



June 2023 Snowpack & Water Supply Outlook

Weather Forecast Office
Reno, NV
Tuesday, June 6



Above the Truckee River near Farad.
Top: May 5th (fresh snow)
Bottom: June 4th.



Chris Smallcomb
Meteorologist in Charge
NOAA National Weather Service
Reno, Nevada
chris.smallcomb@noaa.gov

Tim Bardsley
Service Hydrologist
NOAA National Weather Service
Reno, Nevada
tim.bardsley@noaa.gov



Wet Pattern Continues into Mid-June

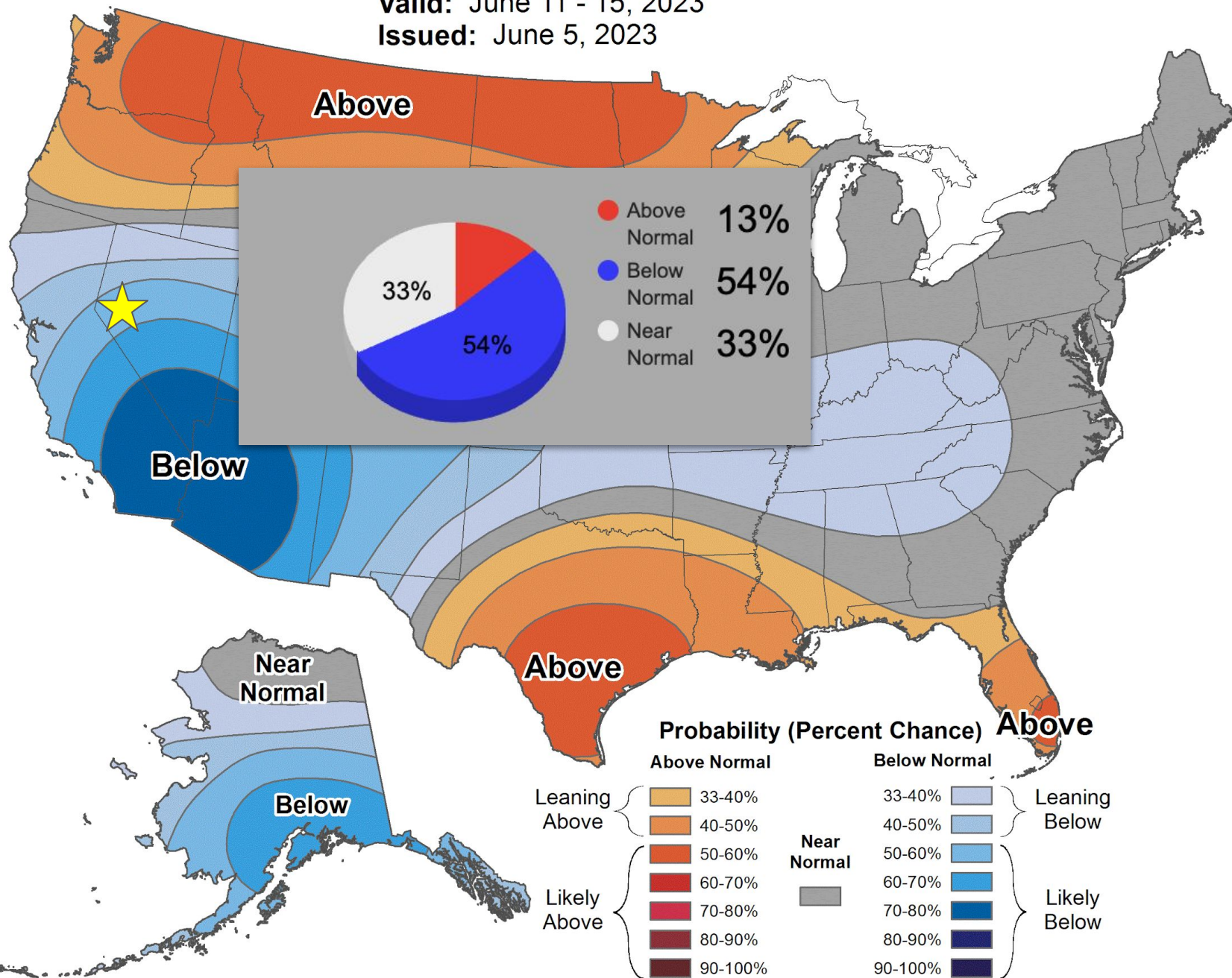
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Tuesday, June 6



6-10 Day Temperature Outlook



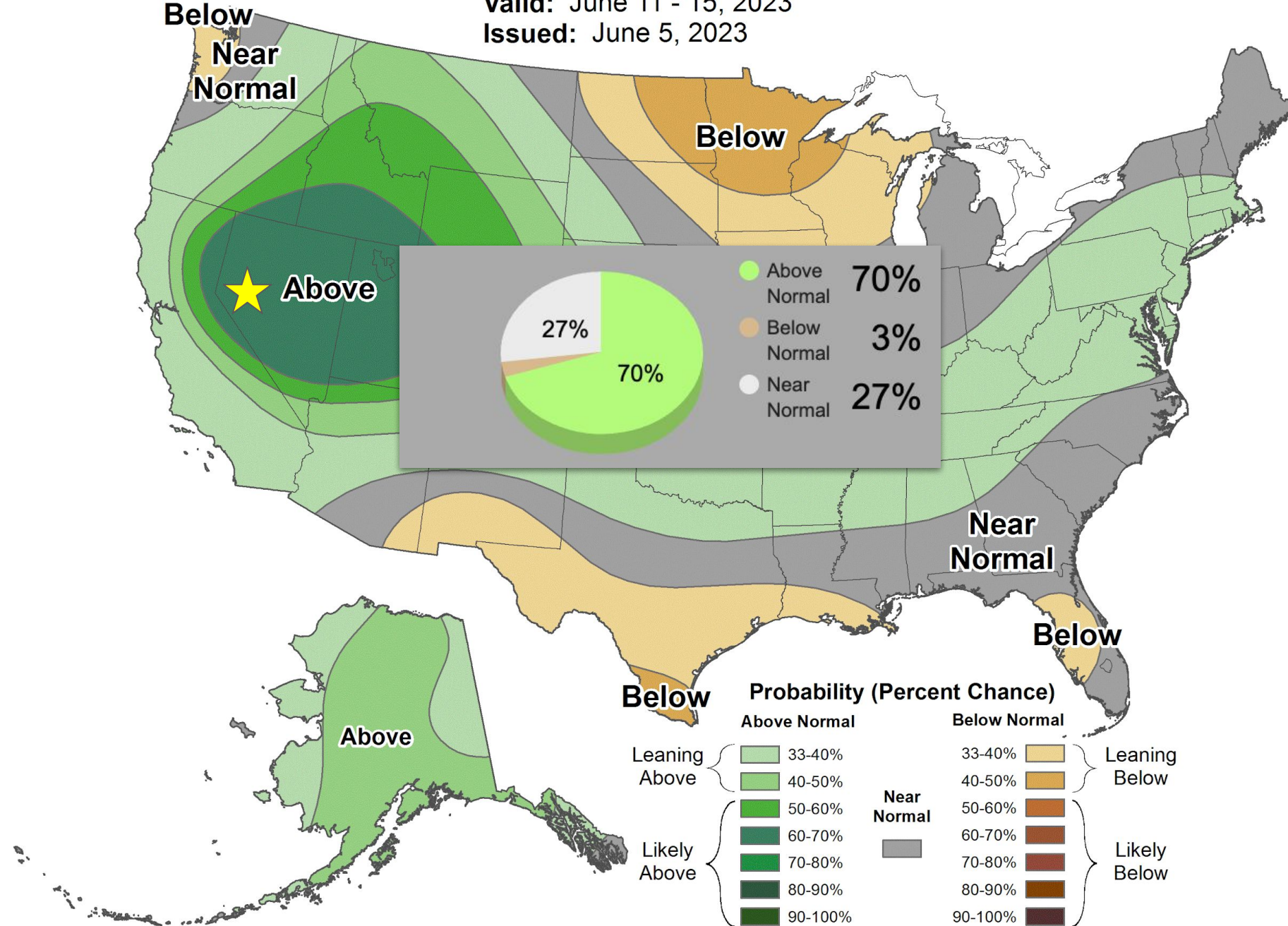
Valid: June 11 - 15, 2023
Issued: June 5, 2023



6-10 Day Precipitation Outlook



Valid: June 11 - 15, 2023
Issued: June 5, 2023



Our big winter doesn't want to let go!

Almost daily chances for rain and t-storms into next week.

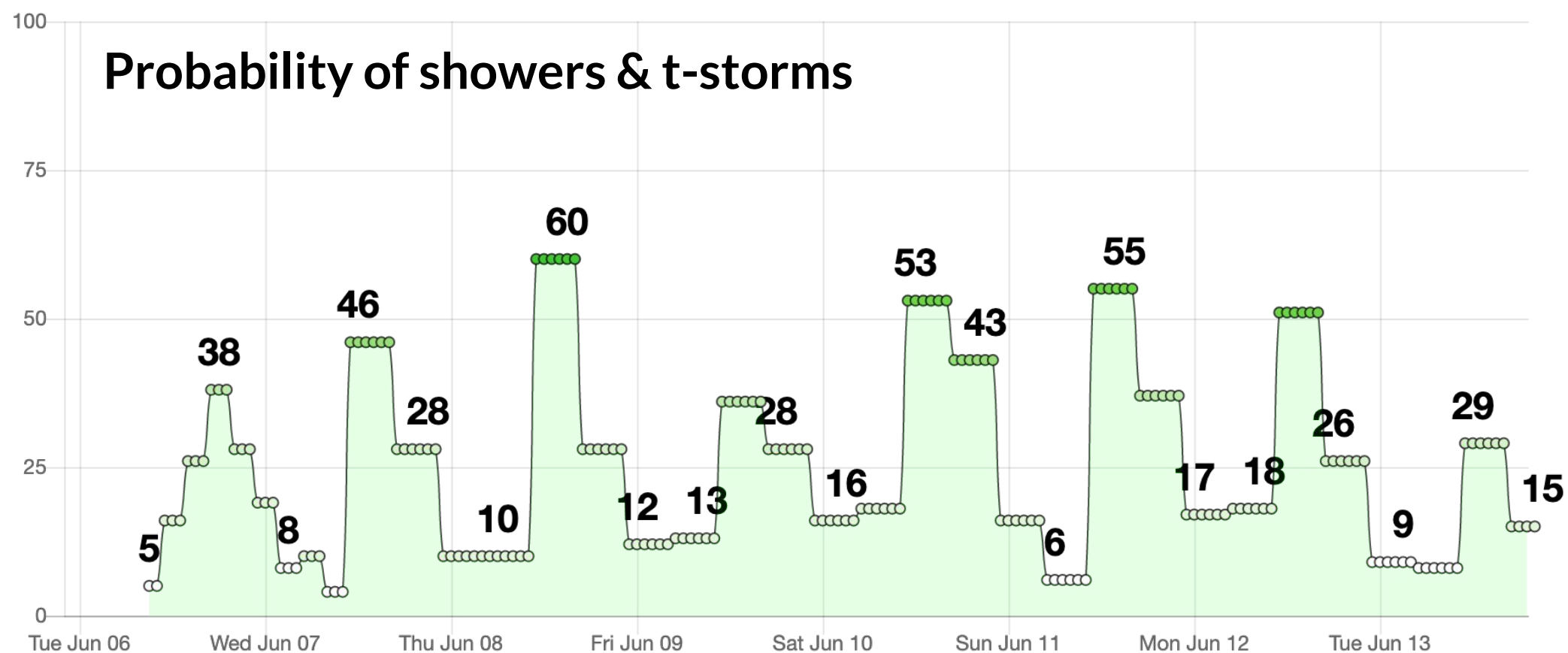
No heatwaves on the horizon, at least the next 7-14 days.



Important: Volatile Atmosphere Next 7 Days



Unusual and prolonged thunderstorm setup, daily risk.
 Localized heavy rains of 1-2", high winds above 50 MPH, lightning, and hail to quarter size are all possible.
 Flash flooding will happen sooner than normal - wet ground.
 Have a way of receiving weather warnings (e.g. iNWS) and monitor radar. **Outdoor events through this weekend should have a t-storm/lightning plan in place.**

