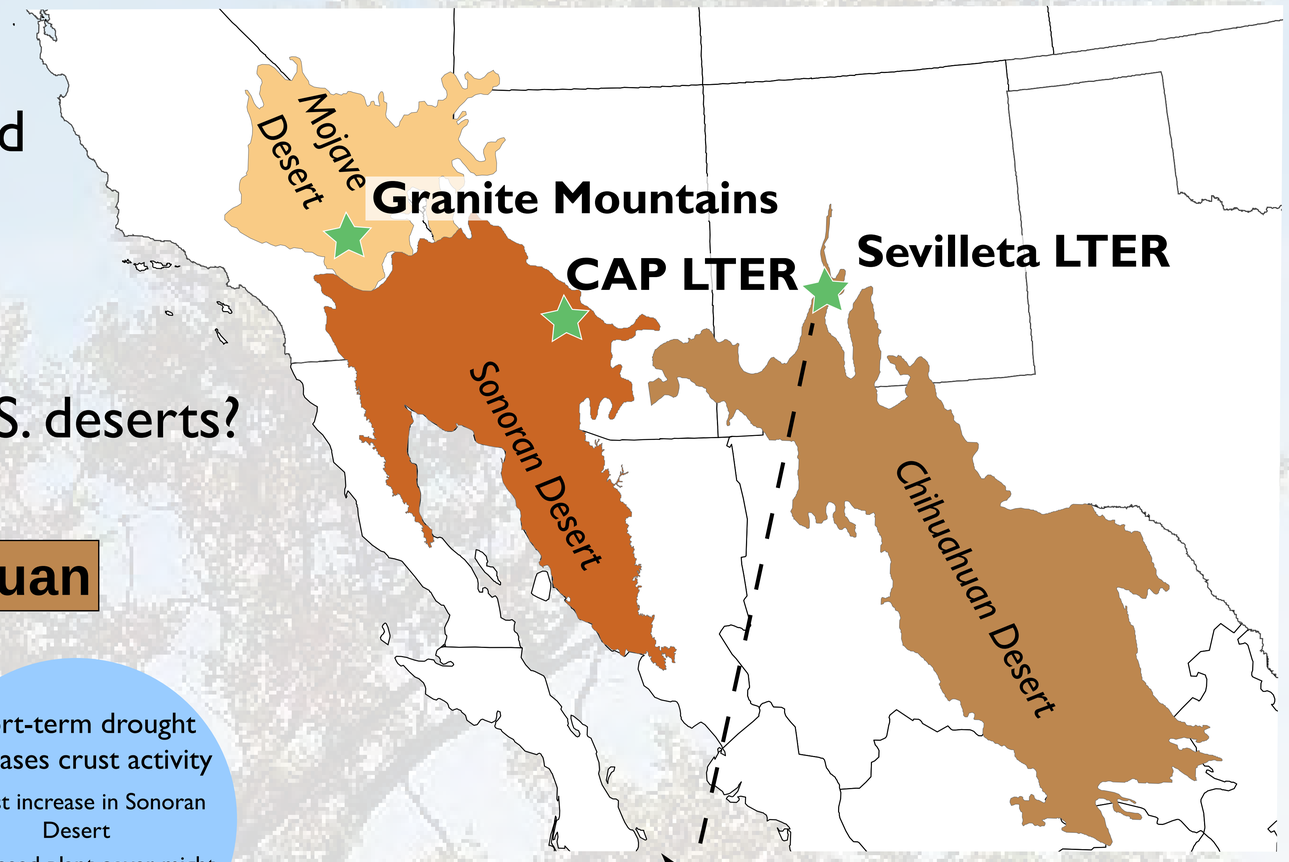
Preliminary findings of drought-induced changes to ecosystem processes across U.S. deserts

