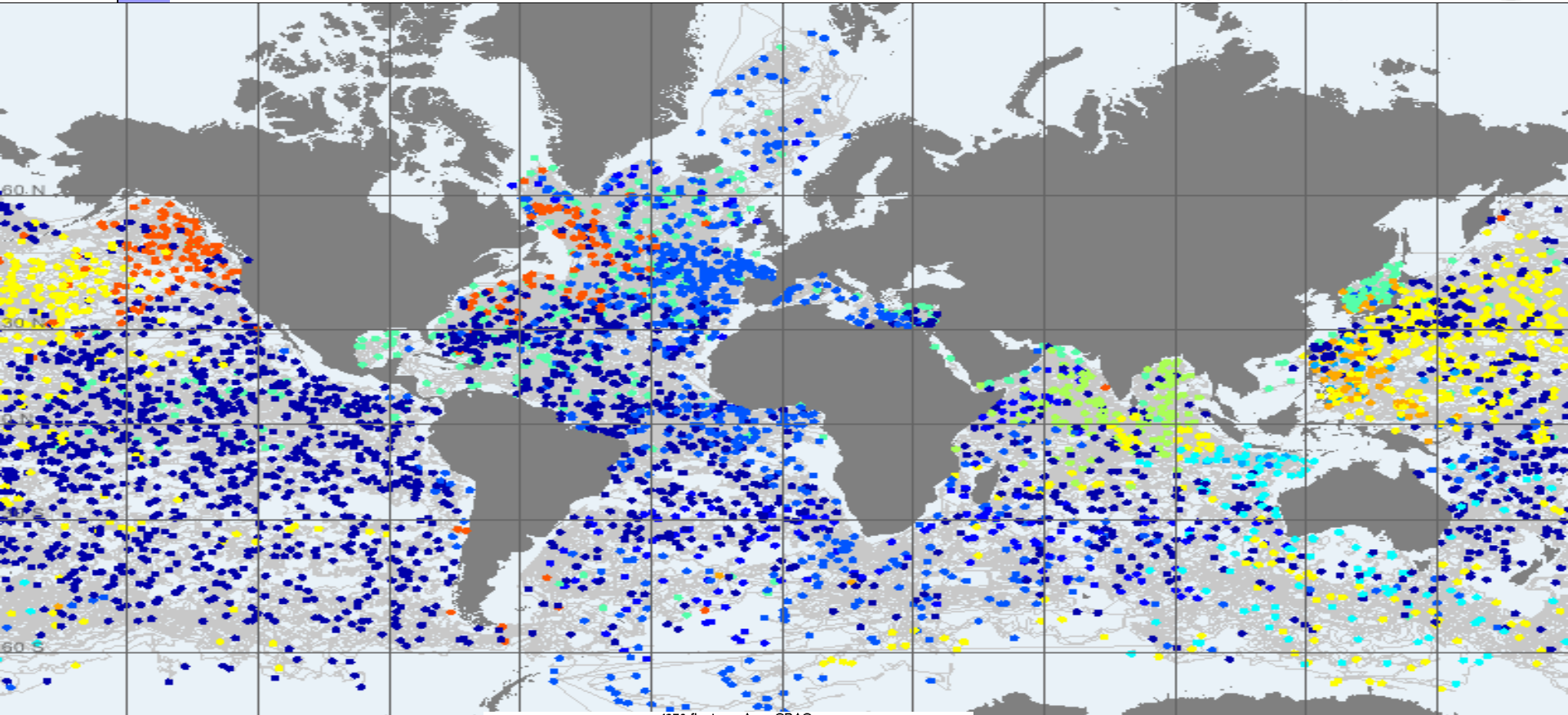
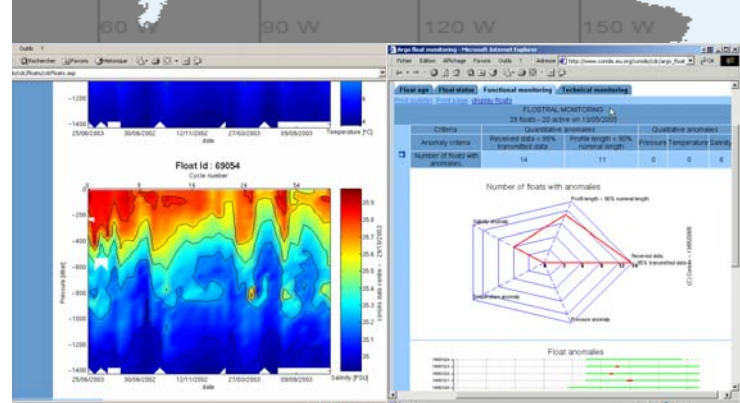
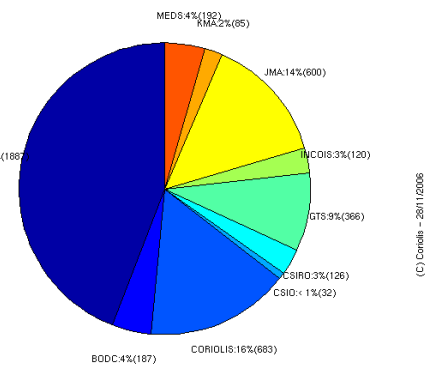
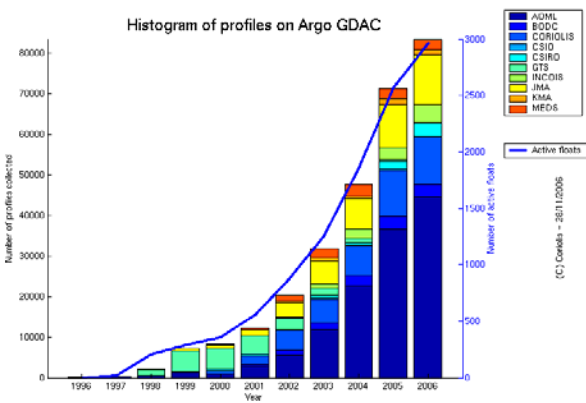


