

Interactive comment on “Exploring the physical controls of regional patterns of flow duration curves – Part 3: A catchment classification system based on seasonality and runoff regime” by E. Coopersmith et al.

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In response to the reviewer’s comment, it seems beneficial to help explain the objectives of this paper.

This analysis aims to classify seasonal runoff behavior (the seasonal flow regime curve for daily streamflow) using four simple, widely-accessible pieces of information. These four pieces of information form the basis of a classification system that groups catch-

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ments that are similar in terms of these characteristics. Encouragingly, these catchments display similar runoff regimes (as hypothesized), and also display a great deal of geographic continuity.

The system developed within this work is similar in many ways to Koppen’s classification system, although hydrological information is included in our classification methodology where Koppen does not include such information. Koppen’s work has been widely accepted as a mechanism for classifying climates. For this reason, we contend that our work, analogously, is an appropriate method for classifying seasonal runoff behavior.

This paper does not aspire to be a comprehensive classification system for every conceivable property of every conceivable catchment, but rather, a means of grouping catchments that possess similar runoff regime curves. Further explanation is required, which is the task of the other analyses within this four-part paper as well as the synthesis work that concludes our efforts.

Empirical results suggest that seasonality of precipitation plays an integral role in the description and understanding of regional patterns of hydrologic behavior, and more specifically, flow duration curves. The first paper attempts to model the FDC by fitting statistical parameters to hundreds of flow duration curves, the second paper attempts to understand regime curves in terms of the functional processes that play a dominant role, the third paper attempts to classify behavior using four features chosen, in part, from insights gained in determining dominant processes and the empirical evidence that seasonality is highly relevant, and the fourth combines these insights into a synthesis paper that speaks to overall hydrologic structure and future pursuits.

This is a brief summary of this paper and how it connects to the other papers in the series. This paper is self-contained, very detailed in its presentation of what was done and what conclusions were drawn, and if the reviewer cares to query on any of these, we are happy to respond. It is hard to respond to gut reactions that are not substanti-

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ated.

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