

# Nevada Drought Update - JANUARY 2022

Drafted January 5-6, 2022

Prepared by S. McAfee, State Climatologist

**December storms were very good news. Conditions have improved, but it's too early to say the drought is over**

## Current drought conditions in Nevada and across the West

Nevada, like much of the West, remains in drought, but Extreme (D3) and Exceptional (D4) drought are much less extensive than they were a month ago (Figs. 1-2, Table 1).

About 7.5% of the state is still in Exceptional (D4) drought. This is mostly limited to northeastern Nye county. Extreme (D3) drought extends in a band northeast from Esmeralda county to White Pine and northern Lincoln Counties. Moderate (D1) drought is present in north-central Nevada and along the Utah border in Lincoln and Clark Counties. The rest of the state (~60%) is in Severe (D2) drought (Fig. 1).

Over the last month, there have been one and even two class improvements over much of southern and eastern Nevada. There were also improvements in drought conditions over the Sierra Nevada and in parts of the Upper Colorado River Basin (Fig. 2).

| Date                   | 1/5  | 9/28 | 11/30 | 12/28 |
|------------------------|------|------|-------|-------|
| None                   | 0.0  | 0.0  | 0.0   | 0.0   |
| Abnormally Dry-D0      | 0.3  | 0.0  | 0.0   | 0.0   |
| Moderate Drought-D1    | 8.5  | 4.8  | 10.0  | 10.7  |
| Severe Drought-D2      | 18.7 | 27.6 | 33.7  | 61.1  |
| Extreme Drought-D3     | 48.8 | 42.6 | 31.3  | 20.6  |
| Exceptional Drought-D4 | 23.7 | 25.0 | 25.0  | 7.5   |

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

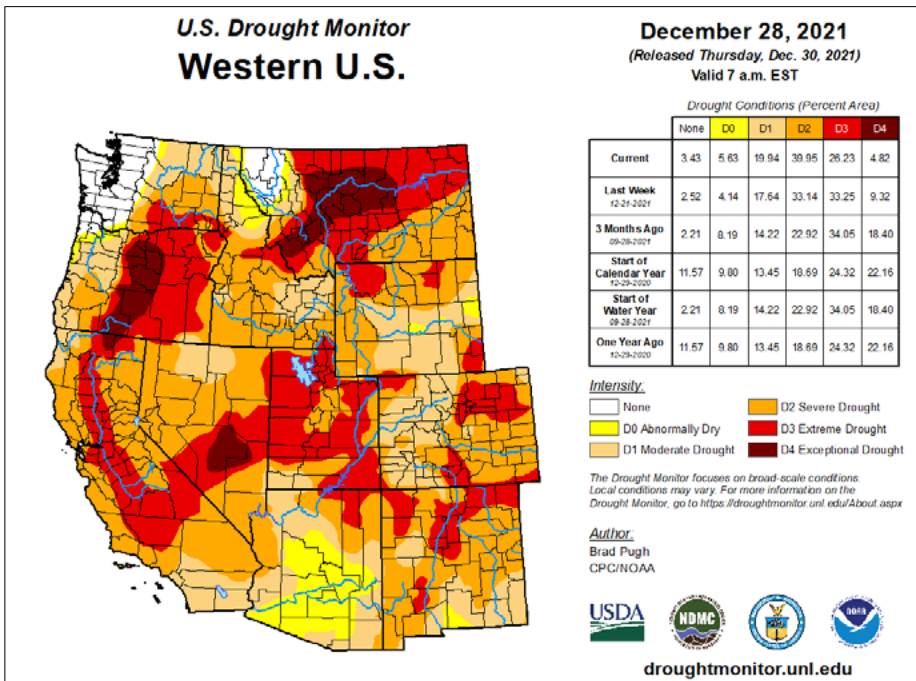


Fig. 1. Drought Monitor map for the western US, released on December 30, 2021, reflecting conditions as of December 28, 2021.