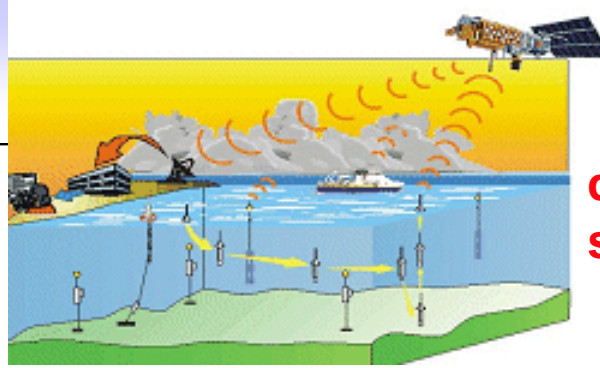
Argo data management



4278 floats on Argo GDAC



Argo data flow



data sent ashore via satellite

float data from satellite

4-12 hours

prepare data for distribution

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

24 hours, real-time qc

gts : 24 hours

dm qc, few months

24 hours

users
scientists, modelers, students...

ftp : 24 hours
web : 12 hours

perform regional analyses

gdac global data centers
usgodae, coriolis

24 hours

information about argo

long term archive

1 year

regional centres
n. atlantic, pacific, indian

here is the master copy of argo data

aic argo information center

long term archive
usnodc

1 day to several years



■ PI : Principal Investigators

The scientists who deploy the floats, then carry out delayed mode QC and return data to DAC Centres within a few months of observations.

■ DAC: Data Assembly Centres

The DACs are facilities set up by many of the nations deploying floats. Their role is crucial in acquiring the raw data from the floats and standardizing the handling.

Their functions include :

- collecting data
- converting to standard exchange formats
- applying standardized real-time quality control
- delivering data to the GTS and GDACs within 24 hours of the surfacing and to PIs on a more relaxed schedule
- coordinating Argo data handling for the floats under their control

■ GDAC : Global Data Centres

The GDACs are the data servers where the master copies of the data reside. The Argo global dataset is available from GDACs; central points for data distribution on Internet for all floats.

Located in Monterrey (US GODAE/FNMOC/USA) and Brest (Coriolis/Ifremer/France). A synchronization between the 2 GDACs centres occurs daily.

Argo data management actors

- **RDAC : Regional Data Centres**

The Regional Centres look at data from ocean basins to verify float data and generate products.

They provide basin-wide synthesis of all floats data with other available data. They provide a feedback to Pis on delayed mode quality control.

- **AIC : Argo Information Centre**

Centre located in Toulouse/France, in charge of informing on the Argo program status and to provide all necessary information to users.

