

Argo data management report 2014

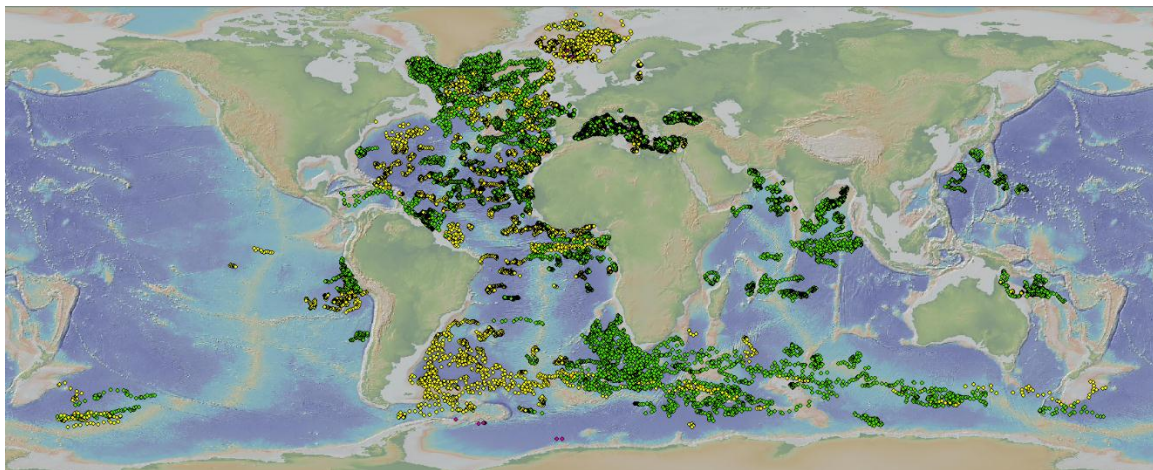
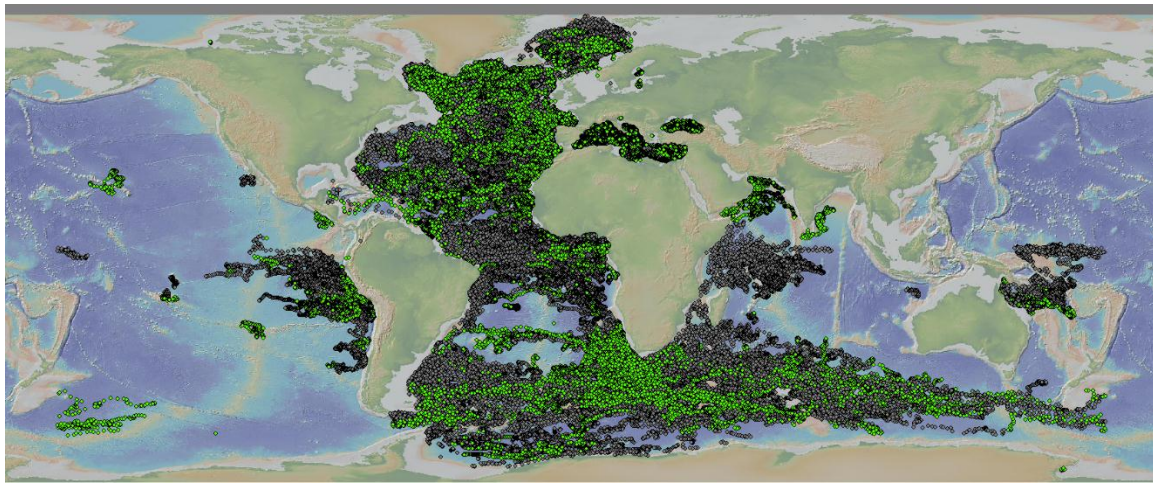
Coriolis DAC & GDAC

Data Assembly Centre and Global Data Assembly Centre

Annual report October 2013 - September 2014

Version 1.1

October 30th, 2014



DAC status

This report covers the activity of Coriolis data centre for a one year period from October 1st 2013 to September 30th 2014.

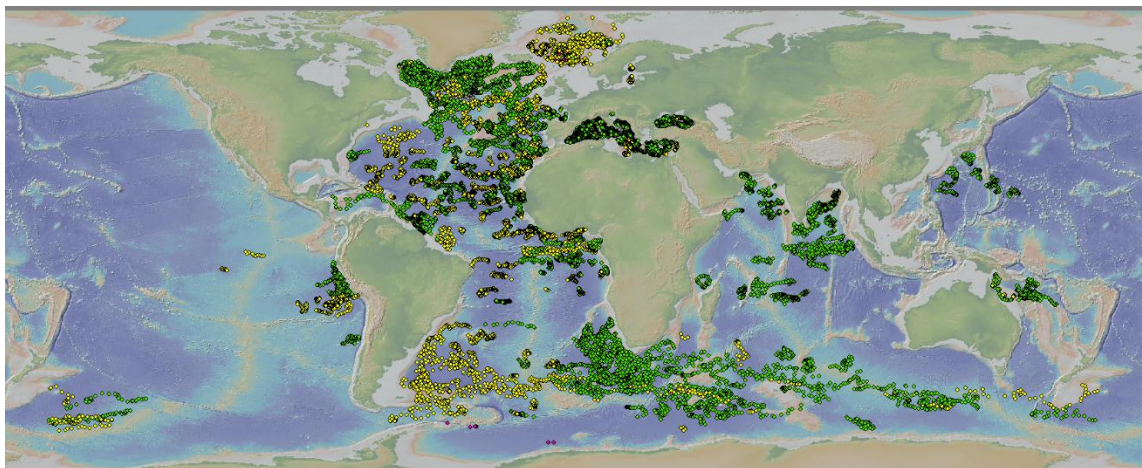
Data acquired from floats

These last 12 months, a total of **30 753 profiles from 687 active floats** was collected, controlled and distributed.

Compared to 2013, **the number of profiles increased by 40%, the number of floats increased by 5%**. The increase in profile number is mainly explained by new bio-Argo floats that perform more vertical profiles than typical core-Argo floats. We also started to split in 2 profiles the floats having pumped/unpumped CTD samplings.

The 687 floats managed during that period had 50 versions of data format:

- APEX 26 versions 262 floats
- NEMO 3 versions 7 floats
- NAVIS 1 version 1
- NOVA 1 version 6 floats
- PROVOR 19 versions 411 floats



Map of the 30 753 profiles from 687 floats managed by Coriolis this current year

Apex Nemo Nova Provor

Bio-geo-chemical sensors on Provor floats

We are developing a new data processing chain based on Matlab to manage data and metadata from Provor-Remocean floats. These are advanced type of floats performing bio-geo-chemical measurements. They are available in real-time from Argo GDAC or directly from:

