

Cara McCarthy
National Water and Climate Center -Snow Survey and Water Supply Forecasting
WSWC – Summer Meeting
June 23, 2021

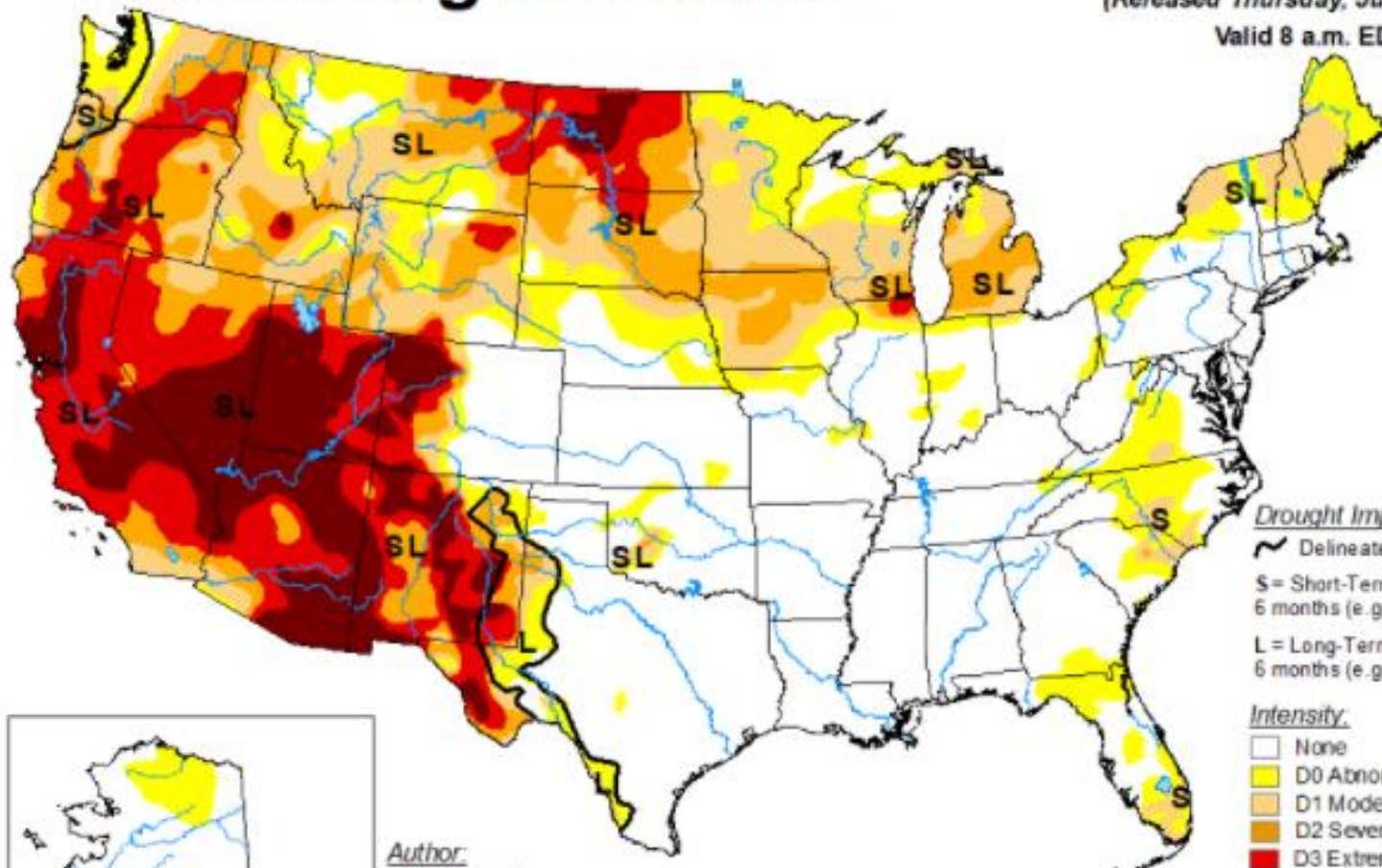


U.S. Drought Monitor

June 15, 2021

(Released Thursday, Jun. 17, 2021)

Valid 8 a.m. EDT



Drought Impact Types

~ Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity

None

D0 Abnormally Dry

D1 Moderate Drought

D2 Severe Drought

D3 Extreme Drought

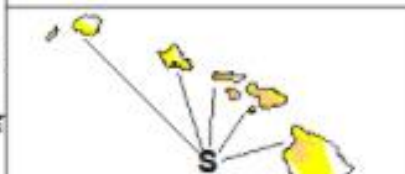
D4 Exceptional Drought

Author:

Curtis Riganti

National Drought Mitigation Center

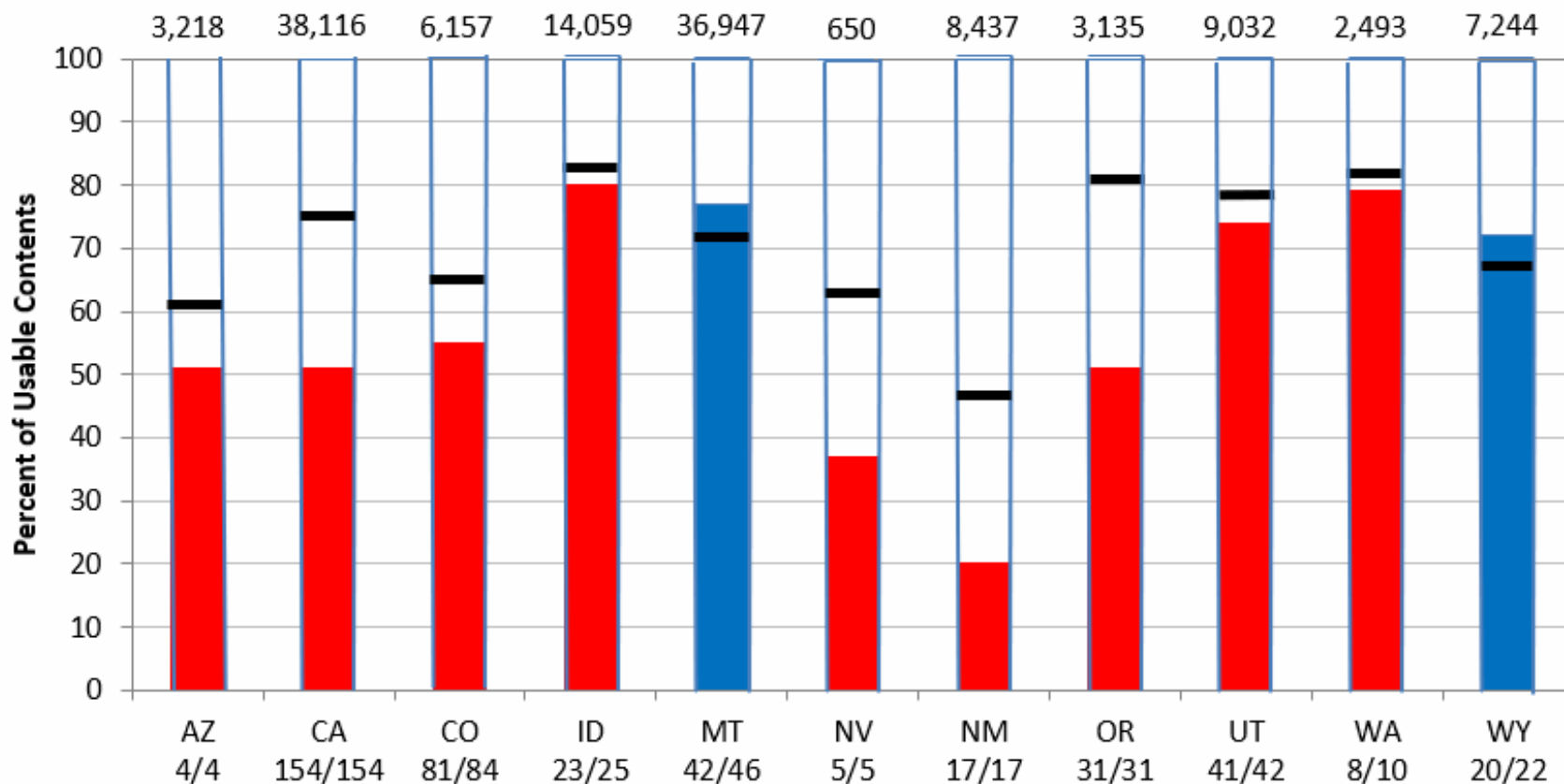
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



Reservoir Storage as of June 1, 2021

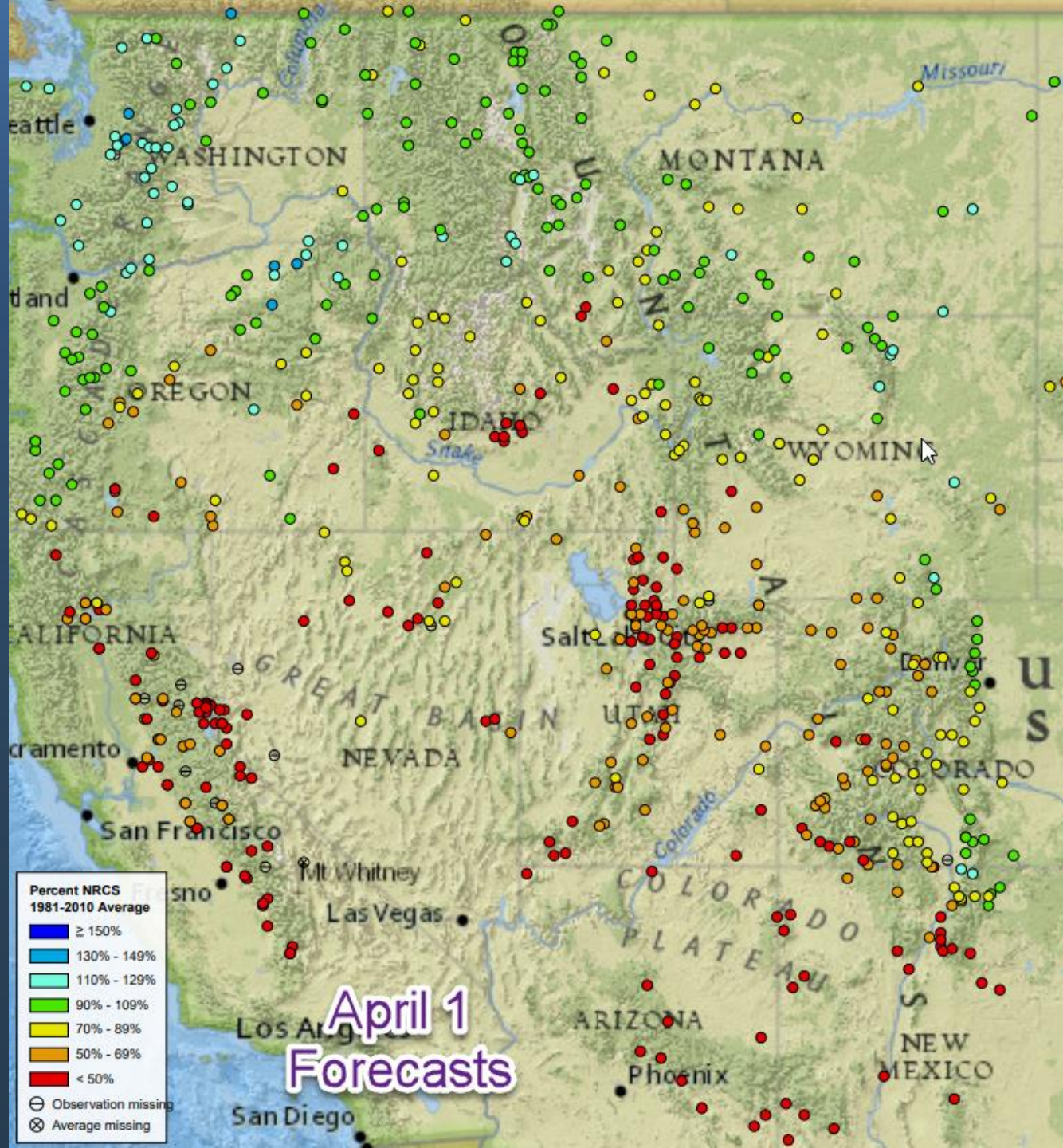
■ Below Average ■ At or Above Average ■ Average

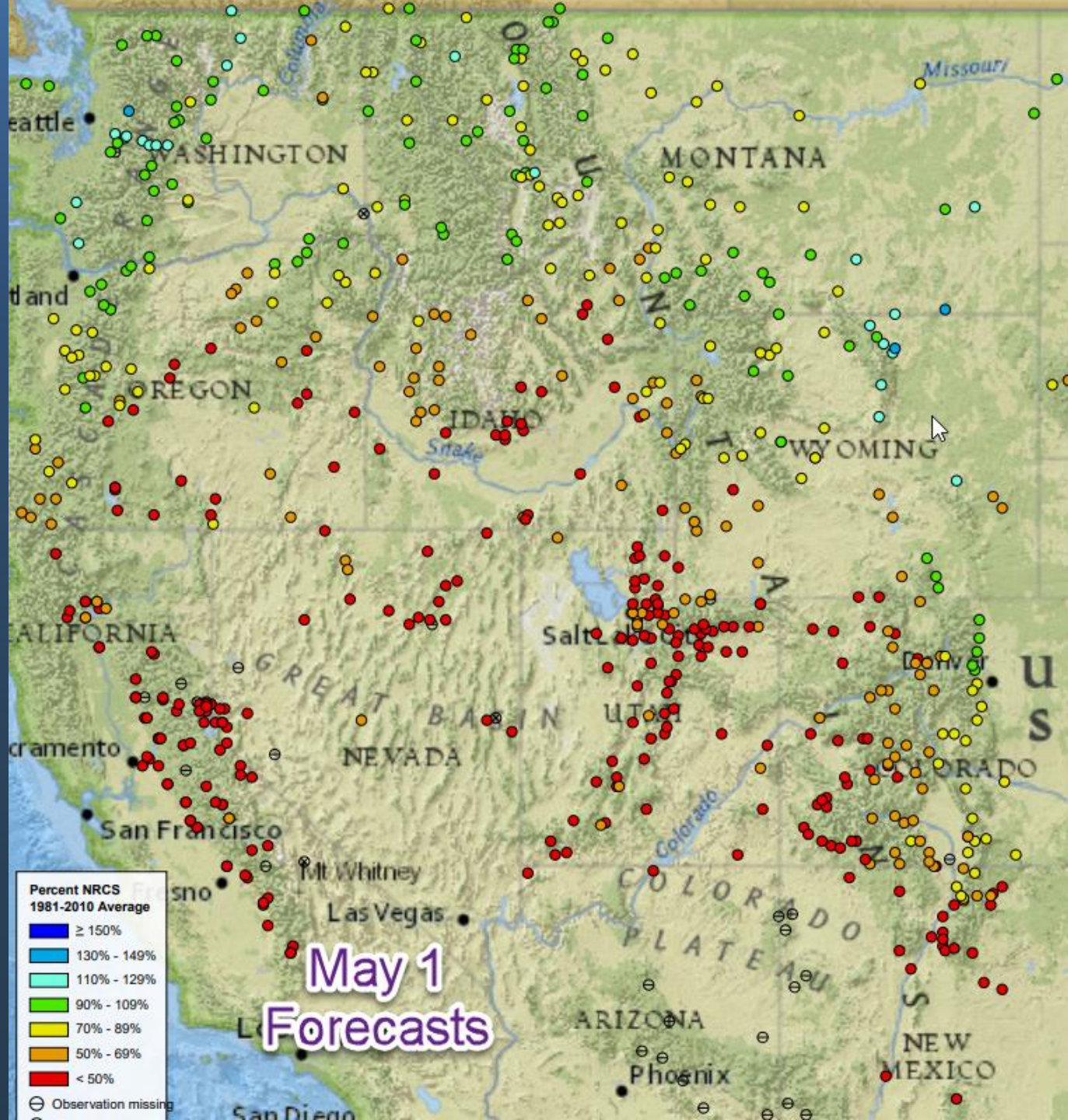
Capacity of Reservoirs Reported (1000 Acre-Feet)

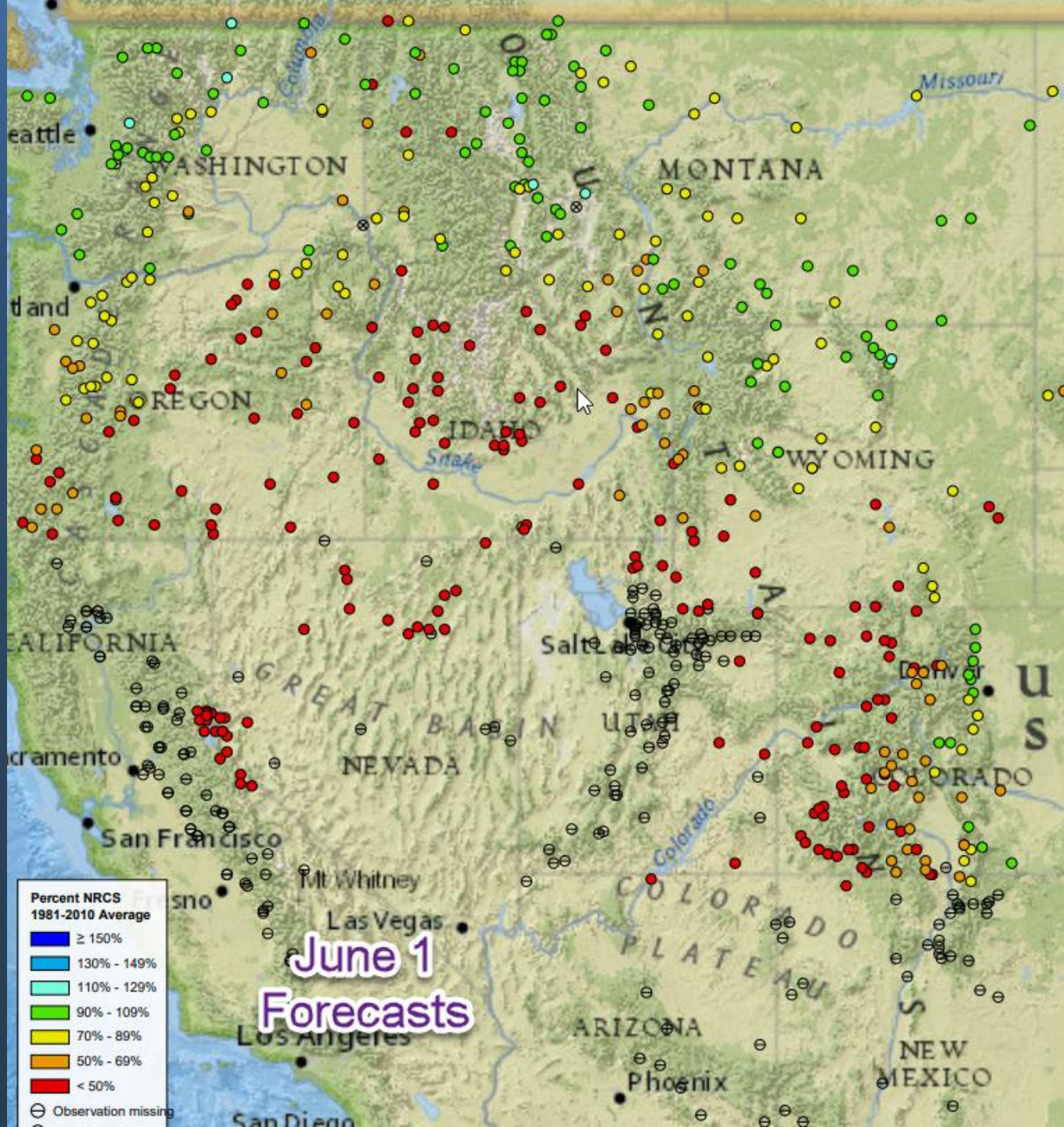


Prepared by: USDA Natural Resources Conservation Service
National Water and Climate Center, Portland, OR
www.nrcs.usda.gov/wps/portal/wcc/home/

