

# Nevada Drought Update - NOVEMBER 2022

Drafted November 5, 2022

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In eastern Nevada, the water-year got off to a decent start. Western and southern Nevada were not so lucky, with very low precipitation.

## Current drought conditions in Nevada and across the West

Courtesy of summer rain, a dry October, and the cooler temperatures of autumn, Nevada's drought remained steady (Figs. 1 & 2).

At this point, the US Drought Monitor primarily reflects long-term drought impacts on water resources. Most of Nevada is in D2 - Severe Drought or D3 - Exceptional Drought (Table 1, Fig. 1). Over the last month, there was a small area of improvement in eastern Elko county (Fig. 2).

Drought continues to cover much or all of California, Utah, Nevada and Idaho (Fig. 1). In the Southwest, October rains led to more improvements, and much of the region is now only Abnormally Dry (D0).

The eastern Upper Colorado River Basin, where early season storms brought rain and high-elevation snow is now also only D0-Abnormally Dry. It's too early to tell how the winter will play out, but at least it's a good start for the Colorado River.

Date	2 Nov 2021	26 Jul	27 Sep	1 Nov
None	0.0	0.0	0.0	0.0
Abornmally Dry-D0	0.0	0.0	0.0	0.0
Moderate Drought-D1	4.8	0.5	0.5	0.5
Severe Drought-D2	38.4	36.0	53.7	54.9
Extreme Drought-D3	31.8	33.8	45.9	44.6
Exceptional Drought-D4	25.0	29.8	0.0	0.0

Table 1. Percent of Nevada in each drought class from the [US Drought Monitor](https://droughtmonitor.unl.edu).

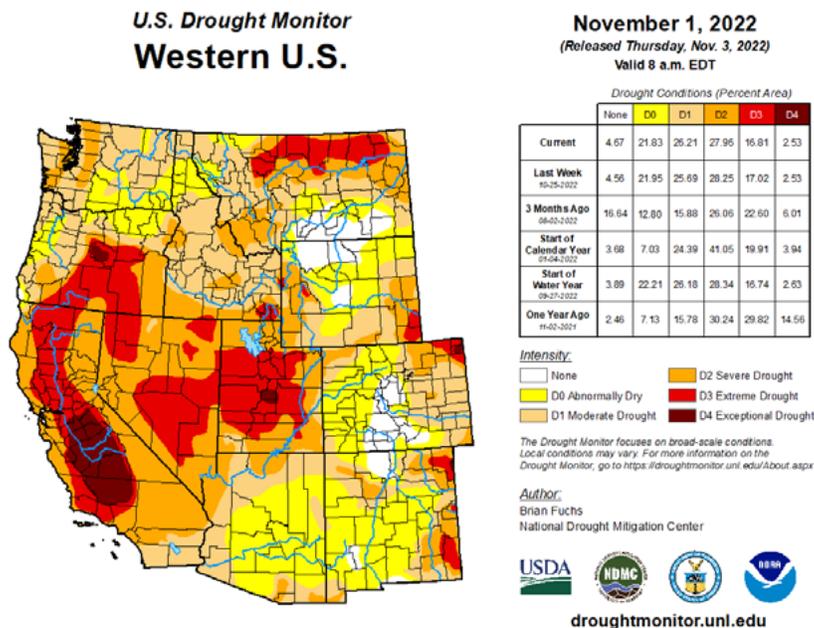


Fig. 1. Drought Monitor map for the western US, released on November 3, 2022, reflecting conditions as of November 1, 2022.

