Nevada Drought Update - AUGUST 2022

Drafted August 3, 2022
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Drought remains, but some improvement is possible as monsoon rains continue.

Current drought conditions in Nevada and across the West

There has been little overall change in the drought picture this month (Fig. 1, Table 1). The state remained entirely in drought at the end of July. Drought remains more severe in southern and eastern Nevada than further north, and drought is a bit more severe now than in late June. At the end of last month, 58.5% of the state was in Extreme (D3) or Exceptional (D4) Drought. Now 63.6% of the state is in the two deepest drought classes.

Conditions are better than last summer, when nearly 80% of the state was in Extreme or Exceptional Drought (Table 1).

Drought has moderated substantially to our north and south (Fig. 2). There were aditional improvements in Montana and eastern Washington, as well as in Arizona and New Mexico. Changes in Nevada were primarily to extend D3 and D4 slightly further north.

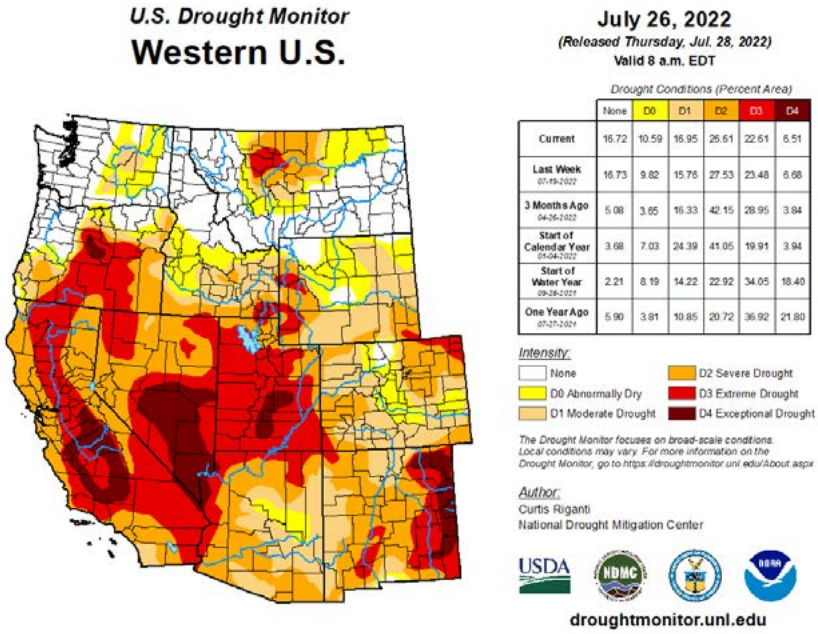


Fig. 1. Drought Monitor map for the western US, released on July 28, 2022, reflecting conditions as of July 26.

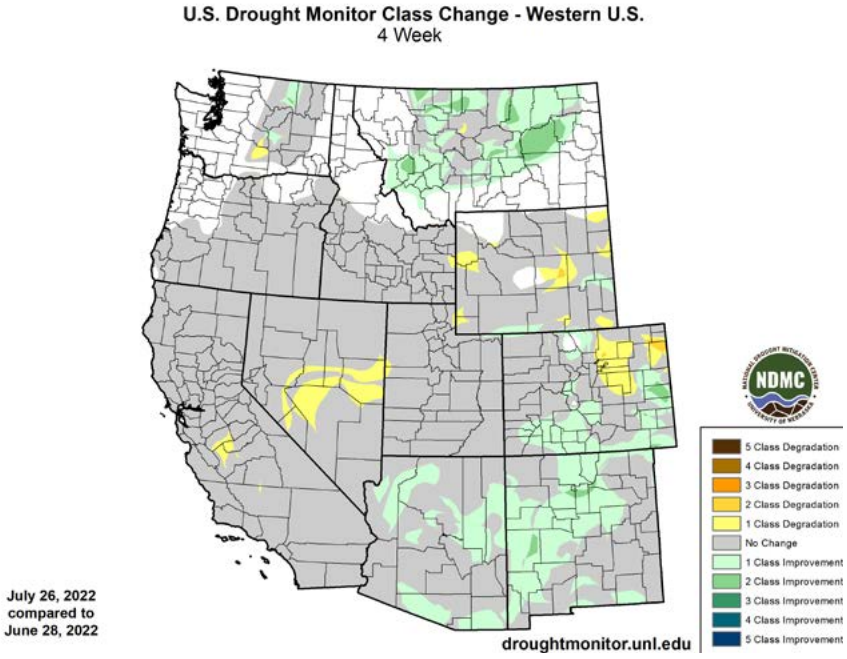


Fig. 2. Drought Monitor change map showing places where drought conditions improved (green) or worsened (yellow to brown) between late June and late July 2022.

