# BOUSSOLE Monthly Cruise Report

## Cruise 19
## February 07 – 09, 2003

Duty Chief: David Antoine (antoine@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Alain Stépahn)

Science Personnel: David Antoine, Dominique Tailliez, Alec Scott, Maria Vlachou

*Laboratoire d'Océanographique de Villefranche (LOV), 06238 Villefranche sur mer cedex, FRANCE*

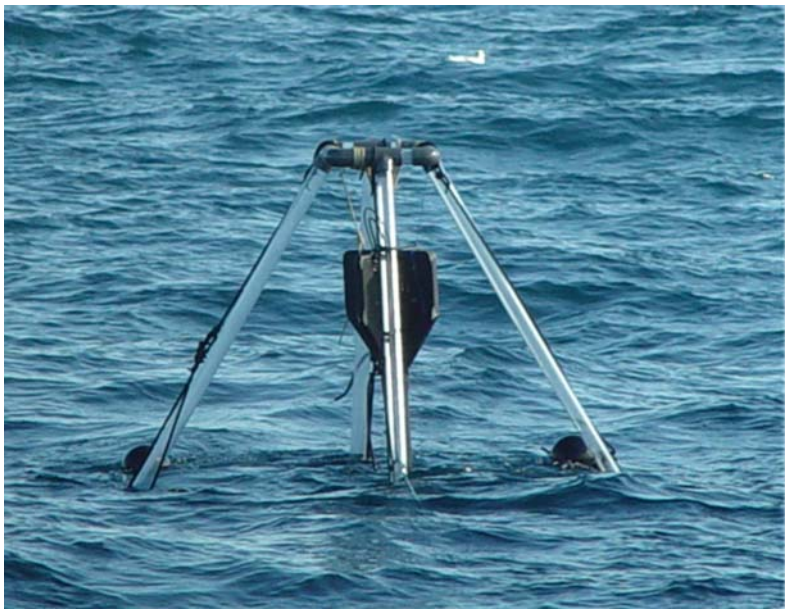

Fig 1. SPMR surface float apparatus for acquiring Eu data at approximately 20cm below surface. Data can be used to support near-surface extrapolation algorithms.

**BOUSSOLE project**

**ESA/ESRIN contract N° 17286/03/I-OL**

**Deliverable from WP#400/200**

*December 2, 2005*

# Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

BOUSSOLE is funded and supported by the following Agencies and Institutions

European Space Agency

Centre National d'Etudes Spatiales, France

National Aeronautics and Space Administration of the USA

Centre National de la Recherche Scientifique, France

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## Cruise Objectives:

Multiple SPMR profiles were to occur within 1 hour of satellite overhead passes of SeaWiFS and MERIS and around solar noon. Optimal conditions: Clear blue skies and flat, calm sea surface. SIMBADA measurements were to be performed consecutively where possible with SPMR if conditions suitably good. If conditions poor, SIMBADA data would be collected and used only to measure atmospheric optical thickness. A floating platform was to be used to support the SPMR Eu sensor approximately 20cm below the surface for approximately one 10 minute session per day where possible. This data would be compared with the near-surface extrapolation methods used in processing. CTD deployments were required before and after the profiling session. In addition to the depth profile from the CTD, CDOM fluorometer, Chl fluorometer and AC9, seawater samples were to be collected, filtered and the filters stored in LN2 for further HPLC pigment and particulate absorption analysis in the lab. A gimbled PAR sensor positioned on the foredeck and operated from the CTD computer served as a light field stability indicator during SPMR profiling.

Maria Vlachou participated in the cruise to collect CDOM samples from CTD casts. These were to be used in the calibration of the new CDOM fluorometer through laboratory measurements using two different techniques; spectrophotometer with a 10-cm cuvette and a new instrument: the UltraPath.

Replicate HPLC samples were collected so that lab to enable the testing of the viability of using one set of filters for both HPLC and AP analysis.

This was the first Boussole cruise for Alec Scott who has taken the place of Emmanuel Roussier as the Boussole project engineer,.

## Cruise Summary:

Both Friday 7th and Saturday 8th January provided fair conditions for optics work with fairly calm seas on both days. Suitability of the conditions for satellite cal/val was reduced on the 7th Jan because of cirrus cloud and milky skies. However, this improved on the 8th with blue skies and, for the most, light cumulus cloud. SPMR profiles were performed throughout the period intended. The weather conditions deteriorated for Sunday 9th Feb. A CTD cast was attempted but aborted due to technical problems and poor sea conditions. Due to the sea state and strong winds preventing scientific activity, the ship headed for port via Villefranche Bay where a CTD cast was performed at the bay entrance to check the functioning of the altimeter (confirmed as operational).

