



January 2024: 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

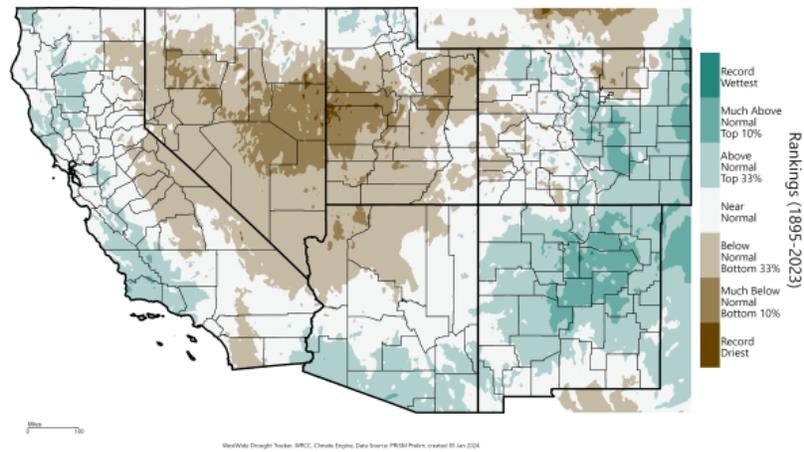
Mexico State Climate office.

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Precipitation and Temperature

December precipitation in New Mexico was near normal, above normal, or much above normal. Arizona precipitation ranged from above normal in the south to below normal in the northern part of the state.

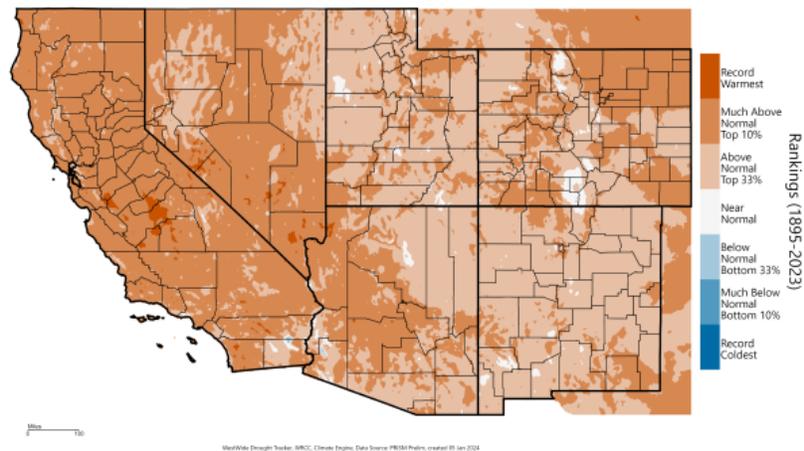
Southwest - Precipitation
December 2023, Percentile



Source: [WestWide Drought Tracker](#)

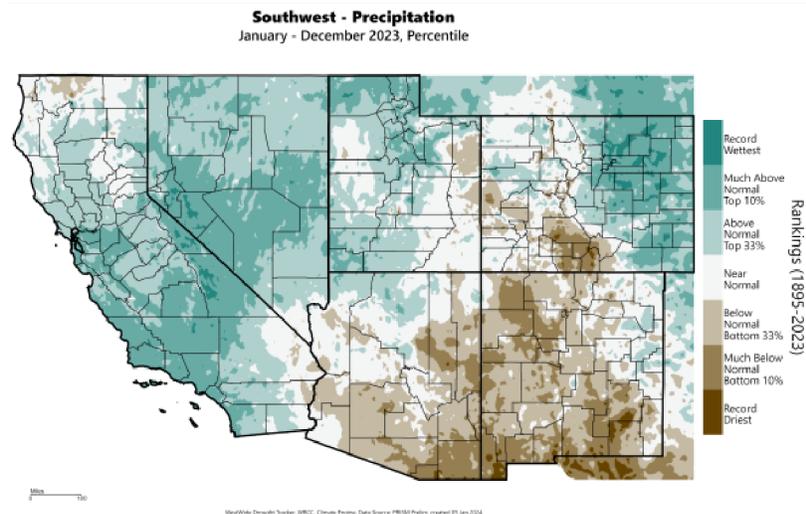
December temperatures were above normal across the Southwest, and much above normal for parts of New Mexico and a large part of Arizona.