Date	***7/27 2021***	***4/26***	***6/28***	***7/26***
None	0.0	0.0	0.0	0.0
Abornmally Dry-D0	0.0	0.0	0.0	0.0
Moderate Drought-D1	5.1	0.0	0.5	0.5
Severe Drought-D2	16.3	49.3	41.0	36.0
Extreme Drought-D3	46.3	42.5	37.2	33.8
Exceptional Drought-D4	32.3	8.3	21.3	29.8

Table 1. Percent of Nevada in each drought class from the US Drought Monitor.

July Temperature, Precipitation & Soil Moisture

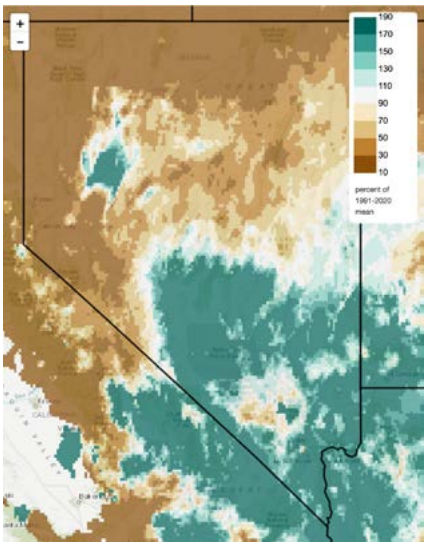


Fig. 3. Percent of average (1991-2020) July precipitation in 2022. gridMET from Climate Toolbox.

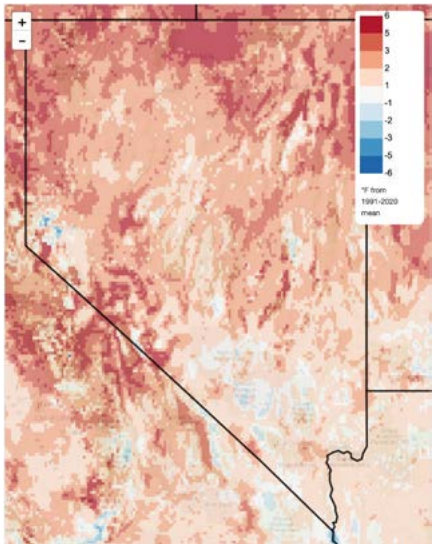


Fig. 4. Difference from average (1991-2020) July temperature (°F). gridMET from Climate Toolbox.

Back in June, it was clear that the monsoon was getting off to a good start. Most of Arizona and New Mexico had a very wet June, but the rains didn't make it up into Nevada until mid-July. Since then, much of southern and central Nevada has gotten well more than the usual July rain (Fig. 3). Spring Valley State Park in Lincoln County reported 12" of rain in July, and over half of it fell on one day!) Other notably wet places are the SNOTEL stations at Bristlecone Trail (5.8") and Rainbow Canyone (4.3").

Most of northern Nevada was not so lucky. While there were storms around Lovelock. many stations in northern Nevada reported no rain at all.

Where precipitation was near or above normal, temperartures were generally near or below normal (Fig. 4). Along the northern and northwestern borders of the state, where precipitation was much below normal, temperatures were 3-6°F warmer than normal.

Summer rains tend not to be immediate drought-busters. They often fall so heavily that they run off without soaking the soil, they're spotty, and evaporation is significant in the hot weather. But, it does add up, and the precipitation outlook for August is promising (Fig. 5).

By late July, surface soils were much wetter than normal in parts of the state where precipitation was high (Fig. 6, left). Topsoils remained quite dry in northern Nevada. Subsoils remain drier than usual, even in southern Nevada where rain was quite heavy(Fig. 6, right). If rains continue, moisture may increase in those deeper soil layers.

