

# Argo data management report 2015

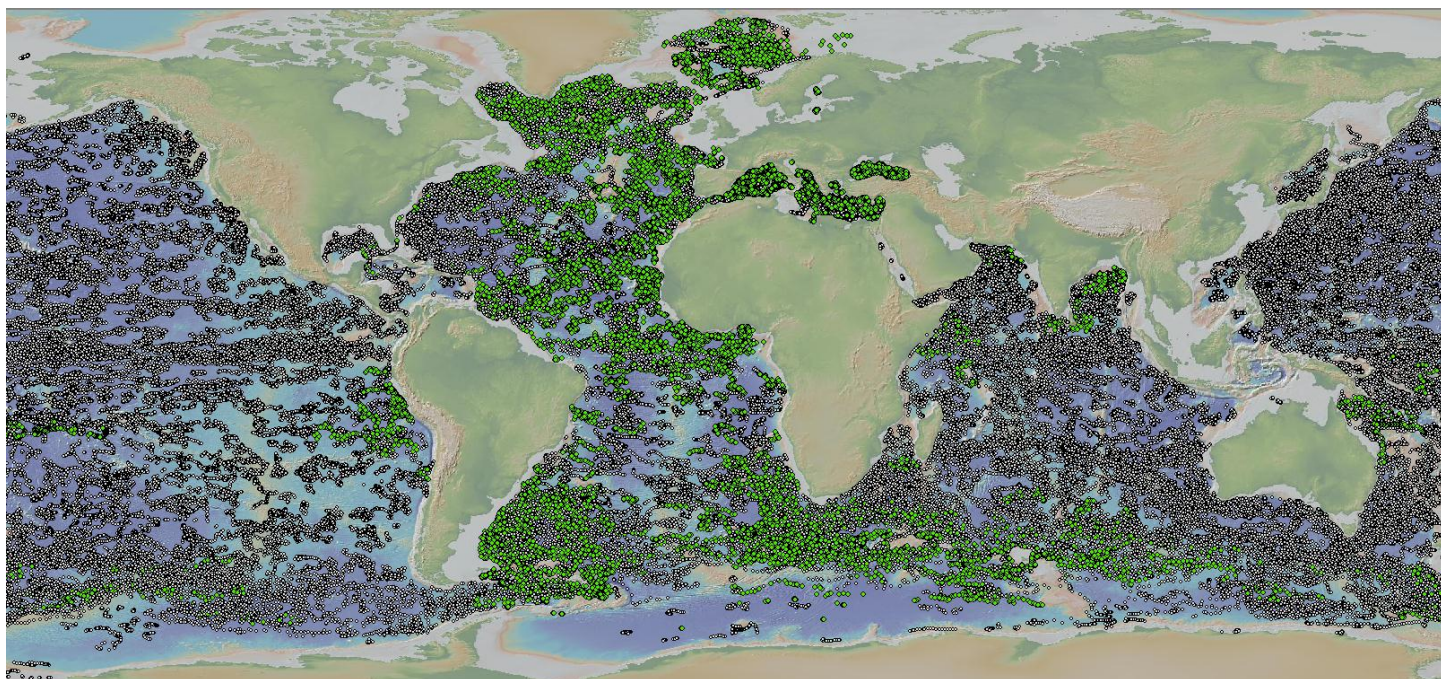
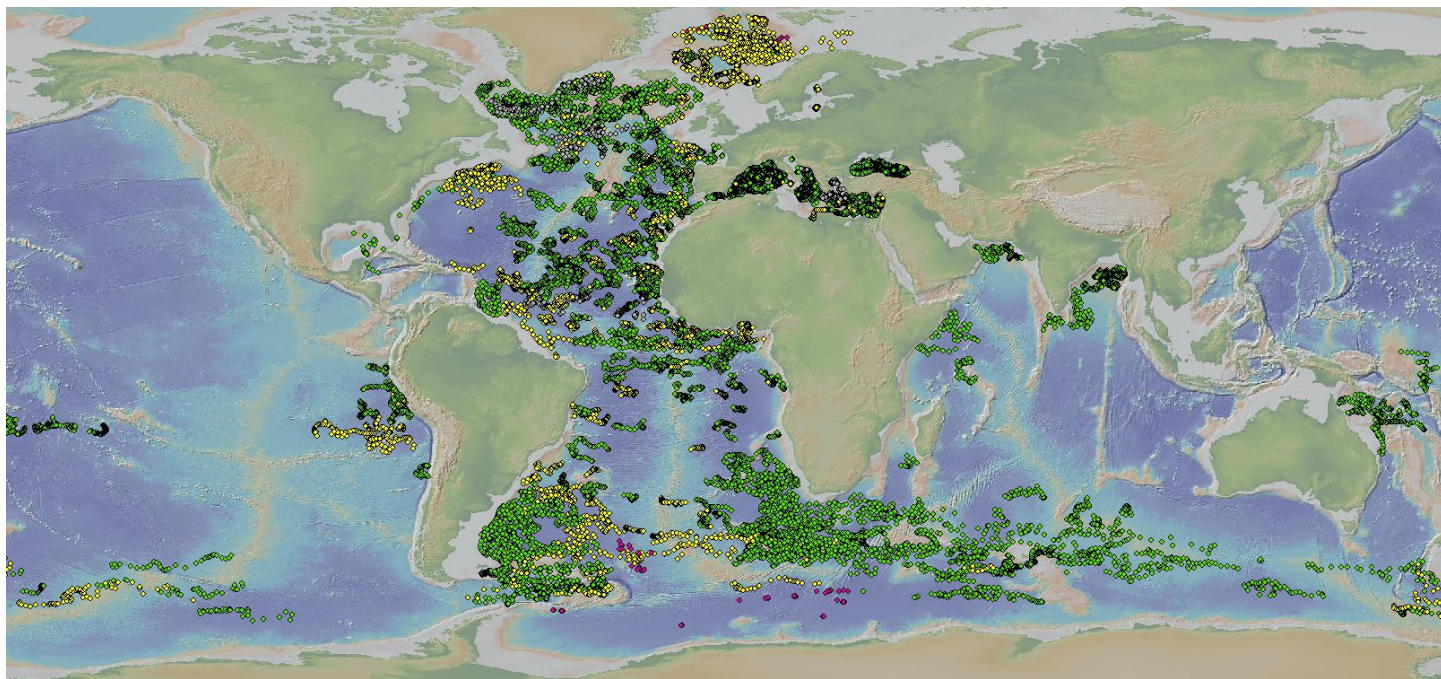
## Coriolis DAC & GDAC

Data Assembly Centre and Global Data Assembly Centre

Annual report October 2015

Version 1.1

November 2<sup>nd</sup>, 2015





## DAC status

This report covers the activity of Coriolis data centre for a one year period from October 1<sup>st</sup> 2014 to September 30<sup>th</sup> 2015.

### Data acquired from floats

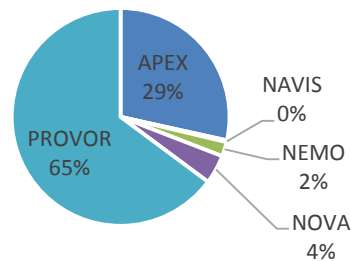
These last 12 months, **25 568 profiles from 745 active floats** were collected, controlled and distributed.

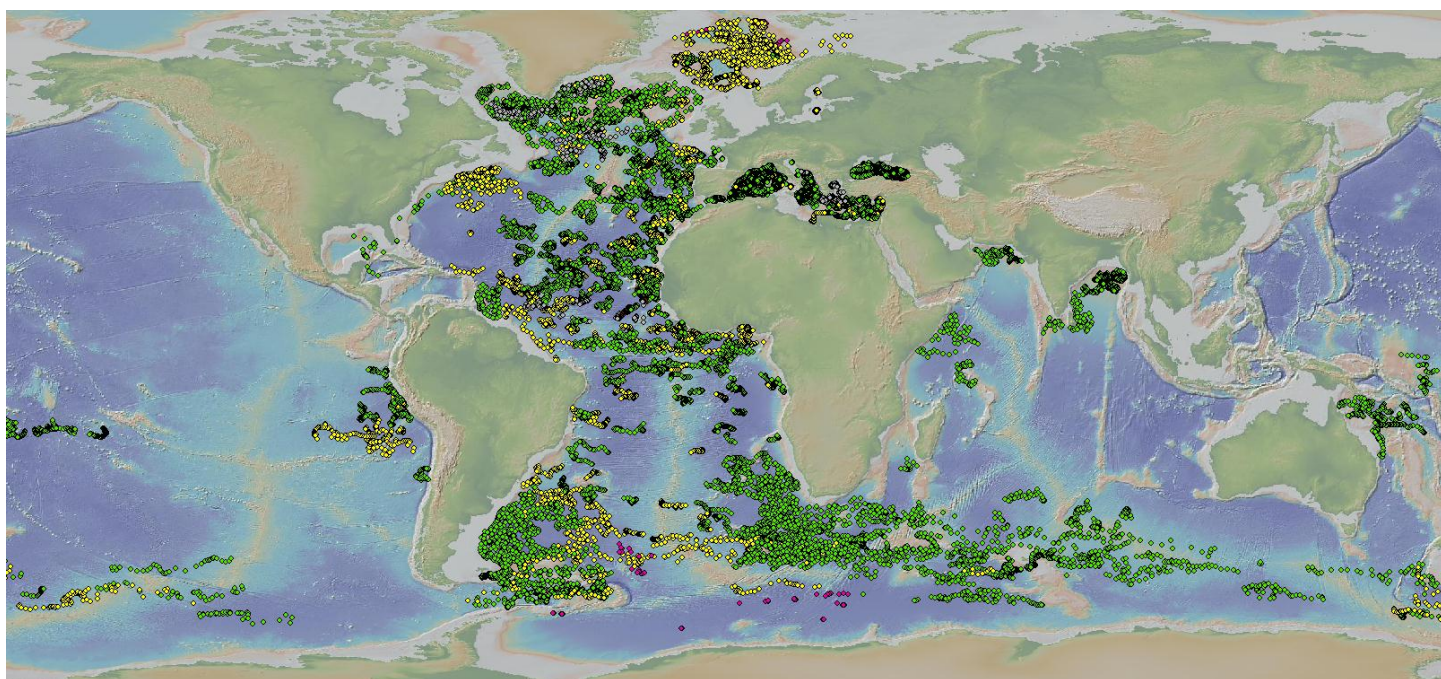
Compared to 2014, **the number of profiles increased by 18%, the number of floats increased by 14%**. The increase in both profile and platforms number is mainly explained by new bio-Argo floats.

