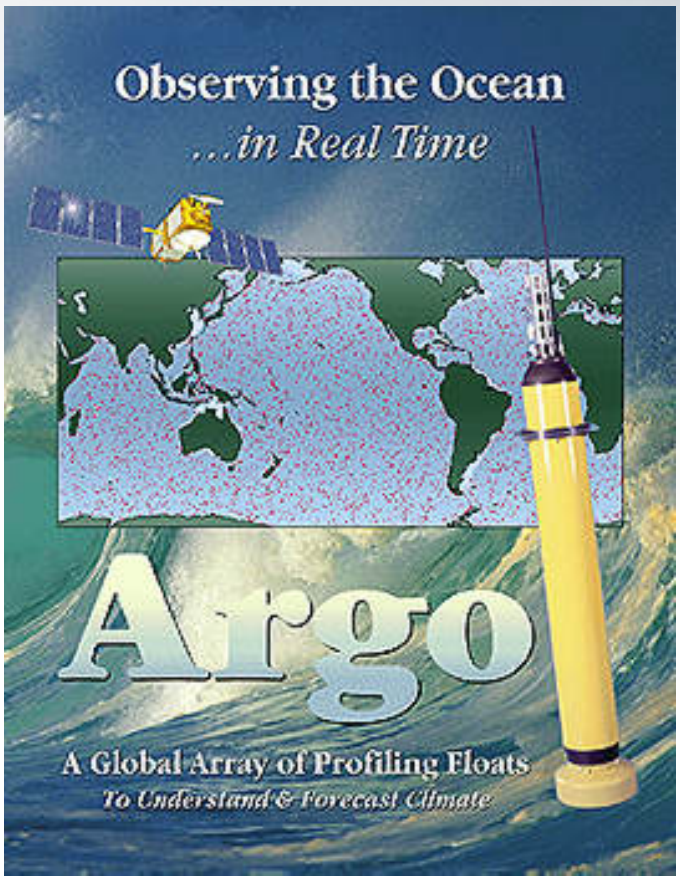
First South Atlantic ARGO Data Center meeting

Dr. Robert L. Molinari

ARGO part of the integrated global observation strategy

National Oceanic and Atmospheric Administration
Atlantic and Oceanographic Meteorological Laboratories
Physical Oceanographic Division



