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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "A physics-based probabilistic forecasting model for rainfall-induced shallow landslides at regional scale" *by* Shaojie Zhang et al.

Anonymous Referee #1

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Zhang et al present a large scale analysis of landslide hazards by connecting hydrological process simulation and a probabilistic slope stability model. The innovative content of the work lies in the application of a Monte Carlo approach to assess the uncertainty of geotechnical model parameterization (cohesion and internal friction angle). The objective of the study is very ambiguous as landslide probability calculation is carried out for a large area (31000 km^2) on a daily basis. The spatial resolution is 125 m. Consequently several simplifications are necessary. The success rate of landslide prediction for a rainstorm event in 2013 is high, as well as the false prediction rate. In my opinion the manuscript is well written and has an adequate structure. The authors do a good job in explaining what they did and the probabilistic approach is of interest for the

research community. For this reason I recommend acceptance with minor revisions.

The following specific comments cover mainly English style and grammar and may not be exclusive: L 88: Mohr-Coulomb is misspelled L 92: c is a stress L 92: "(which)" instead of "(Which)" L 133: "dependent on the variable r" instead of "dependent on the a variable r" L 145: add "to" before "identify" L 193-194: I suggest to re-formulate this sentence. L 228: "takes" instead of "take" L 305: the depth of the shear plane has a crucial influence on the FOS. It seems that the depth of the shear plane was assumed to equal the depth of the soil. Is this correct? Please comment (also in section 5) on the consequences of this assumption (sensitivity of model outcome) and on the accuracy of the spatial soil depth distribution assumed in this study. L 307: please explain the discretization process in more detail Section 4: add information of the size of the investigation area could be given earlier. Figure 9: right: what does the star mean?

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