Argo Canada DAC

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Ocean Science Branch

ADMT21: Argo DACs Workshop

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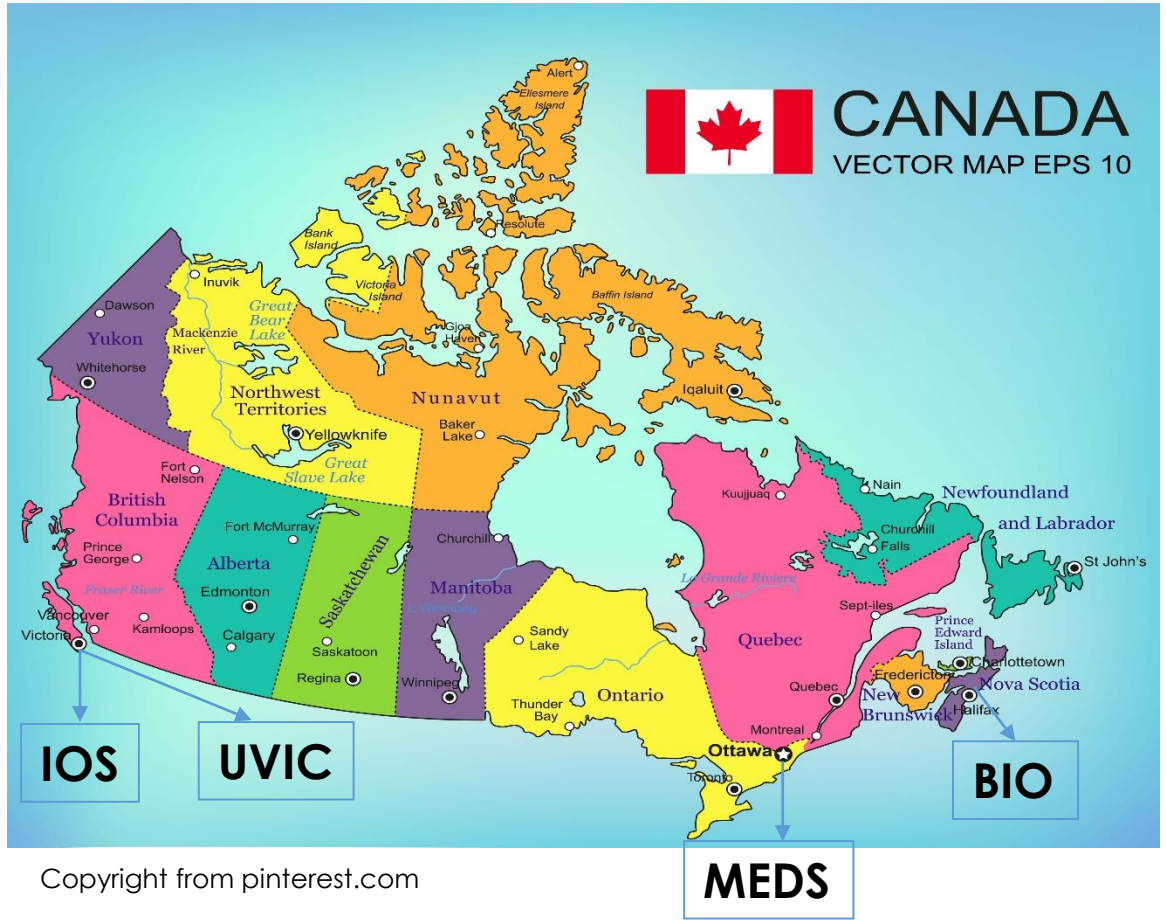
Background

- The Marine Environmental Data Section (MEDS) of Oceans Science Branch within DFO carries out functions of Argo DAC since the Argo program started in 1998-1999.
- MEDS are responsible for data collect by 585 floats of which 105 floats are actively report.
- Argo data system is handling collected from 6 different float types which resulted in 16 different data formats.
- Raw data from these floats are transmitted on Argos, Iridium and RUDICS satellite.
- Raw data are made available to MEDS via Telnet, FTP and email protocol.
- The data system runs Open VMS and Window Server.

