February 2024: Southwest Climate Outlook

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https://climas.arizona.edu/

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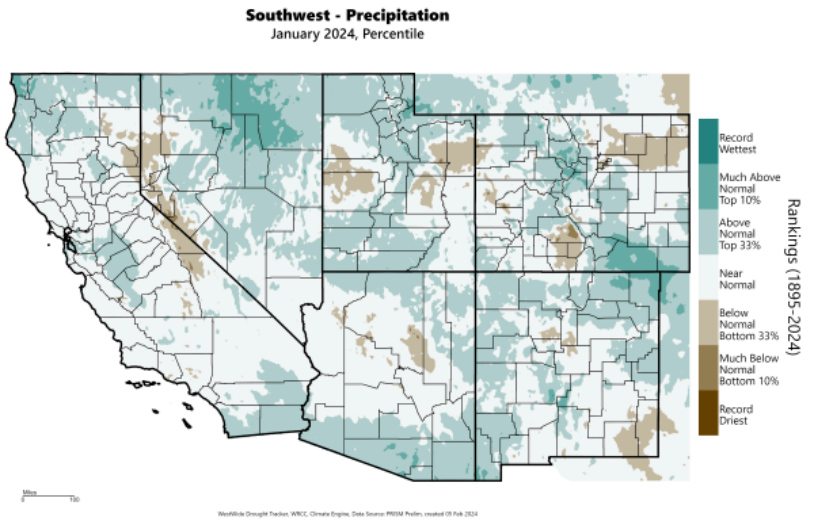
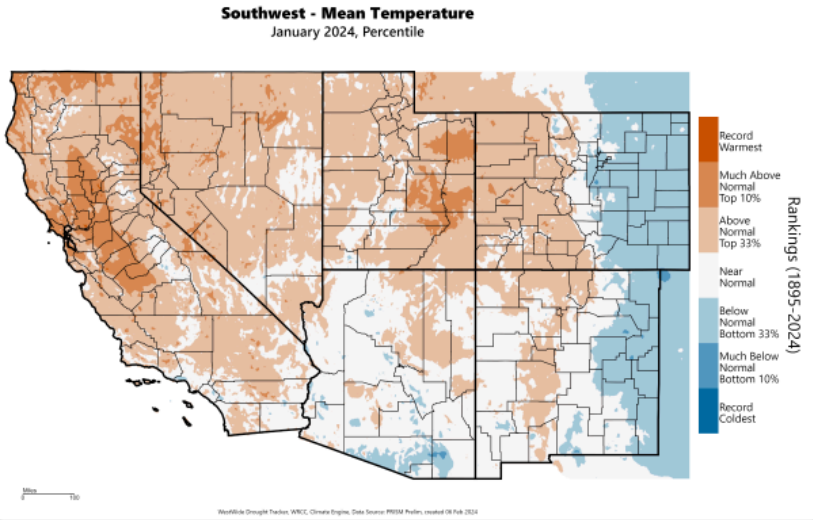
Precipitation and Temperature

January precipitation was near normal or above normal across much of Arizona and New Mexico. Precipitation was below normal in some isolated areas.



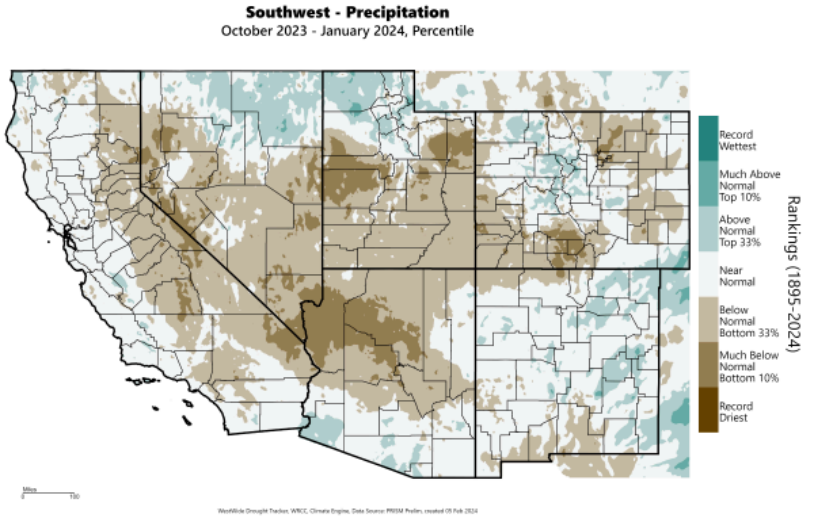
Source: WestWide Drought Tracker

January temperatures were near normal for large parts of Arizona and New Mexico, but also ranged from above normal in the Colorado Plateau and Rio Grande Valley to below normal in the eastern plains of New Mexico.



