

Colorado Climate Update

Allie Mazurek, engagement climatologist

Water Conditions Monitoring Committee

May 20, 2025



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

Water Year 2025 so far

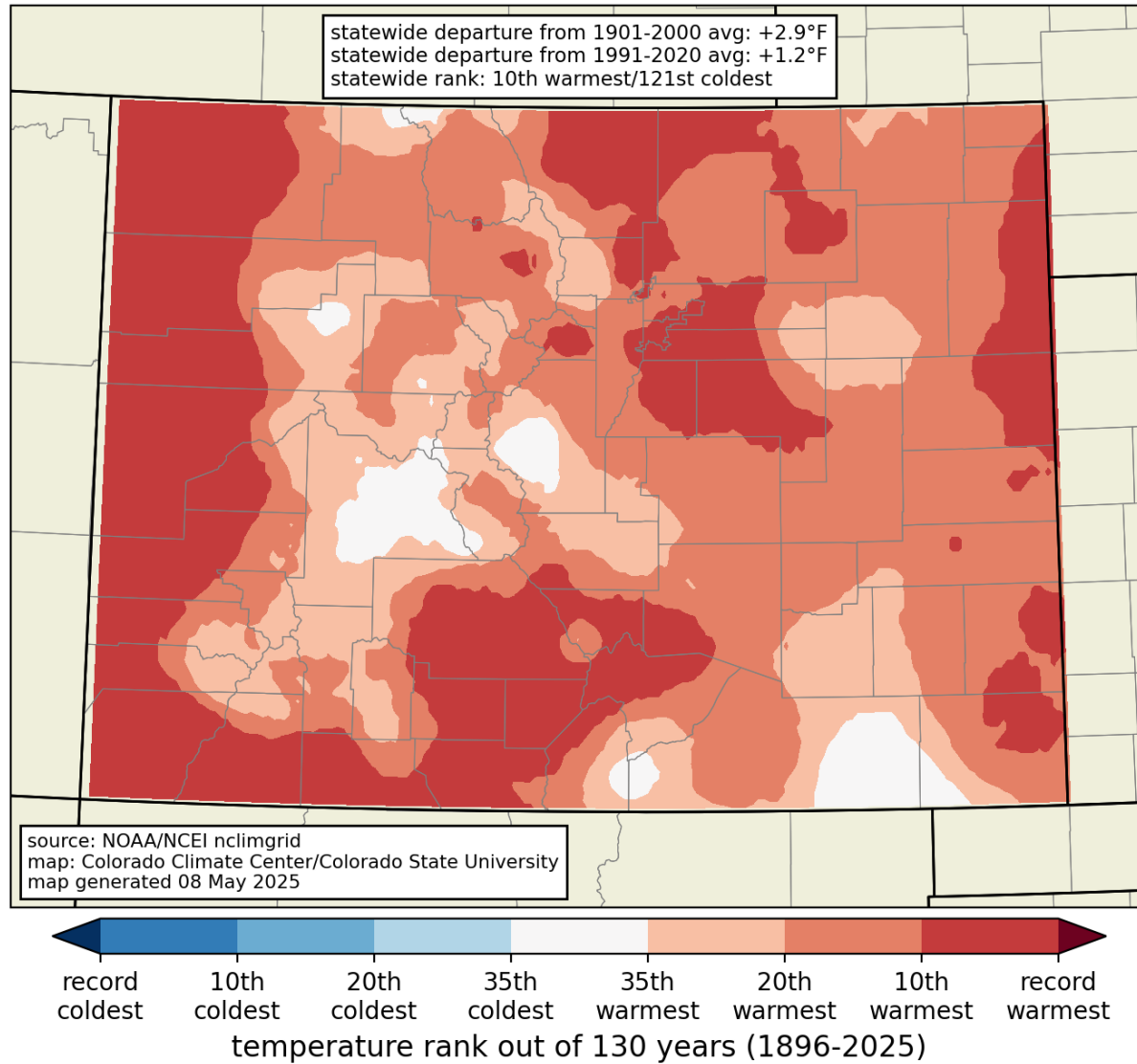
temperature, precipitation, & more



Tornado near Bennett, CO – May 18, 2025
Source: Zach Seipp/costormchasers.bsky.social



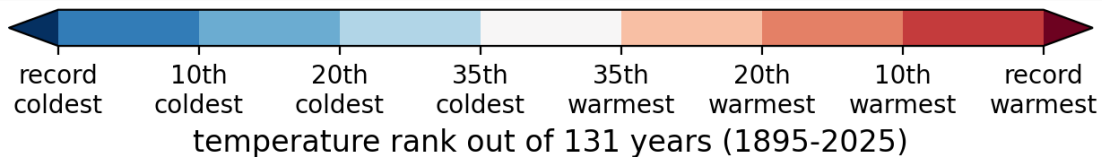
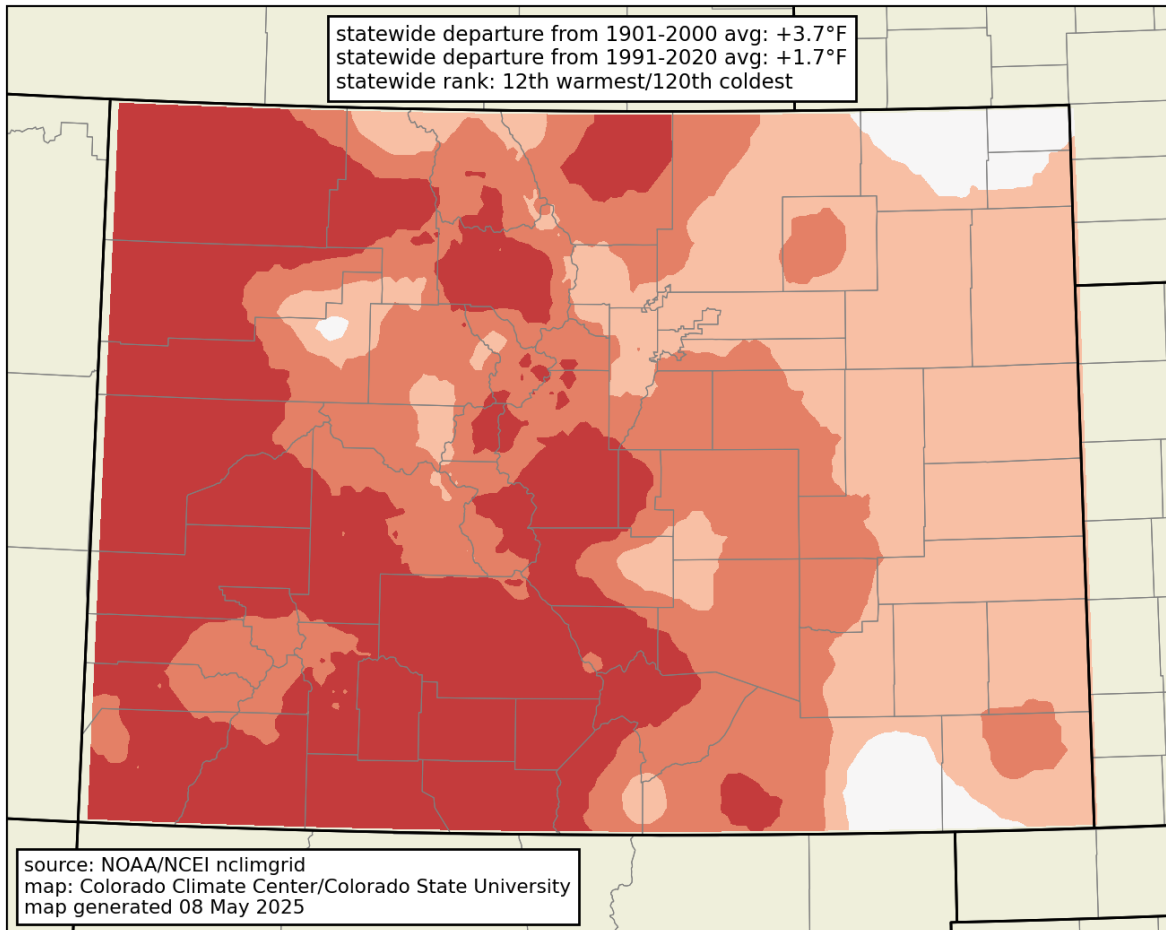
average temperature rank
7 months ending April 2025 (Oct-Apr)



Statewide: Tied for 10th warmest first 7 months of the water year

Month	T Rank (of 130 years)	Above, below, or near 20 th century avg?
Oct	2 nd warmest	much above
Nov	45 th coolest	near avg
Dec	3 rd warmest	much above
Jan	24 th coolest	below
Feb	35 th warmest	above
Mar	10 th warmest	much above
Apr	33 rd warmest	above

average temperature rank 3 months ending April 2025 (Feb-Apr)

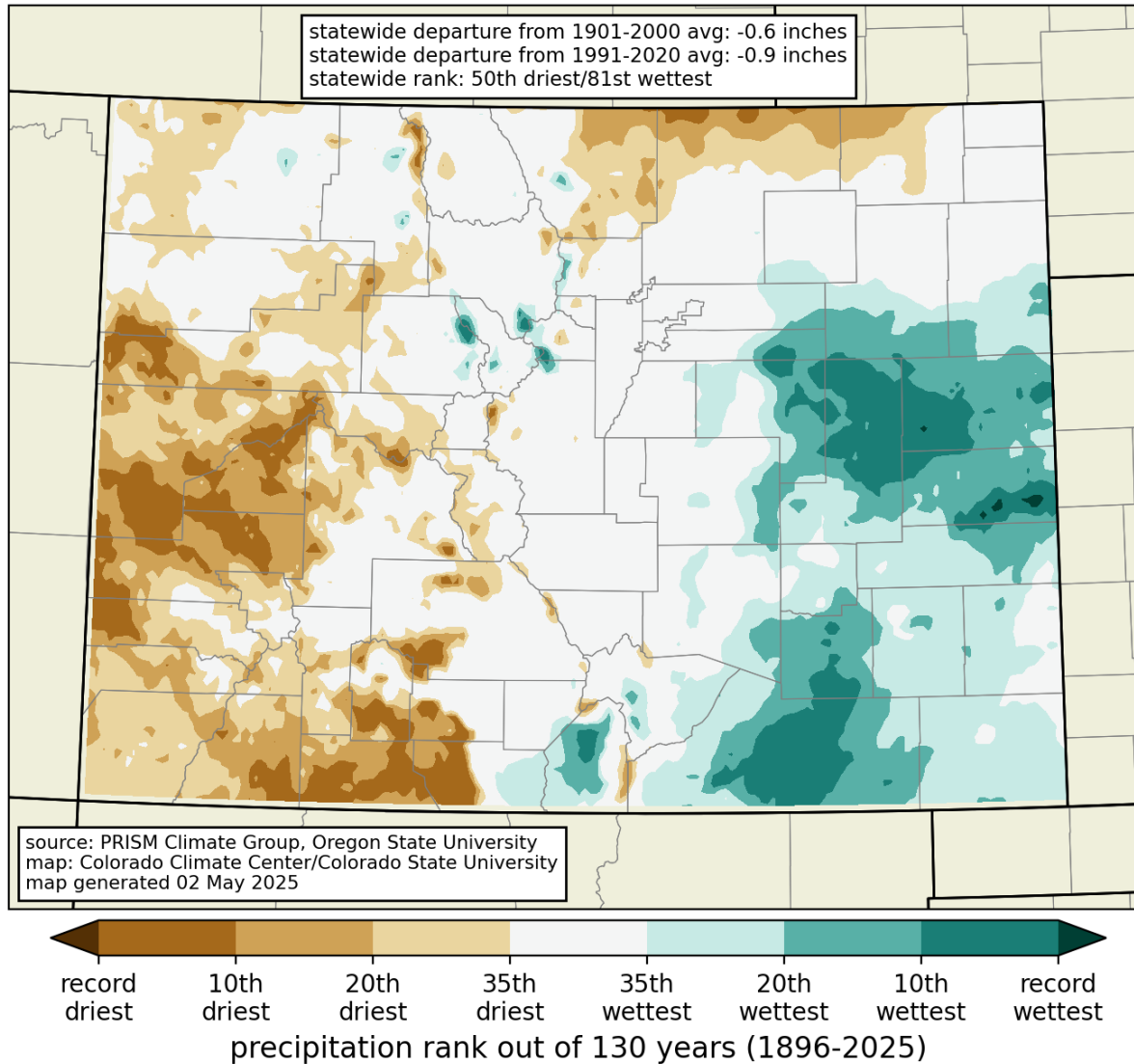


Statewide: 12th warmest Feb-Apr on record

The past 3 months have been particularly warm for the western half of the state

Month	T Rank (of 130 years)	Above, below, or near 20 th century avg?
Feb	35 th warmest	above
Mar	10 th warmest	much above
Apr	33 rd warmest	above

