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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "An evaluation of influential factors on landslide mobility during the 2008 Wenchuan earthquake" *by* D. P. Guo et al.

Anonymous Referee #2

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The topic of this paper might be interesting to our NHESS readers, but this reviewer failed to see what our readers should be learning from this draft. The draft is also rather short of reasonable analysis or other evidence to support some of the inferences made. Therefore, this reviewer suggests that this paper should be rejected due to some key problems as follows.

1. The authors tried to use and relate some parameters to the landslide mobility through a statistical approach. But this reviewer failed to see the physical meaning of these analyses. If the models were not supported physically, the models would be meaningless. Say, the authors tried to conclude that some parameters have a linear relationship with landslide mobility index, but they did not provide the reason, namely, the possible physics behind these phenomena. On the other hand, for this reviewer, it

is very difficult to find a linear relationship between those parameters and the mobility index presented in Fig. 4 and Fig. 7. The very low values of R2 make this reviewer doubting reliability of the approach proposed by the authors.

2. Some interpretations were based on the authors' images without field evidences or theoretical analysis. For example, the authors failed to see any relationship between the equivalent coefficient of friction and the sine of slope transition angle from Fig.5, but they concluded that these two factors had some relation based on Fig.6. As this reviewer understands, the slope transition angle is the feature of topography before the occurrence of landslide, and Fig.6 can only tell us that more landslides had been triggered on those slopes with slope transition angle being 160-170 degrees. They are basically two different concepts. Nevertheless, the authors concluded that they have some relationship and also tried to explain the reason by guess.

3. Figure 7 is in the natural order of things, because the authors plotted H/L against H.

4. It is understood that the PGA estimated through equation 1 will be in very low accuracy. It is also expected that PGA would be affected by many site effects (such as bedrock, elevation and topography). Therefore, this reviewer doubts the reliability of the data presented in Fig.8 and then the conclusions made basing on these data.

5. Concerning the effect of rock type, this reviewer suggests that the authors make further examination on the data used in the draft. As seen in Fig. 9, the authors selected 12 cases for RT1 and RT2, but 28 cases for RT3 and RT4. If we just selected those cases with H/L being smaller than 0.6, we may have differing conclusion. Namely we may conclude that they had same mobility.

6. Due to these problems mentioned above, this reviewer doubts the need or reliability of the model as presented by equation 2.

7. Although this reviewer does not think that language should not be a key issue in judging a scientific paper, the English of this draft should be thoroughly sharpened.