

Climate change → western rangelands

Confidence

High

Medium

Low

Temperature-related

Higher temperatures; greater increases in scenarios with greater CO₂

Earlier spring thaw & later fall frost

Shift from snow to rain

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Precipitation

Regional differences between north (stable or increasing) and south (stable or decreasing)

Possible seasonal shift toward cool-season precipitation

Potential increasing monsoon activity

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Precipitation	Regional differences between north (stable or increasing) and south (stable or decreasing) Possible seasonal shift toward cool-season precipitation Potential increasing monsoon activity
Soil moisture & drought	Higher atmospheric demand for moisture Longer & hotter summer dry soil period Enhanced weather variability & extreme events

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<p>Precipitation</p>	<p>Regional differences between north (stable or increasing) and south (stable or decreasing)</p> <p>Possible seasonal shift toward cool-season precipitation</p> <p>Potential increasing monsoon activity</p>
<p>Soil moisture & drought</p>	<p>Higher atmospheric demand for moisture</p> <p>Longer & hotter summer dry soil period</p> <p>Enhanced weather variability & extreme events</p>
<p>Plants & forage</p>	<p>Modestly enhanced rangeland wildfire activity in areas with sufficient fuel</p> <p>Increasing summer drought stress & more cool-season plant growth</p> <p>Changes in plant growth & forage production (areas of decrease & increase)</p> <p>Shifting plant communities: ↑ invasive annuals, ↑ C4 grasses, ↓ C3 grasses, ↑ shrubs</p>

