

Interactive comment on “A dasymetric data supported earthquake disaster loss quick assessment method for emergency response in China” by J. Xu et al.

Anonymous Referee #2

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General comments

The paper describes a methodology for rapid estimation of fatalities as a consequence of an earthquake, for rapid response applications. Although the proposed methodology is not original, the paper is interesting, as an example of practical and potentially useful application of loss assessment technologies to emergency management. The paper describes all main steps of the proposed methodology, and provides a preliminary validation using four earthquakes in China. Unfortunately the Authors fall short in providing a clear and accurate description of the proposed approach, and the paper should be further integrated and improved to be useful to the scientific community.

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The quality of the presentation could be improved. In particular, the English should be thoroughly checked. Particular care should be devoted to ensuring the consistency of the acronyms (for instance, the term DPM (Damage Probability Matrix) is often substituted with DMP). The references should be checked as well for typos and inconsistencies. Furthermore, the captions of the figures should contain a brief explanation of the content of the figures themselves.

Specific comments

- the dasymetric approach, which is a core component of the paper, has not been properly described and discussed. What methodology has been followed for disaggregation? References should be provided and a clear explanation of the approach should be provided.
- The input data used to define the underlying exposure model is not clearly described. Moreover, the references points to papers available only in Chinese (to my knowledge), therefore would be useful either provide more useful references or describe in more details the data and used methodologies.
- Generation of iso-seismals: how are the short and long axes of the ellipsoid computed? (i.e. how is the length of the rupture estimated?)
- The calibration of the DPMs included damage data from the earthquakes considered for validation of the proposed approach?
- For the 4 validation earthquakes, information about the expected and actual focal mechanism should be provided to assess the performance of the stage 1 of the co-seismic assessment.
- Page 17 line 5: According to the Authors "speed is more important than accuracy". This assertion is questionable and should be further motivated, or discussed. In general the common sense would suggest that a suitable tradeoff between speed and accuracy should be attained, but this information should come from the end-users and

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being closely related to the emergency response application.

- There is no discussion about the validity of the assumptions related to risk assessment, nor a discussion on the uncertainties in the different model components, in particular those used to implement the disaggregation.

- The discussion on the validation would highly benefit from a modelling of the uncertainties. In particular, higher absolute errors to be expected in case where small number of fatalities is forecasted (cases E2 & E3). (that is, the aleatoric component plays a much greater role). Perhaps a percent error could be used, or another type of relative difference. The case E4 should be discussed in more details separately, as indeed a significant difference between forecasted and actual estimate can be observed.

- Page 12 line 11: are the authors referring to the "seismic intensity with exceedance probability of 10% in 50 years"? Moreover, this is usually referred to as "hazard" and is only a proxy of "earthquake disaster risk", lacking the exposure and vulnerability information.

- Table 1: "Griddding damage possible matrixes". Does it refers to "Gridding Damage Probability Matrices"?

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