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Discussions

Interactive comment on "Hydroclimatic regimes: a distributed water-balance framework for hydrologic assessment and classification" *by* P. K. Weiskel et al.

Anonymous Referee #2

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This study follows up on previous work by the same authors. Dry regions of the world are important and the authors expand their work to include these as well. The new indices are tested in the US, which is quite appropriate given the large climatic variability present. The authors present interesting results with respect of where runoff is generated or consumed, whether vertical fluxes dominate and what spatial variability an be identified

This manuscript is a nice contribution and should be published after some adjustments. I have a few suggestions to strengthen the storyline.

[1] This work follows the extensive calls by a wide range of people for new strategies to hydrological science in line with the needs or a changing and increasingly impact world (Wagener et al., 2010, WRR). One important issue is the presence or absence of data. It might be nice for the authors to discuss the data needs for their approach in the conclusions section since it will help people understand how transferrable these ideas are to other regions of the world. Most dry regions of the world are in developing countries where data is much more sparse than in the US.

[2] The study presented only includes 4 figures and is rather brief on the insights provided. Recent studies that aimed at understanding variability in time had problems to decipher differences in controls on variability (e.g. Sawicz et al., 2014, HESS). I would very much like to know how the classification presented has changed over the decades analysed? I think that the long-term average is less interesting. Given that places are weak sources or sinks, have they changed in character with time? Where are the limits of current data in understanding this variability?

[3] What is the opportunity for using these indices for projecting into the future? Are there projections of both the climate and the water demand (or the economic and population growth) that could be used to estimate these indicators into the next decades?

[4] How would you bring in other datasets, e.g. about groundwater?

[5] What is missing from the manuscript right now is a discussion about how these new indicators and the results are more informative for water management. The discussion of the results is a bit brief and it does not sufficiently link into water management. The authors would make a stronger case if they would really state what this new classification means for understanding and managing water resources. The results are described, but could be interpreted more.

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