

Colorado Climate Update

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Assistant State Climatologist

Water Conditions Monitoring Committee

June 25, 2024



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

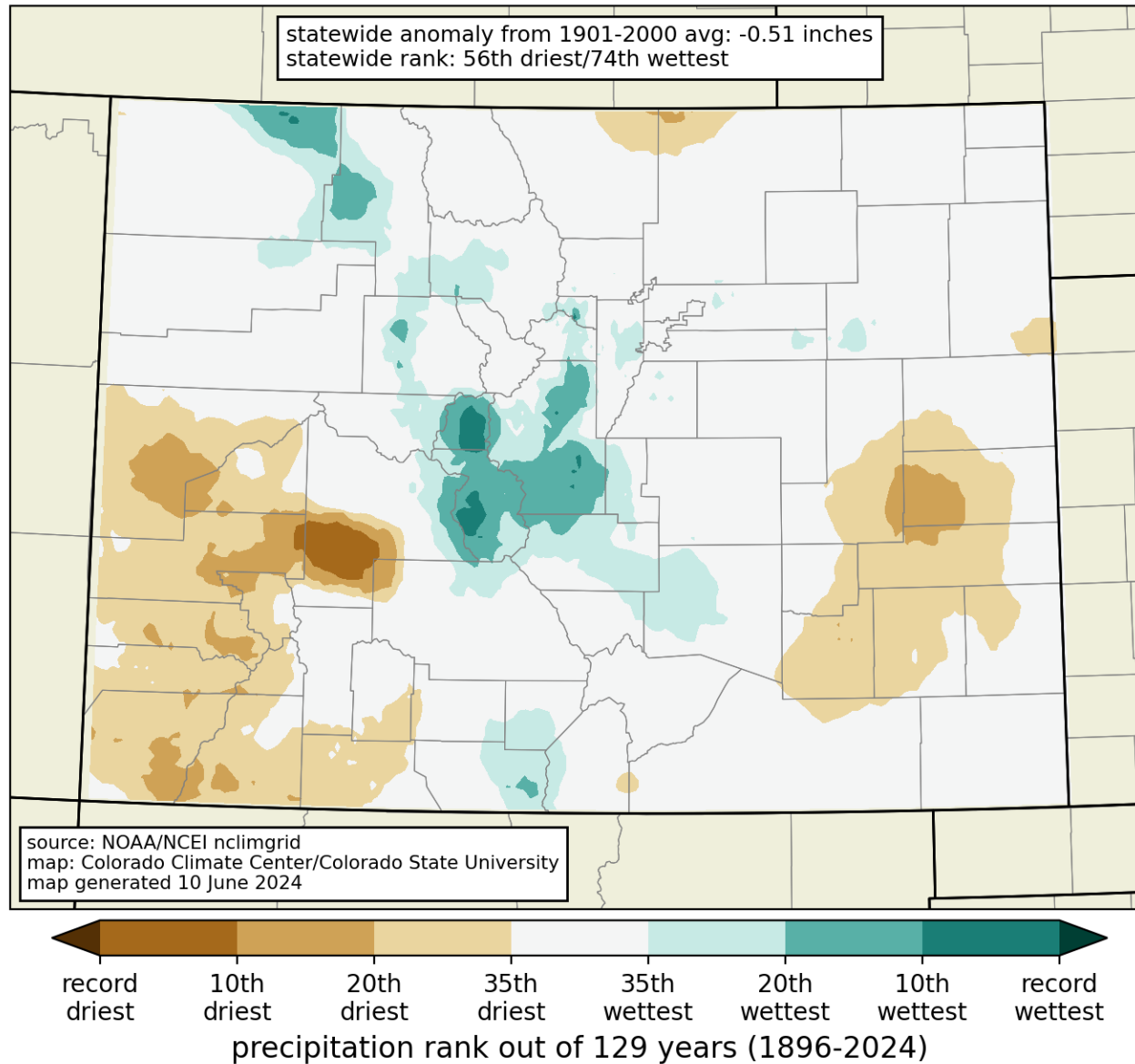


2024 Water Year to Date

A look at
Spring 2024



precipitation rank: 8 months ending May 2024 (Oct-May)



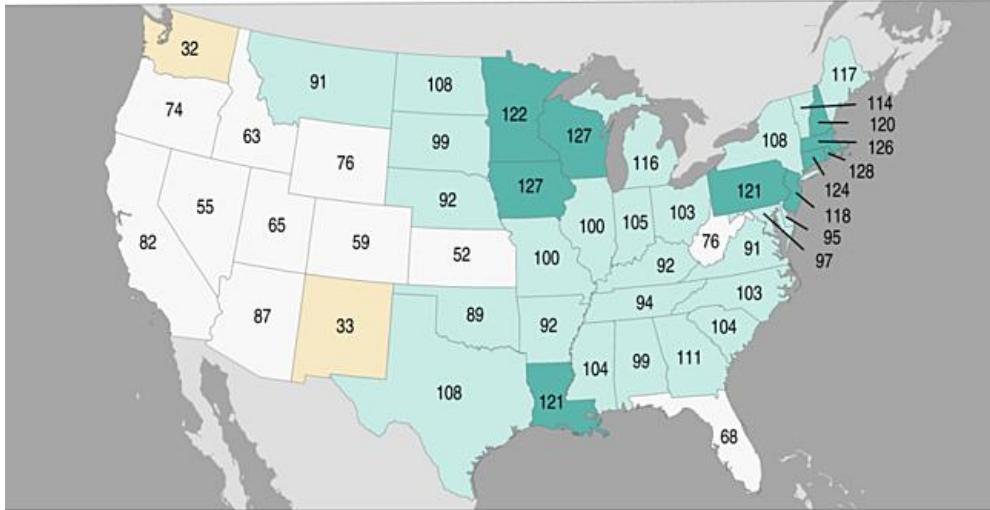
https://climate.colostate.edu/co_cag/rank_maps.html

Statewide Precipitation Ranks

March – May 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

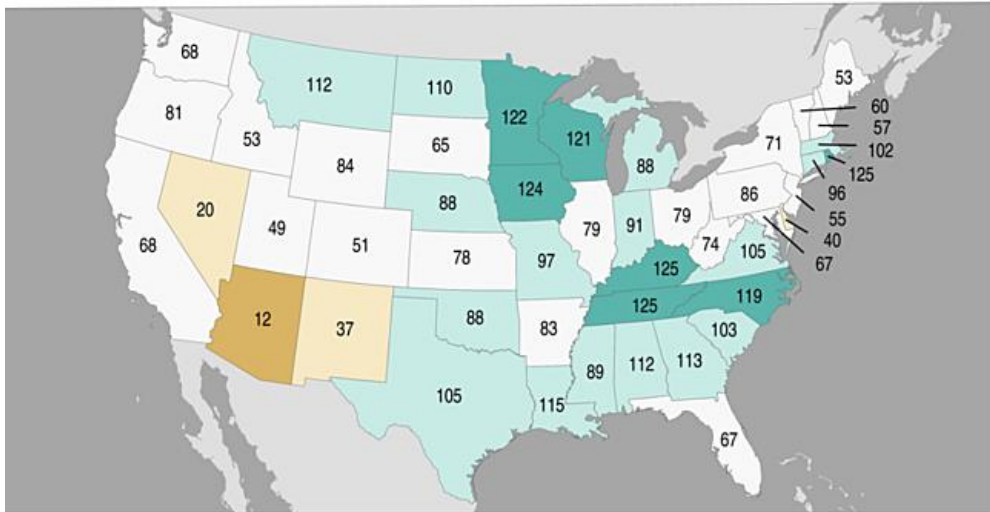


Statewide Precipitation Ranks

May 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Created: Thu Jun 6 2024
Source: nClimGrid – Monthly

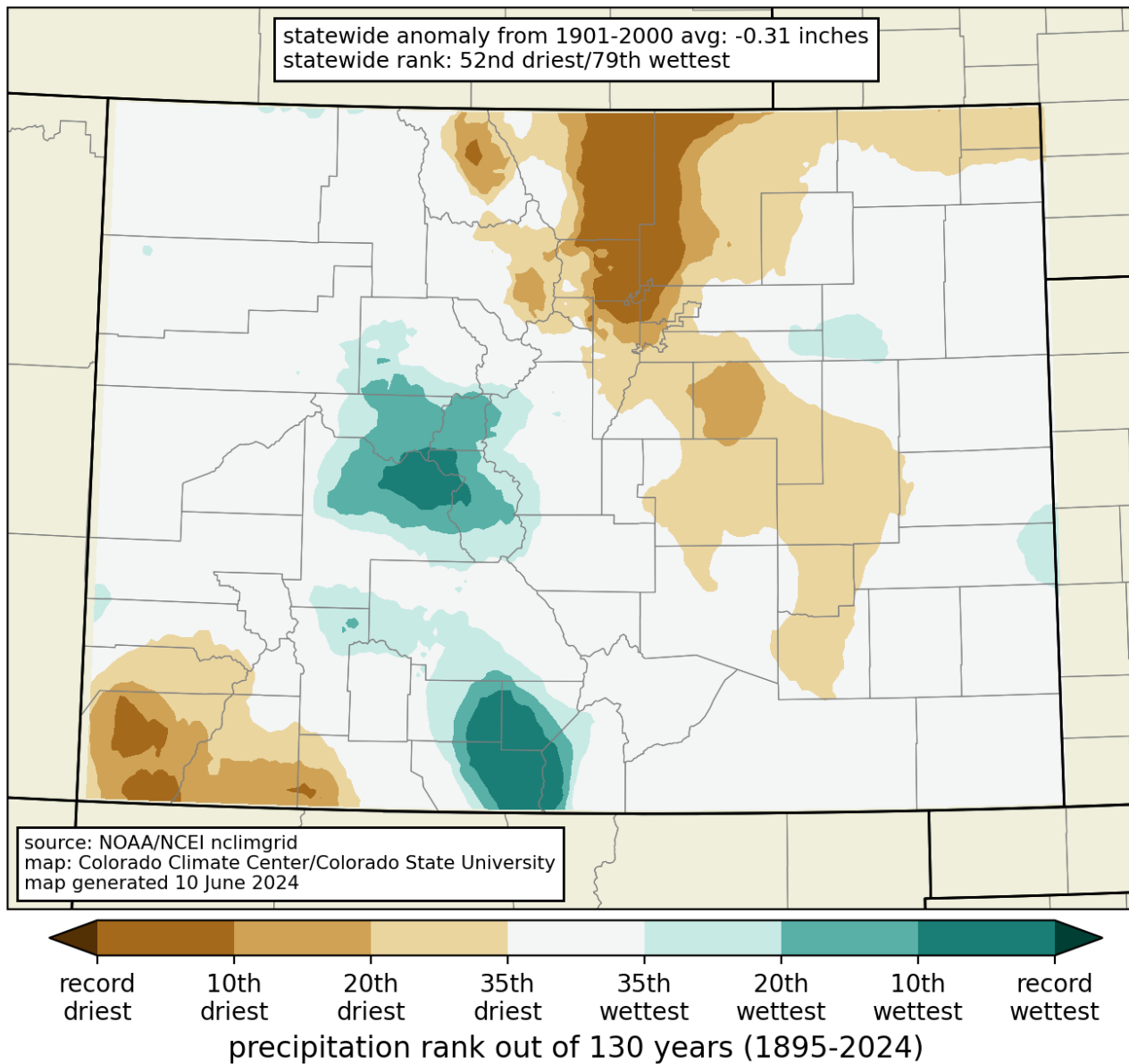


[ps://www.ncdc.noaa.gov/temp-and-precip/us-maps/](https://www.ncdc.noaa.gov/temp-and-precip/us-maps/)

Month	P Rank (of 130 years)	Above, below, or near 20 th century avg?
Oct	53 rd driest	near avg
Nov	23 rd driest	below
Dec	64 th wettest	near avg
Jan	47 th wettest	near avg
Feb	15 th wettest	above
Mar	29 th wettest	above
Apr	43 rd driest	below
May	51 st driest	near avg
Jun		
Jul		
Aug		
Sep		



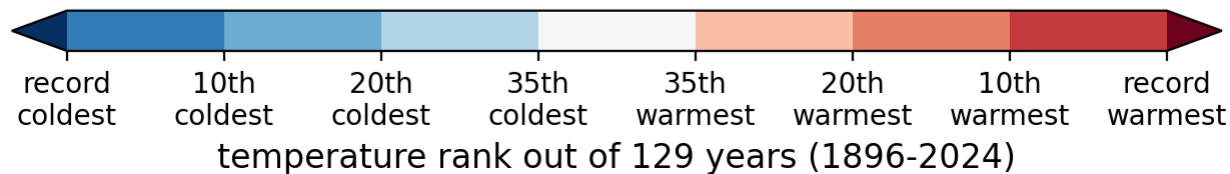
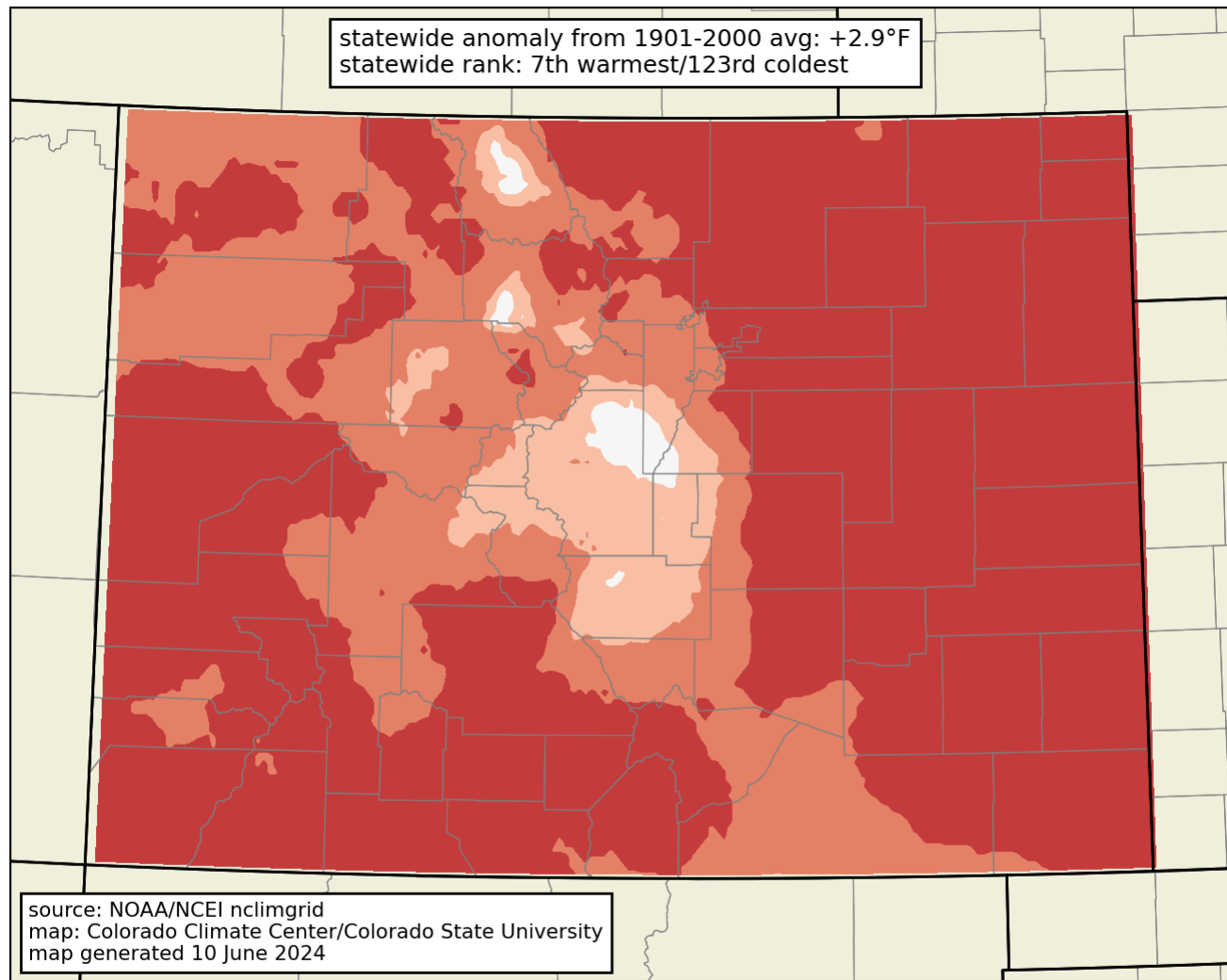
precipitation rank: May 2024



