

Long Term Surface Water Supply in New Mexico

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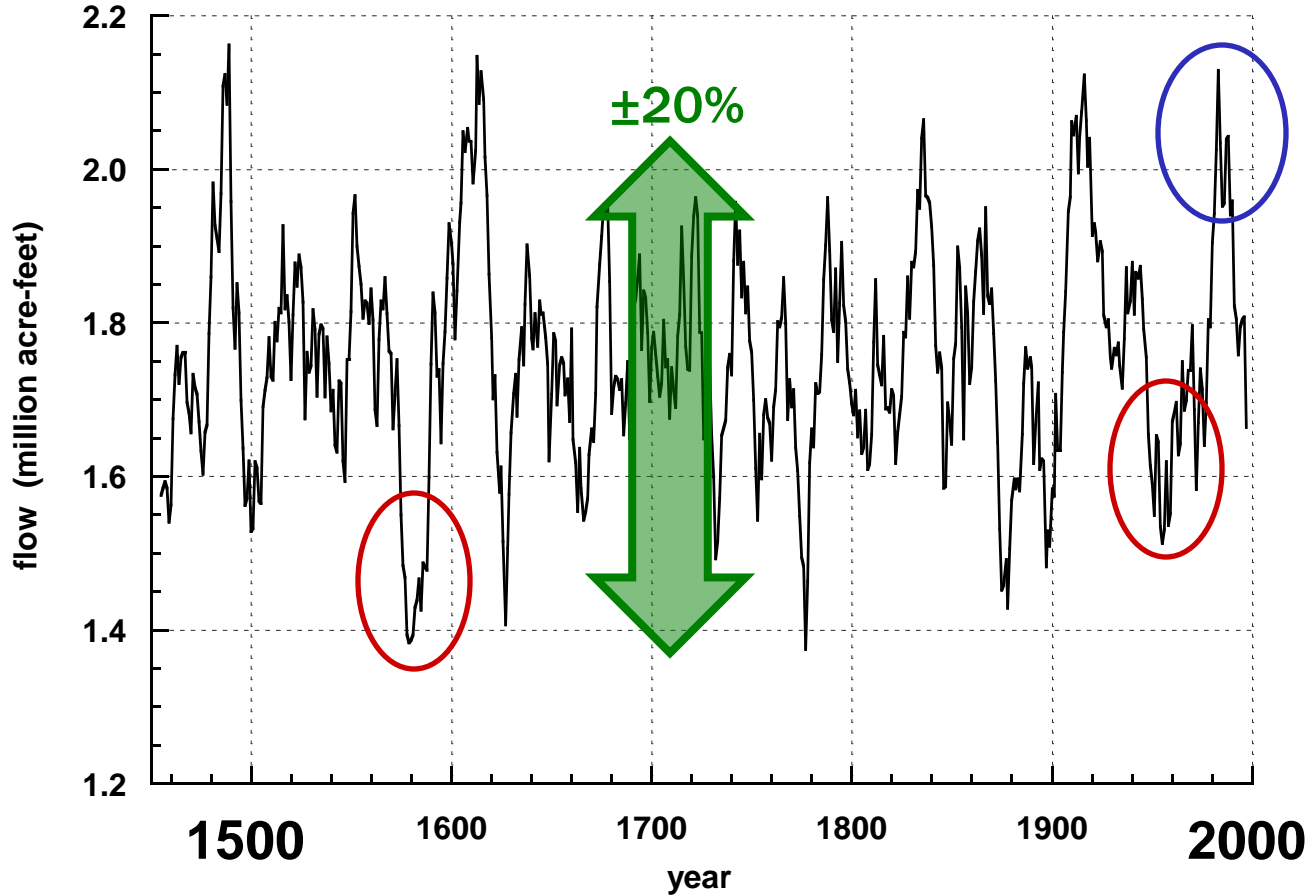


Rio Grande at the Nature Center

- * A 10-minute, 5-slide summary of hydroclimatic variability and change in New Mexico
- * High variability, diminished flows

