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Natural Hazards and Earth System Sciences
Discussions

# *Interactive comment on* "Contrasting seismic risk for Santiago, Chile, from near-field and distant earthquake sources" *by* Ekbal Hussain et al.

**Anonymous Referee #2**

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The paper compares potential impacts of near field and distant earthquakes. The results show the need to take into account minor but proximal faults when addressing seismic risks in urban areas. In my opinion the paper is of good quality and may interest many readers. I suggest to accept it with the following revisions.

1) I'm not sure that the large impact of local/crustal earthquakes compared to subduction earthquakes is a new result. Similar conclusions have been reached in the 90s during the Earthquake Risk Management of the Quito city (Chatelain, J., Tucker, B., Guillier, B. et al. Earthquake risk management pilot project in Quito, Ecuador. GeoJournal 49, 185–196 (1999) doi:10.1023/A:1007079403225). Other references may exist.

2). Are the selected GMPE's similar to the one selected by the SARA project ? If not,



why ?

3) The exposure model is "aggregated" at the census district level. The active faults are however "near field" and close to faults the ground-shaking intensity is highly distance dependent. The authors should better describe the distance computation between the faults and the exposure assets. Which distance definition is used ? Is this distance definition similar for all GMPE's ?

4) My understanding is that the building are homogenously distributed within the district which is not the case in reality. Such spatial homogenization may introduce a bias. The author should discuss the potential effects of this homogenization (and even test it using various random buildings distributions in each district cell)

5) The authors used the vs30 values from the Bonnefoy et al. (2009). This paper is however not deriving such vs30 values but resonant frequencies from H/V values. I then do not understand how vs30 values have been obtained.

6) Epistemic uncertainties are large for such risk computations. Such epistemic uncertainy is taking into account only for the GMPE part (for which several GMPE's are considered). The resulting uncertainty is however never shown in the paper (since the authors consider an average GMPE model). It would be interesting to show (on Figure 10) the results for each GMPE (and not the average) to illustrate (at least once) the impact of the modelling epistemic uncertainty on the results.

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