

Interactive comment on “Climate-vegetation-soil interactions and long-term hydrologic partitioning: signatures of catchment co-evolution” by P. A. Troch et al.

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The study by Troch et al. touches upon an important topic in catchment hydrology, namely the possible co-evolution between the surface hydrologic cycle, vegetation and landscape. I think the paper of Troch et al. could become a major contribution in the emergent field of catchment ecohydrology. I nonetheless feel that the paper could be lengthen and could provide more discussion on the physical implications of the findings. I find the paper relatively short and I would have enjoyed more insights on the physical processes at play. Since the authors have 12 models in 12 climates, that is 144 different climate-catchment pairs, substantial insights could be obtained, especially

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regarding the decomposed contribution of the soil surface and groundwater hydrology and vegetation dynamics. Could the analysis of shorter time scales lead to some insights regarding runoff generation and the surface water partitioning? What are the main climatic/vegetation/soil parameters dominating the annual and smaller scale responses? The current manuscript partly answered these questions but I feel that the study could go much more in depth and yield major insights on catchment ecohydrology. Minor comments: - in the introduction the studies of Dietrich and Perron 2006, Perron et al. 2012 and Wang and Wu 2012 could be interesting from a geomorphological point of view. - in section 2.1 it could be relevant to explain how you are dealing with infiltration excess and in section 2.3 it would be worth having a sentence explaining why you chose daily rainfall data. In case of substantial infiltration excess this could be too coarse. - section 3.1: the concept of (evolving) catchment filters is important. Could you elaborate a bit more? - in table 1 could you have the annual precipitation, and aridity index of each basin

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