Proxy Rio Grande streamflow: Otowi gage

Reconstructed Rio Grande Streamflow at Otowi
11-year running average



based on
tree ring data

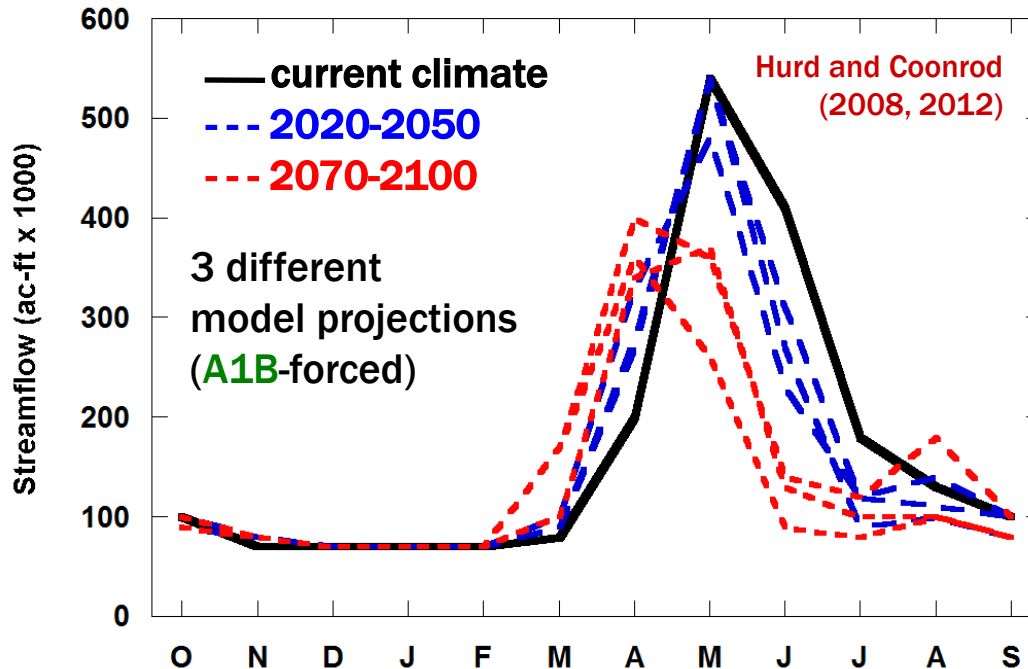


Rio Grande at Otowi

**Huge multidecadal fluctuations in
precipitation and streamflow**

treeflow.org
Gutzler (2012)

Projected Middle Rio Grande Streamflow



Snowpack currently feeds a late Spring flood pulse on the upper Rio Grande and its principal tributaries

In the future (warmer) climate:

