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March Southwest Climate Outlook

Drought: Drought is widespread in the Southwest. Severe and extreme drought cover about 57 and 65 percent of Arizona and New Mexico, respectively. Drought intensified in the last month, most notably in northern Arizona and New Mexico.

Precipitation: Only one storm in the past 30 days delivered substantial moisture to Arizona and New Mexico. That storm dropped rain and snow mostly at higher elevations around March 1, and drier-than-average conditions in the last 30 days remained the norm for most of both states. Precipitation in nearly all of Arizona and New Mexico since January 1 has been less than 50 percent of average.

Temperature: Temperatures in the last 30 days in the Southwest generally were between 2 and 6 degrees F warmer than average. Maximum temperatures were more above average than minimum temperatures. This winter has been one of the warmest on record for much of the Southwest.

Snowpack: Scant precipitation and warm conditions have caused below-average snowpacks in the Southwest. In Arizona, the largest snowpacks are in the San Francisco Peaks and measure 67 percent of average; conditions in all other basins are less than 10 percent of average. Snowpacks in all river basins in New Mexico measure less than 63 percent of average.

Water Supply: Total reservoir storage decreased by about 291,000 acre-feet in Arizona and increased by about 34,600 acre-feet in New Mexico in February. Storage stands at about 46 percent of capacity in Arizona and about 23 percent of capacity in New Mexico. Elephant Butte Reservoir in southern New Mexico gained about 27,800 acre-feet in February—increases are typical this time of year—but remains low, at 15 percent of capacity or 30 percent average.

ENSO: Sea surface temperatures in the tropical Pacific Ocean are near average, reflecting ENSO-neutral conditions. The NOAA-Climate Prediction Center, however, has issued an El Niño Watch, which means that conditions are favorable for the development of an El Niño in the next six months.

Precipitation Forecasts: The NOAA-Climate Prediction Center is calling for equal chances for above-, below-, or near-average precipitation across nearly all of Arizona and New Mexico for the April–June period.

Temperature Forecasts: The NOAA-Climate Prediction Center forecasts high chances for above-average temperatures in the Southwest during the April–June period.

Streamflow Forecasts: The April–July streamflow forecasts issued on March 1 for the Colorado River call for flows into Lake Powell to be around 109 percent of average. March–July forecasts for the Salt, Verde, and Gila rivers, on the other hand, project well below-average flows. In New Mexico, the March-July forecast for the Rio Grande at Otowi Bridge is around 38 percent of average.

Tweet March's SW Climate Snapshot

CLICK TO TWEET

Winter precip in SW has been a dud. Most of region at less than 50 percent of avg since Jan 1. More SW climate @ http://bit.ly/1lUnVL5

Online Resources

Figure 1.
High Plains Regional Climate Center
www.hprcc.unl.edu/maps/current/

Figure 2.
Natural Resources Conservation Service
www.wcc.nrcs.usda.gov/gis/snow.html

Figure 3.
National Drought Mitigation Center
http://droughtmonitor.unl.edu/Home/RegionalDroughtMonitor.aspx?west

Climate Snapshot

Dry and warm conditions continued in the Southwest in the past 30 days. Temperatures in Arizona were between 2 and 6 degrees F above average, with the largest temperature anomalies occuring in the southwest region of the state (Figure 1). New Mexico had similarly warmer-than-average conditions in the past 30 days. Averaged over the January–February period, Arizona temperatures were the warmest on record, a period that spans 120 years, according to the National Climatic Data Center. While not record setting, New Mexico experienced its 13th warmest January–February on record. During these months, a persistent high-pressure system parked off the West Coast pushed the jet stream north of the Southwest, causing warm temperatures and stifling rain and snowfall. Precipitation averaged over January and February was the fourth driest and driest on record in Arizona and New Mexico, respectively. While the high-pressure system in the last month was not been as persistent as in previous months, only one storm wafted over the region, occuring around March 1, and precipitation was less than 50 percent of average across most of Arizona and New Mexico. Consequently, drought remains widespread and intense in both states. The lack of precipitation also increased the potential for large wildfire risk from April to July. Barring a few late winter storms, drought conditions are not expected to improve before the monsoon.