https://climate.colostate.edu/co_cag/rank_maps.html



average temperature rank: 8 months ending May 2024 (Oct-May)



https://climate.colostate.edu/co_cag/rank_maps.html

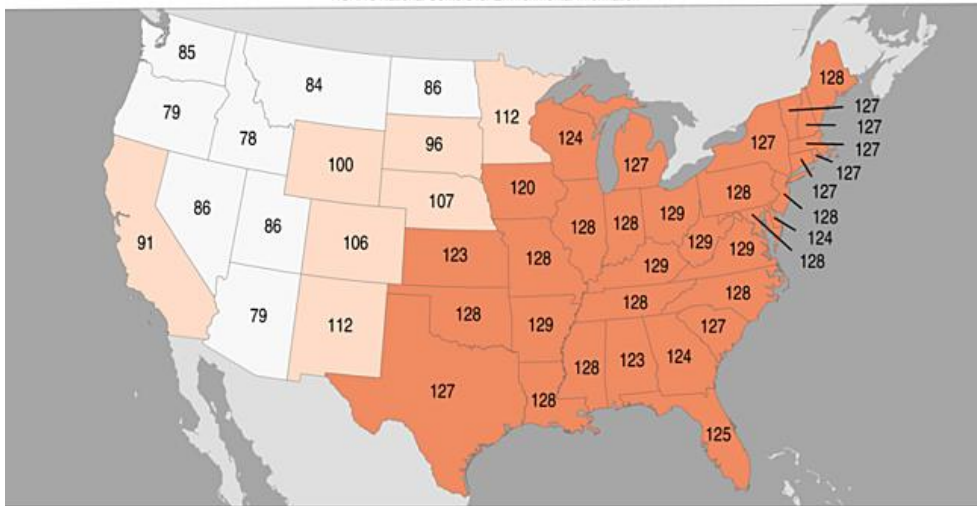


Statewide Average Temperature Ranks

March – May 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

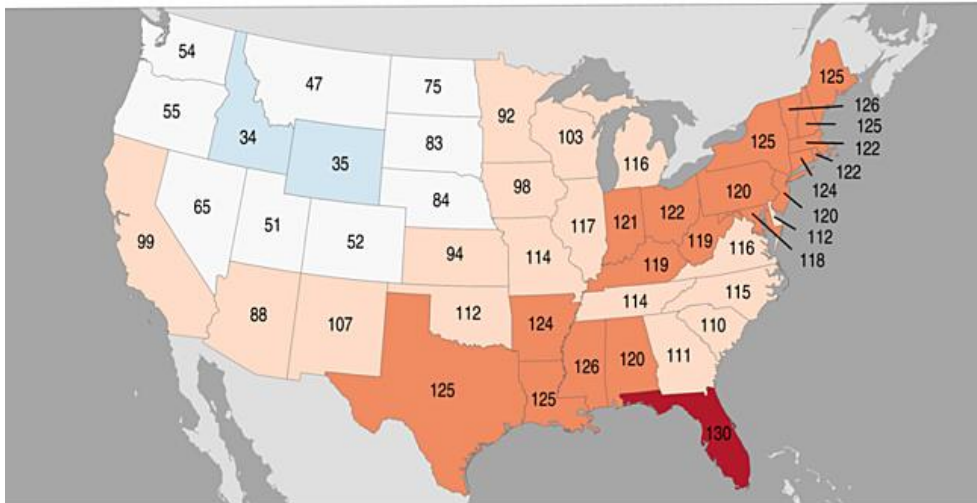


Statewide Average Temperature Ranks

May 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

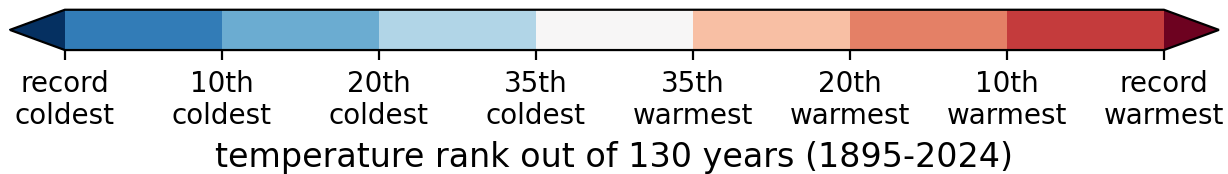
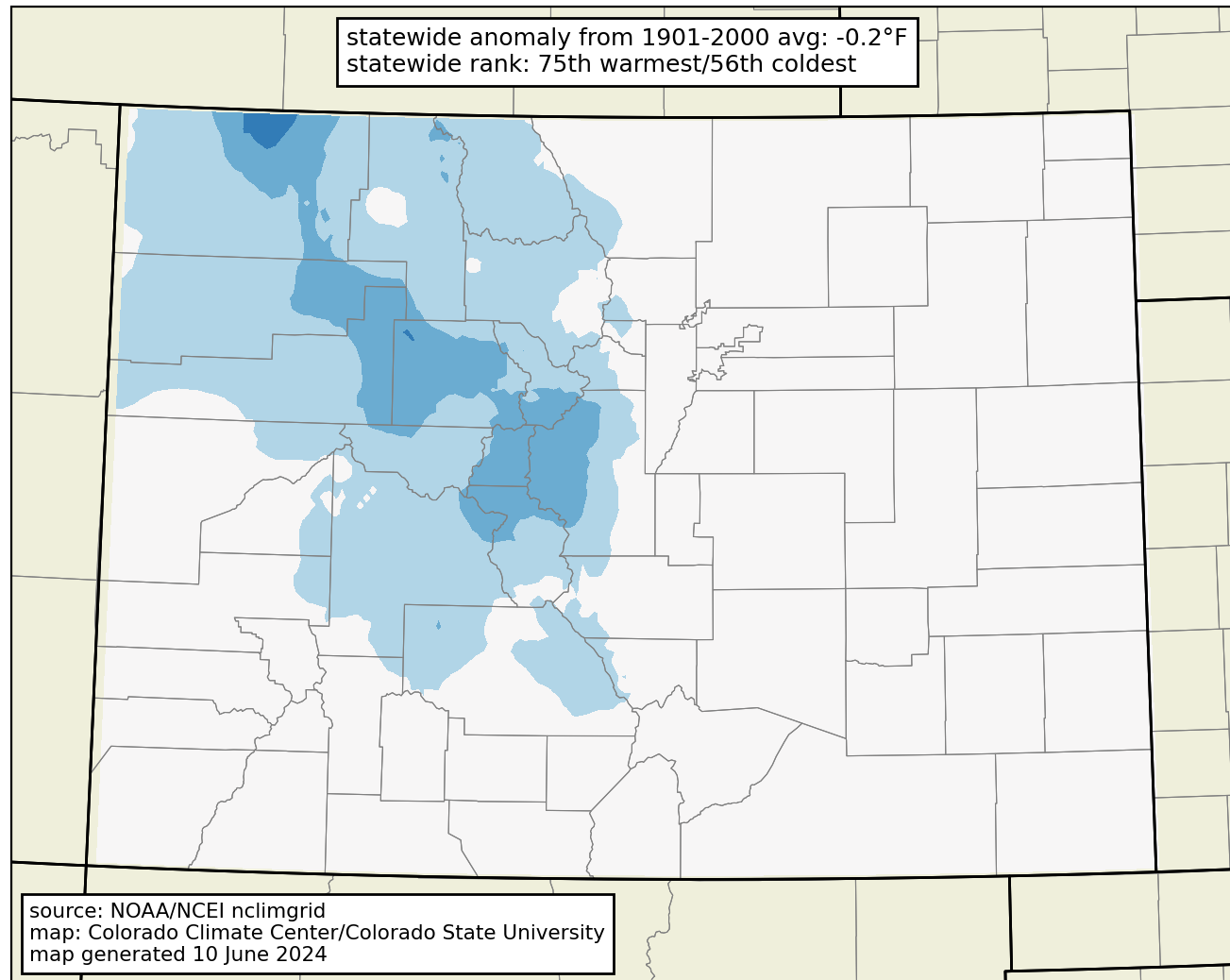


Month	T Rank (of 129 years)	Above, below, or near 20 th century avg?
Oct	26 th warmest	above
Nov	19 th warmest	above
Dec	7 th warmest	much above
Jan	51 st warmest	near avg
Feb	11 th warmest	much above
Mar	34 th warmest	above
Apr	16 th warmest	above
May	52 nd coolest	near avg
Jun		
Jul		
Aug		
Sep		

