Argo data management report 2022

Coriolis DAC & GDAC

Data Assembly Centre and Global Data Assembly Centre

Annual report November 2022

Version 1.0

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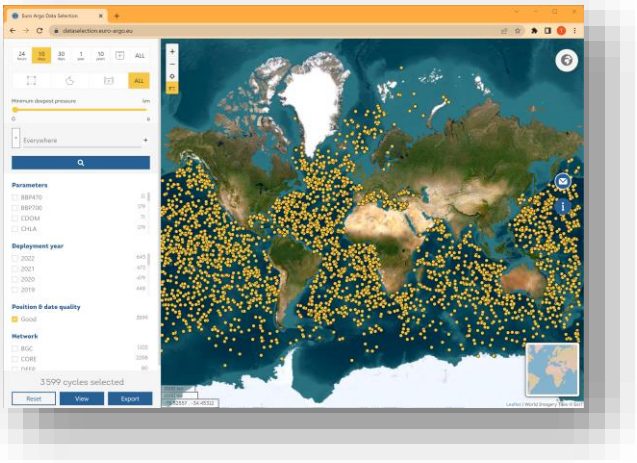
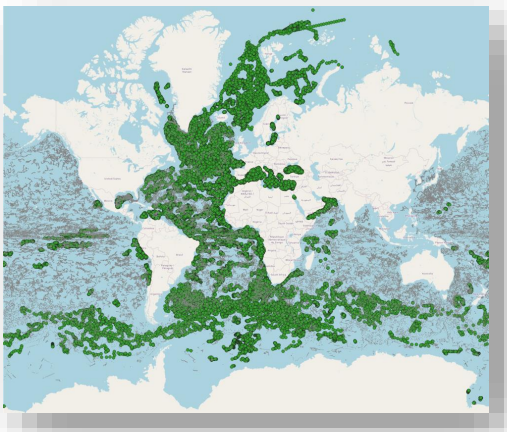
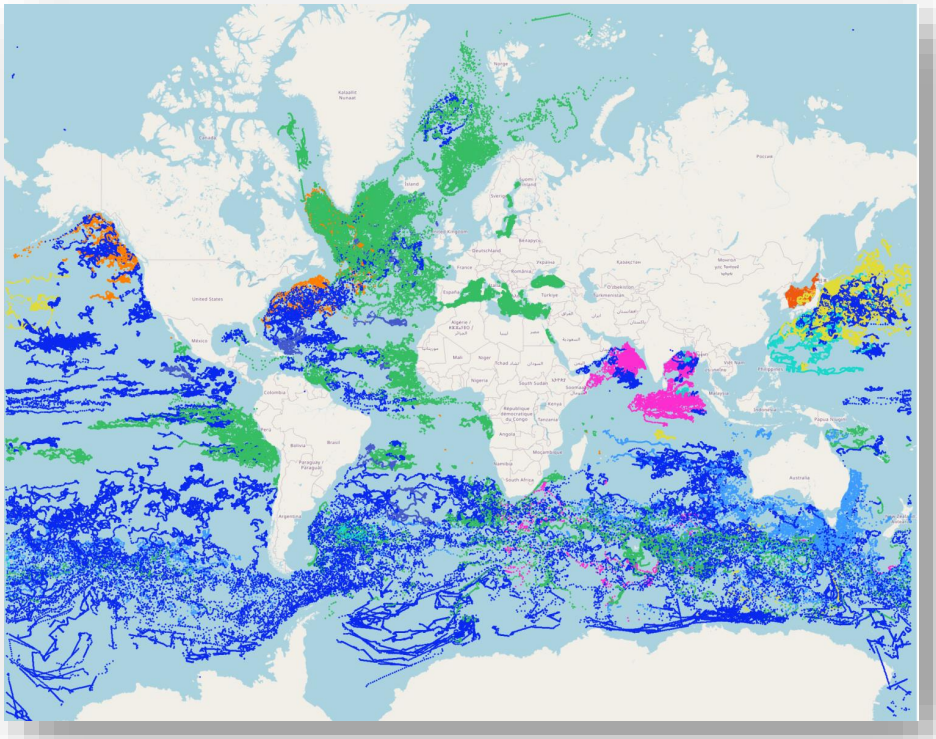






1 DAC status

This report covers the activity of Coriolis DAC (Data Assembly Centre) for the one-year period from September 1st 2022 to October 30th 2022.

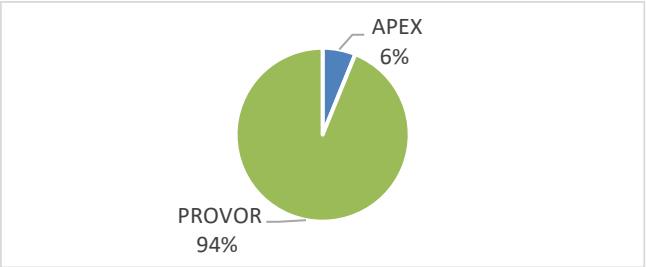
1.1 Data acquired from floats

1.1.1 Active floats for the last 12 months

These last 12 months, **64452profiles from 888 active floats** were collected, controlled and distributed.
Compared to 2021, **the number of profiles keeps increasing (+10%), the number of floats increased by 7%.**
These figures illustrate a good momentum in Coriolis DAC activity.

The 888 floats managed during that period had 51 versions of data formats.

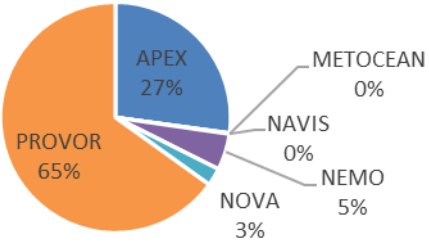
Coriolis DAC, active floats in 2021			
Float family	nb versions	nb floats	nb core p
APEX	17	54	4 870
NOVA	2	8	328
PROVOR	32	826	59 254
Total	**51**	**888**	**64 452**

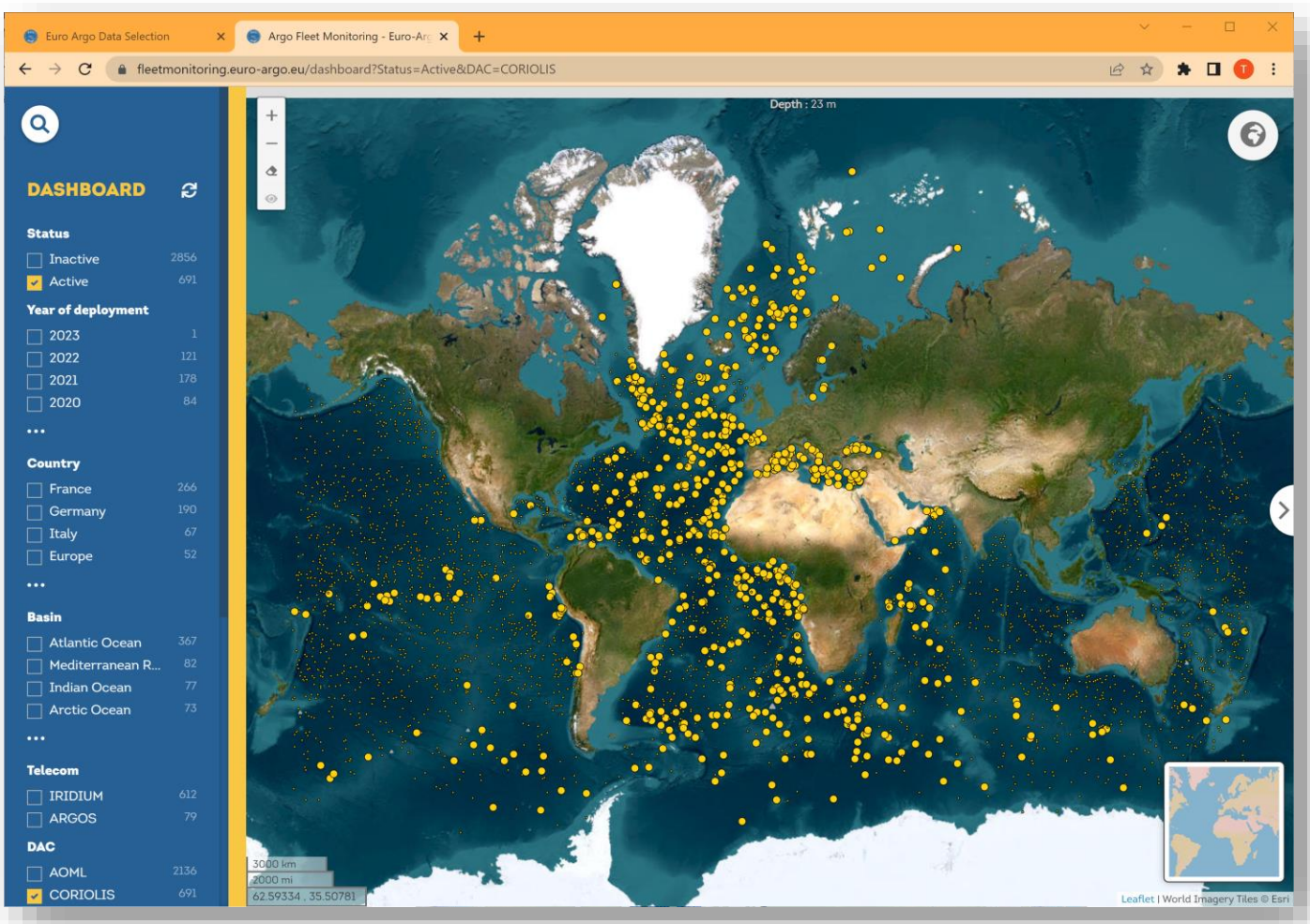


1.1.2 All floats managed by Coriolis DAC

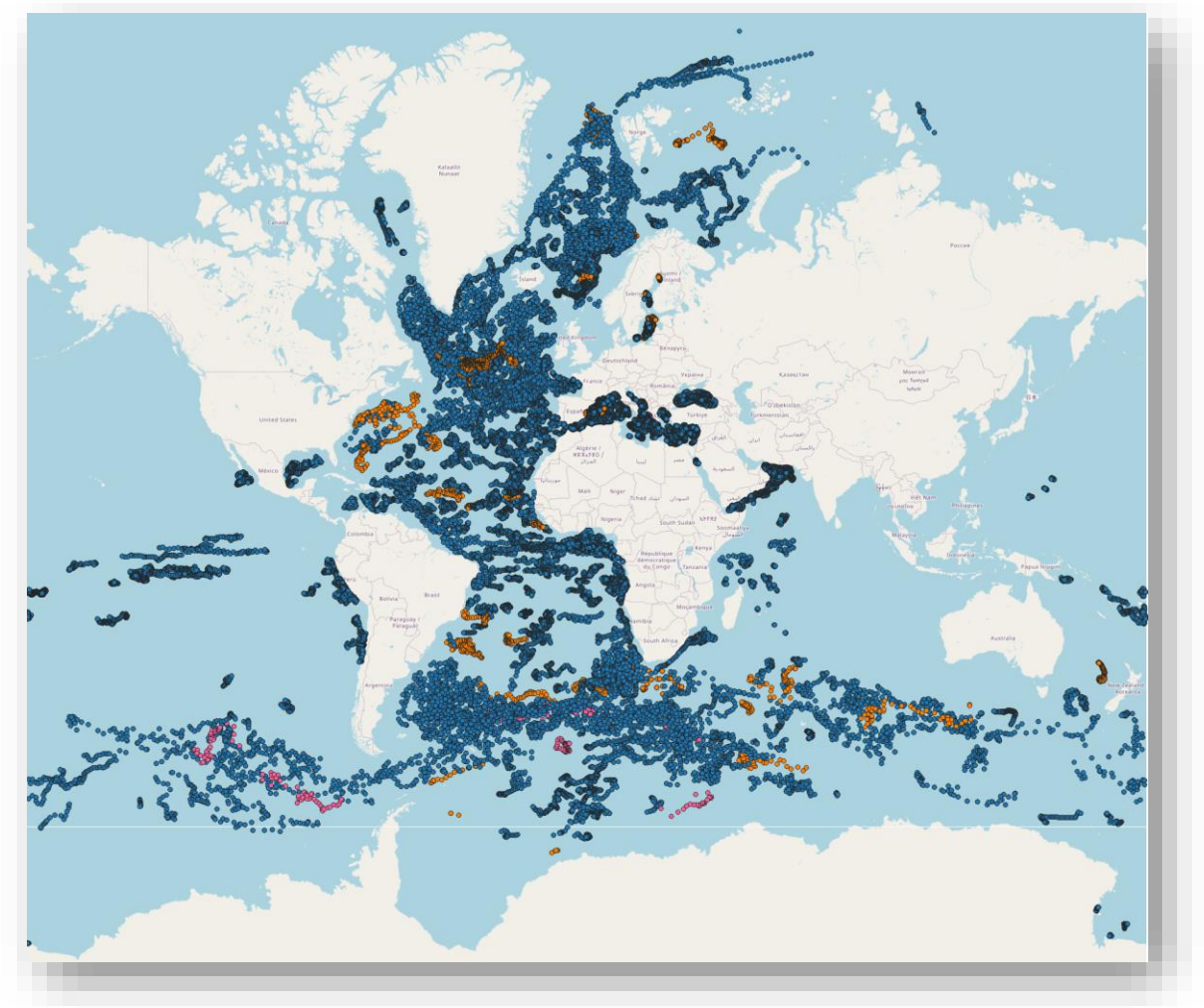
Coriolis DAC manages a total of 3.409 floats with 172 versions, from 6 families.
These floats reported 643.357 core Argo vertical profiles.