Organization



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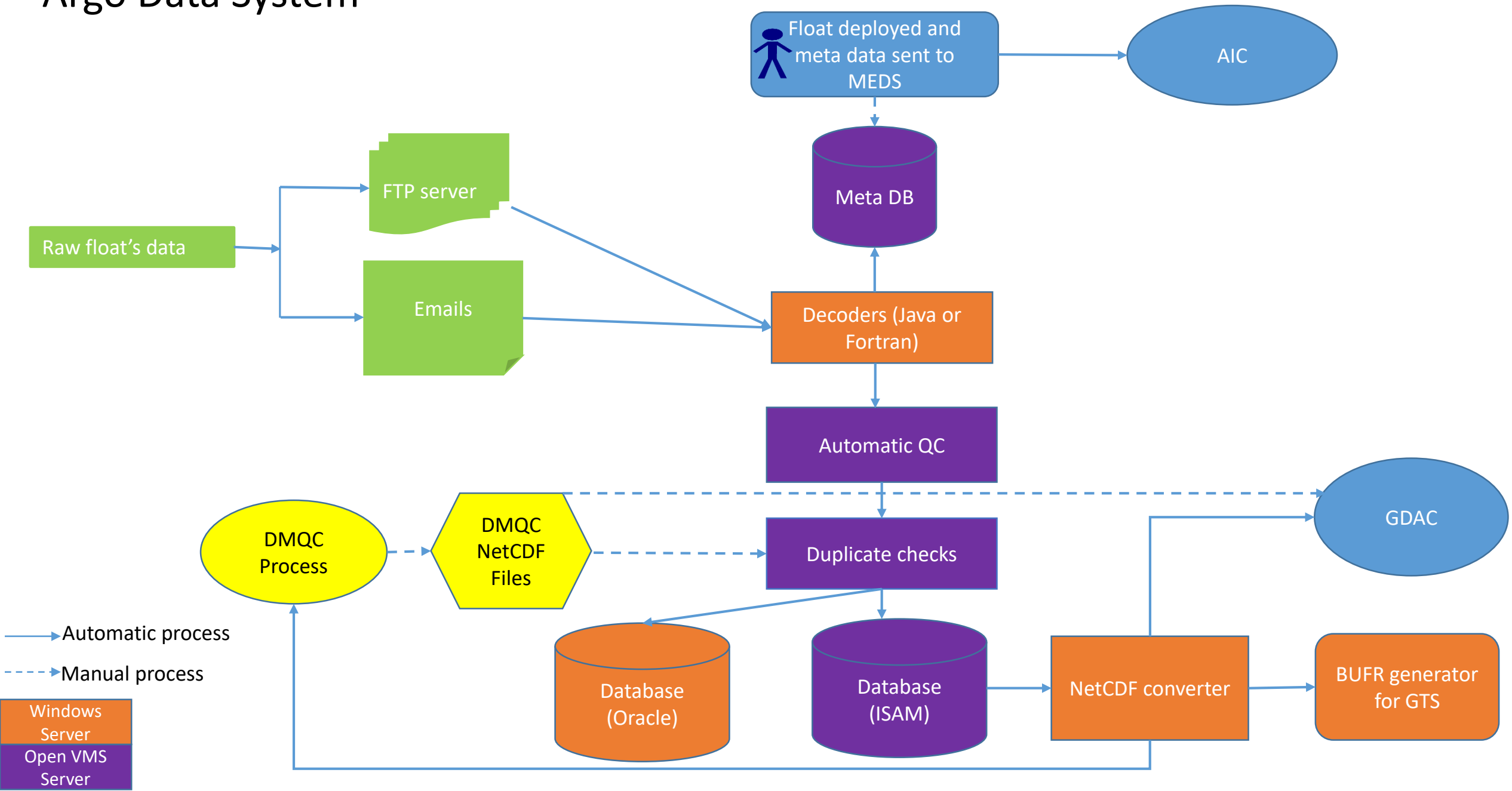
- **Principal Investigators**
  - Blair Greenan (BIO)
  - Tetjana Ross (IOS)
  - Roberta Hamme at UVIC for DOXY
- **Real-time Argo DAC**
  - Anh Tran (MEDS)
- **Delayed mode Operators**
  - Zhimin (Robert) Ma at MEDS for core Argo profiles DMQC
  - Chris Gordon at BIO for BGC Argo profiles DMQC
- **Logistic**
  - Ingrid Peterson (BIO)