The 745 floats managed during that period had 54 versions of data formats.

Number of active float types in 2015

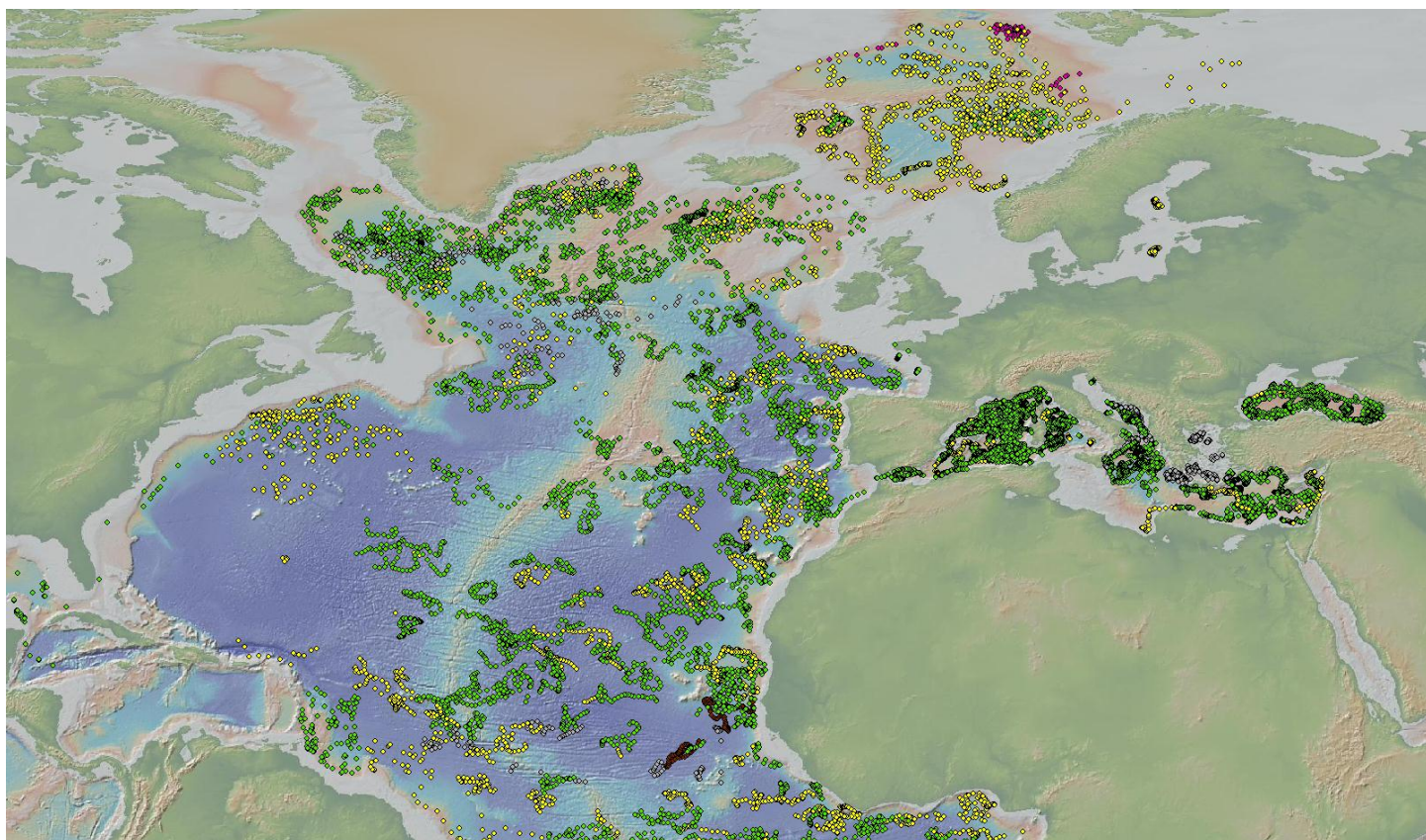
Float family	nb versions	nb floats
APEX	29	212
NAVIS	1	2
NEMO	1	16
NOVA	1	32
PROVOR	22	483
Total	54	745





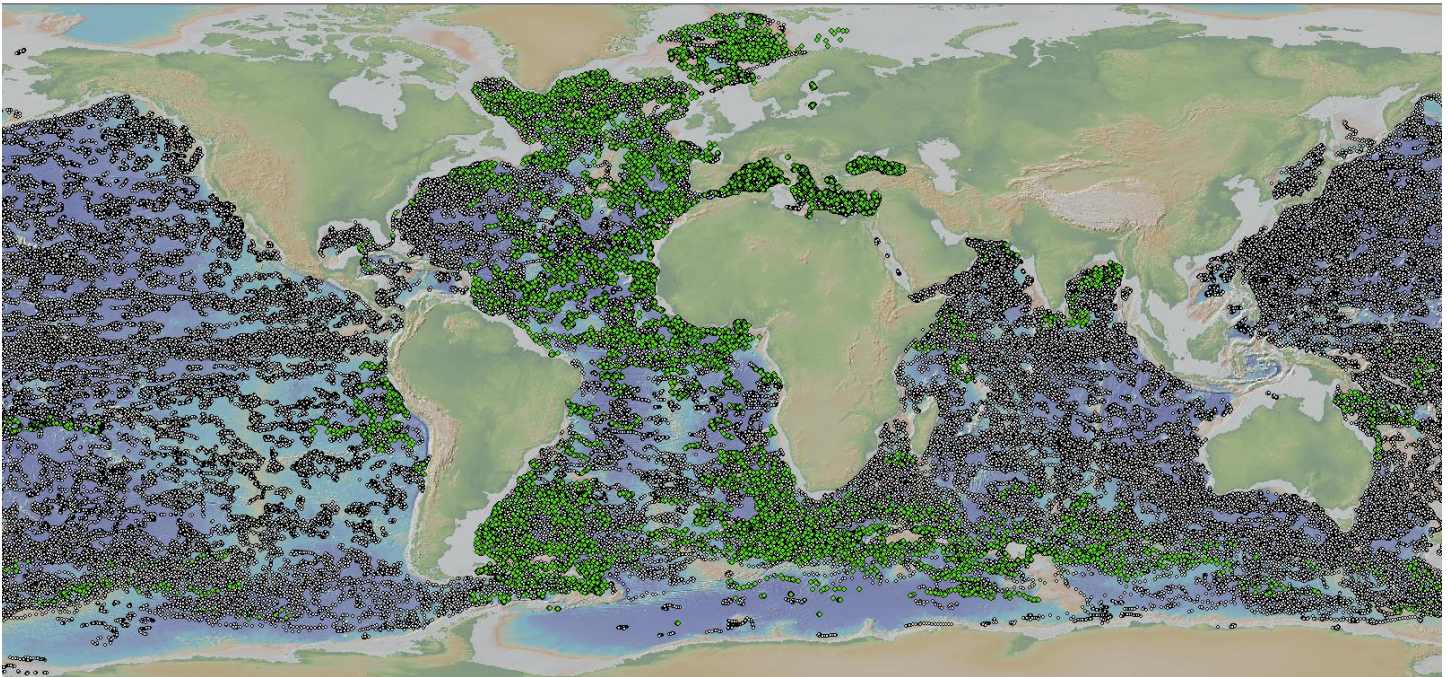
Map of the 25 568 profiles from 745 active floats decoded by Coriolis DAC this current year

Apex Navis Nemo Nova Provor



Map of active floats managed by Coriolis this current year, zoom on north Atlantic area





Map of the profiles from active floats decoded by Coriolis DAC this current year, among the other DAC's profiles (Coriolis: green, other DACs: grey)

## Transition from Argo format 3.0 to Argo format 3.1

### Provor CTS3 floats

In 2015, all versions of Provor CTS3 floats data and metadata were transferred into version 3.1 NetCDF files.

**This transfer required a significant amount of manpower: about 12 man months, shared between 3 persons.**

The transfer required also a significant amount of data processing resources.

### From V3.0 real-time data to V3.1

The existing V3.0 real-time data files were reprocessed from raw Argos or Iridium data into V3.1 NetCDF files.

### From V3.0 delayed mode data to V3.1

The existing V3.0 delayed mode data were reprocessed from raw Argos or Iridium data into V3.1 real-time NetCDF files. Then, the existing adjustments and calibrations were reported from the V3.0 files into the V3.1 to create a new delayed mode dataset, with better metadata information (such as detailed vertical sampling schemes).

The new files delayed mode files have more information than their previous versions

- A detailed vertical sampling scheme
- A separation of pumped/unpumped CTD profiles
- A consistent configuration/mission scheme between data and metadata files
- Correction of erroneous cycle numbers

### Provor T, CTS1, CTF, CTS2

The Provor T, CTS1, CTS2 were converted from V3.0 to V3.1

For these old floats, most of the profiles were delayed mode files. We did not reprocess the files from raw Argos or Iridium data. For each float, we simply gathered additional metadata and performed a conversion from V3.0 to V3.1.

## Apex floats

All Apex floats are distributed in format version 3.0.