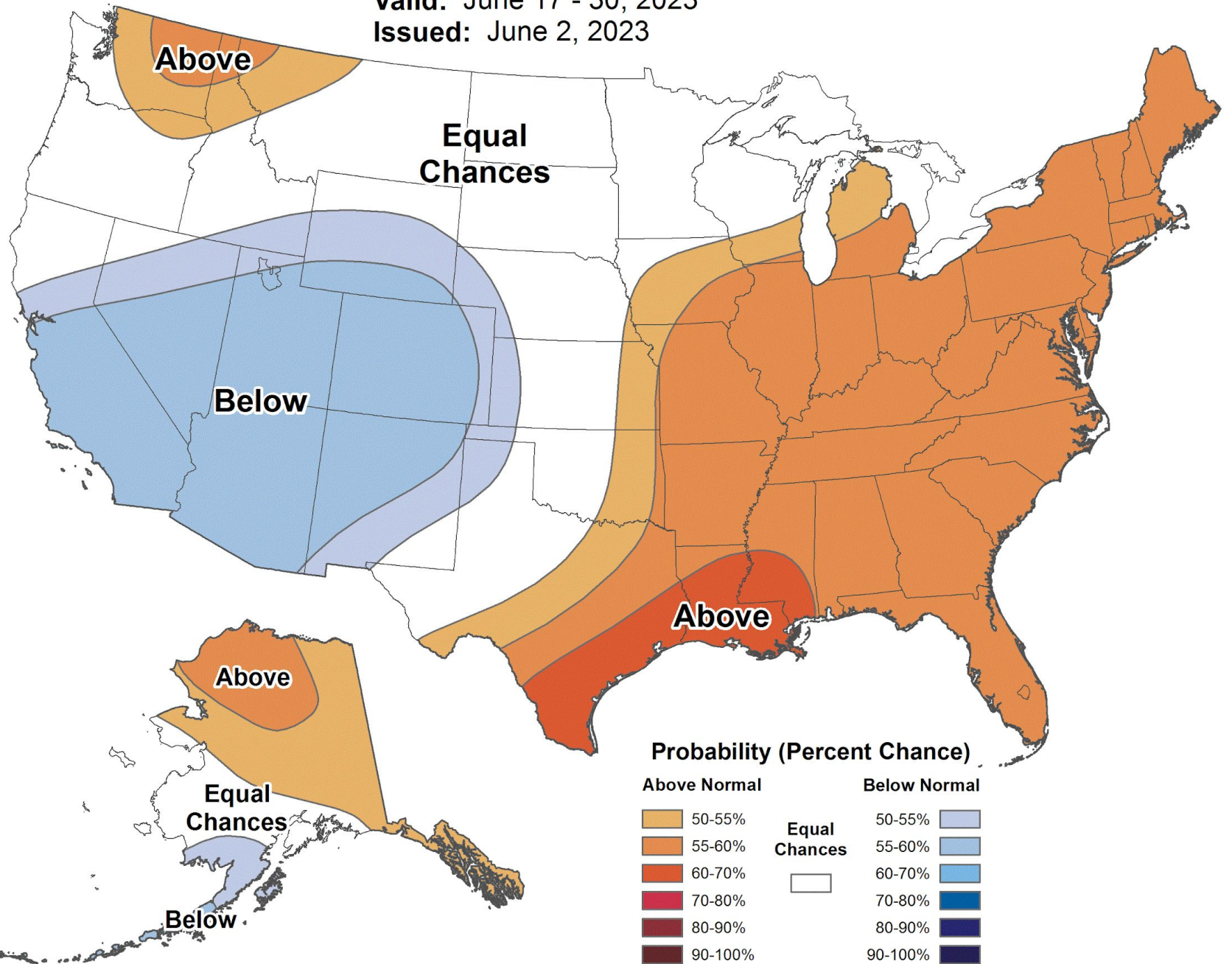




Weeks 3-4 Temperature Outlook



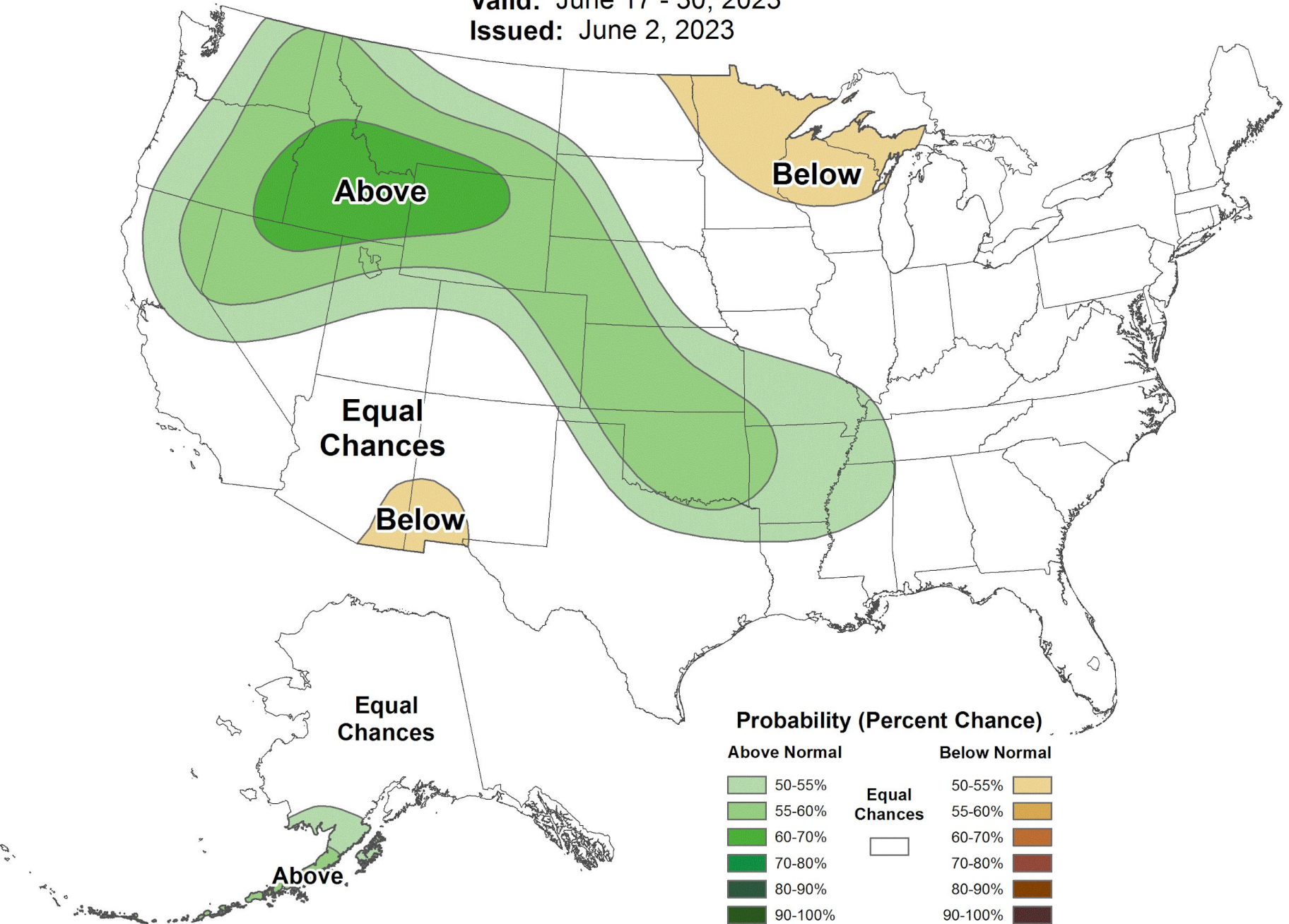
Valid: June 17 - 30, 2023
Issued: June 2, 2023



Weeks 3-4 Precipitation Outlook



Valid: June 17 - 30, 2023
Issued: June 2, 2023



Leaning near to above normal on precipitation and t-storm chances.

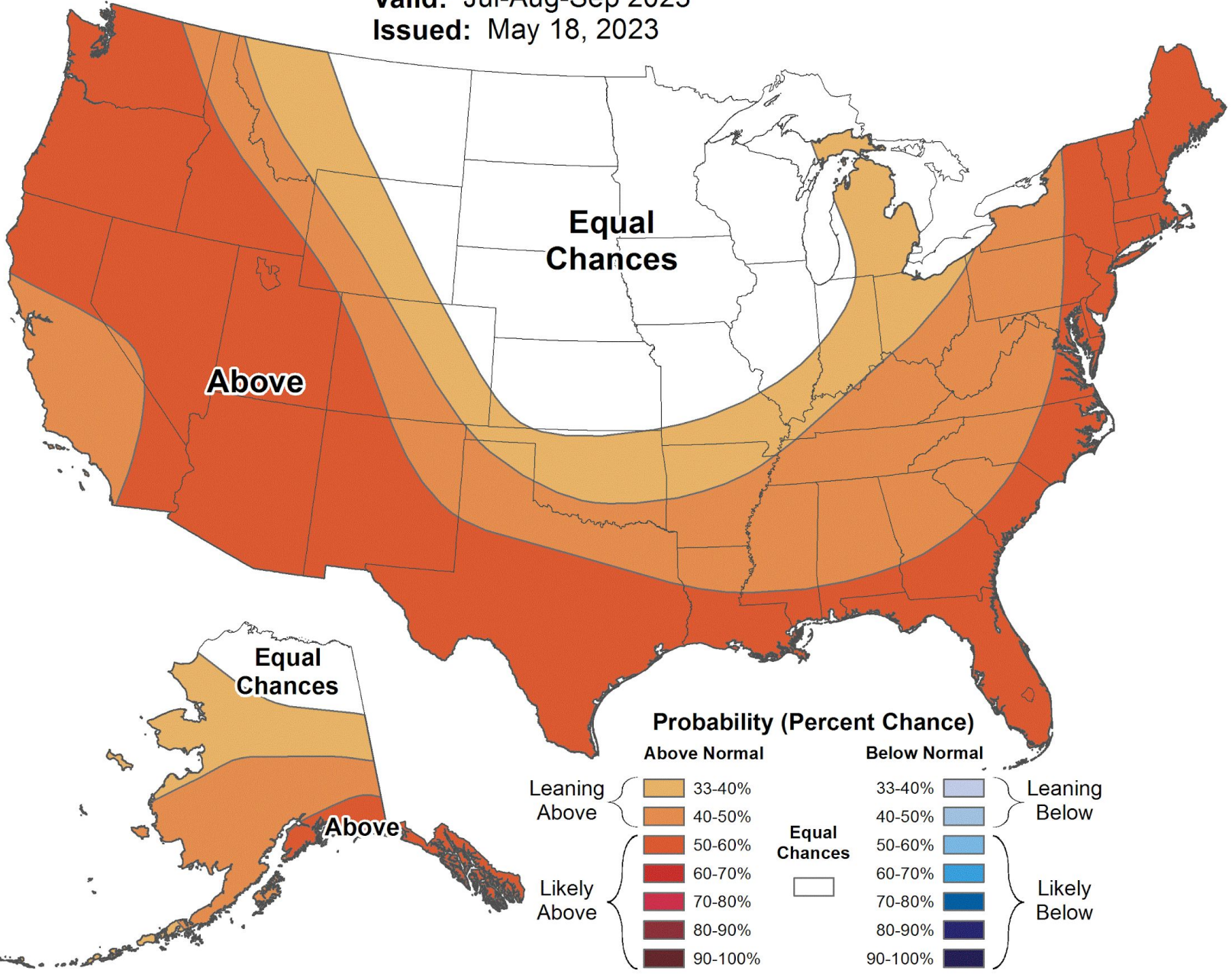
Leaning near to below normal on temperatures - limited risk of heatwaves this month.



Seasonal Temperature Outlook



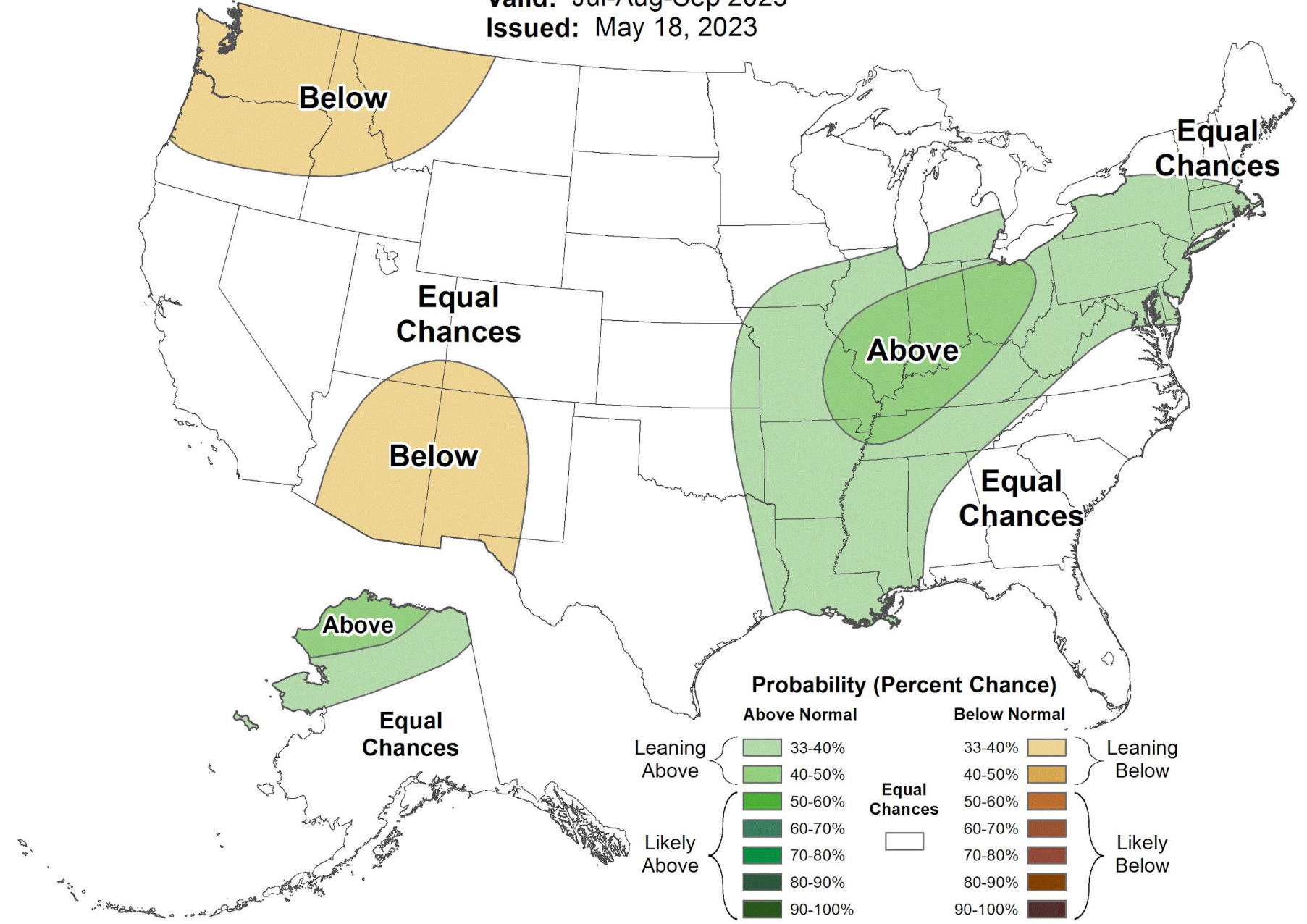
Valid: Jul-Aug-Sep 2023
Issued: May 18, 2023



Seasonal Precipitation Outlook



Valid: Jul-Aug-Sep 2023
Issued: May 18, 2023



Precip: No favored outcome. Monsoon may be less active than last year. More wind/RH red flag days possible.

Temps: Favoring above normal as we head into mid-late summer. Better risk of heatwaves into August-September.



Heatwave Potential Following Big Snow?

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Number of Days Max Temperature ≥ 100 - Jan through Dec - Reno Area, NV (ThreadEx)

Use navigation tools above and below chart to change displayed range



Odds favor a lower risk of major heatwaves this summer, at least thru June and July.

Why? More of the sun's energy is used to evaporate copious moisture out of the ground & plants instead of going right into heating up the air.

But not a 100% guarantee in the new climate...see 2017.



Deep Snowpack is Hard on Equipment and Recreation!

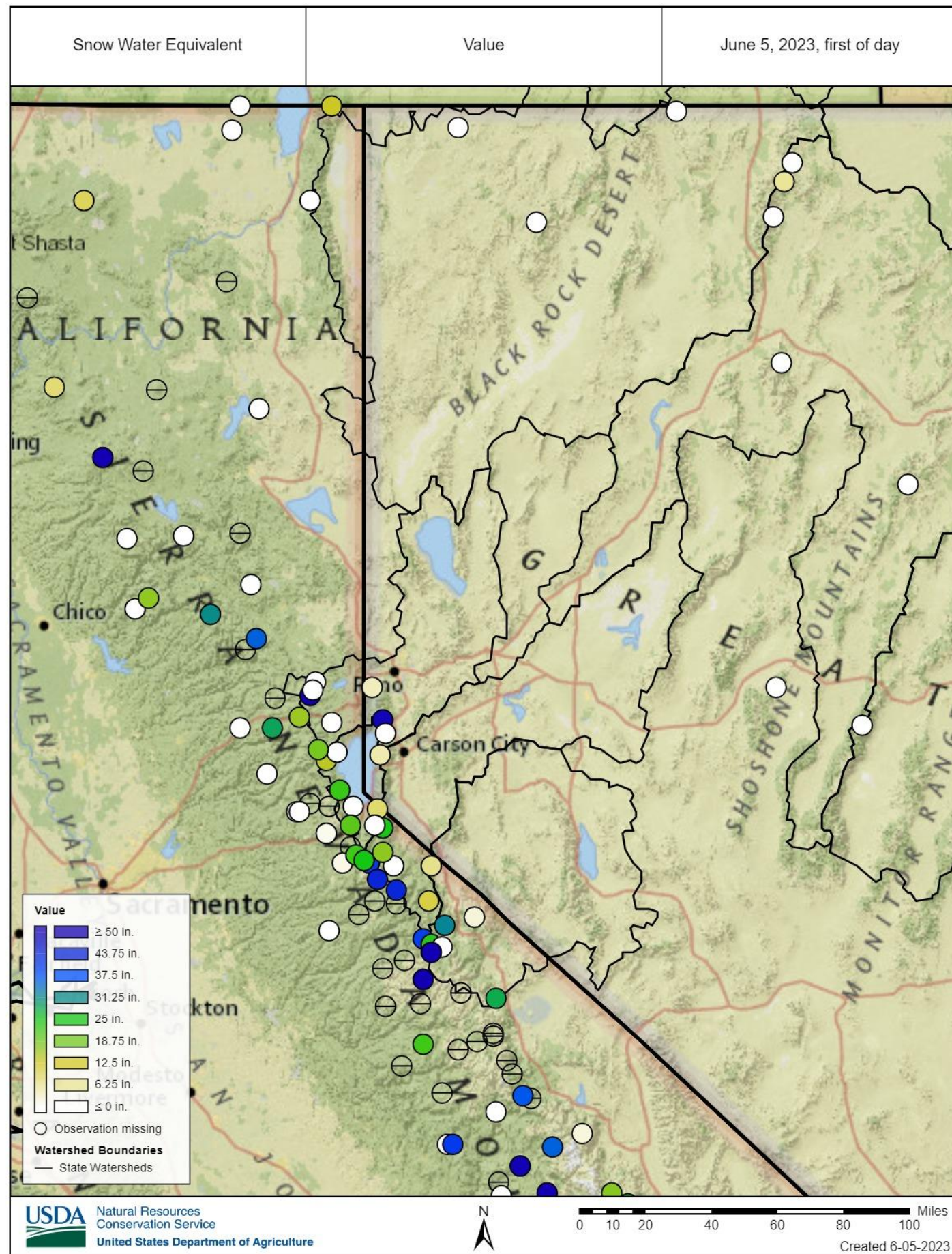
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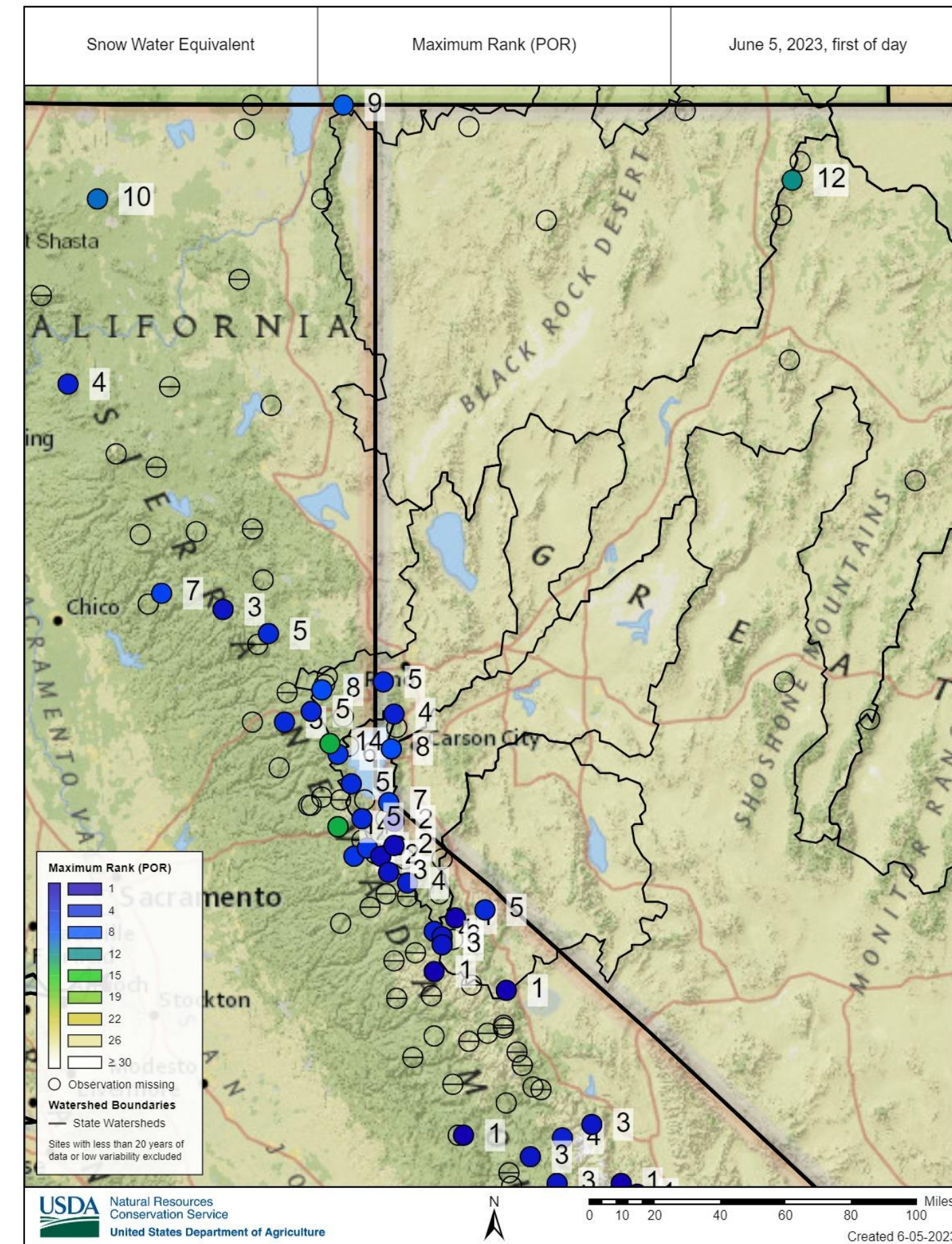
How's The Snowpack Doing?