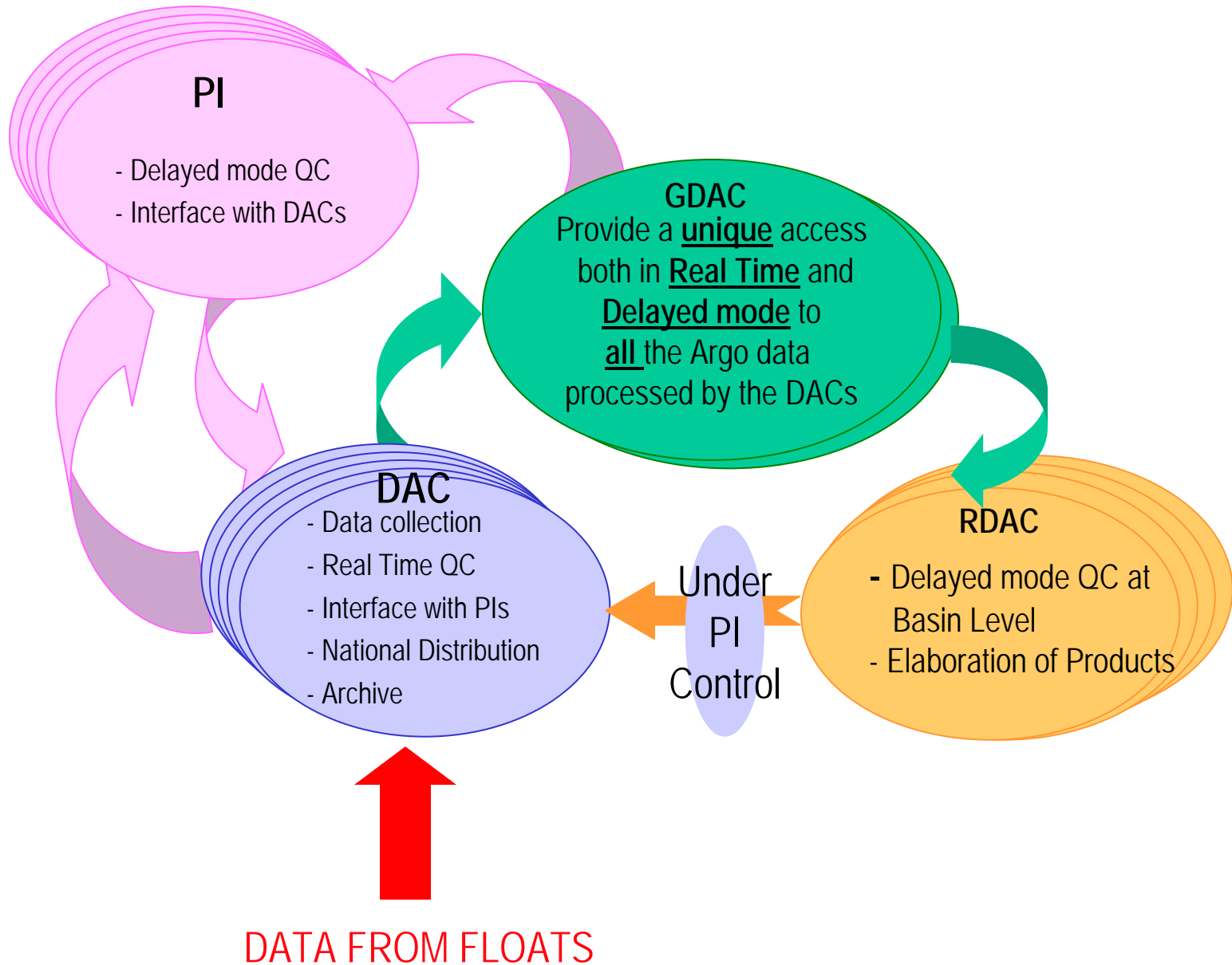
- **Argo long term archive**

Data centre located in NODC/USA in charge of the long term archive of all Argo data.



Argo data management actors

Argo workshop in Ghana, December 2006



Argo quality control process

Argo workshop in Ghana, December 2006

Data from floats



Real-time (RT) data stream

Function: Apply agreed RT QC tests to float data. Assign quality flags.

