

Topic Editor Decision: Publish subject to technical corrections (04 Feb 2020) by John M. Huthnance

Comments to the Author:

Dear Authors

Thank-you for your extensive revisions which have mostly satisfied the referees. One referee has not responded to the request to re-review but I think you responded reasonably to their comments. You may have seen that the other two are pleased with your response and have only “minor” comments now. Please see below their comments and a few details from myself. You should respond to these; on final publication all these comments will become public and so the quality of your response will be visible. I will treat this last stage as “Technical corrections” meaning that I do not need to see the paper again. However, it will be copy-edited and you should check that the final version retains your intended meaning.

Thank-you for publishing in Ocean Science.

Yours sincerely
John Huthnance

Dear Editor,

We appreciate your efforts in handling our manuscript through two rounds of review processes and suggesting technical corrections below. We are glad that you and the reviewers are satisfied with our revisions. The following comments have been replied and addressed point by point. The “technically corrected” manuscript, both “track-changes” and “accept-changes” versions, is submitted again along with our responses.

Thank you for your help.

Sincerely,
Long Jiang
On behalf of co-authors

Review 1

“Dear Authors;

Thank you for considering my comments and making adjustments accordingly. I think you addressed my questions. I have some minor comments/observations:

- at page 11 lines 13-14 you state: "Another limitation of the study is not considering changes in bed morphology and thus, bottom roughness." I would rephrase this sentence a little bit. Including morphodynamics not only has impact on bed roughness, but also has an effect on tidal propagation (as you rightfully state in the abstract) and output parameters such as intertidal area (your figure 8). Making reference to a poster (Hagen et al., 2019) is quite weak when plenty of peer-reviewed journal publications on models with morphodynamic adaptation are available (and some of which you included already elsewhere). Here I give you some references that include relevant discussions and other references on the matter (some of which are mine, without insisting to refer to these specifically, but merely as inspiration for addressing the issue properly in your work).

Response (1): Thanks a lot for reading our manuscript twice and providing helpful comments. We have rephrased the sentence, to refer to not only bottom roughness but also other hydrodynamic processes in the basin. Please see Page 11 Lines 22–23 of the “accept-changes” version of the revised manuscript.

The suggested references broaden our discussion on the estuarine morphodynamic adaptation with sea-level rise. We have included them in the discussion in this paragraph.

Also, you state in the discussion that you simply do not consider bed level changes, but it would have been nice to find some elaborations in the discussions on the potential impact of bed level changes on your results. You choose not to do that (and it may be challenging), but probably also miss an opportunity to make the work more appealing in that sense.

- Ganju, N. K., & Schoellhamer, D. H. (2010). Decadal-timescale estuarine geomorphic change under future scenarios of climate and sediment supply. *Estuaries and Coasts*, 33(1), 15-29.
- Elmilady, H. M. S. M. A., van der Wegen, M., Roelvink, D., & Jaffe, B. E. (2019). Intertidal area disappears under sea level rise: 250 years of morphodynamic modeling in San Pablo Bay, California. *Journal of Geophysical Research: Earth Surface*, 124(1), 38-59.
- Lodder, Q. J., Wang, Z. B., Elias, E. P., van der Spek, A. J., de Looff, H., & Townend, I. H. (2019). Future Response of the Wadden Sea Tidal Basins to Relative Sea-Level rise—An Aggregated Modelling Approach. *Water*, 11(10), 2198.

Response (2): Thanks for the suggestion. We have expanded the discussion of not considering morphological changes. It is indeed challenging to speculate how bottom topography will change given the uncertainties in sediment sources and grain size distribution. Further, the uncertainties

in bottom topography will translate into how including them can change our results. Although we cannot directly predict the morphologic changes in the Oosterschelde based on studies into other systems, the potential uncertain sources are added to the Discussion to be considered by future studies. Please see Page 11 Line 28–32 of the “accept-changes” version of the revised manuscript.

It would be nice to see some of your explanation of the ES implementation of the MARS model, back in the manuscript.

Response (3): We have explained that the MARS resolution is relatively low in the Oosterschelde and Dutch Delta. This is why the model downscaling is necessary. Please see the first paragraph of Section 3

I am very happy with the nice R1-5 figures in your response!

Response (4): Thanks!

Mick van der Wegen”

Review 2

“I really appreciate the thorough revision of the manuscript. All questions and suggestions have been answered in depth.

A technical note:

Please make sure that the orientation of the x-axis in Figure 6 fits to the description.”

Response: Thanks for the positive feedbacks. We have double checked the transect orientation. It is from the west to the east as described in the caption.

Editor (myself)

Page 1 line 15. “basin” -> “bay”?

Response (1): Changed.

Page 1 line 17. You might add that the shift to enhanced sediment export has implications for dredging and/or shoreline/coastal defence management (as you discuss in the paper).

Response (2): We have added “with potential implications for shoreline management”

Page 2 line 23. Omit first “The”

Response (3): “The” is removed. Now on Page 2 Line 24 in the “accept-changes” version of the revised manuscript. All the page and line numbers refer to those in the “accept-changes” version.

Page 2 line 27. Omit “the”

Response (4): “the” is removed. Now on Page 2 Line 28.

Page 3 line 1. “. . sea”

Response (5): “seas” is changed to the single form. Now on Page 3 Line 2.

Page 3 line 5. “. . Additionally, tidal changes . .”

Response (6): “the” is removed. Now on Page 3 Line 6.

Page 3 line 32. “are” -> “is”

Response (7): The suggested change is made. Now on Page 4 Line 1.

Page 4 line 24. Better “. . rate itself does not feature in the model runs). . .”

Response (8): We have moved “itself” forward. Now on Page 4 Line 27.

Page 4 line 29. “or” -> “and”.

Response (9): We have replaced “or” with “and”. Now on Page 4 Line 32.

Page 5 line 17. “. . analyses were carried out both on observed and on simulated . .”

Response (10): The suggested change is made. Now on Page 5 Line 20.

Page 9 line 33. Omit “such”.

Response (11): “such” is removed. Now on Page 10 Line 4.

Page 10 lines 7, 8. I think you need to say how the Ria de Aveiro lagoon and Western Scheldt convergence / friction (or ??) are different from the previous examples so that their “tidal asymmetry is insensitive to SLR . . to deepening”.

Response (12): The sentence has been rephrased and moved to between Page 9 Line 33 and Page 10 Line 2.

Page 10 line 34. “. . coupling, and would make an . .”

Response (13): We have revised the sentence as suggested. Now on Page 11 Line 3.

Page 11 lines 7,8. “. . parts of Chesapeake Bay (Lee. . .) and San Francisco Bay . . .”

Response (14): “Bay” is added to the sentence. Now on Page 11 Line 11.

Page 11 line 19. Omit first “The”.

Response (15): “The” is removed. Now on Page 11 Line 23.

Page 13 Acknowledgements. I think you might thank all the referees for helpful suggestions improving the paper.

Response (16): We have included the names of three reviewers in the Acknowledgements.