Monthly Climate Report

NWS Reno

Issued: 03/05/2024

Includes previous Drought update (DGT) and Hydro Report (E5)

Synopsis:

February started in a similar fashion as January, with several storms during the first week of the month. The most impactful event occurred on the 4th-5th, bringing the largest snowfall of the season to date to the Sierra and heavy snow amounts for the cities of far western NV. While the active pattern took a break for much of February's second week, storms returned again from the 14th through the 21st (including Valentine's Day and the Washington's Birthday/Presidents' Day holiday weekend), with the strongest storm of this period occurring on the 19th-20th. The remainder of the month was mainly dry with a wind event on the 26th and even stronger winds on the 29th. A major Sierra blizzard also began to bring heavy Sierra snow on the 29th, which extended into the first few days of March.

Temperatures were generally below average for the first half of the month, with the coldest days from the 7th-10th. However, there was no major outbreak of unusually cold weather during this period. The second half was generally warmer than average, but again no unusually warm spells occurred. The overall result was temperatures near average in most areas for the full month (Figure 1), except for about 2-4 degrees below average in parts of Mono and Plumas counties, and 2-4 degrees above average across far northwest NV and west central NV from about US-95 eastward. Precipitation was near to above average (Figure 2) due to the combined effect of the stronger storms on the 4th and 19th-20th, along with several weak to moderate storm systems through the first 3 weeks of the month. Areas with the wettest anomalies (at least 200% of average) included much of Mineral County, eastern Mono County and central Lassen County.

The Sierra snowpack received a solid boost from this more active February storm pattern, along with no unusually warm periods. At month's end, the eastern Sierra basins narrowed the deficit and recovered to 75-85% of season-to-date normals. While still nowhere near the 170-240% of normal from this time a year ago, the current snowpack levels are certainly an improvement compared to where they stood a month ago.

Weather Events:

The first weather system on the 1st into the morning of the 2nd brought 8-12" of snow to the Sierra crest above 7000 feet, except heavier amounts of 1-2 feet near the crest in southern Mono County. Below 7000 feet, snowfall amounts were less than 2". Rainfall in lower elevations was generally light. Persistent snow shower bands produced during the afternoon-evening of the 2nd brought an additional 3-10" across the Tahoe basin and Mono County near the crest, with a few sites near I-80 receiving 10-15". While cloudy conditions in CA/NV and also west central Pennsylvania for Groundhog's Day produced no shadow, which by folklore tradition would lead to an early spring, the opposite effect occurred as the strongest winter storm of the season plowed through the region on the 4th.

This storm arrived by early morning and persisted throughout much of the day on the 4th across the Sierra and far western NV. Snow showers lingered through the 5th in the Sierra. While a slight warmup brought a brief

changeover to rain across the lower valleys, snowfall totals ranged from 7-14” across much of Reno-Sparks, Carson City and Minden with up to 18” across some foothill locations and Virginia City. For northeast CA near and above 5000 feet, the Tahoe basin below 7000 feet, and Mono County near US-395, 1-2 feet of snow fell, with 2-3 feet above 7000 feet near the Sierra crest and in the Carson Range. Western Mono County near the crest received the most snow, with storm totals around 4 feet at Mammoth Mountain. Peak ridge top wind gusts near 160 mph were reported at the Sierra crest.

A weaker storm followed on the 7th-8th, producing 3-6” near the Sierra crest, with up to 10” in southwest Mono County. A band of heavy wet snow also fell in parts of Mineral and Lyon counties on the evening of the 7th, with 5-9” reported around Hawthorne. Drier conditions then returned to the region from the 9th through 13th with a slow warming trend, although cool nights kept overall temperatures near or slightly below average.

The storm door re-opened on the 14th, with 3-8 inches of snow in the Tahoe basin below 7000 feet, northeast CA near and above 5000 feet, and parts of Mono County near US-395, and around 1 foot near the Sierra crest. Peak wind gusts up to 120 mph were reported at the Sierra crest, with gusts 50-60 mph in foothill areas and wind prone sections of US-395/I-580 from far western NV southward to northern Mono County.

A weaker storm brought up to 3” snowfall to the Tahoe basin, with 4-10” in the Sierra above 7000 feet on the 17th, then a stronger storm arrived with the main push of rain and snow along with gusty winds on the 19th-20th, followed by a final round of snow and rain on the morning of the 21st. Storm snowfall totals were generally 15-30” in the Sierra above 7000 feet, but dropping off to only 3-9” below 7000 feet in the Tahoe basin, northeast CA, and central Mono County, as this storm was milder than the February 4 event. Liquid precipitation totals were generally between 1-2” for the Sierra and the Tahoe basin, with parts of Carson City and Douglas county receiving between 1.0 and 1.5” of rainfall. The Reno area and other sites near the US-395 corridor from Lassen County to Mono County received mainly between 0.50 and 1.0” from this 3-day event. Peak wind gusts of 45-50 mph occurred in lower elevations, with up to 60 mph in a few wind prone areas, and Sierra ridge gusts up to near 125 mph.

Most areas were dry from the 22nd-28th, with warmer than average temperatures into the lower 60s for western NV bringing a touch of early spring on the weekend of the 24th-25th. A cold front brought minimal precipitation but a period of gusty winds on the 26th, mainly 45-55 mph with 60-70 mph gusts in wind prone/foothill areas, and Sierra ridge gusts of 120-140 mph.

The end of February (Leap Day 2/29) brought the first stage of a multi day blizzard for the Sierra, with high winds extending across western NV. Many locations reported peak gusts of 50-65 mph, with up to 75 mph in a few wind prone areas, and Sierra ridge gusts up to 145 mph. The rest of the story with this major blizzard will be included with the March Climate Report!