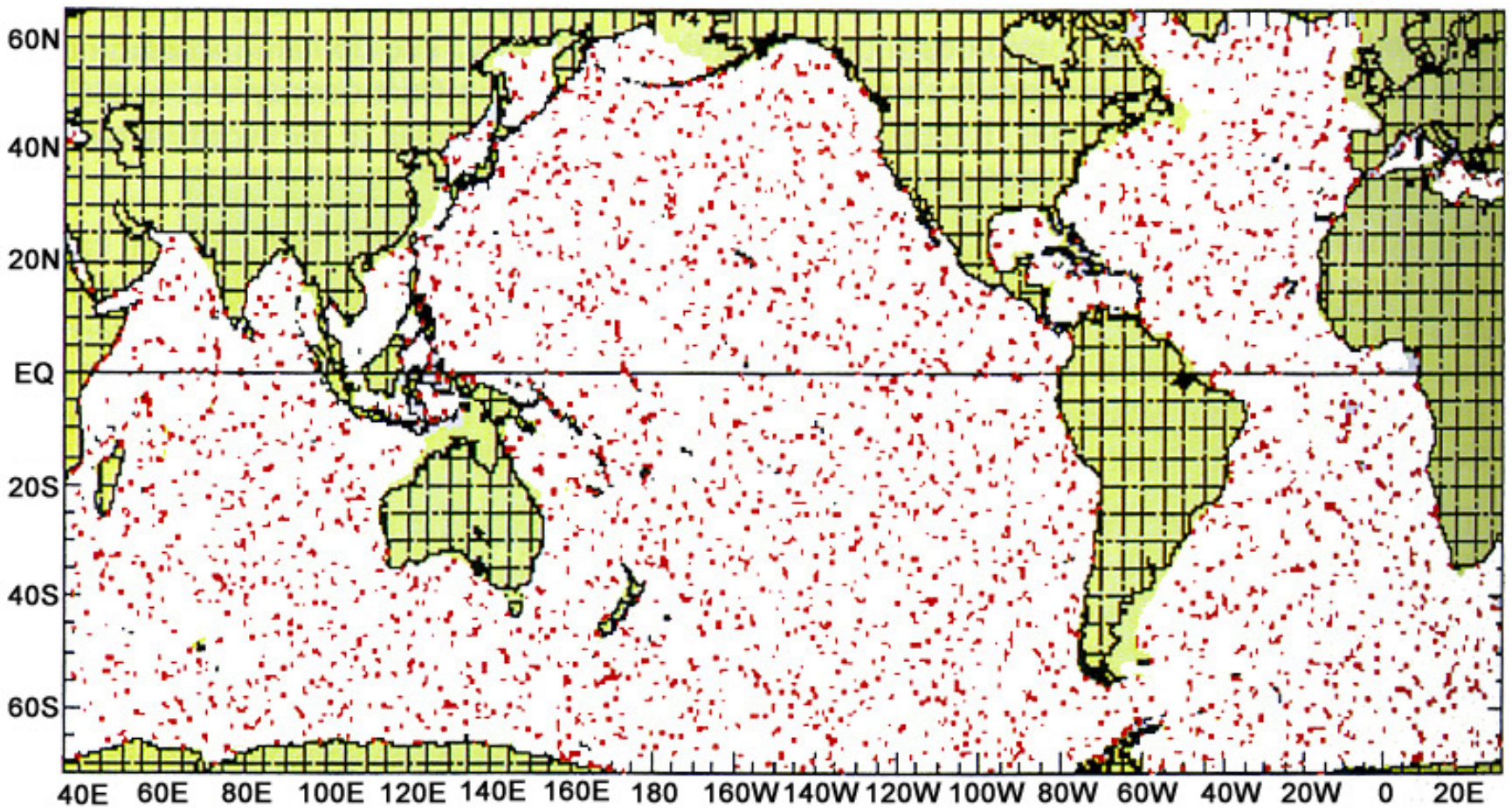
USA Operations

R. Sabina
C. Schmid
X. Xia
Y. Chong
E. Forteza

AOML

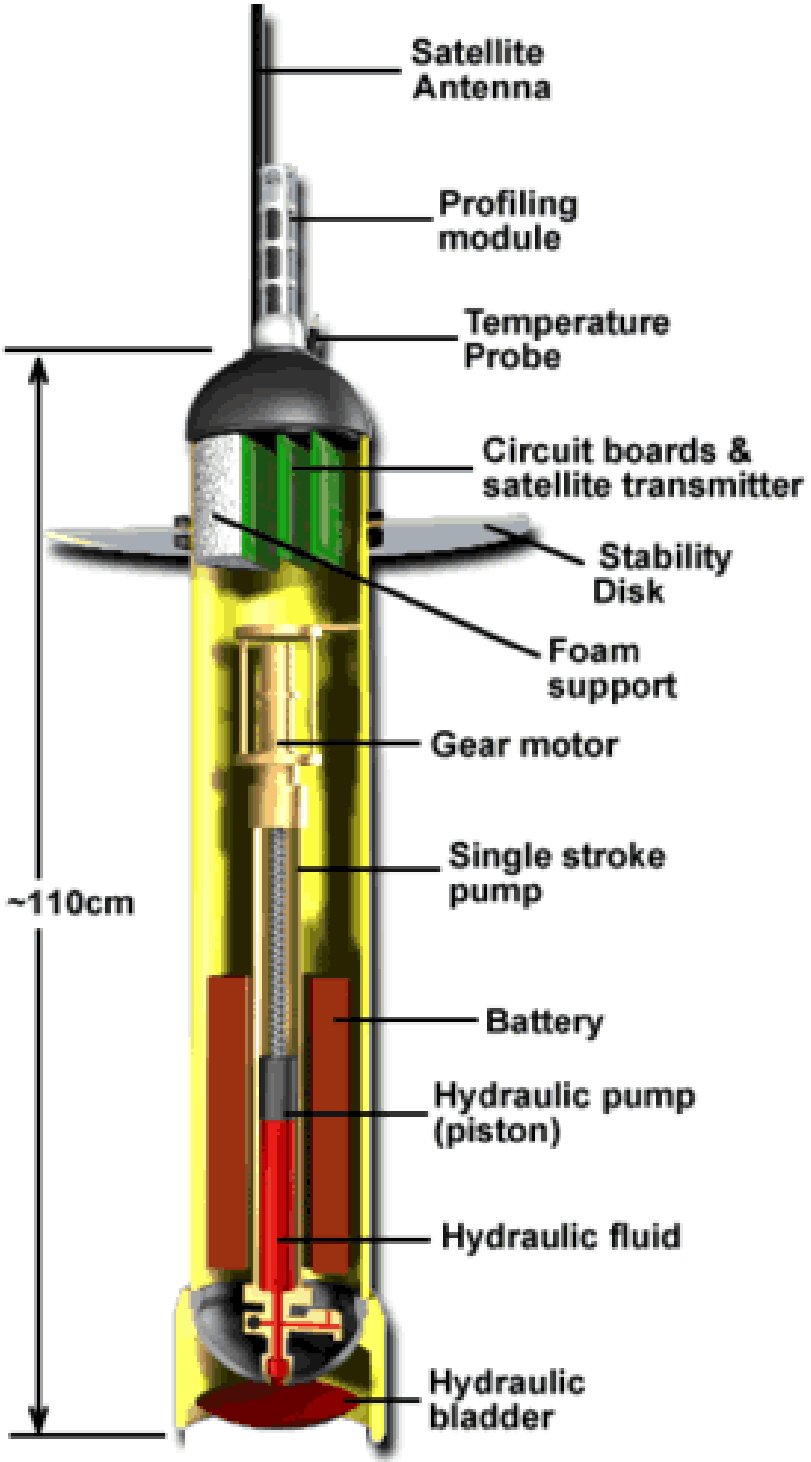
NOAA

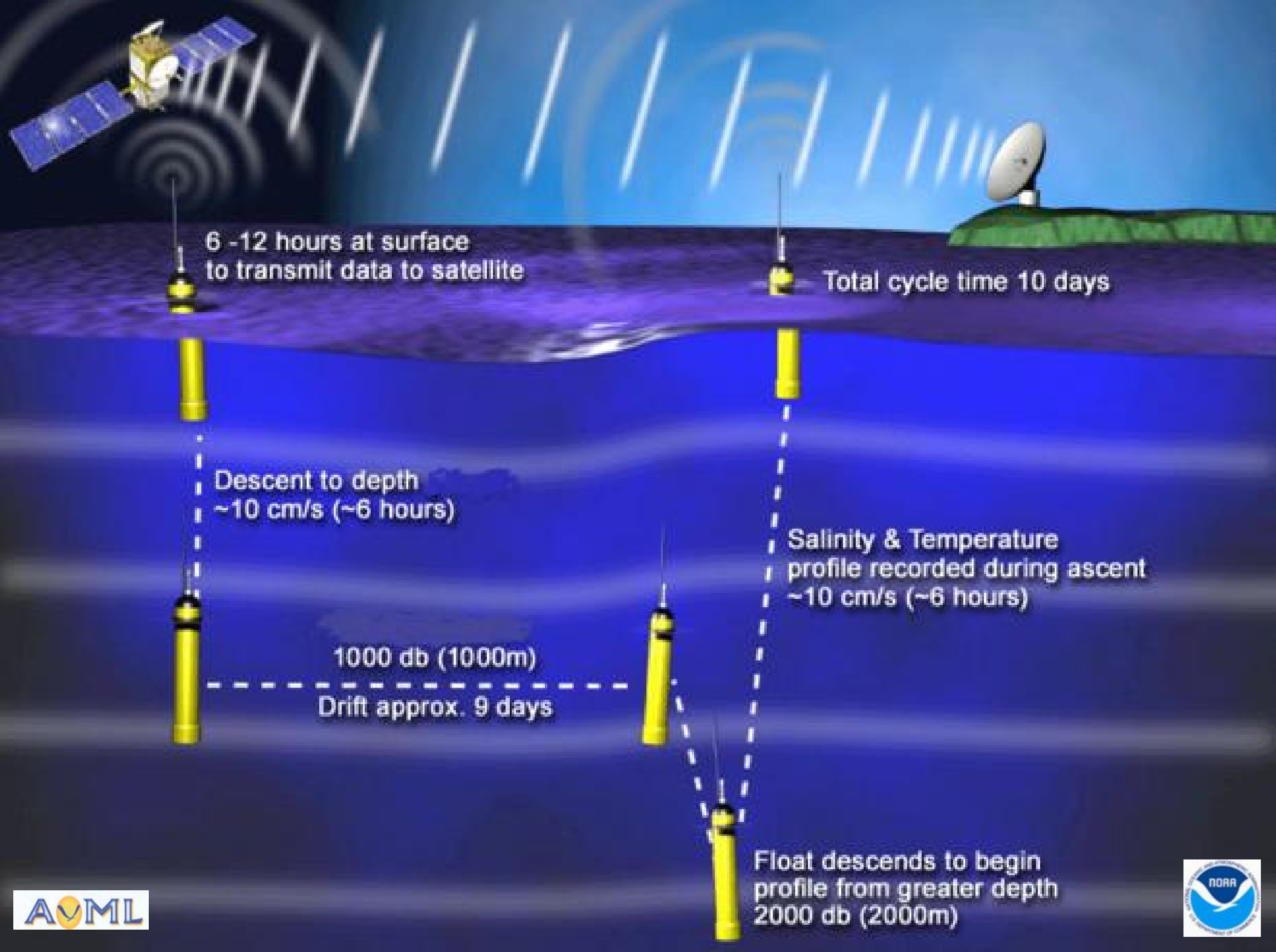
Argo Float Array



Positions of 3000 mid-depth floats are shown 3 years after deployment at 3º latitude and longitude spacing in the NRL global eddy-resolving model (courtesy H. Hurlburt). The mid-depth flow shows no tendency to produce clumps or gaps.

