

# Where is Our Water Going to Come From?

---

## Café Scientifique

Dr. Cathy J. Wilson

Los Alamos National Laboratory

# Water Trivia Questions

---

- **Where is the majority of our freshwater stored on earth?**
  - Atmosphere
  - Lakes
  - Icecaps/glaciers
  - Underground
  
- **How much water does an average American use for household activities (washing, flushing, watering) per day?**
  - 50 gallons
  - 100 gallons
  - 500 gallons
  
- **How much water does it take to make a hamburger?**
  - 3 gallons
  - 75 gallons
  - 650 gallons



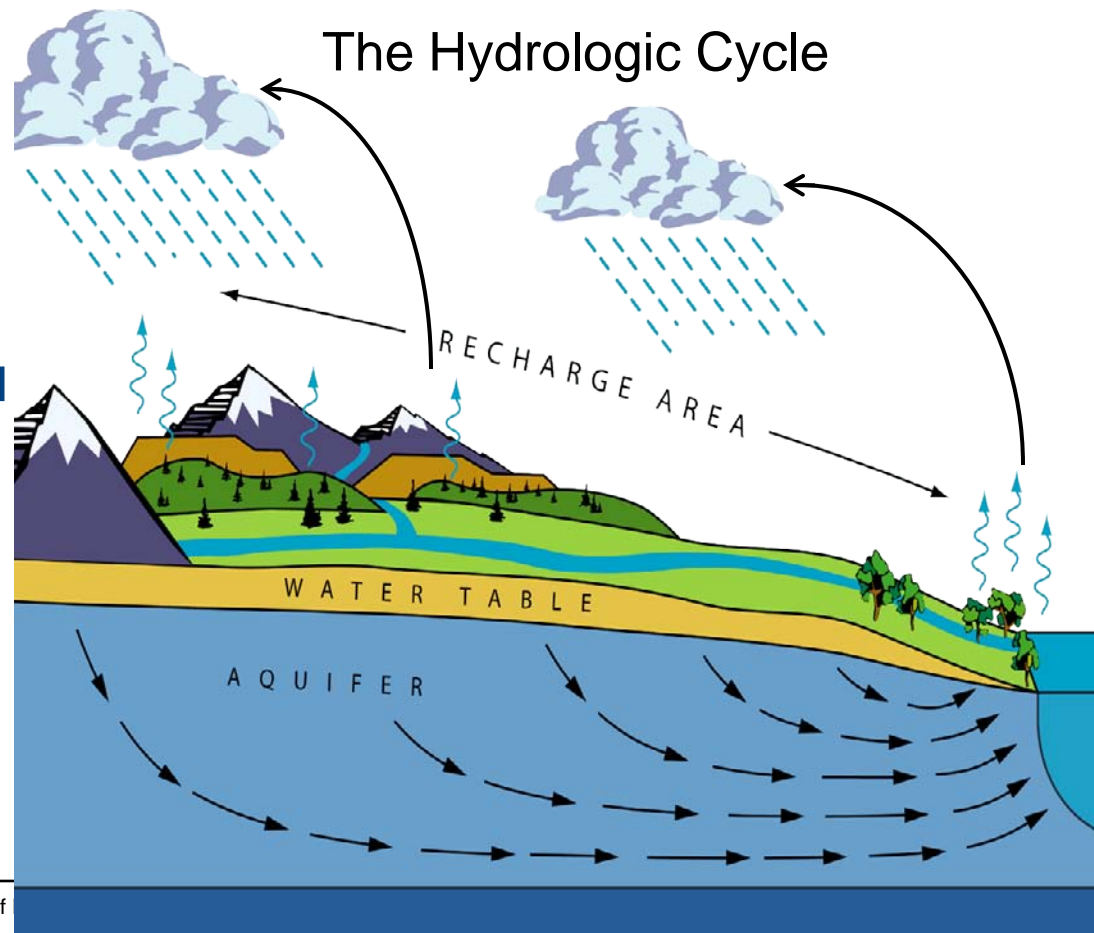
# The water planet: is there plenty to go around?



# Only a small amount of the earth's water is readily available for human use.

How is the earth's water distributed? What is renewable water?

