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Multivariate multi-data assimilation system in Mercator project.

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We propose a new ocean data assimilation algorithm based on the Reduced-Order Optimal Interpolation (ROOI) technique, which calculate corrections to model fields in a way which is consistent with a priori statistical and dynamical information. The algorithm uses 1D vertical multivariate Empirical Orthogonal Functions (EOFs) to extract statistically-coherent information from the observations. We assimilated conjointly temperature and salinity profiles, sea surface temperature and altimeter data. It is then applied to two different models: a 1/3˚ North and Tropical Atlantic configuration between 20˚S and 70˚N (MNATL) and an Atlantic and Mediterranean with a very high horizontal resolution (5 to 7 km) between 9˚N and 70˚N (PAM).

At last, we use PALM coupler which provides a general structure for a modular implementation of a data assimilation system and makes easier the changes in the analysis algorithm.

After a brief presentation of the two model configurations, we will present some recent results obtained with the multivariate multi-data system, in particular quantitative and qualitative comparisons with his univariate counterpart. We will also comment 7-day and 14-day forecast skills of the multivariate system.