Source: WestWide Drought Tracker

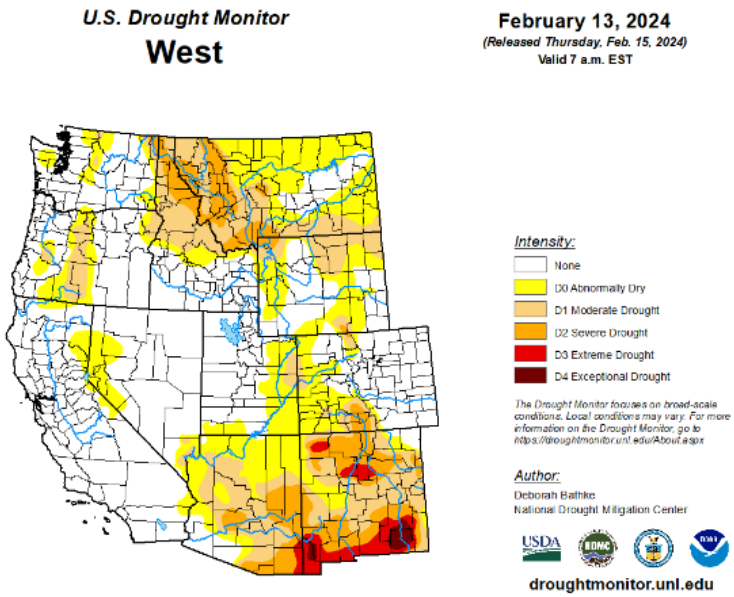
Water year precipitation to-date (October 2023 – January 2024) highlights a seasonal precipitation deficit for a large area including central and northern Arizona, parts of the Upper Colorado River Basin, and the headwaters of the Rio Grande.



Source: WestWide Drought Tracker

Drought

Drought conditions classified as moderate to extreme remain widespread across Arizona and New Mexico, despite some improvement over the past month. Parts of southern New Mexico are still considered to be under exceptional drought conditions, but the proportion of the area of the state under exceptional drought has decreased from 6.5% to 4.4% since mid-January. Other areas have received enough rain or snow from recent precipitation episodes for conditions to move to less-severe categories of drought, but 97% of New Mexico and 89% of Arizona remain classified as at least abnormally dry (D0-D4). Drought is moderate or worse (D1-D4) for 55% of Arizona and 88% of New Mexico, by area.



Source: U.S. Drought Monitor

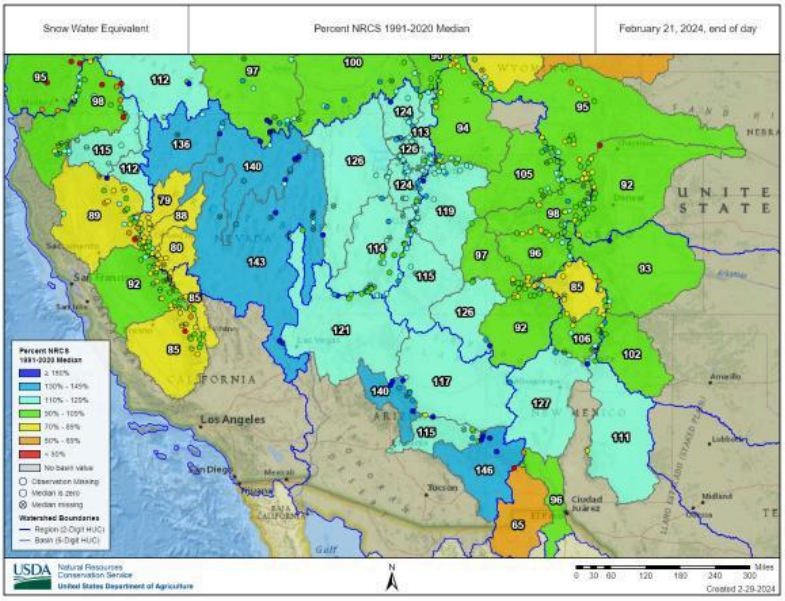
NIDIS Improved and Expanded State Pages on Drought.Gov