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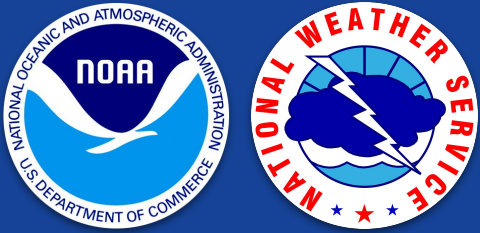


Left side is current SWE,
Right side maximum rank for current SWE

Only a few sites are still record for date, but many are close



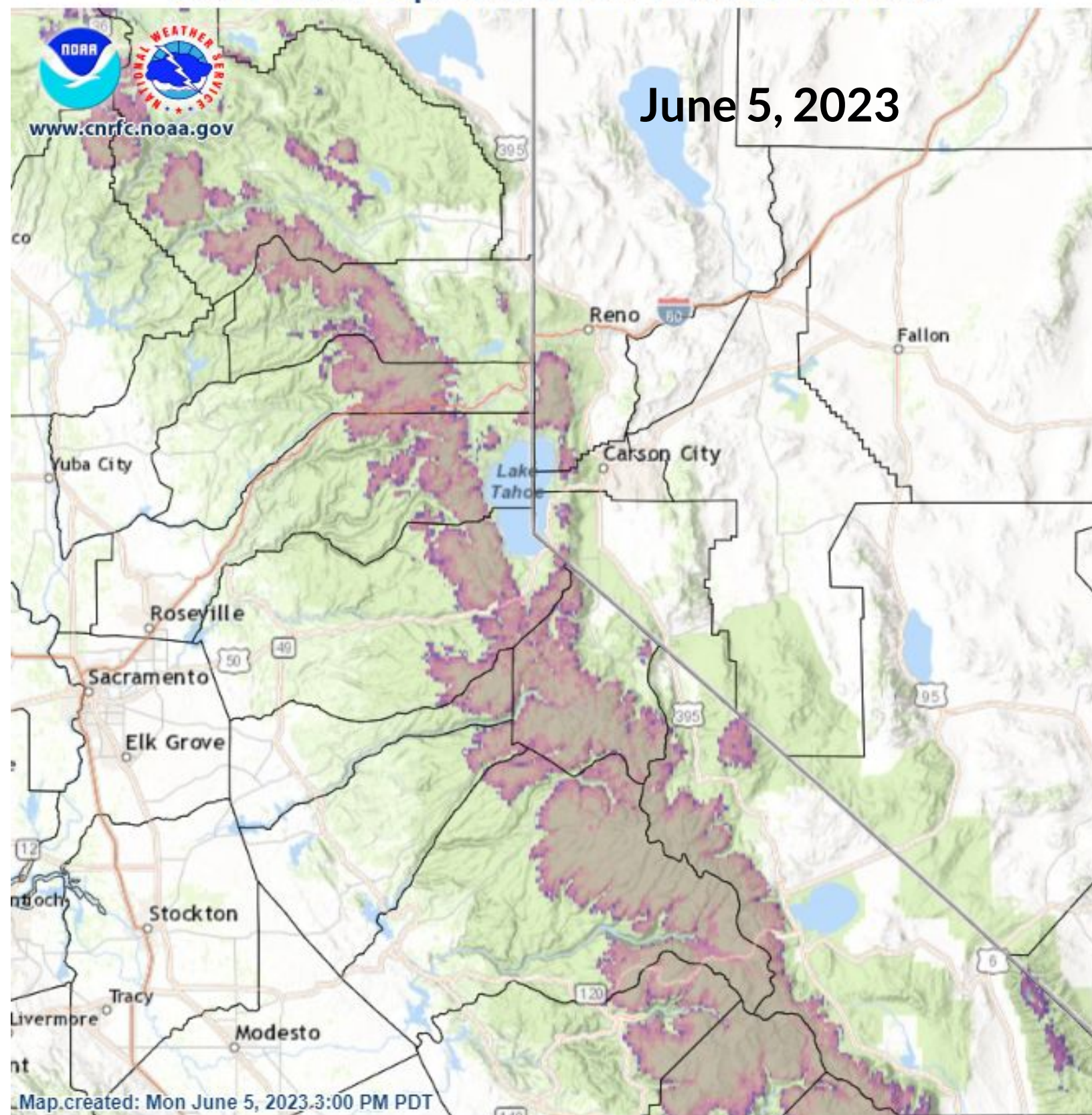
Source: [NRCs](https://www.nrcs.usda.gov/)



Snowpack Spatial Comparison

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Tuesday, June 6

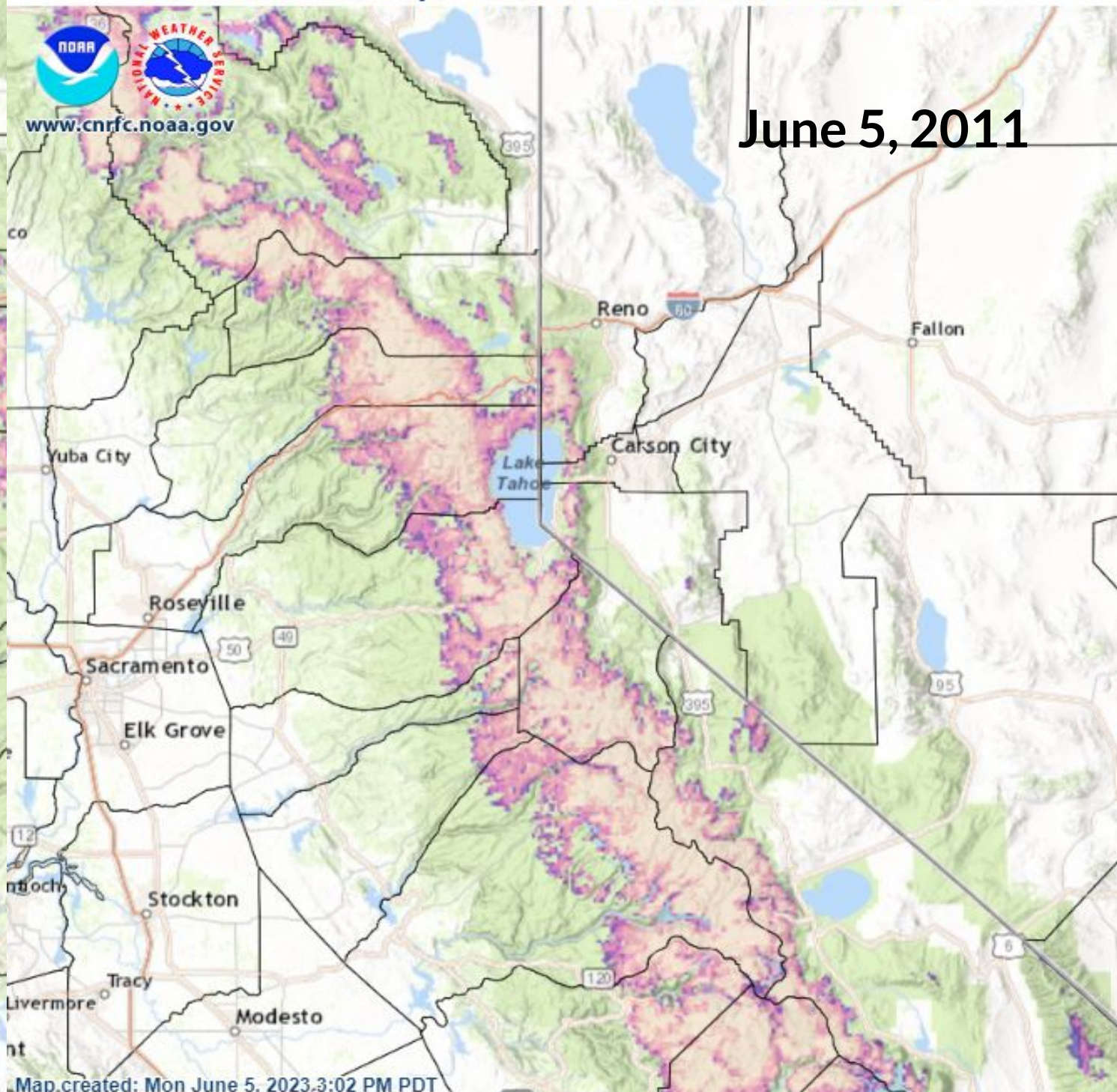
Snow Water Equivalent from NOAA's NOHRSC



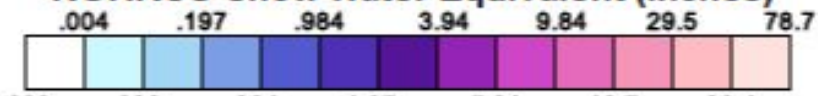
Snow Water Equivalent from NOAA's NOHRSC



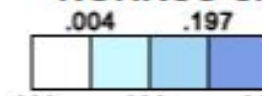
Snow Water Equivalent from NOAA's NOHRSC



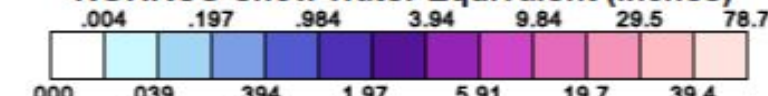
NOHRSC Snow Water Equivalent (Inches)



NOHRSC Si



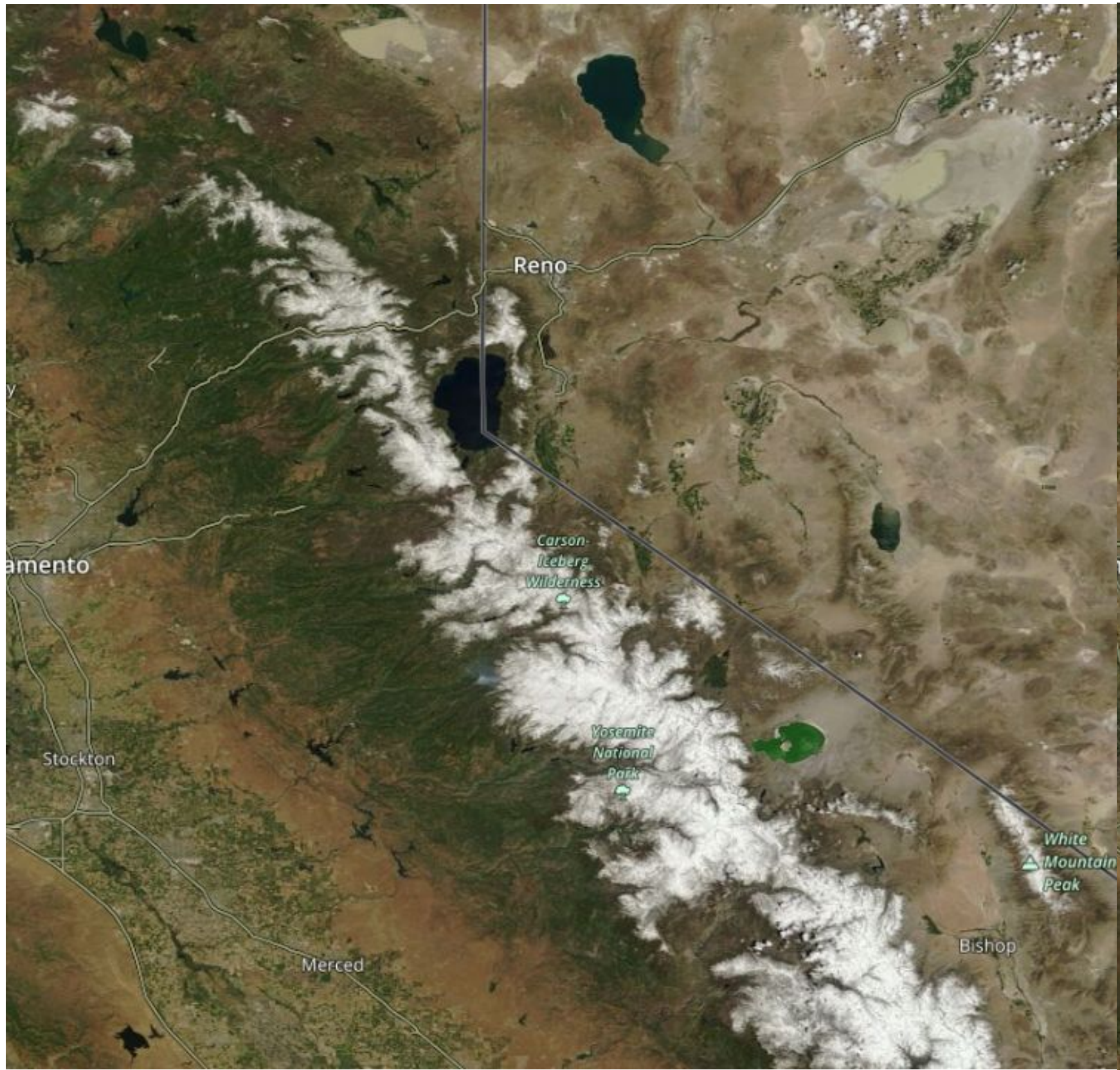
NOHRSC Snow Water Equivalent (Inches)