The warm and dry conditions in Arizona and New Mexico have resulted in low snowpacks across the region (Figure 2) and in expectations for low spring and summer streamflows. For example, forecasts for the Salt, Verde, and Gila rivers in Arizona call for streamflows to be around 24, 52, and 28 percent of the March–May average, respectively. Because the majority of winter precipitation falls before the end of March, these forecasts are relatively accurate. In New Mexico, the Rio Grande is also expected to have very low streamflow, which will further exacerbate water stress for urban, agriculture, and other uses. Currently, Elephant Butte Reservoir is only 15 percent full. While Arizona and New Mexico have been drier than average, the Colorado mountains have received above-average snow, and the Colorado River streamflow forecast calls for inflow into Lake Powell to be around 109 percent of average.

Forecasts for upcoming months call for high probabilities of above-average temperatures, an expectation based in part on warming trends in recent decades. There is also increasing evidence that an El Niño event will form in coming months if a large pool of warm water below the sea surface continues to migrate east. The next several months will be pivotal for an El Niño formation. If an El Niño materializes, it will be the first one since 2009 and it could alter monsoon and winter weather patterns in the Southwest.

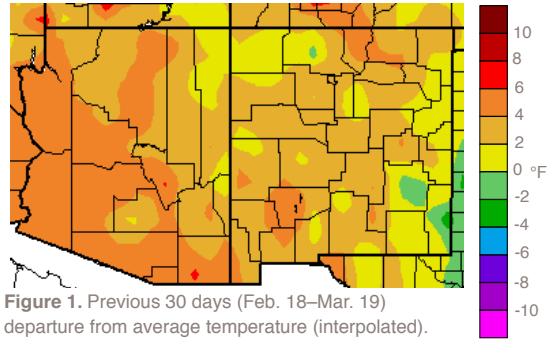


Figure 1. Previous 30 days (Feb. 18–Mar. 19) departure from average temperature (interpolated).

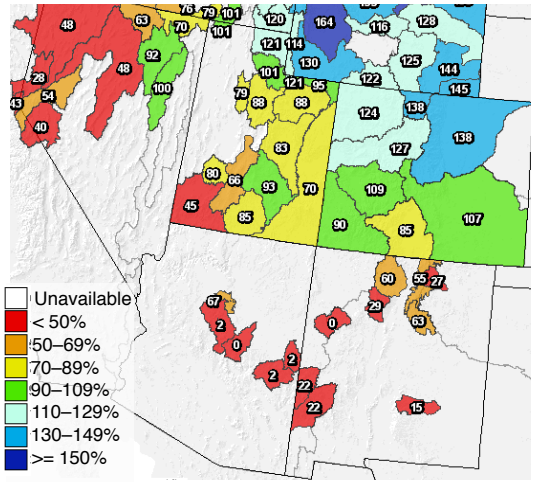


Figure 2. The percent of average snow water content contained in snowpacks on March 20, 2014.

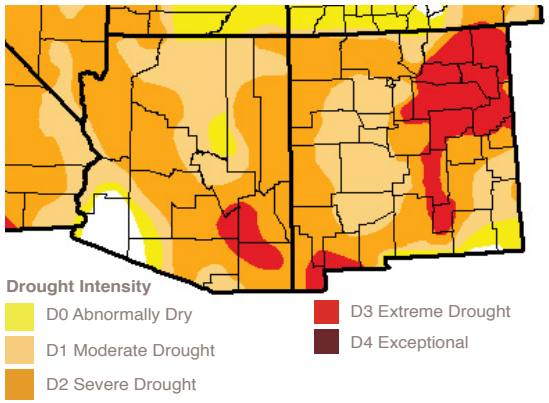


Figure 3. U.S. Drought Monitor map based on data through March 18.

Online Resources

Portions of the information provided in this figure can be accessed at NRCS

Arizona: http://1.usa.gov/19e2BdJ

New Mexico: http://www.wcc.nrcs.usda.gov/cgibin/resv_rpt.pl?state=new_mexico

Notes

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 1971–2000 reservoir average (red line).

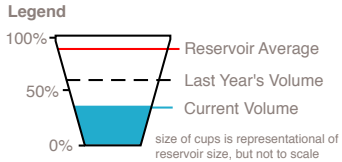
The table details more exactly the current capacity (listed as a percent of maximum storage). Current and maximum storage are given in thousands of acre-feet for each reservoir. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (approximately 325,851 gallons). On average, 1 acre-foot of water is enough to meet the demands of 4 people for a year. The last column of the table list an increase or decrease in storage since last month. A line indicates no change.