State and Number of Reservoirs Reported



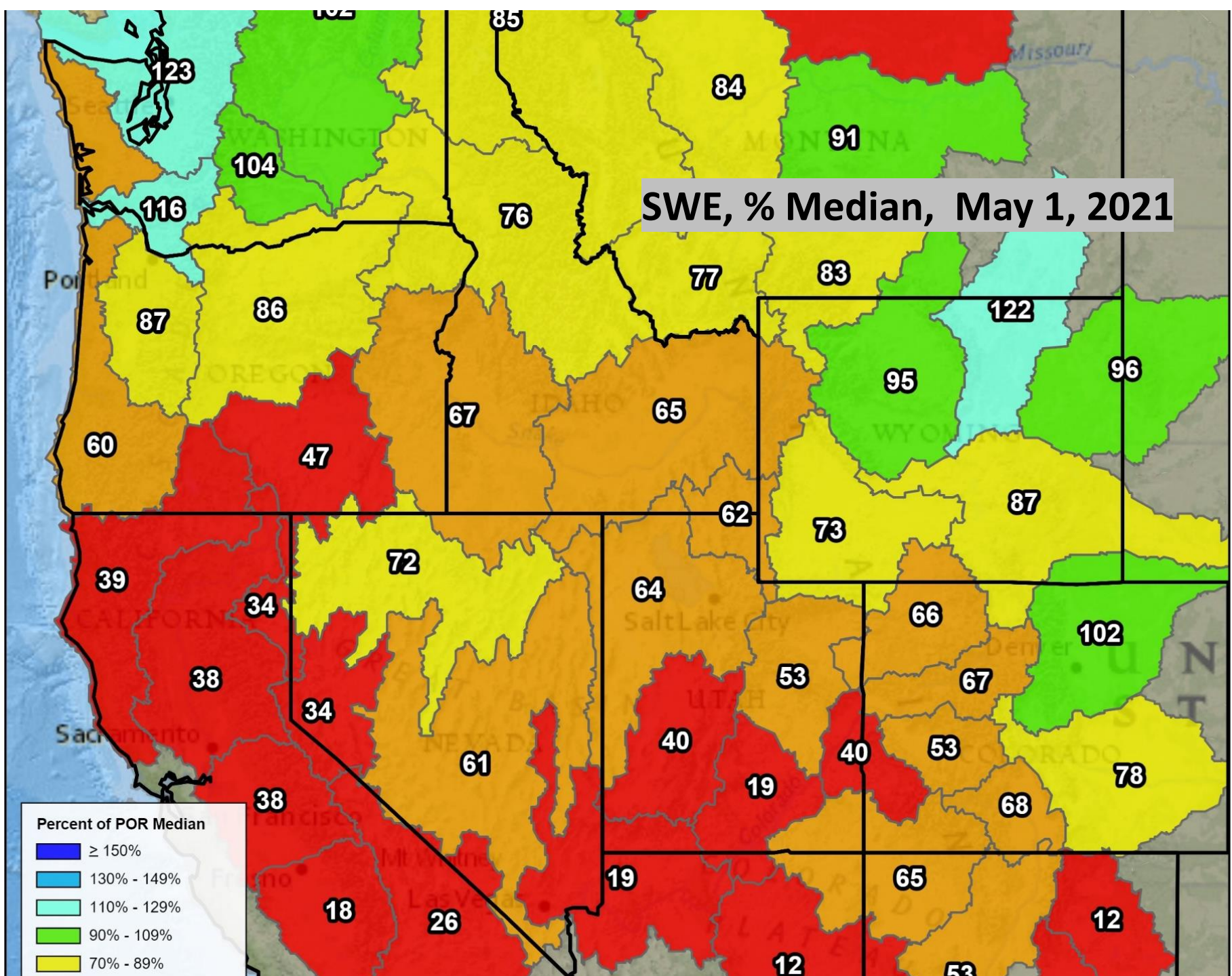




SWE, % Median, May 1, 2021

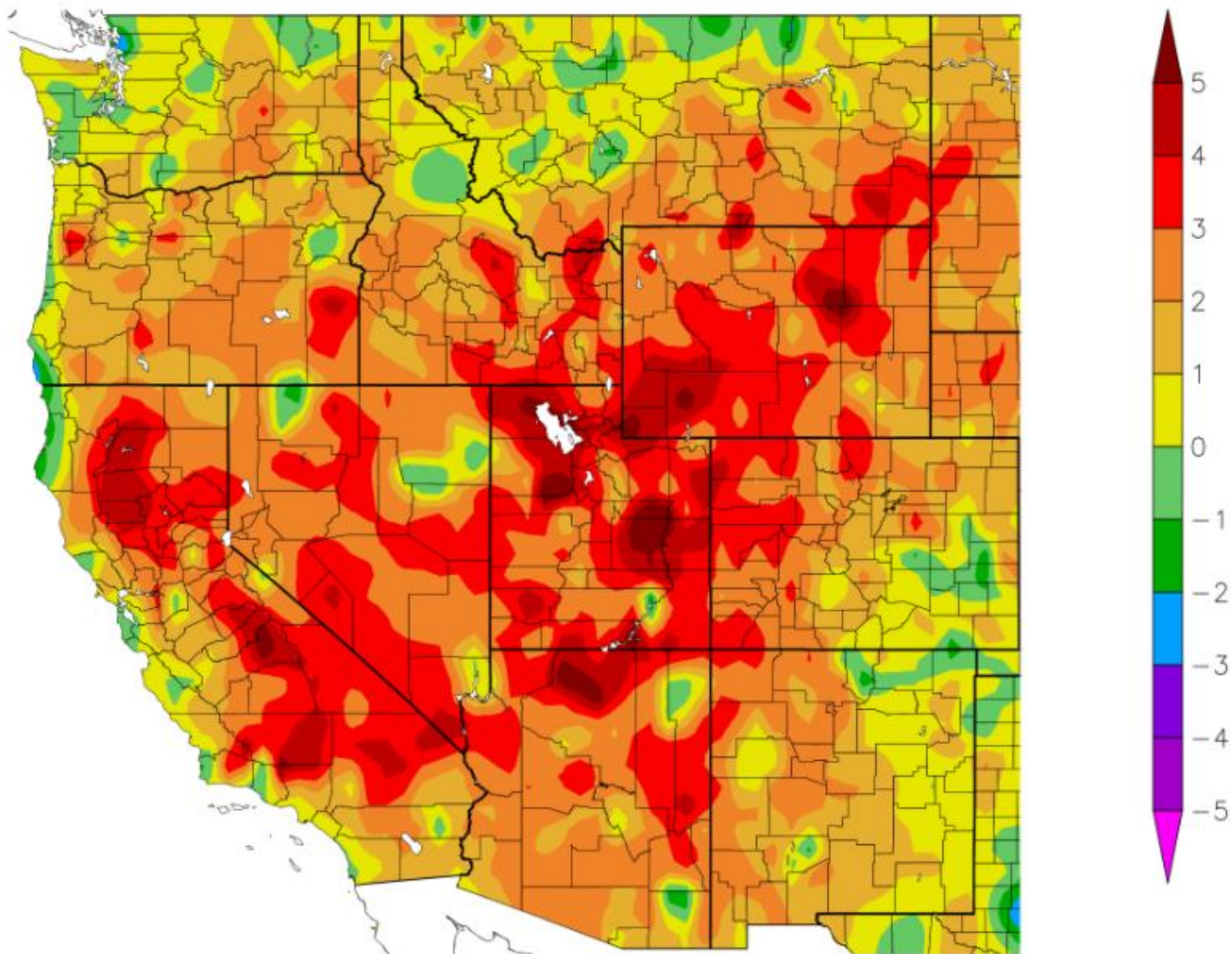
Percent of POR Median

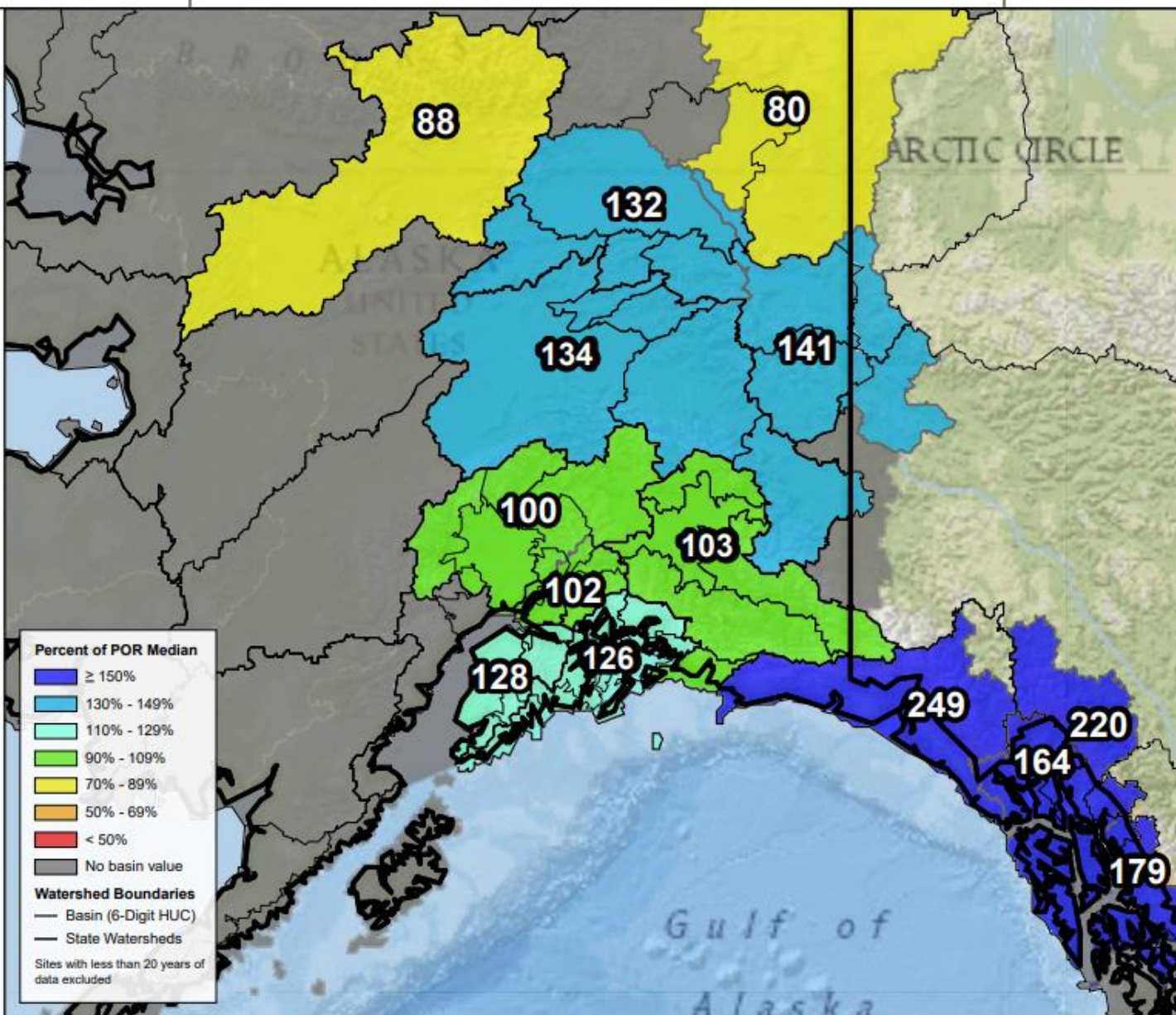
- ≥ 150%
- 130% - 149%
- 110% - 129%
- 90% - 109%
- 70% - 89%

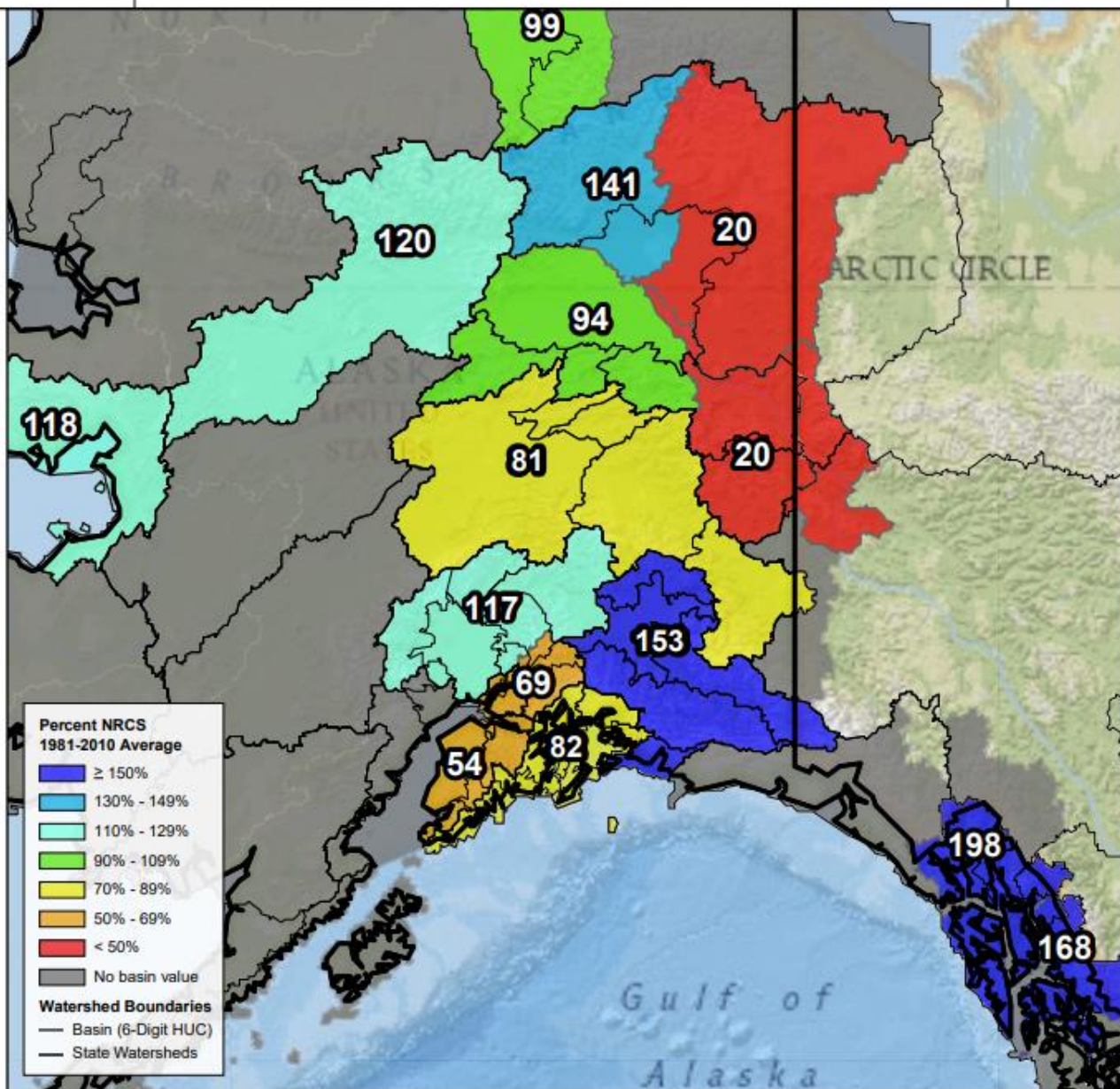


Departure from Normal Temperature (F)

