

Korean National Report on Argo-2008

Deployment in 2008 and Future Prospect

National Institute of Meteorological Research of Korea Meteorological Administration (METRI/KMA) and Korea Ocean Research and Development Institute (KORDI) are involved in the International Argo Program since 2001. In 2008, METRI/KMA deployed 10 floats in the Northwest Pacific Ocean and 5 floats in the East/Japan Sea, and KORDI deployed 3 floats in the Drake passage, Antarctic Ocean and 11 floats in East/Japan Sea. Since 2001, Korea Argo has kept its steady course, deploying 214 floats until 2008. At present, 110 floats are active.

In 2009 total of 18 floats are planned for the deployment; 11 floats in the Pacific Ocean and 7 floats in the East/Japan Sea. In addition, METRI/KMA has a plan to deploy 12 floats in 2010. It is expected that METRI is able to secure funding to maintain the current level of float launch for the next several years. KORDI's fund is seriously reduced, it is hard to expect adding new floats and there is a high risk in data service beyond 2009.

Status of Argo data management

METRI's RTQC Argo data with TESAC and NetCDF format are transmitted into GTS network and GDAC respectively. In addition, METRI/KMA has done the preparation for transmission of BUFR formatted Argo data, and the transmission will be started in coming spring. Submission of KORDI's RTQC Argo data to GDAC is not smoothly working. Re-processed data for total period with NetCDF format were relayed to GDAC and we are waiting for automatic uploading.

Korea Oceanographic Data Center (KODC) is in charge of delayed mode QC (DMQC) and has worked on the DMQC for Korean Argo data in the North Pacific, the East/Japan Sea and the Antarctic Ocean. As of December 2007, KODC sent 2040 delayed mode profiles, 53.8% of total 4393 profiles in the North Pacific and 1578 delayed mode profiles, 52.4% of total 3352 profiles in the East/Japan Sea, to the GDACs. KODC also made a reference

database for the East/Japan Sea, which was named as EJS HB (East/Japan Sea Hydrobase), and added 278 CTD profile data to EJS HB in 2008. Delayed mode file in the East/Japan Sea is going to be submitted to GDACs. In relation to DMQC in the Antarctic Ocean, KODC asked ADMT group for assistance.

Research and operational uses of Argo data

METRI has a long-term plan to develop the operational ocean forecasting system for the East Asian Sea as well as the Global Ocean. For the purpose, METRI has been developing the data assimilation for their model system. This year, ARGO data will be assimilated to the Regional Ocean Model (ROMS) adopting Ensemble Kalman Filter. In addition, 3-D VAR method will be tested for the Global Ocean Model (MOM4). Also, KORDI uses Argo data for scientific research and a data assimilating-model to understand circulation in East/Japan Sea. In addition, researches on the variability of heat content in the mixed layer, data assimilation and other application for ocean modeling are actively carried out by several universities in Korea.

Real time ARGO observations are being used in KOPS model for the East Sea region. Following figure (Fig.1) shows the current location of the each ARGO float deployed in the East Sea (only live floats are shown in the figure). Profiles are being updated every 2 days and used for data assimilation purpose. For any given day of model run, observations available in recent 10 days prior to the model date are used.