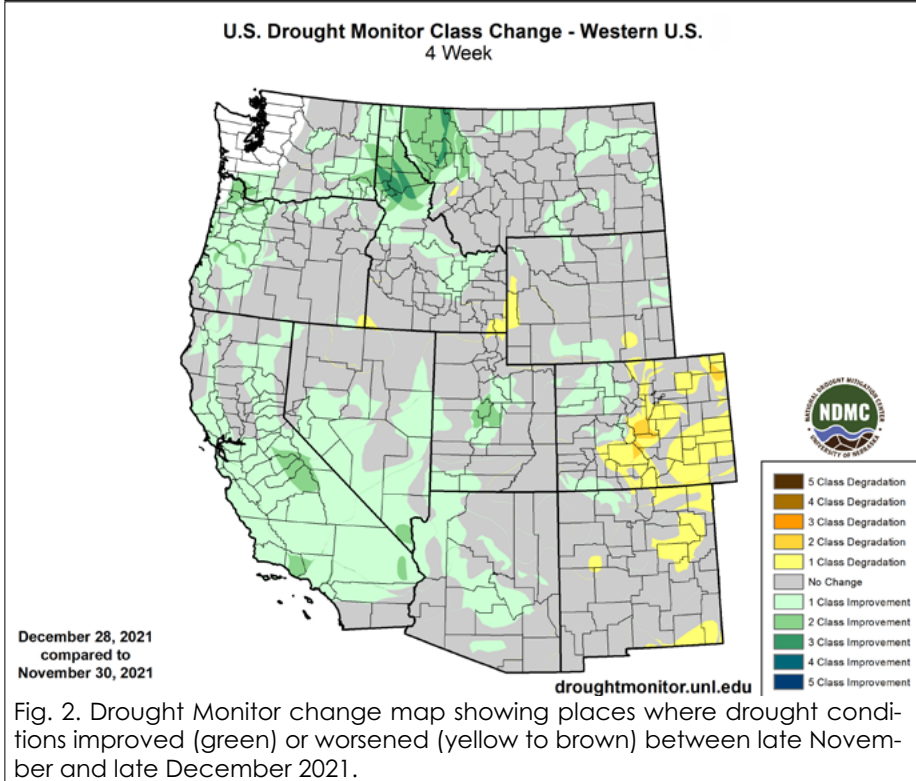


Fig. 2. Drought Monitor change map showing places where drought conditions improved (green) or worsened (yellow to brown) between late November and late December 2021.

# December Temperature, Precipitation & Snowpack

Statewide, December temperatures were within a couple degrees of normal (Fig. 3). Much of the state also received more precipitation than usual (Fig. 4). The wettest conditions were in west-central Nevada, where two to more than three times the usual precipitation fell. Some small areas of southern Nevada appear to have gotten less than half of the expected rain.

Storms in December brought significant snowfall to the region. At the end of November, average snowpack ranged from 15% to 66% of normal across the Sierra Nevada, Great Basin and Upper Colorado River Basin. By late December, snowpack was above normal over all of the region (Fig. 5). Some basins in the Sierra Nevada currently have twice the usual snowpack.

October and December were very wet -- at least in parts of the state -- raising questions about why the state is still in drought (Fig. 1). The Standardized Precipitation-Evapotranspiration Index, which accounts for precipitation and atmospheric thirst, tracks accumulated moisture surpluses and shortfalls. Over the last month, most of the state has a surplus, but there are still shortfalls over the last 6 to 24 months (Fig. 6). It's kind of like getting a big paycheck after months when expenses outstripped income.

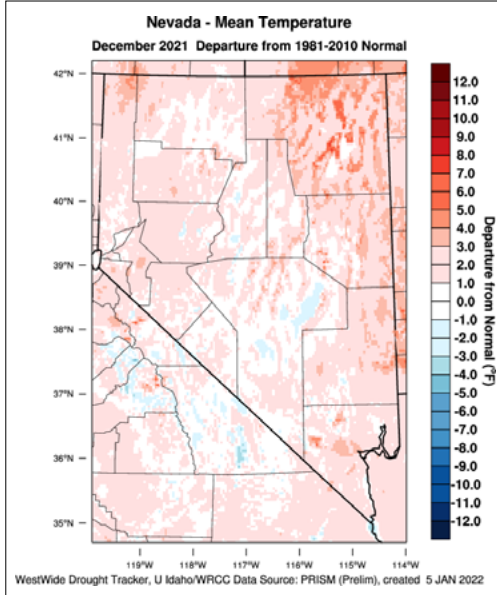


Fig. 3. Difference from average (1981-2010) December temperature (°F) in December 2021. PRISM from [WestWide Drought Tracker](#).

