

## ***Interactive comment on “An improved method of Newmark analysis for mapping hazards of coseismic landslides” by Mingdong Zang et al.***

### **Anonymous Referee #3**

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In this paper, Newmark method is applied for the study of Ludian earthquake event, and two innovations are introduced to this method. (1) Using Baron model to calculate  $F_s$  and  $a_c$ ; (2) using CF method to calculate the slope failure probability in the Ludian earthquake. The special comments include: Line 46 the introduction is not sufficient. There is a lack of current research about Newmark, the purpose of this study and the problems to be solved in this paper Line 51 Please add the relevant references about Barton model Line 78 is the landslide inventory from previous study. If it is, please add the references. If not, Please give the brief introduction about the information of pre and post-earthquake images (such as images name and resolutions) and interpretation methods. Line 95  $F_s$  need subscript Line 147 add the relevant reference and give a brief description Line 166 How many cells about static factor of safety less than

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1? If it is larger than 5% of the total area, it is not appropriate. Otherwise, the 0.09 is too small, what is the reason for such a small value? Please explain the reason.

Line 229 Normally, the larger the Dn value, the larger the P (H/E) value is and the larger the CF value is, the more tending to 1. So is CF method appropriate? I think Weibull curve might be more appropriate. Or would you like to show more evidence? Since there are Newmark values and landslide inventory of Ludian earthquake, why not fit Weibull curve?

Jibson, R.W.; Harp, E.L.; Michael, J.A. A method for producing digital probabilistic seismic landslide hazard maps: An example from the Los Angeles, California, area. *Engineering Geology* 2000, 58, 271-289.

Line 267 I am confused with this word. From Fig. 15, we find that when the Dn is about 60 cm, the area is the largest. That means the study area is more susceptible to the landslide types with larger displacement rather than shallow falls and slides with small displacement. This is inconsistent with the facts.

Line 282 I thought fig.16 is meaningless. What is the significance of establishing a functional relationship between area and CF values in different CF interval? In addition, do you use median, maximum, minimum or average values of CF for each interval?

Line 514 Please give the stations distribution of the fig.15 and a brief information. In addition, the accuracy of PGA obtained by inverse distance interpolation needs to be verified. Why not use other interpolation methods (Dreyfus, Daniel Kenoyer, 2013, The influence of different simplified sliding-block models and input parameters on regional predictions of seismic landslides triggered by the Northridge earthquake, *Engineering Geology* in this article, they use Kriging interpolation). In addition, since you have station records, it will be better if you use Arias intensity.

Other comments: (1) There are few articles about the Ludian earthquake landslide, especially about the Newmark aspect of the Ludian earthquake. Please add the relevant references and make a brief discussion. (2) In this paper, compared with the traditional Fs calculation method, the author introduces Barton mode. Whether the author compares the difference between the two calculation methods and makes a quantitative comparative analysis is necessary, as well as a brief qualitative discussion.

In summary, we suggest that this article should be revised.

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