April 2023: Southwest Climate Outlook

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https://climas.arizona.edu/

The Southwest Climate Outlook is published by the Climate Assessment for the Southwest (CLIMAS), with support from University of Arizona Cooperative Extension, and the New Mexico State Climate office.

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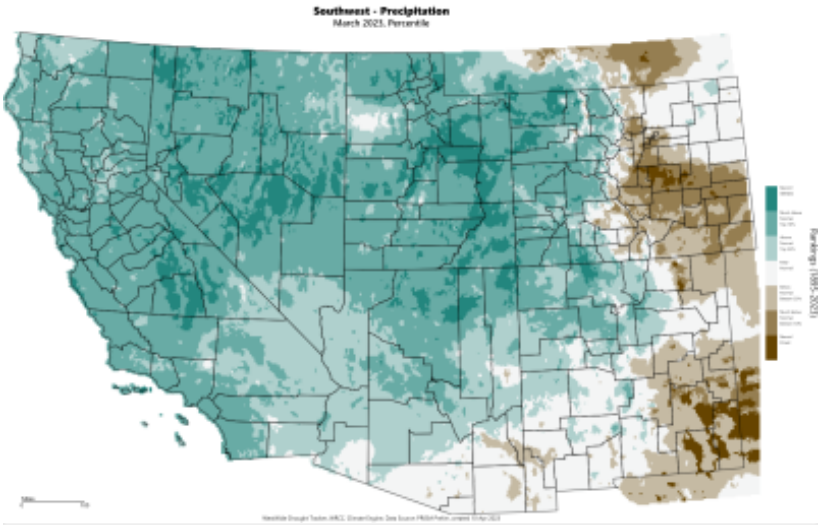
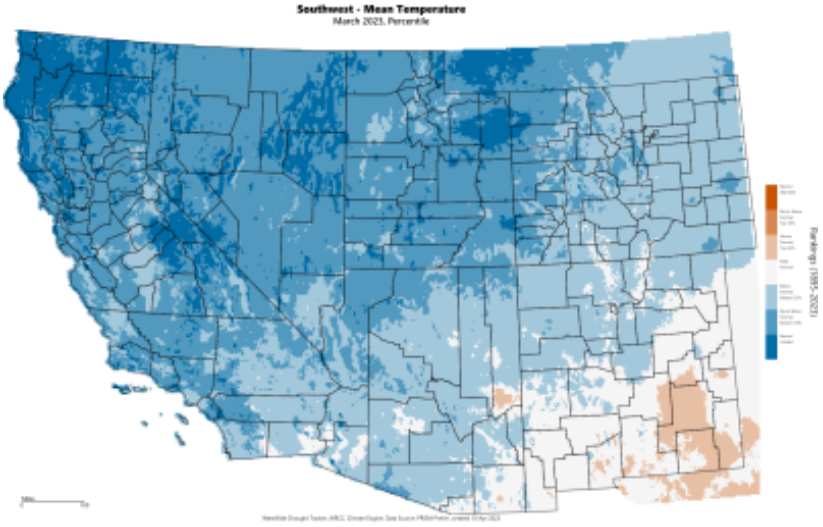
Precipitation and Temperature

March precipitation was above normal to much-above-normal for much of Arizona and northern New Mexico; southeastern Arizona and southern New Mexico received near-normal precipitation, and eastern New Mexico received below-normal to much-below normal precipitation.



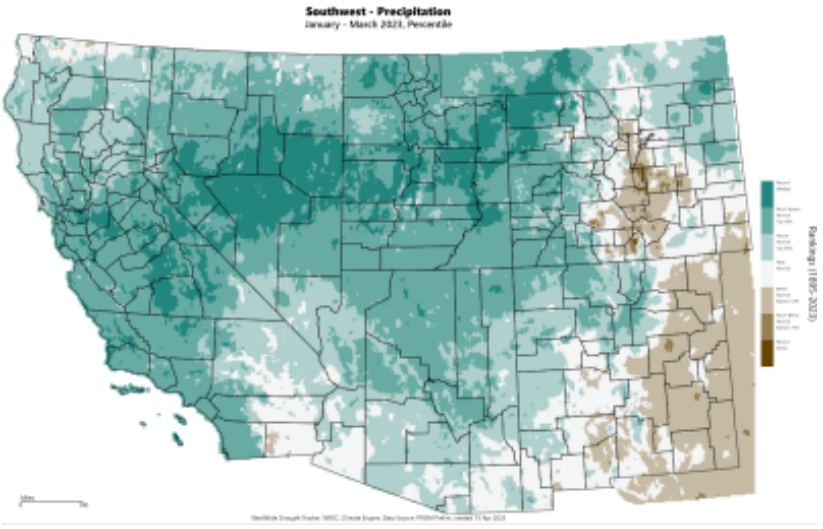
Source: WestWide Drought Tracker

March temperatures were below-normal to much-below-normal for Arizona; New Mexico temperatures were below normal-in the northwest to above-normal in the southeast.



