

## ***Interactive comment on “Vectors of subsurface stormflow in a layered hillslope during runoff initiation” by M. Retter et al.***

### **Anonymous Referee #1**

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general comments Stormflow generation and the assessment of the dominating processes are important tasks towards a deeper understanding of the hydrological runoff formation processes. Especially the investigations at the plot and hillslope scale provide insight into the real world behaviour of mass flow. Therefore the presented paper and the applied technique have significant relevance for that issue. The predefined objectives of the paper are concisely discussed and the conclusions are reliable. The cited references are exhaustive and are sufficiently listed in the reference list.

specific comments The English of the text should be corrected by a native speaker, as some sentences seemed to be a little strange. There are some parts in the text, which are hard to understand and they will be commented in the technical corrections.

The methodological approach of the study by means of obliquely installed TDR probes

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enables only the assessment of the initial phase (wetting phase) of the runoff formation process and gives no further indication during the steady state phase. As mentioned in the text, preferential flow or anisotropies of the soil layers will play a maior role for flood formation than the unsaturated matric flow.

technical corrections

Abstract: The abstract should already include some summarised results and conclusion.

p2522 li 16: stormflow instead stromflow

2 study site: The canopy (grassland) should be specified more precisely (length, density, root depth).

Are some soil physical parameters available (e.g. hydraulic conductivity of B-horizon)?

p 2524 li17: Willen-Hincapie (institution is missing)

3 Methods:

Figure 2, lower right: The height of probe s should end up with axis y (to achieve orthogonal projection).

Figure 3, upper right: Was the face front of the trench really orthogonal to the slope?  
Legend: canopy sheet to prevent instead of prevet.

p 2526 li20: boundary of soil bedrock (27-35 cm) In Figure 3 max depth is 40 cm!

p 2525 li 25: what means "clearance" in that context?

3.2.2. sprinkling

p2527 li 11: The duration and sequence of the experiments should be indicated in the text additional to the intensities.

li 16: "homogeneity of sprinkling" in terms of intensity distribution of charge?

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li 17: Appendix A should be used as a regular Table X.

li 20: Are the 1m<sup>2</sup>-plots located inside the hillslope-plot, which TDR-triples are used?

### 3.2.3 tracer experiments

p2528 li 9: correct 4 and 8 m upslope "from of" the trench ... !

li 22: Describe the technical application of overland flow facility!

### 4 results

li 24: Instead of single wetting fronts (for each TDR) rather "events" should be mentioned as referred on the next page as "datasets" (line 5).

p2529 li 1: Text in Figure 4: "ID-15" is not clear (it refers obviously to table 1)? Rather indicate date and depth of triple in the text.

p2529 li 3: Here it should be pointed out more clearly that the increasing wetting phase (see Fig.1) is used for the assessment of  $v$  and  $q$  (according to equ. 1 and 2). Liner assumption approximate constant wetting front velocities during the wetting phase.

li 9: The letter font is too small for table 1. Why are there no data for the natural rain event. Refer in text or eliminate the line!

p2531 li 25: Table 3: Additional to sprinkler intensity the accumulated depth of charge should be indicated for each event.

### 4.3. water balance calculation

Why are the data of the event 27.5.2005 missing?

### 5 discussion

p2533 li 2: What is meant with the sentence "The direction of the vectors also matches well with the direction of that previous study and both data plot within the same order of scale, although soils are different" ?!

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Figure 5: Too small, indices cannot be recognized.

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**HESD**

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