Arizona

New Mexico

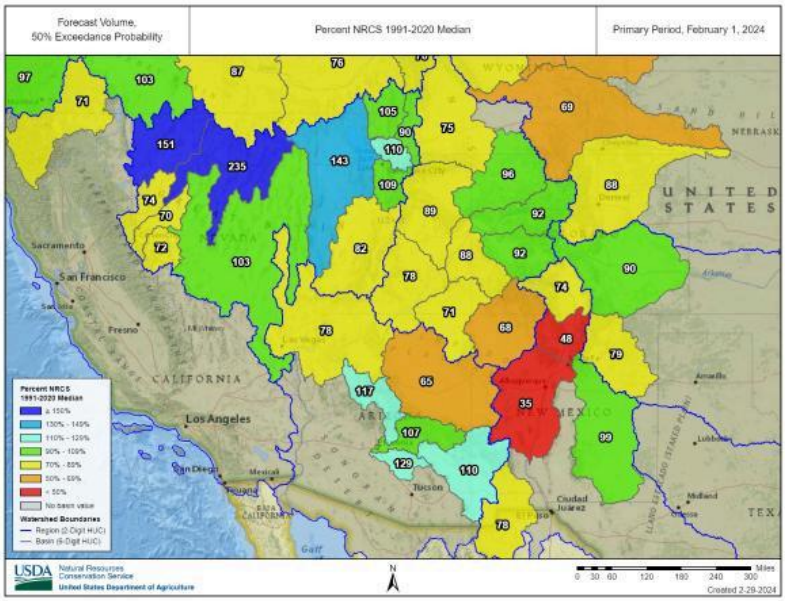
Snowpack & Streamflow

Winter snowpack is broadly near normal to above normal in the Southwest. Large-scale basin averages are near normal for the Upper Colorado Basin and Rio Grande at 103% and 96% of median, respectively; and above normal for the Lower Colorado at 124%, as of February 21. Peak winter snowpack is typically close to March 1st in Arizona and New Mexico, while closer to April 1st further north in the Upper Colorado River Basin.



USDA-NRCS: National Water and Climate Center

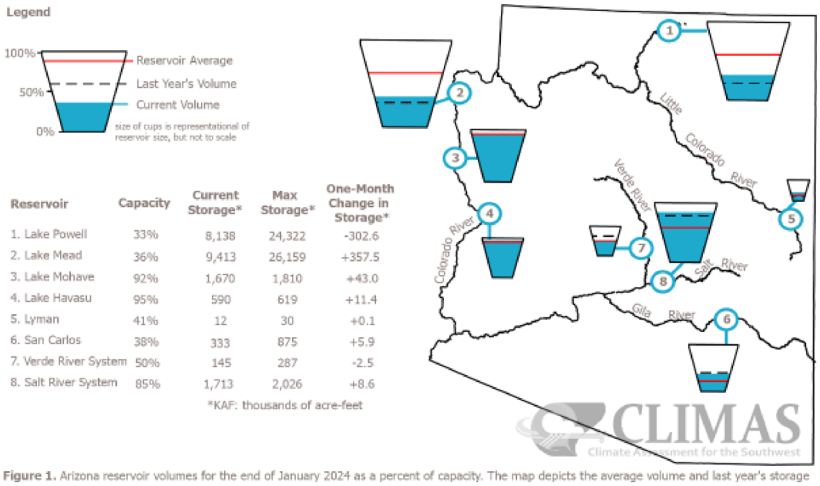
Forecast streamflow is based in part on Snow Water Equivalent (SWE), but in this case the forecast has not been updated to consider more recent precipitation, instead basing predictions on end-of-January snowpack. Given that the recent SWE is closer to normal or above normal, it is reasonable to expect an updated streamflow forecast will predict flows closer to normal.