## U.S. Drought Monitor Class Change - Western U.S. 4 Week

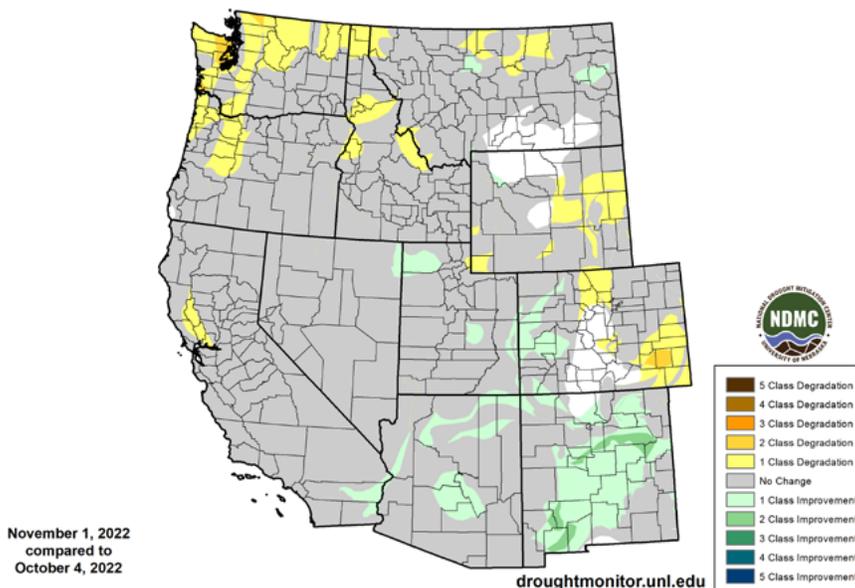


Fig. 2. Drought Monitor change map showing places where drought conditions improved (green) or worsened (yellow to brown) between early October and early November 2022.

# October Temperature, Precipitation & Soil Moisture

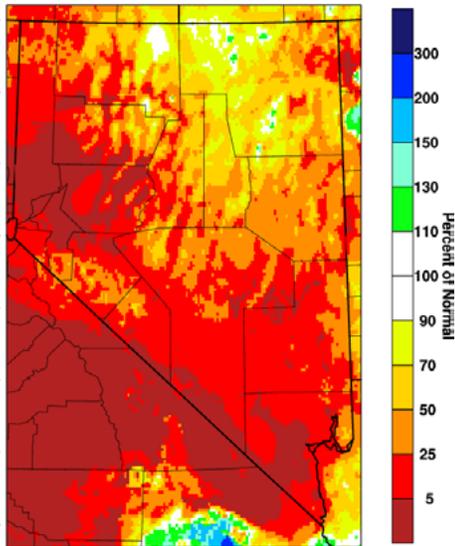


Fig. 3. Percent of average (1981-2010) October precipitation in 2022. PRISM from [Westwide Drought Tracker](#).

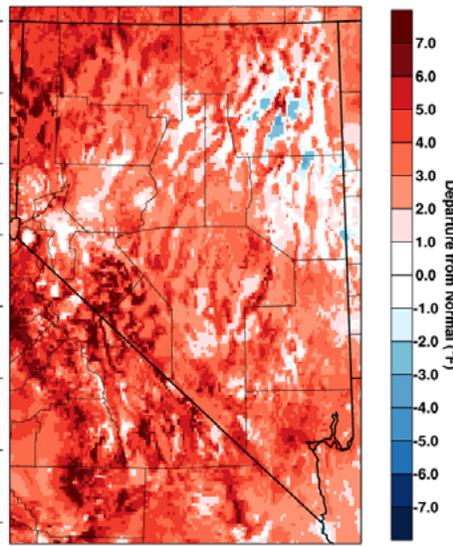


Fig. 4. Difference from average (1981-2010) October temperature (°F) in 2022. PRISM from [Westwide Drought Tracker](#).

In most of Nevada, October was dry (Fig. 3) and somewhat warmer than normal (Fig. 4). Southern Washoe County, central Clark County, and areas along the California border received nearly no rain. Most of south-central Nevada got less than a quarter of the expected October precipitation. In these areas, temperatures ranged from near normal for early fall to as much as 5°F warmer than normal. In eastern Humboldt, Elko and Eureka Counties, precipitation was close to normal. Temperatures in northeast Nevada were near normal or even a bit cool.

Early in the snow season, percent of normal snowpack can be kind of an odd metric. In the Sierra Nevada, where October was dry, basins were at 0% of normal on October 3, though normal is not all that much snow (Fig. 5). In the Humboldt, late October snowpack was about 5000% of normal. That sounds impressive, but it represents less than an inch of water storage, because the median snowpack in the Humboldt is very close to zero in late October.

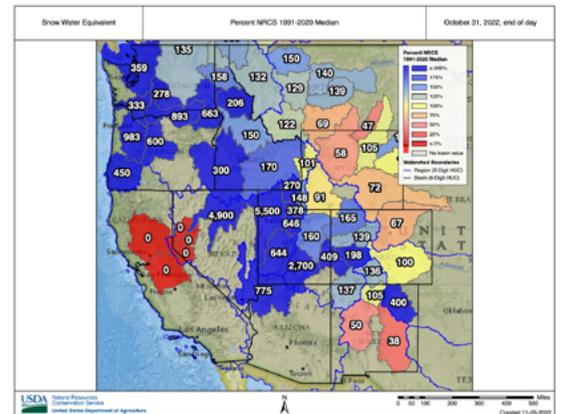


Fig. 5. October 31 snowpack as percent of the 1991-2020 median. [Natural Resources Conservation Service](#).