## Cruise Report (all times in GMT)

## Friday 7 February, 2003

0615 Departure from the port of Nice.

0930 Arrival at Boussole study site (43°22'N 7°54'E)

0952 CTD boussole1. Max 400m. Bottle depths (m): 200, 150, 100, 80, 70, 60, 50, 35, 20, 10, 5.

1030 CTD on deck. Plans to sample from bottles for HPLC and AP before the optics cast were revised because volumes required took too long to collect and filter. Solution: triplicate samples were only taken for surface analysis (5 and 10 meters) and for analysis of optics; the sampling at other depth for HPLC, AP and CDOM analyses was postponed to the next CTD cast.

1129 Start SPMR session. Seas calm but conditions not ideal because of milky skies and cirrus clouds. Wind 10knt from SW.

1230 End SPMR session. Total of 6 profiles

1245 SPMR surface float deployed (Figure 1)

1255 SPMR surface float back on deck. Successful deployment.

1328 CTD Boussole2. Max 400m. Bottle depths (m): 200,150,100,80, 70,60,50,35, 20,10,5.

1359 CTD on deck. Niskin 10 (10m) spigot was open.

## Saturday 8 February, 2003

0850 CTD Boussole3. 43°21.966'N 07°54.166'E. Max 400m. Bottle depths (m): 200, 150, 120, 100, 90, 80, 70, 50, 30, 10, 5.

0930 CTD on deck. Niskin 5 (90m) failed.

0930 Start SPMR session. Blue skies with some cumulus. Wind easterly at ~10kts.

1000 End SPMR session. 2 profiles. Break for lunch (hoping for better conditions after lunch; this will not be confirmed!)

1121 Start SPMR session. Skies still blue with some cumulus but wind is clocking around to south.

1228 End of SPMR session. 4 profiles. Pausing to wait for second SeaWiFS pass.

1255 Start SPMR session. Wind 10kts from south.

1312 End SPMR session. 2 profiles. Apart from occasional cumulus clouds, conditions were favourable for optics.

1319 Floating SPMR deployed. Amount of cumulus increased but had periods of blue sky.

1330 Floating SPMR recovered.

1339 Start SPMR session. Cumulus clouds have increased in number. Having to time profiles carefully to avoid intermittent cloud cover during profile.

1406 End SPMR session. 2 profiles. First profile aborted because of cloud cover

1413 CTD Boussole4. 43°21.976'N 07°54.154'E. Max 400m. Bottle depths (m): 200,150,10,10,10, 10, 5, 5, 5.

1440 CTD on deck. Niskin 3-6 (10m) were open.

1800 Arrival in port of Nice

## Sunday 9 February, 2003

0600 Depart port of Nice. Conditions windy, overcast and some rain.

0930 Arrival at study site. Winds over 20 kts and waves around 1.5m.

1000 CTD Boussole4. 43°21.976N 07°54.154E. Sea conditions marginal. Problems were encountered with the computer which, in addition to the rough sea conditions, led to the decision to stop work and head for more sheltered water or port if necessary.

1015 CTD recovered. During lunch, ship headed towards the coast to find more sheltered waters for CTD cast. Optics work was written off but CTD cast was required to collect water for the CDOM fluorometer calibration.

1700 CTD Boussole5. Villefranche Bay. (just to check the altimeter).

1730 CTD recovery.

1830 Arrival in Port of Nice.

## Satellite Overhead Passes at Boussole Site (43°22'N 7°54'E)

SeaWiFS (times in GMT)

- 07 Feb 2003: 12:28 at 53.59 degrees elevation
- 08 Feb 2003: 11:31 at 35.73 degrees elevation
- 08 Feb 2003: 13:09 at 23.83 degrees elevation
- 09 Feb 2003: 12:12 at 67.55 degrees elevation

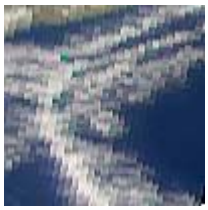
MERIS (times in GMT)