USDA-NRCS: National Water and Climate Center

Water Supply

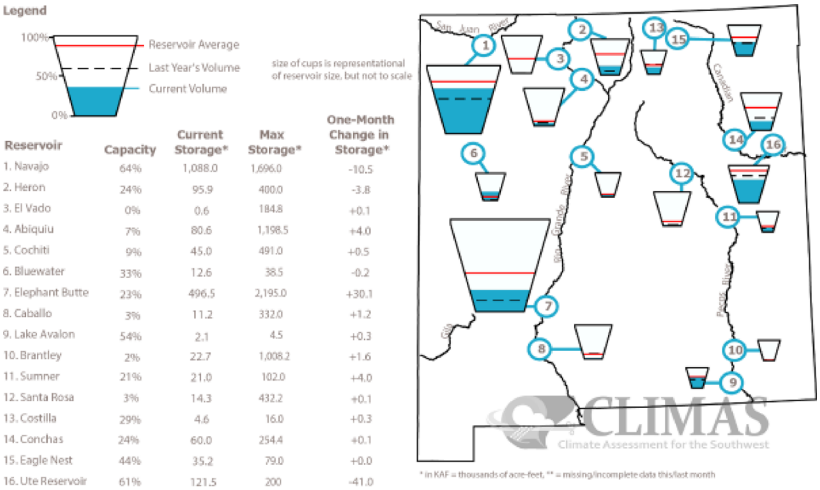
Arizona reservoir levels as of end of January are near or above where they were at that time last year, including lakes Mead and Powell, although those two reservoirs remain much below long-term average levels. New Mexico reservoir storage is more variable in comparison to last year's levels; Conchas, Ute, and Eagles Nest reservoirs levels are down from last year; Navajo and Elephant Butte levels are up from last year; though with few exceptions storage generally remains much below the long-term average.



Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Lake Powell	33%	8,138	24,322	-302.6
2. Lake Mead	36%	9,413	26,159	+357.5
3. Lake Mohave	92%	1,670	1,810	+43.0
4. Lake Havasu	95%	590	619	+11.4
5. Lyman	41%	12	30	+0.1
6. San Carlos	38%	333	875	+5.9
7. Verde River System	50%	145	287	-2.5
8. Salt River System	85%	1,713	2,026	+8.6

*KAF: thousands of acre-feet

Figure 1. Arizona reservoir volumes for the end of January 2024 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	64%	1,088.0	1,696.0	-10.5
2. Heron	24%	95.9	400.0	-3.8
3. El Vado	0%	0.6	184.8	+0.1
4. Abiquiu	7%	80.6	1,198.5	+4.0
5. Cochiti	9%	45.0	491.0	+0.5
6. Bluewater	33%	12.6	38.5	-0.2
7. Elephant Butte	23%	496.5	2,195.0	+30.1
8. Caballo	3%	11.2	332.0	+1.2
9. Lake Avalon	54%	2.1	4.5	+0.3
10. Brantley	2%	22.7	1,008.2	+1.6
11. Sumner	21%	21.0	102.0	+4.0
12. Santa Rosa	3%	14.3	432.2	+0.1
13. Costilla	29%	4.6	16.0	+0.3
14. Conchas	24%	60.0	254.4	+0.1
15. Eagle Nest	44%	35.2	79.0	+0.0
16. Ute Reservoir	61%	121.5	200	-41.0

Figure 2. New Mexico reservoir volumes for end of January 2024 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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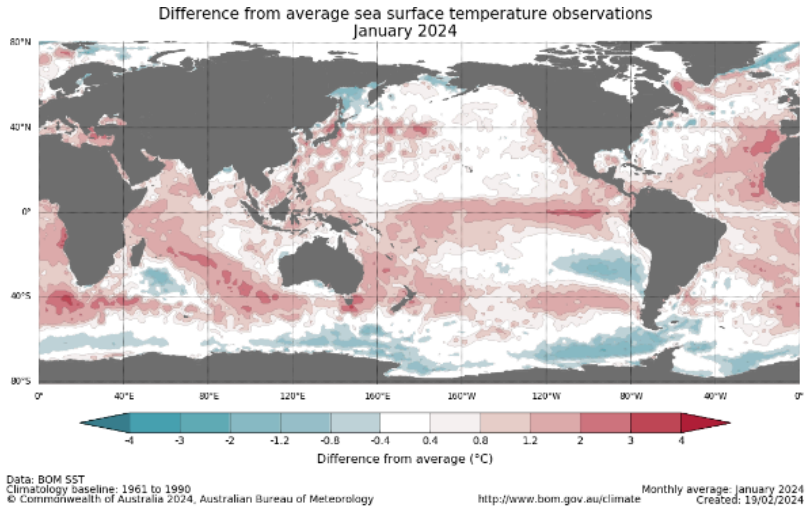
BOM: New Mexico Dashboard

