

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 #2

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The authors evaluated the performance of two different methods for parameterizing the whitecapping effect: 1) Komen which is based on the mean spectral parameters, 2) and van der Westhuysen approach which is based on the saturation level concept of the wave spectrum. This sensitivity analysis was performed in the winter, covering the storms of January 2009. They performed match-up comparison between their results at four NDBC stations. Their results showed that both approaches underestimate wave height at all stations, but still Komen performed better than the Westhuysen. Also, the Westhuysen approach underestimates mean wave period and the total wave energy

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as well, whereas Komen did a good job in the modeling of the wave period. In addition, the authors discussed the effect of coastal geometry, the effect of boundary layer instability, as well as the effect of wind field and growth conditions. The results and the methods are applicable, and useful for physical oceanographers using SWAN itself or Delft3D model, since the SWAN model is embedded in Delft3D model. Although other models such as WWIII model seems also appealing to researchers, but still SWAN model can be more efficient due to its flexible mesh option while these two models sharing a very similar theoretical background. I believe SWAN was a suitable choice and computationally more efficient in this study, considering the areas were modeled. Komen and Westhuysen are still available in SWAN and are still widely used for wave simulation all of the world, so that's worthwhile to evaluate. The results from this paper are very interesting and scientifically valuable. Results are presented in concise and convincing ways. Their results can be used for other areas, for example in the Gulf of Mexico, where recently folks have a difficulty to select the most appropriate method to parameterize the whitecapping effect. I would like to recommend this paper with minor revisions.

#51: the author mentioned that Komen method tends to underestimate in different regions. The author should be specific about these regions. Are these regions are shallow water, deep water? Also, at least two references should be added to this part.
#63: Some more findings from Mulligan et al., (2008) and W007 must be mentioned
#77: Did the author observe such this variability in their wind data, if so, how much?
general comment: be consistent with swell and swell waves. #146: In Figure 1, label the locations of places they mention in the text. Such a Gulf of Main, Rhode Island, and others. #146: how much variation? any idea? #168: provide the results for CFSR evaluation. Such as R2 or RMSE, or others. Support your evaluation results in providing other references other than the mentioned one. #191: wave height? do you mean significant wave height, be more specific. #201: you don't need to put these references. # In Figure 5 and 6: explain what those are black and red lines (regression line and 1: 1 line) in the captions. #Again, label Florida and Massachusetts

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coast on Figure 1 #228: Could you provide any references that support the averaging method could minimize the noises? #270: Show the location of very northeast edge on the map and explain about the wind condition during the simulation period on this location. #314: state the default values. #374: supply this paragraph with appropriate references. #406: remove the space between 12 and d. And be consistent about the figure's captions (e.g., Figure 10 or Figure10) #Add a few lines (2 or 3lines) discussing if the mentioned results considering these two approaches are applicable for other seasons since the authors only performed the sensitivity test for the winter.

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