

Interactive comment on “AMM15: A new high resolution NEMO configuration for operational simulation of the European North West Shelf” by Jennifer A. Graham et al.

Anonymous Referee #1

Received and published: 26 July 2017

The paper at hand, "AMM15: A new high resolution NEMO configuration for operational simulation of the European North West Shelf" describes in some detail the benefit from using an eddy-resolving model of the entire shelf, rather than just in limited, usually near-shore regions. The upgrade from the former system is not limited to a horizontal scale change, as everything except atmospheric forcing, vertical mixing and vertical resolution, has undergone a revision. A practical and very sensible choice.

The paper is excellently written. I think it would benefit from just a few points of clarification.

Comments.

C1

p.5 line 5. Is the tidal forcing an open boundary condition or applied in the entire domain as a tidal potential? Not clear exactly how this is implemented. The paper says, "The amplitude and phase is provided for 12 tidal constituents (surface height and velocity)" . Does NEMO convert this TPX input to forcing terms?

p.5 line 20-27. Not entirely clear if the river data is applied as an annual climatology (one single average value per river) or daily climatology (the annual cycle included). I assume the reason for not using time series rather than climatology is that this was not available at the time.

p.5 line 28. Please state the horizontal resolution of the atmospheric forcing. Only time resolution is given.

p.6 line 14. Are you stating that the use of river climatology based on gauge data is to be preferred over runoff time series based on a hydrological model?

p.12 line 1 and p.18 line 22. The (increased) fresh water bias in the Norwegian Trench is probably rightly connected with the Baltic boundary, which in AMM15 lies south of the Belt Sea. Is there any indication of the correctness of the modelled transport thru the Danish Straits? A large error could exist, possibly stemming from the not very realistic (in this region) 10m minimum depth. How does the model Belt Sea cross-section area, net water transport out of the Baltic, and fresh water export, compare with reality? It is also possible that the boundary data (from Gråve et al.) is too fresh. This is one instance where the AMM15 high resolution model in some respects is described as leading to worse results than the previous 7km model. It could well be examined just a bit further, not necessarily by further experiments, as stated in the Conclusion. but using the data at hand. But that is just a suggestion.

p.12 line 8. How large is the fresh water reduction, in %?

p. 13 Fig. 5. Some of the graphics is white and thus invisible.

Typos:

C2

p.4 line 14. Kattergat -> Kattegat

p.16 line 6. uses of a -> uses a

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-127>,
2017.