- <ftp://ftp.ifremer.fr/ifremer/argo/etc/coriolis-custom/probio-draft/>

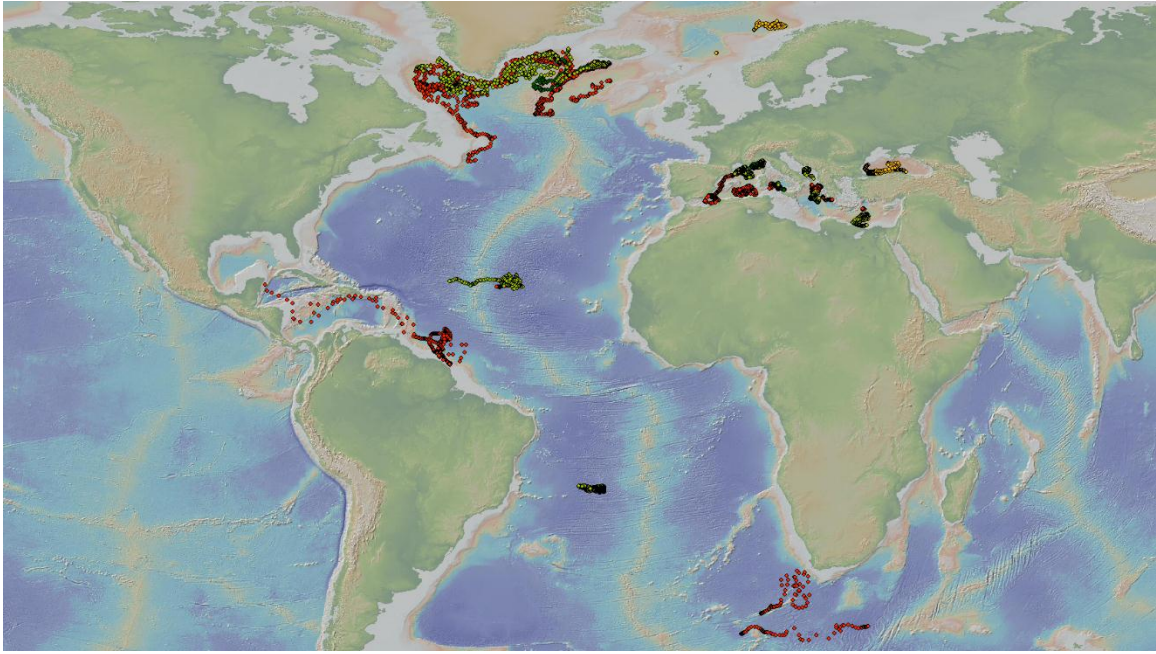
Overview of Coriolis bio-Argo floats

- 60 Provor bio-Argo floats where deployed in 2013-2014
- Funded by NAOS and E-AIMS projects
- Iridium rudics bi-directional communication
- Six sensors are fitted on the floats
 - AANDERAA_OPTODE_4330 Aandera oxygen sensor
 - C_ROVER Wetlabs transmissiometer
 - ECO_PUCK Wetlabs fluorometer turbidity, scattering
 - SATLANTIC_OCR504 Satlantic Irradiance sensor
 - SBE41CP Seabird CTD sensor
 - SUNA_V2 Satlantic nitrate sensor
- 83 parameters managed : core-argo, b-argo, i-argo parameters
These parameter include chlorophyll, turbidity, CDOM, back-scattering, UV, nitrate, bisulfide, pH, radiance, irradiance, PAR
- New behaviour of the floats : multiple profiles performed during a single cycle



© Antoine Poteau, Observatoire Océanologique de Villefranche (CNRS/UPMC)

Deployments of a bio-argo Provor in Ligurian sea

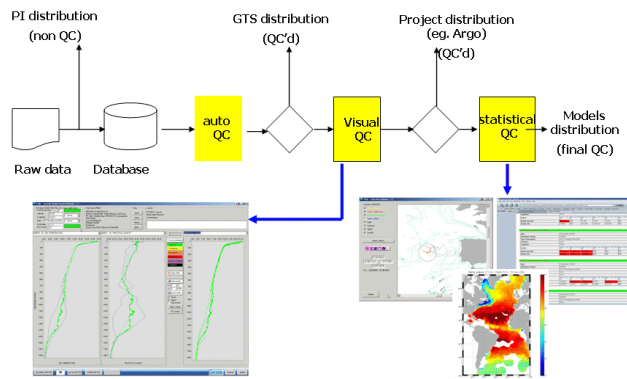


Map of the 60 bio-Argo Provor floats deployed in 2013-2014, they measure parameters such as chlorophyll, turbidity, CDOM, back-scattering, UV, nitrate, bisulfide, pH, radiance, irradiance, PAR.

Data issued to GTS

All profiles processed by Coriolis are distributed on the GTS by way of Meteo-France. This operation is automatically performed. After applying the automatic Argo QC procedure, the Argo profiles are inserted on the GTS every 2 hours. Argo profiles are inserted on the GTS 365 days per year, 24 hours a day.

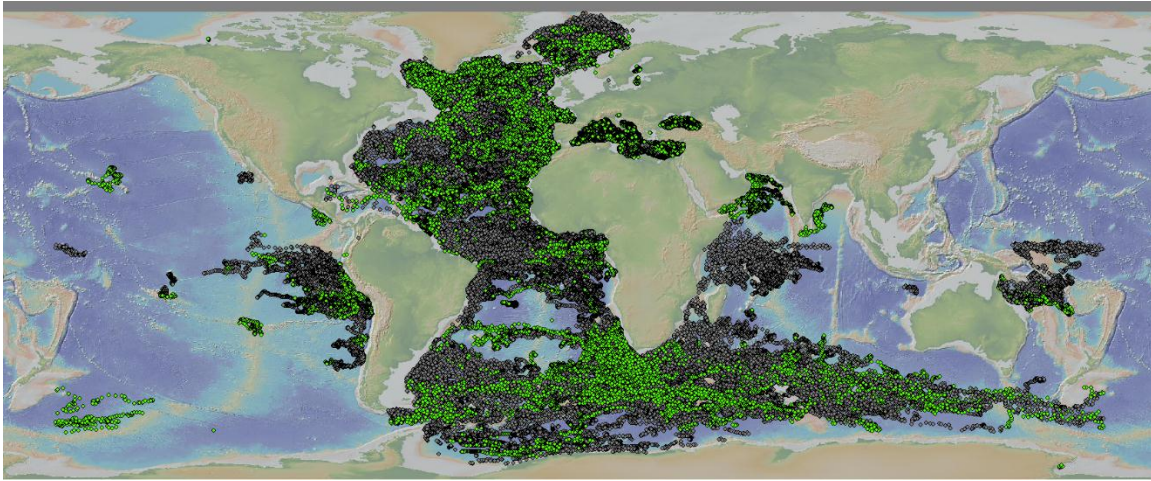
Once a day, floats data that are less than 21 days old are checked in an objective analysis (ISAS) that triggers alert and visual inspection for suspicious observations.



CORIOLIS DAC: Argo data flow

Data issued to GDACs after real-time QC

All meta-data, profiles, trajectory and technical data files are sent to Coriolis and US-GODAE GDACs. This distribution is automated.



Map of real-time profiles (Argo NetCDF V3.0, V3.1) and delayed mode profiles (Argo NetCDF V2.4)
Real time : green dots, delayed mode : grey dots

Transition to Argo NetCDF format V3.1

Since May 17th 2013, the new profile files from Coriolis DAC are distributed in Argo NetCDF version 3.0. On October 7th 2013, all the existing real-time profile files from Coriolis DAC were transformed into version 3.0 files (43 964 files resubmitted).

Since September 2014, the Provor bio-Argo floats are distributed with Argo NetCDF V3.1 format: metadata, technical data, trajectory and profiles.

Gradually, all Coriolis files will be converted in Argo NetCDF 3.1. The transition will be performed by float type: for a given type, all files will be converted. We want to avoid a combination of different formats for a given float.

Data issued for delayed mode QC

Delayed mode profiles

All profile files are sent to PIs for delayed QC. Most of the Atlantic data handled by Coriolis are checked by the European project Euro-Argo.

Preparation of Argo delayed mode trajectories

An important activity was performed to extract delayed mode NetCDF V3 trajectory files from the Andro atlas of deep ocean currents. These trajectory files are proposed to Argo DACs.

The Andro trajectory TRAJ3 files are available for most of the DACs. Each DAC may decide to use these files to provide delayed mode trajectory on GDAC.

Coriolis DAC will use these files as its delayed mode trajectories for old floats versions. The floats decoded with the recent Coriolis Matlab data processing will not use ANDRO for its delayed mode trajectories.

Delayed mode data sent to GDACs

An Argo delayed mode profile contains a calibrated salinity profile (psal_adjusted parameter).

A total of **11 986 new or updated delayed mode profiles** was sent to GDACs this year. The number of delayed mode profiles increased by 7%. **A total of 111 454 delayed mode profiles** were sent to GDACs since 2005.

