

# Colorado Climate Update

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Climatologist

Water Availability and Demand  
July 2022



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CENTER



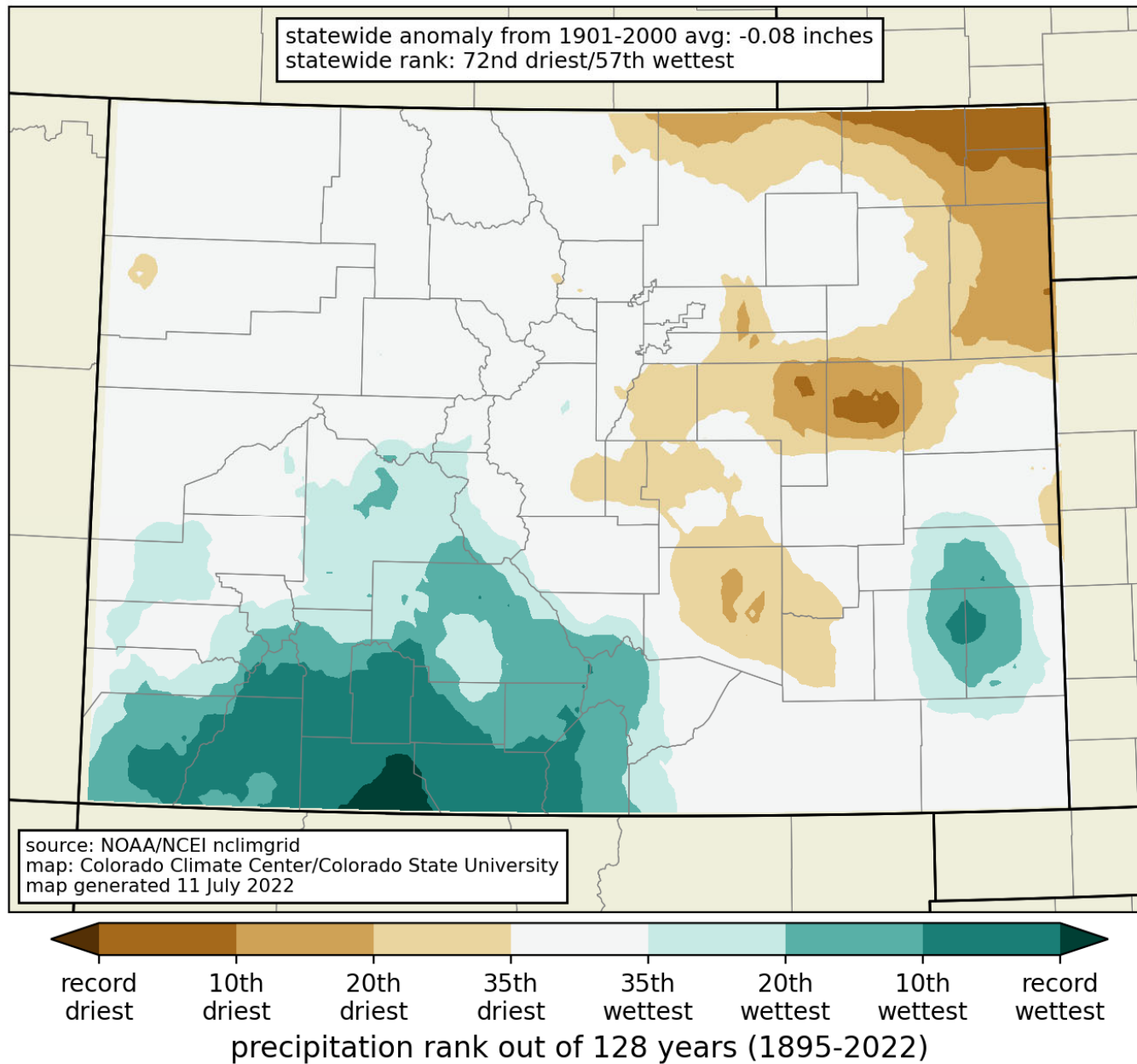
ATMOSPHERIC SCIENCE  
COLORADO STATE UNIVERSITY

## 2022 Water Year to Date

A look at  
WY 2022  
June 2022  
& MTD stats



## precipitation rank: June 2022



[https://climate.colostate.edu/co\\_cag/rank\\_maps.html](https://climate.colostate.edu/co_cag/rank_maps.html)



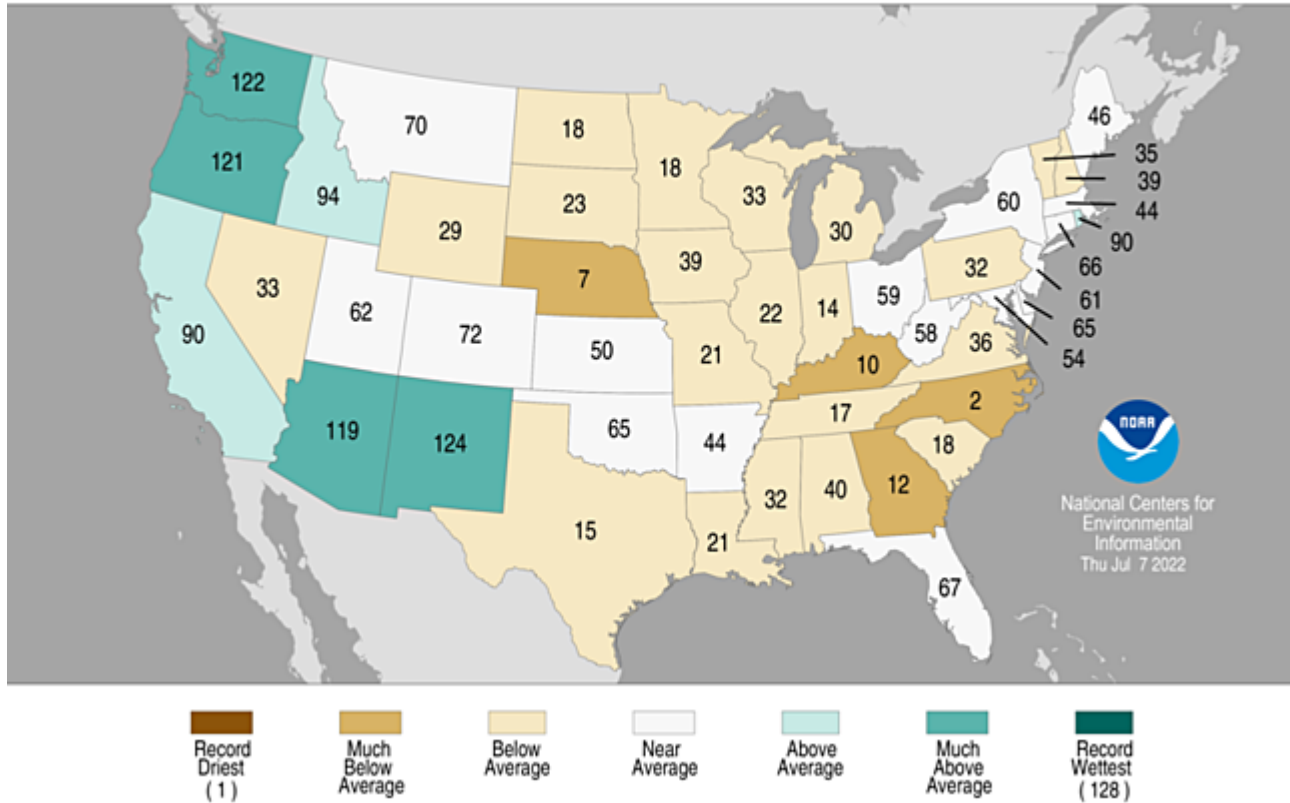
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## Statewide Precipitation Ranks

June 2022

Period: 1895–2022



Month	P Rank (of 128 years)	Above, below, or near 20 <sup>th</sup> century avg?
Oct	62 <sup>nd</sup> driest	near avg
Nov	10 <sup>th</sup> driest	much below
Dec	13 <sup>th</sup> wettest	much above
Jan	40 <sup>th</sup> driest	below
Feb	49 <sup>th</sup> driest	near avg
Mar	67 <sup>th</sup> driest	near avg
Apr	5 <sup>th</sup> driest	much below
May	47 <sup>th</sup> driest	near avg
Jun	57 <sup>th</sup> wettest	near avg
Jul		
Aug		
Sep		

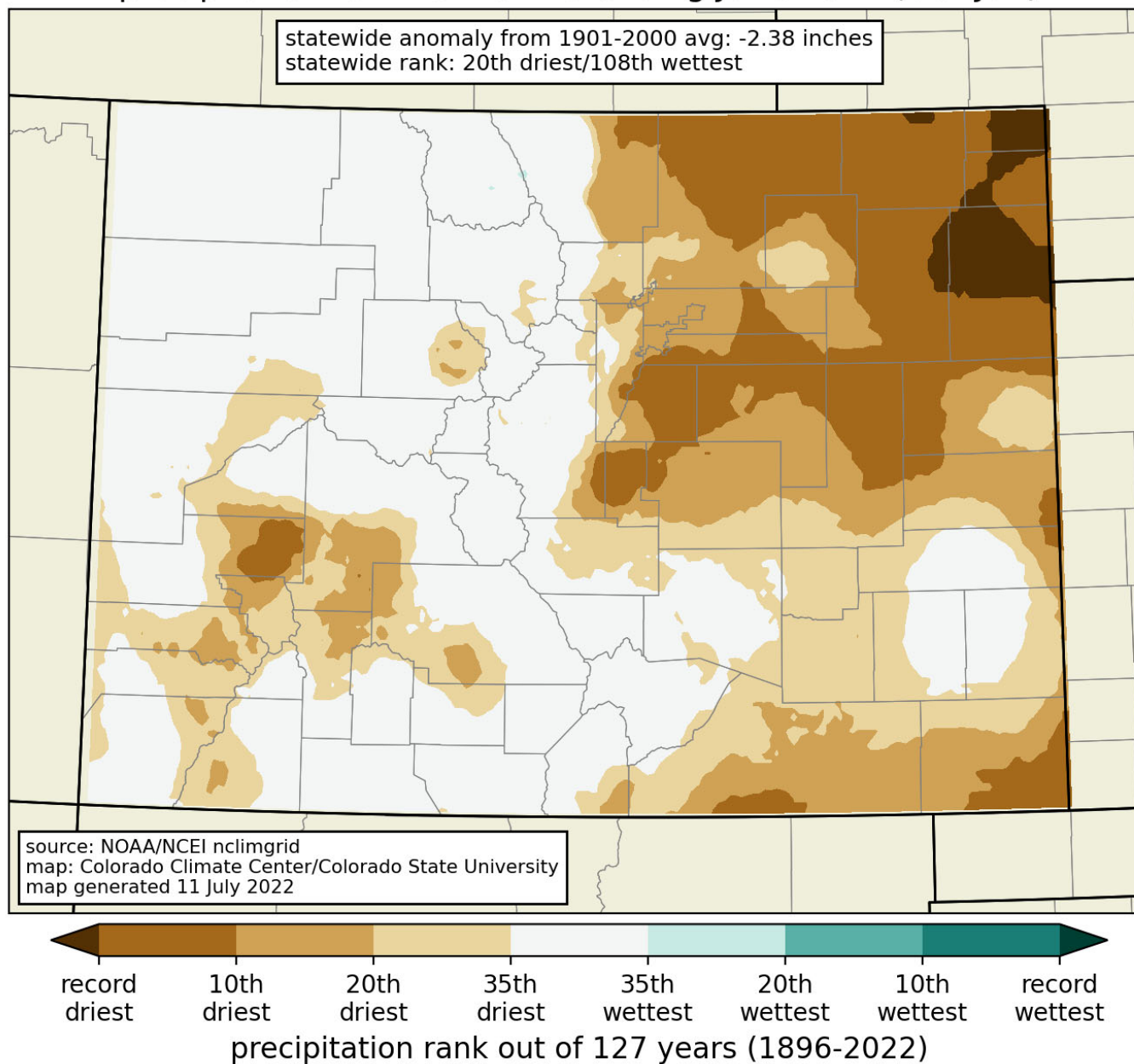
A welcome early start to the monsoon in SW CO, but dry on the eastern plains. Still a dry year for the water year to date.

