

## Argo National Data Management Report Argo Australia

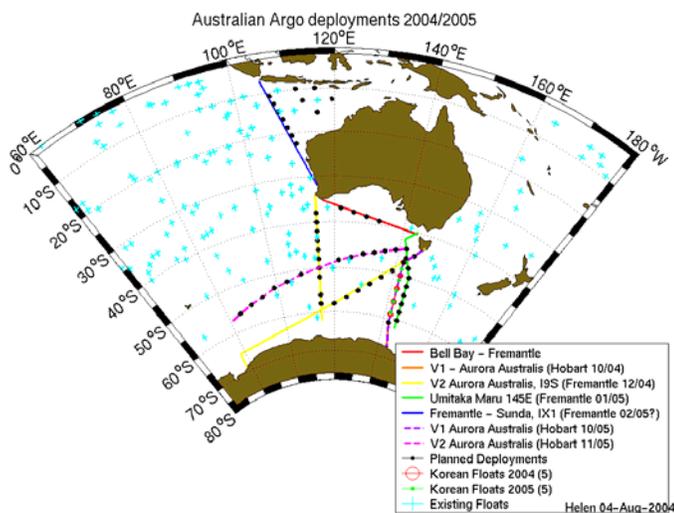
A cooperative project between CSIRO Marine Research (CMR)  
and the Australian Bureau of Meteorology

The past year has been productive. Though the time-frame was tight, we were ready to deliver V2 Argo format netcdf files before the 31<sup>st</sup> December and had minimal format changes required after testing. Delivery is now automated and, subject to the vagaries of ftp, works well.

The Australian Bureau of Meteorology now processes all real time reports from Argo floats in our program. They then have a direct pipeline onto the GTS; float data generally arrives on the GTS well within 12 hours of collection. They are in the process of taking over the netCDF file generation and delivery as well and will shortly become the primary portal for Australian Argo data. More details can be found below.

We have hired a half-time scientist, Rick Smith, to begin delayed mode QC. We are still testing the available tools on the floats in our region.

In the past year, we deployed 2 floats in the Great Australian Bight. This small number was due to the general recall of the float sensors, limiting the number of unaffected floats we had on hand. Within the next year, we plan to start making up for this lean year by deploying 41 floats as detailed on the map below. In addition, we are deploying 5 Korean floats, bringing the total number to 46 floats. Later next year, we are already planning to deploy a further 20 floats (including another 5 Korean floats), two of which will carry O<sub>2</sub> sensors.



## 1. Status

- Argo float data is currently acquired from all active floats through automated ftp to Service Argos. It is then subjected to real-time calibration and QC, and then sent to the GTS. This is being done at the Bureau by JAFOOS – the Joint Australian Facility for Ocean Observing Systems.
- CMR runs a parallel process as a backup and generates the V2 netCDF files which are then submitted daily to the two GDACs.
- Real-time mode data is immediately available for delayed mode QC, both directly from the CMR processing site and through a mirror of the GODAE GDAC site which is updated weekly. Daily files (which are updated hourly by GODAE) are downloaded twice a day as well, giving real-time access to all available profiles.
- Operational Delayed mode QC has not yet begun. We believe we need to adapt the WJO routines to our areas of interest and are assembling the appropriate climatologies. We anticipate that delayed mode QC will begin mid-November 2004 and delayed mode netCDF files from profiles that require correction will be submitted to the GDACs within 5 months. However our float salinities are corrected for drift in realtime, and thus the current GDAC copies have reasonably accurate salinities. Thermal lag spikes and a better drift correction remain to be applied in delayed-mode fashion.
- Web pages are automatically updated when each float reports. The latest plots of temperature, salinity and positions are available at:  
<http://www.per.marine.csiro.au/argo/index.html>
- Argo data will be an important in situ data source in our new Blue Link project to predict ocean circulation in real-time. More details of this project can be found at  
<http://www.marine.csiro.au/bluelink/index.htm>

Helen Phillips is using Argo data in regional analyses of the oceanic freshwater budget.

Widodo Prabawano and Helen Phillips have begun a study exploring the links between mixed-layer and thermocline variability and ocean primary productivity off Java and the Sunda Arc.

