

Reply to Interactive comment by Anonymous Referee #3 “A sprinkling experiment to quantify celerity-velocity differences at the hillslope scale”

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First of all we would like to thank Referee #3 for his/her time and useful comments on this manuscript. His/her suggestions will for sure help to improve the quality of this manuscript. Our answers (in blue) to the suggestions are written below each suggestion (black).

1) The discussion of the paper is entirely devoted to process understanding. However, I miss a section discussing the effects of the experimental set up (mainly the use of only one tracer in time and space). For example, what would the authors advice to improve on the experimental set up and what would be the effect of applying multiple tracers (or spatially distributed or in time (think of also adding ^{18}O , or others tracers like salts). It is not critics on the current work, but I think with so much emphasis on the experiment, it could be worthwhile to discuss that as well. This could maybe also be linked to the conclusion you draw that the “precise mechanism of disturbance transmittance remains unclear”.

Yes, we like the idea of adding a paragraph to the paper on possible future work on this topic, including the experimental set up (e.g. use of multiple tracers, applying a disturbance through higher rainfall intensities, lateral celerities etc.).

2) I would suggest the authors to rethink if parts of the paper cannot be transferred to appendix or supplement material. The paper is long and that distracts somewhat. Especially the field description (3.1-3.2) but even more the long model description including CRET and mixing model description, python etc info (3.7) and could be summarized in a few lines in the main article and all other details moved to the supplement material. To me that would be helpful.

We agree that the paper is long and transferring parts of the paper you mention to appendix or supplement material could be helpful to readers. We are not sure if transferring parts of the Methods to supplement material is common for HESS.

3) There are quite some typo's and sloppiness, wrong references and inconsequent numbering of headings that should be rigorously checked by the authors before resubmitting

Yes, we will make sure to correct typos and incorrect references to Figures and Tables.