

# **Monthly Climate Report**



NWS Reno Issued: 07/07/2023 Includes previous Drought update (DGT) and Hydro Report (E5)

### Synopsis:

June 2023 felt more like early spring and not the first month of summer as we continued with a cool, wet pattern. From the 4th to the 17th and the 21st to the 28th, much of the region experienced daily showers and thunderstorms which produced localized flash flooding, small hail, strong wind gusts, and plenty of lightning. Overall precipitation for June finished above to well above normal (Figure 1), with locally heavier amounts in thunderstorms. A dry cold front more typical in early spring moved through on the 18th-19th, producing strong winds along the Sierra crest, northeast CA, and western NV. This front also brought in well below average temperatures, with several cold mornings in the 30s in western NV and 20s in the Sierra. Overall average temperatures finished between 2 to 5 degrees below average region-wide with near normal temperatures in Lassen County (Figure 2). We managed to skip summer until the last few days of the month, when we finally recorded our first and only 90 degree day in Reno on the 30th. Lastly, we continued to gradually melt the record Sierra snowpack, which produced localized flooding in Mono County and prolonged flooding in the Walker River Basin.

### Weather Events:

The first three days of June had seasonal temperatures and dry weather across the area. But it didn't last long as we entered an extended two week period of isolated to scattered showers and thunderstorms. These daily storms typically produced rainfall amounts between 0.10-0.25" with localized amounts between 0.5-1.5". There were also several public reports of small accumulating hail, and station reports of outflow winds up to 40-50 mph. There were a few notable stronger thunderstorms in this extended wet period, with a severe warned storm on the 6th near Lovelock with observed gusts 50-58 mph. The hydrology impacts due to these storms are highlighted in the hydrology section.

After several weeks of wet weather to begin the month, a cold front pushed through on the 18th. This front finally dried the area out while producing strong southwest winds along the Sierra crests, northeast CA, and western NV. Gusts upwards of 80 mph were recorded in the Sierra from the Lake Tahoe area south into Mono County, with gusts upward of 50 mph in northeast CA and western NV. This uncommon mid-June frontal system additionally brought well below average temperatures through the 21st. Low temperatures dipped into the low 30s to low 40s in parts of northeast CA and western NV, upper 20s to low 30s in the Tahoe Basin, and the low to mid 20s in several high-elevations in the eastern Sierra.

By the 22nd through the 28th, isolated to scattered daily showers and storms returned to the area along with a gradual warm up, although temperatures stayed below average during this time. Although not as severe with high rainfall rates as the thunderstorms earlier in the month, precipitation amounts varied between 0.10-0.25" with local amounts between 0.5-1.0". There were also several public reports of small hail, and station reports of outflow winds between 30-40 mph. By the final days of the month, high pressure returned to the area with

temperatures trending back to average by the 29th. We finally hit our one and only 90+ degree day of June on the 30th in Reno, while the Tahoe Basin reached the low 80s, with 70s in the higher Sierra locations.

### Hydrology:

The unseasonably wet and cool conditions persisted most of June which moderated the snowmelt in the Sierra. As of the end of the month, the mid and lower elevation snow has melted off. But, snow still covered the higher elevation peaks especially from the Tahoe area south through Mono County. The increasing temperatures at the end of June finally ramped up the melt in the higher elevation snowpack. Still by the end of June significant high elevation snow remains (Figure 3). The same simulation showed zero snow for the past 3 years on this date.

#### **River flooding updates:**

- Humboldt at Imlay in minor flood stage the majority of the month impacting rural roads, agricultural lands and range land.

- Walker Basin both forks and mainstem in minor/moderate flood stages much of the month (Figures 4-6)

- Miller Lane Closure (May 22nd through June)
- Prolonged impacts to private property in Mason valley
- Prolonged impacts to rural roads, agricultural and range lands
- Spillway concerns at Weber Reservoir.
- Multiple homes impacted in Mason area
- June 2nd: SR-827 (Mason Bridge) closed from SR-339 to Sceirine Ln.
- Mason Valley Wildlife Management area closed June 14th

- Localized snowmelt flooding in Mono County 15th-21st. Impacting numerous USFS roads and facilities.

#### Notable flash flooding events.

Many of the thunderstorms that occurred during June were slow moving and produced locally heavy rainfall with amounts of 1-2". The most notable event occurred on the 10th in Carson City. Between 1-2" of rain fell within a 1 to 2 hour period, resulting in flash flooding and a mudflow. (Image 1-2). Another notable event occurred on the 11th where aerial flooding was reported in Dayton, NV as well as flash flooding in 6-mile Canyon (Image 3), prompting a closure for several hours. A mudflow impacted I-80 east of Fernley on June 12th (Figure 4). Heavier rainfall did occur several times over the Dixie and Tamarack burn scars. However, rainfall rates were not high enough over the most sensitive basins to produce any debris flows, but some minor flood impacts were reported on highway 89 on June 4th as well as flood damages in the Dixie burn along remote USFS roads.

