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

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December Southwest Climate Outlook

Precipitation: Precipitation across Arizona has been above average since November 19. More than 3 inches of rain and snow fell during a cut-off low system in late November in parts of the Mogollon Rim area. Elsewhere in the state, more than 1.75 inches have accumulated, mostly from the mid-November storm. The system that drenched Arizona, however, only clipped the northwest corner of New Mexico. Less than 75 percent of average precipitation has fallen in the southern half of New Mexico since November 19.

Temperature: Temperatures since November 19 have been generally below average in both Arizona and New Mexico, largely as a result of below-average maximum temperatures. Minimum temperatures, on the other hand, have been above average. The largest temperature anomalies have occurred in higher elevation areas.

Drought: Drought conditions remained virtually unchanged in the last 30 days in New Mexico; if present, drought conditions often persist this time of year because precipitation is scant. Arizona, however, saw slight improvements due to widespread rain in late November. Currently, moderate or more severe drought covers about 77 and 54 percent of New Mexico and Arizona, respectively. Drought was more intense and widespread in both states this time last year.

Snowpack: Snowpack in the headwaters of the Rio Grande in Colorado was about 116 percent of average as of December 17. In the Upper Colorado River Basin, average snowpack conditions in Utah were generally more than 200 percent of average, while watersheds in Colorado contained between 100 and 125 percent of average. Snowpack in the central Arizona highlands was also above average.

Water Supply: Reservoir storage in Arizona slightly decreased in November; combined storage in Lakes Mead and Powell dropped by about 56,000 acre-feet and the reservoirs are about 45 percent full. Storage slightly increased in New Mexico, with most gains occurring in Elephant Butte, which added about 44,000 acre-feet. Water storage in the state is only about 22 percent of average.

ENSO: Sea surface temperatures in the tropical Pacific Ocean remain near average, or ENSO-neutral, and these conditions are expected to persist through the winter.

Precipitation Forecasts: The NOAA-Climate Prediction Center is calling for elevated chances of below-average precipitation through the winter, reflecting both dynamical and statistical models. ENSO-neutral conditions, however, makes precipitation outlooks less certain.

Temperature Forecasts: The NOAA-Climate Prediction Center forecasts above-average temperatures for the December–February period. These forecasts are based in part on seasonal warming trends.



Tweet December's SW Climate Snapshot [CLICK TO TWEET](#)

Precip in late Nov improved AZ drought but some clues suggest winter will be slightly drier than ave.



Online Resources

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

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

New Mexico: www.wcc.nrcs.usda.gov/wsf/reservoir/resp_rpt.html

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).

