

Interactive comment on “Physically based modeling of rainfall-triggered landslides: a case study in the Luquillo Forest, Puerto Rico” by C. Lepore et al.

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Received and published: 8 March 2013

This documented work represents a very good approach in basin-scale landslides modeling and is recommended to be accepted with some minor comments. The current work is smart because with more and more satellite data available, it is a good time to pursue dynamic and deterministic approach for landslide studies at larger scale (i.e., basin scale; here I suggest to cite some recent work on basin scale modeling, e.g., Cannon and Gartner, 2005 and so on). Particularly, this work links the landslide mechanism with hydrologic dynamics, which is of much help for future landslide research at temporal and spatial resolution.

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(1) It mentioned that Eq. 3 is equal to the equation proposed by Iverson (2000) (page 1341 line 4). The essential part of Iverson's equation is the dynamic response of rainfall and I didn't see this responding part in your draft.

(2) Did you use any observation data of landslide events to verify your simulation result? Before you do so, much analysis becomes over-interpretation, e.g., section 6.3. Please at least clarify this problem ahead.

(3) Moreover, it used homogeneous cohesion and friction, which are two of the most important parameters determining the FS. I understand it is limited by the availability of data, however, I think it is quit necessary to comment the limitation of this work at this point.

The list of references below might be helpful:

Cannon, S., and J. Gartner (2005), Wildfire related debris flow from a hazards perspective, Chapter 15 in, Jacob, M., and Hungr, O., eds: Debris-flow hazards and related phenomena: Springer-Praxis Books in Geophysical Sciences, 321-344.

Liao, Z., Y. Hong, D. Kirschbaum, R. Adler, J.J. Gourley, and R. Wooten, 2011: Evaluation of TRIGRS (transient rainfall infiltration and grid-based regional slope-stability analysis)'s predictive skill for hurricane-triggered landslides: a case study in Macon County, North Carolina. *Natural Hazards*, 58 (1), 325-339. doi: 10.1007/s11069-010-9670-y.

Ren, D., J. Wang, R. Fu, D. Karoly, H. Yang, L. M. Leslie, C. Fu, and G. Huang, 2009: Mudslide caused ecosystem degradation following Wenchuan earthquake 2008. *GRL*, 36, doi:10.1029/2008GL036702.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 1333, 2013.

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