Argo National Data Management Report of Japan, 2012

1. Status

The Japan DAC, the Japan Meteorological Agency (JMA), has processed data from 1144 Argo and Argo-equivalent floats including 271 active floats as of October 15, 2012. There are ten Japanese PIs who agreed to provide data to the international Argo data management. The DAC is acquiring ARGOS messages from CLS and getting IRIDIUM messages via e-mail in real-time, thanks to the understanding and the cooperation of PIs. Almost all profiles from those floats are transmitted to GDACs in netCDF format and issued to GTS using TESAC and BUFR code after real-time QC on an operational basis. The Okinawa Institute of Science and Technology deployed a NOVA float in March 2012. The profiles will be transmitted to GDACs and GTS, when the WMO instrument code of NOVA is decided.

The Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has done the Delayed Mode QC for all Japanese floats. JAMSTEC acquired the ARGOS messages for 12,498 profiles via CLS and the Iridium messages via e-mail and dial-up access for delayed QC from October 26th, 2011 to October 13th, 2012. JAMSTEC sent 8,281 delayed profile files (D-files) to GDACs through the Japan DAC, JMA, during the period. Submission of delayed profile files were slowed down during the last year because we have been upgrading our analysis system since the last fall. Since the new analysis system will be completed by the next spring, we are trying to get the submission rate normal.

Web pages:

Japan Argo

http://www.jamstec.go.jp/J-ARGO/index_e.html

This site is the portal of Japan Argo program. The outline of Japanese approach on the Argo program, the list of the publication, and the link to the database site and PIs, etc. are being offered.

Real-time Database (JMA)

http://argo.kishou.go.jp/index.html

This site shows global float coverage, global profiles based on GTS TESAC and BUFR messages, and status of the Japanese floats. JMA started providing the monthly mean sub-surface temperature distributions in the Pacific Ocean from 2001 to the latest, which are objectively analyzed using in-situ temperature data including those from Argo floats.

Delayed mode Database (Argo JAMSTEC)

http://www.jamstec.go.jp/ARGO/argo_web/argo/index_e.html

JAMSTEC's website shows mainly Japanese float list, trajectory map, profile chart, and QCed float data. Moreover, the position and trajectory maps of all floats of the world as well as Japanese floats by using Google Map. Brief profile figures of the selected floats are also shown. This site also shows global maps based on objective analysis (temperature, salinity, potential density, dynamic height, geostrophic current, mixed layer depth, etc.).

Statistics of Argo data usage:

Operational models of JMA

MOVE/MRI.COM-G (Multivariate Ocean Variation Estimation System/ Meteorological Research Institute Community Ocean Model - Global)

JMA has been operating the MOVE/MRI.COM-G for the monitoring of El Niño and the Southern Oscillation (ENSO) and for initialization of the seasonal prediction model (JMA/MRI-CGCM). The MOVE/MRI.COM-G consists of an ocean general circulation model (OGCM) and an objective analysis scheme.
Visit
http://ds.data.jma.go.jp/tcc/tcc/products/elnino/move_mricom_doc.html
for more information.

JMA/MRI-CGCM (Coupled ocean-atmosphere General Circulation Model of JMA)

JMA has been operating JMA/MRI-CGCM as a seasonal prediction model and an ENSO prediction model. The oceanic part of this model is identical to the OGCM used for the MOVE/MRI.COM-G.
Visit
http://ds.data.jma.go.jp/tcc/tcc/products/elnino/jmamri_cgcm_doc.html
for more information.

MOVE/MRI.COM-WNP (Multivariate Ocean Variation Estimation System/ Meteorological Research Institute Community Ocean Model - Western North Pacific)

MOVE/MRI.COM-WNP provides daily and monthly products of subsurface temperatures and currents for the seas around Japan and northwestern Pacific Ocean.

Other operational models

JCOPE2 (Japan Coastal Ocean Predictability Experiment)

JCOPE2 is the model for prediction of the oceanic variation around Japan which is operated by Research Institute for Global Change of JAMSTEC. JCOPE2 is the second version of JCOPE, developed with enhanced model and data assimilation schemes. The Argo data is used by way of GTSPP. The hindcast data 6 months back and the forecast data 3 months ahead are disclosed on the following web site: http://www.jamstec.go.jp/frcgc/jcope/. More information are shown in
http://www.jamstec.go.jp/frcgc/jcope/htdocs/jcope_system_description.html.

FRA-JCOPE2

FRA-JCOPE2 is the reanalysis data created by assimilating most available observation data into the JCOPE2 ocean forecast system. The horizontal high resolution is 1/12 deg. in order to describe the oceanic variability associated with the Kuroshio-Kuroshio Extension, the Oyashio, and the

mesoscale eddies from January 1993 to December 2009. Collaboration with Japanese Fishery Research Agency (FRA) has allowed us to assimilated huge amount of in-situ data around Japan. FRA-JCOPE2 reanalysis data are available. The website, http://www.jamstec.go.jp/frcgc/jcope/vwp/, provides information about downloading and interactively visualizing the reanalysis data for users.