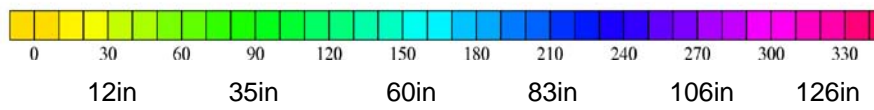
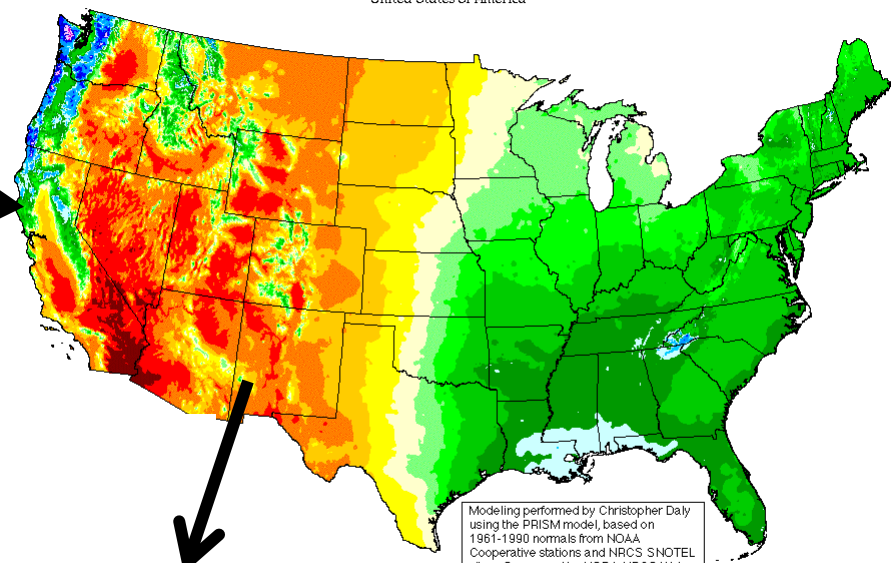
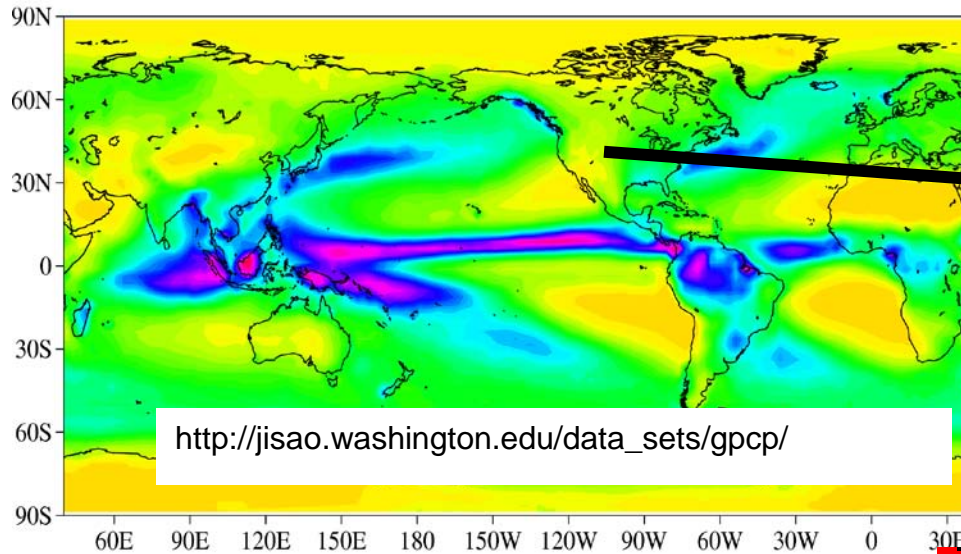
Earth :	1.4 billion (cubic kilometers)
Oceans:	1.3 billion
Total freshwater:	35 million
Ice caps & glaciers:	24 million
Groundwater:	10.5 million
Lakes/swamps:	100 thousand
Atmosphere:	13 thousand
Rivers:	2 thousand



# Renewable water is highly variable in space and time.

Annual total precipitation (cm, GPCP)

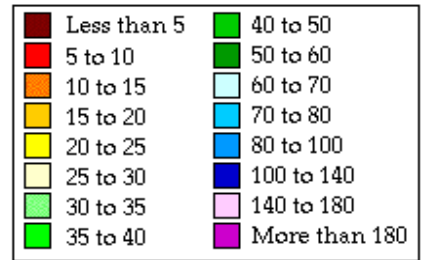
Annual total precipitation USA



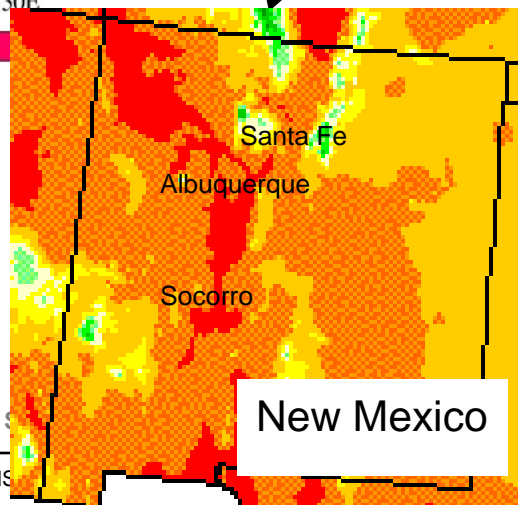
Modeling performed by Christopher Daly using the PRISM model, based on 1961-1990 normals from NOAA Cooperative stations and NRCS SNOTEL sites. Sponsored by USDA-NRCS Water and Climate Center, Portland, Oregon.

Oregon Climate Service  
George Taylor, State Climatologist  
(541) 737-5705

Legend (inches)