Coriolis DAC, all floats			
Float family	nb versions	nb floats	nb core p
APEX	79	926	145 680
METOCEAN	1	1	52
NAVIS	1	3	1 932
NEMO	8	174	10 185
NOVA	3	85	9 629
PROVOR	80	2 220	475 879
Total	**172**	**3 409**	**643 357**

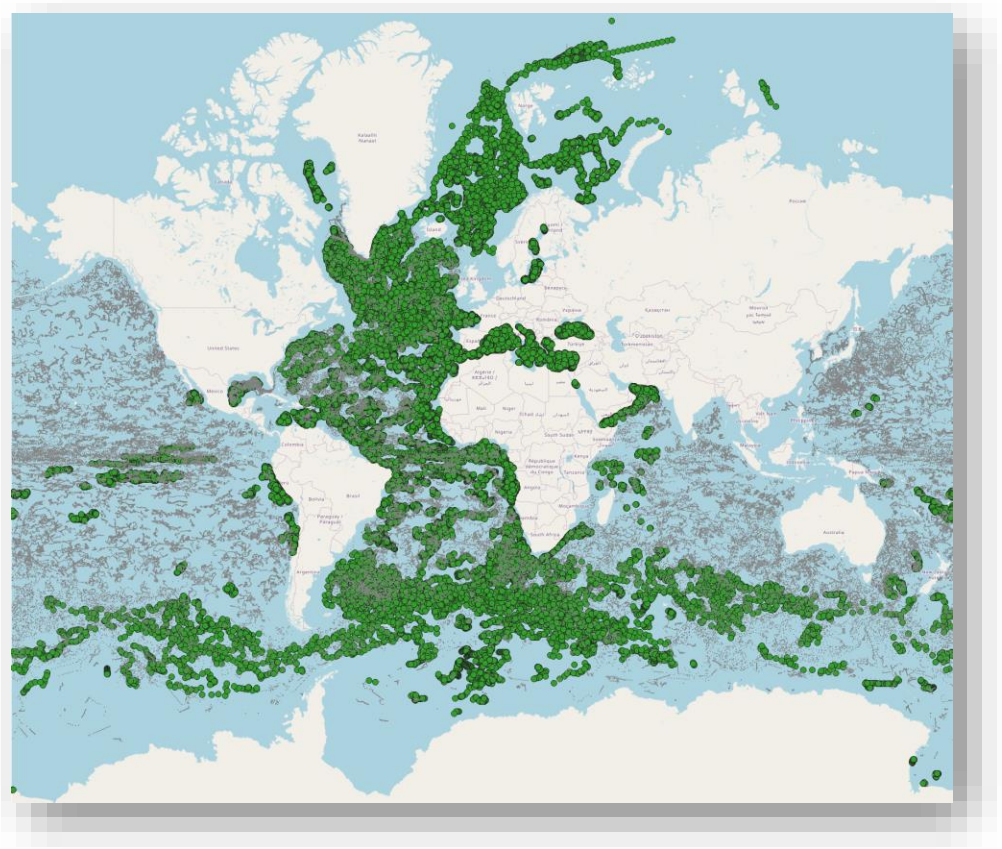




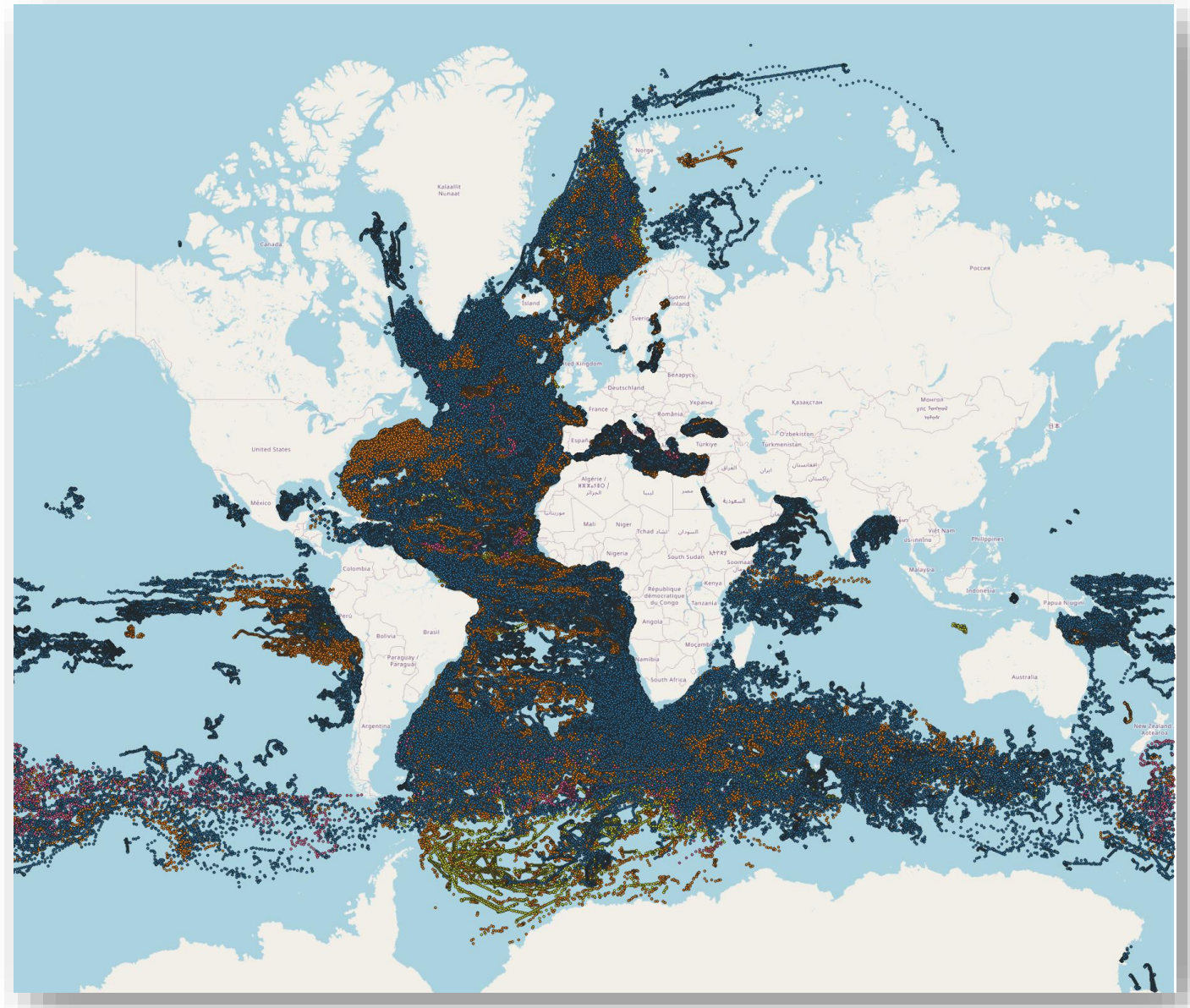
Map of the active floats on November 27th 2022 decoded by Coriolis DAC, among others DACs (small dots) as displayed on Euro-Argo floats dashboard https://fleetmonitoring.euro-argo.eu/dashboard



Map of the 64 452 profiles from 888 active floats decoded by Coriolis DAC this current year
Apex Nova Provor

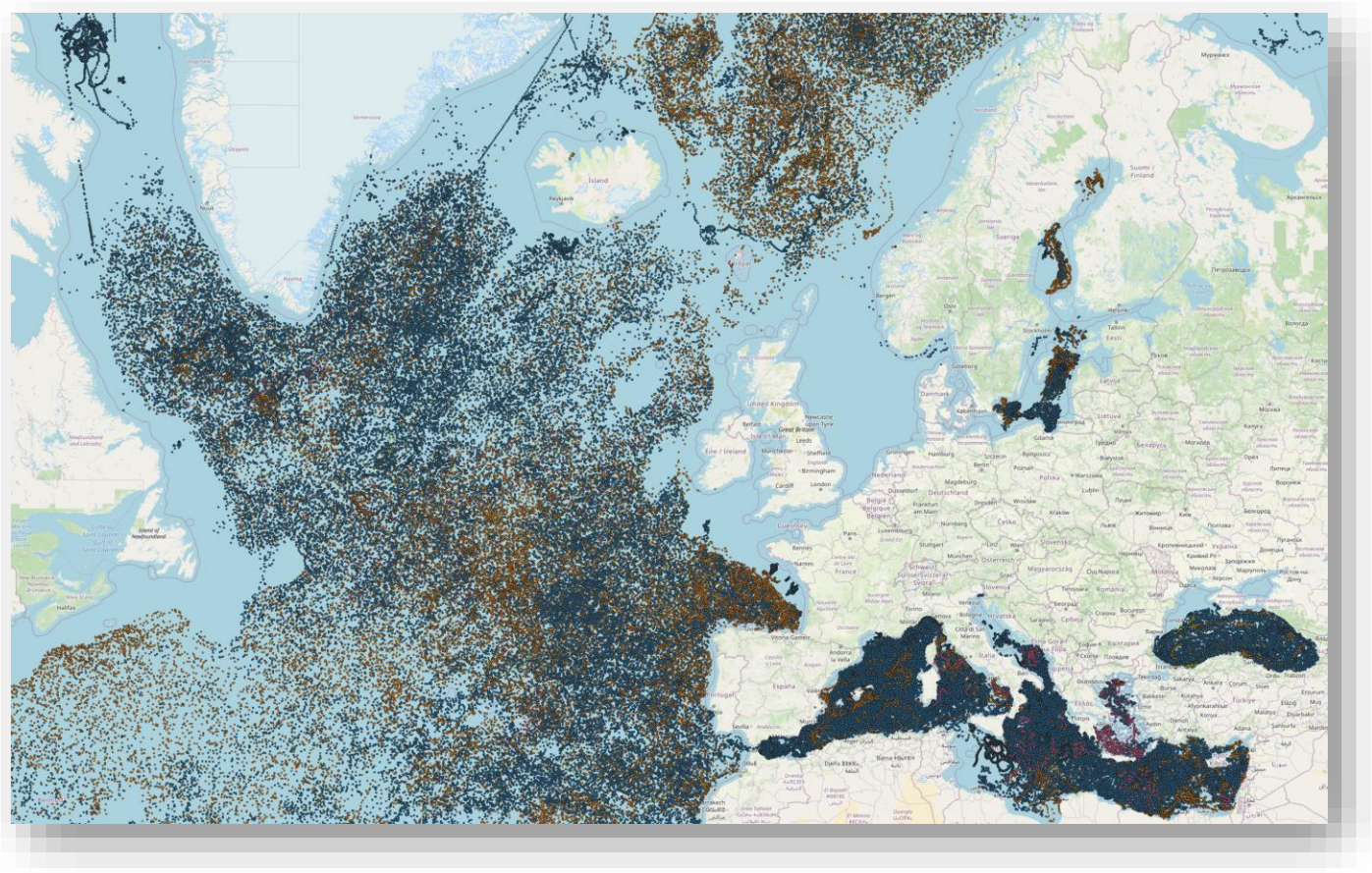


Map of the profiles from active floats decoded by Coriolis DAC this current year, among the other DAC's profiles (Coriolis: green, other DACs: grey)



Map of the 450.000 profiles from 3.500 floats managed by Coriolis DAC

Apex **Metocean** **Navis** **Nemo** **Nova** **Provor**



Map of the profiles floats managed by Coriolis DAC , focus on North Atlantic
Apex **Metocean** **Navis** **Nemo** **Nova** **Provor**

1.1.3 BGC-Argo sensors on Coriolis floats

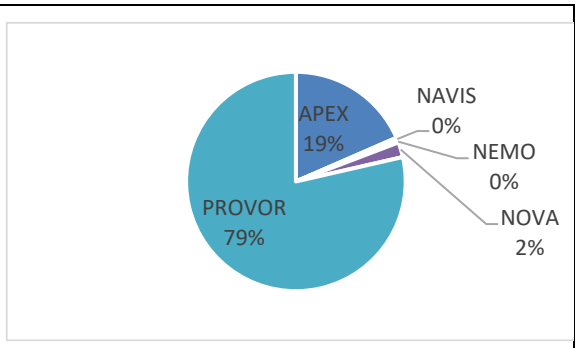
The data processing chain for data and metadata from Coriolis BGC-Argo floats is continuously improved. These are advanced types of floats performing bio-geo-chemical (BGC) measurements.

Coriolis DAC manages 677 BGC-Argo floats from 5 families. They performed 90.115 cycles.

The data processing chain is freely available:

- Coriolis Argo floats data processing chain, http://doi.org/10.17882/45589

BGC-Argo floats processed by Coriolis DAC				
Float familly	nb versions	nb floats	nb profile	nb cycles
APEX	33	125	22 489	16 456
NAVIS	1	3	644	644
NEMO	1	2	297	297
NOVA	1	15	1 236	1 210
PROVOR	46	532	198 417	71 508
Total	**82**	**677**	**223 083**	**90 115**



General characteristics

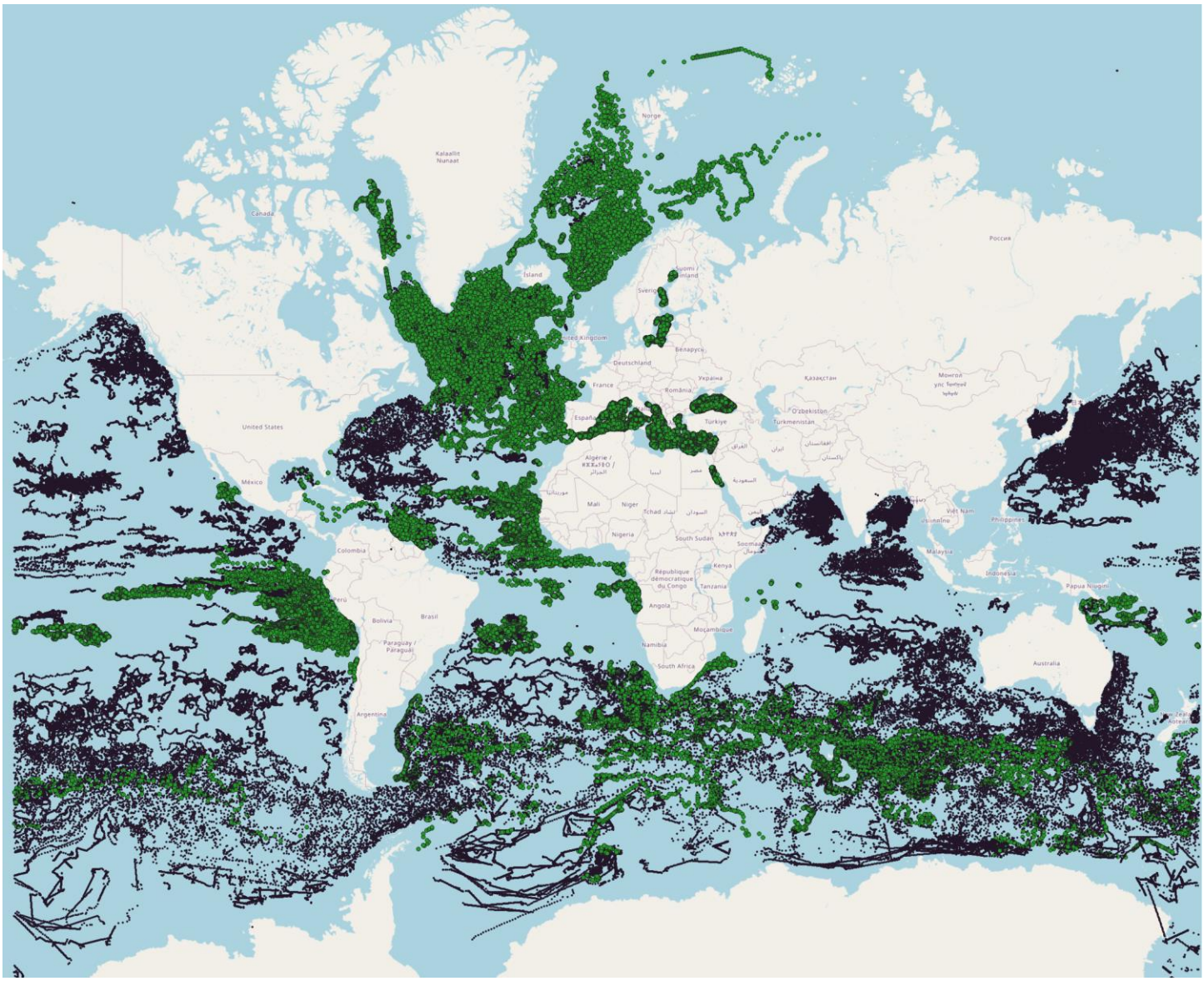
- Iridium sbd or rudics bi-directional communication or Argos
- Fourteen sensors are fitted on the floats
- Eleven BGC parameters reported

