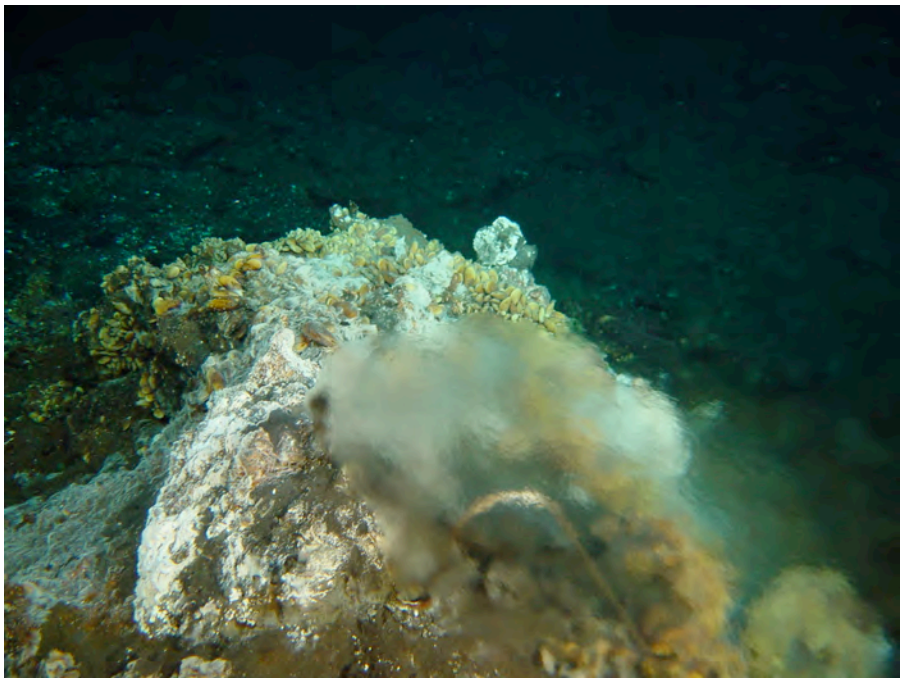
Bathyluck'09 Cruise

(Lucky Strike)

Horta-Horta (Portugal), August 31st - September 29th 2009

NO PourQuoi Pas ? - ROV Victor 6000 – AUV AsterX



Project PI : J. Escartín - Cruise PIs : J. Escartín & M. Cannat

CNRS - Institut de Physique du Globe de Paris, France

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1. Introduction

1.1. Cruise overview

The aim of the project BATHYLUCK (BAThymétrie–HYdrothermalisme–LUCKy Strike) is to a) understand theinterplay between tectonism and volcanism along the zone of crustal accretion of a slow-spreading ridge, b) constrain the physical and chemical characteristics and temporal evolution of hydrothermal activity associated with a slow-spreading segment and the active processes that occur within, and c) the effect of spatial and temporal variations in hydrothermalism on geo-microbiological interactions at the scale of the site. We propose an integrated, multi-scale study of the Lucky Strike hydrothermal field and its setting, that will be one of the first of such kind at a slow-spreading ridge. This project is also a necessary step to establish a long-term seafloor observatory to study active processes at a slow-spreading ridge within the MoMAR Program. It is fully integrated with other past and on-going research programs, including MoMARNET (European Network), ESONET (European Seafloor observatory Network), and builds on prior field research in the area (cruises SISMOMAR'05, Graviluck'06, MoMARETO'06, MoMAR'07 & '08).

The cruise was carried out onboard PourQuoi Pas?, with the ROV Victor 6000 and the AUV AsterX (IFREMER), between the 31st of August and the 29th of September 2009 (departure from and arrival to Horta). An exchange of personnel and scientific material was carried out in the proximity of Lucky Strike on the 9th of September with the BO Arquipelago (U. Azores). The cruise PI for the 1st leg was J. Escartín, and for the 2nd leg M. Cannat.

The three main types of operations carried out during the cruise were: a) the installation and/or recovery of instrumentation to obtain time-series of active processes (including sismometers, temperature sensors, pressure gauges, geomicrobiological colonizators); b) sampling of fluids and rocks; and c) high-resolution geophysical surveys (electronic still imagery, microbathymetry, magnetics, water column studies) to characterize both the distribution of hydrothermal activity and the interactions between volcanic and tectonic processes along the Lucky Strike ridge segment. Anciliary biological and microbiological studies were also carried out.

We carried out a total of 11 ROV Victor dives (dive# 386-396). 5 of the dives were carried out with the Module Route, 3 for high resolution bathymetry surveys (393, 394, 396), and 2 for imagery and microbathymetry (390 & 391). The 6 remaining VICTOR dives were dedicated to sampling and instrument installation (Module Prelevement). The AUV AsterX carried out 9 dives for geophysical surveying, but with limited success due to failures in the engine (aborted or highly shortened dives).

1.2. Summary of cruise operations

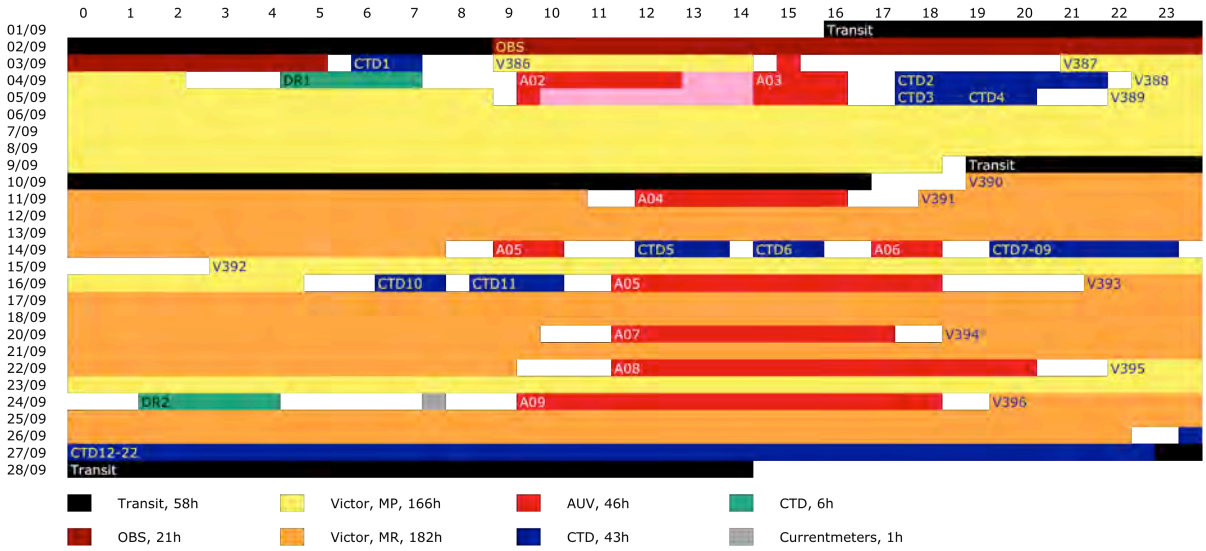


Table 1.2.1. Overview of operations during the Bathyluck'09 cruise, and their time distribution over a total cruise length of ~650 h.

Monday 31 Aug 2009
Installation and preparation of material at Horta

Tuesday 1 Sep 2009
15:45 Departure from Horta;

Wednesday 2 Sep 2009
09:12 Arrival at site B1
09:35 Rosette test
10:36 OBS 005 on board
10:42 Rosette test of the acoustic system on board
12:38 OBS 001 on board
12:57 OBS 002 deployed
14:24 OBS 012 on board
14:36 OBS 003 deployed
16:14 OBS 014 on board
16:19 OBS 004 deployed
17:11 OBS 013 deployed
19:18 OBS 023 on board
20:24 OBS 022 deployed
22:42 OBS 002 relocated

Thursday 3 Sep 2009
00:24 OBS 003 relocated
01:44 OBS 022 relocated
03:23 OBS 004 relocated
05:20 OBS 013 relocated
05:59 CTD 001 in the water
07:21 CTD 001 on board
08:50 ROV in the water – START DIVE 386
10:42 NASA Launch
14:21 ROV on board – END DIVE 386
17:10 AUV in the water
17:35 AUV tested
21:38 ROV in the water – START DIVE 387

Friday 4 Sep 2009
02:22 ROV on board -END DIVE 387
04:18 Dredge in the water
07:13 Dredge on board
09:41 AUV in the water
13:17 AUV on board
14:30 AUV in the water
16:38 AUV on board
17:33 CTD 002 in the water
21:54 CTD 002 on board
22:27 ROV in the water – START DIVE 388

Saturday 5 Sep 2009
08:50 ROV on board-END DIVE 388
10:28 AUV in the water
11:03 AUV on board
14:28 AUV in the water
16:26 AUV on board
17:26 CTD 003 in the water
18:48 CTD 003 on board
19:09 CTD 004 in the water
20:28 CTD 004 on board
21:45 ROV in the water – START DIVE 389

Sunday 6 Sep 2009
00:59 transit to Montsegur
09:09 transit to Tour Eiffel
11:18 transit to NASA
12:35 transit to Montsegur
13:05 Transit to NASA
14:45 NASA Recover
15:16 transit to Y3
17.00? NASA Launch

Monday 7 Sep 2009
00:21 transit to PP4

02:53 transit to Y3
05:17 transit to SINTRA
08:18 Transit to NASA
09:49 transit to Tour Eiffel
11:07 transit to Montsegur
12:09 Transit to NASA
13.00 ? NASA Recover
15:35 transit to Tour Eiffel
16:38 transit to Montsegur
17:40 transit to JPP
20.00 ? transit to Pico

Tuesday 8 Sep 2009
00:10 transit to PP5
00:26 transit to PP6
00:36 transit to White Castle
01:48 Transit to NASA
02:22 transit to Cristall
04:00 Transit to NASA
05:11 transit to White Castle
08:15 Transit to NASA
11.34.00 ? NASA Recover
14:00 Visiting OBS
15:55 going to Barrio Alto
16:36 transit to PP24
17:23 transit to GG
19:22 transit to SINTRA
transit to St Liberté
22:00 transit to Tour Eiffel

Wednesday 9 Sep 2009
00:21 Transit to NASA
03:06 transit to Helene
05:18 trasit to Pico
06:36 transit to White Castle
07:14 transit to GPP
08:00 Transit to NASA
09:00 transit to point A
12:04 transit to St Liberté
13:34 transit to Isabele
15:11 Transit to NASA
16:31 END OF DIVE 389
18:08 ROV on board
18:53 transit half way to Horta

Thursday 10 Sep 2009
08:00 Transfert Personnel
15:22 transit to Lucky Strike
17:18 NASA Recover
18:08 ROV in the water – START DIVE 390
20:16 OTUS Acquisition Start

Friday 11 Sep 2009
06:41 OTUS 001 Deployed
08:08 OTUS Acuisition end. Aquired profiles: 21,22,23,24,25.
09:10 Magnetometer Calibration
10:45 ROV on board -END DIVE 390
11:33 AUV in the water
16:27 AUV on board
18:22 ROV in the water -START DIVE 391
21:25 OTUS Acuisition start
23:53 Aquired profiles: 26,27,28,29,30,31,32,33,34.

Saturday 12 Sep 2009
00:00 Continuing OTUS aquisition
12:08 OTUS aquisition END. Acquired profiles 35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66.
12:18 OTUS end BMF Acuisition Start
12:20 at point Y3
13:39 at point M08_8 and Sintra
15:02 at Tour Eiffel
15:55 OTUS and BMF Acuisition end
17:24 OTUS end BMF Acuisition Start
00:55 OTUS Acuisition end BMF END.
Aquired profiles: 62,63,64,65,66,67,68,69,70.

Sunday 13 Sep 2009
01:03 Continuing OTUS and BMF aquisition
23:46 Continuing OTUS and BMF aquisition.
Aquired
profiles:71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,9899.

Monday 14 Aug 2009
00:11 Continuing OTUS and BMF aquisition
06:36 OTUS end BMF Acuisition end.Aquired profiles:100,101,102,103,104,105,106,107,108,109,110,111,112.
08:12 ROV on board -END DIVE 391
09:14 AUV in the water
10:40 AUV on board
12:06 CTD 005 in the water
13:48 CTD 005 on board
13:49 Transit to CTD A site
14:14 CTD 006 in the water
15:49 CTD 006 on board
15:50 Transit to AUV deployment site
17:14 AUV05 in the water
17:44 AUV on board
18:53 Transit to CTD B site
19:24 CTD 007 in the water
21:20 CTD 007 on board
21:50 CTD 008 in the water
22:01 CTD 008on board
22:16 CTD 009 in the water
23:19 CTD 009 on board
23:41 Transit to ROV deployment site

Tuesday 15 Sep 2009
02:25 NASA Launch
03:10 ROV in the water -DIVE 392
06:48 Transit to NASA
07:19 Transit to JPP Est
07:36 Transit to NASA
08:55 Transit to JPP Est
09:05 Nasa on board
09:46 transit to White Castle
15:17 NASA Launch
15:55 Transit to JPP West
16:38 Transit to NASA
18:41 Transit to marker C
19:22 Nasa on board

20:59 transit to Tour Eiffel

Wednesday 16 Sep 2009
01:46 transit to Isabele
04:53 ROV on board. END OF DIVE 392
05:09 Transit to point D for CTD Deployment
06:33 CTD 010 in the water
07:46 CTD 010 on board
08:30 CTD 011 in the water
10:25 CTD 011 on board
10:25 Transit to AUV deployment site
11:32 AUV06 in the water
18:37 AUV on board
18:38 Transit to ROV deployment site
21:17 ROV in the water -DIVE 393

Thursday 17 Sep 2009
00:02 Continuing BMF aquisition
23:50 Continuing BMF aquisition. Acquired profiles: 1,2,3,4,5,6.

Friday 18 Sep 2009
00:21 Continuing BMF aquisition
23:50 Continuing BMF aquisition. Acquired profiles: 8,1,2,3,4.

Saturday 19 Sep 2009
00:31 Continuing BMF aquisition
08:14 end of BMF acquisition. Acquired profile: 1,2,3,4,5,6,7,8.
10:13 ROV on board. END OF DIVE 393
11:24 AUV07 in the water
17:13 AUV on board
18:26 ROV in the water -DIVE 394
23:30 BMF aquisition. Acquired profile: 1,2.

Sunday 20 Sep 2009
00:00 Continuing BMF aquisition.
23:50 End BMF aquisition. Acquired profile: 4,5,6,7,8,9,10,11,12.

Monday 21 Aug 2009
00:00 Continuing BMF aquisition.
07:47 End BMF aquisition. Acquired profile:13,14,15.
09:40 ROV on board. END OF DIVE 394
11:21 AUV08 in the water
20:27 AUV on board
22:05 ROV in the water -DIVE 395
23:41 transit to White Castle

Tuesday 22 Sep 2009
00:27 transit to Cristal
04:12 transit to Y3
07:45 transit to nasa 1
08:04 NASA Launch
11:25 NASA 1.Recovered
12:25 transit to Y3
13:38 transit to Montsegur
16:13 transit to Tour Eiffel
19:19 Trasit to NASA 2
20:51 transit to Tour Eiffel
22:50 Transit to Asics
23:00 transit to M08-9

Wednesday 23 Sep 2009
00:53 transit to SINTRA
02:33 transit to Montsegur
03:36 Transit to NASA
05:49 transit to Montsegur
06:29 Transit to NASA
08:40 transit to "site inconnu"
11:46 Transit to NASA
13:23 transit to Pico
14:25 Transit to Cipress
15:55 transit to Aisics
17:25 Transit to NASA 3
19:30 NASA Recovered
20:00 Exploration of Lava lake
22:10 transit to SINTRA

Thursday 24 Sep 2009
00:05 ROV on board. END OF DIVE 395
01:00 Transit to Dredge deployment site.
01:40 Dredge#2 in the water
04:09 Dredge on board
06:53 ROV camera Test start
07:11 ROV camera Test end
07:23 Currentmeter #2
07:48 Currentmeter #1
07:48 Transit to AUV deployment site
09:27 AUV09 in the water
18:31 AUV on board
19:44 ROV in the water -DIVE 396
23:48 BMF aquisition. Acquired profile: 1.

Friday 25 Sep 2009
00:00 Continuing BMF aquisition.
23:34 Continuing BMF aquisition.Acquired profile: 2,3,4,5,6,7,8.

Saturday 26 Sep 2009
00:00 Continuing BMF aquisition.
20:13 End BMF aquisition. Acquired profile:9,10,11,12,13,14,15,16.
22:27 ROV on board. END OF DIVE 396
22:29 Transit to CTD deployment site.
23:24 CTD 012 in the water

Sunday 27 Sep 2009
01:06 CTD 012 on board
01:32 CTD 013 in the water
02:50 CTD 013 on board
03:15 CTD 014 in the water
04:37 CTD 014 on board
05:21 CTD 015 in the water
07:08 CTD 015 on board
07:58 CTD 016 in the water
09:24 CTD 016 on board
09:49 CTD 017 in the water
11:48 CTD 017 on board
12:36 CTD 018 in the water
13:11 CTD 018 on board
14:20 CTD 019 in the water
15:34 CTD 019 on board
18:01 CTD 020 in the water

18:44 CTD 020 on board
19:40 CTD 021 in the water
21:05 CTD 021 on board
21:29 CTD 022 in the water
22:45 CTD 022 on board

23:00 Departure to Horta

Monday 28 Aug 2009
00:00 transit to Hor

2. Science operations - Instrumentation

2.1. Autonomous temperature sensors

2.1.1 Probe characteristics

We have 4 sets of temperature probes : 20 high-temperature probes (NKE) able to record temperature up to 450°C, 6 low-temperature probes (NKE) able to record temperature up to 100°C , 12 high-temperature probes (WHOI) able to record temperature up to 415°C, 5 low-temperature probes (WHOI) able to record temperature up to 125°C.

NKE probes are all composed of a 10-cms long, 2cm in diameter cylindrical body hosting the electronic component and of a rod of variable length at the end of which the temperature is actually measured. Rods of high-T probes are ~20cms-long and ~0.5cm in diameter (Figure 1). Rods of low-T probes are 5 cms long and ~0.1 cm in diameter.

WHOI HT-probes are composed of a 15-cm long, 9cm in diameter cylindrical TI body, housing the electronic components (data logger battery), and a 72.4 cm long and 6 mm in diameter rod, housing the J-type thermistor at its tip.

WHOI LT-probes are composed of a 4.5'' long, 1''(~2.54cm) in diameter cylindrical, housing the electronic component, in titanium and of a 5''long rod.

High-T and low-T NKE-probes weight ~250g in air (200g in water) and 230g in air (180g in water), respectively. A metallic plate (~60g) coated with neoprene on both sides has been mounted on the body of 14 NKE probes (serial number starting with 29) to facilitate their catch with ROV/Victor's arms (Maestro and Sherpa) and to avoid direct contact between the arms and the probe body. A Plexiglas plate coated with neoprene on both sides was mounted on 6 high-T NKE probes (serial number starting with 29 too) for the same purpose than above. All high-T rods have been torn at their end to help deployment in smoker orifices (see figure1).

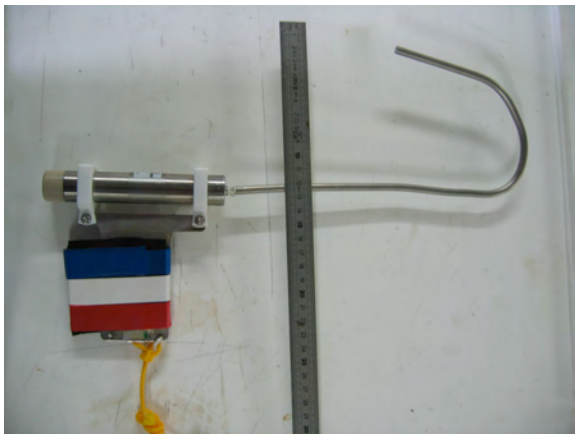


Figure 1 : A picture of 1 high-T probe with its metallic plate.

High-T WHOI probes weight ~5.3kg in air (loger and yellow syntactic handle) and 0.70kg in water. A wood plate has been mounted on the body of 12 WHOI probes for the same purpose. All high-T WHOI probes have been torn too for the same reason than above (Figure 2).

Figure 2 : A picture of two high-T probes with their yellow handle and their wood plate in vents.

Low-T WHOI probes weight 1bs in air (1bs in water). A plastic rod has been mounted on the body of 5 WHOI probes to help the deployment in vents (figure 3).

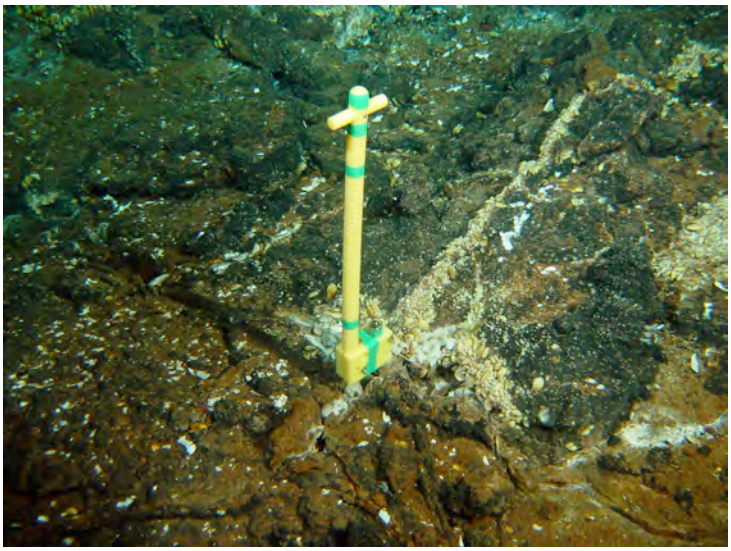


Figure 3 : A picture of a low-T probe with its yellow plastic rod in a crack.

2.1.2. Recovery of T-probes deployed during MOMAR'08

A first objectif objectif was the recovery of 16 temperatures probes deployed in smoker-like vents and diffuse seeps during the Momar08 cruise in 2008. 10 of these probes have been recovered: 9 of them are out of order (serynge corrosion/altération, leak in the probe 's body hosting the electronic components) and the data lost ; the last one is working but the data set is usless because the probe fell from its vent, so it was recoring 5°C (water temperature at 2000m) during 1 year. We have not been able to find the 6 remaining ones that are probably burried under the ashes of Fallen chimneys and/or mussel colonies.

2.1.3. Deployment of BATHYLUCK'09 probes (short- and long-term)

A second goal was the deployment of high- and low-temperature probes in smoker-like vents and diffuse seeps, repectively. A first set of 11 high-temperature probes were deployed in several Lucky Strike smokers (Figure 6 and Tab 1) for the duration of the cruise. These probes have been recovered at the end of ROV/Victor's last sampling dive (dive number 395). 12 NKE probes, 12 HT-WHOI probes and 5 LT-WHOI probes were also deployed in several high-T smokers and diffuse seeps during ROV/Victor's dives. These

probes will stay down bottom and record temperature fluctuations for one year. They will be recovered during our next visit to Lucky Strike site scheduled next year. 11 NKE-HT probes were deployed temporarily and brought back to the ship. Two of them are out of order due to corrosion/altération/leak. One recorded the ambient temperature of the water above a diffusive field of vents because it fell from the orifice. The 8 remaining have recorded high and low-temperature fluctuations during a few days depending on deployment day and time. Details (location, deployment day&time, serial#...) about the deployment of the 50 short- and long-term probes can be found in Appendix … and see Figure6 and Tab1.

2.1.4. Temperature gradient measurements in hydrothermal plume

A last objective was, as during MOMAR08, the measurements of temperature gradients in hydrothermal plumes above smokers. In order to do so, 6 regulary-spaced (every ~5cms, see figure 4 and Tab2) low temperature probes (those with a short serynge) have been installed on a Plexiglas plate. The plate has been succesfully deployed above 11 Lucky Strike smokers even if during the different gradient measurement events , the probe rods were twisted by the Rov's arm or in the basket (tab2).

Figure 4 : Array of 6 low-T probes mounted on a Plexiglas plate to measure temperature gradients in hydrothermal plumes.

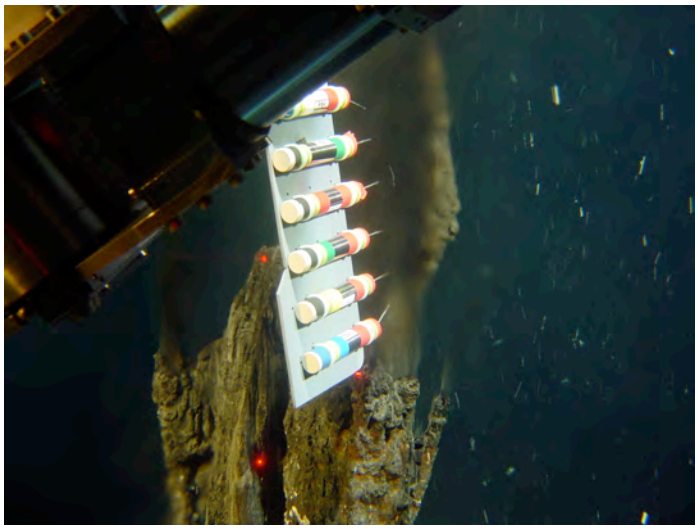


Figure 5 : Deployment of the gradient plate in a vent.

2.1.5. Temperature record examples

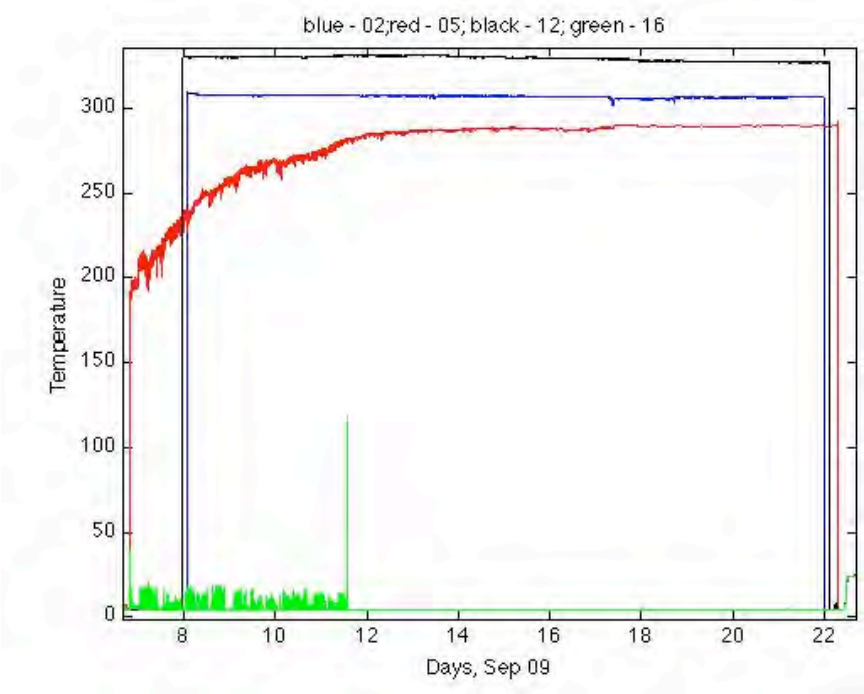


Figure 6 : Temperature recorded by 29002 (blue), 29005 (red), 29012 (black) and 29016 (green) function of the time in days. One the red one, we see an evolution of the T till it stabilizes, and even the tides. The higher T vents (blue and black) show a modest evolution. Green curve at very low T, because the 29016 probe fell from the vent down the bottom.

Zoom :

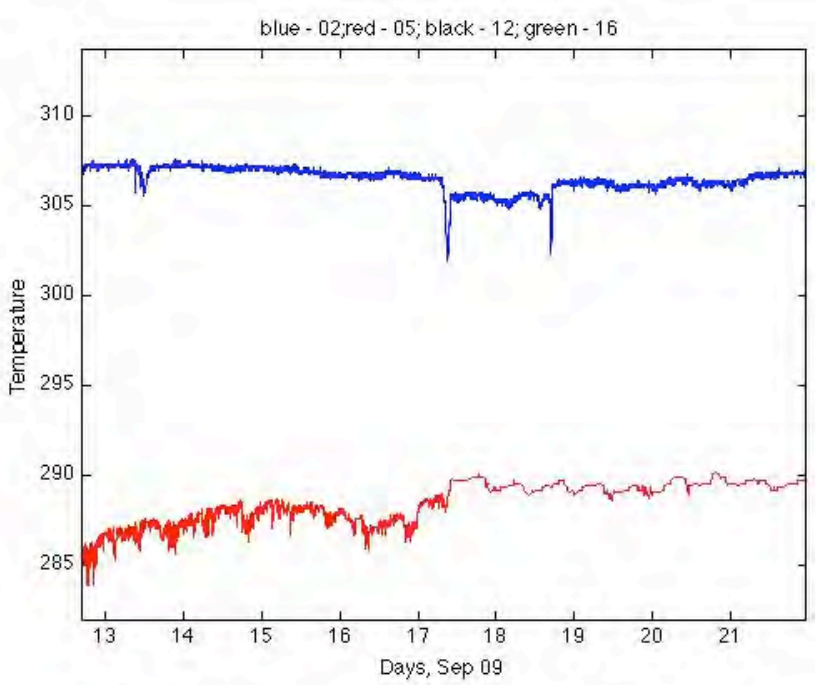
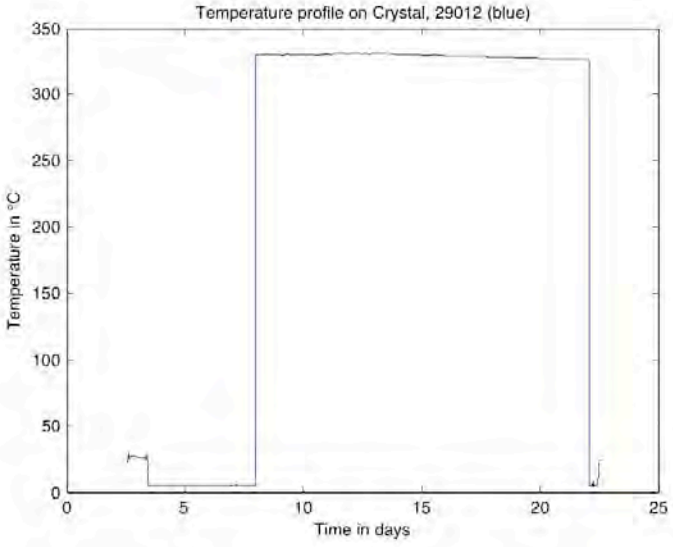
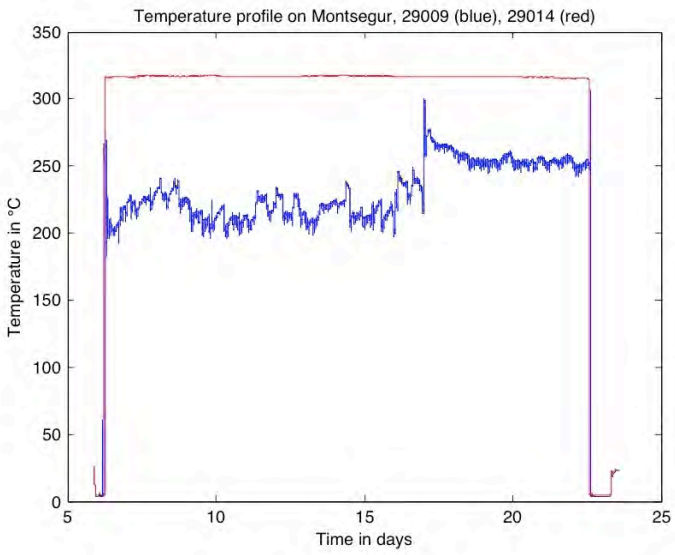


Figure 7 : Zoom of the figure 5 between 280 and 310 °C, on the red and blue curve. Same remark than above (figure 7)

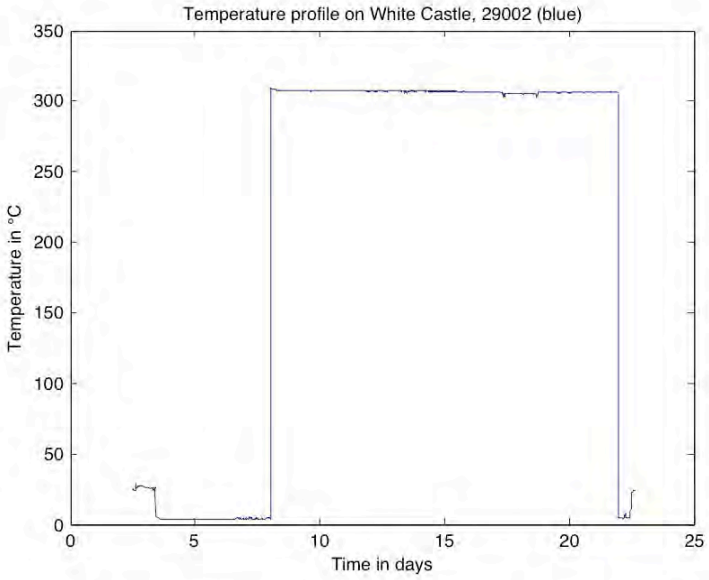
Results for each site :



Crystal

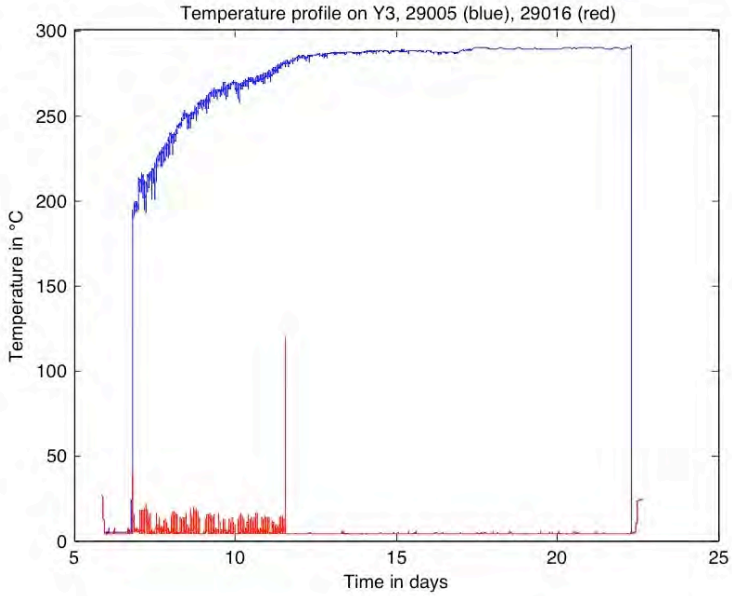


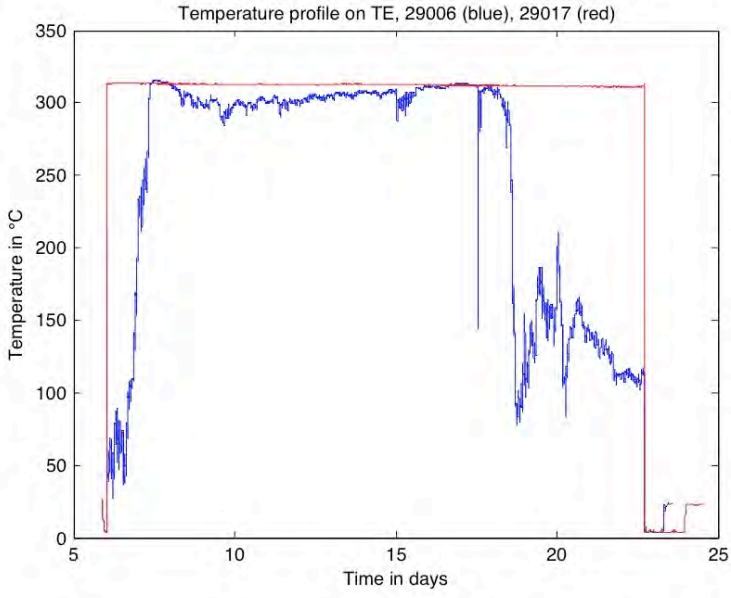
Montsegur



White Castle

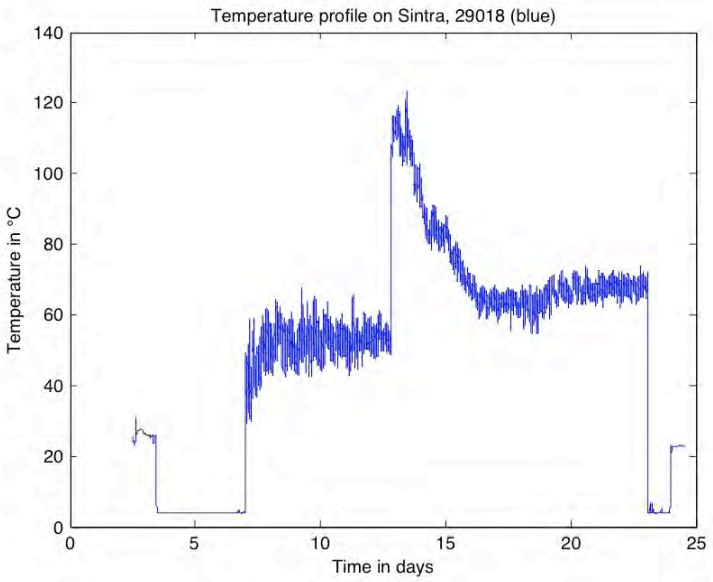
Y3





Tour Eiffel

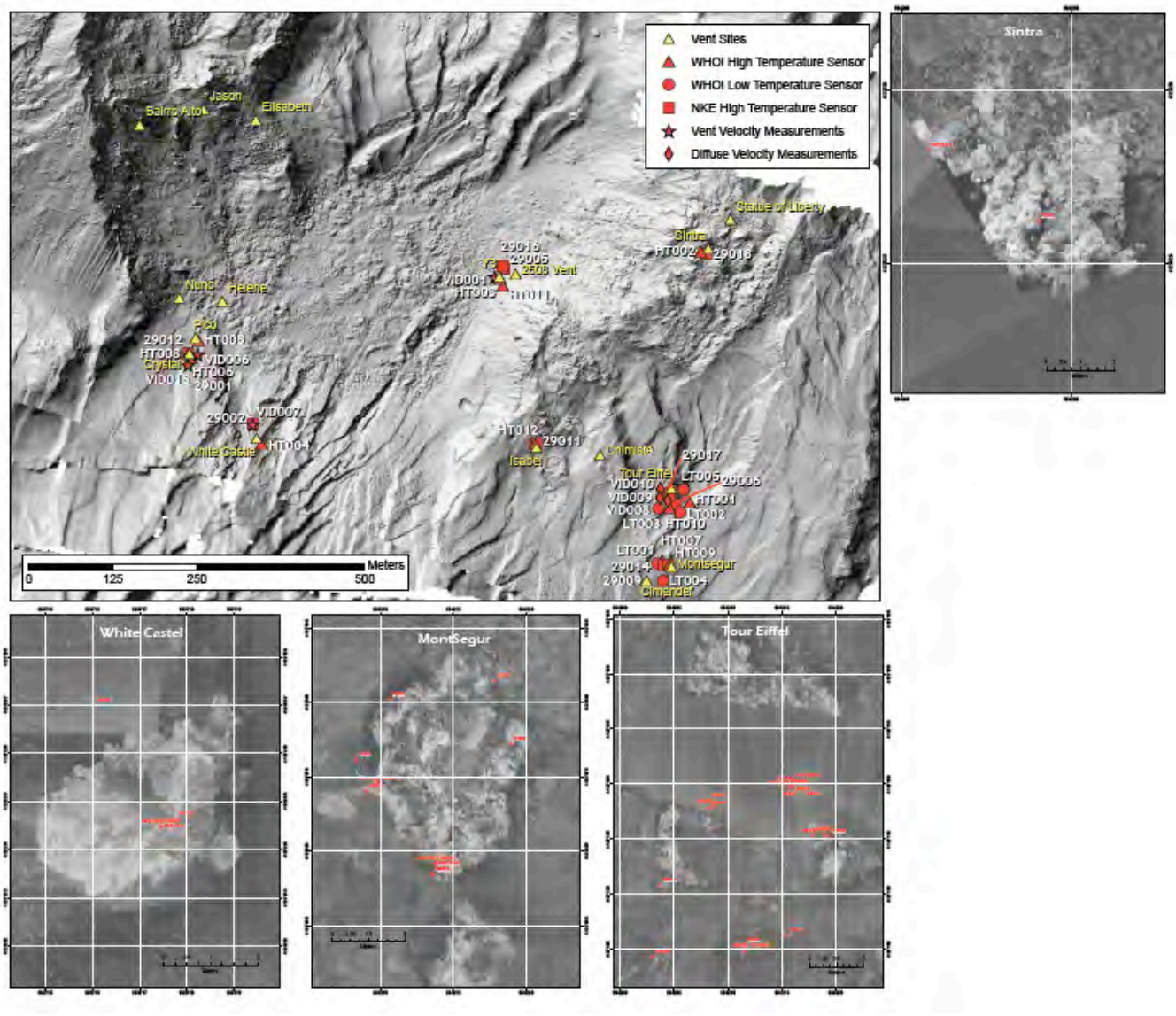
Sintra


Temperature profile on Sintra, 29018 (blue)
Temperature in °C
Time in days
0
20
40
60
80
100
120
140
0
5
10
15
20
25

Name	Date	Time	Dive number	Latitude	Longitude	LAT	LON	Depth	X	Y	XUTM	YUTM	Location	Recovery date	Recovery Time	Recovery Dive Number	Delta_t(s)= TUTC-Tsonde
29001	08/08/09	00:06	389	37 17,450	32 16,921	37,29083	-32,28202	1724	13640	7378	563640	4127378	Crystal	22/09/09	03:16:50	395	
29002	08/09/09	01:28	389	37 17,394	32 16,869	37,28990	-32,28115	1711	13717	7275	563717	4127275	White Castle	21/09/09	23:44	395	26
29002B	22/09/09	22:22	395	37 17,337	32 16,525	37,28895	-32,27542	1683,7	4226	7173	564226	4127173	TE				
29004	22/09/09	13:04	395	37 17,511	32 16,670	37,29185	-32,27783	1729,4	4010	7493	564010	4127493	Y3				
29005	06/09/09	19:24	389					1729	14014	7504	564014	4127504	Y3	22/09/09	07:08	395	36
29005B	22/09/09	23:29	395	37 17,377	32 16,640	37,28962	-32,27733	1684,8	4055	7246	564055	4127246	Isabel				
29006	06/09/09	01:20:44	389					1686	14212	7178	564212	4127178	TE	22/09/09	17:07	395	18
29007	22/09/09	15:38	395						4212	7069	564212	4127069	Montsegur				
29008			395														8
29009	06/09/09	06:04	389					1700	14206	7074	564206	4127074	Montsegur	22/09/09	14:59	395	23
29010	22/09/09	02:08	395	37 17,435	32 16,932	37,29058	-32,28220	1721,8	3623	7349	563623	4127349	South Crystal				
29011	07/09/09	01:52	389	37 17,379	32 16,641	37,28965	-32,27735	1685	14054	7248	564054	4127248	Isabel	22/09/09	23:18	395	
29012	07/09/09	22:51	389	37 17,447	32 16,919	37,29078	-32,28198	1724	13642	7372	563642	4127372	Crystal	22/09/09	02:37	395	32
29012B	23/09/09	02:01	395					1617,6	4255	7528	564255	4127528	Sintra				
29013	22/09/09	14:52	395	37 17,278	32 16,533	37,28797	-32,27555	1702	4215	7064	564215	4127064	Montsegur				
29014	06/09/09	06:30	389					1700	14212	7074	564212	4127074	Montsegur	22/09/09	14:20	395	36
29015	22/09/09	07:24	395	37 17,510	32 16,667	37,29183	-32,27778	1729	4014	7492	564014	4127492	Y3				
29016	06/09/09	19:44	389					1729	14014	7504	564014	4127504	Y3	22/09/09	07:44	395	39
29016B	23/09/09	17:18	395	37 17,338	32 16,528	37,28897	-32,27547	1691,4	4221	7174	564221	4127174	Aisics				
29017	06/09/09	00:49	389	37 17,331	32 16,529	37,28885	-32,27548	1684	14219	7162	564219	4127162	TE	22/09/09	17:11	395	10
29018	06/09/09	23:34	389	37 17,529	32 16,504	37,29215	-32,27507	1619	14254	7528	564254	4127528	Sintra	23/09/09	01:54	395	64
29019	22/09/09	18:06	395					1684,9	4221	7173	564221	4127173	TE				
29020	21/09/09	23:58	395	37 17,381	32 16,869	37,28968	-32,28115	1710,8	3718	7250	563718	4127250	White Castle				
HT001	06/09/09	00:27:00	389	37 17,333	32 16,518	37,28888	-32,27530	1686	14237	7166	564237	4127166	TE				
HT002	06/09/09	22:15	389	37 17,530	32 16,509	37,29217	-32,27515	1616,8	14247	7530	564247	4127530	Sintra				
HT003	06/09/09	17:19:40	389					1717	14009	7490	564009	4127490	Y3				
HT004	15/09/09	13:41:05	392	37 17,379	32 16,862	37,28965	-32,28103	1711	13728	7247	563728	4127247	White Castle				
HT005	07/09/09	21:46	389	37 17,460	32 16,913	37,29100	-32,28188	1725	13651	7395	563651	4127395	Pico				
HT006	07/09/09	23:11	389	37 17,447	32 16,919	37,29078	-32,28198	1724	13642	7372	563642	4127372	Crystal				
HT007	06/09/09	03:47	389	37 17,287	32 16,540	37,28812	-32,27567	1703	14224	7079	564224	4127079	Montsegur				
HT008	07/09/09	23:49	389	37 17,450	32 16,921	37,29083	-32,28202	1724	13640	7378	563640	4127378	Crystal				
HT009	06/09/09	02:15	389					1702	14213	7074	564213	4127074	Montsegur				
HT010	05/09/09	03:55	388					1684	14213	7158	564213	4127158	TE				
HT011	06/09/09	17:00	389	37 17,503	32 16,668	37,29172	-32,27780	1717	14009	7490	564009	4127490	Y3				
HT012	07/09/09	02:04	389	37 17,379	32 16,642	37,28965	-32,27737	1685	14052	7248	564052	4127248	Isabel				
LT001	07/09/09	15:05:30	389	37 17,285	32 16,544	37,28808	-32,27573		14198	7077	564198	4127077	Montsegur				
LT002	07/09/09	16:32:30	389	37 17,325	32 16,526	37,28875	-32,27543						South of TE				
LT003	07/09/09	16:22	389	37 17,328	32 16,543	37,28880	-32,27572						South of TE				
LT004	07/09/09	16:56	389					1704	14206	7051	564206	4127051	Montsegur				
LT005	07/09/09	16:12:53	389	37 17,343	32 16,523	37,28905	-32,27538		14203	7152	564203	4127152	TE				
26001	16/08/08	10:59:00	360	37 17,340	32 16,598	37,28900	-32,27663	1699.2	14183	7063			Roldan	06/09/09	08:51	389	15min38s
28883	13/08/08	08:54:00	360	37 16,990	32 14,857	37,28317	-32,24762	1981.6	16710	6544			East Volcano	15/09/09	08:54	392	
28886	15/08/08	19:10:00	361	37 17.5689	32 16,895		-32,28158	1729	13691	7557			West lava lake	09/09/09	07:46	389	

Recovered probes 1month
Not used
1 year recording probes
Burnt probes, no data

Tab 1 : Summation table of all the probe event with the location, time, date of the deployment and recovery.



Distribution of all T sensors throughout the Lucky Strike field (shaded microbathymetric map, top right). Other panels: OTUS mosaics of selected sites, with location of T sensors relative to the hydrothermal structures (vents, mounds, other).

TGR	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6
1	5,3	5,3	5,1	4,75	5,1
3	4,65	4,8	5,5	5,1	5,5
4	3,54	4,75	5,4	5,1	3,48
5	3,59	4,67	5,34	4,75	3,39
7	3,99	5,7	5,58	5,02	4,62
8	3,02	6,58	4,44	4,61	5,26
10	4,16	4,21	4,95	3,95	6,1
11	4	6,45	2,9	3,3	6,7

Tab 2 : Measurements in cm of the distance between two rods for every gradient event

2.2. Ocean Bottom Seismometers

R. Daniel, A. Rai, I. Veludo, A. Blin, C.Courrier

Contact : rdaniel@ipgp.jussieu.fr

Version au 8/10/2009 à 17:00

2.2.1. Introduction

The 5 Ocean Bottom Seismometers (OBSs) deployed during BBMOMAR-I (18-27 July, 2006) and BBMOMAR-II (8-17 Aug. 2008) have provided important information about the distribution of seismicity at the Lucky-strike segment of the Mid-Atlantic ridge. The region is well known for numerous active hydrothermal vents. To study the relation between seismicity and hydrothermal activity in the region, it was decided to continue the OBS experiment at nearly the same sites by re-deployment of 5 new OBSs for another year. OBS experiment contributes significant earthquake data to the multi-disciplinary BATHYLUCK09 experiment conducted between 1st Sept. and 28th Sept. 2009.

During the first two days of the BATHYLUCK09 experiment (01/09/09 and 02/09/09), five multi-channel (one pressure, two horizontal and one vertical component) ocean-bottom seismometers (OBSs), deployed during BBMOMAR-II experiment were recovered after one-year of successful operation at Lucky strike segment. Five new OBSs were deployed at nearly same locations on 02/09/2009. The four short-period and one broad-band ocean-bottom seismometer deployed during this experiment will record the seismicity in the region for the next year.

Instruments deployed during BBMOMAR-II, recovered during BATHYLUCK09

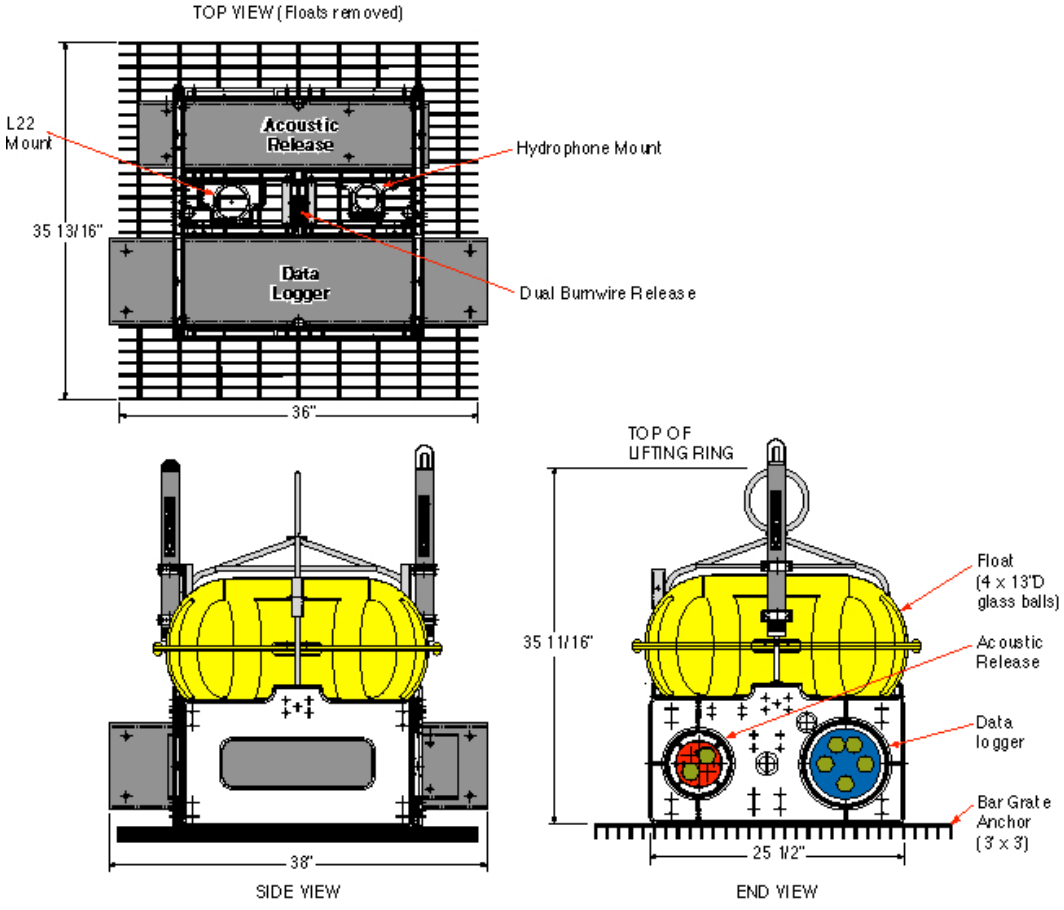
Name	Lat.(°)	Long.(°)	Notes
B1	37°19.3000	-32°16.6625	array N
B2	37°17.9097	-32°19.4248	array W
B3	37°17.5066	-32°17.2777	array central
B4	37°16.9622	-32°14.4609	array E
B7	37°15.6354	-32°17.8473	array south

Instruments deployed during BATHYLUCK09 to be recovered in summer 2010

Name	Lat.(°)	Long.(°)	Reloc.	Lat. Reloc. Long.	Notes
C1	37°19.3000	-32°16.639	37°19.2148	-32°16.6964	array N (SP)
C2	37°17.918	-32°19.426	37°17.8499	-32°19.4913	array W (SP)
C3	37°17.565	-32°17.288	37°17.4767	-32°17.3593	array central (SP)
C4	37°16.967	-32°14.476	37°16.8423	-32°14.5015	array E (SP)
C7	37°15.6354	-32°17.8473	37°15.6146	-32°17.8856	array south (BB)

**SP short period, BB : Broad Band.*

2.2.2. Short period OBS:



Schematic diagram of the Ocean-bottom seismometer assembly

(model: L-CHEAPO, Scripps Institute of Oceanography, San Diego).

Characteristics of short-period sensors:

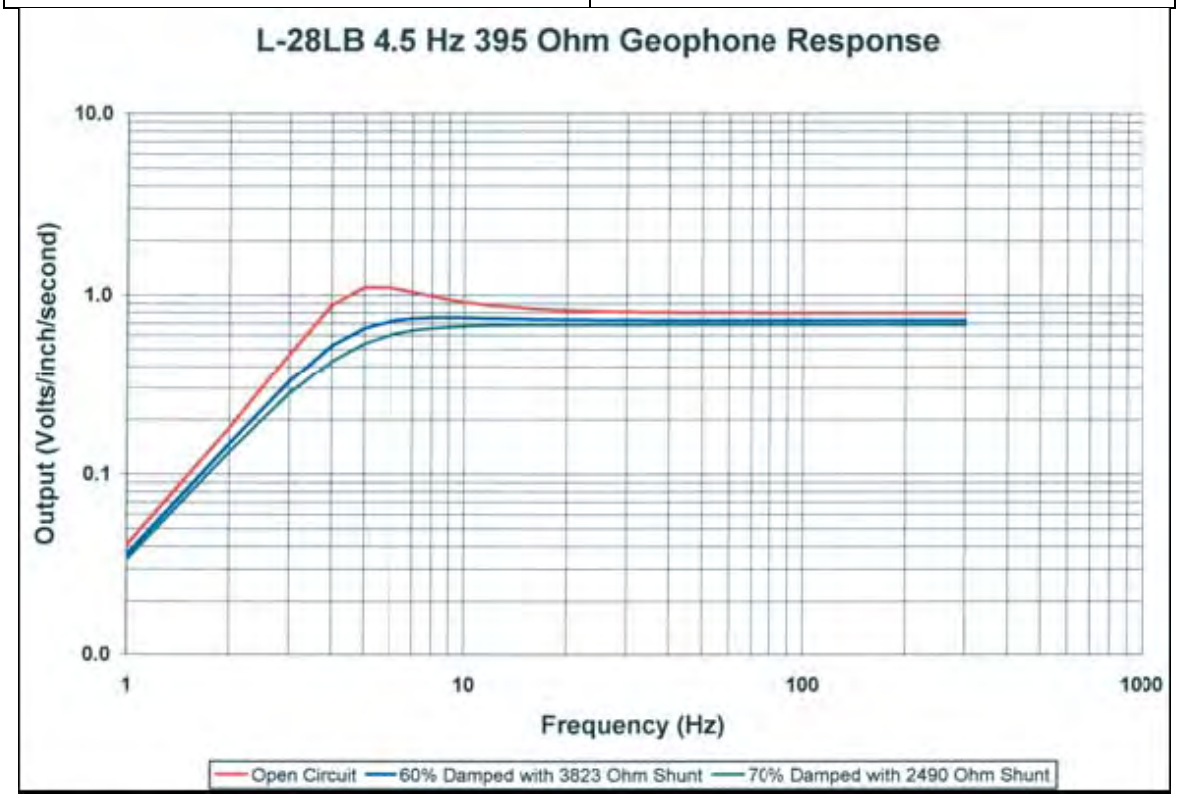
Sensors	***Electronics***
Three axis Geophone Mark Products L-28 Hydrophone Hitech HYI-90-U *Mechanical layout:* Dimensions : 1m x 1m x 1m Maximum depth : 6000 meters Material of cylinders: Aluminium 7075 hard anodised and epoxy paint ***Weight*** In air without drop weight : 72 Kg In air with drop weight : 110 Kg In water without drop weight : -14 Kg In water with drop weight : 19 Kg	Nb of real bits : 21 at 16 Hz or 20 à 125 Hz Number of channels : 4 Available sampling rate : 1000 - 500 - 250 - 125 - 62,5 - 32,25 - 16,125 s/s Crystal – CS5321 – CS5322 Data storage : HD 80 Gb Clock : Seascan MCXO SISMTB4SC ***Surface gear*** Flag Radio beacon Flash light Reflectors

Seismometer short period:

The sensor is composed of sismometers L-28LB (manufactured by Sercel). It's caracteristics are the following :

Natural frequency (f0)	**4.5 Hz**
Frequency Tolerance	**±0.5 Hz**
Standard Coil Resistance (Rcoil)	**395 Ω**
Resistance Tolerance	**6.5%**
Maximum Distortion @ 0.7 in/sec **peak-to-peak @ 12 Hz**	**0.2%**
Transduction Constant **V/in/s ±10%**	$0.040 \cdot \sqrt{R_{coil}}$
Open Circuit Damping ±10%	$\frac{1.726}{f}$

Coil Current Damping	$\frac{10.40 \cdot R_{coil}}{f.(R_{coil} + R_{shunt})}$
Suspended Mass (m)	19.00 g
Power Sensitivity	1.60 mW/in/s
Cast-to-Coil Motion	0.160 inch. Peak to peak



Item	Symbol	Valeur
Natural Frequency	f_0	4.50 Hz
Resistance Shunt	*Rshunt*	2490 Ω
Open loop dumping coefficient	δ_0	$\frac{1.726}{f_0} = 0.384$
Coefficient d'amortissement de la bobine		$\frac{10.40 \cdot R_{coil}}{(R_{coil} + R_{shunt}) f_0} = 0.316$
Facteur d'amortissement	δ	$0.70 = 70\%$

Sensivity ou Transconduction +/- 10%	-	.040 * √(R_{coil}) volts/in/second = 1.5748 * √(R_{coil}) volts/m/second = 31.3 volts/meter/second

The Hydrophone

The hydrophone used in the lCheapo OBS is a HTI-90u manufactured by High Tech, Inc.

Sensivity:

without preamp	• -186 dB re: 1 V/uPa • 50.1 V/Bar
with preamp	• (max) -155 dB re: 1 V/uPa • (max) 1778 V/Bar • (min) -240 dB re: 1 V/uPa • (min) 0.1 V/Bar

Frequency response: 2 Hz to 20 KHz

Equivalent input self noise:

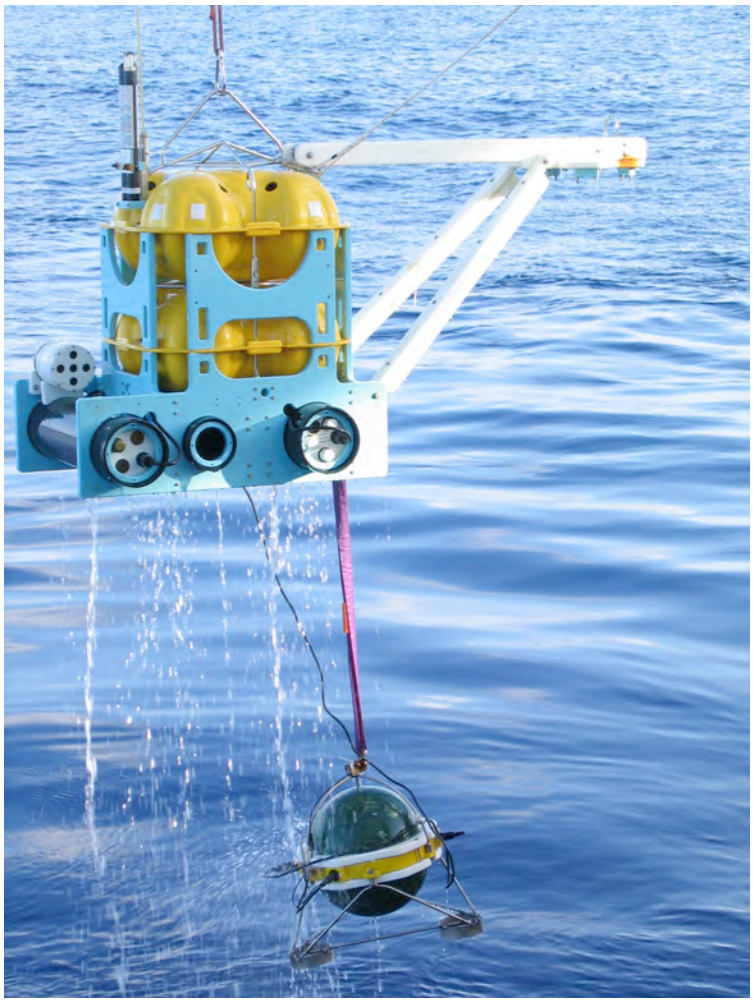
RMS from 1 Hz to 1000 Hz	• 63 dB re: 1 uPa • 0.015 uBar
Spectral	• 54 dB re: 1 uPa/sq.root Hz @ 10 Hz • 35 dB re: 1 uPa/sq.root Hz @ 100 Hz • 26 dB re: 1 uPa/sq.root Hz @ 1000 Hz

2.2.3. Broad Band OBS (BBOBS):

Characteristics of Broad-band sensor:

Sensor	***Electronics***
Nanometrics Trillium T240	Nb of real bits : 21 at 16 Hz or 20 à 125 Hz

Differential pressure gauge *Mechanical layout:* Dimensions : 1m x 1,5m x 1, 30m Maximum depth : 6000 meters Material of cylinders: Aluminium 7075 hard anodised and epoxy paint ***Weight:*** In air without drop weight : 230 Kg In air with drop weight : 310 Kg In water without drop weight : In water with drop weight :	Number of channels : 2 Available sampling rate : 1000 - 500 - 250 - 125 - 62,5 - 32,25 - 16,125 s/s Crystal – CS5321 – CS5322 Data storage : HD 80 Gb Clock : Seascan MCXO SISMTB4SC **Surface gear:** Flag Radio beacon Flash light Reflectors



2.2.4. BATHYLUCK09 OBS operations

Instruments were tested before deployment on 31st Aug. and 1st Sept for acoustic communication between the command unit and the OBSs, both on-board and hanging the acoustic unit at a depth of 1000 m,. 2009. On 2nd Sept., we recovered all the five OBSs deployed during BBMOMAR-II cruise and deployed five new instruments at almost the same locations (14 Hours / 5 persons).

To recover the OBSs from ocean-bottom, an acoustic signal corresponding to the particular OBS was sent using EdgeTech equipment (model 8011XS). The acoustic signal activates the unlock mechanism between the OBS and its heavy metallic platform, and OBS moves upward because of buoyancy of the floaters. Once on the ocean-surface, the OBS is brought back to the ship, and is washed with fresh water, after investigating the signs of corrosion, etc. The data-logger was then extracted from the unit, it was de-vacuumed and clock-drift was measured using Zyfer GPS antenna. We used OBSDUMP software to copy the raw data from the data-logger to the external hard-disk. After correction de Raw-data with fix software (Lcheapo bug), the Fix-data is then converted to SAC format using ANYPLOT

software module, to be able to be read by analysis software. The same procedure is adopted for every other OBS recovered during the cruise.

Recovery:

Cruise recovery parameters:

Site	Deployment Site	B4	B3	B1	B7	B2
OBS	Number	14	12	5	23	1
deployment	File name	BBMM2_B2_14	BBMM2_B3_12	BBMM2_B1_05	BBMM2_B7_23	BBMM2_B2_01
parameters	sample rate	62,5	62,5	62,5	62,5	62,5
	nb channel	4	4	4	4	4
	Année	2008	2008	2008	2008	2008
	Jour Julien	222	222	223	224	225
	Synch time (JJ/MM/AAAA HH:MM:SS)	09/08/2008 21:07:00	09/08/2008 22:23:00	10/08/2008 17:25:00	11/08/2008 18:07:00	12/08/2008 12:34:00
	Wake up time (JJ/MM/AAAA HH:MM:SS)	10/08/2008 22:00:00	10/08/2008 22:00:00	11/08/2008 01:00:00	12/08/2008 18:00:00	13/08/2008 12:00:00
	Lat deployment (format °,m)	37°16,919 N	37°17,505 N	37°19,289 N	37°15,627 N	37°17,926 N
	Long deployment (format °,m)	32°14,626 W	32°17,337 W	32°16,801 W	32°17,953 W	32°19,523 W
	Lat deployment	37,282	37,2918	37,3215	37,2605	37,2988
	Long deployment	32,2438	32,289	32,28	32,2992	32,3254
	Depth	2097	1776	1859	1939	2099
recovery parameters	Année	2009	2009	2009	2009	2009
	Jour Julien	245	245	245	245	245
	heure largage	15:17	13:07	9:40	17:56	11:42
	Time at surface	16:07	13:59	10:17	19:10	12:25
	Time on board	16:24	14:24	10:35	19:18	12:38
	Vitesse de remontée m/s	0,81	0,66	1,03	0,48	0,97
Synchronisation	checked at (inst) (JJ/MM/AAAA HH:MM:SS)	02/09/2009 17:35:01	02/09/2009 16:12:03	02/09/2009 10:52:03	02/09/2009 22:27:00	02/09/2009 13:22:01

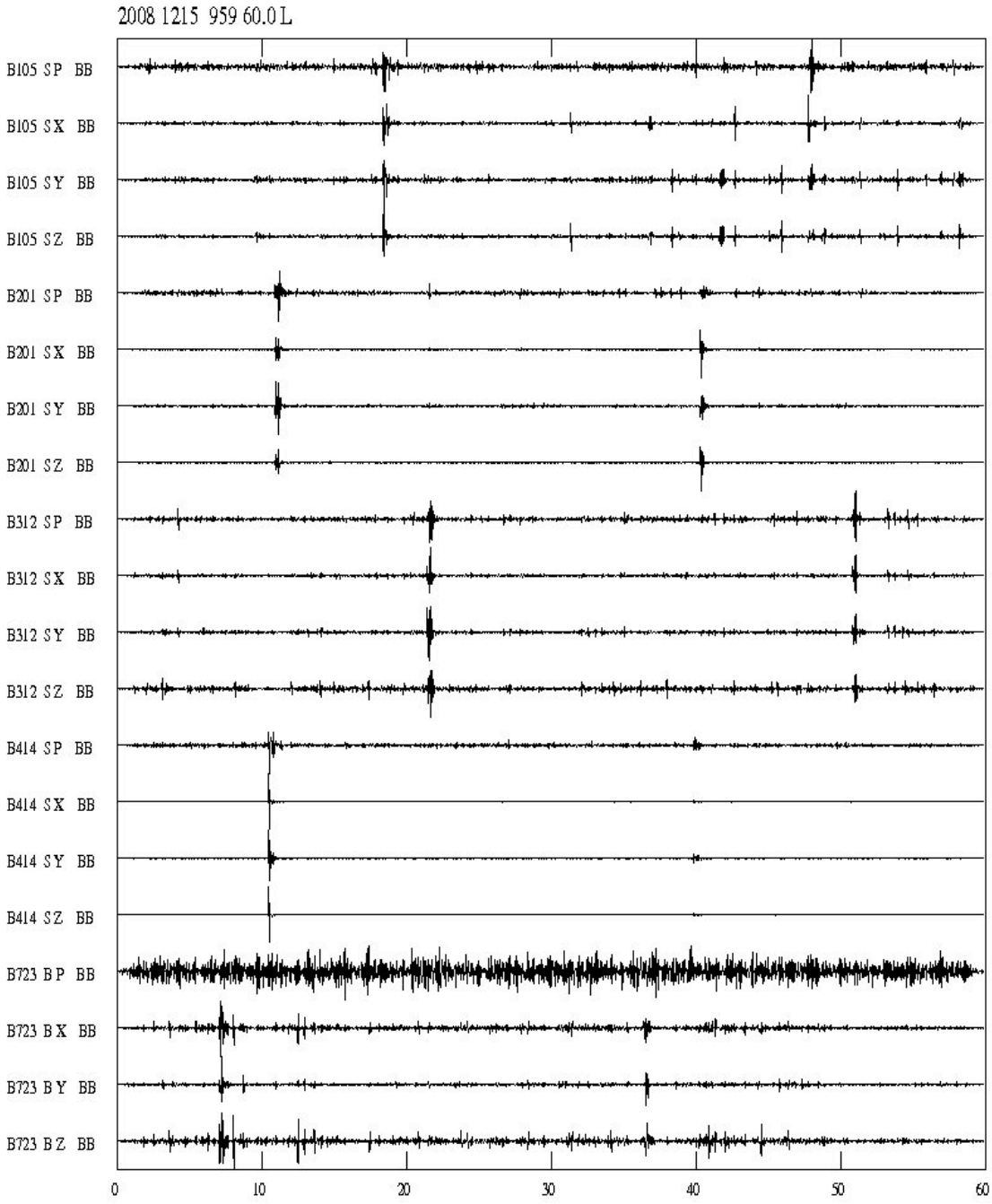
	time tag (GPS) (JJ/MM/AAAA HH:MM:SS.mmm)	02/09/2009 17:35:00,448	02/09/2009 16:12:00,443	02/09/2009 10:52:00,999	02/09/2009 22:27:00,073	02/09/2009 13:22:00,356
	drift (inst - GPS)	0,552	2,557	2,001	-0,073	0,644
	clock drift rate	1,643E-08	7,613E-08	5,973E-08	-2,182E-09	1,931E-08

Summary	EOF at (Shift D)	02/09/2009 17:40:12	02/09/2009 16:15:00	02/09/2009 10:52:45	02/09/2009 22:30:37	02/09/2009 13:24:07
	Closing Block Number	50465657	50458005	50412573	50253941	50106373
	Poids fichier (octects)	25838416384	25834498560	25811237376	25730017792	25654462976
	MOctects/jour	66,62	66,62	66,62	66,63	66,62
	seconds sync to sync	33507612,000	33502500,000	33472365,000	33366637,000	33269047,000
	days recorded	387,82	387,76	387,41	386,19	385,06
	Comments	Record!!				

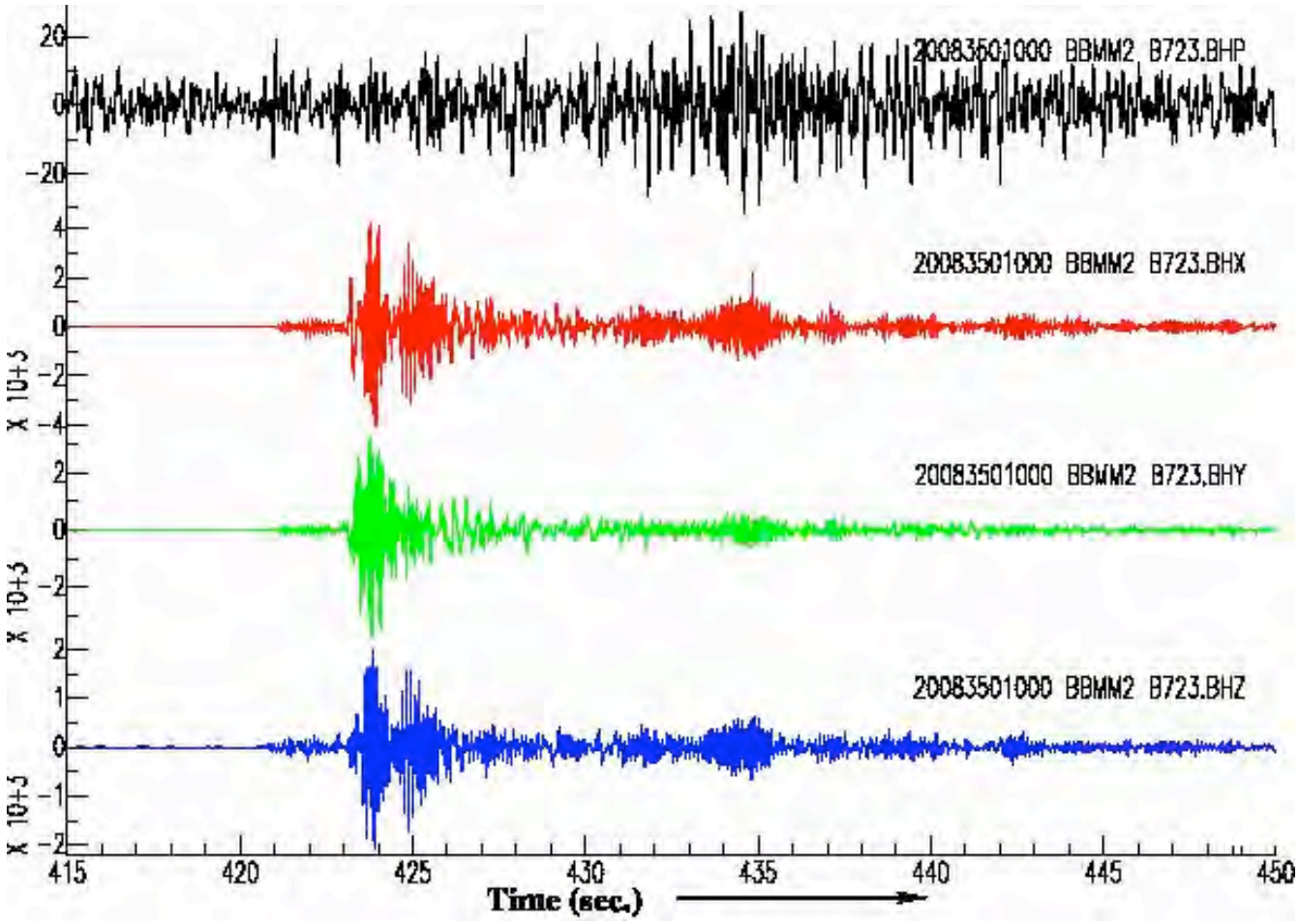
Determination Position	Lat (format °,m)	37°16,9622 N	37°17,5066 N	37°19,3000 N	37°15,6354 N	37°17,9097 N
(par ping)	Long (format °,m)	32°14,4609 W	32°17,2777 W	32°16,6625 W	32°17,8473 W	32°19,4248 W
	Lat décimal	37,2827	37,2918	37,3217	37,2606	37,2985
	Long décimal	32,241	32,288	32,2777	32,2975	32,3237
	Depth	2097	1776	1859	1939	2099
	erreur (m)	320,7	111,1	256,5	189,2	191,8

2.2.5. Data Examples:

All the OBS recorded good quality data during 13 months:



The above figure gives an example of the data recorded by all the five equipments (One Pressure, two_horizontal and one vertical component).



Above figure is an example of the 4-channels of the record from site B7 (instrument 23). Quick review of the data suggests that in general the quality of the records is good.

2.2.6. Corrosion:

After more than one year under the ocean, the instruments came back with some important corrosion. Critical parts, such as pull pins, screw washer & nuts, floating structure are very attacked by corrosion and must be replaced.

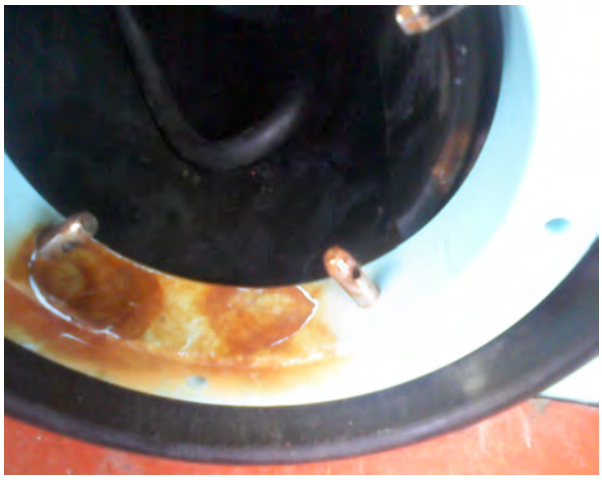
Most of damaged screw are in stainless steel A2 that is not recommended for oceanic application under water, the corrosion started to attack the stainless steel structure because the 2 metal have a different composition : from now only stainless steel 316L must be use for metallic parts.


Almost the 4 screw that assure the link between frame and floating are severely corroded


(see picture).

The link between floating and frame must be secured in future deployment while standard screws are used: for the BBMOMAR-III we secured with 2 plastic links (2cm large) passed around blue PE plate of the frame (side plate) and the yellow plastic floating frame.

The balls of the pull-pin are also severely corroded and for most of case the balls are disappeared. The attachment of the cylinder must be secured with tie-rap links or similar.



Action must be taking once returned to France: we should make a sort of “maintenance” procedure for the OBS (BBOBS) that come back after a stay under water. After return to Paris, the OBS (BBOBS) should be completely disassembled, cleaned with clear water (and soap if necessary), dried, the damaged part should be repaired or replaced. Metallic parts can also be painted. A follow book or file can be make in order to follow the life (repair, modification, duration of time under water,...) of the OBS (BBOBS).

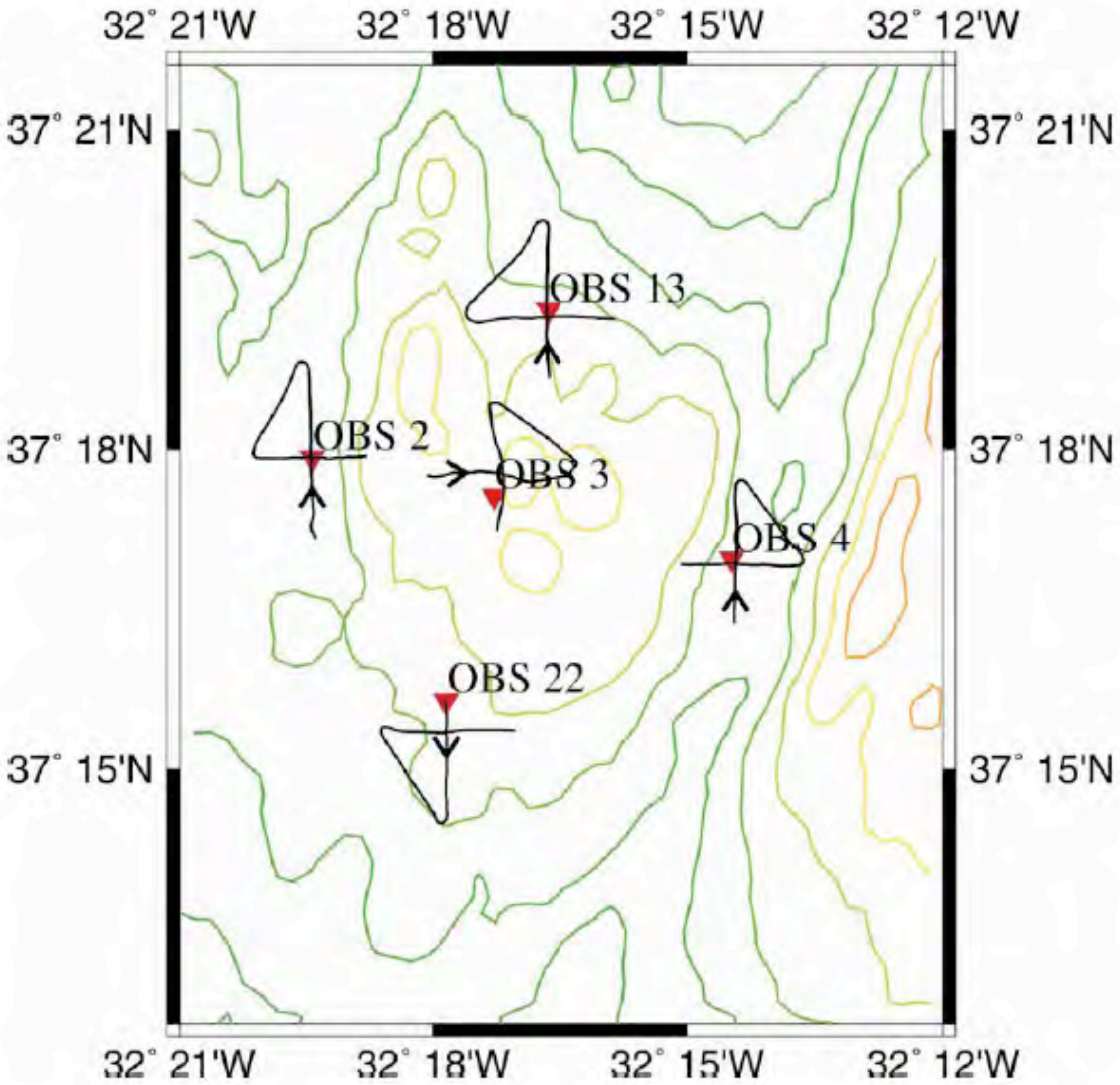
2.2.7. Deployment and relocation information

Site	Deployment Site	C1	C2	C3	C4	C7
OBS	Number	13	2	3	4	22
deployment	File name	BBMM3_C1_02	BBMM3_C2_03	BBMM3_C3_04	BBMM3_C4_13	BBMM3_C7_22
parameters	sample rate	62,5	62,5	62,5	62,5	62,5
	nb channel	4	4	4	4	4
	Année	2009	2009	2009	2009	2009
	Jour Julien	244	244	244	244	244
	Synch time (JJ/MM/AAAA HH:MM:SS)	01/09/2009 10:50:00	01/09/2009 14:10:00	01/09/2009 15:04:00	01/09/2009 17:49:00	01/09/2009 20:06:00
	Wake up time (JJ/MM/AAAA HH:MM:SS)	03/09/2009 12:00:00	03/09/2009 12:00:00	03/09/2009 12:00:00	03/09/2009 12:00:00	03/09/2009 12:00:00
	Lat deployment (format °,m)	37°19,3000 N	37°17,918 N	37°17,565 N	37°16,967 N	37°15,6354 N
	Long deployment (format °,m)	32°16,639 E	32°19,426 E	32°17,288 E	32°14,476 E	32°17,8473 E
	Lat deployment	37,322	37,299	37,293	37,283	37,261
	Long deployment	32,277	32,324	32,288	32,241	32,297
	Depth					

Preliminary Acoustic Relocation of Deployed OBSs:

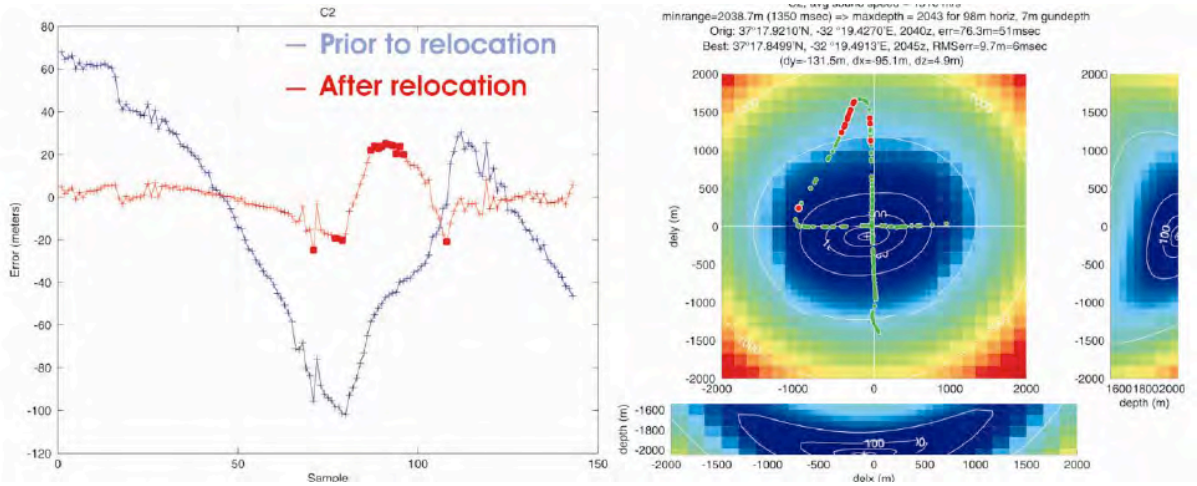
For OBS relocation, one acoustic ping was emitted every 20 seconds while navigating along an E-W N-S path, 1.5 nautical miles long, crossing each OBS deployment site. The relocation is then performed using acoustic arrivals time residuals minimization.

.



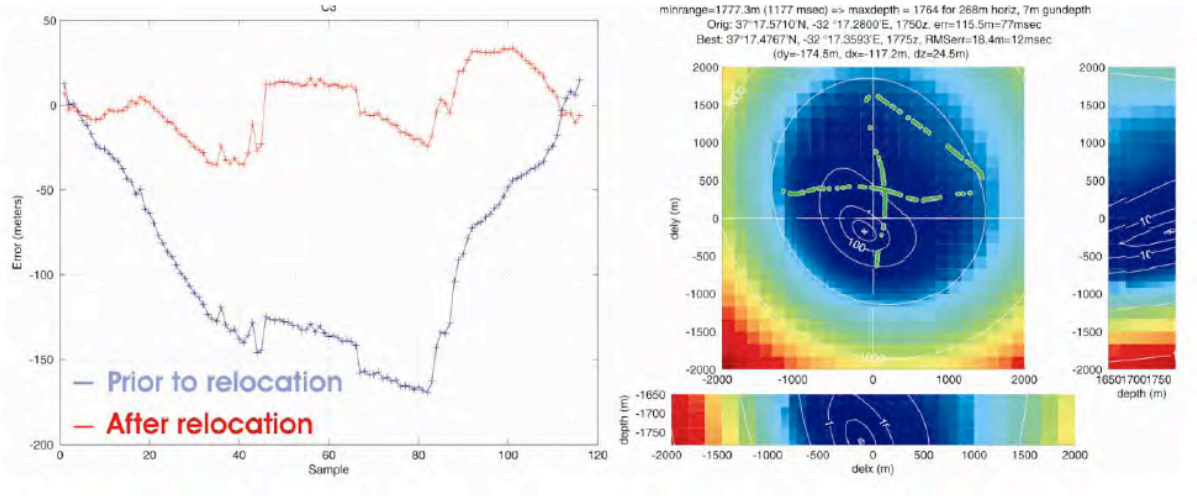
Data input for the relocation are the deployment position, the boat position at the time of each ping, transducer depth and the distance (in meters) calculated from the two way time ping (boat shift until ping back reception considered negligible). Significant outliers were removed from the relocation file. No CTD was performed at the OBS's deployment site and so a mean value of 1510 ms^{-1} for sound speed in the water was used.

OBS02 site C2

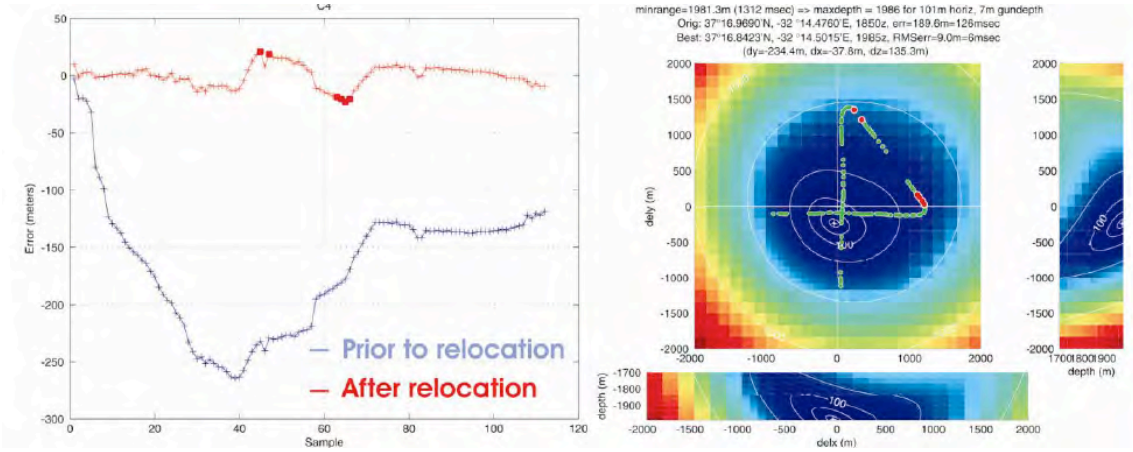


Left: error (m) for each point of acoustic ping before (blue) and after (red) relocation; Right: path trough deployment position (red & green dots) and relocated position (dark blue area correspond to the minimal values of RMS). Red dots correspond to outlier values that were kept in the file for they are not significant outliers or they are consistent with surrounding values.

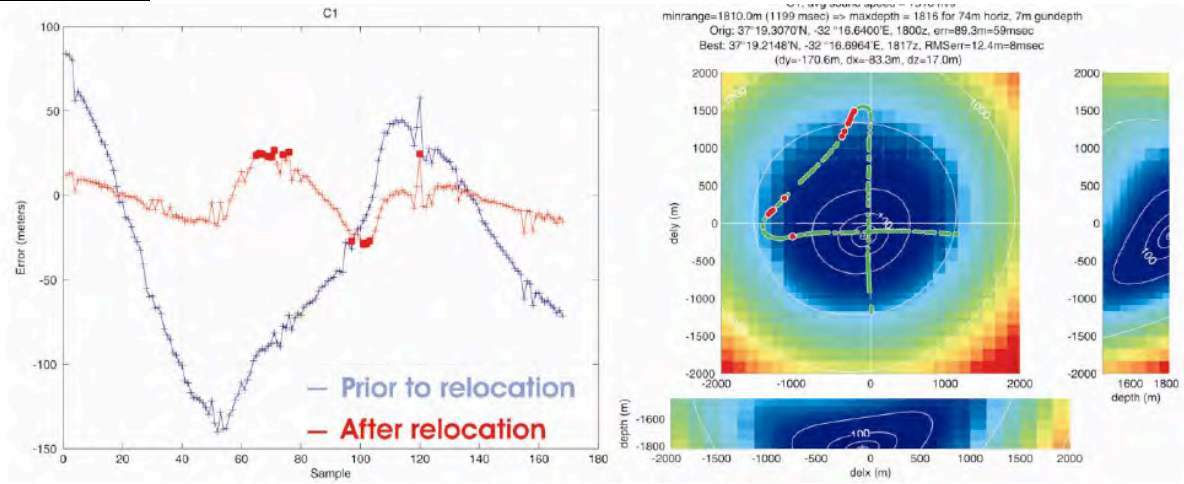
OBS03 site C3



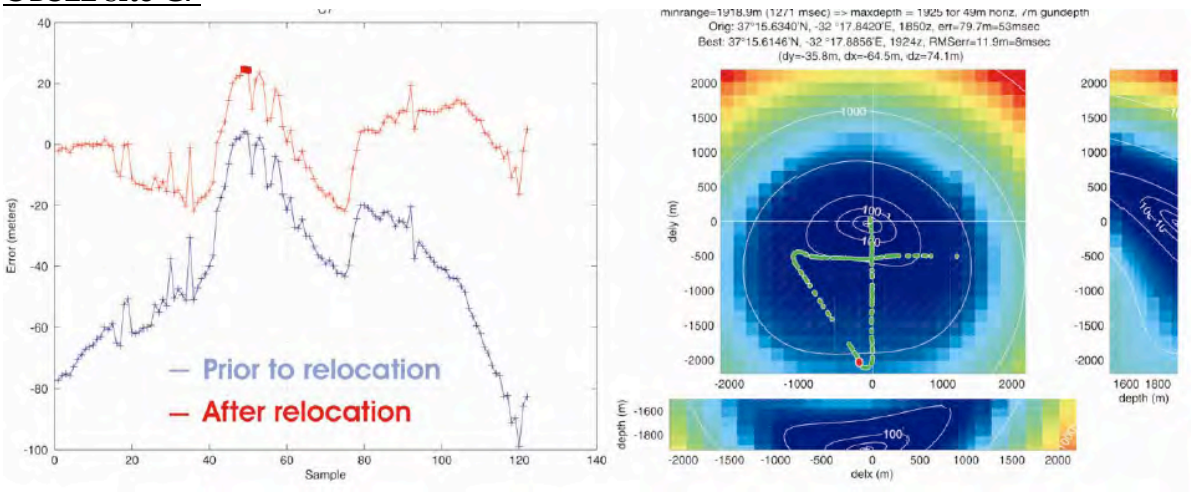
OBS04 site C4



OBS13 site C1



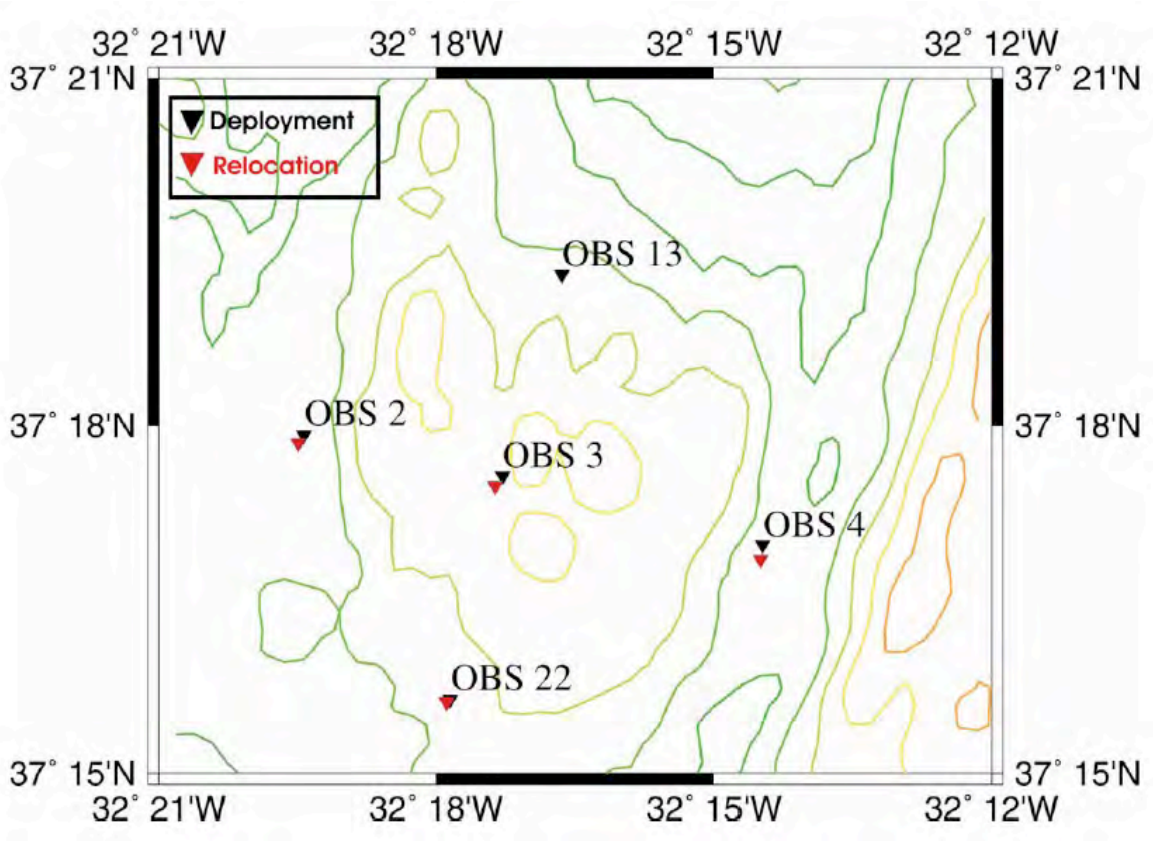
OBS22 site C7



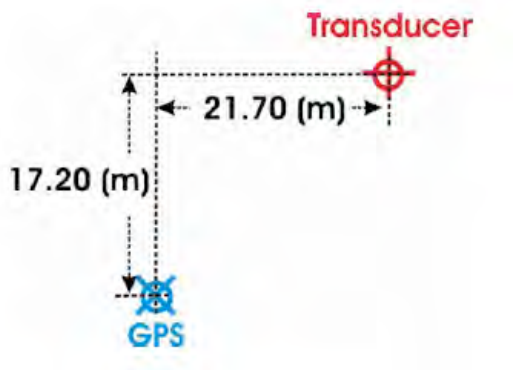
Location Results

OBS	Latitude	Longitude	Depth	Lat.	Long

OBS	Latitude		Longitude		(m)	Incertitude	Incertitude
	(º)	min	(º)	min		(º)	(º)
C2 OBS02	37	17.8499	-32	19.4913	2045	0.00009	0.00011
C3 OBS03	37	17.4767	-32	17.3593	1775	0.00017	0.00021
C4 OBS04	37	16.8423	-32	14.5015	1985	0.00009	0.00011
C1 OBS13	37	19.2148	-32	16.6964	1817	0.00011	0.00014
C7 OBS22	37	15.6146	-32	17.8856	1924	0.00011	0.00013

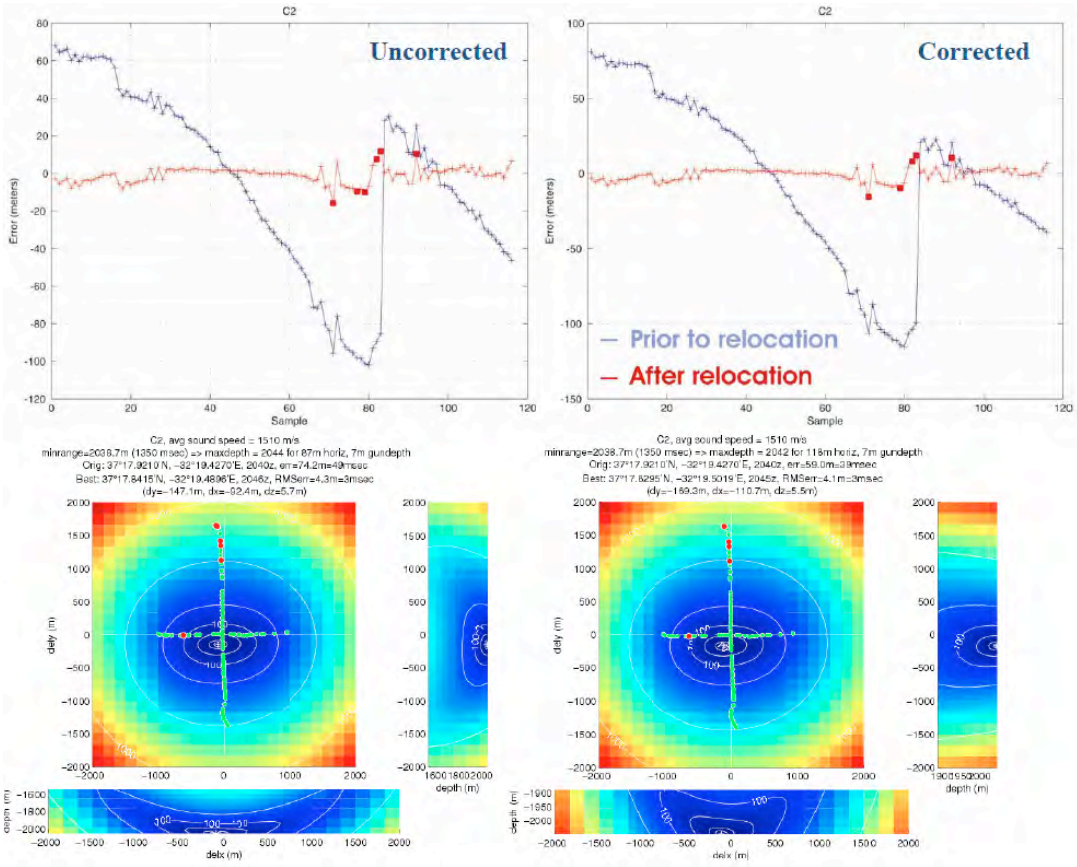


These results are preliminary for one last correction remains to be done. The GPS antenna is not at a vertical position from the acoustic system, thus adding an error to the system.



In order to evaluate the significance of this error, every ping position was corrected for OBS2 at site 2, and the results compared with the uncorrected ones. In both cases, for this run, only NS and EW branches of the navigation path were considered, thus showing that the oblique segment of the path, if not crossing the OBS site, is not very effective for relocation purposes, for it seems to be responsible for the centre oscillation of residuals after correction has been done.

OBS2 site C2



OBS02	Latitude		Longitude		Depth (m)	Δ (° Lat)	Δ(° Long)
	(°)	min	(°)	min			
Uncorrected	37	17.8415	-32	19.4896	2046	0.0002	0.0002
Uncorrected	37	17.8295	-32	19.5019	2045	0.0002	0.0002

This variation Δ is above the incertitude limits and the Transducer – GPS distance correction should be done for a more precise relocation. A dive has been done on the spot of the OBS 3 and permitted an exact position measurement.

The following table shows the difference between the calculated position by ping method and the real position The difference is approximately 5 meters (around the accuracy of GPS system).

OBS03	Latitude		Longitude		Depth (m)	Δ (° Lat)	Δ(° Long)
	(°)	min	(°)	min			
With Ping Localisation	37	17.4767	-32	17.3593	1775	0,0027’	0,0007’
ROV localisation	37	17.474	-32	17.360	1768	5meter	1meter

2.3. Pressure Gauges

2.3.1 Introduction

B. Lecompte, O. Pot

L'équipe Géodésie fond de mer du groupe de Physique Spatiale et Planétaire de L'IPGP, s'occupe depuis 1996 d'assurer le développement et l'utilisation des capteurs de pressions couplés à des mesures GPS en surface, afin d'étudier la déformation des fonds marins. Dans ce contexte, les capteurs de pression de type JPP (conception interne) et SEABIRD assure la continuité des mesures sur le chantier LUCKY STRIKE et permettent l'étude de l'évolution géodésique du site.

Les objectifs de la mission consistent à :

- Relever 2 sondes SBE 53 plongées lors de la précédente campagne sur JPPE et JPPW.
- Plonger le module JPP2 avec la sonde Paros 1 (S/N 89534) sur le site JPPE.
- De reconditionner la sonde SBE 53-026 (JPP5) récupérée sur JPPE et de l'implanter sur JPPW.
- De qualifier l'adaptation des baudruches type SBE sur les sondes Paros (Sonde Paros 4).
- De consigner les données des capteurs relevés sur la base de données de la mission Bathyluck.

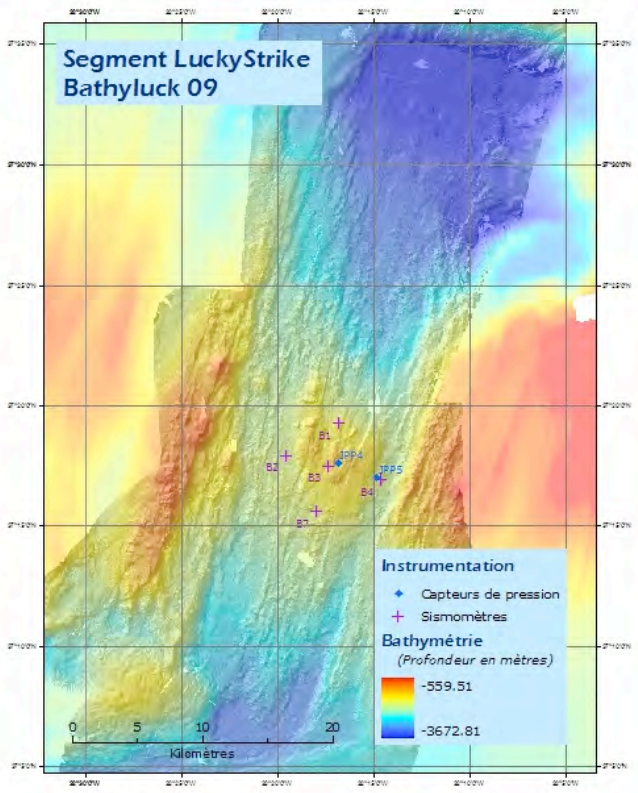


Figure 2.3.1. Location of pressure gauges.

2.3.2. Mission report

2.3.2.1. Qualification des câbles en équipression des JPP.

Les câbles équipression assurent la connexion entre les sondes Paros et le module de contrôle/ énergie des JPP. Ces câbles constitués de câbles conducteurs passant dans un tuyau plastique rempli d'huile médicale et fermé par les connecteurs en extrémité. Parfois ces câbles soumis à de fortes pressions successives, se détériorent et rendent possible le contact de l'eau de mer avec les câbles conducteurs.

2 câbles ont été amenés pour la mission. Reliés à leur sonde de pression Paros et à un bouchon étanche, ils ont été plongés pendant 13 heures à une profondeur moyenne de 1700 m. Il faut ajouter un temps de descente/montée d'à peu près 3 heures.

Figure 2.3.2. (left) : Câble équi-pression avec sonde Paros. Figure 2.3.3. (right): Ensembles montés sur le ROV

Résultat qualification des câbles (plongée ROV) :

Début plongée : le 10/09/09 @ 18h10 local

Fin plongée : le 11/09/09 @10h30 local

Tps montée descente ROV : ~ 3 heures

Tps plongée au fond : 13 heures @ ~ 1700 m

Sondes plongées : Paros 1 et 2 (89534 et 97982)

Pas défaillance des câbles à l'issue de la plongée.

Le nouveau système de baudruche (type Seabird) sur la sonde Paros 4 a résisté.

2.3.2.2. Préliminaires à la mission

Programme des relèves (voir carte en annexe1)

Afin d'assurer la continuité des mesures sur les sites JPPE (Est) et JPPW (Ouest) du Lac de Lave de Lucky Strike, les deux sondes de pression implantées en 2008 seront remplacées par deux autres modèles reconditionnés (voir tableau récapitulatif) :

Capteur déployés en 2008

Capteur	Référence	Site	Coordonnées(Lat/Long)	Date deploiement
JPP5	SBE 53BPR n°27	JPPE	37°16.990'/32°14.857'	11/08/2008

JPP4	SBE 53BPR n°26	JPPW	37°17.552/32°16.891'	11/08/2008

Capteur déployés en 2009

Capteur	Référence	Site	Coordonnées(Lat/Long)	Mode déploiement
JPP2	Paros 1 - 89534	JPPE	37°16.990'/32°14.857'	ROV
JPP5	SBE 53BPR n°27	JPPW	37°17.552/32°16.891'	ROV

JPP5 replongera sur JPPW après reconditionnement afin de conserver JPP1 et JPP3 en prévision de MOMAR SAT en 2010.

2.3.2.3. Préparation des JPP

JPP2 est sorti de sa caisse. Les batteries neuves ont été implantées dans le cylindre au laboratoire. La tension contrôlée est nominale (15,8V). L'électronique est reliée par un câble série et un adaptateur USB/série à l'ordinateur. Un check du JPP est contrôlé par hyperterminal. Le capteur répond. Afin de vérifier le fonctionnement de la JPP ainsi que l'enregistrement des données suivants les paramètres programmés, une procédure d'enregistrement automatique « Verbose mode » est lancée le 13/09/09.

Trois fichiers sont enregistrés dans la mémoire Flash du JPP.

Cette procédure réalise un cycle de mesure complet sur les trois données physiques mesurées : pression, tilt (XYZ), et température (Extérieur/intérieure du cylindre).

Le cycle de mesure est le suivant :

Paramètres de mesure des JPP (1à3)

Donnée Mesurée	périodicité
Pression	30s
Tilt	1 Heure
Temp. Ext./int	15 min

Le cycle s'est déroulé sans problème. La carte flash est déchargée et les données effacées.

Les deux horloges (CF2 et DS1306) ne sont pas synchronisées. Une procédure permet de synchroniser les deux horloges à celle du PC auquel la JPP est reliée. L'heure du PC est synchronisée à celle du GPS du Bateau. Le temps GMT est le même que l'heure locale.

Cette procédure implique l'utilisation de l'interface MOTOCROSS plutôt qu'Hyperterminal.

Suite à la procédure, les deux horloges sont synchronisées, mais un décalage de 2min persiste entre celles-ci et le tps de référence → à prendre en compte lors de la relève.

La commande 'app' permet de relancer l'invite de la sonde JPP. Une minute sans commande 'setup' : la procédure d'enregistrement automatique se met en route.

La sonde est prête à être déployée.

JPP2 a démarré son cycle d'enregistrement le 14/09/2009 @ 13h23 pour la mission.

Un dernier contrôle visuel est effectué sur l'électronique, les joints contrôlés puis graissés.

Un vide léger est créé dans le cylindre après fermeture. Ne pas oublier le bouchon sur le connecteur 8 broches. Le cylindre est fixé dans le châssis en prenant garde de l'orientation pour le tilt (la sonde thermique externe située en bas).

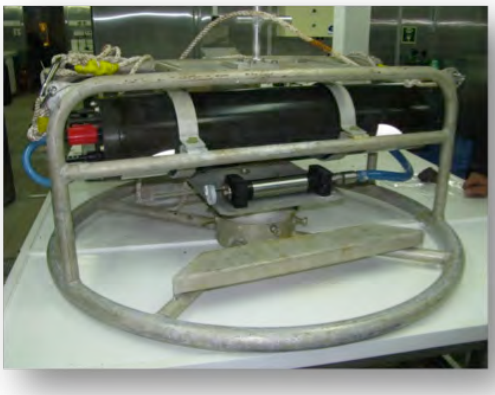


Figure 2.3.4a: JPP sur châssis : vue extrémité cylinder. Figure 2.3.4b: Vue ensemble JPP avec sonde Paros.

La boule de préhension a été remplacée par un T adapté à la saisie du Châssis par la pince du ROV. L'ensemble JPP2 est fixé dans le tiroir n°2 de l'ascenseur NASA.

La masse dans l'eau de 35 kg du capteur a été jugée un peu élevée par les pilotes du ROV ; Une flottabilité devra être implantée pour laisser plus de latitude d'emport du ROV dans le futur.

Un repère (label : MO9/JPPE) a été fixé sur le châssis pour localiser facilement la sonde lors de la relève future.

Figure 2.3.5. a (left): JPP2 dans le tiroir de l'ascenseur .
Figure 2.3.5.b (right): Châssis+JPP2 prêt à plonger.

Rappel caractéristiques JPP2

Référence capteur	Cylindre JPP2 / Sonde Paros 1 - S/N 89534
Référence Marqueur	M09 / JPPE
Masse capteur + châssis Air	65kg
Masse capteur + châssis Eau	35kg
Dimensions extérieures (dans châssis)	980mmx550mm TBC
Matière	Cyl. : AU4G anodisé – Châssis : tube alu
Certificat cylindre	IFREMER n° H010202 du 20/01/09
Certificat	PAROS-SCIENT. 9206 du 26/02/09

2.3.3. Déploiement de JPP2

Plongée

JPP2 est déployé lors de la plongée 392 de VICTOR le 15/09/2009

Action	Heure	Coordonnées(Lat/long)	Profondeur	Picture
Mise à l'eau ascenseur	02h25	37°17.004/32°14.814		
Ascenseur au fond		37°16.948/32°14.872		
Mise à l'eau ROV	03h30	37°16.984/32°14.886		
ROV au fond	04h45	37°16.977/32°14.874	1885m	
ROV sur ascenseur	05h24	37°16.948/32°14.872	1963m	2.3.a
JPP2 à côté benchmark	06h00	37°16.986/32°14.853	1970m	2.3.b
JPP2 sur benchmark	06h45	37°16.986/32°14.853	1980m	2.3.c

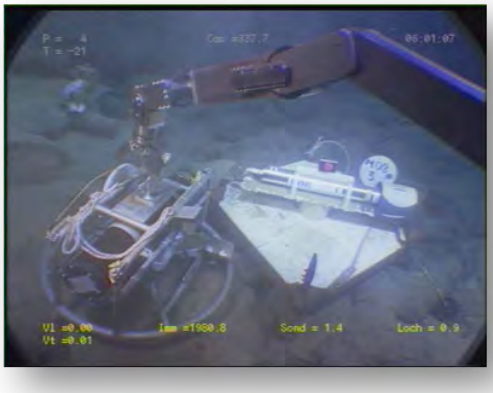


Figure 2.3.6. a (left): ROV sur l'ascenseur .
Figure 2.3.6.b (right): JPP2 à côté du benchmark

Après avoir libéré le benchmark de JPP5, une élingue a dû être coupée à l'aide d'un couteau. Celui-ci a fait bouger le benchmark, qui bascule suivant une de ses diagonales (mouvement de l'assiette). Le benchmark ne semble pas avoir été déplacé. JPP2 a pu être positionnée dans la même direction que JPP1, l'année précédente (lors de sa relève).

Les vis de réglage des pieds n'ont pas été actionnées.

L'orientation du JPP2 est la même que celle de JPP1 lors de la relève 2008

Figure 2.3.7. : Long. : 37°16.986 / Lat. : 32°14.853

2.3.4. Récupération et préparation de JPP5

JPP5 (sonde SEABIRD) a été récupéré sur le site JPPE le 15/09/09 à 06h48 par le ROV lors de la plongée 392. Puis placé dans le tiroir n°2 de l'Ascenseur à 07h01. Des traces de corrosion sont très visibles (alumine ?) principalement sur la tranche de la plaque support de sonde.

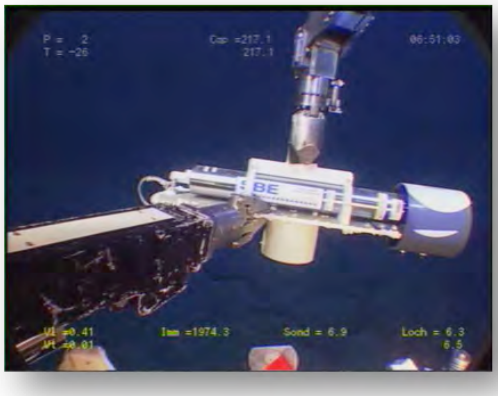


Figure 2.3.8.a (left) Recovery JPP5 by VICTOR. Figure 2.3.8.b (right) JPP5 in elevator

L'ascenseur est remonté sur le Pourquoi pas ? à 09h05. L'ensemble est rincé à l'eau douce.

La corrosion a attaqué sur plusieurs millimètres l'aluminium. Le traitement en alodyne est insuffisant pour protéger le support sur le long terme. Les éléments en aluminium du support devront être remplacés. Les supports des sondes SBE bénéficieront d'une nouvelle conception pour les déploiements à venir.

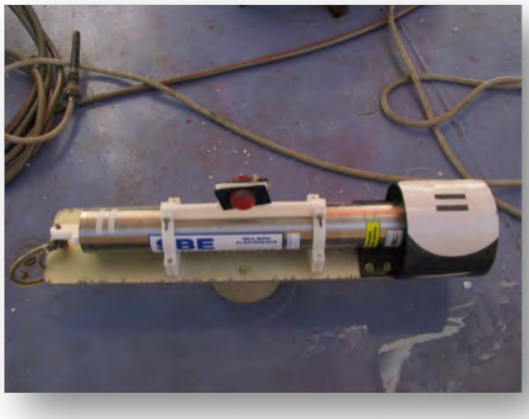


Figure 2.3.9.a (left) JPP5 arriving on deck; Figure 2.3.9.b (right) JPP5 after recovery

Figure 2.3.10. a (left): Corrosion on support; b (center) & c (right) Corrosion around bolts

Le bouchon du connecteur série (4 broches) est retiré et la sonde est reliée au port série de l'ordinateur par l'intermédiaire d'un câble spécifique.

La commande 'DS' sur l'utilitaire SEASOFTWAVE puis RUN → 3-SEATERMW permet d'établir un diagnostique de la sonde. L'acquisition est stoppée. Les données sont rapatriées :

Référence sonde	JPP5 –SBE 53 - 027

Début enregistrement	11/08/2008
Fin enregistrement	15/09/2009
Fréquence enregistrement	30 secondes
Coordonnées 2008	N37°16.990 – W32°14.857
Coordonnées 2009	N37°16.9834- W32°14.8531
Profondeur sur JPPE	1981 mètres
Décalage Horloge/GMT	+50s/GMT
Données hexadécimales	DataJPP5 08_09.HEX
Données texte	DataJPP5 08_09.TID

2.3.5. Préparation JPP5

Les données de JPP5 sont effacées à travers l'interface Seabird /seasoftwaves/seaterm W.

Les piles neuves remplacent les anciennes. Cette opération est délicate et réclame d'être deux personnes. Le desserrage et serrage du circuit créant les contacts entre les piles doit se faire très progressivement.

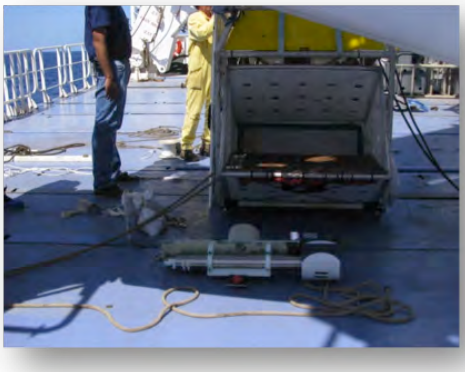
Vérifier les joints toriques et les graisser avant de refermer la sonde.

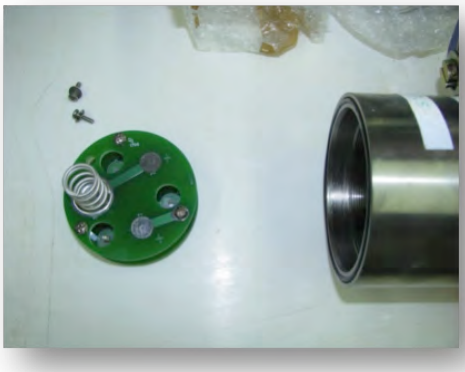
Connectée à nouveau au PC (DELL-E6500 avec adaptateur USB/série) le début d'enregistrement est lancé à 13h15'34.

Paramètres d'enregistrement de JPP5 avant plongée.

Début enregistrement	13h15'34''
Vmain	22,0V
Iop	5,5mA
Vlith	8,9V
Last sample mesure p	13.9
Last sample mesure t	23,8035

Intervalle entre 2 mesures	30 secondes
Tide sample/day	2880
Memory endurance	685 jours





2.3.6. Déploiement de JPP5

Plongée

La sonde JPP5 est placée dans le tiroir n°2 de l'ascenseur. Un petit flotteur accroché à un bout a été ajouté pour aider à la préhension de la sonde lors de la sortie de celle-ci du tiroir.

L'ascenseur a été largué à 15h1

Scénario de la plongée sur JPPW.

Action	Heure	Coord. (Lat/long)	Profondeur	Image
Mise à l'eau ascenseur	15h17			
Ascenseur au fond	15h58	37°17.512/32°16.885		
ROV sort JPP5 du tiroir	16h06	37°17.512/32°16.885	1732m	2.5.a
JPP5 à côté benchmark	16h22	37°17.547/32°16.886	1728m	
JPP5 sur benchmark JPPW	16h28	37°17.547/32°16.886	1729m	2.5.b

Le repère fixé sur JPPW : M08-1

2.5.b – JPP 5 SUR Benchmark JPPW (repère M08-1)

JPP4 est en attente de récupération à côté du benchmark . Ce dernier n'a pas bougé lors des opérations.

Long. : 37°17.547 / Lat. : 32°16.886

2.3.7. Récupération JPP4 sur JPPW

Arrivée ascenseur NASA en surface à 19h22 TU

Check fonctionnement avec SEATERM W : La sonde continue à enregistrer.

Arrêt enregistrement (commande « stop ») @ 20h14

Référence sonde	JPP4 –SBE 53 - 026
Début enregistrement	11/08/2008
Fin enregistrement	15/09/2009 @ 20:14
Fréquence enregistrement	30 secondes
Coordonnées JPPW	N37°17.547/W32°16.886
Profondeur site JPPW	1729 mètres
« Tide recorded »	1.152.380 soit 400 jours
Décalage Horloge/GMT	+45s/GMT
Données hexadécimales	DataJPP4 08_09.HEX
Données texte	DataJPP4 08_09.TID
pression moy. mesure : PSI	2551

Pression moy mesure : bar	6,8948.10-2 x PSI= 175.9 bar
Profondeur moy. mesure	1759/1.007 = 1746m

2.3.8. Plongée de JPP1

Les sondes Paros avaient montré des signes de faiblesse au niveau de la canule de pression. La corrosion de cette canule peut être la cause d'une défaillance des mesures.

Sur les sondes SEABIRD un système de Baudruche chargée d'huile permet de transmettre la pression au quartz. Ce système est séduisant car il met en œuvre essentiellement des pièces plastiques. Une adaptation de ce principe a été faite par Olivier Pot sur les sondes Paros.

La sonde Paros 4 (97982) a été connectée au cylindre JPP1 (voir Photo). L'ensemble a été placé dans l'ascenseur lors de la plongée 392 du ROV.

Données de Plongée de JPP1

Référence sonde	JPP1 –PAROS 4 97982
Début enregistrement	14/09/09 @ 14:07 :38
Fin enregistrement	15/09/2009 @ 20:14 :16
Temps de plongée	6h30
Coord.ascenseur au fond	N37°16.948/W32°14.872

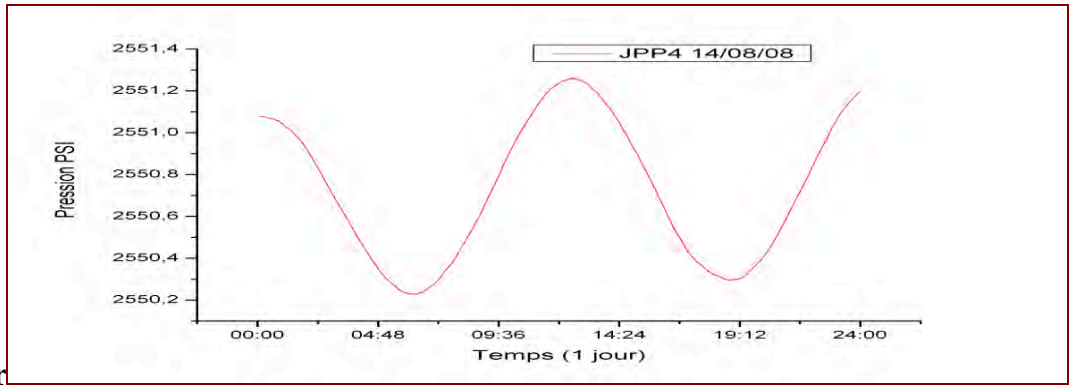
Profondeur site JPPW	1963 mètres
Décalage Horloge/GMT	7'40/GMT
Données P1E	256 à 258 0912.P1E
Données CTE	256à258 0912.CTE

Les données ont été récupérées et seront comparées à des mesures de calibration en caisson hyperbare afin de valider le montage.

2.3.9. Données

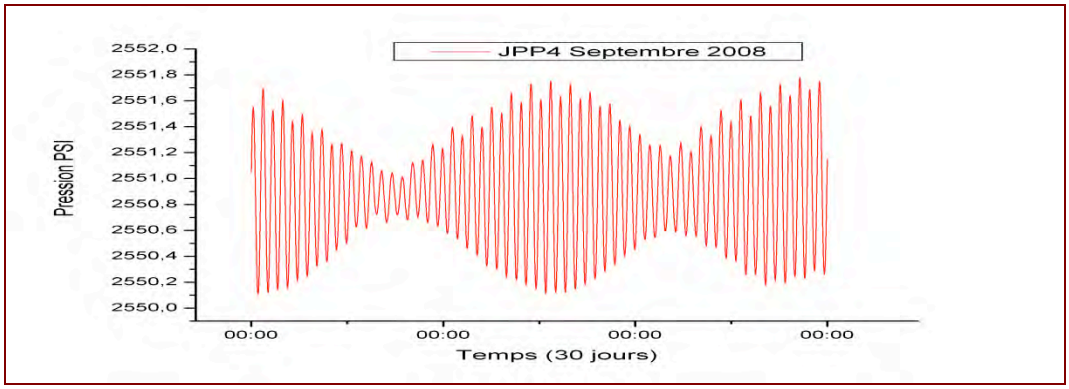
Données JPP4 (SBE 53-026)

Pression : Les données de pression sont en PSI.



1 jour

1mois



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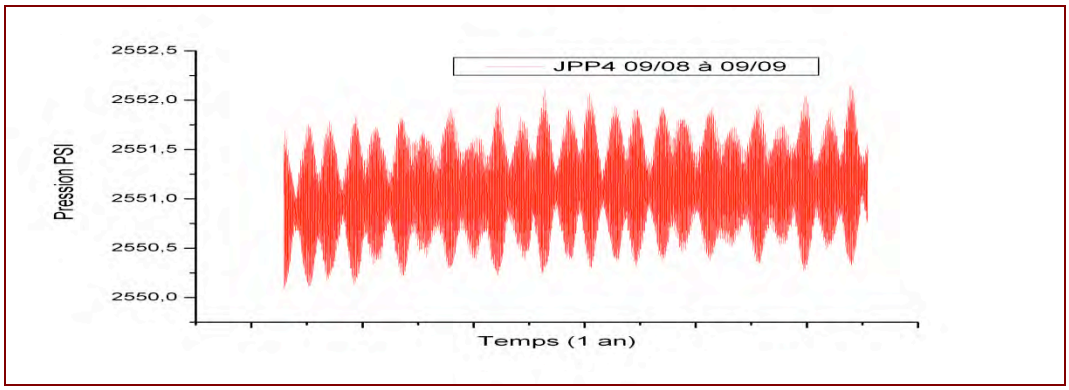
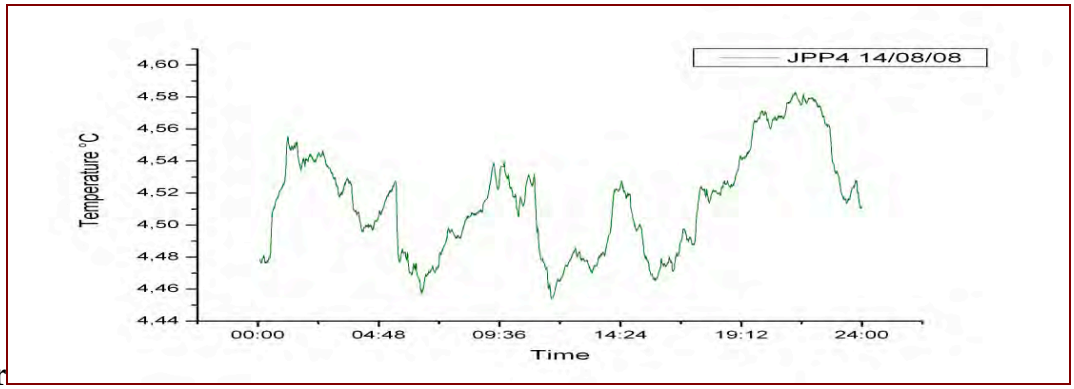
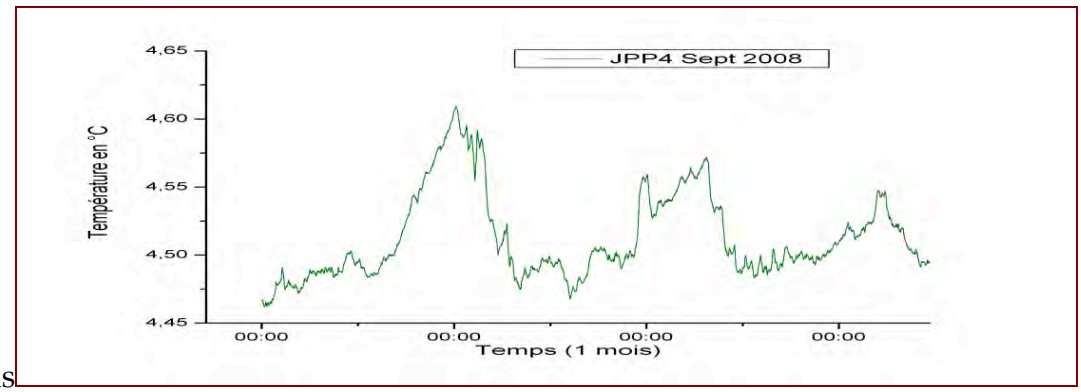


Températures :

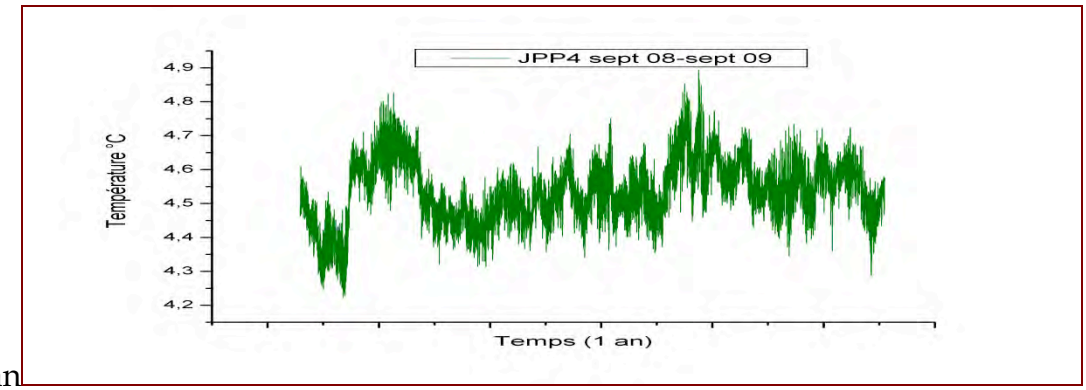
1 jour



1 mois



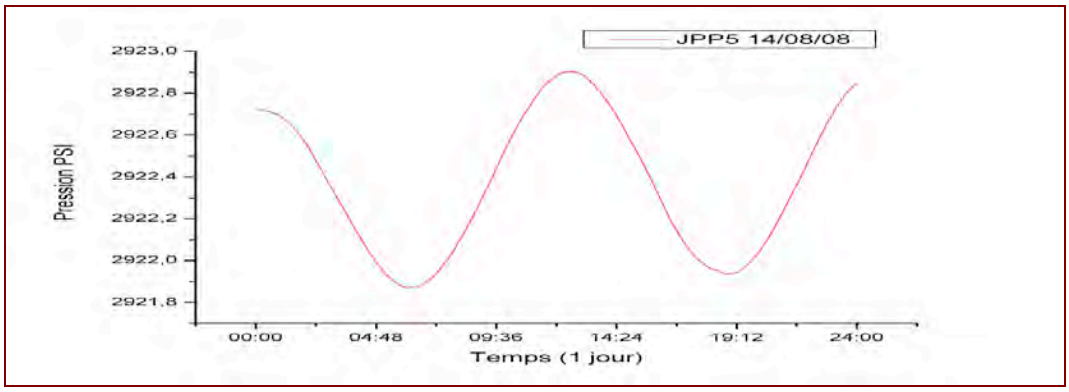
1an



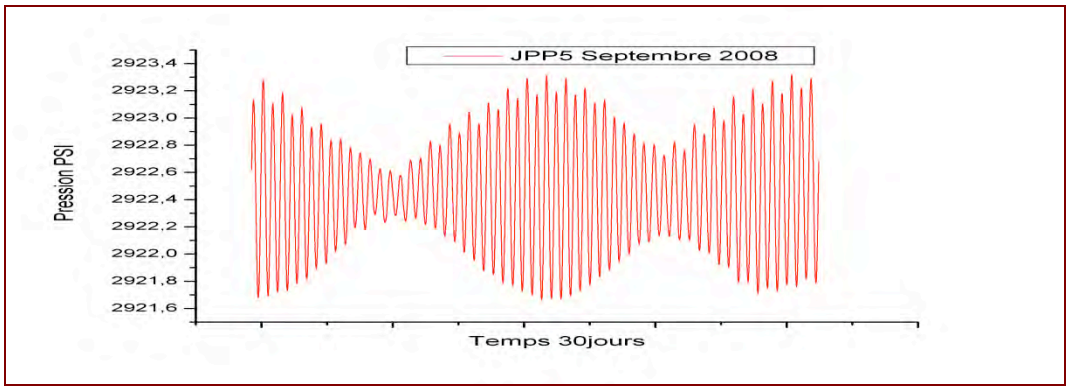
Données JPP5

Pressions : données en PSI

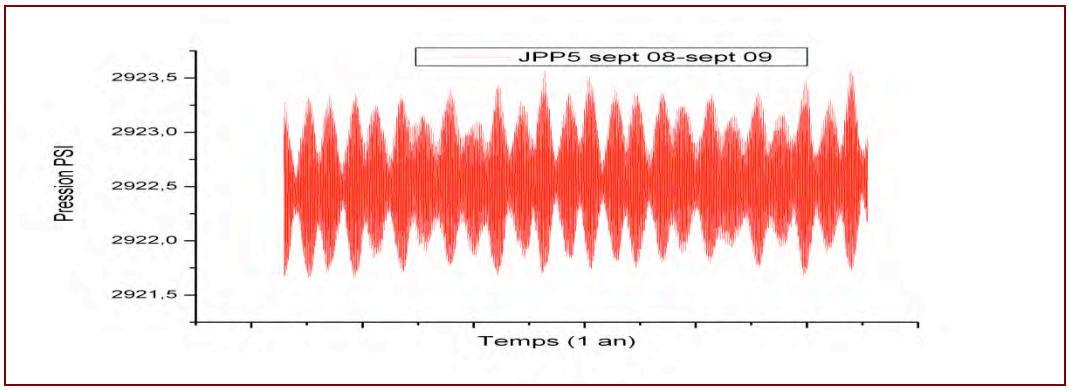
1 jour



1 mois

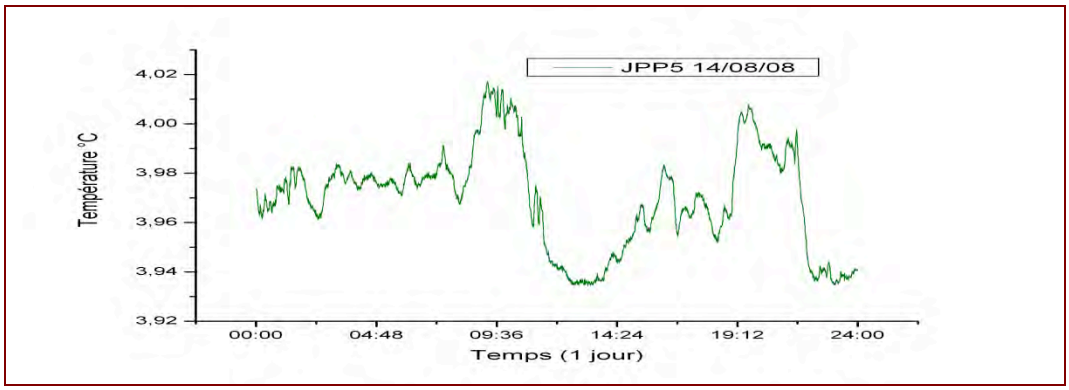


1 an

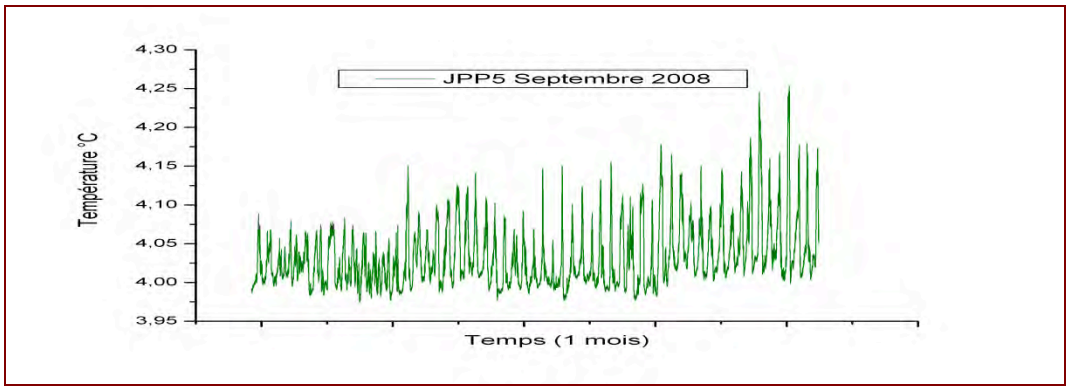


Températures en °C

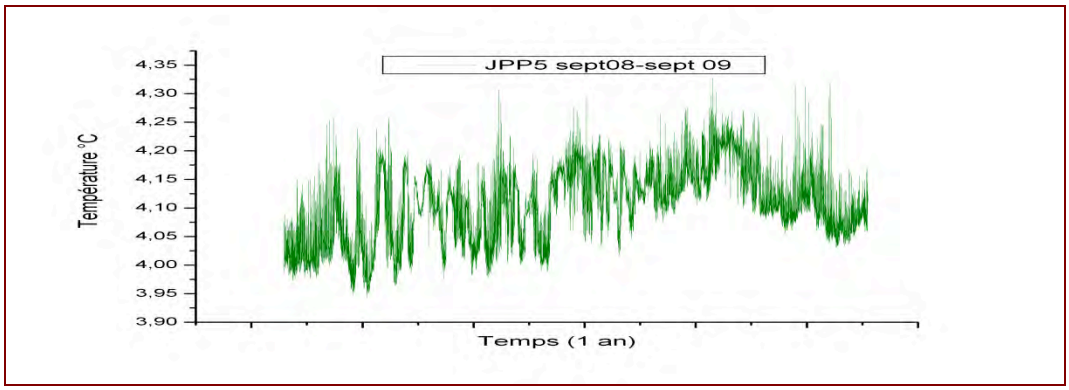
1 jour



1 mois



1an



2.3.10. Conclusions

Les objectifs de la mission ont été atteints.

Toutes les récupérations et déploiements ont été réalisés avec VICTOR et l'ascenseur NASA.

Deux sondes (JPP2 et JPP5) continuent les enregistrements respectivement sur les sites JPPE et JPPW.

Les données enregistrées par JPP4 et 5 déployées lors de la précédente campagne ont été récupérées et sont complètes (voir tableaux).

La sonde JPP4 a été remontée et partira prochainement en calibration, permettant d'appliquer les facteurs correctifs sur les mesures déjà effectuées.

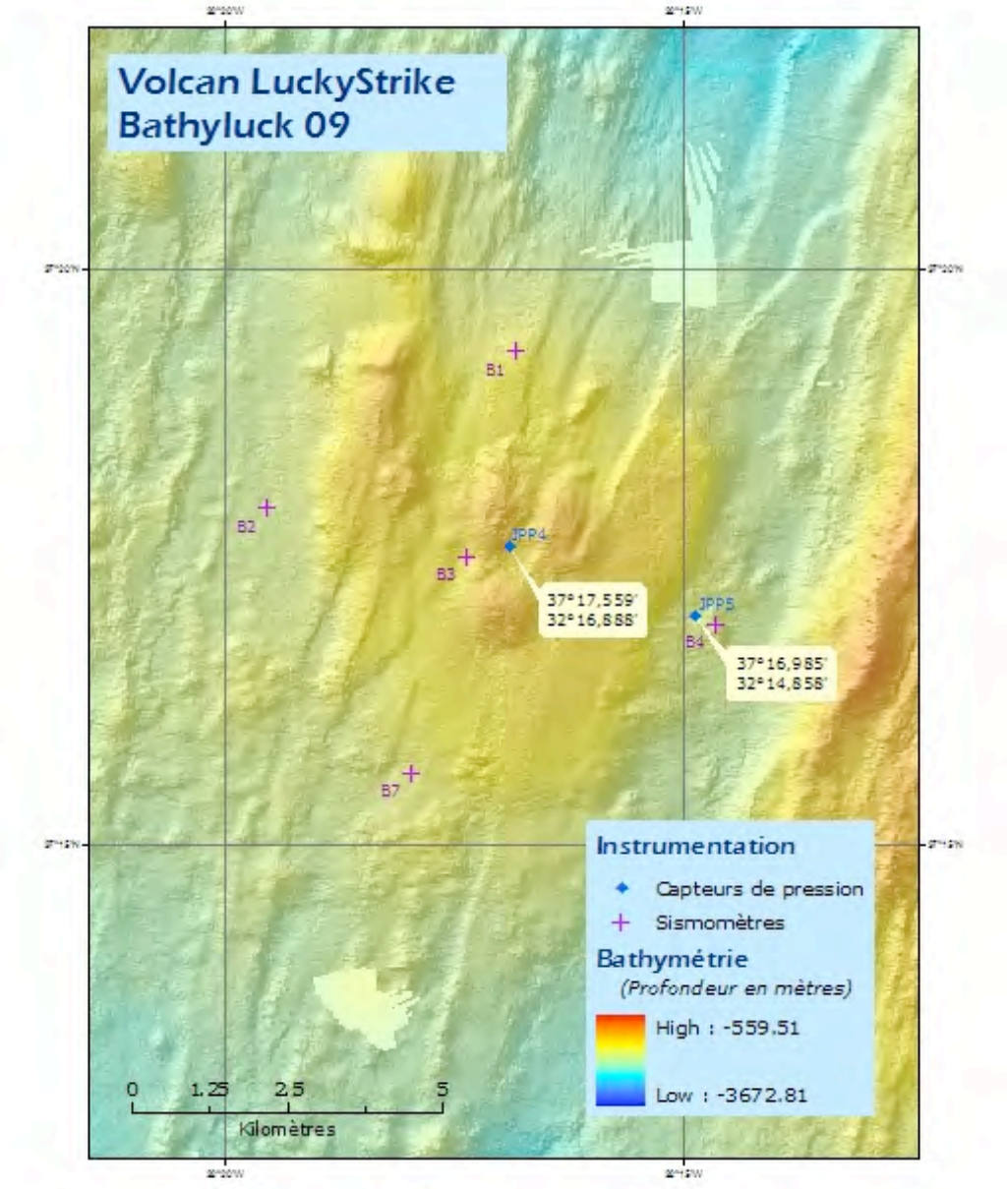
Une sonde Paros a fourni des données avec un système de baudruche polyuréthane type SEABIRD en remplacement de la canule initiale.

Les supports de sonde Seabird SBE (JPP4 et 5) sont à revoir. Le traitement Alodyne sur l'aluminium n'est pas suffisant pour éviter la corrosion.

Une flottabilité supplémentaire sera à rajouter sur les JPP1 à 3 pour faciliter la manipulation avec le ROV (gestion des Ballasts).

Bilan instrumental	Durées de fonctionnement	Observations
JPP1 sonde Paros 4 S/N 97982	6h30 à proximité de JPPE	Essai baudruche sur sonde Paros
JPP2 sonde Paros 1 S/N 89534	En cours de fonctionnement	Déployée sur JPPE repère M08-3
JPP4 - SBE 53 S/N 026	Start data@ : 06/04/2008 14:07:38 end data @ : 09/15/2009	Récupéré sur JPPW Départ en calibration.

	20:14:16 - 20:13:31 GMT	Données Pression /T° : OK
JPP5 – SBE 53 S/N 027	Start data@ : 06/04/2008 12:35:47 end data @ : 09/15/2009 10:03:40 - 10:02:50 GMT En cours de fonctionnement	Récupéré sur JPPE Déployé sur JPPW repère M08-1 Données Pression/T° : OK



Location of P-sensors – Bathyluck'09 cruise.

On Air weight characteristics :

Part :	Weight :
-E- Cylinder + gauge	38 kg
-Frame	23 kg
-Handle	6 kg
-Total	67kg+/1
-Benchmark	245 kg

2.4. Currentmeters

2.4.1. Description de la campagne

Dans le cadre du réseau Européen ESONET d'exploration et d'étude scientifique de chantiers marins, plusieurs campagnes ont été consacrées au volcan Lucky strike au large des Açores, sur le rift médio Atlantique. Sous la direction de Javier Escartin et Mathilde Cannat, la campagne BATHYLUCK 09 s'inscrit dans la continuité de ces chantiers pluridisciplinaires.

L'équipe Géodésie fond de mer du groupe de Physique Spatiale et Planétaire de L'IPGP, s'occupe depuis 1996 d'assurer le développement et l'utilisation des capteurs de pressions couplés à des mesures GPS en surface, afin d'étudier la déformation des fonds marins. Dans ce contexte, les capteurs de pression de type JPP (conception interne) et SEABIRD assure la continuité des mesures sur le chantier LUCKY STRIKE et permettent l'étude de l'évolution géodésique du site

Les objectifs de la mission :

Consistent à :

- Au déploiement de deux lignes de mouillage avec largueur acoustique.
- Sur chaque ligne est implanté un courantomètre AQUADOPP.
- Les lignes seront déployées depuis le pont du Pourquoi Pas ? sur les sites prédéfinis appelés C1 et C2.

2.4.2. Description des courantomètres

Référence	NORTEK AQUADOPP 2000m
Numéro de série	AQD 2291 et AQD 2311
Dimensions (mm)	L : 600 -ø 84
Poids air/eau	4.4kg / 1.2 kg
Mémoire	9MB
Matériau cylindre	Delrin et polyuréthane
Matériau tête	Bronze
Piles	Alcalines
lien	http://www.nortek-as.com/lib/brochures/DeepAquadopp%2006%20b.pdf/view

- Les courantomètres aquadopp mesurent le courant marin par mesure doppler de l'écho acoustique dans trois axes. Ils sont équipés d'un compas, d'un capteur de pression et d'un tilt.

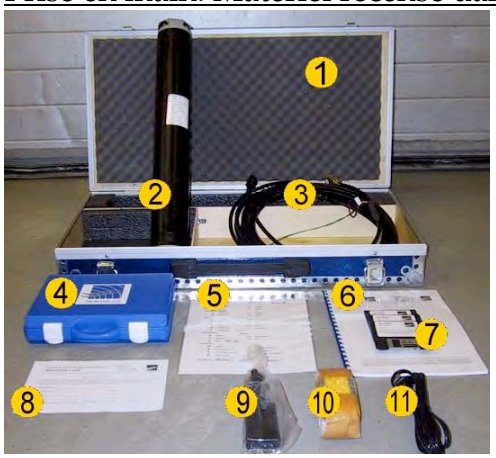
- Il existe une interface aquadopp DW (windows 2000/XP) pour paramétrer les capteurs, lancer l'acquisition, rapatrier et traiter les données.
- La connexion se fait par le biais de la liaison série du PC à l'aide d'un câble spécifique. L'utilisation d'un adaptateur USB/série est à proscrire.
- Le guide d'utilisation disponible de l'interface aquadopp DW n'est pas très clair et pas assez détaillé.
- Un manuel à jour est disponible en ligne à l'adresse suivante : http://www.nortek-as.com/lib/manuals/aquadopp à condition de s'inscrire au préalable.
- Lionel Fichen de la DT INSU BREST, nous a fourni sa procédure de mise en œuvre (voir en annexe).
- Une dérive est à assembler sur les courantomètres. Nous y avons apposé une numérotation, comme suit, sur un adhésif réfléchissant, qui correspond aussi au numéro de la ligne de mouillage.

Figure 2 : Courantomètre n°2 avec sa dérive

AQD 2291	N°1
AQD 2311	N°2

2.4.3. Mise en œuvre des courantomètres

Prise en main. Matériel recensé dans une caisse de courantomètre :



1 -Boite de transport 2 -Aquadopp courantomètre 3 -Cable de communication et d'alimentation 4 -Boite de stockage équipement 5 -Liste équipement 6 -Manuel utilisateur

Aquadopp 7 -logiciel Aquadopp DW
9.11 -Transformateur 9-16V/220V 10 -Piles

- La prise en main est assez simple • Voir la procédure de Lionel.
- Le gros câble (3) combine la connexion série (DB9) et la prise vers le transformateur secteur. Celle-ci permet de paramétrer et de faire fonctionner en laboratoire le courantomètre sans consommer les piles.
- Un PC avec une prise série est nécessaire (pas de convertisseur série/USB).

Sortie connecteur + vis remplacement piles

Nortek forum:
http://www.nortek-as.com/en/knowledge-center/forum/current-profilers-and-currentmeters 2.2.2.Paramètres d'enregistrement.

Les courantomètres doivent en principe fonctionner pour une durée **d'un an**. Mais le contexte des missions pour 2010 étant mal défini (carénage intégral de VICTOR), l'**autonomie** de l'instrument sera étendue à **600 jours**. Prolonger l'autonomie influence directement l'intervalle de données. Après une série d'essais de fonctionnement, les paramètres ont été programmés sur chaque courantomètre comme suit :

S/N courantomètre	2311 BA / 2291BA
Départ enregistrement	23/09/09 @ 23 :20 GMT/ 22:49 :47 GMT
Intervalle de mesure (s)	600
Distance de mesure (m)	0.35
Intervalle de diagnostique (min)	720
Intervalle de Mise à jour compas (s)	600
Salinité prise en compte (%)	35
Durée des enregistrements (jours)	600
Mémoire requise (MB)	4
Autonomie piles (jours)	<600

L'ouverture du faisceau acoustique généré est de 1,7° afin d'obtenir les meilleures données.

2.4.4. Mouillage des lignes de courantomètre.

Description de la ligne de mouillage

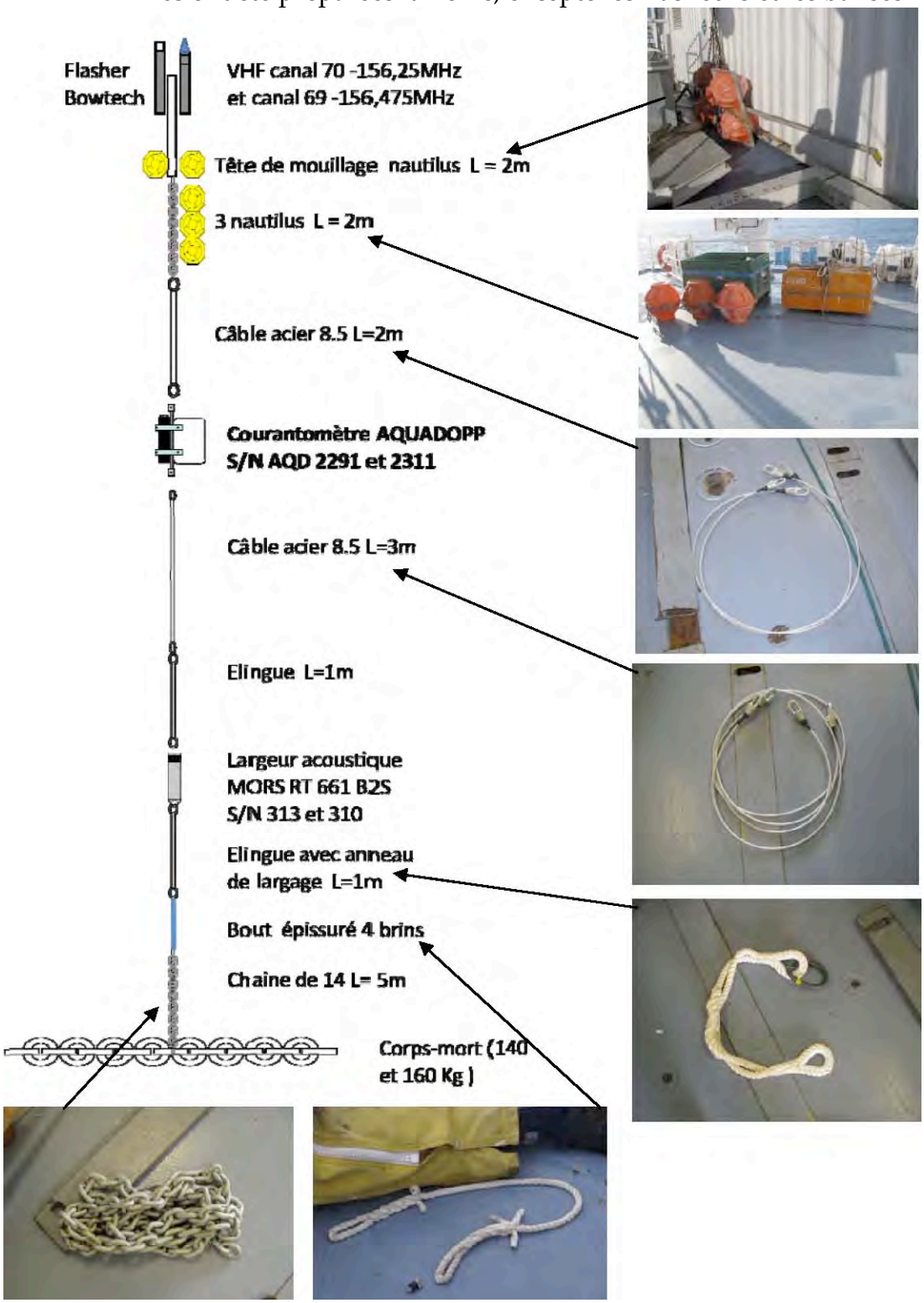
- Les lignes telles que décrites ci-dessous permettent la station, à quelques mètres du fond pendant la durée d'enregistrement entre deux missions.
- Les largueurs acoustiques permettent de récupérer la ligne en la désolidarisant du lest par une commande acoustique en surface ou en subsurface, à l'aide de la télécommande et une tête acoustique.
- Plusieurs bouts épissurés ont été intercalés au cas où les largeurs ne fonctionneraient pas. Cela nécessiterait une intervention du ROV ou du Nautile pour les

sectionner.

- Les balises radio et flasher servent au repérage des lignes après leur remontée en surface.
- La masse du lest est calculé précisément en fonction des éléments de la ligne.

<u>Déploiement des lignes de mouillage</u>

-
- Les lignes ont été lancées le 24/09/09 à l'aube.
- Elles ont été préparées la veille, excepté les flasheurs et les balises radios installées le



jour même.

- L'enregistrement des courantomètres a démarré la veille du lancement un peu avant minuit.
- Les marins du Pourquoi Pas ? ont procédé au déploiement depuis le pont arrière.

Les opérations se sont parfaitement déroulées.

Données de déploiement :

Ligne de mouillage n°1 sur le pont

Ligne de mouillage n° 1 en cours de déploiement

2.4.5. Repérage des lignes de mouillage

Ligne de mouillage	Site	Heure	Latitude	Longitude	Prof.	Fréquence VHF	Largeur acoustique
N°1	C2	07h50	37°17.386	32°16.285	1656 m	Canal 70 156.25MHz	S/N 310 13.5khz
N°2	C1	07h24	37°17.532	32°16.572	1723m	Canal 69 156.475Mhz	S/N 313 13khz

Le 27/09/09 une tentative de repérage de balise est décidée. Le Pourquoi Pas ? se positionne au dessus du point de déploiement des lignes. Un repérage est tenté avec la tête acoustique du bateau et la télécommande des largeurs acoustiques(MORS TT301B).

- Mauvais fonctionnement de la télécommande probablement dû à un problème de batterie.

Ce problème nous a été confirmé comme récurrent par la suite. Un essai a été fait avec les moyens de GENAVIR pour repérer les balises avec leur équipement (le poisson). Mais les pilotes du type de largeur des lignes (RT6X1) ne figuraient pas dans leur base. Une concertation avec GENAVIR sera nécessaire pour disposer des pilotes nécessaires à la commande de nos largeurs, et permettre leur commande avec différents moyens.

2.5. Geomicrobiological colonizators – C. Rommevaux (CNRS/IPGP)

2.5.1. Scientific objectives

The main objectives of the geomicrobiological part of the MoMAR project cruises are the characterisation of the interactions between microorganisms and oceanic mineral substrates associated with the hydrothermal vents, the understanding of the processes of colonisation, bio-alteration and fossilization of microbes, as well as their spatial and temporal variations induced by physical and chemical variations of the hydrothermal fluids. This project has been initiated three years ago during the Graviluck cruise (Atalante and Nautile 2006), with the deployment of colonizers at two different sites: the off axis site and the lava lake Lucky Strike site. The project was carried on during the MoMARDream leg2 cruise (Pourquoi Pas? and Nautile 2007). But due to mechanical problems on the boat, we were only able to recover the off axis site samples. For logistical reasons, for the next, we selected one other off axis site situated East of Lucky Strike volcano. During the MoMAR08 cruise (Atalante and Victor 2008), we deployed 2 supports of incubators at East Volcano site, 2 supports of incubators at Lava Lake Site, 1 support of incubators at Montsegur Ouest Roldan Site, and recover 1 support of incubators deployed at Lava Lake site in 2006 during the Graviluck cruise.

Oceanic hydrothermal fluids interact with various mineral substrates at variable temperatures. These fluids sample and carry different chemical elements which are at the start of the food chain for a large population of chemiolithoautotrophic microorganisms (Bacteria, Archaea and Eukaryota). These microorganisms are the basis of the hydrothermal ecosystem. They gain energy through inorganic electron donors and acceptors, and use metals (Fe, Au, As…) sulphur and methane from hydrothermal fluids, but also from mineral substrates through the mineral alteration. Very few studies actually evaluate the abundance, extent, or metabolic diversity of mineral-oxidizing microorganisms, or quantify their relative contribution to primary biomass production and mineral alteration. This alteration produces, at different scales, the modification of physical and chemical properties of rocks constituting the oceanic crust. Because only 1 to 10% of microorganisms present in hydrothermal environments are known to be cultured species, there is very few information on their metabolism and ecological influence, as well as on their role on chemical and mineralogical evolution of the hydrothermal systems.

These are the main reasons why we plan an *in situ* colonisation study during this project. This study uses known mineral substrates in order to better understand (1) how environmental variations act on microbial community at different scale, (2) how microbial community are organized all together, (3) the relations between phylogenetic composition, diversity, biomass and mineralogical and/or physical/chemical nature of inorganic substrates.

2.5.2. Experiment summary

Incubators consist of Falcon tubes with 3 lines of eight 0.5mm diameter holes, and 3 lines of eight 1mm diameter holes. All samples were sterilised. During this cruise, samples used as abiotic controls were put inside classical Falcon tubes closed at the top by a 0.22μ polycarbonate filter. The microbiologic box and the incubator supports were sterilised with Desibac HPC solution and then rinsed with EtOH 96% for sterile descent of incubators through the water columns. The box was then filled with sterile distilled water and closed for the descent.

2.5.3. Roldan site

Roldan Site (dive 389-4): B09BGM01R 06/09/09 08:51

Instrument type: Support of 6 incubators **Roldan**

Poids dans l'air: 2 kg

Site: ***ROLDAN***

Lat: N37 17,340 ***UTMY:*** 7063

Lon: W32 16,598 ***UTMX:*** 14183

Im: 1699.2 ***Cap***: 75.1

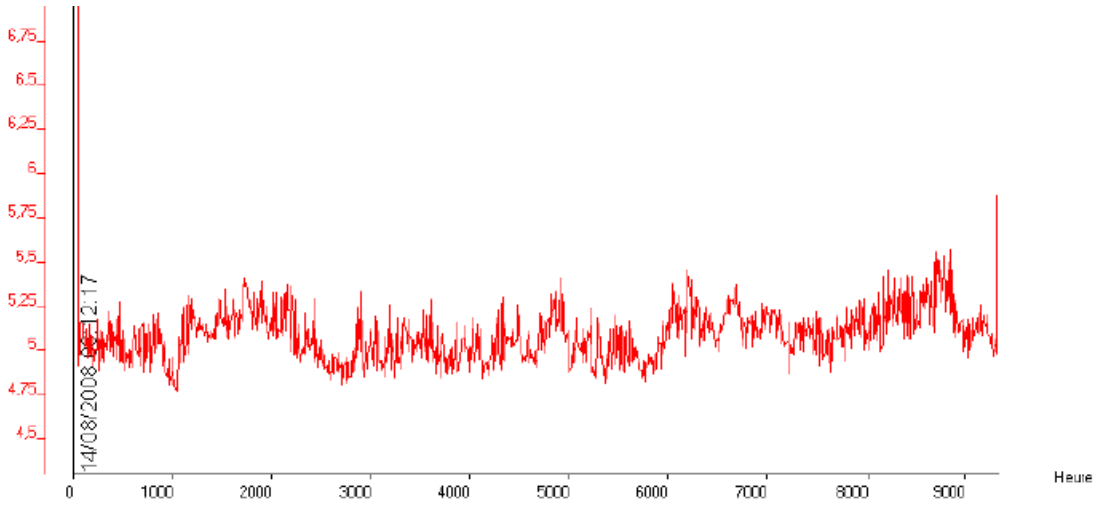
Incubators description:

- MM08-pA-ROLDAN and MM08-pB-ROLDAN Fresh peridotites from Oman
- MM08-bN7A-ROLDAN and MM08-bN7B-ROLDAN natural basalt glasses GR06-N7 collected during Graviluck'06
- MM08-bH_2A-ROLDAN and MM08-bH_2B-ROLDAN Reduced synthetic basalt glasses (H_2 fusion 3-5/06/08)

T sensor attached: NKE LowT 26001, sampling 3 min.

		dd/mm/yy	***hh:mm:ss (GMT)***
Clock set/sync :		13/08/08	20:51:59
Start recording:		13:08:08	20:54:07
End recording:		06/09/09	16:12:16
Clock sync:	***PC***	16:24:27	

TS 16:08:49



Temperature profile obtained inside the Roldan Incubators support between 14/08/2008 06:12 and 06/09/09 06:48

Deployment information: ***Date: 16/08/08 at 10:59***

Dive#: 360-2 (VICTOR, MoMAR08)

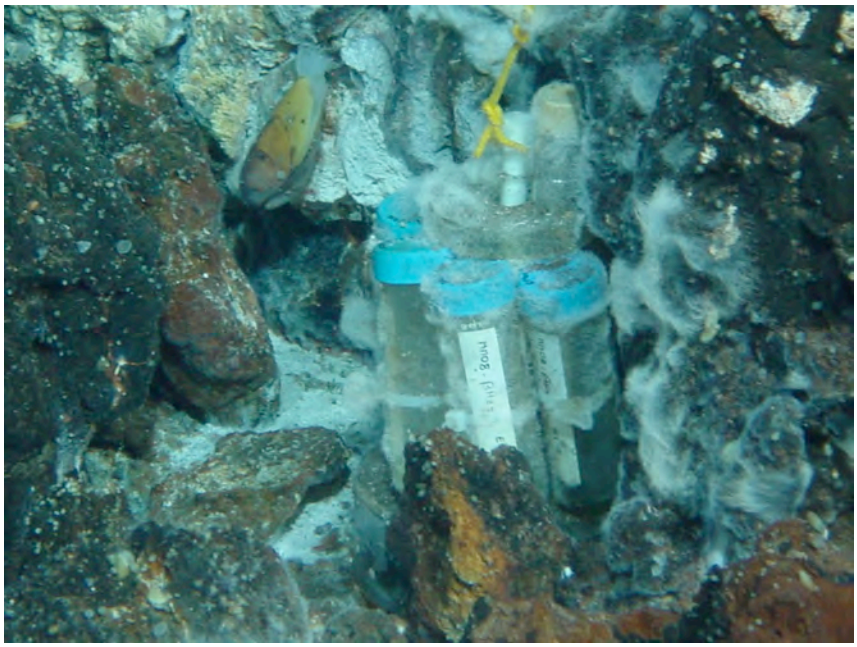
DVDs # 2

080816112207A.JPG. Deployment during MoMAR08

Recovery information: *Date: 06/09/09 at 08:51*

Dive#: 389-4 (VICTOR, Bathyluck 09)

DVDs # 389#5



090906084309A.JPG. Recovery during Bathyluck 09

Samples conditioning

Diversity of bacterial mat covering the incubators and supports:

- 1liter of water from bioboxe filtred at 0,22μm, filter conditioned with EtOH 96% at -80°
- Sampling of water and bacterial mat with sterilized pipettes and preserved into Falcon 15ml at -80°C.

FISH imaging:

- Small rocks pieces and polish pieces fixed in Formaldehyde 2% for 45min then rinced 3time with sterilized sea water and conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 6 tubes
- For Gram+ small rocks pieces and polish pieces conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 6 tubes

Mossbaüer analysis

- Powders of synthetic basalt glasses βH_2 biotic conditioned into 5ml tube with EtOH96%

Microorganisms culture

- Rocks pieces of each biotic substratum conditioned into cryotubes with DMSO5% (sea water) and stored at -80°C in order to provide ferooxidising bacteria cultivation.
- Rocks pieces of each biotic substratum stored into Eppendorf with sterilized sea water, before inoculation into 10ml methanotroph and sulfato reduring media under anaerobic hood (see annexe 1 for media protocols). 2 flasks for each substratum was then flushed and put under pressure with H_2/CO_2 80/20 mixture. Flasks were stored at 4°C for incubation.

Note: The dialyse membrane used for the abiotic control were partially broken into the incubators but away from mineral substrates, therefore, the abiotic controls will be interpreted with caution.

Notes: Installed at Roldan active site, near Marker MO08-11

2.5.4. Tour Eiffel AISICS Site

Tour Eiffel AISICS Site (dive 389-4): B09BGM02D 07/09/09 10 :28

Instrument type: Support of 8 incubators **LSTE1**

Poids dans l'air: 2 kg

Site: ***Tour Eiffel, chimney Aisics***

Lat: N37 17,340 ***UTMY:*** 7155

Lon: W32 16,598 ***UTMX:*** 14187

Im:1690.8m ***Cap:*** 58,3

Incubators description:

- MM08-pA-LSTE1 and MM08-pB- LSTE1 Fresh peridotites from Oman
- MM08-bN7A-LSTE1 and MM08-bN7B- LSTE1 natural basalt glasses GR06-N7 collected during Graviluck'06
- MM08-bH_2A-LSTE1 and MM08-bH_2B-LSTE1 Reduced synthetic basalt glasses (H_2 fusion 18/06/08)
-

T sensor attached: no temperature sensor.

Deployment information: ***Date: 07/09/09 at 10:28***

Dive#: 389-4 (VICTOR, Bathyluck 09)

DVDs # 389#17-18

080816112207A.JPG Deployment during Bathyluck 09

Recovery information: *Date: at*

Dive#:

DVDs #

Notes: Installed at AISICS active chimney at Tour Eiffel Site

2.5.5. West Lava Lake

West Lava Lake Site (dive 389-4): B09BGM03R 09/09/09 07:46

Instrument type: Support of 10 incubators **LSLL3**

Poids dans l'air: 2 kg

Site: *JPPWEST*

Lat: N37 17.5689 ***UTMY:*** 7557

Lon: W32 16.895 ***UTMX:*** 13691

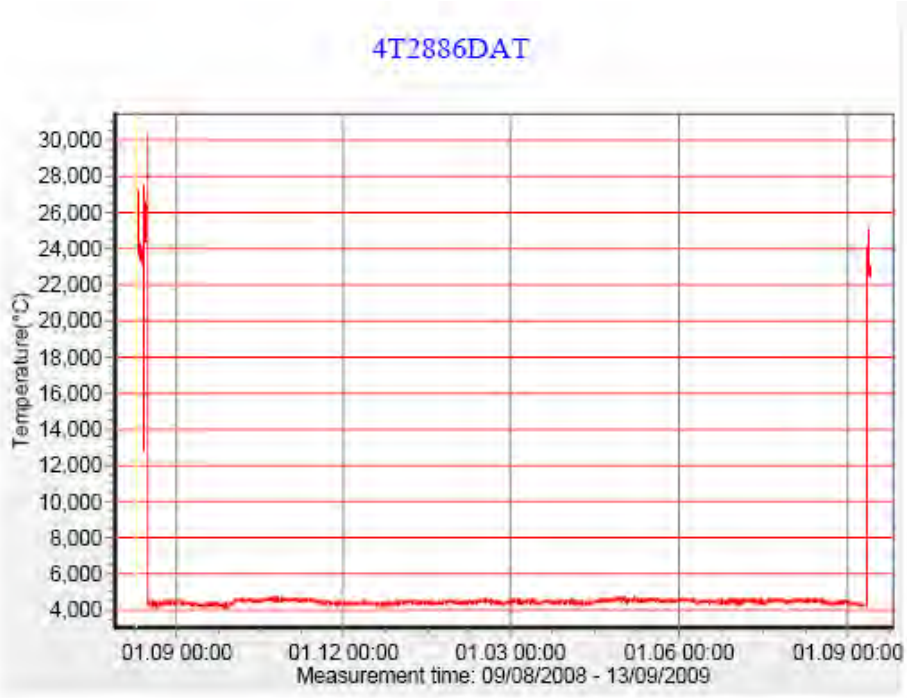
Im: 1729m ***Cap:*** 104.8

Incubators description:

- GR08-pA-LSLL3 and GR08-pB-LSLL3 few serpentinised peridotites OMAN
- GR08-bN2A-LSLL3 and GR08-bN2B-LSLL3 natural basalt glasses GR06-N2 Graviluck (2006)
- GR08-bN7A-LSLL3 and GR08-bN7B-LSLL3 natural basalt glasses GR06-N7 Graviluck (2006)
- GR08-bO_2A-LSLL3 and GR08-bO_2B-LSLL3 oxidised synthetic basalt glasses (O_2 fusion 26/06/07)
- GR08-bH_2A-LSLL3 and GR08-bH_2B-LSLL3 reduced synthetic basalt glasses (H_2 fusion 14/05/07)

T sensor attached: Starmon Temperature sensor Seastar T2886, sampling 3 min.

		dd/mm/yy	***hh:mm:ss (GMT)***
Start recording:		09/08/08	16:56
End recording:		13/09/09	16:17
Clock sync:	***PC***		
	TS		

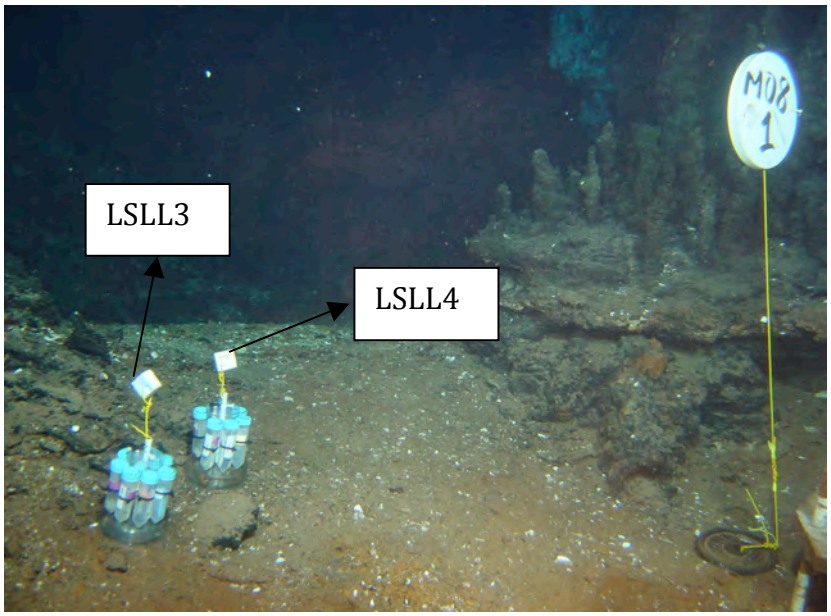


Temperature profile obtained inside the LSLL3 Incubators support between 09/08/08 16:25:54 and 13/09/09 16:17

Deployment information: ***Date: 15/08/08 at 19:10***

Dive#: 361-3 (VICTOR, MoMAR08)

DVDs # 20 and 21

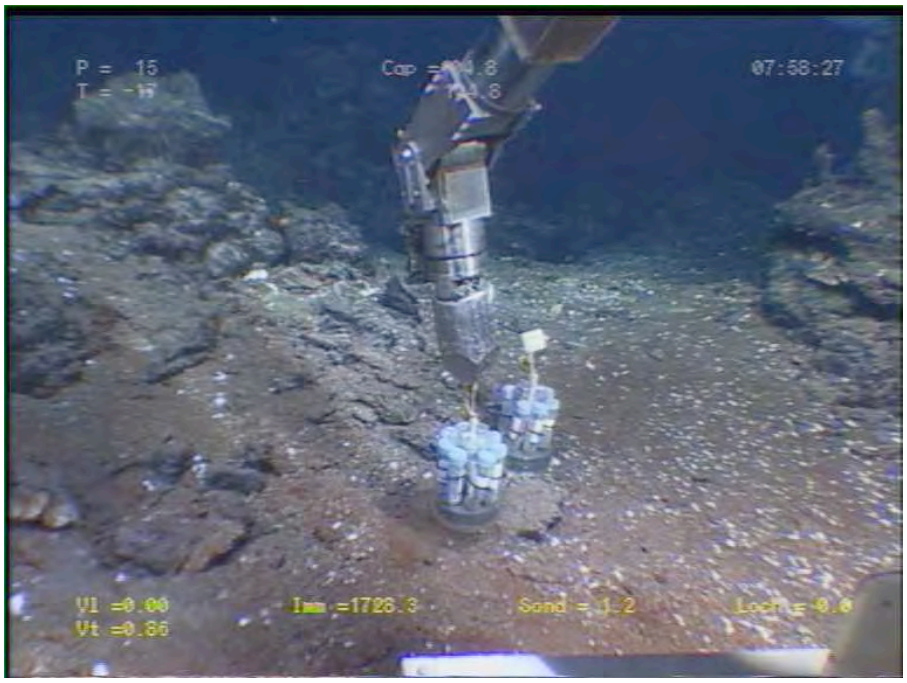


080815192556A.jpg Deployment during MoMAR 08

Recovery information: ***Date: 09/09/09 at 07:46***

Dive#: 389-4 (VICTOR, Bathyluck 09)

DVDs # 389#39



090909075827A.JPG Recovery of LSLL3 during Bathyluck 09

Samples conditioning

FISH imaging:

- Small rocks pieces and polish pieces fixed in Formaldehyde 2% for 45min then rinsed 3time with sterilized sea water and conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 9 tubes
- For Gram+ small rocks pieces and polish pieces conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 9 tubes

Mossbaüer analysis

- Powders of synthetic basalt glasses βH_2 biotic conditioned into 5ml tube with EtOH96%

Microorganisms culture

- Rocks pieces of each biotic substratum conditioned into cryotubes with DMSO5% (sea water) and stored at -80°C in order to provide ferooxidising bacteria cultivation.

Note: The dialyse membrane used for the abiotic control were partially dissolved into the incubators π abiotic. Nevertheless, the abiotic controls will be interpreted with caution.

Notes: Installed near JPPW and Marker MO08-1

2.5.6. East volcano site

East volcano Site (dive 392-7): B09BGM04R 15/09/09 07:31

Instrument type: Support of 10 incubators **LSEV1**

Poids dans l'air: 2 kg

Site: ***JPPEST***

Lat: N37 16,990 ***UTMY:*** 6544

Lon: W32 14,857 ***UTMX:*** 16710

Im: 1981.6m ***Cap***: 282.3

Incubators description:

- GR08-pA-EV1 and GR08-pB-EV1 few serpentinised peridotites OMAN
- GR08-bN2A-EV1 and GR08-bN2B-EV1 natural basalt glasses GR06-N2 Graviluck (2006)
- GR08-bN7A-EV1 and GR08-bN7B-EV1 natural basalt glasses GR06-N7 Graviluck (2006)
- GR08-bO_2A-EV1 and GR08-bO_2B-EV1 oxidised synthetic basalt glasses (O_2 fusion 29/06/07)
- GR08-bH_2A-EV1 and GR08-bH_2B-EV1 reduced synthetic basalt glasses (H_2 fusion 16/05/07)

T sensor attached: Starmon Temperature sensor Seastar T2883, sampling 3 min.

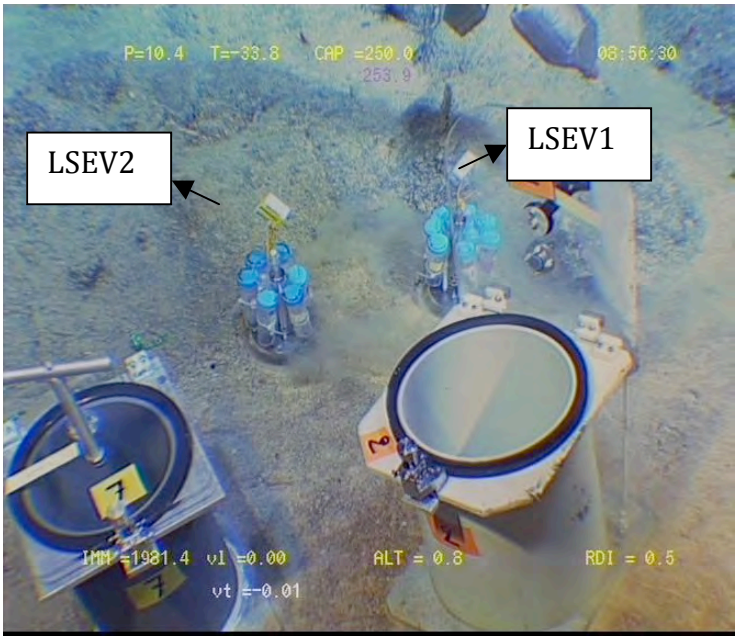
	dd/mm/yy	***hh:mm:ss (GMT)***
Start recording:	09/08/08	16:56
End recording:	16/09/09	10:21:59

Temperature profile obtained inside the LSEV1 Incubators support between 09/08/08 16:56 and 16/09/09 09:26

Deployment information: ***Date: 13/08/08 at 08:54***

Dive#: 360-2 (VICTOR, MoMAR08)

DVDs # 2



(Minifilm)080813090244.JPG Deployment during MoMAR08

Recovery information: ***Date: 15/09/09 at 07:31***

Dive#: 392 (VICTOR, Bathyluck 09)

DVDs # 392#2

090915073135A.JPG Recovery of LSEV1 during Bathyluck 09

Samples conditioning

FISH imaging:

- Small rocks pieces and polish pieces fixed in Formaldehyde 2% for 45min then rinced 3time with sterilized sea water and conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 10 tubes
- For Gram+ small rocks pieces and polish pieces conditioned into 5ml tubes with EtOH 50% at -21°C. 1 tube for each sample => 10 tubes

Mossbaüer analysis

- Powders of synthetic basalt glasses βH_2 biotic conditioned into 5ml tube with EtOH96%

Microorganisms culture

- Rocks pieces of each biotic substratum conditioned into cryotubes with DMSO5% (sea water) and stored at -80°C in order to provide ferooxidising bacteria cultivation.

Note: The dialyse membrane used for the abiotic control were correct, nevertheless, the abiotic controls will be interpreted with caution.