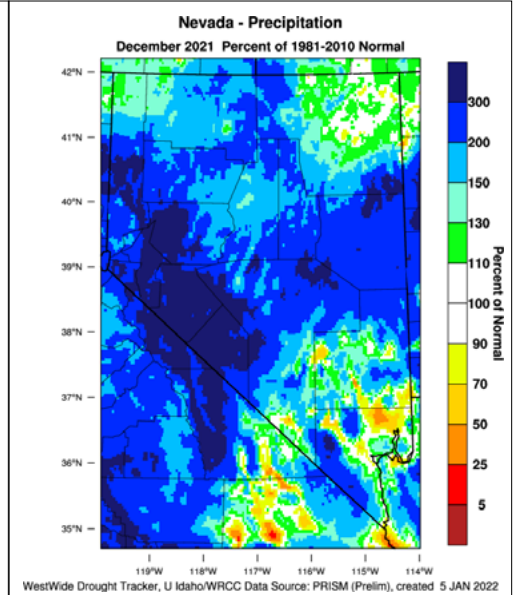


Fig. 4. Percent of average (1981-2010) December precipitation in December 2021. PRISM from [WestWide Drought Tracker](#).

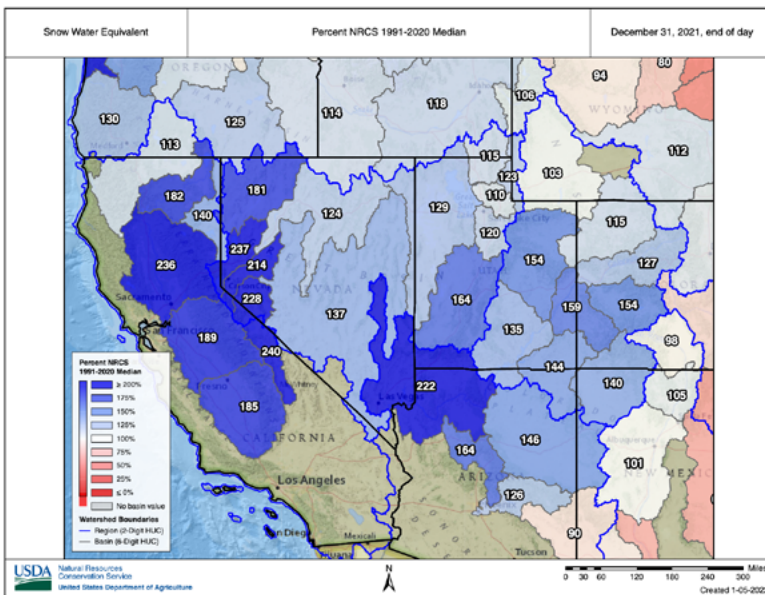


Fig. 5. Basin-average snowpack. Snowpack is shown as snow water equivalent (SWE), the water content of the snowpack, relative to the 1991 - 2020 median value. Data from the [Natural Resources Conservation Service Nevada](#).

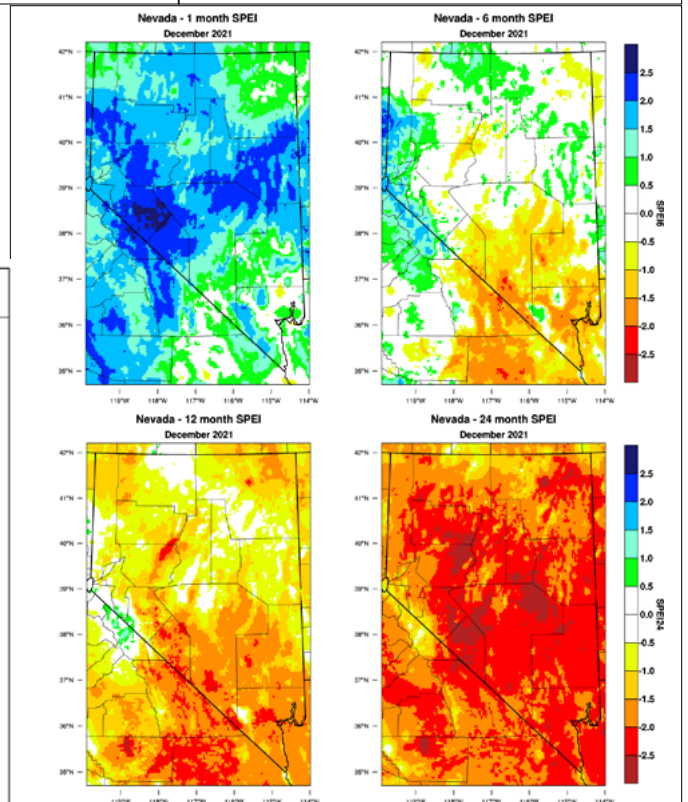


Fig. 6. Standardized Precipitation-Evapotranspiration Index (SPEI) over 1, 6, 12 and 24 months. The SPEI is a drought index that tracks both precipitation and atmospheric thirst. Positive values indicate wet conditions and negative values drought. PRISM from [WestWide Drought Tracker](#).