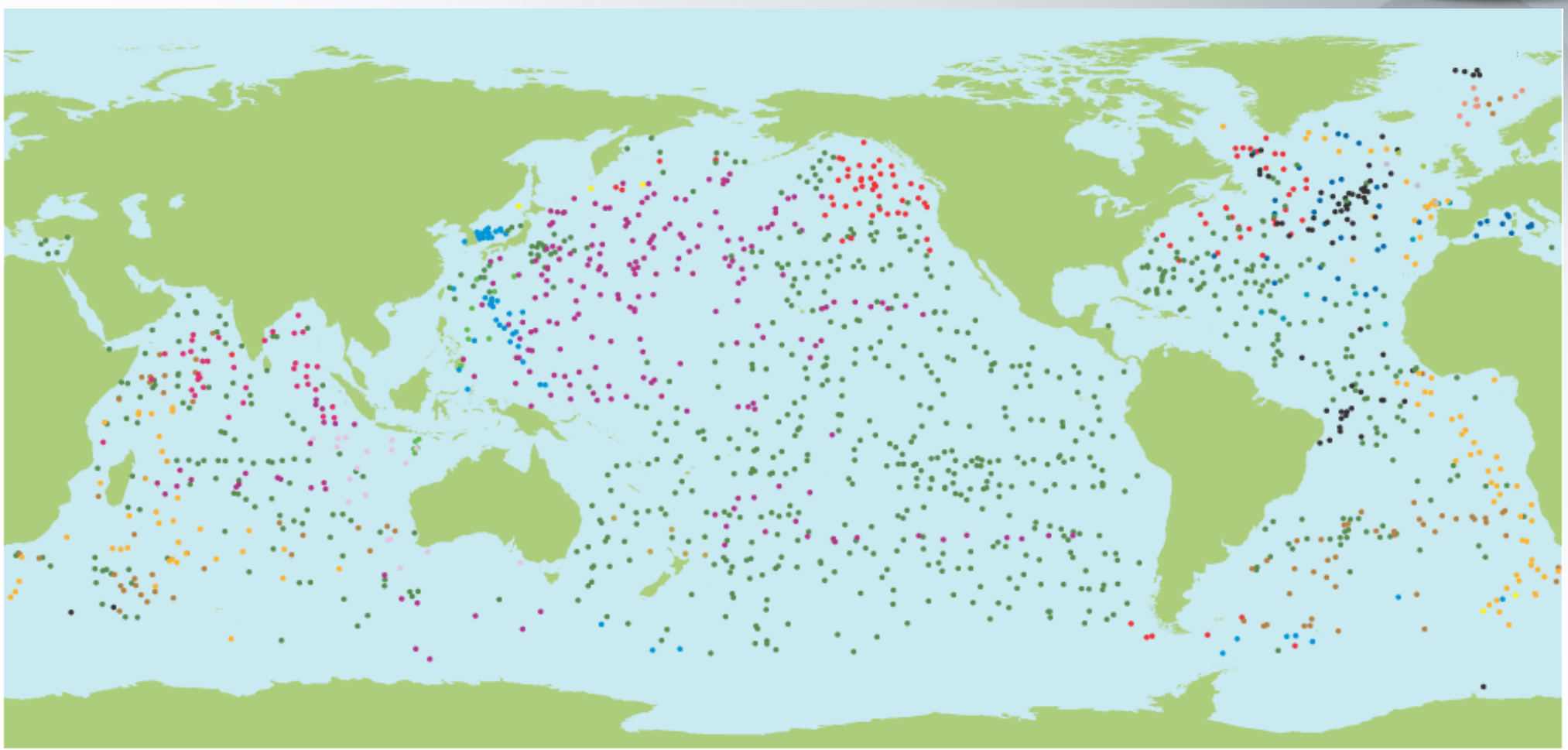
- **FLOAT MANUFACTURERS**
  - Webb Research APEX
  - Martec Provor
- **SENSOR MANUFACTURERS**
  - Falmouth Scientific, Inc
  - SeaBird
- **RESEARCH**
  - IFREMER
  - Float History by SOC
- **TELECOMMUNICATIONS**
  - **Argos**
    1. CLS
    2. SAI
  - **ORBCOMM**
  - **IRIDIUM**




6 -12 hours at surface
to transmit data to satellite
Total cycle time 10 days
Descent to depth
~10 cm/s (~6 hours)
Salinity & Temperature
profile recorded during ascent
~10 cm/s (~6 hours)
1000 db (1000m)
Drift approx. 9 days
Float descends to begin
profile from greater depth
2000 db (2000m)
AOML
NOAA