Users: Operational centres, data assimilation, researchers needing timely data.

Timeframe: 24-48 hrs after transmission.

Who/Where: Performed by National Data Assembly Centres.

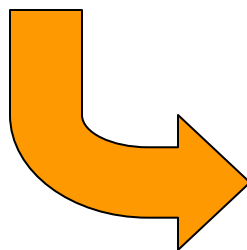
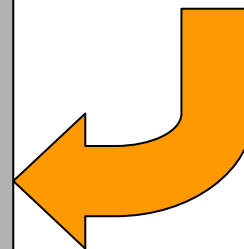
Delayed-mode (DM) data stream

Function: Apply accepted DM procedures to float data. Provide statistically justified corrections using accepted methods. Provide feedback to RT system.

Users: All needing adjusted data with error estimates.

Timeframe: 6-12 months after transmission.

Who/Where: Perform by PIs with DM Agencies or Regional Centres.



Regional Analysis

Function: Provide basin-wide synthesis of all float data with other available data.

Users: Researchers of climate change and model validation.

Timeframe: Lifespan of float.

Who/Where: Perform by Regional Centres.

All data are available from the two Argo Global Data Assembly Centres: Coriolis at IFREMER, and USGODAE at Monterey.



ARGO

part of the integrated global observation strategy



■ Profiles : 17 automatic QC tests performed before gdac and gts distribution

- 1 Platform Identification
- 2 Impossible Date
- 3 Impossible Location
- 4 Position on Land
- 5 Impossible Speed
- 6 Global Range
- 7 Regional Range
- 8 Pressure Increasing
- 9 Spike
- 10 *Top and Bottom Spike : removed*
- 11 Gradient
- 12 Digit Rollover
- 13 Stuck Value
- 14 Density Inversion
- 15 Grey List
- 16 Gross salinity or temperature sensor drift
- 17 *Visual QC (not mandatory)*
- 18 Frozen profile
- 19 Deepest pressure

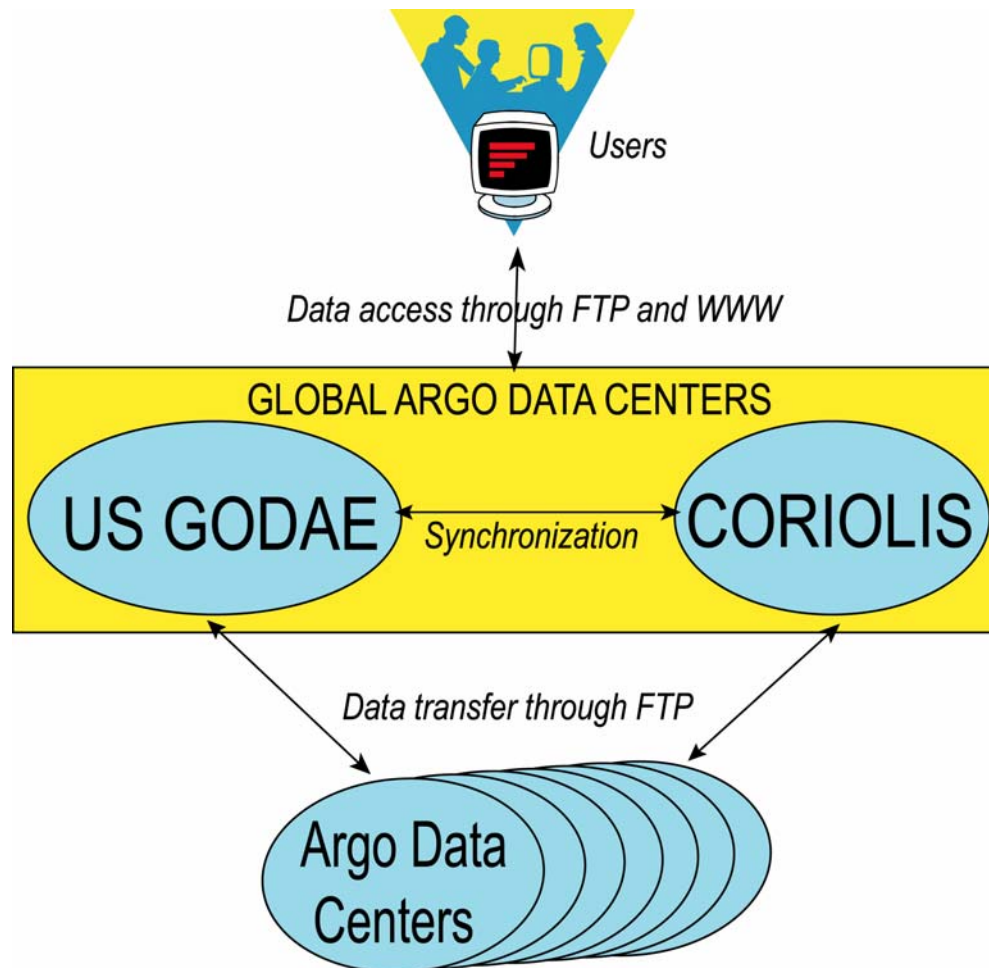
■ Trajectories : 7 automatic QC tests performed before gdac and gts distribution