BIO – Bedford Institute Oceanography
IOS- Institute of Ocean Sciences
UVIC- University of Victoria

Argo Data System



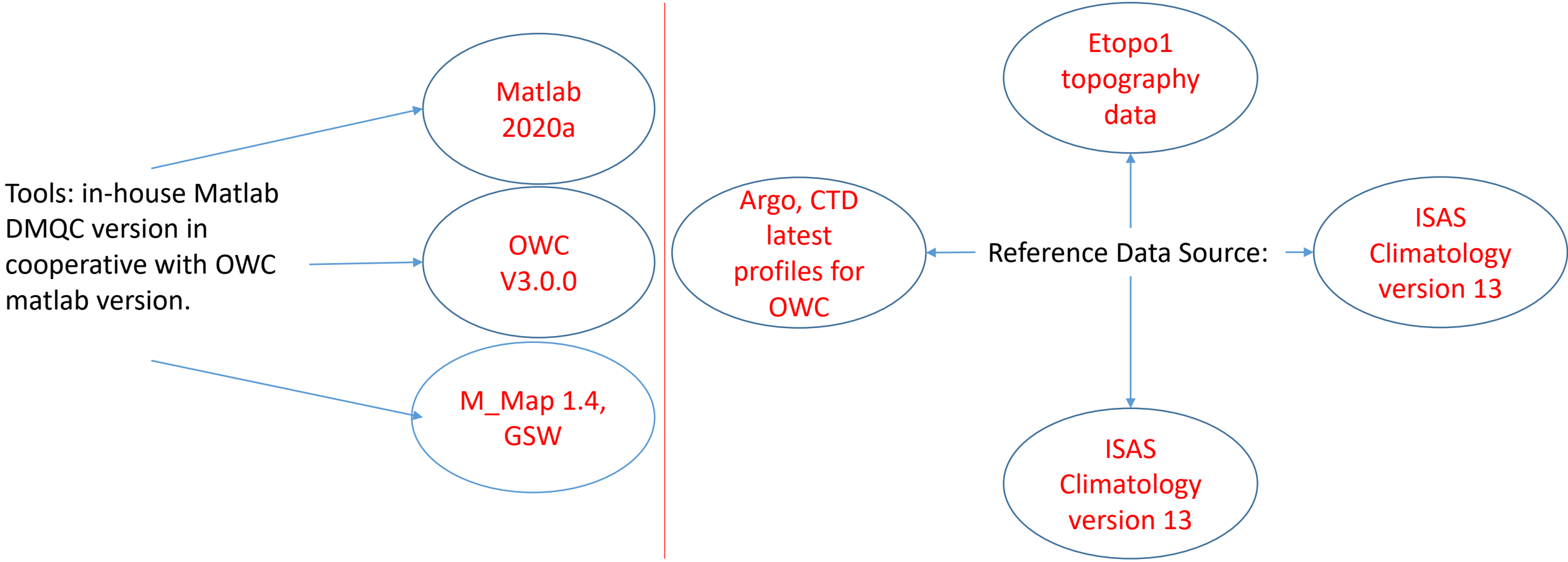
Challenges

- Components of Argo system run on three different servers with different maintenance schedules. Therefore, all operations need to be optimize to meet 12 hours target.
- Compromise between Argo requirements and department IT security
- Argo system has been developed 20 years ago. New functionalities was added on to the original system. Some components of the Argo system are still running on Open VMS server using FORTRAN language which requires migration. Therefore it’s a big learning curve for new hire.
- The internal structure of the database and formats are rigid and it’s more difficult to adapt to the new Argo requirements.

