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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Technical Note: Characterizing hydrologic change through catchment classification" *by* K. A. Sawicz et al.

Anonymous Referee #2

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The authors classify the hydrologic behavior of a subset of the MOPEX database. The classification is based on six hydrological signatures in the decade 1948-58. This baseline is then used to capture/explain changes in hydrological behavior for three subsequent decades (until 1988). The use of CART decision tree gives a clear insight in the classification procedure/results.

The paper addresses current issues in hydrologic research. The paper is well structured and well written. For me, the paper is worth being published after minor revisions.

I have only a few comments:

P6602L9: You assume that a decade is both "required and sufficient". Why? From my point of view most of the signatures react very sensitive to the length of your dataset.

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This point should at least be discussed at the end of paper.

P6607L21: “Pike-Turc” equation. Here a reference is missing (Pike (1964)). You find a good discussion of this “Bodyko type” of equation in Wang & Wu (2013) or Gerrits et al. (2008). Maybe you can include these reference in your discussion of threshold values.

Sawicz et al. (2011) missing in the references

Figure1: Why you define a class “0”, this is a bit misleading (“NULL=void” class)?

Figure3: Does the decision tree directly shows the “physical and climatic characteristics” that control your classification? What I derive from the figure, are only threshold values. Interpretation of possible causes can be found in figure 1, not in figure 3.

Figure5: Difficult to read; improve quality, resolution is not sufficient.

References:

Wang, D. and L. Wu (2013): Similarity of climate control on base flow and perennial stream density, Hydrol. Earth Syst. Sci., 17,315-324, www.hydrol-earth-syst-sci.net/17/315/2013/.

Gerrits, A. M. J., H. H. G. Savenije, E. J. M. Veling, and L. Pfister (2009), Analytical derivation of the Budyko curve based on rainfall characteristics and a simple evaporation model, Water Resour. Res., 45, W04403, doi:10.1029/2008WR007308.

Pike, J. G. (1964), The estimation of annual runoff from meteorological data in a tropical climate, J. Hydrol., 2, 116– 123.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 6599, 2013.