The first version V071412 Apex float V3.1 data processing is under test. The real-time files will be reprocessed and delayed mode files will be reprocessed with a transfer of the delayed mode adjustments/calibrations. This operation will be performed in November 2015.

The rest of 24 versions of still active Apex floats will be converted (probably in 2016).

The 35 versions no more active will be converted to V3.1.

## Nemo, Nova, Navis floats

There are 9018 files for these 3 types of floats (4.6% of the total).

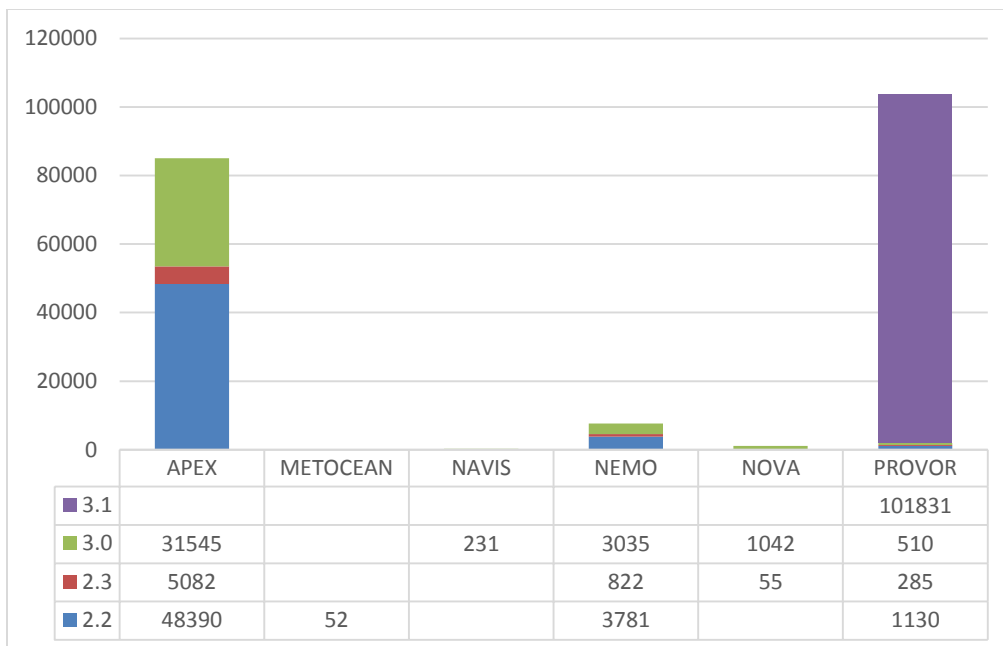
The schedule for V3.1 transition for these files is not yet defined.

## Delayed mode trajectories

The delayed mode trajectories derived from Andro trajectory product were produced in version 3.0. Their conversion to V3.1 trajectory format will be performed in 2016.

The 1442 delayed mode trajectories files are available from:

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



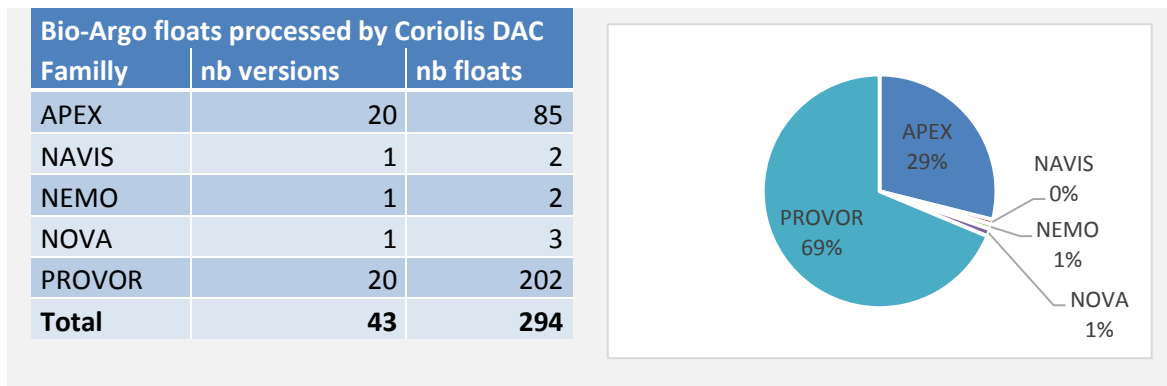
Number of files from Coriolis DAC, per file format

## Bio-geo-chemical sensors on Provor floats

The data processing chain based on Matlab to manage data and metadata from Provor-Remocean floats is continuously improved. These are advanced types of floats performing bio-geo-chemical measurements.

In 2015, data and metadata from these floats have been distributed on Argo GDAC. They feature version 3.1 core and bio profiles, core and bio trajectories, metadata and technical data.

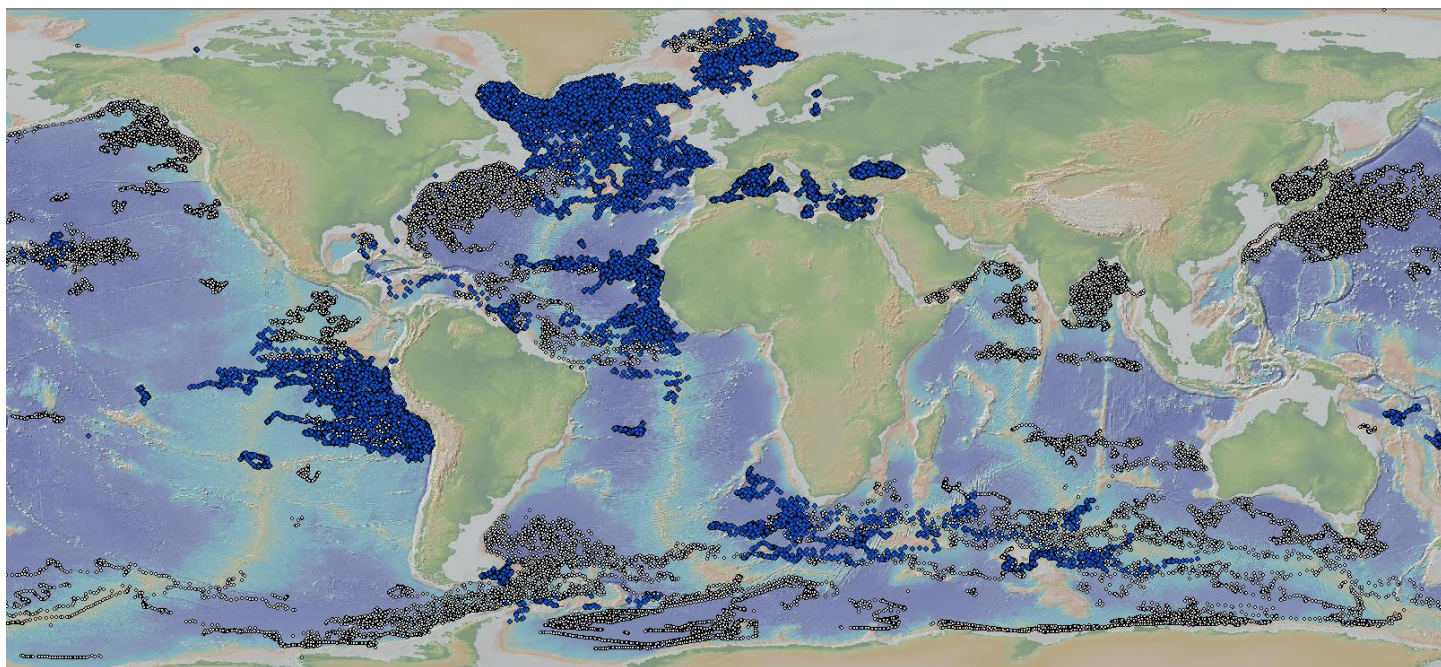
The other bio-Argo floats (Apex, Navis, Nemo and Nova) are distributed in V3.0 data files.



### Overview of Coriolis bio-Argo floats

- 294 Coriolis bio-Argo floats
- Iridium rudics bi-directional communication or Argos
- 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





Map of the 294 bio-Argo floats managed by Coriolis DAC (grey dots: the others DACs bio-Argo floats). They measure parameters such as chlorophyll, turbidity, CDOM, back-scattering, UV, nitrate, bisulfide, pH, radiance, irradiance, PAR.



