

# CALIFORNIA-NEVADA DROUGHT OUTLOOK

JANUARY 2018



▲ **Fig 1.** U.S. Drought Monitor for January 30. Source: [droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)

## Current Drought Conditions

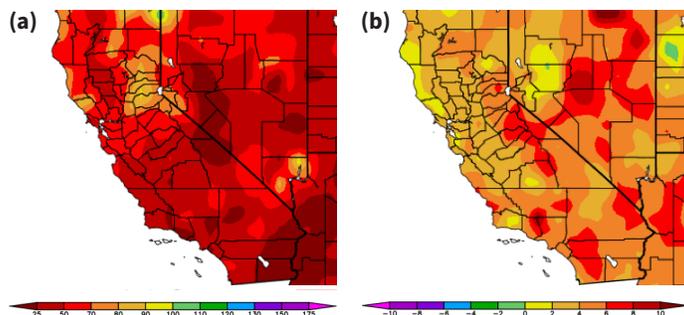
Although winter is typically considered the wet season for California and Nevada, below-normal precipitation has many in the region once again thinking about drought. Over the past two months, abnormally dry (D0) conditions have expanded across the southern and Sierra regions of California and most of Nevada according to the U.S. Drought Monitor (Fig. 1). Moderate drought (D1) conditions have also expanded in Southern California and in the Southern Central Valley, in addition to the lingering moderate-severe drought near the south-central coast. As of January 30, 30% of California-Nevada is in moderate-severe drought and 54% is abnormally dry.

## Regional Climate Update

California and Nevada remain dry following a dry start to the water year (October 1). Although some precipitation has fallen over the region, much of Nevada and Southern California have received less than 50% of normal precipitation, and parts of Northern California have received 70-90% of normal (Fig. 2). According to California Department of Water Resources, precipitation [8-station index](#) and [5-station index](#) measurements in the northern and central Sierras are below the 1966-2015 average. Based on historical data, the Western Regional Climate Center (WRCC) has indicated that much of the region is unlikely to reach normal conditions. For example, most stations shown only have a 10-30% likelihood of reaching their respective mean water year (Oct

1 - Sept 30) precipitation total (each station starts the water year at 50%).

December and January temperatures have also been warmer than normal, with some areas up by 6-8°F. These warm temperatures and a lack of precipitation have impacted snowpack. [NRCS SNOTEL](#) measurements across the region are reporting snow water equivalent (SWE) of less than 25% of median for this time of year – including in Sierra Nevada. Snowpack levels are also low in eastern Nevada (currently <50% of normal SWE), and in the Colorado River Basin - which provides water resources to Southern California and Nevada. Although storms in early January relieved some dryness, soil moisture is low across the region and will likely remain low in the coming months. Soil moisture percentile values in southwestern Nevada are showing conditions that are in the driest 5% of historical observations for this time of year, and across California there are also large swaths that fall within the driest 5-30% in history. Most reservoir levels are still above their historical averages from last year's wet winter. Continuing to monitor temperature as well as precipitation will be important throughout winter to understand how much precipitation falls as rain, rather than accumulating snowpack, which will impact pre-April snowmelt.



▲ **Fig. 2.** (a) Percent of Normal Precipitation (%), 10/1/2017-1/23/2018. (b) Departure from Normal Temperature (F), 11/25/2017-1/23/2018. Source: [hprcc.unl.edu/maps.php?map=ACISClimateMaps](http://hprcc.unl.edu/maps.php?map=ACISClimateMaps)

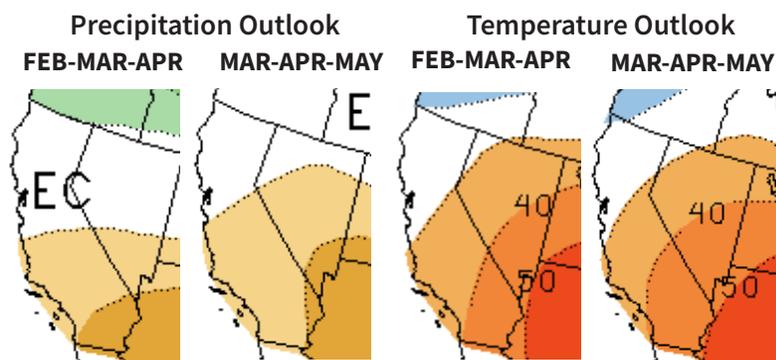
## Drought & Climate Outlook

The January 2018 Seasonal Outlooks produced by NOAA's Climate Prediction Center (CPC) show equal chances of above, below, or normal precipitation for northern California and Nevada for February-March-April (FMA) and March-April-May (MAM), and increased odds of below-normal precipitation (33-50%) for the southern portion of the region (Fig. 3). There is a 33-50% chance of above-normal temperatures over much of the region through spring, with the greatest chances centered over southern Nevada and southern California. Through April, drought is expected to persist in the southern central California coast and near the southern California-Arizona border, with potential drought development in western central California. These outlooks reflect the typical wintertime La Niña-related circulation patterns (i.e. northern displaced polar jet stream and mean storm track).

La Niña conditions continued through the winter, with below-average equatorial sea surface temperatures (SSTs) across the central and eastern Pacific Ocean. [NOAA's ENSO alert system](#) status is a La Niña advisory with conditions favored to continue through the Northern Hemisphere winter with a transition to ENSO-neutral expected during the spring. The [official probabilistic ENSO forecast](#) as of early-January, combining observational and predictive information with human judgement, shows La Niña conditions have a high chance of continuing through early spring (~60-85%). The chances of neutral conditions increases in spring into summer. The multi-model averages also predict La Niña to persist into spring before this transition.

### Contributors:

Julie Kalansky, CNAP/SIO/UCSD  
Shrad Shukla, CNAP/UCSB  
Tim Brown, WRCC/DRI  
Dennis Lettenmaier, CNAP/UCLA  
Amanda Sheffield, NOAA/NIDIS



▲ **Fig. 3.** A = chances of above-normal; EC= equal chances of above, below, normal; B = chances of below-normal. Source: [cpc.ncep.noaa.gov/](http://cpc.ncep.noaa.gov/)

### Did drought play a role in the recent California wildfires?

Recent wildfires in California, three of them among the ten most destructive in the state's history, resulted in mass evacuations, deployed resources, destroyed structures, and loss of life. The northern California fires ignited during a Diablo wind event, preceded by a wet winter/spring, hot summer, and dry fall. The southern California fires ignited during a Santa Ana wind event following a dry autumn and extended dryness linked to the 2012-2017 drought.

It is still to be determined what role long-term drought played in setting up conditions for these fires. Wildfire is dependent on ignition sources and the availability and type of fuels. The availability of vegetation as fuel is affected by the previous seasons' precipitation and drought conditions in preceding years. The wet winter of 2017 supported vegetation growth across the region, and over the summer and fall that vegetation dried out, creating more fuels and adding to existing fuels that may have remained from previous long-term drought. Long-term drought in southern California may have had more of an impact on wildfire than in northern California, but more studies are needed to determine the role of long term drought on these wildfires.

### About this Outlook

On January 22, 2018 NIDIS and partners held the California-Nevada Drought Early Warning System Drought & Climate Outlook Webinar. This series provides stakeholders with updates on current and developing drought conditions, climatic events like El Niño and La Niña, as well as the environmental and social impacts of these conditions. A recording this webinar can be found at: <https://www.drought.gov/drought/calendar>