4/24/2021 – 6/22/2021



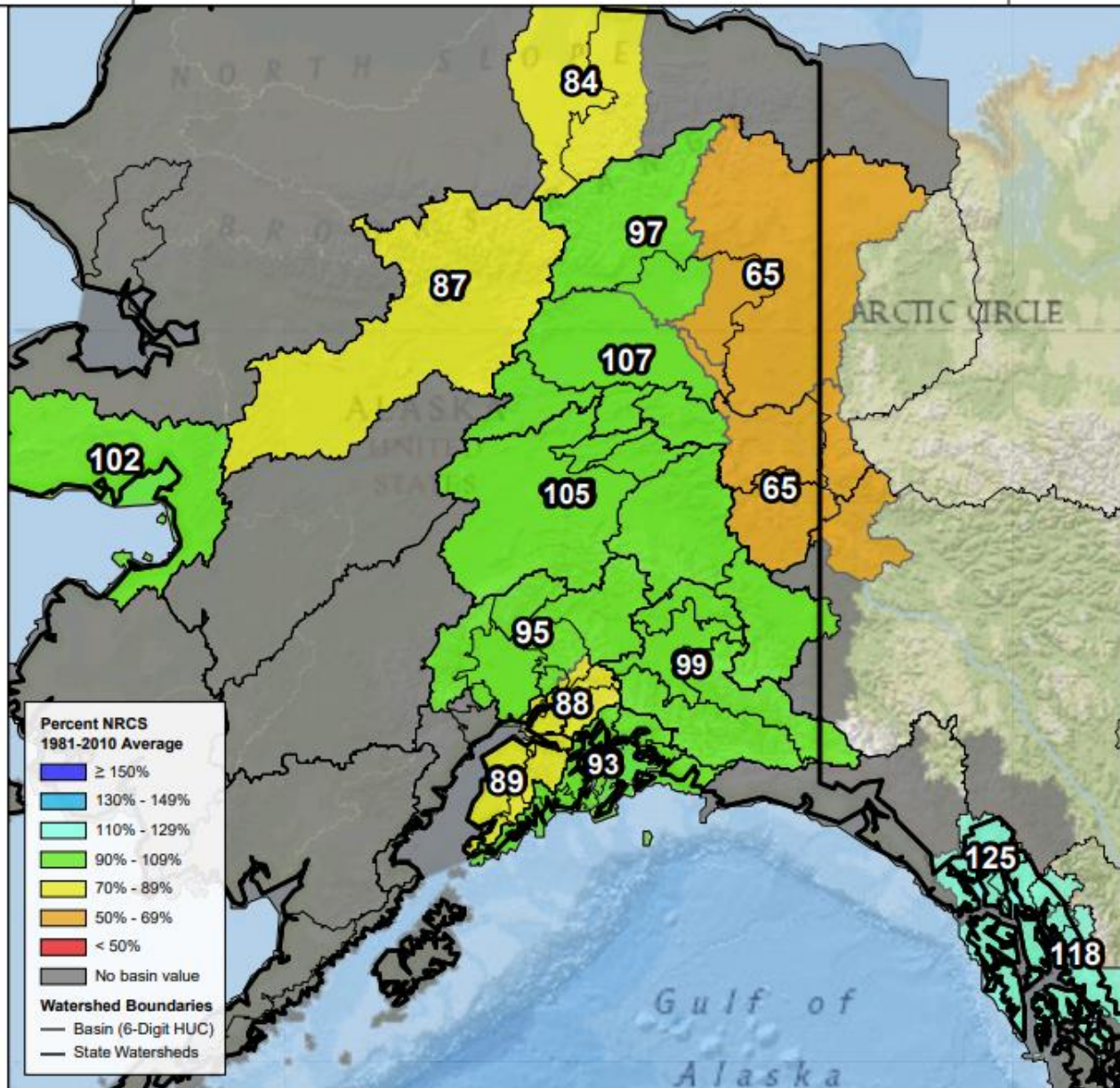




Nearly
15" of
precip.
around
Juneau
since
May 1

Alaska

As of last week, higher elevation network sites still had a depth of 4-8 feet of snow



Water supply forecasts indicate near normal conditions

ARIZONA SHORT-TERM DROUGHT STATUS REPORT

MAY 2021

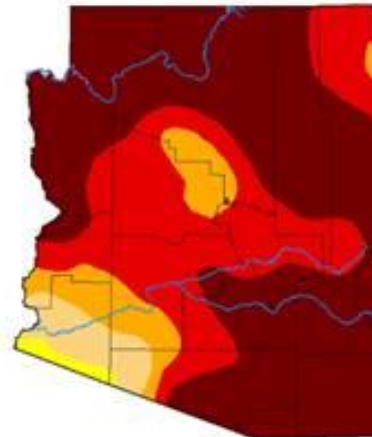
May is typically one of the two driest months in Arizona. Up to 0.50 inches of rain were received throughout Coconino, Yavapai, Gila, and Apache counties. However, this was not enough to improve current drought conditions. While north central Arizona received most of the rain, the rest of the state remained exceedingly dry, roughly 60%-90% below last year's average precipitation levels for the month.

Drought conditions have remained largely unchanged through the month with 95% of the state in Severe (D2) to Exceptional (D4) drought. No substantial improvement to drought is expected in June.

Wildland fires continued to impact the state with above-normal fire risk. Stage 2 fire restrictions were issued on state lands in Cochise, Graham, Greenlee, Pima, Pinal, and Santa Cruz counties. All other counties continued Stage 1 fire restrictions.

May temperatures across the state were generally average for the month. The outlook for summer shows above average temperatures expected, with equal chances for above, normal, or below average amounts of rain.

U.S. Drought Monitor Arizona



June 1, 2021
(Released Thursday, Jun. 3, 2021)
Valid 9 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D1	D2	D3	D4	Total
Current	0.00	100.00	98.00	94.00	90.00	97.70
1-yr. Mean	0.00	90.00	98.00	94.00	90.00	97.70
3-Months Ago	0.00	90.00	98.00	94.00	90.00	97.70
Start of Calendar Year	0.00	90.00	98.00	94.00	90.00	97.70
Start of Water Year	0.00	90.00	98.00	94.00	90.00	97.70
One Year Ago	0.00	90.00	98.00	94.00	90.00	97.70

Legend:	
None	D2 Severe Drought
D1 Abnormally Dry	D3 Extreme Drought
D2 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on short-term conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu>

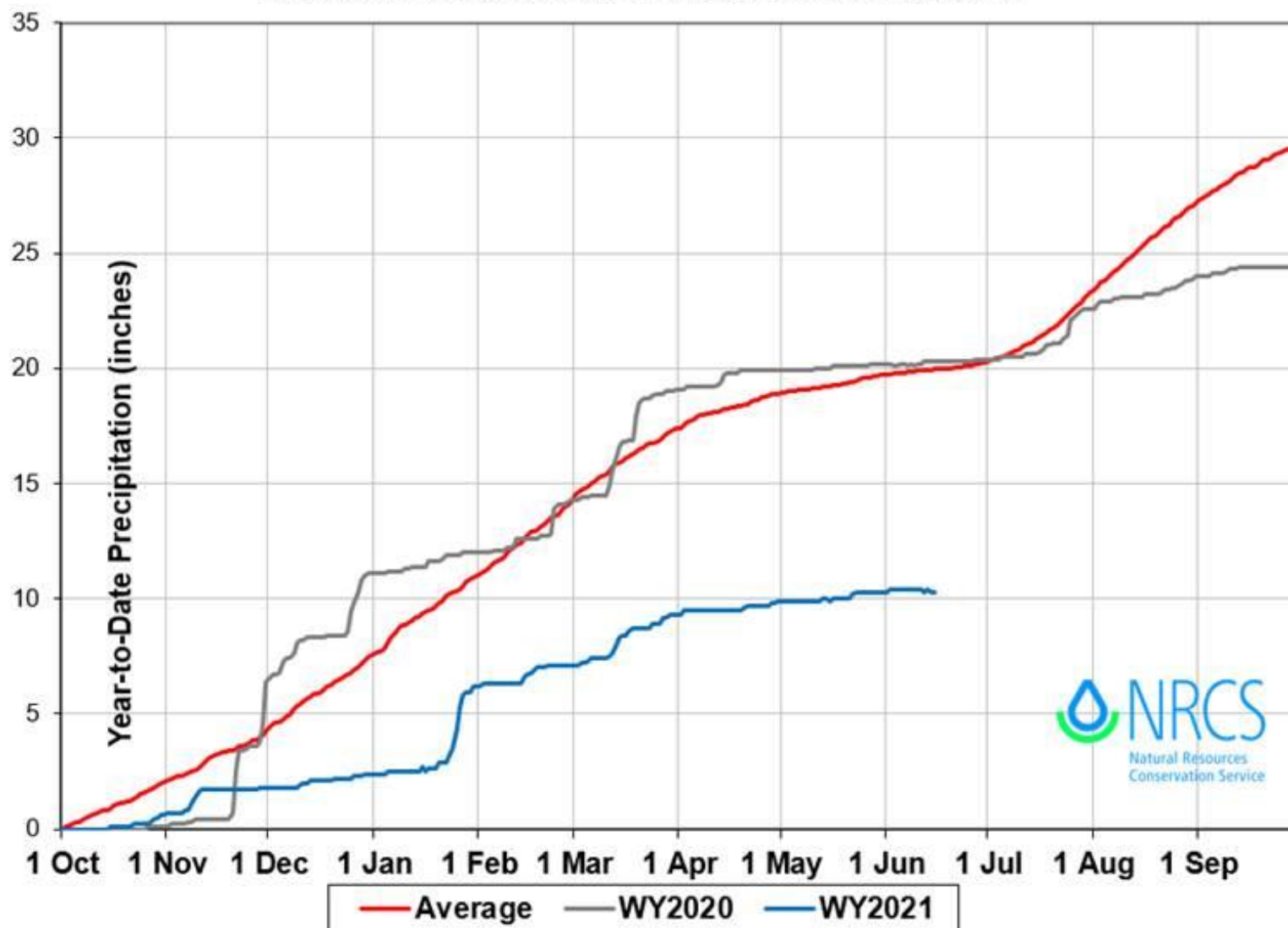
Author:
Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

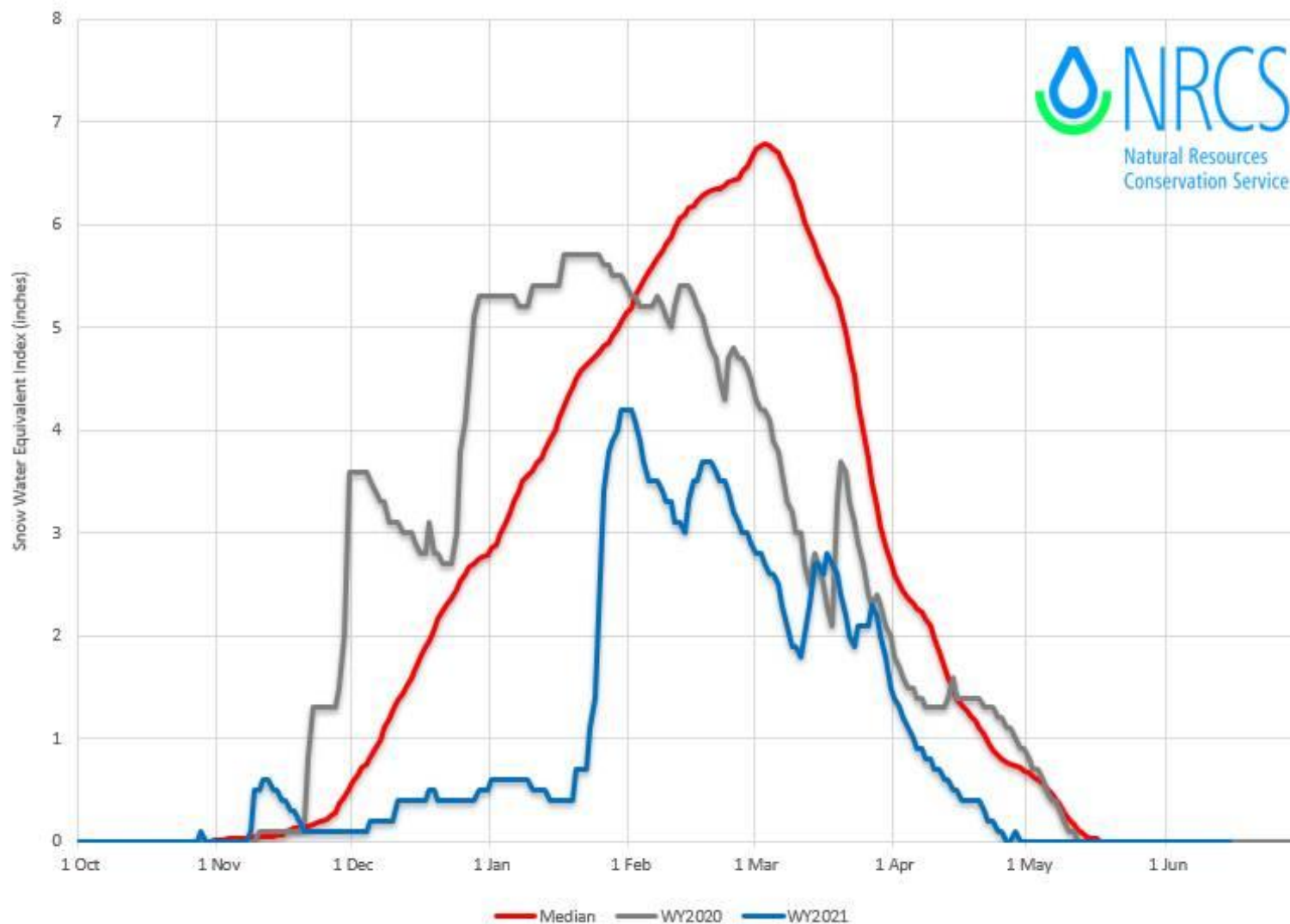
ARIZONA STATEWIDE Year-to-Date Precipitation Summary

Based on Provisional SNOTEL data as of Jun 15, 2021

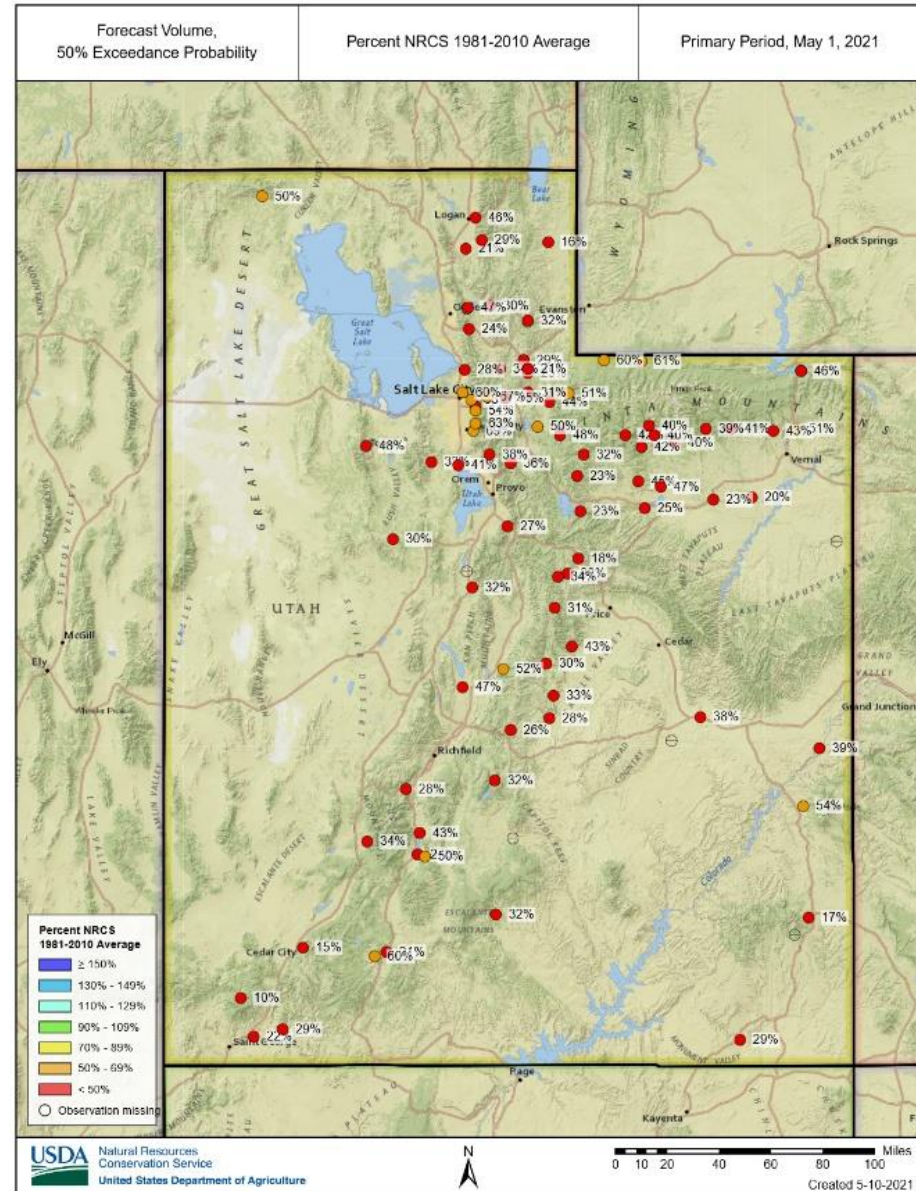
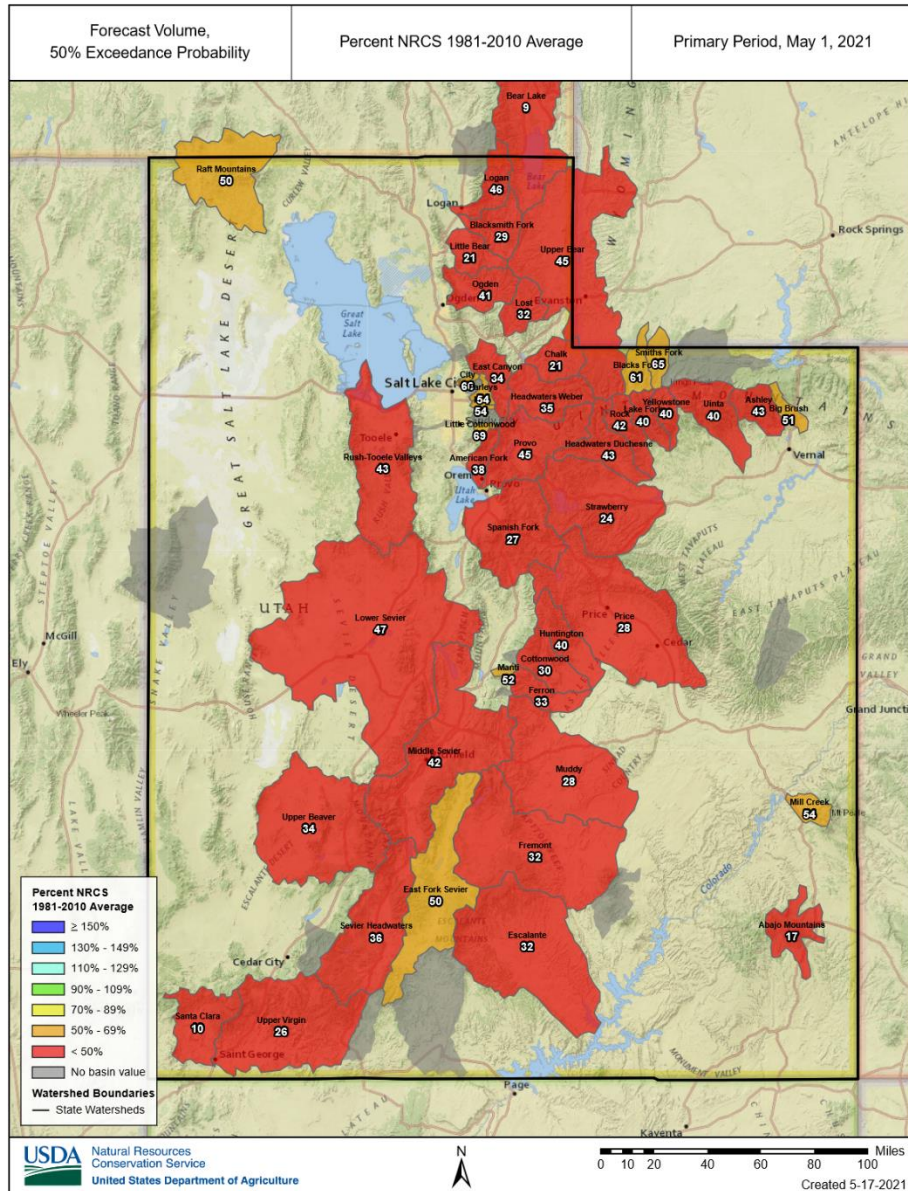


ARIZONA STATEWIDE Time Series Snowpack Summary

Based on Provisional SNOTEL data as of Jun 15, 2021



Runoff forecasts for April-July flow are exceptionally low.



