

Ocean Sci. Discuss., referee comment RC2
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Comment on os-2021-58

Anonymous Referee #2

Referee comment on "Dynamics of fortnightly water level variations along a tide-dominated estuary with negligible river discharge" by Erwan Garel et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-58-RC2>, 2021

The manuscript by Garel et al. is a very focused piece of research on the fortnightly variability in mean water level along a tide-dominated estuary with low river inflow. They apply an analytical model to determine the physical processes involved, validating their results against observations in the Guadiana estuary. The presentation of the research is well structured, has a good coverage of supporting literature to define existing knowledge - identifying the gaps to address, and has good use of figures to illustrate key points. I have a few minor comments, with the main one focusing on the implications of the research. Section 5.2 answers the initial research question posed, but it is not until this point (near to the end of the manuscript) that the reader has a good understanding of the importance of this research in terms of application to present-day management issues. More detail is required earlier in the manuscript, for example L19 in the abstract more information about the impacts could be stated. On L56/57 more information is given but this could be summarised in the abstract. "Impacts on the estuarine environment" is very general and could be a positive or negative impact and may relate to the natural system and/or human influence on the system. While ecosystems are mentioned in the conclusions, flood hazard is not.

In the paragraph starting at L131, the influence of atmospheric pressure has been considered and removed. Could you comment on the influence that wind and waves may have on the water levels. I appreciate winds are mentioned later in the manuscript but a comment to acknowledge the limitations of not removing all meteorological (and wave) forcing on the water level would be of value.

I have a few other minor suggestions:

L34, "metric order", I suggest providing a value the change in elevations may reach.

L35, "flood control" I would have thought flood hazard was related to the changes in mean high water rather than mean water levels. This point isn't discussed later in 5.2. Are you really referring to inundation of the intertidal and the impacts on ecosystems as discussed later in section 5.2 or potential changes in saltmarsh that protect the coast from flooding? Please ensure the points in the introduction are directly linked to the discussion points in section 5.2 and vice versa.

L206 & L244, "species" is an unusual choice of term. I would have used component.

L209, Zf remains at a similar level but it is not perfectly constant.

L210, it would be better to focus on the period where there are quality results stating the initial data are removed due to artefacts of the filtering techniques.

L235, both lines have a clear signal. One is larger than the other rather than clearer.

L272, how realistic is the use of a flat non-rippled sandy bed. How could the results vary for different conditions?

L396, clarify the study is numerical using a case study for validation. I suggest you start the conclusion saying "...in a numerical representation of tide-dominated estuaries". Otherwise, it could be misinterpreted that the results are only applicable to the study site.

There are a few typos to correct including:

L16 and L46 need rewording for clarity.

L34, check punctuation.

L46, check grammar.

P6/P7, there is an unexpected break in the sentence across the pages.

L205, insert a space between "is0.8"

L208, depends on.

L250, nearly constant.

L403, in the upper estuary.

In the Conclusion both abbreviations (e.g. LWL) and full names (e.g. mean water level) are used. Be consistent.