

Comments on manuscript titled: “Effects of variability in probable maximum precipitation patterns on flood losses”

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Article type: research paper

Note: all the comments are based on the electronic document ‘hess-2017-758.pdf’

I think that the manuscript presents an important piece of research work which helps to enhance the understanding of several effects on flood loss estimation using the model chain approach which consisting of five components starting with a precipitation module based on PMF approach and ending with a damage module.

The paper is in general well-structured and presented in a quite clear manner. Readers, at least like me, feel comfortable to follow and understand the story of the study reading the excellent introduction chapter. However, going through the remaining chapters I have several points which need to be addressed and clarified by the authors:

- P6, L4-11: Pls explain what “nested” means and why we need this in this context? P6, L6-8: how about the downstream boundary condition? Additionally, what shown in Figure 2 is quite confusing: why do we need the 2D model when we have already 1D model covering the whole flood plain? How to define coupling points (denoted as black triangles in the figure).
- Figure 1 is not clear and should be improved: (1) at the curved arrow line “boundary conditions”, where does the bunch of hydrographs come from? (2) pls expand the figure for the flood loss component adding info on the use of fdm and wse maps and the five vulnerability functions (V1...V5) because they are used intensively in subsequent plots and discussions.
- Have the exposed buildings/residents corresponding to 1D fdm, 1D wse (Figure 5 and Figure 6) been used for any loss calculation? If not, Pls remove them from the two figures. Additionally, can the authors explain that the distribution of exposed buildings seems to be bimodal in the cases of 2D but unimodal in the cases of 1D?
- P12 L6: “At minimum 2423 ... maximum 4667 buildings....”. Are these numbers correct? I see at least in the 2D fdm case, the maximum value exceeds 5300 buildings.
- I may miss some import points when reading the manuscript! The exposed buildings are higher in 2D fdm compared to those of 2D wse (Figure 5), could the authors help explain why their corresponding losses the opposite (Figure 7 and Figure 8). To this end, I think I would be clearer to explain ‘fdm’ and ‘wse’ in a better way (meaning P7L19 – P8L8 is not clear enough!).
- P11L15 and elsewhere: “other uncertainties”. There are several kind of uncertainties of which some can be quantified the other cannot. Therefore, the use of “other uncertainties” in this sentence is not recommended even though I understand what the authors mean!
- Figure 3: To see clearer spatio-temporal pattern, it would be better to add hydrographs at the outlet of some sub-catchments.
- P6 L4: delete “from the wse”