



Ecohydrology of Vegetation Conversion and Ecosystem Consequence

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Land degradation in arid and semi arid rangelands often derives from the rapid interconversion of vegetation functional type, such as that between grasses and shrubs (e.g. shrub encroachment) and that between native and non-native species dominance. These interconversions have important ecohydrological and biogeochemical consequences that affect patterns of productivity and system resilience, especially given the potential interacting effects of contemporary climate change. These interconversions can be explained and predicted in terms of spatial distribution of soil resources like moisture and nutrients. The distribution of soil resources, in turn are controlled by the feedbacks between aeolian - hydrologic transport processes, vegetation and disturbance. Disturbances like fire and grazing primarily affect the rates and patterns of resource redistribution in these systems. The variations in soil properties affect the underlying hydrological processes like infiltration, runoff and root zone moisture dynamics. In turn, these altered hydrologic processes affect the emerging vegetation dynamics and ecosystem fluxes of water, carbon and nutrients.

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