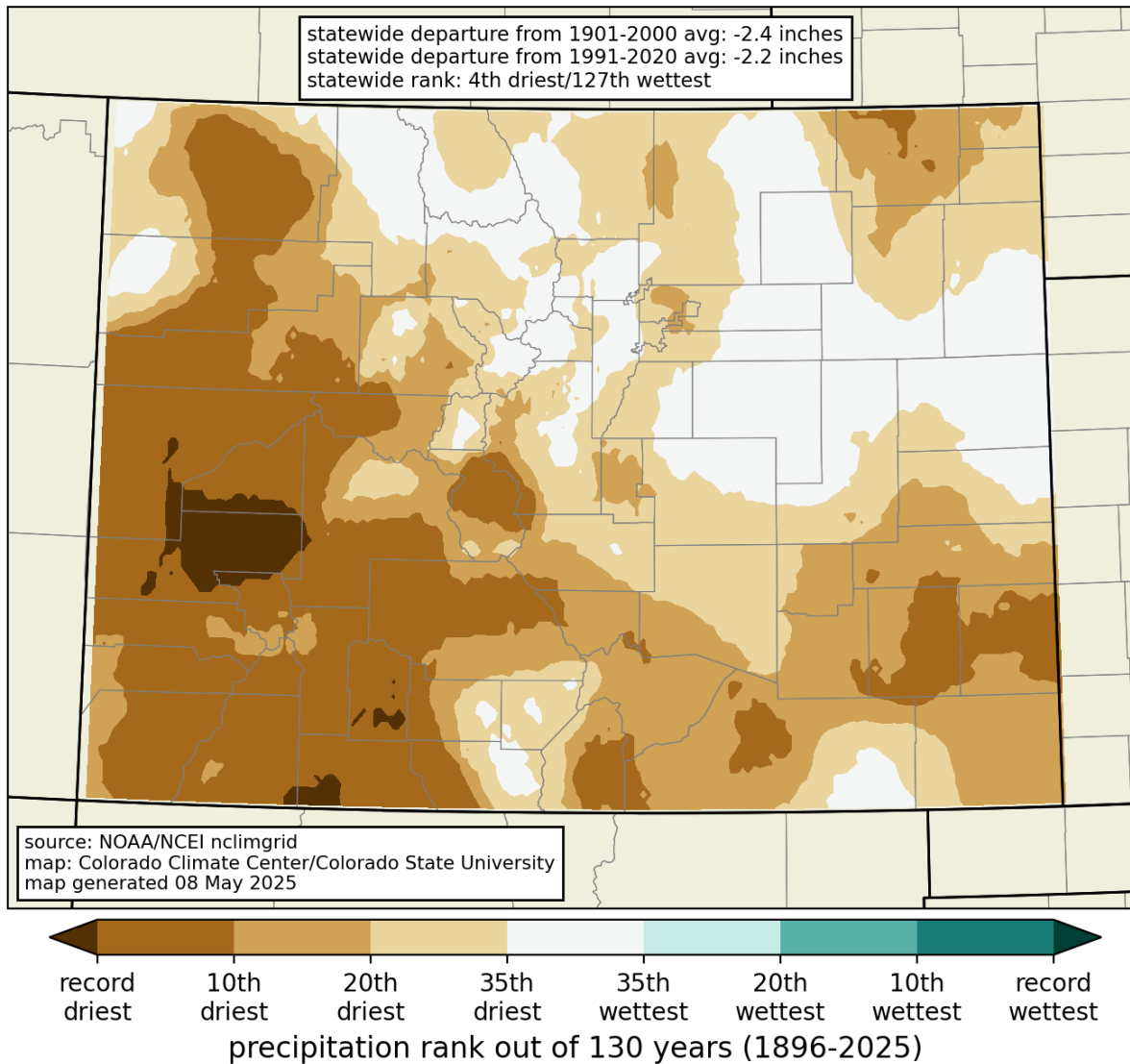
precipitation rank (preliminary PRISM data)
7 months ending April 2025 (Oct-Apr)



Month	P Rank (of 130 years)	Above, below, or near 20 th century avg?
Oct	47 th wettest	near average
Nov	5 th wettest	much above
Dec	12 th driest	below
Jan	34 th driest	below
Feb	46 th driest	near average
Mar	50 th driest	near average
Apr	15 th driest	below

Statewide: 40th driest/91st wettest first 7 months of the
water year

precipitation rank 5 months ending April 2025 (Dec-Apr)



Since the big November snowstorm, things have been very dry... especially for western CO. Parts of the eastern plains are also falling behind on precipitation

Month	P Rank (of 130 years)	Above, below, or near 20 th century avg?
Dec	12 th driest	below
Jan	34 th driest	below
Feb	46 th driest	near average
Mar	50 th driest	near average
Apr	15 th driest	below

Statewide: 4th driest December through April
Record driest for some locations in western CO

Colorado statewide average temperature and precipitation, October - April

Warm & dry

Warm & wet

October 2024-
April 2025

October through
April: warmer and
drier than average

1991-2020 avg temp (34.9F)

1901-2000 avg temp (33.2F)



Cool & dry

Cool & wet



February-April
2025

Warm & dry

Warm & wet

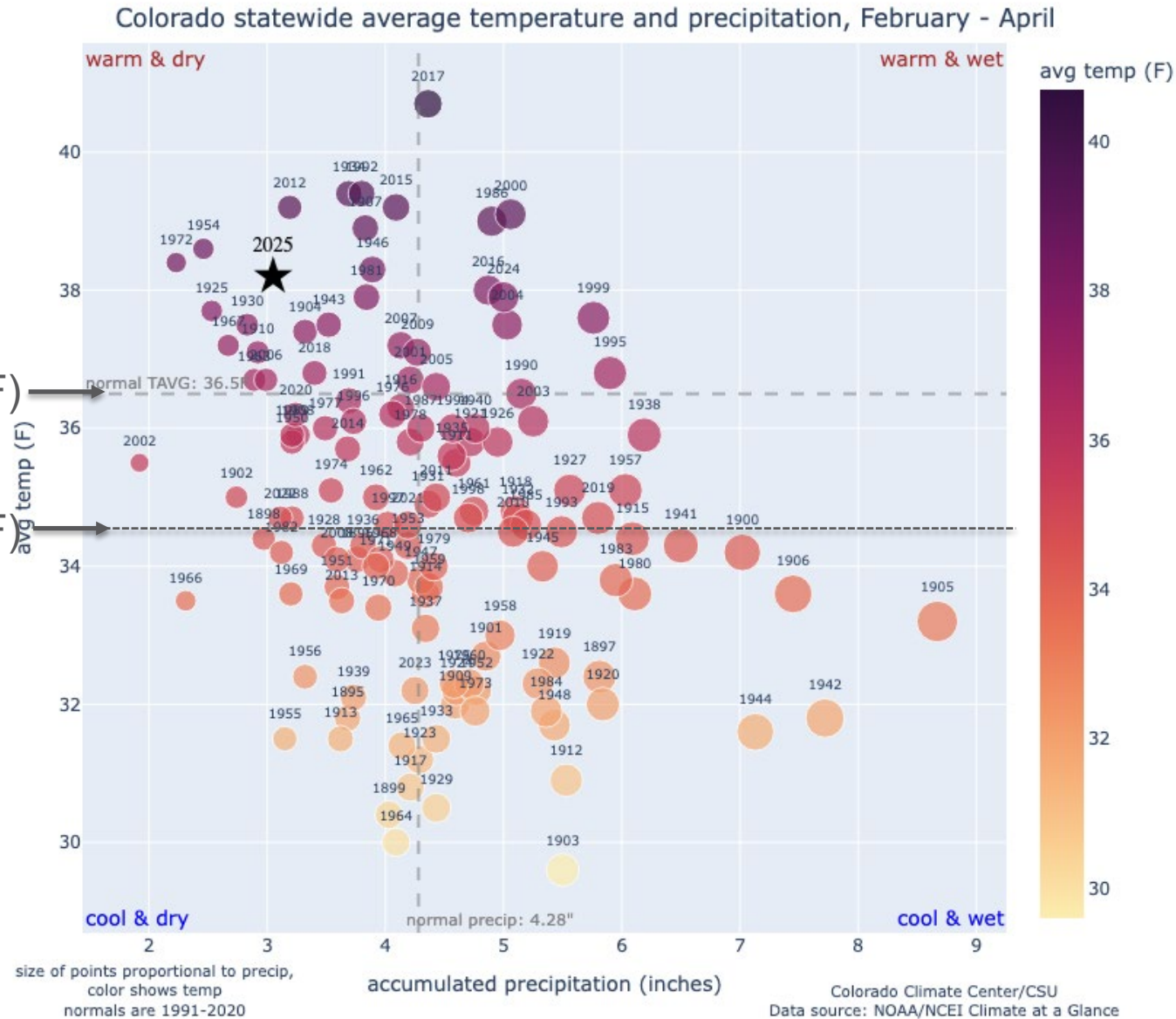
February through
April: notably warm
and dry

1991-2020 avg temp (36.5F)

1901-2000 avg temp (34.5F)

Cool & dry

Cool & wet

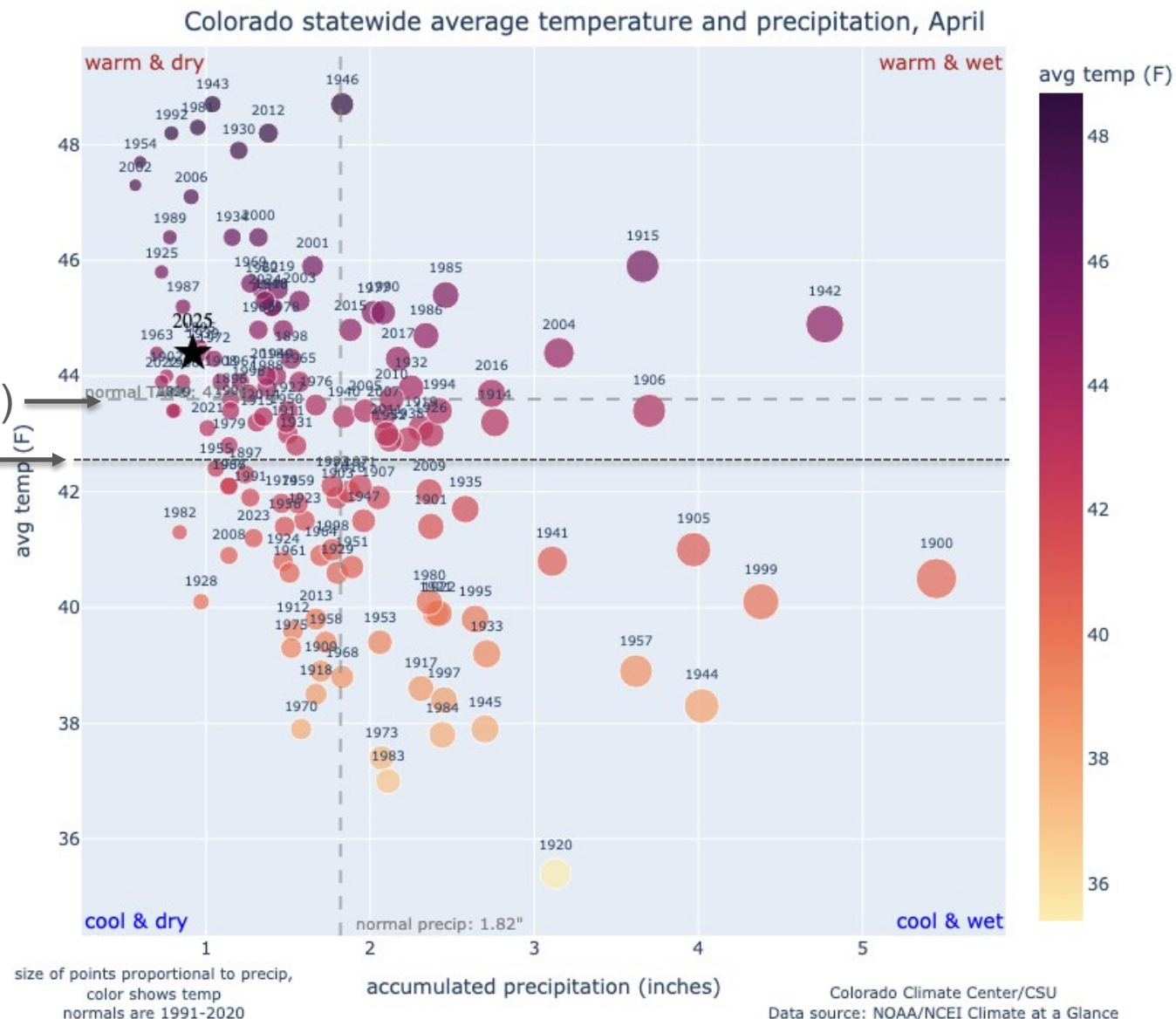


Warm & dry

April 2025

1991-2020 avg temp (43.6F) →
1901-2000 avg temp (42.5) →

Cool & dry



Warm & wet

April was only
slightly warmer than
30-year normal but
definitively drier
than average

