

## ***Interactive comment on “Synergy between satellite observations and model simulations during extreme events” by Anne Wiese et al.***

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General Comments: In this work, first the authors present the validation, again in situ observations, of the results of the WAM wave model forced with different wind models with different spatial and temporal resolution for the North and Baltic Seas. Concluding that in this area the results of the WAM model are more precise when is forced with winds of lower temporal resolution. For later, using the previous model results, in order to demonstrate that the wind and wave satellite observations of the Sentinel 3 are more accurate near the coast than any other of the previous available satellite observations. However, there are some points that in my opinion the authors should consider:

- The biggest effort of the work is in the validation of the results of the WAM wave model, which is not reflected in the title or in the abstract of the work.

*Authors: We agree. The title has been changed now to include also the WAM wave model validations.*

- On the other hand, in this validation different wind models are used, which are not sufficiently described and their differences and similarities are not listed (Example, if they incorporate or not assimilation of data, etc.), which is very important at the time of understand the differences in the subsequent wave results.

*Authors: This is a very good point also made by one of the other reviewers. We added in the revised version more information about the different wind data used in this study.*

- Finally, mention the need to incorporate in the text the definition of the error statistics that have been used throughout the work (eg, SI)

*Authors: Thank you for this comment – this is very good point. This has been added now.*

I recommend minor revision before acceptance for publication.

Detailed comments:

1. The title could be "Synergy between WAM model simulation and Sentinel 3 observations during a extreme events"

*Authors: Thank you for the suggestion. We agree that it is important to add the wave model. We however decided not to specify the name of the wave model WAM in the title but just to use wave, in order to attract a wider audience to read our study.*

*The title now is “Synergy of wind wave model simulations and satellite observations during extreme events”*

2. With the same idea above, the abstract should be rewritten.

*Authors: You are right. We have now re-written the abstract incorporating also the information about the wave model WAM simulations.*

3. P5 Figure 1: Explain in text of the figure the three colors boxes

*Authors: We agree. This has been added.*

4. P5 line 11: There is an error in the directional resolution described

*Authors: Thank you and apologies for our mistake. This has been corrected.*

5. P6 table 2: I recommend use the same units for the spatial resolution of the different meteo models. The same along the text.

Authors: We agree. The units have been homogenized.

6. P8 lines 9-18: Change “ensemble” for “different model experiments” or “numerical tests”

Authors: We decided to use “ensemble” here, because it better reflects our idea behind using the different model experiments.

7. P11 lines 9-13: The concept of “period of the peak” can be confusing in this context of results of wave models and it is more frequent to call it “storm duration”

Authors: “Period of the peak” has been changed to “duration of the peak”.

8. P16, lines 9-10: Explain why do you think that using wave-atmosphere coupling models could you improved your results

Authors: This statement has been modified in the revised manuscript.