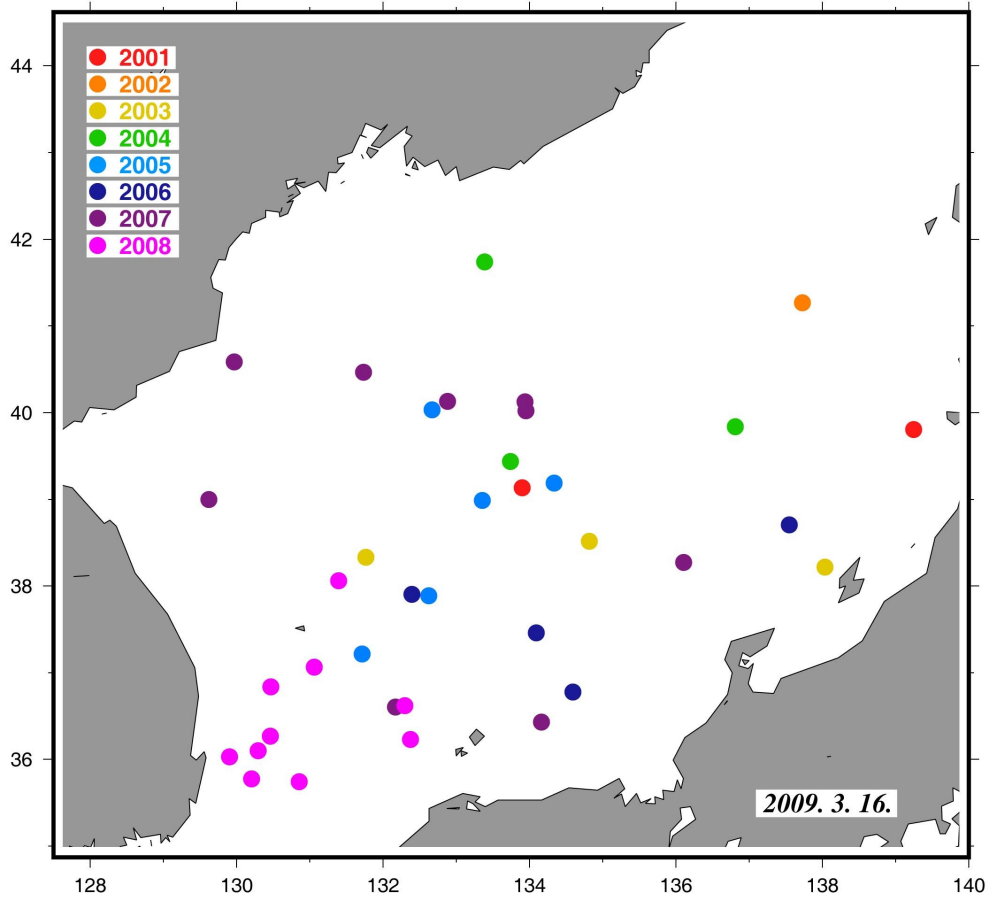


Fig.1: Current locations of ARGO floats in the East Sea

Some observations have errors and some have missing values for some depths in between, these observations are removed from the data assimilation by using quality control checks.

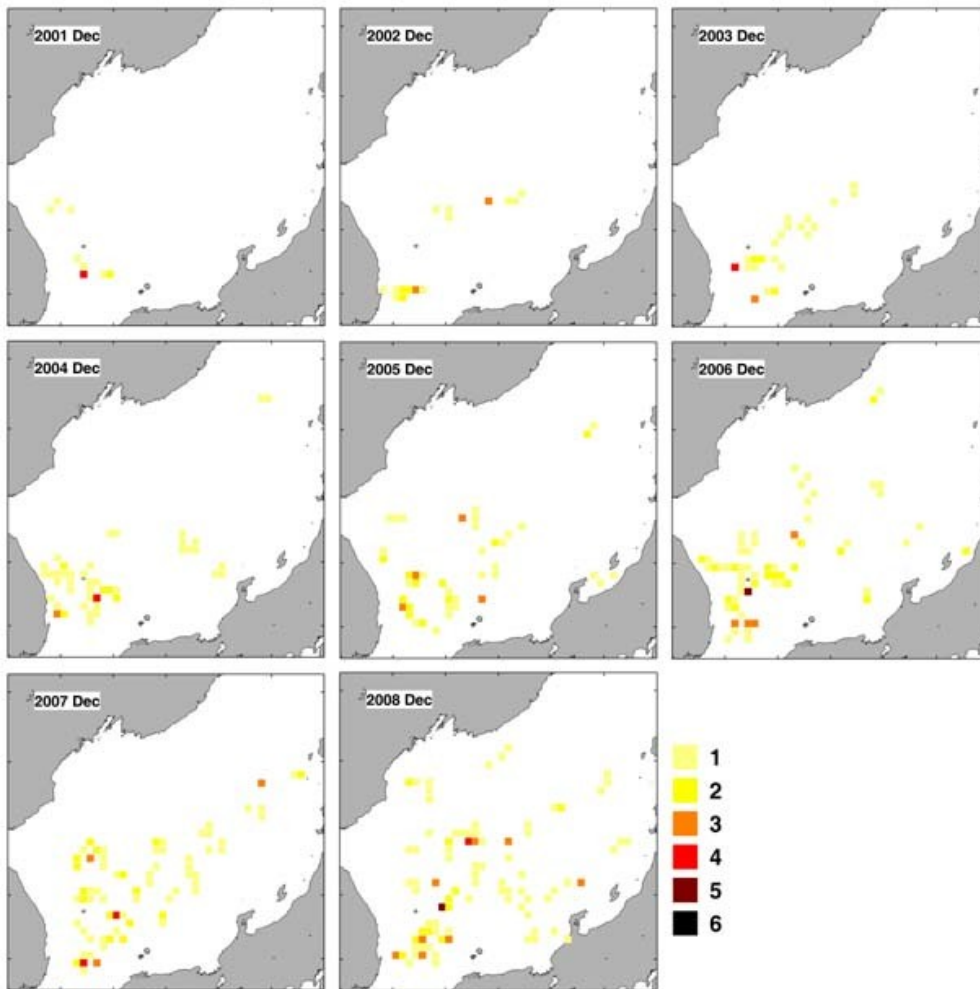


Fig. 2: No. of observations per grid (0.25 X 0.25) in the East Sea are shown for each December from 2001 to 2008.

The distribution of ARGO observations were very sparse during 2001 (since this is the beginning of the program) and increased year by year. The available observations are shown per each 0.25 X 0.25 Deg. grids are shown in the above figure (Fig. 2). The ARGO observations are relatively dense in the southwestern part of the East and very few observations are available in the northern part of the East Sea.