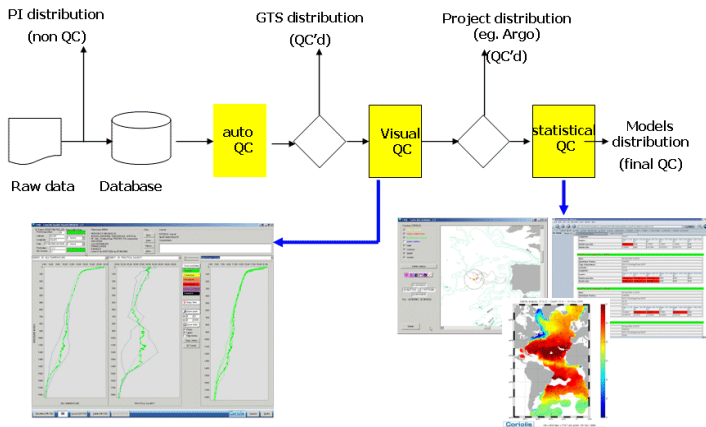
© Antoine Poteau, Observatoire Océanologique de Villefranche (CNRS/UPMC)

Deployments of a bio-argo Provor in Ligurian sea

## 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

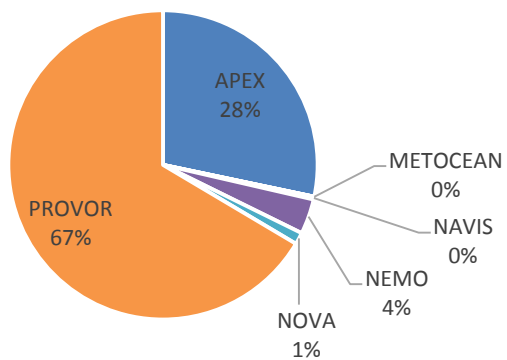
## Data issued to GDACs after real-time QC

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

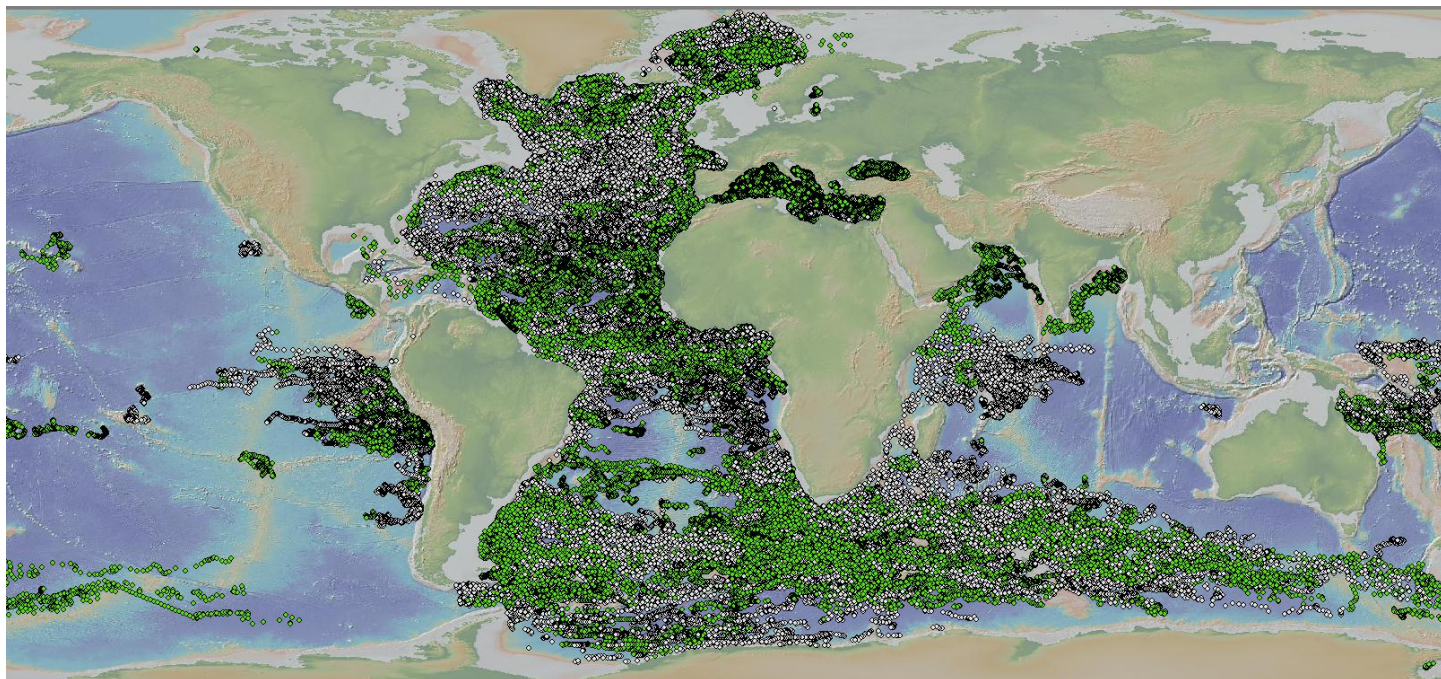
All Coriolis floats, profiles				
Family	nb float	nb profile	RT profiles	DM profiles
APEX	799	84 983	22 038	62 945
METOCAN	1	52	-	52
NAVIS	2	231	231	-
NEMO	163	7 636	2 866	4 770
NOVA	32	1 093	970	123
PROVOR	1 068	103 855	51 764	52 091
<b>Total</b>	<b>2 065</b>	<b>197 850</b>	<b>77 869</b>	<b>119 981</b>



77 869 real-time profile files



Distribution of Coriolis DAC real-time profiles



Map of real-time profiles and delayed mode profiles

Real time: green dots, delayed mode: grey dots

## 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

The delayed mode trajectories derived from Andro trajectory product were produced in version 3.0. Their conversion to V3.1 trajectory format will be performed in 2016.

The 1442 delayed mode trajectories files are available from:

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

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.

## Delayed mode data sent to GDACs

An Argo delayed mode profile contains a calibrated salinity profile (psal\_adjusted parameter).

- A total of **51 741 new or updated delayed mode profiles** was sent to GDACs this year.
- Among these files, 43 014 profiles files were converted into V3.1 format.
- **A total of 119 981 delayed mode profiles** were sent to GDACs since 2005.  
The number of delayed mode profiles increased by 8% this year.

## 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)

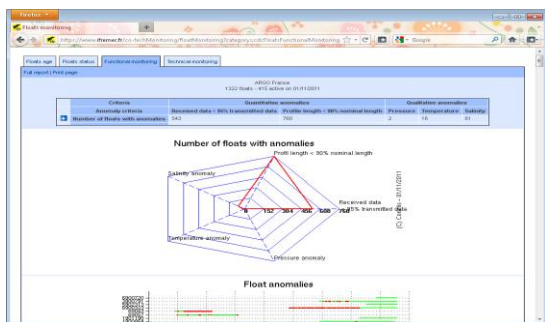
This web page describes all Argo floats interoperability services from Coriolis:



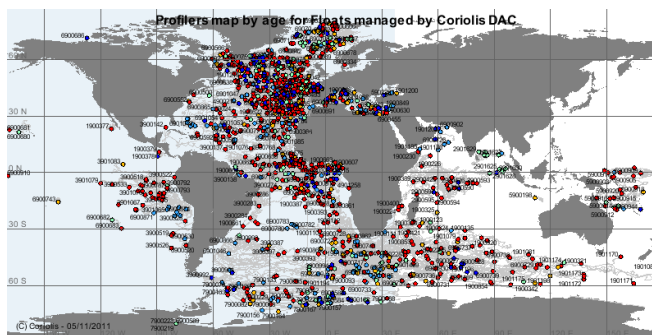
- <http://www.coriolis.eu.org/Data-Products/Data-Delivery/Argo-floats-interopability-services2>
  - Display an individual float's data and metadata
  - Display an individual float's data and metadata in XML format
  - Display all Argo floats
  - Display a group of floats
  - Argo profiles and trajectories 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.

Fonction	Description	Etat J	Etat J-1	Etat J-2	Etat J-3	Dernière exécution (TU)
CO-05-08-08	Archive GDAC Argo					OK 2015-10-27T13:52:33Z
CO-03-07-01	Argo files controler					WARNING 2015-09-17T16:00:30Z
CO-01-07-08	Collecte Argo Coriolis EDAC	😊	😊	😊	😊	OK 2015-10-28T14:58:53Z
CO-01-07-03	Collecte Argo DAC - FTP	😊	😊	😊	😊	OK 2015-10-28T15:02:05Z
CO-01-07-01-02	Collecte Argo DAC - Table argo index profiles	😊	😞	😞	😊	UNDERWAY-LOCKED 2015-10-28T14:52:01Z
CO-01-07-01-aoml	Collecte Argo DAC - aoml	😊	😊	😊	😊	OK 2015-10-28T14:32:07Z
CO-01-07-01-bodc	Collecte Argo DAC - bodc	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z
CO-01-07-01-coriolis	Collecte Argo DAC - coriolis	😞	😟	😊	😊	OK 2015-10-28T15:01:47Z
CO-01-07-01-csio	Collecte Argo DAC - csio	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z
CO-01-07-01-csiro	Collecte Argo DAC - csiro	😊	😊	😊	😊	OK 2015-10-28T14:32:04Z
CO-01-07-01-incois	Collecte Argo DAC - incois	😊	😊	😊	😊	OK 2015-10-28T14:32:04Z
CO-01-07-01-jma	Collecte Argo DAC - jma	😊	😊	😊	😊	OK 2015-10-28T14:32:09Z
CO-01-07-01-kma	Collecte Argo DAC - kma	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z
CO-01-07-01-kordi	Collecte Argo DAC - kordi	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z
CO-01-07-01-meds	Collecte Argo DAC - meds	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z
CO-01-07-01-nmdis	Collecte Argo DAC - nmdis	😊	😊	😊	😊	OK 2015-10-28T14:32:03Z

Argo GDAC operations monitoring: every working day, an operator performs diagnostics and take actions on anomalies (red or orange smileys)

## 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 Copernicus models (Foam, Topaz, Moon, Noos)
- EuroGoos projects

Argo projects: this year, Coriolis data centre performed float data management for **55 Argo scientific projects and 55 PIs (Principal Investigators)**.



