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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Coastal flooding: impact of waves on storm surge during extremes. A case study for the German Bight" *by* Joanna Staneva et al.

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Answers of the reviewers' comments

Reviewer #2

In the new manuscript, more emphasis is given on the storm surge predictions from coupled -and uncoupled models, while the general experiment setup and case study are the same as in the previous paper. The advantage of having a coupled model system is discussed; the authors show that the coupling of their ocean circulation model with a wave prediction model improves the predictions of extreme storm surges to a large degree. We are thankful. . ..

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Discussion paper

The relevance of wave-current interactions for storm surges still lacks sufficient documentation that is backed up with observational data, and this new paper presents strong arguments for using coupled models for the forecasting of dangerous storm surges. The data is presented clearly and informative in the figures, but the text needs some revision with regard to clarity and English grammar, therefore I would recommend the paper for acceptance with minor revisions.

Authors: We completely agree and carefully revised our English grammar.

Points to be corrected: - Some references that are used in the text are missing in the reference list. Authors: We crossed-checked all references.

- page 2, line 8: wind-induced surface stress does generally play an important role, not only in shallow areas.

Authors: We agree and rephrased this sentence.

- page 2, line 11: The reference to Qiao et al (2004) is not an original reference to this problems, there are many earlier studies that treat wave-induced mixing in both experiments and models. It would be good to also cite some of the earlier works here.

Authors: We cited earlier works and added new references.

- page 6, line 12: If <u> is the sum of Eulerian current and the Stokes drift, equation (3) will solve for the Lagrangian current following water masses. This is somehow different to the way GETM solves for fixed grid points. If solving for <u> that includes Stokes drift, the radiation stress is not the only wave information that is used in eq. (3). Note that traditional formulations of radiation stress use a Eulerian framework. I think that that <u>, as it is used here, should only include the Eulerian current.

Authors: We are sorry for the confusion. We completely agree with this statement and have made the appropriate corrections in the revised text.

- The coupling from GETM to WAM should also be described along with section 2.3.

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Discussion paper

Authors: We added this information to Section 2.3.

- Some text passages, particularly section 6 are somehow hard to read and should be revised for clarity and grammar.

Authors: The text has been revised. The language and grammar have been corrected. We hope that the revised manuscript reads better.

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