

Interactive comment on “Field investigation of preferential fissure flow paths with hydrochemical analysis of small-scale sprinkling experiments” by D. M. Krzeminska et al.

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We thank the Reviewer for sharing his point of view. The Reviewer writes that she/he do not think that “results of the sprinkling experiments have substantial benefits for landslides studies, providing helpful solutions for specified works”. We do not agree with this opinion. In our view there is quite some interest in studying the spatially distributed pore pressure response to rain and snow melt infiltration in unstable slopes, especially when thinking of efficiency of drainage mitigation work. This, however, is not straightforward. Therefore, we propose a sprinkling test methodology combining hydrological and hydrochemical information and have tested this on a real landslide,

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not a laboratory set-up.

We believe that our research presents important novel issues which we believe are interesting for the scientific community. In short they are:

- small scale sprinkling test for monitoring/investigation of fissure flow in the field (there is very limited experimental research dedicated to fissure flow, and to our knowledge not one on landslide terrain),
- combination of hydrological and hydrochemical analysis,
- two consecutive days of experiment using two tracers,
- ability to identify/capture dominant process in the ‘natural conditions’;

In this research we show that presented method works and has the potential to be applied to identify and quantify hydrological process distributed across an area (landslide in our case). There are limitations and shortcomings, that we are aware of, and they are discussed in the paper.

We agree with Reviewer that the major part of the paper is presentation of results obtained from our field experiment at their case specific interpretation. This is to show the range of observation possible to obtain with the use of small – scale sprinkling tests and the range of information possible to obtain when combining hydrological and hydrochemical analysis (qualitative and quantitative). Quite detailed description of the field work results is necessary to notice the drawbacks of proposed experimental settings.

Based on the results of experiments we were able to identify the dominant processes observed in analysed areas and conceptualised three types of hydrological behaviors (Secion 4.2.1). Small number of sprinkling experiments restricted the interpretation of more general hydrological or mechanical concepts of landslide areas “represented” by location of sprinkling tests that can be published and defended.

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However, we do agree with the reviewer that we could stress the scientific aspects and practical potential and limitation more in the discussion. We will do so.

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