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Confidence

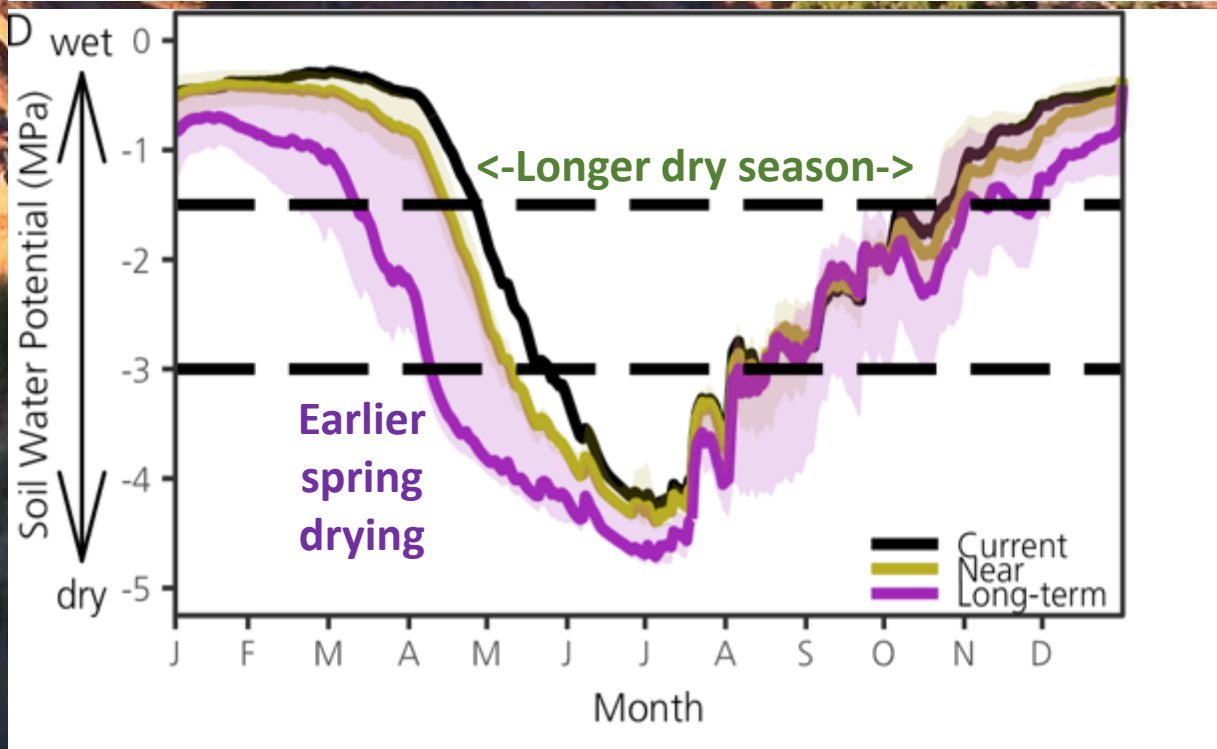
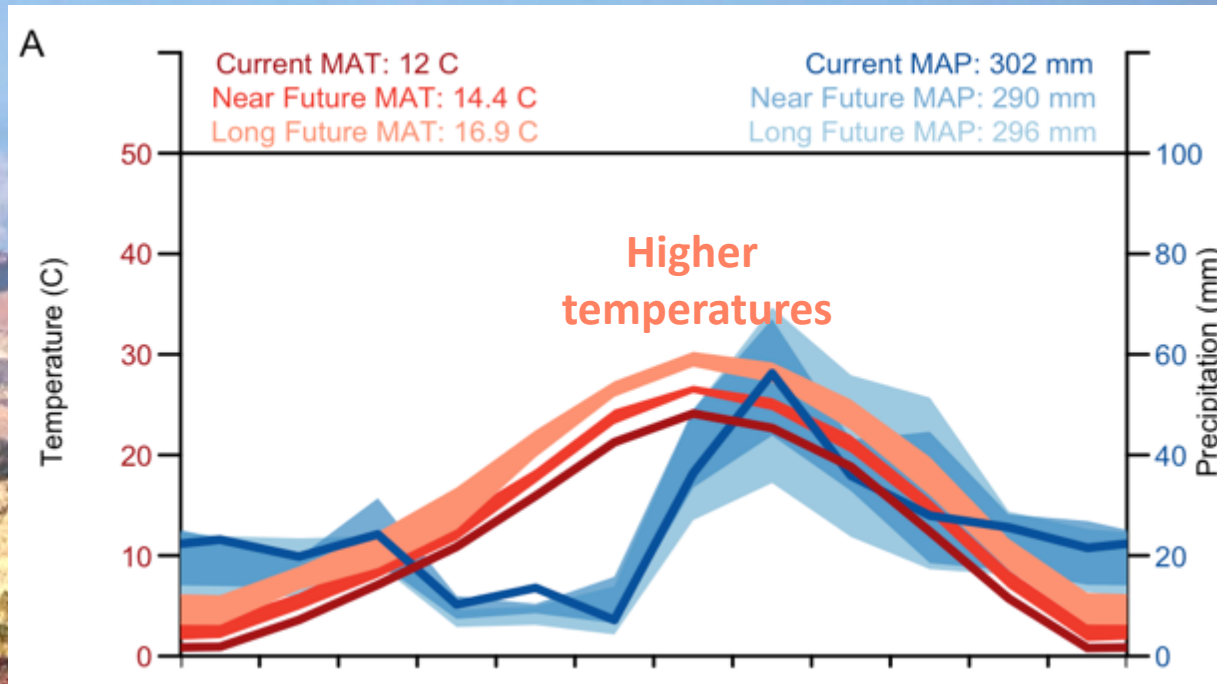
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