

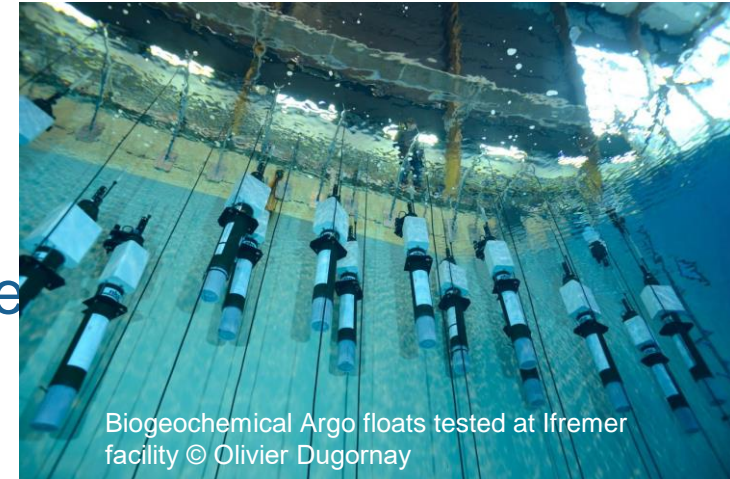


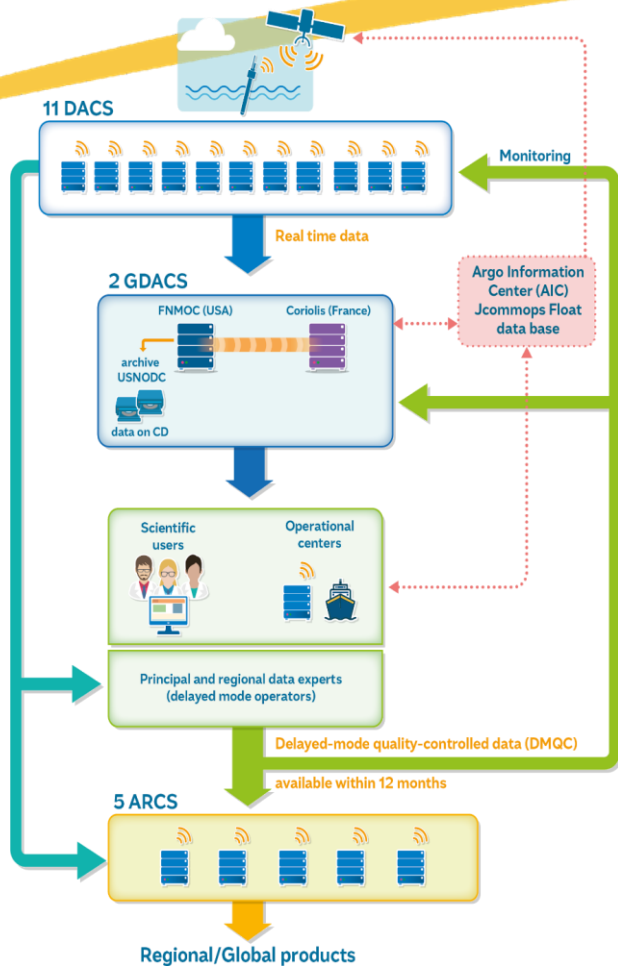
The Argo data system

Birgit Klein (BSH)

Marginal Seas Argo DMQC workshop, Sopot, Poland 18.04.2023-19.04.2023

- The Argo data system
- Access to Argo Data
 - Argo data management webpage
 - Argo data selection tool
 - Argo fleet monitoring
 - Argopy
 - Argo online School
 - EuroArgodev Github





The data flow

Floats send their measurements to **DACs***, where raw data are processed and sent to **the 2 GDACs***:

- 1 GDAC in Europe (Coriolis/Ifremer)
- 2 DACs in Europe (Coriolis/Ifremer, France and BODC, UK)

- **ARCs** regional data centers look after the homogeneity

- **Argo Information Centre (AIC)** at OceanOPS:

- Registration of floats
- Information on data (“metadata”)