Southwest - Mean Temperature
December 2023, Percentile



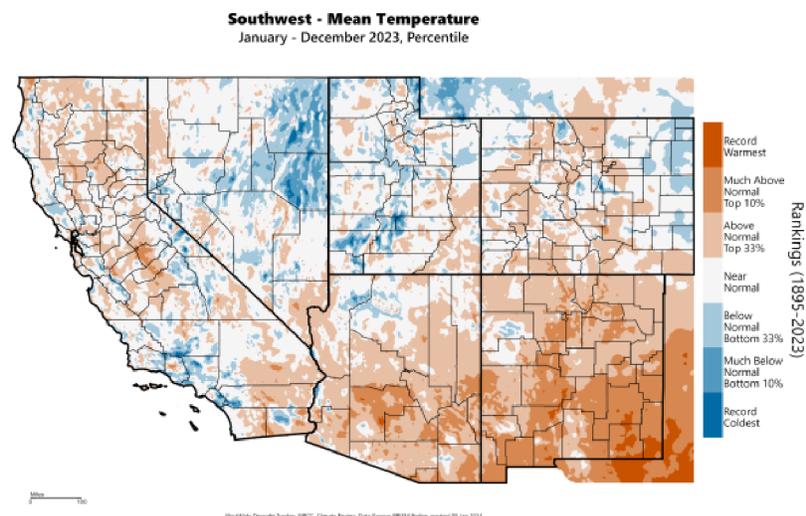
Source: [WestWide Drought Tracker](#)

2023 calendar year precipitation totals were below normal for much of Arizona and New Mexico. For many areas, precipitation was much-below normal—among the driest 10% of years in the record, and in some places 2023 was the driest year on record.



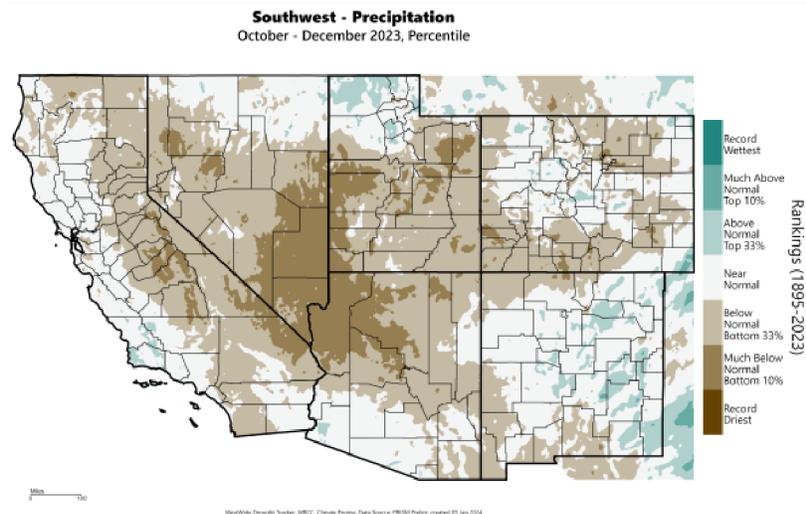
Source: WestWide Drought Tracker

2023 calendar year mean temperatures were generally above normal across Arizona and New Mexico, with much-above normal temperatures in parts of southern Arizona, throughout the Rio Grande valley, and across southern New Mexico, where for some localities 2023 was the warmest year on record.