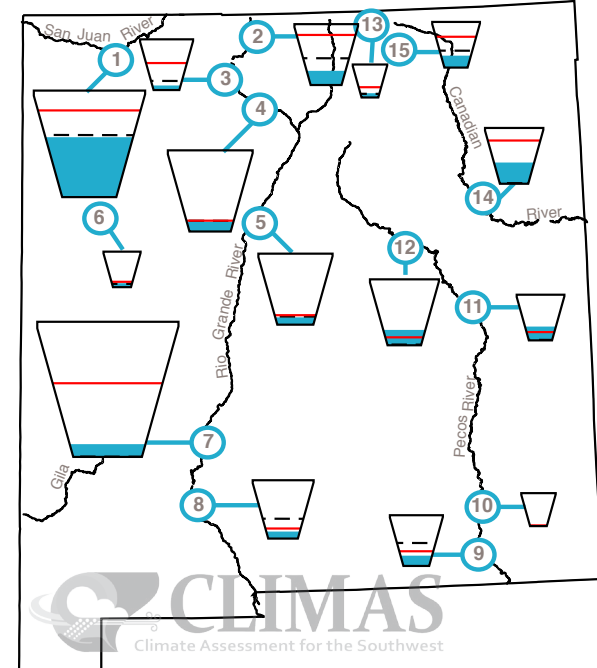
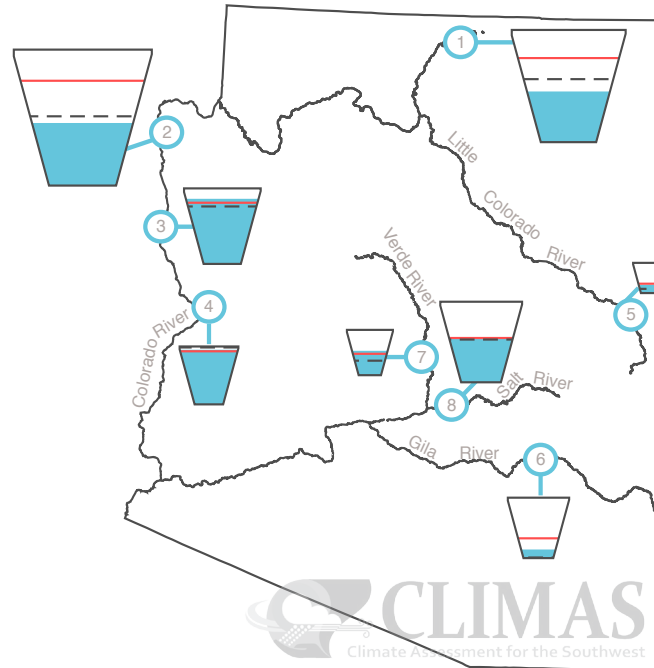
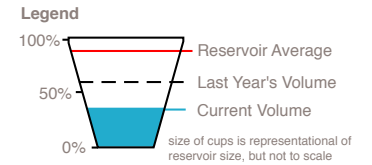
The table details more exactly the current capacity (listed as a percent of maximum storage). Current and maximum storage are given in thousands of acre-feet for each reservoir. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (approximately 325,851 gallons). 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 DECEMBER 17, 2013

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	44%	10,623.0	24,322.0	-276.0
2. Lake Mead	47%	12,314.0	26,159.0	220.0
3. Lake Mohave	85%	1,534.5	1,810.0	-21.8
4. Lake Havasu	95%	586.1	619.0	2.9
5. Lyman	28%	8.5	30.0	0.4
6. San Carlos	14%	123.2	875.0	3.7
7. Verde River System	49%	141.8	287.4	-14.2
8. Salt River System	55%	1,119.1	2,025.8	19.4

*thousands of acre-feet

Reservoir Name	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Navajo	57%	960.3	1,696.0	9.1
2. Heron	23%	91.2	400.0	-0.3
3. El Vado	8%	15.6	190.3	-2.0
4. Abiquiu	12%	143.7	1,192.8	0.7
5. Cochiti	9%	46.6	491.0	-0.5
6. Bluewater	11%	4.1	38.5	-0.1
7. Elephant Butte	11%	236.2	2,195.0	43.7
8. Caballo	12%	39.0	332.0	0.4
9. Lake Avalon	40%	1.6	4.0	0.8
10. Brantley	3%	29.3	1,008.2	4.0
11. Sumner	33%	34.0	102.0	3.1
12. Santa Rosa	23%	99.4	438.3	-1.0
13. Costilla	17%	2.7	16.0	0.6
14. Conchas	38%	95.7	254.2	-1.5
15. Eagle Nest	26%	20.5	79.0	0.1

N/A—value not available

* thousands of acre-feet

Online Resources

Figure 1.
Data obtained from High Plains
Regional Climate Center

www.hprcc.unl.edu/maps/current/

Figure 2.
Natural Resources Conservation
Severice

www.wcc.nrcs.usda.gov/gis/snow.html

Figure 3.
Climate Prediction Center
forecasts

www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.php

Climate Snapshot

Temperatures in November have been September-like across the Southwest; the mild conditions have been the climate story of the last month. This is most pertinent in southeastern Arizona where minimum, maximum, and average temperatures have ranged between 2 and 5 degrees F above average.

October and November precipitation can deliver a healthy dose of rain when tropical storms penetrate inland, but dry conditions typically characterize fall in the Southwest. In the last 60 days, less than 0.5 inches of rain—less than 25 percent of average—has fallen in nearly all of Arizona and most of New Mexico (Figure 1). The one exception has been in northern New Mexico, where a cold front sneaked into the region on November 5 and delivered precipitation. For most of the region, however, the percent of average metric can be misleading during this time of year because rain and snow accumulations are historically small. Consequently, drought conditions often remain fixed after the monsoon season until winter rain and snow begin—or do not begin—in earnest. Currently, severe drought covers about 25 percent of Arizona, while either severe or extreme drought exists over 38 percent of New Mexico. Drought in both states, however, is not as intense or widespread as it was one year ago.

