



— BUREAU OF —
RECLAMATION

Climate and Surface Water Analyses Summary

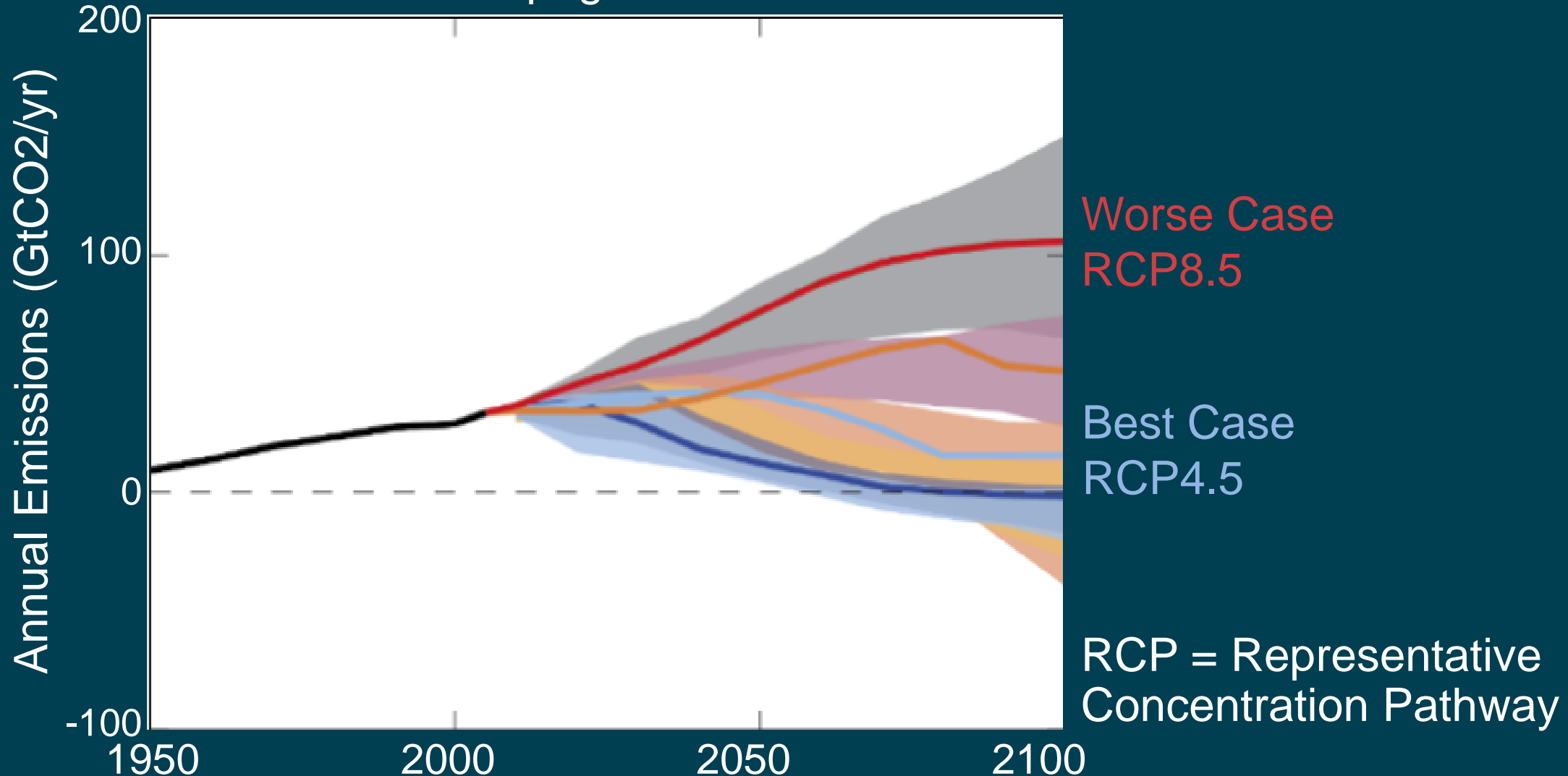
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Future Climate Scenarios

