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# August 2022 Southwest Climate Outlook

**Monthly/Seasonal Precipitation and Temperature:** July precipitation was average to much above average in most of Arizona and between much below average and much above average in New Mexico (Fig. 1a). July temperatures were above average to much above average in Arizona and New Mexico (Fig. 1b). Water year precipitation is below average or drier in much of Arizona and New Mexico, with northeast Arizona, and western and northern New Mexico, the notable exceptions (Fig. 2).

**Drought:** The Aug 9 U.S. Drought Monitor (USDM) shows decreases in the severity of drought in Arizona and New Mexico following widespread monsoon activity. Despite the local improvement, drought conditions are still found across most of the southwestern United States (Fig. 3). Long-term accumulated precipitation deficits are a factor in these designations. Sustained monsoon activity helped reduce the most extreme drought characterizations but is not enough to reverse long-term drought conditions.

**Water Supply:** Most of the reservoirs in Arizona and New Mexico are at or below the values recorded at this time last year. Most are also below their long-term average (see reservoir storage for Arizona and New Mexico). The shortage declaration for the Colorado River in 2022 and low water levels in the Rio Grande highlight ongoing concerns about the intersection of long-term drought and water resource management.

**Wildfire:** Fire season to date has been well above average in New Mexico, and closer to average in Arizona. Monsoon activity tamped down but did not eliminate wildfire risk. The NIFC fire outlooks for September call for normal fire risk for Arizona and most of New Mexico (Fig. 4).

**ENSO Tracker:** ENSO remains at La Niña status according to most outlooks. The forecast consensus is generally that La Nina is likely to persist through fall and possibly into winter (see ENSO-tracker for details).

**Monsoon:** Monsoon precipitation has been widespread across the region (Fig. 5). Early storms in June boosted percent of normal, and recent activity brought much of the region to at or above average, calculated as a percent of the average seasonal total to date (Fig. 6). The persistence of La Nina could suppress eastern Pacific tropical storm activity, which could limit late-season monsoon events that are often supplemented or driven by surges in tropical moisture or even tropical storms that push inland.



## Tweet Aug 2022 SW Climate Outlook

AUG2022 @CLIMAS\_UA SW Climate Outlook, Forecasts, ENSO Tracker, SW Monsoon, AZ & NM Reservoirs, [bit.ly/3c0Mewd](https://bit.ly/3c0Mewd) #SWclimate #AZWx #NMWx



## Online Resources

**Figure 1**  
National Centers for Environmental Information  
[ncdc.noaa.gov/sotc](https://www.noaa.gov/sotc)

**Figure 2**  
West Wide Drought Tracker  
[wwdt.dri.edu](https://www.wwdt.dri.edu)

**Figure 3**  
U.S. Drought Monitor  
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**Figure 4**  
National Interagency Fire Center  
[nifc.gov](https://www.nifc.gov)

**Figures 5-6**  
Climate Science Applications Program/CLIMAS  
[cals.arizona.edu/climate](https://www.cals.arizona.edu/climate)  
data: PRISM

# August 2022 - Climate Summary

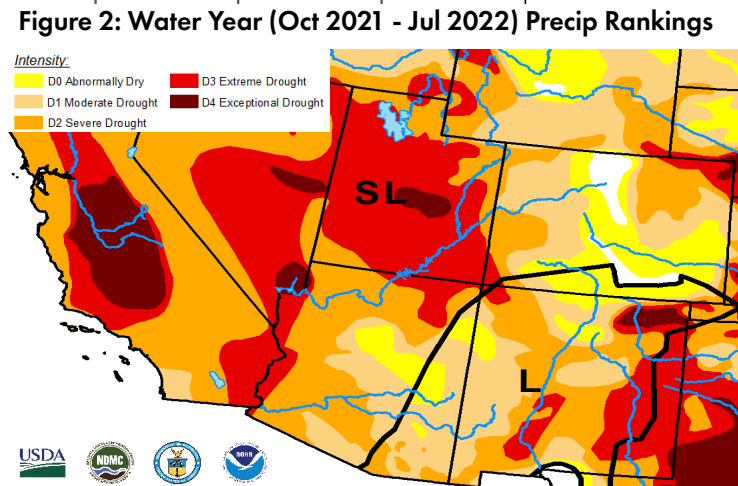
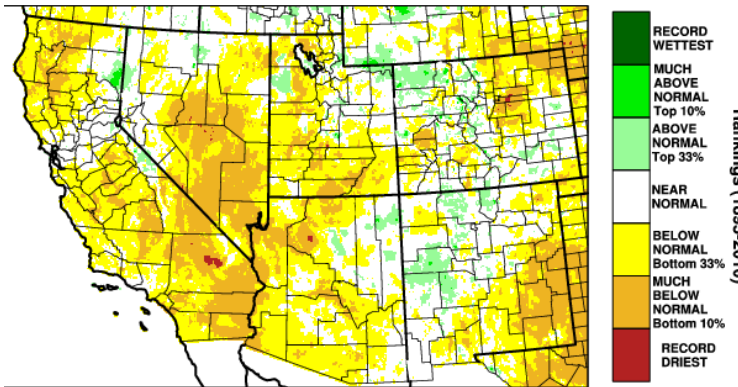
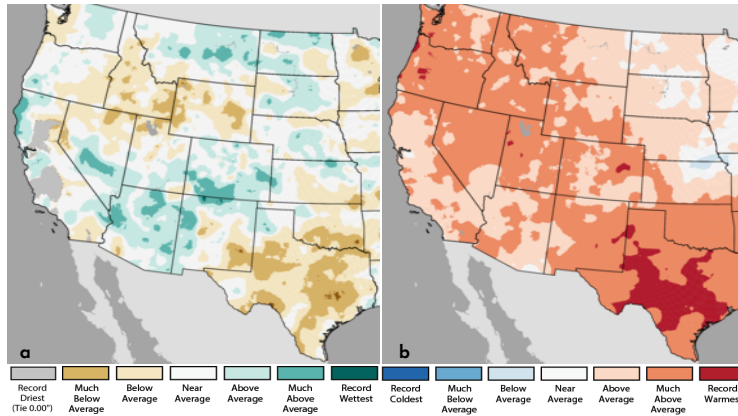


