State and Transition Modeling: A Call for Dynamic Soil Properties Data. (S05-stringham185616-Oral)

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Abstract:

Historically, models of rangeland ecosystem function were based on plant community composition and production. Although the concept of ecological site used by the Natural Resources Conservation Service includes soil-vegetation relationships to differentiate sites; vegetation attributes are measured to determine system status. The focus of rangeland ecologists on the aboveground, biotic community has de-emphasized the role of soil dynamics in ecosystem change driven by disturbances. Currently, a process-based state and transition model is being used for developing management models of the rangelands of the United States. This theoretical model incorporates the biotic and abiotic components responsible for system function. A state is defined by soil and vegetation properties and processes, but recognized by plant species. States exhibit natural fluctuations in vegetation or soil, however they are ecologically stable. Transitions between states occur after crossing a vegetation- or soil-defined threshold that is not reversible from an ecological process perspective. Today's challenge is to define the nature, role and response of dynamic soil properties within these rangeland states.

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