Geosci. Model Dev. Discuss.,
doi:10.5194/gmd-2016-260-AC1, 2016

Geoscientific Model Development Discussions
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EGU

Interactive comment on "The Finite-volumE Sea ice–Ocean Model (FESOM2)" *by* Sergey Danilov et al.

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Received and published: 8 December 2016

article Dear Joseph,

Many thank for your comments on our manuscript. Below we present answers or describe the changes made in the revised version.

1. *Near line 35: I'd think the change from tetraheda to triangular prisms and also new ALE requires some new learning from users?*

   The tetrahedral discretization of FESOM1.4 is hidden from its users, because

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the data points are at the prismatic mesh. We agree, of course, that the change in data placement and varying layer thicknesses of ALE vertical coordinate imply some learning, but this issue is largely handled through updating our post-processing scripts in a centralized way. Meshes, forcing, the organization of input and output are inherited from FESOM, and we tried to keep consistency with respect to namelists.

The text of manuscript is adjusted as follows: "It works on the same general triangular meshes and is conceived so as to minimize new learning required from users having experience with FESOM1.4."

2. *It'd be beneficial to users if the authors clearly list out the main differences from other models, especially those using similar gridding strategy (line 65).*

   The text is changed to: "The same cell-vertex placement of variables is also used in FVCOM (Chen et al. (2003)), however FESOM2 differs in almost every numerical aspect, including the implementation of time stepping, scalar and momentum advection and dissipation (see below)."

3. *What is used to solve Eq. (11)?*

   Equation (11) (old numbering) is solved by using pARMS, as detailed section 5.5. The operator matrix is updated on each time step. The preconditioner is not updated, which works well for global applications.

4. *It'd be nice to number all equations for easy referencing.*

   We originally numbered only the equations that are referenced. We follow reviewer's recommendation in the revision, however, we still do not number auxiliary equations.

5. Technical corrections – Done.

With best regards,

The authors