- Argo data are now a primary in situ data feed for the routine subsurface ocean data analyses performed by Neville Smith's group at the Australian Bureau of Meteorology's Research Centre:  
<http://www.bom.gov.au/bmrc/ocean/results/climocan.htm#subsurface>

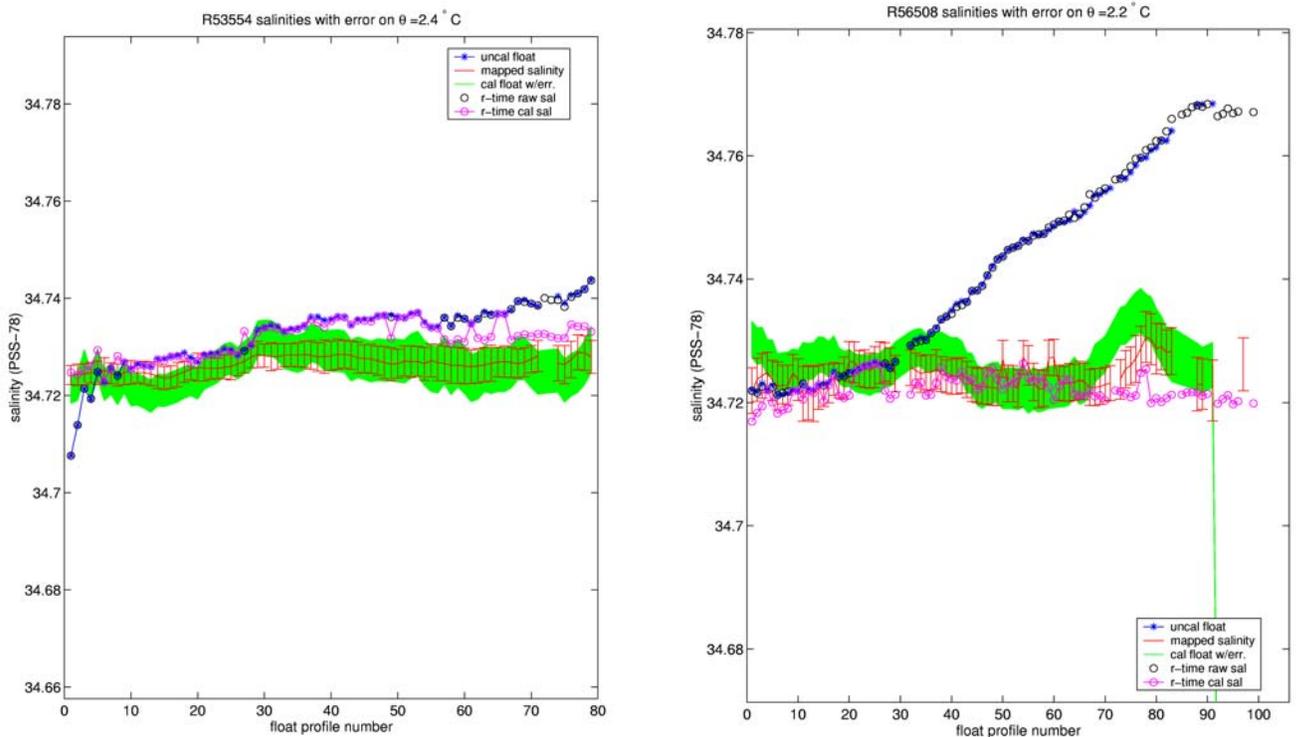
## 2. Delayed Mode QC

We are still testing our procedures to enable the calibration of floats. The main hurdles are the complexity of each individual case and the uncertainty about the quality of the climatology for parts of the Southern Ocean which maybe exerting an unrealistic correction to some floats. There is no one size fits all solution or general procedure. However, we have recently made good progress by liaising

and talking through a lot of these issues with BODC. This collaboration has generated some interesting ideas.

In the short term we will be able to submit Delayed Mode QC for five floats in mid-November 2004 that require little or no calibration. We expect to be operational within 5 months for the floats that require more complex attention.

Of the 10 older floats deployed in 1999 as part of our Argo pilot, we have found that the SeaBird conductivities have generally drifted salty, either linearly with time, or some quadratic-like behaviour (see figures below). To date we have not yet gained a physical understanding of this drift to saltier values. We are interested in whether other long-lived SeaBird sensors show the same tendency.



**Figure 1:** Salinity on a deep isotherm for two pilot Argo float SeaBird sensors. The unadjusted WJO formalism with the NODC data base was applied to give the green range, and the realtime adjusted salinities are shown in pink (adjusted to WOCE 1995 and DOTSS 2000 high precision CTD cruises).

#### 4. Regional Centre Functions

We have now received funding for a further full time scientist to concentrate on Argo activities starting June 2005. With these resources, CMR now anticipates becoming an RDAC for the Australian region within the next year. While flexible, envisioned boundaries for the region of responsibility are roughly 100 to 180E and 70S to the equator. We are also participating in the Southern Ocean RDAC in

which the UK is taking the lead. In the Tasman Sea area, we will overlap with the activities of the Pacific RDAC which is a cooperative effort between JMA and IPRC. This will also allow comparisons of results in areas of overlap and validation of our respective methods.

We are coordinating closely with IPRC, JMA and BODC and hope that this collaborative approach will benefit all parties, resulting in better and faster development of our RDAC capabilities.