Hydrology:

No flooding occurred in February. Area rivers and streams are generally flowing near to above normal (Figure 3). Mountain soil moisture is above normal, which will aid in spring runoff efficiency (Figure 4). As of March 1st, mountain snowpacks were below normal for the Sierra (spoiler alert, near to slightly above normal by March 4th), and well above normal for northern and northeastern Nevada (Figure 5). While February was far from a record setter, it provided well above normal precipitation and snow accumulation in all basins. These gains were especially needed in the Sierra, where the snowpack made a solid recovery, placing it well within striking distance of normal for the early March storm. March will not need to add much snow to meet or exceed the median seasonal peak for the Sierra, and that peak is already exceeded for the Humboldt (Figure 6). Water

supply forecasts for the April-July period are generally near to slightly below average for the eastern Sierra, and well above average for the Humboldt (Figure 7). While these forecasts have considerable skill by early March, there is a significant range of potential outcomes driven mostly by the uncertainty in spring weather. Major reservoir systems in the region are above normal and still benefiting from carryover storage along with normal to above normal winter flows (Figure 8).

Drought Update:

Much of the region benefited from the wetter than normal February which led to solid gains in precipitation. However, the current 2023-24 water year remains generally drier and warmer than average across the region (Figure 9). As of the end of February, much of western NV as well as Mono County still remains significantly below average for water year precipitation.

The combination of above average temperatures and areas of below average precipitation has translated into areas of abnormally dry (D0) indicated by the US Drought monitor (Figure 10). Other long-term drought indicators such as water storage, soil moisture, and stream flows remain in good conditions. Early March storms and snowpack gains have helped improve conditions. Check the drought monitor webpage for any updates.

Additional Information on Drought and Climate:

Report Drought conditions here
Nevada statewide Drought update
NV Living with Drought
Drought Monitor
New Drought.gov
California Nevada Drought Early Warning System
NOAA CPC Drought page
CNAP Drought tracker
California Nevada River Forecast Center
WRCC Drought Tracker
WRCC Enso page
WRCC Monthly Climate Summaries
Evaporative Demand Drought Index
US Seasonal Drought Outlook

Contact NWS Reno Climate Team
rev.climate@noaa.gov 775-673-8100
https://www.weather.gov/rev/

Photos:

Photo 1: Open water at Lake Davis, Plumas County 2/23/24

Photo 2: Crepuscular rays over the Truckee Meadows from NWS Reno 2/29/24

Photo 3: New snowfall around sunrise at NWS Reno 2/5/24

Photo 4: Heavy snow in Hawthorne NV, morning of 2/8/24 (photo credit: Betty Easley)

Figures:

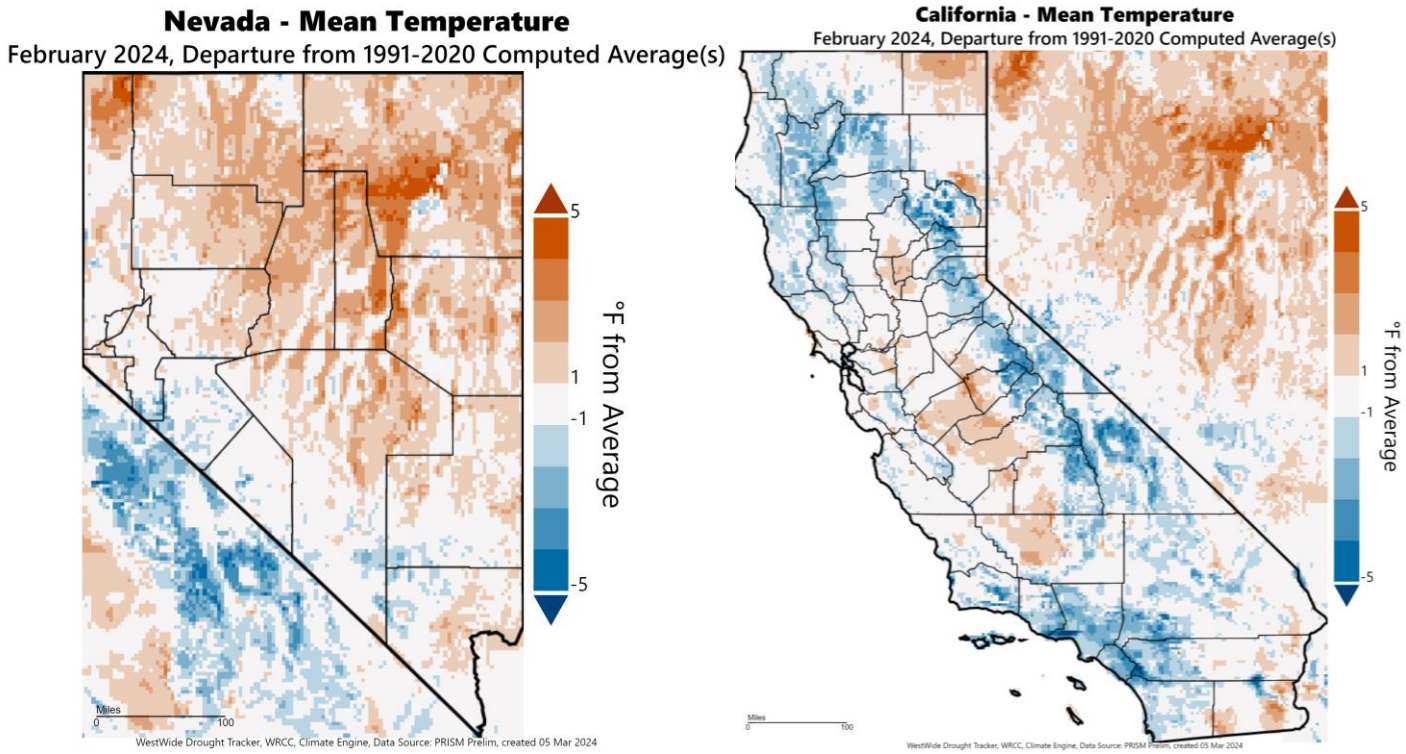

Figure 1: Nevada (left) and California (right) departure from normal temperatures for February 2024. Data courtesy of WestWide Drought Tracker. (WWDT)