Web pages

The web site of the French DAC is available at:

- <http://www.coriolis.eu.org/Observing-the-Ocean/ARGO2>

This web page describes all Argo floats:

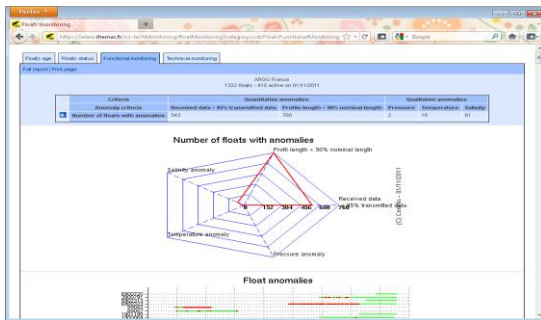
- <http://www.ifremer.fr/co-argoFloats/>
 - Individual float description and status (meta-data, geographic map, graphics : section, overlaid, waterfall, t/s charts)
 - Individual float data (profiles, trajectories)
 - FTP access
 - Data selection tool
 - Global geographic maps, GoogleEarth maps
 - Weekly North Atlantic analyses (combines Argo data and other measurements from xbt, ctd, moorings, buoys)

This web page describes all Argo floats interoperability services from Coriolis:

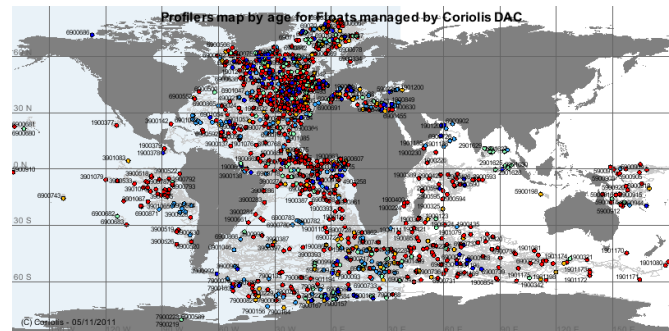
- <http://www.coriolis.eu.org/Data-Products/Data-Delivery/Argo-floats-interoperability-services2>
 - Display an individual float's data and metadata
 - Display an individual float's data and metadata in XML format
 - Display all Argo floats
 - Display a group of floats
 - Argo profiles and trajectories data selection
 - All individual float's metadata, profile data, trajectory data and technical data
 - Argo profiles data on OpenDAP, OGC-WCS and http
 - Argo data through Oceanotron data server
 - Argo profiles data through GCMD-DIF protocol
 - Argo data through RDF and OpenSearch protocols
 - Display Argo profiles and trajectories with GoogleEarth

Some pages of Coriolis web site are dedicated to technical monitoring:

- <http://www.coriolis.eu.org/Data-Products/At-sea-monitoring>



Example 1: technical monitoring of Argo-France floats



Example 2: age map of floats managed by Coriolis DAC.

Data centre activity monitoring: Coriolis operators perform an activity monitoring with an online control board.



Example 1: distribution activity on 03/11/2011. An operator has to perform a diagnostic on anomalies of Argo data distribution (red smileys). A series of small data base incidents explains the unusual situation.



Example 2: data distribution to GDAC activity in March 2011. On 26th, a bigger than usual data distribution delayed the update of DAC files.

Statistics of Argo data usage (operational models, scientific applications, number of National Pis...)

Operational oceanography models; all floats data are distributed to:

- French model Mercator (global operational model)
- French model Previmer (regional operational model)
- French model Soap (navy operational model)
- EU MyOcean models (Foam, Topaz, Moon, Noos)
- EuroGoos projects

Argo projects: this year, Coriolis data centre performed float data management for **50 Argo scientific projects and 50 PIs (Principal Investigators)**.

List of Coriolis scientific PIs and project names

Name	nb floats	Name	nb floats
Holger GIESE	91	Stephane BLAIN	4
Christine Coatanoan	51	Tero PUROKOSKI	4
Sabrina SPEICH	50	Bert RUDELS	4
Pierre-Marie Poulain	47	Nathanaële Lebreton	3
Virginie THIERRY	45	Detlef QUADFASEL	3
Birgit KLEIN	42	Gerd ROHARDT	3
Bernard BOURLES	33	Serge Le Reste	3
Andreas STERL	32	Jose Luis PELEGRI	3
Pedro Joaquin VELEZ BELCHI	29	Sunke SCHMIDTKO	2
Sabrina SPEICH et Michel ARHAN	26	C. PROVOST et N. BARRE	2
Fabrizio D'Ortenzio	23	Louis PRIEUR	2
Christophe MAES	20	Frederic VIVIER	2
Rena CZESCHEL	14	Hubert LOISEL	2
Hervé Claustre	13	Stéphanie Louazel	2
Kjell Arne MORK	11	Laurent BEGUERY	2
Laurent Coppola	11	Jordi FONT	1
Cecile CABANES	8	Conan Pascal	1
Xavier ANDRE	7	Juliet HERMES	1
Bettina FACH	6	Pascal Conan	1
Violeta SLABAKOVA	5	Yves GOURIOU	1
Alban LAZAR	5	Pascual ANANDA	1
Xavier CARTON	5	Coppola Laurent	1
Fabien DURANT	4	V. Dutreil and S. Le Reste	1
Gerard ELDIN	4	Alain SERPETTE	1
Dimitris KASSIS	4		

Project	nb floats
BSH	133
CORIOLIS	126
GOODHOPE	76
ARGOMED	41
RemOcean	41
ARGO Italy	38
DAP	32
NAOS	32
ARGO SPAIN	31
OVIDE	14
PIRATA	11
ARGO Norway	11
AMOP	9
CORIOLIS_OVIDE	9
ARGO Finland	8
GMMC-GEOVIDE	8
IFM	7
ARGO GEOMAR	7
GMMC GE MOOSE	6
DEKOSIM	6
EAIMS	5
SRI_LANKA	4
ARGO Bulgaria	4
MEDARGO_IT	4
FLOPS	4

Project	nb floats
ARGO Greece	4
Argo-Italy	3
LEFE_GMMC_CNES	3
HYMEX	3
CORIOLIS_UPSEN	3
WEN	3
AWI	3
ASPEX	2
SHOM	2
MOOXY	2
Opportunité	2
TRACK2010	2
PROSAT	2
EGO2009	2
IFM-GEOMAR	2
EuroArgo	2
JERICO	1
GMMC_CNES	1
SOCIB	1
GMMC - GEOVIDE	1
Physindien	1
CONGAS	1
ARGO_LEBANON	1
PERSEUS	1
ASA	1

Products generated from Argo data ...

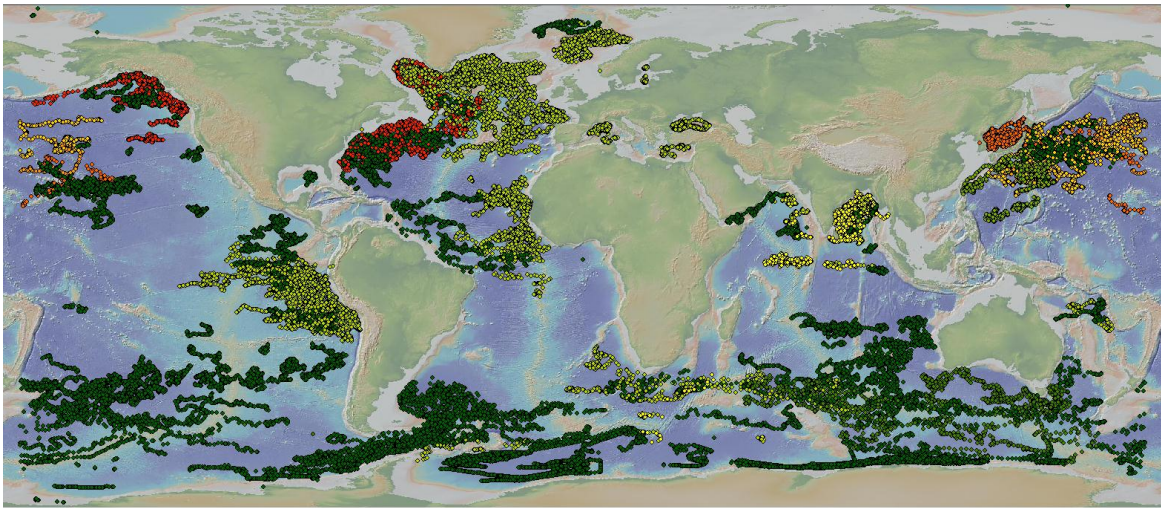
Distribution of Argo oxygen observations to EU former CarboOcean project.

Once a week, all Argo floats data with oxygen observations are distributed to the German data centre Pangea using the OAI inter-operability protocol (Open Archive Initiative).

More on <http://www.coriolis.eu.org/Data-Products/Data-Delivery/Argo-floats-interoperability-services2>

This year, 11 863 new oxygen profiles from 249 floats were distributed.

A total of 73 622 oxygen profiles from 616 floats were distributed since 2004.

