Natural Hazards
and Earth System
Sciences
Discussions

Interactive comment on "Flood loss modelling with FLF-IT: A new Flood Loss Function for Italian residential structures" *by* Roozbeh Hasanzadeh Nafari et al.

Anonymous Referee #2

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This paper aims to calibrate and validate a new relative flood loss function for Italian residential structures based on real damage data collected from a river flood event in the region of Emilia-Romagna at 2014. Authors are focusing on direct tangible damage, and the spatial scale is on the order of individual buildings. The function was developed based on an Australian approach (FLFA), which represents the confidence limits that exist around the parameterized functional depth-damage relationship. In the next step, the performance of the model was also validated for the prediction of loss ratios and absolute damage values. In this regard, a three-fold cross-validation procedure was carried out over the empirical sample to measure the range of uncertainty from the actual damage data. The validation procedure shows that the newly derived function

performs well and the results of these validation tests illustrate the importance of model calibration.

General comment

I have read the paper with great interest and the main objective addressed by the manuscript is framed appropriately to the scope of the journal. Overall, I think that the paper is well written, the results are nicely presented and the presented study could provide interesting empirical and quantitative insights. Nevertheless, some revisions are necessary to make a few points clearer and I recommend to accept it only after these revisions.

Specific comments

Materials and Methods part. In this part, I believe that the authors must use numbers rather than describing numbers with text (i.e. 10.000 kmˆ2 rather than 10 thousand kmˆ2). The methodology is well described and the method sounds scientifically correct but I believe and as it stated by another reviewer they should describe their methodological steps chronologically in order to avoid confusion. Additionally, I would suggest the authors to remove section 2 on the section describing their methodological steps in order to increase reader's friendliness. Moreover, I suggest the authors to give more information about the raw data used. As a reviewer without knowledge of the raw dataset, this is hard to assess. Please describe in more detail how total structure damage, average market value and mean water depth were calculated. On the data description part, change 'hydrological simulation' by 'hydraulic simulation' and 'bi-dimensional hydrological model' by '2D hydraulic model'.

Discussion. In general, the discussion part is missing apart a small discussion of their findings in section 4. I would suggest the authors to describe their results in more detail as well as with respect to findings from other case studies available in the literature. A more detailed comparison between the flood loss function for Italian residential structures presented in this study with other processes or other types of elements at

risk would be in my opinion an added value and would underline the importance of the specific one presented here.

Literature.

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