Coriolis BGC-Argo floats s	nb floats	nb profiles
AANDERAA_OPTODE	599	85 539
SATLANTIC_OCR504_ICSW	228	180 440
SUNA_V2	95	17 874
SEAFET	45	4 907
C_ROVER	25	5 045
UVP6-LP	13	773
RAMSES_ACC	8	868
ECO_FLBB	4	888
CYCLOPS-7_FLUOROMETER	2	106
OPUS_DS	2	792
SEAPOINT_TURBIDITY_METEI	2	106
HYDROC	1	120
9AXIS_IMU	1	24

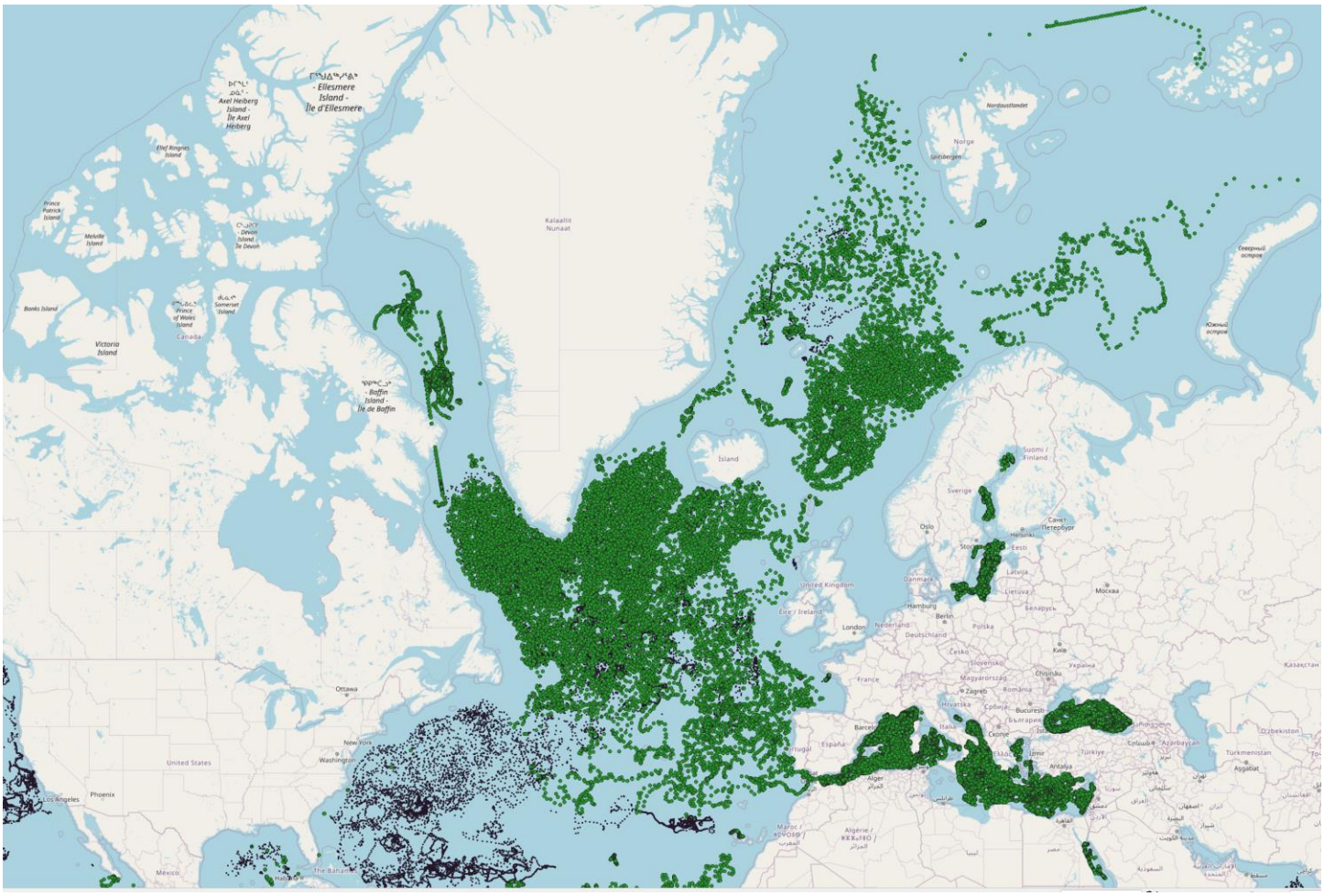
The 13 types of sensors mounted on Coriolis BGC-Argo floats

BGC parameter	nb files
DOXY	258 079
CHLA	108 988
BBP700	106 473
NITRATE	59 180
CDOM	50 144
DOWN_IRRADIANCE490	48 344
DOWNWELLING_PAR	47 117
PH_IN_SITU_TOTAL	37 968
TURBIDITY	2 514
BISULFIDE	1 352

The 10 main BGC parameters reported by Coriolis BGC-Argo floats



Map of the 677 BGC-Argo floats managed by Coriolis DAC (grey dots: the others DACs bio-Argo floats). They measure parameters such as oxygen, chlorophyll, turbidity, CDOM, back-scattering, UV, nitrate, bisulfide, pH, radiance, irradiance, PAR.



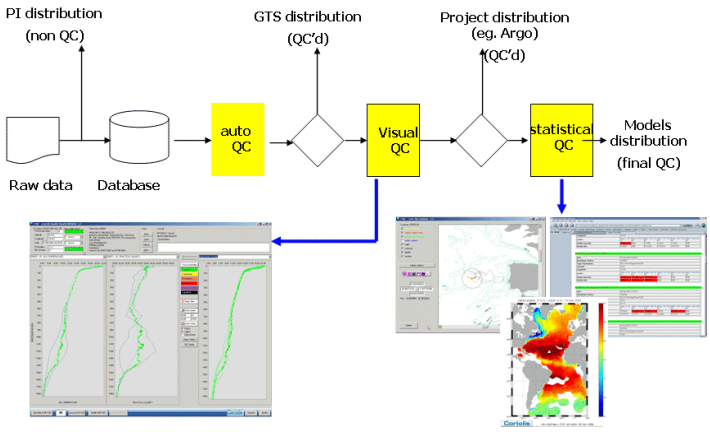
A zoom on North Atlantic of the BGC-Argo floats managed by Coriolis DAC (grey dots: the others DACs bio-Argo floats)

1.2 Data issued to GTS

Vertical profiles processed by Coriolis are distributed on the GTS by way of Meteo-France. This operation is fully automated. After applying the automatic Argo QC procedure, the Argo profiles are inserted on the GTS every hour. The profile files are sent as BUFR messages.

Vertical profiles are distributed on GTS if they are less than 30 days old. Once a day, floats data are checked with ISAS objective analysis that triggers alerts and visual inspection for suspicious observations.
The corrected data are not redistributed on GTS.

In July 2019, Coriolis stopped the TESAC messages distribution; only BUFR messages are now distributed.

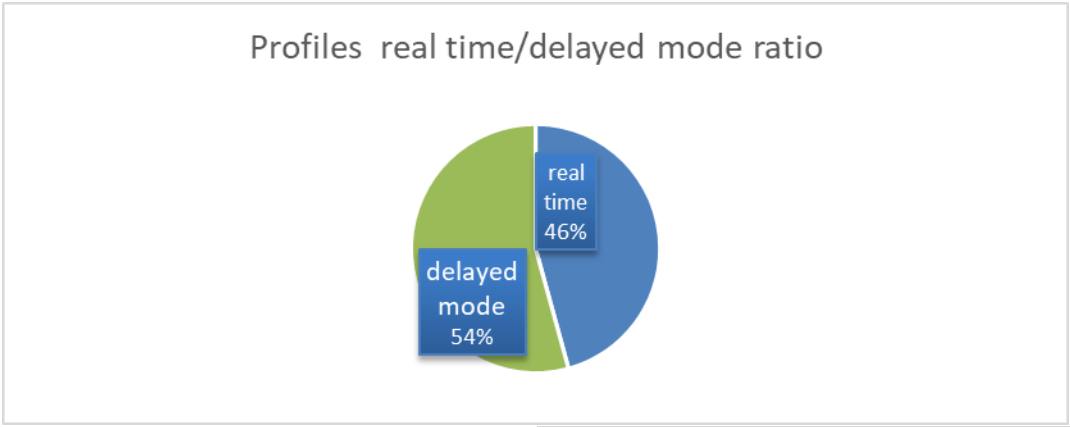


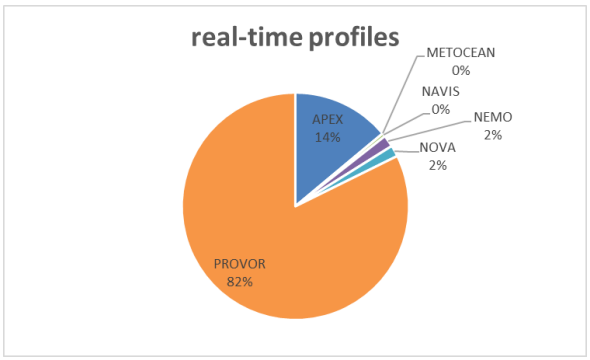
Coriolis DAC Argo data flow

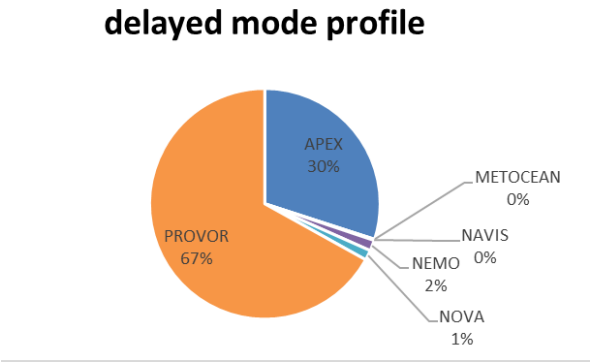
1.3 Data issued to GDACs after real-time QC

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

All Coriolis floats, number of profile files on GDAC				
Family	nb floats	nb profile	RT profile	DM profiles
APEX	926	145 680	41 015	104 665
METOCEAN	1	52	-	52
NAVIS	3	1 932	1 411	521
NEMO	174	10 185	4 941	5 244
NOVA	85	9 629	4 705	4 924
PROVOR	2221	475 903	242 168	233 735
Total	**3 410**	**643 381**	**294 240**	**349 141**







Distribution of Coriolis DAC real-time and delayed mode profiles

1.4 Data issued for delayed mode QC

Delayed mode profiles

All profile files are sent to PIs for delayed QC.

1.5 Delayed mode data sent to GDACs

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

- A total of **107.747 new or updated delayed mode profiles** was sent to GDACs this year.
- **A total of 350.000 delayed mode profiles** where sent to GDACs since 2005.

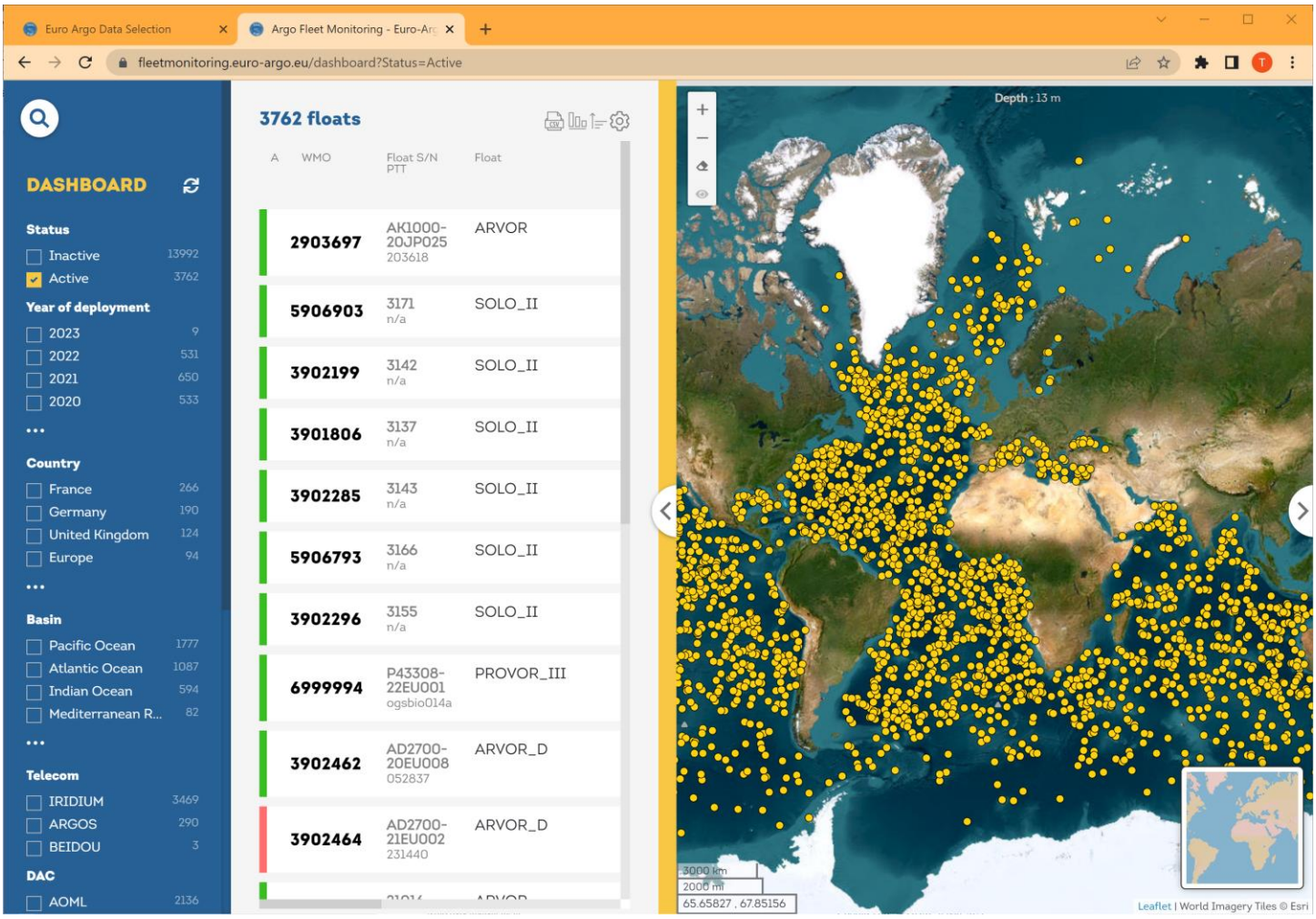
The number of delayed mode profiles increased by 8% this year compared to 2021.