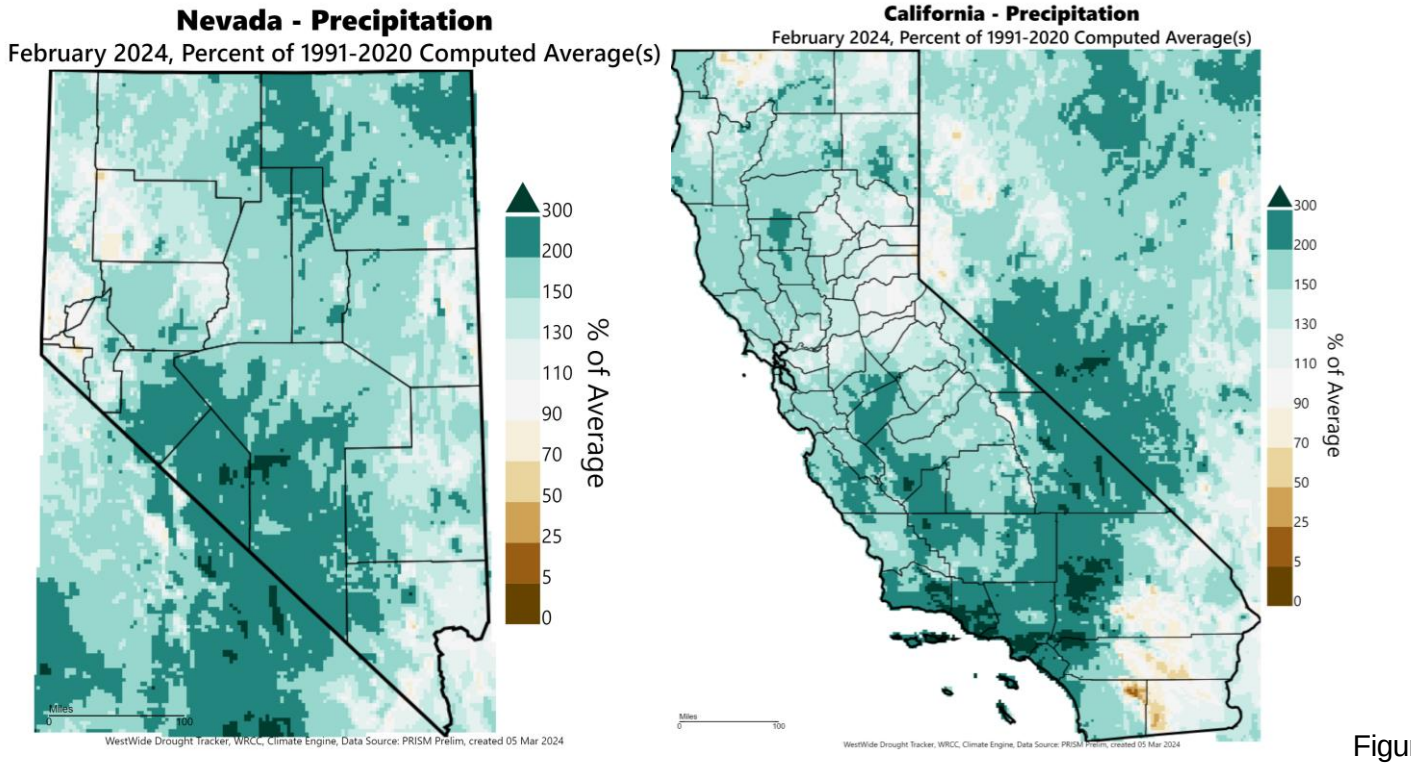

Figure 2: Nevada (left) and California (right) percent of normal precipitation for February 2024. Data courtesy of WestWide Drought Tracker. (WWDT)