Period: 1961-1990

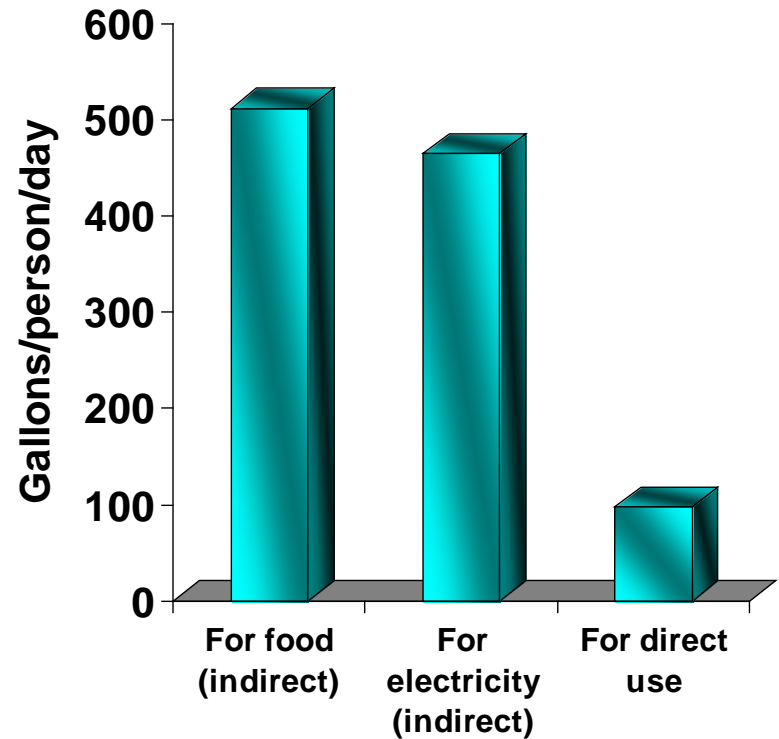
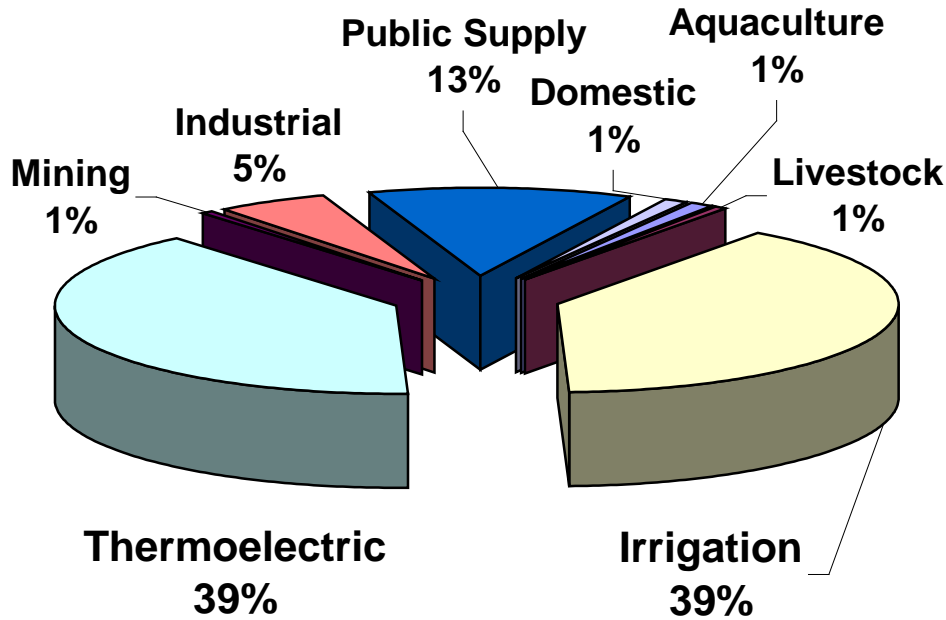


How many feet of rain fall in Indonesia?

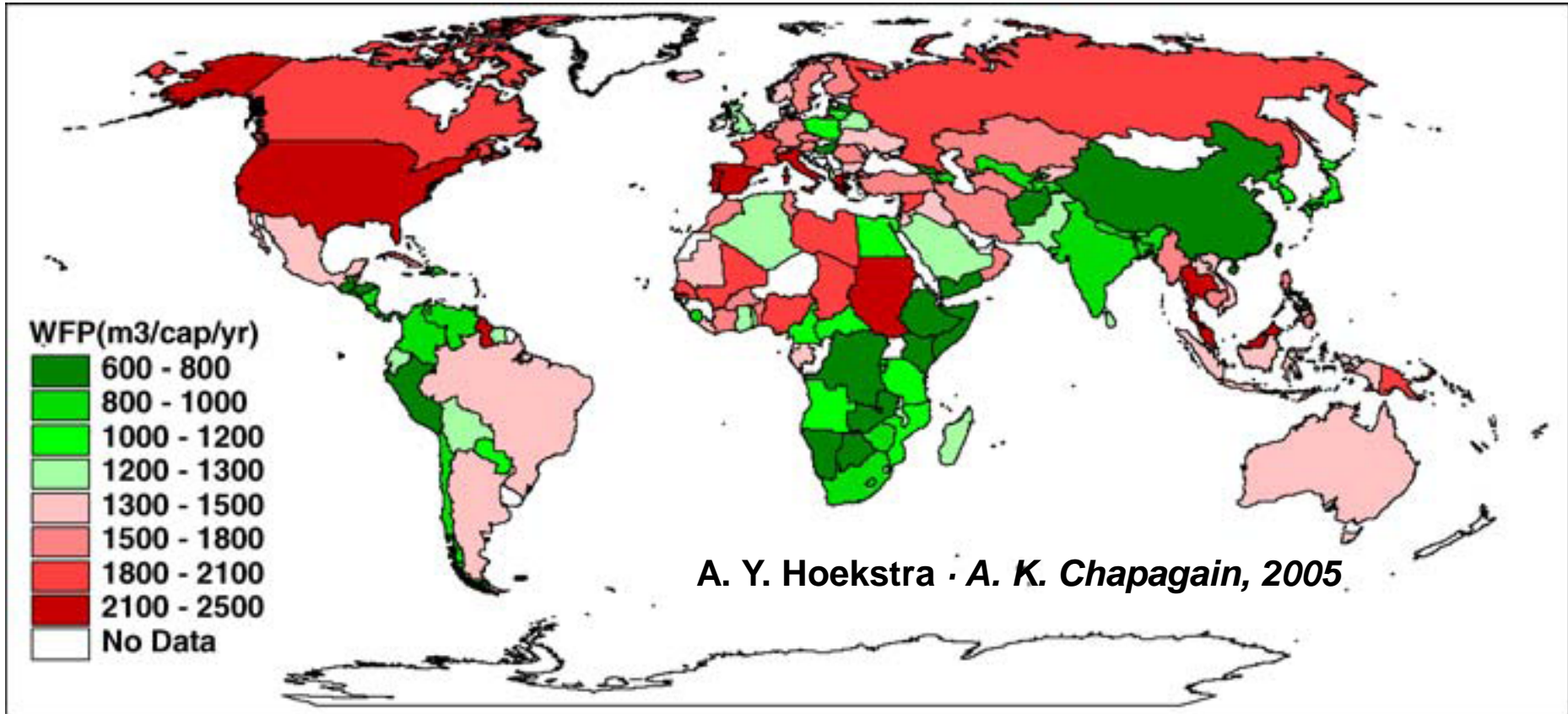
How much precipitation falls in NM?