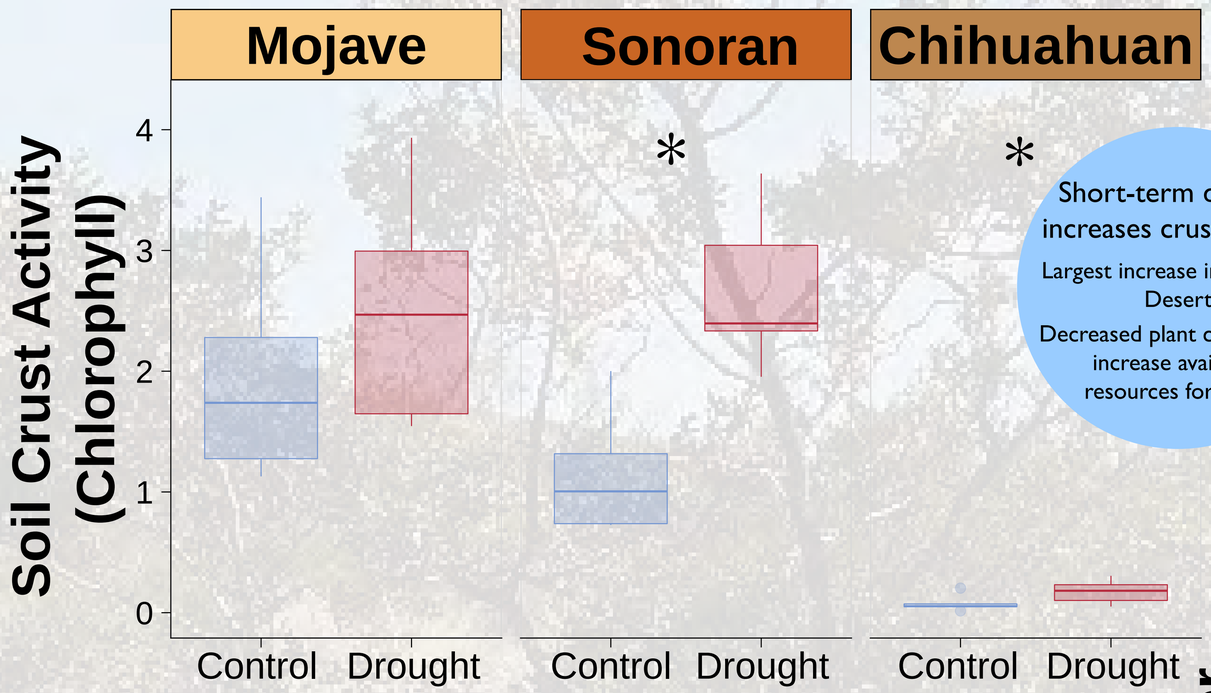
Timothy Ohlert, Mariah Patton, Scott Collins
University of New Mexico, Department of Biology
Email: tohlert@unm.edu
@tim-ohlert

Questions

1) Which ecosystem characteristics are affected by drought?
-Soil crust, plant cover, species richness

2) Are drought responses consistent across U.S. deserts?