1.6 Web pages

1.6.1 Argo dashboard

The Argo floats dashboard developed in 2019 by Coriolis team is available at:

- https://fleetmonitoring.euro-argo.eu/dashboard

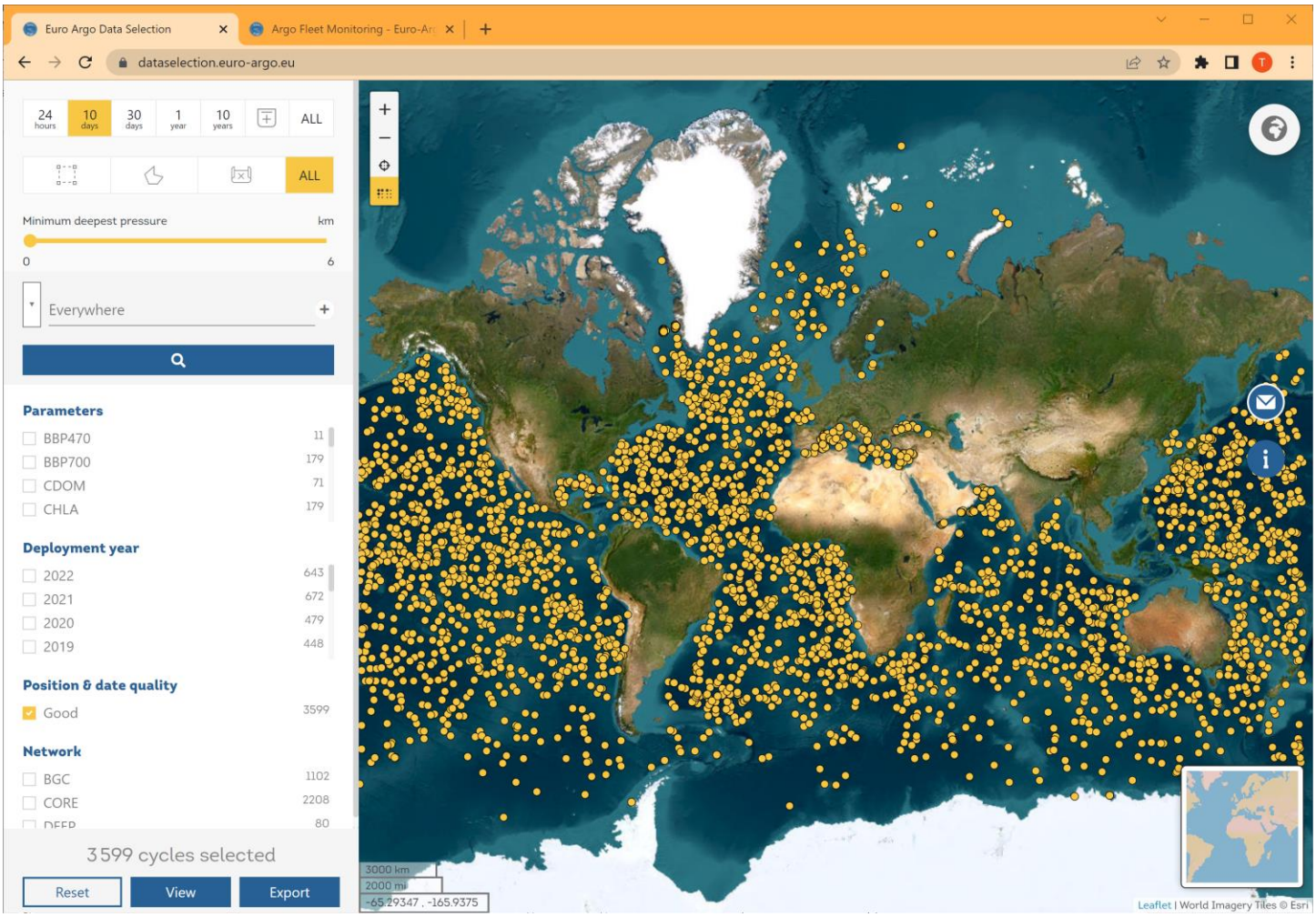


It displays all Argo floats, with facetted interrogations and instantaneous answers. The dashboard is developed on cloud and big-data techniques.

- Cloud techniques: a metadata and a data APIs, opened to internet machine to machine queries
- Big-data techniques: Argo metadata are hourly indexed in an Elasticsearch index, Argo data are hourly indexed in a Cassandra data base. Elasticsearch and Cassandra allows instant answers on dataset having billions of observations.

The Argo data selection was developed in 2020. The initial version is online at https://dataselection.euro-argo.eu/

It proposes data discovery with facetted search on temporal and spatial coverage, parameters, deployment years or quality codes. The selected data are downloadable in NetCDF and CSV formats.



Argo data selection https://dataselection.euro-argo.eu

1.6.2 European Open Science Cloud BlueCloud

A collaboration is underway with NASA-JPL and the European Blue Cloud to use the CMC (Common Mapping Client) client as the front office of Argo dashboard to provide in situ – satellite – model integration.

- http://bluecloud.odatis-ocean.fr

1.6.3 Interoperability services (ERDDAP API,…)

The APIs used by Argo dashboard and Argo data selection web portals are open and publicly available to interested users at the following endpoints OpenAPI (swagger):

- https://fleetmonitoring.euro-argo.eu/swagger-ui.html
- https://dataselection.euro-argo.eu/swagger-ui.html

More information available on https://www.euro-argo.eu/Argo-Data-access

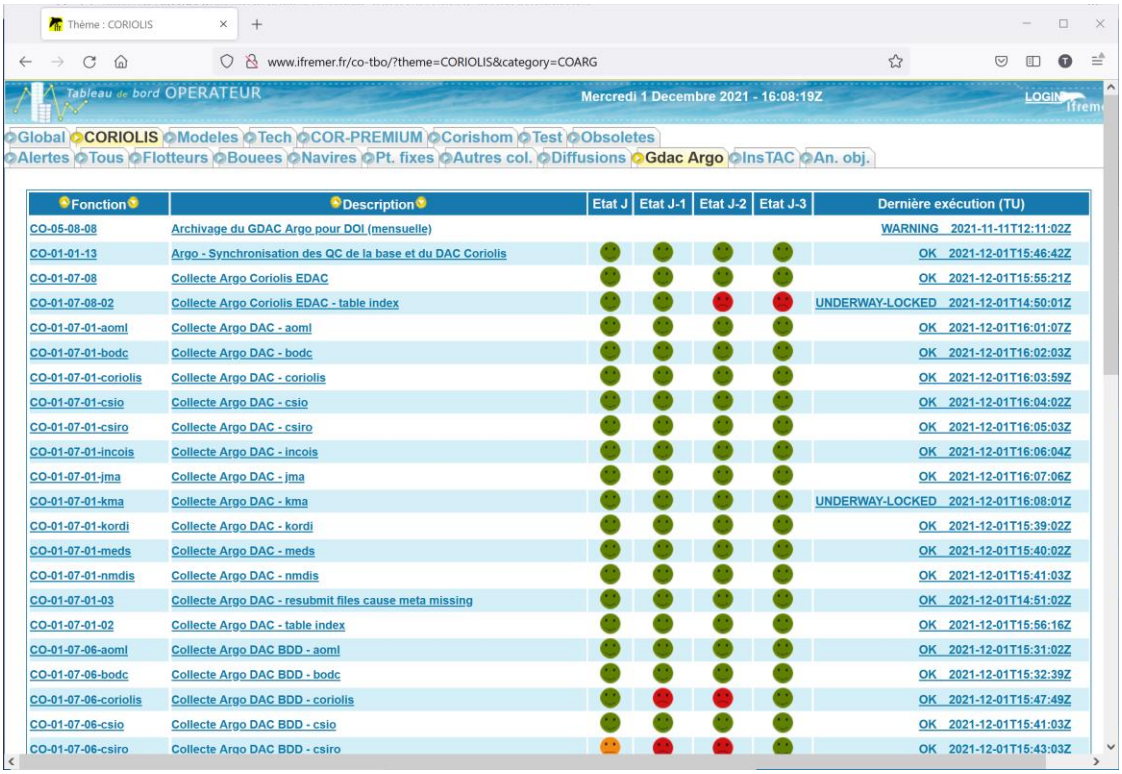
This web page describes all Argo floats interoperability services from Coriolis:

- http://www.coriolis.eu.org/Data-Products/Data-Delivery/Argo-floats-interoperability-services2
    - Argo data through ERDDAP data server (www.ifremer.fr/erddap)

- Display an individual float's data and metadata in HTML or XML format
- Display all Argo floats, display a group of floats
- Argo profiles and trajectories data selection (HTML or XML)
- 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

1.6.4 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	Archivage du GDAC Argo pour DOI (mensuelle)					WARNING 2021-11-11T12:11:02Z
CO-01-01-13	Argo - Synchronisation des QC de la base et du DAC Coriolis					OK 2021-12-01T15:46:42Z
CO-01-07-08	Collecte Argo Coriolis EDAC					OK 2021-12-01T15:55:21Z
CO-01-07-08-02	Collecte Argo Coriolis EDAC - table index					UNDERWAY-LOCKED 2021-12-01T14:50:01Z
CO-01-07-01-aoml	Collecte Argo DAC - aoml					OK 2021-12-01T16:01:07Z
CO-01-07-01-bodc	Collecte Argo DAC - bodc					OK 2021-12-01T16:02:03Z
CO-01-07-01-coriolis	Collecte Argo DAC - coriolis					OK 2021-12-01T16:03:59Z
CO-01-07-01-csio	Collecte Argo DAC - csio					OK 2021-12-01T16:04:02Z
CO-01-07-01-csiro	Collecte Argo DAC - csiro					OK 2021-12-01T16:05:03Z
CO-01-07-01-incois	Collecte Argo DAC - incois					OK 2021-12-01T16:06:04Z
CO-01-07-01-jma	Collecte Argo DAC - jma					OK 2021-12-01T16:07:06Z
CO-01-07-01-kma	Collecte Argo DAC - kma					UNDERWAY-LOCKED 2021-12-01T16:08:01Z
CO-01-07-01-kordi	Collecte Argo DAC - kordi					OK 2021-12-01T15:39:02Z
CO-01-07-01-meds	Collecte Argo DAC - meds					OK 2021-12-01T15:40:02Z
CO-01-07-01-nmdis	Collecte Argo DAC - nmdis					OK 2021-12-01T15:41:03Z
CO-01-07-01-03	Collecte Argo DAC - resubmit files cause meta missing					OK 2021-12-01T14:51:02Z
CO-01-07-01-02	Collecte Argo DAC - table index					OK 2021-12-01T15:56:16Z
CO-01-07-06-aoml	Collecte Argo DAC BDD - aoml					OK 2021-12-01T15:31:02Z
CO-01-07-06-bodc	Collecte Argo DAC BDD - bodc					OK 2021-12-01T15:32:39Z
CO-01-07-06-coriolis	Collecte Argo DAC BDD - coriolis					OK 2021-12-01T15:47:49Z
CO-01-07-06-csio	Collecte Argo DAC BDD - csio					OK 2021-12-01T15:41:03Z
CO-01-07-06-csiro	Collecte Argo DAC BDD - csiro					OK 2021-12-01T15:43:03Z

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

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

Operational oceanography models; all floats data are distributed to:

- EU Copernicus Marine service models (Mercator, Foam, Topaz, Moon, Noos, Boos)
- French model Soap (navy operational model)

Argo projects: this year, Coriolis data centre performed float data management for **72 Argo scientific projects and 60 PIs (Principal Investigators).**

List of Coriolis scientific PIs and project names

project	nb floats
argo-bsh	126
coriolis	108
argo italy	80
argo germany	57
mocca	45
mocca-eu	39
euro-argo	34
ovide	31
naos wp1	30
norargo2	28

Top 10 of Coriolis DAC projects having active floats

pi name	nb active flo
birgit klein	215
pierre-marie poulain	82
kjell arne mork	51
christine coatanoan	41
damien desbruyeres	39
virginie thierry	33
andreas sterl	31
romain cancouet	28
bernard bourles	21
sophie cravatte	20

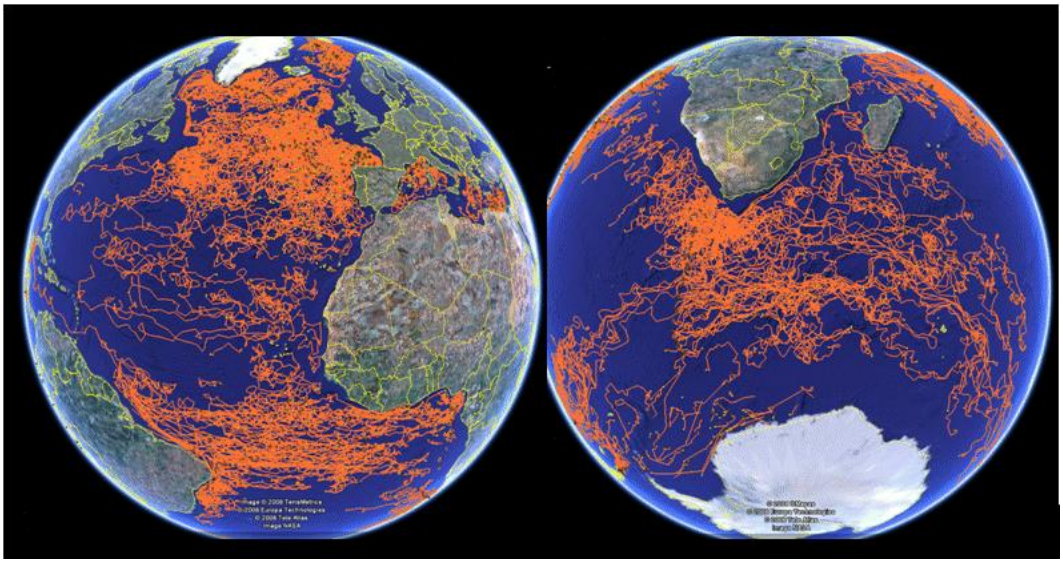
Top 10 of Principal Investigators (PI) in charge of active floats

1.8 Products generated from Argo data

Sub-surface currents ANDRO Atlas

Based on Argo trajectory data, Ifremer and CNRS 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:

- Ollitrault Michel, Rannou Philippe, Brion Emilie, Cabanes Cecile, Piron Anne, Reverdin Gilles, Kolodziejczyk Nicolas (2022). **ANDRO: An Argo-based deep displacement dataset**. SEANOE. https://doi.org/10.17882/47077



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

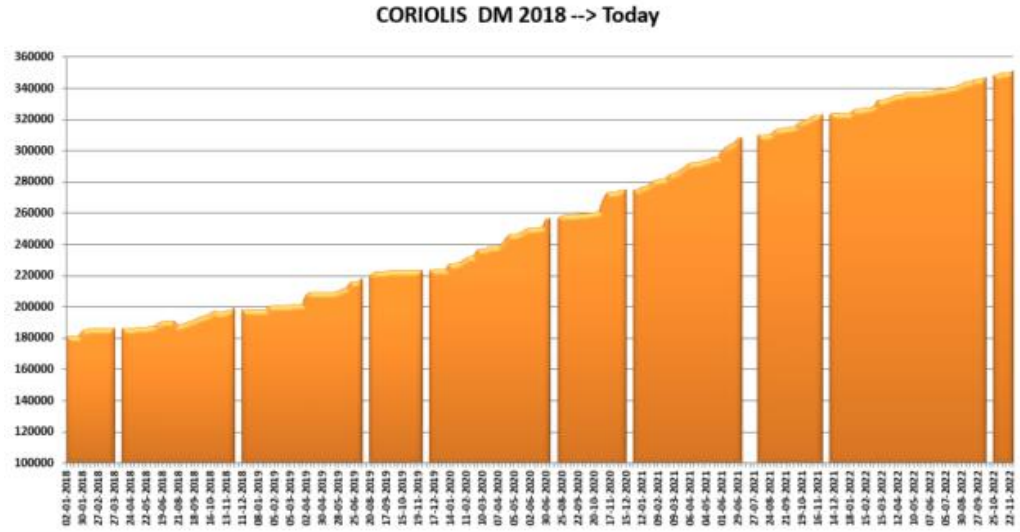
2 Delayed Mode QC

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. By working on this way with PIs, the delayed mode quality control is strengthen.

