

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

### **Anonymous Referee #2**

Received and published: 26 June 2013

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.

C2828

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/](http://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.

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