

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2  
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## Comment on nhess-2021-308

Anonymous Referee #2

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Referee comment on "Assessing tropical cyclone compound flood risk using hydrodynamic modelling: a case study in Haikou City, China" by Qing Liu et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-308-RC2>, 2021

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This paper presents a study on compound flooding in coastal regions. Using Haikou as a case study area, the authors couple a storm surge model and overland flooding model based on Delft3D Flexible Mesh model to investigate the compound effect of tropical cyclone flood hazards. It is an interesting and well-written paper. This paper is on a topic of interest to the audience of NHESS. The modeling and analysis methods are scientifically sound. The results provide helpful insights about coastal compound floods. I only have a few minor comments that I hope the authors could address in their revision:

Specific comments:

1. It would be helpful to have a figure showing location of tide and rainfall gauges in the bigger graph of figure 1. I am not very familiar with the geography of the region and I suspect many readers may not be either.
2. Section "TCs influencing Haikou" on lines 212-215: The TCs that pass through the region (18-22°N, 109-113°E) and stay over 24 hours have an apparent effect on Haikou. Therefore, 66 TCs from 1960 to 2017 are selected in this study (Figure 2), .... I suggest that the authors explain clearly about the selection criteria.
3. It would be interesting to see the impact of climate change on compound flood. The authors may add some discussion related to this topic.
4. This paper conducts a probability distribution of storm tide, while doesn't consider the rainfall probability distribution. I think it is one of limitations in this study, the authors should give some additions about this limitation in the conclusion part.