Nat. Hazards Earth Syst. Sci. Discuss., 2, C380–C382, 2014
www.nat-hazards-earth-syst-sci-discuss.net/2/C380/2014/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Landslides triggered by the 12 January 2010 Mw 7.0 Port-au-Prince, Haiti, earthquake: visual interpretation, inventory compiling and spatial distribution statistical analysis" *by* C. Xu et al.

Anonymous Referee #2

Received and published: 12 April 2014

This study uses high-resolution satellite images to construct a landslide inventory for the 2010 Haiti earthquake triggered landslides and perform an analysis of factors controlling the landslide. The topic is important and could be relevant to the readers of NHESS. However, the significance and novelty of this manuscript has not been highlighted. The scientific target to be explored should be clear, and the statistical analysis should be unbiased. The following comments are provided and hopefully useful to the authors to improve the presentation of this manuscript. 1. Type, resolution, date and coverage of each satellite image should be listed on a table for clear reading and infor-

mation of data quality. 2. Infrared band which is the most sensitive one to recognition of landslides among all satellite bands was commonly used in recognition of landslides. Is infrared band used in the present study or not? This must be explained. 3. Landslide interpretation by an expert and field check are always necessary and related to quality of inventory. So, these must be assessed and discussed. 4. In the statistical analysis, some efforts have mentioned by previous researchers to make the results unbiased. These include: (1) different types of landslides are analyzed separately, (2) landslide deposition area must be recognized and not included in the analysis, (3) flat region must be separated from the study area and not included in the analysis, and (4) landslide ratio (probability of landslide failure) instead of landslide number or landslide area is used in the analysis (e.g. Lee, 2013). For example, in the vicinity of Port-au-Prince and in that of Leogane, there are wide flat region. If these flat regions are included in the statistical analysis, then the result becomes unclear and obscure. A pdf file of "Lee, C.T. (2013) Re-evaluation of Factors Controlling Landslides Triggered by the 1999 Chi-Chi Earthquake. In: Earthquake-Induced Landslides, Ugai, K., Yagi, H., Wakai, A. (eds.), Springer, 213-224" can be found in Google Scholar. 5. The definition or mathematic expression of "slope curvature" must be described in the text. 6. P17, Line 20-22: "The 453 landslides triggered by the Haiti earthquake contain various landslide types and experienced relatively gentle ground motion comparing with the Wenchuan event, thus have relatively short runout distances." This is questionable, because the apparent friction is commonly controlled by landslide volume, not the ground-motion intensity. 7. P18, Line 4-7: "This perhaps because the coherent deep-seated landslides of large areas mostly have higher angle of reach due to their smaller horizontal runout distance, whereas shallow-disrupted landslides of small areas have lower angle of reach due to their larger horizontal runout distance." This is questionable, because the coherent deep-seated landslides commonly have large volume and smaller apparent friction, whereas the shallow-disrupted landslides commonly have small volume and smaller apparent friction. 8. P4, Line 4; P19, Line 10, 14, 17, 18; P20, Line 1, 8; P22, Line 13; P25, Line 15, 18: "LPND" should be typing error of "LTND". 9.

Fig.13: What density means must be demonstrated in the figure caption and must be discussed in the text. 10. P30, Line 16-17: “The correlations of the maximum values and distribution area (or number of 1 km$\times$1 km grids) were shown” should be “The correlations of the maximum values and distribution area (or number) of 1 km$\times$1 km grids were shown”. 11. P30, Line 20-21: “Fig. 30 indicates the completeness of the inventory of landslides triggered by the Haiti earthquake”. This is questionable and better reserved. Completeness of a landslide inventory is commonly evaluated from the plot of a frequency-size relationship. 12. One anonymous author comment indicates “I wonder if some of those that don’t show anything remarkable could be dropped and their relationships just mentioned.” I agree this comment and suggest authors of present manuscript can redo statistical analysis of the landslide controlling factors according above-mentioned unbiased approach, and emphasize only some significant factors. 13. To improve the readability of this manuscript, I recommend the manuscript should be proofread by native English speaker.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 1259, 2014.