Cool & wet



April 2025 and May so far

temperature, precipitation, & notable events



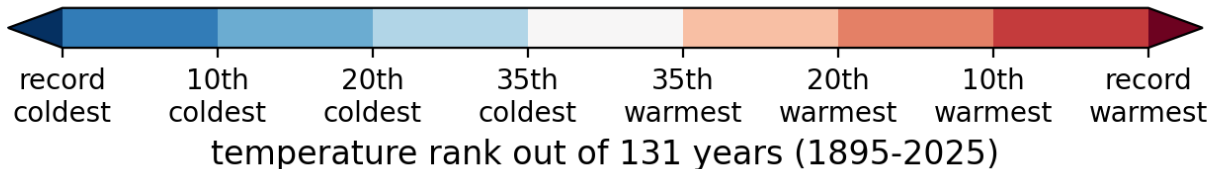
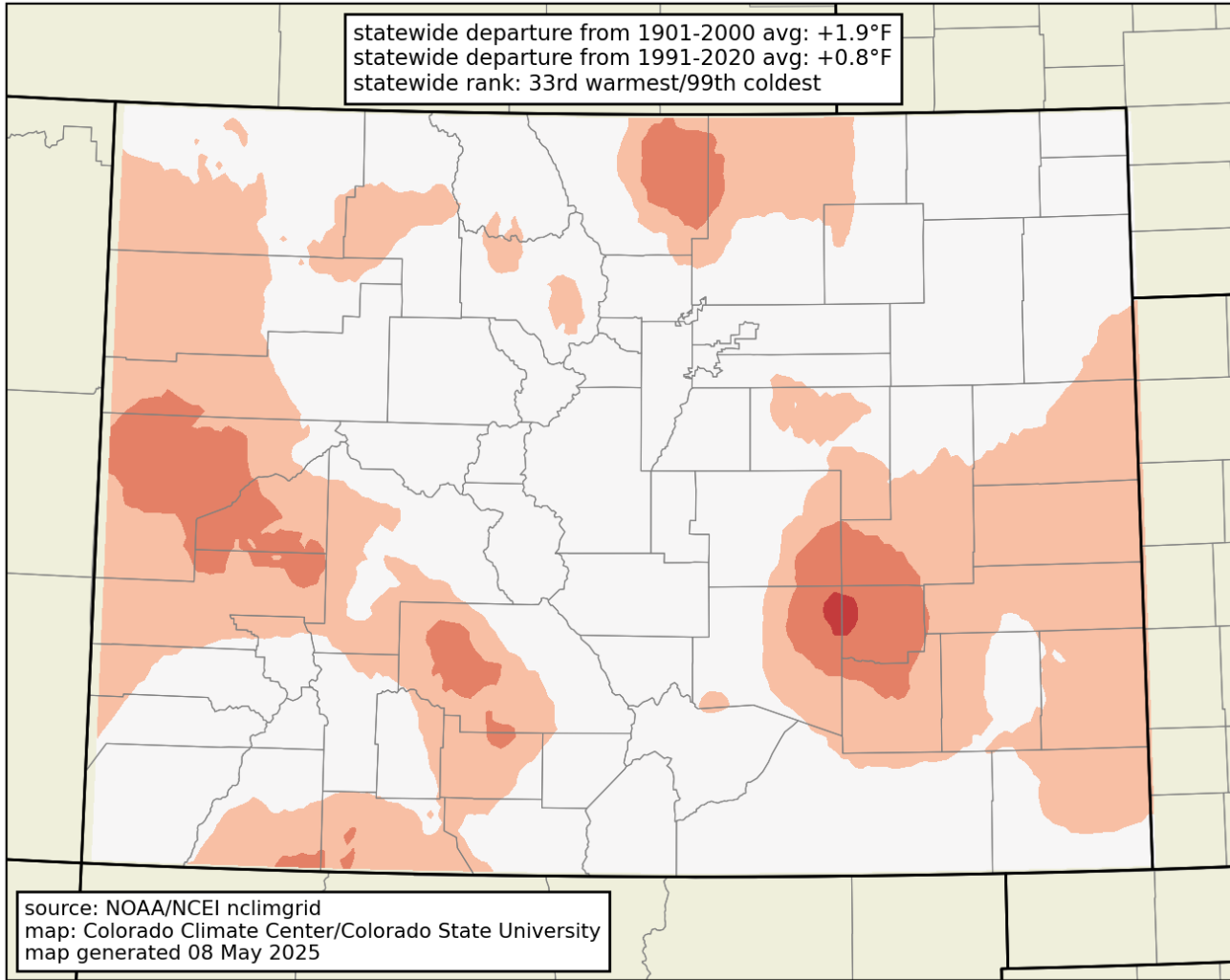
Tornado near Bennett, CO – May 18, 2025

Source: CDOT via [@myradar.bsky.social](https://twitter.com/myradar.bsky.social)



average temperature rank April 2025

statewide departure from 1901-2000 avg: +1.9°F
statewide departure from 1991-2020 avg: +0.8°F
statewide rank: 33rd warmest/99th coldest

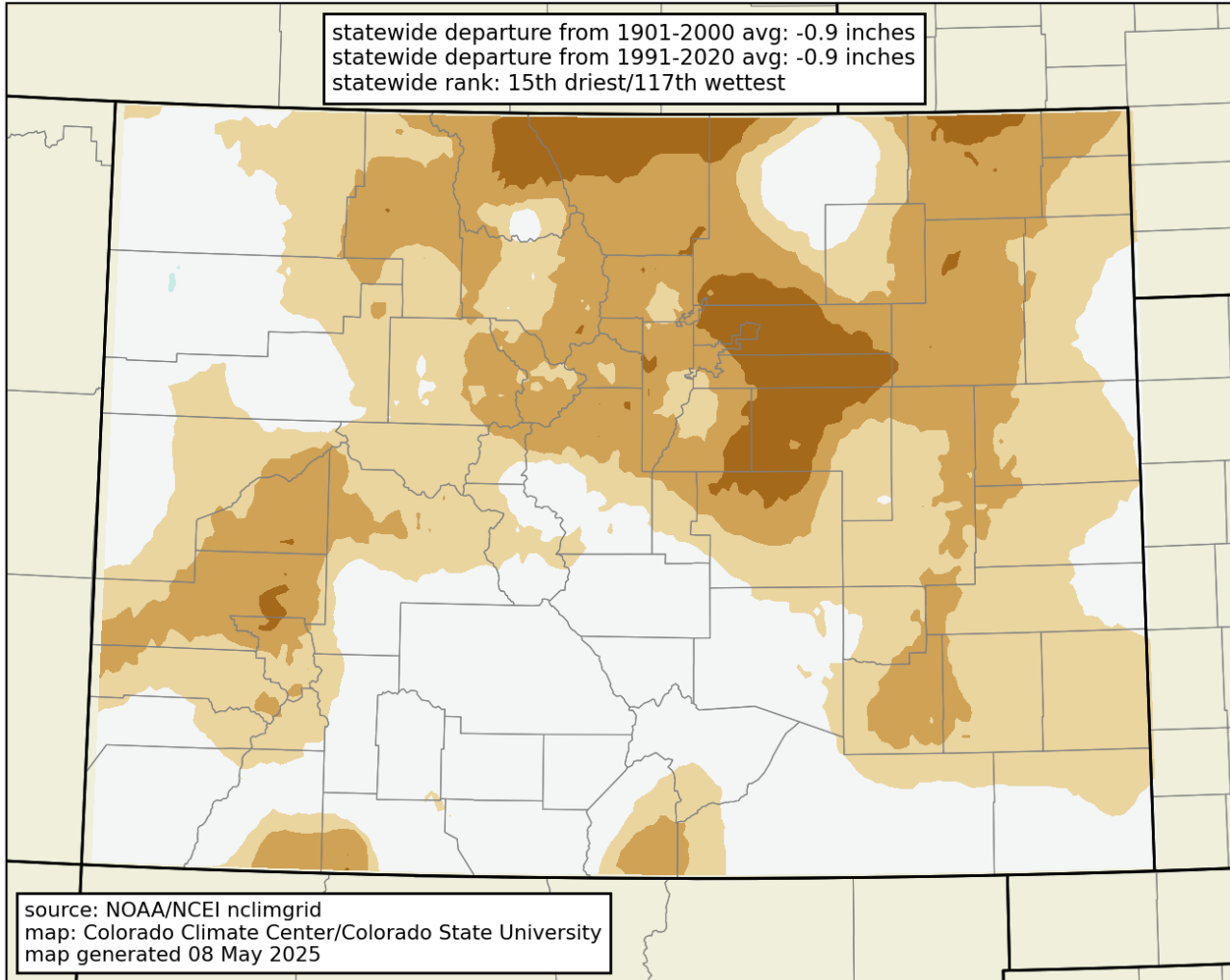


Slightly warmer than average April (33rd warmest on record), but generally unremarkable. Areas that stand out: West Slope, parts of the southeastern Plains, and Larimer/Weld counties.