## Water Resources

In many of the state's reservoirs, water levels were near or above their average level for late December (Fig. 7). All but four reservoirs were at 80% or more of their usual capacity. Boca Reservoir was especially high. It was at 64% capacity, in contrast to the average -- 22% capacity. Topaz Lake was also unusually full at 41% capacity. In late December, it's normally at 24%.

Rye Patch Reservoir remained at 4% of capacity -- about half its usual for the time of year. Other reservoirs running low for the time of year are Stampede Reservoir, Lahontan Reservoir, and Lake Mead.

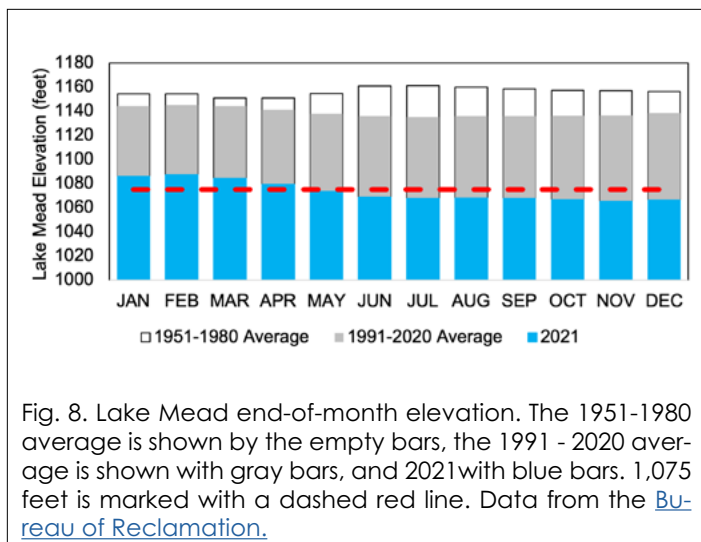


Fig. 8. Lake Mead end-of-month elevation. The 1951-1980 average is shown by the empty bars, the 1991 - 2020 average is shown with gray bars, and 2021 with blue bars. 1,075 feet is marked with a dashed red line. Data from the [Bureau of Reclamation](#).

Water levels in Lake Mead inched up during December, from 1064.97 feet in late November to 1066.39 feet by the end of the year (Fig. 8). This is still very low, more than 70 feet below the 1991 - 2020 average reservoir elevation. In fact, it is the lowest December reservoir elevation reported since 1936 when Lake Mead was still filling.

As in November, there were a variety of streamflow levels reported (Fig. 9). In southern Nevada and in the Truckee-Carson and Walker Basins, most gages recorded normal or above normal streamflow. A few streams were still running low. In central and far northern Nevada, most streams had normal or below normal flow.

As with reservoirs, streamflow in managed systems reflects both the amount of water available and how they are managed.