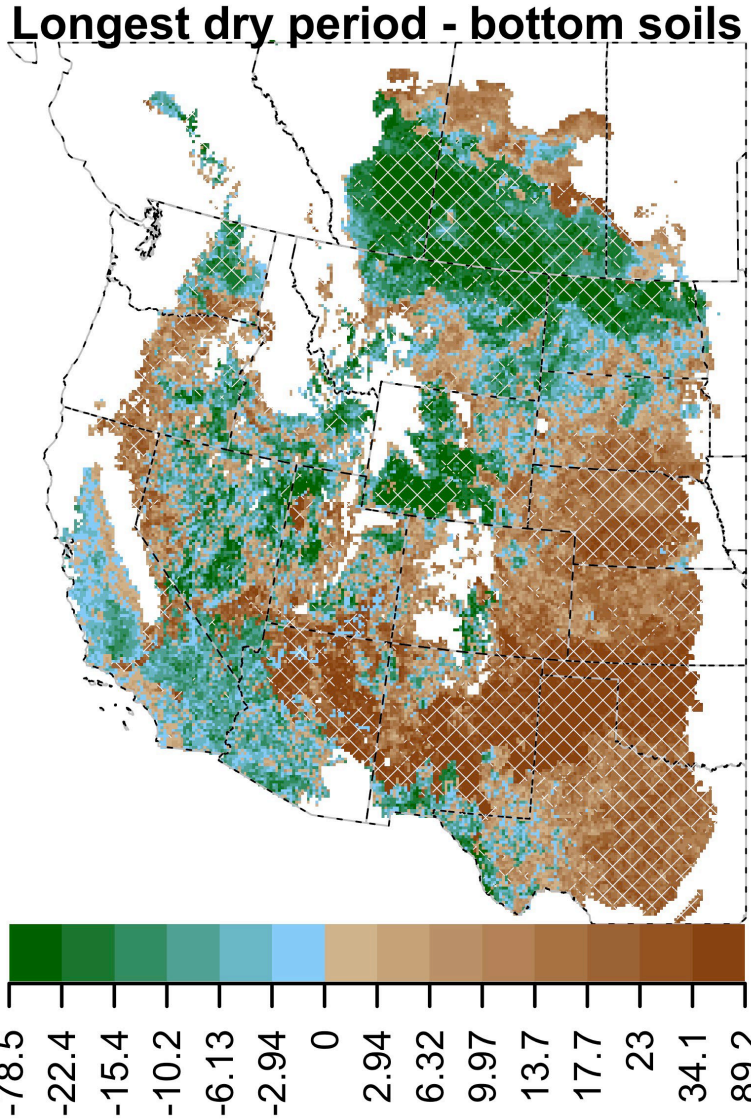
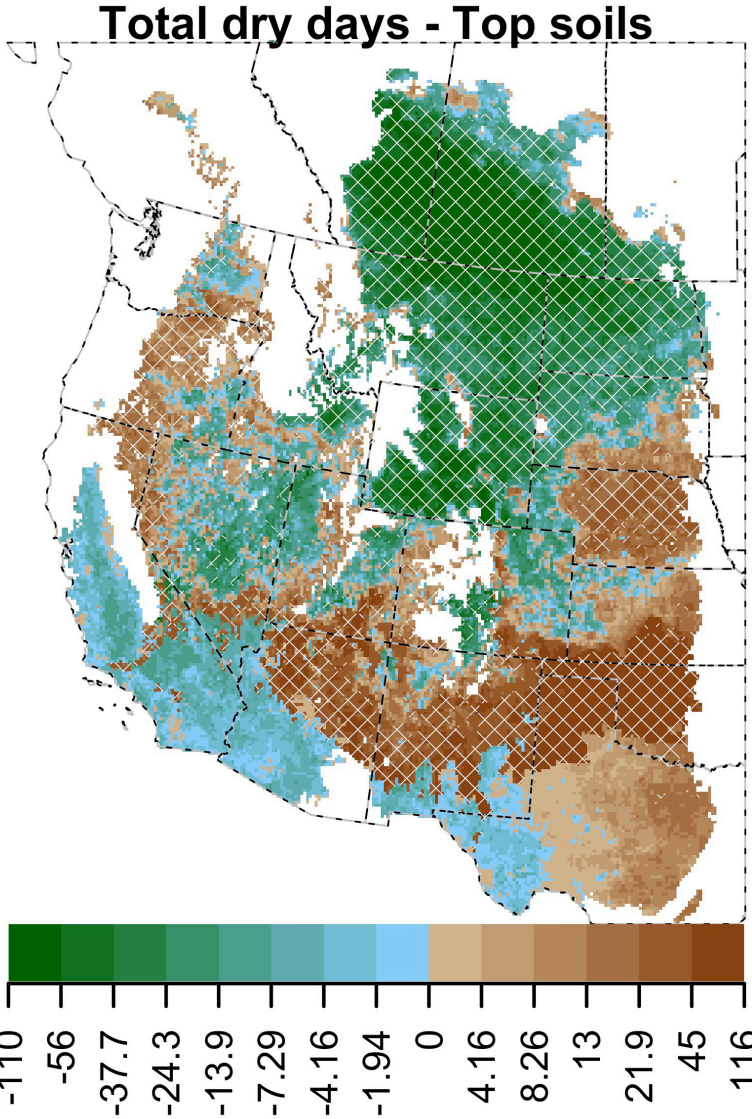
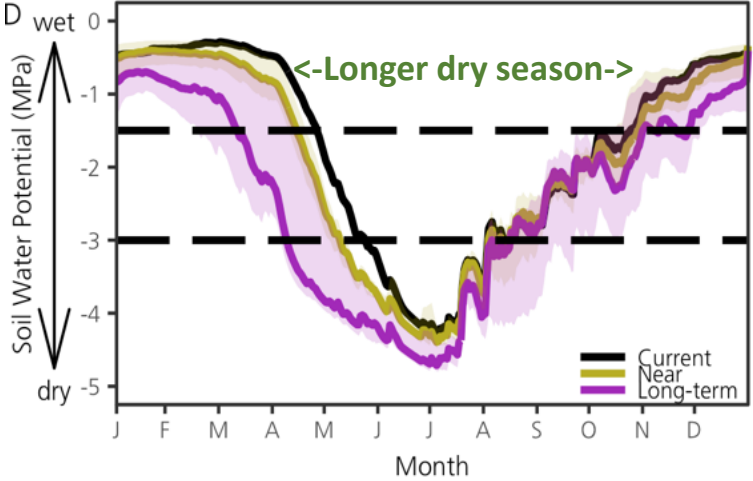
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<p>Management</p>	<p>Restoration in drylands may become even more challenging</p> <p>Habitat loss & fragmentation likely to continue</p> <p>Protecting & growing high quality areas may be increasingly important</p>

