

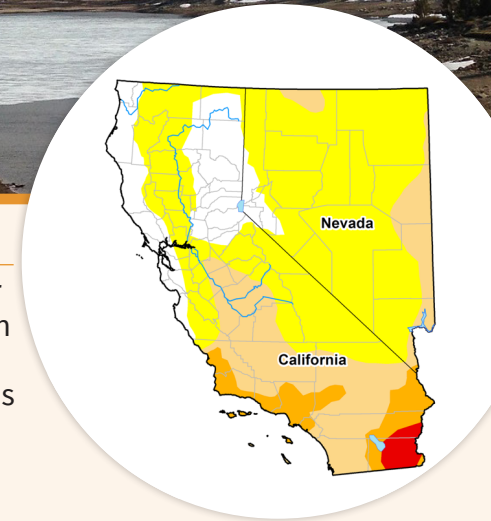
CALIFORNIA-NEVADA DROUGHT OUTLOOK

MARCH 2018



Current Drought Conditions

A lack of precipitation and snow, which persisted from the start of this water year through the end of February, drove the development and expansion of drought in southern California. According to the U.S. Drought Monitor, moderate to extreme (D1-D3) drought expanded in southern California in February while dry conditions remained in Northern California and Nevada. By early March, extreme drought (D3) drought reached the southern central coast and rangeland conditions had begun to deteriorate. Recent March storms have halted this expansion and improved drought conditions in California, with the exception of conditions worsening in the desert southwest (Fig. 1). As of April 3, 29% of California-Nevada was in moderate-extreme drought and 56% was abnormally dry.



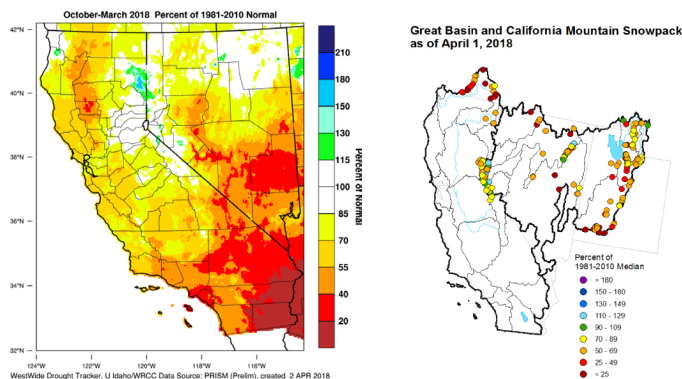
▲ Fig 1. U.S. Drought Monitor for April 3. Source: droughtmonitor.unl.edu

Regional Climate Update

Winter precipitation leading into March was below normal across California-Nevada, with the greatest precipitation deficits developing in the south. At the end of February, the southern region received <20-50% of normal water year precipitation to date, while the north received 40-85% of normal. Snowpack was also low, with snow water equivalents (SWE) in the 0-69% range over the Sierra Nevadas and eastern Nevada ranges, according to the Natural Resources Conservation Services (NRCS). Rangeland forage conditions were also low in central and southern California, where drought strategies were being

considered along the central coast and ranchers in the San Joaquin Valley were feeding hay instead of forage in March.

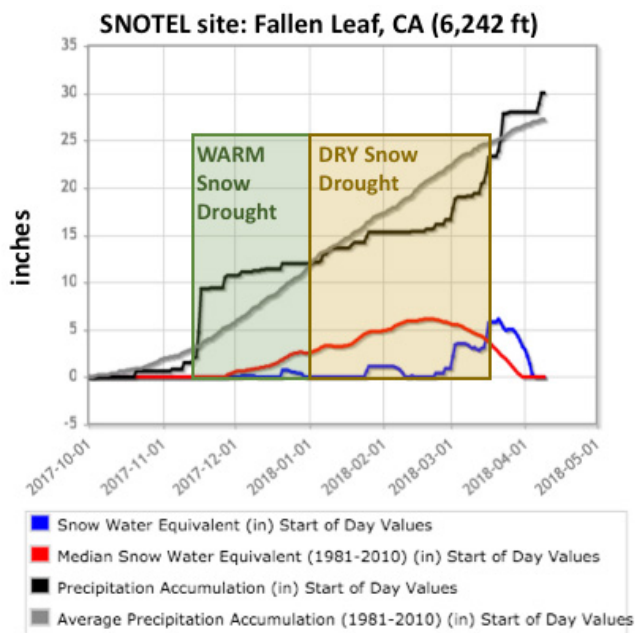
March brought several storms, including atmospheric rivers, to the region with the most notable event occurring on or around March 20-22. Precipitation for the month was above normal across much of the region, especially over the Sierras. Combined with below-normal temperatures (1-5oF), snowpack conditions improved, but precipitation and SWE remain below normal for the water year as of April 1st (Fig. 2). Sierra SWE was at or below 2014-2015 levels until March, but did not improve as radically as in 1990-1991, the most recent “Miracle March”. For a full recap of February and March conditions in the West, check out the Western Regional Climate Center Monthly Summary.