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





## precipitation rank: 9 months ending June 2022 (Oct-Jun)



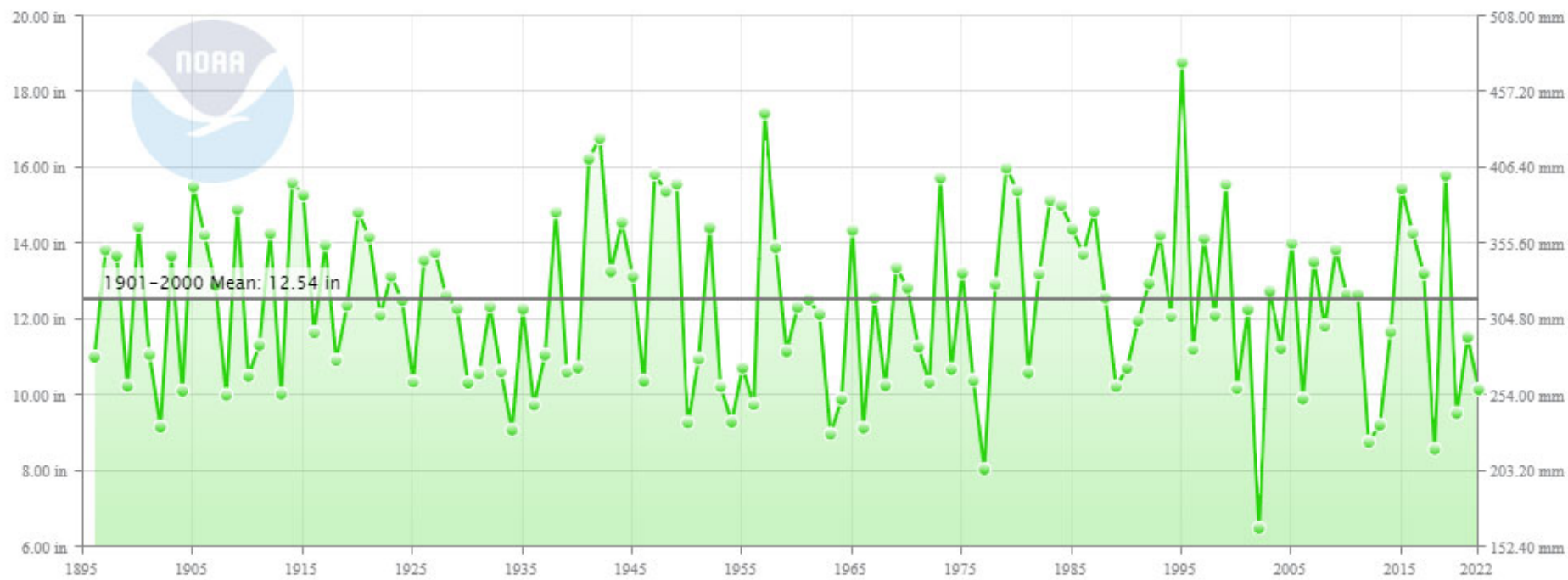
[https://climate.colostate.edu/co\\_cag/rank\\_maps.html](https://climate.colostate.edu/co_cag/rank_maps.html)



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Colorado Precipitation  
October–June



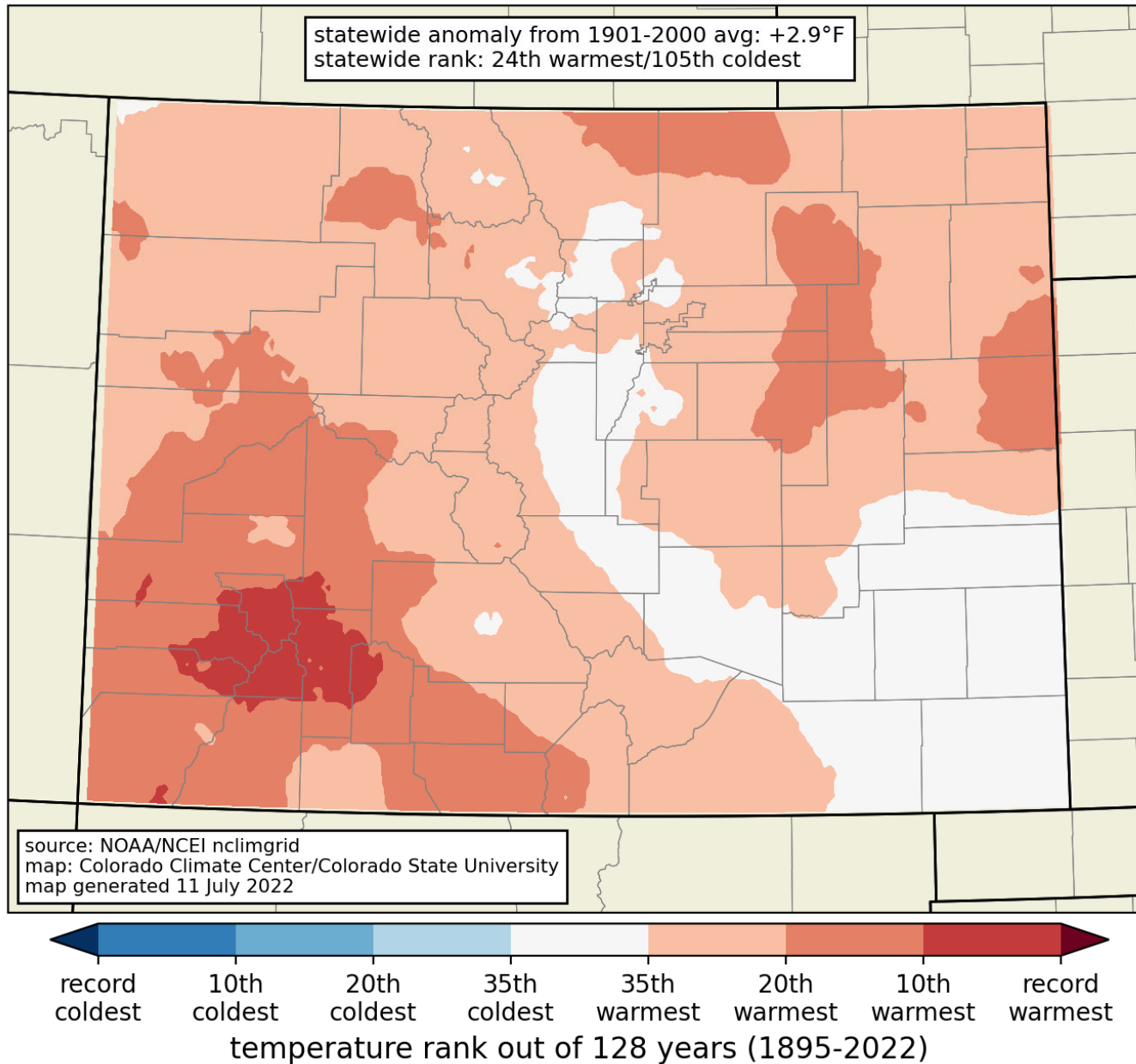
<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series>



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## average temperature rank: June 2022



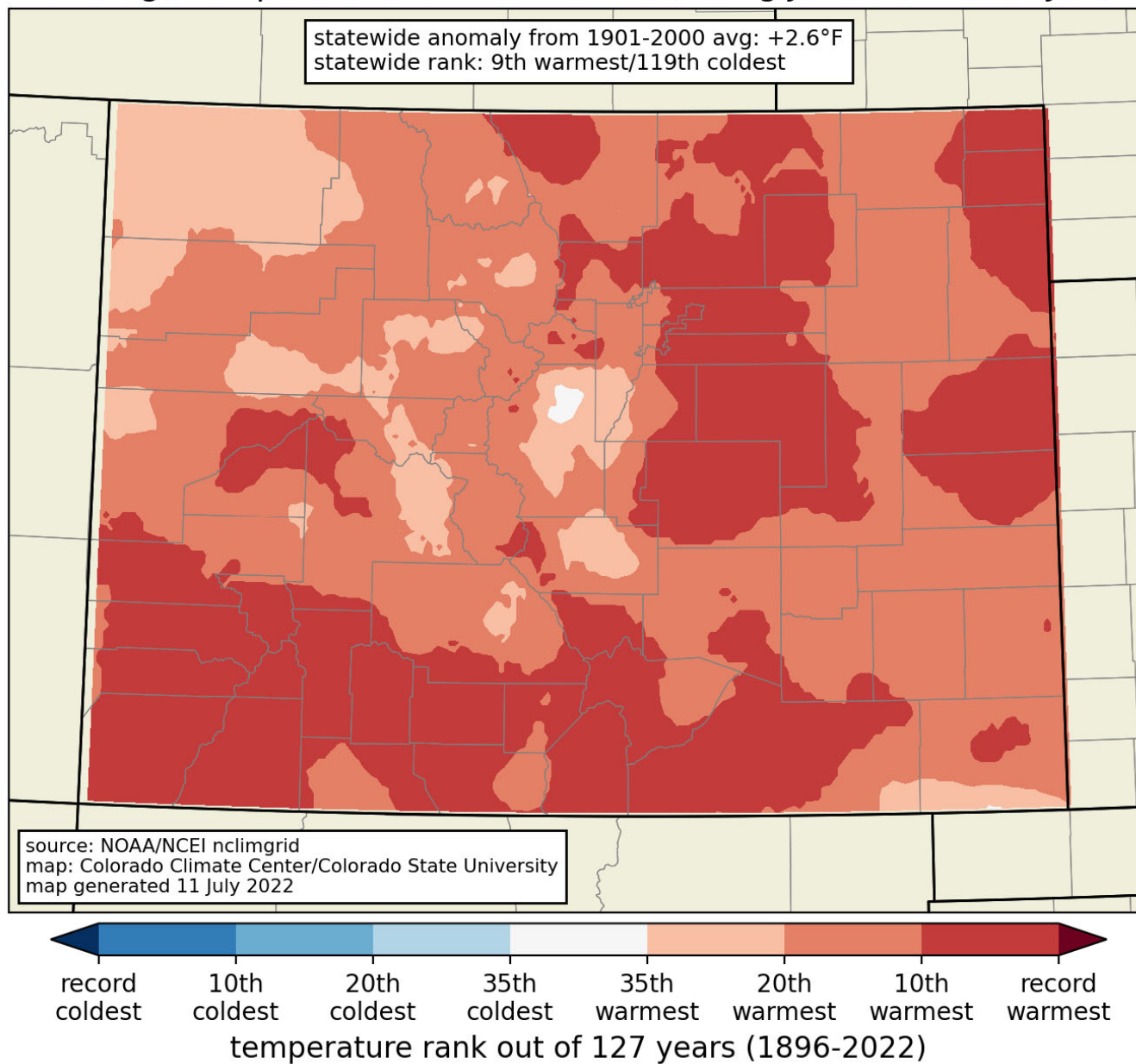
[https://climate.colostate.edu/co\\_cag/rank\\_maps.html](https://climate.colostate.edu/co_cag/rank_maps.html)



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## average temperature rank: 9 months ending June 2022 (Oct-Jun)



[https://climate.colostate.edu/co\\_cag/rank\\_maps.html](https://climate.colostate.edu/co_cag/rank_maps.html)



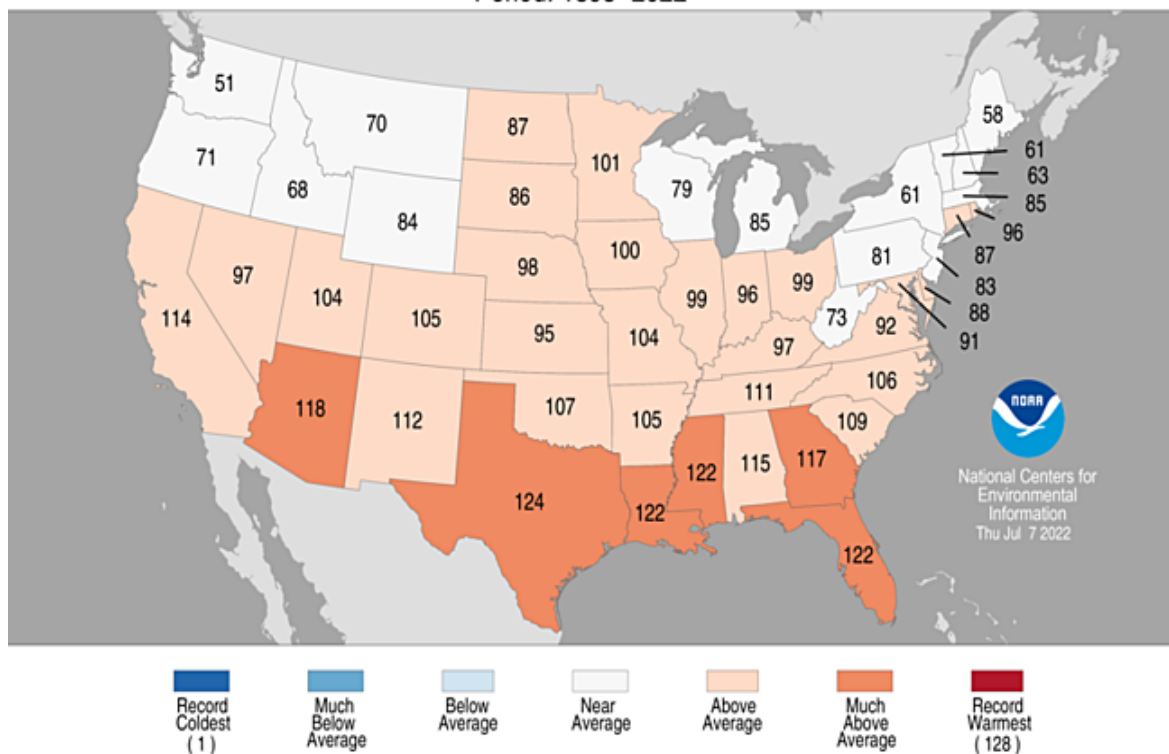
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## Statewide Average Temperature Ranks

