

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

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We thank referee2 for their (short – but still insightful) review.

Their principal objection to our paper is (like the first referee's) that “Making comparisons between observed and modelled tidal dynamics falls into technical report and is not appropriate for journal such as scientific ocean discussions”.

We are happy to agree that the scope of our paper is indeed restricted to assessing the accuracy of our model, rather than exploring the physics of the tides, or discussing the modelling techniques at any length.

So the question is whether papers like ours should only exist as technical reports, or whether they should be peer-reviewed alongside studies of dynamics.

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We think the decision to distribute a new product like tidal current predictions should not be taken lightly, and, indeed, that the public expect that distribution of public-good products is subject to open and extensive peer review. We do not think this final step of the science-to-society chain should be made in the shadows. That would encourage the proliferation of unvalidated model products being distributed to an unsuspecting public. We welcome the Editors' thoughts on this matter.

Referee 2 also made two technical comments:

1) COMPAS is too advanced for the relatively simple job of modelling barotropic tides. This is a fair comment, so we are happy to include an explanation in the paper, which is that modelling the tides is just a first step. We will soon be adding river flows and all the other complications that will require the use of a full-physics model. The model used was chosen to be an unstructured one so that resolution placement and transition can be applied in ways not possible with a structured model. Our model of choice is COMPAS, which uses the thoroughly tested and documented TRiSK numerics, suitable for accurate prediction of 2D and 3D flows. These numerics possess many attractive attributes not shared by all models, viz. conservation of vorticity as well as mass, momentum & volume, operation on a C grid without the requirement of stabilization, supporting a stationary geostrophic mode, availability of mesh generation software (JIGSAW) that specifically conforms to the numerical requirements and competitive speed compared to structured models.

2) We should have also included comparisons with the 'parent' model TPXO. We certainly considered doing this but decided against it mainly because the paper is already burdened with many statistics. We are happy to add another Figure or Table comparing the tidal velocity errors of TPXO with the errors of the nested model, if invited to by the Editor.

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