<https://www.ncdc.noaa.gov/temp-and-precip/us-maps/>



average temperature rank: May 2024



https://climate.colostate.edu/co_cag/rank_maps.html

Current Conditions

Temperature

Precipitation

Evaporative Demand

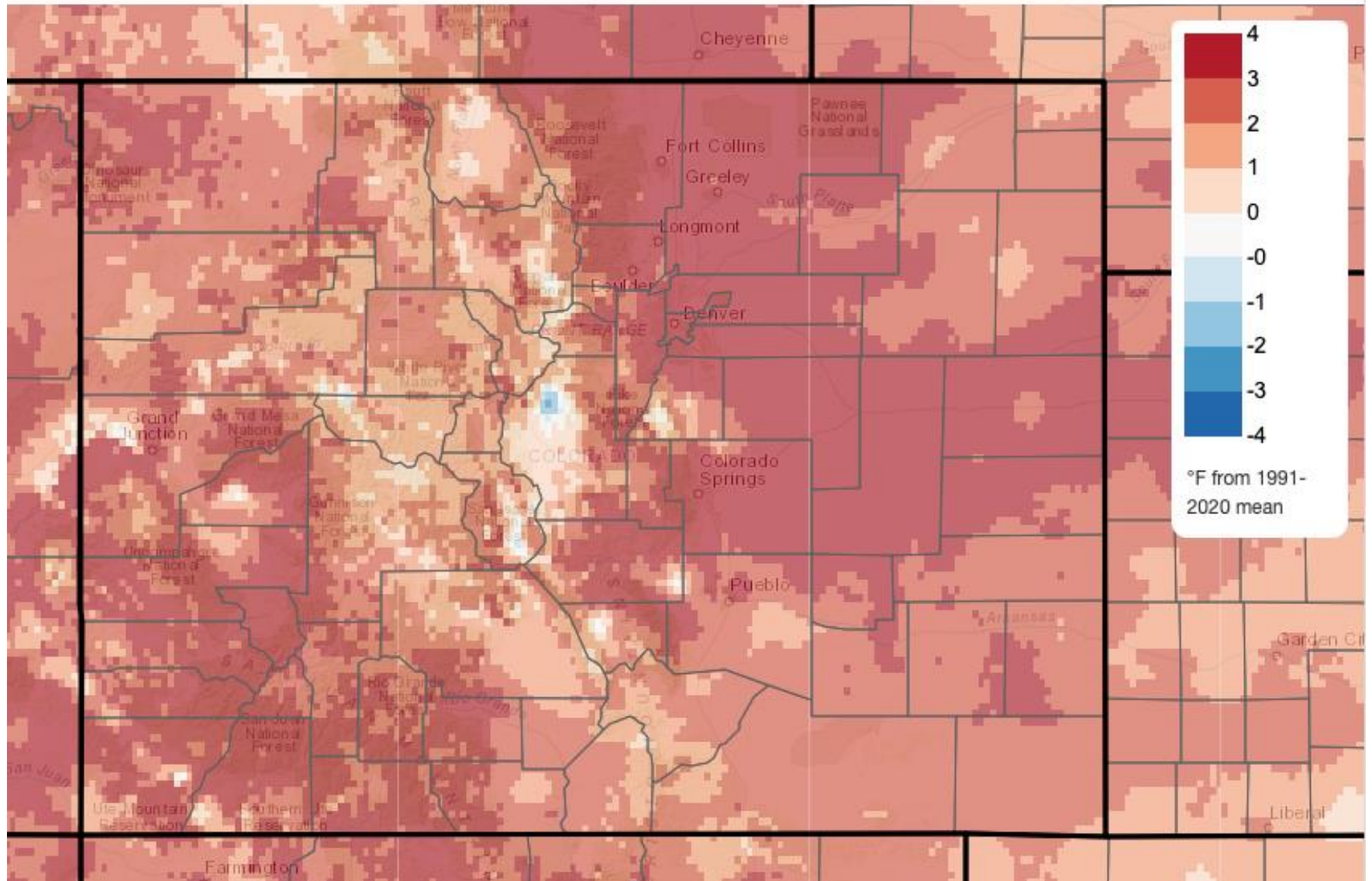
Soil Moisture

Vegetation



Mean Daily Temperature Anomaly, Last 30 Days

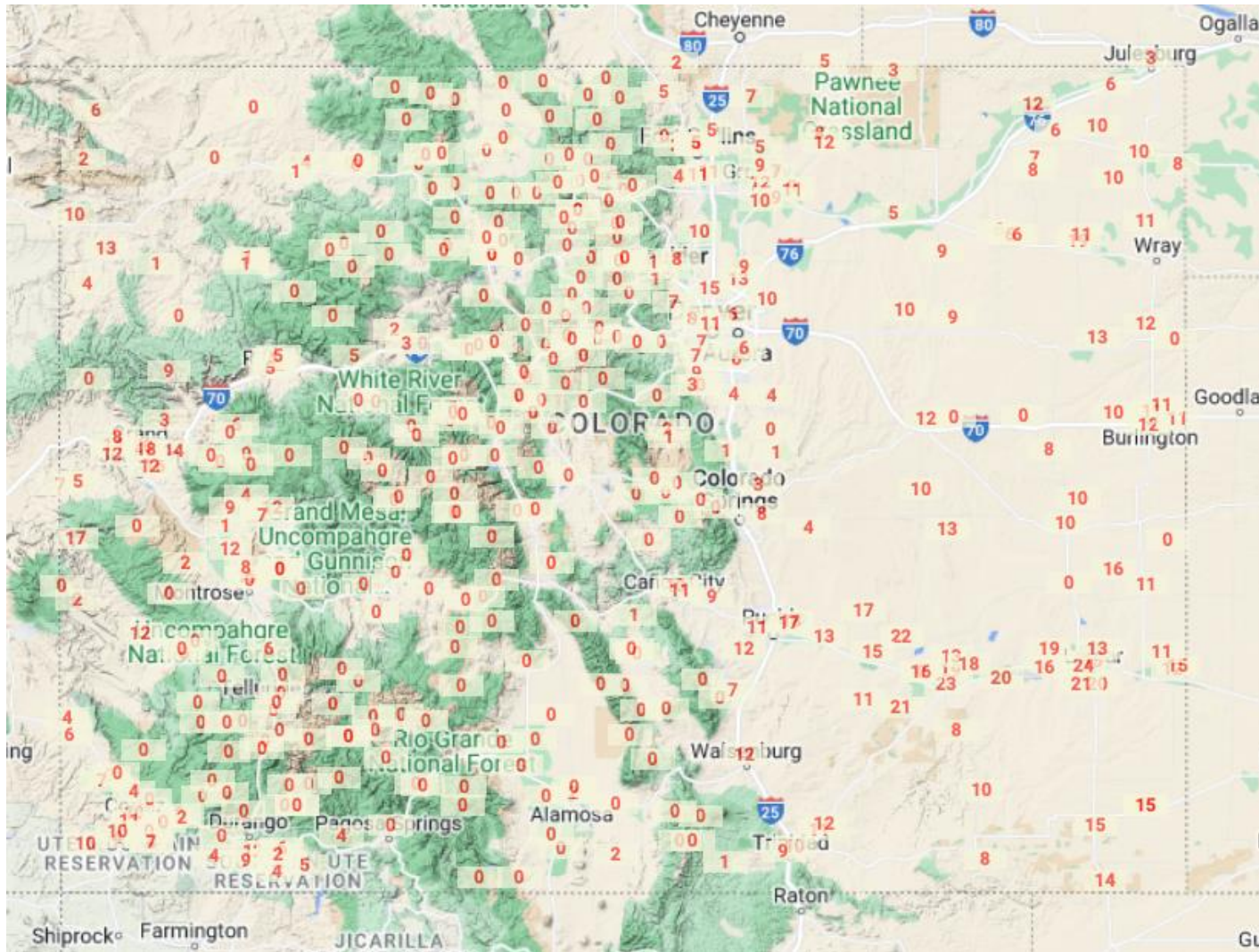
2024/05/25 - 2024/06/23



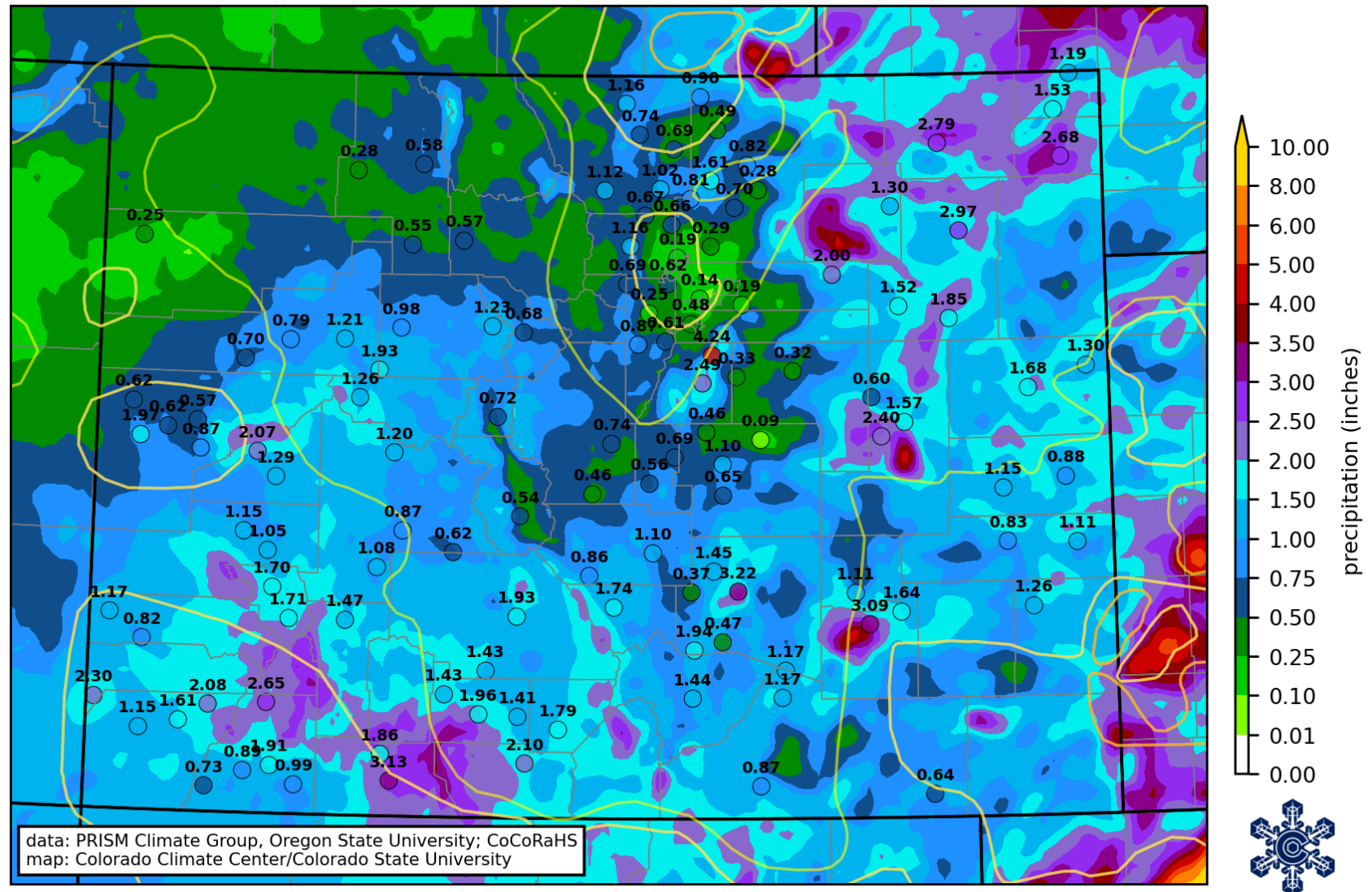
<https://climatetoolbox.org/tool/Climate-Mapper>



Number of 90 degree days so far this year

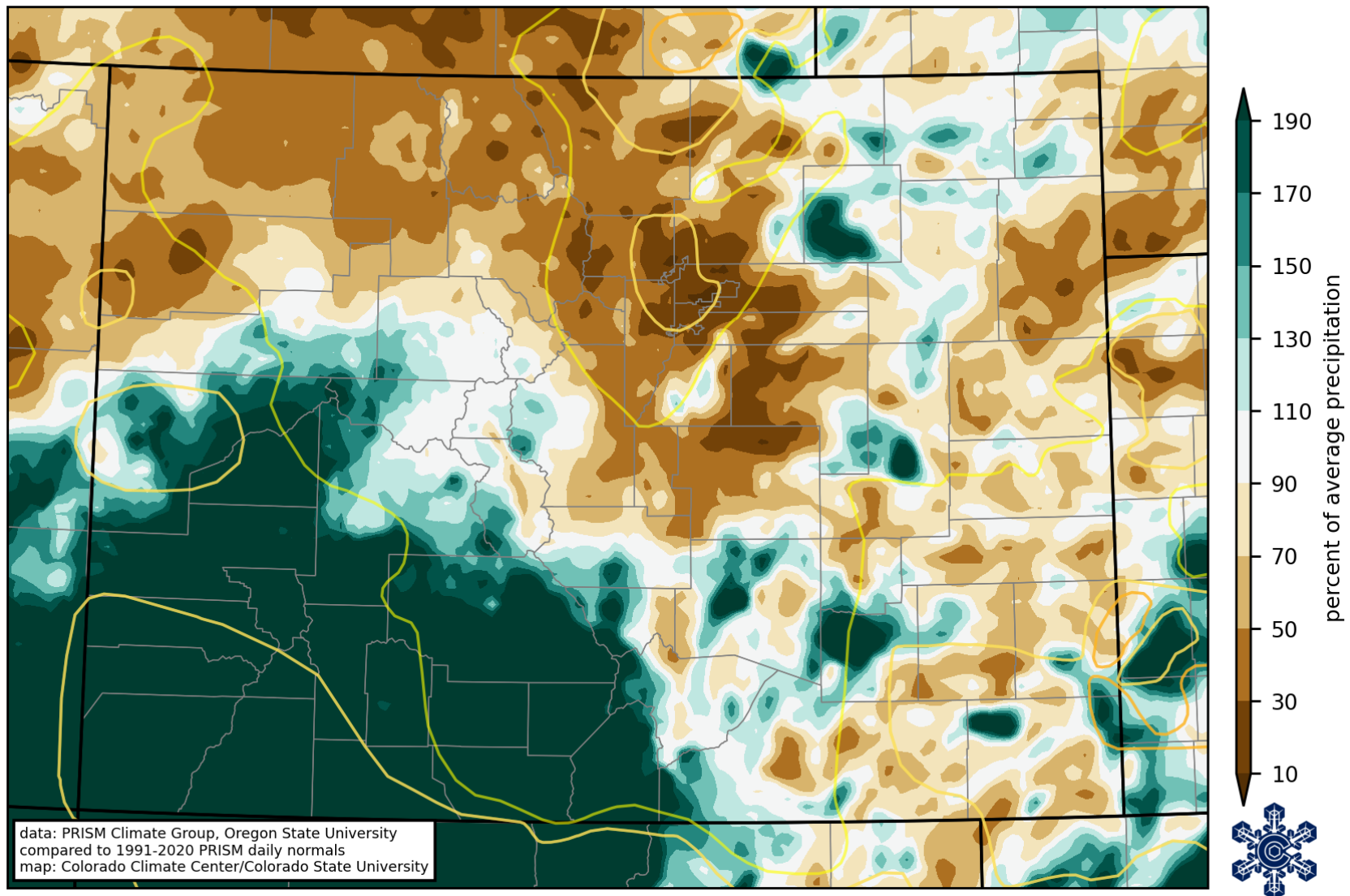


Ark Valley has already seen over 20 90° days. Number in the teens for the West Slope and Front Range.



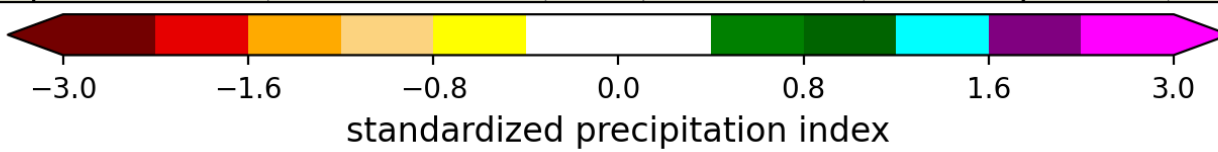
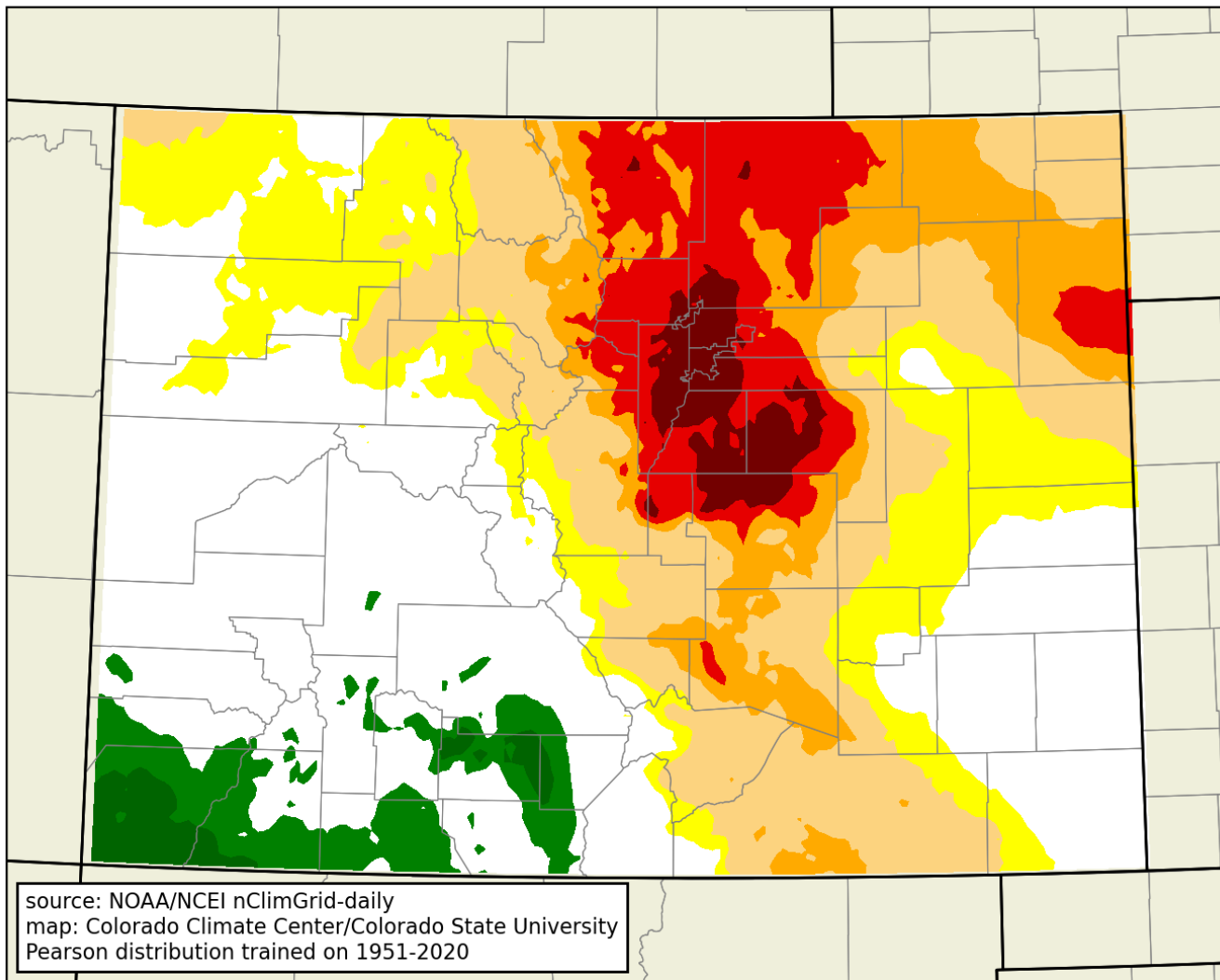
<https://climate.colostate.edu/drought/>