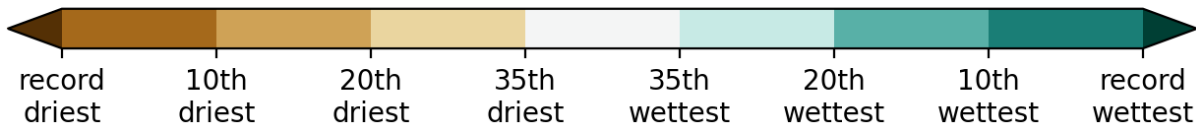
However, April featured some major temperature swings--we will recap those later!

precipitation rank
April 2025

statewide departure from 1901-2000 avg: -0.9 inches
statewide departure from 1991-2020 avg: -0.9 inches
statewide rank: 15th driest/117th wettest



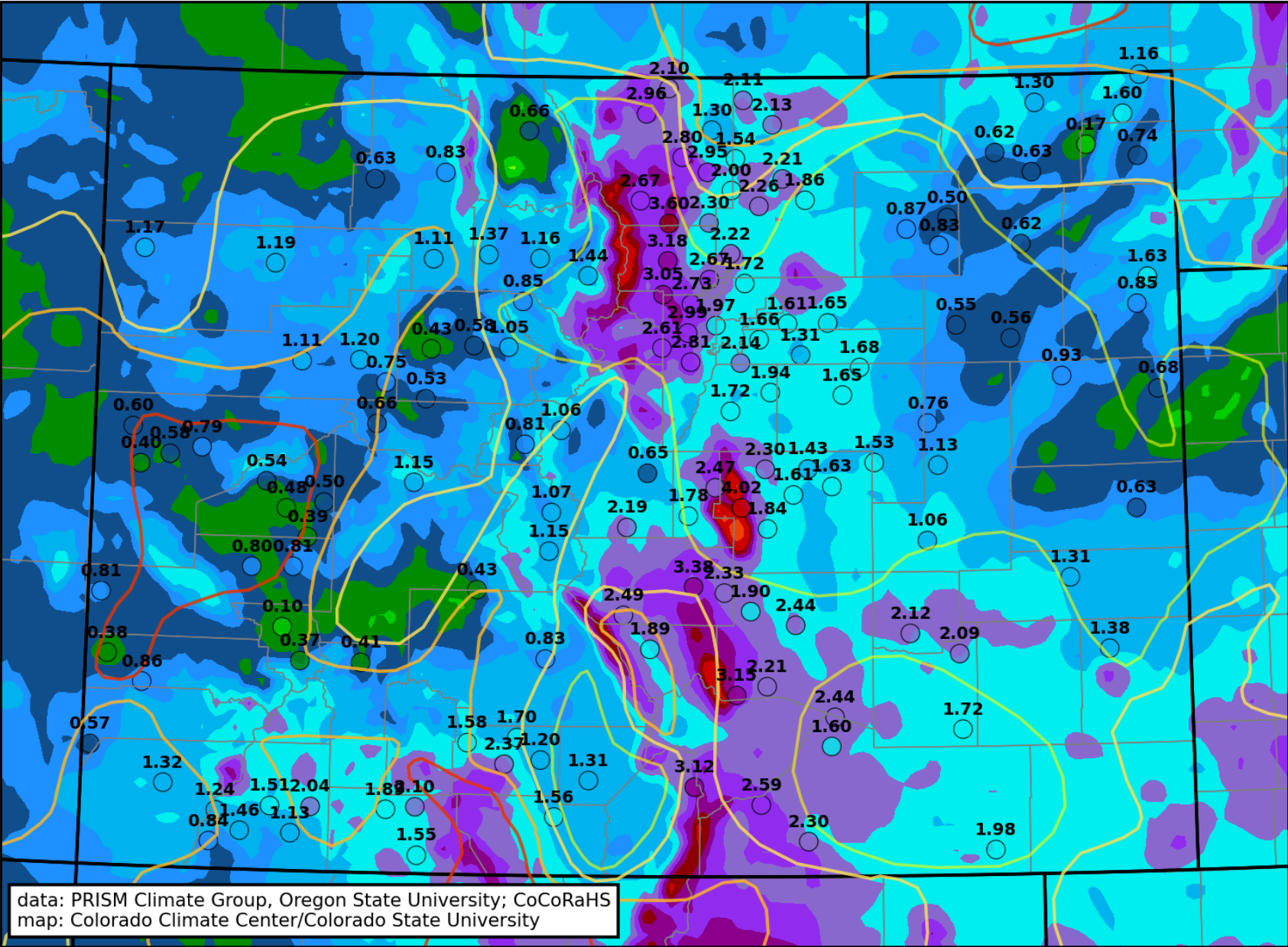
source: NOAA/NCEI nclimgrid
map: Colorado Climate Center/Colorado State University
map generated 08 May 2025



precipitation rank out of 131 years (1895-2025)

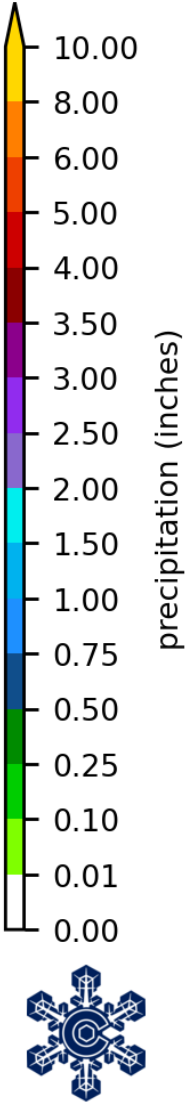
April precipitation was below average for a decent chunk of the state—worst deficits on the plains east of Denver, West Slope, and north central CO

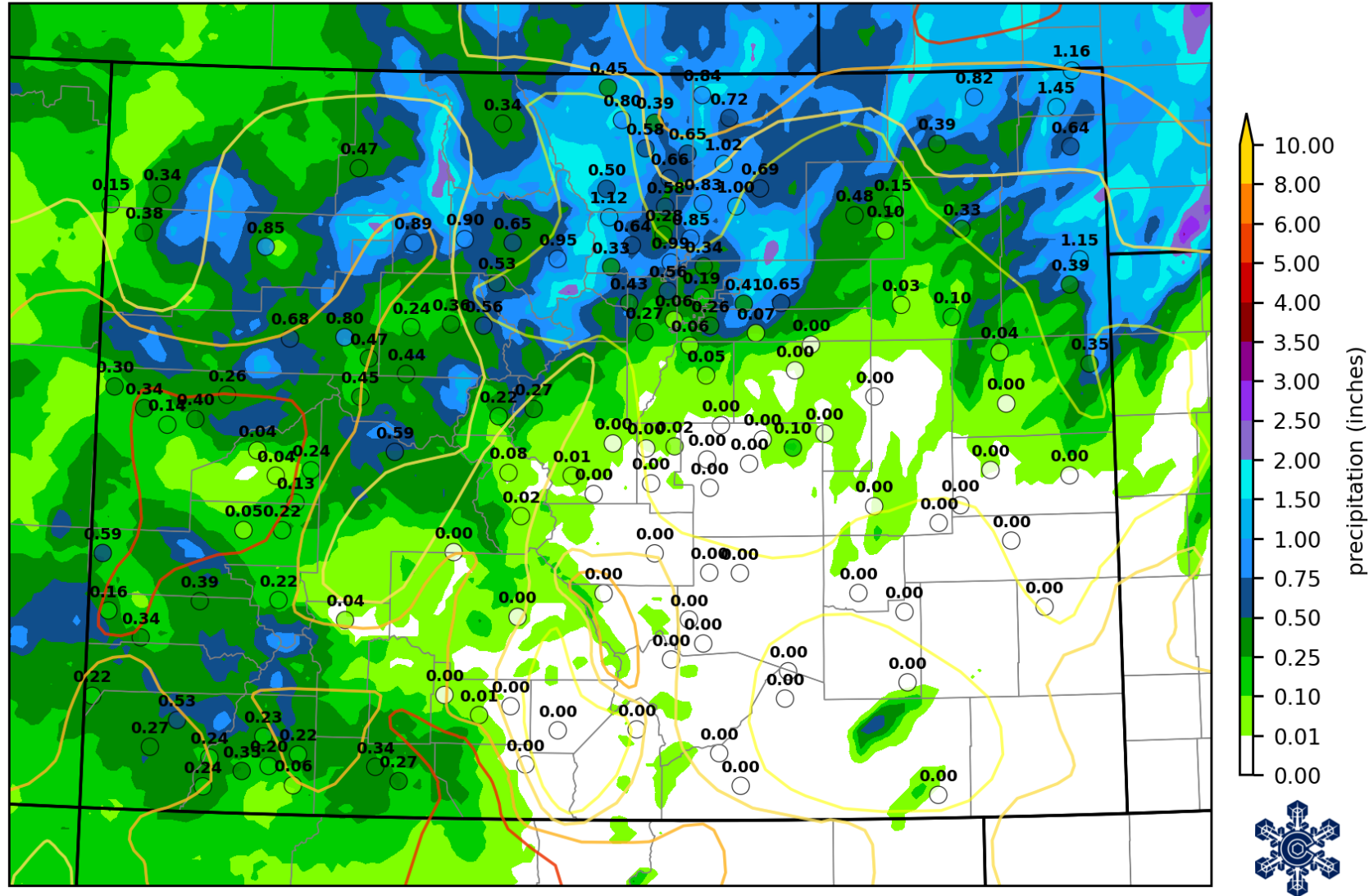
7th-straight drier than average April



May precipitation
through Monday
morning (19th)

Lots of beneficial
precipitation across
the Front Range,
Sangre de Cristos,
SE CO

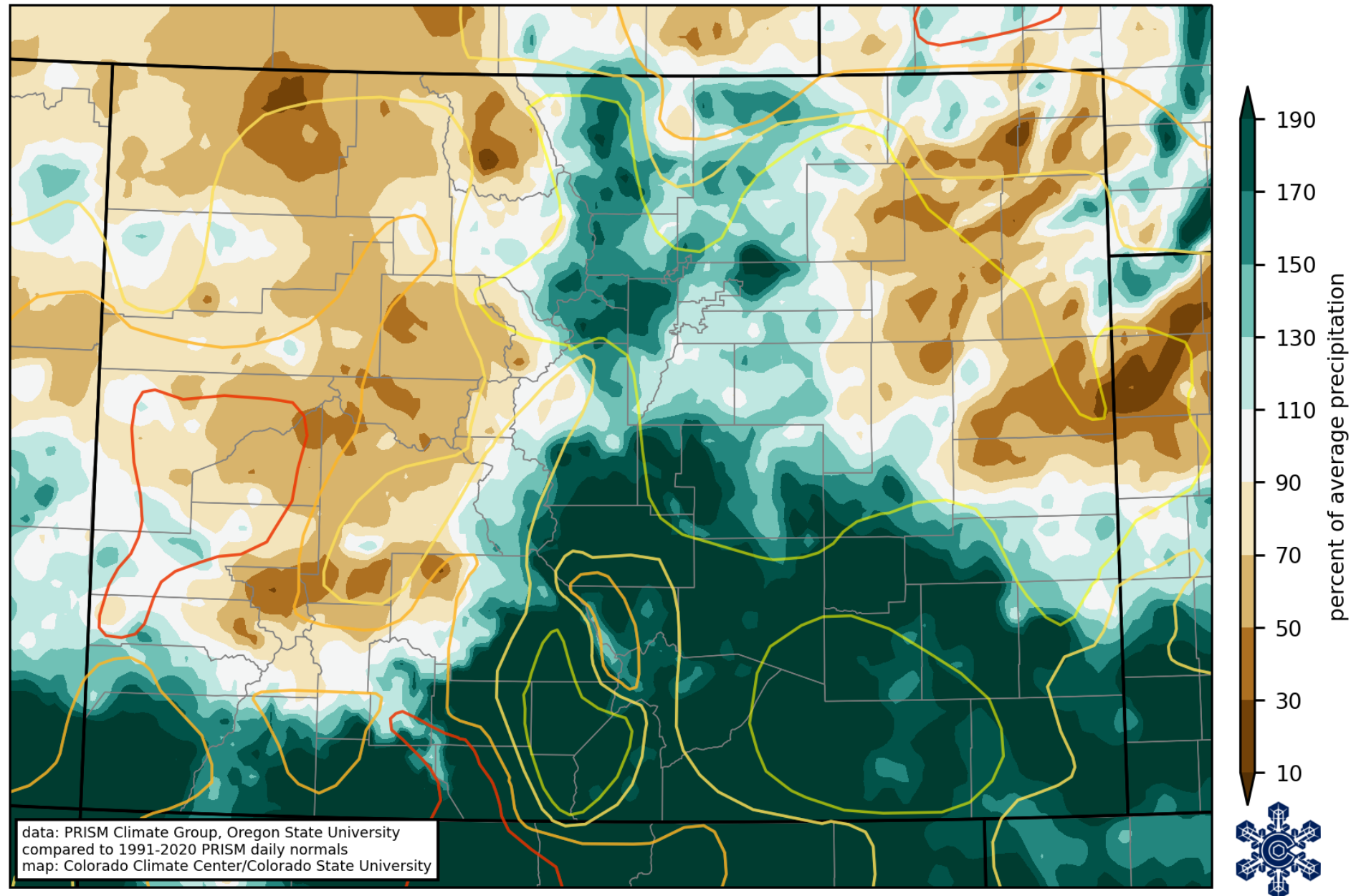




Precipitation over the past ~week

Northeast and north-central CO saw beneficial rainfall from thunderstorms—average April rainfall is ~2.5-3 inches across NE CO