Future developments

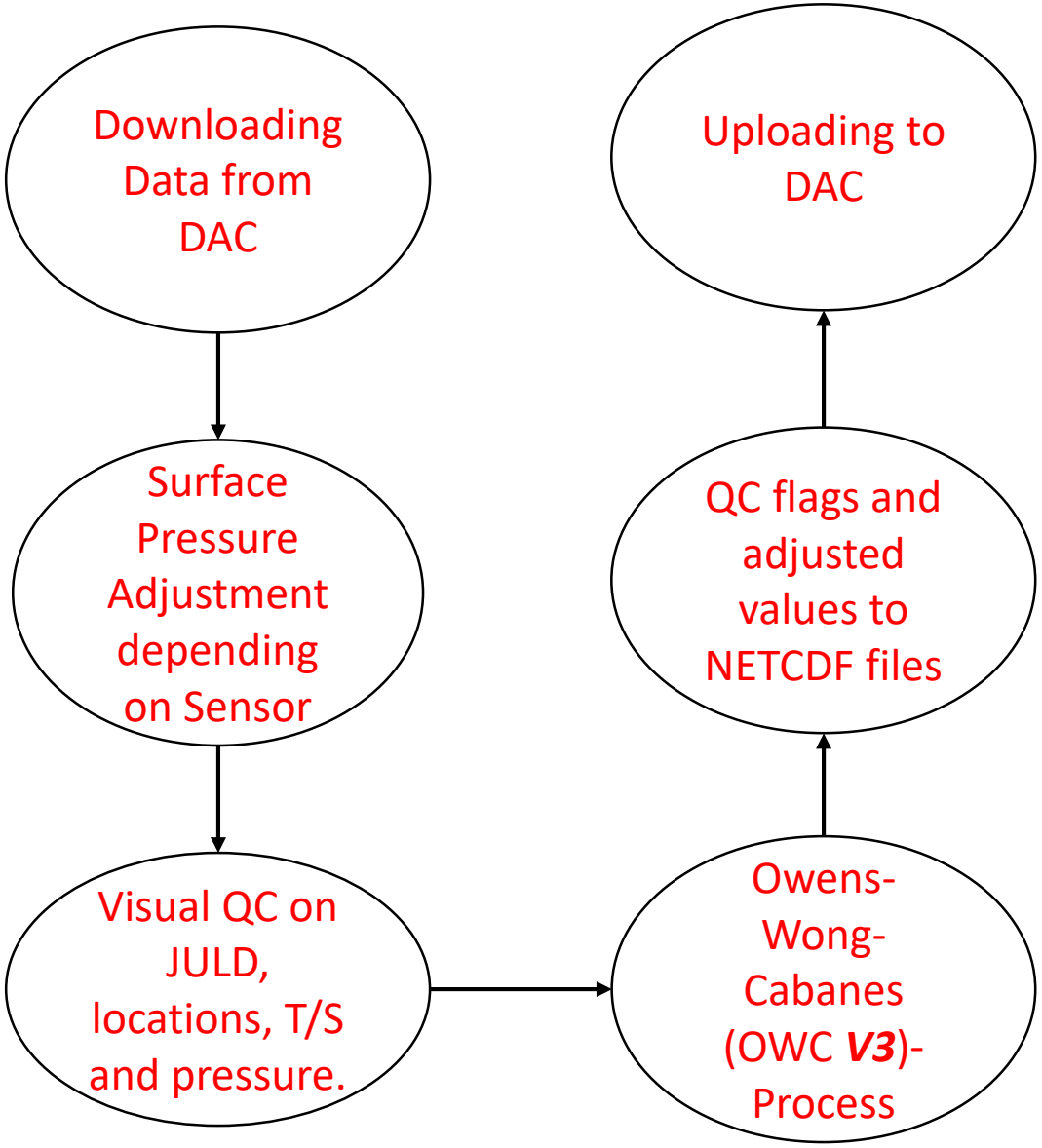
- We are working on converting Argo automatic real-time QC tests written in FORTRAN to Python
- Renewal of the current Argo Website
- Develop the decoder for BGC float.