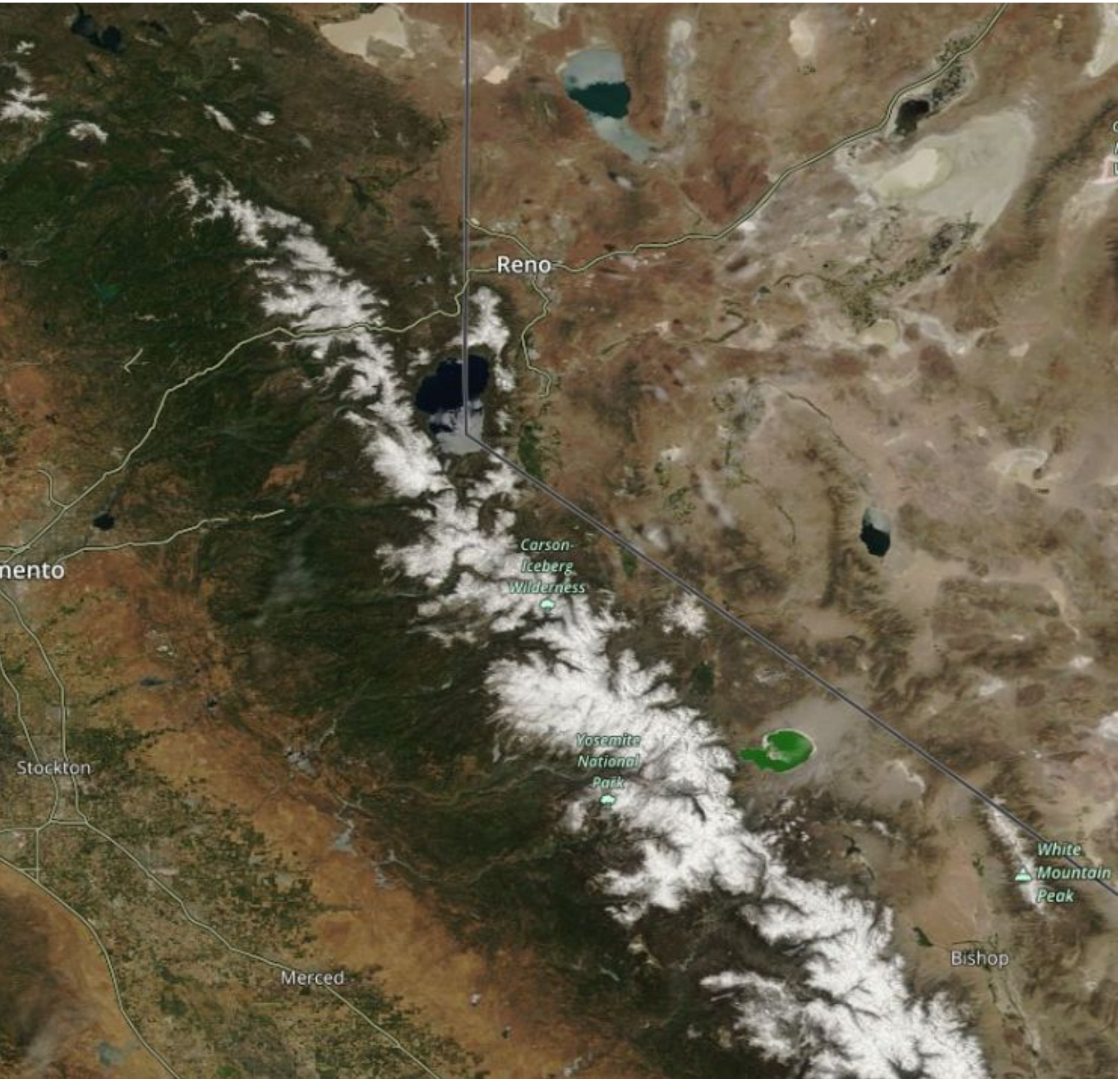


Satellite Imagery of Snowpack

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6/3/2023



6/6/2017



Walker and Mono County

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6/3/2023

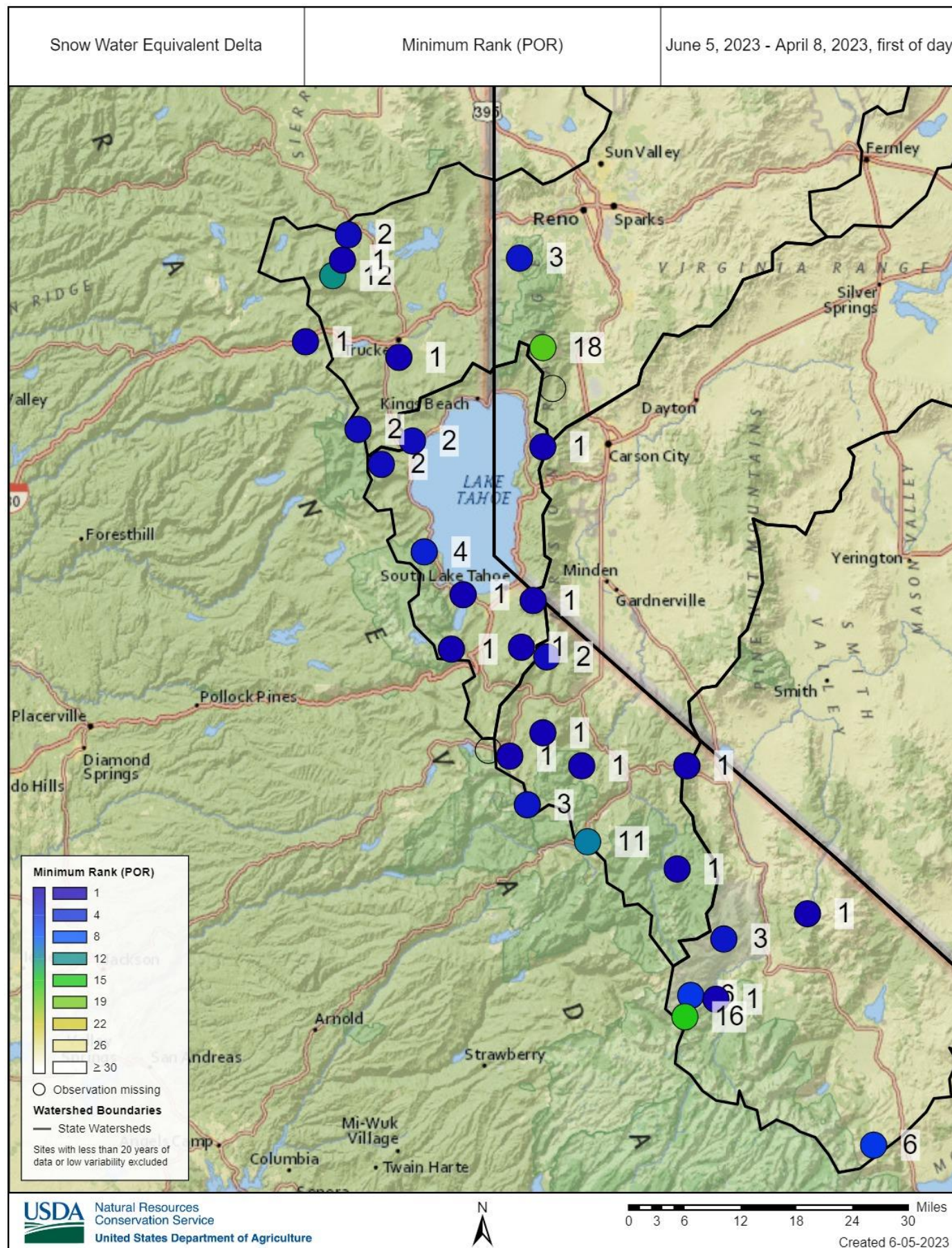


6/6/2017

6



How has the melt stacked up so far?

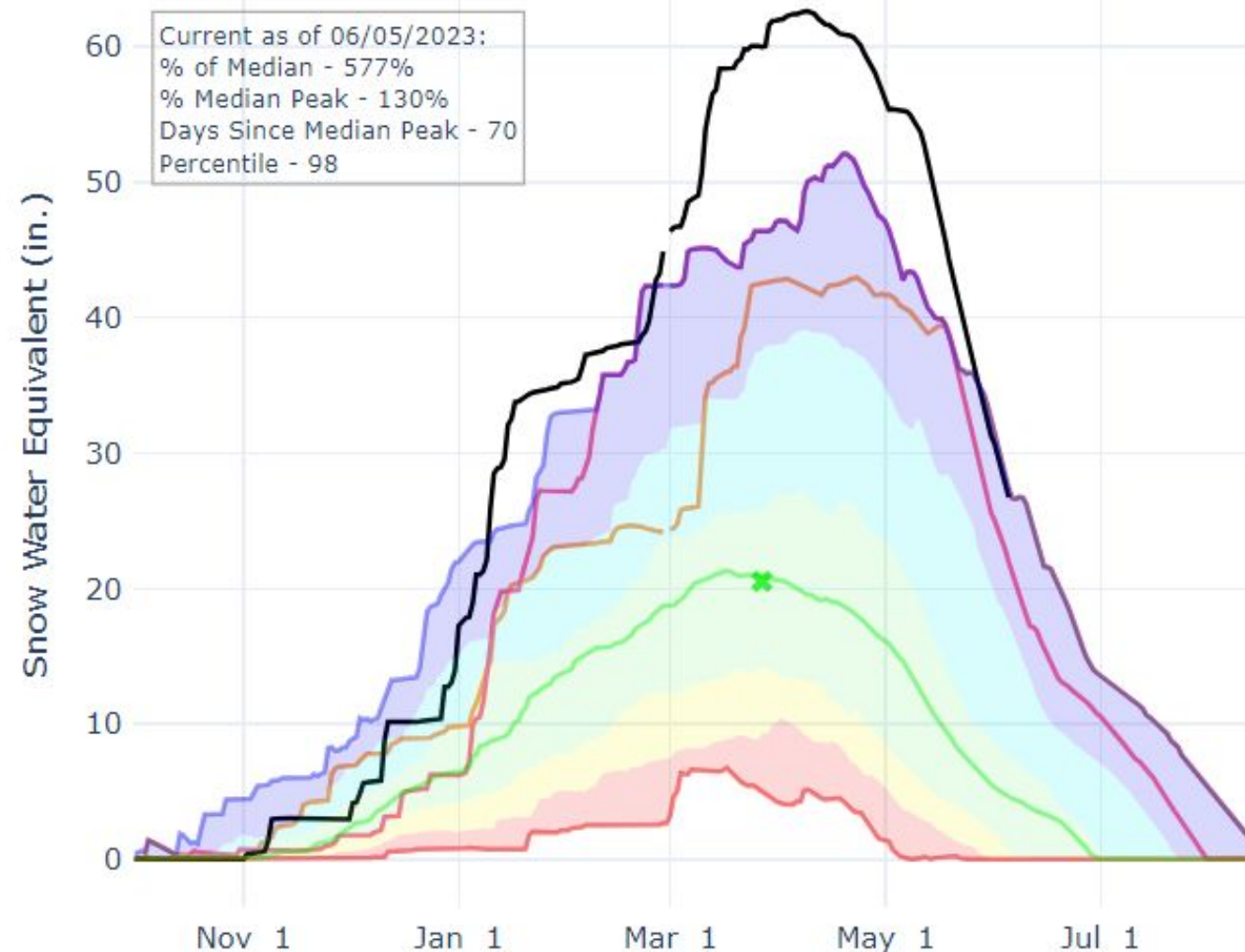


Left: SNOTEL SWE Loss ranked from April-Jun5, many records at low to moderate accumulation sites due to much greater amount of snow available to melt. Closer to middle of the pack for deep snow accumulation sites that are typically not limited by available snow.

SNOW WATER EQUIVALENT IN WALKER

Reset Range

[Link to data: CSV / JSON](#)

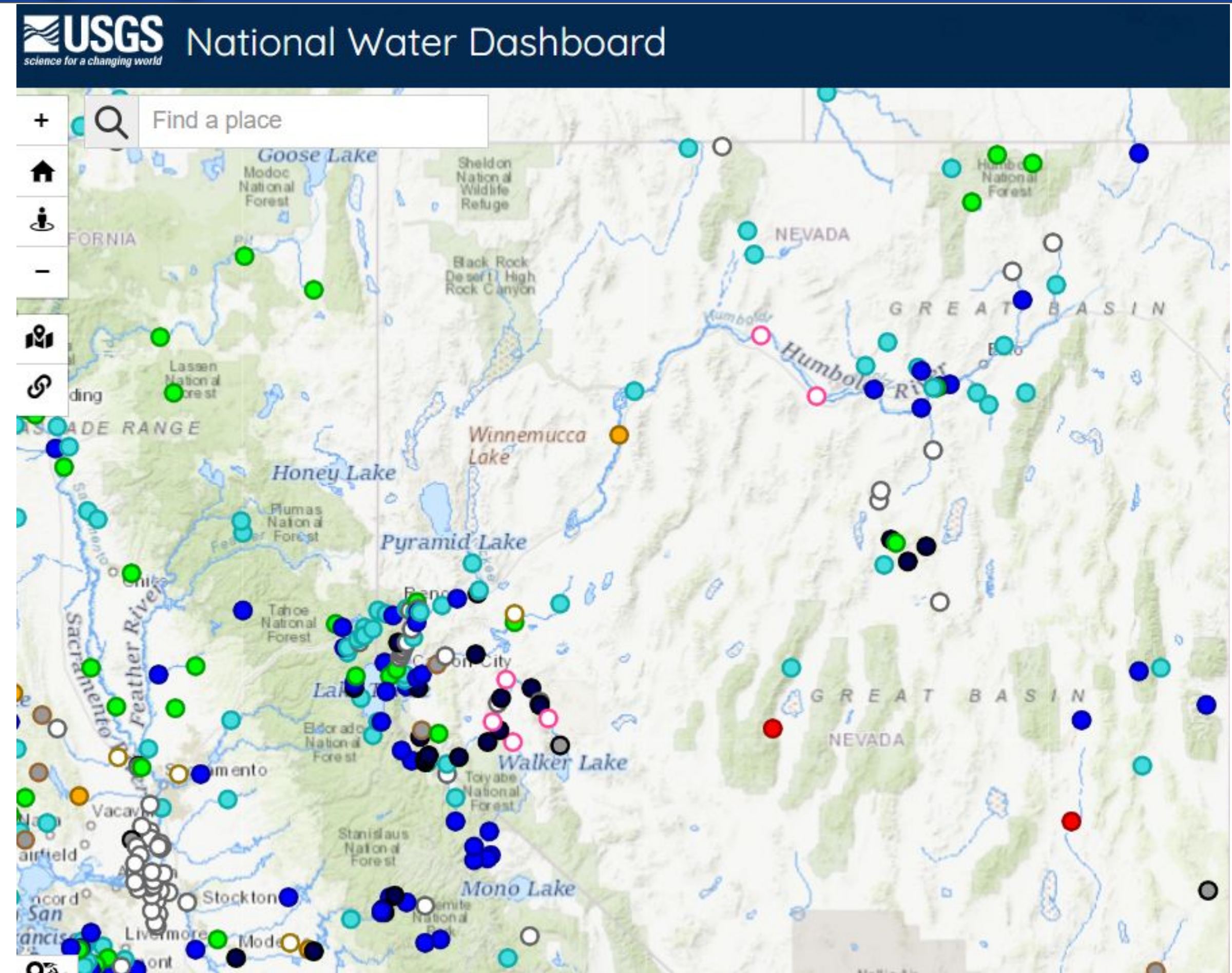


Right: Current SNOTEL snow water equivalent (SWE) in the Walker Basin (black) compared to 2017 in purple and 1995 in brown.