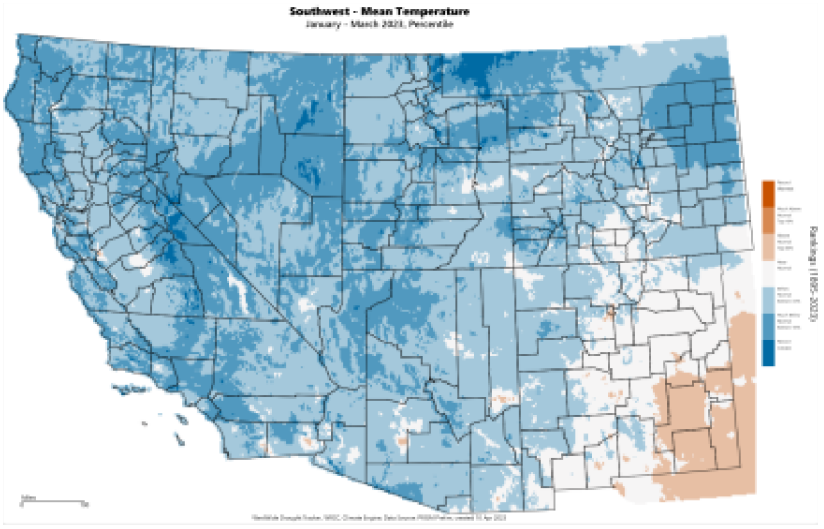
Source: WestWide Drought Tracker

January-March precipitation totals were above-normal to much-above-normal for Arizona and northern and western New Mexico, and below-normal for eastern New Mexico.



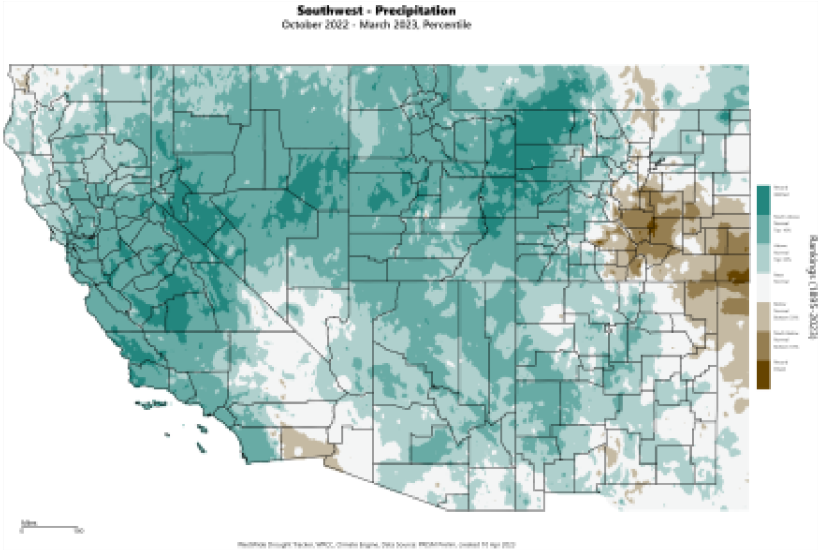
Source: WestWide Drought Tracker

January-March temperatures tended toward below normal in Arizona and western New Mexico, above normal in southeastern parts of New Mexico, but near normal across much of the state.



