

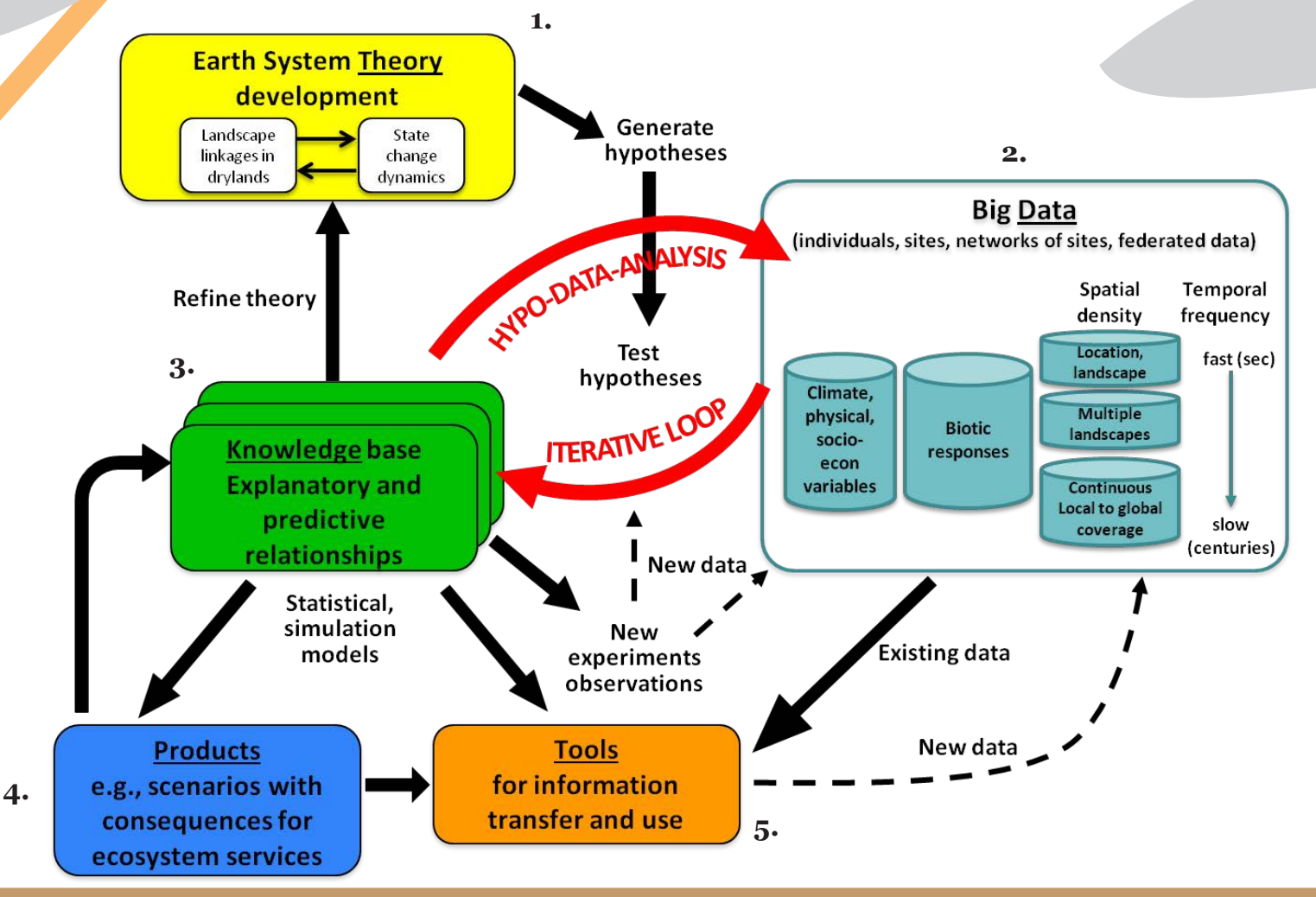
# Jornada Basin LTER: Landscape Linkages and State Changes Across Spatial and Temporal Scales