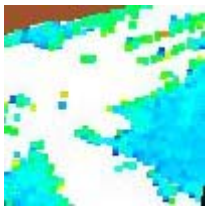
- 09 Feb 2003 10:04

## Ligurian Sea Boussole Site Images

http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts.pl

## SeaWiFS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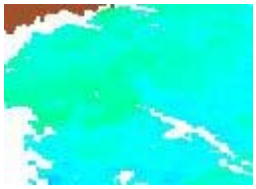
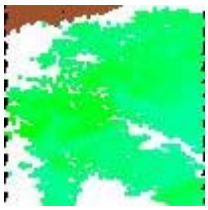
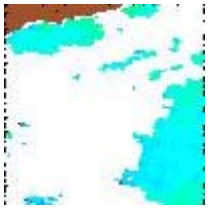
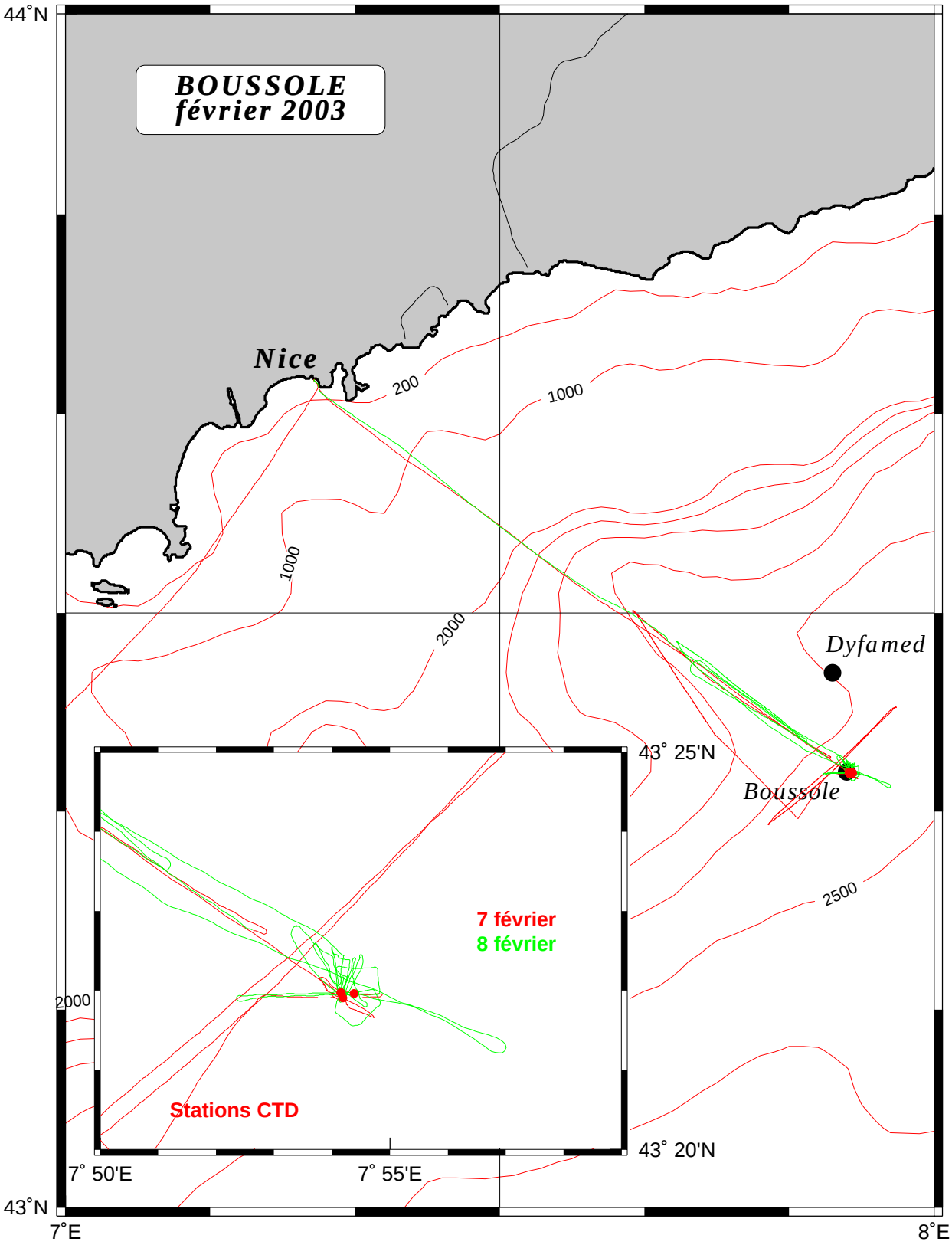



