



Viewing Catchment Hydrology from the Right

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Catchment hydrologists commonly seek to understand hydrologic fluxes, or the left side of the water balance equation, governing the “loss” of water by processes including runoff generation, streamflow, evapotranspiration, soil water flow, and groundwater recharge. For many ecohydrological problems, however, we are not necessarily interested in understanding how water leaves a catchment, but how it is retained. This necessitates a different conceptualization of the role of landscape properties in catchment hydrology. While it is relatively easy to monitor or model fluxes, distributed estimates of storage are challenging. It is the storage mechanisms and resistance to flow, rather than conductance, that control important measures such as residence time, moisture distribution, and water availability. In this study, we consider the water balance of a semi-arid, snowmelt driven catchment from the perspective of storage. We present examples of how storage mechanisms influence soil moisture distribution, streamflow generation and cessation, and stream nutrient dynamics.