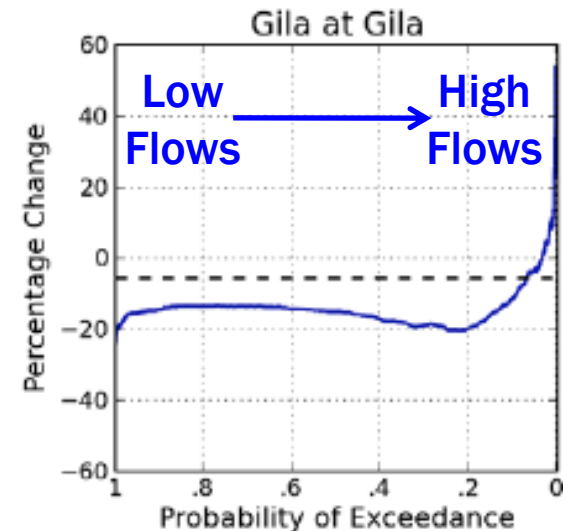
Earlier & weaker snow-fed flood pulse

Reduced total streamflow volume, especially in late spring/early summer

2030s: 4 - 14% reduction

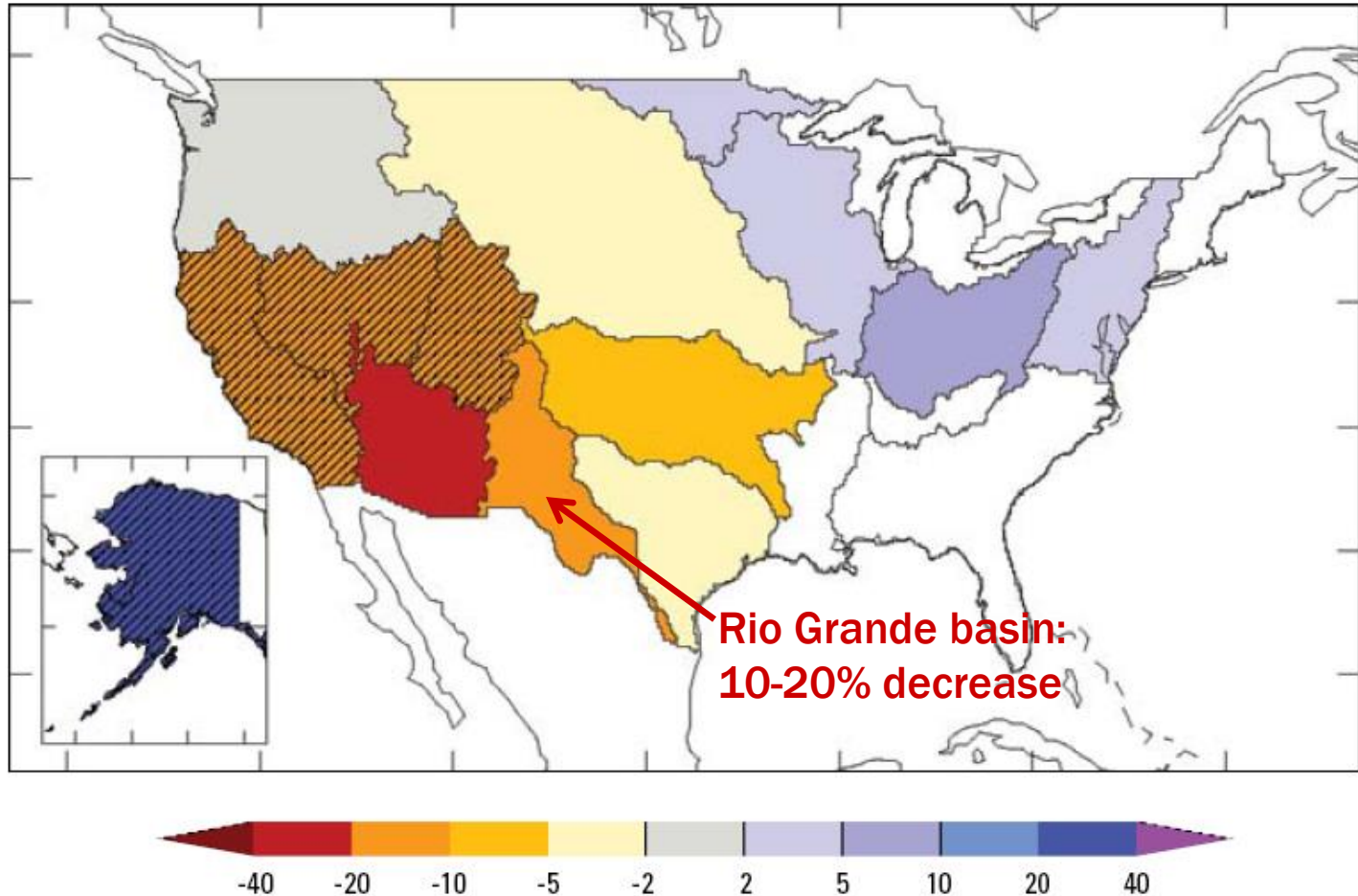
2080s: 8 - 29% reduction

Change in Distribution of Daily Flows



Garfin et al. (2014)

Projected Streamflow Changes: North America



Milly et al. (2005)

**mid-21st Century projection,
relative to 20th Century baseline**

Conclusions: Surface Water Supply in New Mexico

1. Global Warming

5 facts in 10 words
(Leiserowitz, 2015)

It's real

It's us

It's bad

Scientists agree

There's hope

2. Surface Hydrology in NM

Huge decadal variability ($\pm 20\%$, **precip**)

Long-term flow decline due to climate change,
comparable to variability by century's end
(mostly **temperature**)