Status of core Argo DMQC in Canada



Metadata: Upgrade QC Comments from version 3.0 to 3.3: global attribute for DMQC operator name, ORCID and operator institute

DMQC Data Flow

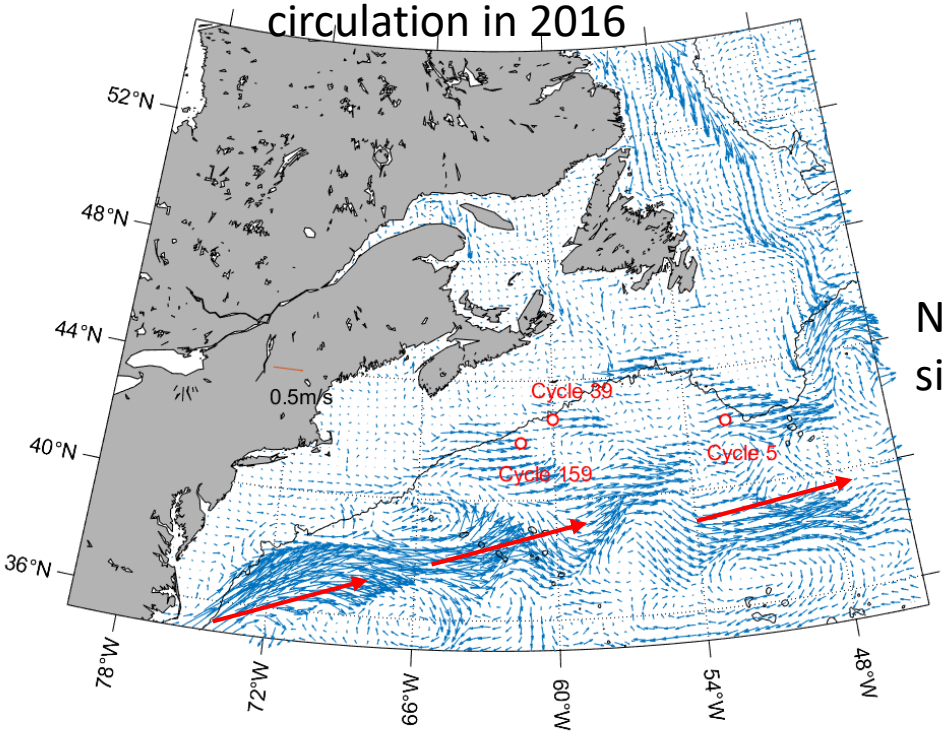


Brief Conclusion and Plan on DMQC process

1. We successfully established DMQC process and applied its in-house tool on the Canadian Argo floats. However, we still face challenges (slides followed).
2. Tools and related reference data will be continuously upgraded to the latest version.
3. DMQCed NETCDF files will follow the latest format documented on the quality control manual.
4. We will follow the monthly anomaly reports to QC the related floats.