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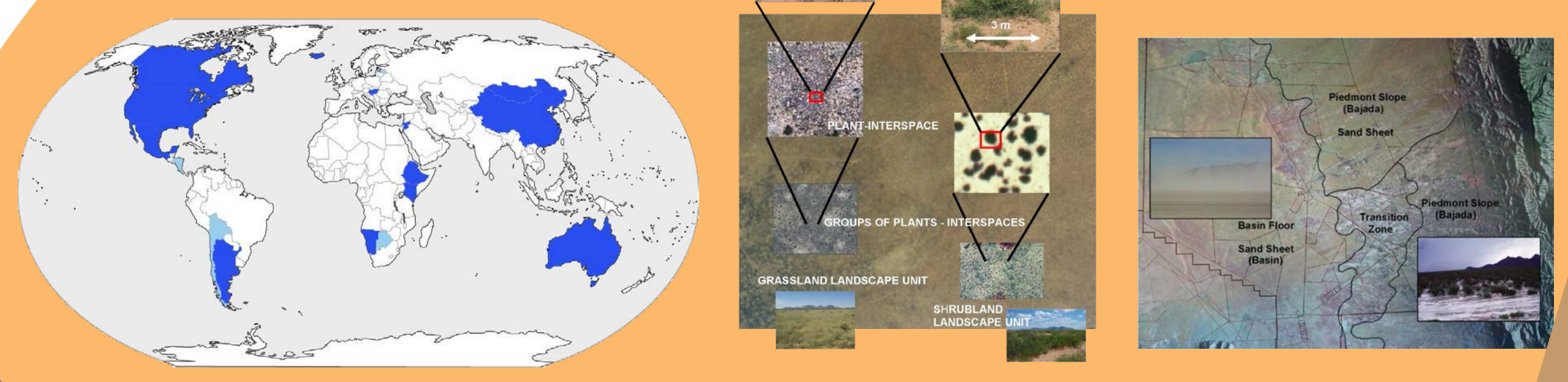
-To understand and quantify the mechanisms that generate alternative natural and human-dominated states in dryland ecosystems  
 -To predict future states and their consequences for the provisioning of ecosystem services

We work across a range of interacting spatial and temporal scales with a focus on important vegetation-soil geomorphic units found at the Jornada, across the American Southwest, and in aridlands globally. We have active research projects or collaborations on 6 continents.



1. New understanding of state changes. In particular in drylands, that lead to theory development, testable hypotheses, and new experiments (see JFN posters)
2. Accessible data and visualization tools at multiple scales (see S. Peters Eco Trends poster)
3. Relationships among drivers, patterns, and processes (see JRN posters)
4. Develop scenarios of alternative human- and natural-dominated states and their impacts on ecosystem services (see JRN posters)
5. Information transfer to K-12 students and teachers, and JGO and government agency land resource managers (see S. Bestelmeyer Asombro poster)