In late October, top soils were drier than usual where precipitation was low and wetter than normal over parts of northeastern Nevada (Fig. 6 left). Subsoils remain slightly to very dry across much of the state (Fig. 6 right). This likely reflects the longer term moisture deficits.

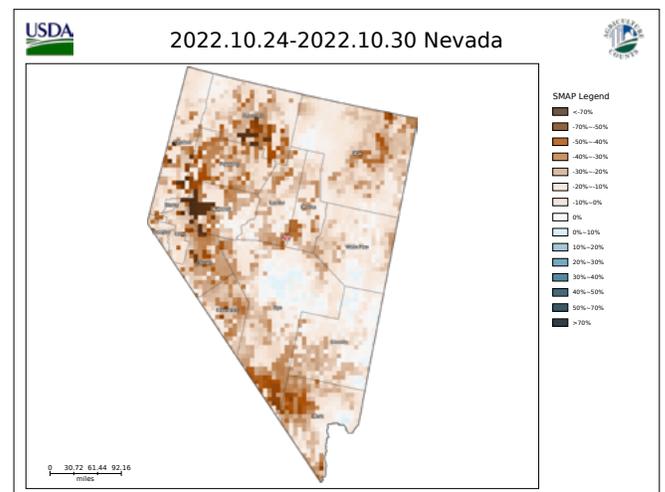
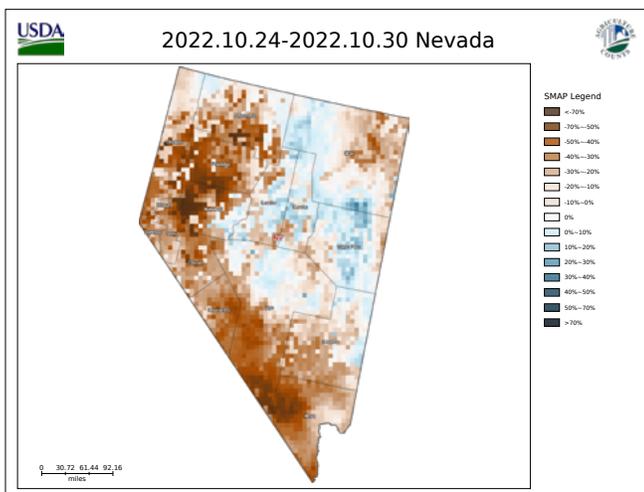


Fig. 6. Topsoil (left) and subsoil (right) moisture anomalies from 9km SMAP for late October 2022. Maps from [Crop-CASMA](#).

## Water Resources

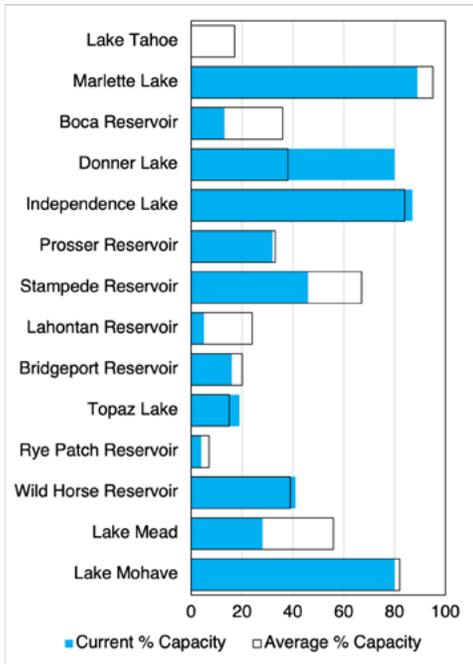


Fig. 7. Current and average percent capacity in Nevada's reservoirs at the end of September 2022. Data from the [Natural Resources Conservation Service](#).

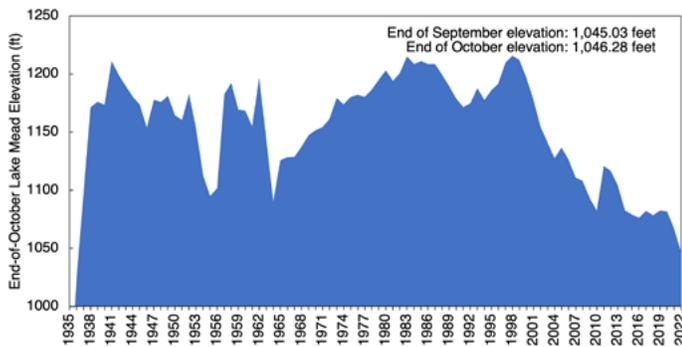


Fig. 8. End-of-October Lake Mead elevation, 1935-2022. Data from the [US Bureau of Reclamation](#).