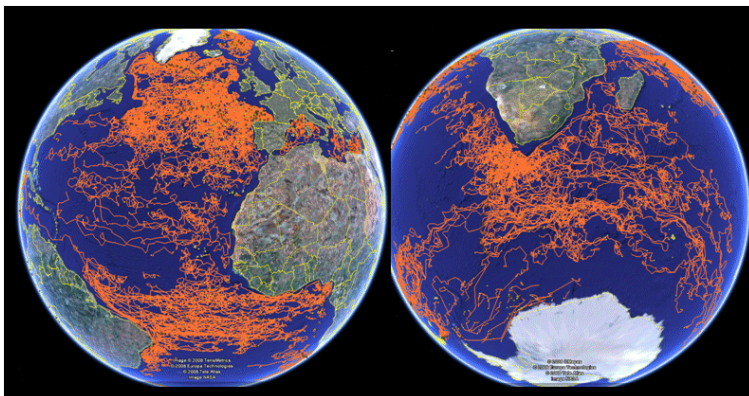


Oxygen profiles collected by all Argo partners since 2004: 73622 profiles from 616 floats.

Sub-surface currents ANDRO Atlas

Based on Argo trajectory data, Michel Ollitrault and the Ifremer team are regularly improving the “Andro” atlas of deep ocean currents. The ANDRO project provides a world sub-surface displacement data set based on Argo floats data. The description of each processing step applied on float data can be found in:

- http://www.ifremer.fr/lpo/files/andro/ANDRO_JAOT_2013.pdf
- See also : <http://wwz.ifremer.fr/lpo/Produits/ANDRO>



Argo trajectories from Coriolis DAC are carefully scrutinized to produce the “Andro” atlas of deep ocean currents.

Delayed mode trajectories recovered from ANDRO project

During ADMT12 in Seoul it was decided that the ANDRO project dataset could be used to populate the first delayed mode NetCDF trajectory files. From Andro data set, the Argo delayed mode trajectories in format version 3.1 are now available on:

- <ftp://ftp.ifremer.fr/ifremer/argo/etc/coriolis-custom/argo-andro-data>

The delayed mode trajectories are described in ftp://ftp.ifremer.fr/ifremer/argo/etc/coriolis-custom/argo-andro-data/argo-andro-data_20141016.pdf

The Principal Investigators (PI) and DACs can decide to use or ignore the delayed mode trajectories proposed from ANDRO.

In addition to delayed mode trajectory files, a series of profile files were rescued for each DAC. A "rescued" profile is a profile available with Andro, but not identified on the GDAC ftp site. Each DAC may decide to rescue or ignore these profiles.

DAC	nb rescued profiles
aoml	8545
bodc	378
coriolis	3770
csio	10
csiro	38
incois	1129
jma	485
kma	348
kordi	208
meds	708
Total	15619

Number of profiles available from ANDRO not found on GDAC

Delayed Mode QC

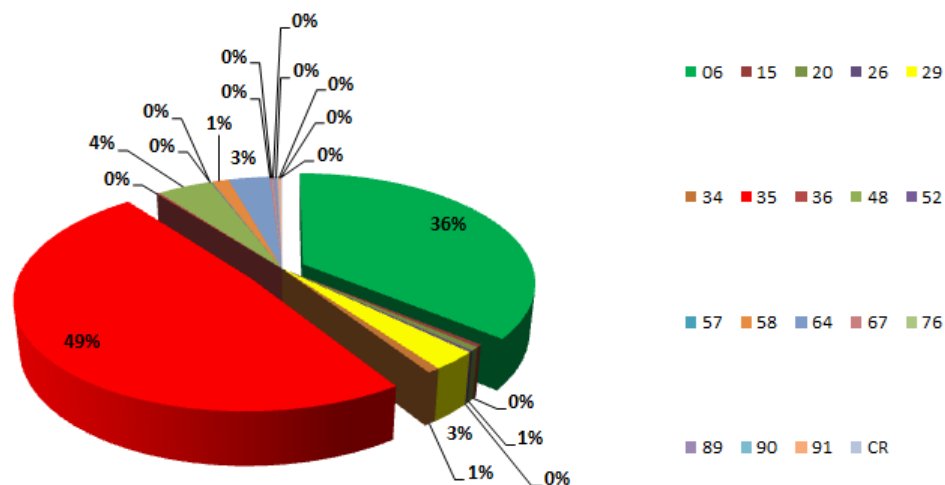
(Please report on the progress made towards providing delayed mode Argo data, how it's organized and the difficulties encountered and estimate when you expect to be pre-operational).

At the Coriolis data centre, we process the delayed mode quality control following four steps. Before running the OW method, we check carefully the metadata files, the pressure offset, the quality control done in real time and we compare with neighbor profiles to check if a drift or offset could be easily detected. As each year, we have worked on this way with PIs to strengthen the delayed mode quality control.

Some floats have been deployed from some projects, meaning a lot of PIs and a lot of time for explaining the DM procedure to all of them. A few PIs are totally able to work on DMQC following the four steps but this is not the case for most of them. Since the unavailability of the PIs leads to work by intermittence and then extend the period of work on the floats, we did the work with a private organism (Glazeo) to improve the realization of the DMQC, exchanging only with the PIs to validate results and discuss about physical oceanography in studied area. Working in this way, we largely improve the amount of delayed mode profiles.

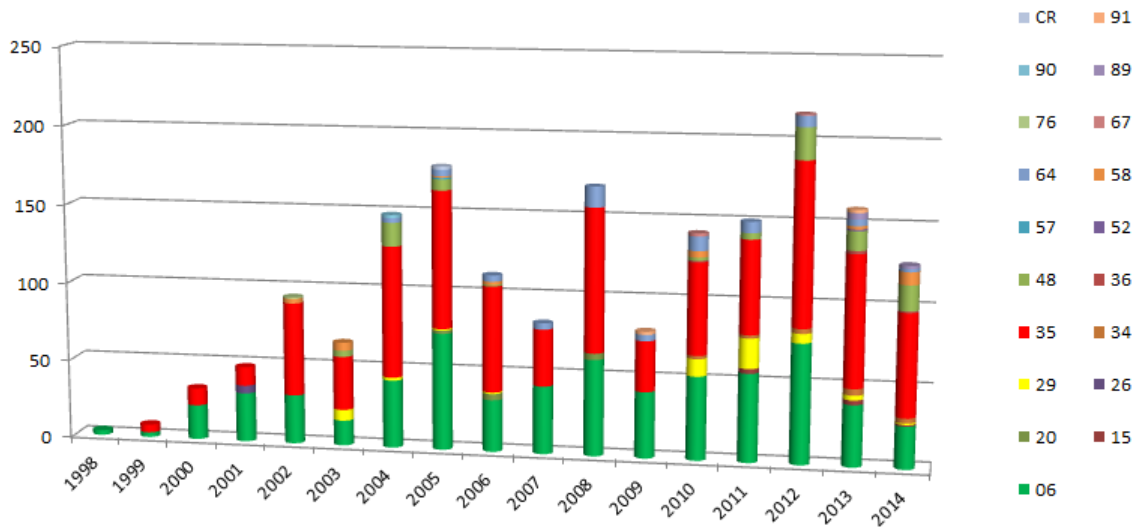
For a few projects, there are still no identified operators to do DMQC, for instance the first run has been done by students which have now left institutes or are not available to carry on with this work. We have made a lot of progress with BSH (Marek Stawarz and now Birgit Klein) and some floats have been processed in DMQC or are in progress (we are finalizing delayed mode QC for some floats).

Floats by country



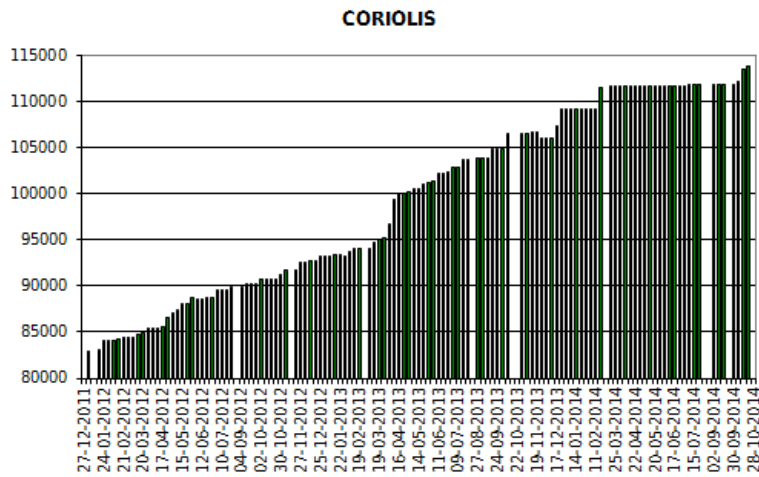
Percentage of floats by country in the Coriolis DAC.

