

Interactive comment on “Interannual variability and future projection of summertime ocean wave heights in the western North Pacific” by W. Sasaki et al.

Anonymous Referee #2

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In the manuscript a very simple statistical model is built between wind speed and 3-month averaged 90%-iles of significant wave height (H90) mainly based on ERA-40 re-analysis data. The model can be reduced to a correlation between a wind-index time series and the principal component of the first EOF of H90. Subsequently, this relation is used in combination with one realization of a climate change scenario to estimate potential future changes in H90 for the western North Pacific.

Although, the subject is generally of interest and deserves publication, the technical realization lacks sufficient technical quality and substantial conclusions. I therefore, unfortunately, recommend rejecting the manuscript in its present form. My recommen-

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ation is based on the following points:

1. The paper does not reach substantial conclusions. The 0.4 m increase in H90 over a wide range of the western North Pacific is partly an artefact of the oversimplifications in the statistical model used. The model basically reflects a correlation between a wind-index time series and the principal component of the first EOF. The latter, naturally has a large scale structure.

2. Also, the conclusion about a large-scale 0.4 m increase in H90 is based on an analysis of just one climate change scenario from one model. As the model is rather simple, it may have been easily applied to additional scenarios from the same or other models to elaborate on uncertainties in the projected changes. The approach used here does not represent the present state-of-the-art.

3. Although the study is motivated by possible changes in tropical cyclone statistics and their impact on significant wave height, the approach presented is not able to tackle that aspect. By using just one EOF only large-scale changes are analyzed. Furthermore, about half of the wave height variability is discarded, monthly means and 90%-ile wave heights are used, all of which is inappropriate to cover aspects related to the much smaller scale and more intense effects of tropical cyclones.

4. Some of the analysis and discussion presented appears to be rather decoupled from what the title and the introduction are suggesting and should have been deleted from the manuscript.

5. The statements and citations in the introduction do not reflect the present knowledge; in particular the discussion on tropical cyclones is outdated as recent publications present a rather mixed picture on this subject.

Summarizing I think that the subject is rather interesting and deserves publication. However, in this manuscript the authors failed to address the subject properly and it should therefore be rejected.

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