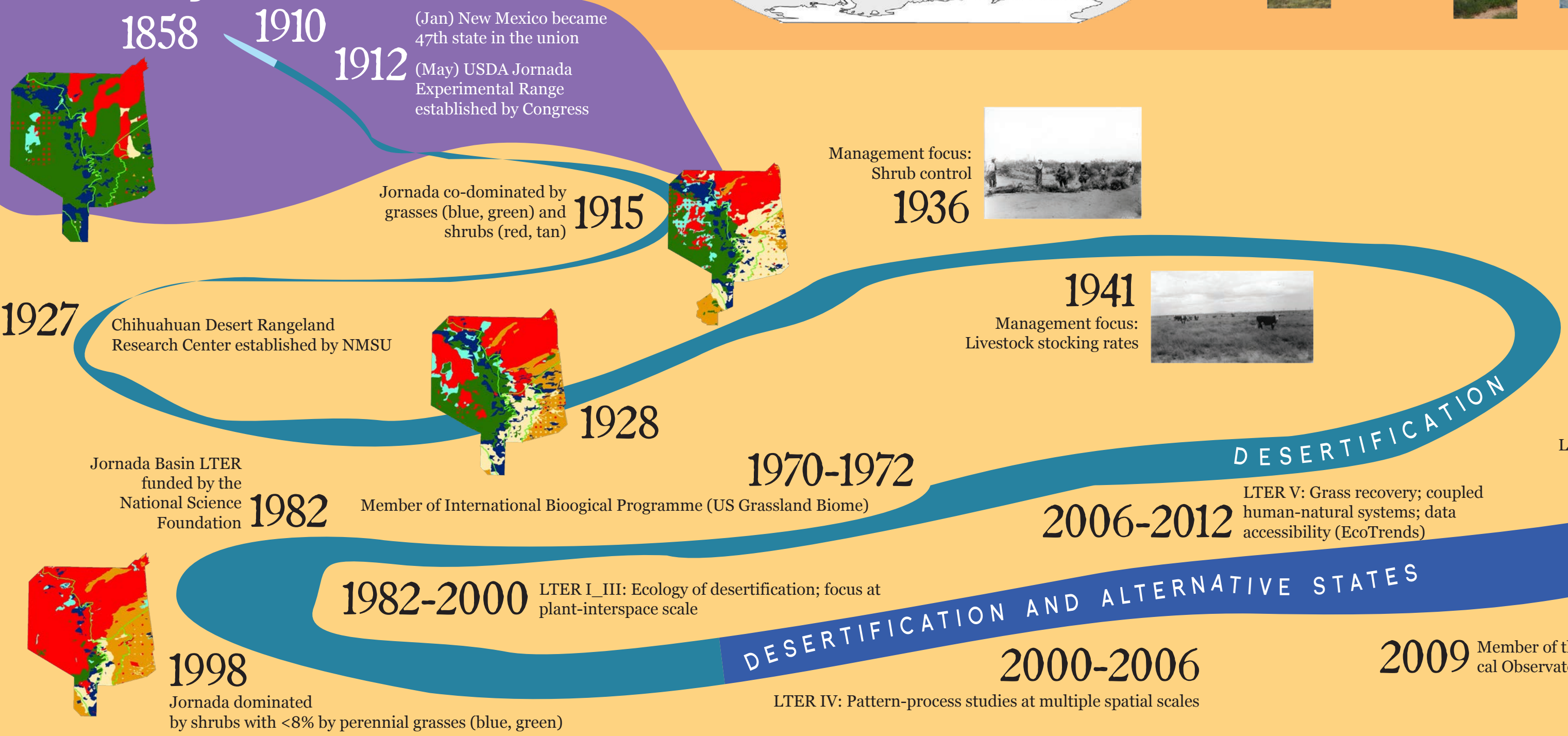
## Our Future: Goals of LTER-VI (2012-2018)



