Argo Canada National Data Management Report

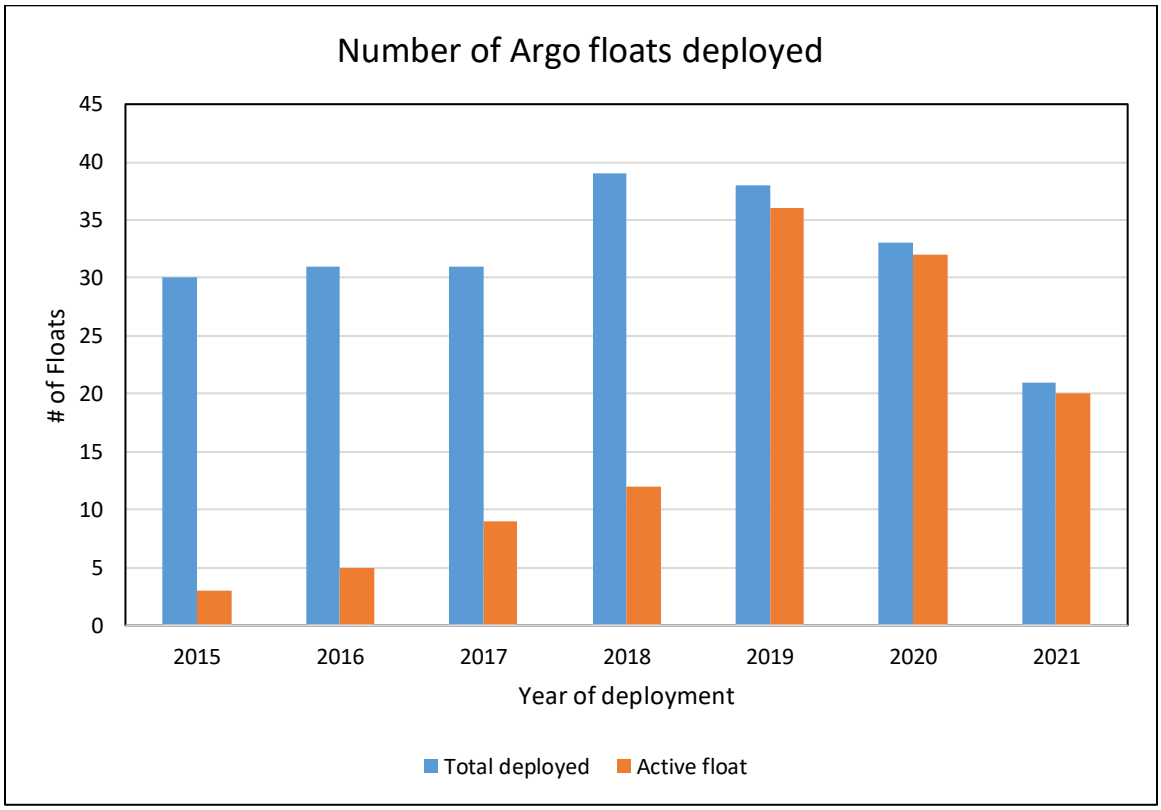
ADMT22 - Virtual Meeting

Dec 6 – 10, 2021

1. Status

- Data acquired from floats

  As of the end of November 2021, we are tracking 117 floats of which 1 floats may have failed to report within the last 4 months. The plot below shows the total number of floats deployed per year and the number of floats which are still active as of November 2021.

