

Nat. Hazards Earth Syst. Sci. Discuss., author comment AC1  
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## Reply on RC1

Wagner Luiz Langer Costa et al.

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Author comment on "Modelling extreme water levels using intertidal topography and bathymetry derived from multispectral satellite images" by Wagner Luiz Langer Costa et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-387-AC1>, 2022

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Dear Reviewer anonymous referee 1,

Thank you for your observations regarding our preprint. Your suggestions helped to improve our manuscript.

Based on your review and those provided by the other reviewers, we understand that we need to modify the structure of the paper because the current format is confusing. We have undertaken a deeper revision of the state of the art on SDB (adding new references and text to the introduction section). We have added a much clearer aim to the introduction, and worked on linking the methods to the aim in a much more clear and logical order. In the methods section, we added further explanations about the different methods implemented to remove the bias (i.e., statistical and dynamical methods). In the discussion and conclusion sections, we built further on the context provided in the new references added in the introduction part. Please note that we did not model the storm surge, but we analyzed the maximum astronomical tide in all simulation scenarios and compared the outputs between scenarios using only surveyed bathymetry, only SDB, and mixed surveyed bathymetry combined with SDB. In terms of coastal flooding, the maximum water level is the main parameter studied and in most places in the world, the water level is dominated by the tide. In summary, we are happy to modify the paper structure as you and other reviewers recommend.

Please find in the supplement the answer to your specific questions.

Best regards,

The Authors.

Please also note the supplement to this comment:  
<https://nhess.copernicus.org/preprints/nhess-2021-387/nhess-2021-387-AC1-supplement.pdf>