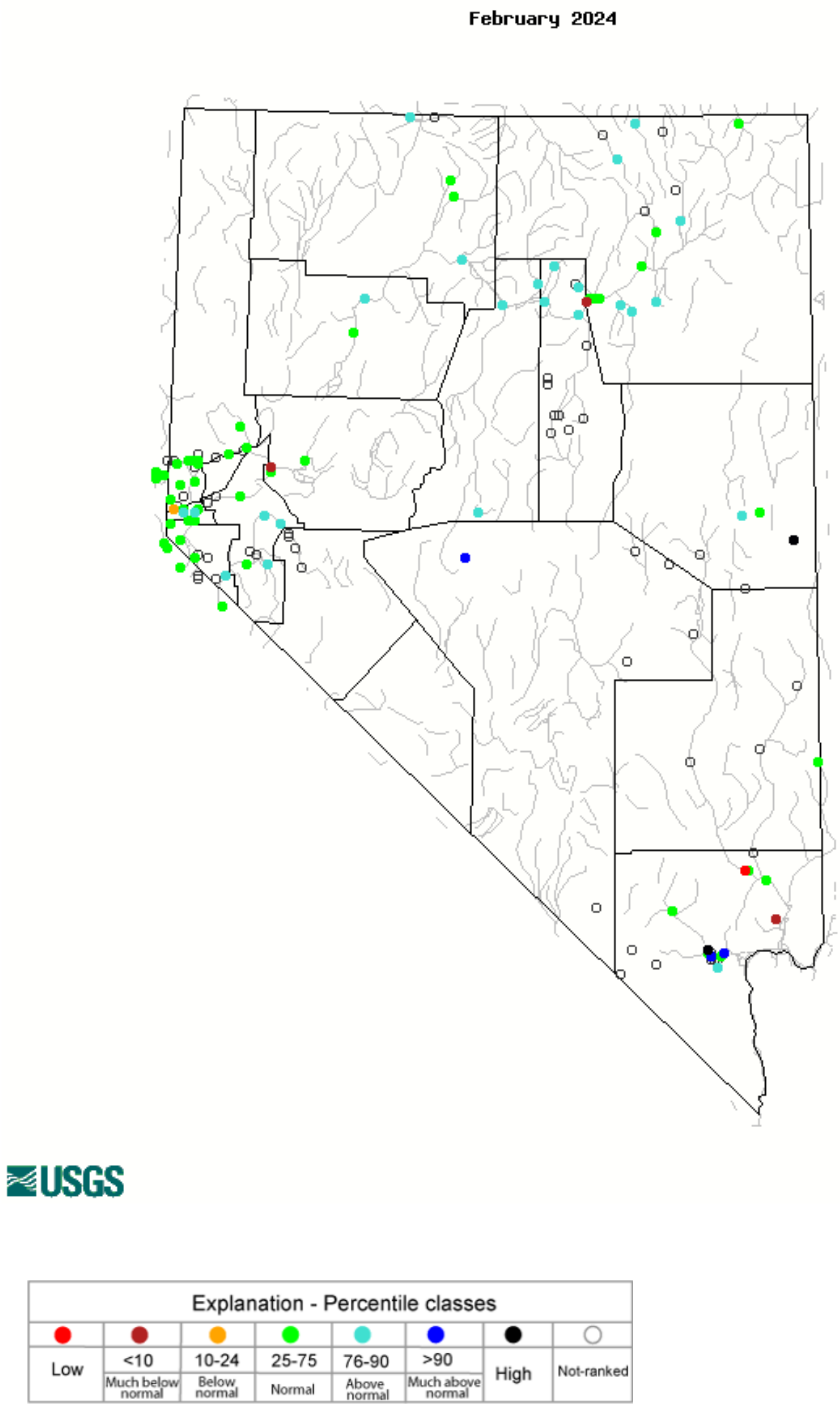

Figure 3: February Monthly USGS streamflow

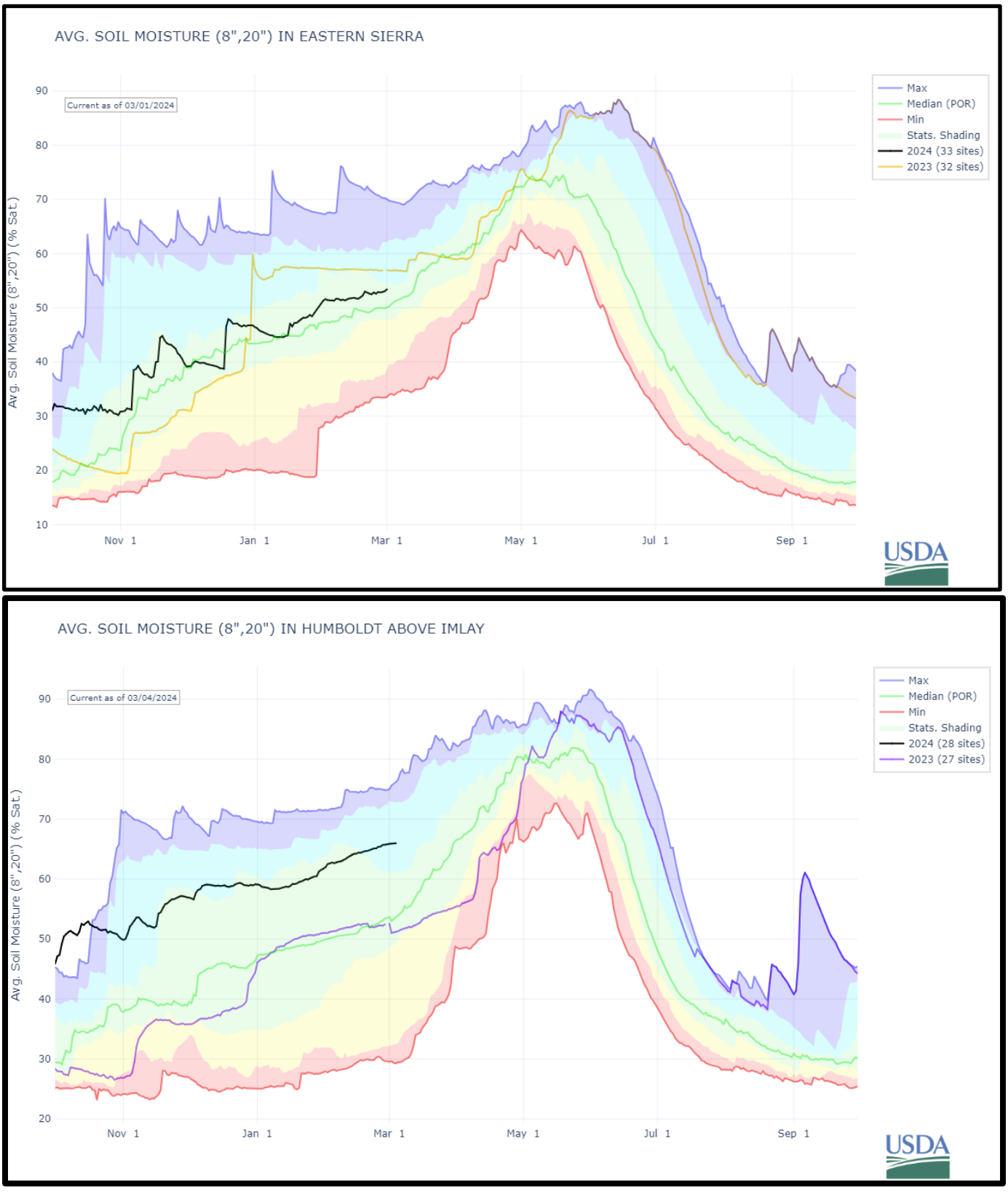

Figure 4: NRCS SNOTEL soil moisture for the combined Tahoe, Truckee, Carson and Walker basins (upper), and Humboldt basin (lower) indicated in dark black for water year 2024. Water year 2023 is plotted in orange for additional perspective.

