

Interactive comment on “Data assimilation of sea surface temperature and salinity using basin-scale EOF reconstruction: a feasibility study in the NE Baltic Sea” by Mihhail Zujev et al.

Anonymous Referee #1

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The paper describes Data Assimilation experiments over a regional configuration of the NE Baltic Sea using the HBM model. The assimilated data are sparse observations of SST and SSS coming from different datasets. The analysis is a simple and classical method based on a linear regression using EOFs which are built from free simulation and no observation error are used in the analysis. A coarse grid is used to perform this analysis for physical and numerical reasons but also due to weak quantity of observation. The model is restarted using a simple nudging on SST and SSS. The results are relatively good even if the simulations with assimilation are very short in time so the stability and robustness of the results are not sure. The paper is very easy to read and the results are presented using figures of good quality. My remarks are very minor and

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the paper could well fit into Ocean Science Discussion. Consequently, I would suggest a minor revision with only technical corrections.

1 Major comments (S=Section, P=Page, L=Line)

â€” S.2.4, l.34-35 : The authors should spatially smooth (using for instance a shapiro filter or other) the model variable ψ_m before estimating $(\psi_m - \psi_o)$ in order to remove “noise” in the nudging. With the present formulation, the implemented nudging tends to artificially “kill” the little scale of the model.

2 Other Comments (S=Section, P=Page, L=Line)

â€” S.2.3, l.185 : “that that” should be “that”. The word “that” is written two times. â€” S.3.2.4, l.408: “Golberg” should be “Golbeck”. â€” References : the reference for Liu should be timely ordered.

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