Notes: Installed near JPPE

2.5.7. Seamon site

Seamon Site (Benshmark C) (dive392-7)): B09BGM05D 15/09/09 20:12

Instrument type: Support of 8 incubators **LSSeamon1**

Poids dans l'air: 2 kg

Site: ***Seamon Marker Benshmark C***

Lat: N37 16,990 ***UTMY:*** 7470

Lon: W32 14,857 ***UTMX:*** 12767

Im: 1741.2m ***Cap:*** 35.4

Incubators description:

- GR08-pA-EV3 and GR08-pB-EV3 few serpentinised peridotites OMAN
- GR08-bN2A-EV3 and GR08-bN2B-EV3 natural basalt glasses GR06-N2 Graviluck (2006)
- GR08-BN7A-EV3 and GR08-BN7B-EV3 natural basalt glasses GR06-N7 Graviluck (2006)
- GR08-bH_2A-EV3 and GR08-bH_2B-EV3 reduced synthetic basalt glasses (H_2 fusion 18/06/08)

T sensor attached: Temperature sensor Starmon Seastar T2886, sampling 3 min.

		dd/mm/yy	***hh:mm:ss (GMT)***
Clock set/sync :			
Start recording:		15/09/09	09:00
End recording:			
Clock sync:	***PC***		
	TS		

Deployment information: ***Date: 15/09/09 at 20:12***

Dive#: 392-7 (VICTOR, Bathyluck 09)

DVDs # 392#8

Recovery information: ***Date:***

Dive#:

DVDs #

Notes: Installed near Benshmark C at the centre of Lava Lake, future Seamon node

090915201249A.JPG Deployment during Bathyluck 09

2.5.8. Montsegur Site

Montsegur Site (dive395-10)): B09BGM06D 22/09/09 16:07

Instrument type: Support of 8 incubators **LSMS1**

Poids dans l'air: 2 kg

Site: ***Montsegur***

Lat: N37 17.28 ***UTMY:*** 7067

Lon: W32 16.54 ***UTMX:*** 4212

Im: 1702m ***Cap:*** 66.8 ***T°C***: 6.2 inside mussels bed

Incubators description:

- GR08-pA-EV3 and GR08-pB-MS1 few serpentinised peridotites OMAN
- GR08-bN2A-EV3 and GR08-bN2B- MS1 natural basalt glasses GR06-N2 Graviluck (2006)
- GR08-BN7A-EV3 and GR08-BN7B-MS1 natural basalt glasses GR06-N7 Graviluck (2006)
- GR08-bH_2A-EV3 and GR08-bH_2B-MS1 reduced synthetic basalt glasses (H_2 fusion 18/06/08)

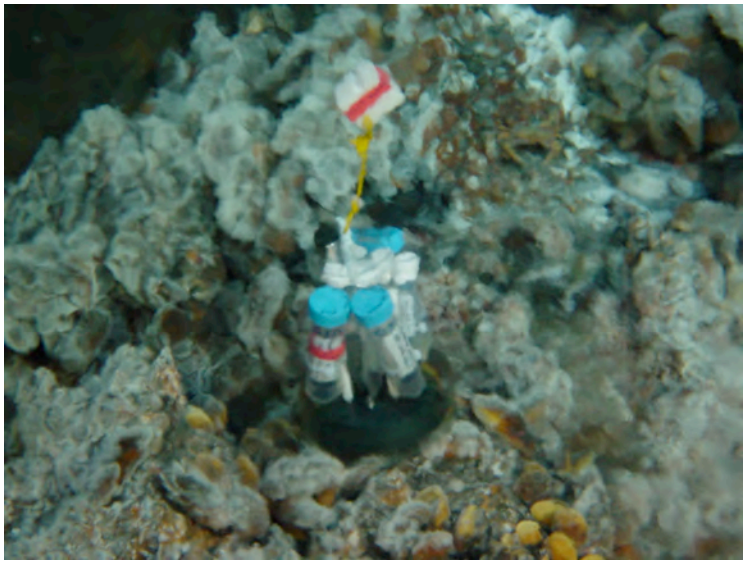
T sensor attached: Temperature sensor Starmon Seastar T2883, sampling 3 min.

		dd/mm/yy	***hh:mm:ss (GMT)***
Clock set/sync :			
Start recording:		22/09/09	08:00
End recording:			
Clock sync:	***PC***		
	TS		

Deployment information: ***Date: 22/09/09 at 16:07***

Dive#: 395-10 (VICTOR, Bathyluck 09)

DVDs # 395#9-10



090922160808A.jpg Deployment during Bathyluck 09

Recovery information: *Date:*

Dive#:

DVDs #

Notes: Installed inside mussels bed at Montsegur

****

3. Science operations – Geophysical surveys & water column studies

3.1. Multibeam surveys – ROV Victor + Module Route

3.1.1. The Victor multibeam system

The « Module de Mesure en Route » (MMR) is equipped with a Reson 7125 multibeam echosounder system. This system measures seafloor depth and reflectivity. Emissions have a frequency of 400 kHz, with an opening angle of 120° in the direction perpendicular to the ROV's track (transversal) and about 0.5° along-track. The seafloor is therefore insonified over a wide area across-track: about 3.4 times the ROV's altitude. Within this wide insonified area, the system identifies 512 equally-spaced « beams », 256 on each side of the vertical. The typical ROV speed for multibeam measurements is 0.3 to 0.4 m/s, hence, at an altitude of 8 metres, there was 1 cycle every 4 to 5 cm.

Seafloor depth is measured with a precision of about 0.2% of the altitude of the ROV, with a maximum precision of 5 cm. Depth data are acquired with a resolution of about 5% of the ROV's altitude. In our case, the nominal precision and resolution are therefore of 5 cm and 0.5 m for the bathymetry acquired during the OTUS surveys with an altitude of 10 m. Precision and resolution are 10 cm and 2.5 m respectively for the bathymetry acquired at an altitude of 50 m. Seafloor reflectivity is measured with a resolution of about 2.5 cm. However, reflectivity was not processed onboard.

3.1.2. Multibeam data acquired during BATHYLUCK_Leg 2

MMR dive n#	altitude	date	OTUS	Bathy/reflectivity	magnetism	video
05-390	10m	10-11/09/09	Y		Y	Y
06-391	10m	11-14/09/09	Y	Y	Y	Y
08-393	50	16-19/09/09		Y	Y	
09-394	50	19-20/09/09		Y	Y	
11-396	50	24-26/09/09		Y	Y	

During Leg 1 (31/08/08 – 10/09/09), there were no dives with the module route. During Leg 2 (10/09/09 – 28/09/09), bathymetry and reflectivity (sidescan sonar) data were acquired at an average altitude of 8 m along the tracks of the two OTUS surveys (dives 05-390 and 06-391), which are partly included within the area previously mapped during the MoMARETO and MoMAR08 ??? cruises. Multibeam data were also acquired during dives

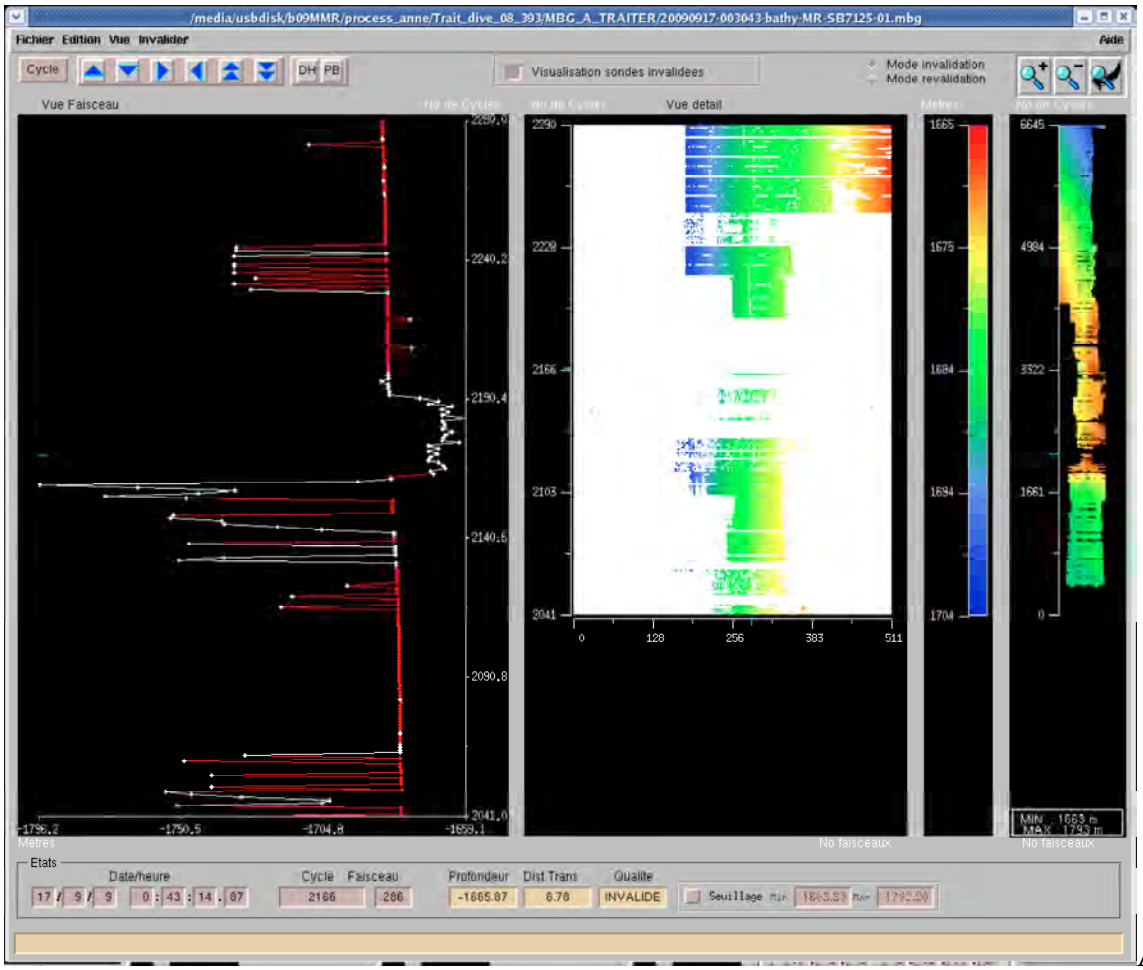
08-393, 09-394 and 11-396 at an altitude of ~50 m. Tracks were spaced by 15 m in the OTUS areas, and by 120 m in the 50m surveys.

Bathymetry and reflectivity :

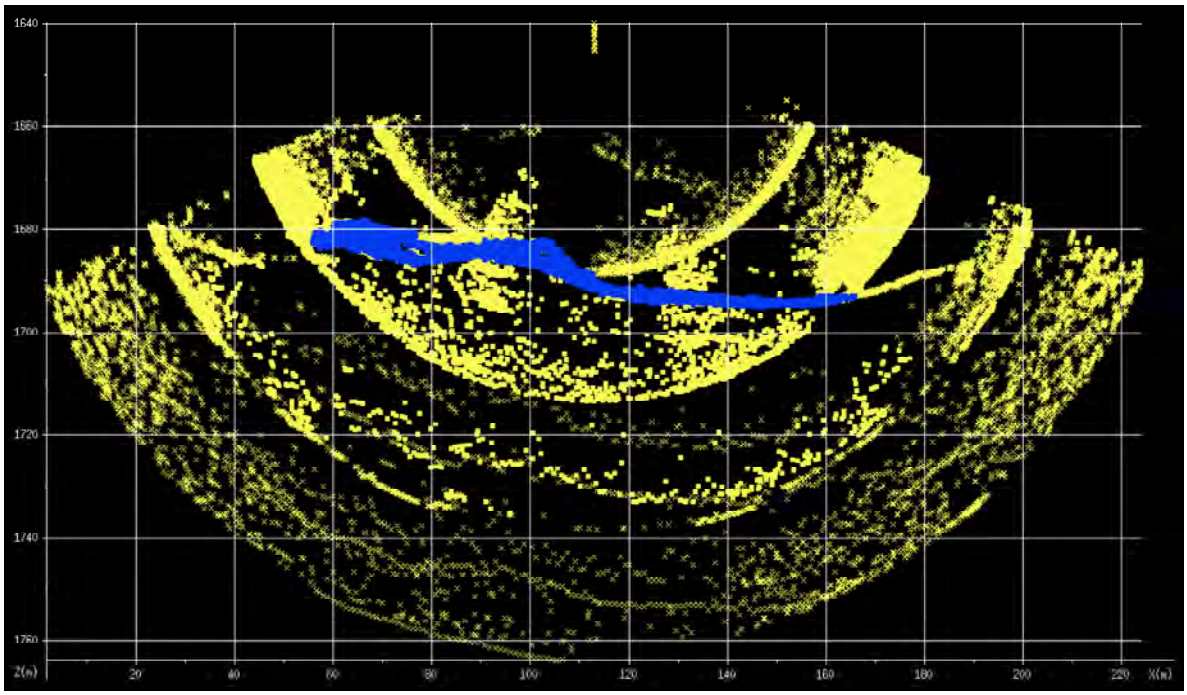
Original Reson 7125 data is released in .S7k files. These files are processed automatically by the VICTOR's acquisition system to produce the .mbg (Caraibes format georeferenced depth files) , .nvi (caraibes format navigation files) and other files which can be found in the NetCDF folder. A tool of the Caraibes software (importation/ Tm7125) also allow the production of .mbg and .nvi files from the .S7k files.

We had time to pre-process a part of the bathymetric data from the OTUS 06-391 survey and a part of one of the 50m survey (dive 08-393) onboard. The processing time of each dive is long since the bathymetric data were very noisy (see figure below). A significant part of the incorrect data was invalidated directly by the acquisition system. However, about 1/3 to 1/2 of the valid data were also invalidated abusively. This could not be corrected by Victor crew so bathymetric data collected until the 18/09/09 had to be revalidated with caraibes before further processing. The processing time to remove incorrect data was therefore important, especially since there was systematically 1 invalid cycle every 1 s to 8 s depending on the time.

On the 18th of September, settings on the MMR system were changed (with high intensity emission and low-intensity reception) and thereafter bathymetric data were much less noisy and invalid cycles did not occur anymore. The processing time for dives 09-394 and 11-393 as well as for dive 08-393 (from the 18/09/09) will thus be reduced compared to those of the previous dives.



Above : screen capture of the processing using Batmul caraibes module that shows the amount of data (in white) that needed to be invalidated. Dive 08-393.



Above : screen capture of "odicee" caraibes module, showing the data that are invalidated directly by the acquisition system (yellow x) and the ones that are invalidated during post-processing (yellow squares). Dive 08-393.

Navigation : Navigation data consist in BUC (Base Ultra Courte) acoustic positioning and dead reckoning navigation ("estime" calculated from loch and attitude data from Victor) positioning. Until the 15/09/09 (dive 392), BUC data were of unequal quality. After Pourquoi Pas crew fixed some problems on the BUC system onboard, the quality of data was generally correct. We sometimes lost reliable BUC positioning during couples of hours. This seems to be correlated with the attitude of the ship with respect to the Victor and with the weather: when the weather was not so good, the ship used more frequently its lateral motors to reposition, such that its noise perturbed BUC transmissions. The MMR surveys were conducted using the dead reckoning navigation as a guide for ROV displacements. We will need to reprocess the navigation using the BUC data for dives 392 for which the quality of BUC data was good. For the two OTUS surveys, we also plan to use the navigation generated by mosaicing of the OTUS images in order to renavigate the .mbg bathymetric files.

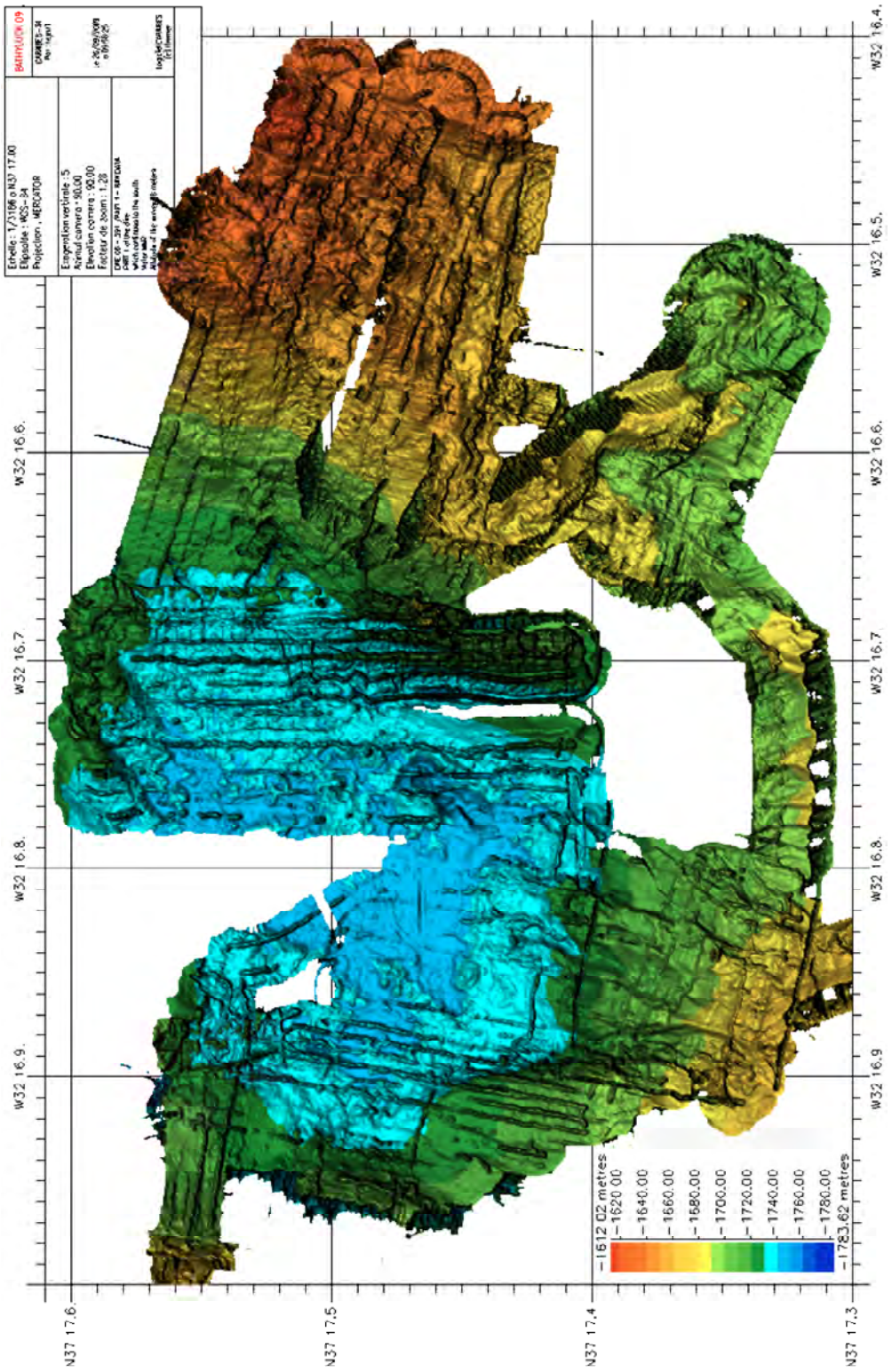
Maps:

Maps in this report were made using caraibes. Raw data (or processed data when available) were grided with "mailla" module, with 2 metres for the 50 m surveys, and 0.5 to 1 m for the 10 m surveys. We did not make any corrections navigation because we ran out of time due to the time necessary for data cleaning. After the incorrect data were removed, the quality of the multibeam data was very good and small features like lava flows (at 10 m), small volcanic mounds and minor tectonic structures were well expressed and measurable.

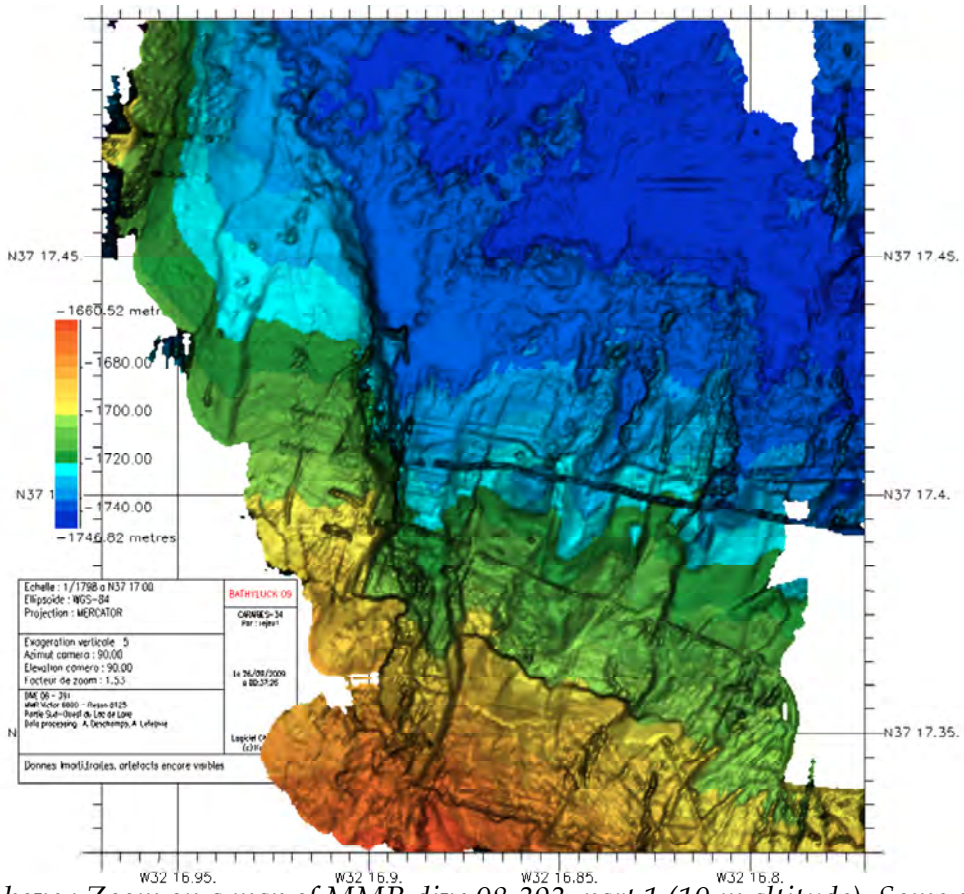
Processing of seafloor reflectivity data will be the last step, carried out using the renavigated bathymetry as one of the input files and some dedicated Caraibes modules.

Dive 05-390 – 10/09/09 – 11/09/09 : only magnetic and OTUS data were acquired during this dive at an altitude of 8 meters. Bathymetric and reflectivity data were recorded but are unusable since the plastic protection of multibeam system antennas was not removed.

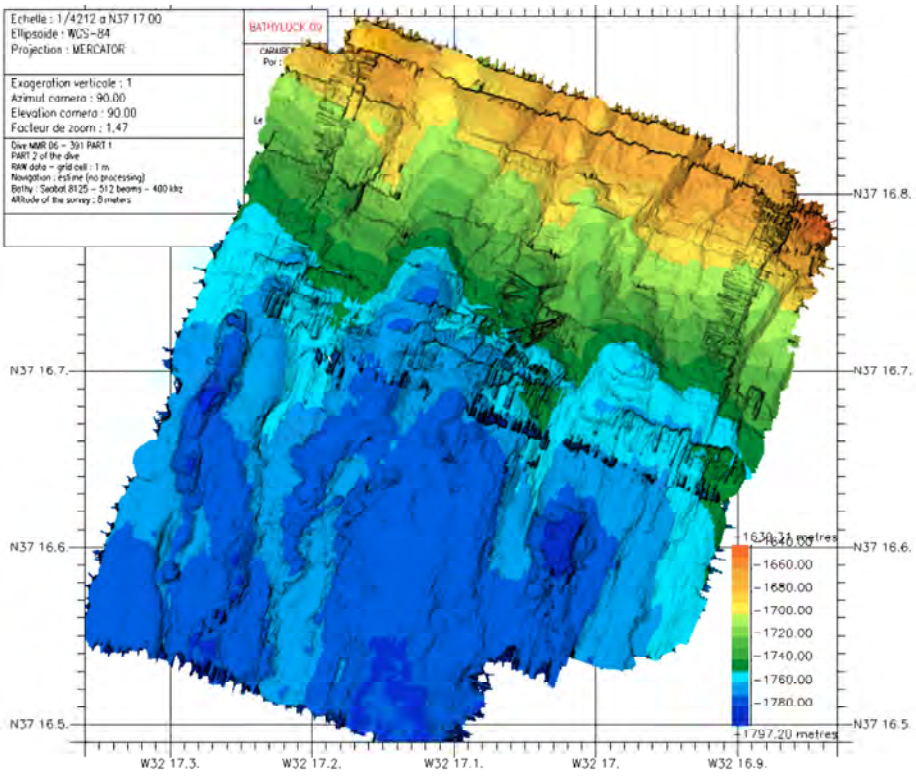
Dive 06-391 :11/09/09 – 14/09/09 : This dive started in the vicinity of the lava lake. The survey was performed at an altitude of 10 metres so that OTUS images could be collected at the same time as multibeam data. Magnetic data were also recorded. The overlap between contiguous lines was high in order to insure overlap in OTUS photos.



Above : Raw bathymetry of MMR dive 06-391, part 2 (10 m altitude). OTUS photos and magnetic data were also recorded during this dive.

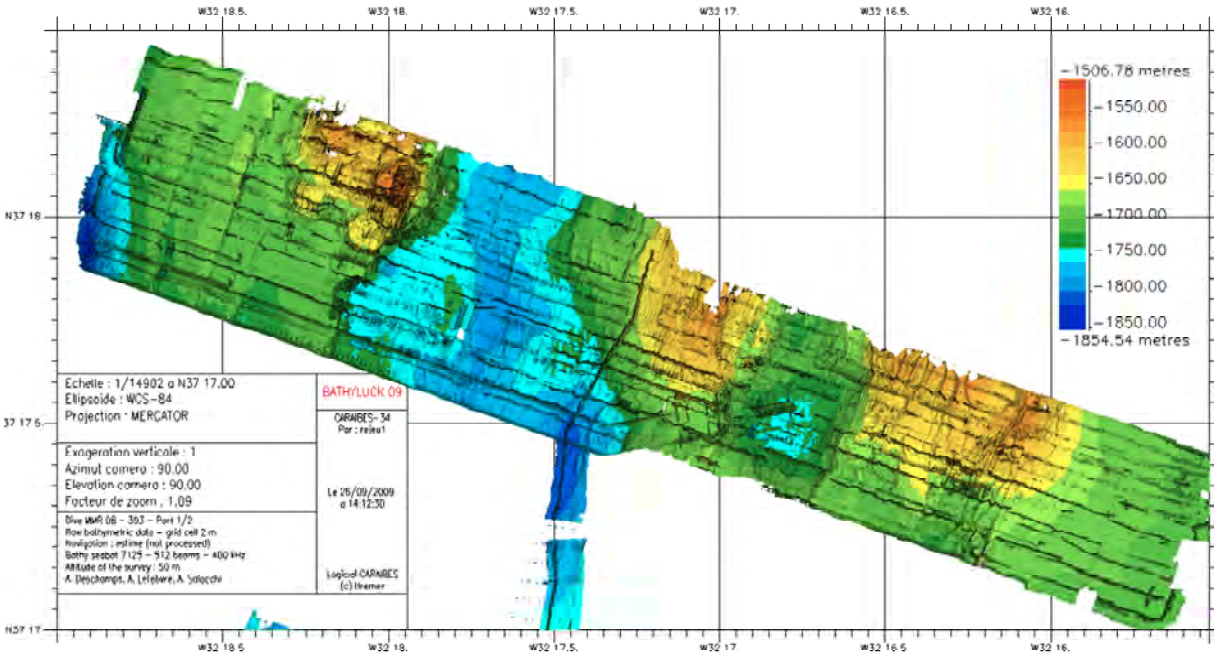


Above : Zoom on a map of MMR dive 08-393, part 1 (10 m altitude). Some data are cleaned, other are still raw and noisy.

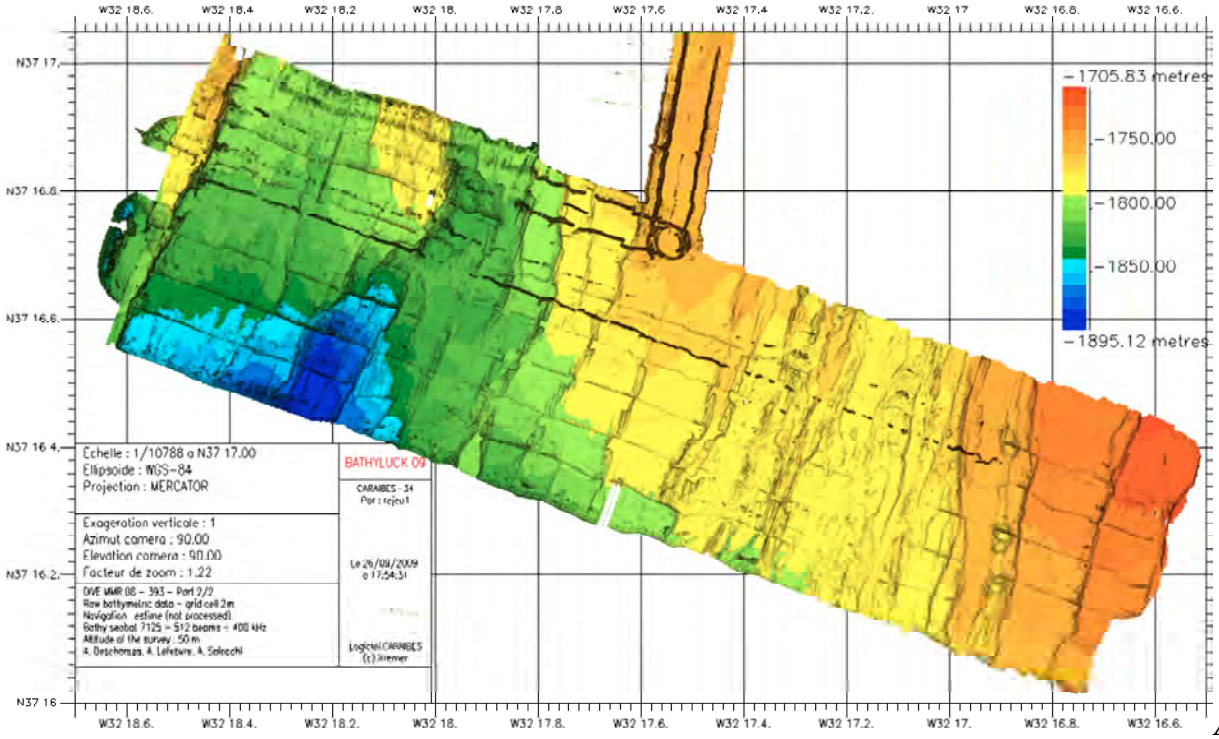


Above : Map of MMR dive 06-391, part 2 (10 m altitude).

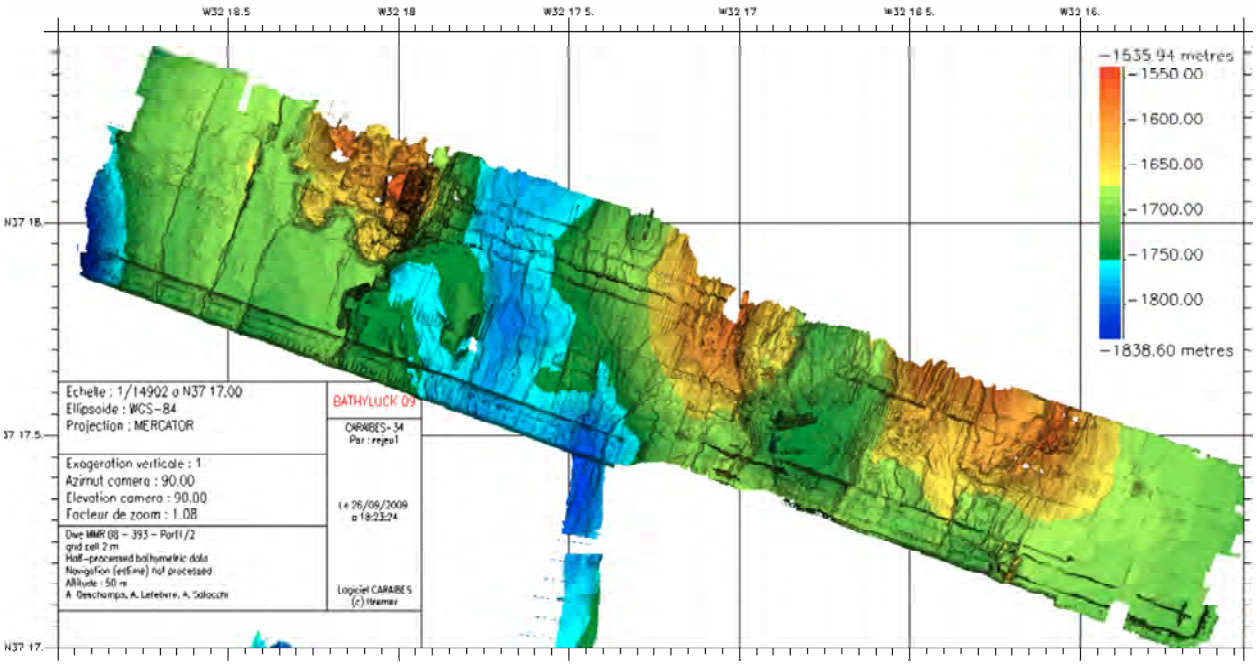
Victor MMR dive 08 – 393 : 16/09/09 to 19/09/09



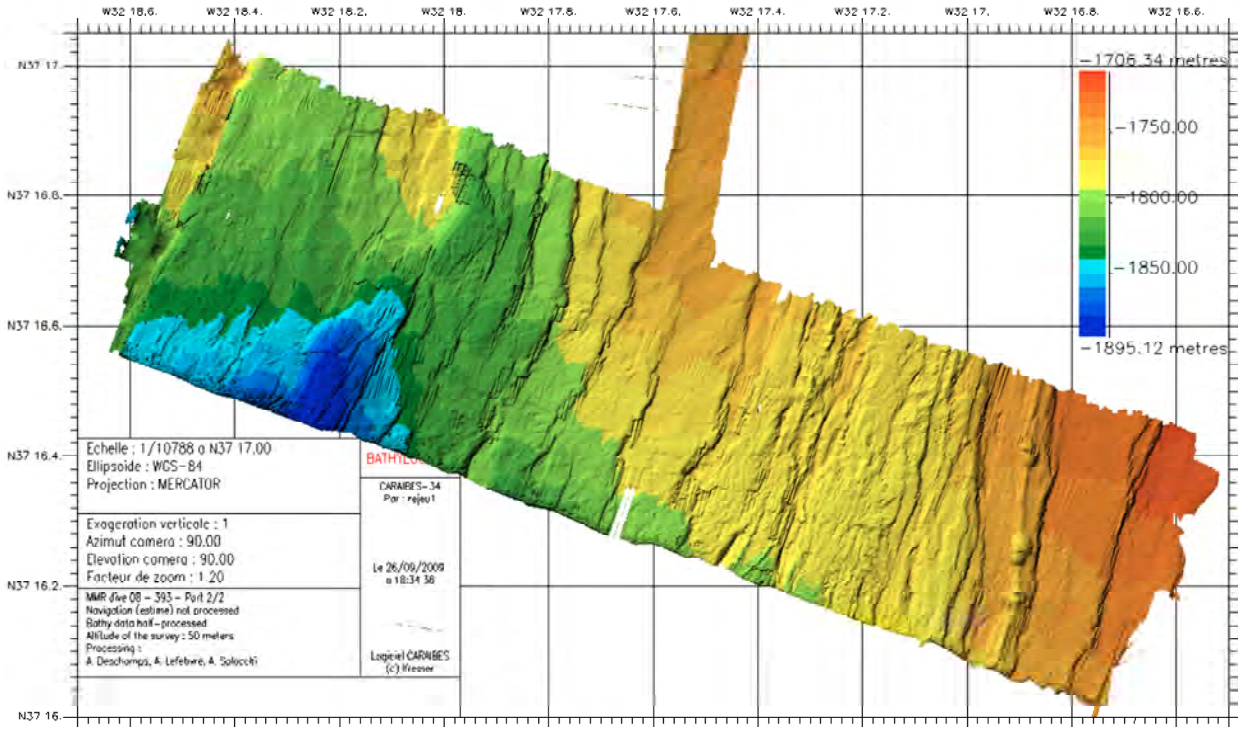
Above : Map of MMR dive 08-393, part 1 (50 m altitude).



Above : Map of raw bathymetric data from MMR dive 08-393, part 2 (50 m altitude).

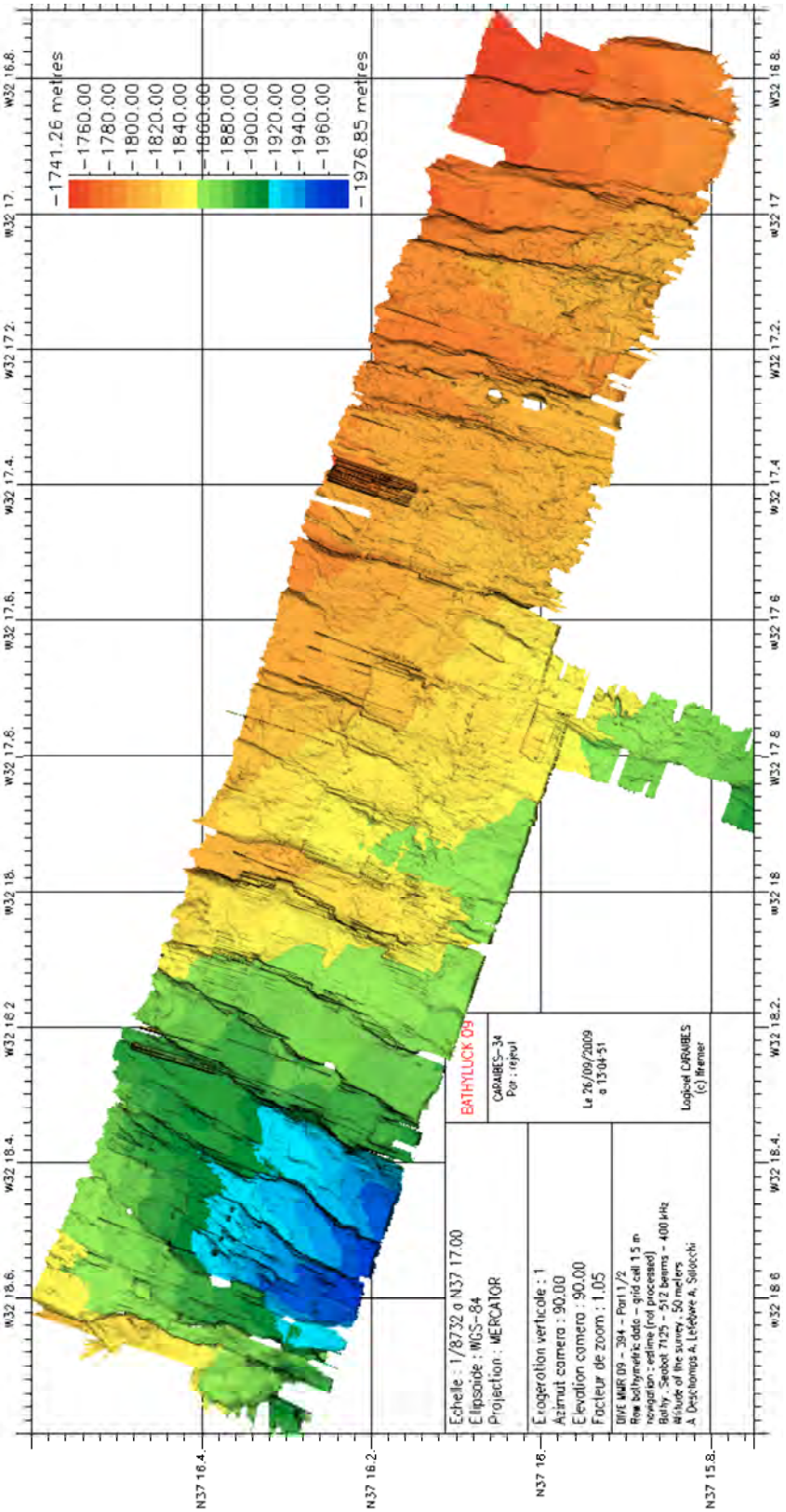


Above : Map of half-processed bathymetric data from MMR dive 08-393, part 1 (50 m altitude).

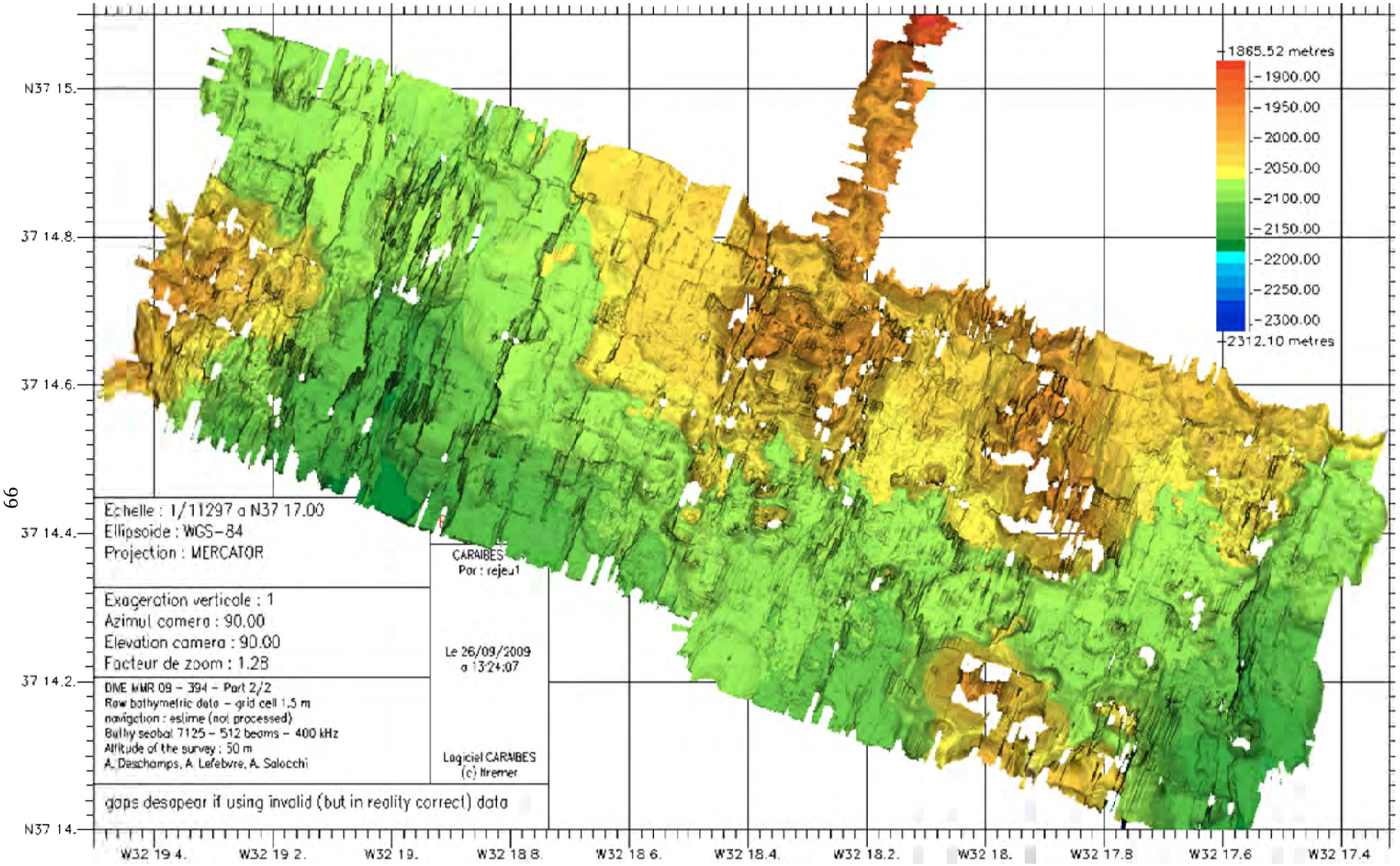


Above : Map of half processed (most of the bathymetry is cleaned, however navigation is not processed) bathymetric data from MMR dive 08-393, part 2 (50 m altitude). In the eastern side of the survey, 3 volcanic mounds aligned on an almost linear structure are easily discernable.

Victor MMR dive 09 – 394 : 19/09/09 to 21/09/09



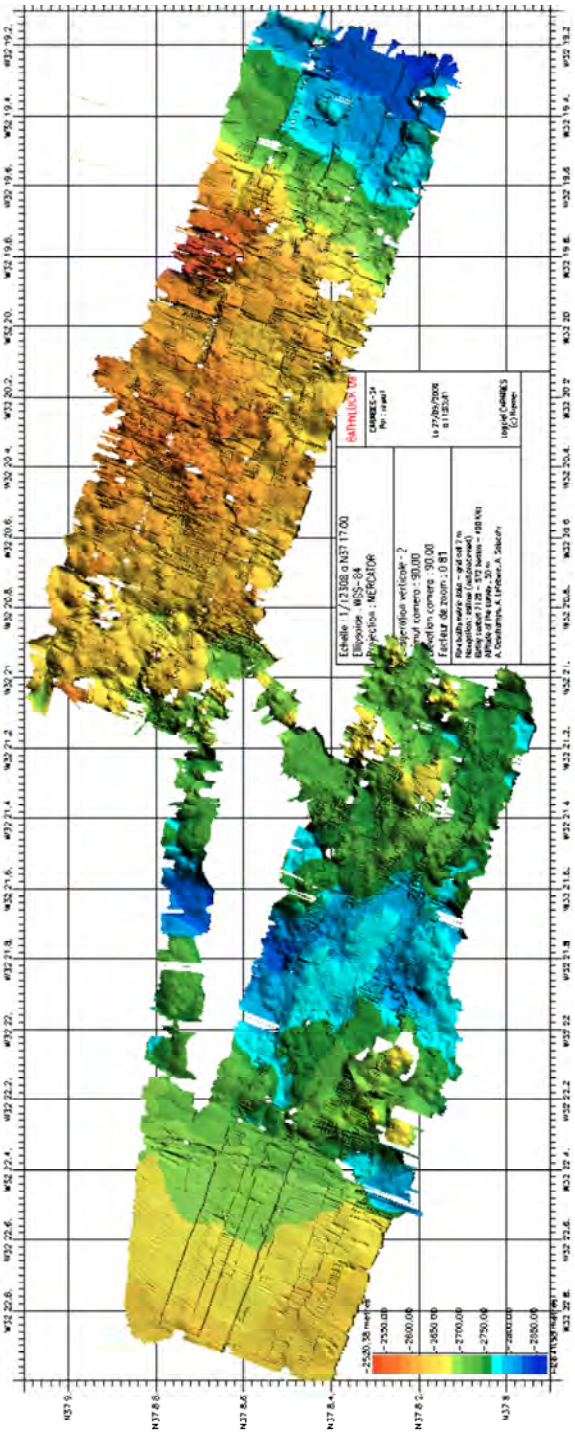
Above : Map of raw bathymetric data from MMR dive 09-394, part 1 (50 m altitude).


1865.52 metres
-1900.00
-1950.00
-2000.00
-2050.00
-2100.00
-2150.00
-2200.00
-2250.00
-2300.00
2312.10 metres
N37 15.
37 14.8.
37 14.6.
37 14.4.
37 14.2.
N37 14.
W32 19 4.
W32 19 2.
W32 19.
W32 18 8.
W32 18 6.
W32 18.4.
W32 18.2.
W32 18.
W32 17.8
W32 17.6
W32 17.4
Echelle : 1/11297 a N37 17.00
Ellipsoide : WGS-84
Projection : MERCATOR
CARAIBES
Par : rejeu1
Exageration verticale : 1
Azimut camera : 90.00
Elevation camera : 90.00
Facteur de zoom : 1.28
Le 26/09/2009
a 13:24:07
DIVE MMR 09 - 394 - Part 2/2
Raw bathymetric data - grid cell 1.5 m
navigation : estime (not processed)
Bathy seabat 7125 - 512 beams - 400 kHz
Altitude of the survey : 50 m
A. Deschamps, A. Lefebvre, A. Salocchi
Logiciel CARAIBES
(c) Ifremer
gaps desapear if using invalid (but in reality correct) data

Above : Map of raw bathymetric data from MMR dive 09-394, part 2 (50 m altitude).

Victor MMR dive 11 – 395 : 24/09/09 to 26/09/09

During this dive, Victor was at ~50 m of altitude and travelling at ~0.3 m/s. On the 26th in the morning, one of Victor's motor failed which resulted in the ROV not being very stable until the end of this dive.



3.2. Multibeam surveys – AUV AsterX

The Autonomous Underwater Vehicle (AUV) used during this cruise was AsterX. It is 4.5 m-long with a diameter of 0.69 cm and can reach a depth 3000 m. Depending on the payload, its weight is between 600 and 800 kg in air. During Bathyluck cruise, it was equipped with the Simrad 2000 multibeam system, Seabird (Temperature, Salinity, depth), GAPS (Global Acoustic Positioing System) navigation system (base courte) and loch Doppler (200 kHz), inertial system (IXSEA Phins). The longest survey carried out during this cruise lasted 9 h and the bathymetric and magnetic surveys were ~40 km–long, carried out until AUV ran out of battery and was forced to come back to surface. All AUV surveys were done at a speed of 3 knt at an altitude of ~60 m above the seafloor.

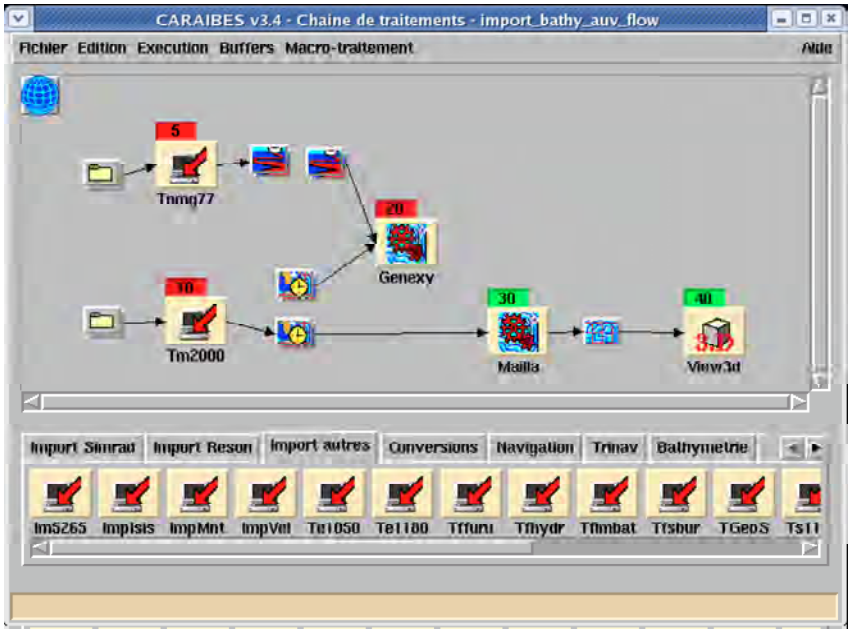
The multibeam echosounder Simrad EM2000 (CNRS/Géosciences Azur) operates at a frequency of 200 kHz. With a beam spread angle of 120°, the beamwidth is 2.5° across-track, and 1.5° along-track. Asterx was navigated at 50 to 70 m above the seafloor and survey lines were spaced 200 m, thus allowing for a full seabed mapping coverage with overlap between two contiguous lines.

Backscatter imagery was also recorded but not processed onboard. A combination of phase and amplitude detection was used, resulting on a measurement accuracy of 8 cm RMS being achievable practically independent of beam pointing angle.

There were 9 AUV dives during Bathyluck 2009. AUV failed during dives 1, 2, 3, 4, 5 and 7. Bathymetric data were acquired only dives 1, 2, 4, 6, 7, 8 and 9. Surveys 6, 8 and 9 were fully successful and AUV stopped these dives when it ran out of battery. Details about each dive can be found in a table in a chapter in "Navigation" part of the report. The profiles were slightly offset with respect to the planned profiles due to bottom currents and a non-perfect localisation of the AUV. During dive 8, during which position of AUV was corrected by the operator when AUV reached the bottom, the offset was only a few metres. During dive 6, during which no correction was performed at the beginning of the survey

(due to safety reasons: the AUV landed in an area with sharp and high reliefs), the resulting offset was approximately 50 meters.

The multibeam system Simrad 2000 worked well and delivered raw data with very few invalid data. All the maps below were generated with these raw data and GAPS navigation was used. The processing of the navigation for AUV is explained in detail in the previous chapter “navigation”. The processed GAPS navigation file was then imported into caraibes using module “Tnmg77”. Bathymetric data were imported from xxxx.all files provided by AUV crew using “Tm2000” module.



Seabird data to be used for bathymetric processing are :

Dive 1 : 1496 m/s

Dive 2 : 1496 m/s

Dive 4 : 1498 m/s

Dive 6 : 1497 m/s

Dive 7 : 1498 m/s

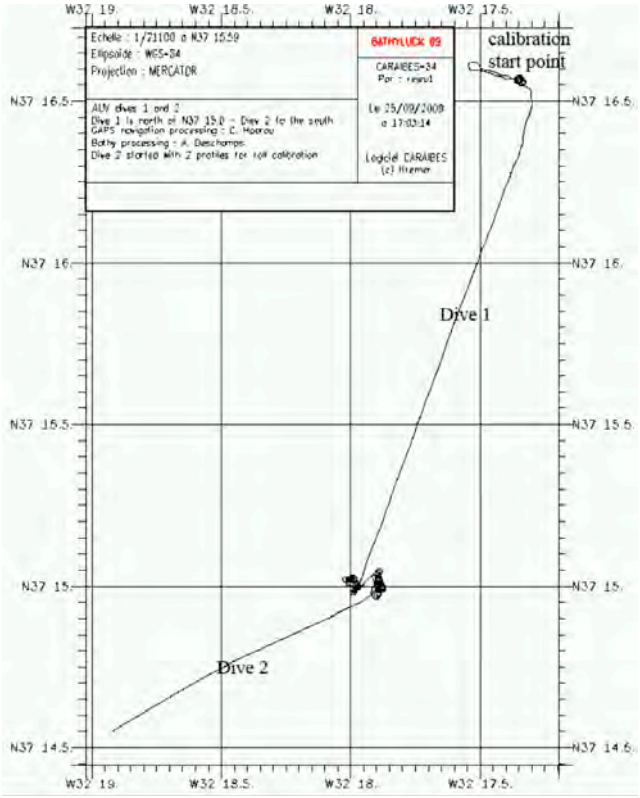
Dive 8 : 1502.8 m/s

Dive 9 : 1504 m/s

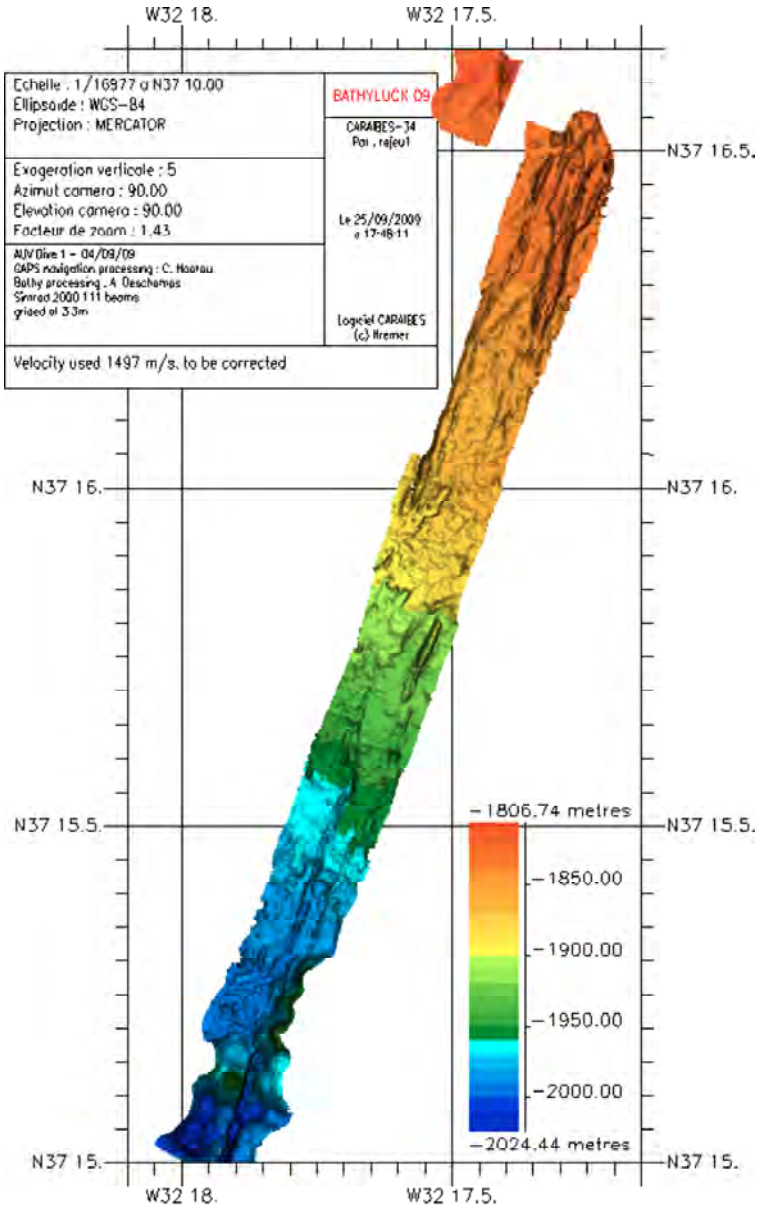
The onboard processing used the value of 1497 m/s for all the dives. This should be corrected during post-processing.

Dives AUV 1 and 2 : 04/09/09

Dive 1 started at 10h26 on the 04/09/09 with 2 roll calibration profiles. It stopped at 12h51. Dive 2 started at 14h39 the same day and stopped at 15h48. No valid bathymetric data were acquired.



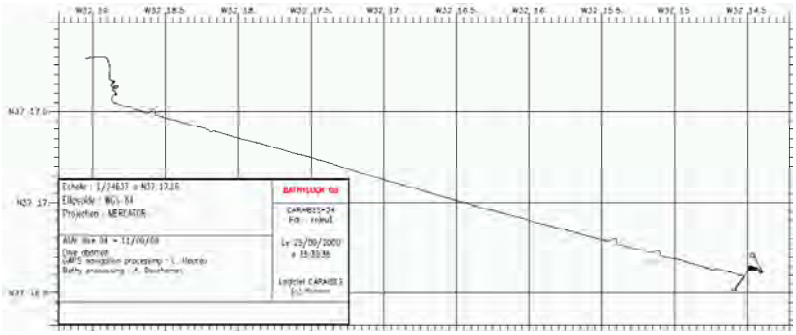
Right : AUV tracks during dives 1 and 2.



Above : AUV raw bathymetric data acquired during dives 1 and 2. Fissures and dismembered volcanic feature are clearly expressed.

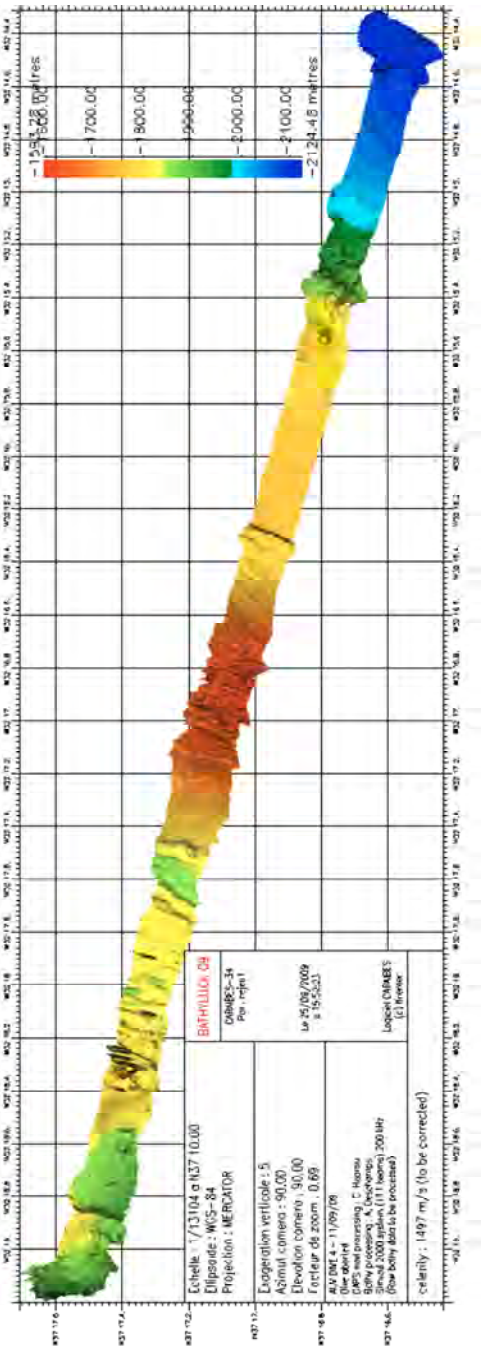
Dive AUV 04 : 11/09/2009

In this dive (from 12h01 to 15h55), AUV achieved 1 line before failing. GAPS positioning was of good quality. Valid bathymetric data were recorded between 10h42 and 14h15 approximately.



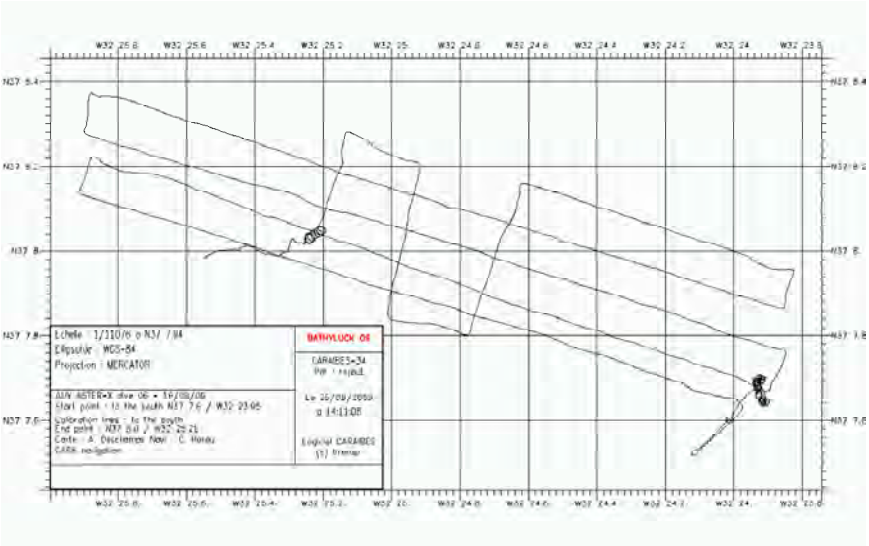
Above : AUV tracks during dive 4.

Below : AUV raw bathymetric data acquired during dive 4.

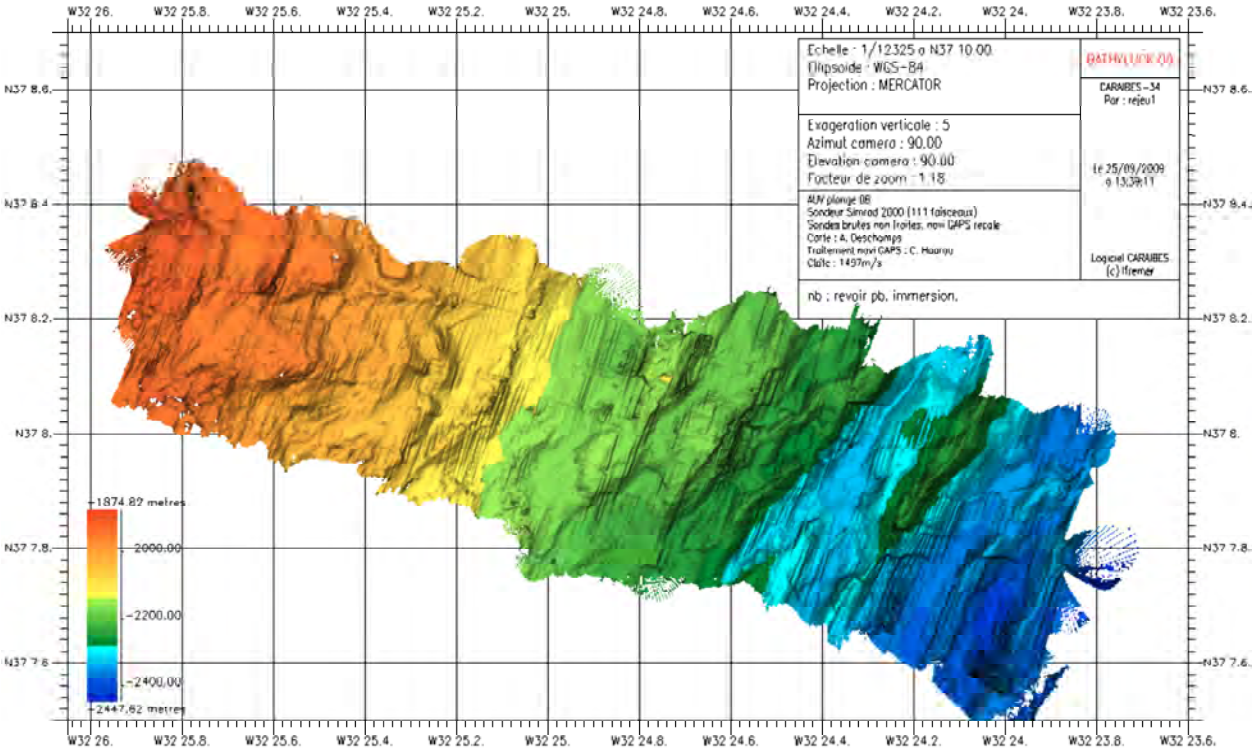


Dive AUV 06 : 16/09/2009

During this dive, AUV achieved 4 full lines and 3 transverses lines. It also made 2 short lines at the beginning of the dive for roll calibration. GAPS positioning was of good quality. The AUV worked well and completed its survey as planned.



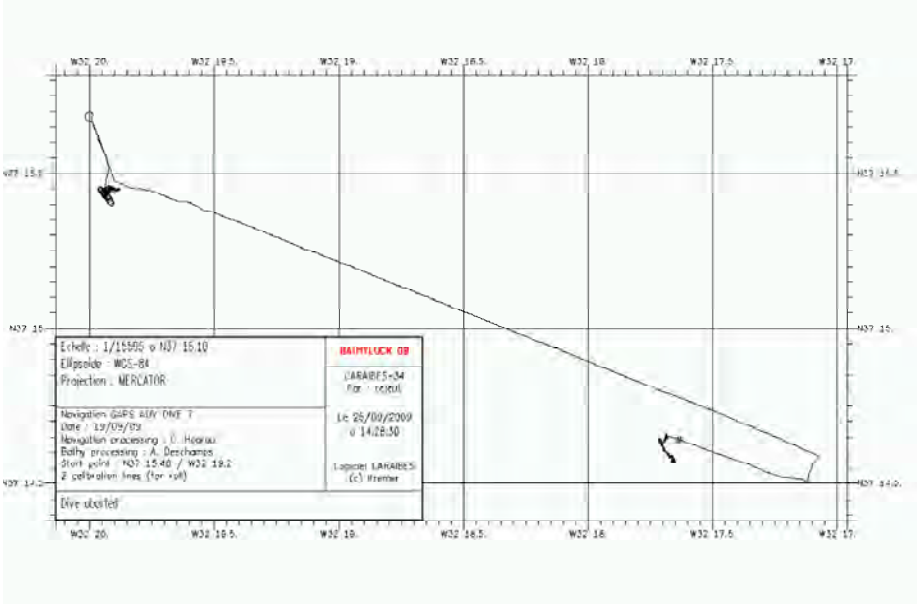
Above : AUV tracks during dive 6. Below : Raw bathymetry of dive 6.



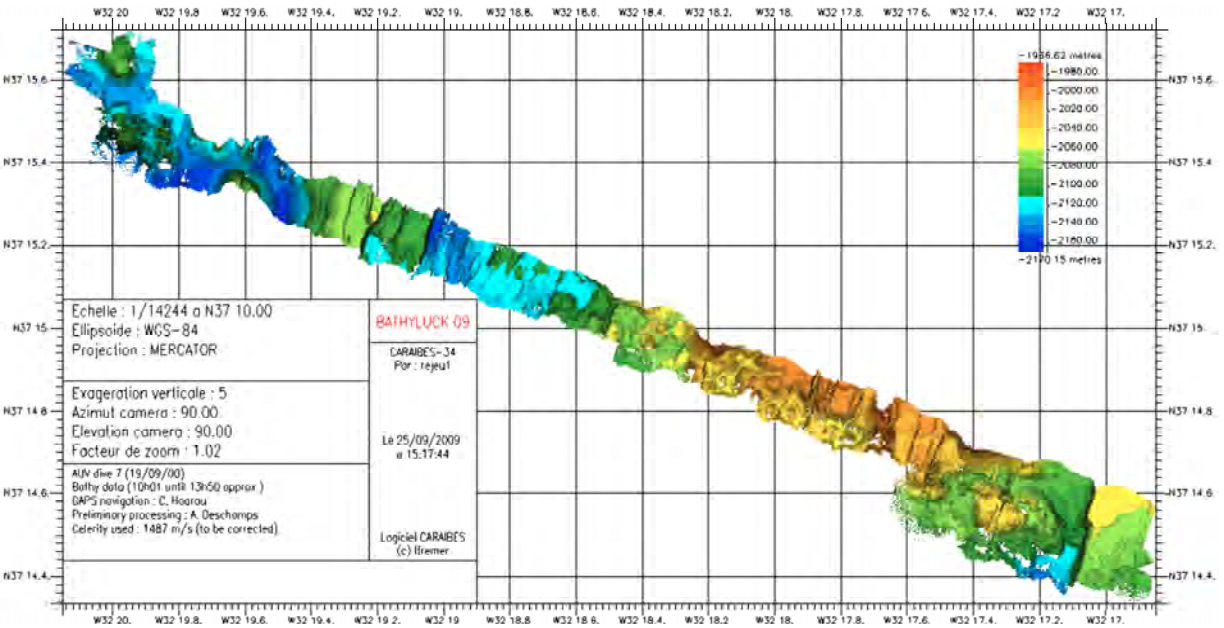
AUV dive 7 (19/09/09)

AUV dive 7 started with 2 superposed lines in order to calibrate the roll. This calibration was valid for dives 8 and 9. Dive was aborted during the 2nd profile due to an AUV failure.

CTD data gave a sound velocity of 1498 m/s. This correct value was used to generate the MBG files thereafter used to process the following bathymetric map (3 m grid).

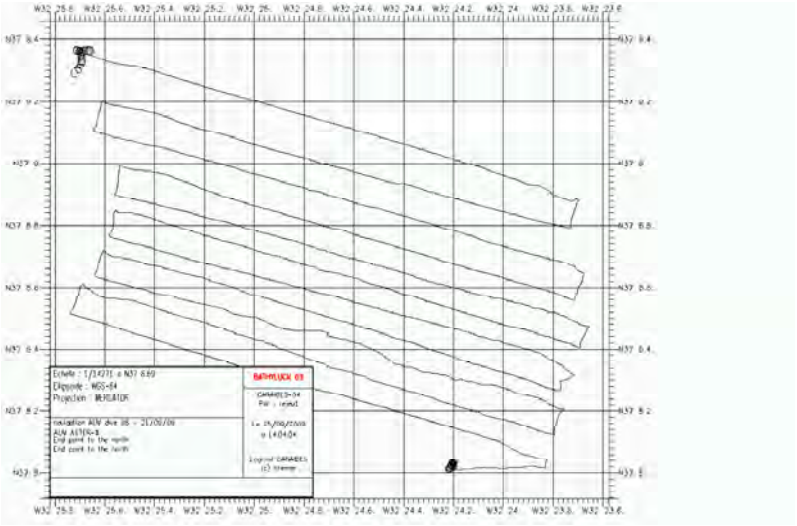


Above : AUV tracks during dive 7. Below : Raw bathymetry of dive 7.

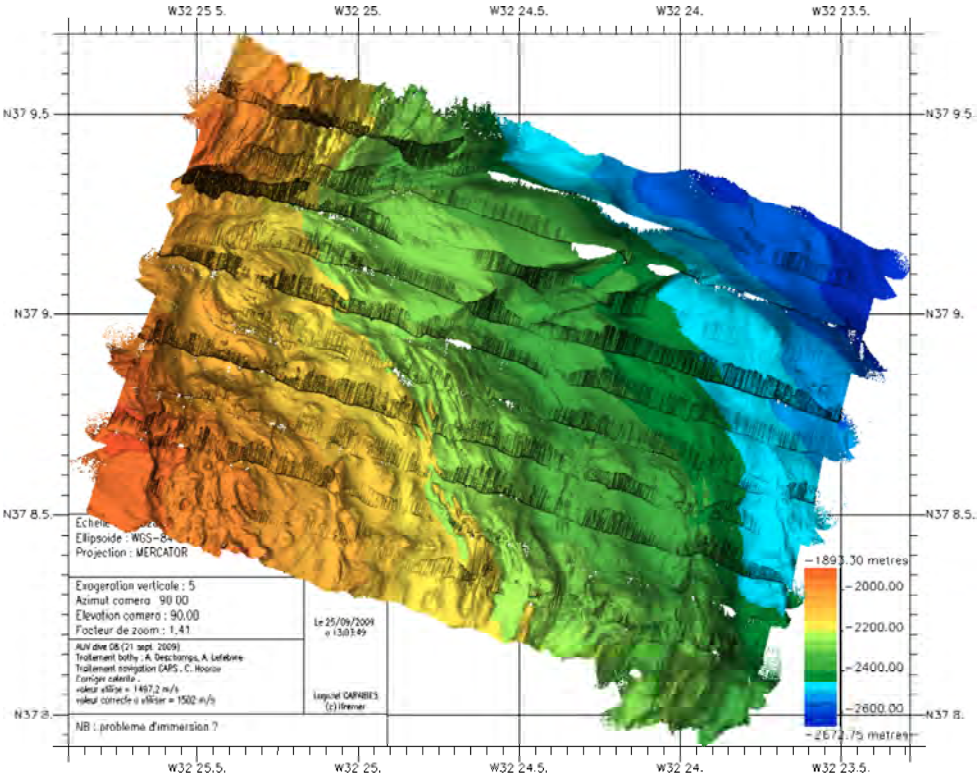


Dive AUV 08 : 21/09/2009

AUV achieved 11 lines and stopped the planned survey when it ran out of battery. GAPS positioning was of good quality. No profile for roll calibration was made because the AUV was not opened since dive 7. CTD data gave a sound velocity of 1502.8 m/s. However, a value of 1497 m/s was used to generate the MBG files used to process the following bathymetric map. This value should be corrected during the further post-processing.

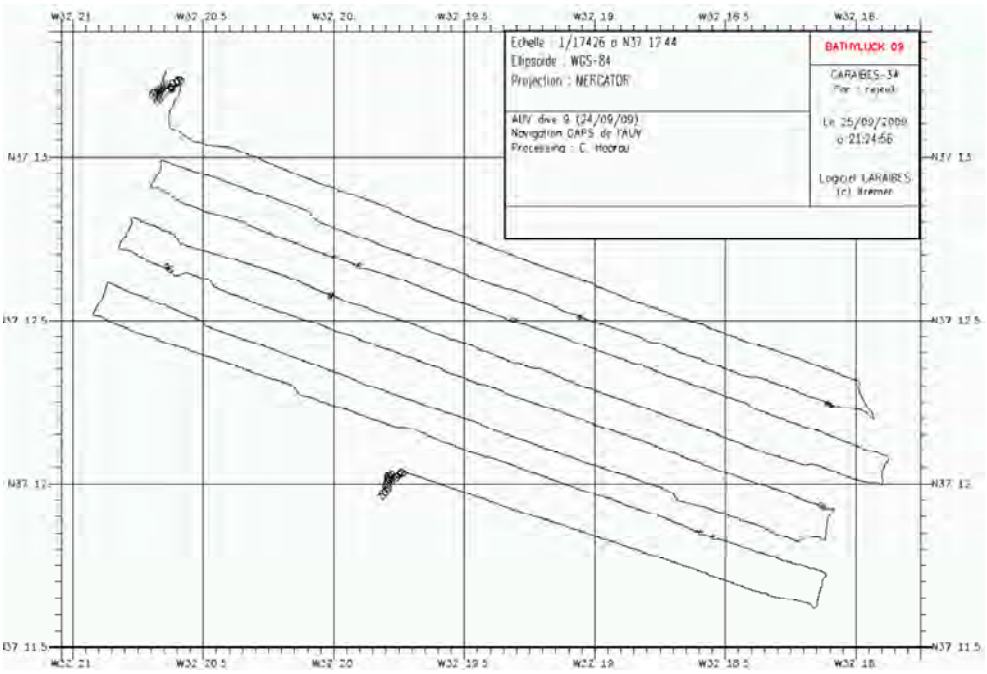


Above: AUV tracks during dive 8. Below: raw bathymetry during dive 8 (Menez Home peridotite massif)

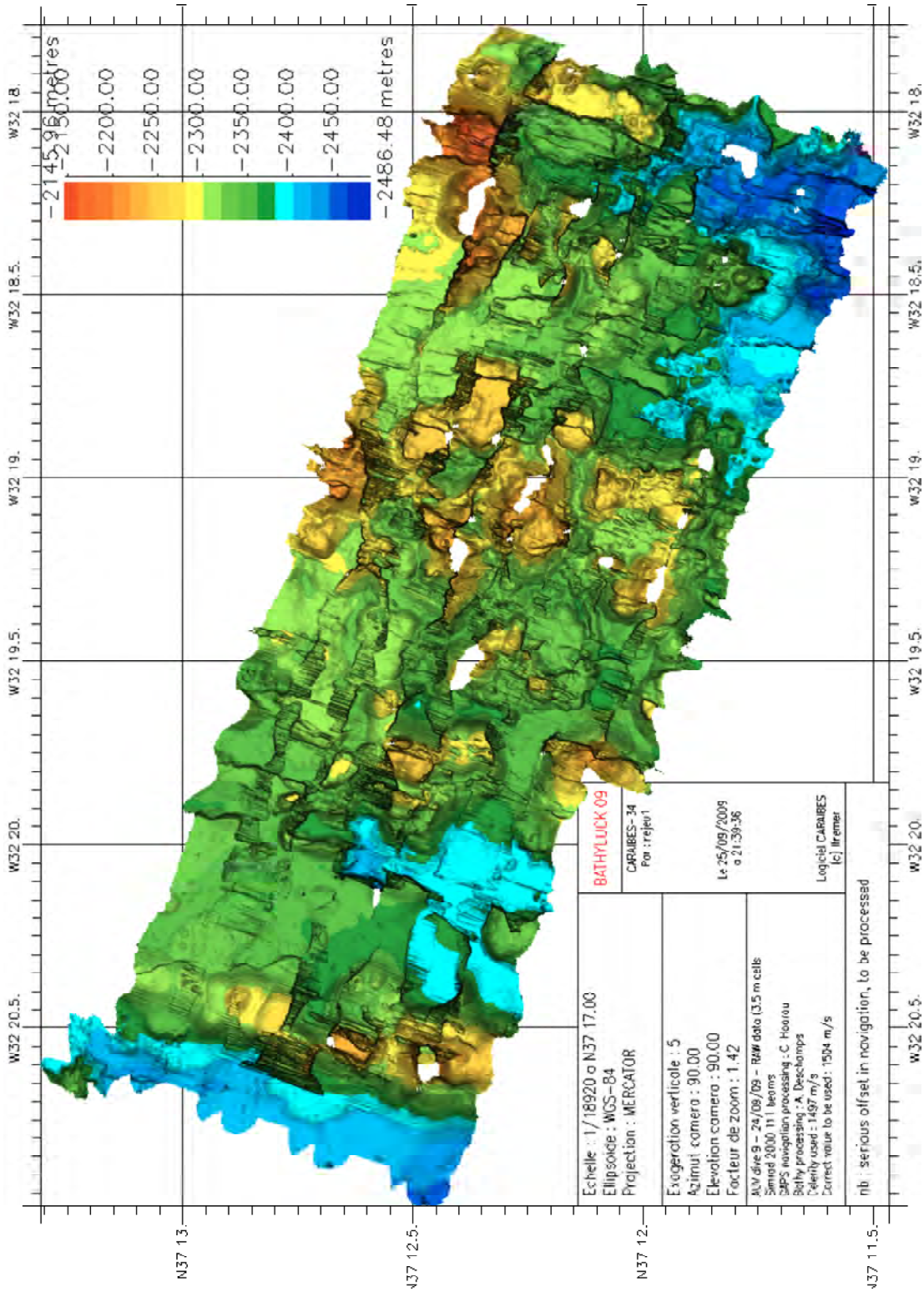


AUV dive 9 (24/09/09)

AUV achieved 7.5 lines and stopped the planned survey when it ran out of battery. GAPS positioning was of good quality. As during previous dive, no profile for roll calibration was carried out given that the AUV was not opened since dive 7. CTD data gave a sound velocity of 1504 m/s. However, a value of 1497 m/s was used to generate the MBG files used to process the following bathymetric map. This value should be corrected during the further post-processing. Navigation provided using GAPS system seemed to have the same quality as during previous dives. However, the bathymetric map displayed a strong offset in navigation, which should be corrected during post-processing.



Above : AUV tracks during dive 9.



Above : AUV bathymetry, dive 9. Notice the significant offset in navigation which needs to be corrected.

3.3. Magnetic surveys

3.3.1. Magnetic measurements

Deep-sea magnetic data were collected with two deep-sea vector magnetometers (WHOI-DSVM and IPGP-DSVM) set up on *Victor* (ROV) and on *Asterix* (AUV). The main objective of the magnetic survey is the high resolution characterization of the magnetic structures of the Lucky Strike hydrothermal vents, south segment (including lava lake) and peridotite massif on the west flank.

3.3.2. Data collection

Deployment

The magnetic data are collected with:

- a fluxgate magnetometer (MAG-03MSL70) from the Institut de Physique du Globe de Paris (IPGP) during *Victor* MMR dives 390, 391, 393, 394 and 396.

- a fluxgate magnetometer (Honeywell) from from the Woods Hole Oceanographic Institution (WHOI) during *Victor* dive 391 and 393 and all AUV dives.

Both are composed of a data logger and a captor (weight in air: 30 kg for IPGP DSVM and 25kg for WHOI DSVM). During *Victor* dives the data loggers were set up on the right side of the *Victor*, the captor at *Victor* front right for IPGP magnetometer and right bottom for WHOI magnetometer (see Figure 1 up). For IPGP magnetometer the power was supplied by the *Victor*, WHOI magnetometer is powered by autonomous batteries. The setting for AUV is shown in Figure 1 bottom.

Acquisition failed during several deployment of the WHOI magnetometer, the reason for failure is unclear but seems to correspond to interval when AUV had sudden acceleration.

A summary of the deployment and recovered data is made in Table 1.

Date and location	**submersible**	**WHOI DSVM**	**IPGP DSVM**
04/09/09 Dive 1 N-S in the 37°15 area Dive 2 technical pb	AUV	Deployed Failure during acquisition but data on the floor between 11:00 and 11:34.	-
11/09/09 Dive 4 : 37°16 hydrothermal area	AUV	Deployed Failure during acquisition Data on the floor: only	-
11/09/09 Dive 4 : 37°16 hydrothermal area	AUV	Deployed Failure during acquisition Data on the floor: only between 10:40 and 12:20	-

16/09/09 Dive 6: Menez Hom massif peridotites - West flank	AUV	Deployed Failure during acquisition no data recorded during survey	-
19/09/09 Dive 7: in the 37°15 area	AUV	Deployed Data during all dive, on the floor 13:03 to 14:10	-
21/09/09 Dive 8- 11 lines above Menez Hom!	AUV	Deployed Data during all dive on the floor 12:36 to 19:33	-
24/09/09 Dive 9: South segment 37°12-37°13 area	AUV	Deployed Failure during acquisition no data recorded during survey	-
10 sept – 11 sept Hydrothermal field (OTUS dive)	ROV 390	-	Deployed Data on the floor Missing the loops going down
11 sept-13 sept Lava lake	ROV 391	-	Deployed Data during all dive
16-19 sept Hydrothermal fields (OTUS dive)	ROV 393	Deployed Data during all dive	Deployed Data during all dive
19 sept -21 sept South of hydrothermal fields	ROV 394	Deployed Failure during acquisition no data recorded during survey	Deployed Data during all dive
24 sept-26 sept North of Lava lake	ROV 396	-	Deployed Data during all dive

Table 1: Summary of magnetic acquisition and recovered data.

Figure 1: General configuration of magnetometer installation on *Victor* (ROV) and *Asterix* (AUV)

3.3.3. Onboard data processing

Raw magnetic data were preliminary processed in order to check data quality, to model the AUV and Victor remanent and induced magnetization and to calculate the magnetic anomaly along a few tracks. For the IPGP captor, raw measurements are re-evaluate using the calibration of the captors at the geomagnetic observatory from "Chambon la forêt" (each components are multiply by 0.97 and the following constant are added to the (X,Y,Z) components: (-60nT, -150nT, -110nT). Data are then transformed in submarine coordinates which consists in a permutation of (X,Y,Z) in (Z,X,-Y) leading to $(X_{mes\_cor}, Y_{mes\_cor}, Z_{mes\_cor})_{local}$. For The WHOI captor the permutation and calibration is done using the Maggie WHOI software.

Ambient field

The ambient magnetic field is calculated with the IGRF10 (IAGA, 2005 as computed using USGS software), at point (37°22 N; 32°17 W). The magnetic field is calculated for the Sept, 15th 2009. For a first order the magnetic filed is considered as constant during the whole survey. The values are: (X_{igrf}: 25310 nT; Y_{igrf}: -5590 nT; Z_{igrf}: 35130 nT) leading to (I:53°; D:12°; F=43.6mT).

Submersible field

During the Dive calibration loops are performed to evaluate the magnetic perturbation linked to the submersibles. The loops consist in a series of 360° loops onto a sub-horizontal plan. Loops are performed during submarines transit up and down, and are considered valid in depth intervals with the lowest magnetization sources influence, from 500 meters below sea surface to 500m above the ocean floor. The magnetic field generated by the submersible itself is first evaluated by substracting the IGRF field (in submersible coordinates) to the recorded values during calibration loops (calibration loops shown on Figure 2 for AUV). The recorded values of the magnetometers are time matched for each calibration loop with the navigation by using ROV (resp AUV) and magnetic heading angular speed as slight misfit is detected in the two time series when simple time matching is done. The angular speed matching allows to have a strict control on the calibration loop starting time.

A first evaluation using a simple graphical method shows that the data are rather dispersed (see Figure 3 for Victor data during dive 391). The clockwise and anticlockwise loops show some differences (especially on the X component), the variation on the Z component show that a minor angle exists probably between Zsub and Zdown. A magnetic field model for the submersibles (as seen by the captor) is thus not easily derived. We filter the data so that outliers are excluded using a first least square weighting function, these average curves are considered as the best estimate of (Xsub, Ysub, Zsub). A simple fit on the least square data using a cosine function allows then to derive a heading dependent formula for the submersible as seen by each component of the captors. Due to the peculiar condition during calibration loops (only one lateral motor on, no vertical motion, etc…) we are not assured to have a proper model of the submarine anomaly. At this stage of processing we estimate the errors to be on the order of a few hundred nT.

The final submersible signature curves with respect to headings are given for Victor (made on Dive 391) for WHOI and IPGP magnetometer (see Figure 4-a and 4-b), and for the AUV (Dive 6) for WHOI magnetometer (not shown).

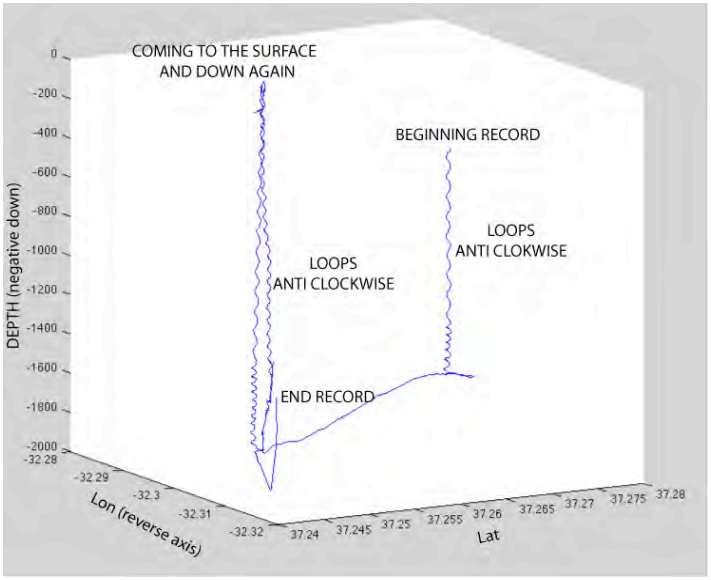


Figure 2: Calibration loops to estimate the magnetic field generated by the AUV during DIVE 1.

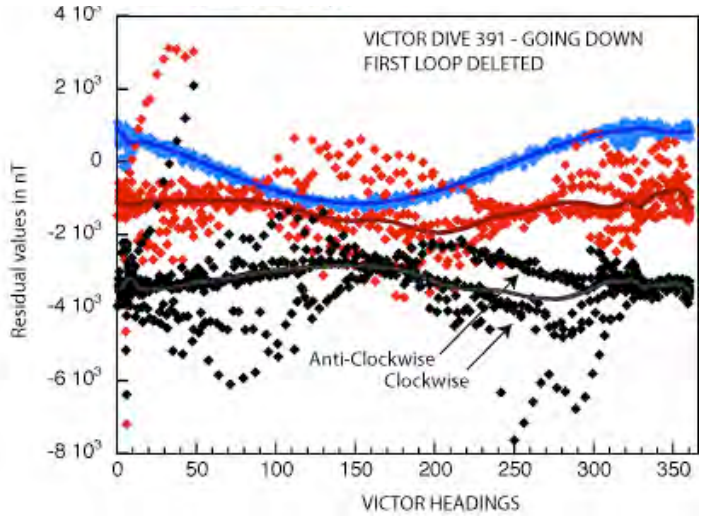


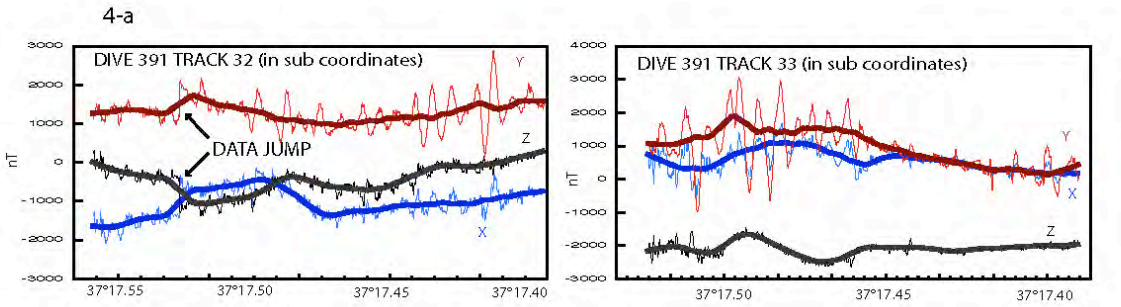
Figure 3: Results of the (X_{sub}, Y_{sub}, Z_{sub}) in resp. black, red and blue series during calibration loops, the first loop was very noisy and is not shown. A least square fit is shown.

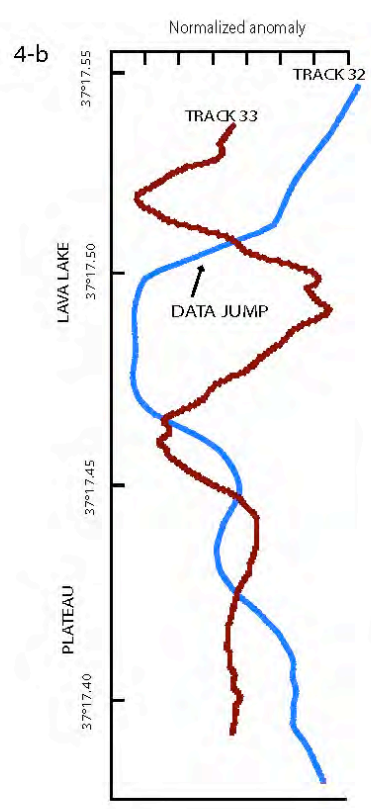
3.3.4. Magnetic Results

A few tracks were grossly pre-processed onboard. We derived the magnetic anomaly by removing to each corrected measured components $(X_{mes\_cor}, Y_{mes\_cor}, Z_{mes\_cor})_{local}$ the submersible $(X_{sub}, Y_{sub}, Z_{sub})_{local}$ values for the given heading. The total field was then computed and the local main field the Earth magnetic field $(X_{igrf}, Y_{igrf}, Z_{igrf})_{local}$ is

substracted. The data can then be projected onto the main field direction to recover the anomaly.

An example of the preprocessed data is given in Figure 4-a for IPGP magnetometer on track 32 and 33 from Dive 391 (through the lava lake and into the higher plateau). As seen on the Figure a jump in the data occurs around lat 37°17.5 during the course of track 32. Another problem arise from the use of the calibration constant, track 32 and track 33 show offsets (note that the values are represented in submarine coordinates). In Figure 4-b we compute an anomaly after artificially resetting the values of track 33 to match track 32. The 1st order bathymetry processes for the same dive is shown for comparison in Figure 4-c. Interestingly an area of higher magnetization might be seen in the middle of the lava lake on track 33, the data jump of track 32 prevent from seeing such a structure. This clearly has to be confirmed.





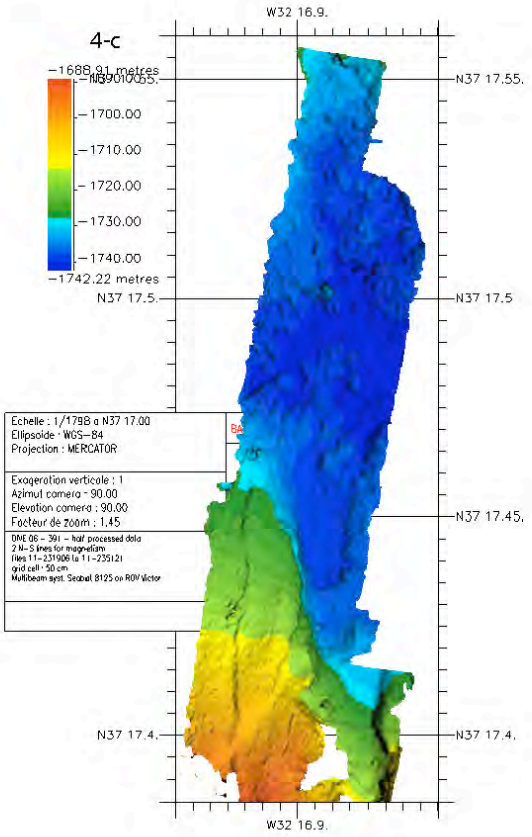


Figure 4: a) processed anomaly in (x, y, z) in submarine coordinates for dive 391, tracks 32 and 33, note the data jump during track 32 acquisition b) projection of the anomaly on the main field unit vector, c) bathymetry shown for the two tracks.

3.4. Nephelometry surveys

The localization of hydrothermal vents is very difficult due to their extreme depth and small area. Using CTD's and Miniature Autonomous Plume Recorders, we attempted to localize new vent sites in the regions surrounding the Lucky Strike vent field.

3.4.1. Miniature Autonomous Plume Recorder (MAPR)

Description

Two Miniature Autonomous Plume Recorders (MAPR's) were deployed on the remote-operated vehicle (ROV), the autonomous underwater vehicle (AUV), and the CTD throughout the Bathyluck 2009 cruise. The MAPR's were constructed at the Pacific Marine Environmental Laboratory (PMEL) of the United States National Oceanographic and Atmospheric Administration (NOAA) by Susan Walker and Edward Baker. The MAPR's are self-contained, autonomous sensors for the measurement of temperature, pressure, oxygen reduction potential (ORP), and nephelometry (Figure 1).

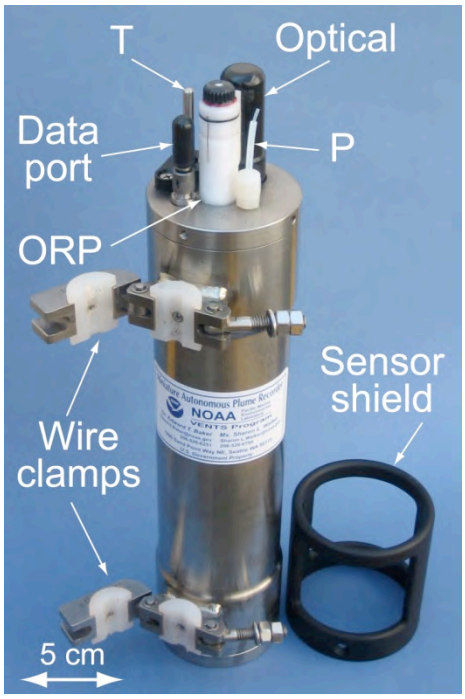


Figure 1. Each MAPR consists of sensors to measure temperature, pressure, oxygen reduction potential (ORP), and nephelometry (labeled).

Deployment

A single MAPR was deployed with every CTD cast (20 casts in total), with each AUV dive (9 dives), and for every ROV dive that performed detailed mapping (either 8 m or 50 m above the seafloor; 4 dives). For each deployment, the sensor start time, the water entry time, retrieval time, and data recovery time were noted to allow post-cruise localization of the data with navigation.

Data

The data show an expected large variability of temperature, ORP, and nephelometry with pressure (depth). In fact, most of the variations near the seafloor can be correlated with changes in depth (Figure 2) although there are some small variations that may be due to hydrothermal sources. A single, strong signal was recorded at the Tour Eiffel vent site (Figure 3).

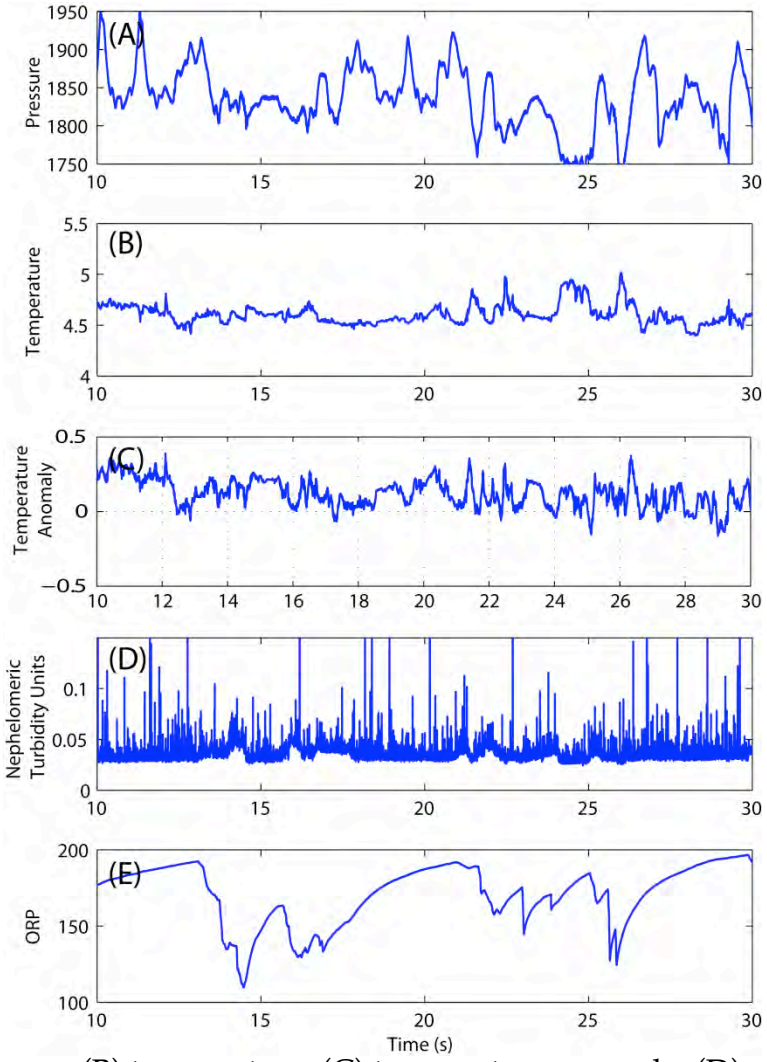


Figure 2. (A) Pressure, (B) temperature, (C) temperature anomaly, (D) nephelometry, and (E) ORP provide several possible means for finding new hydrothermal sites.

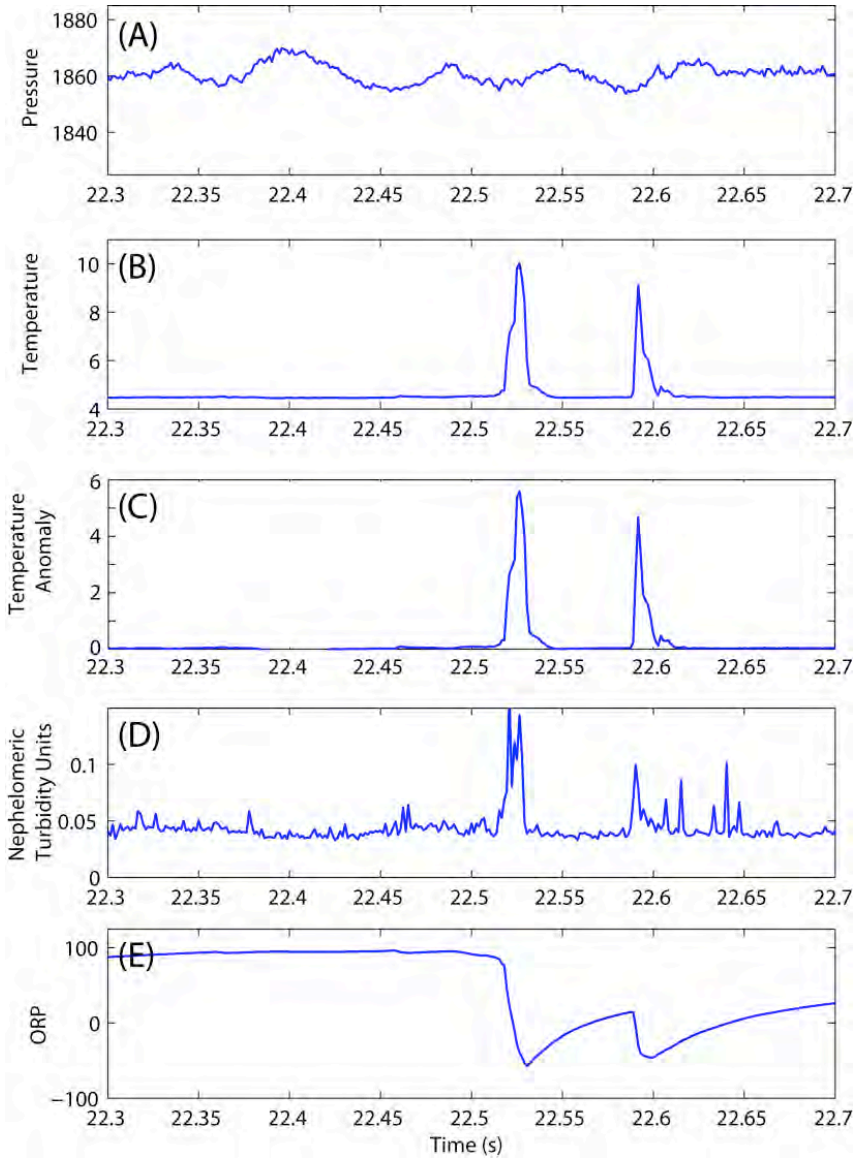


Figure 3. Data from the Tour Eiffel vent site shows a strong signal in (B) temperature, (C) temperature anomaly, (D) nephelometry, and (E) ORP that is not likely to be associated with the small changes in (A) pressure.

3.4.2. *Sea CTD*

Description

The onboard SEACAT 19 Plus CTD profiler (Figure 4) by Sea Bird Electronics recorded conductivity, temperature, and pressure information during 20 separate casts. The SBE 19 plus is a small, easily deployable device that provides real-time data output to the ship during each CTD cast.

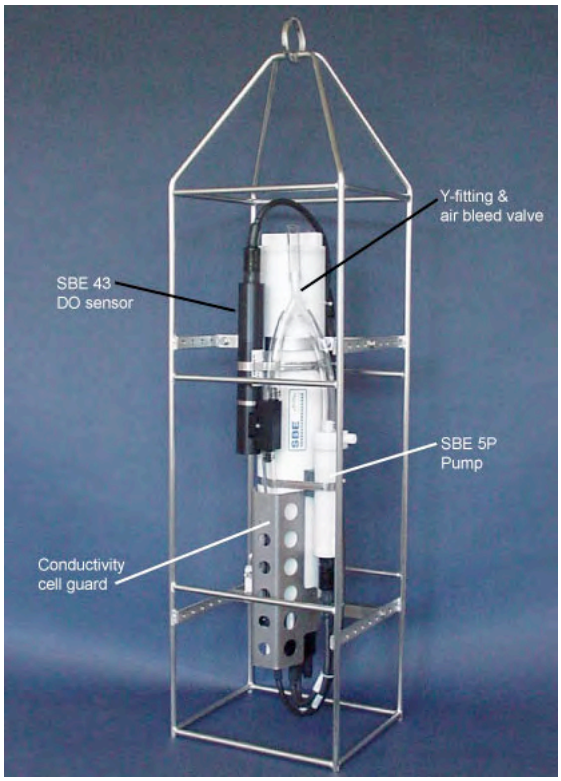


Figure 4. The SEACAT 19 Plus Profiler by Sea Bird Electronics measures pressure, temperature and conductivity (salinity). The Profiler is shown here with its standard plastic housing, a version with a titanium housing was used during the cruise.

Data

Each CTD cast provided a measure of the temperature and salinity with depth. The data were relatively clean and provided consistent results across the survey area (Figure 5A).

3.4.3. Data Treatment

Initially, each MAPR data set was examined in detail for signals associated with hydrothermal venting. A candidate hydrothermal site was marked if there was a data anomaly in at least two of the three data collected that was not correlated with the pressure. In addition, an temperature anomaly was calculated by subtracting the median temperature value from the CTD casts (every 5 meters) from the MAPR temperatures (Figure 2, 3, 5B). This will provide a better indication of regionally elevated temperature as opposed to sharp spikes in temperature.

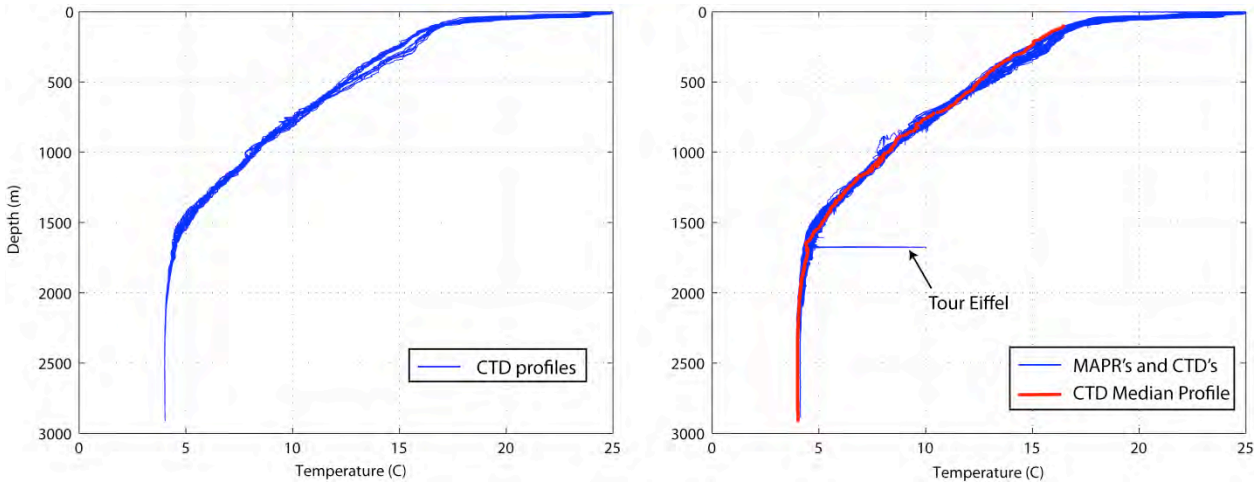


Figure 5. CTD measurements of (A) temperature (blue lines) versus depth were taken at 20 different locations. This data is be compared with (B) MAPR data (blue thin lines) to look for possible hydrothermal sites. The median (red, thick line) is used subtracted from the MAPR data to produce a temperature anomaly.

Preliminary Results

Besides locations of previously known vent sites (i.e. Tour Eiffel, Figure 3), no obvious spikes were located in the collected data. The temperature anomaly data has not been fully analyzed, however, and the presence of a regional signal from hydrothermal venting cannot be discounted.

Comments

The vents at Lucky Strike are largely of clear or almost clear fluid and particle densities are often low. This combination does not favor the localization of new vent sites through the use of a CTD or MAPR; the most likely signal is a temperature anomaly which diminishes rapidly with distance from the source. The data indicate that localization of vent sites is possible, but most likely in very low-level surveys where visual verification is also possible.

4. Science operations – Sampling

4.1. Vent fluid sampling

Valérie Chavagnac, Cédric Boulart, Alain Castillo)

4.1.1. Aims and objectives

The aim of BATHYLUCK 09 in terms of fluid sampling is to constrain the physical and chemical characteristics of the fluids emitted on the Lucky Strike area, and the temporal evolution of the hydrothermal activity associated with a slow spreading segment.

We will determine the chemical composition of high and low temperature hydrothermal fluid to better constrain and understand the physical and chemical conditions taking place during water-rock interactions at a slow spreading segment. This will enable us to define more precisely the hydrothermal plumbing system including phase separation process.

Our two main objectives are:

Internal dynamic of the hydrothermal circulation: the chemical composition of seawater is progressively modified during its circulation in the oceanic crust before being expelled at the bottom seafloor as hydrothermal fluid. The chemical composition has recorded the pressure and temperature at which water-rock interaction took place. We propose to analyze the chemical and isotopic composition of the hydrothermal fluids from the vent sites at different places around the Lucky Strike area. We will focus on Eiffel Tower, Montsegur (south), Y3 (east), Sintra (north), White Castle and Crystal (west).

Temporal evolution of the hydrothermal fluid chemical composition: Lucky Strike has been visited several times in the 90's but has not been sampled since then. We will compare the chemical composition of the hydrothermal fluid sampled in 2009 to those sampled and analyzed in previous years. Therefore, it will be possible to track the evolution of the fluid composition and to decipher whether the plumbing hydrothermal system has been altered over time.

4.1.2. Methodology

- *Samplers*

Two kinds of fluid samplers (Fig. 1) were used to collect high and low temperature hydrothermal fluids from the Lucky Strike vent site. High temperature fluids were collected either in 750 ml Titanium syringes, triggered by the hydraulic arm of Victor and deployed one by one, or in gas-tight titanium bottles of 200 ml capacity. The gas-tight bottles have been built specially to avoid out-gassing and gas leakage during recovery. These samplers initially designed for the manned submersible Nautile and deployed by 4, required modifications to be operated by Victor's hydraulic arm one by one. Low temperature hydrothermal fluids were only sampled with the gas-tight bottles.

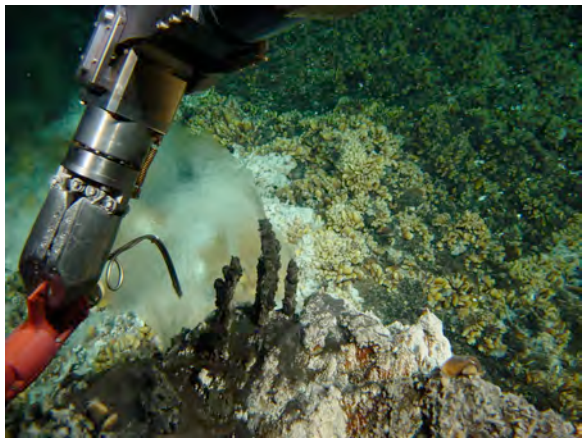
Figure 1: 750 mL titanium syringe (left) and 200 mL gas-tight bottle (right).

- *Fluid sampling strategy*

We sampled all sites where a temperature sensor has been deployed for a year-period. We sampled also two additional sites (Nuno and Cypress). Two new sites, called South Crystal and Cypress) have been discovered, both located on the western side of the lava lake . Both low and high temperature vents were sampled when possible during Victor dives 388, 389, 392, and 394. The sites are:

- Montsegur (high and low temperature)
- Eiffel Tower (high and low temperature)
- Y3 (high and low temperature)
- Sintra (low and high temperature)
- Isabel (high temperature)
- Crystal (high temperature)
- White Castle (high temperature)
- South Crystal (high temperature)
- Cypress (high temperature)
- Nuno (high temperature)

Before sampling, the temperature was measured and monitored in real time with a high-temperature probe (range and precision), mounted on the sampling module of the ROV Victor (Figure 2). This allowed the operator to choose the best vent for sampling.



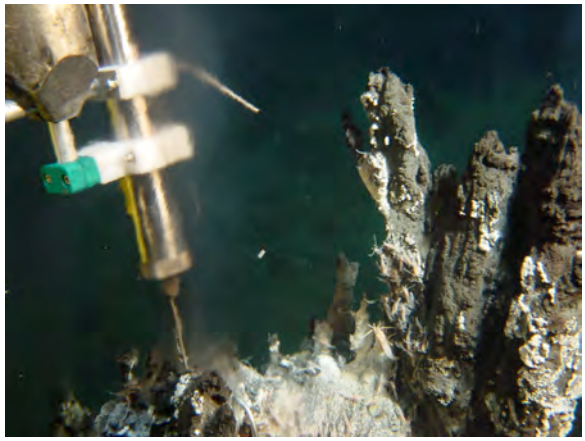


Figure 2: Temperature measurement (top), operating the 200 mL bottles (centre), and the syringes (bottom)

- *Sample processing*

Hydrothermal fluids were processed on board the ship straight after the submersible recovery. Fluids were stored in different containers depending on the type of analysis to be carried out onshore. In the case of the titanium bottles (200 mL), a gas-tight "blood" bag was connected to the bottle to recover the gases (Figure 3). Then, an aliquot of the fluid was transferred in a 60 mL glass bottle, poisoned with $Hg(Cl)_2$, and crimp-sealed without any air bubbles for dissolved gas analysis (CH_4, CO_2, H_2) onshore (Figure 4). Another aliquot was taken for pH measurement performed straight after recovery of the sample. The rest of the fluid was transferred in different LDPE Nalgene bottles for chemical and isotope analysis to be done onshore.

Figure 3: Example of gas collection from gas-tight Ti-bottles (left inside) and of gas pocket (on the right inside).

In the case of the 750 mL syringes, aliquots were taken directly in 125 mL glass bottles, poisoned with $Hg(Cl)_2$, and crimp-sealed without any air bubbles for dissolved gas analysis (CH_4, CO_2, H_2) onshore. The pH was measured on board straight after dissolved gas sample recovery and the rest of the fluid was transferred in different LDPE Nalgene bottles for chemical and isotope analysis to be done onshore.

Figure 4: glass bottles for dissolved gas analysis.

4.1.3. Preliminary results

Table 1 presents the full list of the fluid sampling operations during BATHYLUCK 09 and Table 2 the preliminary results acquired after fluid recovery. 53 hydrothermal fluids were collected with different quality depending on the mixing ratio between pure hydrothermal fluid and ambient seawater. We suspect that fluid B09FLU018 to B09FLU025 were most likely of poor quality as the bad weather conditions prevented the return of NASA on board straight after fluid sampling. We anticipate that the samples are highly "diluted" by seawater. B09FLU016 shows a high pH compared with the sample from the same vent (B09FLU017), which can be explained by a lack of stability of the ROV during the sampling. Similar situation took place at other site. High temperature fluid pH varies from 3.58 (at Eiffel Tower) to 4.96 (Y3), which is comparable with previous data acquired by Charlou et al. (2000), Langmuir et al. (1997), Von Damm et al., (1998).

date	time	latitude (N)	longitude (W)	n° dive ROV	n° dive Nautile	depth m	T°C (ROV)	Chimney	n° syringe 200ml	n° syringe 750ml	comments	Sample name	Observer
5/9/09	01:24	37°17.337	32°16.537	388	/	1635	316°C	Eiffel Tower	/	2	Ti-canule inserted in the vent orifice	B09 FLU 001-2/750	Cédric
5/9/09	02:32	37°17.337	32°16.537	388	/	1635	316°C	Eiffel Tower	/	4	Ti-syringue dropped twince on the sea-bed, fired?	B09 FLU 002-4/750	Cédric
5/9/09	05:56	37°17.329	32°16.530	388	/	1696	56°C	Eiffel Tower	2	/	Ti-canule completely bended at 90°	B09 FLU 003-2/200	Valérie
5/9/09	06:07	37°17.334	32°16.543	388	/	1696	56°C	Eiffel Tower	5	/	Ti-canule is straight	B09 FLU 004-5/200	Valérie
5/9/09	06:18	37°17.338	32°16.534	388	/	1696	56°C	Eiffel Tower	7	/	Ti-canule is straight	B09 FLU 005-7/200	Valérie
6/9/09	02:01	37°17.284	32°16.532	389	/	1701	296°C	Montsegur	/	1	/	B09 FLU 006-1/750	Cédric
6/9/09	02:07	37°17.284	32°16.531	389	/	1701	296°C	Montsegur	/	3	/	B09 FLU 007-3/750	Cédric
6/9/09	02:53	37°17.286	32°16.531	389	/	1701	80°C	Montsegur	9	/	/	B09 FLU 009-9/200	Cédric
7/9/09	03:40	37°17.514	32°16.672	389	/	1718	286°	Y3	/	3	second chimney behind	B09FLU010-3/750	Cédric & Valérie
7/9/09	04:05	37°17.513	32°16.671	389	/	1718	286°	Y3	/	4	second chimney behind	B09FLU011-4/750	Cédric & Valérie
7/9/09	04:56	37°17.520	32°16.672	389	/	1730	8°C	Y3	2	/	bacterial mats near a temperature probe	B09FLU012-2/200	Cédric & Valérie
7/9/09	05:12	37°17.499	32°16.674	389	/	1730	8°C	Y3	9	/	bacterial mats near a temperature probe	B09FLU013-9/200	Cédric & Valérie
7/9/09	06:31	37°17.530	32°16.506	389	/	1620	21°C	Sintra	7	/	/	B09FLU014-7/200	Valérie & Alain
7/9/09	06:50	37°17.528	32°16.514	389	/	1620	21°C	Sintra	5	/	/	B09FLU015-5/200	Valérie & Alain
7/9/09	09:19	37°17.382	32°16.644	389	/	1675	224°C	Isabel	/	2	the vent exaust is too small. We can't sample in the same chimney as Javi	B09FLU016-2/750	Valérie & Alain
7/9/09	09:xx	37°17.380	32°16.641	389	/	1682	224°C	Isabel	/	1	the vent exaust is too small. We can't sample in the same chimney as Javi	B09FLU017-1/750	Valérie & Alain
8/9/09	03:03	37°17.449	32°16.913	389	/	1725	325°C	Crystal	/	2	same chimney as T sensor HTW006	B09FLU018-2/750	Cédric & Valérie
8/9/09	03:12	37°17.449	32°16.913	389	/	1725	325°C	Crystal	/	3	same chimney as T sensor HTW006	B09FLU019-3/750	Cédric & Valérie
8/9/09	03:50	37°17.443	32°16.918	389	/	1725	324°C	Crystal	2	/	same chimney as T sensor HTN001	B09FLU020-2/200	Cédric & Valérie
8/9/09	03:57	37°17.443	32°16.918	389	/	1725	324°C	Crystal	7	/	same chimney as T sensor HTN001	B09FLU021-7/200	Cédric & Valérie
8/9/09	06:10	37°17.378	32°16.869	389	/	1711	275°C	White Castle	/	4	the spring is blocked. Got trouble to fire the bottle	B09FLU022-4/750	Cédric & Alain
8/9/09	06:16	37°17.378	32°16.862	389	/	1711	275°C	White Castle	/	1		B09FLU023-1/750	Cédric & Alain
8/9/09	06:51	37°17.377	32°16.870	389	/	1711	310°C	White Castle	5	/		B09FLU024-5/200	Cédric & Alain
8/9/09	07:01	37°17.377	32°16.870	389	/	1711	310°C	White Castle	9	/		B09FLU025-9/200	Cédric & Alain
15/9/09	11:53	37°17.381	32°16.863	392	/	1711	285°C	White Castle	/	1		B09FLU027-1/750	Valérie & Cédric
15/9/09	12:05	37°17.381	32°16.863	392	/	1711	285°C	White Castle	/	2		B09FLU028-2/750	Valérie & Cédric
15/9/09	12:15	37°17.381	32°16.863	392	/	1711	285°C	White Castle	2	/	doubt during sampling, syringe was fired before sampling	B09FLU029-2/200	Valérie & Cédric
15/9/09	13:11	37°17.381	32°16.863	392	/	1711	285°C	White Castle	7	/		B09FLU030-7/200	Valérie & Cédric
15/9/09	14:27	37°17.432	32°16.936	392	/	1721	340°C	South Crystal	/	3		B09FLU031-3/750	Cédric
15/9/09	14:39	37°17.432	32°16.936	392	/	1721	340°C	South Crystal	/	4		B09FLU032-4/750	Cédric
16/9/09	03:05	37°17.380	32°16.913	392	/	1724	237°C	Crystal	9	/		B09FLU033-9/200	Cédric
16/9/09	03:10	37°17.380	32°16.913	392	/	1724	237°C	Crystal	5	/		B09FLU034-5/200	Cédric
22/9/09	01:16	37°17.438	32°16.932	395	/	1721	328°C	South Crystal	/	3	good sampling	B09FLU035-3/750	Cédric and Valérie
22/9/09	01:12	37°17.438	32°16.932	395	/	1721	328°C	South Crystal	7	/	good sampling	B09FLU036-7/200	Cédric and Valérie
22/9/09	01:21	37°17.438	32°16.932	395	/	1721	328°C	South Crystal	9	/	good sampling	B09FLU037-9/200	Cédric and Valérie
22/9/09	03:45	37°17.447	32°16.919	395	/	1725	327°C	Crystal	/	1	good sampling	B09FLU038-1/750	Cédric and Valérie
22/9/09	03:52	37°17.447	32°16.919	395	/	1725	327°C	Crystal	2	/	good sampling	B09FLU039-2/200	Cédric and Valérie
22/9/09	05:35	37°17.509	32°16.671	395	/	1716	229°C	Y3	/	4		B09FLU040-4/750	Cédric and Valérie
22/9/09	06:02	37°17.509	32°16.671	395	/	1716	229°C	Y3	5	/		B09FLU041-5/200	Cédric and Valérie
22/9/09	21:28	37°17.338	32°16.522	395	/	1684	315°C	Eiffel Tower	2	/		B09FLU042-2/200	Cédric and Valérie
22/9/09	21:39	37°17.338	32°16.522	395	/	1684	315°C	Eiffel Tower	/	1		B09FLU043-1/750	Cédric and Valérie
23/9/09	01:27	37°17.529	32°16.502	395	/	1617	196°C	Sintra	7	/	probably bottle fired before hand, then losy sampling	B09FLU044-7/200	Cédric and Valérie
23/9/09	01:34	37°17.529	32°16.502	395	/	1617	196°C	Sintra	/	4		B09FLU045-4/750	Cédric and Valérie
23/9/09	01:44	37°17.529	32°16.502	395	/	1617	196°C	Sintra	9	/		B09FLU046-9/200	Cédric and Valérie
23/9/09	03:18	37°17.281	32°16.534	395	/	1699	237°C	Montsegur	5	/		B09FLU047-5/200	Cédric and Valérie
23/9/09	03:30	37°17.281	32°16.534	395	/	1699	237°C	Montsegur	/	2		B09FLU048-2/750	Cédric and Valérie
23/9/09	14:11	37°17.489	32°16.925	395	/	1730	154°C	Nuno	/	4		B09FLU049-4/750	Cédric and Valérie
23/9/09	14:25	37°17.489	32°16.925	395	/	1730	154°C	Nuno	7	/		B09FLU050-7/200	Cédric and Valérie
23/9/09	15:11	37°17.449	32°16.875	395	/	1734	188°C	Cypress	9	/		B09FLU051-9/200	Cédric and Valérie
23/9/09	15:15	37°17.449	32°16.875	395	/	1734	188°C	Cypress	5	/		B09FLU052-5/200	Cédric and Valérie
23/9/09	16:45	37°17.401	32°16.650	395	/	1691	298°C	Aisics	2	/		B09FLU053-2/200	Cédric and Valérie
23/9/09	16:52	37°17.401	32°16.650	395	/	1691	298°C	Aisics	/	1		B09FLU054-1/750	Cédric and Valérie
23/9/09	16:58	37°17.401	32°16.650	395	/	1691	298°C	Aisics	/	2		B09FLU055-2/750	Cédric and Valérie

Table 1: List of fluid sampling operations during cruise Bathyluck'09

Chimney	T°C (ROV)	salinity (‰)	specific gravity of seawater d20/20	pH	SAMPLING
Eiffel Tower	316°C	26	1.017	3.58	B09FLU001-2/750
Eiffel Tower	316°C	28	1.021	4.4	B09FLU002-4/750
Eiffel Tower	56°C	36	1.027	6.36	B09FLU003-2/200
Eiffel Tower	56°C	35	1.026	6.27	B09FLU004-5/200
Eiffel Tower	56°C	36	1.027	6.41	B09FLU005-7/200
Eiffel Tower	315°C	25	1.02	3.92	B09FLU042-2/200
Eiffel Tower	315°C	24	1.018	3.42	B09FLU043-1/750
Aisics	298°C	35	1.026	7.25	B09FLU053-2/200
Aisics	298°C	34	1.025	5.74	B09FLU054-1/750
Aisics	298°C	25	1.019	3.52	B09FLU055-2/750
Montségur	296°C	30	1.023	4.44	B09FLU006-1/750
Montségur	296°C	34	1.024	5.26	B09FLU007-3/750
Montségur	80°C	34	1.024	5.45	B09FLU009-9/200
Montsegur	237°C	24	1.018	3.68	B09FLU047-5/200
Montsegur	237°C	25	1.019	3.43	B09FLU048-2/750
Y3	286°	33	1.023	4.24	B09FLU010-3/750
Y3	286°	35	1.026	4.96	B09FLU011-4/750
Y3	8°C	36	1.026	6.51	B09FLU012-2/200
Y3	8°C	36	1.026	6.57	B09FLU013-9/200
Y3	229°C	32	1.023	3.22	B09FLU040-4/750
Y3	229°C	34	1.026	3.7	B09FLU041-5/200
Sintra	21°C	36	1.026	7.07	B09FLU014-7/200
Sintra	21°C	35	1.026	6.54	B09FLU015-5/200
Sintra	196°C	36	1.026	7.3	B09FLU044-7/200
Sintra	196°C	35	1.025	4.18	B09FLU045-4/750
Sintra	196°C	33	1.023	3.92	B09FLU046-9/200
South Crystal	328°C	33	1.024	3.84	B09FLU035-3/750
South Crystal	328°C	32	1.023	3.47	B09FLU036-7/200
South Crystal	328°C	32	1.023	3.42	B09FLU037-9/200
South Crystal	340°C	30	1.025	3.92	B09FLU031-3/750
South Crystal	340°C	34	1.026	4.34	B09FLU032-4/750
Crystal	237°C	35	1.025	5.04	B09FLU033-9/200
Crystal	237°C	31	1.024	3.7	B09FLU034-5/200
Crystal	327°C	32	1.023	3.43	B09FLU038-1/750
Crystal	327°C	32	1.023	3.89	B09FLU039-2/200
Crystal	325°C	35	1.026	4.68	B09FLU018-2/750
Crystal	325°C	32	1.023	4.1	B09FLU019-3/750
Crystal	324°C	35	1.025	4.63	B09FLU020-2/200
Crystal	324°C	35	1.025	7.75	B09FLU021-7/200
Nuno	154°C	33	1.023	4.2	B09FLU049-4/750
Nuno	154°C	35	1.026	7.65	B09FLU050-7/200
Cypress	188°C	35	1.026	5.67	B09FLU051-9/200
Cypress	188°C	32	1.023	4.23	B09FLU052-5/200
Isabel	224°C	35	1.024	6.31	B09FLU016-2/750
Isabel	224°C	30	1.023	4.06	B09FLU017-1/750
White Castle	275°C	35	1.025	5.58	B09FLU022-4/750
White Castle	275°C	34	1.025	5.12	B09FLU023-1/750
White Castle	310°C	28	1.021	3.45	B09FLU024-5/200
White Castle	310°C	35	1.026	7.49	B09FLU025-9/200
White Castle	285°C	29	1.023	3.51	B09FLU027-1/750
White Castle	285°C	35	1.025	4.58	B09FLU028-2/750
White Castle	285°C	34	1.024	5.38	B09FLU030-7/200

Table 2: Preliminary results (Temperature, salinity, density, and pH).

Below, we summarize the principal features of each site. Each sampling site will be described in an individual sample file with pictures taken during fluid sampling.

Eiffel Tower:

4 samples of high temperature hydrothermal fluid with a temperature of 315-316°C and a pH = 3.42 to 4.4;

3 samples of low temperature hydrothermal fluid with a temperature of 56°C and a pH = 6.27 to 6.41

Aisics:

3 samples of high temperature hydrothermal fluid with a temperature of 298°C and a pH = 3.52 to 7.25. We suspect that the sample with a pH of 7.25 is essentially seawater, which will be confirmed onshore by further analyses of major element concentration such as Mg.

Montsegur:

4 samples of high temperature hydrothermal fluids with a temperature of 237 – 296°C and a pH = 3.43 to 5.26

1 sample of low temperature hydrothermal fluid with a temperature of 80°C and a pH = 5.45

Y3:

4 high temperature hydrothermal fluids with a temperature of 229 – 286°C and a pH = 3.22 to 4.96

2 low temperature hydrothermal fluids with a temperature of 8°C and a pH = 6.5

Sintra:

3 high temperature hydrothermal fluids with a temperature of 196°C and a pH = 3.92 to 4.18, the last sample is essentially seawater as evidenced by a pH of 7.3.

2 low temperature hydrothermal fluids with a temperature of 21°C and a pH = 6.54 – 7.07.

South Crystal:

5 high temperature hydrothermal fluids with a temperature of 328 – 340°C and a pH = 3.42 to 4.34.

Crystal:

8 high temperature hydrothermal fluids with a temperature of 237 – 325ºC and a pH = 3.43 to 5.04. The last sample is characterized by a pH of 7.75, showing a strong dilution by the ambient seawater.

Nuno:

2 high temperature hydrothermal fluids with a temperature of 154ºC and a pH = 4.2. One sample is highly diluted by seawater 9pH = 7.65).

Cypress:

2 high temperature hydrothermal fluids with a temperature of 188ºC and a pH = 4.23 – 5.67

Isabel:

2 high temperature hydrothermal fluids with a temperature of 2244ºC and a pH = 4.06 – 6.31

White Castle:

7 high temperature hydrothermal fluids with a temperature of 275 – 310ºC and a pH = 3.51 to 5.58. The last sample presents a high pH of 7.49 due to strong dilution with the ambient seawater.

4.2. Microbial fuel cell

Valérie Chavagnac, Cédric Boulart, Alain Castillo, on shore Benjamin Erable

4.2.1. Context

The concept of electro-active biofilm (EAB) has recently emerged from a few studies that discovered that certain bacteria, forming biofilms on conductive materials, can achieve a direct electrochemical connection with the electrode surface using it as electron exchanger, without the aid of mediators. This electro-catalytic property of biofilms has been clearly related to the presence of some specific strains that are able to exchange electrons with solid substrates (*Geobacter sulfurreducens*, *Rhodoferax ferrireducens*, etc.). EABs can be obtained principally from natural sites such as soils or seawater and freshwater sediments or from samples collected from a wide range of different microbially-rich environments (sewage sludge, activated sludge, or industrial and domestic effluents).

The capability of some micro-organisms to connect their metabolisms directly in an external electrical power supply is very exciting and extensive research is in progress on exploring possibilities of EABs applications. Indeed, the best known application is probably the microbial fuel cell (MFC) technology that is capable of turning biomass into electrical energy.

A marine MFC consists typically in a graphite anode embedded in anaerobic marine sediments and connected through an electrical circuit (e.g., a marine scientific instrument or capacitor) to a cathode set-up in the overlying aerobic seawater as shown in Figure 5 (Reimers et al. 2001; Tender et al. 2002). A main feature of this marine MFC is sustainability, which is attributed to constant supply of fuel and oxidant by environmental processes that are typically derived from settlement of dead phytoplankton and/or vegetative detritus, constant regeneration of its microbial electrode catalysts, and ability of these microbial catalysts to exchange electrons with their electrodes without electron-transfer mediators. MFCs implemented in marine sediments with plain graphite electrodes have sustained power density around 20 mW/m^2 of anode surface area during several months, with maximal values up to 28 mW/m^2 (Tender et al. 2002). In 2008, Tender et al. described the first demonstration of a marine MFC as a practical alternative to batteries for a low-power consuming application (Tender et al. 2008). To generate enough power for the telemetry system, energy produced by the MFC was stored in a capacitor and used in short bursts. Their prototype sustained 36 mW power equivalent of ca. 26 alkaline D-cells per year at 25°C.

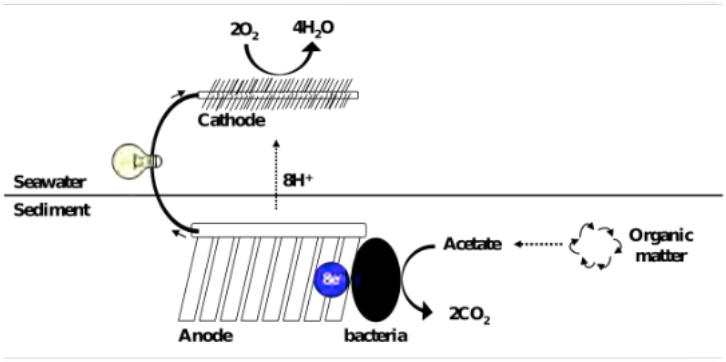


Figure 5. Schematic representation of the marine MFC principle, also called benthic MFC.

4.2.2. Objectives

In this context, the Bathyluck'09 mission will have two main objectives.

The first objective is to assess the technical possibility of locate a marine MFC at the seafloor in the Lucky Strike area and then evaluate the potential of the MFC technology in terms of performance for powering sensors immersed several hundreds meters deep near to the hydrothermal site.

The second interest is to discover/highlight new microbes from hydrothermal environment including electro-active bacteria that can grow in extreme conditions of temperature, pressure and sulphur content. These kinds of electro-active micro-organisms are suspected to have a metabolism that would greatly increase the power densities of marine MFC. This part of the work will take place directly on board during the cruise using bio-electrochemical reactor coupled with potentiostats (electrochemical instrumentation) and "fresh" samples as shown on Figure 5. Different samples from the seafloor of Lucky strike area will be tested as inoculums for bio-electrochemical reactors. A systematic screening of samples will be carried out through an electrochemical technique called chrono-amperometry (potentiostatic method). Positive samples, i.e. samples that will give a positive electrochemical response will be then frozen and stored for post-mission analysis (chemical analysis, microbial analysis, ...).

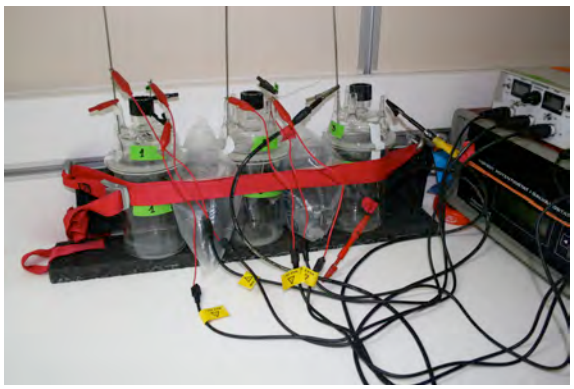


Figure 6: Set-up of bio-electrochemical reactor coupled with potentiostats on board of the *Pourquoi Pas?*

4.2.3.Experiments

Three experiments have been carried out during the cruise:

1. 100 ml of high temperature hydrothermal fluid collected at the Eiffel Tower hydrothermal vent (sample name: B09FLU002, T = 316°C, pH = 4.4) was mixed with 400 ml seawater. The fluid was collected using a Ti-bottle. We added 500mg of acetate to provide food to the micro-organisms. See Figure 7.
2. 100 ml of low temperature hydrothermal fluid collected at the Eiffel Tower hydrothermal vent site (sample name: B09FLU004, T = 56°C, pH = 6.27) was mixed with 400 ml seawater. The fluid was collected using a gas-tight Ti-syringe. We added 500mg of acetate to provide food to the micro-organisms.

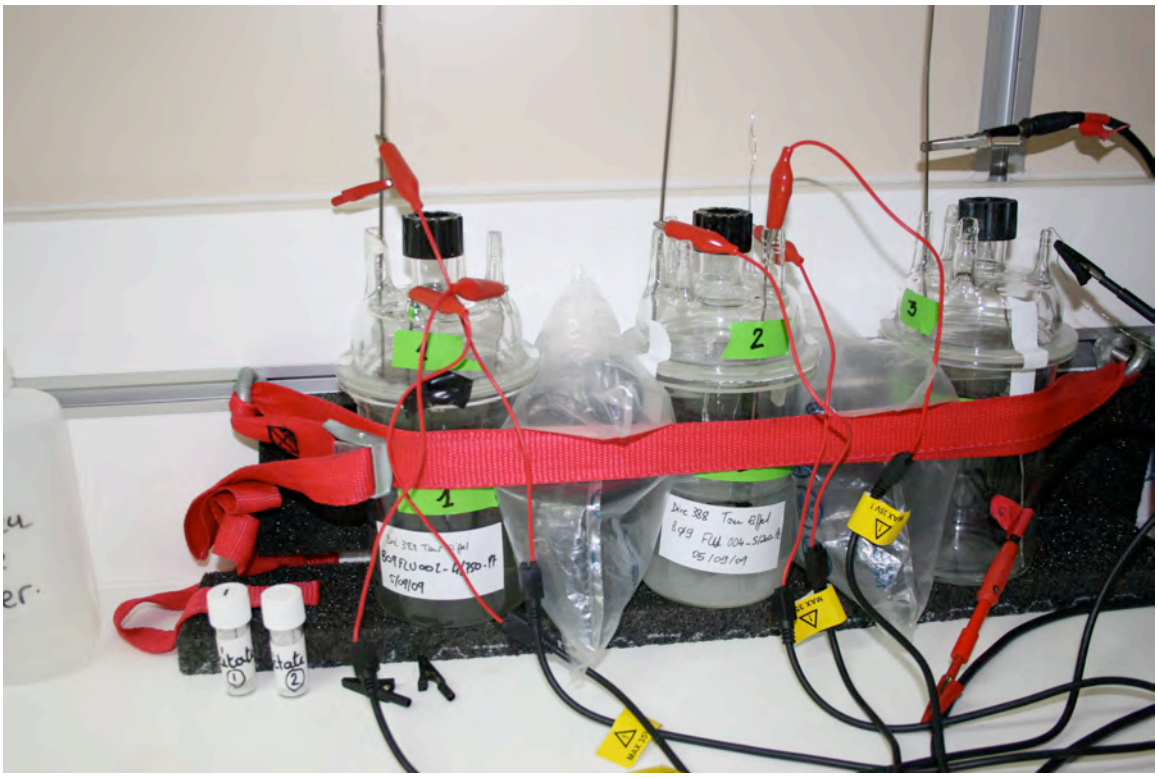


Figure 7: Set-up of experiment 1 and 2.

3. During Dive 394, a set of 6 incubators was recovered at the hydrothermal site Roldan, South of Eiffel Tower (see microbiology paragraph). These incubators were left on site for a year. They were taken in a bio-box, which has been filled up with sterile water on board and taken at depth. The bio-box was opened at the seafloor just before recovery of the incubators. Numerous filamentous bacteria were present on the incubators. We took approximately 100 ml of seawater from the site of recovery. The seawater contained numerous filamentous bacteria in suspension (See Figure 8). No acetate was added in this case.

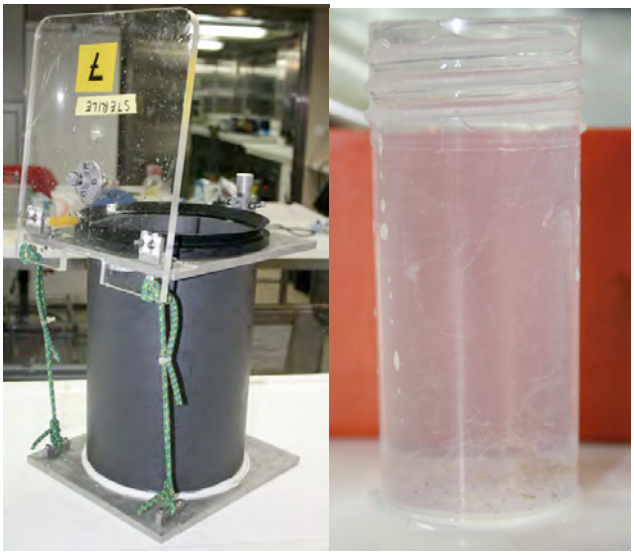


Figure 8: On the left, picture of the bio-box with which the incubators have been recovered. On the right, picture of the seawater containing numerous filamentous bacteria.

4.2.4. Preliminary results

Potentiostat 1 et 2 were connected to a data logger, which will allow us on shore to get a full data set over the experiment period. For each bio-electrochemical reactor, we have set-up an initial electrical potential around –100 mV. Only bio-electrochemical reactors 2 and 3 showed an increase of electrical potential through time. For bio-electrochemical reactor, no response was observed. Nevertheless, For the potentiostat 3, we have carried out only punctual measurement of electrical potential between the reference electrode and the working electrode. The results are reported in Table 3 and shown in

Date	reading electrical potential (mV)
6/9/09	-74
7/9/09	-74
9/9/09	19
10/9/09	70
13/9/09	77
14/9/09	80
16/9/09	89
17/9/09	94
18/9/09	101
19/9/09	104
20/9/09	109
21/9/09	110
22/9/09	114

Figure 9.

Table 3: Reading of the electrical potential measured in reactor 3.

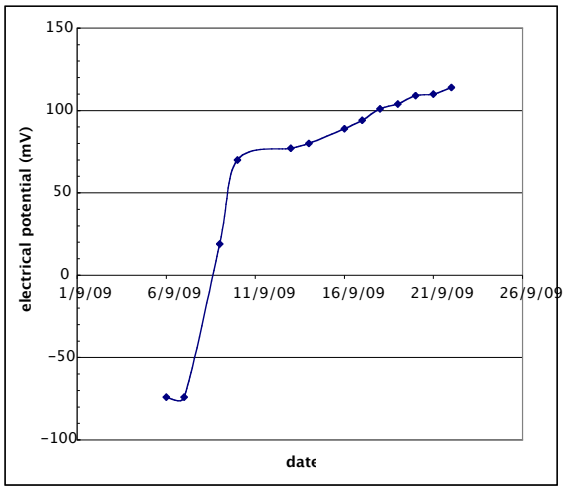


Figure 9: Electrical potential measured in reactor 3 as a function time.

In summary, low temperature hydrothermal fluid contains electro-active micro-organisms. A systematic screening of samples will be carried out on shore to identify the micro-organisms which have the potential of the MFC technology in terms of performance for powering sensors.

4.2.5. References

Reimers CE, Tender LM, Fertig S and Wang W. 2001. Harvesting energy from the marine sediment - Water interface. Environmental Science and Technology. 35(1):192-195.

Tender LM, Reimers CE, Stecher Iii HA, Holmes DE, Bond DR, Lowy DA, Pilobello K, Fertig SJ and Lovley DR. 2002. Harnessing microbially generated power on the seafloor. Nature Biotechnology. 20(8):821-825.

Tender LM, Gray SA, Groveman E, Lowy DA, Kauffman P, Melhado J, Tyce RC, Flynn D, Petrecca R and Dobarro J. 2008. The first demonstration of a microbial fuel cell as a viable power supply: Powering a meteorological buoy. Journal of Power Sources. 179(2):571-575.

4.3. Geological sampling

Samples were collected during two ROV VICTOR dives and two dredges.

4.3.1. ROV VICTOR sampling

Samples of chimneys and basaltic rocks were collected during two ROV VICTOR dives and bring back to the surface using either the lift or VICTOR's basket.

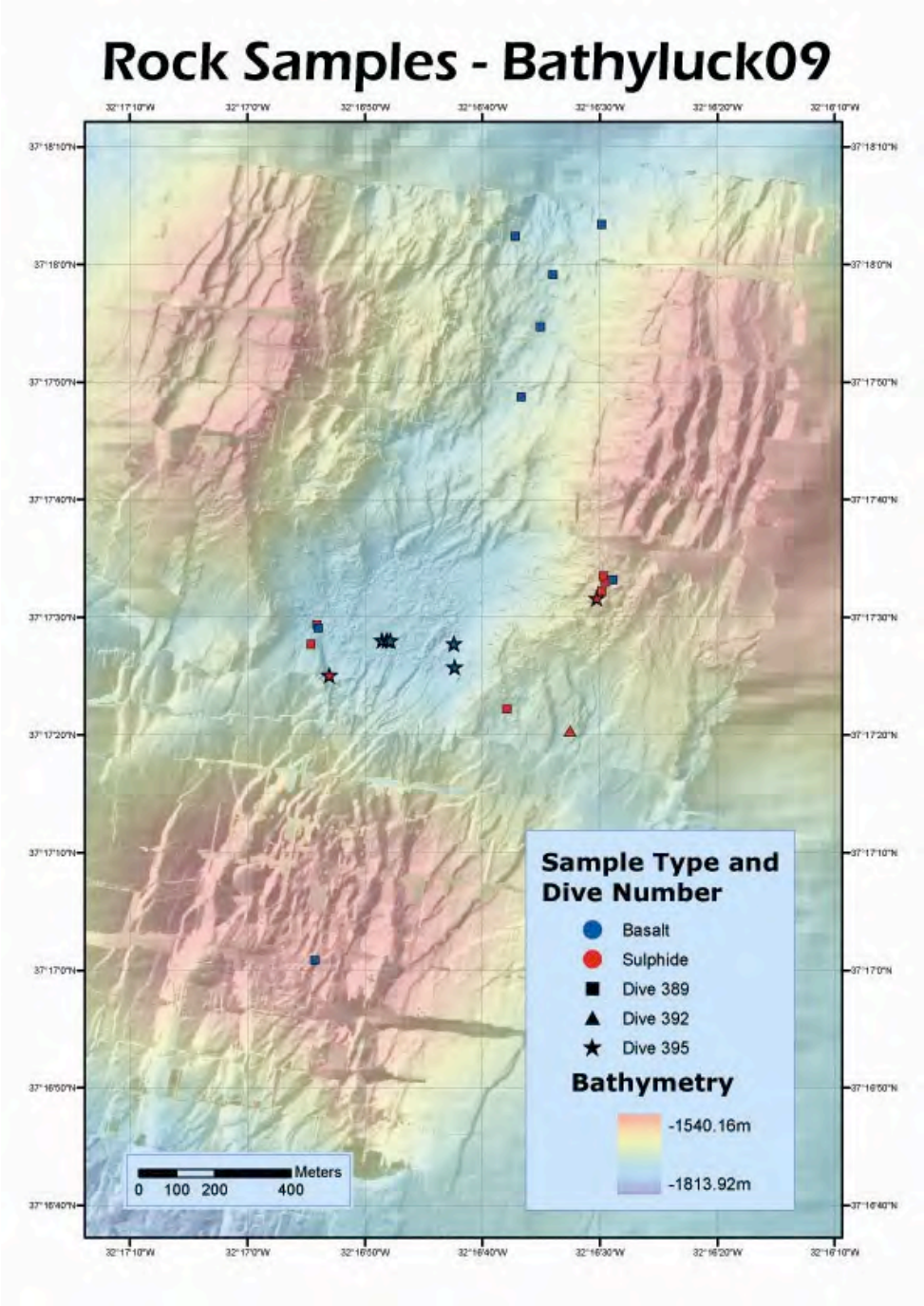


Figure 1 : map of the location of the samples collected during the dives

The samples were packed in two plastic boxes labelled :

BATHYLUCK 2009 VICTOR BASALT

BATHYLUCK 2009 VICTOR SULFURES

4.3.1.1. Samples of the 389 VICTOR dive :

17 samples were collected during the 389 dive on the sites of Sintra, Isabel, Pico, Crystal, and in the north of the lava lake. These samples consist in 10 samples of basaltic rocks and 7 samples of sulphides.

Description of the samples :

B09-ROC1 : 800 g, highly vesicular glassy basalt with large plagioclases phenocrysts (2 mm). Surface of a pillow-tube with pronounced reddish brown alteration.

B09-ROC2 : 500g, massive fragment at the top of an inactive chimney. Very ferrous block. Chalcopyrite,

B09-ROC3 : a big block of vesicled basalt with Fe-Mn crust. Loads of vesicles up to few mm in size. Very porous but still very heavy in weight. No phenocrysts.

B09-ROC4 : small block of massive sulphide with a vesicle of 4 cm diameter. Minerals of pyrite and chalcopyrite have grown in the vesicle. Fe-Mn crust ? Needle of chalcopyrite sealed in an anhydrite substrate ?

B09-ROC5 : very big piece of massive sulphide taken at the top of the chimney which was inactive. Easy to identify the chimney conduit with its progressive growth through time. Very fragile piece. High smell of H2S. Anhydrite, Chalcopyrite which can be in small cracks.

B09-ROC6 : 50g, fragment of a very small chimney. Chalcopyrite, Anhydrite.

B09-ROC7 : 150g + 1 tube of glass shards, very fresh lava crust from lava lake.

B09-ROC7b : 100g, aphyric and very small vesicles. Glass crust mostly gone but still pretty fresh.

B09-ROC8 : 1kg + tube with glass shards. Nice piece of small lava tube. Very fresh glass from LS lava lake. Brown/red stain on over surface. No phenocrysts and no vesicles.

B09-ROC9 : crystal.

B09-ROC10 : 600g, fragments of two small chimneys from the same location mixed in the same basket. 6 pieces : 3 are clearly tips of old chimneys with traces of isocubanite (two more than 150g and one less than 100 g); 2 fragments of similar chimney material (less than 100g). One fragment of light and very brown material (less than 50g)

B09-ROC11 : 200 g, fragment of altered and highly vesicular basalt containing extremely altered glass. Upper surface of a thin lava tube. Vesicles up to 0.5 mm.

B09-ROC12 : 100g, fragment of lava flow crust extremely altered. Reddish brown alteration. No glass preserved.

B09-ROC13 : 1 kg, fragment of lava tube in talus. Mn-coated on all faces. Vesicular basalt. Difficult to say more on uncut faces.

B09-ROC14 : 150 g, fragment of crust of vesicular basalt with plagioclase phenocrysts (up to 0.5 cm). Vesicles up to 1 cm (a few larger next to the upper surface). Glass is largely altered.

B09-ROC15 : 400g, fragment of pillow. Vesicular basalt with small plagioclase phenocrysts (less than 0.5 cm, particularly common in upper 3 cm below over crust). Vesicles up to 1 mm about 10 cm from over crust.

B09-ROC16 : 100g, fragment of vesicular lava crust (over surface of lava flow 2 cm thick, with "pxx" cavity underneath). Glass is altered.

B09-ROC17 : 500g, fragment of massive sulphide, 2 pieces of same block. Anhydrite, pyrite, chalcopyrite.

4.3.1.2. Samples of the 392 VICTOR dive :

1 sample of chimney was collected during this dive.

Description of the sample :

B09-ROC18 : 1kg, piece of Tour Eiffel. The sample carried nice mussels collected by Nélia. Sample is heavy. Sulphides, anhydrite, but also locally what looks like a little fresh glass. It is the same kind of basaltic rock invaded by hydrothermal deposits .

4.3.1.3. Samples of the 395 VICTOR dive :

8 samples were collected during the 395 dive on the sites of Sintra, lava lake and PP6. These samples consist in 6 samples of basaltic rocks and 2 samples of sulphides.

Description of the samples :

B09-ROC19 : 400g, relatively old hydrothermal deposit. Sample has a red-green stain altered (copper, grey matrix of sulphides, perhaps anhydrite …)

B09-ROC20 : 150g, 100% basaltic glass from lava lake. Sample exploded in multiple fragments. Upper glassy crust is hardly altered (faint reddish brown tinge).

B09-ROC21 : 200g + tube of glass, aphyric basalt with glassy crust from lava lake. Upper crust is remarkably fresh. Hardly any alteration very black and

fine strines are visible. Crust is 1 to 2 cm thick. Basalt is aphyric and has no vesicles. One piece has a glassy crust with striae on both sides.

B09-ROC22 : 2 kg with a tube of glass, large piece of lava from lava lake. Sample was like a flat hollow tube and broke in multiple fragments in the basket of ROV. Almost 100% aphyric, very fresh glass. Outer glassy crust has a faint dark red/brown tinge but striae are well visible. Inside, glassy crust is smooth with a dark chocolate colour and lots of folds. There are drops and large vesicle-shaped irregularities in the inside, one with a diameter of 3 cm.

Figure 2 : sample B09-ROC22 before sampling

B09-ROC23 : basalt from edge of the lava lake. Aphyric with up to 1cm thick glassy crust on both sides. Very fresh . Sample broke in many samples. Basalt is 2-3 cm thick with glass on both sides. No porphyric clasts but small to large (2 mm) vesicles.

B09-ROC24 : slab of basalt from edge of lava lake about 2 cm with up to 0.7cm of glass on both sides. Upper crust coaled with brownish crust (less than 0.5 mm) but very fresh glass underneath. Lower crust with dark smooth chocolate texture. A very few large vesicles (2.5 cm large, 0.5 cm diameter), one just under lower glassy crust.

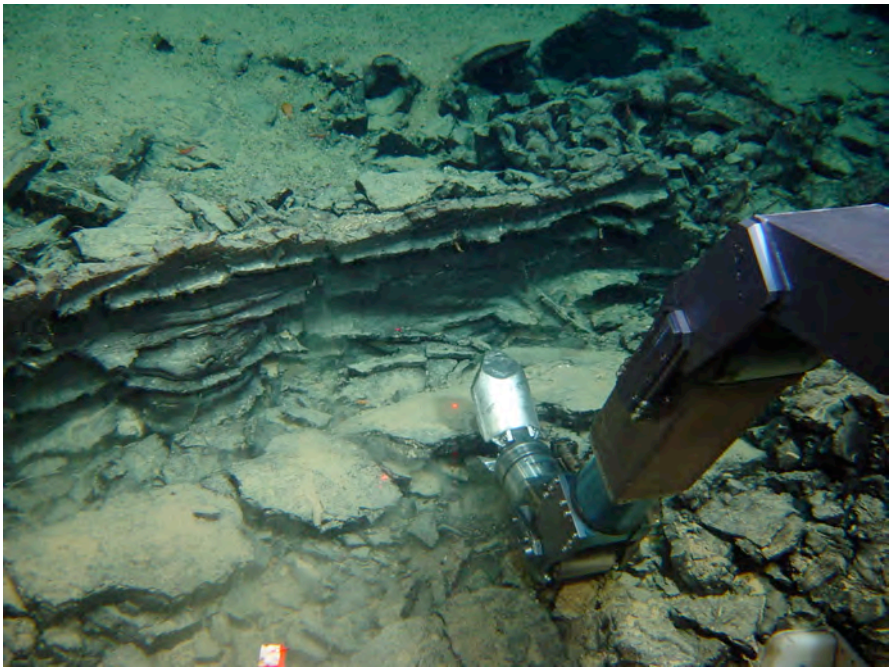


Figure 3 : sampling of B09-ROC24 at lake shore

B09-ROC25 : 4kg, two blocks broken from one from pyroclastic breccia in lava lake and a few smaller fragments. Rock is pale grey with lots of vesicles up to 2 mm in diameter. In rare pieces that are not altered to muddy friable, it is apparent that the grey vesicular matrix was probably glass initially. Same vesicles contain small mineral and rock very altered (white, green, dark brown). Substantial regions of rock also have a coating of small sulphides (pyrite?) in vesicles … The rock then looks like a less sulphide-rich version of our "slab" samples.

Figure 4 : view of pyroclast deposit (B09-ROC25)

BO9-ROC26 : 200g, fragment of a small chimney. Oxydation on some parts. Crystallisation of anhydrite. Mussels are still there on a part. Sample used before by the biology team.

4.3.2. Dredges`  `

Rocks of the Menez Hom massif were dredged on the 4th of September 2009 and on the 24th of September 2009. The dredges were first deployed close to the start point. Then, after adding to the dredge 500 m of cable compared to the measured depth, the boat made the profile at a speed of 1 node. It stopped 300 m after ending the profile to allow the dredge to finish the profile at depth. The dredge was finally recovered and the samples were washed before being sorted to take the most representative samples.

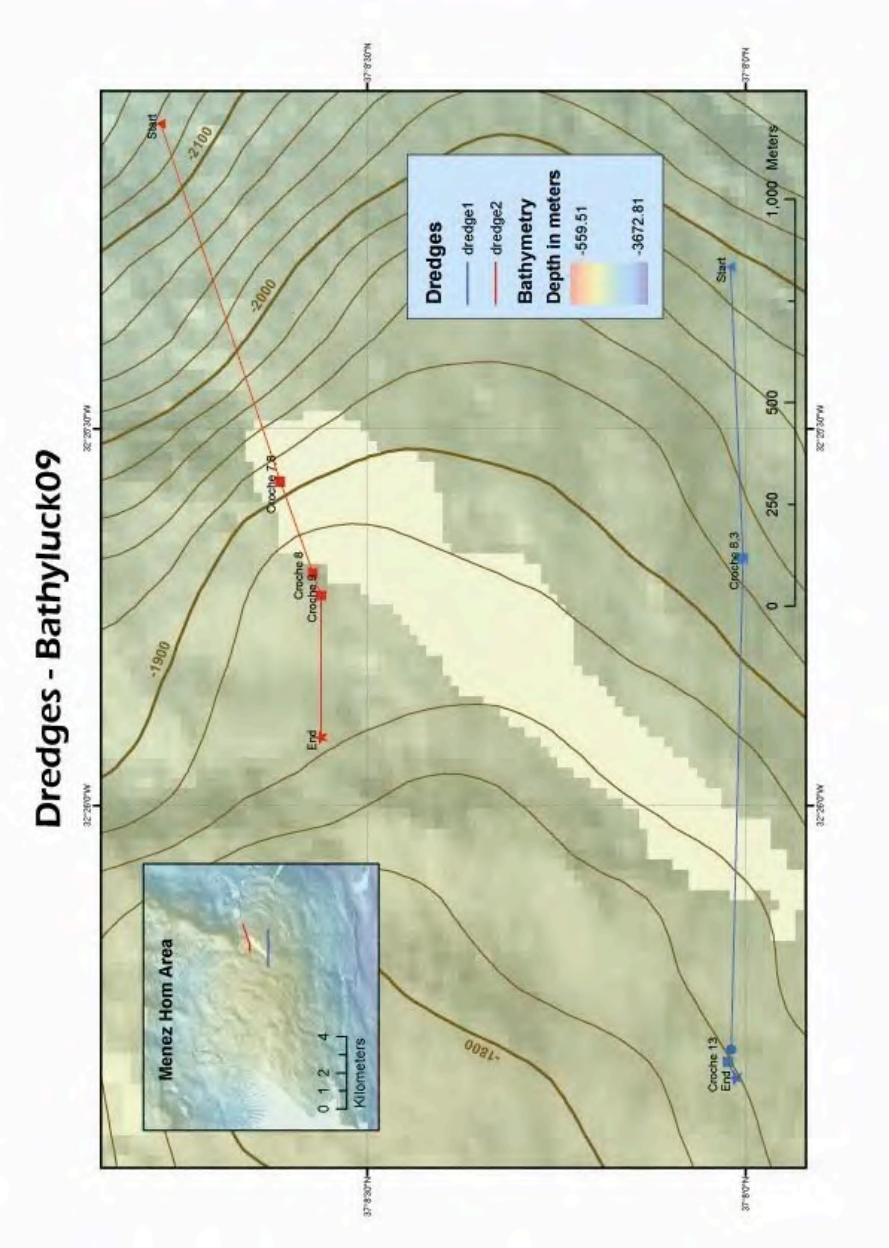


Figure 5 : map of the location of the two dredges

2.1. 04/09/09 dredge :

West wall of the axial valley on Menez Hom massif

	Ship lat	Ship long	depth	Wire out
Dredge on bottom	37°08.020	32°25.285	1992 m	2335 m
Croche « 8.3 tons »	37°08.003	32°25.672	1923 m	x
Croche « 13 tons »	37°08.002	32°26.340	1870 m	x

Off bottom	37°08.002	32°26.361	1879 m	1960 m

Total estimated weight : 600 kg

2 small fragments of coral.

Carbonaceous ooze and sedimentary breccia with ultramafic clasts : about 20 kg

In which :

- About 18 kg with cream-white carbonaceaous matrix, variably consolidated (Type 1)
- About 2 kg with orange-red indurated matrix (Type 2)
- 0.5 kg of grey sandstone with fine grained serpentine clasts and aragonite crystals in matrix (Type 3)

Metabasalts ? angular blocs : about 6 kg (Type 4)

Variably serpentinized and cataclased peridotite with serpentine and carbonate veins : about 570 kg

In which :

- about 15 % orange cataclastic harzburgite (Type 5)
- about 25% grey-green-pink cataclastic dunite ? (Type 6)
- about 60% orange cataclastic dunite and harzburgites (Type 7)

Most samples are coated by sediment and many have a thin Mn coating. It is possible we sampled a rock slide. Samples were not cut prior to description and overlap is likely between these types…

Out of the 600 kg we kept : 100 kg

3 plastic boxes labelled : B09 DRAGUE1 Type 1-6

B09 DRAGUE1 Type 7

B09 DRAGUE1 Vrac

The following samples were put in bags :

Weights are estimated.

Type 1. sedimentary breccia with ultramafic clasts cream-white carbonaceaous matrix, variably consolidated

B09-DR1-1-1. 2 fragments of white carbon. sed 20g

B09-DR1-1-2 sed breccia indurated 500g

B09-DR1-1-3 sed breccia 200g

B09-DR1-1-4 sed breccia indurated , 2 blocs 200g

B09-DR1-1-5 microbreccia, sedimentary, indurated 50g

B09-DR1-1-6 sed breccia 150g

Type 2. sedimentary breccia with ultramafic clasts orange-red indurated matrix

B09-DR1-2-1 4 small blocs 200g

B09-DR1-2-2 one bloc 300g

B09-DR1-2-3 one bloc 150g

B09-DR1-2-4 3 small blocs 150g

Type 3. grey sandstone with fine grained serpentine clasts and aragonite crystals in matrix

B09-DR1-3 6 small blocs, not numbered, in one bag

B09-DR1-3-1 one small bloc

Type 4. about 6 kg of angular decimetric blocs, probably metabasalts, but difficult to be sure with uncut samples. We kept all these blocs in one of the blue boxes but did not number them on board.

Type 5. Relatively massive (weakly cataclastic) harzburgite. Orange, altered pyroxenes well visible.

B09-DR1-5-1 small bloc(200g)

B09-DR1-5-2 large bloc, 25 by 20 cm

Type 6. Serpentinized and cataclased peridotite with carbonate veins. Characteristic grey-pink-green color, no pyroxenes visible… dunite protolith ?

B09-DR1-6-1 Piece (500g) of a very large bloc (about 30 kg) with a well defined pattern of white serpentine veins, en échelon

B09-DR1-6-2 about 1kg

B09-DR1-6-3 500g with nice carbonate vein

B09-DR1-6-4 200 gr

B09-DR1-6-5 200g with very thin veins of darker serpentine parallel to faces of sample

Type 7. orange cataclastic dunite and harzburgites with carbonate veins….. in fact quite a few small samples which were more green than orange were also put into this type…

B09-DR1-7-1 100g flat sample, carbonate veins in cataclastic serpentinized peridotite

B09-DR1-7-2 100g flat sample, carbonate veins in cataclastic serpentinized peridotite

B09-DR1-7-3 200g flat sample, carbonate veins in cataclastic serpentinized peridotite

B09-DR1-7-4 50g flat sample, carbonate veins in cataclastic serpentinized peridotite

B09-DR1-7-5 50g flat sample, carbonate veins in cataclastic serpentinized peridotite

B09-DR1-7-6 200g intermediate with type 6 (more grey than orange, no pyroxene visible). Altered vein, possibly gabbro protolith, water green

B09-DR1-7-7 30g sigmoidal fragment of sheared serpentine

B09-DR1-7-8 50g fragment of greenish serpentine

B09-DR1-7-9 50g pale green sheared serpentine, with talc ? This is not at all a common facies in this dredge

B09-DR1-7-10 50g intermediate with type 6 (more grey than orange, no pyroxene visible). Altered vein, possibly gabbro protolith

B09-DR1-7-11 50g serpentinized peridotite with one flat face that is coated with consolidated gravel, cemented by aragonite crystals

B09-DR1-7-12 100g green serpentine with thin white serpentine veins

B09-DR1-7-13 100g cataclatic serpentine, orange, with nice undeformed carbonate vein and a zone of more green and sheared material next to this vein… either highly cataclastic serpentine, or sheared and altered gabbro.. ?

B09-DR1-7-14 70g orange serpentinized peridotite (dunite ?) with a strange erosion pattern, cauliflower-like, possibly due to polygonal pattern of serpentine veins ?

B09-DR1-7-15 100g orange dunite with large spinels. Quite heavy (fresher than the rest ?).

B09-DR1-7-16 70g round dunitic ? sample

B09-DR1-7-17 200g also possibly a dunite protolith, orange, flat faces parallel to set f serpentine veins.

B09-DR1-7-18 200g piece of a large bloc of cataclastic orange peridotite (50cm/20)

B09-DR1-7-19 large bloc of cataclastic orange peridotite. We keep the entire sample. Could be used in exhibit

B09-DR1-7-20 70g sheared serpentine, sample is quite hard and has a flat surface formed by an ivory colored material containing clasts of green serpentine… what is it ?

B09-DR1-7-21 100g red cataclastic peridotite. This is a very uncommon facies in this dredge, only seen in this small sample.

B09-DR1-7-22 200g orange cataclastic peridotite, 2 flat faces with sheared serpentine veins

B09-DR1-7-23 (7cm) orange highly cataclastic peridotite with a flat face formed by undeformed carbonate vein in sheared yellowish serpentine

B09-DR1-7-24 intermediate with type 6 (more grey than orange, no pyroxene visible), sheared in sigmoides.

B09-DR1-7-25 200g orange cataclastic peridotite with a sheared serpentine vein and a set of undeformed serpentine and carbonate veins.

B09-DR1-7-26 300g orange cataclastic dunite (?) with serpentine and carbonate veins

B09-DR1-7-27 150g orange to green sheared peridotite, sample has sigmoidal shape

B09-DR1-7-28 250g orange cataclastic dunite(?), flat faces

B09-DR1-7-29 weight ? cataclastic orange harzburgite, clasts have a somewhat sigmoidal shape.

B09-DR1-7-30 weight ? cataclastic orange harzburgite,a flat face along undeformed serpentine vein, the main cataclastic deformation network suggests movement perpendicular to this vein.

Other samples which were not described and looks interesting were put together in a box (BATHYLUCK2009-DRAGUE1-VRAC)

2.1. 24/09/09 dredge :

North wall of the axial valley on Menez Hom massif

	Ship lat	Ship long	depth	Wire out
Dredge on bottom	37°08.773	32°24.984	1969m	2440m
Croche « 7.8 tons »	37°08.615	32°25.570	x	2280m
Croche « 8 tons »	37°08.572	32°25.691	x	2240m
Croche « 9 tons »	37°08.561	32°25.721	x	2200m
Off bottom	37°08.561	32°25.91	x	1892m

Total estimated weight : 93 kg

Figure 6 : dredge 2 on the deck

Metabasalts, angular blocks : about 8 kg (Type 1)

Variably serpentinized and cataclased ultramafic rocks with serpentine and carbonate veins : about 80 kg

In which :

- About 30 kg of angular samples (Type 2)
- About 50 kg of samples with less angular irregular surfaces (Type 3)

Strongly altered and deformed samples : about 5 kg (Type 4)

Rocks of magmatic origin : 500 g (Type 5)

Most samples are coated by sediment and many have a thin Mn coating. Samples were cut prior to description.

Out of the 90 kg we kept : 50 kg

2 plastic boxes labelled :

BATHYLUCK 2009 DRAGUE2 Type 1-2-5

BATHYLUCK 2009 DRAGUE2 Type 3-4

The following samples were put in bags :

Weights are estimated.

Type 1. Altered basaltic rocks.

B09-DR2-1-1. 1kg, two fragments from an initial block of 4 or 5 kg. Metabasalt, fractures, aphyric. Mn-crust.

B09-DR2-1-2 200g, metabasalt, grey, fractures and lighter alteration halos. Aphyric. Mn-crust

B09-DR2-1-3 400g, two fragments from an initial block of 2/3kg. Fractures. Aphyric. Mn-crust?

B09-DR2-1-4 500g, few vesicles, light, fractures from which halos are going into the rock. Aphyric, Mn-crust.

B09-DR2-1-5 400g, very nice with a cataclased zone showing chlorite and a fresher zone. Aphyric.

B09-DR2-1-6 100g, dark grey (less altered ?). Mn-crust and few fractures.

Type 2. cataclased and serpentinized angular peridotites.

B09-DR2-2-1 400g, fragment from a block of 4/5kg. Striated fault plane on one of the faces : fibrous mineral on a width of less than 1 mm. Brown/red, no pyroxene.

B09-DR2-2-2 300g, strongly cataclased peridotite with lots of veins. Orange. No pyroxene.

B09-DR2-2-3 200g, orange, spinel, less altered. Serpentine veins network. Dunite ?

B09-DR2-2-4 300g, cataclased. Brown, many veins. No pyroxene.

B09-DR2-2-5 400g, dunite. Many veins with magnetite. Brown/red. Spinel.

B09-DR2-2-6 200g, many dark veins. Orange. Cataclased dunite without pyroxene.

B09-DR2-2-7 200g, very nice with alteration halos from green serpentine/chlorite veins. Grey/purple. Perhaps ghosts of pyroxenes and apatite (magmatic injection ?)

B09-DR2-2-8 100g, numerous black veins. Brown/red matrix. Big veins with serpentine and chlorite on the edges. Dunite (spinel)

B09-DR2-2-9 300g, serpentine veins. Dark brown, many fractures. Spinel (dunite ?). Chlorite on one of the edges.

B09-DR2-2-10 400g, Brown/Orange. Big vein of serpentine and many black veins. Cataclased.

B09-DR2-2-11 400g, brown to light yellow, very cataclased with dark veins and serpentine veins.

B09-DR2-2-12 400g, dark brown, serpentine veins. Very angular and cataclased.

B09-DR2-2-13 100g, orange/brown with a big dark vein et many other veins. Mn-crust.

B09-DR2-2-14 100g, orange/brown, very cataclased with veins of serpentine on one of the faces and a lot of small dark veins.

B09-DR2-2-15 100g, many dark veins. Brown/orange. Veins with serpentine and carbonates. Mn crust. Quite deformed with elongated spinels, small pyroxenes (harzburgite).

B09-DR2-2-16 100g, brown, many dark veins. Very cataclased, Mn-crust.

B09-DR2-2-17 150g, brown to light yellow. Cataclased, many dark veins.

B09-DR2-2-18 100g, light brown, serpentine veins. Very altered.

B09-DR2-2-19 70g, brown/orange. Very small grain (homogenous texture). Spinels, dark veins.

Type 3. Peridotites with less angular and irregular surfaces.

B09-DR2-3-1 100g, brown/grey. Veins with serpentine and carbonates. Porphyroclasts of pyroxenes (harzburgite ?)

B09-DR2-3-2 200g, yellow/green. Veins with serpentine and a dark brown halo. Porphyroclasts of pyroxenes (harzburgite ?)

B09-DR2-3-3 200g, orange/brown with many veins of serpentine with a black halo. Maybe carbonates.

B09-DR2-3-4 150g, cataclased. Alteration halo surrounding a clearly orange/brown center. Many black veins. Mean color : yellow.

B09-DR2-3-5 150g, very cataclased and a lot of serpentine. Veins with carbonates and black veins.

B09-DR2-3-6 600g, big blocks in spindle, striated surfaces on all the faces, veins of serpentine and carbonates. Brown. Pyroxenes.

B09-DR2-3-7 200g, very cataclased with a color grey/green. Many dark veins with brown/orange halos. Carbonate veins.

B09-DR2-3-8 100g, very altered. Brown veins, big veins perpendicular to the small one.

B09-DR2-3-9 150g, very altered sample with a green/brown color. A lot of serpentine.

B09-DR2-3-10 150g, yellow alteration zones surrounding orange centers. Many dark veins. Cataclased. Carbonates veins.

B09-DR2-3-11 150g, very cataclased. Brown with some dark veins and some light veins. Conglomerate with carbonate surrounding the sample. Veins with carbonates.

B09-DR2-3-12 300g, very cataclased with a brown/orange color. Dark veins and veins of carbonates.

B09-DR2-3-13 300g, very very cataclased with many dark veins. A lot of serpentine : light green. Some orange/brown parts can be observed.

B09-DR2-3-14 400g, orange/brown with many phenocrysts of pyroxenes. Surrounded by a conglomerate. Veins of carbonates.

B09-DR2-3-15 three fragments for a total weight of 200g. Brown/orange. Carbonate veins on one of the faces. Cataclased, veins with serpentine.

B09-DR2-3-16 50g, orange and green on one of the side. Pyroxenes (harzburgite ?). Cataclased. Veins of carbonate. Vein on one of the faces.

B09-DR2-3-17 70g, grey/green. Many dark veins, cataclased. Serpentine, pyroxenes (harzburgite ?). Rounded surface.

B09-DR2-3-18 400g, cataclased, a lot of serpentine. Spinels and perhaps pyroxenes. Many veins of serpentine. Green/grey. Talc.

B09-DR2-3-19 50g, green/grey, spinels. A lot of serpentine. Cataclased. Talc.

B09-DR2-3-20 600g, very cataclased, quite a breche. Yellow/orange. Veins of carbonates. Sedimentary conglomerate on one of the face. Deformed in a ductile way (impression of movement), sometimes difficult to distinguish the veins from the matrix.

B09-DR2-3-21 60g, orange, the freshest one. Big dark vein in the middle. Ductile shear with dark sigmoids. Many phenocrysts of pyroxenes.

B09-DR2-3-22 light brown with altered zone in orange. Dark veins and veins of carbonates. Cataclased.

B09-DR2-3-23 50g, heterogeneous rock, cataclased. Blue/grey in some places, orange/brown in other. Very deformed. A lot of veins.

B09-DR2-3-24 400g, dark brown, cataclased with dark veins. Sedimentary conglomerate on one face, carbonates. Veins of carbonates.

Type 4. "Unclassifiable" samples. Strongly deformed and altered samples.

B09-DR2-4-1 200g, strongly deformed, cataclased. Close to type 3 ones but very big veins of serpentine. Fault plane with striations on one of the faces. Orange/brown, dark veins.

B09-DR2-4-2 100g, very cataclased. Many veins of serpentine, quite light. White in the center of the altered zones. Visible shear on veins of serpentine.

B09-DR2-4-3 150g, very altered with color blue/green. Small orange oxidations. Veins of serpentine. Strongly deformed, elongated shape.

B09-DR2-4-4 many fragments (200g for the whole). Very dark part, a lot of serpentine. Maybe apatite, round-shaped replacement minerals. Shear.

B09-DR2-4-5 100g, spheroid sample with a halo from the center with a few altered peridotite to the surrounding part which is light blue and then dark blue. A lot of veins. Serpentine in the halo.

B09-DR2-4-6 100g, white rocks (smectite, talc ?). Light. Many veins, cataclased.

B09-DR2-4-7 150g, spheroid sample with a halo from the center with a few brown altered peridotite to the surrounding part which is orange. A few veins. Pyroxenes.

B09-DR2-4-8 150g, orange/brown peridotite altered by large veins (sometimes more than 1 cm) with serpentine and chlorite. Dark veins in the peridotite.

B09-DR2-4-9 150g, green/blue. Many veins of serpentine. Alteration halo from blue in the center to green in the surrounded part. Shear, very deformed.

B09-DR2-4-10 300g, a lot of serpentine, strongly deformed, green. Very dark in the center. Shear in ductile domain. Regions oriented by the crystallization of serpentine and less deformed regions.

B09-DR2-4-11 150g, cataclased. Black/blue in the altered parts. Vein of carbonate. Deformed and sheared.

B09-DR2-4-12 100g, totally green, serpentinized. The texture of the peridotite can sometimes still be observed.

B09-DR2-4-13 100g, blue and green on the edges. Veins of serpentine and carbonates.

B09-DR2-4-14 70g, spheroidal sample with an alteration halo. Veins of serpentine. Blue in the center and brown/orange in the halo.

B09-DR2-4-15 70g, brown/orange, spinels (dunite). A few fine dark veins. Fine blue/green alteration halo in the surrounding part (perhaps preferentially altered halo).

B09-DR2-4-16 50g, green/grey. Many big veins. Very altered and serpentinized.

B09-DR2-4-17 50g, brown/red, white in the center. Maybe a leached peridotite.

B09-DR2-4-18 300g, dark peridotite with a blue/green region and the other part is brown/orange. A lot of veins of serpentine. Cataclased and very altered.

Type 5. magmatic samples.

B09-DR2-5-1 100g, heavy. Grey with red spots of olivine. Red olivine (3mm) which is altered at the surface into chlorite. Pyroxenes (3mm), a few plagioclases (1mm). Rock between a pyroxenite and a troctolite.

B09-DR2-5-2 100g, heavy, white with plagioclase and maybe quartz. Microgrenue texture. Mn crust. Maybe a dyke.

4.4. Biological sampling

N. Mestre

4.4.1. Sampling and preservation of samples

The fauna collected during the Bathyluck'09 cruise was taken from different sites within the Lucky Strike vent field (Table 1.1.). All animals were collected with the ROV Victor 6000, either in sterile bioboxes (Fig. 1.1.) or using the slurp gun. Samples were taken at the end of each dive, or before the recovery of the elevator in the case of the bioboxes, to minimize the time between sampling and arrival at surface. Samples were transferred to cold rooms either at 4ºC or at 10ºC.