The Argo data system: files created

4 different sort of files are created to store the data transmitted by the float:

Meta-file: Contains descriptive information about the float

Tech-file: Contains technical data transmitted by the float

Traj-file: Contains underway data from the float at surface and parking depth

Prof-file: Contains the vertical profiles measured by the float

/ifremer/argo/dac/coriolis/7900566/				
Name	Besitzer	Größe	Geändert	Rechte
..				
profiles	ftp		09.03.2023 02:26	rw-r--r--
7900566_BRtraj.nc	ftp	38.971 ...	09.03.2023 01:33	rw-r--r--
7900566_meta.nc	ftp	204 KB	09.03.2023 01:33	rw-r--r--
7900566_prof.nc	ftp	3.069 KB	20.01.2023 10:51	rw-r--r--
7900566_Rtraj.nc	ftp	33.431 ...	09.03.2023 01:33	rw-r--r--
7900566_Sprof.nc	ftp	2.540 KB	09.03.2023 02:26	rw-r--r--
7900566_tech.nc	ftp	72 KB	09.03.2023 01:33	rw-r--r--

The quality control

Three different steps of quality control

- In real time only automated tests and automated adjustments for the parameters QC flags are set
- Sensor drift is identified and corrected in delayed mode ADJUSTED parameters are filled, QC fields are set, DATA mode is now D
- Consistency check performed by the ARG



1

Automatic Real Time Quality Control Test

- Profile per profile
- Detect obvious bad data



2

Scientific Delayed Mode Assessment

- Float by float looking at the complete time series
- Detect bad sensor behaviour

