Argo & BGC-Argo

Real-time quality controls

GDAC – Global Data Assembly Centre activity

US-FleetNumerical and EU-Coriolis operate a Global Data Assembly Centres (GDAC) for Argo and BGC-Argo floats

The GDAC function is to:

- Aggregate real-time and delayed-mode NetCDF-CF files provided by DACs
- Check the NetCDF-CF compliance of the DACs files
- Preserve NetCDF-CF files
- Distribute files on multiple channels
  FTP, HTTP, Thredds, ERDDAP, DOI

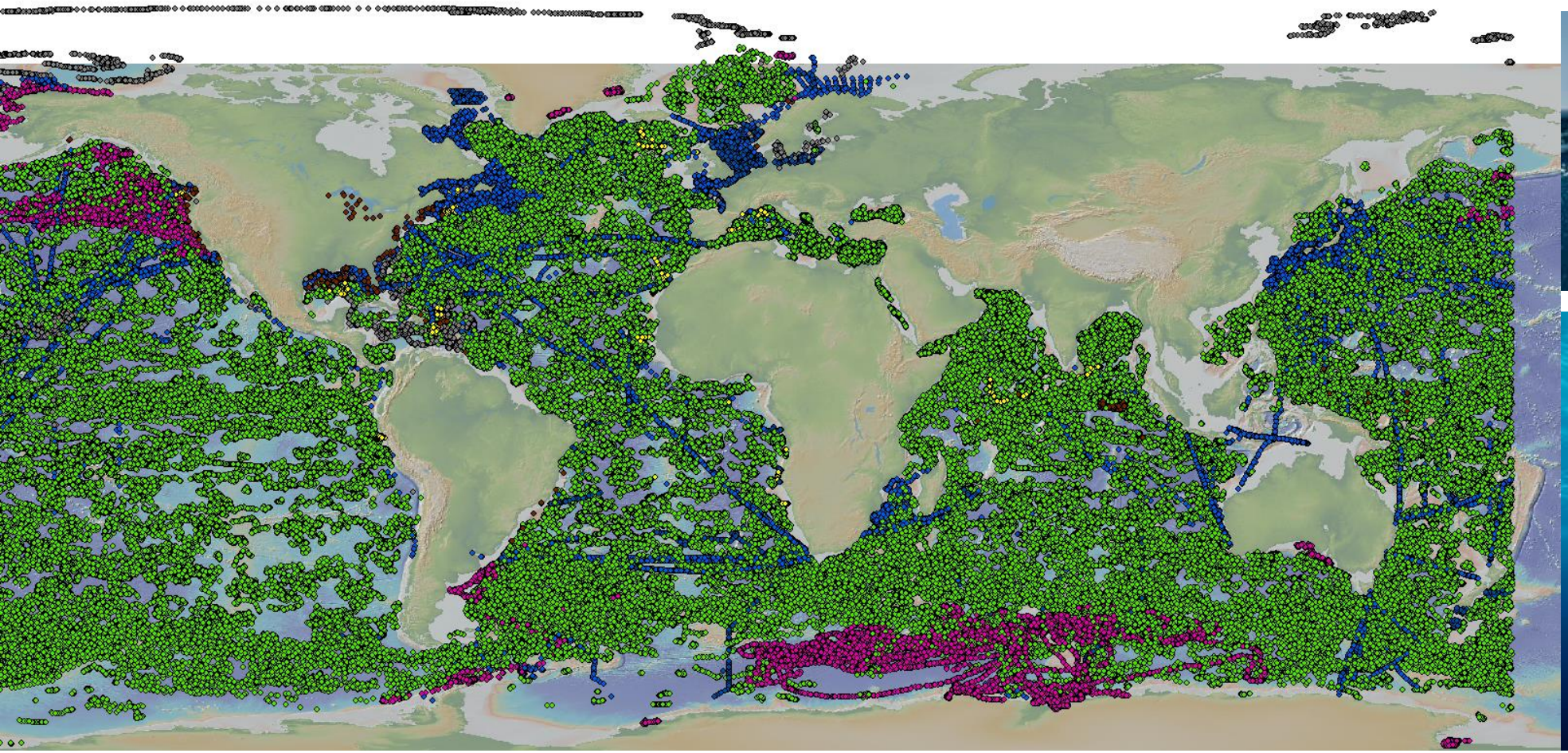
Argo data system, a young adult (20 years old)

- More than 4000 floats are deployed; observing the global ocean from surface to 2000 meter deep (and even deeper).

