

Chinese Argo National Data Management Report

ADMT-20

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Zenghong Liu¹, Xiaogang Xing¹, Mingmei Dong²

- 1) Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou
- 2) National Marine Data & Information Services, Ministry of Natural Resources, Tianjin

1. Status

(Please report the progress made towards completing the following tasks and if not yet complete, estimate when you expect them to be complete)

- Data acquired from floats

From the last ADMT (Dec 2018- Sep 2019) China acquired 4,259 TS profiles (additionally 472 O₂, 675 CHLA, 675 BBP, 558 CDOM, 384 DOWN_IRRADIANCE, 384 NITRATE and 206 pH profiles) from 105 (including 9 BGC floats) operational floats (Fig.1).

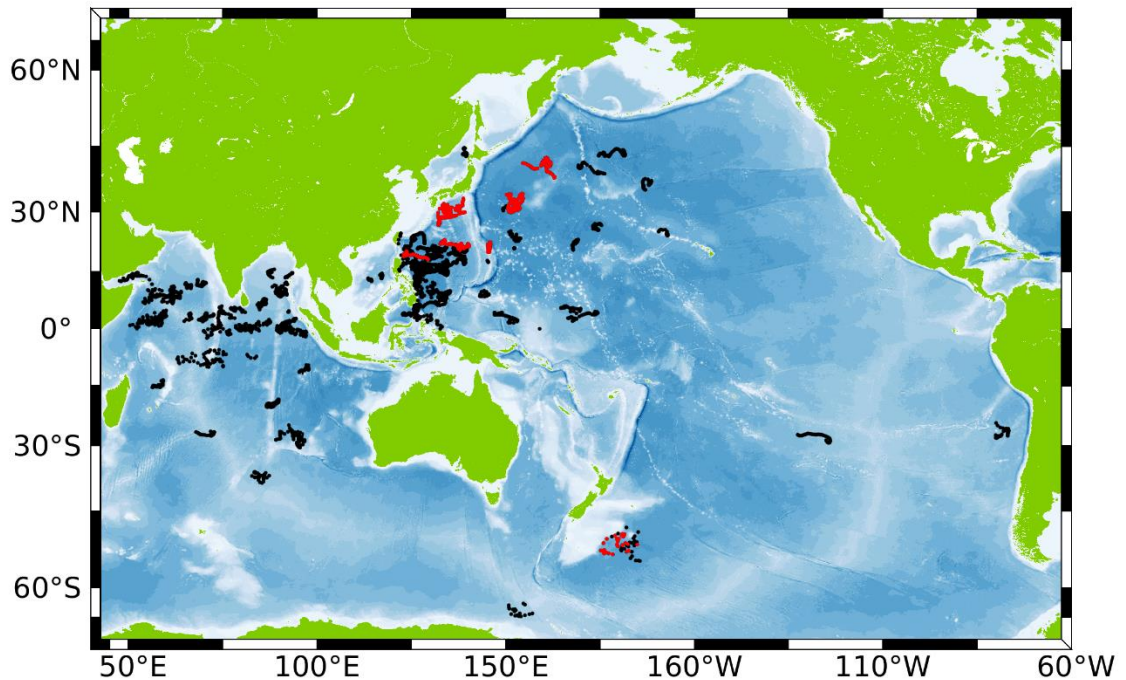


Fig.1 The geographic distributions of Core (black) and BGC (red) profiles

- Data issued to GTS

Every day CSIO sends BUFR bulletins to GTS through Beijing node (038) from China Meteorological Administration (CMA). With the perl script developed by JMA, CSIO is able to convert TS & O2 profiles into BUFR. An interruption happened during May-July 2019 due to a problem of the FTP server from Meteorological Bureau of Zhejiang Province.

- Data issued to GDACs after real-time QC

The meta, technical, trajectory and profile files are submitted to GDAC in netCDF format version 3.1 on an operational basis. A new decoder for two full-equipped (six BGC parameters) PROVOR-IV BGC floats was developed this year. The RT-QC procedures for DOXY, CHLA, BBP and pH are being applied.

- Data issued for delayed QC

This August CSIO sent a technician to CSIRO for receiving a DMQC training under the support from the Ministry of Science and Technology (MOST). Presently she can use OWC tool and is accelerating the pace of eliminating the backlog at CSIRO. We thank CSIRO for their sincere help to China Argo.

- Delayed data sent to GDACs

11,689 D-files (6,018 D-files and 5,671 BD-files) were submitted to GDACs this year from CSIO. The backlog is still there, about 3,7000 profiles are DM pending.