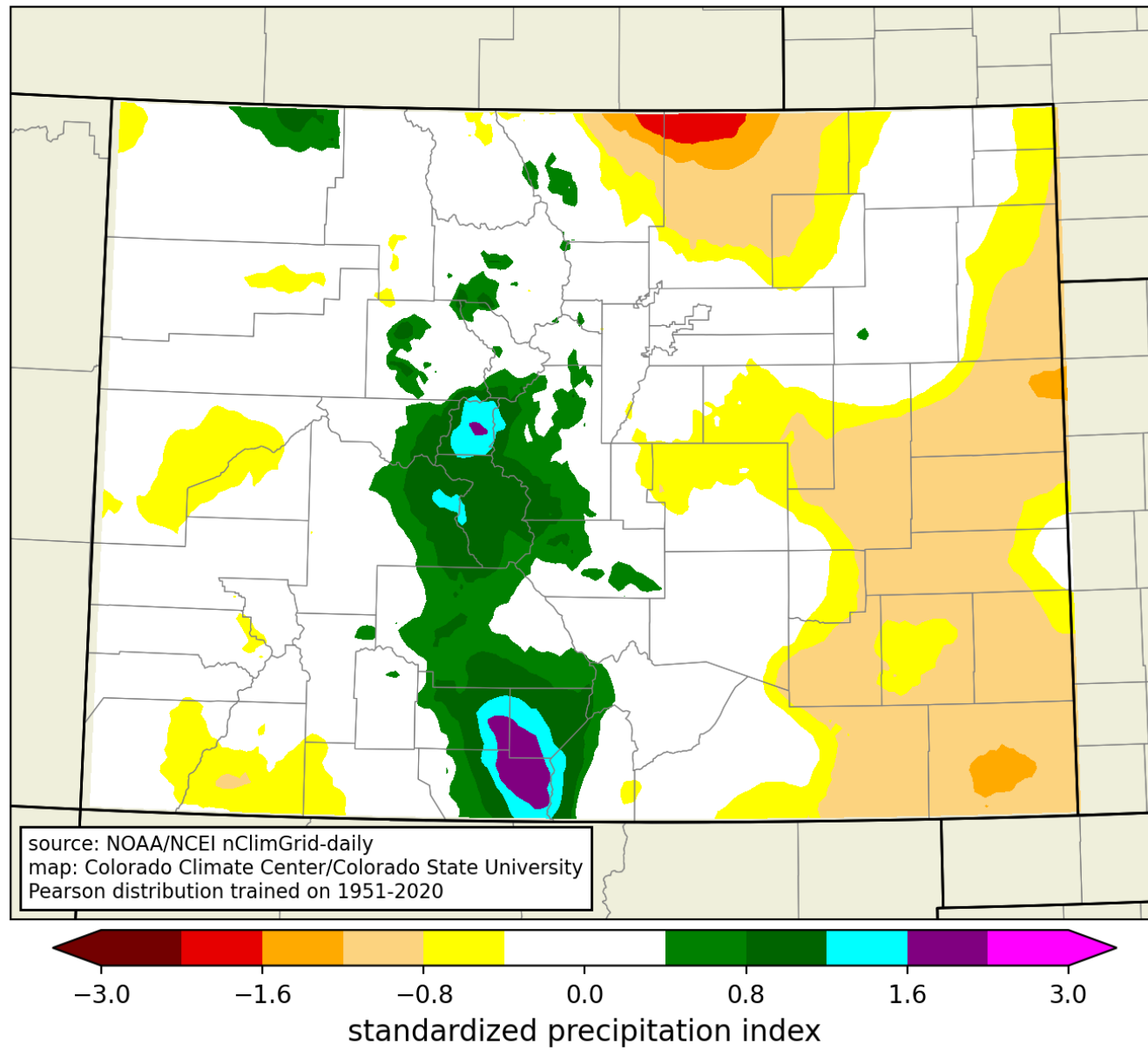
June is normally drier for southwest, so moisture was much above average. But higher amounts are expected on the plains, so it wasn't as beneficial.

30-day SPI based on NOAA nClimGrid data, Fri 21 Jun 2024

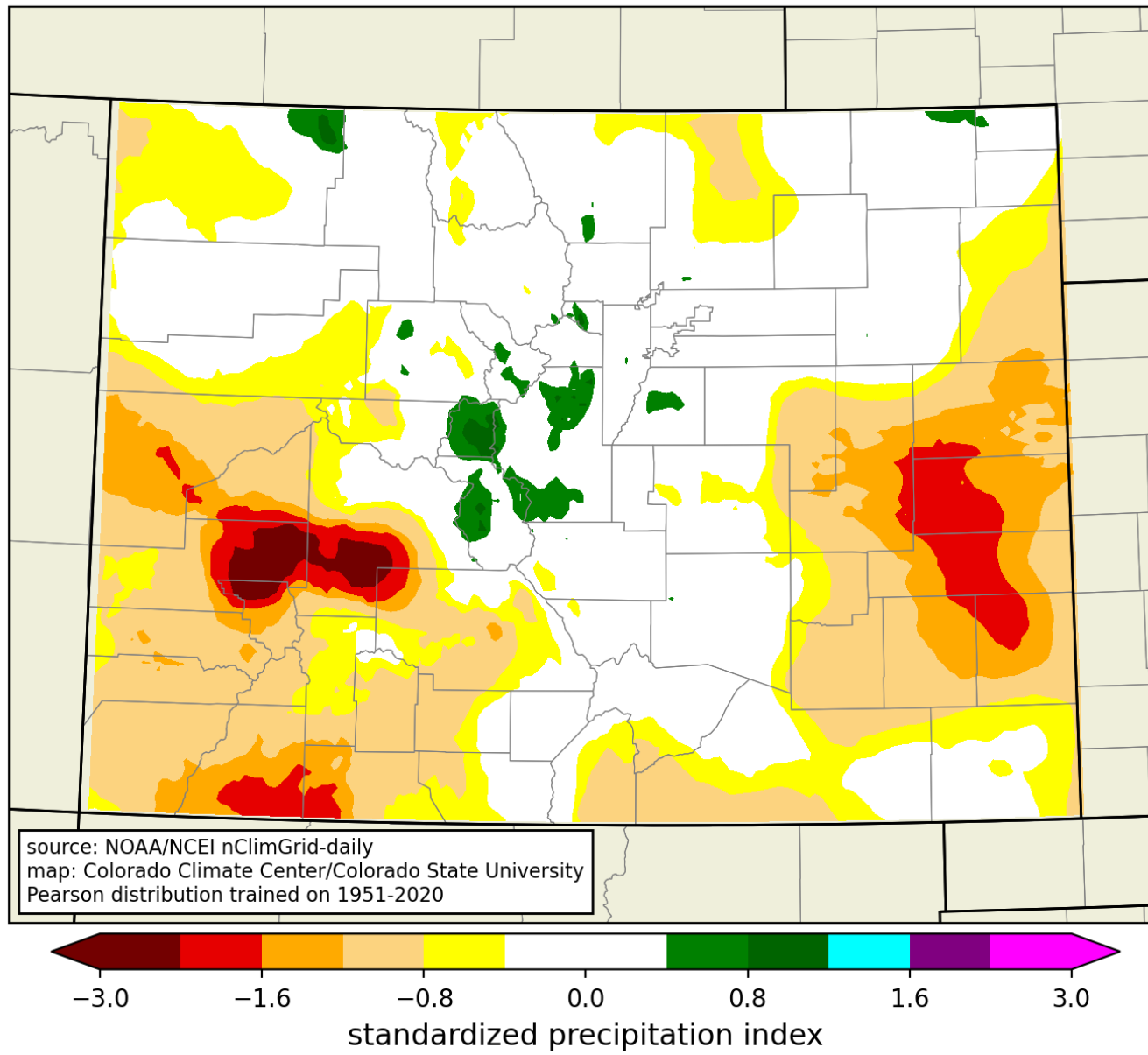


<https://climate.colostate.edu/drought/>

120-day SPI based on NOAA nClimGrid data, Fri 21 Jun 2024

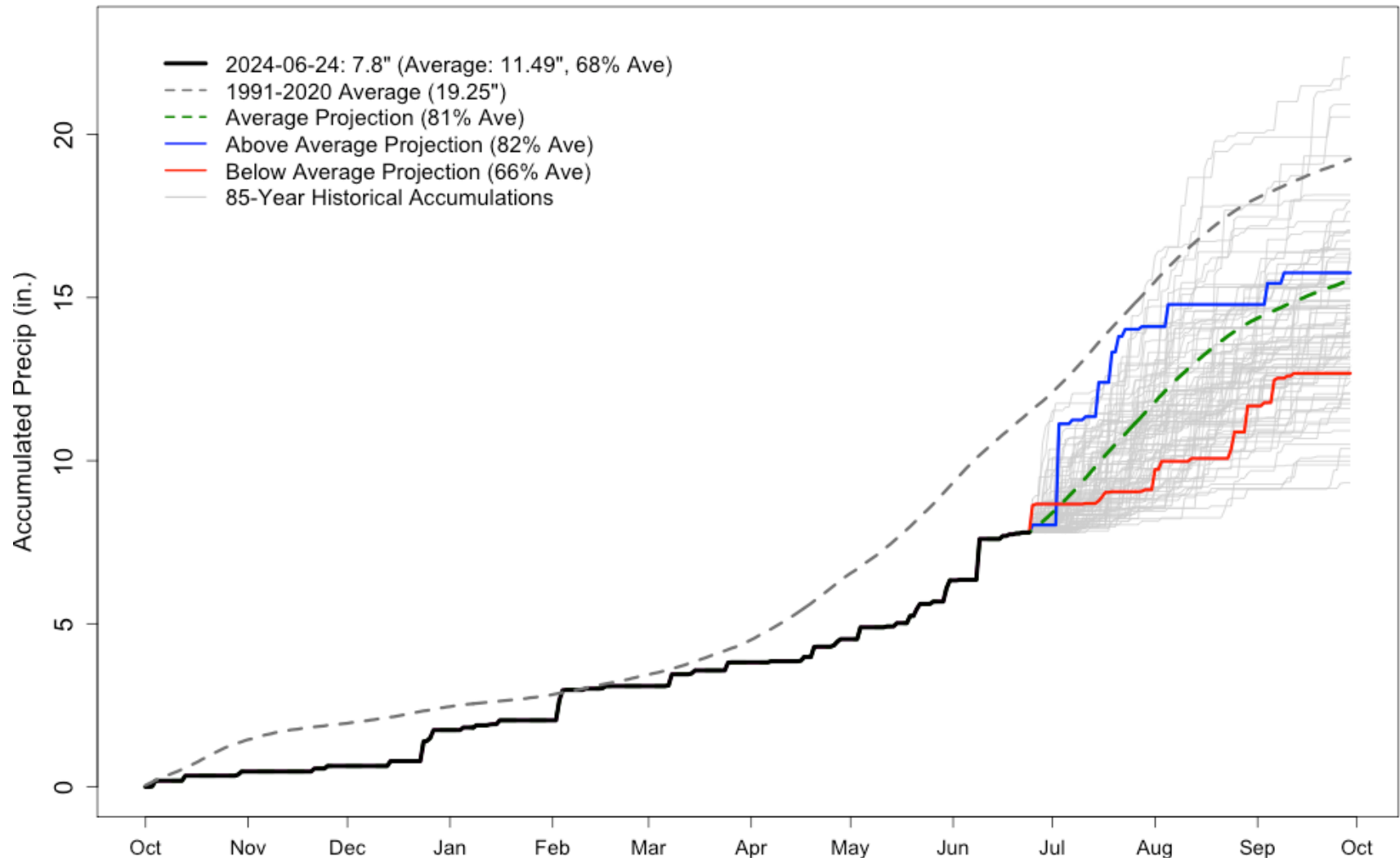


<https://climate.colostate.edu/drought/>



<https://climate.colostate.edu/drought/>

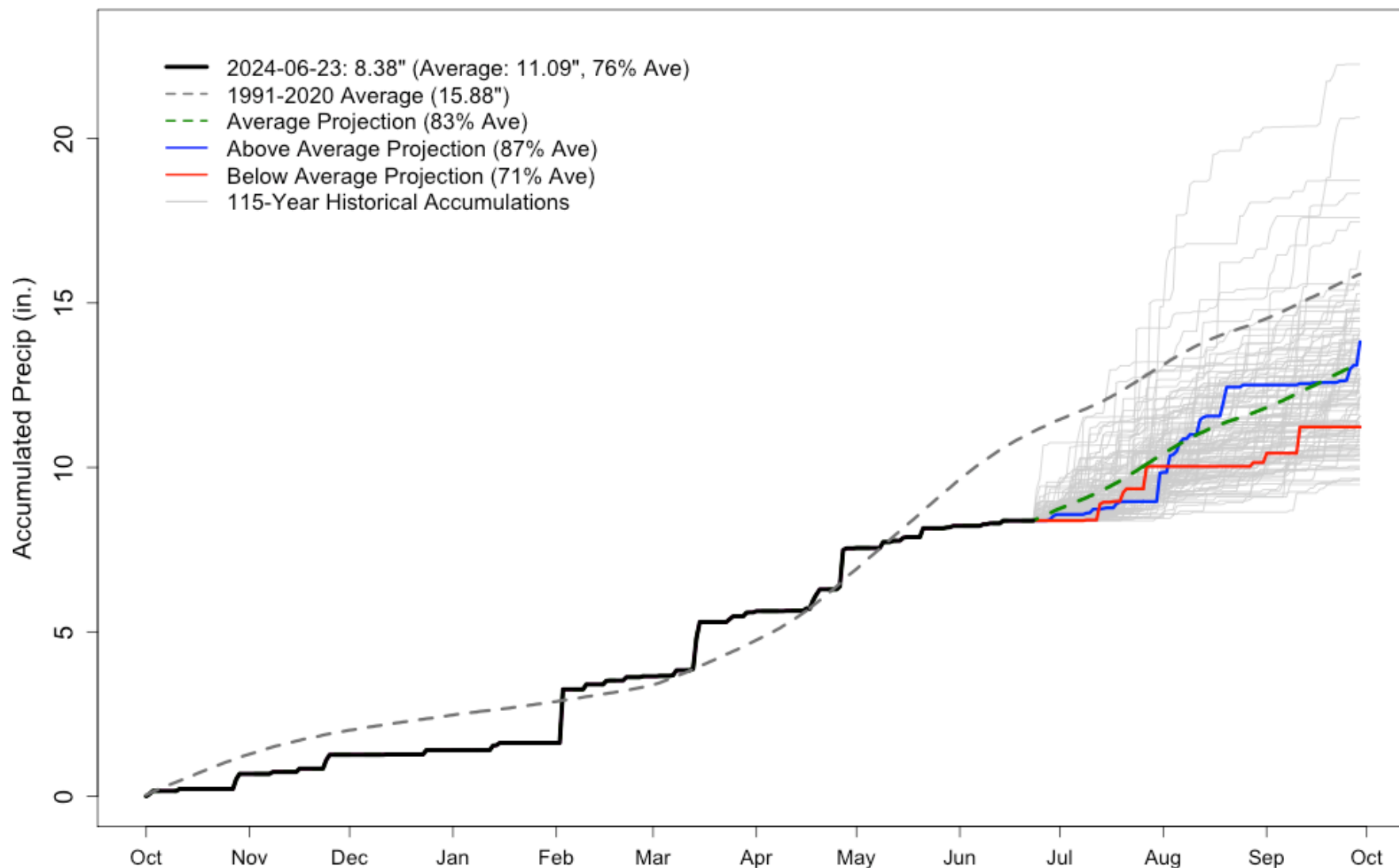
BURLINGTON WY2024 Precipitation Projections