Streamflows Today - Way Above Normal to Record

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Streamflow: Status

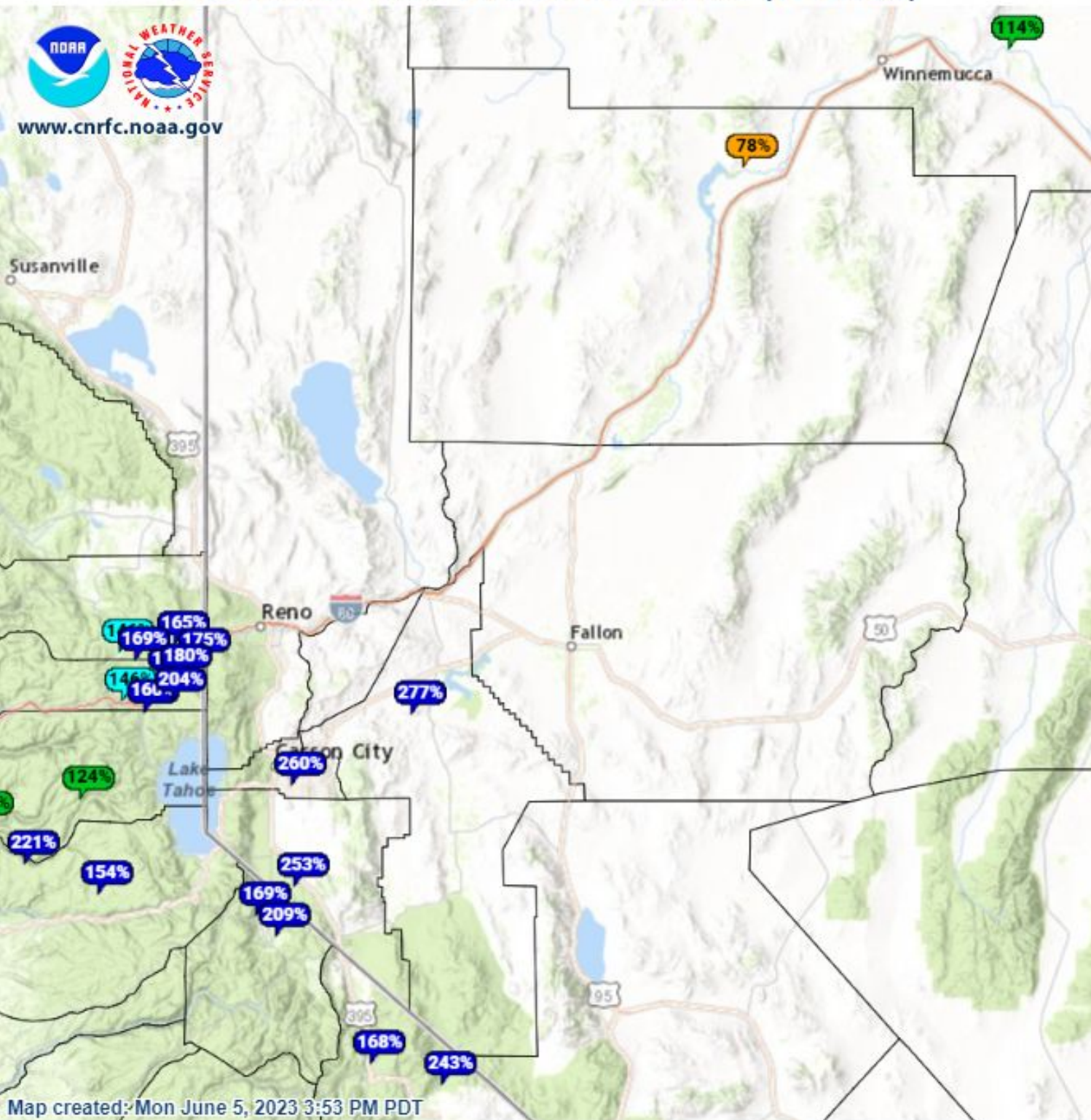
- Above flood stage
- All-time high for this day
- Much above normal
- Above normal
- Normal
- Below normal
- Much below normal
- All-time low for this day
- Not flowing
- Not ranked
- Measurement flag
- Recent measurement unavailable

Source: USGS National Water [Dashboard](#)

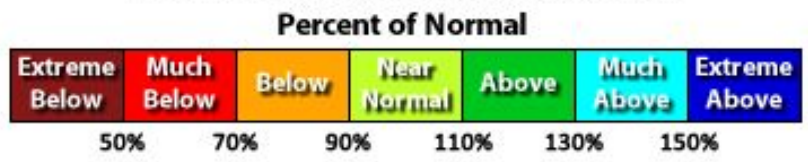


Water Year Flow to date

Observed Water Year Flow To Date (WY2023)



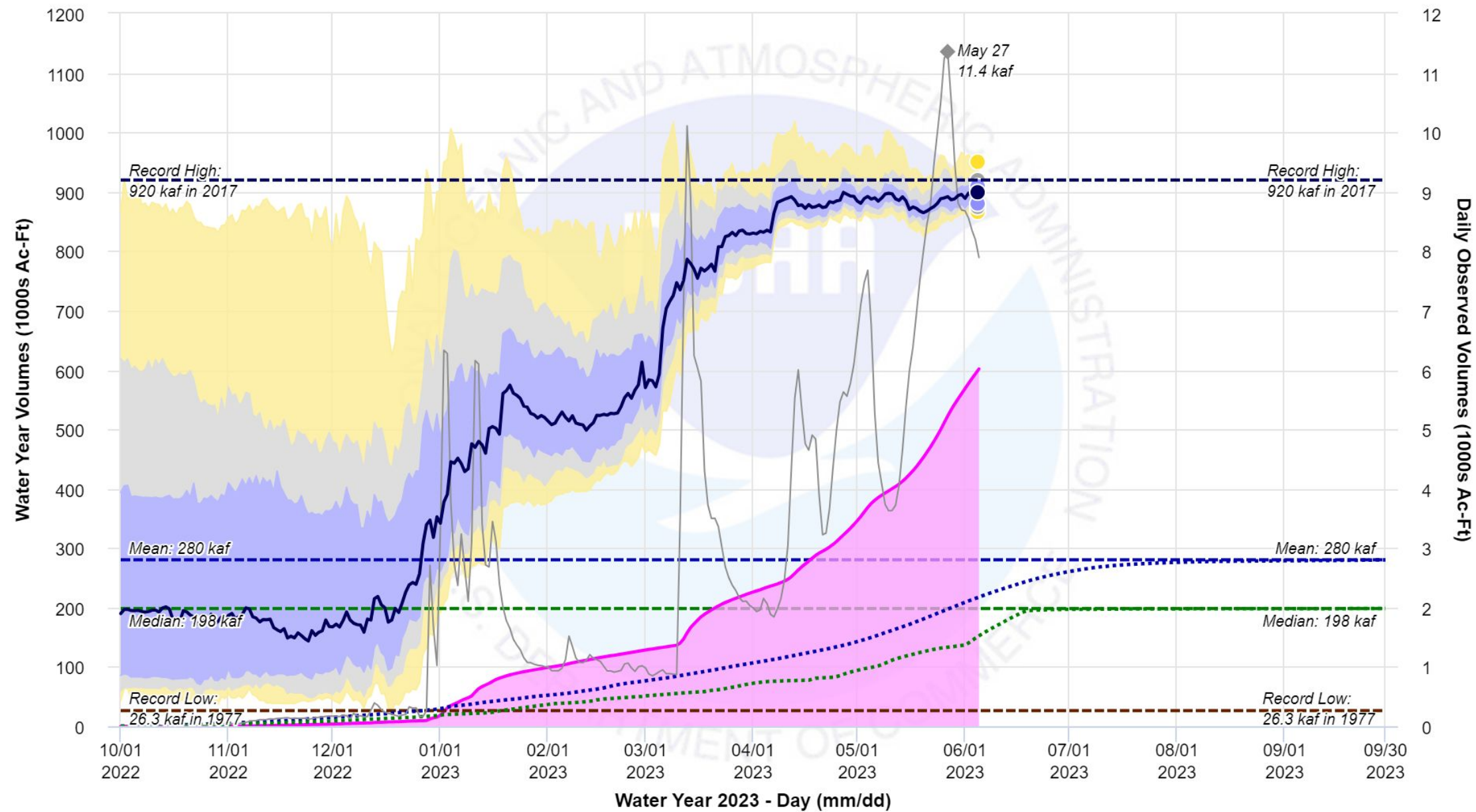
Valid: Mon Jun 5, 2023 at 5:00 AM PDT



CARSON - FORT CHURCHILL, NR (FTCN2) 06/05/2023

Median Forecast: **899 kaf** | **321% of Mean** | **454% of Median**

Created: 06/05/2023 at 11:35 AM PDT

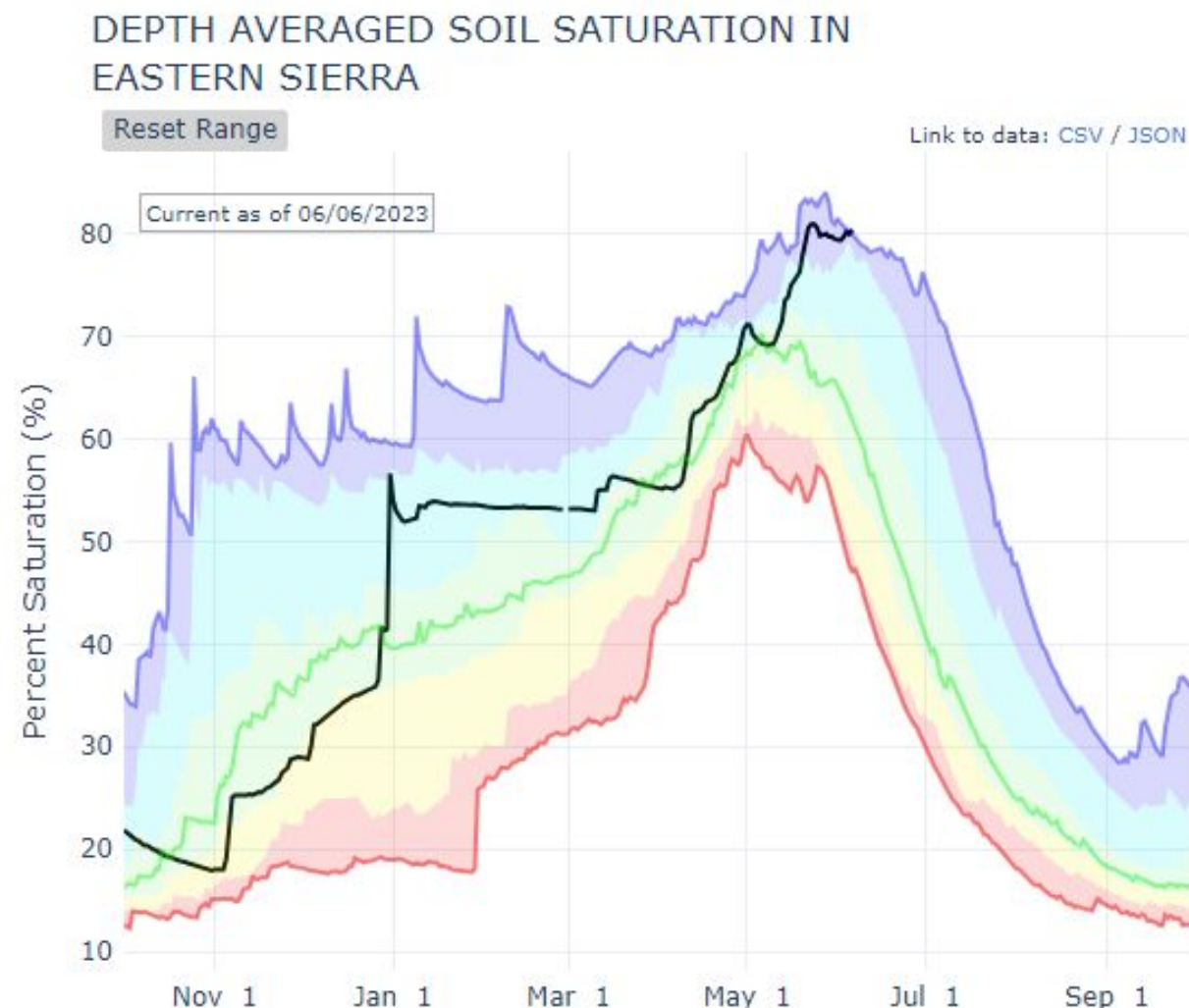


Observed to Date Percent of Mean: **277% (602 kaf)** Water Year to Date Mean: **217 kaf**
Historical Water Year Vol Max: **920 kaf in 2017** Historical Water Year Vol Min: **26.3 kaf in 1977**

This product only considers meteorological uncertainty and does not account for hydrologic uncertainty.
Means/medians are based on the period of Water Years 1980 through 2021.

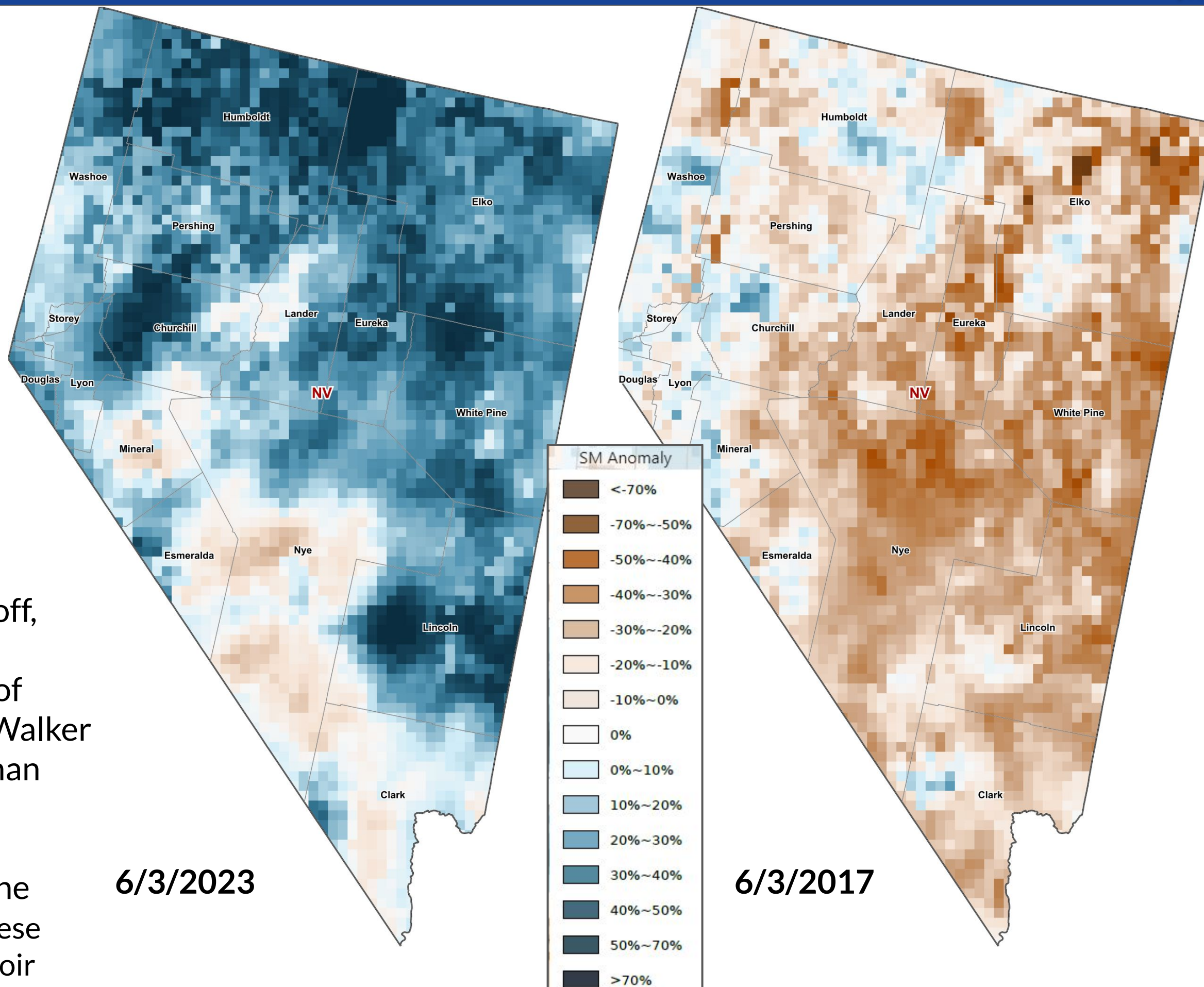
Legend entries below can be toggled on/off.

- WY Volume Mean
- Daily Obs
- ESP WY Vol Fcst Max/Min
- WY Volume Median
- ◆ Obs Peak
- Record Low
- WY to Date Obs
- ESP WY Vol Fcst 50%
- Record High
- WY to Date Mean
- ESP WY Vol Fcst 25/75%
- ESP WY Vol Fcst 10/90%
- ▼ Snow Model Updates



Wet soils have resulted in more efficient runoff, especially in the Walker System. Preliminary numbers indicate a much higher percentage of water from Bridgeport and the Upper West Walker have made it to the Mason Valley this year than over the same period in 2017.

