

## ***Interactive comment on “A sprinkling experiment to quantify celerity-velocity differences at the hillslope scale” by Willem J. van Verseveld et al.***

### **Anonymous Referee #1**

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The article reports an interesting sprinkling experiment on a natural hillslope. Isotopic signature and physical measurements are utilized to investigate the hillslope hydrograph, velocities, celerities, transit time distributions, and flowpaths. The site is well described and well studied as documented by an extensive literature review. In my opinion, the article is suitable for publication in Hess after minor revision.

In preparing a new version, the Authors may take into account the following suggestions:

1. Specify meteorological conditions during the sprinkling experiment. I believe no rainfall events were registered in the 24-days experiment.
2. The description of the different sensors location can be improved. I would also recommend to improve Figure 1 and introduce acronyms for each type of sensors in

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the map.

3. In your findings, soil moisture responded earlier than lateral subsurface flow to irrigation. Please comment on this.

4. Section 4.3 is very relevant and I think it could be rewritten a bit more clearly. Could you also report results in a Figure/Table?

5. Table 2 could be improved by adding instrument depths.

6. Discussion on immobile soil water fraction should be expanded and stated more clearly.

7. Are estimated celerities compatible with WS10 response to storm events?

Finally, the manuscript present numerous typos and reference to figures and Tables is often incorrect. I suggest a thorough revision of the writing.

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