Meager rainfall amounts across the western slope but not enough to be drought-busting



**May percent of
normal precipitation
through Monday the
19th**

**Precip across the
southern part of the
state has been
running above
average for May
thanks to the
rain/snow event
earlier this month**

**Despite Sunday's
storms, still running
behind in May
precip across NE
CO**



May is typically the wettest month for NE Colorado

month of maximum average precipitation

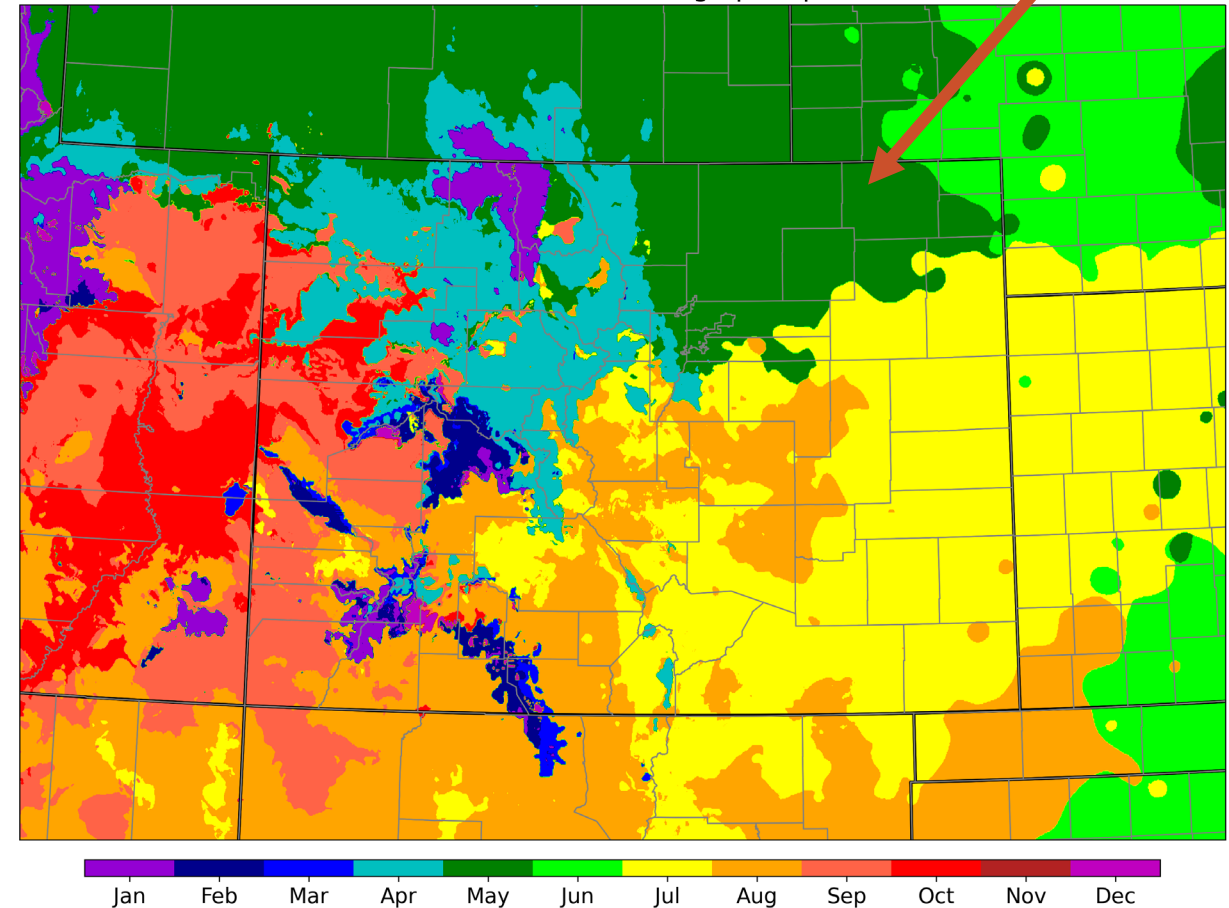
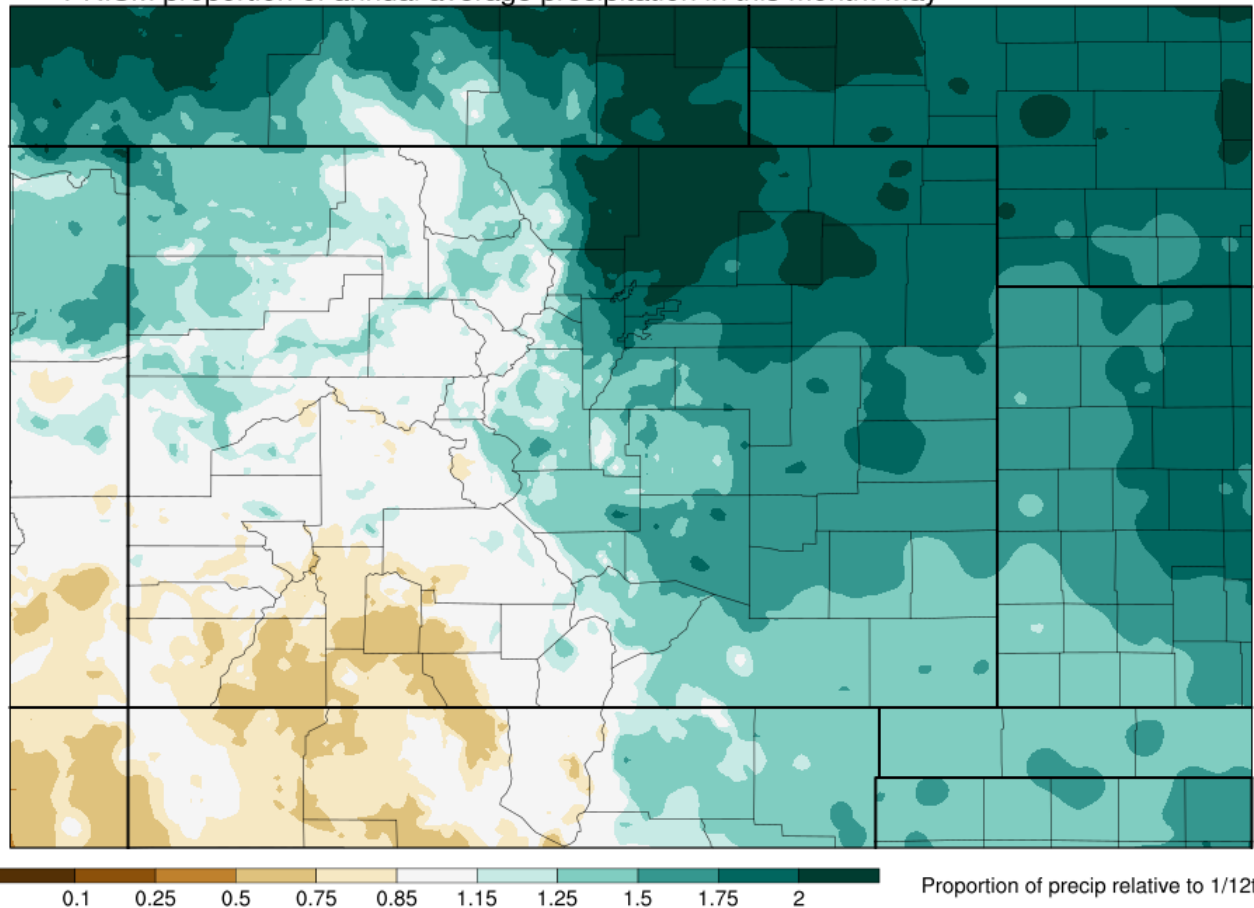


Figure: Russ Schumacher/Colorado Climate Center
Data: PRISM climate group (prism.oregonstate.edu), 1991-2020 normals

PRISM proportion of annual average precipitation in this month: May

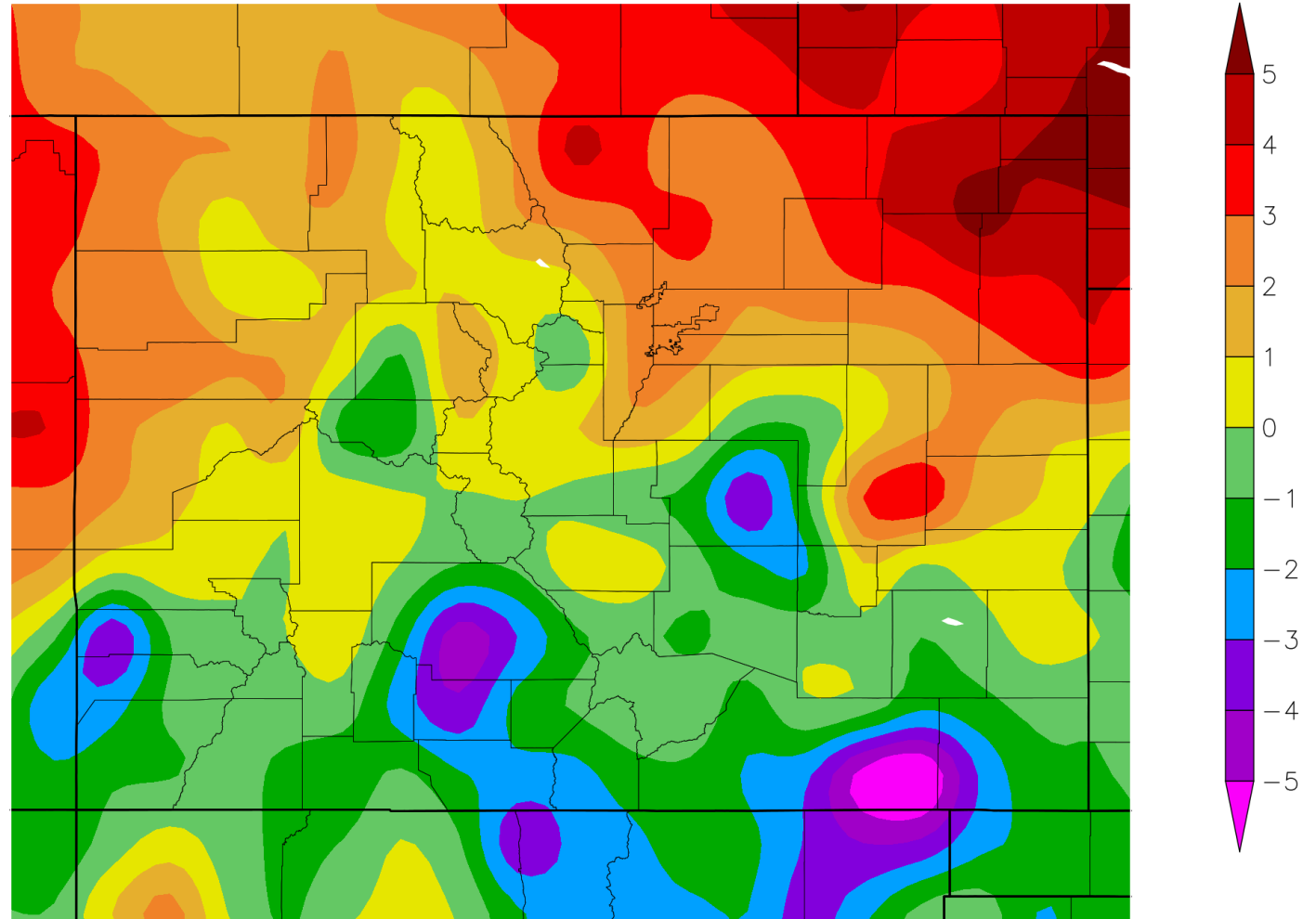


data: 1991-2020 normals, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
map: Russ Schumacher/Colorado Climate Center/Colorado State University

Departure from Normal Temperature (F)
5/1/2025 – 5/19/2025

**May departure from
normal temperature
through the 18th**

**Warmer than
average over the
north (esp. NE),
cooler than average
to the south**



Generated 5/20/2025 using provisional data.