FRA-ROMS

FRA-ROMS is the nowcast and forecast system for the Western North Pacific Ocean developed by Fisheries Research Agency (FRA) based on the Regional Ocean Modeling System (ROMS). FRA started the operation in May 2012. The forecast oceanographic fields are provided every week on the website http://fm.dc.affrc.go.jp/fra-roms/index.html/.

Products generated from Argo data:

Products of JMA

El Niño Monitoring and Outlook

JMA issues the current diagnosis and the outlook for six months of ENSO on the following web site. The outputs of the MOVE/MRI.COM-G and the JMA/MRI-CGCM can be found here.
http://ds.data.jma.go.jp/tcc/tcc/products/elnino/index.html

Subsurface Temperatures and Surface Currents in the seas around Japan

The following parameter outputs of the MOVE/MRI.COM-WNP can be found on http://goos.kishou.go.jp/rrtdb/jma-pro.html.

- Daily and Monthly mean subsurface temperatures at the depths of 50m, 100m, 200m and 400m analyzed for 0.1 x 0.1 degree grid points.
- Daily Surface Currents for 0.1 x 0.1 degree grid points.

Products of JAMSTEC

MOAA (Monthly Objective Analysis using the Argo data)

MOAA is the global GPV data set which was made by monthly OI objective analysis using Argo and the other available CTD and morring data. Various maps have been made using MOAA, and opened to the public on the Argo JAMSTEC web site,
http://www.jamstec.go.jp/ARGO/argo_web/MapQ/Mapdataset_e.html.
We will release the new data set, which is operated a 10-day global ocean analysis by optimal interpolation based on Argo, TRITON and available CTD data in the near future.

Objectively mapped velocity data at 1000 dbar derived from trajectories of Argo floats

The gridded velocity data at 1000 dbar is made by optimal interpolation analysis using YoMaHa’07. This dataset has been disclosed since October

2009. This dataset are updated every 6 months. This data is opened to the public on the Argo JAMSTEC web site, http://www.jamstec.go.jp/ARGO/argo_web/G-YoMaHa/index_e.html.

Mixed layer data set from Argo floats in the global ocean

JAMSTEC has produced a data set of gridded mixed layer depth with its related parameters, named MILA GPV. This consists of 10-day and monthly average data and monthly climatology data in the global ocean using Argo temperature and salinity profiles. This data set is opened to the public on the Argo JAMSTEC web site, http://www.jamstec.go.jp/ARGO/argo_web/MILAGPV/index_e.html.

2. Delayed Mode QC

Based on the mutual agreement by PIs in Japan in 2006, JAMSTEC has done the DMQC for all Japanese floats.
JAMSTEC has submitted the delayed mode files of 84,004 profiles to GDACs as of October 17th, 2012.
The procedure of DMQC in JAMSTEC is as follows.

(JAMSTEC floats and the most of Argo-equivalent floats)

1. (within 10 days) data re-acquisition from CLS, bit-error repair (if possible), real-time processing, position QC, visual QC
2. (within 180 days) surface pressure offset correction, cell TM correction (Apex only)
3. (after 180 days) WJO and OW salinity correction, the definitive judgement by experts, D-netCDF file making

(Argo-equivalent floats that had ceased by 2007)

JMA executes real-time processing again by using the latest procedure. The procedure after real-time processing is executed by JAMSTEC according to the same way as the foregoing.

The OW software is mainly operated instead of WJO. The calculation result of WJO has been used at the definitive judgment. In order to decide the best parameter value, JAMSTEC will continue to use both OW and WJO.

3. GDAC Functions

The JAMSTEC ftp server has been providing the mirror site of GDACs since 2003.
ftp://ftp2.jamstec.go.jp/pub/argo/ifremer/
ftp://ftp2.jmastec.go.jp/pub/argo/fnmoc/

4. Regional Centre Functions

JAMSTEC operates PARC in cooperation with IPRC and CSIRO and has extended

the responsible region into the whole Pacific including the Southern Ocean by request of AST-9 (Action item 9) since April 2008.
JAMSTEC is providing the float monitoring information in the Pacific region (e.g., float activity watch, QC status, anomaly from objective analysis, diagnosis plot for sensor correction, etc.), reference data set for DMQC (SeHyD and IOHB), the link to the CTD data disclosure site of Japanese PIs, some documents, and some QC tools on the following web pages (http://www.jamstec.go.jp/ARGORC/). JAMSTEC will plan to upgrade of the site which provides the float monitoring information.