April 1-June 5th 2017, Mason saw ~73% of the upstream volume vs. ~ 93% this year. (note these numbers do not account for differences in reservoir

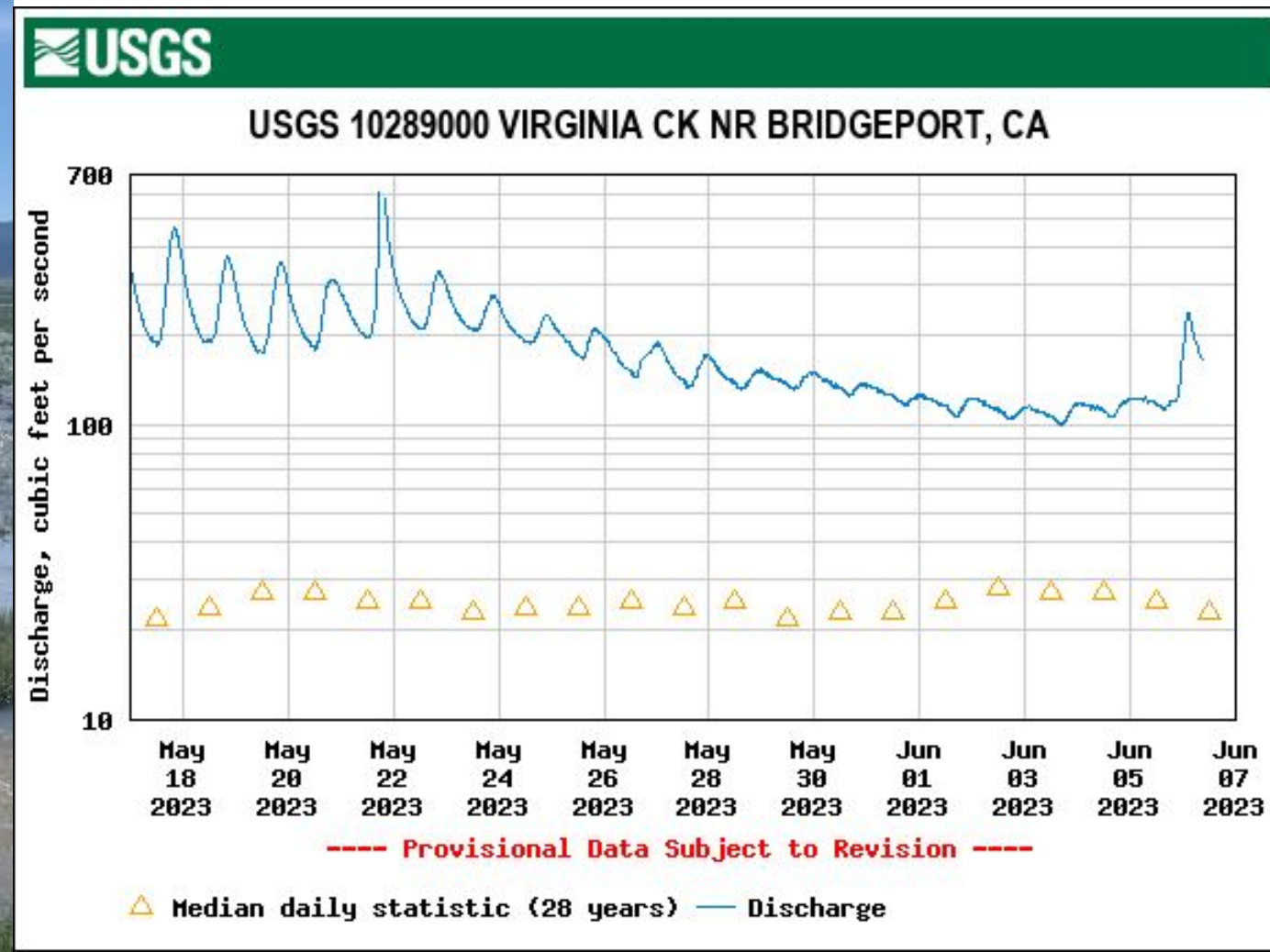


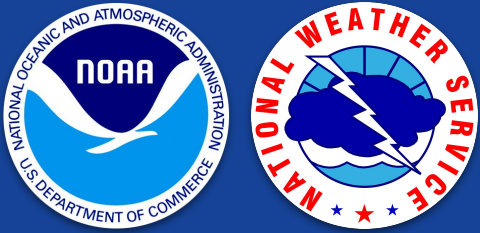


Mono Small Streams



Photo Credit:WRID

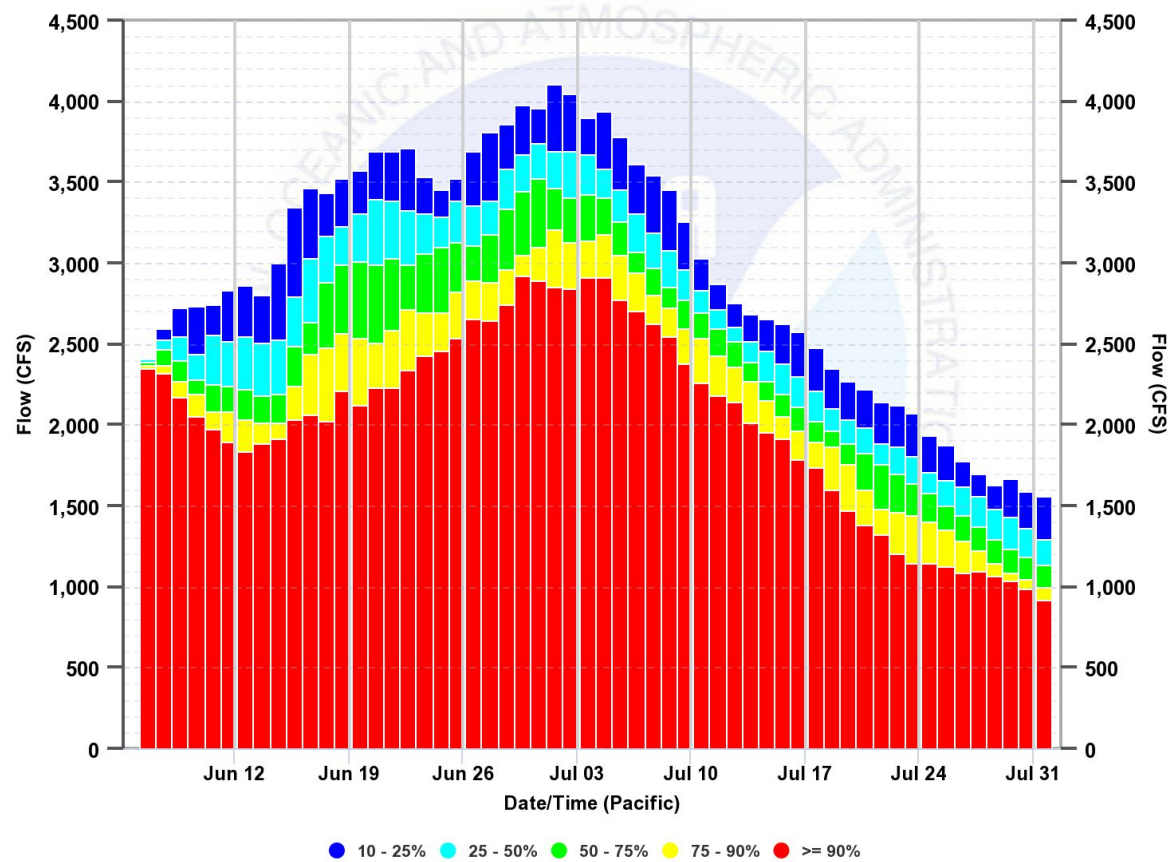




Timing of Flows Through July

WEST WALKER RIVER - BELOW LITTLE WALKER RIVER NEAR COLEVILLE (WWBC1) - Chance of Flow Exceedance

Interval: 1 Day | Value Type: Mean | Analysis Years: 1980 - 2021
Forecast for the period 06/05/2023 5 am - 07/31/2023 5 am Pacific
This is a conditional simulation based on the current conditions as of 06/05/2023



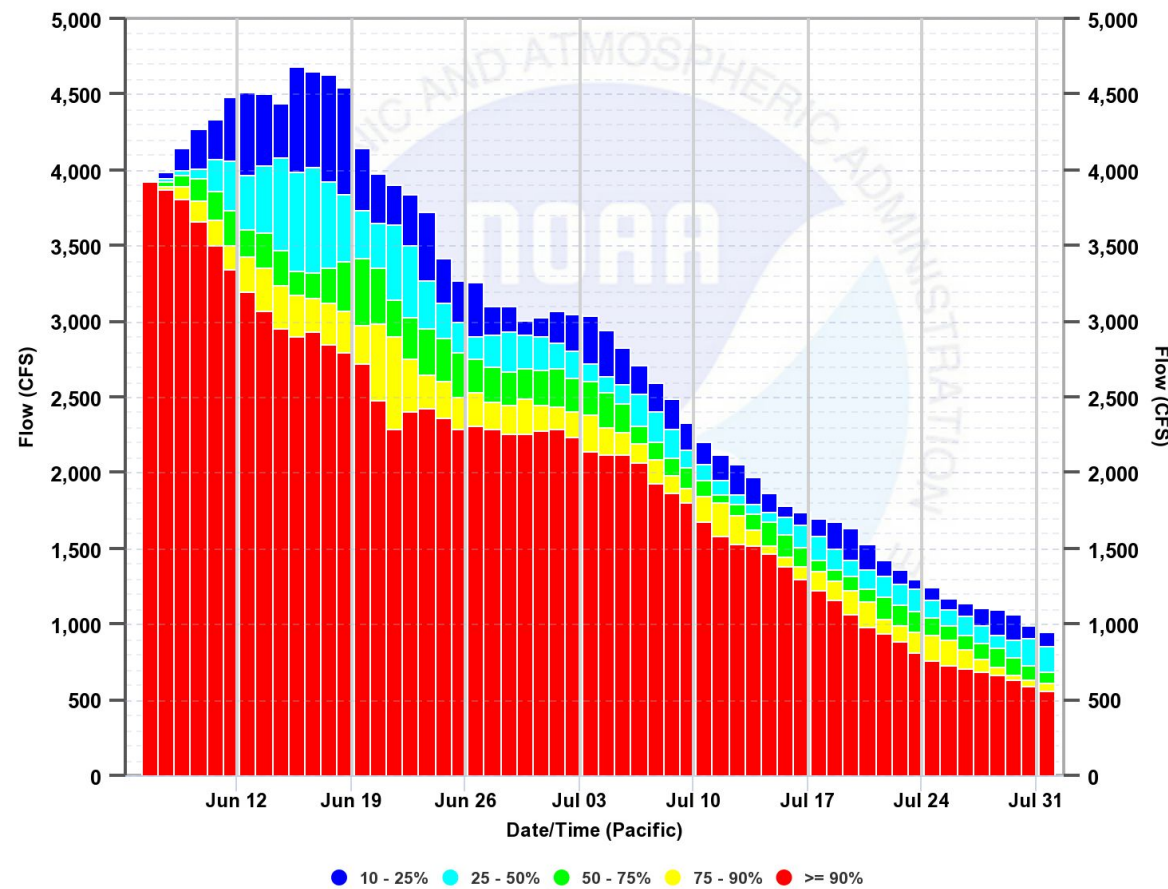
Walker River

Prolonged flood flows, with additional peaks likely into early July.

Recent rain impacting Walker Basin with rising flows

CARSON RIVER - CARSON CITY (STWN2) - Chance of Flow Exceedance

Interval: 1 Day | Value Type: Mean | Analysis Years: 1980 - 2021
Forecast for the period 06/05/2023 5 am - 07/31/2023 5 am Pacific
This is a conditional simulation based on the current conditions as of 06/05/2023

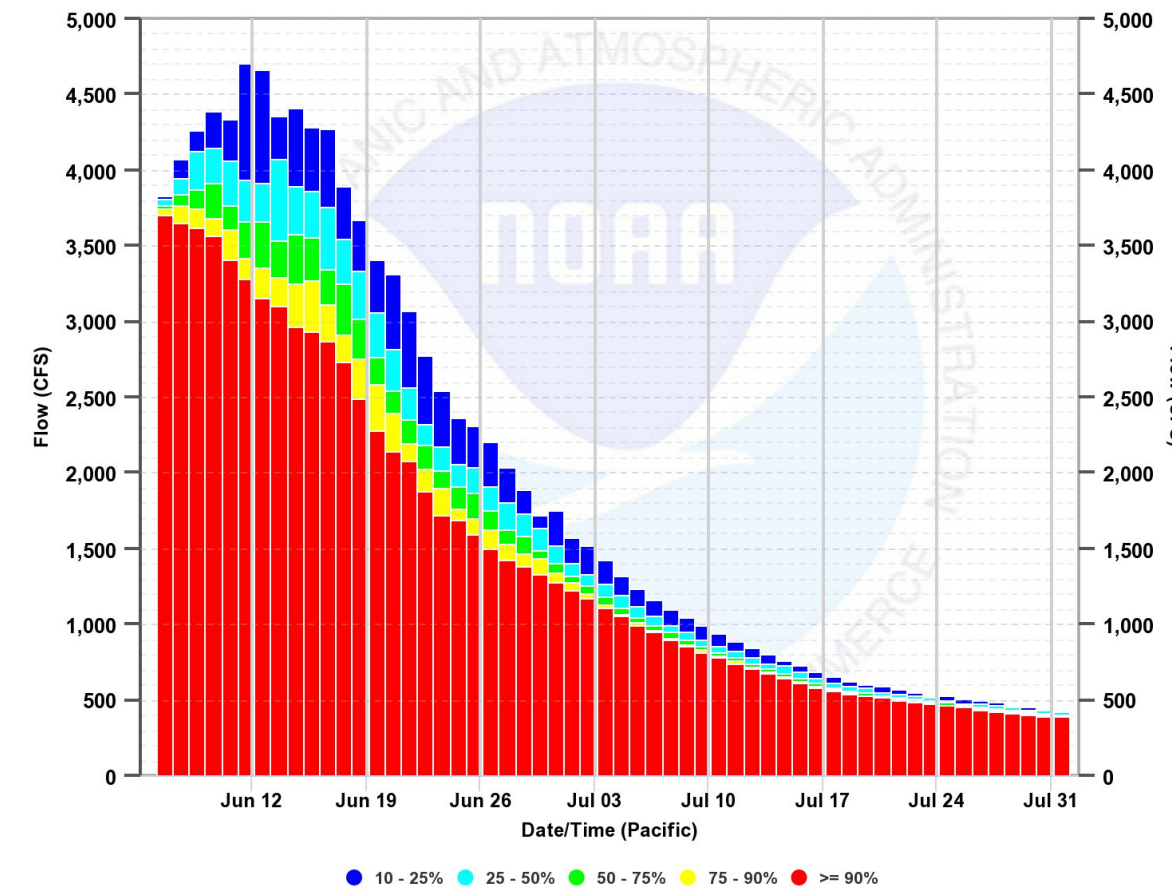


Carson River

Additional peaks likely in late June, but below previous peaks.

TRUCKEE RIVER - FARAD (FARC1) - Chance of Flow Exceedance

Interval: 1 Day | Value Type: Mean | Analysis Years: 1980 - 2021
Forecast for the period 06/05/2023 5 am - 07/31/2023 5 am Pacific
This is a conditional simulation based on the current conditions as of 06/05/2023



Truckee River

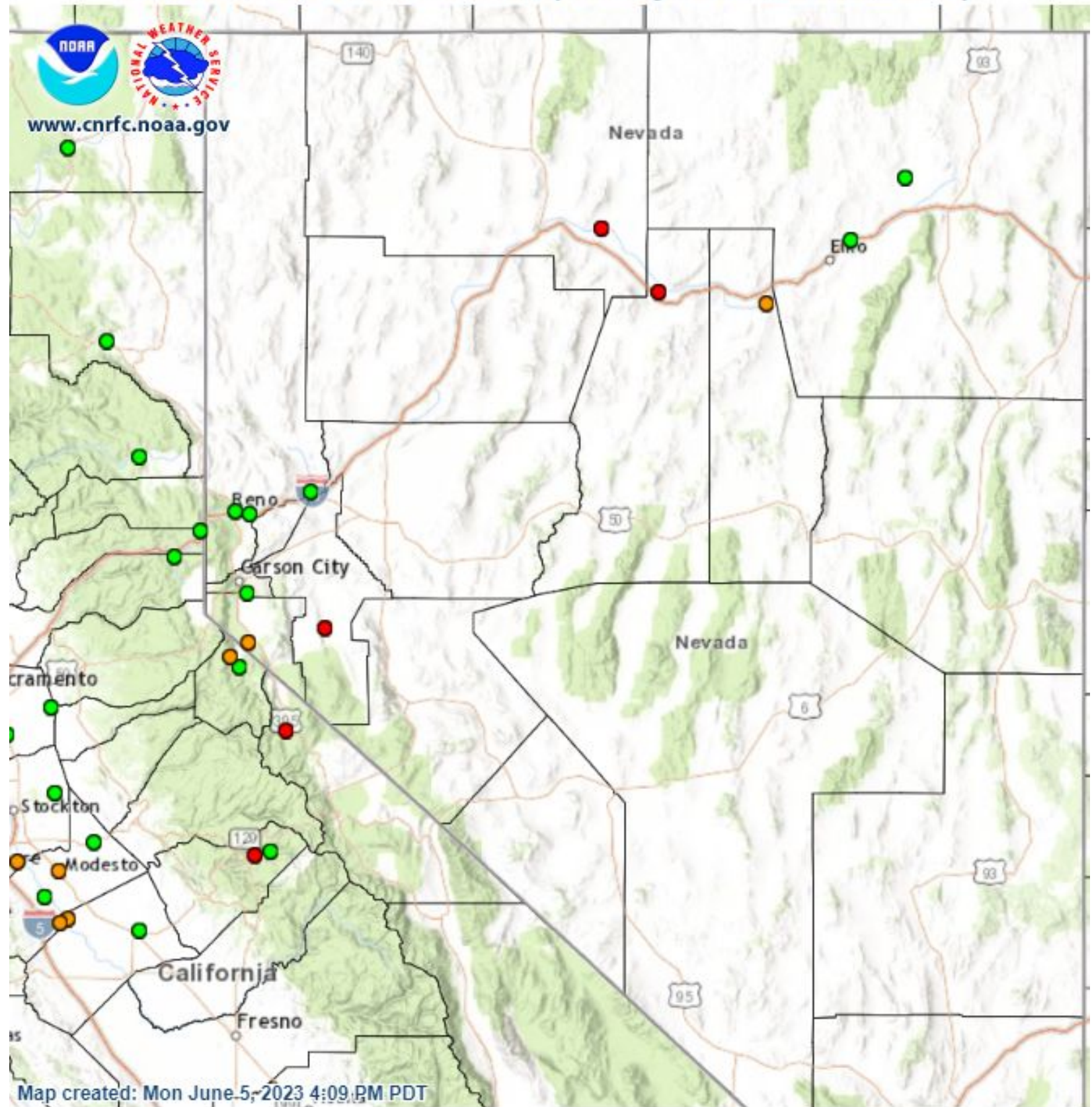
Additional rises possible, but not a flood risk.



