IN-SITU Delayed Mode at Coriolis Data Center: 1990-2007 Reference dataset

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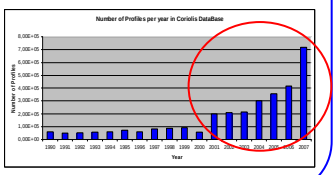
Since 2005, the operational analysis system set up by the Coriolis Data Center produces mainly temperature and salinity vertical profiles but also gridded fields in real time. This system contributed in 2007, to release a new product for operational oceanography **to perform re-analysis** for 2002-2006 **on a delayed mode basis**. One year later, these re-analysis have been **enlarged to the period 1990-2007**. Its main goal is to **improve the database content** and **strengthen the quality control to fit modelers needs.**

DataBase Content

- In-Situ Data:
  - ARGO profilers
  - XBT, CTD
  - Drifting Buoys
  - Moorings
- Updated CTD Levitus reference data set (WOD 2005)

⇨ **Providing quality controlled data:**
- Temperature and salinity profiles
- Trajectories

Since 2001 Coriolis is operating one of the Two Global Data Centers for Argo which contributes to the increase of its database content. ⇦



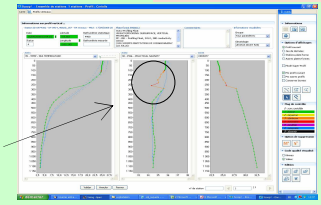
Quality Control Process

The Coriolis Data Center processes Temperature and Salinity profiles in both real-time and delayed mode using a three-steps method.
It operates:

Automatic tests: identification, location, range, speed, spike detection, gradient, density inversion

Statistical tests: comparison to climatology, and with neighbours.

Visual control: flags are manually assigned to doubtful profiles detected by the two previous tests.

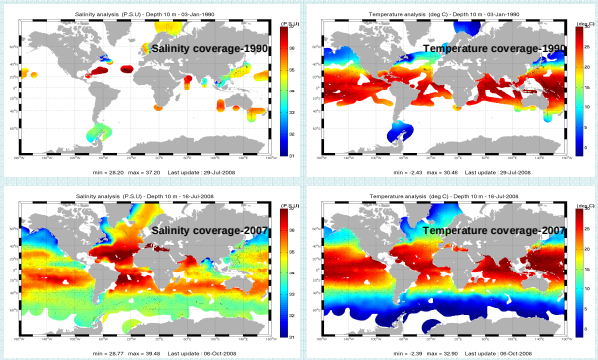


Reprocessing 1990-2007

Global and annual delayed analysis of the database content and additional validation of the dataset collected in real time and delayed mode over the period 1990-2007.

Reference dataset *release 2008* :

- **In-situ data**: all type of data used included the updated CTD Levitus set (WOD 2005).
- **T and S weekly gridded fields** and individuals profiles both on their original level and interpolated level (grid ½° and 59 l evels).



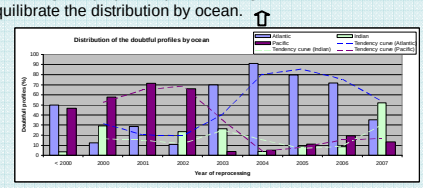
Evolution of the coverage since 1990 in Temperature and Salinity at 10m depth

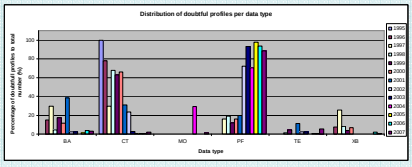
Objective Analysis Method

2 runs of analysis producing gridded data on two different time windows, with an additional visual control in between.

- **First run**: done on a six weeks window (t-21, t+21) to capture the most doubtful profiles and operated on a monthly basis.
- **Visual control**: only these doubtful profiles are visually checked by an operator to decide whether or not they are bad data or real oceanic phenomena. A quality flag is manually assigned by an operator and included in the product.
- **Second run**: also done on a six weeks window but operated on a weekly basis for the modeling needs.

Increase of the deployments in Atlantic since 2003 reflected in the distribution of doubtful profiles by ocean. Indeed, the inversion of the Pacific and the Atlantic curves in 2003 corresponds to the Argo deployment politic willing to equilibrate the distribution by ocean. ⇧

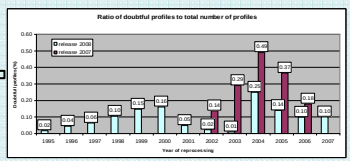




⇩

PF formats (ARGO profilers) are over-represented among the doubtful profiles. ARGO data collected from the different DAC's are not submitted to a real time procedure (i.e. submitted to automatic tests but no visual control) before being sent to Coriolis GDAC. Therefore, when the Coriolis data center operates its delayed mode procedure, it detects mainly ARGO data through the Objective Analysis method (with visual control).

Improvement since the Release 2007. Less than 0.3% of doubtful profiles: the results are improved since the release 2007 ⇨ Improvement in real time + delayed mode QC procedure, and better quality at the acquisition level. ⇦



Next Steps

➢ Improve the database content by strengthening our QC process and including updated datasets (recent CTD by CCHDO and NODC-USA)
➢ Produce a release on a yearly basis

Access

➢ ftp and OPenDAP on request to codac@ifremer.fr
➢ http://www.coriolis.eu.org/cdc/global_dataset_release_2008.htm