# We use most of our water for power generation and food production.

U.S. Freshwater Withdrawals, 345 Bgal/day

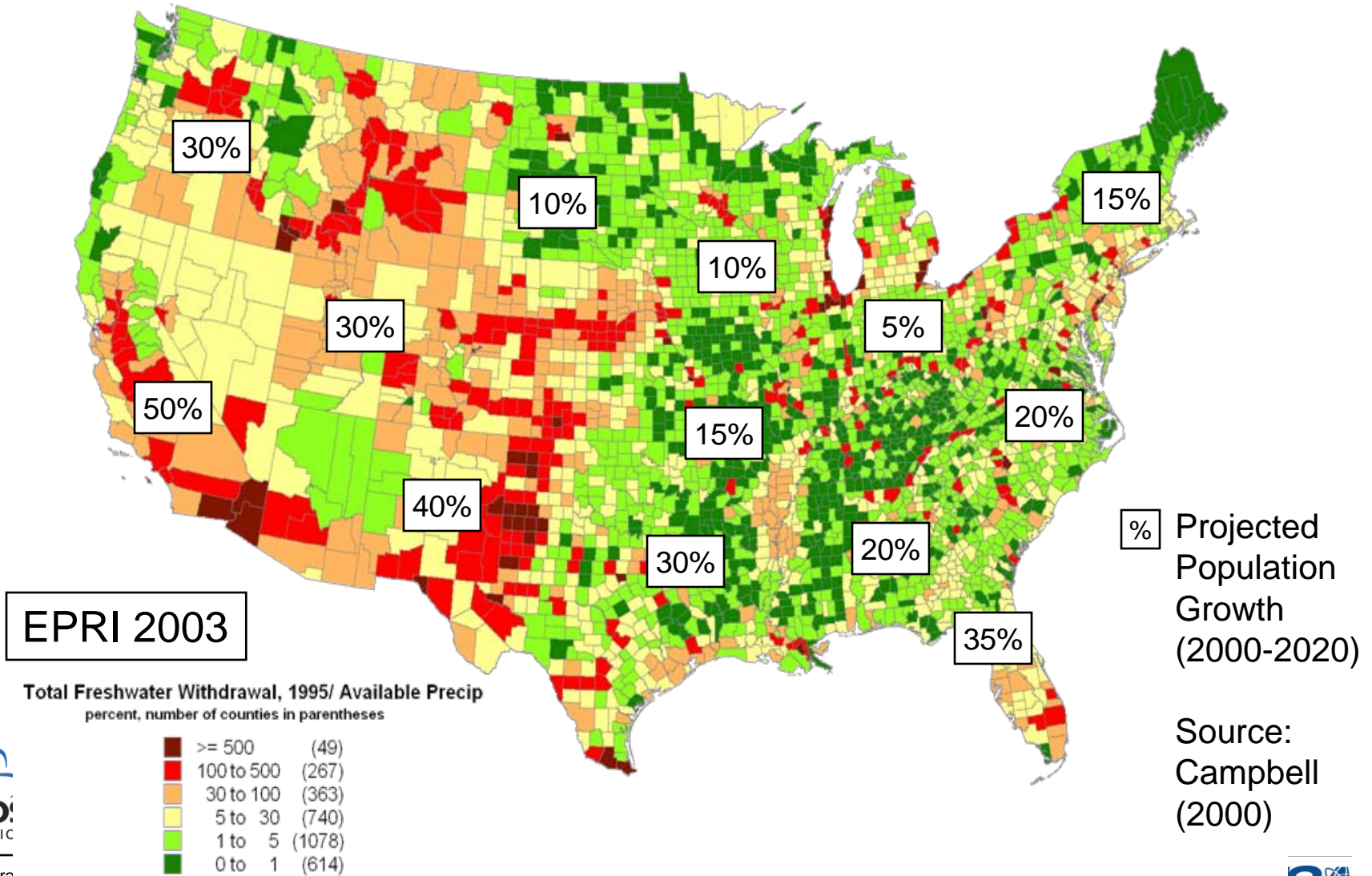


# Americans use more water per capita per year than anyone else in the world.



Average national water footprint per capita (m<sup>3</sup>/capita/yr). Green means that the nation's water footprint is equal to or smaller than global average. Countries with red have a water footprint beyond the global average

