

SRP Perspective Cobre Valley Small Town Forum



**Charlie Ester
Surface Water Resources**

**Miami, AZ
September 6, 2018**



Salt River Valley Water Users Association

- Established 1903
- A Federal reclamation project
- A private corporation
- Delivers 800,000 acre-feet per year

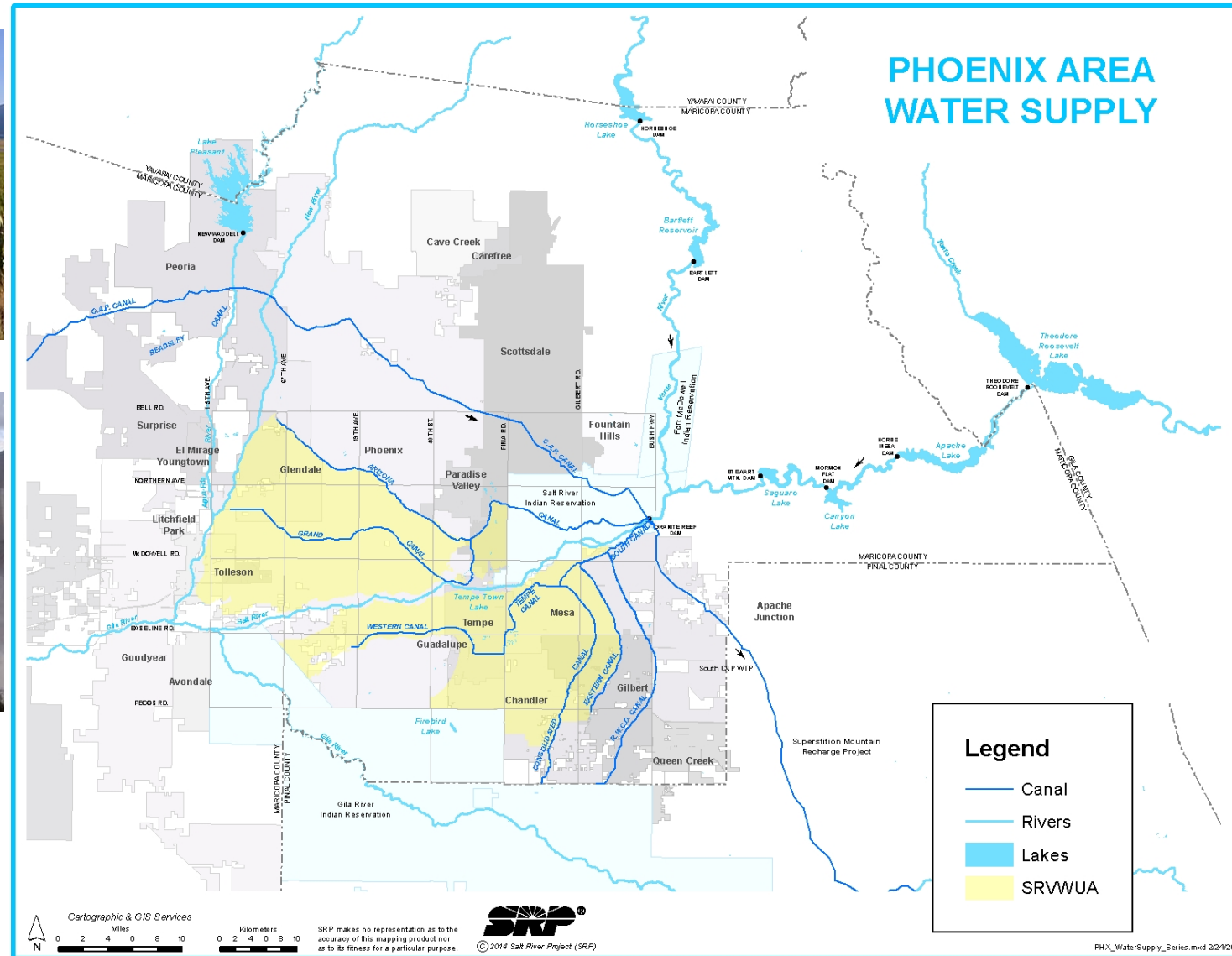
SRP Agricultural Improvement and Power District

- Established 1937 as a political subdivision of the state of Arizona
- > 1 million customers in and around the Phoenix metro area





SRP Reservoirs and Water Delivery System



Arizona's Climate Is...