Source: WestWide Drought Tracker

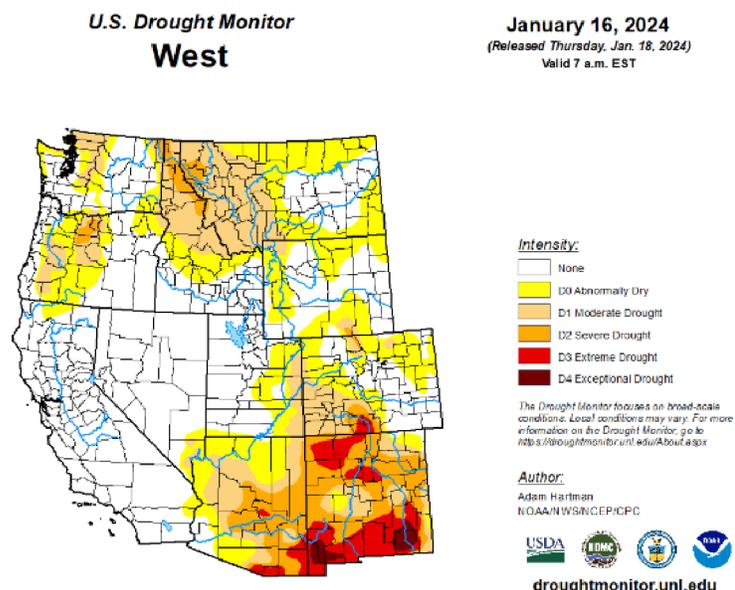
Precipitation for October through December was below normal across much of Arizona, much-below normal for northern and northeastern Arizona, but near normal to above normal for a large portion of New Mexico.



Source: [WestWide Drought Tracker](#)

Drought

Drought and abnormally dry conditions are widespread across the Southwest, with the most intense drought conditions occurring in southern New Mexico, where over 6% of the state's area has been under Exceptional Drought conditions since late September 2023. 37% of New Mexico and 6% of Arizona are classified under Extreme Drought or worse. Severe Drought conditions are affecting 79% of New Mexico and 36% of Arizona. Conditions are Moderate or worse for 94% of New Mexico and 63% of Arizona.



Source: [U.S. Drought Monitor](#)

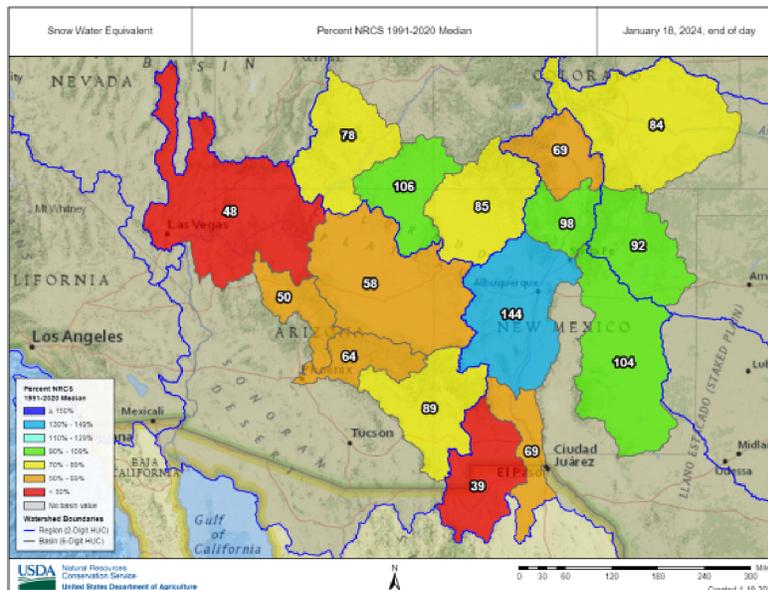
NIDIS Improved and Expanded State Pages on Drought.Gov