- They continuously measure physical properties of the ocean : temperature, salinity, pressure, current, and … more and more bio-geo-chemical parameters such as oxygen, ph, nitrate, carbon

- Argo dataset: 2 million files continuously managed
  More than 20 years of observations
  http://doi.org/10.17882/42182

Argo floats observations in 2016 (& others)

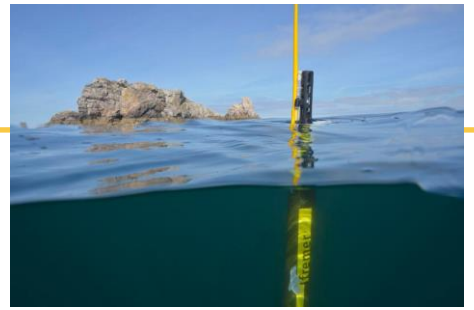


Vertical profiles, 2016 observations, vertical profiles

Argo floats - sea-mammals - XBT and CTDs from vessels - gliders

DAC-GDAC

Argo data flow



float data from satellite

data sent ashore via satellite

decode qc and format data for distribution

floats deployment and data certification

4-12 hours

24 hours, real-time qc

dm qc, few months

gts : 24 hours

dac data assembly centres
aoml, coriolis, jma, meds, cls...

pi principal investigators
howard freeland, yves desaubies …

users
scientists, modelers, students…

24 hours

ftp : 24 hours
web : 12 hours

perform regional analyses

gdac global data centers
usgodae, coriolis

24 hours

1 day
to
several years

here is the master copy of argo data

information about argo

long term archive

1 year

regional centres
n. atlantic, pacific, indian

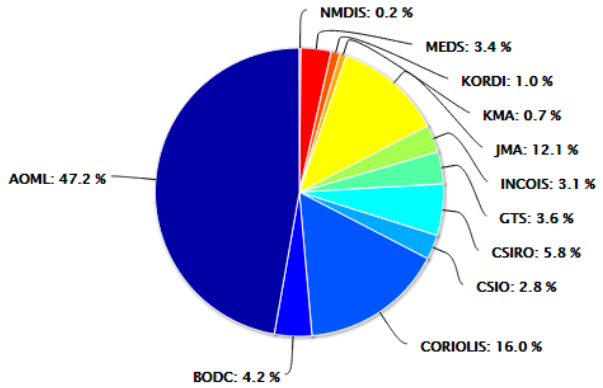
aic argo information center

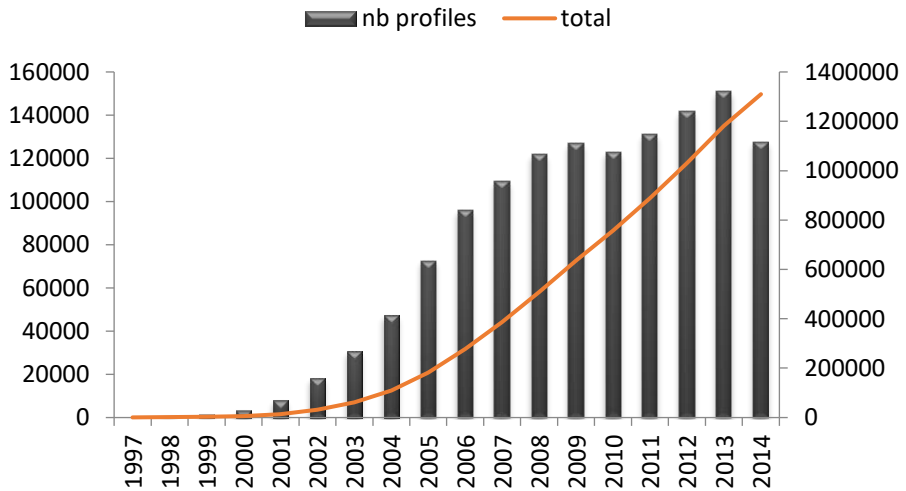
long term archive
usnodc

DAC-GDAC

Argo data management

- Argo data management is performed on 3 levels
  - PI : principal investigator for a series of floats
  - DAC : data assembly centre for a series of PIs
  - GDAC : global data assembly centres for all the DACs
- The Argo global data set is continuously and homogeneously managed, improved, in real-time and delayed mode.