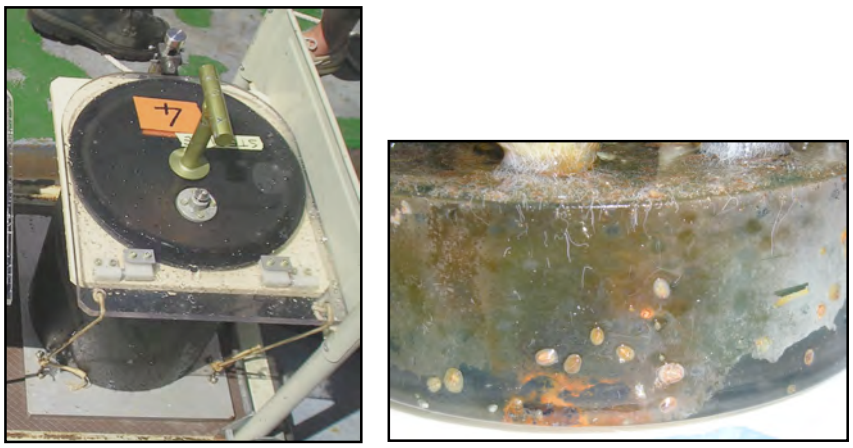


Fig. 1.1. Left - biobox used for collecting mussels; right - fauna attached to the microbiology colonizator.

Specimens were identified to the species level whenever possible. Sampling was directed to the most abundant species present in Lucky Strike, the mussels *Bathymodiolus azoricus*, the polychaete *Branchipolynoe seepensis* and shrimps *Mirocaris fortunata*. Other species were also present in the samples, such as the crab *Segonzacia mesatlantica*, the polychaete *Amathys lutzi*, small gastropods, amphipods.

Fifteen mussels and polychaetes from each sample were dissected and frozen at -80ºC for molecular biology studies; ten were preserved in 4% formalin for histology. Fifteen shrimps from each sample were preserved in 100% ethanol and ten frozen at -80ºC. Ten other shrimps from each sample were preserved in 4% formalin.

The remaining specimens present in the samples were preserved in 100% ethanol. The fauna attached to one colonizator for microbiology studies, recovered from Evan site, was preserved in 4% formalin for later identification.

4.4.2. Experimental work

Experimental work to study the high-pressure changes effects on *Mirocaris fortunata* was conducted during the cruise. Small pressure vessels connected to a hydraulic hand pump were used to incubate small *Mirocaris fortunata* for 1 hour at 10ºC, at 1 bar, 100 bar and 160 bar. After the incubation period, the shrimps were left for 30 minutes at 1 bar, and all shrimps survived the incubation period at the different pressures. O_2 consumption measurements were also conducted in order to insure that the oxygen was not an added stressing factor, and also as a way to compare the oxygen consumption rate at the different pressures analysed. In addition, these measurements will give an idea of the metabolic rate at different pressure conditions and the degree of stress that each individual is exposed to. Individuals were then frozen at -80ºC, for later analysis of the molecular changes as a result of the high pressure.

Some specimens of *M. fortunata* will be kept alive for as long as possible. Six ovigerous females were found among the samples, and will be maintained until embryos hatch from the egg capsules. The analysis of the larval development will be attempted as well as the effect of temperature and pressure on the larval development.

This work will be incorporated in the Abyss2100 project that aims to elucidate how marine organisms cope with potential changes in the environment. This will be achieved by integrating methods ranging from a molecular, cellular to whole-organism level, in order to reveal their resilience potential. The approach is based on the concept that physiological effects on the individual can potentially translate into changes in populations and affect the ecology of entire communities and on the hypothesis that deep-sea organisms are potentially at risk due to climate change.

Table 1.1. Location of sampling and method of collection.

Event	Date	Time	Dive	Site	Latitude	Longitude	Depth (m)	Cap	Description
B09TEM057	23/09/2009	02:32	395	Sintra	37º17.530	32º16.505	1617	161.2	Temperature measured 6-9ºC
B09TEM064	23/09/2009	15:33	395	Cypres	37º17.443	32º16.860	1734	135	Temperature measured 7.48ºC
B09MBI01R	06/09/2009	10:42	389	Tour Eiffel	37º17.340	32º16.529	1696		Sterile biobox for mussels and bacterial matt
B09TEM064	23/09/2009	15:33	395	Cypres	37º17.443	32º16.860	1734	135	Temperature measured 6-7.83ºC
B09RTEM010	06/09/2009	11:01	389	Tour Eiffel	37º17.340	32º16.529	1696		7.60
B09BIO007	23/09/2009	15:42	395	Cypres	37º17.443	32º16.860	1734	135	Sterile biobox for mussels
B09TEM068	23/09/2009	22:32	395	Sintra	37º17.530	32º16.505	1617	62.57	Temperature measured 6-7ºC Top of flange 6ºC, under part of flange 8-10ºC
B09TEM030	16/09/2009	00:30	392	Tour Eiffel	37º17.340	32º16.529	1696	280	Temperature measured 5.22ºC
B09BIO008	23/09/2009	22:41	395	Sintra	37º17.530	32º16.505	1617	62.57	Slurp gun for shrimps
B09BIO002	16/09/2009	00:41	392	Tour Eiffel	37º17.340	32º16.529	1696	280	Slurp gun for shrimps
B09BIO003	16/09/2009	00:59	392	Tour Eiffel	37º17.340	32º16.529	1696	258	Slurp gun for shrimps
B09TEM031	16/09/2009	01:12	392	Tour Eiffel	37º17.340	32º16.529	1696	258	Temperature measured 5.11ºC
B09TEM032	16/09/2009	01:33	392	Tour Eiffel	37º17.340	32º16.529	1696	152	Temperature measured 8.8ºC
B09BIO004	16/09/2009	01:37	392	Tour Eiffel	37º17.340	32º16.529	1696	152	Slurp gun for shrimps
B09TEM034	16/09/2009	02:57	392	Crystal	37º17.4310	32º16.3697	1722		Temperature measured 13.58ºC
B09BIO005	16/09/2009	03:17	392	Crystal	37º17.4310	32º16.3697	1722		Slurp gun for shrimps
B09BIO006	23/09/2009	02:10	395	Sintra	37º17.529	32º16.504	1617	161.2	Sterile biobox for mussels

4.5. Colonization modules - TRACK

4.5.1. Recovery

Tour Eiffel:

N 37º17.3300

W 32º 16.5307

Imm = 1696 m

Colonization Modules (Dive 392)

23:07h - B09_TRACK_C5R

00:12h - B09_TRACK_C4R

On the 16 of September 2009, the ROV Victor 6000 took a dive recovered 3 colonization modules that were at Tour Eiffel site. Colonization modules were placed two years ago in other mission and they contained Alfafa, wood and carbonates.

Substrates which were inside the colonization modules will be for biochemical analysis, FISH analysis and Immunological analysis. Samples were withdrawn the top, middle and low.

Fig. 1 - Colonization module.

The Alfafa substrate was removed as follows:

Table I – Destination and storage of top substrate Alfafa.

No cubes	Addressee	Storage Mode
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table II – Destination and storage of middle substrate Alfafa.

No cubes	Addressee	Storage Mode
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table III– Destination and storage of low substrate Alfafa.

No cubes	Addressee	Storage Mode
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

At the end of the sampler, were removed Alfafa cubes for FISH. These cubes were set in Formaldehyde 4% over 2-4 hours at 4ºC. Wooden cubes were then rinsed 3 times in filtered seawater using 0,45 microns filters. The next step was to rinse in Ethanol/ filtered seawater during 30 minutes. To finalize, the ethanol/filtered seawater was removed and absolute ethanol was added and the sample was stored at 4ºC.

The Wood subtract was removed as follows:

Table IV – Destination and storage of top substrate wood.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table V – Destination and storage of middle substrate wood.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
6	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table VI – Destination and storage of low substrate wood.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
6	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

At the end of the sampler, 13 wooden cubes were removed for FISH. These cubes were placed in Formaldehyde 4% over 2-4 hours at 4ºC. Wooden cubes were then rinsed 3 times in filtered seawater in 0,45 microns filters. The next step was to rinse in Ethanol/ filtered seawater during 30 minutes. To finalize, ethanol/filtered seawater was removed and absolute ethanol was added and the sample was stored at 4ºC.

Colonization Module (Dive 395)

B09_TRACK_C6R

Third colonization module was recovered on 23 September 2009 and contained carbonates. Carbonates were shared:

Table VII – Destination and storage of top substrate Carbonates.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table VIII – Destination and storage of middle substrate Carbonates.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
5	Sylvie Gaudron	Ethanol 96%
6	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

Table IX – Destination and storage of low substrate Carbonates.

No cubes	Addressee	Storage Mode
3	Laure Guillow	Ethanol 96%
3	Sebastian Duperron	Ethanol 96%
6	Sylvie Gaudron	Ethanol 96%
5	Sylvie Gaudron	Formaldehyde 37%
10	Ana Colaço	Frozen

4.5.2. Samples of fauna

Mussels:

11:23H – B09BIO001

Tour Eiffel mussels (Fig. 2) were collected on the 7th of September 2009 with aid of ROV. Mussels were collected and placed in one biobox, previously sterilized with ethanol. Once the biobox arrived at surface, mussels were removed and kept refrigerated until processing of samples.

- 10 were frozen to do immunological and histological analysis;

- 10 mussels were stored in Formaldehyde 10% and chilled at 4ºC to do FISH;

- 10 mussels were dissected in gills, foot, digestive gland, mantle and rest to do biochemical analysis.

Shrimps:

00:41 – B09BIO02

00:50 - B09BIO03

01:37 - B09BIO04

Shrimps were collected at Tour Eiffel with ROV´s slurp gun and when they arrived at the surface, 20 shrimps were frozen at -20ºC.

Sintra:

N 37º17.5455

W 32º16. 4848

Imm = 1622 m

Mussels from Sintra were collected using a biobox and preserved as follows:

-10 were frozen to do immunological and histological analysis;

-10 mussels were stored in Formaldehyde 10% and chilled at 4ºC to do FISH;

-10 mussels were dissected in gills, foot, digestive gland, mantle and rest to do biochemical analysis.

Fig. 2 – Mussels collected at Tour Eiffel.

Shrimps

Shrimps were collected at Sintra with ROV´s slurp gun and when they arrived at the surface 10 shrimps were frozen at -20ºC.

Cypres:

N 37º17.3300

W 32º 16.5307

Imm = 1696 m

One new site was discovered (Cypres) during the cruise and mussels were collected at this place. Ten were frozen at -20ºC.

4.6. Microbiologica sampling

Françoise Lesongeur and Valentin Crépeau (IFREMER)

4.6.1. Microbial mats study (Valentin Crépeau PhD)

Mats samples, performed during Momar-2008 cruise with PEP pump, permit us to finish the phylogenetic and metabolic characterizations begun during EXOMAR (2005) and MoMARETO (2006) cruises. Theses studies revealed a poor *Archaeal* diversity, dominated by the Marine *Crenarchaeota* Group 1, especially by the aerobic-oxidative specie *Nitrosopumilus maritimus,* which seems to be active. In contrast *Bacterial* clones revealed a considerably higher diversity. A large number of them (29% and 25%) were related to the γ and ε classes of *Proteobacteria*, but α and δ classes were also represented (11% and 3%). Besides *ProteoBacteria*, *Bacteroides*-Cytophaga-*Flexibacter* (BCF) group is well represented (25%) and a few clones of many other groups and phyla were found. Complementary 16S ribosomal RNA clones, obtained with RT-PCR, revealed clones affiliated to *Thiotricaceae* as main active specie. Metabolic study, with specific primers, showed active bacterial populations implied in autotrophic carbon fixation, sulfur- and methane-oxidization.

During this cruise we took twice (dive 389 and 395) mussels covered by white filamentous mats, in the Tour Eiffel site. Samples were realized with sterile box and mussels were properly scrap to collect mats fragments. We also took, from broken mussels, some shell pieces with attached microbial filaments. These fragments and shell pieces were :

- freeze at –80°C in RNAlater® to molecular studies ;
- prepare for Fluorescent *In Situ* Hybridization (FISH) and store at –20°C ;
- prepare for electronic microscopy and store at 4°C ;
- use to inoculate bioreactor and various culture *media* (see below).

To complete the molecular studies on biofilms and well understand the relationship between microorganisms and hydrothermal fauna, we equally sampled some digestive glands of a few mussels, to characterize them microbial populations.

Cultural approaches are, in microbiology, the natural complement of biomolecular studies; consequently, we used a wild range of media and techniques to cultivate specific microorganisms from Lucky Strike biofilms.

- Sulfur cycle is a main way to chemosynthetic microorganisms in hydrothermal systems and the dominants species in microbial mats from Lucky Strike are, in all likelihood, implied in sulfur-oxidization. For theses reasons we decided to realize a longtime culture, in bioreactor, to study development and variations of sulfur-oxidizers. We used very poor autotrophic medium, just supplied with thiosulfate and flushed with N_2/CO_2 gaz enriched with H_2S (sulfide hydrogen).

- An agar *medium*, with Na_2S/O_2 gradient, were inoculate to performed the enrichment of filamentous sulfur-oxidizers, which seems visually dominate the mats.
- Four others autotrophic *media* were also inoculate to realize more classics enrichments for sulfur- and methane-oxidizers.

All cultures are performed in the dark between 8 and 10°C. Actives populations will be survey by microscopic observations, FISH techniques and RNA extractions followed by DGGE fingerprinting method.

Figure 1. White filamentous microbial mat on mussels patches (up), temperature measure and mussels' sample (down).

4.6.2. Temporal study of microbial populations in hot active chimneys

An active chimney (fluids temperatures after sampling: 162°C), AISICS, was collected in the Tour Eiffel site. Already sampled during EXOMAR (2005), MoMARETO (2006) and MoMAR-2008, it permit us to observe and better-understand changes and variations of microbial populations during the growth of the chimney. Molecular approach will be performed, using DNA extraction, PCR amplification, cloning, sequencing and phylogenetic analysis of 16S rRNA genes.

The chimney was collected in a sterile box and crushed under anoxic atmosphere (N_2/H_2; 90:10). We did aliquots in 5OmL Falcon tubes and froze them at –80°C for molecular studies and we stored an other part in flasks under anoxic atmosphere for cultures.

Three others hot active chimneys (fluids temperatures after sampling: 176°C, 276°C and 276°C) were also sampled from Isabel, White castle and Montségur sites. Samples are conditioned in the same way than AISICS. Phylogenetic diversity characterization by molecular approach are planned.

Figure 2. AISICS edifice (up at the left) and chimneys sampled from Isabel site (up at the right), White castle site (down at the left) and Montségur (down at the right).

Table 1. Data samples.

	Dive 389		
BA01	**Tour Eiffel**	**06/09/2009 B09MBI01R**	**Mussels covered with microbial samples**
	Tour Eiffel	06/09/2009 B09TEM 010	Temperature on mussels patch: 6.83°C
			Detail:

			Microbial mat collected on mussel
			12 nunc tubes at -80°C in RNA later
			8 1.5 mL tubes at -20°C for FISH
			6 nunc tubes at 4°C fixed in glutaraldehyde
			Mussels shell pieces with attached microbial mat
			1 100 mL container for FISH
			4 Falcon tubes at -20°C for FISH
			2 Falcon tubes at fixed in glutaraldehyde
			Mussels digestive glands
			12 nunc tubes at -80°C in RNA later
			12 nunc tubes at -20°C for FISH
BA02	**Tour Eiffel**	**07/09/2009 B09MBI02R**	**AISICS chymney samples**
	Tour Eiffel	07/09/2009 B09TEM 016	Temperature of fluids before sampling chimney : 124°C
	Tour Eiffel	07/09/2009 B09TEM 017	Temperature of AISICS fluids after sampling : 162°C
			5 nunc tube - 80°C for DNA extraction
			1 falcon tube at -80°C for DNA extraction
			2 falcon tube à -80°C for FISH
			1 flask at 4°C for culture
BA03	**Isabel**	**09/09/2009 BO9MBI03R**	**Chymney samples**
	Isabel	09/09/2009 B09TEM 025	Temperature of fluids before sampling chimney : 174°C
	Isabel	09/09/2009 B09TEM 026	Temperature of fluids after sampling chimney: 176°C
			1 Falcon tube at -80°C for DNA extraction
			1 Falcon tube at -80°C for FISH
			1 flask at 4°C for culture
	Dive 392		
BA04	**White castle**	**15/09/2009 B09MBI04R**	**Chymney samples**
		15/09/2009 B09TEM 028	Temperature of fluids after sampling chimney : 276°C
			7 Falcon tube at - 80°C for DNA extraction
			1 Falcon tube at -20°C for FISH
			2 flask at 4°C for culture

			6 nunc tubes with DMSO at -80°C for culture
			1 piece of chimney in a bag at -80°C
	Dive 395		
BA05	**Tour Eiffel**	**23/09/2009 B09 MBI 05 R**	**Mussels covered with microbial mat samples**
		23/09/2009 B09TEM59	Temperature on mussels patch: 7,00°C
			Detail:
			Mussels shell pieces with attached microbial mat
			1 100 mL container for FISH
			2 Falcon tubes at -20°C for FISH
			2 Falcon tubes at fixed in glutaraldehyde
			Mussels digestive glands
			12 nunc tubes at -80°C in RNA later
			12 nunc tubes at -20°C for FISH
			Mussels cut in two
			2 100 mL container for FISH
BA06	**Montségur**	**23/09/2009 B09MBI06R**	**Chymney sampled in sterile box for microbiology**
		23/09/2009 B09TEM060	Temperature of fluids after sampling chimney : 276°C
			6 falcon tubes at -80°C
			3 falcon tubes for FISH
			2 flask at 4°C for culture

4.7 Hydrothermal fluid flow quantification

4.7.1. Scientific Objectives

Accurate estimates of heat flux from hydrothermal vent sites are essential to understanding many biological, geological, and chemical processes at mid-ocean ridges. Calculations of heat flux rely on measurements of the temperature and the volume flux of escaping fluid. The goal of the fluid flow portion of the Bathyluck 2009 cruise was to acquire video sequences from both localized hydrothermal vents and regions of diffuse upwelling and to use these images to calculate the velocity of the rising fluids. Coupling these calculations with temperature measurements will allow a more accurate estimate of the heat flux from individual vent sites and from the entire Lucky Strike hydrothermal field than was previously possible.

4.7.2. Methods

4.7.2.1. Video Capture Protocol

Video was recorded in PAL format at 25 frames per second with an interlaced resolution of 720 by 576. Before each video capture, the remote operated vehicle (ROV) was placed in a fixed position and maintained as stationary as possible. The camera focus and the light level were then adjusted depending upon the flow being imaged. For localized venting (i.e. venting from a single orifice; Figure 1A), the focus was set on the upwelling fluid and the light level was adjusted to provide a large pixel intensity variation within the upwelling plume. The camera focus for flows with a high particle density (Figure 1B) was set to the plane containing the particles of interest and the light level was adjusted to maintain a high contrast between particles and background. In cases of clear, diffuse flow (e.g. along the length of a fracture; Figure 1C), the camera was focused on the background behind the fluid and the light level was set to ensure a large variation of pixel intensities in the image background.

4.7.2.2. Velocity Calculations

Depending upon the type of fluid flow, velocities are calculated in either one or two steps. First, a cross-correlation of pixel intensities is performed across subsequent images to calculate pixel displacements. For localized venting of opaque fluid and diffuse flows with high particle densities, these displacements correspond to the fluid velocity (Figure 2, 3). However, for clear, diffuse fluids, the pixel displacements correspond to the apparent deformation of the image background caused by thermally induced variations in the refractive index. To calculate the fluid velocities, a second normalized cross-correlation is performed on the pixel displacement gradients; in effect, tracking the motion of the apparent background deformation through time (Figure 4).

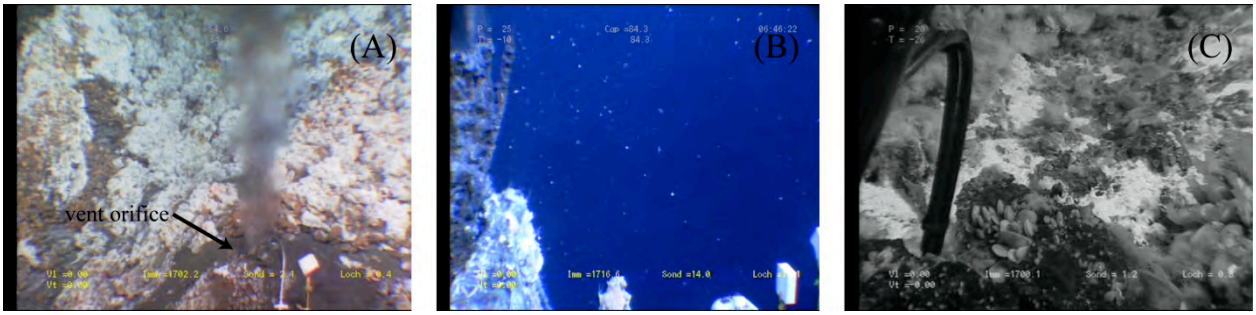


Figure 1. Velocity calculations are performed on (A) localized flow from a single orifice, (B) diffuse flow with a high particle density, and (C) clear, diffuse flow that acts as a deforming lens due to variations in the refraction index of light.

4.7.3. Acquired Data

A total of 31 individual video events were captured from the main camera of the Victor 6000 remote-operated vehicle. Each event is composed of between 1 and 12 separate video sequences ranging between ~20 seconds to 3 minutes in length. The majority of video events were collected in two different type of survey. First, video events of diffuse flow were collected during a ~6 hour survey of fractures surrounding the Tour Eiffel vent site. Second, videos were collected at several vent sites in parallel with temperature and temperature gradient measurements to facilitate the later calculation of heat flux. The video events are summarized in the table below.

Video Event	Latitude (N)	Longitude (W)	Flow Type	Event Length	Vent Site
B09VID001	37°17.510	32°16.667	Localized Vent	6 min 0 sec	Y3
B09VID002	37°17.509	32°16.662	Localized Vent	2 min 0 sec	Y3
B09VID003	37°17.529	32°16.504	Diffuse	1 min 30 sec	Sintra
B09VID004	37°17.325	32°16.526	Diffuse	1 min 20 sec	Tour Eiffel
B09VID005	37°17.271	32°16.539	Diffuse	1 min 0 sec	Mont Segur
B09VID006	37°17.449	32°16.915	Localized Vent	21 min 1 sec	Crystal
B09VID007	37°17.383	32°16.868	Localized Vent	0 min 37 sec	White Castle
B09VID008	37°17.332	32°16.541	Diffuse	41 min 45 sec	Tour Eiffel
B09VID009	37°17.332	32°16.541	Diffuse	17 min 10 sec	Tour Eiffel
B09VID010	37°17.333	32°16.534	Diffuse	30 min 5 sec	Tour Eiffel
B09VID011	37°17.333	32°16.534	Diffuse	19 min 38 sec	Tour Eiffel
B09VID012	37°17.339	32°16.533	Localized Vent	2 min	Aisics Vent
B09VID013	37°17.339	32°16.533	Localized Vent	2 min	Aisics Vent

B09VID014	37°17.339	32°16.533	Localized Vent	2 min	Aisics Vent
B09VID015	37°17.379	32°16.862	Localized Vent	2 min 30 sec	White Castle
B09VID016	37°17.383	32°16.868	Localized Vent	2 min 3 sec	White Castle
B09VID017	37°17.435	32°16.932	Localized Vent	2 min 0 sec	South Crystal
B09VID018	37°17.432	32°16.932	Localized Vent	2 min 0 sec	South Crystal
B09VID019	37°17.466	32°16.907	Localized Vent	4 min 15 sec	Crystal
B09VID020	37°17.447	32°16.992	Localized Vent	2 min 0 sec	Crystal
B09VID021	37°17.507	32°16.670	Localized Vent	2 min 0 sec	Y3
B09VID022	37°17.507	32°16.670	Particles	2 min 20 sec	Y3
B09VID023	37°17.510	32°16.667	Diffuse	2 min 0 sec	Y3
B09VID024	37°17.510	32°16.667	Diffuse	2 min 0 sec	Y3
B09VID025	37°17.280	32°16.535	Localized Vent	2 min 5 sec	Mont Segur
B09VID026	37°17.281	32°16.535	Localized Vent	2 min 30 sec	Mont Segur
B09VID027	37°17.336	32°16.529	Localized Vent	1 min 10 sec	Tour Eiffel
B09VID028	37°17.337	32°16.524	Localized Vent	2 min 10 sec	Tour Eiffel
B09VID029	37°17.339	32°16.533	Localized Vent	2 min 9 sec	Aisics Vent
B09VID030	37°17.378	32°16.640	Localized Vent	5 min 45 sec	Isabel
B09VID031	37°17.338	32°16.528	Localized Vent	2 min 0 sec	Aisics Vent

4.7.4. Preliminary Results

Several initial velocity calculations were performed while underway. Maximum velocities of localized flow range between ~12-30 cm/s, within the values measured in previous studies at the East Pacific Rise (~8-43 cm/s) [*Ramondenc et al.*, 2006]. Upwelling, diffuse flow surrounding the tower at Y3 is calculated to range between 4-16 cm/s (Figure 3). Finally, initial diffuse flow velocities along fractures at the base of Tour Eiffel are between 1-3 cm/s (Figure 4).

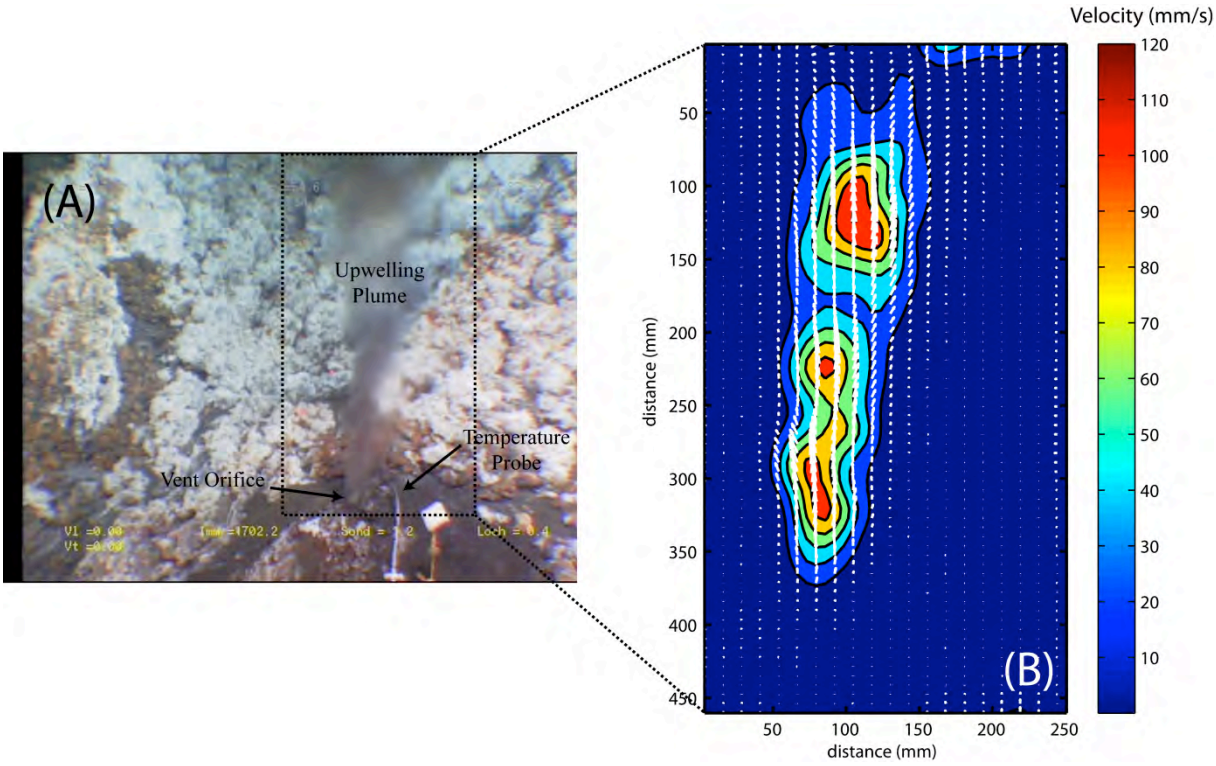


Figure 2. Images from a (A) localized vent source are used to calculate (B) time-averaged velocities (color contours and velocity vectors). Here, the velocities are averaged over 1 minute.

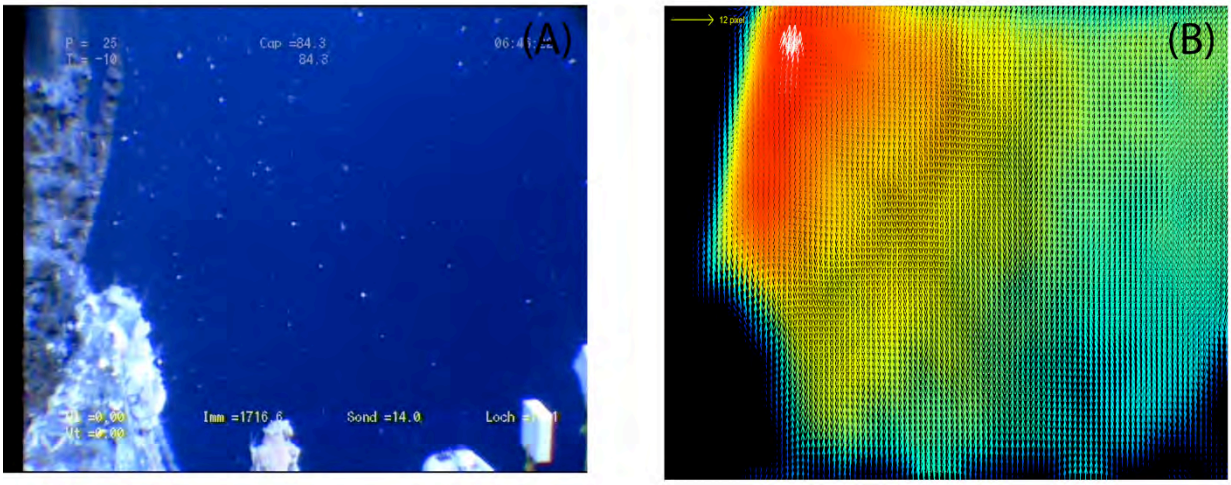


Figure 3. Images of (A) diffuse flow with a high particle density are used to calculate (B) the time-averaged velocity (arrows) of buoyant, low temperature flow around the tower at Y3. Velocities in (B) range from ~3 cm/s to ~16 cm/s. Hotter colors represent larger velocity magnitudes.

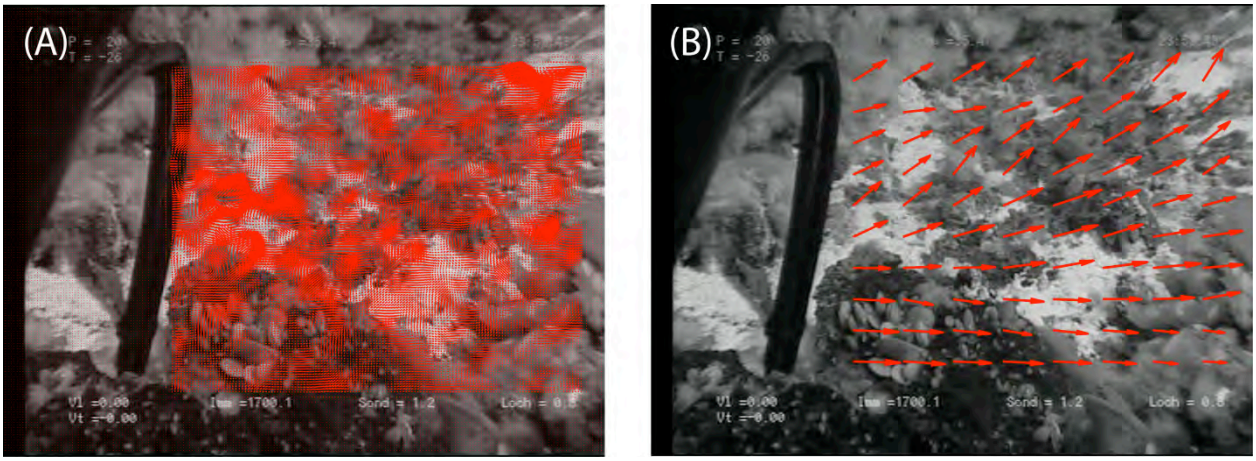


Figure 4. Images of clear, diffuse fluid flow are used to calculate the (A) apparent deformation of image backgrounds (small, red arrows). A second normalized cross-correlation of the deformations across subsequent calculations of (A) is performed to calculate the (B) time-averaged velocity field of the fluid (red arrows). Here, the velocities are averaged over 18.5 seconds of video and range between 1 cm/s and 3 cm/s.

4.7.5. Planned Post-Cruise Work

Method Verification

In order to verify the accuracy of the new method of diffuse flow measurements of clear fluids, we plan to perform a series of tests using both laboratory and numerical experiments of upwelling hot plumes in fluids with both constant and temperature dependent viscosity. Initial tests have already been performed in the laboratory with satisfactory results, but more rigorous verification and error analysis is needed.

Velocity Calculations

Data processing of the acquired videos will involve as many as three steps depending upon the video quality and type of venting being examined. In some areas with strong currents it was not possible to maintain a perfectly steady camera throughout a video sequence. The first step of video processing will be to remove the wobble introduced by this motion. Camera movement will be removed by comparing the position of distinctive points in each image throughout the video sequence and warping each image so that these points remain steady. The second processing step will be to calculate either the fluid velocity (localized venting and high particle density diffuse flow) or the apparent background deformation (clear, diffuse fluid). Finally, the third step will involve calculating the fluid velocity for clear, diffuse fluid flow. The processing of fluid velocities is expected to be complete by March 2010.

Heat Flux Estimates

Once velocity calculations are complete, heat fluxes will be estimated by coupling the velocities with the temperature measurements performed during this cruise. The details of these estimates will vary with the type of flow and will require extrapolation of the 2D calculated velocity fields to 3D.

4.7.6. Comments

Although the video events and velocity calculations coupled with the temperature measurements will likely provide a very good estimate of the Lucky Strike heat flux, there are several difficulties arising from the quality of video captured. The current system of direct conversion to DVD causes a large loss of resolution and severely limits the types of analysis possible. For example, the low frame rate (25 frames per second) causes portions of the fluid to cross several pixels in a single frame, causing smearing of the image. Thus, velocity calculations on clear fluids are limited to very slow, low temperature flows. For opaque fluids venting from a single orifice, the fastest velocities within the first few centimeters of the vent are unmeasurable. A camera with a faster frame rate and higher resolution with a direct to DV-tape or hard drive solution would provide a significant improvement to the current system and eliminate many of the above concerns.

5. Science operations – Navigation and Data

5.1. Engine navigation

5.1.1. Victor Navigation

5.1.1.1. Positioning systems

The Victor 6000 is a ROV (Remote Operated Vehicle). It is driven by the ROV team from the ship thanks to an optical cable. Two different positioning systems are available: the estimated navigation and the BUC.

Estimated Navigation

During the dives, the ROV Victor 6000 calculates its geographical position from its last position and the data given by an inertial sensor. This positioning system is very accurate locally but a drift can be introduced by submarine currents.

BUC – Base Ultra Courte

The BUC is an ultra short baseline acoustic positioning system. The ship sends out a sound wave and when the ROV receives this signal, it calculates its new position base on the travel-time of the acoustic wave. This positioning system is not affected by submarine currents so its absolute location is more accurate but there can be a large error locally.

Two complementary systems

The BUC is theoretically better than the estimated navigation. But sometimes, the transmition of the acoustic wave is blocked because of a bad choice of the frequency or too much noice from the boat.

As a consequence, the Estimated Navigation is more stable than the BUC system so the ROV team uses it to drive the robot. But they need to relocate regularly the estimated navigation in order to reduce the drift. This relocalisation is indispensable for the dive in survey mode in order to respect the profiles and to reach dive's cartographic objectives without holes in the original profiles.

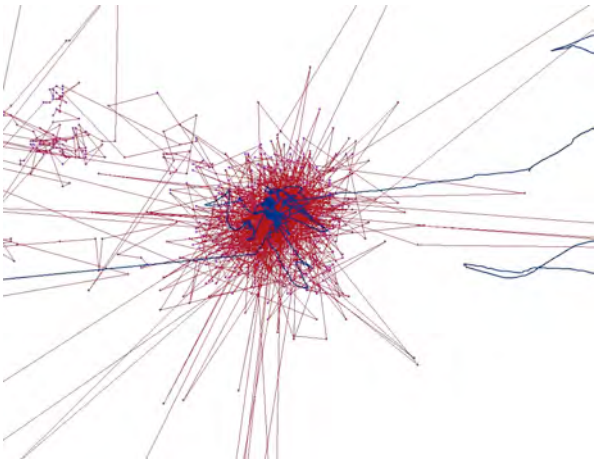
5.1.1.2. Data processing

Raw Data

For each dive, the Victor Team made a CD (or a DVD) containing all the data recorded by the ROV. This data includes the estimated navigation, the BUC data, an hybrid navigation, the images taken by the scientists during the dives, and informations about the camera during the shooting. The hybrid navigation is a combination of the BUC data and the estimated navigation. It has never been used for the processing of the navigation because of a lack of information about the methodology used to build it in the Ifremer documentation.

At the beginning of the cruise (until the dive number 392 on the 15th of September), there was a technical problem in the transmition of the acoustic wave. So, the BUC data are unusable for the dives 386 to 392. For these dives, the estimated navigation was processed with regard to the BUC and the relocalisation done by the pilots. These dives were done in a sampling mode or with the OTUS acquisition which will allow recalculating later a better navigation during the generation of the mosaic.

Comparaison of the BUC data before and after the dive 392



Bad BUC transmition in sampling mode

Bad BUC transmition in survey mode

Good BUC transmition: only a few points are aberrant

Number Dive	Positionning System used for the processing
386 - 1	Estimated Navigation
387 - 2	Estimated Navigation
388 - 3	Estimated Navigation
389 - 4	Estimated Navigation
390 – 5	Estimated Navigation
391 - 6	Estimated Navigation
392 – 7	BUC
393 – 8	BUC

394 – 9	BUC
395 – 10	BUC
396 - 11	BUC

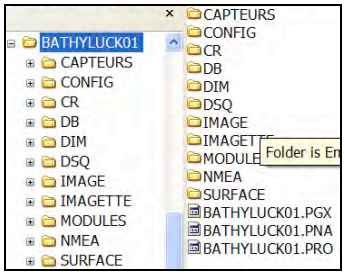
Methodology

The raw data are first imported thanks to an Ifremer software module, "Import des données du Victor 6000". This software converts the raw data to ArcGIS format (.dbf) and sorts the data by type.

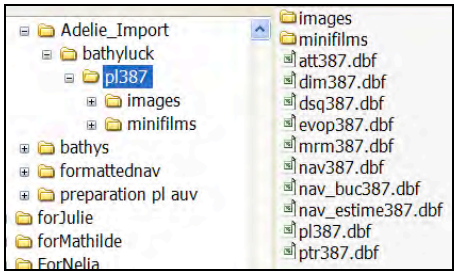
Navigation data was processed with the Ifremer software, Adelie. This software is delivered as an extension of the GIS software ArcGIS of ESRI enterprise. Adelie gives tools to draw tracks and export them to a readable format for the ROV team (Vemo+ format) before the dives and tools to process the navigation after the dives (filters, conversion of points to lines, smoothing of the tracks…).

Aberrant points were removed from the navigation data by filtering. Then, the navigation tracks were smoothed using a Gaussian algorithm.

Processing Line



Victor raw navigation data



Victor imported navigation data

Victor processed navigation data

(Every ArcGIS Shapefile contains 6 files)

Output Data

Once processed, the data are in an ESRI format: one shapefile (.shp) for each dive with the time and the coordinates. They were converted to different formats for those who needed the navigation data.

So, in the final data storage, there are three folders:

- One with the Shapefiles (ArcGIS-ESRI format)
- One with Excel files
- One with text files formatted for Caraïbe (for the bathymetry processing)

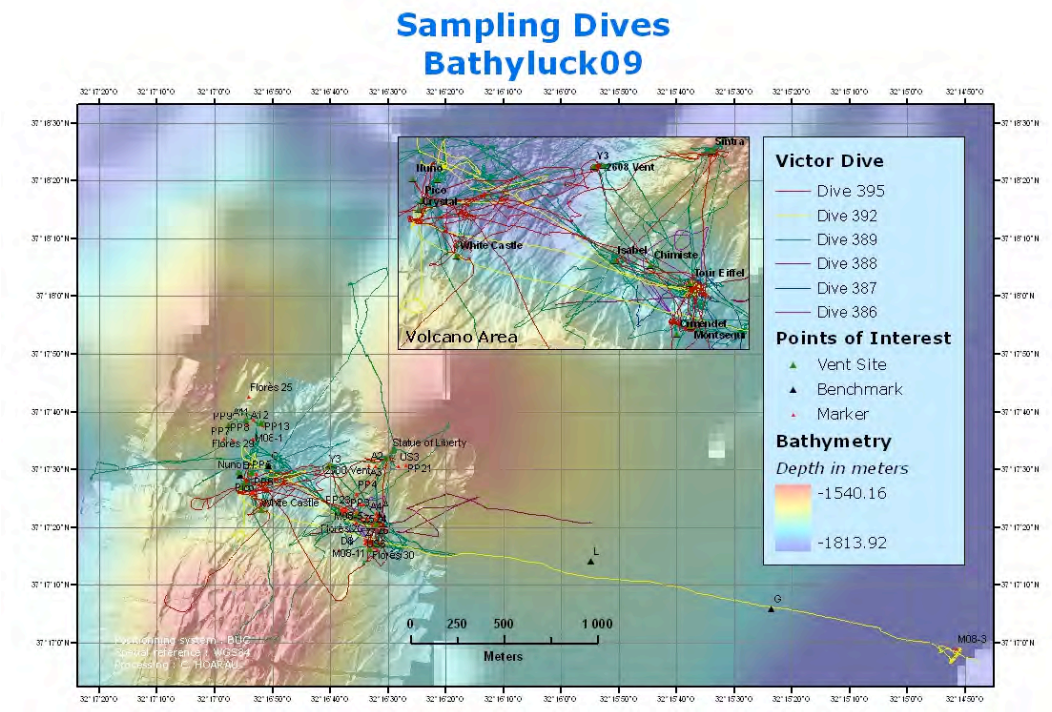
5.1.1.3. Chronological summary of dives

Dive 386-1 Dive 387-2 Dive 388-3	01/09/09 to 02/09/09 02/09/09 to 03/09/09 04/09/09 to 05/09/09	3 short dives in sampling mode with a technical problem on the arm "maestro"
Dive 389-4	05/09/09 to 09/09/09	1 long dive in sampling mode
Dive 390-5 Dive 391-6	10/09/09 to 11/09/09 11/09/09 to 14/09/09	2 dives with OTUS, magnetism and MMR at an altitude of 8m
Dive 392-7	15/09/09 to 16/09/09	1 dive in sampling mode
Dive 393-8 Dive 394-9	16/09/09 to 19/09/09 19/09/09 to 21/09/09	2 dives with MMR at an altitude of 50m
Dive 395-10	21/09/09 to 24/09/09	1 dive in sampling mode
Dive 396-11	24/09/09 to 26/09/09	1 dive with MMR at an altitude of 50m

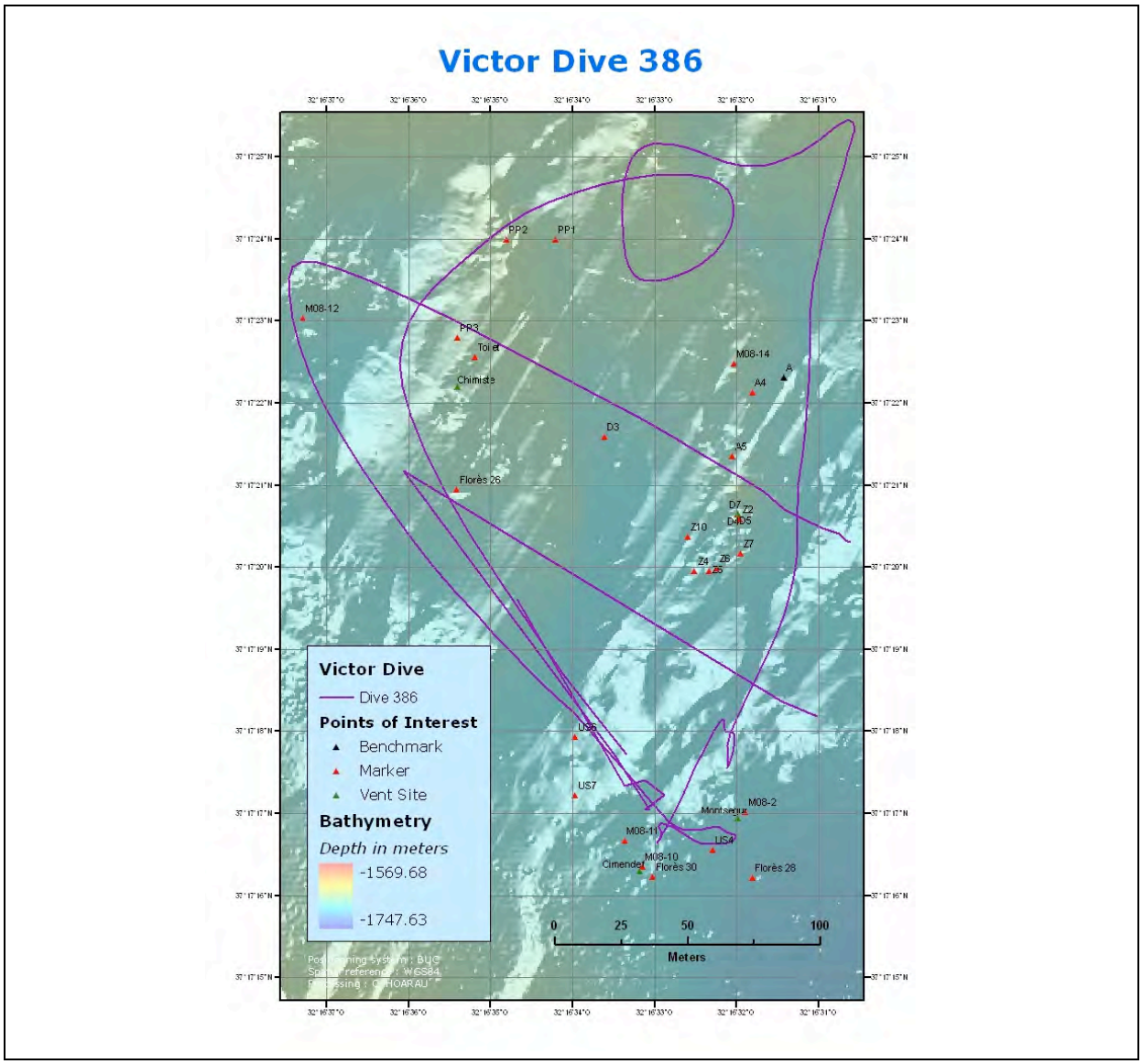
5.1.1.4. Sampling dives

Three dives have been performed in sampling mode to sample fluids and fauna and capture video of the LuckyStrike vent sites. During these three dives, instrumentation was deployed and recovered too: at the very beginning of the cruise temperature probes were deployed on the volcano area, at the middle of the cruise two pressure gauges were replaced, at the end of the cruise the short period instrumentation was recovered, and the rest of the instrumentation was deployed for one more year.

Before this, three dives were performed in sampling mode but only a few operations were successfull because of technical problems on the arm of Victor.

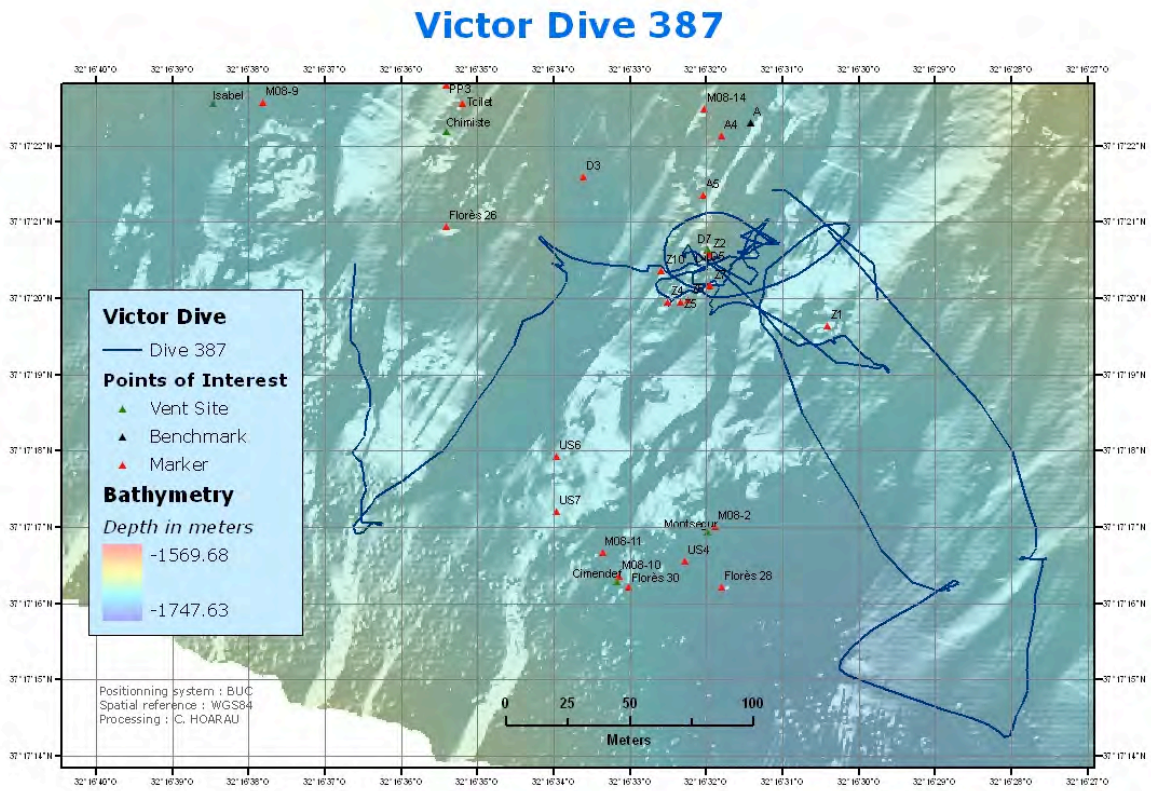


Dive 386	
Date	03/09/2009
Observateurs	CANNAT Mathilde ESCARTIN Javier
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	3 sites d'études prévus : MontSegur, Tour Eiffel et Roldan Récupération de capteurs de températures et de boîtes microbio. Pose de nouveau capteurs de température et de boîte microbio. Prélèvement de fluides et de biologie.
Bilan de la plongée	Aucune opération effectuée Problème technique diagnostiquée sur le bras du Victor Plongée écourtée

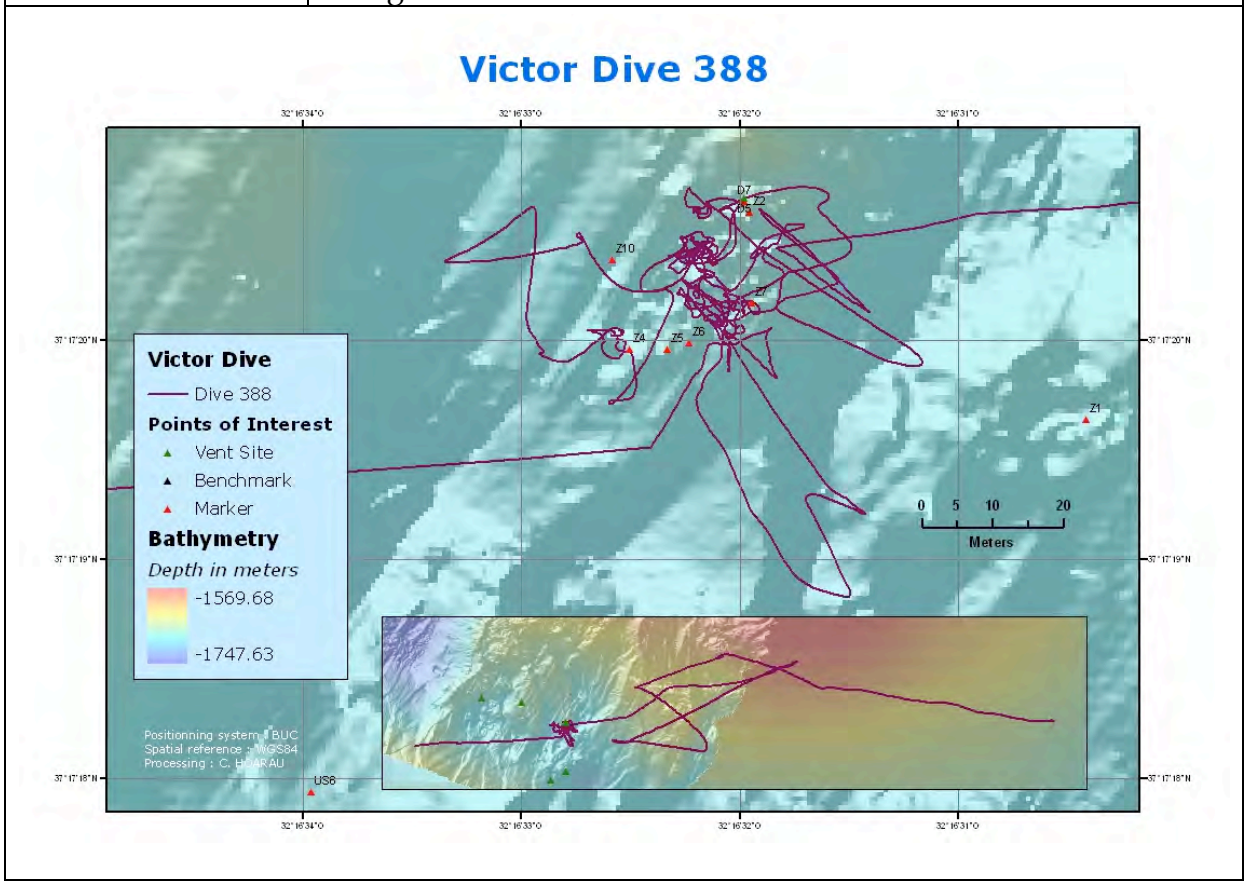


Dive 387	
Date	02/09/2009
Observateurs	CANNAT Mathilde ESCARTIN Javier CHAVAGNAC Valérie
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	3 sites d'études prévus : MontSegur, Tour Eiffel et Roldan Récupération de capteurs de températures et de boîtes microbio. Pose de nouveau capteurs de température et de boîte microbio. Prélèvement de fluides et de biologie.

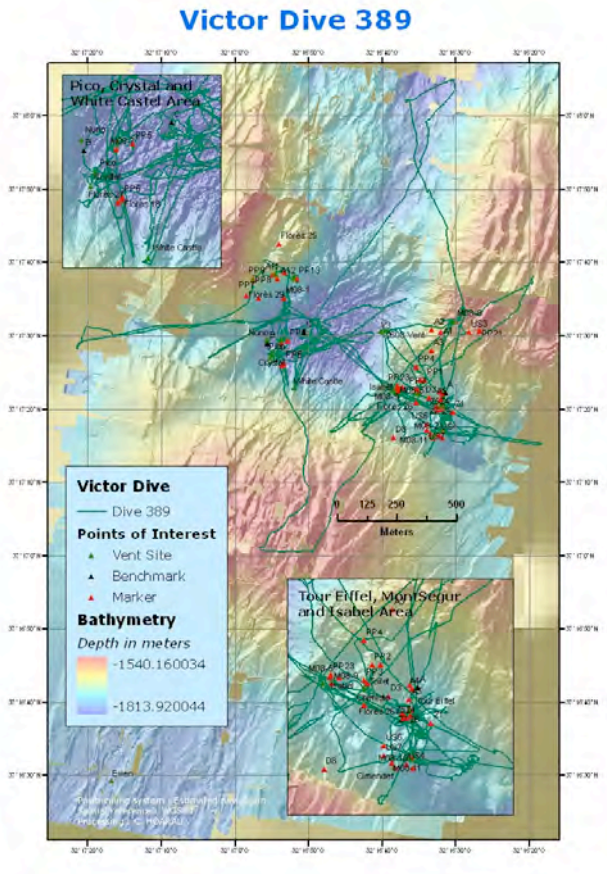
Bilan de la plongée	Aucune opération effectuée Problème technique diagnostiquée sur le bras du Victor Plongée écourtée



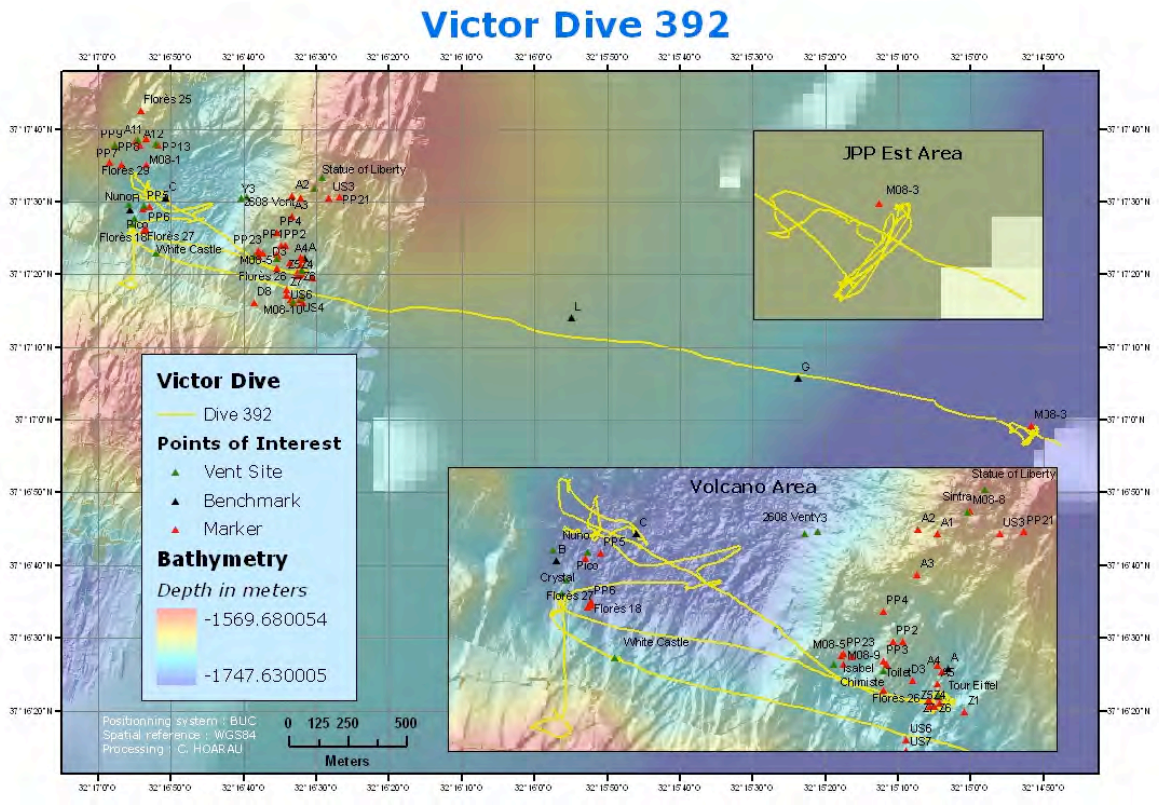
Dive 388	
Date	04/09/2009
Observateurs	CANNAT Mathilde ESCARTIN Javier CHAVAGNAC Valérie BOULARD Cédric BARREYRE Thibaut
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	3 sites d'études prévus : MontSegur, Tour Eiffel et Roldan Récupération de capteurs de températures et de boîtes microbio. Pose de nouveau capteurs de température et de boîte microbio. Prélèvement de fluides et de biologie.
Bilan de la plongée	1 capteur de température posé 2 capteurs de température récupérés 3 seringues de fluide prélevées 2 bouteilles de fluide prélevées Problème technique diagnostiquée sur le bras du Victor Plongée écourtée



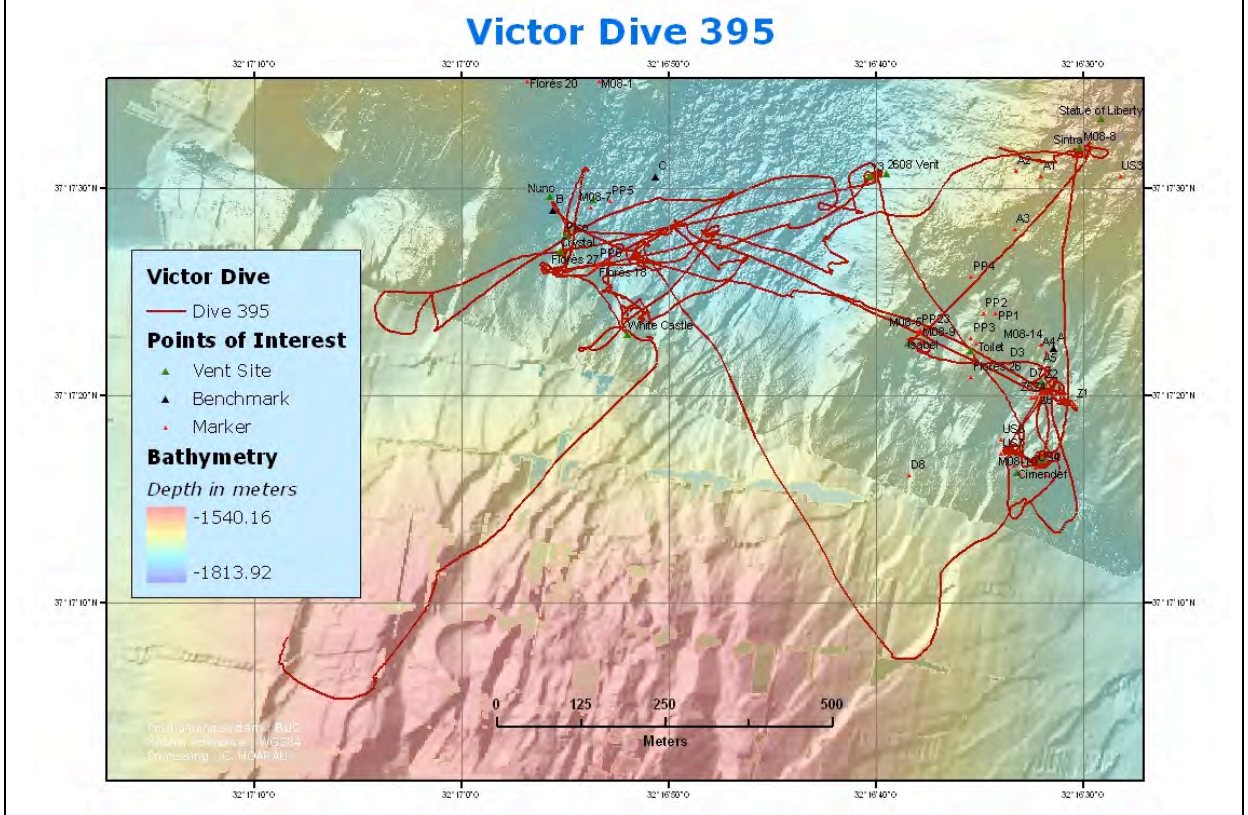
Dive 389	
Date	05/09/2009
Observateurs	BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CARLUT Julie, CHAVAGNAC Valérie, CREPEAU Valentin, CASTILLO Alain, ESCARTIN Javier, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, ROMEVAUX-JESTIN Céline, SALOCCHI Aura
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	Sites d'étude: MontSegur, Tour Eiffel, Roldan, Pico, Isabel, Crystal, White Castel, Y3. Récupération de l'instrumentation mise en place durant la campagne MoMAR'08 (capteurs de température et colonisateurs microbiologiques), Mise en place d'une série de capteurs de température pour une an ou un mois de mesures. Pélèvements de fluides et faune sur les sites hydrothermau. Capture vidéo de plumes hydrothermaux
Bilan de la plongée	26 capteur de température posé et 5 récupérés 9 seringues et 10 bouteilles de fluide prélevées 2 colonisateurs microbiologiques récupérés et 1 déployé 11 vidéos capturées



Dive 392	
Date	15/09/2009
Observateurs	BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CARLUT Julie, CHAVAGNAC Valérie, CREPEAU Valentin, CASTILLO Alain, ESCARTIN Javier, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, ROMEVAUX-JESTIN Céline, SALOCCHI Aura, LECOMTE Benoit, POT Olivier, SILVA Catia
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	Récupération et remplacement des capteurs de pression Prélèvement de fluides et d'échantillons biologiques Récupération et pose de colonisateurs microbiologiques Remise en place du dernier capteur de température Mise en place d'un panneau de calibration pour la caméra
Bilan de la plongée	1 capteur de température posé et 6 récupérés 4 seringues et 4 bouteilles de fluide prélevées 3 colonisateurs microbiologiques récupérés et 1 déployé 4 prélèvements biologiques 1 vidéo capturée



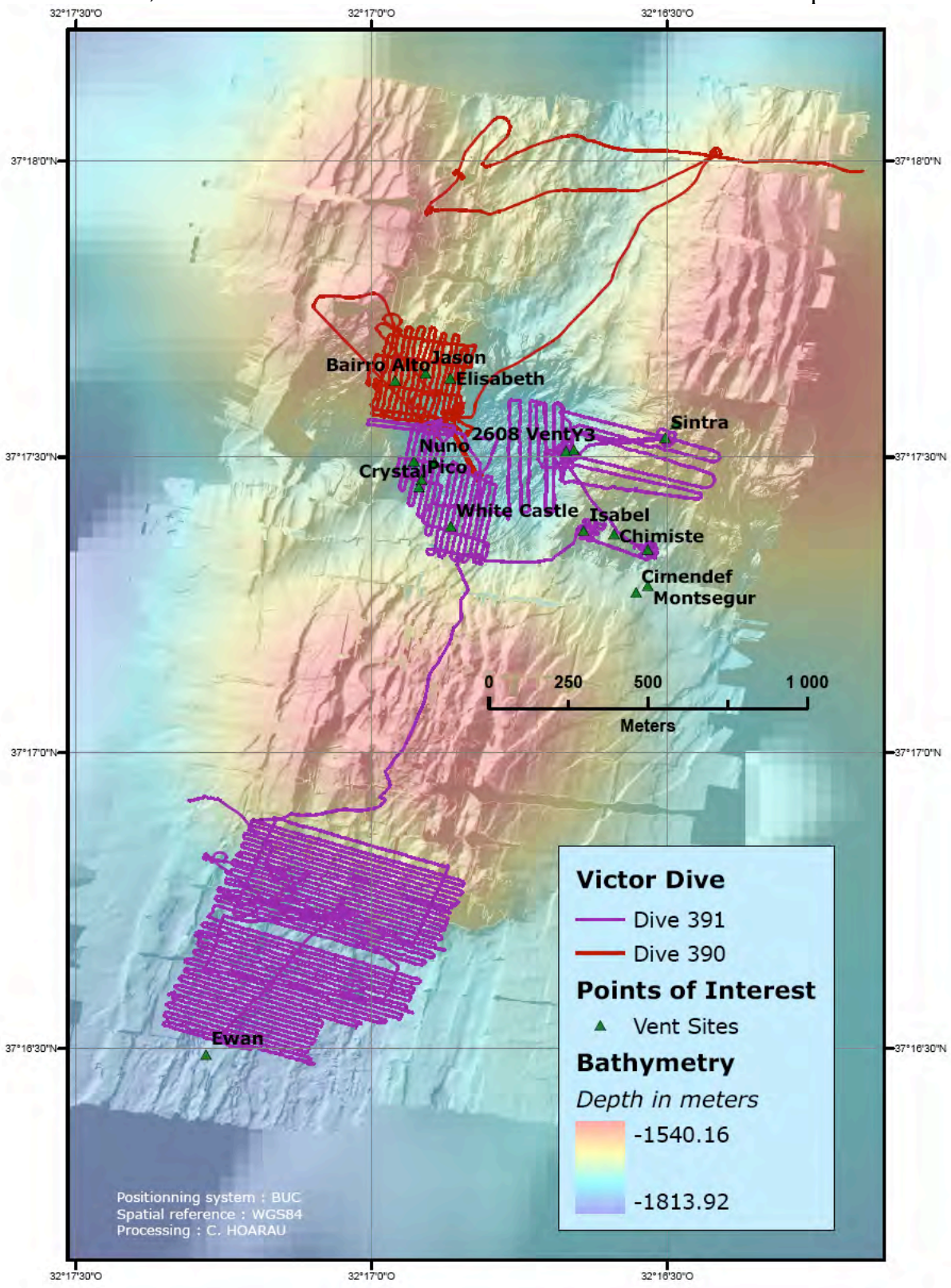
Dive 395	
Date	21/09/2009
Observateurs	BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CARLUT Julie, CHAVAGNAC Valérie, CREPEAU Valentin, CASTILLO Alain, ESCARTIN Javier, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, ROMEVAUX-JESTIN Céline, SALOCCHI Aura, LECOMTE Benoit, POT Olivier, SILVA Catia
Station	Lucky strike
Latitude Moyenne	N 37 17.5000
Longitude Moyenne	W 32 16.7000
Objectifs de la plongée	Récupération et remplacement des capteurs de pression Prélèvement de fluides et d'échantillons biologiques Récupération et pose de colonisateurs microbiologiques Remise en place du dernier capteur de température Mise en place d'un panneau de calibration pour la caméra
Bilan de la plongée	11 capteur de température posé et 11 récupérés 12 seringues et 9 bouteilles de fluide prélevées 1 colonisateur microbiologique récupéré et 1 déployé 5 prélèvements biologiques 16 vidéos capturées



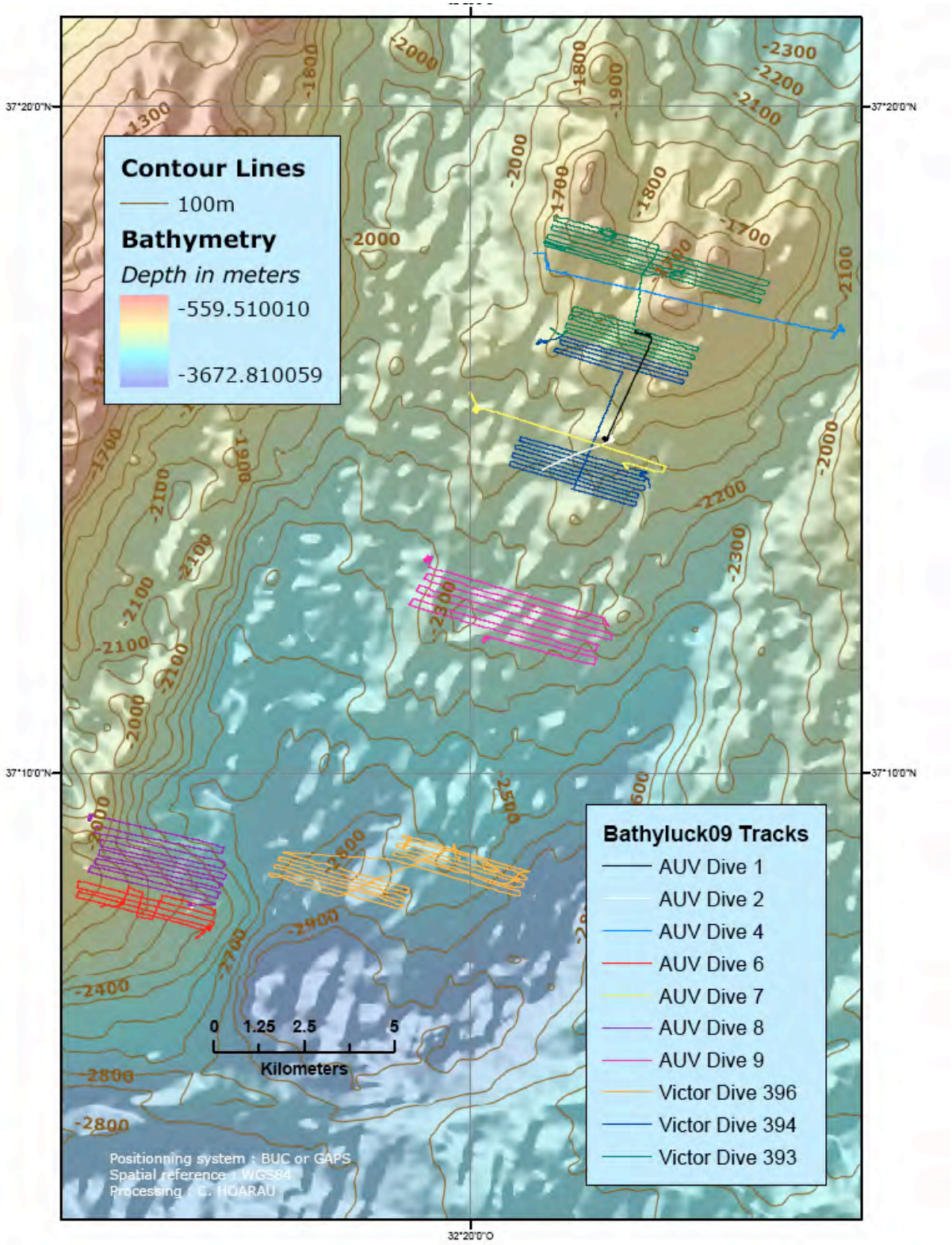
5.1.1.5. Survey Dives

Two types of survey dives were performed:

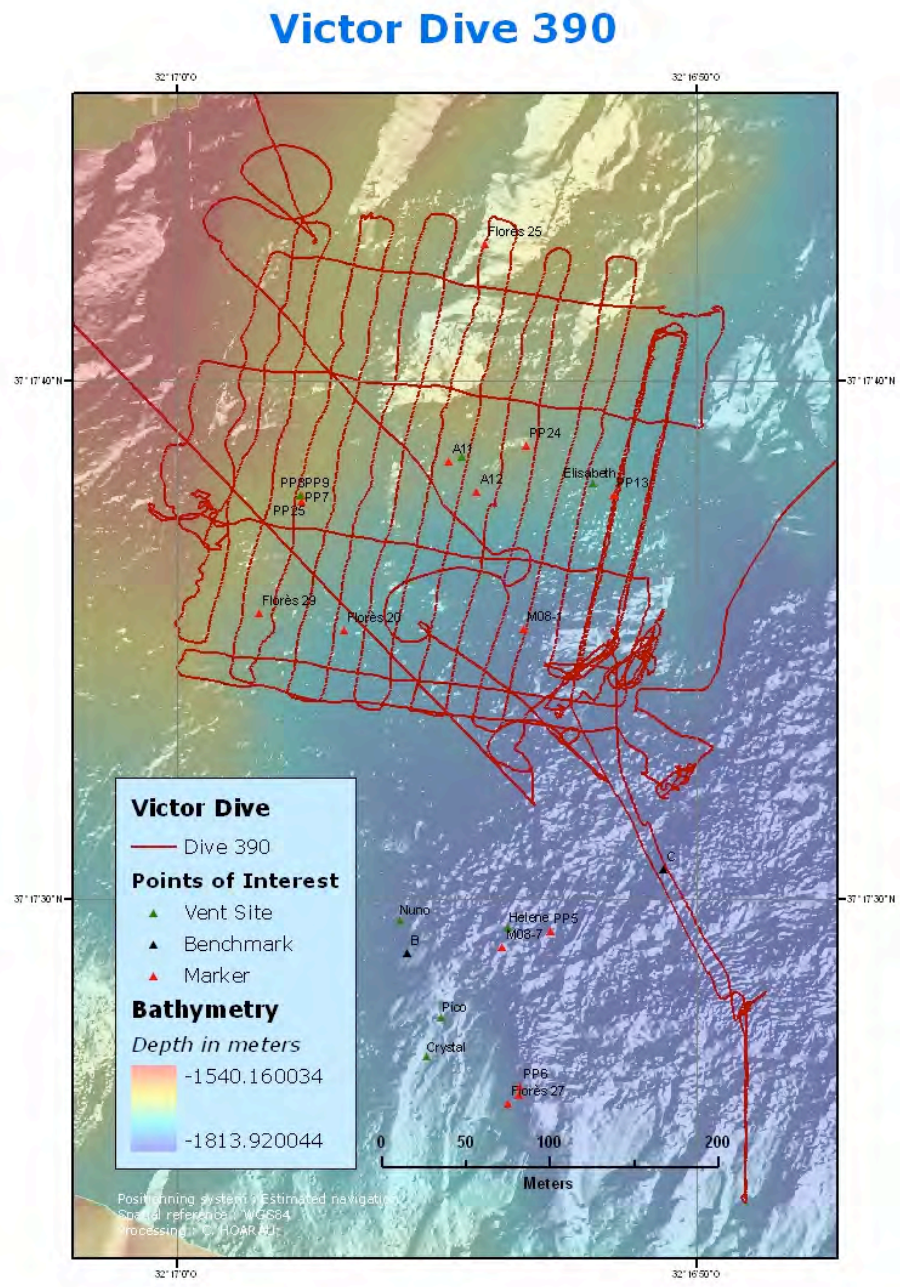
- For the OTUS acquisition, two dives (390 and 391) were performed at an altitude of 8m with an interval between tracks of 15m. During these two dives, the MMR was turned on but there were several technical problems.



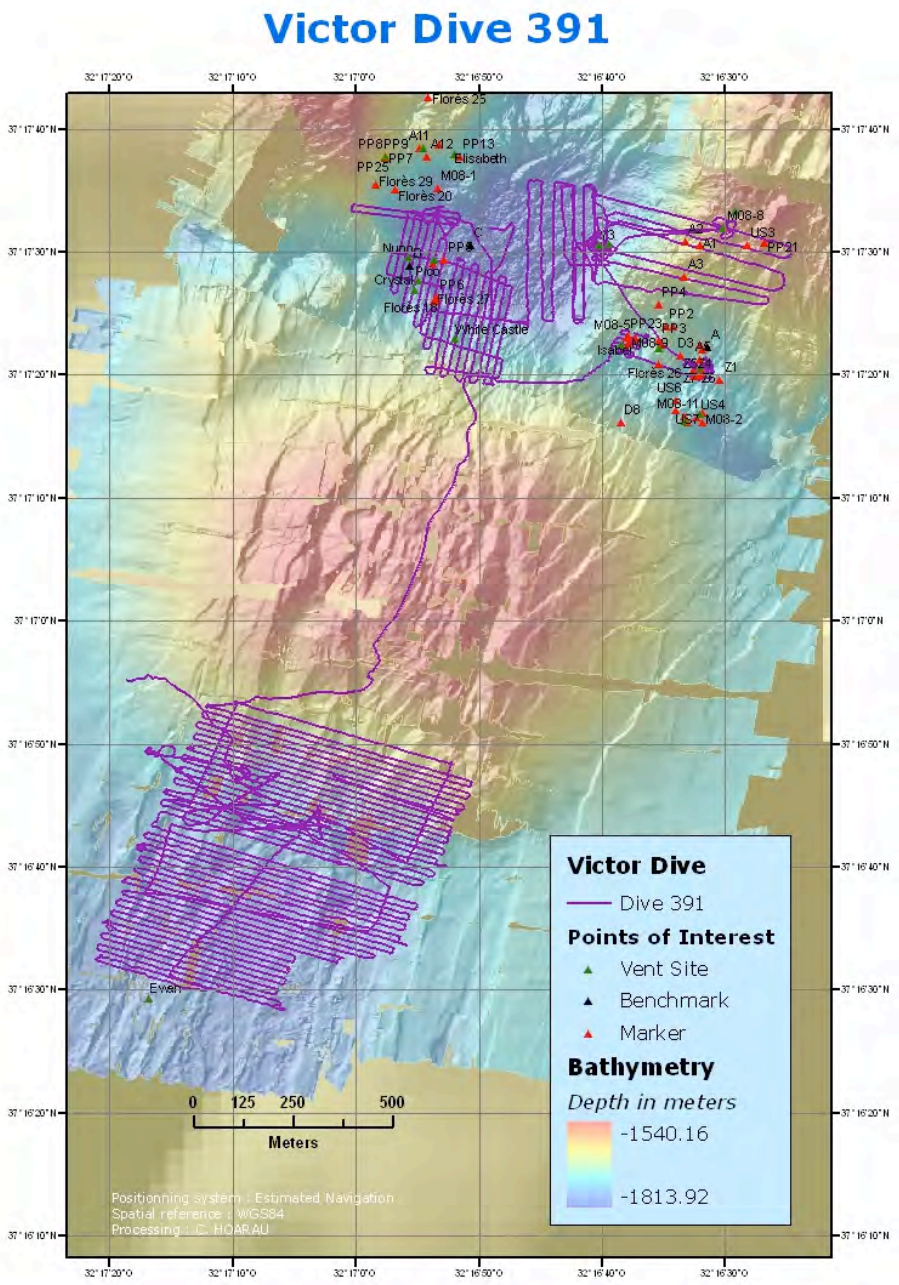
- For the MMR acquisition, three dives (393, 394 and 396) were performed at an altitude of 50m with an interval between tracks of 120m.



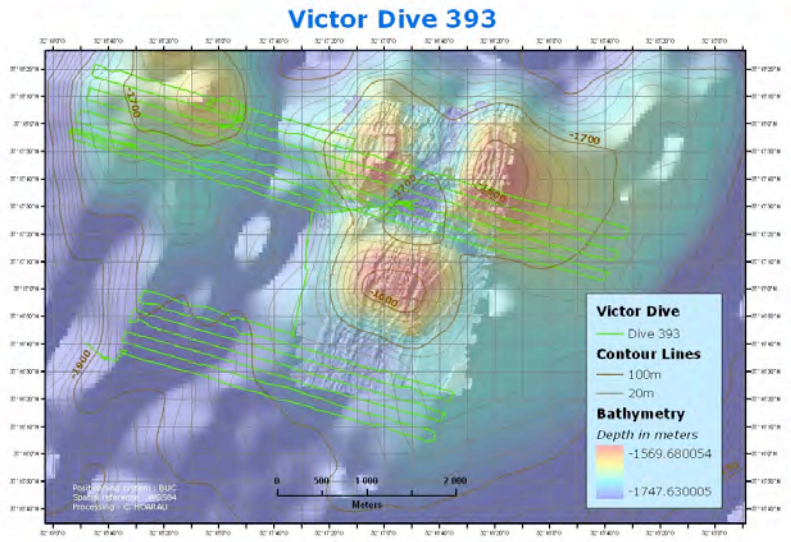
Dive 390	
Date	10/09/2009
Station	Lucky strike
Objectifs de la plongée	Compléter le survey OTUS de la campagne MoMAR08 au Nord-Est du lac de lave



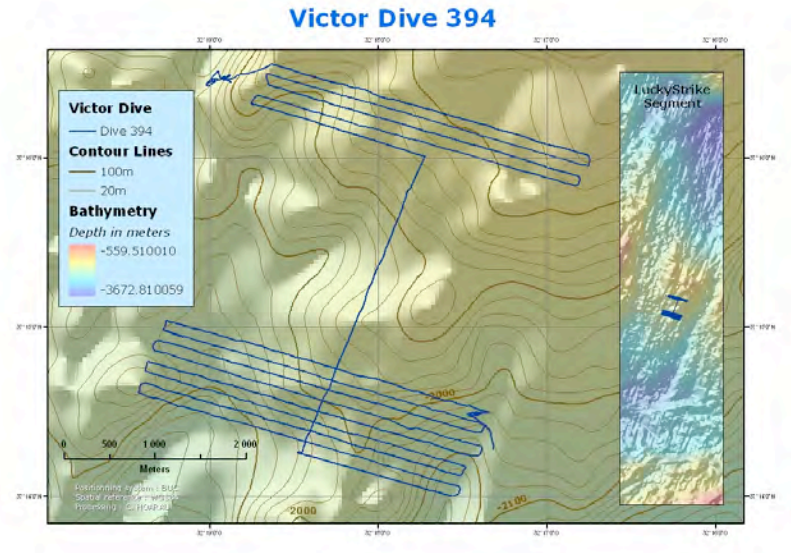
Dive 391	
Date	11/09/2009
Station	Lucky strike
Objectifs de la plongée	Compléter le survey OTUS de la campagne MoMAR08 au lac de lave Compléter la couverture OTUS des sites hydrothermaux principaux Trouver le site Hydrothermal Ewan découvert durant la campagne Graviluck06
Bilan de la plongée	3 vidéos capturées Ewan est proche



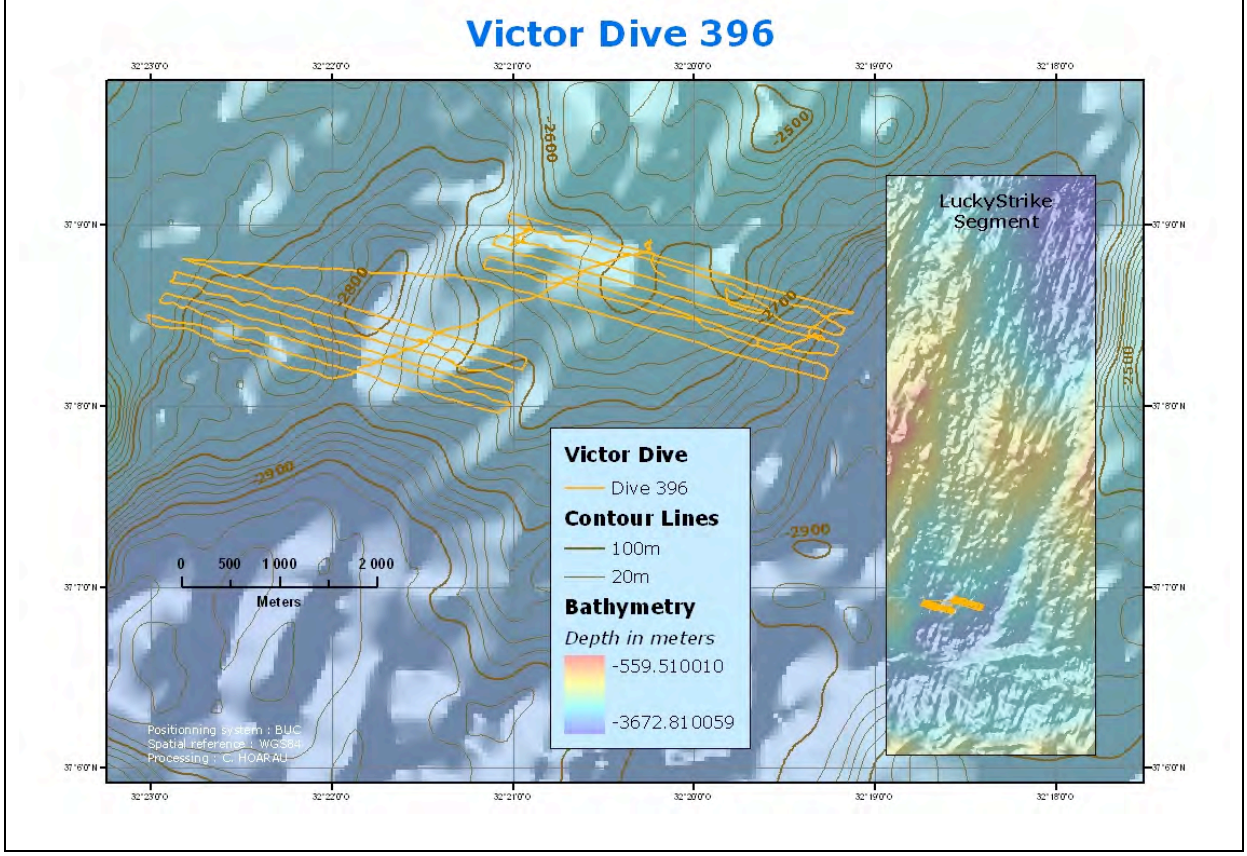
Dive 393	
Date	16/09/2009
Station	Lucky strike
Objectifs de la plongée	Compléter la couverture cartographique au centre et au sud du volcan LuckyStrike



Dive 394	
Date	19/09/2009
Station	Lucky strike
Objectifs de la plongée	Compléter la couverture cartographique au sud du volcan LuckyStrike et vers le sud le long de l'axe de la dorsale



Dive 396	
Date	24/09/2009
Station	Lucky strike
Objectifs de la plongée	Compléter la couverture cartographique au sud du segment LuckyStrike



5.1.2. AUV Navigation

5.1.2.1. Data and Positioning systems

AsterX is an AUV (Autonomous Underwater Vehicle). Its trajectory is programmed on board before each dive and is not modifiable during the dive. In real time it reports its acoustic position which allows a relocalisation to its actual position. The only modification permitted during a dive is to force the AUV to jump over portions of the curent dive plan.

PHINS – Estimated navigation

During the dives, the AUV AsterX calculates his geographical position from his previous position and the data given by his inertial sensor, the PHINS. This positioning system is very accurate locally but a drift can be introduced by submarine currents. In consequence, the AUV always thinks that it is on its programmed trajectory but actually it often drifts off course, especially during descent. So, the AUV team must occasionally relocalisate it using the acoustic position.

GAPS – Global Acoustic Positioning System

The AUV can have the same data as Victor 6000 because it has the same BUC positionning system, but the GAPS is used by the AUV team because it is more accurate and more stable.

5.1.2.2. Data processing

Raw Data

For each dive, the AUV Team gives a numeric folder with all the data recorded by the AUV during the dives. This folder had 4 subfolders which contain:

- The 'log_AUV' with the GPS data, the PHINS data (roll, pitch, heading, depth, altitude, CTD, and vehicle status during the dive)
- The bathymetry data in the folder "CU" (charge utile)
- The GAPS raw data
- All the files which Mimosa outputs (Mimosa is the software used by the AUV team to manage the dives: programming of the trajectory, monitoring of the dives…). The files are sorted by type.

The data used for the navigation processing is the GAPS synchro data which is sorted by Mimosa. This data is delivered in a NMEA format: all the PTSAG lines of the GAPS receptor are grouped in a text file by Mimosa.

Methodology

The first step of the process is the conversion of the GAPS data to a text format readable by ArcGIS. Once imported in ArcGIS, the methodology and the sofware are the same as for the Victor navigation processing: first the aberrant points are filtered and then the tracks are smoothed. But the difference is that the AUV tracks are less smoothed for two reasons:

- The GAPS data are cleaner than that provided by the BUC.
- The descent and ascent of the AUV is helical and these parts of the trajectory are usefull for the calibration of the magnetometer. A strong smooth would erase the helical trajectory.

Output Data

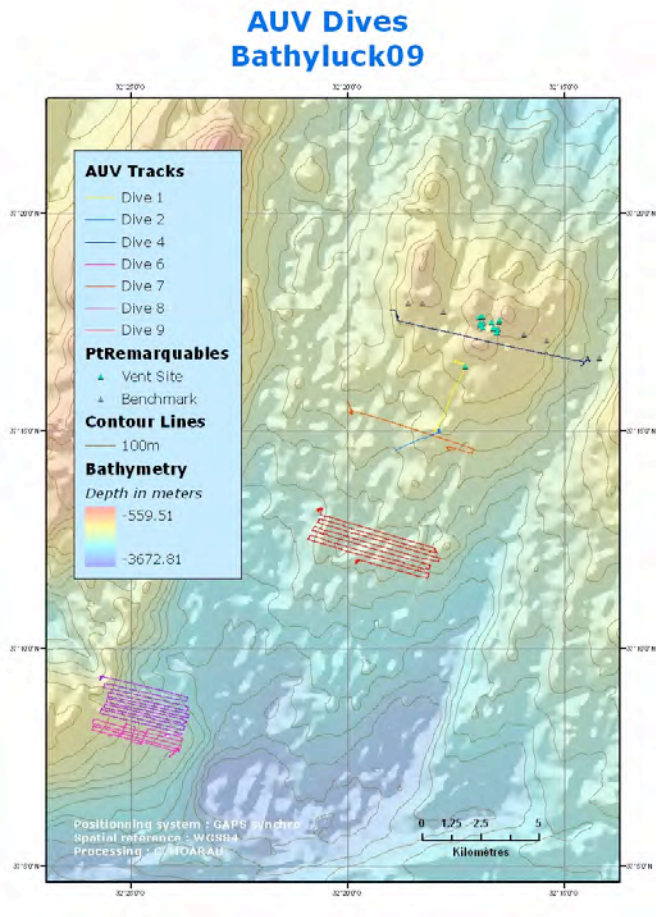
Once processed, the data are in an ESRI format: one shapefile (.shp) for each dive with the time and the coordinates. They have been converted to different formats for those who needed the navigation data.

So, in the final data storage, there are three foolders:

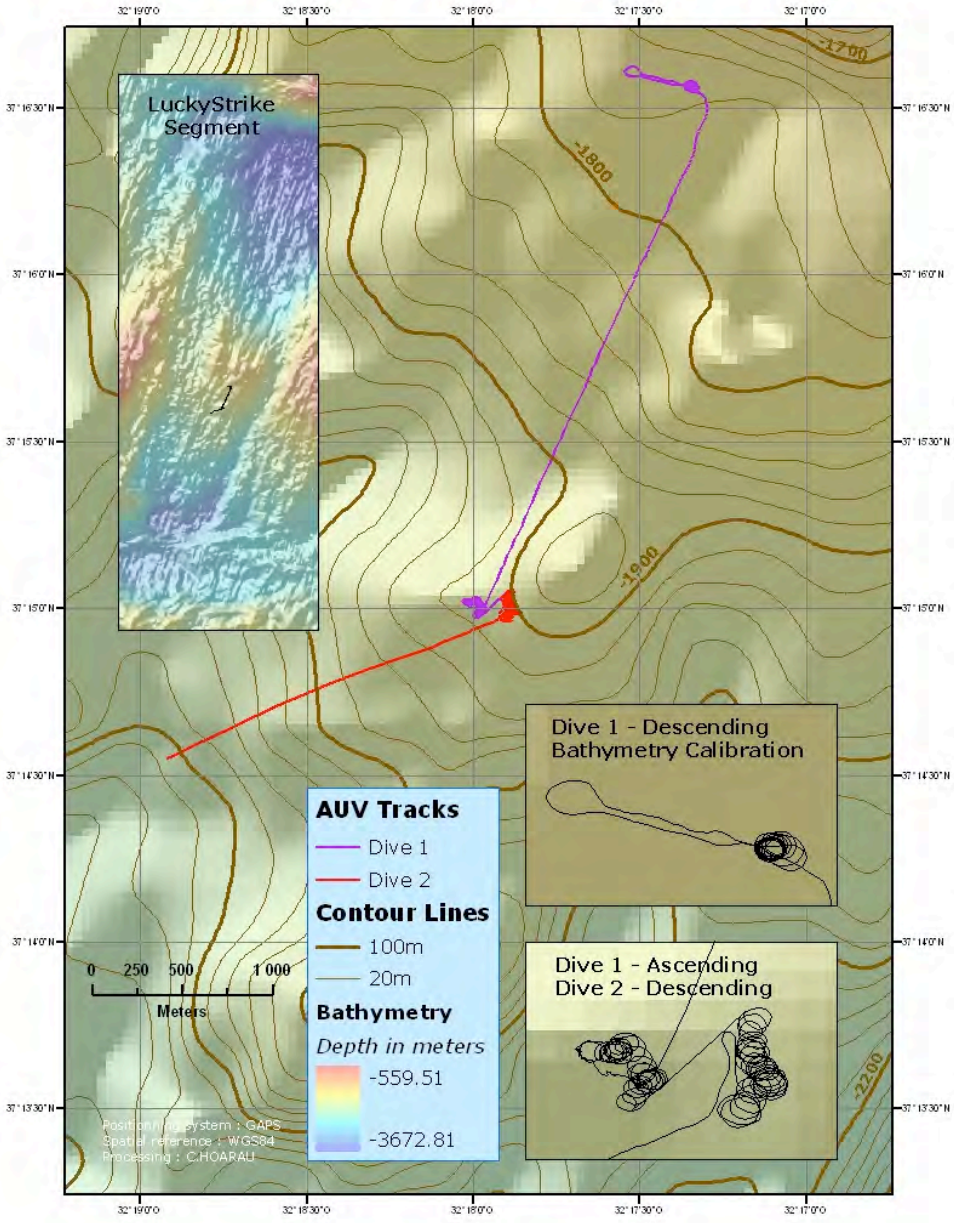
- One with the Shapefiles (ArcGIS-ESRI format)
- One with Excel files
- One with text files formatted for Caraïbe (for the bathymetry processing)

5.1.2.3. Chronological summary of dives

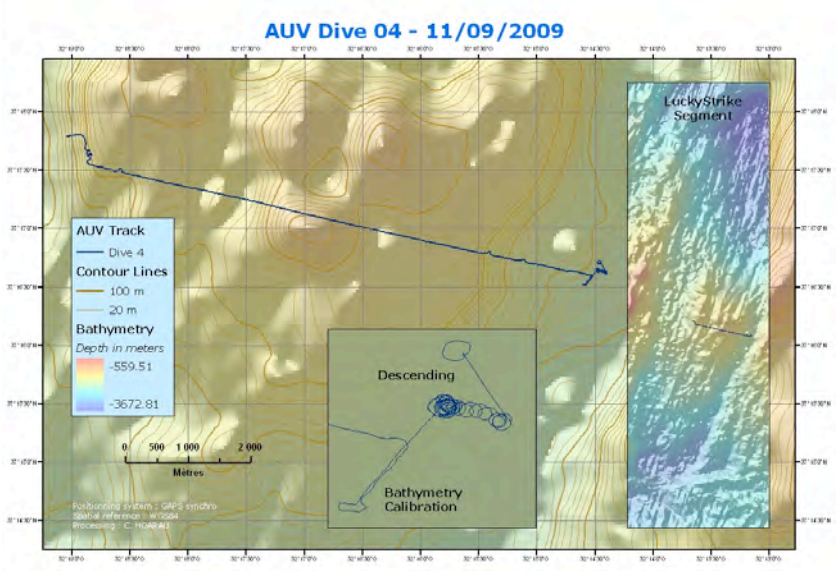
Dive 1 Dive 2	04/09/09	09:35-13:17 14:30–16:09	2 short dives with technical problems Orientation North-South	2 profiles
Dive 4	11/09/09	11:58-15:56	1 short dive with technical problems	1 profile
Dive 6	16/09/09	11:32-17:38	1 dive in Menez Hom area	4 profiles + 3 transverses
Dive 7	19/09/09	11:24-17:19	1 short dive with technical problems	1,5 profile
Dive 8	21/09/09	11:21-20:03	1 long dive in Menez Hom area	11 profiles
Dive 9	24/09/09	09:27-18:14	1 long dive in the South of the segment	7,5 profiles



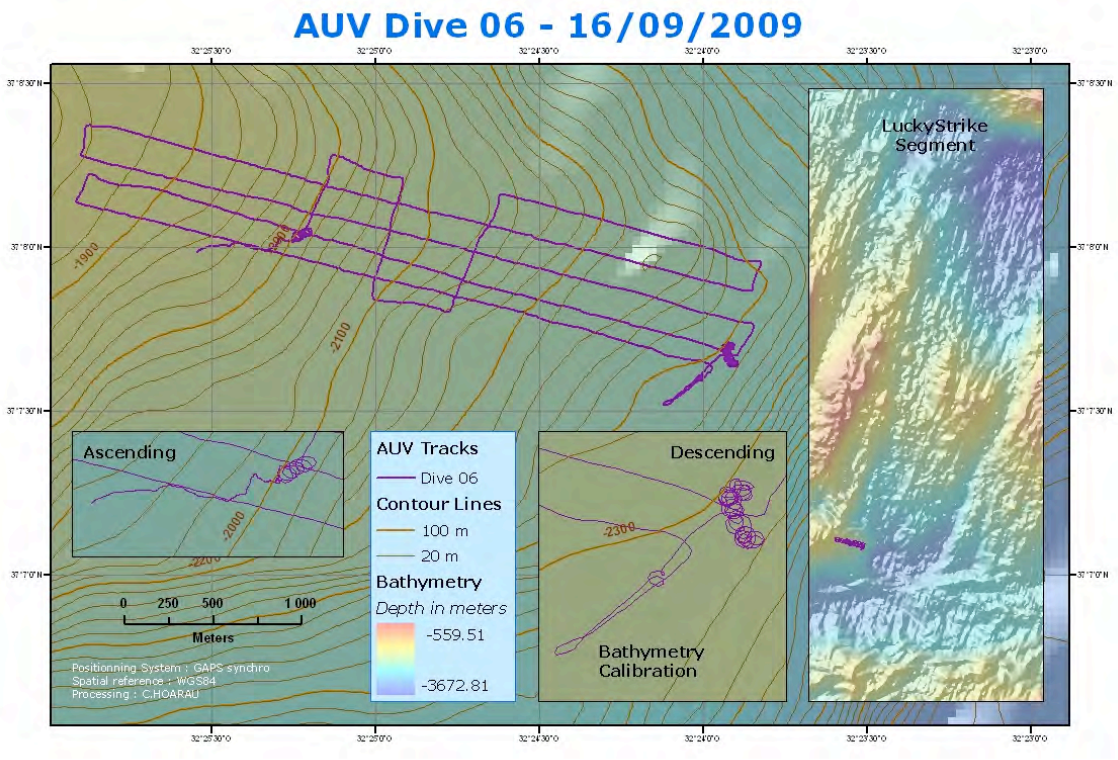
Dive 1 and 2	
Date	04/09/2009
Objectifs de la plongée	Cartographie du segment LuckyStrike parallèlement à l'axe



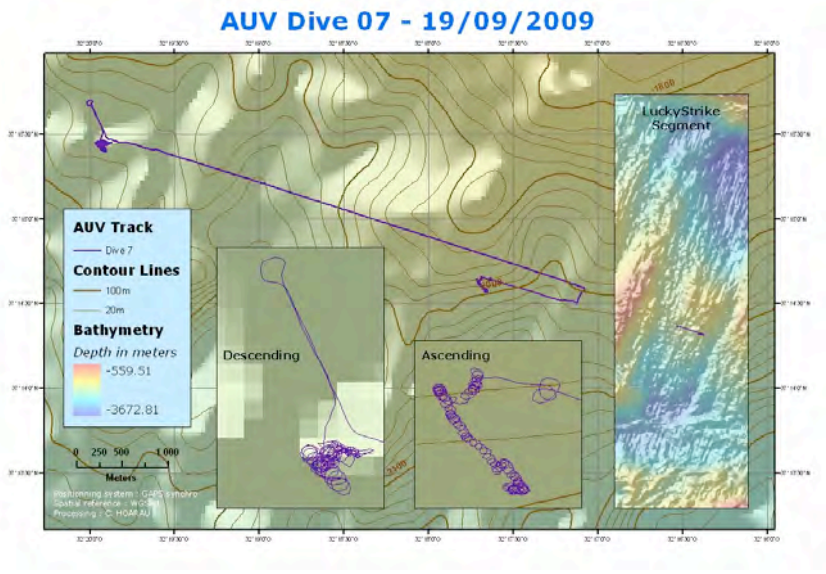
Dive 4	
Date	11/09/2009
Objectifs de la plongée	Cartographie du segment LuckyStrike perpendiculairement à l'axe



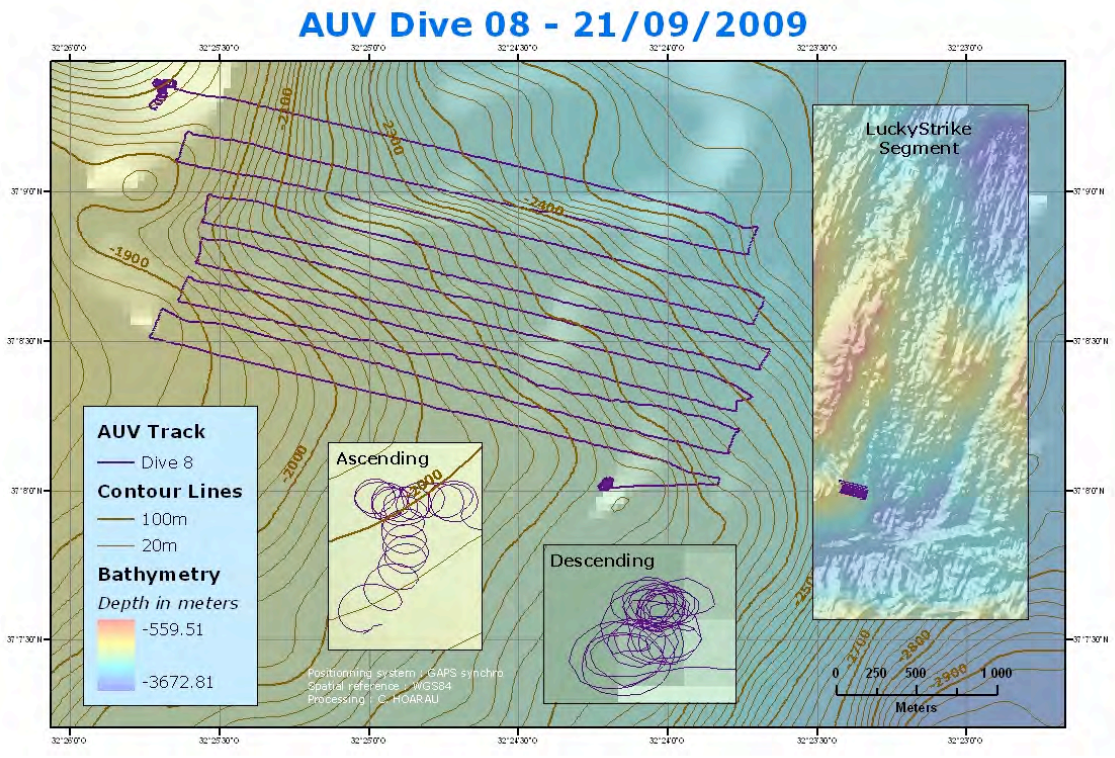
Dive 6	
Date	16/09/2009
Objectifs de la plongée	Cartographie de la zone de Menez Hom



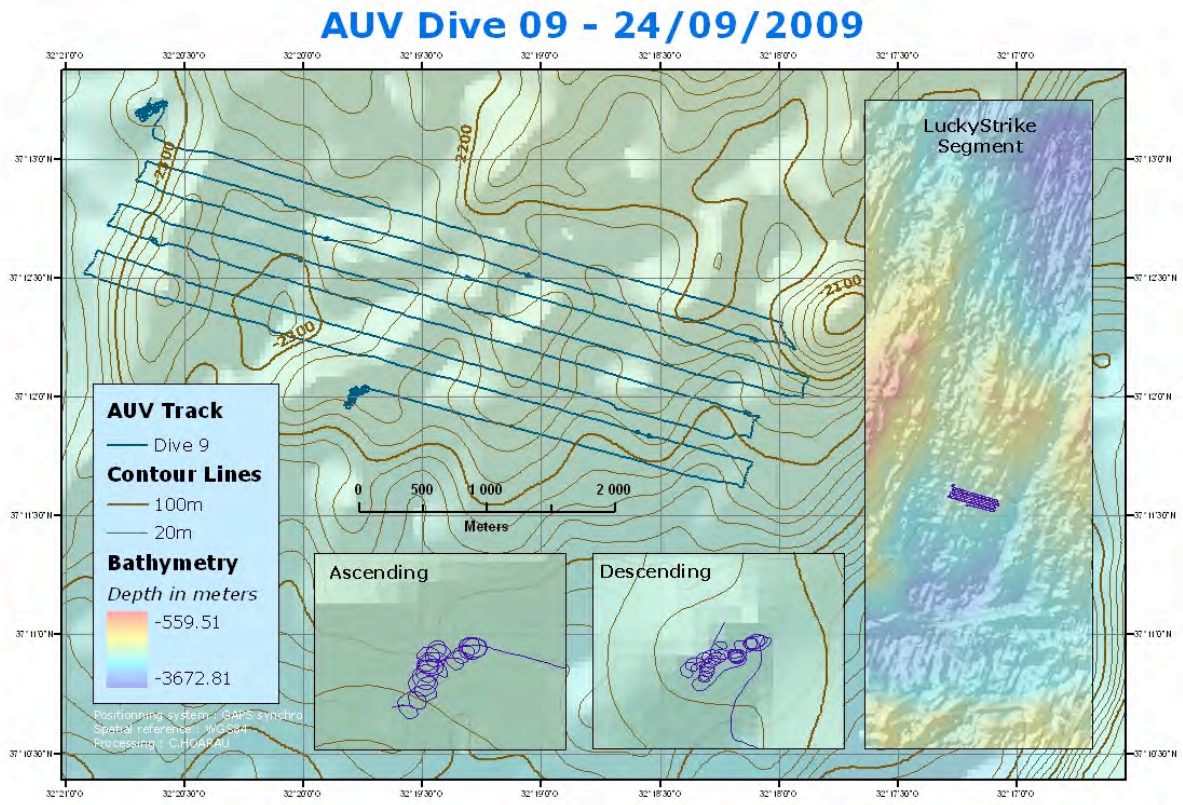
Dive 7	
Date	19/09/2009
Objectifs de la plongée	Cartographie du Segment LuckyStrike



Dive 8	
Date	21/09/2009
Objectifs de la plongée	Cartographie de la zone de Menez Hom



Dive 9	
Date	24/09/2009
Objectifs de la plongée	Cartographie du Segment LuckyStrike



5.2. Video imagery and back ups

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5.2.1. Acquisition of images for the calibration of the OTUS camera

Goal and Objective

The OTUS camera has been used extensively for creating mosaics of the sea floor. The accuracy of the mosaics depends heavily on the knowledge of a projection model that describes the image formation inside the OTUS camera. The projection model defines how a point in the sea floor at a given distance from the camera is projected into a given point in the OTUS image. The projection model is defined by a set of parameters, such as the camera focal length and radial distortion coefficients. Once these parameters are known, it becomes possible to do angular measurements between points in the image, and to correct the image for the barrel distortions caused by the lens and the camera housing glass.

The process of estimating the camera projection parameters is referred to as camera calibration. The most common method for calibrating a camera involves acquiring a set of images of a flat calibration grid. This calibration grid is a set of black and with rectangles of the same size, and of known dimensions. By acquiring several images of the calibration grid (minimum 5), at different distances and orientations, it is possible to estimate the camera projection parameters by minimizing a non-linear least squares error criterion.

The purpose of the bathyluck09 OTUS calibration task was to acquire the images for the camera calibration. A relatively large grid was required to fill the image at the minimum operating distance of 3 meters. A special calibration grid was built for this task, using Plexiglas and measuring 1500x1500x20mm.

Deployment and acquisition

The calibration grid was attached to the NASA and deployed on September 15th . Additional weights were required to ensure sufficient negative buoyancy.

Figure 7 - Attachment of the OTUS calibration grid to the NASA.

The image acquisition was performed between 23:30, Sept. 16 and 00:15 on Sept 17th. A total of 45 usable OTUS stills were collected, where all the squares are visible. Video imagery was also collected for the calibration of the down looking science camera.

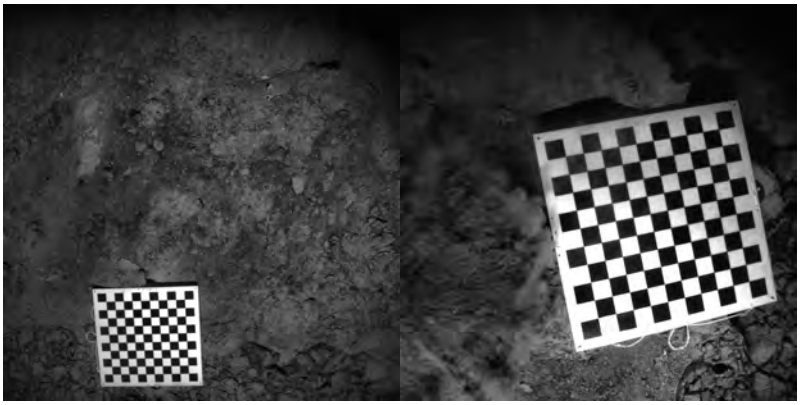


Figure 8 – Examples OTUS images used for camera calibration.

Calibration Results

A preliminary calibration was performed using the matlab's calibration toolbox detailed in
http://www.vision.caltech.edu/bouguetj/calib_doc/htmls/parameters.html

The following results were obtained, with uncertainty bounds of three times the standard deviation:

Focal Length: fc = [1196.76902 1196.75632] ± [21.84415 21.88437] (in pixels)

Principal point: cc = [529.42286 517.79150] ± [2.96737 4.30134] (in pixels)

Skew: alpha_c = [0.00000] ± [0.00000] => angle of pixel axes = 90.00000 ± 0.00000 degrees

Distortion: kc = [-0.12429 -0.00000 0.00000 -0.00000 0.00000] ± [0.00477 0.00000 0.00000 0.00000 0.00000]

Pixel error: err = [0.24014 0.22358] (in pixels)

5.2.2. OTUS imagery and 2D optical mapping

A total of 21845 OTUS images were collected on dives 390(5), 391(6), 392(8), 394(9) and 396(11), at 10 second intervals. The raw image format is a grey level TIFF file with 16 bits per pixel. The naming convention is Img_DD-MM-YYYY_HH-MM-SS-DDD-NNN.tif, where DD-MM-YYYY is the date, HH-MM-SS-DDD is the time including milliseconds and NNN is a the index of the image within the dive.

Three preliminary mosaics were produced onboard for small areas centered at Tour Eiffel, Sintra and Y3. The mosaics were generated from the ROV acoustic positioning. The accuracy of the acoustic positioning is usually too low to allow for a seamless alignment and georeferencing of neighboring images. A far better alignment will obtained after the cruise, by using image matching to identify the same regions of the sea floor in multiple images. The image matching provides accurate motion estimates at a small scale. These estimates will then be combined with the navigation data which provides accurate information at a larger scale.

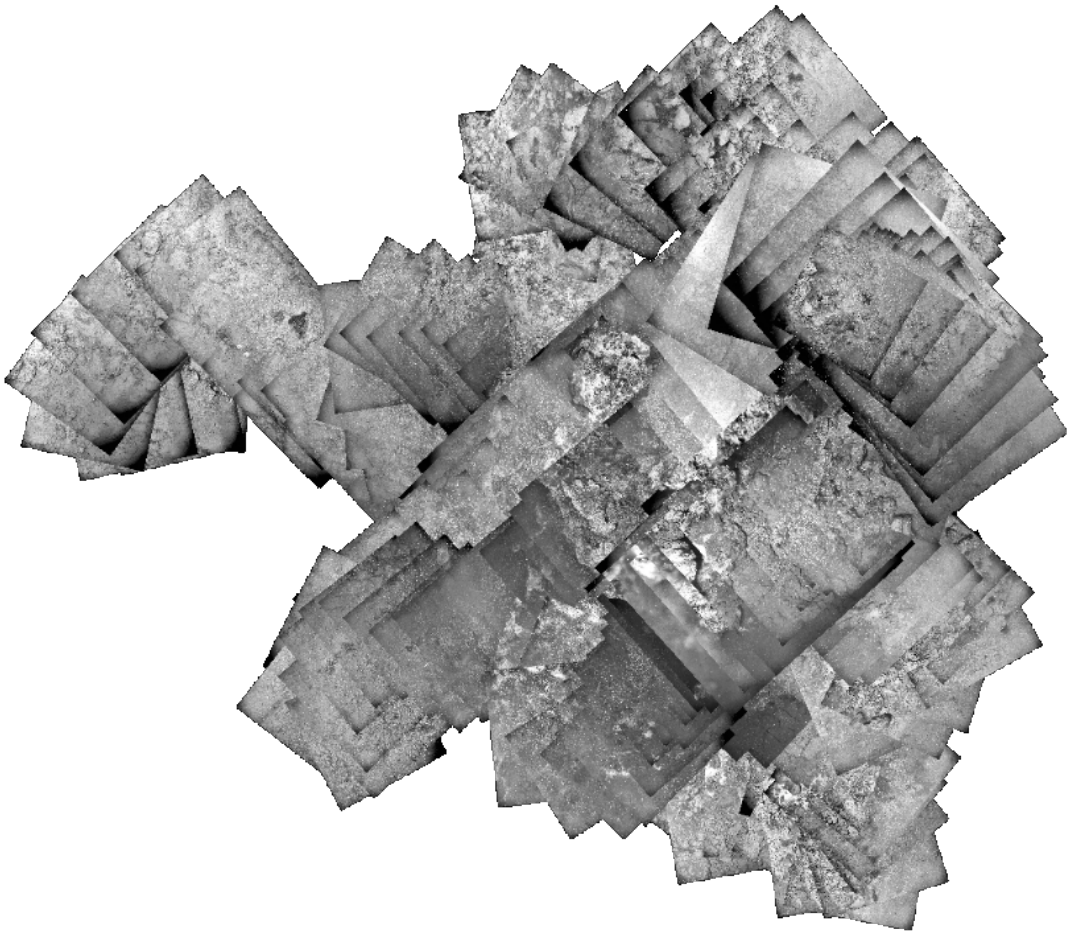


Figure 9 - Preliminary mosaic of the Tour Eiffel region surveyed on September 12th , between 15:10 and 15:54 as part of dive 391(6). The image width is 87 meters.

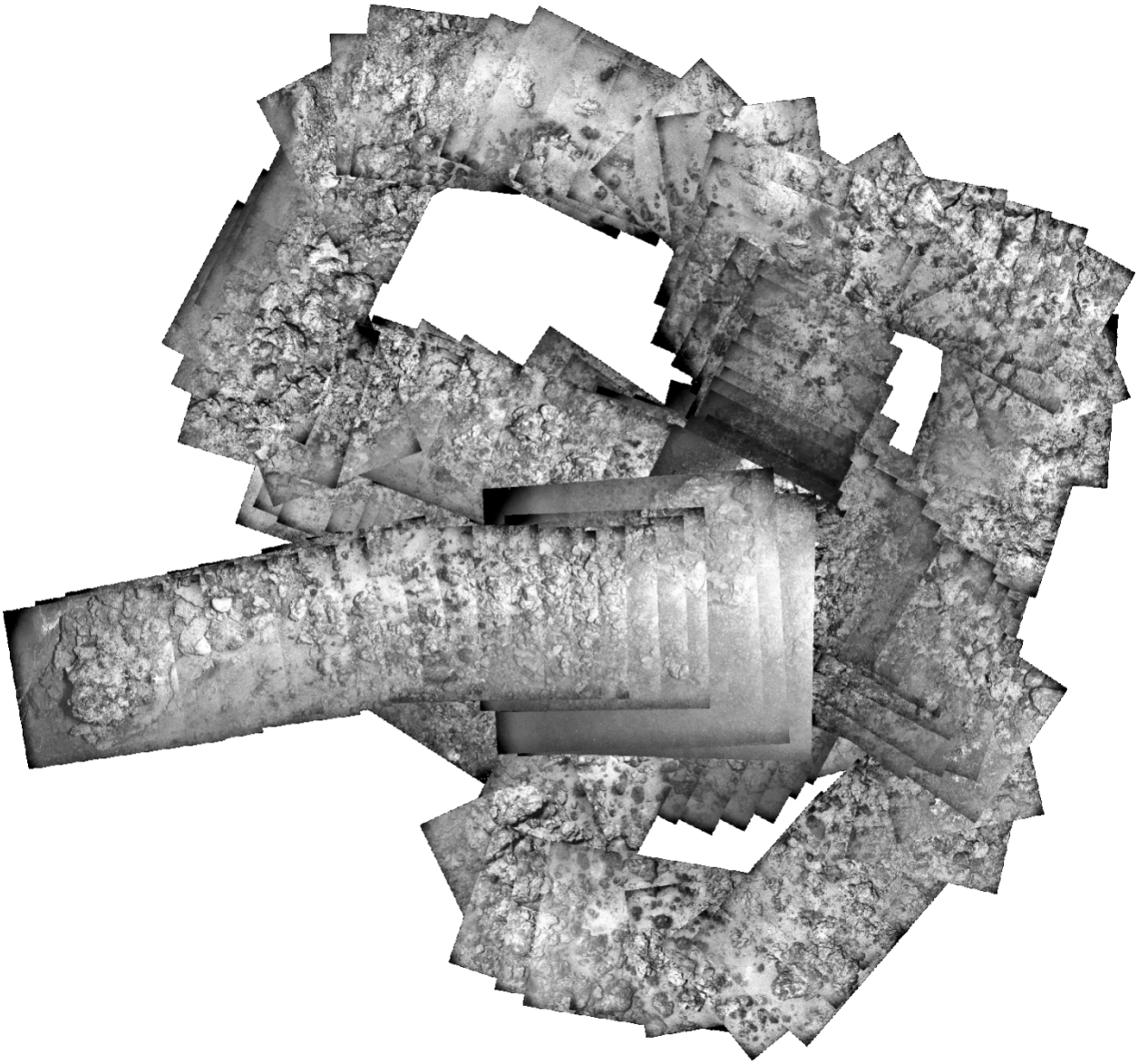


Figure 10 Preliminary mosaic of the Sintra region surveyed on September 12th , between 15:10 and 15:54 as part of dive 391(6). The image width is 80.6 meters.

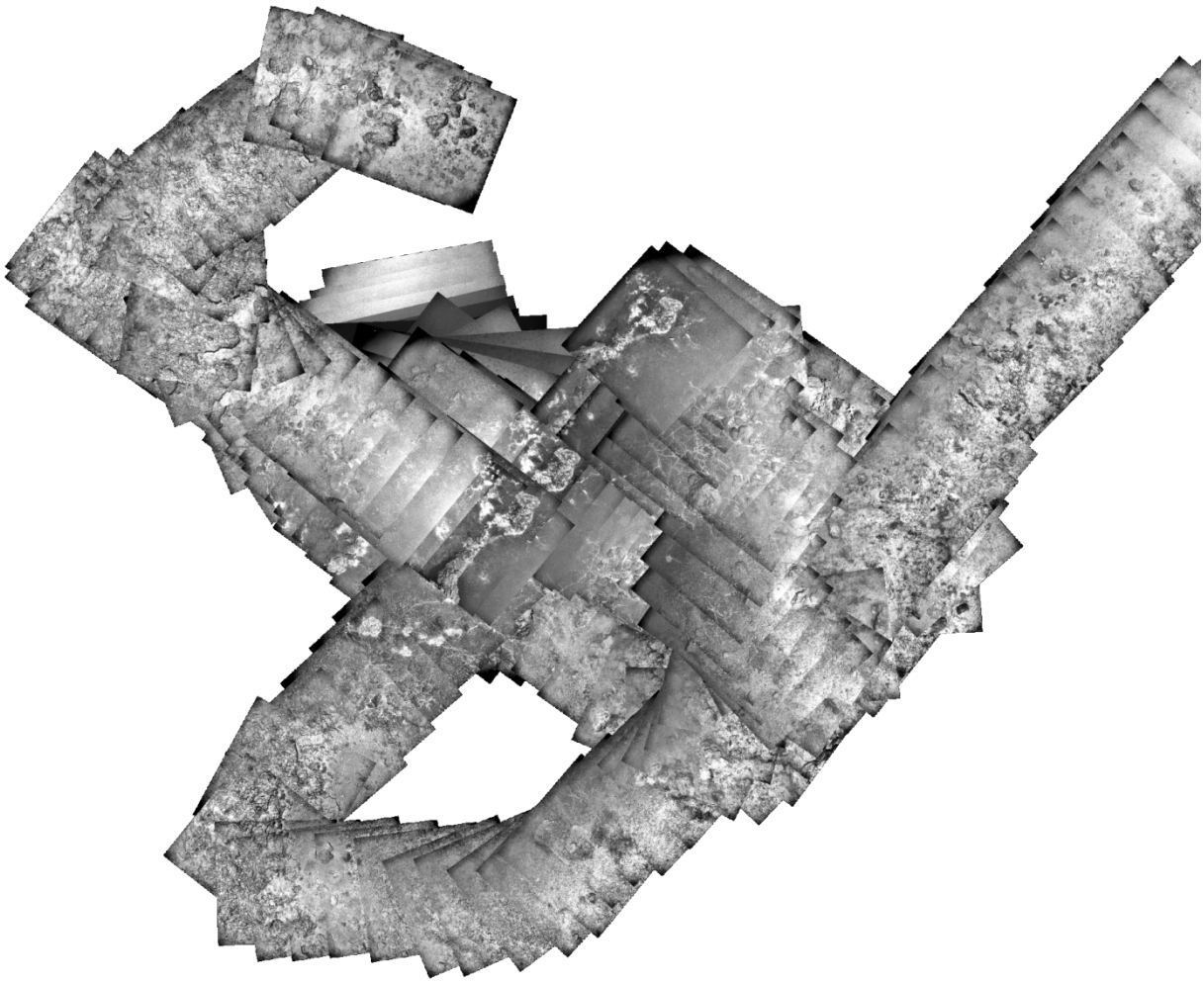


Figure 11 - Preliminary mosaic of the Y3 region surveyed on September 12th , from 12:15 to 12:36, and 14:21 to 14:33 as part of dive 391(6). This survey was interrupted due to a ROV blackout. Inaccuracies in the navation data result in the benthic structures in the center of the mosaic being represented in several locations. Image alignment errors can be significantly reduced using image matching, which will be performed after the cruise. The mosaic width is 92 meters.

5.2.3. Image acquisition for 3D model construction

A video survey was conducted to map the Tour Eiffel hydrothermal vent. The purpose of this survey was to obtain data to attempt to generate a 3D textured model of the vent. A textured model contains a dense set of 3D points, which describe of the shape of the vent, and a set of image patches that contain the photometric texture of the surface of the vent.

Textured 3D models of benthic structures have two important advantages. Firstly they allow for a far better visualization and interpretation of the vents. The user is able to freely rotate the model to choose more informative viewpoints than those followed by the camera. Secondly they serve as volumetric and photometric descriptions of the vents at a given time, which can be evaluated against similar models obtained from posterior surveys. A series of 3D textured models could potentially be used to quantify volumetric and appearance changes across time.

Video for this task was acquired on September 12th between 15:45 and 16:40 as part of dive 391. The survey comprised two parts :

1. Two complete turns around the base of Tour Eiffel keeping constant altitude and approximate distance to the side of the vent.
2. Four up and down transects from the base to the top. Each transect was rotated 90 degrees.

Frames from the first turn are presented in the next figure.

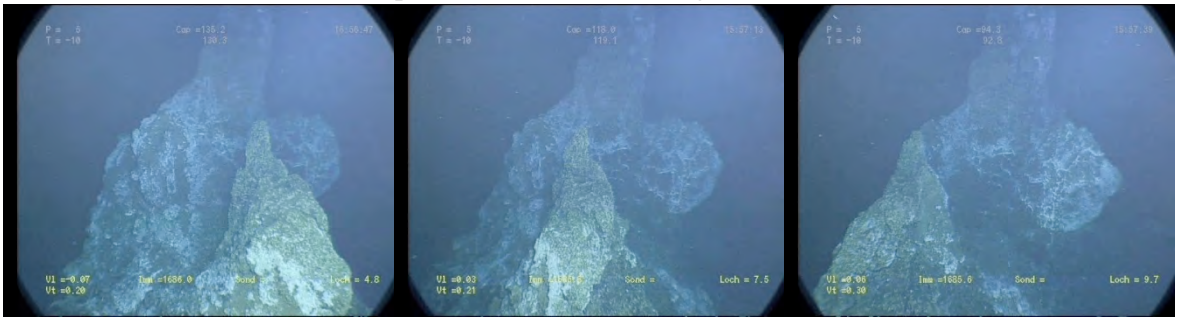


Figure 12 - Frames from the first turn around Tour Eiffel during the video acquisition for 3D reconstruction.

5.2.4. Acquisition of images for the calibration and color correction of the main video camera

Video sequences were acquired for both the calibration and color correction of images for the main Victor camera. A double sided Plexiglas calibration grid, measuring 700x700x20mm, was used. On one of the sides it contains a checkered pattern of 11 by 11 black and white squares, similar to the bigger calibration grid used for the calibration of the OTUS camera. On the other side it contains a color chart, composed of 36 squares of different colors.

The grid was attached to the side of the NASA in a way to ensure that both sides of the grid would be visible, one at a time. The switching of one side to the other was accomplished by a single cut of one of the securing lines, using the ROV line cutting tool. The grid was deployed on September 7th and images were collected from 13:11 to 14:04, as part of dive 389.

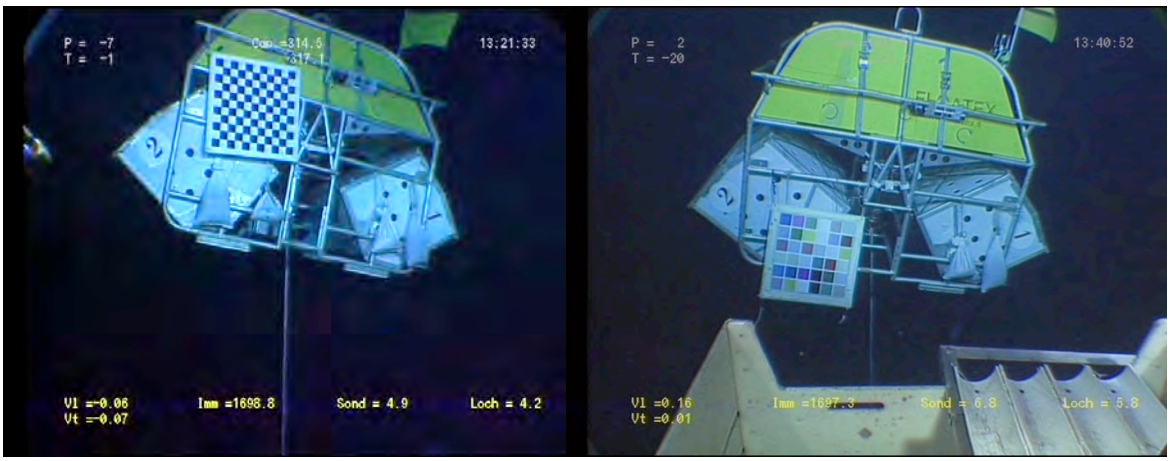


Figure 13 - Double sided calibration grid attached to the NASA, arranged for geometric calibration (left) and color calibration (right).

Camera calibration

The main ROV camera will be calibrated using the same approach as the OTUS camera, described above. Due to time restrictions, this calibration will be done after the cruise.

Color correction

Sea water absorbs light at different rates for different wavelengths in the visible spectrum. Red components are more intensely absorbed than blue components, which results in distant images being more bluish than images acquired at close range. The purpose of color correction is to estimate a model for this color shift as a function of distance, so that the original colors can be approximately restored.

The data collection for the estimation of the color shift model was conducted by imaging a pattern of known colors at different distances in the water.

An additional set of 'dry' images was collected by the ROV camera in the ship hangar using the ROV lights. The dry images provide information on the color response of the camera and lighting system without any water absorption effects. This acquisition was performed on Sept 24th, before sunrise (between 6:45 and 7:15 AM) in order to ensure that the only source of illumination were the ROV lights.

Figure 14 - Open air image of the color chart taken by the ROV main camera and using the ROV lights

Preliminary color correction results were obtained by modeling the color shift, for a single distance, as

□□□□□□□□□□□□□□□□□=□·□·□□□□□□□□□□□□□+□ , where s is a scale, A is a 3x3 rotation matrix, B is a 3x1 translation vector and □□□□□□□□□□□□□□□ and □□□□□□□□□□□□□ are RGB triplets for the corrected and original (uncorrected) colors. This model has 7 parameters. The parameters were estimated from 25 pairs of RGB triplets, using a least squares criterion. The RGB triplets were averages of 7x7 pixel windows, whose location was picked by hand from two images of the color chart, at the surface and in the water attached to the NASA. Preliminary results are presented in the next figure.

Figure 15 - Image of the color chart at the surface that was used as a reference for the corrected color values.

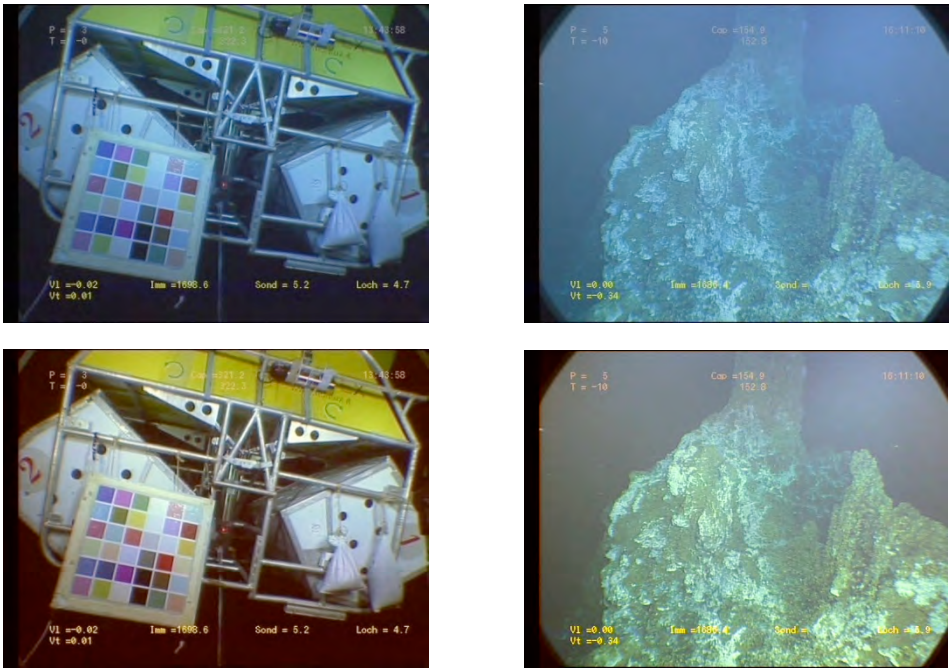


Figure 16 - Examples of images collected with the main ROV camera before (top) and after color correction (bottom)

5.2.5. DVD copy and back-up

Video was recorded into DVD for dives 386 through 393 and 395. Up to 3 DVD recorders where used simultaneously. The contents of all DVDs that were successfully finalized were copied into hard disks. Two sets of two 1TByte mirrored hard disks were used. Set 1 is Mac-readable (formatted as HFS+) and contains dives 386 through 389 while set 2 is PC readable (NTFS format) and contains dives 390 through 393 and dive 395.

Each DVD contents were stored in two different formats: the native DVD format and a compressed AVI encoded as a MPEG4 stream. The native DVD format contains a set of files with file extension *.VOB . Each VOB contains up to 30 minutes of video. A typical 2 hour DVD occupies 4GB of disk space. The AVI copy is a single file per

DVD and occupies slightly over 1GB for a 2 hour DVD. Both formats can be opened with an updated viewer such as the VLC (http://www.videolan.org/vlc/)

Following the naming convention used in MOMAR08, the native DVD files were stored in separated directories under the E:\Video_DVD. Each directory has the format B09XXX_N_YYMMDD_HHMMSS where

- XXX is the dive number,
- N is the recorder number,
- YY is the year, MM month, DD day
- HH is the hour as marked on the text overlay, MM is the minute and SS is the second

The AVIs are stored in directory E:\Video_MP4 and have the same naming convention followed by '_mpeg4.avi'.

The following table contains the log of all DVDs in disk set 1. The first column is the DVD identifier. DVDs that failed to finalize are marked as xxxxxx on the time field. The remaining columns contain the absolute dive number, the recorder, time of start, check mark of proper copy to hard drive, number of chapters on the DVD, check mark of conversion to AVI and additional notes.

DVD_indentifier	*Dive*	*Cam*	*video start*	*Copy HD*	*Chap*	*Avi*	*Notes*
B09386_1_090903_xxxxxx	386	1	failed to finalize				failed to finalize
B09386_2_090903_105800	386	2	10:58:00	ok	1	ok	
B09386_3_090903_110144	386	1	11:01:44	ok	1	ok	
B09387_1_090903_230944	387	1	23:09:44	ok	1	ok	
B09387_2_090903_231039	387	2	23:10:39	ok	1	ok	
B09387_3_090903_231119	387	3	23:11:19	ok	1	ok	
B09388_1_090905_002800	388	1	00:28:00	ok	1	ok	
B09388_2_090905_002900	388	2	00:29:00	ok	1	ok	
B09388_3_090905_002912	388	3	00:29:12	ok	1	ok	
B09388_1_090905_011757	388	1	01:17:57	ok	1	ok	
B09388_1_090905_024116	388	1	02:41:16	ok	1	ok	
B09388_2_090905_024242	388	2	02:42:42	ok	1	ok	
B09388_3_090905_024316	388	3	02:43:16	ok	1	ok	
B09388_1_090905_031851	388	1	03:18:51	ok	1	ok	
B09388_1_090905_045616	388	1	04:56:16	ok	1	ok	
B09388_1_090905_053338	388	1	05:33:38	ok	2	ok	
B09388_2_090905_045406	388	2	04:54:06	ok	1	ok	
B09388_3_090905_045455	388	3	04:54:55	ok	1	ok	
B09388_1_090905_070922	388	1	07:09:22	ok	1	ok	
B09388_3_090905_071054	388	3	07:10:54	ok	1	ok	

B09388_2_090905_071008	388	2	07:10:08	ok	1	ok	
B09389_1_090905_232327	389	1	23:23:27	ok	1	ok	
B09389_2_090905_232407	389	2	23:24:07	ok	1	ok	
B09389_3_090905_232450	389	3	23:24:50	ok	1	ok	
B09389_1_090906_013519	389	1	01:35:19	ok	1	ok	
B09389_2_090906_013520	389	2	01:35:20	ok	1	ok	
B09389_3_090906_013522	389	3	01:35:22	ok	1	ok	
B09389_1_090906_033747	389	1	03:37:47	ok	1	ok	
B09389_2_090906_033750	389	2	03:37:50	ok	1	ok	
B09389_3_090906_033751	389	3	03:37:51	ok	1	ok	
B09389_1_090906_054022	389	1	05:40:22	ok	1	ok	
B09389_2_090906_054026	389	2	05:40:26	ok	1	ok	
B09389_3_090906_054038	389	3	05:40:38	ok	1	ok	
B09389_1_090906_074507	389	1	07:45:07	ok	1	ok	
B09389_2_090906_074546	389	2	07:45:46	ok	1	ok	
B09389_3_090906_074624	389	3	07:46:24	ok	1	ok	
B09389_1_090906_095106	389	1	09:51:06	ok	1	ok	
B09389_2_090906_095152	389	2	09:51:52	ok	1	ok	
B09389_3_090906_095233	389	3	09:52:33	ok	1	ok	
B09389_1_090906_120120	389	1	12:01:20	ok	1	ok	
B09389_2_090906_120123	389	2	12:01:23	ok	1	ok	
B09389_3_090906_120124	389	3	12:01:24	ok	1	ok	
B09389_1_090906_140718	389	1	14:07:18	ok	1	ok	
B09389_2_090906_140721	389	2	14:07:02	ok	1	ok	
B09389_3_090906_140722	389	3	14:07:22	ok	1	ok	
B09389_1_090906_161156	389	1	16:11:56	ok	1	ok	
B09389_2_090906_161158	389	2	16:11:58	ok	1	ok	
B09389_3_090906_161158	389	3	16:11:58	ok	1	ok	
B09389_1_090906_181430	389	1	18:14:30	ok	1	ok	
B09389_2_090906_181434	389	2	18:14:34	ok	1	ok	
B09389_3_090906_181819	389	3	18:18:19	ok	1	ok	
B09389_1_090906_201840	389	1	20:18:40	ok	1	ok	
B09389_2_090906_202425	389	2	20:24:25	ok	1	ok	
B09389_3_090906_202426	389	3	20:24:26	ok	1	ok	

B09389_2_090906_222419	389	2	22:24:19	ok	1	ok	
B09389_3_090906_222535	389	3	22:24:35	ok	1	ok	
B09389_1_090906_232544	389	1	23:25:44	ok	1	ok	
B09389_2_090907_002855	389	2	00:28:55	ok	1	ok	
B09389_1_090907_023622	389	1	02:36:22	ok	1	ok	
B09389_2_090907_023613	389	2	02:36:13	ok	1	ok	
B09389_3_090907_023546	389	3	02:35:46	ok	1	ok	
B09389_1_090907_045509	389	1	04:55:09	ok	1	ok	
B09389_2_090907_045512	389	2	04:55:12	ok	1	ok	
B09389_3_090907_045514	389	3	04:55:19	ok	1	ok	
B09389_1_090907_065911	389	1	06:59:11	ok	1	ok	
B09389_2_090907_065942	389	2	06:59:42	ok	1	ok	
B09389_3_090907_070028	389	3	07:00:28	ok	1	ok	
B09389_1_090907_090905	389	1	09:09:05	ok	1	ok	
B09389_2_090907_090944	389	2	09:09:44	ok	1	ok	
B09389_3_090907_091024	389	3	14:45:56	ok	1	ok	
B09389_2_090907_111326	389	2	11:13:26	ok	1	ok	
B09389_1_090907_124346	389	1	12:43:46	ok	1	ok	
B09389_2_090907_131757	389	2	13:17:57	ok	1	ok	
B09389_3_090907_132349	389	3	13:23:49	ok	1	ok	
B09389_1_090907_144556	389	1	14:45:56	ok	1	ok	
B09389_2_090907_152202	389	2	15:22:02	ok	1	ok	
B09389_3_090907_152534	389	3	15:25:34	ok	1	ok	
B09389_1_090907_164248	389	1	16:42:48	ok	1	ok	
B09389_2_090907_164329	389	2	16:43:29	ok	1	ok	
B09389_3_090907_164331	389	3	16:43:31	ok	1	ok	
B09389_1_090907_185102	389	1	18:51:02	ok	1	ok	
B09389_2_090907_185101	389	2	18:51:01	ok	1	ok	
B09389_1_090907_205423	389	1	20:54:23	ok	1	ok	
B09389_2_090907_205424	389	2	20:54:24	ok	1	ok	
B09389_3_090907_211344	389	3	21:13:44	ok	1	ok	
B09389_1_090907_230029	389	1	23:00:29	ok	1	ok	
B09389_2_090907_230104	389	2	23:00:04	ok	1	ok	
B09389_3_090907_230200	389	3	23:02:00	ok	1	ok	

B09389_1_090908_010525	389	1	01:05:25	ok	2	ok	
B09389_2_090908_010936	389	2	01:09:36	ok	1	ok	
B09389_3_090908_010554	389	3	01:05:54	ok	3	ok	
B09389_1_090908_031809	389	1	03:18:09	ok	1	ok	
B09389_2_090908_031806	389	2	03:18:06	ok	1	ok	
B09389_3_090908_031808	389	3	03:18:08	ok	1	ok	
B09389_1_090908_052105	389	1	05:21:05	ok	1	ok	
B09389_2_090908_052353	389	2	05:23:53	ok	1	ok	
B09389_3_090908_052205	389	3	05:22:05	ok	1	ok	
B09389_1_090908_073044	389	1	07:30:44	ok	1	ok	
B09389_2_090908_073122	389	2	07:31:22	ok	1	ok	
B09389_3_090908_073201	389	3	07:32:01	ok	1	ok	
B09389_1_090908_094755	389	1	09:47:55	ok	1	ok	
B09389_2_090908_094801	389	2	09:48:01	ok	1	ok	
B09389_3_090908_094804	389	3	09:48:04	ok	1	ok	
B09389_1_090908_115100	389	1	11:51:00	ok	1	ok	
B09389_2_090908_115307	389	2	11:53:07	ok	1	ok	
B09389_3_090908_115355	389	3	11:53:55	ok	1	ok	
B09389_1_090908_135943	389	1	13:59:43	ok	1	ok	
B09389_3_090908_135926	389	2	13:59:26	ok	1	ok	
B09389_2_090908_135924	389	3	13:59:24	ok	1	ok	
B09389_1_090908_xxxxxx	389	1	failed to finalize				C1#33 failed to finalize
B09389_2_090908_160953	389	2	16:09:53	ok	1	ok	
B09389_3_090908_161026	389	3	16:10:26	ok	1	ok	
B09389_1_090908_175949	389	1	17:59:49	ok	1	ok	
B09389_2_090908_175656	389	2	17:56:56	ok	1	ok	
B09389_3_090908_175733	389	3	17:57:33	ok	1	ok	
B09389_1_090908_195706	389	1	19:57:06	ok	1	ok	
B09389_2_090908_195707	389	2	19:57:07	ok	1	ok	
B09389_3_090908_195709	389	3	19:57:09	ok	1	ok	
B09389_1_090908_215943	389	1	21:59:43	ok	1	ok	
B09389_2_090908_220000	389	2	22:00:00	ok	1	ok	
B09389_1_090908_234615	389	1	23:46:15	ok	1	ok	
B09389_3_090908_234629	389	3	23:46:29	ok	1	ok	

B09389_2_090908_234618	389	2	23:46:18	ok	1	ok	incon. time on hand notes
B09389_3_090909_020233	389	3	02:02:33	ok	1	ok	
B09389_2_090909_020213	389	2	02:02:13	ok	1	ok	
B09389_1_090909_015823	389	1	01:58:23	ok	1	ok	
B09389_3_090909_041829	389	3	04:18:29	ok	1	ok	
B09389_2_090909_041754	389	2	04:17:54	ok	1	ok	
B09389_1_090909_041846	389	1	04:18:46	ok	1	ok	
B09389_2_090909_062438	389	2	06:24:38	ok	1	ok	
B09389_3_090909_062439	389	3	06:24:39	ok	1	ok	
B09389_1_090909_xxxxxx	389	1	failed to finalize				failed
B09389_1_090909_082951	389	1	08:29:51	ok	1	ok	
B09389_2_090909_083015	389	2	08:30:15	ok	1	ok	
B09389_3_090909_083023	389	3	08:30:23	ok	1	ok	
B09389_3_090909_xxxxxx	389	3	failed to finalize				C3#41 failed
B09389_1_090909_103842	389	1	10:38:42	ok	1	ok	C1#42
B09389_2_090909_103923	389	2	10:39:23	ok	1	ok	
B09389_1_090909_124157	389	1	12:41:57	ok	1	ok	C1#43
B09389_2_090909_xxxxxx	389	2	failed to finalize				C2#42 failed
B09389_3_090909_124159	389	3	12:41:59	ok	1	ok	C3#42
B09389_1_090909_141407	389	1	14:14:07	ok	1	ok	C1#44
B09389_3_090909_142835	389	3	14:28:35	ok	1	ok	C3#43
B09389_1_090909_161809	389	1	16:18:09	ok	1	ok	C1#45
B09389_2_090909_144403	389	2	14:44:03	ok	1	ok	C2#43
B09389_3_090909_163111	389	3	16:31:11	ok	1	ok	C3#44

The following table contains the all the DVDs in disk set 2.

DVD_indentifier	*Dive*	*Cam*	*video start*	*Copy HD*	*Chap*	*Avi*	*Notes*
B09390_1_090910_202013	390	1	20:20:12	ok	1	OK	C1#1
B09390_1_090910_221144	390	1	22:11:44	ok	1	OK	C1#2
B09390_1_090911_021206	390	1	2:12:06	ok	1	OK	C1#4
B09390_1_090911_041434	390	1	4:14:34	ok	1	OK	C1#5
B09390_1_090911_061604	390	1	6:16:04	ok	1	OK	C1#6
B09390_1_090911_xxxxxx	390	1		failed			Failed to copy C1#3
B09390_2_090910_215000	390	2	22:50:00	ok	1	OK	C2#1

B09390_2_090911_005225	390	2	0:52:25	part	1		C2#2 CRC error but ok
B09390_2_090911_025358	390	2	2:53:58	ok	1	NOT OK	c2#3
B09390_2_090911_041518	390	2	4:15:18	ok	1	OK	C2#4
B09390_2_090911_061644	390	2	6:16:44	ok	1	OK	C2#5 end of dive 390
B09391_1_090911_203029	391	1	20:30:29	ok	1	OK	C1#1
B09391_2_090911_203030	391	2	20:30:30	ok	1	OK	C2#1
B09391_1_090911_xxxxxxx	391	1	failed to finalize				
B09391_2_090911_xxxxxxx	391	2	failed to finalize				
B09391_1_090912_003829	391	1	0:38:29	ok	1	OK	C1#3
B09391_2_090912_003828	391	2	0:38:28	ok	1	OK	C2#3
B09391_1_090912_024037	391	1	2:40:37	ok	1	OK	C1#4
B09391_2_090912_024027	391	2	2:40:27	ok	1	OK	C2#4
B09391_1_090912_044437	391	1	4:44:37	ok	1	OK	C1#5
B09391_2_090912_044516	391	2	4:45:16	ok	1	OK	C2#5
B09391_1_090912_065045	391	1	6:50:45	ok	1	OK	C1#6
B09391_2_090912_064820	391	2	6:48:20	ok	1	OK	C2#6
B09391_1_090912_xxxxxx	391	1	failed to finalize				
B09391_2_090912_xxxxxx	391	2	failed to finalize				
B09391_1_090912_105455	391	1	10:54:55	ok	1	OK	C1#8
B09391_2_090912_105805	391	2	10:58:05	ok	1	OK	C2#8
B09391_3_090912_102742	391	3	10:27:42	ok	1	OK	C3#1
B09391_3_090912_143353	391	3	14:33:53	ok	1	OK	C3#2
B09391_1_090912_130253	391	1	13:02:53	ok	1	OK	C1#9
B09391_2_090912_125808	391	2	12:58:08	ok	1	OK	C2#9
B09391_1_090912_150155	391	1	15:01:55	ok	1	OK	C1#10
B09391_2_090912_150156	391	2	15:01:56	ok	1	OK	C2#10
B09391_3_090912_162725	391	3	16:27:25	ok	1		C3#3
B09391_2_090912_170433	391	2	17:04:33	ok	1	OK	C2#11
B09391_1_090912_xxxxxx	391	1	failed to finalize				
B09391_1_090912_185842	391	1	18:58:42	ok	1	OK	C1#12
B09391_2_090912_185841	391	2	18:58:41	ok	1	OK	C2#12
B09391_1_090912_210734	391	1	21:07:34	ok	1	OK	C1#13
B09391_2_090912_210740	391	2	21:07:40	ok	1		C2#13
B09391_1_090912_231649	391	1	23:16:49	ok	1	OK	C1#14

B09391_2_090912_231704	391	2	23:17:04	ok	1	OK	C2#14
B09391_1_090913_011848	391	1	1:18:48	ok	1	OK	C1#15
B09391_2_090913_011911	391	2	1:19:11	ok	1	OK	C2#15
B09391_1_090913_032048	391	1	3:20:48	ok	1	OK	C1#16
B09391_2_090913_032105	391	2	3:21:05	ok	1		C2#16
B09391_1_090913_053008	391	1	5:30:08	ok	1	OK	C1#17
B09391_2_090913_053009	391	2	5:30:09	part	1	OK	CRC error C2#17
B09391_1_090913_xxxxxx	391	1	failed to finalize				C1#18
B09391_2_090913_xxxxxx	391	2	failed to finalize				C2#18
B09391_1_090913_xxxxxx	391	1	failed to finalize				C1#19
B09391_2_090913_094420	391	2	9:44:20	ok	1	OK	C2#19
B09391_1_090913_112719	391	1	11:27:19	ok	1	OK	C1#20
B09391_2_090913_114141	391	2	11:41:41	ok	1	OK	C2#20
B09391_1_090913_132119	391	1	13:21:19	ok	1	OK	C1#21
B09391_2_090913_134319	391	2	13:43:19	ok	1	OK	C2#21
B09391_1_090913_151714	391	1	15:17:14	ok	1	OK	C1#22
B09391_2_090913_154532	391	2	15:45:32	ok	1	OK	C2#22
B09391_1_090913_171327	391	1	17:13:27	ok	1	OK	C1#23
B09391_2_090913_174725	391	2	17:47:25	ok	1	OK	C2#23
B09391_1_090913_191024	391	1	19:10:24	ok	1	OK	C1#24
B09391_2_090913_194900	391	2	19:49:00	ok	1	OK	C2#24
B09391_1_090913_210919	391	1	21:09:19	ok	1	OK	C1#25
B09391_2_090913_214737	391	2	21:47:37	ok	1	OK	C2#25
B09391_1_090913_230803	391	1	23:08:03	ok	1	OK	C1#26
B09391_2_090913_234921	391	2	23:49:21	ok	1	OK	C2#26
B09391_1_090914_010339	391	1	1:03:39	ok	1	OK	C1#27
B09391_2_090914_015124	391	2	1:51:24	ok	1	OK	C2#27
B09391_2_090914_xxxxxx	391	1	failed to finalize		1		C1#28
B09391_1_090914_033123	391	1	3:31:23	ok	1	OK	C1#29
B09391_2_090914_034519	391	2	3:45:19	ok	1	OK	C2#28
B09391_1_090914_053330	391	1	5:33:30	ok	1	OK	C1#30
B09391_2_090914_054646	391	2	5:46:46	ok	1	OK	C2#29 end of dive
B09392_1_090915_051514	392	1	5:15:14		1	OK	C1#1 begin of dive
B09392_2_090915_xxxxxx	392	2	recording crashed after 1.5 hrs, impossible to load the DVD				C2#1

B09392_3_090915_051640	392	3	5:16:40	ok	1	OK	C3#1
B09392_1_090915_071632	392	1	7:16:32	OK	1	OK	C1#2
B09392_2_090915_065545	392	2	6:55:45	OK	1	OK	C2#2
B09392_3_090915_071929	392	3	7:19:29	OK	1	OK	C3#2
B09392_1_090915_091732	392	1	9:17:32	OK	1	OK	C1#3
B09392_2_090915_091607	392	2	9:16:07	OK	1	OK	C2#3
B09392_3_090915_091959	392	3	9:19:59	OK	1	OK	C3#3
B09392_1_090915_111802	392	1	11:18:02	OK	1	OK	C1#4
B09392_2_090915_111803	392	2	11:18:03	OK	1	OK	C2#4
B09392_3_090915_124728	392	3	12:47:28	OK	2		C3#4 2 chapters
B09392_1_090915_132653	392	1	13:26:53	OK	1	OK	C1#5
B09392_2_090915_132654	392	2	13:26:54	OK	1	OK	C2#5
B09392_3_090915_144438	392	3	14:44:38	OK	1	OK	C3#5
B09392_1_090915_152751	392	1	15:27:51	OK	1	OK	C1#6
B09392_2_090915_152755	392	2	15:27:55	OK	1	OK	C2#6
B09392_3_090915_165940	392	3	16:59:40	OK	1	OK	C3#6
B09392_1_090915_173005	392	1	17:30:05	OK	1	OK	C1#7
B09392_2_090915_173016	392	2	17:30:16	OK	1	OK	C2#7
B09392_3_090915_212000	392	3	21:20:00	OK	1	OK	C3#7
B09392_1_090915_193235	392	1	19:32:35	OK	1	OK	C1#8
B09392_1_090915_193246	392	2	19:32:46	OK	1	OK	C2#8
B09392_3_090915_213146	392	3	21:31:46	OK	1	OK	C3#8
B09392_2_090915_213453	392	2	21:34:53	OK	1	OK	C2#9
B09392_1_090915_234407	392	1	23:44:07	OK	1	OK	C1#10
B09392_2_090915_234443	392	2	23:44:43	OK	1	OK	C2#10
B09392_3_090915_234528	392	3	23:45:28	OK	1	OK	C3#9
B09392_3_090916_014432	392	3	1:44:32	OK	2		C3#10 2 chapters
B09392_1_090916_014424	392	1	1:44:24	OK	1	OK	C1#11
B09392_1_090916_xxxxxx	392	1	failed to finalize				C1#9
B09392_1_090916_xxxxxx	392	2	failed to finalize				C2#11 (END OF DIVE)
B09393_1_090916_231009	393	1	23:10:09	OK	1	OK	C1#1 begin of dive
B09393_2_090916_231012	393	2	23:10:12	OK	1	OK	C2#1
B09393_2_090917_001700	393	2	0:17:00	OK	1	OK	C2#2 End of recording
B09395_1_090921_233121	395	1	23:31:21	OK	1	OK	C1#1

B09395_2_090921_233121	395	2	23:31:21	OK	1	OK	C2#1
B09395_3_090921_233249	395	3	23:32:49	OK	1	OK	C3#1
B09395_1_090922_013148	395	1	1:31:48	OK	1	OK	C1#2
B09395_2_090922_013150	395	2	1:31:50	OK	1	OK	C2#2
B09395_3_090922_013150	395	3	1:31:50	OK	1	OK	C3#2
B09395_3_090922_032612	395	3	3:26:12	OK	1	OK	C3#3
B09395_1_090922_032610	395	1	3:26:10	OK	1	OK	C1#3
B09395_2_090922_032610	395	2	3:26:10	OK	1	OK	C2#3
B09395_1_090922_052238	395	1	5:22:38	OK	1	OK	C1#4
B09395_2_090922_052239	395	2	5:22:39	OK	1	OK	C2#4
B09395_3_090922_052240	395	3	5:22:40	OK	1	OK	C3#4
B09395_3_090922_071817	395	3	7:18:17	OK	1	OK	C3#5
B09395_2_090922_071739	395	2	7:17:39	OK	1	OK	C2#5
B09395_1_090922_071705	395	1	7:17:05	OK	1	OK	C1#5 crc errors but ok
B09395_3_090922_091624	395	3	9:16:24	OK	1	OK	C3#6
B09395_1_090922_091617	395	1	9:16:17	OK	1	OK	C1#6
B09395_3_090922_104917	395	3	10:49:17	OK	1	OK	C3#7
B09395_2_090922_104708	395	2	10:49:17	OK	1	OK	C2#7
B09395_1_090922_120632	395	1	12:06:32	OK	1	OK	C1#8
B09395_2_090922_120633	395	2	12:06:33	OK	1	OK	C2#8
B09395_3_090922_120634	395	3	12:06:34	OK	1	OK	C3#8
B09395_1_090922_140204	395	1	14:02:04	OK	1	OK	C1#9
B09395_2_090922_XXXXXX	395	2	failed to finalize				C2#9 failed to finalize
B09395_3_090922_140206	395	3	14:02:06	OK	1	OK	C3#9
B09395_1_090922_161110	395	1	16:11:10	OK	1	OK	C1#10
B09395_2_090922_161119	395	2	16:11:19	OK	1	OK	C2#10
B09395_3_090922_161127	395	3	16:11:27	OK	1	OK	C3#10
B09395_1_090922_181036	395	1	18:10:36	OK	1	OK	C1#11
B09395_2_090922_181034	395	2	18:10:34	OK	1	OK	C2#11
B09395_3_090922_181033	395	3	18:10:33	OK	1	OK	C3#11
B09395_1_090922_201525	395	1	20:15:25	OK	1	OK	C1#12
B09395_2_090922_201522	395	2	20:15:22	OK	1	OK	C2#12
B09395_3_090922_201520	395	3	20:15:20	OK	1	OK	C3#12
B09395_1_090922_222242	395	1	22:22:42	OK	1	OK	C1#13

B09395_2_090922_222246	395	2	22:22:46	OK	1	OK	C2#13
B09395_3_090922_XXXXXX	395	3	XXXXXX	FAILED			C3#13 FAILED
B09395_1_090923_001705	395	1	0:17:05	OK	1	OK	C1#14
B09395_2_090923_001703	395	2	0:17:03	OK	1	OK	C2#14
B09395_3_090923_001704	395	3	0:17:04	OK	1	OK	C3#14
B09395_1_090923_021731	395	1	2:17:31	OK	1	OK	C1#15
B09395_2_090923_021726	395	2	2:17:26	OK	1	OK	C2#15
B09395_3_090923_021729	395	3	2:17:29	OK	1	OK	C3#15
B09395_1_090923_XXXXXX	395	1	XXXXXX	FAILED			C1#16 FAILED
B09395_2_090923_042539	395	2	4:25:39	OK	1	OK	C2#16
B09395_3_090923_042540	395	3	4:25:40	OK	1	OK	C3#16
B09395_3_090923_062749	395	3	6:27:49	OK	1	OK	C3#17
B09395_2_090923_062742	395	2	6:27:42	OK	1	OK	C2#17
B09395_1_090923_061335	395	1	6:13:35	OK	1	OK	C1#17
B09395_1_090923_081335	395	1	8:13:35	OK	1	OK	C1#18
B09395_2_090923_081431	395	2	8:14:31	OK	1	OK	C2#18
B09395_3_090923_081527	395	3	8:15:27	OK	1	OK	C3#18
B09395_1_090923_XXXXXX	395	1	XXXXXX	FAILED			C1#19 FAILED
B09395_1_090923_XXXXXX	395	1	XXXXXX	FAILED			C1#19 BIS FAILED
B09395_2_090923_101010	395	2	10:10:10	OK	1	OK	C2#19
B09395_3_090923_100901	395	3	10:09:01	OK	1	OK	C3#19
B09395_1_090923_111729	395	1	11:17:29	OK	1	OK	C1#20
B09395_2_090923_120941	395	2	12:09:41	OK	1	OK	C2#20
B09395_3_090923_120932	395	3	12:09:32	OK	1	OK	C3#20
B09395_1_090923_131904	395	1	13:19:04	OK	1	OK	C1#21
B09395_2_090923_140606	395	2	14:06:06	OK	1	OK	C2#21
B09395_3_090923_140809	395	3	14:08:09	OK	1	OK	C3#21
B09395_1_090923_151711	395	1	15:17:11	OK	1	OK	C1#22
B09395_2_090923_161048	395	2	16:10:48	OK	1	OK	C3#22
B09395_2_090923_182500	395	2	18:25:00	OK	1	OK	C2#23
B09395_2_090923_161050	395	2	16:10:50	OK	1	OK	C2#22
B09395_3_090923_182451	395	3	18:24:51	OK	1	OK	C3#23
B09395_1_090923_172145	395	1	17:21:45	OK	1	OK	C1#23
B09395_1_090923_192320	395	1	19:23:20	OK	1	OK	C1#24

B09395_2_090923_203600	395	2	20:36:00	OK	1	OK	C2#24
B09395_3_090923_203516	395	3	20:35:16	OK	1	OK	C3#24
B09395_1_090923_212504	395	1	21:25:04	OK	1	OK	C1#25 (end of dive)

The two tables are stored in the disks as excel files, under the directory e:\logs.

5.2.5. Other data

The final contents of directories

- \\nas\victormmr\BATHYLUCK
- \\nas\SCIENCE\BATHYLUCK\DATA\AUV\AUV_RawDATA

were copied into three identical 1TB hard drives. Each hard drive contains both directories.

6. Appendixes

6.1. Science Party

Leg 1 & 2

Thibaut	BARREYRE	ENS, France
Cedric	BOULART	U. Toulouse, Tourlouse, France
-Mathilde	CANNAT **(PI Leg 2)**	CNRS/IPGP, Paris, France
Julie	CARLUT	CNRS/ENS, Paris, France
Alain	CASTILLO	CNRS/U. Toulouse, Toulouse, France
Valerie	CHAVAGNAC	CNRS/U. Toulouse, Toulouse, France
Valentin	CREPEAU	IFREMER, France
Charlotte	HOARAU	ENSG, France
Alice	LEFEVBRE	NOCS, Southampton, UK
Françoise	LESONGEUR	IFREMER, Brest, France
Benjamin	MALVOISIN	ENS, France
Eric	MITTELSTAEDT	U. Paris Sud, France
Nelia	MESTRE	NOCS, Southampton, UK,
Olivier	POT	CNRS/IPGP, Paris, France
Celine	ROMMEVAUX-JESTIN	CNRS/IPGP, Paris, France
Aura	SALOCCHI	U. Modena, Modena, Italy

Leg 1

Alexandre	BLIN	CNRS/IPGP, Paris, France
Christophe	COURRIER	CNRS/IPGP, Paris, France
Romuald	DANIEL	CNRS/IPGP, Paris, France
Javier	ESCARTIN (**PI**)	CNRS/IPGP, Paris, France
Abishek	RAI	IPGP, Paris, France
Idalina	VELUDO	U. Lisboa, Lisbon, Portugal

Leg 2

Anne	DESCHAMPS	UBO, France
Nuno	GRACIAS	U. Girona, Girona, Spain
Benoit	LECOMPTE	CNRS/IPGP, Paris, France
Jose	PACHECO	U. Açores, Ponta Delgada, Portugal- Cara- -
Catia	SILVA	U. Açores, Horta, Portugal

6.2. Temperature sensor deployment sheets

6.2.1. HT NKE 29001 - Crystal

HT sonde NKE temporaire (1mois) 29001

Site : Crystal

Vent

T° in situ : 240°C (B09TEM040)

Event : B09THN29001D

Configuration

Set date/time : 02/09/09 12 :33 :23

Start date/time : 02/09/09 12 :33 :23

Sample interval : 10''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 450 32 16 921

X = 13640; Y = 7378 ; Z = 1724; Cap = 131.8; Depth : 1724 m; Heading (Pan) : 15

Installed : 08/09/2009 at 00:06

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed at Crystal, next to HTW008, at the other side of HTW006 and NKE 29012.

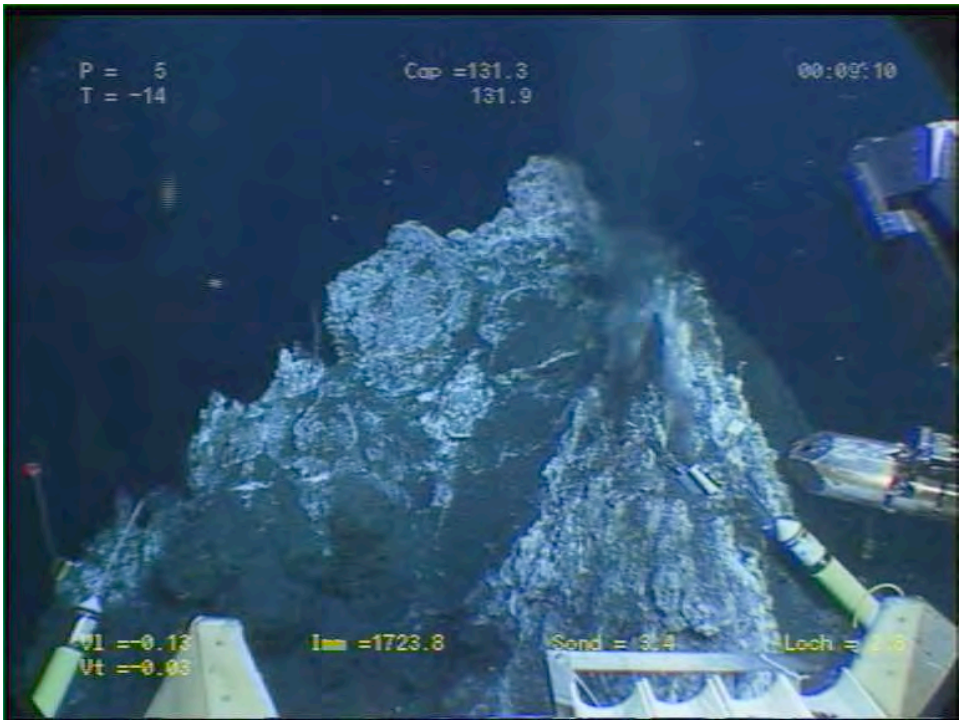
Color sensor : White

Photos

090908000204A Cap=131.8 Pan=14 Im=1724 view of probe

090908000600A Cap=131.8 Pan=13 Im=1724 view of the vent

090908000742A photo of the probe and vent



090908000910A Cap= 131.3 Pan= 5 Im= 1723.8 general view of the site : HT008 (Brown/Brown) and 29001 (White)

Recovery

Position :

Lat : Lon :

37 17 447 32 16 922

X = 3639

Y = 7372

Z = 1725

Cap = 167

Depth : 1725 m

Heading (Pan) : 22

Date/Time : 22/09/2009 at 03:16 :50

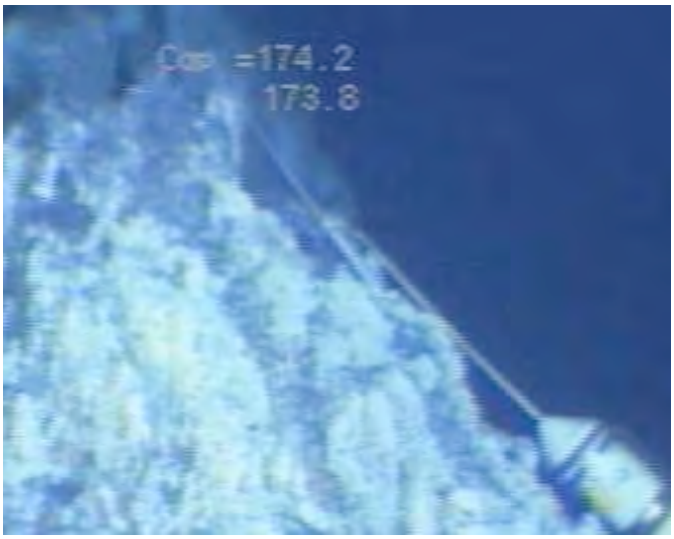
Remark : La sonde a perdu son flotteur, qui a fondu. => B09VID020

Photos

090922031200A Cap=173.9 Pan=6, 29001 probe float on the bottom without the sensor.

090922031419A Cap=174.2 Pan=-9, the 29001 probe and sensor is still in the vent !! Next to the HTW008

ZOOM :



6.2.2. NTNKE 29012 – Crystal

HT sonde NKE temporaire (1mois) 29012

Site : Crystal

Vent

T° in situ : 323-326°C (B09TEM039)

Event : B09THN29012D

Configuration

Set date/time : 02/09/09 12 :34 :51

Start date/time : 02/09/09 12 :34 :51

Sample interval : 10''

Voltage : …

Deployment

Position :

Lat : Lon :

37 17 447 32 16 919

X = 13642; Y = 7372; Z = 1724; Cap = 218; Depth : 1724 m; Heading (Pan) : 13

Installed : 07/09/09 at 22:51

Bathyluck09-Dive 389

DVDs # …

Observers :

Remark : installed at Crystal, next to HTW006.

Color sensor : Yellow and Red

Photos

090907225124A Cap=218.5 Pan=12 Im=1724.7 view of the probe 29012

090907225411A Cap=218.5 Im=1724.7 general view of the vent

090908024907A Cap=152.8 Pan=7 Im=1725.3 general view of probes : 29012 (yellow/red) and HT006 (Black/Black)

Recovery

Position :

Lat : Lon :

37 17 460 32 16 907

X = 3660

Y = 7396

Z = 1725

Cap = 227

Depth : 1725 m

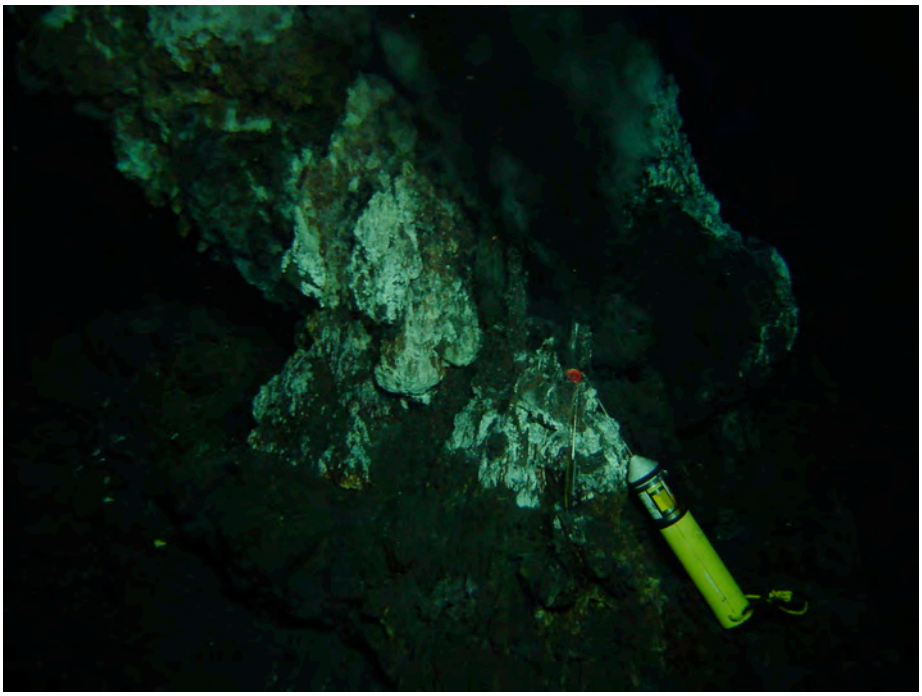
Heading (Pan) : 26

Date/Time : 22/09/2009 at 02:37

Delta t = 32 s

Remark : => B09VID019 and B09TGR003

Photos



090922023422A at the left, the NKE probe 29012, and at the rigtht the WHOI one HTW006

090922023628A Cap=227.8 Pan=2 Tprobe 29012 recovered

6.2.3. HT WHOI HT006 - Crystal
HT sonde WHOI (1 an) HT006

Site : Crystal

Vent

T° in situ : …

Event : B09HTW006D

Configuration

Logger1 : 225 6886A

Logger2 : 225 6922B

Set date/time : - A : 01/09/09 17 :42 :36

- B : 01/09/09 17 :43 :36

Start date/time : - A : 01/09/09 18 :00 :00

- B : 01/09/09 18 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.447 32 16.919

X = 13642; Y = 7372; Z = 1724; Cap = 159; Depth : 1724 m; Heading : 9

Installed : 7/09/2009 at 23:11

Bathyluck09-Dive 389

DVDs # …

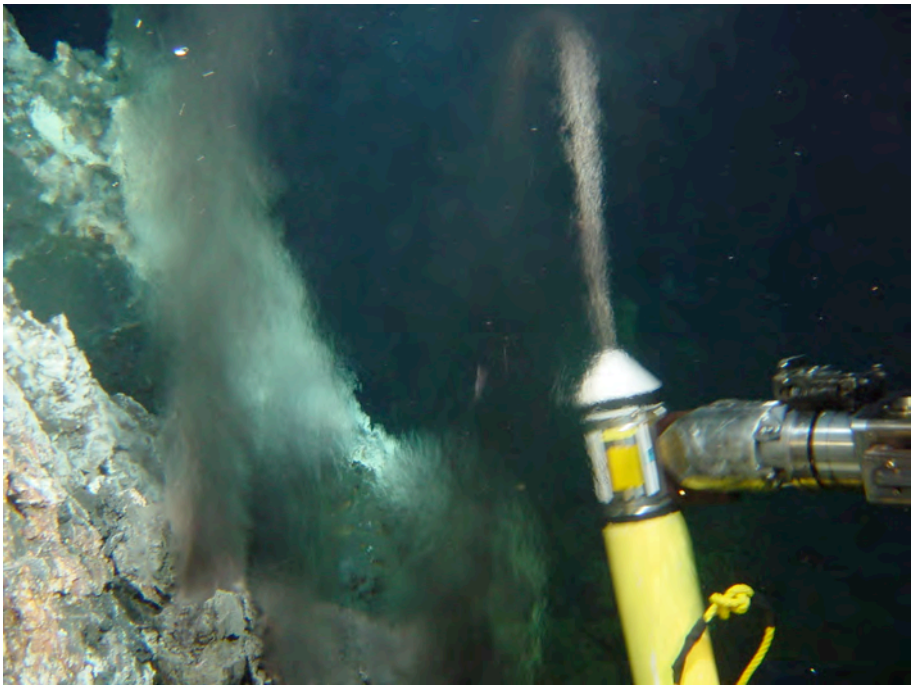
Site surveyed between … and …

Observers : Javier and Thibaut

Remark : installed at Crystal, next to NKE2012

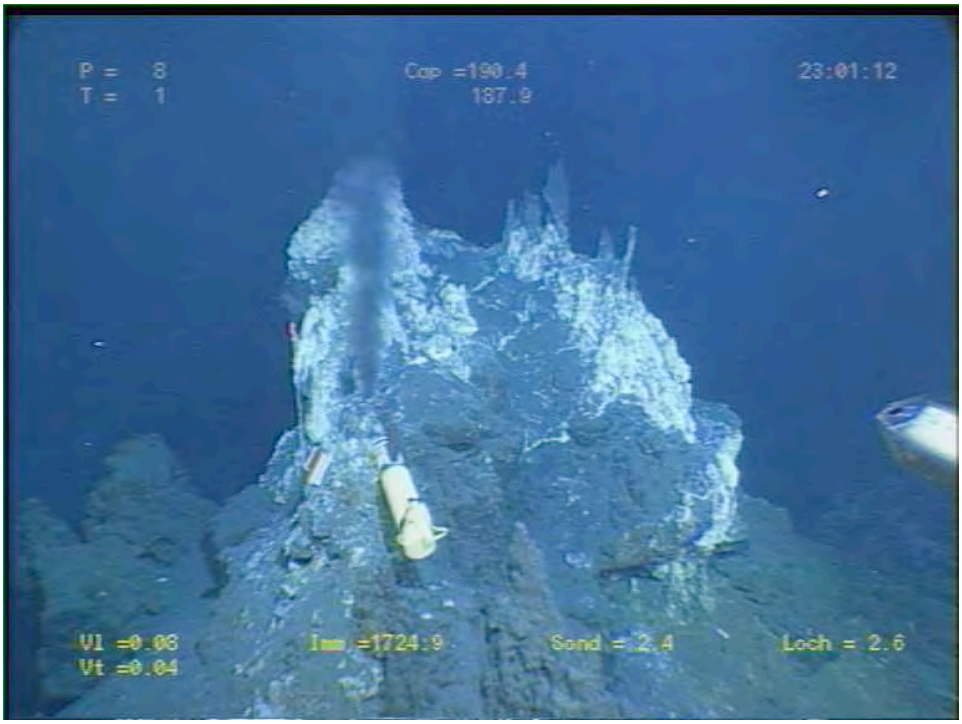
Color sensor : Front : Black / Back : Black

Photos

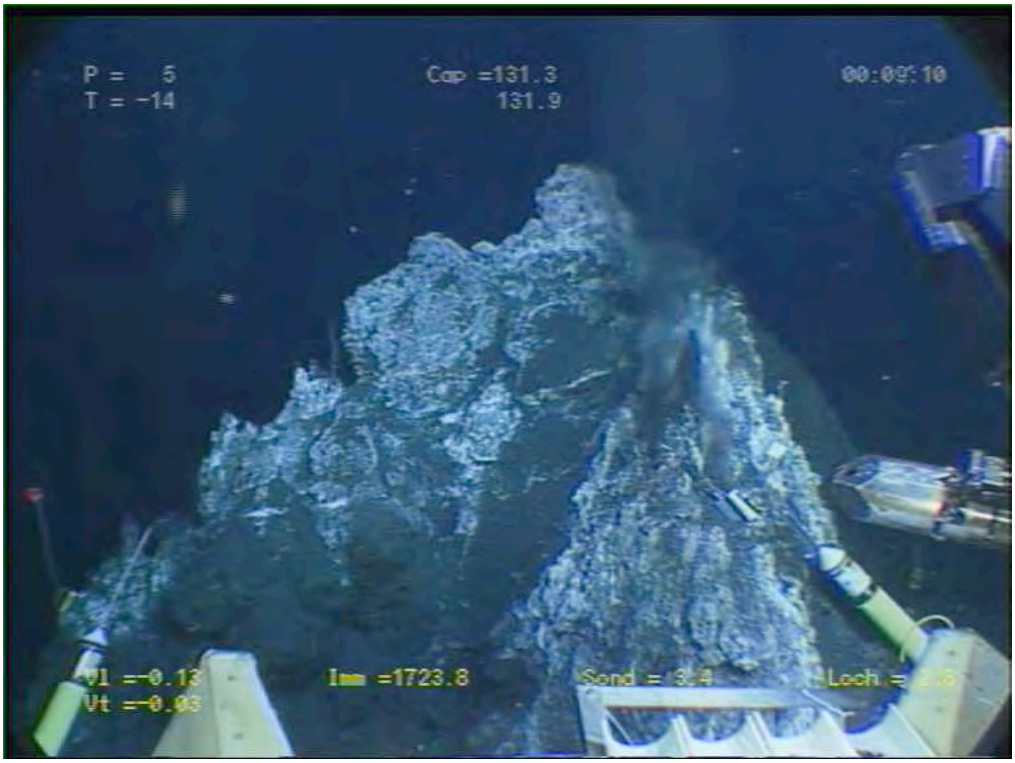


090907221128A photo of the WHOI probe HTW006 Black/Black

090907223542A Cap=218.6 view of the vent and the probe



090907230112A Cap=190.4 Pan=8 General view of the site with the probe HTW006



090908000910A Cap=131.3 Pan=5 General view of the site Crystal with all the probes, form left to right : 29012, HTW006, 29001, HTW008

6.2.4. HT WHOI HT008 – Crystal

HT sonde WHOI (1 an) HT008

Site : Crystal

Vent

T° in situ : …

Event : B09HTW008D

Configuration

Logger1 : 225 6892A

Logger2 : 225 6906B

Set date/time : - A : 01/09/09 17 :51 :53

- B : 01/09/09 17 :52 :41

Start date/time : - A : 01/09/09 18 :00 :00

- B : 01/09/09 18 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.450 32 16.921

X = 13640; Y = 7378; Z = 1724; Cap = 131.9; Depth : 1724 m; Heading : 26

Installed : 7/09/2009 at 23:49

Bathyluck09-Dive 389

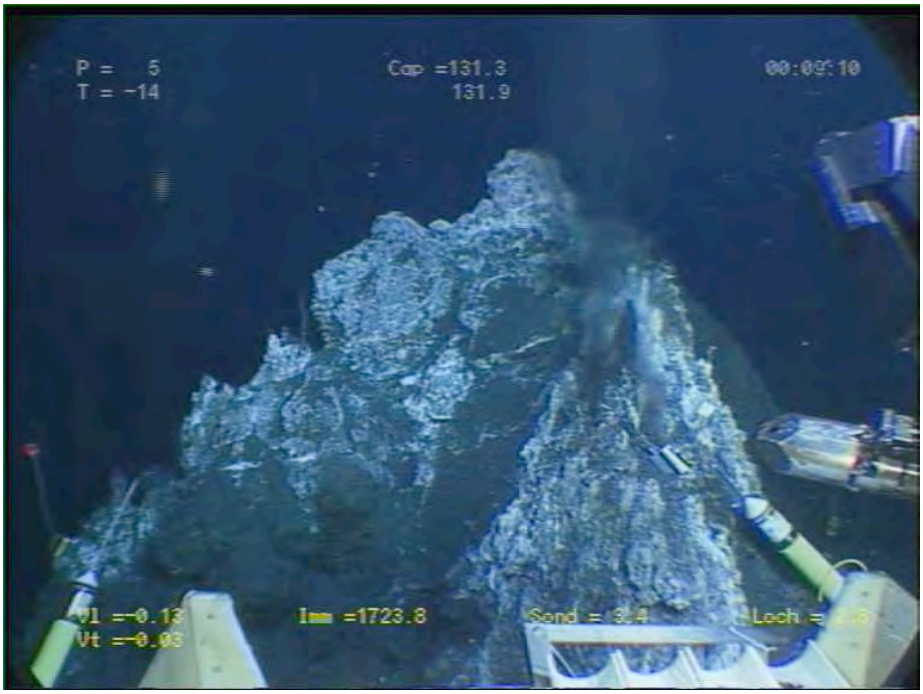
DVDs # …

Observers : Javier and Thibaut

Remark : installed at Crystal, next to NKE29001 and at the other side of HT006 and NKE29012.