Figure 3: US Drought Monitor - Aug 9, 2022

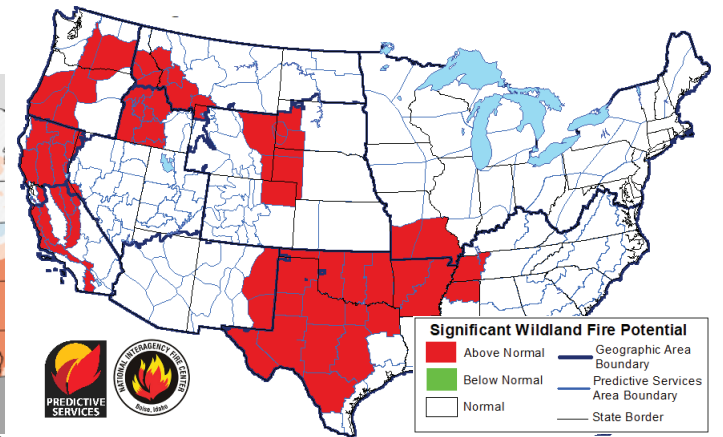


Figure 4: NIFC Significant Wildland Fire Potential Outlook - Sept 2022

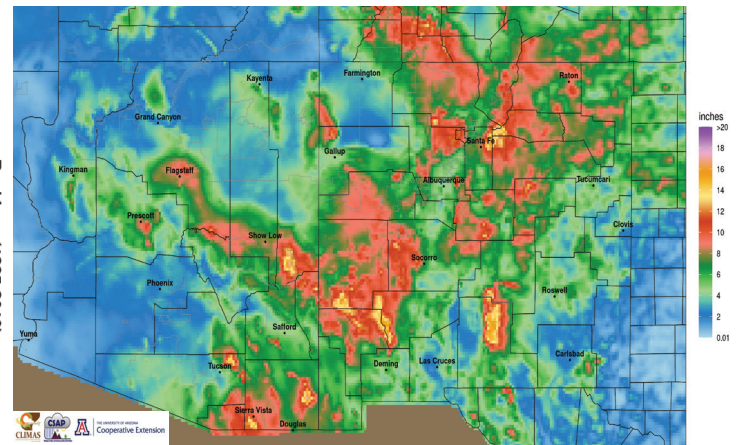


Figure 5: Monsoon Total Precipitation (Jun 15 - Aug 16, 2022)