7th Feb, 2003 8th Feb 2003 9th Feb, 2003

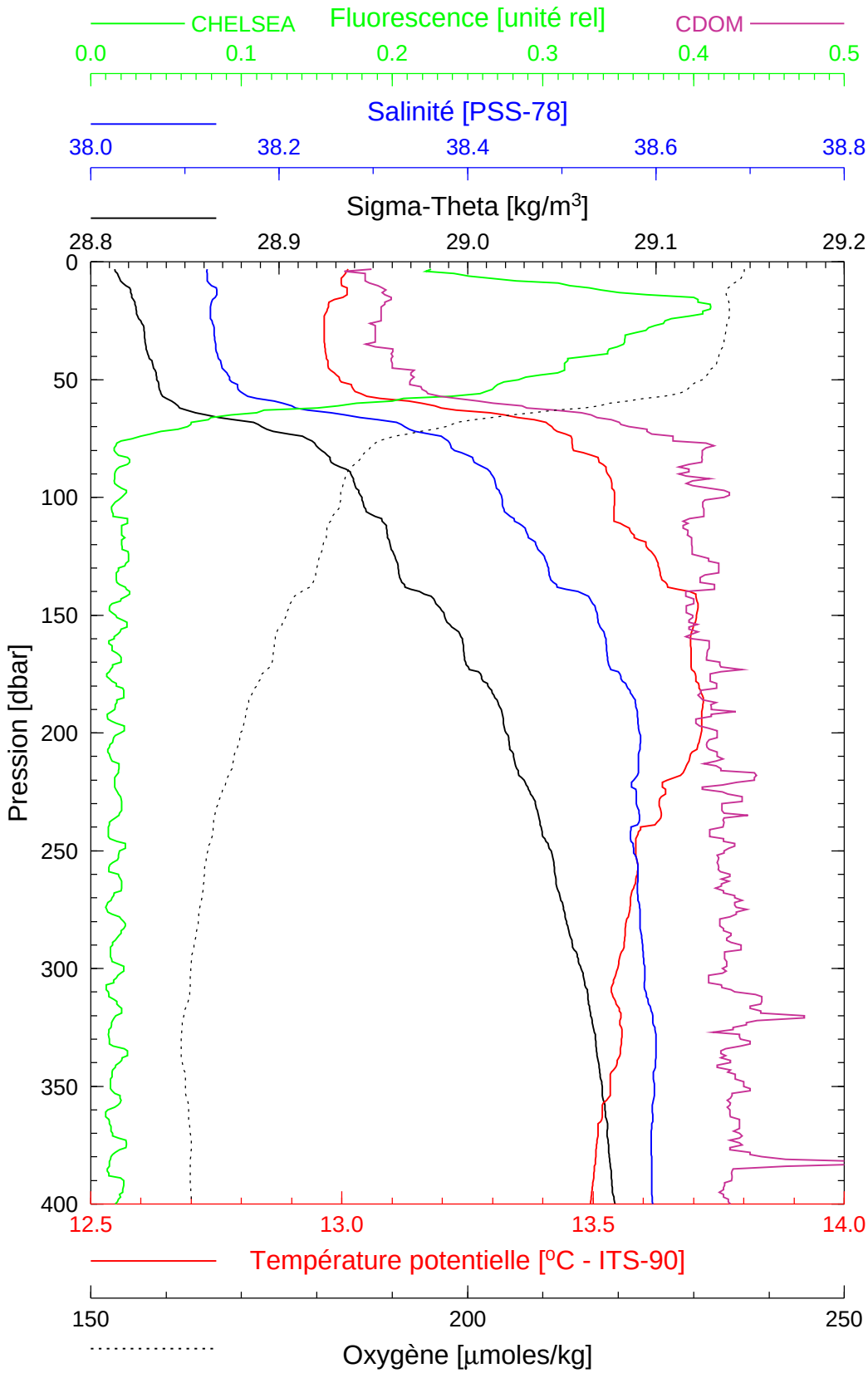
# Boussole 19 Cruise Summary Table

| Date | Black names | Profile names | CTD notées / | Start Time | Dur | Depth | Latitude (N) | | Longitude (E) | | Other sensors | Time | PAR | Strt/Fin | | | Wind | Wind | Press. | | | | | | Sea | | White |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (file extension: ".raw") | (file extension: ".raw") | satellite overpass | GMT (h:m) | (m:s) | (meter) | (Deg) | (Minute) | (Deg) | (Minute) | (Simbada) | | | mark# | Sky | Clouds | Qty (#/8) | speed | dir | Atm. | hum% | Visibility | T air | T sea | Sea | Swell ht | Swell dir. | caps |
| 07/02/03 | | | CTD BOUS001 | 9.52 | 38.00 | 400 | 43 | 21.909 | 7 | 54.193 | | | | | | | 2 | 5knts | 206 | 1023.2 | 34 | good | 11 | | | | | |
| | bou070203black1 | | | 11.11 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou070203a | | 11.29 | 02.24 | 110 | 43 | 21.993 | 7 | 53.919 | | | bou051002a | | slightly milky | some cirrus | | 8knts | 211 | 1022.8 | 40 | good | 11 | 12.5 | quite calm | no swell | - | no |
| | | bou070203b | | 11.41 | 03.53 | 120 | 43 | 22.026 | 7 | 53.9 | | | bou051002b | | milky sky | some cirrus | | 10 knts | 223 | 1022.7 | 45 | good | 11.3 | | quite calm | | | |
| | | bou070203c | | 11.51 | 02.34 | 120 | 43 | 22.08 | 7 | 53.866 | | | bou051002c | | | | | | | | | | | | | | | |
| | | bou070203d | | 12.01 | | | 43 | 22.098 | 7 | 53.848 | simbada | | | | | cirrus | 5 | 10knts | 221 | 1022.5 | 45 | good | 11.3 | | | | 240 | |
| | | bou070203e | | 12.18 | | | 43 | 21.886 | 7 | 54.113 | simbada | | | | milky sky | cirrus | 4 | | | | | | | | | | | |
| | | bou070203f | SeaWiFS at 12.28 | 12.26 | | | 43 | 21.948 | 7 | 53.958 | | | | | milky sky | cirrus | 4 | 10knts | 218 | 1022.5 | 41 | good | 11.3 | | | | | |
| | | bou070203spmratsurface | | 12.45 | 09.32 | | 43 | 21.962 | 7 | 54.086 | | | | | milky sky | cirrus | 6 | 11knts | 219 | 1021.9 | 48 | good | 11.3 | | | | | |
| | bou070203black2 | | | 13.06 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | | | CTD BOUS002 | 13.28 | 31.00 | 400 | 43 | 21.964 | 7 | 54.384 | simbada | | | | | | 3 | 11knts | 221 | 1021.6 | 50 | good | 11.5 | 13.05 | quite calm | | | |
| 08/02/03 | | | CTD BOUS003 | 8.50 | 40.00 | 400 | 43 | 21.966 | 7 | 54.166 | | | | | | | 4 | 8knts | 176 | 1022.2 | 57 | | 11 | 12.92 | a little choppy | | | |