Arizona

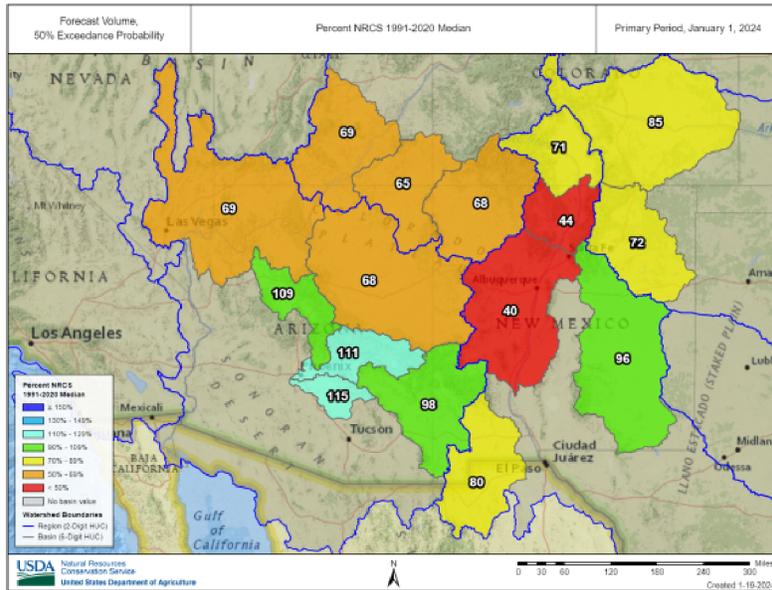
New Mexico

Snowpack & Streamflow

Snowpack in the Southwest is generally falling short of normal for this time of year, with only a handful of basins reporting near normal or above normal snow water equivalent (SWE) measurements. Consequently, streamflow forecasts are broadly predicting flows below normal, except for basins of the Salt, Verde, Gila, and Pecos, where forecasts are calling for near-normal or above-normal streamflow.



[USDA-NRCS: National Water and Climate Center](#)



USDA-NRCS: National Water and Climate Center

Water Supply

Reservoir levels in Arizona are above where they were at this time last year, and aside from Lakes Mead and Powell, levels are at or above the long-term average. New Mexico reservoir levels are generally below the long-term average, but many reservoirs are holding more water than at this time last year.

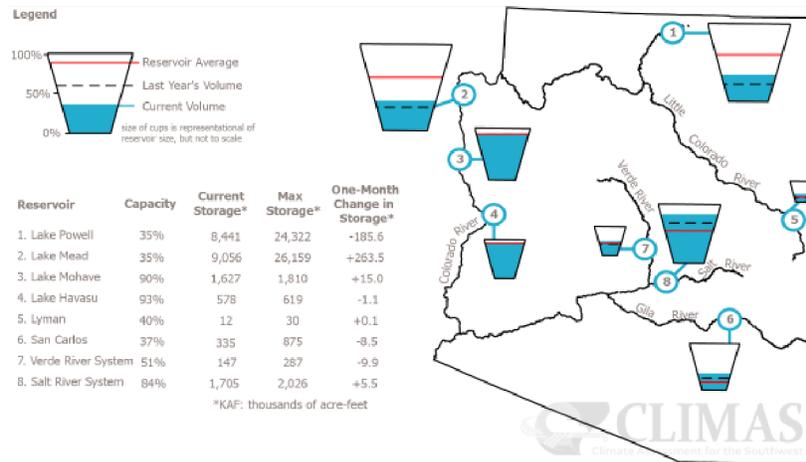
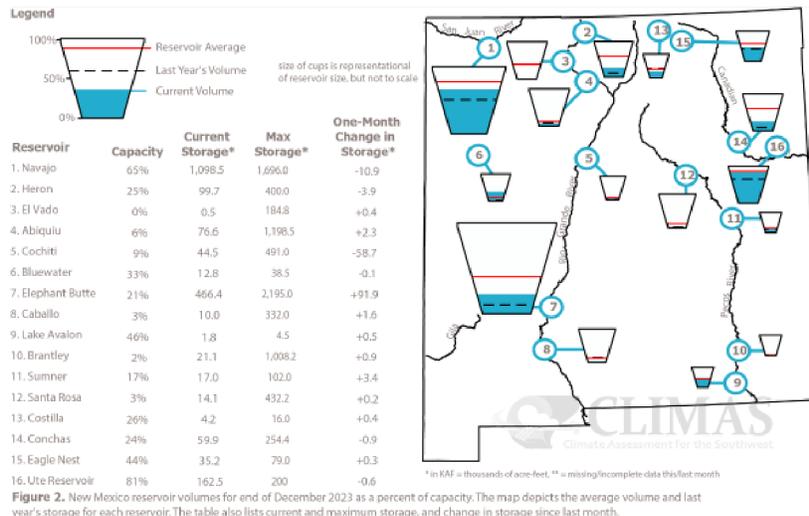


Figure 1. Arizona reservoir volumes for the end of December 2023 as a percent of capacity. The map depicts the average volume and last year's storage for each reservoir. The table also lists current and maximum storage, and change in storage since last month.