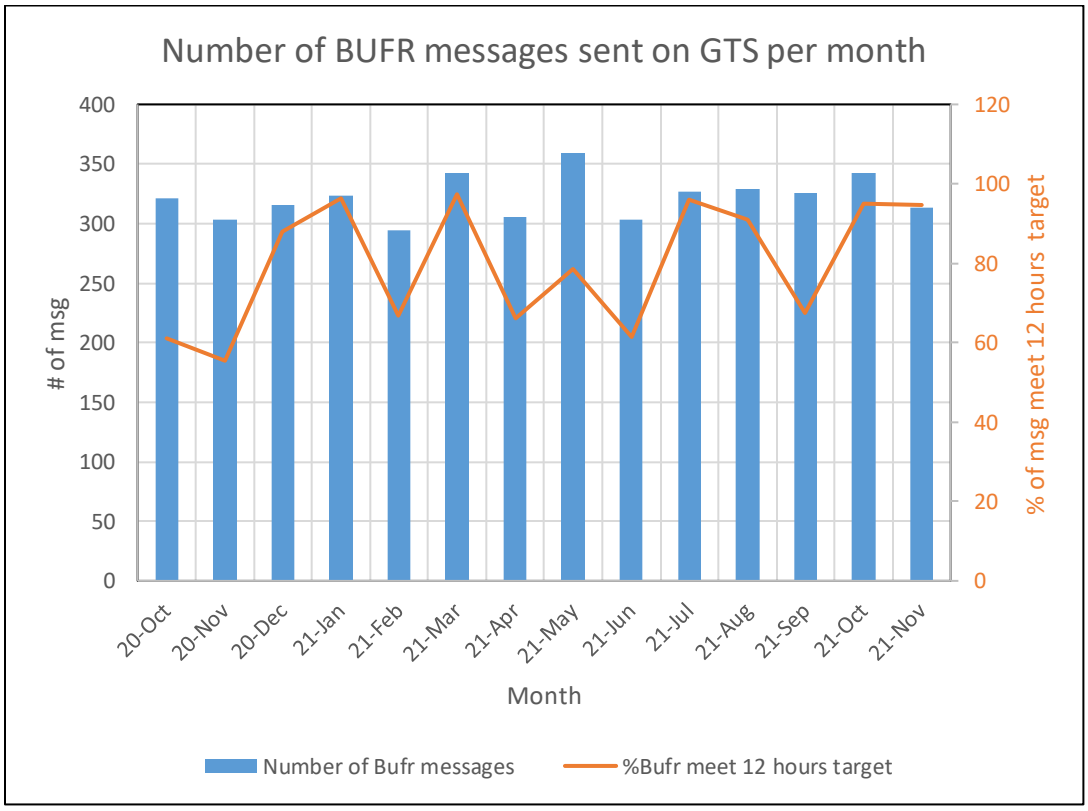


Since November 2020, we deployed 26 new ARVOR-I floats of which 5 floats are equipped with dissolved oxygen sensors and 2 floats are equipped with RBR sensor. One of the two RBR floats that deployed in 2021 suffered a CTD failure a month or so after deployment. However, it

was recovered, and RBR diagnosed that the conductivity cell was defected, and caused a leak. All floats were acquired from NKE and are reporting on the Iridium satellite system.

- Data issued to GTS

  All data are issued to the GTS in BUFR formats. Since November 2020, on average, 80% of data were issued on the GTS within the 12 hour target in BUFR formats. A monthly average of 316 BUFR messages were transmitted on the Argo network between November 2020 and November 2021. During the year, we have experienced some difficulties with the server updates and has caused a drop in the transmission time on the GTS.



- Data issued to GDACs after real-time QC

  The profile, technical, trajectory and meta files are transmitted to the GDACs in NetCDF format version 3.1 on an operational basis with some

additional delay, compared to the data sent on the GTS, because the two processes run on different servers. There are still a number of trajectory NetCDF files of dead floats that are not in format version 3.1 at the GDACs.

- Data issued for delayed QC
  Data are available for delayed mode QC as soon as they are sent to the GDACs, but only floats deployed for at least 6 months are qualified for fully DMQC

- Delayed data sent to GDACs
  During last year, the majority work was focused on QC profiles (temperature and salinity) of core Argo floats. Specifically, float's profiles reported more than 6 months ago was conducted with a full quality-control cycle which includes pressure adjustment, visual QC on vertical temperature and salinity profiles, and the Owens-Wong-Cabanes (OWC) method on salinity time series. On the other hand, float's profile within 6 months was quality-controlled in a partial cycle containing pressure adjustment and visual QC. In both cases, their QCed profiles were converted to D-files and transmitted to GDACs.
  During last year, significant efforts were made to improve BGC DMQC tool and to establish a feasible working environment for the DMQC tool. Therefore, less efforts were attempted to QC BGC profiles. We have begun to DMQC some of the BGC profiles of inactive floats. These profiles will be submitted to the GDACs shortly.

- Web pages
  http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/argo/index-eng.html
  We maintain web pages that show float tracks and all data collected by Canadian floats. Links to both real-time and delayed mode data are also available for download directly from GDAC. The pages are updated daily.

Argo Canada data is discoverable from the Government of Canada Open Government Portal, https://open.canada.ca/en.
It provides links to download data in NETCDF and web services to access float positions.

- Statistics of Argo data usage (operational models, scientific applications, number of National Pis…)
    a. Argo data have been used to generate monthly maps and anomaly maps of temperature and salinity along line P in the Gulf of Alaska. Line-P has been sampled for 50 years and has a reliable monthly climatology. For more information on the Line-P products and other uses of Argo to monitor the N.E. Pacific go to: http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/argo/canadian-products/index-eng.html.
    b. The Canadian Meteorological Centre (Dorval, Québec) of Environment Canada is assimilating real-time Argo data in operational mode.

2. Delayed Mode QC

2.1 Statistics

As of November 17, 2021, 71% of all active floats, had their profiles DMQCed according to the latest delayed-mode procedures at least once, in comparison to last year's percentage of 67%. About 6,785 profiles across 65 core Argo floats have been DMQCed within the last year. There are 3,694 fully QCed core profiles while the number of partially QCed profiles is 3,091.

Of all BGC floats, 13% have been either visually QCed or fully DMQCed at least once on their profiles. It should be noted that DMQC only applies to DOXY for Argo B-profiles.

2.2 DMQC Tool

The DMQC tool for core Argo floats has been updated to the latest OWC method as well as the most recent climatology and reference database. The DMQC tool for BGC Argo floats focusing on DOXY is coded by python and under development with notable improvements. All source codes have been shared on Github (https://github.com/ArgoCanada/bgcArgoDMQC).

2.3 Anomaly Report and Audit

The monthly anomaly reports issued by Ifremer (French GDAC) were carefully reviewed and the anomalies were flagged and updated to GDAC NETCDF files. The audit especially targeted on delayed-mode salinity data reported by John Gilson and Annie Wong's analysis was reviewed and corrected accordingly. Actions were made to re-evaluate the salinity data in 'D' mode with suggested reference database and updated D-files were re-submitted to GDACs.

3. GDAC Functions

Canada forwards TESAC data to the GDACs in Ifremer (France) and USGODAE (USA) three times a week. Canada also monitors the timeliness of Argo data on the GTS in BUFR format.

4. Regional Centre Functions

Canada has no regional centre function.