| | bou080203black1 | | | 9.30 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou080203a | | 9.42 | | 120 | 43 | 22.407 | 7 | 54.051 | | | | | slightly milky | cumulus | 2 | 9knts | 110 | 1022.3 | 53 | good | 10.8 | | | 0,4-0,6 | 180 | |
| | | bou080203b | | 9.50 | 02.11 | 110 | 43 | 22.457 | 7 | 54.051 | simbada | | | | slightly milky | cumulus | 2 | 9knts | 110 | 1022.3 | 53 | good | 10.8 | | | 0,4-0,6 | 180 | |
| | bou080203black2 | | | 10.04 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | bou080203black3 | | | 11.21 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou080203c | SeaWiFS at 11.31 | 11.33 | 02.23 | 120 | 43 | 22.301 | 7 | 54.044 | | | | | blue | cumulus | 2 | 10knts | 154 | 1021.5 | 60 | good | 11.3 | | | | | |
| | | bou080203d | | 11.47 | | 90 | | | | | | | | | blue | cumulus | 2 | 10knts | 154 | 1021.5 | 60 | good | 11.3 | | | | | |
| | | bou080203e | | 12.07 | 02.48 | 120 | 43 | 21.899 | 7 | 54.491 | | | | | blue | cumulus | 2 | 10knts | 180 | 1021.3 | 60 | good | 12.1 | | | | | |
| | | bou080203f | | 12.16 | 02.33 | 120 | 43 | 22.024 | 7 | 54.017 | | | | | blue | cumulus | 2 | 10knts | 180 | 1021.3 | 60 | good | 12.1 | | | | | |
| | bou080203black4 | | | 12.28 | 03.00 | | | | | | simbada | | | | | | | | | | | | | | | | |
| | | bou080203g | | 12.55 | 02.43 | 120 | 43 | 21.995 | 7 | 54.118 | | | | | blue | cum but clear overhead | 1 | 8knts | 180 | 1020 | 57 | good | 12.1 | | | | | |
| | | bou080203h | SeaWiFS at 13.09 | 13.06 | | 120 | 43 | 22.121 | 7 | 53.981 | | | | | blue | cum but clear overhead | 1 | 8knts | 180 | 1020 | 57 | good | 12.1 | | | | | |
| | | bou080203spmratsurface | | 13.19 | | | 43 | 22.375 | 7 | 53.877 | | | | | blue | cum but clear overhead | 1 | 8knts | 180 | 1020 | 57 | good | 12.1 | | | | | |
| | | bou080203i | | 13.39 | 00.34 | | | | | | | | | | blue | large cumulus | 5 | 7knts | 165 | 1020.4 | 54 | good | 12 | | | | | |
| | | bou080203j | | 13.43 | 02.34 | 120 | 43 | 22.735 | 7 | 53.52 | | | | | blue | large cumulus | 5 | 7knts | 165 | 1020.4 | 54 | good | 12 | | | | | |
| | bou080203black5 | | | 14.06 | 03.00 | | | | | | | | | | | | | | | | | | | | | | |
| | | | CTD BOUS004 | 14.13 | 27.00 | 400 | 43 | 21.976 | 7 | 54.154 | | | | | | | 4 | 8knts | 161 | 1020.3 | 62 | good | 10.9 | 12.02 | | | | |
| 09/02/03 | | | | | | | | | | | | | | | | | | | | | | | | | | | |