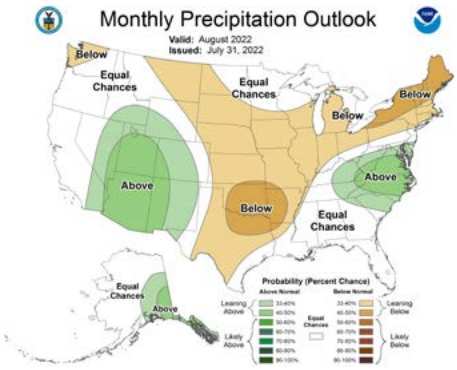
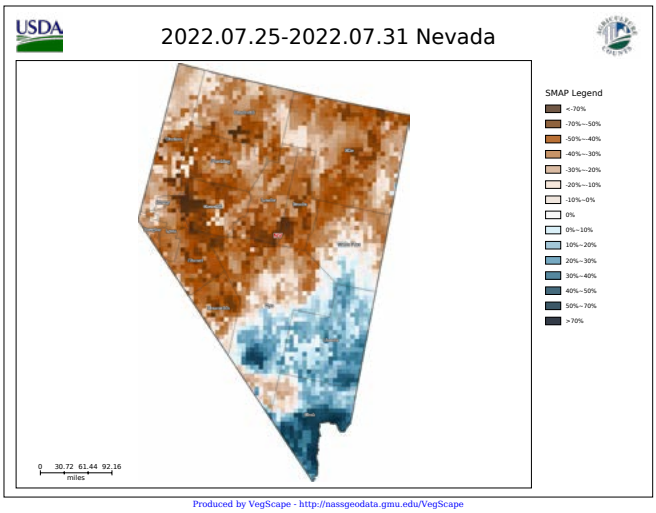


Fig. 5. August precipitation outlook from the Climate Predication Center.



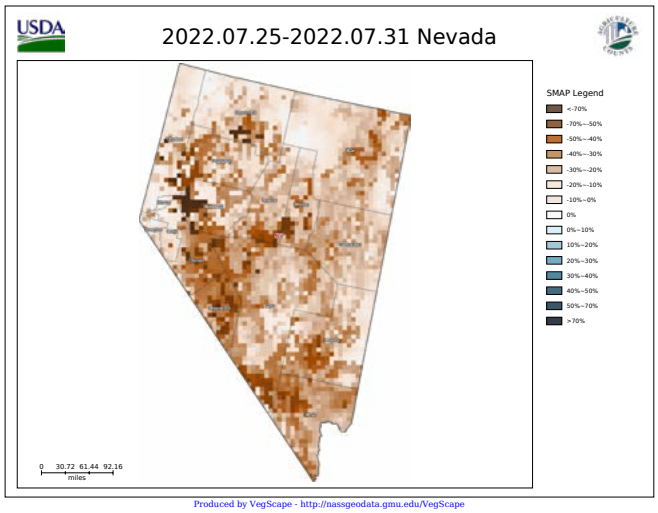


Fig. 6. Remotely sensed topsoil (left) and subsoil (right moisture anomalies for late July 2022. Maps from Crop-CASMA.

Water Resources

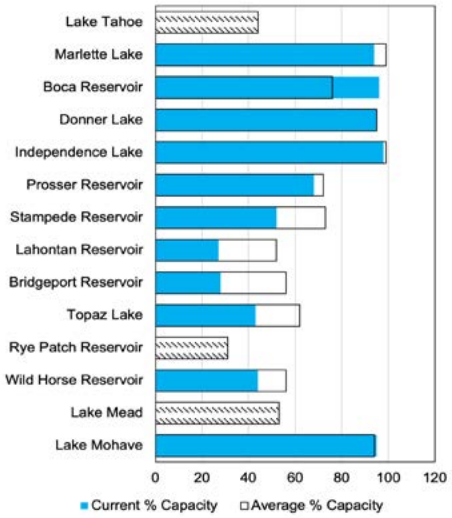


Fig. 7. Current and average percent capacity in Nevada's reservoirs at the end of July 2022. Data from the Natural Resources Conservation Service. Note! When this month's report was being prepared, percent capacity information was not available for Lake Tahoe, Rye Patch Reservoir, and Lake Mead.

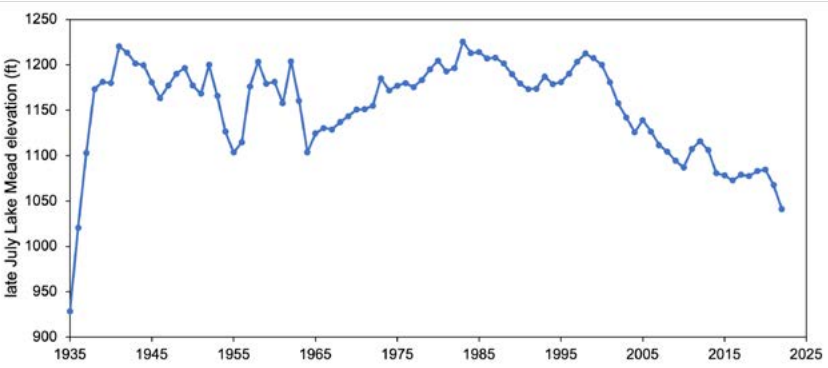


Fig. 8. End-of-July water elevation at Lake Mead. Data from the US Bureau of Reclamation.

