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Hydrology and Earth System Sciences Discussions

Interactive comment on "Formation of runoff at the hillslope scale during intense precipitation" *by* S. Scherrer et al.

Anonymous Referee #3

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General remarks: The paper reports the results of 18 sprinkling experiments applying extreme precipitation rates. The experimental effort is impressive and this data should certainly be published in an international journal. However, the experiments were undertaken at least 10 years ago and it should be checked carefully to what extent this was not published before (cf. Scherrer and Naef 2003, HP). The results are generally interesting for a wide audience. A problem with the paper is that the model QSOIL is introduced (too briefly to understand it), but hardly any modeling results are shown (some data in figure 3). What did the authors learn about the dominant runoff generation processes through the parallel modelling? As the paper is already quite long, the authors should consider keeping the modeling part out completely, or show more

details. The paper is a bit lengthy, and I have the feeling that it could be reduced easily be 10-20 % without loosing contents. The final (shortened) version should also be checked by a native speaker.

Some specific remarks: 1. Page (p) 2524, line (l) 14-16: be more specific and less general.

2. End the introduction with the specific objectives of this paper.

3. Section 2: Introduce separate sub-sections for experimental setup and modelling.

4. p 2528, l 27-28: How does the model deal with the macropores and its exchanges?

5. p 2529, top: How was field data be used directly for model parameterisation? When and when not? How much additional model calibration was necessary?

6. p 2530, top: What is a R-layer?

7. I suggest to call Section 3 'Field observations'.

8. p 2540, l 17f: Can not you be more specific and less descriptive?

9. p 2541, l 18: Where did you show that?

10. p 2543, bottom: I found the conclusions generally a bit vague. Try to be more clear/specific about the controlling variables.

11. p 2544, top: What might be the implications for flood formation at catchment scale? How can your hillslope investigations help to make predictions at catchment scale, where a number of additional processes come in? What kind of future research is needed? More experiments, other experiments, more/other models?

12. p. 2558: Sorry, but I do not agree with your interpretations, as I clearly see an effect of the antecedent moisture.

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