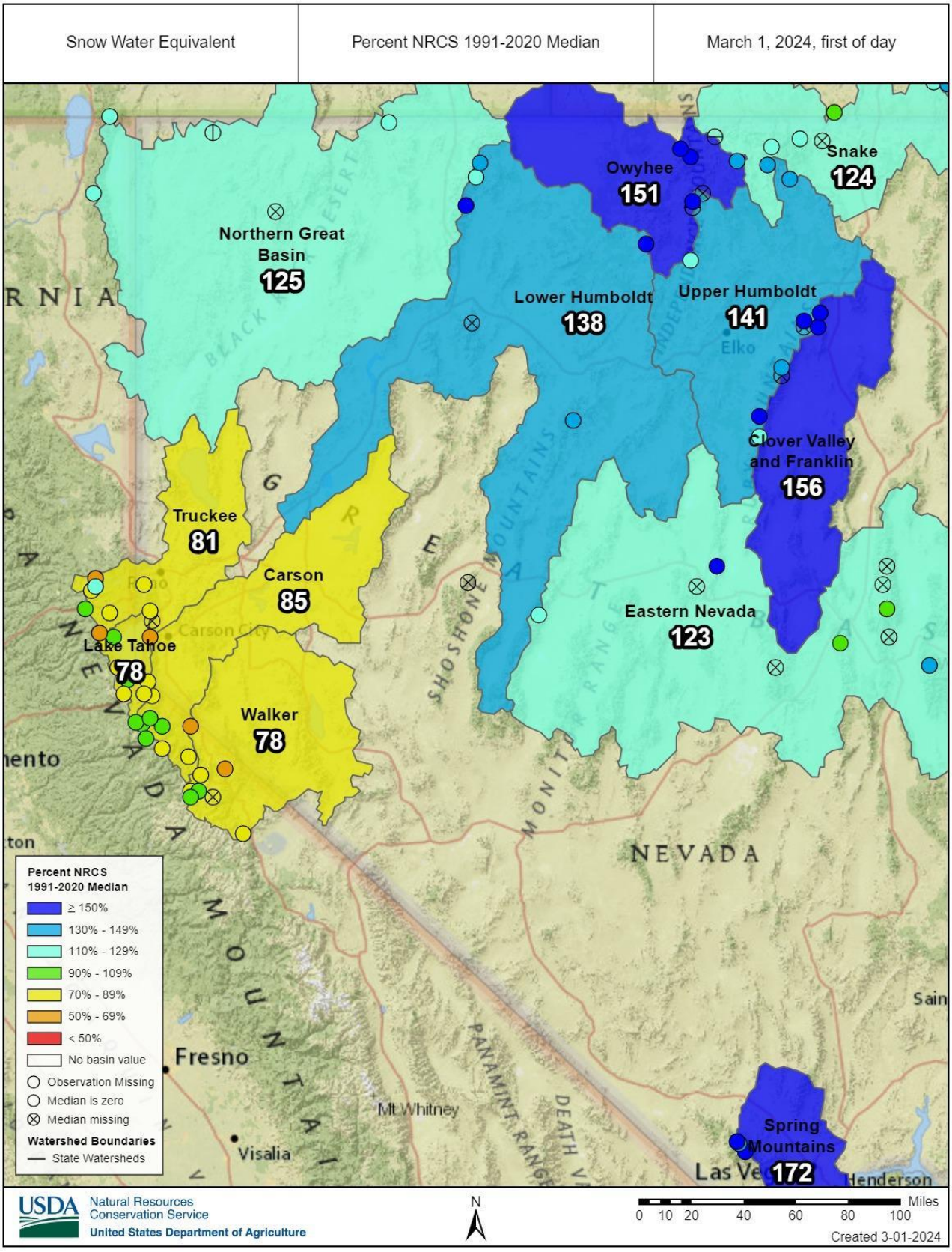

Figure 5: NRCS SNOTEL basin snow water equivalent as percent of median for 03/01/24. By 3/4/2024, Sierra Basins were at or slightly above median.