Unpredictable

Extreme

Variable

Changing?

Greatest Threats...

Drought

Flood

Wildfire

Response...

Plan for the Future

Prepare for Extremes

Protect for Resilience

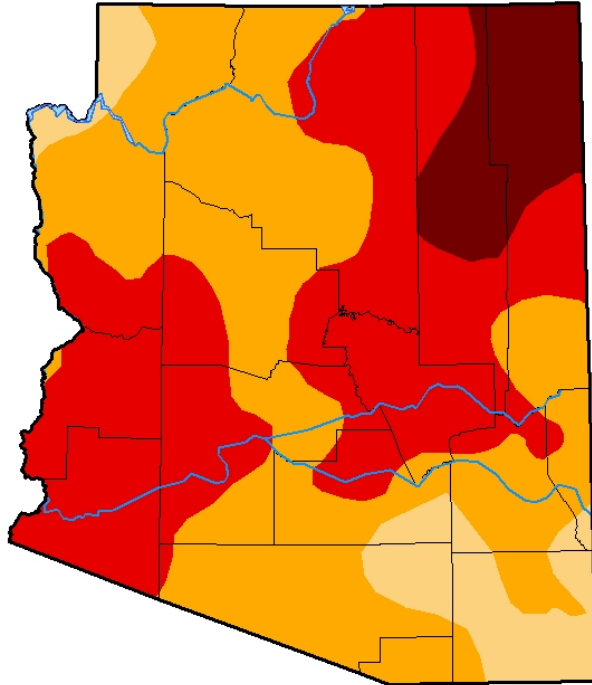




Horseshoe Dam January 2010

Mostly, It's About Managing For Times of Scarcity.

U.S. Drought Monitor Arizona



August 21, 2018
(Released Thursday, Aug. 23, 2018)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	91.01	48.23	8.62
Last Week 08-14-2018	0.00	100.00	100.00	91.01	48.23	8.62
3 Months Ago 05-22-2018	0.00	100.00	100.00	97.05	73.20	15.71
Start of Calendar Year 01-02-2018	0.00	100.00	100.00	28.66	0.00	0.00
Start of Water Year 09-26-2017	45.38	54.62	10.69	0.00	0.00	0.00
One Year Ago 08-22-2017	75.16	24.84	10.69	0.00	0.00	0.00

Intensity:

■ D0 Abnormally Dry ■ D3 Extreme Drought
■ D1 Moderate Drought ■ D4 Exceptional Drought
■ D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