Source: WestWide Drought Tracker

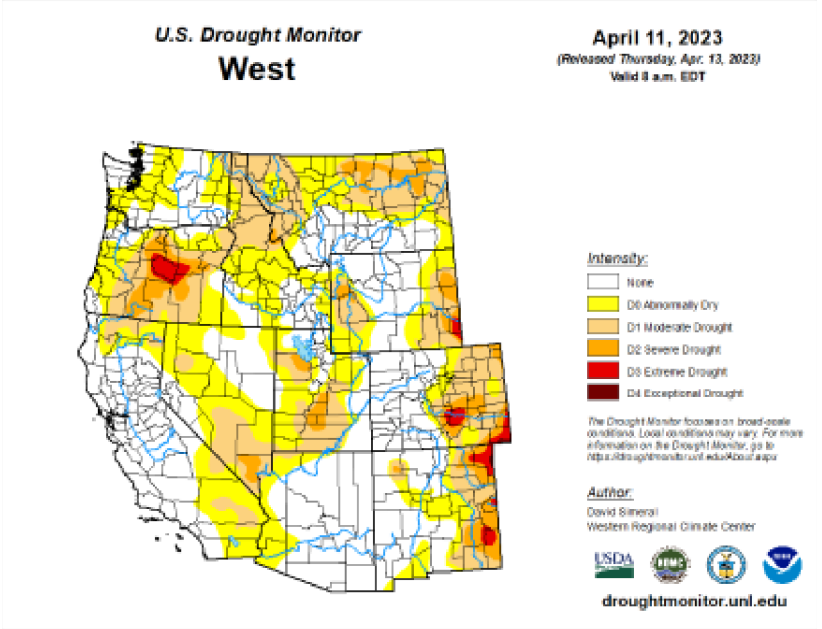
Water year (October 2022-March 2023) precipitation is above-normal to much-above-normal across the majority of Arizona and New Mexico, except for extreme southwestern Arizona and northeastern New Mexico, where water-year precipitation totals have been near to below normal.



Source: WestWide Drought Tracker

Drought

The U.S. Drought Monitor (USDM) places 1.5% of Arizona under moderate drought conditions; 16.5% of the state, in the west, is abnormally dry. Drought conditions are more severe in New Mexico, where over half of the state's area is experiencing abnormally-dry (D0) or drought (D1-D4) conditions. 32% of the state's area is experiencing moderate drought or worse conditions, with severe-to-extreme drought conditions persisting in the east, extending over 16% of the state's area.



Source: U.S. Drought Monitor

NIDIS Launches Improved and Expanded State Pages on Drought.Gov

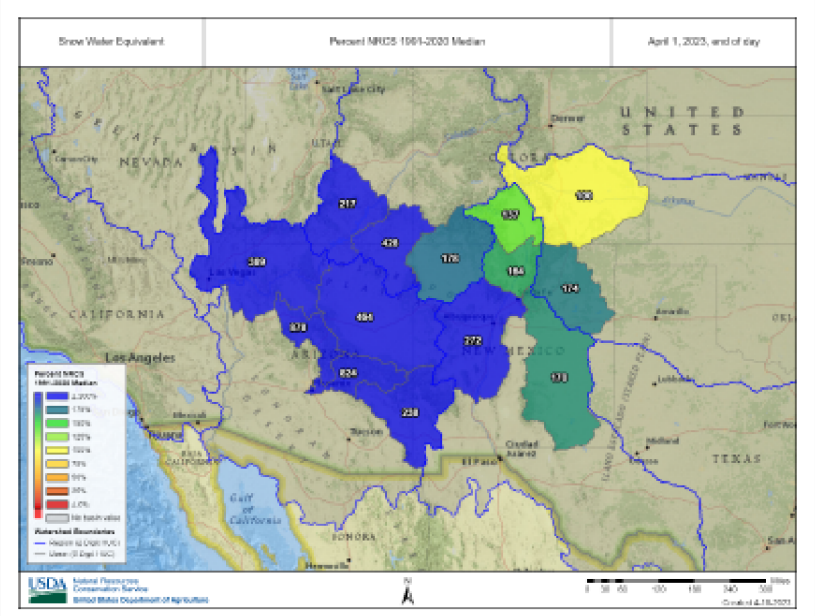
The expanded Drought.gov state pages provide a one-stop shop for state drought information, including interactive and easily shareable maps, statistics, and resources for all 50 states.