Argo Real-Time Status

(Last Update: 06-MAI-2005 04:52 UTC) - 1804 Active Floats

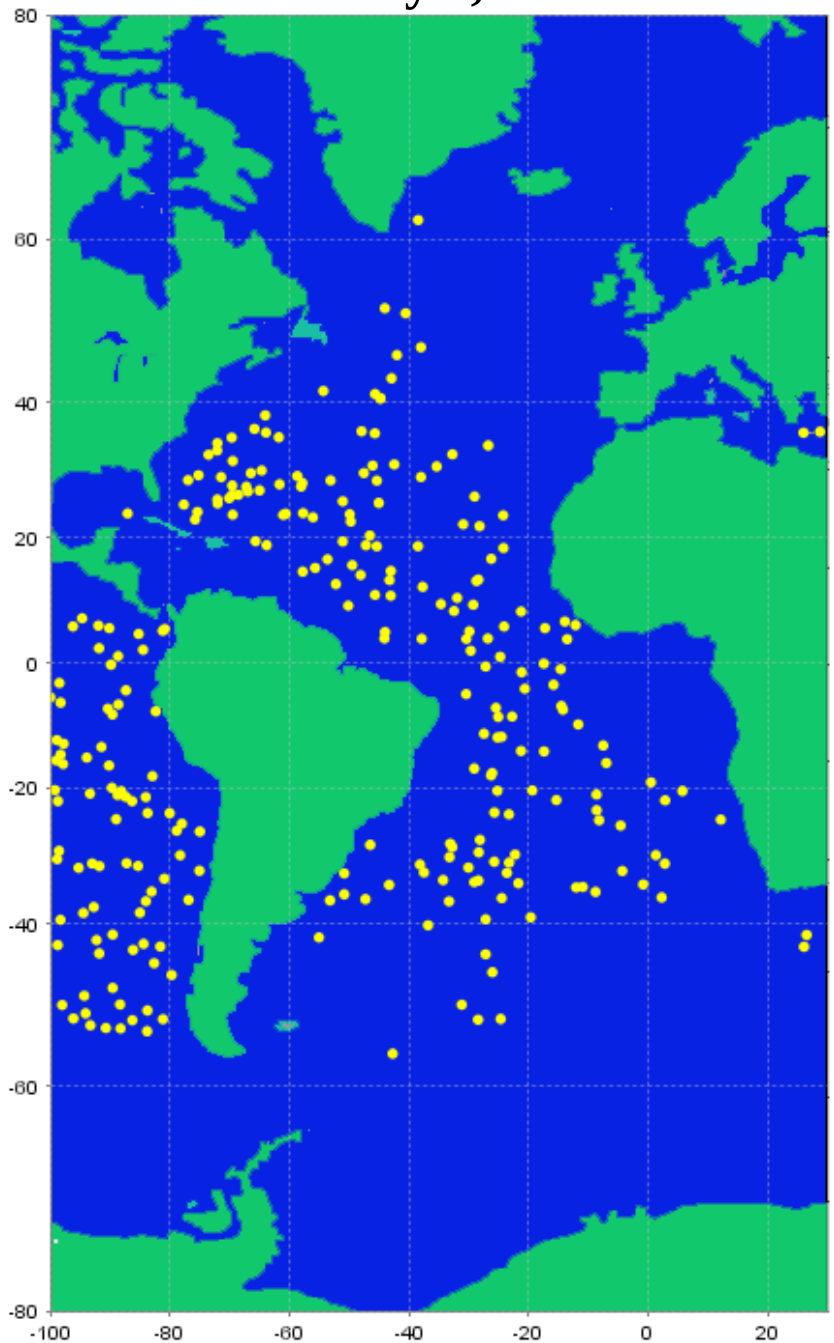


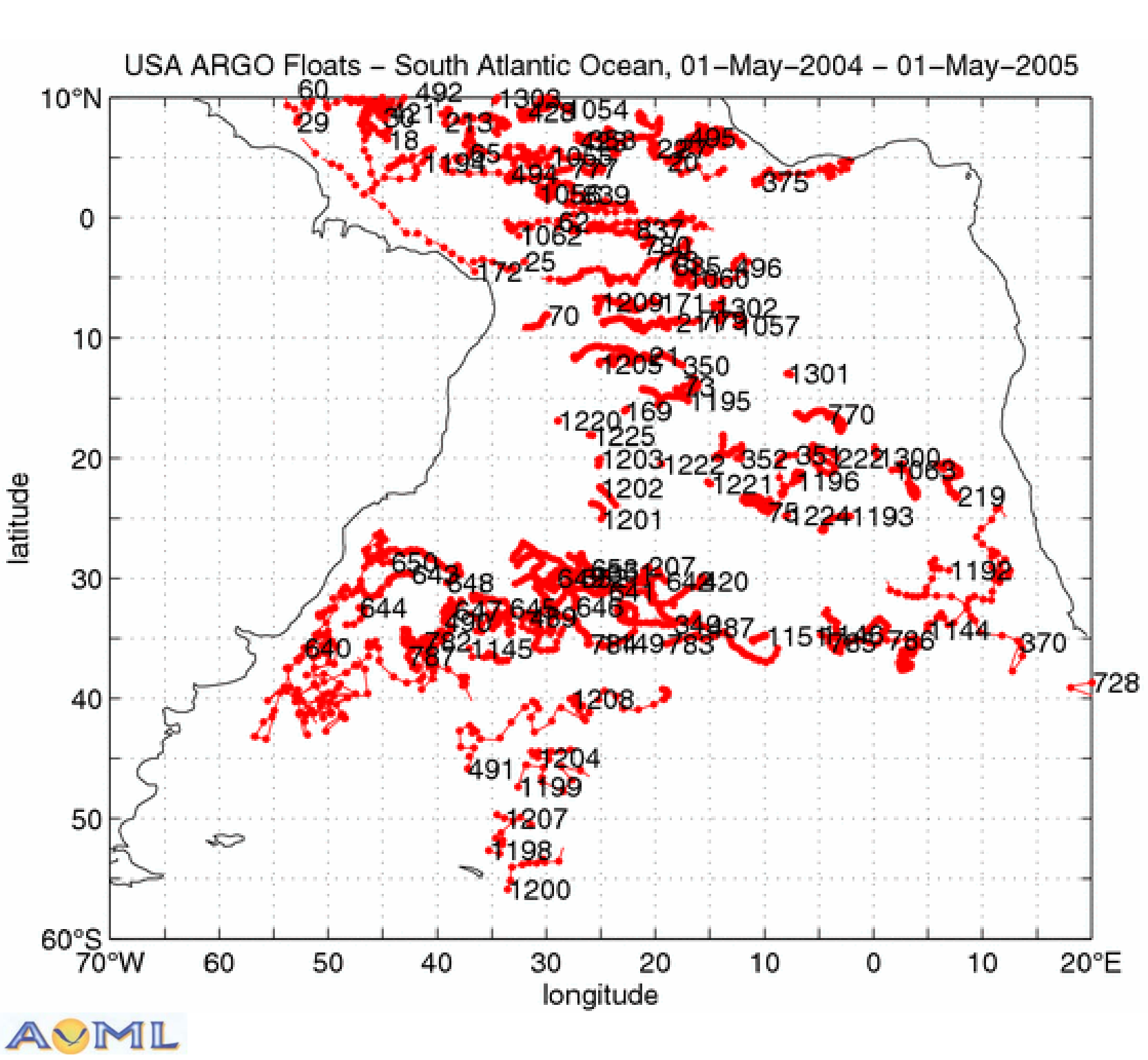
AUSTRALIA
CANADA
CHINA
EUROPEAN UNION
FRANCE
GERMANY
INDIA
IRELAND
JAPAN
KOREA
MAURITIUS
NETHERLANDS
NEW ZEALAND
NORWAY
RUSSIAN FED.
SPAIN
UNITED KINGDOM
UNITED STATES