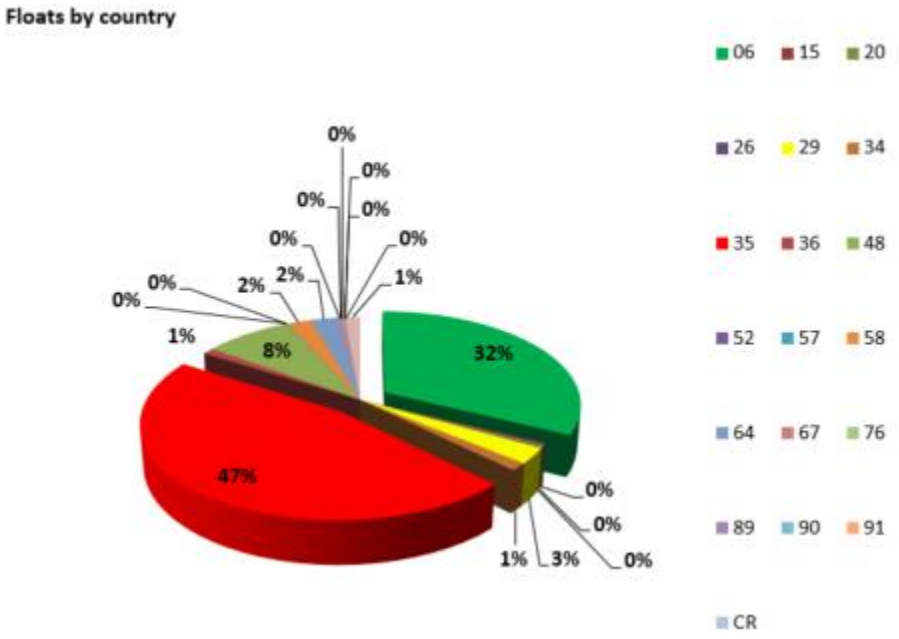
Some floats have been deployed from some projects, meaning a lot of PIs and a lot of time for explaining the DM procedure to all of them. A few PIs are totally able to work on DMQC following the four steps but this is not the case for most of them. Since the unavailability of the PIs leads to work by 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

A lot of work is always done from BSH (Birgit Klein) taking into account also floats from other German institutes and OGS (Antonella Gallo/Massimo Pacciaroni/Giulio Notarstefano) for the MedSea as well as Alberto Gonzalez Santana for IEO.

Over the past 5 years, a major effort has been made to steadily improve the quality control status of the delayed mode.

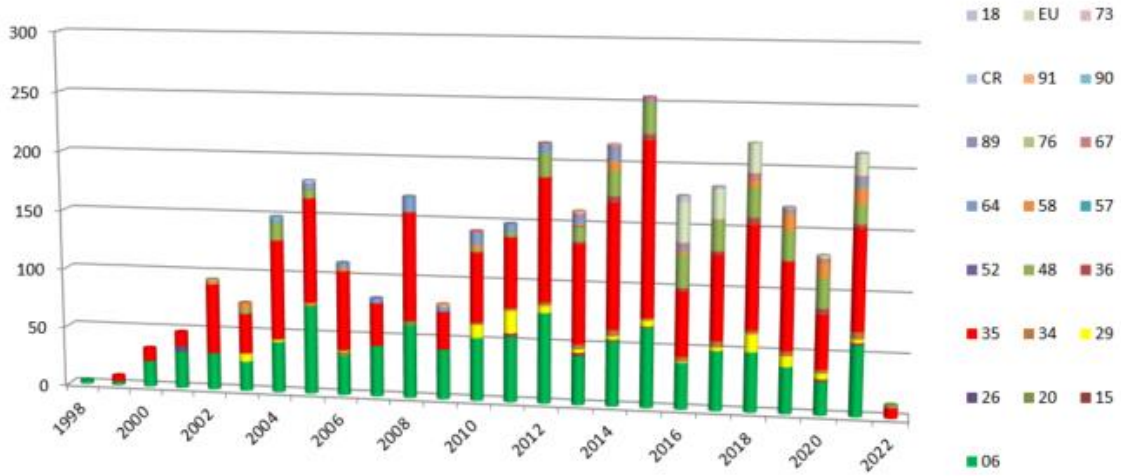


Evolution of the DM profiles' submission versus dates in last 5 years



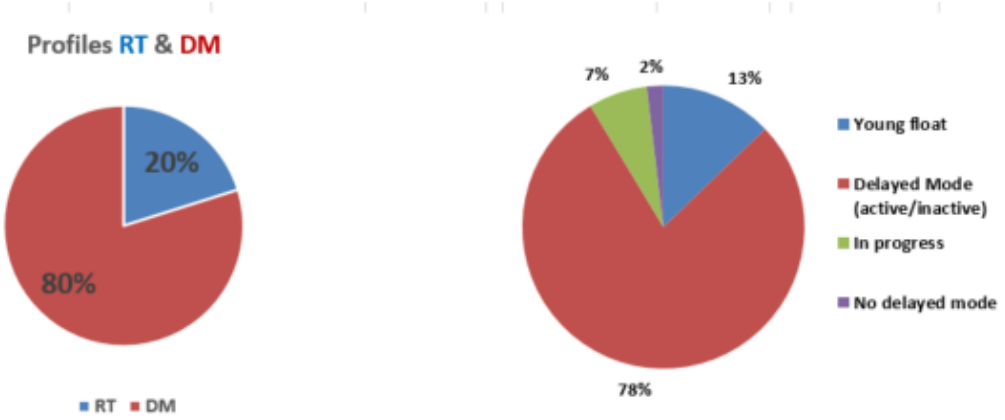
Percentage of floats by country in the Coriolis DAC.

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



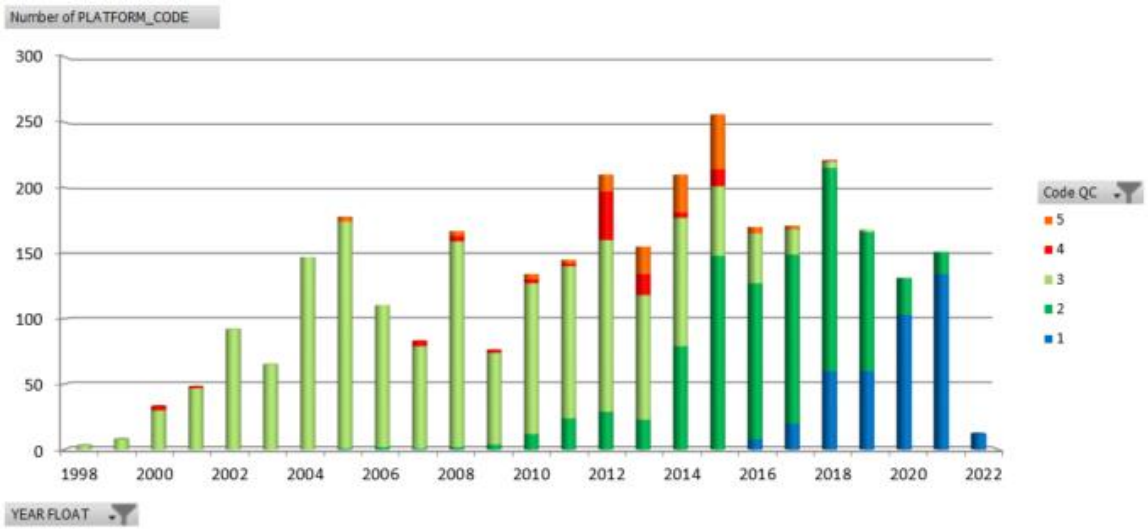
Number of floats by country and by launch's year in the Coriolis DAC

During the last year (from November 2021 to November 2022), 27386 new delayed mode profiles where produced and validated by PIs. A total of 350836 delayed mode profiles where produced and validated since 2005.



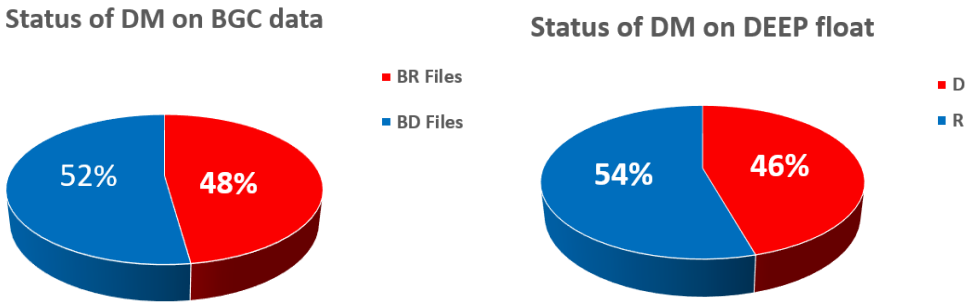
Status of the floats processed by Coriolis DAC.
Left: in terms of profile percent (DM available) and right: in terms of float percent (DM : delayed mode – RT : real time).

The status of the quality control done on the Coriolis floats is presented in the following plot. For the three last years (2020-2022), most of the floats are still too young (code 1) to be performed in delayed mode. For the years 2012 to 2016, we are still working on the DMQC of some floats. The codes 2 and 3 show the delayed mode profiles for respectively active and dead floats.

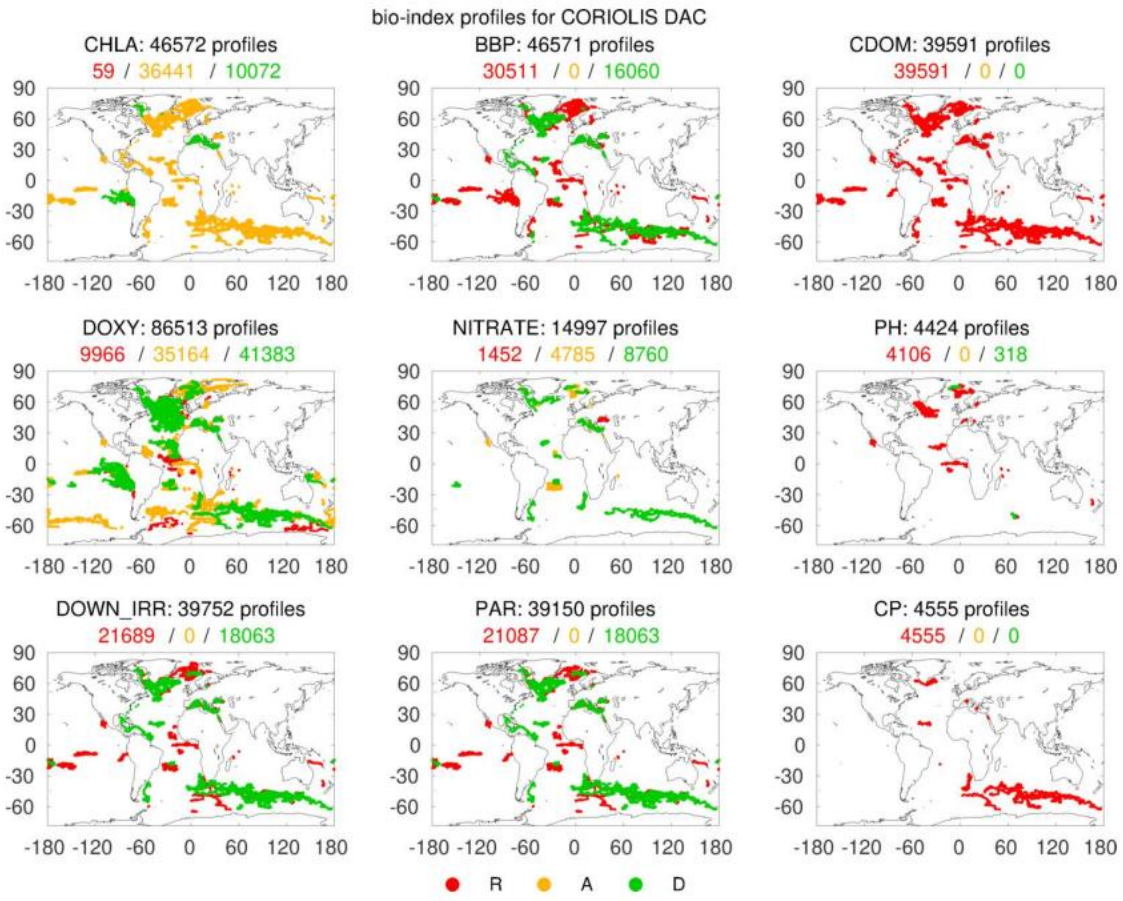


Status of the quality control done on profiles sorted by launch's year, code 1: young float, code 2: active float, DM done, code 3 : dead float, DM done; code 4 : DM in progress, code 5 : waiting for DM, code 6 : problems with float.

Looking in more detail to focus on BGC or Deep Argo data, a great effort has also been made to increase the count of delayed mode profiles: at least 52% of float have one parameter in D mode for BGC profiles when 46% of Deep Argo floats have been processed in delayed mode.



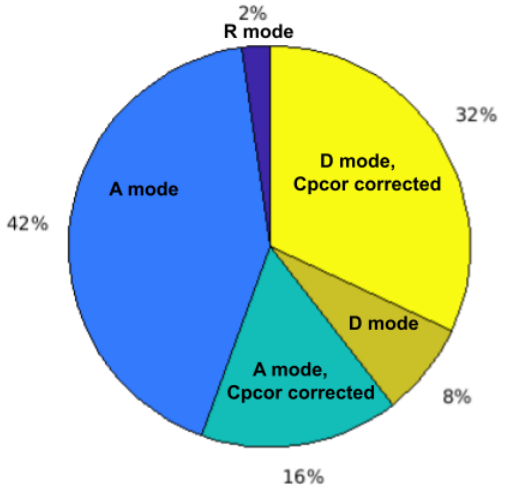
Regarding the BGC data, some information can be found on the document provided by the audit of Henry Bittig (https://biogeochemical-argo.org/cloud/document/implementation-status/BGC_summary_coriolis.pdf).



