

Dear anonymous referee #2,

thank you for the thorough review of our manuscript. We appreciate that you took the time to read our work in depth and made remarks that will improve the quality of it. Below, we answer to your revisions point-by-point. Please note that we included a false version of the correlation matrix in Fig. 5 in the original manuscript. The text already referred to the correct parameters and the conclusions remain unchanged. We have corrected this mistake in the revised manuscript.

Sincerely,
Robert Lepper (on behalf of the authors)

Answer to referee #2

Major points

- 1) I miss a mechanistic explanation for the results, at least within the results sections. There are some attempts in the discussion but this is mainly focused on the evolution of the channels and sediment transport capacity. Section 4.3 points to some possibilities, but this is at the local scale. What drives the large-scale changes in the tidal prism? Comments on this, or even a speculation about mechanisms is needed.

Answer: Thank you for raising this question. A mechanistical speculation about the local changes in tidal prism was given in section 4.3. as you already pointed out. We would like to refer to Sect. 4.2. where a mechanistic explanation considering tidal prism was debated. We do agree that some additional information is necessary in the result chapters.

In our opinion, local and regional phenomena must be separated more in future research, because their combination complicated the distinct identification of mechanisms. If we were regarding an isolated tidal basin, a mechanistic explanation would be simpler, but the cumulative effect of multiple local distortions made the separation of drivers and effects cumbersome. For this reason, we suggested future research for a better understanding of the cumulative effect at the end of Sect. 4.4.

Still, we believe that further possible explanations are possible and necessary at the end of Section 3.4. (Fig. 5) and have elaborated the end of this section to explain for the observed correlation (or the lack thereof).

Action: We elaborated the end of Sect. 3.4. and included a reasonable chain of indications for the observed behavior by clearly dividing the behavior to a coastal and to a shelf-sea context.

Minor points

- a) L56-57: please use the same units for SLR and accretion – cm yr⁻¹ would be preferred. Also, please refer to Figure 1 here. *Changed in the manuscript to cm yr⁻¹.*
- b) L100: how do these errors propagate through the solutions when you change bathymetry? They are larger than your SLR signals later on. This must be commented on.

Answer: See “answer to reviewer #1” point 2). Validation of the model was carried out for all years in the period of 1997 to 2015 (Hagen et al., 2021). Mentioned errors are an average of the RMSE of each year at each gauge. We included an excerpt of the respective RMSEs (1997/2015) here to demonstrate comparability:

<i>gauge</i>	<i>high water</i>	<i>tidal range</i>	<i>flood duration</i>
<i>ALW</i>	<i>9/6 cm</i>	<i>15/12 cm</i>	<i>15/15 cm</i>
<i>DWG</i>	<i>14/10 cm</i>	<i>15/13 cm</i>	<i>14/9 min</i>
<i>BAL</i>	<i>19/14 cm</i>	<i>16/16 cm</i>	<i>13/14 min</i>
<i>CUX</i>	<i>14/14 cm</i>	<i>15/20 cm</i>	<i>14/13 min</i>

Action: We clarified this matter following the remark of reviewer #1. No further action was taken.

- c) Mark -> Note. Also, on L356. *Changed in the manuscript.*
- d) L221-223: Distinguished -> separated may be a better word. *Changed in the manuscript.*
- e) L326: Is this a popular assumption? In my mind it is the opposite and SLR leads to weaker dissipation. I guess this depends very much on local conditions, so maybe this could be reworded and you can state that you see a decreased dissipation, as do several other papers (including global studies) whereas others show increases. This leads to an important conclusion: regional responses must be modelled explicitly, and one region is a poor representation for general signal in another region.

Answer: In our opinion, this point is tightly linked with your major comment and our action is to be regarded in context. We understand now, that this statement is confusing from an oceanographic point of view. From our coastal perspective, it was popular belief that more extensive tidal flats increase overall dissipation near shore and we were surprised to find out that the opposite was the case. Your conclusion is essential and we have included it in the manuscript.

Action: We reworded the statement to what it was: A citation of the authors from L327 (of the original manuscript) and added your conclusion to Sect. 5.