



## **Non-linear Quality Control of Historical Observations for the Global Climatology**

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Calculating a global ocean climatology from historical datasets like the World Ocean Database (WOD) demands a robust quality control procedure to refine the data from outliers and representativeness errors. A nonlinear quality control (NQC) procedure is developed similar to Jia et al. (JAOT, 2016) for regional as well as global climatologies. The NQC procedure requires the subdivision of the domain into dynamically homogeneous regions and the computation of a subregional objective analysis (OA) estimated field in each region. The mean and standard deviation of this OA field is used to reject data few standard deviations out of the mean in each region. The procedure iterates and continues to eliminate the data until the convergence is reached, i.e. no more data is rejected. The regime-oriented quality check of observations effectively filters out the low representativeness observations and outliers and results in better defining the climatological field. As a test example, NQC is applied to south Atlantic region, using the the Data Interpolating Variational Analysis (DIVA) and results are intercompared between climatology computed with the WOD quality control flags and the new NQC procedure. The NQC procedure produces a good compromise between the number and the quality of observations for a climatological estimate.