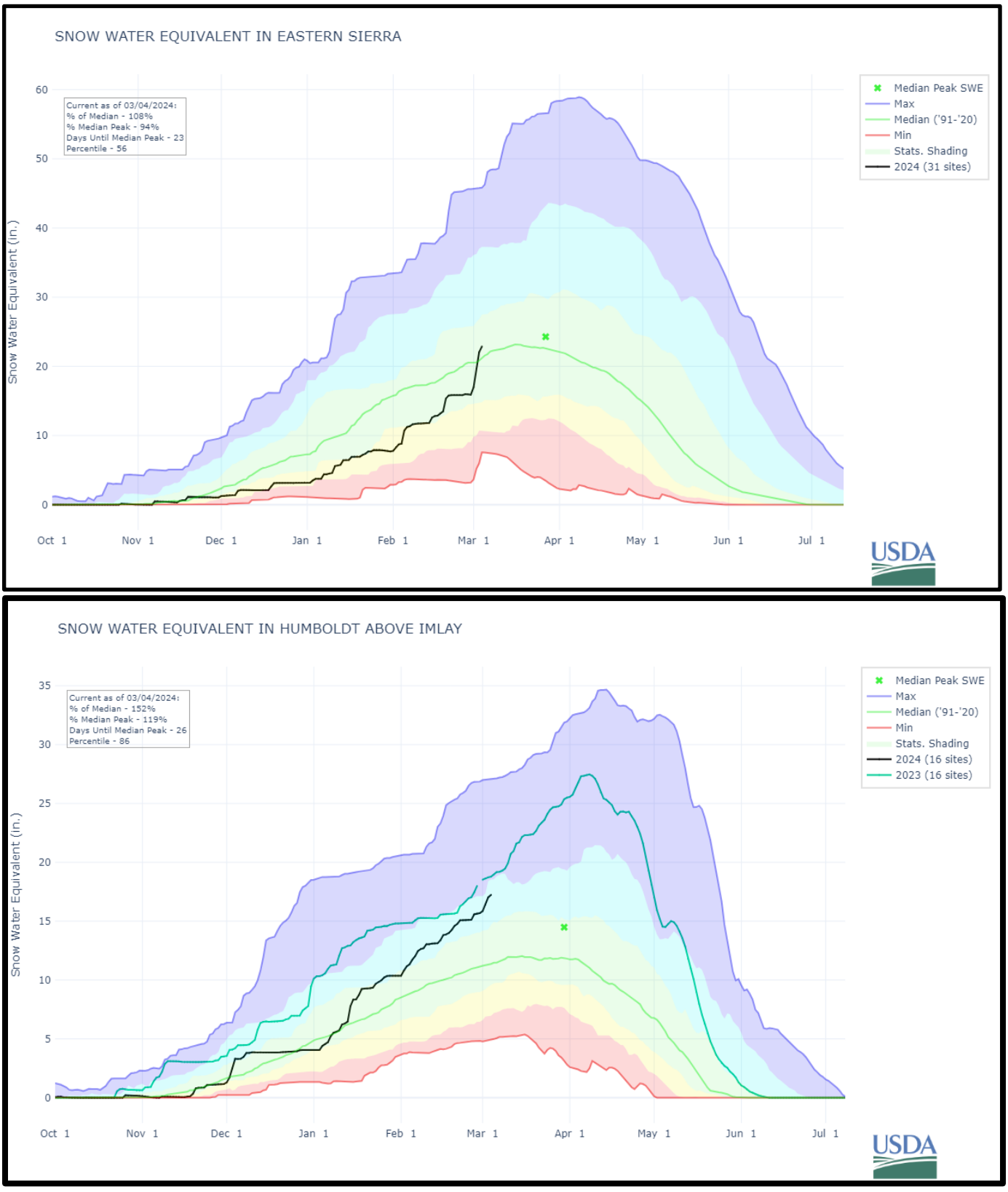

Figure 6: NRCS SNOTEL snow water equivalent (SWE) for the combined Tahoe, Truckee, Carson and Walker basins (upper plot), and Humboldt (lower plot) indicated in black for water year 2024. 2023 Water year plot added for Humboldt for reference.

