Evaporating water is different from bulk

soil water in 2H and 18O

Summary:

The authors have done a solid job of revising the manuscript for clarity, especially in terms of presentation and methodology. The manuscript now reads much better and many of the key findings are now more clearly conveyed. I think that the manuscript is nearly ready for publication but there are few important (and hopefully quickly addressable) points to consider from the soil physics perspective, as I detail below. These should, however, these should only be minor revisions.

Page 2, Line 49: "is no longer connected" should be "is hydraulically disconnected"

Page 3, Line 63: "pre-event" don't you mean "event"

Page 3, Lines 65-80 (section starting with "…when small pores…"):

This a bit vague and does not appear to be totally correct.

Small pores being filled with water (and/or) and event water being "large" are not necessarily prerequisites for preferential flow.

You could easily have near-positive or positive pore water pressures near the soil surface displacing/filling water in small pores (without requiring all of the water to be channeled into preferential flow paths). But, then you could also have water from the soil matrix (smaller pores) mechanically displacing water in preferential flow paths (larger pores). In the former scenario pre-event "small" pore water could feasibly stay in the matrix, whereas in the later, the matrix water would presumably enter into preferential flow paths, with the potential to contribute heavily to evaporation (based on your three stage descriptions). See these papers:

Sklash, M., Beven, K., Gilman, K. & Darling, W. J. H. P. Isotope studies of pipeflow at Plynlimon, 465 Wales, UK. 10, 921-944 (1996).

Levy, B. S. & Germann, P. F. J. J. o. c. h. Kinematic wave approximation to solute transport along 559 preferred flow paths in soils. 3, 263-276 (1988).

Klaus, J., Zehe, E., Elsner, M., Külls, C. & McDonnell, J. Macropore flow of old water revisited: 460 experimental insights from a tile-drained hillslope. Hydrology and Earth System Sciences 17, 103-461 118 (2013).

Similarly, event water being "large" does not necessarily bear much relevance to the flow partitioning. The amount, in combination with intensity, is much more relevant as you could have a large rain event that is slowly infiltrating (low intensity) and conducive to matrix flow.

Rainfall intensity is particularly important because it may mean the difference between detecting similar or distinctly different water in matrix versus preferential flow paths.

See the general point:

Kumar, A., Kanwar, R. S., and Hallberg, G. R.: Separating preferential

and matrix flows using subsurface tile flow data, J. Environ

Sci. Heal. A, 32, 1711–1729, 1997.

Also see how this idea is applied more recently using stable isotopes of water at hillslope:

Klaus, J., Zehe, E., Elsner, M., Külls, C. & McDonnell, J. Macropore flow of old water revisited: 460 experimental insights from a tile-drained hillslope. Hydrology and Earth System Sciences 17, 103-461 118 (2013).

…and at the soil column scale, which details that these distinct pore scale separations may require extreme rainfall events (e.g.,50 y storm) and well-developed soil structure:

Radolinski, J., Pangle, L., Klaus, J. & Stewart, R. D. J. H. P. Testing the 'two water worlds' hypothesis under variable preferential flow conditions. Hydrological Processes 35, e14252 (2021).

I think the authors just need to be a little more explicit in their soil physical description/discussion. The 3-stage evaporation description reads better and makes much more sense now, which is very helpful. However, it may really benefit the manuscript to tighten-up the discussion of boundary conditions and how that influences mixing and/or the source of evaporation in soils.

Page 21, Line 446: "see my previous comment about large versus intense events. Please revise through the mansuscript.

Page 21, Line 448: Yes. But again, these do not necessarily have to be empty pores as displacement will likely occur simultaneously. (see comments, references, and discussion points that I made above).

Page 21, Line 452: “pre-filled with pre-event water”. You were just describing bypass flow when small pores were empty. Now they are filled?

Please clarify.

Page 23, Lines, 504 and 506-508: Okay. Again, this does not appear to be strictly correct.

You are mentioning on Line 504 that "larger pore water" is preferred by plants and dominates groundwater recharge.

Then you mention that this is consistent with Brook et al. who categorically distinguish two water worlds as one tightly bound pool of soil water that supplies transpiration and another mobile pool that recharges groundwater and enters streams.

Brook et al., write on page 103: "Our results indicate that for this seasonally dry watershed within the Cascade Mountains of Oregon, soil water is separated into two water worlds: mobile water, which eventually enters the stream, and tightly bound water used by plants."

Please revise.