- Web pages

HomePage :

Currently the China Argo Real-time Data Centre (Hangzhou) maintains a website (<http://www.argo.org.cn>) from which the latest progress on China Argo, the real-time observations from Chinese floats including data file and related plots are provided. Some Argo products and a Web-GIS based global Argo data inquiry system are also provided and updated to users.

Data Service :

A web-GIS based webpage has been developed and maintained by CSIO, from which users are able to inquire and download the global Argo observations (<http://platform.argo.org.cn:8090/flexArgo/out/index.html>).

A similar webpage for global BGC floats is being developed by Zhejiang University.

- Statistics of Argo data usage (operational models, scientific applications, number of National Pis...)

Operational uses: NMEFC and NMDIS from MNR, IAP/Chinese Academy of Sciences have applied Argo data into their operational models.

Scientific applications: The Argo data are mainly used in from seasonal to decadal ocean variations in global and regional scales, air-sea interactions, ocean's role in global climate change.

Until now, about 11 PIs from 7 institutions have deployed profiling floats and share data with Argo community.

- Products generated from Argo data

BOA_Argo: It is now a biannually updated gridded Argo product developed by CSIO (ftp://data.argo.org.cn/pub/ARGO/BOA_Argo/). The product is based on the post-QC'd Argo dataset maintained by CSIO.

Post-QC'd global ocean Argo dataset: The dataset is based on a FAST post-QC toolbox developed by CSIO, with which users are able to conduct a quick QC for all the T/S profiles downloaded from GDAC. It is a quarterly updated Argo dataset after a careful screening (<ftp://ftp.argo.org.cn/pub/ARGO/global/core/>).

Global ocean BGC-Argo dataset: The dataset is derived from the B-files on the GDAC, and is separated into various txt files according to BGC parameters. The dataset is also expected to be quarterly updated depending on the CSIO resources (<ftp://ftp.argo.org.cn/pub/ARGO/global/bgc/>).

2. Delayed Mode QC

(Please report on the progress made towards providing delayed mode Argo data, how it's organized and the difficulties encountered and estimate when you expect to be pre-operational.)

The OWC tool developed by CSIRO currently cannot handle DMQC for multiple profiles files. We hope CSIRO update the software, which will enable us to deal with many profiles with N_PROF=2 from APEX Iridium floats. The lack of historical shipboard CTD data in the South China Sea will make it difficult for us to correct salinity drift found in several HM2000 floats.

Dr. Xiaogang Xing from CSIO is leading the DMQC for observations from BGC floats.

Oxygen data observed by 17 Provor floats deployed in the northwestern Pacific in 2014, have been quality-controlled, by comparison to the climatology WOA13 as in Takeshita et al. (2013). The obvious drift appeared after about three months after deployed for all 17 Provor, probably due to the biofouling. The “drift date” for each sensor was identified and the slope factor m was obtained for correcting all the profiles before the “drift date”. The corrected Oxygen data were uploaded in the DB files, where all profiles after the “drift date” were not processed.

Nitrate data observed by Float 2902753 and 2902756 (two 6-variable Provor floats deployed in March of 2019 in the northwestern Pacific gyre), had the abnormal positive bias at sea surface due to the high temperature ($> 20^{\circ}\text{C}$), which cannot be well solved by tuning the reference wavelength. Ken Johnson provided a new temperature-salinity correction algorithm, which worked well as long as the reference wavelength was tuned as 208.5 nm and 209 nm for two floats, respectively. The new algorithm was, therefore, suggested to be published as soon as possible.

FDOM (CDOM) data observed by Float 2902753 and 2902756 appeared the “detection-limit” issue which was never seen before. The detection limit was found as 49 raw counts for 2902753 and 50 for 2902756, from ~70 m to sea surface at the local noon (No such an issue at local night). The detected minimum counts

are consistent to our on-float-measured dark count values (50 and 50). We guess it is related to the extremely low FDOM in the northwestern Pacific gyre, even much lower than 1 count at daytime due to the strong photo-bleaching, but FDOM could be supplied by vertical diffusion or produced by upper-layer ecosystem itself (phytoplankton, zooplankton, bacteria) during the night.

3. GDAC Functions

(If your centre operates a GDAC, report the progress made on the following tasks and if not yet complete, estimate when you expect them to be complete)

None

4. Regional Centre Functions

(If your centre operates a regional centre, report the functions performed, and in planning)

None