Arizona

New Mexico

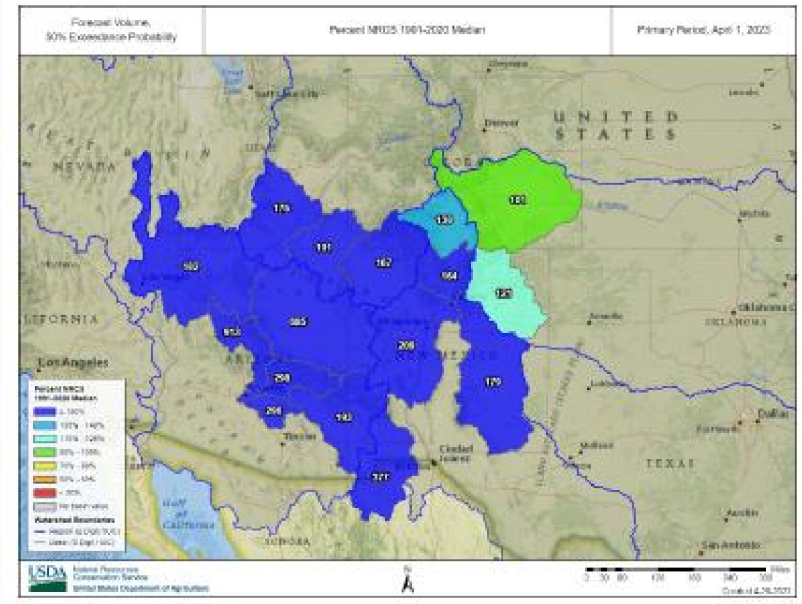
Snowpack & Streamflow

April 1 snow water equivalent (SWE) was above normal across the southwest, especially west of the continental divide, where snowpack was in some places many times the normal amount.



Source: National Resource Conservation Service (USDA)

Streamflow forecasts based on snowpack are consistently above median across the Rio Grande and Lower Colorado River basins.

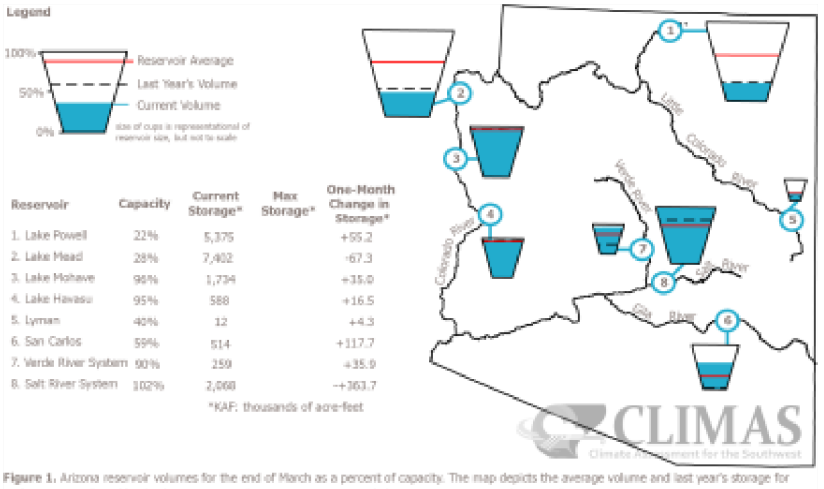


Source: National Resource Conservation Service (USDA)

Learn More: From Snow to Flow

Water Supply

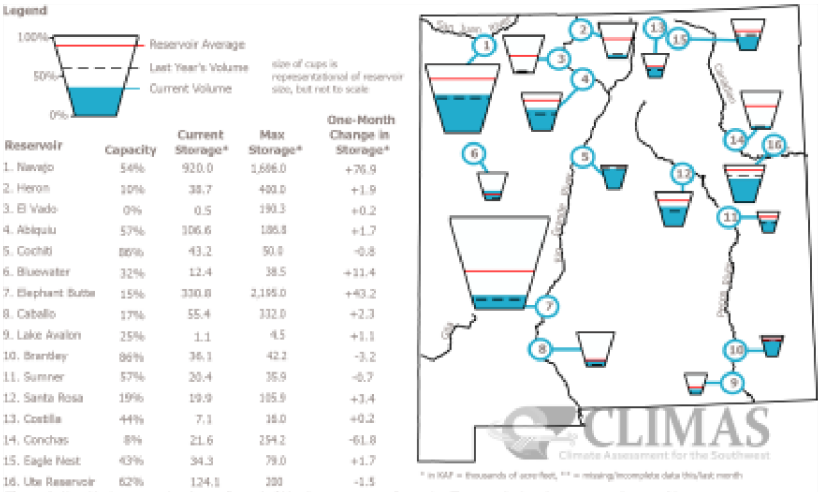
The largest reservoirs across Arizona and New Mexico remain at levels far below the long term average, but storage is increasing at many reservoirs after a wetter-than-normal winter. Storage at Elephant Butte and Navajo reservoirs is up relative to last year, and the Salt-Verde-Gila have filled to well-over the long term average, with Salt River reservoirs already at capacity.



Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Lake Powell	22%	5,375		+55.2
2. Lake Mead	28%	7,402		-67.3
3. Lake Mohave	96%	1,734		+35.0
4. Lake Havasu	95%	588		+16.5
5. Lyman	40%	12		+4.3
6. San Carlos	59%	514		+117.7
7. Verde River System	90%	259		+35.9
8. Salt River System	102%	2,068		~+363.7

*KAF: thousands of acre-feet

Figure 1. Arizona reservoir volumes for the end of March 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.



Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Navajo	54%	920.0	1,686.0	+76.9
2. Heron	10%	38.7	400.0	+1.9
3. El Vado	0%	0.5	190.3	+0.2
4. Abiquiu	57%	106.6	186.8	+1.7
5. Cochiti	86%	43.2	50.0	-0.8
6. Bluewater	32%	12.4	38.5	+11.4
7. Elephant Butte	15%	330.8	2,195.0	+43.2
8. Caballo	17%	55.4	332.0	+2.3
9. Lake Avalon	25%	1.1	4.5	+1.1
10. Brantley	86%	36.1	42.2	-3.2
11. Sumner	57%	20.4	35.9	-0.7
12. Santa Rosa	19%	19.9	105.9	+3.4
13. Costilla	44%	7.1	16.0	+0.2
14. Conchas	8%	21.6	254.2	-61.8
15. Eagle Nest	43%	34.3	79.0	+1.7
16. Ute Reservoir	62%	124.1	200	-1.5

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

Figure 2. New Mexico reservoir volumes for end of March 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.

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 1991–2020 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 Natural Resources Conservation Service - National Water and Climate Center (USDA)

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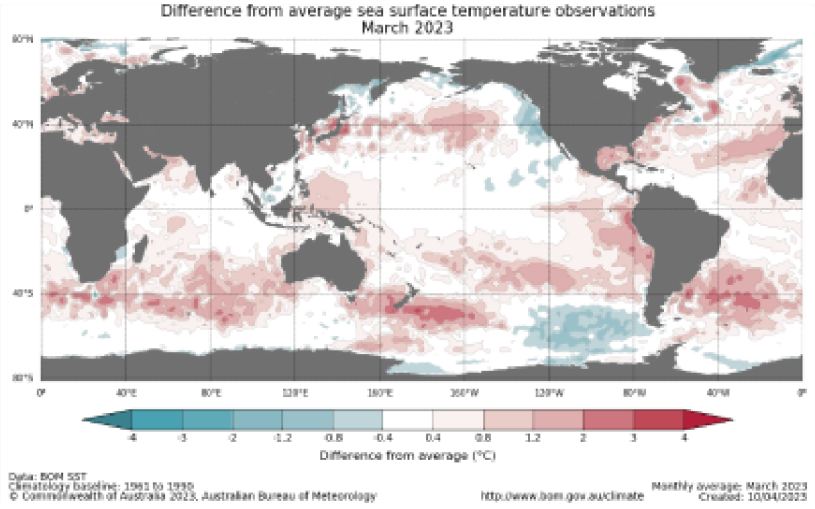
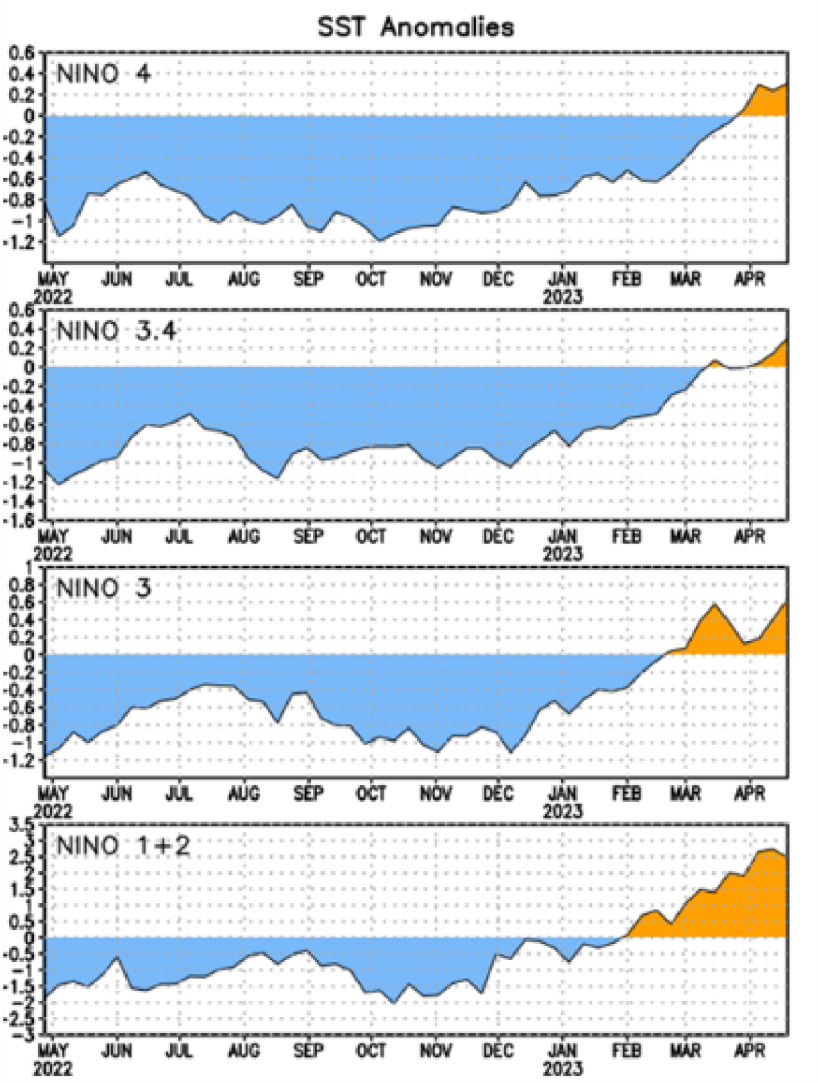
ENSO Tracker