Precipitation

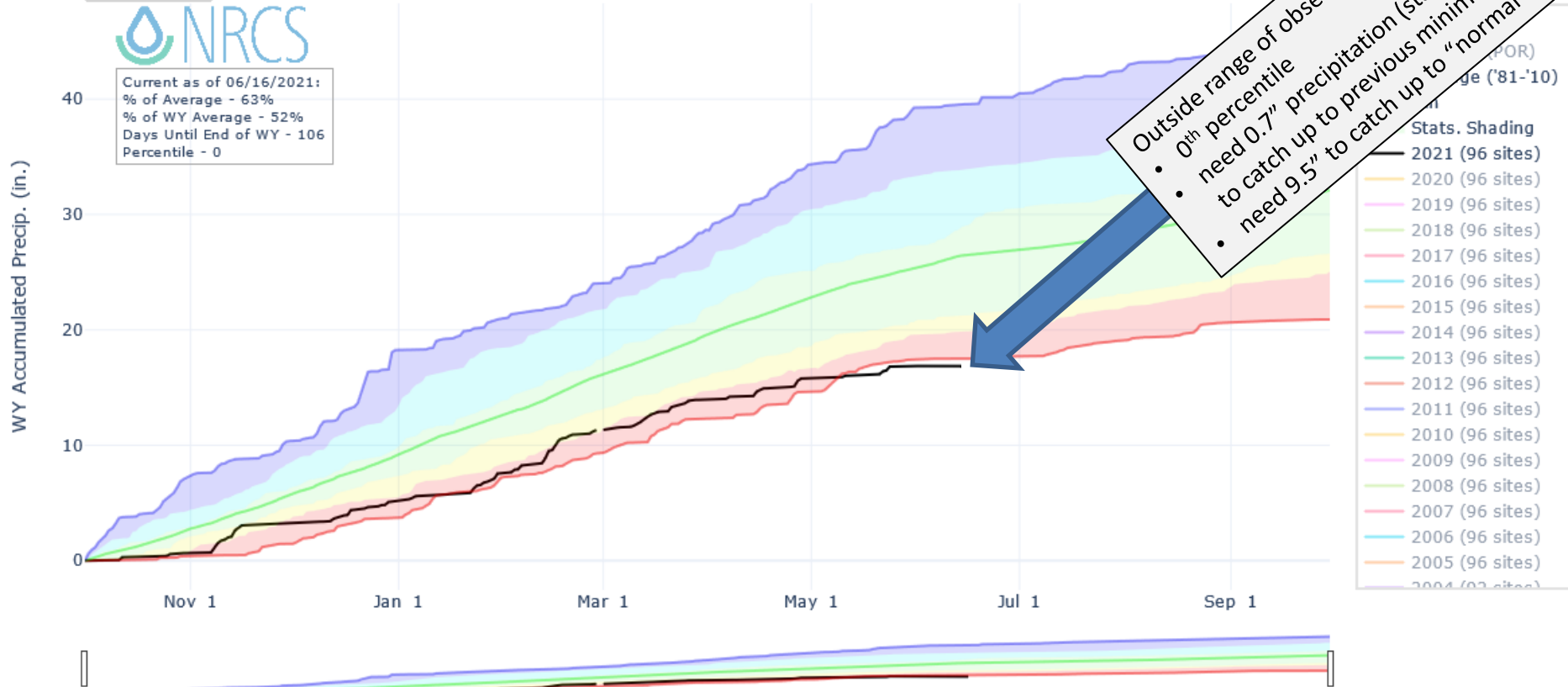
PRECIPITATION IN STATE OF UTAH

Reset Range

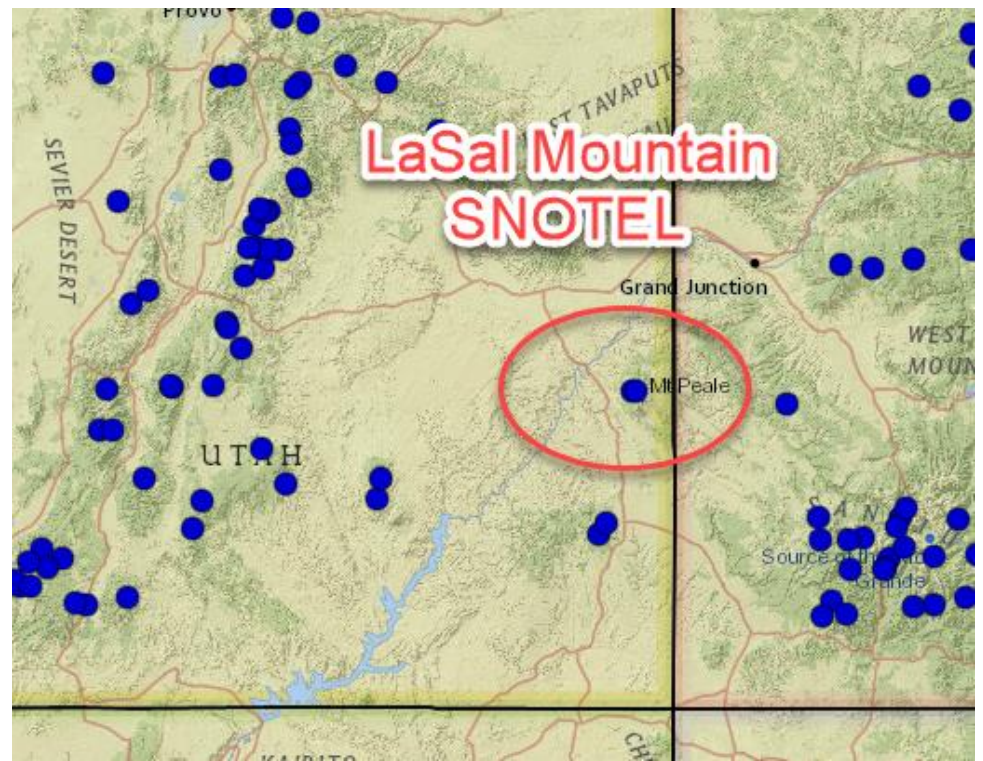
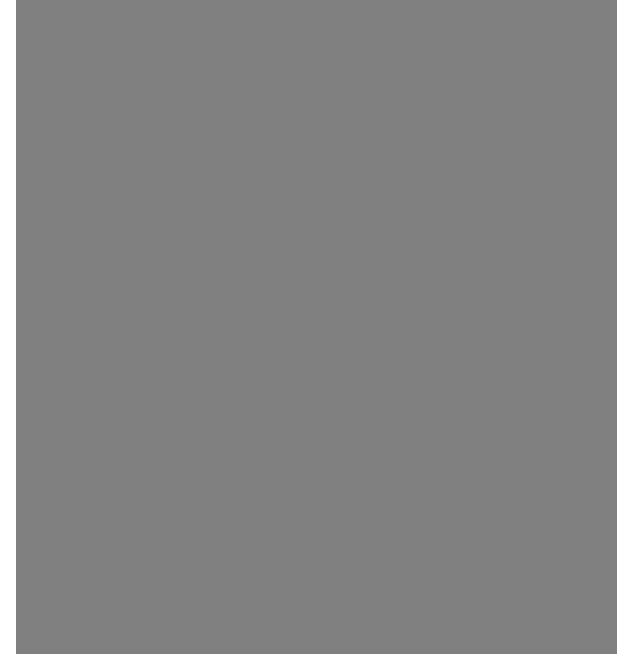


Current as of 06/16/2021:
% of Average - 63%
% of WY Average - 52%
Days Until End of WY - 106
Percentile - 0

Link to data: CSV /



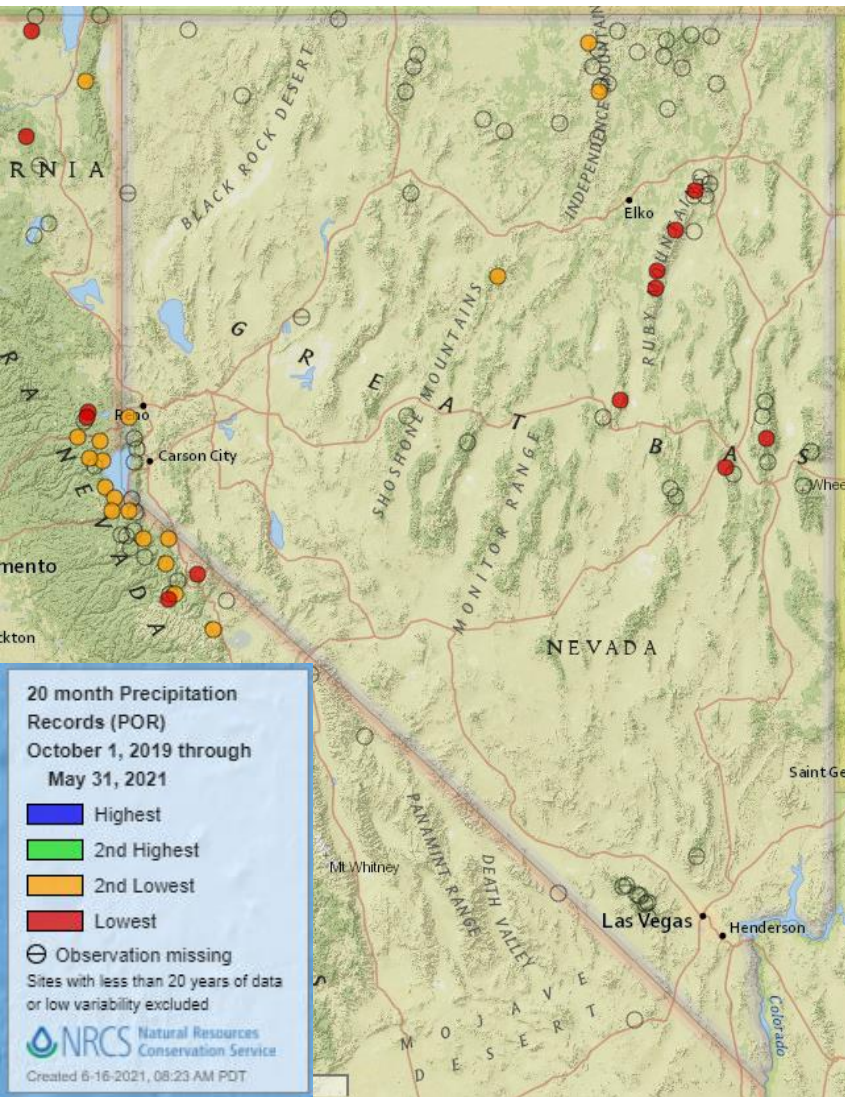
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.



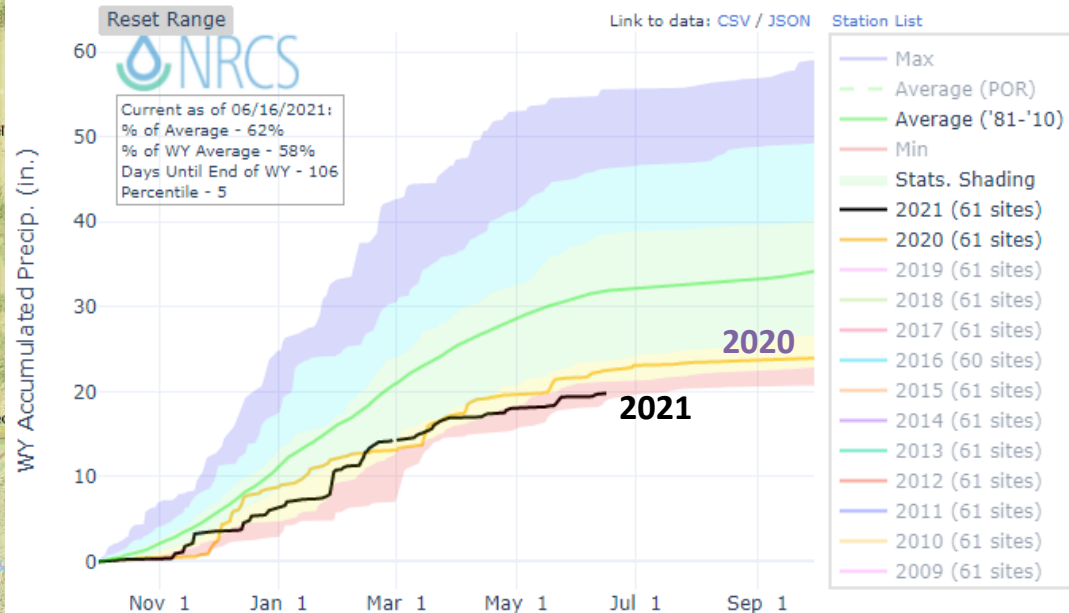
Pack Creek fire – June 2021 – LaSal Mountain SNOTEL - ~9600 Ft Elev



Two consecutive dry years adds up to record or near record dry conditions over past 20-months



PRECIPITATION IN STATE OF NEVADA

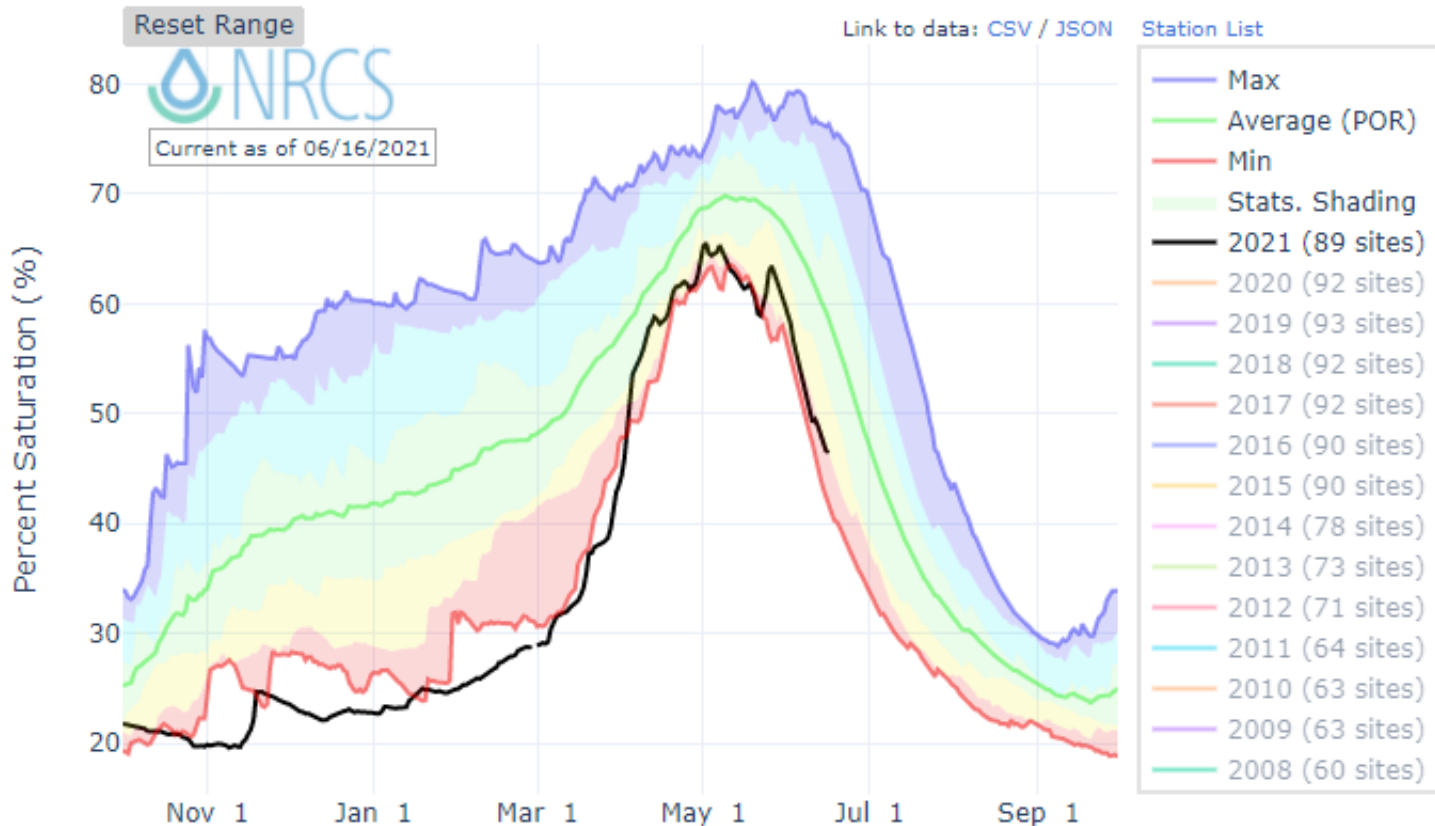


Data based on SNOTEL precipitation

Soil moisture across Nevada has been near record dry all year

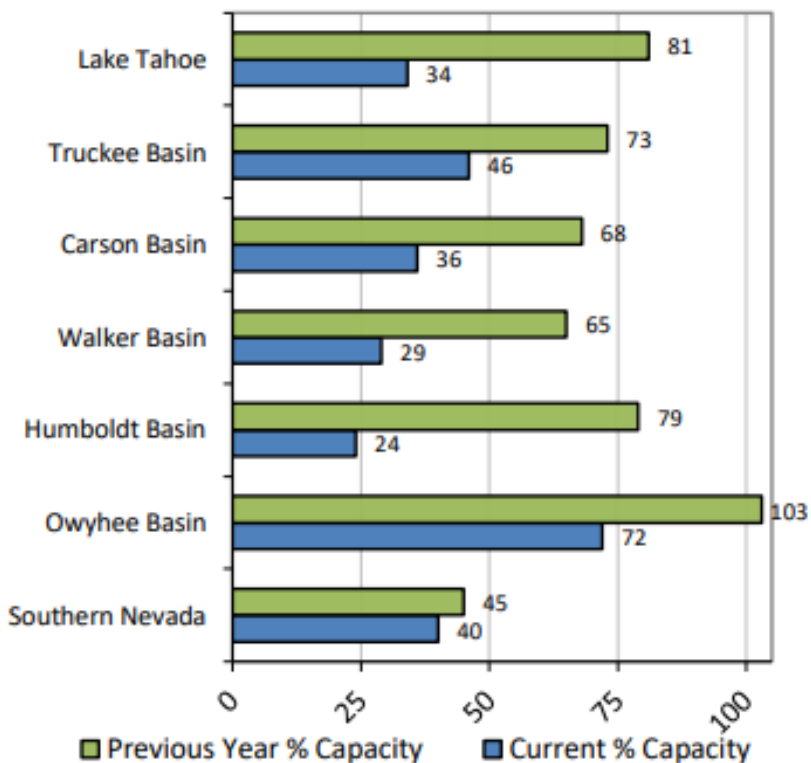
Based on SNOTEL soil moisture data available since 2006

DEPTH AVERAGED SOIL SATURATION IN STATE OF NEVADA



Nevada Reservoir Storage

June 1, 2020 vs June 1, 2021



Water Supply Impacts

June 1, 2020 vs June 1, 2021

Lake Tahoe – Water level expected to fall below the lake's natural rim later this summer. This means zero outflow.

