Regional Patterns of Water Balance Variability across the United States: A Newtonian-Darwinian Synthesis

Patterns of variability of catchment water balances across the United States are explored over a range of time scales, through a combination of data analysis and conceptual modeling. Catchments are grouped into clusters of similar behavior on the basis of key signatures of the water balance variability. The resulting clusters have a strong relationship to regional patterns of several climate drivers (in a Newtonian sense) but also with regional ecosystem, soil, and vegetation classes (in a Darwinian sense). In this sense, the study has identified a deeper sense of similarity evident in observed space-time variability of water balances that also reflects the co-dependence and co-evolution of climate and landscape properties.