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Discussions

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.

Anonymous Referee #3

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Authors made significant efforts to evaluate the two mostly used white capping parameterizations in SWAN, viz., Komen and Saturation based Westhuysen approach. The simulation results clearly support the fact that Komen approach is the best for simulating bulk wave parameters as well as the spectra, during the winter weather conditions, for the US East coast. The horizontal resolution for the NCEP/CFSR wind input is $\sim$ 32 km for the study area, which would be sufficient for capturing the offshore directed wind forcing. However, as the authors observed, quoting Ardhuin et al., (2017), CFSR wind data is insufficient for capturing the short period gusting in the wind field, which

is quite common during January-March period in the study area. The simulated wave conditions at NDBC 44017 showed distinct variations in terms of its sensitivity to the two white capping parameters. As authors pointed out, the coastal geography played a significant role in the wave generation and its evolution for this station. Authors also provided a detailed discussion on comparing the varying source terms; effect of wind field and its effect on the wave growth; effect of coastal geometry, and finally effect of boundary layer instability etc. The study confirmed that, both Komen and Westhuysen implementations in SWAN and WAM models are comparable in their performance, with Komen approach consistently showed better agreement with in situ observations. In order to examine the slanting fetch effect on the coastal buoy locations, two things could be considered, which may not necessarily 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.). Figure 3; a wind vector is required for scaling purpose Figure 8: please correct the units along Y-axis

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