Annual Anthropogenic CO₂ Emissions



Variable Precipitation, Warmer Temperatures - 1

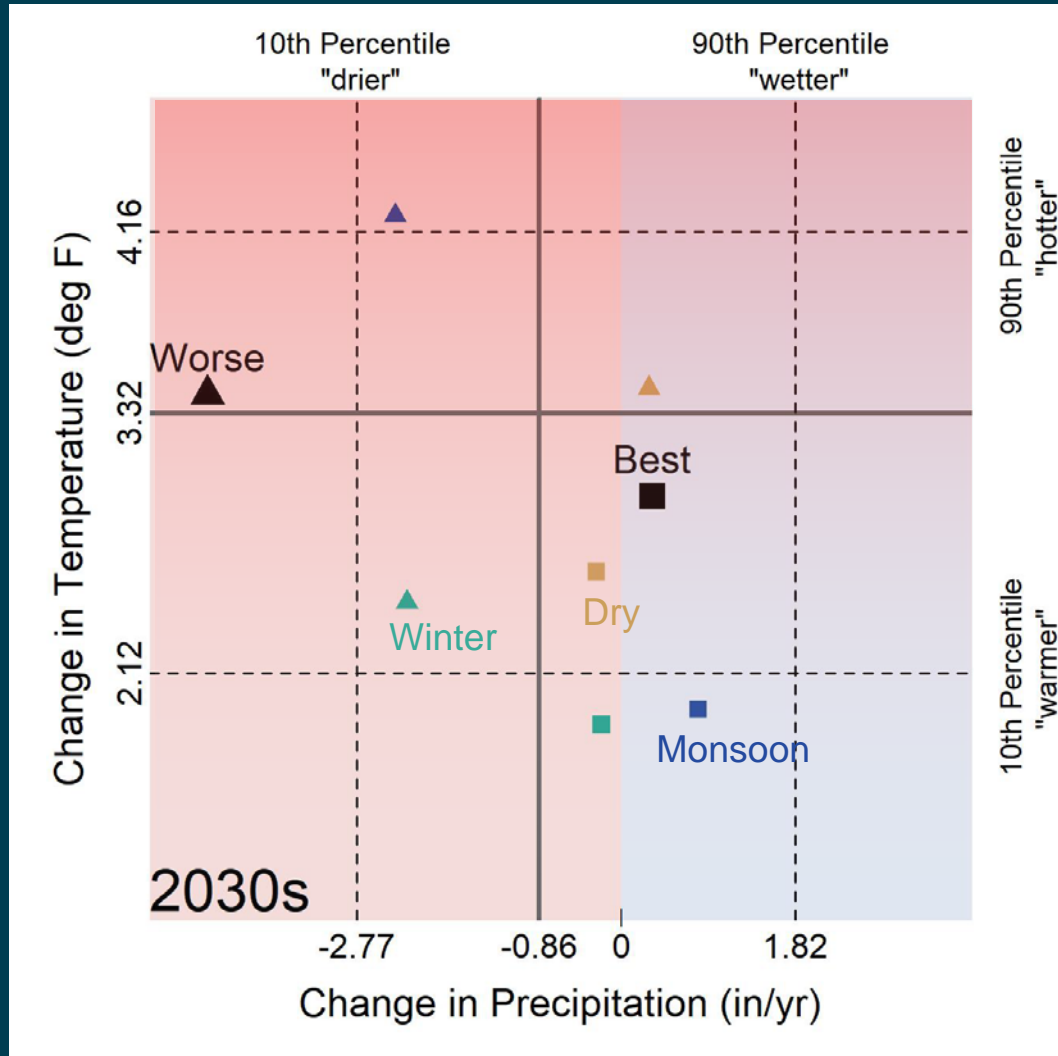
	Best 2030s	Best 2060s	Worse 2030s	Worse 2060s
Change in Total Annual Precipitation	0.32"	-0.85"	-4.34"	-3.90"
Change in Average Monsoon Precipitation	0.80"	-0.87"	-2.38"	-1.57"
Change in Average Winter Precipitation	-0.21"	0.57"	-2.25"	-2.38"
Precipitation RSD* Historical - B: 20.3% W: 17.3%	21.6%	28.5%	18.9%	30.4%
Change in Average Annual Temperature	2.94°F	3.83°F	3.41°F	5.12°F
Change in Average Dry Season Temperature	2.59°F	2.31°F	3.44°F	3.34°F
Change in Average Monsoon Temperature	1.96°F	3.52°F	4.24°F	5.81°F
Change in Average Winter Temperature	1.88°F	1.85°F	2.45°F	3.20°F