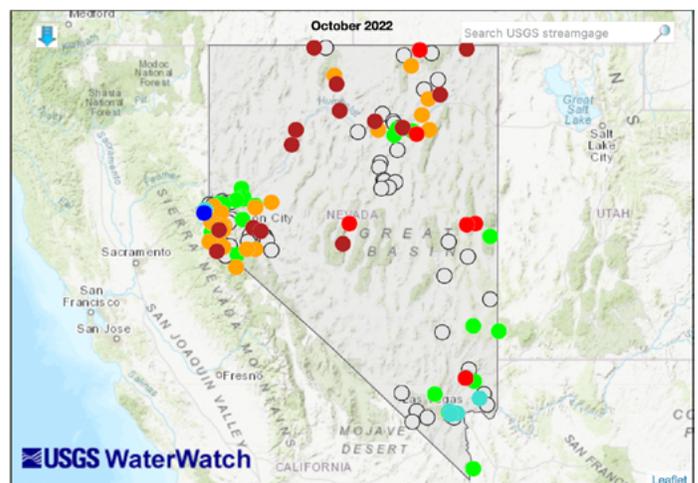
In the Truckee, Carson and Walker Basins, there was a mix of streamflows. Some gages measured streamflows that were near normal. Some were below or much below normal. One stream gage -- the Little Truckee River below Boca -- reported very high flows. Given that Boca Reservoir dropped from about 50% capacity in late September to 13% at the end of October, that high flow may be indicative of reservoir management activities. I've seen some very low water levels in the Truckee on recent drives by the river.

Four Nevada reservoirs are very low, even for late October (Fig. 7). Lake Tahoe is now below the rim. Lahontan and Rye Patch Reservoirs are at 5% and 4% of capacity, respectively. While Lake Mead at 28% of capacity might seem quite full, it's normally over half full at the end of October.

In the Truckee Basin, some reservoirs are quite full (Donner, Independence, and Prosser), while others (Boca and Stampede) are relatively low. Similarly in the Walker Basin, one reservoir has more water than normal (Topaz Lake) and one less (Bridgeport).

Lake Mead levels rose again in October, from 1,045' in late September to just over 1,046' by October 31 (Fig. 8). While this is good news, water levels remain very low. The reservoir elevation in 2022 was the lowest October elevation since the reservoir finished filling, and water levels were about 20' lower than this time last year. The [Bureau of Reclamation](#) anticipates Lake Mead levels to hold steady or drop slightly through the end of 2022. The most likely flow scenario suggests a modest rise in water levels in the winter and a further drop to just below 1,025' next summer.

The USGS reports primarily above-normal streamflow in southern Nevada (Fig. 9). In north-central and northeastern Nevada most gages reported below or much-below normal streamflow throughout October, despite near-normal or only slightly low precipitation.



Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	
						Not-ranked

Fig. 9. October average stream flow relative to usual October conditions. From [USGS Water Watch](#). You can find more information on the [percentile classes from the USGS](#).

# Vegetation

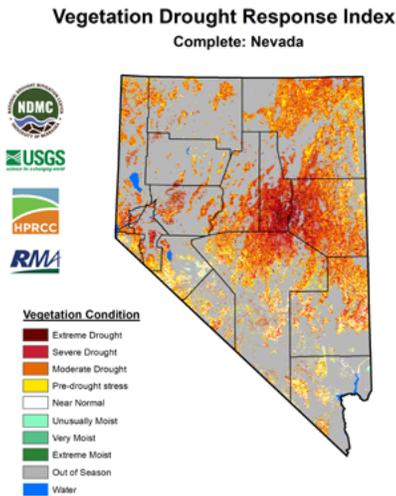


Fig. 10. Vegetation Drought Response Index (VegDRI) for October 30, 2022. VegDRI tracks drought using remotely sensed vegetation, the Palmer Drought Severity Index, and the 36-week Standardized Precipitation Index. Gray shading indicates areas where the growing season is considered over for the year. [VegDRI](#).