Sea surface temperatures (SSTs) across the equatorial Pacific were near-to-above average in March, as the traces of last year's La Niña disappeared.



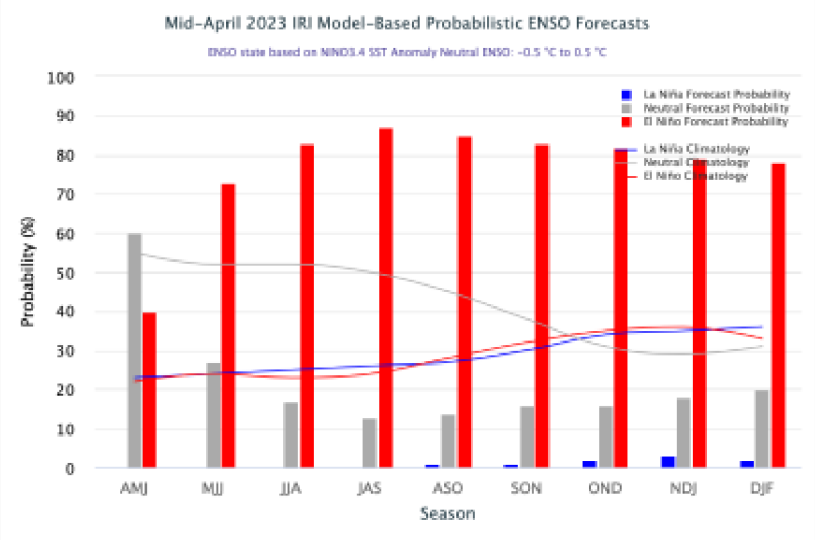
Source: Australian Bureau of Meteorology

A warming trend across all Niño SST regions that began around December has led to positive SST anomalies that have persisted in April, with the greatest warm anomalies occurring in the Niño 1+2 region along the South American coast.

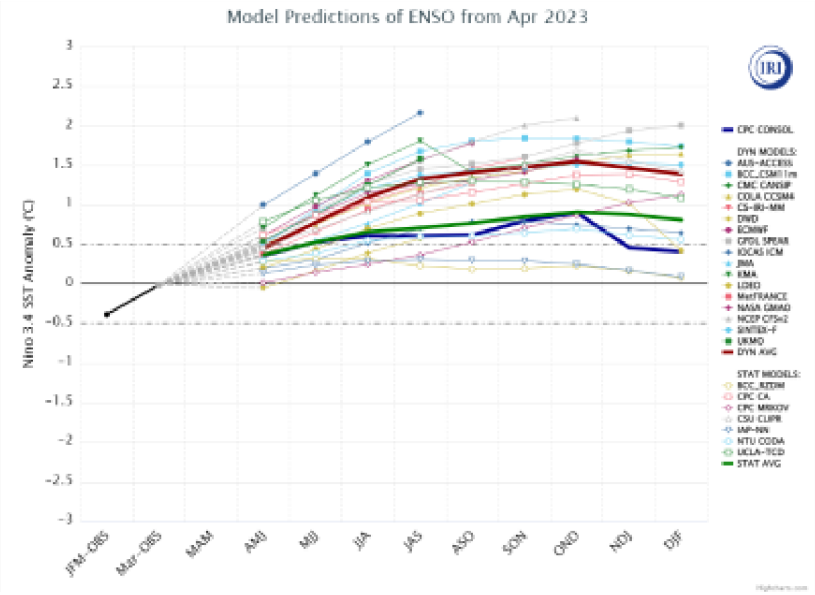


Source: Climate Prediction Center (NOAA)

ENSO forecasts have tipped toward favoring a late spring-to-early summer transition to El Niño, with models pointing to around a 70% chance of May-July Niño 3.4 SSTs exceeding the threshold value of 0.5°C above average. Model forecasts favor El Niño conditions through the end of the year.



