

## ***Interactive comment on “Predicting Ocean Waves along the U.S. East Coast During Energetic Winter Storms: sensitivity to Whitecapping parameterizations” by Mohammad Nabi Allahdadi et al.***

**Mohammad Nabi Allahdadi et al.**

mallahd@ncsu.edu

Received and published: 17 December 2018

Dear Reviewer Thank you very much for your time and efforts for reviewing our papers. Responses to your comments are as follows:

comment: However, as the authors observed, quoting Ardhuin et al., (2007), CFSR wind data is insufficient for capturing the short period gusting in the wind field, is quite common during January-March period in the study area

Response: As you mentioned, the timescale for the wind gusting is very short. In fact,

C1

it is in the scale of seconds to minutes (Abdallah and Cavaleri (2002)) that cannot be captured by the common wind models with hourly to 6-hourly output. Modification of wind input and whitecapping formula to include the effect of these fluctuation even in case of using wind model outputs is one of the ways that can increase the accuracy of wave models. It was not the focus of our study and was just mentioned as an example about the shortcoming of the available whitecapping formula in SWAN or other models. We will discuss it more in the paper introduction.

Comment: In order to examine the slanting fetch effect on the coastal buoy locations, two things could be considered, which may not necessarily be required for this study. It would be ideal to simulate wave conditions for easterly wind episodes and compare the performance for the two parameterization schemes; data assimilation also would be an option, see (Orzech et al., 2013; Almeida et al., 2016.).

Response: We agree that considering easterly wind episodes can shed more lights on the effect of the coastal geometry on wave condition at coastal buoys. As we mentioned in the summary and conclusion section, we considered a complementary paper to study the performance of two whitecapping approaches during other seasons including summer. They could include events of the easterly winds that will be studied in detail. About the data assimilation option: again we agree with the reviewer. However, our main goal in this study was only detecting the problem and probable causes, not diagnosing the solutions. That is why we only used the default parameter to challenge the original parametrization of the approaches. Calibration and its advanced form as data assimilation could be very helpful for improving the performance of these model like the calibration process that we completed in Allahdadi et al (2018).

Comment: Figure 3; a wind vector is required for scaling purpose Figure Response: Reference wind vector will be added to Figure 3 in the revised manuscript.

Comment: Figure8: please correct the units along Y-axis Response: The unit of Y-axis will be corrected in the revised manuscript.

C2

Regards Allahdadi et al

---

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2018-112>, 2018.