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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Water-level attenuation in broad-scale assessments of exposure to coastal flooding: a sensitivity analysis" *by* Athanasios T. Vafeidis et al.

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This is a personal short comment (not necessarily reflecting the views of my co-authors) to the last point raised by reviewer #1, suggesting the use of land-use data rather than a "tilted" bathtub with fixed coefficients; and regarding the lack of validation.

As we have mentioned in our previous response (and added to our manuscript), our study involves the use of future socio-economic scenarios (Shared Socioeconomic Pathways, SSP); unfortunately there are currently no consistent future land-use projections for these scenarios, thus not allowing for the consideration of land-use information (in the form of some type coefficients) in the assessment of impacts.

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Regarding validation: we are reporting annual expected impacts (e.g. damages). To validate those impacts we would need long-term information on global impacts of coastal flooding. Such information is also generally not available, and where it is records are short and fragmented. Further, validation of flood extent by comparing to single events has been done in previous studies for few cases where some data have been available (also for the bathtub method which is well validated and its limitations are well known), and for single events (e.g. Xynthia). Such validation is not necessarily appropriate or informative in our case as flood characteristics can vary substantially based on storm characteristics (such as duration, wind direction etc.). Importantly, as our study also finds, flood characteristics are not necessarily the largest uncertainty in impact assessments.

The above are also two of the main reasons why we have conducted a sensitivity analysis (which is a form of validation according to all textbooks), which has led us to suggest other possible types of solutions for the representation of flood characteristics.

Finally, I would like to add that, personally, I have appreciated the discussion with the reviewer. I believe that such discussions are beneficial to all parts (even when there is disagreement) and promote science in general.

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