Chinese National Report

(submitted by Xu Jianping)

1. The status of implementation in 2010

1.1 Float deployed and their performance

In 2010 China deployed 23 floats in the Indian Ocean and the northwest Pacific Ocean, in which 15 PROVOR floats were deployed by the East China Sea Branch, State Oceanic Administration (SOA) and the rest 8 APEX floats by the Second Institute of Oceanography, SOA. Of these floats, 2 were iridium floats first used by China Argo, in which one is still active. The operator successfully changed its sampling cycle and continuous profiling depth. But the other one did not report data after deployment. Generally the deployment was delayed because of no suitable cruise in 2010.
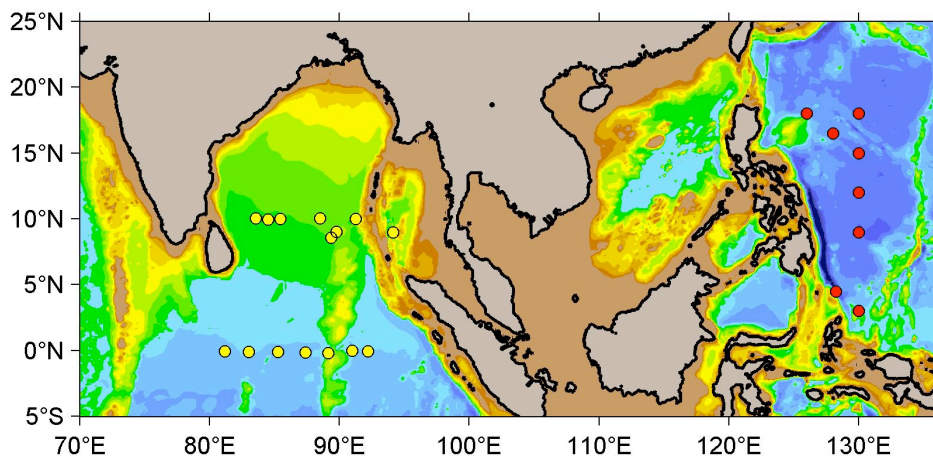

Fig.1   Launch positions of Chinese Argo floats in 2010.
Red dots are Apex floats, and yellow dots are PROVOR floats.

We installed lithium battery packs in 15 APEX floats in which two were deployed and are performing normally.

Since 2002, China has deployed totally 89 Argo floats, and 48 are still active as of Jan. 14, 2011, in which 2 are equipped with Aanderaa Optode.   Fig. 2 shows the survival rate of China Argo floats, from which you can see that about 50% floats could make 40 cycles.
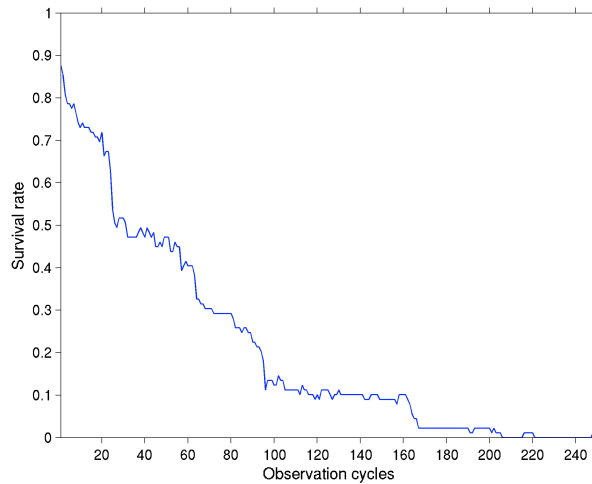
Fig.2   Survival rate estimated for all Chinese Argo floats as of 14 January, 2011.

1.2 Technical problems encountered and solved

The 10 APEX floats called back for Druck pressure sensor microleaks were sent back to Hangzhou in 2010. No technical problems were met so far.

1.3 Argo data management

In 2010, China Argo Real-Time Data Center received 1069 temperature and salinity profiles and a few oxygen profiles, which were submitted to GDAC, France within 24 hours after real-time QC, and further to the GTS by CLS.   At the end of the last year, we deployed 2 iridium floats and successfully acquired and processed data from one of the floats.   Assistance of Mr. Dana Swift from UW and Mr. Bill Woodward from CLS America is greatly appreciated.   Data acquisition and processing of 15 PROVOR floats deployed by the East China Sea Branch, SOA is done by Coriolis data center.

So far pressure correction has not been carried out at China Real-Time Data Center, and we plan to begin this work before May this year.

1.4 Status of delayed mode quality control process

China Argo Real-Time Data Center has submitted 3305 D-files to GDAC, which make up 72% of the total.   OW method and thermal mass correction were used for salinity adjustment.

