



An extreme value approach for quality control of temperature and salinity profiles based on the historical knowledge of the local variability

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Climate research benefits from the continuous development of global in-situ hydrographic networks in the last decades. Apart from the increasing volume of observations available on a large range of temporal and spatial scales, a critical aspect concerns the ability to constantly improve the quality of the datasets.

In the context of the Coriolis Dataset for ReAnalysis (CORA), a new quality control method based on a local comparison to historical extreme values ever observed is developed, implemented and validated.

Temperature, salinity and potential density validity intervals are directly estimated from minimum and maximum values from an historical reference dataset, rather than from traditional mean and standard deviation estimates.

Such an approach avoids strong statistical assumptions on the data distributions such as unimodality, absence of skewness and spatially homogeneous kurtosis. As a new feature, it also allows addressing simultaneously the two main objectives of a quality control strategy, i.e. increasing the number of good detections while reducing the number of false alarms.

The reference dataset is presently built from the fusion of 1) all ARGO profiles up to early 2014, 2) 3 historical CTD datasets and 3) the Sea Mammals CTD profiles from the MEOP database. All datasets are extensively and manually quality controlled. In this communication, the latest method validation results are also presented.

The method has been implemented in the latest version of the CORA dataset and benefits to the current and future versions of the Copernicus CMEMS dataset.