### List of Coriolis scientific PIs and project names

Project name	nb floats
coriolis	172
bsh	146
goodhope	82
argo italy	53
remocean	45
naos	42
argomed	34
argo_spain	30
gmmc	28
dap	19
awi	14
ovide	13
sagar	12
argo greece	11
eaims	11
pirata	11
argo norway	10
geovide	10

#### List of projects with more than 10 active floats

List of project with less than 10 active floats : amop, argo brazil, argo bulgary, argo geomar, argo\_fin, asa, aspex, bioargo-italy, brazilian navy argo program, bwr, cnes, congas, dekosim, euro-argo, flops, ge moose, geo\_eco\_mar, gmcc\_cnes, ifm, lefe, mafia, medargo\_it, mooxy, outpace, perseus, physindien, proteusmed, rrex, shackelton, shom, socib, sri\_lanka, ticmoc, track2010, upsen, vsf, wen

PI name	nb floats
birgit klein	86
christine coatanoan	77
sabrina speich	61
pierre-marie poulain	60
holger giese	57
virginie thierry	43
bernard bourles	33
christophe maes	27
pedro joaquin velez belchi	27
fabrizio d'ortenzio	26
herve claustre	23
andreas sterl	19
sabrina speich et michel arhan	18
fabien durand	16

gerd rohardt	14
jose luis pelegri	12
rena czeschel	12
dimitris kassis	11
jean-baptiste sallee	10
kjell arne mork	10

#### List of Principal Investigators (PI) in charge of more than 10 active floats

List of Principal Investigators (PI) in charge of less than 10 active floats: alain serpette, alban lazar, anja schneehorst, bert rudels, bettina fach, cecile cabanes, chistophe maes, christine provost, conan pascal, detlef quadfasel, elodie martinez, frederic vivier, gerard eldin, hubert loisel, jordi font, juliet hermes, katrin latarius, laurent coppola, luis felipe silva santos, nathanaële lebreton, pascal conan, pascual ananda, s. speich, s.cravatte, serge le reste, sorin balan, stephane blain, stéphanie louazel, tero purokoski, thierry moutin, tobias ramalho dos santos ferreira, velez belchi pedro, violeta slabakova, waldemar walczowski, xavier andre

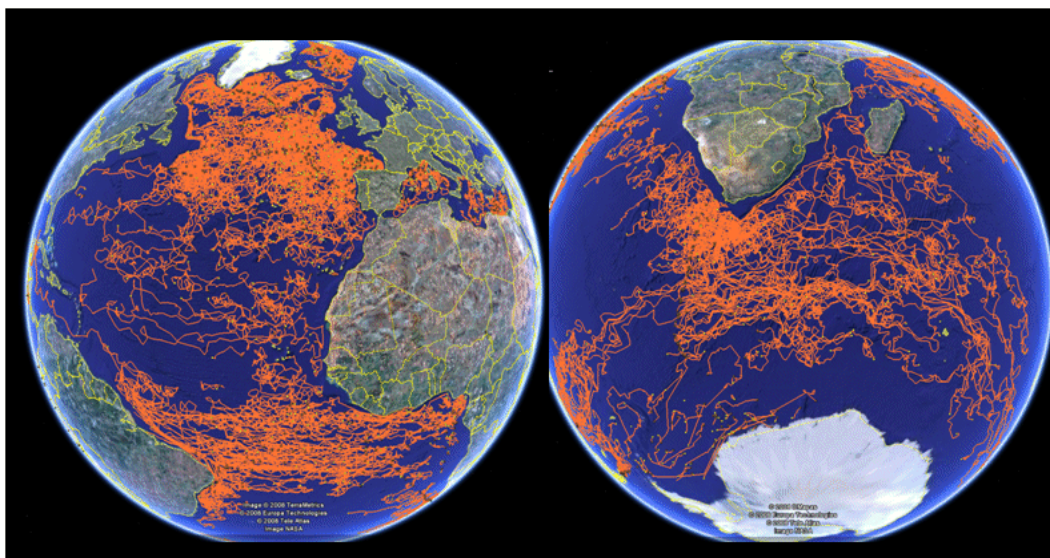


## *Products generated from Argo data ...*

### **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](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 QC

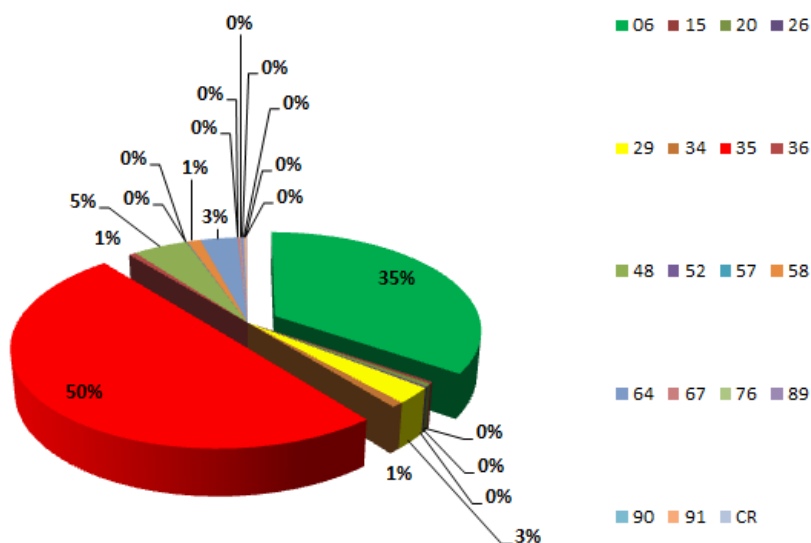
(Please report on the progress made towards providing delayed mode Argo data, how it's organized and the difficulties encountered and estimate when you expect to be pre-operational.)

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.

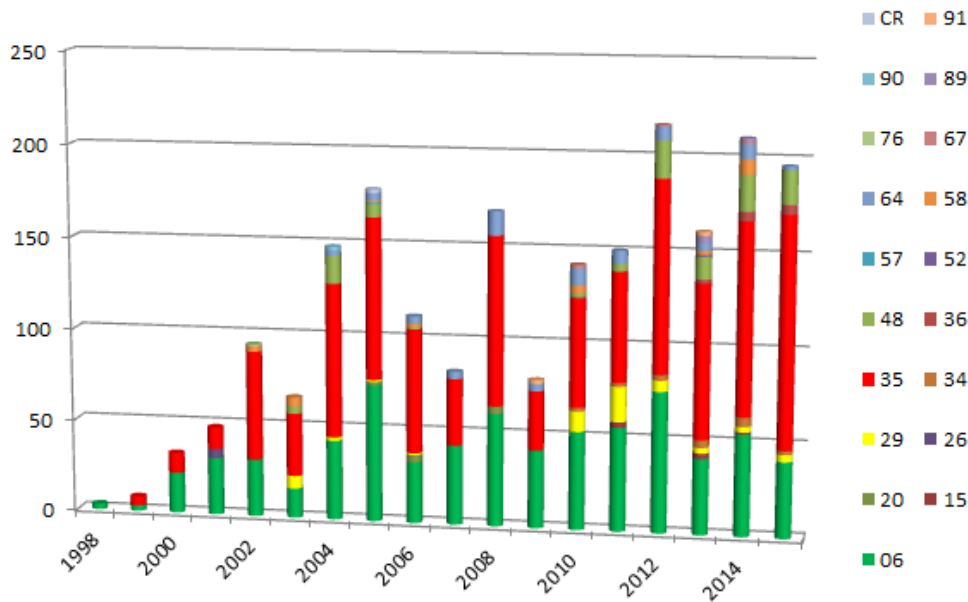
For a few projects, there are still no identified operators to do DMQC, for instance the first run has been done by students which have now left institutes or are not available to carry on with this work. We have made a lot of progress with BSH (Birgit Klein) taking into account also floats from other German institutes and OGS (Giulio Notarstefano) for the MedSea.

Floats by country



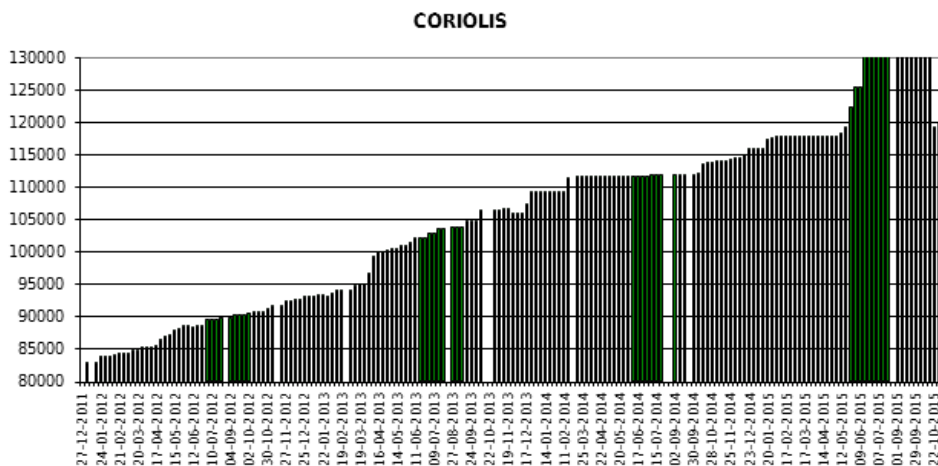
Percentage of floats by country in the Coriolis DAC.

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



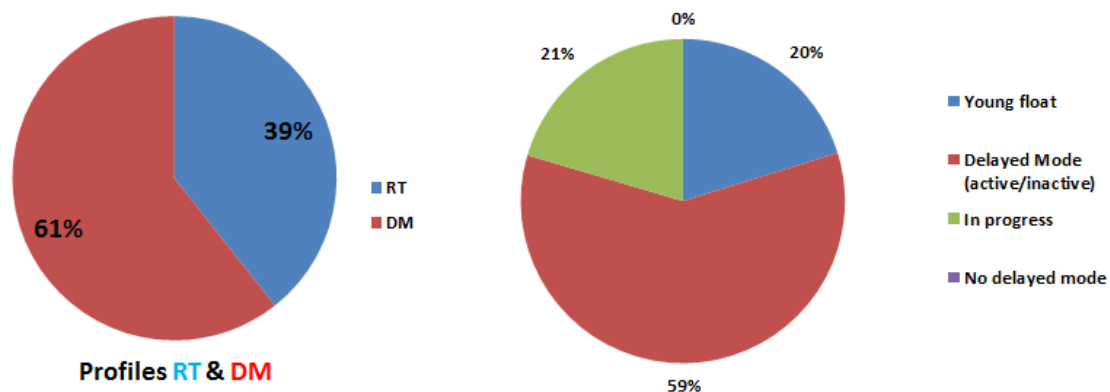
Number of floats by country and by launch's year in the Coriolis DAC

During the last year (from October 2014 to October 2015), 6169 new delayed mode profiles were produced and validated by PIs. A total of 119964 delayed mode profiles were produced and validated since 2005.