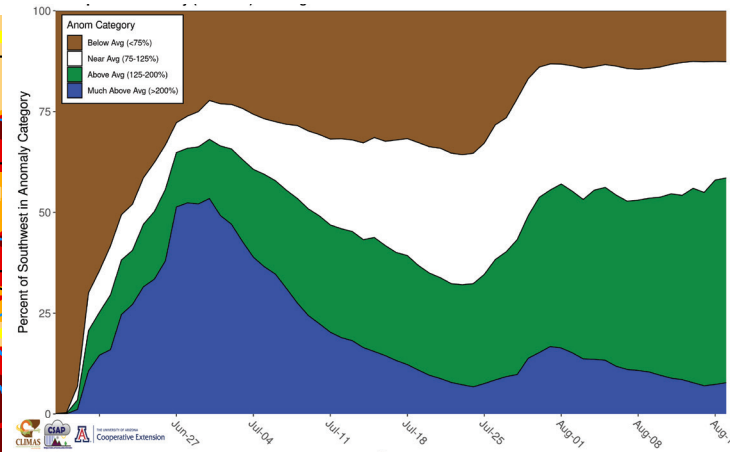


Figure 6: Precipitation Anomaly (% of Ave) Coverage - Jun 15 - Aug 16, 2022

# Online Resources

**Figure 7**  
Intl. Research Institute for Climate and Society  
iri.columbia.edu

**Figures 8-9**  
NOAA Climate Prediction Center  
cpc.ncep.noaa.gov

## August 2022 - Seasonal Forecasts

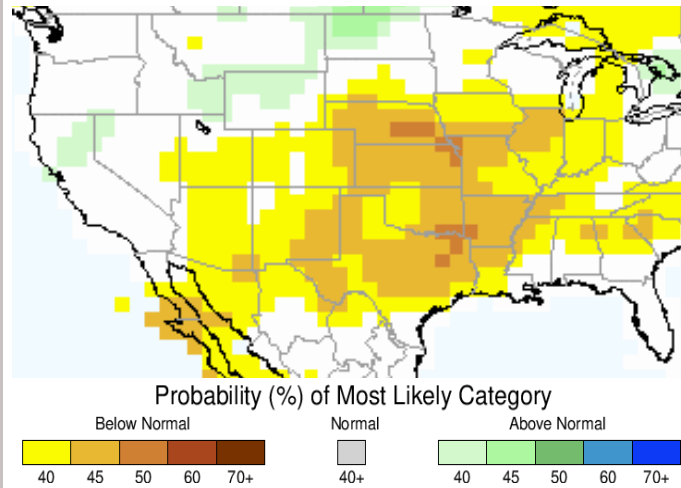


Figure 7A: Three-Month (Sept-Nov) Forecast for Precipitation

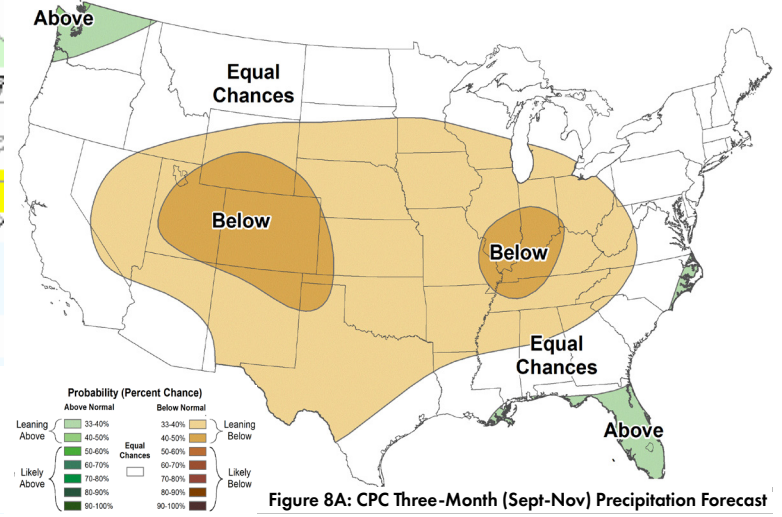


Figure 8A: CPC Three-Month (Sept-Nov) Precipitation Forecast

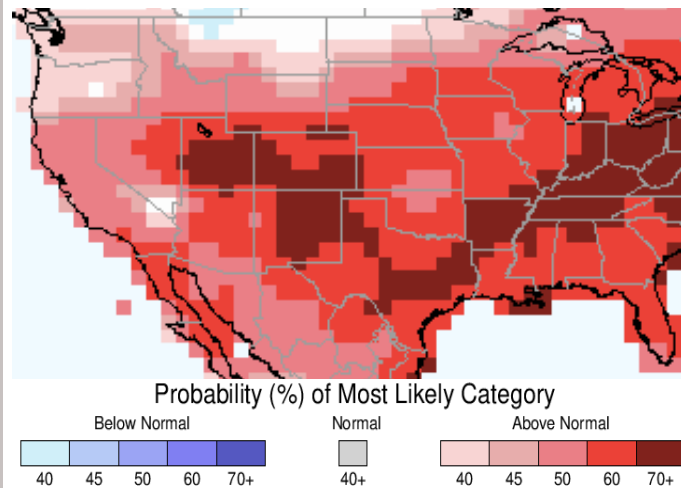


Figure 7B: Three-Month (Sept-Nov) Forecast for Temperature

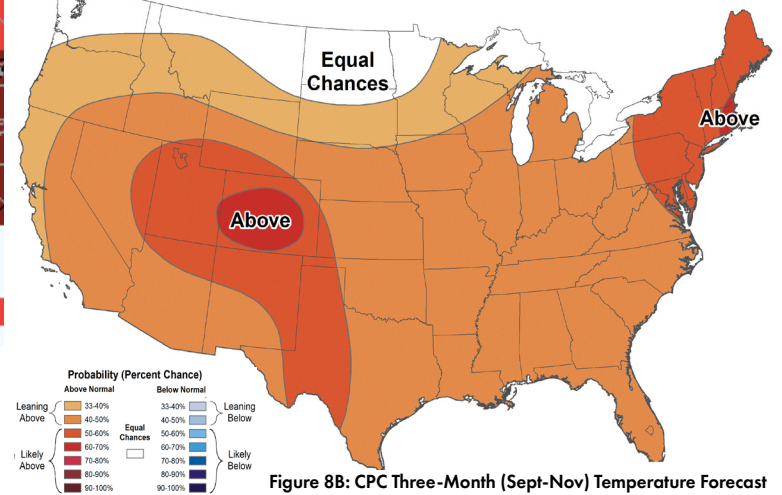


Figure 8B: CPC Three-Month (Sept-Nov) Temperature Forecast

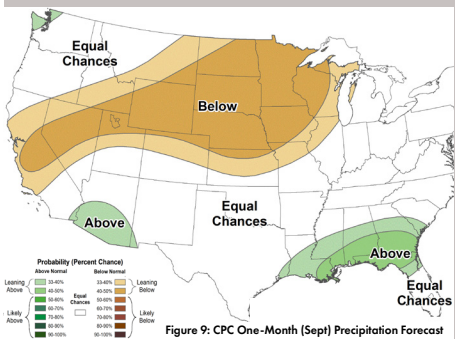


Figure 9: CPC One-Month (Sept) Precipitation Forecast

**Precipitation Forecasts:** The IRI outlook for Sept-Nov calls for increased chances of below average precipitation in most of New Mexico and Arizona (Fig. 7a). The NOAA-CPC outlook for Sept-Nov calls for increased chances of below average precipitation in New Mexico and northern Arizona (Fig. 8a). The Sept outlook calls for increased chances of above average precipitation in southern Arizona (Fig. 9).

**Temperature Forecasts:** The IRI outlook for Sept-Nov calls for increased chances of above average temperatures across most of the Southwest (Fig. 7b). The NOAA-CPC outlook for Sept-Nov calls for increased chances of above average temperatures across the Southwest (Fig. 8b).



## Online Resources

### Figure 1

Australian Bureau of Meteorology  
[bom.gov.au/climate/enso](http://bom.gov.au/climate/enso)

### Figure 2

NOAA - Climate Prediction Center  
[cpc.ncep.noaa.gov](http://cpc.ncep.noaa.gov)

### Figure 3

International Research Institute for  
 Climate and Society  
[iri.columbia.edu](http://iri.columbia.edu)

### Figure 4

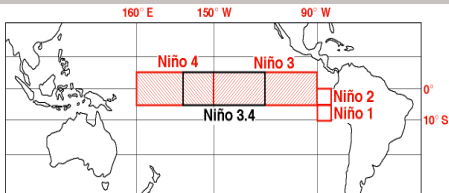
NOAA - Climate Prediction Center  
[cpc.ncep.noaa.gov](http://cpc.ncep.noaa.gov)

## El Niño / La Niña

Information on this page is also found  
 on the CLIMAS website:

[climas.arizona.edu/sw-climate/  
 el-niño-southern-oscillation](http://climas.arizona.edu/sw-climate/el-niño-southern-oscillation)

## Equatorial Niño Regions



For more information: [ncdc.noaa.gov/  
 teleconnections/enso/indicators/sst/](http://ncdc.noaa.gov/teleconnections/enso/indicators/sst/)