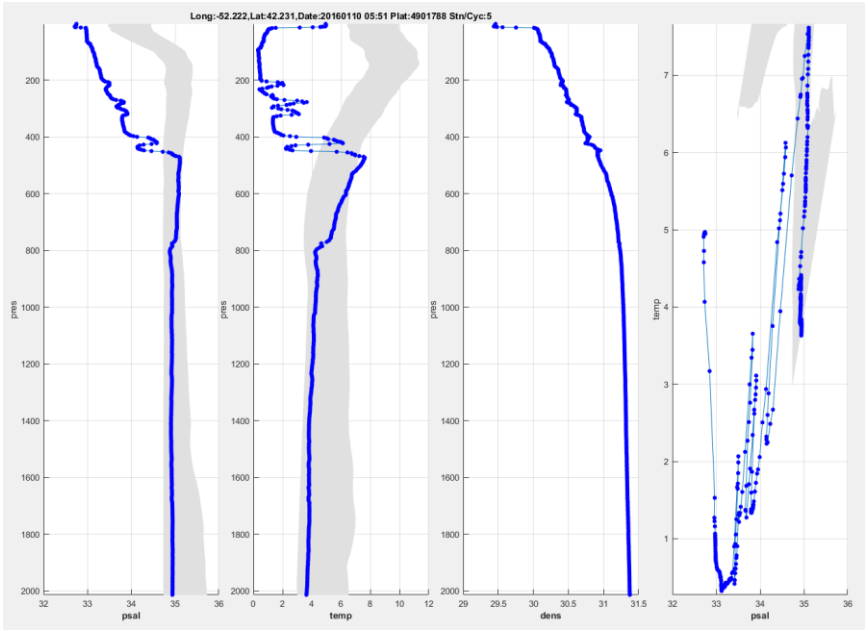
Challenges on DMQC

Annual Mean Surface circulation in 2016



NEMO 1/12 model simulation

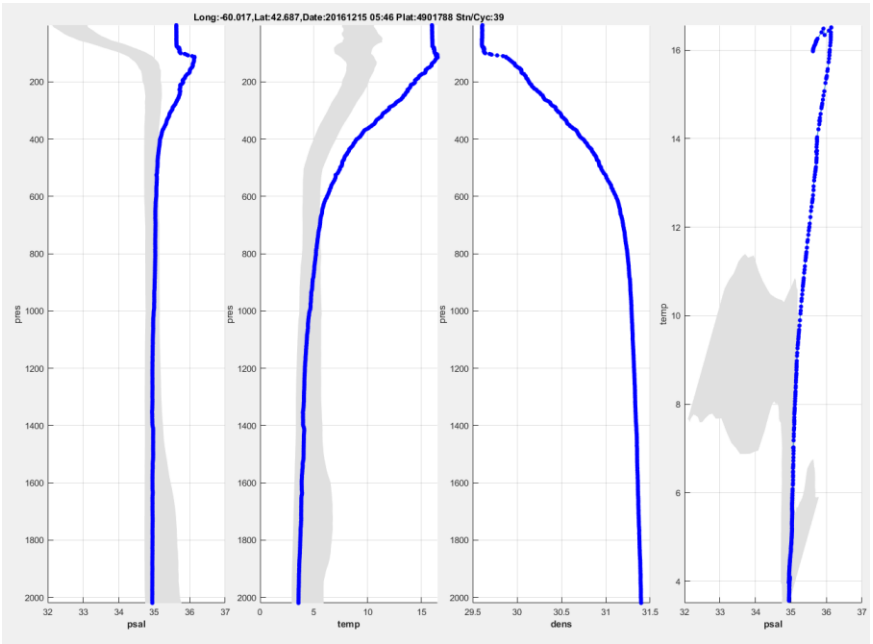
Cycle 5



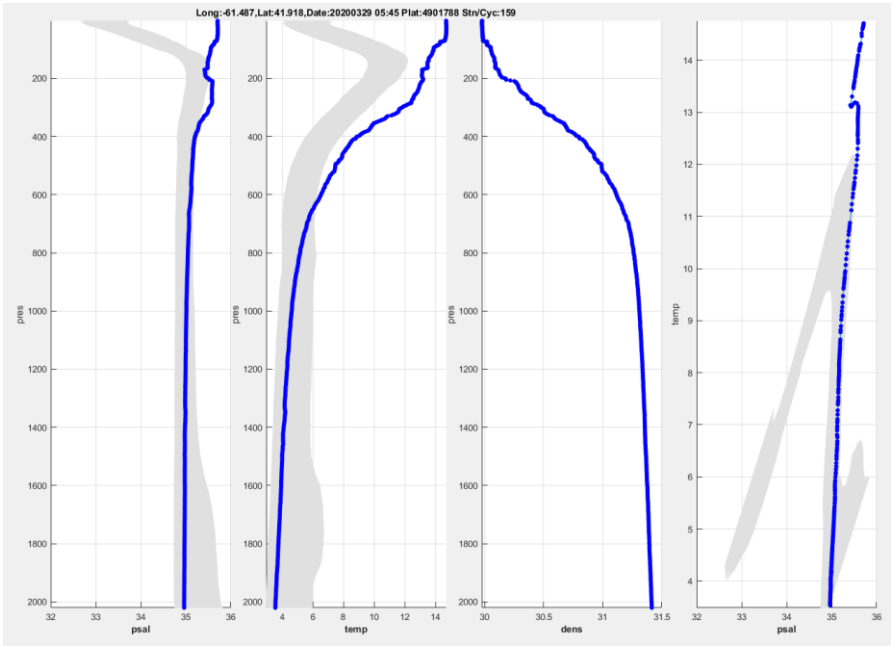
Deviations from climatology

Visual QC:

