Geosci. Model Dev. Discuss.,
doi:10.5194/gmd-2016-174-RC2, 2016

Geoscientific Model Development Discussions
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EGU

Interactive comment on "Development of a probabilistic ocean modelling system based on NEMO 3.5: application at eddying resolution" *by* Laurent Bessières et al.

Anonymous Referee #2

Received and published: 13 November 2016

The paper Âń Development of a probabilistic ocean modelling system with NEMO at eddying resolution" presents a really innovative and useful method to produce ocean ensemble and associated diagnostics and statistics. The subject and the way it is presented are perfectly in the scope of GMD and especially for the NEMO special issue. I have only few recommendations and questions that authors can take into account in the final version of the paper. 1) The online diagnostics is one of the most useful developments proposed in the paper but authors don't provide any information on the computational cost of these online diagnostics. As these diagnostics need several global mpi communications, the cost should be important. Could you provide this cost at least for an example of this statistic? 2) Authors suggest that the ensemble online

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Discussion paper

method could be useful for relaxation of the ensemble mean toward a climatology for example. Could you explain more precisely the way this could be done, is there already work and references about such method? It is not obvious that it will work properly. Is there a way to keep a good spread of the ensemble ? 3) Could you explain why do you use the NATL experiment for the gulf stream study and the ORCA one for the MOC? 4) Could you provide more information of the restoring which is done in the simulation? Is there a sea surface salinity restoring, a sea surface temperature restoring? 5) As you use bulk formulae to compute your atmospheric fluxes and to constrain your model, it is not true that you have strictly the same atmospheric forcing in all the members. Could you provide quantified informations of the variance of the atmospheric fluxes in the experiment? It will be useful to know if this variability is negligible or not. 6) There is no discussion about impact of the number of members in the study, as you have 50 members in your global simulation it will be interesting to know how each member gives information and if the ensemble spread converges? This point could at least discussed in the perspectives.

Figure 3 : Keeping the same color or symbol code between fig 3a and 3b could be more clear for reader Figure 6 a) there is no legend line for the Median.

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