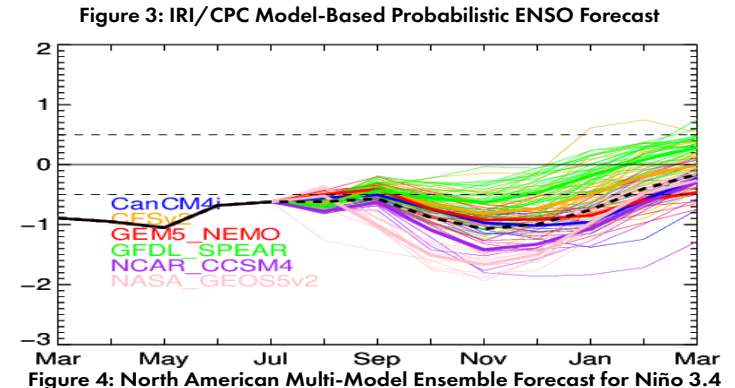
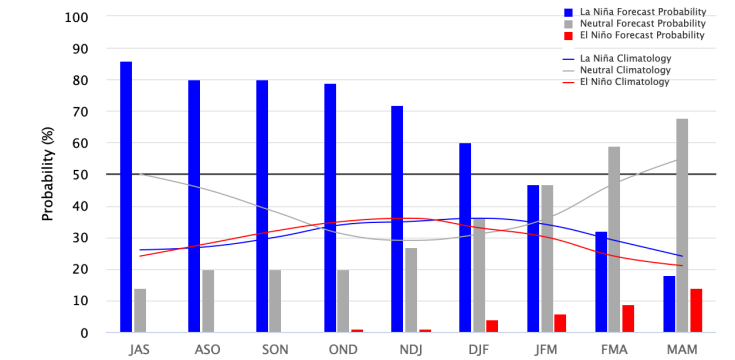
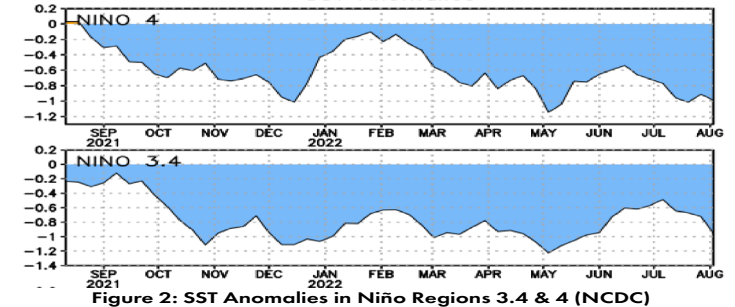
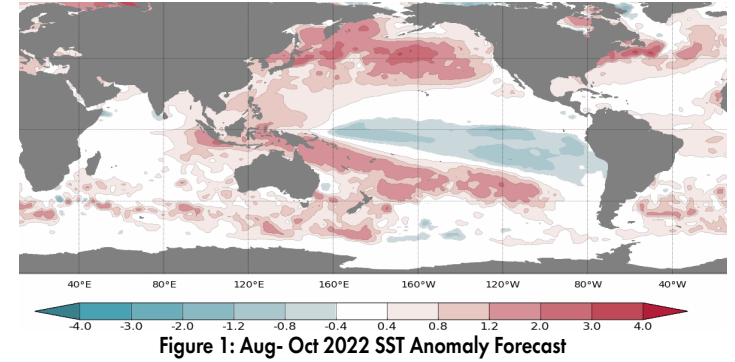
Image source: [aoml.noaa.gov/](http://aoml.noaa.gov/)

# ENSO Tracker

Sea surface temperature (SST) forecasts for Aug – Oct 2022 continue to call for cooler than average conditions across most of the equatorial Pacific (Fig. 1), and the current 3.4/4 anomalies remain below the La Niña threshold (Fig. 2). ENSO outlooks generally call for La Niña to last well into fall and possibly through winter.

**Forecast Roundup:** On Aug 16 the Australian Bureau of Meteorology raised their ENSO outlook “La Niña ALERT”, noting “renewed cooling in the tropical Pacific” and “climate models indicating La Niña is likely” through early winter. On Aug 10 the Japanese Meteorological Agency (JMA) observed La Niña conditions had a 60-percent chance of continuing into early winter, and a 40-percent chance of returning to ENSO-neutral. On Aug 11 the NOAA Climate Prediction Center (CPC) maintained their “La Niña Advisory” noting “the coupled ocean-atmosphere system remained consistent with an ongoing La Niña” and called for an 86-percent chance of La Niña through fall, and a 60-percent chance of La Niña in winter. On Aug 11, the International Research Institute (IRI) issued an ENSO Quick Look (Fig. 3), noting below-average SSTs and that “oceanic and atmospheric variables have remained consistent with La Niña, although weakened”. The North American Multi-Model Ensemble (solid and dashed black line, Fig. 4) is currently forecast to remain under the La Niña temperature threshold through fall and into winter.

**Summary:** La Nina appears to have persisted through summer, and now the primary question is how long it will last this fall and winter. The La Nina signal is likely to suppress eastern Pacific tropical storm activity, which can tamp down late season monsoon activity. If La Nina conditions persist into early winter, the Southwest can anticipate seasonal outlooks that call for below average winter precipitation, based on the relatively strong link between La Nina and below average cool season precipitation.





## Online Resources

### Figures 1-4

Climate Science Applications Program/CLIMAS  
cals.arizona.edu/climate  
data: PRISM