Color sensor : Front : Brown / Back : Brown

Photos



090908000910A Cap=131.3 Pan=5 General view of the site Crystal with all the probes, form left to right : 29012, HTW006, 29001, HTW008

090908034730A general view of the vent and the two probes : 29001(left) and HTW008(right)

6.2.5. HT NKE 29005B – Isabel

HT sonde NKE temporaire (1mois) 29005B

Site : Isabel

Vent

T° in situ : 224°C

Event : B09THN29005BD

Configuration

Set date/time : 22/09/09 16 :38 :26

Start date/time : 22/09/09 12 :38 :26

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 377 32 16 640

X = 4055; Y = 7246; Z = 1684.8; Cap = 168.3; Depth : 1684.8 m; Heading (Pan) : 7

Installed : 22/09/2009 at 23:29

Bathyluck09-Dive 395

DVDs # …

Observers :

Remark : installed at Isabel, next to HTW012, at the same place that B09THN29011

Color sensor : white and yellow

B09VID030

Recovery

Position :

Lat : Lon :

37 17 378 32 16 640

X = 4055

Y = 7247

Z = 1684.7

Cap = 168

Depth : 1684.7 m

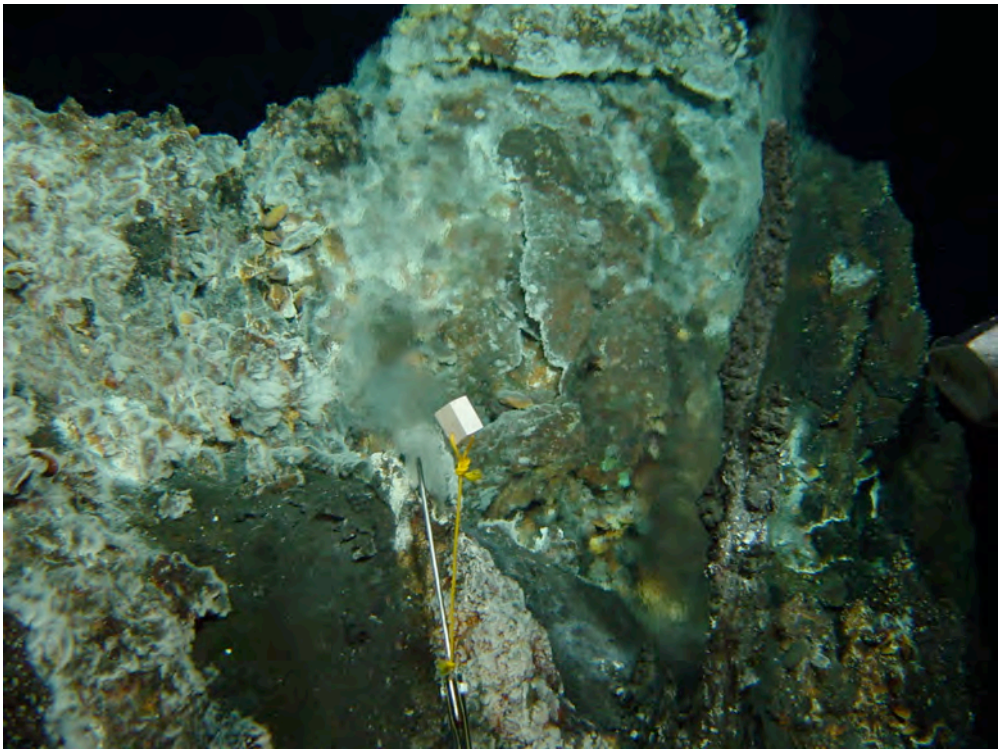
Heading (Pan) : -0

Date/Time : 22/09/2009 at 23:18

Remark : installed next to HTW012, at the same place that NKE29011

Photos

090922232855A Cap=168.5 Pan=-2 view of the probe 29005B and the vent



090922232945A view of the probe deployed on the site

6.2.6. HT NKE 29011D – Isabel

HT sonde NKE temporaire (1mois) 29011

Site : Isabel

Vent

T° in situ : 224°C

Event : B09THN29011D

Configuration

Set date/time : 02/09/09 12 :28 :38

Start date/time : 02/09/09 12 :28 :38

Sample interval : 10''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 379 32 16 641

X = 14054; Y = 7248; Z = 1685; Cap = 170; Depth : 1685 m; Heading (Pan) : 6

Installed : 07/09/2009 at 01:52

Bathyluck09-Dive 389

DVDs # …

Observers :

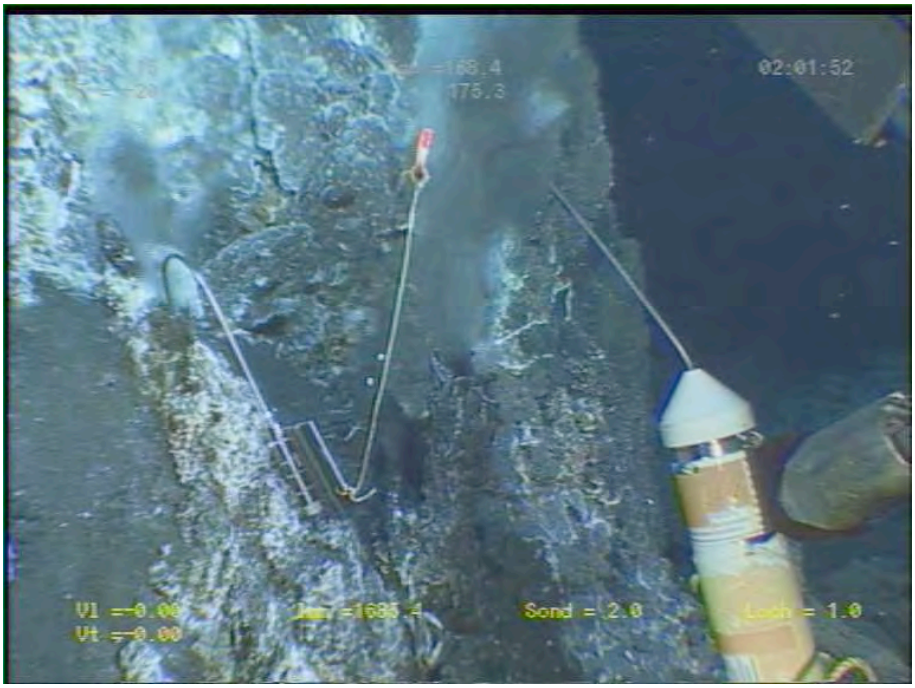
Remark : installed at Isabel, next to HTW012.

Color sensor : red and green

Photos

090907013124A Cap=170 Im=1685 view of the probe

090907014945A Cap=170 Im=1685 view of the vent



090907020152A Cap=168.4 Im=1685 general view of the probe : 29011 (red/green) and HT012 (No color/no color)

Recovery

Position :

Lat : Lon :

37 17 378 32 16 640

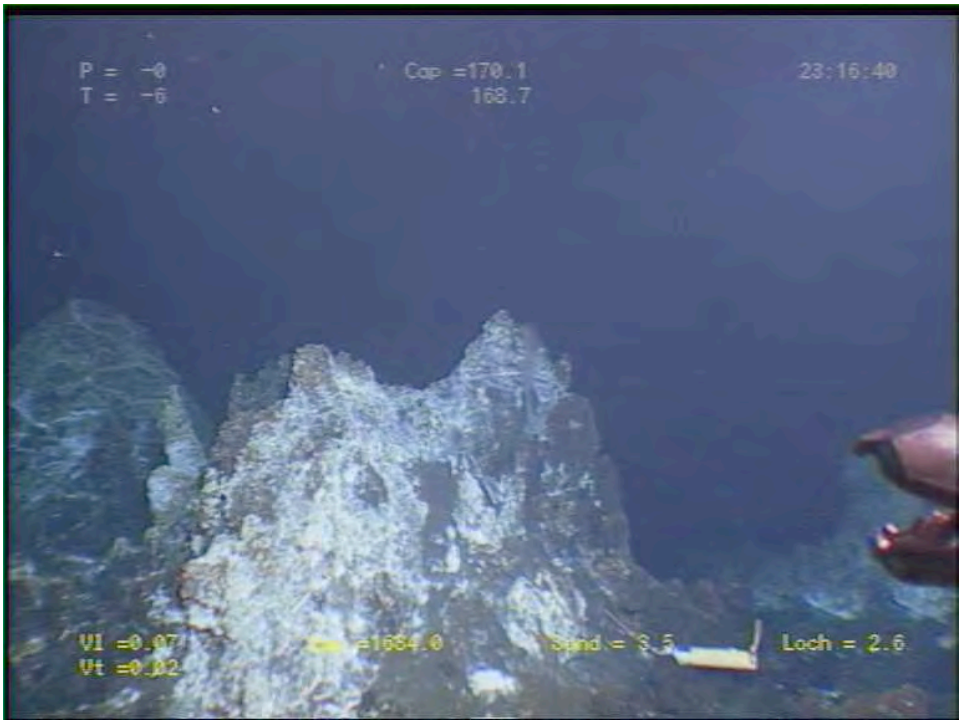
X = 4055; Y = 7247; Z = 1684.7; Cap = 168; Depth : 1684.7 m; Heading (Pan) : -0

Date/Time : 22/09/2009 at 23:18

No data, burnt by the chimney

Remark : none

Photos



090922231640A Cap=170.1 Pan=-0 - arriving on the site Isabel, we can see the two probes, and HTW012 is on the bottom, out of her vent

090922231853A Cap=168.9 Pan=10 recovery of the probe 29011

6.2.7. HT WHOI HT012 - Isabel

HT sonde WHOI (1 an) HT012

Site : Isabel

Vent

T° in situ : …

Event : B09HTW012D

Configuration

Logger1 : 225 6901A

Logger2 : 225 6927B

Set date/time : - A : 01/09/09 18 :20 :25

- B : 01/09/09 18 :21 :13

Start date/time : - A : 01/09/09 19 :00 :00

- B : 01/09/09 19 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.379 32 16.642

X = 14052; Y = 7248; Z = 1685; Cap = 173.3; Depth : 1685 m; Heading : 3

Installed : 7/09/2009 at 02:04

Bathyluck09-Dive 389

DVDs # …

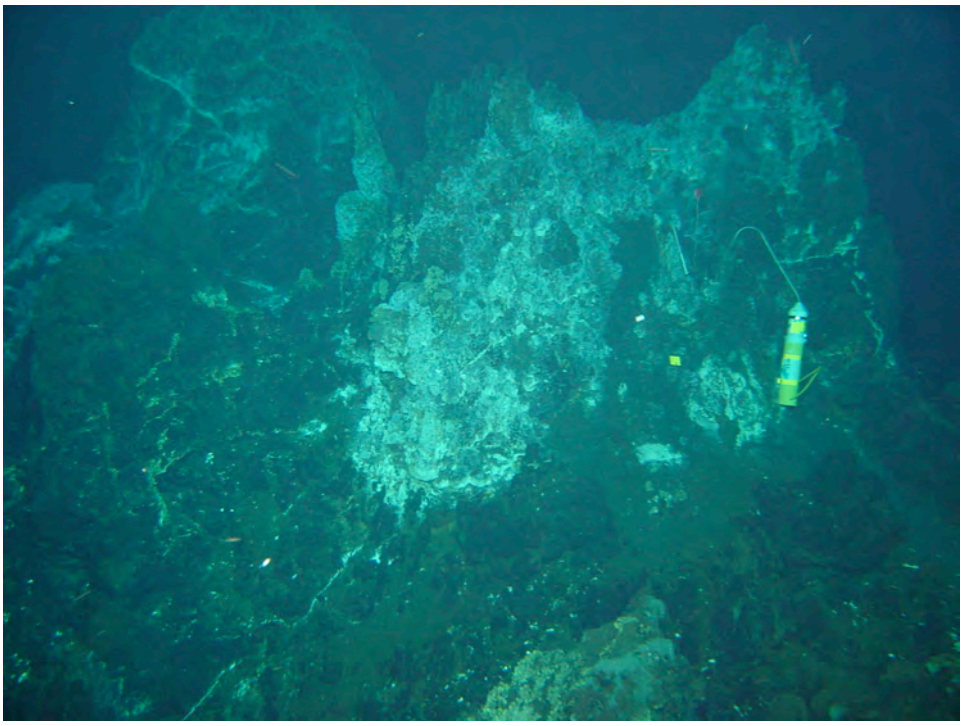
Observers : Javier and Thibaut

Remark : installed at Isabel, next to NKE29011

Color sensor : Front : NoColor / Back : NoColor

TOMBEE !!!

Photos



090907021132A General view of Isabel with the two probes HTW012 and 29011 before the HTW012 fall.

090922234001A Cap=168.2 Pan=2 View of HTW012 recovered on the bottom, before putting it in the vent again

Re-deployment

Position : Lat : Lon :

37 17.379 32 16.640

X = 4055; Y = 7248; Z = 1685; Cap = 91.8; Depth : 1685 m; Heading : 8

Installed : 23/09/2009 at 00 :51

Bathyluck09-Dive 395

Remark : installed next to 29005B

Photos

090922235034A re-deployment of the probe HTW012

090923003349A Cap=91.1 Pan=8 re-deployment of HTW012 on Isabel

Recovery

6.2.8. HT NKE 29007D – Montsegur

HT sonde NKE (1year) 29007

Site : Montsegur (same vent than 29009)

Vent

T° in situ : 177°C (B09TEM047)

Event : B09THN29007D

Configuration

Set date/time : 21/09/09 10 :04 :55

Start date/time : 21/09/09 10 :04 :55

Sample interval : 90''

Voltage : …

Deployment

Position :Lat : Lon :

X = 4212; Y = 7069; Z = 1702; Cap = 54.6; Depth : 1702 m; Heading (Pan) : 0

Installed : 22/09/2009 at 15:38

Bathyluck09-Dive 395

DVDs # …

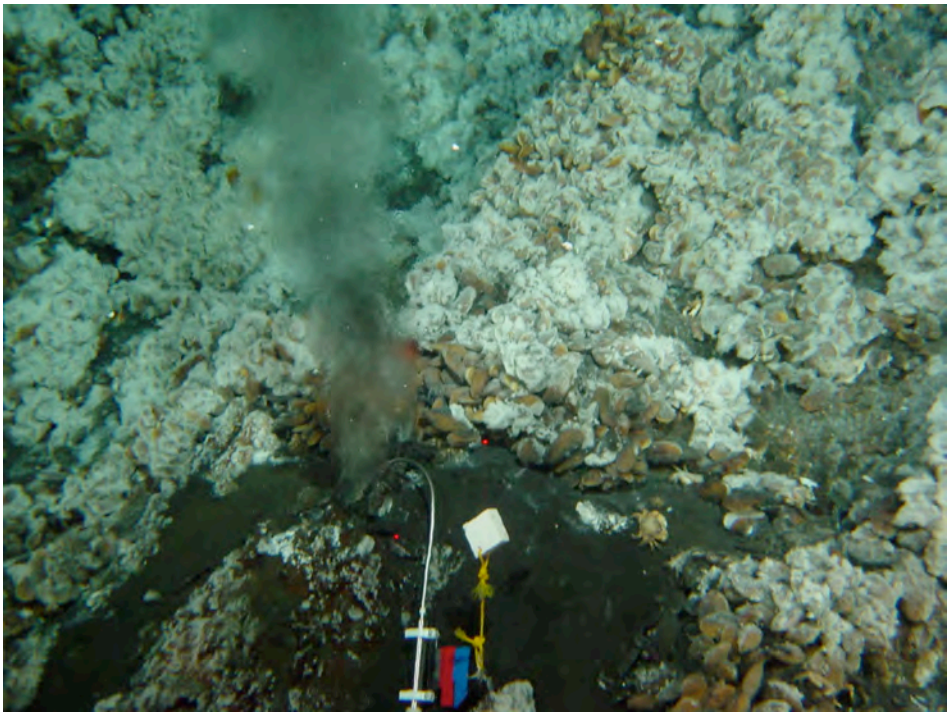
Observers : Eric and Thibaut

Remark : installed at Montsegur, at the same place than 29009

Color sensor : Blue/Red

Photos

090922153523A Cap=54.2 Pan=-4 view of the probe 29007 and the vent



090922153653A Photo of the vent and probe 29007 (red/blue)

090922153722A Cap=54.6 Pan=-0 General view of the site with the probe in the vent

Recovery

6.2.9. HT NKE 29008D - Montsegur

HT sonde NKE (1year) 29008

Site : Montsegur (same vent than 29014)

Vent

T° in situ : 177°C (B09TEM047)

Event : B09THN29008D

Configuration

Set date/time : 21/09/09 10 :18 :32

Start date/time : 21/09/09 10 :18 :32

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 281 32 16 535

X = 4212; Y = 7069; Z = 1702; Cap = …; Depth : 1702 m; Heading (Pan) : …

Installed : 22/09/2009 at …

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

Remark : Not installed ! Le collier est tombé …

Color sensor : Blue/green

<u>Note : NOT USED</u>

Photos

6.2.10. HT NKE 29009D - Montsegur

HT sonde NKE temporaire (1mois) 29009

Site : Montsegur (West side)

Vent

T° in situ : 177°C (B09TEM047)

Event : B09THN29009D

Configuration

Set date/time : 02/09/09 12 :25 :59

Start date/time : 02/09/09 12 :25 :59

Sample interval : 10''

Voltage : …

Deployment

Position : Lat : Lon :

X = 14206 Y = 7074 Z = 1700; Cap = …; Depth : 1700 m; Heading : …

Installed : 6/09/2009 at 06 :04

Bathyluck09-Dive 389

DVDs # …

Observers : Javier

Remark : installed in the west flank of Montsegur, on small broken smoker on W flank of big mound of Montsegur

Color sensor : blue and yellow

Photos

090906050945A general view of the site, with probes : HT007 (Gray/Gray) and 29009 (blue/yellow)

090906043240A view of the vent and the probe 29009

090906055202A view of the probe 29009

Recovery

Position :Lat : Lon :

37 17 281 32 16 535

X = 4212; Y = 7069; Z = 1702; Cap = 34; Depth : 1702 m; Heading (Pan) : 0

Date/Time : 22/09/2009 at 14:59 :00

Delta t = 23s Remark : Non

Photos

090922145758A Cap=33 recovery of the Tprobe 29009

6.2.11. HT NKE 29013D - Montsegur

HT sonde NKE (1year) 29013

Site : Montsegur (same vent than 29014)

Vent

T° in situ : 201°C (B09TEM046)

Event : B09THN29013D

Configuration

Set date/time : 21/09/09 10 :01 :46

Start date/time : 21/09/09 10 :01 :46

Sample interval : 90''

Voltage : …

Deployment

Position :Lat : Lon :

37 17 278 32 16 533

X = 4215; Y = 7064; Z = 1702; Cap = 350; Depth : 1702 m; Heading (Pan) : -1

Installed : 22/09/2009 at 14:52

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

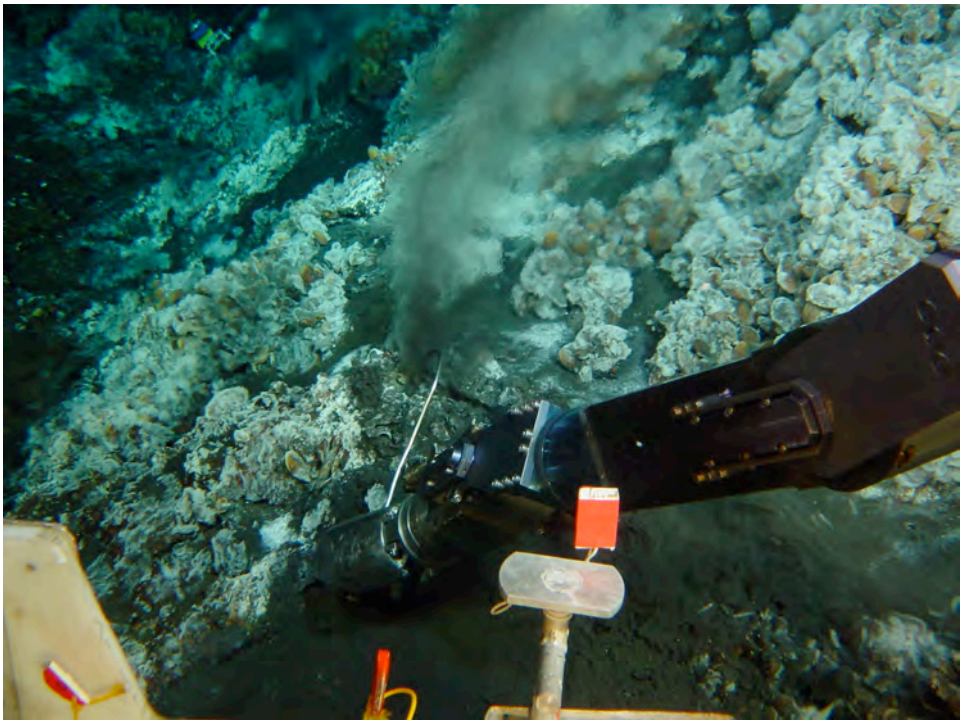
Remark : installed at Montsegur, at the same place than 29014

Color sensor : Red/White/Green

Photos

090922144957A Cap=350 Pan=-2 arriving on the deployment site

090922145142A Cap=350 Pan=-2 deployment of Tprobe



090922145244A Photo of the Tprobe deployment

6.2.12. HT NKE 29014D - Montsegur

HT sonde NKE temporaire (1mois) 29014

Site : Montsegur (West side)

Vent

T° in situ : 201°C (B09TEM046)

Event : B09THN29014D

Configuration

Set date/time : 02/09/09 12 :30 :48

Start date/time : 02/09/09 12 :30 :48

Sample interval : 10''

Voltage : …

Position :Lat : Lon :

X = 14206 / 14212; Y = 7074; Z = 1700; Cap = 55.3; Depth : 1700 m; Heading : …

Installed : 6/09/2009 at 06 :30

Bathyluck09-Dive 389

DVDs # …

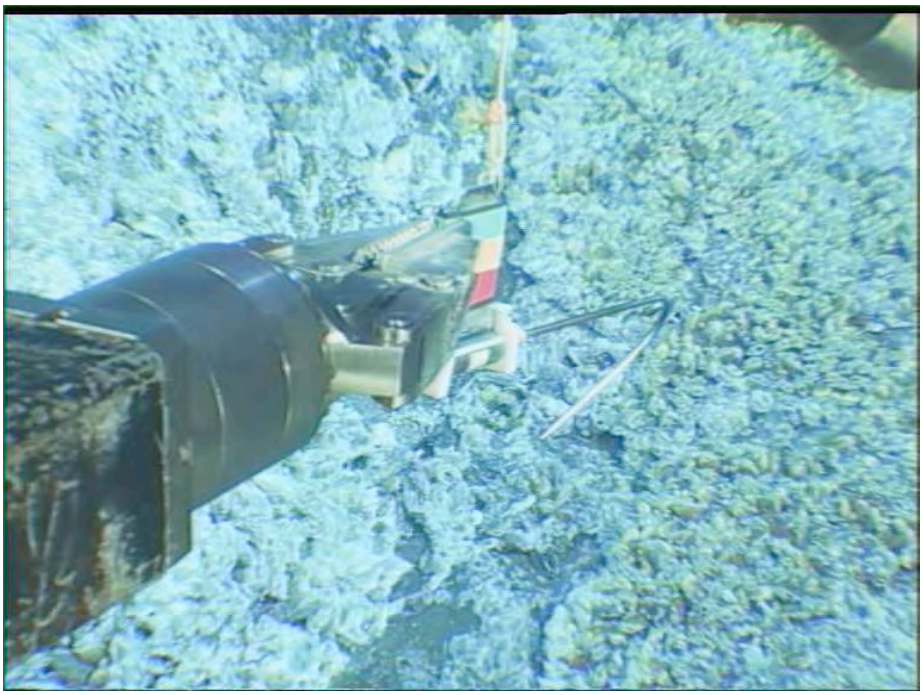
Observers : Javier

Remark : installed in the west side of Montsegur.

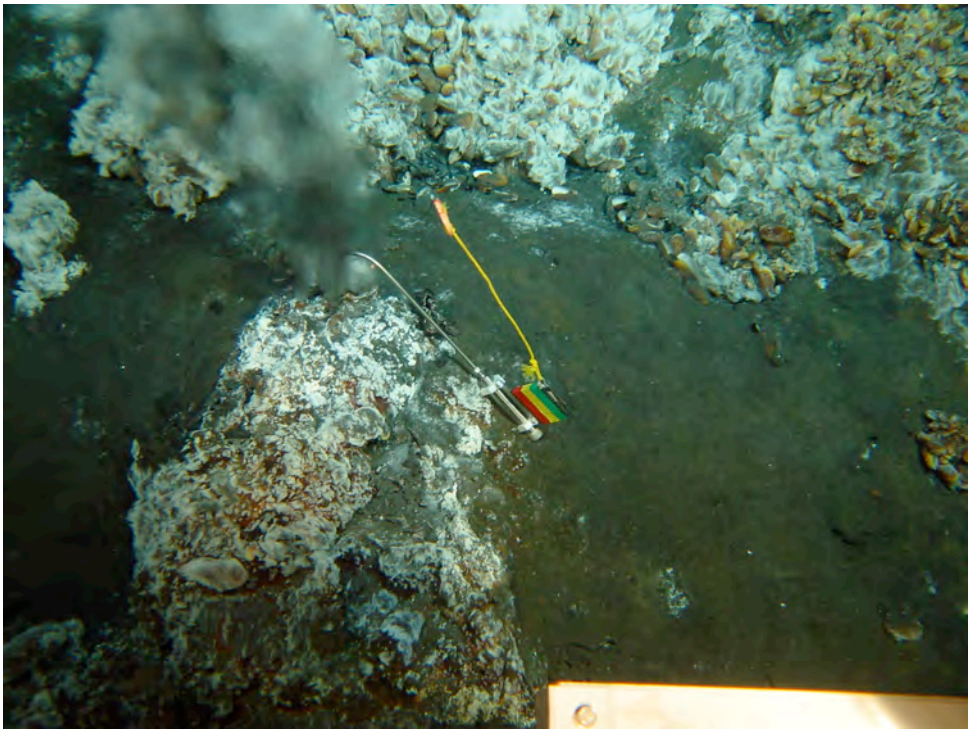
Color sensor : red /yellow / green

Cartoon

Photos



090906062048A view of the probe 29014



090906063256A view of the vent (Red/Yellow/Green) and the probe

Recovery

Position :Lat : Lon :

X = 4218; Y = 7064; Z = 1702; Cap = 356.2; Depth : 1702 m; Heading (Pan) : 0

Date/Time : 22/09/2009 at 14:20

Delta t = 36s

Remark : None

Photos

090922142004A Cap=355.4 Pan=-14 recovery of Tprobe

6.2.13. HT WHOI HT007D - Montsegur

HT sonde WHOI (1 year) HT007

Site : North of Montsegur

Vent

T° in situ : 196°C

Event : B09HTW007D

Configuration

Logger1 : 225 6917B

Logger2 : 225 6921A

Set date/time : - A : 01/09/09 17 :47 :10

- B : 01/09/09 17 :47 :55

Start date/time : - A : 01/09/09 18 :00 :00

- B : 01/09/09 18 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.287 32 16.540

X = 14224; Y = 7079; Z = 1703; Cap = 142; Depth : 1703 m; Heading : -9

Installed : 6/09/2009 at 03:47

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed at North of Montsegur

Color sensor : Front : Gray / Back : Gray

Photos

090906032243A Cap=142.9 Pan=18 deployment of the WHOI probe HTW007 (gray/gray)

090906035623A Cap=142.3 Pan=1 general view of the site and the Tprobe

Recovery

6.2.14. HT WHOI HT009D - Montsegur

HT sonde WHOI (1 an) HT009
Site : Montsegur

Vent

T° in situ : 256°C

Event : B09HTW009D

Configuration

Logger1 : 225 6907B

Logger2 : 225 6932A

Set date/time : - A : 01/09/09 17 :59 :00

- B : 01/09/09 17 :59:35

Start date/time : - A : 01/09/09 19 :00 :00

- B : 01/09/09 19 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

X = 14213; Y = 7074; Z = 1702; Cap = 15; Depth : 1702 m; Heading : -5

Installed : 6/09/2009 at 03:47

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

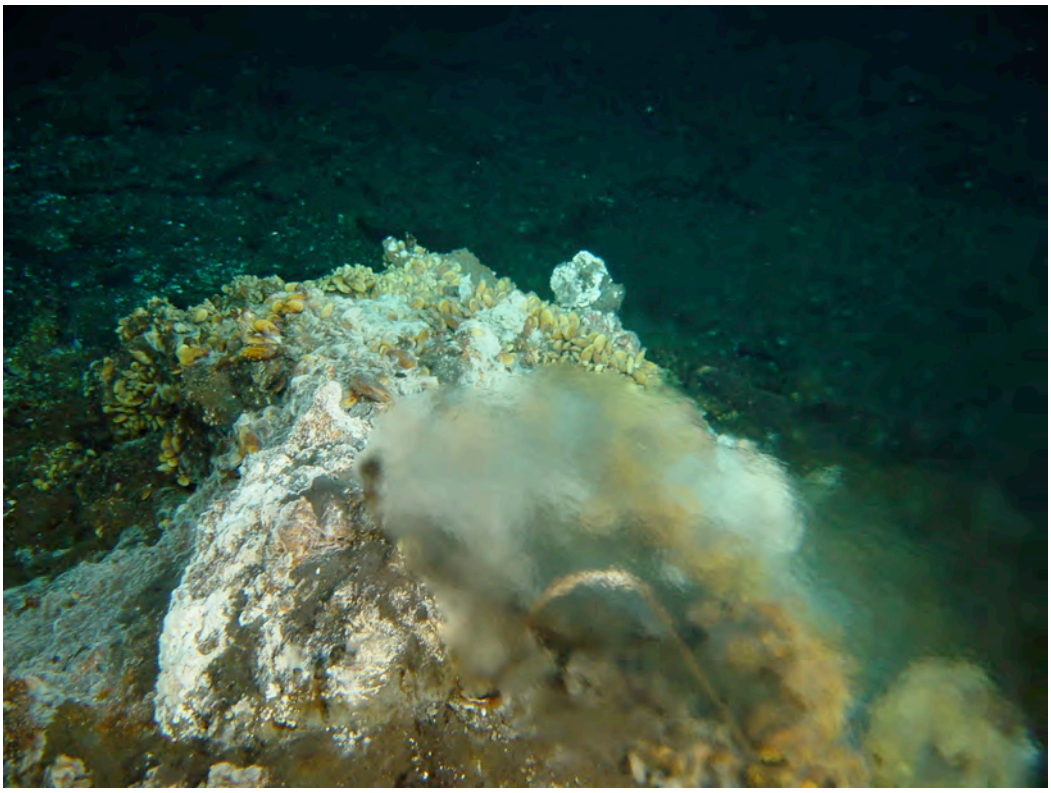
Remark : installed at North of Montsegur

Color sensor : Front : Yellow/Green // Back : Yellow/Green

Photos

090906021208A Cap=15.3 Pan=3 deployment of the HTW009 Tprobe

090906021958A Cap=24.9 General view of the site with the Tprobe deployed



090906021700A Photo of the vent with the sensor inside.

Recovery

6.2.15. LT WHOI LT001D - Montsegur

LT sonde WHOI (1 year) LT001

Site : West of Montsegur

Vent

T° in situ : 20°C (B09TEM019)

Event : B09TLN001D

Configuration

Logger : 2319683

Set date/time : 01/09/09 15 :04 :20

Start date/time : 01/09/09 16 :00 :00

Sample interval : 15' (452days)

Voltage : …

Deployment

Position : Lat : Lon :

37 17.285 32 16.544

X = 14198; Y = 7077; Z = 1702; Cap = 105; Depth : 1702 m; Heading : 2

Installed : 07/09/2009 at 15:05 :00

Bathyluck09-Dive 389

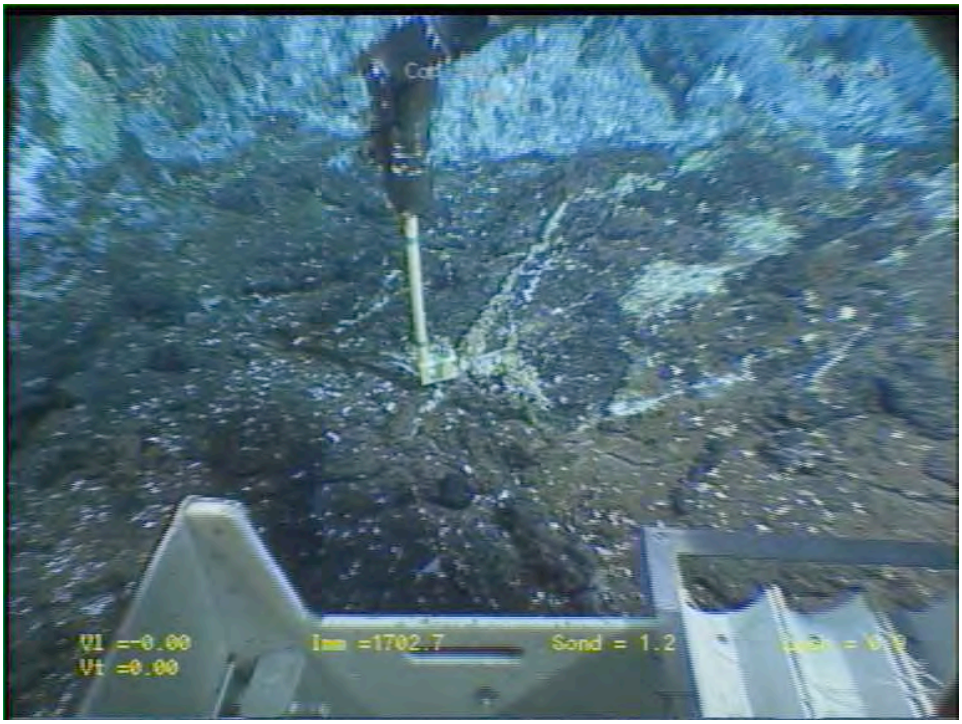
DVDs # …

Observers : Javier and Thibaut

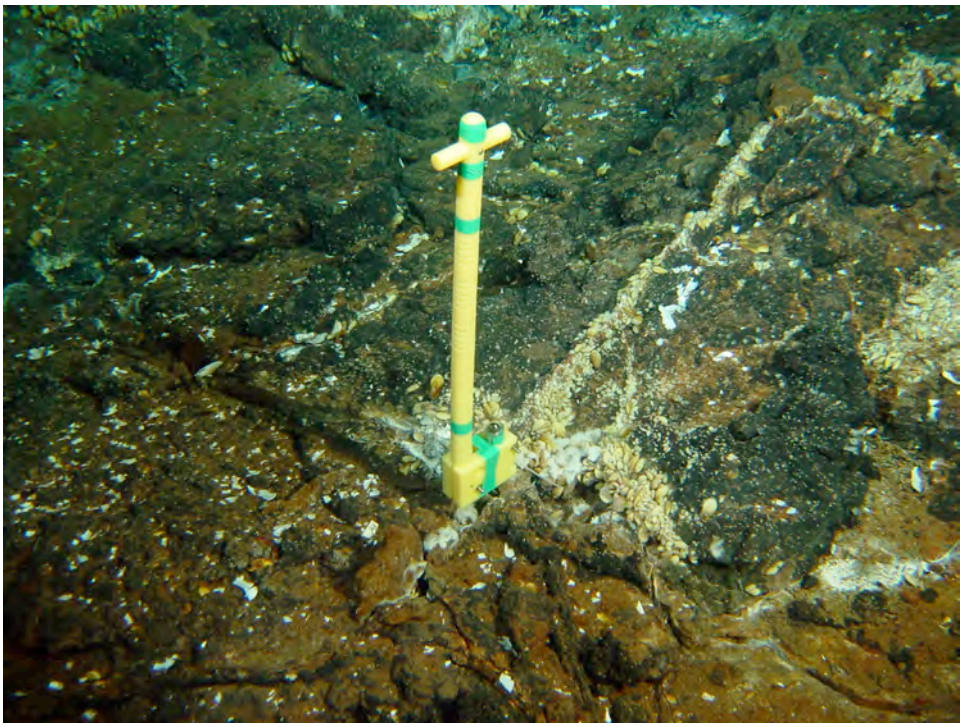
Remark : installed at the West of Montsegur, B09TEM019=20°C

Color sensor : Green

Photos



090907150500A Deployment of LT001 (green)



090907150638A general view of the probe in the crack

Recovery

6.2.16. LT WHOI LT004D - Montsegur

LT sonde WHOI (1 year) LT004

Site : North of Montsegur

Vent

T° in situ : …

Event : B09TLN004D

Configuration

Logger : 2319686

Set date/time : 01/09/09 14 :35 :

Start date/time : 01/09/09 16 :00 :00

Sample interval : 15' (452days)

Voltage : …

Deployment

Position :

Lat : Lon :

X = 14206; Y = 7051; Z = 1704; Cap = 228; Depth : 1704 m ;Heading : 9

Installed : 07/09/2009 at 16:56

Bathyluck09-Dive 389

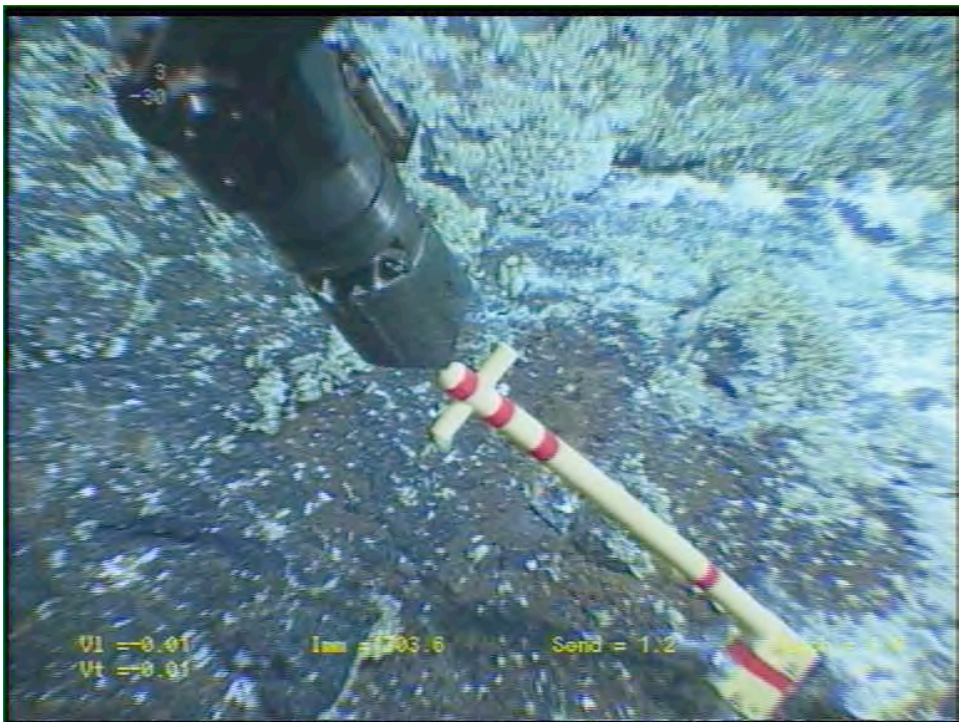
DVDs # …

Observers : Javier and Thibaut

Remark : installed at the North of Montsegur

Color sensor : Red

Photos



090907165621A Cap=228 Pan=3 Deployment of the LT probe LT004

090907165742A Cap=228 Pan=3 Deployment of the LT probe LT004

Recovery

6.2.17. HT WHOI HT005D - Pico

HT sonde WHOI (1 an) HT005

Site : Pico

Vent

T° in situ : …

Event : B09HTW005D

Configuration

Logger1 : 225 6894A

Logger2 : 225 6905B

Set date/time : - A : 01/09/09

- B : 01/09/09

Start date/time : - A : 01/09/09

- B : 01/09/09

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.460 32 16.913

X = 13651; Y = 7395; Z = 1725; Cap = 63.5; Depth : 1725 m; Heading : 7

Installed : 7/09/2009 at 21:46

Bathyluck09-Dive 389

DVDs # …

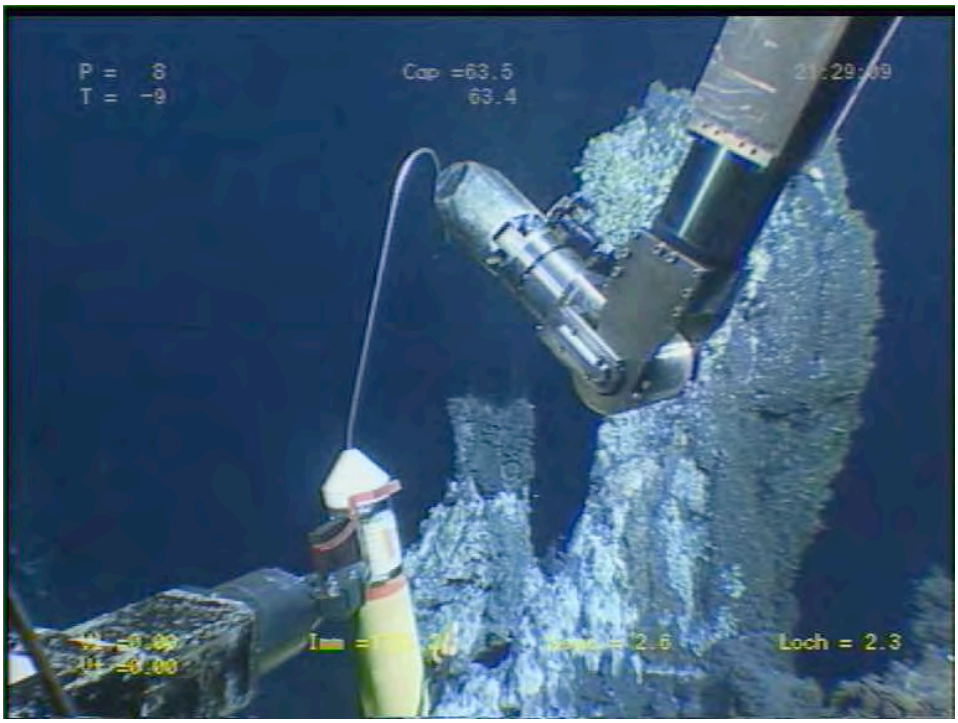
Observers : Javier and Thibaut

Remark : installed at Pico

Color sensor : Front : Orange / Back : Orange

Note : Top orange is close to falling off

Photos



090907212909A Cap=63.5 Pan=8 general view of the site with Tprobe HTW005 in Sherpa

090907213518A Cap=63.4 Pan=15 deployment of the Tprobe HTW005 (orange/orange)

Recovery

6.2.18. HT NKE 290012BD - Sintra

HT sonde NKE temporaire (1mois) 29012B

Site : Sintra

Vent

T° in situ : 196°C

Event : B09THN29012BD

Configuration

Set date/time : 22/09/09 16 :37 :27

Start date/time : 22/09/09 16 :37 :27

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

X = 4255; Y = 7528; Z = 1617.6; Cap = 161; Depth : 1617.6 m; Heading (Pan) : -1

Installed : 23/09/2009 at 02:01

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

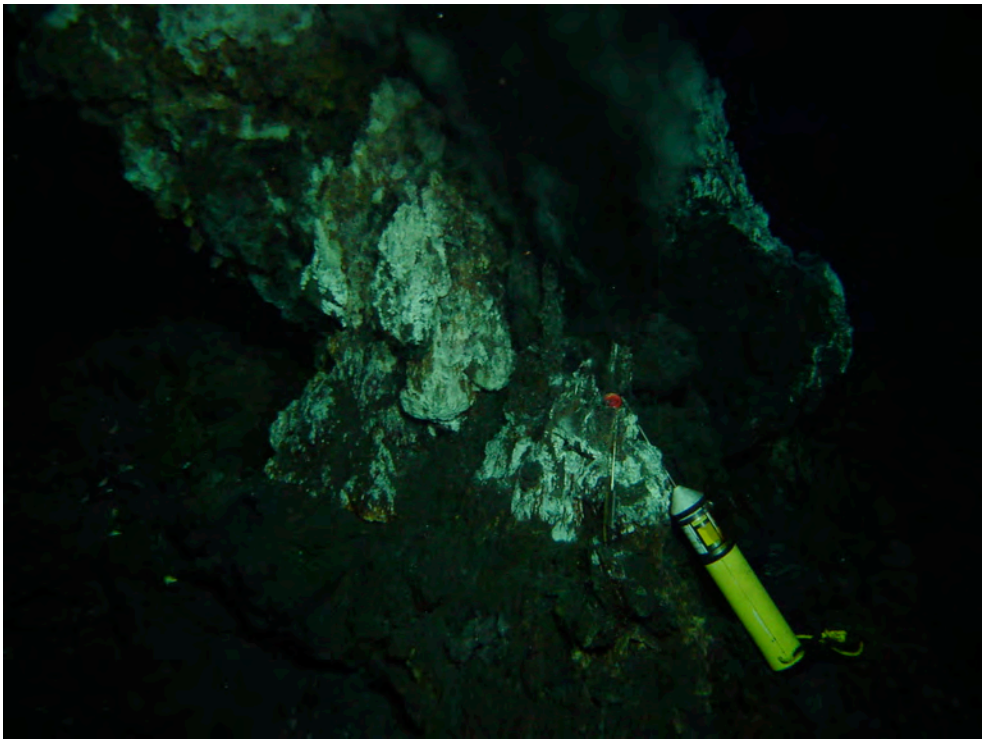
Remark : installed at Sintra

Color sensor : Yellow/Red

Photos

090922023734A Cap=227 View of the Tprobe in maestro

090922023628A Cap=227.8 deployment of the Tprobe 29012B next to the HTW006



090922023422A photo of the site and probes, 29012B(left) and HTW006(right)

Recovery

6.2.19. HT NKE 29018D - Sintra

HT sonde NKE temporaire (1mois) 29018

Site : Sintra, en bas du mont

Vent

T° in situ : 217°C

Event : B09THN29018D

Configuration

Set date/time : 02/09/09 12 :33 :23

Start date/time : 02/09/09 12 :33 :23

Sample interval : 10''

Voltage : …

Deployment

Position :Lat : Lon :

37 17 529 32 16 504

X = 14254; Y = 7528; Z = 1619; Cap = 196; Depth : 1619 m; Heading (Pan) : 43

Installed : 06/09/2009 at 23:34

Bathyluck09-Dive 389

DVDs # …

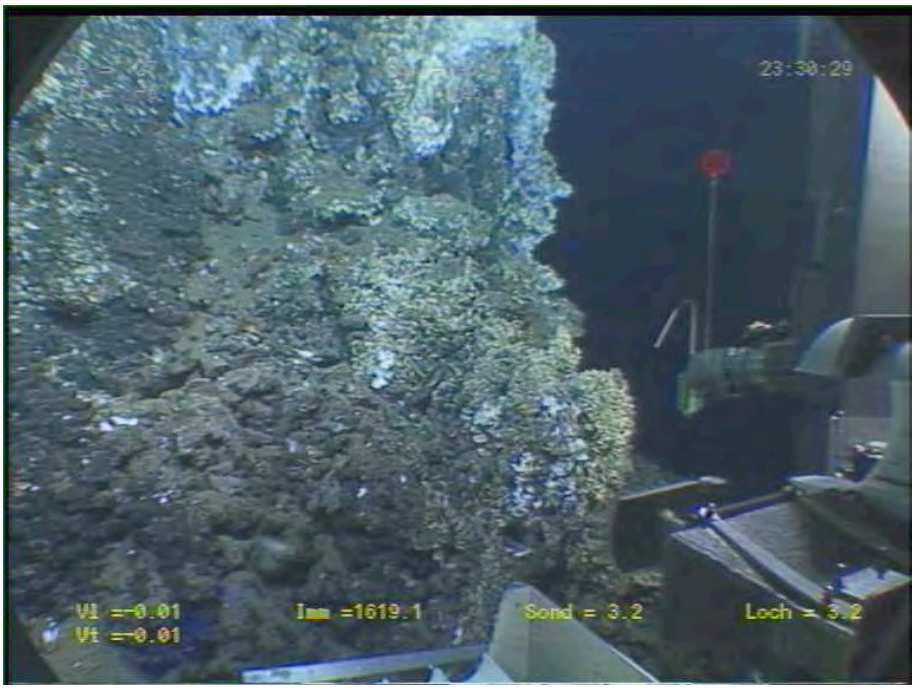
Observers :

Remark : installed at Sintra (en bas du mont).

Color sensor : Green and Yellow

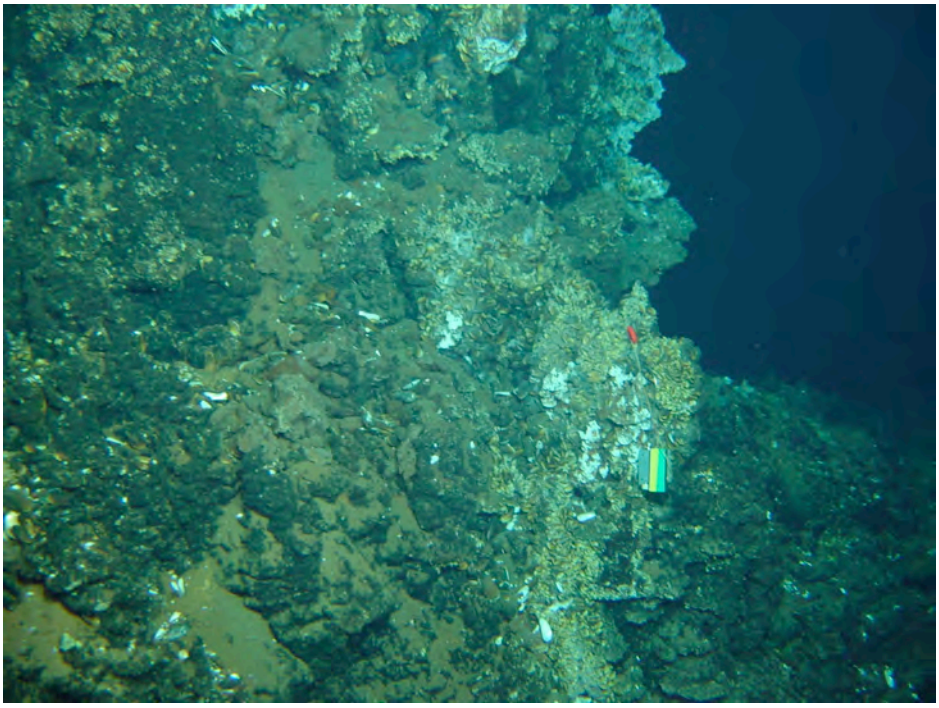
Cartoon

Photos



090906233029A Cap=196 Im= 1619.1 general view of the probe and site

090906233309A Cap=196 Im=1619 view of the vent



090906233900A general view of the site and the probe 29018 (green/yellow)

Recovery

Position :

X = 4257; Y = 7533; Z = 1619; Cap = 220; Depth : 1619 m; Heading (Pan) : …

recovered : 23/09/2009 at 01:54

Delta t = 1min4s

Remark : None

Photos

vlcsnap-8042146 Cap=153.6 Pan=-1 Recovery of 29018 at Sintra

vlcsnap-8042425 Recovery of 29018 at sintra

6.2.20. HT WHOI HT002D - Sintra

HT sonde WHOI (1 an) HT002

Site : Sintra

Vent

T° in situ : …

Event : B09HTW002D

Configuration

Logger1 : 225 6888A

Logger2 : 210 2248B

Set date/time : - A : 01/09/09 15 :36:35

- B : 01/09/09 17 :37 :01

Start date/time : - A : 01/09/09 16 :00 :00

- B : 01/09/09 16 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.530 32 16.509

X = 14247; Y = 7530; Z = 1616.8; Cap = 68.1; Depth : 1616.8 m; Heading : 14

Installed : 6/09/2009 at 22:15

Bathyluck09-Dive 389

DVDs # …

Site surveyed between … and …

Observers : Javier and Thibaut

Remark : installed at Sintra, NKE29018 and NKE29012B

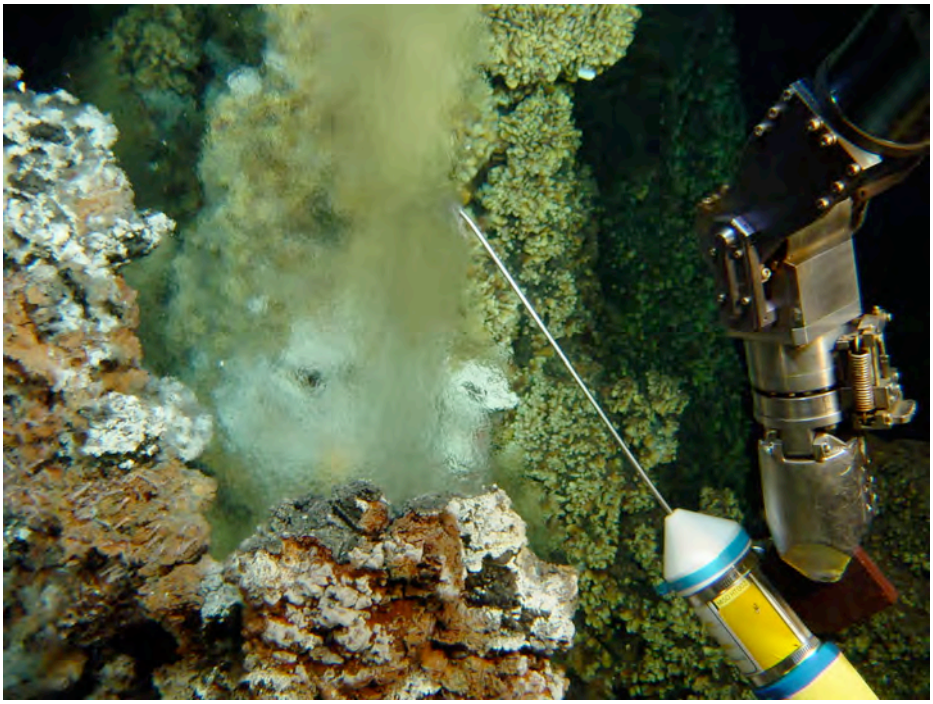
Color sensor : Front : Blue / Back : Blue

Cartoon

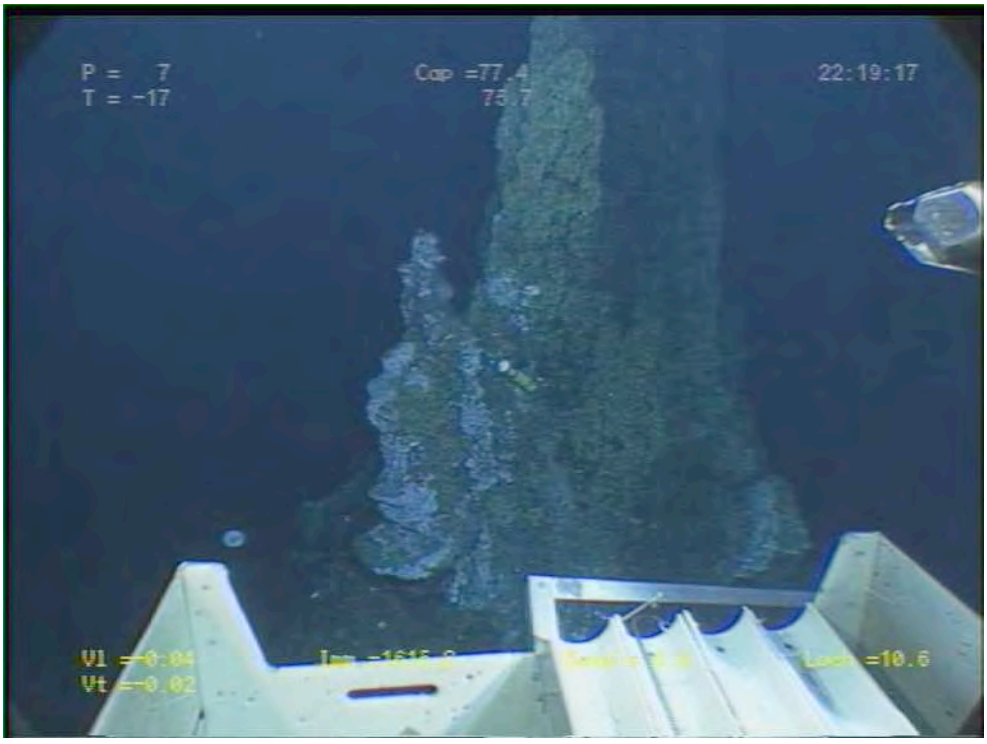
P=7

Photos

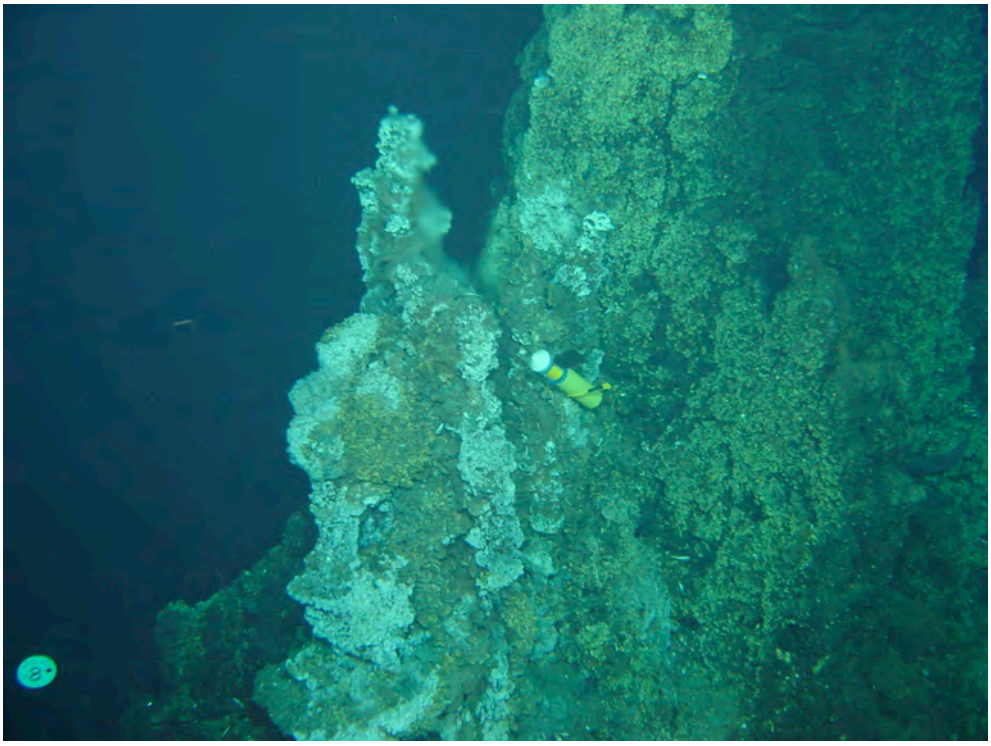
090906221243A Cap=75.1 Pan=12 Deployment of HTW002 (blue/blue)



090906215746A Photo of the HTW002 deployment



090906221917A Cap=77.4 P=7 General view of the site with the Tprobe



090906221939A Photo : general view of the site and Tprobe next the marker M08-8

Recovery

6.2.21. HT NKE 290010D - Sintra

HT sonde NKE (1year) 29010

Site : South Crystal

Vent

T° in situ : 322°C (B09TEM038)

Event : B09THN29010D

Configuration

Set date/time : 21/09/09 10 :07 :27

Start date/time : 21/09/09 10 :07:27

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17.435 32 16.932

X = 3623; Y = 7349; Z = 1721.8; Cap = 53.9; Depth : 1721.8 m; Heading : 1

Installed : 22/09/2009 at 2 :08

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

Remark : installed at South Crystal

Color sensor : Blue/White/Red

B09TEM036=328°C, B09TEM037=334°C, B09TEM038=322°C,

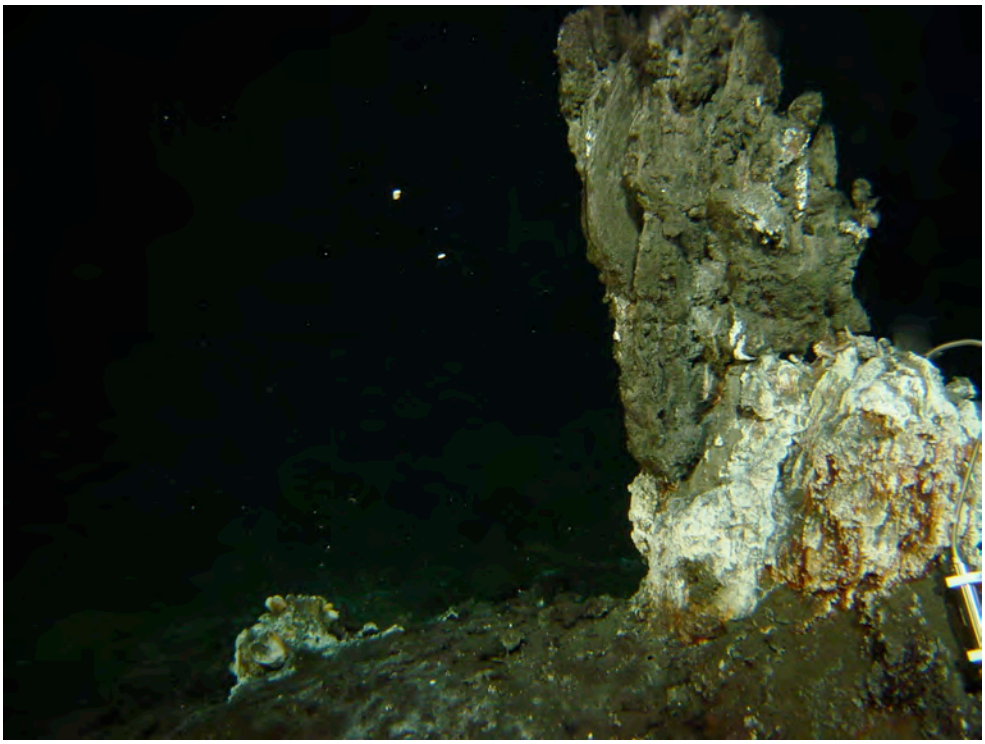
B09VID017, B09VID018

Cartoon

Photos

090922015701A Cap=340.5 Pan=1 view of the site of south Crystal and the 29010 probe in maestro

090922020751A Cap=53.9 Pan=9 Photo of the deployment of the probe 29010



090922022353A Cap=123.7 Pan=11 photo : general view of the site with the deployed probe (right)

Recovery

6.2.22. HT NKE 29002BD – Tour Eiffel

HT sonde NKE (1year) 29002B

Site : Tour Eiffel, near to 29019

Vent

T° in situ : 142°C (B09TEM053)

Event : B09THN29002BD

Configuration

Set date/time : 22/09/09 16 :36 :06

Start date/time : 22/09/09 16 :36 :06

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17.337 32 16.525

X = 4226; Y = 7173; Z = 1683.7 ;Cap = 29.8; Depth : 1683.7 m; Heading : 1

Installed : 22/09/2009 at 22:22

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

Remark : installed on the top of tour eiffel, near to HTW and 29019

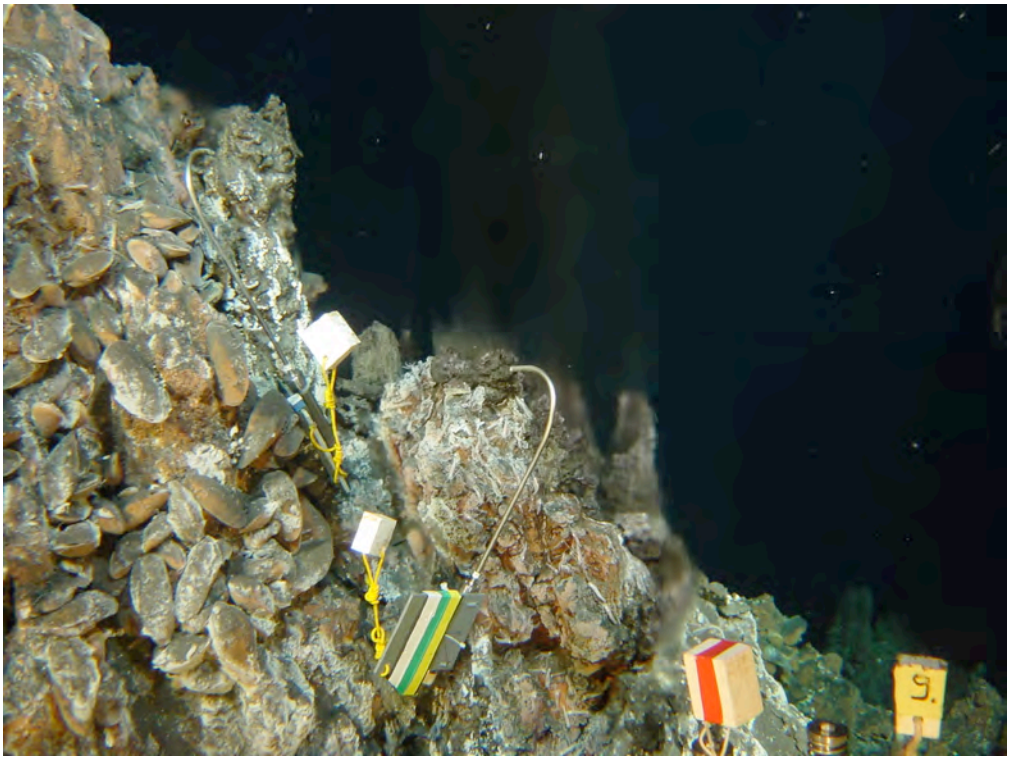
Color sensor : Blue/White

Cartoon

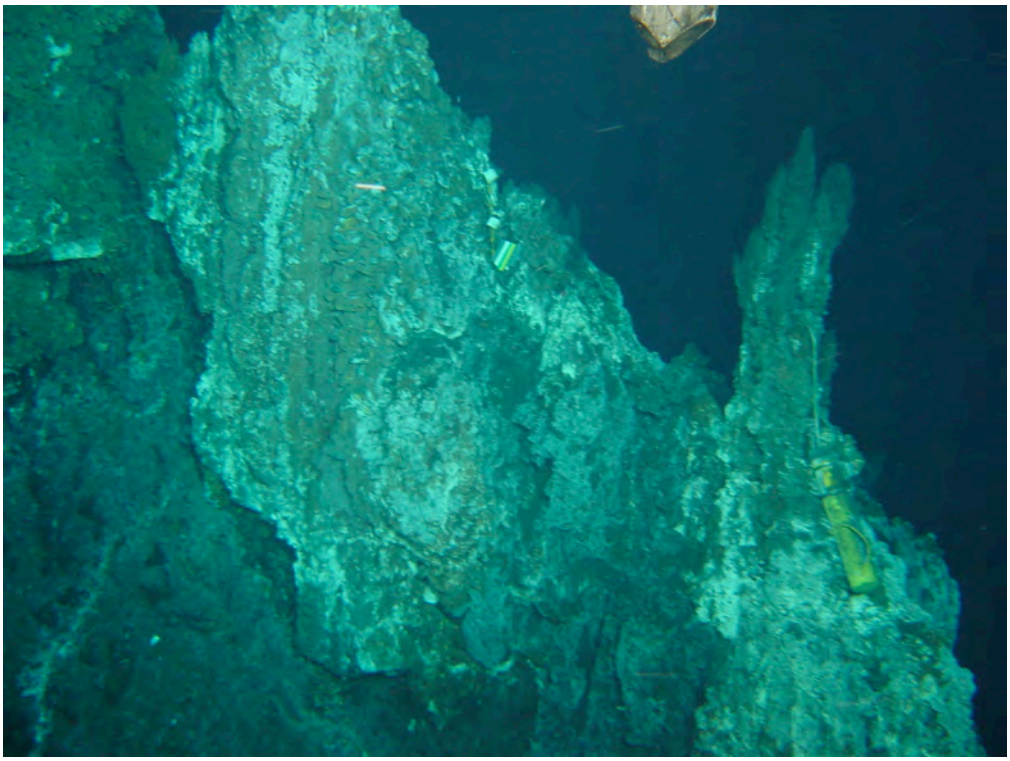
Photos

090922221826A Cap=29.8 Pan=... deployment of Tprobe 29002B (Blue/White)

090922222203A Cap=29.9 deployment of Tprobe 29002B (Blue/White)



090922222325A Two Tprobes on TE : 29002B(left) 29019(right)



090922223448A Cap=20.2 Pan=1 General view of Tprobes, from left to right : 29002B, 29019, HTW010

Recovery

6.2.23. HT NKE 29006D – Tour Eiffel

HT sonde NKE temporaire (1mois) 29006

Site : Tour Eiffel

Vent

T° in situ : 204°C-30°C (B09TEM050-B09TEM049)

Event : B09THN29006D

Configuration

Set date/time : 02/09/09 12 :37 :10

Start date/time : 02/09/09 12 :37 :10

Sample interval : 10''

Voltage : …

Deployment

Position :Lat : Lon :

X = 14212; Y = 7178; Z = 1686; Cap = …; Depth : 1686 m; Heading : …

Installed : 6/09/2009 at 01 :20 :44

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed on the top of tour eiffel, next to NKE 29017

Color sensor : blu

Cartoon

Photos

090906011954A Cap=53.6 Pan=4 Im=1686 view of vent and probes : 29006 (blue) and 29017 (green)

090906012024A view of the vent

090906012231A Cap=54 Pan=4 Im=1685 general view of probes and vent

Recovery

Position :

X = 4233

Y = 7172

Z = 1684

Cap = 42.1

Depth : 1684 m

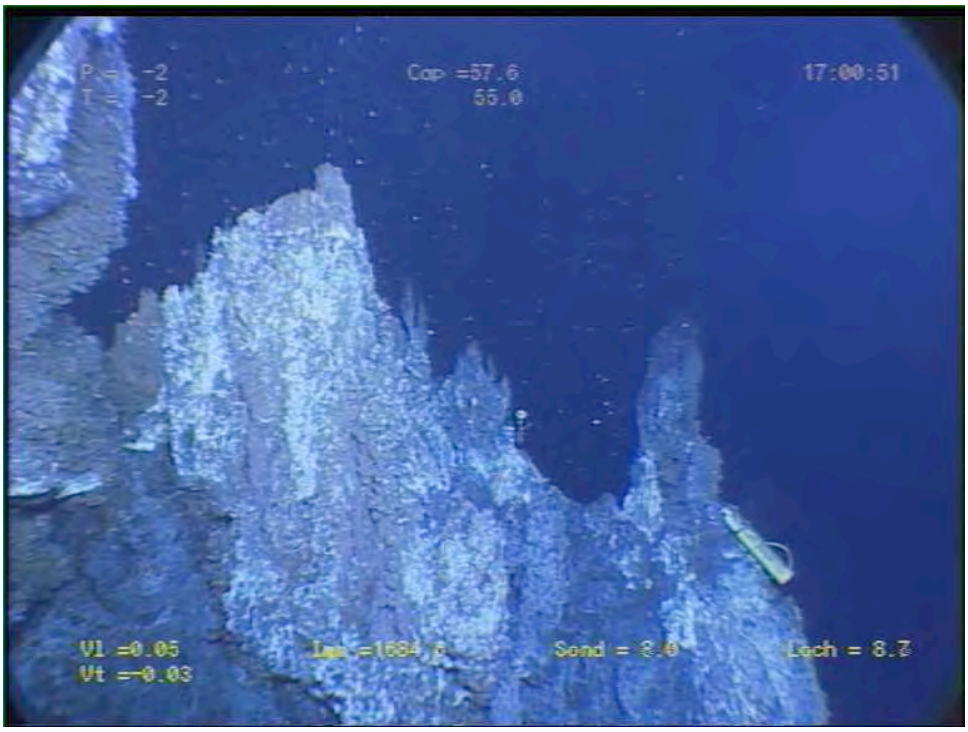
Heading (Pan) : 1

Date/Time : 22/09/2009 at 17: 07 :00

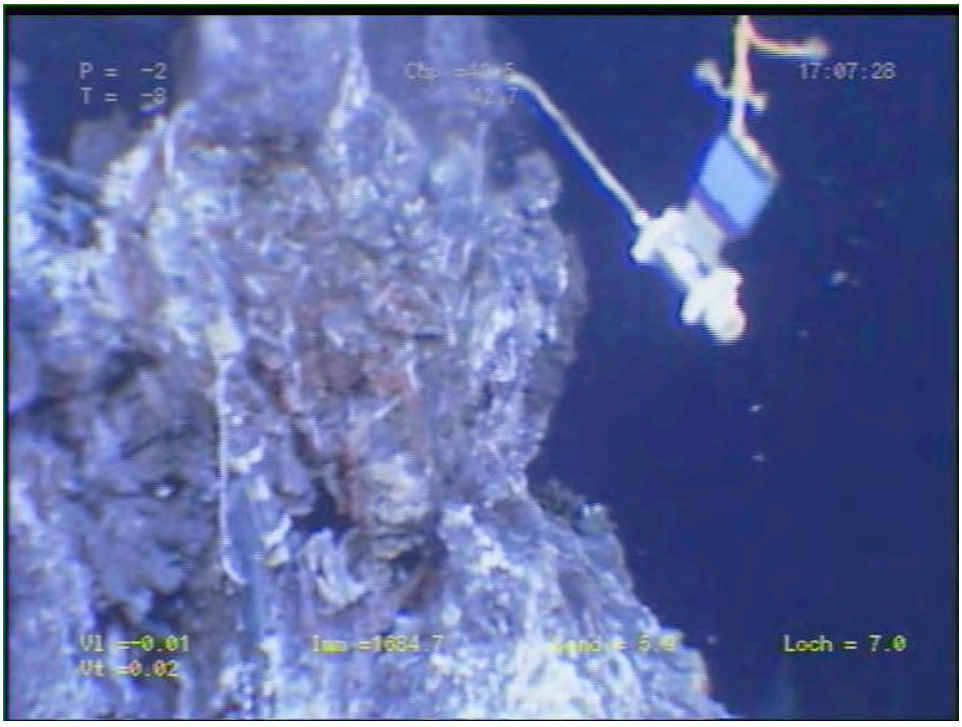
Delta t = 18s

Remark : B09TEM050=204°C , B09TEM049=30°C

Photos



090922170051A Cap=57.6 Pan=-2 general view of TE with Tprobes, from left to right : 29017, 29006, HTW010



090922170728A Cap=42.5 Pan=-2 recovery of the Tprobe 29006

6.2.24. HT NKE 29016BD – Tour Eiffel

HT sonde NKE (1year) 29016B

Site : Aisics

Vent

T° in situ : 298°C (B09TEM065)

Event : B09THN29016BD

Configuration

Set date/time : 22/09/09 16 :34 :50

Start date/time : 22/09/09 16 :34 :50

Sample interval : 90''

Voltage : …

Deployment

Position :Lat : Lon :

37 17.338 32 16.528

X = 4221; Y = 7174; Z = 1691.4; Cap = 56.3; Depth : 1691.4 m; Heading : 9

Installed : 23/09/2009 at …

Bathyluck09-Dive 395

DVDs # …

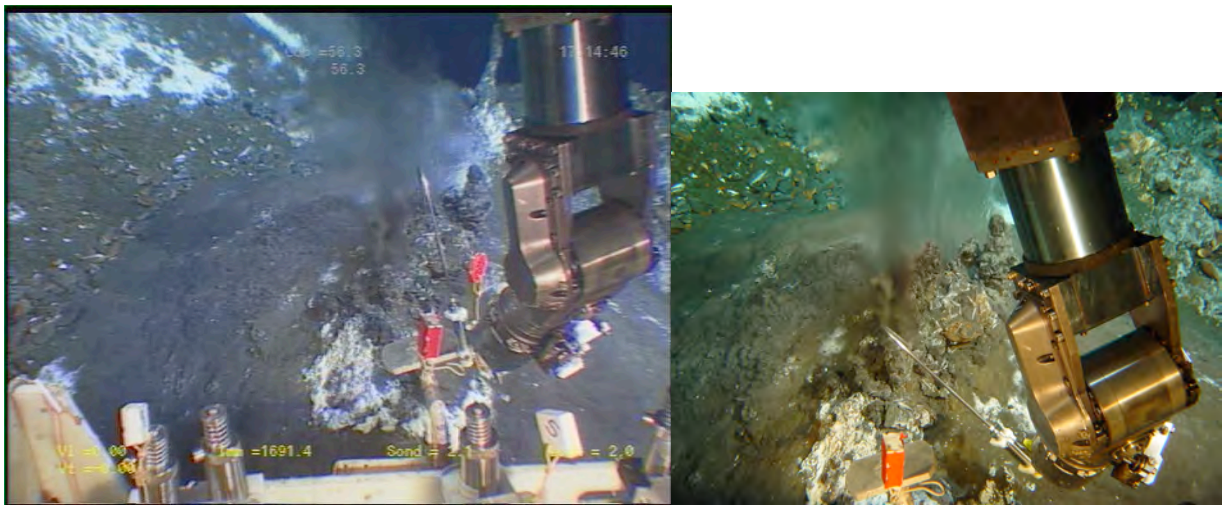
Observers : Eric and Thibaut

Remark : installed at Aisics

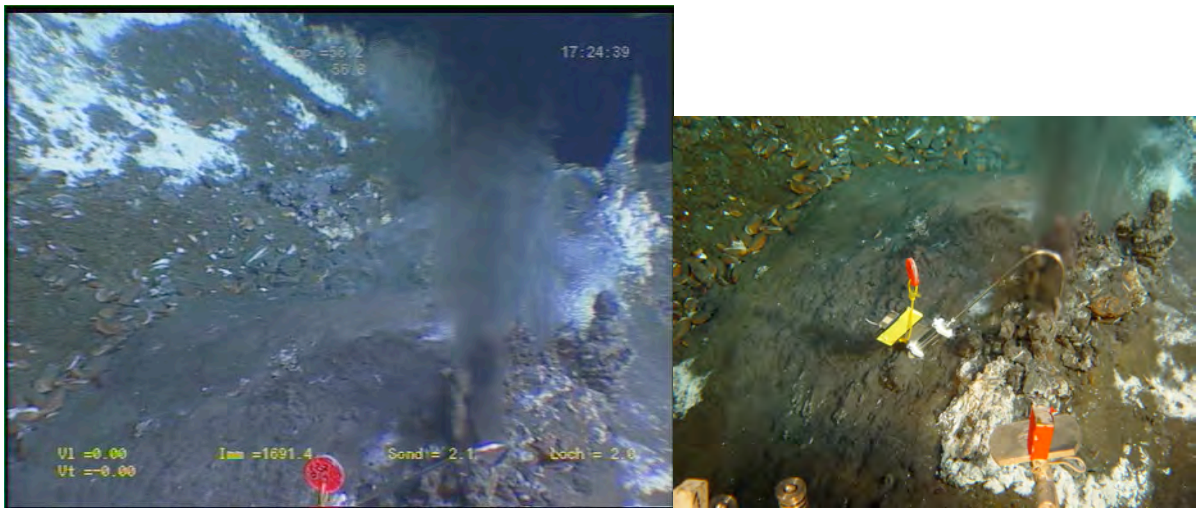
Color sensor : Yellow

B09TGR011 , B09VID031

Photos



090923171446A deployment of Tprobe 29016B (yellow)



090923171834A Cap=56.2 general view of the Tprobe inside the vent

Recovery

6.2.25. HT NKE 29017D – Tour Eiffel

HT sonde NKE temporaire (1mois) 29017

Site : Tour Eiffel, on the top

Vent

T° in situ : 313°C

Event : B09THN29017D

Configuration

Set date/time : 02/09/09 12 :13 :28

Start date/time : 02/09/09 12 :13 :28

Sample interval : 10''

Voltage : …

Deployment

Position :; Lat : Lon :

37 17.331 32 16.529

X = 14219; Y = 7162; Z = 1684; Cap = 52; Depth : 1684 m; Heading :

Installed : 6/09/2009 at 00 :49

Bathyluck09-Dive 389

DVDs # …

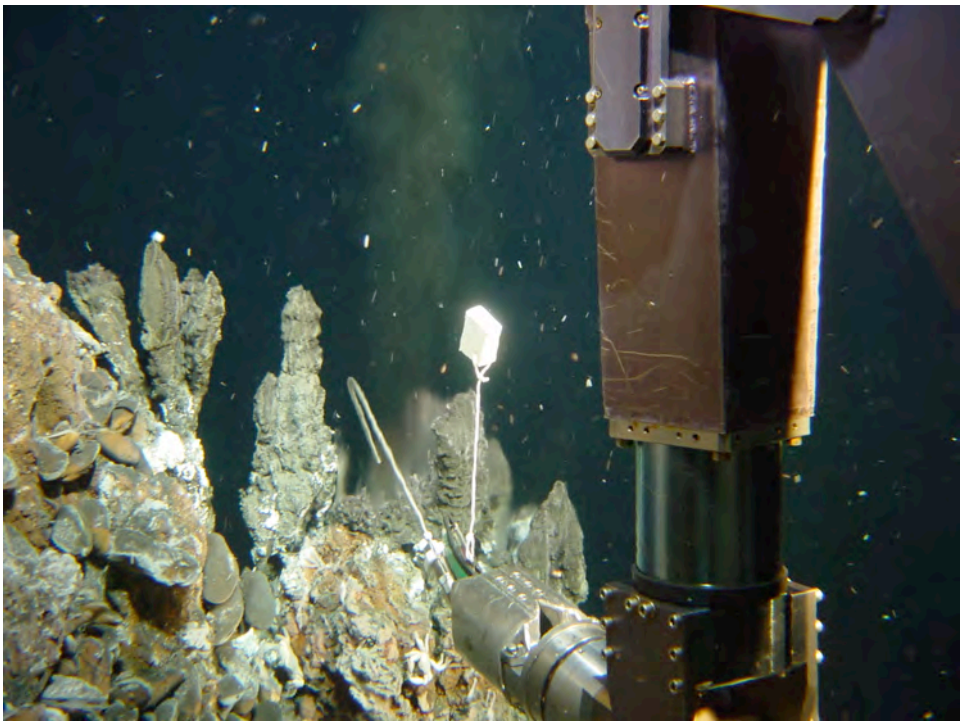
Observers : Javier and Thibaut

Remark : installed on the top of tour Eiffel. Next to HTW001 and HTW010.

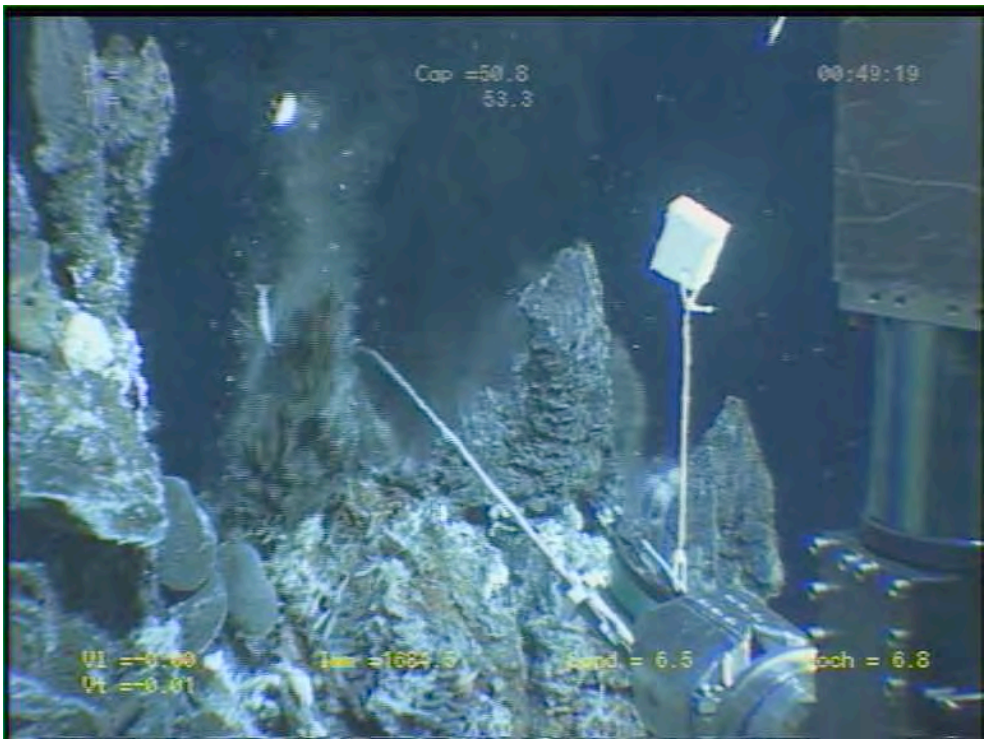
Color sensor : green

Cartoon

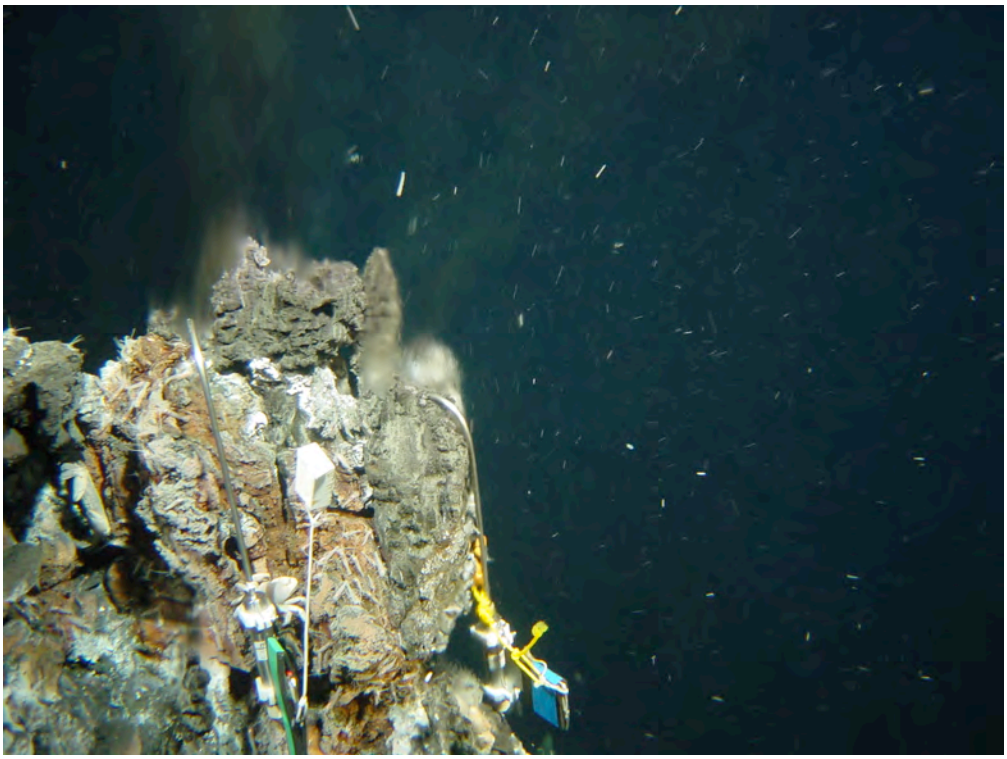
Photos



090906004831A view of the vent and probe



090906004919A Cap=50.8 Im=1684.5 view of the probe 29017 (green) inside the vent



090906012244A general view of the vent and probes : 29017 (left) 29006 (right)

Recovery

Position :

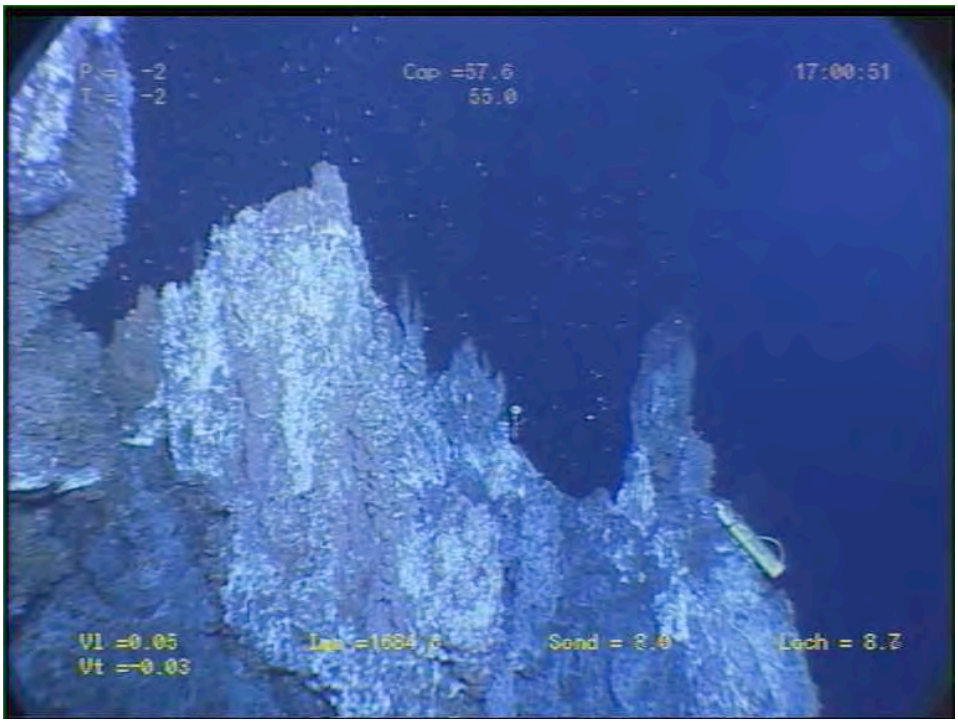
X = 4223; Y = 7172; Z = 1684; Cap = 42.5; Depth : 1684 m; Heading (Pan) : -2

Date/Time : 22/09/2009 at 17: 11 :00

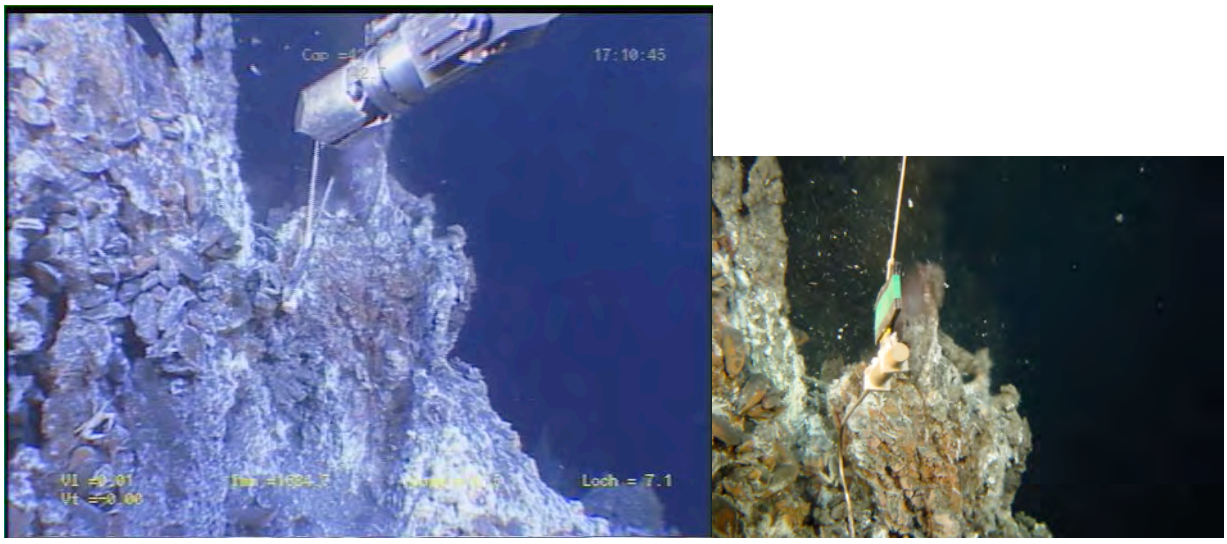
Delta t = 10s

Remark : None

Photos



090922170051A Cap=57.6 Pan=-2 general view of Tprobes, from left to right : 29017, 29006, HTW010



090922171045A Cap=42.7 recovery of Tprobe 29017(green, cf. photo 090922171104A)

6.2.26. HT NKE 29019D – Tour Eiffel

HT sonde NKE (1year) 29019

Site : Tour Eiffel, near HTW and at the same place than 29017

Vent

T° in situ : 300°C (B09TEM051)

Event : B09THN29019D

Configuration

Set date/time : 21/09/09 10 :10 :08

Start date/time : 21/09/09 10 :10 :08

Sample interval : 90''

Voltage : …

Deployment

Position :Lat : Lon :

X = 4221; Y = 7173; Z = 1684.9; Cap = 23.1; Depth : 1684.9 m; Heading : 16

Installed : 22/09/2009 at 18:06

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

Remark : installed on the top of tour eiffel, near to HTW and at the same place than NKE 29017

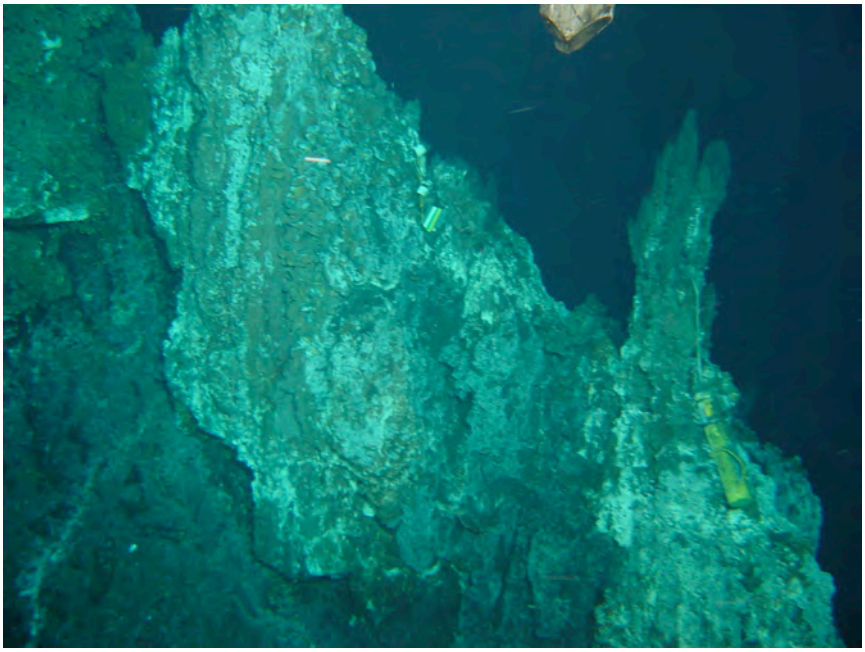
Color sensor : Yellow/Green/White

B09VID027

Photos

090922180625A Cap=23.1 Deployment of Tprobe 29019 (yellow/green/white)

090922223505A Cap=20.2 Pan=1 general view of the site and probes, from right to left : HTW010, 29019, 29002B



090922223448A Cap=20.2 Pan=1 general view of the site and probes, from right to left : HTW010, 29019, 29002B

Recovery

6.2.27. HT WHOI HT001D - Tour Eiffel

HT sonde WHOI (1 an) HT001

Site : Tour Eiffel

Vent

T° in situ : …

Event : B09HTW001D

Configuration

Logger1 : 225 6908A

Logger2 : 225 6930B

Set date/time : - A : 01/09/09 15 :25 :30

- B : 01/09/09 15 :25 :40

Start date/time : - A : 01/09/09 16 :00 :00

- B : 01/09/09 16 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.333 32 16.518

X = 14237; Y = 7166; Z = 1686; Cap = …; Depth : 1686 m; Heading : …

Installed : 6/09/2009 at 00:27 :00

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed at TE, top, next to HT010

Color sensor : Front : Red / Back : Red

Found it, the 15/09/09 at 21 :15, falling off from the vent, on the ground

Photos

1509098047964 Cap=244 Pan=9 No more HTW001, it fell down

Re-deployment

Position : X = 14223; Y = 7174; Z = 1686; Cap = …; Depth : 1686 m; Heading : …

Installed : 15/09/2009 at 22:34 :00

Bathyluck09-Dive …

DVDs # …

Observers : Thibaut

Photos

090906002113A Photo of the WHOI Tprobe and the vent

090906002803A Cap =294 deployment of the Tprobe HTW001

090906003157A Cap=293.7 Pan=4 General view of TE with the two probes, HTW010(left) and HTW001(right)

Recovery

6.2.28. HT WHOI HT010D - Tour Eiffel

HT sonde WHOI (1 an) HT010

Site : Tour Eiffel

Vent

T° in situ : …

Event : B09HTW010D

Configuration

Logger1 : 225 6893B

Logger2 : 225 6903A

Set date/time : - A : 01/09/09 18 :03 :41

- B : 01/09/09 18 :04 :15

Start date/time : - A : 01/09/09 19 :00 :00

- B : 01/09/09 19 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position:Lat : Lon :

X = 14213; Y = 7158; Z = 1684; Cap = …; Depth : 1684 m; Heading : …

Installed : 5/09/2009 at 03:54

Bathyluck09-Dive 388

DVDs # …

Observers : Javier and Thibaut

Remark : installed on the top of tour eiffel, under the NKE : 29017 and 29006

Color sensor : Front : Yellow / Back : Red

Photos

090905034805A Cap=42.1 Pan=-22 View of the vent and the Tprobe HTW010(Yellow/red)

090905035335A Cap=42 Pan=-19 deployment of HTW010

090905035551A Cap=40.8 Pan=-15 Tprobe deployed, general view

Recovery

6.2.29. LT WHOI LT002D - Tour Eiffel

LT sonde WHOI (1 year) LT002

Site : South of TE

Vent

T° in situ : …

Event : B09TLN002D

Configuration

Logger : 2319684

Set date/time : 01/09/09 14 :55 :18

Start date/time : 01/09/09 16 :00 :00

Sample interval : 15’ (452days)

Voltage : …

Deployment

Position : Lat : Lon :

37 17.325 32 16.526

X = ; Y = ; Z = 1695; Cap = 338.2; Depth : 1695 m; Heading : 5

Installed : 07/09/2009 at 16:32 :30

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed at the South of TE

Color sensor : Blue

Photos

090907162639A Cap=338.2 Pan=6 Deployment of the LT-probe TLN002

090907163730A Cap=336.4 Pan=8 General view of the site and probe

Recovery

6.2.30. LT WHOI LT003D - Tour Eiffel

LT sonde WHOI (1 year) LT003

Site : South of TE

Vent

T° in situ : …

Event : B09TLN003D

Configuration

Logger : 2319685

Set date/time : 01/09/09 15 :12 :15

Start date/time : 01/09/09 16 :00 :00

Sample interval : 15' (452days)

Voltage : …

Deployment

Position : Lat : Lon :

37 17.328 32 16.543

X = ; Y = ; Z = 1696.8; Cap = 353; Depth : 1696.8 m; Heading : -30

Installed : 07/09/2009 at 16:22

Bathyluck09-Dive 389

DVDs # …

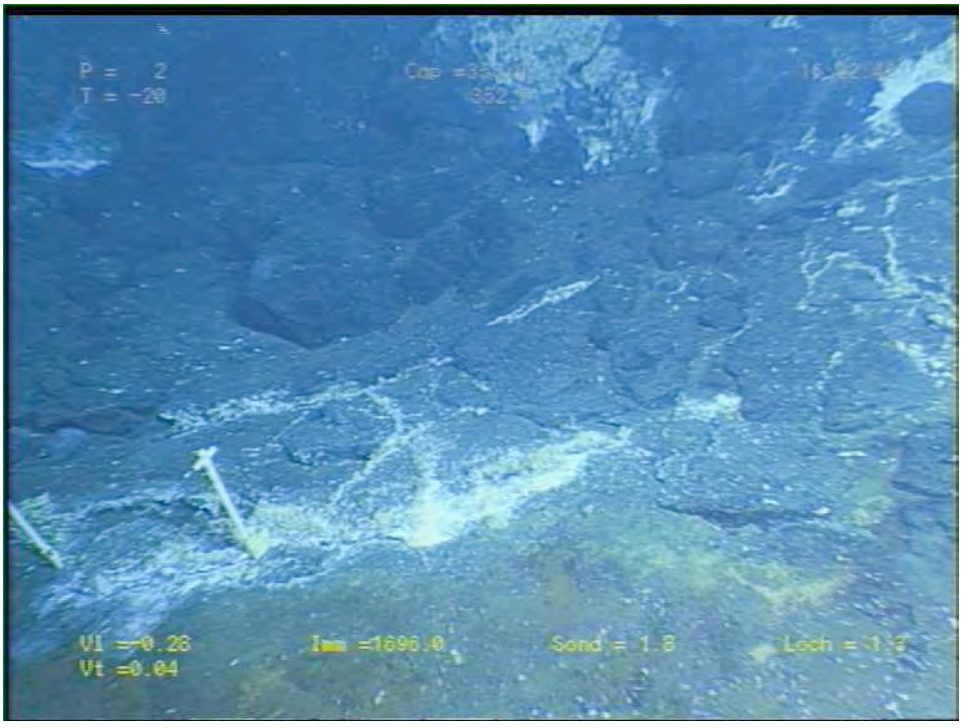
Observers : Javier and Thibaut

Remark : installed at the South of TE, next to LT005

Color sensor : Green/yellow

Photos

090907161901A Cap= 352.8 Pan=-8 Deployment of the LT probe, LT003(right) and LT005(left)



090907162242A Cap=353 Pan=2 General view of the site with probes : LT003(right) and LT005(left)

Recovery

6.2.31. LT WHOI LT005D - Tour Eiffel

LT sonde WHOI (1 year) LT005

Site : South of TE

Vent

T° in situ : …

Event : B09TLN005D

Configuration

Logger : 2319687

Set date/time : 01/09/09 15 :07 :45

Start date/time : 01/09/09 16 :00 :00

Sample interval : 15' (453days)

Voltage : …

Deployment

Position : Lat : Lon :

37 17.343 32 16.523

X = 14203; Y = 7152; Z = 1697.2; Cap = 350 Depth : 1697.2 m; Heading : 2

Installed : 07/09/2009 at 16:12 :53

Bathyluck09-Dive 389

DVDs # …

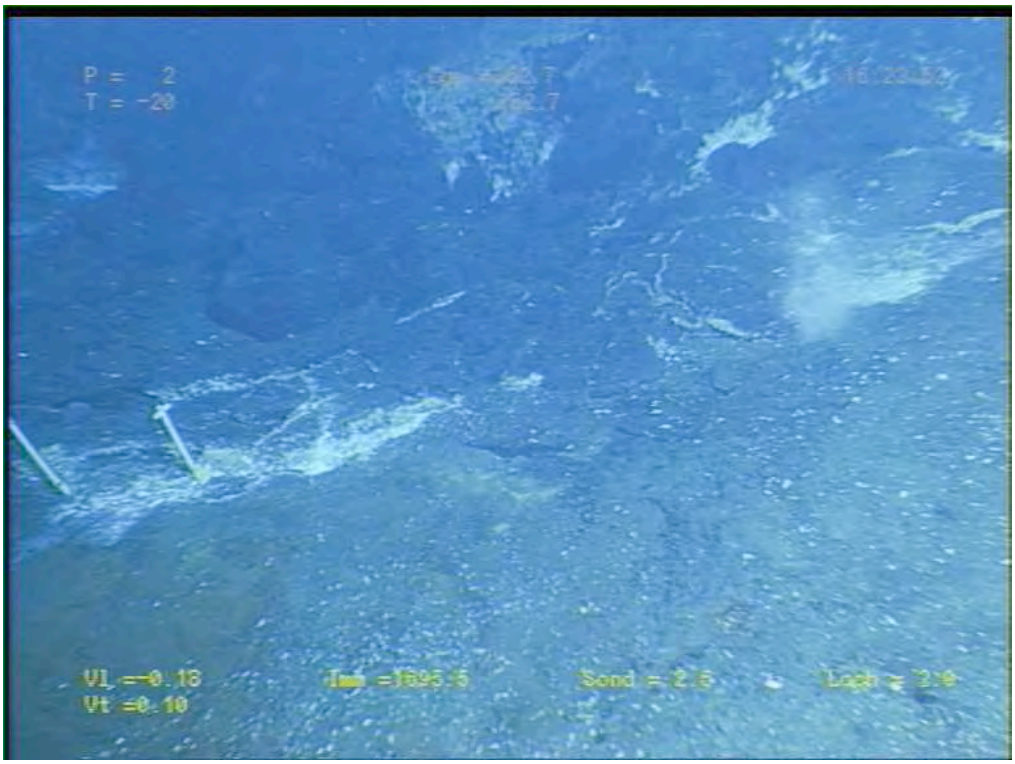
Observers : Javier and Thibaut

Remark : installed at the South of TE, next to LT003

Color sensor : Yellow

Photos

090907161251A Cap=27 Pan=-12 Deployment of the LT probe LT005



090907162251A Cap =352.7 Pan=2 General view of the site and probes : LT003 (right) and LT005 (left)

Recovery

6.2.32. HT NKE 26007R – Tour Eiffel

T Probe 26007

Site : Tour Eiffel

Fissure

T° in situ : ?

Nav « estime » uncorrected Lat 37°17.331N

Lon 32°16.531 W

X Z Depth : 1696 m Heading : 22

Installed : 13/08/2008 at 20 :26

MoMAR08-Dive 360-2

DVDs # 7

Site surveyed between 19 :37 and 20 :57

Observers : Javier and Fabrice

Remark : installed next to Tprobe 27003 south of TF, near former location of J. Sarrazin's MoMARETO colonization devices

Recovery Bathyluck09 VICTOR Dive 388 5/9/09 04 :59

Event B09HTN26007R

X=14205 Y=7114 Z=1697

Sensor Fallen from crack – tip corroded

080813202723 / cap 19.5 / pan -10

Recovery of T sensor

VICTOR 388 – Bathyluck 09

090905 045858

6.2.33 HT NKE 26003R – Tour Eiffel

T Probe 27003

Site : Tour Eiffel

Fissure

T° in situ :

Nav « estime » uncorrected Lat 37.2888433 Lon -32.2754933

37 17.331 32 16.530

X Y Depth : 1696 m Heading : 33

Installed : 13/08/2008 at 20 :34

MoMAR08-Dive 360-2

DVDs # 7

Site surveyed between 19 :37 and 20 :57

Observers : Javier and Fabrice

Remark : installed next to Tprobe 26007 south of TF, near former location of J. Sarrazin's MoMARETO colonization devices

Recovery Bathyluck09 VICTOR Dive 388

5/9/09 04 :56

Event B09HTN26007R

X=14213 Y=7114 Z=1696

Sensor Fallen from crack – tip corroded – No video

080813203513/ Cap 20 /Pan –12.8

6.2.34. HT NKE 29002D – White Castle

HT sonde NKE temporaire (1mois) 29002

Site : White Castle (North)

Vent

T° in situ : 308°C (B09TEM035)

Event : B09THN29002D

Configuration

Set date/time : 02/09/09 12 :20 :30

Start date/time : 02/09/09 12 :20 :30

Sample interval : 10''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 394 32 16 869

X = 13717 Y = 7275 Z = 1711 Cap = 149; Depth : 1711 m; Heading (Pan) : 22

Installed : 08/09/2009 at 01:28

Bathyluck09-Dive 389

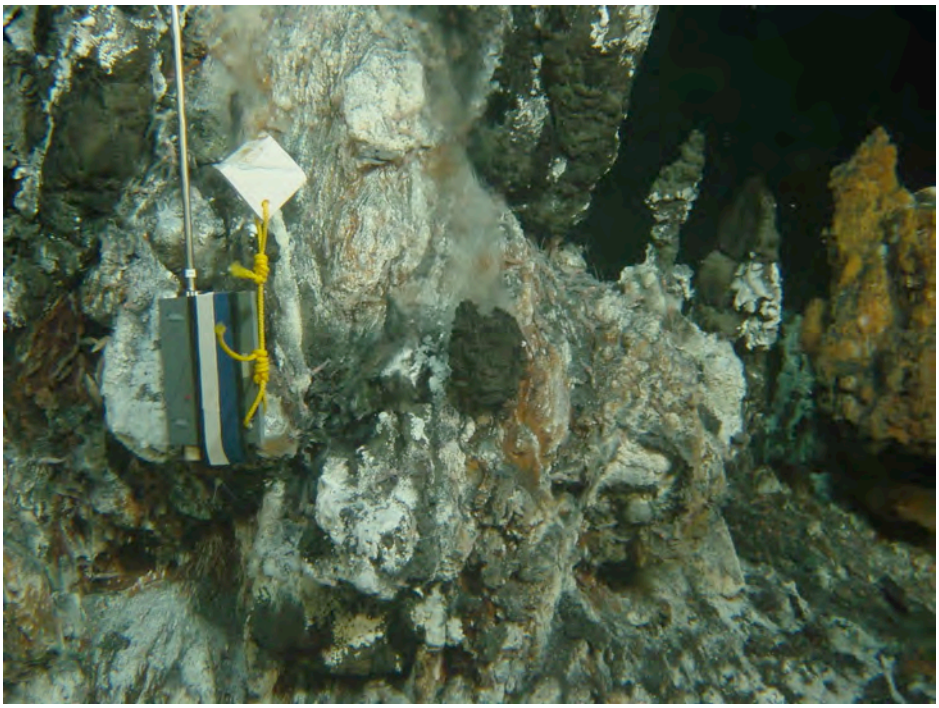
DVDs # …

Observers : Thibaut and Eric

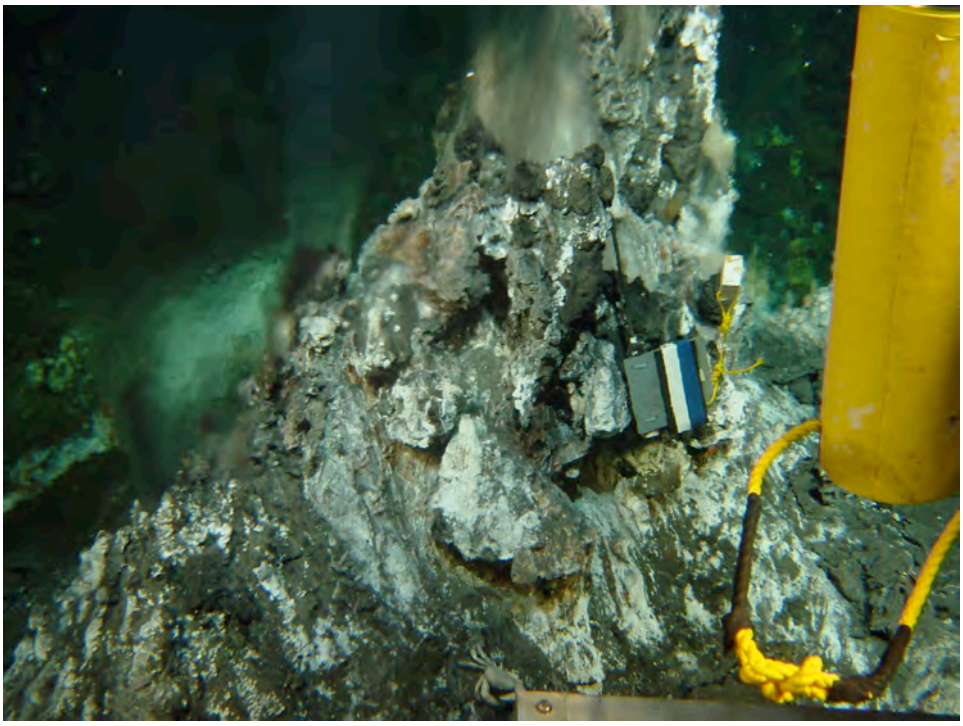
Remark : installed at the north of White Castle, next to HTW004.

Color sensor : Blue and White

Photos



090908061822A view of the probe 29002 (blue and white)



090908072405A general view of the vent and probe, plus the HT004 (yellow/yellow)

Recovery

Position : Lat : Lon :

37 17 383 32 16 868

X = 3719 Y = 7254 Z = 1710 Cap = 157.4 Depth : 1710 m

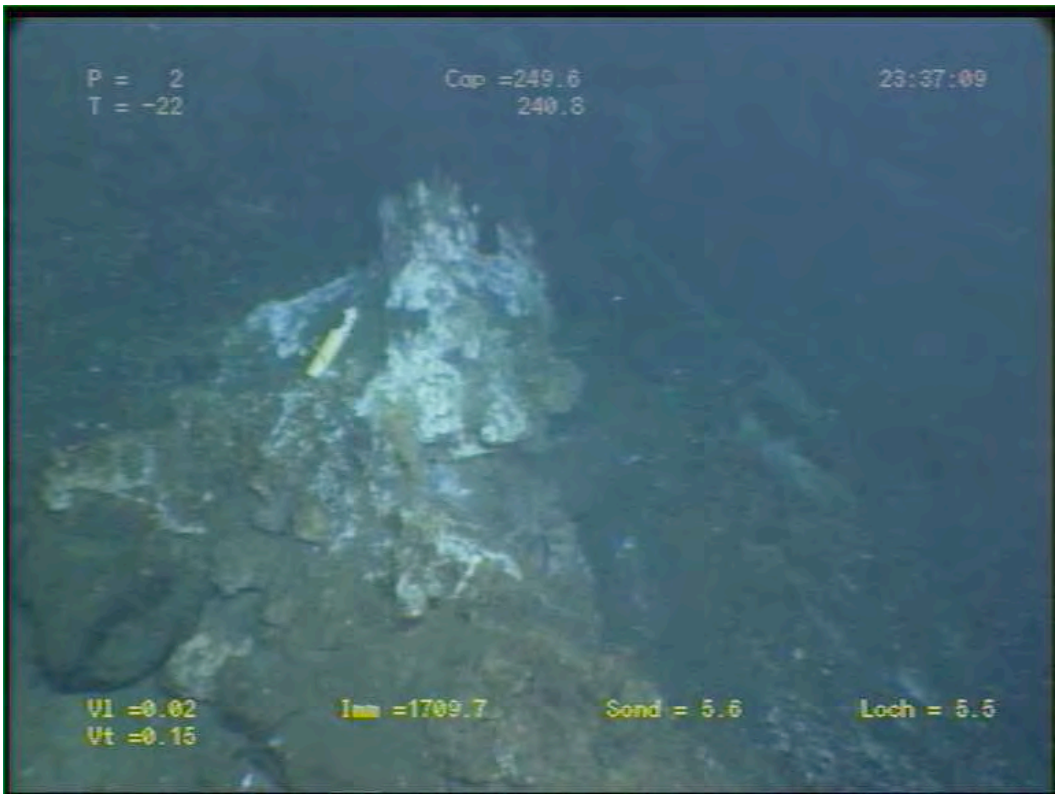
Heading (Pan) : 7

Date/Time : 21/09/2009 at 23 :44

Delta t = 26s

Remark : B09TEM035=308°C

Photos



090921233708A Cap=249.6 Pan=2 General view, arriving at white castle, we can see the two probes : HTW004(left) and 29002(right)

090921234033A Cap=157.0 P=2 recovering the Tprobe 29002

090921234345A Cap=158 Pan=5 recovering the 29002 probe

6.2.35 HT NKE 29020D – White Castle

HT sonde NKE (1year) 29020

Site : White Castle (North), same place than the NKE29002

Vent

T° in situ : 308°C (B09TEM035)

Event : B09THN29020D

Configuration

Set date/time : 21/09/09 10 :14 :24

Start date/time : 21/09/09 10 :14 :24

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17 381 32 16 869

X = 3718 Y = 7250 Z = 1710.8; Cap = 158.7; Depth : 1710.8 m; Heading (Pan) : 9

Installed : 21/09/2009 at 23:58

Bathyluck09-Dive 395

DVDs # …

Observers : Thibaut and Eric

Remark : installed at the north of White Castle, next to HTW004, at the place the 29002. => B09VID016

Color sensor : Blue, Yellow and White

Photos

090921235632A Cap=157.8 Pan=-0 view of the 29020 probe (blue/yellow/white)

09092123

6.2.36. HT WHOI HT004D - White Castle

HT sonde WHOI (1 an) HT004

Site : White Castle

Vent

T° in situ : …

Event : B09HTW004D

Configuration

Logger1 : 225 6890A

Logger2 : 225 6999B

Set date/time : - A : 01/09/09 17 :47 :00

- B : 01/09/09 17 :48 :02

Start date/time : - A : 01/09/09 17 :00 :00

- B : 01/09/09 17 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.379 32 16.862

X = 13728; Y = 7247; Z = 1711; Cap = 326; Depth : 1711 m; Heading : 6

Installed : 15/09/2009 at 13:41 :05

Bathyluck09-Dive 392

DVDs # …

Observers : Thibaut

Remark : installed at White Castle

Color sensor : Front : Yellow / Back : Yellow

Tombée une fois quelques temps après sa première mise en place

B09VID015

Photos

vlcsnap-8044604 Cap=325.6 Pan=8 general view of the site and probe

vlcsnap-8045718 Cap=326.3 deployment of HT004 in the vent

vlcsnap-8046658 Cap=326 Pan=9 HTW004 deployed, general view of the site

Recovery

6.2.37. HT NKE 26004D – Y3

HT sonde NKE (1year) 29004

Site : Y3 (zone diffuse), bas de la tour au Nord

Vent

T° in situ : …

Event : B09THN29004D

Configuration

Set date/time : 21/09/09 10 :16 :33

Start date/time : 21/09/09 10 :16 :33

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17.511 32 16.670

X = 4010 Y = 7493 Z = 1729.4; Cap = 282; Depth : 1729.4 m; Heading : 6

Installed : 22/09/2009 at 13 :04

Bathyluck09-Dive 395

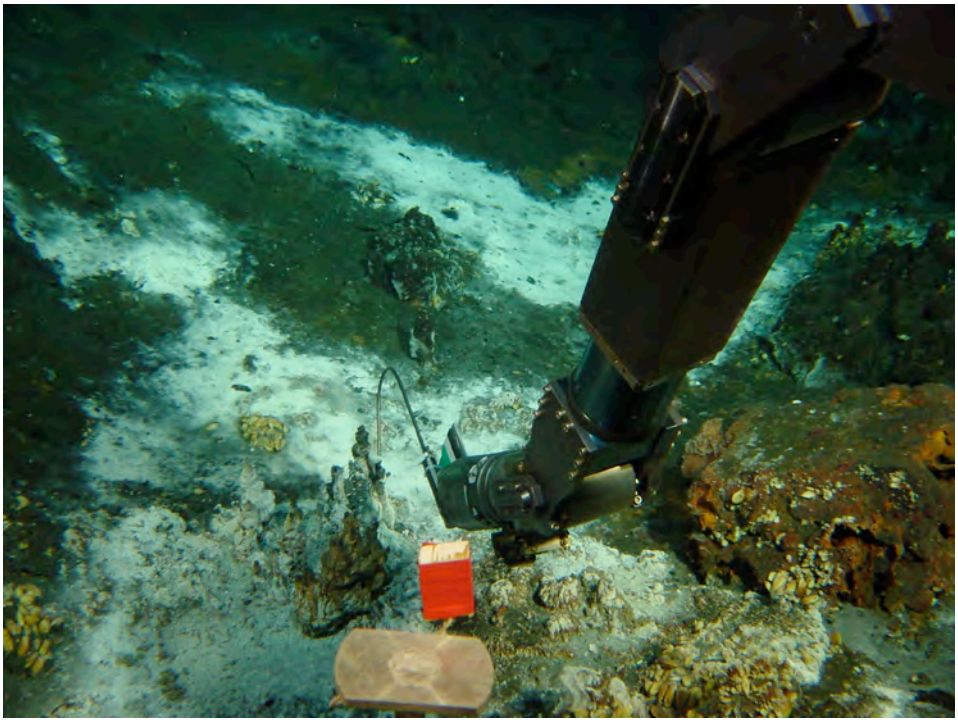
DVDs # …

Observers : Eric and Thibaut

Remark : Color sensor : White/Green

B09VID0 ??

Photos



090922124202A Cap=283 photo : general view of the vent and probe

090922124425A Cap=283 deployment of the 29004 probe

Recovery

6.2.38. HT NKE 26005D – Y3

HT sonde NKE (1year) 29004

Site : Y3 (zone diffuse), bas de la tour au Nord

Vent

T° in situ : …

Event : B09THN29004D

Configuration

Set date/time : 21/09/09 10 :16 :33

Start date/time : 21/09/09 10 :16 :33

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17.511 32 16.670

X = 4010 Y = 7493 Z = 1729.4; Cap = 282; Depth : 1729.4 m; Heading : 6

Installed : 22/09/2009 at 13 :04

Bathyluck09-Dive 395

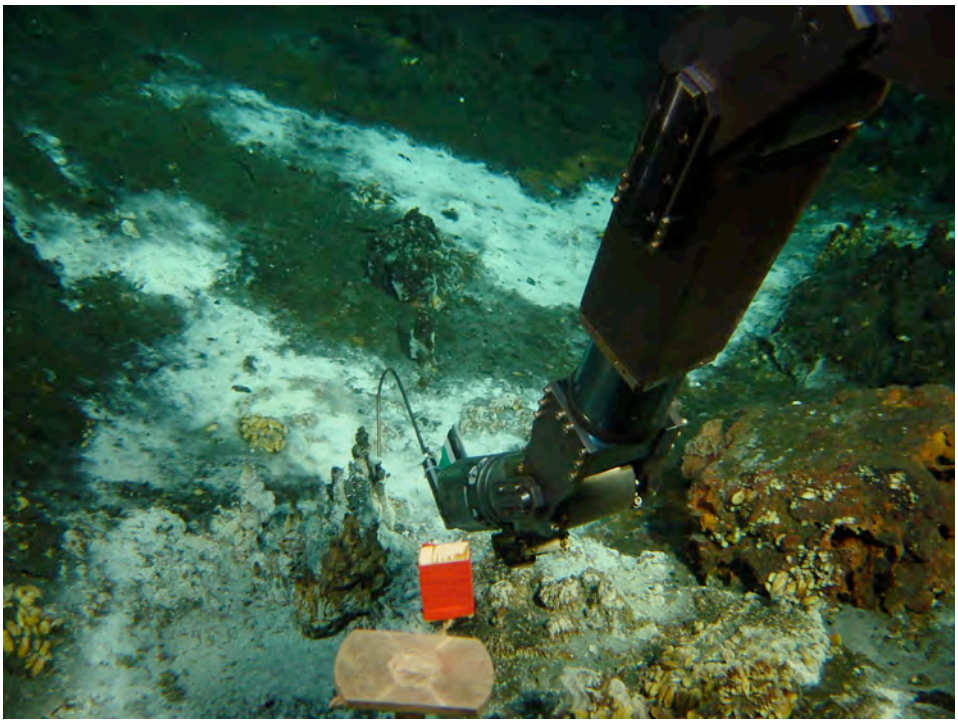
DVDs # …

Observers : Eric and Thibaut

Remark : Color sensor : White/Green

B09VID0 ??

Photos



090922124202A Cap=283 photo : general view of the vent and probe

090922124425A Cap=283 deployment of the 29004 probe

Recovery

6.2.39. HT NKE 26015D – Y3

HT sonde NKE (1year) 29015

Site : Y3 (zone diffuse), same vent than 29005

Vent

T° in situ : 25°C (B09TEM045)

Event : B09THN29015D

Configuration

Set date/time : 21/09/09 10 :12 :30

Start date/time : 21/09/09 10 :12 :30

Sample interval : 90''

Voltage : …

Deployment

Position : Lat : Lon :

37 17.510 32 16.667

X = 14014; Y = 7492; Z = 1729; Cap = 219.6; Depth : 1729 m; Heading : 19

Installed : 22/09/2009 at 07 :24

Bathyluck09-Dive 395

DVDs # …

Observers : Eric and Thibaut

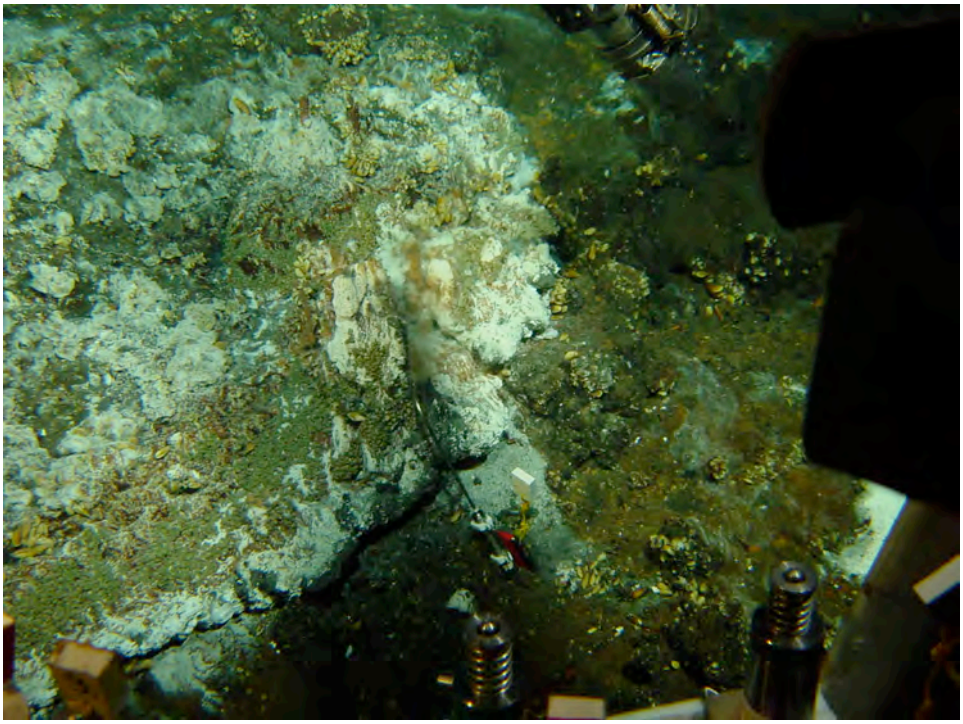
Remark : Color sensor : Red

B09TEM045, B09VID023

Same vent than 29005

Photos

090922071712A Cap=219 deployment of the 29015 probe



090922072532A Cap=219 Photo : general view of the vent and probe

Recovery

6.2.40. HT NKE 26016D – Y3

HT sonde NKE temporaire (1mois) 29016

Site : Y3

Vent

T° in situ : …

Event : B09THN29016D

Configuration

Set date/time : 02/09/09 12 :41 :15

Start date/time : 02/09/09 12 :41 :15

Sample interval : 10''

Voltage : …

Deployment

Position : Lat : Lon :

X = 14014 Y = 7504 Z = 1729; Cap = 291; Depth : 1729 m; Heading (Pan) : 39

Installed : 6/09/2009 at 19 :44

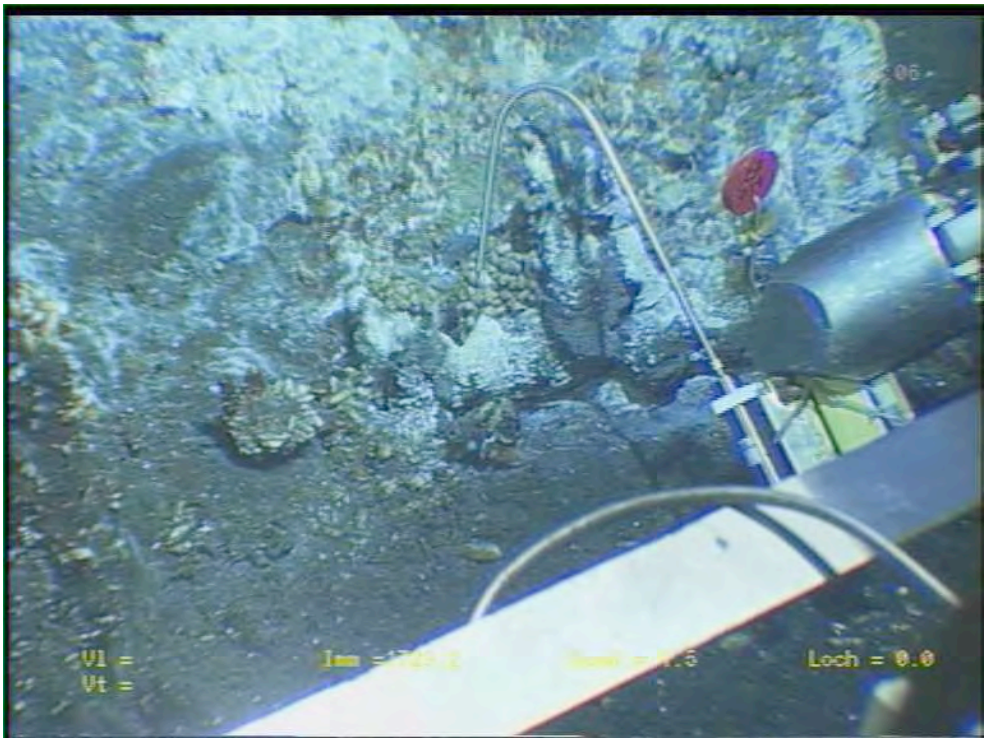
Bathyluck09-Dive 389

DVDs # …

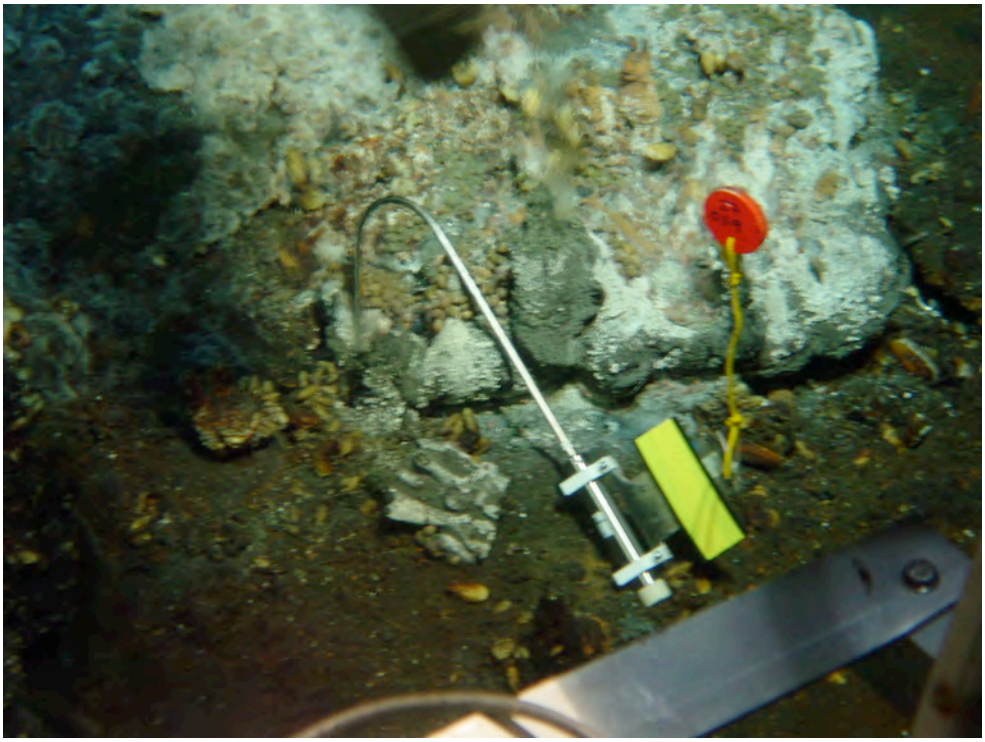
Observers : Javier, Thibaut and Eric

Remark : Color sensor : yellow

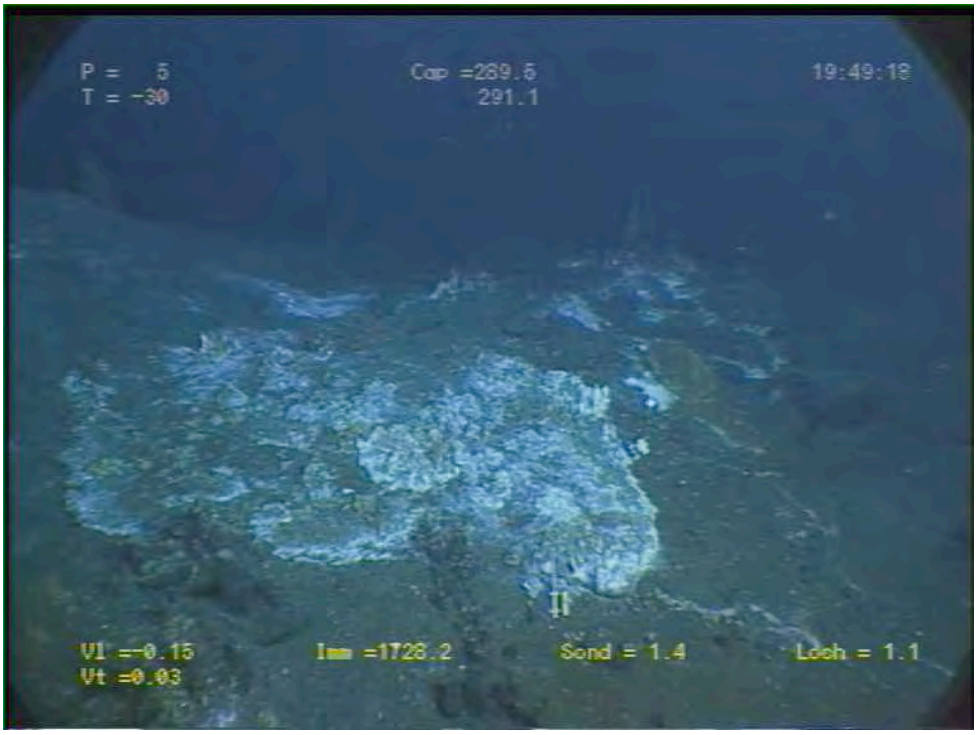
Photos



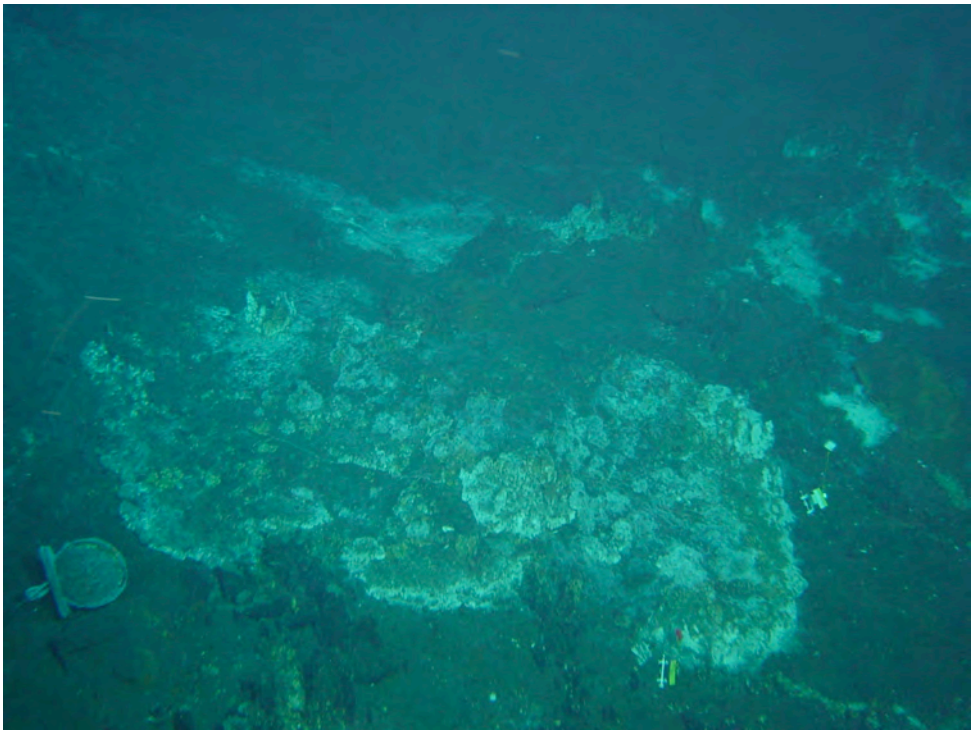
090906194206A Im=1729 view of the probe 29016



090906194459A view of the probe inside the vent



090906194918A Cap=289.5 Pan=5 Im=1728.2 general view of the site with probes : 29016 (left) and 29005 (right)



090906195027A general view of the site with probes : 29016 (left) and 29005 (right)

Recovery

Position :

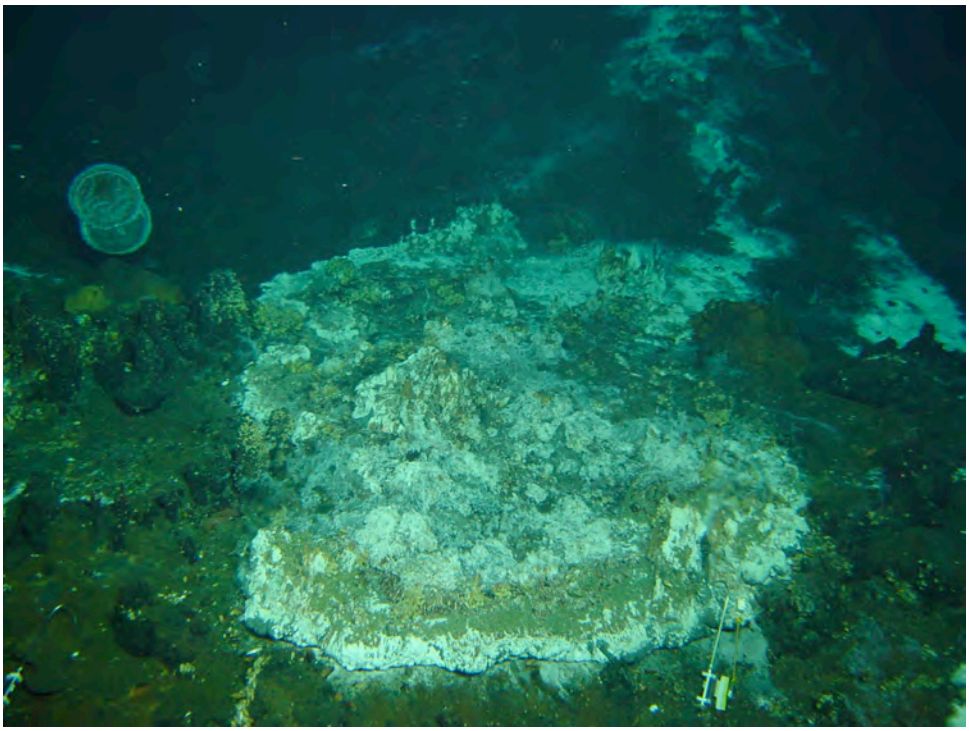
X = 4019; Y = 7493; Z = 1729; Cap = 270; Depth : 1729 m; Heading (Pan) : 1

Date/Time : 22/09/2009 at 07:44

Delta t = 39s

Remark : we found the probe on the ground, around one meter from the vent

Photos



090922070341A we can see at the down left corner the 29016 probe, fallen, on the floor

6.2.41. HT WHOI HT003D – Y3

HT sonde WHOI (1 an) HT003

Site : Top of Y3

Vent

T° in situ : 320.58°C

Event : B09HTW003D

Configuration

Logger1 : 225 6887A

Logger2 : 225 6929B

Set date/time : - A : 01/09/09 16 :37 :50

- B : 01/09/09 16 :38 :56

Start date/time : - A : 01/09/09 18 :00 :00

- B : 01/09/09 18 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

X = 14009; Y = 7490; Z = 1717; Cap = 233; Depth : 1717 m; Heading : …

Installed : 6/09/2009 at 17:19 :40

Bathyluck09-Dive 389

DVDs # …

Observers : Javier

Remark : installed at Top of Y3, next to HT011 (Cap 220, at the right of HT011)

Color sensor : Front : Green / Back : Green

TOMBEE ?

Photos

090906171820A Cap=233.4 Pan=16 Deployment of HTW003 (right) and view of HTW011 (left)

090906173110A Cap=221 Pan=7 General view of Y3 with the two probes : HTW003 (right) and HTW011 (left)

6.2.42. HT WHOI HT011D –Y3

HT sonde WHOI (1 an) HT011

Site : Top of Y3

Vent

T° in situ : …°C

Event : B09HTW011D

Configuration

Logger1 : 225 6918B

Logger2 : 225 6920A

Set date/time : - A : 01/09/09 18 :09 :15

- B : 01/09/09 18 :09 :51

Start date/time : - A : 01/09/09 19 :00 :00

- B : 01/09/09 19 :12 :00

Sample interval : 24'

Voltage : …

Deployment

Position : Lat : Lon :

37 17.503 32 16.668

X = 14009; Y = 7490; Z = 1717; Cap = 255; Depth : 1717 m; Heading : 20

Installed : 6/09/2009 at 17:00

Bathyluck09-Dive 389

DVDs # …

Observers : Javier and Thibaut

Remark : installed at Top of Y3, next to HT003 (Cap 220, at the left of HT003)

Color sensor : Front : Orange / Back : Blue

No more orange at the front of the probe

TOMBEE ?

Cartoon

Photos

090906165812A Cap=254.8 Pan=21 Deployment of the HTW011 probe

090906173110A Cap=221 Pan=7 General view of Y3 with the two probes : HTW003 (right) and HTW011 (left)

6.3. OBS

OBS Short and long period Analog Signal Conditioners

Overview

The analog signal conditioners consist of several different stages as shown in Figures 1, 2, and 3. The signal from the hydrophone (or seismometer) enters the OBS electronics system and is immediately terminated by a manufacturer specified termination resistance (R_{Term}).

Rterm = 2490 ohms avec les nouveaux sismo (L28) - C1 est un court Circuit et R1 est retiré (L28)

The signal is then passively filtered to remove the DC offset to prevent saturation of the A2D. Following the high pass filter is the anti-alias low pass filter.

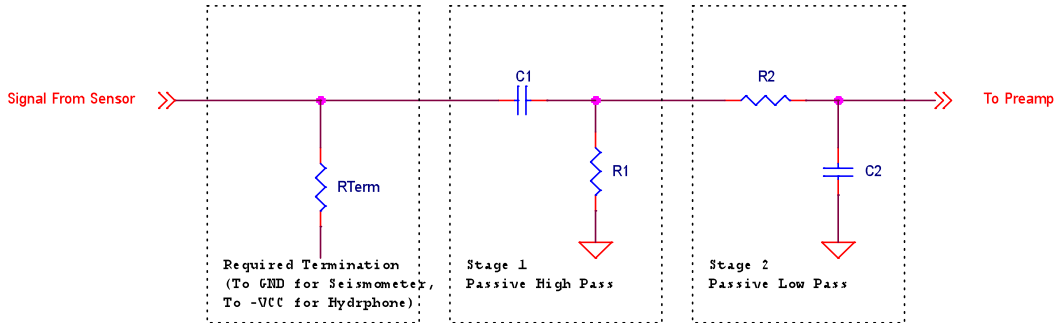


Figure 17 - Passive Analog Filters

The third stage is the amplification stage and is shown in figure 2. This is simply an opamp in a non-inverting configuration.

Le gain sur le sismo est de 128 et sur l'hydro de 16

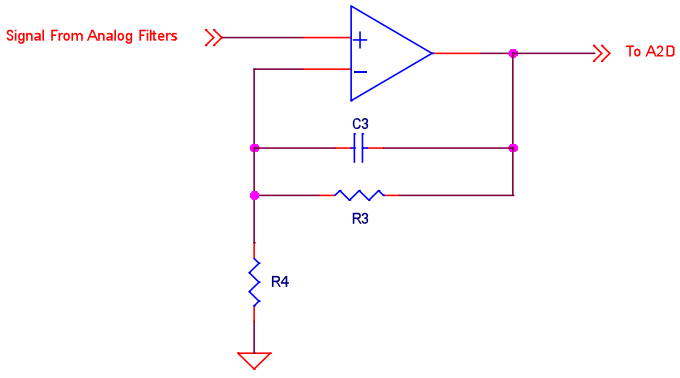


Figure 18 - Analog Preamp

The final stage is the manufacturer specified anti-alias filter for the analog-to-digital converter. This is shown in the figure below:

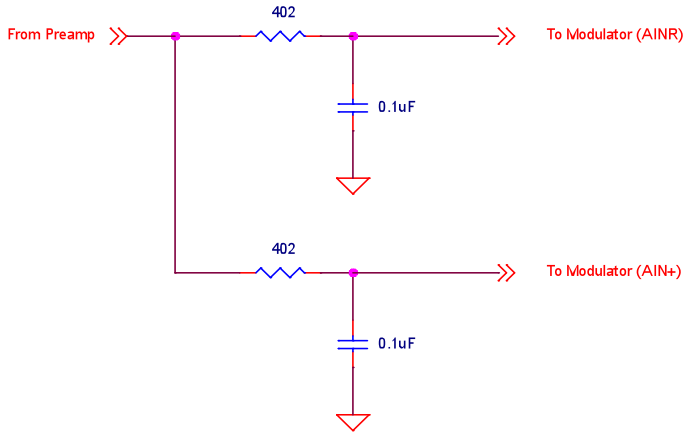


Figure 19 - Anti-Alias Filter

Termination Resistors

The termination resistor is manufacturer specified to be a 1% or better. The following termination values are used:

	Hydrophone	Seismometer
R_{Term}	402Ω	2.0KΩ

Stage 1

Stage 1 is described by the following transfer function:

$$G(s) = sR_1C_1 / (1+sR_1C_1)$$

where $s=j\omega$ and $\omega=2\pi f$ with values for R_1 and C_1 as follows:

	Hydrophone	Seismometer
R_1	15KΩ	15KΩ
C_1	10μF	10μF

Stage 2

Stage 2 can be described by the following transfer function:

$$G(s) = 1 / (1+sR_2C_2)$$

where $s=j\omega$ and $\omega=2\pi f$ with values for R_2 and C_2 as follows:

	Hydrophone	Seismometer
R_2	10KΩ	10KΩ
C_2	33pF	33pF

Stage 3

Stage 3 can be described by the following transfer function:

$$G(s) = 1 + (R_3/R_4) * 1/(1+sR_3C_3)$$

where s=jω and ω=2π*f* with values for R_3 , C_3 , and R_4 are as follows:

	Hydrophone	**Seismometer**
R_3	681KΩ	681KΩ
C_3	10pF	10pF
R_4	97.09KΩ (Gain x8) **45.4KΩ (Gain x16)** 21.82KΩ (Gain x32) 10.807KΩ (Gain x64)	45.4KΩ (Gain x16) 10.807KΩ (Gain x64) **5.354KΩ (Gain x128)** 2.67KΩ (Gain x256)

The value for R_4 can vary depending on the setting of the amplifier at the instrument launch. The standard settings are x16 for the hydrophone and x128 for the seismometer.

Stage 4

The final analog stage is the anti-alias filter. The transfer function for this is similar to stage 2 and is given by:

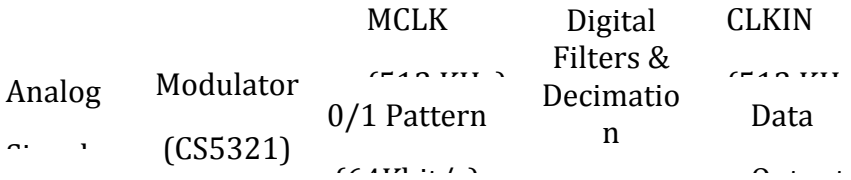
$$G(s) = 1/(1+sRC)$$

where s=jω and ω=2π*f* with R=402Ω and C=0.1μF. This configuration and the component values are specified in the A2D design documentation.

The A2D and Digital Filtering

Overview

The crystal 24-bit A2D is a chipset consisting of 2 chips – the delta-sigma modulator (CS5321) and the digital filter (CS5322). An oversimplified overview of the chipset as it appears in the LCHEAPO is shown below:



The analog signal arrives at the modulator and is oversampled by a delta-sigma modulator. The modulator outputs a ones-density bitstream at 64Kbit/s that is

proportional to the analog signal. The bitstream is fed into a digital low pass FIR filter. The 33-tap filter takes the ones density producing a stream of 24-bit data values. This stream is decimated and filtered several more times. An overview of the filters and decimation is shown in the figure below:

FIR 1

(33-Taps, 11-Bit Coefficients)

This filter is a low pass filter (think of it as an integrator) that takes a bitstream of 0s and 1s and produces a 24-bit value.

Decimate by 8

FIR 2

(13-Taps, 24-Bit Coefficients)

Decimate by

4, 8, 16, …, 256

FIR 3

(101-Taps, 24-Bit Coefficients)

Decimate By 2

24-Bit

Digital Filters

The z-transform for the FIR is an Mth order polynomial given by:

$$H(z) = \sum b_n z^{-n}$$

Where the summation is over n and ranges from 0 to M-1, M being the number of taps. The b_n are the tap coefficients of the FIR filter. There are no poles in a FIR filter – only zeros, which can be solved for by finding the zeros of the above equation (use matlab roots() function).

The frequency response can be determined by evaluating the z-transform on the unit circle:

$$z = e^{j\omega}$$

The value of $\omega = 2\pi F/F_s$ ranges from $-\pi$ to $+\pi$. F_s is the sampling frequency and F is the frequency in question (this limits F to range from $-F_s/2$ to $F_s/2$). Giving:

$$H(\omega) = \sum b_n e^{-j\omega n}$$

$$H(F) = \sum b_n e^{-j2\pi nF/Fs}$$

With the sum, over n, takes place from 0 to M-1 (M being the number of taps).

Fir 1

The first FIR filter is a 33-Tap low pass filter (F_s = 64KHz) used to take the ones-density and obtain a 24-bit value. The coefficients (in matlab format) are:

```
fir1 = [  0,   0,   1,   4,  10,  20,  35,  56,  84, 120, ...
        161, 204, 246, 284, 315, 336, 344, 336, 315, 284, ...
        246, 204, 161, 120,  84,  56,  35,  20,  10,   4, ...
          1,   0,   0];
```

The ouput of this filter is a stream of 24-bit samples at 64Ksamples/s. This high sample rate is brought down to 8Ksample/s by an 8-to-1 decimator which is then fed into FIR stage 2.

Fir 2

The second filter is a 13-Tap low pass (F_s = 8KHz) filter. The coefficients (in matlab format) are:

```
fir2 = [     8192,   98304,  540672, 1802240, 4055040, 6488064, ...
           7569408, 6488064, 4055040, 1802240,  540672,   98304, 8192];
```

The output of the second FIR filter is decimated by a user defined rate (depending on sample rate). Currently, the LCHEAPO has the following decimation:

Final LCHEAPO Sample Rate (Hz)	2-stage Decimation
31.25	128:1
62.50	64:1
125	32:1
250	16:1
500	8:1
1000	4:1

The output from the decimator is fed into the third FIR filter.

Fir 3

The third and final filter is a 101-Tap low pass filter (Fs=8KHz/x) with some type of shaping. The coefficients (in matlab format) are:

```
fir3 = [    -26,  -247,   -822,  -1362,   -839,   1012,   2197,    212,  -3443,  -3077, ...
             3156,  7168,   -256, -10709,  -7644,  10713,  18055,  -3873, -28007, -11826, ...
            31641,  35194, -22177, -60427,  -5404,  77065,  51056, -71982,-106905,  33416, ...
           156296,  43678,-175718,-152408, 139856, 270573, -29083,-360427,-162173, 371807, ...
           417807,-246840,-693181, -78388, 902497, 685231,-865217,-1713558,  -262, 3276208, ...
  4950471, 3276208,  -262,-1713558,-865217, 685231, 902497, -78388,-693181,-246840, ...
           417807, 371807,-162173,-360427, -29083, 270573, 139856,-152409,-175718,  43678, ...
           156296,  33416,-106905, -71982,  51056,  77065,  -5404, -60427, -22177,  35194, ...
            31641, -11826, -28007,  -3873,  18055,  10713,  -7644, -10709,   -256,   7168, ...
             3156,  -3077,  -3443,    212,   2197,   1012,   -839,  -1362,   -822,   -247, ...
             -26];
```

After the third stage, there is a final decimation of 2-to-1. The system then sends this value as the sample point.

Rosette Test:

CTD

Accoustic modem of the 4 OBS + 1 BB-OBS = total 5

Accoustic release

Turpidity mapper

The rosette test consists in the following :

All the accoustic modems are gathered in one frame called « rosette » which enables the diving of all of them in one dive. The rosette is brought down to 1000 meters at the end of a cable, enableling thus a real condition test before bringing them back up on deck to instal them on each inividual OBS.

At this ocasion other devices took the opportunity to be dived and tested as described on the illustration. Once the rosette at the requiered deepth, each modem is tested by sending the commands described in the following table :

acoustic n°	event	UTC Hour	command
[ACO29697]	Enable Command 221062	09:59:20	Enable #2
[ACO29697]	Command Enable received	09:59:39	
[ACO29697]	Single Ping	09:59:43	
[ACO29697]	Disable Command 221113	09:59:55	Disable #2
[ACO29697]	Command Disable received	10:00:12	
[ACO29697]	Single Ping	10:00:18	
[ACO29698]	Enable Command 221130	10:01:58	Enable #3
[ACO29698]	Command Enable received	10:02:20	
[ACO29698]	Single Ping	10:02:27	
[ACO29698]	Disable Command 221155	10:03:11	Disable #3

[ACO29698]	Command Disable received	10:03:54	
[ACO29698]	Single Ping	10:04:01	
[ACO29699]	Enable Command 221176	10:06:07	Enable #4
[ACO29699]	Command Enable received	10:06:24	
[ACO29699]	Single Ping	10:06:41	
[ACO29699]	Disable Command 221214	10:06:51	Disable #4
[ACO29699]	Command Disable received	10:07:12	
[ACO29699]	Single Ping	10:07:41	
[ACO29708]	Enable Command 221632	10:08:27	Enable #13
[ACO29708]	Command Enable received	10:08:45	
[ACO29708]	Single Ping	10:08:51	
[ACO29708]	Disable Command 221657	10:09:00	Disable #13
[ACO29708]	Command Disable received	10:09:18	
[ACO29708]	Single Ping	10:09:24	
[ACO30862]	Enable Command 167365	10:10:14	Enable #22
[ACO30862]	Command Enable received	10:10:45	
[ACO30862]	Single Ping	10:11:01	
[ACO30862]	Disable Command 167402	10:11:14	Disable #22
[ACO30862]	Command Disable received	10:11:32	
[ACO30862]	Single Ping	10:11:37	

The principle is to enable each modem, ping it to confirm it is enabled, then to disable it, and to confirm it doesn't answer when we try to ping it again.

Release of OBS#5 :

It has not been possible to communicate with OBS5 using the automatic system:

[ACO29059]	Enable Command 214254	10:14:11	Enable #5
[ACO29059]	Command Enable NOT RECEIVED	10:14:41	
[ACO29059]	RX13 IN11 *	10:14:48	
[ACO29059]	Enable Command 214254	10:14:48	Enable #5

[ACO29059]	Command Enable NOT RECEIVED	10:15:29
[ACO29059]	RX13 IN11 *	10:15:42
[ACO29059]	Single Ping	10:15:42
[ACO29696]	RX13 IN11 *	11:18:57

Finally a manual command has been send and the OBS5 has been finally on board at 11 :36 .

Release of OBS#1 :

After many attempts to communicate with OBS1 using the automatic system, we tried with the manual modem.

Finally a ping has been received, and the range value confirmed the OBS was coming up.

[ACO29696]	Enable Command 221024	11:18:57	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:20:11	
[ACO29696]	Enable Command 221024	11:20:20	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:22:21	
[ACO29696]	Enable Command 221024	11:22:33	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:23:08	
[ACO29696]	Enable Command 221024	11:23:39	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:24:14	
[ACO29696]	Release 1 Command 246046	11:24:25	Release #1
[ACO29696]	Command Release 1 NOT RECEIVED	11:25:11	
[ACO29696]	Enable Command 221024	11:28:45	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:29:21	
[ACO29696]	Enable Command 221024	11:29:26	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:30:15	
[ACO29696]	Enable Command 221024	11:30:19	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:30:46	
[ACO29696]	Enable Command 221024	11:30:51	Enable #1
[ACO29696]	Command Enable NOT RECEIVED	11:31:04	

[ACO29696]	02/09/2009 13:18:25 [ACO29696] Single Ping	12:15:55
[ACO29696]	02/09/2009 13:19:05 [ACO29696] Single Ping	12:16:35
[ACO29696]	Single Ping	12:17:13
[ACO29696]	Single Ping	12:17:25
[COMMENT]	Range : No reply within range gate	12:20:10
[COMMENT]	Range : No reply within range gate	12:20:12
[COMMENT]	Range : No reply within range gate	12:20:13
[COMMENT]	Range : 285.9 Seconds or 435 Meters	12:20:36
[COMMENT]	Range : 282.6 Seconds or 430 Meters	12:20:46
[COMMENT]	Range : 282.6 Seconds or 430 Meters	12:20:55

Release of OBS#12 :

OBS12 operated normally.

[ACO29707]	Enable Command 221573	13:06:26	Enable #12
[ACO29707]	Command Enable received	13:07:00	
[ACO29707]	RX13 IN11 *	13:07:14	
[ACO29707]	Release 1 Command 246635	13:07:14	Release #12
[ACO29707]	Command Release 1 received	13:08:30	
[ACO29709]	IN11 *	14:42:40	

Release of OBS#14 :

OBS14 did not answer to the automatic requests.

According to the logbook the OBS14 answered to the manual request at 15 :15

The release has been confirmed at 15 :17, and reach the surface at 16 :7.

It was on board at 16 :24.

Release of BB-OBS#23 :

BB-OBS23 finally confirmed its release request at 17:54.

On surface at 19 :10 and on board at 19 :18.

[ACO30880]	02/09/2009 18:54:27 [ACO30880] Enable Command 170337	17:51:57	Enable #23
[ACO30880]	Command Enable NOT RECEIVED	17:52:32	
[ACO30880]	02/09/2009 18:55:26 [ACO30880] Enable Command 170337	17:52:55	Enable #23
[ACO30880]	Command Enable NOT RECEIVED	17:53:16	
[ACO30880]	IN11 *	17:53:20	
[ACO30880]	Enable Command 170337	17:53:20	Enable #23
[ACO30880]	Command Enable received	17:53:50	
[ACO30880]	RX12 IN11 *	17:54:01	
[ACO30880]	Release 1 Command 152325	17:54:02	Release #23
[ACO30880]	Command Release 1 NOT RECEIVED	17:54:43	
[ACO30880]	IN11 *	18:52:25	
[ACO30880]	Multi ping 15s	18:52:25	
[COMMENT]	Range : No reply within range gate	18:53:36	
[COMMENT]	Range : 1834.1 Seconds or 2797 Meters	18:53:52	
[COMMENT]	Range : No reply within range gate	18:54:08	
[COMMENT]	Range : No reply within range gate	18:54:24	
[COMMENT]	Range : No reply within range gate	18:54:34	

6.4. P-sensor gauge information

CAPTEUR de PRESSION : PAROS JPP 1 à 3

BPR Bottom Pressure Recorder
SBE 53

Brochure/specifications in pdf format Manual Configuration options & accessories

The SBE 53 BPR measures full ocean depth water level with extremely high resolution, accuracy, and stability. The BPR combines a uniquely precise and stable time base with low power frequency acquisition circuitry, Paroscientific Digiquartz® pressure transducer, non-volatile 32 MB FLASH memory, and a precision thermometer to provide unprecedented bottom pressure recording capability. An optional conductivity sensor (SBE 4M) can be added to provide salinity data as well.

The BPR integrates pressure measurements to obtain water levels (tides) unaffected by wave action. The interval between each water level measurement and the duration of the integration period are user-programmable. The interval is programmable over a range of 1 minute to 1 hour. The integration duration is programmable from 1 minute to the entire tide interval. The BPR can continuously power the pressure transducer and reference frequency oscillator, eliminating turn-on transients and providing the highest quality data. Alternatively, the BPR can be programmed to enter a power-down state between measurements to conserve battery power for very long deployments, with a user-specified *warm-up* period before each pressure measurement. Temperature data is recorded with each pressure integration. Logging (recording) can be programmed to start and stop at specified times after the instrument is deployed.

The pressure signal and internal temperature compensation (pressure temperature) signal (frequencies) from the transducer are integrated in parallel for the tide integration duration. The measurement times are set by a continuously powered, real-time clock with an accuracy of ± 5 seconds/month. Long-term drift of the counter's reference frequency is on the order of 1 ppm per year. To allow for correction of drift, an ovenized crystal oscillator is programmed to periodically make a reference frequency measurement.

Large memory and low power requirements permit frequent water level recording. For example, with standard alkaline batteries, a 420-day deployment could include water level measurements every 30 minutes (integrating pressure for the entire 30 minutes); a 2-year deployment could be achieved if pressure integration is limited to 4 minutes for each water level measurement, with a 15-minute warm-up of the pressure sensor and reference frequency oscillator before each measurement. Alternatively, deployments approximately 3 times longer are possible with Electrochem DD lithium batteries. Binary upload of data in memory can be accomplished at up to 115,200 baud.

Firmware upgrades can be downloaded via the serial interface without opening the electronics compartment.

STANDARD CONFIGURATION

- Titanium housing for depths to 7000 meters (22,900 ft)
- 1300, 2000, 4000, or 6800 meter (2000, 3000, 6000, or 10,000 psia) Paroscientific Digiquartz temperature-compensated pressure sensor
- Accurate temperature sensor – aged thermistor embedded in BPR end cap
- Frequency input channel and bulkhead connector for optional SBE 4M conductivity sensor
- 32 MB FLASH memory
- 12 alkaline D-cell batteries (Duracell MN1300, LR20); battery compartment is separated from electronics by a moisture-proof seal.
- Impulse glass-reinforced epoxy bulkhead connectors

OPTIONS

- SBE 4M Conductivity sensor, interfaced via bulkhead connector and clamped to BPR housing
- High accuracy external temperature sensor
- Wet-pluggable (MCBH Micro) connectors in place of standard connectors

SOFTWARE

The BPR includes SEASOFT© for Waves, a comprehensive package of Windows programs for instrument setup and data retrieval, data conversion, and plotting.

SPECIFICATIONS

	Pressure	Standard Temperature (°C)	High Accuracy Temperature (°C) *optional*	Conductivity (S/m) *optional*
Measurement Range	0 – 1300, 2000, 4000, or 6800 m (2000, 3000, 6000, or 10000 psia)	-5 to +35	-5 to +35	0 to 7
Accuracy	0.01% of full scale [1]	0.01	0.002	0.001
Resolution	0.045 ppm (0.3 mm for 10,000 psia range, 1-minute integration, continuously powered)	0.001	0.0001	0.00002
Calibration	0 psia to full scale pressure	+1 to +32 [2]	+1 to +32 [2]	2.6 - 6 plus zero conductivity (air) [2]
Repeatability	0.005% of full scale			
Hysteresis	0.005% of full scale			

[1] Digiquartz residual temperature sensitivity is measured at Sea-Bird, and Digiquartz calibration coefficients are adjusted so that residual temperature sensitivity is less than 1 ppm over 0 – 20 °C (0.05 ppm/°C; 0.0005 psia for a 10,000 psia range sensor).

[2] Measurements outside specified calibration ranges will be at slightly reduced accuracy due to extrapolation errors.

Clocks:

Counter Time Base (for Digiquartz pressure and pressure temperature)	Quartz TCXO ± 3 ppm per year aging (± 1 ppm/year typical), ± 0.1 ppm (0 - 20 °C)
Ovenized Crystal Oscillator (for reference frequency drift correction)	*Warm-up re-stabilization:* less than ± 1 x 10^{-7} *Stability vs. temperature:* ± 0.1 ppm (-20 °C to +70 °C) *Aging:* < 1 x 10^{-7} per year, less than 1 x 10^{-6} /10 years
Real-Time Clock (for time stamp and sample timing)	Quartz TCXO watch-crystal type 32,768 Hz; accuracy ± 2 ppm (5 seconds/month). Battery-backed for minimum 2-year operation, without main batteries installed.
Conductivity Time Base	Quartz TCXO ± 1 ppm per year aging; ± 15 ppm (-20 to +70 °C).

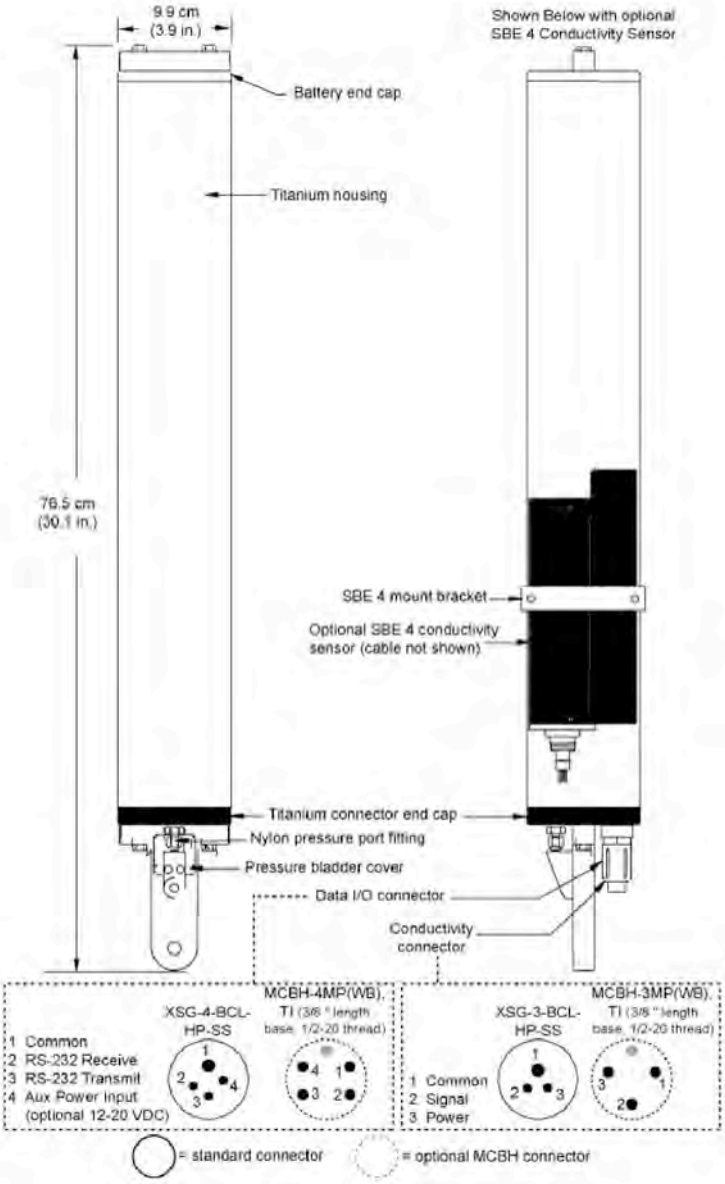
Memory: 32 Mbyte Flash RAM

Data Storage:
17 bytes/sample (no conductivity)
20 bytes/sample (with conductivity)

Power Supply:
Internal: 12 alkaline D-cells, Duracell MN 1300, LR20 (standard) or 6 lithium DD-cells (Electrochem BCX85-3B76-TC).
External: 12 - 24 VDC nominal.

Housing: titanium to 7000 meters

Weight (with alkaline batteries): 14.5 kg (32 lbs) in air; 8.6 kg (19 lbs) in water



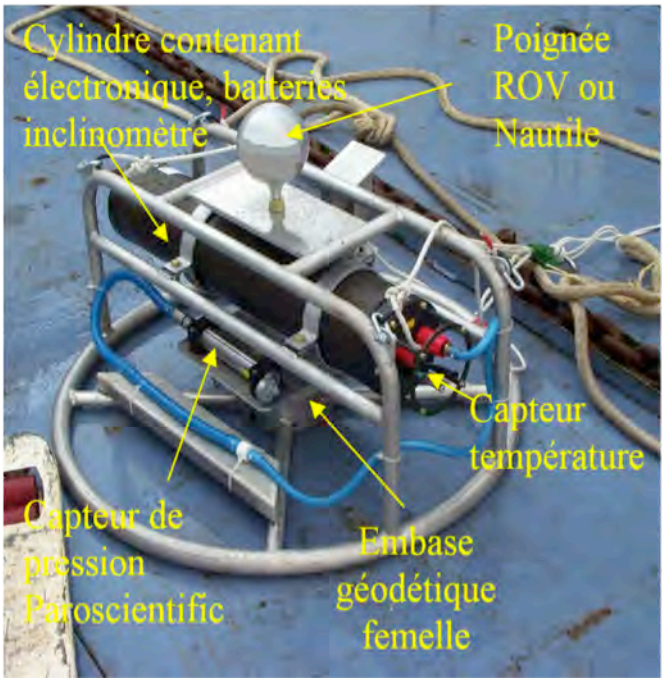
ADDITIONAL INFORMATION / LINKS:

Documentation -- manual, photos, technical papers, application notes, etc.

- Product manual
  (Note: Manuals for older firmware versions are available on our ftp site, ftp://ftp.halcyon.com/pub/seabird/OUT/Older_Manuals/)
- Photo Gallery
- Print version of this specification sheet / brochure
- Application Notes:

Instrument

Permanent pressure gauge



Paroscientific Series 8CB Depth Sensors

External temperature sensor

Tiltmeter +/- 25°

Energy time : 1 yr including com (TBC)

→ Managed by Persistor

Campaign :

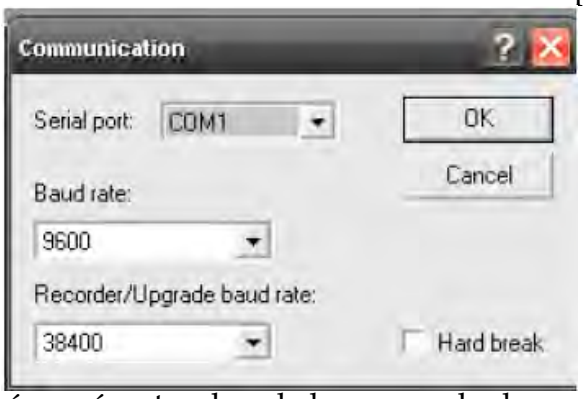
- **Lucky strike 2006**
- **Momar dream 2007**

6.5. Currentmeters

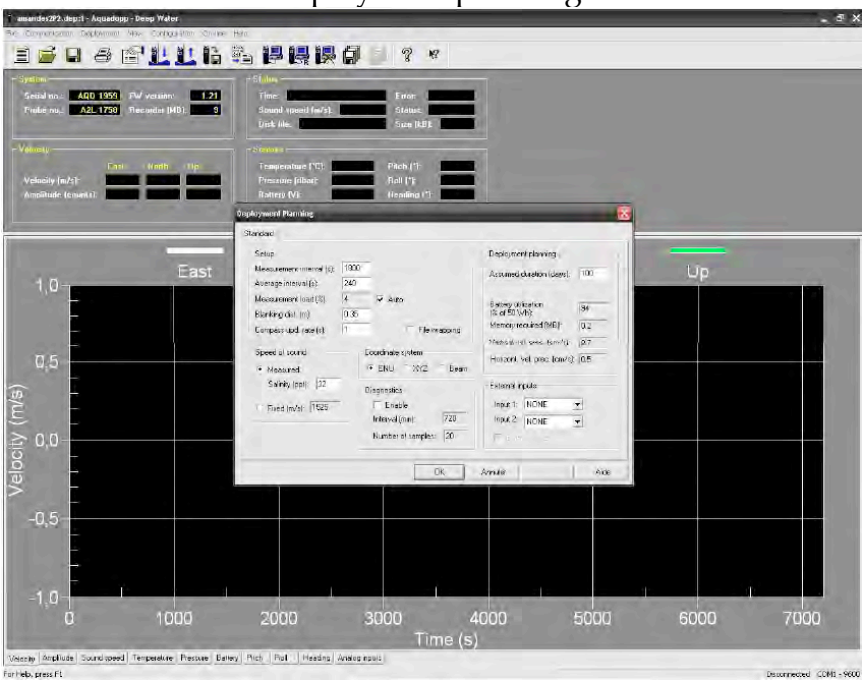
6.5.1. AQUADOPP NORTEK

Déploiement AQUADOPP :

- Insérer la pile dans l'appareil (manuel page 47-48)
- Brancher le câble interface entre le PC et l'appareil. Utiliser l'alimentation externe pour ne pas solliciter les piles pendant la préparation de l'Aquadopp
- Lancer le logiciel« Aquadopp DW »
- Choisir le port série dans « communication » => « serial port »



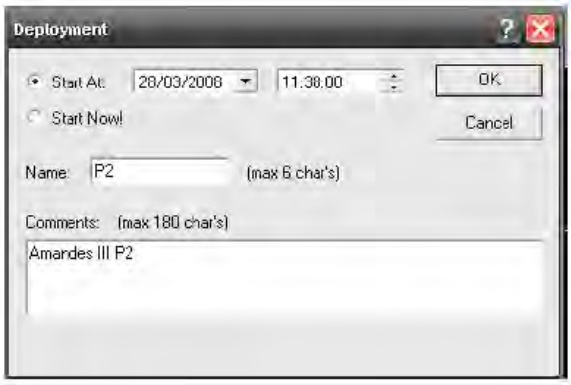
- Effacer les données présentes dans le logger : « deployment » => « Erase recorder »
- Cliquer sur l'icône configuration  .
- La fenêtre « Deployment planning » s'ouvre :



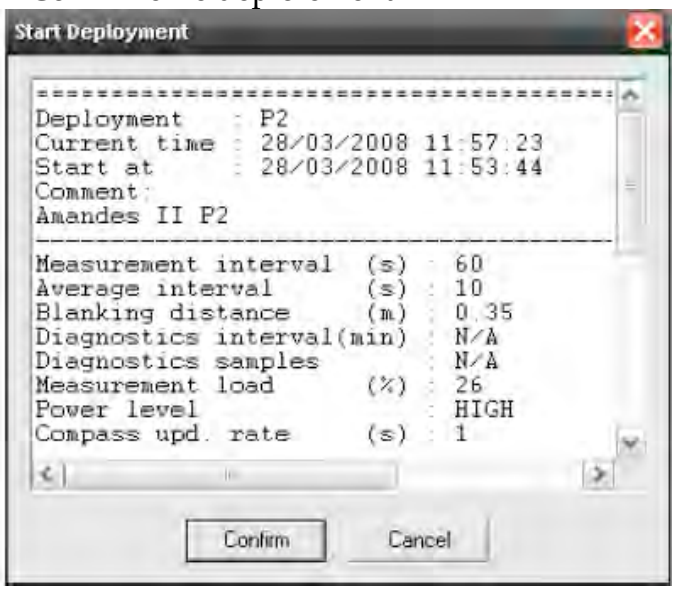
Note : Pour Amandes III configurer comme dans l'exemple ci-dessus

- Cliquer sur l'icône  « start recorder deployment »

Choisir une heure ronde. nregistrer le fichier .dep sur le PC Ajuster l'horloge (heure TU GPS)



• Confirmer le déploiement :



• Débrancher le câble et mettre le bouchon

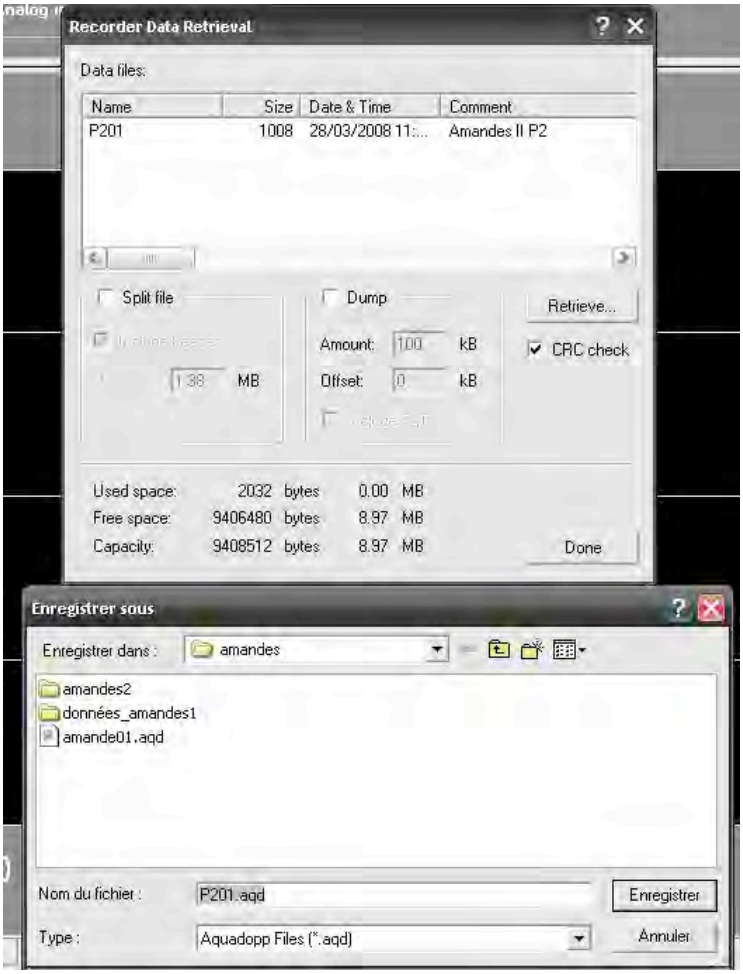
<u>Récupération des données :</u>

• Choisir le port série dans « communication » => « serial port »

•
•

• Cliquer sur  « stop recorder deployment » et noter l'heure d'arrêt du courantomètre

• Cliquer sur  « recorder data retrieval » ; Sélectionner le fichier à télécharger depuis l'appareil et cliquer sur « retrieve »



• Enregistrer le fichier .aqd sur le PC
• Pour convertir ces données .aqd en un fichier ASCII, cliquer sur l'icône « data convertion »  et rechercher sur le disque le fichier à convertir. Les fichiers ascii seront nommés avec l'extension « .dat »

6.5.2. Lignes de mouillage

Principe : Permettre d'immerger des instruments et de les récupérer a l'aide d'une télécommande acoustique à distance.