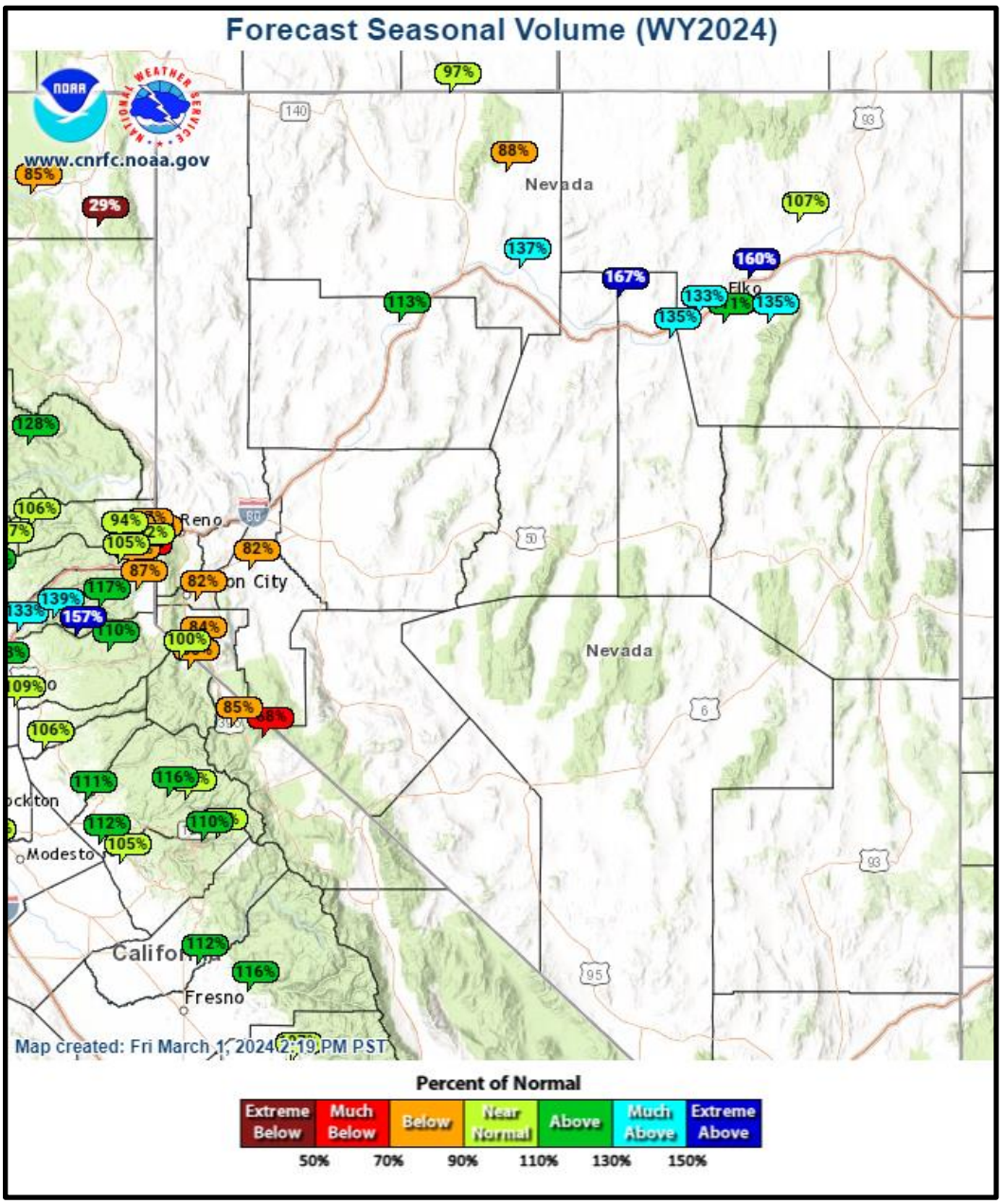

Figure 7. CNRFC median April-July forecasts. While water supply forecasts have considerable skill by early February, a wide range of outcomes are still possible, driven primarily by spring weather. Visit the CNRFC page to view the probabilistic forecasts.

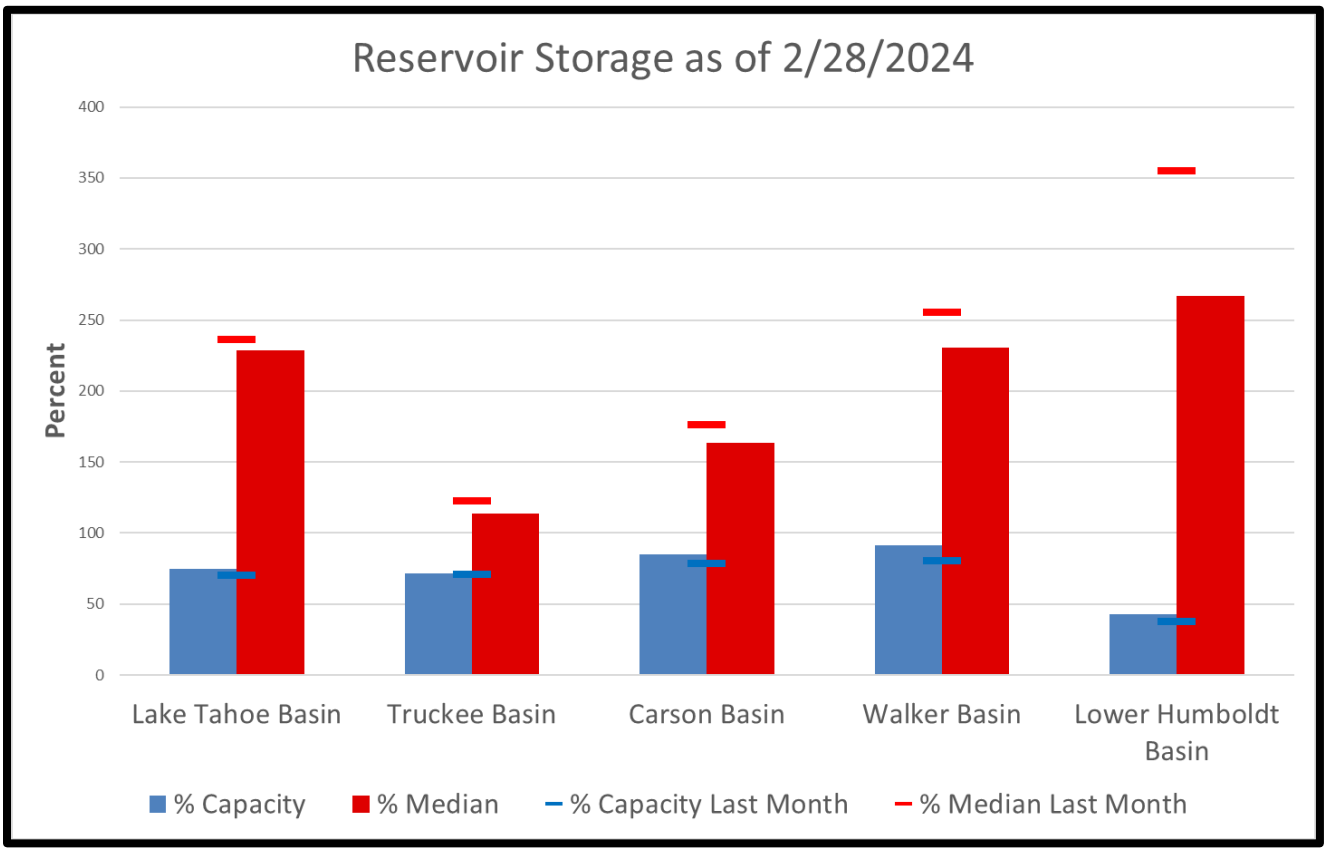

Figure 8: End of month reservoir storage relative to capacity and **median*** for this month and last month. (*note reference was recently update to NRCS 1991-2020 median values)