June 2022  
Period: 1895–2022



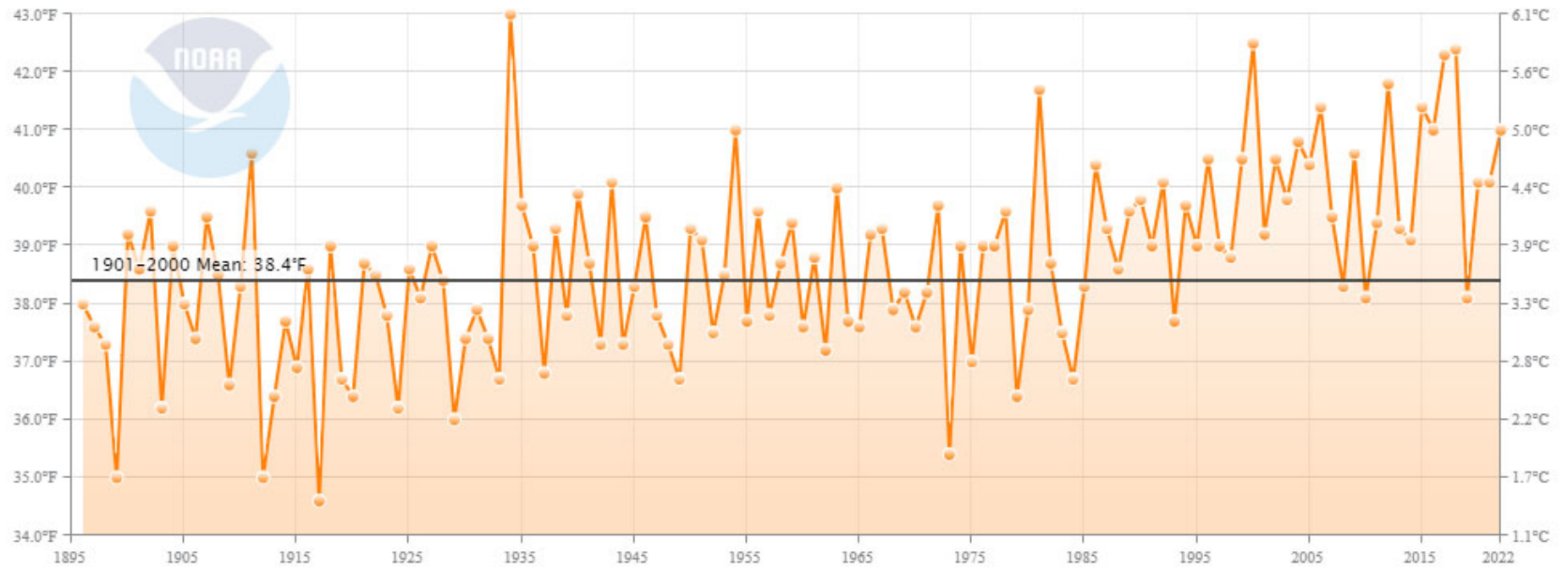
June was warm early with a little cooler weather near the end.  
Overall, a warm start to summer

Month	T Rank (of 127 years)	Above, below, or near 20 <sup>th</sup> century avg?
Oct	41 <sup>st</sup> warmest	above
Nov	3 <sup>rd</sup> warmest	much above
Dec	2 <sup>nd</sup> warmest	much above
Jan	33 <sup>rd</sup> warmest	above
Feb	31 <sup>st</sup> coldest	below
Mar	54 <sup>th</sup> warmest	near avg
Apr	49 <sup>th</sup> warmest	near avg
May	41 <sup>st</sup> warmest	above
Jun	24 <sup>th</sup> warmest	above
Jul		
Aug		
Sep		

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



Colorado Average Temperature  
October–June



2.6 F warmer than the 20<sup>th</sup> century average for the water year to date

Tied for 5<sup>th</sup> warmest Oct-Jun over last ten year span

<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series>



## Current Conditions

Temperature

Precipitation

Evaporative Demand

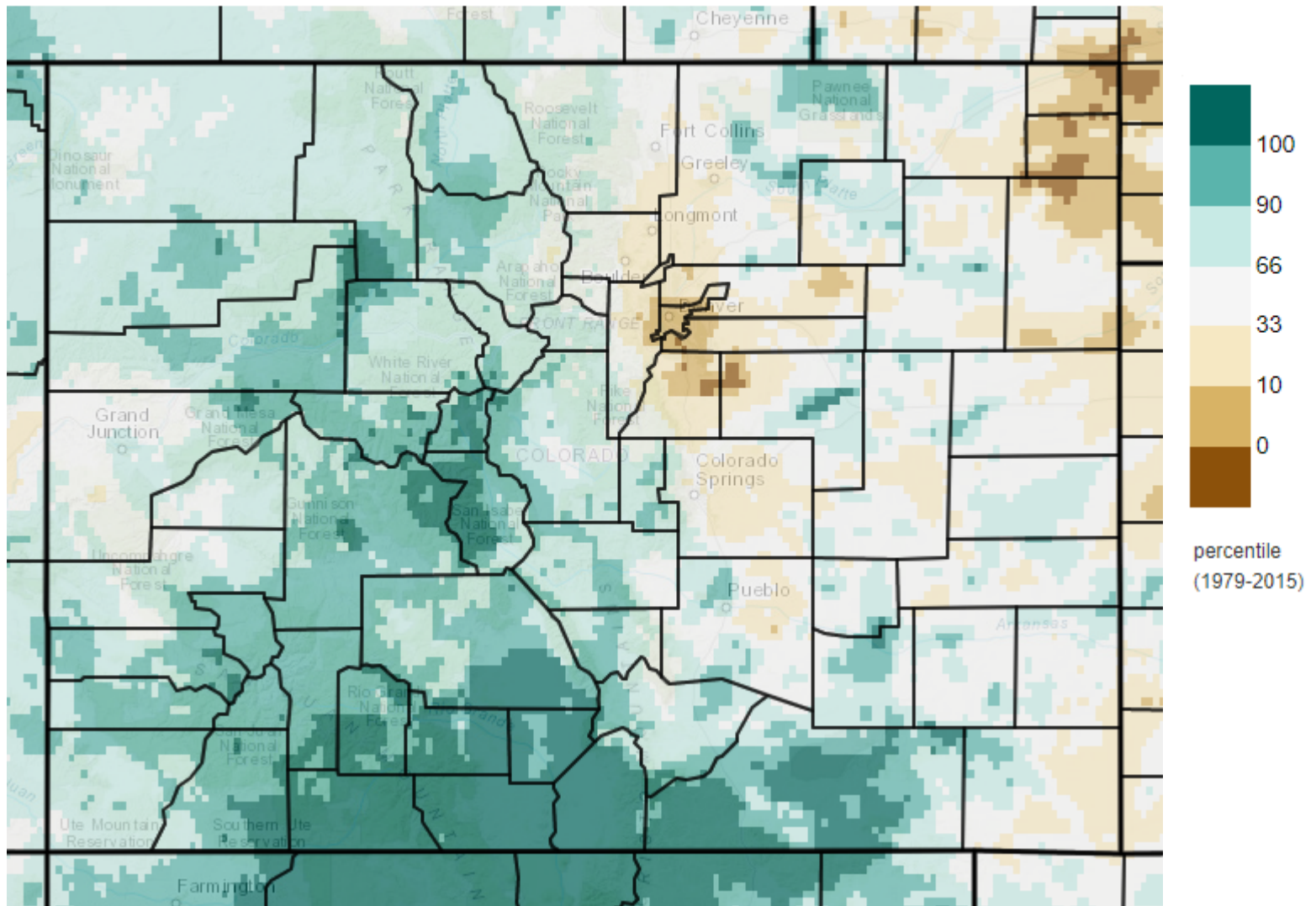
Soil Moisture

Vegetation



## Total Precipitation Percentile, Last 30 Days

2022/06/17 - 2022/07/16



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



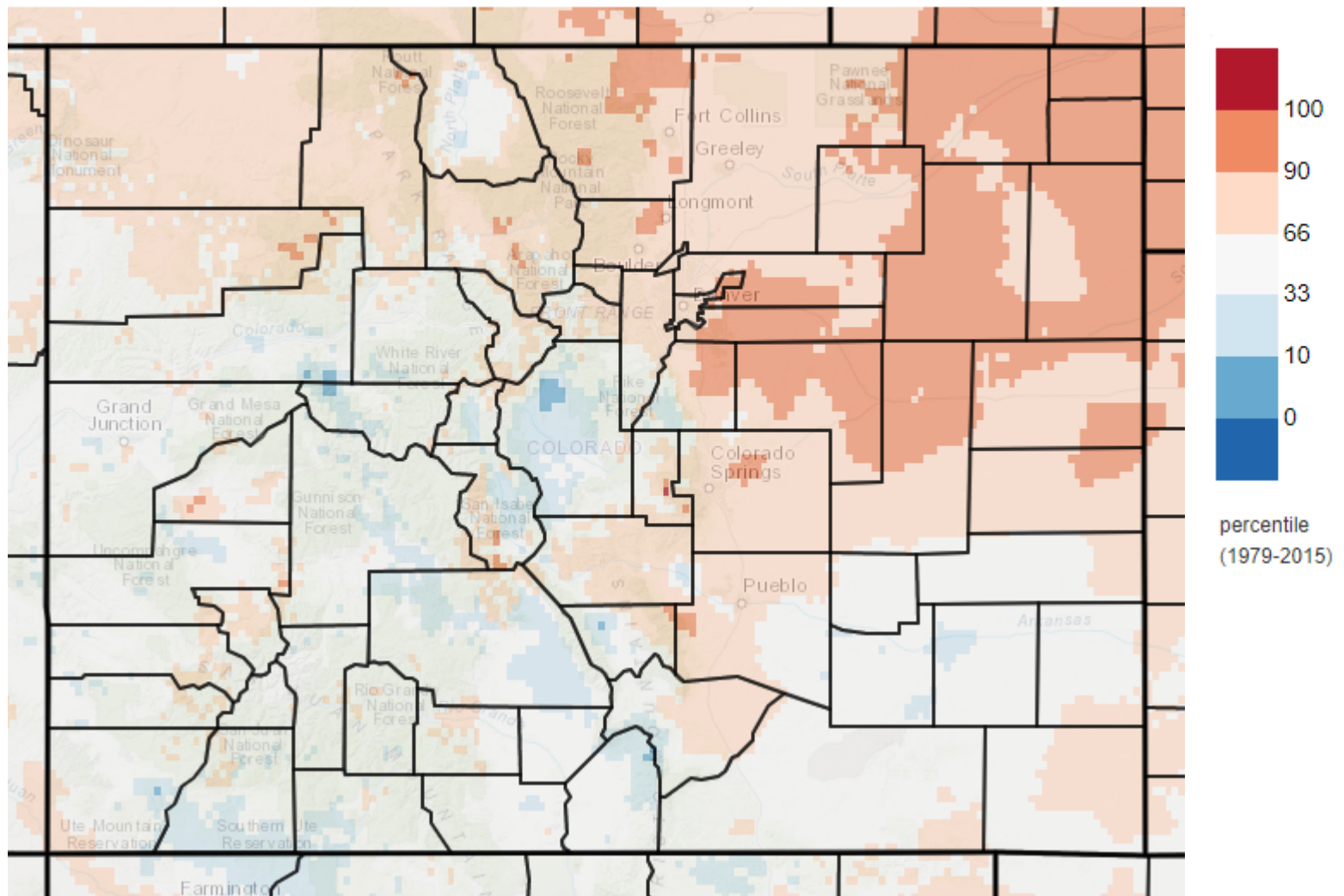
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## Mean Daily Temperature Percentile, Last 30 Days