Location and number of R,A,D profiles per parameters.

For the Deep Argo data, current status of RT and DM adjustments has presented in the pie-chart for 6 DACs and details for Coriolis are presented in the histogram bar.

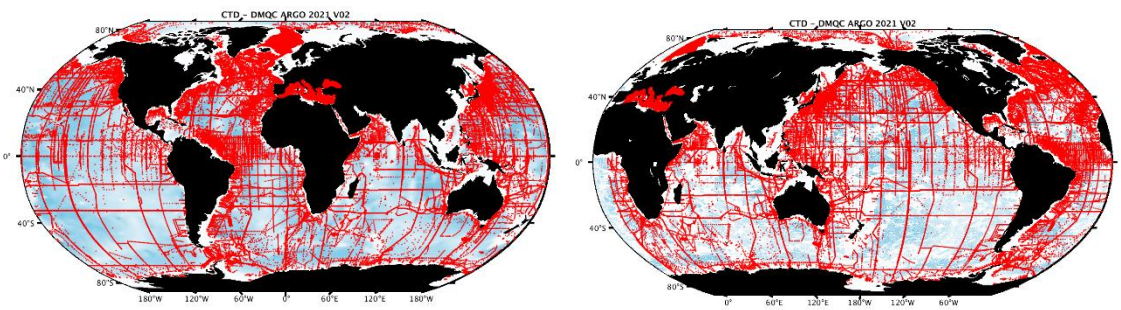
329 deep floats - 30165 profiles
from 6 dacs : aoml, bodc, coriolis, csio, csiro, jma



- ~ 48 % of the salinity profiles have been corrected with a new Cpcor value either in A mode or D mode.
- Some dacs haven't started to implement the RT adjustment for deep floats.

CTD Reference database

The version 2021V02 including some new CTDs (deployment CTDs, scientists' CTDs, GO-SHIP CTDs retrieved from the CCHDO website) as well as some corrections from the US-Audit DM feedback, has been provided at the end of the year 2021.



Like the others, the last version is available on the Ifremer ftp site (ask login/password at codac@ifremer.fr) and is divided in smaller tar balls, one by wmo box area (1-3-5-7): for instance, CTD_for_DMQC_2021V02_1.tar.gz for all boxes starting with wmo 1, then we will have 4 tar files.

A new version is in preparation and will include updates from ocean climate library, CTD from CCHDO (confidential and GO-SHIP data), CTD from deployment, data from PANGEA and CTD provided by scientist (Arctic area).

3. Value Added items

- List of current national Argo web pages, especially data specific ones
- Statistics of National Argo data usage (operational models, scientific applications, number of National PIs…)
- Products generated from Argo data that can be shared
- Publicly available software tools to access or qc Argo data

4. GDAC Functions

If your centre operates a GDAC, report the progress made on the following tasks:

- Operations of the ftp server
- Operations of the www server
- Operations of a user friendly interface to access data
- Data synchronization
- Statistics of Argo data usage : Ftp and WWW access, characterization of users (countries, field of interest : operational models, scientific applications) …

5. Regional Centre Functions

If your centre operates a regional centre, report the functions performed and any future plans.

6. Other Issues

Please include any specific comments on issues you wish to be considered by the Argo Data Management Team. These might include tasks performed by OceanOPS, the coordination of activities at an international level and the performance of the Argo data system.

3 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) …

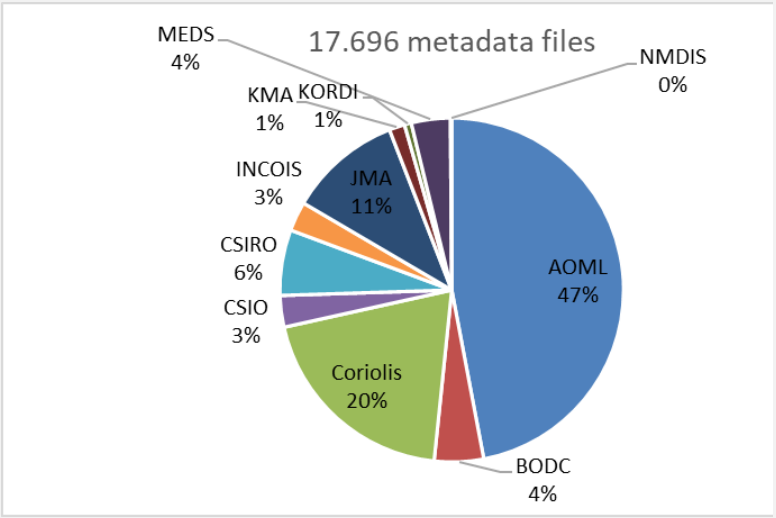
3.1 National centres reporting to you

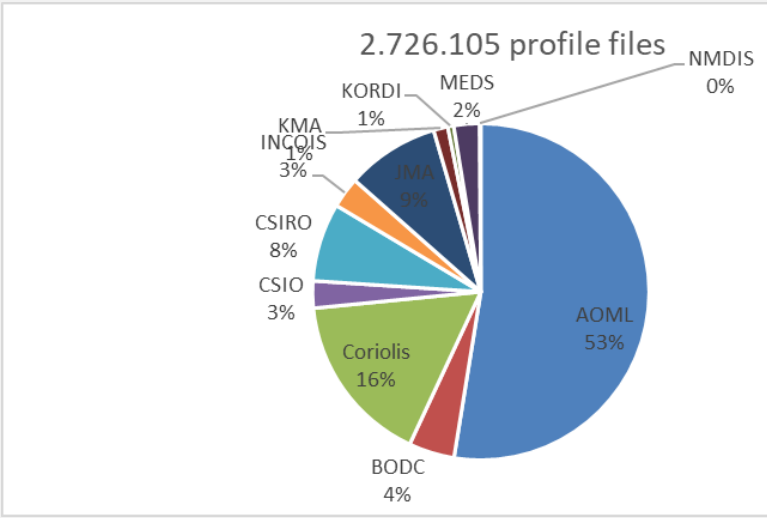
Currently, 11 national DACs submit regularly data to Coriolis GDAC. On November 2022, the following files were available from the GDAC FTP site.

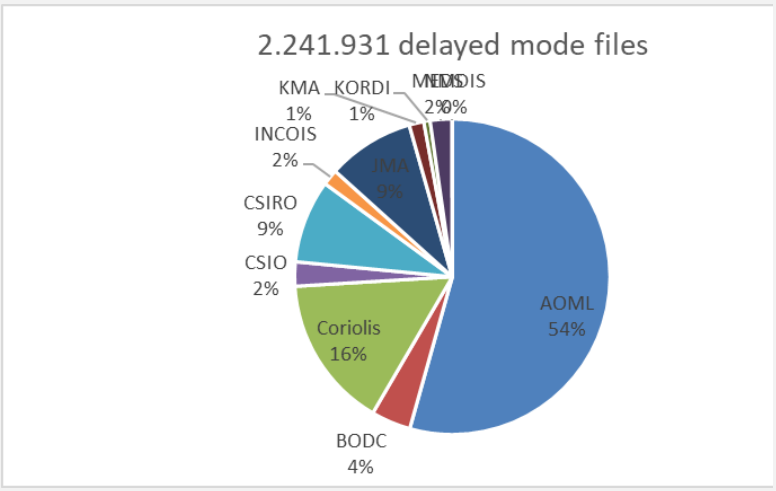
Compared to 2021, the number of floats (metadata) increased by 5%, the number of profile files increased by 7%.

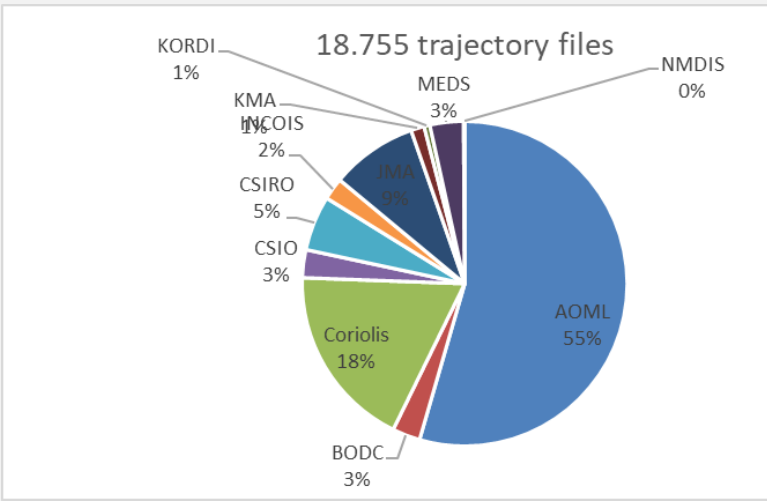
3.1.1 GDAC files distribution

DAC	metadata files 2021	increase	profile files	increase2	delayed mode profile files	increase3	trajectory files
AOML	8 319	5%	1 432 739	6%	1 218 599	8%	10 219
BODC	820	3%	119 843	7%	91 012	4%	519
Coriolis	3 518	7%	449 398	11%	350 321	8%	3 437
CSIO	525	3%	71 015	5%	55 649	9%	523
CSIRO	1 092	6%	205 190	6%	191 023	7%	1 025
INCOIS	491	0%	80 508	2%	36 487	7%	412
JMA	1 887	2%	244 049	5%	200 085	14%	1 616
KMA	259	2%	37 439	3%	33 706	3%	250
KORDI	115	5%	15 423	0%	14 504	0%	107
MEDS	651	8%	68 041	8%	50 113	12%	628
NMDIS	19	0%	2 460	0%	432	-	19
Total	**17 696**	**5%**	**2 726 105**	**7%**	**2 241 931**	**8%**	**18 755**









Number of files available on GDAC, November 2022

3.1.2 Argo Semaphore dashboard: give credit to data providers

Ifremer manage a dashboard (Semaphore) to monitor data distribution and give credit to data providers such as Argo floats.

- https://audience-argo.ifremer.fr

FTP, HTTPS and ERDDAP downloads log files are ingested in an Elasticsearch index. A link between downloaded files, download originators, floats included in the downloaded files and institution owners of the floats is performed. These links are displayed in a Kibana dashboard.

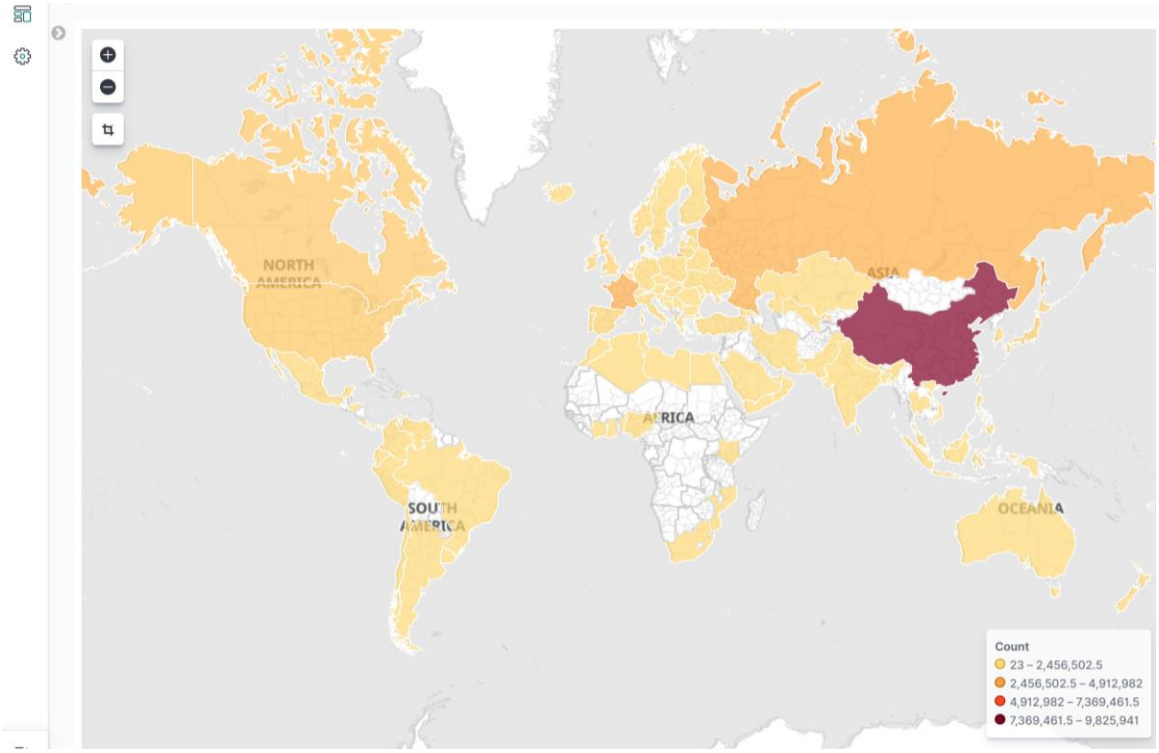
This dashboard offers the possibility to give credit to Floats owner institutions such as how many data from one particular institution was downloaded, by whose data users.

Semaphore key figures for 2022:

- **2 million sessions for Argo data downloads**
- **655 million of files downloaded**
- **80% of ftp downloads, 20% of https downloads**
- **20 petabytes daily downloads**

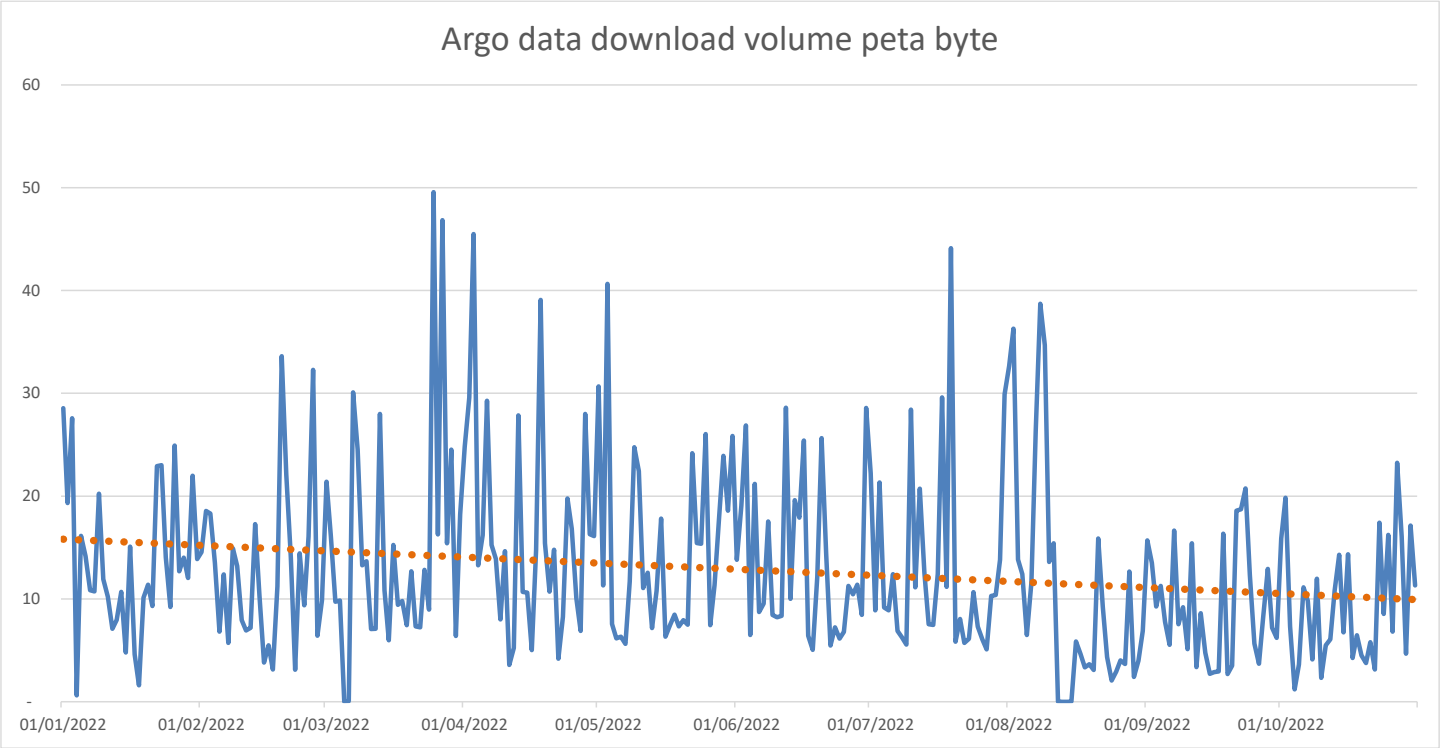
Download service	Nb hits	percent
ftp	525 899 105	80%
https	127 977 145	20%
thredds	816 041	0,12%
cms-ezpublish	536 706	0,08%
erddap	72 709	0,01%
Total	**655 301 706**	

The vast majority of downloads is with ftp (80%), followed by https (20%) and a tiny fraction with Thredds or ERDDAP data services.



