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Review and rebuttal of the paper

Cumulative Land Subsidence in Populated Asian Coastal Cities

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Editor handling the paper: Mai Van Cong

Response from authors:

The authors would like to thank the editor on and reviewers for the time taken to review this short communication, and the constructive criticism provided. The authors have revised the manuscript accordingly, as detailed in the responses below.

Comments from reviewers:

Reviewer 1:

The authors have reviewed and analyzed previous studies of land subsidence in populated Asian coastal cities. It is good to know that the land subsidence have been observed since the 1918 in Tokyo as the earliest. The causes of the land subsidence have been found as the groundwater exploitation for domestic water supply, urbanization (construction of high-rise buildings) and industrial purposes (natural gas extraction, etc.). The manuscript concludes that the land subsidence must be paid more attention The manuscript is clearly written and easy to follow. However, it could be better if the authors provide a location map of the coastal cities analysed/presented in the manuscript. In addition, a conclusion section needs to be provided to point out the main finding of the manuscript.

My recommendation is that the paper needs to be revised based on my comments above.

The authors would like to thank the reviewer for the time taken to review this short communication, and the constructive criticism provided. The authors have now included a new figure that details the location of the cities in question, and a conclusion, which now reads:

This short communication provides a chart that details the progress of land subsidence of 11 coastal cities in East and Southeast Asian countries, along with the global mean sea level rise. This severe land subsidence took place in parallel with economic development, and was typically caused by urban development and groundwater extraction. Land subsidence was found to be one to two orders of magnitude faster than sea level rise. While land subsidence has stopped in Tokyo, Osaka, Nagoya, and Niigata, and slowed down in Shanghai, Taipei, and Tianjin, it is still ongoing in Jakarta, Manila, Yunlin, and Bangkok.

Land subsidence may be occurring in many other places where urban development is progressing rapidly and groundwater is extracted for domestic and industrial purposes. However, in many areas it is probably unrecognized, as there are few places where fixed-point precise observations of ground elevation are being carried out. Once land subsidence occurs the ground level cannot be returned to its original level. However, the examples discussed in this communication indicated that, if land subsidence is identified and dealt by through regulations, it can be slow down or stopped relatively quickly. Hence, the authors hope that the figure provided

will lead city planners and disaster risk management practitioners to seriously consider the fundamental challenges posed with land subsidence to sustainable urban development.

Reviewer 2:

Here the authors examined land subsidence in densely populated East and Southeast Asian coastal cities as well as the related causes by analyzing existing literatures. The reviewer appreciates the authors' effort of exploring the issue using long-term observations. While the authors address a sound and important question, the rigor of the study can be improved. At this point, I recommend this paper for publication after a major revision to address the following comments:

The authors would like to thank the reviewer for the time taken to review this short communication, and the constructive criticism provided.

1. It will be clearer if the authors can provide a map to show the location of the cities they listed in Table 1.

The authors have now included a new figure that details the location of the cities in question (the new Fig. 1 in the paper).

2. The manuscript could benefit from a Conclusion that reinforcing the most important points of the research.

The authors have now included a new figure that details the location of the cities in question, and a conclusion, which now reads:

This short communication provides a chart that details the progress of land subsidence of 11 coastal cities in East and Southeast Asian countries, along with the global mean sea level rise. This severe land subsidence took place in parallel with economic development, and was typically caused by urban development and groundwater extraction. Land subsidence was found to be one to two orders of magnitude faster than sea level rise. While land subsidence has stopped in Tokyo, Osaka, Nagoya, and Niigata, and slowed down in Shanghai, Taipei, and Tianjin, it is still ongoing in Jakarta, Manila, Yunlin, and Bangkok.

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will lead city planners and disaster risk management practitioners to seriously consider the fundamental challenges posed with land subsidence to sustainable urban development.

3. Use more recent references from journals with the highest impact factor, especially in the Introduction and Discussion sections.

The authors have attempted to provide some new references throughout the paper, and hope the reviewer will be satisfied. The authors want to also note that this is a short communication, so they did not want to make it unnecessarily long, while also attempting to provide a more comprehensive reference list. If the reviewer thinks that any other references are needed, the authors are willing to include them.