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NCEI/NOAA



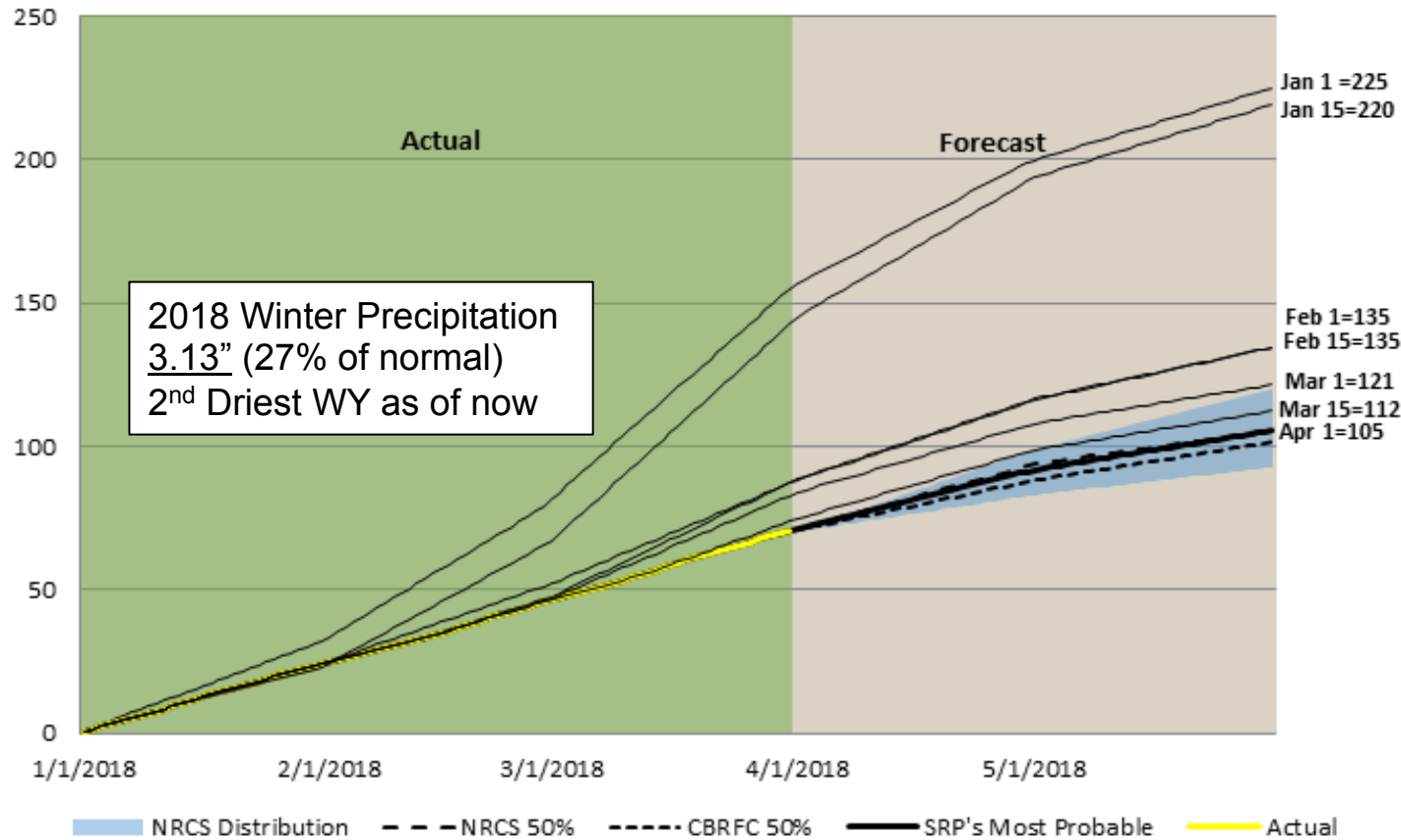
<http://droughtmonitor.unl.edu/>

Droughts Happen, and Are Nothing New to Arizona



Roosevelt Lake - 2002
Total Storage @12%

April 1, 2018 - Salt, Tonto and Verde Streamflow Forecast



Salt and Verde River Inflows

Year	Jan-May Inflow (AF)	May 1 Storage (AF)	May 1 Percent Full
2010	1,419,000	2,311,000	100
2011	223,000	2,006,000	87
2012	196,000	1,512,000	66
2013	449,000	1,453,000	63
2014	148,000	1,300,000	56
2015	328,000	1,314,000	57
2016	338,181	1,307,000	57
2017	970,440	1,731,000	76
2018	100,013*	1,337,000	58

***2018 Lowest Jan-May Inflow**
2002 Inflow – 106,000 AF

2011-2018 Lowest Inflow - consecutive 8-year period
1996 -2018 Lowest Inflow - consecutive 23-year period

What's In Store For Our Future?



