

# Review of: "[Perspective] Combatting Relative Sea-Level Rise at a Global Scale: Presenting the International Panel on Land Subsidence (IPLS)"

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Potential competing interests: No potential competing interests to declare.

Dear authors,

Your paper communicates a very strong message, concisely written, setting the agenda to bring scientific endeavours and disciplines together and to engage with agents on an intergovernmental level to treat land subsidence as critical as global sea-level rise. The paper clearly outlines the ideas and objectives of the International Panel on Land Subsidence (IPLS) and highlights the relevance of the topic for non-experts, which is deemed highly relevant in order to link with and convince agents across disciplines, institutional contexts, and governmental contexts. Some suggestions are made in order to enhance the strength of this paper and help to further elaborate the idea of IPLS, making this initiative more sound, especially towards approaching and integrating with the IPCC.

In the abstract, land subsidence is termed a "critical factor," which is, in my view, very neutral wording as it rather constitutes a hazard to many – often densely populated – coastal lowlands. However, my major concern about this paper is to point out the need to find a good balance of proposing big steps such as integrating land subsidence with sea-level rise (SLR) projections of the IPCC while staying realistic, as the integration of 21<sup>st</sup> century projections of coastal land subsidence and elevation change in the IPCC's AR7 seems too ambitious. The latter could risk that readers would not trust the spirit and the seriousness of the idea of IPLS (especially when it is people from the IPCC SLR community). For example, better to stay with saying "[...] starts to integrate 21<sup>st</sup>-century projections [...] into IPCC's SLR projections within the 7<sup>th</sup> Assessment Report cycle".

As you aim to collaborate with other groups and initiatives such as UNESCO and the UC Riverside Water Dialogue, please specify how you aim to do that. Is it via conference sessions, or will you actively reach out to them, etc.? The reader may not know how you want to manage it, so please simply list it. This also makes your idea of IPLS more thorough, and people will trust its viability!

It is appreciated that you explicitly list the actions to be undertaken in the IPLS. However, the description of writing position papers requires some additional information. How should the expertise within the broad land subsidence community be synergised? There is a need for working groups to develop out of the IPLS community! How should this be organised? Who will take care of or lead? Please elaborate a bit on this and extend this bullet point accordingly. Similarly, writing thematic assessment reports requires sub-(working) groups within the IPLS community. So also this bullet point

needs a bit more explanation of how to realise it. Again, these suggestions just help to make the idea of IPLS and argumentation in the paper stronger (again, important to keep in mind when approaching the IPCC SLR community).

Conducting global coastal land elevation change projections is not a trivial task, and one (global?) product is probably too ambitious to achieve and to make it into the working rounds of IPCC AR7. For a single global product, you need consistent global(!) vertical land motion (VLM) data that ideally involves the same processing and time frame, which is then integrated into the elevation data. If you refer to a data product for IPCC AR7, a more realistic/feasible goal would be to have first elevation projections for individual regions affected by land subsidence and where high-quality information on VLM and land elevation is available. The overall goal of achieving a global data product is very much appreciated, but to convince the reader (and especially the IPCC SLR community), an intermediate way between proposing the overall idea/high-end goal and what is feasible needs to be found. However, to build on your high-end goal of a land elevation projection product, you probably want to mention that this will be continuously updated (i.e., by integrating latest VLM observations and models). It is also appreciated if a little more information was delivered to make clear how the envisioned framework will allow to engage and create overspill effects on different scales.

Finally, I recommend rephrasing the text on global intergovernmental collaboration, as intergovernmental dialogue and knowledge exchange are not something only for the long term but should rather occur simultaneously with the other actions of the IPLS. Engagement with governmental and intergovernmental stakeholders involves a lot of time (often years to decades), especially when it comes to anchoring subsidence-reducing/-minimising measures in laws. Therefore, it is recommended to be explicit and consider the engagement with governmental and intergovernmental authorities sooner (especially as vast coastal areas will have tremendously subsided over the next years/decade if the driving human activities are not reduced...).

Apart from these major comments that mainly relate to the actions you propose for the IPLS initiative, I have some minor suggestions that should support the enhancement of the thoroughness of your paper. Please include further references, especially when you refer to the disproportionate impact of land subsidence on the poor. Please also provide the full references for the IPCC 2021 AR6 SLR projections, which are Fox-Kemper et al., 2021; Garner et al., 2021, 2022. It is of utmost importance to include further references when you refer to the improper consideration of land subsidence in climatological and oceanographic disciplines, as this constitutes a fundamental argument for your proposal of IPLS. Although there are a few studies that include VLM in SLR impact assessments, these mainly rely on simplified, linear assumptions while coastal land subsidence is a gradual, non-linear process of long-term reaction towards triggers and impacts. It is recommended to add that this non-linearity is rarely considered in those studies. In addition, you may add policy papers to the list of activities provided along with the aims of IPLS before outlining the roadmap. Finally, the paper would benefit from rephrasing a few text passages (i) in that the term “developing countries” will be replaced by “Global South” to avoid controversies in the international, inter- and transdisciplinary discourse, and (ii) to complete/rewrite so far uncompleted/too informal sentences.

Overall, with that, I look forward to the ongoing and coming activities of IPLS.



Best regards,

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