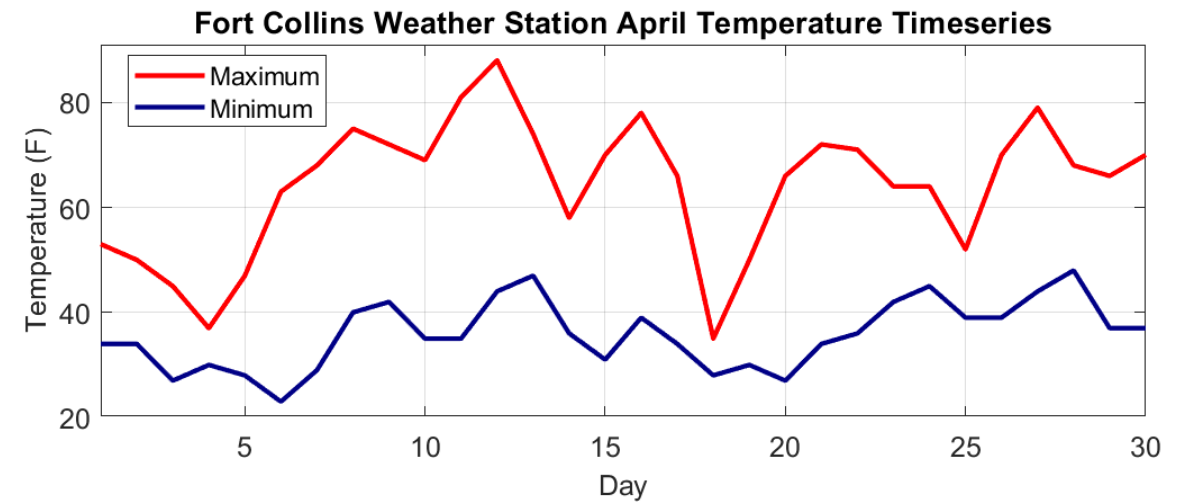
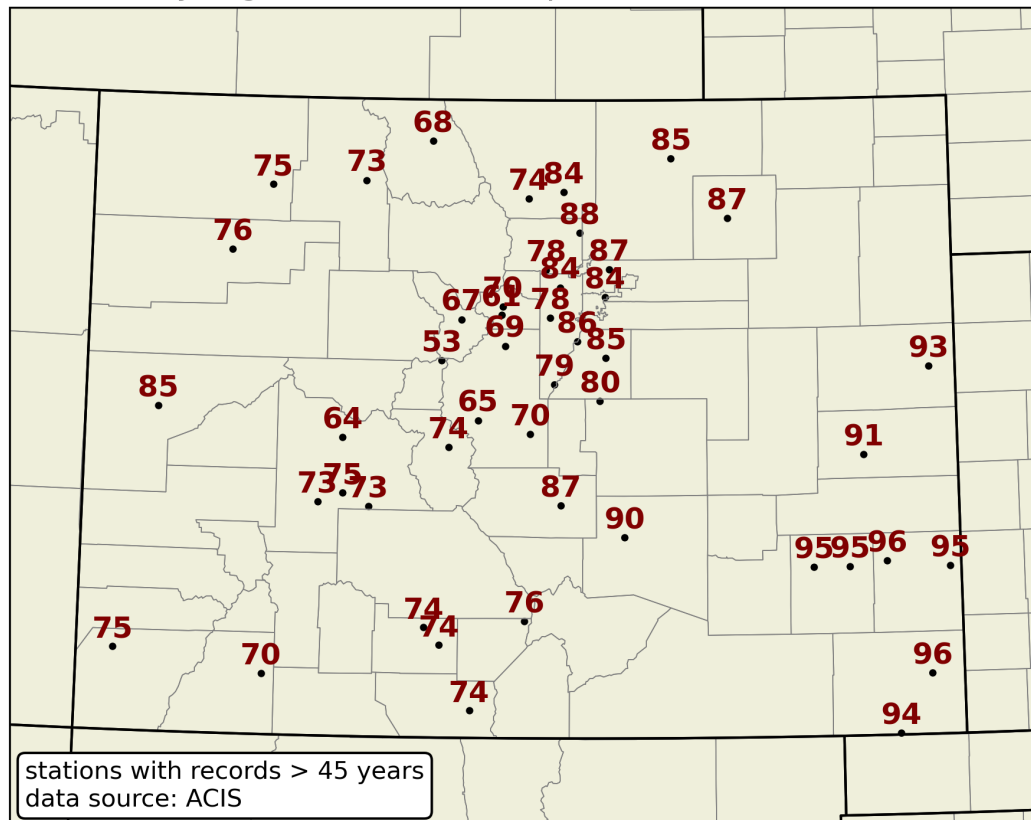
ACIS Web Services



Temperature swings

Record-high April temperatures, followed by snow less than a week later

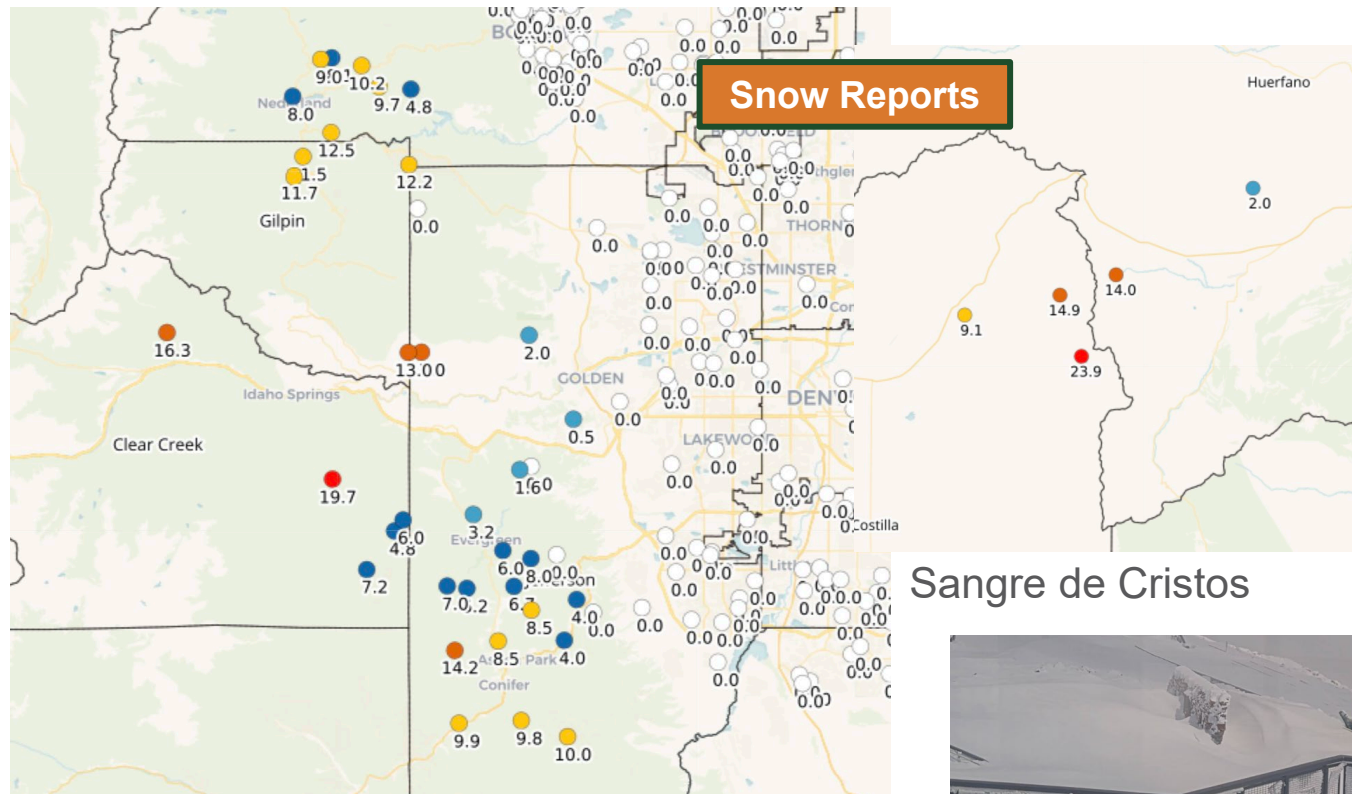
record daily high maximum temperatures for 2025-04-13 (°F)



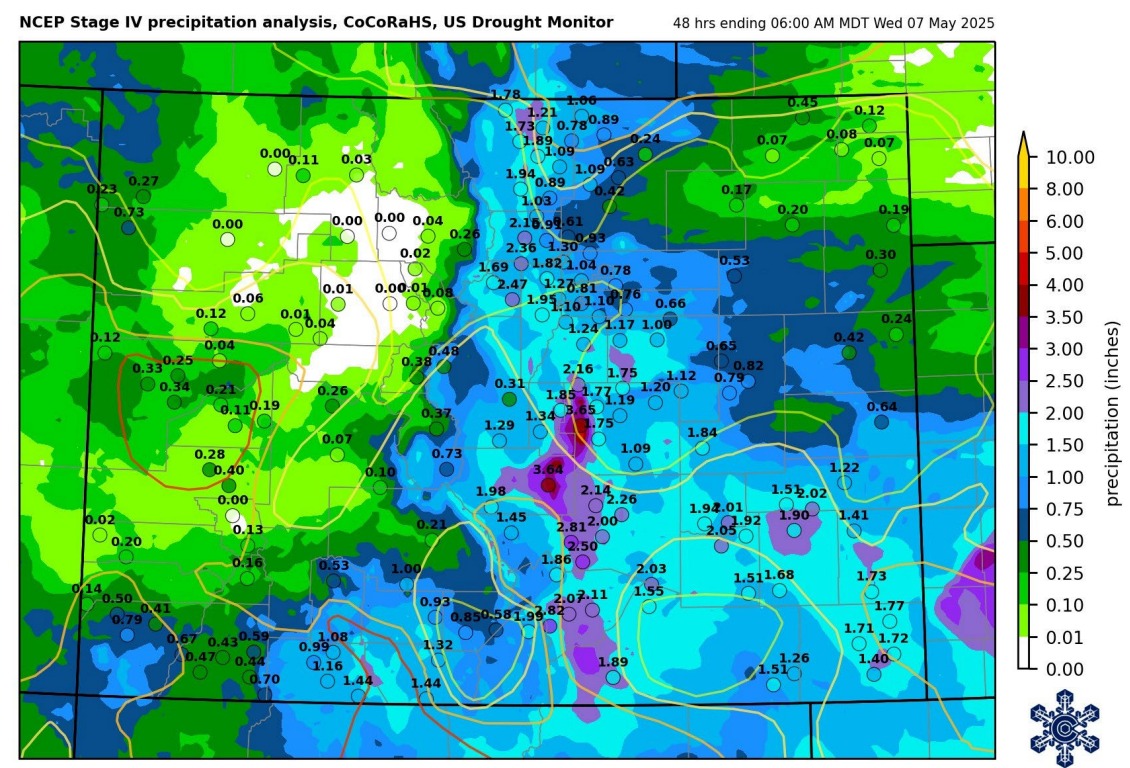
I-70 on April 18 (source: CDOT)



Spring rain & snow (May 5-7)



