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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Extremeness of recent drought events in Switzerland: dependence on variable and return period choice" *by* Manuela I. Brunner et al.

Anonymous Referee #2

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This paper is focused on the extremeness of recent drought events in Switzerland by looking at different types of drought, including meteorological, hydrological, agricultural, and groundwater drought. The paper is a new research study and is generally well-written as it explains the methodology, the mathematical framework and the assumptions used. However, the application research part needs minor improvements to verify the novelties of the method employed in the study area. Based on this general comment the following points should be addressed and clarified.

1. Section 3.1.2 (B) Simulations. Please provide information about hydrological model application showing briefly calibration and validation statistics for the 140 catchments

of the PREVAH model. Please also show application model efficiency for the selected six (6) catchments. A comparison table with the observed and simulated drought characteristics (deficit and deficit duration, and estimated observed and simulated return periods) should be provided to demonstrate the successful application of the method.
2. Section 3.2 Event identification. How important is the threshold selection on the final general results? Why the authors select a fixed threshold and why a variable threshold method is not selected for this study (e.g. Van Loon, 2015)? I would expect from the authors to use at least a monthly varying threshold for this type of presented analysis. How different would be the presented results if monthly or daily thresholds are used. Please justify this issue on the revised manuscript. Furthermore, please discuss the selection of 50% percentile for all the study variables. A preliminary sensitivity analysis could be useful to justify the selection of the selected percentile and the smoothing window of 60 days.

For the motivations listed above, the paper in its present form needs revisions in order to evaluate the innovative character of the proposed method. The paper is of general interest for international audience and merits publication in NHESS journal when the major revisions and comments are addressed. Addressing these comments will improve the quality of the paper and help the general reader of the paper.

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