- 1 Platform Identification
- 2 Impossible Date
- 3 Impossible Location
- 4 Position on Land
- 5 Impossible Speed
- 6 Global Range
- 7 Regional Global Parameter

■ QC flag scale

- 0 No QC was performed
- 1 Good data
- 2 Probably good data
- 3 Bad data that are potentially correctable
- 4 Bad data
- 5 Value changed
- 6 Not used
- 7 Not used
- 8 Interpolated value
- 9 Missing value

- The GDAC FTP sites provide the master copy of Argo data set (meta-data, profiles, trajectories and technical informations).
- The GDAC keeps the highest processing level of floats data. It is not in charge of archiving the different versions of float data.



Principles

- Each national center has an FTP account on the global data servers
- When a new cycle is available, the National DAC :
 - Applies real-time quality controls to the new profile(s) and trajectory
 - Distributes simultaneously to both GDACs in NetCDF format :
 - ✓ The new profile(s)
 - ✓ The trajectory file
 - ✓ The technical file
 - Distributes the profile(s) to GTS
(GTS distribution may be performed by CLS-Argos)
- For new floats Metadata must be transferred first

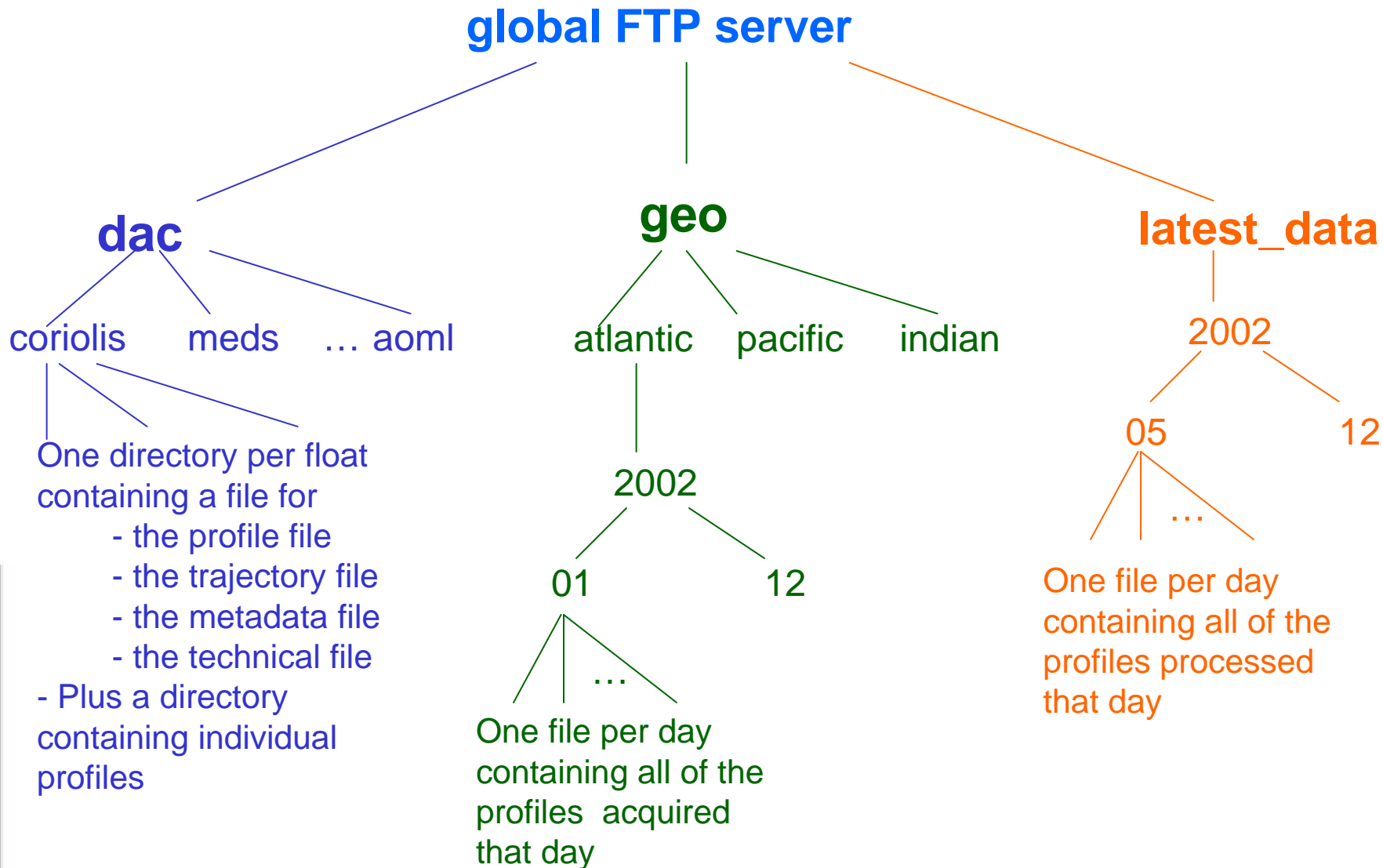




- On GDAC FTP site, for each float, 4 types of informations are handled.
 - Metadata file : general informations on the float life.
 - Profile file : one file per profile.
It contains both original data acquired by the float and the best available profile together with quality flags.
Note : for users convenience, some aggregated profile files are generated by GDAC.
 - Trajectory file : one file containing the complete trajectory of the float as well as the measurements collected while drifting.
 - Technical file : one file containing the technical information provided by the float.
- Argo NetCDF format is used for metadata, profile, trajectory and technical files.