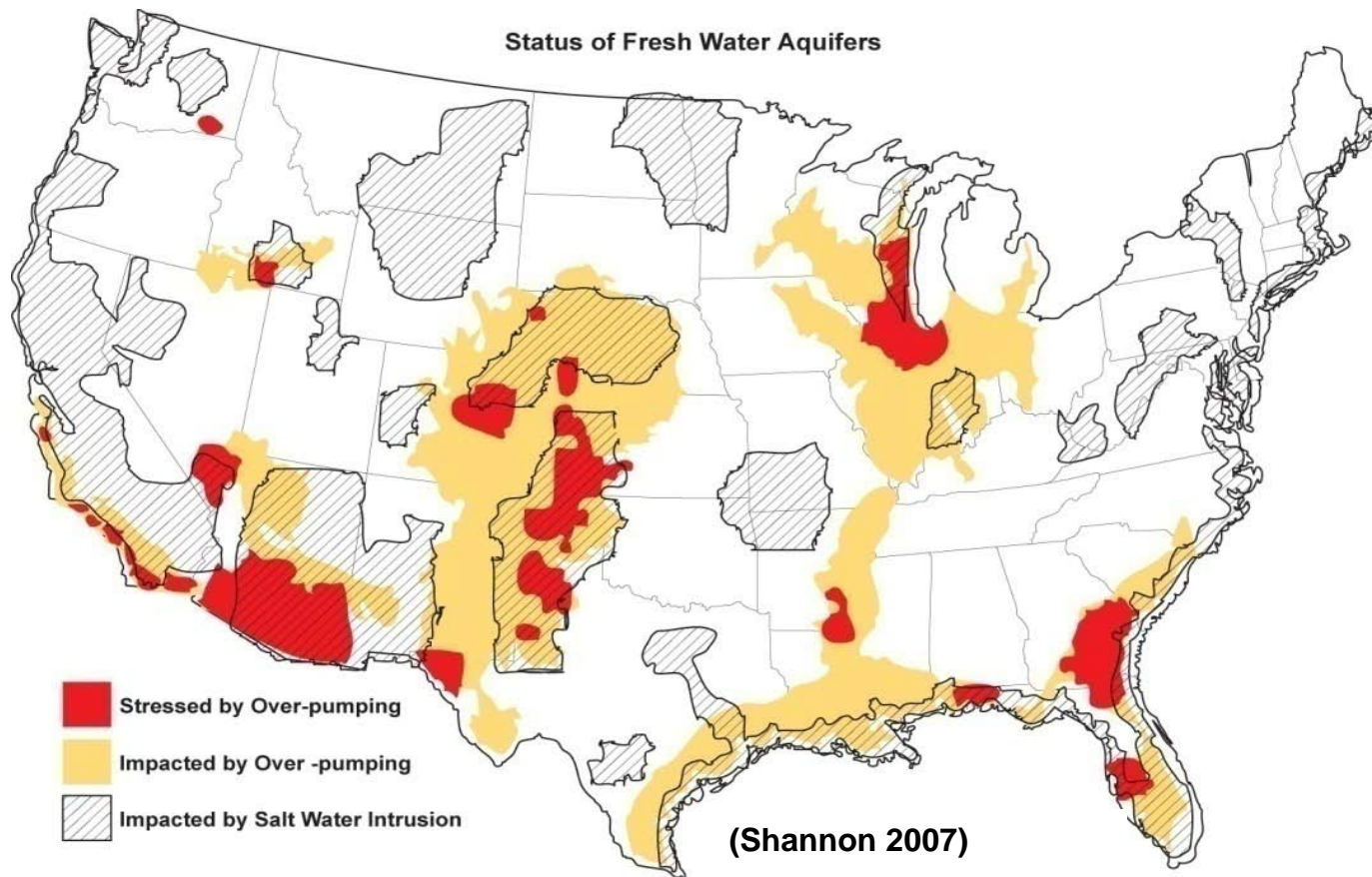
# The US is facing growing limitations on fresh water availability.





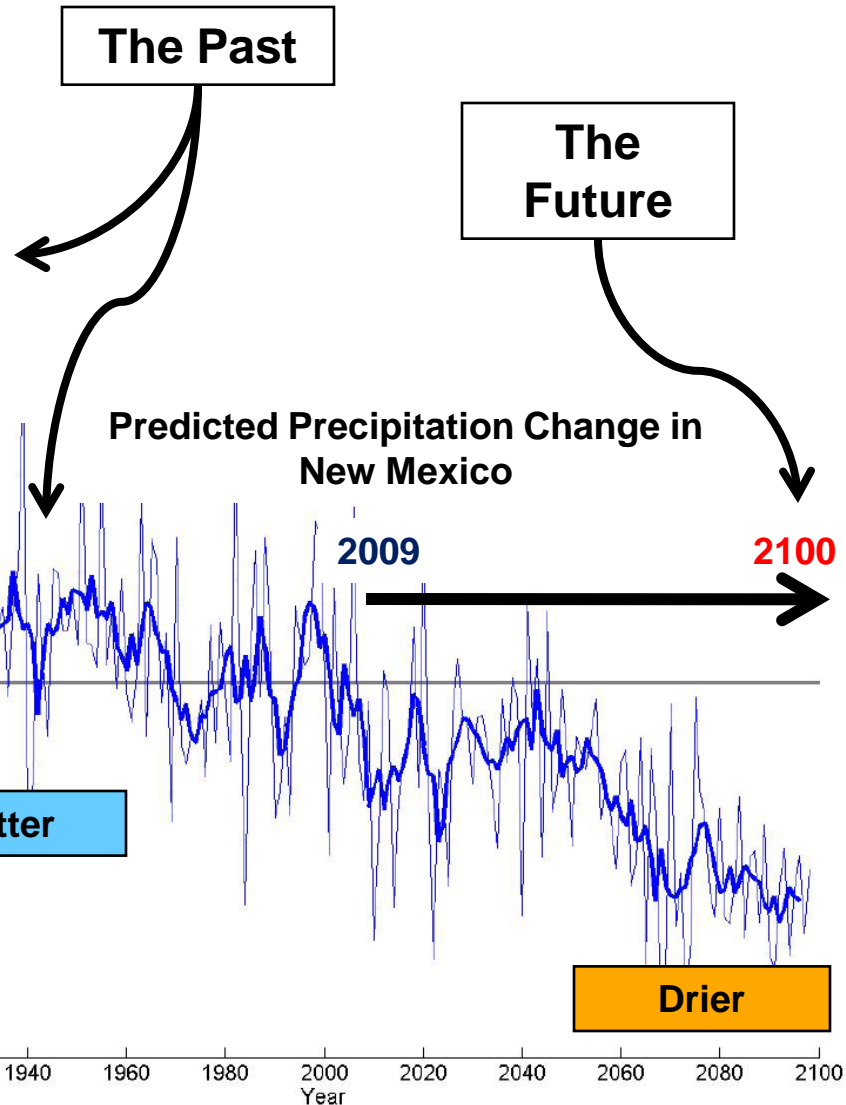
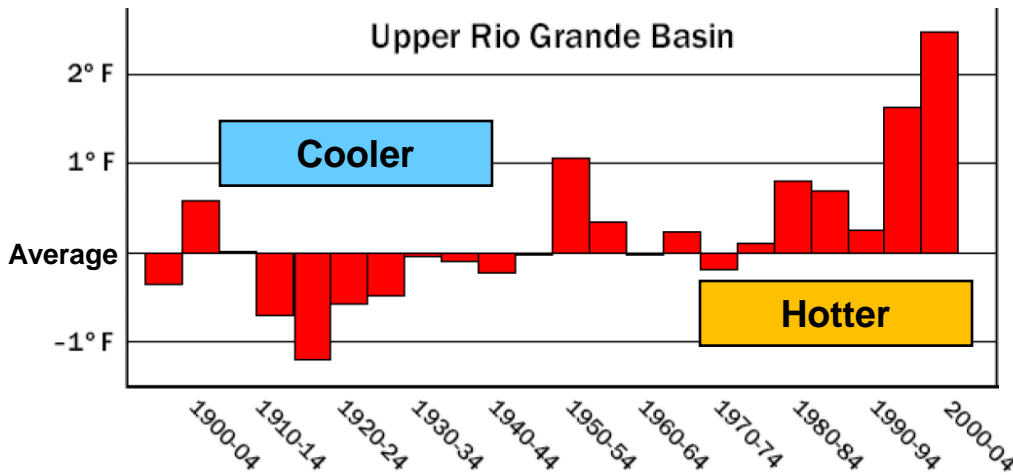
# To meet demand we “mine” ground water and use water from other States.