Codes for the countries: 06 : Germany - 15 : Bulgaria - 20 : Chili - 26 : Denmark - 29 : Spain - 34 : Finland - 35 : France - 36 : Greece - 48 : Italy - 52 : Lebanon - 57 : Mexico - 58 : Norway - 64 : Netherlands - 67 : Poland - 76 : China - 89 : Turkey - 90 : Russia - 91 : - South Africa - CR : Costa Rica

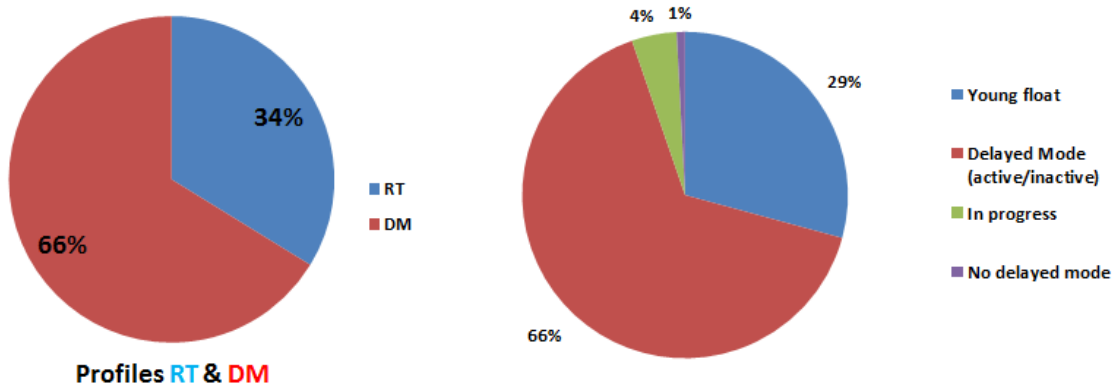


Number of floats by country and by launch's year in the Coriolis DAC

During the last year, 4517 new delayed mode profiles were produced and validated by PIs. A total of 113795 delayed mode profiles were produced and validated since 2005.



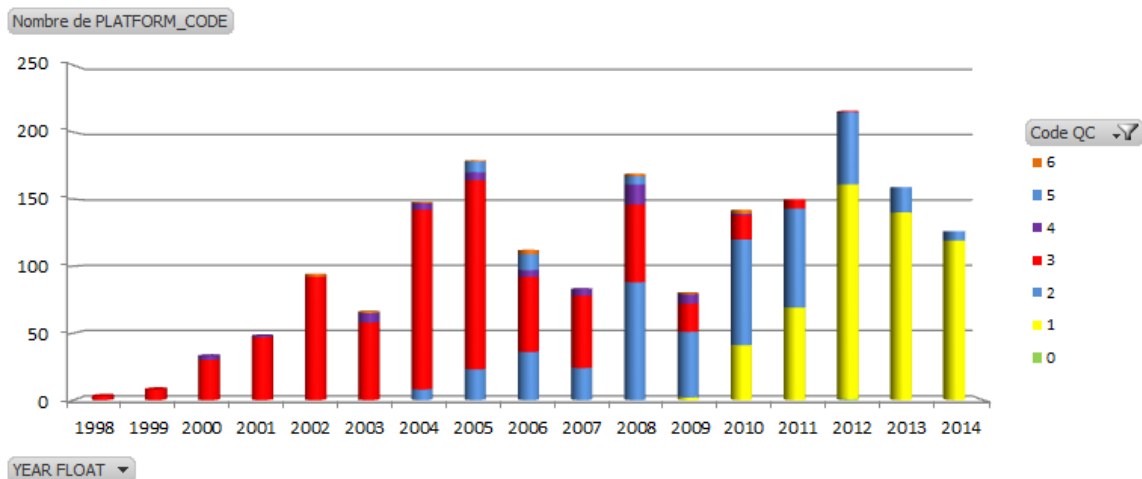
Evolution of the DM profiles' submission versus dates



Status of the floats processed by Coriolis DAC.

Left: in terms of profile percent and right: in terms of float percent (DM : delayed mode – RT : real time).

The status of the quality control done on the Coriolis floats is presented in the following plot. For the two last years (2012-2013), most of the floats are still too young (code 1) to be performed in delayed mode. For the year 2011, we are working on the DMQC of those floats, which should be available for the end of this year. The codes 2 and 3 show the delayed mode profiles for respectively active and dead floats.

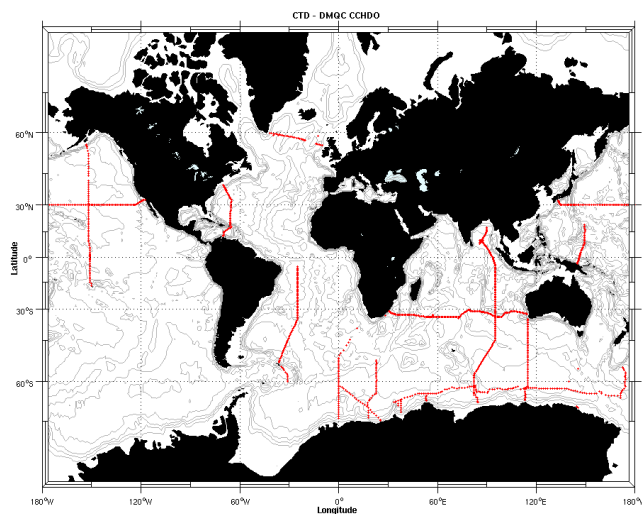


Status of the quality control done on profiles sorted by launch's year, code 1: young float, code 2: active float, DM done, code 3 : dead float, DM done; code 4 : DM in progress, code 5 : waiting for DM, code 6 : problems with float.

Reference database

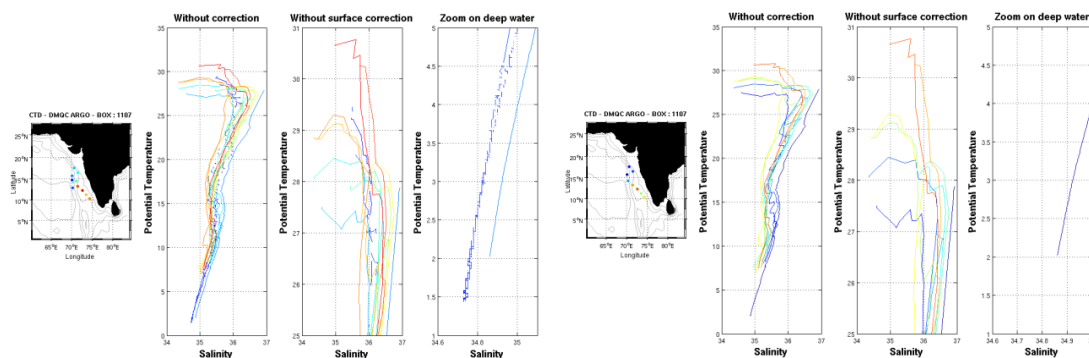
A new version CTD_for_DMQC_2014V01 is in preparation and will be provided in November 2014.

The November's version takes into account new CTD provided by the CCHDO (following figure) as well as feedbacks from users on quality of some profiles.



New CTD datasets downloaded on the CCHDO website.

The new version will also take into account best quality control on data (based on analysis of deep water). At this time, only updates on boxes in the area 1 have been corrected.



Example of updates - box 1107 : left previous version, right; updated version.

This version will be provided on the ftp site in smaller tar balls, one by wmo box area (1-3-5-7): for instance, CTD_for_DMQC_2014V01_1.tar.gz for all boxes starting with wmo 1, then we will have 4 tar files.

GDAC Functions

(If your centre operates a GDAC, report the progress made on the following tasks and if not yet complete, estimate when you expect them to be complete)

- National centres reporting to you
- Operations of the ftp server
- Operations of the www server
- Data synchronization
- Statistics of Argo data usage : Ftp and WWW access, characterization of users (countries, field of interest : operational models, scientific applications) ...

