

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

Anonymous Referee #1

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Comments on “Hydroclimatic regimes: a distributed water-balance framework for hydrologic assessment and classification” submitted to Hydrological and Earth System Sciences by P.K.Weiskel et al.

General comments

This manuscript presents new metrics of hydrological regime and classification, compensating classic ones such as local runoff and aridity index. The authors proposed three metrics (total water availability, green-blue index, and hydrological-unit evapotranspiration ratio) and applied them to the conterminous United States including a wide

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area of arid lands. They declared that these metrics characterize hydrological regimes in arid lands in more hydrologically consistent manner. This manuscript demonstrates their concept rather than some research results. I agree with their conclusion, only if these new metrics are used in conjunction with classic ones (Table 2), which are simple and can be more easily useful. The three metrics (TWA, GBI, and et/p) require evaluation of landscape fluxes (Lin and Lout) and so intensive measurements or hydrological models. The manuscript was well prepared; it even includes the glossary of terms. The new metrics were well presented by using two different types of hydrological models; a continental water-balance one and a transient watershed one. They would be used not only for hydrological studies but also for water management, considering the difference between green and blue waters. I conclude that the manuscript is acceptable after minor revision.

Specific comments

Page 2937 Line 15 From the viewpoint of provisional service, the original definitions of green (ET) and blue water (Lout) by Falkenmark and Rockström (2004, 2006, 2010) look still valuable. Just a comment.

Page 2941 Line 9 Please provide your reason or a reference for the assumption “the rive corridor is 30% of the total hydrologic unit area”

Page 2962 Figure 1e Please use different symbols for catchments (a-d). They are confusing with figure identifiers (a-f) especially in the caption.

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