Evolution of the DM profiles' submission versus dates

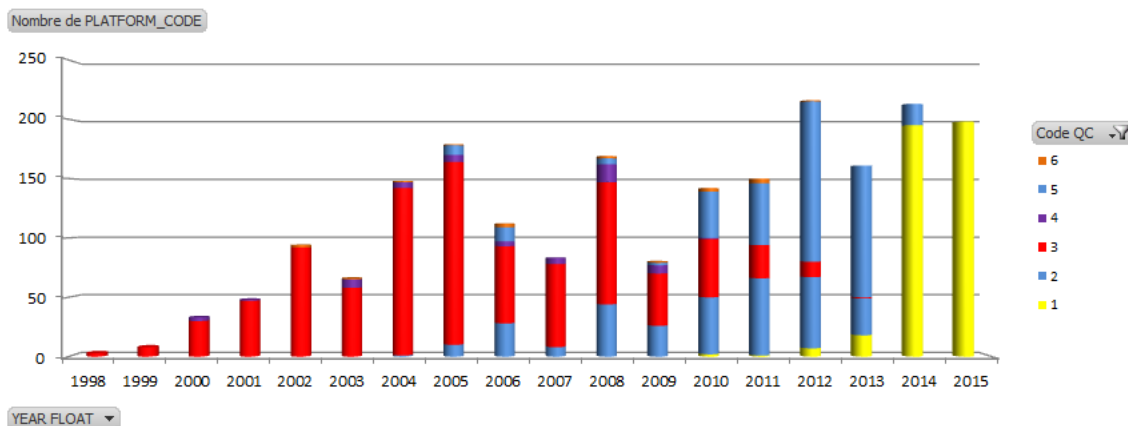




*Status of the floats processed by Coriolis DAC.*

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

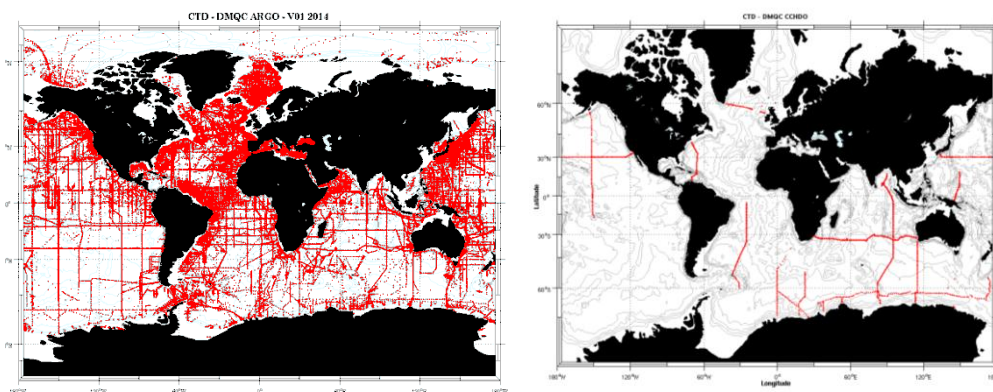
The status of the quality control done on the Coriolis floats is presented in the following plot. For the two last years (2014-2015), most of the floats are still too young (code 1) to be performed in delayed mode. For the years 2011-2012-2013, we are working on the DMQC of some floats, which should 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.*

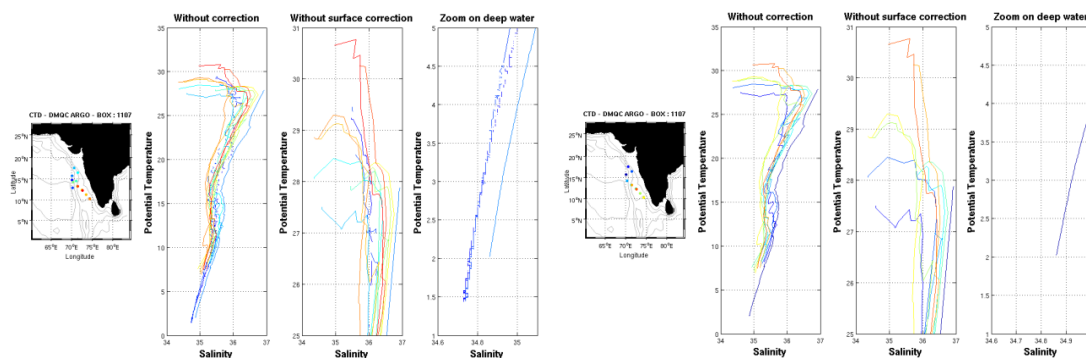
## Reference database

The last version CTD\_for\_DMQC\_2014V01 has been provided in December 2014. This version takes into account new CTD provided by the CCHDO (following figure) as well as feedbacks from users on quality of some profiles.



*Version 2014 V01 & New CTD datasets downloaded on the CCHDO website (during 2014).*

The new version takes also 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 is available 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. A work on the quality control has been started on the boxes of the area 3.

A new version is in preparation. The CCHDO website has been updated and a lot of CTD has been downloaded in the Coriolis database. For some cruises, the expocodes need to be associated to a ship. When the association will be made, the dataset will be exported to update the reference database. In parallel, the OCL update has been downloaded before the summer and will be added in this next version.

## 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.

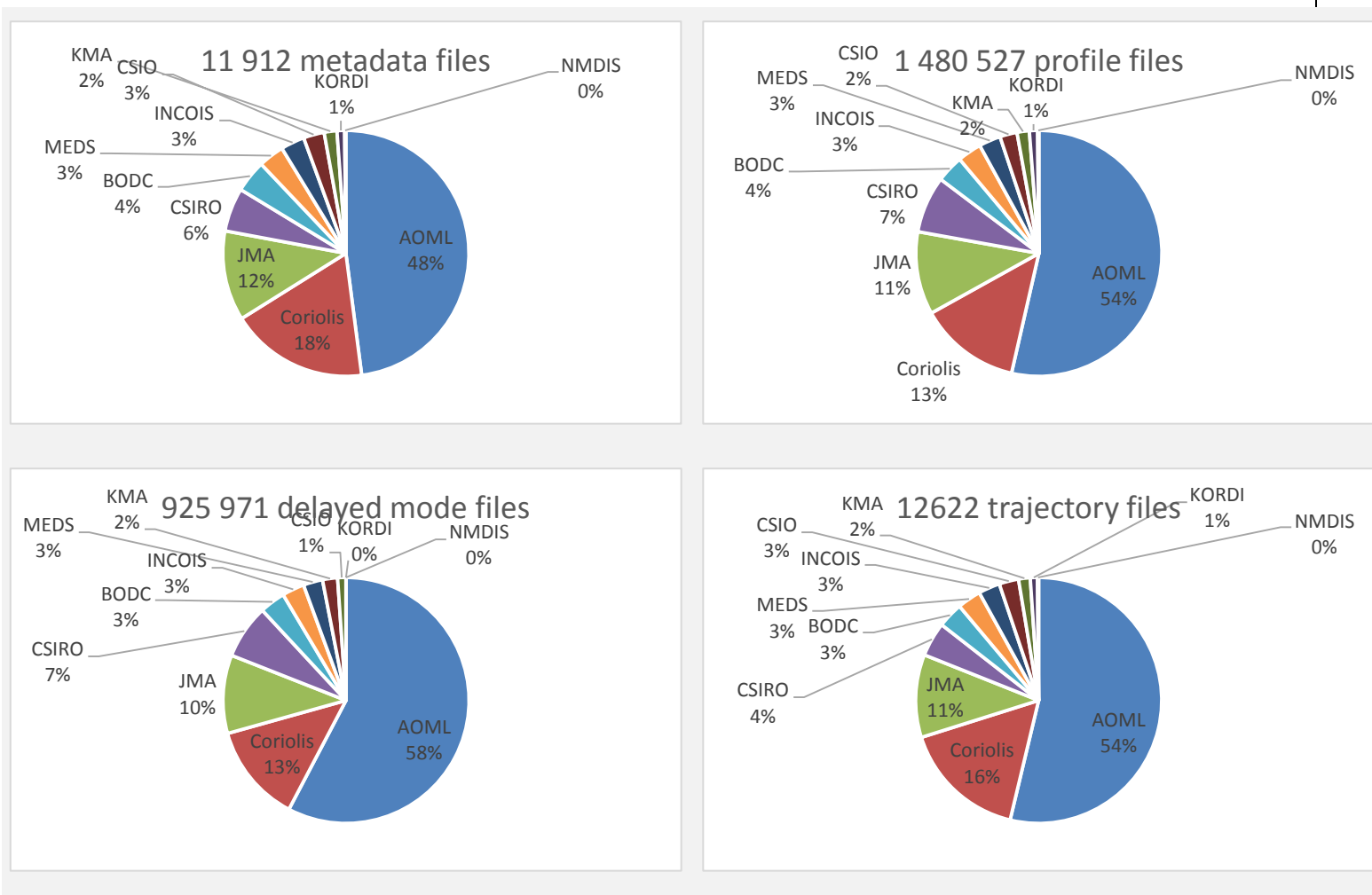
The additional GTS DAC contains all the vertical profiles from floats that are not managed by a national DAC. These data come from GTS and GTSP projects. The GTS profiles are quality controlled by the French DAC (Coriolis).

On October 28th, the following files were available from the GDAC FTP site.