National centres reporting to you

Currently, 11 national DACs submit regularly data to Coriolis GDAC.

The additional GTS DAC contains all the vertical profiles from floats that are not managed by a national DAC. These data come from GTS and GTSP projects. The GTS profiles are quality controlled by the French DAC (Coriolis).

On October 22nd, the following files were available from the GDAC FTP site.

DAC	metadata files 2014	metadata files 2013	increase from last year	profile files 2014	profile files 2013	increase from last year2	delayed mode profile files 2014	delayed mode profile files 2013	increase from last year3	trajectory files 2014	trajectory files 2013	increase from last year4
AOML	5 191	4 750	9%	701 226	611 161	15%	485 436	445 834	9%	5 817	4 617	26%
BODC	472	435	9%	47 329	42 136	12%	31 221	31 221	0%	420	415	1%
Coriolis	1 884	1 693	11%	168 971	145 718	16%	111 454	104 902	6%	1 795	1 579	14%
CSIO	276	140	97%	18 325	11 623	58%	10 141	9 201	10%	201	137	47%
CSIRO	621	596	4%	96 450	79 427	21%	44 076	37 324	18%	566	566	0%
INCOIS	339	302	12%	41 529	37 007	12%	26 410	26 409	0%	335	299	12%
JMA	1 339	1 229	9%	150 463	138 226	9%	91 672	85 536	7%	1 325	1 215	9%
KMA	184	168	10%	20 925	18 358	14%	17 180	13 970	23%	176	160	10%
KORDI	119	119	0%	15 459	14 849	4%	0	0	#DIV/0!	113	119	-5%
MEDS	379	368	3%	40 432	37 911	7%	23 481	23 449	0%	371	362	2%
NMDIS	19	19	0%	1 963	1 622	21%	0	0		19	19	0%
Total	10 823	9 819	10%	1 303 072	1 138 038	0	841 071	777 846	8%	11 138	9 488	17%

Operations of the ftp server

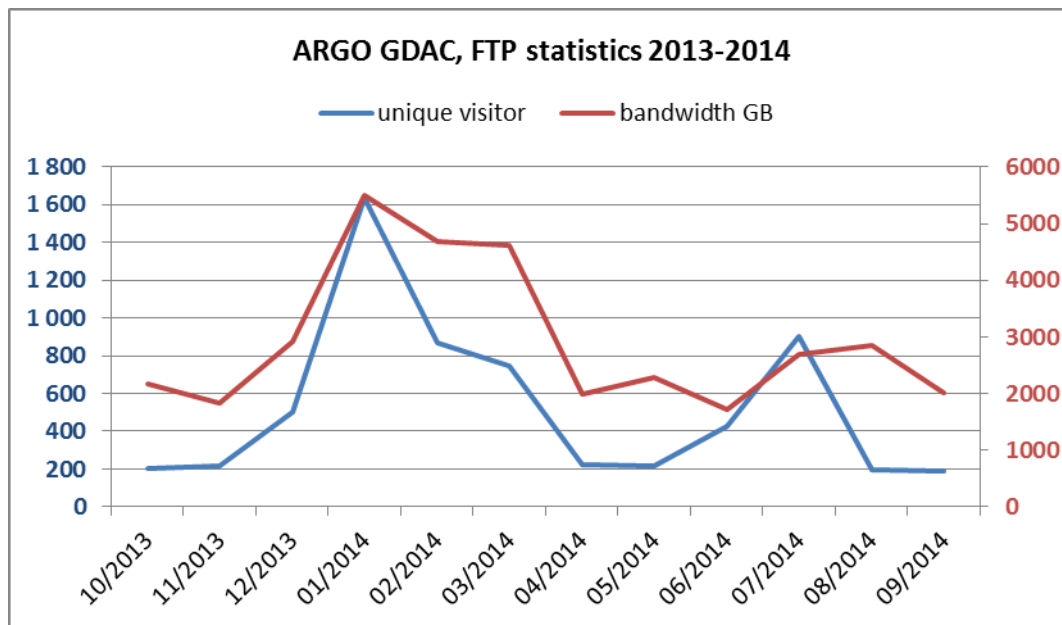
- Meta-data, profile, trajectory and technical data files are automatically collected from the national DACs ;
- Index files of meta-data, profile and trajectory are daily updated ;
- GDAC ftp address: <ftp://ftp.ifremer.fr/ifremer/argo>

Statistics on the Argo GDAC FTP server: <ftp://ftp.ifremer.fr/ifremer/argo>

There is a monthly average of 526 unique visitors, performing 3170 sessions and downloading 2940 gigabytes of data files.

The graphics show a steep increase of activity on GDAC FTP in January 2014. There is no clear explanation yet for that increase.

ARGO GDAC FTP statistics					
month	unique visitor	number of visits	hits	bandwidth GB	
10/2013	202	2 537	6 026 215	2166	
11/2013	214	2 351	4 242 190	1838	
12/2013	499	2 958	3 884 042	2913	
01/2014	1 634	4 360	3 786 613	5509	
02/2014	867	3 181	7 075 494	4673	
03/2014	744	3 311	6 815 564	4626	
04/2014	224	2 710	6 458 830	1995	
05/2014	219	3 104	4 587 936	2284	
06/2014	426	3 280	2 465 725	1713	
07/2014	901	3 915	4 024 710	2697	
08/2014	194	3 236	4 589 316	2851	
09/2014	191	3 095	6 381 900	2012	
Average	526	3 170	5 028 211	2 940	

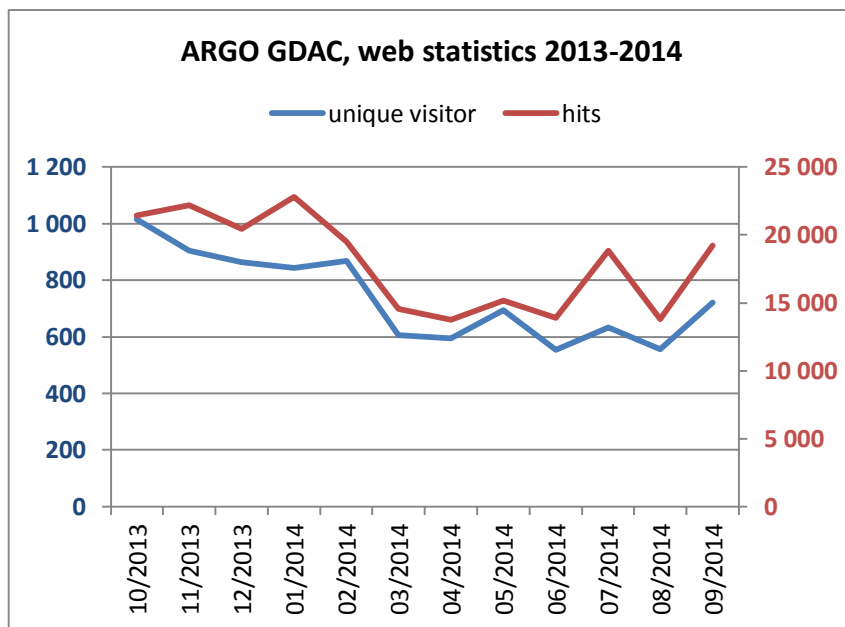


Statistics on the Argo data management web site: <http://www.argodatamgt.org>

There is a monthly average of 738 unique visitors, performing 1300 visits and 17 968 hits.