By late October, the growing season has wrapped up in many parts of the state (Fig. 10). In places where it's still warm enough for plants, the VegDRI index indicates spotty drought conditions ranging from mild stress to severe and extreme drought. This is consistent with anecdotal reports that forage production was good in some locations and not so great in others.

Now that autumn has solidly arrived, wildfire risk is substantially lower. Unfortunately, the risk is not zero, as we saw with last year's Airport Fire near Bishop, but it is less of a concern.

## Climate & Drought Outlook

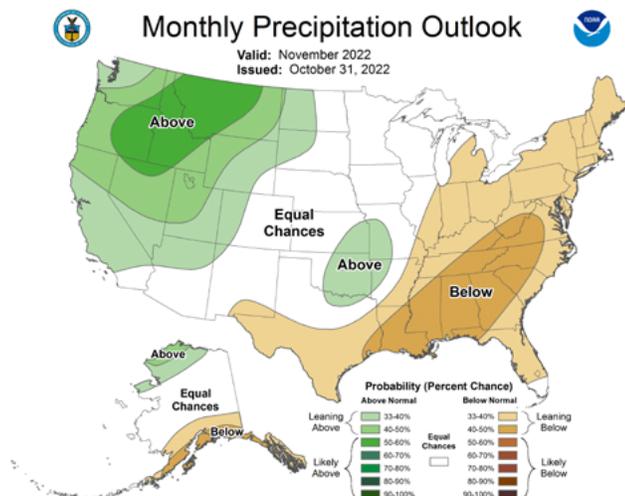


Fig. 11. November precipitation outlook. From the [Climate Prediction Center](#).

The Climate Prediction Center outlook for November shows decent odds of wetter than normal conditions (Fig. 11), especially for northern Nevada. This is in line with expected

weather over the week of November 6. Winter storm watches and warning were issued as far south as Tonopah. Las Vegas had rain in the forecast, and Caliente snow.

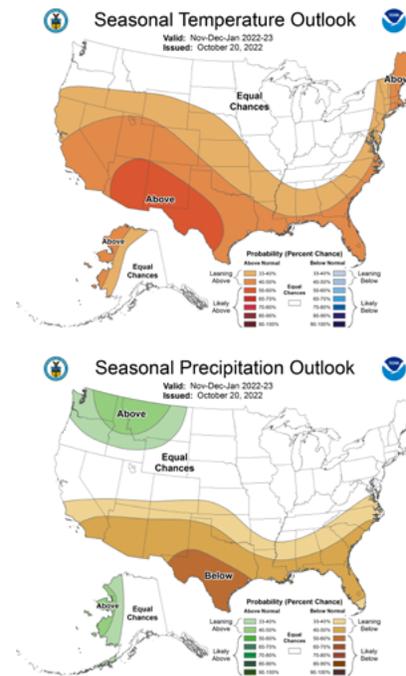


Fig. 12. Temperature (top) and precipitation (bottom) outlooks for November - January. From the [Climate Prediction Center](#).

The three-month outlook through January is not quite as promising (Fig. 12). In most of the state, there are 40-50% chances of above normal temperatures. In southern Nevada, there are slightly elevated chances that it will be drier than normal. Across the rest of the state, there are roughly equal chances of wet, dry, or near normal conditions.

Given the current level of drought and the lack of a clear signal that this winter will be a snowy and wet, the Climate Prediction Center indicates that we are likely to remain in drought through January (Fig. 13).

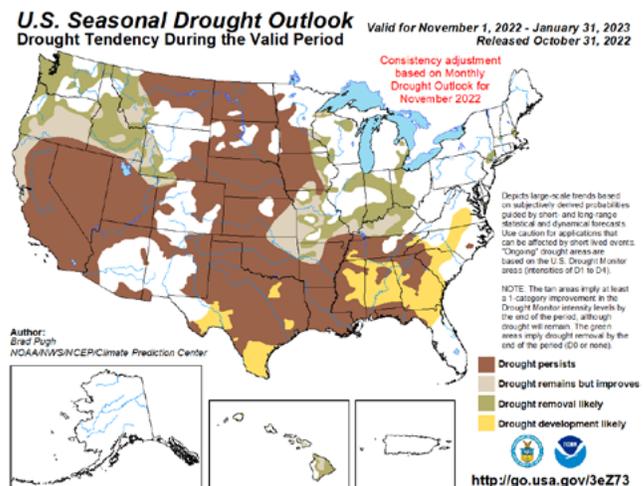


Fig. 13. Drought outlook through January. From the [Climate Prediction Center](#).