GMT 2003 Mar 5 17:05:40

**Boussole** **Février 2003** **bous001**

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*Heure déb* *09h 52min [TU]* *Longitude* *07º54.193 E*

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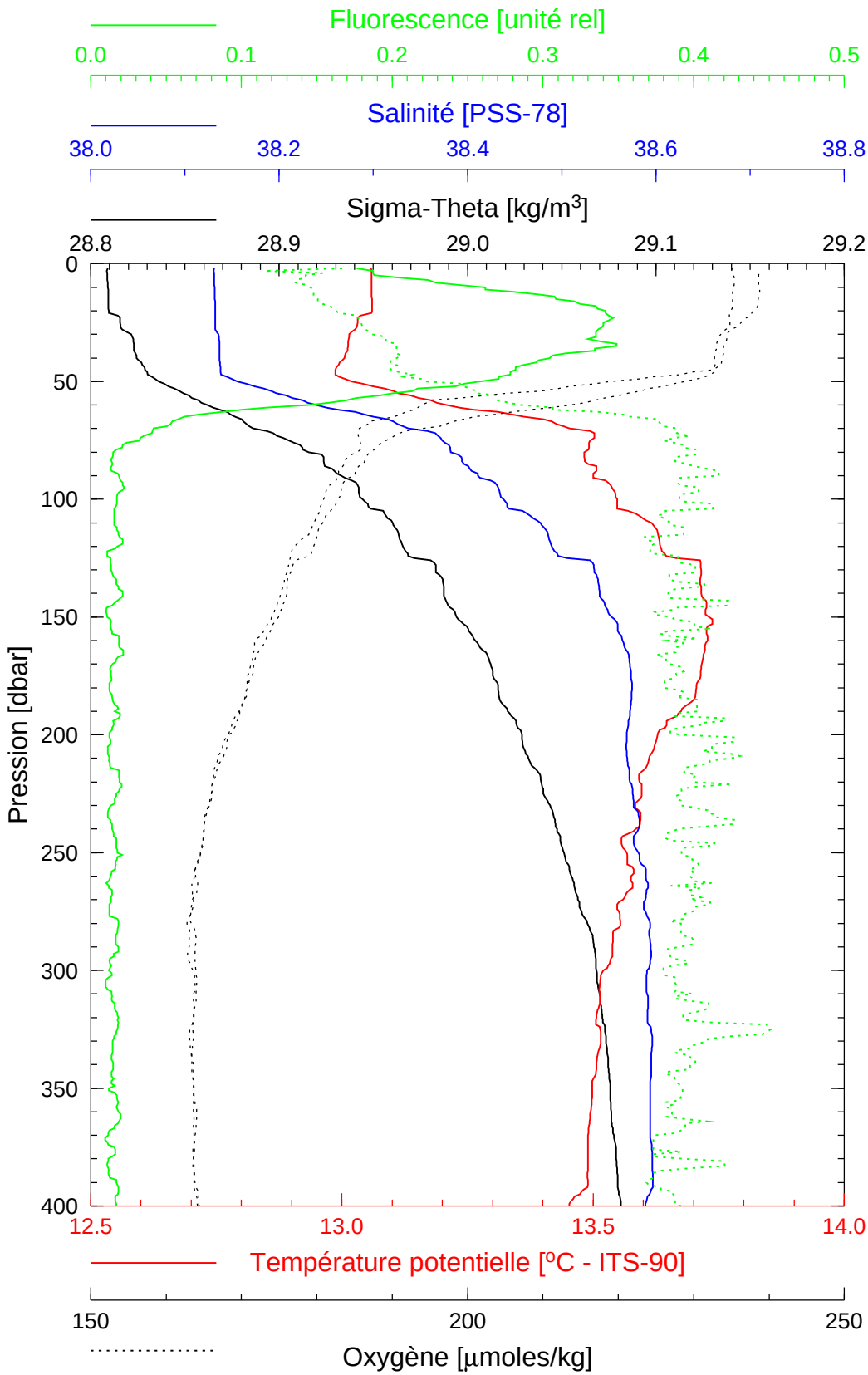