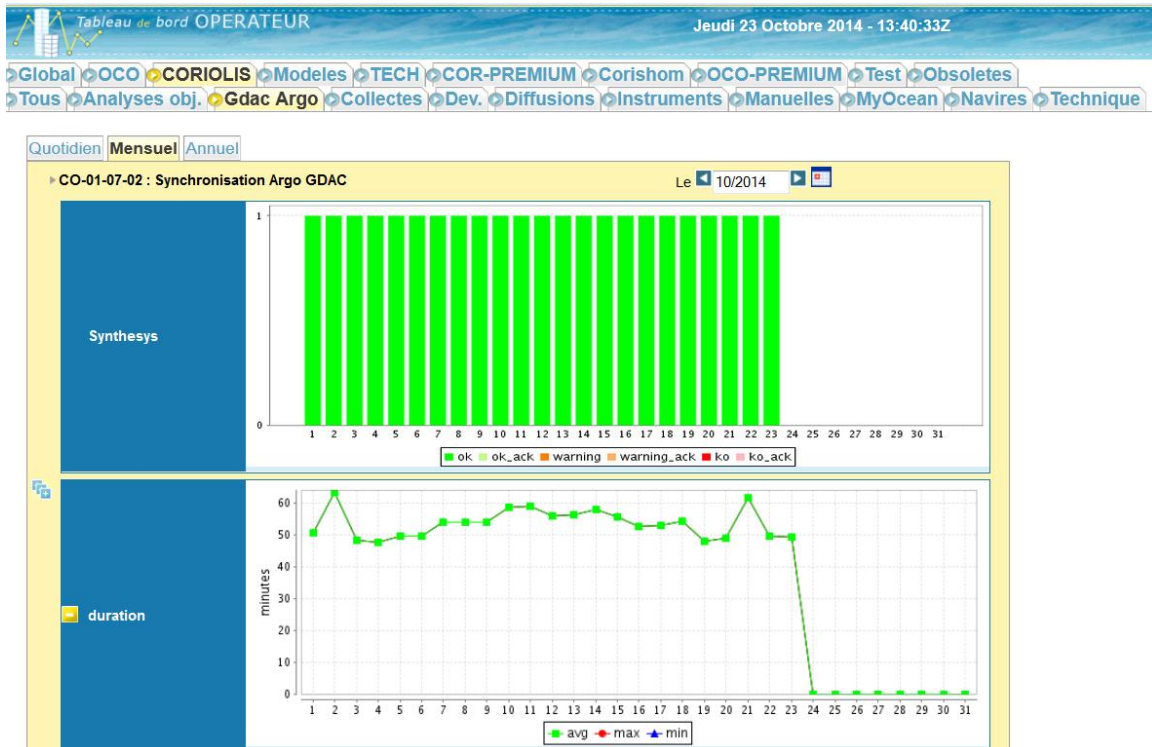
The graphics shows a slightly decreasing number of unique visitors.

ARGO GDAC web statistics						
month	unique visitor	visits	pages	hits	bandwidth	
10/2013	1 015	1 865	6 563	21 425	854	
11/2013	904	1 571	11 665	22 185	711	
12/2013	864	1 770	11 692	20 464	1 005	
01/2014	844	1 591	12 294	22 794	928	
02/2014	869	1 570	11 268	19 507	916	
03/2014	605	1 045	2 514	14 538	998	
04/2014	595	1 044	2 242	13 761	1 110	
05/2014	694	1 128	2 483	15 153	1 210	
06/2014	554	856	1 716	13 888	1 030	
07/2014	634	1 093	2 206	18 865	1 100	
08/2014	556	880	1 941	13 810	995	
09/2014	721	1 187	2 695	19 222	1 630	
Average	738	1 300	5 773	17 968	1 041	



Data synchronization

The synchronization with US-Godae server is performed once a day at 01:55Z.



The synchronization dashboard in October 2014: the daily synchronization time takes on average 50 minutes.

The 50 minutes of daily synchronization is too long and not normal. After investigation, we found that 1200 profile files existed on the US GDAC but not on Coriolis GDAC. But, once a day these 1200 files were rejected as non-valid files by the format checker. The DAC resubmitted these files, with a valid format on both US and Coriolis GDAC. The synchronization process now takes less than 10 minutes (mainly index comparison).

FTP server monitoring

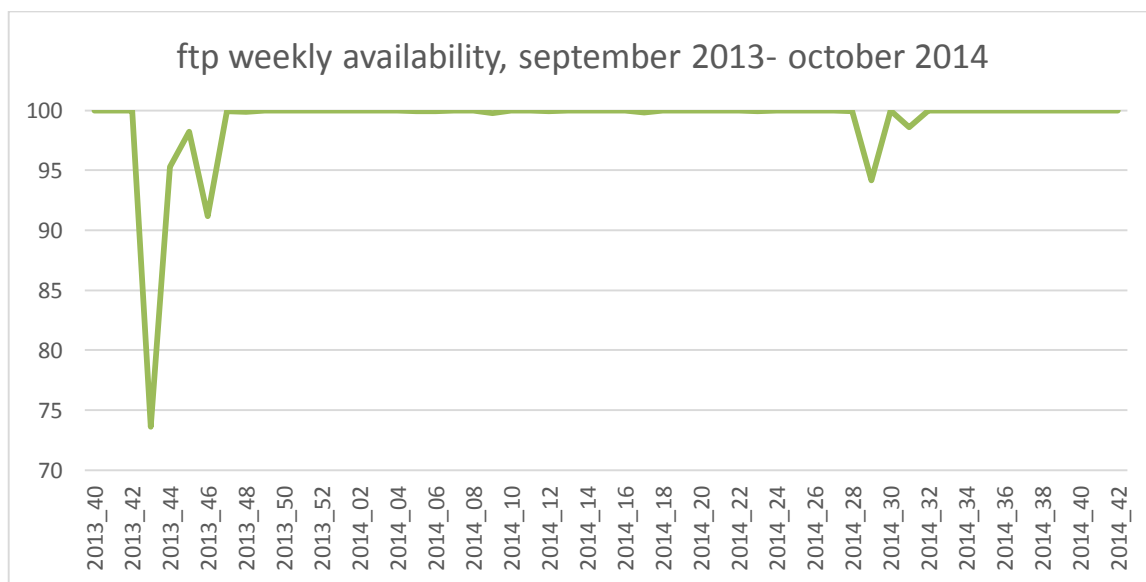
The Argo GDAC ftp server is actively monitored by a Nagios agent (<http://en.wikipedia.org/wiki/Nagios>).

Every 5 minutes, a download test is performed. The success/failure of the test and the response time are recorded. The FTP server is a virtual server on a linux cluster.

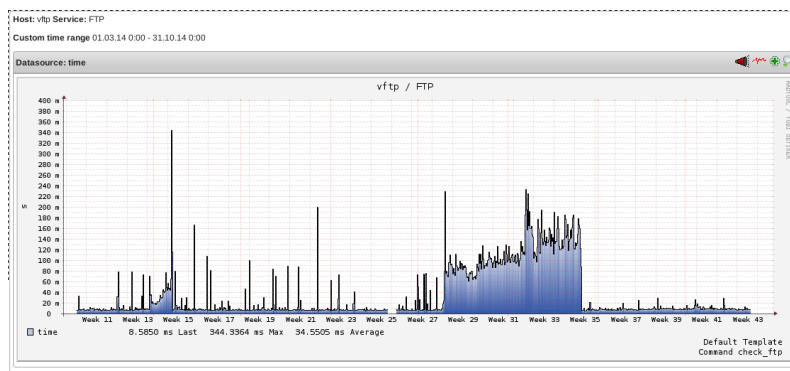
We faced 2 bad events in November 2013 and in July 2014.

- In November 2013 (week 43), we cumulated 3 days, 2 hours and 28 minutes of interruption. This major problem was related a system instability on the linux cluster.
- In July 2014 (week 29), we cumulated 2 days of interruption. The Ifremer Internet service provider faced a router problem, somewhere between Brest and Paris.

For the last 3 months (August – October 2014), Nagios did not detect any Internet or ftp server failure.



Nagios ftp monitoring: between September 2013 and October 2014



Nagios monitoring: duration of a test file download between March and October 2014

The file transfer time was significantly longer for some during week 29 (July 2014).