Argo NetCDF data format is described in « Argo users's manual »
<http://www.coriolis.eu.org/cdc/argo/argo-dm-user-manual.pdf>

Argo GDAC FTP structure

Argo workshop in Ghana, December 2006



ARGO

part of the integrated global observation strategy

Argo data management reference documents

■ Reference documents

- Data management web page : http://www.coriolis.eu.org/cdc/argo/argo_data_management.htm
- Beginner's guide to Argo data : http://www.coriolis.eu.org/cdc/argo/Argo_data_guide.pdf
- Data management policy : http://www.coriolis.eu.org/cdc/argo/argo_data_management_handbook.pdf
- GDACs organization : http://www.coriolis.eu.org/cdc/argo/gdac_argo_servers-2.4.pdf
- User's manual; data formats : <http://www.coriolis.eu.org/cdc/argo/argo-dm-user-manual.pdf>
- Quality control manual : <http://www.coriolis.eu.org/cdc/argo/argo-quality-control-manual.pdf>

■ Data access

- The whole Argo data set is available in real time and delayed mode from the global data centres (GDACs). The internet addresses are :
 - <http://www.usgodae.org/argo/argo.html>
 - <http://www.coriolis.eu.org/cdc/argo.htm>
- The FTP addresses are :
 - <ftp://usgodae1.fnmoc.navy.mil/pub/outgoing/argo>
 - <ftp://ftp.ifremer.fr/ifremer/argo>
- Data discovery : Live Access Server
 - <http://usgodae2.usgodae.org/las/servlets/dataset>
 - <http://www.usgodae.org/docs/lasget.html>
 - <http://www.ifremer.fr/las/servlets/dataset>
- Data discovery : web interface
 - http://www.usgodae.org/cgi-bin/argo_select.pl
 - <http://www.coriolis.eu.org/cdc/ArgoZonalDataSelection/cdcArgoZonalDataSelections.asp>
 - <http://www.coriolis.eu.org/cdc/dataSelection/cdcDataSelections.asp>
- Data access : OpenDAP
 - <http://www.usgodae.org/cgi-dods/nph-dods/ftp/outgoing/argo>
 - <http://www.ifremer.fr/cgi-bin/nph-dods/data/in-situ/argo>