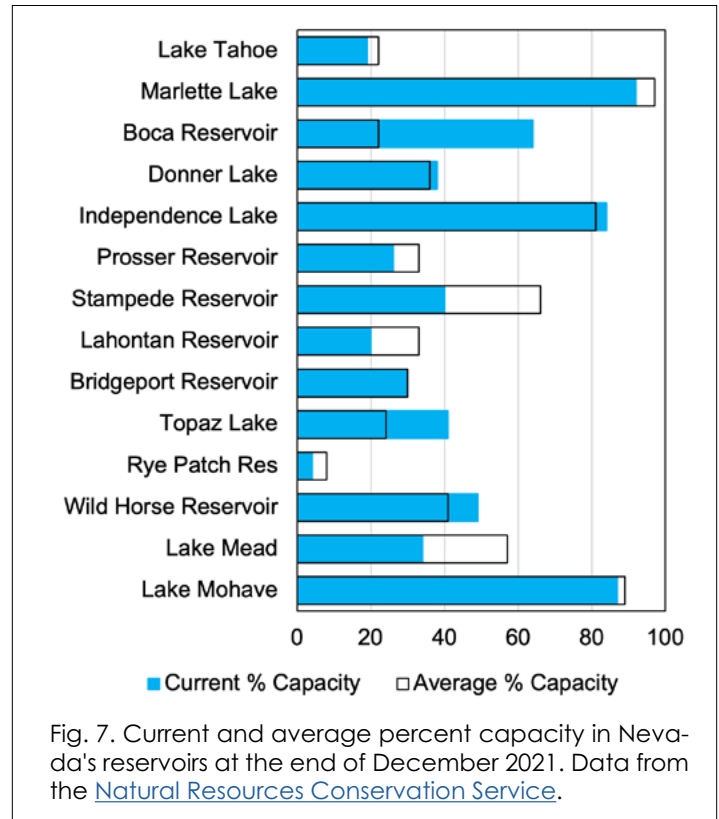


Fig. 7. Current and average percent capacity in Nevada's reservoirs at the end of December 2021. Data from the [Natural Resources Conservation Service](#).

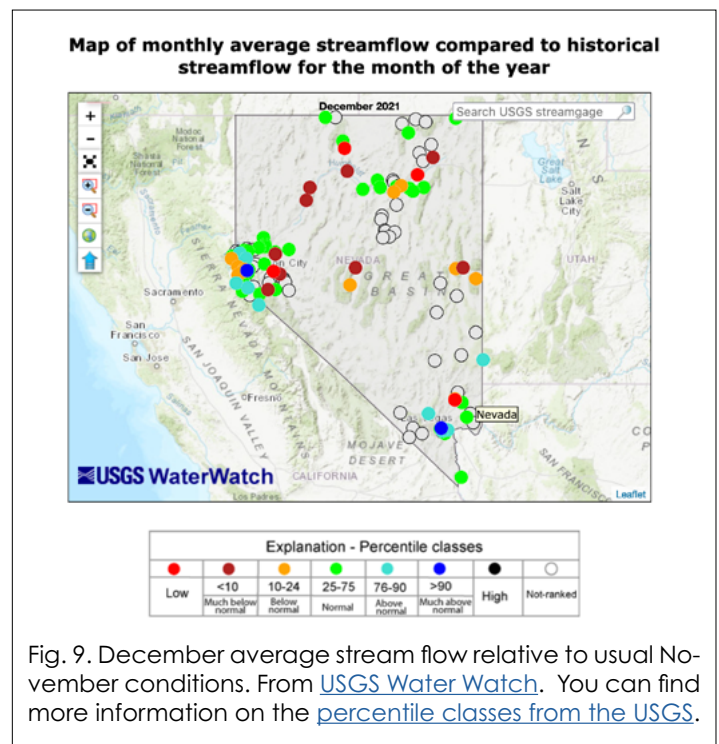
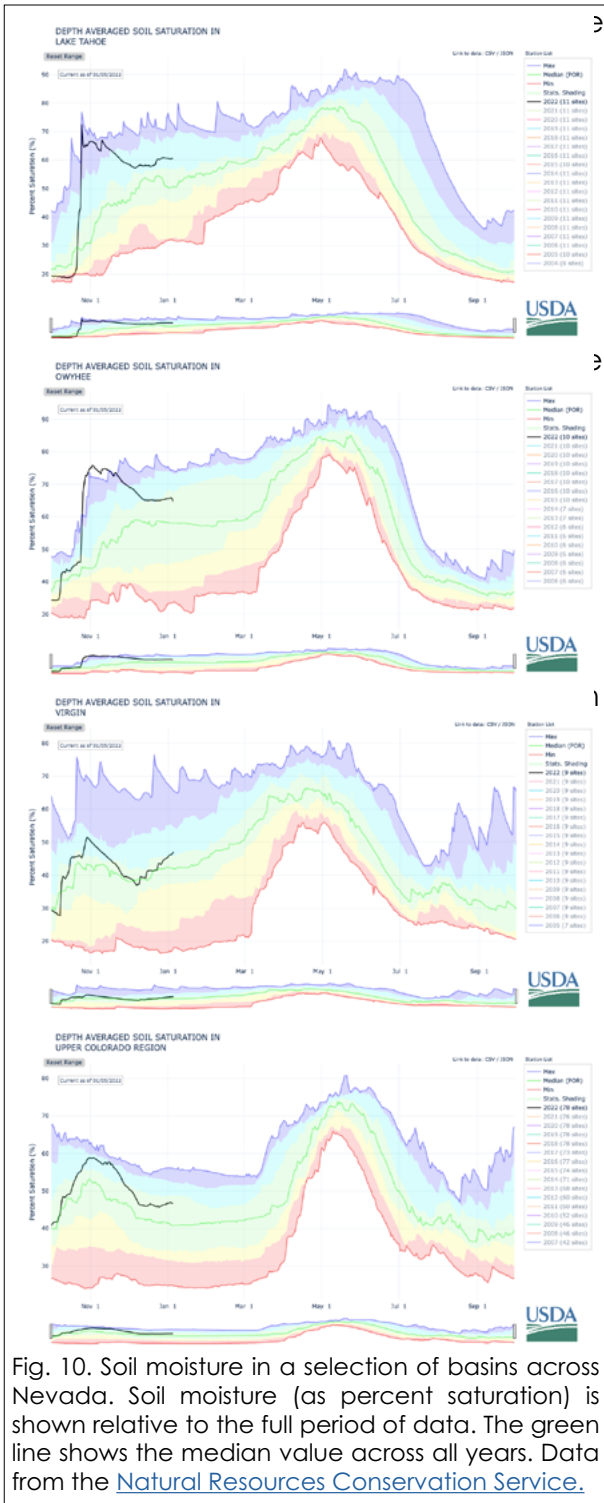