*RSD = Relative Standard Deviation

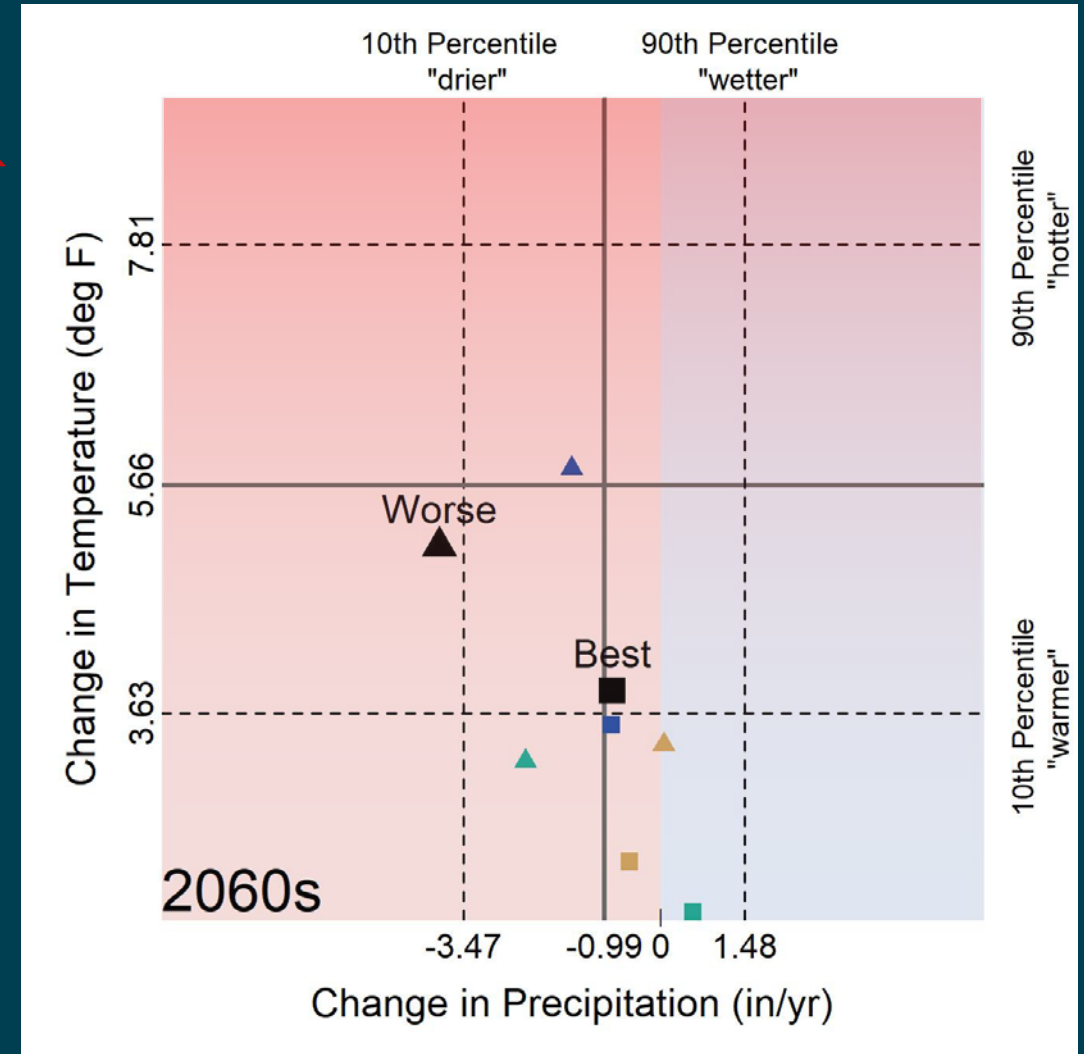
The variability in temperature increases but the rsd is small ($\leq 2\%$) relative to precipitation