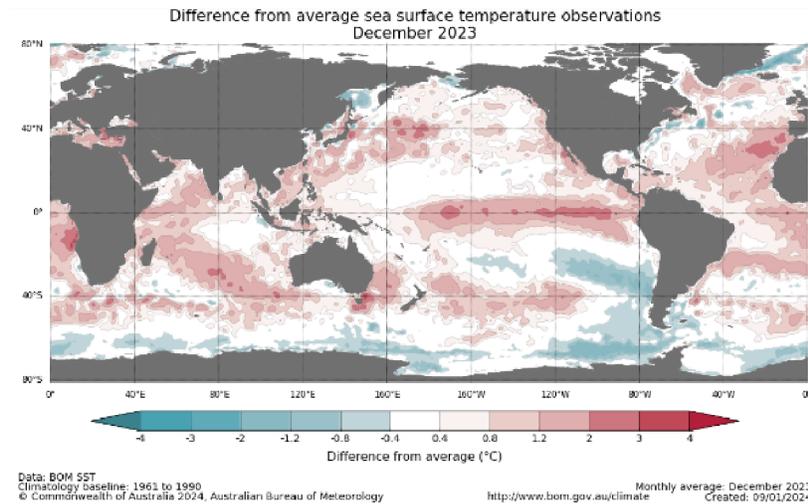
The map gives a representation of current storage for reservoirs in Arizona and New Mexico. Reservoir locations are numbered within the blue circles on the map, corresponding to the reservoirs listed in the table. The cup next to each reservoir shows the current storage (blue fill) as a percent of total 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 \(USDA\)](#)

BOM: New Mexico Dashboard

ENSO Tracker

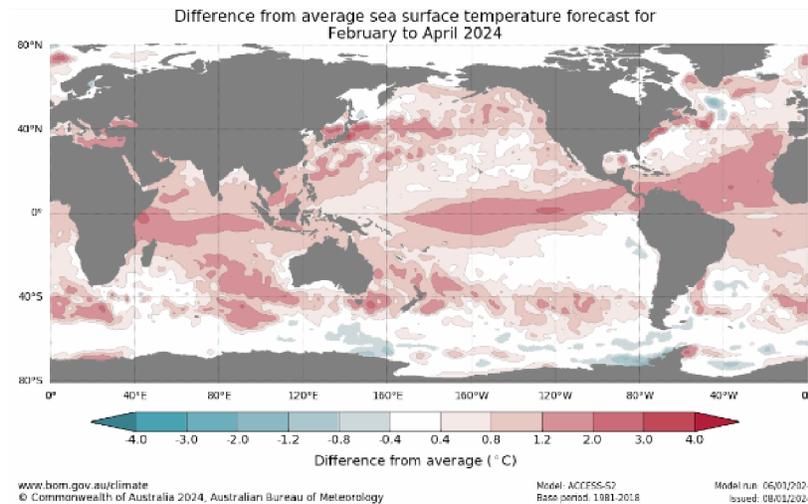
Sea-surface temperatures (SSTs) in the Pacific reflect ongoing El Niño conditions, with SSTs in the central and eastern equatorial Pacific ranging around 1-2°C warmer than long-

term averages. One thing that has distinguished the current El Niño from past events is the near absence of the cool-anomaly SSTs in the western Pacific that canonically co-occur with the warming in the central or eastern part of the ocean.



