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Nonlinear Processes in Geophysics
Discussions

Interactive comment on "Size distribution law of earthquake-triggered landslides in different seismic intensity zones" *by* Yidan Huang and Lingkan Yao

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We very much appreciate the careful reading of our manuscript and valuable suggestions of the reviewer. Responds to the reviewer's comments: Comment 1: From the title and the abstract, I thought the objective of the paper was to find the distribution law between size and frequency of landslides triggered by earthquake with different intensities. However, the paper structure should be well managed considering three ways (inventory data, computer simulation and physical experiment) in the paper. Response: Thanks for your comments, I'll try to revise to make it more focused.

Comment 2: Landslide inventory data in the paper is not clearly clarified. The pro-

cess and existing uncertainties in image interpretation for landslides should be explained. How did the authors deal with the connected landslides which are common in Wenchuan earthquake events and difficult to be separated? The author states the phenomena in lines 160-161, but without any other words later. Response: Several individual landslides in low-resolution images may be misjudged into a single larger landslide because the distances of them are less than the resolution of the image. Therefore, the higher resolution of the images used, the easier individual landslides are separated and the more objective landslide inventory maps prepared. The remote sensing data collected in this paper have high resolution, and the single landslide can be identified through manual visual inspection combined with experience.

Comment 3: The distribution law of volume (depth)-frequency and area-frequency is obtained and shown in Table 1 and Table 2. The results are from the same triggering events but the number of the samples shown in the tables is not the same. Why? Response: The samples in Table 1 are obtained from field surveys, and the samples in Table 2 are from remote sensing interpretation. The number of samples obtained from field surveys is small, while that from remote sensing interpretation is large.

Comment 4: Equation 1 is wrong. Response: I am very sorry for our incorrect writing, I have revised it. The correct equation is: N(A)=a$\times$Aˆ(-b)

Comment 5: Please explain the matching ability of the physical experiment with the real earthquake events, such as in terms of the peak acceleration in experiment and seismic intensity in Table 2-3. Response: In general, 0.1g corresponds to the VII degree region, 0.2g corresponds to the VIII degree region, 0.4g corresponds to the IX degree region.In the physical experiment, 0.075-0.125g corresponds to the region blow IX degree, and 0.15-0.25g corresponds to the region above IX degree. In the shaking table experiments, the one-side slope sand pile was built by dried sand gravel reaching its natural angle. The strength of the loose slope is less than the natural slope. In other words, a small peak acceleration could cause the sand pile to collapse in the experiment. Therefore, the seismic intensity in the physical experiment is less

than in the real earthquake events. The purpose of the experiment is to study the evolution trend of the distribution law with increasing seismic intensity, which is mainly a comparison of the evolution law without a definite numerical correspondence.

Technical corrections 1. Grammar mistake exists in the paper, such as Lines 30-34, Line 211. 2. The quality of the figures need to be improved. 3. The unit of the parameters in Line 234 and Figure 4-5 is not clear. 4. The language needs to be improved. Response: Thank you for pointing out the mistakes in our writing, we have corrected.

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