

Argo Chinese National Report 2014

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1. The status of implementation

- floats deployed and their performance

From March 2014 to February 2015, China Argo deployed 29 Argo profiling floats in Northwestern Pacific ocean. Among these floats, 17 Iridium PROVOR floats with Aanderra 4330 Optode were purchased by Ocean University of China, and deployed by "DongFangHong-2" research vessel in March 2014. During this cruise, CSIO also deployed 8 APEX floats. The remaining 4 floats were deployed by CSIO through "KeXue-1" research vessel (Institute of Oceanology, Chinese Academy of Sciences) in November 2014.

In the efforts of Prof. Xu Jianping, 137 floats (108 PROVOR and 29 APEX floats) deployed by other institutions in China have been added into China Argo equivalent. All the data from these Argo equivalent floats have been submitted to GDAC since October 2014.

As of January 2015, China Argo (including China Argo equivalent) has deployed 336 floats, and 203 floats are still active now. From the last AST meeting, China deployed 73 floats including 44 Argo equivalent floats.

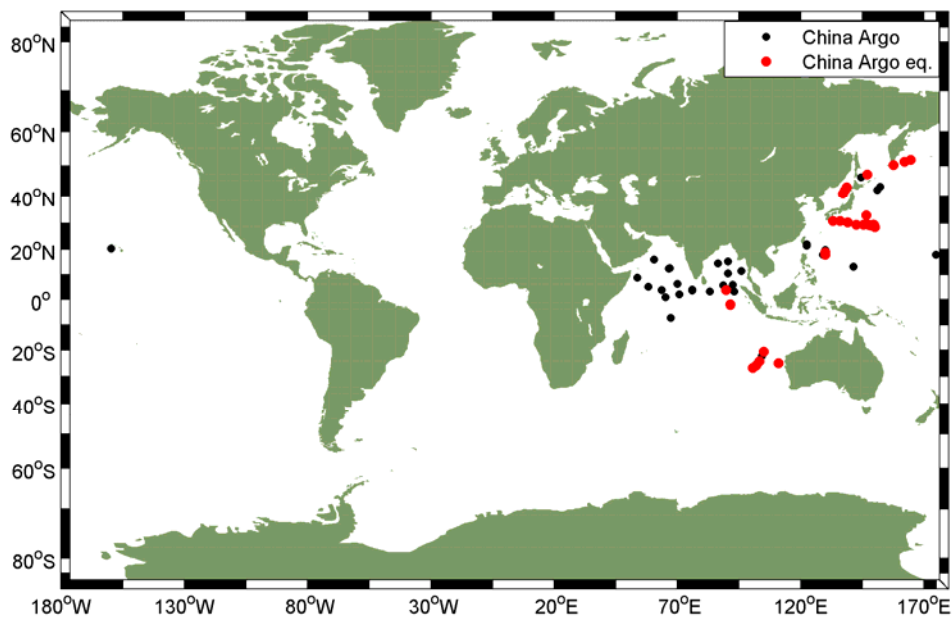