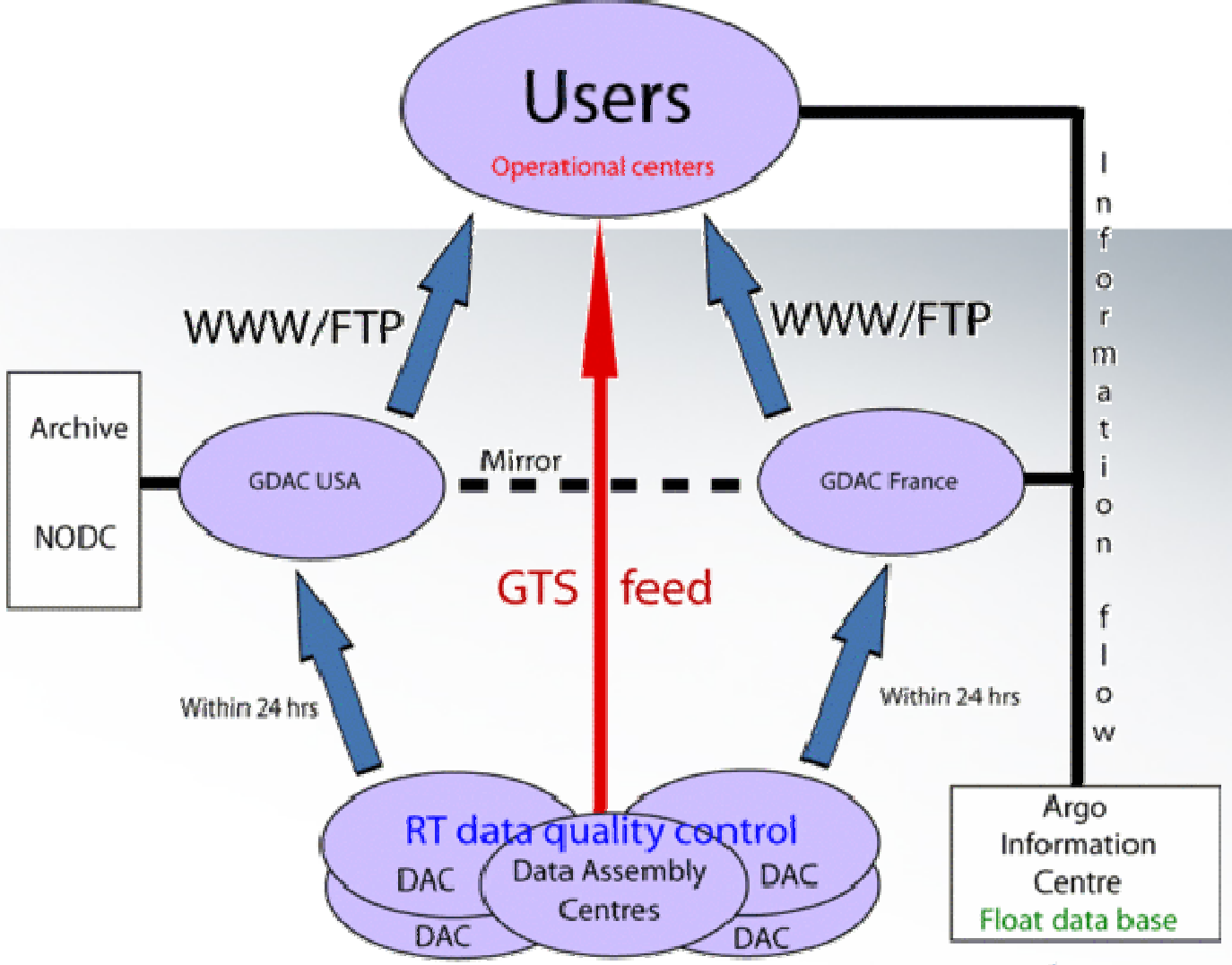
Argo float deploying countries 2004:

- Australia
- Canada
- China
- Denmark
- France
- Germany
- India
- Ireland
- Japan
- Korea
- Mauritius
- Netherlands
- New Zealand
- Norway
- Russia
- Spain
- UK
- USA
- European Union

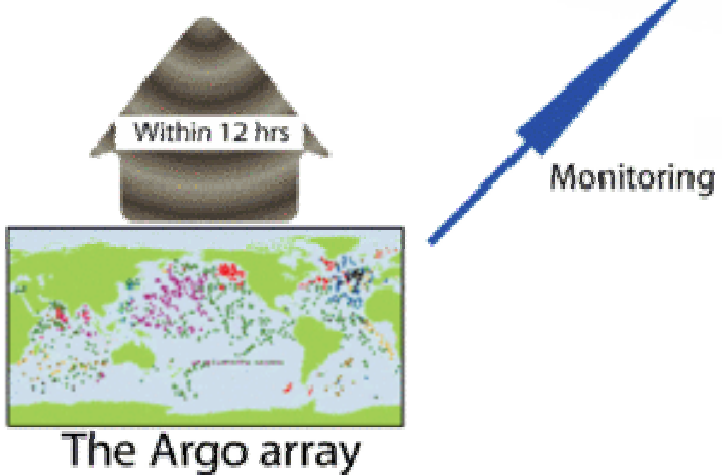
US Argo Profile Locations Observed in the Last 12 Days
Atlantic Ocean
May 1, 2005

