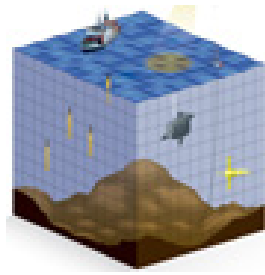


Joint ECMWF/OceanPredict workshop on Advances in Ocean Data Assimilation



Contribution ID: 59

Type: **Oral presentation**

Ensemble-variational assimilation with NEMOVAR at ECMWF

Monday, 17 May 2021 15:30 (15 minutes)

This presentation will summarize the work by the NEMOVAR consortium (ECMWF, CERFACS, UK Met Office, INRIA) to develop an ensemble-variational data assimilation system for the NEMO model enabling effective assimilation of ocean observations. A holistic approach has been adopted by revisiting our static **B** matrix formulation, developing various flavours of a flow dependent **B** matrix and improving our ensemble generation scheme by implementing stochastic physics in the NEMO ocean model. The focus of the presentation will be on the configuration that is most likely to be implemented in the OCEAN6 system. It consists of a modelled **B** matrix where an ensemble of climatological perturbations is used to specify its static parameters: background error standard deviations and correlation length scales. The standard deviations are combined with errors of the day captured by ensemble perturbations. While it is not straightforward to implement hybrid/flow dependent horizontal correlation length scales in operational settings due to the requirement of costly re-computation of normalization factors ensuring that the correlation matrix is unit diagonal, we will show that it is feasible to envisage a configuration with fully flow dependent vertical length scales. With ECMWF plans to develop its own SST analysis going ahead and given the still prohibitive cost of fully ensemble-based **B** matrix, we consider such a configuration crucial for effective assimilation of surface observations.

Which theme does your abstract refer to?

Data assimilation methods (algorithmic developments in variational, ensemble and hybrid DA, covariance modelling, etc)

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Session Classification: Theme 3: Data assimilation methods

Track Classification: Data assimilation methods