Truckee Carson Irrigation District's current allocation is set for 70% with anticipation of leaving the Lahontan Reservoir at its minimum pool by summer's end. TCID anticipates a reduction in allocation prior to July's Board meeting; as this trend is "Drier".

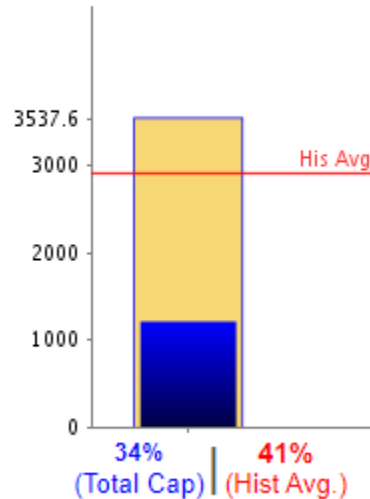
Walker River Irrigation District allocated 22% for Bridgeport Reservoir storage water and 11% for Topaz Reservoir storage water.

Pershing County Water District set a 25% allotment for irrigators using Rye Patch Reservoir water. The reservoir is expected to be at its minimum pool by summer's end.

Southern Nevada – Forecasted inflow to Lake Powell only 26% of average. Lake Mead expected to drop a key threshold, triggering the first ever federally declared shortage and cutbacks for Nevada and Arizona.

Oroville and Shasta – The Two Largest Reservoirs in California

OROVILLE - STORAGE CONDITIONS AS OF JUNE 21, 2021



- Storage: 1,209,192 AF
- Reservoir Elevation: 693.97 FT
- 34% of Total Capacity
- 41% of Historical Avg. For This Date
- Total Capacity: 3,537,577 AF
- Avg. Stor. for June 21: 2,917,905 AF

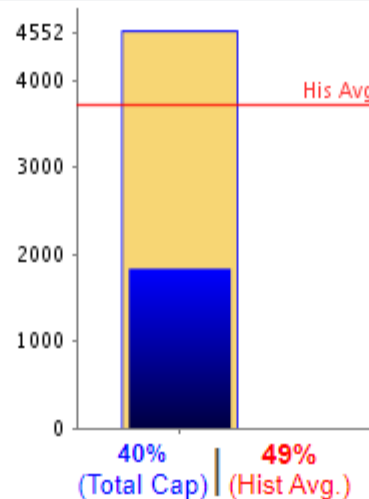
Change Date:  21-Jun-2021

Major Reservoir Current Conditions Graphs

[Printable Version of Current Data](#)

Oroville:
Hydropower
plant may shut
down later this
summer

SHASTA - STORAGE CONDITIONS AS OF JUNE 21, 2021



- Storage: 1,831,757 AF
- Reservoir Elevation: 947.23 FT
- 40% of Total Capacity
- 49% of Historical Avg. For This Date
- Total Capacity: 4,552,000 AF
- Avg. Stor. for June 21: 3,724,940 AF

Change Date:  21-Jun-2021

Major Reservoir Current Conditions Graphs

[Printable Version of Current Data](#)

[cdec.water.ca.gov/
reservoir_map.html](http://cdec.water.ca.gov/reservoir_map.html)

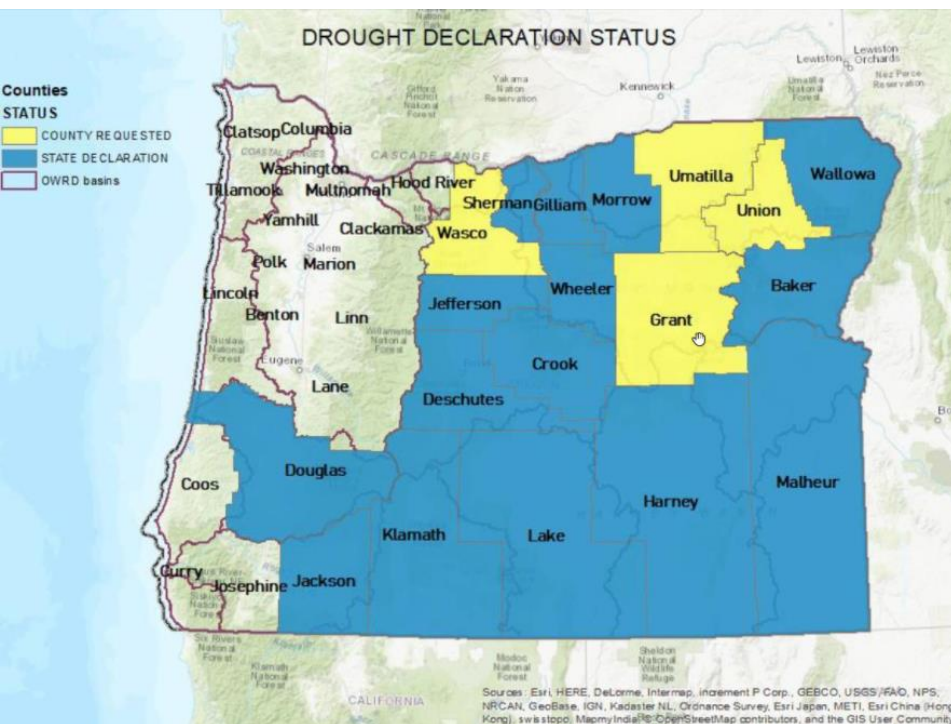


Water wars on the Klamath:

“Not applicable this year because this is no water. There are no water wars because there is no water.” – *Scott Oviatt, NRCS*

Photo: Sean Fleming, NWCC-NRCS, Sprague, September 2020. Haze from fires. The Sprague River flows into Upper Klamath Lake.

U.S. Drought Monitor has Oregon currently in drought status in 100% of the state. 37% of the state is categorized as Extreme (D3) to Exceptional (D4)



U.S. Drought Monitor Oregon

June 15, 2021
(Released Thursday, Jun. 17, 2021)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	98.99	77.03	36.90	4.78
Last Week 06-08-2021	0.00	100.00	100.00	80.37	34.37	4.78
3 Months Ago 03-16-2021	19.32	80.68	67.32	43.99	12.53	0.00
Start of Calendar Year 12-29-2020	8.57	91.43	83.53	68.71	27.74	0.00
Start of Water Year 09-29-2020	6.50	93.50	84.77	65.53	33.59	0.00
One Year Ago 06-16-2020	5.49	94.51	78.38	44.30	4.79	0.00

Intensity

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

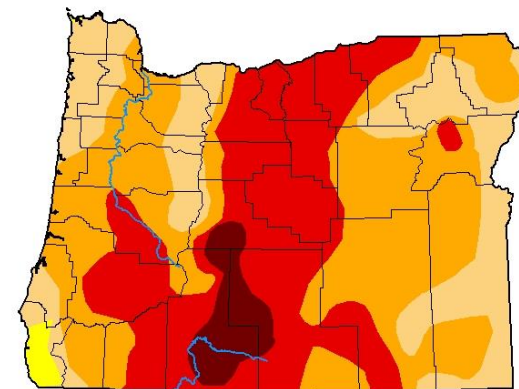
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Author:

Curtis Riganti
National Drought Mitigation Center

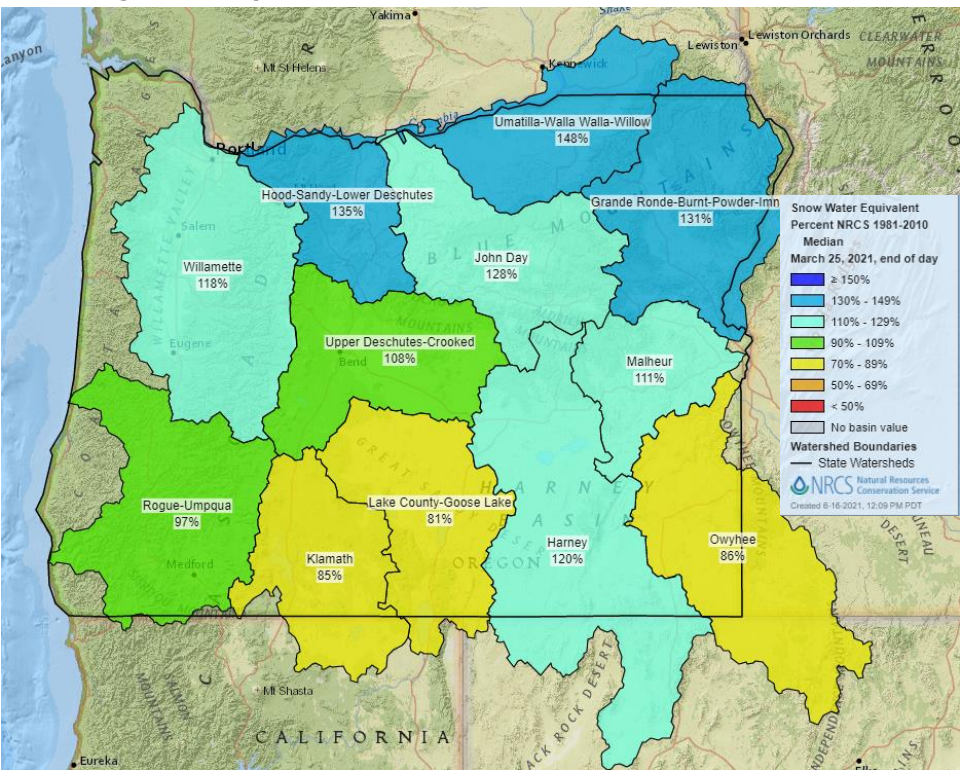


droughtmonitor.unl.edu



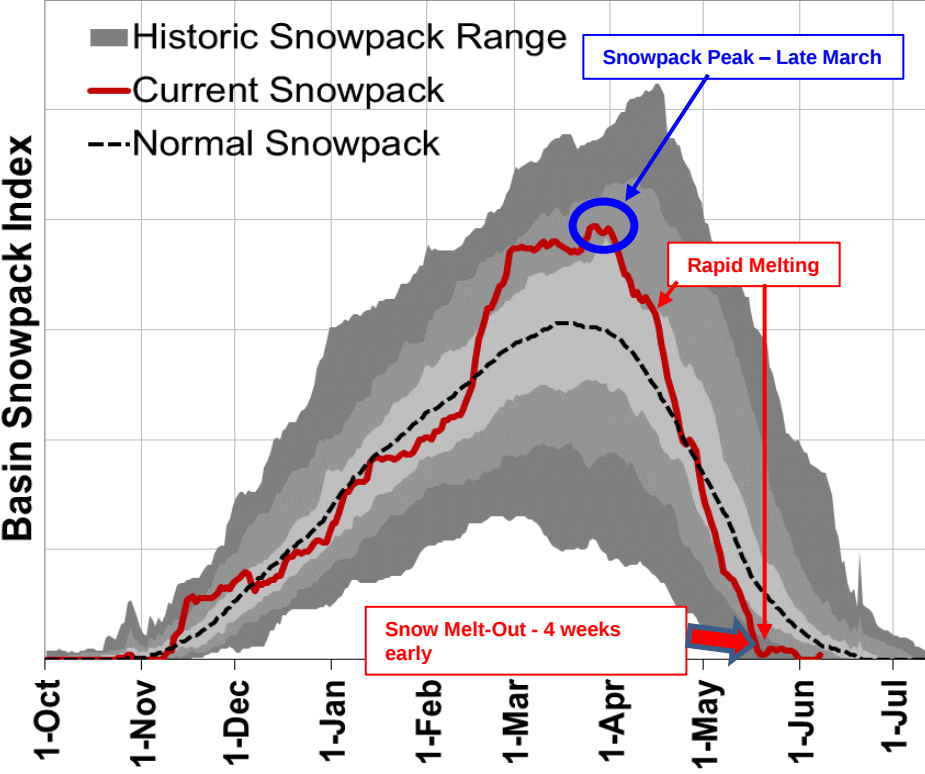
Oregon Governor Kate Brown has signed emergency drought declarations for 15 counties and an additional 4 counties have drought declarations forwarded to Governor for approval (19 of 36 counties declared or requested)

Snowpack peaked across Oregon in late March. The northern part of the state recorded well above normal snowpack, while the southern half of the state generally received below normal amounts.