Moyens utilisés :

Désignation	Référence	Qté	Contrôle	N° ligne
Courantomètre Aquadopp P0436	A2L 1949/AQD2311	1	OUI	2
Courantomètre Aquadopp P20377-2	A2L 1907/AQD2291	1	OUI	1
Largueur Mors RT661B2S	NS 313	1	OUI	2
Largueur Mors RT661B2S	NS 310	1	OUI	1
Télécommande Mors TT301B		1	OUI	
Hydrophone PET	NS 225	1	OUI	
Flasher Bowtech	NS 5751/2	1	OUI	1
Flasher Bowtech	NS 5751/3	1	OUI	2
Balise Novatech VHF RF700A	SN 9654 canal 70 156,525 Mhz	1	OUI	2
Balise Novatech VHF RF700A	SN H05-047 canal 69 156,475 Mhz	1	OUI	1
Nautilus		6	OUI	1 et 2
Accastillage, câbles, élingues, chaines			OUI	1 et 2
Tête de mouillage	Dont 2 nautilus	2	OUI	1 et 2

Notice d'utilisation de la télécommande acoustique basse fréquence :

-Placer l'hydrophone de la télécommande le plus près possible de l'hydrophone du largueur (voir photo n° 1)

-Mettre la télécommande sur la position « ON »

-Entrer au clavier le N° de la fonction désirée. Ex : B386 selon la fiche correspondant au largueur. La lettre correspond au larguer et les chiffres aux différents types de fonction. (voir photo n°2).

-Après contrôle de la commande, appuyer sur « SAFETY » pour valider et appuyer aussitôt sur «COMMANDE ». Pour effacer les codes commandés, taper « MODE » puis « 0 » Voir ci après les codes commandes de chaque largueur utilisé

ANNEXE 1

DIVISION Environnement
rue Rivoallon
Ste Anne du Portzic
29200 BREST
FRANCE

TEL : (16) 98 05 67 00
FAX : (16) 98 45 70 71

M O R S

FICHE D'EQUIPEMENT

RT 6X1

TYPE	:	RT 661 B2S DDL	Numéro de série	:	310
FONCTION	:	Transpondeur	Fabrication	:	27.11.95
Modification	:		Client	:	INSU

SPECIFICATIONS TECHNIQUES

CARTES ELECTRONIQUES

Référence	Fonction	N/S
194 2002	Carte RT 6x1 Soft V2.5	350

SPECIFICATIONS ELECTRONIQUES

Largeur émission : 10 ms
Niveau émission : 191 dB +/-4dB réf 1µP à 1m
Retard émission : 15 ms
Inhibition émission 7.6s

FT0 = 12.0 khz
FR1 = 09.0 khz ⇒ FT1 = 13.5 khz
FR2 = 13.5 khz ⇒ FT2 = 09.0 khz
BIT1= 04 ⇒ FR3 = 10.0 khz
BIT0= 12 ⇒ FR4 = 14.0 khz
FT4= FT5= FT7 = 12.0 khz

SPECIFICATIONS FONCTIONNELLES

Fonctions / Codes ⇒	TT301	TT201	Séquences	
ON FR1-FR2	B347	BIT0 + BIT 1 + 47	FT0	
OFF FR1-FR2-PINGER	B348	BIT0 + BIT 1 + 48	FT0	
RELEASE 1	B349	BIT0 + BIT 1 + 49	FT0⇒FT5	
DIAGNOSTIC	B350	BIT0 + BIT 1 + 50	FT0⇒FT7	Retard Mesure:3s Offset Verticalité:10s
WINDOW	B346	BIT0 + BIT 1 + 46	FT0	Temps Attente:15s Temps Actif:15s
ON FR1-OFF FR2(W)	B383	BIT0 + BIT 1 + 83	FT0	
ON FR2-OFF FR1(W)	B384	BIT0 + BIT 1 + 84	FT0	
PINGER (W)	B394	BIT0 + BIT 1 + 94	FT0⇒FT4...	Largeur Emission:9.14ms Récurrence:1s

(W) : Code actif seulement durant le temps actif WINDOW

SPECIFICATIONS DIVERS

Configuration énergie	:	3	bancs de	6	piles R20 en série	ALCALINE
		1	banc de	1	pile 6F22	ALCALINE
Répartition alimentation	:	veille-puissance-moteur			3bancs de 6 R20	
		secours moteur			1banc de 1 6R22	
Structure	:	301 9200				
Option	:	xxxxxxx				
Mesure DIAGNOSTIC	:	t (FT7)-t(FT0)-3s (13 s en position horizontale)				
Tension des piles (V)	:	Mesure DIAGNOSTIC x 4.1				

ANNEXE 1

DIVISION Environnement
rue Rivoallon
Ste Anne du Portzic
29200 BREST
FRANCE

TEL : (16) 98 05 67 00
FAX : (16) 98 45 70 71

MORS

FICHE D'EQUIPEMENT

RT 6X1

TYPE	: RT 661 B2S DDL	Numéro de série	:	313
FONCTION	: Transpondeur	Fabrication	:	23.11.95
Modification	:	Client	:	CNRS

SPECIFICATIONS TECHNIQUES

CARTES ELECTRONIQUES

Référence	Fonction	N/S
194 2002	Carte RT 6x1 Soft V2.5	353

SPECIFICATIONS ELECTRONIQUES

Largeur émission 10 ms
Niveau émission 191 dB +/-4dB réf 1µP à 1m
Retard émission 15 ms
Inhibition emission :7.6s

FT0 = 12.0 khz
FR1 = 09.0 khz ⇒ FT1 = 13.0 khz
FR2 = 13.0 khz ⇒ FT2 = 09.0 khz
BIT1=05 ⇒ FR3 = 10.5 khz
BIT0=13 ⇒ FR4 = 14.5 khz
FT4= FT5= FT7 = 12.0 khz

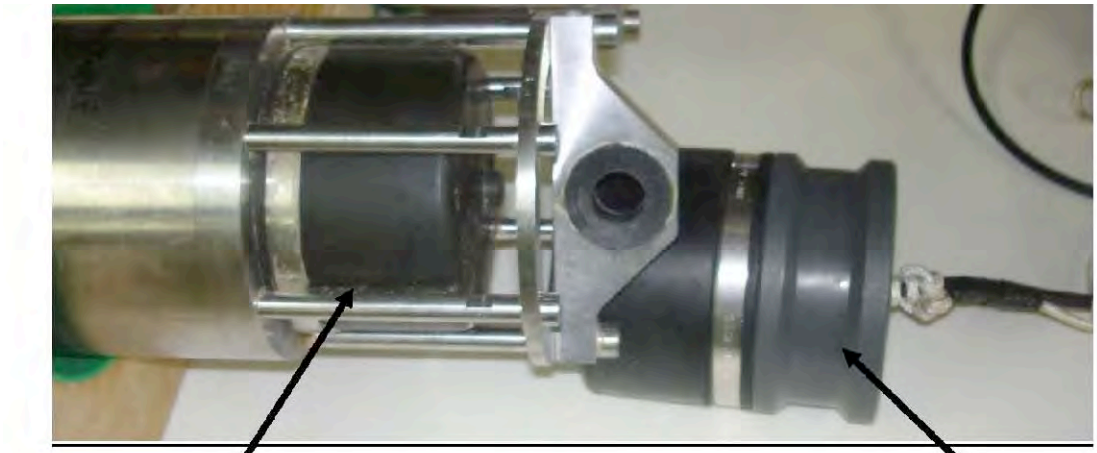
SPECIFICATIONS FONCTIONNELLES

Fonctions / Codes ⇒	TT301	TT201	Séquences	
ON FR1-FR2	C432	BIT0 + BIT 1 + 32	FT0	
OFF FR1-FR2-PINGER	C433	BIT0 + BIT 1 + 33	FT0	
RELEASE 1	C434	BIT0 + BIT 1 + 34	FT0⇒FT5	
DIAGNOSTIC	C435	BIT0 + BIT 1 + 35	FT0⇒FT7	Retard Mesure:3s Offset Verticalité:10s
WINDOW	C431	BIT0 + BIT 1 + 31	FT0	Temps Attente:15s Temps Actif:15s
ON FR1-OFF FR2(W)	C483	BIT0 + BIT 1 + 83	FT0	
ON FR2-OFF FR1(W)	C484	BIT0 + BIT 1 + 84	FT0	
PINGER (W)	C494	BIT0 + BIT 1 + 94	FT0⇒FT4...	Largeur Emission 9.14ms Recurrence 1s

(W) : Code actif seulement durant le temps actif WINDOW

SPECIFICATIONS DIVERS

Configuration énergie	:	3	bancs de	6	piles R20 en série	ALCALINE
		1	banc de	1	pile 6F22	ALCALINE
Répartition alimentation	:	veille-puissance-moteur			3bancs de 6 R20	
		secours moteur			1banc de 1 6R22	
Structure	:	301 9200				
Option	:	xxxxxxx				
Mesure DIAGNOSTIC	:	t (FT7)-t(FT0)-3s (13 s en position horizontale)				
Tension des piles (V)	:	Mesure DIAGNOSTIC X 4.1				



Tête acoustique du largueur

Tête acoustique de la télécommande

Affichage commande

Clavier

SAFETY

COMMANDE

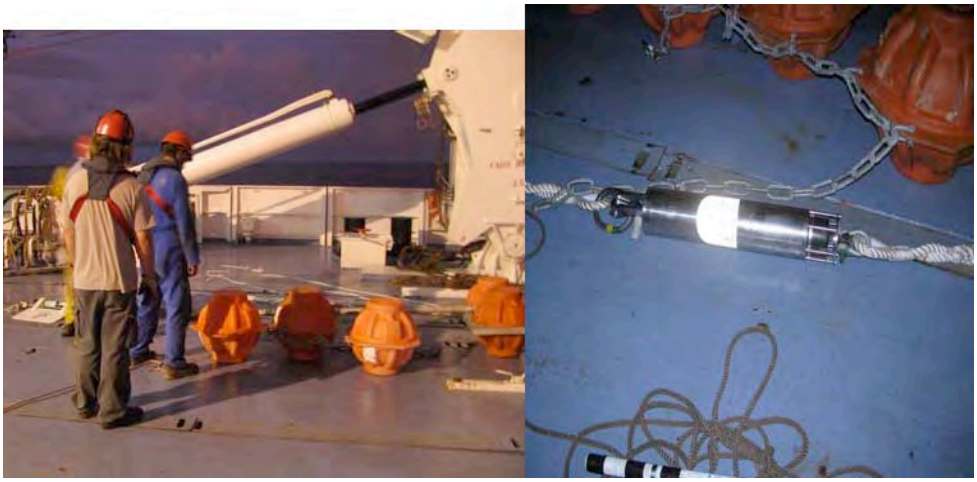
Télécommande pour largeur acoustique

Flasher

Emetteur VHF

Ligne N°**1**
Site : C2
Points **GP**S : 37° 17.386 32° 16.285 - **Dat**e **e**t **heur**e : 7h50

Ligne N°**2**
Site : C1
Points GPS : 37° 17.532 32°16.572 **Dat**e **e**t **heur**e : 7h30



Description d'**un** largueu**r :**

-Chaque balise a sa propre fréquence de commande IF (fréquence interrogation). La fréquence FR1 est commune aux balises (9 KHz) donc dans le cas ou nous utilisons plusieurs balises il est préférables de passer en fréquence FR2 donc les fréquences sont différentes entre chaque balise, cela évite qu'elles communiquent entre elles.

-Pour la mise en route on choisira le mode « ONFR2-OFFFR1 (Window) » facultatif c'est uniquement pour communiquer avec la balise pour vérifier son bon fonctionnement et état des piles, ensuite contrôle du bon code « RELEASE 1 » pour le largage. Et pour mettre en veille pour éviter une usure des piles inutilement, taper « OFFFR1-FR2 PINGER et appuyer sur « SAFETY » et « COMMANDE ».

-Et a tout moment il est possible d'activer une commande de largage en laissant les largueurs en veille.

Description de la ligne de mouillage :

-1 -Lest qui restera au fond (140 Kg environ) -2 -Chaine dans un tube PVC pour éviter de s'entortiller -3 -Bout pour pouvoir être coupé dans le cas ou le largueur ne fonctionne pas -4 -Elingue 1 mètre en nylon -5 -Câble acier 3 mètres -6 -Anneau de levage qui est fixé dans le crochet du largueur -7 -Largueur Mors -8 -Elingue 1 mètre en nylon -8 -Câble acier 2 mètres diamètre 8,5 mm -9 -Courantomètre AQUADOPP -10 -Ensemble de 3 Nautilus avec chaîne -11 – Tête de mouillage avec 2 Nautilus -12 – Flasher Bowtech (fixé sur tête de mouillage) -13 – Balise VHF Novatech (fixée sur tête de mouillage)

6.6. Geomicrobiology

6.6.1. Annex 1: Sample conservation protocol for sediments, rocks and sea water

FISH :

- *Realize 2 Fixations*: Samples have to be fixed as rapidly as possible and never been frizzed before. Keep the sediment to deposit at the bottom and extract the supernatant.
  - *Formaldehyde Fixation*
    - ◊ Immerge rocks or sediments in formaldehyde 2% (realised preferentially with filtered sterile sea water, or PBS + 2% NaCl) during 2h (maximum 4h)
    - ◊ Keep out the fixture
    - ◊ Wash three times with PBS +2% NaC or sterilised sea water, extraction of the supernatant.
    - ◊ Immerge rocks or sediments in EtOH 50% in PBS+2% NaCl
    - ◊ Conserved at -20°C
  - *EtOH 50% fixation for Gram+ bacteria*
    Fixation with EtOH 50% in PBS +2% NaCl, and conserve at -20°C

****

6.6.2. Preparation of enrichment media and cultivation for methanogens and sulfato-reducing bacteria

Protocole de préparation des milieux d'enrichissement (Anne Godfroy)

Préparation des solutions Stocks :

- ***Solution Stock de sels de magnésium (MG) [pour 1 litre]***
  - $MgSO_4, 7H_2O$ 180g
  - $MgCl_2, 6H_2O$ 140g
- ***Solution Stock (A) [pour 1 litre]***
  - $MnSO_4, 4H_2O$ 9g
  - $ZnSO_4, 7H_2O$ 2.5g
  - $NiCl_2, 6H_2O$ 2.5g
  - $AlK(SO_4)_2, 12H_2O$ 0.3g
  - $CoCl_2, 6H_2O$ 0.3g
  - $CuSO_4, 5H_2O$ 0.15g
- ***Solution Stock (B) [pour 1 litre]***
  - $CaCl_2, 2H_2O$ 56g

- NaBr 25g
- KCl 16g
- KI 10g
- $SrCl_2$, $6H_2O$ 4g

- ***Solution Stock (C) [pour 1 litre]***
  - K_2HPO_4 50g
  - H_3BO3 7.5g
  - Na_2WO_4, $2H_2O$ 3.3g
  - Na_2MoO_4, $2H_2O$ 0.15g
  - Na_2SeO3 0.005g

  Stériliser par filtration à 0.22μm.

- ***Solution Stock (D) [pour 1 litre]***
  - $FeCl_2$, $4H_2O$ 10g dans une solution d'acide chloridrique 1M, qsp 1l
- ***Solution Stock de vitamines [pour 1 litre, dans 50% v/v ethanol]***
  - Pyridoxine hydrochloride 200mg
  - Thiamine hydrochloride 100mg
  - Riboflavin 100mg
  - Nicotinic acid 100mg
  - DL-calcium pantothenate 100mg
  - Lipoic acid 100mg
  - Biotin 40mg
  - Folic acid 40mg
  - Cyanocobalamin 2mg

Dissoudre séparément les vitamines solubles dans l'eau (Rouge) et celles solubles dans l'éthanol en concentration double (i.e. dans 500ml d'eau et 500ml d'éthanol) puis mélanger les deux solutions.

Stériliser la solution par filtration sur filtre 0.22μm (Millipore)

Solutions de Na_2CO_3 (1M), et $NaHCO_3$ (1M) pour ajuster le pH à 6.8-7 ces solutions sont conservées en fioles peni sous N_2

Préparation du milieu de culture Méthano [pour 250ml]

- ***Base minérale du milieu SME***
  - Sol MG 2.5ml
  - Sol A 0.25ml
  - Sol B 0.25ml
  - Sol C 0.25ml
  - Sol D 0.25ml
  - NaCL (28g/l) 7g
  - NH_4Cl (0.3 g/l) 2.5ml (Sol mère à 30g/l)
- ***Indicateur de l'état de réduction***
  - Résazurine 0.05g/l 0.125ml

Ajuster à pH 7

Cette solution est stérilisée, (20 min à 120°C) et refroidie sous un flux de N_2

- ***Dans l'enceinte anaérobie rajouter les solutions suivantes***
  - Formate (10mM) 1.25ml(Sol mère à 13.6 g/l)
  - Acetate (10mM) 1.25ml(Sol mère à 16,4 g/l)

  (Stérilisées par filtration à 0.22μm)

  - Yeast extract (0.2 g/l) 2.5ml (Sol mère à 20 g/l)

  (Stérilisé par filtration à 0.22μm)

  - Vitamines 0.125ml

  Dans l'enceinte anaérobie, sous atmosphère 90% N_2 + 10% H_2, réduire la solution en ajoutant 1.25 ml de Na_2S (0.5g/l, 10%, pH7). Répartir le milieu avec 10ml dans chaque fiole.

  Inoculer avec les morceaux de substrat puis fermer et sertir les fioles

  Hors de l'enceinte, flusher chaque fiole avec le mélange gazeux H_2/CO_2 (80/20), pendant environ 1 min et mettre en équi-pression Vérifier et ajuster du pH 6,8-7 avec les solutions de Na_2CO_3 (1M) et $NaHCO_3$ (1M) à la seringue (les volumes à ajouter sont déterminés sur une fiole témoin décapsulée).

NB Les solutions mères (acides organiques, extrait de levures vitamine etc…) qui sont rajoutées dans l'enceinte anaérobie seront conservées en fiole sous N_2

Préparation du milieu pour les sulfato-réductrices (TYA) [pour 250 ml]

- ***Base minérale du milieu SME***
  - Sol MG 2.5ml
  - Sol A 0.25ml
  - Sol B 0.25ml
  - Sol C 0.25ml
  - Sol D 0.25ml
  - NaCl (28g/l) 7g
  - NH_4Cl (0.3 g/l) 2.5ml (Sol mère à 30g/l)
- ***Indicateur de l'état de réduction***
  - Résazurine 0.05g/l 0.125ml

  Stériliser 20 min à 121°C et refroidir sous un flux de N_2

- ***Dans l'enceinte anaérobie rajouter les solutions suivantes***
  - Acetate (20mM) 2.5ml (Sol mère à 16,4 g/l)
  - Na_2SO_4 (3g/l) 2.5ml (Sol mère à 300g/l)

  - Yeast extract (0.1 g/l) 1.25ml (Sol mère à 20 g/l)

  - Vitamines 0.125ml

Dans l'enceinte anaérobie, sous atmosphère 90% N_2 + 10% H_2, réduire la solution en ajoutant 1.25 ml de Na_2S (0.5g/l, 10%, pH7).

Inoculer avec les morceaux de substrat puis fermer et sertir les fioles

Hors de l'enceinte, flusher chaque fiole avec le mélange gazeux H_2/CO_2 (80/20), pendant environ 1 min et mettre en équi-pression Vérifier et ajuster du pH 6,8-7 avec les solutions de Na_2CO_3 (1M) et $NaHCO_3$ (1M) à la seringue (les volumes à ajouter sont déterminés sur une fiole témoin décapsulée).

6.7. Dive sheets (A_La_Mer documents)

6.7.1. Dive 386-1

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 386- 1

Date : 01/09/2009
Observateurs :

Date	Heure	Observateurs
03/09/2009	08h00 - 12h00	CANNAT Mathilde ESCARTIN Javier
03/09/2009	12h00 - 16h00	ESCARTIN Javier CANNAT Mathilde

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

3 sites d'études prévus : MontSegur, Tour Eiffel et Roldan

Récupération de capteurs de températures et de boîtes microbio.
Pose de nouveau capteurs de température et de boîte microbio.
Prélèvement de fluides et de biologie.

Bilan des opérations :

21 images ont été numérisées,

Bilan de la plongée :

Aucune opération effectuée
Problème technique diagnostiquée sur le bras du Victor
Plongée écourtée

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof (m)	Cap	Commentaires

03/09/2009	10:58:00	Montsegur	N 37 17.3689	W 032 16.6190	1685	315.7	Début DVD 1 caméra 1,2,3
03/09/2009	11:09:47	Montsegur	N 37 17.3606	W 032 16.6140	1689	238.9	on bottom\n
03/09/2009	11:19:00	Montsegur	N 37 17.3172	W 032 16.5802	1695	131.8	Scarp, W of Montsegur
03/09/2009	11:19:15	Montsegur	N 37 17.3162	W 032 16.5792	1695	120.4	toward Montsegur
03/09/2009	11:21:41	Montsegur	N 37 17.3065	W 032 16.5694	1704	141.1	first vent near montsegur
03/09/2009	11:22:18	Montsegur	N 37 17.3057	W 032 16.5685	1704	139.0	Before Montsegur
03/09/2009	11:26:53	Montsegur	N 37 17.2853	W 032 16.5503	1704	121.0	dead yellow chim,eys
03/09/2009	11:28:34	Montsegur	N 37 17.2831	W 032 16.5484	1703	119.1	arrive at bigger white mount no smoker
03/09/2009	11:30:35	Montsegur	N 37 17.2802	W 032 16.5447	1702	67.6	we turn around these mounts
03/09/2009	11:32:30	Montsegur	N 37 17.2799	W 032 16.5418	1703	16.1	a few vents\n
03/09/2009	11:34:00	Montsegur	N 37 17.2803	W 032 16.5396	1702	93.0	Turning around montsegur
03/09/2009	11:35:43	Montsegur	N 37 17.2806	W 032 16.5379	1706	44.6	we have left the series of mounts, toward NE, pass yellow stuff
03/09/2009	11:37:20	Montsegur	N 37 17.2803	W 032 16.5363	1705	322.9	montsegur
03/09/2009	11:46:50	Montsegur	N 37 17.2771	W 032 16.5368	1705	304.0	fluid vent (diffuseur) ion mount south of main montsegur mount
03/09/2009	11:50:20	Montsegur	N 37 17.2785	W 032 16.5430	1703	14.2	main montsegur mount
03/09/2009	11:53:19	Montsegur	N 37 17.2807	W 032 16.5465	1702	44.9	view on main montsegur w
03/09/2009	11:54:06	Montsegur	N 37 17.2807	W 032 16.5466	1702	45.1	landed. US4 marker
03/09/2009	11:56:43	Montsegur	N 37 17.2808	W 032 16.5468	1702	62.9	at foot of mount, vent quite strong
03/09/2009	11:59:33	Montsegur	N 37 17.2809	W 032 16.5469	1704	82.0	old T probe
03/09/2009	12:02:00	Montsegur	N 37 17.2809	W 032 16.5471	1703	78.4	Bottle
03/09/2009	12:05:24	Montsegur	N 37 17.2811	W 032 16.5489	1703	79.4	bottle also visible in mosaic
03/09/2009	12:07:37	Montsegur	N 37 17.2802	W 032 16.5489	1703	79.3	problem with the arm
03/09/2009	12:10:15	Montsegur	N 37 17.2786	W 032 16.5486	1703	77.7	viw from babord camera

03/09/2009	12:11:15	Montsegur	N 37 17.2778	W 032 16.5490	1703	75.9	zoom on t probe, bacterial mats
03/09/2009	12:40:00	Tour Eiffel	N 37 17.3256	W 032 16.5231	1701	4.0	S of Tour Eiffel
03/09/2009	12:46:16	Tour Eiffel	N 37 17.3830	W 032 16.5183	1697	0.7	cable from Graviluck Benchmark
03/09/2009	12:53:00	Tour Eiffel	N 37 17.4193	W 032 16.5102	1676	359.5	Victor stopped

6.7.2. Dive 387-2

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 387- 2

Date : 03/09/2009
Observateurs : **CANNAT Mathilde, CHAVAGNAC Valérie, ESCARTIN Javier, BARREYRE Thibault**

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

3 sites d'études prévus : Tour Eiffel, Roldan, MontSegur

Récupération de capteurs de température et de boite de microbiologie
Pose de capteurs de tepérature et de boîte de microbiologie
Prélèvements de fluides et de biologie

Bilan des opérations :

27 images ont été numérisées,

Bilan de la plongée :

Aucune opération effectuée
Problème technique diagnostiquée sur le bras du Victor
Plongée écourtée

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof (m)	Cap	Commentaires
03/09/2009	23:11:47	Lucky strike	N 37 17.3233	W 032 16.5102	1699	310.2	au fond
03/09/2009	23:15:22	Lucky strike	N 37 17.3326	W 032 16.5264	1703	322.4	babord
03/09/2009	23:23:56	Tour Eiffel	N 37 17.3375	W 032 16.5438	1698	3.4	moving to north up TE
03/09/2009	23:25:36	Tour Eiffel	N 37 17.3399	W 032 16.5333	1695	22.1	top of southern TE chimneys
03/09/2009	23:28:05	Tour Eiffel	N 37 17.3364	W 032 16.5355	1694	38.7	top of south TE
03/09/2009	23:33:00	Tour Eiffel	N 37 17.3404	W 032 16.5281	1697	281.6	Site for samopling

03/09/2009	23:34:04	Tour Eiffel	N 37 17.3407	W 032 16.5281	1694	274.1	vent south TE
03/09/2009	23:35:05	Tour Eiffel	N 37 17.3413	W 032 16.5273	1695	266.8	
03/09/2009	23:40:31	Lucky strike	N 37 17.3421	W 032 16.5260	1694	259.4	
03/09/2009	23:41:42	Tour Eiffel	N 37 17.3432	W 032 16.5251	1695	259.0	
03/09/2009	23:43:27	Tour Eiffel	N 37 17.3435	W 032 16.5264	1692	258.9	
03/09/2009	23:44:39	Tour Eiffel	N 37 17.3443	W 032 16.5229	1694	245.3	
03/09/2009	23:45:38	Tour Eiffel	N 37 17.3458	W 032 16.5189	1693	241.9	
03/09/2009	23:46:20	Tour Eiffel	N 37 17.3469	W 032 16.5198	1694	235.6	
03/09/2009	23:49:35	Tour Eiffel	N 37 17.3413	W 032 16.5251	1696	245.8	in station problems with the arm
03/09/2009	23:50:07	Tour Eiffel	N 37 17.3406	W 032 16.5245	1694	250.5	
03/09/2009	23:53:27	Tour Eiffel	N 37 17.3414	W 032 16.5318	1694	283.9	babord
03/09/2009	23:53:45	Tour Eiffel	N 37 17.3416	W 032 16.5318	1695	302.2	
03/09/2009	23:55:47	Tour Eiffel	N 37 17.3418	W 032 16.5327	1692	229.2	
03/09/2009	23:59:06	Tour Eiffel	N 37 17.3422	W 032 16.5248	1694	246.7	
04/09/2009	00:07:03	Tour Eiffel	N 37 17.3460	W 032 16.5188	1699	263.4	still in station
04/09/2009	00:11:23	Tour Eiffel	N 37 17.3508	W 032 16.5367	1691	191.1	babord we move around TE
04/09/2009	00:16:00	Tour Eiffel	N 37 17.3423	W 032 16.5081	1701	320.8	around the edifice
04/09/2009	00:18:52	Tour Eiffel	N 37 17.3483	W 032 16.5094	1699	287.7	we start a turn of the bottom of TE
04/09/2009	00:20:53	Tour Eiffel	N 37 17.3406	W 032 16.5192	1703	307.9	pillows truncated
04/09/2009	00:21:40	Tour Eiffel	N 37 17.3370	W 032 16.5207	1703	304.3	
04/09/2009	00:34:00	Tour Eiffel	N 37 17.2717	W 032 16.4795	1706	165.4	Chain and cable
04/09/2009	00:47:10	Tour Eiffel	N 37 17.2761	W 032 16.4599	1697	355.6	ascenseur found
04/09/2009	00:48:42	Tour Eiffel	N 37 17.2766	W 032 16.4591	1697	345.3	lest ascenseur

6.7.3. Dive 388-3

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 388- 3

Date : 04/09/2009
Observateurs : **ESCARTIN Javier, BOULART Cédric, BARREYRE Thibault, CHAVAGNAC Valérie**

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

Trois sites d'études : Tour Eiffel, MontSegur, Roldan

Récupération des anciens capteurs de température
Pose de capteurs de température et de boîte de microbiologie
Prélèvements de fluides

Bilan des opérations :

Opérations de prélèvements
Eau :
Bouteille titane 750 ml : 2 prélèvements,
MultiPreleveur 200 ml : 3 prélèvements,
Mouillages
1 mouillage a été posé.
2 mouillages ont été relevés.

106 images ont été numérisées,

Bilan de la plongée :

1 capteur de température posés
2 capteurs de température récupérés
2 seringues de fluide prélevées
Problème technique diagnostiquée sur le bras du Victor
Plongée écourtée

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof	Cap	Commentaires

					(m)		
04/09/2009	23:35:50	Lucky strike			1005	281.5	ROV going down and move to Tour Eiffel
05/09/2009	00:28:15	Tour Eiffel	N 37 17.3186	W 032 16.6370	1703	83.3	yellow marker\n
05/09/2009	00:29:27	Tour Eiffel	N 37 17.3244	W 032 16.5499	1702	82.0	test maestro
05/09/2009	00:37:08	Tour Eiffel	N 37 17.3251	W 032 16.5420	1702	72.0	arrive on eiffel tower
05/09/2009	00:37:32	Tour Eiffel	N 37 17.3251	W 032 16.5416	1702	71.5	arrive from the SW
05/09/2009	00:39:31	Tour Eiffel	N 37 17.3283	W 032 16.5382	1697	15.9	northward
05/09/2009	00:40:33	Tour Eiffel	N 37 17.3308	W 032 16.5367	1695	13.6	location of Aiscies
05/09/2009	00:41:19	Tour Eiffel	N 37 17.3328	W 032 16.5359	1695	14.0	eiffel tower
05/09/2009	00:42:08	Tour Eiffel	N 37 17.3331	W 032 16.5336	1696	358.7	chimneys of previous dive
05/09/2009	00:42:40	Tour Eiffel	N 37 17.3340	W 032 16.5316	1697	333.8	black smokers on eiffel tower
05/09/2009	00:46:20	Tour Eiffel	N 37 17.3330	W 032 16.5331	1699	321.0	temperature probe ready to go out
05/09/2009	00:48:11	Tour Eiffel	N 37 17.3354	W 032 16.5335	1696	321.7	approach to black smoker for temperature
05/09/2009	00:49:47	Tour Eiffel	N 37 17.3363	W 032 16.5329	1696	323.3	in the smoke
05/09/2009	00:51:02	Tour Eiffel	N 37 17.3365	W 032 16.5330	1697	319.0	positionning for temperature measurement
05/09/2009	00:51:54	Tour Eiffel	N 37 17.3369	W 032 16.5345	1693	319.5	black smoker
05/09/2009	00:53:15	Tour Eiffel	N 37 17.3364	W 032 16.5342	1693	320.8	taking temperature probe
05/09/2009	00:56:12	Tour Eiffel	N 37 17.3364	W 032 16.5342	1694	299.2	re-positionning of victor for temperature
05/09/2009	00:57:54	Tour Eiffel	N 37 17.3365	W 032 16.5355	1691	309.2	shrimps on the chimney
05/09/2009	00:58:21	Tour Eiffel	N 37 17.3365	W 032 16.5355	1692	315.5	very hot
05/09/2009	00:59:48	Tour Eiffel	N 37 17.3365	W 032 16.5354	1692	315.2	positionning
05/09/2009	01:00:14	Tour Eiffel	N 37 17.3365	W 032 16.5354	1692	315.2	finding a hole
05/09/2009	01:01:15	Tour Eiffel	N 37 17.3365	W 032 16.5355	1692	315.4	B09TEM001
05/09/2009	01:03:01	Tour Eiffel	N 37	W 032 16.5355	1692	315.9	MESURE TEMPERATURE: 316.5°C

			17.3362				
05/09/2009	01:04:34	Tour Eiffel	N 37 17.3345	W 032 16.5332	1696	314.8	re-positionning
05/09/2009	01:06:05	Tour Eiffel	N 37 17.3333	W 032 16.5341	1696	314.9	change tool
05/09/2009	01:06:43	Tour Eiffel	N 37 17.3304	W 032 16.5323	1696	315.5	basket out
05/09/2009	01:08:54	Tour Eiffel	N 37 17.3208	W 032 16.5247	1701	316.2	take syringe
05/09/2009	01:10:45	Tour Eiffel	N 37 17.3213	W 032 16.5283	1703	316.3	take bottle
05/09/2009	01:11:45	Tour Eiffel	N 37 17.3186	W 032 16.5270	1701	315.1	Ti bottle 2
05/09/2009	01:14:56	Tour Eiffel	N 37 17.3199	W 032 16.5321	1703	332.1	ti bottle on the way
05/09/2009	01:18:20	Tour Eiffel	N 37 17.3337	W 032 16.5346	1693	340.0	coming back to eiffel tower
05/09/2009	01:20:13	Tour Eiffel	N 37 17.3356	W 032 16.5357	1694	338.2	back to eiffel tower
05/09/2009	01:22:12	Tour Eiffel	N 37 17.3359	W 032 16.5358	1693	339.7	bottle 2
05/09/2009	01:22:41	Tour Eiffel	N 37 17.3359	W 032 16.5358	1693	339.4	PRELEVEMENT fluide bouteille titane: bottle fired
05/09/2009	01:23:36	Tour Eiffel	N 37 17.3359	W 032 16.5359	1693	340.0	fluid sampling
05/09/2009	01:24:02	Tour Eiffel	N 37 17.3359	W 032 16.5360	1693	339.6	B09FLU001
05/09/2009	01:26:12	Tour Eiffel	N 37 17.3364	W 032 16.5371	1693	339.8	bottle 2 in basket
05/09/2009	01:26:23	Tour Eiffel	N 37 17.3364	W 032 16.5372	1693	340.1	take bottle 4 for same vent
05/09/2009	01:27:26	Tour Eiffel	N 37 17.3365	W 032 16.5372	1693	340.4	take bottle 4
05/09/2009	01:28:48	Tour Eiffel	N 37 17.3365	W 032 16.5372	1693	339.8	take bottle 4
05/09/2009	01:29:35	Tour Eiffel	N 37 17.3366	W 032 16.5375	1693	339.6	take bottle 4
05/09/2009	01:33:18	Tour Eiffel	N 37 17.3369	W 032 16.5380	1693	339.9	take bottle 4 better!
05/09/2009	01:33:59	Tour Eiffel	N 37 17.3370	W 032 16.5380	1693	339.5	bottle 4 in maestro
05/09/2009	01:34:59	Tour Eiffel	N 37 17.3372	W 032 16.5379	1693	340.1	sherpa in the smoke
05/09/2009	01:35:28	Tour Eiffel	N 37 17.3373	W 032 16.5378	1693	339.7	a bit of help from sherpa
05/09/2009	01:35:58	Tour Eiffel	N 37	W 032 16.5378	1693	340.0	sherpa takes the bottle

			17.3373				
05/09/2009	01:37:17	Tour Eiffel	N 37 17.3373	W 032 16.5378	1693	339.8	bottle falled down
05/09/2009	01:40:31	Tour Eiffel	N 37 17.3379	W 032 16.5377	1694	282.8	bottle down
05/09/2009	01:43:16	Tour Eiffel	N 37 17.3376	W 032 16.5373	1694	282.4	a Ti bottle is disturbing some shrimps
05/09/2009	01:43:43	Tour Eiffel	N 37 17.3374	W 032 16.5373	1694	282.3	ti bottle recovered - not fired
05/09/2009	01:45:45	Tour Eiffel	N 37 17.3374	W 032 16.5368	1694	282.3	manip with sherpa
05/09/2009	01:46:54	Tour Eiffel	N 37 17.3376	W 032 16.5367	1694	282.3	tricky
05/09/2009	01:49:13	Tour Eiffel	N 37 17.3373	W 032 16.5367	1694	282.2	get bottle 4
05/09/2009	01:51:25	Tour Eiffel	N 37 17.3374	W 032 16.5366	1694	282.2	re positionning of the bottle in sherpa
05/09/2009	01:53:38	Tour Eiffel	N 37 17.3373	W 032 16.5366	1694	282.1	bottle 4 in maestro
05/09/2009	01:56:39	Tour Eiffel	N 37 17.3369	W 032 16.5374	1693	310.3	back to the chimney
05/09/2009	01:58:03	Tour Eiffel	N 37 17.3369	W 032 16.5374	1693	310.4	bottle 4 back to vent
05/09/2009	02:00:38	Tour Eiffel	N 37 17.3347	W 032 16.5355	1693	310.3	bottle falled down - problem with maestro
05/09/2009	02:01:44	Tour Eiffel	N 37 17.3326	W 032 16.5340	1698	313.3	fish
05/09/2009	02:09:28	Tour Eiffel	N 37 17.3367	W 032 16.5331	1694	310.4	bottle 4 on the bottom
05/09/2009	02:09:50	Tour Eiffel	N 37 17.3367	W 032 16.5331	1693	310.1	a bottle in the middle of crabs
05/09/2009	02:10:36	Tour Eiffel	N 37 17.3368	W 032 16.5331	1693	309.5	attempt to take it again
05/09/2009	02:12:12	Tour Eiffel	N 37 17.3368	W 032 16.5330	1693	309.2	a photo of crabs
05/09/2009	02:14:54	Tour Eiffel	N 37 17.3368	W 032 16.5329	1695	310.3	shrimp
05/09/2009	02:20:26	Tour Eiffel	N 37 17.3411	W 032 16.5303	1697	278.5	3rd attempt for bottle 4
05/09/2009	02:22:40	Tour Eiffel	N 37 17.3415	W 032 16.5303	1700	279.0	bottle 4 on the way to vent
05/09/2009	02:27:05	Tour Eiffel	N 37 17.3384	W 032 16.5359	1692	319.2	close to vent
05/09/2009	02:31:20	Tour Eiffel	N 37 17.3388	W 032 16.5364	1692	318.4	in vent
05/09/2009	02:32:13	Tour Eiffel	N 37	W 032 16.5364	1692	318.8	PRELEVEMENT fluide bouteille titane: bottle 4

			17.3388				fired B09FLU002
05/09/2009	02:32:59	Tour Eiffel	N 37 17.3387	W 032 16.5363	1692	318.8	return to basket
05/09/2009	02:36:08	Tour Eiffel	N 37 17.3372	W 032 16.5345	1693	318.8	in the basket
05/09/2009	02:57:00	Tour Eiffel	N 37 17.3409	W 032 16.5369	1692	321.3	debut mise en place du capteur
05/09/2009	03:01:34	Tour Eiffel	N 37 17.3411	W 032 16.5370	1692	321.4	tige tordue, difficile de la mettre dans le conduit
05/09/2009	03:03:21	Tour Eiffel	N 37 17.3411	W 032 16.5370	1692	321.3	capteur mis en place ! mais le corps semble etre dans le fluide...
05/09/2009	03:07:32	Tour Eiffel	N 37 17.3416	W 032 16.5363	1695	274.0	on decide de recuperer la sonde
05/09/2009	03:09:49	Tour Eiffel	N 37 17.3411	W 032 16.5378	1692	274.4	recuperation
05/09/2009	03:31:33	Tour Eiffel	N 37 17.3409	W 032 16.5361	1692	12.9	mise en place: second try
05/09/2009	03:35:33	Tour Eiffel	N 37 17.3408	W 032 16.5361	1692	13.7	on perd la sonde : elle tombe
05/09/2009	03:38:03	Tour Eiffel	N 37 17.3393	W 032 16.5357	1695	353.6	going down to pick the sensor\n
05/09/2009	03:40:20	Tour Eiffel	N 37 17.3405	W 032 16.5356	1694	315.6	la sonde est recuperee
05/09/2009	03:48:05	Tour Eiffel	N 37 17.3408	W 032 16.5363	1692	42.2	sherpa casse pour la dexieme fois le conduit pour le degager
05/09/2009	03:51:33	Tour Eiffel	N 37 17.3408	W 032 16.5362	1692	42.0	try to put the sensor into the conduit
05/09/2009	03:55:51	Tour Eiffel	N 37 17.3404	W 032 16.5362	1692	40.8	03:55 le capteur whoi hight t HT010 est positione dans le conduit
05/09/2009	03:57:46	Tour Eiffel	N 37 17.3404	W 032 16.5362	1692	42.6	reference de la pose : B09HTW010
05/09/2009	04:12:56	Tour Eiffel	N 37 17.3403	W 032 16.5364	1692	42.1	capteur saisit par maestro HTN20
05/09/2009	04:44:34	Tour Eiffel	N 37 17.3335	W 032 16.5426	1697	6.1	récupération capteur , celui de gauche a bougé
05/09/2009	04:56:08	Tour Eiffel	N 37 17.3333	W 032 16.5420	1697	1.0	RECUP capteur B09THN27003 R
05/09/2009	05:01:07	Tour Eiffel	N 37 17.3334	W 032 16.5437	1698	23.4	RECUP capteur B09THN26007R
05/09/2009	05:09:43	Tour Eiffel	N 37 17.3339	W 032 16.5423	1697	19.0	LOCALISATION orifice de sortie de fluide
05/09/2009	05:14:16	Tour Eiffel	N 37 17.3339	W 032 16.5423	1697	19.0	BIO moules et crabes dans la fissure
05/09/2009	05:20:29	Tour Eiffel	N 37 17.3341	W 032 16.5422	1697	19.0	MESURE Prise temperature: 51°C
05/09/2009	05:23:32	Tour Eiffel	N 37	W 032 16.5422	1697	19.1	MESURE B09TEM002 et B09TEM003

			17.3341				
05/09/2009	05:47:11	Tour Eiffel	N 37 17.3341	W 032 16.5422	1697	19.0	LOCALISATION position prelevement fluide
05/09/2009	05:48:01	Tour Eiffel	N 37 17.3341	W 032 16.5422	1697	19.0	declenchement prelevement fluide
05/09/2009	05:49:05	Tour Eiffel	N 37 17.3341	W 032 16.5422	1697	19.0	PRELEVEMENT B09FLU003 seringue titane N°2
05/09/2009	06:07:08	Tour Eiffel	N 37 17.3339	W 032 16.5423	1697	19.0	PRELEVEMENT seringue 5 B09FLU004
05/09/2009	06:15:47	Tour Eiffel	N 37 17.3339	W 032 16.5423	1697	19.0	close up prelevement seringue 5
05/09/2009	06:17:19	Tour Eiffel	N 37 17.3339	W 032 16.5423	1697	19.0	close up prelevement seringue 5 bis
05/09/2009	06:17:48	Tour Eiffel	N 37 17.3340	W 032 16.5423	1697	19.0	PRELEVEMENT B09FLU005
05/09/2009	06:41:44	Tour Eiffel	N 37 17.3393	W 032 16.5376	1692	66.3	fumeur intrumenté
05/09/2009	06:44:29	Tour Eiffel	N 37 17.3435	W 032 16.5362	1694	272.4	Fumeur TE
05/09/2009	06:49:46	Tour Eiffel	N 37 17.3440	W 032 16.5375	1691	235.2	TE
05/09/2009	06:54:12	Tour Eiffel	N 37 17.3430	W 032 16.5365	1693	288.1	Sortie panier
05/09/2009	07:11:29	Tour Eiffel	N 37 17.3315	W 032 16.5196	1700	288.2	Pb bras
05/09/2009	07:13:29	Tour Eiffel	N 37 17.3354	W 032 16.5300	1701	288.2	Pb Bras confirmé. Test manuel ignoré
05/09/2009	07:21:52	Tour Eiffel	N 37 17.3434	W 032 16.5319	1695	314.6	En cours de remontée

6.7.4. Dive 389-4

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 389- 4

Date : 05/09/2009
Observateurs : **BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CARLUT Julie, CHAVAGNAC Valérie, CREPEAU Valentin, CASTILLO Alain, ESCARTIN Javier, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, ROMEVAUX-JESTIN Céline, SALOCCHI Aura, SILVA Caria**

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

Sites d'étude : MontSegur, Tour Eiffel, Roldan, Pico, Isabel, Crystal, White Castel, Y3
Récupération de l'instrumentation mise en place durant la campagne MoMAR'08 (capteurs de température et colonisateurs microbiologiques)
Mise en place d'une série de capteurs de température pour une an de mesures et d'une autre série pour environ un mois de mesures
Pélèvements de fluides et de faune sur les sites hydrothermaux étudiés
Capture vidéo de plumes hydrothermaux

Bilan des opérations :

Opérations de prélèvements
Biologie :
Grande Boite ROV : 4 prélèvements,
Eau :
Bouteille titane 750 ml : 10 prélèvements,
MultiPreleveur 200 ml : 9 prélèvements,
Mouillages
28 mouillages ont été posés.
8 mouillages ont été relevés.

1012 images ont été numérisées,
4 nouvelles localités ont étés définies : Lave Lac, Roldan, Crystal_ et White Castle.

Bilan de la plongée :

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof (m)	Cap	Commentaires
05/09/2009	22:50:21	Lucky strike	N 37 17.3518	W 032 16.6597	1424	265.7	crevette moustachue à 1422m de prof\n
05/09/2009	23:23:39	Tour Eiffel	N 37 17.3337	W 032 16.5487	1702	35.1	Chimere fond à Tour Eiffel\n
05/09/2009	23:46:35	Tour Eiffel	N 37 17.3426	W 032 16.5239	1693	280.9	Tour Eiffel - fumeur capteur HT010
05/09/2009	23:53:27	Tour Eiffel	N 37 17.3376	W 032 16.5288	1695	9.3	Aisics
06/09/2009	00:21:09	Tour Eiffel	N 37 17.3395	W 032 16.5304	1694	293.9	preparation pose capteur HT001
06/09/2009	00:27:08	Tour Eiffel	N 37 17.3397	W 032 16.5298	1694	293.9	POSE: HT001 est posé
06/09/2009	00:28:04	Tour Eiffel	N 37 17.3398	W 032 16.5297	1694	294.0	OK HT001 - TIME: 00:27 date 06/09/09
06/09/2009	00:31:57	Tour Eiffel	N 37 17.3383	W 032 16.5284	1697	293.7	Les deux capteurs HT010 et HT001
06/09/2009	00:40:59	Tour Eiffel	N 37 17.3385	W 032 16.5318	1691	53.7	NKE29017 en cours de placement
06/09/2009	00:49:19	Tour Eiffel	N 37 17.3386	W 032 16.5317	1691	51.1	POSE : NKE29017
06/09/2009	00:58:22	Tour Eiffel	N 37 17.3383	W 032 16.5311	1691	53.1	B09TEM004 - T=313°C
06/09/2009	01:01:10	Tour Eiffel	N 37 17.3363	W 032 16.5310	1693	33.4	view of temperature sensors
06/09/2009	01:11:43	Tour Eiffel	N 37 17.3356	W 032 16.5258	1699	296.1	get T sensor n°6 blue
06/09/2009	01:21:20	Tour Eiffel	N 37 17.3394	W 032 16.5303	1691	53.7	POSE :B09THN29006
06/09/2009	01:22:41	Tour Eiffel	N 37 17.3393	W 032 16.5306	1691	54.1	B09THN017 et B09THN29006 côte à côte
06/09/2009	01:23:52	Montsegur	N 37 17.3355	W 032 16.5337	1694	27.0	Go to Montsegur
06/09/2009	01:29:01	Montsegur	N 37 17.2863	W 032 16.5251	1704	248.4	arrive on montsegur
06/09/2009	01:52:23	Montsegur	N 37 17.2843	W 032 16.5310	1703	15.7	BO9 TEM 005 : mont segur 296°C
06/09/2009	01:54:44	Montsegur	N 37 17.2841	W 032 16.5310	1703	16.8	recuperation bouteille
06/09/2009	01:55:35	Montsegur	N 37 17.2842	W 032 16.5310	1703	17.2	recuperation bouteille
06/09/2009	01:56:49	Montsegur	N 37 17.2841	W 032 16.5310	1703	17.3	BO9FLU006
06/09/2009	01:59:10	Montsegur	N 37 17.2841	W 032 16.5310	1703	18.0	B09FLU006

06/09/2009	02:00:03	Montsegur	N 37 17.2842	W 032 16.5310	1703	18.4	range la bouteille dans le panier
06/09/2009	02:00:34	Montsegur	N 37 17.2843	W 032 16.5310	1703	16.4	retour bouteille panier
06/09/2009	02:01:46	Montsegur	N 37 17.2842	W 032 16.5310	1703	17.5	prise de la 2ième bouteille
06/09/2009	02:05:04	Montsegur	N 37 17.2843	W 032 16.5310	1703	16.2	bouteille n°3 prise
06/09/2009	02:07:12	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.8	prélèvement BO9FLU007
06/09/2009	02:08:19	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.9	B09FLU007
06/09/2009	02:09:35	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.4	bouteille 3 dans le panier
06/09/2009	02:12:09	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.4	Tsensor on montsegur
06/09/2009	02:14:13	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.1	Positing of WHOI T sensor
06/09/2009	02:16:57	Montsegur	N 37 17.2843	W 032 16.5309	1703	15.0	POSE : WHOI T sensor B09THW009D
06/09/2009	02:22:26	Montsegur	N 37 17.2829	W 032 16.5297	1704	357.9	Recovery of 2008 T sensor 27017
06/09/2009	02:30:12	Montsegur	N 37 17.2838	W 032 16.5308	1704	310.8	MESURE First T measurement (6° C), fluide diffus
06/09/2009	02:35:17	Montsegur	N 37 17.2843	W 032 16.5310	1704	310.9	MESURE Only 10°C
06/09/2009	02:36:55	Montsegur	N 37 17.2843	W 032 16.5310	1703	310.8	B09TEM006 = 80°C
06/09/2009	02:39:14	Montsegur	N 37 17.2843	W 032 16.5310	1704	310.8	B09TEM007 = 70°C
06/09/2009	02:45:12	Montsegur	N 37 17.2836	W 032 16.5302	1704	310.7	seringue prise par flotteur
06/09/2009	02:48:42	Montsegur	N 37 17.2836	W 032 16.5302	1704	310.7	syringe in place going to take fluid
06/09/2009	02:50:33	Montsegur	N 37 17.2837	W 032 16.5309	1704	310.8	PRELEVEMENT B09FLU009
06/09/2009	03:06:42	Montsegur	N 37 17.2863	W 032 16.5378	1704	142.5	MESURE: B09TEM008 196°C
06/09/2009	03:12:18	Montsegur	N 37 17.2863	W 032 16.5378	1704	142.7	MESURE: B09TEM009 295°C
06/09/2009	03:13:51	Montsegur	N 37 17.2863	W 032 16.5378	1704	142.7	getting WHOI T probe
06/09/2009	03:15:45	Montsegur	N 37 17.2863	W 032 16.5379	1704	142.6	positionning of the T sensor
06/09/2009	03:26:28	Montsegur	N 37 17.2865	W 032 16.5379	1704	142.9	T sensor deployed but down now

06/09/2009	03:27:05	Montsegur	N 37 17.2865	W 032 16.5378	1704	142.8	recovering the T sensor
06/09/2009	03:29:56	Montsegur	N 37 17.2866	W 032 16.5381	1704	143.9	got it!
06/09/2009	03:32:04	Montsegur	N 37 17.2866	W 032 16.5382	1704	140.5	2nd attempt
06/09/2009	03:33:35	Montsegur	N 37 17.2866	W 032 16.5382	1704	140.1	T sensor falled down again
06/09/2009	03:38:03	Montsegur	N 37 17.2866	W 032 16.5386	1704	142.0	3rd attempt
06/09/2009	03:47:45	Montsegur	N 37 17.2866	W 032 16.5383	1703	143.5	POSE : T sensor in
06/09/2009	03:48:20	Montsegur	N 37 17.2866	W 032 16.5383	1703	142.7	B09THW007D in
06/09/2009	04:23:13	Montsegur	N 37 17.2869	W 032 16.5381	1703	142.8	prise sonde n°9
06/09/2009	04:34:03	Montsegur	N 37 17.2869	W 032 16.5378	1703	142.8	sonde n°9 presetation au dessus du flux
06/09/2009	05:09:46	Montsegur	N 37 17.2888	W 032 16.5381	1704	178.1	changement d'endroit pour sonde n°9
06/09/2009	05:16:19	Montsegur	N 37 17.2830	W 032 16.5380	1702	107.8	repositionnement au dessus des cheminées
06/09/2009	05:43:32	Montsegur	N 37 17.2829	W 032 16.5381	1702	105.8	Sonde tombée, non accrochée sur la cheminée
06/09/2009	05:46:32	Montsegur	N 37 17.2829	W 032 16.5381	1702	105.9	3e Tentative
06/09/2009	06:07:32	Montsegur	N 37 17.2422	W 032 16.5598	1702	73.4	POSE : B09THN009D
06/09/2009	06:16:59	Montsegur	N 37 17.2257	W 032 16.5666	1702	57.7	prise du capteur 14
06/09/2009	06:31:38	Montsegur	N 37 17.2258	W 032 16.5667	1702	55.4	POSE : B09THN14D
06/09/2009	06:36:44	Montsegur	N 37 17.2268	W 032 16.5700	1702	56.5	route pour rechercher les sondes de l'an dernier sur Montsegur
06/09/2009	06:40:38	Montsegur	N 37 17.2253	W 032 16.5701	1703	54.9	localisation capteur 27001
06/09/2009	06:41:34	Montsegur	N 37 17.2253	W 032 16.5701	1703	54.6	RECUP : B09THN27001R
06/09/2009	06:57:07	Montsegur	N 37 17.2346	W 032 16.5633	1704	189.3	Positionnement pour recuperer capteur 26021
06/09/2009	06:58:51	Montsegur	N 37 17.2333	W 032 16.5637	1704	207.0	RECUP : B09THN26021R
06/09/2009	07:00:25	Montsegur	N 37 17.2333	W 032 16.5636	1704	207.1	sonde 26021 dans panier
06/09/2009	07:04:01	Montsegur	N 37 17.2817	W 032 16.5379	1704	112.0	route vers ascenceur

06/09/2009	07:08:55	Montsegur	N 37 17.2720	W 032 16.4745	1699	118.5	arrivee sur ascenceur
06/09/2009	07:14:53	Montsegur	N 37 17.2667	W 032 16.4685	1696	297.9	ouverture panier 2
06/09/2009	07:15:15	Montsegur	N 37 17.2663	W 032 16.4686	1696	298.8	ouverture panier 1
06/09/2009	07:16:59	Montsegur	N 37 17.2673	W 032 16.4666	1696	305.6	boites dans panier 1
06/09/2009	07:22:33	Montsegur	N 37 17.2674	W 032 16.4675	1695	249.3	sortie bouteille Ti1
06/09/2009	07:24:10	Montsegur	N 37 17.2671	W 032 16.4664	1695	270.5	bouteille Ti1 dans ascenceur panier 1
06/09/2009	07:25:45	Montsegur	N 37 17.2666	W 032 16.4663	1695	274.9	sortie bouteille Ti3 du panier Victor
06/09/2009	07:27:14	Montsegur	N 37 17.2655	W 032 16.4676	1696	306.7	bouteille Ti3 dans panier 1 ascenceur
06/09/2009	07:29:40	Montsegur	N 37 17.2651	W 032 16.4688	1697	331.6	sortie sonde 26021 du panier Victor
06/09/2009	07:30:51	Montsegur	N 37 17.2650	W 032 16.4688	1697	332.4	sonde 26021 dans panier 1 ascenceur
06/09/2009	07:32:52	Montsegur	N 37 17.2649	W 032 16.4687	1697	331.6	sonde 27001 sortie panier Victor
06/09/2009	07:34:33	Montsegur	N 37 17.2651	W 032 16.4686	1697	331.3	sonde 27001 dans panier 1 ascenceur
06/09/2009	07:35:58	Montsegur	N 37 17.2650	W 032 16.4686	1697	330.9	sortie seringue Ti panier ROV
06/09/2009	07:37:13	Montsegur	N 37 17.2651	W 032 16.4686	1697	331.7	seringue Ti dans panier 1 ascenceur
06/09/2009	07:40:09	Montsegur	N 37 17.2623	W 032 16.4697	1698	331.7	sortie capteur 27017 panier ROV
06/09/2009	07:41:54	Montsegur	N 37 17.2603	W 032 16.4724	1700	342.4	sonde 27017 dans panier 1 ascenceur
06/09/2009	07:46:10	Montsegur	N 37 17.2626	W 032 16.4768	1701	55.1	prise boite microbio7 dans panier ascenceur 1
06/09/2009	07:49:06	Montsegur	N 37 17.2625	W 032 16.4777	1701	57.9	boite microbio7 dans panier ROV
06/09/2009	07:53:10	Montsegur	N 37 17.2609	W 032 16.4766	1701	45.7	boite microbio4 sortie du panier1 ascenceur
06/09/2009	08:03:50	Montsegur	N 37 17.2618	W 032 16.4773	1701	38.9	boite et sonde au sol
06/09/2009	08:07:11	Montsegur	N 37 17.2619	W 032 16.4773	1701	38.8	sonde 05 dans panier RV fond droite
06/09/2009	08:08:52	Montsegur	N 37 17.2619	W 032 16.4774	1701	38.8	saisie boite microbio4
06/09/2009	08:11:00	Montsegur	N 37 17.2619	W 032 16.4774	1701	38.8	Boite 4 dans panier ROV

06/09/2009	08:12:49	Montsegur	N 37 17.2619	W 032 16.4774	1701	38.8	saisie boite7 rebord du panier
06/09/2009	08:15:30	Montsegur	N 37 17.2602	W 032 16.4793	1701	39.4	route vers Roldan cap 280 sur 150m
06/09/2009	08:25:44	Montsegur	N 37 17.2783	W 032 16.5301	1705	272.3	passage sur Montsegur
06/09/2009	08:30:05	Montsegur	N 37 17.2786	W 032 16.5484	1702	188.3	Marquer M08-10
06/09/2009	08:32:38	Roldan	N 37 17.2850	W 032 16.5513	1701	213.1	Arrivée Roldan
06/09/2009	08:34:07	Roldan	N 37 17.2820	W 032 16.5577	1700	123.5	marquer M08-11
06/09/2009	08:36:48	Roldan	N 37 17.2772	W 032 16.5559	1699	64.4	positionnement devant colonisateurs
06/09/2009	08:42:30	Roldan	N 37 17.2778	W 032 16.5542	1699	31.6	colonisateurs EVAN
06/09/2009	08:46:02	Roldan	N 37 17.2779	W 032 16.5542	1699	31.7	ouverture boite 7
06/09/2009	08:51:34	Roldan	N 37 17.2780	W 032 16.5542	1699	31.6	recuperation colonisateurs
06/09/2009	08:52:45	Roldan	N 37 17.2780	W 032 16.5543	1699	31.3	Recup. colonisateur EVAN1 B09BGM01R
06/09/2009	09:01:15	Roldan	N 37 17.2783	W 032 16.5541	1699	31.9	petite roche dans boite
06/09/2009	09:04:09	Roldan	N 37 17.2783	W 032 16.5543	1699	32.6	fermeture boite 7
06/09/2009	09:09:14	Roldan	N 37 17.2772	W 032 16.5558	1699	31.9	boite 7 dans panier ROV
06/09/2009	09:11:29	Roldan	N 37 17.2865	W 032 16.5553	1699	347.8	route vers TE cap 350 100m
06/09/2009	09:16:49	Tour Eiffel	N 37 17.3350	W 032 16.5457	1701	49.5	Arrivee TE
06/09/2009	09:20:27	Tour Eiffel	N 37 17.3392	W 032 16.5375	1693	19.3	repérage moules avec tapis bacterien
06/09/2009	09:32:38	Tour Eiffel	N 37 17.3360	W 032 16.5418	1697	17.2	sortie boite 4 du panier
06/09/2009	09:58:00	Tour Eiffel	N 37 17.3385	W 032 16.5122	1695	260.3	black out ROV remontée
06/09/2009	10:01:24	Tour Eiffel	N 37 17.3411	W 032 16.4991	1690	201.0	boite 4 dans panier et fermeture panier
06/09/2009	10:02:36	Tour Eiffel	N 37 17.3421	W 032 16.4957	1689	295.5	bras rentrés, sherpa blocké.
06/09/2009	10:05:00	Tour Eiffel	N 37 17.3392	W 032 16.4895	1688	235.3	système redémarré, redescente au fond
06/09/2009	10:18:51	Tour Eiffel	N 37 17.3288	W 032 16.5211	1697	352.4	resortie de boite 4

06/09/2009	10:25:32	Tour Eiffel	N 37 17.3323	W 032 16.5267	1693	342.4	zone de prélèvement choisie pour les moules avec tapis bacteriens
06/09/2009	10:29:36	Tour Eiffel	N 37 17.3346	W 032 16.5273	1691	345.6	zone prelèvement moules avec tapis TE
06/09/2009	10:41:30	Tour Eiffel	N 37 17.3323	W 032 16.5218	1691	342.9	ouverture boite4
06/09/2009	10:42:24	Tour Eiffel	N 37 17.3322	W 032 16.5218	1691	342.7	echantillonnage moules et tapis
06/09/2009	10:49:49	Tour Eiffel	N 37 17.3316	W 032 16.5210	1691	343.0	prelèvement moules et tapis TE
06/09/2009	10:53:46	Tour Eiffel	N 37 17.3317	W 032 16.5210	1691	343.1	dépot des moules dans la boite 4
06/09/2009	10:55:07	Tour Eiffel	N 37 17.3315	W 032 16.5207	1691	343.3	B09MBI01R, fermeture boite 4
06/09/2009	10:59:36	Tour Eiffel	N 37 17.3305	W 032 16.5187	1691	342.9	boite 4 dans panier ROV
06/09/2009	11:02:46	Tour Eiffel	N 37 17.3297	W 032 16.5173	1691	342.9	saisie sonde temperature pour prise au niveau des prelèvements
06/09/2009	11:04:11	Tour Eiffel	N 37 17.3297	W 032 16.5170	1691	342.9	prise température : B09TEM010 6.83°C
06/09/2009	11:07:38	Tour Eiffel	N 37 17.3288	W 032 16.5149	1691	342.9	sonde dans les moules
06/09/2009	11:07:56	Tour Eiffel	N 37 17.3287	W 032 16.5147	1691	343.0	temperature de 6,81°C
06/09/2009	11:09:15	Tour Eiffel	N 37 17.3285	W 032 16.5143	1691	342.9	temperature en un deuxième point: B09TEM011 7.6°C
06/09/2009	11:09:42	Tour Eiffel	N 37 17.3285	W 032 16.5142	1691	342.9	T=7,60°C
06/09/2009	11:11:39	Tour Eiffel	N 37 17.3278	W 032 16.5127	1691	342.9	zoom sur moules
06/09/2009	11:15:11	Tour Eiffel	N 37 17.3277	W 032 16.5120	1691	343.0	sonde temperature rangée
06/09/2009	11:17:18	Tour Eiffel	N 37 17.3294	W 032 16.5143	1691	342.8	zone après prélèvement!!!
06/09/2009	11:18:47	Tour Eiffel	N 37 17.3337	W 032 16.5278	1693	344.5	route vers NASA cap 139
06/09/2009	11:25:22	Tour Eiffel	N 37 17.2741	W 032 16.4707	1702	131.2	chimère
06/09/2009	11:25:59	Tour Eiffel	N 37 17.2738	W 032 16.4689	1702	131.7	arrivée ascenceur
06/09/2009	11:30:07	Tour Eiffel	N 37 17.2741	W 032 16.4650	1701	112.0	sortie boite 7
06/09/2009	11:33:09	Tour Eiffel	N 37 17.2743	W 032 16.4652	1701	110.4	boite 7 dans ascenceur panier 1 (poignée cassée!!!)
06/09/2009	11:35:09	Tour Eiffel	N 37 17.2744	W 032 16.4651	1701	110.0	sonde vert-jaune dans panier ROV

06/09/2009	11:38:08	Tour Eiffel	N 37 17.2744	W 032 16.4652	1701	109.8	sonde 01 dans panier ROV
06/09/2009	11:40:23	Tour Eiffel	N 37 17.2748	W 032 16.4640	1700	143.6	sortie sonde 09 et blanc-vert-blanc
06/09/2009	11:43:16	Tour Eiffel	N 37 17.2752	W 032 16.4635	1700	148.8	sandes dans panier ROV
06/09/2009	11:47:57	Tour Eiffel	N 37 17.2751	W 032 16.4636	1700	148.6	boite 4 dans panier 1 ascenceur
06/09/2009	11:51:47	Tour Eiffel	N 37 17.2752	W 032 16.4638	1700	147.9	sonde bleu-blanc-noir dans panier ROV
06/09/2009	11:57:43	Tour Eiffel	N 37 17.2744	W 032 16.4608	1699	205.3	sonde noir-blanc-vert dans panier ROV
06/09/2009	12:30:51	Lucky strike	N 37 17.2730	W 032 16.4622	1700	288.7	transfering nasa nr 2 to victor nr 3
06/09/2009	12:39:26	Montsegur	N 37 17.2773	W 032 16.5002	1708	280.7	en route vers montsegur
06/09/2009	12:42:48	Montsegur	N 37 17.2790	W 032 16.5271	1704	278.6	on arrive a montsegur
06/09/2009	12:42:57	Montsegur	N 37 17.2790	W 032 16.5272	1704	276.7	catraetyx poisson\n
06/09/2009	12:43:35	Montsegur	N 37 17.2790	W 032 16.5272	1704	275.9	sonde de temperature pouse a cote de montsegur nr 8\n
06/09/2009	12:49:00	Montsegur	N 37 17.2790	W 032 16.5273	1704	276.1	possoin et sondes de temperature
06/09/2009	12:53:19	Montsegur	N 37 17.2794	W 032 16.5277	1704	276.1	sonde temperature nr 4 pose a montsegur
06/09/2009	13:03:38	Montsegur	N 37 17.2790	W 032 16.5255	1704	275.4	4 sondes de température posées à montsegur
06/09/2009	13:05:07	Lucky strike	N 37 17.2781	W 032 16.5248	1705	224.4	back to nasa
06/09/2009	13:08:16	Lucky strike	N 37 17.2781	W 032 16.5062	1707	95.8	going to elevator\n
06/09/2009	13:33:45	Lucky strike	N 37 17.2738	W 032 16.4601	1702	15.0	nasa n8
06/09/2009	13:51:25	Lucky strike	N 37 17.2748	W 032 16.4575	1700	325.9	cutting weight
06/09/2009	13:52:21	Lucky strike	N 37 17.2745	W 032 16.4576	1700	322.4	t probe on the ground!
06/09/2009	13:53:59	Lucky strike	N 37 17.2744	W 032 16.4571	1702	334.3	getting t sensore from ground
06/09/2009	13:57:00	Lucky strike	N 37 17.2757	W 032 16.4592	1701	23.7	cutting last weight
06/09/2009	14:07:45	Lucky strike	N 37 17.2851	W 032 16.4544	1697	200.7	changed dvd
06/09/2009	14:18:43	Lucky strike	N 37 17.2850	W 032 16.4514	1694	259.8	waiting for the release of nasa

06/09/2009	14:22:02	Lucky strike	N 37 17.2804	W 032 16.4552	1701	45.0	largage accoustiaue ne marche pas
06/09/2009	14:22:54	Lucky strike	N 37 17.2800	W 032 16.4543	1698	356.3	nasa released
06/09/2009	14:32:53	Lucky strike	N 37 17.2530	W 032 16.3147	1706	77.5	small sponges
06/09/2009	14:36:01	Lucky strike	N 37 17.2530	W 032 16.3142	1708	83.1	putting the HT sensor back inside of the panier
06/09/2009	14:48:32	Lucky strike	N 37 17.2635	W 032 16.3935	1696	316.3	moving to Y3
06/09/2009	14:51:22	Lucky strike	N 37 17.2754	W 032 16.4047	1684	319.9	pillow lava
06/09/2009	14:54:01	Lucky strike	N 37 17.2832	W 032 16.4124	1681	320.1	pillow lava
06/09/2009	15:04:11	Lucky strike	N 37 17.2889	W 032 16.4291	1687	322.6	
06/09/2009	15:11:45	Lucky strike	N 37 17.3007	W 032 16.4526	1693	320.8	ballast back
06/09/2009	15:18:46	Lucky strike	N 37 17.3168	W 032 16.4794	1696	320.8	fish
06/09/2009	15:21:50	Lucky strike	N 37 17.3227	W 032 16.4892	1697	320.4	inactive hydrothermal process
06/09/2009	15:27:09	Lucky strike	N 37 17.3457	W 032 16.5155	1697	320.3	
06/09/2009	15:29:43	Lucky strike	N 37 17.3709	W 032 16.5403	1690	321.3	sediments
06/09/2009	15:31:08	Lucky strike	N 37 17.3772	W 032 16.5466	1686	320.8	chimera
06/09/2009	15:36:08	Lucky strike	N 37 17.4163	W 032 16.5794	1680	320.3	other fish
06/09/2009	15:37:15	Lucky strike	N 37 17.4197	W 032 16.5871	1676	323.6	
06/09/2009	15:38:36	Lucky strike	N 37 17.4271	W 032 16.5936	1672	320.6	
06/09/2009	15:39:18	Lucky strike	N 37 17.4330	W 032 16.5995	1668	321.9	just passed pp4
06/09/2009	15:41:30	Lucky strike	N 37 17.4524	W 032 16.6204	1676	321.4	
06/09/2009	15:42:17	Lucky strike	N 37 17.4588	W 032 16.6269	1676	320.5	big foult
06/09/2009	15:46:45	Y3	N 37 17.5040	W 032 16.6550	1728	353.6	almost at y3
06/09/2009	15:47:12	Y3	N 37 17.5066	W 032 16.6554	1730	348.1	temperute sensor visible
06/09/2009	15:47:58	Y3	N 37 17.5077	W 032 16.6558	1730	348.6	at site y3

06/09/2009	15:48:24	Y3	N 37 17.5078	W 032 16.6561	1730	345.9	Y3 chimney
06/09/2009	15:48:59	Y3	N 37 17.5076	W 032 16.6561	1730	348.2	Y3 chimney
06/09/2009	15:50:02	Y3	N 37 17.5083	W 032 16.6560	1730	347.2	Almost top of Y3
06/09/2009	15:52:17	Y3	N 37 17.5092	W 032 16.6565	1730	347.4	Top of Y3
06/09/2009	15:53:37	Y3	N 37 17.5100	W 032 16.6571	1730	347.5	Y3 and a fish
06/09/2009	15:55:01	Y3	N 37 17.5100	W 032 16.6571	1730	347.6	Sherpa and the chimney
06/09/2009	15:58:27	Y3	N 37 17.5100	W 032 16.6570	1730	347.3	Zoom on the posible spot
06/09/2009	15:58:39	Y3	N 37 17.5099	W 032 16.6570	1730	347.3	Picture of the spot
06/09/2009	16:01:12	Y3	N 37 17.5105	W 032 16.6596	1731	126.6	looking for the right spot to position the sensor
06/09/2009	16:04:04	Y3	N 37 17.5099	W 032 16.6588	1731	123.6	crashed the ciminey
06/09/2009	16:09:40	Y3	N 37 17.5119	W 032 16.6590	1731	157.8	
06/09/2009	16:22:29	Y3	N 37 17.5104	W 032 16.6591	1731	167.9	still trying
06/09/2009	16:23:57	Y3	N 37 17.5104	W 032 16.6591	1731	167.8	still trying
06/09/2009	16:27:41	Y3	N 37 17.5104	W 032 16.6592	1731	167.7	we abandon this ventt
06/09/2009	16:29:10	Y3	N 37 17.5112	W 032 16.6581	1731	187.3	looking for another one
06/09/2009	16:37:58	Y3	N 37 17.5097	W 032 16.6598	1731	118.0	still searching for vent site
06/09/2009	16:40:14	Y3	N 37 17.5095	W 032 16.6592	1732	109.2	black smoker site at top of tower
06/09/2009	16:43:13	Y3	N 37 17.5101	W 032 16.6605	1732	108.1	redescending from tower
06/09/2009	16:46:10	Y3	N 37 17.5097	W 032 16.6557	1730	257.8	base of tower no apparent venting
06/09/2009	16:48:27	Y3	N 37 17.5087	W 032 16.6570	1730	335.6	moules and tapis on side of tower with a nearby vent
06/09/2009	16:50:35	Y3	N 37 17.5101	W 032 16.6572	1729	295.3	looking for somwhere to put the T sensor
06/09/2009	16:51:27	Y3	N 37 17.5107	W 032 16.6569	1730	272.9	breaking off of the top of the tower by gas forces
06/09/2009	16:54:00	Y3	N 37 17.5107	W 032 16.6572	1730	260.5	tower falling down!

06/09/2009	16:56:09	Y3	N 37 17.5110	W 032 16.6569	1729	247.0	all that remains of the once proud tower - all the dark material has fallen off
06/09/2009	16:57:17	Y3	N 37 17.5103	W 032 16.6577	1730	255.8	joli black smoker after falling of tower
06/09/2009	16:59:29	Y3	N 37 17.5103	W 032 16.6580	1730	255.0	in the plume
06/09/2009	17:00:17	Y3	N 37 17.5104	W 032 16.6575	1730	255.1	POSE : B09HT004D Sensor in the hole!
06/09/2009	17:08:18	Y3	N 37 17.5108	W 032 16.6510	1727	256.5	aligning the next T sensor
06/09/2009	17:15:40	Y3	N 37 17.5103	W 032 16.6586	1730	233.7	close up of hole for T sensor
06/09/2009	17:17:12	Y3	N 37 17.5103	W 032 16.6586	1730	233.5	preparing the T sensor
06/09/2009	17:19:11	Y3	N 37 17.5103	W 032 16.6586	1730	233.3	POSE : B09HTW003D placing temperature sensor
06/09/2009	17:19:57	Y3	N 37 17.5103	W 032 16.6586	1730	233.5	pic of two sensors at tower
06/09/2009	17:25:36	Y3	N 37 17.5103	W 032 16.6586	1730	233.3	B09VID001 17 26 01 Top of Y3
06/09/2009	17:30:22	Y3	N 37 17.5105	W 032 16.6584	1730	233.4	End of B09VID001 17 30 Top of Tower Y3
06/09/2009	17:31:11	Y3	N 37 17.5114	W 032 16.6580	1730	221.6	Top of Tower Y3 with 2 sensors
06/09/2009	17:39:23	Y3	N 37 17.5101	W 032 16.6571	1729	269.9	Making a tour of the Y3 Tower
06/09/2009	17:41:02	Y3	N 37 17.5103	W 032 16.6583	1729	270.6	Two vent holes at the top of Tower Y3
06/09/2009	17:41:35	Y3	N 37 17.5103	W 032 16.6583	1730	269.4	Getting T measurements at top of Tower Y3
06/09/2009	17:45:10	Y3	N 37 17.5104	W 032 16.6582	1729	269.5	MESURE : taking T measurments for vent with ST04 sensor 320°C
06/09/2009	17:49:07	Y3	N 37 17.5106	W 032 16.6571	1729	264.2	temperature sensors on tower Y3
06/09/2009	17:49:36	Y3	N 37 17.5113	W 032 16.6578	1730	238.2	two sensors on top of tower Y3
06/09/2009	17:55:09	Y3	N 37 17.5130	W 032 16.6609	1731	12.6	searching for next site (bio?)
06/09/2009	17:56:17	Y3	N 37 17.5134	W 032 16.6602	1732	98.2	marker seen while searching for site
06/09/2009	17:59:50	Y3	N 37 17.5135	W 032 16.6576	1732	115.5	approach toward the next site
06/09/2009	18:01:44	Y3	N 37 17.5122	W 032 16.6562	1730	191.6	approach site, fractures in background, base Y3
06/09/2009	18:03:11	Y3	N 37 17.5122	W 032 16.6563	1730	192.9	looking for next site at base of Y3

06/09/2009	18:06:09	Y3	N 37 17.5107	W 032 16.6540	1729	276.0	looking for sensor, base of Y3
06/09/2009	18:07:04	Y3	N 37 17.5100	W 032 16.6553	1730	358.4	looking for sensor, base Y3
06/09/2009	18:09:10	Y3	N 37 17.5107	W 032 16.6556	1730	3.0	near sensor at base of Y3
06/09/2009	18:09:41	Y3	N 37 17.5107	W 032 16.6555	1730	3.0	looking for buried sensor base of Y3
06/09/2009	18:17:41	Y3	N 37 17.5105	W 032 16.6554	1730	3.6	where theTprobe should be at base of Y3/ change to DVDs 10 (cam 1 2 and 3)
06/09/2009	18:18:34	Y3	N 37 17.5105	W 032 16.6555	1730	3.5	could not find t sensor
06/09/2009	18:21:22	Y3	N 37 17.5124	W 032 16.6549	1729	352.9	looking for fractures where sensor 27002 is located at base of Y3
06/09/2009	18:22:31	Y3	N 37 17.5125	W 032 16.6559	1729	314.9	looking for site at base of Y3
06/09/2009	18:24:36	Y3	N 37 17.5126	W 032 16.6676	1732	171.3	end of the tower that was knocked off by ROV???
06/09/2009	18:26:22	Y3	N 37 17.5067	W 032 16.6715	1734	102.1	fractures and fish at base of Y3
06/09/2009	18:28:45	Y3	N 37 17.4997	W 032 16.6649	1733	68.8	fractures at base of Y3, maybe where sensor is located
06/09/2009	18:29:27	Y3	N 37 17.4976	W 032 16.6638	1733	62.0	looking for temp sensor at base of Y3
06/09/2009	18:30:47	Y3	N 37 17.4983	W 032 16.6627	1732	53.8	photo test1
06/09/2009	18:31:51	Y3	N 37 17.5010	W 032 16.6593	1731	44.5	searching for sensor still in fracture network
06/09/2009	18:32:51	Y3	N 37 17.5021	W 032 16.6570	1730	33.1	fracture network near marker A11 at base of Y3
06/09/2009	18:33:27	Y3	N 37 17.5026	W 032 16.6569	1730	31.4	fracture network we find the temperature sensor but it appears to have tilted out of the fissure. also the fissure seems less active than in 2008
06/09/2009	18:35:29	Y3	N 37 17.5030	W 032 16.6564	1730	31.4	trying to get the T sensor, base of Y3
06/09/2009	18:36:45	Y3	N 37 17.5030	W 032 16.6564	1730	31.3	RECOVERY of Temperature sensor, B09THN27002R
06/09/2009	18:37:23	Y3	N 37 17.5030	W 032 16.6564	1730	31.4	Capture of Temp sensor, B09THN27002R
06/09/2009	18:39:00	Y3	N 37 17.5030	W 032 16.6565	1730	31.4	close up of fissure with mussels
06/09/2009	18:41:50	Y3	N 37 17.5031	W 032 16.6565	1730	31.4	picking up next temp sensor, base of Y3
06/09/2009	18:43:43	Y3	N 37 17.5031	W 032 16.6565	1730	31.4	setting up temp sensor, base of Y3
06/09/2009	18:45:26	Y3	N 37 17.5031	W 032 16.6565	1730	31.3	trade off of hands for yellow and white sensor, base Y3

06/09/2009	18:47:37	Y3	N 37 17.5036	W 032 16.6561	1730	23.6	looking for water escaping and moule to pick up
06/09/2009	18:49:11	Y3	N 37 17.5035	W 032 16.6560	1730	23.4	possible location for moule and hot water flux
06/09/2009	18:52:22	Y3	N 37 17.5048	W 032 16.6555	1730	121.6	possible hole to place the temp sensor at base Y3
06/09/2009	18:53:37	Y3	N 37 17.5051	W 032 16.6561	1730	120.0	very inactive in terms of venting this year for this fracture network, moving elsewhere
06/09/2009	18:56:02	Y3	N 37 17.5067	W 032 16.6520	1729	42.0	looking for a good site for temp and moules, base Y3
06/09/2009	18:58:16	Y3	N 37 17.5082	W 032 16.6516	1728	198.8	still looking for active fractures for T sensor
06/09/2009	18:59:43	Y3	N 37 17.5093	W 032 16.6544	1729	266.5	looking for place to put T sensor and pick up moules, base Y3
06/09/2009	19:00:39	Y3	N 37 17.5110	W 032 16.6543	1729	262.8	perhaps the spot in bottom right of photo here is good t sensor spot
06/09/2009	19:01:29	Y3	N 37 17.5121	W 032 16.6550	1729	248.5	zone of potential placement of T sensor and pick up of moules
06/09/2009	19:03:10	Y3	N 37 17.5118	W 032 16.6562	1730	198.0	potential location for temperature sensor and pick up of moules
06/09/2009	19:04:16	Y3	N 37 17.5118	W 032 16.6562	1730	197.7	placing of T sensor, base of Y3
06/09/2009	19:06:04	Y3	N 37 17.5119	W 032 16.6562	1730	198.0	placement of T sensor, base of Y3
06/09/2009	19:09:51	Y3	N 37 17.5118	W 032 16.6563	1730	188.1	placing the t sensor, base Y3
06/09/2009	19:13:21	Y3	N 37 17.5119	W 032 16.6565	1730	188.4	problem with first attempt at placing T sensor, trying again
06/09/2009	19:16:26	Y3	N 37 17.5119	W 032 16.6565	1730	188.2	adjusting position of T sensor in hand of ROV, base Y3
06/09/2009	19:20:04	Y3	N 37 17.5119	W 032 16.6565	1730	188.4	grabbing the T sensor, base Y3
06/09/2009	19:20:34	Y3	N 37 17.5119	W 032 16.6565	1730	188.6	putting T sensor, base Y3, try 3
06/09/2009	19:24:28	Y3	N 37 17.5119	W 032 16.6565	1730	188.8	DEPLOY B09THN005D, placed the next T sensor NKE29005, base Y3
06/09/2009	19:26:06	Y3	N 37 17.5126	W 032 16.6574	1731	165.3	Temp sensor, base Y3
06/09/2009	19:26:55	Y3	N 37 17.5123	W 032 16.6572	1731	164.8	Temp sensor, base Y3
06/09/2009	19:27:26	Y3	N 37 17.5124	W 032 16.6570	1731	164.2	temp sensor, Y3
06/09/2009	19:28:56	Y3	N 37 17.5101	W 032 16.6507	1728	262.0	t sensor at bottom right
06/09/2009	19:30:43	Y3	N 37 17.5108	W 032 16.6527	1729	288.0	searching for a 2nd spot here for T sensor, base Y3

06/09/2009	19:32:00	Y3	N 37 17.5163	W 032 16.6389	1730	291.1	Video EVENT B09VID02 Y3 smoker
06/09/2009	19:40:05	Y3	N 37 17.5141	W 032 16.6399	1731	290.9	placing the temperature sensor, 2nd at base Y3
06/09/2009	19:44:57	Y3	N 37 17.5141	W 032 16.6399	1730	290.9	DEPLOY T sensor, B09THN016D, base of Y3, 2nd sensor NKE29016
06/09/2009	19:45:43	Y3	N 37 17.5141	W 032 16.6399	1730	291.0	placed T sensor, base Y3, 2nd capture
06/09/2009	19:50:22	Y3	N 37 17.5146	W 032 16.6329	1728	290.4	the zone with 2 t sensors, base of Y3
06/09/2009	19:51:39	Y3	N 37 17.5141	W 032 16.6365	1728	274.2	2 temp sensors just in zone at bottom right of photo, base of Y3 visible
06/09/2009	19:53:47	Y3	N 37 17.5151	W 032 16.6389	1729	250.0	picture of temp sensors that have already been covered again within about 1 hour
06/09/2009	19:56:00	Y3	N 37 17.5181	W 032 16.6302	1728	170.0	en route pour le site de descente de NASA
06/09/2009	20:26:00	Y3	N 37 17.3034	W 032 16.6213	1694	215.2	at NASA
06/09/2009	20:49:19	Y3	N 37 17.2776	W 032 16.5739	1693	225.9	Lepidion schmitdti
06/09/2009	20:56:51	Sintra	N 37 17.2831	W 032 16.5522	1699	225.6	end of station for NASA descent we leave for SINTRA
06/09/2009	21:14:52	Sintra	N 37 17.4910	W 032 16.5241	1646	11.1	chimere
06/09/2009	21:16:55	Sintra	N 37 17.5008	W 032 16.5192	1639	10.6	arriving near Sintra
06/09/2009	21:20:01	Sintra	N 37 17.5257	W 032 16.5085	1627	11.3	at marker M08-? Sintra
06/09/2009	21:24:42	Sintra	N 37 17.5305	W 032 16.5144	1629	93.4	top of sintra active\n
06/09/2009	21:25:30	Sintra	N 37 17.5309	W 032 16.5130	1624	94.6	marker m08 8
06/09/2009	21:27:40	Sintra	N 37 17.5312	W 032 16.5124	1624	93.9	top of sintra at 8 m and inactive\n
06/09/2009	21:28:04	Sintra	N 37 17.5312	W 032 16.5124	1624	96.2	only active part is the W flank
06/09/2009	21:32:52	Sintra	N 37 17.5355	W 032 16.5081	1623	198.8	anémone de mer près du marqueur 8
06/09/2009	21:33:33	Sintra	N 37 17.5364	W 032 16.5069	1624	198.7	capteur 26020 retrouvé
06/09/2009	21:40:51	Sintra	N 37 17.5348	W 032 16.5087	1623	174.3	cataetyx laticeps n2
06/09/2009	21:43:40	Sintra	N 37 17.5349	W 032 16.5072	1623	193.8	RECOVER B09THN26020R
06/09/2009	21:47:25	Sintra	N 37 17.5334	W 032 16.5065	1623	206.5	approche du vent : cap 206

06/09/2009	21:51:41	Sintra	N 37 17.5306	W 032 16.5103	1622	96.5	observation : diffuseur
06/09/2009	21:57:01	Sintra	N 37 17.5306	W 032 16.5098	1622	96.5	tentatives de mise en place HT002
06/09/2009	21:57:43	Sintra	N 37 17.5306	W 032 16.5097	1622	96.6	idem
06/09/2009	21:58:47	Sintra	N 37 17.5306	W 032 16.5097	1622	96.6	tentative pose: HT002
06/09/2009	21:59:17	Sintra	N 37 17.5305	W 032 16.5097	1622	96.6	idem
06/09/2009	21:59:30	Sintra	N 37 17.5305	W 032 16.5097	1622	96.6	temperature sensor in the hole
06/09/2009	22:02:14	Sintra	N 37 17.5302	W 032 16.5096	1622	96.6	pose : HT002 dans le vent ?
06/09/2009	22:10:54	Sintra	N 37 17.5296	W 032 16.5103	1623	97.1	pose : HT002 prète à etre reposée
06/09/2009	22:15:33	Sintra	N 37 17.5297	W 032 16.5085	1620	68.2	pose: HT002 mis en place !!! 22:15
06/09/2009	22:16:04	Sintra	N 37 17.5297	W 032 16.5085	1620	68.0	on lache le capteur pour voir s'il reste en place
06/09/2009	22:16:40	Sintra	N 37 17.5297	W 032 16.5086	1620	68.0	pose : HT002 en place
06/09/2009	22:17:08	Sintra	N 37 17.5297	W 032 16.5086	1620	68.1	POSE : HT002 dans le vent
06/09/2009	22:19:35	Sintra	N 37 17.5292	W 032 16.5121	1626	75.4	HT002 prise à Sintra
06/09/2009	22:36:23	Sintra	N 37 17.5315	W 032 16.5092	1622	160.5	spider on the top of the image ?
06/09/2009	22:40:02	Sintra	N 37 17.5305	W 032 16.5090	1622	136.8	maetro agrandit le conduit
06/09/2009	22:49:42	Sintra	N 37 17.5276	W 032 16.5012	1626	5.1	depart pour Nord Sintra, objectif : trouver un vent pour le HT012 : 22:49
06/09/2009	23:03:08	Sintra	N 37 17.5500	W 032 16.4868	1619	345.9	statue of the liberty?, dead chimney
06/09/2009	23:07:57	Sintra	N 37 17.5473	W 032 16.4893	1619	198.5	desert, pas de vents ici à Nord Sintra
06/09/2009	23:13:18	Sintra	N 37 17.5352	W 032 16.4995	1625	200.3	cataetyx laticeps
06/09/2009	23:16:49	Sintra	N 37 17.5322	W 032 16.5019	1623	208.7	depose la sonde HT012 sur le sol en attendant de trouver un vent
06/09/2009	23:18:39	Sintra	N 37 17.5322	W 032 16.5018	1623	207.3	sonde HT012 déposée
06/09/2009	23:21:43	Sintra	N 37 17.5322	W 032 16.5018	1623	207.3	NKE 29018 jaune/vert saisie par maestro
06/09/2009	23:30:29	Sintra	N 37 17.5300	W 032 16.5042	1622	195.2	vent potentiel pour NKE 29018

06/09/2009	23:33:10	Sintra	N 37 17.5300	W 032 16.5043	1622	196.1	POSE : mise en place de NKE 29018.
06/09/2009	23:41:39	Sintra	N 37 17.5327	W 032 16.5018	1624	210.8	récupération de HT012
06/09/2009	23:44:11	Sintra	N 37 17.5327	W 032 16.5019	1623	210.4	HT012 récupérée
06/09/2009	23:59:22	Sintra	N 37 17.5344	W 032 16.4926	1623	184.3	old chimney, another one
07/09/2009	00:07:07	Sintra	N 37 17.5028	W 032 16.4825	1641	350.4	arrivée à white points : pillow lava
07/09/2009	00:08:00	Sintra	N 37 17.5029	W 032 16.4833	1641	8.1	flange : white points
07/09/2009	00:09:19	Sintra	N 37 17.5031	W 032 16.4832	1641	8.0	flanges : bactéries, diffusion
07/09/2009	00:11:02	Sintra	N 37 17.5034	W 032 16.4831	1641	7.7	flange
07/09/2009	00:11:25	Sintra	N 37 17.5034	W 032 16.4831	1641	7.7	flange (white points)
07/09/2009	00:30:22	Sintra	N 37 17.4318	W 032 16.5876	1675	255.8	cheminée active, tissu bactérien
07/09/2009	00:35:12	Sintra	N 37 17.4298	W 032 16.5903	1673	21.5	cheminée active vue de près
07/09/2009	00:37:11	Sintra	N 37 17.4296	W 032 16.5902	1673	21.2	mise en place HT012 ...
07/09/2009	00:38:49	Sintra	N 37 17.4285	W 032 16.5895	1673	21.3	mise en place HT012
07/09/2009	00:40:50	Sintra	N 37 17.4278	W 032 16.5891	1673	21.2	mise en place de HT012 échoue, on la récupère
07/09/2009	00:42:27	Sintra	N 37 17.4278	W 032 16.5892	1673	21.2	sonde HT012 bien récupérée
07/09/2009	00:43:47	Sintra	N 37 17.4261	W 032 16.5912	1675	21.3	HT012 récupérée
07/09/2009	00:57:24	Isabel	N 37 17.3538	W 032 16.6112	1696	322.3	sud isabel ? Cheminée ?
07/09/2009	01:10:51	Isabel	N 37 17.3804	W 032 16.6428	1685	134.2	nouveau vent en vue ...
07/09/2009	01:15:35	Isabel	N 37 17.3805	W 032 16.6428	1686	172.9	mise en place sonde HT012 sur Isabel
07/09/2009	01:17:13	Isabel	N 37 17.3805	W 032 16.6428	1686	172.9	mise en place HT012
07/09/2009	01:19:09	Isabel	N 37 17.3805	W 032 16.6428	1686	173.1	HT012 mis en place sur Isabel
07/09/2009	01:31:25	Isabel	N 37 17.3807	W 032 16.6426	1686	170.1	mise en place NKE29011
07/09/2009	01:32:09	Isabel	N 37 17.3807	W 032 16.6426	1686	170.1	NKE29011 mis en place ...

07/09/2009	01:48:31	Isabel	N 37 17.3807	W 032 16.6426	1686	169.0	récupération de la sonde 29011 tombée près du vent (HT012 est tombée aussi!)
07/09/2009	01:49:45	Isabel	N 37 17.3807	W 032 16.6426	1686	169.1	POSE : mise en place 2eme essai de la sonde NKE 29011
07/09/2009	01:57:42	Isabel	N 37 17.3808	W 032 16.6427	1686	176.9	récupération de la sonde HT012
07/09/2009	02:01:53	Isabel	N 37 17.3807	W 032 16.6425	1686	168.4	mise en place 2eme essai de la sonde HT012
07/09/2009	02:02:22	Isabel	N 37 17.3807	W 032 16.6425	1686	168.5	mise en place à Isabel de la sonde de temperature HT012
07/09/2009	02:04:29	Isabel	N 37 17.3807	W 032 16.6425	1686	169.0	POSE : sonde HT012 mise en place à Isabel
07/09/2009	02:06:26	Isabel	N 37 17.3807	W 032 16.6425	1686	167.6	idem (zoom)
07/09/2009	02:08:33	Isabel	N 37 17.3817	W 032 16.6423	1687	179.9	2 capteurs à Isabel :HT012 et NKE 29011
07/09/2009	02:09:28	Isabel	N 37 17.3824	W 032 16.6426	1687	178.3	On s'éloigne des capteurs
07/09/2009	02:11:27	Isabel	N 37 17.3836	W 032 16.6440	1686	151.3	Vue sur les deux capteurs HT012 et NKE29011
07/09/2009	02:19:47	Tour Eiffel	N 37 17.3159	W 032 16.5257	1702	128.2	Arrive sur nasa
07/09/2009	02:22:23	Tour Eiffel	N 37 17.3136	W 032 16.5223	1703	344.0	arrivée à proximité de l'ascenceur
07/09/2009	02:24:42	Tour Eiffel	N 37 17.3157	W 032 16.5231	1702	112.4	damier de calibrage sur l'ascenceur
07/09/2009	02:26:12	Tour Eiffel	N 37 17.3140	W 032 16.5232	1703	86.9	panier ouvert
07/09/2009	02:26:37	Tour Eiffel	N 37 17.3139	W 032 16.5223	1703	59.0	détails contenu du panier
07/09/2009	02:28:58	Tour Eiffel	N 37 17.3140	W 032 16.5215	1703	36.1	récupération bouteilles titane
07/09/2009	02:37:24	Tour Eiffel	N 37 17.3162	W 032 16.5212	1701	160.8	récup seringue titane 200mn du panier #2
07/09/2009	02:40:07	Tour Eiffel	N 37 17.3164	W 032 16.5213	1701	159.1	seringue #5\n
07/09/2009	02:43:09	Tour Eiffel	N 37 17.3164	W 032 16.5210	1701	161.8	transfert seringue #7
07/09/2009	02:54:01	Tour Eiffel	N 37 17.3134	W 032 16.5166	1702	237.5	recup derniere seringue #9
07/09/2009	02:54:52	Y3	N 37 17.3156	W 032 16.5116	1702	71.0	en route pour Y3
07/09/2009	02:57:05	Y3	N 37 17.3323	W 032 16.5339	1702	321.4	route vers Y3
07/09/2009	02:59:53	Y3	N 37 17.3538	W 032 16.5633	1699	321.1	relief en route pour Y3

07/09/2009	03:02:07	Y3	N 37 17.3619	W 032 16.5724	1691	321.1	anemone ?
07/09/2009	03:10:56	Y3	N 37 17.4190	W 032 16.6432	1682	322.7	relief dans le lac de lave en route pour Y3
07/09/2009	03:12:54	Y3	N 37 17.4381	W 032 16.6553	1687	337.9	crevasse en N37 17.44 W32 16.66
07/09/2009	03:14:48	Y3	N 37 17.4618	W 032 16.6545	1696	350.1	a 150m de Y3
07/09/2009	03:24:08	Y3	N 37 17.5100	W 032 16.6706	1730	330.1	photo de pachycara
07/09/2009	03:25:19	Y3	N 37 17.5104	W 032 16.6700	1731	330.3	ROV temperature at Y3
07/09/2009	03:26:27	Y3	N 37 17.5109	W 032 16.6701	1731	330.6	at site y3
07/09/2009	03:27:12	Y3	N 37 17.5107	W 032 16.6698	1730	328.5	Y3 chimney
07/09/2009	03:29:17	Y3	N 37 17.5111	W 032 16.6701	1730	330.4	summit of y3
07/09/2009	03:33:06	Y3	N 37 17.5121	W 032 16.6706	1730	330.8	try at temperature
07/09/2009	03:36:49	Y3	N 37 17.5127	W 032 16.6706	1730	312.6	temperature at Y3
07/09/2009	03:37:46	Y3	N 37 17.5127	W 032 16.6706	1730	312.5	MESURE B09TEM012 reading 261°C
07/09/2009	03:47:52	Y3	N 37 17.5126	W 032 16.6704	1730	312.4	first fluid sampling at Y3
07/09/2009	03:49:44	Y3	N 37 17.5127	W 032 16.6705	1730	311.6	looking at the chimney and find a way to sample
07/09/2009	03:50:26	Y3	N 37 17.5127	W 032 16.6705	1730	312.3	chimney
07/09/2009	03:50:48	Y3	N 37 17.5127	W 032 16.6705	1730	312.4	vent orifice
07/09/2009	03:51:15	Y3	N 37 17.5127	W 032 16.6705	1730	312.5	PRELEVEMENT B09FLU010
07/09/2009	03:51:29	Y3	N 37 17.5127	W 032 16.6705	1730	312.3	PRELEVEMENT B09FLU010
07/09/2009	03:51:55	Y3	N 37 17.5127	W 032 16.6705	1730	312.6	position de la bouteille tutane dans la cheminee
07/09/2009	04:10:20	Y3	N 37 17.5128	W 032 16.6700	1730	312.5	PRELEVEMENT B09FLU011
07/09/2009	04:10:44	Y3	N 37 17.5128	W 032 16.6699	1730	312.5	positionnement de la bouteille titane
07/09/2009	04:11:47	Y3	N 37 17.5128	W 032 16.6699	1730	312.3	B09FLU011
07/09/2009	04:23:16	Y3	N 37 17.5092	W 032 16.6692	1730	314.7	base of Y3

07/09/2009	04:26:09	Y3	N 37 17.5093	W 032 16.6627	1726	323.5	for LT fluid sampling, we go towards the T sensor which was deployed last year
07/09/2009	04:28:37	Y3	N 37 17.5147	W 032 16.6666	1730	315.7	cataetyx
07/09/2009	04:29:28	Y3	N 37 17.5154	W 032 16.6672	1730	316.3	pachycara and cataetyx
07/09/2009	04:31:53	Y3	N 37 17.5104	W 032 16.6609	1731	320.1	Lepîdion
07/09/2009	04:38:25	Y3			1731	322.4	MESURE : B09TEM013 taking temperature with the ROV T probe 20°C
07/09/2009	04:47:56	Y3			1731	321.9	starting with the LT syringe at Y3
07/09/2009	04:56:44	Y3			1731	322.4	position de la seringue pour le prelevement de fluide BT
07/09/2009	04:58:03	Y3			1730	322.3	PRELEVEMENT B09FLU012
07/09/2009	05:10:32	Y3			1731	322.5	Approche n°9 pour prelevement
07/09/2009	05:12:21	Y3			1731	322.4	PRELEVEMENT B09FLU013
07/09/2009	05:15:30	Y3			1731	322.4	Depose n°9 dans panier
07/09/2009	05:17:08	Y3			1731	322.2	Seringue 9 deposée
07/09/2009	05:19:15	Y3			1731	322.1	llyophis saldanhai ??
07/09/2009	05:20:49	Y3			1729	26.9	Mouvement vers Sintra
07/09/2009	05:41:47	Sintra	N 37 17.5272	W 032 16.5134	1627	81.1	marker M08-8
07/09/2009	05:44:07	Sintra	N 37 17.5292	W 032 16.5075	1625	166.2	Arrivée Sintra
07/09/2009	05:48:41	Sintra	N 37 17.5259	W 032 16.5096	1623	160.4	site hydrothermal Sintra
07/09/2009	05:54:04	Sintra	N 37 17.5261	W 032 16.5081	1622	229.9	Vue sur Sonde B09HTW002D
07/09/2009	05:59:56	Sintra	N 37 17.5261	W 032 16.5089	1622	233.4	MESURE B09TEM014 reading 21°C
07/09/2009	06:02:07	Sintra	N 37 17.5261	W 032 16.5089	1622	233.4	site de la mesure de temperature
07/09/2009	06:05:48	Sintra	N 37 17.5261	W 032 16.5089	1622	233.4	B09TEM014 21°C
07/09/2009	06:10:43	Sintra	N 37 17.5261	W 032 16.5089	1622	231.8	Prise Seringue n°5
07/09/2009	06:14:25	Sintra	N 37 17.5261	W 032 16.5089	1622	231.8	seringue n°5 lachée
07/09/2009	06:20:21	Sintra	N 37 17.5261	W 032 16.5089	1622	231.8	prise seringue n°7
07/09/2009	06:26:16	Sintra	N 37 17.5261	W 032 16.5089	1622	231.7	Presentation pour prelevement
07/09/2009	06:27:50	Sintra	N 37	W 032 16.5089	1622	232.0	position de la canule pour le prelevement

			17.5261				
07/09/2009	06:30:09	Sintra	N 37 17.5261	W 032 16.5089	1622	231.5	PRELEVEMENT: B09FLU014
07/09/2009	06:46:18	Sintra	N 37 17.5261	W 032 16.5091	1622	228.0	approche n°5
07/09/2009	06:47:37	Sintra	N 37 17.5261	W 032 16.5091	1622	226.8	position de la canule de la seringue 5 pour le prelevement
07/09/2009	06:51:36	Sintra	N 37 17.5261	W 032 16.5091	1622	227.6	PRELEVEMENT n°5: B09FLU015
07/09/2009	06:56:10	Sintra	N 37 17.5261	W 032 16.5091	1622	227.3	B09FLU015
07/09/2009	07:00:46	Sintra	N 37 17.5167	W 032 16.5193	1631	179.7	Route vers NASA
07/09/2009	07:20:50	Sintra	N 37 17.3181	W 032 16.5149	1700	188.1	Arrivée NASA
07/09/2009	07:40:49	Sintra	N 37 17.3143	W 032 16.5169	1701	228.1	Prise bouteille dans NASA
07/09/2009	07:45:28	Sintra	N 37 17.3146	W 032 16.5170	1701	227.8	load the NASA with the material for fluid sampling
07/09/2009	08:02:30	Tour Eiffel	N 37 17.3147	W 032 16.5172	1701	227.8	saisie boite 2 dans panier ascenceur (petite fuite au moment de la saisie) relachée
07/09/2009	08:06:56	Tour Eiffel	N 37 17.3147	W 032 16.5173	1700	227.9	boite2 dans panier ROV
07/09/2009	08:15:37	Tour Eiffel	N 37 17.3143	W 032 16.5174	1701	191.6	sortie boite 6 ascenceur
07/09/2009	08:16:45	Tour Eiffel	N 37 17.3143	W 032 16.5174	1700	191.5	boite 6 posée dans panier ROV pour meilleure saisie pendant le transit
07/09/2009	08:20:39	Isabel	N 37 17.3205	W 032 16.5190	1700	212.4	route vers Isabel cap 295 sur 200m
07/09/2009	08:29:43	Isabel	N 37 17.3689	W 032 16.6410	1693	10.1	arrivée sur Isabel
07/09/2009	08:32:40	Isabel	N 37 17.3738	W 032 16.6298	1693	337.9	Vue d'Isabel
07/09/2009	08:34:31	Isabel	N 37 17.3757	W 032 16.6266	1693	301.0	dépose boite 6 dans l'alignement marqueur M08 9 et marqueur jaune, cap 300
07/09/2009	08:38:58	Isabel	N 37 17.3815	W 032 16.6296	1690	258.1	transit vers point de B09HTW012D pour prelevement de fluides
07/09/2009	08:39:58	Isabel	N 37 17.3829	W 032 16.6351	1686	214.8	localisation de la sonde
07/09/2009	08:45:40	Isabel	N 37 17.3798	W 032 16.6381	1686	172.3	position devant le point de prélèvement, sortie de la sonde de température du ROV
07/09/2009	08:50:10	Isabel	N 37 17.3798	W 032 16.6381	1686	172.2	B09TEM015 224°C
07/09/2009	09:03:58	Isabel	N 37 17.3921	W 032 16.6431	1683	155.9	saisie et sortie bouteille Ti 2
07/09/2009	09:11:32	Isabel	N 37	W 032 16.6459	1686	188.1	positionnement bouteille

			17.3803				
07/09/2009	09:12:33	Isabel	N 37 17.3803	W 032 16.6458	1686	188.1	repositionnement du ROV
07/09/2009	09:14:28	Isabel	N 37 17.3803	W 032 16.6458	1686	174.0	Victor positionné, tentative prelevement
07/09/2009	09:16:10	Isabel	N 37 17.3803	W 032 16.6458	1686	173.5	positionnement canule
07/09/2009	09:19:46	Isabel	N 37 17.3802	W 032 16.6458	1686	173.7	prelèvement fluide B09FLU016
07/09/2009	09:21:44	Isabel	N 37 17.3803	W 032 16.6458	1686	173.7	depose bouteille dans panier ROV
07/09/2009	09:23:46	Isabel	N 37 17.3801	W 032 16.6458	1686	173.6	bouteille 2 dans panier ROV
07/09/2009	09:25:23	Isabel	N 37 17.3801	W 032 16.6458	1686	173.6	saisie bouteille Titane 1
07/09/2009	09:27:09	Isabel	N 37 17.3801	W 032 16.6458	1686	173.5	prelevement fluide B09FLU017 avec bouteille Ti1
07/09/2009	09:28:03	Isabel	N 37 17.3801	W 032 16.6458	1686	173.5	prelevement en cours
07/09/2009	09:29:39	Isabel	N 37 17.3801	W 032 16.6458	1686	173.6	fin de prelevement
07/09/2009	09:33:55	Isabel	N 37 17.3801	W 032 16.6458	1686	173.6	bouteille Ti 1 dans panier ROV
07/09/2009	09:45:52	Isabel	N 37 17.3766	W 032 16.6342	1693	296.5	Récupération boite 6 au fond
07/09/2009	09:49:45	Tour Eiffel	N 37 17.3749	W 032 16.6310	1693	343.2	transit TE cap 110
07/09/2009	09:56:25	Tour Eiffel	N 37 17.3502	W 032 16.5487	1693	112.8	arrivée sur TE
07/09/2009	10:10:32	Tour Eiffel	N 37 17.3376	W 032 16.5403	1694	69.2	arrivee sur AISICS
07/09/2009	10:17:25	Tour Eiffel	N 37 17.3377	W 032 16.5374	1692	58.5	vue de AISICS
07/09/2009	10:19:20	Tour Eiffel	N 37 17.3369	W 032 16.5387	1694	58.5	approche vers le sommet blanc pour déposer les colonisateurs
07/09/2009	10:24:14	Tour Eiffel	N 37 17.3373	W 032 16.5372	1692	58.6	ouverture boite6
07/09/2009	10:25:26	Tour Eiffel	N 37 17.3373	W 032 16.5371	1692	58.4	Saisie colonisateur dans la boite6
07/09/2009	10:28:30	Tour Eiffel	N 37 17.3373	W 032 16.5372	1692	58.5	Pose colonisateur LSTE1 B09BGM02D
07/09/2009	10:29:21	Tour Eiffel	N 37 17.3373	W 032 16.5372	1692	58.3	colonisateur en position
07/09/2009	10:30:13	Tour Eiffel	N 37 17.3372	W 032 16.5371	1692	59.1	vue generale colonisateur LSTE1
07/09/2009	10:34:40	Tour Eiffel	N 37	W 032 16.5379	1695	5.3	vue sur AISICS avec floteur colonisateur LSTE1

			17.3361				devant (carré blanc)
07/09/2009	10:36:30	Tour Eiffel	N 37 17.3378	W 032 16.5378	1692	59.7	approche AISICS pour mesure Temperature puis prelevement cheminee
07/09/2009	10:40:14	Tour Eiffel	N 37 17.3376	W 032 16.5374	1692	60.0	saisie sonde temp ROV
07/09/2009	10:42:20	Tour Eiffel	N 37 17.3376	W 032 16.5374	1692	59.9	mesure temp B09TEM016 124°C
07/09/2009	10:44:48	Tour Eiffel	N 37 17.3376	W 032 16.5374	1692	60.0	rangement sonde temp ROV
07/09/2009	10:51:45	Tour Eiffel	N 37 17.3377	W 032 16.5375	1692	59.9	reprise boite 6 par Sherpa
07/09/2009	10:54:50	Tour Eiffel	N 37 17.3377	W 032 16.5375	1692	60.1	la cheminée s'est cassée!!! mais pas dans la boite
07/09/2009	10:58:00	Tour Eiffel	N 37 17.3378	W 032 16.5375	1692	58.3	echantillonnage cheminée B09MBI02 AISICS
07/09/2009	10:59:24	Tour Eiffel	N 37 17.3378	W 032 16.5375	1692	59.9	fermeture boite 6
07/09/2009	11:01:11	Tour Eiffel	N 37 17.3378	W 032 16.5375	1692	59.9	saisie sonde temp ROV
07/09/2009	11:02:37	Tour Eiffel	N 37 17.3378	W 032 16.5375	1692	59.8	mesure temperature B09TEM017 160°C
07/09/2009	11:03:57	Tour Eiffel	N 37 17.3378	W 032 16.5375	1692	60.0	rangement sonde temperature ROV
07/09/2009	11:12:04	Tour Eiffel	N 37 17.3294	W 032 16.5397	1696	179.5	boite 6 dans panier ROV
07/09/2009	11:15:33	Montsegur	N 37 17.3041	W 032 16.5340	1704	183.1	transit vers Montsegur cap 183
07/09/2009	11:18:04	Montsegur	N 37 17.2886	W 032 16.5312	1704	182.9	Arrivee à Montsegur
07/09/2009	11:22:04	Montsegur	N 37 17.2823	W 032 16.5332	1704	269.9	sortie Boite 2 panier ROV
07/09/2009	11:27:28	Montsegur	N 37 17.2838	W 032 16.5354	1704	292.0	vue de Montsegur
07/09/2009	11:33:07	Montsegur	N 37 17.2884	W 032 16.5393	1704	218.5	zone prelevement de moules
07/09/2009	11:34:19	Montsegur	N 37 17.2884	W 032 16.5392	1704	219.9	saisie sonde temp ROV
07/09/2009	11:35:30	Montsegur	N 37 17.2885	W 032 16.5391	1704	232.1	mesure temperature B09TEM018 7.5°C
07/09/2009	11:40:14	Montsegur	N 37 17.2888	W 032 16.5386	1704	261.3	rangement sonde temp ROV
07/09/2009	11:43:02	Montsegur	N 37 17.2888	W 032 16.5386	1704	261.9	ouverture de la boite
07/09/2009	11:46:03	Montsegur	N 37 17.2887	W 032 16.5389	1704	251.0	prelevement de moules B09BIO001
07/09/2009	11:48:06	Montsegur	N 37	W 032 16.5389	1704	251.6	moules dans la boite

			17.2886				
07/09/2009	12:03:58	Montsegur	N 37 17.2878	W 032 16.5398	1704	210.4	nouveau prelevement de moules
07/09/2009	12:05:17	Montsegur	N 37 17.2878	W 032 16.5398	1704	210.2	prélèvement moule
07/09/2009	12:08:43	Montsegur	N 37 17.2878	W 032 16.5398	1704	210.2	fermeture de la boite BIO
07/09/2009	12:11:55	Montsegur	N 37 17.2838	W 032 16.5322	1704	156.6	transit vers NASA
07/09/2009	12:21:11	Montsegur	N 37 17.3115	W 032 16.5109	1701	10.3	tache inconnue
07/09/2009	12:29:57	Montsegur	N 37 17.3108	W 032 16.5201	1702	249.4	arrivee sur NASA
07/09/2009	12:33:59	Montsegur	N 37 17.3120	W 032 16.5224	1702	308.6	transfert de la boite dans nASA
07/09/2009	12:36:10	Montsegur	N 37 17.3109	W 032 16.5242	1703	17.9	poignée de la boite bio cassée
07/09/2009	12:44:27	Montsegur	N 37 17.3115	W 032 16.5249	1703	42.7	sortie du panier de la boite microbio
07/09/2009	12:50:19	Montsegur	N 37 17.3115	W 032 16.5247	1703	42.7	mise en place de la boite 6 micribio dans NASA
07/09/2009	13:10:32	Lucky strike	N 37 17.3114	W 032 16.5232	1703	345.1	rov attached to the ascensor
07/09/2009	13:12:36	Lucky strike	N 37 17.3118	W 032 16.5237	1703	31.6	B09VIDCAL1
07/09/2009	13:15:48	Lucky strike	N 37 17.3108	W 032 16.5241	1703	45.5	still doing the calibration for video images
07/09/2009	13:26:01	Lucky strike	N 37 17.3094	W 032 16.5257	1703	43.9	end of calibration
07/09/2009	13:30:12	Lucky strike	N 37 17.3132	W 032 16.5262	1702	101.6	preparing to cut the cable to release the color calibration panel
07/09/2009	13:37:42	Lucky strike	N 37 17.3099	W 032 16.5221	1703	349.4	color calibration panel ready !
07/09/2009	13:42:14	Lucky strike	N 37 17.3119	W 032 16.5214	1703	322.6	B09VIDCAL2 start color calibration
07/09/2009	13:45:36	Lucky strike	N 37 17.3126	W 032 16.5220	1703	322.2	max and minimum of light on color panel
07/09/2009	13:54:22	Lucky strike	N 37 17.3144	W 032 16.5228	1701	196.6	Taking low temperature sensor (yellow)
07/09/2009	14:03:36	Montsegur	N 37 17.3163	W 032 16.5204	1701	231.0	Taking green low T sensor with Sherpa
07/09/2009	14:33:58	Montsegur	N 37 17.3096	W 032 16.5194	1703	330.6	Elevator is on the way to the surface
07/09/2009	14:44:23	Montsegur	N 37 17.3106	W 032 16.5184	1702	307.7	fish nelia
07/09/2009	14:56:49	Montsegur	N 37	W 032 16.5445	1703	114.8	Cracks networks at the west of Montsegur

			17.2860				
07/09/2009	14:58:39	Montsegur	N 37 17.2855	W 032 16.5439	1703	104.6	MESURE : B09TEM019 Temperature measurement in a crack (20°C)
07/09/2009	15:02:52	Montsegur	N 37 17.2855	W 032 16.5439	1703	104.6	B09TEM019
07/09/2009	15:05:00	Montsegur	N 37 17.2855	W 032 16.5439	1703	104.5	POSE : B09TLN001D
07/09/2009	15:06:35	Montsegur	N 37 17.2855	W 032 16.5439	1703	104.7	B09TLN001D
07/09/2009	15:12:44	Montsegur	N 37 17.2911	W 032 16.5392	1705	186.1	T measurement aborded 12°C
07/09/2009	15:15:26	Montsegur	N 37 17.2909	W 032 16.5392	1705	184.4	Other T measurement here we put the T sensor
07/09/2009	16:03:12	Montsegur	N 37 17.3256	W 032 16.5413	1698	39.1	looking for spot to place T sensor near Tour Eiffel
07/09/2009	16:05:15	Montsegur	N 37 17.3258	W 032 16.5409	1698	27.6	just in front of Tour Eiffel, looking for place to put T sensor, 15 m from Tour Eiffel
07/09/2009	16:08:48	Tour Eiffel	N 37 17.3258	W 032 16.5409	1698	27.9	T sensor, hold on by maestro, south Tour Eiffel
07/09/2009	16:12:51	Tour Eiffel	N 37 17.3258	W 032 16.5409	1698	28.1	POSE : T sensor is placed, LT005 just south of Tour Eiffel
07/09/2009	16:16:48	Tour Eiffel	N 37 17.3262	W 032 16.5398	1697	352.6	picking up the T sensor, placing just south of Tour Eiffel, green sensor
07/09/2009	16:19:02	Tour Eiffel	N 37 17.3262	W 032 16.5398	1697	352.8	getting ready to place the T sensor, B09LT003
07/09/2009	16:20:39	Tour Eiffel	N 37 17.3262	W 032 16.5398	1697	352.4	POSE : temperature sensor LT003 placed, just south of Tour Eiffel
07/09/2009	16:21:21	Tour Eiffel	N 37 17.3262	W 032 16.5398	1697	352.9	two T sensors just south of Tour Eiffel, LT005 and LT003
07/09/2009	16:25:50	Tour Eiffel	N 37 17.3265	W 032 16.5375	1696	338.3	picking up LT002, for placement at next site south of Tour Eiffel
07/09/2009	16:26:40	Tour Eiffel	N 37 17.3265	W 032 16.5375	1696	338.2	getting ready to place LT002, south of Tour Eiffel
07/09/2009	16:29:10	Tour Eiffel	N 37 17.3265	W 032 16.5375	1696	338.4	still trying to place LT004 in hole south of Tour Eiffel
07/09/2009	16:32:28	Tour Eiffel	N 37 17.3265	W 032 16.5375	1696	338.4	POSE : Final placement of LT002, south of Tour Eiffel
07/09/2009	16:46:14	Tour Eiffel	N 37 17.2956	W 032 16.5348	1704	225.9	possible location for T sensor, near Mt Segur
07/09/2009	16:52:56	Montsegur	N 37 17.2952	W 032 16.5350	1704	228.8	picking up last Low T temp sensor, LT004, near Mt Segur
07/09/2009	16:58:14	Montsegur	N 37 17.2952	W 032 16.5349	1704	235.9	pushed the sensor into the hole, trying to push a little more
07/09/2009	16:59:32	Montsegur	N 37 17.2951	W 032 16.5349	1704	234.1	POSE : placement of temp sensor LT004 near > MontSegur
07/09/2009	17:09:37	Montsegur	N 37	W 032 16.5337	1704	290.9	temp sensors sitting on the seafloor, going to pick

			17.2867				up and place at GPP west
07/09/2009	17:13:07	Montsegur	N 37 17.2867	W 032 16.5334	1704	291.4	putting T sensor in the panier
07/09/2009	17:26:48	Montsegur	N 37 17.2872	W 032 16.5337	1704	289.5	moving toward next HT sensor to pick up and put in panier
07/09/2009	17:31:19	Lave Lac	N 37 17.2869	W 032 16.5302	1705	291.1	hanging out before going to JPP
07/09/2009	17:32:19	Lave Lac	N 37 17.2868	W 032 16.5354	1704	278.1	heading toward JPP
07/09/2009	18:02:45	Lave Lac	N 37 17.4628	W 032 16.7374	1742	314.2	in transit, toward JPP
07/09/2009	18:28:44	Lave Lac	N 37 17.5650	W 032 16.8845	1726	243.3	arrivee sur le marqueur JPP
07/09/2009	19:02:45	Lucky strike	N 37 17.5576	W 032 16.8801	1729	207.7	begin recovery of 2008 probe
07/09/2009	19:09:44	Lucky strike	N 37 17.5573	W 032 16.8801	1729	206.2	the probe is struck in hydrothermal deposits
07/09/2009	19:10:42	Lucky strike	N 37 17.5573	W 032 16.8801	1729	208.4	RECUP probe recovered B09THN27015R
07/09/2009	19:19:27	Helene	N 37 17.5529	W 032 16.8775	1728	197.1	we move to Helene
07/09/2009	19:26:45	Helene	N 37 17.4962	W 032 16.8857	1739	232.8	arrive at Marker M08_7 Helene on drapped lava and lava pillars
07/09/2009	19:33:39	Helene	N 37 17.5021	W 032 16.8895	1738	8.4	Looking for new site, temperature sensor on the floor
07/09/2009	19:34:46	Helene	N 37 17.5012	W 032 16.8905	1738	353.4	pillow lavas near Helene
07/09/2009	19:41:31	Helene	N 37 17.4998	W 032 16.8912	1739	359.1	joli pillow lavas near Helene
07/09/2009	19:46:44	Helene	N 37 17.5003	W 032 16.8849	1739	354.2	still looking for a chimney to put HT sensor
07/09/2009	19:49:28	Helene	N 37 17.5013	W 032 16.8847	1739	290.3	end of searching at this site, we are going to move to another site
07/09/2009	19:52:19	Helene	N 37 17.4939	W 032 16.8997	1739	263.3	discussing where to move: fish in the picture
07/09/2009	19:58:43	Helene	N 37 17.5206	W 032 16.8839	1738	356.5	waiting for descent of NASA
07/09/2009	20:04:19	Helene	N 37 17.5696	W 032 16.8868	1727	355.6	We are getting away from NASA.
07/09/2009	20:39:18	Helene	N 37 17.5644	W 032 16.8810	1726	198.9	jpp and colonisators
07/09/2009	20:49:09	Helene	N 37 17.5370	W 032 16.9085	1724	209.3	13651 7521 lest descente nautile
07/09/2009	21:09:25	Pico	N 37 17.4631	W 032 16.9175	1728	112.3	Pico - 21h09 x=13634 y=7402
07/09/2009	21:29:09	Pico	N 37	W 032 16.9140	1727	63.5	prise de HT005 par sherpa et maestro

			17.4603				
07/09/2009	21:35:19	Pico	N 37 17.4603	W 032 16.9140	1727	63.5	mise en place de HTW005
07/09/2009	21:46:55	Pico	N 37 17.4605	W 032 16.9140	1727	63.4	sonde posée B09HTW005
07/09/2009	22:11:24	Crystal	N 37 17.4574	W 032 16.9158	1726	233.9	capteur HTW006 at crystal
07/09/2009	22:15:28	Crystal	N 37 17.4574	W 032 16.9158	1726	234.1	mise en place de HTW006
07/09/2009	22:37:44	Crystal	N 37 17.4578	W 032 16.9162	1727	218.5	POSE : HTW006 POSEE!!
07/09/2009	22:51:25	Crystal	N 37 17.4576	W 032 16.9158	1726	218.5	prise de HTN012
07/09/2009	22:53:53	Crystal	N 37 17.4576	W 032 16.9158	1727	218.5	POSE : HTN012 posé!
07/09/2009	23:01:12	Crystal	N 37 17.4580	W 032 16.9164	1727	190.3	vue générale du site : capteur HTN012 et HTW006
07/09/2009	23:47:22	Crystal	N 37 17.4559	W 032 16.9173	1726	132.0	mise en place de HTW008
07/09/2009	23:48:29	Crystal	N 37 17.4559	W 032 16.9173	1726	132.0	POSE : HTW008
07/09/2009	23:59:41	Crystal	N 37 17.4559	W 032 16.9172	1726	131.8	taking NKE HTN001
08/09/2009	00:05:28	Crystal	N 37 17.4559	W 032 16.9172	1726	132.0	HTN001 in but not released yet
08/09/2009	00:06:01	Crystal	N 37 17.4559	W 032 16.9172	1726	131.8	POSE : HTN001 released
08/09/2009	00:06:41	Crystal	N 37 17.4559	W 032 16.9172	1726	131.9	B09HTN001D
08/09/2009	00:09:10	Crystal	N 37 17.4570	W 032 16.9172	1726	130.9	leave crystal
08/09/2009	00:50:40	White Castle	N 37 17.3956	W 032 16.8687	1714	158.5	white castle
08/09/2009	00:52:10	White Castle	N 37 17.3956	W 032 16.8686	1714	157.6	preparation pour la pause d'une sonde T
08/09/2009	01:13:41	White Castle	N 37 17.3954	W 032 16.8686	1714	157.7	POSE : sonde dans la cheminee HT004 (Capteur tombé de Y3 et récupéré)
08/09/2009	01:14:16	White Castle	N 37 17.3954	W 032 16.8686	1714	157.7	B09HTW004D
08/09/2009	01:25:01	White Castle	N 37 17.3956	W 032 16.8682	1714	150.1	prise d'une autre sonde HTN29002
08/09/2009	01:28:41	White Castle	N 37 17.3956	W 032 16.8682	1714	149.7	POSE : capteur en place
08/09/2009	01:30:36	White Castle	N 37 17.3956	W 032 16.8682	1714	149.5	prise de vue de B09HTN29002D
08/09/2009	01:32:22	White Castle	N 37	W 032 16.8682	1714	149.5	B09VID007 with castle smokers

			17.3956				
08/09/2009	01:33:53	White Castle	N 37 17.3967	W 032 16.8652	1715	218.4	vue générale du site de White Castle avec les sondes
08/09/2009	01:37:47	Lave Lac	N 37 17.3889	W 032 16.8666	1711	350.4	route vers l'ascenseur
08/09/2009	01:51:45	Lave Lac	N 37 17.4893	W 032 16.8132	1740	220.5	at the elevator
08/09/2009	01:55:26	Lave Lac	N 37 17.4866	W 032 16.8189	1741	33.0	grab of the NASA
08/09/2009	01:55:50	Lave Lac	N 37 17.4873	W 032 16.8190	1741	42.2	bascule du panier n°2
08/09/2009	01:58:27	Lave Lac	N 37 17.4891	W 032 16.8177	1740	245.9	panier n°2
08/09/2009	01:59:41	Lave Lac	N 37 17.4890	W 032 16.8166	1740	279.6	attraper le panier
08/09/2009	02:00:26	Lave Lac	N 37 17.4892	W 032 16.8167	1740	276.8	sensor
08/09/2009	02:01:46	Lave Lac	N 37 17.4892	W 032 16.8165	1740	276.4	first sensor in the box\n
08/09/2009	02:03:08	Lave Lac	N 37 17.4892	W 032 16.8166	1740	276.4	second sensor in the box
08/09/2009	02:05:20	Lave Lac	N 37 17.4895	W 032 16.8172	1740	261.5	3° syringe in the box
08/09/2009	02:06:56	Lave Lac	N 37 17.4895	W 032 16.8172	1740	261.3	4° syringe in the box
08/09/2009	02:08:35	Lave Lac	N 37 17.4897	W 032 16.8174	1740	247.3	4° syringe in the box
08/09/2009	02:12:02	Lave Lac	N 37 17.4879	W 032 16.8193	1741	61.9	catching nasa
08/09/2009	02:17:17	Lave Lac	N 37 17.4887	W 032 16.8167	1740	267.1	bottle n°3
08/09/2009	02:18:40	Lave Lac	N 37 17.4888	W 032 16.8167	1740	266.6	bottle n°3 in the box
08/09/2009	02:21:35	Lave Lac	N 37 17.4887	W 032 16.8153	1740	247.8	bottle n°2 in the box
08/09/2009	02:25:58	Lave Lac	N 37 17.4600	W 032 16.8933	1739	244.0	on the way to crystal
08/09/2009	02:35:53	Crystal	N 37 17.4464	W 032 16.9127	1733	209.3	marker flores
08/09/2009	02:41:00	Crystal	N 37 17.4348	W 032 16.9203	1727	225.9	return to Crystal where TsensorHTW008 has been deployed\n
08/09/2009	02:43:13	Crystal	N 37 17.4344	W 032 16.9207	1728	203.9	meqsure of T with ROV T sensor
08/09/2009	02:49:07	Crystal	N 37 17.4336	W 032 16.9210	1727	151.7	positioning of the T sensor
08/09/2009	02:49:59	Crystal	N 37	W 032 16.9210	1727	151.5	B09TEM020 at Crystal at 325 degree

			17.4336				
08/09/2009	02:56:07	Crystal	N 37 17.4337	W 032 16.9210	1727	151.6	try to take Ti syringe 2
08/09/2009	03:02:56	Crystal	N 37 17.4337	W 032 16.9210	1728	151.8	positioning of bottle 2 in the chimney
08/09/2009	03:03:26	Crystal	N 37 17.4337	W 032 16.9210	1728	151.8	PRELEVEMENT : B09FLU018
08/09/2009	03:04:24	Crystal	N 37 17.4337	W 032 16.9210	1728	151.8	B09FLU018 bottle 2
08/09/2009	03:08:59	Crystal	N 37 17.4337	W 032 16.9210	1727	152.1	Ti syringe 3
08/09/2009	03:09:34	Crystal	N 37 17.4337	W 032 16.9210	1727	151.8	Ti syringe 3 in
08/09/2009	03:10:28	Crystal	N 37 17.4337	W 032 16.9210	1728	152.2	PRELEVEMENT B09FLU019
08/09/2009	03:11:31	Crystal	N 37 17.4337	W 032 16.9210	1728	151.8	PRELEVEMENT B09FLU019
08/09/2009	03:12:32	Crystal	N 37 17.4337	W 032 16.9210	1727	151.7	PRELEVEMENT B09FLU019
08/09/2009	03:32:02	Crystal	N 37 17.4317	W 032 16.9225	1726	79.0	site for fluid sampling on the other side of crystal near marker Flores 17
08/09/2009	03:33:21	Crystal	N 37 17.4325	W 032 16.9219	1726	109.8	two chimneys for fluid sampling including their T sensor
08/09/2009	03:35:46	Crystal	N 37 17.4327	W 032 16.9216	1726	130.9	sensing the temperature
08/09/2009	03:38:40	Crystal	N 37 17.4327	W 032 16.9216	1726	130.2	MESURE : B09TEM021 reading 270°C
08/09/2009	03:40:21	Crystal	N 37 17.4327	W 032 16.9216	1726	130.5	second chimney T sensing
08/09/2009	03:41:02	Crystal	N 37 17.4327	W 032 16.9216	1726	130.6	MESURE: B09TEM022 reading 324°C
08/09/2009	03:41:41	Crystal	N 37 17.4327	W 032 16.9216	1726	130.3	MESURE B09TEM022
08/09/2009	03:46:49	Crystal	N 37 17.4327	W 032 16.9215	1726	130.6	crystal syringe milti 2
08/09/2009	03:48:39	Crystal	N 37 17.4327	W 032 16.9216	1726	130.5	positioning of syringe 2 for fluid sampling
08/09/2009	03:48:51	Crystal	N 37 17.4327	W 032 16.9216	1726	130.5	PRELEVEMENT: B09FLU020
08/09/2009	03:55:18	Crystal	N 37 17.4327	W 032 16.9215	1726	129.9	take syringe n°7
08/09/2009	03:55:50	Crystal	N 37 17.4327	W 032 16.9215	1726	130.3	PRELEVEMENT: B09FLU021
08/09/2009	04:09:04	Lave Lac	N 37 17.4924	W 032 16.8215	1741	52.7	arrivée NASA
08/09/2009	04:15:21	Lave Lac	N 37	W 032 16.8174	1741	311.0	Approche NASA

			17.4955				
08/09/2009	04:18:35	Lave Lac	N 37 17.4942	W 032 16.8179	1741	332.8	unloading Victor's basket
08/09/2009	04:27:47	Lave Lac	N 37 17.4940	W 032 16.8175	1741	343.1	unloqding Victor's basket
08/09/2009	04:30:33	Lave Lac	N 37 17.4953	W 032 16.8210	1741	115.3	depose bouteilles Ti 2 et 3
08/09/2009	04:39:10	Lave Lac	N 37 17.4961	W 032 16.8172	1740	267.3	Prise bouteille Ti n°1
08/09/2009	04:51:29	Lave Lac	N 37 17.4967	W 032 16.8190	1741	208.7	Prise Bouteille Ti n°4
08/09/2009	05:01:00	Lave Lac	N 37 17.4944	W 032 16.8205	1741	76.5	Sonde Noir Vert Bleu
08/09/2009	05:04:48	Lave Lac	N 37 17.4956	W 032 16.8171	1741	292.0	Sonde Bleu Jaune Blanc
08/09/2009	05:07:08	Lave Lac	N 37 17.4951	W 032 16.8209	1741	107.5	Fermeture panier 1
08/09/2009	05:29:07	White Castle	N 37 17.3826	W 032 16.8673	1721	219.7	Arrivée White Castle
08/09/2009	05:30:47	White Castle	N 37 17.3800	W 032 16.8685	1715	217.5	White Castle HTW 004
08/09/2009	05:39:55	White Castle	N 37 17.3784	W 032 16.8697	1714	156.4	MESURE: B09TEM023 reading up to 275°C
08/09/2009	05:40:49	White Castle	N 37 17.3784	W 032 16.8697	1714	156.6	measure of fluid temperature
08/09/2009	05:58:02	White Castle	N 37 17.3781	W 032 16.8701	1713	139.4	Prise bouteille Ti n°4
08/09/2009	05:58:34	White Castle	N 37 17.3780	W 032 16.8700	1713	140.2	prise bottle n°4
08/09/2009	06:02:13	White Castle	N 37 17.3780	W 032 16.8700	1713	139.3	positioning of cqanule inside the chimney
08/09/2009	06:05:02	White Castle	N 37 17.3780	W 032 16.8700	1713	139.3	Ressort bloqué
08/09/2009	06:10:09	White Castle	N 37 17.3780	W 032 16.8700	1713	139.3	2e Essai OK PRELEVEMENT: B09FLU022
08/09/2009	06:14:15	White Castle	N 37 17.3781	W 032 16.8702	1713	139.4	Prise bouteille Ti n°1
08/09/2009	06:16:29	White Castle	N 37 17.3781	W 032 16.8701	1713	139.3	Prevelement B09FLU023
08/09/2009	06:18:19	White Castle	N 37 17.3781	W 032 16.8701	1713	139.3	small chimneys all around the central edifice
08/09/2009	06:19:20	White Castle	N 37 17.3781	W 032 16.8701	1713	139.3	depose Bouteille n°1
08/09/2009	06:37:13	White Castle	N 37 17.3779	W 032 16.8699	1713	139.3	MESURE: B09TEM024 reading 310°C, same spot as HTN29002
08/09/2009	06:47:41	White Castle	N 37	W 032 16.8699	1713	139.3	Prise seringue n° 5

			17.3779				
08/09/2009	06:51:23	White Castle	N 37 17.3779	W 032 16.8699	1713	139.3	Prelevement B09FLU024
08/09/2009	06:52:25	White Castle	N 37 17.3779	W 032 16.8699	1713	139.3	PRELEVEMENT B09FLU024
08/09/2009	06:54:04	White Castle	N 37 17.3779	W 032 16.8698	1713	139.4	depose seringue n°5
08/09/2009	06:59:51	White Castle	N 37 17.3779	W 032 16.8698	1713	139.3	Prise seringue n° 9
08/09/2009	07:01:56	White Castle	N 37 17.3779	W 032 16.8698	1713	139.4	PRELEVEMENT: B09FLU025
08/09/2009	07:02:31	White Castle	N 37 17.3779	W 032 16.8698	1713	139.4	B09FLU025
08/09/2009	07:08:45	White Castle	N 37 17.3789	W 032 16.8692	1713	139.6	Repositionnement sonde
08/09/2009	07:11:38	White Castle	N 37 17.3773	W 032 16.8677	1711	313.9	approche cap 320
08/09/2009	07:15:39	White Castle	N 37 17.3777	W 032 16.8681	1711	339.5	White Castle
08/09/2009	07:24:02	White Castle	N 37 17.3784	W 032 16.8700	1713	209.4	White Castle
08/09/2009	07:34:11	White Castle	N 37 17.3784	W 032 16.8701	1714	200.8	White Castle
08/09/2009	07:42:19	White Castle	N 37 17.3784	W 032 16.8687	1714	200.1	White Castle
08/09/2009	08:20:11	Chimiste	N 37 17.4878	W 032 16.8164	1740	348.9	NASA
08/09/2009	09:47:55	Lave Lac	N 37 17.4974	W 032 16.8389	1741	319.7	benchmark C
08/09/2009	10:07:10	Lave Lac	N 37 17.4968	W 032 16.8271	1741	351.1	exploration zone benchmarkC pour installation noeud SEAMON
08/09/2009	10:09:01	Lave Lac	N 37 17.4942	W 032 16.8277	1740	4.9	explo zone benchmark C
08/09/2009	10:10:20	Lave Lac	N 37 17.5019	W 032 16.8263	1741	1.6	id
08/09/2009	10:11:21	Lave Lac	N 37 17.5072	W 032 16.8273	1740	4.9	id
08/09/2009	10:14:54	Lave Lac	N 37 17.5067	W 032 16.8266	1740	181.6	zoom sur trace dans zone observ
08/09/2009	10:32:53	Lave Lac	N 37 17.5147	W 032 16.8500	1741	180.7	zone obs petit trucs blancs
08/09/2009	10:35:52	Lave Lac	N 37 17.5147	W 032 16.8500	1741	180.7	explo zone benchmark C
08/09/2009	10:36:36	Lave Lac	N 37 17.5147	W 032 16.8500	1741	180.6	explo zone benchmark C
08/09/2009	10:45:26	Lave Lac	N 37	W 032 16.8540	1740	56.7	explo zone benchmark C

			17.5062				
08/09/2009	10:57:51	Lave Lac	N 37 17.5041	W 032 16.8465	1741	328.6	explo zone benchmark C
08/09/2009	10:58:29	Lave Lac	N 37 17.5051	W 032 16.8466	1740	334.7	explo zone benchmark C
08/09/2009	11:01:14	Lave Lac	N 37 17.5059	W 032 16.8454	1741	346.1	explo zone benchmark C
08/09/2009	11:01:37	Lave Lac	N 37 17.5059	W 032 16.8454	1741	346.1	zoom sol
08/09/2009	11:06:13	Lave Lac	N 37 17.5078	W 032 16.8413	1741	295.1	explo zone benchmark C
08/09/2009	11:08:10	Lave Lac	N 37 17.5102	W 032 16.8432	1741	242.4	explo zone benchmark C
08/09/2009	11:09:24	Lave Lac	N 37 17.5102	W 032 16.8432	1741	243.1	explo zone benchmark C
08/09/2009	11:12:19	Lave Lac	N 37 17.5130	W 032 16.8439	1741	196.8	explo zone benchmark C
08/09/2009	11:14:17	Lave Lac	N 37 17.5171	W 032 16.8447	1740	192.1	end explo zone benchmark C
08/09/2009	12:11:25	Lave Lac	N 37 17.5630	W 032 16.6618	1727	227.0	fish passing ilyophis?
08/09/2009	12:11:48	Lave Lac	N 37 17.5598	W 032 16.6660	1727	227.5	pachycara?
08/09/2009	12:16:22	Lave Lac	N 37 17.5189	W 032 16.7198	1737	227.2	looking for NASA
08/09/2009	12:18:41	Lave Lac	N 37 17.5041	W 032 16.7397	1738	227.3	ilyophis?
08/09/2009	12:33:15	Lave Lac	N 37 17.5073	W 032 16.6947	1733	277.5	U turn , still looking for the ascensor
08/09/2009	12:41:26	Lave Lac	N 37 17.4808	W 032 16.7755	1740	349.2	a bit lost... still looking for the ascensor...
08/09/2009	12:43:43	Lave Lac	N 37 17.4876	W 032 16.7802	1739	340.0	fish
08/09/2009	12:55:50	Lave Lac	N 37 17.4738	W 032 16.8184	1740	126.5	still looking for the ascensor
08/09/2009	13:32:14	Lave Lac	N 37 17.4569	W 032 16.8363	1741	260.9	still looking for the ascensor
08/09/2009	13:48:32	Lave Lac	N 37 17.4973	W 032 16.7939	1739	311.6	fish
08/09/2009	13:55:42	Lave Lac	N 37 17.5388	W 032 16.8313	1740	340.8	found the ascensor
08/09/2009	14:05:51	Lucky strike	N 37 17.5364	W 032 16.8872	1736	262.6	dvds changed at 13.59
08/09/2009	14:18:31	Lucky strike	N 37 17.5302	W 032 16.9872	1690	262.4	en route to site of OBS3
08/09/2009	14:39:00	Lucky strike	N 37	W 032 17.2303	1711	249.8	en route to site of OBS3

			17.5111				
08/09/2009	14:43:40	Lucky strike	N 37 17.5017	W 032 17.2786	1736	249.8	arrived at OBS position
08/09/2009	14:53:54	Lucky strike	N 37 17.4890	W 032 17.3474	1769	188.4	obs 3 found
08/09/2009	14:54:23	Lucky strike	N 37 17.4881	W 032 17.3472	1769	186.9	OBS3
08/09/2009	14:54:56	Lucky strike	N 37 17.4881	W 032 17.3472	1768	187.5	obs on the bottom
08/09/2009	14:56:58	Lucky strike	N 37 17.4767	W 032 17.3583	1768	214.3	B09OBSC3 location on the bottom\n
08/09/2009	15:01:07	Lucky strike	N 37 17.4750	W 032 17.3594	1768	214.7	OBS position next to the 2008 position of recovered OBS
08/09/2009	15:02:18	Lucky strike	N 37 17.4752	W 032 17.3594	1768	215.7	photo with new OBS and the weigth of recovered OBS
08/09/2009	15:03:02	Lucky strike	N 37 17.4752	W 032 17.3594	1768	215.8	weigth of recovered OBS B3 (BBMOMAR-2)
08/09/2009	15:06:04	Lucky strike	N 37 17.4752	W 032 17.3593	1768	215.9	OBS 3 cap216, 1768.0 m depth
08/09/2009	15:15:16	Lucky strike	N 37 17.4714	W 032 17.3591	1768	319.9	manill OBS
08/09/2009	15:16:07	Lucky strike	N 37 17.4714	W 032 17.3591	1767	319.6	view of lest of released 2008 OBS
08/09/2009	15:24:35	Lucky strike	N 37 17.4978	W 032 17.2835	1737	80.3	moving on the direction of Helene and elisabeth (eastnorth east cap 80
08/09/2009	15:24:49	Lucky strike	N 37 17.4979	W 032 17.2819	1735	79.8	scarpment
08/09/2009	15:27:04	Lucky strike	N 37 17.5018	W 032 17.2521	1720	75.7	pillow lavas
08/09/2009	15:30:48	Lucky strike	N 37 17.5049	W 032 17.2333	1711	76.2	moving on for a surveillance of the area around pp24 elisabeth
08/09/2009	15:32:27	Lucky strike	N 37 17.5087	W 032 17.2095	1706	76.3	pillow lavas
08/09/2009	15:34:24	Lucky strike	N 37 17.5112	W 032 17.1962	1694	76.4	scarpment
08/09/2009	15:34:41	Lucky strike	N 37 17.5119	W 032 17.1939	1689	76.4	top of scarpment
08/09/2009	15:35:25	Lucky strike	N 37 17.5137	W 032 17.1870	1683	76.4	another scarpment
08/09/2009	15:38:59	Lucky strike	N 37 17.5204	W 032 17.1437	1682	76.3	sediment on the sea bed
08/09/2009	15:45:13	Lucky strike	N 37 17.5206	W 032 17.1089	1686	75.9	on the way to Barrio Alto
08/09/2009	15:56:39	Lucky strike	N 37 17.5579	W 032 16.9969	1688	50.1	dead chimneys on the way to barrio alto
08/09/2009	15:58:25	Lucky strike	N 37	W 032 16.9823	1697	47.8	seafloor on the way to barrio alto

			17.5676				
08/09/2009	16:00:35	Lucky strike	N 37 17.5834	W 032 16.9675	1696	15.6	seafloor while going to barrio alto
08/09/2009	16:03:04	Lucky strike	N 37 17.5991	W 032 16.9645	1693	16.5	fallen chimney
08/09/2009	16:10:52	Bairro Alto	N 37 17.6321	W 032 16.9610	1671	10.4	arriving in barrio alto
08/09/2009	16:11:50	Bairro Alto	N 37 17.6303	W 032 16.9608	1672	10.4	particles in the water column
08/09/2009	16:12:14	Bairro Alto	N 37 17.6330	W 032 16.9602	1671	10.2	old chemineys around barrio alto
08/09/2009	16:12:54	Bairro Alto	N 37 17.6353	W 032 16.9600	1669	49.2	seafloor in barrio alto
08/09/2009	16:14:01	Bairro Alto	N 37 17.6359	W 032 16.9601	1668	49.3	barrio alto
08/09/2009	16:16:32	Bairro Alto	N 37 17.6359	W 032 16.9577	1666	51.1	mussels, still alive in barrio alto, but not a lot of fluids
08/09/2009	16:17:12	Bairro Alto	N 37 17.6356	W 032 16.9576	1667	50.6	tiny bit of fluids and a crab
08/09/2009	16:18:31	Bairro Alto	N 37 17.6362	W 032 16.9558	1666	29.6	barrio alto, vue d'ensemble
08/09/2009	16:19:40	Bairro Alto	N 37 17.6369	W 032 16.9517	1657	77.5	exploring barrio alto
08/09/2009	16:20:57	Bairro Alto	N 37 17.6417	W 032 16.9450	1653	30.1	going around to have a look
08/09/2009	16:22:28	Bairro Alto	N 37 17.6470	W 032 16.9391	1657	150.3	probably une cage a moule
08/09/2009	16:23:24	Bairro Alto	N 37 17.6468	W 032 16.9380	1655	177.2	cheminey
08/09/2009	16:24:04	Bairro Alto	N 37 17.6466	W 032 16.9375	1655	184.4	marqueur
08/09/2009	16:24:30	Bairro Alto	N 37 17.6469	W 032 16.9368	1654	181.9	chimney
08/09/2009	16:25:34	Bairro Alto	N 37 17.6451	W 032 16.9377	1653	189.5	mussels on cheminey
08/09/2009	16:26:07	Bairro Alto	N 37 17.6435	W 032 16.9387	1652	178.2	mussels on cheminey
08/09/2009	16:32:39	Bairro Alto	N 37 17.6400	W 032 16.9140	1672	64.5	seafloor when arriving towards jason
08/09/2009	16:34:01	Bairro Alto	N 37 17.6452	W 032 16.9079	1671	47.8	hydrothermal structure, but very calm - jason
08/09/2009	16:37:44	Bairro Alto	N 37 17.6384	W 032 16.8871	1688	11.1	jpp24 where there is not a lot
08/09/2009	16:39:11	Bairro Alto	N 37 17.6350	W 032 16.8823	1695	111.6	going towards elizabeth now, water is quite blurry
08/09/2009	16:41:21	Bairro Alto	N 37	W 032 16.8641	1708	10.6	theoretically, elizabeth, but can't see anything

			17.6364				
08/09/2009	16:42:32	Bairro Alto	N 37 17.6275	W 032 16.8620	1708	156.6	looking for elizabeth
08/09/2009	16:46:36	Bairro Alto	N 37 17.6376	W 032 16.8656	1709	295.1	north of elizabeth, going south to try and find it
08/09/2009	16:48:00	Bairro Alto	N 37 17.6342	W 032 16.8676	1707	192.5	if that's elizabeth, it's ridiculous!
08/09/2009	16:50:23	Bairro Alto	N 37 17.6254	W 032 16.8683	1707	232.7	south of elizabeth
08/09/2009	16:53:46	Bairro Alto	N 37 17.6304	W 032 16.8724	1707	269.3	going to the NW to see the point written as PPPP
08/09/2009	16:55:34	Bairro Alto	N 37 17.6381	W 032 16.8832	1699	314.9	impressive seafloor
08/09/2009	16:56:46	Bairro Alto	N 37 17.6429	W 032 16.8878	1686	333.1	seafloor going to pp24
08/09/2009	16:58:58	Bairro Alto	N 37 17.6502	W 032 16.8960	1674	319.2	broken dalles NW of pp24
08/09/2009	17:01:59	Bairro Alto	N 37 17.6527	W 032 16.9076	1672	355.1	nice white cheminey - probably quite new
08/09/2009	17:03:13	Bairro Alto	N 37 17.6557	W 032 16.9090	1671	327.6	nice cheminey and we can't break it because it is a protected area!
08/09/2009	17:05:59	Bairro Alto	N 37 17.6585	W 032 16.9157	1669	326.6	dead cheminey with the cat from alice in wonderland
08/09/2009	17:07:28	Bairro Alto	N 37 17.6652	W 032 16.9273	1668	288.4	lots of dead cheminey lying down
08/09/2009	17:12:06	Bairro Alto	N 37 17.6591	W 032 16.9011	1666	78.5	passing north of the point pppp, everything is dead
08/09/2009	17:16:09	Lucky strike	N 37 17.6419	W 032 16.8773	1698	186.6	going south
08/09/2009	17:30:32	Lucky strike	N 37 17.5137	W 032 16.9012	1738	184.5	In transit to GG, fish in the image!
08/09/2009	17:36:41	Lucky strike	N 37 17.4561	W 032 16.9043	1738	178.2	little pillow lava mounds on route to GG
08/09/2009	17:41:17	Lucky strike	N 37 17.4093	W 032 16.8926	1731	165.7	still in transit to GG, approaching white castle
08/09/2009	17:41:50	Lucky strike	N 37 17.4042	W 032 16.8915	1727	164.9	interesting fractures on way to GG
08/09/2009	17:43:39	Lucky strike	N 37 17.3869	W 032 16.8875	1718	163.1	chimney near white castle, dead
08/09/2009	17:59:35	Lucky strike	N 37 17.2622	W 032 16.8361	1652	180.7	pillow lavas at GG, oriented
08/09/2009	18:01:11	Lucky strike	N 37 17.2542	W 032 16.8368	1643	180.0	pillows near GG
08/09/2009	18:02:51	Lucky strike	N 37 17.2495	W 032 16.8376	1640	179.8	climbing up the volcano from GG, lots of pillows
08/09/2009	18:04:47	Lucky strike	N 37	W 032 16.8386	1628	178.1	apparently aligned pillow lavas

			17.2327				
08/09/2009	18:05:56	Lucky strike	N 37 17.2262	W 032 16.8389	1623	178.0	layers and layers of pillow lavas near GG as climb up the volcano
08/09/2009	18:10:18	Lucky strike	N 37 17.2056	W 032 16.8431	1604	178.4	aligned pillow lavas as mount up the volcano sud
08/09/2009	18:12:07	Lucky strike	N 37 17.2073	W 032 16.8445	1604	192.4	close up of pillows as way up volcano
08/09/2009	18:18:21	Lucky strike	N 37 17.1733	W 032 16.8433	1595	170.8	lavas near the top of volcano sud
08/09/2009	18:20:53	Lucky strike	N 37 17.1583	W 032 16.8348	1578	144.3	interesting lavas as approach summit of volcano sud
08/09/2009	18:22:18	Lucky strike	N 37 17.1454	W 032 16.8315	1566	164.8	what appears to be a ridge of lava rocks on approach to summit volcano sud
08/09/2009	18:25:32	Lucky strike	N 37 17.1260	W 032 16.8395	1572	185.1	like a tree of coral
08/09/2009	18:27:37	Lucky strike	N 37 17.1248	W 032 16.8384	1572	188.5	more coral at summit of volcano sud
08/09/2009	18:31:44	Lucky strike	N 37 17.1050	W 032 16.8527	1568	251.7	interesting lava in top right of photo, near axis
08/09/2009	18:32:41	Lucky strike	N 37 17.0983	W 032 16.8619	1564	243.3	looks like we are approaching the edge of fault along axis
08/09/2009	18:37:30	Lucky strike	N 37 17.0686	W 032 16.8897	1567	231.7	continuing to cross the axis and possibly at another fault
08/09/2009	18:38:07	Lucky strike	N 37 17.0640	W 032 16.8968	1563	246.8	possible fault from above as crossing axis
08/09/2009	18:40:24	Lucky strike	N 37 17.0528	W 032 16.9149	1560	280.6	in the axial graben
08/09/2009	18:42:41	Lucky strike	N 37 17.0368	W 032 16.9265	1555	281.0	vieux mouillage de balise
08/09/2009	18:48:25	Lucky strike	N 37 17.0194	W 032 16.9362	1563	324.2	on station for sampling. gorgone and nice internal tube structure
08/09/2009	18:51:56	Lucky strike	N 37 17.0194	W 032 16.9362	1563	324.3	we szz the plag phenocrysts
08/09/2009	19:00:26	Lucky strike	N 37 17.0224	W 032 16.9374	1561	324.4	B09ROC0001 rock sample
08/09/2009	19:13:19	Lucky strike	N 37 17.0115	W 032 16.8492	1557	95.6	seafloor on volcan sud
08/09/2009	19:17:11	Lucky strike	N 37 17.0083	W 032 16.8241	1567	95.3	Going to get samples in sintra
08/09/2009	20:02:57	Lucky strike	N 37 17.3603	W 032 16.6529	1696	34.6	passing sud Isabel, en route to Sinstra
08/09/2009	20:04:01	Bairro Alto	N 37 17.3691	W 032 16.6504	1698	34.7	picture of fish just getting ready to flee, near Sud Isabel, en route to Sinstra
08/09/2009	20:08:31	Sintra	N 37 17.4187	W 032 16.6167	1678	40.1	en route to Sintra, approaching PP4
08/09/2009	20:11:55	Sintra	N 37	W 032 16.5884	1666	42.2	En route to Sintra, near A4 qnd A3

			17.4516				
08/09/2009	20:13:29	Sintra	N 37 17.4645	W 032 16.5758	1660	41.5	en route to Sintra
08/09/2009	20:14:04	Sintra	N 37 17.4661	W 032 16.5736	1658	44.4	3 towers seen on way to Sintra
08/09/2009	20:23:24	Sintra	N 37 17.5389	W 032 16.4971	1624	14.7	fallen towers near nord Sintra?
08/09/2009	20:27:47	Sintra	N 37 17.5363	W 032 16.5193	1624	285.0	looking for fallen towers to take a piece near nord Sintra
08/09/2009	20:28:57	Sintra	N 37 17.5348	W 032 16.5302	1624	283.8	approaching marker and looking for old towers to sample
08/09/2009	20:30:35	Sintra	N 37 17.5352	W 032 16.5003	1623	191.1	marker 8 looking for fallen towers
08/09/2009	20:32:08	Sintra	N 37 17.5350	W 032 16.5004	1622	191.4	marker!!!!! wow!!!
08/09/2009	20:33:38	Sintra	N 37 17.5350	W 032 16.5004	1622	191.2	looking for a spot to take a piece of rock
08/09/2009	20:37:15	Sintra	N 37 17.5351	W 032 16.4990	1623	192.6	sample of most likely old chimney
08/09/2009	20:40:07	Sintra	N 37 17.5352	W 032 16.4989	1623	193.3	B09ROC002
08/09/2009	20:51:28	Statue of Liberty	N 37 17.5474	W 032 16.4878	1622	44.3	site for B09ROC003 sampling
08/09/2009	20:54:47	Statue of Liberty	N 37 17.5478	W 032 16.4868	1622	42.6	B09ROC003 at Statue of Liberty
08/09/2009	21:01:35	Statue of Liberty	N 37 17.5422	W 032 16.4883	1623	333.5	small inactive chimney nearby the active chimney
08/09/2009	21:02:40	Statue of Liberty	N 37 17.5424	W 032 16.4884	1623	334.4	potential sampling chimney
08/09/2009	21:04:29	Statue of Liberty	N 37 17.5406	W 032 16.4915	1624	331.7	but a better chimney to the WNW
08/09/2009	21:07:01	Statue of Liberty	N 37 17.5405	W 032 16.4931	1624	342.9	inactive chimney at statue of liberty
08/09/2009	21:09:17	Statue of Liberty	N 37 17.5408	W 032 16.4931	1625	18.1	attempt to grab but the chimney felt fown: look for small pieces or another part of the inactive chimney
08/09/2009	21:11:28	Statue of Liberty	N 37 17.5412	W 032 16.4928	1624	18.7	chimney much too much fragile to be grabed
08/09/2009	21:12:45	Statue of Liberty	N 37 17.5412	W 032 16.4928	1624	16.4	B09ROC004
08/09/2009	21:13:16	Statue of Liberty	N 37 17.5412	W 032 16.4928	1624	17.4	trying to get a good grip on the sample
08/09/2009	21:17:32	Statue of Liberty	N 37 17.5413	W 032 16.4925	1624	20.8	B09ROC004
08/09/2009	21:18:20	Statue of Liberty	N 37 17.5395	W 032 16.4933	1625	18.1	B09ROC004

08/09/2009	21:26:32	Statue of Liberty	N 37 17.5541	W 032 16.4860	1619	354.5	tatue of liberty
08/09/2009	21:37:51	Statue of Liberty	N 37 17.5608	W 032 16.4897	1620	224.2	Taking B09ROC005
08/09/2009	21:41:38	Statue of Liberty	N 37 17.5607	W 032 16.4898	1620	223.7	B09ROC005
08/09/2009	22:30:39	Tour Eiffel	N 37 17.3273	W 032 16.5441	1697	359.7	approaching fracture for B09VID008
08/09/2009	22:32:32	Tour Eiffel	N 37 17.3282	W 032 16.5440	1696	0.9	starting on left hand side of fracture
08/09/2009	22:32:48	Tour Eiffel	N 37 17.3281	W 032 16.5440	1696	358.9	another shot of fracture for B09VID008
08/09/2009	22:38:00	Tour Eiffel	N 37 17.3277	W 032 16.5443	1696	356.5	sensor temperature being introduced in fracture
08/09/2009	22:38:46	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	356.2	temperature measure, not good video - 25 degrees
08/09/2009	22:40:43	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	355.9	temperature measure A - 46 degrees
08/09/2009	22:41:53	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	355.8	temperature measurement attempt - not hot
08/09/2009	22:44:36	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	355.8	temperature measurement 8B - 22 degrees
08/09/2009	22:47:34	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	355.9	temperature measurement 8C - 22 degrees
08/09/2009	22:50:26	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	356.2	temperature measurement 8D - 26 degrees
08/09/2009	22:52:23	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	356.3	temperature measurement 8E - 36 degrees
08/09/2009	22:55:14	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	356.4	temperature measurement 8F - 44 degrees
08/09/2009	22:57:49	Tour Eiffel	N 37 17.3277	W 032 16.5444	1696	356.3	temperature measurement 8G- 17 degrees
08/09/2009	23:06:00	Tour Eiffel	N 37 17.3277	W 032 16.5438	1697	338.6	temperature measurement 8H - 18 degrees
08/09/2009	23:07:56	Tour Eiffel	N 37 17.3277	W 032 16.5438	1697	338.6	temperature measurement 8I - 16 degrees
08/09/2009	23:11:32	Tour Eiffel	N 37 17.3277	W 032 16.5438	1697	338.6	temperature measurement 8J - 35 degrees
08/09/2009	23:13:18	Tour Eiffel	N 37 17.3277	W 032 16.5438	1697	338.6	temperature measurement 8J 40 degrees
08/09/2009	23:16:21	Tour Eiffel	N 37 17.3277	W 032 16.5438	1697	338.6	temperature measurement 8K - 35 degrees
08/09/2009	23:17:46	Tour Eiffel	N 37 17.3280	W 032 16.5432	1697	338.6	temperature measurement 8L - 44 degrees
08/09/2009	23:32:21	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	22.5	fracture for second set of measurements

08/09/2009	23:33:11	Tour Eiffel	N 37 17.3260	W 032 16.5509	1700	20.5	Video event B09VID009
08/09/2009	23:36:31	Tour Eiffel	N 37 17.3257	W 032 16.5509	1700	41.0	temperature measurement 9A - 8 degrees
08/09/2009	23:37:16	Tour Eiffel	N 37 17.3257	W 032 16.5509	1700	41.2	temperature measurement 9B - 50 degrees
08/09/2009	23:38:53	Tour Eiffel	N 37 17.3257	W 032 16.5509	1700	41.2	temperature measurement 9B - 58 degrees
08/09/2009	23:42:30	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	41.2	temperature measurement 9C - 60 degrees
08/09/2009	23:47:51	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	36.3	temperature measurement 9D - 11 degrees
08/09/2009	23:49:49	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	36.1	temperature measurement 9E - 7 degrees
08/09/2009	23:51:10	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	35.8	temperature measurement 9F - 7 degrees
08/09/2009	23:52:24	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	35.5	temperature measurement 9G - 10 degrees
08/09/2009	23:54:16	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	35.3	temperature measurement 9G - 11 degrees
08/09/2009	23:56:29	Tour Eiffel	N 37 17.3259	W 032 16.5509	1700	33.9	crab at temperature measurement site
09/09/2009	00:10:45	Tour Eiffel	N 37 17.3280	W 032 16.5489	1699	331.1	taking temperature measurements in fracture for VID010
09/09/2009	00:14:48	Tour Eiffel	N 37 17.3284	W 032 16.5488	1700	325.4	B09VID010 - Temp measurement A - 57
09/09/2009	00:16:59	Tour Eiffel	N 37 17.3284	W 032 16.5489	1700	322.1	temperature measurement B - 93
09/09/2009	00:20:18	Tour Eiffel	N 37 17.3284	W 032 16.5489	1700	322.1	temperature measurement C - 63.34
09/09/2009	00:36:41	Tour Eiffel	N 37 17.3290	W 032 16.5372	1699	348.2	temperature measurement D - 47
09/09/2009	00:43:27	Tour Eiffel	N 37 17.3290	W 032 16.5374	1699	5.2	temperature measurement E - 13.5
09/09/2009	00:54:26	Tour Eiffel	N 37 17.3324	W 032 16.5377	1699	102.6	fish - Cataetix laticeps
09/09/2009	01:00:09	Tour Eiffel	N 37 17.3328	W 032 16.5361	1698	122.0	moved to another fracture closer to the vent for VID011
09/09/2009	01:04:40	Tour Eiffel	N 37 17.3330	W 032 16.5350	1698	80.5	B09VID011
09/09/2009	01:06:47	Tour Eiffel	N 37 17.3330	W 032 16.5350	1698	81.3	Temperature measurement A - 10
09/09/2009	01:11:02	Tour Eiffel	N 37 17.3330	W 032 16.5351	1698	81.3	temperature measurement B - 16.11
09/09/2009	01:13:25	Tour Eiffel	N 37 17.3330	W 032 16.5351	1698	81.4	temperature measurement C - 11-12

09/09/2009	01:19:24	Tour Eiffel	N 37 17.3330	W 032 16.5351	1698	81.4	temperature measurement D - 10
09/09/2009	01:20:58	Tour Eiffel	N 37 17.3330	W 032 16.5350	1698	80.8	temperature measurement E - 12
09/09/2009	01:25:59	Tour Eiffel	N 37 17.3325	W 032 16.5352	1698	86.4	image after temp measure F - 17 (no image for this measure)
09/09/2009	02:03:45	Tour Eiffel	N 37 17.5380	W 032 16.8168	1738	69.6	found nasa
09/09/2009	02:05:08	Tour Eiffel	N 37 17.5399	W 032 16.8131	1738	104.0	opening box one of nasa
09/09/2009	02:07:32	Tour Eiffel	N 37 17.5379	W 032 16.8110	1739	54.3	box one of nasa
09/09/2009	02:11:42	Tour Eiffel	N 37 17.5402	W 032 16.8097	1740	305.5	getting knife
09/09/2009	02:25:24	Tour Eiffel	N 37 17.5373	W 032 16.8134	1740	30.4	biobox n° 5 in the basket
09/09/2009	02:33:19	Tour Eiffel	N 37 17.5391	W 032 16.8131	1739	85.3	wood basket in the box
09/09/2009	02:49:22	Tour Eiffel	N 37 17.5370	W 032 16.8151	1739	85.0	getting the dropped box
09/09/2009	03:42:13	Tour Eiffel	N 37 17.4877	W 032 16.8978	1738	232.0	chiminey far too big!
09/09/2009	04:00:46	Helene	N 37 17.4832	W 032 16.9026	1736	135.4	still trying to get a cheminey
09/09/2009	04:19:10	Helene	N 37 17.4834	W 032 16.9028	1736	151.0	trying to get a dead cheminey
09/09/2009	04:23:58	Helene	N 37 17.4836	W 032 16.8988	1738	248.3	moving a bit - still haven't got the dead cheminey
09/09/2009	04:31:54	Helene	N 37 17.4836	W 032 16.9008	1739	334.4	it's breaking but it's a lot! Ca rentre pas ds le panier!
09/09/2009	04:33:33	Helene	N 37 17.4838	W 032 16.9007	1739	334.7	650 kg ou rien!
09/09/2009	04:38:14	Helene	N 37 17.4834	W 032 16.9011	1739	304.9	going to try those ones
09/09/2009	04:40:07	Helene	N 37 17.4834	W 032 16.9012	1739	304.6	we have a superbe piece but...
09/09/2009	04:40:28	Helene	N 37 17.4834	W 032 16.9008	1739	305.2	it broke down - it's very crumbly - so we couldn't take it
09/09/2009	04:46:44	Helene	N 37 17.4883	W 032 16.8999	1737	327.5	going to try the little bit
09/09/2009	04:51:05	Helene	N 37 17.4890	W 032 16.9020	1739	251.2	trying to get a dead cheminey - still
09/09/2009	04:53:56	Helene	N 37 17.4892	W 032 16.9022	1739	250.3	Got a bit in the box9! B09ROC06
09/09/2009	04:54:45	Helene	N 37 17.4894	W 032 16.9015	1739	250.9	site where the bit was taken

09/09/2009	04:55:57	Helene	N 37 17.4895	W 032 16.9006	1739	249.6	looking for some basalt to pick up
09/09/2009	05:02:11	Helene	N 37 17.4955	W 032 16.8995	1740	250.3	manoeuvre not to loose the box whih has broken down
09/09/2009	05:09:45	Helene	N 37 17.5028	W 032 16.8978	1739	250.3	placing box on the seafloor
09/09/2009	05:12:45	Helene	N 37 17.5115	W 032 16.8929	1740	250.9	taking rock samples B09ROC07 and B09ROC08
09/09/2009	05:17:21	Pico	N 37 17.4849	W 032 16.9001	1739	250.4	going towards pico and white castle
09/09/2009	05:24:22	Pico	N 37 17.4612	W 032 16.9160	1730	219.9	things on the seafloor
09/09/2009	05:25:53	Pico	N 37 17.4576	W 032 16.9193	1728	279.3	seafloor between pico and crystal
09/09/2009	05:36:33	Pico	N 37 17.4620	W 032 16.9099	1731	70.9	here is pico
09/09/2009	05:38:20	Pico	N 37 17.4622	W 032 16.9083	1731	78.1	pico, if we want to take samples, we need to take the other basket
09/09/2009	05:41:25	Pico	N 37 17.4626	W 032 16.9054	1732	82.3	putting down the broken basket
09/09/2009	05:48:11	Pico	N 37 17.4654	W 032 16.9016	1736	211.2	new basket - 12 13
09/09/2009	06:11:15	Pico	N 37 17.4609	W 032 16.9031	1731	9.1	i think we're going to try those ones
09/09/2009	06:15:30	Pico	N 37 17.4608	W 032 16.9031	1731	10.1	trying to get samples
09/09/2009	06:16:47	Pico	N 37 17.4608	W 032 16.9030	1731	11.5	a bit of sample put in campartiment 13
09/09/2009	06:21:03	Pico	N 37 17.4611	W 032 16.9031	1731	10.5	taking another sample B09ROC09
09/09/2009	06:21:56	Pico	N 37 17.4611	W 032 16.9030	1731	11.5	sample put in compartiment 13 of the basket
09/09/2009	06:25:17	Pico	N 37 17.4612	W 032 16.9030	1731	11.4	another little bit of dead cheminey
09/09/2009	06:26:08	Pico	N 37 17.4612	W 032 16.9030	1731	11.4	the beautiful piece!
09/09/2009	06:27:38	Pico	N 37 17.4612	W 032 16.9030	1731	11.5	another nice bit - B09ROC10
09/09/2009	06:45:46	Pico	N 37 17.4575	W 032 16.9067	1730	130.1	could not find any basalt - caillou en carton!
09/09/2009	06:55:34	Pico	N 37 17.4628	W 032 16.9014	1731	81.4	recovering the other box to put it in the panier
09/09/2009	06:59:59	Pico	N 37 17.4614	W 032 16.9059	1731	1.6	going to white castle
09/09/2009	07:13:34	Pico	N 37 17.3904	W 032 16.8802	1701	28.9	so, change of plan, now we're going north to JPP (M08-01)

09/09/2009	07:20:04	Pico	N 37 17.4584	W 032 16.8950	1729	356.7	passing by Pico on way to GPP
09/09/2009	07:39:54	Lave Lac	N 37 17.5596	W 032 16.8800	1725	122.7	arrivée sur JPP colonisateurs LSLL3 et 4
09/09/2009	07:42:06	Lave Lac	N 37 17.5561	W 032 16.8743	1728	105.4	approche pour recuperation colonisateur
09/09/2009	07:43:56	Lave Lac	N 37 17.5517	W 032 16.8824	1729	104.2	posé à coté des colonisteurs
09/09/2009	07:51:55	Lave Lac	N 37 17.5161	W 032 16.9583	1729	104.6	ouverture panier
09/09/2009	07:53:19	Lave Lac	N 37 17.5066	W 032 16.9664	1729	104.8	poisson
09/09/2009	07:53:45	Lave Lac	N 37 17.5065	W 032 16.9665	1729	104.8	poisson en zoom
09/09/2009	07:56:56	Lave Lac	N 37 17.4899	W 032 16.9938	1729	104.8	ouverture de la boite bio5
09/09/2009	07:58:27	Lave Lac	N 37 17.4733	W 032 17.0262	1729	104.8	Recup. colonistaeur LSLL3 B09BGM03R
09/09/2009	07:59:26	Lave Lac	N 37 17.4663	W 032 17.0371	1729	104.7	colonistaur dans boite bio
09/09/2009	07:59:50	Lave Lac	N 37 17.4615	W 032 17.0406	1729	104.8	boite bio5 fermée
09/09/2009	08:01:03	Lave Lac	N 37 17.4736	W 032 17.0213	1729	104.8	route vers ascenceur Nautile cap 100
09/09/2009	08:31:43	Lave Lac	N 37 17.5375	W 032 16.8236	1738	91.1	on dépose la boite pleine 8 et 9 du panier dans l'ascenceur
09/09/2009	08:35:48	Lave Lac	N 37 17.5374	W 032 16.8236	1738	90.1	décharge de l'ascenceur au panier des boites 12 et 13
09/09/2009	08:55:43	Lave Lac	N 37 17.5356	W 032 16.8217	1739	41.8	transfert de la boite microbio n°4 de l'ascenceur au panier.
09/09/2009	08:58:44	Lave Lac	N 37 17.5357	W 032 16.8228	1738	42.3	le panier est fermé, victore se met en route pour le point A 32 16 625, 37 17 812
09/09/2009	09:09:20	Lave Lac	N 37 17.5757	W 032 16.7951	1735	29.7	formation rocheuse sur le chemin du point A
09/09/2009	09:10:45	Lucky strike	N 37 17.5760	W 032 16.7963	1734	29.6	formation rocheuse sur la chemin du point A vers le nord
09/09/2009	09:13:52	Lucky strike	N 37 17.5885	W 032 16.7862	1731	27.9	sous victor : des pillows basalts
09/09/2009	09:28:15	Lucky strike	N 37 17.6823	W 032 16.7178	1709	37.4	brèches basaltiques ?
09/09/2009	09:34:20	Lucky strike	N 37 17.7267	W 032 16.6833	1714	31.4	beau faciès au sud du point A
09/09/2009	09:35:43	Lucky strike	N 37 17.7351	W 032 16.6775	1713	31.4	brèche basaltique et radiateurs
09/09/2009	09:39:30	Lucky strike	N 37 17.7669	W 032 16.6559	1708	30.7	brèches basaltiques, tubes et radiateurs au sud du point A

09/09/2009	09:41:35	Lucky strike	N 37 17.7872	W 032 16.6405	1708	29.4	arrivée au point A
09/09/2009	09:42:46	Lucky strike	N 37 17.7884	W 032 16.6402	1708	23.8	front of a lava flow
09/09/2009	09:44:37	Lucky strike	N 37 17.7893	W 032 16.6398	1708	36.5	site d'échantillonage
09/09/2009	09:46:12	Lucky strike	N 37 17.7899	W 032 16.6393	1708	44.4	échantillonage
09/09/2009	09:50:21	Lucky strike	N 37 17.7900	W 032 16.6393	1708	44.2	échantillon B09ROC11 ramassé au point A
09/09/2009	09:51:26	Lucky strike	N 37 17.7900	W 032 16.6393	1708	44.1	B09ROC11
09/09/2009	09:58:18	Lucky strike	N 37 17.8037	W 032 16.6259	1707	37.8	direction le point B plus au nord
09/09/2009	10:08:05	Lucky strike	N 37 17.8920	W 032 16.5779	1703	17.1	arrivée au point B, 2eme point d'échantillonage de la matinée
09/09/2009	10:10:08	Lucky strike	N 37 17.8945	W 032 16.5780	1702	15.9	échantillonage du site B
09/09/2009	10:13:31	Lucky strike	N 37 17.8945	W 032 16.5780	1702	17.4	B09ROC12 dans maestro
09/09/2009	10:15:40	Lucky strike	N 37 17.8945	W 032 16.5780	1702	17.1	B09ROC12
09/09/2009	10:19:26	Lucky strike	N 37 17.8968	W 032 16.5814	1702	4.8	autre site d'échantillonage au niveau du point B, quelques metres plus loin que le premier au nord-ouest
09/09/2009	10:20:23	Lucky strike	N 37 17.8972	W 032 16.5812	1702	330.9	échantillonage
09/09/2009	10:23:50	Lucky strike	N 37 17.8972	W 032 16.5812	1702	330.5	B09ROC13
09/09/2009	10:24:46	Lucky strike	N 37 17.8972	W 032 16.5812	1702	329.2	B09ROC13 ramassé au site B
09/09/2009	10:28:14	Lucky strike	N 37 17.9074	W 032 16.5763	1703	12.4	on se dirige vers le dernier point, le point C encore plus au nord
09/09/2009	10:37:06	Lucky strike	N 37 17.9548	W 032 16.5642	1707	4.8	en allant vers le point C
09/09/2009	10:43:13	Lucky strike	N 37 17.9757	W 032 16.5647	1708	358.9	arrivée au point C
09/09/2009	10:43:53	Lucky strike	N 37 17.9764	W 032 16.5654	1709	358.2	point C : 32 16.568, 37 17 981 , massif étrange
09/09/2009	10:44:58	Lucky strike	N 37 17.9768	W 032 16.5658	1709	358.2	gorgone
09/09/2009	10:48:06	Lucky strike	N 37 17.9862	W 032 16.5660	1710	24.5	site d'échantillonage
09/09/2009	10:50:20	Lucky strike	N 37 17.9854	W 032 16.5659	1711	43.1	échantillonage
09/09/2009	10:53:03	Lucky strike	N 37 17.9854	W 032 16.5660	1711	41.1	B09ROC14 : avec les taches blanches

09/09/2009	10:59:32	Lucky strike	N 37 17.9902	W 032 16.5646	1709	42.6	direction le point D (4) vers le nord nord-est
09/09/2009	11:01:42	Lucky strike	N 37 17.9997	W 032 16.5536	1713	42.6	zone moins sédimentée , on va vers le point D
09/09/2009	11:10:53	Lucky strike	N 37 18.0622	W 032 16.5010	1720	31.8	site d'échantillonage au point E (5)
09/09/2009	11:13:39	Lucky strike	N 37 18.0565	W 032 16.4987	1720	33.1	échantillonage de B09ROC15
09/09/2009	11:15:12	Lucky strike	N 37 18.0565	W 032 16.4988	1720	32.7	B09ROC15
09/09/2009	11:22:20	Lucky strike	N 37 18.0727	W 032 16.5325	1730	231.1	en route vers le point F (6)
09/09/2009	11:23:40	Lucky strike	N 37 18.0696	W 032 16.5396	1724	231.1	on passe sur une ancienne fissure, paralèlle à la vallée axiale et remplie de sédiments
09/09/2009	11:34:51	Lucky strike	N 37 18.0321	W 032 16.6144	1707	243.7	on arrive au point F (5)
09/09/2009	11:35:31	Lucky strike	N 37 18.0322	W 032 16.6152	1705	243.3	site d'échantillonage au point F
09/09/2009	11:37:03	Lucky strike	N 37 18.0325	W 032 16.6151	1705	246.0	échantillonage B09ROC16
09/09/2009	11:38:21	Lucky strike	N 37 18.0326	W 032 16.6147	1705	243.4	B09ROC16
09/09/2009	11:45:09	Lucky strike	N 37 18.0350	W 032 16.6059	1713	177.5	11:44 retour vers le sud
09/09/2009	12:05:28	Lucky strike	N 37 17.8897	W 032 16.5905	1704	172.1	route vers statue of liberty
09/09/2009	12:18:31	Lucky strike	N 37 17.8137	W 032 16.5538	1675	172.8	pillow
09/09/2009	12:24:36	Lucky strike	N 37 17.7767	W 032 16.5348	1654	168.0	toujours route vers statue of liberty
09/09/2009	12:25:17	Lucky strike	N 37 17.7735	W 032 16.5326	1651	167.8	lava tubes sur le fond
09/09/2009	12:26:16	Lucky strike	N 37 17.7674	W 032 16.5290	1647	168.7	poisson
09/09/2009	12:27:21	Lucky strike	N 37 17.7563	W 032 16.5242	1640	168.0	flanc de colline - eboulis?
09/09/2009	12:28:32	Lucky strike	N 37 17.7476	W 032 16.5199	1634	167.9	along slope
09/09/2009	12:29:50	Lucky strike	N 37 17.7430	W 032 16.5179	1625	170.1	poisson bizarre
09/09/2009	12:32:00	Lucky strike	N 37 17.7333	W 032 16.5208	1612	169.0	sommet?
09/09/2009	12:33:11	Lucky strike	N 37 17.7243	W 032 16.5203	1613	169.6	slabby formation.. pyroclastite?
09/09/2009	12:47:30	Statue of Liberty	N 37 17.5767	W 032 16.4835	1619	170.6	A 45m de statue of liberty

09/09/2009	12:50:43	Statue of Liberty	N 37 17.5492	W 032 16.4802	1623	175.6	statue of liberty?
09/09/2009	12:52:13	Statue of Liberty	N 37 17.5514	W 032 16.4771	1621	332.9	slabby formation on slope... pyroclastites ?
09/09/2009	12:57:23	Statue of Liberty	N 37 17.5505	W 032 16.4885	1624	118.3	hydrothermal edifice
09/09/2009	12:57:39	Statue of Liberty	N 37 17.5507	W 032 16.4883	1625	117.5	hydrothermal edifice
09/09/2009	12:58:09	Statue of Liberty	N 37 17.5513	W 032 16.4869	1625	118.5	en approche d'une vieille cheminée
09/09/2009	13:05:52	Lucky strike	N 37 17.5525	W 032 16.4589	1622	202.0	en approche d'une vieille cheminée
09/09/2009	13:07:27	Lucky strike	N 37 17.5489	W 032 16.4552	1617	254.2	route vers le point E - statue of liberty pas trouvée
09/09/2009	13:08:29	Lucky strike	N 37 17.5488	W 032 16.4553	1617	254.4	en approche d'une vieille cheminée
09/09/2009	13:20:42	Lucky strike	N 37 17.6014	W 032 16.3649	1614	65.5	à 58m du point E
09/09/2009	13:24:46	Lucky strike	N 37 17.6116	W 032 16.3439	1603	65.7	flanc de colline
09/09/2009	13:26:42	Lucky strike	N 37 17.6164	W 032 16.3349	1593	65.5	arrete sommitale
09/09/2009	13:27:02	Lucky strike	N 37 17.6169	W 032 16.3342	1590	53.0	point E d'inflexion du profil d'exploration
09/09/2009	13:27:33	Lucky strike	N 37 17.6177	W 032 16.3334	1589	39.1	point E
09/09/2009	13:28:15	Lucky strike	N 37 17.6198	W 032 16.3313	1588	37.3	sommet point E
09/09/2009	13:29:30	Lucky strike	N 37 17.6179	W 032 16.3270	1590	355.0	point E
09/09/2009	13:34:18	Lucky strike	N 37 17.6373	W 032 16.3231	1586	151.1	route vers isabel
09/09/2009	13:43:05	Lucky strike	N 37 17.5589	W 032 16.3612	1619	232.0	large pillows
09/09/2009	13:50:47	Lucky strike	N 37 17.5243	W 032 16.4053	1631	232.5	à 450m d'Isabel
09/09/2009	14:14:40	Lucky strike	N 37 17.4087	W 032 16.5498	1684	215.3	glissement de terrain
09/09/2009	14:19:23	Lucky strike	N 37 17.3789	W 032 16.5770	1691	279.8	on cherche les toilettes
09/09/2009	14:26:02	Lucky strike	N 37 17.3915	W 032 16.5812	1682	256.5	c'est sale au fond!
09/09/2009	14:30:29	Chimiste	N 37 17.3687	W 032 16.5882	1688	289.6	chimiste ? et une chimere
09/09/2009	14:32:11	Lucky strike	N 37 17.3799	W 032 16.6025	1686	311.1	route vers Isabel

09/09/2009	14:34:59	Lucky strike	N 37 17.3713	W 032 16.6161	1693	253.0	verif du poids de victor
09/09/2009	14:39:06	Lucky strike	N 37 17.3675	W 032 16.6172	1693	253.1	un truc bizarre
09/09/2009	14:41:09	Isabel	N 37 17.3688	W 032 16.6270	1696	254.1	arrivee sur isabel
09/09/2009	14:49:43	Isabel	N 37 17.3687	W 032 16.6321	1696	285.9	positionnement pour prendre une cheminee active
09/09/2009	14:51:13	Isabel	N 37 17.3687	W 032 16.6322	1696	290.8	B09TEM025 prise de T avant 220°C
09/09/2009	14:55:00	Isabel	N 37 17.3688	W 032 16.6323	1696	289.7	sortie boite bio
09/09/2009	14:57:08	Isabel	N 37 17.3695	W 032 16.6327	1696	289.5	boite bio dans sherpa
09/09/2009	15:00:09	Isabel	N 37 17.3695	W 032 16.6328	1696	289.6	ouverture de la boite bio
09/09/2009	15:03:17	Isabel	N 37 17.3697	W 032 16.6328	1696	300.9	presentation de la boite bio
09/09/2009	15:07:28	Isabel	N 37 17.3698	W 032 16.6329	1696	300.6	prelèvement cheminée B09MBI03
09/09/2009	15:09:09	Isabel	N 37 17.3698	W 032 16.6329	1696	300.3	cheminee dans la boite bio
09/09/2009	15:11:28	Isabel	N 37 17.3698	W 032 16.6327	1696	300.5	fermeture de la boite
09/09/2009	15:15:33	Isabel	N 37 17.3696	W 032 16.6326	1696	299.9	biobox dans le panier
09/09/2009	15:17:36	Isabel	N 37 17.3697	W 032 16.6327	1696	300.5	reprise sonde T pour mesure sur la cheminee cassee
09/09/2009	15:19:29	Isabel	N 37 17.3697	W 032 16.6331	1696	300.4	B09TEM026 mesure T = 176°C
09/09/2009	15:30:26	Isabel	N 37 17.3676	W 032 16.6315	1696	307.4	recherche de slab
09/09/2009	15:34:46	Isabel	N 37 17.3687	W 032 16.6299	1695	311.5	Prelevement slab B09ROC17
09/09/2009	15:35:23	Isabel	N 37 17.3686	W 032 16.6299	1695	311.0	le slab
09/09/2009	15:36:04	Isabel	N 37 17.3687	W 032 16.6299	1695	310.9	slab isabel
09/09/2009	15:37:52	Isabel	N 37 17.3688	W 032 16.6301	1696	312.7	slab isabel
09/09/2009	15:38:42	Isabel	N 37 17.3688	W 032 16.6302	1696	312.1	slab isabel dans panier 12
09/09/2009	15:41:57	Isabel	N 37 17.3688	W 032 16.6302	1696	310.4	route vers ascenseur Nautile
09/09/2009	16:20:12	Isabel	N 37 17.5296	W 032 16.8121	1741	321.9	Arrivée ascenceur Nautile

09/09/2009	16:24:48	Isabel	N 37 17.5368	W 032 16.8162	1740	306.1	Ascenseur accroché face bac 2
09/09/2009	16:26:57	Isabel	N 37 17.5361	W 032 16.8166	1739	310.4	Ouverture bac 2
09/09/2009	16:31:56	Isabel	N 37 17.5351	W 032 16.8153	1739	306.2	Fin plongée DIVE 389, remontée

6.7.5. Dive 392-7

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 392- 7

Date : 14/09/2009
Observateurs : **BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CASTILLO Alain, CHAVAGNAC Valérie, CREPEAU Valentin, LECOMTE Benoît, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, POT Olivier, ROMEVAUX-JESTIN Céline, SILVA Caria**

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

Récupération et remplacement des capteurs de pression
Prélèvement de fluides
Prélèvements biologiques
Récupération de colonisateur microbiologique et Pose de nouveaux colonisateurs
Remise en place du dernier capteur de température
Mise en place d'un panneau de calibration pour la caméra

Bilan des opérations :

Opérations de prélèvements
Biologie :
Grande Boite ROV : 1 prélèvement,
Aspirateur a larves : 3 prélèvements,
Eau :
Bouteille titane 750 ml : 4 prélèvements,
MultiPreleveur 200 ml : 4 prélèvements,
Mouillages
6 mouillages ont été posés.
7 mouillages ont été relevés.