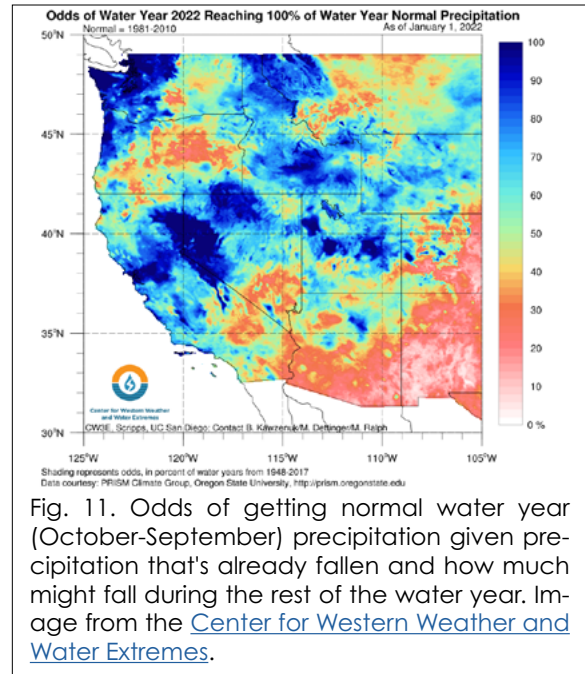
Fig. 9. December average stream flow relative to usual November conditions. From [USGS Water Watch](#). You can find more information on the [percentile classes from the USGS](#).

# Soils

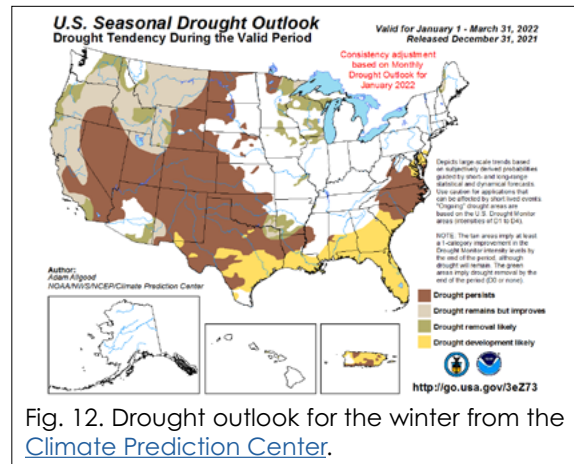


By the end of December soil moisture at SNOTEL sites was above normal in most basins in Nevada (Fig. 10). In northern Nevada, soil moisture did not rise after recent storms because most of the precipitation fell as snow, rather than rain, building up the snowpack instead of immediately wetting up the soil. The Upper Colorado Basin is also wetter than normal for the time of year.

# Outlooks



Because the start of the water year was so wet, most of northern Nevada will probably get a normal amount of rain and snow this water year (Oct 2021 - Sep 2022). In southern Nevada, where the storms have not been so generous, this water year is not very likely to deliver the expected amount of precipitation, considering all years (Fig. 11). Unfortunately, this is a La Niña winter, which are often dry in southern Nevada.



Storms in October and again in December were exceedingly welcome. But even in northern Nevada, where storms dumped the most rain and snow, it's too early to say that we're out of the woods. The Climate Prediction Center's Drought Outlook indicates drought continuing through the winter. Getting out of drought will require more winter storms, and a wet monsoon this summer wouldn't hurt.