**Natural Hazards
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Discussions

Interactive comment on "A methodology based on numerical models for enhancing the resilience to flooding induced by levee breaches in lowland areas" *by* Alessia Ferrari et al.

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The study proposed a methodology to create a database of numerically simulated flooding scenarios with embankment failures with the objective of improving resilience to flooding and increasing hazard preparedness in lowlands with levee breach-induced inundations.

The study is well worth investigating and the paper was well written. The application of the proposed model may have significant implications for hazard preparedness. Here are my concerns:

Although the authors briefly mentioned that optimization techniques have been implemented (see lines 29 and 30 of the manuscript) they have failed to cite recent relevant studies that have applied mathematical modeling and optimization strategies. It is important that the authors emphasize this more in this study. The following are some critical references:

1) Dulebenets, M. A., Pasha, J., Abioye, O. F., Kavoosi, M., Ozguven, E. E., Moses, R., Boot, W., Sando, T. (2019). Exact and heuristic solution algorithms for efficient emergency evacuation in areas with vulnerable populations. International Journal of Disaster Risk Reduction.

2) Trivedi, A., Singh, A.. (2017). A hybrid multi-objective decision model for emergency shelter location-relocation projects using fuzzy analytic hierarchy process and goal programming approach, Int. J. Proj. Manag., 35 (5), pp. 827-840

3) Pel, A., Bliemer, M., and Hoogendoorn, S. (2012). A review on travel behaviour modelling in dynamic traffic simulation models for evacuations, Transportation, 39, pp. 97-123.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2019-132, 2019.