Flattened & weakened snowmelt runoff peak,
earlier peak flows

Earlier, drier, warmer spring season

Possible increase in flashy, high-intensity
precipitation and arroyo flows

NM surface water supply outlook WY 2015

Reservoir volumes end Feb

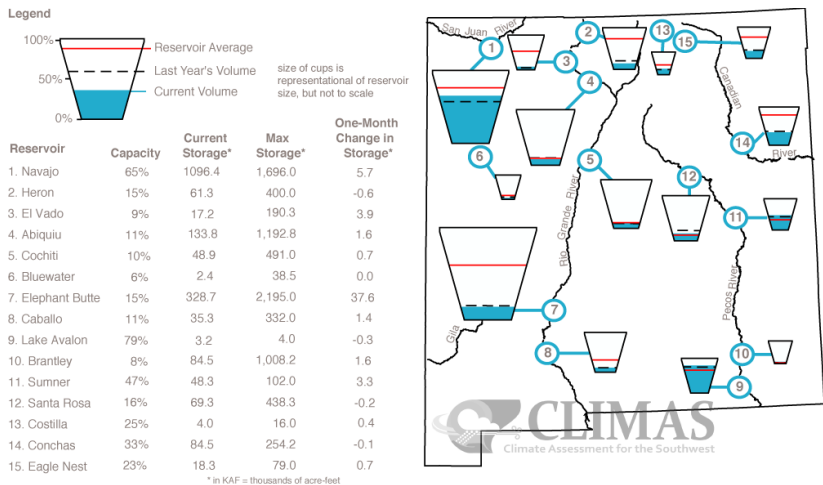
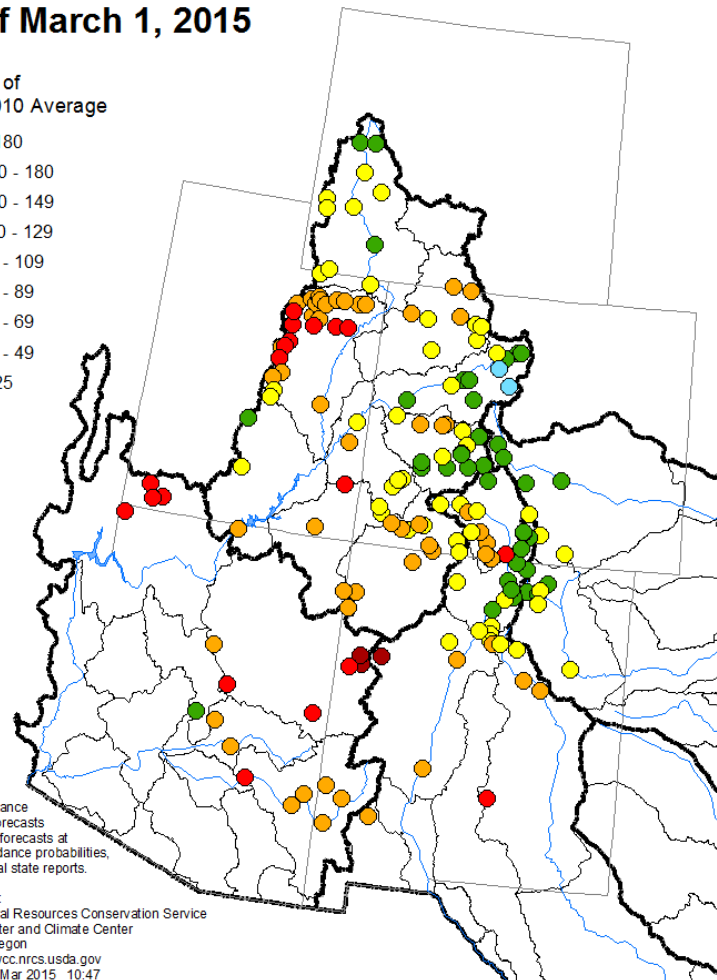


Figure 2. New Mexico reservoir volumes for end of Feb as a percent of capacity. The map depicts the average volume and last year's storage for each reservoir. The table also lists current and maximum storage, and change in storage since last month.

Colorado, Rio Grande, and Arkansas River Basins Spring and Summer Streamflow Forecasts as of March 1, 2015

Percent of 1981-2010 Average

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25



Snowpack 19 March

