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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Earthquake-induced ground failures in Italy from a reviewed database" *by* S. Martino et al.

Anonymous Referee #1

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The work could be of interest, but the authors work with the data who's degree of incompleteness is not assessed. This casts some serious doubts on the validity of the analysis and conclusions. Below are some major problems that need to be carefully addressed before a possible publication:

- Although the incompleteness of the CEDIT catalogue is acknowledged the paper lacks a clear analysis of the incompleteness of the ground failure records. What effect have the incomplete ground failure numbers on the presented statistics and the overall results? If the outcomes shown in figures 8-12 are based on incomplete data, then what is their value? What are the implications? Or these outcomes could be potentially misleading and confusing?

- With reference to figures 12 and 13, how is the occurrence probability of ground failure types defined and calculated? In terms of exceedance probability? But what threshold? This need to be explained. Or the probability simply refers to the statistical properties of the incomplete catalogue. If so, there are no implications as far as the actual relations between the ground failure triggering and earthquake parameters are concerned.

- With reference to Fig. 14, apart from the great data scatter (any explanation?), why is the linear scale used for Mw? Wouldn't it be appropriate to use log scale here considering that attenuation relations are not linear? Please explain. Another problem with using the maximum epicentral distance as an index parameter is that earthquake depth and rupture mechanisms are ignored. So what does it all mean?

- I was also puzzled by the use of very coarse lithologic data. 1:250,000 scale? Poor resolution of lithology, with the uncertainty in the locations of historic failures - what is this good for? The use of similarly coarse geologic maps could be perhaps justified in the case of some parts of Africa. Note that in China, which is MUCH bigger than Italy, 1:50,000 gologic maps are now used to investigate relations between earthquake triggered ground failures and lithology.

- Can we learn something new from an incomplete catalogue and associated statistics? How do the summary statistics of the CEDIT database compare with some other published works based on more complete data?

Examples of some other problems:

- Page 2053 "Source-to-site distance is the key parameter for characterising the susceptibility of an area to failures triggered by earthquakes." – this is simply wrong.

- If the geology map is "reporting only substratum" (page 2051), then how did you get debris and alluvial deposits (page 2050)?

- Conclusions – last sentence: poorly written, unclear.

- Some references missing and some works included in the reference list are not cited in the text.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 2041, 2013.