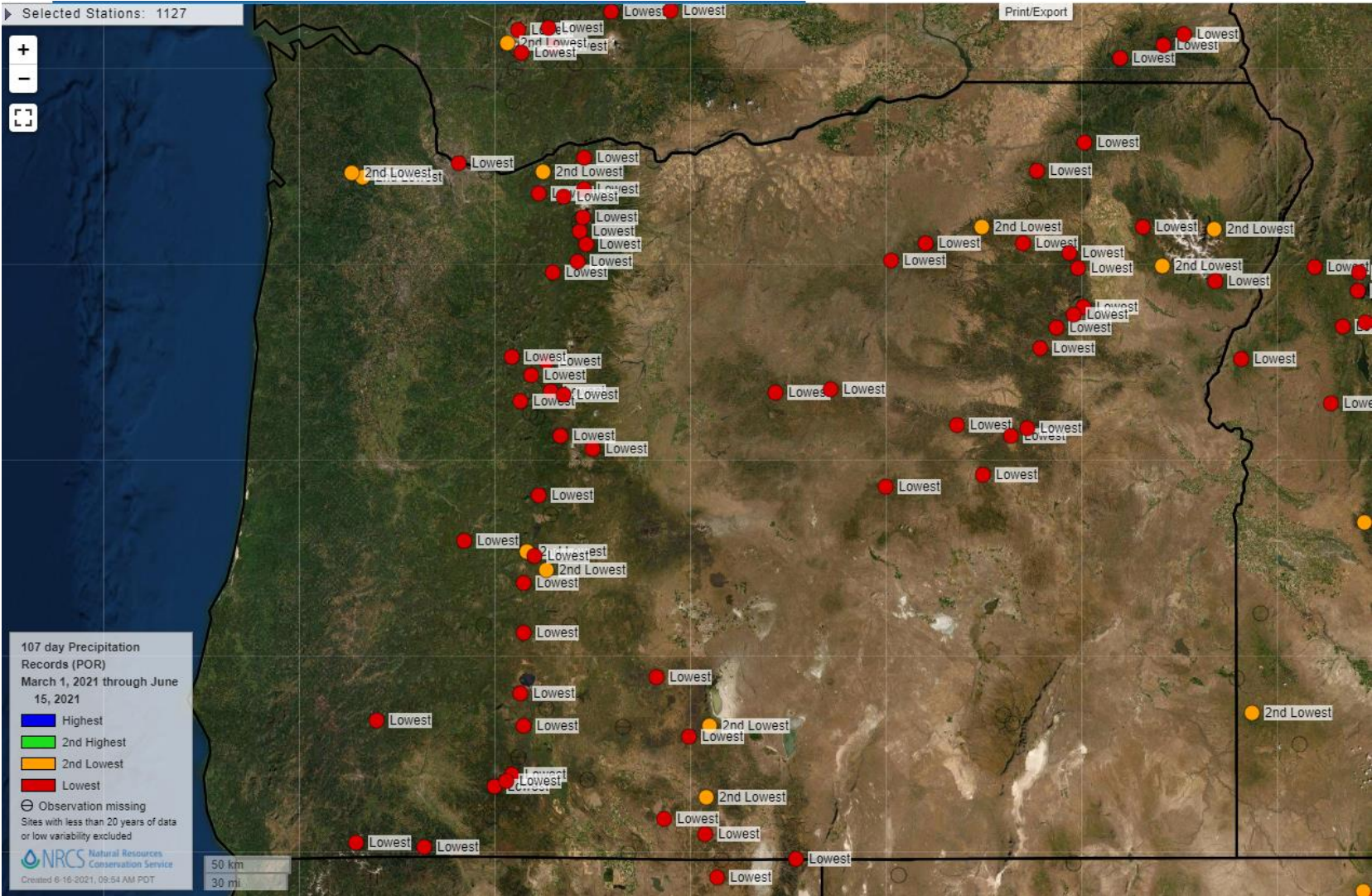


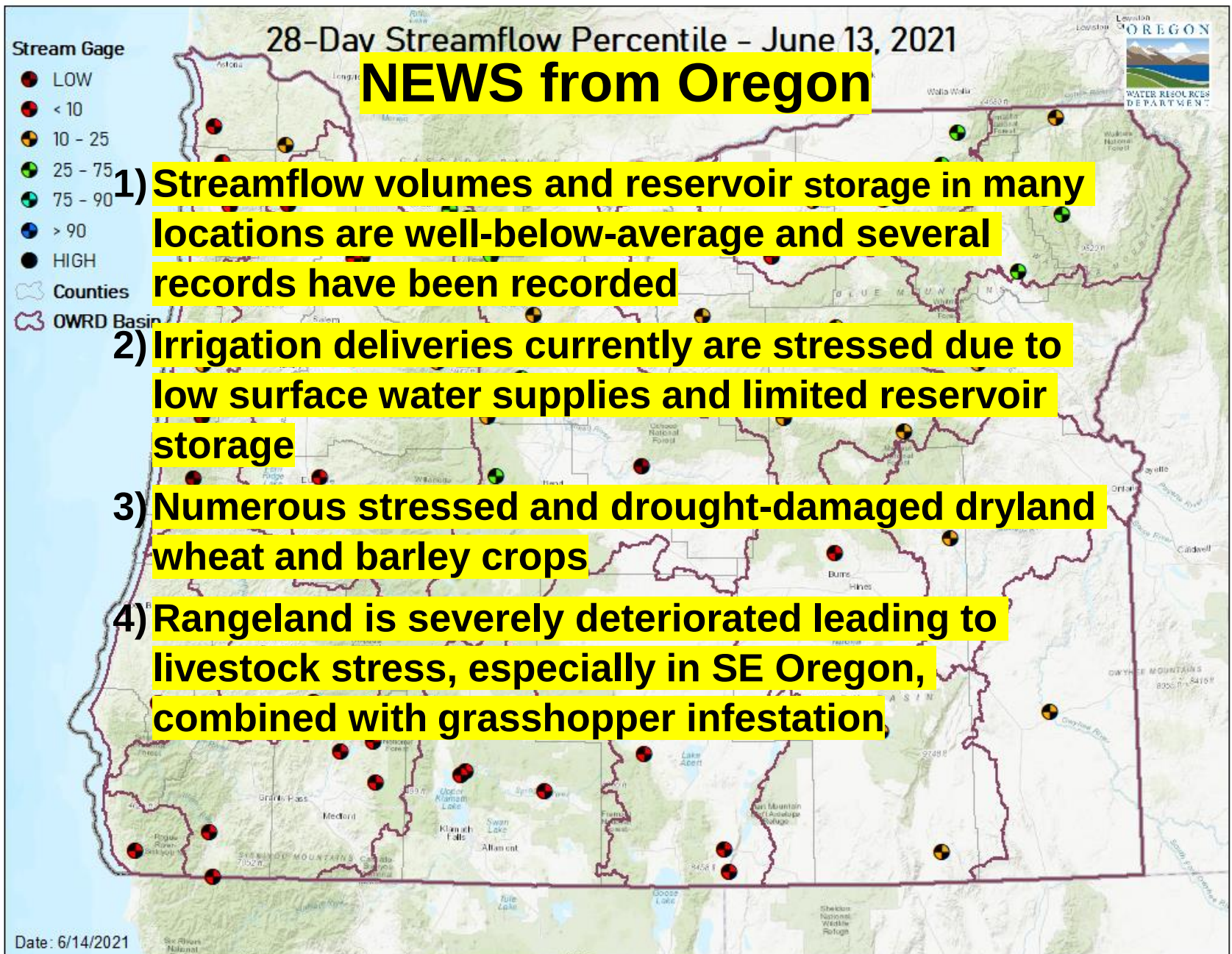
Unseasonably warm temperatures in April and May led to rapid snowpack melt-out and runoff leading to less available surface water to support streamflows and reservoir storage across the state.

Grande Ronde-Burnt-Powder-Imnaha



NRCS
SNOTEL
sites across
Oregon
observed
record low
amounts of
precipitation
from March 1
through
June 15
(23 to 43
years of
record)





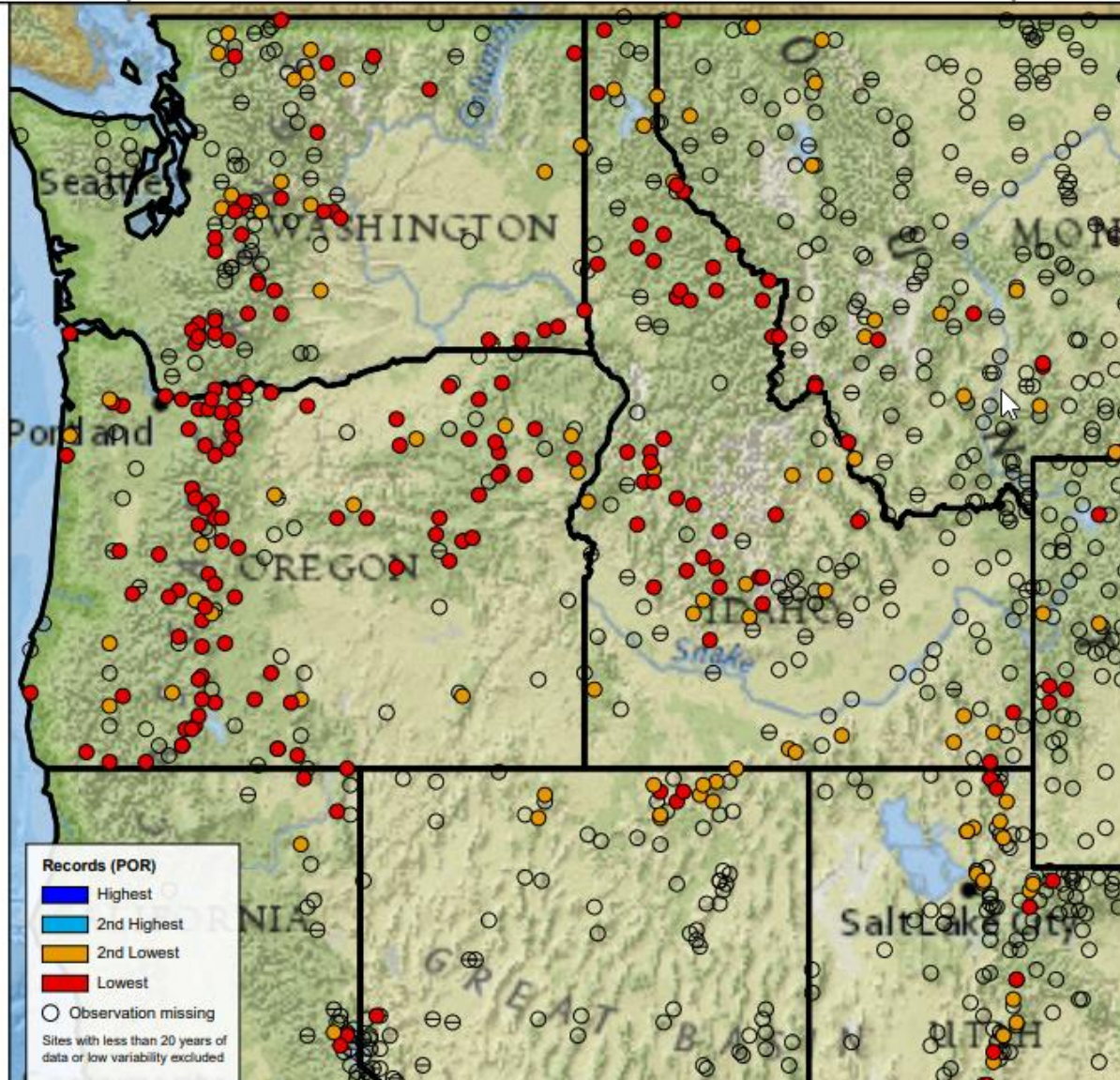
3 month Precipitation

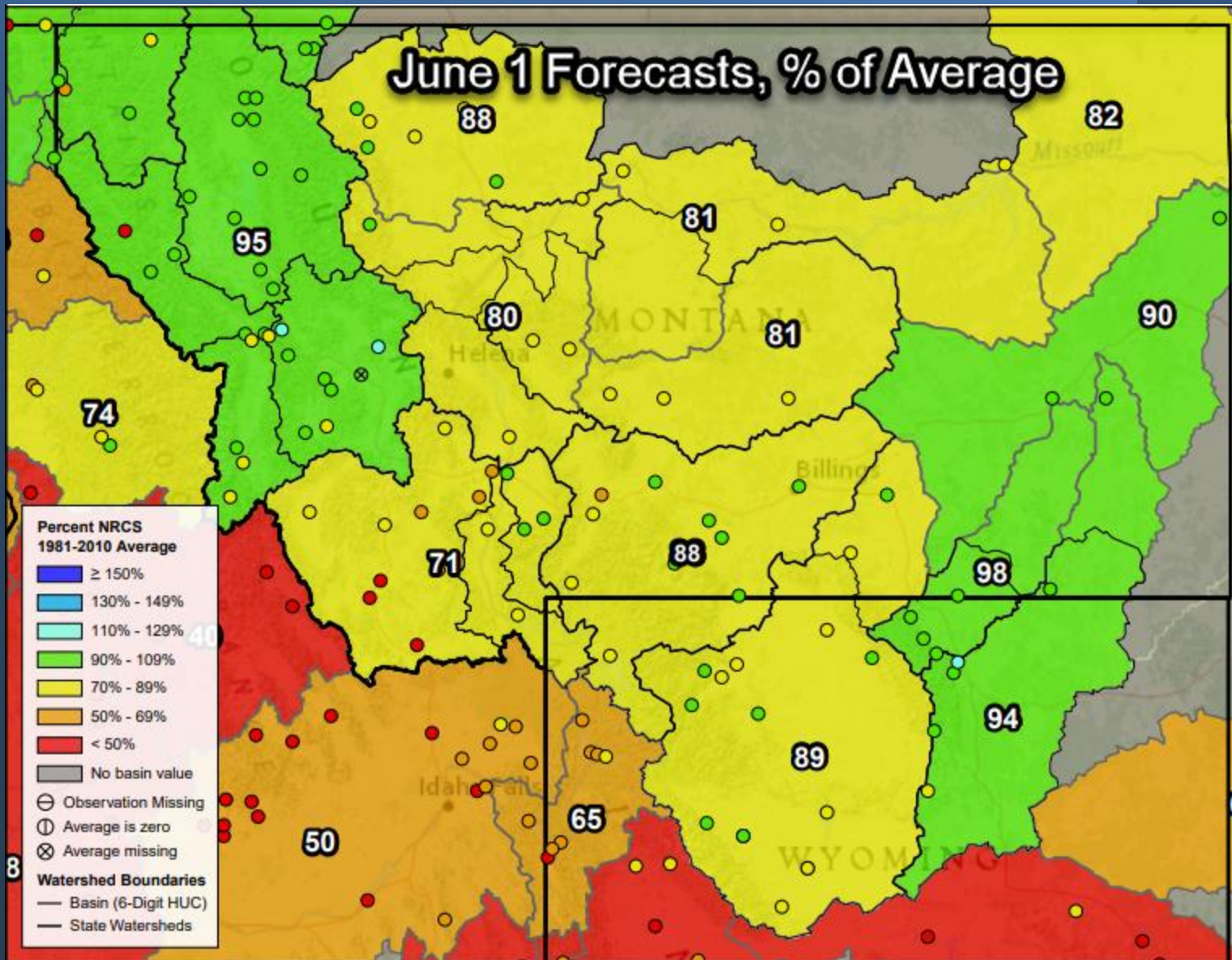
Records (POR)

March 1, 2021 - May 31, 2021

Pacific NW
Record March-May low precipitation (~ 40 years)

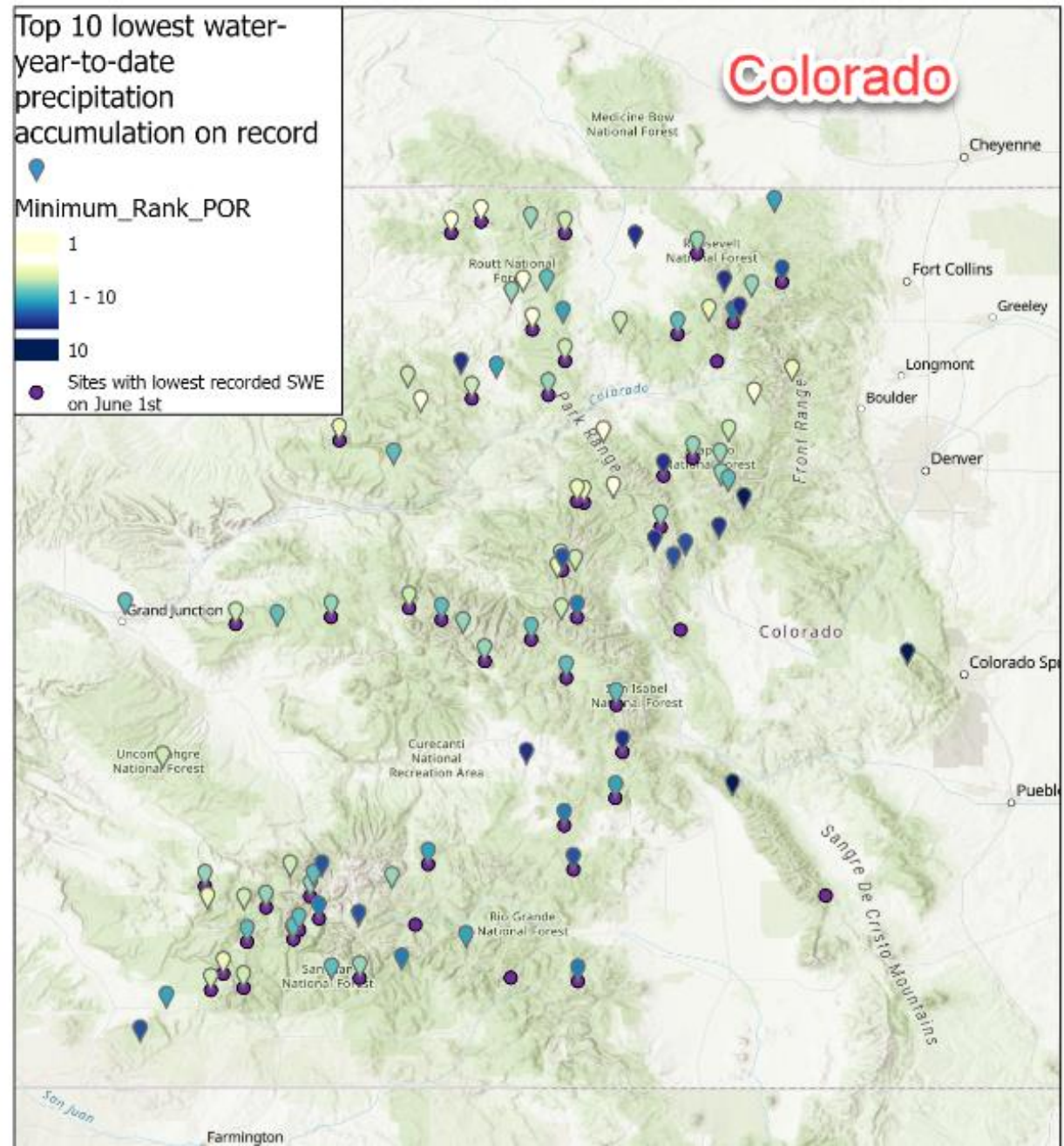
Idaho
Below normal snowpack coupled with record low spring precipitation; In south-central Idaho, extreme to exceptional drought, major agricultural losses anticipated





Aside from Alaska, one of the 'wetter' areas in the West, although SW Montana dry with irrigators pulling all water out of Jefferson, and runoff shifted early, 100F in Bozeman last week.

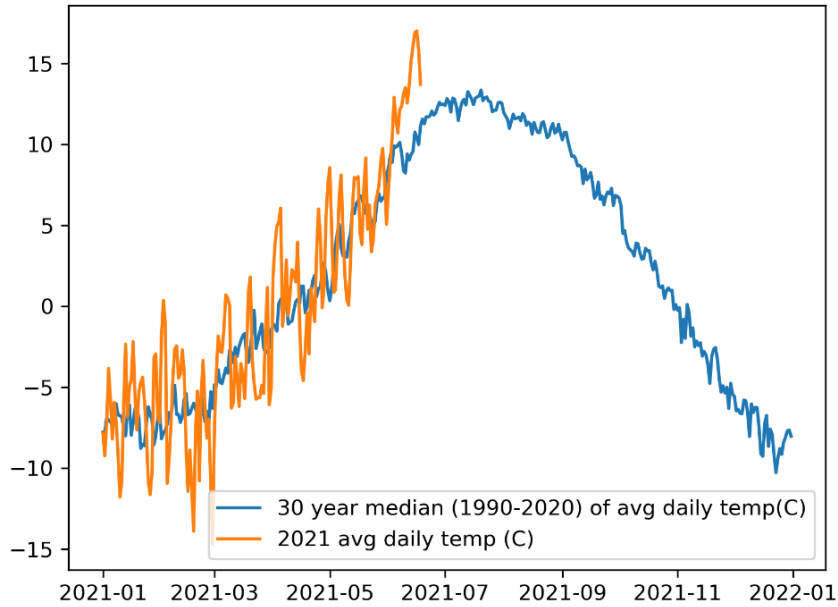
SNOTEL June 1st Extremes



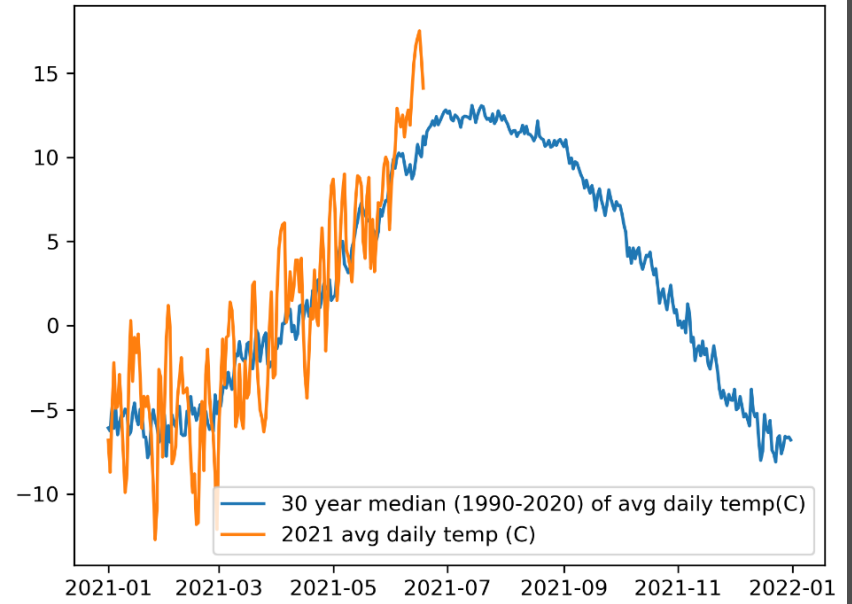
SWE and
precipitation:

