**Introduction on Delayed Mode QC:**

Recalibration is generally not possible due to the no recoverable nature of floats, so float datasets are usually checked against indirect ways. Here we present the application of a method based on mapping a set of calibrated data by objective analysis to the float profile position. The method applied at the Coriolis Data Center is the method of Annie Wong et al (2003) [1] adapted to North Atlantic environment by Lars Böhme [2] to produce the delayed mode data for Gyroscope project in a first time.

Recalibration is set up to correct sensor drifts by using historical hydrographic data. The used objective mapping method takes into account the spatial and temporal variabilities of the North Atlantic [2]. Assuming that a conductivity offset changes slowly over time, the float measurements are fitted linearly to the mapped salinities in potential conductivity space by weighted least-squares. The result is a set of calibrated salinity data with corresponding uncertainties.

**Overview of the Delayed Mode QC method:**

The method uses the two main state variables temperature θ and salinity S. Mean θ-S relationships can be used to estimate salinity from measurements of temperature and pressure. The CTD measurements (WOD01 and others) are interpolated on 2 dbar levels to store all measurements. Conductivities of the float are fitted to the mapped potential conductivities. Measurements are converted to potential conductivity to eliminate differences in pressures between historical and float data. Then the potential second the residuals are mapped to the float profile location using a covariance function of the temporal and small spatial separation. All measurements are converted to potential conductivity to eliminate differences in pressures between historical and float data. Then the potential conductivities of the float are fitted to the mapped potential conductivities.

**DMQC - Analysis on ARGO float:**

Some diagnostic plots allow to follow the behavior of the float and to understand the correction computed from the DMQC method for the calibration.

- Some diagnostic plots allow to detect if a physical or technical event is the cause of the detected drift/offset of the sensor.
- This example shows a drift at the end of the float time-series.

**Complementary tools:**

In parallel, a data analysis system based on optimal estimation methods has been developed and implemented at the Coriolis data center. The residual values allow to follow for some levels possible drifts or offsets. The salinity and temperature fields are used to compare the value of the float salinity with the climatology.

**Conclusions**

Due to the drift and offset observed on the salinity sensor, it is necessary to recalibrate float data in delayed mode. Offsets and drifts are detectable in the floats of the North Atlantic and a corresponding correction is supplied using objective mapping method. The results have shown that SeaBird sensors were more stable than FSI sensors.

Historical hydrographic dataset using to select ‘best’ profiles for the mapping to the float profile is sometimes insufficient in some oceanic areas and need to be updated with the recent cruise data.

To help to determine the correction, complementary tools have been developed, using the residuals and fields of an objective analysis taken into account all type of data available in the Coriolis database (profilers, sbt, ctd, moorings).

**References:**