

Ocean Sci. Discuss., referee comment RC2  
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## **Comment on os-2021-11**

Anonymous Referee #2

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Referee comment on "Impacts of a large extra-tropical cyclonic system in Southern Brazilian Continental Shelf using the COAWST model" by Luis Felipe F. Mendonça et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-11-RC2>, 2021

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This manuscript deals with the impact of an extra-tropical cyclonic system in the Southern Brazilian Continental Shelf using numerical modeling. Although this is an important topic of study, this manuscript presents some problems that do not allow a dynamical understanding of the problem. The main problem of the manuscript is that the numerical simulations present results that do not well represent the observations. For this reasons, mainly, I suggest the rejection of the manuscript. Below, I present in more details the problems that I found:

-Line 69: By shelf waves the authors mean Continental Shelf Waves?

-Line 132: Brazilian Current or Brazil Current?

-Lines 150-153: There are no references regarding the tidal amplitudes.

-Line 159: How near the coast of Brazil?

-Lines 162-163: What do the authors mean by oceanic mesoscale gyration? And why does it cause accumulation of water in the coast?

-Lines 164-166: The authors could give some examples of natural disasters and extreme events in Brazil to put the manuscript in perspective.

-Line 174-175: Models do not provide data.

Lines 180-181: The authors mention the importance of models in understanding coastal processes, but do not mention any of these studies. Also, they should mention the observational studies.

-Line 250 (Data validation): The authors did not validate the data in this section.

-Line 408: The authors present a correlation coefficient (Pearson's) of 0.78, but no significance level. I don't believe this correlation coefficient for SSH low-frequency variability is satisfactory. There are other studies dealing with similar problems that present much higher correlation coefficients for the low-frequency variability (e.g. Costa et al., 2019, Khalid et al. 2020, Ruiz et al. 2021). Why not computing some other statistical parameter that deals with the comparison between actual values and not the variability alone? (e.g. Willmott, 1981)

-Page 15: The figures should present data and model in the same panel.

-Lines 509-511: The authors should present a figure with the locations mentioned in the text, as well as the width of the continental shelf in the domain.

-Line 512: It is hard to see the agreement between data and model. The authors should provide a qualitative method and a better figure.

-Line 516: The delay of few hours is considerably high for these processes. These differences can lead to substantial errors in SSH prediction that do not allow a good understanding of the phenomenon. For instance, if astronomical tides and storm surge peaks are coincident, storm tides can occur. A delay of few hours in one of these processes can lead to wrong prediction.

-Lines 552-562: This part of the manuscript looks more like the Introduction.

-Line 566 (Conclusions): For the reasons given above, I believe the conclusions are weakly proved. In essence, the conclusions are very superficial and do not contribute substantially to the knowledge of the process in the region.