

Interactive comment on “Spatial distribution of solute leaching with snowmelt and irrigation: measurements and simulations” by D. Schotanus et al.

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The authors provide a well written manuscript on an interesting topic: Leaching of solutes from top-soils which is highly relevant for groundwater risk assessment. “Extreme” infiltration events during snowmelts are considered and high resolution data of tracer breakthrough curves are combined with extensive numerical simulations of solute leaching and transport. Conservative and biodegradable tracers are studied. Simulations and experimental observations are in reasonable agreement. In my opinion the paper can be published almost as it is. Below a few observations the authors

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may want to consider in minor revisions.

We thank the reviewer for his/her positive review. Below, we will respond to the specific comments.

2.1 what is a “GC analyser”. Do you mean gas-chromatography with which detector?
We mean gas-chromatography with Trace GC Ultra, Thermo Scientific. We added this to the ms.

3.3.1 unclear sentence “The moment that the solute leaching starts in a cell, increases with decreasing leached solute mass, as was also the case in Figs. 3 and 4.”
We changed this sentence in: “With decreasing leached solute mass (i.e. increasing cumulative area), the cumulative drainage at which solute leaching starts in a cell increases, as was also the case in Figs. 3 and 4.”

3.3.2 That solute breakthrough was similar for transient and steady state conditions was also observed in a modeling study by Kuntz and Grathwohl (2009): Comparison of steady state and transient flow conditions on reactive transport of contaminants in the vadose soil zone. *Journal of Hydrology*, 369, 225–233
Thank you for this suggestion. We added to the ms: “Kuntz and Grathwohl (2009) found that steady state flow can be used instead of transient flow, except when extreme infiltration events occur. Then, solute leaching was higher in transient simulations than in steady state.”

Fig. 14 and 15: Labels too small
We enlarged the fontsize of the labels.

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