

Interactive comment on “Effects of finite source rupture on landslide triggering: The 2016 M_W 7.1 Kumamoto earthquake” by Sebastian von Specht et al.

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Dear Mr. Xu,

thank you for your comments and constructive suggestions, which we considered in detail to improve the presentation of our study. Please find below our point-by-point response to the *original comments*:

1. *The unspecified landslide date are from NIED. Please discuss the possible uncertainties may cause by these data. In addition, how accuracy the coseismic inventory is, please also explain the possible mapping errors, and discuss how*

C1

they will affect the results.

The landslides were mapped from aerial imagery at much higher resolution (sub-meter resolution) than the 30-m DEM that we used to compute local hillslope aspect and slope. Even a large systematic bias (up to several meters) in the landslide mapping would be small compared to the DEM resolution. We appreciate the reviewer's comment in this regard, but feel that a detailed uncertainty analysis of the landslide inventories is beyond the scope of this study.

2. *Figure 4: lines are not so visible. Fig.4 b and d are not well explained. Please use a better presentation of the data in this figure.*

The figure has been modified to offer more detailed description and an explanatory figure.

3. *Figure 7: The explanation of this figure in the texts is not enough. Is this point density map? Do you consider the size of the landslides here?*

Yes, these are kernel density maps of the landslides. The landslide area is taken into account in these figures as highlighted by the colorbar annotation. We added some more detail to the description of Fig. 7.

4. *Please explain the correlation between the unspecified landslides and the coseismic landslides? Are there any reactivations?*

We discuss the relation between both landslide data sets at the end of the section "Topographic analysis". A detailed study of the unspecified and coseismic landslides is that by Chen et al. (2017), who reported 29 reactivated landslides in the area affected by slope failures. We refer to their work in the text.

Changed in text (p. 18, l.3):

Chen et al. (2017) identified only 29 landslide reactivations during the Kumamoto earthquake.

C2

5. *Some relevant and important references are missing: Fan X et al (2018), published on Landslides journal: Coseismic landslides triggered by the 8th August 2017 Ms 7.0 Jiuzhaigou earthquake (Sichuan, China): factors controlling their spatial distribution and implications for the seismogenic blind fault identification.*

We added the suggested reference to the introduction, page 1 line 23 and page 3 line 10.

6. *On Page 3, line 8-9: Wenchuan earthquake has been well studied by many others, please also refer to: Huang and Fan (2013). "The landslide story" on Nature Geoscience.*

We agree with the reviewer: literally hundreds of papers on the Wenchuan earthquake have become available by now. Yet the suggested reference cites papers that we already cite concerning the earthquake related landslides of Wenchuan, i.e. Gorum et al. (2011).

References

- Chi-Wen Chen, Hongey Chen, Lun-Wei Wei, Guan-Wei Lin, Tomoyuki Iida, and Ryuji Yamada. Evaluating the susceptibility of landslide landforms in Japan using slope stability analysis: a case study of the 2016 Kumamoto earthquake. *Landslides*, 14(5):1793–1801, oct 2017. ISSN 1612-510X. doi: 10.1007/s10346-017-0872-1. URL <http://link.springer.com/10.1007/s10346-017-0872-1>.
- Tolga Gorum, Xuanmei Fan, Cees J. van Westen, Run Qiu Huang, Qiang Xu, Chuan Tang, and Gonghui Wang. Distribution pattern of earthquake-induced landslides triggered by the 12 May 2008 Wenchuan earthquake. *Geomorphology*, 133(3-4):152–167, 2011. ISSN 0169555X. doi: 10.1016/j.geomorph.2010.12.030. URL <http://dx.doi.org/10.1016/j.geomorph.2010.12.030>.

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2018-101>, 2018.