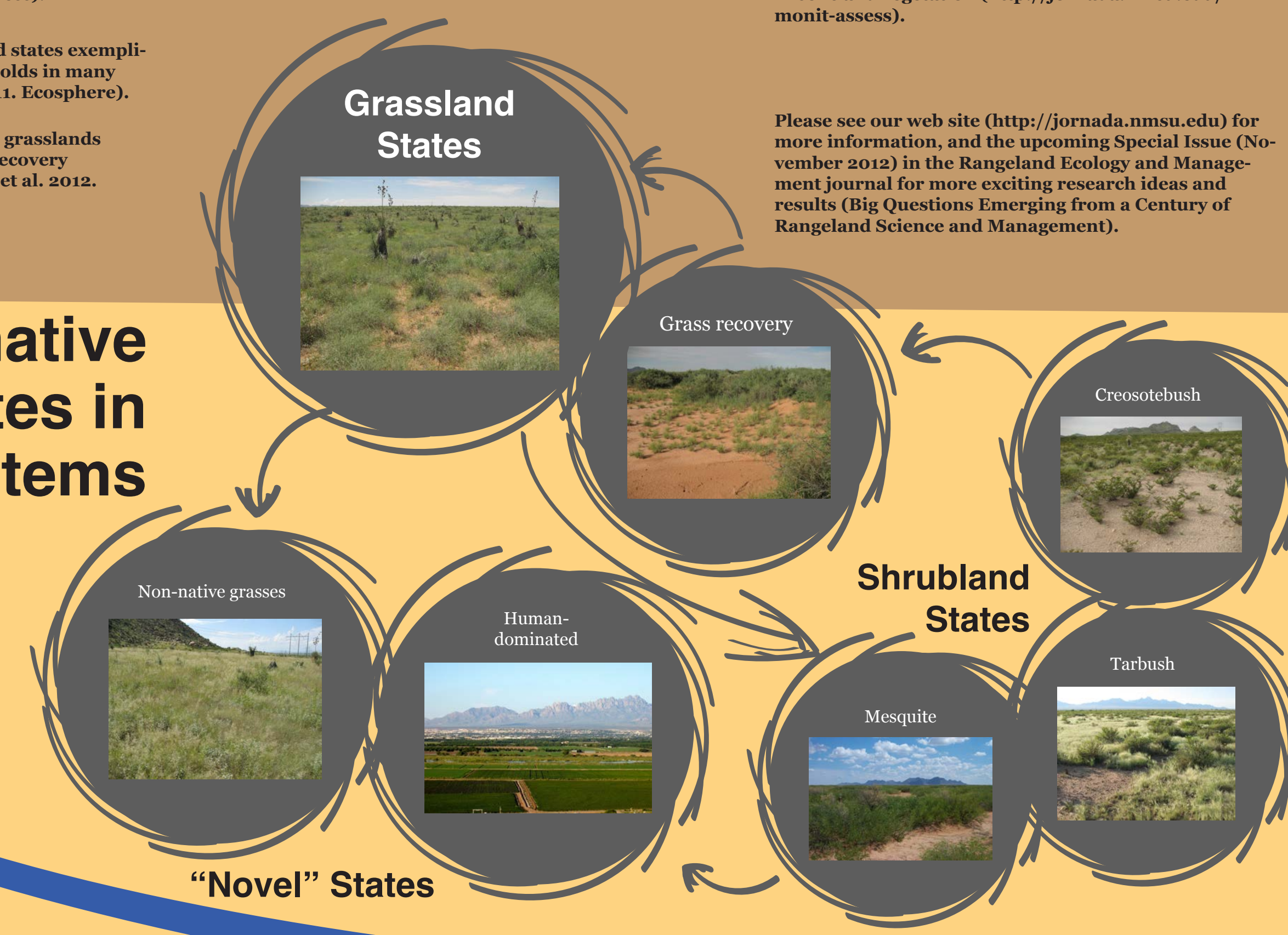
## Key Findings From 30 Years of LTER and 100 Years of USDA Research

1. Desertification can be explained and predicted by understanding plant-scale processes (Schlesinger et al. 1990. Science) interacting with patch-and landscape-scale patterns and processes (Peters et al. 2006. BioScience). Livestock grazing and drought at broad scales are insufficient to explain finer-scale patterns and dynamics (Havstad et al. 20067. Oxford Press).
2. Conversion of grasslands to shrubland states exemplify dynamics of tipping points and thresholds in many other ecosystems (Bestelmeyer et al. 2011. Ecosphere).
3. State change reversal from shrublands to grasslands is constrained by degraded soils, yet grass recovery occurs following series of wet years (Peters et al. 2012. Global Change Biology).
4. Resources connect ecosystems in unexpected ways across a range of spatial and temporal scales (Monger et al. 2009. Ecology; Okin et al. 2009. BioScience).
5. Tools and activities are effective ways to make Jornada research relevant and accessible to broad audiences: (1) web-based interfaces improve data accessibility ([www.ecotrends.info](http://www.ecotrends.info)), (2) schoolyard activities teach desert ecology to K-12 students ([www.asombro.org](http://www.asombro.org)), and (3) qualitative and quantitative methods monitor changes in soils and vegetation (<http://jornada.nmsu.edu/monit-assess>).

## Jornada History



## Alternative States in Arid Ecosystems



Please see our web site (<http://jornada.nmsu.edu>) for more information, and the upcoming Special Issue (November 2012) in the Rangeland Ecology and Management journal for more exciting research ideas and results (Big Questions Emerging from a Century of Rangeland Science and Management).