



## **Grassland to Woodland Transitions: Linking Hydrology and Vegetation Dynamics**

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State and transition (S&T) models have become the foundation for managing and understanding dynamics of rangeland ecosystems by natural resource agencies. Typically, they are based on states, phases and transitions that are described by changes in vegetation composition and limited to qualitative descriptions. Recently, S&T models have been linked to ecological processes (primarily hydrology) with the assumption that changes in states can be described and even defined by changes in rates of processes. The connection between ecological processes and vegetation composition is tenuous and requires some critical evaluation. We will focus on the well recognized thresholds of grassland to woodland associated with Ashe Juniper and Eastern Redcedar increase into grasslands and savannas. We will evaluate the available research on ecohydrology for these rangelands and link these data to existing models of vegetation change along a productivity gradient in the southern Great Plains. We will present a framework for evaluating the relationship between vegetation and ecological processes in S&T models.

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