https://climate.colostate.edu/precip_proj.html



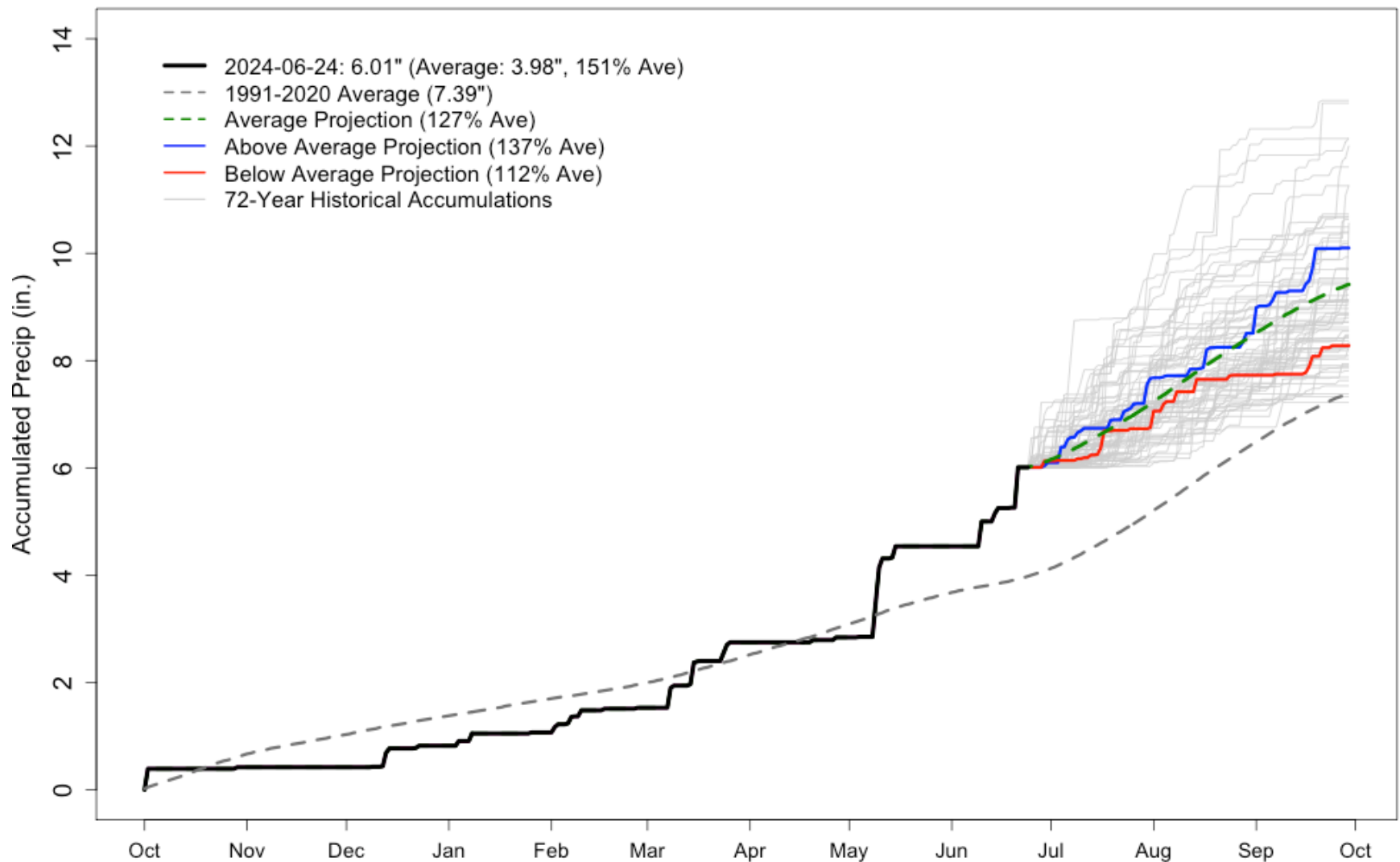
FORT COLLINS WY2024 Precipitation Projections



https://climate.colostate.edu/precip_proj.html

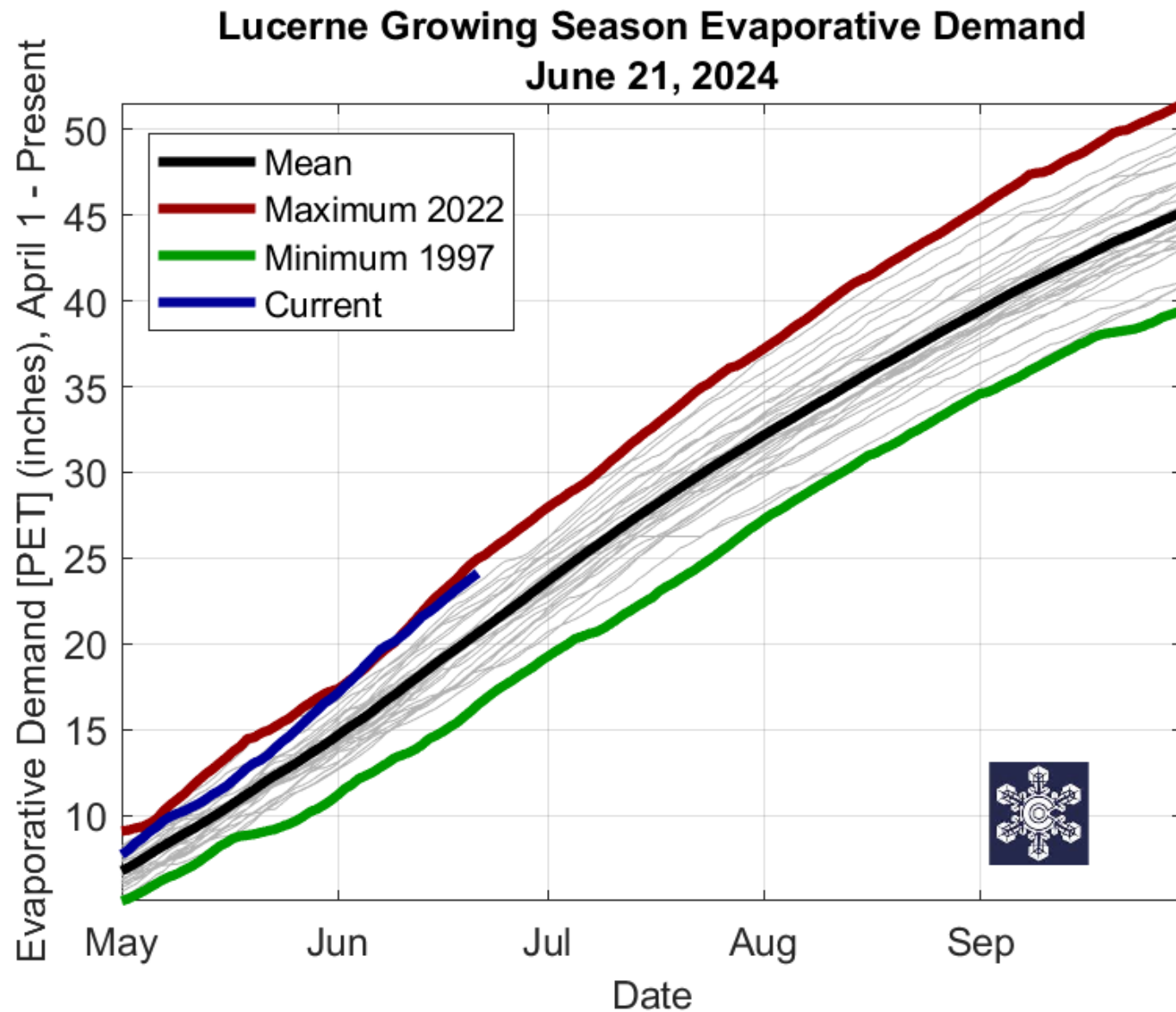


ALAMOSA-BERGMAN FIELD WY2024 Precipitation Projections



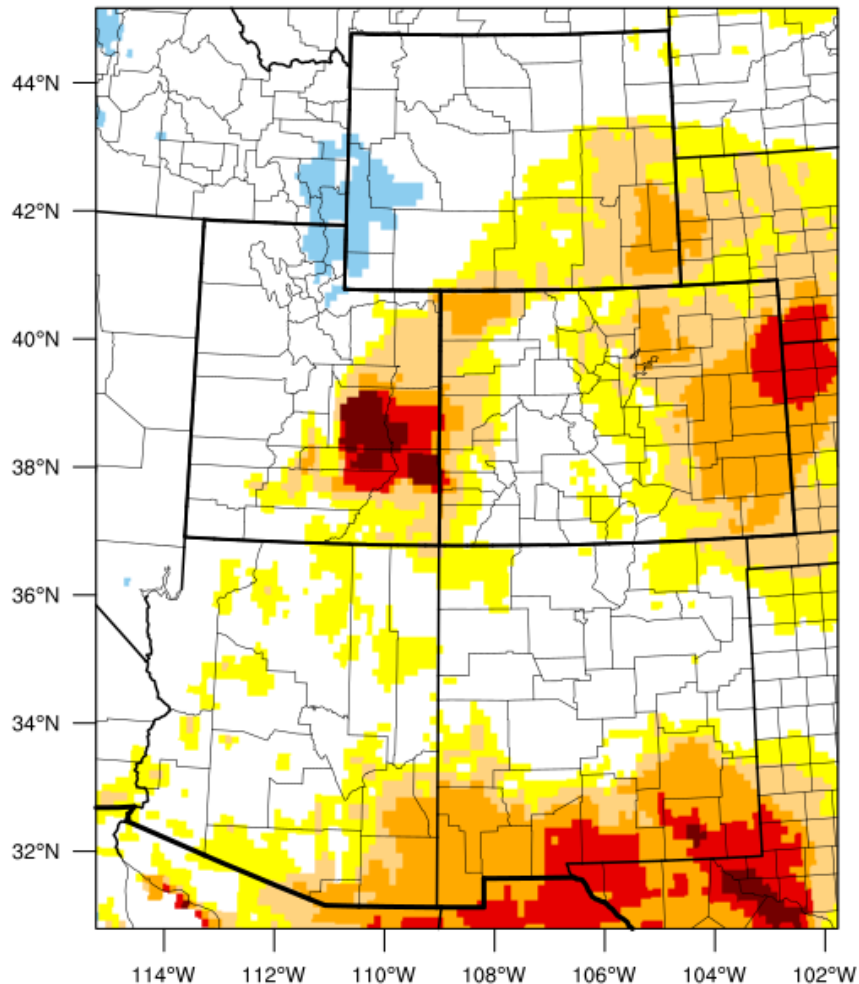
https://climate.colostate.edu/precip_proj.html





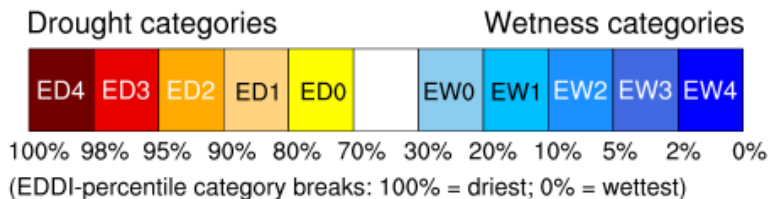
Higher evaporative demand is evident in northern Colorado.