## Monsoon Resources

NWS Tucson Monsoon Tracker  
weather.gov/twc/Monsoon

NWS Tucson Monsoon Info  
weather.gov/twc/MonsoonInfo

CLIMAS Monsoon Info  
climas.arizona.edu/sw-climate/monsoon

Monsoon WRF Forecast Discussion  
arizonawrf.blogspot.com

Madweather SW Weather Discussion  
madweather.blogspot.com

# Monsoon 2022

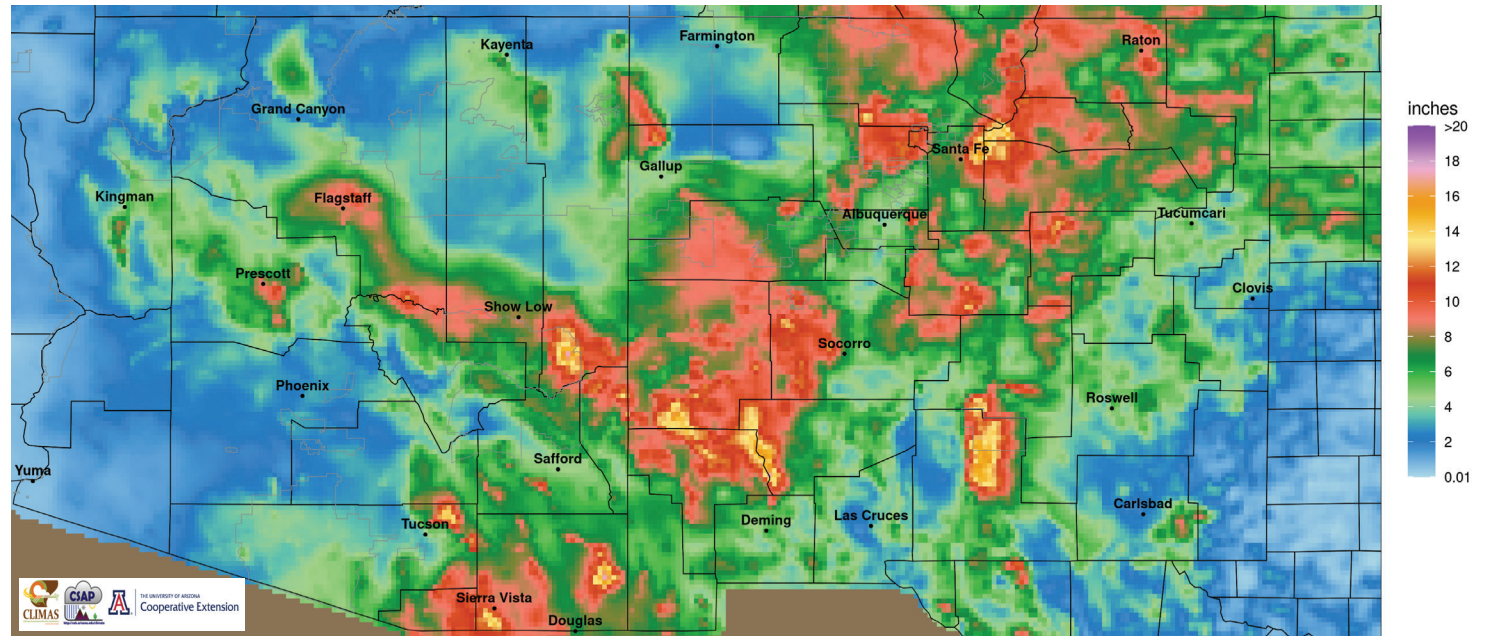


Figure 1: Monsoon Total Precipitation (Jun 15 - Aug 16, 2022)

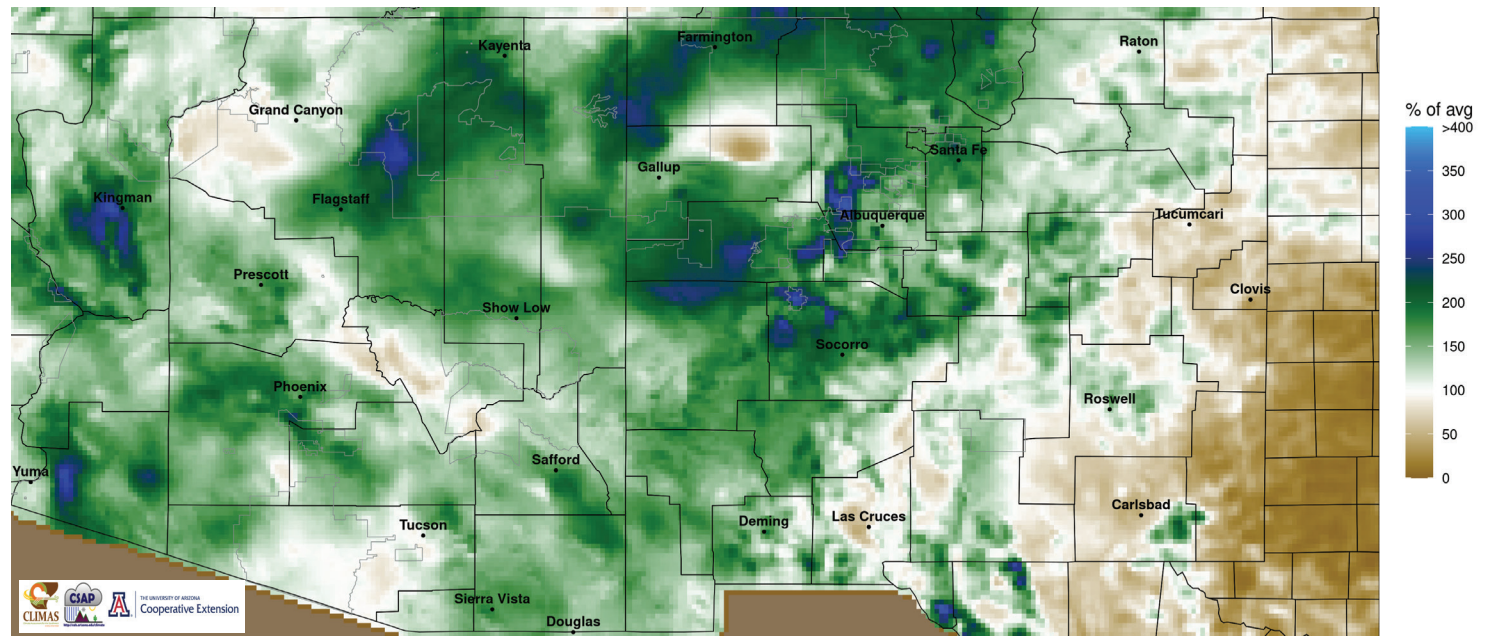


Figure 2: Percent of Average Precipitation (Jun 15 - Aug 16, 2022)



## Online Resources

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Climate Science Applications Program/CLIMAS  
[cals.arizona.edu/climate](http://cals.arizona.edu/climate)  
 data: PRISM

## Monsoon Resources

NWS Tucson Monsoon Tracker  
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NWS Tucson Monsoon Info  
[weather.gov/twc/MonsoonInfo](http://weather.gov/twc/MonsoonInfo)

CLIMAS Monsoon Info  
[climas.arizona.edu/sw-climate/monsoon](http://climas.arizona.edu/sw-climate/monsoon)

Monsoon WRF Forecast Discussion  
[arizonawrf.blogspot.com](http://arizonawrf.blogspot.com)

Madweather SW Weather Discussion  
[madweather.blogspot.com](http://madweather.blogspot.com)