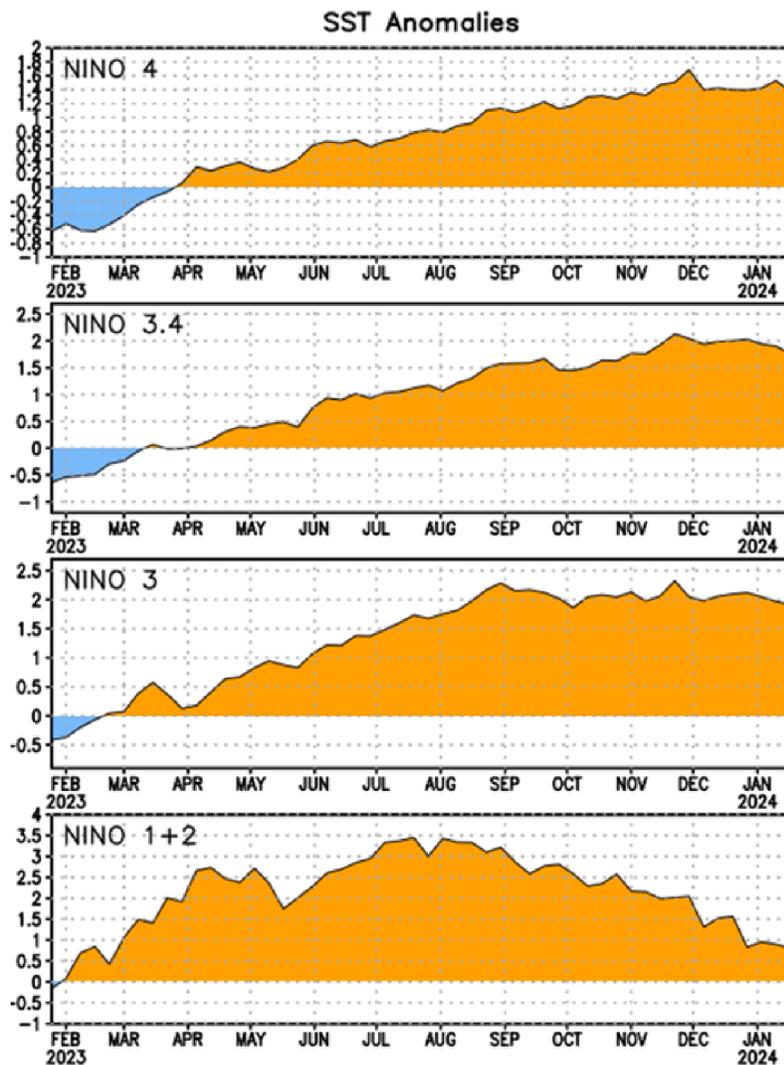
Source: Australian Bureau of Meteorology

SST forecasts for February-April show little change from December SSTs—a sign that this El Niño event is likely near or has reached its peak expression.



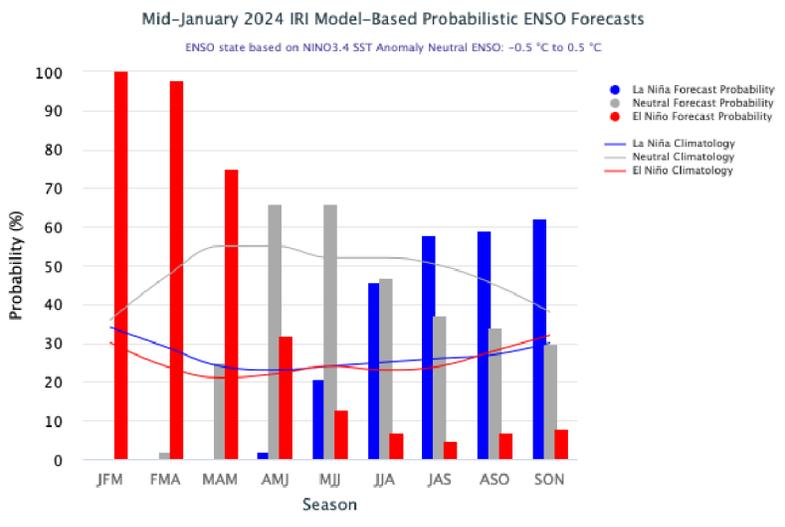
Source: Australian Bureau of Meteorology

Across the ENSO diagnostic regions, recent weekly SSTs have shown declines. Niño regions 3, 3.4, and 4 appeared to have been at peak warmth in late November. Niño region 1+2, which measures SSTs along equatorial coast of South America, peaked months earlier in July-August.



