Natural Hazards
and Earth System
Sciences

Open Access

Discussions

# Interactive comment on "Developing fragility functions for the areas affected by the 2009 Samoa earthquake and tsunami" *by* H. Gokon et al.

**Anonymous Referee #2**

Received and published: 10 September 2014

Dear Editor,

thank you for considering me as a reviewer for this manuscript, which I read with interest. The paper proposes new tsunami vulnerability functions for Samoa, based on data collected via remote sensing after the 2009 Tsunami. The methodology is rigorous and well described, and authors use a defensible technique to generate the curves. The only recommendations I would make are:

- There is already a work by Stefan Reese (published in 2009) that generated tsunami fragility curves for Samoan buildings, with data collected after the 2009 tsunami (exactly the same event of this manuscript). Authors briefly acknowledge this work in the introduction and they basically state that it is important to have more "point of views"

about fragility curves to "more accurately evaluate the vulnerability of the affected areas". However, after that sentence, authors do not make much effort to compare their results with those of Reese (2009), which I think is the main lack of this paper. The biggest problem with tsunami fragility curves is that they are developed using a range of different techniques and different assumptions, which make them really hard to compare, particularly if these are developed in different countries. In this case we have a chance to compare two studies in the same area, and based on the same event. As such, I think that this paper would "more accurately evaluate the vulnerability of the affected areas" only if authors would include a detailed comparison with the results of Reese et al (2009). Otherwise we only have another paper about tsunami fragility curves in Samoa, and we don't know how to compare its outcomes with those already in literature.

- In order to facilitate interpretation of results, authors should describe in detail the type of building damage corresponding to each of the 4 states they decided to use (survived, major damage, collapsed, washed away), rather than simply referring to Miura et al (2006). Of course readers can go get Miura's paper and look if any description of the damage classes is provided, but given the critical importance of this information I think it would be much better to include a description in this paper, ideally with example pictures (not satellite images, but photographs of the damages buildings).

- Authors should explain why the picked only 4 damage classes, and not 5 like Reese et al (2009) did.

- Authors should include a description of the physical and engineering characteristics of the buildings in their sample as fragility curves are strongly dependant of building physical features

- Authors should explain why they decided to not to generate different fragility curves for different building types (e.g. masonry, wooden, one storey, multiple storeys, etc.), as most of the publications in this field did. They seem to have the data about individual

buildings as they collected them using a special GPS-equipped camera. Then why did they not use those data?

I hope this helps,

Thank you

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 1, 2014.

C2031