Foothills west of Denver



May 5-7 Precipitation



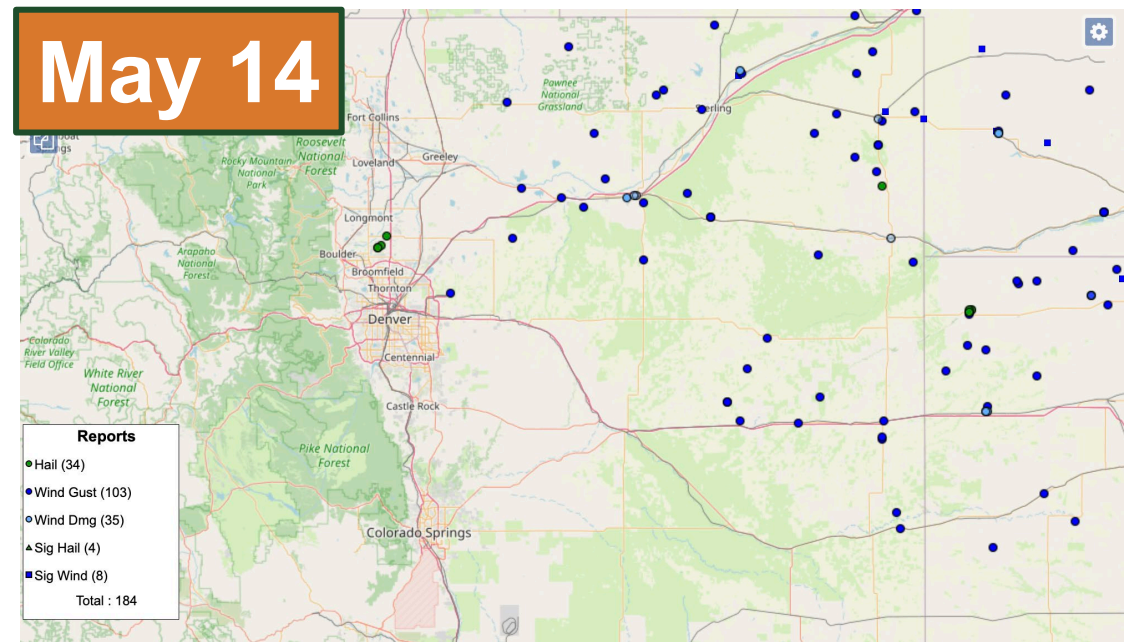
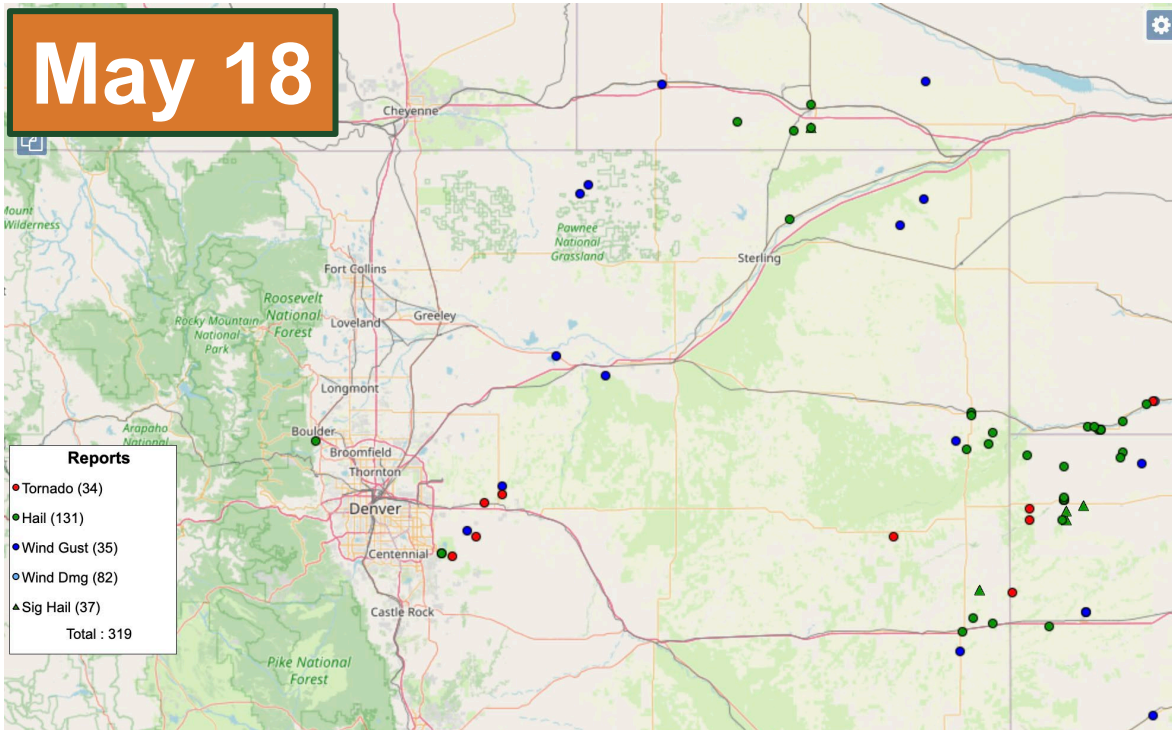
Pikes Peak Webcam
May 8, 2025

Source: City of Colorado Springs/Powder

<https://maps.cocorahs.org/>

Spring storms

Reports of tornadoes, winds > 58mph, hail > 1in



Includes measured “significant severe” (75mph+) gusts of 79 mph & 86 mph in Phillips county. Second-most number of wind reports for a single day in CO (second to the June 2020 derecho)



Tree damage in Holyoke on May 15

Source: [Instagram/@kjb2711](https://www.instagram.com/kjb2711)

<https://www.spc.noaa.gov/exper/reports/>

Drought conditions

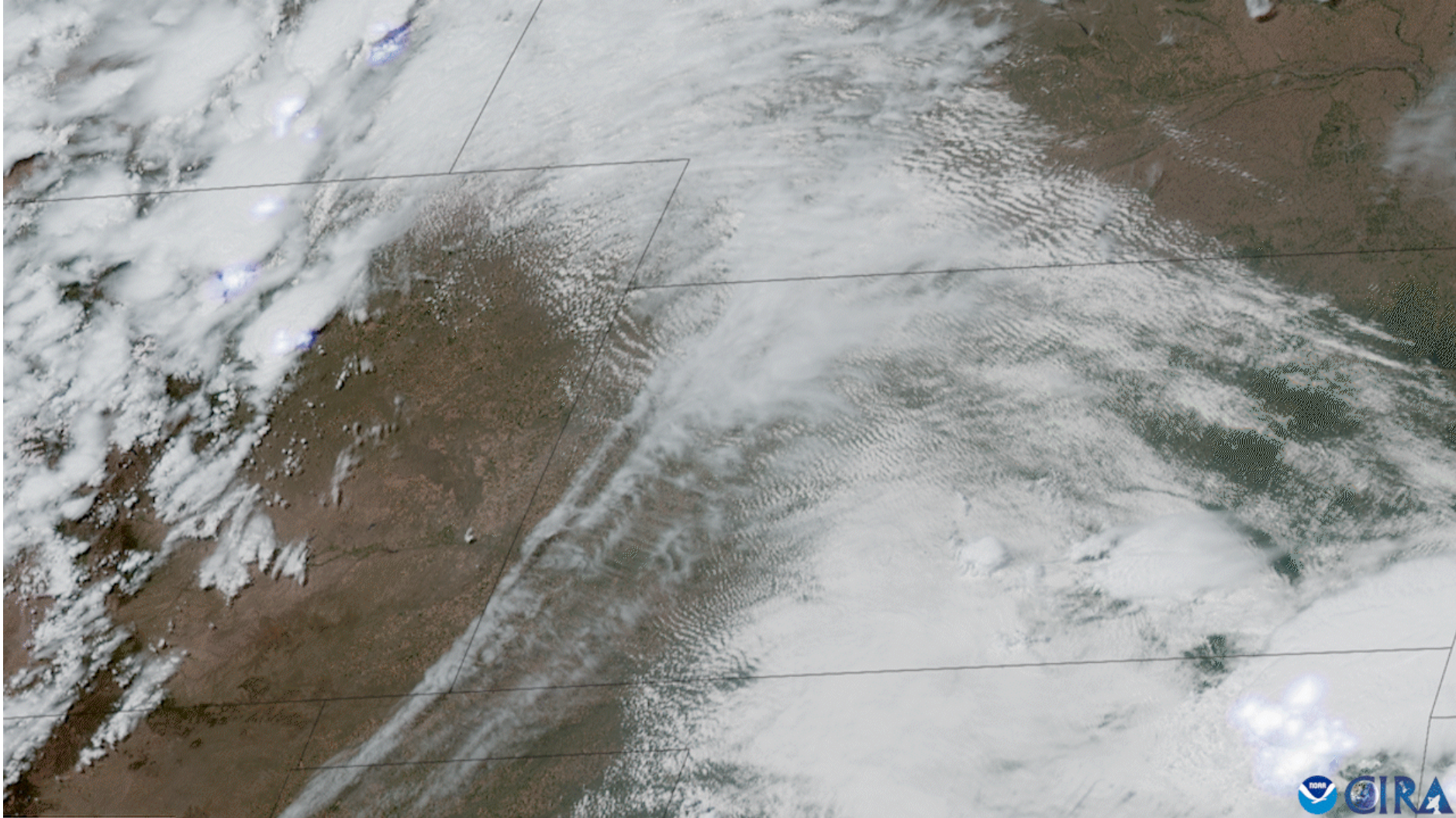


Image: CIRA/CSU & NOAA

<https://satlib.cira.colostate.edu/event/mid-may-severe-weather/>

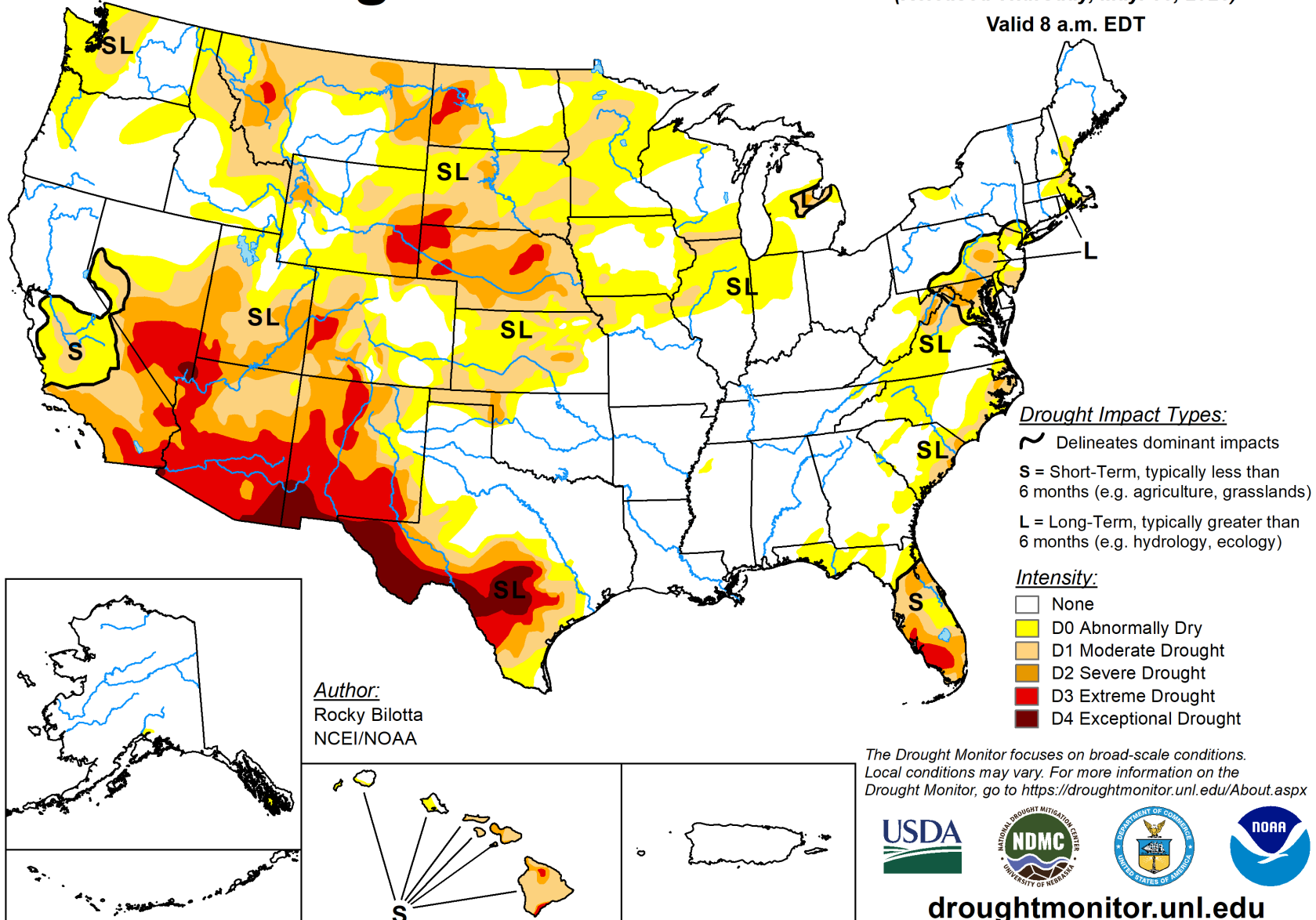


U.S. Drought Monitor

May 13, 2025

(Released Thursday, May. 15, 2025)