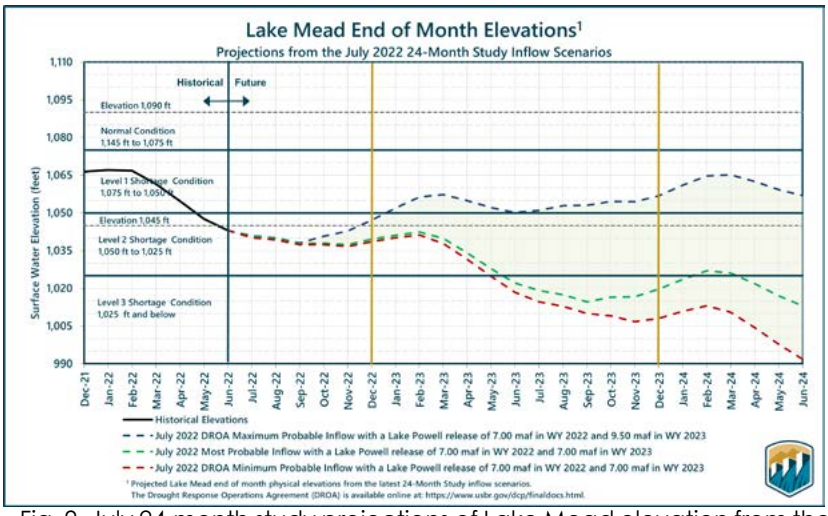


Fig. 9. July 24-month study projections of Lake Mead elevation from the US Bureau of Reclamation.

As of late July, reservoir storage was in generally good shape in the Truckee River Basin. Boca Reservoir was at 126% of normal capacity. Lahontan and Bridgeport Reservoirs and Topaz Lake remain low (Fig. 7). Lake Tahoe is quite low, but holding steady. Water levels dropped less than a foot during July. The lake level is just about a foot above the nautral rim at 6,223 feet.

Lake Mead water levels remain very low (Fig. 8). By late July, the surface elevation had fallen to1,040.92 feet. The continuing drop was consistnent with the July 24-month study (Fig. 9). Water levels will likely drop a bit more during August and then stabilize during the fall. Water levels could even increase if autumn is wet.

July streamflows (Fig. 10) were mostly below or much below normal in northern-central and northeastern Nevada. A few streams had normal flow, and one even somewhat above normal flow. In the Truckee, Carson, and Walker Basins, flows were generally low or normal. In southern Nevada, several streams had much above normal flow.

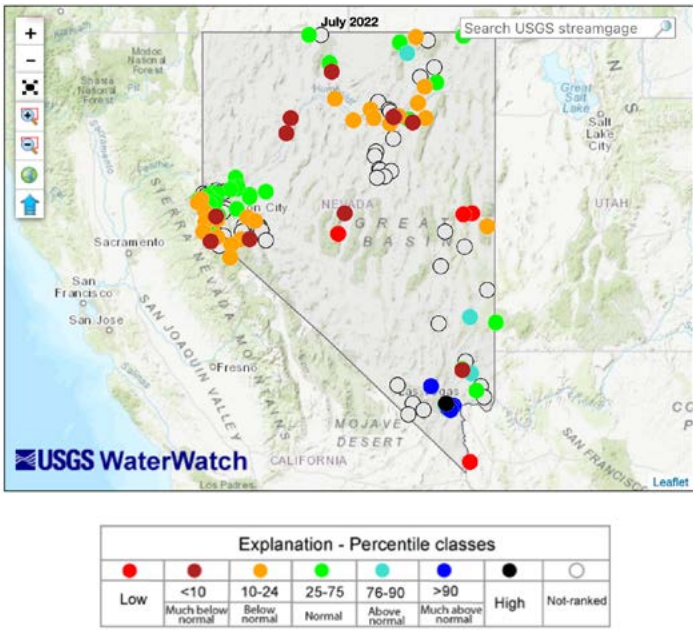


Fig. 10. July average stream flow relative to usual June conditions. From USGS Water Watch. You can find more information on the percentile classes from the USGS.