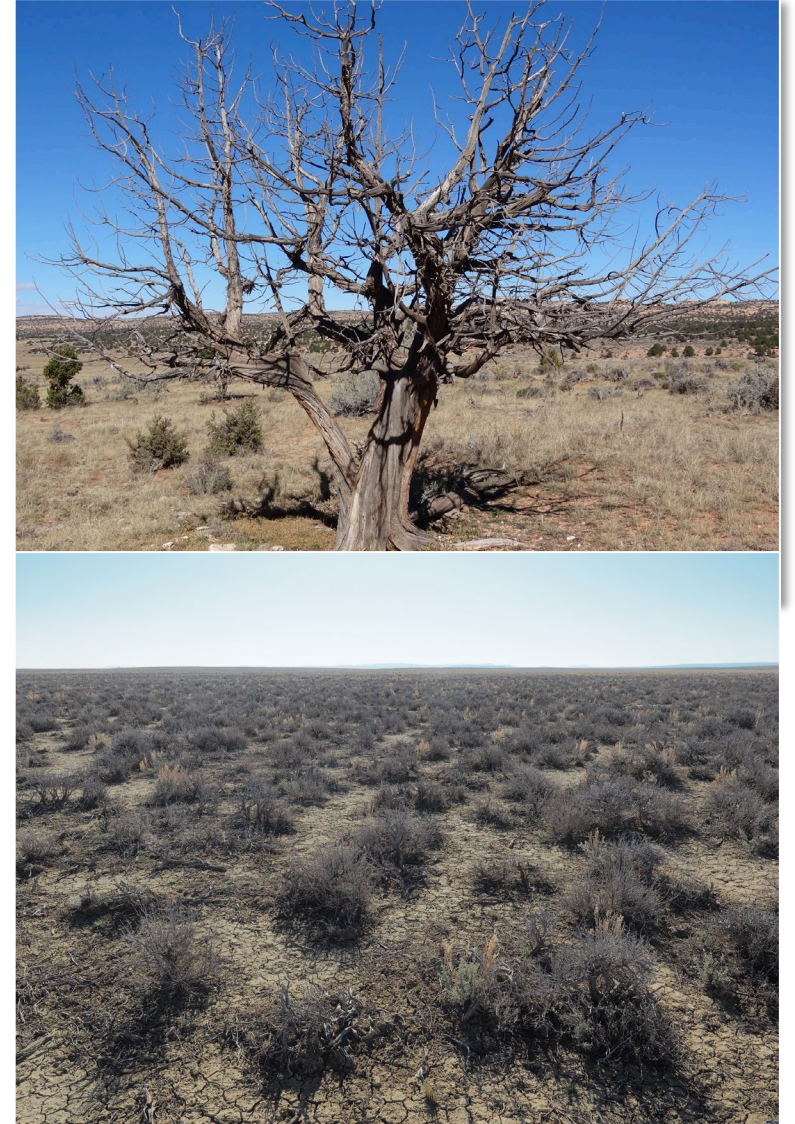
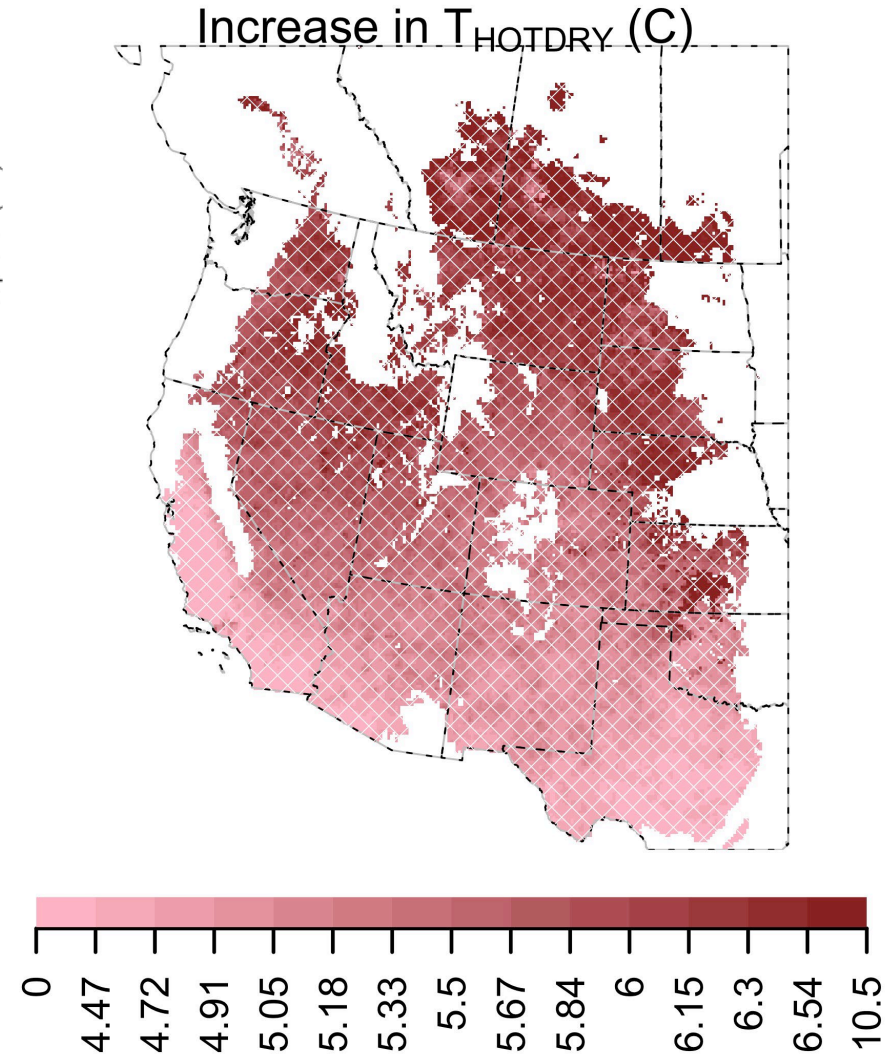
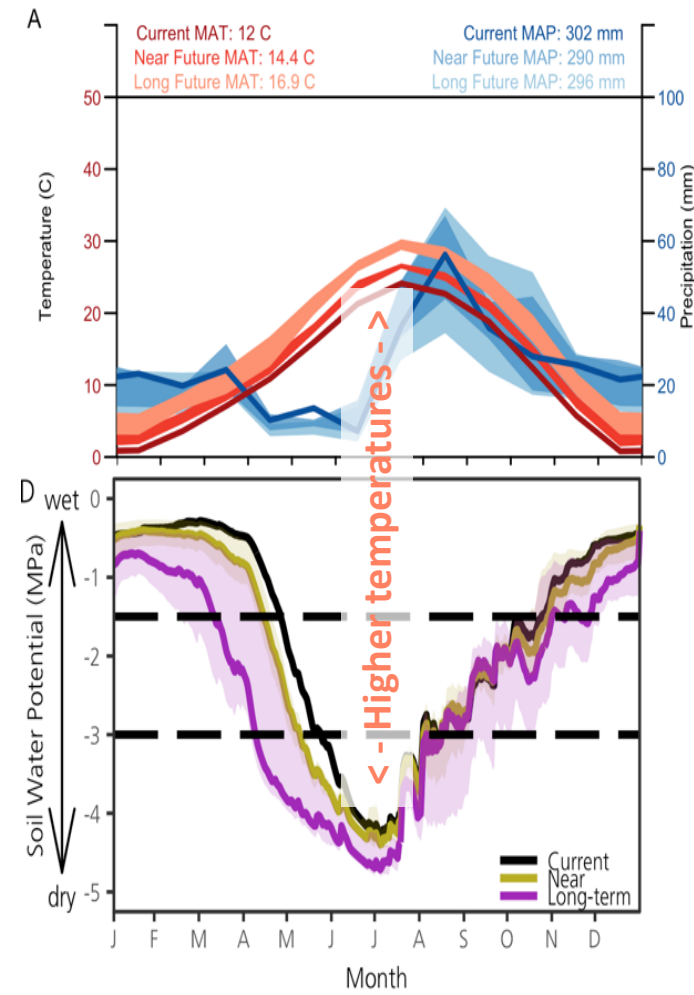
Wupatki National Monument



