Ocean Science Discussions

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Comment on os-2022-1

Emil Stanev (Referee)

Referee comment on "Mechanism of generation and propagation characteristics of coastal trapped waves in the Black Sea" by Müjdat Aydın and Şükrü Turan Beşiktepe, Ocean Sci. Discuss., https://doi.org/10.5194/os-2022-1-RC2, 2022

This paper addresses the propagation of coastal trapped waves in the Black Sea. This important issue of the Black Sea oceanography is not enough studied. The data of several stations along the Turkish coast present a valuable observational material, which I see for the first time. The paper has the potential to become an important contribution to Black Sea oceanography. However, it still needs a substantial improvement and deeper analysis. In my mind, the analyses of observations and model are very preliminary (descriptive) and can be substantially extended. The introduction, sounds like a short review on coastal waves. Authors can consider shortening it, in particular its first part, and keep the necessary information about the specific processes in the Black Sea.

Specific comments.

- In case that authors keep in the revised manuscript the first paragraph (~line 25), this is perhaps the place where they can also mention Kelvin waves.
- You can consider mentioning in paragraph, lines 70-80, that basin wide numerical experiments aimed to studying coastal shelf waves have been carried out by Stanev and Beckers (1999) and use part of what they found as support to what you study. Even better is that you explain what exactly step ahead you do in comparison with the old studies. Paragraph, line 140, shows that similar periods were found by these authors too.
- Add units in Fig. 4 and its caption. Check for the same problem all figures, for instance fig. 5 etc.
- Explain in more detail how to read and understand Fig. 4.
- Mark in Fig. 2 the time period presented in Fig. 5. Actually, Fig. 5 is the most important figure in this manuscript. Along with Figure 3, it deserves deeper analysis. More fundamental is to ask whether there is only one clear event or coastal wave propagation during the period presented in Fig. 2.

- The expression "Spatial distribution of this storm" (~line 180) is unclear from the graph in Fig. 7. May be Fig. 8? Explain how the graph illustrates spatial distribution.
- One basic problem is that the analysis of model results is not coherent with the analysis of observations. I wonder whether authors can find similar propagation characteristics as in figure 5, but sampled from the model data. This would be better than showing figure 10. What does spectral analysis of model data show?
- Some statements cannot be derived from the analysis: Line 230 "The waves formed have maximum amplitude on the shore and decay exponentially offshore with the scale of the Rossby radius of deformation." . You can check that using model results.
- Although English is not my mother tongue, I find that the text needs substantial improvement by native English speaking scientist.

References

Stanev, E. V., and J. M. Beckers (1999) Barotropic and baroclinic oscillations in strongly stratified ocean basins. Numerical study for the Black Sea. *J. Mar. Sys.*, 19, 65-112.

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