Vegetation & Fire

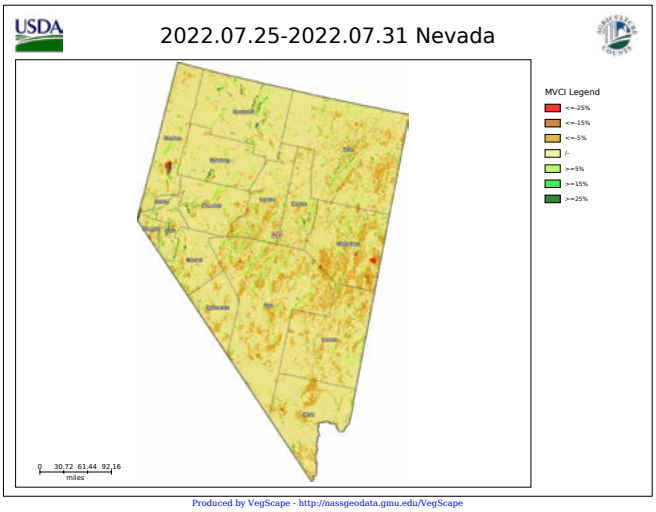


Fig. 11. Mean Vegetation Condition Index for late July. Negative values (brown) indicate places where vegetation is less robust than usual; positive values (green) where vegetation is doing better than usual. From USDA Crop-CASMA.

The remotely sensed Mean Vegetation Condition Index indicates slightly stressed vegetation in much of eastern Nevada, with some patchy robust vegetation (perhaps tracking some of the mid-July rains, Fig. 11). The August 1 USDA Crop Progress report indicates that 15% of Nevada's pasture and range are in Very Poor condition, 40% are in Poor condition, 30% are in Fair condition, and 15% remain in Good condition.

Most of the reasonably large fires so far this summer have been in eastern Nevada. The largest—the Wildcat fire in Elko—county burned over 21,000 acres before being contained. The other large fires—the 5,644-acre Dodge Springs Fire, the 5,989-acre Becky Peak, and the 1,966-acre Goshute fire—are all contained or nearly contained at this point, too. Western Nevada has gotten some smoke from Sierra Nevada fires -- notably the Oak Fire near Yosemite and the McKinney Fire near Yreka.

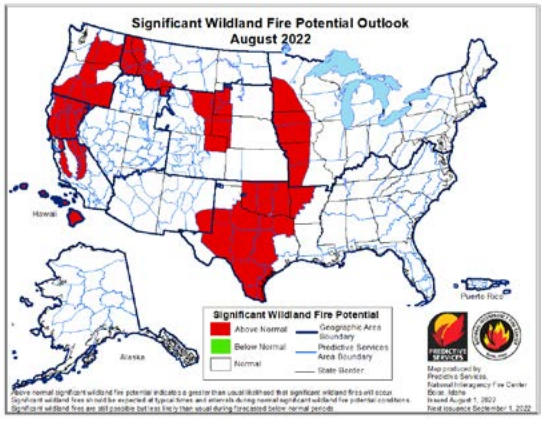


Fig. 12. Significant wildland fire potential outlook for August 2022. For September - October, visit NIFC Predictive Services.

The August fire outlook (Fig. 12) suggests an above normal fire risk along the Sierra and in far northwestern Nevada, where summer rains have been scanty.

Drought Outlook

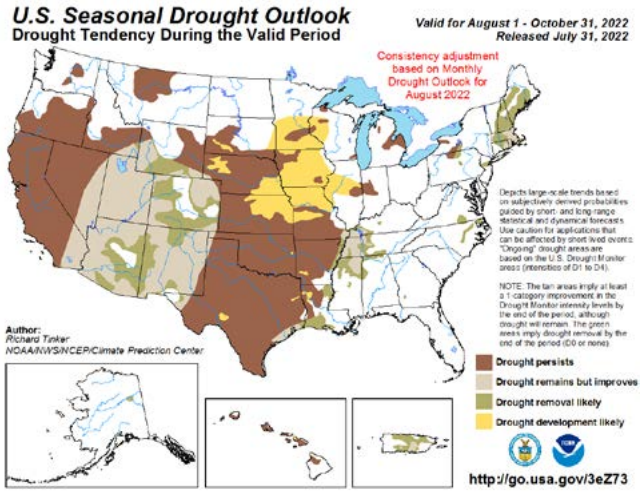


Fig. 13. Drought outlook through October. From the Climate Prediction Center.

Finally, some good news! The seasonal drought outlook suggests that drought might become less bad in eastern Nevada (Fig. 13). Not no drought mind you, but less bad. The improvements are due primarily to the summer rains that have already fallen, as well as the potential for more summer rain in coming weeks.

What would it take to end the drought? This is a surprisingly challenging question to answer, but the National Oceanographic and Atmospheric Administration has one approach to answering to it. Assuming normal amounts of rain for August, it would take 3.9" (northwest Nevada), 4.4" (southern Nevada), 6.2" (central Nevada), and 7.4" (northeast Nevada) to end the drought in three months. In most of Nevada, there's a less than 2% chance of that happening. In northwestern Nevada, there's an 8% chance of getting enough rain (or snow by October) to end the drought in three months.