

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
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Comment on nhess-2022-135

Anonymous Referee #1

Referee comment on "Characteristics and RISM of sliding flow landslides triggered by prolonged heavy rainfall in the loess area of Tianshui, China" by Jianqi Zhuang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-135-RC1>, 2022

The present study aims to studying prediction model for the shallow loess landslides events which is frequency occurrence in loess area due to prolonged heavy rainfall. The landslide data, along with the characteristics of the loess shallow landslides were obtained through multiple field investigations and remote sensing interpretations, and then the mechanisms involved in the sliding flow landslide are proposed which is very useful for comprehensive study shallow landslide mechanism.

The outstanding wok of the manuscript is a new Revised Infinite Slope Model (RISM) was proposed using equal differential unit method and corrected the deficiency that the safety factor increases with the slope increasing when the slope is larger than 50° calculated using the Taylor slope infinite mode which is an innovative work. Meanwhile, the intensity-duration (I-D) prediction curve of the rainfall-induced shallow loess landslides under different slopes was constructed combined with the characteristics of rainfall infiltration and RISM, it is the first time propose the intensity-duration (I-D) prediction curve based on physical method.

The manuscript structure is reasonable and readable, and the RISM and prediction model have reference value for the research of shallow landslides. And the manuscript will be attract more read and cited. But there is some information should be added before published, I give the minor revise.

1) the manuscript title is not suitable, and the manuscript title should contain the key words: prediction model etc. e.g., the title can be revised to: A novel prediction method of shallow landslide in loess area based on RISM, a "7.25" loess sliding-flow landslide event in 2013 in Tianshui, China case study.

2) Literatures seems to be extensive. Some recent research on shallow landslides, are suggested to be incorporated and supplemented. For example:

Fatma Keles and Hakan A. Nefeslioglu. Infinite slope stability model and steady-state hydrology-based shallow landslide susceptibility evaluations: The Guneysu catchment area (Rize, Turkey), CATENA, 2021.

Medina V et al. Fast physically-based model for rainfall-induced landslide susceptibility assessment at regional scale. CATENA, 2021.

3) the shallow loess landslide event name is not the same, e.g., "7.25 loess landslides" is used in the abstract, and "7.25" loess sliding-flow landslide events is used in text, please make it unified.

4) Line 85, In Section Introduction, please focus on scientific issues clearly and work to solve these problems well. This section needs definitely gives the research gap and objective about your work.

5) Do the earthquakes and symbols in Figure 1 represent the earthquake magnitude? If so, please add their units "Ms".

6) English requires proofread by native speakers.