# Monsoon 2022

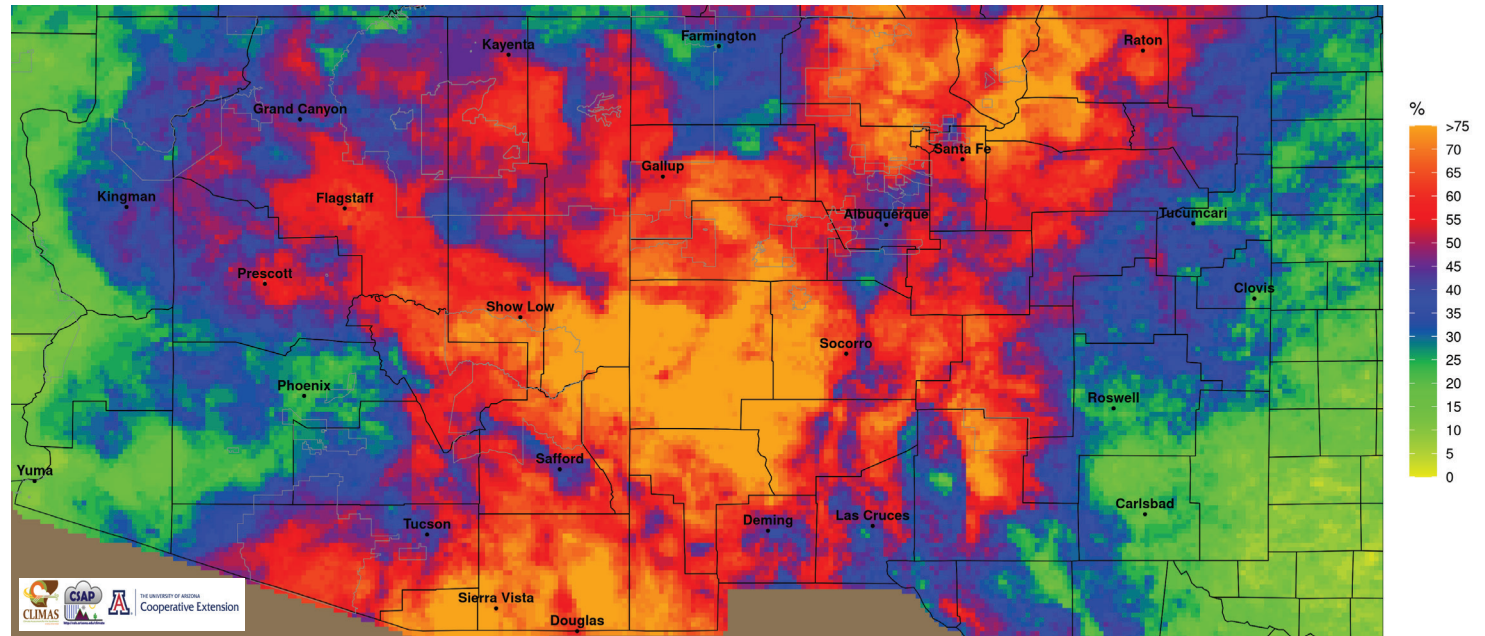


Figure 3: Percent of Days With Rain (>0.01 in) (Jun 15 - Aug 16, 2022)

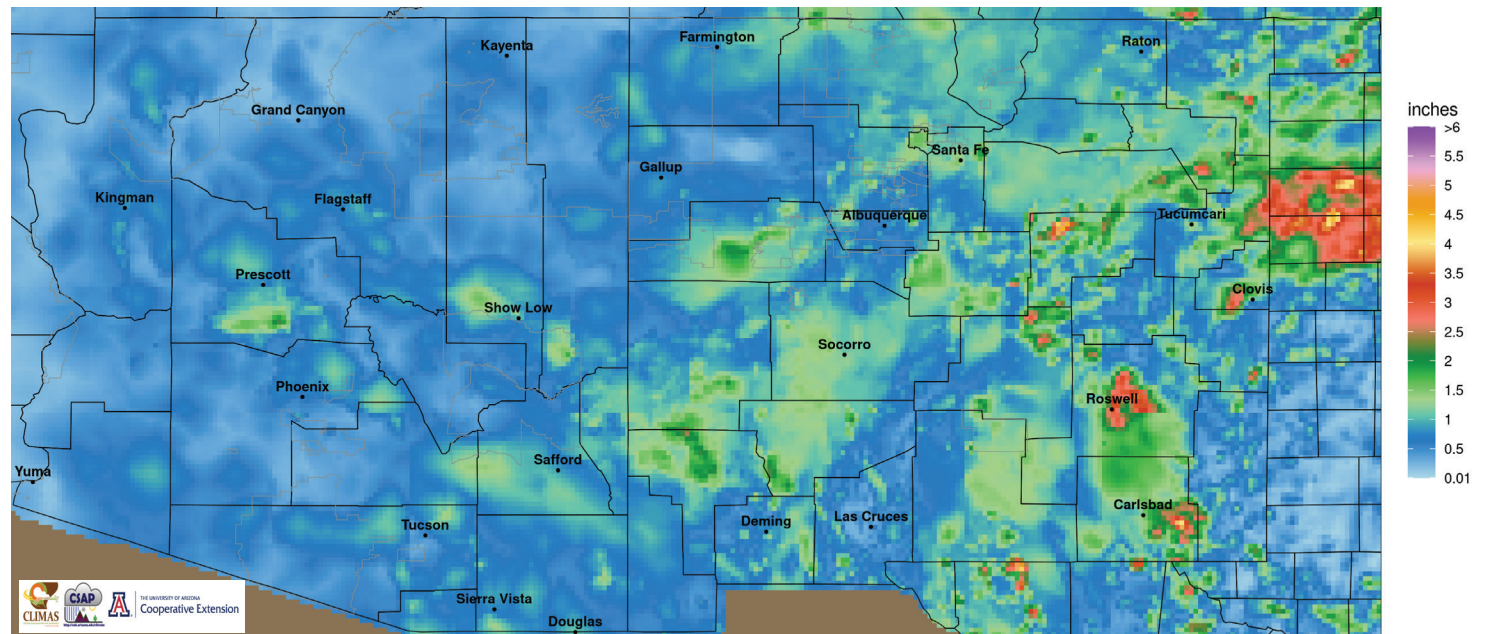


Figure 4: Max 1-Day Precipitation (Jun 15 - Aug 16, 2022)

## Online Resources

Portions of the information provided in this figure is available at the Natural Resources Conservation Service [www.wcc.nrcs.usda.gov/BOR/basin.html](http://www.wcc.nrcs.usda.gov/BOR/basin.html)

Contact Ben McMahan with questions/comments.