DAC	metadata files 2015	increase from 2014	profile files 2015	increase from 2014	delayed mode profile files 2015	increase from 2014	trajectory files 2015	increase from 2014
AOML	5 711	10%	793 219	13%	534 132	10%	6 782	17%
BODC	505	7%	52 884	12%	31 221	0%	420	0%
Coriolis	2 163	15%	197 682	17%	120 217	8%	2 071	15%
CSIO	326	18%	33 537	83%	10 141	0%	323	61%
CSIRO	684	10%	110 457	15%	65 891	49%	569	1%
INCOIS	373	10%	46 758	13%	27 093	3%	357	7%
JMA	1 410	5%	161 413	7%	95 460	4%	1 376	4%
KMA	200	9%	23 847	14%	18 262	6%	193	10%
KORDI	119	0%	15 950	3%	0		119	5%
MEDS	402	6%	42 365	5%	23 554	0%	393	6%
NMDIS	19	0%	2 415	23%	0		19	0%
<b>Total</b>	<b>11 912</b>	<b>10%</b>	<b>1 480 527</b>	<b>14%</b>	<b>925 971</b>	<b>10%</b>	<b>12 622</b>	<b>13%</b>

- The total number of NetCDF files on the GDAC/dac directory was 1 635 935.
- The size of GDAC/dac directory was 126Go
- The size of the GDAC directory was 462Go



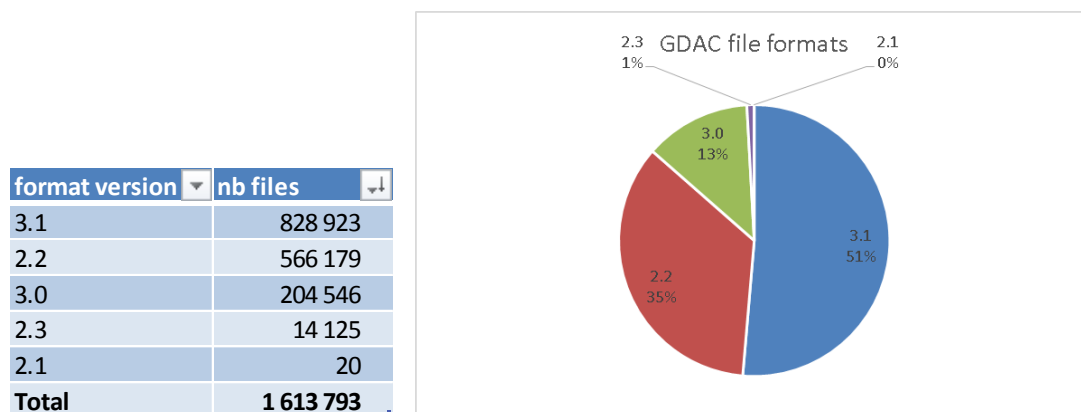


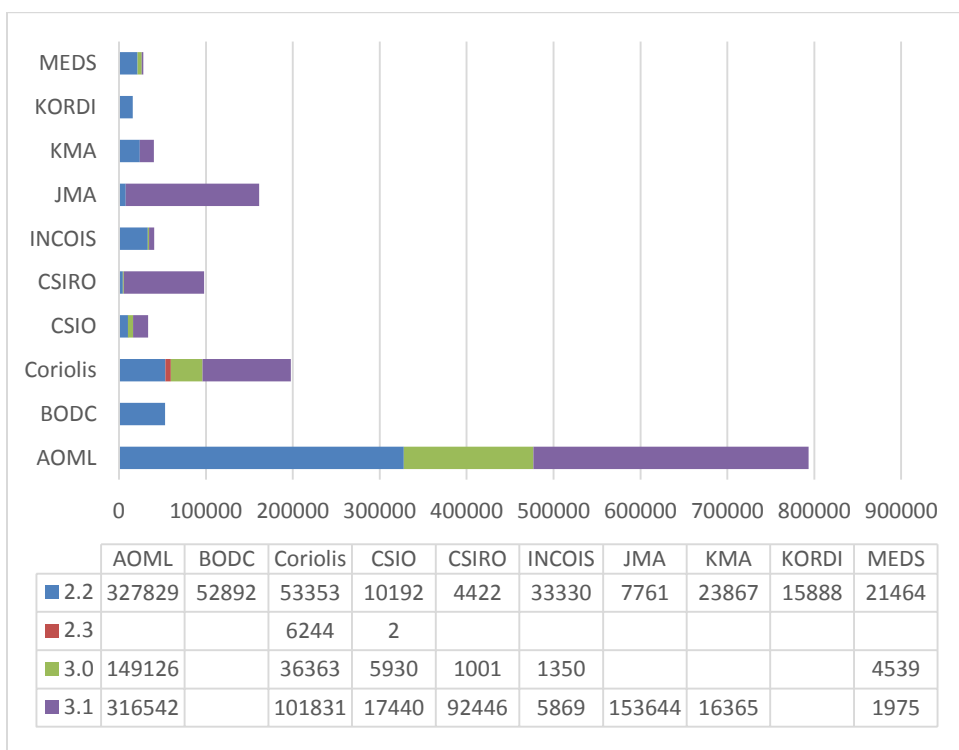
Number of files available on GDAC, October 2015

### File format: transition to Argo NetCDF V3.1

The transition from Argo format 2.\* and 3.0 toward format 3.1 is underway.

**On October 2015, the number of files in format version 3.1 reached and passed the 50% threshold.**





### Number of files per DAC and format version

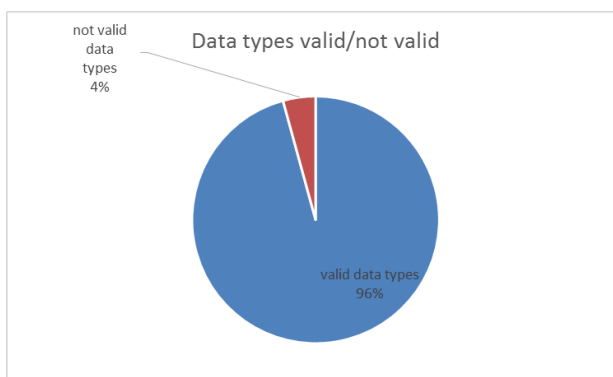
The files in format version V3.1 are much more homogeneous than their previous versions.

The controls applied by the format checker on V3.1 is much more exhaustive. The controlled vocabulary listed in the 27 reference tables is used for V3.1 format checks. A non-valid content is automatically rejected. Only valid V3.1 content appears on GDAC.

### Example of valid content checked by the format checker on V3.1 files

There are 8 valid DATA\_FORMAT variables listed in reference table 1 (there are 26 more tables...). A survey on GDAC files shows that 68763 files (4% of the total) do not have a valid DATA\_FORMAT. The V3.1 files are not affected by this kind of problem.

data_type	nb files	valid type
Argo profile	1 418 844	yes
Argo profile merged	53 714	yes
Argo technical	487	yes
Argo technical data	8 565	yes
Argo trajectory	10 828	yes
B-Argo profile	52 383	yes
B-Argo trajectory	209	yes
Argo meta-data	10 912	no
ARGO profile	54 481	no
ARGO technical data	1 610	no
ARGO trajectory	1 645	no
Argo Trajectory	115	no



## 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 483 unique visitors, performing 4518 sessions and downloading 4 teraoctets of data files.

The graphics show a fair increase of activity on GDAC FTP in April 2015. This may be related to the Argo science team meeting event.

ARGO GDAC FTP statistics				
month	unique visitor	number of visits	hits	bandwidth Go
10/2014	209	3 718	7 391 775	2613,62
11/2014	243	4 061	5 012 221	2766,08
12/2014	237	4 313	2 849 501	3061,09
01/2015	230	4 411	3 524 356	3695
02/2015	782	4 437	4 763 221	4146
03/2015	451	4 317	15 087 674	5700
04/2015	1 203	6 697	7 106 252	5377
05/2015	708	5 199	5 990 249	5844
06/2015	284	4 176	5 874 822	4084
07/2015	938	5 213	3 499 775	3852
08/2015	232	3 572	4 157 650	3096
09/2015	280	4 103	4 876 859	3826
<b>Average</b>	<b>483</b>	<b>4 518</b>	<b>5 844 530</b>	<b>4 005</b>

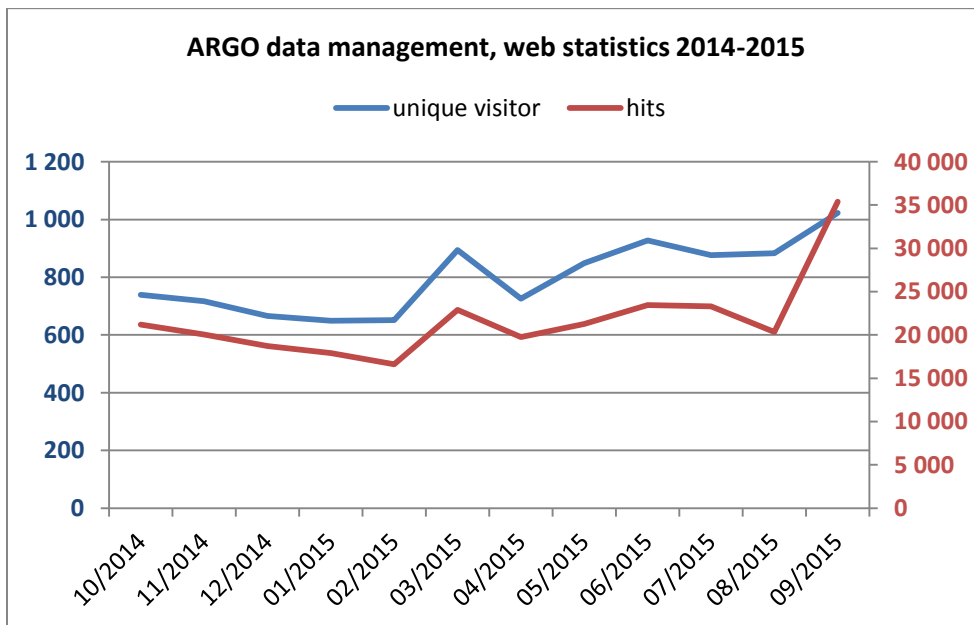


Statistics on the Argo data management web site: <http://www.argodatamgt.org>

There is a monthly average of 800 unique visitors, performing 1363 visits and 21 743 hits.