ENSO Tracker

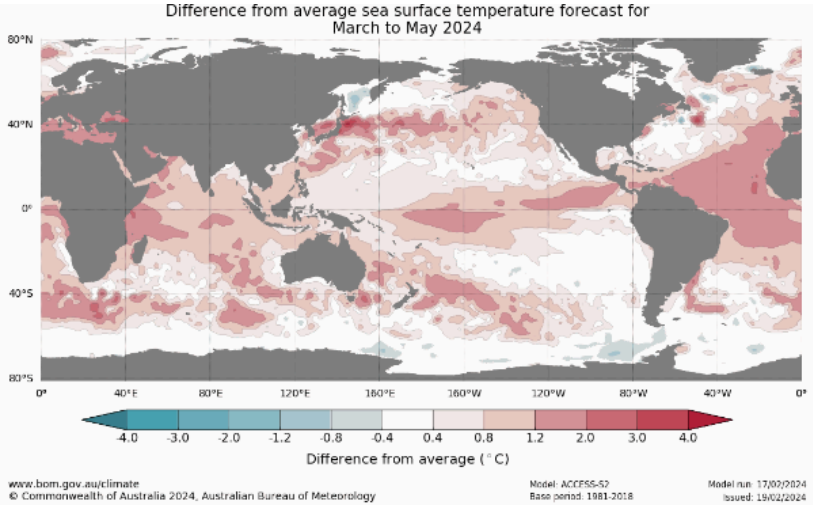
Pacific sea surface temperatures (SSTs) in January showed warm anomalies along the equator in the central and eastern Pacific, consistent with El Niño conditions that have been ongoing for the latter half of 2023 and forecast to peak at some point in the current winter.



Source: Australian Bureau of Meteorology

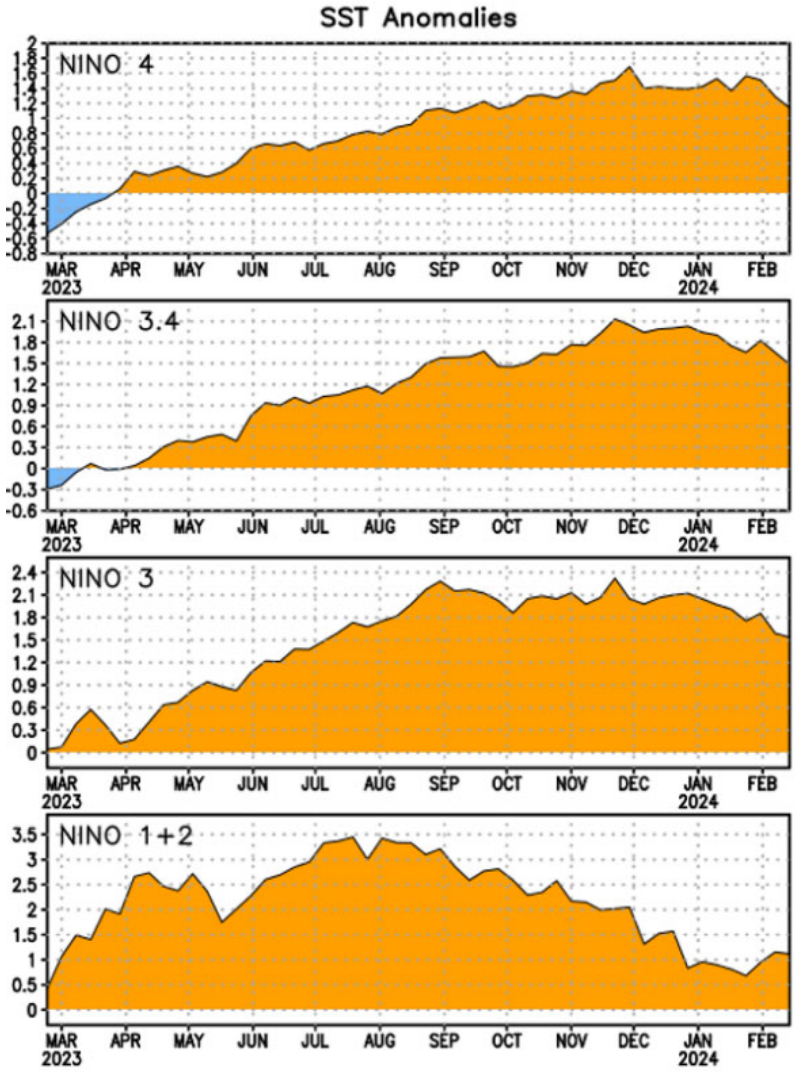
The forecast SST pattern for March – May 2024 shows lingering warm anomalies, but near normal SSTs in the east Pacific along the equator indicate increased upwelling of

subsurface waters in the cold-tongue region, ENSO's center of action in the eastern Pacific, signaling El Niño's departure and a transition to ENSO-neutral state in the tropical Pacific.



