

## ***Interactive comment on “Global ship accidents and ocean swell-related sea states” by Zhiwei Zhang and Xiao-Ming Li***

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We would like to thank the reviewer for the valuable comments on the manuscript. Following are responses to the comments on a point-by-point base.

C1: Abstract: -sea state conditions play a significant role in shipping safety. should be sea state. remove the condition.

R1: The suggestion will be followed in revision of the manuscript.

C2: The sea state parameters, including the significant wave height, the mean wave period and the mean wave direction, obtained from numerical wave model data were analyzed for selected ship accidents. This sentence is fuzzy. please rewrite it.

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R2: The sentence is revised: Sea state parameters of numerical wave model, in terms of significant wave height, mean wave period (zero-crossing period) and mean wave direction were analyzed for the selected ship accident cases.

C3: Introduction -wave period (T) cross-zero wave period or other types of wave period?

R3: Yes. It is cross-zero wave period. We will clarify this in the revised manuscript.

C4: Date and method -the ERA-20C products describe the spatio-temporal evolution of the atmosphere (on 91 vertical levels, between the surface and 0.01 hPa), the land-surface (in 4 soil layers), and ocean waves (for 25 frequencies and 12 directions). I understand you want to describe the high-quality of ECMWF-20C data, however, waves are used in this study. Thus the atmosphere and soil are useless here.

R4: Yes. The sentence is a little bit lengthy and we will revise it accordingly.

C5: I wonder why not analysis the relation between ship accident and winds? especially in poor weather, wave should be related with wind.

R5: It is a good question. Sea wind does have significant impact on shipping safety and in many cases the high waves induced by wind can cause serious ship casualties. However, in this study, we would like to know impacts of sea state when both windsea and swell present on shipping safety. Swell are long waves propagating far away from generation sources and therefore are not effected by sea wind anymore. Therefore, in this study, we didn't investigate relation between sea wind and ship accidents. We will clarify this point in the revised manuscript.

C6: 4.1 Wave Height Here, the variable is not coincident with description above. Following the manuscript, SWH is right!

R6: We will follow this suggestion and revise the subtitle.

C7: Figure 4 the figure at forth row should be replotted due to the colors does not

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overlap with x axis and y axis

R7: Thank the reviewer for pointing the slight offset of the two plots in the fourth column. We will revise them.

C8: Figure 5 the arrow is out of area

R8: Starting points of the arrows are the grids where the model data available. The boundary (axis limits) of the plots are the same as the grids, therefore, it is unavoidable that some arrows are beyond the plots.

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