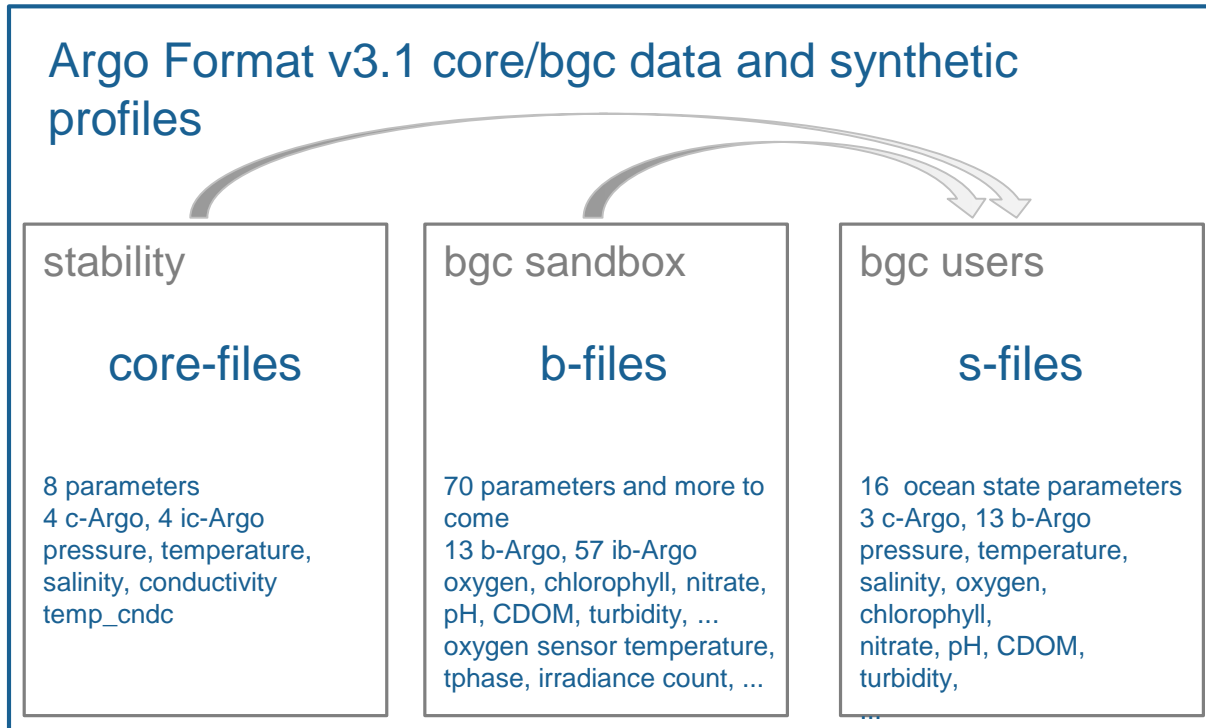


3

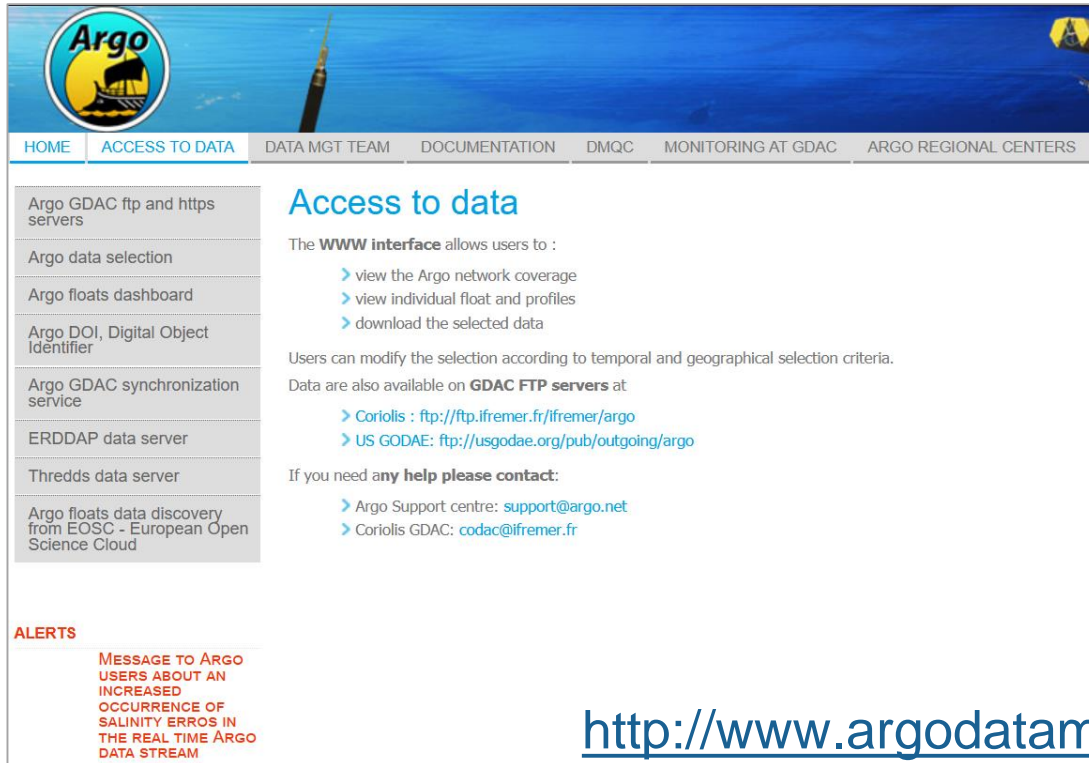
Basin Scale Consistency Check

- Look at a batch of floats in an area
- Check if they are consistent with each other

The split between physical and BGC parameters



Argo data management webpage

A screenshot of the Argo data management webpage. The page has a blue header with the Argo logo and a navigation menu. The main content area is titled "Access to data" and provides information about data selection, synchronization, and FTP servers. There is also an "ALERTS" section at the bottom left.

Argo

HOME | **ACCESS TO DATA** | DATA MGT TEAM | DOCUMENTATION | DMQC | MONITORING AT GDAC | ARGO REGIONAL CENTERS

Argo GDAC ftp and https servers

Argo data selection

Argo floats dashboard

Argo DOI, Digital Object Identifier

Argo GDAC synchronization service

ERDDAP data server

Thredds data server

Argo floats data discovery from EOSC - European Open Science Cloud

Access to data

The **WWW interface** allows users to :

- > view the Argo network coverage
- > view individual float and profiles
- > download the selected data

Users can modify the selection according to temporal and geographical selection criteria.