Fig.1 The launch positions of all floats from the last AST meeting

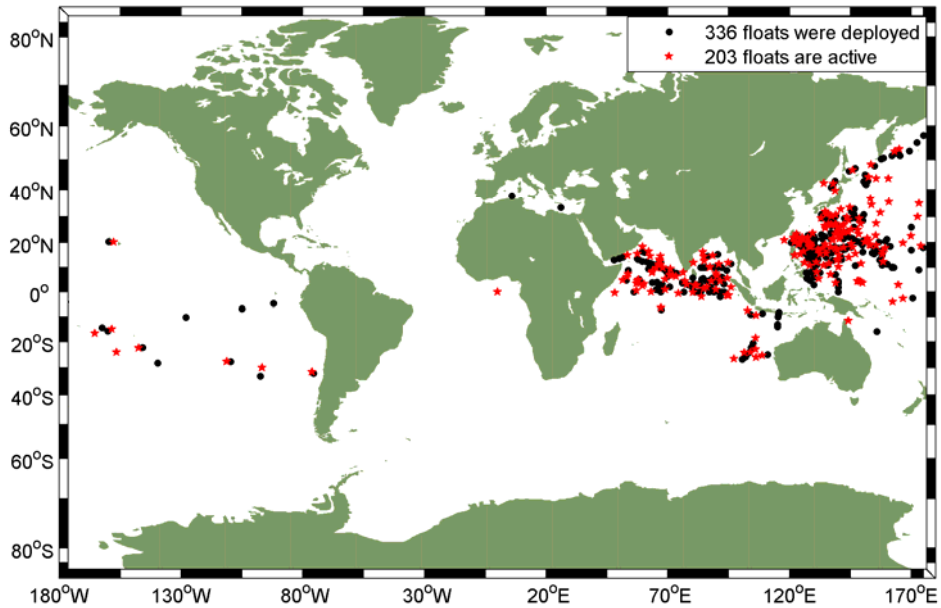


Fig.2 The launch positions of all floats (black dots) and latest positions of the active floats (red pentagons) as of January 2015.

During the cruise in November 2014, a HM2000 profiling float developed by Qingdao Hisun Ocean Equipment Corporation Limited was deployed. A comparison between HM2000, APEX float (Iridium), CTD cast and salinometer has been carried out. The cycle time of HM2000 float was set to 1 day. For better comparison, the cycle time of the Iridium APEX float was shortened to 2 days. The result shows that observations from the HM2000 are reliable. This type of float makes use of both Beidou and GPS system for data transmission and positioning, and also uses SBE41 or SBE41CP CTD sensor. It has a maximal profiling depth of 2000 meters, and the advantages of two-way communication, grounding protection, automatic data retransmission and maximal depth protection. The float is still active now, and has observed 39 profiles.

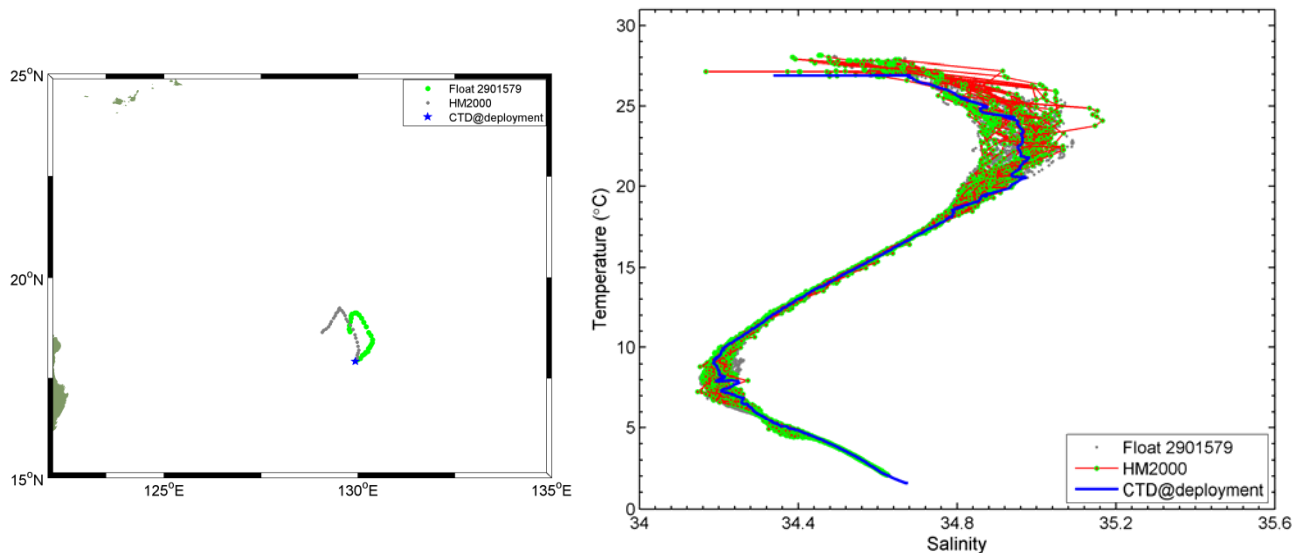


Fig.3 The profile positions and T-S of HM2000 float, CTD cast and float 2901579 (APEX)