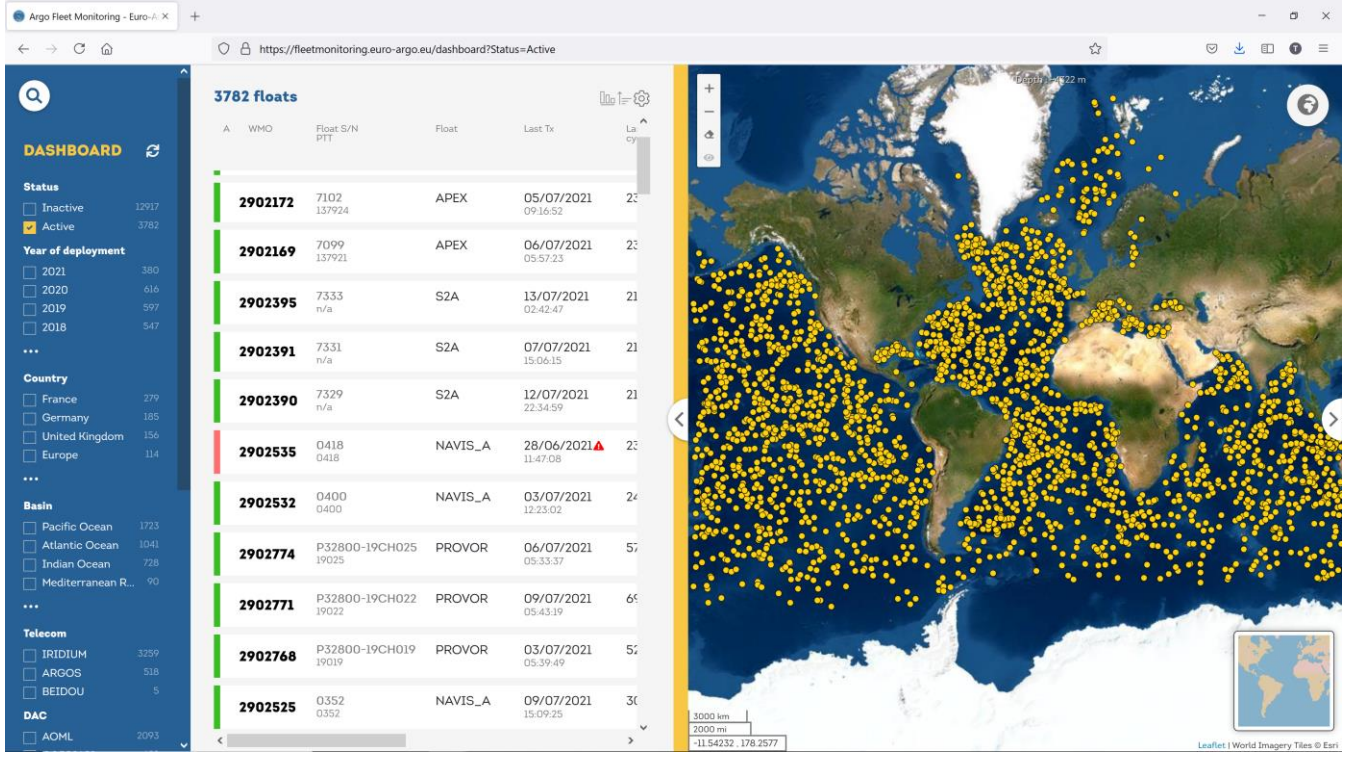




Argo data distribution

The Argo global data set is freely available without identification
http://www.argodatamgt.org/Access-to-data

- GDAC https - ftp servers
  ftp://ftp.ifremer.fr/ifremer/argo
- GDAC DOI (Data Object Identifiers)
  http://www.argodatamgt.org/Access-to-data/Argo-DOI-Digital-Object-Identifier
- GDAC data selection & dashboard
  - https://dataselection.euro-argo.eu
  - https://fleetmonitoring.euro-argo.eu/dashboard
- Synchronization rsync service
  http://www.argodatamgt.org/Access-to-data/Argo-GDAC-synchronization-service
- GDAC ERDDAP data server
  http://www.ifremer.fr/erddap
- GDAC Thredds servers
  http://tds0.ifremer.fr/thredds/catalog/CORIOLIS-ARGO-GDAC-OBS/catalog.html



Argo data formats and quality control

- Data format: Argo NetCDF V3.1 CF1.6 documented in “Argo user’s manual” http://dx.doi.org/10.13155/29825

- Quality control http://dx.doi.org/10.13155/33951
  - Real-time QC: 26 automatic QC tests are applied in real-time.
  - A daily global analysis with alerts on atypical data
  - Delayed mode QC: every year, observations are scrutinized and adjusted by a scientist