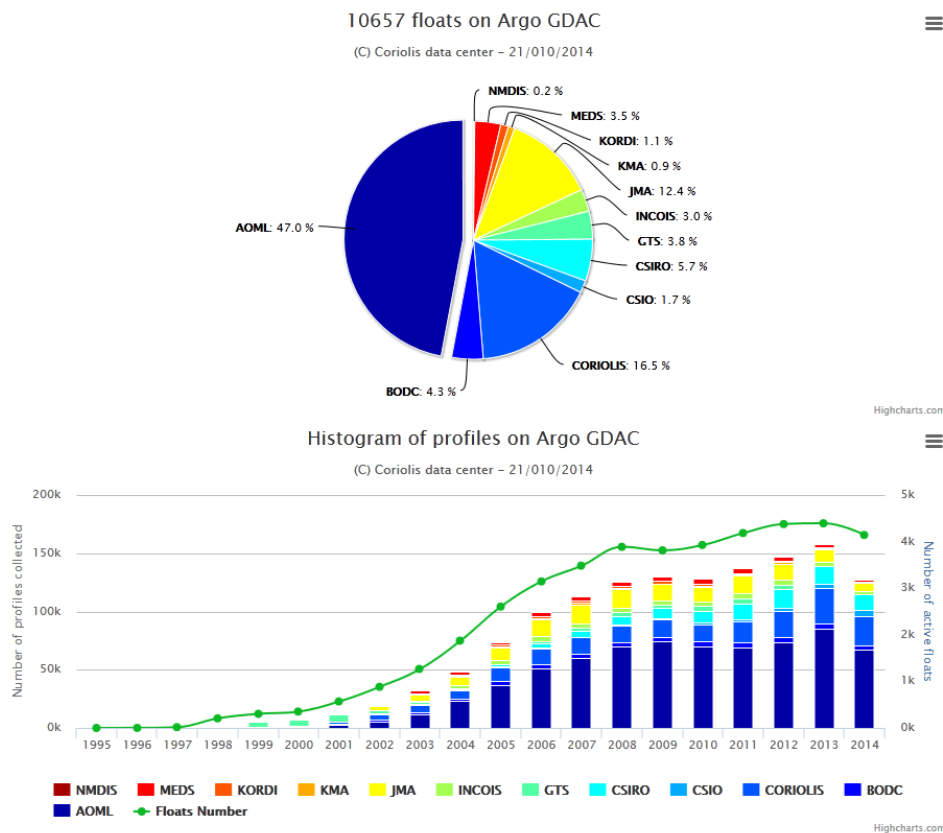
Grey list

According to the project requirements Coriolis GDAC hosts a grey list of the floats which are automatically flagged before any automatic or visual quality control. **The greylist has 1248 entries** (October 23rd 2014), compared to 1139 entries one year ago.

DAC	nb floats in greylist
AOML	913
BODC	51
CSIO	62
NMDIS	8
Coriolis	25
INCOIS	1
JMA	161
KMA	9
KORDI	9
MEDS	9
Total	1248

Statistics on GDAC content

The following graphics display the distribution of data available from GDAC, per float or DACs. These statistics are weekly updated on : <http://www.argodatamgt.org/Monitoring-at-GDAC>



Mirroring data from GDAC: rsync service

In July 2014, we installed a dedicated rsync server called vdmzrs.ifremer.fr described on:

- <http://www.argodatamgt.org/Access-to-data/Argo-GDAC-synchronization-service>

This server provides a synchronization service between the "dac" directory of the GDAC with a user mirror. From the user side, the rsync service:

- Downloads the new files
- Downloads the updated files
- Removes the files that have been removed from the GDAC
- Compresses/uncompresses the files during the transfer
- Preserves the files creation/update dates
- Lists all the files that have been transferred (easy to use for a user side post-processing)

Examples

Synchronization of a particular float

- `rsync -avzh --delete vdmzrs.ifremer.fr::argo/coriolis/69001 /home/mydirectory/...`

Synchronization of the whole dac directory of Argo GDAC

- `rsync -avzh --delete vdmzrs.ifremer.fr::argo/ /home/mydirectory/...`

Argo DOI, Digital Object Identifier on monthly snapshots

A digital object identifier (DOI) is a unique identifier for an electronic document or a dataset. Argo data-management assigns DOIs to its documents and datasets for two main objectives:

- Citation: in a publication the DOI is efficiently tracked by bibliographic surveys
- Traceability: the DOI is a direct and permanent link to the document or data set used in a publication

Argo documents DOIs

- Argo User's manual: <http://dx.doi.org/10.13155/29825>

Argo GDAC DOI

- Argo floats data and metadata from Global Data Assembly Centre (Argo GDAC)
<http://dx.doi.org/10.12770/1282383d-9b35-4eaa-a9d6-4b0c24c0fc9>

Argo GDAC monthly snapshots DOIs

- Snapshot of 2014 month 09: <http://dx.doi.org/10.12770/bc3de4fa-6668-4e0e-bae3-102c6d9c8ddd>
- Snapshot of 2014 month 08: <http://dx.doi.org/10.12770/57b95b6a-ef27-47db-b14f-f8cb7c729793>

Regional Centre Functions

Check of the overall consistency of the delayed mode corrections in the North Atlantic

We have checked 578 floats processed in delayed mode (DM) in the North Atlantic, North of 30°N. Among the 578 floats, 392 do not show a significant salinity drift or bias according to the PI decision and were not corrected in DM, the other 186 floats have been corrected by the PI.

For each of the 578 floats, we have run a slightly modified OW method. Compared to the OW original method, our configuration better take into account the interannual variability, that was shown to induce spurious corrections with the standard OW method settings and provides an improved estimate of the error bars. The modified OW method has been described in more details in the following paper:

<http://www.mercator-ocean.fr/content/download/2058/15810/version/1/file/Newsletter%2350-final.pdf>

For each float, we have compared the original correction made by the PI and the result of the slightly modified OW method. We found 26 floats among 578 for which the salinity correction proposed by the PI differs significantly from our results. The 26 floats are listed on the NAARC web site:

<http://www.argodatamgt.org/Argo-regional-Centers/North-Atlantic-ARC/Overall-consistency-of-DM-corrections>

Pis or DM operators of the 26 floats have been informed and the DM corrections have been revised or revisions are in process.

We plan to update these checks of the overall consistency of the delayed mode corrections in the NAARC region once a year.

WMO Number	Float Model	Deployment date	Centre	PI	Old DM correction revised ?
1900076	PROVOR CTF2	11/09/2002	IF	Virginie THIERRY	YES on 2014-02
1900078	PROVOR CTF2	15/09/2002	IF	Virginie THIERRY	YES on 2014-02
4900211	PROVOR CTF2	17/03/2002	IF	Virginie THIERRY	YES on 2014-02
4900215	PROVOR CTF2	11/05/2002	IF	Virginie THIERRY	YES on 2014-02
4900223	PROVOR CTF2	17/06/2002	IF	Virginie THIERRY	YES on 2014-02
4900225	PROVOR CTF2	18/06/2002	IF	Virginie THIERRY	YES on 2014-02
6900045	PROVOR CTF2	25/07/2001	IF	Virginie THIERRY	YES on 2014-02
6900166	APEX SBE APF7	07/05/2002	IF	Virginie THIERRY	YES on 2014-02
6900162	PROVOR CTF2	13/10/2001	IF	Virginie THIERRY	YES on 2014-02
6900176	PROVOR CTF2	26/06/2002	IF	Virginie THIERRY	YES on 2014-02
6900395	PROVOR CTS3	13/06/2006	IF	Virginie THIERRY	YES on 2014-02
69032	PROVOR CT	23/04/2000	IF	Christine COATANOAN	YES on 2014-02
69039	PROVOR CT	25/09/2000	IF	Christine COATANOAN	YES on 2014-02
69043	PROVOR CT	05/04/2001	IF	Christine COATANOAN	YES on 2014-02
4900350	APEX SBE APF7	19/09/2003	IF	Juergen FISCHER	NOT YET
4900352	APEX SBE APF7	24/09/2003	IF	Juergen FISCHER	NOT YET
6900160	APEX SBE APF7	02/08/2001	IF	Walter ZENK	NOT YET
6900515	APEX SBE APF8 SN	05/06/2007	IF	Birgit KLEIN	NOT YET
6900560	APEX APF9A F/W	27/08/2008	IF	Birgit KLEIN	NOT YET
6901064	APEX-APF9A	04/07/2011	IF	Holger GIESE	NOT YET
4900412	PROVOR-SBE	10/11/2003	ME	Howard Freeland	NOT YET
4900627	APEX-SBE	22/10/2005	ME	Howard Freeland	NOT YET
4900635	APEX-SBE	19/05/2006	ME	Howard Freeland	NOT YET
4900681	APEX-SBE	23/09/2005	ME	Howard Freeland	NOT YET
4900682	APEX-SBE	27/05/2006	ME	Howard Freeland	NOT YET
6900614	APEX-SBE	16/05/2010	BO	Jon Turton	NOT YET