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.

Joanna Staneva et al.
Joanna.Staneva@hzg.de

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Answers of the reviewers’ comments
Reviewer #3

The manuscript presents a case study analysis of coastal inundation during an extreme extratropical storm event (Xaver) that made its land fall in northwest Europe December 2013, with a considerable impact in the North Sea. The central focus (and goal) of the paper is to show the goodness of having a wave model coupled to a surge model (or a regional ocean model). I consider this study useful and interesting, nevertheless I have some comments regarding the way the study and the results are presented. I make some suggestions regarding language, but the authors should read and correct the whole text, since the use of the English language is sometimes far from appropriate.

Authors: We are very thankful for the suggestions regarding the language. We completely agree and carefully revised our English language and grammar.

Abstract The abstract has several flaws that I suggest the authors should address. Please have in mind that the abstract should “survive” (or stand) by itself. Hence it should have concise but complete information so that an educated reader knows (or understands) what to expect in the text body. Please provide information about the models you are using in the abstract.

Authors: We agree and added more information about the model and major results to the Abstract.


Authors: This has been changed to “Extreme storm events”.

P1-L21: replace “enhances significantly” with “is significantly enhanced” Authors: The suggested revision has been made.

P1-L23: replace “area” with “areas” Authors: The suggested revision has been made.

P2-L7: erase “the” before “ocean”. Authors: This sentence has been revised for clarity.

P2-L7: Regarding sentence starting with “The wind-induced...” why is this here? It seems disconnected from the rest of the text (although, of course, being a valuable statement). Authors: This statement has been revised for clarity.

P2-L8: sea surface or ocean surface (mixed) layer? I tend to look at the sea (ocean) surface as a skin layer. Please be clearer. Authors: This statement has been revised for clarity.
P3-L30: replace “substantial” with “a considerable”; replace “for” with “in” Authors: The suggested revision has been made.

P4-L1: erase “cause”. Authors: The suggested revision has been made.

P4-L8: erase “as well as satellite data”; add “and remote sensing” after “in-situ”. Authors: The suggested revision has been made.

P4-L22: “outer model” or “outer domain”? Authors: We corrected this in the revised manuscript.

P4-L28: add “further details.” after “2016)”. Authors: The suggested revision has been made.

P5-L15: “action density” or “wave energy density”? Authors: We modified to “wave energy density”.

P5-L21: there is no “S” in the rhs of equation (2). Authors: The source terms \( S = S(\sigma, \theta, \phi, \lambda, t) \) on the right hand side of the equation (2) is the net source term expressed in terms of the action density. It is split as the sum of a number of source terms representing the effects of wave generation by wind (Swind) quadruplet nonlinear wave-wave interactions (Snl4), dissipation due to white capping (Swc), bottom friction (Sbot) and wave breaking (Sbr).

P6-L9: “wave motion” is too broad; please provide additional explanation Authors: We agree and provided more explanation including additional references at the end of Section 2.4.

P6-L27: add “wave model” after “by”; the WAM model doesn’t “give” data! all this sentence is inaccurate from a wave model standpoint. Authors: The suggested revision has been made.

P7-L2: add “of” before “GOTM”. Authors: The suggested revision has been made.

P7-L10: replace “causing” with “that caused”. Authors: The suggested revision has been made.

P7-L19: replace “has” with “had”. Authors: The suggested revision has been made.


P9-L5: replace “As an example we present” with “As can be seen in”. Authors: The suggested revision has been made.

P9-L12: sentence starting with “The standard. . .” is confusing; please consider re-writing. Authors: The suggested revision has been made.

P9-L15: “low”? how much? replace “analysis on” with “the analysis of”. Authors: “low” was substituted with a quantitative measure, the phrase has been replaced.

P9-L28: you have defined Hs before, hence erase “significant wave height”. Authors: The suggested revision has been made.

P10-L28: replace “demonstrate” with “show”; maybe this reduction should be quantifies here. Authors: The suggested revision has been made. The reduction is quantified and this is demonstrated in Table 2.

P11-L14: reached or reaching? Authors: This sentence has been revised for clarity.

P11-L30: replace “their” with “its”. Authors: The suggested revision has been made.

P12-L3: erase “with”. Authors: The suggested revision has been made.

P12-L17: add “to be” before “important”. Authors: The suggested revision has been made.

P12-L30: correct the tense of the verb. Authors: The suggested revision has been made.

P13-L4: “North-Frisian Wadden Sea” is this correct? Authors: Yes the term “North-Frisian Wadden Sea” can be used also for the North Frisian Islands which a group of islands in the Wadden Sea, a part of the North Sea.
P13-L5: “is due...” how do you know? Authors: The suggested revision has been made.
P13-L6: replace “of the” with “to the”. Authors: The suggested revision has been made.
P13-L29: models only could be inappropriate...” wrong tense; please re-write. Authors: The suggested revision has been made.
P14-L2: replace “is” with “are”. Authors: The suggested revision has been made.
P14-L3: add “the” before Nederland”. Authors: The suggested revision has been made.
P14-L6: sentence starting with “Recently...” is confusing; consider re-writing. Authors: The suggested revision has been made.
P14- L22: replace “with” with “to”. Authors: The suggested revision has been made.
P14-L30: replace “the coastal area” with “coastal areas”. Authors: The suggested revision has been made.
P14-L30: replace “know” with “understand”. Authors: The suggested revision has been made.
P14-L31: “risks and losses”? What do you mean?; replace “increases” with “has increased”. Authors: This sentence has been revised for clarity.
P15-L1: sentence starting with “Although...” is confusing; consider re-writing. Authors: The suggested revision has been made.
P15-L4: what “leads”? Authors: This sentence has been revised for clarity.
P15-L6: replace “has” with “have”. Authors: The suggested revision has been made.
P15-L7: replace “cause” with “causes”. Authors: The suggested revision has been made.
P15-L9: erase “the”. Authors: The suggested revision has been made.
P15- L18: sentence starting with “Nowadays...” is confusing; consider re-writing. Authors: This sentence has been revised for clarity.
P15-L24: replace “satellite” with “remote sensing”; which products?, please be more specific. Authors: This sentence has been revised for clarity.
P15-L27: add “have after “We”; add “the” after “that”. Authors: This sentence has been revised for clarity.