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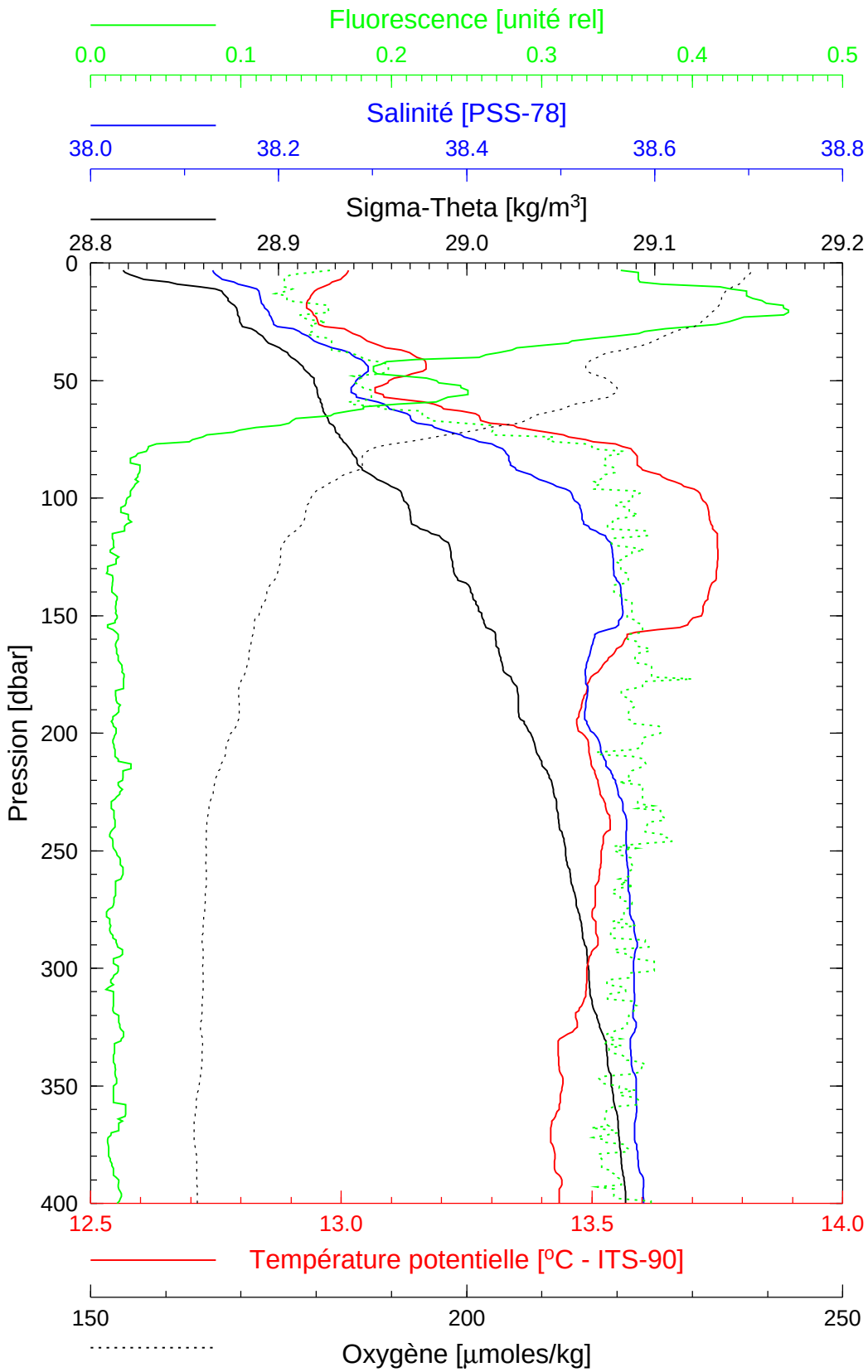