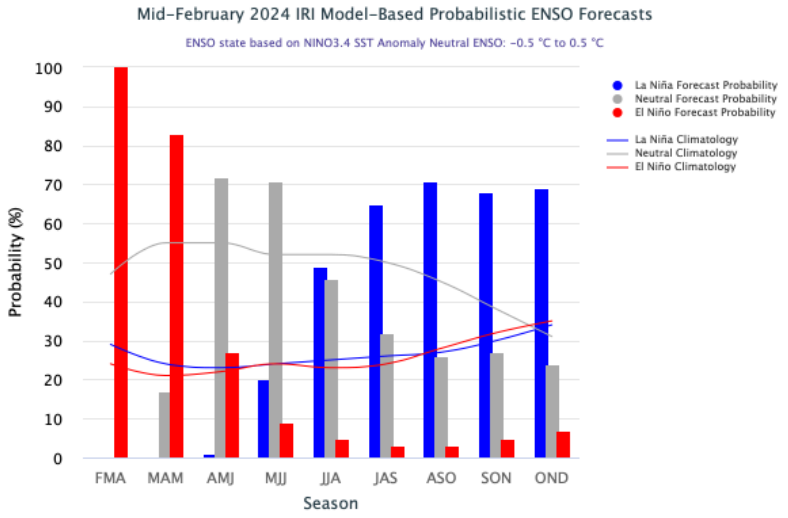
Source: Australian Bureau of Meteorology

Time-plots of weekly departures from normal in the four main ENSO SST regions show declining values for all central and eastern Pacific diagnostic regions, beginning with easternmost region Nino 1+2 where anomalies peaked last summer, then Nino 3 and Nino 3.4 which saw peaks in fall, and most recently Nino 4 in the central Pacific, which remained at near-peak 1.5°C above normal through January, but has most recently fallen to +1.1°C.



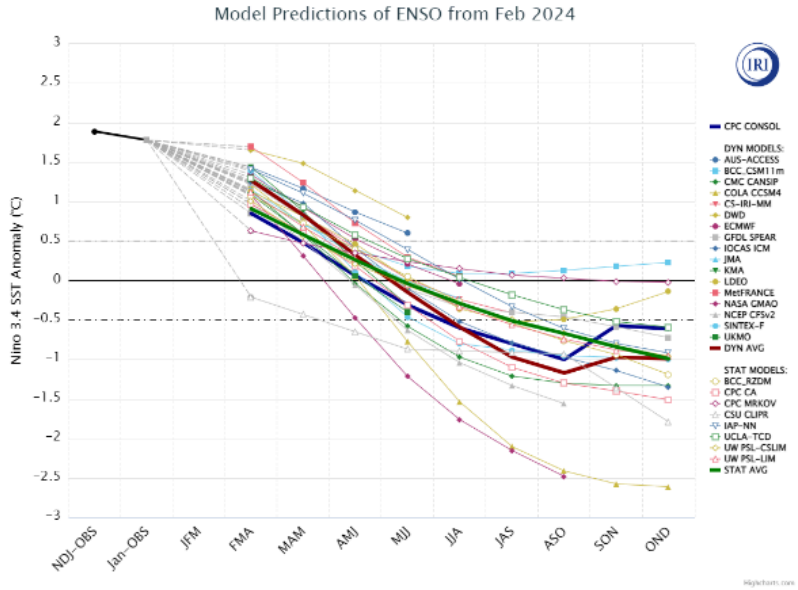
Source: Climate Prediction Center (NOAA)

ENSO forecast models indicate April-May-June SSTs will likely (probability > 70%) reflect ENSO-neutral conditions. The forecast for the July-August-September season, and subsequent seasons, favors (probability > 60%) La Niña conditions.



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

Individual ENSO forecast models all agree the current El Niño will subside during the spring months. All but a few models indicate a subsequent transition to La Niña conditions by the October-November-December season 2024.