The graphics shows a slightly increasing number of unique visitors.

ARGO GDAC web statistics					
month	unique visitor	visits	pages	hits	bandwidth Go
10/2014	739	1 297	2 904	21 205	2
11/2014	717	1 224	2 486	20 050	1
12/2014	666	1 127	2 395	18 716	2
01/2015	649	1 138	2 290	17 901	1
02/2015	651	1 066	2 535	16 605	1
03/2015	894	1 531	3 643	22 890	2
04/2015	726	1 270	3 028	19 761	1
05/2015	849	1 403	2 940	21 263	1
06/2015	927	1 584	3 317	23 461	1
07/2015	876	1 478	3 185	23 313	1
08/2015	883	1 417	3 131	20 349	1
09/2015	1 023	1 826	4 355	35 396	1
<b>Average</b>	<b>800</b>	<b>1 363</b>	<b>3 017</b>	<b>21 743</b>	<b>1</b>



## Data synchronization

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



The synchronization dashboard in October 2015: the daily synchronization time takes on average 2 hours.

You may notice on the dashboard that the synchronization process reported errors twice in October (red bars)

- 19/10/2015 01:55:02 : Can't create the ftp connection to usgodae.org
- 28/10/2015 02:55:01 : Can't create the ftp connection to usgodae.org

The synchronization issued warnings twice (orange bars)

### 29/10/2015 02:55:02

- warning Invalid date\_update in prof index, line 1451658 : meds/4900627/profiles/D4900627\_153.nc - ME
- warning Invalid date\_update in prof index, line 1453008 : meds/4900635/profiles/D4900635\_098.nc - ME
- warning Invalid date\_update in prof index, line 1454402 : meds/4900681/profiles/D4900681\_152.nc - ME
- warning Invalid date\_update in prof index, line 1454511 : meds/4900682/profiles/D4900682\_069.nc - ME

### 27/10/2015 02:55:01

Four files have an invalid update date (minutes > 59)

- US, meds/4900627/profiles/D4900627\_153.nc, D4900627\_153.nc, 20150126211960
- US, meds/4900635/profiles/D4900635\_098.nc, D4900635\_098.nc, 20150127214960
- US, meds/4900681/profiles/D4900681\_152.nc, D4900681\_152.nc, 20150128180060
- US, meds/4900682/profiles/D4900682\_069.nc, D4900682\_069.nc, 20150128202560

## FTP server monitoring

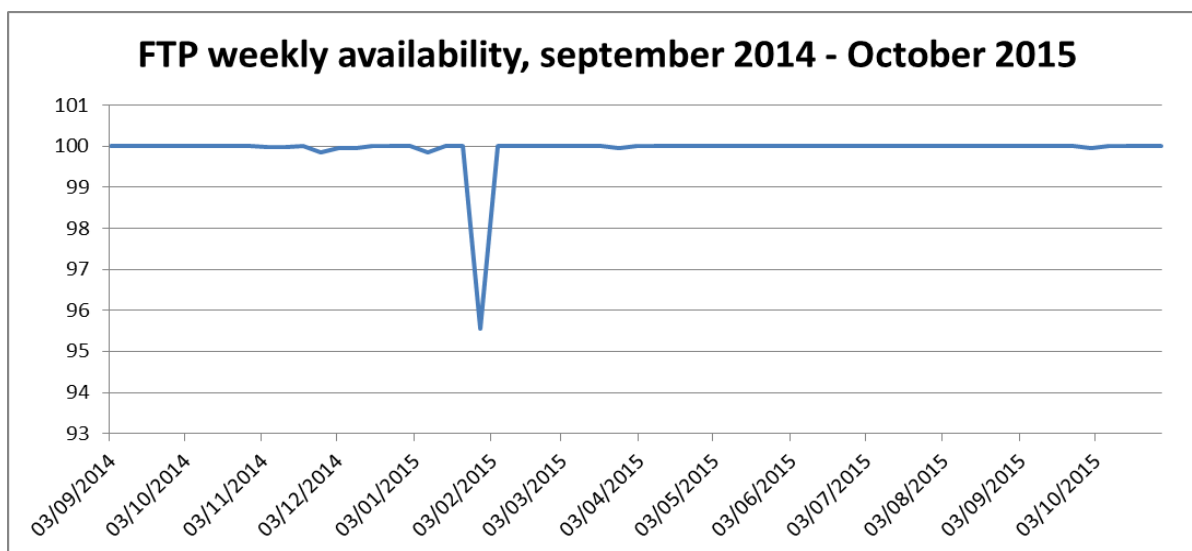
The Argo GDAC ftp server is actively monitored by a Nagios agent (<http://en.wikipedia.org/wiki/Nagios>).

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

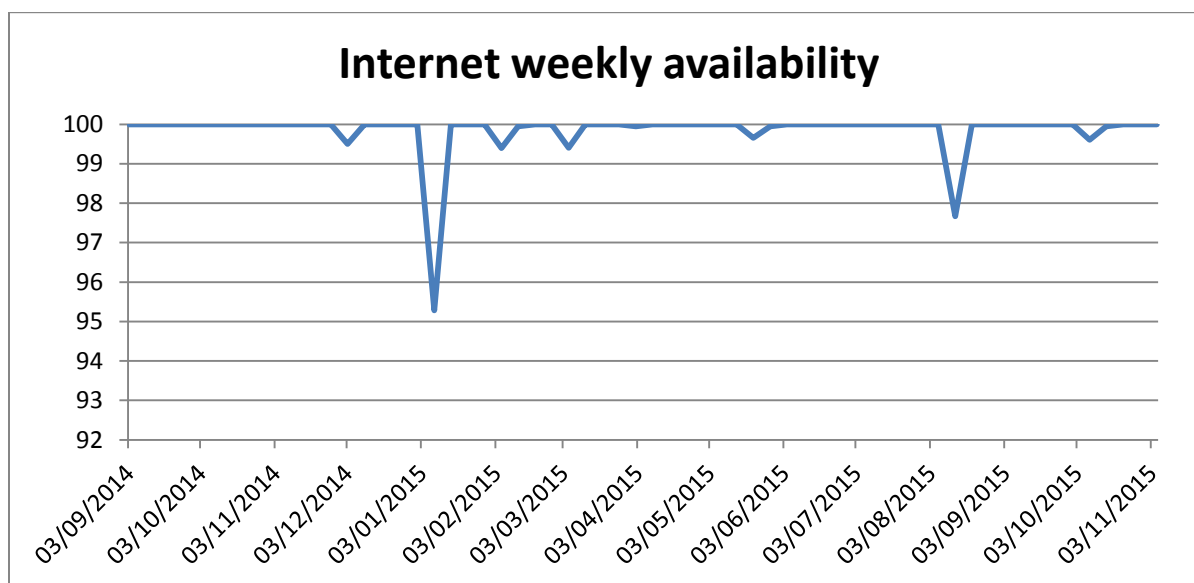
On the last 12 months, the weekly average performance was 99.84%. The 0.16% of poor performances represents 15 minutes for a week. For the last 12 months, the cumulative poor performances period is of 24 hours.

We faced 3 significant events these last 12 months.

- First week of January: 8 hours of Internet poor performances
- Last week of January 2015: disk storage instability: 7 hours and 35 minutes of poor performances of ftp.
- Mid-August 2015 : 4 hours of poor Internet performances



Nagios ftp monitoring: between September 2014 and October 2015



Nagios Internet monitoring: between September 2014 and October 2015

## Grey list

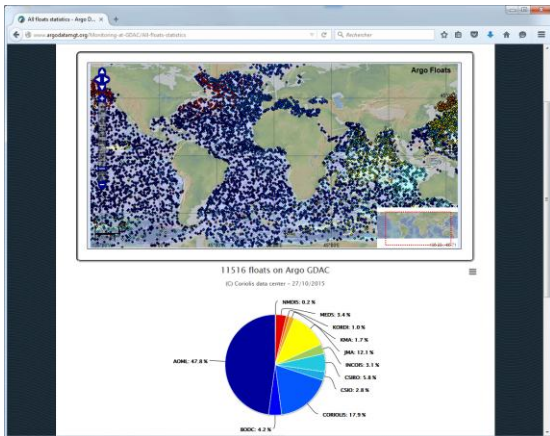
According to the project requirements Coriolis GDAC hosts a grey list of the floats which are automatically flagged before any automatic or visual quality control. **The greylist has 1000 entries** (October 29<sup>th</sup> 2015), compared to 1285 entries one year ago.

DAC	nb floats in greylist
AOML	758
Coriolis	32
JMA	116
CSIRO	0
BODC	55
INCOIS	4
MEDS	9
KMA	9
CSIO	8
KORDI	9
NMDIS	0
<b>Total</b>	<b>1000</b>

## Statistics on GDAC content

The following graphics display the distribution of data available from GDAC, per float or DACs. These statistics are daily 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
- More on: <http://www.argodatamgt.org/Access-to-data/Argo-DOI-Digital-Object-Identifier>

### 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-a9d6-4b0c24c0cfc9>

### **Argo GDAC monthly snapshots DOIs**

- Snapshot of 2015 October 8<sup>th</sup> : <http://dx.doi.org/10.12770/71b7b0ed-1e3a-4ebc-8e3b-b5b363112f2a>
- Snapshot of 2015 September 08<sup>th</sup> : <http://dx.doi.org/10.12770/ca035889-880d-463e-a523-10aabc3d6be3>