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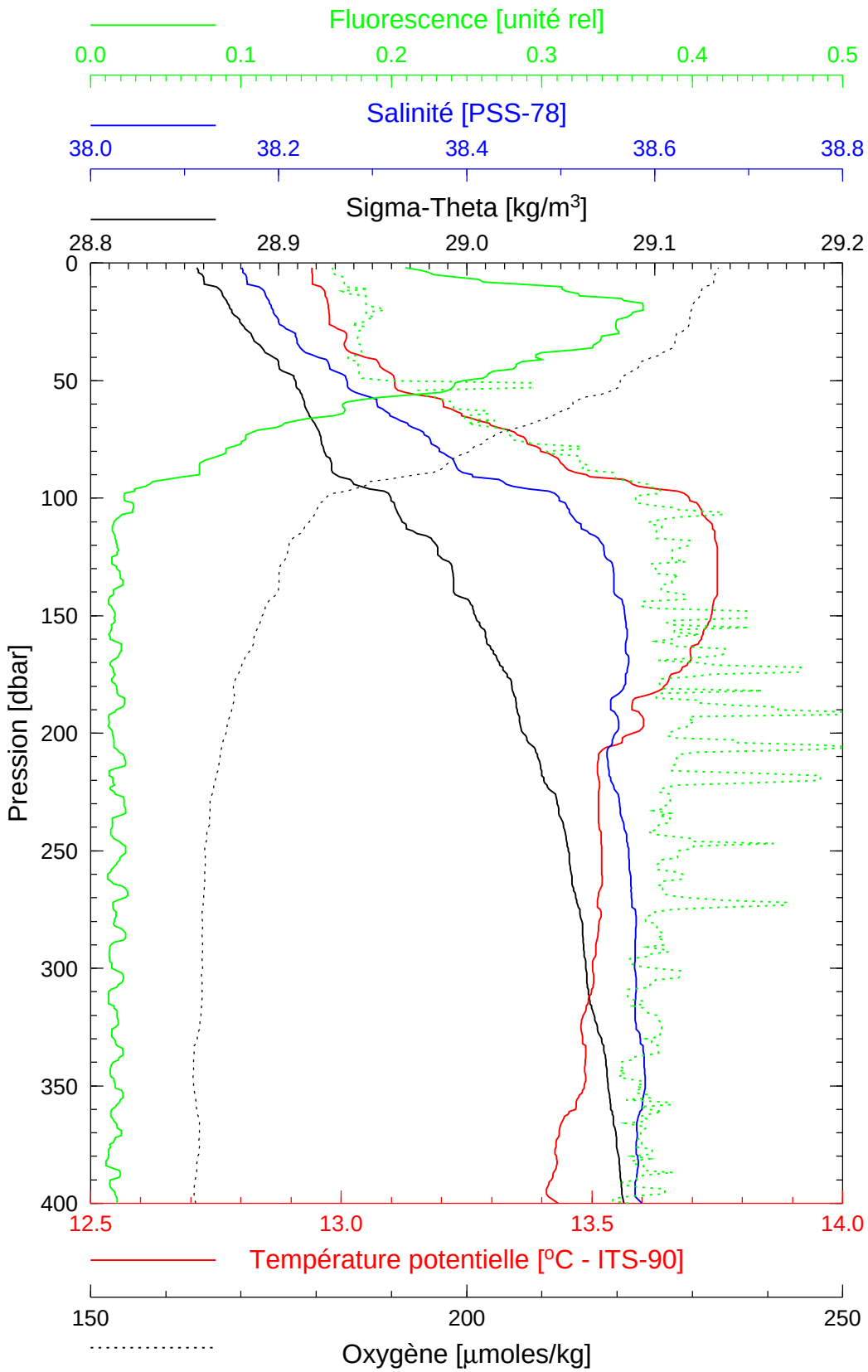
**Boussole** **Février 2003** **bous003**

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