2022/06/17 - 2022/07/16



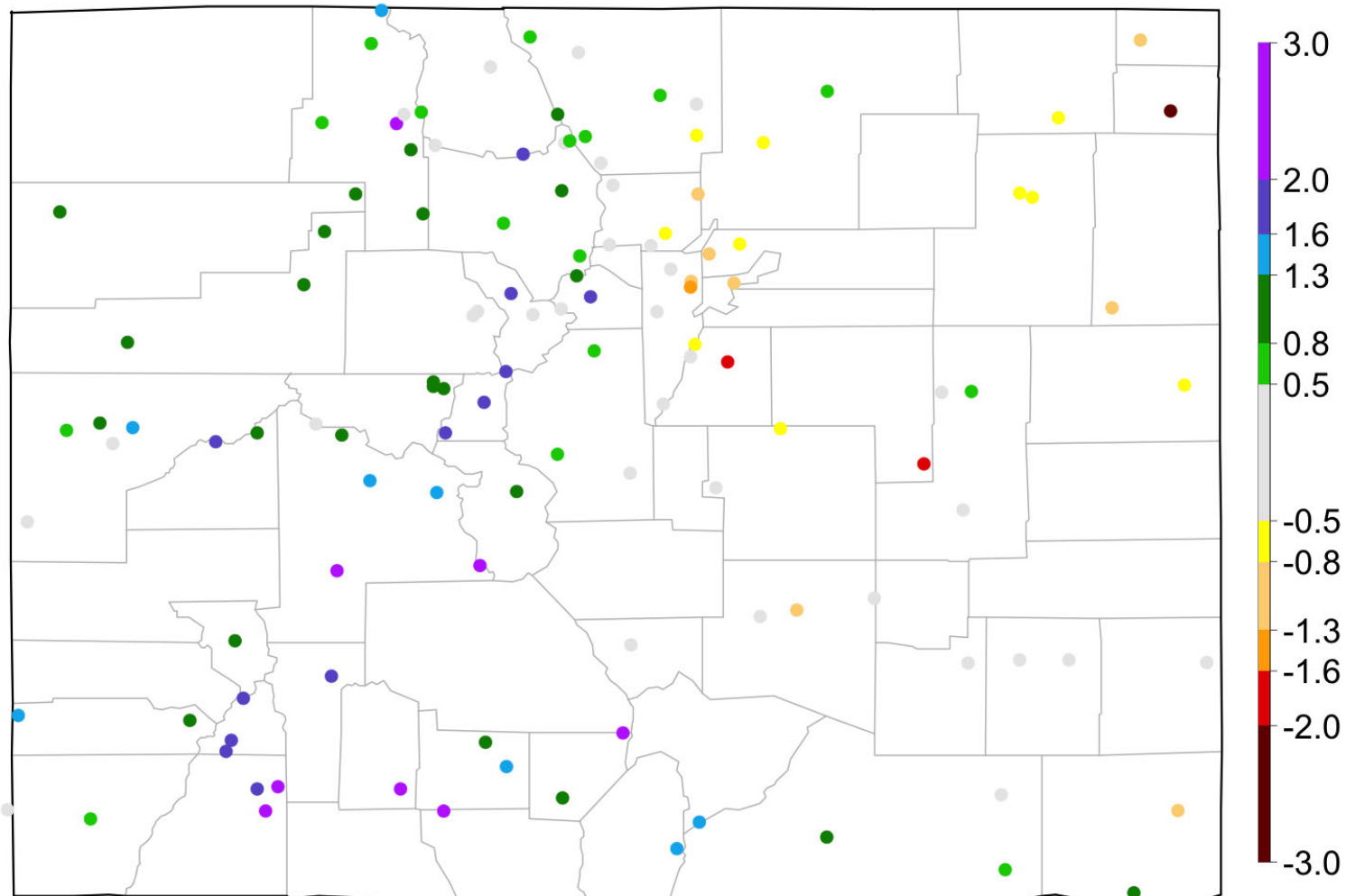
<https://climatetoolbox.org/tool/Climate-Mapper>



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30-day SPI: 2022/06/18 - 2022/07/17



Data from High Plains Regional Climate Center and ACIS

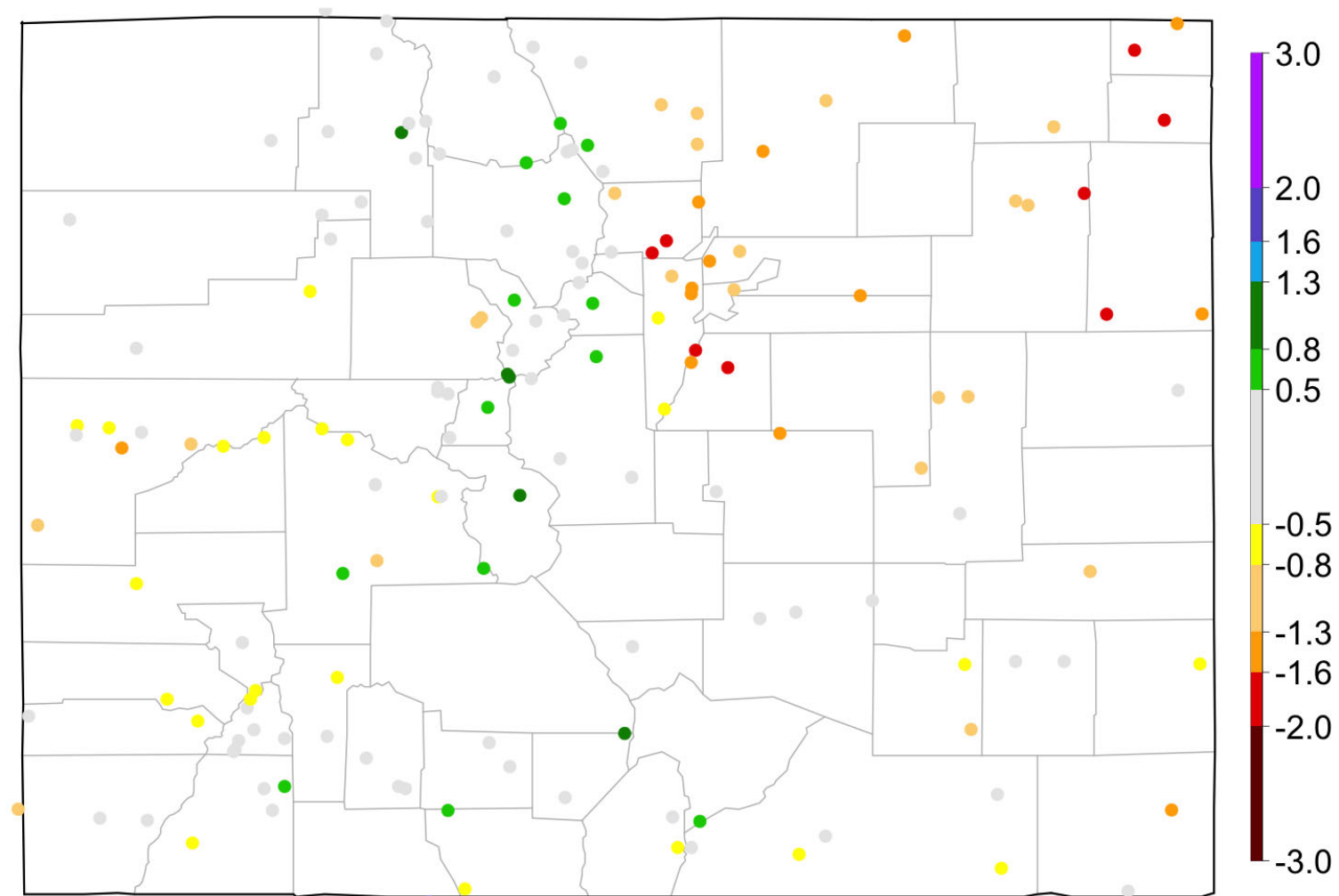
<https://climate.colostate.edu/drought/>



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120-day SPI: 2022/03/20 - 2022/07/17



Data from High Plains Regional Climate Center and ACIS

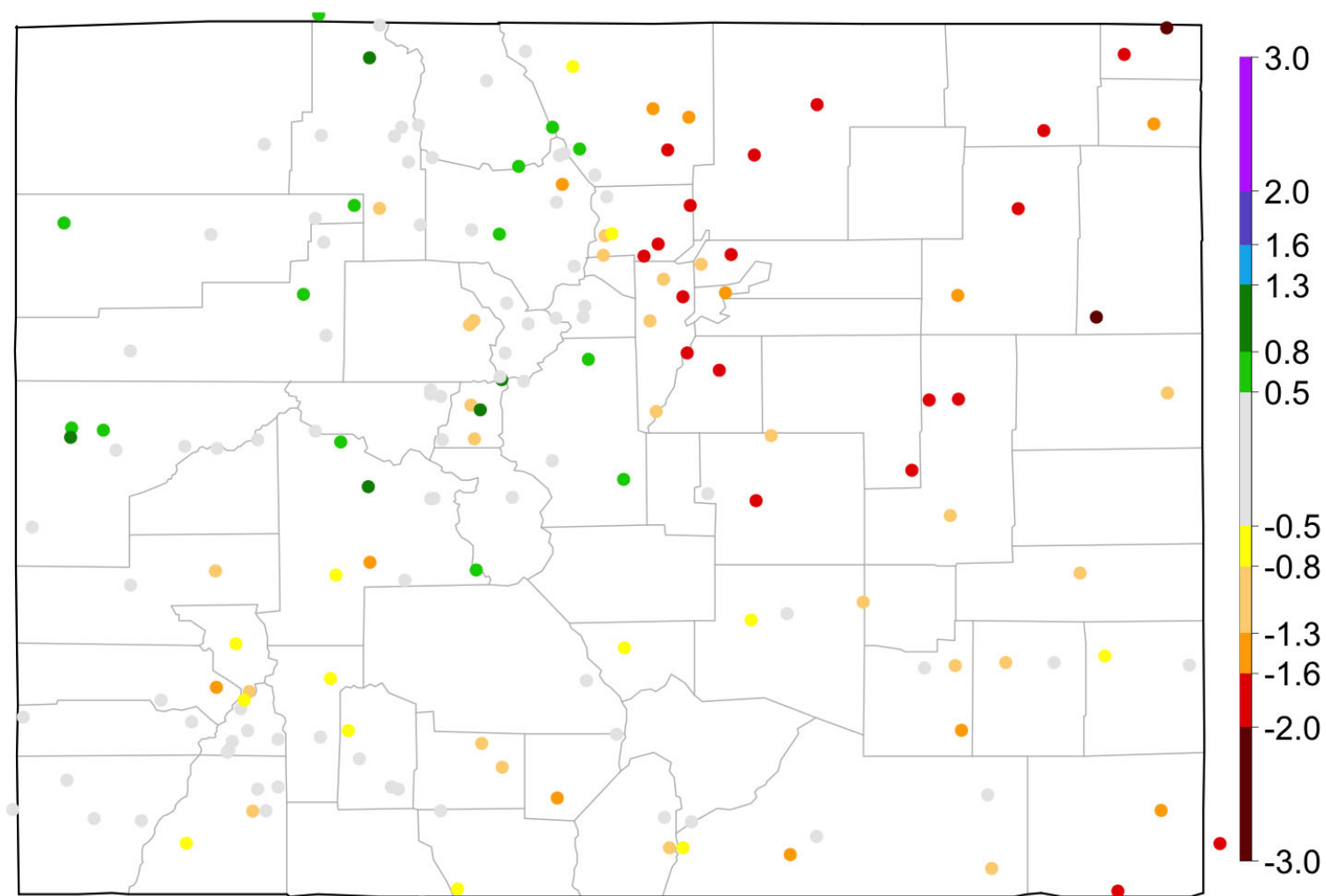
<https://climate.colostate.edu/drought/>



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12-month SPI: 2021/07/18 - 2022/07/17



Data from High Plains Regional Climate Center and ACIS

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

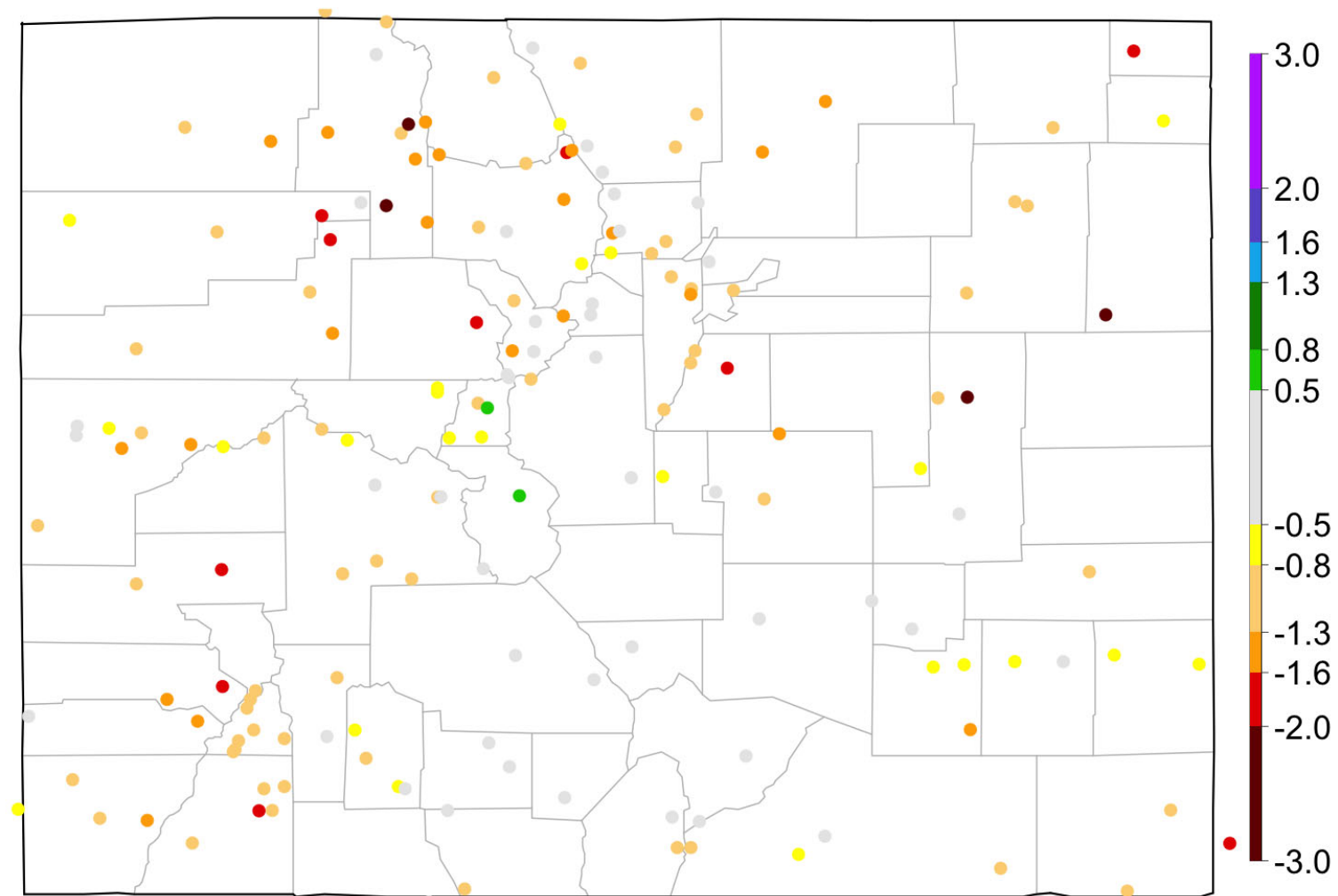


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24-month SPI: 2020/07/18 - 2022/07/17



