

Analysis of SMOS salinity data in the North Atlantic ocean using DINEOF: detection of outliers and comparison with in situ data.

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Sea Surface Salinity (SSS) data from the Soil Moisture and Ocean Salinity (SMOS) mission is analysed over the North Atlantic ocean using DINEOF (Data Interpolating Empirical Orthogonal Functions). DINEOF is a technique that reconstructs missing data by iteratively computing a truncated EOF basis. This truncated EOF basis allows to reduce the noise level in the reconstructed data, as noise is typically found in high-order EOFs. A first DINEOF analysis is used to detect and remove outliers from the SMOS SSS daily fields, before performing 10-day and monthly SSS averaged fields. A second DINEOF analysis over these averaged datasets will provide us with complete SSS fields with reduced noise and fewer outliers. These SMOS-based SSS fields will be compared to monthly fields calculated using in situ data, in order to assess their differences in space and time. The main SSS processes present in both datasets and the typical spatial scales of SSS variability over the North Atlantic ocean will be studied. The gain obtained with the higher spatial and temporal resolution obtained with SMOS will be assessed by studying the characteristics of oceanic structures like the Gulf Stream and the Azores Front.