

Responses to Review Anonymous Referee 2

Dear Reviewer anonymous referee 2,

Thank you for your observations regarding our preprint. Your suggestions helped to improve our manuscript. See below our responses marked in blue for each of your main concerns (marked in black).

1- The manuscript presents a novel methodology to deriving intertidal bathymetry for four estuaries in New Zealand (Tauranga, Ohiwa, Maketu and Whitianga harbour) characterized by a complex morphology. I find this thematic interesting, as it allows to update and improve the boundary conditions of regional numerical models. However, I think the structure and writing of the manuscript require further work to reflect all the work done. The manuscript needs a better use of English, a restructuring of the chapters and above all to emphasize the purpose of the work as well as the authors' motivation and innovations. Therefore, I do not recommend the publication of this manuscript as submitted. This review is critical, nonetheless the authors have the potential to have a great manuscript and I would like to encourage them in their progress.

We appreciate that you found our manuscript interesting, despite the problems regarding its structure. The inadequate structure is a problem highlighted by all the 3 reviewers. We intend to modify it accordingly. For instance, we plan to describe the content of each chapter at the end of the introduction section and set the paper up with more clearly presented aims.

2 - I mainly concern of the reasoning and the reading flow, which is quite confusing and the reader can easily miss the guidelines of the study. Section 1 does not clearly show the developments achieved by the scientific community, the relevance of the chosen methodology and, above all, the authors' motivations.

In the introduction section, we showed the main techniques used in the manuscript, and their advantages and disadvantages. However, we recognize that we could improve the introduction and will re-review of the literature about SDBs and add newly-available literature. We will also build the introduction more clearly toward our aims.

3 - Section 2 is very long and presents too many technical concepts, and even results, that is hard to follow how they were implemented. The study area

should be expanded with a description of the main processes describing water level dynamic, since the work's title mentions storm surge modelling.

We will move model validation and put it into the results. We understand that some terms used in section 2.5 can lead to confusion; thus, we propose the re-writing of section 2 to make it clearer. Regarding the expansion of the section to improve the description of the water level dynamics, we think this would be an excellent addition to the discussion.

4- Results and figures in Section 3 present a lack of consistency of SI units, authors should homogenize them. I think criteria presented in Fig. 3 and 4 are unclear and need a deeper discussion. Errors should be accompanied by their percentage for better interpretation. Unfortunately, the color map chosen for Fig. 7 and 9 is not good for presenting such significant results. The conclusions are extremely short and not summarize the reasoning of the work.

We will use consistent SI units in all figures. We understand that the explanation of the identification of the intertidal zone and the waterline position is still unclear; we propose to add more information to the paragraphs in relation to Figures 3 and 4. We will provide a more clear presentation on the range of the depths within the intertidal zone so that the error presentation is much clear. The colour maps of Figures 7 and 9 will be changed. We will add more detail to the discussion and conclusion; in particular, we will add more on the hydrodynamic modelling results and new references about SDB techniques.