

Argo Chinese National Report 2017

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1. The status of implementation

- floats deployed and their performance

From the last AST meeting, China deployed 21 floats (13 HM2000, 3 APEX, 3 ARVOR_D and 2 NAVIS floats) in the South China Sea (SCS), the northwestern Pacific, Indian Oceans and the Southern Ocean via 5 cruises (Fig.1). These floats were deployed by 2 PIs from the Second Institute of Oceanography, SOA (CSIO) and Shanghai Ocean University (SHOU). It is worth noting that it is the first time for China to deploy BGC-float with ECO Triplet sensors (1 NAVIS BGCi) and deep Argo float. Since 2002, China Argo has deployed 403 floats, and approximately 104 floats are still operational.

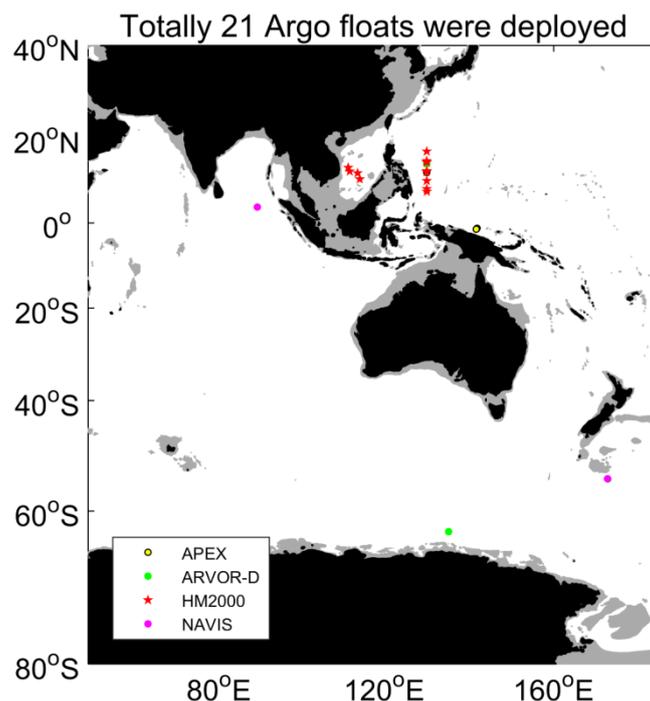


Fig.1 Launch positions of the floats from Mar. 2017 to Feb. 2018.

- technical problems encountered and solved

As the development of float and sensor technology, the performance of the battery used in profiling floats has become more and more important for the maintenance of the Argo array. It has been found that the HM2000 float has an average lifetime of ~ 1 yr based on the performance of the 10 floats deployed in 2016. We have recommended the manufacturer (HSOE) to change the

battery model even if the cost probably increases. For APEX float, we have decided each float to be installed EI lithium battery packs by ourselves.

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

From the last AST meeting, CSIO received data from 140 active floats (45 APEX, 68 PROVOR, 22 HM2000, 3 ARVOR and 2 NAVIS) and submitted 3743 TS and 7 BGC profiles to GDACs. Noted that the PI from Ocean University of China agreed to share data that from the 6 APEX floats (with oxygen sensors) with Argo community. These floats were deployed in the Southern Ocean in Nov. 2015, and observed about 309 profiles. All the profile data are converted into BUFR bulletin and send to the GTS via Chinese Meteorological Agency (Beijing). Unfortunately, there was a breakdown during May-October 2017, owing to a technical problem at CMA. The submission of BUFR bulletins was restored in the mid of last October. Now CSIO has been submitting meta, technical, trajectory and profile files in V3.1. A correction for the trajectory files is ongoing after the ADMT-18 meeting.

- status of delayed mode quality control process

There is a severe backlog for delayed QC. The situation is not changed from the last AST meeting owing to the lack of human resource. This year, a new staff will be employed to eliminate the backlog.

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

China Argo is still waiting for a chance to improve the situation. Some special programs and major infrastructure construction projects will include a batch of Argo floats deployment. But we do not know when the corresponding funds will be secured. The proposal about the maintenance of 400 Argo floats mentioned during the AST-18 meeting is still waiting for approval. If the proposal is granted this year, we hope more than 100 floats to be deployed in the second half of this year. However, the funds for 60 floats' purchasing and deployment will be secured in the mid of this year.

Currently there are 6 staffs working for float deployment, data processing and data applications, 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.

As of Feb. 2018 CSIO has 32 floats (including 12 BGC-floats) in storage. Two cruises have been confirmed to deploy about 10 APEX and 6 BGC-floats during April-July in the northwestern Pacific Ocean. To decode the BGC data from the different types of the BGC-float (including DOXY, FLBBGD and SUNA), CSIO is preparing decoding software.

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.

Argo data has become an important data source in basic research and operational application. CSIO maintains a monthly global Argo gridded dataset (BOA_Argo) and updates once a year at present. CSIO has collected all the data from GDAC and carried out a post quality control for each float. Statistically, the good temperature and salinity data are account for 81.7% and 80.7% of the totals (floats in the grey list are also eliminated).

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 T/S/O₂/CHLA/CDOM/BBP profiles, float trajectory, profile data, the derived products and status of global Argo are provided. Another is maintained by NMDIS (China Argo Data Centre, <http://www.argo.gov.cn>), however, as the CMOC/China was established in NMDIS in 2015, the Argo data and products are also delivered on CMOC/China website (<http://www.cmoc-china.cn>).

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

No.

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. Host the AST meeting

At the AST-18 meeting in Hobart, China Argo group expressed the desire to host the AST-20 meeting in Hangzhou, China. Of course, the final meeting place will be decided by the AST. We are still glad to host the following AST meeting.

8. Keeping the Argo bibliography

The following articles are not listed in Argo Bibliography:

Zhang, X., C. Sun, C. Liu, L. Zhang, C. Shao, X. Zhang, and Y. Zhao, 2017: Evaluation of the Impact of Argo Data on Ocean Reanalysis in the Pacific Region. *Advances in Meteorology*, <https://doi.org/10.1155/2017/7314106>.

Zhou, C., X. Ding, J. Zhang, J. Yang, Q. Ma, 2017: An objective algorithm for reconstructing the three-dimensional ocean temperature field based on Argo profiles and SST data. *Ocean Dyn.*, 67(2), doi 10.1007/s10236-017-1104-x.

Wang, G., L. Cheng, T. Boyer, and C. Li, 2017: Halosteric Sea Level Changes during the Argo Era. *Water*, 9, 484, doi:10.3390/w9070484.