2. Present level of and future prospects for national funding for Argo

China Argo is financially supported by the Ministry of Science and Technology and the State Oceanic Administration.   The deployment of 50 floats each year will be funded for the next two years.   At present there are 59 floats in storage (including 35 from the East China Sea Branch). Besides, 20 APEX floats and 10 ARVOR floats were ordered at the end of 2010, which makes the

storage up to 90 totally. Just like before, the funding of Argo deployments is from scientific research projects.

3. Summary of deployment plans

Because of something out of our own control, a special cruise for Argo deployments has to be cancelled in 2010. We plan to make a deployment cruise before May this year in the northwestern Pacific Ocean, but there are still something uncertain such as ship availability and fund. We also plan to get onboard the Navy convoy ship to deploy 10 Argo floats in Gulf of Aden.

4. Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centers.

Argo data have been widely used in the study of ocean circulation, water mass, heat content and tropical cyclone, and some marine and atmospheric operational centers have used Argo data in their data assimilation system. For example, the National Marine Data and Information Service has used Argo data in its assimilation system and developed reanalysis products of temperature, salinity and current for the coastal seas of China and their adjacent waters, which is named as CORA; the reanalysis data sets of the Indian and western Pacific Oceans developed by the Institute of Atmospheric Physics, Chinese Academy of Sciences also use Argo data; and Argo data is widely used in the operational forecasting system of the tropical Pacific Ocean at the National Marine Environmental Forecasting Center.

China Real-Time Data Center is still collecting global Argo data every month, which are shared through FTP and network database (http://ww.argo.org.cn) after visual QC. This is well received by many domestic users in China.

5. Collection of CTD data

China Argo Real-Time data Center continues to make CTD observation at the site where each Argo float is deployed. 8 CTD casts were made in 2010. Since the data were obtained in Jan. 2011, they have not been submitted to CCHDO.

6. List of publications in which Chinese scientists are involved

(1)Xu Jianping. A Collection of Papers on the Observation and Application of Argo profiling floats in the West Pacific Ocean (in Chinese). 2010, Ocean press, Beijing, pp344.
(2) Liu Z. H., Zhang T., Zhu B. K. A method to extend the lifetime of APEX Argo profiler (in Chinese). 2010, Ocean Technology, 29(3):115-118.
(3) Zhang S. M., Wu Y. M., Yang S. L. Analysis of Spatial Distribution and Change about Argo Floats Observation Numbers (in Chinese). 2010, Ocean Technology, 29(3):108-114.
(4) Zhou H., Yuan D.L., Li R.X., et. al.. The Western South China Sea Currents from Measurements by Argo Profiling Floats during October to December 2007. 2010, Chinese Journal

of Oceanology and Limnology,28(2):398-406.

(5)Yin X.Q., Qiao F. L., Yang Y.Z., et. al.. An Ensemble adjustment Kalman Filter Study for Argo Data. 2010, Chinese Journal of Oceanology and Limnology,28(3):626-635.

(6) Jin G.D., Tao Z., Liu X.M., et. Al., Analysis of temperature and salinity of sea based on Argo data(in Chinese). 2010, Marine Environmental Science, 29(3):415-419.

(7)Chi J.J., Sun C.N., Luo Y.J., The research on satellite remote sensing SSH data in describing the vertical distributing in the underwater(in Chinese). 2010, Marine Forecast, 27(1):59-61.

(8)Yin X.Q., Qiao F.L., Xia C.S., et. al. , The Compare of the Temperature in Gulf of Aden between model forecast and Argo Profiling Data(in Chinese). 2010, Advance in Marine Science, 28(4):42-48.

(9)Yang Y.J., Fu Y. F., Sun L. et. al., Responses of the upper ocean to Typhoon Tingting observed from multiplatform satellites and Argo float(in Chinese),2010, Journal of university of science and technology of china , 40(1):1-7

(10) Yang S.L., Zhou G. F., Zhou W.F., et. al.. The relationship between skipjack Katsuwonus pelamis catch and water temperature and surface salinity in the west—central Pacific Ocean based on Argo data(in Chinese),Journal of Dalian Fisheries University,25(1):34-40.

(11)Xu X.H., Liao G.H., Xu D.F.. Analysis of the Anticyclone eddy in the Northwest Pacific with Argos Drifters Data.(in Chinese).2010,Journal of Marine Science,28(4):1-13.

(12)Wu X.F., Xu J.P., A summary of upper ocean heat content in the tropical western Pacific and its distribution features, variations and observations(in Chinese),2010, Journal of Marine Science, 28(1):46-54.