

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## **Comment on nhess-2021-163**

Jean-Paul Pinelli (Referee)

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Referee comment on "Assessment of direct economic losses of flood disasters based on spatial valuation of land use and quantification of vulnerabilities: a case study on the 2014 flood in Lishui city of China" by Haixia Zhang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-163-RC1>, 2021

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### General comments

This is a very interesting paper in a much needed area. The paper proposes a methodology to evaluate inland flood losses for specific events, which potentially could be used for flood disaster management and prevention.

### Specific comments

In the conclusion, the authors state that "The estimated 280 spatial distributions of the loss ratio and loss value of the flood disaster accurately reflect the spatial pattern of disaster loss and provide scientific guidance for disaster prevention, mitigation, and emergency rescue". This is certainly true, but the paper would benefit from a more detailed explanation on how the work could actually be used for guidance. May be a whole section on this topic would be welcome.

Also, the procedure for the derivation of the vulnerability curves is not clear, and should be improved and consolidated.

## Technical and editorial comments

Overall, the paper would benefit if the authors would try to reduce the use of the passive voice.

Line 16: "values of disaster-bearing bodies." Not sure what is meant. I suggest you use another expression.

Line 29: not sure what a "sponge" city is.

Line 40: I suggest using more recent references for the USA.

Line 54: I suggest that you add as a reference,

J.-P. Pinelli, Josemar Da Cruz, K. Gurley, A. Paleo-Torres, M. Baradaranshoraka, S. Cocke & D.-W. Shin, " Data management for the development, validation, calibration, and operation of a hurricane vulnerability model," International Journal of Disaster Risk Science, November 2020, DOI 10.1007/s13753-020-00316-4

Line 76: is this correct: the district is in the city? Or should it be the reverse?

Line 139: Not if the expression remote sensing is the correct one. Remote sensing refers to the acquisition of data through sensors at a distance, hence remote. From your description this is not the case. It seems you are describing process of digitization.

Line 146: Not sure what is meant by "traversed". Please, clarify.

Line 170: you might want to reference and look into different reports from the US Corps of Engineers. I believe that HAZUS inland flood curves are actually derived from their work.

Section 3.3 and line 221: If I understand correctly, you have data of accumulated loss as a function of land use. For each type of land use, you adjust the parameters of the equation of your vulnerability curve till you get the optimum fit (least error between model

and data). In number 4) you mention the "scale parameters", but I am not clear what they are. Could you please clarify?

Now I see your figure 6, but you have a reference there to FEAM 2013, which I cannot find in your list of references. Also, in the figure caption you write that the color curve is the optimized result, but the graphs seem to indicate the reverse, with the black being the best fit to the data. Am I missing something? Am I correct in interpreting that the black dots in your figures are data points from the references, to which you initially fit you VC, and then you adjust some kind of scale parameter to get a new optimized fit to your own data for the Liandu event? This is somewhat confusing and need to be better explained and clarified.

Line 262: fortification should be replaced by mitigation. If you are not referring to mitigation, then, please clarify the meaning.

Line 269: "more reasonable" than what? The last sentence of that paragraph should be rewritten to clarify the meaning.

Line 286: I don't know what sponge city planning means.