1-week EDDI categories for June 20, 2024



Hotter temperatures
+
Higher winds
+
Lower humidity

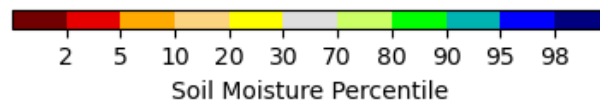
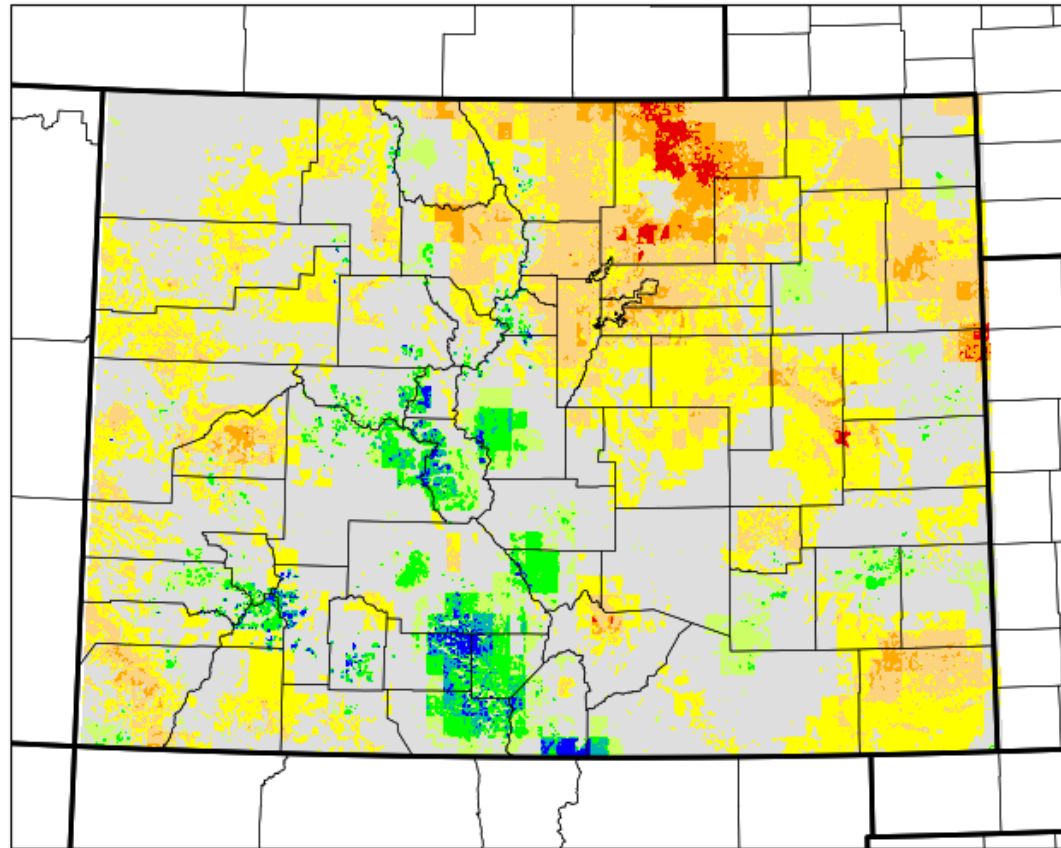
Higher evaporative demand



Generated by NOAA/ESRL/Physical Sciences Laboratory

<https://climate.colostate.edu/drought/#evap>

Soil Moisture Percentiles (0-1m) 06/20/2024



<https://climate.colostate.edu/drought/#soil>





Drought

National Drought

Colorado Drought

Some Drought Facts

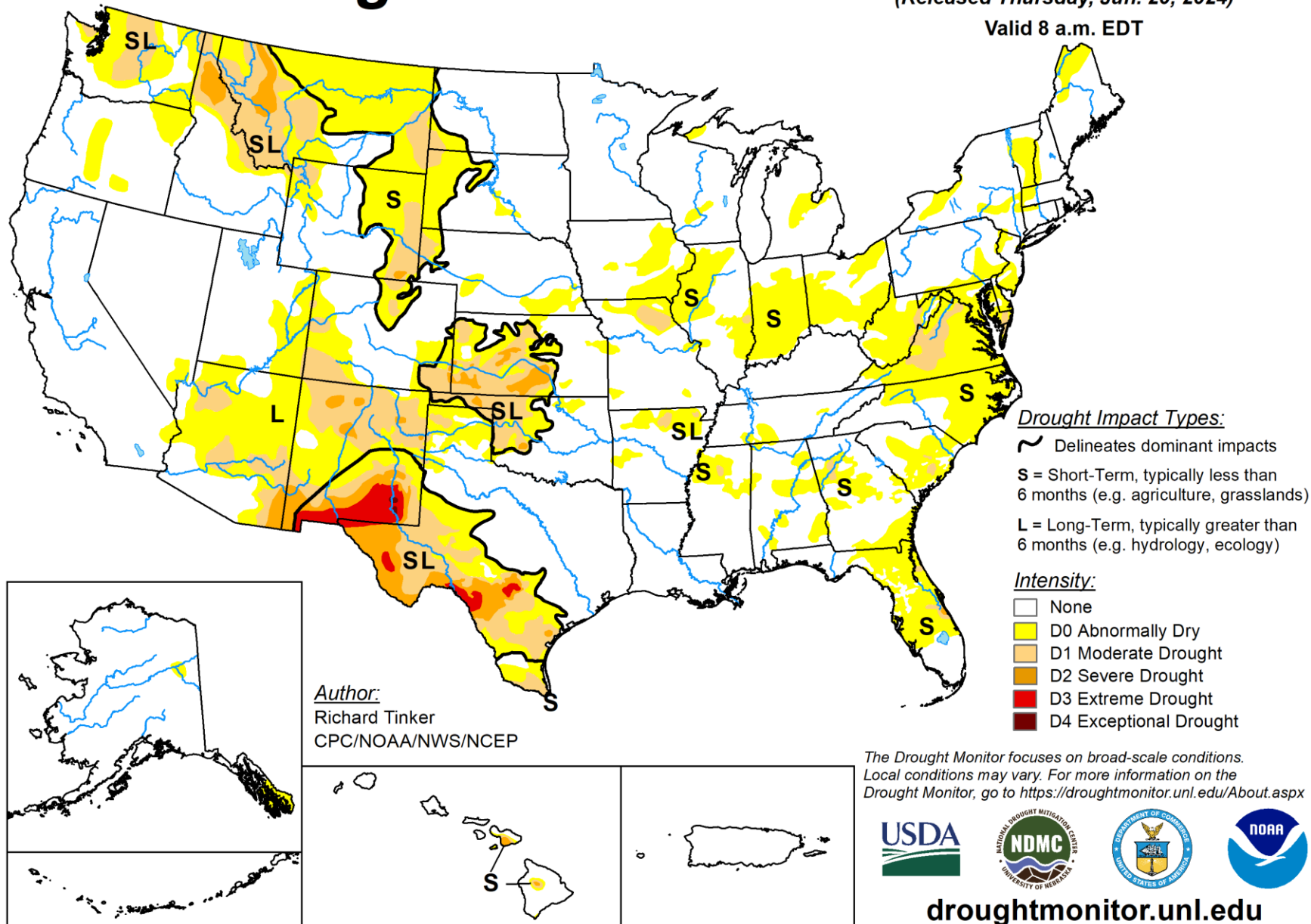


U.S. Drought Monitor

June 18, 2024

(Released Thursday, Jun. 20, 2024)

Valid 8 a.m. EDT



U.S. Drought Monitor Colorado

June 18, 2024

(Released Thursday, Jun. 20, 2024)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.65	43.35	16.11	0.38	0.00	0.00
Last Week 06-11-2024	62.24	37.76	13.86	0.38	0.00	0.00
3 Months Ago 03-19-2024	65.92	34.08	8.40	0.00	0.00	0.00
Start of Calendar Year 01-02-2024	34.65	65.35	29.59	8.85	2.05	0.00
Start of Water Year 09-26-2023	65.71	34.29	17.43	2.77	0.00	0.00
One Year Ago 06-20-2023	96.93	3.07	0.00	0.00	0.00	0.00

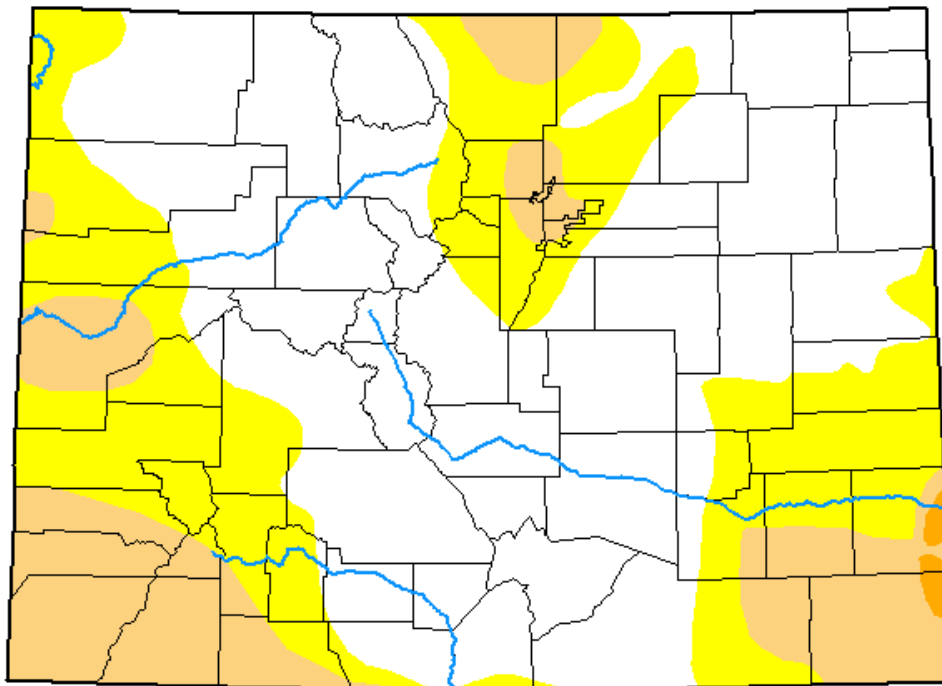
Intensity:

 None	 D2 Severe Drought
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate 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>

Author:

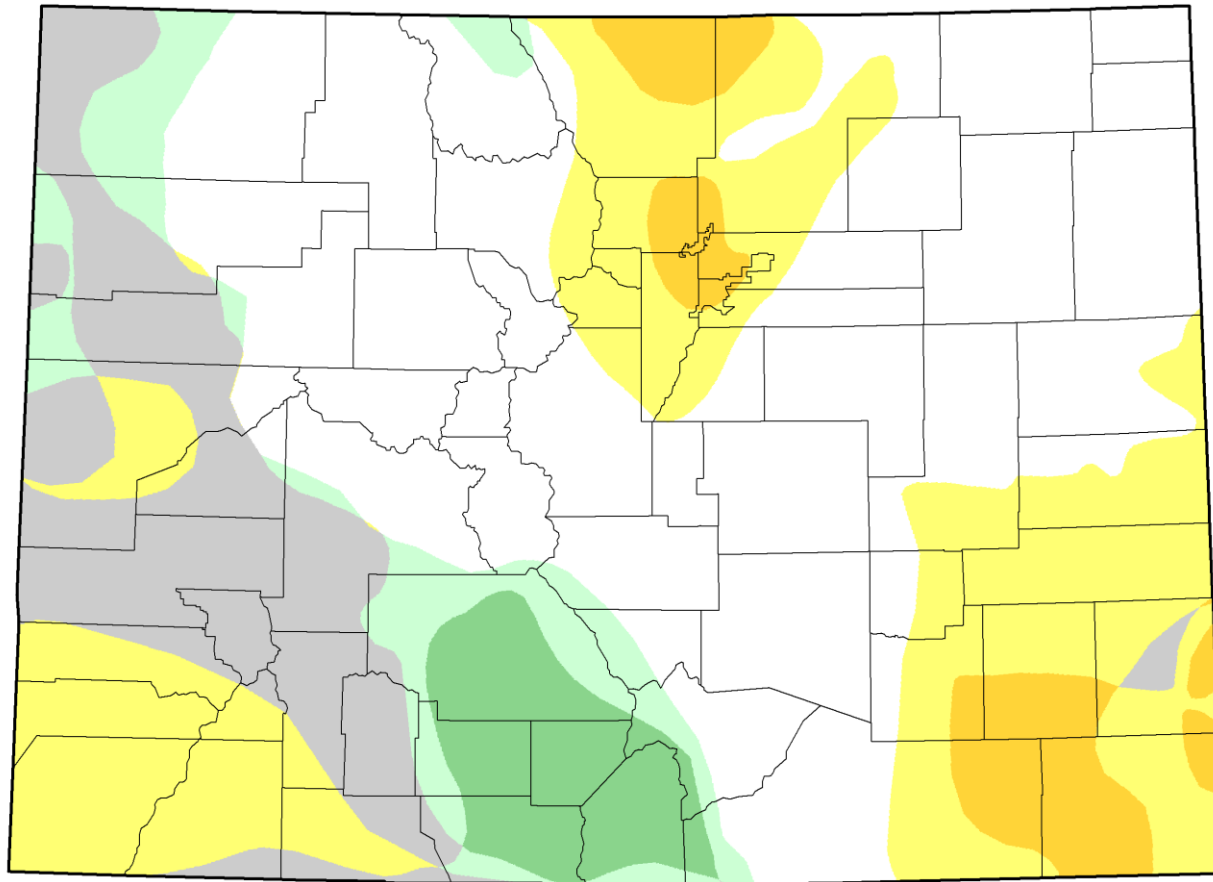
Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu



U.S. Drought Monitor Class Change - Colorado 12 Week



June 18, 2024
compared to
March 26, 2024

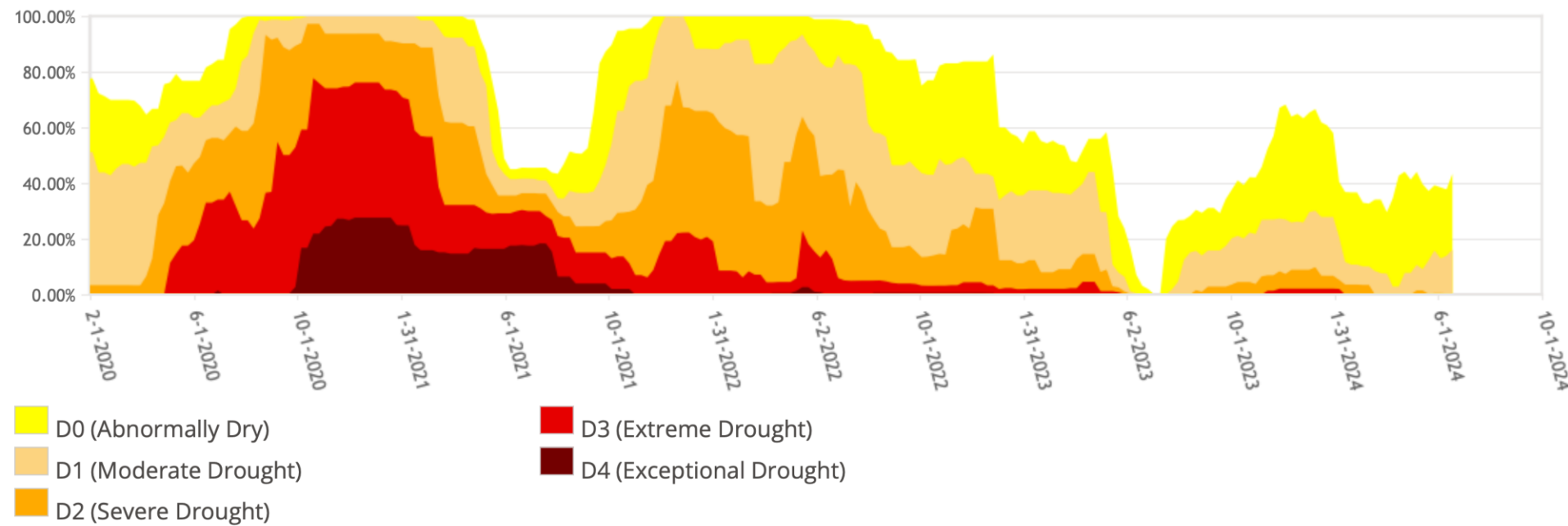
droughtmonitor.unl.edu



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement



Colorado Percent Area in U.S. Drought Monitor Categories



From the U.S. Drought Monitor website, <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, 6-24-2024

Evolution of drought through 2020 – 2021.
No drought in the state last June.
No D4 in the state since 2022!
Some D1 with a bit of D2/D3 over the winter.
Overall not a lot of droughty areas around the state.