255 images ont été numérisées,
2 nouvelles localités ont étés définies : JPPE et South Crystal.

Bilan de la plongée :

Les objectifs de la plongée ont été atteint.
Un capteur de température repéré à terre a également été repositionné.

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof (m)	Cap	Commentaires
15/09/2009	05:16:31	JPPE	N 37 16.9786	W 032 14.8593	1979	21.0	arrivée sur JPP East
15/09/2009	05:18:41	JPPE	N 37 16.9820	W 032 14.8545	1981	19.4	Vue sur le capteur pression JPP East
15/09/2009	05:19:10	Lucky strike	N 37 16.9810	W 032 14.8528	1981	23.7	Vue sur les colonisateurs
15/09/2009	05:19:43	Lucky strike	N 37 16.9791	W 032 14.8525	1981	34.4	route vers NASA cap 193
15/09/2009	05:22:52	Lucky strike	N 37 16.9526	W 032 14.8679	1974	225.7	arrivée sur ascenseur NASA
15/09/2009	05:30:57	Lucky strike	N 37 16.9440	W 032 14.8810	1970	223.3	accrochage NASA avec Sherpa
15/09/2009	05:31:58	Lucky strike	N 37 16.9436	W 032 14.8800	1970	227.4	ouverture Paniers 1 et 2 de NASA
15/09/2009	05:49:46	Lucky strike	N 37 16.9410	W 032 14.8820	1970	273.9	JPP2 sorti du panier
15/09/2009	05:50:11	Lucky strike	N 37 16.9414	W 032 14.8789	1970	271.7	route vers site JPP East cap 20
15/09/2009	05:54:13	Lucky strike	N 37 16.9820	W 032 14.8527	1980	14.4	arrivée JPP East
15/09/2009	05:58:07	Lucky strike	N 37 16.9842	E 019 50.6870	1981	339.4	vue du fond avec flore
15/09/2009	05:59:21	Lucky strike	N 37 16.9868	W 012 43.7435	1981	337.3	Victor posé à coté JPPEast
15/09/2009	06:01:07	Lucky strike	N 37 16.9855	W 032 14.8535	1981	337.7	JPP2 posé au sol
15/09/2009	06:03:09	Lucky strike	N 37 16.9870	E 018 54.2408	1981	333.4	Recup JPP5 B09JPP5R
15/09/2009	06:06:59	Lucky strike	N 37 16.9834	W 032 14.8531	1981	332.2	saisie JPP5 par Sherpa
15/09/2009	06:09:15	Lucky strike	N 37 16.9859	W 032 14.8520	1981	333.1	saisie JPP2 pour positionnement sur plaque
15/09/2009	06:12:17	Lucky strike	N 37 16.9851	W 032 14.8510	1981	332.3	PP2 reposé au sol pour couper les bouts sur la plaque
15/09/2009	06:15:43	Lucky strike	N 37 16.9829	W 032 14.8527	1981	332.1	sortie faucille
15/09/2009	06:24:31	Lucky strike	N 37 16.9841	W 032 14.8500	1981	331.5	1 bout coupé
15/09/2009	06:25:16	Lucky strike	N 37 16.9851	W 032 14.8503	1981	332.3	rangement faucille
15/09/2009	06:32:07	Lucky strike	N 37 16.9850	W 032 14.8504	1981	318.1	menage des bouts sur le socle\n
15/09/2009	06:39:39	Lucky strike	N 37 16.9841	W 032 14.8492	1981	333.0	saisie et positionnement JPP2

15/09/2009	06:45:01	Lucky strike	N 37 16.9860	W 032 14.8521	1981	330.3	pose JPP2 B09JPP2 D
15/09/2009	06:45:56	Lucky strike	N 37 16.9841	W 032 14.8529	1981	332.2	Vue de JPP2
15/09/2009	06:46:36	Lucky strike	N 37 16.9681	E 011 22.9136	1981	331.7	JPP2 deployé sur JPP East
15/09/2009	06:48:09	Lucky strike	N 37 16.9834	W 032 14.8515	1981	332.2	route vers NASA pour déposer SBE JPP5 et recupérer boite bio cap 200
15/09/2009	06:55:17	Lucky strike	N 37 16.9418	W 032 14.8840	1969	92.2	positionnement devant panier 2 NASA
15/09/2009	07:01:14	Lucky strike	N 37 16.9470	W 032 14.8780	1970	135.6	JPP5 dans panier 2 NASA
15/09/2009	07:02:08	Lucky strike	N 37 16.9488	E 026 41.2263	1970	135.7	fermeture panier 2 NASA
15/09/2009	07:03:27	Lucky strike	N 37 16.9492	W 032 14.8797	1971	135.8	remplissage pour bonne pesée
15/09/2009	07:07:41	Lucky strike	N 37 16.9460	W 032 14.8800	1969	69.0	Positionnement Victor devant panier 1
15/09/2009	07:16:32	Lucky strike	N 37 17.3689	W 032 14.3352	1970	302.3	sortie Boite 4 du panier 1
15/09/2009	07:18:06	Lucky strike	N 37 16.6824	W 032 15.1931	1969	251.5	route vers JPP East cap 15
15/09/2009	07:21:20	Lucky strike	N 37 16.9774	W 032 14.8581	1979	38.1	arrivée site JPP East
15/09/2009	07:24:07	Lucky strike	N 37 16.9865	E 000 00.0155	1982	281.4	Victor posé à cote des colonisateurs
15/09/2009	07:30:01	Lucky strike	N 37 16.9860	W 032 14.8473	1982	282.5	ouverture boite 4
15/09/2009	07:31:35	Lucky strike	N 37 16.9860	W 032 14.8473	1982	282.6	recupération colonisateurs LSEV1 B09BGM04R
15/09/2009	07:33:17	Lucky strike	N 37 16.9854	W 032 14.8470	1982	282.5	colonisateurs dans boite 4
15/09/2009	07:35:28	Lucky strike	N 37 16.9868	W 032 14.8468	1982	282.5	fermeture boite 4
15/09/2009	07:36:49	Lucky strike	N 37 16.9869	W 032 14.8457	1982	282.5	Colonisateurs LSEV1 dans boite 4
15/09/2009	07:38:50	Lucky strike	N 37 16.9802	W 032 14.8418	1983	218.9	route vers NASA cap 224
15/09/2009	07:41:20	Lucky strike	N 37 16.9535	W 015 21.3737	1974	223.0	arrivée sur NASA
15/09/2009	07:43:52	Lucky strike	N 37 16.9468	W 032 14.8782	1970	75.5	accrochage Sherpa devant panier 1 NASA
15/09/2009	07:48:28	Lucky strike	N 37 16.9511	W 032 14.8749	1973	192.3	boite 4 dans panier 1
15/09/2009	07:49:20	Lucky strike	N 37 16.9500	W 032 14.8745	1972	208.9	Fermeture panier 1 NASA

15/09/2009	07:55:35	Lucky strike	N 37 16.9470	W 032 14.8737	1970	237.1	ascenseur laché
15/09/2009	08:05:06	Lucky strike	N 37 16.9503	W 032 14.8760	1973	181.5	Tentative de larguage accoustique de l'ascenseur
15/09/2009	08:14:43	Lucky strike	N 37 16.9512	W 032 14.8787	1972	175.2	joute sous marine: Victor vs Nasa = Larguage de l'ascenseur avec le couteau de victor
15/09/2009	08:25:38	Lucky strike			1980	36.7	Debut transit vers White Castle : Vue sur JPP Est
15/09/2009	08:27:10	Lucky strike			1981	7.8	Vue sur JPP Est
15/09/2009	08:34:42	Lucky strike			1980	273.3	Holloturie près de JPP Est
15/09/2009	08:35:11	Lucky strike			1979	274.6	Holloturie près de JPP Est
15/09/2009	08:45:55	Lucky strike			1972	279.4	gros plan sur hooloturie du fond..... on voit son tube digestif c'est sympa
15/09/2009	08:54:15	Lucky strike			1963	286.2	Oursin en compagnie de.... eponge?
15/09/2009	08:56:06	Lucky strike			1963	285.3	Zodiac a l'eau NASA proche surface, Gros plan sur oursin
15/09/2009	11:06:12	Lucky strike	N 37 17.3100	W 032 16.5840	1699	287.6	sureal chimere
15/09/2009	11:26:18	White Castle	N 37 17.3796	W 032 16.8580	1713	306.3	Arrivée à white castle!!
15/09/2009	11:26:36	White Castle	N 37 17.3793	W 032 16.8580	1713	300.5	white castle
15/09/2009	11:27:11	White Castle	N 37 17.3806	W 032 16.8601	1712	313.8	white castle au cap 310
15/09/2009	11:33:18	White Castle	N 37 17.3800	W 032 16.8620	1712	310.6	prise sonde temperature
15/09/2009	11:34:31	White Castle	N 37 17.3801	W 032 16.8621	1712	311.2	pose capteur
15/09/2009	11:37:33	White Castle	N 37 17.3810	W 032 16.8630	1712	311.4	B09-TEM-027
15/09/2009	11:39:55	White Castle	N 37 17.3800	W 032 16.8629	1712	311.4	B09 TEM 027 cheminée haut
15/09/2009	11:41:24	White Castle	N 37 17.3802	W 032 16.8622	1712	311.1	B09 tem 027 cheminée haut coté west max 185°
15/09/2009	11:45:58	White Castle	N 37 17.5170	W 032 16.9957	1712	311.0	cheminée bas sud max 290°C
15/09/2009	11:48:03	White Castle	N 37 17.5017	W 032 16.9811	1712	311.4	vue cheminée 290°C
15/09/2009	11:49:24	White Castle	N 37 17.5170	W 032 16.9946	1712	310.7	on range la sonde, la cheminée du bas un peu au sud-est est selectionnee pour prel. fluides
15/09/2009	11:51:45	White Castle	N 37 17.4995	W 032 16.9584	1712	311.7	B09FLU027 bouteille 1 saisie
15/09/2009	11:52:59	White Castle	N 37 17.3720	W 032 16.8546	1712	311.3	B09FLU027 bouteille 1 prepa prelevement
15/09/2009	11:53:48	White Castle	N 37 16.9831	W 032 16.5426	1712	311.1	B09FLU027 prelevement prepa

15/09/2009	11:54:15	White Castle	N 37 17.2330	W 032 16.7410	1712	311.3	B09FLU027 prel
15/09/2009	11:54:28	White Castle	N 37 17.2325	W 032 16.7421	1712	311.1	B09FLU027
15/09/2009	11:55:14	White Castle	N 37 17.3795	W 032 16.8610	1712	311.1	fin prélevement
15/09/2009	11:55:50	White Castle	N 37 17.3800	W 032 16.8620	1712	311.1	rangement bouteille 1
15/09/2009	11:58:23	White Castle	N 37 17.3790	W 032 16.8629	1712	311.2	saisi bouteille 2
15/09/2009	12:05:12	White Castle	N 37 17.3790	W 032 16.8615	1712	311.3	PRELEVEMENT : B09FLU028
15/09/2009	12:07:07	White Castle	N 37 17.3793	W 032 16.8630	1712	310.8	retour de la bouteille dans le panier
15/09/2009	12:11:05	White Castle	N 37 17.3790	W 032 16.8620	1712	311.2	prise boite
15/09/2009	12:13:19	White Castle	N 37 17.3797	W 032 16.8620	1712	311.4	capture boite
15/09/2009	12:15:31	White Castle	N 37 17.3784	W 032 16.8620	1712	308.5	placement pour prise cheminee
15/09/2009	12:16:04	White Castle	N 37 17.3790	W 032 16.8616	1712	309.1	cheminee du dessus cassee
15/09/2009	12:17:45	White Castle	N 37 17.3800	W 032 16.8600	1713	309.3	in the smoke
15/09/2009	12:19:50	White Castle	N 37 17.3793	W 032 16.8603	1713	302.8	mise en place de la boite pour le prelevement de la cheminee
15/09/2009	12:21:22	White Castle	N 37 17.3800	W 032 16.8602	1713	302.8	ouverture boite
15/09/2009	12:24:23	White Castle	N 37 17.3803	W 032 16.8610	1713	305.6	preparation boite
15/09/2009	12:28:04	White Castle	N 37 17.3804	W 032 16.8610	1713	301.2	cheminée avant d'être cassée
15/09/2009	12:28:47	White Castle	N 37 17.4383	W 032 16.7454	1713	300.5	mise en place de la boite
15/09/2009	12:32:41	White Castle	N 37 17.3802	W 032 16.8600	1715	209.9	cheminee casee avant l'echantillonnage - recherche d'une autre cheminee
15/09/2009	12:37:46	White Castle	N 37 17.3800	W 032 16.8633	1713	142.1	recherche d'une cheminee
15/09/2009	12:42:08	White Castle	N 37 17.3800	W 032 16.8638	1712	104.0	preparation pour casser la cheminee
15/09/2009	12:43:20	White Castle	N 37 17.3800	W 032 16.8649	1712	103.8	cheminee cassee
15/09/2009	12:44:50	White Castle	N 37 17.3808	W 032 16.8648	1712	103.8	on ramasse les morceaux
15/09/2009	12:46:35	White Castle	N 37 17.3800	W 032 16.8640	1712	104.3	Prelevement cheminée B09MBI004R

15/09/2009	12:46:58	White Castle	N 37 17.3800	W 032 16.8642	1712	104.2	biobox fermee
15/09/2009	12:52:19	White Castle	N 37 17.3797	W 032 16.8647	1713	103.2	fermeture biobox assuree
15/09/2009	12:57:11	White Castle	N 37 17.3803	W 032 16.8640	1713	101.7	crab
15/09/2009	13:04:29	White Castle	N 37 17.3810	W 032 16.8639	1712	104.8	Mesure temperature B09TEM028 = 276°C
15/09/2009	13:06:07	White Castle	N 37 17.3796	W 032 16.8636	1712	104.8	rangement sonde T
15/09/2009	13:08:58	White Castle	N 37 17.3810	W 032 16.8640	1713	104.3	prise du multipreleveur 2
15/09/2009	13:11:12	White Castle	N 37 17.3800	W 032 16.8646	1713	104.8	B09FLU029... doute sur la position du declencheur
15/09/2009	13:14:37	White Castle	N 37 17.6604	W 032 16.3104	1713	104.9	prise de la bouteille 7
15/09/2009	13:16:04	White Castle	N 37 17.2850	W 032 17.0480	1713	104.9	prise bouteille 7
15/09/2009	13:17:58	White Castle	N 37 17.3800	W 032 16.8640	1713	104.7	B09FLU030 seringue
15/09/2009	13:19:41	White Castle	N 37 17.3800	W 032 16.8632	1713	104.8	retour seringue 7 dans le panier
15/09/2009	13:34:04	White Castle	N 37 17.3797	W 032 16.8590	1715	276.2	side of white castle
15/09/2009	13:35:49	White Castle	N 37 17.3790	W 032 16.8639	1712	319.8	arrivée au site pour poser la HTW004
15/09/2009	13:38:22	White Castle	N 37 17.3789	W 032 16.8611	1711	325.6	mise en place HTW004
15/09/2009	13:40:22	White Castle	N 37 17.3780	W 032 16.8610	1711	326.9	HTW004 almost in the vent
15/09/2009	13:41:52	White Castle	N 37 17.3780	W 032 16.8612	1712	326.0	POSE : HTW004 mis en place : white castle
15/09/2009	13:45:31	White Castle	N 37 17.3790	W 032 16.8609	1711	327.7	B09VID015
15/09/2009	13:48:11	Crystal	N 37 17.3930	W 032 16.8910	1713	314.5	on the way to Crystal for fluids sampling
15/09/2009	13:55:06	Crystal	N 37 17.4222	W 032 16.9308	1719	349.4	near Crystal
15/09/2009	13:56:38	Crystal	N 37 17.4300	W 032 16.9315	1721	24.7	near Crystal
15/09/2009	13:57:09	Crystal	N 37 17.4316	W 025 06.5070	1721	25.7	near Crystal
15/09/2009	13:58:54	Crystal	N 37 17.4280	W 032 16.9300	1721	24.4	Temperature measurement of smoker near Crystal
15/09/2009	14:03:05	Crystal	N 37 17.4310	W 032 16.9284	1722	347.1	Temperaturare measurement B09TEM029

15/09/2009	14:08:59	Crystal	N 37 17.4310	W 032 16.9287	1722	347.1	max temperature measured 334 C
15/09/2009	14:12:43	Crystal	N 37 17.4310	W 032 16.9279	1722	346.9	getting Ti bottle out of the basket, getting ready for sampling the smoker
15/09/2009	14:16:29	Crystal	N 37 17.7102	W 032 16.3697	1722	347.2	B09FLU031
15/09/2009	14:19:12	Crystal	N 37 17.5485	W 032 16.6965	1722	347.1	puting Ti botttle back in the basket
15/09/2009	14:28:19	Crystal	N 37 17.4296	W 032 16.9274	1722	346.9	B09FLU032
15/09/2009	14:30:51	Crystal	N 37 17.4320	W 032 16.9280	1722	347.0	bottle did not open to take fluid
15/09/2009	14:34:38	Crystal	N 37 17.4300	W 032 16.9286	1722	347.1	it did not work
15/09/2009	14:37:06	Crystal	N 37 17.4290	W 032 16.9295	1722	347.0	other attempt same bottle
15/09/2009	14:38:55	Crystal	N 37 17.4300	W 032 16.9261	1722	347.1	yes it worked this time, not sure if bottle opened a little bit before this
15/09/2009	14:46:23	Crystal	N 37 17.4280	W 032 16.9284	1720	58.7	dvd changed 392 C3#4
15/09/2009	14:50:18	Crystal	N 37 17.4316	W 032 16.9242	1722	59.8	on the way to the position of the nasa that will be deployed soon
15/09/2009	14:52:47	South Crystal	N 37 17.4255	W 032 16.9321	1720	59.4	view of the site "sud crystal" from above
15/09/2009	14:53:23	South Crystal	N 37 17.4248	W 032 16.9323	1719	61.0	view of the site "sud crystal" from above
15/09/2009	14:53:37	South Crystal	N 37 17.4243	W 032 16.9337	1719	59.4	view of the site "sud crystal" from above
15/09/2009	14:54:01	South Crystal	N 37 17.4264	W 032 16.9318	1720	60.3	sud crystal cap 60.3 immersion 1710m
15/09/2009	14:56:31	South Crystal	N 37 17.4400	W 025 06.5111	1724	351.2	changing direction to the way of crystal
15/09/2009	15:00:19	Crystal	N 37 17.4447	W 032 16.9201	1726	353.5	approach crystal from above
15/09/2009	15:01:53	Crystal	N 37 17.4448	W 032 16.9152	1727	354.4	crystal
15/09/2009	15:02:19	Crystal	N 37 17.4468	W 032 16.9168	1728	357.0	crystal
15/09/2009	15:02:28	Crystal	N 37 17.4493	W 032 16.9164	1729	359.1	Passage au dessus de Crystal
15/09/2009	15:56:02	Crystal	N 37 17.4915	W 032 16.8604	1737	325.8	Route vers nasa cap 325 Im 1725m
15/09/2009	15:59:09	Crystal	N 37 17.5089	W 032 16.8856	1738	5.2	ascenseur nasa
15/09/2009	16:00:51	Crystal	N 37 17.5106	W 032 16.8844	1737	20.5	ouverture des paniers

15/09/2009	16:04:38	Crystal	N 37 17.5140	W 032 16.8860	1737	142.4	approche de l'ascenseur
15/09/2009	16:06:32	Crystal	N 37 17.5140	W 032 16.8869	1737	146.2	la sonde sbe 5 est sortit
15/09/2009	16:07:25	Crystal	N 37 17.5149	W 032 16.8869	1737	146.1	RRoute vers JPP Ouest
15/09/2009	16:12:52	Crystal	N 37 17.5410	W 032 16.8870	1731	5.5	approche du chassis
15/09/2009	16:22:09	Crystal	N 37 17.5470	W 032 16.8850	1728	162.7	B09JPP4R Récupération de JPP 4
15/09/2009	16:22:47	Crystal	N 37 17.5470	W 032 16.8860	1728	163.0	sonde avec dépot d'alumine
15/09/2009	16:28:41	Crystal	N 37 17.5460	W 032 16.8860	1728	163.6	B09JPP5D Deploiement JPP5 sur son chassis
15/09/2009	16:30:32	Crystal	N 37 16.9250	W 032 16.4360	1728	162.8	Route vers NASA cap 160 cheminées
15/09/2009	16:33:04	Crystal	N 37 17.5027	E 007 10.3640	1736	195.7	approche de l'ascenseur
15/09/2009	16:34:55	Crystal	N 37 17.5110	W 032 16.8828	1737	260.8	sonde mise dans le panier
15/09/2009	16:38:56	Crystal	N 37 17.5093	W 032 16.8827	1738	295.3	prise d'une bouteille titane n°3
15/09/2009	16:40:41	Crystal	N 37 17.5089	W 032 16.8821	1738	297.3	dépose de la bouteille dans l'ascenseur
15/09/2009	16:42:50	Crystal	N 37 17.5122	W 032 16.8840	1738	331.7	extraction de la bouteille n°4 vers le panier nasa
15/09/2009	16:43:32	Crystal	N 37 17.5112	W 032 16.8838	1738	338.6	dépose de la bouteille n°4 dans le panier nasa
15/09/2009	16:46:05	Crystal	N 37 17.5088	E 007 47.4583	1738	346.7	extraction de la bouteille titane vers le panier nasa
15/09/2009	16:46:39	Crystal	N 37 17.5109	W 032 16.8839	1738	340.0	déponse de la bouteille dans le panier
15/09/2009	16:47:47	Crystal	N 37 17.5100	W 032 16.8840	1738	349.8	prise de la bouteille titane n°2
15/09/2009	16:48:24	Crystal	N 37 17.5107	W 032 16.8827	1738	339.3	dépose dans le panier nasa
15/09/2009	16:49:38	Crystal	N 37 17.5110	W 032 16.8822	1738	339.1	prise de la seringue n°2 pour dépose dans le panier nasa
15/09/2009	16:51:00	Crystal	N 37 17.5100	W 032 16.8830	1738	347.1	dépose de la seringue n°2 dans le panier nasa
15/09/2009	16:52:45	Crystal	N 37 17.5100	W 032 16.8830	1738	342.4	prise de la seringue n°7 pour dépose dans le panier nasa
15/09/2009	16:53:49	Crystal	N 37 17.5105	W 032 16.8840	1738	343.1	dépose de la dernière seringue dans le panier nasa
15/09/2009	16:56:01	Crystal	N 37 17.7306	W 032 16.2758	1738	351.7	prise de la boite n°5 avec échantillons vers le panier nasa

15/09/2009	17:00:17	Crystal	N 37 17.5100	W 032 16.8830	1738	336.3	Panier 2 Fermé avec Boite bio, Fluide et JPP
15/09/2009	17:06:22	Crystal	N 37 17.5109	W 032 16.8870	1737	78.0	Contenu du panier 1
15/09/2009	17:09:12	Crystal	N 37 17.5110	W 032 16.8870	1737	103.2	Prise boite BIO n°6
15/09/2009	17:11:55	Crystal	N 37 17.5099	W 032 16.8871	1737	103.0	Depose boite BIO n°6 dans panier ROV
15/09/2009	17:13:29	Crystal	N 37 17.5105	W 032 16.8865	1737	103.8	Prise Boite BIO n°2
15/09/2009	17:20:57	Crystal	N 37 17.5096	W 032 16.8870	1737	103.1	Depose boite BIO n°2 dans panier
15/09/2009	17:21:54	Crystal	N 37 17.5100	W 000 00.0430	1737	105.3	Fermeture panier 1
15/09/2009	17:25:27	Crystal	N 37 17.5020	W 032 16.8882	1737	35.6	prise de la serpette pour degager le panneau de calibration
15/09/2009	17:31:14	Crystal	N 37 17.5086	W 032 16.8860	1737	304.3	Prise du panneau de calibration
15/09/2009	17:33:15	Crystal	N 37 17.5076	W 032 16.8874	1737	327.8	Panneau de calibration attrapé
15/09/2009	17:43:05	Crystal	N 37 17.6692	W 032 17.0177	1728	28.3	Panneau pose au fond
15/09/2009	17:47:23	Crystal	N 37 17.5169	W 032 16.9160	1727	116.4	Tentative pour deplacer le panneau
15/09/2009	18:04:15	Crystal	N 37 17.5093	W 032 16.9017	1733	16.2	retrait incrustation pilote sur l'ecran
15/09/2009	18:11:05	Crystal	N 37 17.5115	W 032 16.8887	1732	59.0	en route vers NASA
15/09/2009	18:26:17	Crystal			1736	148.5	attente remontée ascenceur
15/09/2009	18:39:01	Crystal			1738	105.7	ascenceur largué, debut remontée
15/09/2009	18:41:00	Lave Lac			1735	110.2	en direction du marqueur C
15/09/2009	18:52:42	Lave Lac	N 37 17.5012	W 032 16.8341	1740	170.0	marqueur C en vue
15/09/2009	19:19:13	Lave Lac	N 37 17.5669	W 002 09.0294	1713	319.8	Attente récupération NASA en surface
15/09/2009	19:29:39	Lave Lac	N 37 17.7042	W 032 16.5350	1697	169.9	Route vers marker C cap 169
15/09/2009	19:56:19	Lave Lac	N 37 17.5000	W 032 16.8426	1738	107.8	arrivée sur marqueur C
15/09/2009	20:00:56	Lave Lac	N 37 17.4960	W 032 16.8410	1741	53.3	prise de la boite n°6
15/09/2009	20:09:50	Lave Lac	N 37 17.4960	W 032 16.8377	1741	35.3	Boite 6 ouverte
15/09/2009	20:10:58	Lave Lac	N 37 17.4970	W 032 16.8376	1741	35.4	saisie colonistaeur LSSeamon1

15/09/2009	20:12:49	Lave Lac	N 37 17.4953	W 032 16.8370	1741	35.4	Pose colonisateur LSSeamon1 B09BGM05 D
15/09/2009	20:13:36	Lave Lac	N 37 17.4950	W 032 16.8370	1741	35.5	on referme la boite
15/09/2009	20:16:41	Lave Lac	N 37 17.4960	W 032 16.8368	1741	35.6	Boite 6 dans panier ROV
15/09/2009	20:19:08	Lave Lac	N 37 17.4940	W 032 16.8360	1741	119.8	Route vers Tour Eiffel cap 122
15/09/2009	20:48:25	Isabel	N 37 17.3565	W 032 16.6197	1698	123.1	on passe avec sud isabel sur notre droite
15/09/2009	20:54:12	Isabel	N 37 17.3370	W 032 16.5469	1699	80.8	on décide de s'arreter prendre un bout de slab
15/09/2009	20:59:15	Isabel	N 37 17.3399	W 032 16.5421	1696	53.7	sampling of B09ROC018
15/09/2009	21:00:50	Isabel	N 37 17.3390	W 032 16.5430	1696	53.5	echantillon de slab avec moules
15/09/2009	21:02:46	Isabel	N 37 17.3369	W 032 16.5441	1698	54.0	echantillon dans panier ROV
15/09/2009	21:03:48	Tour Eiffel	N 37 17.3340	W 032 16.5428	1698	95.7	arrivée Tour Eiffel
15/09/2009	21:04:37	Tour Eiffel	N 37 17.3327	W 032 16.5373	1695	60.5	sonde HTW001 tombée de sa position de déploiement
15/09/2009	21:18:09	Tour Eiffel	N 37 17.3350	W 032 16.5265	1693	282.4	HT001 tombée
15/09/2009	21:18:52	Tour Eiffel	N 37 17.3360	W 032 16.5259	1694	281.7	HT001 récupérée
15/09/2009	21:50:34	Tour Eiffel	N 37 17.3359	W 032 16.5270	1691	236.6	début de la deuxieme installation de HT001
15/09/2009	22:33:04	Tour Eiffel	N 37 17.3362	W 032 16.5270	1692	226.9	B09HTW001D 2eme deploiement de la sonde
15/09/2009	22:33:47	Tour Eiffel	N 37 17.0810	W 032 16.0695	1692	226.7	POSE : HTW001
15/09/2009	22:35:24	Tour Eiffel	N 37 17.4478	W 032 16.1109	1695	232.3	HT001, general view
15/09/2009	22:59:32	Tour Eiffel	N 37 17.3310	W 032 16.5330	1696	18.4	boite 6 sortie du panier ROV
15/09/2009	23:07:31	Tour Eiffel	N 37 17.3303	W 032 16.5330	1696	18.9	Recuperation TRACS C5 B09TRACC5R
15/09/2009	23:08:20	Tour Eiffel	N 37 17.3306	W 032 16.5326	1696	19.2	tracs C5 dans boite 6
15/09/2009	23:46:10	Tour Eiffel	N 37 17.0775	W 032 16.7018	1697	17.0	boite 6 dans panier ROV
16/09/2009	00:05:27	Tour Eiffel	N 37 17.3286	E 021 56.9424	1696	37.9	taking the biobox in sherpa
16/09/2009	00:08:57	Tour Eiffel	N 37 17.3295	W 032 16.5330	1696	38.0	biotrack of eiffel tower in biobox 2

16/09/2009	00:09:34	Tour Eiffel	N 37 17.3310	W 032 16.5340	1696	37.8	this is the C4 biotrack
16/09/2009	00:11:51	Tour Eiffel	N 37 17.3300	W 032 16.5330	1696	37.9	Recuperation TRACS 4 B09TRACKC4R
16/09/2009	00:12:46	Tour Eiffel	N 37 17.3300	W 032 16.5330	1696	37.8	fermeture boite 2 avec le biotrack C4
16/09/2009	00:16:06	Tour Eiffel	N 37 17.3306	W 032 16.5330	1696	37.8	rangement de la biobox dans le panier
16/09/2009	00:19:54	Tour Eiffel	N 37 17.3320	W 032 16.5340	1696	38.2	looking for a place to slurp the shrimps
16/09/2009	00:24:27	Tour Eiffel	N 37 17.3357	W 032 16.5267	1695	294.3	taking temperature probe
16/09/2009	00:28:21	Tour Eiffel	N 37 17.3348	W 032 16.5266	1694	284.1	looking for a place where there are shrimps to slurp
16/09/2009	00:31:12	Tour Eiffel	N 37 17.3350	W 032 16.5253	1695	293.2	measuring the temperature of the shrimps
16/09/2009	00:32:42	Tour Eiffel	N 37 17.3350	W 032 16.5256	1695	293.5	B09TEM030 temperature des crevettes: 20°C
16/09/2009	00:35:40	Tour Eiffel	N 37 17.3350	W 032 16.5269	1694	286.6	rangement sonde temperature
16/09/2009	00:37:32	Tour Eiffel	N 37 17.3355	W 032 16.5270	1694	282.6	on prend l'aspirateur
16/09/2009	00:39:04	Tour Eiffel	N 37 17.3350	W 032 16.5274	1693	282.8	sortie de l'aspirateur dit le slurp gun
16/09/2009	00:41:06	Tour Eiffel	N 37 17.3343	W 032 16.5273	1694	282.0	slurping
16/09/2009	00:42:01	Tour Eiffel	N 37 17.3303	W 032 16.5270	1694	282.1	aspiration dans bol 1
16/09/2009	00:43:47	Tour Eiffel	N 37 17.2841	W 032 16.5434	1694	282.3	aspiration!!
16/09/2009	00:50:39	Tour Eiffel	N 37 17.5010	W 032 16.5930	1692	222.2	B09BIO002 shrimps aspiration
16/09/2009	00:52:54	Tour Eiffel	N 37 17.3377	W 032 16.5270	1692	223.0	preparation aspiration des crevettes dans les moules
16/09/2009	00:55:22	Tour Eiffel	N 37 17.3378	W 032 16.5270	1692	218.6	reprise aspirateur dans sherpa
16/09/2009	01:07:23	Tour Eiffel	N 37 17.3378	W 032 16.5260	1693	263.4	aspiration dans le bol 2
16/09/2009	01:09:01	Tour Eiffel	N 37 17.3375	W 032 16.5255	1693	265.4	fin aspiration B09BIO003
16/09/2009	01:11:07	Tour Eiffel	N 37 17.3370	W 032 16.5257	1693	264.7	prise sonde T
16/09/2009	01:12:51	Tour Eiffel	N 37 17.3367	W 032 16.5253	1693	264.8	B09TEM031 = 5.11°C
16/09/2009	01:16:29	Tour Eiffel	N 37 17.3410	W 032 16.5252	1694	256.9	marqueurs au pied de tour eiffel

16/09/2009	01:24:26	Tour Eiffel	N 37 17.3439	W 032 16.5280	1692	147.9	on voit un asticot
16/09/2009	01:27:50	Tour Eiffel	N 37 17.3420	W 032 16.5280	1692	178.2	on cherche un autre endroit pour les crevettes
16/09/2009	01:31:32	Tour Eiffel	N 37 17.3383	W 032 16.5295	1691	152.7	on reprend la temperature des crevettes
16/09/2009	01:33:50	Tour Eiffel	N 37 17.3383	W 032 16.5283	1691	152.7	B09TEM032 = 8.89°C
16/09/2009	01:38:38	Tour Eiffel	N 37 17.3390	W 032 16.5294	1691	152.1	aspiration
16/09/2009	01:41:03	Tour Eiffel	N 37 17.3396	W 032 16.5294	1691	152.7	B09BIO004 sampling shrims
16/09/2009	01:54:14	Tour Eiffel	N 37 17.3419	W 032 16.5718	1686	289.9	heading to crystal
16/09/2009	01:59:05	Tour Eiffel	N 37 17.3540	W 032 16.6174	1699	289.9	site pres d'isabel
16/09/2009	02:03:54	Tour Eiffel	N 37 17.3693	W 032 16.6610	1688	289.1	gros poisson
16/09/2009	02:19:17	Tour Eiffel	N 37 17.4133	W 032 16.8715	1734	309.1	tache blanche sur la route de crystal
16/09/2009	02:21:56	Crystal	N 37 17.4250	W 032 16.9035	1722	309.0	fish
16/09/2009	02:23:54	Crystal	N 37 17.4355	W 032 16.9225	1723	342.2	arriving at Crystal
16/09/2009	02:32:00	Crystal	N 37 17.4460	E 032 17.0800	1727	359.1	preparing for fluid sampling
16/09/2009	02:43:10	Crystal	N 37 17.4381	W 029 47.9198	1725	27.6	is this crystal?
16/09/2009	02:47:00	Crystal	N 37 17.5717	W 032 16.5067	1726	126.3	marker flores 17
16/09/2009	02:48:41	Crystal	N 37 17.5625	W 032 16.5256	1726	157.2	preparing for fluid sampling and temperature measurement
16/09/2009	02:58:17	Crystal	N 37 17.4440	W 032 16.9180	1727	157.3	B09TEM033 max temp Max temp 237°C
16/09/2009	03:00:12	Crystal	N 37 17.4440	W 032 16.9180	1727	157.2	B09TEM034 shrimps max temp 13.58°C
16/09/2009	03:03:55	Crystal	N 37 17.4422	W 032 16.9174	1726	157.4	B09FLU033 seringue 9
16/09/2009	03:05:43	Crystal	N 37 17.4428	W 032 16.9172	1726	157.2	taking second seringue for fluid sampling replicate
16/09/2009	03:14:14	Crystal	N 37 17.4433	W 032 16.9170	1726	157.0	B09FLU034
16/09/2009	03:17:07	Crystal	N 37 17.4430	W 032 16.9170	1727	157.2	B09BIO005 taking the aspirateur (sample lost due the bottle being broke during the ascent of the ROV)
16/09/2009	03:22:38	Crystal	N 37 17.4432	W 032 16.9178	1726	157.3	end of sampling for this dive, ready to come up

6.7.6. Dive 395-10

ALAMER : Résumé de plongée

Bathyluck09
Plongée : 395-10

Date : 21/09/2009
Observateurs : **BARREYRE Thibault, BOULART Cédric, CANNAT Mathilde, CARLUT Julie, CASTILLO Alain, CHAVAGNAC Valérie, CREPEAU Valentin, DESCHAMP Anne, ESCARTIN Javier, HOARAU Charlotte, LECOMTE Benoît, LEFEBVRE Alice, LESONGEUR Françoise, MALVOISIN Benjamin, MESTRE Nelia, MITTELSTAED Eric, PACHECO Jose, POT Olivier, ROMEVAUX-JESTIN Céline, SALOCCHI Aura, SILVA Caria, VELUDO Idalina**

Station : **Lucky strike** lat moy : N 37 17.5000 long moy : W 032 16.7000

Objectifs de la plongée :

Récupération de l'instrumentation déposée en début de campagne pour un mois (capteur de température)
Prélèvements biologiques
Prélèvements de fluide
Pose des derniers capteurs de température pour un an
Capture de vidéos sur les sites hydrothermaux étudiés

Bilan des opérations :

Opérations de prélèvements
Biologie :
Grande Boite ROV : 4 prélèvements,
Bouteille titane 750 ml : 1 prélèvement,
Eau :
Bouteille titane 750 ml : 9 prélèvements,
MultiPreleveur 200 ml : 12 prélèvements,
Mouillages
13 mouillages ont été posés.
13 mouillages ont été relevés.

600 images ont été numérisées,
2 nouvelles localités ont étés définies : Nuno et Cypres.

Bilan de la plongée :

Rapport de plongée :

Date	Heure	Localité	Latitude	Longitude	Prof (m)	Cap	Commentaires
21/09/2009	23:35:05	White Castle	N 37 17.3833	W 032 16.8637	1712	284.7	Arrivée à White Castle
21/09/2009	23:37:09	White Castle	N 37 17.3860	W 032 16.8667	1715	249.2	HTW004 et NKE 29002 en vue à White Castle
21/09/2009	23:40:33	White Castle	N 37 17.3852	W 032 16.8675	1713	157.0	début de la récupération
21/09/2009	23:40:48	White Castle	N 37 17.3851	W 032 16.8673	1713	157.7	29002 at white castle, récupération
21/09/2009	23:43:45	White Castle	N 37 17.3841	W 032 16.8671	1713	158.0	RECUP : 29002
21/09/2009	23:47:06	White Castle	N 37 17.3837	W 032 16.8669	1713	157.7	on mesure le T0 avec le capteur de Victor
21/09/2009	23:50:24	White Castle	N 37 17.3823	W 032 16.8668	1713	157.8	MESURE : B09TEM035 = 308°C
21/09/2009	23:56:32	White Castle	N 37 17.3825	W 032 16.8670	1713	157.7	capteur29020
21/09/2009	23:57:31	White Castle	N 37 17.3833	W 032 16.8672	1713	157.4	mise en place capteur
21/09/2009	23:58:21	White Castle	N 37 17.3844	W 032 16.8674	1713	158.2	POSE : B09HTN29020 mis en place
22/09/2009	00:04:52	White Castle	N 37 17.3838	W 032 16.8669	1713	160.9	Sonde 29020 et plaque gradient à white castle
22/09/2009	00:08:01	White Castle	N 37 17.3833	W 032 16.8661	1714	161.3	MESURE : B09TGR001
22/09/2009	00:11:05	White Castle	N 37 17.3836	W 032 16.8662	1714	161.7	lasers
22/09/2009	00:12:19	White Castle	N 37 17.3836	W 032 16.8658	1714	161.4	on repose la plaque gradient dans le panier
22/09/2009	00:22:18	White Castle	N 37 17.3835	W 032 16.8676	1714	160.3	B09VID016 début : 00:22
22/09/2009	00:25:04	White Castle	N 37 17.3855	W 032 16.8694	1714	161.1	B09VID016 fin 00:25
22/09/2009	00:29:44	South Crystal	N 37 17.4182	W 032 16.8905	1730	326.0	route vers sud crystal
22/09/2009	00:39:27	South Crystal	N 37 17.4387	W 032 16.9311	1723	276.1	arrivée sur sud crystal
22/09/2009	00:45:25	South Crystal	N 37 17.4368	W 032 16.9350	1722	138.8	sortie sonde température
22/09/2009	00:50:08	South Crystal	N 37 17.4356	W 032 16.9324	1723	257.5	repositionnement sur le site
22/09/2009	00:51:54	South Crystal	N 37 17.4356	W 032 16.9326	1722	339.5	sud crystal
22/09/2009	00:52:24	South Crystal	N 37 17.4358	W 032 16.9326	1722	338.8	mesure de température

22/09/2009	01:00:52	South Crystal	N 37 17.4352	W 032 16.9350	1722	338.4	MESURE : B09TEM036 = 328°C
22/09/2009	01:01:55	South Crystal	N 37 17.4352	W 032 16.9354	1722	338.4	récupération d'une bouteille
22/09/2009	01:05:04	South Crystal	N 37 17.4351	W 032 16.9337	1722	338.4	présentation bouteille n°3 sur sud crystal
22/09/2009	01:05:44	South Crystal	N 37 17.4350	W 032 16.9333	1722	338.5	positionnement pour B09FLU035
22/09/2009	01:05:55	South Crystal	N 37 17.4350	W 032 16.9333	1722	338.5	positionnnement de la canule dans la cheminee
22/09/2009	01:06:45	South Crystal	N 37 17.4349	W 032 16.9334	1722	338.6	PRELEVEMENT: B09FLU035 - bouteille n°3 Sud Crystal
22/09/2009	01:09:00	South Crystal	N 37 17.4345	W 032 16.9334	1722	338.6	retour de la bouteille 3 dans le panier
22/09/2009	01:10:15	South Crystal	N 37 17.4344	W 032 16.9333	1722	338.5	présentation pour prendre la seringue n°7
22/09/2009	01:12:25	South Crystal	N 37 17.4348	W 032 16.9329	1722	338.5	PRELEVEMENT:B09FLU036
22/09/2009	01:13:18	South Crystal	N 37 17.4350	W 032 16.9329	1722	338.6	retour seringue 7 dans le panier
22/09/2009	01:14:51	South Crystal	N 37 17.4360	W 032 16.9325	1722	338.6	présentation pour prendre la bouteille n°9
22/09/2009	01:17:55	South Crystal	N 37 17.4361	W 032 16.9317	1722	338.3	recup par sherpa
22/09/2009	01:19:30	South Crystal	N 37 17.4356	W 032 16.9321	1722	338.4	prise seringue 9
22/09/2009	01:21:25	South Crystal	N 37 17.4356	W 032 16.9323	1722	338.5	PRELEVEMENT: B09FLU037
22/09/2009	01:25:58	South Crystal	N 37 17.4340	W 032 16.9312	1722	338.6	retour seringue 9 dans panier
22/09/2009	01:26:39	South Crystal	N 37 17.4339	W 032 16.9312	1722	338.5	prise sonde T pour nouvelle mesure du fumeur cassé
22/09/2009	01:29:23	South Crystal	N 37 17.4346	W 032 16.9318	1722	338.6	MESURE : B09TEM037 = 334°C
22/09/2009	01:37:52	South Crystal	N 37 17.4338	W 032 16.9314	1722	338.5	MESURE : B09TGR002
22/09/2009	01:42:37	South Crystal	N 37 17.4343	W 032 16.9315	1722	338.6	mesure plaque gradient terminée, on la range dans le panier
22/09/2009	01:54:57	South Crystal	N 37 17.4347	W 032 16.9308	1722	338.7	mise en place de la sonde 29010
22/09/2009	01:57:02	South Crystal	N 37 17.4351	W 032 16.9320	1722	341.0	très dur de la mettre en place dans cette position , on bouge donc victor sur la gauche du vent
22/09/2009	02:00:12	South Crystal	N 37 17.4345	W 032 16.9325	1721	44.8	general view of the site of south crystal
22/09/2009	02:05:39	South Crystal	N 37 17.4335	W 032 16.9316	1722	53.8	mise en place capteur NKE 29010

22/09/2009	02:07:21	South Crystal	N 37 17.4331	W 032 16.9318	1722	53.9	POSE : 29010
22/09/2009	02:08:17	South Crystal	N 37 17.4333	W 032 16.9317	1722	53.8	B09HTN29010D
22/09/2009	02:10:06	South Crystal	N 37 17.4343	W 032 16.9324	1722	54.0	Mesure T0
22/09/2009	02:10:22	South Crystal	N 37 17.4345	W 032 16.9325	1722	54.0	MESURE : B09TEM038 = 322°C
22/09/2009	02:19:12	South Crystal	N 37 17.4338	W 032 16.9315	1722	123.7	début B09VID017 : 02:19:00
22/09/2009	02:21:04	South Crystal	N 37 17.4336	W 032 16.9315	1722	123.5	Fi n B09VID017 : 02:21:00
22/09/2009	02:21:48	South Crystal	N 37 17.4340	W 032 16.9304	1722	123.6	debut B09VID018 : 02:21:30
22/09/2009	02:23:31	South Crystal	N 37 17.4350	W 032 16.9271	1722	123.6	Fin B09VID018 : 02:23:30
22/09/2009	02:23:49	South Crystal	N 37 17.4353	W 032 16.9253	1722	123.6	general view of the site of S. Crystal with the 29010 Tprobe
22/09/2009	02:24:54	Crystal	N 37 17.4370	W 032 16.9190	1723	89.2	direction Pico -Crystal
22/09/2009	02:34:19	Crystal	N 37 17.4483	W 032 16.9160	1727	227.3	RECOVERY : sonde 29012 retrouvée à crystal
22/09/2009	02:35:07	Crystal	N 37 17.4482	W 032 16.9161	1727	227.1	RECOVERY: 29012
22/09/2009	02:37:34	Crystal	N 37 17.4479	W 032 16.9164	1727	227.4	RECUP : 29012
22/09/2009	02:40:49	Crystal	N 37 17.4480	W 032 16.9164	1727	227.5	B09TEM039 : vent de la sonde 29012
22/09/2009	02:41:17	Crystal	N 37 17.4481	W 032 16.9163	1727	227.3	
22/09/2009	02:47:49	Crystal	N 37 17.4452	W 032 16.9189	1727	134.6	MESURE : B09TEM039 = 323°C
22/09/2009	02:52:26	Crystal	N 37 17.4454	W 032 16.9165	1727	134.6	mise en place B09TGR003
22/09/2009	02:58:09	Crystal	N 37 17.4454	W 032 16.9180	1727	134.2	MESURE : B09TGR003 1ere prise
22/09/2009	03:01:08	Crystal	N 37 17.4477	W 032 16.9192	1727	134.6	MESURE : B09TGR003 2eme prise
22/09/2009	03:05:11	Crystal	N 37 17.4469	W 032 16.9182	1727	134.4	debut B09VID019 : 03:05:00
22/09/2009	03:07:00	Crystal	N 37 17.4458	W 032 16.9181	1727	134.9	Fin B09VID019 : 03:07:00
22/09/2009	03:12:01	Crystal	N 37 17.4474	W 032 16.9204	1728	173.9	sonde 29001 retrouvée au sol
22/09/2009	03:12:45	Crystal	N 37 17.4473	W 032 16.9205	1727	174.4	surprise: plus de sonde au bout de la prise!!!

22/09/2009	03:14:19	Crystal	N 37 17.4470	W 032 16.9199	1727	174.0	la sonde 29001 est toujours là, dans le vent !
22/09/2009	03:20:01	Crystal	N 37 17.4479	W 032 16.9201	1727	168.9	RECUP : 29001
22/09/2009	03:24:12	Crystal	N 37 17.4481	W 032 16.9214	1727	168.7	MESURE : B09TEM040 = 240°C
22/09/2009	03:27:55	Crystal	N 37 17.4456	W 032 16.9197	1727	168.4	MESURE : B09TGR004 1ere prise
22/09/2009	03:31:51	Crystal	N 37 17.4457	W 032 16.9219	1727	168.8	MESURE : B09TGR004 : 2eme prise
22/09/2009	03:35:32	Crystal	N 37 17.4475	W 032 16.9205	1727	168.4	debut B09VID020 : 03:35:00
22/09/2009	03:36:58	Crystal	N 37 17.4481	W 032 16.9189	1727	168.8	FIN B09VID020 : 03:37:00
22/09/2009	03:41:58	Crystal	N 37 17.4482	W 032 16.9163	1728	182.2	retour vers B09HTN29012 pour le prelevement des fluides
22/09/2009	03:43:15	South Crystal	N 37 17.4479	W 032 16.9170	1728	182.3	prise de la bouteille n°1
22/09/2009	03:45:04	South Crystal	N 37 17.4480	W 032 16.9174	1728	182.4	positionnement pour le prelevement
22/09/2009	03:45:33	South Crystal	N 37 17.4480	W 032 16.9175	1728	182.2	PRELEVEMENT : B09FLU038 mesure temperature par Eric et thibault à 323°C
22/09/2009	03:48:14	South Crystal	N 37 17.4463	W 032 16.9193	1728	182.6	prise de la seringue n°2
22/09/2009	03:49:37	South Crystal	N 37 17.4462	W 032 16.9193	1728	183.3	positionnement pour le prelevement
22/09/2009	03:50:05	South Crystal	N 37 17.4462	W 032 16.9193	1728	182.6	PRELEVEMENT : B09FLU039 seringue n°2
22/09/2009	03:52:32	South Crystal	N 37 17.4461	W 032 16.9195	1728	182.5	reprise de la temperature dans le fumeur apres prelevement de fluide
22/09/2009	03:53:02	South Crystal	N 37 17.4464	W 032 16.9198	1728	182.5	MESURE : prise de la temperature B09TEM041 reading 327°C
22/09/2009	04:06:02	South Crystal	N 37 17.4391	W 032 16.9324	1723	288.8	Fumeur Sud Crystal
22/09/2009	04:11:06	South Crystal	N 37 17.4350	W 032 16.9125	1722	159.0	En route vers Y3
22/09/2009	04:44:31	Y3	N 37 17.5129	W 032 16.6729	1731	163.0	Y3
22/09/2009	04:52:12	Y3	N 37 17.5099	W 032 16.6647	1730	275.1	en approche pour mesure T°
22/09/2009	05:03:21	Y3	N 37 17.5102	W 032 16.6715	1731	84.9	Y3 pousse !!!
22/09/2009	05:11:38	Y3	N 37 17.5078	W 032 16.6721	1731	84.3	MESURE : B09TEM042 T=216°C
22/09/2009	05:21:30	Y3	N 37 17.5070	W 032 16.6708	1732	84.3	MESURE : B09TEM043 T=211°c

22/09/2009	05:25:04	Y3	N 37 17.5071	W 032 16.6692	1731	84.3	Prise Bouteille Ti n°4
22/09/2009	05:28:39	Y3	N 37 17.5071	W 032 16.6726	1731	84.3	prise de la bouteille Ti n°4
22/09/2009	05:33:02	Y3	N 37 17.5074	W 032 16.6722	1732	84.3	Bouteille Ti n°4 attrappée
22/09/2009	05:34:28	Y3	N 37 17.5071	W 032 16.6708	1731	84.3	PRELEVEMENT : B09FLU040
22/09/2009	05:35:33	Y3	N 37 17.5073	W 032 16.6710	1731	84.3	PRELEVEMENT : B09FLU040
22/09/2009	05:36:15	Y3	N 37 17.5075	W 032 16.6706	1731	84.3	depose Bouteille 4
22/09/2009	05:38:56	Y3	N 37 17.5071	W 032 16.6713	1731	84.3	Prise seringue n°5
22/09/2009	05:46:54	Y3	N 37 17.5073	W 032 16.6691	1731	84.3	Manipulation avec Sherpa
22/09/2009	05:59:03	Y3	N 37 17.5075	W 032 16.6714	1731	84.3	Seringue n°5 assurée
22/09/2009	06:02:07	Y3	N 37 17.5076	W 032 16.6715	1731	84.3	PRELEVEMENT : B09FLU041
22/09/2009	06:03:08	Y3	N 37 17.5076	W 032 16.6720	1731	84.3	PRELEVEMENT : B09FLU041
22/09/2009	06:04:19	Y3	N 37 17.5075	W 032 16.6720	1731	84.3	Canule Seringue n°5
22/09/2009	06:05:25	Y3	N 37 17.5072	W 032 16.6708	1731	84.3	Canule seringue n°5
22/09/2009	06:11:48	Y3	N 37 17.5075	W 032 16.6715	1731	84.3	preparation B09TGR005
22/09/2009	06:18:40	Y3	N 37 17.5085	W 032 16.6704	1731	84.3	B09TGR005 1ere prise
22/09/2009	06:20:02	Y3	N 37 17.5092	W 032 16.6703	1731	84.3	B09TGR005 2eme prise
22/09/2009	06:25:37	Y3	N 37 17.5075	W 032 16.6689	1731	84.3	B09TGR006 1ere prise
22/09/2009	06:27:06	Y3	N 37 17.5075	W 032 16.6699	1731	84.3	B09TGR006 2eme prise
22/09/2009	06:32:56	Y3	N 37 17.5087	W 032 16.6705	1731	84.2	on range la plaque gradient dans le panier
22/09/2009	06:42:01	Y3	N 37 17.5087	W 032 16.6706	1731	84.3	prise du capteur de température
22/09/2009	06:43:47	Y3	N 37 17.5087	W 032 16.6706	1731	84.3	MESURE : B09TEM044 Tmax = 11.89°C
22/09/2009	06:46:30	Y3	N 37 17.5087	W 032 16.6711	1731	84.3	B09VID022
22/09/2009	06:51:29	Y3	N 37 17.5086	W 032 16.6713	1731	84.3	B09VID021

22/09/2009	06:55:47	Y3	N 37 17.5026	W 032 16.6745	1733	83.3	à la recherche de 29016 et 29005
22/09/2009	07:03:52	Y3	N 37 17.5119	W 032 16.6651	1729	215.6	arrivée sur le site des sondes 29005 et 29016 en bas de la tour de Y3
22/09/2009	07:05:51	Y3	N 37 17.5117	W 032 16.6651	1729	219.4	RECUPERATION : 29005
22/09/2009	07:08:50	Y3	N 37 17.5102	W 032 16.6661	1730	219.6	29005 récupérée
22/09/2009	07:13:13	Y3	N 37 17.5097	W 032 16.6667	1730	219.5	prise de 29015 pour remplacer la sonde 29005 dans la zone diffuse
22/09/2009	07:17:13	Y3	N 37 17.5109	W 032 16.6669	1730	219.6	mise en place de 29015
22/09/2009	07:24:53	Y3	N 37 17.5118	W 032 16.6653	1730	219.7	POSE : B09HTN29015
22/09/2009	07:25:29	Y3	N 37 17.5121	W 032 16.6652	1730	219.6	29015 posée
22/09/2009	07:29:32	Y3	N 37 17.5120	W 032 16.6647	1730	219.5	B09VID023
22/09/2009	07:44:00	Y3	N 37 17.5128	W 032 16.6644	1729	269.3	On retrouve la sonde de température NKE29016 parterre
22/09/2009	07:54:16	Lave Lac	N 37 17.4808	W 032 16.6820	1734	172.5	on the way to NASA1
22/09/2009	08:24:19	Lave Lac	N 37 17.5087	W 032 16.7060	1736	36.7	la va lake nice photo of pill ar
22/09/2009	08:41:33	Lave Lac	N 37 17.4308	W 032 16.9209	1720	313.0	NASA1 in view
22/09/2009	08:51:11	Lave Lac	N 37 17.4343	W 032 16.9207	1723	223.2	ouverture coffre ascenseur
22/09/2009	08:55:22	Lave Lac	N 37 17.4334	W 032 16.9228	1722	230.1	Beginning unload seringes and bottles in container 2 of first elevator
22/09/2009	08:56:42	Lave Lac	N 37 17.4339	W 032 16.9229	1722	233.6	unloading seringe 2
22/09/2009	08:58:30	Lave Lac	N 37 17.4347	W 032 16.9241	1722	233.9	unload
22/09/2009	09:00:17	Lave Lac	N 37 17.4349	W 032 16.9246	1722	230.9	unloading
22/09/2009	09:03:29	Lave Lac	N 37 17.4347	W 032 16.9250	1722	230.8	loading bottle 4
22/09/2009	09:06:35	Lave Lac	N 37 17.4350	W 032 16.9261	1722	230.9	loading bottle 3
22/09/2009	09:08:37	Lave Lac	N 37 17.4353	W 032 16.9251	1722	231.3	loading bottle 1
22/09/2009	09:12:20	Lave Lac	N 37 17.4358	W 032 16.9242	1722	239.9	loading seringe 7
22/09/2009	09:12:28	Lave Lac	N 37 17.4358	W 032 16.9242	1722	239.2	loading seringe 7

22/09/2009	09:32:24	Lave Lac	N 37 17.4362	W 032 16.9207	1723	232.7	Ascenseur closed.\nsamples inside ascenseur
22/09/2009	09:57:15	Lave Lac	N 37 17.5152	W 032 16.9010	1733	25.2	grabing the mire
22/09/2009	10:11:46	Lave Lac	N 37 17.5099	W 032 16.9021	1733	25.1	taking some time to secure the "mire" with victor arms
22/09/2009	10:16:17	Lave Lac	N 37 17.4983	W 032 16.9040	1733	194.4	going cap 197 during 100 meters to the elevator
22/09/2009	10:28:04	Lave Lac	N 37 17.4359	W 032 16.9159	1723	215.6	elevator in sight!
22/09/2009	10:33:11	Lave Lac	N 37 17.4328	W 032 16.9184	1721	298.8	Locked... this was way too easy...
22/09/2009	10:50:27	Lave Lac	N 37 17.4369	W 032 16.9025	1723	220.5	fencing with elev... the accoustic did not worked properly
22/09/2009	10:51:11	Lave Lac	N 37 17.4369	W 032 16.9023	1723	220.1	liberation.. 10h51 elvator is gone
22/09/2009	11:10:15	Lave Lac	N 37 17.4951	W 032 16.7820	1738	44.9	Going towards NE, waiting for elevator to come up at the surface
22/09/2009	11:14:00	Lave Lac	N 37 17.4903	W 032 16.7993	1740	260.3	Evidemment l'ascenseur a dévivé vers l'Ouest...
22/09/2009	11:14:55	Lave Lac	N 37 17.4899	W 032 16.8041	1741	259.6	beau drappé on repart un peu vers l'Ouest
22/09/2009	11:17:04	Lave Lac	N 37 17.4900	W 032 16.8191	1740	260.5	beuh?
22/09/2009	11:17:33	Lave Lac	N 37 17.4900	W 032 16.8244	1740	260.5	cataetyx? ??
22/09/2009	11:54:54	Y3	N 37 17.4158	W 032 17.0629	1679	60.1	going towards Y3
22/09/2009	12:27:03	Y3	N 37 17.5024	W 032 16.6786	1735	79.6	arrivée à Y3
22/09/2009	12:32:23	Y3	N 37 17.5100	W 032 16.6665	1729	308.5	arrivée sur la zone diffuse en bas de la tour de Y3
22/09/2009	12:38:20	Y3	N 37 17.5099	W 032 16.6682	1730	283.4	site potentiel pour poser 29004
22/09/2009	12:42:01	Y3	N 37 17.5108	W 032 16.6697	1730	282.9	mise en place 29004
22/09/2009	13:02:41	Y3	N 37 17.5074	W 032 16.6676	1730	282.9	POSE : 29004
22/09/2009	13:08:14	Y3	N 37 17.5083	W 032 16.6667	1730	282.8	déploiment de la plaque gradient
22/09/2009	13:15:22	Y3	N 37 17.5069	W 032 16.6666	1730	282.9	MESURE : B09TGR007 2eme prise
22/09/2009	13:28:24	Y3	N 37 17.5096	W 032 16.6663	1730	307.0	MESURE : B09TEM045 = 25°C
22/09/2009	13:38:34	Montsegur	N 37 17.4992	W 032 16.6632	1730	54.5	manips finies sur Y3, direction Mont Ségur

22/09/2009	14:20:05	Montsegur	N 37 17.2777	W 032 16.5316	1702	355.4	29014 retrouvée
22/09/2009	14:20:30	Montsegur	N 37 17.2775	W 032 16.5315	1702	355.4	RECUP : Temperature sensor NKE29014
22/09/2009	14:21:04	Montsegur	N 37 17.2775	W 032 16.5315	1702	355.5	Tprobe 29014 recovered !
22/09/2009	14:26:02	Montsegur	N 37 17.2788	W 032 16.5321	1702	354.7	MESURE : B09TEM046 = 201°C
22/09/2009	14:36:57	Montsegur	N 37 17.2796	W 032 16.5356	1702	350.3	B09VID025
22/09/2009	14:49:58	Montsegur	N 37 17.2796	W 032 16.5345	1702	350.5	Tprobe 29013 saisie par le bras
22/09/2009	14:50:57	Montsegur	N 37 17.2796	W 032 16.5345	1702	350.4	mise en place 29013
22/09/2009	14:51:43	Montsegur	N 37 17.2797	W 032 16.5346	1702	350.5	mise en place 29013
22/09/2009	14:52:41	Montsegur	N 37 17.2797	W 032 16.5347	1702	350.5	POSE : B09HTN29013
22/09/2009	14:57:59	Montsegur	N 37 17.2802	W 032 16.5347	1703	33.9	RECUP : T probe 29009
22/09/2009	14:59:00	Montsegur	N 37 17.2800	W 032 16.5348	1703	33.9	29009 dans le panier
22/09/2009	15:02:38	Montsegur	N 37 17.2803	W 032 16.5349	1703	34.0	MESURE : B09TEM047=177°C
22/09/2009	15:05:03	Montsegur	N 37 17.2801	W 032 16.5345	1703	33.9	tentative pour redresser les tiges des sondes
22/09/2009	15:07:11	Montsegur	N 37 17.2804	W 032 16.5345	1703	33.8	on redresse les tiges
22/09/2009	15:21:48	Montsegur	N 37 17.2827	W 032 16.5317	1703	42.6	Prise capteurs pour voir déformation des tiges
22/09/2009	15:22:34	Montsegur	N 37 17.2827	W 032 16.5317	1703	42.5	Prise 2 pour voir déformation des tiges des sondes
22/09/2009	15:30:46	Montsegur	N 37 17.2802	W 032 16.5337	1703	43.9	la nouvelle sonde perd son flotteur et son collier... we put it back in the basket
22/09/2009	15:32:29	Montsegur	N 37 17.2798	W 032 16.5342	1703	47.0	preparing to install NKE 29007
22/09/2009	15:34:41	Montsegur	N 37 17.2804	W 032 16.5347	1702	53.9	installing NKE 29007 at Montsegur vent
22/09/2009	15:37:23	Montsegur	N 37 17.2813	W 032 16.5344	1702	54.6	POSE : B09HTN29007D
22/09/2009	15:37:48	Montsegur	N 37 17.2812	W 032 16.5342	1702	54.6	B09VID026
22/09/2009	15:40:11	Montsegur	N 37 17.2815	W 032 16.5348	1702	54.6	end of video event, view of NKE29007 in place
22/09/2009	15:44:27	Montsegur	N 37 17.2856	W 032 16.5300	1704	141.4	exploration Montsegur avant de déposer le colonisateur LSMS1

22/09/2009	15:59:22	Montsegur	N 37 17.2807	W 032 16.5351	1702	66.3	zone de dépôt choisie
22/09/2009	16:02:01	Montsegur	N 37 17.2808	W 032 16.5352	1702	65.6	sortie sonde de de température
22/09/2009	16:03:08	Montsegur	N 37 17.2808	W 032 16.5352	1702	66.1	mesure de température B09TEM048 = 6, 20°C
22/09/2009	16:04:23	Montsegur	N 37 17.2806	W 032 16.5362	1702	66.3	range sonde de température
22/09/2009	16:05:33	Montsegur	N 37 17.2801	W 032 16.5363	1702	66.1	ouverture de la boite
22/09/2009	16:06:20	Montsegur	N 37 17.2796	W 032 16.5355	1702	66.1	sortie du colonisateur LSMS1 de la boite
22/09/2009	16:07:18	Montsegur	N 37 17.2795	W 032 16.5354	1702	66.1	Depot colonisateur LSMS1 B09BGM06D
22/09/2009	16:08:05	Montsegur	N 37 17.2795	W 032 16.5353	1702	66.3	photo du colonisateur LSMS1 en place
22/09/2009	16:09:21	Montsegur	N 37 17.2791	W 032 16.5347	1702	65.9	fermeture de la boite
22/09/2009	16:13:20	Tour Eiffel	N 37 17.2922	W 032 16.5307	1702	77.6	départ pour Tour eiffel
22/09/2009	16:17:59	Tour Eiffel	N 37 17.3309	W 032 16.5317	1697	5.6	arrivée sur TE zone Tracs
22/09/2009	16:19:38	Tour Eiffel	N 37 17.3313	W 032 16.5316	1696	22.2	photo Trac
22/09/2009	16:21:24	Tour Eiffel	N 37 17.3307	W 032 16.5310	1696	22.2	sortie de la boite du panier
22/09/2009	16:28:53	Tour Eiffel	N 37 17.3359	W 032 16.5328	1696	21.7	boite posée au fond
22/09/2009	16:30:25	Tour Eiffel	N 37 17.3355	W 032 16.5328	1696	21.9	Recuperation tracs C06 B09TRAC06R
22/09/2009	16:41:59	Tour Eiffel	N 37 17.3339	W 032 16.5321	1695	22.4	floteur dans la boite
22/09/2009	16:45:18	Tour Eiffel	N 37 17.3340	W 032 16.5312	1695	21.9	fermeture de la boite
22/09/2009	16:45:43	Tour Eiffel	N 37 17.3340	W 032 16.5313	1695	21.8	boite 1 fermee
22/09/2009	16:47:59	Tour Eiffel	N 37 17.3352	W 032 16.5331	1695	21.8	boite bio 1 dans le panier
22/09/2009	16:56:19	Tour Eiffel	N 37 17.3364	W 032 16.5275	1693	21.5	récupération des sondes 29006 and 29017
22/09/2009	17:00:52	Tour Eiffel	N 37 17.3375	W 032 16.5281	1693	57.7	vue générale des trois sondes : 29006 et 29017
22/09/2009	17:07:28	Tour Eiffel	N 37 17.3378	W 032 16.5273	1691	42.5	RECUP de la sonde bleue 29006
22/09/2009	17:08:05	Tour Eiffel	N 37 17.3377	W 032 16.5271	1691	42.3	depot de la sonde dans le panier

22/09/2009	17:10:45	Tour Eiffel	N 37 17.3381	W 032 16.5270	1691	42.6	recup 29017
22/09/2009	17:11:00	Tour Eiffel	N 37 17.3381	W 032 16.5270	1691	42.5	RECUP :29017
22/09/2009	17:11:34	Tour Eiffel	N 37 17.3382	W 032 16.5270	1691	42.6	Depot 29017 dans le panier
22/09/2009	17:19:00	Tour Eiffel	N 37 17.3363	W 032 16.5272	1691	42.9	MESURE : B09TEM049 T=30°C
22/09/2009	17:22:00	Tour Eiffel	N 37 17.3367	W 032 16.5294	1691	43.4	MESURE : B09TEM050 T=204°C
22/09/2009	17:33:25	Tour Eiffel	N 37 17.3335	W 032 16.5299	1695	35.1	capteur 29019 attrapé par maestro
22/09/2009	17:39:01	Tour Eiffel	N 37 17.3357	W 032 16.5322	1695	59.0	La caisse est tombéé, avec le capteur !!!
22/09/2009	17:41:36	Tour Eiffel	N 37 17.3360	W 032 16.5311	1695	55.4	sonde 29019 récupérée
22/09/2009	17:46:54	Tour Eiffel	N 37 17.3368	W 032 16.5287	1695	57.3	
22/09/2009	17:59:09	Tour Eiffel	N 37 17.3384	W 032 16.5269	1690	23.1	mise en place 29019
22/09/2009	18:01:15	Tour Eiffel	N 37 17.3378	W 032 16.5278	1690	23.2	On vient d'accrocher un crabe !
22/09/2009	18:04:58	Tour Eiffel	N 37 17.3370	W 032 16.5281	1690	23.0	mise en place sonde 29019 deuxième essai
22/09/2009	18:06:41	Tour Eiffel	N 37 17.3366	W 032 16.5281	1690	23.3	POSE : 29019
22/09/2009	18:13:03	Tour Eiffel	N 37 17.3390	W 032 16.5264	1690	23.1	MESURE : B09TEM051 T=300°C
22/09/2009	18:18:00	Tour Eiffel	N 37 17.3389	W 032 16.5263	1690	23.2	MESURE : B09TGR010
22/09/2009	18:28:16	Tour Eiffel	N 37 17.3333	W 032 16.5256	1691	45.0	B09TGR010 finished
22/09/2009	18:32:04	Tour Eiffel	N 37 17.2471	W 032 16.5061	1704	137.2	mesure du gradient de température dans le plume
22/09/2009	19:05:08	Tour Eiffel	N 37 17.2826	W 032 16.5614	1699	3.5	arrivée sur NASA2
22/09/2009	19:08:04	Tour Eiffel	N 37 17.2838	W 032 16.5613	1701	40.5	ascenseur pour transfert
22/09/2009	19:28:37	Tour Eiffel	N 37 17.2876	W 032 16.5644	1702	260.4	prise de la sonde titane 2
22/09/2009	19:40:17	Tour Eiffel	N 37 17.2869	W 032 16.5618	1702	261.1	prise d'une sonde de temp jaune
22/09/2009	20:17:36	Tour Eiffel	N 37 17.2895	W 032 16.5579	1702	260.7	fin du transfert à NASA 2
22/09/2009	21:07:23	Tour Eiffel	N 37 17.3367	W 032 16.5209	1690	30.3	approche tour eiffel et choix fumeur

22/09/2009	21:12:39	Tour Eiffel	N 37 17.3331	W 032 16.5242	1689	29.5	on fait le menage
22/09/2009	21:14:05	Tour Eiffel	N 37 17.3308	W 032 16.5222	1689	29.7	on a fait le ménage et on a une jolie sortie de fluide
22/09/2009	21:14:52	Tour Eiffel	N 37 17.3291	W 032 16.5206	1689	29.7	prise sonde température
22/09/2009	21:21:46	Tour Eiffel	N 37 17.3266	W 032 16.5101	1689	29.9	MESURE : B09TEM052 = 315°C
22/09/2009	21:25:38	Tour Eiffel	N 37 17.3315	W 032 16.5154	1689	29.8	prise seringue n°2
22/09/2009	21:26:30	Tour Eiffel	N 37 17.3312	W 032 16.5147	1689	29.8	sortie seringue n>°2
22/09/2009	21:29:42	Tour Eiffel	N 37 17.3268	W 032 16.5156	1689	29.9	PRELEVEMENT : B09FLU042
22/09/2009	21:30:05	Tour Eiffel	N 37 17.3268	W 032 16.5156	1689	29.8	PRELEVEMENT : B09FLU042
22/09/2009	21:30:33	Tour Eiffel	N 37 17.3267	W 032 16.5156	1689	29.9	retour de la seringue n°2 dans le panier
22/09/2009	21:32:11	Tour Eiffel	N 37 17.3266	W 032 16.5155	1689	29.8	prise bouteille Ti n°1
22/09/2009	21:34:03	Tour Eiffel	N 37 17.3308	W 032 16.5154	1689	29.8	prise bouteille 1
22/09/2009	21:39:07	Tour Eiffel	N 37 17.3359	W 032 16.5191	1689	29.8	PRELEVEMENT : B09FLU043
22/09/2009	21:39:36	Tour Eiffel	N 37 17.3323	W 032 16.5189	1689	29.8	PRELEVEMENT : B09FLU043
22/09/2009	21:41:25	Tour Eiffel	N 37 17.3287	W 032 16.5183	1689	29.9	retour bouteille n°1
22/09/2009	21:49:03	Tour Eiffel	N 37 17.3266	W 032 16.5115	1689	29.8	capteur 29002B : B09HTN29002B
22/09/2009	21:55:26	Tour Eiffel	N 37 17.3274	W 032 16.5087	1689	29.8	les deux sondes 2019 à gauche et 29002B à droite
22/09/2009	21:57:43	Tour Eiffel	N 37 17.3294	W 032 16.5187	1689	29.9	sonde 29002B tombée, on l'a récupère
22/09/2009	22:15:14	Tour Eiffel	N 37 17.3415	W 032 16.5238	1689	29.8	pb: on essaye de détordre le capteur 29002B
22/09/2009	22:18:26	Tour Eiffel	N 37 17.3446	W 032 16.5204	1689	29.8	mise en place 29002B
22/09/2009	22:22:35	Tour Eiffel	N 37 17.3395	W 032 16.5249	1689	29.8	POSE : B09HTN29002B
22/09/2009	22:23:23	Tour Eiffel	N 37 17.3488	W 032 16.5310	1689	29.9	view of the probes : 29002B (left) and 29019 (right)
22/09/2009	22:31:34	Tour Eiffel	N 37 17.3489	W 032 16.5342	1689	29.8	MESURE : B09TEM053 = 142°C
22/09/2009	22:34:45	Tour Eiffel	N 37 17.3467	W 032 16.5369	1693	20.4	General view of probes on TE

22/09/2009	22:35:06	Tour Eiffel	N 37 17.3466	W 032 16.5371	1693	20.2	general view of probes on TE
22/09/2009	23:08:22	Isabel	N 37 17.3728	W 032 16.6354	1693	4.3	arrivée sur Isabel
22/09/2009	23:14:37	Isabel	N 37 17.3796	W 032 16.6363	1689	212.5	arrivée au site , marqueur M08-9
22/09/2009	23:16:40	Isabel	N 37 17.3782	W 032 16.6392	1686	169.9	la sonde HTW012 est tombée par terre par contre on a retrouvé la sonde 29011
22/09/2009	23:18:25	Isabel	N 37 17.3770	W 032 16.6393	1686	168.7	29011
22/09/2009	23:18:54	Isabel	N 37 17.3771	W 032 16.6393	1686	168.9	RECUP : 29011
22/09/2009	23:21:08	Isabel	N 37 17.3774	W 032 16.6401	1686	168.7	Sonde 29011 déposée dans le panier
22/09/2009	23:24:41	Isabel	N 37 17.3772	W 032 16.6403	1686	168.5	Prise par maestro de 29005B
22/09/2009	23:28:56	Isabel	N 37 17.3770	W 032 16.6408	1686	168.3	POSE : 29005BD
22/09/2009	23:29:55	Isabel	N 37 17.3772	W 032 16.6410	1686	168.3	Tprobe29005BD mis en place : general view
22/09/2009	23:40:02	Isabel	N 37 17.3774	W 032 16.6390	1686	168.2	HTW012 a été récupérée
22/09/2009	23:49:55	Isabel	N 37 17.3774	W 032 16.6390	1686	168.2	mise en place le 22/09/09 de HTW012 qui était tombée
22/09/2009	23:50:31	Isabel	N 37 17.3774	W 032 16.6390	1686	168.1	HTW012
22/09/2009	23:52:11	Isabel	N 37 17.3774	W 032 16.6390	1686	168.2	échec
23/09/2009	00:17:58	Isabel	N 37 17.3765	W 032 16.6402	1686	168.5	récupération de HTW012 qui était retombée
23/09/2009	00:19:30	Isabel	N 37 17.3770	W 032 16.6409	1686	160.6	préparation mise en place HTW012
23/09/2009	00:33:49	Isabel	N 37 17.3773	W 032 16.6407	1685	91.0	nouvelle tentative de mise en place de HTW012
23/09/2009	00:36:35	Isabel	N 37 17.3773	W 032 16.6408	1685	91.2	on retord la tige de HTW012
23/09/2009	00:52:18	Isabel	N 37 17.3830	W 032 16.6313	1686	90.1	POSE : HTW012 posé
23/09/2009	00:55:32	Sintra	N 37 17.4226	W 032 16.5900	1686	33.1	En route pour SINTRA
23/09/2009	01:07:56	Sintra	N 37 17.5315	W 032 16.4983	1624	301.8	Arrivée SINTRA
23/09/2009	01:09:23	Sintra	N 37 17.5314	W 032 16.5025	1623	236.2	a la recherche de HT
23/09/2009	01:11:22	Sintra	N 37 17.5312	W 032 16.5021	1623	160.6	SINTRA HT ?

23/09/2009	01:15:34	Sintra	N 37 17.5312	W 032 16.5022	1622	176.8	B09TEM54 : 99°C
23/09/2009	01:18:24	Sintra	N 37 17.5309	W 032 16.5017	1622	173.7	B09TEM55: 175°C
23/09/2009	01:22:06	Sintra	N 37 17.5312	W 032 16.5035	1621	133.7	B09TEM56: 196°C
23/09/2009	01:23:54	Sintra	N 37 17.5313	W 032 16.5031	1621	133.6	Prise seringue n°7
23/09/2009	01:27:00	Sintra	N 37 17.5314	W 032 16.5024	1621	133.7	PRELEVEMENT : B09FLU044 seringue 7
23/09/2009	01:27:55	Sintra	N 37 17.5313	W 032 16.5023	1621	133.7	Depose seringue n°7
23/09/2009	01:32:39	Sintra	N 37 17.5314	W 032 16.5035	1621	133.8	Prise bouteille Ti n°4
23/09/2009	01:34:55	Sintra	N 37 17.5315	W 032 16.5014	1621	133.3	PRELEVEMENT :B09FLU45 bouteille 4
23/09/2009	01:36:20	Sintra	N 37 17.5318	W 032 16.5011	1622	133.5	Depose bouteille Ti n°4
23/09/2009	01:37:21	Sintra	N 37 17.5310	W 032 16.5020	1621	133.7	Essai de prise de seringue n°9
23/09/2009	01:39:11	Sintra	N 37 17.5303	W 032 16.5027	1621	133.7	Manipulation avec SHERPA
23/09/2009	01:40:35	Sintra	N 37 17.5300	W 032 16.5032	1622	133.8	Repositionnement dans la pince
23/09/2009	01:43:05	Sintra	N 37 17.5305	W 032 16.5037	1622	133.7	Seringue N°9 en place
23/09/2009	01:44:07	Sintra	N 37 17.5303	W 032 16.5034	1622	133.7	PRELEVEMENT : B09FLU046 seringue n°9
23/09/2009	01:45:01	Sintra	N 37 17.5302	W 032 16.5034	1622	133.7	Depose seringue n°9
23/09/2009	01:50:26	Sintra	N 37 17.5313	W 032 16.5031	1623	150.7	on a trouvé la sonde 29018
23/09/2009	01:54:47	Sintra	N 37 17.5304	W 032 16.5024	1622	220.8	RECUPERATION : sonde 29018
23/09/2009	01:59:55	Sintra	N 37 17.5286	W 032 16.5038	1622	165.9	saisie de 29012B
23/09/2009	02:03:26	Sintra	N 37 17.5283	W 032 16.5039	1622	161.2	POSE : 29012B
23/09/2009	02:03:46	Sintra	N 37 17.5284	W 032 16.5039	1622	161.2	29012B posée , general view
23/09/2009	02:08:18	Sintra	N 37 17.5308	W 032 16.5039	1622	161.2	getting biobox 5
23/09/2009	02:12:54	Sintra	N 37 17.5304	W 032 16.5045	1622	161.3	collecting mussels
23/09/2009	02:13:17	Sintra	N 37 17.5304	W 032 16.5045	1622	161.2	colletting mussels

23/09/2009	02:15:20	Sintra	N 37 17.5298	W 032 16.5032	1622	174.3	PRELEVEMENT B09BIO06 : collecting mussels
23/09/2009	02:23:14	Sintra	N 37 17.5287	W 032 16.5039	1622	172.3	mussle and rock collected
23/09/2009	02:23:51	Sintra	N 37 17.5296	W 032 16.5033	1622	172.0	closing biobox 5
23/09/2009	02:29:48	Sintra	N 37 17.5300	W 032 16.5019	1622	178.0	MESURE : B09TEM057 Tmax = 9°C
23/09/2009	02:37:30	Montsegur	N 37 17.4723	W 032 16.5132	1643	191.5	route montsegur
23/09/2009	02:56:18	Montsegur	N 37 17.2876	W 032 16.5291	1704	231.3	arrivée sur Montségur
23/09/2009	03:01:17	Montsegur	N 37 17.2815	W 032 16.5403	1702	69.0	on a trouvé une cheminée sans capteur de T!
23/09/2009	03:01:53	Montsegur	N 37 17.2800	W 032 16.5427	1702	67.7	prise sonde T
23/09/2009	03:11:30	Montsegur	N 37 17.2849	W 032 16.5358	1702	65.5	MESURE : B09TEM058 = 237°C
23/09/2009	03:11:46	Montsegur	N 37 17.2851	W 032 16.5359	1702	65.5	crevettes proche dùun fumeur
23/09/2009	03:12:13	Montsegur	N 37 17.2854	W 032 16.5359	1702	65.4	fumeur montségur pour prise fluide
23/09/2009	03:14:23	Montsegur	N 37 17.2852	W 032 16.5351	1702	65.3	prise seringue n°5
23/09/2009	03:16:06	Montsegur	N 37 17.2837	W 032 16.5345	1702	65.4	reprise seringue 5 dans sherpa
23/09/2009	03:18:00	Montsegur	N 37 17.2833	W 032 16.5351	1702	65.4	PRELEVEMENT : B09FLU047
23/09/2009	03:19:40	Montsegur	N 37 17.2822	W 032 16.5361	1702	65.5	fumeur
23/09/2009	03:24:38	Montsegur	N 37 17.2830	W 032 16.5367	1702	65.3	on fait le menage dans le panier
23/09/2009	03:28:13	Montsegur	N 37 17.2831	W 032 16.5380	1702	65.3	prise bouteille n°2
23/09/2009	03:30:08	Montsegur	N 37 17.2822	W 032 16.5364	1702	65.3	PRELEVEMENT : B09FLU048
23/09/2009	03:30:23	Montsegur	N 37 17.2822	W 032 16.5363	1702	65.3	PRELEVEMENT : B09FLU048
23/09/2009	03:30:48	Montsegur	N 37 17.2818	W 032 16.5362	1702	65.4	PRELEVEMENT : B09FLU048
23/09/2009	03:36:07	Lucky strike	N 37 17.2787	W 032 16.5397	1702	93.1	going to NASA2 east of tour eiffel\n
23/09/2009	03:40:58	Lucky strike	N 37 17.2920	W 032 16.5602	1703	171.7	arrived to NASA2
23/09/2009	03:45:07	Lucky strike	N 37 17.2897	W 032 16.5647	1702	53.5	Victor accroché à NASA2

23/09/2009	03:46:01	Lucky strike	N 37 17.2893	W 032 16.5639	1702	52.8	Boite BIO5 Sortie du panier ROV
23/09/2009	03:48:53	Lucky strike	N 37 17.2871	W 032 16.5619	1702	42.9	boite BIO5 dans panier NASA2
23/09/2009	03:59:07	Lucky strike	N 37 17.2883	W 032 16.5607	1702	42.6	Sortie Boi Bio4 panier NASA2
23/09/2009	04:01:12	Lucky strike	N 37 17.2876	W 032 16.5615	1702	41.9	Boite BIO4 dans oanier ROV
23/09/2009	04:04:12	Lucky strike	N 37 17.2869	W 032 16.5615	1702	41.9	Sortie boite Nautile panier NASA2
23/09/2009	04:05:57	Lucky strike	N 37 17.2867	W 032 16.5618	1702	41.9	boite Nautile dans panier ROV
23/09/2009	04:14:16	Lucky strike	N 37 17.2909	W 032 16.5645	1703	200.7	Victor accroché face au panier 1 NASA2
23/09/2009	04:15:36	Lucky strike	N 37 17.2909	W 032 16.5636	1703	200.9	Bouteille Ti2 sortie panier ROV
23/09/2009	04:16:34	Lucky strike	N 37 17.2910	W 032 16.5631	1703	200.5	Bouteille Ti2 dans panier 1 NASA2
23/09/2009	04:17:19	Lucky strike	N 37 17.2911	W 032 16.5626	1703	200.8	Bouteille Ti4 sortie panier ROV
23/09/2009	04:18:03	Lucky strike	N 37 17.2917	W 032 16.5621	1703	200.9	Bouteille Ti4 dans panier1 NASA2
23/09/2009	04:20:48	Lucky strike	N 37 17.2906	W 032 16.5596	1703	200.8	BouteilleTi1 sortie panier ROV
23/09/2009	04:21:43	Lucky strike	N 37 17.2907	W 032 16.5592	1703	200.8	Bouteille Ti1 dans panier 1 NASA2
23/09/2009	04:22:33	Lucky strike	N 37 17.2908	W 032 16.5597	1703	200.8	Seringue Ti5 sortie panier ROV
23/09/2009	04:26:08	Lucky strike	N 37 17.2907	W 032 16.5610	1703	207.1	Seringue Ti5 dans panier1 NASA2
23/09/2009	04:27:06	Lucky strike	N 37 17.2903	W 032 16.5600	1703	207.7	Seringue Ti sortie panier ROV
23/09/2009	04:34:46	Lucky strike	N 37 17.2890	W 032 16.5551	1702	248.2	Seringue Ti dans panier1 NASA2
23/09/2009	04:37:23	Lucky strike	N 37 17.2900	W 032 16.5566	1702	248.2	Seringue Ti sortie panier ROV
23/09/2009	04:38:45	Lucky strike	N 37 17.2901	W 032 16.5568	1702	248.0	Seringue Ti dans panier1 NASA2
23/09/2009	04:39:41	Lucky strike	N 37 17.2902	W 032 16.5569	1702	247.7	Serigue Ti sortie panier ROV
23/09/2009	04:41:06	Lucky strike	N 37 17.2894	W 032 16.5569	1702	249.3	Serigue Ti dans panier 1 NASA2
23/09/2009	04:44:59	Lucky strike	N 37 17.2909	W 032 16.5525	1702	243.7	route vers Tour Eiffel cap20
23/09/2009	04:52:06	Tour Eiffel	N 37 17.3350	W 032 16.5320	1695	19.5	Chimère sur chemin Tour Eiffel

23/09/2009	04:53:35	Tour Eiffel	N 37 17.3363	W 032 16.5323	1695	18.1	Chimère photo
23/09/2009	04:56:41	Tour Eiffel	N 37 17.3376	W 032 16.5336	1694	22.1	Massif de Moule et tapis bacterien sur Tour Eiffel
23/09/2009	05:00:21	Tour Eiffel	N 37 17.3386	W 032 16.5330	1692	21.3	zone repérée pour prelever
23/09/2009	05:02:38	Tour Eiffel	N 37 17.3399	W 032 16.5325	1692	7.8	Sortie sonde de temperature ROV
23/09/2009	05:04:07	Tour Eiffel	N 37 17.3401	W 032 16.5325	1692	8.8	Mesure temperature B09TEM059 T=7°C
23/09/2009	05:06:45	Tour Eiffel	N 37 17.3401	W 032 16.5325	1692	10.5	rentrée sonde temperature ROV
23/09/2009	05:08:54	Tour Eiffel	N 37 17.3389	W 032 16.5320	1692	11.3	boite BIO4 sortie panier ROV
23/09/2009	05:11:02	Tour Eiffel	N 37 17.3382	W 032 16.5319	1692	12.3	ouverture boite BIO4
23/09/2009	05:12:50	Tour Eiffel	N 37 17.3385	W 032 16.5324	1692	14.6	prelevement moules et tapis microbiens B09MBI05R
23/09/2009	05:15:21	Tour Eiffel	N 37 17.3396	W 032 16.5329	1692	12.4	prelevement moules et tapis
23/09/2009	05:39:31	Tour Eiffel	N 37 17.3316	W 032 16.5345	1692	16.3	fermeture boite BIO4
23/09/2009	05:42:56	Tour Eiffel	N 37 17.3297	W 032 16.5350	1692	13.7	boite BIO4 dans panier ROV
23/09/2009	05:43:38	Tour Eiffel	N 37 17.3293	W 032 16.5351	1692	13.1	route vers Montsegur cap 190
23/09/2009	05:46:16	Montsegur	N 37 17.2982	W 032 16.5337	1704	199.1	sortie boite Nautile panier ROV
23/09/2009	05:49:45	Montsegur	N 37 17.2787	W 032 16.5279	1704	263.6	Arrivée sur Montsegur
23/09/2009	05:54:46	Montsegur	N 37 17.2784	W 032 16.5330	1702	39.5	Cheminée à prelever
23/09/2009	05:59:59	Montsegur	N 37 17.2779	W 032 16.5334	1702	39.5	boite Nautile ouverte
23/09/2009	06:06:08	Montsegur	N 37 17.2796	W 032 16.5332	1702	39.4	prelevement haut de la cheminée B09MBI06R
23/09/2009	06:07:24	Montsegur	N 37 17.2794	W 032 16.5329	1702	39.5	cheminee dans la boite
23/09/2009	06:11:27	Montsegur	N 37 17.2789	W 032 16.5306	1702	39.6	prelevement morceau cheminee plus dur
23/09/2009	06:16:14	Montsegur	N 37 17.2791	W 032 16.5314	1702	39.3	fermeture boite Nautile
23/09/2009	06:19:43	Montsegur	N 37 17.2789	W 032 16.5323	1702	39.5	fermeture boite Nautile
23/09/2009	06:21:05	Montsegur	N 37 17.2807	W 032 16.5389	1702	39.3	sortie capteur temperature ROV

23/09/2009	06:21:56	Montsegur	N 37 17.2834	W 032 16.5467	1702	39.3	Mesure temperature B09TEM060 T= 279°C
23/09/2009	06:24:18	Montsegur	N 37 17.2858	W 032 16.5538	1702	39.5	rangement sonde temperature ROV
23/09/2009	06:25:19	Montsegur	N 37 17.2862	W 032 16.5546	1702	15.6	route vers NASA2 cap 312
23/09/2009	06:27:11	Lucky strike	N 37 17.2872	W 032 16.5564	1700	314.3	arrivée sur NASA2
23/09/2009	06:28:54	Lucky strike	N 37 17.2916	W 032 16.5602	1702	306.2	Accrochage NASA2 devant panier
23/09/2009	06:30:54	Lucky strike	N 37 17.2903	W 032 16.5592	1702	290.3	boite Nautile dans panier NASA2
23/09/2009	06:33:32	Lucky strike	N 37 17.2907	W 032 16.5587	1702	279.9	sortie boite BIO4 panier ROV
23/09/2009	06:35:35	Lucky strike	N 37 17.2874	W 032 16.5553	1702	275.9	boite BIO4 dans panier NASA2
23/09/2009	06:40:26	Lucky strike	N 37 17.2880	W 032 16.5629	1702	278.4	sortie boite Bois 8-9 panier NASA2
23/09/2009	06:43:18	Lucky strike	N 37 17.2879	W 032 16.5596	1702	280.4	boite Bois8_9 dans panier ROV
23/09/2009	06:48:29	Lucky strike	N 37 17.2890	W 032 16.5561	1702	275.8	Sortie boite Bois12-13
23/09/2009	06:50:59	Lucky strike	N 37 17.2888	W 032 16.5568	1702	280.1	boite Bois12-13 dans panier ROV
23/09/2009	06:52:53	Lucky strike	N 37 17.2829	W 032 16.5469	1702	277.8	Fermeture panier2 NASA2
23/09/2009	06:55:56	Lucky strike			1702	115.3	Fermeture panier1 NASA2
23/09/2009	06:56:40	Lucky strike			1702	119.8	Attente larguage ascenseur
23/09/2009	07:13:01	Lucky strike			1701	262.7	sortie faucille pour larguer NASA2
23/09/2009	07:13:30	Lucky strike			1701	269.6	capitain Crochet!!
23/09/2009	07:23:37	Lucky strike			1702	268.9	NASA2 largué
23/09/2009	07:27:23	Lucky strike	N 37 17.2762	W 032 16.5316	1702	131.3	Attente au fond récupération NASA2 en surface
23/09/2009	08:15:07	Lucky strike	N 37 17.1914	W 032 16.6144	1661	206.1	changement DVD/ recuperqtion NASA2
23/09/2009	08:19:55	Lucky strike	N 37 17.1276	W 032 16.6290	1642	197.7	on part vers site inconnu cap 330°
23/09/2009	08:52:47	Lucky strike	N 37 17.3569	W 032 16.7880	1662	343.6	exploration du sud du lac de lave transit to "site inconnu"
23/09/2009	08:55:44	Lucky strike	N 37 17.3599	W 032 16.7894	1676	342.8	transit facing scarp

23/09/2009	09:07:01	Lucky strike	N 37 17.4214	W 032 16.8336	1735	342.8	on approche du site...
23/09/2009	09:09:12	Cypres	N 37 17.4478	W 032 16.8528	1736	337.8	arrivée sur site
23/09/2009	09:11:55	Cypres	N 37 17.4546	W 032 16.8519	1739	38.7	vue des cheminées
23/09/2009	09:13:55	Cypres	N 37 17.4530	W 032 16.8492	1740	14.3	vu du sud : vue sur le site sud
23/09/2009	09:15:34	Cypres	N 37 17.4566	W 032 16.8516	1740	265.8	Vue de l'Ouest
23/09/2009	09:17:02	Cypres	N 37 17.4563	W 032 16.8562	1740	212.4	vue du sud Ouest
23/09/2009	09:17:17	Cypres	N 37 17.4563	W 032 16.8563	1934	213.2	Moules du sud Ouest
23/09/2009	09:19:06	Cypres	N 37 17.4550	W 032 16.8578	1739	211.6	vue du NNE
23/09/2009	09:22:01	Cypres	N 37 17.4475	W 032 16.8600	1740	276.2	vue des cheminées de Cypres
23/09/2009	09:22:45	Cypres	N 37 17.4472	W 032 16.8603	1740	274.1	site plus a
23/09/2009	09:23:29	Cypres	N 37 17.4461	W 032 16.8596	1740	274.2	Nid d'abeilles belle photo!
23/09/2009	09:23:57	Cypres	N 37 17.4454	W 032 16.8592	1740	275.0	nid d'abeilles le même en capture caméra avec incrustations
23/09/2009	09:24:23	Cypres	N 37 17.4447	W 032 16.8587	1740	274.4	crevettes
23/09/2009	09:26:06	Cypres	N 37 17.4416	W 032 16.8566	1740	274.2	jolie photo, cheminées et moules
23/09/2009	09:26:52	Cypres	N 37 17.4408	W 032 16.8559	1740	274.1	CYPRES on lui a trouvé un nom...
23/09/2009	09:27:43	Cypres	N 37 17.4402	W 032 16.8551	1740	274.1	Cypres vue de l'Est
23/09/2009	09:28:07	Cypres	N 37 17.4400	W 032 16.8548	1740	274.2	Vue generale Cypres vue de l'Est
23/09/2009	09:28:40	Cypres	N 37 17.4384	W 032 16.8531	1740	274.2	Cypres
23/09/2009	09:30:14	Cypres	N 37 17.4338	W 032 16.8467	1740	274.1	vue genrale Cypres
23/09/2009	09:33:04	Cypres	N 37 17.4367	W 032 16.8394	1740	245.6	Diffuseur a flanc de coteaux
23/09/2009	09:34:17	Lave Lac	N 37 17.4375	W 032 16.8397	1740	237.7	crevettes sur diffuseur
23/09/2009	09:35:15	Cypres	N 37 17.4388	W 032 16.8410	1740	236.8	moules
23/09/2009	09:35:23	Cypres	N 37 17.4391	W 032 16.8415	1740	236.7	re moules et petite cheminée diffusante

23/09/2009	09:36:31	Cypres	N 37 17.4417	W 032 16.8468	1740	236.9	Posé cap 236 on regarde vers le site possible prelevement de fluides
23/09/2009	09:38:29	Cypres	N 37 17.4435	W 032 16.8532	1740	236.7	cap 236 - 5
23/09/2009	09:39:17	Cypres	N 37 17.4444	W 032 16.8550	1740	236.8	cap 236 + 18
23/09/2009	09:39:57	Cypres	N 37 17.4456	W 032 16.8569	1740	236.8	le site possible de prelevement au cap 236 + 20 (panne) au CENTRE DROIT photo le site possible (petite cheminée noire concretionnée)
23/09/2009	09:41:56	Cypres	N 37 17.4458	W 032 16.8590	1741	236.8	vue de Cypres en passant vers lateral coté droit
23/09/2009	09:45:58	Cypres	N 37 17.4446	W 032 16.8577	1740	274.1	Le nid d'abeille est au centre (le gerement à droite)
23/09/2009	09:50:55	Cypres	N 37 17.4360	W 032 16.8523	1737	330.3	une petite vue au 330
23/09/2009	09:52:04	Cypres	N 37 17.4349	W 032 16.8529	1738	341.0	Vue au 340° Cypress
23/09/2009	09:54:22	Cypres	N 37 17.4321	W 032 16.8685	1736	249.9	We go towards "OTHER" cap 250
23/09/2009	09:56:28	Cypres	N 37 17.4293	W 032 16.8824	1738	230.2	Hydrolagus
23/09/2009	09:56:49	Lave Lac	N 37 17.4293	W 032 16.8835	1738	230.7	belle vue des laves et d'une chimère
23/09/2009	10:00:06	Cypres	N 37 17.4206	W 032 16.8796	1736	179.2	Arrivée Zone blanche "Other" ça diffuse assez fort
23/09/2009	10:02:11	Cypres	N 37 17.4195	W 032 16.8796	1737	201.2	qq moules sur site "other"
23/09/2009	10:03:59	Cypres	N 37 17.4201	W 032 16.8806	1737	202.4	petits vers sur tache blanche
23/09/2009	10:05:07	Cypres	N 37 17.4202	W 032 16.8805	1737	201.4	Taille Zone environ 1m de diam
23/09/2009	10:06:51	Cypres	N 37 17.4210	W 032 16.8800	1737	202.3	bactéries et crevettes, une moule
23/09/2009	10:21:08	Cypres	N 37 17.4172	W 032 16.8856	1735	99.5	Vue avec arrete
23/09/2009	10:21:40	Cypres	N 37 17.4171	W 032 16.8856	1735	98.2	pareil de babord
23/09/2009	10:26:22	Cypres	N 37 17.4177	W 032 16.8838	1735	98.0	la ride, elle s'oriente SE=NW maybe just due to deposits and currents
23/09/2009	10:28:14	Cypres	N 37 17.4182	W 032 16.8840	1735	97.7	rock BA09ROC19
23/09/2009	10:29:28	Cypres	N 37 17.4168	W 032 16.8824	1735	97.7	vue de l'échantillon B09ROC19
23/09/2009	10:31:57	Cypres	N 37 17.4165	W 032 16.8805	1735	97.7	Depots verdatres
23/09/2009	10:33:28	Cypres	N 37 17.4178	W 032 16.8817	1735	97.7	autre vue de depots verdatres dans cassure

23/09/2009	10:35:05	Cypres	N 37 17.4176	W 032 16.8809	1735	95.4	OTHER est nommé CYPRESS SUD
23/09/2009	10:38:52	Lucky strike	N 37 17.4127	W 032 16.8688	1731	86.7	choux fleurs, on va essayer d'en tprendre un morceaux
23/09/2009	10:42:45	Lucky strike	N 37 17.4114	W 032 16.8685	1732	132.0	B09ROC19bis ... cet échantillon n'arrivera pas sur le pont....
23/09/2009	10:44:08	Lucky strike	N 37 17.4115	W 032 16.8688	1732	132.0	Les echantillons de desagregent
23/09/2009	10:48:55	Lucky strike	N 37 17.4116	W 032 16.8698	1731	136.1	juste un peu au Sud Est, une autre zone de diffusion avec moules
23/09/2009	10:50:28	Lucky strike	N 37 17.4116	W 032 16.8701	1731	136.3	moules...
23/09/2009	10:51:21	Lucky strike	N 37 17.4116	W 032 16.8703	1731	136.5	Diffuseur et moules sur site un peu au SE de Cypress Sud
23/09/2009	10:51:57	Lucky strike	N 37 17.4117	W 032 16.8704	1731	136.0	SE de Cypress Sud
23/09/2009	10:53:11	Lucky strike	N 37 17.4120	W 032 16.8714	1731	145.3	moules
23/09/2009	10:59:23	Lucky strike	N 37 17.4029	W 032 16.8562	1726	131.9	anciennes fissures avec dépots hydrothermaux altérés en choux fleurs
23/09/2009	11:00:24	Lucky strike	N 37 17.4017	W 032 16.8550	1725	106.4	on se dirige vers PR3 au bord du lac de lave
23/09/2009	11:02:52	Lucky strike	N 37 17.4010	W 032 16.8485	1724	111.9	Vielle cheminée
23/09/2009	11:03:46	Lucky strike	N 37 17.4008	W 032 16.8486	1722	111.7	vue des vieilles cheminées avec l'anémone
23/09/2009	11:04:26	Lucky strike	N 37 17.4005	W 032 16.8493	1722	112.2	l'anemone su site mort
23/09/2009	11:05:04	Lucky strike	N 37 17.3998	W 032 16.8508	1722	112.2	un oursin au pied des vieilles cheminées
23/09/2009	11:06:21	Lucky strike	N 37 17.3983	W 032 16.8541	1722	100.2	DEAD CHIMNEYS (nom du site)
23/09/2009	11:30:30	Lucky strike	N 37 17.3991	W 032 16.8502	1726	263.2	back to dead chimneys
23/09/2009	11:39:37	Lucky strike	N 37 17.3896	W 032 16.8461	1725	238.0	Fissure avec moules
23/09/2009	11:41:21	White Castle	N 37 17.3890	W 032 16.8465	1715	207.0	à White Castle... l'estime parait très bonne
23/09/2009	11:44:34	Lucky strike	N 37 17.3981	W 032 16.8382	1726	37.5	Autre cheminée morte?
23/09/2009	11:46:54	Lucky strike	N 37 17.4131	W 032 16.8168	1727	39.8	On se dirige vers point de mise a l'eau ascenseur
23/09/2009	12:38:56	Lucky strike			1740	311.4	Seeing the third elevator
23/09/2009	12:41:04	Lave Lac			1739	166.0	Opening of the 2 part of the elevator
23/09/2009	12:49:33	Lave Lac	N 37	W 032 16.8319	1740	329.8	seringue fluide vers panier ROV

			17.4684				
23/09/2009	13:10:09	Lave Lac	N 37 17.4705	W 032 16.8273	1740	243.6	4 seringues dans le panier + colonisateur
23/09/2009	13:16:11	Lave Lac	N 37 17.4686	W 032 16.8301	1740	66.1	Taking the fluids boxes in the 1st part of the elevator
23/09/2009	13:27:00	Pico	N 37 17.4641	W 032 16.8923	1740	272.9	route vers Pico
23/09/2009	13:28:46	Pico	N 37 17.4678	W 032 16.9081	1737	279.1	on promène le bidon gaz 2 dans Maestro vers Pico
23/09/2009	13:37:22	Pico	N 37 17.4620	W 032 16.9178	1729	50.1	approche Pico
23/09/2009	13:42:22	Pico	N 37 17.4594	W 032 16.9138	1733	141.1	petit tour sur Pico
23/09/2009	13:51:39	Pico	N 37 17.4783	W 032 16.9200	1735	342.8	on va faire un tour à Nuno car pas de fumeur à Pico
23/09/2009	13:54:19	Nuno	N 37 17.4867	W 032 16.9256	1735	324.6	arrivéé sur Nuno
23/09/2009	13:55:35	Nuno	N 37 17.4873	W 032 16.9261	1734	325.0	Nuno
23/09/2009	13:59:00	Nuno	N 37 17.4889	W 032 16.9257	1734	318.3	reprise bouteille par sherpa pour explo température sur nuno
23/09/2009	14:01:40	Nuno	N 37 17.4887	W 032 16.9263	1734	318.4	crevettes de nuno
23/09/2009	14:05:54	Nuno	N 37 17.4887	W 032 16.9253	1734	318.4	MESURE: B09TEM061 = 154
23/09/2009	14:07:24	Nuno	N 37 17.4877	W 032 16.9252	1734	318.3	préparation pour la bouteille n°2
23/09/2009	14:11:56	Nuno	N 37 17.4873	W 032 16.9251	1734	318.3	PRELEVEMENT: B09FLU049
23/09/2009	14:12:25	Nuno	N 37 17.4878	W 032 16.9256	1734	318.4	PRELEVEMENT: B09FLU049
23/09/2009	14:14:17	Nuno	N 37 17.4885	W 032 16.9269	1734	318.9	Bouteille 4 en vrac dans le panier
23/09/2009	14:18:54	Nuno	N 37 17.4885	W 032 16.9271	1733	313.5	prise seringue 7
23/09/2009	14:19:27	Nuno	N 37 17.4886	W 032 16.9271	1733	313.6	reprise seringue 7 avec sherpa
23/09/2009	14:23:47	Nuno	N 37 17.4883	W 032 16.9269	1734	313.9	seringue 7 bien prise
23/09/2009	14:25:10	Nuno	N 37 17.4871	W 032 16.9267	1734	313.6	PRELEVEMENT: B09FLU050
23/09/2009	14:25:39	Nuno	N 37 17.4867	W 032 16.9266	1734	313.7	PRELEVEMENT: B09FLU050
23/09/2009	14:29:01	Nuno	N 37 17.4726	W 032 16.9132	1733	132.3	route vers Cypress
23/09/2009	14:33:21	Cypres	N 37	W 032 16.8629	1739	131.2	arrivée sur Cypress

			17.4493				
23/09/2009	14:34:03	Cypres	N 37 17.4488	W 032 16.8604	1740	189.1	tour de Cypress pour se reprendre au cap 236
23/09/2009	14:37:27	Cypres	N 37 17.4460	W 032 16.8610	1741	243.2	choix de la cheminée
23/09/2009	14:42:11	Cypres	N 37 17.4454	W 032 16.8606	1741	245.3	positionnement pour mesure T
23/09/2009	14:48:16	Cypres	N 37 17.4449	W 032 16.8606	1741	236.7	crabo-température B09TEM062 T=186°C
23/09/2009	14:50:47	Cypres	N 37 17.4450	W 032 16.8599	1741	236.4	un crabe se bat avec Victor
23/09/2009	14:51:58	Cypres	N 37 17.4449	W 032 16.8595	1741	236.2	un poisson passe
23/09/2009	14:57:54	Cypres	N 37 17.4460	W 032 16.8615	1741	266.3	cypress tour
23/09/2009	14:58:24	Cypres	N 37 17.4457	W 032 16.8614	1741	266.2	cypress tour
23/09/2009	15:02:29	Cypres	N 37 17.4468	W 032 16.8612	1741	263.1	mesure de T sur un habitat à crevettes
23/09/2009	15:06:10	Cypres	N 37 17.4471	W 032 16.8611	1741	262.3	MESURE: B09TEM062 = 186++
23/09/2009	15:07:32	Cypres	N 37 17.4475	W 032 16.8598	1741	262.0	prise seringue 9
23/09/2009	15:11:32	Cypres	N 37 17.4456	W 032 16.8628	1741	262.1	PRELEVEMENT: B09FLU051
23/09/2009	15:13:35	Cypres	N 37 17.4441	W 032 16.8634	1741	261.1	prise seringue 5
23/09/2009	15:14:17	Cypres	N 37 17.4428	W 032 16.8631	1741	261.1	approche pour prendre du fluide
23/09/2009	15:15:15	Cypres	N 37 17.4424	W 032 16.8628	1741	261.1	PRELEVEMENT: B09FLU052
23/09/2009	15:17:51	Cypres	N 37 17.4458	W 032 16.8597	1741	261.6	oppening the biobox
23/09/2009	15:18:50	Cypres	N 37 17.4468	W 032 16.8586	1741	261.8	moving the biobox
23/09/2009	15:22:09	Cypres	N 37 17.4492	W 032 16.8557	1741	262.0	temperature sensor
23/09/2009	15:31:17	Cypres	N 37 17.4454	W 032 16.8575	1741	135.0	MESURE : B09TEM063 T=5.40°C
23/09/2009	15:34:29	Cypres	N 37 17.4437	W 032 16.8593	1741	135.1	MESURE : B09TEM064 Tmax=7°C
23/09/2009	15:42:54	Cypres	N 37 17.4452	W 032 16.8613	1741	133.9	B09BIO007 catching mussels
23/09/2009	15:49:15	Cypres	N 37 17.4440	W 032 16.8614	1741	134.3	putting mussels at biobox
23/09/2009	15:50:25	Cypres	N 37	W 032 16.8621	1741	133.9	catch mussels

			17.4438				
23/09/2009	15:52:06	Cypres	N 37 17.4430	W 032 16.8599	1741	134.2	victor with mussels
23/09/2009	15:53:25	Cypres	N 37 17.4349	W 032 16.8290	1741	141.0	closing biobox
23/09/2009	15:55:26	Tour Eiffel	N 37 17.4300	W 032 16.8104	1740	145.9	route vers Tour Eiffel cap 116
23/09/2009	16:35:15	Tour Eiffel	N 37 17.3363	W 032 16.5311	1693	57.0	arrivée sur aiscics
23/09/2009	16:37:06	Tour Eiffel	N 37 17.3362	W 032 16.5309	1693	56.4	prise sonde T
23/09/2009	16:40:23	Tour Eiffel	N 37 17.3353	W 032 16.5305	1693	56.3	MESURE: B09TEM065 = 298°C
23/09/2009	16:43:03	Tour Eiffel	N 37 17.3367	W 032 16.5315	1693	56.3	récupération seringue n°2
23/09/2009	16:45:20	Tour Eiffel	N 37 17.3364	W 032 16.5317	1693	56.3	PRELEVEMENT: B09FLU053
23/09/2009	16:45:43	Tour Eiffel	N 37 17.3364	W 032 16.5317	1693	56.4	PRELEVEMENT: B09FLU053
23/09/2009	16:46:47	Tour Eiffel	N 37 17.3367	W 032 16.5320	1693	56.3	retour seringue 2 dans le panier
23/09/2009	16:50:14	Tour Eiffel	N 37 17.3360	W 032 16.5305	1693	56.3	récupération bouteille n°1
23/09/2009	16:51:34	Tour Eiffel	N 37 17.3356	W 032 16.5304	1693	56.4	PRELEVEMENT: B09FLU054
23/09/2009	16:51:51	Tour Eiffel	N 37 17.3356	W 032 16.5303	1693	56.3	PRELEVEMENT: B09FLU054
23/09/2009	16:52:38	Tour Eiffel	N 37 17.3357	W 032 16.5302	1693	56.3	prelevement sur aiscics
23/09/2009	16:53:22	Tour Eiffel	N 37 17.3350	W 032 16.5301	1693	56.4	retour bouteille n°1 dans le panier
23/09/2009	16:54:58	Tour Eiffel	N 37 17.3344	W 032 16.5295	1693	56.3	récupération bouteille n°2
23/09/2009	16:55:49	Tour Eiffel	N 37 17.3343	W 032 16.5289	1693	56.2	sortie du panier
23/09/2009	16:57:40	Tour Eiffel	N 37 17.3350	W 032 16.5286	1693	56.3	PRELEVEMENT: B09FLU055
23/09/2009	16:58:38	Tour Eiffel	N 37 17.3357	W 032 16.5284	1693	56.3	PRELEVEMENT: B09FLU055 bouteille 2
23/09/2009	17:02:25	Lucky strike	N 37 17.3369	W 032 16.5291	1693	56.4	on a repéré le capteur 29016B jaune derrière la plaque gradient, on va le récupérer
23/09/2009	17:06:45	Lucky strike	N 37 17.3361	W 032 16.5301	1693	56.1	Photos tiges plaques gradient pour voir les différences de distance
23/09/2009	17:07:28	Lucky strike	N 37 17.3357	W 032 16.5308	1693	56.3	MESURE avec la plaque de gradient de température
23/09/2009	17:10:53	Lucky	N 37	W 032 16.5314	1693	56.4	B09TGR011 terminé

		strike	17.3361				
23/09/2009	17:12:23	Lucky strike	N 37 17.3357	W 032 16.5308	1693	56.4	maestro prend la sonde 29016B
23/09/2009	17:14:46	Lucky strike	N 37 17.3343	W 032 16.5305	1693	56.3	mise en place 29016B
23/09/2009	17:15:46	Tour Eiffel	N 37 17.3339	W 032 16.5306	1693	56.3	29016B à Aisics
23/09/2009	17:18:03	Tour Eiffel	N 37 17.3346	W 032 16.5317	1693	56.5	POSE : 29016D posé
23/09/2009	17:18:45	Tour Eiffel	N 37 17.3349	W 032 16.5319	1693	56.2	29016B posée à Aisics
23/09/2009	17:24:40	Tour Eiffel	N 37 17.3368	W 032 16.5333	1693	56.3	B09VID031
23/09/2009	17:25:32	Lucky strike	N 37 17.3368	W 032 16.5354	1693	56.2	route vers NASA3 cap 300
23/09/2009	17:50:54	Lave Lac	N 37 17.4684	W 032 16.8186	1741	300.8	Arriving at NASA 3
23/09/2009	18:11:28	Lave Lac	N 37 17.4679	W 032 16.8272	1740	27.8	biobox B05 in basket 2 of NASA 3
23/09/2009	18:21:06	Lave Lac	N 37 17.4687	W 032 16.8292	1740	28.0	grabbing bottle Ti 04
23/09/2009	18:34:33	Lave Lac	N 37 17.4688	W 032 16.8273	1740	87.3	closing basket 1 of NASA and ready for largage
23/09/2009	18:38:55	Lave Lac	N 37 17.4694	W 032 16.8268	1740	337.6	going to cut the rope to release NASA 3
23/09/2009	18:41:23	Lave Lac	N 37 17.4694	W 032 16.8269	1740	232.5	release of NASA 3 - now we wait for it to be on surface in approx 45 min
23/09/2009	18:54:26	Lave Lac	N 37 17.4452	W 032 16.8635	1740	198.7	going to cypress
23/09/2009	18:57:29	Cypres	N 37 17.4409	W 032 16.8642	1741	185.8	pillier de lave at cypress
23/09/2009	19:02:48	Cypres	N 37 17.4512	W 032 16.8694	1740	187.7	cypress hill
23/09/2009	19:03:07	Cypres	N 37 17.4514	W 032 16.8694	1740	187.7	mussels at cypress hill
23/09/2009	19:29:04	White Castle	N 37 17.3880	W 032 16.8718	1715	155.0	white castle
23/09/2009	20:09:07	Lave Lac	N 37 17.4625	W 032 16.7989	1741	41.2	contact of ropy and flat lava
23/09/2009	20:13:46	Lave Lac	N 37 17.4660	W 032 16.8071	1742	41.4	PRELEVEMENT: sample of ropy lava B09ROC19
23/09/2009	20:20:42	Lave Lac	N 37 17.4648	W 032 16.8035	1742	25.0	contact of ropy and flat lava
23/09/2009	20:22:00	Lave Lac	N 37 17.4647	W 032 16.8034	1742	357.7	sructure of ropy lava flow front
23/09/2009	20:27:20	Lave Lac	N 37	W 032 16.8030	1742	358.3	PRELEVEMENT: lava sample B09ROC20

			17.4659				
23/09/2009	20:32:18	Lave Lac	N 37 17.4618	W 032 16.8036	1740	358.6	zenital view of ropes of the flat lava
23/09/2009	20:35:11	Lave Lac	N 37 17.4655	W 032 16.8032	1741	358.2	ropes on the margin of flat lava. depressed areas are covered with sediment
23/09/2009	20:36:30	Lave Lac	N 37 17.4689	W 032 16.7987	1741	357.4	contact of ropy and flat lava. Ropy lava show more sediment on top
23/09/2009	20:39:56	Lave Lac	N 37 17.4700	W 032 16.7966	1741	358.7	rope structure in flat lava
23/09/2009	20:45:45	Lave Lac	N 37 17.4703	W 032 16.7956	1741	358.3	PRELEVEMENT: sample B09ROC21 rope of flat lava
23/09/2009	20:48:39	Lave Lac	N 37 17.4704	W 032 16.7951	1740	358.3	ropes of flat lava
23/09/2009	20:51:41	Lave Lac	N 37 17.4700	W 032 16.7939	1741	134.3	contact of flat and ropy lava
23/09/2009	20:53:25	Lave Lac	N 37 17.4648	W 032 16.7957	1741	145.8	detail of contact of ropy lava flow front and flat lava
23/09/2009	20:54:37	Lave Lac	N 37 17.4619	W 032 16.8031	1741	145.3	detail of contac of ropy and flat lava: ropy lava sits on top flat lava\n
23/09/2009	20:56:09	Lave Lac	N 37 17.4635	W 032 16.8009	1741	145.5	detail of contact of flat and ropy lava. ropy sits on top of flat lava\n
23/09/2009	20:57:18	Lave Lac	N 37 17.4642	W 032 16.7983	1742	145.5	contact of flat and ropy lava
23/09/2009	21:01:03	Lave Lac	N 37 17.4652	W 032 16.7940	1742	104.4	PRELEVEMENT: ropy lava sample B09ROC22
23/09/2009	21:02:21	Lave Lac	N 37 17.4623	W 032 16.7969	1742	104.5	PRELEVEMENT: detail of the structure of sample B09ROC22
23/09/2009	21:03:49	Lave Lac	N 37 17.4617	W 032 16.7978	1742	104.5	ropy lava front structure
23/09/2009	21:06:31	Lave Lac	N 37 17.4616	W 032 16.7984	1742	104.6	detail of a toe of ropy lava on top of flat lava
23/09/2009	21:06:49	Lave Lac	N 37 17.4619	W 032 16.7984	1742	104.6	ropy lava on top of sediments on flat lava
23/09/2009	21:08:50	Lave Lac	N 37 17.4628	W 032 16.7953	1742	104.7	detail of fluid structures of ropy lava
23/09/2009	21:09:53	Lave Lac	N 37 17.4620	W 032 16.7884	1741	90.0	zenital view of ropes on flat lava
23/09/2009	21:15:41	Lave Lac	N 37 17.4491	W 032 16.7421	1740	120.0	ruble wall
23/09/2009	21:19:45	Lave Lac	N 37 17.4334	W 032 16.7080	1737	138.9	sediment acumulated on low areas
23/09/2009	21:20:21	Lave Lac	N 37 17.4325	W 032 16.7067	1737	143.9	colapsed lava
23/09/2009	21:22:00	Lave Lac	N 37 17.4320	W 032 16.7056	1736	133.4	lava columns and wall of colapsed lava
23/09/2009	21:23:03	Lave Lac	N 37	W 032 16.7048	1736	122.8	contact of ropy lava (with pilows) and flat lava

			17.4316				
23/09/2009	21:24:25	Lave Lac	N 37 17.4331	W 032 16.7045	1735	122.7	detail of interior wall of lava lake limit
23/09/2009	21:27:06	Lave Lac	N 37 17.4334	W 032 16.7014	1735	123.6	detail of interior wall of lava lake limit
23/09/2009	21:28:32	Lave Lac	N 37 17.4328	W 032 16.7015	1735	125.8	lava lake limit and colapsed lava surface
23/09/2009	21:33:34	Lave Lac	N 37 17.4318	W 032 16.7021	1735	126.5	PRELEVEMENT: Sampling of B09ROC23. Lava from the lava lake wall
23/09/2009	21:34:48	Lave Lac	N 37 17.4316	W 032 16.7034	1735	126.6	tube structure at lava lake edge
23/09/2009	21:40:55	Lave Lac	N 37 17.4383	W 032 16.7055	1735	117.4	lava lake wall with laser scale
23/09/2009	21:42:55	Lave Lac	N 37 17.4397	W 032 16.7041	1735	118.2	PRELEVEMENT: lava from the colapsed lava lake surface. Sample B09ROC24
23/09/2009	21:45:40	Lave Lac	N 37 17.4402	W 032 16.6895	1735	116.5	detail of lthe lava lake wall
23/09/2009	21:47:12	Lave Lac	N 37 17.4406	W 032 16.6893	1735	102.5	detail of partialy colapsed tube at lava lake edge
23/09/2009	21:48:42	Lave Lac	N 37 17.4459	W 032 16.6975	1735	107.0	detail of interior of tube with lava drops, on edge of lava lake
23/09/2009	21:54:30	Lave Lac	N 37 17.4611	W 032 16.7047	1741	255.1	white pyroclastic material
23/09/2009	21:55:56	Lave Lac	N 37 17.4606	W 032 16.7047	1742	287.6	blocks of pyroclastic material and lose pyroclasts on the floor
23/09/2009	21:56:35	Lave Lac	N 37 17.4602	W 032 16.7079	1742	290.1	Detail of block of pyroclastic material. The block is layered and some layers are richer in coaser fragments
23/09/2009	21:57:49	Lave Lac	N 37 17.4602	W 032 16.7059	1741	288.1	Detail of block of pyroclastic material with laser scale
23/09/2009	21:59:46	Lave Lac	N 37 17.4602	W 032 16.7062	1743	292.7	PRELEVEMENT: Atempt to sample pyroclastic material
23/09/2009	22:03:36	Lave Lac	N 37 17.4583	W 032 16.7094	1743	295.5	PRELEVEMENT: sample of a coarse block from within the pyroclastic material B09ROC25
23/09/2009	22:18:49	Lave Lac	N 37 17.5198	W 032 16.5870	1692	63.3	Fish
23/09/2009	22:23:43	Lave Lac	N 37 17.5242	W 032 16.5737	1679	83.7	Cataetyex laticeps
23/09/2009	22:26:54	Lave Lac	N 37 17.5289	W 032 16.5270	1651	82.3	bacterial mats
23/09/2009	22:28:30	Lave Lac	N 37 17.5255	W 032 16.5017	1638	82.6	Fish
23/09/2009	22:30:01	Sintra	N 37 17.5247	W 032 16.4975	1631	90.8	At Sintra
23/09/2009	22:31:24	Sintra	N 37 17.5300	W 032 16.4967	1627	44.2	Sintra

23/09/2009	22:32:11	Sintra	N 37 17.5310	W 032 16.4961	1625	45.3	mussels and shrimps at the bottom of the vent where there is flange
23/09/2009	22:33:29	Sintra	N 37 17.5312	W 032 16.4957	1623	48.5	image of fauna assemblages at the flange where shrimps will be collected
23/09/2009	22:36:21	Sintra	N 37 17.5267	W 032 16.4939	1623	43.4	B09TEM066 Measuring temperature (62 °c)
23/09/2009	22:41:59	Sintra	N 37 17.5350	W 032 16.4964	1622	61.1	Mussels
23/09/2009	22:43:21	Sintra	N 37 17.5353	W 032 16.4966	1622	62.6	B09BIO008 slurping shrimps from flange
23/09/2009	22:45:09	Sintra	N 37 17.5292	W 032 16.5050	1622	62.9	Shrimps at Sintra
23/09/2009	22:54:55	Sintra	N 37 17.5263	W 032 16.5011	1629	83.2	End of dive

6.8. Logbook

DATE HR	LAT	LON	NOTES	EVENT
05:45			— leave HORTA —	

1.3.3 Instruments deployed during BBMOMAR II to be recovered in summer 2009

Name	Lat	Long	depth	reloc lat	reloc long	Notes
B1	37°19.289	32°16,801	1859	37°19.3000	−32°16.6625	array N
B2	37°17,926	32°19,523	2099	37°17.9097	−32°19.4248 E	array W
B3	37°17,505	32°17,337	1776	37°17.5066	−32°17.2777 E	array central
B4	37°16,919	32°14,626	2097	37°16.9622	−32°14.4609 E	array E
B7	37°15,627	32°17,953	1939	37°15.6354	−32°17.8473 E	array south (BBobs)

01/09/09 22:55	38°01.584N	30°06.511W	On transit ETA 09:00
02/09/09 09:12	37°19.08N	32°16.265W	on site B1
09:16	37°19.077N	32°16.263W	start descending acoustic devices for testing
09:35	37°19.097W	32°16.308W	acoustic devices @ −1000 m
→ 09:45			acoustic transducer in the water
09:47			start test on devices RT661 BZSDDL #310 and #313
			For device #310 release code send - Transmited
			For device #313 commands send in mode B
			In the begginning ~~commands~~ ~~tests~~ tests were not OK due to ~~the~~ proximity to the boat.
10:01			testes of the acoustic parts of the OBS. test sequence: P G P D P →
09:33			code release envoyé - language B1
09:34			OBS répond
			OBS brule son filament
09:35			rosette au fond 1000 m bsf (descente 1 ms⁻¹)
09:36			test de longueur de Javier
09:45			on débarde tête acoustique
			2 têtes B et C
			B test Ok répond avec accusé reception.
			C test FAIL sur mode C
			on passe en mode B test Ok sur tête C.
			⇒ (C reçois les commandes en mode B mais pas en mode C)

RAP

Tests in rosette

	P	E	P	D	P	
2	✓	✓	✓	✓	✓	10:01 OK
3	✓	✓	✓	✓	✓	10:04 OK
4	✓	✓	✓	Δ ✓	✓	10:08 OK
13	✓	✓	✓	✓	✓	10:09 OK
22	✓	Δ ✓	✓	Δ ✓	✓	10:11 OK

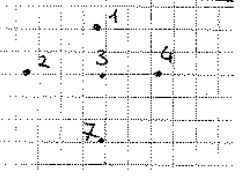
Δ = echo

	N	W	
~~0:13~~			~~acoustic devices (rosette) on board (out)~~
0:16	37°19.126	32°16.376W	OBS ~~#3~~ on the surface
0:17			acoustic devices (rosette) starts to come up
0:26			acoustic ~~device~~ (~~rosette~~) on board
0:35			acoustic transducer #2 on board
0:36			OBS 5 on board & ~~B2 OBS #3~~
0:42			acoustic devices (rosette) on board
0:42			Tests de release on #310 and #313 OK! (Garden acoustic devices) (confirmed)
0:44			Departure to OBS B2 site
0:48			Data logger from OBS Removed / Data transfer OK
0:50			communication with data loger - 3 secs drift
1:16	37°17.84	32°18.921	~~6~~ on site B2
1:26			acoustic head on water
1:27	37°17.86	32°18.94	~~Enable~~ enable OBS #1 ~~pas de réponse~~ no answer ~~activation interrogation~~ - stop SIMRAD (communication interface) -
1:29			send release bus the OBS has not answered yet .....
1:37			Enable OK (OBS #1 du site B2)
1:54			release out OK bruno
1:43	37°17.99	32°19.16	down écho - lower bottom?
2:25	37°17.85	32°19.198	OBS 1 on the surface
2:38			OBS 1 on BOARD

Aura + Nelia FROM B2

12:57	37°17.921N	32°19.427W	OBS 2 ~~out~~ DEPLOYED
13:05	37°17.817N	32°19.170W	Acoustic transiver is in the water
13:08			release confirmed from OBS 12
13:10			Transiver on board
			moving on B3
13:59	37°15.557N	32°17.016W	OBS 12 on surface
14:24	37°17.531N	32°17.274W	OBS 12 ON BOARD
14:36	37°17.571N	32°17.280W	OBS 3 DEPLOYED
14:38	37°17.558	32°17.324W	Acoustic transiver in the water
14:45			release NOT confirmed from OBS 14
14:49			Transiver on Board
			moving on B4
15:14	37°16.952	32°14.808	Acoustic transiver in the water enable
15:15			release confirmed from B4
15:17			release confirmed from OBS 14
16:07	37°16.980	32°14.188	OBS 14 ON THE SURFACE
	* Shift Change: Eric Mittelstaedt 4pm		
16:24	37°16.969	32°14.476	OBS 14 ON BOARD
16:19	37°16.969	32°14.476	OBS 4 DEPLOYED
17:11	37°19.307N	32°16.640W	OBS 13 DEPLOYED
17:47	37°15.728	32°17.818	Acoustic TRANDUCER IN WATER
17:54			Enable confirmed OBS 23
17:56			release confirmed OBS 23
19:10	32°15.462	32°17.928	~~OBS~~ ~~on~~ ~~water~~ OBS 23 on Surface
19:18	37°15.436	32°18.041	OBS 23 ON BOARD
16:14	37°15.634	32°17.842	OBS 22 DEPLOYED

POSITION OF OBS MAP



	N	W	Description / Codes
07			Transit du site OBS22 au site OBS2
			date start relocation @ about 21h30
			to avoid too long time of transit,
			pull out acoustic transiver - speed of boat 6.4 nd
4h18	37° 17.064	32°19.247	Arrivat at pt 1 of relocation acoustic transiver back down
4h25	37°17.221	52°19.419	Start to pt2 - speed of boat : 3nd

⚠ pt 5 We NEED to disable OBS 2
pt 10 " OBS 3
pt 15 " OBS 22
pt 20 " OBS 4
pt 25 " OBS 13

22h42	37°17.76	32°16.85	OBS 2 released - way to OBS 3
0h29	37°16.826	32°17.283	OBS 3 released on way to OBS 22
1h04	37°15.347	32°17.1	OBS 22 released on way to OBS 4
1h45	37°15.347	32°17.1	Dock at OBS 22
2h28	37°15.311	32°15.13	OBS 4 released on way to OBS 13
3h	37°15.916	32°[illegible]	Problem OBS 4 ⇒ Problem ⇒ we [illegible] back [illegible] to the OBS ↳ OK à 03h31
4h11	37°18.581	32°16.643	Point 21, start localisation OBS 13
5h	[illegible]	32°16.1356	end of relocation OBS 13
5h56	[illegible]	32°16.1390	acoustic transponder back up
6h	[illegible]	32°16.[illegible]	Route de Mailxgun depuis point clip 135°
6h50	37°17.654	32°16.512	Station at Mailxgun dept point
7h07	17.686	16.528	B09 CTD 001 D CTD + MAPPER
7h08			CTD at Sea Surface
7h10			Go down up to 1600 m
			CTD at 50 m deep commands at bridge
			speed 1 m/s
7h28/34			CTD at 1000 m deep ↳ B09CTD001
			1532 m slow down 0.5 m/s.

Time	N	W	Description / Code
06:41			slow down 0,26 m/s 1500 m → 0,1 m/s
06:43			CTD at 1600 m stay 1 min at bottom.
06:45			CTD go up 1 m/s. ↳ file CTD001-R
06:48			CTD at 1500 m.
06:54			CTD at 1000 m.
07:07			CTD at 500 m.
07:13			slow down at 0,5 m/s.
07:15			CTD stopped at 105 m, manoeuvre at deck.
07:19			CTD at sea surface
07:21			CTD on board B09 CTD 001 R

8h50	37°17.477	32°16.556	ROV to water DIVE 386
9h58	37°17.306	32°16.488	Mise à l'eau de la NASA.
10h18			~~Start of DVD recording~~
10h42	37°17.318	32°16.479	NASA into water
10:58			

	X	Y
11:01	127089	154063
11:13		
11:14	127089	154057
11:23		
11:26		
11:27		
11:29	127065	154196
11:34	127031	154200
11:37	127030	154211
11:40	127090	154206
	127061	154201
	B09 LOC 001	
11:46		
11:54	127058	154191
12:01	127060	154195
	B09 LOC 002	

accrués du ROV au bottom incrustations etc.

		matériel + bord
13:00	DVD 1-1	1-Main
	DVD 2-1	2-babord
	DVD 3-1	3-~~tribord~~ verticale

Photogrammetry and work.

We wait for the night to land. "Steve Pin"

We move to Mailxgun.

naming over.

St-Jacques scarp before Mailxgun

arrival at Mailxgun we with white sediment. we look for a marker... none to be seen

we continue toward Mailxgun seeing dead yellow chimneys.

another lab with white on cracks.

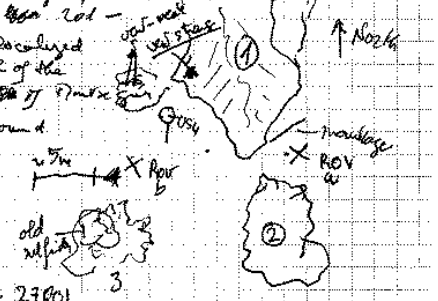
arrive at ~~Mailxgun~~ large 16057 mound... with yellow.

we turn around mounds are dead/bleached N.S.

we are at Mailxgun, next yellow mound with the metal base rod -

we are well localized (Rolex) for route of the main mound of Mailxgun

we turn around



QUS4 marker

Mailxgun ref b

la partie Nb

Trajet 27801

a bottle burst in mass - le QUS4 is located 22m away

	lat/N	lon/X	
:06			in position at Montrigon — problem with Victor's arm...
:10			in position again same position arm problem again
:16			Problem w/ arm, still W of Montrigon
:28			11.
2:33	127000	154195	→ Going up to repair the arm Going N to catch up w/ leisure, full N.
:40	127133	154211	South TOUR EIFFEL
:46	127203	154222	~~arrêt~~ - arrêt pour le benchmark Blackjack
:53	127333	154239	au tenaire VICTOR d'un H
54			Victor Stopped @ 50m Auto immersion
3:58	37 17 298	32 [illegible]	Laisse en vrac
4:21	37 17 273	32 16 468	Victor Surface
4:26			Retour Pont
4:57	37 17 248	32 16 476	Debut Calimat BUC
16h	Pont 4	408	Debut de vendre de alcool !
16h30	Pont 4	408	Fin de vendre d'alcool !

20:48			VICTOR on deck the 4 T-probes are still there, are fully free in the basket....
1:24			VICTOR attaché sur le pont prêt à aller à l'eau
1:30	37 17 492	32 16 639	Getting ready to deploy Victor
1:34	37 17 426	32 16 614	Victor in the water! Again! Good luck Victor! Dive 387
1:43	37 17 309	32 16 597	Le déploiement est à l'eau the rest is in the water
2:15			DVD installés
2:29			~~from 1000m~~ ROV reaching 1000m.
2:56			ROV reaching 100m from the bottom →TEST ↓ + Valérie
3:06	127142	154269	10 m from bottom. 23:09 DVD 1 - Z Penpode in rentalem OK ~~23~~ DVD 2 - Z Babord 23:11 DVD 3 - Z Pancpale next change DVD ↓ 01:10
23:11	127137	154258	
23:15	127158	154232	on route to Vlab. explanation of Southern TE we see the T-probes and Françoises face... we move north to look for vents.
23:24	127178	154203	
23:26	127168	154208	DVD 2 → ~~babord~~ Bras 1
23:35	124220	154226	we see vents southern on top of TE edifice further north.
23:44			DVD 2 → babord
23:59	127184	154225	In our vent structure - we measure the chemistry problem w/ the arm again... gaz - fluid flux (black) in strings as we try to use the T-probe ROV's arm ~~a probe de T avec technique~~ they are still rewiring the arm... we move a little around the structure. we have completed a turn of the edifice...
sept 2009			
0:08			
0:16			

Time	Lat N/S	Lon E/W	
12:06			in position at Montsegur... problem with ROV's arm
12:10			in position again - same problem arm problem again
12:12			
12:16			Problem w/ arm, still W of Montsegur
12:28			11.
12:33	127060	154195	→ Going up to repair the arm
			Going N & catch up w/ Jason, full N
12:40	127133	154211	South TOUR EIFFEL
12:46	127203	154222	~~cable~~ - ~~winding~~ pour la benchmark Gracia
12:53	127333	154239	au remorque VICTOR d'un H
13 54			Victor stopped @ 50m Auto immersion
13 58	37 17 298	32 16 586	Laissé en vrac
14 21	37 17 273	32 16 468	Victor Surface
14 26			Retour Pont
14h 57	37 17.45	32 16 496	Debut Calibration BUC
16h	Pont 4	408	Debut de vente de alcool ! et caca
16h 30	Pont 4	408	Fin de vente de alcool !
17h	Pont 7	AC Seambh.	Reunion des Seambhics
17h 10	37°17.097	32°16.357	Test of navigation of AUV - AUV IN WAT
17h 17			AUV ON BOARD start B09 AUV 10 B09 AUV 1R
~~17h 20~~			
17h 30	37°17.093	32°16.355	AUV IN WATER - 2nd of calibration tests
17h 35	37°17.093.	32°16.355	AUV ON BOARD - End 2nd calibration test
18:50	Pont 3	Pont 3	[redacted] Jusqu'ici, tout va bien
19:46	37°17.423	32°16.553	Getting ready to deploy Victor.
19 20:11	37°17.164	32°16.604	VICTOR en the water starting
20:29			↳ keep in the water Dive 387 ?

time	Lat	Long	Observations/Descriptions
05:15	37°08.080	32°25.285	filled stop at 2299 m - dep at 2018 m.
05:21			filled at 0.2 m/s up to.
05:24			small tension variations. stop to filled. 2335 m filled 1992 m deep.
05:27			croche
05:33	37°08.0082	32°25.[illegible]	croche with 8.3 -> 6. 1983 m dep.
05:31			pay in at 0.1 m/s.
05:56			croche stop pay in
05:57			restart pay in at 0.1 m/s. 1880 m deep. wa.
06:04	37°08.0018	32°26.3835	pay in at 0.2 m/s. 1875 m deep. slow down ship 0.5 nd and pay in at 0.5 m/s.
06:07	37°08.0023	32°26.3399	croche stop ship 13T tension stop pay in
06:08			restart pay in 0.2 m/s then 0.5 m/s. 1870 m deep.
06:13	37°08.0015	32°26.3610	End of dredge : 1960 m pay out 1879 m deep
06:20			pay in 1 m/s. dredge no more on bottom.
06:23			1.2 m/s pay in ..
06:43			slow down pay in 0.8 m/s 200 m filled.
06:46			stop command cable from bridge, start from deck 100 m.
06:52			pay in 0.6 m/s
07:13			dredge on board.
07:24	37°07.9983	32°26.5663	Start Transit to Lucky Strike
07:32	37°08.377	32°26.333	cap 43° speed 7.6 nd.
07:45	37°09.826	32°24.713	— 43° — 10 nd
08:00	37°11.888	32°22.382	— 11 nd
08:00	watch Valérie et Mathilde.		
08:16	37°14.054	32°19.971	cap 42° Speed 7 nd
08:34	37°16.25	32°17.385	cap 36° Speed 5 nd

Time	Lat/Y	Long/X	
00:17	127208	154260	We start turn of the bend of TE
00:23			we go to the NASA to check its position.
00:34			Chaine / Lest
00:42			
00:49	127052	154324	Ascenseur Found
00:51	127068	154326	Lest Ascenseur
00:54	127062	154317	Début Retour Victor / Mise en tension baise
01:05	37 17 305	32 16 517	Début Remontée Victor
			⚠ Problème Enregistrement DVD Caméra 1 → Finalisé mais lecture impossible Sauf sur lecteur ROV...
			⚠ Problème enregistrement DVD Caméra 2 → id à DVD C1
2:00	37 17 328	32 16 514	ROV @ 50 m
2:22			ROV Back on Deck avec son bras cassé
2:30			Route to dredge point.
04:00	watch Céline et Alain		Route to dredge point at Iroise Home.
04:05	37°08.083	32°24.76	at dredge point 2146 m. 500 m before start
04:18	37°07.999	32°24.737	dredge on water at sea surface
04:19			dredge go down. on station.
04:23			filled 100 m from deck, then filled from bridge
			filled at 1 m/s.
04:46			1500 m filled
04:50			go to start point of dredge at 1600 m filled
			filled at 0,5 m/s. speed boat 1 nd.
05:00			1997 m filled dredge at bottom
05:11			filled more deep at 2050 m.
			filled at 0,2 m/s 2250 m filled depot 2084

8.40	37°16.546	32°17.342	Arrival @ station.
8.48	37.16 52	32.17.38	Station for AUV
8h45	37°16.722	32°A.271	Magnetometer data logger on @ 8"45 on AUV
			B09 MAG 002D
9"05'45"			MAPPER data logger on @ 9"05'45" on AUV
			B09 MAP 002D
9"35	37°16.472	32°17.381	Start of AUV into water.
			B09 AUV 002D
9"41	37°16.463	32°17.394	AUV into water Cap 180°
			On the map Start @ pt 2 and finish @ pt 8
9"55	37°16.440	32°17.646	AUV portion
10h10	37°16.486	32°17.6918	
10.27	37°16.555	32°17.803	Position of AUV — Abandon ship
10.28	37°16.555	32°17.360	either BUC or Gaps.
10.42	37°16.579	32°17.859	
10.48	37°16.556	32°17.395	Locked at the bottom
10.52 Am	37°16.579	32°17.926	— Start up Calibration Line.
10.59	37°16.589	32°17.393	—
11.02.34	37°16.379	32°17.337	— Start up profile at 2
11.12	37°15.940	32°17.358	— Position of AUV
11.20.33	37°15.5	32°17.737	— Position " "
11.34	37°14.9936	32°17.9773	AUV Mission stopped. → water Acca and Benjamin
12:52	37°15.08	32°17.792	AUV at the surface
13:17	37°15.90	32°17.600	AUV on board
			B09 AUV 002R
14.02	37°16.219	32°17.978	AUV with box is prepared for an other dive.
14:15	37°15.520	32°17.804	AUV ready to dive
14.17	37°15.460	32°17.725	Test with the AUV. → OK

14.30	37°15.012	32°17.882	AUV in the water
	AUV POSITION		B09 AUV 003 → to be cont'd
14.36	37°15.0731	32°17.952	dept 20.70 m
14.46	37°15.017	32°17.880	dept 470.30 m
14.56	37°15.075	32°17.886	dept 1126.0 m
15.06	37°14.991	32°17.888	dept 1576.20 m
15.16	37°14.996	32°17.887	dept 1788.0 m
15.26	37°14.907	32°18.135	dept 1899.30 m — AUV is far from the pro Ship is moving closer the AUV.
15.36	37°14.749	32°18.508	dept 1961.40 m
15:39	37°14.749	32°18.508	the AUV is coming up.
			~~mission~~ stopped
15:49	37°14.547	32°18.918	dept 1407.30 m
16.09	37°14.5107	32°18.955	AUV surface. Watch Alice.
	Ship Position		
16.12	37°14.447	32°18.601	Boat going closer to recover the AUV AUV on the "quart avant" à 300 m
16.16	37°14.403	32°18.618	Putting Zodiac in the water
16:20	37°14.362	32°18.646	Going to recover AUV.
16:32	37°14.238	32°18.861	Attaching the AUV
16;38	37°14.249	32°18.573	AUV back on board B09 AUV 002R
16:45	37°14.133	32°18.476	Zodiac on board
17.07	37°14.973	32°17.908	Going to EVAN for deploying the CTD while scientific meeting.
			CTD profile plan is:
			1st Upon immersion — 5m above bottom — Starting EVAN transect South
17.17	37°16.175	32°17.237	Still in transit à meeting
17.21	37°16.490	32°17.143	Fin du profile

8.40	37°16.546	32°17.342	Arrival @ station.
8.48	37.16 52	32.17.38	Station for AUV
8h45	37°16.722	32°A.271	Magnetometer data logger on @ 8"45 on AUV
			B09 MAG 002D
9"05'45"			MAPPER data logger on @ 9"05'45" on AUV
			B09 MAP 002D
9"35	37°16.472	32°17.381	Start of AUV into water.
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9"41	37°16.463	32°17.394	AUV into water Cap 180°
			On the map Start @ pt 2 and finish @ pt 8
9"55	37°16.440	32°17.646	AUV portion
10h10	37°16.486	32°17.6918	
10.27	37°16.555	32°17.803	Position of AUV — Abandon ship
10.28	37°16.555	32°17.360	either BUC or Gaps.
10.42	37°16.579	32°17.859	
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			1st Upon immersion — 5m above bottom — Starting EVAN transect South
17.17	37°16.175	32°17.237	Still in transit à meeting
17.21	37°16.490	32°17.143	Fin du profile

Time	Lat	Long	Description
17.25	37°16.519	32°17.241	Getting a Position
17:31	37°17.205	32° 16.400	CTD ready to be deployed
17:33	37° 17.209	32° 16.400	CTD in water / surface & going down
17:38	37° 17.209	32° 15.339	CTD going down velocity 1.30 ms⁻¹ longueur 2000
			total depth 1817 m.
17.39			velocity 1 ms⁻¹ Lgr 2900 m.
17:44	37°16.410	32° 17.195	depth 1820 m / 1.06 ms⁻¹ length -650 m Pressure 666 db. (decibar ≈ m).

CTD (gps point) Lat Long Lgr de cable Pression (vitesse ds)

B Ø 9 CTD Ø02

File name 3108_CTD_002.hex

	(depth(m))	W/out(m)	Pression(db)	(ms⁻¹) Vitesse ft/sec	
17:51	37°16,470	32°17.194	7820	7090	7775	-7,70	Going down.
17:56	37°16.410	32°17.193	7821	7832	7356	-7,05	
18:01	37°16.410	32° 17.183	1823	1651	1680	-0.66	
18:04	37° 16.411	32° 17.194	1823	1722	1749	0	Stop down

(with ic becomes vertical).

STAY DOWN A BIT and then go up at 1 knot @ 180 or 40 (more or less).

18:09	37° 16.411	32° 17.194	1823	1723	1749	0.70	Going UP.
18:14	37°16.410	32°17.196	1823	-1429	1447	1.1	
18:19	37°16.406	32° 17.195	1822	1184	1200	0	STOP ~~DOWN~~ UP
			Going	Cap	190 @	1 knot (0.15 mile).	
18:20	37°16.406	32° 17.195	Going	= transit			
18:25	37°16.363	32°17.203	1827	1185	1198	0	Still in transit
18:30	37°16.280	32° 17.222	1830	1184	1187	0	← 67 m de point for next cast down

			Depth (m)	w/out (m)	Pressure (db)	velocity (ms⁻¹)	Action
18:33	37°16.250	32° 17.229	1832	-1184	1191	0	On position Ø3 waiting to stabilize
18:40	37°16.249	32°17.228	1831	-1186	1200	0.38	GOING DOWN
18:45	37°16.249	32°17.228	-7825	-1443	-1466	-1,05	DOWN
18:50	37°16.248	32°17.227	-1829	-1772	1748	-0,7 → 0	STOP DOWN
18:51	37°16.250	32°17.225	1830	1724	1752	0	STABILISE
18:56	37°16.251	32°17.228	1825	1724	1745	0.52	GOING UP
19:01	37°16.250	32°17.229	1830	1438	1458	0.75	UP
19:06	37°16.250	32°17.228	1827	1225	1291	0.35	UP
19:08	37°16.2498	32° 17.2290	1825	1200	1185	0	STOP UP
19:10	37° 16.250	32°17.229	1831	1201	1185	0	TRANSIT Cap 190 @ 1 knot
19:15	37° 16.212	32° 17.237	1826	1200	1185	0	TRANSIT
19:20	37° 16.125	32° 17.256	1830	1188	1185	0	TRANSIT
19:24	37° 16.099	32° 17.263	1831	1192	1185	0	STABILISE
19:30	37° 16.098	32°17.263	1830	1188	1200	0.6	GOING DOWN
19:35	37° 16.098	32° 17.262	1831	1520	1538	0.96	DOWN
19:40	37° 16.098	32° 17.263	1831	1722	1749	0	STABILISE
19:41	37°16.098	32°17.263	1831	1717	1741	0.57	GOING UP
19:45	37°16.098	32°17.262	1831	1550	1568	1.09	UP

Change of Plan for CTD

Because of difficulty in moving and going up with the cable.

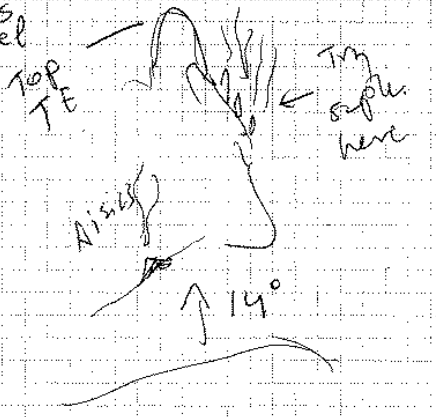
Decided when first cast down

TIME	LAT	LONG	Description / Comments.				
			DEPTH (m)	w/out (m)	Pressure db	$\vec{v}$ m/s	FKTION
19:50	37°16.098	32°17.262	1828	1271	1285	0.65	UP
19:52	37°16.098	32°17.262	1831	1189	1205	0	STABILISE
19:54	37°16.098	32°17.262	1831	1189	1205	0	TRANSIT
20h00	water	Valeur					
20h00	37°16.053	32°17.272	1834	1189	1203	0	TRANSIT
20h05	37°15.957	32°17.293	1848	1189	1186	0	TRANSIT
20h08	37.15.934	32.17.300	1831	1189	1192	0	Stabilise.
20h10	37.15933	32.17299	1850	1189	1195	0	Stabilise.
20h12	37 15.934	32.17.2999	1850	1189	1200	0.97	GOING DOWN
20h15	37.15933	32.17299	1849	1336	1358	0.92	GOING DOWN
20h20	37 15.934	32.17299	1848	1547	1573	-0.5	GOING DOWN
20h25	37 15.934	32.17 299	1848	1682	1711	0.3	GOING DOWN
20h27	37 15.933	32.17 299	1836	1724	1750	0	Stabilize
20h31	37 15.933	32.17.299	1850	1724	1750	0	Stabilize
20h32	37°15933	32.17.299	1850	1722	1750	0.5	UP
20h35	37° 15' 933	32° 17 299	1846	1613	1634	0.75	UP.
20h40	37°15934	32°17 299	1845	1379	1400	0.5	UP.
20h45	37° 15 933	32° 17 300	1847	1232	1244	0.5	UP.
20h47	37°15.933	32° 17.300	1847	1182	1200	0	TRANSIT
20h50	37 15902	32°17 298	1843	1182	1200	0	TRANSIT
20h55	37 15824	32°17 299	1843	1182	1200	0	TRANSIT
20h58	37 15 781	32 17 303	1861	1183	1183	0	Station-Stabilize
21h00	37 15 38	32 17301	1862	1183	1185	0	Stabilize
21h05	37 15780	32 17 300	1861	1183	1195	0	Stabilize
21h08	37 15780	32 17300	1856	1191	1198	0.7	DOWN
21h15	37°15 779	32 17 300	1857	1545	1550	0.6	DOWN

TIME	Lat	Long	Depth	Depth	Depth	N	
21h20	37°15	32°17300	1850	1713	1741	0.3	DOWN.
21h21	37°15780	32°17.299	1862	1723	1750	0	Stabilize.
21h22	37°15.780	32°17.300	1858	1718	1750	0.6	UP
21h25	37°15780	32°17.299	1854	1540	1556	1.08	UP
21h30	37°15.779	32°17.299	1861	1257	1279	1.07	UP.
21h31	37°15.780	32°17 299	1857	1161	1200	1.07	last point

TIME	Lat	Long	Description / Observation.
21h45	37°15 780	32°17.299	CTD is on its way up.
21h50	37°15 780	32°17.299	CTD is still on its way up.
21h54	37°15780	32°17300	CTD is on deck
			transit to the pint of ROV Deployment.
22h00	37°15.862	32°17369	Cap 28° prend, transit to ROV Deployment point
22h15	37°17260	32°16710	still in transit to the pint of ROV deployment
22h27	37°17°329	32°16 870	ROV into water Dive
22h34	37°17°250	32°16 947	Dive into the water
22h~~48~~	[32 17 245 (ROV)]	[32 17 019 (ROV)]	objectif demandé : W 32 16 531 → N 37 17 312 point de liaison haut déb't sur le ROV relance – descente reprise
~~23h00~~			
23:00			position ROV X: 13438 Y: 7081 depth ~250 m
23:10			position ROV x: 13468 y: 7044 depth: 466 m
23:20			x: 13538 y: 7042 depth: 660
23:30			x: 13595 y: 7059 depth: 884
			DVD prélevés (photo de poisson) C1 → Principal overlay C2 → bras 1 overlay C3 → principal overlay
23:40			x: 13646 y: 7083 depth: 1098
23:50			x: 13719 y: 7024 depth: 1342

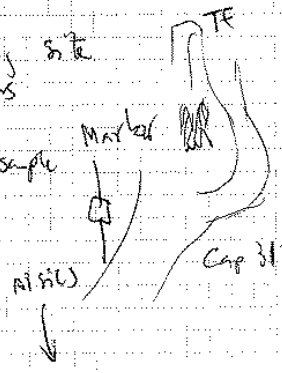
Time	Lat Y	Long X	observation
00:00:00			→ x = 13754 depth 1560 y = 7020 descente is much slower stabilisation and more towards site → Tour Eiffel
5/9/09			
00:10:00			→ x = 13820 depth 1589 y = 7094
00:15:00			Cedric & Nelia start of shift
00:17	7125	13800	Stop ROV descent => tries. Lat 37.17.313 Long 32.16.813
00:20			Pour l'instant tout va bien !
00:24	7145	13983	Nearly on the bottom. + or left arm
00:26	7134	14013	Have to pit
00:27			Start DVD Recorder
00:28	7134	14013	marker yellow
00:30	7158	14073	test maesho ok
00:31:30	7155	14080	push in the bottom
00:37:00	7157	14135	arriving to toor eiffel from west
00:40:00	7162	14203	on Aiscies
00:41:20	7153	14209	on tor Eiffel
00:46:25	7166	14219	sortie sonde temperature
00:50:30	7172	14224	sortie du panier



Time	Lat Y	Long X	observation
5/9/09 00:55:00			Approaching ~~sortie~~ fluid ext to take temperature measurement — B09TEM001
00:58:49			shrimps!
01:00:05	7199	14218	too close to the vent
01:00:40			taking TEM 200°C
01:02:00			316.50 °C max
01:03:00			~~sloppy~~ While taking temp measure the chimney was slightly broken it is in this largen hole of the broken chimney that the fluid sample
01:08:00			DVD 1 Stopped !!
01:14:			DVD 1 changed. DVD 2 de C1 en route ... bottelle titane #2
01 17			Restart DVD 2 C1 ~~26~~ ok.
01 18			Going back to Eiffel tower
01 20			Approaching again TE to sample fluid
01:22:40			Taking fluid #2 — B09FLU001 with BOTTLE #2 x 14207 z 1685 y 7192
01:26:04	14208	7173	Trying to catch #4 ~~fish~~ Caught #4 #4 and try to take it w/ PANEL Slumpa ~~fish~~ #4 in 1st position
01:37			Bottle #4 fell down → going back to look for it
01 42			catching bottle

5/9/09 JE/CB

01:47:32			Bottle (4) in slurp to catch it again
01:54:20			Bottle #4 in main arm
01:57:00			Approaching site w/ smokers
01:57:45			Going to sample
02:00:45			Problem of arm again
			Bottle @ bottom of Lucky Strike #4
02:05:00			Looking for bottle
02:10:00			found bottle below fluid exit next to bottle at least 4 crabs Segonzacia mesatlantica
02:15:10			Recovered Ti bottle
02:20:00	7187	14225	trying to grab Ti bottle with manesthesia
02:23:00			Ti bottle ready for sampling
02:24:00			approaching sampling fluid exit. with bottle on 4
02:29:20			Approaching sources
02:30			Problems w/ DVDs
02:32:10			Bottle #4

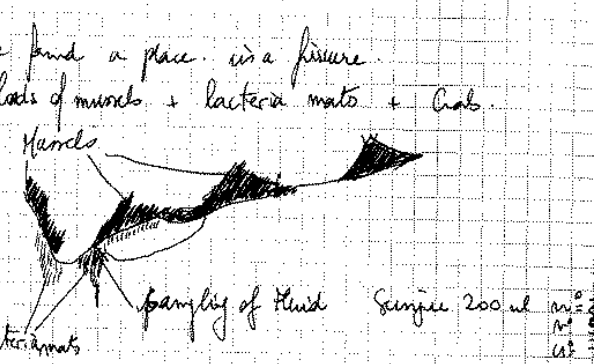


BOSFLUOR	
x	14197
y	7201
z	1685

2:34	JE TB	DVD 2 C1 ejected
		Pb of DVDs !
		Impossible to record
02:36		Problem w/ Basket
		Bottle #4 in basket
02:41		Trying to catch the sensor
02:44		All DVDs OK
		T sensor in hand HTO10 in hand
02:51		Moving to target
01:54		Trying to put it in
03:02		Putting it in → need to reorient it
03:26		fell & and not well put in the hole
03:12		Changing arms & going to put it in main arm
		present ourselves on left side of structure
		PROBLEM W/ DVD #1
03:15		Retrieve DVD 1 #4
03:32		Putting the sensor
03:37		fell to bottom
03:46		HTO10 recovered & moving to other one.
		Approaching vents
03:48		Trying to put it in after breaking the chimney
03:53:10		HTO10 in
03:55		HTO10 IN

BOSHTW0010	TOP
x	1412
y	7158
z	1684

05/5/08					
04:01	CR, TB, DF			05:01:39	
04:06		Catching n° 14 for basket			
		Green - Yellow Red			
04:12		Turning the arm & trying to grab it properly			
04:22		Relocating VICTOR			
04:36		Problems w/ fluid preleveurs			
		Go down to scope the low T fluid			
04:43		2 temperature sensors @ both		5n°8	X 14218 Y 7159
		27003 Cap 3.4 26007			
		NKG HTW 010 Down in cradle for			
04:49		Charging DVD		5n°27	
04:50		Start DVD		5n°33	
04:52		Recovering of			
04:53		011 sensor inlet Recovery 27003		5n°37	
04:54		BOS THN 27003R		5n°38	X 14218 Y 7159
		Recovery of T sensor	x 14213 y 7158	6:56	
		Looks bent → broke	z 1696	6n°00	
				6n°04	X 14218 Y 7159
4:55		011 sensor in hand Recovery 26007		6n°18	X 14212 Y 7174
		BOS THN 26007R	x= 14208 7114 1647	6n°25	
				06:29	
				06:32	



Mesure of Temperature (ROV) first try up to 17°

~~BOS FLU 003~~ 56°

~~BOS~~ FLU 002 50°.

DVD 1 stop problem with reading

problem solved with DVD 1 reading.

taken at T1 seringue ; T1 cannula is regularly loaded @ 90°

~~BOS~~ Fluid sampling ~~BOS FLU 003~~.

Seringue n°2 back to the basket

Seringue n°5 is taken T1 Cannula is straight,

Seringue n°5 is in place.

~~BOS~~ FLU 004 -

~~BOS~~ FLU 005 -

These two ~~bottle~~ samples have been done with a straight T1-cannula angled towards the exit.

No fish nor fish

Moving to top of Tour Eiffel

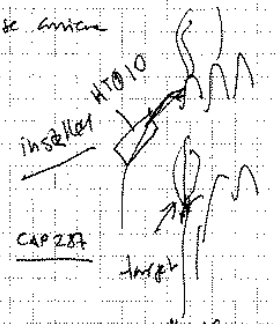
5/9/09 | OL MC AC

06 34 Nomarch Marker
06 35 Going up TE
06 35 Capture is lost working
06 37 Installed T sensor
06 38:30 Approaching T sensor to install small

Black Smokers!

06 45 looking 271 to Smoker lower the previous one

06 51 Problem transverse arm



06 53 – Problem with the arm again. "Défaut d'enclenchement"
– problem with the control of the arm is outside... videorecords

7:08 keep
being shot down by 7:11
recently check gone mad.
every 2 hrs.
Work is impossible. About Dive.

nbart
DVD1_6
DVD2_4
DVD3_4

7:21 On bottom waiting to stop

7:22 Good bye TE

7 34 Going up

8.12 AM 37° 17.332 N } Location of Ship (Pourq Pas?)
32° 16.484 W }

8.17 37 17.332 N
32° 16.484 W

MAL : 37° 15,09' N
AUV 3 32° 17.30' W

5/9/09

AUV ASTER X

Continuation of profile → Dive #3

B09AUV003D

Date/time	lat Y	lon X	
5/9/09			
08:26	37°17.321 N	32°16.478 W	Position du bateau
08:34	37°17.265	32°16.456	Location of ship.
08:40	37°17.215	32°16.406	Location of ship
08:46	37°17.171	32°16330	Victor fait surface
08:50	32°17.155	32°16.272	Le ROV est récupéré et sur le bateau.
09:03			bateau fait route vers le point de mise à l'eau
09:06	37°16.457	32°16.562	Location of ship
09:20	37°15.072	32°17.281	Location of ship, le bateau est au point de mise à l'eau de l'AUV
09:31			Tests sur l'AUV
09:38			Calibration de l'AUV
09:39	37°15.435	32°17.391	Location of ship
09:57			Fin de Calibration de l'AUV
10:28 AM	37°15.065	32°17.778	AUV Dropped in the water
10:32	37°15.1026	32°17.8367	AUV Location
10:40			Problem detected in AUV
10:48	37°15.122	32°17.654	AUV to be Back on the Ship
11:14	37°15.197	32°17.588	Ship Location. 11:03
11:58	37°15.191	32°17.663	changement de spark : K. AURA, D. ARMAND, C. Charlotte
12:21	37°15,038	32°17,882	ship position

B09AUV002D

B09AUV002R

B09AUV002R

Time	Lat/Y	Lon/X	
12h39	37°15.940N	32°17.887W	Ship position
12h58	37°15.032N	32°17.876 W	Ship position 35m from the deploying zone
13h13	37°15.005N	32°17.895W	AUV expected to be dived within 15 mn
13:27	37°15.049	32°17.965	Ready to dive but probleme with beacon.
14:16	37°15.062	32°17.802	in 20 min AUV should dive...
14:27	37°15.039	32°17.848	AUV start deyplement
14:28	37°15.040	32°17.860	AUV in the water B09 AUV36 D
	AUV POSITION		B09 MPR005 O
14:30	37°15.090	32°17.877	depth 17.60 m
14:36	37°15.014	32°17.755	~~depth~~ AUV is not responding !
14:45	37 14.965	32 17.869	AUV Still surface.
14 49	37 15.0088	32 17.856	AUV @ 21.8 Still not responding.
			~~Back to surf~~ on the way to surface
14:58	37 14.95	32 17.84	On the way to surface
15:08	37 14.95	32 17.88	Still coming up
15h10	37°14,938	32°17,581W	reset de l'AUV
15h18	37°14,978	32°17,557	ship position
			calibration de l'AUV.
CELINE. ERIC. ALEXANDRE on watch			
15h00	37°15.980	32°17.569	Ship position . start to retrieve the AUV
16h20	37°14.580	32°17.532	AUV retrieve
16h26	37°14.478	32°17.495	AUV ON BOARD B09 AUV36 R
16h31	37°14.478	32°17.495	MAPR ON BOARD B09 MPR005 R
16h57	37°14.120	32°17.893	on way to CTD at AXESOUTH
			speed 3.1 nd cap. 215°
17:08	37°13.086	32°18.534	speed 9 nd cap. 207°
17:15	37°12,332	32°18.974	CAP. 218,9 Vit. 2,4 kn
17:24	37°11,994	32°19.196	Ship position - arrived at start CTD 3 B09 MPR 0060
17:26	37°11.993	32°19.196	CTD 3 Deployed B09 CTD0030 Descend 1m/s

Time 3/9/19	Lat (N)	Lon (W)	Depth (m)	Line out (m)	Pressure (db)	$\bar{V}$ (m/s)	Action
17:34	37°11.992	32°19.195	2226	327	339	-1.01	descend
17:44	37°11.992	32°19.196	2226	920	940	-1	descend
17:54	37°11.992	32°19.195	2243	1847	1500	-1	descend still again
18:04	37°11.992	32°19.198	2249	2033	2073	-1	descend yet again
18:05						-0.8	slowing down approaching bottom
18:07	37°11.9929	32°19.1971	2240	21458	2181	0.0	Stop
18:09	37°11.9931	32°19.1966	2240	21458	2181	1.2	Begin to raise
18:14	37°11.9920	32°19.1967	2234	18046	1825	1.2	continue to raise
18:24	37°11.9920	32°19.1968	2244	1228.3	1239	1.2	continue to raise
18:34	37°11.9915	32°19.1961	2243	550.5	557	1.2	continue to raise
18:40				100		0.5	slow down, rising at
18:42	37°11.990	32°19.196	2245	37m	41	0.0	stop, pass to Port
18:44	37°11.990	32°19.196	2245	0	0.1 (after 4 min)	0.0	surface
18:48							Stop aquisition
18:48 19:09	on way to Axis arrive, deploy CTD4		1900	CTD 4		B09 CTD0024	

Time	Lat (N)	Long (W)	depth (m)	line out (m)	Pressure (db)	$\bar{V}$ m/s	Action
19:09	37°11,0251	32°19.4040	2402	0	1	-1.0	Start descend
19:19	37°11.008	32°19.40	2403	609	650	-1.2	speed up and continue to descend
19:29	37°11.0079	32°19.4095	2401	1105	1126	-1.2	continue to descend
19:39	37°11.0082	32°19.4090	2403	1778	1818	-1.2	continue to descend
19:46							Slow down approaching bottom
19:48	37°11.0086	32°19.4098	2406	2310	2350	0	Stop
19:49	"	"	2402	2310	2350	1.2	~~Begin~~ begin to raise CTD
19:58	37°11.006	32°19.410	2406	1773	1790	1.2	continue to raise
20h06	37°11.009	32°19.409	2391	992	997	1.2	UP
20h18	37°11.008	32°19.405	2403	324	324	1.2	UP

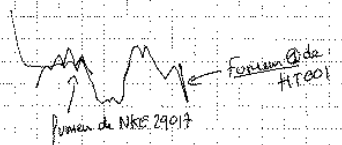
Time	Lat	Long	Depth	W/out (cm)	Measure	∇ c/s	Action
20h24	37°11.0088	32°19.4054	73 m	remontée à bord		5197	
20h27	37°11.0089	32°19.4092	surface	surface			
20h28	37°11.0086	32°19.4060	à bord				
			Transit towards the point of RoV deployment.				
20h46	37°13.312	32°18.469					
21h01	37°15.74	32°17.754					
21h15	37°16.263	32°16.554					
21h16	37°17.357	32°16.599	Arrivée @ station for RoV deployment.				
21h21	37°17.397	32°16.683					
21h31	37°17.395	32°16.685	hull in station				
21h35	37°17.383	32°16.683	RoV into Water				
21h45	37°17.245	32°16.737	Let drift under				
21h02	⚠ ROV position x=1378 y=7084		grant Julie et Thibaut				
	⚠ ROV position in UTM		depth = 353				
22h12	x = 13826	x = 7050	depth = 597		offset UTM	X_0 = 550 000 Y_0 = 4 120 000	
22h18			DVD changés (non commencés !)			C1 → principale C2 → local 1 C3 → principale	
22h22	x = 13895	y = 7097	depth = 870				
22h32	x = 13917	y = 7097	depth = 1170				
22h42	x = 13967	y = 7106	depth = 1645 à 22h42 pb du treuil la descente est arrêtée				
22h43			depth = 1632				
22h46	x = 13986	y = 7101	depth = 1421				
22h48			depth = 1422 photo de crevette (forme moustachue) photo 7 (190cc-7)				
22h54	x = 14050	y = 7101	depth = 1415 on a perdu la localisation le treuil a des pbs pour remonter				
22h56	x = ? y = ? (pas de localisation)		⇒ OK Tout depth = 1419 la descente reprend				
22h59	x = 14110	y = 7115	depth = 1444				
23h05	x = 14088	y = 7119	depth = 1570 (à 120 m du fond)				
23h10	x = 14157	y = 7166	depth = 1576 (à 129 m du fond)				
23h15	x = 14199	y = 7134	depth = 1571 pesée				
23h17			pesée terminée départ pour Tour Eiffel				

Time	Lat	Long	Observation / Description 6/9/15 V387
23h21	x = 14165	y = 7147	dept = 1682 essai bras fond à 14 m
23h24	x = 14193	y = 7175	depth 1695 DVD demarrés chimère (photo)
23h27	x = 14172	y = 7158	fond à 5m manqueur (24) depth 1689.6
23h31			bcp de courant on n'arrive pas à le contrer avec moteur transversal on essaie de se décaler vers la droite sans succès - on se déjase par le haut et aussi
23h35	x = 14231	y = 7180	
23h40	x = 14207	y = 7213	depth = 1688,9 (7 m du fond) on contourne par la gauche
23h44	x = 14236	y = 7215	Serment de Tour Eiffel depth = 1680 m photo 9 : APN chimère HTO10 Jumeau AISICS
23h51	x = 14228	y = 7162	→ Trop de courant pb de stabilisation Jumeau AISICS photo 10
23h57			pb de moteur un cablage mal mis inverse la poussée ... annule l'effet de manoeuvre transversal
5154			
6/9/15			
00:05	x = 14140	y = 7149	depth 1665 m
00:09	x = 14206	y = 7209	on prend avec le bras le capteur HTO01 (nom complet B09 HTW 001D)
00:10			Capteur saisi le pb du moteur va peut être se résoudre
00:20	x = 14237	y = 7166	on est bien localisé par capteur photo : 11 photo : 13 → pose ratée !!
00:24			
00:27	x = 14210	y = 7203	photo 15 photo 16 photo 17 (avec beau passage !) photo 18 vue avec HTO10 (et HTO01)

Tour Eiffel
HTO10
AISICS
0° N

B09 HTW 001D
37°17.333
32°16.578
x 14237
y 7166
z 1686

t	lon/y	lon/x	6/5/09	V385
00:37	x=14213	y=7177	on s'approche d'un autre fumeur.	
00:40	x=14216	y=7176	on prend NKE29017 avec le bras P=24 Cap @ 50	photo 19
00:47	x=14212	y=7181	presque dedans	photo 21
00:49	x=14219	y=7162	posé !	photo 22



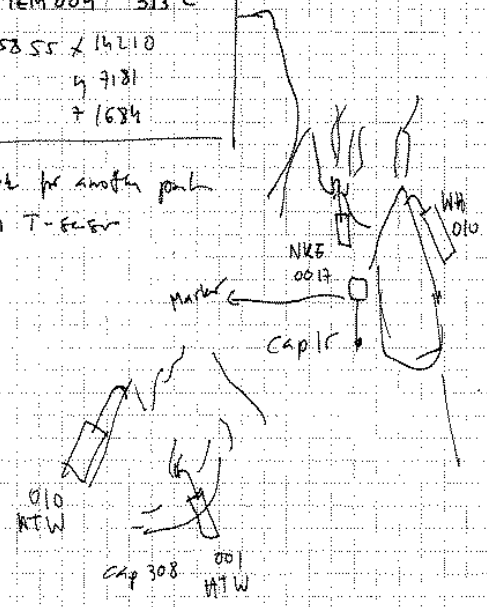
cap 52
depth 1684

B09 THN 29017
lat = 37° 17.331
lon = 5.2° 16.529
X = 14219
Y = 7162
Z = 1684

00:54 Taking out the T sensor to measure T°

NKE 29017

B09 TEM 004 313°C
00:58:55 x 14210
y 7181
z 1684



Going to look for another part to install T-sensor

01:08			
01:11			
01:12			
01:20			
01:29	7089	14230	Arrive on Montagnar
01:34			T Sensor 2008
01:35			Start 2nd Series of DVDs
01:36			Marker M08 2
01:41			Repositionning for T measurement
01:51			T measurement = 296 °C

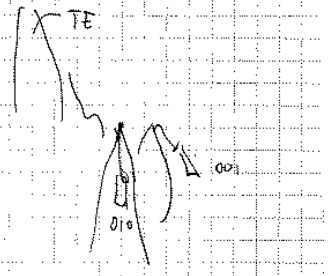
B09TEM005 296°C
14217
7076
17.01 m

6/05/09 V389

Going up to look for another source for 2nd NKE sensor
Putting away the sonde T
Sonde T in # 29006 in hand
Going to put it next to previous one

B09 THN 29006

B09 THN 25006
1686
14212
7178



Next to 29017

2 WHOI
2 NKE installed in TE

6/09/09 Dive 389

Time	X	Y
01:55		
01:59		
02:03		
02:07		
02:11		
02:12	14210	7074
12:14		
02:15		

Ti Bottle 1 in Maestro

14215
7076
↳ 750mL

BOSFLU006

Rov not very stable

14216
7075
1701.9 m

Montegur

Cap = 168

Ti Bottle 3 out of basket

Bottle 3 Fired

BOSFLU007 (Bottle 3) 750mL

14216
7079
1701m

Taking out T-sensor N7009

Putting down sensor in same site as Ti fluid Samplers

Putting sensor ' hole

Montegur

BOSTHW009
in Montegur
x 14213 Caps
y 7074
z 1702

256°C

ALVIN

Time	X	Y
02:15		6/9/09
02:21	83	
02:25		
02:29		
02:35		
02:37		
02:39		
02:41		
02:43		
02:45		
02:50		
02:55		
03:01		
03:08	14206	7080
03:16	Parking	

Note 06/09/09

Going back to recover T-Sensor from 2008

BOSTHN27017k Recovered & in basket

Sensor by Alvin weight

Taking out T sensor

Going towards the plate

Measuring T → in crack only 5°C → no diffuse flow

Going for Alvin plate @ mound

Under plate → only 5°C

BOSTEM006 80°C

BOSTEM007 70°C Just by its side, below

T sensor in

Taking out low T bottle

Bottle grabbed & going to take sample

BOSFLU009 Diffuse flow Bottle #9

Looking for new site, around the N of Montegur

N Montegur → down to check small vents

Taking out the T sensor

Vents 2.8 cm ~ 35 cm high

BOSTEM008 196°C

BOSTEM009 ~~235°C~~ 295°C

Cap 140

196°C

295°C

Putting T sensor in high area

06/07/07

03:25 03:26	14205	7077	Trying to install sensor HTW007 T sensor fell
03:30			T sensor caught by the [illegible]
03:44			BOS HTW007D x 14224 Nof Montagne y 7079 @ 1962 z 1703 Low
04:02			Smile dans sac
04:06			looking for place to put in the T sensor (NKE) Smile #7 stuck in the basket
04:17			Stuck in basket → take out ? Rope broken off and stuck in hole in back of basket
04:21			Going for another T sensor NKE 005
04:30			Re-positioning VICTOR
04:45			" " "
05:06			Moving for another site @ Montagne
05:10	14205	7066	settled @ cap 105
5:41	54		Chapeau OVD → #4 in
5:43			fallen on floor → rearranging it
5:48	46		NKE #9
05:52			BOS HTW007D Cap 107 x 14206 y 7074 z 1701

outside
Installed in flow
Not installed

06/09/07

6:05	
05:58	Approaching sensor to recover it
06:04	Caught in hand →
	BOS HTW007D 14206 7074 1700 Installed → after 2 hrs
06:14	Moved & installed @ basket
06:18	N°14 on hand
06:23	Caught it in the right way
06:24	Going down into the hole
06:30	BOS THN014D x 14212 Cap 55.3 y 7074 z = 1701
6:42	from BIC position BOS THN2[illegible]001R
6:58	14212 7076 BOS THN 26021R

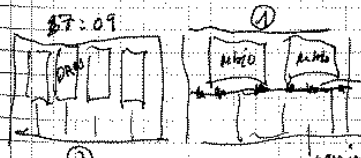
Mathilde + Céline ↓

recover sensor T probe of 2008 with well developed bacterial mat – still in place

over of Summer

"probe has moved and has the "canule" pointing up in the water

07:09



Ascenseur NASA
14330 / 7070

→ transfer of 2 HT filled samples (Ti bottles) in Panier ① Nina

the NKE probe falls of the side of VICTOR's basket into the basket

→ transfer of recovered NKE probe into the basket NASA ①
26021

→ transfer of NKE Rec. 2700 into NASA ①

→ transfer of Ti bottle LowT into NASA ①

6/09/09

time	lat/Y	lon/X	
7:39	7163 BGC	14741	NASA dive team onboard → transfer of NKE unit recovered 27/08 into NASA ④
7:44			← change to DVDs #5 (1 2 3) ← bio box 7 in NASA VICTOR's basket ← bio box 4 in VICTOR's basket "NKE65" accidentally one of the new NKE probes has been grabbed by the float in NASA and transferred to VICTOR's basket with bio box... packaged in small plastic box deep in basket also it is worth noting that white bio box 4 was taken out of NASA a little bit of water may have coagulé in...
			grand on a sorti Bio box 4 du panier, on a un peu laissé sur la caisse et il y avait qu'un peu d'eau rentré...
9:16			End of station at NASA – route toward Roldan (Marker H08-11)
9:17	7055	14280	we see a mooring with : "bouée"
9:25	Bouée off		we go on a relevé – Cimandef.
9:31	7068	14192	"HD08 10" – cap 190 – Roldan – Cimandef – 218 – 150 – 54 – Roldan mount 1 – Roldan mount 2 – old chimney – mosaic – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 – 11 – 12 – 13 – 14 – 15 – 16 – 17 – 18 – 19 – 20 –

06/09/09

TIME	Lat Y	Lon X
11:07		
11:08		
11:13	7178	14219
11:18		
11:25		
12:01		
12:05		
12:09		
12:13:55		

Pictures taken from temperature measurement

Temperature ~ 7.9°C

2nd temperature measurement

~ 7.60°C BOY TEMO11

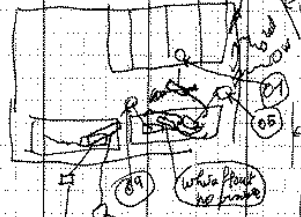
end of temperature measurement

moving cap 1 by 1 to NASA vers sud est

belle capture d'image Chimère

arrive at NASA pour NASA

VICTOR's basket after NASA



← transfer basket 7 in NASA the handle breaks just as the box is taken in NASA...