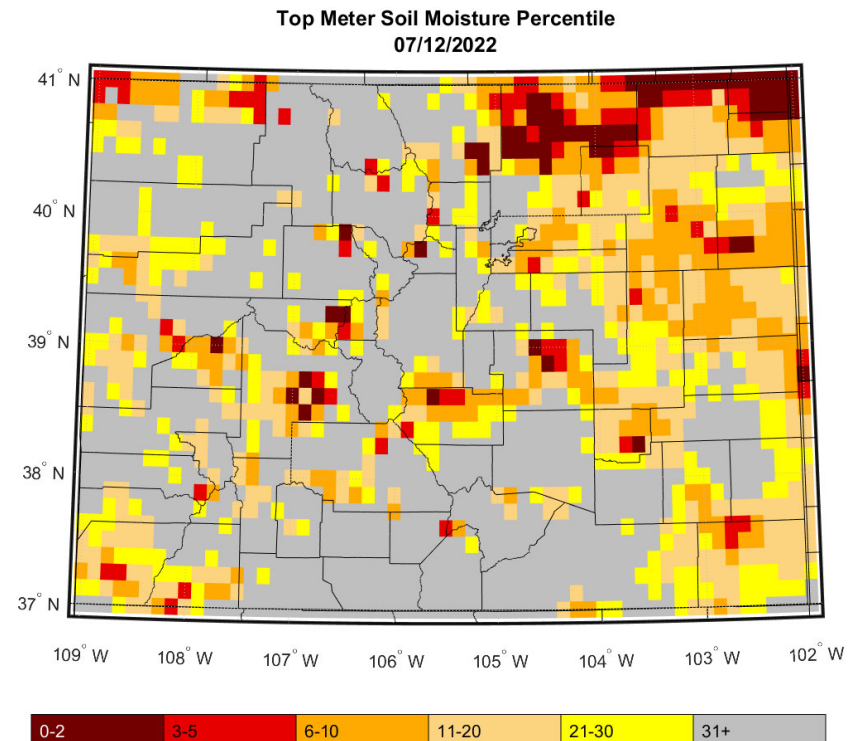
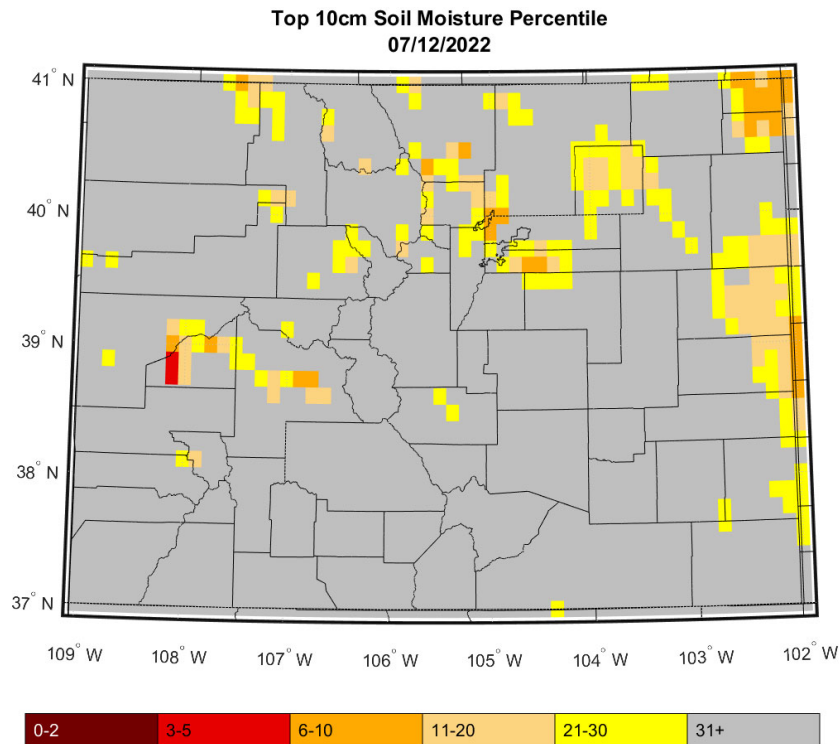
Data from High Plains Regional Climate Center and ACIS



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# Soil Moisture



Shallow soil moisture has shown notable improvement in western CO where monsoon moisture has been consistent over the past couple of weeks. Eastern Plains soil moisture indicate longer-term hydrologic drought is dominant.

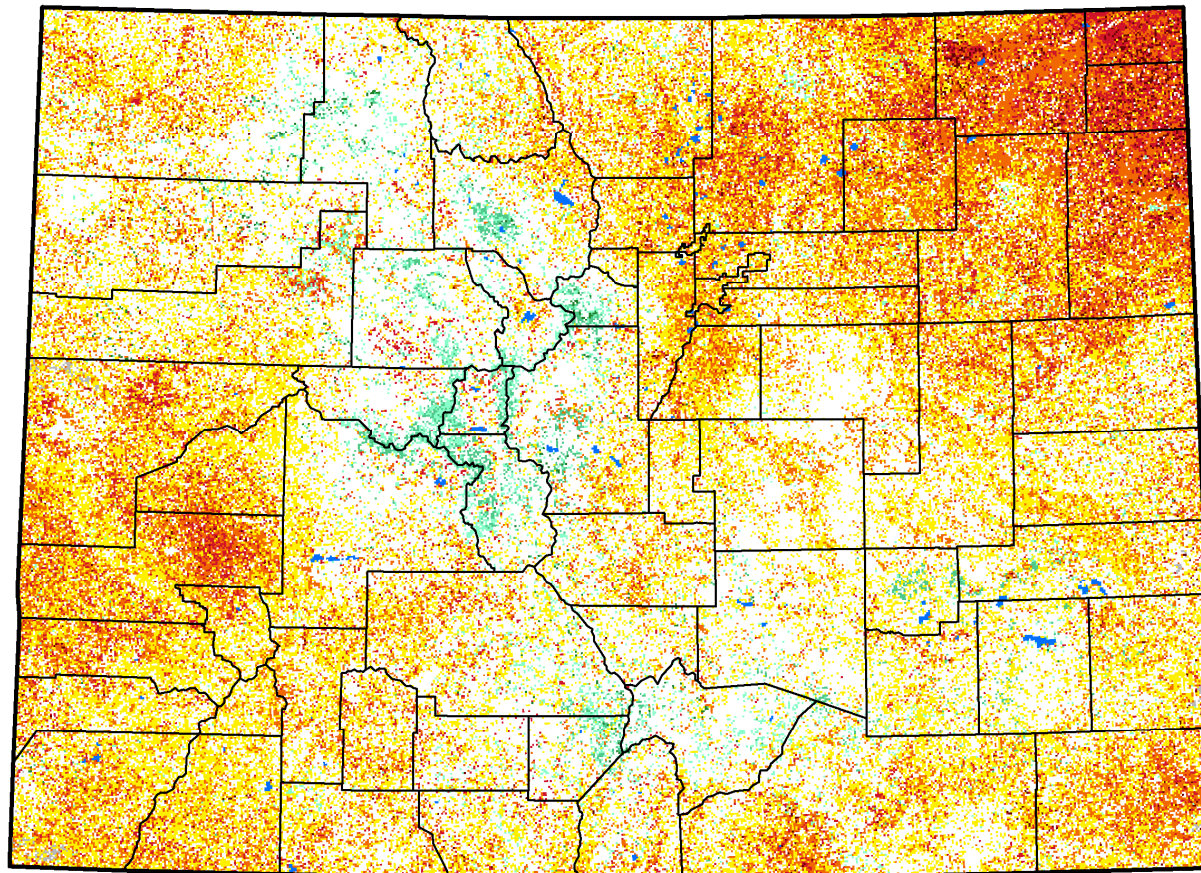
<https://climate.colostate.edu/drought>



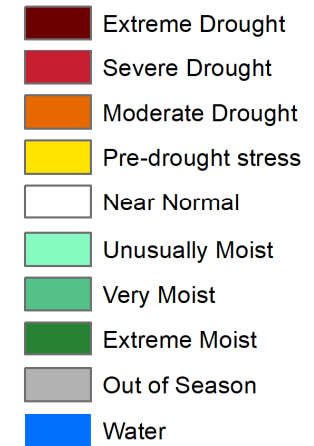
# Vegetation Drought Response Index

Complete: Colorado

July 17, 2022



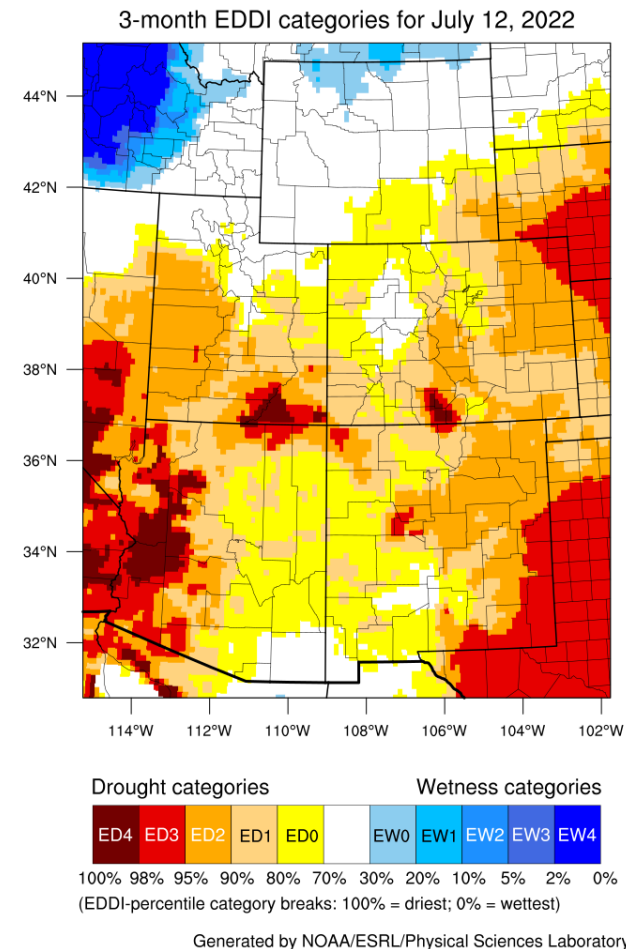
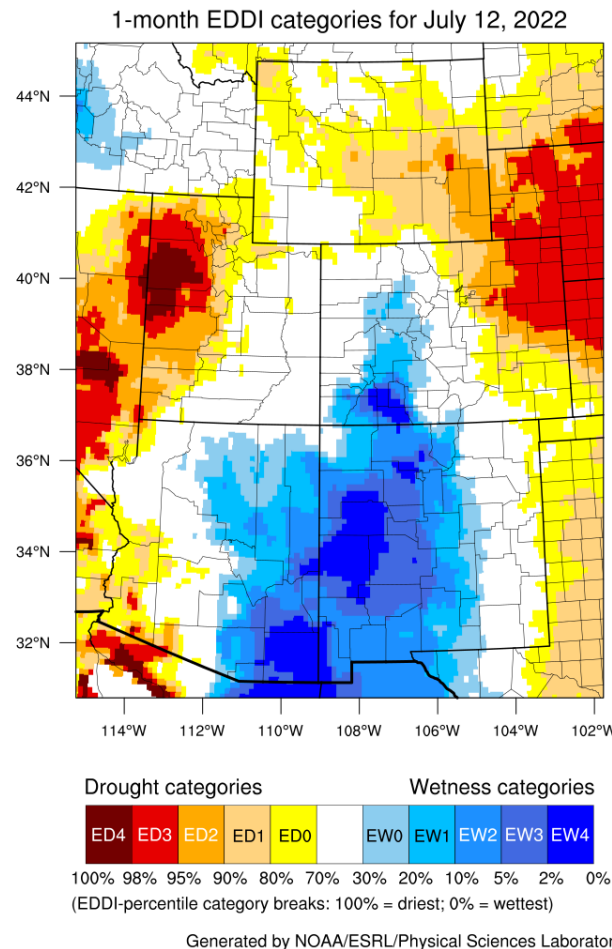
## Vegetation Condition



