

Interactive comment on “Variability of distributions of wave set-up heights along a shoreline with complicated geometry” by Tarmo Soomere and Katri Pindsoo

Anonymous Referee #2

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The authors discuss the often less analysed, especially in climate science, but important topic of wave set-up heights and occurrence of these heights along a 60 km long part of the Estonian coastline at the Gulf of Finland. Whereas the overall topic raised by the authors is of interest, the way it is presented make it hard for the reader to understand the overall purpose of this study. In the present form, I can not recommend to accept this manuscript. However, after addressing some major concerns by the authors I would suggest to accept the publication after major revisions.

General comments

The main criticism is that in the current form it is not clear what is the scientific question

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they wanted to tackle in the first place and what is the main conclusion at the end of this work. Is it to establish some kind of climatology of wave set-up height in that area? Or is it to improve the general understanding of properties of the wave set-up? Can one translate the findings to other coastal regions, at least can one assume some? What is the reason to find an approximation of the empirical distribution? Also, the authors should put more emphasis in the manuscript, as one of the most cited and may be important references Soomere et al. 2013 is missing in the reference list.

Specific comments

If it is understood correctly they have used a single wind observation in favour of simulated wind information as forcing for the wave model. They argued that the simulated wind of atmospheric models are some times inaccurate and have some problems in representing the real wind fields. While this is certainly true, the analysis would benefit to present a short validation of the simulated wave field against some observation in the study area to show that a single forcing site is capable to represent the coastal wave climate reasonable.

Which Equation is exactly used for estimating the wave set-up height. They stated Eq (8) is used, but they also introduce the effect of shoaling and refraction is this afterwards used or neglected. Also, two Equations have the same reference number (9).

Some of the figures should also be refined. Figure 2 shows the model domain and the coastal segments with coloured dots that represent the value of a parameter of an estimated approximation. At this point this is too much information for the reader, one does not know what parameter “a” stands for. For instance, a colour coding, or a simple labelling of the number of the coastal segment would be of much more help later on, as in the other figures only the index number of the coastal section is displayed on the x-axis.

It is not clear what is the difference between the left and right side of figure 5, besides more storms are involved on one side. What is the colour coding for?

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