

Monthly Climate Report



NWS Reno Issued: 10/10/2023 Includes previous Drought update (DGT) and Hydro Report (E5)

Synopsis:

September was generally on the warm side, except for three cold low pressure systems which brought periods of well below average temperatures around the Labor Day weekend (1st-4th), the 21st-22nd, and at month's end. The overall result was most areas seeing near or slightly below average temperatures for the month (Figure 1). Parts of Mineral and Mono counties ended up with above average temperatures in September, mainly due to milder nights. Showers and embedded thunderstorms accompanied each of these systems. Additional rounds of showers and thunderstorms occurred during the warmer days around mid-month, mainly in areas south of US-50. Precipitation was generally above average in most areas, with the greatest anomalies (more than 300% of average) across west central NV from US-95 eastward. A few areas in northern Mono County, far western Lassen County, and parts of Douglas and Alpine counties were drier than average in September (Figure 2).

Weather Events:

We entered September with an active pattern throughout the region that continued during the first five days of the month. This led to areas of flash flooding, a few reports of small to 1" hail, and strong winds in the Sierra and western NV. Four-day storm accumulations ended up between 0.10-1.0" in the greater Reno-Carson City-Minden area, 0.5-2.5" in the Tahoe Basin, and 0.50-1.5" in northeast CA. Between 0.5-1.0" fell in the inner basins and ranges, with a localized area receiving 2.5" in eastern Churchill County. This period of rain was accompanied by much cooler temperatures, running up to 15 degrees below average for the first week of September. It was even cold enough to produce light snow showers on top of Mt. Rose Ski Area on the 1st.

Stretching from the 5th to the 20th, temperatures warmed back up to 3-6 degrees above average region-wide. We still experienced areas of showers and thunderstorms on the 9th through the 11th, some of which caused small hail, strong winds, and localized flooding. Additional showers and storms occurred on the 17-19th due to a southerly push of monsoon moisture. This once again led to areas of flash flooding and road closures. Another cool-down across the region occurred from the 21st-22nd as another cold system dropped into the region. This produced some minor precipitation, but mostly gusty winds and well below average temperatures.

Strong southwest winds on the 25th produced choppy lake winds, as well as Red Flag Warning conditions for NE California (Lassen County and Surprise Valley) and northern Washoe County when combined with afternoon and evening RH values between 8-15%.

On the 29th-30th, the coldest system of the 2023 Fall season so far moved into the area. This storm produced between 0.30-1.25" of liquid precipitation in northeast CA and far northwest NV, 0.10-0.30" in the Tahoe Basin, and localized areas of 0.25-0.5" in the inner basin. Snow was recorded at elevations mostly above 7,000-8,000 feet, where up to 3" of snow was recorded between the 28th-30th (Photo 1). This cold system also brought well below average temperatures to finish off the month, with high temperatures around 15 degrees below seasonal normals.

Hydrology:

Localized heavy rain in September impacted roadways with flash flooding and debris on September 3rd in Mineral County along highways 359 and 361 (Photo 2), and again on September 10th along 359. On September 18th, heavy rain caused flooding on USA Parkway (SR-439) in Storey County (Photo 3). Each of these events lead to temporary road closures and required debris removal, and significant repairs for hwy 361.

Mountain precipitation for September reported by NRCS SNOTEL stations in the Sierra and NW Nevada was well above normal. Soil moisture conditions ended the water year well above normal as well and the wettest for the end of September since 2018 (Figure 3). Combined with well above normal September streamflow could help bolster runoff efficiency in water year 2024 (Figure 4). Water year 2023 accumulated streamflows were well above average, throughout the area (Figure 5), but generally well below record volumes from water year 2017 and others that produced greater flows in the fall and winter. Reservoir storage ended the 2023 water year above average throughout the region with considerably greater storage then one year ago (Figure 6). September losses were notably below normal in Lahontan, Tahoe, and in the Walker basin.

Drought/Climate Update:

The 2022-23 water year ended with well above average precipitation for the area (Figure 7). Reno recorded the second wettest water year on record, while several other locations including Minden and Yerrington broke their water year precipitation records. The US Drought Monitor currently depicts the entire NWS Reno service area as drought-free (Figure 8), which aligns well with the strong positive anomaly indicated by the Palmer Drought Severity Index (PDSI) (Figure 9).

Reno 2022-23 Water Year Stats

- 15.38 inches of precipitation: Ranked 2nd
- 209% of normal precipitation. 8.03" above normal.

- #1 most days with precip: 87 days of measurable precip (0.01" or more) this water year in Reno. Beats 97/98 with 82 days.
- 50.2 inches of snowfall: Ranked 7th.
- #1 most days with snowfall: 40 days with measurable snow.

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 Drought Tracker WRCC Enso page WRCC Monthly Climate Summaries Evaporative Demand Drought Index US Seasonal Drought Outlook

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

Photos:



Photo 1: Fresh snowfall on the Sierra crests on September 30th. Photo from NWS Reno.



Photo 2: Rockslide and flooding causing damage and closure of Highway 361 in Mineral County over the Labor Day weekend. Photo Credit: Mineral County Sheriff's Office.



Photo 3: Flood debris from flash flooding on USA Parkway September 18th, photo credit: Storey County Emergency management.

Figures:



Figure 1. Departure from normal temperatures for September 2023. Data courtesy of WestWideDroughtTracker (WWDT)



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 2 OCT 2023

Figure 2. Percent of normal precipitation for September 2023. Data courtesy of WestWideDroughtTracker (<u>WWDT</u>)



Figure 3. <u>NRCS SNOTEL soil moisture</u> for the combined Tahoe, Truckee, Carson and Walker basins indicated in dark black or the start of water year 2024.



≥USGS

Figure 4: September <u>Monthly USGS streamflow</u> Note, the only red dot in western NV is the Truckee Canal which is closed for construction.





Figure 5: WY 2023 preliminary streamflow as percent of average (CNRFC)

Figure 6: End of month reservoir storage relative to capacity and average for this month and last month.





Figure 7: Water year 2023 precipitation percent of normal. Data courtesy of WestWideDroughtTracker (<u>WWDT</u>)









Figure 8: End of September Drought Monitor Status (no drought!) for NWS Reno Service area.(<u>Drought</u> <u>Monitor</u>).



Figure 9: Current Palmer Drought Severity Index at the end of September. Data courtesy of WestWideDroughtTracker (WWDT)