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United States Forest Service
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To the Editors of *Hydrology and Earth System Sciences*:

Please consider for publication as a Technical Note in *Hydrology and Earth System Sciences* the revised manuscript:

Technical note: Accounting for snow in the estimation of root-zone water storage capacity from precipitation and evapotranspiration fluxes

Below we have included our response to the reviewer; black font represents reviewer comments, blue font our responses, and red font text that we added to the manuscript. The most significant change in this revision is our addition of additional hydroclimatic data describing the case study region in the southern Sierra.

Thank you for your consideration of this updated manuscript.

Sincerely,

David N. Dralle, W. Jesse Hahm, Dana Chadwick, Erica McCormick, Daniella M. Rempe

R1 comments:

The revised manuscript of Dralle et al., that deals with a correction for snow for estimating root-zone storage capacity with the method of Wang-Erlandsson et al. (2016), shows many improvements in comparison with the previous version. I am happy the authors found my comments useful and addressed all of them.

I especially appreciate the extended discussion and believe this addresses the possible shortcomings much better. I just have several minor issues left, from which I hope they are helpful again:

Minor comments

P1.L14-P2.L28. The authors agreed with me in their response that the opposite is also true: estimates of soil water storage are made for the full soil column, whereas the volume of water that roots actually use may be smaller. Maybe it is good to also add some lines about that in the introduction?

We edited this to include:

This may be because plants are unable to access the full reported depth of the soil column, or because plants access water stored at depths below soil

P4.L100. Unaccounted for inter-pixel → unaccounted inter-pixel? P4.L104. Have access → has access

Thanks

P4.L109-110. I think a bit more detail on the study area would be nice. P5.L140. Dry periods periods → dry periods

We have included additional description of the regional hydroclimate and vegetation cover.

P6.L141-146. I find this paragraph rather confusing. You are comparing also now the root zone storage capacity with the total storage capacity, which are, in my view, totally different things. Also the term accessible plant-available water storing capacity is confusing, but I think also here you mean the total storage capacity in the soil. I think you should make clearly the distinction between the water that can be stored in the soils, based on soil depths and field capacities, and the root zone storage capacity, that may be less as roots do not explore the full soil column (or the top layers that are used to calculate this storage capacity).

Thank you, we streamlined the language, and now refer to Klos et al [2018] to clarify usage of terms.

Klos, P. Zion, et al. "Subsurface plant-accessible water in mountain ecosystems with a Mediterranean climate." Wiley Interdisciplinary Reviews: Water 5.3 (2018): e1277.

P7.L154-155. We advocate...critical zone. → Yes, me too, but this is practically impossible on a large scale. Or do you have some ideas here?

We have some ideas, but will explore them in future work!