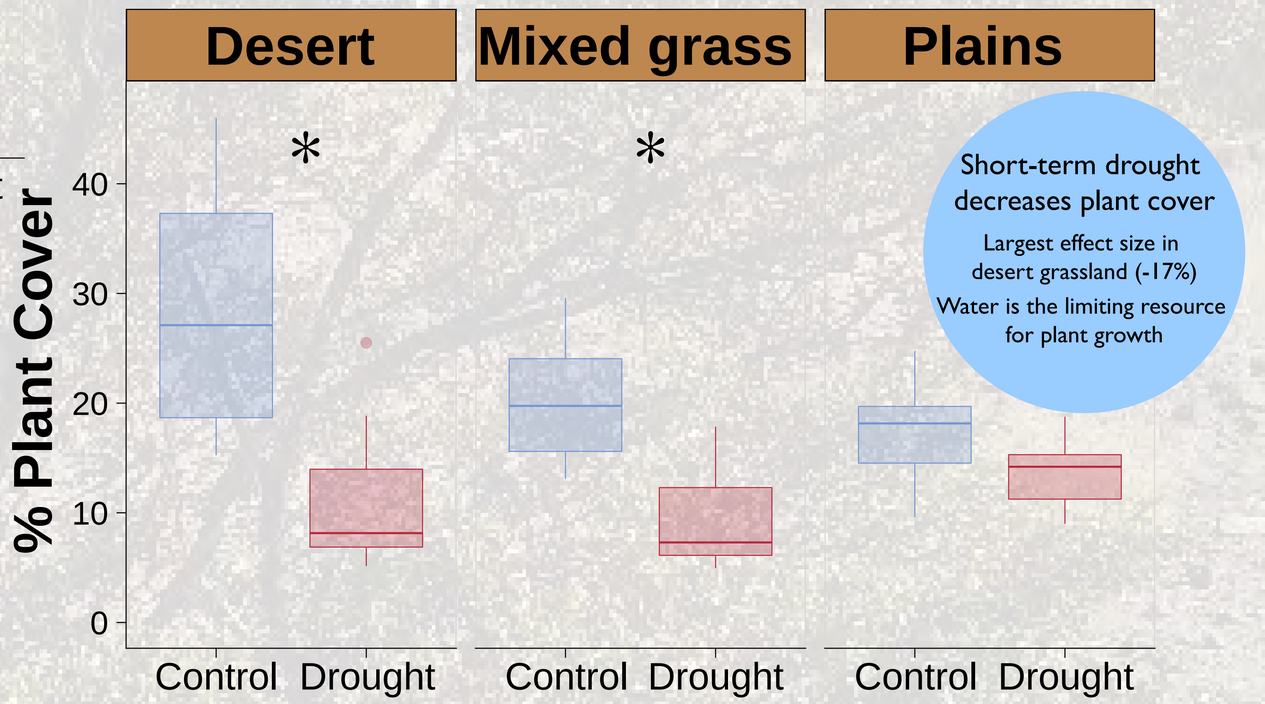


Short-term drought increases crust activity

Largest increase in Sonoran Desert

Decreased plant cover might increase available resources for crust.

Sevilleta only



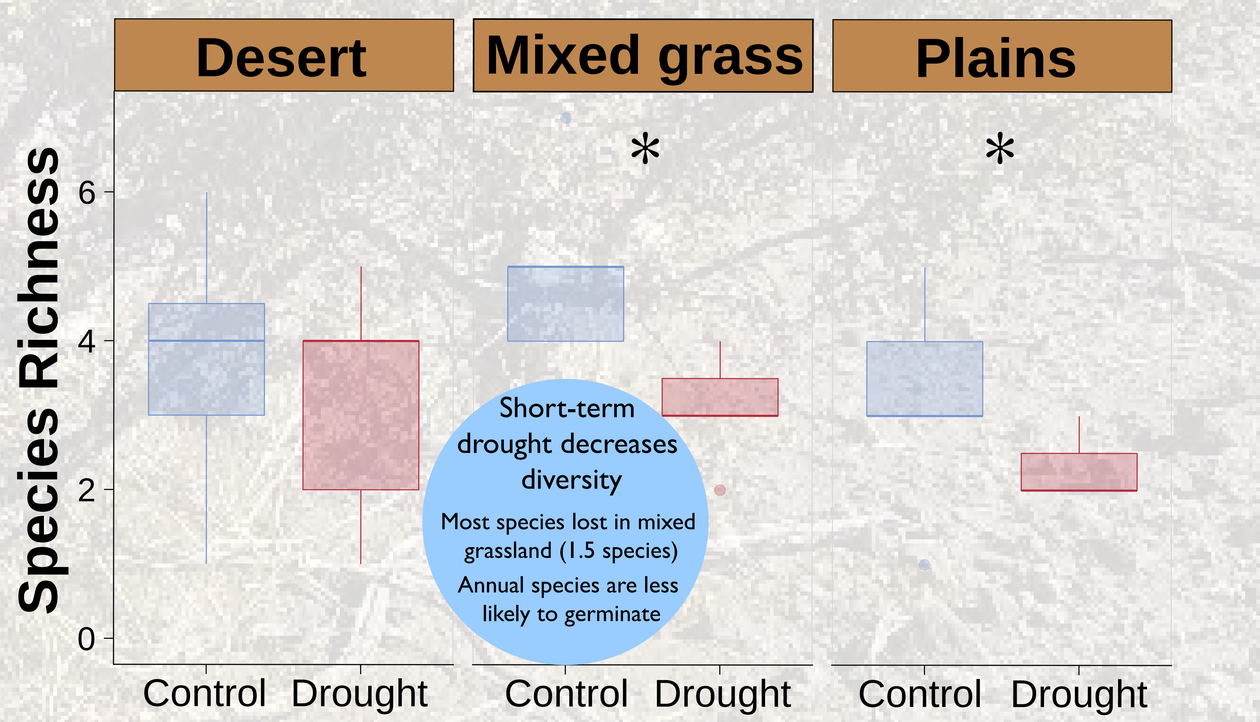
Short-term drought decreases plant cover

Largest effect size in desert grassland (-17%)

Water is the limiting resource for plant growth

Experimental design

- 66% reduction of annual precipitation
- 2.5 x 2.5m plots
- 7 sites in the three hot deserts of North America: Mojave, Sonoran, Chihuahuan
- 7 replicates per site
- Drought treatment start date: Fall 2018/Spring 2019



Short-term drought decreases diversity

Most species lost in mixed grassland (1.5 species)

Annual species are less likely to germinate

Future Directions

- Drought treatments will continue until 2022 to asess drought severity effects
- Post-drought recovery monitoring will test ecosystem resilience to drought
- Data will be used in global analyses with the Drought Network

Acknowledgements

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