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# Evaporative Demand



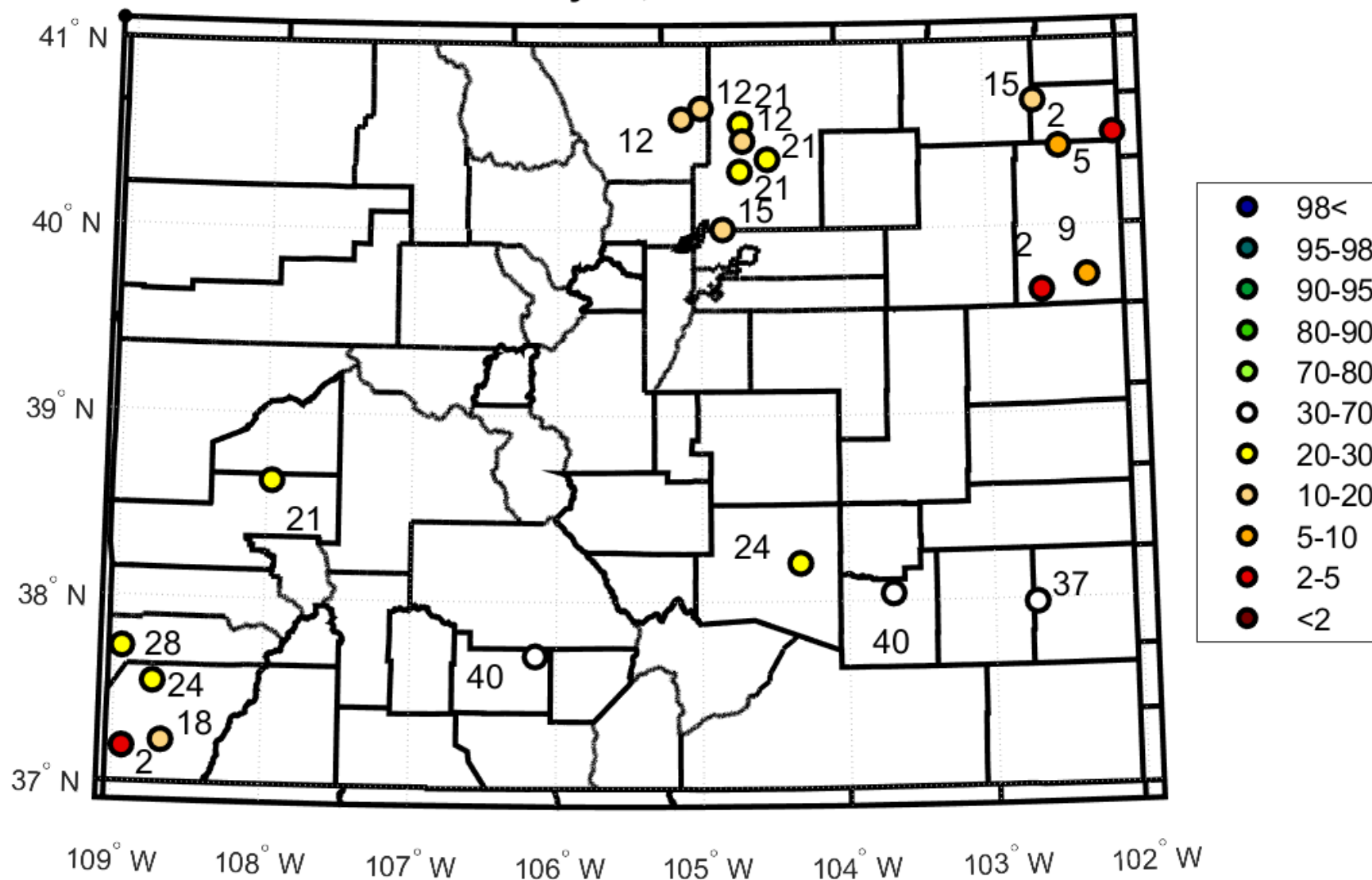
EDDI combines temperature, solar radiation, wind, and humidity – compares to historical record for that time period shown. Short term higher demand showing up over Eastern Plains, longer term demands have been high for most of the state.

<https://psl.noaa.gov/eddi/>





# Growing Season Water Balance (P/PET) Percentiles July 15, 2022







## Drought

National Drought

Colorado Drought

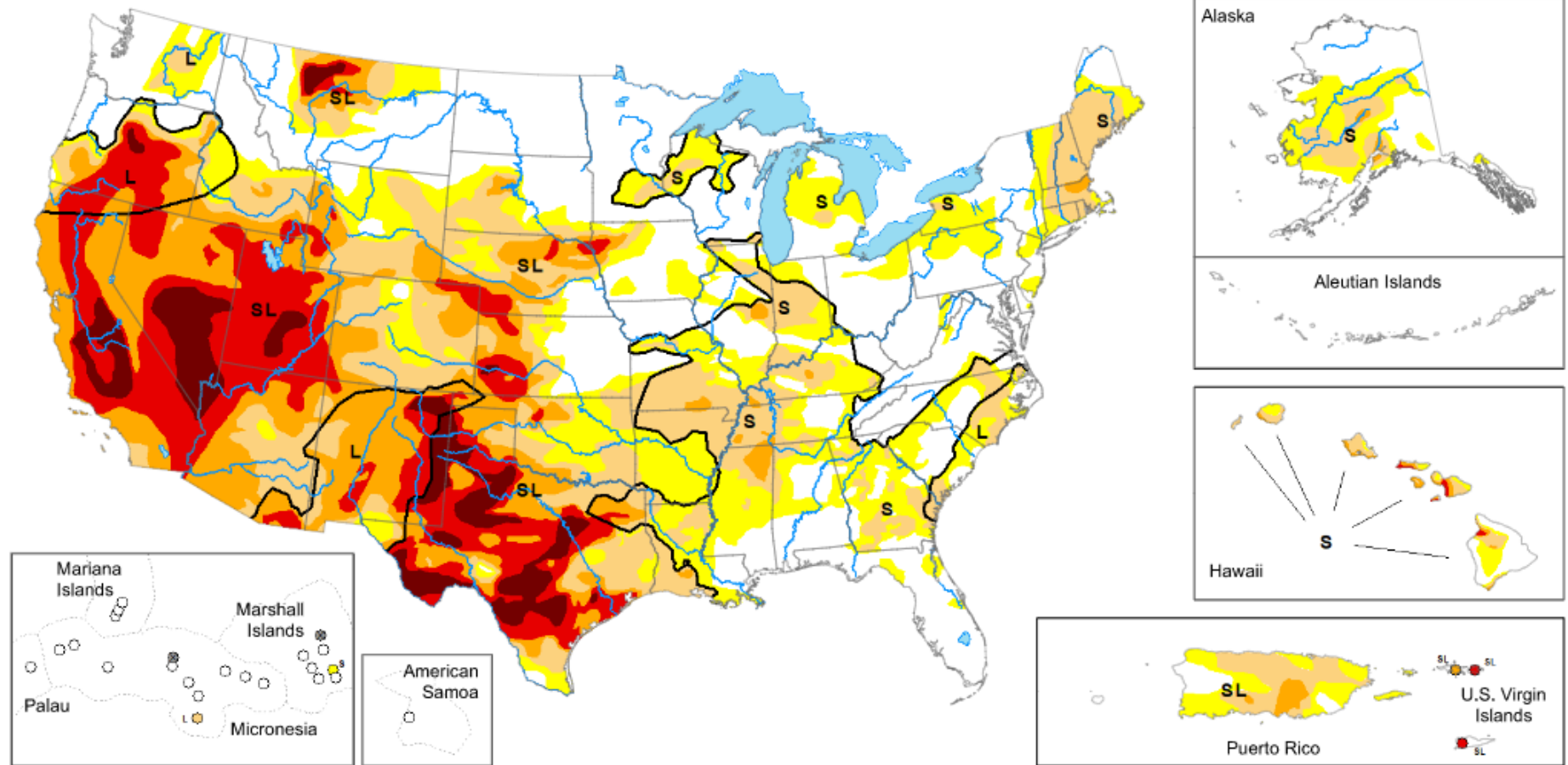
Some Drought Facts





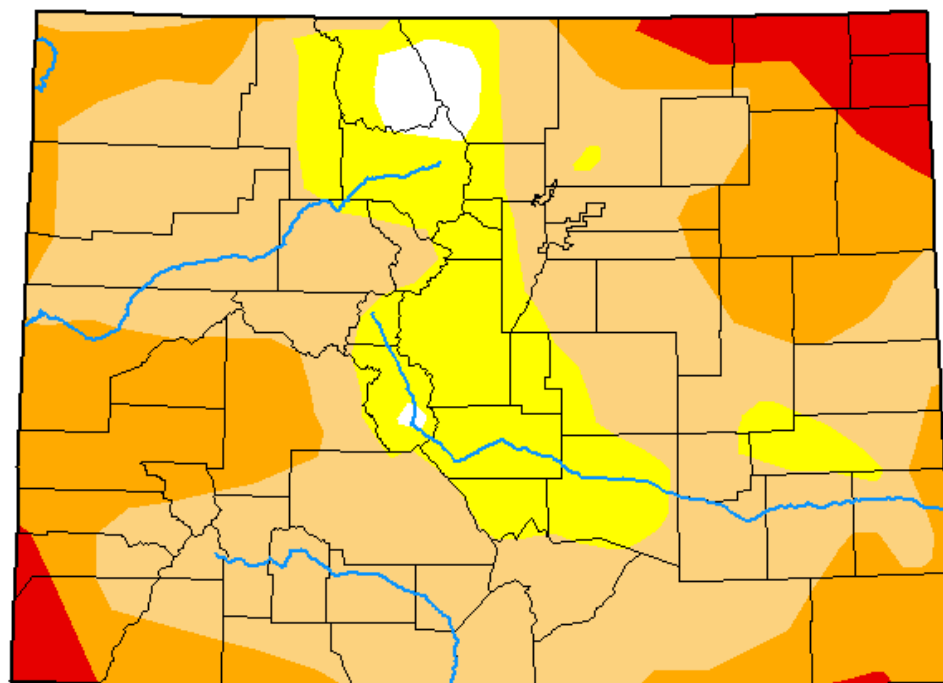
Map released: July 14, 2022

Data valid: July 12, 2022



# U.S. Drought Monitor Colorado

**July 12, 2022**  
(Released Thursday, Jul. 14, 2022)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	1.52	98.48	82.84	31.59	4.88	0.00
<b>Last Week</b> 07-05-2022	1.52	98.48	82.84	44.60	5.06	0.07
<b>3 Months Ago</b> 04-12-2022	0.00	100.00	82.90	31.94	4.32	0.53
<b>Start of Calendar Year</b> 01-04-2022	0.00	100.00	95.49	67.08	22.25	0.00
<b>Start of Water Year</b> 09-28-2021	12.72	87.28	46.42	26.30	15.05	3.91
<b>One Year Ago</b> 07-13-2021	54.44	45.56	40.99	36.23	29.94	18.32