Many major ground water aquifers seeing reductions in water quality and yield



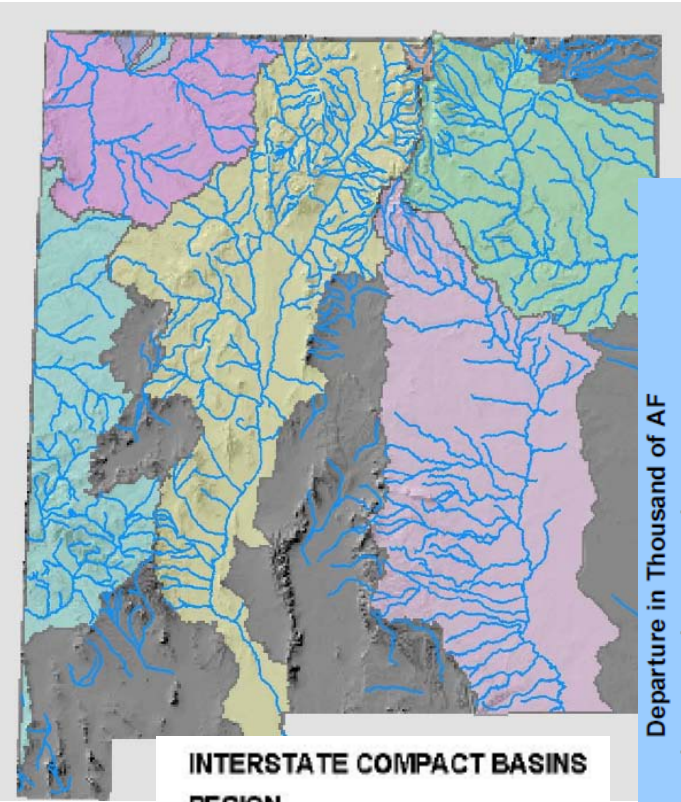
# How will climate change impact New Mexico?

## Change in Temperature from Historical Average



NM Climate Change Report, Office of the State Engineer

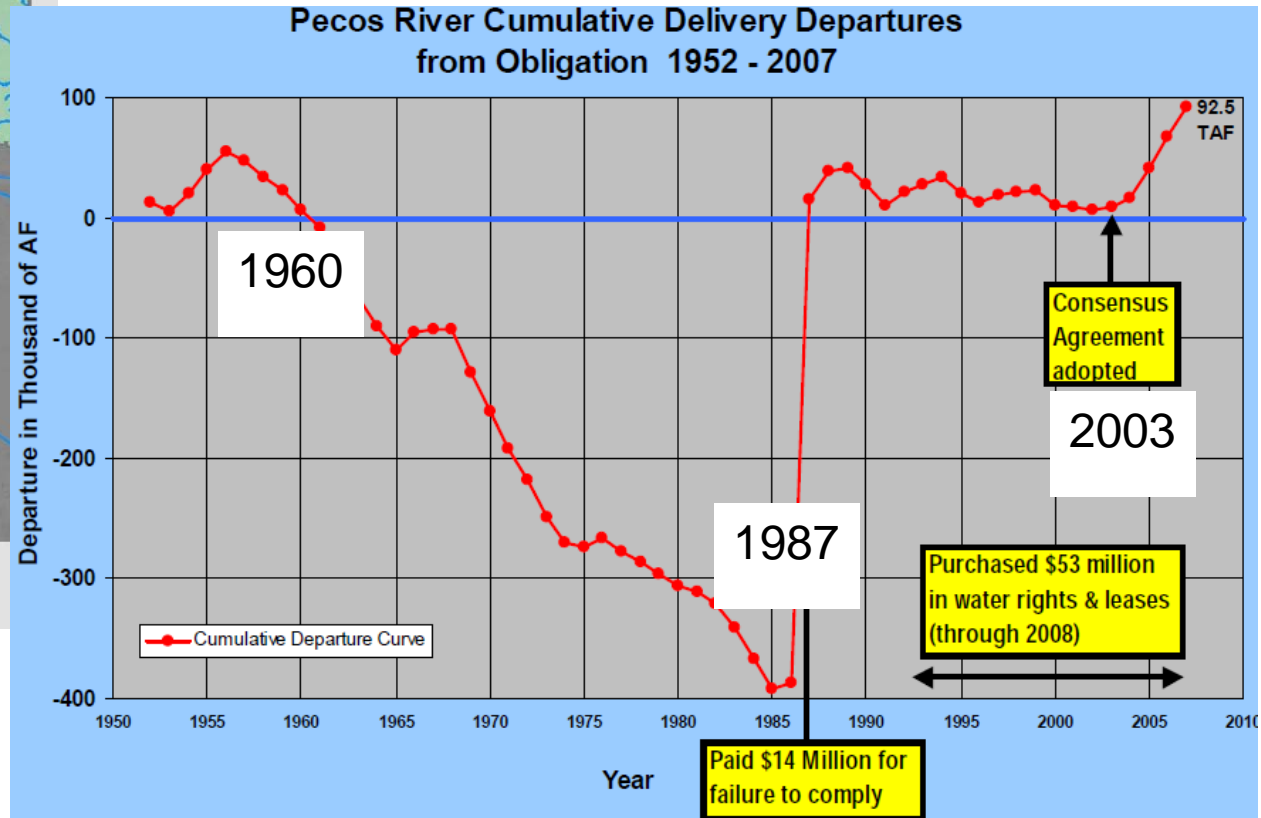
# New Mexico Legal Framework: Interstate Compacts