Variable Precipitation, Warmer Temperatures - 2



Hotter

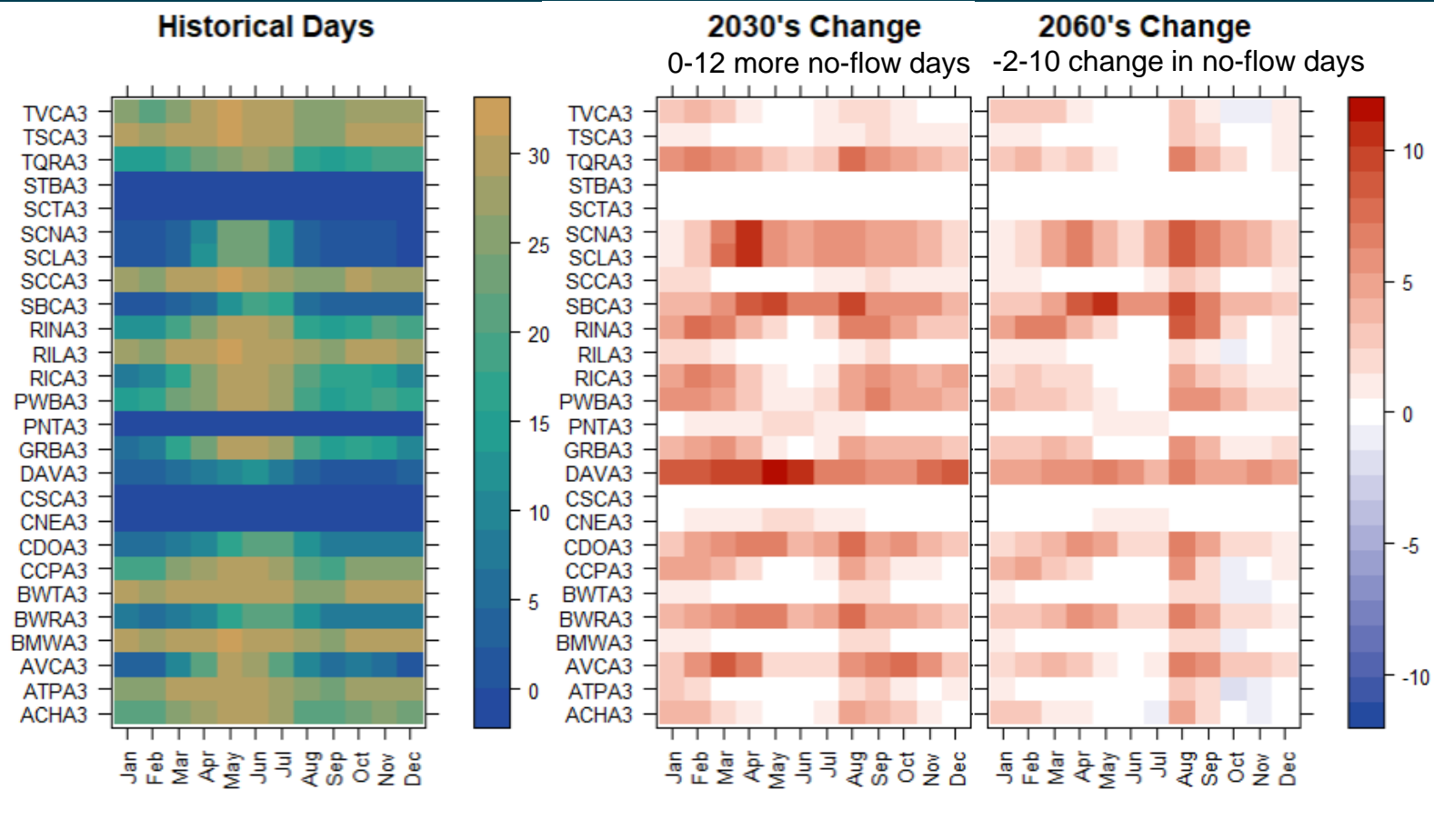


Drier Wetter

Drier Wetter

Increase in “No Flow” Days

Worse Case Scenario shown here



2030's Top 5 Increases in Dry Days (#)

Davidson Canyon (DAVA3)	May	12
Davidson Canyon (DAVA3)	June	11
Santa Cruz nr Nogales (SCNA3)	April	10
Santa Cruz nr Lochiel (SCLA3)	April	10
Sabino Creek (SBKA3)	May	10

