

## RESPONSE TO EDITOR DECISION

Dear authors,

**Thanks for providing the well updated manuscript, which has been reviewed again by three reviewers. All reviewers' comments are minor issues that I believe the authors can well address them. In particular, I remind the authors to discuss the different precipitation scenarios and the heterogeneities when applying small-scale rainwater detention approach. Based on these, I suggest an overall minor revision of the paper before it can be accepted for publishing.**

Dear Special Issue Editors, dear Dr. Yang,

We are delighted that our efforts to clarify the original idea and motivation for our study in order to improve the initial manuscript are acknowledged. Based on the newly provided comments, we have undertaken another revision, specifically elaborating on our choice of a 'most representative' precipitation scenario and the impact of intra-city heterogeneities. Thanks to your and the reviewers' comments, the quality of the manuscript could further be improved.

With kind regards,

Leon Scheiber, Gabriel David, Mazen Hoballah Jalloul, Jan Visscher, Hong Quan Nguyen, Roxana Leitold, Javier Revilla Diez and Torsten Schlurmann

---

## RESPONSE TO REPORT #1

**All of my comments were addressed properly. I recommend this paper be accepted for publication. The important reference this paper has cited is a paper under review process which is Scheiber et al., (in review). Please check again how to cite an unpublished paper.**

We are happy to hear that our revisions meet the reviewer's expectations. Moreover, we are thankful for this remaining technical caveat, which concerned us as well. To gain clarity, we have asked the editorial office of NHESS for advice: we were informed that, in our specific case, both companion papers can be accepted simultaneously, so that their 'under review' status will be changed by the production team. According to this statement, there should not be further technical constraints.

## RESPONSE TO REPORT #2

### **No more comments (Accept as is).**

We are more than happy that we were able to compose a manuscript which, according to the reviewer's perception, can be accepted as is. We thank the reviewer for his/her efforts that were instrumental in improving the initial submission.

## RESPONSE TO REPORT #3

**This study evaluated and discussed the effectiveness of two flood adaption strategies in Ho Chi Minh City, including the large-scale ring dike protection scheme and decentralized small-scale rainwater detention. Significant reductions of flood hazard, as indicated by Normalized Flood Severity Index (INFS) which considering flood depth and duration, have been revealed for both strategies and their combination. The manuscript is well written, with comprehensive and meaningful analysis and discussions on the implementation of different climate change adaption strategies for HCMC, which also enlightening other areas such as LECZ and ASEAN. I enjoyed reading it. Though I believe the manuscript is publishable in the present form, there are few minor comments for the authors consideration.**

**1) It seems that certain precipitation scenario was used for the HCMC flood case. The uncertainties of modelling results shall be considered when comparing the effectiveness of different strategies. There are at least two issues related to the choice of precipitation scenario. First, the effectiveness of two strategies at different scales may be aimed for different kinds of flood events, for example, storm surges or pluvial floods. However, certain precipitation scenario shall not be able to reflect such differences. Moreover, how the effectiveness would change with the scale of flood is not clear enough neither.**

The reviewer makes a valid point here, stating that the decision for a specific precipitation scenario impacts the calculated effectiveness and overall reliability of different adaptation strategies. We agree that our assumptions and the resulting uncertainties should be documented. We revised the manuscript accordingly. The corresponding discussion section (chapter 4) now reads as follows (ll. 329-338):

*“Additional limitations arise from the definition of a design storm and from the parametrization of rainwater detention in the form of an attenuated hyetograph (cf. section 2 Material and Methods). The precipitation boundary was determined in conjunction with a systematic*

*mapping of local policies and adaptation guidelines. It follows a 180 min design storm specified by an official decree enforced in decision 752/QĐ TTg of the HCMC government. This duration may be seen as a balance point: while the large-scale ring dike and pumping stations are constructed to cope with extraordinary precipitation volumes (mostly in combination with spring tides), the suggested detention measures aim at complementing the local drainage system during shorter cloudburst events. The same applies to the return period, which certainly has a considerable impact on the effectiveness and technical limitation of the compared strategies. Nevertheless, the commitment to this specific design storm has to be seen in a row of conceptual assumptions that were necessary to undertake a direct comparison of these hydraulically unlike adaptation options.”*

**2) The intra-city heterogeneities shall also be important, especially for the small-scale rainwater detention approach. One advantage of the decentralized rainwater detention is the feasibility to be applied to local scale, for example, the flood prone areas due to the unfavoured topography, land use, drainage system etc. However, it is a bit hard to identify such information from the “more uniformly distributed” flood reduction of the small-scale rainwater detention strategy.**

We agree with the reviewer that it is a major advantage of small-scale detention measures to be implemented in a decentralized manner that is based on people-centered, i.e. bottom-up decisions. This makes the approach applicable to many regions, including those where a large-scale protection scheme is ineffective. But then, the detention measures can also relieve pressure from the downstream parts of the drainage system independent of whether they are installed in flood-prone areas or not. For this conceptual study, it was therefore decided to consider this type of adaptation to be “uniformly distributed” rather than making assumptions about the local feasibility and most effective placement in specific boroughs or neighborhoods. After all, such in-depth considerations about intra-city heterogeneities, unfortunately, can neither be proven nor evaluated at the available level of detail (e.g. about the drainage system). However, in order to sensitize readers to the existence of presumable heterogeneities and to clarify the rationale behind our uniform parametrization, we have added the following lines to the discussion of assumptions regarding our parametrization scheme (ll. 343-346):

*“Even if presumable heterogeneities in the realization of rainwater detention measures are neglected by this uniform parametrization, it still allows for the fact that subsidized micro-scale solutions may be implemented in a people-centered, i.e. bottom-up approach. In the first place, this new paradigm in adaptation can complicate official monitoring, but may render supervision by local authorities unnecessary in the end.”*