

Interactive comment on “Application of a hybrid EnKF-OI to ocean forecasting” by F. Counillon et al.

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General comments The paper “Application of a hybrid EnKF-OI to ocean forecasting” by Counillon, Sakov and Bertino addressed an important issue of how to improve the computational efficiency of EnKF without losing its performance significantly. Though the idea of combining the dynamical ensemble and the static ensemble is not new, they conducted systematic experiments to examine the benefits of the hybrid EnKF-OI over the EnOI with a large size ensemble and the EnKF with a small size dynamical ensemble. Also they showed the behavior of the optimal blending coefficient β^* in the term of the percentage of the number dynamical ensemble. These are novel results. The paper is well written and should be published after some minor revisions.

Specific comments A recent paper by Liyin Wan et al (in press C357

of Advances in Atmospheric Science: a URL of the paper is http://www.iapjournals.ac.cn/aas/ch/reader/download_new_edit_content.aspx?file_no=2007) also tested another hybrid method that “dresses” a small size dynamical ensemble by a large size static ensemble. Since the work is relevant, some mention and a reference should be added.

There are several ways of defining a static ensemble. For example, one can take some snapshots from a long-term model run (used in this paper). Or one can use a static ensemble that is taken from a long-term model run but is in the same season of the assimilation time. In the previous case, the static ensemble will be dominated by seasonal variability in most oceans and in the later case the interannual variability is dominated. Authors should mention that their results are only based on one way of defining the static ensemble.

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