The map gives a representation of current storage for reservoirs in Arizona and New Mexico. Reservoir locations are numbered within the blue circles on the map, corresponding to the reservoirs listed in the table. The cup next to each reservoir shows the current storage (blue fill) as a percent of total capacity. Note that while the size of each cup varies with the size of the reservoir, these are representational and not to scale. Each cup also represents last year's storage (dotted line) and the 1981–2010 reservoir average (red line).

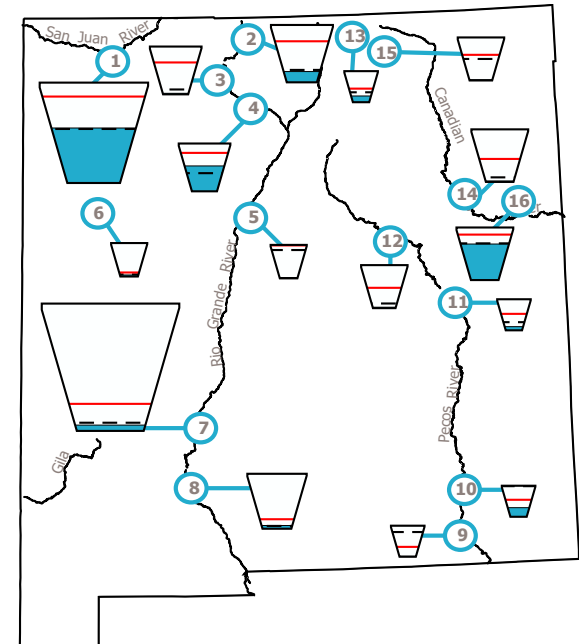
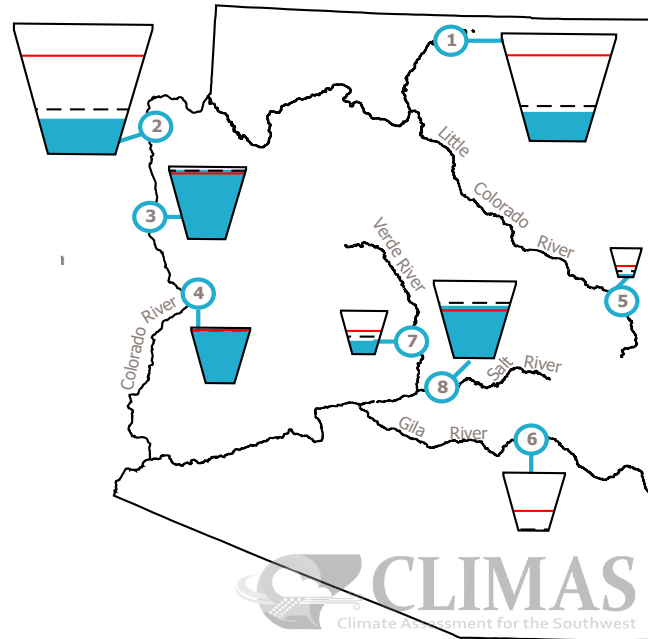
The table details more exactly the current capacity (listed as a percent of maximum storage). Current and maximum storage are given in thousands of acre-feet for each reservoir. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (approximately 325,851 gallons). On average, 1 acre-foot of water is enough to meet the demands of four people for a year. The last column of the table lists an increase or decrease in storage since last month. A line indicates no change.

These data are based on reservoir reports updated monthly by the National Water and Climate Center of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

# Reservoir Volumes

DATA THROUGH AUG 1, 2022

Data Source: National Water and Climate Center, Natural Resources Conservation Service



\* in KAF = thousands of acre-feet, \*\* = missing/incomplete data this month

Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Lake Powell	26%	6,212	24,322	-666
2. Lake Mead	27%	7,041	26,159	-146
3. Lake Mohave	96%	1,729	1,810	+16
4. Lake Havasu	97%	599	619	+11
5. Lyman	10%	2.9	30	-0.2
6. San Carlos	0%	0.3	875	+0.3
7. Verde River System	30%	85.5	287	-2.1
8. Salt River System	68%	1,371	2,026	-42

\*KAF: thousands of acre-feet

Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Navajo	54%	915.7	1,696.0	-23.5
2. Heron	18%	71.7	400.0	-6.5
3. El Vado	0%	0.7	190.3	+0.5
4. Abiquiu	52%	97.7	186.8	+8.9
5. Cochiti	**	**	50.0	**
6. Bluewater	4%	1.4	38.5	-0.2
7. Elephant Butte	4%	82.7	2,195.0	-71.1
8. Caballo	6%	18.9	332.0	-4.7
9. Lake Avalon	**	**	4.5	**
10. Brantley	29%	12.3	42.2	+3.0
11. Sumner	11%	4.0	35.9	-6.0
12. Santa Rosa	**	**	105.9	**
13. Costilla	19%	3.0	16.0	-0.2
14. Conchas	**	**	254.2	**
15. Eagle Nest	**	**	79.0	**
16. Ute Reservoir	67%	133	200	-1.0



## Southwest Climate Podcast

[climas.arizona.edu/media/podcasts](https://climas.arizona.edu/media/podcasts)

### iTunes

<https://apple.co/3kHh8bf>

### Spotify

<https://spoti.fi/3zZlvWu>

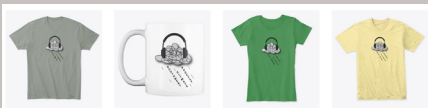
### Android

<https://bit.ly/2ILYHos>

### Stitcher

<https://bit.ly/3nEWhHd>

We also finally have podcast gear (shirts and mugs).



Order at: [the-southwest-climate-podcast.creator-spring.com/](https://the-southwest-climate-podcast.creator-spring.com/)

If you are interested in showing your support - or enjoying the (lack of a) monsoon in style, this is one way to do so.

