

Hydrol. Earth Syst. Sci. Discuss., author comment AC3
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Reply on RC2

Tunde Olarinoye et al.

Author comment on "Karst spring recession curve analysis: efficient, accurate methods for both fast and slow flow components" by Tunde Olarinoye et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-249-AC3>, 2021

General comments

Thank you for the opportunity to review this manuscript " Karst spring recession curve analysis: efficient, accurate methods for both fast and slow flow components." The authors have presented an intriguing combination of techniques to separate and quantify fast and slow flow components of a spring hydrograph recession. This is an exciting and valuable contribution to the literature and, while the methodology appears technically sound, there are a few overarching issues that I feel need to be addressed prior to final publication.

Reply to general comments

We thank reviewer 2 for her/his useful and constructive comments. The following suggestions made by the reviewer will be taken into account and following changes will be made accordingly.

First, the use of a snow-dominated system violates much of the underlying assumptions of recession curve analysis. Namely, that the recession behavior is controlled by infiltration and flow path properties within the rock itself. In a snowmelt system, this is not often the case - snowpack often acts as a separate storage component in the system that is not controlled by aquifer properties but instead by a combination of sublimation, melt, and refreeze processes. To continue utilizing this site, the authors should be clear up front about this potential violation of assumptions and utilize this in the discussion of the results.

Reply: We thank the reviewer for pointing out issues about other external controls in a snow-dominated catchment. We will clearly highlight this issue and a potential violation of assumptions in section 3 (Test springs and data).

Similarly, it would be valuable to discuss the potential implications of seasonality of precipitation (and soil moisture) on infiltration capacity in the mediterranean system. Either more information on when recession curves are in relation to seasonal precipitation or discussion of this impact on the fit of the results would be valuable.

Reply: We thank the reviewer for her/his suggestion. Similar to our reply to first reviewer's specific comments 1 and 5, we will provide additional analysis and discussion on the effects of seasonality on the variability of recession parameters

Generally, the document could use some minor grammatical review to correct some minor issues throughout.

Reply: We will carefully review the entire text to correct all grammatical and spelling errors.