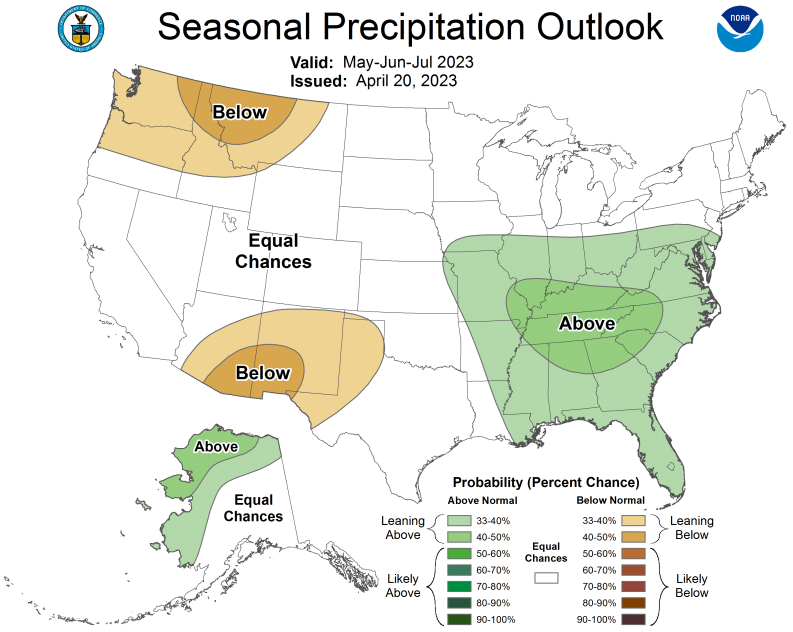
Source: International Research Institute (Columbia University)



Source: International Research Institute (Columbia University)

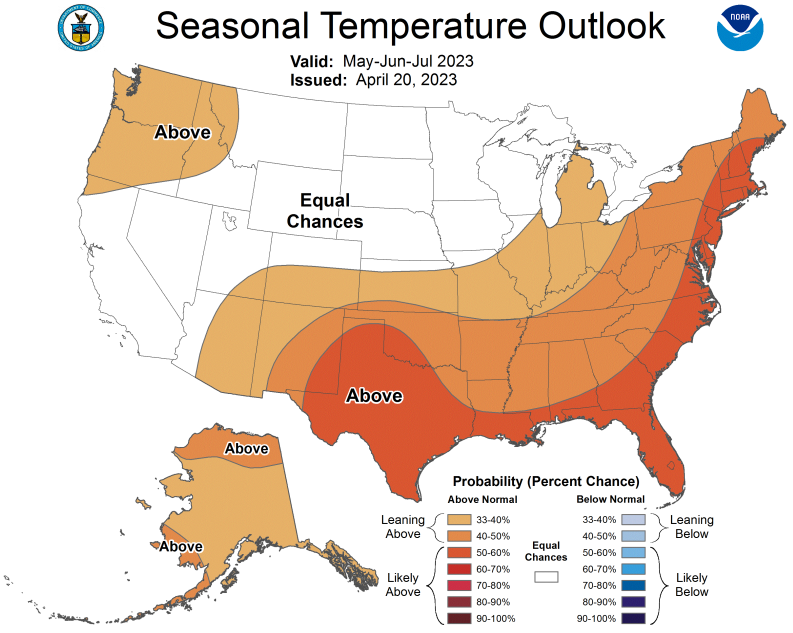
Seasonal Forecasts

The CPC seasonal precipitation outlook for May-July leans toward below-average precipitation in Arizona and New Mexico, because of some evidence for expecting a slower progression of the monsoon onset in the Southwest this year—Gulf of California SSTs are cooler than normal, and snowpack and soil moisture are elevated across the West.



