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Time-Series Monitoring of Desert Grassland Cover Changes in Response to Fire and Drought

Grasslands provide society with a number of important ecosystem services, but overuse and poor management of these landscapes in the past has greatly diminished their spatial extent and quality. In the Southwestern US, federal, state and private land managers have embraced the idea of prescribed fire as a restoration tool for grasslands, but there remains some ambiguity around how to best implement long-term fire plans, and in particular how to modify and adapt those plans given the uncertainty of climate change effects on native and non-native plants following multiple disturbances. This presentation describes an application of multi-temporal satellite imagery and long-term field monitoring data to assess fire- and drought-related cover-changes of semidesert grasslands in Arizona. Results show that aggressive application of prescribed fire effectively reduces woody plant cover, but also encourages non-native grasses and annual plant cover, especially during extended drought periods.