Next 7-10 Days: Mostly Modest Decreases in flow but Thunderstorms are a wildcard

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Ensemble River Forecast (10-day 50% Exceedance)

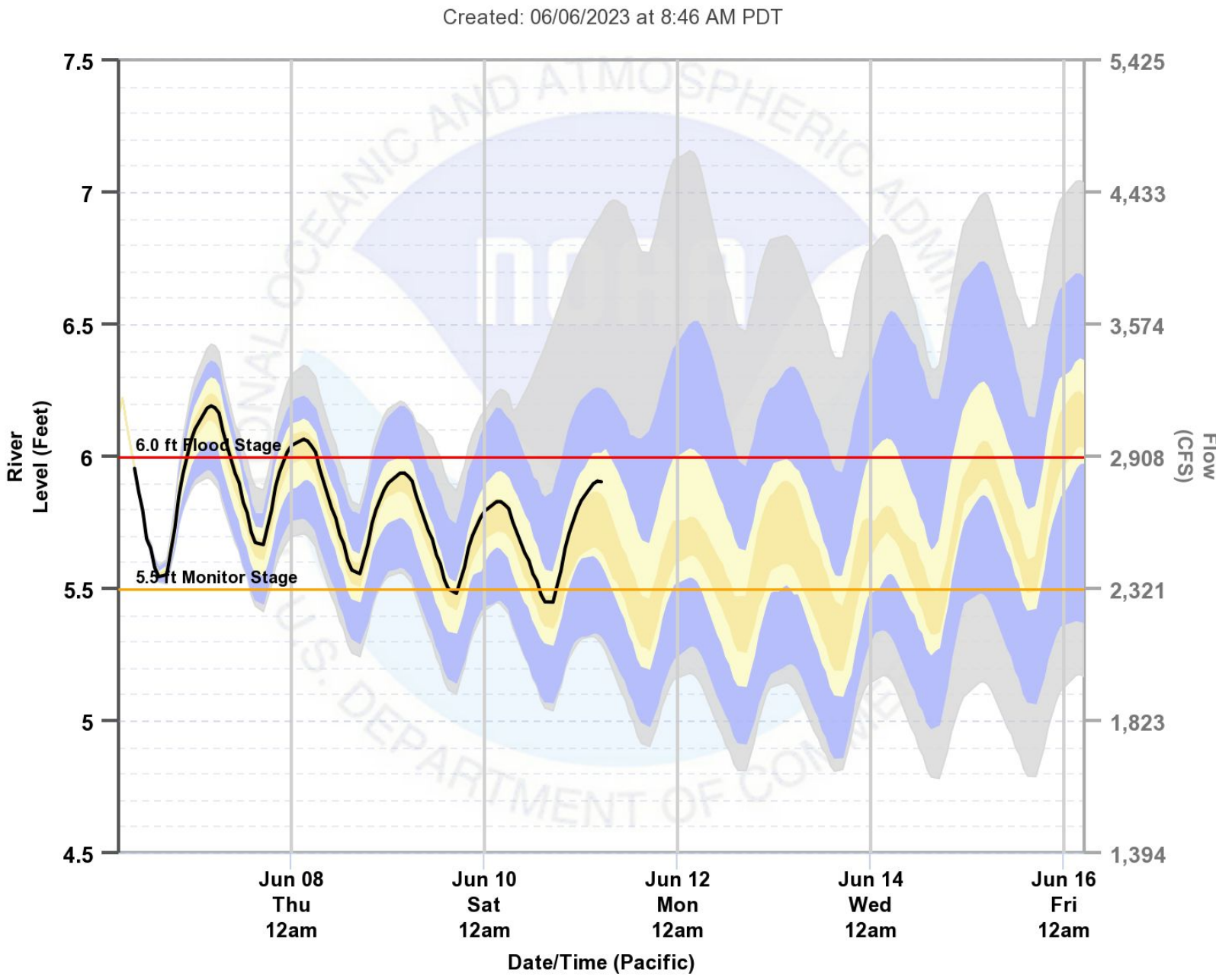


Map created: Mon June 5, 2023 4:09 PM PDT

○ No Monitor or Flood Stage Available
● 80 Normal Conditions
● 7 Above Monitor Stage
● 5 Above Flood Stage
● 0 Above Danger Stage

The number inside each circle above represents the number of gages with forecast conditions inside that category.

Hourly River Level Probabilities
WEST WALKER RIVER - HWY 395 BELOW LITTLE WALKER (WWBC1)



Chance of Peak River Level Exceedance (Feet)

Forecast Period: 06/06/2023 5 am - 06/16/2023 5 am

2%	7.16
5%	7.00
10%	6.70
25%	6.40
50%	6.33
75%	6.22
90%	6.22
95%	6.22
98%	6.22

Flood Stage 6.0 ft > 98%

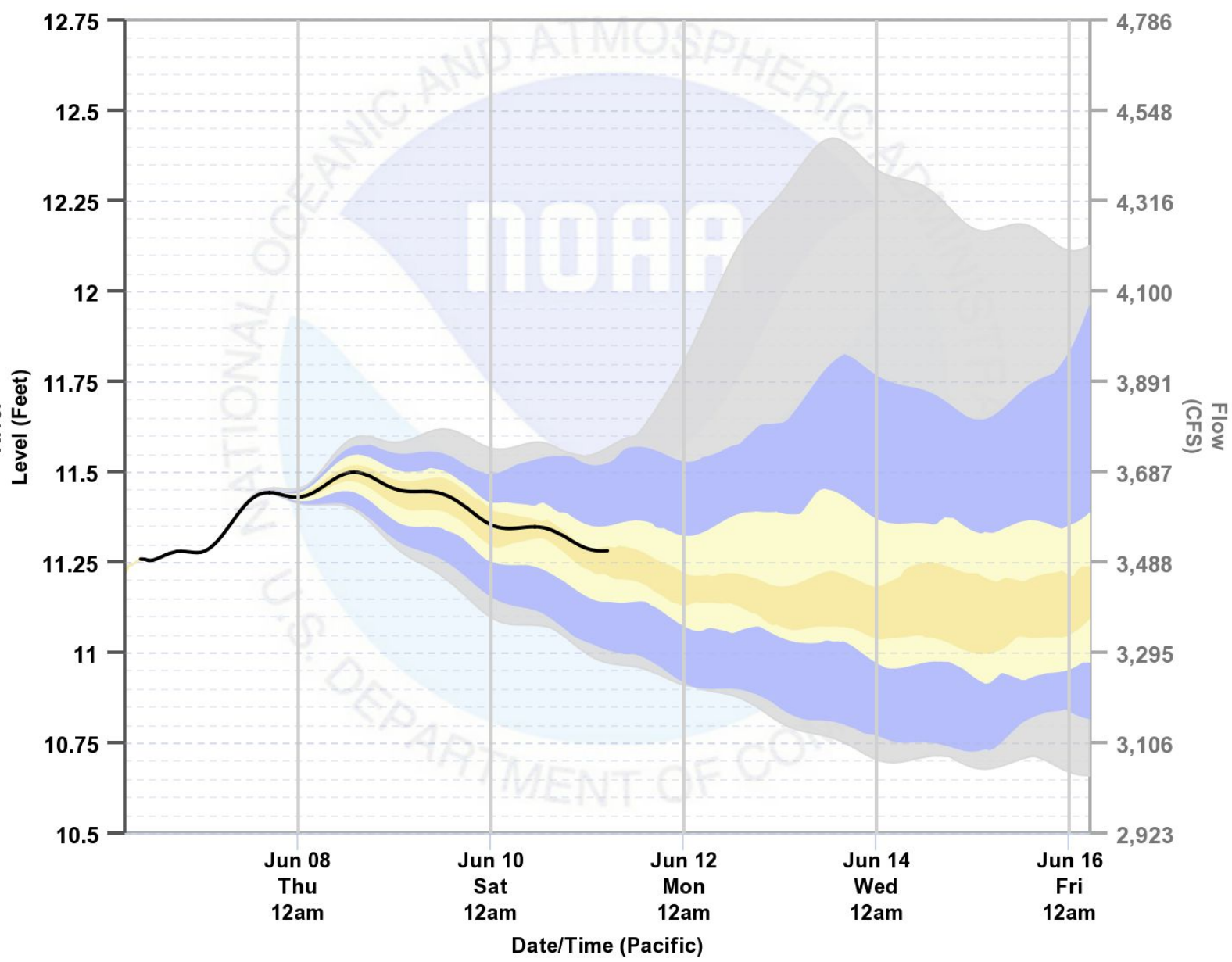
- Official Forecast (Deterministic)
- Ensemble Mean
- Model Traces
- Hourly Probabilities
 - 0-5% chance
 - 5-25% chance
 - 25-40% chance
 - 40-60% chance

Source: www.cnrfc.noaa.gov/?product=hefs_10day_50_peaks&zoom=7&lat=39.935&lng=-118.406&CNRFC=false&STATES=true&COUNTIES=true



Short-Term Hydrographs

Hourly River Level Probabilities
WALKER RIVER - MASON AT SNYDER LANE (MASN2)
Created: 06/06/2023 at 8:46 AM PDT

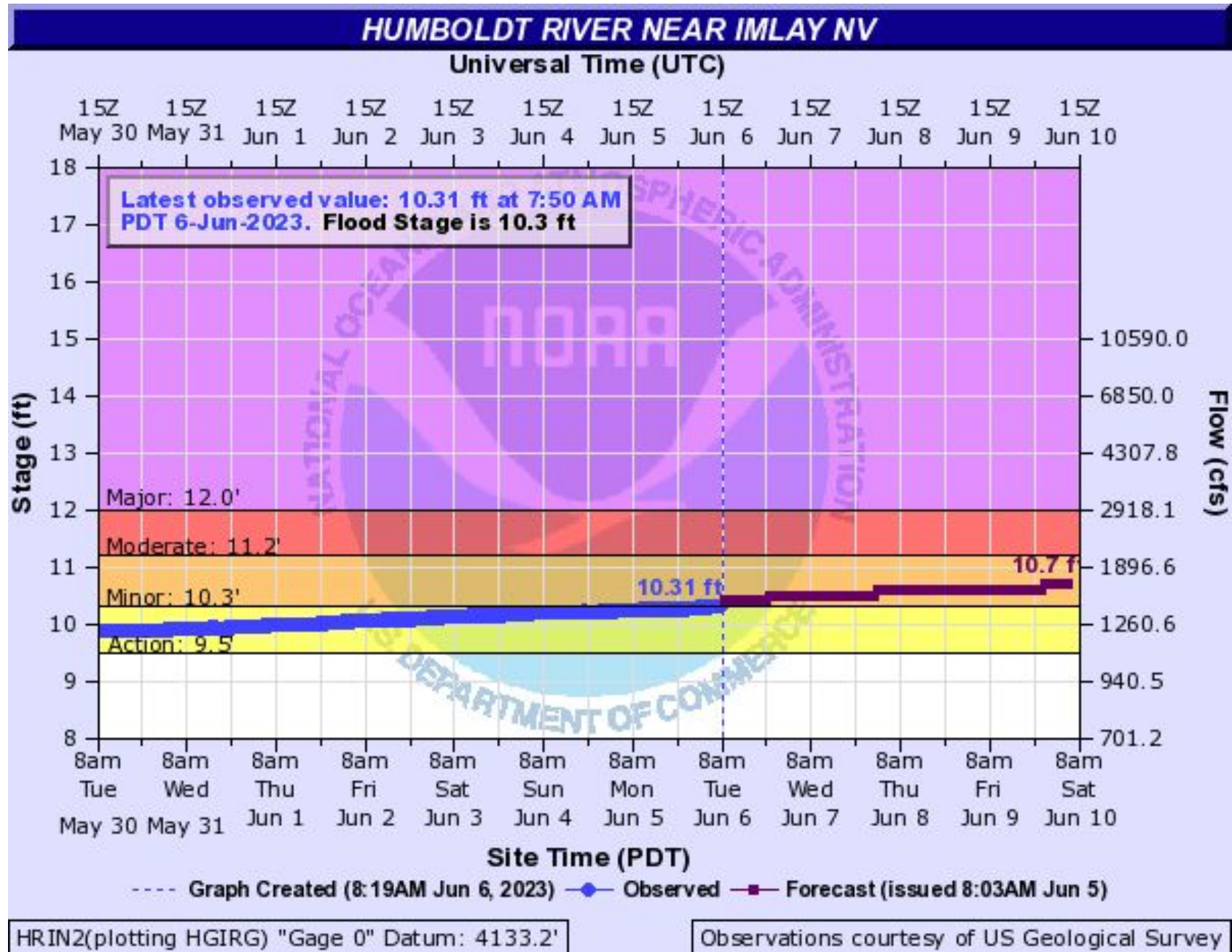


Chance of Peak River Level Exceedance (Feet)
Forecast Period:
06/06/2023 5 am - 06/16/2023 5 am

2%	12.42
5%	12.07
10%	11.79
25%	11.57
50%	11.53
75%	11.46
90%	11.44
95%	11.44
98%	11.44

Flood Stage
9.8 ft > 98%

- Official Forecast (Deterministic)
- Ensemble Mean
- Model Traces
- Hourly Probabilities
 - 0-5% chance
 - 5-25% chance
 - 25-40% chance
 - 40-60% chance