3 new NKE/Mon (2W/1R)

→ NKE Trois green Celui-ci yellow in VICTOR's basket above the "faucille"

→ 2 NKE Trois grabbed together: NKE 9 black-green-red red float NKE W4 white white float

5 new NKE prises (1 W/we float 4 red) ← transfer basket 4 in NASA

→ NKE noire white/blue/white float black

→ NKE prise red float / black/white/green

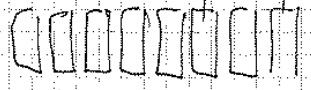
etc. change to DVDs #7

Approaching NASA to get Sensors

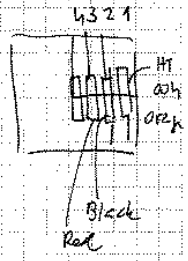
NASA closed panel N°1

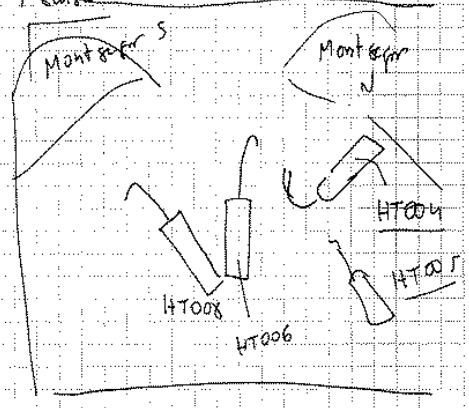
Going to look Sensors

Taking 1st



TIME	
12:15:45	HT004 in basket
12:19:00	T Sensor fell from side →
12:22	#3 in elevator alt
NASA #1	V#1 HT004 - ORANGE / yellow
NASA #3	V#2 HT - Black 006
NASA #2	V#3
	V#4
NASA #4	
12:35	Going to put them down @ MONTSEGUR otherwise too complicated of a panel
12:39	Going to Montségur
12:43	Settled @ hole E between Montségur N Montségur S HT008 being put down
12:46	Trying to take out T Sensor
	Catching 006
12:50	Taking out last sensor in panel
13:05	Going to Elevator





6/5/08					
13:06	Cap Ecst to Elevcto				
13:12	Cutting a bag → victor very light				
13:13	Stopped catching the knife				
13:24	Caught bag for weight & in basket under T sensor				
13:25	Going to elevator to catch rest of sensors				
13 35	Green Green in Basket #1				
13:35	W/O colors				
13:41	13:41 BLUE IN Basket				
1349	Box 2 closed				
13 47	Serpette on maestro				
1350	Cutting last of the NASA				
1352	T PROBE ~~FAILED~~ ON THE GROUND ! (Blue ~~orange~~)				
1355	↳ HT011 &				
13 57	Got the T Sensor				
	Cut the ~~last~~ weights				
	14326				
	7069				
	1684.5 m				
1408	HT011 ⇒ Orange tape got off.				
	the Sensor is blue only				
1408	DVD Change → Change to DVD #8				
1412	Waiting for Release of NASA				
1421	Going to cut the rope ⇒ Largage accouslig				
	doesn't work				
1423	ASCENSEUR LARGUÉ				
14 32	Taking a WHOI T Sensor from Sherpa to Maestro and then to Basket.				
14:49					CAP 282
14:45					NASA ON SURFACE CAP 282 vers Y3
14:49					Going N - NW
14:49					Zodiac ready to go to water
14:53					Pillows above an scarp
14:57					Going W/ sensor in hand
~~15:00~~					~~NASA ONBOARD~~
15:05					>stopped waiting for ship to move
15:11					Ballast up
15:16					Moving towards Y3 - Chimere
15:22					Inactive hydrothermal deposit
15:25					Transit in estimated terrain
15:29					Arriving to Tour Eiffel
15:29	1h233	715			Passing tour Eiffel on the N side
15:36					Arriving to a active site
15:38					Our active site PPH
15:42					Fault & down to Krk lake
15:43					Going down
15:49					T Sensor in cradles
1					~~SIMRA~~ Y3
15:53					on top of Y3
15:57					Sitting on top of Y3 looking for site to put the T sensor
15:06					With sensor in hand - Biobox
16:10					HT011 in hand -
16:12					DVDs in #9
16:17					Broken small outflow @ 11m on Y3 height
16:28					Moving for new site

16:32 @ Y3 looking for salt to put T sensor

16 33 Top of Y3 crashing

16 39

16 41 Trying to touch the top → not possible

16:46 @ base of T Y3 eclipse → no exit of pictures

16:48 Going up again Cap

16:50 @ bpt → Going down Cap 307

16 57 50 Y3 → Black in basket after breaking top of tower with basket

16 58 36 Putting sensor

17 00 00 Sensor in @ top of ~~Tour~~ Y3

Cap 255.1

BO9 HT004 D
@ top of TEiffel
Cap 254
Im 1715.5

17:04

17:10

17:19:40

12:24:48

12:43:59

18:02 Y7489 X 1407

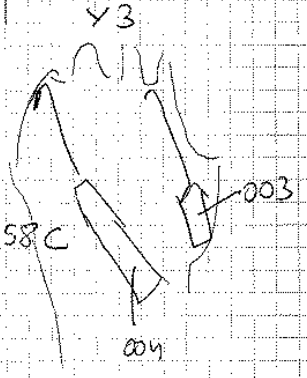
18:16 DVD s#10 1 2 3

Catching new T sensor for basket
transferring from Sherpa to main arm
View of T-Sensor in the arm
Approaching top of Y3 with new sensor

VERT	VERT	HT003
BO9 HTW003D	Green	Green
Im009		
7490	top of Y3	
1717	Cap 233	

~~309 HT~~ BO9 VID 001
~~17:24:48~~
17:24:00
17:30:00

Video event to measure / calorimetry for ERIC MITTELSTAEDT



CAP 215

309 → 320 C (max)
Source Temperature: 320.58 C
for vent with capture
ST04

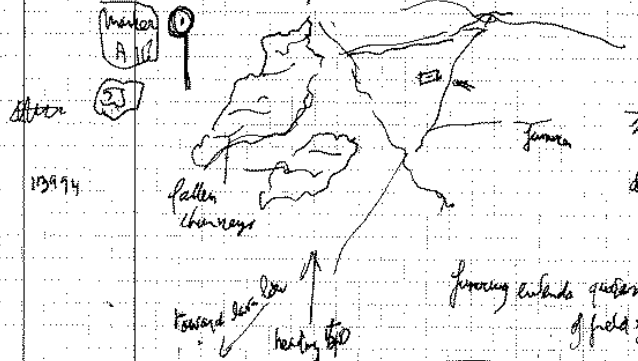
Source Temperature:
for vent with capture

looking for WRE mark 2001_27002. It looks like the area is covered by debris of chimney... we clean a little bit, the dust in the water, and small things. — impossible to find ...

	Lat / Y	Lon / X
18:21		
19:26		
18:33	7488	19994
18:36		
18:41		
18:53		

we look for set of fumaroles with NKE 2008 27002

we pass a large block of chimney broken by the edge of the lava lake.



19:13

19:24

fumarolic emanations gradient to exit of field of vents

Forward flow

heading 150

the probe BOGTHN27002R

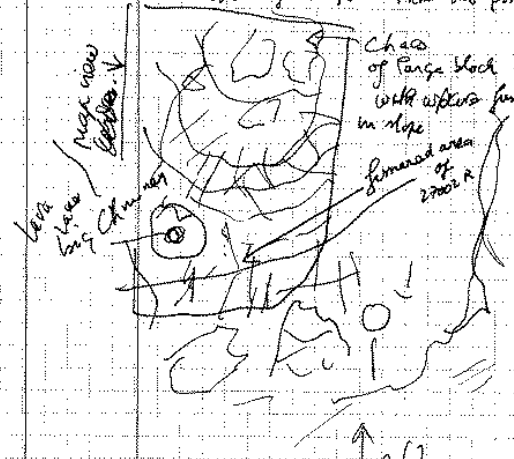
Xenon as if it was tilted and out of fumaroles.

the probe definitely is also in action - scanner

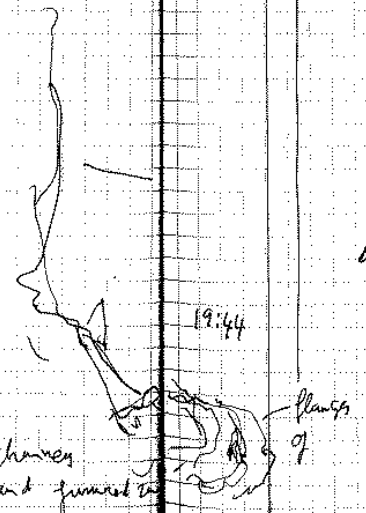
we take a next probe = white and yellow buoy while float.

we explore this area... the fumaroles do not have a known fluid flux than last year apparently.

19:32

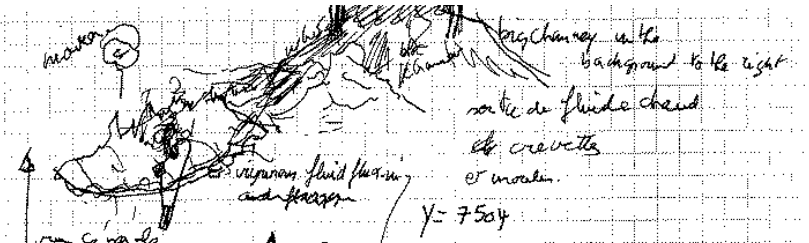


19:44



↑ 267 view with chimneys and fumarolic

highway.

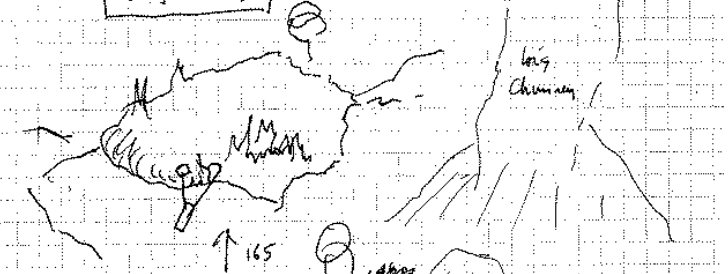


↑ 197

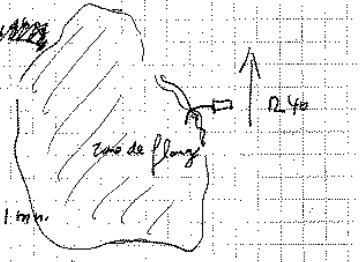
top V3 deplacement of NKE T post

Fumarolic flange

Event BOGT.....D



exploration de sud de la zone de flange



we take a sequence of video for Eric M.

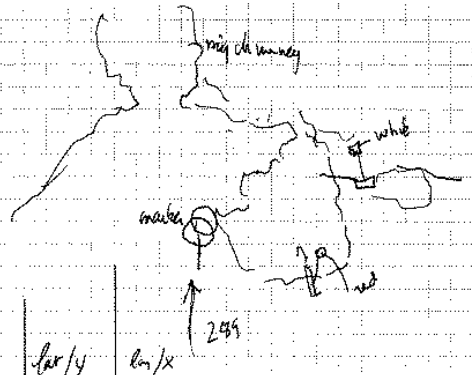
video event BOGVIDOO2 - 1 mn.

nice zonal view of flange and gastéropodes,

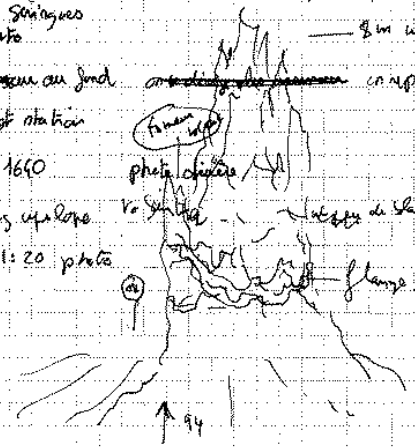
to the East of the small zone the just framed, fluid flow is stronger -

deplacement of NKE T post red float - yellow (side of basket) right

BOGTOOV2 D



time	lat/y	lon/x	
20h05	y = 7383	x = 14130	depth 1639,9
20h13	y = 7243	x = 14108	on passe entre Isabel et christa cap vers le SW
20h16 à 20h23			Changer DVD → C1 #11 C2 #1 C3 #11 (0389-111 ; 0389-211 ; 0389-311) ph au lancement → lancement manuel
20h25	y = 7147	x = 14026	dept 1674 on a fait proche de pt de remarée topo on est au site d'attente accrassem
20h26	y = 7148	x = 14026	accrassem descend ! on reste en station (Capteur BT woodshole)
			tolinjuteur 1 boîte microbes + tous les petits capteurs + damier + seringues
20h29			photo — 3m inactive chimney.
20h56			accrassem au fond ~~on change de cap~~ on repart cap NNE
21:00			reboot station
21.14	y = 7453	x = 14260	dep 1660 photo chimney
21:18	bac à 7521	est 14247	Going up slope vers Isabel — vers le blanc
			21:20 photo flange.

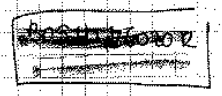


We explore the top of the edifice for a while.

6/9/08

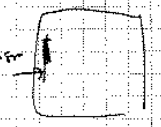
21:30
21:33
21:33
21:34
21:38
21:41
21:43
21:45
21:47
21:50
21:52
21:54
21:55
21:56
22:04 : 22
22:11
22:16
22:25
22:26
22:31
22:36
22:46
22:49
22:52
22:58 | 14282 | 7543
23:00
23:03
23:14
23:15
23:22

Going around Sintra to look for dead end
Arrivons de mer
Capteur →
Settling down to recover sensor #26020
Settled in front of sensor

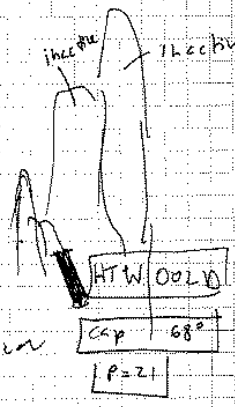


Sensor recovered & into panel Basquet of HCTOR in panel

Approaching edifice



looking into the face of Sintra 26020
Settling into Sintra
Removed top of small chimney
Taking out T sensor
HTW002 in Maestro head
probe fell off ...
probe is in the arm again...
event B09HTW002D



Change of DVD1
HTO#2 in Maestro hem
Going back to Sate to install last T sensor
Settling still around small chimneys
Not possible to put sensor → Going to look for VS3 & PP
Going 120°
Going N
Deep smoker DM high & Going North
Barely active thing site
Touring looking for sites
Turning to Sintra → looking around here
putting down T sensor on floor to put small sensor
Smoke on seafloor ~~2007~~ cap 2007
near MOP-8 marker
Catching 25019 NKE green yellow

6/5/25

23:26 Sonde in hand @ site — going up

23:27 Moving to site

23:34

BOS-HTN 250180
X 14254 CAPTOR
Y 7523 PHR
Z 16150

Cap 201

MOBO

HIGH side

NUKE 250180
H

Sonde waiting

217°C

23:42 Picking up T sensor @ fee from

Sonde in Meeskro

23:53 Charging ships

23:54 Going with white points

23:54:15

old chimney	x 14210
h=15m	y 7523
	z=16150

23:55:24 Old Chimney

2

7/8/25

00:02
00:04
00:06
00:08
00:10
00:13
00:15
00:17
00:21
00:23
00:32
00:33
00:35
00:35
00:44
00:47
00:55:54
00:57:24
01:05
01:10

Transect our old chimneys

2 white points

Big broken pillows

Two small structures, white - very small

and visible in photomosaic

BOS VID 003
White points Moiraje

00:10:00
↓
00:11:30

Going

Our half-used site

Extinct ecifa

Going W over bacterial skins towards PPH?

PPH? forest of large & small domes

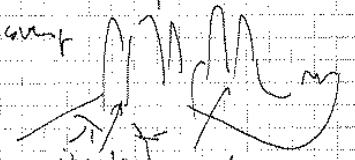
Going around structure

Go with T sensor to 'designer'

Put it on of white chimneys → Not in hole

Pull down & recovery

Margaux



our active, small area

Sand issue!?

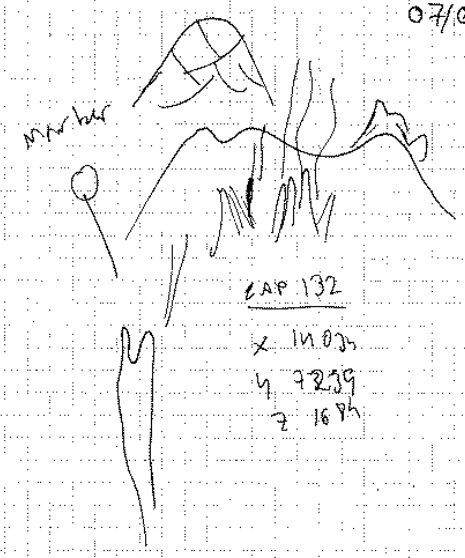
Smoking on top — Going to scale

chimney not circular filled with bacteria

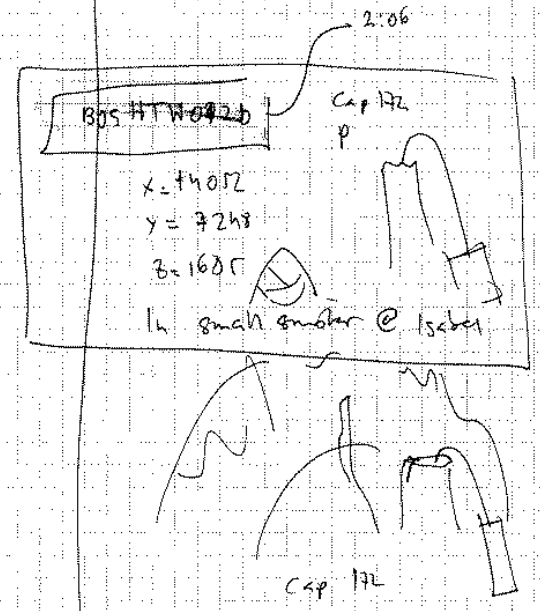
Smoker on right

07/09/09

01:13 Myo39 72A



1:17 arrivée



01:29 DVD - camera 1 #14 .... recording did not start properly until 1:50

even BOSTHNBO11D ← 1:52

1:44

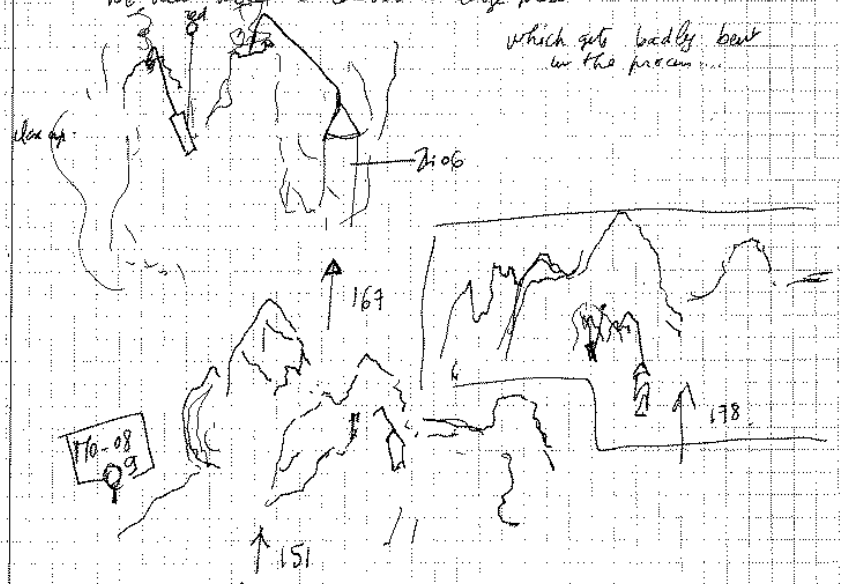
1:52

while placing the small probe we dislodged the 3 one ... which got lost below the ice...

we recover from the small probe and get it into smaller hole next to other one.

Arrivé at 1:52

We next move to recover the large probe — which got badly bent in the precam...



2:18 Observateur - Cedric & Christophe

Arrive sur l'ascenseur

2:25 Ouverture panier de NASA

X= 14231

Y= 7136

2:28 Recupere bouteille T.

bouteille n°4 in Victor's basket

+ bouteille n°3

2:33 DVD 1 WRITE FAILED

Change DVD C2 & C3 for DVD C2 #14 C3 #14

DVD C1 → Change for DVD C1 #15

07/09/09

2 37 Seringue n° 2 du 6 panier BOGTEM013

2 39 Seringue n° 5 BOGTEM010

2 43 " n° 7

X 14142

Y 7125

1697 m

2 53 Seringue n° 9 du 6 panier.

Go to Y3 (320° pour la gauche)

3 02 Anemone?

3 12 Cap au 350

3 14 @ 150m de Y3

3 17 @ 50m de Y3

~~3 24~~ ~~bouteille n°3~~ observ: Cédric & Valerie

3 29 Sommet de Y3 @ 13.5m

3 37 Ready to T measurement ⇒ 268°c

3 37 Move to left

BOGTEM012 ⇒ 286°c

X= 14010

Y= 7498 1717.3 m

3 44 Taking bottle 3

3 46 Bottle 3 in Maestro

3 48 Problème bras ? ⇒ Casse un bout de cheminée

3 50 BOGFLU010 bottle 3 sur Y3

4 01 Range la sonde T

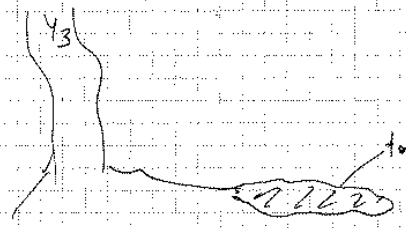
4 07 Bouteille n°4 sortie du panier

4 10 BOGFLU011 X= 14007

Y= 7498 1717 m

4 13 Remonte base Y3 → cherche <100°c

4 18 Alignement Victor



4 32 Prise sonde T - peu mesure près des capteurs pris + tôt

4 40 Mesure T ~ 8°c → 20°c

BOGTEM013 = 8°c Localement 20°c

X=14009
Y=7480

↳ T°c Variable.

4 46 Attaque d'un bouton du Rov!

4 47 Prise Seringue 2 observ: Valerie & Flavien

4 48 Assure avec Sherpa

4 53 Change DVD C1 → DVD 16

C2 → DVD 15

C3 → DVD 15

4 56 Presentation de la fissure

4 58 BOGFLU012 X=14006 Seringue n°2

Y 7509

1729 m

~~4 53~~ Change of DVD DVD1 → 16

DVD 2 → 15

DVD 3 → 15

5 12 BOGFLU013 X 14003 Seringue n°9

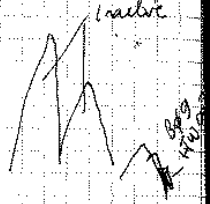
Y = 7471

07/09/09

5h17 transit to SINTRA site MARKER M08-8
backend maps within radius

05:42 Arrival @ Marker M08-8 Harbor.
X 7527 X : 14241

05:49 SINTRA → landslide slope to west.
X 14233
Y 7537



05:55 Start of taking temperature in the diffuse vent with the T probe of ROV

BØ9 TEM 014 T°C up to 21°C
X = 14250 Y = 7538

06:06

06:31 BØ9 FLU 014 Syringe 7
X = 14303 Y = 7530
very difficult to get a good spot for sampling.
due to constraint from the T sensor and the topography.
lots of shrimps

06:49 BØ9 FLU 015 Syringe 5.
X = 14240 Y = 7527

06:58 DVD C-1 : 17
DVD C-2 : 16 change of DVD.
DVD C-3 : 16

06:59 transit to NASA for taking 2 HT- syringe.
7:16 X = 14213 Y = 7215 Position fixed

7h22 Arrival @ NASA X=14232 Y=7131
7h24 drop of Sillespa on NASA.
7h37 Putting back to NASA the second HT- syringe
7h45 2 HT- syringes are back to the bracket of ROV.
7h49 We start downloading the 4-BT-Ti syringes to the NASA

8:00
8:05
8:16
8:18
8:30
8:36
08:45
08:47
08:57
09:19

observers: Celine N Valerie
07/09/09

Taking Minibio box 2, taking with Maelis arm → small opening into the sterile box / bracket water
Minibio box n°2 into the bracket of ROV.
Maelis with Microbiobox n°6 / still closed left into Maelis hand until Isabell into for fluid sampling.

We leave the NASA site and move towards Isabel site.

Arrival @ site Isabel we are looking for a place to leave the Microbiobox to allow fluid sampling.
X = 14054
Y = 7237.

Near M08-09 (E side) : we leave the microbio box.
X = 14072
Y = 7246

We found a spot to stabilize the ROV.
difficult spot for any sampling and T° ROV.

ROV T° probe out.
BØ9 TEM 015 T°C = 224°C
too short

T° ROV
up to 224°C

Fluid Sampling:
BØ9 FLU 016 difficult to identify the exact exit. Syringe 2
X = 14050
Y = 7255
Dip 174°

07/09/09

09:05 DVD C1 - 18
C2 - 17
C3 - 17

9h27 BΦ9 FLU 017 Sejupe 1. Sans chimney ao Janier..
X = 14053
Y = 7252.

9h31 Celine_Françoise

9h49 Transit vers Tour Eiffel. Cap 110

9:56 Arrivé aux Tour Eiffel.

10:10 on a repéré AISICS.

10:20 Recherche position pour Colonisateur

10:24 ouverture de la boite 6. Colonisateur

Sortie du colonisateur

10:28 dépot Colonisateur LSTE 1
B09 BGN02D
Im 1690,8 X 14187
cap 58,3 Y 7155

10:36 Approche du ROV pour relever la cheminée AISICS
X 14236
Y 7180. Cap 59

10:40 Mesure de température
B09 TEN 016 - 95c - 12,4°c au plus chaud

10:49 Changement de position de la boite 6 pour faire le prélèvement
X 14224 Cap 59,9 B09 MB102R
Y 7204

10:59
11:01
11:07
11:11
11:14
11:18
11:21
11:22
11:23
11:27
11:32
11:42
12:09
12:19
12:21

07/09/09

Fermeture de la boite 6.
Sortie Sonde de température
B09 TEN 017 température après prélèvement 16,2°c

Transit vers Mont Segur.
Change DVO C1 # 19
C2 # 18
C3 # 18

Nélia & Céline

transit to Montsegur

~~Température~~ Manken MOS - 10 near Montsegur

Sortie du panier, taking bio box out of panier

taking bio box 2 out of the basket (panier)

Bio box in the ~~hand~~ shanpa ready to collect mussels from Montsegur.

sellecting the best spot to collect mussels B09 BIO 02

moving to the ~~E~~ east side of Montsegur to avoid touching the temperature probes

Taking temperature measurement to the mussels assemblage that are going to be collected B09 TEM 018

Y 7066

X 14232 ~~range~~ range 7.50 °C ~ 7.00 °C

opening bio box

end of mussel sampling

returning to the NASA

OBSERVATEUR: Cédric

Poisson

07/09/09

12:22 1 Tache inconnue vue sur la mosaïque
14242 = X
7133 = Y
1691 m

12:29 Preparation Boite bio pour rangement du NASA
NASA en vue

12:34 Poignet de la boite bio (moulée) cassée ! ⇒ tombée du panier NASA

12:37 Accroche NASA

12:43 DVD C1 #19 WRITE FAILED.
↳ Change for DVD C1 #20

12:44 Toucher boite bio 6 → NASA
Sonic

X = 14221
Y = 7133
1697 m

12:55 Blue low T sensor in basket

13:04 Tondi in

13:11 starting the calibration

B09VIDCAL1
calibration of camera start 13:11 13:26

13:18 All DVD recording camera #1 15
Recording camera #3 19

Going to ask for panel ropes for calibration

13:30 Going up to Nasa to cut calibration panel

13:37 Color calibration panel visible

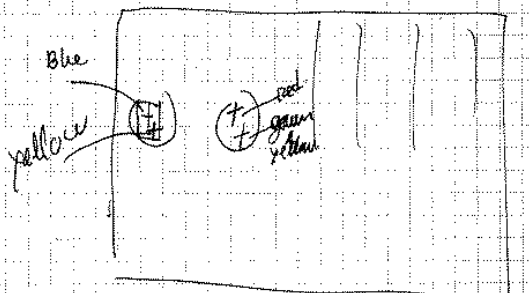
13:40 Turn on laser

07/09/09

13:40 B09VIDCAL2
- Color calibration 13:40 S
- Different illumination 13:42 28 cm for laser
13:45

13:47 PUTTING T SENSORS

green with shenpa



14:04 All low temperature sensors with Victor, all is with Shenpa and is green.

14:06 box of the NASA is closed

14:09 NASA ready for release
ROV moving to a safe position

14:21 waiting for the positioning of the boat

14:30 waiting for the NASA to be released with acoustic signal
↳ didn't work !!

14:33 going to cut the weights from the NASA

14:34 NASA released

14:38 Shrimp ?

07/09/09

14:40 fish in the bottom, area
14:47 Going to Montepr
14:52 @ Montepr going over the E flank
Setting on W flank of Montepr (BOSNOVNO)

14:58 Taking out T Sensor
14:55 BOSTEM019 20°C

15:01 Taking out T Sensor
BOSTLN001
W of montepr
West side, North
Bicns.

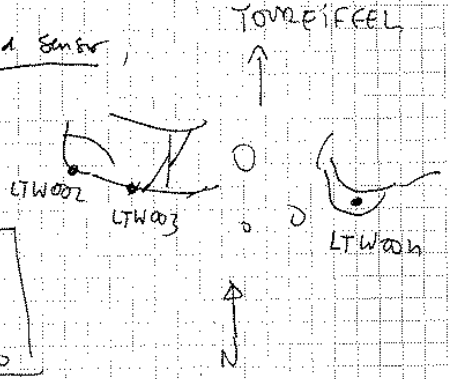
15:03 Moving to 2nd site on N of Montepr near
WHOI T Sensor

15:13 Measuring T → looking for site 12°C
15:17 Problem with VICTOR
No cover
15:24 End of probl w/ VICTOR
15:32 Change DVD #2
15:37 Waiting for ship to re-position
15:35 Going to Tour Eiffel
16:00 Looks for TEiffel
16:06 Taking out Tensor, low T w/o color (yellow)
16:10 yellow BOSLTW003
16:13:00 IN 002
x = 14203
y = 7152
TE
P03

16:17 14203 7152
16:20
16:20 24
16:20
16:23
16:25
16:31
16:35
16:38
16:35
16:44
16:47
16:45
16:54
16:56
1704

Sonde is yellow - green
Put LTW003
Putting it in
BOLTW003D
Green-yellow
Next to LTW002
S. of T Eiffel

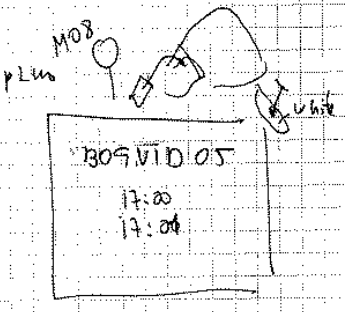
Moving East
Down, to put 3rd Sensor,
BOSLTW002 BLUE
Put it



BOSVID04
Start 16:35
16:36:20

Moving to Montepr

Going to Montepr
Montepr → Going down on N to put T Sensor
Mramcay to sit on rock
Take red one
Putting it in
BOS LTW004 Red
X 14206
Y 7051
Z 1704

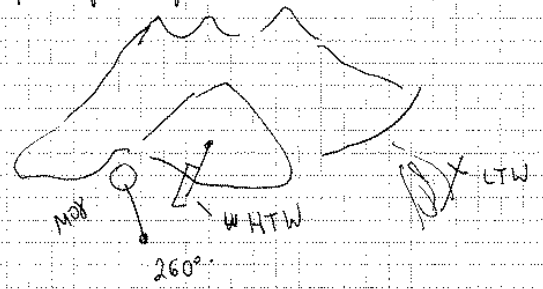


BOSVID05
17:00
17:04

View of WHOI NT & LT & M08-8 + 4

4/9/07

17:04 Going to pick up sensors

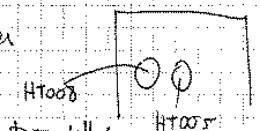


17:11 Picking up big sonde

17:12 HT008 towards HT008

17:17 HT006 caught

17:20 HT007 caught orange tape falling



17:40 Transit vers JPP.

18:15 Going to JPP

19:20 old inactive chimney

19:24 looking for MO8-1

Going down to look for site

18:38 Marker visible

19:29 At JPP MO8-1 13683

19:34 ~~Sonde on~~ Going ground obj 7634

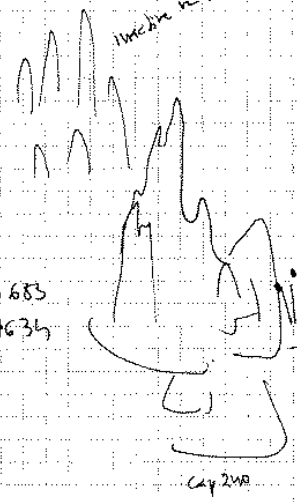
Checking the site

18:42 Going around site

19:43 Fish

19:48 Pole with power of engines

19:52 DVD 1 #23
2 #22
3 27



15:00 trying → put sensor in basket

19:02 Approaching T sensor → on bottom

15:01 Arrive towards T sensor

15:06 Going to reach the site

19:11 Broke dive of 2701S

19:12

BOSTTH N 2701S2
x 13654
y 7574
Broke Z=1728

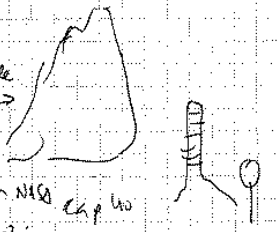
8:15 Moving south

12:25 Near big dead objects

19:26 Pillars & sheet flows

15:26 Marker near lava pole & air lave lake

high folded lave



15:30 over sensor

15:35 In big hole → back up

15:39 Problem of 'backup' with NAS explain

15:54 Victor pulled by ship

19:00 Going to site to catch sensor 2600T

15:44 Sonde in pond

15:46 Going ground artifice

19:55 Going N to come out of deviator landing site

19:57 33 T sensors

19:58 pillar

20:01 MO8-1

20h22 y=7589 x=13682 depth = 1718 on stationne en attendant la Nasca

20h35 y=7592 x=13683 on se dirige vers B and pour aller vers Nemo

20h39 y=7592 x=13682 on passe sur le alongitudinal de JPP depth = 1724

Explorer Pacifica (MO8)

20h44 y=7551 x=13644 on avance doucement vers N avec entourant la ligne 1735 m de fond ... cap: 211

20h48 y=7521 x=13651 dep 1724 on vide des sacs de grenaille cap 210

20h55 3 plongeurs DVO lancés
C1 # 24
C2 A 23
C3 # 23

20h59 y=7451 x=13643 depth = 1727,7
y=7469 x=13643 Edifices

21h04 → on part vers Pico (Pico) cap au sud! cap: 173 photo prise

21h08 y=7407 x=13635 depth 1724 on s'oriente un peu vers l'est cap 132.

21h08 y=7402 x=13634 on trouve une cheminée photo depth: 1726.3 cap 113

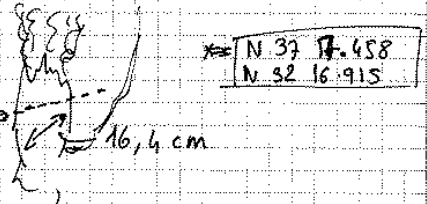
21h13 y=7398 x=13647 on est devant une belle cheminée de fumeur noir on va mettre une sonde depth: 1725 m cap: 114 photo

21h17 on recule à l'approche pour poser capteur cap 112.

21h22 photo - photo

N 37 17.458
N 32 16.915

22h23 16 cm 64



on casse le haut de la cheminée

21h29 → on a sorti le capteur Red Red de WH01 orange orange HT005.

21h33 → B09 HTW005
X = 13649 N 37 17.458
Y = 7393 W 32 16.914

ça s'effonche un peu on la replace.

21h36 → difficile à replacer...

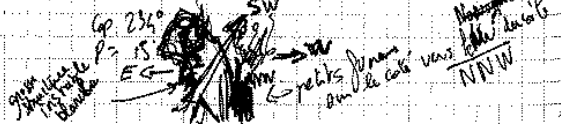
21h42 → on retend la canne pour aider à pentrer le capteur

21h45 → le capteur est POSÉE! cap à 63° P = 14 photo

21h52 → on va un cristal à ~15 m au sud de Pico.

21h52 y=7374 x=13643 depth = 1723 on est sur cristal cap 215° P = 7° photo

+ Mêmes photos on cherche un endroit au calme.



22:00 → on fait s'effonche un petit de la cheminée

x = 13648 y = 7375 dep 1724
N: 37° 17.449 W: 32° 16.915.
cap 234.

22h15 → on attrape la sonde HTW006 pour la mettre (black black).
coordonnées B09 HTW006 ! photo.
posée mais assez instable...

22:24 ça s'effonche.... RATÉ...
on essaye de récupérer la sonde...

22h33 → ça ennui au même endroit.
Cap 218
x: 13651 y: 7383
depth 1724 m
photo.

POSÉE

Mais - Voir 23 H10 ....

préparation d'un petit capteur HTN012 Black Red yellow

22:42 →
22h47 → NHE012 Evenement vidéo

on lache B09 HTN012! photo.
juste en dessous de (B09 HTW006)
(à environ 20 cm en dessous).

B09 vid 006 plume image for ERIC

23:02 → en repassant un peu à l'avant du capteur on se rend compte que B09 HTW006 n'est pas bien centrée dans la cheminée.

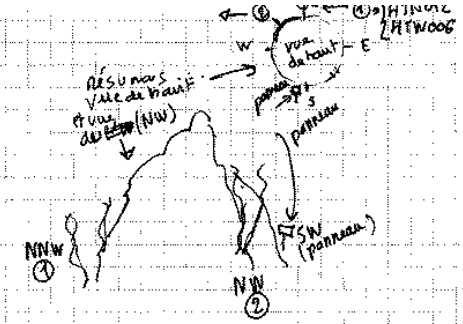
23:10 → RE - POSÉE ← B09 HTW006

23:13 → on se déplace vers l'avant et le sud de l'édifice au cap 130° on a fait face à une nouvelle cheminée. Sur le côté droit (donc vers le) on voit un marqueur qui flotte mollement.

FLORES 17 indiqué.

SW

7/9/09



23:12 → on va [redacted] poser capteur sur le ②

23:16 → on saisi HTNOO8

23:26 → Posé !!

BAG HTNOO8
cap n 137 P: 26
x: 13641 depth 1726
Y: 7378
N 37° 17.450
W 32° 16.919

photo

on va mettre une petite aussi ... photo.

23:57 Picking up new HTN sensor HTN001 from basket

00:03 Putting #1

00:05

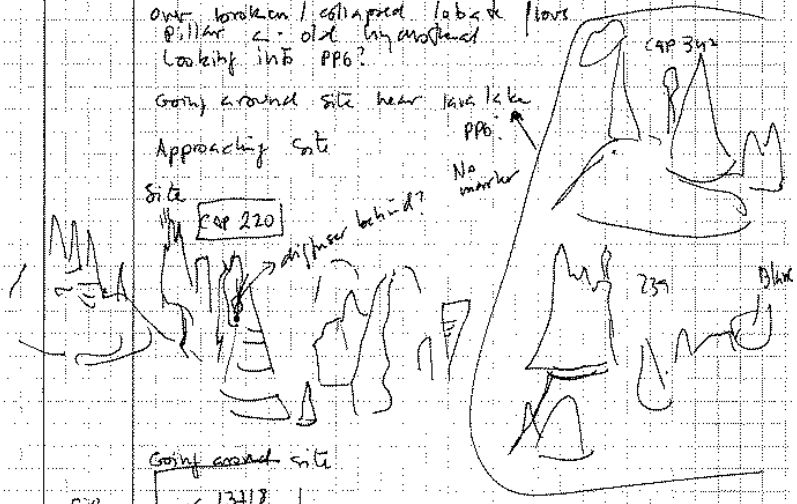
BAG HTN0010
Cap 131 x 13641 N 37 17.450
z = 1725 y 7387 32° 16.515

9/5/09

00:10
00:12
00:13
00:13 43
00:14
00:18
00:20
00:21
00:22
00:23
00:23
00:25
00:26
00:30
00:32
00:36
00:39 30 fish
00:40
00:42
00:43
00:45
00:51
00:52
01:02
01:04

In transit to PP5

over folded lavas
collapsed floors
yellow browns
@ scarp > 10 m in height
top of scarps, pillars yellow "cabbages"
looking for site
ter Going down on sheeted ~~slope~~ flows
Pillars
over broken / collapsed lobate flows
Pillar < - old hydrothermal
Looking into PP6?
Going around site near lava lake
Approaching site



Going around site

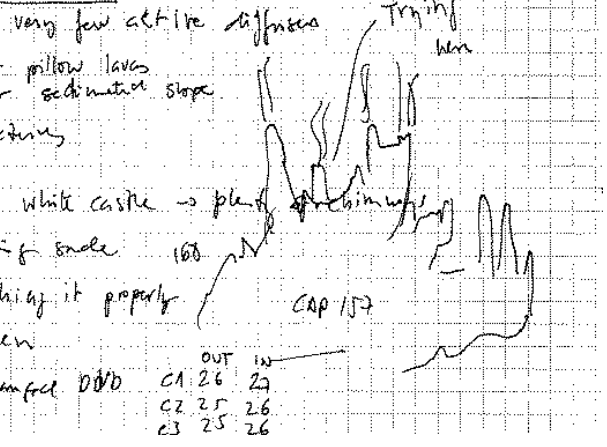
x 13418
y 7390
z 1735

Site locked

very few active diffusers

Trying

over pillow lavas
over sedimentary slope
fracturing



over white castle → plenty of shrimps
twisting snake 160
catching it properly
fallen

Changed DVD

	OUT	IN
C1	26	27
C2	25	26
C3	25	26

8/9/05

01:07 Putting sonde

01:05 Trying

01:13 Sonde HT004

BOS HTN00410
x 13702 z=1711
y 7263
put in White Castle

01:21 Trying to catch sensor on black & panel

01:24 Sonde blue-white HTN09002D

01:28 Going to put it in ni

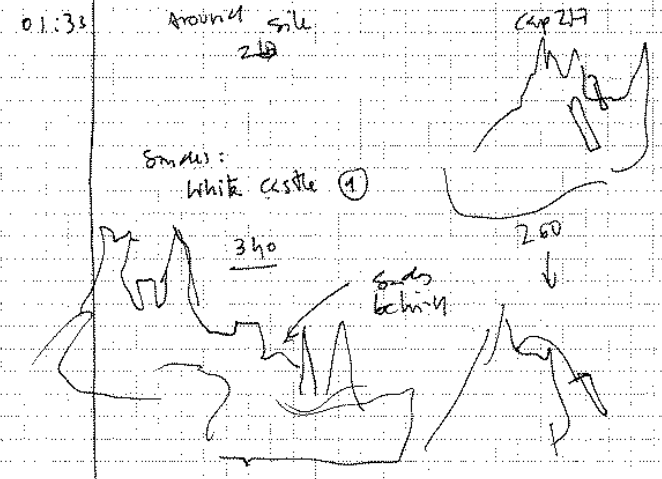
01:30 no sonde in hole

B09 HTN29002D
near ash. White smoker

01:32

BOS HTN4
B09 VLD 007
White castle smokers

01:33 Around site 210



01:40 En route vers ascenseur

01:41 Going North towards elevator

01:42 pilling

01:45 looking for elevator

01:51 at the elevator

01:55 colonne de fond de l'ascenseur par un déplacement vertical

01:56 bascule du panier 2. pour prise de 2 bouteilles titane et 4 seringue

02:00 prise des 4e seringue dans l'ascenseur, 1er.

02:01 depose dans ~~the~~ Pe panier ROV de Pe seringue

02:02 2ème seringue Ascenseur

02:03 2ème seringue dans panier ROV

02:04 3e sampler in the rov box

02:06 3ème seringue dans la boite

02:09 4ème seringue ds le panier

2:15 Prise bouteille 3 ds panier NASA

2:19 Bouteille 3 ds panier

2:22 2e bouteille (2) ds panier

Go to Crystal

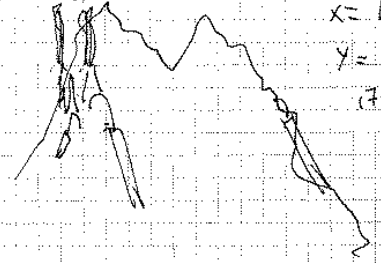
2:33 Vue sur Crystal

2:35 Marker FLORES

2:38 On trouve la sonde T Crystal

2:39 Sortie Sonde T de Victor

2:41 Approche pour mesure T



X= 13647
Y= 7345
(725.6

08/09/09

2:50 BOGTEM020 325°C

2:51 Sonde T rentrée

2:54 On prend la bouteille 2

2:56 On essaye de prendre la bouteille 2

3:01 Prise bouteille 2 ~~BOGFLU018~~

3:04 BOGFLU018

3:07 Bouteille 2 → Panier (13627 = X, 7401 = Y, 1725.4m) Sonde T noir-noir

3:08 Bouteille 3 sortie du panier

3:11 Bouteille 3 décrochée BOGFLU019

3:14 Bouteille 3 du panier
Tour du site vers autre sonde T

3:17 DVD C1 → DVD 27
C2 → DVD 26
C3 → DVD 26

3:21 Sonde T lachée ...

3:24 Sortie Sonde T pour mesure sur HTW008 pic du marker FLORES 17
X 13634
Y 7366
1725.6m

3:31 Recalage pour mesure T ⇒

3:38 BOGTEM021 = 270°C

3:42 BOGTEM022 = 324°C Mesure à côté de la sonde HTN001

08/09/09

3:46 Prise seringue 2

3:49 Seringue 2 déclenchée BOGFLU020

3:55 Seringue 7 de fumeur

3:57 Seringue 7 déclenchée BOGFLU021

4:00 Route Ascenseur

4:10 Arrivée sur Ascenseur pour prendre les bouteilles du panier 1

4:16 Accroche NASA pour prendre bouteille 1 à 4 et ranger les bouteilles pleines

4:38 Récupération dans NASA des bouteilles vides ~~et seringue~~ (2) pour mettre dans panier ROV. (n°1 et 4)

4:54 Rangement des seringues pleines dans Ascenceur.

5:00 Récupération 2 sondes T°C de l'ascenceur pour rangement dans panier ROV. (Noir-vert-bleu / Bleu-jaune-blanc)
flotteur 3e capteur cassé lors de la saisie → laissé dans ascenceur. Fermeture du panier ascenceur n°1.

5:09 Fermeture panier 2 ascenceur.

5:16 Route vers White Castle cap 200 après déroulage de 7 tours de laisse !! sur 230 m.

5:20 Changement DVD

	OUT	IN
C1	27	28
C2	26	27
C3	26	27

5:26 Arrivée sur White Castle.

5:29 Visu BOGHTW004 approche pour prélèvet fluide (bouteille Ti)

5:32 Prise sonde T°C ROV

5:40 BOGTEM023 202°C → 275°C. zone de la sonde HTW004

5:45 Rentrée sonde T°C ROV.

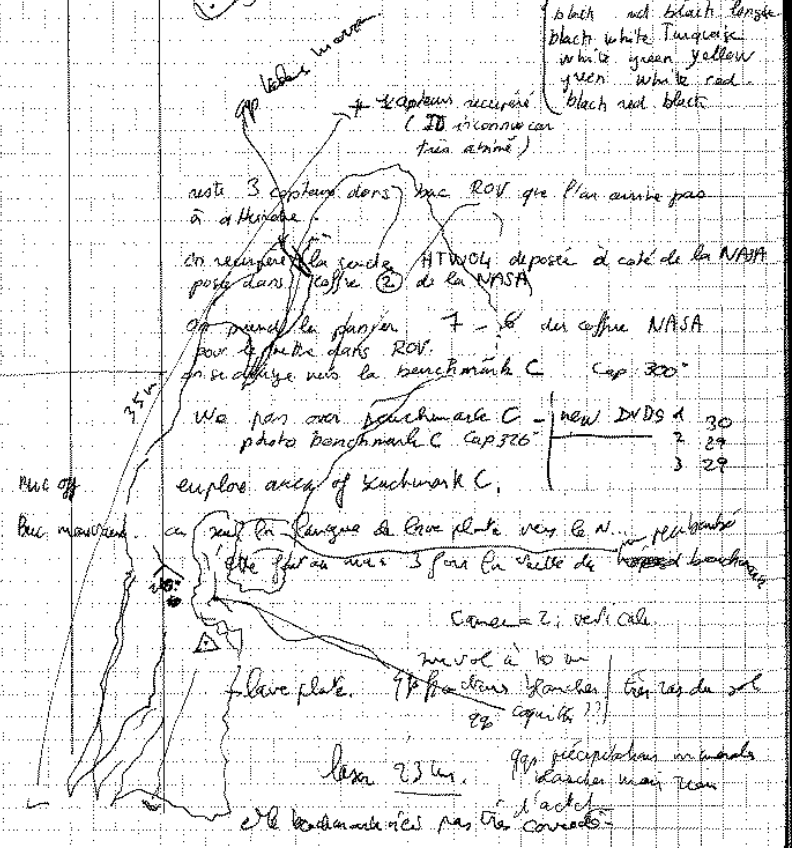
5:56 Prise Bouteille Ti 4.

6:02 BOGFLU022 le ressort m'a pas percuté → nouvel essai.

6:10 BOGFLU022 essai réussi.

Time	Description
8/09/09	
06:12	Rangement Bouteille 4 dans panier ROV
06:14	Sortie Bouteille Ti 1 du panier ROV
06:16	BOS FLU023
06:19	Rentrée Bouteille Ti 1 dans panier ROV
06:20	Prise sonde T°c ROV
06:23	sonde T°C perdue car pas verouillée
06:31	Sonde HTW04 sortie suite à manip récupérat° sonde T° ROV.
06:33	Prise sonde T° ROV avec Maestro
06:37	BOS TEM024 dans flux avec sonde HTN 29002. 3.10°C
06:40	Rentrée sonde T° ROV
06:48	Saisie Seringue Ti 5 06:50 sonde HTW04 recouvré dans Sherpa.
06:51	BOS FLU024
06:53	Rangement seringue 5 dans panier ROV.
06:59	Saisie Seringue Ti 9
07:01	BOS FLU025 X = 13717 Y = 7245
07:06	Rangement seringue 9 dans panier ROV
07:09	repositionnement vers sortie fluide par autre côté pour replacer HTW04. Prise de la sonde dans Maestro. Cap 320
07:22	Position impossible car corps de la sonde risque d'être dans une autre sortie de fluide ↳ repositionnement par l'autre côté cap
07:24 07:30	changement DVD Out Im e1 28 29 C2 27 28 C3 27 28
	redeploiement BOS HTW04 D X = 13721 Z = 1710 Y = 7248 cap = 200
07:54	Trying to put the sensor
08:55 09:02	T sensor of white casse off → handle broken & moving to electr

Time 8/9/2009	Description
9:15	en route to NASA. The ROV is ready to launch - Now ready for ROV and to recover NASA.
	13757/7365
	lat y / lon x
08:19	7464 / 13799 dep 1332 on arrive à l'ascenseur.
08:24	dépose sonde cap 11° juste devant ascenseur. (HTW04)
08:33	on replace (1) (4) bouteilles Titanes dans coffre NASA (1)
	replacés (26) (98) (1) seringues et capteurs { Black Turquoise blue / Blue yellow white / black red black and / black red black turquoise / black white Turquoise / white green yellow / green white red / black red black
	4 capteurs récupérés (10 inconnu car trop abîmé)
	reste 3 capteurs dans bac ROV que l'on arrive pas à attraper.
9:27	on récupère la sonde HTW04 déposée à coté de la NASA
9:30	post dans coffre (2) de la NASA
9:33	on prend le panier 7 - 6 du coffre NASA pour le mettre dans ROV.
9:43	on se dirige vers le benchmark C Cap 320°
9:45	We pass over benchmark C - new DVDs 1 30 / 2 29 / 3 29 / photo benchmark C cap 326°
9:49	explore area of benchmark C.
	Pipe off / Pipe manquant on suit la tranchée de Rove plate vers le N... plusieurs fois / Rove plate. qq fractures blanches / très rapide sol qq capteurs ???
10:09	laser 23 cm. qq pièces blanches manquantes / blanches mais rien à l'arrière / et toujours pas très connectés.



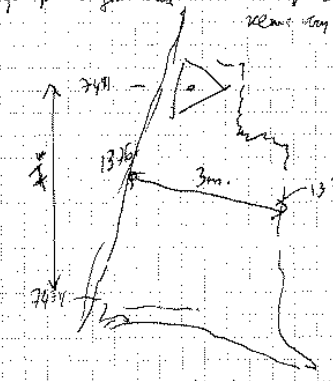
08/09/09

10:15 Complete area of landmark C

10:21

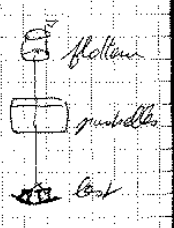
6:50 stop since a 15mn we have a lot of rebound on the water

10:55 continuing exploration. We go up the first area toward North - the flat area to the South of landmark C seems very good.



11:17 transit vers l'endroit de largage de l'ascenseur.

11:43 Ascenseur largué / mise à l'eau n°2 Co 2ème ascenseur



11:53 dgt de DVD

nv DVD C1 # 31
C2 # 30
C3 # 30

12:00 change shift pilote 2

waiting for the ascenson to arrive in the bottom . . .

12:17 moving South west x 13925 y 7498

12:25 looking for the ascenson

12:45 still lost .. looking for ascenson

13:55 Found the ascenson North from the deployment (110 m)

13:59 DVD changed C1 # 32
C2 # 31
C3 # 31

14:02 Moving West towards the OBS 3 position.

14:16 passing near event site ~1690m
x 13858
y 7529

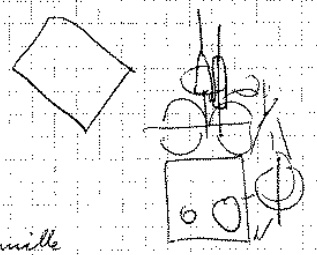
14:38 on route to OBS

14:43 Arrived at OBS3 position

14:50:40 red shrimp passing

14:55 @ OBS

x = 13025	N 37. 17. 462	on the Top of the OBS 3 N: 37°17,474
7410	32 17.347	W 32°17,366
	z = 1768	
BP 90BS C3	CAP 22 D	



15 h 17 : 20" => manille

↳ envoyer la photo du DVD à F. Blin SVP CAP 215 z = 1768

15:24 Slope w/ pillows - trash & N of 8 pillow cases

15:27

15:29 Water zone of hot water NOT !

8/9/09

15:32 x 13257 y 7468 1694 Pillows going up hill

16:34 Fissure

15:38 Sedimented slope with pillow blocks

15:41 On station to check coordinates

15:45 On sedimented slope

15:55 Going towards Barco Alto to have a look over there

16:03 changing DVD.
Bug - On electric tool

16:07 Trying to sort DVD out
while on transit towards Barco Alto
Ja roache no.1 Faut être patient

16:16 DVD Ja roach
et arriving in Barco Alto

16:19 Barco Alto ?
Access of chimneys on a
slope with a few fractures
and patches of hydrothermal
bacterial mats

16:15 Barco Alto blow-up
Large edifice hanging at edge of talus

16:20 Extinct towers near Barco Alto

16:22 Cage a mules on side of edifice

16:26 Transit to top

16:28 Chimneys → low flow, extinct

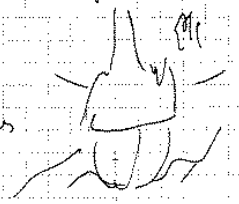
Station

15:29 Going towards station

16:32 Fractures with shiny surface flow

16:33 Zone with small amounts of mussels / bacterial mats, many dead chimneys

16:34 Jason ?
only a few patches of white, mostly dead



16:38 Turning to look for PP24

16:39 Patches of shiny surface flow

16:41 Own station

16:48 Ridiculous, minute hydrothermal vents

16:49 Around zone of Elizabeth (not found)

16:50 White stain

16:54 Going up to look for hydrothermal activity

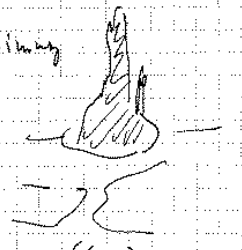
x 13660
y 7717

16:55 Going up scarp with

16:56 Over white stain

16:57 x = 13660 z = 1665
y = 7745 small vent field

17:02 our top small chimney
x = 13656
y = 7714
z = 1668



17:06 Dead hydrothermal vent

17:07

17:07 tilted chimneys
field of dead chimneys

17:10 Old hydrothermal site
Old chimneys

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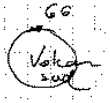
17 12 Big mond & inactive chimneys

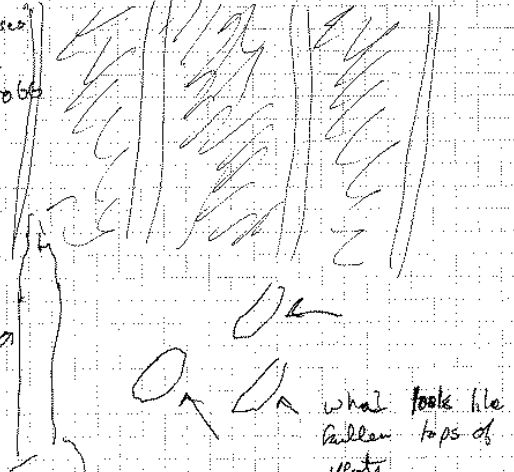
17 23 Going towards point "GG"
37 17.285
32 16.853
Then going to Crête de la dorsale
Volcan Sud

17 25 In trans.E. toward GG



17:37 Passed a group of pillow lavas en route to GG
cap 178 37°17.448 13701
32°16.879 7373

17:42 Series of "fractures" seen near White castles on way to GG (no active vents seen)
~37°17.40
32°16.884



17:47 On way to GG

08/09/09

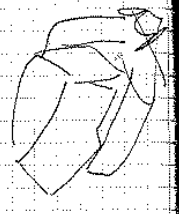
Time	
17:51	Changement DVD OUT 33 34 / 32 33 / 32 33
17:55	arrivée à GG X = 13746 Y = 7030 Z = 1656
	pillow + coulée 220°.
	pillow allongées Nord-Sud sens de la pente
18:02	on suit la pente du volcan sud
	pillows et débris de pente.
	laves cordées.
18:10	St Pierre des profondeurs et gorgones. X = 13751 Y = 6924 Z = 1592
	au milieu de pillows.
18:16	eau mouvée, troublée.
	zone de débris de pente sur une pente plus raide.
	laves en cordée ou empilement.
	on suit une arrête formée de pillows. X = 13732 Y = 6830
18:26	Z = 1559 m arrivée au sommet du volcan.
18:29	descente vers fond du cone volcanique cap 230.
18:30	Going down to the bottom of the summit
18 33	Chaos of pillows & broke up rocks
18 33	edge of fault
18 34	View in vertical camera → 12 m fault scarp
18 36	in the valley?
18 38	Going down near fault
18 38	Rope
18 40	Both of pillows & broke up lavas
1842	Mouillage de boîte
1845	Pompage
1847	Going down to pick up a rock
18 52	Trying to pick a rock

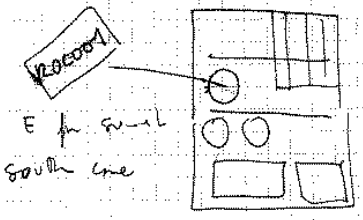
08/09/09

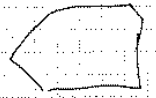
18:56 Trying to catch ~ rock

18:55 Caught X ~~13614~~ 13610 39° 19.002
Y ~~6545~~ 6542 32° 16.542
Z 1561

BOSROC001







19 05 Going E for small of south one

19 07 Down ~ 7.5 m scarp

19 09 Pillars in defined, in sh

19:11 Scarp (1) → pillars 1550

19:12 Vy scarp

19:22 route vers Sintra cap 34

19:57 Changed DVDs

	out	in
C1	34	35
C2	33	34
C3	33	34

20:02 En route to Sintra, passing Sud Isabel

20:08 En route to Sintra, approaching PP4

20:15 3 dead vents en route

37 17.441 1421.8
32° 16.529 2366

20:26 Searching for fallen, old chimney at nord Sintra

08/09/09

20:29 on apercoit le manguem 8 vers Sintra

LO MD08

08/09/09

20:39 BOSROC002 prise d'une roche à sintra photo : IAPN
la roche ferrugineuse ancienne cheminée ?
boîte 6

X = 14266
Y = 2543
Z = 617
Cap = 193

20:53 BOS ROC 003
boîte 6
X = 14287
Y = 2573
Z = 1621

5th Liberté
boîte 6 | 7 | 6

21:17 BOS ROC 004
boîte 7
X = 14272
Y = 7570
Z = 1623
North Cintra - South Sintra

21:40 BOS ROC 005
boîte 7
X = 14267
Y = 7582
Z = 1614
→ Liberté

↳ grosse roche de boîte 7

22:00 DVD | C1 – DVD 35 | C2 – DVD 34 | C3 – DVD 34 | Change

22:01:10 on route to Tour Eiffel

22:17:27 arrive at benchmark (A) = Gravitude A
en route to Tour Eiffel

22:24 Arrived at Tour Eiffel!!
Making route to come to South

08/09/09

22:26 – making tour of Tour Eiffel to arrive at south side

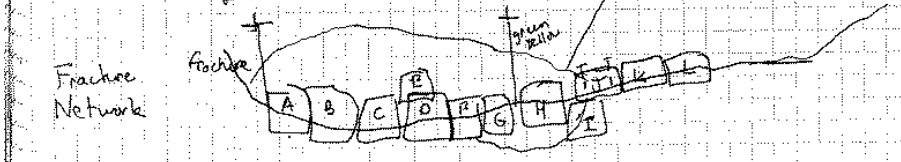
22:29 – see fracture system setting down

22:36 – Pulling out temp sensor for capturing temps along fracture network

22:38 – Beginning of fracture system scan video event B09VID008 to survey network of fractures

T measurements

	T_a	36 – 46	22:58	T_g – 17°C
	T_b	22	23:04	T_h – 18
	T_c	22	23:07	T_i – 16
22:50	T_d	26	23:12	T_j – 35, 40
	T_e	36	23:16	T_k – 35
22:55	T_f	44	23:18	T_l – 44



23:23 – moving rover for better angle on next fracture. Need to move to another fracture network

23:27 – searching for next fracture network

23:30 – next fracture network found

08/09/09

23:34 Video Event B09VID009

37°17

Temp	Time	
23:36	8	T_a
23:38	58	T_b
23:40	60	T_c
23:48	11	T_d
23:50	7	T_e
23:51:45	7	T_f
23:53	10	T_g
		T_h
		T_i

23:44:46 Change DVD's

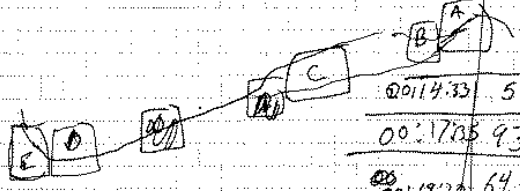
In	Out
37	36
36	35
36	35

24:00 Change of shift

09/09/09

00:06 Video Event – moving to a new fracture cap 28 from old fracture 37°17,35 32 16,531

00:09 B09VID010



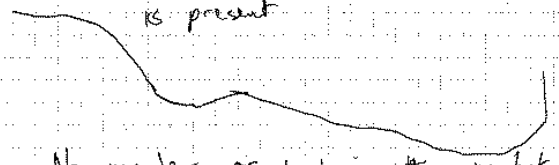
move Victor between Card D

Time	Temp	Code
00:14:33	57	A
00:17:05	93	B
00:19:20	64.34	C
38:55	47	D
41:20	13.5	E

00:47:59 – Moving to another fracture still at Tour Eiffel

04/09/09

00:50 – looking at a fracture to see if hot water is present



No moules or bacteria, thus no hot fluid

00:53:22 Moving along fracture, took picture of fish

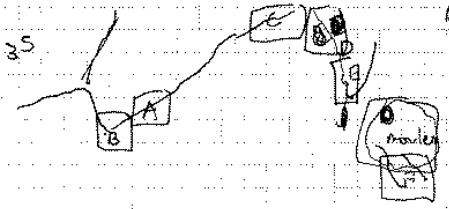
00:55:53 Looking at some white areas for hot water

01:00:5 New zone with hot water escaping

01:04 Turning to better base fracture and take measures

BOX VIDEO 11

10435



37° 17.333
32° 16.534

Time	Temp	Code
01:06	10	A
01:10:51	16.11	B
01:14:17	11-12	C
01:19:98	10	D
01:21:41	12	E
01:24:51	17	F

NELIA & AURA

01:28 moving on to the NASA "poubelle" cap 300

01:38 passing near a fault

02:00 changed DVDs C1 # 38
C2 # 37
C3 # 37

02:02 found Nasa "poubelle"

02:05 opening box 1 of the Nasa "poubelle"

02:20

02:30

02:35

02:40

02:47

02:51

02:58

03:01

03:05

03:06

03:12 18

03:18 59

03:34

03:39

03:50

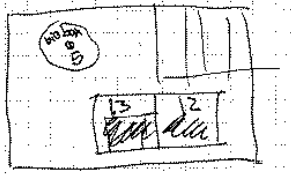
05:06

pio box nr 5 inside ROV basket

"basket wood" taken out of Nasa "poubelle" (12 / 13) inside ROV basket

Wood box felt out of the base "poubelle"

wood box 6 and 7 inside the NASA "poubelle"



wood box 12/13 inside the panier.

seaching for the falen wood box

box felt near the chains of the base

Got the box back

on route to Helene

trying to "fix" the flagging point of the NASA that has the cable of the weight around it.

Fixed

back on route to Helene

getting basket (9-8).

on the way to helene

marker 6 Maman 7 near PPS

arrived at Helene

1st attempt to get an machine chimney didn't work, as it is too fragile

still trying to get a chimney

changing DVDs Putting in

C1 # 39
C2 # 39
C3 # 38

/ broken ejecting DVD doing it manually.

Time	Description
4:13	Trying to charge DVD's
	Waiting to have new DVD's to break the chemney.
04:19	Probleme avec DVD 1.
04:38	X = 13.665 Y = 7440 Z = 1735 prelevement ancienne cheminée (extérieur apres repositionnement.
04:40	prelevt avec Sherpa sommet de cheminée dans boîte 9.
	fiable => rien dans boîte.
	cheminées trop grosses
	recherche d'une autre cheminée plus petite.
04:47	Cible nouvelle petite cheminée X = 13.668 Y = 7450 Z = 1736 nm
	B09 ROC06 dans boîte 9. cheminée.
	boîte en bois cassée.
05:02	Saisie boîte par Sherpa.
05:05	Saisie boîte par Nacotra.
05:08	Depôt caisse bois sur panier ROV impossible masque la caméra.
05:10	Dépôt caisse bois au sol X = 13.671 Y = 7442 Z = 1737
05:11	B09 ROC07 prelevement morceau basalte dans boîte 8
05:13	B09 ROC08 prelèvement morceau de tube lave boîte 8.
05:17	route vers Pico cap 220
05:29	en vue de Equatal : zone sedimentée.
05:31	retour vers Pico cap 15.
05:36	Vue sur Pico X = 13.656 Y = 7399 Z = 1720 m.
05:40	Vue sur petites cheminées mates
05:41	Pose caisse bois par terre.
05:56	approche pour prelevt cheminée sur Pico.
06:07	looking for a small dead chimney
6:13	Changed arms with box 12-13 to grab a chimney
6:15	Grabbing piece of old chimney to put in 13 box - a little broken up by the arm grabber
6:17	approaching the small chimney's a little to get a better grab
06:21	Picked up another little piece of chimney and placed in boite 13
6:22	changing DVD C1 # 40 C2 # 33 C3 # 33 Manual - Pas de noir - true automatic doesn't work.
6:24	Still taking chemney.
6:26	Nice piece of chimney in box 13 B09ROC09
6:27	Next piece of chimney in box 13 B09ROC10
6:31	Going to back up and search for a basalt piece now
6:37	Still looking for basalt piece, then going to go to White Castle
6:44	Try to take piece of basalt, came up w/nothing but dirt. Could not find basalt that was not soft. Did not take one. Now heading to White Castle!)
6:53	- arrive at box that was left behind earlier (8-9)
6:56	- picking up box 8-9
6:57	- put box in panier (8-9)
6:59	- Heading for White Castle - yes!
7:12	- CANCEL trip to White Castle - not enough time, are going to GPP (M08-01) to recover bio 300m to the north

7:14 – En route to GPP

7:19 – Passing by Pico on way to GPP

7:25 – Extend line for Victor as Lead North to GPP

7:34 – approaching MOR-01 colon and continuing toward MOR-01

7:39 – First site of colonizer marker MOR-01 colon

7:41 – arrive at site w/ two colonizers, we are going to put one in the microbio box in the panier

7:43 – Zoom on both coral colonizer to determine which to take

7:46 – LS LL 3 – will be the colonizer that we are going to pick up.

7:49 – have a small problem w/ a module on the ROV, they guys a trying to fix it.
– restarting computer

7:51 – no more visible error and the panier works now.

7h 58 – Boite Incubateur back into the microbio box. observer: Helene Thibault.
X = 13691 Y = 7557 depth = 1749 m

8:00 – transit towards the NASA Nautile.

8h 08 – Arrival NASA Nautile.
X = 13 775 Y = 7540

8h 20 – Microbio box #5 back to the Nautile NASA (n°1)

8h 30 – change of DVD DVD: C1 – 41
C2 – 40
C3 – 40

Time	lat	long	observations
8:32	13796	7544	Sample boxes 8-9 back to NASA Nautile.
08:52	13784	7538	Microbio box n°4 from NASA Nautile to ROV basket
8:56			Microbio box n°4 into ROV basket.
9:08			transit towards point A.

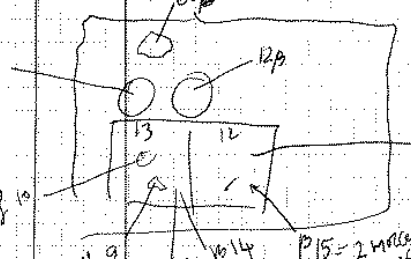
A = 37° 17.812
32° 16.625

B = 37° 17.901
32° 16.588

C = 37° 17.981
32° 16.568

small inactive chimney @ 30 distance ~ 10 m from NASA

9h14	13836	7636	basalt in pillow 1727 m. Cap 30
9:16	13857	7683	gentle slope then flat area. still 400 m to point A
			flat seafloor sedimented basalts – pillows with rhodolite + thin basalt lava flows basalt breccia
9:26			
9:30	13952	7864	same same "radiata" shrimps
9:34	14000	7923	same large block with brecciated look. 1707 m.
9:36			we same, a fast large talus.
9:41	14092	8050	same we take a sample. 509 ROC 11 1704 m. possible displacement front de coulée gap de bras de gauche.



9:56 – end of samples – continuing north.

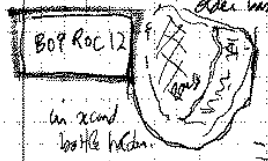
9:58 — same type of rock - brecciated flow with rubbleware and lenses of tuffs

10:00 — we go up — 15 — scarp in brecciated basalt

10:02 — 14085 — 8126 — 1695 top of scarp, more pillows and tubes, brecciated basalt with some formation w/ sediments

10:08 — 14085 — 8126 — 1693m same

10:09 — 14131 — 8235 — 1699m — same only more sedimented we take a sample. older basalt? very flat on one side very red on the other



10:18 — End of rambling we move 3m to the west and sample as value of pillowed tube fragments

10:30 — 14143 — 8263 — Continuing with 693 - basic brecciated basalt we go uphill down a bit

10:32 — 14135 — 8315 — Brecciation & sedimented basalt

10:34 — Mound of

10:35 — DVDs putting the in

10:36 — Line of holes → burrowing animals

10:35 — DVD1 en route

10:40 — DVD2 en route

10:40 — DVD3 en route

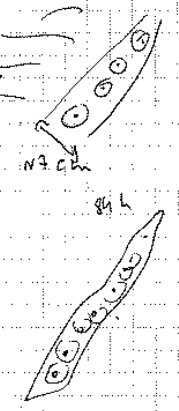
10:40 — 14:40

10:40 — 14168 — 8347 — our blocks of basalt

10:43 — "Chimney" → basalt block

10:45 — Gorgonia

10:46 — Shrimp



10:47

10:47

10:49

10:50

10:51

10:52

10:54

10:58

11:01

11:04

11:06 — 14220 — 8478

11:09 — 14254 — 8504

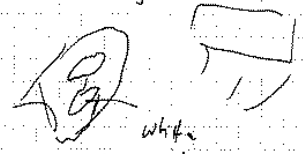
Next way pt 37° 17.5813
32° 16.567

Going down to pick a basalt sample

Next way pt 37° 17.0065
32° 16.5411

Approach to pick up rock — Big piece → release

Small piece
Dark brown

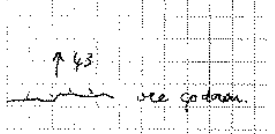


BOSROC14
x 14156
y 8371
z 1710
Cap 42

C#2 on brass 1
to look into pocket

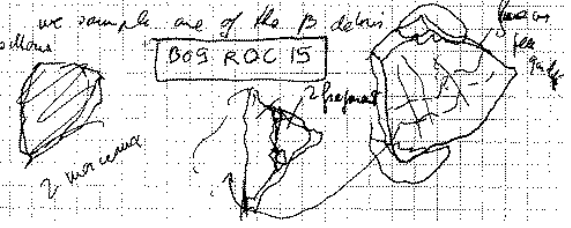
Putting in basket

we pass a basalt value.
1709m
top of ridge 1696m



1705m + 6m descend
reaching bottom of slope at 1720 m.

1718m we sample one of the 15 debris
broken pillows



9/09/2009

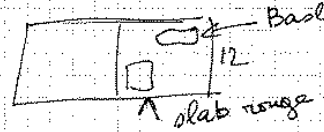
11:19	14231	8559	1771 m end of sampling rock to SW —
11:23			1723
			we pass a fault fracture only few decimeters
			239 then a range of same material - vertical
11:35			1727
			in the graben
			mount of broken pillows and tubes
			W
			another range in blocks - quite redundant
			226
11h26			
11:27	14130	8492	224
			on slope of pillows in big blocks 60° west
11:29			another range looking W 1717 m
11:30			large block of vesiculated basalt and radiolarite stopper
11:32			
11:34	14076	8471	1706 we get up irregular slope
			in fragments of radiolarite
			1703 m.
			we sample basalt pillow basalt
			B09 ROC 16
			tripod of the camera.
			broken glass on pillow face.
11h43			on repart au sud...
12h00	y=8239	x=14116	m continue d'explorer en redescendant
12h04			Cédric - française
			Transit → Statue of Liberty
	14231	7930	Flanc du volcan - falaise abrupte
			changage DVD - C1 ≠ 43
			C2 # 42
			C3 ≠ 42

9/09/09

12:47	14265	7586	Approche statue of Liberty.
			Pas de structure hydrothermale evidente sur la route
			On n'a pas vraiment trouvée statue of Liberty.
13:07			Route vers le point 37° 17,6127 32° 16,3329
13:35	14096	7686	Colline - falaise. Arrivé sur le point.
			arête sommet - faille présence de sédiment
			Coulée
13:34			Transit vers Isabel.
14:13			Change DVD 1. C1 # 44
14:15	14185	7301	Glissement de terrain
14:27			DVD 3 #42 ⇒ failed ⇒ pas finalisé
			⇒ change pour DVD 3 #43
14h39	14072	7231	arrivée sur Isabel. vers 1693,6.
			DVD 2 ≠ 43
	14072	7231	→ choix de la cheminée.
			vers 1695.
			Sortie sonde de température
			B09 TEN025. 220C 174°C
14h55			Sortie boite bio.
14h57			boite dans chapa.
15:03			Positionnement de la boite
	14066	7233	B09 MB103. → cheminée dans
	Cap 310		la boite
			Resume de température après prélèvement
			B09 TEN026 176°C

9/09/09

15:26			Fin Prélèvement Nicrotec
15:32	14068	7232	Prelèvement Slab
			cap 310 vmm 1695,2
			Prelèvement de la croute
			BOB ROC 17.
			couleur Rouille semble friable.
			dans le panier 12 avec les basaltes.



15:41			Route vers Ascenseur Nautile cap 315
16:00			Alain et Celine.
16:14	13825	7458	Arrivée sur Ascenseur Victor → recalage estime.
16:19	13806	7515	Arrivée Ascenseur poubelle
16:24			Saisie Ascenseur face baie 2 cap 310.
16:27			Ouverture baie 2
16:30			Fermeture baie 2 ascenseur.
16:31			End of Dive 389
16:32			2 bras rentrés.
16:33	13749	7493	début remontée victor - 1711 m.
16:39			Arrêt DVD 45.C1 43.C2 44.C3.
			Arrêt pour remettre les 2 moteurs transversaux 1210 m
17:04			Remontée reprise après test des transvers.
17:13			ROV à 920 m de profondeur
17:22			ROV à 700 m de profondeur
17:27			ROV à 500 m de profondeur.
17:34			ROV à 300 m.

Time	Description.
17:42	Lest à 100 m passage commande au pont ROV à 100 m.
17:46	Lest en surface. ROV maintenu à 15 m immersion
17:47	Lest à bord. ROV recule. remontée baisse.
17:55	1e flotteur baisse à bord
17:59	ROV en surface.
18:04	ROV accroché. Rov hors tension.
18:08	ROV à bord.
18.53	Route vers Hata Lat: 37°17.252 Lon: 32°16.313 cap 50 sp 6.6kt
07.57	Route vers Lucky Strike après transfert de personnels.
	Lat 37°52.349 Lon 30°29.933 cap 231° vit. 9 nd.

REPRISE QUART — 10/09/09 14h45

Time	LAT	LONG	
15.22			On the way to Lucky Strike to get the elevators
15.24	37° 21.04	32° 06.15	ETA 16h13
15.43	37° 19.61	32° 10.22	ETA 16h14 ...
			16:00 Shift Alice & Valentin (but Valentin s'est trouvé la navré!) so Celine is taking the shift.
16.06	37° 18.136	32° 14.357	ETA 16.17
16.15	37° 17.585	32° 16.686	trying to declench NASA ! No, actually waiting for boat to stop.
16.23	37° 17.48	32° 16.811	On station
16.27	37° 17.551	32° 16.861	Elsecsam NASA seems to reply ~ coming up NASA depth. 1654 m.
16.32	37° 17.422	32° 16.734	Still coming up but v. slowly NASA depth = 1443 m.
16.37	37° 17.483	32° 16.663	Still coming up depth = 1196 m.
16.42	37° 17.522	32° 16.532	Z = 970 m (but was 600 m a minute ago)

Time	lat	long	Description / comments
19/03/09			
16:47	37° 17.621	32° 16.533	St.II coring up depth Z = 735 m.
			Downstairs, they are testing Victor's camera & arms.
			doing la check list.
16:52	37° 17.637	32° 16.679	Z = 481 m.
17:02	37° 17.514	32° 16.716	Z = 70 m nearly there!
17:05	37° 17.481	32° 16.733	Surface, soon onboard
			Zodiac deployed for recovery.
17:18	37° 17.480	32° 16.981	Hydrophone onboard
17:20	37° 17.465	32° 16.949	Recovering all the things from NAUTR
			Getting in position for deploying Victor.
17:29	37° 17.420	32° 16.991	Getting ready to deploy Victor.
17:43	37° 17.429	32° 16.991	Still preparing Victor
			Valentin se met à sécher
			Weather observation
			cloud cover 0.5/8
			waves small
			wind not too much
			(especially in the hangar!)
17:56	37° 17.516	32° 16.879	Victor is on the bridge
			Still waiting to deploy!
18:07	37° 17.541	32° 16.872	Victor is in the water, Surface
18:14			list is in the water.
18:16			Diving + CTD en route
18:35			400 m immersion
18:50			800 m immersion
			doing a 360° tour beginning facing North clockwise
18:55			and anti clockwise (812 m immersion)
18:58			Going back down (après avoir fait du hachis de Squith)

Time	lat	long	Description / comments 10/09/09
19:05			@ Doing a little tour @ 1001.5 m immersion
			Starting North clockwise
			"We don't know at which speed we are careful to do it slowly" Luc
19:09			anti-clockwise
19:12			Going down to 1200 m immersion.
19:19			1200 m immersion
			doing another little tour (et pas sûr sens) clockwise
19:23			anti-clockwise
			(total water depth - a bit more than 1700)
19:26			Going to the bottom. and slowly to MOS-01 colon
19:46			Immersion 1715.8 m. Lock 15.0 m.
19:53	X	X	20 h - minuit : J. Caulet & A. Deschamps
	Waypoint during OTUS		X_0 = 560 000 Y_0 = 4 100 000
19:53			→ Arrivée du RAV au fond
20:08			→ Recalage sur le marqueur "0801 colon"
20:12:21	27628	3729	→ début profil - Point no
20:15			P = 1708 m Alt : 11-12 m
			recalage de l'estime inertiel depuis 20:12.
20:16			début OTUS
20:17			recalage estime au point 0
20:20			enregistrement caméra DVD 330 Cliff 1
20:25			⚠ pas de Micro-bathy ⇒ on la récupère ⇒ appareil non lancé. Il faut que nous l'amenions sur zone plate vers le lac de Leve pour calibrer en statique puisqu'on avait au point ④
20:30	27808	3760	Fin 1er profil
20:33			on retourne vers début 2ème profil mais on part pour calib bathy.
20:48			fin du 2ème profil. Arrivé au point ③
20:48			on fait route vers lac de Leve pour calibration

Heure	Y	X	
20:51	27532	3729	redémarrage mpetersène... pb lors de la mise à l'eau la mise sous tension a été coupée il faudra refaire le calibrage à la remontée !!
21:09			fin de la 1ère ligne par calibrage sondeur -
21:11			début de la 2e ligne vers le Nord
21:16			fin de 2ème profil
21:18 / 21:26 / 21:48			station - on reste sur point x = 3778, y = 27409 depth = 1731 m à point.
21:51			Calibrage cap nord / 075° (à vérifier sur cartes caraïbes) on se redirige vers le point 0. cap 345
22:04			en station-naire au point 0 photo bio
22:12			début enregistrement bathy et obs mais estime pas encore recalée -
22:12			- recalage estime
			- début d'1 nouveau fichier bathy DVD 390 C1#2 (caméra 1)
22:14:30			Passage sur le point 0 route vers le Nord
22:25			Passage sur le point (1)
22:28			Passage sur le point (2) → début de la ligne 2 vers le sud changement de fichier
22:39:22			fin de profil pt (3)
22:40:00			virage
22:41:30	y = 27609, x = 3695		point (4)
22:42			⚠ TOUTES LES IMAGES SONT TOUS EN MIROIR ⇓ nous corrigeons ! A partir de 22:45 OK images directes
22:47			on quitte la route pour vérifier la plaque du sondeur
22:48			enregistrement
22:51			Mise en place DVD caméra 2 pour aide OK US 390 C2 #1

Heure	Y	X	
22:53			Mais vérifions le retour bathy ... il semble que la bathy soit aussi inversée !!
23:00			⚠ les données bathy sont aussi en miroir
23:08	27614	3742	on reste en station près d'une pente pour essayer de corriger le pb sur des "settings" du sondeur multifaisceaux...
23:24	y = 27627	x = 3747	on commence un mini profil sur une pente pour recalibrer le sondeur afin maintenant rapidement les données par caraïbe et être certain que les données ont bien pris en compte le renversement de 180° mis en settings -
23:29			Terminé... ⇒ Traitement... Rumuit - Lyh → Françoise - Benjamin
00:10	27629	3730	Repend la bathy au point (0)
00:19	27804	3761	Fin de Profil_1
			change DVD C1#3 vers OH15
00:25	27808	3746	début Profil 2 vers le sud.
0:29			cmm 1678,9 Alt 7,1
0:42	27603	3700	Arrivée au point (3), changement de cap par 287. Im: 1708 m, Loch = 12,4 m
0:44	27603	3695	Arrivée au point (4), changement de cap pr 40 Im = 1712 m Loch = 12 m. Le Debt du 3ème profil
00:51			change DVD C2 #2
1:01	27919	3662	Fin de Profil 3 _ Passage Point (5). cm 1645 Loch 11,8.
1:03	27845	3722	arrivée point (6) Recalage de l'estime sur la BUC changement de fichier
1:04			départ vers le sud ⇒ début Profil 4 cmm 1646,9 loch 12,1
1:22	27593	3678	Arrivée point (7) (Fin profil 4). Aperçu d'un Lat: N37.17556 Long: W22.16853 volcanisateur.

Time	Y	X	
1.24	27576	3662	Changement de fichier. Debut ~~profil 5~~, passage au point (8) Vers le Nord. Im = 1712 m Loch = 12 m
1.26			Debut du profil 5.
1:36			Passage à proximité de PP24.
1.42	27848	3706	Passage point (9) Fin de profil 5. Im = 1642 m Loch = 10 m.
1:44	27850	3691	Passage point (10) Debut ~~profil 6~~ Im = 1641 m Loch = 11,5 m. Changement de fichier.
2:06	27578	3648	Vers le Sud Passage point (11) Fin profil 6 Im = 1707 m. Loch = 11,8 m
2:09	27582	3632	Changement de fichier. Debut du ~~profil 7~~, Passage point (12) Im = 1702 m Loch = 11,9 m Vers le Nord.
2:11			Change DVD C1 # 4
2:26	27862	3679	Passage point (13) (Fin de profil) Im = 1849 m Loch = 10,6 m
2:29	27865	3665	Changement de fichier Debut ~~profil 8~~, Passage point (14) Im = 1656 m Loch = 10,3 m Vers le Sud. (A) Recalage de l'estime sur le Br.
2:40	27742	3644	Succession de piliers me

Time	Y	X	Comments
02:50	27586	3618	Passage point (15) Fin profil 8. Im = 1701 Loch = 9,8
02:51	27587	3602	Changement de fichier Passage point (16) Debut ~~profil~~ Vers le Nord. Im = 1694 Loch = 9,0
2:53			Change DVD C2 # 3
03:10	27866	3650	Passage point (17) Fin profil 9. Im = 1653 Loch = 11.
03:13	27871	3634	Changement de fichier Passage point (18) Debut ~~profil 10~~ Vers le Sud. Im = 1642 Loch = 9,9
03:19			Aperçu des tests de plongées précédents du Nautile.
03:30	27688	3588	Passage point (19) Fin profil 10 Im = 1690 Loch = 11,4
03:31	27691	3573	Changement de fichier. Passage point (20) Debut ~~profil 11~~ Vers le Nord Im = 1685 Loch = 11,6
03:53	27871	3620	Passage point (21) Fin profil 11. Im = 1633 Loch = 9,7
03:57	27878	3605	Changement de fichier. Passage point (22) Debut ~~profil 12~~ Vers le Sud. Im = 1698 Loch = 11,3

Time	X	Y	Comments
04:00			changement quart : Eric et Céline
04:12			Change DVD's In Out C1 #5 C1 #4 C2 #4 C2 #3
04:20	3556	27598	Passage point (23) Fin du profil 12 Im = 1673 Loch = 10.4
04:21	3546	27606	changement de fichier Passage point (24) Début profil 13 vers Nord Im = 1666 Loch = 10.
04:23			Passage au dessus de cheminées mates
04:36	3590	27871	Passage au point (25) Fin du profil 13 Im = 1638 Loch = 10.9
04:37	3578	27872	Passage au point (26) Début profil 14 vers sud Im = 1632 Loch = 11.6 changement de fichier
04:40	3567	27817	recalage Buc
04:48	3544	27706	passage au dessus de cheminées.
04:55	3535	27622	passage au point (27) Fin du profil 14.
04:56	3522	27629	Passage au point (28) Début du profil 15 Im = 1642 Loch = 10.9 vers le Nord Changement de fichier
05:01	3530	27658	problème de pente décalage vers l'Est. Loch = 17.9 Im = 1627. on arrête d'avancer pour recevoir sur le profil.
05:04	3531	27681	cheminée en face - passage au dessus loch = 10.6
05:09	3540	27740	passage au point (29) mais continuation vers le Nord du profil 15
05:19	3564	27854	Passage au point (30) Fin du profil 15
05:19			Im = 1627 Loch = 10. recalage estime. changement de fichier début profil 16 vers Est.
05:33	3751.	27822	perte du loch (passage au dessus d'un creux.)
05:41	3773	27818	Passage point (30) début profil 16 Im = 1679 Loch = 18.8.
05:45	3777	27821	Debut profil 17 vers sud - Changement de fichier Im = 1684 Loch = 17.7
05:49	3768	27752	Passage point (31) Fin profil 17. Im = 1696 Loch = 10.2
05:50	3768	27750	Debut profil 18 vers Ouest changement de fichier.
05:58	3681	27767	passage au dessus d'une petite cheminée (repère visuel).
06:00	3646	27715	contournement grosse cheminée mate Im = 1656
06:09	3532	27790	Passage au point (32) Fin du profil 18 Im = 1624 Loch = 10.6
06:10	3529	27781	Debut profil 19 vers sud Changement de fichier
06:13			Changement DVD Im Out C1 #6 #5 C2 #5 #4.
06:15	3517	27739	cheminée très haute repere vieille cheminée
06:18	3514	27702	Passage point (33) Fin du profil 19.
06:20			Debut profil 20 pour
06:21	3529	27685	explorer autour du site "Céline" sur C2 : passage à caméra principale

Time	X	Y	Comments
06:28	3535	27695	Arrivée aux les cheminées Im = 1633 Loch = 13.2 couverture de mailles.
06:31	3534	27705	mouillage.
06:34	3537	27701	marqueur amaen au pied de la cheminée peut être Bairro Alto.
06:38			recupération d'un marqueur dans panier
06:41	3528	27771	OTUS 01 déployé : BO9 MAR 01 D
06:43			retour vers point 33 pour refaire le profil
06:47	3505	27703	au point (33) Debut profil 21 vers Est. Im = 1603 Loch = 12.1 Changement de fichier.
07:05	3744	27660	Passage au point (34) Fin de profil 21 Im = 1701 Loch = 10.8
07:06	3745	27649	Debut profil 22 vers sud Im = 1705 Loch = 10.5 changement fichier
07:08	3731	27585	Passage au point (35) Fin du profil 22 Im = 1709 Loch 10.1
07:10	3710	27588	Debut profil 23 vers ouest Im = 1709 Loch = 10. Changement de fichier.
07:18	3556	27612	cheminées Im = 1673 Loch = 9.6.
07:21	3524	27616	Passage au point (36) Fin du profil 23 Im = 1656 Loch = 9.1
07:23	3523	27602	Passage au point (37) Debut profil 24 Im = 1657 Loch = 12.8 vers Est. changement de fichier.
07:35	3734	27565	Fin du profil 24 Im = 1712 Loch = 10.4 Route vers Ascenseur Nouble Profil 25

Time	X	Y	Comments
07:35			changement de fichiers.
07:38	3744	27545	arrivée aux ascenseur Nouble - Im = 1724 Loch=10
07:41			saisie de la serpette avec Haestad.
07:48 → 07:54			largage des bots.
07:57			inspection ascenseur et flotteur
08:00			New Watch Catia Silva, Vo Eric, Pacheco
08:08	3760	27548	OTUS Stop
08:16			~~DVD change In out~~ DVD Stop was not changed because of elevator in coming up
08:20			Acoustic release of elevator didn't work
08:34 estime	3761	27542	Elevator released by cutting the rope
08:38 estime	3760	27543	VICTOR started ascending
08:48 estime	3915	27791	Still ascending
08:58 estime	4157	28141	Still ascending
09:03			The elevator is at surface
09:10	4023	27543	VICTOR is at 1200 m
09:13:20	4005	27534	~~CALIBRATION MAGNETOMETER~~ 1200m Cap 270 begin of magnetometer Calibration anticlockwise rotation ~~End of rotation anticlock~~
4:15			
09:15			2e anti clockwise rotation
09:16			Stop anti clockwise rotation and started clockwise rotation
09:17:20			Finished rotation
09:31			elevator is on deck
09:35 ≈	3621	27620	Magnetometer calibration, 1000 m Cap 301 clockwise rotation
09:35			Begun anticlockwise rotation on
09:37			
09:37:44			Begun of clockwise rotation
09:40			Beginning of anti clockwise rotation
09:41			and of magnetometer calibration

Time	X	Y			Latitude N	Longitude W	observation
			~~Magnetometer~~ Calibration 300 m				
09:51:00	3562	27587	Cap 221 ↻ clockwise rotation	56	37°17.308	32°18.168	d 1655 m
09:52:24			Anticlockwise rotation	16	37°17.5929	32°18.845	d 1709 m Avoid event. Reduce speed
09:54:10			End of calibration	19	37°17.6057	32°18.8507	d 1644 m Profile pb.
			VICTOR ascends to surface	25	37°17.6828	32°18.859	d 1525 m coming up!
10:02	3550	27608	382 m depth for the ROV	09	37°17.6957	32°18.8831	d 775 m coming up
10:17			100 m depth for the ROV	26	37°17.77	32°19.89	d 482 m coming up.
10:19	3896	27578	Position of the boat	41	37°17.79	32°18.99	d 159 m
10:39	4117	27442	Boat on deck ROV still in water	52	37°17.7883	32°19.0455	d 64 m
10:45	4325	27420	ROV back on deck.	56	37°17.903 Ship position.	32°18.937	d < 0 m at the surface !!
11:09	37°16.672	32°14.411	AUV is being tested on Hangar before to AUV deployment site.				Ship Valentin et Alice
11:39	37°16.564	32°14.832	Position of Penguin Bay	16:05	37°17.999	32°18.877	Scientific Reunion (Heating)
11:58	37°16.425	32°14.128	AUV into water	16:27	37°17.933	32°18.954	AUV on board
			BO9AUV004 D	16:33	37°17.966	32°19.003	Zodiac on board Waiting to deploy Victor.
			Rosa and Benoit				
12:01	AUV POSITION		going to diving point	16:55	37°17.956	32°17.836	Still waiting for Victor cloud cover 8/8
12:07	37°16.707	32°14.585	depth 370 m	17:21	37°17.926	32°16.626	Still waiting for Victor cloud cover 3.5/4
12:04	37°16.664	32°14.331	depth 527 m	17:40	37°17.361	32°16.044	Soon ....
12:22	37°16.648	32°14.472	depth 1091 m	17:57	37°17.446	32°16.700	Victor is on the bridge but waiting for sun to stop to deploy Victor.
12:35	37°16.498	32°14.480	depth 1788 m				
12:41	37°16'636	32°14.46	d 1912 m.				
12:44	37°16'600	32°1453	d 1963 m @ bottom going to calibration	18:11	37°17.434	32°16.718	Victor is in the water. Surface
12:51	37°16'67	32°1439	d 1942 m. Début de Profil. V = 3 kn	18:22			Beginning to dive.
13:02	37°16'72	32°15'78	d 1833 m. Fin 1er virage (évitement)	18:33			VICTOR DIVE 391 It's reparty (after a little blackout)
13:09	37°37'16	32°15'41	1698 m another one (same) Avoid something	18:51			400 m inversion
13:17	37°16'88	32°1596	1623 m. Straight line since last event.	19:05			inversion 804 m.
13:27	37°17030	32°16604	d 1552 m				anti-clockwise cour (in Sola).
13:36	37°17'14	32°17.08	d 1497 m Straight line since last event	19:29			de clockwise (final inversion 738)

TIME	LAT	LONG	DESCRIPTION 11/09/16
19:10			Going down
19:14			inversion 903.9 m anti-clockwise tour
19:16			le clockwise tour Final inversion 894.3 m
19:18			Going down
19:22			inversion = 1003.3 anti-clockwise.
19:24			le clockwise. Final inversion 1003.0
19:26			Going down
19:29			inversion 1103.7 anti-clockwise
19:31			le clockwise Final inversion 1112.8 m
19:32			Going to the bottom. to do calibration over flat part in lac de Lave
	X	Y	$x_0 = 550\,000$ $y_0 = 120\,000$

Shift Silva and Thibaut

20:22	N3717.456	W3216.845	Arrivé au fond, vers le lac de lave 11.1 m.
20:27	N 37 17 403 X = 13766	W 32 16 836 Y = 7292	Début de la calibration of de la bathymetry sensor : Z = 12 m.
20:32	13791	7295	Profil finit pour calibration
20:35	13793	7293	Beginning of the Return of the bathymetry calibration
20:41	13792	7409	Calibration finished

Lat	Long	description 11/09/16
—	—	Looking to do the end of calibration which failed at the end of the first profil
—	—	we decided to not do the second calibration and going to the (39)
—	—	Going H0801 to the estime Relac
—	—	We Relac estime the H0801 without using the estime ; still moving to make a good relocation of the estime H0801
13.686	75 80	We Relac estime the marker H0801
		We are going to the (38) point
13729	7569	We are in the (38) point.
13725	7554	We are in the (39) point. Change the file
13725	7554	Begin of the profil from (39) to the West (40) Imm = 1721 Loch = 10.1
13515	7588	Arrive at point (40). Finished the profil Change the file I: 1650, 3 Loch = 10.5
—	—	leaving to point (41)
13513	7571	Arrive at point (41). Beginning the profil to the East.
N37 17.555	W32 17.005	Imm = 1675, Loch = 17,9
13741	7540	Arrive at point (42). Profil (37) was finished Relocation to estime at H0801 Imm = 1725, 3 Loch = 9.8
13685	7582	We relocate the estime H0801 and we goes to point (43)

11/09/09

Time	Lat	Long	Description
22:05	13624 N3717555	7571 W3216930	We aeeive at point ① · Chang file Imm=1705,7 Loch=10.8
22:06	—	—	Beginning the peofil ⑱ to the South.
~~22:18~~	~~13591~~	~~7374~~	
22:18	13591	7374	Aeeive at point 1 and of the peofil ⑱ I= 1705 Loch= 10.0 ~~Change the file~~
22:20	13605	7372	Aeeive at point ② · Beginning the peofile ⑲ Change file. to the North Im = 1710.9 Loch = 10.6
22:33	—	—	DVD change : #2
22:34	~~13640~~ 13640	7564	Aeeive at point ③ and the peofile ⑲ finished. Imm = 1708 Loch= 10.9
22:36	13653 N3717548	7559 W3216911	Beginning the peofile ⑳ feom point ④ to the ~~sea~~ point ⑤ to the South. Change of file Imm = 1713,3 Loch = 10.8
22:49	13614 N3717482	7326 W3216938	Aeeive at point ⑤ · End of the peofile ⑳ · Moving to pointe ⑥ and start the peofile ㉑ to the North. Change the file.
22:53	13626	7321	Imm = 1659.4 Loch = 10.5
23:06	13664	7540	Aeeive at point ⑦ · Finished the peofile ㉑. ~~Change file~~ Imm = 1719,7 Loch = 10.7

Time	Lat	Long	Description
23:07			stop archivage
23:09	13685	7581	Relocat° of the eshime on Ho8-01 (Bol2 m) ~~going to point 8~~ data ~~transfert to~~ were templated NAS
23:10			
23:18			Going to point ⑧.
23:20	13680 N3717534	7534 W3216893	Aeeive at point ⑧ Biginnig the peofile ㉒ to the South. Change the file. Imm = 1726 Loch = 10.3
23:35	13639 N3717406	7296 W3216921	Aeeive at point ⑨ · Finished the peofile ㉒. Imm = 1688 Loch = 10.6
23:36	~~13658~~		Moving to point ⑩.
23:37			Change the file.
23:38	13652 N3717402	7289 W3216933	Begining of peofile ㉓ at point ⑩ to the North Imm = 1692.8 Loch = 10.2
22:44	—	—	Take a picture of a fish (snack)
23:51	13688 N3717517	7501 W3216827	Aeeive at point ⑪ finished the peofile ㉓. ~~Change the file~~. Imm = 1728,0 Loch = 9,7
23:53	13700 N3717507	7484 W3216879	Aeeive at point ⑫. Begin the peofile ㉔. Change the file. to the South Imm = 1729 Loch = 9.6

Time	Lat	Long	Description
00:00			~~Start~~ Cedric & Nelia
00:07	13659	7233	Arrive at point (13) end of profile (35) Imm: 1676 Loch: 10.2
00:09	13672	7230	Arrive at point (14) begin of profile (36) Imm: 1676 Loch: 10.2 change of file 00.09 to the north
00:19	13698	7382	end of profile (36) Imm: 1726 Loch: 10.1 Arrive at point (15)
00:20	13698	7382	begin of profile (37) Imm: 1725 Loch 10.1 to the west
00:24	13649	7395	passing near Pico Imm: 1716.4 Loch: 10.1 connection of Buc on Pico
00:28	13584	7413	end of profile (37) arrive at point (16) Imm 1696 Loch 17.7 change of file at 00:28 to the north begin of profile (38)
00:31	13583	7433	profile stopped, error in the pc
00:32	13585	7428	restart of profile 38
00:33			DVD changed start of 39 C1 # 3 C2 #
00:35	13593	7468	end of profile (38) arrive at point (17) Imm: 1700 Loch 10.5

LAT	LONG	Description
13593	7468	begin of profile (39)
		~~start~~ to the east
13679	7450	passing near Helene, but not seen in the cameras
13723	7440	change of file arrive at point (18) end of profile (39)
		Imm: 1729 Loch: 10.5
		start of profile (40)
		smaller change of direction to East South East
13828	7386	~~arriving at point 1~~ ~~profile not seen~~ problem with photomosaic
		Imm: 1729.6 Loch: 10.3
		N 37° 17.454 W 32° 16.792
		all working
13834	7382	arriving at point (1) end of profile (40)
		Imm 1728 Loch 10.7
13834	7382	start of profile (41) change of direction to the South
		N 37° 17.452 W 32° 16.789
		Imm 1728 Loch 10.7
13813	7239	ROV stopped - end of raise
		N 37° 17.374 W 32° 16.804
13813	7231	Restart slowly
13806	7208	FULL SPEED!
13793	7139	Arriving at point (2) end of profile (41) Imm: 1678 Loch: 10.7 N 37° 17.320 W 32° 16.818

12/09/09

HHE	LAT	LONG	DESCRIPTION
01:24	13779	7142	Arriving at point (3) ~~Start~~ of profile (42) Imm: 1673 Loch: 10.4 N 37 17.322 W 32 16.827 Change of file → to the north
01:41	13824	7407	arriving at point (4) end of profile (42) N 37 17.465 W 32 16.796 Imm 1730 Loch 10.4
01:44	13809	7410	arriving at point (5) Imm 1729 Loch 10.6 N 37° 17.467 W 32° 16.806 Start of profile (43) to the south
02:00	13765	7145	arriving at point (6) end of profile (43) Imm: 1667 Loch: 10.3 N 37°17.324 W 32° 16.837
02:02	13750	7151	arriving at point (7) Start of profile (44) to the north Imm = 1665 Loch: 11.1 N 37 17.327 W 32 16.847
02 20	13793	7414	Arriving @ point (8) end of profile (44) + change of file Imm 1730 Loch 10.8 37 14.469 32 16816

HOUR	LAT	LONG	DESCRIPTION
12/09/09			
2 21	13783	7421	Arriving @ point (9) Start profile (45) to the South Imm 1730 Loch 10.3 37 17 473 32 16 824
02:40	13735	7151	Arriving @ point no (10) End of profile (45) Imm 1663 Loch 10.9 N 37 17.327 W 32° 16.857
02:42	13722	7163	~~Start of~~ arriving at point no (11) ~~change~~ of file Start of profile (46) Imm: 1660 Loch: 11.5 N 37° 17.334 W 32° 16. 866 Change of DVDs start of C1 #4 C2 #4
2 58	13767	7432	Arriving @ point (12) end of profile (46) 37 17.479 32. 16.834 Imm 1730.4 Loch 10.2
3:00	13754	7438	~~Structure on the bottom~~ Arriving @ point (13) Start profile (47) to the South 37 17.482 32 16 843 Imm 1730 Loch=10.
3:10	13754	7438	Structure on the bottom = old chimney? ~~Arriving @ point 14~~ ~~End of profile 47~~
3:13	13725	7278	Recalage BLC sur White Cattle (15m de décalage)

Heure	Lat	Long					
3.26	13706	7163	Arriving @ point 14				
			End of profile 47				
			37 17 334	32 16 897			
			Imm 1655.7	Loch = 10.4			
3.28	13690	7157	Arriving @ point 15				
			Start profile 48	to the north			
			37 17 331	32 16 887			
			Imm = 1654	Loch 10.3			
3 40	13715	7310	Pb Crash.				
3 41			Restart				
345	13731	7397	Hydrothermal Chimneys.				
3 48	13739	7463	Arriving @ point 16				
			End of profile 48				
			N 37 17 485				
			W 32 16 853				
			Imm 1729	Loch 10.2			
357	13723	7468	Prise Quart - Alain - Olivier - Céline				
			Arrivée point 17				
4.01	13725	7450	Début profil 49				
			N 37 17 488				
			W 32 16 864				
			Imm 1728.6	Loch 10.2			
4.23	13697	7166	Arrivée point 18				
			fin profil 49				
			N 3717 334				
			W 3216 997				
			Imm 1658	Loch 11.9			

13661	7184	Arrivée point 19		12/09/09
		début profil 50		
		N: 3717.345		
		W: 32 16.905		
		Imm 1662	Loch. 10.3	
13808	7153	Arrivée point 20		
		fin profil 50		
		N = 37 17 328		
		W = 32 16 807		
		Imm = 1685	Loch. 10.1	
13808	7153	Arrivée point 20		
		Début profil 51		
		N - 37 17 328		
		W - 32 16 808		
		Imm 1685	Loch = 10,1	
13816	7203	Arrivée point 21		
		fin profil 51		
		N - 37 13 355		
		W - 32 16 802		
		Imm 1696	Loch 9.4	
13816	7203	Arrivée point 21		
		Début profil 52		
		N 37 13 355		
		W 32 16 80C		
		Imm 1696	Loch 9m	

4.41	13700	7246	Changement DVD off = C1_4 C2_4	Start = C1 = 5 C2 = 5
4.50	13653	7268	Arrivée Point (22) fin Profil (52) N = 37 17 391 W = 32 16 912 Imm 1685	Loch 10.3
4.50	13653	7268	Arrivée Point (22) Debut profil (53) N = 37 17 391 W = 32 16 912 Imm 1685	Loch 10.3
4.53	13667	7319	Arrivée Point (23) fin Profil (53) N = 37 17 419 W 32 16 902 Imm = 1705	Loch. 11.
4.53	13667	7319	Arrivée Point (23) Debut profil (54) N = 37 17 419 W = 32 16 902 Imm = 1705	Loch = 11

	13862	7293
08	13862	7293
11		
14	13852	7297
15	13852	7297
17	13856	7297
	13864	7650

[redacted] 12/09/09

Arrivée point (24)
fin Profil (54)
N = 37 17 404
W = 32 16 770
Imm 1727 Loch = 10.5

Arrivée point (0)
Debut profil (55)
N = 37 17 397
W = 32 16 769
Imm = 1722 Loch = 11.7

Profils Nord - Sud

Abandon

TRANSFERT FICHIER
Fichier ne redemarre pas
Recalage BUC - 25m de decalage
Fichier Partu no 33

Arrivée point (0)
Debut profil (55)
N = 37 17 406
W = 32 16 770
Imm 1725 Loch 10.3

Arrivée point (1)
fin Profil (55)
N = 37 17 397
W 32 16 767
Imm = 1721 Loch 10.5

12/09/09

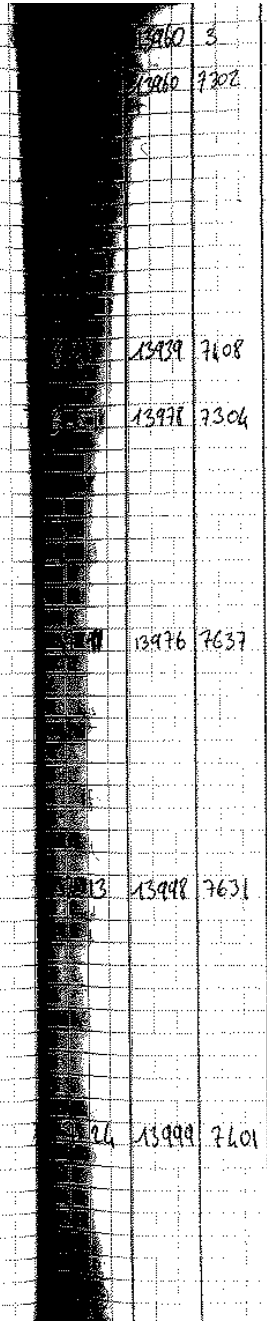
05.99 | 13880 | 7651 | Arrivée Point 2 — Debut profil 56 — N = 37 17 597 — W = 32 16 750 — Imm = 1717 4 — Loch = 10.5

6.04 | 13895 | 7304 | Arrivée Point 3 — fin profil 56 — N = 37 17 409 — W = 32 16 748 — Imm = 1720 — Loch = 10.6

6.06 | 1395 | 7301 | Arrivée Point 4 — Début profil 57 — N = 37 17 408 — W = 32 16 734 — Imm 1798 — Loch = 10

6.26 | 13948 | 7648 | Arrivée point 5 — fin profil 57 — N = 37 17 595 — W = 32 16 731 — Imm 17.13 — Loch 10.4

6.29 | 13954 | 7642 | Arrivée point 6 — ~~debut~~ profil 58 — N = 37 17 592 — W = 32 16 706 — Imm 1708.2 — Loch 11.8



13960 | 3

13962 | 7302

13939 | 7608

13971 | 7304

13976 | 7637

13998 | 7631

13999 | 7601

Contournement Y3

Arrivée Point 7 — fin Profil 58 — N = 37 17 408 — W = 32 16 701 — Imm = 1686 — Loch = 10.6

changement DVD — OFF C1-5 C2-5 — start C1-6 C2-6

Arrivée Point 8 — Debut profil 59 — N = 37 17 409 — W = 32 16 692 — Imm = 1686 — Loch = 10.6

Arrivée Point 9 — ~~fin~~ fin Profil 59 — N = 37 17.589 — W = 32 16.692 — Imm = 1714 — Loch = 11.3

Arrivée Point 10 — Début Profil 60 — N = 37 17.586 — W = 32 16.677 — Imm = 1712 — Loch = 11,1

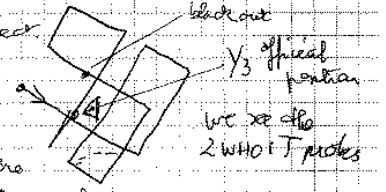
Arrivée Point 11 — fin ~~Debut~~ Profil 60 — N 37.17.462 — W 32 16 678 — Imm 1676 — loch = 11

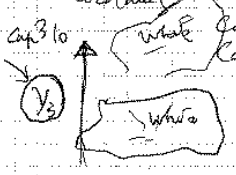
12/09/09

7.25			Route vers Y3 pour recalage Estime			
7.29	14008	7481	Arrivée sur Y3. N37 17.503 W32 16.671			
↓			Recalage Estime sur Y3. 44m au 110°			
7.36			N = 37 17 504			
			W = 32 16 671			
7.37			Route vers point 11			
7.41	13999	7400	Arrivée point (11)			
			début profil (61)			
			N = 37 17 461			
			W = 32 16 678			
			Imm = 17m Loch = 10.4			
7.49			Depuis 6.30 pas d'OTUS			
7.50			Retour Flash - OTUS OK			
8h00			Début quart Julie Caillet / Anne Deschamps			
08h02	14206	7363	~~Début~~ Arrêt enregistrement car ROV arrêté			
			par attendre le bateau N37 17.443 W32 16.411			
08h11			Début enregistrement, on repart vers le point (12)			
			← on a vu ça ! Gaine déplacée vers (8h20) caméra			
			← brun/rouge foncé			
			← couleur rouge bordeau			
			(vous en avez de la chance !! c'est comestible ?)			
08.21.30			pt (12)			
			Y = 7344 N2			
			X = 14339			
8h24	14344	7364	Nouveau fichier (13) N37 17.440 W32 16.444			
			début profil (62) vers l'ouest.			
8:40			dépots hydrothermaux - photo 2 -			
8:44			passage sur point (14)			
8:46			Arrivé sur Y3 - L'estime est à 2 mètres de Y3			
			Donc le point (11) de 10m sur la trajectoire			

Changement de DVD juste à Y3
OF C1-6 ⇒ C1-7
C2-6 ⇒ C2-7
Début enregistrement 8h50 sur le DVD
estime recalée à Y3 x=14 018 y=7476
N37 17.499 W32 16.663
début enregistrement bathy
passage sur point (15) x 14030 y=7471
début ligne (63) vers l'E N37 17.499 W32 16.650
dep petits depots hydrothermaux
Passage sur le site actif. Donc navigation ok, pas de dérive
photo 7.
14340 7386 Arrivée point (16) fin de la ligne 63
N37 17.448 W32 16.440
14359 7432 Passage point (17) début ligne 64 vers l'W - changement heure
N37 17.477 W32 16.434
Passage à Sintra Sud - Donc navigation OK
comme prévu
Sintra Sud 14336/7432 N37 17.477
W32 16.457
depots hydrothermaux à mi chemin entre Sintra Sud et White point
Passage sur White point ? 14283/7462 N 37 17.485
W 32 16.485
14182 7499 petits depots hydrothermaux passage vers les bleus A2 ?
N37 17.513 W32 16.553
14042 7548 passage sur point (18) fin ligne (64)
N37 17.540
W 32 16.648
fin enregistrement bathy pour transfert sur NAS
Arrivée sur Y3 par recalage Estime - Il y a pas de dérive (< 2 mètres)
Recalage estime sur Y3 -
Début enregistrement bathy - On quitte Y3 vers le Nord vers point (19)

			~~début ligne (65)~~
			9h 9:52 : arrêt à 20m d'altitude au lieu de 2m
09:57			début ligne (65) vers 1er passage au point (19)
~~09:57~~	y: 7570	x: 14047	point 19 (y = 7570 ; x = 14047).
9h59	14096	7554	sortie de fluide ?? dépôts hydrothermaux jaune blanc N37 17.544 / W 32 16.611
10:12	14306	7487	passage sur US 3 - Donc localisation OK - N37 17.509 / W32 16.4
10:16	14365	7465	Arrivé en fin de ligne (65) au point (20) début du virage N37 17.495 W32 16.450
10:20	14372	7499	Passage au point (21), début ligne (66) vers l'W
			Nouveau fichier - N37 17.513 W32 16.425
10:26	14059	7537	Passage sur Sintra ~~E~~ marqueur NO8-8 vu N37 17.534 W 32 16.501
10:30	14042	7604	Passage point (22) fin ligne (66) N37 17.571 W32 16.647
			on continue avec le même cap de la ligne NS (10)-(11) par recouvrement données ORUS et bathy -
10:43	13998	7618	intersect° avec ligne NS (10)-(11) N37 17.578 W 32 16.677
			on se dirige vers le Sud vers Y3 par recaler l'estime.
10:53			fin enregistrement DVD C1-7 → C1-8 C2-7 → C2-8
			Arrivée à Y3
10:55			recalage de l'estime (inutile car quasi pas de dérive) 2 mètres
			⚠ la bathy a été stoppée AVANT le recalage de l'estime
11:04			début enregistrement bathy, on se dirige vers le point (6)
11:06	14000	7440	on coupe (10)-(11)
11:07	~~14000~~ 13978	7439	on coupe la ligne (9)-(8) N37 17.482 W 32 16.691
	13957	7440	on coupe la ligne (6)-(7) N 37 17.482 W 32 16.705
	13954	7641	on se dirige vers le point (6) vers le Nord
			Passage point (6) et début profil (58) - direct° point (7) changement de fichier
			point (6) : N 37 17.591 W 32 16.706
	13958	7304	Passage point (7) N37 17.409 W 32 16.706
			Fin du profil N-S (58)
	13938	7305	Passage au point (8) N37 17.410 W 32 16.692
			Début enregistrement profil (59) vers le Nord.
			changement de fichier Méthode + Boisset
	13977	7476	pr une ~~reconnaissance~~
			fin end of profile (58) at pr 9
			en route to Y3
	14004	7492	Y3 rm. estime à perfect
			we ~~did~~ not.
			delayed survey
			change file
			for the survey we are





#8

Y3 on marker 564009 4127494

Δ Y3 : blackout ~~les écrans~~ du ROV.

back in barracks we prepare to continue the delayed survey. - typical routine all the instruments - ORUS, SBMF, the waters for test after blackout.

ORUS and SBMF on back. we continue survey and change DVD Cam 1 start #9 Cam 2 #9

end of ~~history~~ survey - transfer of files ~~waiting~~ we wait.

12/09/09

13:19 we leave for Sintra

13:21 Vespa SMF out - reboot.

13:30 14150 7545 route en route to Sintra - GPS_SMF_flag on.

13:35 14209 7561 going up steep slope. (route a bit off)

13:39 14250 9523 we get to H08_8 and Sintra
14255 7539 entrance Sintra a bit off.

base is good. We never entrance
former base

207
H08_8

129

1613+10 m

Cap 123

13:44 preparing tracks for micro survey and
297 begin pr survey,
change given

13:45 the fonction of marker H08-8 is perfect

we adapt to extension of ground.

207

297

14:05 end of detailed survey of SINTRA
we go back to V3 to record the last track which was not properly recorded due to blackout.

route to V3
we are at V3 we make 2 tracks to be on the safe side of the blackout data loss.

Change DVD 3 → Cam 3 #2,

53 13994 7472 end of second part of micro survey at V3

42 14034 7488 entrance

we are underway to Tour Eiffel

we run a mini zone of glonass, flange on the slope with W facing

"point zero" Math1

46 14039 7369 base

Cap 144

base in entrance track

50 14085 7318 entrance

Cam 1 abord

another site, rather large.

144

prepare "Math2"

Could be PP2

we pass the position of PP3 and Talbot... nothing in view

change DVDs Cam 1 2 → DVDs #10 #10

55

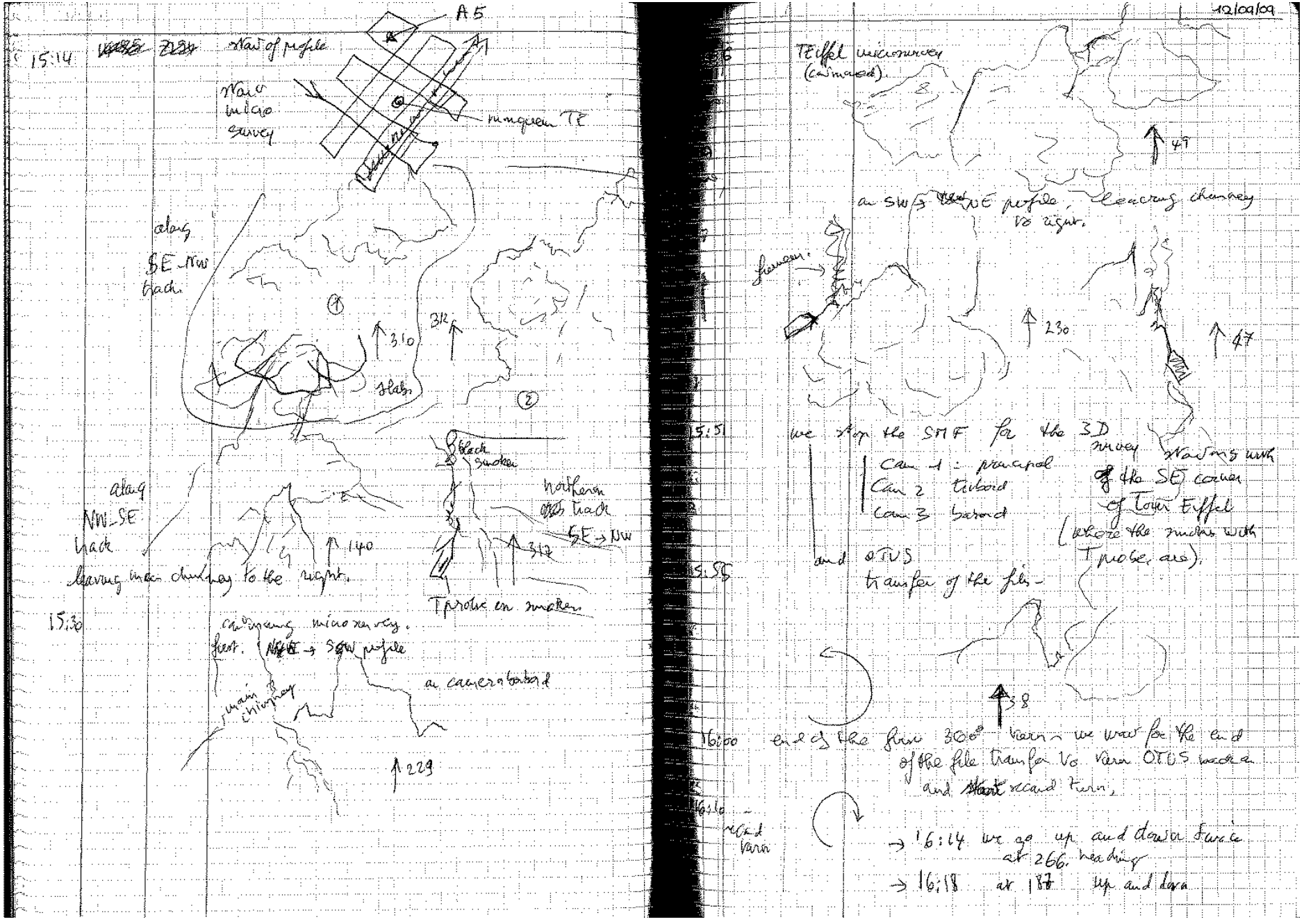
01

02 14217 7180 entrance

Tour Eiffel

preparing tracks for micro survey.

131


A5
15:14
Start of profile
main mast survey
monument TE
along SE-NW track
310
312
Slab
1
2
along NW-SE track
140
leaving main chimney to the right.
15:30
Black smoker
northern OTUS track
SE → NW
317
Transponder on smoker
changing microseismic. front. NW → SW profile
main chimney
229
on camera starboard
15:51
15:55
16:00
16:10
end of the first 360° turn - we wait for the end of the file transfer to view OTUS model and record turn.
→ 16:14 we go up and down track at 266° heading
→ 16:18 at 187 up and down
12/09/09
Eiffel microseismic (enhanced).
47
on SW → NE profile leaving chimney to right.
fumarole
230
47
we stop the SMF for the 3D survey
Cam 1 : principal
Cam 2 tribord
Cam 3 bâbord
and OTUS transfer of the file -
drawings with
of the SE corner of Tour Eiffel
(where the markers with Transponder are).
38

12109109

	X	Y	Description
24	14053 estimé	7220	Isabel PP23 micro survey — new OTUS-STIF files to me, well located. 1683± 10 m.
12:29	14060 estimé	7253	we see T probe on vertical camera
12:36			we pan 1108-12 on the vertical camera zenith at the exact location — there are 3! Tenon 68 markers here!! 5 9 12
17:53	14065	7252	we pan the WHOT Track on vertical camera
18:00			end of micro survey at Isabel Close files we go toward the southern volcano.
			CHANGE LOG TAKER : Eric Mittelstaedt
18:14	13828	7149	Heading toward GG to start large survey — beginning with line over the top of volcano ~currently ~100m from GG
18:27	13747	7097	Arrive at GG along planned profile - head toward pt 1
18:30	13765	7052	Arrive at point 1 Begin profile: 1 to 2 towards South (toward volcano Sud)
	37°17.233	32°16.857	Emm: 1642 Zoch: 10.9
			Change File #: 62
18:30	—	—	OVO for Babord camera is full. (Disc 3) Not replacing because it was only necessary for special survey of Tour Eiffel
18:48	13667	6716	Passing near (a little west) of point marking ~~Volcano~~ of Volcano Sud
18:55	—	—	

Change DVDs	In	Out	
391	12	11	C1
	12	11	C2

WRITE ERROR with Disk 1 !

16:26 Change DVD cam 3 → DVD cam 3 # 3

16:27 we let the microfolder de la camera principale sit back.

16:29 Tour Eiffel → we turn up and down 90 cap. we turned the microfolder off on the main camera

16:36 end of this running microfolder back on → up and down at cap 358. end at: 358

AISICS

↑ 0°

B09VID12

16:42 VIDEO EVENT: smoke out of AISICS

VIDEO EVENT: 3D-capture from 16:51 to 16:51 B09VID13

at 16:49 we see the marked FLORES in camera principale. far behind AISICS chimney

16:51 another take of the smoke out of AISICS. B09 VID 14 —

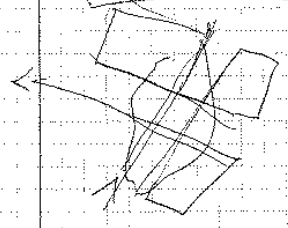
16:59 With and without zoom - beautifull image for Eric

End of Video

17:00 running over. SMF back on. we leave to Isabel.

17:04 Changing DVDs Camera 1 # 11

2 # 11



12/09/09

Time	X	Y	Description
19:02	13600	6541	Passing by (to east of) marker for
	37°16.998	32°16.952	summit of Volcano Sud
19:15	13558	6386	Arrive at point (2) end of line (Head 62)
	37°16.914	32°16.981	Imm: 1618,7
			Loch: 10.2
19:16	13555	6386	Change de file line 230 toward South West
	37°16.914	32°16.983	Begin profile
			Head toward point (0) of the large survey
			South of Volcano Sud
			Imm: 1620 cap: 258
			Loch: 10.3 line: (63)
19:37	13236	6329	Arrive at pt (0) – pause to save data
19:54	13236	6329	~~Pass~~ point (0) begin line (67) toward cost
	37°16,883	32°17,199	Imm: 1669.2 pt 0 to pt 1
			Loch: 9.8
			Change of file
North	2nd.	Volcano	difficulty in keeping the right direction for the sbv. Study current
20:24	13761	6144	arrival @ (point 1)
	37°16.778	32°16.865	Imm 1637 m
			loch = 10.6.
20°35	13754	6134	new ligne begin ligne (65) (point 2) direction WNW
	37.16.774	32°16.849	Imm 1646 m
			loch 10.3
			Cap 295 change of file
			very stray current towards S
21H11	13227	6317	Arrival @ pt 3 fin ligne 65
	37°16.678	32.17.205	Im 1673
			cap 261
			loch 10.1

Time	X	Y	Observations
			Change of DV:
			DVD C1 – 13
			C2 – 13
21H12	13224	6301	Arrival @ pt 4 Forward ligne (66) toward ESE
37 16.870		32°17.208	Imm 1679
			cap 106 change of file
			loch = 10.
21H44	13752	6117	Arrival @ pt 5 fin ligne 66
37°16.768		32°16.851	Im =1656
			Cap = 110
			loch = 10.
21H48	13748	6103	@ pt 6 Alerlage de l'extrémité de la BK
37°16.760		32°16.854	Im 1665 change de file
			Cap 272
21H00 – début profil			toward WNW début ligne (67)
22H30	13215	6289	arrival pt 7 fin ligne 67
37°16.863		32°17.213	Im 1693 Ca
			loch 10.3
22H32	13214	6274	Arrival @ pt 8 début profil (68)
37°16. 855		32°17.24	change de file
			Im 1698 toward ESE.
			loch 9.5
			Cap 107°
23:05	13740	6088	Arrival @ pt 9 fin du profil 68
37°16.752		32°16.859	Im 1683
			loch 10.5
23:30	13738	6038	début profil (69) pt 10
37°16.744		32°16.861	Im 1683 towards WNW.
			loch: 11.1 change de file
			Cap 291
17			change de DVD.
			DVD C1 → X 14
			C2 ↓ X 14

12/09/09

transfert dans mes MAS.

Time	X	Y	observation 13/09/09
23h45			LOTUS n'est pas rejoint après le transfert de donnée sur NAS rejoint en 23:45z (+15' manquante)
Aora and Benjamin			
00:03	13212 N 37 16.348	6260 W 32 17.216	arrivé to point 11 finished profile 69 Imm 1706.7 Each 9.9 Cap 115.5
00:04	13203 37 16.840	6246 32 17.290	debut profile 70 change of file point 12
00:37	13731 N 37 16.737	6059 W 32 16.965	arrivé to point 13 finished profile 70 Imm 1688 Each 10.9 Cap 290
00:38	13736 37 16.744	6073 32 16.862	completing profile 69 point 14 change file
00:54	13490 N 37 16.793	6162 W 32 17.028	arrivé to point 15 finished profile 69 Imm 1683 Each Cap 289 (Complement de la partie Est du profil 69 puis retour au point 12)
00:55			starting profile 70bis
1:03	13 [illegible] 37 16.730	6048 32 16.889	arrivé at point 17 finished profile 70bis Imm 1692 Each 10.1 Cap 112
01:04	13726 37 16.730	6046 32 16.869	starting profile 71 point 19 changed file changed DVDs C1 # 15 C2 # 15
01:18			
01:34	13202 37 16.832	6231 32 17.223	arrivé at point 18 finished profile 71 Imm 1705 Each 10.2 Cap 290
01:36	13196 37 16.825	6219 32 17.227	starting profile 72 point 16 change file Recalage de l'estime sur la BIK
01:36			

Time	X Lat	Y Long	observation 13/09/09
08	13721 37 16.722	6038 32 16.872	arrivé at point 17 finished profile 72 Imm 1697.6 Each 10.7 Cap 109.0 → Ten minute step backup!
28	13717 37 16.741	6018 32 16.875	starting profile 73 W point 18 Imm 1702.2 Each 10.9 Cap 286.3
35	13622 37 16.733	6052 32 16.940	* ship stopped → probleme with the file Imm 1706.6 Each 10.9 Cap 291.7
42			starting again !!
52:10	13192 37 16817	6204 32 17230	arrivé at point 19 finished profile 73 Imm 1728.2 Each 9.6 Cap 233
53:13	13 186 37 16 811	6192 32 17.234	starting profile 79 E point 20 changed file Imm 1730.7 Each 9.6 Cap 142.9
53:20			changed DVD C1 # 16 C2 # 16
53:49	13712 37 16.707	6004 32 16.879	arrivé at point 21 finished profile 74 Imm 1703.2 Each 10.9 Cap 108.8
53:51	13706 37 16.700	5991 32 16 883	starting profile 75 W point 22 change file Imm 1709.4 Each 11.1 Cap 278.4
00	13181 31° 16.803	6177 32°17.237	Valentin - Céline quart. arrivée point 23 Fin Profil 75 Imm = 17 Each = 10.1 Cap = 293
33			pose pour transfert de fichiers
5002	37 16' 195	32 17240	starting profil 76 E point 24 change fichier Imm = 1737 Each = 10.0 Cap = 117.2

13/09/09

Time	Lat	Lon	Description
09:41	13154 U37 16.757	6092 W32 17.258	Profil 81 terminé, arrivé au point (3)
09:43			C2 failed : DVD seems to crash DVD change : #19.
09:43			On retourne vers le point 0 situé à 50 du point 3
09:45	13198	6076	On est au point (0) du nouveau profil ↳ Début profil 82 vers le Nord Imm = 1751 Loch = 10 Cap = 17
10:02	13293 U37 16.884	6137 W 32.17.161	Profil 82 terminé, Arrivé au point (1) équivalent du pt 3a -50m ↳ Cgt de fichier Imm = 1672 m Loch = 9
10:04	—	—	début du profil 83 EQ pt (1) to pt (2)
10:24	13725 U 37 16.805	6186 W32. 16.869	Fin de profil 83, Arrivé au pt (2) (37 +50m) Imm = 1657 m Loch = 11.3
10:31	—	—	Début du profil 84.5 vers le pt (2) (2 + 50) changement de fichier
10:51	13634 U 37 16.622	5938 W 32 16.933	End of line 84 Change of file Beginning of line toward the marker
11:04			Marqueur trouvé Position estime X 13457 D 28m du marqueur cap 194 Y 6074
11:26	13422	6025	Nuage BUC
11:26			WRITE FAILED changement de DVD : C1 #

X	Y	Description
		DVD change : C2 # 20 changement de fichier
13423	6026	Recalage de l'Estime sur le point OTUS 2 de la BUC ↳ On repart terminer le bloc 2 sur le point (3)
13158	6076	~~Début~~ Début à Enregistré Start profil 85 vers le SE 37a 16.748 32 17253 Imm 1744.7a Loch 10.4
13206	6058	Inconn (Camera Verticale) 37.16938 32.17221 Imm 1740 Loch 10.6 ↳ Structure "forte" avec tache blanchâtre ↳ Eboulement plutôt...
13663	5895	Arriving @ point (5) End of profile 85 37 16 647 32 16 907 Imm = 173a Loch = 10
13666	5879	Arriving @ point (6) Start profile (86) 37 16639 32 16911 Imm 1739 Loch 10.5 Vers l'ouest
13445	5955	Plantage OTUS Arrêt du profil - Retour en arrière
13497	5938	Restart profil (86) vers l'ouest
13148	6063	Observant tache blanchâtre / Structure ?
13142	6065	Fin de profil (86) - Arrivée point (7) Imm 1747 Loch 10.3 37 16 742 32 17 264

Heure	X	Y	
			[redacted]
			Boite 2 à fermer sur profil 10.41
13h	13129	6023	Debut profil (87) – Arrivée au point (12)
			lmm 1749 37 16 719
			loch 10.2 32 17 273
13h20			Stop C1 # 20 Volontairement @ 1h52 d'enregistr.
13h42			Change DVD C2 # 21
13h50	13653	5837	Arrive @ point (13)
			Fin profil (87) 37 16 617
			lmm 1738 32 16 920
			loch 10.3
13h51	13646	5822	Arrive @ point (14)
			Debut profil (88) 37 16 609
			lmm 1741.7 32 16 925
			loch 10.4
14h03	13436	5896	Plantage Multifaisceaux
14h28	13441	5896	Multifaisceau redémarré
			↳ Reprise profil 88
14h49	13122	6008	Arrive @ point (15)
			Fin profil (88) 37 16 712
			lmm 1750.3 32 17 278
			loch 10.4
14h51	13116	5995	Arrive @ point (16) 37 16 705
			Debut profil (89) vers l'ut 32 17 282
			lmm 1751
			loch 10.1

Heure	X	Y	
			13109109
			Change DVD C1 # 21 pour C1 # 22
15h39	13639	5810	Arrive @ point (17)
			fin profil (89) 37 16 603
			lmm : 1743.3 32 16 929
			loch : 10.2
15h43	13687	5795	Arrive @ point (18)
			Debut profil (90)
			lmm 1748.7 37 16 594
			loch 10.5 32 16 931
			Change DVD C2 # 22
15h46	13257	5931	ave pas vu limit of a fresh lava flow (Hain)
		en me	
15h51	13205	5951	Traces Coulée de lave
15h53	13142	5973	→ Taches blanches !!
			lmm 1768 +10 = 1778
			⚠ marche arrière pour zoom
			⇒ Débris croûte de lave ?
15h58	13113	5981	Arrive @ point (19)
			Fin profil (90)
			lmm 1753 37°16.697
			Loch 10.4 32°17.284
			Quart : Alice & Alain
			[redacted]
			Transfer fichier (end 16:19)
16h11	13106	5967	Arrive @ point (20) Immersion 1752
			Beginning profile (91) loch 10.6
			N 37°16.689 W32°17.289

Time	X	Y	Description
16.58	13631	57.83	Arrive @ point (21) End of profile (91) Immersion : 1743 m N37° 16.588 Loch : 10.5 m W32° 16.935
17.00	13.627	5768	Arrive @ point (22) Begin Profile (92) Imm 1743 m N 37° 16.580 Loch 10 m W32° 16.938
17 10			Changement de DVD C1 #22 pour C1 #23
17 39	13 602	5953	Arrive @ point (23) End Profile (92) Imm 1757 N 37° 16.682 Loch 10.5 W 32° 17.292 "Et des chinoises, y en a partout."
17 35	13096	5991	Arrive @ point (24) Begin Profile (93) Imm 1752 N37° 16.676 Loch 10.6 W 32° 17.296
17.46			change DVD C2 #22 Par C2 # 23 sort entre
17:54			"C'est le bois de Boulogne des chinoises" OTUS Arrêt pour remise en route. reboot OTUS
18:04			
18.20	13623	5753	Arrivée point R5 de fin profil (93) Imm= 17.45 N= 37 16.572 Loch 10.4 W= 32 16,960 TRANSFERT FICHIERS début profil (94)
18.39	13616	5740	Arrivée point (26) Imm 1746 N= 37° 16.565 Loch = 10.2 W= 32° 16 965

X	Y	Description
		13109109 changement de DVD C1 #23 pour C1 #24 sort entre
13092	5925	Arrive @ point (27) End Profile (94) Immersion : 1753 N 37° 16 667 Loch : 11.0 W 32° 17.299
13086	5911	Arrive @ point (28) Begin Profile (95) Immersion : 1756 N 37° 16.659 Loch : 10.0 W 32° 17.302
		Changement de DVD C2 #24 (out) ⇒ C2 #25 (in)
13612	5727	Arrive @ point (29) End Profile (95) Immersion 1746 N 37° 16.557 Loch 10.5 W 32° 16.948
13607	5711	Arrive @ point (30) Begin Profile (96) Immersion 1745 N 37° 16.543 Loch 10.6 W 32° 16.951
		Cátia and Julie we are in Vitoria New file for bathymetry Waiting for the data archiving system to be repaired (Techsas)
		New file and start again.
		Take a picture.
N13[illegible]	5871	Take a picture we pass in area with white patches (hydrothermal). N 1760 + 10 m.
13082	5897	Arrive at point (31). End of profile (96) Imm = 17 55,06

13/09/09

Time	X	Y	Description
21:08			→ change DVD C1 # 25
21:12	13076	5885	Begining the profile (97) at point (32) Imm = 1255,17 Change the file
21:30			Take a picture → Fish Hydrolagus pallidus
21:45			Change DVD C2#25
21:43			on est pas encore arrivé à 33 mais on repère vers la ligne d'après (1 à 5 m de 34 ?)
21:46			New file début profil (98)
22:06			Take a picture - Fish → Hydrolagus
22:11			Take a picture
22:12			Take a picture. Fish - Hydrolagus
22:15	5857	13111	Reach the end of the box number 2 We go to recalibrate the position CAP = 16.38 Imm = 1764,21 on part cap ~ 90 pour pr BUC
22:25	6032	13165	
22:43	13423	6030	Point OCTUS BUC Imm = 1733,4 Loch = 9,8 recalage estime retour environ 25 m offset BUC
22:46			We go to cross the line that does not exist on the west of point 10 Cap = 132,0 Imm = 1730,2 Loch = 11

Time	X	Y	Description
			Arrive at point west of point 10 cap = 200 Imm = 1755 Loch = 10
06	13557	5763	Arrive at point in the line of point 26 and go to weast. cap = 269 Imm = 1756 Loch = 10.5
07			Change DVD C1 # 26
08			New file
09	13480	5779	Going to west to retrue to the cap = 281,2 Imm = 1772 last point before calibration Loch = 10,6
29	13184	5849	Return to position before calibration. (99)
37	13066	5857	Begin the profile box 3 at point cap = 142,0 Imm = 1756 Loch = 10,2
46	13194	5842	We saw mussels at the vent. Imm = 1750 Loch: 10,6 cap = 110
48			Change DVD C2 # 26
			Nelia et Benoit. Fin de ProR1 14.09.09 !
11	13514	5698	Imm: 1765 loch: 9.4 point 1 cap: 111
15	13496	5688	(100) Imm: 1766 loch: 10.1 point 2 cap: 288
	13507	5682	Arrêt du Rov pour transfert de fichiers N 37 16 534 W 38 17 019 Echine recalée.

TIME	X	Y	DESCRIPTION 14.09.09
00:42			Reprise route → Data backed. cap 288 dir point 3
01:00			Approche vers zone supposée être ENAN
01:04			Changement disk 1 C1 #27 lancé
01:10	13059	5843	Fin profil pt 3 cap : 186 Loch : 11 imm : 1756
01:11	13056	5829	Début profil 101 pt 4 cap : 110 Loch : 12,3 imm : 1753 Réduction longueur profil à 1bot pour les prochains -
01:19	13155	5793	Pts blancs en grande quantités (coraux ?) cap : 110 Loch : 10.4 imm : 1766 balayage caméra → pas d'info précise
01:35	13413	5701	FIN DE PROFIL (Changement de fichier) cap : 195 LOCH : 11.1 pt 5 imm : 1764
01:38	13409	5687	DEBUT PROFIL 102 cap 288.6 Loch 10.6 pt 6 imm : 1765
01:51			Changement DVD 2 C2 #27 lancé
01:52	13170	5794	Zone taches blanches cap : 289 Loch : 9.8 imm : 1767 ANDE est arrivée et la sécurité des autres s'en trouve modifiée -

X	Y	DESCRIPTION 14.09.09
13046	5818	FIN DE PROFIL pt 7 cap : 257 loch : 10.2 immersion : 1760
13040	5804	Début de profil 103 pt 8 cap : 110 loch : 10.1 immersion : 1760
13105	5780	Nelia a vu une structure blanche dont elle voulait un zoom et les gars du ROV ont dit "non" pas possible ma belle" pas sur le vertical. (cam G et D ne montaient rien)
		le poisson vu par Aline
		le poisson vu par Nilia
13405	5674	FIN DE PROFIL pt 9 cap 204 loch : 10.2 immersion 1763
13399	5661	DEBUT DE PROFIL 104 pt 10 cap 287 loch. 11.1 immersion : 1763
13237	5717	? bacterial mats on the bottom
13042	5786	FIN DE PROFIL pt 11 cap : 178 loch 10
		transport fichier + [illegible] immersion 1761
13038	5768	DEBUT PROFIL 105 pt 12 cap : 114 loch : 10.2 immersion : 1762
		Changement DVD C1 #28 lancé

TIME	X	Y	DESCRIPTION 14.09.09
			prise photo "crater".
			POSITION ROV / BOTTOM 10 mètres
			PHOTO YELLOW GREEN STUFF.
03:23	13395	5645	FIN DE PROFIL pt 13
			LAP: 203 loch: 10.4
			imm: 1765 (depth)
03:25	13383	5634	DEBUT PROFIL n° 106 pt 14
			CAP: 292 loch: 10
			imm: 1766
			 Where's EWAN? ← Nelia deep ocean artistic view
03:45			Nelia a vu des Gorgones chgt DVD
03:47	13030	5760	FIN DU PROFIL C2 #88 launch pt 15
			cap 208 loch: 10.2
			imm 1762 pt 16
03:48	13027	5744	NEW PROFILE n° 107 loch: 10.4
			cap 164
			imm: 1763
			Change of Logtaker: Eric + Olivier
4:03	13283	5653	Pass over single dead chimney
	37°16.519	32°17.171	↳ no evidence of fractures or hydro activity
4:08:52	13385	5618	Fine de Profil — pt 17 short
	37°16.500	32°17.102	imm: 1765 loch: 10.2
4:11:23	13368	5607	Arrive Pt 18 short
	37°16.499	32°17.114	New Profile Start: #108 n° 108 to West
			*change of file
			imm: 1767.6 Loch: 10.8

X	Y	DESCRIPTION 14.09.09
13020	5730	Arrive at pt 19 end of profile 108
		imm: 1764 loch: 9.9
13016	5717	Arrive at pt 20
37°16.555	32°17.351	Debut of profile 109 to East
		imm: 1764.69 change of file
		loch: 10.2
13076	5896	see mound that may have moules on it
		but was just little stains in the dirt
		no evidence of Vents dead or alive
		↳ backed up, looked, and then moved forward again to continue profile
13269	5629	did a little triangle of movement because we ran out of cable and had to move the ship so we could continue to move forward.
—	—	still waiting for boat to catch up to us so we can move
13382	5587	Arrive at pt 21 (short) end of profile 109
37°16.483	32°17.104	imm: 1765.4
		loch: 11.4
13370	5578	Arrive at pt 22 (short) debut of profile 110 to West
37°16.478	32°17.115	imm: 1767
		loch: 10.0 change of file
		↳ pause for regulation of nav.
		Move boat 300m west
—	—	~~Bathy has crashed~~ – no bathy at this moment
13236	5623	~~OTUS is Dead as well~~
13192	5639	OTUS is back on line, but not bathy
—	—	Change of DVD C1 In 29 Out 28
13090	5674	Dead, little, chimney – no evidence of active venting
37°16.531	32°17.301	

Time	X	Y	Description
5:39	13023	5699	Arrive at point 123 end of profile 110
	37°16545	32°17.346	Wait here until Bathy is back on line.
5:44			Proceed to point 24 BATHY back on Line
5:45	13023	5686	Arrive at point 24 début profile 111 to East
	37.16.538	32°17.347	mm: 1765.8 lock: 10.4 change of file
5:46	—	—	Change of DVO C2 In: 29 Out: 28
5:58	—	—	~~Bathy crashed again~~ Fokay
6:01	13236	5621	End of profile 111 - but SEE BELOW
	37°16.502	32°17.203	mm: 1758.75 lock: 10.9
			Restart toward West of profile 110
			~~calling this profile 112~~ still keeping file # 111 for the part of profile 110 that we a redoing
			- note: we did not have a turn around point we we moved from profile 111 back to 110
6:05	13159	5657	Arrive at end of part of 110 that we redid
	37°16.521	32°17.255	mm: 1762.5 change of file lock: 9.8
			Début profile 112 to North toward point OTUS2
			After arrive will go to surface
6:33	13434	6044	Arrive at point OTUS2 end of profile 112
	37°16.730	32°17.064	mm: 1737.95 lock: 4.9

X	Y	Description — 14 Sep. 09
13439	6044	Begin Ascent of ROV
Note:		Sauvegarde S7K en local lors du Robben d'acchivage de texsas
		↳ 2009-09-14.054015 - S7K
		↳ 2009-09-14_050525. texsas
		STOP DVO recording

First Magnetic Tour Depth: 1099
cap start: 6:56:04 B-clock wise
start time: 181.1
end time: 6:58:12

cap: 180 counter clockwise
start: 6:58:12
end: 6:59:41

Second Magnetic Tour Depth: 999

direction: ~~clockwise~~ cap: 180.0
clockwise start: 7:03:00
end: 7:04:45

direction: counter clockwise start: 7:04:50
end: 7:06:34

Third Magnetic Tour Depth: 899

direction: ~~clockwise~~ cap: 180
clockwise start: 7:10:13
end: 7:12:01

direction: counter clockwise start: 7:12:03
end: 7:0:37

Fourth Magnetic Tour Depth: ~~80~~ 799.5

direction: ~~counter~~ cap: 180.0
clockwise start: 7:17:14
end: 7:19:07

direction: counter clockwise cap: 180
start: 7:19:18
end: 7:21:36

Time	Description
7:51	ROV on Surface!
8:10	ROV out of water
8:12	ROV on boat
9:13	5ème plongée de l'AUV. AUV in the water lat N 37 17 302 lon W 32 18 277
9:26	37 17 2886 d=65. 32 18 1794 1er Test petit pb.
9:35	37 17 3231 32 18 1741 d = 24.90 2ème Test : encore pb : voie d'eau
09:38	AUV on Surface
09:44	AUV fait route en surface pour faire un Test sur la voie d'eau
09:47	AUV envoyé : début de la plongée → pb AUV en surface
9:57	AUV remonte, gros pb. Plongée 5 finie.
10:10	L'AUV descend 37 17 3244 32 18 2778 d = 271 m
10:15	37 17 3524 d=320m 32 17 2730
10:17	L'AUV remonte autre pb.
10:21	AUV on surface
10:40	AUV in on Deck
10:45	Beginning of transit to CTD site (B09_CTD_005_d)
11:56	Arrivée au 1er point de mise à l'eau de la CTD (CTDE) (B09_CTD_005_1) N 37 08 0240 Cédric and Sara!

19/09/09

Lat	Long	Descr.			
37.08240	32.18548	CTD Deployment → B09_CTD_005_d			
		Depth	W/o	Pressure	to CTD E
37.08201	32.18511	2942	1000	1011	↓
37.08000	32.18511	2839	2872	2887	↓
37.07991	32.18509	2939 going up ! ↑	2843	2888 (B09_CTD_005_1)	↓ Bottom
37.08000	32.18490	2939	2285	2312 going up	↑
37.08000	32.18501	2941	1824	1841	↑
37.08000	32.18510	2939	928	934	↑
37.08000	32.18516	2935	426	414	↑
37.08000	32.18509	2943	130	94	↑
37.08000	32.18509	CTD at the surface		B09-CTD-005-R	
		CTD on board ; moving to CTD A			
37.08024	32.18499	arrival at CTD A			
		CTD at the surface (in the water)			↓
		Depth	w/o	Pressure	B09_CTD_006D
37.08001	32.20006	2764	142	153	going down ↓
37.08000	32.20001	2760	543	563	↓
37.07999	32.20008	2771	1000	1024	↓
37.07998	32.20008	2772	1506	1537	↓
37.07996	32.20008	2776	2011	2055	↓
37.08000	32.20008	2777	2504	2557	↓
37.08000	32.20008	2800	2729	2733	CTD on the BOTTOM !
		2763	2000	2034	going up ↑
37.08001	32.20009	2760	1900	1908	↑
37.08001	32.20000	2746	1000	1006	↑
37.08001	32.20008	2773	600	505	↑
37.08000	32.19999	CTD on the surface			B09_CTD_006R

TIME	LAT	LONG	OBSERVATIONS
15:49	3708.0015	32 20.004	CTD on board
			moving to the AUV spot → AUV 6
Céline et Valentin			
16:00	37 07.883	32 21.00	cap 270 speed = 9.4 nd
16:18	37 07.67	32 23.99	cap. 190 speed 1.6 nd. sur site largage AUV
16.26	37 07.58	32 24.00	Antenne au fond pour début calibration
16:34	37 07.59	32 23.98	Debut carré de calibration de 5 mn à 2 nd
			par côté
16:41			Problème de detection d'eau dans aileron pendant
			test → démontage aileron.
16:58	37 07.78	32 24.25	Fin calibration - direction point de mise à l'eau
17:11	37°07.69	32 23.95	Bateau stoppé - début mise à l'eau
17:14			AUV dans l'eau - largué -
17:15			Propulsion en avant
17.16			Cercle de Test -
17.22	37.07.73	32 24.05	depart en mission -
17:30			Pb remonte en surface "plane fault" - 521 m -
17.45			depth 439 m - remontée de 20 m en 4 min
18:00			depth 358 m - → mise en mode stop pour
			remonter sur sa flotabilité.
18:07			depth = 294 m
18.15			depth = 171.8 m -
18:25			depth = 13 m -
18.26			AUV en surface - entrée d'eau enceinte
18.27			AUV route vers le bateau pour récupération
18:38	37 07.78	32 24 22	AUV accroché
18:44	37°07.75	32° 24 30	AUV à bord.
18:53	37 07.90	32 24 30	Route vers point CTD 3 cap 85 speed = 2 nd

	Lat	Lon	Observations - Biologie
18	37 07.94	32 23.91	route to CTD B position - cap 84 speed 3.1 nd
25	37 07.99	32 22.45	idem et
27	37 07.97	32 22.02	au point CTD B -
28	37 07.97	32 22.03	CTD en surface
			Depth w/o Pressure BOG-CTD-007D
29	37 07.98	32 22.02	2834 11 m 23 ↓
30			CTD à bord - acquisition arrêtée mise en place BUC
34	37 07.99	32 22.00	reprise acquisition CTD BUC dans l'eau
35	"	"	2824 7.4 43 1m/s ↓
45	37 07.99	32 22.00	2837 480 512 ↓
00	37 08.00	32 22.00	2836 1266 1321 ↓
Célia, Ann and Valerie			
15	37 07 99	32 22.00	2834 2170 2248 0,98m/s ↓
27	37 07 99	32 22 00	3057 2750 2829 0.00m/s @50m above the floor
29	37 07 99	32 22 00	2834 2780 2801 0.84m/s going up ↑
30	37 07 99	32 22 00	2830 2614 2681 1.03m/s ↑
45	37 08 00	32 22 00	2836 1805 1843 0,97 m/s ↑
00	37 07 00	32 22 00	2836 911 947 1.0 m/s ↑
15	37 07 99	32 22 00	2835 73 100 0,50m/s ↑
20	37 08 00	32 22 00	2840 6.9 11 0.0m/s at the deck
23	⚠ PAS DE MARKER SUR LA BOX CTD 007D stop acquisition BOG CTD 007R		
			Depth w/o Pressure BOG-CTD-008D
29	37 08 01	32 24 09	22 34
32			CTD is at the deck
47	37 08 01	32 24 09	CTD is at deck

Time	Lat	Long	Observations
21:50	370802	3224.03	Depth 2219 (~~2219~~) w/o 37,2 Pression ^ BUC 0,54 m/s ↓ — B09CTD008D
			MAPPER not on CTD 008 aborted. — B09CTD008R
22h01			
22h16	37 08.001	32°.24.011	B09CTD009D
			Depth w/o Pression BUC
22:31	370800	3224.00	2236 712 730 1.02 m/s ↓
22:46	370799	3224.00	2236 1630 1666 1.05m/s ↓
22:58	370799	3224.00	2227 2166 2202 0.0m/s at sea floor
23:59	370800	3224.00	2235 2165 2180 0,72m/s ↑
23:01	370800	3224.01	2225 2057 2083 0,95m/s ↑
23:06	370799	3224.00	2226 1223 1230 1.02m/s ↑
23:30	37 08.001	32 24.0073	2232 370 270 0,98m/s
23:39	370800	32 24.00	2231 6.8 ^ 0.0m/s at the deck — B09CTD009R
23:41		15/09/09	We are in transit to the deployment site
00.00	Benjamin and Benoit 37°10.380	32°21.34	Always in transit. 15/09/09
00:40	37°12.440	32°17.460	
01:25	37°17.014	32°14.747	
01:50	37°17.035	32°14.883	Prevision déploiement Rov + ascenseur 2h30
02:05	37°17.016	32°14.746	Rov vers 3h00 - 3h15
02:25	37°17.005	32°14.816	Début mise à l'eau ascenseur (Accueil sur partie arrière NASA)
02:30	37°17.004	32°14.814	Mise à l'eau ascenseur.

Lat y	Long x	Observations — 15/09/09
		Début procédure mise à l'eau ROV
		Mise à l'eau ROV
		ROV stoppé à 120 m immersion
		Quart: Olivier, Celine + Alice + Benoit.
		Equipe de choc avec CDS Luc
		X_0 = 550000 Y_0 = 6120000 — DIVE 392
6539	16653	en descente sm = 1585 m
37 16.984	32 14.886	La BUC a bien fonctionné dans la descente.
6527	16670	Im = 1885 m Loch = 87 m
37 16.977	32 14.874	
6521	16672	Im = 1885 m pb de pesée, on largue le
37 16.974	32 14.873	sac de grenaille dans le panier.
		saisie sonde T°C WHOI
6504	16689	saisie sac de grenaille et largage.
37 16.965	32 14.861	
6514	16692	Fin manip de pesée descente vers le fond
37 16.970	32 14.86	
		démarrage DVD C1 #1 main C2 #1 main C3 #1 babad.
6526	16691	JPP E Im = 1977 Sond = 4,1
37°16.977	32°14.860	Cap = 31 (Prise Photo.)
		2 Colmatisateurs à droite
		Repérage ascenseur (départ)
6473	16673	Arrivée sur ascenseur Im = 1963 Sond = 6.4
37°16.948	32°14.872	Cap = 288
		JPP dans panier 2
		Contact Pince ROV avec ascenseur Sond: 5.6
		Ouverture des deux paniers. Sond 6.0
		Imm : 1964
		Vidange pour alléger ROV avant préhension JPP.

TIME	LAT	LONG	Observations		LAT (Y)	LONG (X)	Observations
05:45			Reprise manipulation. Tirage JPP avant prochaine				DISK C2 #1 → FAILURE → FAILED
05:49			JPP 2 sorti de l'ascenseur - En route vers JPP E				DISK C2 #2 → LANCÉ
			Nota : Pour prochaine mission - rajouter de la				
			flottabilité sur la JPP				
05:57	6540 37.16.985	16705 32.14.850	JPP 2 @ the bottom. SHDO = 3 LOCH 2.		6460	16656	Rov sur Ascenseur JPP5 dans tiroir 2
			1mm = 1979,6		37°16.941	32°14.884	~~JPP5~~
							JPP5 dans tiroir. - Tiroir Fermé
06:00	6543 37.16.986	16701 32.14.853	Au dessus du chassis - puis dépose à côté @ 06:02	Repère M08-3			Prise de la boite microbio de NASA
6103			~~JPP~~ SBE as a little stuck.				C1 #1 ont C1 #2 in DKD.
			We put it off we have to pull on the				C3 #1 ont C3 #2 in DVD.
			BE09 ~~JPP~~ JPP5 R	Underwater movo up slightly - no visible movement.			Going towards JPP Est to put the microbio box
			The fat do not appear on the cod.		6531	16711	Arrivée sur JPP east.
6:12			The rope used to deploy the benchmark blew you the way of the new JPP...				Victor posé à côté des colonisateurs
					6544 N 37° 16.386	16710 W 32° 15.897	Bo9 B6M. 03 R Temperature calculateur LSEVS
							Inon 1981.6 m. Cap 282.3
			Longueur élingue trop courte - gêne le positionnement				Going to the Ascenseur
			de JPP 2. Tentative de couper - Try to cut				Arrivée aux NASA.
			the rope on the benchmark.				Colonisateur de NASA (panier 1)
06:24			Rope cut!				Victor s'éloigne de NASA pour langage.
			Benchmark pivote autour de Dy		y= 6480	x= 16664	début quat Julie, Valerie, Katia - depth = 1966.5
							Attente devant NASA pour langage par accoustique - il ne se passe rien pendant un long moment ...
			318 @17				o o o o o o o o o o ...
							o o o o o o o o o o ...
06:45			JPP 2 posé sur le benchmark JPPE				Finalement on sort le COUTEAU !!
			Position similaire à celle de JPP 1 en 2007-2008				NASA coupé ⇒ l'ascenseur remonte !
			Photos prises.				apparemment on peut laisser Victor (Alexandre)
06:48			JPP5 (SBE53) vers ascenseur NASA - Cap: 217		6538	16697	on vise JPP Est.
			Dépôts alluvions importants en bordure de plaque				NASA @ 60 m, Zodiac à l'eau
			Support de la sonde -				NASA en surface

15/09/09

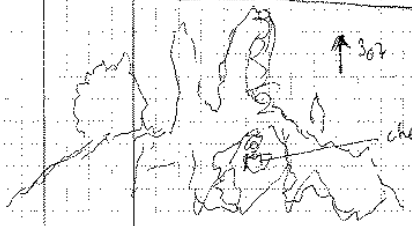
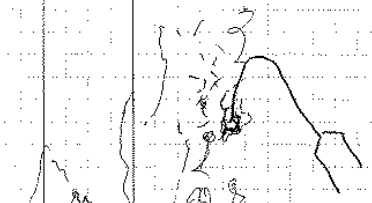
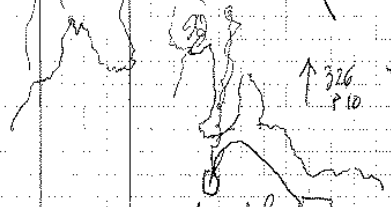
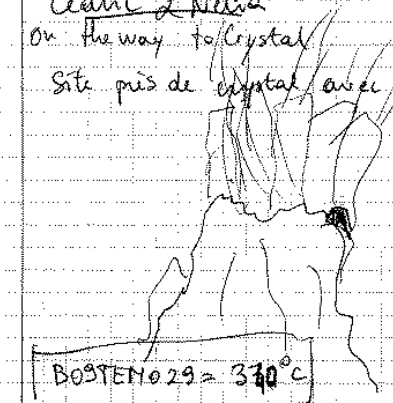
Time	X	Y	observations
09:05			NASA Discoveries. Direction
9:07	37 19 380	32 16 867	Le point de d'arrivée pour le transit
9:19			DVD changés (Tous) → C1 # 3 → C2 # 3 → C3 # 3
09:46	15933	6748	Transit
	37 17.100	32 16 372	Marker G : Support JPP
10:01			Valerie essaye de piloter le ROV !??!!
10:04			Ca ne parle pas en moi....
10:32	14 885	6187	Julie est aux commandes de pilotage du ROV.
	37 17 233	32 16 080	Topographie perturbée dû à l'heure décalée par le test — abandon
10:56			nouveau NAS+ plots pris pour la base
10H50			ACTION : gros travaux vers les bypass batteries à cordelette jaune
11H16	13916	7201	Change of DVD.
	37°17.353	32°16.734	→ C1 - 4 → C2 - 4 → C3 - 4 → @ 11H30 not ON ?
11:17			Bateau en station.
11:24	13 731	7244	Arrivée sur White Castle 120°C
	37°17.378	32°16.866	Bdg TEM 028 118°C
			Cap 312.
			Energetia diffuse — Nouvelle Victoria 288°C — cheminée fortement diffuse
			200°C — Bdg TEM 027 — Fumeur diffuse HT — fumeur de T avec blonde
11H51	13731	7244	Ligne Cantelle 750 m n°1
11H53			Bdg PLV 027 Serpise 750 m°1

Time	X	Y	observations
11H03			
11H05			
11H10			
11H15			
11H23			
11H24			
11H43			
11H47	13725	7247	DVD C3-4 was not on ! not recorded.
	37°17.379	32°16.863	
11H53			Mendrion box off Started & locked.
11H57			Mendrion box n°5 back to ROV basket - basse vitesse T° du ROV
11H59			Bdg TEM 028 → 276°C bord of Chimneys.
12H05	13725	7247	Ligne de Serpise n°2.
12H11			Bdg PLV 029 serpise 2 déclenché vers on reprend anyling → dentelle
12H16			Ligne serpise n°7
12H17			going back to the same origine.
			Bdg PLV030

Valerie & Cédric

Ligne Cantelle 750 m n°2
Bdg PLV 028
Ligne Boite Mendrion n°5 du panier collecte de la chimney
Chimney broke down by itself
change of chimney for anyling to the east.
Bdg M81 004 R
Cap 302 1m = 1711 m.
No recovery as the chimney broke down when trying to set up the mendrion box.
change of chimney looking for a new one difficult to find at good spot for anything and for future purposes.
Bdg M81 004 R Cap 103 1m 1711 m.
Very difficult anyling.

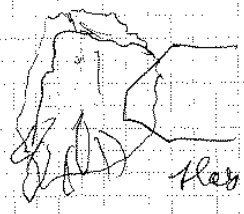
Mathilde / Thibault / Eric

13:24	White Cone		raising the 1 prom water on the basket				
13:26			change DVDs cam 1 → DVDs #5 cam 2 → DVDs #5				
							
13:44			 exav B09HTW004 D				
13:44			 exav B09VID015				
13:45			we depart fm Crystal.				
			Cedric & Nelia On the way to Crystal				
13:49							
13:58	13628	7342	Site pris de Crystal avec gros black smoker				
14:01							
			CAP 349-1 Im 1721.6 Loch 0.7 P = -14 T = 4				
14:08			B09TEN029 = 340°C				
			T = 334 – 340				

14:14	13632	7344	Site : x Pico, x Crystal, x Pic caractéristique, x Site @ 340°C, x PR6 (barré)
			 B09FLU031 Bouteille n° 3
14:17	"	"	
14:24	13632	7344	Toujours le même site au Sud de Crystal Prise de la 2ème bouteille PR6 (n°4)
14:29			B09FLU032 Bouteille n° 4 ↳ Pas déclenchée !
14:39	13633	7345	B09FLU032 Bouteille n° 4 Déclenchée A vérifier ⇒ pb decrassat ↳ Site "Sud Crystal"
14:44			Changement DVD : C3 #4 ⇒ C3 #5
14:56	13636	7363	Pic caractérisé au nord de Sud Crystal
			
15:02	13647	7382	Passage au dessus de Crystal NASA A L'EAU !
15:17			Un poisson passe et NASA descend
15:25			Change DVD C1-5 → C1-6 C2-5 → C2-6
15:28			
			Celine et Olivier
15:55	13736	7468	route vers NASA cap 325. Im = 1725 m.
15:58	13695	7487	accrochée sur ascenseur NASA
16:00	13691	7492	ouverture panier 2 NASA

Time	X	Y	observations		X	Y	observations
16:04	13689	7494	accrochage Victor devant panier 2. Im = 1732 m		13670	7487	Plaque calibration posée au fond.
16:06			JPP5 sortie du panier 2 route vers JPP ouest cap Nord.				(X = 13671 Y = 7481 X = 13671 Y = 7486) cap 16. position remarquable mire Im = 1730 Loch 3.1
16:13	13688	7547	arrivée aux JPP ouest Marqueur H08-1				calibration avec camera principale (micros enlevées).
16:17	13690	7556	posé à côté JPP H08-1 cap 162 Im = 1728				sur DVD 3 caméra verticale.
16:20			B09-JPP-4R le benchmark n'a pas bougé.				calibration camera verticale.
16:28	13689	7556	B09-JPP-5D				Fin manip calibration - Attente Largage NASA
16:29			Saisie JPP4 et route vers NASA cap 160.				NASA largué avec la serpette.
16:33	13698	7496	Arrivée sur NASA.				route vers marker C cap 100
16:35			JPP4 dans panier 2.				arrivée sur marker C - Buc (13769 7474) (13769 7468)
16:41			Bouteille T: 3 dans panier 2		13760	7465	on se déroute pour récupérer l'ascenseur en surface. cap 5°. on suit le leat
16:43			Bouteille T: 4 dans panier 2				Changement DVD 3 - C3-6 out C3-7 start
16:46			Bouteille T: 1 dans panier 2				
16:48			Bouteille T: 2 dans panier 2				
16:52			Seringue T: 2 dans panier 2				
16:54			Seringue T: 7 dans panier 2				
16:59			Boite Bio 5 dans panier 2		13649	7593	site inactif avec marqueur.
16:59			DVD OUT C3 #5 Im C3 #6				NASA en surface
17:00			Fermeture panier 2.				NASA sur le pont.
17:07			Positionnement devant panier 1				route vers marker C cap 160.
17:12			Boite Bio 6 avec colonisateurs Seamon dans panier ROV				Changt DVD C1 #7 out C1 #8 in C2 #7 out C2 #8 in
17:21			Boite Bio 2 dans panier ROV		13760	7468	arrivée sur marker C.
17:22			Fermeture panier 1				positionnt pour déploiement colonisateurs
17:28			DVD C1 #6 out C1 #7 in C2 #6 out C2 #7 in				sortie boite Bio 6 du panier ROV.
17:30			Saisie plaque calibration par Sherpa.				boite 6 ouverte.
17:32			Plaque calibration dégagée de l'ascenseur.		13767	7470	B09-BGM-04D colonisateurs Seamon.
17:41	13645	7497	Deploygment au sol mais dans sediments !! recuperat				Im = 1741.2 Loch = 0.5 cap. 35.4

Time	X	Y	Observations 15/09/09
20:17			boite Bio 6 dans panier ROV.
20:18			route vers Tour Eiffel cap 122.
20:48	14078	7210	Passage Sud Isabel
20:59	14201	7177	Prelevt de roche morceau de slab - B09_ROC_181
	[14198	7176]	

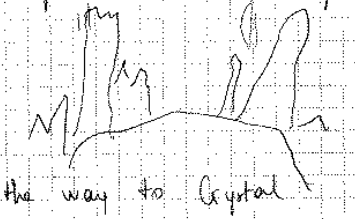
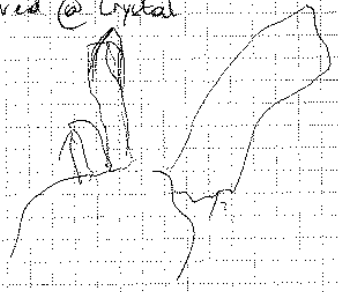


fragment from Western Iles of Eiffel

21:12			sonde de Temp WHOI tombée de sa position - HTB01
21:18			saisie HTB01 par Nautilus.
21:30			Changet DVD C3 #7 out C3 #8 in
21:32			Changet DVD C1 #8 out C1 #9 in C2 #8 out C2 #9 in
22:34			B09_HTW_001D : sonde deployee.
22:53			arrivée aux les tracks.
22:59			boite Bio 6 sortie du panier ROV.
23:05			ouverture boite Bio 6
23:07	14237	7182	tracks C5 dans boite B09_TRACK_C5_R. bout trop long pour fermer la boite. Im: 1694 Inch: 2.4 cap: 23.2 flotteur coupé - le bout flotte !!!
23:19			fermeture boite Bio 6.
23:39			
23:44			

Changet DVD		
	C1 #9 out	C1 #10 in
	C2 #9 out	C2 #10 in
	C3 #8 out	C3 #9 in

Time	X	Y	Observations 16/09/09
			ouverture boite 2 dans panier ROV.
			boite 6 dans panier ROV
			boite 2 sortie panier ROV.
			shift change Cédric & Nelva
			trying to take one of tracks inside box bio box 2 C4
			B09_TRACK_C4_R inside bio box nr 2 bio box closed ! looking for a place to sleep the shrimps !
30	14220	7178	sampling for shrimps B09_TEM_030 ! max temp max ~ 22 °C
	N37 17.340	W32 1652	B09 BIO 02 (?) collecting shrimps into Aspirateur nr 1 @ Tour Eiffel cap: 280 mean field exit bottom
			B09 BIO 03 ! (?) cap 258 collecting shrimps amongs mussels (amidst en moules) feds : on Tour Eiffel → with little bits cap 222. into aspirateur nr 2
			B09 TEM 031 ! max temp : ~ 5.11 °C
			B09 TEM 032 ! max 8.8 °C cap 152 mean fluid exit

Time	X	Y	Observations
01:37			B09 BIO 04 sampling shrimps mean different cap 152. aspirateur n°3
01:44			DVD change C1 #10 → C1 #11 / C2 #10 → C2 #11 / C3 #9 → C3 #10 NOTE: seawater bottom Temp° : ~ 4.5°C
01:46			heading to CRYSTAL cap 290
1-59	14089	7203	Site près d'isabel Cap 290.1 lum 1695_5
			 On the way to Crystal
2 27	13647	7369	Arrived @ Crystal
			 CRYSTAL CAP 358.6. lum 1723_8
2 43	13646	7356	MARKER FLORES 17
2 48			Sortie Sonde t°c
2 57			B09 TEM033 = 23.7°c Vent
			B09 TEM 034 = 13.58°c Shrimp

X	Y
13644	7365
34.57.92	32.17.03
37° 7.988	32° 26.018
37° 7.996	32° 26.008
37° 7.996	32° 26.009
37 7.997	32° 26.008
37° 7.997	32° 26.008
37° 7.997	32° 26.008

16/09/09

Prise Seringue n° 9.
B09 FLU 033 Cap 157.2 lum 1724.3
Prise seringue n° 10
B09 FLU 034
Aspirateur à crevettes ont
B09 BIO 05 => Crevettes de Crystal ds 4 bol 4
FIN PLONGEE 392 => on remonte
ERIC ET VALENTIN ARRIVENT !
bat ≈ 100 m
bat ≈ 6 nd.
On craine ROV coming aboard
Melia and Cedric patiently await their biological samples.
ROV on the Deck !
Transit to Point O for CTD
At station O

	Depth	W/O	vitesse	Pression (B09MPR019)	(B09MTR004 B09CTD0100)
	ROV @ ?	0	0.7	1	Start CTD
	Sonde pos. Hum. ?	61.1	0.7	87 br	pass cont to passerelle
	200 1900m	258.8	1.0	260	↓
	1893.5	784.3	1.0	803	↓ descend
	1905	1273	1.0	1295	↓
	1892	1830	0	1859	— bottom

Time	Lat	YLon	Description				
			Depth	w/0	vitesse	pression	
7:17	37° 7.997	32° 26.008	1904	1830.8	-1.2m/s	1859	Begin rise ↑
7:25	37° 7.997	32° 26.008	1893	1308	-1.2	1318	↑ ascend
7:35	37° 7.997	32° 26.009	1893	583	-1.2	583	↑ ascend
7:45	37° 7.996	32° 26.009	1891	38.2	-0.5	36	↑ ascend
7:46	32° 7.996	32° 26.009	1896	0.0	0	1	– at surface

End CTD010 B09CTD010R

B09MPR014R

7:53	37.08m	32.26.00	Transit to point F.
ZECA	julie	Tibaud	
08:30	37:07.040	32:22.040	At Station for B09CTD011R

16/09/09 B09MPR015R

			Depth	W/0	Speed	Pressure	
08:43	37:07.000	32:22.009	3218.32	60	0,5 m/s	~~0~~	
8:48	37:06.995	32:22,007	3003	145	1,12		command to bridge
			Problem at Pressure readings (Data aquisition not started)				
8:58	37:06.997	32:22.008	3003	812	1,07		
9:01	37:06.998	32:22.004	2992	936	1,04	967	
			File started to be saved				
9:12	37:06.992	32:22.003	2993	1616	1,1	1650	
9:22	37:06,992	32:22,008	3002	2278	1,08	2310	
9:30			2992	2855	1.03	2855	
9:33	37:06.9979	32:22.0082	3006	2899.8	0.4 → 0	2950	
9:35	37.06.9979	32.22.0081		on remonte	~0.5 ↗		
9:36	37:06.9979	32:22.0086	3003	2810	~0.93	2864	

description 16/09/09

		Depth	W/O	Speed (m/s)	Pression
		3002	2568	~1 (going up)	2620
	lat 37 06.9979 lon 32 22.0092	3003	2355	~1 ms-1 (up)	2382
		pb avec le bateau on a perdu le safran et le moteur… on repasse en pilotage manuel…			
	37.07.0029 32°22.0175	3004	2077	~1.01 ms-1	2099
	37°07.0025 32°22 0412	3005	1722.4	~1.06 ms-1	1760
02	37°07.0043 32°22.0263	3005	1200.00	~1.06 ms-1	1223
08	37°06.9995 32°22.0133	3003	849	~0,95	853
13	37°06.9972 32°22.0123	3004	512	~1.06	515
18	37°06.9938 32°22.0186	3004	239	~1.02	237
21		on remontait		~0,8	100
23			7	~0,5	7m
24		– SURFACE –			
25		– BRIDGE –			

END B09CTD011R

B09MPR015R

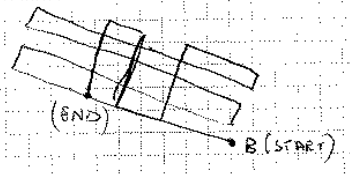
On part pour le point AUV 6.
→ N. 37 07.671 / N. 032 23.897 ~ 30 minutes de transit.