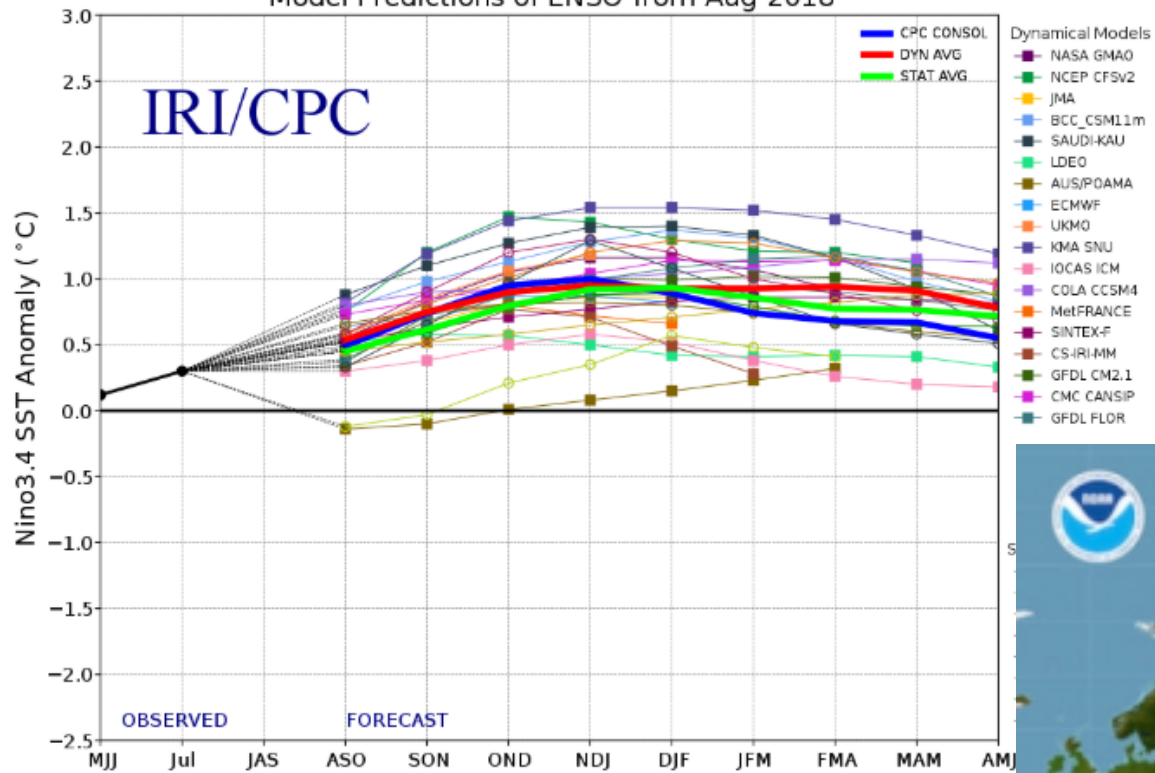


NOAA Makes El Niño Prediction For Winter 2018-2019

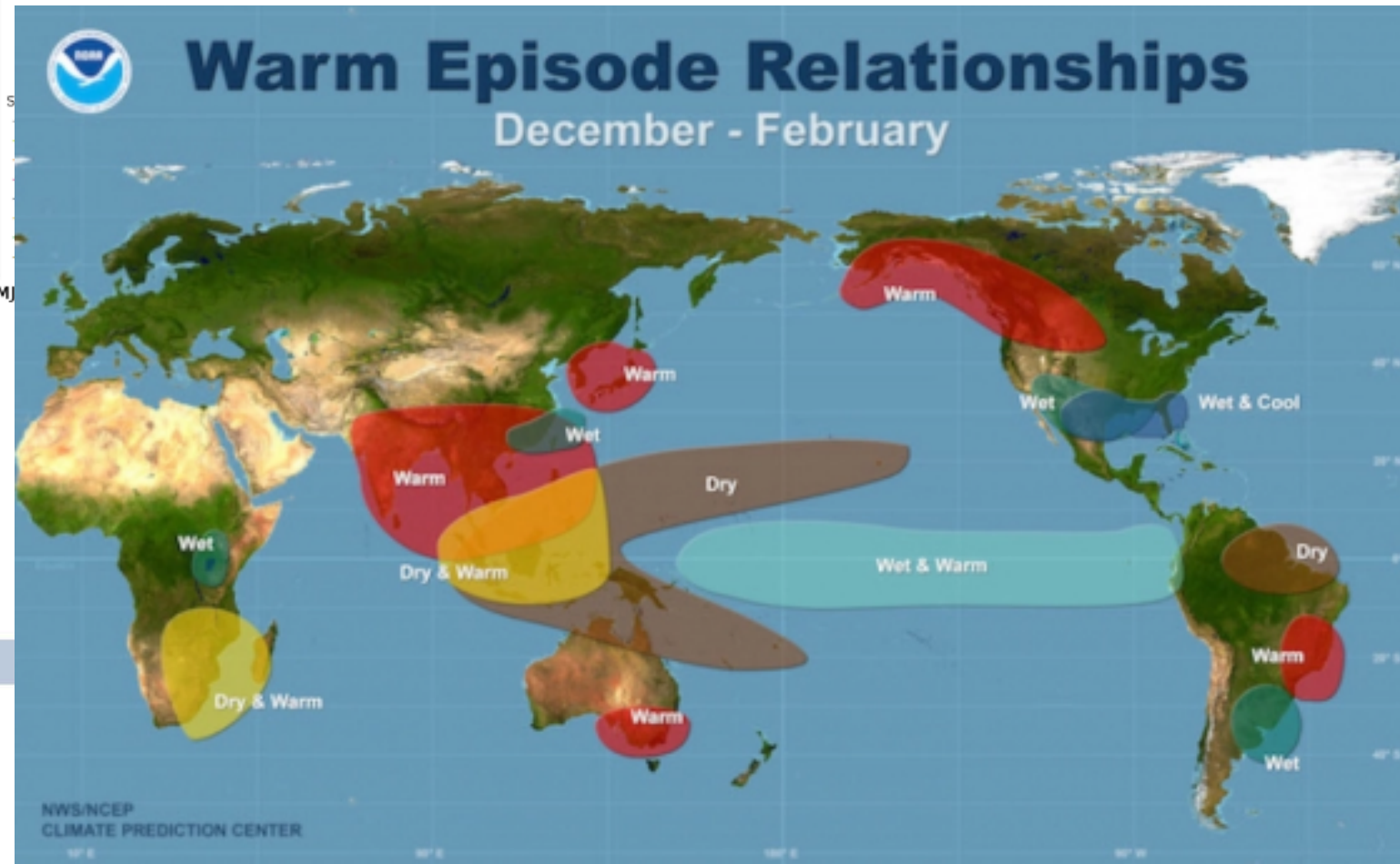


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Model Predictions of ENSO from Aug 2018



Strong consensus among various ENSO models of at least a weak to moderate El Niño...



