Dear Dr Valcke,

Thank you for your comments on our resubmitted manuscript.

Thank you for this revised version of the manuscript. I am a bit sorry to say that I consider you did not properly answered two of my comments, so I still ask you to consider the following modifications in the next version of your manuscript.

First, when I wrote "Similarly, in your reply, you write that the impact of using minimum depths, which limits the wetting and drying, was tested in preliminary experiments, but I don't see where this would be stated" you simply answered that "You are correct, p5 is the only place this is mentioned, apart from where it appears briefly in lines 122-131 copied above." This is not what I was expecting! First, contrary to what you answered, I don't see any justification of using minimum depths on p.5. What I am asking is that you clearly state in the manuscript that the impact of using minimum depths, which limits the wetting and drying, was tested in preliminary experiments and that the conclusion of those preliminary experiments justified using minimum depths. Please add something about this in the manuscript.

Second, I think the Figure 3 captions still need clarification. What I am asking is a clear correspondence between the text in the captions and the different columns. So please consider modifying (again) the 2nd sentence of the captions as follows:
"Statistics listed are percentiles ('%') of 1) the model height field at all grid points (column "model" at left), 2) the model at observation sites, hereafter "m" (column "@obs", 3) model error (column "model-obs") and 4) the observed values o, of which there are 615 within the area shown (column "615 obs").

Of course, let me know if you don't agree with or don't understand those remarks ...

We think both comments are totally valid and have revised the paper as follows:

Minimum depths, wetting and drying.

We have substantially rewritten the paragraph on page 5 where wetting and drying is mentioned, to make it clearer what we did, why we used minimum depths, and what the consequence was. It now reads:

COMPAS can be run with wetting and drying activated, not only for entire water columns, but also for individual layers (in a 3D application) as sea level falls or rises. For the present (2D) application, wetting and drying was not activated other than in preliminary test runs. The main problem with having wetting and drying activated was that it made comparison with tide gauges difficult. At many tide gauge sites, the model cells near the gauge dried at low tide but the observations showed drying at the exact location of the tide gauge did not occur – presumably because the gauge is sited within a harbour or shipping channel unresolved by the model mesh. We chose to deal with this problem by preventing drying by setting the minimum depth (at zero tide) to 8 m at the coast in regions where the tides are large (impacting cells totalling 0.6% of the total model area, mostly in the southern GBR or the region around Darwin) or 4m elsewhere (impacting cells totalling 1.4% of the model area, mostly in the Gulf of Carpentaria). The impact of this workaround solution on the nature of the tides, outside the impacted cells, was evidently negligible. A channel of 12 m was manually included in King Sound (in the NW) to correct an obvious error there, greatly improving the accuracy of the model in this location where Australia's greatest tides are to be found. A similar manual bathymetry correction was also made in Western Port (near Melbourne). We anticipate that further local improvements will follow from the use of an even finer mesh and a more complete set of observations of the real topography.

Figure 3 caption

This now reads (following your suggestion very closely):

M2 height amplitude as a colour-fill map (the model) and points (observations), and inset as a quantity-quantity plot. Statistics listed are percentiles ('%' columns) of 1) the model height field at all grid points ('model' column at left), 2) the model at observation sites, hereafter 'm' ('@ obs' column), 3) model error ('model-obs' column), and 4) the observed values 'o' of which there are 615 within the area shown ('615 obs' column). At far right are listed <|m-o|>, the mean of the absolute value of m-o, <m-o>, the mean error, or bias, and <m> and <o>, the mean modelled and observed amplitudes. A log scale is used, starting at 10cm, so not all points can be shown.

We also made minor edits to the headings of the Tables 2 and 4 to make them more compatible, and to clarify the units of each sub-table, e.g. (MAE, cm)

Thank you very much for all your work. We hope you find this version satisfactory for the Journal.