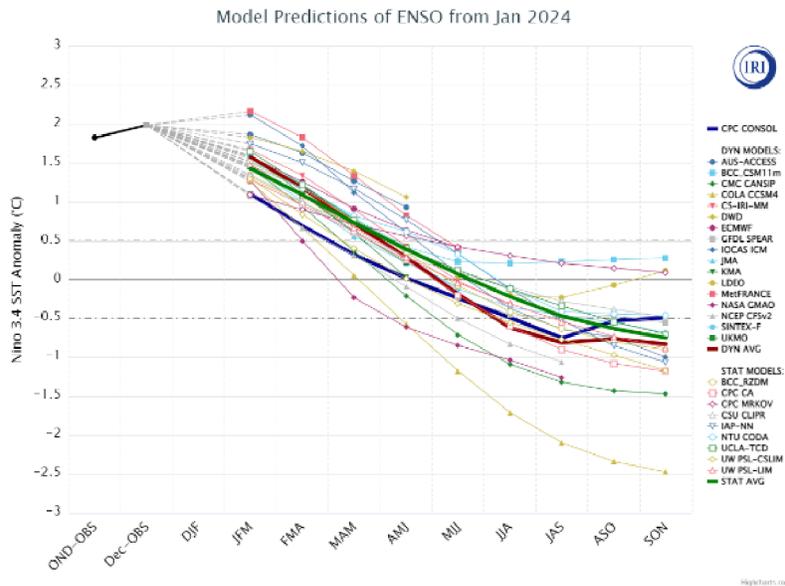
Source: Climate Prediction Center (NOAA)

Model-based ENSO forecasts give a high probability (>90% chance) El Niño conditions will remain in place February-April, likely (>70% chance) through March-May, but favor (>60% chance) a return to ENSO-neutral conditions in April-June, leaning (>50% chance) toward a transition to La Niña as early as late summer (July-September).



Source: The International Research Institute for Climate and Society, Columbia University Climate School

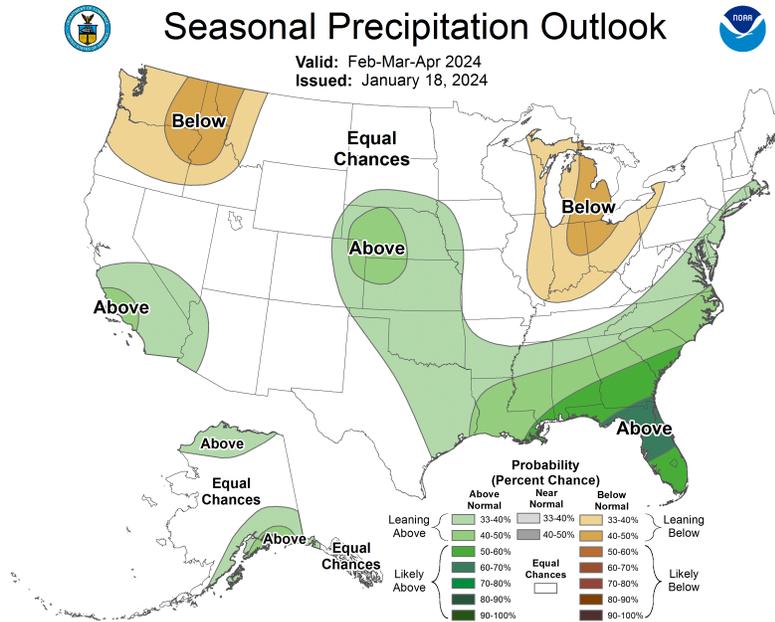
Individual ENSO forecast models are in consensus agreement regarding return to ENSO-neutral this spring. There is less agreement among models regarding a subsequent La Niña, but multi-model average forecasts for statistical and dynamical ENSO models indicate La Niña-like SSTs developing during the summer months.



Source: The International Research Institute for Climate and Society, Columbia University Climate School