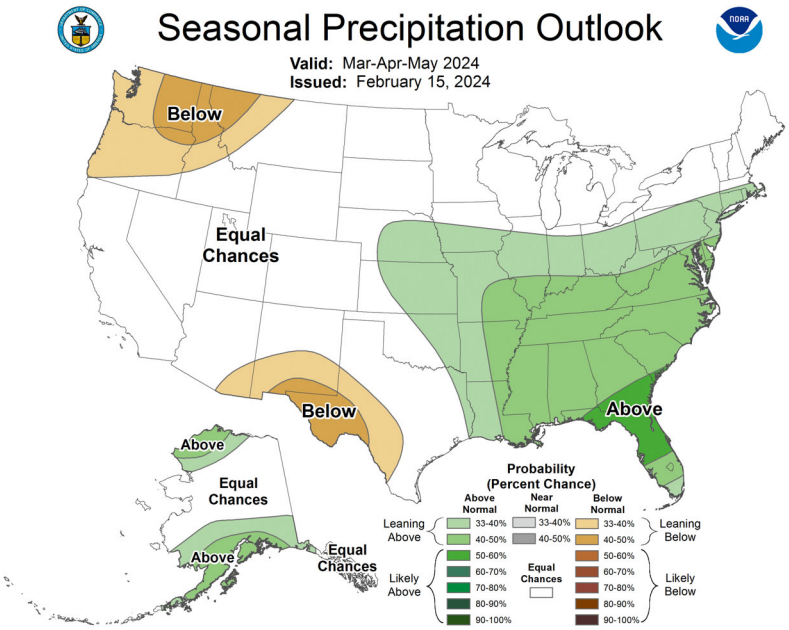


Source: The International Research Institute for Climate and Society, Columbia University Climate School

Seasonal Forecasts

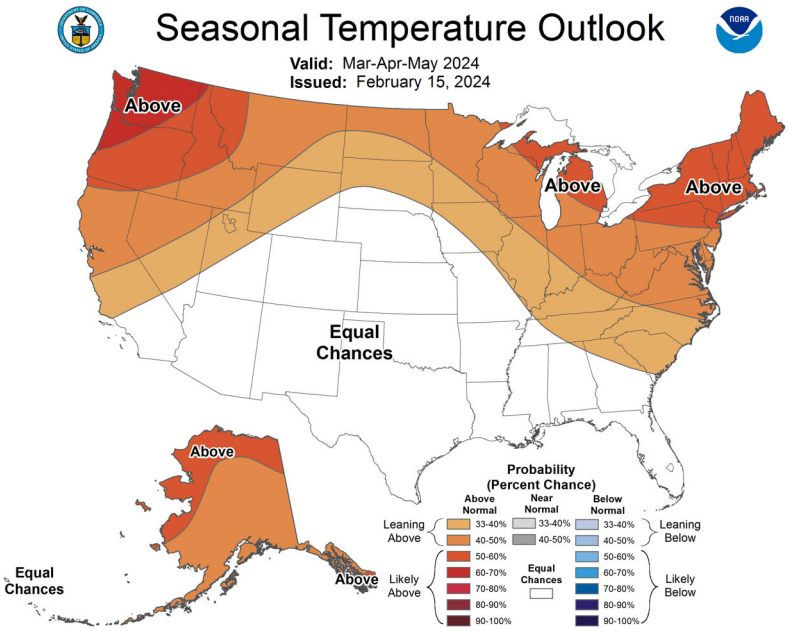
The seasonal precipitation forecast for March through May gives equal chance of near normal, below normal, or above normal precipitation for most of Arizona and New Mexico but

includes part of southeastern Arizona and southern New Mexico in a region where the forecast leans toward below normal precipitation.



Source: Climate Prediction Center (NOAA)

The seasonal temperature forecast for March through May indicates equal chance of temperatures being above normal, below normal, or near normal in Arizona and New Mexico.



Source: Climate Prediction Center (NOAA)

Southwest Climate Podcast

February 2024 – El Niño's Getting Late

It's the new year and Zack Guido and Mike Crimmins are back to give the lowdown on what's happening in regards to the Southwest Climate in this month's Podcast. They cover this past winter's three-month pattern and overall conditions. Then they get global with the current state of El Niño and its influence on atmospheric rivers and other precip events seen in the first half of February. There's a quick look at the resulting snowpack - which is an important feature of the west's water supply. And finally they round it out with a look to the rest of the month which may or may not be the rally we need for a typical wet El Niño before La Niña comes back around.