1. Subjective
2. Depend on operator
3. Hard to differentiate flag 3 and 4



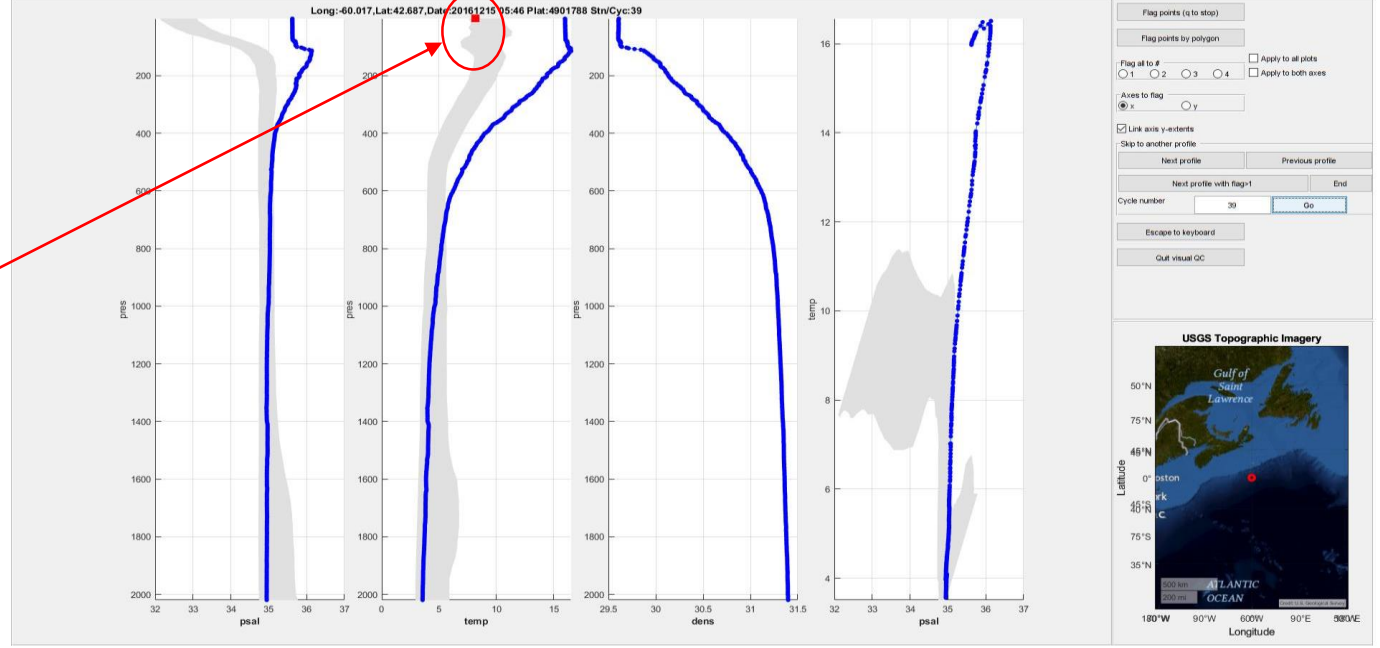
Cycle 39

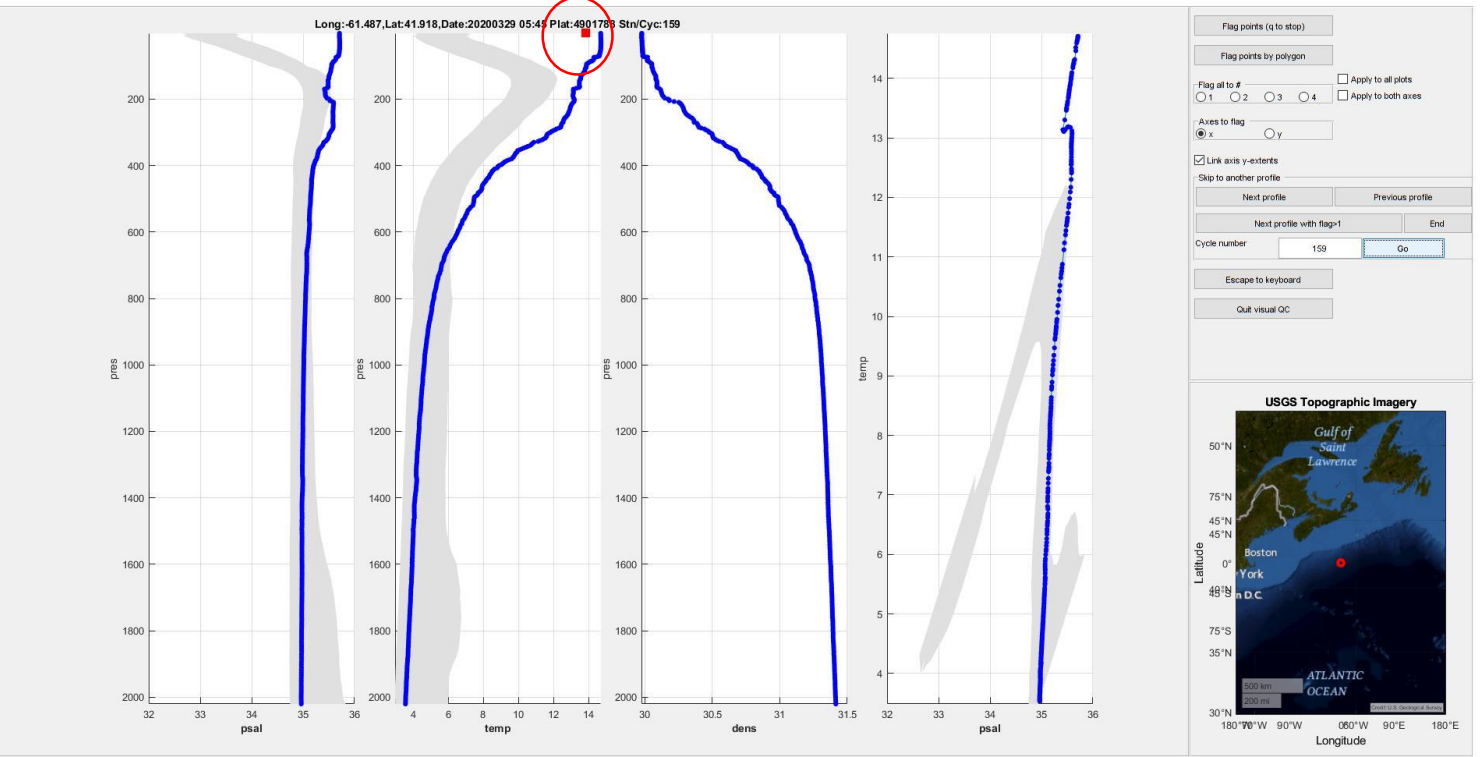


Cycle 159

AVHRR V5.3 global 4km sea surface temperature
We choose 7-day averaged SST and a spatial averaged values scaled between 60-100 km as mesoscale for the gulf Stream region.

AVHRR





1. Cycle 39-> 2016, 12-15 good quality grid is about 40 km away
2. Cycle 159->2020, 03-29 good quality grid is 6 km away from the floats

Conclusion and Plan:

1.AVHRR can help to validate our floats in the Gulf Stream region if there is good quality data around, but there are still some limitations.

2. The experiment show few sensitivities on choosing the spatial scale and time period for averaging.

3. We need more experiments and statistics to validate the concept of using satellite data.

4. We may pursue satellite SSS after.

Thank you !