



EGUsphere, referee comment RC2
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Comment on egusphere-2022-52

Anonymous Referee #2

Referee comment on "Intersecting near-real time fluvial and pluvial inundation estimates with sociodemographic vulnerability to quantify a household flood impact index" by Matthew Preisser et al., EGU Sphere, <https://doi.org/10.5194/egusphere-2022-52-RC2>, 2022

The authors developed a framework to estimate a flood impact index at the household using high-resolution elevation data and compounding both pluvial and fluvial inundation. The paper is very interesting. It is a well-written paper containing interesting results which merit publication. Before I recommend the publication of this paper, I have some comments and suggestions that I would like the authors to address.

My main concern is about *vulnerability* and *resilience*. The vulnerability variables used in this study can be regarded as resilience variables. Is it reasonable? And, the impact index is a very complex issue in the evaluation of the risks. I think you should be careful about the selection of Variables. Some variables maybe not that representative or maybe there is relationship between variables which make these variables used more than once in the computation of the flood index.

Since you provide effective near real-time estimates providing dynamic information for householders or others, did you consider that variables should be updated frequently to make sure the efficiency of the evaluation? This is a very important issue for practical use.

Furthermore, the proposed method is relatively efficient when compared with conventional approaches. But the reasonability and accuracy are still the fundamental issue of the impact map should be addressed. So as the uncertainty.

My other comments are minor.

The authors give us a background in a very detailed way. A very nice Review. maybe it is too wordy for this study. I'm not sure the background section needs so much description, I suggest cutting some down.

I am curious about the application scope of fill-spill-merge. Is there any requirement for topographic difference or complexity of surface landscape? Would it be more helpful for reader to add some terrain information through DEM and the number or location of depressions in Figure 1?

In Line 593-595: "Our pluvial hazard estimate was shown to be accurate in determining the parcel level impact index 94.4% of the time when compared to a full hydrodynamic model". It was confusing for me to understand how to define the "accurate in determining the parcel level impact index"? Is the drainage network from FSM and hydrodynamic model compared here are both out of consideration, differing only at the depressions? Setup differences between the two methods should be made clear.

Figure 1: To those readers who are not in the US, they have no idea where Austin is. It is better to add a figure about the general location of the study region in the US.

The residential area is the main focus of this study, it should be shown on figure 1.

Table 1: The basic information about these watersheds, such as the size and imperviousness, should be added.

Figure 3 is not needful. The process is quite straightforward and has been documented clearly in the text.

Line 420: the full stop after "sources" should be deleted.