## The Southwest Climate Podcast



### Jul 2022 Southwest Climate Podcast Is this a Good or Bad Monsoon?

In this episode of The Southwest Climate Podcast, Mike Crimmins and Zack Guido sit down to talk through the last month of monsoon activity, how the monsoon is performing around the region (and at their houses). They follow up with some discussions of MCV/MCS dynamics based on a listener question and try to make the case whether this is a good monsoon or a bad monsoon. Finally, they dive back into the monsoon fantasy game to see how the first month looks with a few days to go.

### Jun 2022 Southwest Climate Podcast Are You Ready for the Monsoon?

In the June 2022 episode of the Southwest Climate Podcast, Mike Crimmins and Zack Guido apologize for the extended (and unintentional) break from podcasting, before diving into to a wide ranging "catch-up" episode that recaps winter and spring conditions, discusses regional hazards we see in spring into summer, and touches on the forecast and outlook for the summer...and the monsoon! They wrap with a discussion of the monsoon, whether this year could ever live up to last year and what led to last year's conditions, before addressing the excitement that a few outlooks have caused, and the early storms that have been building to the south. They also discuss the return of the Monsoon Fantasy Game and talk about how you can play and test your forecast skills against the "experts". Happy Monsoon!

### Calling all Southwest Climate Podcast listeners - Podcast Survey

We'd like to learn more about who is listening, why they listen, and what we could do to improve.

5 min anonymous survey at <http://tinyurl.com/swclimatepod>

Even if you don't listen, you can still weigh in on topics/improvements

## Online Resources

### Figure 1 Climate Program Office

[cpo.noaa.gov](http://cpo.noaa.gov)

### RISA Program Homepage

[cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA](http://cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA)

### New Mexico Climate Center

[weather.nmsu.edu](http://weather.nmsu.edu)

## CLIMAS Research & Activities

### CLIMAS Research

[climas.arizona.edu/research](http://climas.arizona.edu/research)

### CLIMAS Outreach

[climas.arizona.edu/outreach](http://climas.arizona.edu/outreach)

### Climate Services

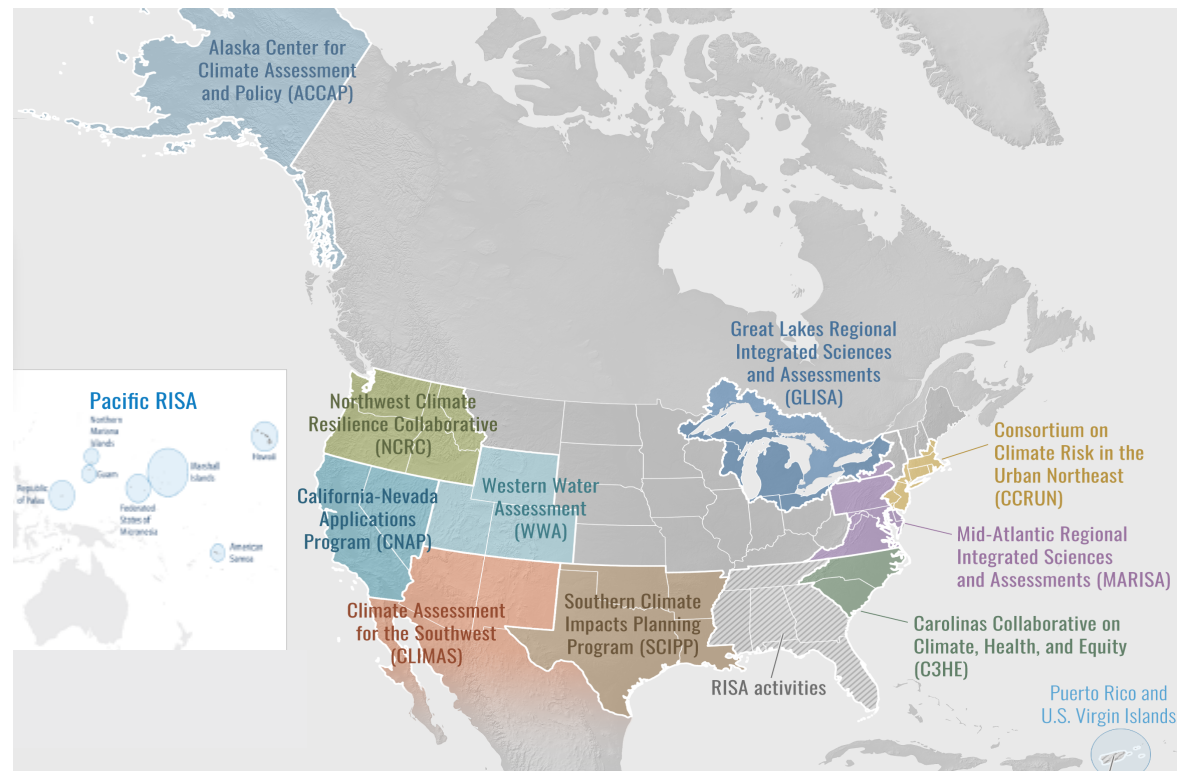
[climas.arizona.edu/climate-services](http://climas.arizona.edu/climate-services)



The Climate Assessment for the Southwest (CLIMAS) program was established in 1998 as part of the National Oceanic and Atmospheric Administration's Regional Integrated Sciences and Assessments program. CLIMAS—housed at the University of Arizona's Institute of the Environment—is a collaboration between the University of Arizona and New Mexico State University. The CLIMAS team is made up of experts from a variety of social, physical, and natural sciences who work with partners across the Southwest to develop sustainable answers to regional climate challenges.

### What does CLIMAS do?

The CLIMAS team and its partners work to improve the ability of the region's social and ecological systems to respond to and thrive in a variable and changing climate. The program promotes collaborative research involving scientists, decision makers, resource managers and users, educators, and others who need more and better information about climate and its impacts. Current CLIMAS work falls into six closely related areas: 1) decision-relevant questions about the physical climate of the region; 2) planning for regional water sustainability in the face of persistent drought and warming; 3) the effects of climate on human health; 4) economic trade-offs and opportunities that arise from the impacts of climate on water security in a warming and drying Southwest; 5) building adaptive capacity in socially vulnerable populations; and 6) regional climate service options to support communities working to adapt to climate change.



**Figure 1: NOAA Regional Integrated Sciences and Assessments Regions**