

Interactive comment on “A model of hydrological and mechanical feedbacks of preferential fissure flow in a slow-moving landslide” by D. M. Krzeminska et al.

R. Greco (Editor)

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I carefully read the paper, the comments by the two reviewers and the relevant answers from the corresponding Author. My judgement is that moderate revision of the manuscript is needed before it can be accepted for publication. It is quite clear that both the reviewers found that improvements of the manuscript should regard the way the "mechanical feedback" has been introduced in the model, by means of an empirical relationship between the local safety factor and the volume of fissures. This issue, besides some other minor concerns (mainly from reviewer #2) should be carefully

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addressed in the revised manuscript. I understand from the corresponding Author's responses that the Authors are going to incorporate in their revised paper the suggestions of the reviewers. However, I would like to stress that the suggestion of reviewer #1 about making use of the information coming from the observed displacements (shown in fig. 3) should be somehow taken into account. Given that the proposed model is willingly a simplified, first attempt, model, I don't expect that it will be possible, retaining its simplicity, to easily link the fissure volume to the displacements, because such a procedure would be inherently non linear (as also the proposed mechanical feedback is, but in a very simplified way) and would be feasible only if the analysis were carried out with a different, more complex approach to the equilibrium of the sliding mass (not a local equation, as the possibility of a movement at a given point depends also on the equilibrium conditions of the surrounding points). Anyway, some discussion about the agreement between predicted fissures and observed displacement, about their spatial distribution (as the Authors say, the distribution of fissures is not expected to be the same in the various parts of the landslide) and, if possible, some ideas for a future improvement of the proposed approach should be incorporated in the revised manuscript. In conclusion, the manuscript represents an interesting novel contribution in the direction of developing conceptual models accounting for the complex hydrological processes that characterize many landslides.

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