Distribution by countries of GDAC ftp, https erddap downloads in 2022

The majority of downloads are from China, Russia, Europe and North America.



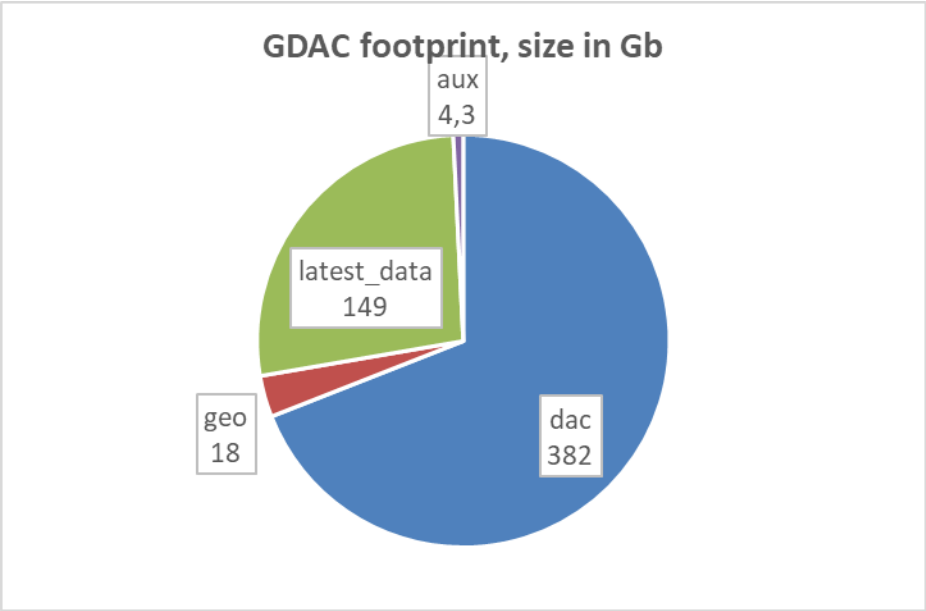
Argo FTP, HTTPS and ERDDAP downloads in 2022, an average of 20 petabytes per day with spikes up to 50 petabytes a day

3.1.3 GDAC files size

- The total number of NetCDF files on the GDAC/dac directory was 3 329 573 (+7% in one year)
- The size of GDAC/dac directory was 382 Go (+21%)
- The size of the GDAC directory was 740 Go (+12%)

More on: http://www.argodatamgt.org/Data-Mgt-Team/News/BGC-Argo-M-prof-files-no-more-distributed-on-GDAC

branch	GDAC size in Gb	yearly increase	N-1
dac	382	21%	316
geo	18	-87%	135
latest_data	149	831%	16
aux	4,3	48%	2,9
gdac total	740	12%	661

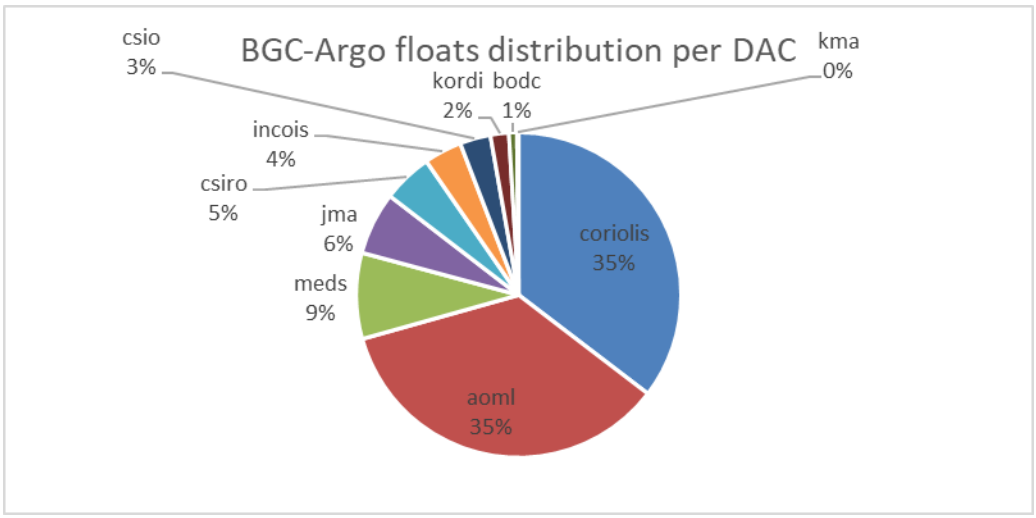


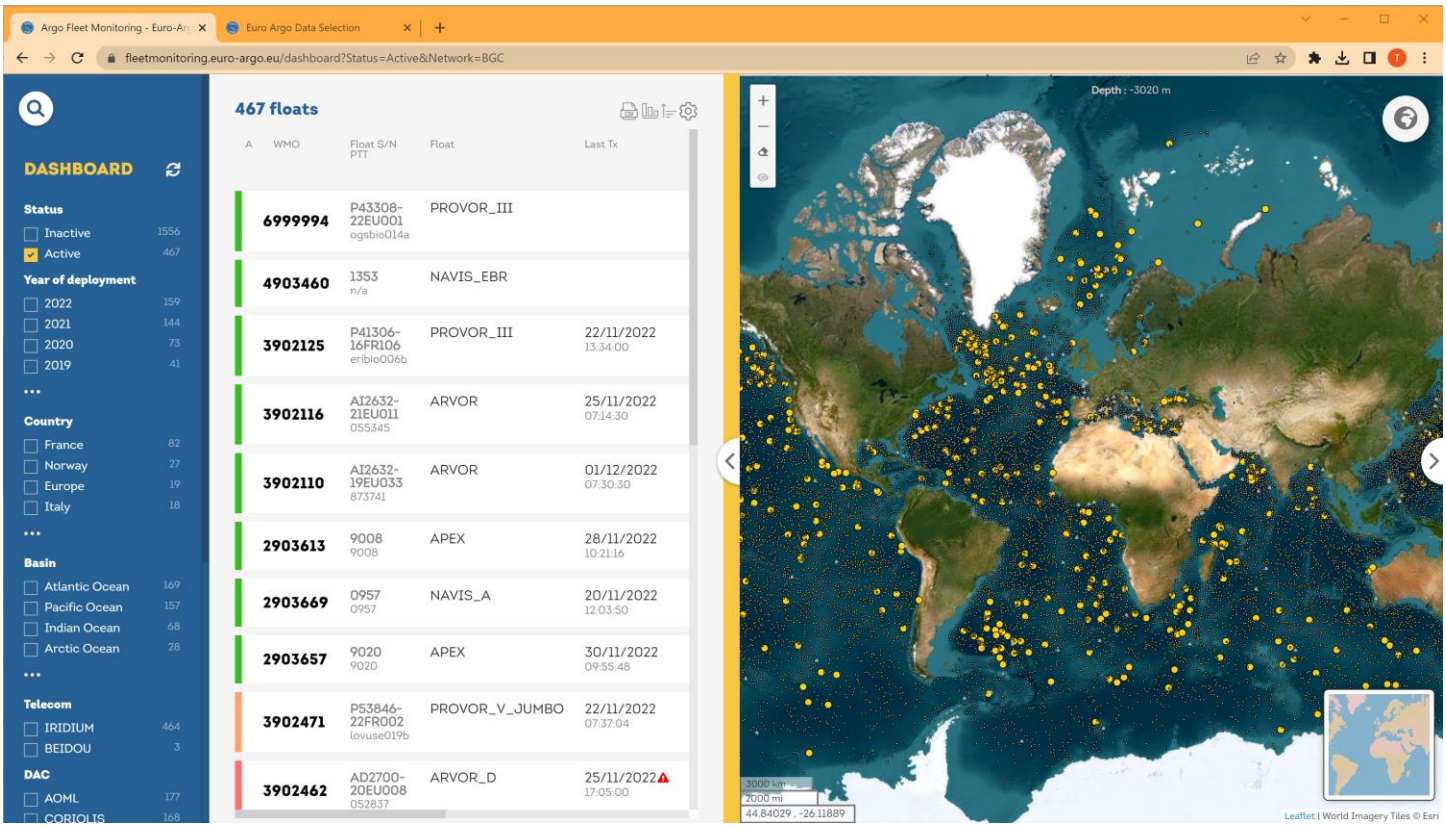
3.1.4 BGC-Argo floats

In November 2022, 270.819 BGC-Argo profiles from 1860 floats were available on Argo GDAC. This is a fair increase compared to 2021: +12% more floats and +8% more profiles.

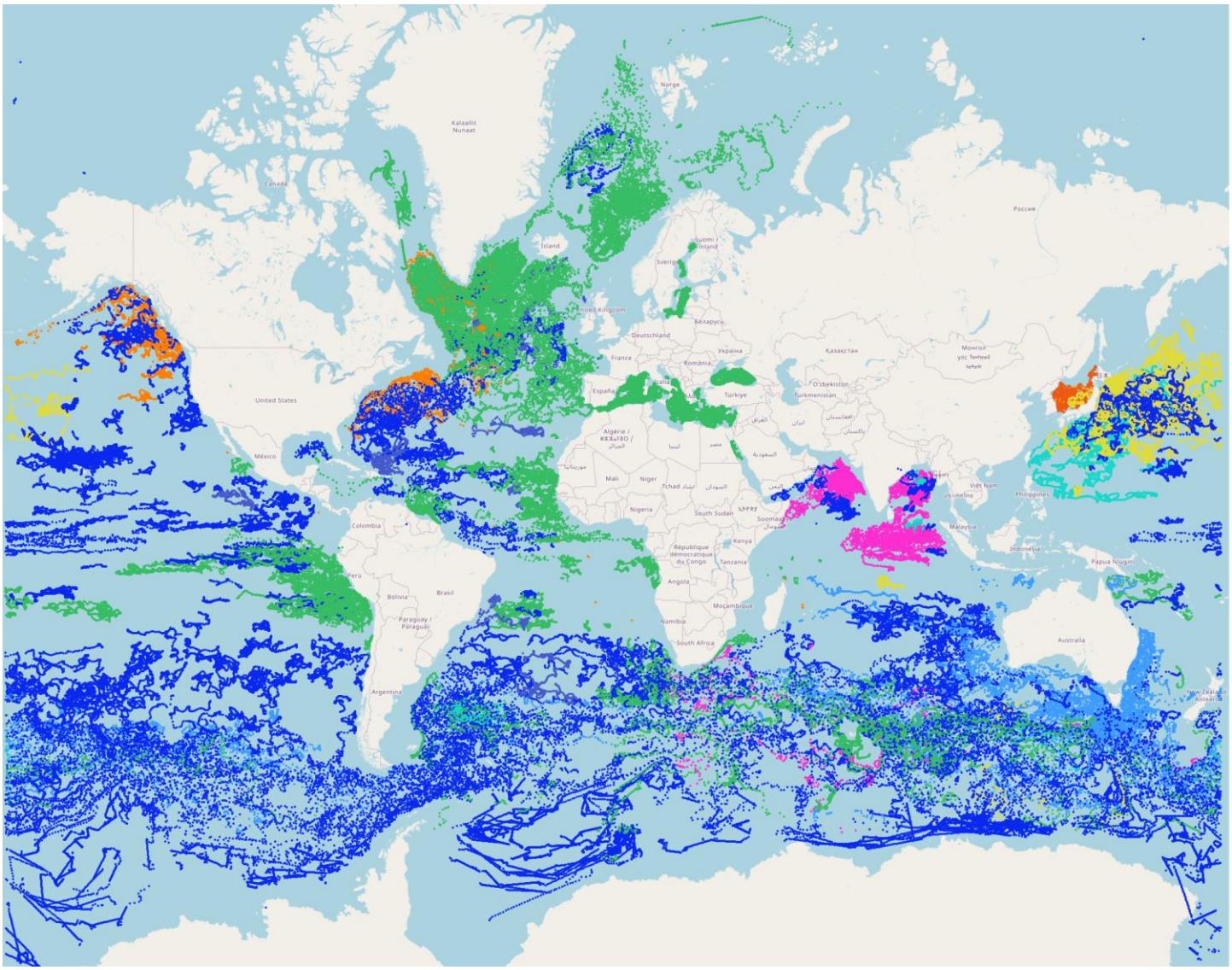
DAC	nb bgc float	nb bgc file
coriolis	658	97 307
aoml	656	93 989
meds	159	5 692
jma	116	19 836
csiro	92	22 832
incois	70	12 167
csio	57	10 267
kordi	34	3 426
bodc	15	4 835
kma	3	468
Total	**1860**	**270 819**

DAC	nb bgc float	nb bgc files
coriolis	671	90 817
aoml	575	86 014
jma	113	18 027
csiro	90	22 203
incois	69	11 352
meds	50	4 910
csio	44	9 170
kordi	34	3 416
bodc	15	4 723
kma	3	106
Total	**1664**	**250 738**



