Natural Hazards
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Sciences

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Discussions

Interactive comment on "Estimating flood damage in Italy: empirical vs expert-based modelling approach" *by* Mattia Amadio et al.

Mattia Amadio et al.

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We would like to thank Reviewer 1 for the helpful comments and suggestions that made our paper more consistent and readable.

1. The title should be revised and become more attractive. How about: "Putting flood loss models to the test: the case of Italy" or something like that. . ..(just a suggestion)

Thank you, the title has been revised as "Testing empirical and synthetic flood damage models: the case of Italy"

2. Chapter materials and methods: 3.1 data description – consider a few introductory sentences before listing the datasets used for the study.

Added: "Our purpose is first to draw a detailed, homogeneous description of the hazard and exposure features involved in the three hazard events in order to evaluate their relationship with measured impacts. Several datasets are required for this task. These have been collected from different sources and spatially projected to the building level (i.e. micro-scale) for each one of the three study areas. The dataset we compiled for this analysis comprises:"

3. Subchapter 3.2: This is a chapter full of dense information. I would prefer two chapters instead: one, giving an overview of the existing models and explaining their characteristics and, two, a chapter describing the method used by the authors focusing on the reasons why they chose to test the particular models.

To improve readability 3.2 has been split into 3 sub-chapters (3.2. Damage models overview; 3.3 Models from Literature; 3.4 Models trained on observed records)

4. In the proposed "method" chapter a schematic description of the model used or work flow would be good and very practical for the reader (a figure showing the models used, the category they belong to expert-based/empirical and UVM, BVM or MVM or a table with a short description of the models and their characteristics).

A workflow figure has been added as 3.4.3.

5. Page 8, line 4: "exposure indicators" why are these "exposure" and not "vulnerability" indicators?

Clarified: "Indicators related to exposure and vulnerability"

6. Page 8, Table 1. What is "finishing level"?

Finishing level represent the state of quality of a buildings, as described in INSYDE details.

7. Page 9, line 16: Age and heat system are not in table 1. If you do not use them do not mention them at all.

Correct, they were deleted.

8. Is "number of floors" named "FN" as in table 1 or "NF" as in Figures 4 and 7?

NF is the right acronym. Thanks for having spotted it, the revised version is now consistent.

9. The language is overall good. There are, however, some small typos that have to be edited. E.g. page 9, line 23: "such as high prediction accuracy" and not "such prediction accuracy".

Thank you. We checked the overall manuscript with the help of a professional translator, we hope to have fixed all the typos.

10. Page 14, line 17: "micro-scale". What is considered a micro-, meso- and macroscale? The issue of scale should be further discussed in the discussion chapter and conclusions.

Added in page 7, line 18: "Models can further be classified in relation to the scale of their development and application (de Moel et al., 2015): "micro-scale" usually refers to a model built to account impacts over buildings individual components and it is commonly applied for local assessment; "meso-scale" refers to sub-national analysis which commonly relies on data aggregated on provincial or regional administrative units; "macro-scale" concerns assessments at country level." Added specification of scale in conclusions.

11. Page 14, lines 18-19: the authors refer to one of the case study areas and suggest that the differences in the model results may be subject to the different type of flood that these areas experienced. This issue should be further discussed. Where all the events similar? What is the difference of the impact of a flash flood? What about the presence of debris? Are these models reliable for all these types of processes?

Added explanation: "In fact, Luino's model was produced based on a flash flood event characterised by higher flow velocities and larges relative impacts". In all other cases,

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we speak of river floods and not flash floods, we specified in text. Also added in the conclusion: "The results have shown important errors when transferring models derived from different countries and scales such as the JRC-IT curve, or from events with different characteristics: the model from Luino is based on a flash-flood event where flow velocity has likely a significant role on the event impact."

Please also note the supplement to this comment:
https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2018-324/nhess-2018-324-AC2-supplement.pdf