

## ***Interactive comment on “The significance of coastal bathymetry representation for modelling the tidal response to mean sea level rise in the German Bight” by Caroline Rasquin et al.***

### **Anonymous Referee #3**

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From my perspective, the paper addresses a highly relevant issue, namely the conflicting results of models on responses of tidal dynamics to changes in mean sea level described in the literature. The present study provides insight and offers a convincing approach and explanation for these differences. It perfectly fits into the topic of this journal and deserves publication.

In principle, the manuscript is well written and I only have a few technical comments I would ask the authors to consider:

1. In the Introduction the sentence, “The German Bight located in the south-east of the North Sea with its flat coastal areas could be especially vulnerable” appeared a

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bit surprisingly. The authors started with a global perspective and I wondered why the German Bight was the area of choice. In addition, why is the German Bight especially vulnerable compared to other flat and low-lying coasts?

2. As the authors motivated their study by differences in the response of global models, can the conclusions from the German Bight be generalized?

3. Model set-up and experiments need some more explanation, in particular

a. Why did the authors choose to include meteorological forcing and not just used a tide-only simulation, in particular as they said they choose the summer to “ensure that the results are not influenced by storm surges or extraordinary high river discharge” (page 7).

b. The salinity boundary condition (page 5) needs some explanation as I expect that readers are not necessarily aware of what was done in the referenced project.

c. A source for the river discharge data and their time resolution should be provided.

4. Figure 6 and following: The gray color bar should be explained in the caption. I was not able to clearly identify gray areas in the Figures.

5. Page 19, line 29: What exactly is “sufficiently fine”? There are probably substantial changes in bathymetry over time as well. What would the authors then consider a “sufficiently fine” resolution?

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