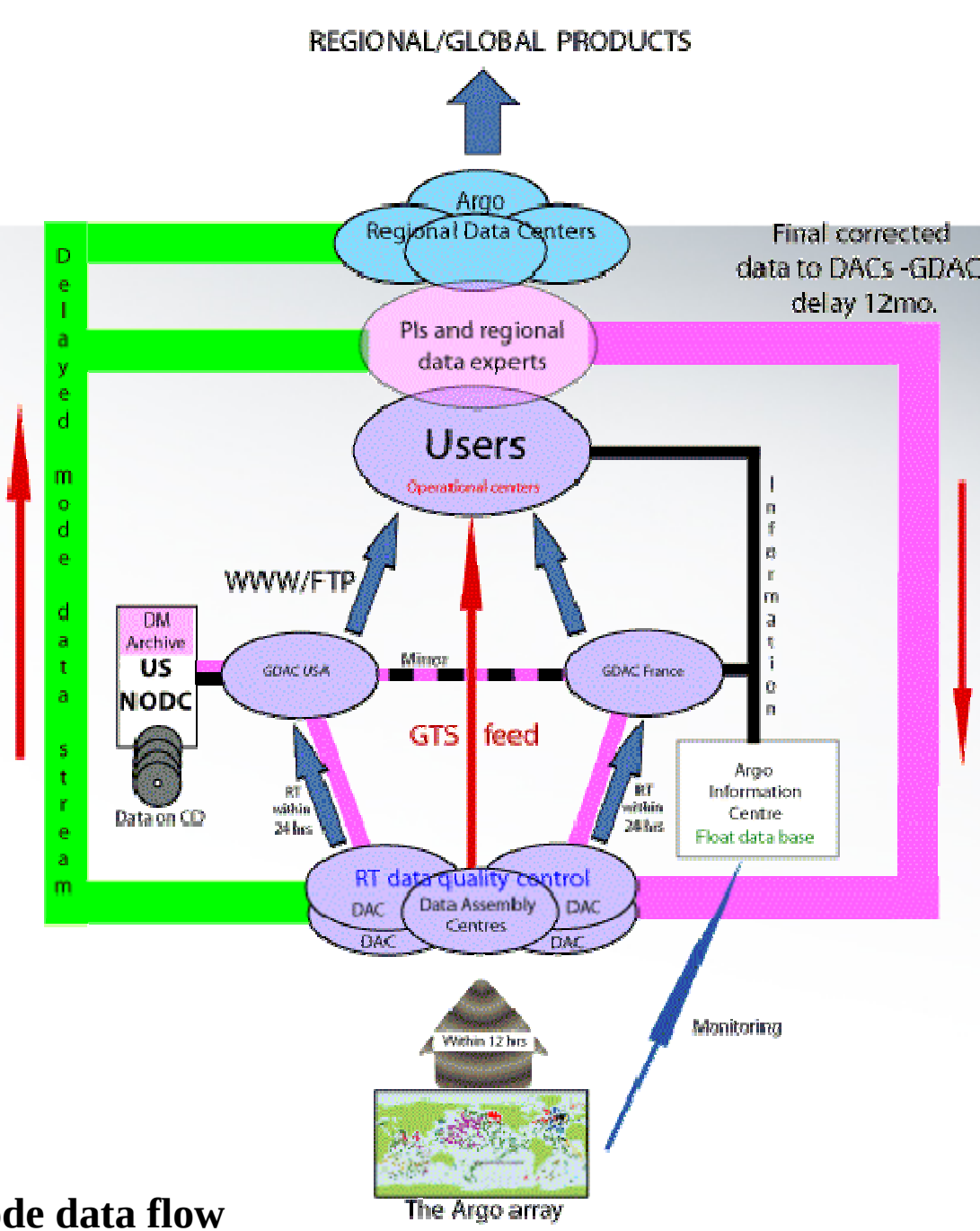



USA ARGO Floats – South Atlantic Ocean, 01–May–2004 – 01–May–2005
10°N
0
10
20
30
40
50
60°S
latitude
70°W
60
50
40
30
20
10
0
10
20°E
longitude



The target is for these "real-time"data to be available within approximately 24 hours of their transmission from the float.