Data are also available on **GDAC FTP servers** at

- > Coriolis : <ftp://ftp.ifremer.fr/ifremer/argo>
- > US GODAE: <ftp://usgodae.org/pub/outgoing/argo>

If you need **any help please contact:**

- > Argo Support centre: support@argo.net
- > Coriolis GDAC: codac@ifremer.fr

ALERTS

MESSAGE TO ARGO USERS ABOUT AN INCREASED OCCURRENCE OF SALINITY ERRORS IN THE REAL TIME ARGO DATA STREAM

<http://www.argodatamgt.org/Access-to-data>

Argo data selection tool

Argo Data Selection is a web interface to discover, select and subset Argo data. Your selection can be downloaded as NetCDF, CSV or image files.

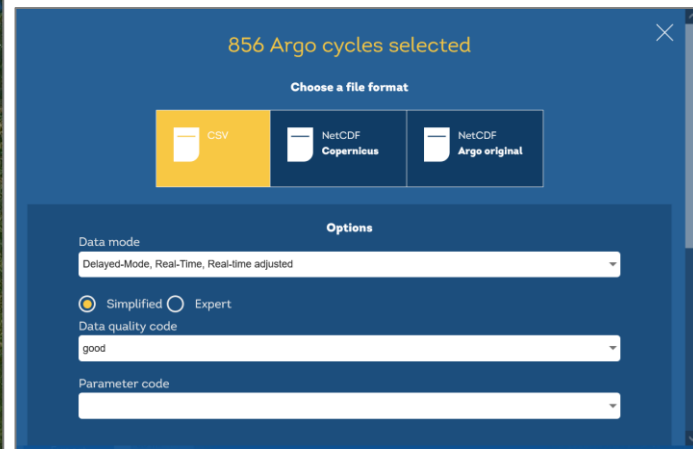
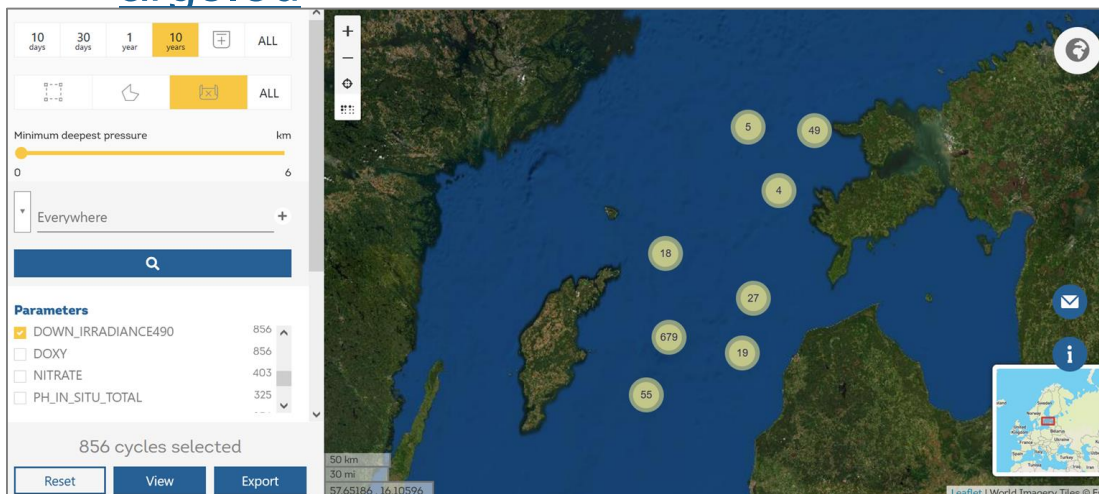
<https://dataselection.euro-argo.org/>