Snowmelt runoff has produced well above average water supply conditions throughout the region (Figure 7). Even the lower Humboldt which was dry for the first 5 months of the water year is now above average for the water year to date. As of the end of June the Carson at Carson City and Ft. Churchill had already exceeded the record April-July volume, and the East Walker is on track to break the April-July volume record as well, and the West Walker will be very close to that record. Reservoir storage conditions improved dramatically in June (Figure 8). Only the Walker Basin remained below average for the end of June, and that was a very deliberate effort to maintain storage capacity to help mitigate high flows in early July.

#### Drought/Climate Update:

As of the end of June, there are no areas of drought in the Reno Hydrologic Service area (HSA), with just 6% abnormally dry (D0) (Figure 9). In fact, many areas have too much water not only due to the above average precipitation, but also below average temperatures causing less evaporation. Water year precipitation is still in the top 10th percentile area-wide with some locations in the HSA area still at record precipitation levels (Figure 10). Short (< 90 days) and long-term (>6-12 months) SPEI is generally 1.5 or greater and the Palmer Drought Severity Index is at a 4.0 or greater for all of the HSA. Surface soil moisture by the end of the month remained in the 90th percentile or greater region-wide (Figure 11), with even the presence of temporary shallow lakes in otherwise dry lake beds in the inner basins. Lastly, live and dead fuel moisture remained well above average, and prescribed fires continued through the entire month.

### 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:



Image 1: June 10th, Carson City flash flooding cleanup. Photo credit: Carson City public works



#### Images 2: June 10th, Carson City flash flooding. Photo credit: Debbie Neddedriep



Storey County Sheriff's Office - Nevada June 11 at 8:14 PM · 😚

The condition of Six Mile Canyon Road earlier this evening. Crews are on scene working, we appreciate your patience and understanding while the roadway is closed.



Image 3: June 11th Six Mile Canyon. Photo credit: Storey County Sheriff Office



Nevada DOT Reno @nevadadotreno · Jun 12 ···· This mudslide occurred on I-80 east of Fernley this am, temporarily closing one lane.

With thunderstorms in the forecast, you could again see localized ponding/flooding on roads.

Avoid driving this pm if you can.

If you must travel, TAKE IT SLOW!

#### NVRoads.com



Image 4: June 12th event onto I-80, photo credit: NDOT

### Figures.



June 2023 Percent of 1981-2010 Normal





June 2023 Departure from 1981-2010 Normal

<sup>(</sup>WWDT)



Figure 3: Modeled Snow Water Equivalent (SWE) for 6/30/2023.



Figure 4. East Walker River above Stronsnider ditch river stages for June. Orange is minor flood stage and red is moderate flood stage.



Figure 5: West Walker River below Little Walker river stages for June. Orange is minor flood stage and red is moderate flood stage.



Figure 6: Walker River in Mason Valley stages for June. Orange is minor flood stage and red is moderate flood stage.



Figure 7: Observed Water Year flow to date for early July



Figure 8: End of month reservoir storage relative to capacity and average for this month and last month

## U.S. Drought Monitor Reno, NV WFO



#### June 27, 2023

(Released Thursday, Jun. 29, 2023) Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.03	5.97	0.00	0.00	0.00	0.00
Last Week 06-20-2023	94.03	5.97	0.00	0.00	0.00	0.00
3 Month s Ago 03-28-2023	36.62	63.38	43.70	0.00	0.00	0.00
Start of Calendar Year 01-03-2023	0.00	100.00	100.00	60.41	16.14	0.00
Start of Water Year 09-27-2022	0.00	100.00	100.00	100.00	19.04	0.00
One Year Ago 06-28-2022	0.00	100.00	100.00	100.00	17.73	0.00

Intensity:



D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

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Figure 9: End of June Drought Monitor Status for NWS Reno Service area. (Drought Monitor)



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 2 JUL 2023 Figure 10: Current water year to date precipitation rankings. Data courtesy of WestWideDroughtTracker (WWDT)



Cell Resolution 0.125 degrees

Projection of this document is Lambert Azimuthal Equal Area



Figure 11: NASA GRACE Surface Soil Moisture Drought Indicator at the end of June 2023. Data courtesy of NASA/University of Nebraska (NASA GRACE).