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Comment on nhess-2022-239

Anonymous Referee #1

Referee comment on "Low-regret climate change adaptation in coastal megacities – evaluating large-scale flood protection and small-scale rainwater detention measures for Ho Chi Minh City, Vietnam" by Leon Scheiber et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-239-RC1>, 2022

This paper compares the effectiveness of two adaptation strategies: (1) a large-scale flood

protection scheme as currently constructed in HCMC and (2) the widespread installation of small-scale rainwater detention as envisioned in the framework of the Chinese Sponge City Program (SPM). As authors claimed, it is important to explore and evaluate potential options of hazard mitigation as flood risk is becoming a major challenge for many cities in low elevation coastal zones. The topic of this study is valuable. But the quality and innovation of the current manuscript are not satisfactory. In any case, I have a few recommendations that I believe will help the authors to clarify their contribution and improve the readability of the manuscript.

Specific points are:

- Most of the figures in the manuscript are very poor in quality and hard to meet the standard for this journal, such as Figs. 2, not clear enough. Generally some of the figures are too small.
- How to simulate the small-scale rainwater detention in the HEC-RAS model? What is the limitation or uncertainty?
- I am not convinced by the model setup given limited information, more information for the validity of flood simulation by HEC-RAS should be described in the paper.
- What is "Flood Severity Index (NFSI)", how is it measured?
- Drainage capacity should be considered for the flood simulation.
- In Table 1, Flood depth (d_{max}) is the average for all the raster cells? This seems very simple. More analysis should be done for different cells, especially considering the spatial distribution.
- Spatial distribution of Flood Severity (NFSI) for different cells?
- This study only considers three scenarios of the mitigation scenarios, I think more analysis considering different sponge city measures would be very interesting. You will

want to discuss this.