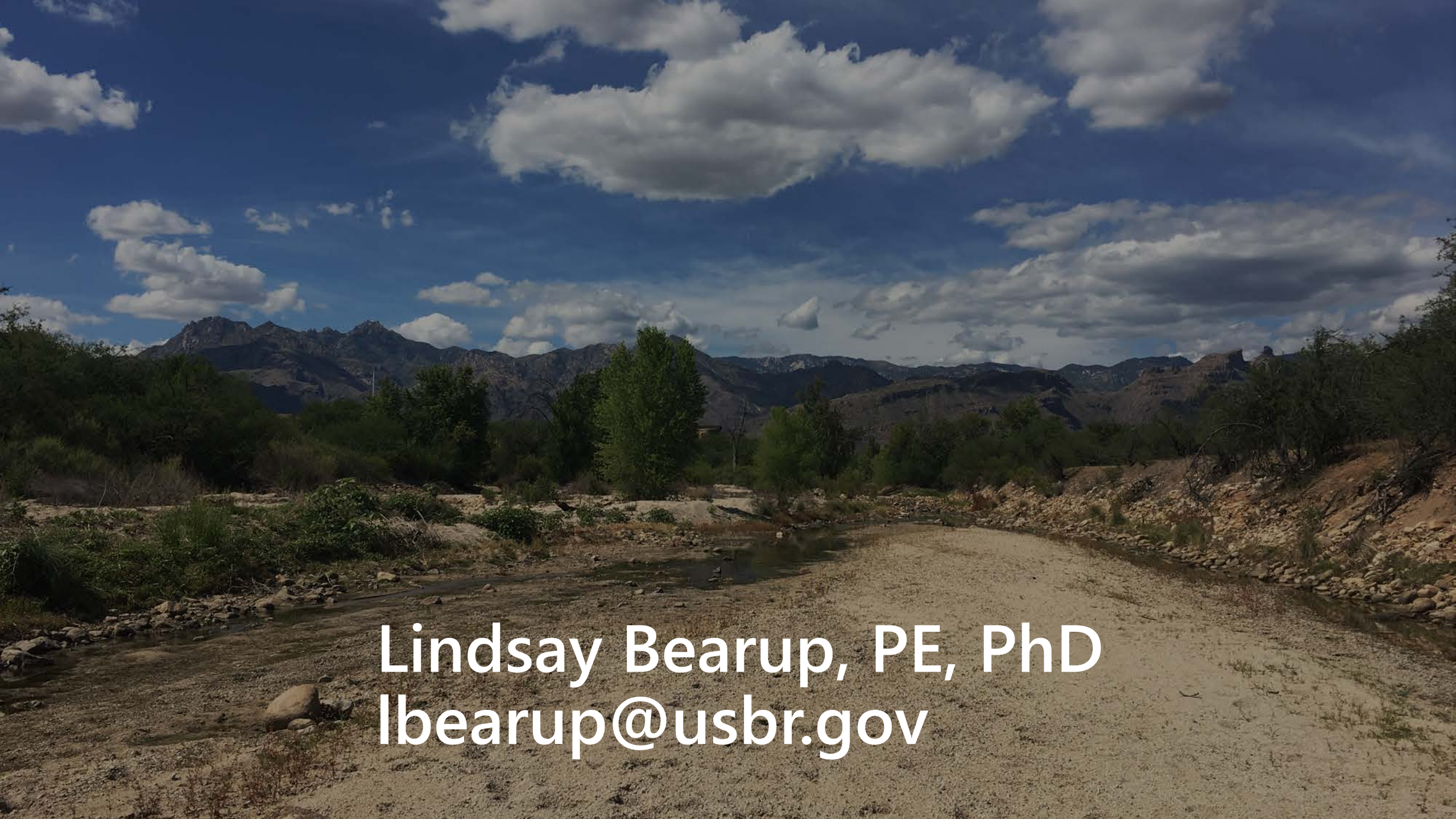
2060's Top 5 Increases in Dry Days (#)

Sabino Creek (SBKA3)	May	10
Sabino Creek (SBKA3)	August	10
Sabino Creek (SBKA3)	April	9
Santa Cruz nr Lochiel (SCLA3)	August	9
Santa Cruz nr Nogales (SCNA3)	August	9

Summary

- Models and scenarios consistently identify increases in temperature, with larger increases in the worse scenario.
- The best case provides a scenario with relatively minimal change in seasonal precipitation; in the worse case scenario, total precipitation decreases in the monsoon and winter wet seasons. Precipitation becomes increasingly variable.
- The number of no-flow days per month consistently increases in the worse case, especially in April, May and August.
- Soil moisture decreases are most pronounced in the months preceding the dry season (April)
- Evapotranspiration decreases because it is limited by soil moisture.





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