Argo Chinese National Report 2018

(Jianping Xu & Zenghong Liu, The Second Institute of Oceanography, MNR)

1. The status of implementation

- floats deployed and their performance

From the last AST meeting, China deployed 21 floats (12 APEX, 9 PROVOR BGC floats) in the northwestern Pacific Ocean. These floats were deployed by 2 PIs from the Second Institute of Oceanography, MNR (CSIO). In total, China Argo has deployed 423 floats, and approximately 95 floats are operational as of 19 Feb., 2019.
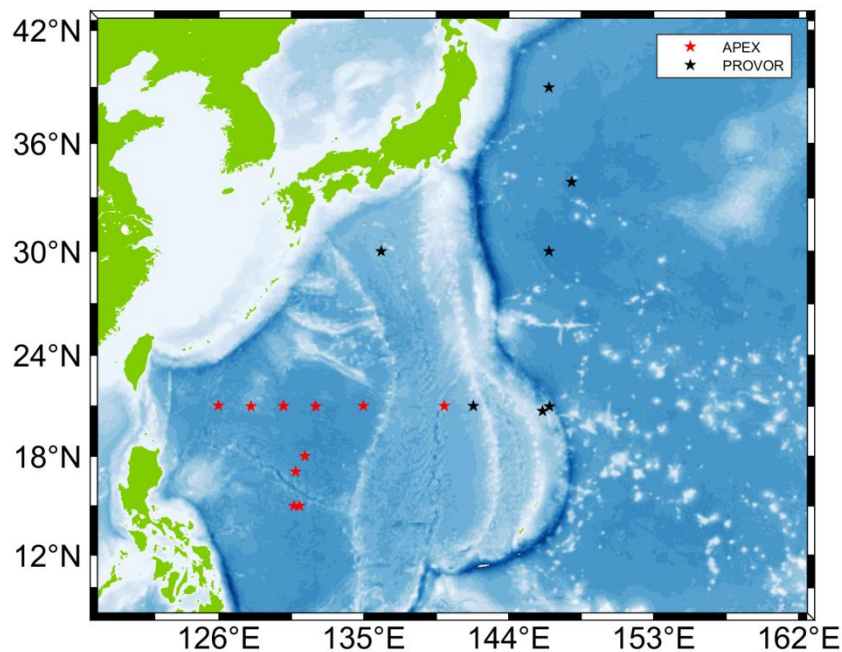

Fig.1   Launch positions of the floats from Mar. 2018 to Feb. 2019.

- technical problems encountered and solved

Technical problem for APF11: occasionally missing files on the CLS RURICS host have been found in some cases. GPS fix obtaining difficulty is also found in some cases. The problem has been reported to Brian King for a further investigation.

Technical problem for BGC PROVOR: Among 9 BGC PROVOR floats deployed in 2018, 2 floats failed to start their mission owing to an improper mission configuration.

-status of contributions to Argo data management (including status of pressure corrections, technical files, etc)

From the last AST meeting, CSIO received data from 120 active floats (42 APEX, 61

PROVOR, 12 HM2000, 3 ARVOR and 2 NAVIS) and submitted 6,144 TS profiles (plus 209 DOXY, 398 CHLA, 398 BBP, 310 CDOM, 360 DOWN_IRRIDIANCE, 120 NITRATE) to GDACs. All the profile data are converted into BUFR bulletin and send to the GTS via Chinese Meteorological Agency (Beijing). An update of the historical profile files into V3.1 has been finished before the ADMT-19 meeting.

- status of delayed mode quality control process

There is a severe backlog for delayed QC. The situation has not been changed until the ADMT-19. We expected to restore the DMQC this year after an exercise of the DMQC GUI.

- status of post-processing of the global Argo data set

A post-processing method about the global Argo data set has been designed at CSIO, in which 15 QC tests are being applied including a climatological test using DMQC_Argo CTD data set and a new spike test presented by Racape at the ADMT-19. A high-quality global Argo data set is expected to be generated during the first half of this year.