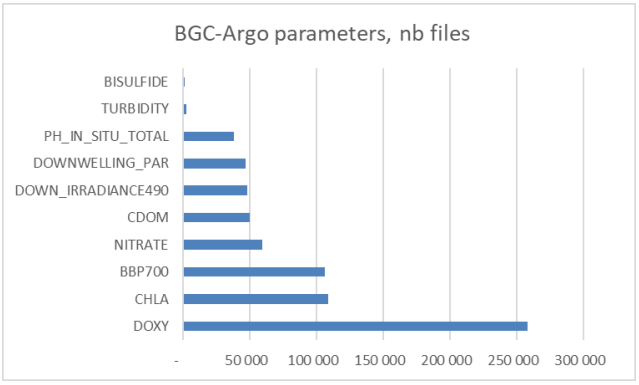


Map of 467 BGC-Argo active floats (yellow) among 2023 BGC-Argo floats (other: grey dots) from https://fleetmonitoring.euro-argo.eu/dashboard



BGC-Argo profiles, colored by DACs

BGC parameter	nb files
DOXY	258 079
CHLA	108 988
BBP700	106 473
NITRATE	59 180
CDOM	50 144
DOWN_IRRADIANCE490	48 344
DOWNWELLING_PAR	47 117
PH_IN_SITU_TOTAL	37 968
TURBIDITY	2 514
BISULFIDE	1 352



Main BGC-Argo physical parameters, number of s-profiles

3.2 Operations of the ftp, https and erddap servers

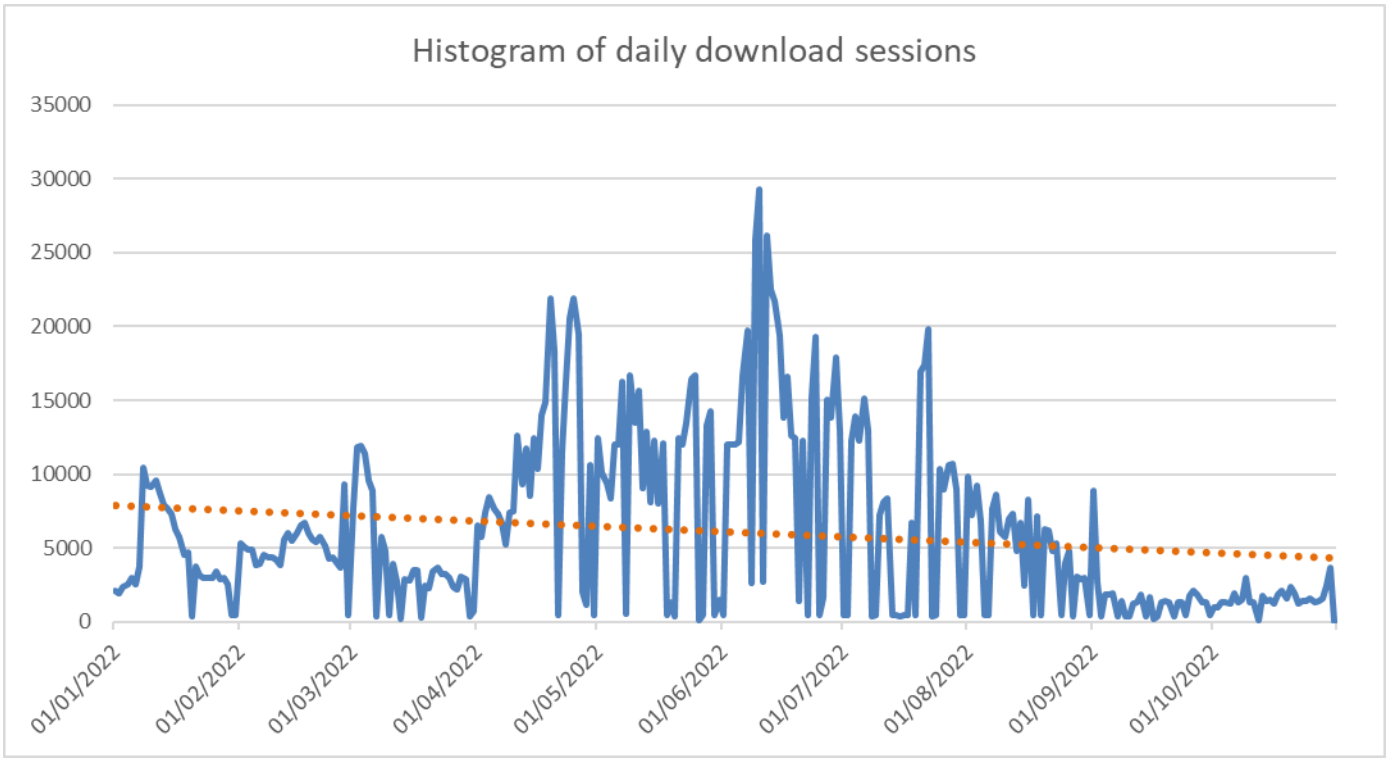
For each individual DAC, every 30 minutes, meta-data, profile, trajectory and technical data files are automatically collected from the national DACs. The 11 DACs are processed in parallel (one process launched every 3 minutes).

Index files of metadata, profiles, trajectories, technical and auxiliary data are hourly updated.

GDAC download services

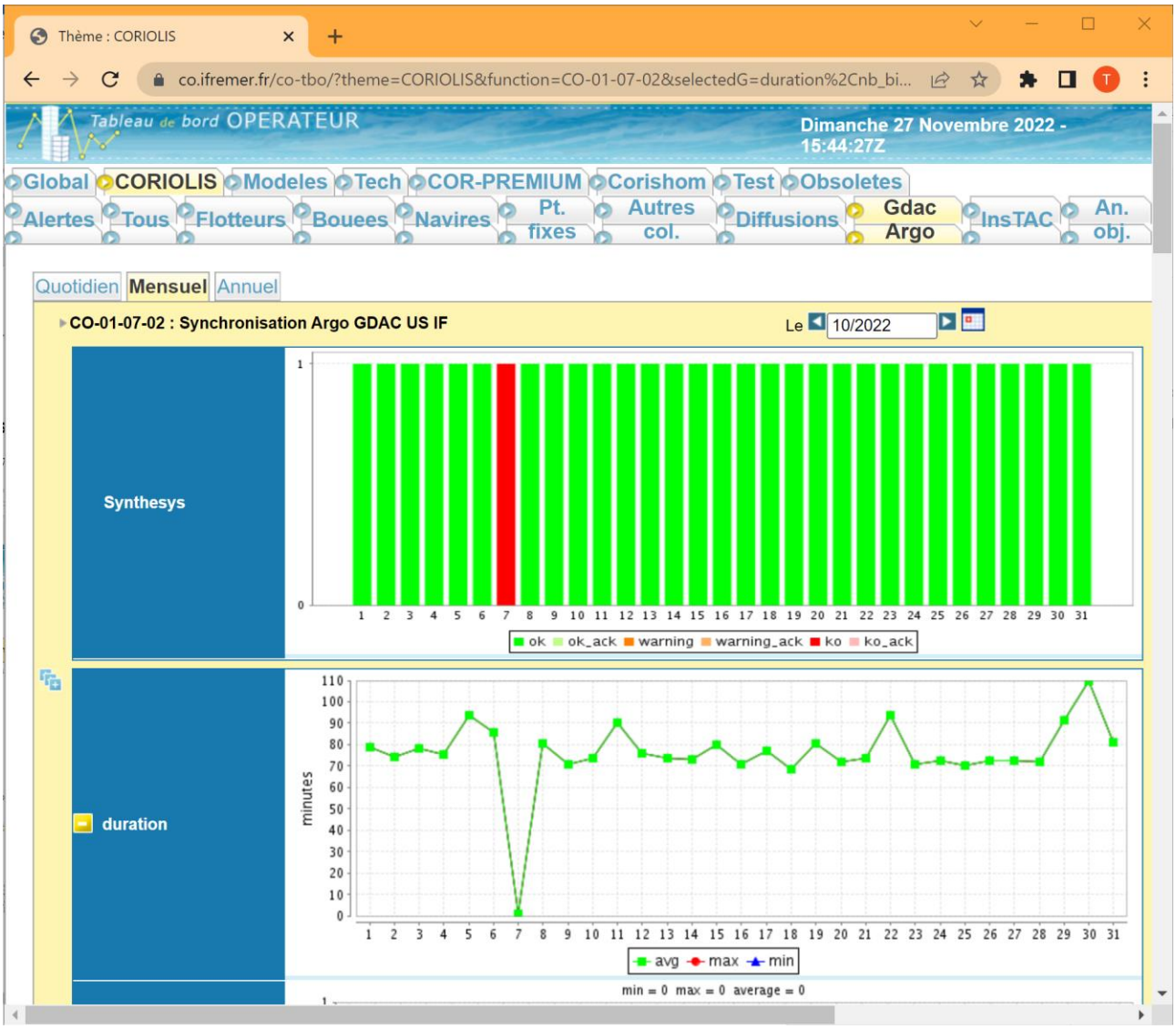
- ftp ftp://ftp.ifremer.fr/ifremer/argo
- https https://data-argo.ifremer.fr
- erddap https://erddap.ifremer.fr

There is a daily average of 6000 sessions and downloading 20 petabytes of data files. There was a huge variability in number of sessions between May and August 2022.



3.3 GDAC files synchronization

The synchronization with US-GODAE server is performed once a day at 03:55Z



Synchronization dashboard in October 2022: the daily sync. time takes on average 80 minutes, with a failure on October 7th.

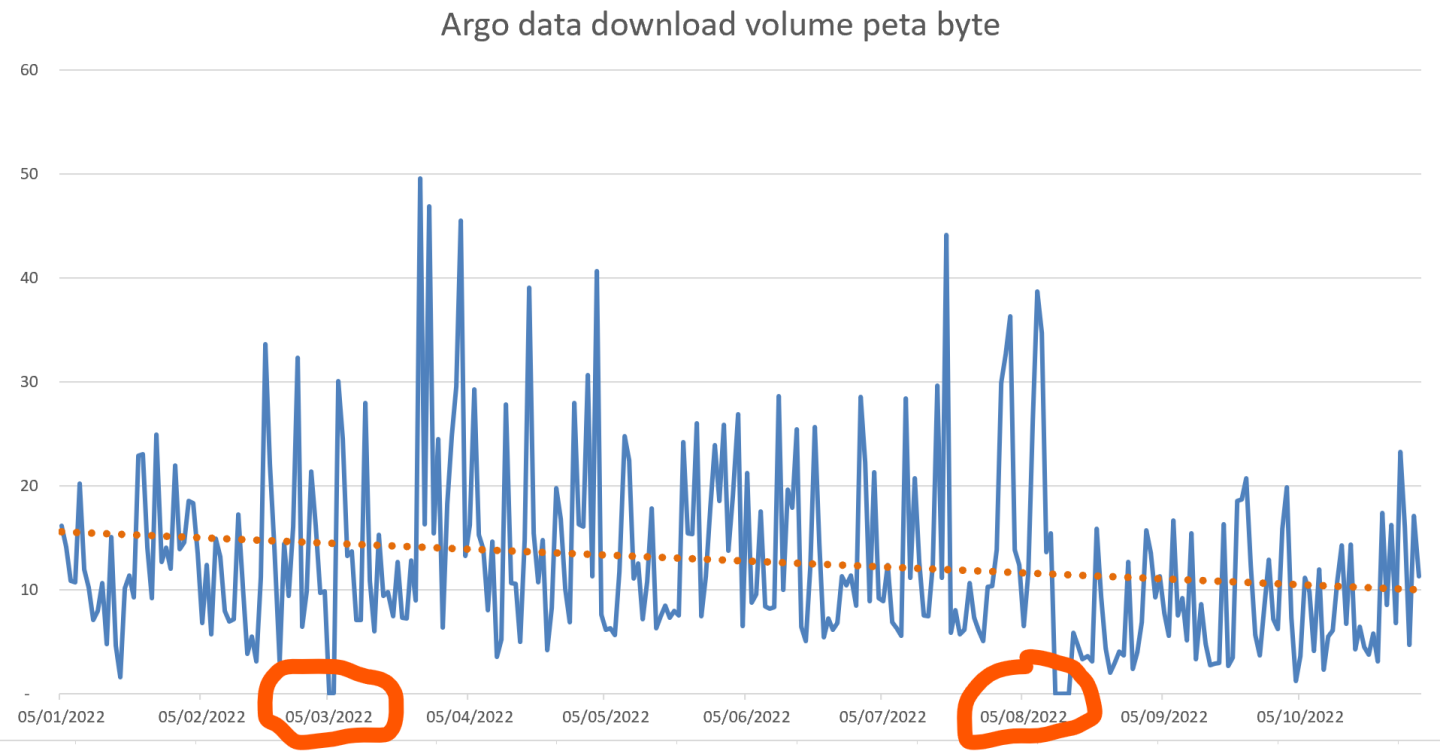
3.4 Download services monitoring

Semaphore is used to monitor the data distribution activity.

In 2022, according to the daily data download volume statistics, there were two period of poor performances: 2 days in March 2022 and 4 days in August 2022.

A poor performance is an abnormally low volume of data downloaded by Argo users (less than 0,1 petabyte of data).

Day	Volume peta byte
05/03/2022	0,013
06/03/2022	0,069
12/08/2022	0,007
13/08/2022	0,005
14/08/2022	0,003
15/08/2022	0,010



Six days of poor data download service in year 2022

3.5 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 1519 core-Argo entries** (November 2022), compared to 2100 entries one year ago.

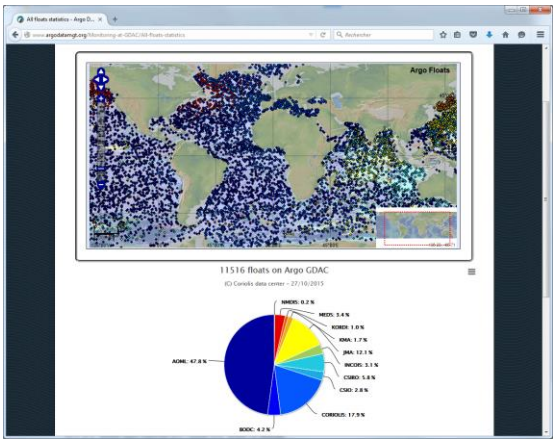
All floats	
DAC	NB_FLOAT
aoml	908
coriolis	177
jma	126
bodc	119
csiro	99
csio	26
incois	24
meds	24
kma	13
kordi	3
Total	1519

Distribution of greylist entries per DAC and per parameter

Parameter	nb entries
PSAL	1518
TEMP	185
PRES	147
DOXY	71
BBP700	51
CHLA	35
CDOM	25
BBP532	11
NITRATE	5
DOWN_IRRADIANCE412	4
DOWNWELLING_PAR	4
DOWN_IRRADIANCE490	4
DOWN_IRRADIANCE380	4
CP660	4
PH_IN_SITU_TOTAL	3
PH_IN_SITU_FREE	1

3.6 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



3.7 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 rysnc 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/...

3.8 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

Since July 2019, the DOI monthly snapshot of Argo data is a compressed archive (.gz) that contains distinct core-Argo tar files and BGC-Argo tar files. A core-Argo user can now ignore the voluminous BGC-Argo files.

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://doi.org/10.17882/42182