

Peters, DPC, KM Havstad, SR Archer, OE Sala. 2015. Beyond desertification: new paradigms for dryland landscapes. *Frontiers in Ecology and the Environment* In Press

In a nutshell:

- 1) The traditional desertification paradigm for drylands focused on shifts from grasslands to dominance by unpalatable woody plants and bare areas with a loss of ecosystem services.
- 2) Challenges to this paradigm have arisen from observations of dynamics across a range of interacting spatial and temporal scales and socioeconomic contexts.
- 3) A new paradigm is emerging that accounts for spatial connectivity in resources interacting with legacies of past conditions and patterns in land use, and will improve interpretation and prediction of regime shifts.
- 4) The paradigm provides a robust framework for assessing ecosystem services, land management decisions, and ecological literacy of future generations.

Abstract

The dryland desertification paradigm focuses on losses of ecosystem services accompanying transitions from grasslands to systems dominated by bare ground or woody plants unpalatable for domestic livestock. However, recent studies reveal complex transitions across a range of environmental conditions and socioeconomic contexts. Papers in this Special Issue illustrate how an understanding of these dynamics is generating a more ecologically robust paradigm where state- and regime-changes occur within the context of land use against a backdrop of climate change, and are modified by landform and antecedent conditions. New and emerging technologies integrate processes and outcomes across a range of scales and levels of organization. Concurrent developments in education are linking these new perspectives to improve the ecological literacy of future generations. A framework that shifts the focus from the supply of ecosystem services to one that reconciles supply with demand can help prioritize land management decisions.