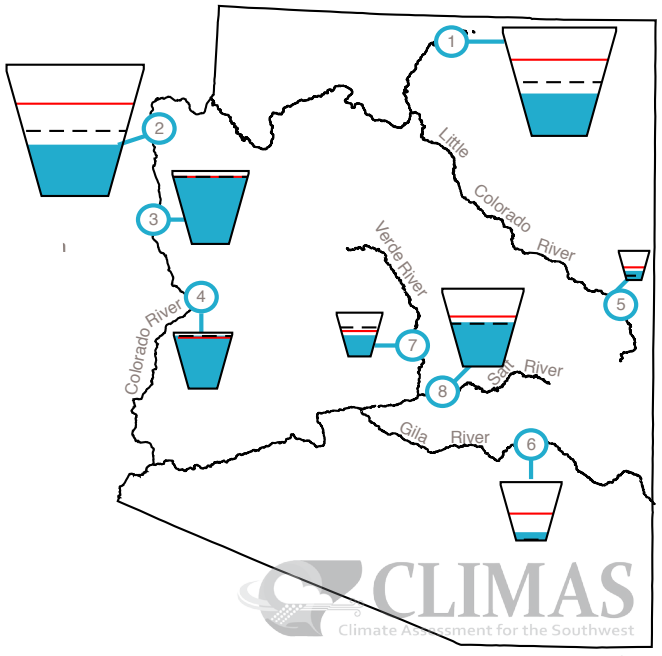
These data are based on reservoir reports updated monthly by the National Water and Climate Center of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

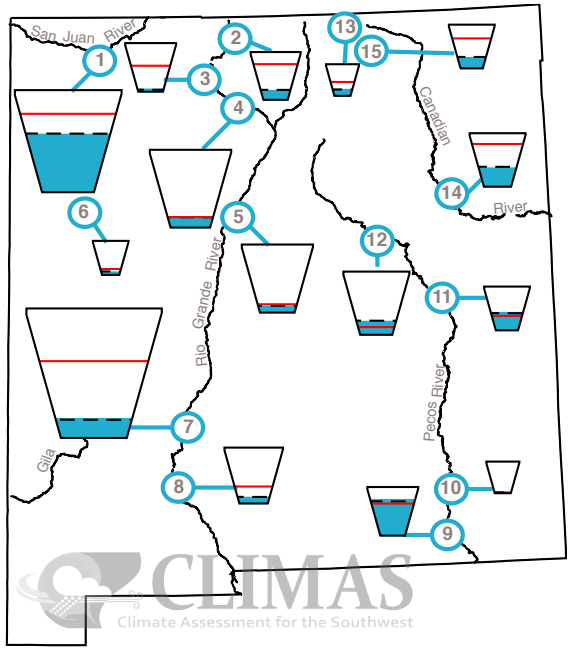
Reservoir Volumes

DATA THROUGH MARCH 1, 2014

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







Reservoir Name	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Lake Powell	39%	9,566.0	24,322.0	-253.0
2. Lake Mead	48%	12,437.0	26,159.0	-106.0
3. Lake Mohave	93%	1,678.0	1,810.0	38.0
4. Lake Havasu	95%	586.4	619.0	38.6
5. Lyman	31%	9.4	30.0	0.3
6. San Carlos	14%	119.0	875.0	-9.2
7. Verde River System	48%	137.0	287.4	-7.0
8. Salt River System	57%	1,148.0	2,025.8	7.1

*thousands of acre-feet

Reservoir Name	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Navajo	57%	966.0	1,696.0	2.8
2. Heron	21%	82.1	400.0	-2.1
3. El Vado	6%	10.6	190.3	3.8
4. Abiquiu	13%	152.8	1,192.8	-0.9
5. Cochiti	10%	49.1	491.0	0.0
6. Bluewater	10%	3.8	38.5	-0.1
7. Elephant Butte	15%	338.9	2,195.0	27.8
8. Caballo	12%	40.5	332.0	0.3
9. Lake Avalon	75%	3.0	4.0	0.2
10. Brantley	3%	34.4	1,008.2	1.0
11. Sumner	42%	43.1	102.0	2.9
12. Santa Rosa	22%	97.0	438.3	-0.8
13. Costilla	22%	3.5	16.0	0.3
14. Conchas	36%	92.0	254.2	-1.2
15. Eagle Nest	26%	20.8	79.0	0.2

N/A–value not available

* thousands of acre-feet