Extremely dry
west of the
Continental
Divide

Gunnison as of 2021-06-18

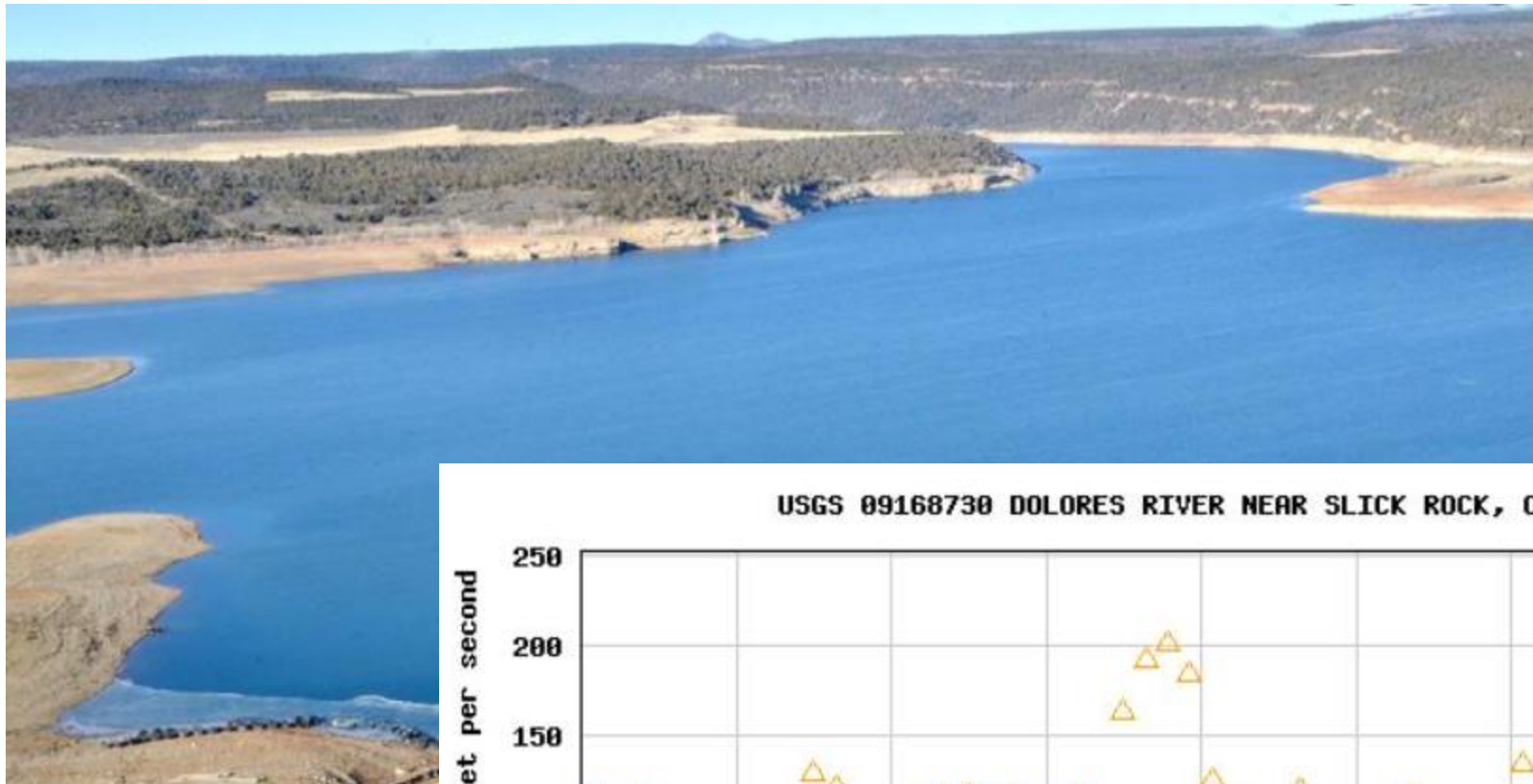


San Miguel-Dolores-Animas-San Juan as of 2021-06-18

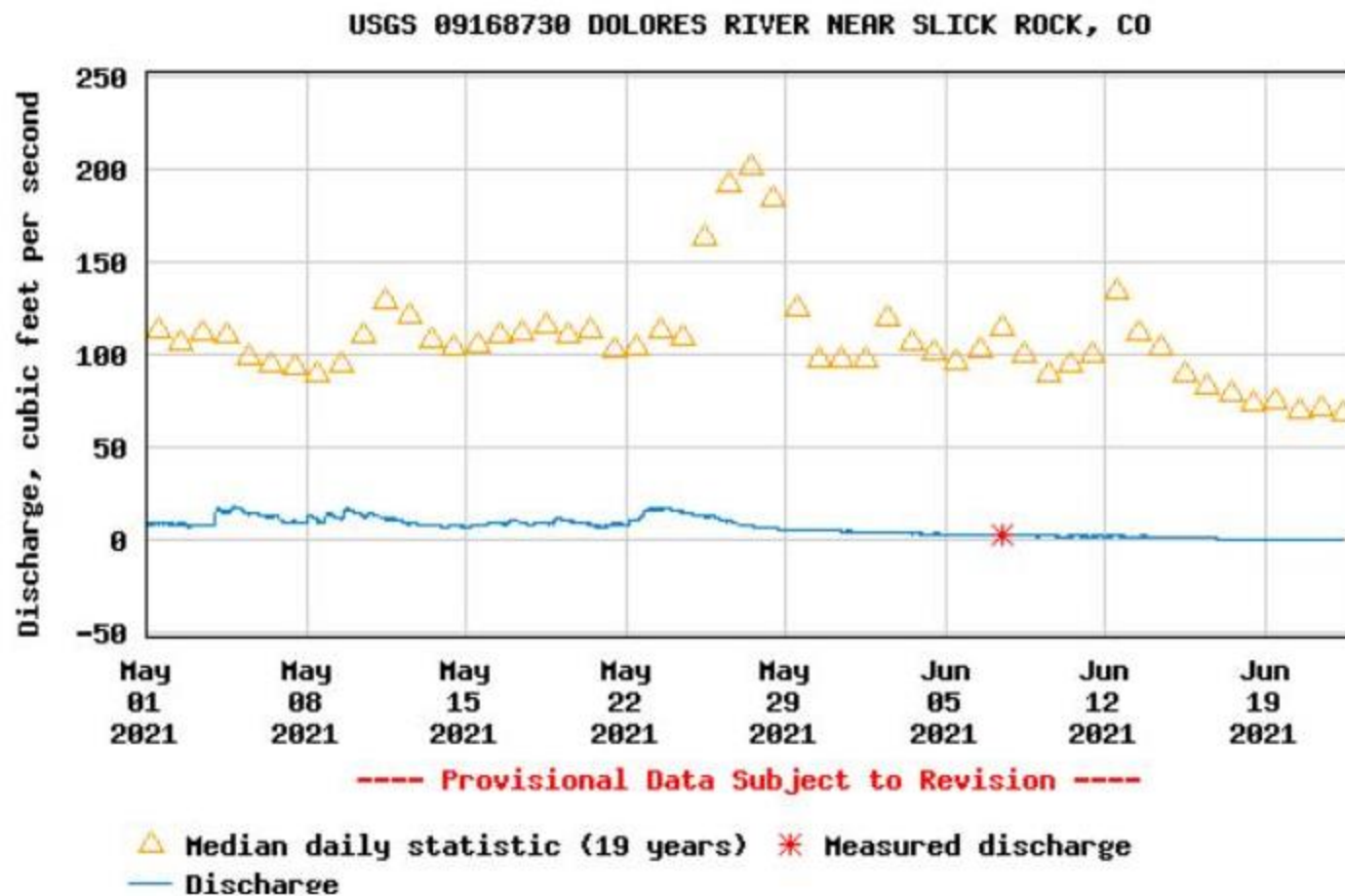


From Colorado: All river basins showed strong deviation from median temps in recent June heat wave

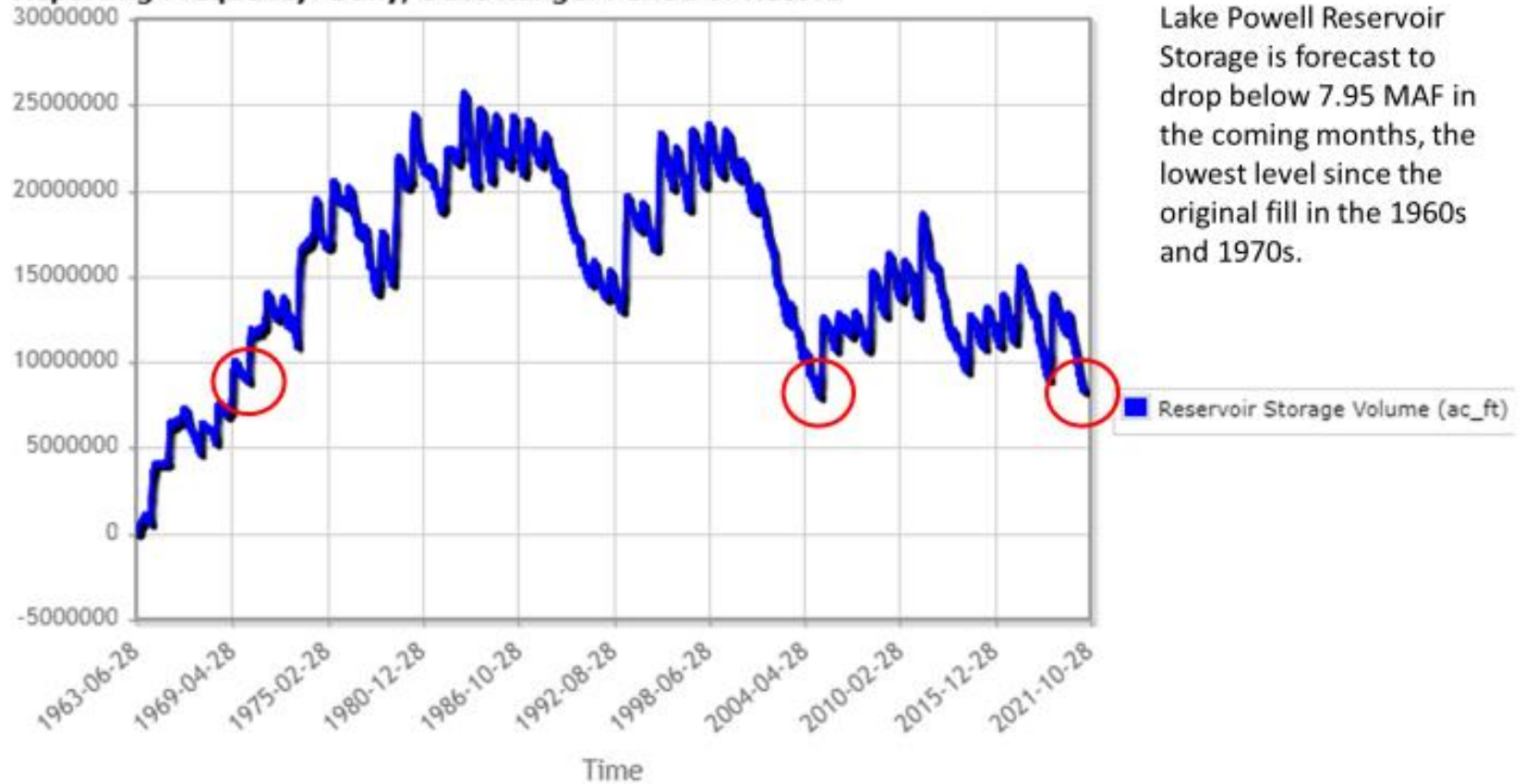
Photo: The
Journal, SW
Colorado



McPhee Reservoir,
SW Colorado, on
the Dolores River:
May drop below
dead pool



Lake Powell (09379900) Arizona RESERVOIR Site - 3700 ft
Reporting Frequency: Daily; Date Range: Period of Record



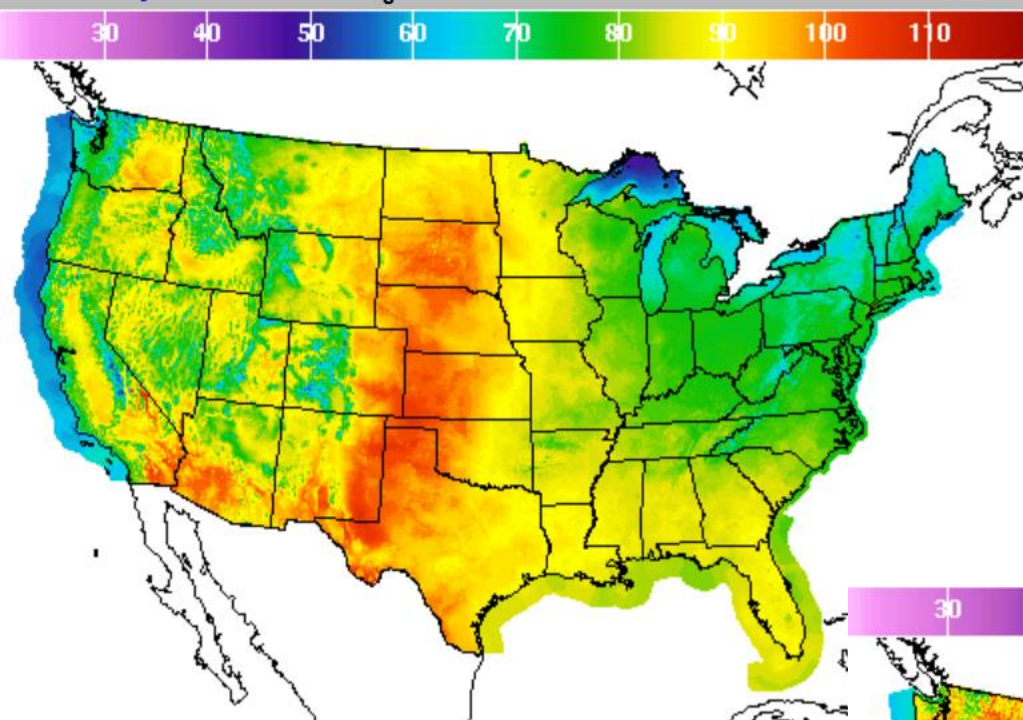
Lake Powell Reservoir Storage is forecast to drop below 7.95 MAF in the coming months, the lowest level since the original fill in the 1960s and 1970s.

Hoover Dam power generation is down 25 percent due to low water levels

The Hoover Dam, which forms the Lake Mead reservoir, produces about 2,000 megawatts of hydropower — enough electricity for nearly 8 million Americans.



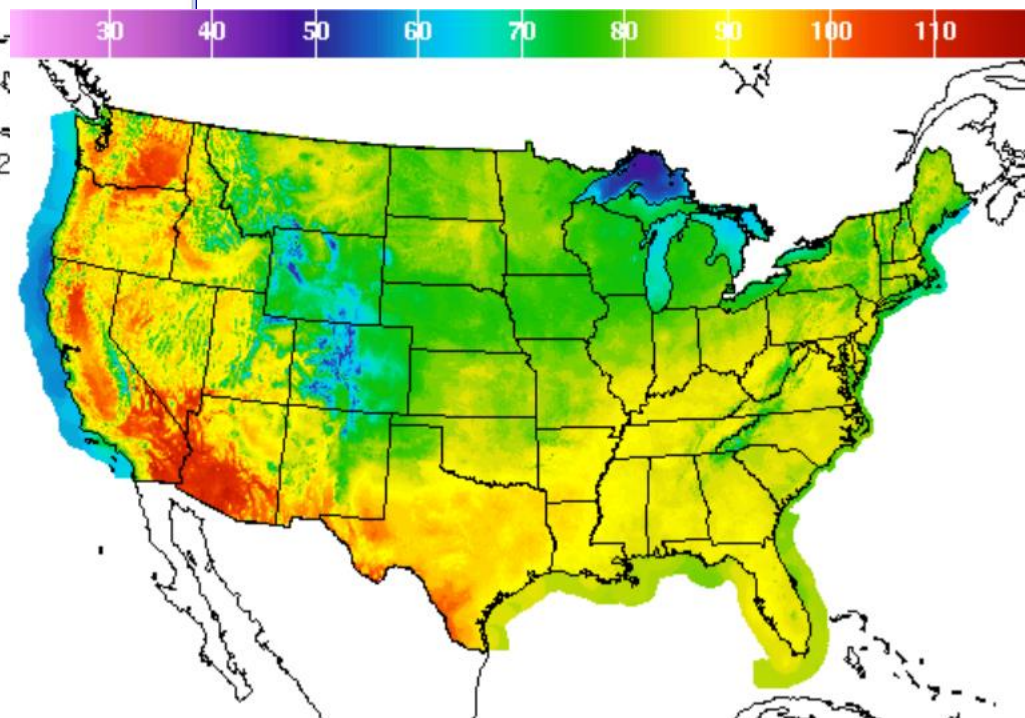
Source: <https://www.cnn.com/2021/06/17/us/lake-mead-drought-water-shortage-climate/index.html>



High Temperature(F) Ending Wed Jun 23 2021
(Thu Jun 24 2021 00Z)