The screenshot displays the Argo Data Selection tool interface. On the left, there are filters for time (10 days, 30 days, 1 year, 10 years, ALL), a search bar, and a 'Parameters' section with checkboxes for BBP470, BBP532, BBP700, and BISULFIDE. A slider for 'Minimum deepest pressure' is set to 0 km. Below the filters, it shows '3,985 cycles selected' and buttons for 'Reset', 'View', and 'Export'. The central map shows a world map with numerous yellow dots representing Argo floats. On the right, a 'Parameters' panel shows counts for selected parameters: BBP470 (17), BBP532 (3), BBP700 (217), and BISULFIDE (1). The 'Deployment year' panel shows counts for 2019 (519), 2020 (583), 2021 (762), and 2022 (439). The 'Position & date quality' panel shows counts for 'Good' (3985) and 'Other' (6). The 'Network' panel shows counts for BGC (496), CORE (3219), and DEEP (69). The bottom of the map shows coordinates: 35000 km, 2000 m, -51.33254, -65.74219.

Argo data selection tool

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<https://dataselection.euro-argo.eu>



Argo Fleet Monitoring Dashboard

Argo Floats Dashboard is a web interface to discover Argo floats with metadata, maps, graphics and technical alerts.

<https://fleetmonitoring.euro-argo.eu>

The dashboard displays 3838 floats. The table below shows a sample of the data:

A	WMO	Float S/N PTT	Float	Last Tx	Last cycle	Battery
	7900211	8329 n/a	SOLO_II	19/06/2022 13:50:04	296	■
	3901247	8536 n/a	SOLO_II	16/06/2022▲ 08:38:59	232	■
	3901242	7403 n/a	S2A	19/06/2022 05:17:14	199	■
	3901483	8594 n/a	SOLO_II	13/06/2022 10:47:00	171	■
	3901486	8600 n/a	SOLO_II	11/06/2022 15:30:04	170	■
	3901480	8591 n/a	SOLO_II	10/06/2022 19:47:09	171	■

The map on the right shows the Atlantic Ocean with numerous yellow circular markers representing the locations of Argo floats. A sidebar on the left contains filters for Status, Year of deployment, and Country. A right-hand sidebar shows a list of DACs and Variables.

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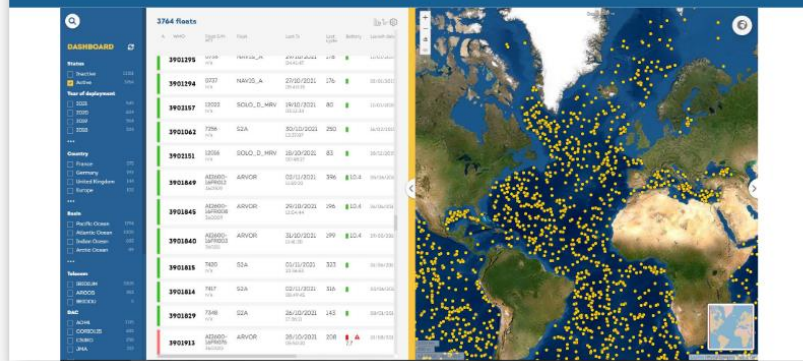
Help page

About

Euro-Argo fleet monitoring tool user guide

More on Argo

Euro-Argo fleetmonitoring web interface - User Guide -



Examples:

<https://fleetmonitoring.euro-argo.eu/dashboard?Status=Active,Inactive&Year%20of%20deployment=2020,2021&Country=Germany&Basin=ARCTIC%20OCEAN>

<https://fleetmonitoring.euro-argo.eu/dashboard?WMO=3901644,3901645,6904067,6904068,6904069,6904091,7900510,7900516,7900517,7900551,7900552,7900553,7900554,7900555,7900578>



<https://github.com/euroargodev/argopy>

`argopy` is a python library dedicated to Argo data access, visualisation and manipulation for regular users as well as Argo experts and operators

argopy: A Python library for Argo ocean data analysis (Maze & Balem, 2020)
Journal of Open Source Software
<https://joss.theoj.org/papers/10.21105/joss.02425>



BINDER

[CLICK HERE TO TRY ARGOPY ONLINE !](#)