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**Floods
Happen...**

Be Prepared

**Refill Reservoirs and
Replenish Groundwater**



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**Droughts
Happen...**

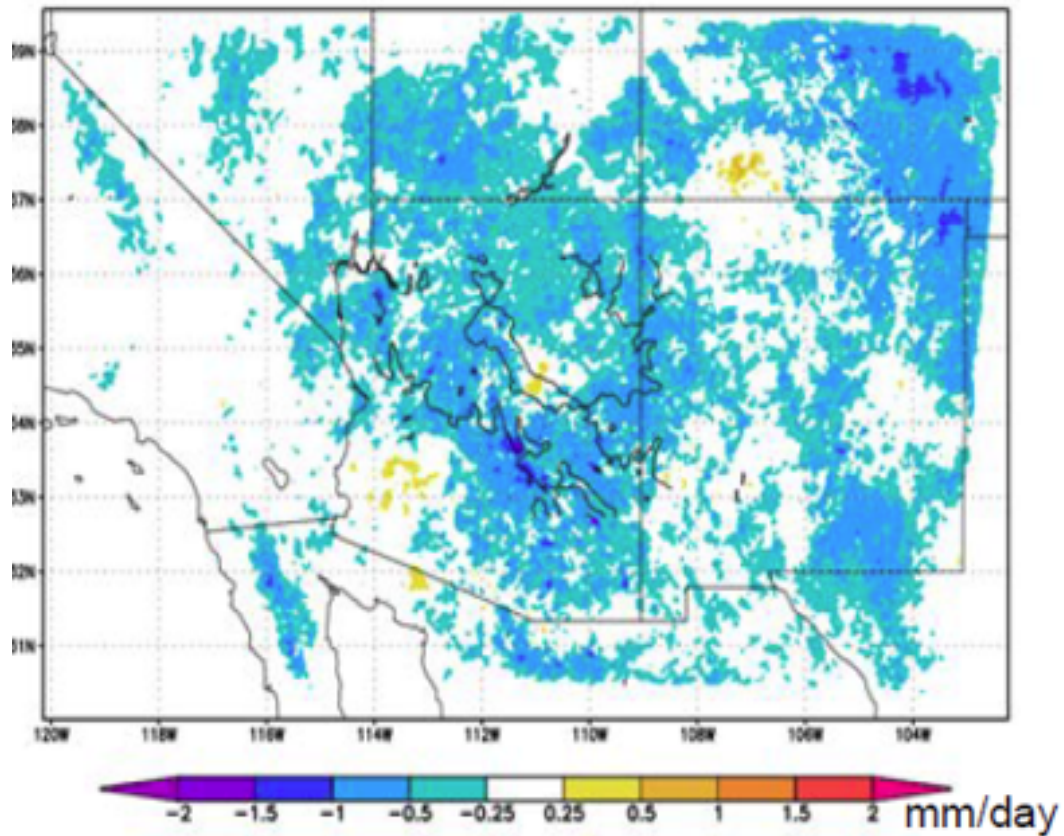
Be Prepared



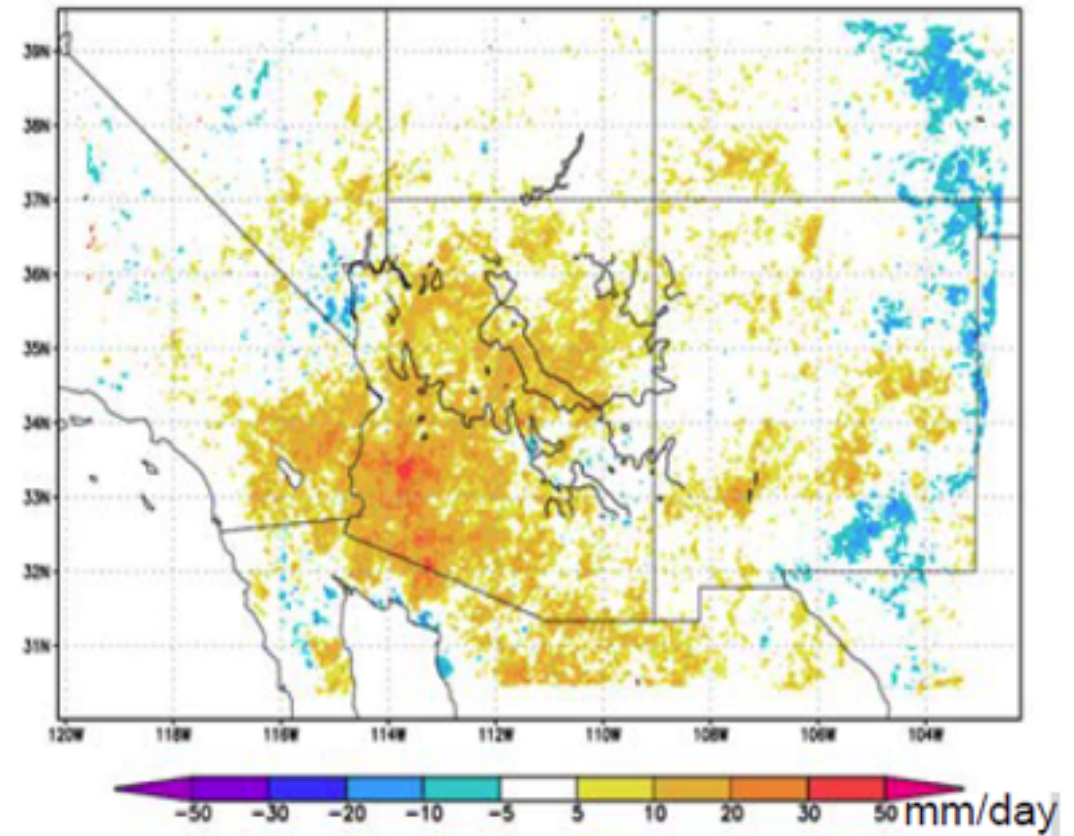
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Future Precipitation-Summer