N. American drylands: changing ecological drought

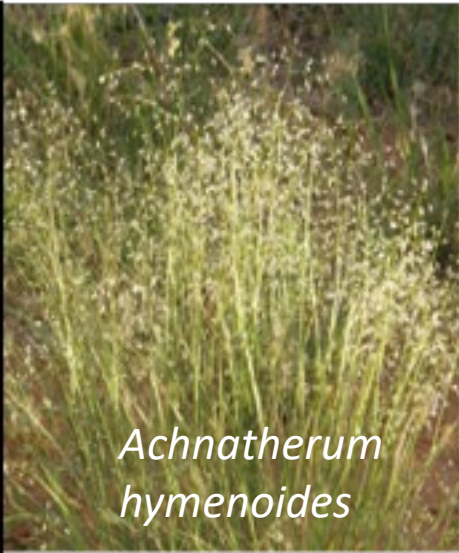


N. American drylands: changing hot-dry stress

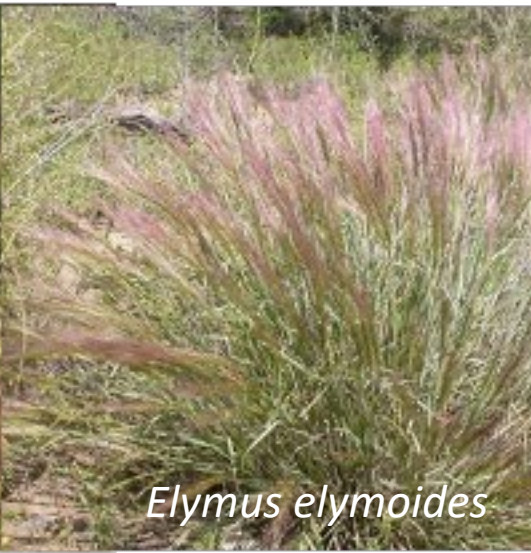


Perennial grasses

C3



*Achnatherum
hymenoides*



Elymus elymoides



*Hesperostipa
comata*



*Pascopyrum
smithii*



Poa secunda

C4



Aristida purpurea



*Bouteloua
gracilis*



*Bouteloua
eriopoda*



Pleuraphis jamesii



*Sporobolus
cryptandrus*



*Sporobolus
airoides*