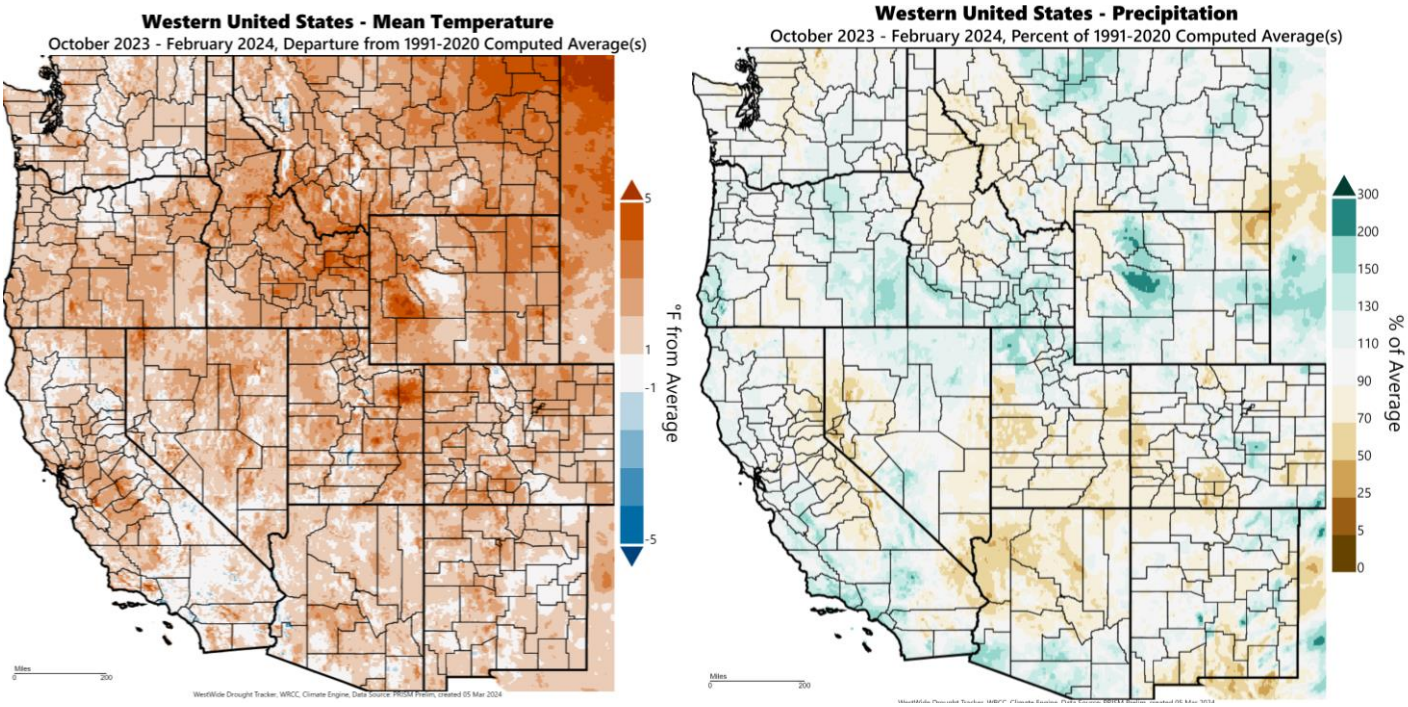

Figure 9: Current 2023-24' water year to date departure from normal temperature (left) and percent of normal precipitation (right). Data courtesy of WestWide Drought Tracker. (WWDT)

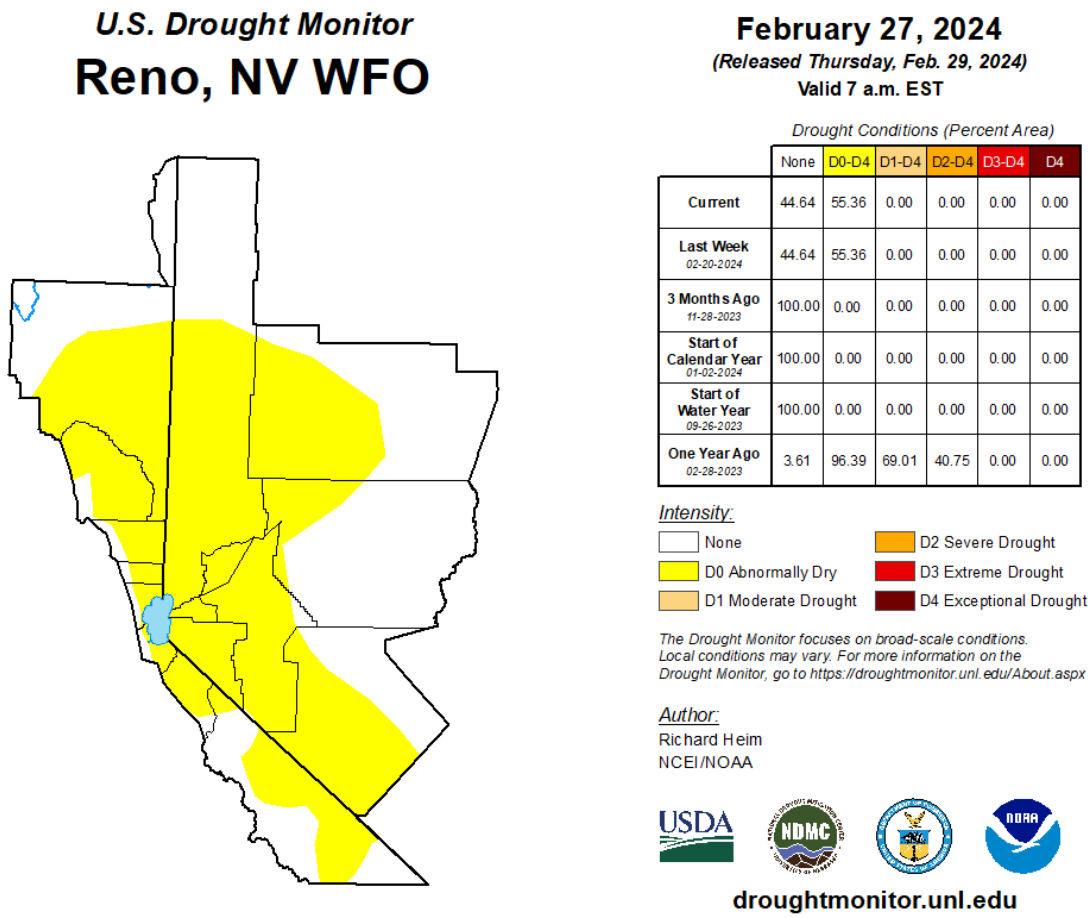

Figure 10: End of February Drought Monitor Status. Abnormally Dry (D0) added to much of the NWS Reno Service area. Check for updates at: Drought Monitor.