## 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:

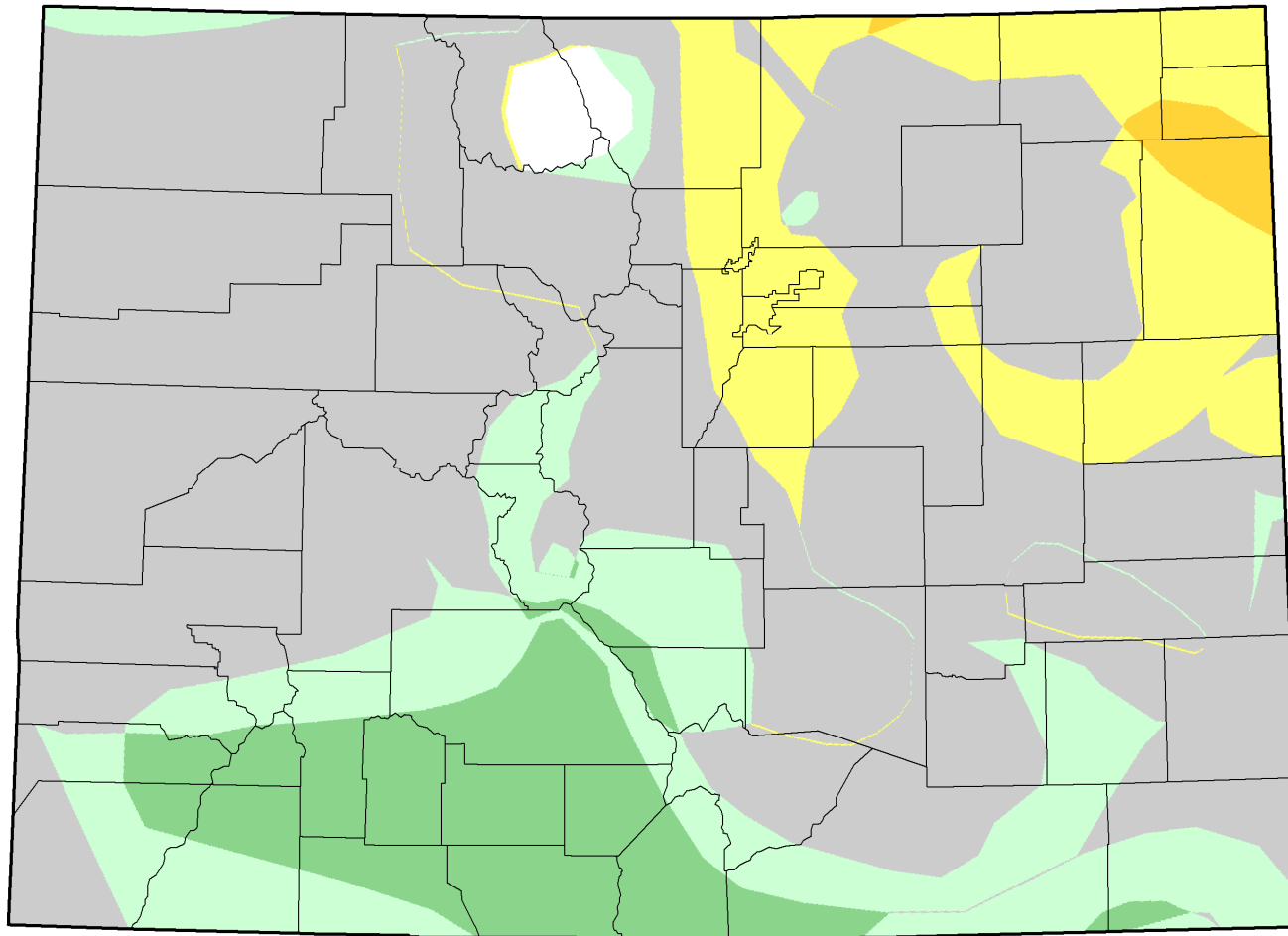
Brian Fuchs  
National Drought Mitigation Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



## U.S. Drought Monitor Class Change - Colorado 4 Week



July 12, 2022  
compared to  
June 14, 2022

[droughtmonitor.unl.edu](http://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







# Outlook

Next 7 days

8-14 day Outlook

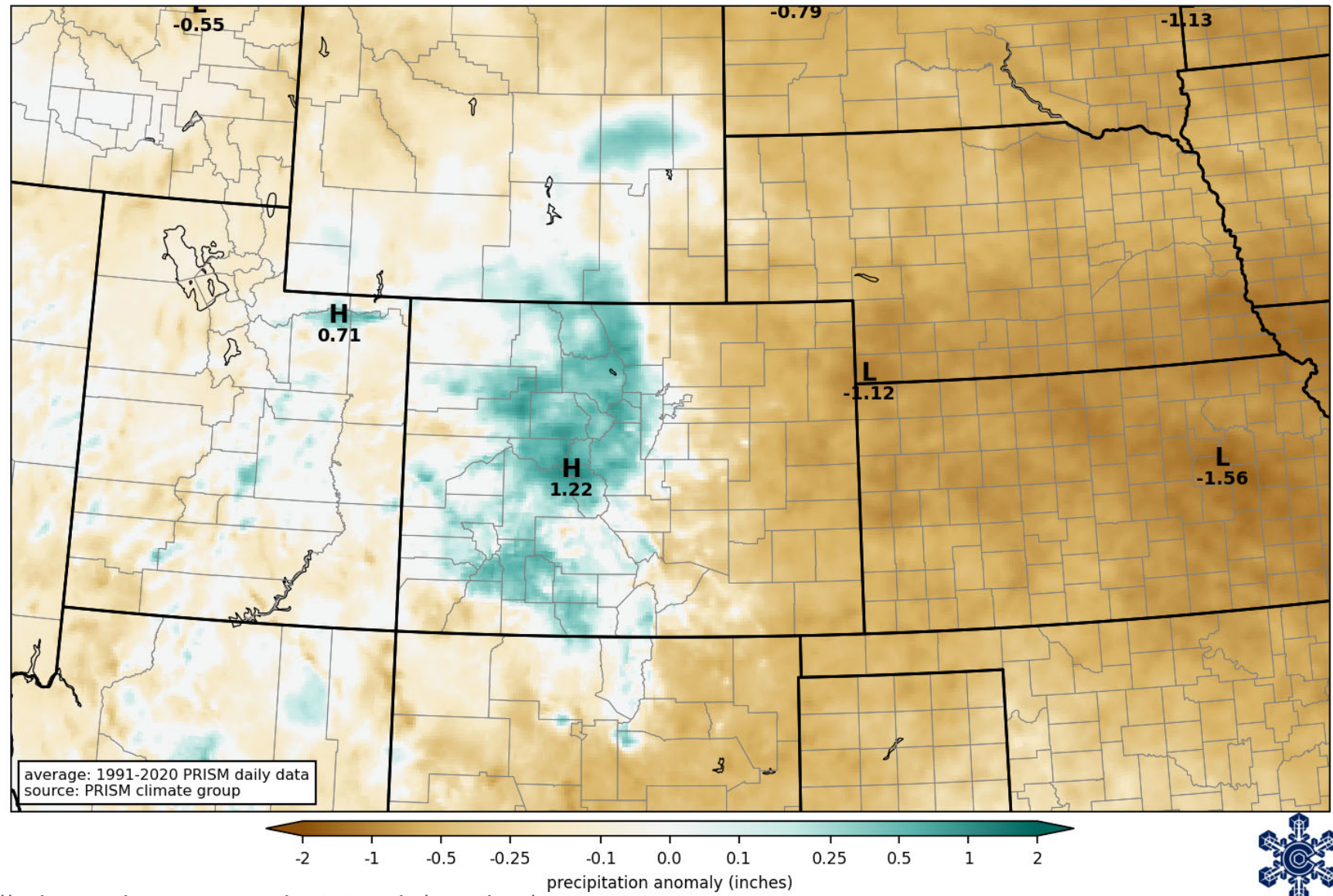
CPC Outlooks

La Niña

# NOAA 7-day precip forecast

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

forecast issued 1200 UTC Mon 18 Jul 2022  
precipitation in 168 hrs ending 1200 UTC Mon 25 Jul 2022

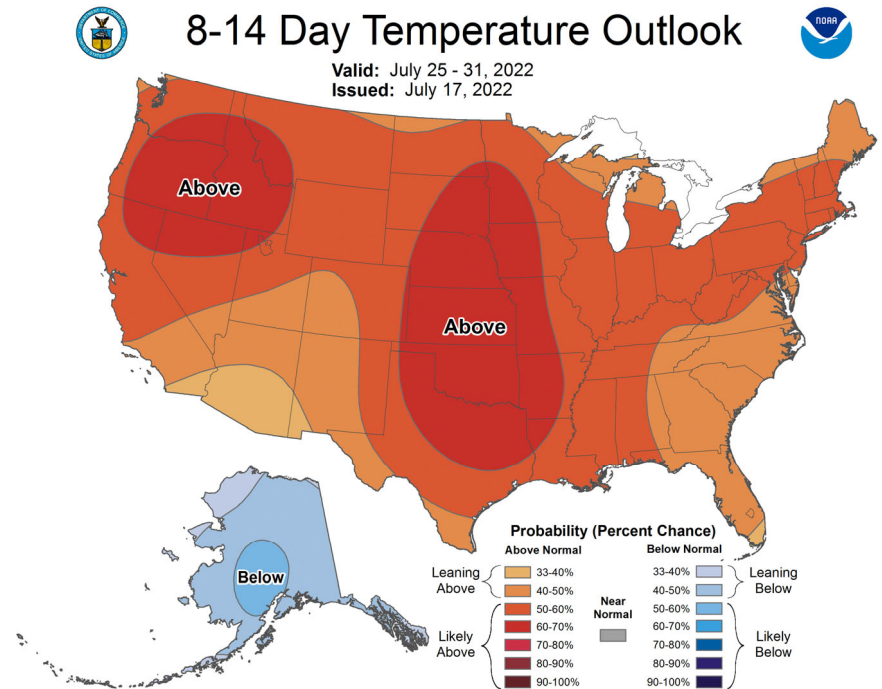
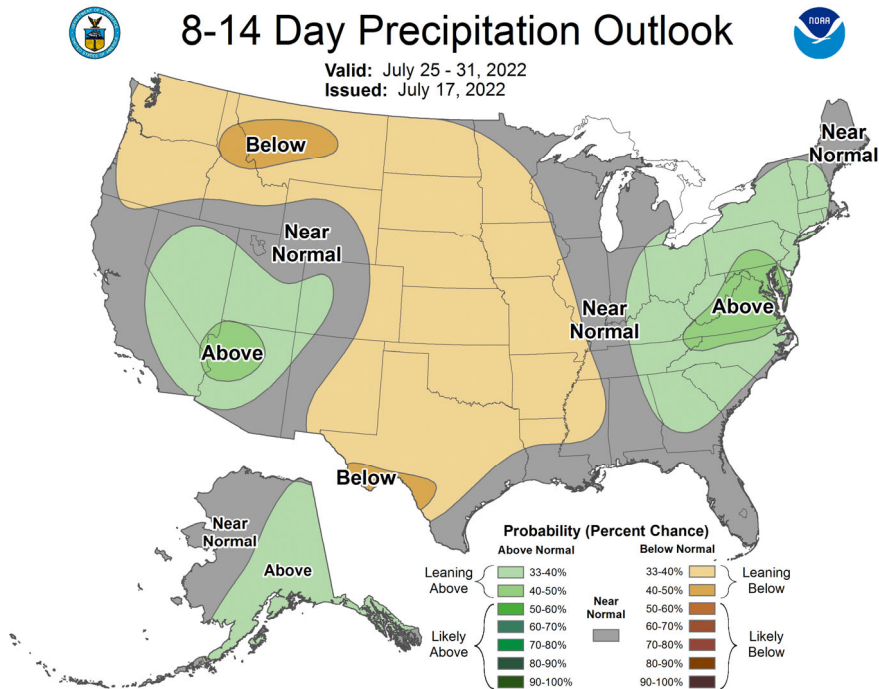


