Ocean Science Discussions

Ocean Sci. Discuss., referee comment RC2
https://doi.org/10.5194/os-2021-62-RC2, 2021

Comment on os-2021-62

Anonymous Referee #2

Referee comment on "Swell hindcast statistics for the Baltic Sea" by Jan-Victor Björkqvist et al., Ocean Sci. Discuss., https://doi.org/10.5194/os-2021-62-RC2, 2021

Swell waves play a critical role in air-sea interactions. In this study, some interesting results of the swell in the Baltic Sea are drawn based on 20 years of high-resolution wave simulation data. These results are interesting to the Baltic Sea research community. I have the following comments/suggestions about the study.

General comments:

- The wind condition varies significantly with the season which may result in the variation of swell probability and energy weight. Authors give the swell height distribution in winter and summer. I am wondering if there are any seasonal variations of the swell energy weight, swell probability, swell period. If so, I would recommend including those analyses?
- In the introduction, the authors point out the importance of the misalignment between wind and swell direction (L20). With the data, I think the authors can analyze the distribution of the swell-wind angle. If so, I would suggest the author add one section about it.
- In section 3.4, the authors give some interesting results about the correlation of wind-sea and swell. The negative correction is contributed to the decaying wind. Based on Eq. 2, the wind direction is also an important factor determining if a wave mode is swell or wind wave. Did the authors have some analysis about the contribution of the variation of wind direction? If you look at Fig 2, the wind direction change is also significant for the variation of swell and wind wave height.
- In the analysis, the correlation is used to show the relation between swell and wind. For the correlation section, why use wind-sea wave height, but not wind speed? They may do not show a significant difference since wind wave height has a highly linear relationship with the wind.

Minor comments:

- L10: suggests□suggest
- L19: upwards□upward
- L55: What is the temporal resolution of the ice data?
- Figure 2: Give the full words of the abbreviations NBP
- Figure 4: Authors can consider using the normalized distribution since the total data points vary with stations which may be easier to show the distribution (in particular for GoF). The total number of data points should be given.