- technical problems encountered and solved

The abnormal sea surface pressures such as 25 or -25 dbar were reported by the 8 APEX floats which were deployed in March 2014. We reported the problem to Teledyne Webb. They finally found that there was an error in regard to the data format of surface pressure in the user manual. After revising the decoder, we have solved the problem.

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

From March 2014 to January 2015, China Argo received data from 229 active floats and submitted 10341 TS and 4319 O2 profiles to GDAC. Coriolis still helps us process data from 8 ARVOR floats. In order to capture variations of mid-scale eddies, the cycle time of the 17 Iridium PROVOR-DO floats deployed by Ocean University of China have been set to one day from their first cycle, therefore those floats have observed quite a lot of O2 profiles. CLS still helps us to insert all Argo profiles into GTS. However, China Argo has reached an agreement with Chinese meteorological department on submitting Argo data into GTS via the Beijing interface before June 2015.

After the ADMT-15 meeting (November 2014), CSIO started to update data to version 3.1, including meta files, profile files and technical files. The update of the trajectory files has not yet been started.

- status of delayed mode quality control process

In the past year, CSIO didn't submit any D-files to GDAC because it took us a lot of time to

reprocess all the data from over 100 Argo equivalent floats, develop decoder for Iridium PROVOR-DO float and update data to version 3.1. We plan to restore DMQC from the early of 2015.

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 funded by Ministry of Science and Technology (MOST), State Oceanic Administration (SOA) and National Natural Science Foundation of China (NSFC). Because the funding is not operational, the number of float deployment is determined by the actual allocated funding.

Currently, there are 5 staffs working for float deployment and data processing at CSIO. The China Argo data centre at NMDIS is in charge of processing data from the floats deployed by East China Sea Branch, SOA, and data archives from Chinese floats.

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.

At present, CSIO has 5 floats in storage, and ordered 5 Iridium APEX floats in 2014. The number of floats to be purchased depends on the actual allocated funding this year. The number of Argo equivalent floats to be deployed is still unpredictable. However, we estimate that about 30 floats including 20 Argo equivalent floats will be deployed.

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 and its gridded products have been widely used in oceanic and atmospheric sciences, as well as in operational departments. Many articles that published on important journals utilized Argo data. For example, in the paper titled " Oceanic mass transport by mesoscale eddies" (Science, vol.345, 2014) , the author (Dr. Zhang Zhengguang from Ocean University of China) utilized altimetric height and Argo data to reveal quantitative relationships between three-dimensional structures of mesoscale eddies and their sea surface signals. Argo data has been used to a global ocean four-dimensional variational data assimilation system (NCC-GODAS) developed by National Climate Centre, as well as the Ocean Variational Analysis System (OVALS) developed by Institute of Atmospheric Physics, CAS, which provided more realistic ocean initial fields to the global air-sea coupling modeling for seasonal climate predicting, and played an

important role in improving the level of predicting.

There are two websites routinely maintained by China, one is maintained by NMDIS (www.argo.gov.cn) at Tianjin (China Argo data center), and another is maintained by CSIO (www.argo.org.cn) at Hangzhou (China Argo Real-time data center). The implement status of China Argo, real-time data display including T/S/O2 profiles, float trajectory, profile data, the derived products and status of global Argo are presented. Meanwhile, GDACs, related international organizations and member's Argo websites can be accessed through these two websites.

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

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.

In February 2015, CSIO submitted 12 CTD casts in the northwestern Pacific ocean to Coroilis.

7. Keeping the Argo bibliography

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