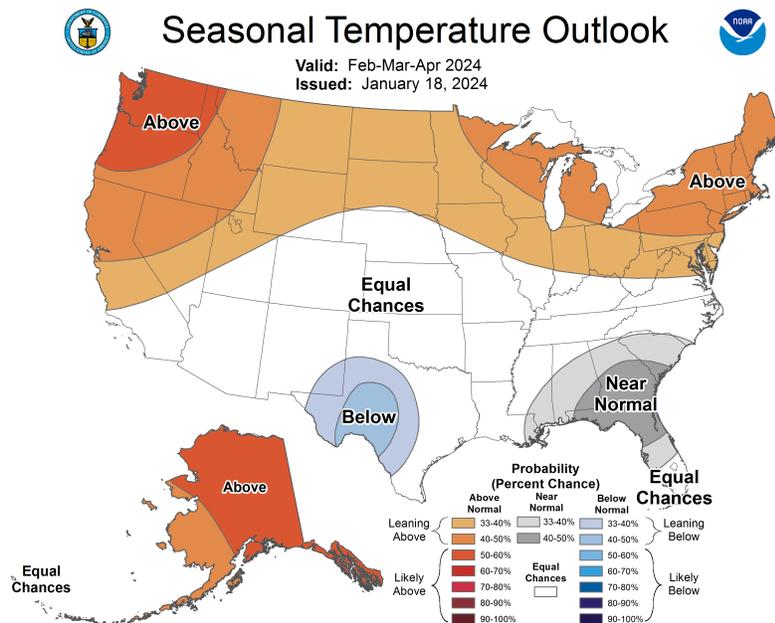
Seasonal Forecasts

The seasonal forecast for February-April precipitation calls for equal chances of above-normal, below-normal, or near-normal precipitation in New Mexico and most of Arizona. The forecast leans toward above-normal precipitation for western Arizona.



Source: Climate Prediction Center (NOAA)

The February-April seasonal temperature forecast calls for equal chances of above-, below-, and near-normal temperatures for Arizona and most of New Mexico. Southeastern New Mexico is included in an area where the forecast leans toward below-normal temperatures.



Source: [Climate Prediction Center \(NOAA\)](https://climatepredictioncenter.noaa.gov)

E&S Fellowship

The Climate Assessment for the Southwest (CLIMAS) program is accepting applications for the [2024 Environment & Society Graduate Fellowship Program](#). This fellowship supports University of Arizona graduate students from any degree-granting program whose work is focused on collaborative environmental research. The fellowship provides an opportunity for graduate students to develop their knowledge, training, and experience in applied environmental science and communication.



Environment & Society Fellowships

Four \$4,750 fellowships are available for University of Arizona graduate students for projects conducted Summer 2024 through Summer 2025.

Fellowship Projects are:

- open to any field of study
- connected to environmental and societal issues
- based in collaborative research methods
- conducted anywhere in the world

Applications due Feb 28, 2024

For more information and to apply, scan the QR code:



Or email Gigi Owen gigi@arizona.edu

Fellowship support provided by:



Arizona Institute for Resilience



Research, Innovation & Impact



Southwest Climate Podcast

December 2023 - Special MailBag Episode



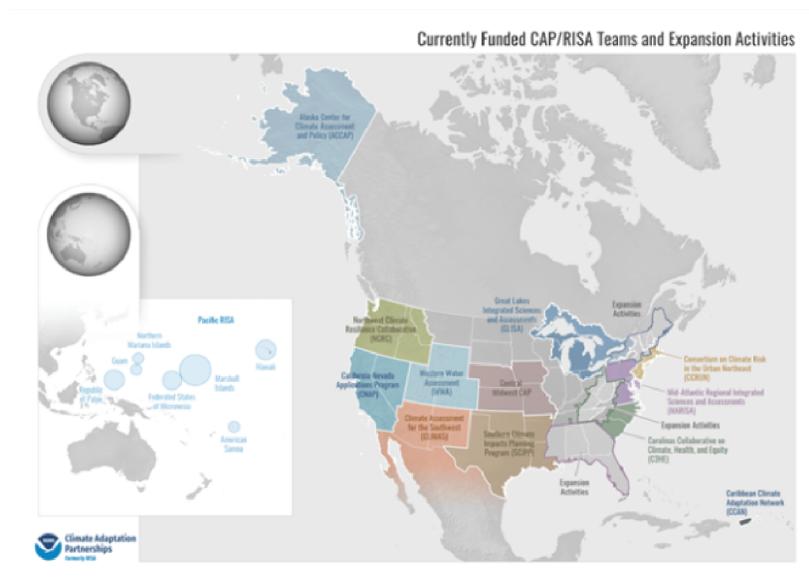
Zack Guido and Mike Crimmins sharpened their pencils, hit the library, and did their homework to bring you a very special MailBag episode of the Southwest Climate Podcast for this month. Thank you to all the listeners for sending in your questions and for trying to stump our hosts. This episode is not to be missed - so grab a cup of coffee and get ready to be schooled before heading off for the end of

semester break. And have a Happy Holidays from the Southwest Climate Podcast crew!

[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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