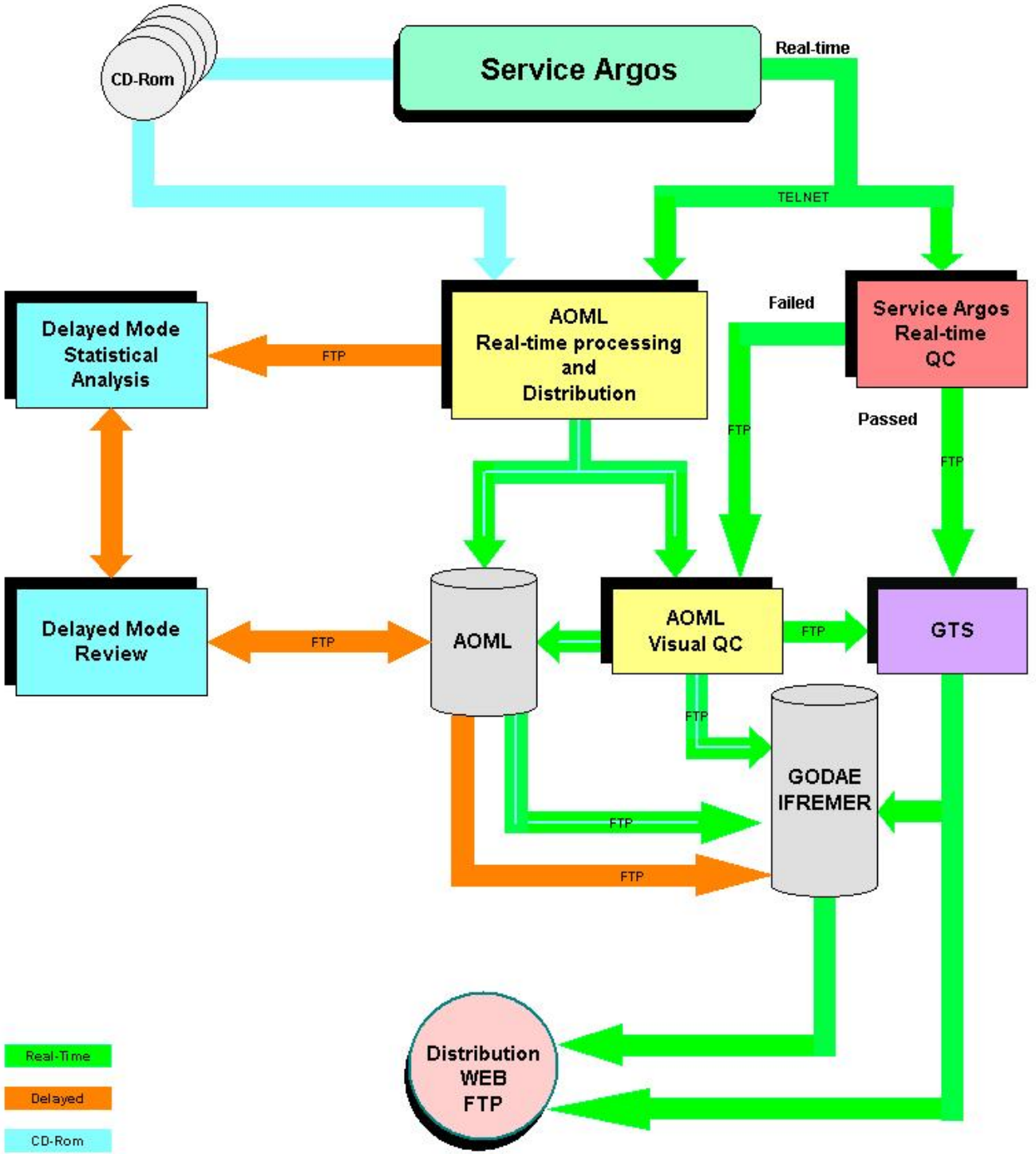




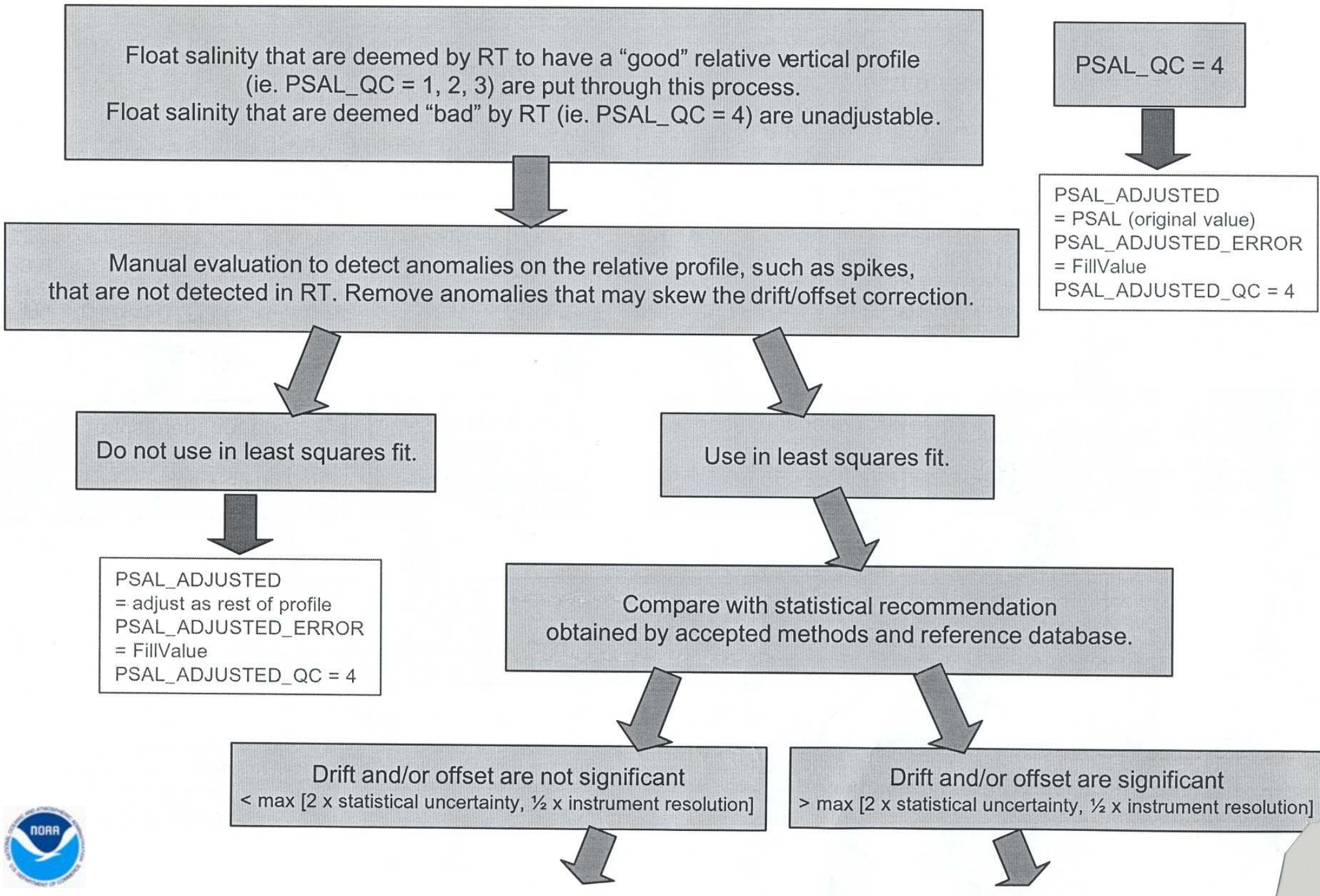
Real time and delayed mode data flow

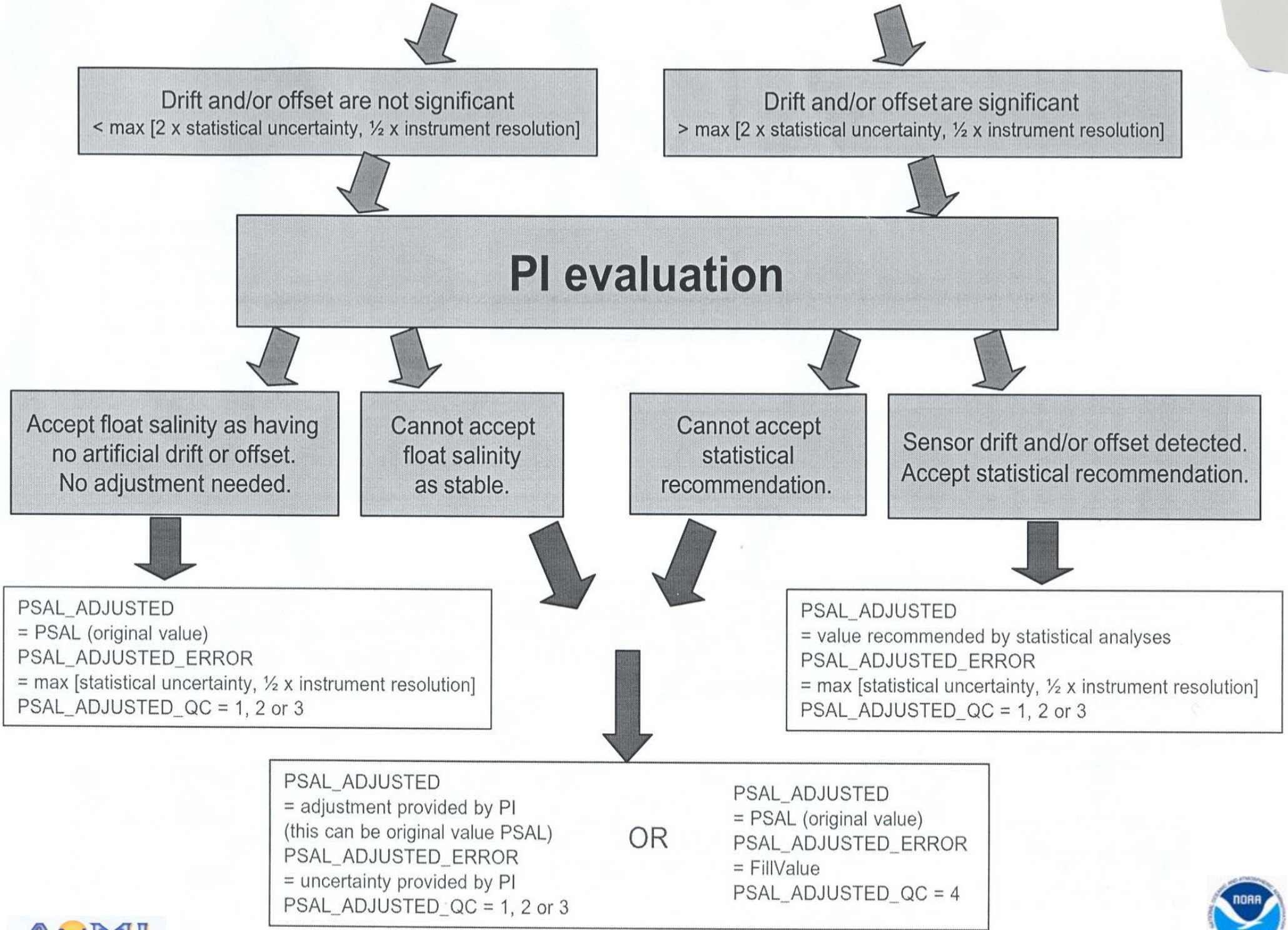
The Argo Information Centre is a source of information about the development and performance of the global array and the national programmes that contribute to it. The final repository for Argo data is with the US National Oceanographic Data Center (NODC) They will also distribute Argo data on CDs so as to permit Argo data use by groups without reliable or low cost internet access.