- status of Chinese COPEX float

The COPEX profiling float is developed by the National Ocean Technology Center (NOTC) and its prototype was manufactured 15 years ago. The NOTC has finished several field self-tests, but it has not been adopted by China Argo until now. During 2017-2018, 3 COPEX (with BeiDou satellite system) were deployed as part of its pilot deployments, however, some technical problems related to the float performance and data format were found. At the end of 2018, NOTC provided another 2 refurbished floats for a further field test.

2. Present level of and future prospects for national funding for Argo including a summary of the level of human resources devoted to Argo.

The level of national funding for Argo deployment before 2020 is as follows:

Float secured (35)

Core Argo: 8 HM2000, 2 APEX

BGC Argo: 2 HM2000 (O2), 17 PROVOR (2 full-equipped), 2 NAVIS (full-equipped with Sea TREC), 1 APEX (O2)

Deep Argo: 3 ARVOR_D

Funding almost secured

75 Core Argo floats in 2019

Funding TBD in 2019

120 floats (15 BGC Argo) in the western Pacific Ocean (as part of TPOS 2020)

60 floats (15 BGC Argo) in the Indian Ocean

There are 9 staffs at CSIO who are working for float deployment, data processing and data applications (including BGC Argo), as well as the operational running of the Beidou profiling float data service center (Hangzhou, CHINA).

3. Summary of deployment plans (level of commitment, areas of float Deployment, low or high resolution profiles) and other commitments to Argo (data management) for the upcoming year and beyond where possible.

Two cruises have been confirmed to deploy about 8 BGC floats in the northwestern Pacific Ocean in this March and December, respectively. A cruise in the northern Indian Ocean is being designed, in which about 15 Core Argo floats are planned to be deployed if the funding is secured in the first half of this year. The Ocean University of China plans to deploy 12 PROVOR floats (with O2 sensor) in the Southern Ocean this year, but the cruise has not been confirmed yet.

4. Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centers. Please also include any links to national program Argo web pages to update links on the AST and AIC websites.

The Argo data has been widely used in scientific research and operational forecasts. CSIO provides a mirror access to the profile files at the GDACs, and also provides a free download of the BOA_Argo (the Argo product developed by CSIO) and post-processed global Argo data set.

There are two websites maintained by China. One is maintained by CSIO (http://www.argo.org.cn) at Hangzhou (China Argo Real-time data center), where the implementation status of China Argo, real-time data display including observed profiles, float trajectory, profile data, the derived products and status of global Argo are provided. Another is maintained by NMDIS, now as part of the CMOC/China website (http://www.cmoc-china.cn).

5. Problems encountered during the operation of international Argo and suggestions

From the beginning of the China Argo, the implementation of the project relies on research programs rather than fiscal budget. The situation has not been improved in recent years. We suggest that the AST should appeal to the all Argo member states to take more responsibilities and obligations under the guidance of IOC Argo resolutions, making the Argo program better serve the international community.

6. To continue improving the number of CTD cruise data being added to the reference database by Argo PIs, it is requested that you include the number and location of CTD cruise data uploaded by PIs within your country to the CCHDO website in the past year.

No CTD data were submitted.

7. Keeping the Argo bibliography

The following articles are not listed in Argo Bibliography:

Chen G, and Geng D. 2018. A "mirror layer" of temperature and salinity in the ocean. Climate Dynamics, https://doi.org/10.1007/s00382-018-4495-6.

Huang Y , Yang B , Chen B , et al. 2018. Net community production in the South China Sea Basin estimated from in situ O 2 measurements on an Argo profiling float. Deep Sea Research Part I Oceanographic Research, 131: 54-61. https://doi.org/10.1016/j.dsr.2017.11.002.

Xu J, and Gao L. 2018. Thetemporal-spatial features of evaporation and precipitation and the effect on sea surface salinity in the tropical Indian Ocean. Haiyang Xuebao (in Chinese), 40(7): 90-102.

Wang X, Zhang W, Wang P, Yang J, and Wang H. 2018. Research on mid-depth current of basin scale in the South China Sea based on historical Argo observations. Haiyang Xuebao (in Chinese), 40(6): 1-14.