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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Stream flow recession patterns can help unravel the role of climate and humans in landscape co-evolution" *by* P. W. Bogaart et al.

Anonymous Referee #2

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The paper presents an analysis of catchment runoff behavior based on the coefficients of the Brutsaert and Nieber [1977] recession slope analysis for numerous Swedish catchments. Both, describing catchment runoff behavior and the use of the coefficients are actually discussed themes and therefore in the scope of HESS. However, describing catchment properties and trends with two coefficients of the recession analysis is a promising approach to catchment characterization. In general, the paper is well organized and presented, but some issues need to be addressed: Please provide a description of the "strong gradients in climate" and possible gradients in runoff behavior or flow regimes. This would be helpful to assess the setting and your data for readers not familiar with special characteristics of swede. Furthermore, findings like the

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increase of ‘b’ with latitude may be affected by climate. In addition a short description of the catchments, e.g. catchments sizes and distribution (spatial and characteristics) would be helpful. Are you sure, that the equate use of coefficient ‘a’ respectively ‘1/a’ to indicate recession time scale in days (e.g. Fig. 4) for linear and non-linear reservoirs is accurate? For non-linear reservoirs ‘a’ depends on Q0, for linear reservoirs not. I miss a description of the selected recession periods, e.g. how many periods did you select for each 5-year subsets. Are the selected recession periods event- or seasonal-based? Do you really have recession times up to 66 days for catchments with ‘b’ about 1? What are the recession times for catchments with non-linear recessions?

Minor remarks: Figures 1, 2 and 3 are very small and hard to read and to explore. E.g. Figure 3: the scale-bars are readable only with high magnification. Please ensure readability without magnification.

Page 9868, line 24: “. . . catchment catchment . . .”

Page 9872, line 22: “. . . 0.1 mm day-22 . . .”: ?

Page 9880, line 2: “Clay (rank 2)” rank 3?

Page 9878, line 13: Fig. 2: please specify which part of the figure you refer to (c and d?).

Page 9883: line 22-23: “. . . variables. The correlation . . .”

Page 9884, line 3: “. . . lead lead . . .”

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 9865, 2015.