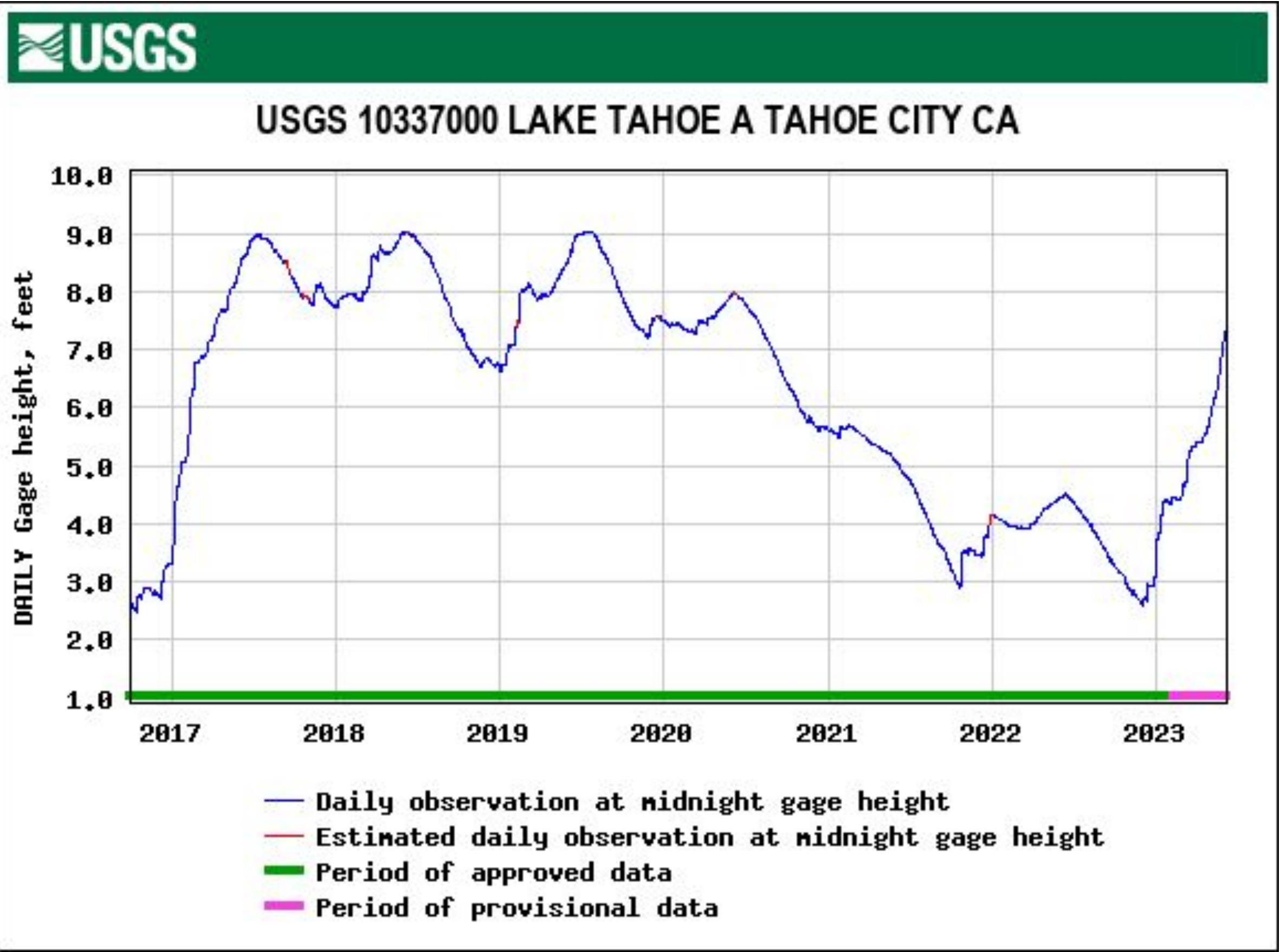


Source: www.cnrfc.noaa.gov/?product=hefs_10day_50_peaks&zoom=7&lat=39.935&lng=-118.406&CNRFC=false&STATES=true&COUNTIES=true



Lake Tahoe Status - USGS Gauge at Tahoe City

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Reno, NV
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Currently ~ 1.7' below the legal limit (6229.1')

Median Forecast brings the lake to within ½ a foot of the limit.



Flash Flooding and Post Fire Concerns

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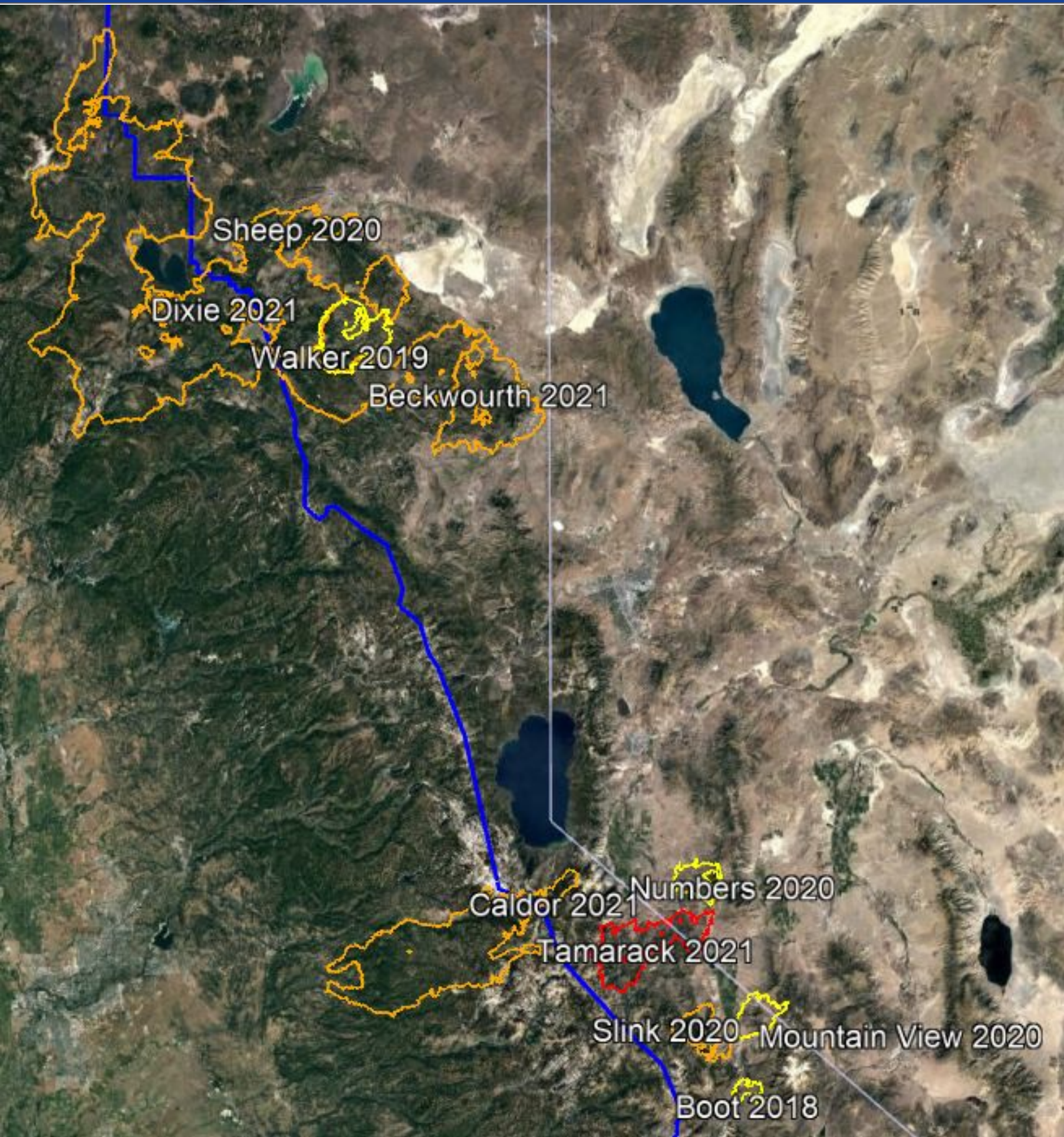
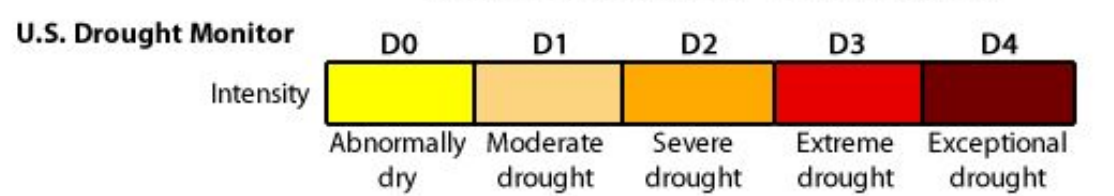
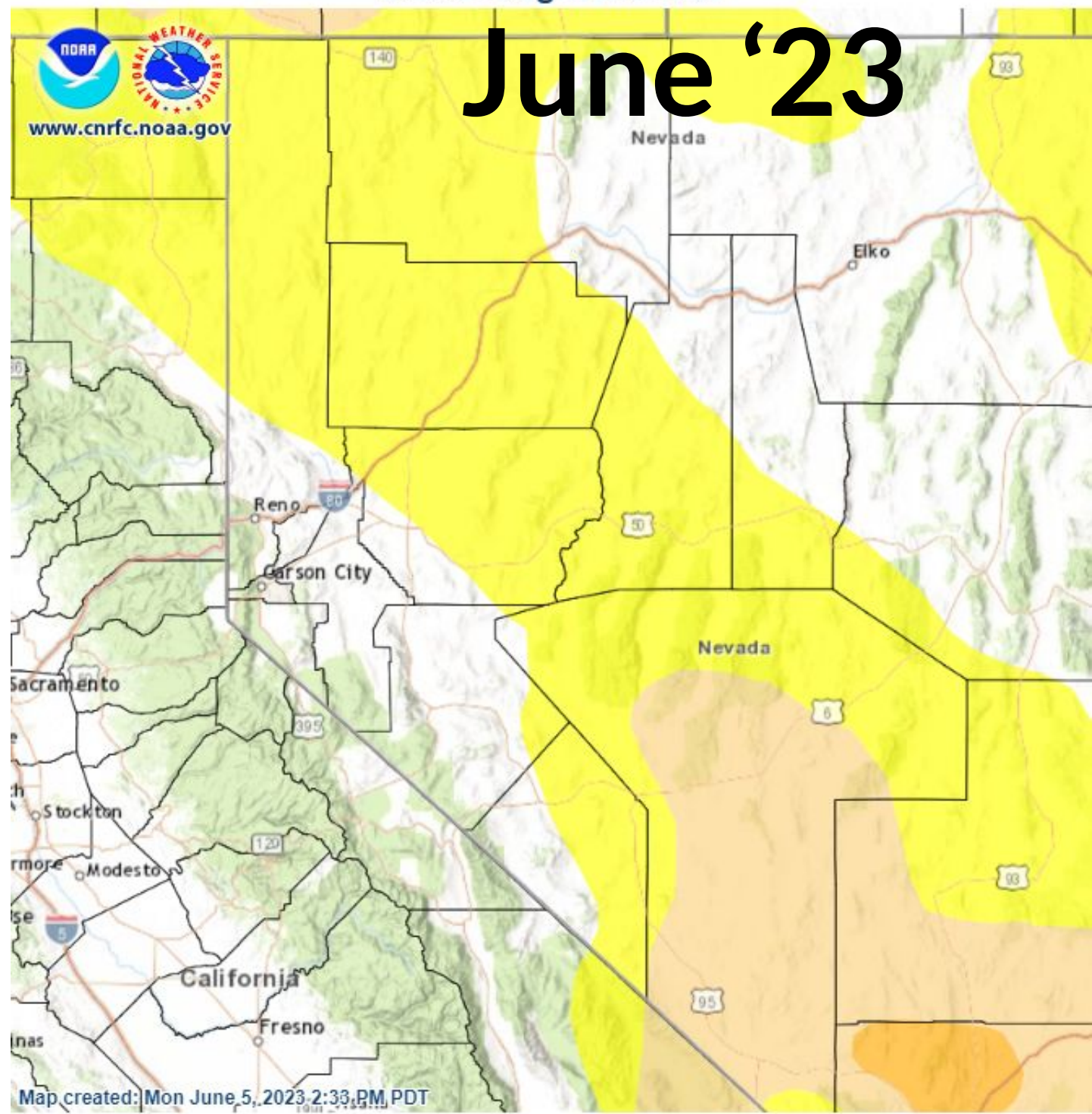


Photo Credit Don Lindsay CGS

U.S. Drought Monitor

June '23



100%

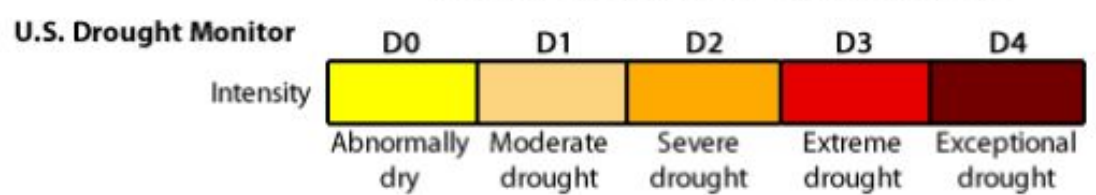
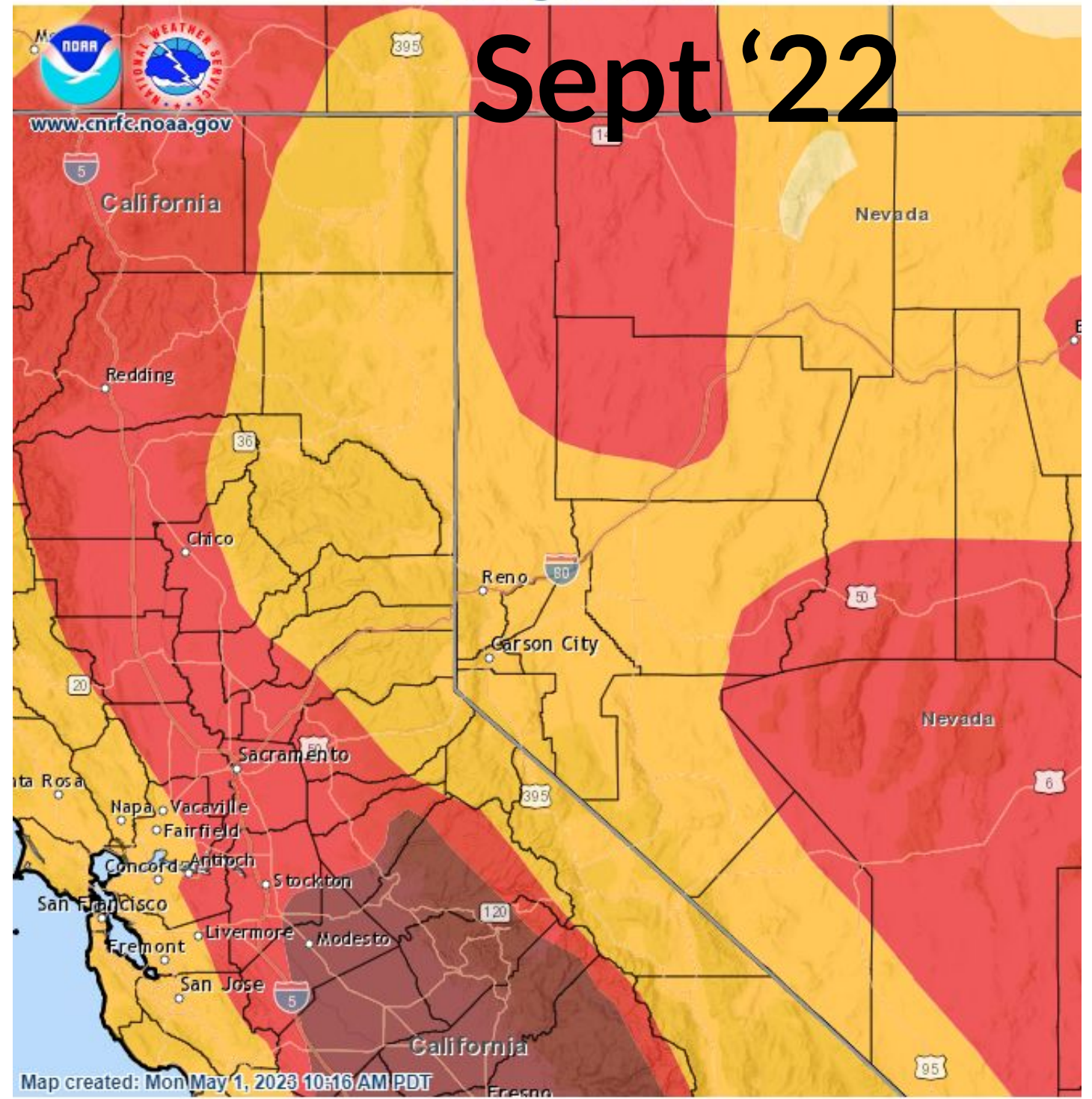
Portion of NWS Reno service area under D1+ drought status at start of this water year.

0%

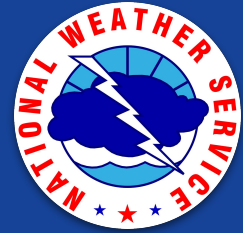
Portion of NWS Reno service area under D1+ drought status right now.

U.S. Drought Monitor

Sept '22



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.



Takeaways

- **Continued cool'ish & showery pattern forecast over the next 1-3 weeks is likely to shift peak melt/flow later for Walker.**
- **Snowpack very high, but now below record in most basins, with the exception of the Walker, which is now tied.**
- **Ongoing flooding on the Walker and continued flood risk along Mono county small streams into early to mid-July.**
- **Heavy rain from thunderstorms is a wild card and can lead to rapid rises along creeks and streams with saturated soils and already high flows. These storms can also create small but problematic rises in mainstem rivers as well as flash flooding concerns, especially on recent burn area.**



That's a Wrap!

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