

Interactive comment on “Simulation and validation of subsurface lateral flow paths in an agricultural landscape” by Q. Zhu and H. S. Lin

Anonymous Referee #2

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General Comments: This is a very nice study that uses GIS to indicate where in a landscape concentrated subsurface flows initiate and travel based on upslope contributing area. The paper is a little cumbersome because of all the variations in approach, consideration of dry and wet periods, and three corroboration methods (also, above vs below discontinuities and on vs off flow paths). Is there a tabular way to summarize all these? Other than that, this paper is publishable with only a few minor changes and perhaps some potential clarifications.

Specific Comments: (please number lines in the future)

- 1) Abstract, line 3: specify D8 flow direction
- 2) Throughout, I believe the authors are referring to "concentrated" subsurface lateral

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flow and should perhaps note that this is what they mean by "subsurface lateral flow."

3) It was not clear until late in the paper that the depths to the different soil discontinuities were determined manually, i.e., not by the soil survey. This needs to be made clearer and it throws doubt on the claim of "cost-effective[ness]" noted in the conclusions. Also, I was left wondering if the surface topography alone would have sufficiently captured the flowpaths?

4) p5 end: consider using "finer" instead of "higher" resolution because it almost seems like "higher" refers to the larger numbers in (). Also, "better" is qualitative and misleading; consider substituting with "finer."

5) I was unfamiliar with the Mn methodology used here. Consider a very brief description and justify method in the introduction instead of the in the results section.

6) Throughout the document, "relative" should be "relatively" as in several places on page 11, e.g. "In relatively dry...", "During the relatively dry...", and "In relatively wet conditions" – note, pluralizing "condition" also reads more easily.

7) Page 12, first para: Note that the macropores would only transport water across the Ap1-Ap2 boundary during wet periods.

8) "Morphological features" does not really capture the Mn corroboration. Consider revising to something like "Soil Mn distribution"

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 2893, 2009.