50 bateau sur site – ~~stationnaire~~ calibration du système de positionnement de l'AUV – le bateau fait un "polygone" pour calib AUV ~ 30 minutes

13 waiting for the AUV dive

23 Prepaeing AUV TO dive

Time	Lat	Long	Comments 16.09.2009
11:28	37°07.656	32°23.953	AUV ready to dive
11:32			AUV in the water B09AUV006D
11:47			AUV en plongée (mais sans vertex inertiel...)
11:50	AUV Position		260 m descente par petits fonds sans intervention
11:51	37°07.705	32°24.057	300 m
11:52			400 m le bateau part légèrement en arrière
11:55			590 m pas d'alarme - j'en fait le point
11:58			800 m
12:00			900 m
12:01			1000 m ! (CEDRIC TEAM) AURA & BENOIT
12:02			1100 m
12:04			1200 m
12:05			1300 m
12:11			1637 m
12:16	37°07.6432	32°23.991	1940 m
12:19	37°07.6546	32°23.956	2066 m Bientôt au fond [AIR S/O]
12:25			2124 m
12:32			2162 m During the calibration (Begin @ 12:35) Sondeur 38 kHz du bateau génère bruit dans communication
12:37	37°07.5457	32°24.498	2234 m Bientôt début de profil
12:41	37°07.665	32°24.062	2333 m starting profile !
12:49	37°07.759	32°24.421	130 m distance from the profile !
12:59	37°07.881	32°24.905	2024 m
13:10	37°08.042	32°25.533	1859 m
13:20	37°08.218	32°25.876	1778 m end of 1° profile



	Lat	Long	OBSERVATIONS 16/09/09		
	37°08.035	32°25.905	starting 2° profile	1782	depth
	[redacted]				
36	37°08.009	32°25089	1992 m depth		
56	37°7.856	32°24.573	2104 m "		
54	37°7.7345	32°24.1036	2214 m		
59	37°7.6918	32°23.882	end of second profile	2221	depth
01	37°7769	32°23893	starting 3° profile	2193	depth
22	37°80082	32°24.973	1993 m		
40	37°8.316	32°25.888	end of 3° profile	1772	depth
42	37°8.326	32°25814	starting 4° profile	1759	depth
02	37°8.106	32°24.826	2028 depth		
19	37°7911	32°24.558	end of 4° profile	2192	depth
23	37°7.456	32°23.872	starting 5° profile	2212	depth
32	37°8.086	32°24,393	2075 m depht		
07	37°8,1561	32°24.6294	2046 m dupkth	6TH profile	cap ≈ 190
48	37°8.807	32°24,8091	2078 m	7TH profile	cap ≈ 280
52	37°07,863	32°25.0075	2014 m	8TH profile	
			Quart Alice (at Olivier)		
2	37°8.2293	32°25.0131	End Profile 8 d = 1931.8 m.		
6	37°8.2473	32°25.1440	Beginning Profile 9 d = 1920 m.		
			Recalage OK		
	37°8.0380	32°25.2066	The END d = 2022 m. it's coming back up.		
25	37°8.0275	32°25.2505	d = 1204 problem with AUV it's still coming up though. @ 11am		
20	37°8.0175	32°25.2766	d = 976 Coming up v. slowly		
0	37°7.9933	32°25.3663	d = 439 Coming up slowly.		

16/09/2009

TIME	LAT Boat	LONG Position	Description
17:38	37° 07.939	32° 25.659	AUV surface Still have control to recover it
18:00	37°08.097	32° 25.865	Tried to recover with Calliste but didn't work so deploying a Zodiac.
18:10	37°08.237	32° 25.950	Zodiac in the water Calliste coming back onboard
18:37	37°08.291	32° 26.176	AUV onboard
18:41	37°08.295	32° 26.224	Zodiac onboard
18:51	37°08.400	32°26.355	Cap 43° Vitesse 3,3 nd Route vers le point de mise à l'eau de Victor
19h00	37°08.774	32°25.977	Cap 42° Vitesse 4,6 nd
19h15	37°10.694	32°24.080	Cap 40° Vitesse 10,5 nd
19h30	37°12,726	32°22.019	cap 42° Vitesse 10,5 nd
19h45	37°14.761	32°19.805	Cap 42° Vitesse 10,6 nd
20h00	37°16.626	32°17.950	cap 42° Vitesse 7,8 nd
20h19h	37°17,525	32°16.867	Arrivée au point de station
20:30h	37°17.488	32°16894	Waiting for the ROV dive
20:42			ROV on the port.
20:45	37°17471	32°16.649	Preparing ROV to dive
21:00	37°17.408	32°17.253	Waiting to the ROV dive DIVE n°393
21:14	37°17426	32°16714	ROV going to the water
21:17	37°17454	32°17759	ROV on the water
21:24	37°17514	32°16887	Leak in the water
21:40	35:07 N37°17.458 W32°17.010	7380	ROV going down Imm = 319,3 Loch = 0.0
21:55	38:79 N37°17594	7645 W32°16.854	Imm = 543,3 Loch = 0.0
21:57			Nettoyage des écrans de la cabine ROV :-)

16/09/09

	Lat	Long	Description
37	3616 N37°17.512	7491 W32°16.936	Calibration for magnetism. Imm = 300.4 Loch = 0.0
			Cap = 246.0 Anti-horaire !
09			fin du bar anti-horaire cap = 240 → enchainement avec 1 bar horaire
01			fin du bar horaire
15			cap 271 Im : 900
23			début rotat° anti-horaire
27			Fin rotat° anti-horaire – début rotat° horaire
10:30	3708	7494	Fin rotat° horaire
			Arrivé à 1000 m
			NB: X/0 = 580 000 Y/0 = 4 120 000
25:00		cap 270	Im = 1000 début rotat° anti-horaire
			plein de p'tit bars par Julie ..... (on a laissé parti 100m et on a du remonter par le p'tit bar)
26:00			Fin bar anti-horaire – début rotat° horaire
28:01			Fin rotat° horaire – cap 271
32:29			Imm = 1100 Cap = 268
			Début rotat° anti-horaire
35:33	3736	7483	Fin rotat° anti-horaire – début rotat° horaire cap 266
37:33			Fin rotat° horaire cap 270
06	3713 N3717495	7461 W3216871	Victor on the bottom
09	3664	7500	Start the DVD record
11	6464	7496	Calibrating the OTUS camera
12	3663	7507	OTUS stopped – Début calibrat° caméra
24	3674	7498	Camera calibration is finished STOP DVD

Time	Lat	Long	Description
23:43:12	~~3686~~ 3679	7481	début calibrat° sondeur.
~~23:50:00~~ 23:50:19		~~7481~~	fin 2ème ligne de calibrat°
Françoise et Benjamin			début calibrat° caméra
00:02		17/09/09	Arrivée sur le dernier pour la calibration
00:08			Calibration OTUS avec dernier finie.
00:31	3834	7541	Lancement du fichier.
			Passage au (point 0), début du [profil 1],
			Imm = 1688,6 Loch = 51,1 Cap = 260 vers l'Ouest
00:44	3493	7476	Recalage avec la BUC.
01:04	2998	7386	Passage au point (1), fin du profil 1,
			début du profil 2.
			Imm = 1718 Loch = 51,1 Cap = 259
			Changement de fichier.
02:45	713	8189	~~Changement de fichier~~ Recalage de l'estime.
02:45	713	8189	Passage au point (2) fin du profil 2
			Imm = 1771 Loch = 505 Cap = 354.
02:50	740	8329	Passage au point (3) début du profil 3
			Imm = 1760 Loch = 503 Cap = 112
			Changement de fichier.
03:18	1346	8115	Arrêt du profil ⇒ les 2 traces
			ne semblent pas se chevaucher suffisamment
			↳ on va resserrer les profils.
			On passe d'1 espacement de 140m à
			1 espacement de 100m.
			↳ retour au pt de départ du profil 3. point (3) (à environ 400 m)

Time	Lat	Long	Description 17/09/09
			Alain et Céline.
~~04:00~~			~~recalage estime sur Buc~~
04:02	729	8298	passage au point 3 Début profil 3 cap Est
			Im = 1737 Loch = 51 cap 109 changt de fichier.
04:20	1031	8178	recalage estime sur Buc Im = 1671.5
			Loch 50.5 cap 108.
04:35	1331	8071	recalage estime sur Buc Im 1661.0
			Loch = 50.5 cap = 108.
04:52:36	1646	7971	recalage estime sur Buc Im = 1658.5
			Loch = 50.5 cap 109.5
05:07	1916	7875	recalage estimé sur Buc Im = 1693
			Loch = 50.9 cap = 109,8
05:27	2353	7724	recalage estime sur Buc Im = 1718.2
			Loch 51.6 cap = 107
06:03	3121	7456	Changement des Fichiers Im = 1683.9
			Loch = 50.2 cap = 110.2
6:11	3236	7419	Recalage estime sur Buc Im: 1650.6
			Loch = 49.7 cap = 110.6
6:36	3793	7223	Recalage Estime sur Buc Im = 1662.5
			Loch = 50.5 Cap = 109.7
6.57	4342	7038	Recalage Estime sur Buc Im = 1642
			Loch = 51.0 Cap = 109.6
07.31	5140	6766	Recalage Estime sur Buc Im = 1650.7
			Loch = 51.1 cap 109.5
07.47	5477	6669	Arrivée point (4). Fin du profil (3)
			Im 1660 Loch 50 Cap 109
7.52	5508	~~6745~~	TRANSFERT Fichier

17/09/09

Time	Lat	Long	Description
8:06	Y: 6749	X: 5496	Arrivée Point ⑧ départ profil ④ Valérie à terre Im = 1658,3 Loch = 50.0 Cap = 297 X = 5496 Y = 6749 V = 0.4
8:06	Y: 6749	X: 5496	Recalage estimé
8:20	Y 6749	x = 5496	on recupère le profil de 120 m on revient dans l'axe du nouveau profil 20m plus au Nord nouveau : Y = 6925 Im = 1645 ; X = 5055 Loch = 49.9 ancien profil départ pt ancien profil → Y = 6749 X = 5496 à 8:20
8:27	y = 6925	x = 5053	Recalage estimé Im = 1641.6 Loch = 49.9 Cap = 290°
8:45	y = 7013	x = 4786	nouv recalage depth = 1625 Loch = 50.5 Cap = 289
8:55	y = 7066	X = 4624	Loch = 51 cap: 290° depth 1643 m Recalage estimé, paraît désirable un peu serré ?
9:08	Y = 7166	X = 4320	Im : 1638 m Loch = 50.4 Cap = 290 Recalage estimé
9:11			On arrive à proximité de Tour Eiffel.
9:13	Y = 7209	X = 4213	On parc au dessus du marker : A5 Im = 1641 Loch = 50.8 Cap = 290
9:16	Y = 7256	X = 4136	On parc au dessus du point référencé : chemin Im = 1638 Loch 149.6 Cap = 290
9:20	Y = 7253	X = 4075	On parc au dessus du point référencé : MH12 Im = 1638 Loch = 50.4 Cap = 290
9:31	X = 7350	X = 3832	Recalage cap: 290 Im = 1687 Loch = 50.6 V = 0,36
9:43	y = 7427	x = 3575	Recalage cap: 289 Im = 1649 Loch : 48. V = 0.23
9:57	y = 7521	x = 3292	Recalage cap = 290 Im = 1631 Loch = 50.2 pb de liaison haut débit. V = 0.42 chemin un peu en I

Time	Lat	Long	comments
10:02			→ nouveau fichier.
10:26	7721	2685	Loch = 50.3 Im = 1695 V = 0,4 cap = 290.5 Recalage
10:41	7865	2346	Recalage ou estimé depth 1711 cap 289 loch = 49 V = 0,28 du coup devant ↓ zone FA.
10:47	7885	2223	recalage estimé ou BVC. la BVC à l'air assez bonne mais estimé douteux, courant latéral de l'ordre de 1/4 de la vitesse suivant axe sismovible.
11:13	7997	1794	Recalage BVC pas très gros décalage après perte BVC pendant 5 minutes ! les courants se sont inversés. ~290° ~295° ~290
11:30	8147	1477	→ point estimé la BVC a sauté ; on dévale le bateau vers l'avant pour essayer de retrouver la BVC. La BVC est très manoeuvrante quand nous sommes positionnés à l'arrière du bateau.
11:42	8229	1229	BVC dans le choux → [redacted] cap = 289 Depth = 1647 Vp = 0.29 Loch = 51 Vt = -0,05 Pas de recalage → on va lancer le GAPS → calage OK : les deux positions sont très proches.
12:49	8269	1120	dept 1663 loch 50,5 — Recalage (yoyo) cap 288 Vp = 0,30 Vt = -0,06 les deux positions obtenues très proches
			Alexa and Cedric on ship !
	8388	770	Cap 299. Arrived @ pt ⑥ End of profile ④ Im 1735 Vp = 0.27 Vt = -0.12 Loch 51.4 Recalage BVC à la fin du profil

Time	Lat	Long				
12:14	8529	814	Arrivée Pt ④ Début profil ⑤ lmm 1702 loch 48.9 Cap 65.6 V_t 0.48 VE -0.02			
12:21	8465	986	On a perdu la BUC			
12:28	8407	1148	lmm 1661 Cap 104 loch 50 On a perdu la BUC			
12:33	8362	1285	On a retrouvé la BUC => pas de recalage			
12:35	8358	1353				
12:41	8270	1493	Recalage BUC lmm 1660 Cap 107 loch 50.5			
12:47	8243	1618	lmm 1656 Cap 106 loch 50.2 BUC OK			
12:58	8153	1877	lmm 1648.3 Cap 106 loch 50.1 BUC OK			
13:10	8076	2103	lmm 1702 Cap 110 BUC OK loch 49.4			
13:24	7970	2401	lmm 1706 cap 112.2 doch 50.7 buc ok			
13:27	7927	2411	repositioning buck lmm 1722 cap 110 loch 51			

	Y	X	
13:53	7777	8897	lmm 1693 Cap = 110 loch 50.5 Ve = 0.21 Recalage BUC. On reprend toujours 25 m sur la droite mais pas à cause de la BUC — Probablement Courant et loch
14:15	7628	3353	lmm 1588.6 loch 66.9 Cap 113 Repositionnement et redescente => loch trop haut (Victor taré pour la boue)
14:23	7553	3505	lmm 1618.2 loch 54.5 Cap 101 Recalage BUC
14:31	7530	3658	Cap 103 loch 51.4 lmm 1677 Recalage BUC
14:43	7414	3967	cap 108 VE=0.04 lmm 1679 doch 99.9 Repositioning BUC
14:54	7338	4268	cap 111 doch 50.6 VE = 0.10 lmm 1622 Repositioning BUC
15:07	7252	4454	cap 111 doch 51 VE 0.01 lmm 1605.5 Repositioning BUC
15:18	7179	4655	cap 109 VE = 0.07 lmm 1629 doch 50 Repositioning BUC

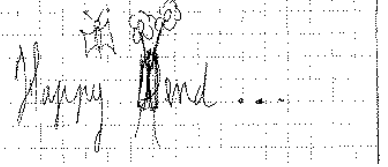
Time	Lat	Long	observation
15:37	50°24	7025	cap 107 VE = 0.12 Imm 1630 m Loch 50 repositioning BUC
15:43	5°187	6998	cap 107 Imm 1640 VE = 043 Loch 50 repositioning BUC Le décalage BUC est dû au décalage à des erreurs Loch. (il est trop haut)
15:50	5345	6936	Cap 109 Imm 1648 VE 011 Loch 51 Repositioning BUC
15:55			Eric + Valentin en shift
15:58	5539	6813	Arrivée au point (2)
16:06	5592	6975	Arrivée au point (3) cap 340 Imm 1659 VE 001 Loch 49.6
16:08			Début profil (6) Direct° Ouest. cap 294
16:11	5571 37° 17,240	7003 32° 15,636	Recalage de BUC cap 294 imm : 1652.6 Loch : 50.5
16:24	5300	7090	Décalage vers la droite de 10 m (modification légère du profil)
16:25	5291	7113	Reprise du profil (5) cap 295 Imm 1634 VT -0,15 Loch 49.6

Time	Lat	Long	observation
16h37	5058	1171	Repositioning BUC cap 296 imm 1618 VT = 0 loch 50
16h50	4854	7256	Repositioning BUC cap 287 imm 1575 VT = -0,8 loch 49,7
17h03	-588	-7344	Repositioning BUC cap 292 imm 1574 VT = -0,8 loch 46,2
17h06	4595	7359	Arrêt du bateau en position au milieu zone G → à 200 m dont plusieurs dessus pour refaire l'acquisition
17h09			Marche arrière du ROV sur 200 m (et du bateau).
17h21	4700	7301	Le bateau repart en avant
17h22	4725	7301	Repositioning BUC et ça repart. cap 280 Imm 1569 Vl 0,33 Loch 49,6 VT -0,09
17h35	4459	7386	Repositioning BUC cap 289 Imm 1581 Vl 0.41 Loch 51
17h42	4322	7436	Passage près de Seal Sentry. cap 290 Imm 1582 Vl 0.35 Loch 66
17h56	4050	7535	Repositioning BUC Vl 0,34 cap 289 Imm 1610 Loch 54,5
18:12	3697 37° 17.603	7661 32° 18.880	Reposition of BUC cap 298 imm 1625 Loch 52.3

Time	Lat X	Lon Y	Description
18:18	3615	7687	Stop d'aquisition de multibeam – crashed !
	37° 17.617	32° 16.936	~~Repositioning of BUC~~
			imm: 1630
			Loch: 54.5
			cap: 294
18:20			Moving Victor backwards to re do the part missed
18:23	3615	7669	Change of fichier – Technos
	37° 17.608	32° 16.892	Multibeam on again imm: 1695 cap: 298.5 loch: 50.1
18:26	→		Starting Forward Again
18:27	3667	7671	Repositioning of BUC
	37° 17.609	32° 16.900	imm: 1673.3
			loch: 41.2
			cap: 294
18:30			BUC is not aching well right now – lost the BUC because motors are on strongly
18:31			BUC is back
18:31			Lost BUC Again
18:32	3569	7703	Repositioning of BUC
	37° 17.626	32° 16.962	imm: 1611.5
			loch: 42.1 > good again
			cap: 288.5
18:45	3261	7823	Reposition of BUC
	37° 17.693	32° 17.175	imm 1578
			lock 56.2
			cap 290.5
19:09	2822	7978	Reposition of BUC
	37° 17, 778	32° 17.171	imm: 1683.9
			loch: 50.8
			cap: 291.9

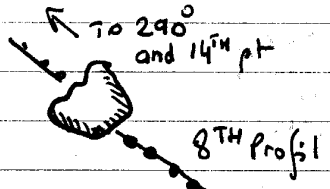
Time	Lat X	Long Y	17/09/09
19:22	2524	8069	Repositioning of BUC
	37° 17.229	32° 17.673	imm: 1737
			loch: 50.6
			cap: 295.1
19:32	2302	8142	Repositioning of BUC
	37° 17.869	32° 17.822	imm: 1690.2
			Loch: 51.0
			cap: 287.7
19:42	2001	8256	Repositioning of BUC
	37° 17.932	32° 18.026	imm: 1641.7
			Loch: 35
			cap: 289
19:56	1851	8299	Reposition of BUC
	37° 17.956	32° 18.127	imm 1624.2
			Loch ~~28.2~~ 52.2
			cap 289.9
19:58			Lost the BUC
19:59			Refound the BUC
20:00			Shift change
			Zeca, Thibaut
20:14			~~BUC~~ Estime is relocated in the ~~estime~~ BUC
20:38	1851	8299	Fin de profil ; arrivée au point 10
			im = 1686 Loch = 49.5 cap = 20
20:46	881	8779	Arrivée au point 11 décalé 150m Im = 1677 Loch 49,7 cap = 108
20:58	883	8785	Recalage de l'estime sur la BUC
			Change of file
21:00	883	8795	Début du profil (7) vers le Sud-ouest ?
			par le point 11 Im = 1670 Loch = 50 Cap = 109

	Time	Lat	Lon	Description	H/04/04
	21:53			Pb d'Acquisition, on relance	
	21.57	2131	8337	Recallage de l'estime sur la BUC Im = 1653 Loch = 53 Cap = 111	
	22.20	2677	8161	Recallage de l'estime Im = 1703 Loch = 50 Cap = 109	
18	22.42	3206	7971	Recalage estime Im = 1593 Loch = 49 Cap = 109 ?	
18	23:00	3626	7820	Recalage estime Im = 1597 Loch = 6.5 Cap = 105	
	23:23	4153	7643	Recalage estime Im = 1636 Loch = 47.9 Cap = 108	
	23:40	4613	7478	Recalage estime Depth 1552 Loch 50 Cap 108	
	23:50	4895	7406	Recalage estime Im = 1551 Loch 49.6 Cap. 109	
	00:05	5179	7278	Im, 1626. Loch = 50,2 Cap. 109 Shift Nelia - Benoit 00h04 19/09/04	
				END of Book see next one ! !	



NAUTILUS NIGHT

[redacted]

TIME	Lat	Lon.	DESCRIPTION	
			SHIFT NELIA - BENOÎT 00H 04H	
00:21	5568	7178	STOP ~~BAT~~ BATEAU. (invisible mais Lon)	
00:24	5666	7142	FIN DE PROFIL. Recalage pt 12 profil 9 à venir	
00:34	5672	7246.	point 13 début profil 8 Cap=290	Im = 1650 Loch = 49.7
00:40	5507	7307	Recalage. (a rock passing in front of the cam due to the flying fish)	Im = 1647 Loch = 49.8
01.03.	5167	7416		Im = 1618 Loch = 48.6
01.15	4995	7482	Recalage 	Im = 1567 Loch = 48.6
01.46	4376	7697	Cap = 298	Im = 1546 Loch = 44,7
02:01	4057	7816	Cap = 286	Im = 1631 Loch = 52,1
02:26	3532	7991	Cap = 281 Changement de fichier @ 02:24	Im = 1534 Loch = 44,7
02:34	3431	8019	restarting the profile after Staping due to a crash on the software and waiting for the boat. (missing part of profile)	
02:36	3415	8045	recalage cap 276	Im : 1573 Loch : 51.1
02:55	2982	8187	. Immm 1643 Cap : 290 Nothing else to say...	Loch : 50.4

TIME	LAT	LONG	REMARQUE 18.04.04
3:10	2737	8273	Cap : 288 Imm = 1693 Loch = 50
3:43	2101	8369	~~some problem with the profile~~  ~~Rest going in the Wrong direction while trying to correct the problem~~
3:47	2046	8368	Completing previous profile (#7) (missing jones)
3:49	1986	8410	Back to profile #8
4:00			Changement de quart Alice - Olivier
	2138	8445	Changement de profil (8) - Problème avec la Pousse ~~[illegible]~~ au changement de profil vers 1570m attente pour Transfert de fichiers
04:04			
4:14	2071	8508	Problème avec le Victa impossible de reculer et nidescendre
4:21	21.29	85.44	Problème de positionnement des PP vers 1600m Sond: 90
4:26	21:97	8435	Reprise du Profil et démarrage des acquisitions
4:27			Faux départ
			Le PC de la bathy a complet + planté On essaye de le remettre bien!

18.09.09

Time	X ~~lat~~	Y ~~Long~~	Remarques
04:39	2196	8446	Le PC d'acquisition de la bathymetry plante complet. Ça fait 2 fois qu'il est redemarré mais il dit "Closed. Sorry for the inconvenience"
04:48	2197	8459	le Pc plante Toujours impossible de redemarrer ATTENTE
05:00	2203	8467	Luc est présent et Toujours problème de PC essai d'un nouveau projet pour relancer
05:12	2205	8474	Malgré la création d'un nouveau projet, le PC plante encore
5:20	2203	8468	Grosse pagaille mais peut être une solution il y a un PC de rechange ---- A suivre
0530			Il n'y a plus de pain ds la cuisine ---- Luc et Pierre changent le PC.
545			Starting the new station
6:00			En cours de réinstallation et même message d'erreur
0615			Still working on the new station
6:30			Toujours en panne
6:45			Windows foutues siennes

18/09/69

Time	Lat	Long	Remarques
0700			Windows a redemarré mais on a perdu le projet.
07:16			Toujours Rien
07:20			Decision de remonter Jean Paul pour prendre la decision de la remontée de Victor
07:22	2169	8463	Ordre de remonter Victor Cap 286 Vmin16 36,9 Poch 39
07:25	2230	8483	remontée Cap 84 Vmin 1631 Poch 53.
07:46	———	———	Inversion = 1100 m Cap = 109° anti-horaire — Petit tour 1
7:48	- — —	— — —	horaire inversion finale 1074 m.
7:54	- ———	———	Inversion = 1000 m. Cap = 109 anti-horaire — Petit tour 2
07:55	- ———	———	horaire (Probablement a fait plus d'1 tour).
8:05:31	- ———	———	Inversion = 800 m. 8000m Cap 109 antihoraire — Petit tour 3

18.09.09

Time	Lat	Long	Remarques
08:07:37			fin bar anti-horaire cap 109
08:08:00			début bar horaire
08:09:54	2032 N 3718065	8503 W 3218003	Cap = 112.4 Imm = 800
08:14:58			Going down ~~to~~ acquisit° alt
0829:42	1930	8611	Imm = 1000 m Cap = 293
08:35:30	1958 W 3718133	8628 W 3218053	Imm = 1100 Cap = 294,4
08:45:08	2027 N 3718145	8650 W 3218006	Imm = 1271 Cap = 58,8
08:55:00	2161 W 3718156	8671 W 3217915	Imm = 1473 cap = 141 180° Begin the Rotation
09:12:30	2244	8439	Imm = 1637,8 Cap = 286,7 Loch = 59,2
09:16:27	2251 N 3718028	8436 W 3217855	Imm = 1642,7 Loch = 60 Cap = 288
09:19:51	2248 N 3718034	8446 W 3217854	Imm = 1653,3 Loch = 49.8 Cap = 292 Start the Registration
09:21:43	2230 N 3718040	8458 W 3217869	At the Repeise Imm = 1637,8 Loch = 47,7 Cap = 289.9 ~~Begin the profile~~
9:30	2135 N 3718058	8490 W 3217934	Accelage estime Imm = 1542 Loch = 26.5 Cap = 291.5

18/09/09

Time	Lat	Long	Desceiption
19:36:53	2105 N3718061	8495 W3217953	Recalage ~~New file~~ Imm = 1520 Loch = 41.1 Cap = 288
19:40:00	2105	8495	~~Stop~~ pb. sondeur - pbe d'enregistrem[t] ~~Start~~
19:42:13	2054 N3718070	8512 W3217988	redebut enregistrem[t] Imm = 1514 Loch = 48.4 Cap = 293
19:51:52	1858 N 3718107	8579 W3218121	At the line and going to west Imm = 1569 Loch = 50.5 Cap = 285.9
19:54:43	1832	8599	~~No~~ No data. Imm = 1570 Loch = 50.2 Cap = 291
0:03:07	1796 N 3718120	8603 W3218162	Recalage estime Imm = 1574,4 Loch = 50.2 Cap = 290.4
0:10:49	1718 N3718132	8624 W 3218215	~~Biginning the profile ?~~ Begginning the profile Imm = 1602 Loch = 50.5 Cap = 289
0:23:09	1526	8694	Recalage Imm = 1640 Loch = 50.3 Cap = 290.4
0:58:00			Recalage estime. Fin du profil vers l'W - Arrêt enregistrement -
1:07:18	927 W 3718358	9036 W3218769	Start new line · Point (15) · NOT original (15) Imm = 1680
1:11:37	983 N3718348	9019 W 3218711	Point (1). New profile Imm = 1668 Loch = 49.7

18.09.09

Time	Lat	Long	Desceiption
11:28:05	1379 N 3718266	8866 W32 18444	Recalage Loch=50.5
11:42:20	1379 N 3718243	8829 W 3218328	Recalage cap=110
11:47:14	1666	8785	At stop position
11:47:49	1670	8781	start the file Francoise / Benjamin.
12:11	2130	8618	Recalage mm 1534 loch 50,3
1234	2546	8472	Recalage. mm 1721 loch 52,7
12:42	2669	8429	Recalage mm 1714 loch 53,3
13:17	3247	8230	Recalage.
13:17	3260	8223	changement de Profil. arrivée point 16.
1318			changement Fichier. Debut Profil vers le sud. mm 1573,8. Cp. 199. loch 53,6
13 24	3223	8116	Recalage. mm 1585 loch 53,7 cap 200
13 37	3158	7906	Recalage mm 1606,4 loch 52,4 arrivé point 17 cap 213 changement fichier debut profil vers le sud.
1345	3093	7794	Recalage mm 1645 loch 53,2
14:08	2891	7431	Recalage.

18.09.09

Time	lat X	long Y	
14:09	2891	7431	Arrivée Point 18 changement de fichier cmm 1748,2 loch 53,3 début profil vers le sud cap 188
14:10			
14:27	2831	7053	Recalage.
14:28	2824	7014	Arrêt des Fichiers. ~~Fin de profil~~ Plantage. Problème pour importer les nouveaux profils.
14:39	2826	7047	OK Profils importés ~~(on rejoint le point de la 2ème boite~~.
14:44	2826	7105	le profil n'était pas terminé. début de la fin du profil, pour combler. (approximatif).
14:58			Arrivée au point 0 de la 2ème boite changement de fichier.
15:00	2817	6765	Recalage
15:01	2844	6750	point 0 début de profil (1) cmm 1706,8 loch 53,3 cap 189.
15:16	2753 37,16 865	6289 32,17 527	Recalage cmm 1696. loch 53,8 cap 190
15:28	2719 37 16726	6031 3217551	arrivée au point 1. changement de fichier Fin de Profil cmm 1701,5 loch 53,7
15:31	2712	6010	~~début de~~ Recalage
15:34	2724	6022	Recalage.
15:35			début de Profil (2) vers Ouest

Time	X Lat	Y Lon.	observations 18/05/09
15:36	2687 37,16735	6048 32,17572	Recalage.
15:38	2608 37,16750	6074 32,17625	Recalage. Imm 1715,3 loch 53,7
15:45	2417 37,16783	6136 32,17755	Plantage des Multifaisceaux. Stop Profil.
15:47	2441 37,16777	6124 32,17739	C'est reparti Imm 1727,1 loch 53,3
15:54	2319 37 16.806	6177 32 17.821	recalage estimé sur BUC Alain et Céline im = 1743 Loch : 54
16:43	1418 37 16.989	6509 32 18.429	Im. 1707 Loch 53 Recalage estimé sur BUC
16:44	1402	6513	arrivée point ② Fin de profil 2 fin d'enregistrement.
16:50	1337 37 16.927	6393 32 18.484	recalage estimé sur BUC Im. 1728 Loch 53
16:53	1344	6390	Départ point ③ Début profil 3 vers Est changement de fichier Im = 1728 loch 53
17:00	1430	6366	problème de loch : passage de 50 à 30 m → fauchée SMF ecrasée. autoaltitude desenclenchée.
17:04			problème resolu.
17:06	1530	6339	recalage estimé sur BUC 1749 im loch 53
17:09	1565	6305	recalage estimé sur BUC Im 1750 loch 52
17:11	1601	6294	recalage estimé sur BUC Im = 1752.8 loch 52.

Time	X Lat	Y Lon	observations
17:20	1753	6237	Im: 1755 Loch = 51 recalage estime sur BUC
17:34	2057 37 16.801	6166 32 17.998	Im. 1734 Loch 53.2 recalage estime sur BUC
17:50	2279	6027	recalage estime sur BUC Im = 1757 Loch = 48.4
18:36	3078 37 16.587	5778 32 17.309	recalage estime sur BUC Im = 1718 Loch = 49.5
18:54	3382 37 16.522	5660 32 17,104	recalage estime sur BUC Im = 1725 Loch = 49.6
19:02	3522	5622	changet du fichier Im = 1717 Loch = 50.2
19:07	3596	5600	~~changet d~~ recalage estime Im = 1695 Loch = 48.2
19:35	4159	5389	arrivée pt (4) recalage estime sur BUC fin d'enregistrement Im = 1662.9 Loch: 49.6 Fin profil 3.
19:40	4124 37 16.318	5289 32 16.603	recalage estime sur BUC Im = 1667 Loch 49 Arrivée pt (5) début profil 4 début enregistrement.
19:45	3991	5336	recalage estime BUC Im = 1680 Loch 49
			Change of Shift : 20:00 Valérie & Julie
20:02	3629 37° 16.415	5464 32° 16.942	Recalage de l'estime Im = 1696 Loch = 50
20:16	3417 37° 16.459	5533 32° 16,081	Im = 1730 Cap = 282 Loch = 48
20:32	3127 37° 16.510	5634 32° 17.277	Recalage de l'estime Im = 1727 Cap = 282 Loch = 50.
20:57	5800 = Y	2608 = X	recalage 1716 cap = 292.7 Loch: 49.7 Vc = 0,40 Vt = 0,16.

time	X lat	Y long.	Journal — 18.09.09
21:19	2319 37°16.670	5924 32° 17.822	Cap = 290° Im 1732 ~ loch = 49.
21:33	2095 37° 16.712	6001 32° 17.973	Recalage de l'estime Im 1773 Cap = 290 loch = 49
21:50	1790 37°16.771	6168 32°18.174	Im = 1757 Cap = 290 loch = 50
22:13	1293 37. 16.870	6296 32°18.513	Arrivé au pt 6 fin du profil 4 fin enregistrement Im = 1734 Cap 200 loch 50
22:28	1276 37.16.804	6166 32.18.527	arrivé au pt 7 début du profil 5
22:26	1261 37°16.794	6147 32°18.537	Recalage estime Im 1740 Cap 110 loch 50.1
22:37	1462 37°16.766	6104 32° 18.397	Recalage de l'estime Im 1765 Cap = 110 loch = 49.7
22:57	1681 37° 16726	6024 32° 18.253	Im = 1770 loch = 49.9 Cap 110.
23:11	2001	5907	Im = 1769,3 loch = 49,7 Cap = 110
23:16	2093 37°16.666	5875 32°17.974	Recalage l'estime Im 1768 loch = 51 Cap 110
23:36	2591 37°16.548	5702 32°17.639	Cap 110 Im = 1724 loch = 49.7
23:50	2933 37°16.477	5575 32°17.408	Cap = 110 Im = 1723 loch = 52 Recalage de l'estime
00:01			Natalia & Cedric are here

19/09/09

time	X	Y	
00 31	3210	5471	lmm = 1685.8 Cap = 110.8 Loch = 50.1
00 40	3884	5151	Recalage et fin de profil (6) lmm = 1675.7 Cap 111 Loch = 50.2
00 45	4072	5151	Arrivée au point (9) - Début de profil (7) lmm 1675. Cap. 293 Loch 49.9
00 56	3853	5157	Recalage Cap 287 Loch 50.5. lmm 1690 Vl = 0.31
01:50	2824	5473	cap 312 lmm 1725 doch 50 (Recalage)
2 45	1854	5840	Cap 290. lmm 1796 Loch 50.3
3:15	1232	6050	Arrival to point (10) - end profile 7 Cap 289 lmm 1757 doch 50 (recalage)
3:19	1192	5939	[change of file] arrival at point (11) - start of profile (8) cap 108 lmm 1757 Loch 57.6
3 35	1581	5795	Recalage Cap = 111 lmm = 1792.5 loch 50.4

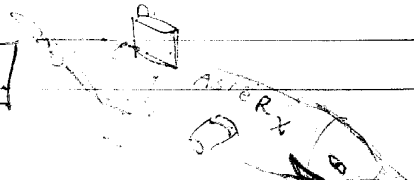
Time	X	Y	observation 19/09/09
3:48	1805	5712	cap 110 Imm 1821 Loch 49 — recalage
	ERIC et CHACHA		
3:54	1876 32° 18,128	5678 37° 16,538	cap 106 Imm 1795 Loch 49 — recalage
4:03			on a perdu la BUC !!!! Ahhh !!!
4:13	2287 32° 17,846	5548 37° 16,466	Cap 104 Imm 1751 Loch 49.6 — on a retrouvé la BUC. Yeah!!!
4:17			on a perdu la BUC
4:22	2493 32° 17,706	5482 37° 16,429	Cap 105 Imm 1740 Loch 50 on a retrouvé la BUC
4:30			On a perdu la BUC
4:35			En fait elle est loin mais elle est là.
4:45	2946 32° 17,401	5331 37° 16,346	La BUC est de retour, on recale pr la forme Cap 105 Imm 1729 Loch 49
4:58	3250 37°16.272	5196 32°17.196	imm 1732 loch : 50.0 cap : 109.5 Reclage of BUC
5:11	3520 37°16.224	5109 32°17.013	Reclage of BUC imm : 1723 loch : 48.3 cap : 109.3
5:40	3990 37°16.131	4941 32°16.696	Arrive at point 12 end of profile 8 imm : 1684 loch : 49.3 cap : 119.6 — Reclage of BUC
5:49	3945 37°16.073	4833 32°16.727	Arrive at point ~~12~~ 13 début profile 9 towards west imm: 1689.8 loch : 50.2 Change of files cap : 290.0
5:57	3826 37°16.096	4874 32°16.808	Stop for regaining circle for new estimation imm 1698.9 (boat getting closer) loch : 49.6 cap : 290.8

Time	X	Y	Description	13/09/09
6:10	3798 37° 16.105	4892 32° 16.826	Restart along profile imm : 1699.3 loch : 49.6 cap : 290.0	
6:32	3462 37° 16.172	5013 32° 17.053	Reclage de BUC imm : 1730.9 loch : 50.5 cap : 289.6	
6:49	3014 37° 16.258	5169 32° 17.356	Reclage de BUC imm : 1734 loch 51.5 cap : 288.5	
7:07	2544	5317	Reclage de BUC imm : 1741 loch : 50.8 cap : 290	
8:00			New shift Zeca Thibaud	
8:14	1157	5821	End of profile	
8:45:11	1130	5727	First magnetic turn Depth : 1099 1) ~~Cap~~ start : 08:~~45:17~~ ~~Direction: 130~~ Cap End ; 8:48 2) Cap start : 138 Direction : End 8:51	
8:55	1108	5727	Second magnetic turn Depth : 1000 1) Cap start : 131 Direction : clock wise End : 8:57 2) Cap start : 131 Direction counter clock wise End 8:59	

Time	X	Y	Description 19.09.09
9:04	11.09	5747	third magnetic turn Depth: 899 0° Cap start: 148 Direction: clockwise End 9:06 0° Cap start: 132 Direction: End 9:08
9:13	1044	5757	Fourth magnetic turn Depth: 799 0° Cap start: 119 End: 9:16 0° Cap start: 134 End: 9:17 ROV ascent to surface
9;43	37:16,763	32:18,851	Boat at Deck
9:50			ROV at surface
10:11			ROV out of water
10:13			ROV in the boat
10:29			En route vers le point de mise à l'eau de l'AUV
11:24	37 15 400 N	32 19 894 W	AUV in the water BOG FUV007
11:28	37 15 3284	32 19 8941	d = 6.70 Test
11:35	37 15 4399	32 19 9167	d = 39.40 début de mission
11:40	37 15 4325	32 19 9393	d = 278 début calibration
11:45	37 15 4560	32 19 9623	d = 610
11:50			problème d'ailerons? ff remonte
11:53	37 15 4542	32 19 9043	d = 710 remonte à la surface

19.09.09

Time	Lat X	Lon Y	Description
11:58	37 15.4492	32 19.8836	d = 482
12:04	37°15.4552	32°19.9116	d = 166.20
12:07	37°15.4660	32°19.9382	d = ~~29.20~~ NELIA + BENOÎT arrived at surface
12:09			doing some tests to the AUV to see if it is working to dive again
12:13	37°15.4284	32°19.9065	AUV going to dive again.
12:18	37°15.4857	32°19.8379	d = 299.50 Astrex gaps _ ~~synch~~ acou
12:21	37 15.4523	32°19.9467	d = 498.40 "
12:24	37°15.4485	32°19.9262	d = 687.80 "
12:28	37°15.4246	32° 19.9280	d = 969.80 "
12:32	37° 15.4391	32°19.9488	d = 1220.40 "
12:36	37° 15.4227	32° 19.9324	d = 1481.40 "
12:40	37°15.4409	32°19.9511	d = 1725.40 Astrex gaps _ Synch
12:45	37°15.4139	32°19.9093	d = 1846 m.
12:49	37°15.3943	32°19.9056	Accrochage loch d= 1919. changement de pitch. mesure altimétrique → 80 m. Recalage en prévision.
12:51	37°15.4195	32°19.9324	RECALAGE ACOUSTIQUE Procédure de calibration
12:59	37°15.6257	32°19.9678	Retour dans procédure calibration.
13:03	37°15.4709	32°19.8747	d = 1954 - 1er Profil Pt 1

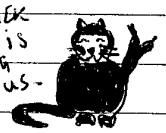


19.09.2009

TIME	LAT (x)	LONG (y)	REMARQUES
13:08	37°15.4099	32°19.6378	d = 1970 m 1er profil en cours. cap: 105 (from the boat)
13:15	37°[illegible].15298	32° 19.2673	d = 1925.10 m cap (boat) = 101
13:25	37° 15.1303	32° 18.7245	d = 1968.20 cap (boat) = 100 result from "demande de info AUV" imm: 2033 altitude: 59.2 cap: 106 37°.25-1034 -32°,31006
13:31	37° 15.0277	32°18.3051	decalage per rapport au profile de l'ecran 41.6 m d = 1912.50
13:41	37° 14.8594	32° 17.8824	d = 1873.10 cap 105 (boat) ~~reply from~~
13:46			reply from AUV after "demande info" lat~~[illegible]~~ 37.245110 Long -32.291180 imm: 1956 Altitude 72.9 cap: 108
13:57	37°14.5907	32°17.0753	d = 1481.4 AUV turning in advance! it believes it ended at the P012 good point. result from "demande info" from the AUV Lat 37
13:59	37°14.5147	32°17.1533	AUV turning at point 3 d = 1930.30 ~~with a bit~~ debut de profile 2
14:02	37°14.5415	32°17.3101	AUV now aligned with the profile 2 d = 1962

19/09/09

TIME	LAT	LONG	DESCRIPTION
14:10	37°14.6383	32°17.6358	AUV made a circle apparently to avoid an obstacle
14:13			back to the profile ... maybe not ...
14:14	37°14.6545	32°19.9324	AUV is coming back up "plane fault"
14:18	37°14.6473	32°17.6840	d = 1653.10
14:21	37 14 617	32 17 7078	d = 1487 en remontée sur profil 2 Tentative de redémarrage en surface.
14:32	37 14 6135	32° 17 7030	d = 1033 coming up again.
14:37	37°14 59 54	32°17.6838	d = 775
14:51	37° 14.5746	32°17.6566	d = 162
14:54	37°14.5700	32°17.6638	d = 0.9
15:00	37 14.5485	32°17.7211	on route to the month before diving again
15:13	37°14 5337	32°17.9018	STAND BY AUV at SURFACE
15:28	37°14.320	32°18.156	ZODIAC @ l'H_2O+NaCl. près de l'AUV
QUART OLIVIER			
15h58			Approche du PP vers P/AUV Cause P/AUV avance en Crabe
16h06			il est envisagé une plongée de l'AUV



19.09.09

TIME	LAT	LONG	Remarques
16:08	37:14	32:18	Tentative de demarrage pour une plongée et récup zodiac
16:14			Prof: 279 m
16:16	37°14	32°18	prof: 433 m
16:20	37:14	32°18	problème de réception acoustique prof: 686 m
16:23			dernière Tentative de communication avec D'AUV prof: 900 m
16:30	37:14	32°18	prof: 1220 m D'AUV ne répond pas à la commande de remonter
16:38	37°14	32°18	prof: 1840m Commande de refaire surface
16:45	37°14,65	32°1815	prof ~~1840~~ m
16:52	37°14 77	32°17 31	prof: 1259 m
16:56	37°14 79	32°18 36	prof: 1096 m
17:06	37°13 ~~1~~ 77	32°1855	prof: 607 m
17:12	37°12 10	32°~~17~~30	prof: 367 m
17:15	37°10 52	32°18 89	prof: 217 m
17:17	37°14 44	32°1812	prof: 99 m
17:19	37°14 ~~4~~2	32°18 13	prof ~~1~~0 m

Coordonnées sur le PISE dans Pausses

19.09.09

Time	Lat	Long	Remarques
17:19	37°14.43	32°17.12	AUV en surface
17°20			Passer en main de l'AUV à Julien
17:23	37°14.44	32°18.42	zodiac à l'eau (coord. bateau)
17:29			amarrage de l'AUV
17:36	37°14.26	32°18.60	l'AUV est dans son berceau le ROV est en préparation pour une plongée
17:44	37°14.17	32°18.73	Transit vers lieu de plongée du ROV CAP: 81 Vit: 1,1 nd
17:53	37°14.25	32°18.76	cap: 1 Vit 5,7 nd
18:06	37°15.96	32°18.70	cap 7°
18:12	37°16.44	32°18.66	Sortie de Victor du hangar
18:23	37°16.561	32°18.675	Levage de Victor pour mise à l'eau à 24° le renard
18:26			mise à l'eau de Victor DIVE 394
18:33			Mise à l'eau du test
	coordonnées du Victor		
18:33	X	Y	Début de la descente
18:39	760	5510	le caisson fond la mer cap 130. imm : 75 m
18:49	582	5510	imm 276 m. cap 89
18:59	558	5454	imm 441 m cap 97
19:15	644	5541	imm : 800 m Tour sens horaire cap 0 => fb magnetomètre. arrêt du tour.

19.09.09

TIME	X	Y	
19:16	614	5528	Tour sens antihoraire Im 800
19:17	606	5523	Nouveau tour sens horaire Im 800
19:19			Nouveau tour sens anti-horaire
19:20	590	5497	On reprend la descente cap 46
19:24	594	5505	Tour sens horaire im 900m. cap 0
19:27	563	5485	on reprend le sens anti horaire
19:29	548	5472	Arret et descente pour 1000m
19:40	704	5565	1000m cap 0. Tour sens horaire.
19:42	698	5552	Tour sens anti-horaire.
19:43	689	5540	Arrêt et descente pour 1100 m
19:49	701	5584	1100 m cap 0. Tour sens horaire
19:50	752	5575	Tour sens anti-horaire
19:52	743	5567	Arrêt et descente
20:07	770	5535	Im = 1398.
20:18	851	5582	Im = 1662.
20:25	910	5594	Im = 1763 à 2 100 m du fond.
20:30	984	5620	im = 1785 à 2 50 m du fond.
20:32	999	5628	Debut nav estime - on se dirige vers pt "0"
20:37	1110	5702	Im 1775. recalage estime.
20:39	1112	5700	Debut profil (1) chive: 394
			Cap: 107. loch: 52 (pt "0")

19.09.09

Time	Lat Y	X Lon	
20:56	5606	1397	Im = 1816 Lech = 50 cap = 110.
20:57	5590	1400	→ recalage.
20:14	5488	1691	recalage estime derive de 2° vers ~~l'est~~ babord de l'estime. cela va être corrigé en "hard" pour prof° ②.
20:29	5397	1995	recalage dep = 1784 lech = 49.8 cap = 108.9 vt = 0,36 ms⁻¹
21:36	5323	2144	Recalage ...
21:37	–	–	Recalage.
22:01	2704	5144	= N37°16.246 W32 17.566
22:10	5070 ~~2910~~ ~~2960~~	2915 ~~8848~~	Recalage N 37 16,210 W 32 17,427
22:11			Multibeam failed
22:12	5065	2930	New file started ~~20~~ N 37 16,203 W 32 17,413
22:36	~~4800~~ 4806	3672	Recalage N 37 16,059 W 32 16,912
22:39	4788	3715	Recalage N 37 16,050 W 32 16,883
22:49	4725	3897	End of profile N 37. 16,014 W 32 16,760
22:59			Start of new profile point 2
23:28			Recalage ~~d'une~~ de point (2 recalages suite au suite, les premiers étant mauvais)
23:30			Recalage estime

Françoise - Benjamin

00:56	5475	1419	Recalage.
	37°16430	32,18433	Im 1840. lech 50,0

	Y	X	20/09/09
:14	5596	1080	Fin du Profil 2 Passage Point (3) 1mm 1779,1 loch 50,0 N 37°16,497 W 32°18,662 → Transfert des fichiers.
:20	5486	1045	Arrivée Point (4) début du profil 3 1mm 1785,3 loch 50,0 N 37°16,438 W 32°18,686
1:24	5470	1099	Recalage N 37°16,429 W 32°18,650
:05	5160	1940	Recalage. N 37°16,258 W 32°18,083
3:11	4669	3341	Recalage N 37°15,987 W 32°17,137
3:31	4496	3827	Fin du profil 3 passage du point (5) 1mm 1714,3. loch 50,0 N 37°15,891 W 32°16,809 changement de fichier
3:34	4396	3789	Arrivée au point (6) Recalage. 1mm 1720,4 loch 50,0 N 37°15,833 W 32°16,824 Début du Profil 4
3:44	4453	3612	Recalage 1mm 1730,7 loch 50,5 N 37°15,869 W 32°16,954 Quart Alice + Eric.
4:15	4655	3030	Recalage 1mm 1750.9 loch 50.3 N 37°15.980 W 32°17.357

20/09/09

TIME	Y	X	COMMENTS
0518	5105	1709	Recalage estime. Imm 1817.7 Loch 50.2 N 37° 16.229 W 32° 18.238
05:54	5357	1004	Fin Profile 4 Arrivée au point (7) Imm = 1805 m Loch = 49.2 m. N 37° 16.368 W 32° 18.714.
05:55			Changement de fichier.
06:00	5267	942	Arrivée au point (8) Recalage Imm 1834.1 Loch 51.1
06:01			Debut profile 5 N 37° 16.320 W 32° 18.757 (But actually, boat isn't doing good).
06:03			Recalage et vrai debut
06:30	1511 37° 16.210	5068 32° 18.373	Recalage de BUC imm: 1841.2 cap: 108.2 loch: 46.9
07.16	2468	4698	Arive at point (9) End of profile 5 Imm: 1785 Begin profile 6 to South Loch: 50.6 N 37°16.006 W 32° 17.727 recalage de BUC transfer
07:41	2279	4167	Recalage BUC imm: 1841.4 loch: 51.2 cap: 197.7 N 37° 15.720 W 32° 17.858
			Change of shift.. Valérie & Anne
7:57	Y=3468 lat=37° 15.558	X=2196 lg. 32° 17.915	Im: 1882 Cap: 200 Loch 50.3

20/09/09

Hmi	X lat	Y lg	observations.
8:16	2075 37°15°369	3517 32°17.999	Im = 1890 Cap = 199 Loch = 50.7
8:31	1978 37°15.212	3227 32°18.066	Im = 1891 Loch = 50.2 Cap = 199
8:35	1959 37°15.160	3131 32°18.080	Recalage de l'estime Im = 1908 Loch = 51.2 Cap = 193
8:46	1894 37°15.056	2938 32°18.125	Im = 1869 m Cap = 192 Loch = 53.8 topographie très accidentée
9:01	1791 37°14.895	2621 32°18.196	Im = 1918.2 Cap = 198 Loch = 50.2
9:16	1678 37°14.699	2276 32°18.274	Im = 1943.3 Cap = 198 Loch = 50.8
9:24	1595 37°14.574	2043 32°18.331	Im = 1982 Cap = 199 Loch = 50.1 Recalage estime
9:38	1497 37°14.413	1745 32°18.399	Im = 2019 Cap = 199 Loch = 49.3
9:54	37 14.258	32 18.461	Recalage estime – fin profil sud (6) pointage point 10 – fin de fichier STOP enregistrement
10:03	37°14.250	32 18.477	Recalage estime et début de fichier – Route vers l'EST début profil (7) Cap 112
10:19	1635 37°14.211	1373 32°18.307	Im = 2050 Cap 112 Loch = 49.9
10:37	1916 37°14.155	1271 32°18.118	Recalage de l'estime. Im = 2039 cap 111 Loch = 49.5.
10:40	1921 37°14.157	1275 32.18.109	Test à faire le bateau arrière, marche arrière ce n'est pas un recalage

20109109

Time	X Lat	Y Long	Observations
11:00	2355 37°14.075	1126 32°17.892	Im: 1976 Cap 111 Lach = 49.8
11:01	2388 37°14.068	1115 32°17.794	Recalage delèbris Im = 1984 m Cap = 111 Lach = 52.5
11:05	2485 37°14.047	1077 32.17.734	⚠ Plantage du logiciel du sondeur multifaisceaux du ROV Marche arrière. 1- fin de fichier automatique
11:07	2469 3	1087	Redémarrage du logiciel. Cap = 111 Im = 2034.
11:08			Nouveau Plantage du logiciel du sondeur Arrêt du Rov
11:21			Programme à redémarrer après plusieurs tentatives
1:28	37°14.052	32°17.747 ⚠	Redemarrage après accueil du ROV par reprendre le bras. ⚠ Passage à 6 cycles/seconde par alléger le calcul du processeur. on redemare ~~avec estime à = 1m de la base~~ apn recalage à 11:29:45 demarage fichier
11:43	2684 37°14.011	1011 32°17.600	Im = 2099.3 Cap 111 Lach = 51.
11:45	2700 37°14.006	1003 32°17.589	Recalage delèbris. Im = 2105 m. Lach = 49.1 Cap 111
11:48	2745 37°[illegible]	984 32°A.558	fin de profil 7 arrivée au point 11 fin d'enregistrement. Im = 2108 m [illegible] Lach = 48.3

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Aora and Cedric

time	X lat	Y long	observations
11:55	2773	1108	at point (12) starting profile (8) cap 293 Imm 2103 vt: 0.04 each 50 (recalage)
12:12	2791	1204	cap 298 Imm 2040 doch 51.1 recalage
12:19	2390	1270	cap 290 Imm 2016 doch 419.8 recalage
12:31	2099	1345	cap 293 Imm 1951 doch 30.7 recalage
18:43	593	1878	cap 294 Imm 2107 each 50.1 recalage
14:12	-96	2106	at point (13) end of profile 8 Imm 1958 doch 50.8 recalage
14:18	21	2206	at point (14) starting profile (9) cap 104 Imm 1960 doch 54.0
14:21	111	2189	cap 110 Imm 1990 doch 52 recalage
14 34	418	2096	Recalage Imm 2074.2 Cap 107.9 loch 50.1

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Time	X	Y	
1508	1041	1859	Recalage Imm 2059.7 Cap 110 Loch 51
1541	1733	1607	Recalage Imm 2038.4 Cap 110 Loch 49.1
6.05	2260	1415	Im 2034 cap 110 loch 50,4 Recalage BUC.
6:19	2588	1304	Im 2073 cap 119 loch 51 Recalage BUC
6:28	2811	1215	Arrivée au point 15. fin profil 9
6:33	2853	1327	↳ Recalage BUC im 2093 Arrivée au point 16 Début profil 10 ↳ Recalage BUC im 2086 cap 288.
6:49	2555	1422	Recalage BUC Im 2093 cap 299 loch 50,9
7:01	2318	1505	Recalage BUC Im 2029 cap 300 loch 50,7.
7h43	1483	1815	Recalage BUC im 2020m cap 288,5 loch 50,4
8:45	34	2338	arrivée au point 17 et fin du profil 10 Recalage Buc im. 1923 cap 118,5 Loch 50
8:52	57	2444	arrivée au point 18 et debut du profil 11 im 1966,9 cap 110 loch 50
9:29	674	2229	Recalage Buc im 2086 cap 115 loch 50,8
0:40	2180	1683	Recalage BUC. im = 1998 Cap = 110 loch = 52

20/09/09

Time	x	y	Observations
20:57:15	2631 N3714.293	1533 W3217.633	Recalage
21:08:20	2878 N3714,244	1443 W 32,17466	Recalage
21 0820			Reached point #19, finished profile #11
21:19:30	2949	1554	Recalage estime
21:20:28	2930	1556	Debut profile #12 in point #20 N3714.305 W3217.430
21:40:31	2930	1651	
	N3714357	W3217615	
21:55:37			N 3714.406
	2394	1739	W 3217.792
			Capt: Julie N Valérie
22:97	2152	1733	Im = 1971m Loch = 53.3
	37°14.451	32°17.95	Cap: 90.8
22:28	1751	1479	Im = 1970 Loch = 47.
	37°14.539	32°18.226	Cap = 287,7.
22:43:27	1425	2007	Im = 1976 loch 50 Cap=291.5.
	37°14.578	32°18.446	Recalage estime
			vl = 0.53
22:54	1188	2200	Im: 1994.5 loch: 53.5 Cap: 290.1
	37°14.660	32°18.046	
23:05:37	858	2288	Recalage estime
	N3714.709	W3218.829	Imm = 2034.4 Loch=51.2
			Cap = 290

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Time	X Lat	Y Long	Observations
3:15	858	2378	Imm = 2038 Loch = 51.2 Cap = 287 N3714.758 W3218.977
3:31	637 N3714.816	2378 W3219.167	Imm = 2013 Loch = 51 Cap = 290
3:41:16	158 N3714.853	2550 W3219.301	Imm = 1996 Loch = 48.9 Cap = 291
23:42:56	135 N3714.856	2556 W3219.346	Finished profile 12. Arrive at point 21 Imm = 1991 Loch = 51.9 Cap = 314.7
23:48:27	143 N3714.922	2678 W3219.310	Recalage estime Imm = 2027 Loch = 52.0 Cap = 114.1
3:50:09	179 N3714.918	2670 W3219.286	Beginnig ~~the~~ profile 13. Arrive at point 22 Imm = 2033 Loch = 51.1 Cap = 111.2
23:58:58	417 N3714.874	2590 W3219.125	Recalage Imm = 2026 Loch = 50.1 Cap = 112.0
00:19:30	767 3714 800	2456 32°18.889	Imm = 2029 Loch = 50. Cap = 111 Recalage @ 00:21
~~00:21~~ : 00:22	~~767~~ 820 37°14784	2433 32°18.846	Imm = 2027 Loch = 50 Cap = 111
:05	1155 37°14 607	2106 32 18 220	Imm = 1948 Loch = 66 Cap = 110 Recalage @ 01:05

21-09-09

Thre	Xlat	Yly	Observations.
1:18	2001 3714560	2021 32.18.057	Recalage de Buc
			Im = 1982 Loch = 48
			Cap = 110
1:33	2361	1896	Recalage de Buc
	3714.491	3217.811	Im = 1973 Loch = 51
			Cap = 110
1:53	2882	1711	Recalage de Buc
	37°14.389	32°17.462	Im = 2028 Loch = 50,8
			Cap = 110
2:01	2964	1681	Fin de Profil (13) Point 23
	37.14.372	32 17.407	Imm = 2040 Loch = 50
			Cap = 24,8
2:06:35	3054	1793	Début de Profil (14) Point 24
	37 14.427	32.17.371	Stand by. relance de fichier
2:11.	3013	1779	Start again. Recalage de Buc
	3714425	32°17373	Imm = 2032
			Cap = 291
2:33	3547	1937	Cap 293
	37 14.512	3217.688	Imm 1990
			Loch 50 Recalage de bouc
3:39	1452	2343	cap = 294
	37°14736	32°18.426	Imm = 1970 Buc ok finalement non
			Loch = 50
03:45	1340	2390	cap = 294 Recalage de Buc
	37°14.762	32°18.511	Imm = 1976
			Loch = 51.4

	X	Y	26-09-09
4:00	1030 3714.821	2497 3218.711	Prise de Quart. Céline - Alain
4.01	957 3714.833	2519 3218.760	Imm = 2027. Cap: 291 Loch = 49.9 Recalage Estime sur BUC
4.33	201 3714.983	2790 3219.270	~~Arrivée Point 25 - fin du Profil 14~~ Sondeur Planté. Marche Arrière Relance du Sondeur.
4.36			Sondeur Relancé - Marche Arrière pour Terminer Profil.
4.41	362 3714.949	2728 3219.162	Sondeur Planté à nouveau
4.44 4.46. 4.47	365	2730.	Sondeur Relancé. Sondeur Planté Encore Sondeur Relancé.
4.50	404	2713	Changement Fichiers.
4.52	362 3714.941	2714 3219.162	Recalage Estime sur BUC Fichier Changé. Progression vers fin Profil 14
5:00	199 3714.980	2785 3219.272	Arrivée Point 25 - fin du profil 14 Imm = 2035 Cap = 280 Loch = 49.8 Recalage Estime sur BUC.
5.06	216 3715.040	2896 3219.260	Recalage Estime sur BUC - changement Fichiers - Imm = 2030 Loch = 49.6 Cap = 111.
5.08	255 3715.027	2872	Arrivée Point 26. Début du profil 15 Imm = 2027 Loch = 52.5
5.09			SONDEUR PLANTÉ. Arrêt du profil.

Time	X	Y	21-09-09
5.10	285 3715.028	2874 32.19.213	Sondeur Relancé _ Reprise du profil.
5.17	412 3715.003	2829 3219.127	Sondeur Planté. Arrêt progression Imm = 2032. Loch = 50.8 Cap = 110.
5:37			Sondeur reparti après arrêt
5:38			Sondeur à nouveau planté !!
5:41	444 3714.997	2817 3219.106	Sondeur reparti. reprise Profil. Im = 2033 Loch = 49.2. Cap = 110
6.00	823 3714.920	2679 3218.850	Recalage Estimée sur BUC Imm = 2026. Loch = 50.6 Cap = 108.
6.38	1455 3714.808	2476 3218.424	Recalage Estime sur BUC I = 1960 Loch = 51.0
7.22	2505 37.14.598	2095 3217.715	Recalage Estime sur BUC Imm = 1968 Loch = 50.2
7.17	3043 3714.500	1918 3217.352	Recalage Estime sur BUC Imm = 2009 Loch = 50.1 Arrivée point 27. fin Profil 15
7.48	3043	1918	Arrêt Fichiers
7.49	3043 3714.500	1918 32.17.352	Remontée du ROV. quart - Julie + Thibaut
07:56	x=2888	y=1866	depth 1824 _ Transit remontée
8:00	x=2860	y=1896	depth = 1696 - cap 255.
8:08	x=2913	y=1903	depth = 1476 cap 254
8:18:30	x=2965	y=1881	→ stationnaire 1100 mètres cap 259. petit tour de magnétomètre. 8:19:15. anticlockwise ↺

21/09/09

:20:45 → fin de l'anticlotuise cap 253.
8:21 → clotuise ↻ - Imm = 1099.6.
8:22:50 → fin : 08:22:55.

8:28:00 → depth 999.7. petit tour anti clotuise ↻

:29:28 → fin tour anti cap = 254.
:29:45 → debut clotuise
:31:30 → fin clotuise depth = 999.9 cap = 264
Diamètre du petit tour ~ 10-20 mètres.
8:35:30 → depth = 900.1 cap = 258°
~~petit tour anticlotuise~~ · on s'approche ~~de la~~ du bas
08:38:45 → début anti clotuise 255° ↻
08:40:48 → fin anti clotuise.
08:41:00 → clotuise
08:42:40 → fin du tour dpt = 899.0.

08:48:15 → anticlotuise. cap ~ 250° [dept 799.8]
50:20 → fin de l'anti
08:50:45 → debut clotuise.
08 52:55 → fin clotuise.

09 02 → 500m = imm

09:21 37 14243 32 17195 ROV en surface

09:38 ROV hors de l'eau

09:40 ROV on the boat

9:51 debut du transit vers point de mise à l'eau de l'AUV
~~37 13.335~~ 37 13.335
32 17.941

10:33 Arrivée sur zone
37 08.019
32 24.261

21/09/09

Time	Lat	Lon	description
11:21	37 08.078	32 24.242	AUV in the water, at surface — B09 AUV 008
11:25			AUV a plongé — AUV plongé 8
11:29			→ cercle de calibration essai acoustique
11:40			l'AUV a failli rentrer dans un TRONC !
11:48:40			AUV en plongée — Plongée 8
			Lat = 37°.08.0288 Long. 32°24.1989
			Quart - Cedric. Françoise
12 00	37°8.024	32.4.1869	d = 840m
12 03			d = 1000m
12:09			1357 m
12:11			1500 m
12 19			1900 m
12:23			2000 m
12:30	37°8.0133	32°.24.1343	2125 m AUV sur le fond (AUV ne repond pas)
12:36	37°80508	32°23872	Arrivée au P013 - début de Profil 1
13:13	37°85659	32°2571	P014 - Fin du profil 1.
13:16	37° 8582	32°8564	début Profil 2 vers 1756,30
13:51	37°8576	32°2378	Fin Profil 2 vers 2282
1354	37°8221	32°2381	debut Profil 3 vers 2294
14 30	37°8.67	32°25.62	Fin de profil 3. vers 1767
14 32	37°8.70	32°25.57	Début profil 4. vers 186
15 07	37°8.30	32°23.76	Fin profil 4 vers 2303 m
15 01	37°8.33	32°23.75	Debut profil 5 vers 2307

Tm	Lat	Long	21/09/09
15:45	37° 8.77	32° 25.57	Fin de profil 5. mm 1835
15:48	37° 8.33	32° 25.51	Debut du profil 6. mm 1903 le profil est un peu loin du profil theorique (style il est « profil 4 theorique)
16:00			Quart Alice & Eric Scientific Meeting.
16:23	37° 8.417	32° 23.690	Fin Profile 6. immersion = 2340.5 m.
16:26	37° 8.477	32° 23.685	Debut Profile 7. immersion = 2365.9 m.
16:01	37° 8.909	32° 25.552	Fin de Profile 7. immersion = 1882.9 m.
17:03	37° 8.986	32° 25.517	Debut de Prof. 8. immersion 1885.5 m
17:39	37° 8.593	32° 23.703	Fin de Prof. 8 immersion = 2366 m.
17:41	37° 8.655	32° 23.694	Debut Prof. 9. immersion = 2411 m. Decalage - ~~est~~ ouest le Prof. qu'on fait est entre les profils theoriques 6 et 7. "Analysons" Patrice.
18:16	37° 9.1196	32° 25.6326	Fin de Profil 9 immersion: 1783 m
18:19	37° 9.1876	32° 25.5664	Début Profil 10 imm: 1812.20
18:55	37° 8.8279	32° 23.7203	Fin de Profil 10 imm: 2490
18:57	37° 8.878	32° 23.7359	Débat du Profile 11 imm: 2486
19:33	37° 9.3636	32° 25.6612	Fin de Profil 11 imm: 1877
19:36	37° 9.3636	32° 25.6696	~~Début de Profil~~ Down AUV coming toward Surface

21/09/09

TIME	LAT	LONG	COMMENTS
19:48	37° 9.354	32° 25.713	Coming up 890 m.
20:00	37° 9.294	32°25.694	coming up 180 m.
20:03	37° 9.284	32° 25.707	AUV en surface
			Position bateau maintenant.
20:09			Zodiac à l'eau
20:20			AUV est à proximité du bateau sur le port d'arrière récupéré.
20h25			AUV out of water
20h27			AUV on deck
20h45			Transit to ROV deployment site
⚠	Appeler		Thibaut, Eric, Nathilde 535 q^d ROV au fond
21h15	37°13.476	32°21.029	Transit 11,1 n^d
21h30	37°16.081	32°18.343W	11,0 n^d
21h45			Victor sur le port
21h55	37°17.494	32°17.037	arrivé sur site
22h00	37°17.493	32°17.036	debut mise à l'eau
22h05	37°17.230	32°17.011	bot à l'eau
			DEBUT de PLONGEE 10-395
22h15	Xo = 560000		Im = 128 m on va vers White Castle
22h40	Yo = 4120000		Im = 777m
	Lat moy = 37° 17 N		Set-up pour les DVD C1 – principale
	Lon moy = 32° 14 W		avec overlay. C2 – babord
			C3 – ~~tribord~~ principale
			— Eric + Thibaut
23:31			Start DVD's
			#C1 #1
			C2 #1
			C3 #1
23:31	3752	7249	At the bottom, on the way
	N 37° 17.380	W32°16.845	
23:35	3728	7248	Arrivée à White Castle

21 Sep 09 — 21/09/09

23:37	3718 N37 17.386	7260 W32° 16868	Turning around White Castle to get in position
23:40	3718 cap: 157.7	7260	Arrive at position for white castle - start taking old temp sensor from vent NKE29002 Blue + White
23:43	3719 37° 17.383	7254 32° 16.868	B09HTN29002R - picked up from old vent on and placed in pannier placed in box 12 for Rocks
23:49	3719 "	7254 "	Taking T_0 temperature with temp sensor of ROV B09TEM035 Temp = 308°C
23:58	3719	7254	Replaced a new temperature sensor picked up blue yellow and white temp sensor NKE29020 B09HTN29020D1 cap: 157.6
00:00			Noticed that 2 temp floaters have disappeared!
00:07	3719	7254	Taking Temperature gradient with Temperature board 1st start: 00:07 fin: 00:09 2nd start: 00:09:30 fin: 00:11:30 B09TGR001 TGR - Temperature Gradient put lasers distance between top + bottom laser 23cm

22/09/09

22/09/09

Time	X	Y	Description
00:19	3718	7250	Remettre the temperature gradient board
	37 17.381	32° 16.879	in the panier

Take video of plume for 2min

B09VID016

start 00:22:00

Shift : Cédric & Valerie

00:27 On bouge vers Sud Crystal

Cap : 336 sur 150 m.

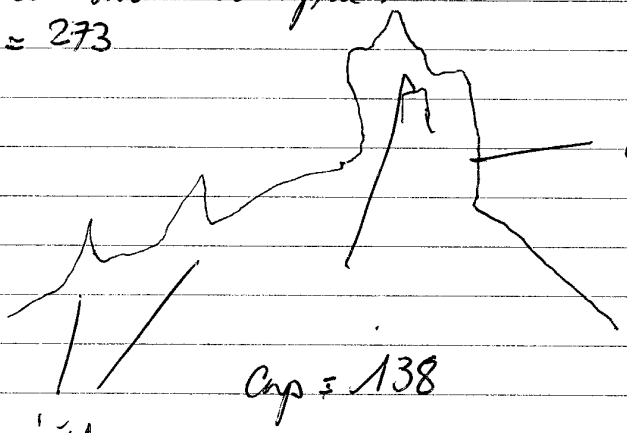
puis 380.

	3628	7333
	37 17.426	32. 16.721.

de nombreuses fissures avec de tapis bactériens.

00:39 | 3623 | 7356. Arrivé sur Sud Crystal.

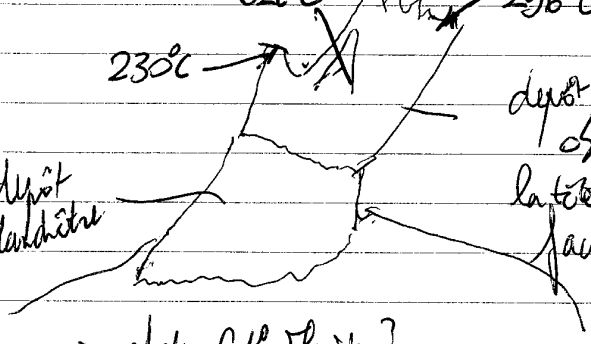
37 17 438 | 32 16.932 Cap = 273



Cheminées éteintes mais ml

Prise de Température avec la sonde rodor difficile dû au panache qui revient vers le bas.

~~le panache~~ on se déplace pour se repositionner vers Cap = 340.



=> chgt Cpt Fluide ?

22/09/09

hre	X	Y	Observation
			BØ9 TE01036 — 328°C
01:02			Prise de la bouteille n°3
01:06			BØ9 FLU035 Prise de fluide dans la chambrée @ 328°C.
01:11			Prise de la seringue n°7.
01:12			BØ9 FLU036 seringue n°7. très bonne prise le bout de la canule est légèrement blanche.
01:16			Prise de la seringue n°9.
01:21			BØ9 FLU037 seringue n°9 Canule est blanche.
01:26			Reprise de la température pour confirmation puisque nous avons été la partie ingénieur de la chambrée lors de la prise de T° précédente.
01:28			BØ9 TE01Ø37 @ 334°C
01:30			Changement DVD C1 #2 C2 #2 C3 #2
1:34	3623	7349	BØ9TGR002 #1 start: 1:36:25 fin : 1:38:50 37° 17.435 N 32° 16.932 W
			#2 start: 1:40:00 end : 1:42:00
01:53	3623	7349	Picked up Red, Blue, white 29010

22/09/09

Move the ROV to the left around the vent for a better angle on the vent for both the video & putting the capture

~~Placed Temperature sensor B09~~

01:58			Moving the ROV to get a better angle for placement of capture and for video
02:01	3625	7349	Arrive at new point to place capture and take video N 37 17.435 W 32° 16.931 cap 53.8
2:08	3625	7349	Placement of new capture B09HTN290100 Red, Blue, White N 37° 17.435 32° 16.931 W cap 53.9 VID017 VID018
02:12	3625	7349	Temperature measurement of orifice B09TEM038 322°C
02:15			Move ROV for Video Event want Black background
02:19			VIDEO event B09VID017 37° 17.432 cap 123.5 start: 2:19:00 36° 16.932 fin : 2:21:00
02:22	3623	7344	Video event B09 VID 018 37° 17.432 cap 123.5 start: 02:21:30 32° 16.932 fin : 02:23:30

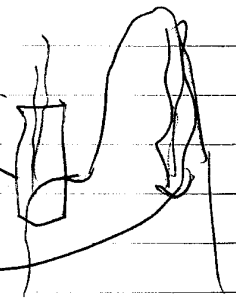
22/09/09

Time	X	Y	Description
2:34	3660 N37° 17.4660	7396 W32° 16.907	Arrive at Crystal
02:37	3660	7396	Recupere the temp sensor yellow, red, 29012 B09 HTN 29012 R
02:45	3660	7396	~~Temperature measurement~~ Move ROV to the right to better see the fumeur
0:2:47	3646 37 17.448	7374 32° 16.917	Arrive at new position, take temperature measurement T_0 = 323°C cap: 134.7 1+T006 B09TEM039
02:58	3646 37 17.448	7374 32° 16.917	Temperature Gradient Measurement 1st start: 02:58:00 end: 03:00:00 B09TGR003 2nd start: 03:01:00 fin: 03:03:00 slightly higher in the plume
3:05	3646	7374	Video Event B09 VID019 start: 03:05:00 end: 03:07:00 1st start: 03:07:15 end: 03:09:15 2nd less light
08:10			See fallen NKE 29001 on the sea floor

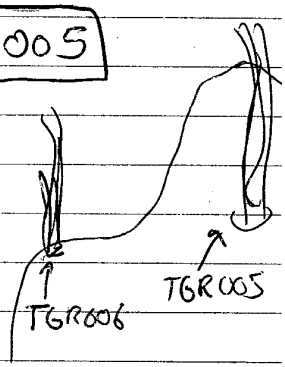
Time	X	Y	Description 22 Sep 09
03:13:47	3637 37° 17.447	7373 32° 16.922	NRE29001 – tie wraps melted and sonde has fallen off the handle – the sonde is still in the orifice!!
03:17	3637 37° 17.447	7373 32° 16.922	Récapture temperature censer B09HTM29001R cap 168.7
03:28	3637	7378	Temperature mesure w/ROV $T_0 = 240°C$ B09TEM040
0326			Change DVD → C1, C2, C3 #3
03:28	3637	7373	Temperature Gradient / B09TGR004
			start 03:28 1st don't think we end 03:30 were in fluid
			start :03:31:00 2nd nicely in fluid end :03:33:00
03:35	3637	7373	Video Event B09VID020 start : 03:35:00 end : 03:37:00
0339			Repositionnement sur le site à 323°C
0343			Recupérat bouteille 750 mL n°1
0345			B09FLU038 sur Crystal (Bouteille 1)
0348			Puis seringue n°2
0350			B09FLU039 Sur Crystal (Seringue 2)
0352	3642	7372	B09TEM041 = 327°C Sur Crystal où ont été pris les fluides

22/09/09

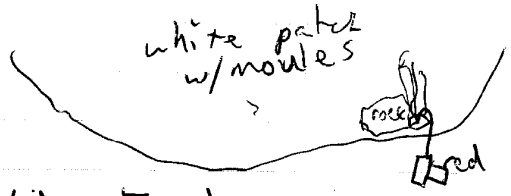
Time	X	Y	Description
4:00	8649	7373	Depart pour explo S_Crystal
4 40	3648	7349	Pas d'autre vent sur S_Crystal ⇒ grande tâche blanche bordée par des cailloux. ⇒ S-Crystal : petite cheminée isolé au sud d'une grde tâche blanche = fin de la chaine Rico/Crystal/S_Crystal ?
4:12			Route Y3
4 40	4002	7479	Arrivée sur Y3
4 48			Arrivée sur site – Preparation pour sonde T
4 58			Victor est stable precaire
5 03			En fait Victor n'est pas stable ⇒ on trouve pas de cheminée !! Toutes prises par des Capteurs T ?!!!
5 09			Victor à peu près stable
5 13			BOGTEM042 = 229°C
5 20			BOGTEM043 = 281°C
			+ chgt de DVD → C.1,2,3 ~~SDVD4~~
			On va echantillonner sur le BOGTEM042
5.25			Prise bouteille n° 4
5 33			bouteille 4 de MAESTRO



Time	X	Y	Description 22109109
5:34	4008	7488	presentation bouteille 4 ds fumeur
5:35			B09FLU040 ds fumeur @ 229°C
5:39			Prise seringue n° 5
6:02			B09FLU041 OK ds fumeur @ 229°C
6:08			fluid syringe replaced in panier
06:17	4008	7486	Take temperature gradient measurement @ Y3
	37° 17.507	32° 16.671	B09TGR005
			start: 06:17 #1
			end: 06:19
			start: 06:20 #2
			end: 06:30
6:24	4008	7486	Temperature Gradient measure B09TGR006
	37° 17.507	32° 16.671	
			#1 Start: 06:24:30 Cap: 84.3
			end: 06:26:30 Imx: 1716.7
			#2 Start: 06:26:45 2nd is a little further in and little higher
			end: 06:28:45
0:6:51	4008	7486	Video Event - smokers @ Y3
	note reverse in timing		B09VID021 start: 6:51:00 cap: 84.3
			end: 6:53:00
06:46	4008	7486	Video Event - diffuse particles @ Y3
			B09VID022 start: 06:46:25
			end: 06:48:45
06:52			Temperature: 8-10°C B09TEM042
			T_{max} = 11.89



Time	X	Y	Description 22/09/09
6:55			Move off of Y3 tower to base move around tower
07:04	4016 37° 17.512	7495 32° 16.665	Arrive at location of NKE 29005 and NKE 29016
07:08:30	4016 37° 17.512	7495 32° 16.665	Pick up white and yellow NKE temperature probe from Y3 NKE29005 B09HTN29005R
07:17			Charge OVOS #5 C1, C2, C3
~~07:18~~	4014	7492	Put down a new temperature
07:24	37°17.510	32° 16.667	sensor in diffuse flow B09HTN29015D red temperature probe
7:29	4014	7492	Video Event start 7:29:00 7:30:08 B09VED023
07:44	4019 37° 17.541	7493 32° 16.663	Pick up old temperature sensor NKE29016 yellow B09HTN29016R
07:45			En transit to Ascenseur 1 of dive 395
7.58	3973 37.17.485	7446 32 16.694.	fin de Transit. Mise à l'eau Ascenseur. quart: Catia + Mathilde + Julie.
08:04:48	3950 3717486	7446 3216711	NASA is on the water
8:19:48	3964 3717490	7454 3216704	Imm = 1733 Loch: 3:0 cap = 1.3 NASA across down



22/09/09

Time	Lat	Long	Description
08:23:19			Take some pictures - Lave pillar
08:27:26	3951 3717513	7497 3216709	NASA is on the ground. we go to NASA. Imm = 1734 Loch = 7.0 Cap = 244.8
08:33	3745 3717462	7399 3216849	Take pictures - small site P = 4 T = 20 Cap = 216.8 Imm = 1737 Loch = 3.6
08:41:23	3679 3717430	7341 3216894	Find ascenseve within 25 meters of South Crystal !!
08:51:54			Oppening the ascenseve basket
08:55:56	3637 3717433	7346 3216923	Trans fee samples to ascenseve bascket. Tempeeature sensors and fluids samples. Imm = 1716 Loch = 6.0 Cap = 235
9:14			change DVDs C1 C2 C3 #6
9:30:13	3637 3216434	7348 3216922	Still transfering the samples to ascenseve Imm = 1715 Loch: 7.0 Cap = 239.7
09:31:14	3639	7351	All samples are at ascenseve. Closed bascket. avec 3 bouteilles, 4 sondes temperatu
09:37:50			Take pictures to closed bascket. 4 versions
09:41			Put a biobox at Victor's basket
09:46:09	3650 3717441	7361 3216914	Having to cut tube. Imm = 1717 Loch = 19.9 Cap = 2.0
09:51:30	3665 3717511	7491 3216902	Take pictures - tube

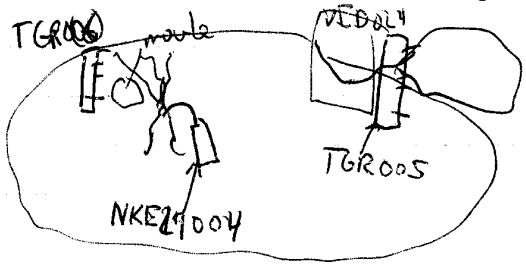
22/09/09

Time	Lat	Long	Description
09:56:37	3664 3717 514	7495 3216 902	Manipulating the ~~grade~~ calibration ~~calibration~~. grade Imm = 1732 Loch = 0.7 Cap = 25.1
10:15:00	3664 3717 508	7484 3216 903	~~Prepa~~ Manipulating calibration ~~guideline~~ grade to put at elevator.
10:28:00	3646 3717 435	7350 3216917	Arrive at elevador place Imm = 1715 Loch = 8.1 Cap = 237
10:31:37			Moving the ~~gg~~ calibration ~~guideline~~ grade to elevator Imm = 1717 Loch = 5.0 Cap = 296
10:33:29			~~Ca~~ Calibration ~~guideline~~ grade at elevador.
10:45			change DVD's $C_1 \neq 7$ $C_2 \neq 7$ $C_3 \neq 7$
10:46:16	3650 3717432	7345 3216914	~~Tried accessible~~ Tried use the acoustic. It can't ~~be~~ work.
10:51:34	3649 3717433	7345 3216914	~~Chega~~ Elevator liberation. Elevator comes up. Imm = 1718 Loch = 6.9 Cap = 220.2
11:05:30	3814 3717 479	7432 3216802	Elevator comming up. Imm = 1699 Loch = 41.1 Cap = 45.0
11:14:17			Take a picture - bottom, lave deposits.

22/09/09

Time	Lat	Long	Description
11:17	3790 3717.490	7453 3216.819	Take picture → Fish - Cataetyx laticeps
11:25			Ascencem en surface
10:35			ascenseur accroché, il a son damier !!
10:40			ascenseur sur bateau -
11:55			on part vers Y3.
12:06			Change DVDs #8 C1 C2 C3 - changed due to write failure on C1 change all at once to maintain continuity between disks
12:25			Approaching Y3 cap 75 Imm: 1731
12:30	4012 N37° 17.507	7486 W32° 16.668	Arrive at Y3
12:33			Manuver to find site to put next temp probe NKE 29004 - see a small vent in the distance that is promising
12:37	4010 37° 17.511	7493 32° 16.670	Arrive at next small chimney just north of Y3 tower cap 283.1
12:52	—	—	Change Position - a little cap: 282.6
13:05	4010	7493	Place temp sensor NKE 29004 BOP HTN 29004D cap: 283 Imm: 1729.4 floater cut by ROV hand

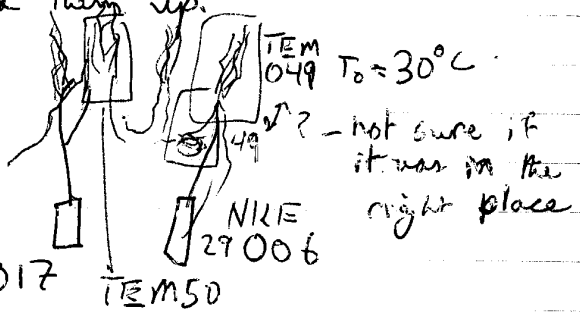
Time	X	Y	Description 21/9/19
13:06			Grabbing temp gradient board
			Temp Gradient + Video event
13:10	4010 37° 17.514	7493 32° 16.870	B09VID024 start 13:10:50 13:12:50 B09TGR005 both events taken at same time
13:14:25	4010	7493	B09TGR006 start 13:14:25 13:16:55
13:25	4010 N37° 17.511	7493 W32° 16.669	Take temperature after moving back to placement location of B09HTN24005 B09TEM045 Cap: 300 mm: 1729.5 $T_0 = 25°C$
13:38:	—	—	In transit to Mont Segur ↳ Temp probe still registering Ambient water temp: $T_{water} = 4.38 - 4.47$ °C mm: 1725 m
13:53	4126 37° 17.372	7237 32° 16.582	Passing Toilet on way to Mont Segur. Still in transit.
14:02			Change of OVDS C1 C2 C3 #9
14:07	4200 37° 17.278	7064 32° 16.543	Arrival at Mont Segur



Time	X	Y	Description 22/09/09
14:11	-	-	Looking for NKE temp sensors to pick up
14:14	4211 37° 17.280	7067 32°16.535	Found one of the small Temp captures Arrive at placement to recover it. cap=35
14:21	4211 cap 355	7067	Breaking off new edifice to recover temp sensor NKE 29014, recovered B09 HTN 29014 R
14:24	-	-	In Panier, ROV moved a little during this at cap 350
14:28	4211	7067	Temperature measurement w/ ROV T0 = 200°C (196.42°C) cap 350 B09 TEM 046
14:31	4211 cap 350	7062	Temperature Gradient Measurement B09 TGR 009 start: 14:31:45 end: 14:33:45
14:35	4211 37° 17.280 cap 350	7067 32°16.535	Video event B09 VID 025 start: 14:35:10 end: 14:37:15
14:43	-	-	Trying to grab temp sensor from panier
14:49	4215	7065	Grabbed from bottom of panier Red, green, white NKE 29023
14:52	4215	7065	Placed temperature sensor NKE 29023 cap 350.5 B09 HTN 29023 O

Time	X	Y	Description 22/09/09
4:54			Move to next temperature probe - advance ~7meters
4:57	4212 37° 17.281	7069 32° 16.535	Arrive at next temp sensor
4:59	4212	7069	Pick up temp sensor NKE29009 blue + white B09HTN29009R
5:02	4212	7069	Temperature measurement B09TEM047 $T_0 = 177\,^{\circ}C$
5:05	4212	7069	- Trying to fix gradient board - some of the leads were bent - managed to straighten many of them
5:18	4212	7069	Temperature Gradient measurement B09TGR009 start: 15:18:00 end: 15:20:03 - took several images of tigers after this measurement
15:	4212 37° 17.281	7069 32° 16.535	Placing ~~temperature sensor~~ NKE29015 in the same place as the 29009 B09HTN29015D
15:28			The handle has broken off NKE29015 while trying to place it. We are going to use a different sensor and will put NKE29015 in the elevator to use later

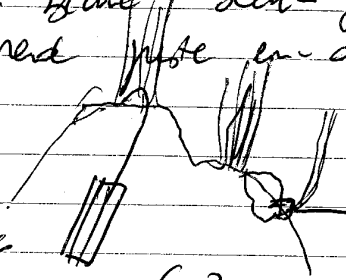
Time	X	Y	Description 22/09/09
15:30	4212 37° 17.281	7069 32° 16.535	Picking up temp sensor Red + blue
15:36	4212 cap : 53.2	7069	Placing temp probe NKE29007 B09HTN29007D in same place as NKE29009 was Z : 1702 m
15:37	4212 cap :	7089 54.6	Video Event B09VID026 start : 15:37:40 end : 15:40:10 Celine et Françoise.
15:43			exploration zone dépot colonisateur à Montségur
16:03	4214 37 17.280	7067 32 16.235	B09TEM048 T = 6.20° C dans moules zone de dépot du colonisateur
16:05			ouverture boite Bio 1. dans panier ROV -
16:07	4212 37 17.280	7067 32 16.536	B09BBC05D déploiement colonisateur Montsegur. Im. 1702 Lock. 0.6 Cap: 66.3
16:10			Change DVD C1 # 10 in C2 # 10 in C3 # 10 in
16:13			route vers Tour Eiffel et TRACS - cap. = 22.
16:17	4218 37 17.330	7160 32 16.531	arrivée sur TRACS de T.E
16:22			Sortie Boite Bio 1 du panier ROV
16:26			Ouverture de la boite
16:30			B09TRAC6R TRAC 6 dans boite bio Im = 1693.5 Lock = 2.1 Cap 21.6

Time	X lat	Y lon	observations 22/09/09
16:43			Fermeture boite BIO 1 avec TRAC à l'intérieur Réouverture !!
16:44			Fermeture boite BIO 1.
16:48			Boite BIO avec TRACS dans panier ROV - Eric et Thibaut.
16:55	4220	7171	Heading towards temperature sensors to pick them up. 
17:04	4220 37° 17.336	7171 32° 16.529	Arrive in front of temperature sensors cap 42.7
17:07	4220	7171	Picked up temperature sensor NKE 29006 cap 42.6 BØ9 HTN 29006 R Blue imm: 1684.8
17:09			In Panier
17:11	4220	7171	Picked up temperature sensor NKE29017 BØ9 HTN 29017 R green imm 1684 cap : 42.6
17:19	4220	7171	Temperature Measurement T_0 = 30°C BØ9 TEM 049
17:22	4220	7171	Temp Measurement BØ9 TEM 050 T_0 = 20.4°C

Time	X	Y	Description 22/09/09
17:25			moved off point where we ~~were~~ picked up the two temp sensors trying to pick up temp sensor from bottom of planer
17:33			Picked up temp sensor yellow/green/white NKE 29019 and put into wooden box
17:37			While trying to recapture the wooden box, it has fallen to the ground.
17:40			Picked up NKE29019 from underneath the overturned wooden box
18:07	4221	71	Placing of temperature probe NKE29019 B09 HTN 290190
18:10			Change of DVDs C1 C2 C3 #11
18:13	4223 37° 17.338	7174 32° 16.527	Measurement of temperature T_0 = 300°C B09 TEM 51
18:25	4223 37° 17.338	7174 32° 16.527	Temperature Gradient Measurement B09 TGR 010 start : 18:25:40 end : 18:27:40
18:24	4223	7174	Video event B09 VID 027
		Olivier et Céline	
18:30	4223	7134	route vers le sud en attente du larguage accompagné recalage comme BUC Im=1689 Loch=15.2 cap=137.

Time	X Lat	Y Lon	Observations 22/09/09
19:03			en route vers NASA2. cap. 3.3.
19:04			arrivée sur NASA2.
19:17	4172	7075	accrochage Victor à NASA2
19:18			ouverture des deux paniers.
19:22	4173	7082	positionnement devant panier 1 de NASA2
19:26			sortie bouteille Ti 1 NASA2
19:27			bouteille Ti 1 dans panier ROV
19:28			sortie bouteille Ti 2 NASA2
19:29			bouteille Ti 2 dans panier ROV.
19:34			sortie bouteille Ti 4 NASA2
19:35			bouteille Ti 4 dans panier ROV.
19:37			sonde NKE Jaune-blanc dans panier ROV
19:38			sonde NKE bleu-blanc-bleu dans panier ROV
19:40			sonde NKE Jaune dans panier ROV
19:44			sonde NKE Noir-Rouge-Jaune dans panier ROV
19:48			boite Biobox 1 dans panier 1 NASA2
19:50			seringue Ti 7 dans panier ROV
20:12			seringue Ti 9 dans panier ROV
20:13			change of DVD in C1 ✱ 12 / C2 ✱ 12 / C3 ✱ 12 — staff: Valerie / Zeus.
20:15			T probe in NASA2 blue suban Ø7.
20:21			T probe in Noir-jaune-Rouge in Quattro then back to NASA2
20:24			T probe in NASA2
20:26			T probe bleue + jaune in Quattro.
20:27			T probe bleue + Yellow in NASA2.
20:37			on the other side of NASA2, taken
20:42			Taken biobox n° 5 in Quattro to put in basket
20:45			biobox no 5 in ROV's basket.
			Enjoy Travail de Prof!

22/09/09

time	X Lat	Y Lon	observations.
20:49			fin de RdV.
20:51			transit to Tour eiffel.
21:02	4232.	7173	Arrive at Tour Eiffel
	37° 17.337	32°16.521	
			Manuvering to
21:08	4231	7175	Embarquement at Tour Eiffel.
	37.17 338	32 16. 522	
			Cap 30°.
21:14			Sonde blanc + bleu - jaune on perd juste en-dessous.
			 depth = 1684m. 315°C.
			blanc bleu jaune Cap 30
21:21			B/9 TET 052 prise de Température @ 315°C.
21:25			Rise de la seringue n°2.
21:28			Rinsé avec B/9 FLV 042 seringue n°2
21:35			Bouteille Tatane n°1. prise du panier.
21:39			B/9 FLV 043 sur Bouteille n°2
			⚠ Seringue n°7 a peut-être été débranchée lors de la manipulation de la prise de fluide dans la bouteille n°2
21:47	4231	7162	Picking up white and blue
	37° 17.331	32°16.524	NKE 29002B

B- 2nd time using this

Time	X	Y	Description 22/09/09
21:55	4228	7162	Positioning Sensor to place in hole next to NKE 29019
21:57			First attempt failed -was in hole, but fell out
22:01			changed camera 2 to record triboard instead of babord -saw potential smoker for video
22:04	4228	7162	Bending capture rod of NKE 29002 for better putting in desired hole
22:05			Next attempt to put in hole of NKE 29002 - failed as well
22:12			Trying to break a new hole in some chimneys
22:14			The sensor turned in the holder connected to the handle for the ROV. Using left hand arm to re-turn the capture
22:20			Change of DVD3 # 13 out labeled #12
22:22	4226	7173	Placement of NKE 29002B
	37 17.337	32°16.524	B09 HTN 29002B 00
22:25			Video event B09 VID028 start : 22:25:15 end 22:27:25
22:31	4226	7173	Temperature Measurement B09 TEM53 T_0 = 142°C
22:33			Moving ROV to Asics to place Temp sensor

Time	X	Y	Description 22109109
22:36			Picking up dropped hook -One try! Impressive!
22:38			Moving to Asics Vent
22:49			22:49:15 laser for measurement
22:50	4214 37° 17.339	7176 32° 16.533	Video Event B09VED0329 start 22:50:25 end 22:52:34
23:00			En Transit to Isabel
23:07	4052 37° 17.374 N	7241 32° 16.642 W	Arrive at Isabel -looking for small T sensor
23:13			Arrive at M08-9 just next to The sensor NKE29011 red and green
23:16	4055 37° 17.378	7247 32° 16.640	Found Sensor, see that the big WHO1 sensor has fallen down. Going to place it again HT012 fell to ground
23:18	4055 cap = 168.5	7247	Pick up NKE29011 and put in Panier B09HTN29011R
23:24	4055	7247	Take new from panier Yellow/White NKE29005B ↑ 2nd use of this sensor
23:29	4055	7247	Placement of temperature sensor 29005B B09HTN29005BD

	22/09/09		
23:33	4055	7246	Video Event B09VI0030 start 23:33:15 } 1st end 23:35:15 start: 23:36:20 2nd more light end: 23:37:20
23:41			Picked up gros sensor from the seafloor where it has fallen HT012
23:50	4055 37° 17.379	7248 32°16.640	Placing HT012 again after it has fallen. cap 168.2 1mm: 1684 m but IT fell again
23/09/09			
00:01:31			Moving ROV to get better position to re-pick up HT012 from the seafloor
00:04	4057 37° 17.377	7246 32°16.639	Picking up large capture HT012 from seafloor cap=156.5 1mm = 1684
00:16			Changement de DVD C1 #14 C2 #14 C3 #14
00:19	4057	7246	Picked up HT012 from seafloor
00:22			Placing HT012 for 3rd time at Isabel ↳ failed again

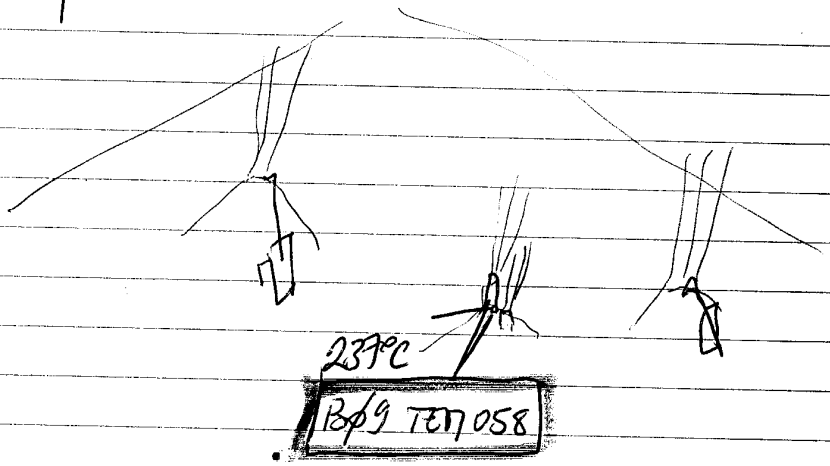
Time	X	Y	Description 23/09/09
00:51	4087	7246	
	37° 17.377	32° 16.639	Placement of Capture.
			BOG HT012D
00:53			In transit to Sintra
			Cap 35
00:58			Ralentage brc Cap 30.
			Approche de Sintra.
01:07	4254	7539.	Marker M08-8 : arrivée sur Sintra
	3717 529	32 16.502	Recherche d'un fumeur haute température
			Cap : 160.
			BOGTED055 175°C
			inactif —— Flux pas extraordinaire.
			99°C loads of shrimps and mussels.
			BOGTED054
			BOG120056 196°C
			changement de position.
			Prise de la carapace n°7 doute n'ai pas enclenchée
01:27			BOG FW044
01:32			Prise bouteille titane n°4
01:34			BOG FW045 Bouteille n°4
01:39			Prise de la carapace n°9
01:41			reprise avec Skenja
01:43			reprise par Maestro.

23/09/09

time	X	Y	observation.
01:44			B09 FW 046 Seiyue n°9.
01:50	4257 37° 17.529	7529 32° 16.502	Fluids complete – move to ~~Boat~~ temperature sensor
01:52	4257	7533	Picking up 29018 from Sintra directly over marker M08-8
01:54	4257 37° 17.529	7533 32° 16.502	Picked up NKE29018 B09 HTN 29018R imm: 1619 cap 220
01:58	4257	7533	Picked up NKE29012B ↑ second time using this sensor
01:59			Moving back to site where temperatures were taken to place captive
2:02	4255 37° 17.529	7528 32° 16.504	Placing temperature sensor B09 HTN 29012BD cap 161.2 imm: 1617m
02:07			NÉLIA + AURA ~~taking biobox out of panier~~ opening biobox inside of the basket
02:10			collecting mussels B09 BI006

23/09/09

Km	X	Y	Observations
02:16			DVD changed : New C1 # 15 C2 # 15 C3 # 15
02:25			closing the biobox
			~~to~~ oops.. old chimney felt
02:32			taking temperature measurement ~ 6.08 °C ..... max 9°C BØ9 TEMØ57
02:33	4255	7444	moving to Montsegun Cap=190 puis Cap=204
02:56	4228 37° 17 288	7087 32 16 524	Arrivé à Montsegur. Km = 1619
			Cap = ~~168~~ 70.



03:02	Prise sonde température du Rdv.
03:11	BØ9 TEMØ58 reading 23°C
03:16	Prise de la cerisaie n°5
03:18	BØ9 FLV047
03:26	Prise de la bouteille n°2

23/09/09

Heure	X lat	Y lon	Observations
03:30			Bdg RV 048
03:34			re-annanging stuff inside the basket
03:36			going to NASA2 to drop material. Celine Françoise
03:40	4263 37,°17,283	7072 32° 16,568	At NASA2..
3:45			Nasa accroché par sherpa.
3:46			prise de la boite Bio5 dans Panier ROV
3:49			Boite 5 dans Nasa 1
3:59			Sortie Boite Bio 4 de Nasa 1
4:01			Boite Bio 5 dans panier ROV
4:04			Sortie Boite Nautile de Nasa 1
4:06			Boite Nautile dans panier ROV
4:13			Nasa accroché par sherpa de l'autre coté
			Sorte Bouteille Ti2 de Panier ROV
4:16			Bouteille Ti 2 dans Nasa 1
			Sortie Bouteille Ti 4 de Panier ROV
4:18			Bouteille Ti 4 dans Nasa 2
4:20			Sortie Bouteille Ti 2 de Panier ROV
			Support Bouteille cassé
4:21			Bouteille Ti 1 dans Nasa 2
4:22			Sortie seringue 5 de Panier ROV
4:24			Seringue 5 dans Nasa 2
04:24			changement DVD C1 #16, C2 #16, C3 #16 in
4:27			Sortie Seringue de Panier ROV
			Seringue dans Nasa 2 pas possible
4:31			Repositionne le ROV.
4:34			Seringue posée dans Caisse bois dans Nasa

Time	X	Y	23/09/09
4:36			Seringue conectement dans Nasa 2
4:37			Sortie seringue de panier Rov
4:39			Seringue dans Nasa2
4:39			Sortie seringue de panier ROV
4:43			Seringue dans Nasa 2
4:40	4178	7084	Sondes temp restent dans panier Rov
4:45	37°17289	32°16558	→ Quitte Nasa
			Route vers tour Eiffel.
4:55			Tour Eiffel.
4:56			Recherche Zone de Prélèvement
			de Roules + Tapis.
5:01	4212	7175	
	37° 17338	32°16534	Zone Prélèvement Roule + tapis.
	Unm 1685,8		
	Loch 6,9		Mesure de température
	Cap	16,2	BO9 TEN 059 7°C
			5,50°C sur le Tapis
			7°C à coté du Tapis.
5:08			Sortie Boite Bio 4 du panier ROV
5:11			ouverture de la boite
			Prélèvement BO9 MBI 05 R
			Roules + Tapis.
5:39			Fin de Prélèvement.
5:40			Boite Bio 4. Fermée.
5:43			Boite Bio dans Panier ROV
5:44			Route vers Mont Ségur.
5 49			Arrivée au Mont-Ségur.
5:55	4216	7065	Unm 1701 _ Prelèvement Cheminée
	37,17279	3216532	Loch 1,2
			Cap 39,5

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5:58 Positionnement Boite dans sherpa.
5:59 Boite ouverte avec succès

6:06 B09 MBI 06 R
Prélèvement cheminée. Partie haute
Puis Partie basse.
DVD C 1 # 16 n'est pas parti ?

6:08

6:12 Fin Prélèvement.

6:14 Change DVD C 1 #17

6:20 Boite fermée.

6:21 Sortie Sonde de température

6:23 B09 TEM 060
Mesure température 279°C

6:24 Rangement sonde température

6:26 changement DVD C2 #17
C3 #17

Route vers NASA

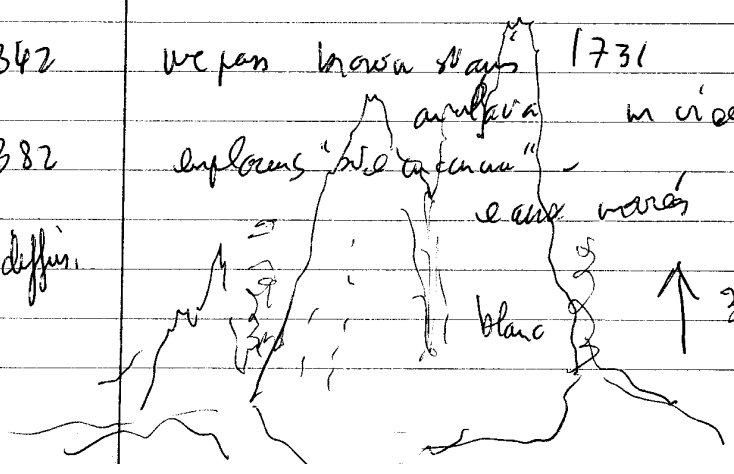
6:29 Arrivée au NASA

6:30 Boite Nautile dans Nasa
6:32 Boite 4 sortie du Panier Rov.
6:35 Boite 4 dans Nasa

6:40 Sortie Panier Bois de Nasa
6:42 Panier 8_9 dans Panier Rov
6:48 Sortie 2nd Panier Bois 12.13 de Nasa
6:51 Panier 12_13 dans Panier Rov

23/09/09

6:52	4184	7078	Fermeture panier 2 Nasa 2
	37917286	32916554	
6:56			Fermeture panier 1 Nasa 2
6:56			Attente langage Nasa
7:06			Ça ne repond pas.
7:11			Echec de largage automatic On va y aller au canteau.
7 23			Difficile prise de Pancille Largage Ascenseur. avant Julie Mathilde (Marion)
8:04	——→		surface de l'ascenseur
8:14	——		changement DVD C1 #18 C2 #18 C3 #18
8:20	14064	6773.	en route exploration - "We wanna" (hydrothermal toward depuis rien yesterday in the distance
8:40	13968	6964	en route toward "We wanna"
8:55	13877	7121	We pan a NW-facing scarp.
8:59			~~Fin~~ (C2 → changé pour camera principale verticale)
9:00	13831	7199	We pan former at south west end of lava lake
9:04			We pan edge of NW facing scarp edge, im 1716+3 m.
9:08	3759	7342	We pan toward ~~N~~ axis 1731
9:10	3737	7382	explorons "We wanna" - arrêt à la crête of "We wanna" eaux noirs
		diffus.	
	qqs nuages		



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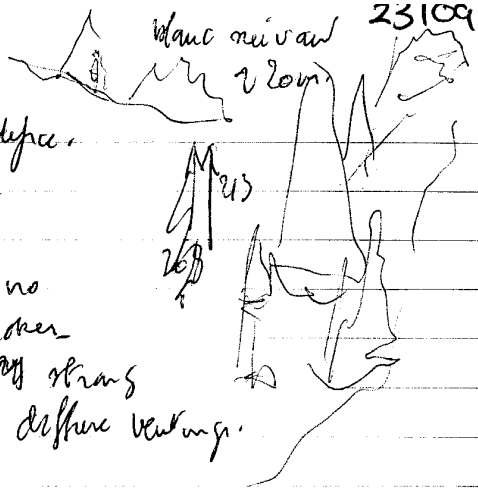
9;14 We turn around small edifice.



crossed fp at Cap 214

active bar no
real smoker
a few very strong
different warnings.

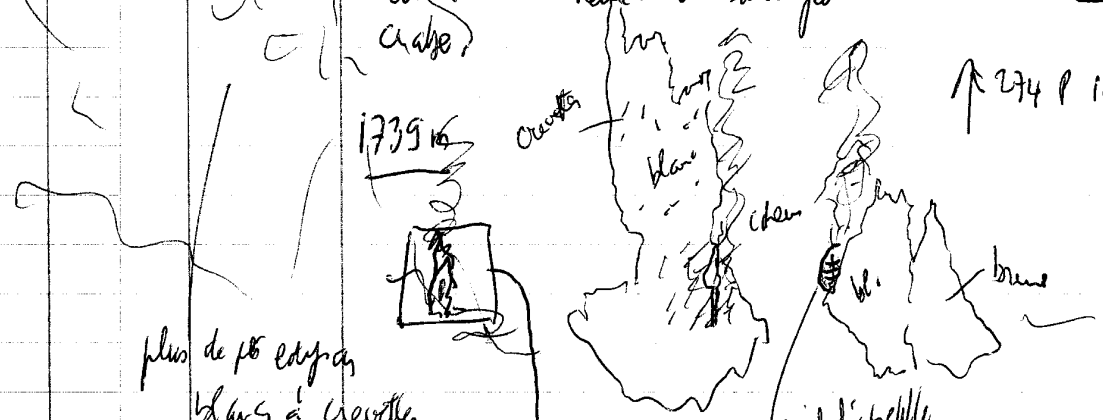
9;20 3731 7391 we explore the whole perch to the SSE 214,
and whose chances: more
different ones.

dans le SSW

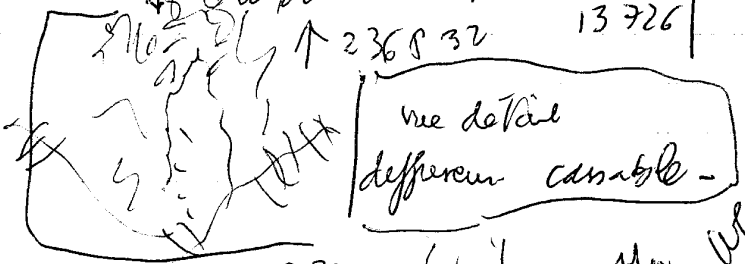
9;23 3742 7357 "nid d'aigle" strong difference.

Crevettes
cache.

Cabo Cyprès



nouvelle photo 2008: pb trou à 7377 13726



P_10 ↑

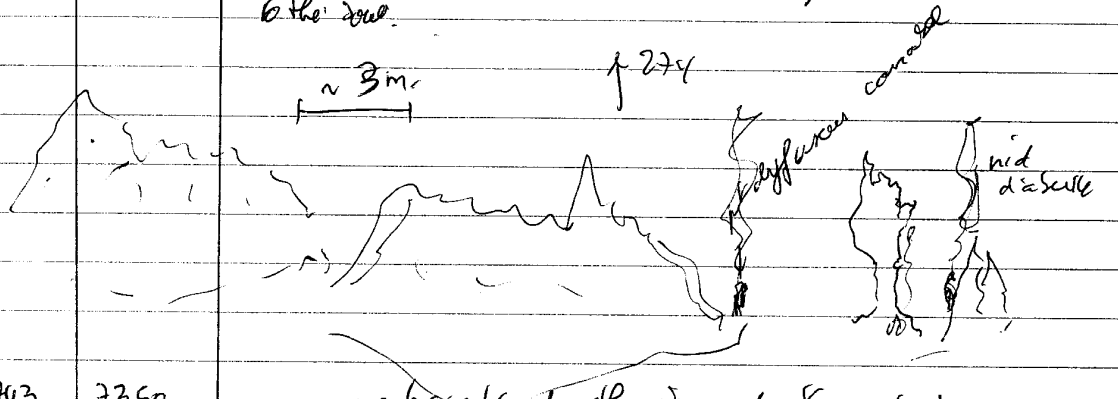
vue d'ensemble

9;40

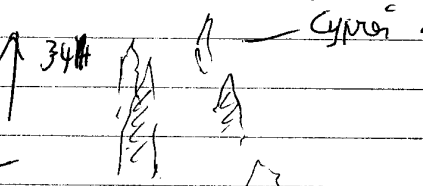
still on station - taking views of site.

23/09/09

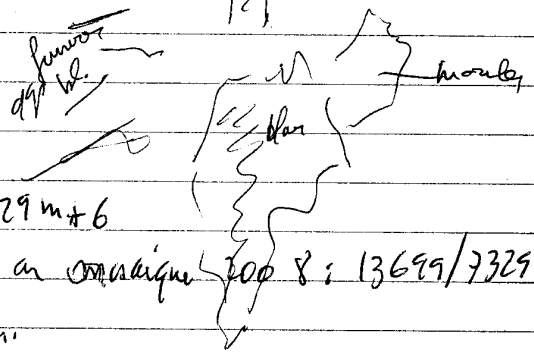
9:46 we continue the exploration of the Cyprus dike.
to the south.



9:50 3743 7350 we have passed the ridge and Cyprus side.
1733 m



9:53 we are just near to cliff of lava we go to locality of white patch on margin of lava lake.
pillars. 1729 m ± 6
top 8: 13699/7329

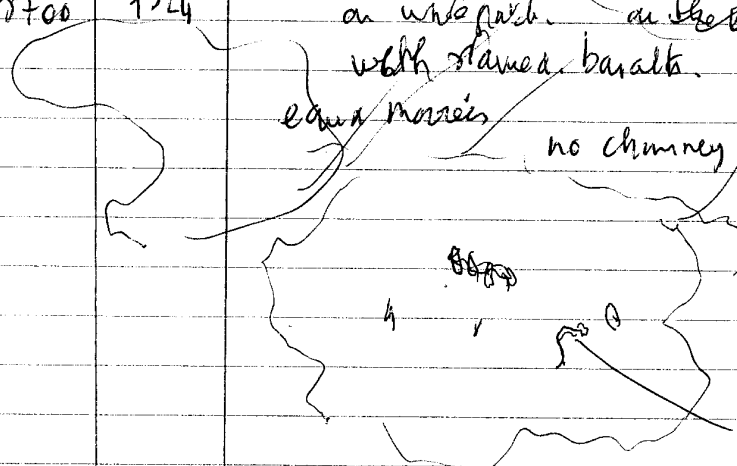


on surface were lava tubes.

9:56 on way - view of chimneys. on ropy lava.
nice view of lava lake.

9:58 in view of white patch. collapsed edge of.

10:00 3700 7324 on white patch. on the edge side of a mound.
with flattened basalts. a few rare mounds
cracks
→ also shrumps.
no chimney no edifice



10:10 Star DVDS #19 C1 Cyprus South.
C2
C3

23/09/09

10:13 ↑97 PG.

red to greenish hues,

base of ridge. with white stains and debris of altered rock with reddish stain.

Sample BOG ROC 19

0:29 3695 7318

Depart 8

0:34 we continue our route around the ridge.

16:38 we see brownish thin flows. BOG ROC 19'

it falls into pieces. — it may not survive ascent.

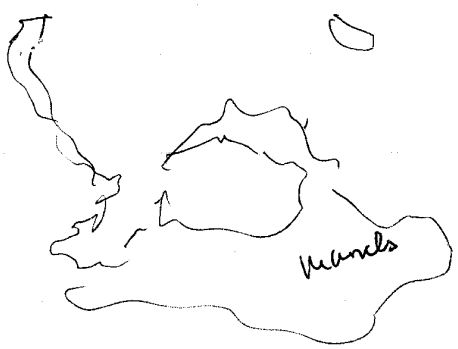
10:49 3701 9322 small We in area of South Cypress 1730 m Mounds

weak deflation.

10:45 DVD C1 #19bis - Marked because C1 # 19 flashed.

↳ a mosaic that may correspond to 13710/7318 ?

↑145



23/09/09

10:57 — we leave for further exploration SE, pan a ridge with fumaroles and boiling clay flats. 1720 m, +5.

3732 7281 — correspond à 13720 / 7290 sur mosaïque.

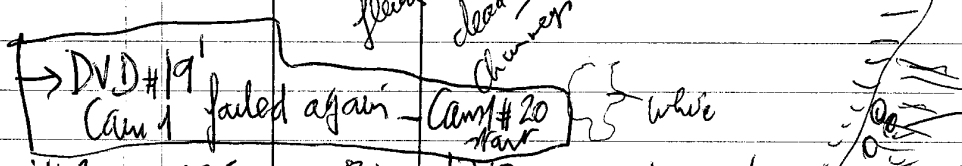
11:04 — dead chimneys, nice photos of anemone, and urchin white. 1721 m,

NW: dead chimney remarquable.

11:07 — we explore this dead we turning around to face S from the north.

11:15 — looking for NE ↑ 213 — we follow a very narrow small ridge.

11:18 3751 7274 — view of dead chimneys. 1717 m. d'après mosaïque;



→ DVD #19 Cam 1 failed again — Cam #20 Nav

11:30 3753 7281 — 1717 m retour à dead chimneys a few.

11:35 3737 7275 — 1723 m mussels in fumarole and white mats, could correspond to 13706 / 7305 on mosaïque 2008.

11:41 3727 7252 — White Castle -

11:44 3745 7265 — sur la rive chemin à monter.

11:46 — we leave for landing of NASA 3

23 [redacted]

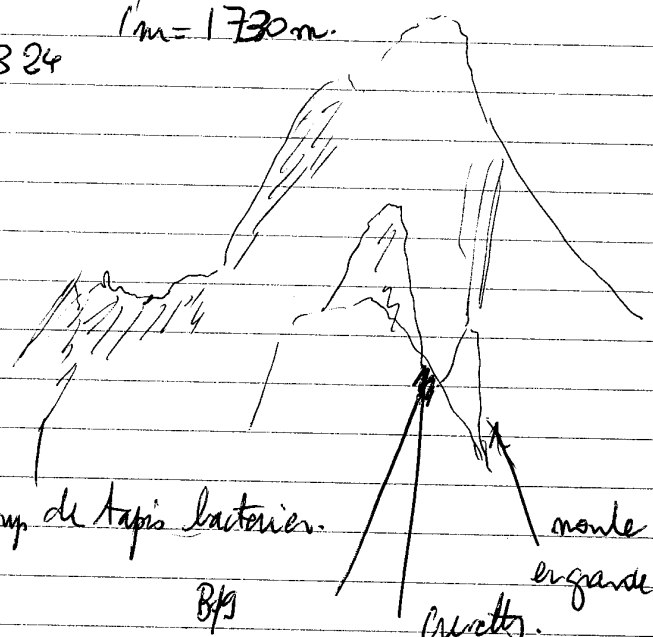
Benjamin et Benoît

TIME	X LAT	Y LONG	Remarques
12:06	3842 3717.468	7347 3216.791	Largage ascenseur. Changement DVD Début C2 # [redacted] C3 # [redacted] Rov arrêté
12:26			Ascenseur au fond Imm Rov = 1729 Lo à p près @ 160 dans le 350°
12:29	3833	7369	En route vers la NASA
12:35	3799	7396	En vue de l'ascenseur.
12:40	3777	7412	Côté 2 de l'ascenseur. ⇒ dépôt d'une boîte en bois
12:48	4090	7357	Position Rov sur NASA : Déchargement des seringues à fluides - Im = 1735 m
12:54			Seringue 2 dans panier
12:58			Seringue 3 dans panier
13:01			Seringue 4 dans panier
13:03			Caisse dans ascenseur
13:14			Bidon gaz 1 dans ascenseur.
13:15			Changement de DVD C1 # 21 in.
13:17			Bidon gaz 2
13:23			Route vers Pico Cap 270.
			Transit vers Pico avec la bastaille Ti n° 24 dans le bain de Spectro.
13:32	3648 3717.462	7399 3216.915	Cap on approche Cap 180°. Difficulté de trouver une position satisfaisante à cause du vent.

Watch : Cédric Villani

23/09/09

Time	X	Y	Observations.
13:51			rien que du diffus, peu de flux. on va voir à Nuno si il y a des émanations plus chaudes - pour comparer -
			Cap 342 vers Nuno. paysage très accidenté.
13:54	3632	7451.	arrivé à Nuno.
			1m = 1730m.
			ap 324



On cherche une cheminée apparente du flux. on remet la bouteille dans le sas pour pouvoir faire une mesure de Température avec Spectro, avant de prélèvement.

14.06	B/9 TEM 061	mesure T°, reading 154°C
14.08	Changement de DVD	C2 # 21 in C3 * 21 in.
14h09	Reprise de la bouteille Ti n°4 par Spectro.	
14h11	B/9 FLU 049 bouteille Ti n°4	
14h19	~~B/9 BAC~~ Prise de la seringue n° 7.	

23/09/09

time	X lat	Y long	observations
14:24			bonne reprise de Pietro de la seringue n°7
14h25			Bdg FLU 050 seringue n°=7.
14h28			Seringue n°7 dans le
14h29			Route vers Cyprès. le nouveau site.
14h33	3707 37°17449	7376 32° 16.875	arrivée au Cyprès. l'm 1734m.
	3726	7371.	petite cheminée Cap 243 mais différente par une plus allongée. car on se prend toute le flamme dans la caméra
			repositionnement pour la TPC.
			Bdg FLU 062 | 188°C 186°C
			difficulté de choisir un site vu la TP stable prélevant pouvant se faire. → on cherche une petite cheminée au pied de la grande cheminée avec habitat à vérifier.
15h09			Mise de la seringue n°=9.
15h11			Bdg FLU 051 seringue n°9.
15h14			Mise de la seringue n°=5.
15h15			Bdg FLU 052 seringue n°=5
15h17			DVD C1 ☆ 2 2 l'm@15:17 Nadia Gabin Pietro

23/09/09

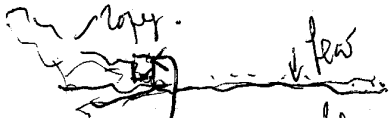
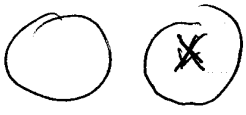
Time	Lat	Long	observations.
15:29			looking for the best spot.
15~~33~~			BOG TEM 063 ~5.40°C
			~~BOG BIO07~~
15:33			BOG TEM 064 ~6.21°C max ~7°C
15:42			BØG BIO07 cap 135 N 37° 17.443 W 32° 16.860 @ cypress
15:53			end of mussel sampling bio box closed.
15:55			Transit à Tour Eiffel pour débarquage au AISICS
16"09			Change of DVD C2 ~~22~~ 22 in C3 ~~22~~ 22 in.
18" ~~11~~ 22	4055 3717401	7290. 32 16 68	Largage BVC ~~par grand~~ 1m 1683 m ~~0~~
16:30			Arrivé à proximité de Tour Eiffel.
16:34			Arrivée à AISICS. cap - 56.
16:37.			Mise sonde Température sur bor. BOG TET 065 reading 298.
16"44			Fin de la remise n°2.
16":45.			BOG FLU053 remise n°2.

23/09/09

time	X var	Y log.	observation
16:50.			Prise de bouteille. n°1.
16:52			B09 FLU 054 bouteille 1
16:56			Prise de bouteille n°2
19:58			B09 FLU 055 bouteille n°2
17:00	4221 N37°17.338	7174 32°16.528	Placing fluid container back in panier
17:03	4221	7174	Think that the last temperature sensor is below the board for measuring temp gradients. Trying to pick it up
17:07	4221 N37°17.338	7174 32°16.528	Taking temperature gradient start: 17:07:25 B09TGR011 end: 17:09:25 cap 56.1 mm : 169.4
17:12			Recalage of BVE with Estime
17:			Placing of yellow temperature probe NKE 29016B ↑ second usage this mission B09 NKE 29016B 0 Video Event on B09VE0
17:21			On change la C1 DVD #23

23/09/09

hre	X lat	U lag	observation.
			Video Event B09VID031
17:22:20	4221	7174	start : 17:22:20 1st
	37° 17.338	32° 16.528W	end : 17:24:20
			Alice et Céline -
17:25	4213	7175	In transit to ascens our NASA3 cap 300
	37 17.338	32 16.533	
17:48			arrivée sur NASA3.
18:00	3777	7412	accrochage Victor à NASA3 face panier 2.
	37 17.488	32 16.829	
18:08			Boite Bio 5 sortie panier ROV
18:11			Boite Bio 5 dans panier 2 NASA3.
18:13			~~Seringue~~ Bouteille Ti 1 sortie panier ROV
18:14			Bouteille Ti 1 dans panier 2 NASA3
18:14			boite Bio5 ouverte !!
18:15			boite Bio 5 refermée.
18:18			Bouteille Ti 2 sortie panier ROV
18:19			Bouteille Ti 2 dans panier 2 NASA3
18:21			Bouteille Ti 4 sortie panier ROV
18:22			Bouteille Ti 4 dans panier 2 NASA3
18:23			Sortie panier Bois 10-11 panier 2 NASA3
18:25			Panier Bois 10-11 dans panier ROV
18:25			Changing DKD - Putting in C2 #23 and C3 #23
			Recovering C2 #22 C3 #22
18:27			Seringue Ti sortie panier ROV
18:28			Seringue Ti dans panier 2 NASA3
18:28			Seringue Ti sortie panier ROV
18:29			Seringue Ti dans panier 2 NASA3
18:29			Seringue Ti sortie panier ROV
18:30			Seringue Ti dans panier 2 NASA3
18:30			Seringue Ti sortie panier ROV

Time	x lat	y lon	observations 23/09/09
18:31			Fermeture panier 2 NASA3
18:37			Fermeture panier 1 NASA3
18:39			Saisie serpette
18:41			Language ascenseur
18:43			Attente au fond recupération NASA3 en surface
18:53			Virée sur "site inconnu"
18:54			Visite du Cypress.
19:19			Ascenseur NASA3 en surface.
19:22			Putting in C1 #24 out C1 #23
19:30			Ascenseur à bord. Mathilde - Anne
19:42			départ vers le pt d'observation
20:02	3764	7336	anémone d'exploration x ~~3842~~ - y ~~7420~~ 7405 1741m an old chimney en zone 10 3840
20:09	3819	7402	ropy lava. 1736 +5 m.
			we get to the area of very flat lava west of the "eye" of ropy lava.
20:13	3805	7411	 we look around at flat lava and ropy. ~~BOG ROC 19~~ - the flat surface is clearly more shattered than the ropy lava Corresponding to: 3812/7417 on mosaic 2008 too fragile - by another spot for sampling the upper ropy lava. - broken BOG ROC 20 in  1741m. in many pieces same field of we take another piece right nearby and put it in same bottle holder
20:20			
20:26			

23/09/09

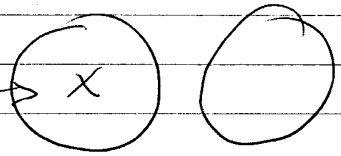
20:32 We move 5m and set to sample the ropy structures which develop from the flat surface at mosaique 2008 : 13815/7411

20:35 DUDs Plan 2 # 24 waved

20:45 we sample the ropy surface of the flat lava. BOG ROC 21

nice fresh thick glass.

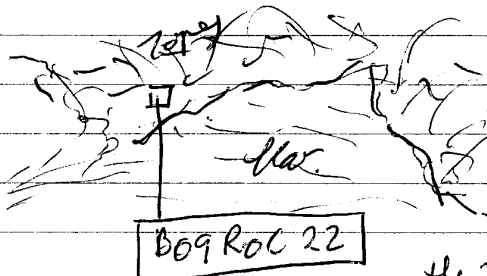
in bottle holder



20:51 we turn around to face the area at mosaique 2005 : 13822/7410

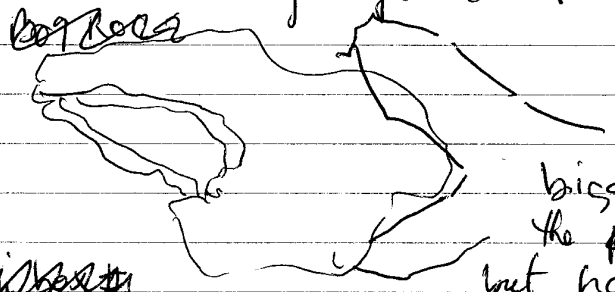
triangular flat

we see the movement trace on flat surface.



we view the back of the ropy lava

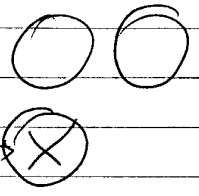
formed flow from ~ 1m high on top of the flat lava.



bigger than the ~~piece~~ claw but hollow!

20:06 ~~with~~ fell off, and broke

at clear part of d fell on bottle holder



nice photos of lava on flat

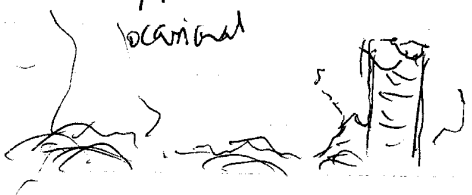
21:10 we leave pd mosaic location 13950/7335 (edge of lava lake).

23/09/09

21:12 on the way to eastern edge of the lake.

21:16 along the edge of fissure – east facing slope.
Cap 119 lava.

21:18 3918 7370 at 1736+6.5 m very fragmented lava.
with flat surfaces.
occasional

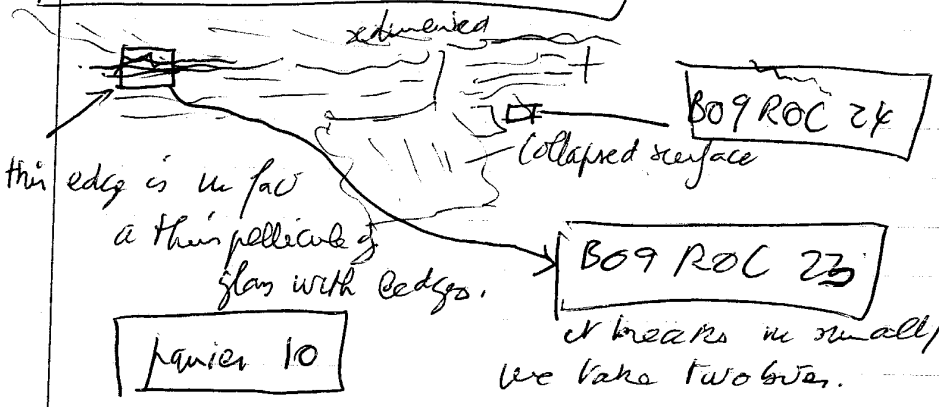


we pass.
a flat
rare surface with hollow inside - collapsed
a lava pellet stands out higher...

21:23 3958 7342 edge of the lava lake 1734 m.

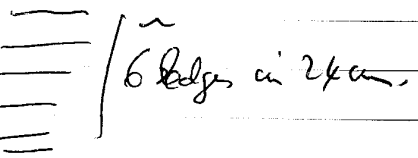
Change DVD cam 1 # 25

21:25



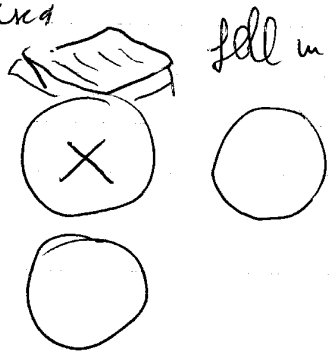
Xavier 10

21:36 we take a view of this edge with the
laser. 24 cm.



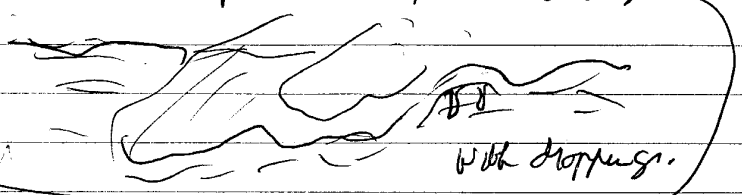
21:41 will we take
to sample flat screws.
collapsed

~~Xavier 11~~



23/09/09

21:45 3972 7359 we follow the edge to the North,
we see tube shaped features over the edge...

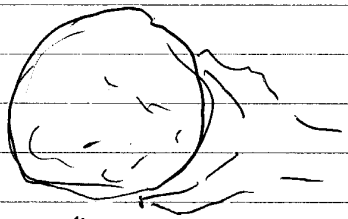


in fact it is the upper surface of the lake, those collapsed tubes must locally a flow field morphology.

21:55 3956 7403 ↑283 we see the double mosaic mosaic 7009
2 blocs
13944
7409.

1740 m
photo with and w/ou lasers.
in fact
They are centimetric and the layering.
may be // to slope...

22:03 BOG ROC 25 — block in order. →



fell in the basket, we didn't know where...
small pieces left in claw put in panier 11.

22:07 we leave for Sintra.

22:30 at Sintra

22:35 BOG TEM 066 top of flange 6@°C
→ lower of flange (8–10°C)
area where shrimps are "still

23/09/09

22:41			~~3709~~ B09BIO08 Slurping shrimps from flange
22:53			end of dive, going up.
23:02	4198	7515	Going up N3717522 W3216542 ~~Illegible~~
23:13	4102	7528	Imm = 1091 Loch = 0.0 Cap = 272.8 N3717530 W3216607
23:23	4104	7518	Imm = 772 Cap = 273 N3717524 W3216606
23:32	3717521	3216478	Cap = 177 Loch = 53
23:41	3717435	3216471	Cap = 177 Loch = 65
23:45			Lest ~~at surface~~ on board
23:50			ROV at surface ~~Rest on board~~

Aura and Benjamin

24/09/09

20:05	37°17014	32°16.638	Rov on Board
21:00	37°10.030	37°23.626	On the way to the dredge point. of Messey Home

24/09/09

Time	Lat	Long	observations
01:27	37°08'81	32°24.956	dredge ready to dive
01:30	37°08'821	32°24.958	~~dredge in the water at the dredge~~
01:38			~~dredge point 2165m~~ dredge point 2165 m
01:48	37°08'822	32°24.959	dredge in the water
			-Speed 0.6 m/s²
01:50			start command cable from the bridge
01:52	37°08'821	32°24'958	starting the "fillage"
01:58	37°08'821	32°24'958	Tension 3200 kg
			Vitesse 0.8 m/s²
			Long 293 m
02:08	37°08'822	32°24'957	tension 4200 kg
			vitesse 1.1 m/s²
			Long 855 m
02:19	37°08'823	32°24'958	Tension : 5200 kg
			Vitesse : 1,1 m/s
			Fillage : 1500 m.
02:23			Changement de la vitesse de fillage : 0,4 m/s.
			Fillage : 1829 m
			Tension : 5800 kg.
			Cap : 239,5°.
			Le bateau démarre à une vitesse de 1 nd.
02:25	37°08.813	32°24.984	Vitesse de fillage : 0,3 m/s.
02:29	37°08.787	32°25.058	On atteint la pente, le fond monte ⇒ arrivée près du début du profil.
02:31	37°08'773	32°25'085	Début de la drague.
02:34	37°08'758	32°25'143	Longueur filée : 2096 m ⇒ atteinte du fond, la drague est au fond. Vitesse : 0,5 m/s
			↳ Filage d'encore 300 m.
02:46	37°08'680	32°25'380	Arrêt du fillage à 2440 m.
			Vitesse : 0,0 m/s Tens° : 6000 kg.
			On est au 2/3 du profil.
02:56	37°08'623	32°25'548	Très peu de croches.
02:58	37°08'615	32°25'570	Fin du profil
03:05	"	"	Croche à 7,8 T (petite croche).
03:11	37°08'572	32°25'691	Croche à 8 T
03:15	37°08'561	32°25'720	Arrêt du bateau : la drague doit être en fin de profil
03:16	37°08'561	32°25'721	Croche à 9T (Vitesse : -0,5 m/s) Long = 2200 m.

24/09/09

03:23 37°08561 32591 Drague est décrochée, on remonte.
Tension : 6600 kg. Long = 1892 m.
V = -1,9 m/s

03:32 37°08562 32°25.722 Tension 5700 kg
vitesse -1.0 m/s²
Long. 1285 m

03:42 37°08562 3 32° 25 722 Tension 4700 kg
vitesse -1.0 m/s²
Long. 788 m

03:45 37°08564 32°25.726 tension 4100 kg
vitesse -1.0 m/s²
Long. 468 m

03:54 37°08562 32°25734 Tension 3300 kg
vitesse 1.0 m/s²
Long. 100 m

4:00 Changement de quart OLIVIER et ERIC

04:09 Drague sur le pont arrière
elle est remplie au 1/3 mais de quoi ????

04:27 Départ vers lieu de largage des
2 Navi Plage
37°08.908 32°25253 Cap 44°

05:19 Tout les cailloux ont été mis en
Caisse bleue
37° 13240 32°21015 Cap 40°

24-09-09

05:48 37° 15 846 32° 13 322 Cap 38°

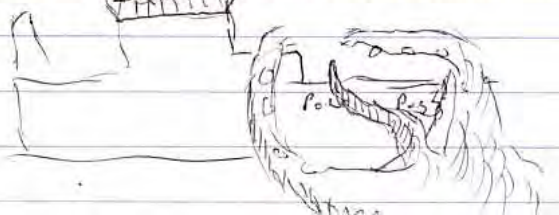
V.r 11 nd

boat location

6:15 37° 17 468 32° 16 676 Cap 344°

~~V.r 8 nd~~

Time	Lat	Lon	Description
6:31	37° 17.616	32° 16.641	Prepping the current meters Also preparing for camera color test on ROV.
6:53	37° 17.536	32° 16.597	Start of camera color test on ROV
7:11	37° 17 534	32° 16.526	End of camera color test on ROV
7:23	37° 17.538	32° 16.532	Language courantomètre n° 2 - BOSCOUR02D
passerelle log:	37° 17.38	32° 16.38	← this is almost the requested location / Science log book must
7:47	37° 17.331	32° 16.517	Language courantomètre n° 1 BOSCOUR01D (wrong...)
passerelle log:	37° 17.37	32° 16.76	← this is almost the requested location / Science log book w
07:48	37° 17.347	32° 16.451	route vers point de mise à l'eau AUV
passerelle log:			
07:57			Lift ROV for change of modules
08:13			En transit vers le point de mise à l'eau de l'AUV
08:43	37 17.283	32 20.612	Arrivé sur zone sous peu
08:50	37 13. 256	32 20. 516	sur zone
08:52			Fin de Calibration des centrales inertielles



24/09/09

Time	Lat	lon	observation
9 : 27	37 13.225	32 20.652	AUV in the water BOGAUV009
09 : 36	37 13,2318	32 20 ~~6563~~ 6553	AUV plonge au point de plongé.
9 : 40	37 13.2018	32 20.6639	d = 258,70
9 : 42	37 13.2087	32 20.6908	d = 402
9 : 45	37 13. 1805	32 20.6875	d = 561
09 : 46	37 13 2098	32 20.652(	Récallage acoustique d = 700
09 : 47	37 13. 2213	32 20.6460	d = 715
09 : 49	37 13.1985	32 20.6545	d = 868
09 : 51	37 13.1929	32 20.6614	d = 968
09 : 53	37 13. 2012	32 20.664	d = 1122
09 : 55	37 13.1969	32 20.6705	d = 1229,40
09 : 57	37 13. 1810	32 20.6683	d = ~~1600~~ 1409
09 : 59	37 13. 1611	32 20. 6690	Recallage acoustique d = 1478
10 : 02	37 13. 2020	32 20. 6245	d = 1665
10 . 05	37 13. 2199	32 20.6343	d = 1814
10 : 09	37 13. 2343	32 20. 6261	d = 1995
10 : 12	37 13. 2356	32 20. 6086	d = 2083
10 . 18	37 13. 2412	32 20. 5786	d = 2206
10 : 19	37 13. 2051	32 20. 5858	Recallage acoustique d = 2217

24/09/09

Time	Lat	Lon	observato
10:20	37 17 1380	32 2062 84	AUV part sur son profile d=2257
10:21			début de profile 4 d=2260
10:25	37 17.0360	32 20.4803	Recallage Acoustique d=2181
10:29	37 17.9807	32 20.2298	d=2191
10:37	37 17.8618	32 20.8384	d=2197
10:42	37 17.7805	32 20.6148	d=2161
10:46	37 17.7292	32 20.4080	74m du fond d=2164
10:51	37 17.6424	32 20.1163	d=2077
11:03	37 17.4556	32 20.4811	d=2116
11:14	37 17.2474	32 20.9660	d=2113 Fin de Profile
11:16	37 17.2081	32 20.9461	d=2124 Recallage et début nouveau Profile 2
11:22	37 17.2396	32 20.1145	AUV fait un cercle pr monter au dessus d'un obstacle
11:24	37 17.2610	32 20.1596	AUV repart sur son profil 2 d=2117
11:41	37 17.5024	32 20.0241	d=2164
11:43	37 17.5182	32 20.0593	d=2156 AUV refait un tour pour éviter un obstacle
11:45			l'AUV repart sur le profil 2
11:53	37 17.6539	32 20.5443	d=2157

24/09/09

Time	Lat	Long	
12:04	37°12,8086	32°20,0754	Recalage d 2186
12:16	37°12,9836	32°,20,6673	Fin de Profil 2 d 2256
12:18	37°12,9058	32°,206868	début Profil 3 d 2256
12:52	3712,6410	32°19 076	1 point décalé d 2176
13:05	37°12,2438	32°18,4080	Recalage d 2135
13:15	37°12,0514	32° 17 8922	Fin Profil 3 d 2168
13:19	37°12 006	32°179704	debut Profil 4 d 2131
13:22	37° 120591	32° 18 1717	Recalage d=2225

LOGBOOK
(à récupérer)

24.09.09

Time

13:55 : Recalage
37°12,5464
32°19,9045 d 2197,60.

13:59 AUV évite qqchose au fond.

14:02 AUV reprend le profil.

14:12 Recalage.
37° 12 75·58
32° 20 6008 d 2200.

14:15 Fin de Profil 4
37° 12,7873
32°, 20 7813 d 2254

14:17 début Profil 5
37° 12 7148
32° 20 7974 d 2249

14:22 Evitement
37° 12 6539 32 20 6463 d = 2152.

14:25 Evitement terminé

14:27 Recalage 37° 12.6236 32° 20 4895
(sur la trajectoire) d = 2130.

14:56 37° 12.1804 32° 18 9933 d: 2144.

	Lat	Long.	Remarques	24.09.09
15:09				
15:15	Evitement	37 11 91 51	3218.08 08	d = 2180m
15:16	Fin de Profil 5	37 11 89 29	3218.10 98	d = 2185m
15:19	37°11 83 09	32° 18 13 30	Profil 6 début	d = 2231 m.
15:20	37°11 84 29	32° 18 18 58	Recalage - (ou)	d = 2271 m
15:28	37 11 94 84	32° 18 68 43	Recalage.	d = 2220 m.
15:39	37 12 11 88	32° 19 23 15	Demande info → OK	d = 2164 m
5:54	37 12 35 05	32° 20 04 26	Demande info OK	d = 2236
		PRISE de QUART - Valentin - Alain -		
16.03	37 12.38 49	32 20.49 74	Recalage	d = 2136
16:11	37.12.51	32.20.87	fin Profil 6	d = 2256
6.14	37.12.50	32.20.87	début Profil 7	d = 2261
6:19	.41	.56	Demande Info → ne répond pas d = 2102 → OK (16h22)	
6.45	37 12 03 89	32.19.23		d = 2147.
7.09	37.11.64 73	32.18.14 83	Fin Profil 7	d = 2230.40
7.11	37.11.63 61	32 18 20 27	Début profil 8	d = 2271.
7.41	37 12 03 54	32 19 75 11	AUV Remonte (Batterie Faible.) Milieu profil 8	d = 2040
8.09	37 11 97	32 19 78	300 m de la Surface	d = 267.

24/09

Time	Lat	Long	Remarques
18.14	37 11.96	32 19.83	AUV en Surface
18.15	37 11 96	32 19 83	Mise à l'eau Zodiac
18.28	37 11 99 Bateau	32 19 62	AUV accroché.
18.31	37.11.98	32.19.63	AUV sur le pont
19:14	37.08.47	32.19.53	Mise à l'eau du ROV PLOUF.
19:16	—	—	
19:22	37.13.40 R.O.V.	32.26.19	Leot à l'eau.
19:44	9789	-9571	

BOA AUV0009R

DIVE 396

Valérie + Julie

im : 375 ap 245 & (245)

im = 1001 dans le sens horaire.

fin des tour horaire

tour anti-horaire.
fin des tour anti horaire.

Im = 1201 m Cap 192
sens horaire départ @ 20H 30:00
fin @ 20H 31:43

sens anti horaire départ @ 20:32:00
fin @ 20:33:51

Im = 1400 m Cap 220
sens horaire départ @ 20:46:00
fin @ 20:47:30

sens anti horaire départ @ 20:48:00
fin @ 20:49:55

20H:30
20:19:20
20:21:30
20:21:30
20:23

24/09/09

Année	X lat	Y long	observations
			Im = 1600 m Cap = 223° sens horaire départ @ 20:57:30 fin @ 20:59:15
			sens anti horaire départ @ 20:59:30 fin @ 21:01:12
			Im = 1800 m Cap = 219 sens horaire départ @ 21:08:45. fin @ 21:10:15
			sens anti horaire départ @ 21:10:45 fin @ 21:12:28
21:42	X = 10219	Y = -9279	on mise proche fond : nm = 7604
			$X_0 = 550\,000$ $Y_0 = 4\,120\,000$
			Note : Toute la descente se passe en remarquant une grande turbidité bcp de particules et de petites bestioles.
22:00	x = 10286	y = -9209	Im = 2705 Cap = 42 on est à 50 m du fond On se dirige vers le point "0"
22h04			début d'enregistrement mais un nouveau fichier sera lancé au début du profil.
			~~Recalage de l'étoile~~
22:12:48			Recalage BVC - puis Nouveau Fichier
22:13:00	10505	-9165	on peu avant pt "0" → on y go !! à la vitesse supersonique de 0,3 m s⁻¹ Loch = 50,0 Im = 2750. Cap = 290

24/09/0

hre	X	Y	
22:21	X = 10364	y = -9112	3 ds marches, le ROV met son moteur vertical. Im : 2708.7
2237	X = 10074	y = -9012	Recalage Im = 2674.7] loch : 49.4 cap = 289.
224938	X=9882	- 8942	Im 2582. RAS... / abrina de BUC depuis qq mina
23:00:00	X = 9687	y = -8885	Recalage ! c'est un peu tourmenté comme relief...
23:18:00	X=9303	y= -8732	Recalage Imm = 2550
23: 19:00	X=9277	y = -8727	on a vu un truc fin et haut sur la
23: 33:00	X = 8898	y = -8594	(?!)
			→ Recalage) Imm = 2532.8 Loch = 50.7 Cap = 288.8
23:48:10	8540	- 8472	Recalage) x = 8540 y = -8472 Imm = 2531 Loch = 50.4 Cap = 289.1
00:23	7705	- 8172	recalage N 37 9.063 W 32 21.010
			end of profile 1
			imm : 2614 Loch 52
00:26			Cap arrived at point 2 → there is a wall !! => cliff. ~~arrived at point 2~~ ~~imm :~~ ~~Loch :~~
			Sonar on !! Stop acquisition of multibeam to go & check on the top of the cliff. Loads of pillow-lavas => taken pictures of the stuff

25/09/09

	X	Y	
00:33	7667	-8274	all back on arrived at point (2) Imm = 22534 cap 108 Lock = 50 N 37 9.009 W 32 21.036
00:41	7761	-8305	recalage N 37 8.992 W 32 20.973
00:47	7879	-8349	multibeam broke... ROV stopped N 37 8.967 W 32 20.893
00:56			Plus de liaison optique avec le multifaisceau
01 15			Changement du demodulateur de la fibre optique --
01 33			Ca marche toujours pas --
01 39			On remonte -- fibre coupée
01:46			Repinette coming up.
01:54			laisse tendue
01:56			Debut remontée ROV
2:35			La panne fibre optique (SMF) semble s'être résolue - On repart en descente - Nouvelle tentative SMF
3:25	_2108	_8346	C'est repartit sur le 2ème prof! vers le point (3)

Heure	X	Y	25/09/0
3:37	-1988	-8381	Recalage Lum: 2585 m N 37 8.949 Loch= 48.3 W 32 20.804 Cap= 110
03:52	-1850	-8444	recalage Im 2566 Loch 50 N 37 8.915 W 32 20.711
04:00			Alice et Céline sont de quart
	lat moy 37°17 lon moy 32°14	x_0 = 560 000 y_0 = 4 120 000	il semblerait qu'ils aient changé de cas de la 42 corrigée.
0510	-605	-8890	Erreur d'acquisition ROV stopped while potting software back on
0519	-594	-8868	changement de fichier (Fichier 5)
0521	-592	-8893	Reprise profile 2
0525	-513	-8931	Pierre has finished to play with the sound velocity profile I used CTD from around here) to help having a better BUC.
0526	-466	-8882	Recalage Im=2484.7m Loch=63.5 m N 37 8.672 W 32 19.778 Maintenant on a un decalage qu'il va falloir rattraper. Going south vers profile 2
05:48	10 37 08.56	-9090 32 19.66	recalage estimé sur BUC Im=2680. Loch=50. cap=111.4
06:19	458	-9275	Arrivée au point (3) Fin du profil 2. Im=2740

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TIME	X	Y	COMMENTS
06:24	434	-9371	Pb de defaut d'isolement sur moteurs ↳ arrêt dans virage pour test.
06:31	440	-9324	recalage estime sur BUC Im=2730 m Loch = 59.5
06:36	419 37° 8.39	-9387 32° 19.18	Arrivée point 4 Debut Profil 3 Im = 2756 Loch = 57 Cap = 290 Changement fichier → fichier n°6.
07:02	-28 37° 8.46	-9274 32° 19.48	recalage Estimé sur BUC Im = 2695 Loch = 56.5 Cap = 290
07.20	-354	-9116	arrêt acquisition SMF. ROV stoppé.
07.47	-472	-9073	changet fichier n°7. Acquisit° SMF relancée.
07.52	-516 37° 8.56	-9086 32° 19.81	recalage Estimé sur BUC Im = 2552 Loch = 55
07:56			retour en arrière pour boucher le trou d'acquisition SMF.
08.02			Change file.
08:10	-524 N 378.649	-9525 W 3219.818	Recalage estime · Change of file
08:16	-443 378.607	-9004 W 3219.763	Going back to complete the data serie. Imm = 2515.5 Loch = 51.5 Cap = 109.3
08:30:12	-303 N378.587	-9040 W 3219.669	Imm = 2548 Loch = 54.8 Cap = 108.4
08:41:11	-219	-9099	Recalage

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Time	X	Y	Description
08:48	-208 N 378.524	-9155 W 3219.605	New file. Recalage. Go back to pec Imm = 2616 Loch = 48.1 Cap = 290
09:07	-502 N 378.578	-9057 W 3219.803	Recalage Imm = 2553 Loch = 49.8 Cap = 290.8
~~09:24~~			
09:22	-707 N 378.614	-8992 W 3219.941	Imm = 2550 Loch = 49.8 Cap = 290
09:29	-805 378.637	-8950 W 3220.007	Imm = 2563 Loch = 50.7 Cap = 290
09:37	-978 N 378.671	-8889 W 3220.124	Recalage Imm = 2540 Loch = 50.5 Cap = 290
09:53	-1332 N 378.740	-8764 W 3220.362	Recalage Imm = 2529 Loch = 49.3 Cap = 294
09:41 09:45 09:55			The estime navigation is jumping to the North
10:07	-1666 N 378.807	-8641 W 3220.588	Imm = 2555 Loch = 51.2 Cap = 289
10:18	-1913 N 378.855	-8556 W 3220.754	Recalage Imm = 2593 Loch = 51 Cap = 294
10:33	-2134 N 378.901	-8472 W 3220.903	Imm = 2583 Loch = 51 Cap = 289
10:38	-2240	-8446	Reloc Estime

25/09/09

Time	X	Y	Description
10:45	-2382	-8388	Arrivée point 5 Fin Profil 3 Fin de Fichier Imm = 2587 Loch = 39 Recalage
~~10:48~~			
10:~~57~~	-2436	-8501	Arrivée point 6 début Profil 4 vers l'Est
10:50	-2436 N37 8.898	-8479 W 3221,108	Recalage Imm = 2592 Loch = 74.9 Cap = 195
~~10:50~~			~~Recalage~~
11:06	-2306 N378.862	-8545 W 3221.020	Recalage estime Imm = 2623 Loch = 50.7 Cap = 108.7
11:23	-2060 N 378.813	-8634 W 3220.854	Imm = 2616 Loch = 52.5 Cap = 108.7
11:38	-1804	-8723	Reloc Estime
11:51	-1538	-8815	Imm = 2541 Loch = 50.3 Cap = 110.1
~~11:~~	Aosa and	Benjamin	on shift
11:55	-1403 37° 8.691	-8859 32° 20.411	cap 108 imm 2536 Loch 51 recalage
12:36	-600 37° 8.530	-9147 32° 19.870	Recalage
12:39	-542	-9168	Recalage
12:12	470	-9414	Recalage
13:21	880	-9490	arrivée at point 7 end of profile 4 Imm 2786 Loch 50

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Time	x	y	observations
13:26	349	-9605	arrivée at point (8) starting profile (8) Imm 2783 Loch 50.3 Cap 289.9
13:51	-34	-9477	Imm 2737 Loch 50 Cap 290 recalage
15:27	-1901	-8818	Imm 2584 Loch 50 Cap 294 recalage
15:54	-2457	-8618	arrivée at point (9) end of profile (9) Cap 290 Imm 2641 Loch 65
15:55			Changement de quart OLIVIER et ERIC
16:02	-2513	-8732	arrivée Point 10 debut profil (10) Cap 113 Imm: 2685 Loch: 49 Recalage BUC
16:36	-1956	-8888	Cap 111 Imm 2564 Loch 50
17:00	-1542	-9070	Cap 110 Imm 2553 Loch 51
17h30	-1081	-9231	Cap: 111 Imm: 2590 Loch: 51

TIME	X	Y	Remarques
17:50	-750	-9355	on suppose qu'il y a un décalage de BUC Cap 109 vmm 2589 Poch 51
17:55	-576	-9356	Recalage BUC
	37°8.417	32°19.559	
18:00	-516	-9420	Position of BUC Cap : 109.7 Loch 49.7 vmm 2618.
	37°8.382	32°19.815	
	-193	-9539	Recalage Estime
18:18	37°8.316	32°19.597	Cap 110° vmm 2727 Loch 51
18:48	290	-9716	arrivée sur point 11 et deplace.
	37°8.219	32°19.271	ment vers point 12 Cap 204 vmm 2794 Loch 49 Attente apparition BUC
1			~~Arrivée sur point 12~~
19:59	291	-9828	Recalage BUC
19:01	258	-9842	Arrivée sur point 12 Cap 292 Chargement de Fichier vmm 2763 Poch=50
19:02	258	-9842	Debut de Popi 7
	37°8.151	32°19.293	Cap 293 vmm 2720 Poch : 50

Time	X	Y	Remarques
19:28	-182	-9709	Recalage Buc
	37°8.224	32°19.590	Cap 294
			Imm 2724
			Loch 49
19:50	-511	-9576	Cap 293
	37°8.297	32°19.812	Imm 2649
			Loch 50
20:01	-699	-9514	Recalage
	37 8,332	32 19,939	
20:38	-1290	-9298	Recalage
	37 8,451	32 20,337	
20:56	-1637	-9173	Recalage
	37 8,520	32 20,571	
21:19	-2096	-9000	Recalage
	37 8,615	32 20,880	Imm 2651 Loch : 50
21:32	-2320	-8931	Recalage
	37 8,653	32 21,031	Imm 2624 Loch 51
21:47	-2542	-8837	End of file - Arrived at point 13
	37 8,705	32 21,181	Imm 2650 Loch 50
			The BUC disapeared
22:13	-2540	-8846	Beginning of profile 13 to 14 between points
	37 8,701	32 21,181	Transit Between the 2 boxes Profil 8
22:27	-2810	-8803	Recalage
	37 8,724	32 21,361	Imm 2683 Loch 50
22:34	-3012	-8810	Recalage
	37 8,721	32 21,498	Imm 2715 Loch 50

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Time	X	Y	
23:01	Floor visible from genital camera		
	-3411	-8782	
	37 8,735	32 21,767	
23:05	-3488	-8782	Loch back to 50 m
	37 8,738	32 21,820	
23:06	-3517	-8775	Recalage
	37 8,742	32 21,839	
23:34	-4082	-8733	Recalage
	37 8,766	32 22,220	Imm 2651 Loch 50
			26/09/09
0:15	4968	8658	Recalage
	37° 8,810	32° 22,819	Imm 2604 loch 50.
			Arrivée au Point 14.
			changement de Profil / fichier
			[redacted]. Anale.
0:18			Début Profil 9
0:27	4746	8733	Recalage.
	37° 8,769	32° 22,669	
0:43	4439	8846	Recalage
	37° 8,704	32°, 22,462	imm 2637 loch 50.
			cap 112
1:24	3701	9105	Recalage loch 51.6
	37°8, 564	32°, 21,965	imm 2736
1:33	3506	9178	Recalage
	37° 8, 524	32° 21, 833	imm 2774 loch 51.1
1:54	3166	9279	Recalage loch 49
	37°8,468	32°21,604	imm 2695
2:19	2635	9484	Recalage loch 45

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Time	X	Y	
2:43	2156 37° 8,266	9645 32° 20,924	Recalage. imm 2629 Fin du Profil 9 Passage Point
2:49	2192 37° 8,199	9769 32° 20,948	Recalage. imm 2674 Passage Point 16 Début Profil 10
3:11	2637 37° 8,275	9633 32° 21,248	Recalage imm 2647 loch 49,6
3:30	3050 37° 8,374	9453 32° 21,527	Recalage imm 2694 On fait une marche arrière pour combler. profil manquant
3:33			On reprend le profil.
3:33	2998 37° 8,346	9504 32° 21,492	Recalage imm 2684
3:34			Recaler sur le profil
3:49	378.402	32 21.700	Prise de Profil - Valentin - Alain.
03:55	378441 -3520	32 21 843 -9331	Recalage Buc. on fait marche arriere pour combler Profil.
03.57	-3474	-9317	Reprise du profil.
04:36	-4271 37.8.586	-9068 32 22.350	Recalage Imm = 2647 Loch. 50
5.11	-5057 37.8.741	-8787 32.22.879	Arrivée point 17. fin profil 10 Recalage Imm=2599
5.13			Transfert fichiers
5.27			Fin Transfert fichiers. Arrivée point 18. Début profil 11
5.30	-5049	-8902	+ recalage BUC
5.			Imm = 2601 Loch = 51.9

26/09/09

Time	x	y	observations. Remarques. Doléances
5:56	-4549	-9038	Recalage BVC Imm= 2633 Loch= 51.1
6:53	-3670 37.8.~~411~~	-9388 3221945	Défaut Pack Puissance Perte 1/Moteur Vertical imm:2720 Loch= 51.2
7.41	-2822	-9682	Perte Acquisition. Marche Arriere pour recouvrir profil
7.43	-2820	-9680	~~Reçu~~ OK. Marche Avant Watch : Catia & Valérie
7:58	-2570 37°8.198	-9775 32°21.204	Imm = 2661 Cap: 110 Loch = 60 8 BVC dans le choux.
8:04	-2447 37°8.191	-9785 32°21.121	Recalage BVC Imm = 2683 Cap 110 Loch = 49 m
20:17	-2267 37 8.113	-9892 32 21.00	fin du profil 11 arrivée au point 19 fin du fichier. + Recalage ~~sur~~ BVC
08:25	-2294 37°8.077	-9996 32°21 022	Recalage de l'étrave début du fichier. Imm 2677 Loch = 51 Cap = 290. début profil 12 arrivée au point 20
8.42	-2527 37°8.120	-9918 32°21.175	Imm 2699.3 Loch = 55.2 Cap 290.
08:47	-2605 ~~37~~°8.138	-9885 32°21.228	Recalage de l'étrave Pm.: 26560 Loch = 54.8

26/09/09

time	X lat	Y lon	observations
9:10			BUC est très loin ~ 1000 m, perdue...
9:15			la BUC est toujours au Sud, toujours pas revenue
9:16:31	-3085 37°8.239	-9701 32°21.551	BUC est revue. Im = 2700 Loch = 56.8 Cap = 290
9:19	-3189 37°8.244	-9693 32°21.588	Recalage de l'estime Im 2720.8 Cap 290 Loch 57.3
9:34	-3410 37°8.301	-9589 32°21.771	Im = 2720.8 Cap 290. 57.1.
9:50	-3773 37°8366	-9471 32°22.015	Im = 2691.7 Loch = 55.4 Cap = 290
10:00	-4017 37°8.410	-9392 32°22.179	Toujours des problèmes opto-electronique 1 défaut d'isolement. Im = 2676 m Loch = 55.2 Cap = 2
10:18	-4311 37°8.468	-9287 32°22.377	Im = 2648 m Loch 54.6.
10:20	-4345 37°8.479	-9266 32°22.400	Recalage de l'estime Im = 2644.9 Loch = 54.6 Cap 290
10:22			BUC de nouveau dans le coin.
10:28	-4530 37°8.507	-9216. 32°22.526	Recalage de l'estime Im = 2629.3 Cap = 290 Loch = 54.3
10:46	-4926 37°8.593	-9060 32°22.792	Im = 2605 Loch = 57.2 Cap 290.
10:52			BUC est de nouveau partie + au Sud
10:55	-5092 37°8.623	-9005 32°22.904	Recalage de l'estime Im = 2 fin de profil 12 arrivé pt 21 Loch = 5

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Heure	X cal	Y log.	Observations
10:01			~~Arrivée au pt 22~~ ~~début du profil 13~~ début enregistrement. ~~fin~~ ~~appareillage~~
10:01	-5160 +37°8.575	-9094 32°22.950	Réglage de l'hte. Im = 2604 Cap = -110 loch = 48
11:04	-5135 37°8.565	-9112 32°22.933	Arrivée au pt 22. début du profil 13. Im = 2547 loch = 56.7 Cap 110.
11:10.			BVC dans le chenal.
11:15.	-5004 37°8.542	-9153 32°22.845	BVC est de retour. Im = 2600.8 loch = 55.9 Cap 110.
11h23			BVC est partie depuis plusieurs minutes. Ralentissage de la BVC.
11h27			Le retour de la BVC.
11:30	-4817 37°8 506	-9219 32°22.719	Réglage de l'hélice Im = 2606.7 loch = 57.2 Cap 110.
11:34			BVC est de nouveau repartie. de retour une minute ~~plus~~ après.
11:47	-4545 37°8.446	-9328 32°22.536	Im = 2630 loch = 51.5 Cap 110.
11:51			BVC est partie de nouveau.
11:53	-4436 37°8.423	-9371 32°22.455	Réglage de l'hélice Im = 2643 m loch = 50.2
11:58			Nelia & Cédric are on duty!

26/09/09

time	X	Y	observations.
12 05	-4271	-9422	La BVC part en virille
12_09	-4203	-9441	La BVC toujours en virille. il y a un mur sur la carte Stop acquisition multibeam. ↳ le mur est orienté au 10°-
12 14	-4174	-9449	* Fin de la falaise remise en route du multibeam après avoir sondé
12 20	-4093 N37 8.372	-9463 W 32.22.23	Recalage BVC hmm = 2641 Loch = 71 Cap = 115.
12 53	-3416	-9722	hmm 2735 Cap 115 Loch 47.7 Difficulté de tenir l'altitude et l'assiette
1327	-2753	-9958	hmm 2697.3 loch 49.1 Cap 110
1348	-2348	-10102	Fin de profil 13 et recalage au point 2 hmm 2663 Loch 55.7 Cap 234.
13:54	-2392	-10202	Arrivée au point 24 / Debut de prof hmm 2707 loch 40 + Recalage Cap 290

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Time	X	Y	
1413	-2875	-10047	lmm = 26937 Cap = 292 Loch = 50.1
1439	-3318	-9902	Recalage lmm 2740 loch 40 Cap 294 la BUC en veille L'engin en a masse
1446	-3435	-9843	Recalage lmm 2724 Loch 49.4 Cap 291
1505	-3761	-9730	Le Retour de la falaise. Stop acquisition du multibeam Mise en route du Sonar
1511	-3823	-9704	Remise en route multibeam Recalage lmm 2647 Loch 24 Cap 294
1525	-4125	-9603	Recalage lmm 2638.9 Loch 47 Cap 287
1528	-4197	-9578	Recalage lmm 2640 Loch 81 Cap 289
1536	-4366	-9509	Stop multibeam / Sonar on il y a une autre falaise Un peu de sédiment blanchatre + Dunes

26/09/09

Time	X	Y	
15:40	-4385	-9501	Remise en route multibeam mais plantage ⇒ on stop le rov Lmm 2661 Cap 290 Loch 41.5
15:42	-4393	-9493	Multibeam OK on repart Lmm 2661 Cap 290 Loch 34
16:00			Alice et Céline
16:15	-5262 31°8.50	-9231 32°23.02	Fin de Profil 14 arrivée au point 25 Im = 2593 Loch = 52 Recalage Estime sur BUC Sauvegarde des données SMF.
16:21	-5220 31°8.45	-9328 32°22.99	recalage Estime sur BUC Arrivée sur point Debut de profil 15 - début enregistrement Im = 2592 Loch = 48.5
16:50	-4719 31°8.37	-9471 32°22.65	Recalage Estime sur BUC Im = 2597 Loch = 64 Xo = 560000 N37° Yo = 4120000 W32
17:06 17:09	-4504	-9600	plus de loch - plus d'estime } grande decorel Loch reprise
17:14	-4420 31°8.29	-9623 32°22.45	recalage estime sur BUC Im = 2732 Loch = 5
17:22 17:25	-4264	-9680	arrivée sur falaise !! perte de loch - perte acquisition SMF. SMF relancé.
17:28	-4102 31°8.20	-9764 32°22.34	recalage Estime sur BUC Im = 2627 Loch = 7 SMF perte acquisition - en station pour relancer SMF.

Time	X Lat	Y Lon	observations 26/09/09
17:34			SMF relancé - reprise du profil - Nouveau fichier n:24 -
17:43	-3837 37°8.17	-9825 32°22.06	recalage Estime sur BUC - Im=2701 Loch=58.1
17.47	-3716 37°8.15	-9875 32°21.98	recalage Estime sur BUC Arrivée point 27 Fin Profil 15 Im = 2727 Loch 48.5 cap = 60 Début Profil 16 changement fichier
17:50	-3697 37°8.16	-9854 32°21.96	recalage sur BUC Im=2722 Loch = 55.7
17:56	-3542 37°8.19	-9798 32°21.86	recalage estime sur BUC - Im=2731 Loch=6
18:02	-3486 37°8.22	-9739 32°21.82	recalage estime sur BUC Im=2742 Loch=54
18:10	-3359 37°8.25	-9684 32°21.74	attente Pest : recalage estime sur BUC
18:49	-2752 37°8.43	-9342 32°21,32	recalage estime sur BUC Im=2683 Loch=4
19:52	-1426	-8671	Pest larguée
19:55	-1371 37°8.83	-8598 32°20.39	recalage Estime sur BUC Im=2540 Loch=55.
Arrivé cap		on shift	on est sur la traversée NE vers fin de profil, Vers le point (28)
20:13	1543 378.582	9058 32 20 567	Fin de profil. JULIE! JULIE! JULIE!
21:09	463	7240	Cap 262 - ~~1000m = 1m~~ Imm=1398,3m Tour magnétique Julie
21:02:4			début tour à 21:04:30 Fin à

JULIE JULIE 26/09/09 JULIE

21:07:00 Top depart bar horaire à 1399 m
21:08:45 Stop bar horaire, Julie ne fait jeach avec les bars ! j'espère AU MOINS que ne bar à ma santé !

JULIE

Cap 250 anticyclone 3 bars →

← Julie après petits bars

1188m Top 21:16:30 anti horaire Cap 260° au dop
Stop bar à 21:18:50 JULIE !
JULIE Depart 21:19:00 → bar horaire
21:20:25 fin bar horaire, oof !
JULIE JULIE ! 3ème !!!!!!!!!!
1200m 21:27:38 debut bar anti horaire de cap ?
21:29:22 fin bar anti horaire
21:30:48 debut bar horaire de 260°
21:31:27 fin bar horaire
oof ! on en a fait 3 ! pas 5 ! na !

JULIE JULIE

22:27:00 RDV sur le pont
37°08.635 / 32°19.580

BOG CTD 012 D

début transit pour CTD
23:24 arrivé N37°05.2939 / W032°25.7248

BOG-CTD_012.hex CTD
Point (1)
debut enregistrement : 23:25:15

23:45 ; $\vec{v}$ 1m/s longueur : 938 N37°05.2771
118 bars depth 3 W32°25.7447

Accès à 2860 m

27/09/09

→ last shift of Aura and Benjamin !!

Time	Lat	Long	observation
00:00	37°05.2774	32°25.7446	vitesse -0.95 ↓ going down Longueur -2045 pression 2086 ↓
00:17			Depht / Pression / w/o ↓ 2926 / 2609 / 2861 ERROR → changed file 11 . going up
00:20	37°05 2776	32°25442	2917 / 2900 / 2856 . at the bottom
00:36			2924 / 1856 / 1823 ↑
00:47			2931 / 1061 / 1046 ↑
00:55			2903 / 450 / 445 ↑
01:04	37°05 2467	32°25 7466	CTD on the surface CT
01:06			CTD on board B09 CTD012R
01:10			moving to the next CTD deployment site
01:32	37°06 092	32° 26290	at the CTD deployment site Point 2
01:34			CTD in the water B09 CTD013D
			Depht / Pression / w/o ↓ going down
01:47			2503 / 742 / 744 ↓
01:58			2509 / 1523 / 1507 ↓
02:10			2506 / 2427 / 2395 ↓
02:12			2524 / 2491 / 2401 at the bottom
02:13			2510 / 2470 / 2425 ↑ going up
02:25			2520 / 1594 / 1562 ↑
02:36			2512 / 779 / 765 ↑
02:49	37°06 0430	32°26.9064	CTD on the surface
02:50			CTD on board B09 CTD013R
02:53			moving to the next CTD deployment site
03:15	37°06645	32°24.943	at the CTD deployment site Point 3
03:19			CTD in the water B09 CTD014D
			depht / Pression / w/o
03:30			2440 / 697 / 701 ↓ going down

Time	Lat	Long	observation			
			depht	pressure	w/o	
3:44	37°06.6206	32°24.9376	2443	1633	-1605	↓
			2489	2111	2097	↓
3:52	↗	Change	of Shift : Oliver → Eric			
3:55	37° 6.622	32° 24.938	2441	2457	-2422	→
			remarkde - at botten, coming			
4:05	37° 6.22	32° 24.938	2506	2031	-1994	
4:15	37° 6.622	32° 24.938	2504	1385	-1361	
4:25	37°6.620	32°24.934	2443	643	632	↑
4:34	37°6.622	32°24.936	2443	98	92,6	↑
4:37	37°6.622	32°24937	Surface elfin Point (3)			
4:40			Deplacement vers Point (4)			
5:19			Arrive at Point (4)			
5:21	37° 6.9167	32° 23.4519	In Water		BOYCTD0150	
			depth	pressure	w/o	
5:22	37° 6.9167	32° 23.4519	(?)	waiting to get depth measure		
5:27	-	-	Still no depth reading - getting help			
5:32	37° 6.9161	32° 23.4527	0	1	-045	Start
5:41	37° 6.9162	32° 24.4533	2706	423	-415	↓
5:52	37° 6.9165	32° 23.4550	2708	1070	-1055	
6:00	37°6.917	32° 23.455	2703	1588	-1573	↓
6:10	37° 6.9147	32° 23.4598	2707	2117	-2082	↓
6:19	37° 6.9142	32° 23.4596	2708	2692	-2646.6	-
6:21	37° 6.914	32° 23.460	2728	2673	-2607	↑
6:31	37° 6.9142	32° 23.4595	2715	2111	-2070	↑

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Time	Lat	Lon	Observations			
			depth	pressure	w/o	
6:51	37° 6.9156	32° 23.4569	2706	870	-859	↑
7:01	37° 6.9159	32° 23.4551	2708	299	-293	↑
7:08	37°6 914	32° 23 456	Surface et fin de CTD N° 15			
			BOG CTD 015R			
7:11			In transit to Point (5)			
7:58	37° 9.1358	32° 24.830	Arrive at Point (5)			
			BOG CTD 016O			
			depth	pressure	w/o	
7:59	37° 9.1352	32° 24.8032	0	0	0.0	In Water
8:11	37° 9.134	32 24.804	2280	581	-585	
8:25	37 09.1355	32 24.8039	2281	1433	-1426	
8:32	37 09.1354	32 24.8037	2305	2078	2052	
8:44	37 09.1353	32 24.8034	2298	2286	2200	bottom, début Remontée
8:52	37 09 1357	32 24 8041	2296	1623	-1595	
9:06	37 09 1353	32 24 8048	2292	799	-785	
9:14	37 09 1358	32 24 8053	2298	310	-305	
9:23	37.09,1359	32 24,8051	2282	1	0	at Surface
9:24			CTD on board			
9:31			In transit to point (6)			

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Time	Lat	Long.	Observations
4:49	37 09.3118	32 22.5117	Arrived at Point 6
			File B09CTD 0178
			Depth / Pression / W/O
9:53	37 09.3263	32 22.5070	2729 / 2 / 1
10:05	37 09.3664	32 22.4932	2725 / 482 / 486
10:13	37 09 3664	32 22 4938	2725 / 942 / 937
10:23	37 09 3669	32 22 4919	2731 / 1430 / 1418
10:33	37 09.3668	32 22.4917	2726 / 1971 / 1935
10:43	37 09.3661	32 22.4925	2725 / 2552 / 2500
10:47	37 09.3666	32 22.4914	2732 / 2672 / 2632 Bottom
11:00	37 09 3669	32 22 4922	2728 / 1911 / 1891
11:14	37 09.3670	32 22.4214	2727 / 1077 / 1072
11:25	37 09.3665	32 22.4916	2731 / 475 / 467
11:35	37 09.3659	32 22.4906	2722 / 1 / 0 AT Surface
11:48			Transit vers le point 7
12:36	37 13 9609	32 15 8579	Arrivée au point 6.
			B09CTD018D Françoise et Beno
			Depth / Pression / W/O
12 36	37139621	32,158557	2287 / 10 / 20,7
12 45	3713 922	32.15 856	[illegible] / 553

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Time	lat	long	depth	pression	w/o	
12:51	37° 13.9142	32° 15.857	2284	966	954	
13:00	37 13.913	32 15.857	2284	1571	1548	
13:04	37 13.912	32 15.858	2284	1861	1832	
13:09	37 13.9130	32 15.858	2284	2179	2141	
13:11	37 13.912	32° 15.858	2284	2266	2229	(2235) CTD
			BOG CTD 018 R			enregistrement remontée
13:15	37 13.913	32° 15.858	2284	2247	2213	
13:20	37 13.912	32 15.858	2284	1838	1810	
13:28	37 13.913	32 15.858	2284	1372.	1353	
13:34	37 13.913	32 15.858	2284	935	920	
13:40	37 13.904	32 15.859	2284	521	513	
13:45	37 13.897	32 15.862	2284	211	206	
13:48	33 13.8802	32 15.8592	Fin fichier @ 50 m surface.			
13:52			Début transit vers Pt 08			
14:12	37.14.8295	32 15.0331	Arrivée sur pt 8			
14:20	37°14.8233	32 15.1139	2199	22	18	
			BOG CTD 019 D			
14:26	37°14.815	32° 15.131	2198 (2140) CTD	349	346	
14:31	37°14.8021	32° 15.1309	2200	688	678	
14:38	37°14.801	32° 15.132	2196	1145	1128	
14:45	37°14.801	32 15.131	2196	1570	1546.	
14:51	37°14.801	32.15.131	2196	1950	1919	
14:56	37°14.801	32 15.131	2196 (2146)	2175	2140.	
14:57			Remontée fichier:	BOG CTD 019R		
15:00	37°14.801	32°15.132	2195	2005	1972.	
15:08	37°14.801	32°15.131	2196	1500	1474	
15:14	37°14.801	32°15.132	2195	1095	1079	
15:21	37°14.801	32°15.132	2197	708	696	
15:25	37.14.801	32.15.132	2200	388	380	
			Fin fichier BOG CTD 019R.			
15:34			Fin CTD en surface.			
15:37			Début transit vers localisation des balises courantométriques.			

OBSERVATIONS. 27/09/09

TIME	LAT	LONG	DEPTH (total)	PRESSURE (CTD)	W/O (CTD)	
16:24	37 17.35	32 16.77	Arrivée sur zone Essai de localisation des courantomètres la boite pour envoyer le signal ne fonctionne			
16:39.			Décision de mettre un "poisson" à l'eau pou interroger les balises.			
16:46			Mise à l'eau du "poisson"			
16:55			le "poisson" est à l'eau			
17:28			Arrêt des localisations des balises. Remontée du A reprendre l'année Prochaine Reprix des CTD.			
17.59	3715.83	32.14.36	Arrivée sur point 9			
18.01	37 15.83	32 14.36	Descente CTD - B09 CTD020D			
18.40	37.15.83	32 14.36	~~Depth 2072~> pressure 2072 Depth : 2040 fin Acquisition			
18.44	37.15.83	32 14.36	Début acquisition B09 CTD020R			
19.20	37 15.83	32 14.36	fin Acquisition. CTD à bord. Fin Point 9 Route vers point Suivant.			
19.40	3716.94	32.14.05	Arrivée sur Point 10. Mise à l'eau pour CTD. B09 CTD021D			
19.44	37 16.94	32.14.05	Début Acquisition			
						Vites
20:00	37169334	32.14.0515	2139.88	878	-877.	-0,2

Time	Lat	Long	Depth	Pression	w/o	Vitesse
20:16	3716.9330	32140515	2139.98	1791	1770	0,98 m/s
				start aquisition		
20:23	37169334 ~~3716.9308~~	32140508	2138.39	~~1994~~ 2017	~~A~~	B09CTD021R
20:31	3716 9328	32140524	2139	1694	1660	0.94 m/s ↑
20:45	3716 9342	32140512	2138.60	893	874	0,97 m/s ↑
21:00	~~3716~~ 9339	32140516	2139.55	90	80.7	0,55 m/s ↑
21:05			← end B09CTD021R			
			CTD en surface lowered vers CTD22			
21:24	37°18.428	32°13,840	2163m.	arrive at pt Pn CTD22		
21:27	37° 18.407	32° 13,791	max d'eau	B09CTD022D		
21:29			max d'eau			
			186 miles de Hrta			
21:45	37184165	3213.8638	2158	787	781.8	0,94 m/s ↓
22:01	37184197	3213.9207	2152	1723	1704	996 m/s ↓
22:07	37° 18.420	32° 13.920	2105m	end of B09CTD022D		
22,10				start of B09CTD022R		
22:14	37184211	3213.9206	2155	1813	1780	1.11 m/s ↑
22:29	37184202	3213.9211	2158	899	881	1.05 m/s ↑
22:45			save file aquisition			
22:45			B09CTD022R			
			CTD ~~on~~ of ~~board~~ ~~the~~ surface			
22:45			CTD on board			
			The end !			