National Digital Forecast Database

02z issuance Graphic created-Jun 22 10:14PM EDT

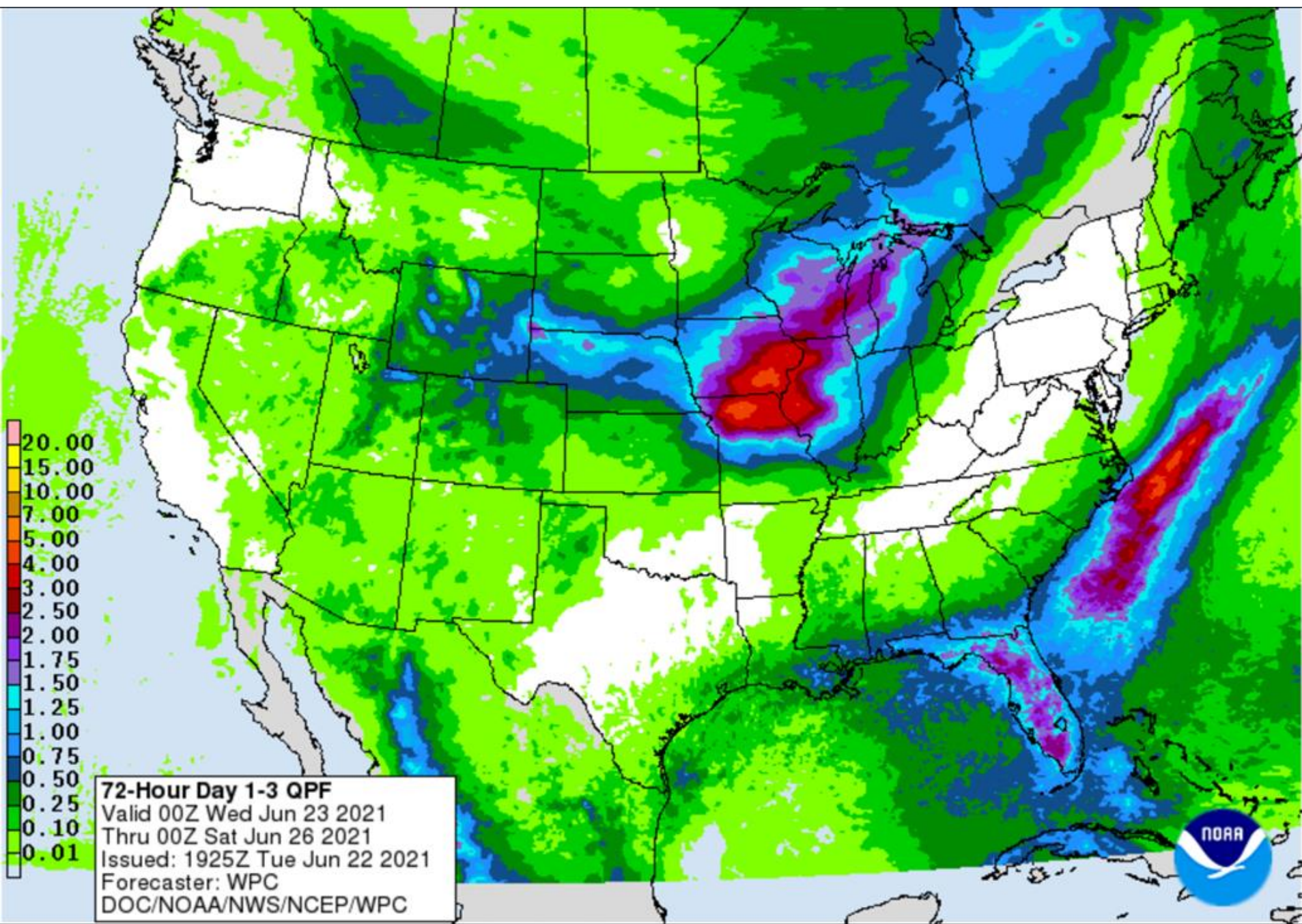


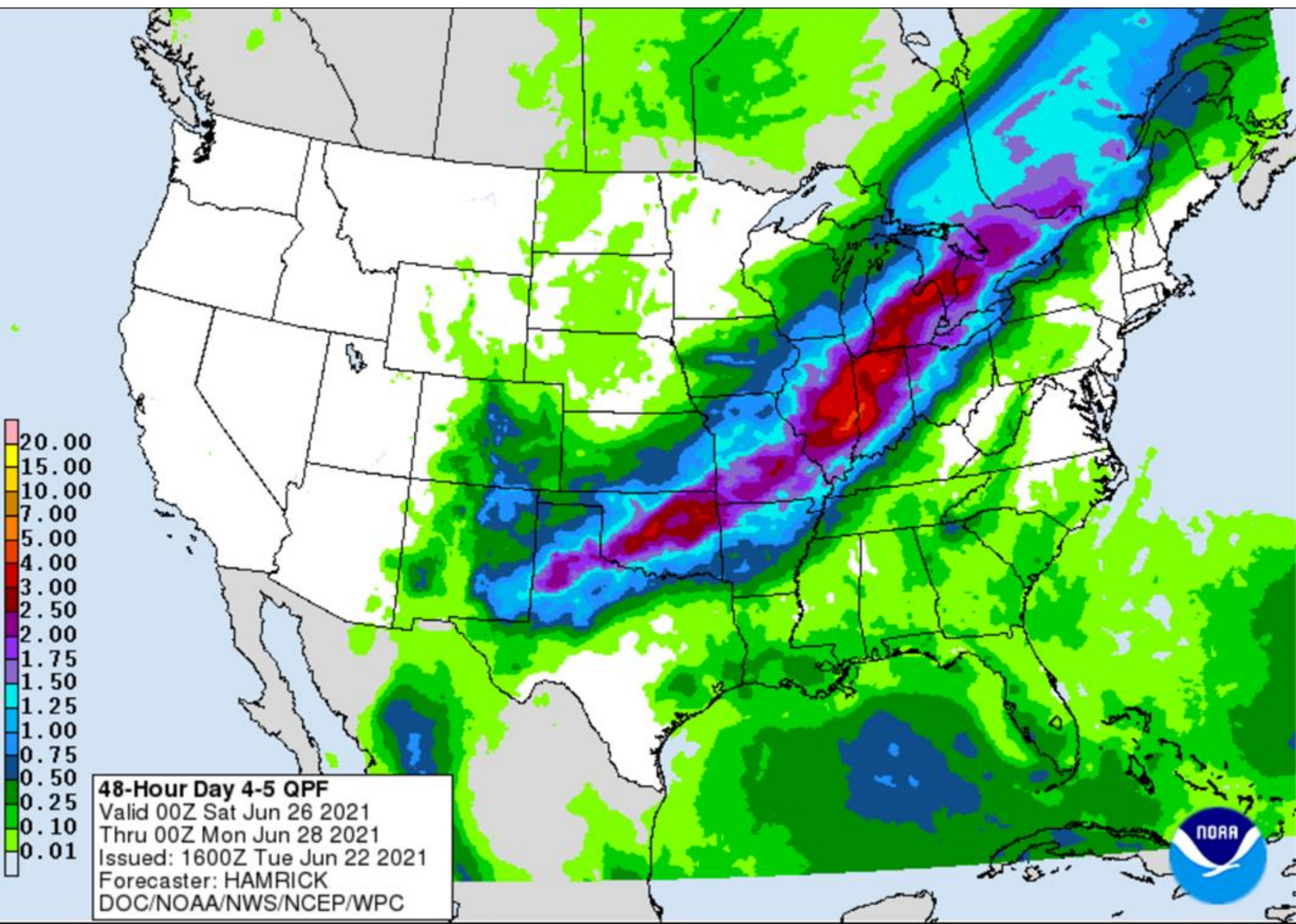
High Temperature(F) Ending Sat Jun 26 2021 8PM EDT
(Sun Jun 27 2021 00Z)

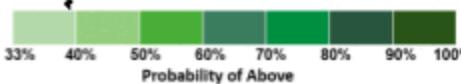
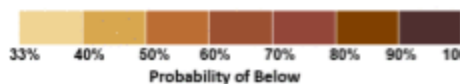
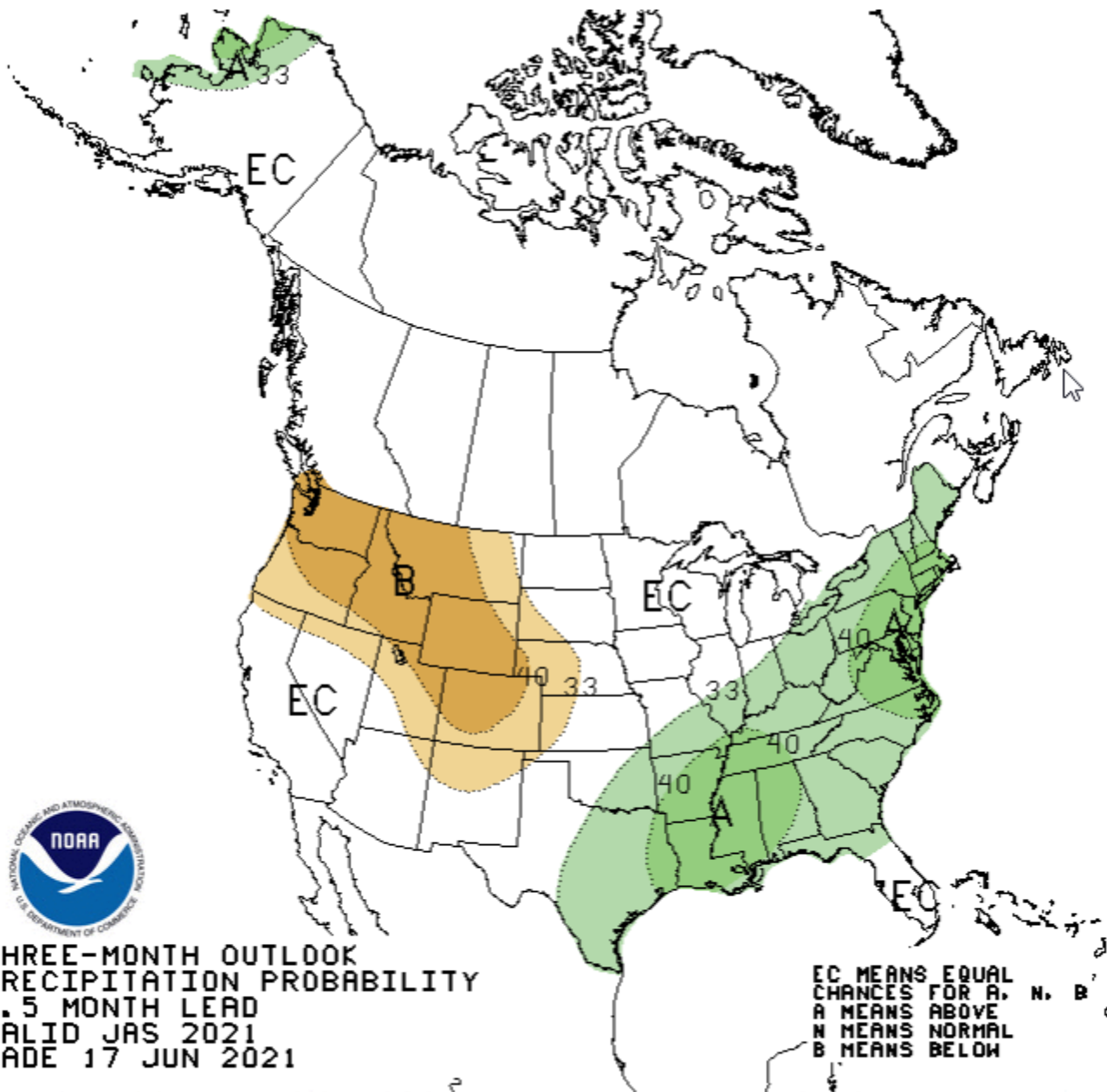
National Digital Forecast Database

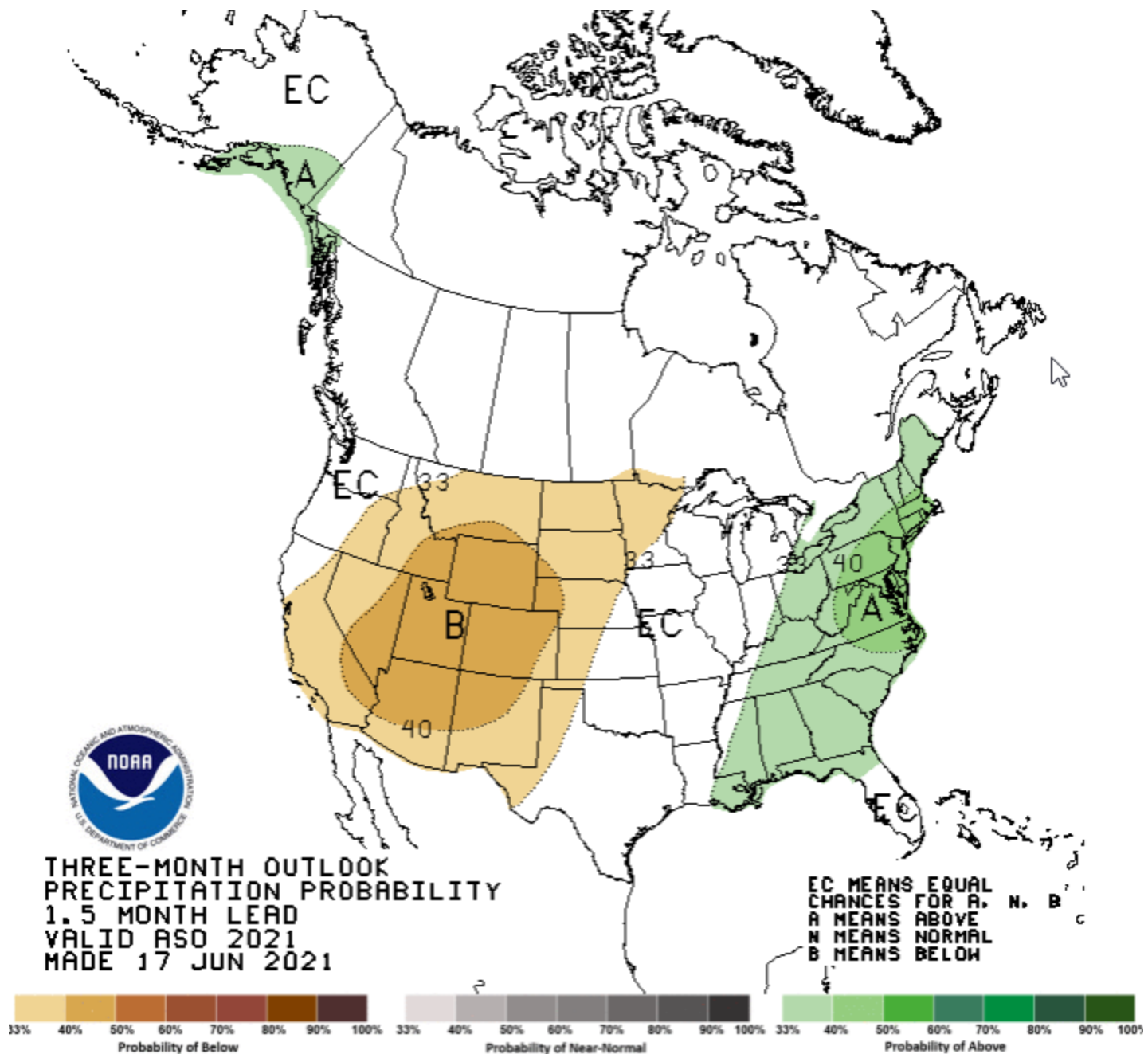
01z issuance Graphic created-Jun 22 9:13PM EDT

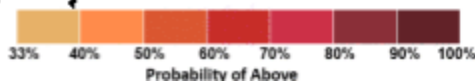
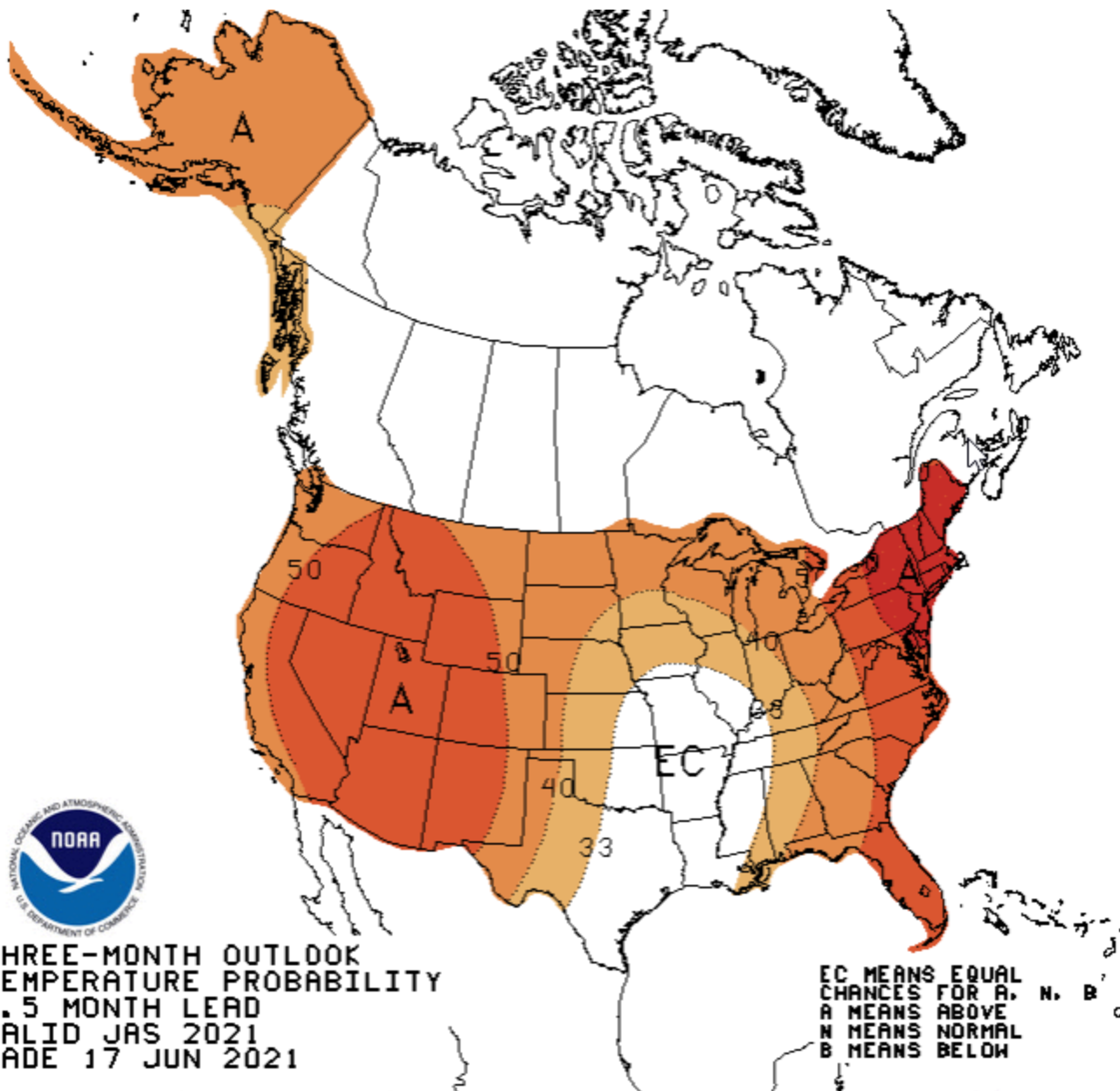












Questions?

cara.s.mccarthy@usda.gov

www.nrcs.usda.gov/wps/portal/wcc/home