## INTERSTATE COMPACT BASINS

### REGION

- ANIMA-LA PLATA
- CANADIAN RIVER COMPACT
- COLORADO RIVER COMPACT
- COSTILLA CREEK COMPACT
- LA PLATA
- PECOS RIVER COMPACT
- RIO GRANDE COMPACT
- UPPER COLORADO COMPACT



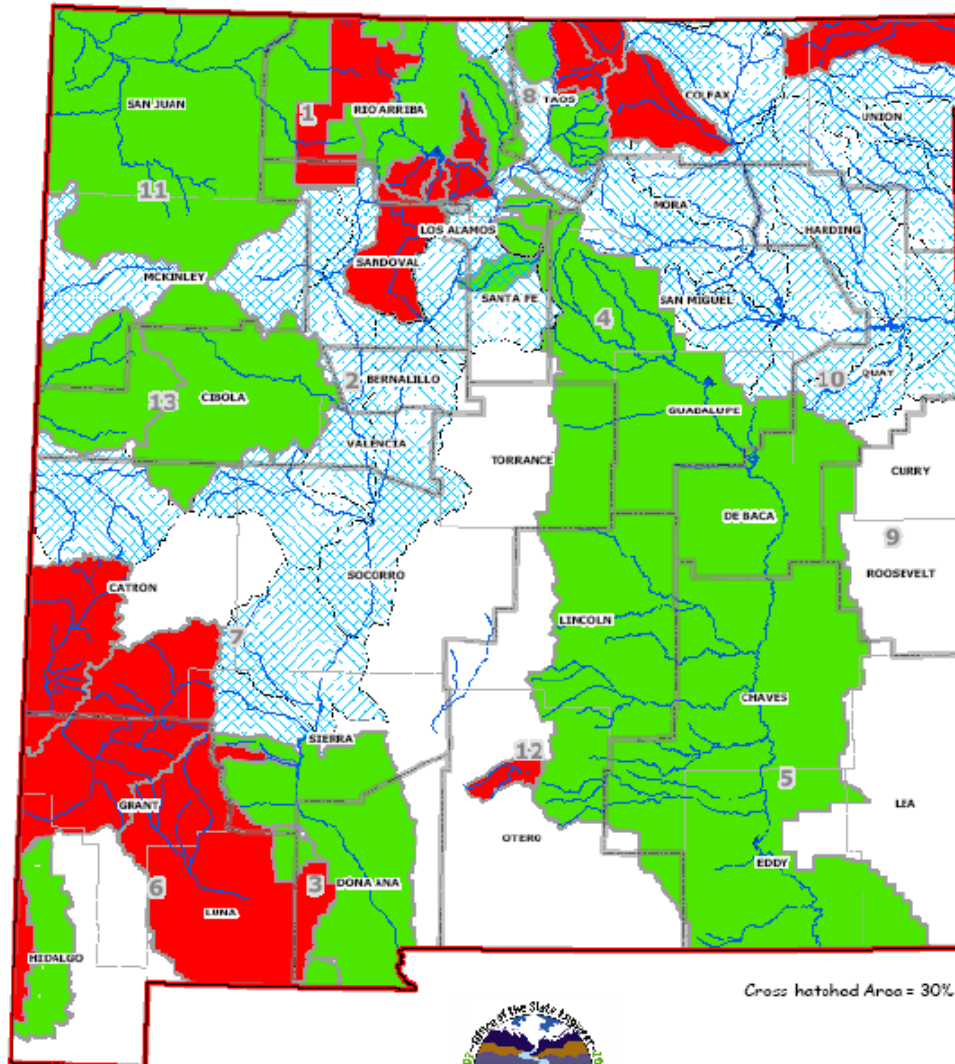
UNCLASSIFIED

Slide 11

# New Mexico Legal Framework: Internal Allocations

## Water Rights Adjudication in New Mexico

NEW MEXICO ACTIVE (GREEN) & COMPLETED (RED) ADJUDICATIONS  
AND SURFACE BASINS FOR FUTURE ADJUDICATION (CROSS-HATCHED)



### Rule of prior appropriation:

Whoever used it first is most senior and gets to use that amount of water forever. But, you must “Use it or Lose it”.