Outlook

Next 7 days

8-14 day Outlook

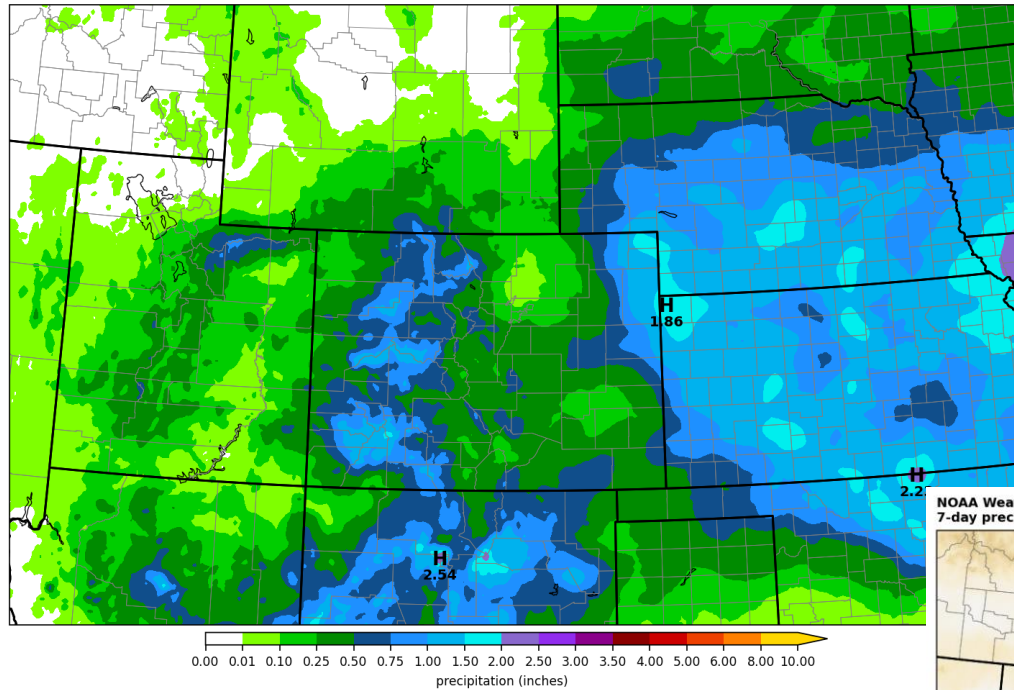
CPC Outlooks

El Niño

NOAA 7-day precip forecast

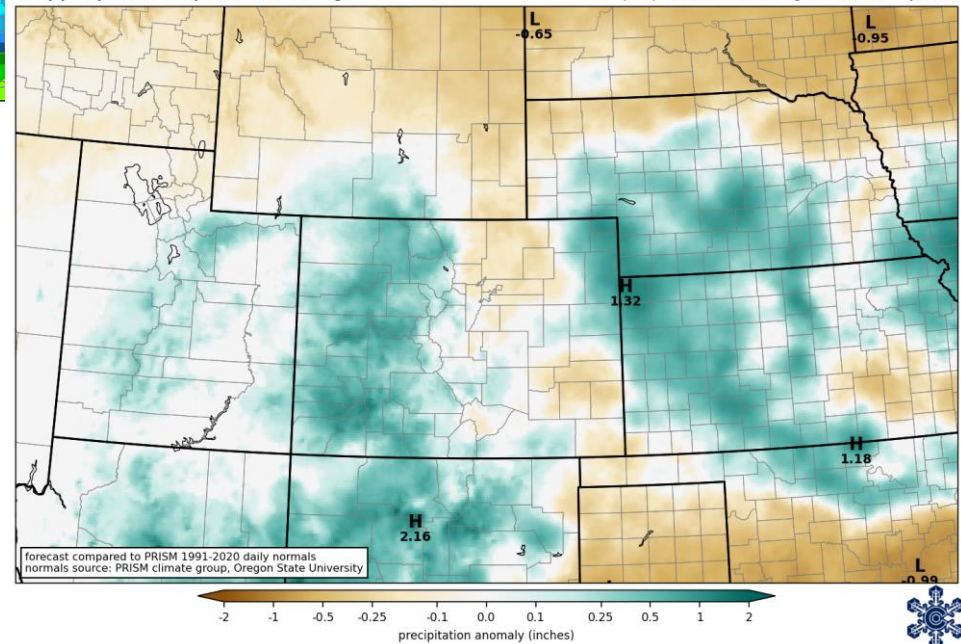
NOAA Weather Prediction Center
7-day precipitation forecast

forecast issued 1200 UTC Mon 24 Jun 2024
precipitation in 168 hrs ending 1200 UTC Mon 01 Jul 2024



NOAA Weather Prediction Center
7-day precip forecast departure from average

forecast issued 1200 UTC Mon 24 Jun 2024
precipitation in 168 hrs ending 1200 UTC Mon 01 Jul 2024

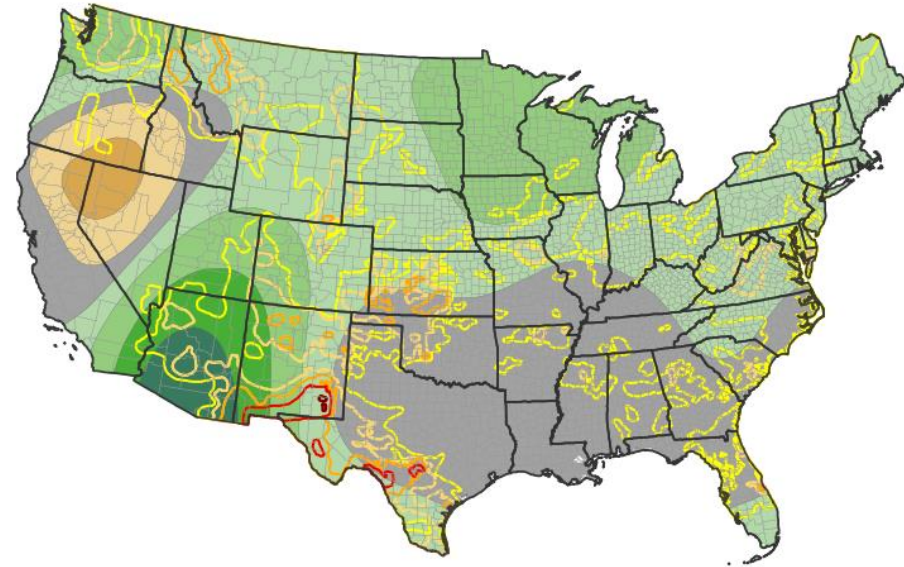


<http://schumacher.atmos.colostate.edu/weather/>



8-14 day outlook

8-14 Day Precipitation Outlook for July 1-7, 2024



Probability of Below-Normal Precipitation

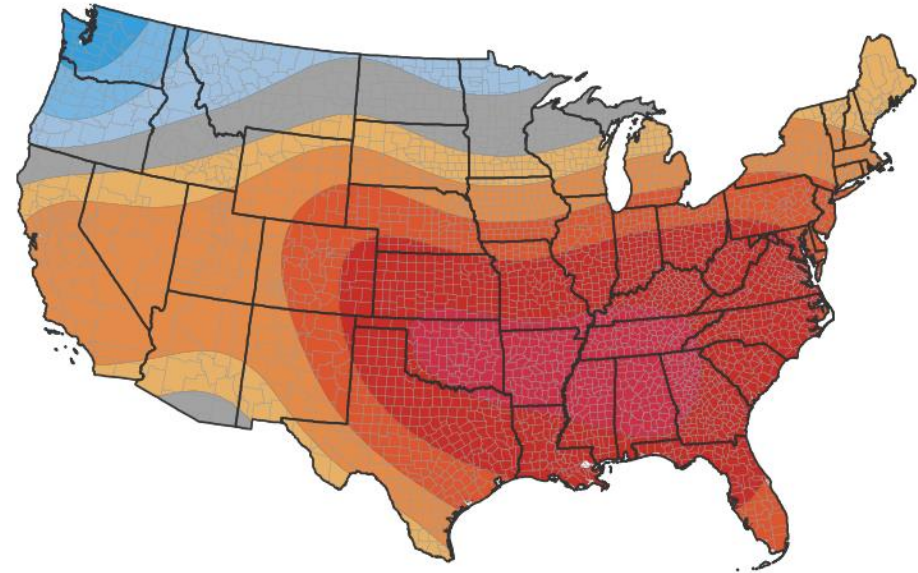


Probability of Above-Normal Precipitation



Near-Normal Conditions

8-14 Day Temperature Outlook for July 1-7, 2024



Probability of Below-Normal Temperatures



Probability of Above-Normal Temperatures



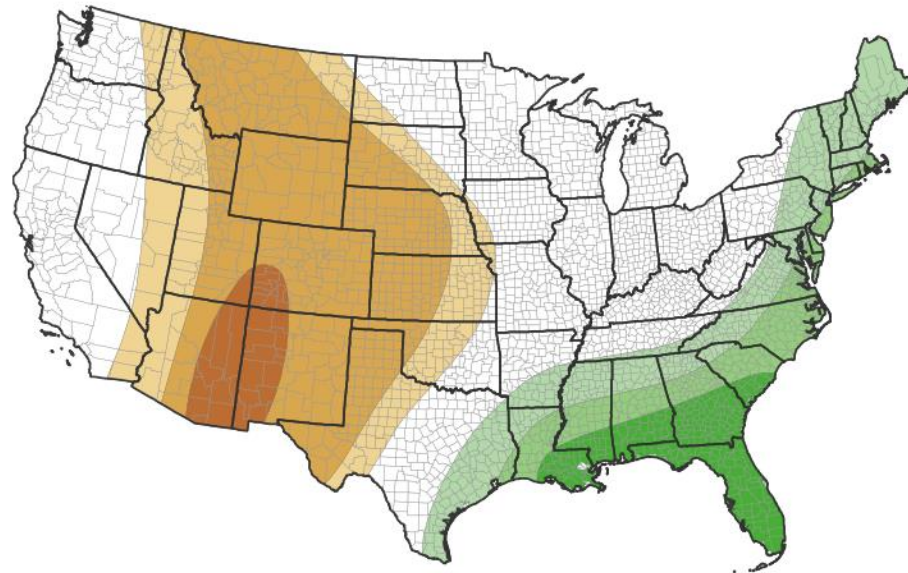
Near-Normal Conditions

<https://www.cpc.ncep.noaa.gov>



Seasonal outlook

**Seasonal (3-Month) Precipitation Outlook for July
1–September 30, 2024**



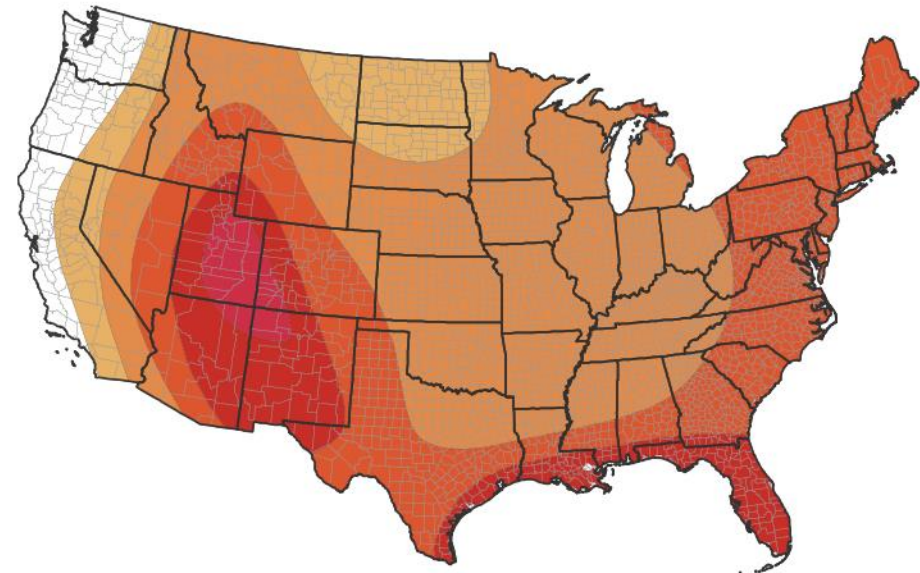
Probability of Below-Normal Precipitation



Probability of Above-Normal Precipitation



**Seasonal (3-Month) Temperature Outlook for July
1–September 30, 2024**



Probability of Below-Normal Temperatures



Probability of Above-Normal Temperatures



<https://www.cpc.ncep.noaa.gov>

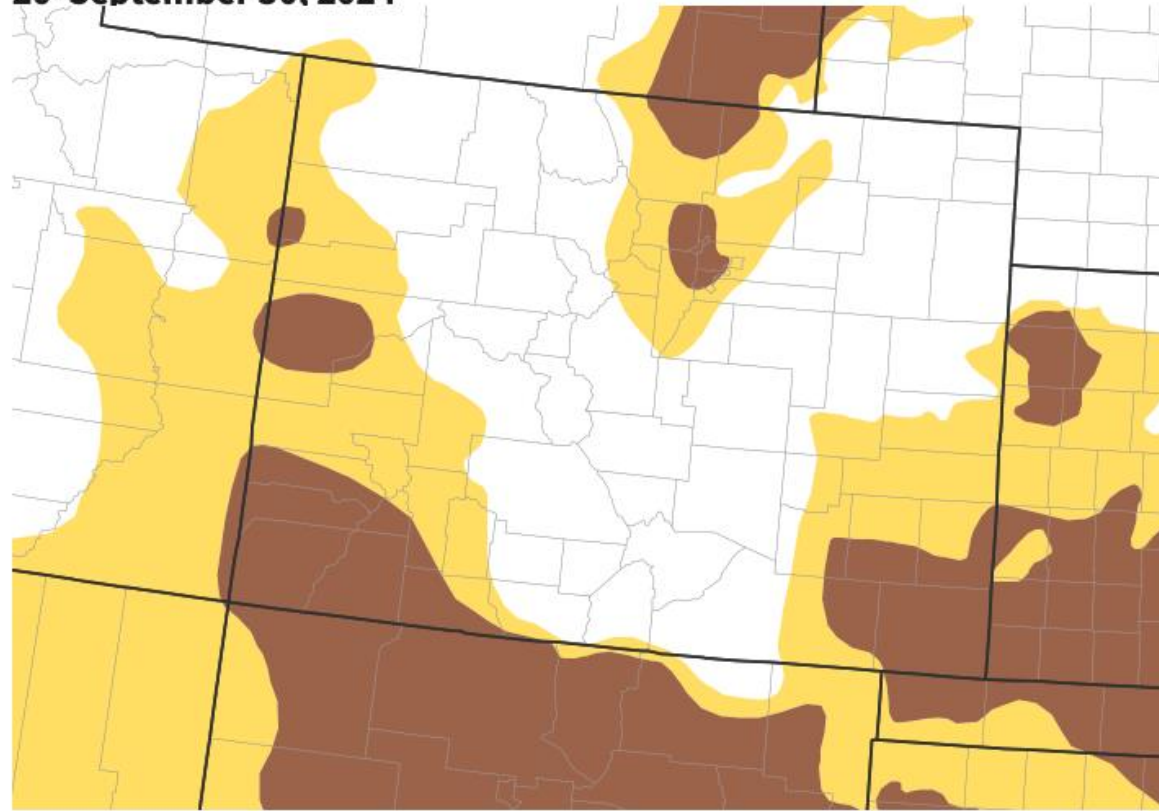


Drought Outlook



Seasonal (3-Month) Drought Outlook for June 20–September 30, 2024

- Worsening drought is likely over the Four Corners area.
- Drought development and worsening drought is possible this summer over the entire state.
- A strong monsoon would help limit the risk and possibly regulate those temperatures a bit more.