▲ Fig. 2. (left) Percent of normal precipitation (%) (<https://wrcc.dri.edu/wwdt/>), October 2017 - March 2018. (right) Percent (%) of 1981-2010 median snow water equivalent (https://www.wcc.nrcs.usda.gov/cgibin/grtbsnow.pl?state=great_basin)

The Sierra Nevada Snow Drought of 2018

This year the Sierra Nevada snow drought was both warm and dry, dependent on elevation and region. Winter snowpack at lower elevations began as a warm snow drought (lack of snow accumulation despite near-normal precipitation) and evolved into dry snow drought (below-normal cold-season precipitation) through mid-winter at all elevations (Fig. 3).

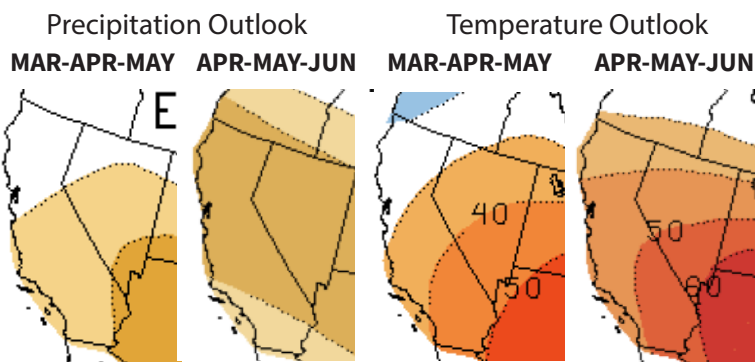


▲ Fig. 3. Time series of SWE at Fallen Leaf (6,242 ft), a low elevation Sierra Nevada station. Source: NRCS

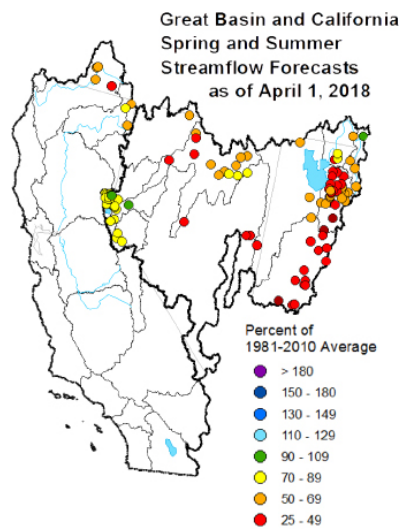
Exploring the temporal winter evolution of snow drought is the preferred method for characterizing the origin, termination, and potential impacts of snow drought. Using April 1 alone as a defining time for snow drought may miss important aspects of impacts, such as this winter’s westwide tourism and recreation impacts. In response to the need for snow drought resources, NIDIS has launched a [new snow drought page](#) in a multi-agency collaborative effort to increase awareness of snow drought and its impacts. There you can find relevant data and tools and report snow drought impacts to the [Drought Impact Reporter](#) in an effort to improve understanding of how snow drought impacts citizens and economies.

Drought & Climate Outlook

The March 2018 Seasonal Outlooks produced by NOAA’s Climate Prediction Center (CPC) favor below-normal precipitation across California and Nevada for April-May-June (AMJ) (Fig. 4). There is a 33-60% chance of above-normal temperatures over much of the region through early summer, with the greatest chances over the more southeastern portion of the region. Spring and summer streamflow forecasts are 70-100% of the 1981-2010 average in the Sierras and 25-89% in the Nevada ranges as snowpack is generally below-normal (Fig. 5). Through April, current U.S. Drought Monitor conditions are likely to persist as the region enters its climatological dry season.



▲ Fig. 4. A = chances of above-normal; EC= equal chances of above, below, normal; B = chances of below-normal. Source: cpc.ncep.noaa.gov/



▲ Fig. 5. Spring & Summer Streamflow Forecast Maps for the Great Basin and California as of April 1, 2018. Source: https://www.wcc.nrcs.usda.gov/cgibin/grtb_strmflow.pl?state=great_basin

During February-March 2018, La Niña conditions weakened but were still reflected by below-average sea surface temperatures (SSTs) in the east-central equatorial Pacific Ocean. The [NOAA’s ENSO alert system](#) status is currently a La Niña advisory with a transition from La Niña to ENSO-neutral most likely (~55% chance) during the March-May season, with neutral conditions likely to continue into the second half of the year.

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About this Outlook

On March 26, 2018, NIDIS and its partners held this webinar as part of a series of drought and climate outlook webinars designed to provide stakeholders in the region with timely information on current drought status and impacts, as well as a preview of current and developing climatic events.

A recording this webinar can be found at: <https://www.drought.gov/drought/calendar>