Listen Here

Public Health Corner

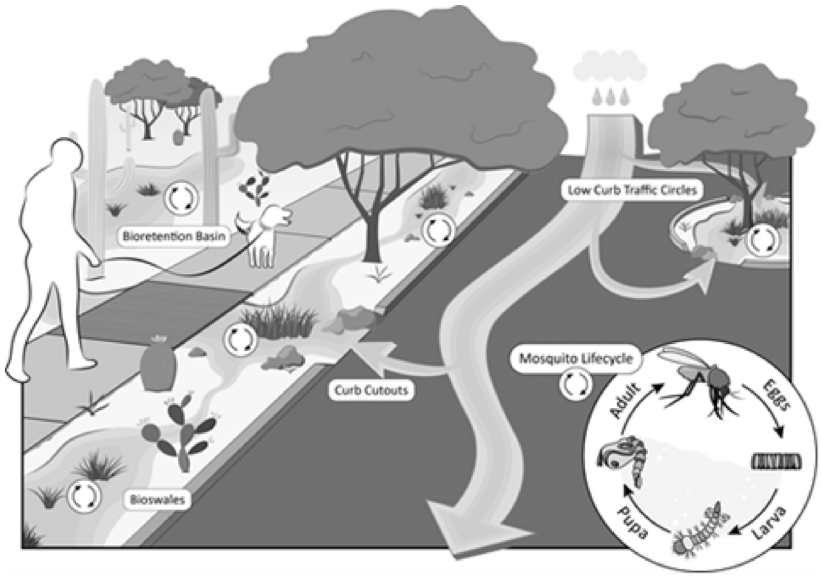
> *Welcome to the Public Health Corner, a new quarterly section in the Southwest Climate Outlook dedicated to exploring the intersection between climate change and public health in Arizona and New Mexico! In this section, we will dive into the various health impacts of climate change that are affecting our communities and explore strategies to mitigate and adapt to these challenges.*

It is starting to get warmer... summer sun, hikes in the mountains, and relaxing evenings on the patio... well, relaxing until those nasty ankle-biters attack that is! With heat

planning for this summer in full swing, we focus on the impacts of vector borne diseases in Arizona and New Mexico. Be they mosquitoes, fleas, or ticks, the warm weather gets these potential disease vectors moving about. While it can get too hot for these vectors to thrive, generally warmer temperatures mean faster development which in turn usually leads to larger populations. Larger populations of vectors can be associated with increased entomologic risk, that is the risk of encountering a potentially infected vector. Further, because of this association between vectors and climate and the increasing temperatures we are observing, most predict that vectors will increase and their associated diseases might too!

In our region, mosquito-borne West Nile virus is now endemic meaning we expect to see it every year with some years worse than others. Flea-borne plague happens occasionally in the higher elevations in New Mexico. The effects of tick-borne Rocky Mounted Spotted Fever can be devastating – especially among children (<10 years of age) who are five times more likely than adults to die from RMSF. Forecasts usually indicate a risk for the emergence of new diseases into our region, with mosquito-borne dengue probably being the most watched.

So how do we protect ourselves against the increasing threat from vector borne disease? CLIMAS researchers have been focusing on two aspects: vector-wise adaptations and education. Drs Heidi Brown and Ladd Keith worked to understand what puts green stormwater infrastructure at risk for growing mosquitoes and found that most across the city of Tucson were quickly drying out after a rain event. No pooling water – less risk of mosquitoes! A collaboration between the faculty at the College of Medicine and Public Health has led to the generation of free online trainings and education material for the health impacts of climate especially vector borne diseases. We continue to work toward resilient climate solutions that work in your neighborhood!

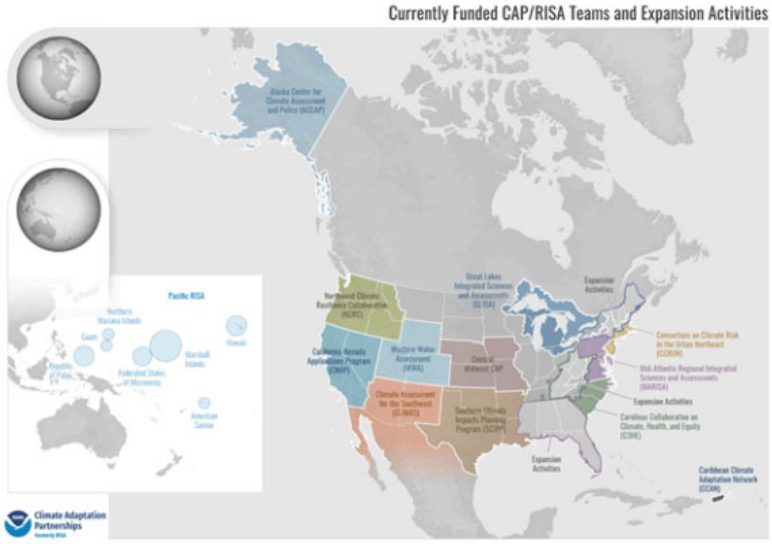


Source: Greening Up For Mosquitoes: A Comparison of Green Stormwater Infrastructure in a Semiarid Region

Join us next quarter in the Public Health Corner as we explore the health impacts of climate change in Arizona and New Mexico, and discover ways we can all work together to create a healthier and more resilient future.

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

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