Source: Climate Prediction Center (NOAA)

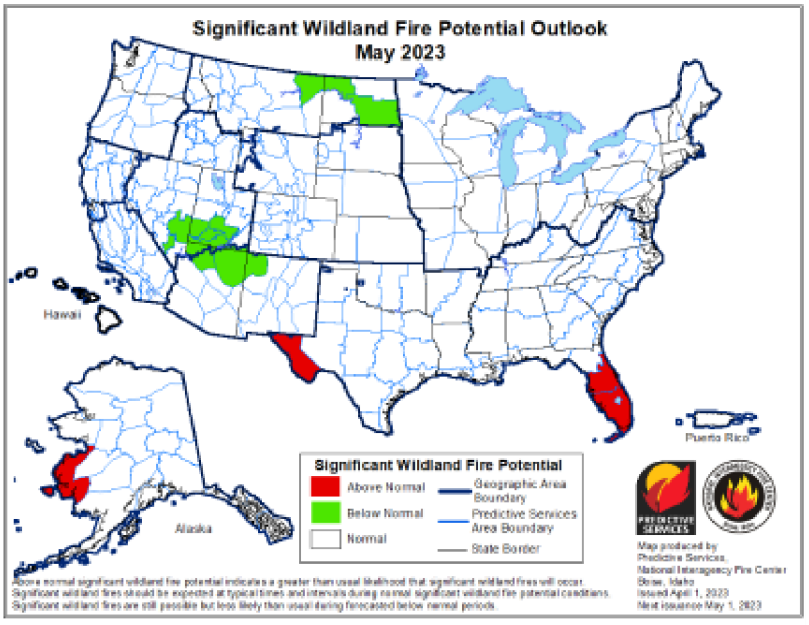
The CPC seasonal temperature outlook for May-July shows probabilities leaning toward above-normal temperatures in Arizona and New Mexico, with greater likelihood of higher temperatures in eastern New Mexico, as part of a broad forecast of above-average temperatures across the southern and eastern United States, which CPC attributes to dry soil moisture conditions, elevated SSTs, and recent trends.



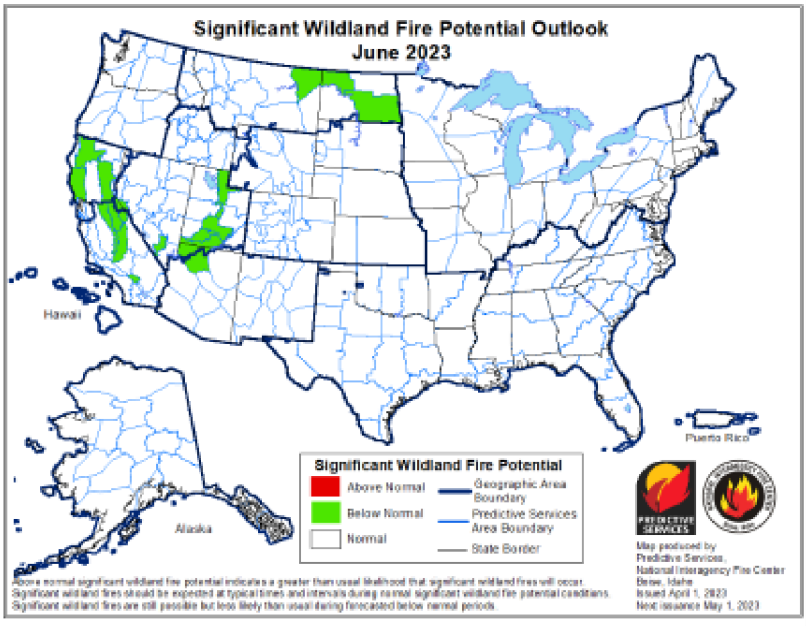
Source: Climate Prediction Center (NOAA)

Wildfire

Fire season is already underway in the Southwest. The NIFC fire outlooks for May and June predict normal fire risk for much of Arizona and New Mexico, with below normal fire potential for northern Arizona because of persisting winter snowpack.



Source: National Interagency Fire Center - Predictive Services



Source: National Interagency Fire Center - Predictive Services

Southwest Climate Podcast

Mar 2023 - Water Everywhere: Big Winter Stories

In the March 2023 edition of the Southwest Climate Podcast, Mike Crimmins and Zack Guido still have plenty to talk about! The pod starts out with a recap of the month of March's precipitation and temperature followed by a discussion of whether ENSO played a role. Then they plow (pun intended) into the 'Big Winter Stories' covering historical snowpack, atmospheric rivers, extremes and drought. Stick around for the streamflow conversation as well as what Mike and Zack are looking forward to.

Listen Here

About CLIMAS

The Climate Assessment for the Southwest (CLIMAS) program was established in 1998 as part of the National Oceanic and Atmospheric Administration's Climate Adaptation Partnerships (CAP) Program (formerly known as Regional Integrated Sciences and Assessments, or RISA). 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.

Learn more about the NOAA CAP program here.

Disclaimer

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Thank You to additional contributors: Mike Crimmins & Matt Meko