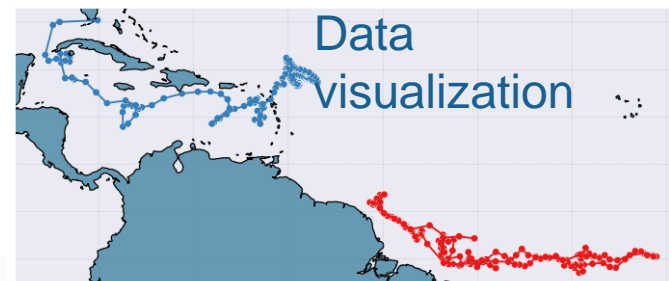
Install with conda or PyPi

Access

data:

```
In [1]: from argopy import DataFetcher as ArgoDataFetcher
```

```
In [2]: ds = ArgoDataFetcher().region([-75, -45, 20, 30, 0, 100, '2011-01', '2011-06']).to_xarray()
```



Floats WMO
 ● 6902745
 ● 6902746



Argo Online School

<https://euroargodev.github.io/argoonlineschool>

An online educational tool that will make it easier for users to understand the Argo data, its acquisition, the quality controls and the processing carried out to offer good quality data.

The Argo Online School is a set of videos, animations and hands-on jupyter notebooks designed by IEO/CSIC to be accessible for high school or graduate students in any discipline, with no prerequisites.

<https://www.euro-argo.eu/Outreach/Educational-material/Argo-Online-School>

The screenshot displays the Argo Online School interface. On the left, there is a sidebar with the Argo Online School logo and a search bar. The main content area shows a lesson titled "The Argo Program" with a video player. Below the video, there is a text description of the Argo program.

Argo Online School

Search this book...

The Argo Online School

LESSON 1

The Argo Program

- What is the Argo network?
- Why do we need Argo and what are its objectives?
- How the observations are done?
- What is an oceanographic profile?
- Technological innovations
- Recap Lesson 1

LESSON 2

The Argo Data

The Argo Program

Argo is a large-scale global set of profiling floats that measure temperature and salinity versus pressure, in addition to six biogeochemical variables: oxygen concentration, nitrate concentration, pH, chlorophyll-a concentration, suspended particles and downwelling irradiance. Argo is the main component of the ocean observing system. This is the current distribution of the Argo matrix.



Online collaborative framework Euroargodev

Euro-Argo ERIC
Euro-Argo is the European infrastructure for the Argo programme that aims at sustaining 1/4 of the global network and enhance coverage in European seas.
https://www.euro-argo.eu @EuroArgoERIC euroargo@ifremer.fr

Overview Repositories 48 Packages People 63 Teams 28 Projects 2 Settings

Pinned

- publicQCforum** (Public)
A public forum to talk about Quality Control of Argo measurements
☆ 9
- argopy** (Public)
A python library for Argo data beginners and experts
Python ☆ 106 🍴 30
- argodmqc_owc** (Public)
Argo float salinity calibration software
HTML ☆ 7 🍴 2
- argoonlineschool** (Public)
Here you can find find the jupyter notebooks that constitute the Argo Online school.
Jupyter Notebook ☆ 3 🍴 4
- BGC-ARGO_R_WORKSHOP** (Public)
R tool for accessing, processing, and visualizing BGC Argo
R ☆ 3 🍴 4
- check_CTD-RDB** (Public)
Checking the status of the CTD Reference database (RDB)
MATLAB ☆ 4 🍴 1

People
View all
Invite someone

Top languages
MATLAB Jupyter Notebook

- On Github
- Conceived for hosting, sharing, and developing **Delayed Mode quality control procedures** for core Argo
- Today is being used by the entire **Euro-Argo RISE** project and the **international Argo community**: From quality control operators to end-users



Euroargodev

<https://www.github.com/euroargodev>



THANKS!

@EuroArgoERI



#EARISE

EURO-ARGO RISE



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Call INFRADEV-03-2018-2019: Individual support to ESFRI and other world-class research infrastructures.

