

Ocean Sci. Discuss., referee comment RC1
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Comment on os-2021-11

Anonymous Referee #1

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-RC1>, 2021

This study uses the COAWST model to study the influence of an atmospheric frontal system to the coastal ocean. The frontal system is associated with an extra-tropical cyclone. The model is based on the ocean circulation model (ROMS) and the weather forecast model WRF using nested grids.

The paper presents some model-data comparison for an event happened in Sep. 2016 and shows the area's sea level anomaly which the authors conclude that it is "probably" due to coastally-trapped waves with a propagation speed of 480 km/day northward.

From what I read, the paper looks like a modeling practice and the results are presented without a clear discussion of the useful dynamics in detail with confidence. In fact, no quantitative analysis to the model output is done. The sea level anomaly should have been analyzed before concluding it is coastally-trapped waves and if the propagation speed matches theory. The figures are of low quality and captions not uniform (some are clear and the others are not).

Some examples of problems, among many others, are

This comparison showed a correlation higher than
Line 28: "78% between sea level rise data and the model results," - sea level rise data? Isn't this a work for a extrotropical cyclone that only lasted for a few days? Why was the short time event related to sea level rise which would be a climate data defined to be 30 years or longer. I guess the authors meant water level data.
Figure 1 is out of the context - it maybe useful for a conference for background but not needed as they have nothing to do with the dynamics and the coastally-trapped waves.
Figure 4, poor quality

Figure 6, Caption is too brief and unclear.

Figure 7, poor quality - but the presentation is odd - I would prefer to see direct comparison between model and data, not separating the tidal and non-tidal parts. If you need to separate them, put the data and model in the same frame and include quantification of statistics (e.g. correlation or R2 value)

Lines 456 and 457: "The physical mechanism that explains the force of the coastal-trapped waves over topography is straightforward,..." then the authors basically referred to some previous papers and finishes their analysis for the coastally-trapped waves. I would not call this paragraph an analysis. The work is not done with quantified analysis and any new finding in dynamics.

Similar problems exist for analysis around Figure 9. Figure 9 is presented in an odd way as well. It is not helpful in providing a clear picture.

For the discussion around Figure 10: why the left panel has no tide while the right panel has tide? What is the reason to not include tide for the along shelf 50-m contour line transect but do include tide for the cross shelf transect?