Mean trend from model ensemble

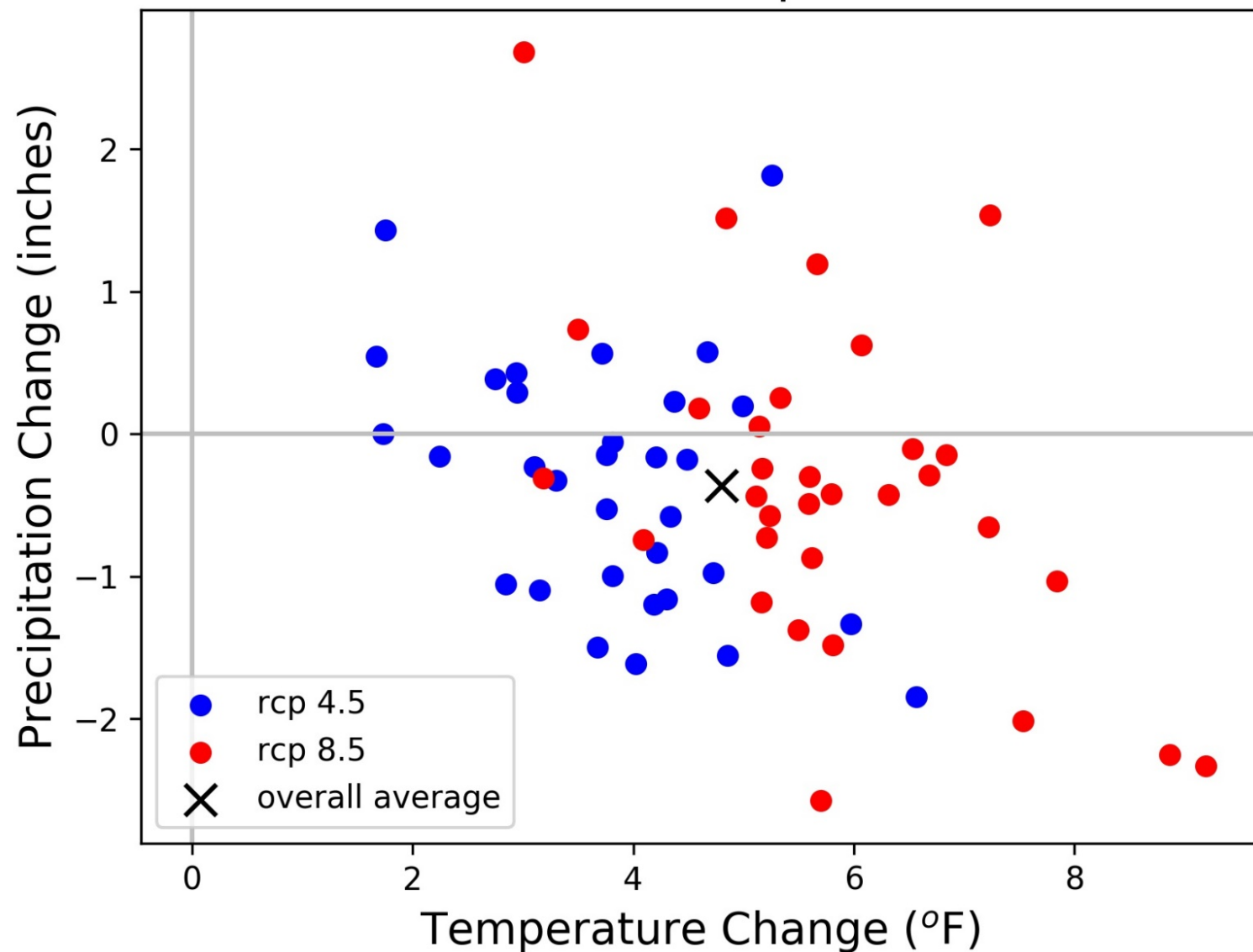


Extreme trend from model ensemble



Statistically Downscaled (LOCA) CMIP5 projections for Salt-Verde

Dec.-Mar. 2031-2099 compared to 1950-2018



Summary

Large uncertainty in the future for the Salt-Verde

- Total precipitation? Wetter extreme events?
- More rain vs. snow = more or less flow?
- Impact of increased temperature on drought?
- Thinner forest = change in flow. Is it more or less?
- Natural drought cycle will likely continue to be the biggest contributor to flow variability

How Do You Prepare For The Future?

From a Hydrologist's Perspective, You Plan For Drought,
Prepare For Flood!



Protecting the Watershed

Resilience of the Watershed

Forest Restoration



Delivering water and power™

- **Accelerating treatments and protecting watersheds**
- **Restoration Increases Resiliency Against Future Drought/Climate Change**
- **Ensures Sustainability of Future Water Supply**



Partnerships & Collaboration Are Key

Your Partners and Collaborators...Local Control

The Mining Companies

City and County Governments

US Bureau of Reclamation

US Forest Service

Natural Resources Conservation Service

San Carlos Apache Tribe

University of Arizona

U S Geological Survey

Allow You To Maintain Your Own Destiny. You Chose Your Future!



**Predictions are very difficult to make, especially if it is about the future!
Plan accordingly.**



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Thank You