### Administration issues:

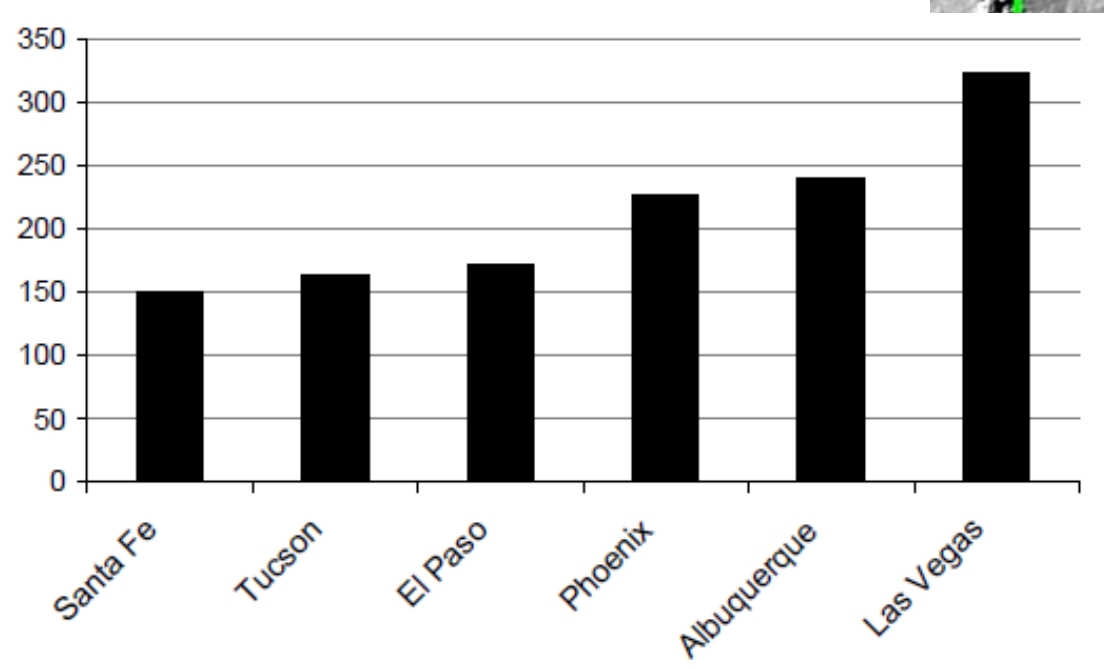
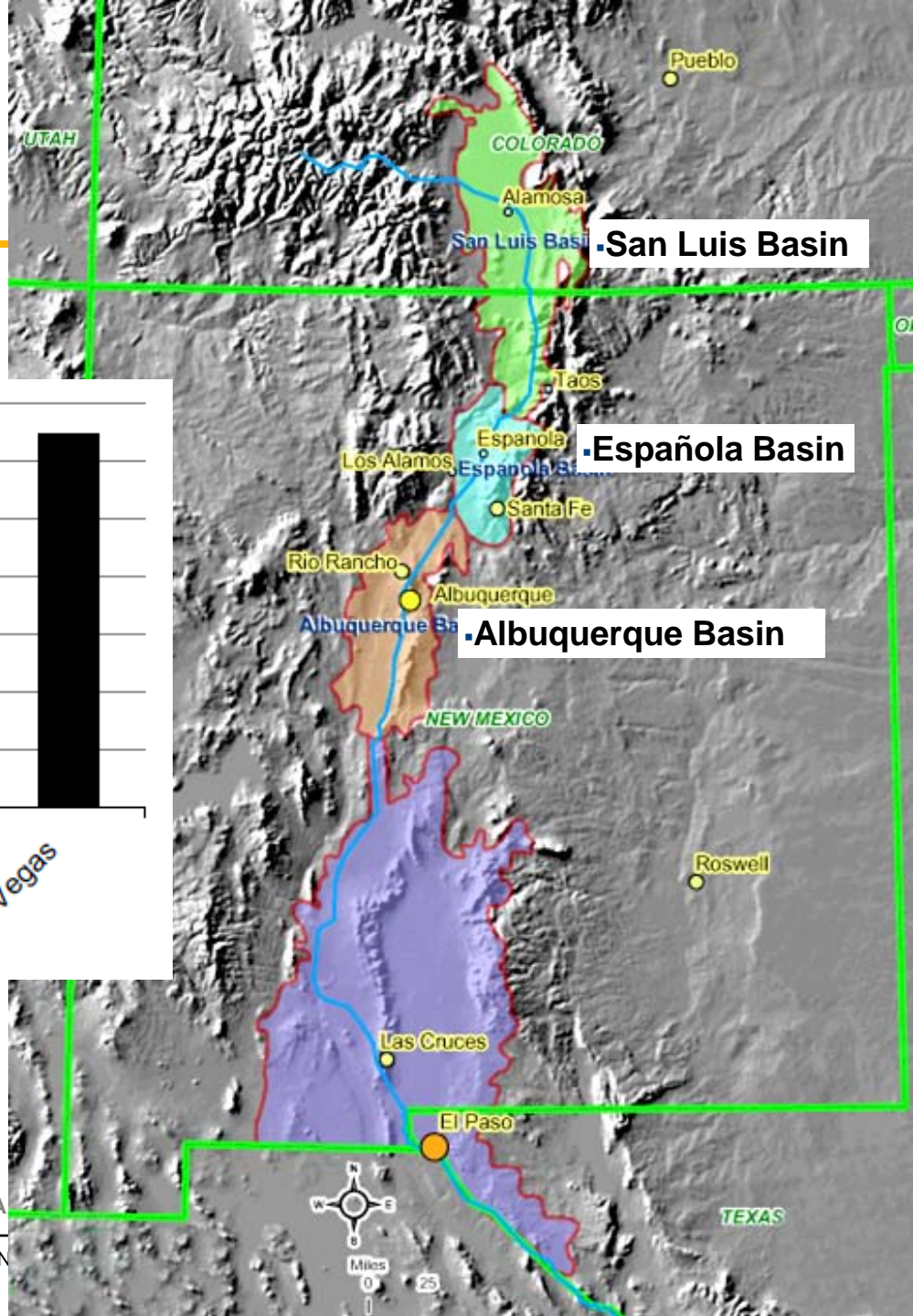
Monitoring how much each person uses.  
Enforcing allocation limits.  
Developing new ways to make sure everyone gets the water they need during drought: shortage sharing, water markets and banks, water leasing.

### Adjudication:

Agreement on seniority and amount of each person’s water right. Recent agreements with 6 NM tribes recognize seniority.  
Climate change not factored into process.

# Where will your water come from?

Southwest regional climate change symposium



# Where will your water come from?

---

- **Where does your water come from now, and how might climate change impact your water supply?**
- **What can YOU do to reduce water stress in your region?**
- **What role should the government play in reducing water stress in your region?**

# Extra Slide

---

# ■ Española Basin Research

## ■ Recharge

