

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## **Comment on nhess-2021-141**

Anonymous Referee #1

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Referee comment on "Modeling of a compound flood induced by the levee breach at Qianbujing Creek, Shanghai, during Typhoon Fitow" by Yuhan Yang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-141-RC1>, 2021

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This paper presents the flood model can reproduce the historical flood maps due to a compound flooding in a specific area during a typical typhoon event. The flood model proves its ability to examine the compound effects of precipitation and levee breach on the inundation. The paper is well structured and well written. My big concern is what the innovation of this paper is. The modelling approach seems reasonable but it is hardly seen innovative stuff in this paper. It was mentioned that the critical time to minimize damage (should further take actions) is the first a few hours after levee breach; however, readers would perhaps anticipate this conclusion before reading this article. In addition, I'm not fully convinced by one of conclusion, which concludes that the model is strongly sensitive to roughness value (but the difference of max. average water depth is very small (~5cm) when the roughness value differs 10 times). Maybe it should further explain that why the flood extent not consistently increases with the increasing of the roughness value after levee breach (compares to the flood extent before levee breach). Moreover, the vertical uncertainty of the topographical data could lead to large impact thus as a sensitive value on the flood extent and water depth in the flooding model.

Minor comments:

- I feel parts of the introduction is concatenated with literatures (e.g. line 68 to 86), it would be nice to summarize the findings rather than simply list the findings one after another.
- Line 25-26: 'In low-elevation areas, temporary drainage measures and flood defenses are equally important'. This has neither studied and nor proved in the paper.
- Line 66: what is the economic damage in this area?

- How does the model control the levee height during the breaching process in section 2.3?
- Line 184: what does 'remaining' mean? Does it mean the height of floodwall was decreased to 4.9-5m?
- Line 269: the assumed evapotranspiration value is based on what?
- it would be better to combine figure 2 and 5, which can clearly show the inundation process due to rainfall and sustained high water level in the river.
- Line 321: maybe it's better to show the breach location or highlight waterfront area in Figure 4.
- Line 348: decreased from 0.6 to 0.55?
- In Figure 3, it seems that these six points are building locations, how about the roadway and farmland? This is not consistent to the text line 367-369.