

Interactive comment on “New estimates of potential impacts of sea level rise and coastal floods in Poland” by D. Paprotny and P. Terefenko

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We would like to thank the referee for his comments. They pertain chiefly to the general concept of the work presented by us; we should therefore emphasize why certain choices have been made regarding the design of this research.

Firstly, the apparent lack of methodological novelty was a consciously chosen to allow comparison with previous studies and present the added value of new data. The static ‘bathtub’ approach to sea level rise (SLR) and coastal floods was used by all previous studies, so that they are differentiated by the quality of data involved. Other aspects, like assumptions, simplifications and extent of the analysis was the result of what data was available. As we note in the introduction, existing studies for Poland are either

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based on old analogue materials, official flood maps with incomplete coverage or on low-resolution global models. For instance, global model DIVA, which the referee refers to (Hinkel et al. 2010) is generalized for an average 70-km sections of the coast; even if Poland is presented in finer scale, it would be still little for a 500-km coast. The large difference in the level of detail of the analysis and processing technology compared to older Polish studies is in our opinion a sufficient reason to perform the study.

Secondly, since projection of SLR and the return periods of extreme flood still carries large degree of uncertainty, the study covers the whole range of possible scenarios for a reason. Most importantly, the results can be easily linked also to any existing and future studies on climate change and storm surges. Therefore, the study won’t be rendered obsolete merely due to the change of climate scenarios, which occurs every few years. Also, this approach allows to identify how risk to population and assets changes with each increment of water level, which is another difference from other studies.

It is true that the study does not include adaptation and barely touch the aspect of future socio-economic change. Analysing both in the level of detail matching the ‘baseline’ results of current exposure would require extensive studies on their own right. Adaptation methods is expected to be the next step our work. Future socio-economic change is closely linked to policy, as the location of new investment and construction depends on the spatial planning regulations. Precise delimitation of zones prone to SLR and floods, as well as accurate inventory of current exposure of population and assets is therefore crucial; depending how this information will be implemented, the future exposure will differ substantially.

This leads us to the last of referee’s comments, about the usefulness of the study for policy. Wide range of scenarios and detailed breakdown of exposure estimates makes it complementary to the official flood maps, which are expected to be used in local spatial planning, while this study would be useful for national-scale policy making, as it gives an detailed and up-to-date overview of coastal hazard for the whole country,

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which was not available so far. The study relied governmental data , of which many are being updated on continuous basis, while the analysis was programmed into GIS. That makes it easy to redo at any time when updates of data become available.

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