Ocean Science

Discussions

Open Access

OSD

Interactive
comment

Interactive comment on "Australian tidal currents – assessment of a barotropic model with an unstructured grid" *by* David A. Griffin et al.

Anonymous Referee #2

Received and published: 21 January 2021

Unfortunately, inside the manuscript I can't find enough of scientific discussion, novelty, explanation of new or previously unresolved processes for the Australian seas, that I think are crucial for publishing in the Ocean Science Discussions.

Choice of the model for this study seems strange and unreasonable. Authors are using advanced COMPAS model characterized with advanced and high order advections schemes for tracers and momentum (FCT, ultimate quickest) to simulate pure 2D barotropic tides. If they wanted to resolve only 2D barotropic tidal dynamics then there are by far better suited models (ADCIRC, explicit time stepping or SCHISM, implicit time stepping) which use standard MPI parallel solvers and are capable of resolving even higher resolutions and longer simulations. Using flux as the part of the boundary conditions is interesting approach (NVOE, Herzfeld 2009), however I am not convinced

that choice of using 1/6th of degree resolution of TPXOv9 transports (having small values along the COMPAS model open boundaries i.e. Figure 5) and having fair chance to introduce the boundary errors (as signal to noise ratio is small even for the strongest M2) is better option from example 1/30th of degree sea level data (the same global model -TPXOv9) that could be used as standard forcing as in other 2D barotropic models. Authors could put more effort and do the comparison of their model performance against global model(s) results which they used for boundary condition forcing (at gauge stations where they have observations).

Making comparisons between observed and modelled tidal dynamics falls into technical report and is not appropriate for journal such as scientific ocean discussions.

Interactive comment on Ocean Sci. Discuss., https://doi.org/10.5194/os-2020-107, 2020.