Argo Data Processing System Data Flow



Argo salinity artificial drift & offset QC procedures




Drift and/or offset are not significant
< max [2 x statistical uncertainty, ½ x instrument resolution]
Drift and/or offset are significant
> max [2 x statistical uncertainty, ½ x instrument resolution]
PI evaluation
Accept float salinity as having no artificial drift or offset. No adjustment needed.
Cannot accept float salinity as stable.
Cannot accept statistical recommendation.
Sensor drift and/or offset detected. Accept statistical recommendation.
PSAL_ADJUSTED
= PSAL (original value)
PSAL_ADJUSTED_ERROR
= max [statistical uncertainty, ½ x instrument resolution]
PSAL_ADJUSTED_QC = 1, 2 or 3
PSAL_ADJUSTED
= value recommended by statistical analyses
PSAL_ADJUSTED_ERROR
= max [statistical uncertainty, ½ x instrument resolution]
PSAL_ADJUSTED_QC = 1, 2 or 3
PSAL_ADJUSTED
= adjustment provided by PI
(this can be original value PSAL)
PSAL_ADJUSTED_ERROR
= uncertainty provided by PI
PSAL_ADJUSTED_QC = 1, 2 or 3
OR
PSAL_ADJUSTED
= PSAL (original value)
PSAL_ADJUSTED_ERROR
= FillValue
PSAL_ADJUSTED_QC = 4

A beginners' guide to accessing Argo data

John Gould – Argo Director

Argo collects salinity/temperature profiles from a sparse (average 3° x 3° spacing) array of robotic floats that populate the ice-free oceans that are deeper than about 2000m. They also give information on the surface and subsurface currents. Each profile is made up of about 200 data points. The first Argo floats were deployed in 2000 and the array will be complete in 2006/7. Argo data are made available to users quickly and free of restriction

The following document is a first draft for a brief user guide to the Argo data system. This is intended to describe to Argo users

(i) what they should expect from Argo data (real-time and delayed mode streams) and
(ii) how to find it.

Complete documentation of the Argo data system is contained in the "Argo Data Management Handbook" and "Argo Real-time Quality Control Tests Procedures", both available at http://www.coriolis.eu.org/cdc/argo_rfc.htm . Feedback from Argo users will be very valuable as we implement and test the remaining parts of Argo's data management system. Specifically, comments in the following areas are especially appreciated and should be sent to argo@ucsd.edu :

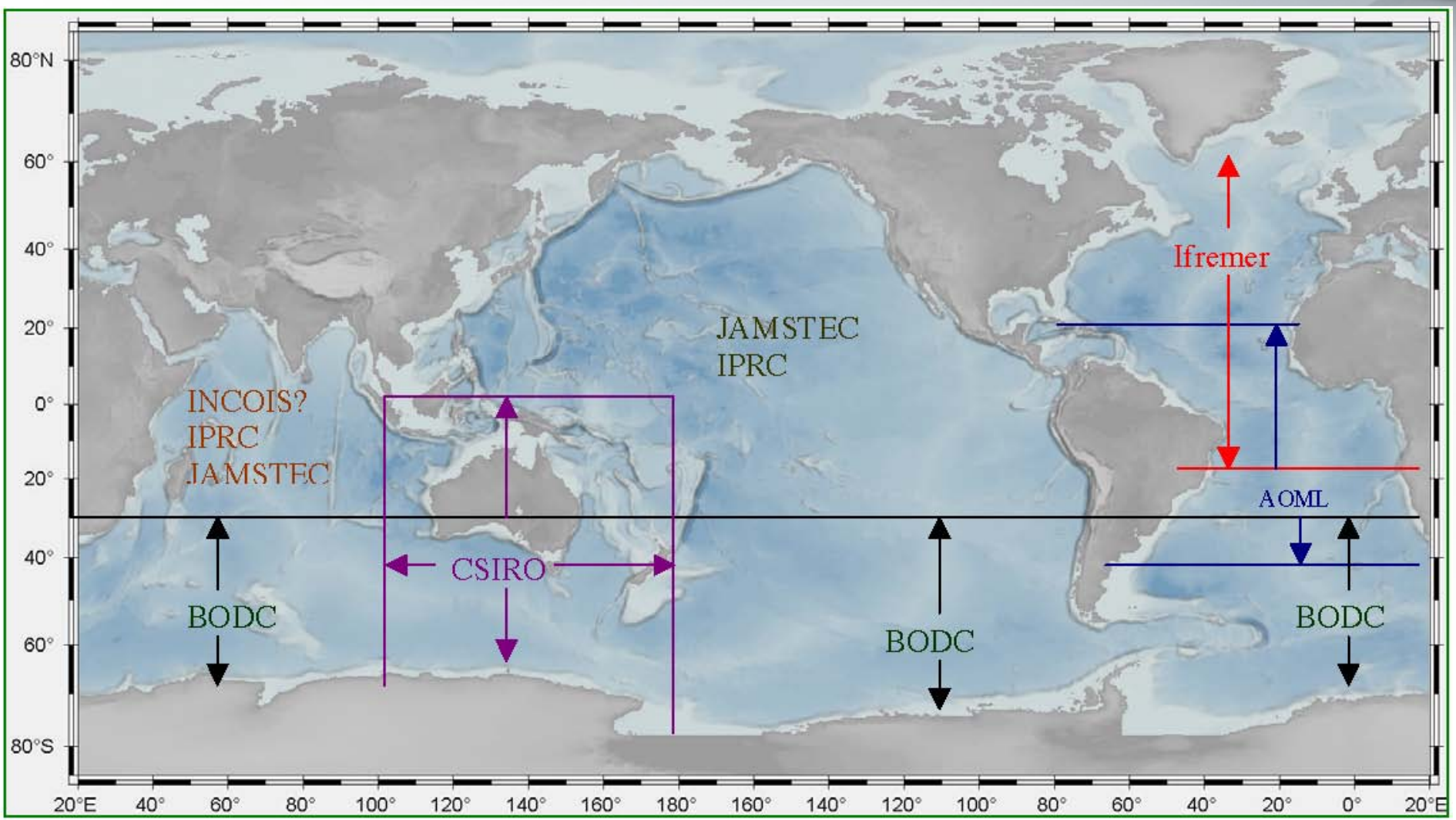
1. For users requiring real-time data (within about ~24 hours of measurement):

- Are there inconsistencies between Argo's specified real-time QC tests and what is found in the data files (GTS or Global data Centres)?
- Are there formatting problems in the GDAC netcdf files, with respect to the specifications in the Argo Data Management Handbook.
- Are there additional or better (fully automated) real-time QC tests that should be applied ? (For example it has been noted that a range check on pressure is needed).
- Is an automated estimate of salinity sensor drift (presently only in delayed mode data) needed?

2. For users requiring near real-time data, but on a time scale of several days or longer:

- Some DACS (e.g. US Argo DAC) are presently implementing visual profile inspection in near real-time. It is unlikely that this will be done by all national DACS unless there is a strong requirement expressed for an intermediate quality dataset (better quality than real-time, faster than delayed-mode). Is there such a requirement?

3. For users requiring scientific quality data (delayed-mode).

- At present, only about 20% of Argo profiles are available as delayed mode data (i.e. netcdf filename begins with D), and the delayed-mode system is still under

Area of interest of the institutes participating in Regional DACs implementation