

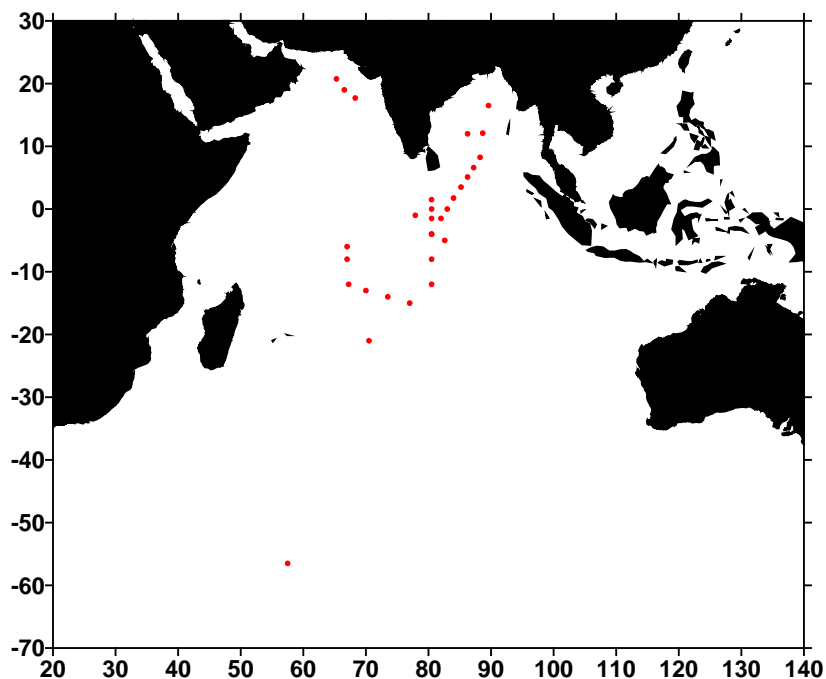
## Argo Steering Team Meeting (AST-14)

National Report – India  
(Submitted by M Ravichandran)

### 1. The status of implementation

#### 1.1a Floats deployment

During the year 2012–13, 30 floats were deployed in the Indian Ocean taking the total to 284. The new deployment includes 8 Bio-Argo floats with additional sensors like Doxy, FLBB, Chl-a. The deployment locations are given below.



#### 1.1b performance Analysis of Floats deployed

Out of the 284 floats deployed, 114 floats are active. Out of these 114 active floats, 87 floats are less than 3 years old.

#### 1.2 Technical problems encountered and solved

None

#### 1.3 Status of contributions to Argo data management

- **Thirteenth Argo data management team meeting and Bio-Argo workshop was hosted by INCOIS, Hyderabad during 12-16, November 2012.**
- **Data acquired from floats**  
All the active floats data are processed and sent to GDAC.

- **Data issued to GTS**  
From June 2011, India started uploading TESAC format messages to GTS via New Delhi RTH. There is slight issue with respect to the GTS messages not appearing in METEO France and once this is resolved, INCOIS would soon start transmitting the BUFR messages onto GTS.
- **Data issued to GDACs after real-time QC**  
All the active floats (114) data are subject to real time quality control and are being sent to GDAC.
- **Web pages**  
INCOIS is maintaining Web-GIS based site for Indian Argo Program. It contains entire Indian Ocean floats data along with trajectories. Further details can be obtained by following the link:  
[http://www.incois.gov.in/incois/argo/argo\\_home.jsp](http://www.incois.gov.in/incois/argo/argo_home.jsp).
- **Statistics of Argo data usage**  
Argo data is widely put to use by various Organisations/Universities/Departments. INCOIS Argo web page statistics (for the past one year) are as shown below

| Page               | Views    | Visitor |
|--------------------|----------|---------|
| Argo Web-Gis       | 871      | 679     |
| Data downloads     | 1029     | 1101    |
| Live Access Server | 2,13,727 | 99,137  |
| Argo products      | 1301     | 722     |

In addition to this, the Argo data is provided in the form of a DVD for users with low bandwidth, particularly, university students. Web-GIS features on the INCOIS web site are all incorporated into this DVD. This DVD serves all the Argo data and data products pertaining to the Indian Ocean. As many as 200 copies are supplied to the users.



- User interactions meeting were conducted to bring about awareness about the Argo data among the researchers and students from various organizations and universities in India.
- INCOIS is also conducting University outreach program where in scientist visit various universities to bring about the awareness about the data with

INCOIS. Students are encouraged to use Argo data for their MS thesis dissertations, thereby giving wide publicity to the Argo program. Many publications and dissertations are coming out using Argo data.

#### **1.4 Status of Delayed Mode Quality Control process**

DMQC is done on all eligible floats on a routine basis.

- Around 187 floats were passed through the DMQC s/w and the following problems were tackled
  - Pressure Sensor offsets.
  - Salinity drift.
  - Salinity Hooks.
  - TBTO problems.
  - TNPD problems. etc
- Around 66 % of FLOATS are DMQCied for INCOIS DAC.
  - Lack of CTD profiles in some of the region in North Indian Ocean (coastal areas and in EEZ) is still a critical problem when decision is to be taken for the complicated cases.

#### **1.5 Trajectory files status:**

A total of 276 trajectory netcdf files were processed and uploaded to the GDAC. The process of generation of trajectory netcdf files undergoes quality checks like position, time, cycle number, etc., and corresponding quality status is assigned to each parameter.

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

Indian Argo Project is a 5 year Program from April 2012 to March 2017 fully funded by Ministry of Earth Sciences, (MoES), Govt. of India. Funding is secured for deployment of 200 Argo floats (40 floats per year including 10 Bio-argo floats), Data management activities, Data analysis, etc.

3 Permanent and 2 temporary scientific/technical personnel are working under Indian Argo project, which include personal for deployment of Argo floats, Data system, Analysis of Data, etc.

### **3. Summary of deployment plans (level of commitment, areas of float deployment) and other commitments to Argo (data management) for the upcoming year and beyond where possible.**

India is committed to deploy floats in the Indian Ocean wherever gap exists. India has committed 40 floats per year for the next five year (10 floats in the Southern Ocean, 10 floats in the Bay of Bengal, 10 floats in the equatorial Indian Ocean and remaining 10 in the Arabian Sea). After ascertaining the gap region and cruise plan of MoES research vessels, these floats will be deployed. The existing data management resources will continue for the next 5 year term.

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

**Operational:** All Argo data are being routinely assimilated in Ocean Model for providing Global ocean analysis. This analysis is being used by MET department for initialization of coupled ocean-atmosphere forecast of Monsoon. From the year 2011, India could provide seasonal forecast of monsoon using dynamical model wherein Ocean analysis (with assimilation of Argo) is an important contribution. The analysis products are being made available at INCOIS live access server (las.incois.gov.in)

**Research:** Argo data are being widely used for many applications to understand the Indian Ocean dynamics, cyclone and monsoon system in relation to heat content, thermocline component of sea level and validation of OGCM.

INCOIS is hosting Indian Ocean ARC, wherein all floats data from the Indian Ocean region are archived and distributed apart from many products

**5. Issues that your country wishes to be considered and resolved by the Argo Steering Team regarding the international operation of Argo. These might include tasks performed by the AIC, the coordination of activities at an international level and the performance of the Argo data system. If you have specific comments, please include them in your national report.**

None

**6. As part of an action item from AST-9 aimed to improve 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. These cruises could be used for Argo calibration purposes only or could be cruises that are open to the public as well.**

None

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