<http://schumacher.atmos.colostate.edu/weather/>

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# 8-14 day outlook

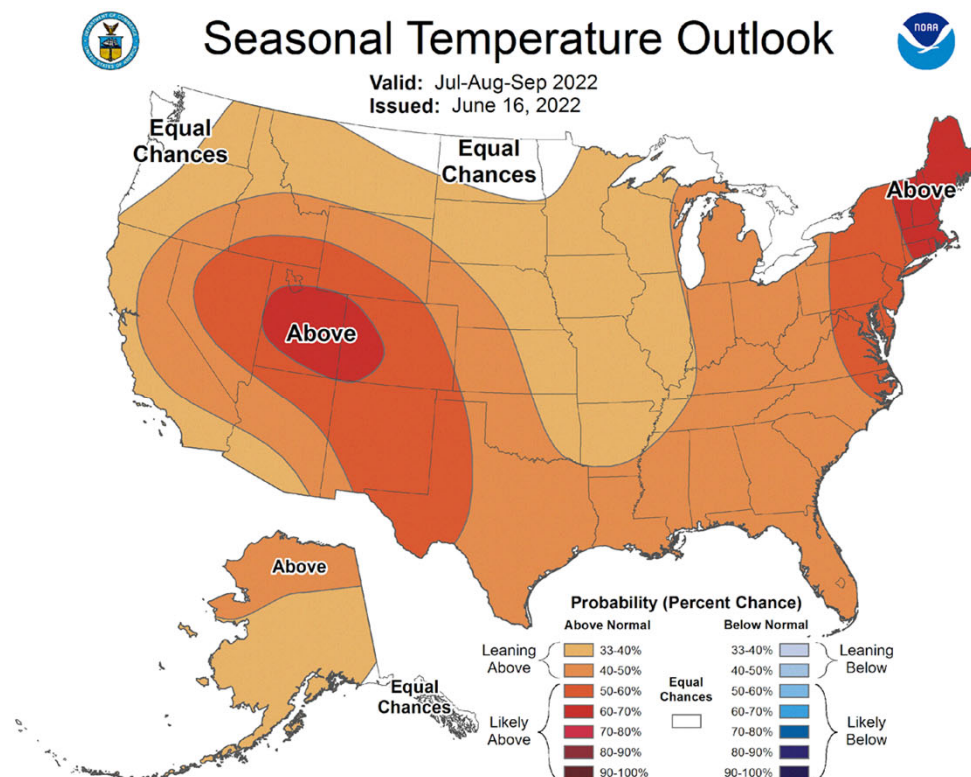
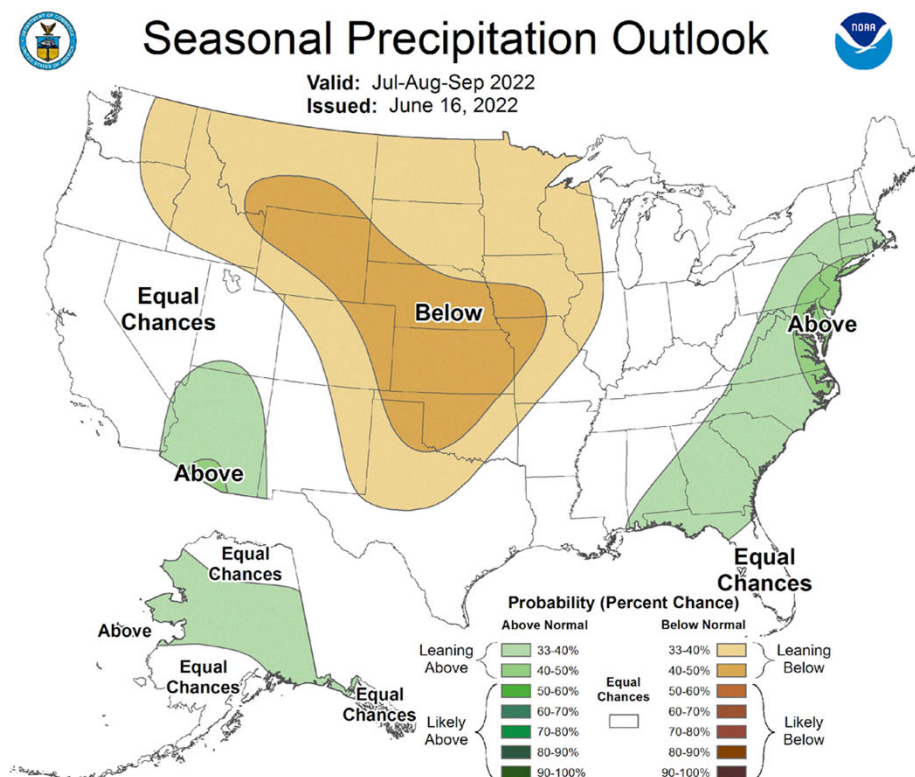


Continue to expect monsoonal moisture, which should help regulate temperatures, at least for the Four Corners area.

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



# Seasonal outlook



Seasonal outlook continues to show dominant warm signal over Colorado, with the most confidence over western CO. Continued monsoon moisture evident, but trending drier over the Eastern Plains.

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



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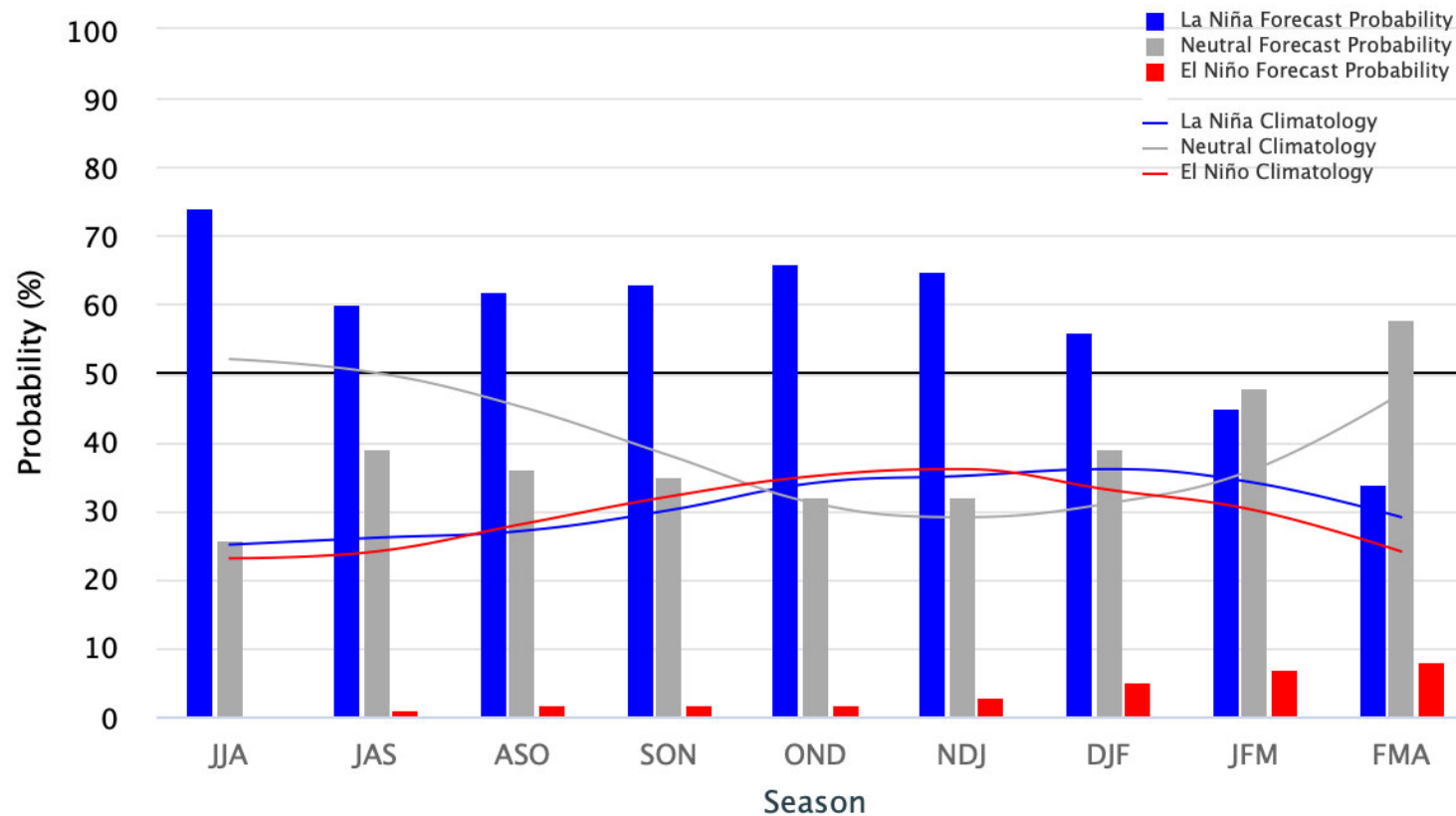


# What's the ENSO forecast?

Early-July 2022 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly

Neutral ENSO:  $-0.5^{\circ}\text{C}$  to  $0.5^{\circ}\text{C}$



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

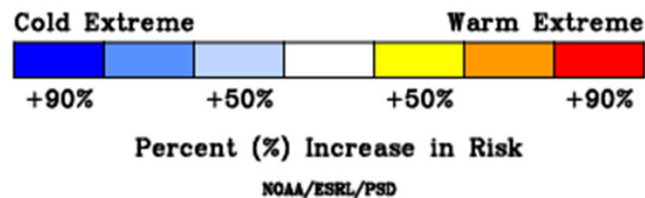
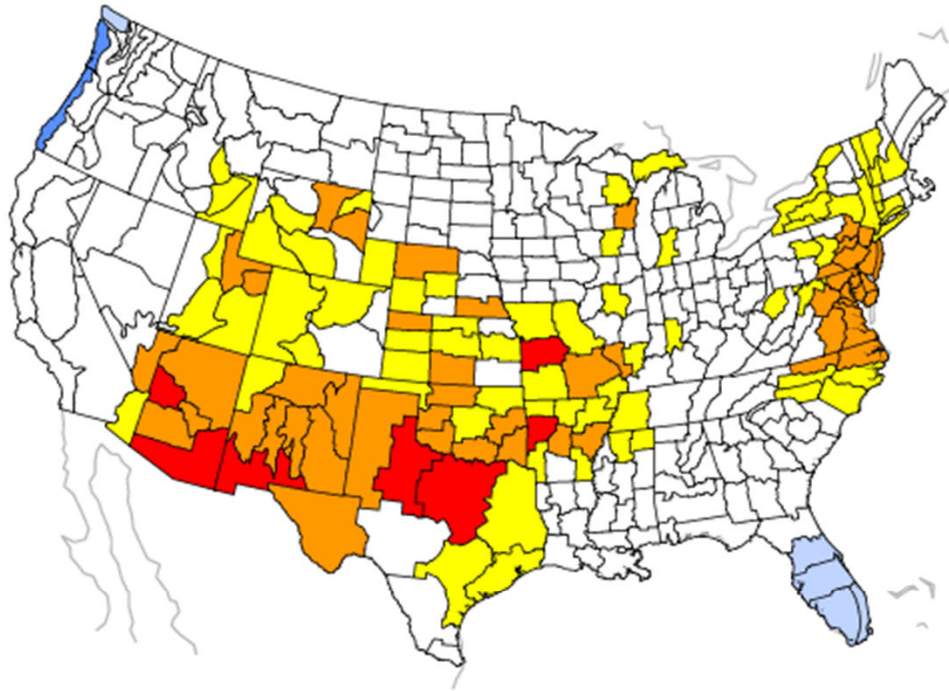




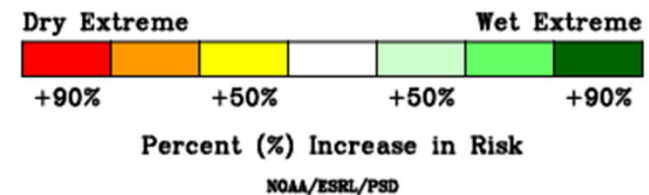
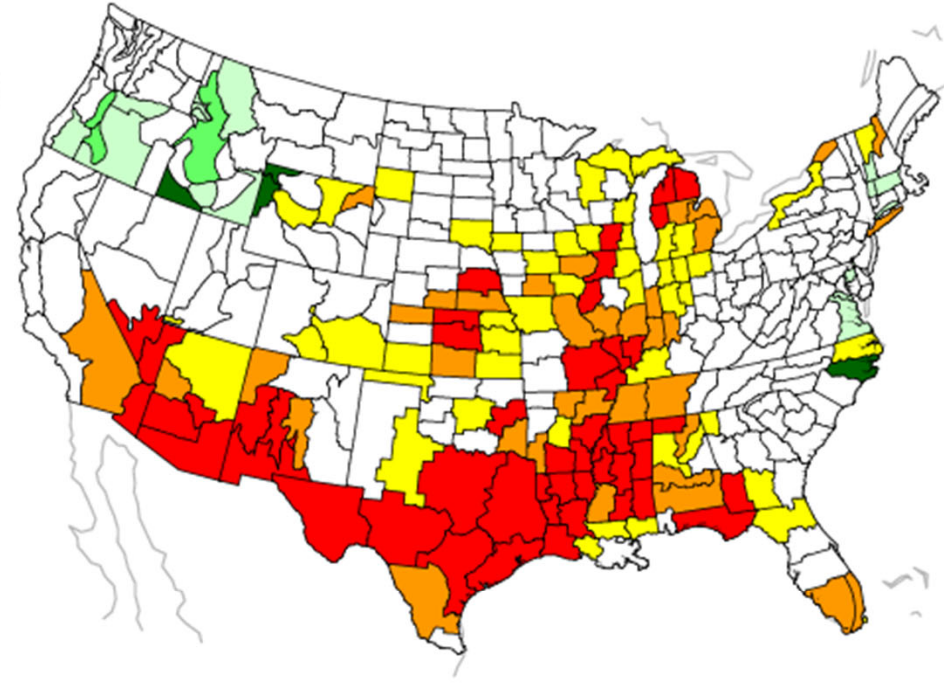


What does La Niña  
mean for the fall?

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



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



Risk of extremes during a La Niña, from <https://psl.noaa.gov/enso/climaterisks/>

The region is generally more likely to see warm and dry extremes in the fall during a La Niña. What would three La Niña winters in a row mean? Good question!



# Key Takeaways

- ❑ June was warmer than 20<sup>th</sup> century averages, but not out of line with recent years. An early monsoonal surge lead to above normal moisture for western CO, but lack of polar jet influence and cold air lead to a dry eastern plains.
- ❑ Long-term drought impacts remain evident in streams vegetation.
- ❑ Active monsoon is expected to continue, but the remainder of summer is expected to stay hot and linger late
- ❑ It is likely that either La Niña conditions will persist or neutral conditions will develop in fall. El Niño development is unlikely. This, in combination with other patterns observed in a warming climate (e.g. late redevelopment of cold arctic air) mean warm/dry conditions are likely to persist into fall



# Thanks!

To view this and other presentations:  
[https://climate.colostate.edu/ccc\\_archive.html](https://climate.colostate.edu/ccc_archive.html)