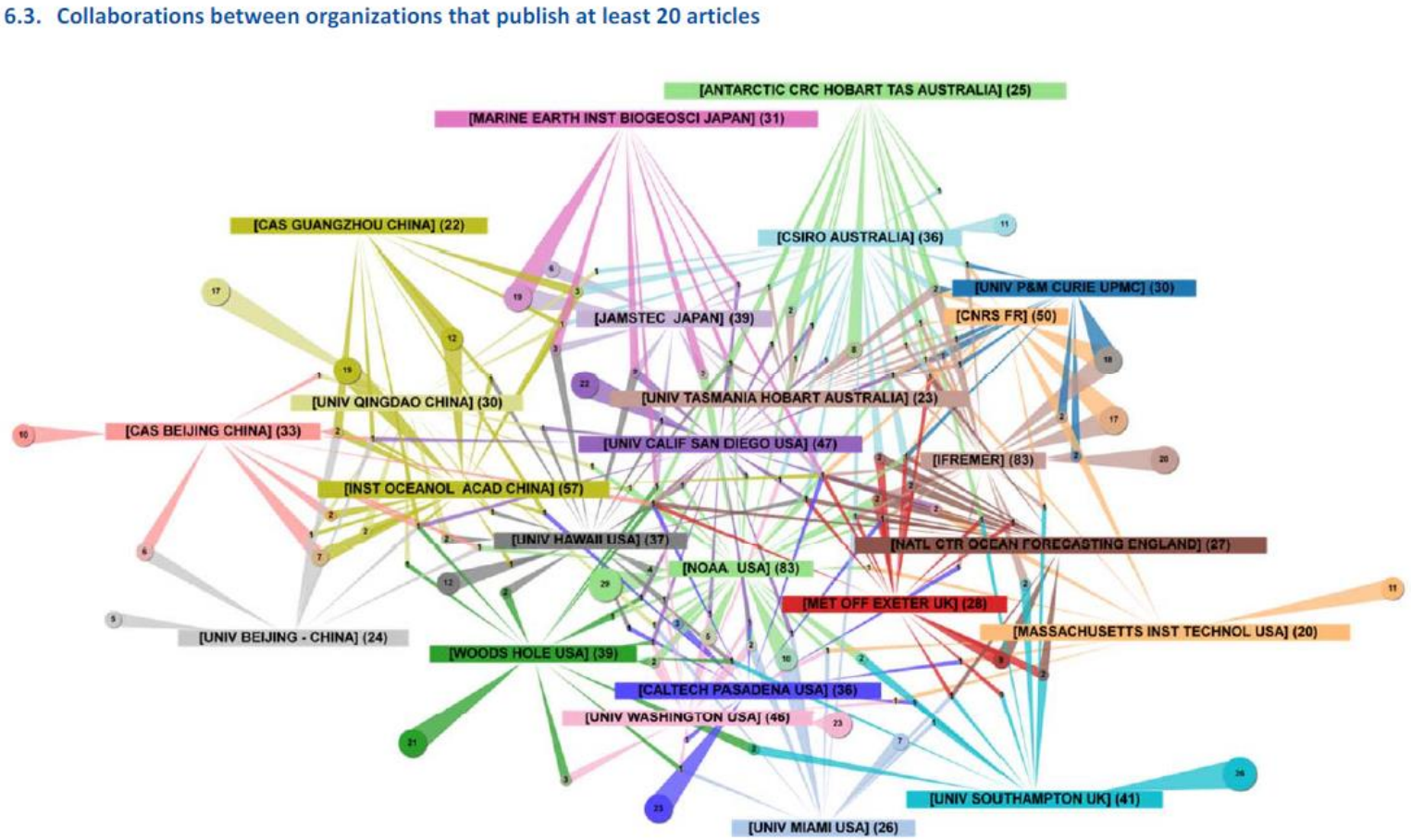
Argo data unique and global DOI

- A unique and global DOI is assigned to Argo data
- Each month, a snapshot of Argo dataset is preserved
  - It is the most recent citeable version of Argo data
  - It is identified with the Argo DOI and a fragment

- *Argo (2000). Argo float data and metadata from Global Data Assembly Centre (Argo GDAC). SEANOE. http://doi.org/10.17882/42182*
  - A generic author : « Argo »
  - A rich and active bibliography : 2184 publications in March 2017
  - A series of 43 snapshots, and 9 related datasets or computer codes
  - Under study : give credit to the comprehensive list of 200 contributors PIs, data managers, delayed mode operators

Argo data unique and global DOI

- Argo yearly publications bibliometric survey
  https://cloud.ifremer.fr/index.php/s/1G6fwGLYf1E26qZ



Coriolis DAC data processing tools

- Coriolis Argo floats data processing chain. SEANOE. https://doi.org/10.17882/45589
- DBCP drifting buoys DAC data processing chain, version 1.0. SEANOE. https://doi.org/10.17882/51148
- EGO gliders data processing chain. SEANOE. https://doi.org/10.17882/45402
- NetCDF file format checker for Argo floats, Copernicus In Situ TAC, EGO gliders, OceanSITES. SEANOE. https://doi.org/10.17882/45538

Copernicus Marine In situ TAC data flow