Drought Is Predicted To...



Source(s): Climate Prediction Center
Last Updated: 06/20/24

Drought.gov

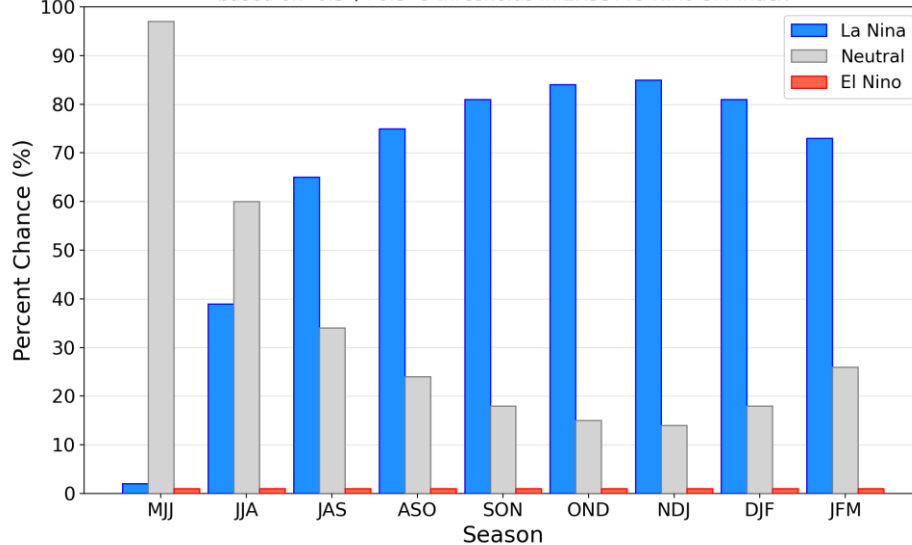
<https://www.cpc.ncep.noaa.gov>



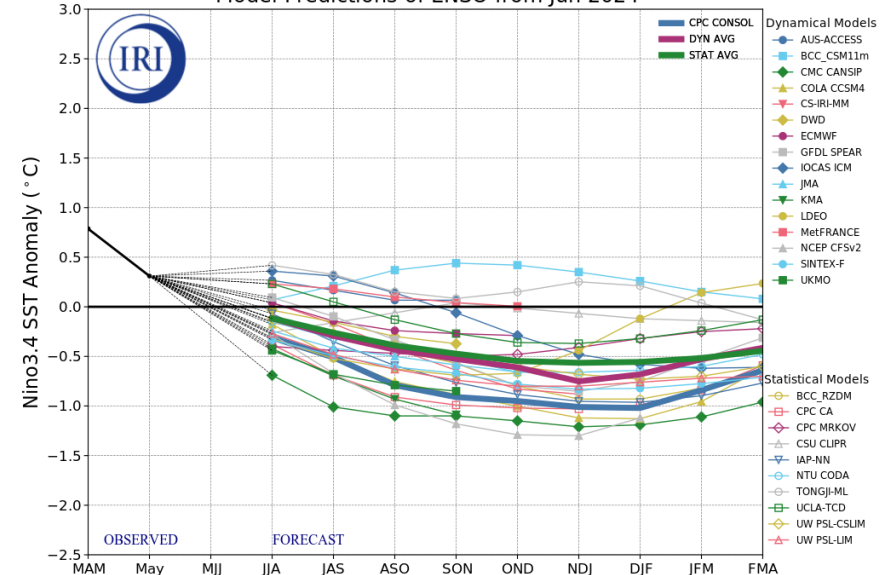
What's the ENSO forecast?

Official NOAA CPC ENSO Probabilities (issued June 2024)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index



Model Predictions of ENSO from Jun 2024



CPC/IRI June 20, 2024: As of mid-June 2024, waning El Niño conditions persist only in the western equatorial Pacific (between 160E to 160W), while other oceanic and atmospheric indicators now align with ENSO-neutral conditions. Almost all models in the IRI ENSO prediction plume forecast ENSO-neutral for Jun-Aug, 2024, which persists in most models during boreal summer seasons of Jul-Sep, and Aug-Oct, 2024. La Niña becomes the most probable category in Sep-Nov, 2024 through Jan-Mar, 2025, while for Feb-Apr, 2025 ENSO-neutral conditions become dominant (52% chance).

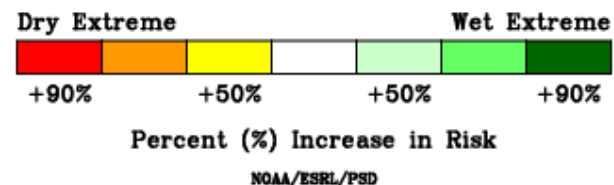
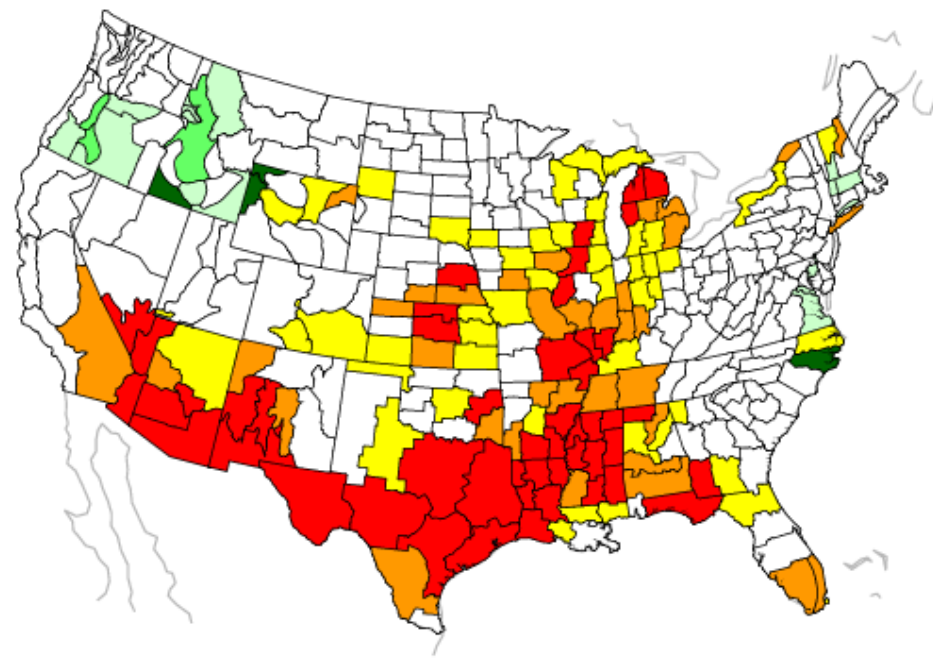
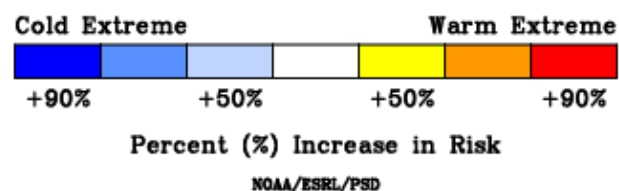
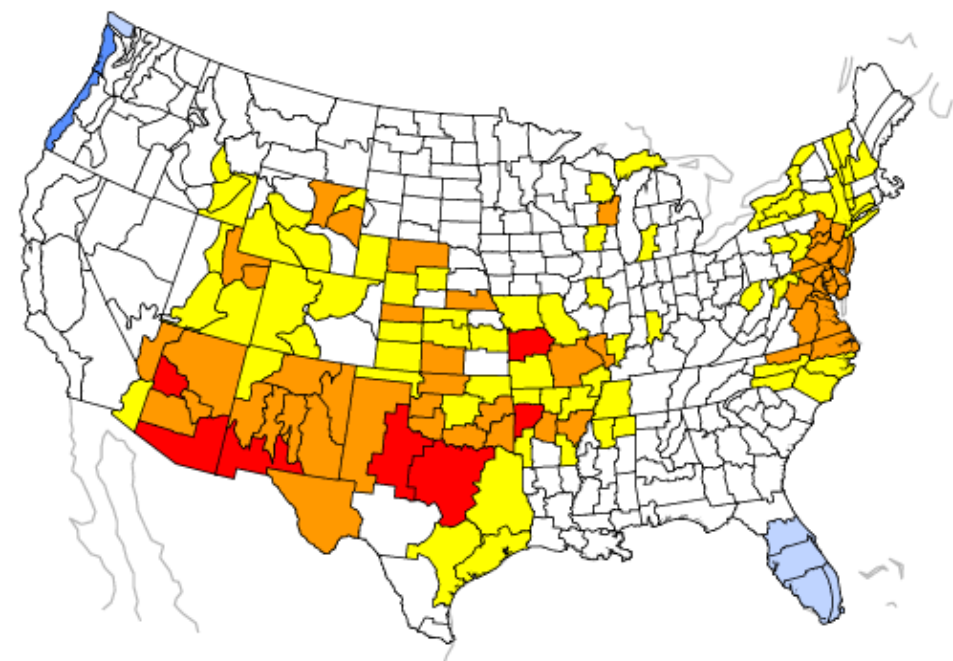
<https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>

A decorative background consisting of a grid of small, light green dots on a dark green background. The dots are arranged in a regular pattern, with some dots missing in the upper right quadrant to create a sense of depth and focus on the text.

What does La Niña mean
for late summer and fall?

SON Temperature During La Nina
Increased Risk of Warm or Cold Extremes

SON Precipitation During La Nina
Increased Risk of Wet or Dry Extremes



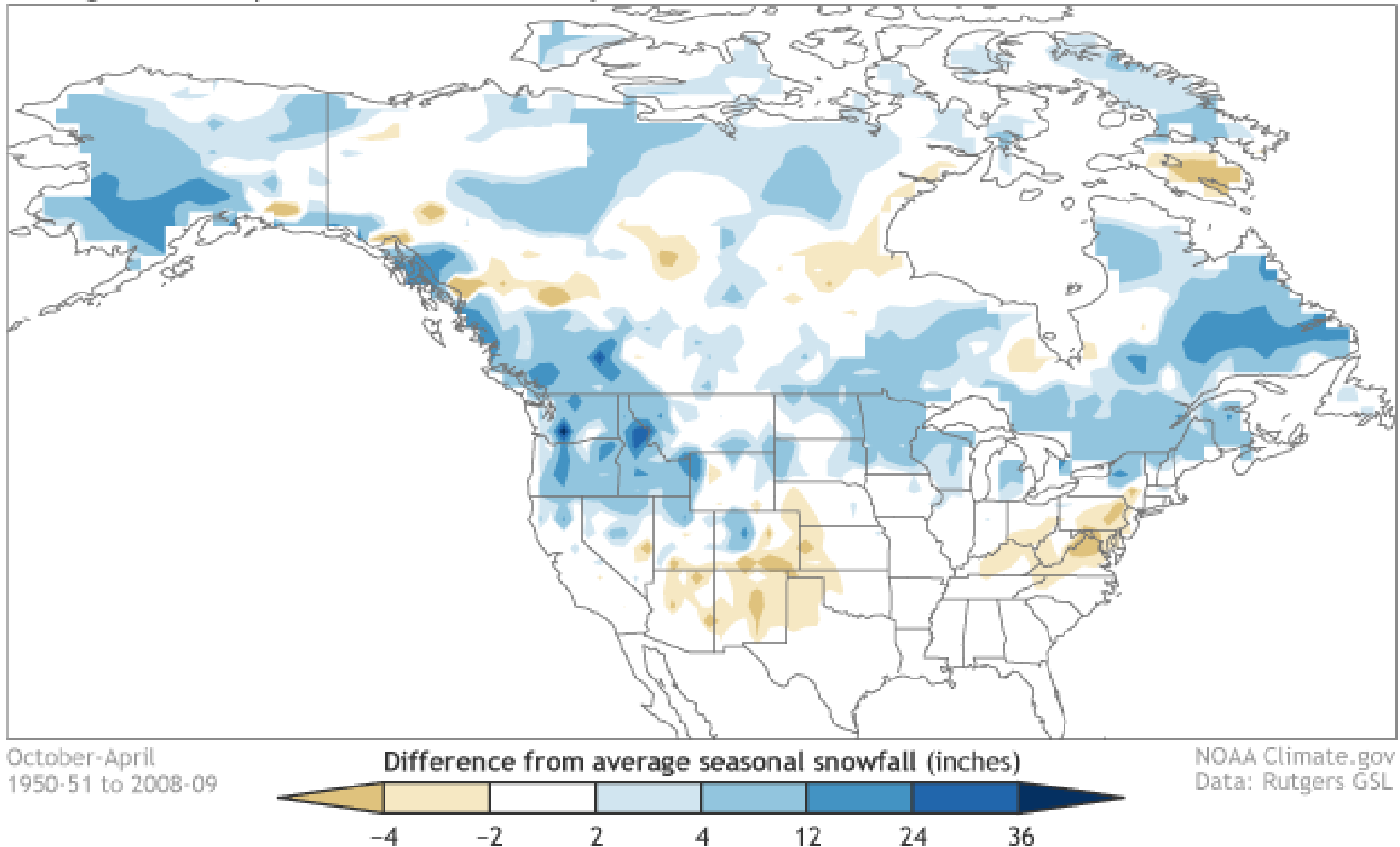
Increased risk of warm extremes in the fall.

Slight increased risk of dry extremes in the fall, especially to the south.

<https://psl.noaa.gov/enso/climaterisks/>



Average snowfall patterns for all La Niña years



La Niña winters tend to favor our northern mountains with more snow. Southern CO and the plains are more likely to get less snow.



Key Takeaways

- ❑ WY2024 has been much warmer than average, with variable precipitation patterns.
- ❑ Drought has emerged in northern CO and southeast CO.
- ❑ We have started the summer very hot.
- ❑ Very likely that our summer will continue to see much above average temperatures across the entire state.
- ❑ Below average precipitation is more likely this summer, especially over the Four Corners.
- ❑ Due to hot and dry prevailing conditions, worsening drought and new drought development are more likely.
- ❑ La Niña arrives this summer and is expected to stick around into the winter.
- ❑ This could be good news for the northern mountains, but another tough snow year is more likely for the San Juan mountains.



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climate.colostate.edu

To view this and other presentations:
https://climate.colostate.edu/ccc_archive.html

Thank you