The next several months will be pivotal for either improving or worsening drought conditions. Winter precipitation also substantially influences reservoir storage, because a large fraction of total annual streamflow in the region's major rivers is generated from winter rain and snow. As of October 31, reservoirs in both Arizona and New Mexico were well-below capacity (see page 3). If recent snow in the Upper Colorado River and Rio Grande basins is a harbinger of things to come, the above-average snowpacks bode well (Figure 2). A large storm set to slam the Southwest over the November 23 weekend could further build snowpacks and also improve short-term drought conditions. The seasonal precipitation outlook for December–February, however, favors below-average rain and snow for Arizona and New Mexico and equal chances for the Upper Colorado River and Rio Grande basins (Figure 3). However, confidence in precipitation outlooks is lower in the absence of a La Niña or El Niño event. Historically, winters in which ENSO-neutral conditions prevail—the expectation this winter—have been characterized both by above- and below-average precipitation.

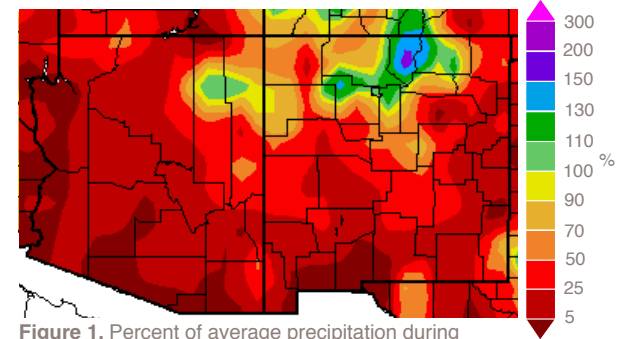


Figure 1. Percent of average precipitation during previous 60 days (Sept. 22–Nov. 20; interpolated).

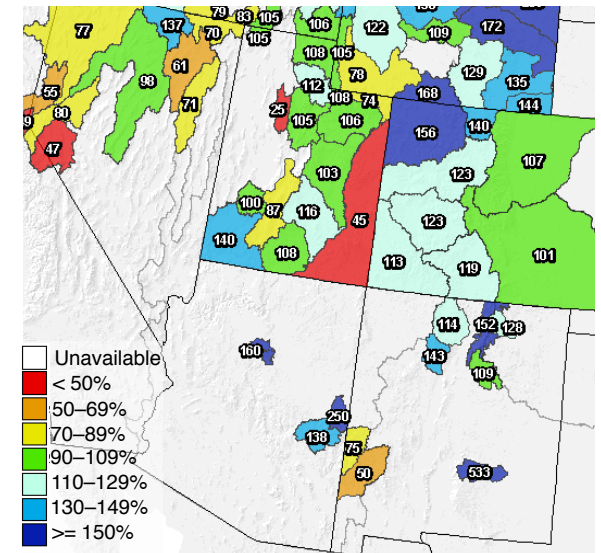


Figure 2. The percent of average snow water content contained in snowpacks on November 21, 2013.

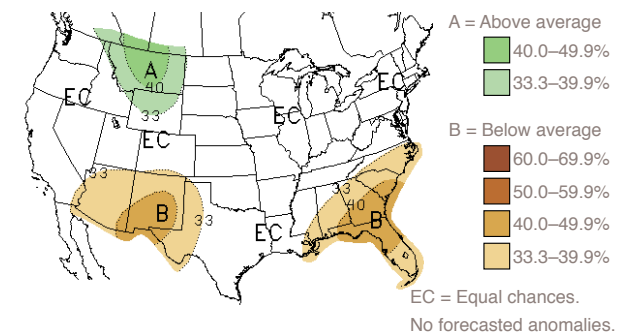


Figure 3. Long-lead national precipitation forecast for December–February 2013.