Valid 8 a.m. EDT



U.S. Drought Monitor Colorado

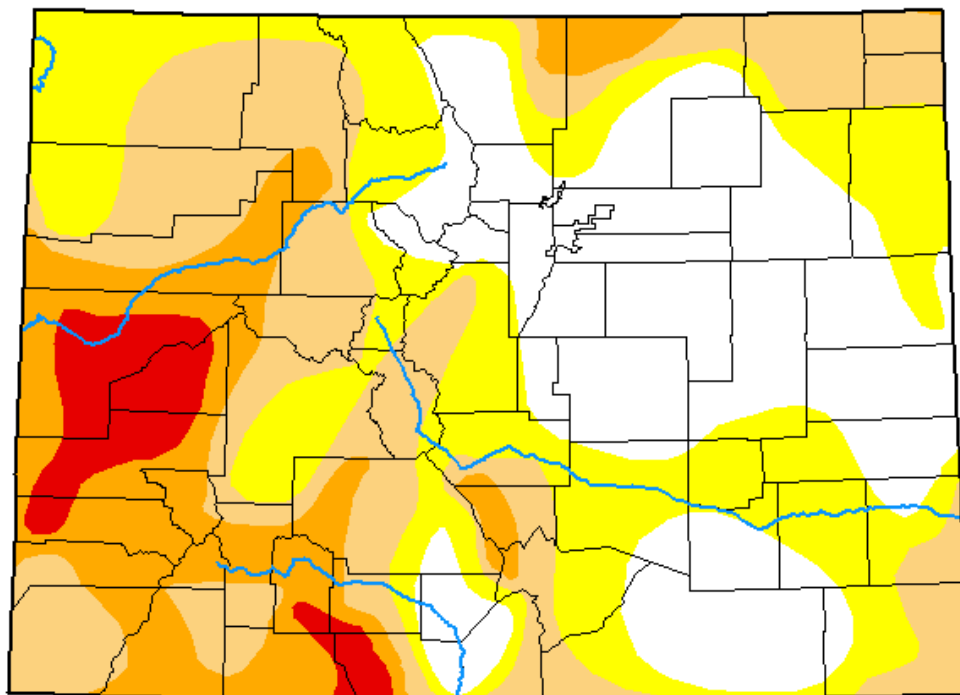
May 13, 2025

(Released Thursday, May. 15, 2025)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	29.59	70.41	43.15	18.58	4.54	0.00
Last Week <i>05-06-2025</i>	25.43	74.57	44.70	16.47	3.81	0.00
3 Months Ago <i>02-11-2025</i>	53.45	46.55	24.27	7.08	0.98	0.00
Start of Calendar Year <i>01-07-2025</i>	71.40	28.60	10.78	4.08	0.98	0.00
Start of Water Year <i>10-01-2024</i>	48.27	51.73	24.40	4.62	0.00	0.00
One Year Ago <i>05-14-2024</i>	60.34	39.66	9.02	1.41	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:

Rocky Bilotta
NCEI/NOAA

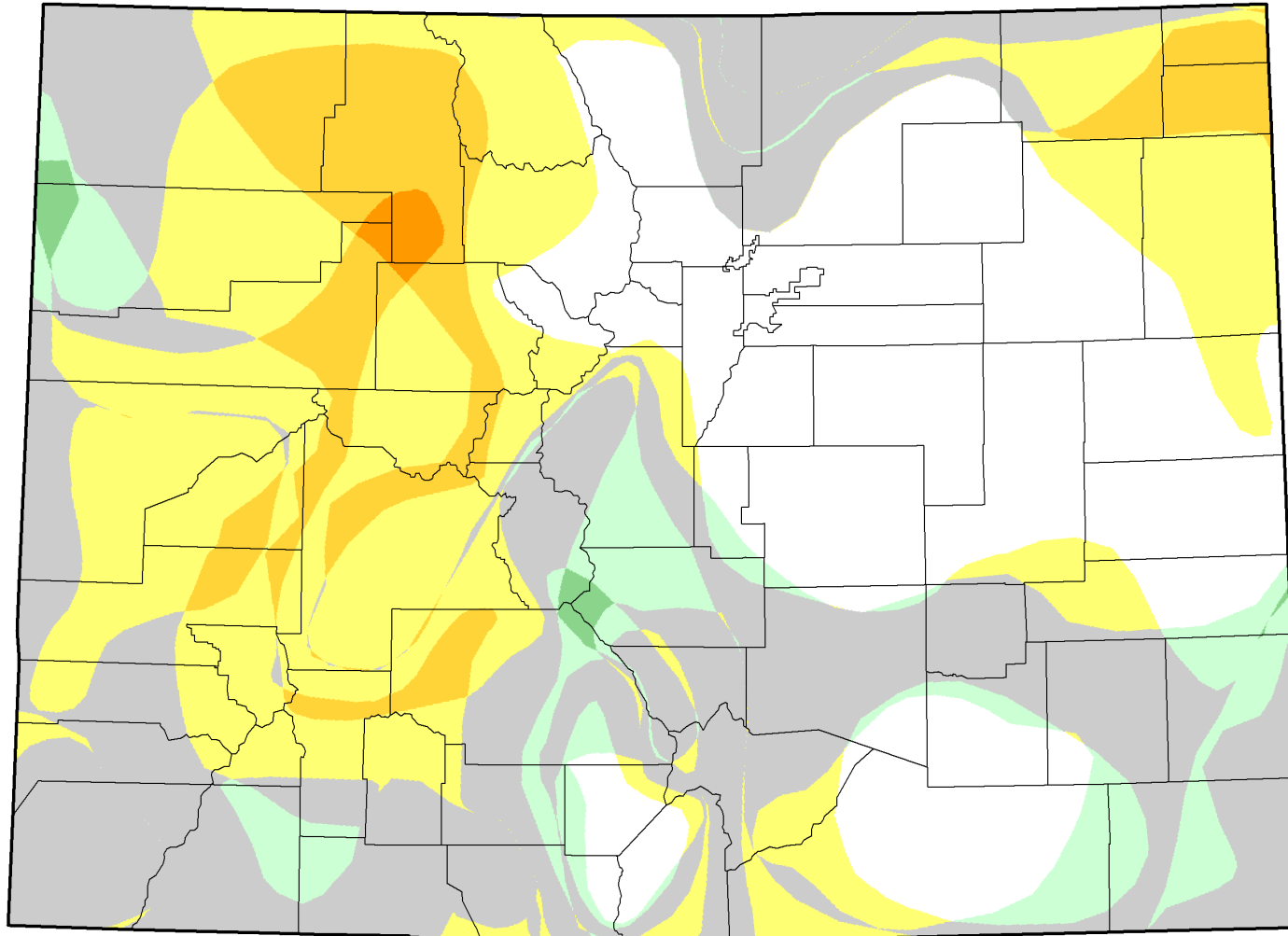


droughtmonitor.unl.edu



U.S. Drought Monitor Class Change - Colorado 6 Week

Change since
beginning
April



May 13, 2025
compared to
April 1, 2025

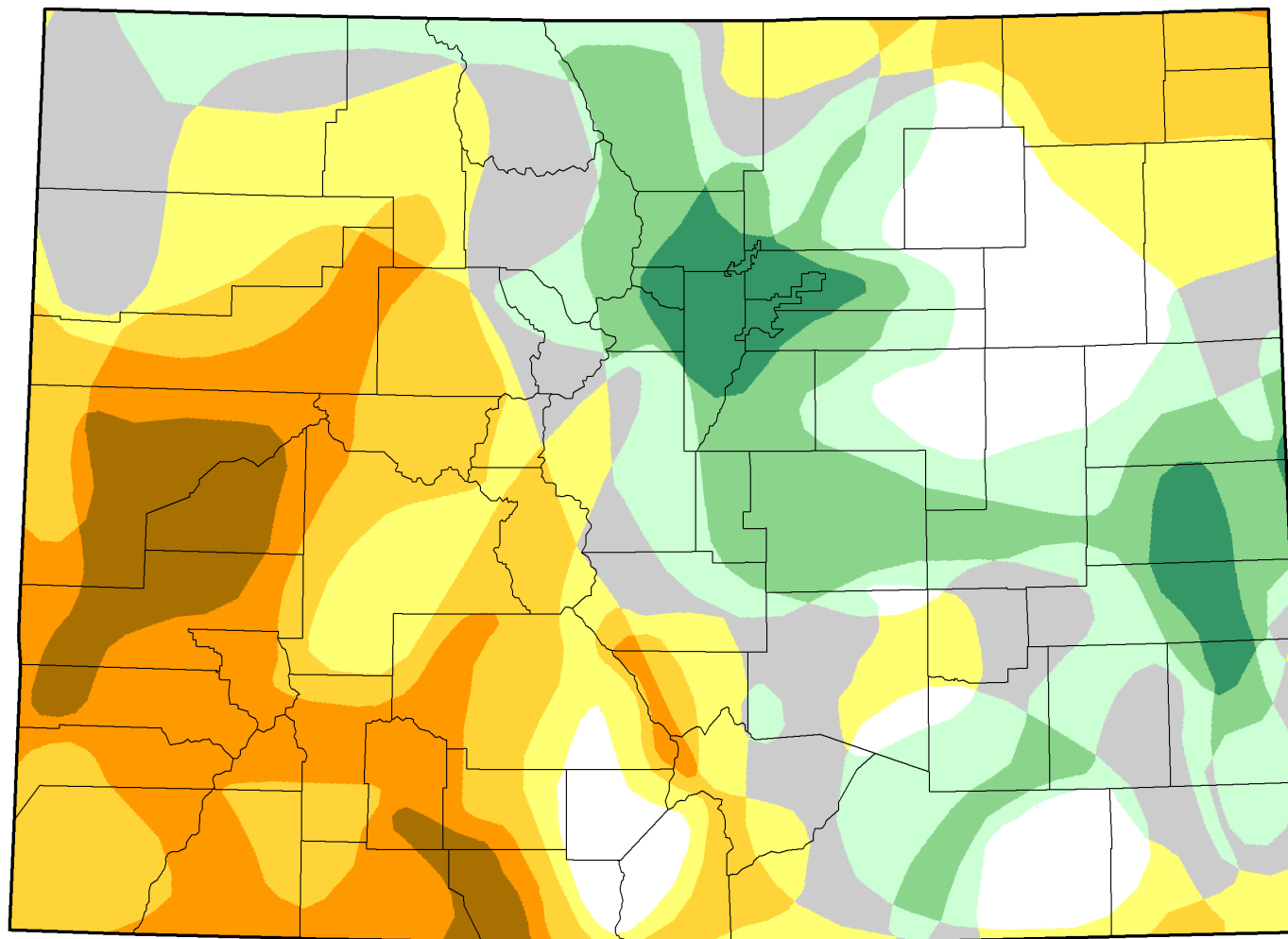
droughtmonitor.unl.edu



- 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

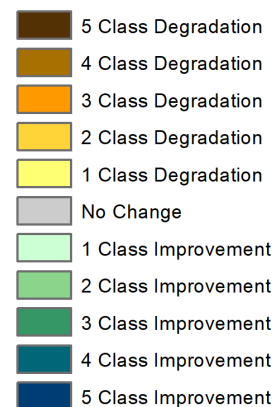


U.S. Drought Monitor Class Change - Colorado Start of Water Year



May 13, 2025
compared to
October 1, 2024

droughtmonitor.unl.edu

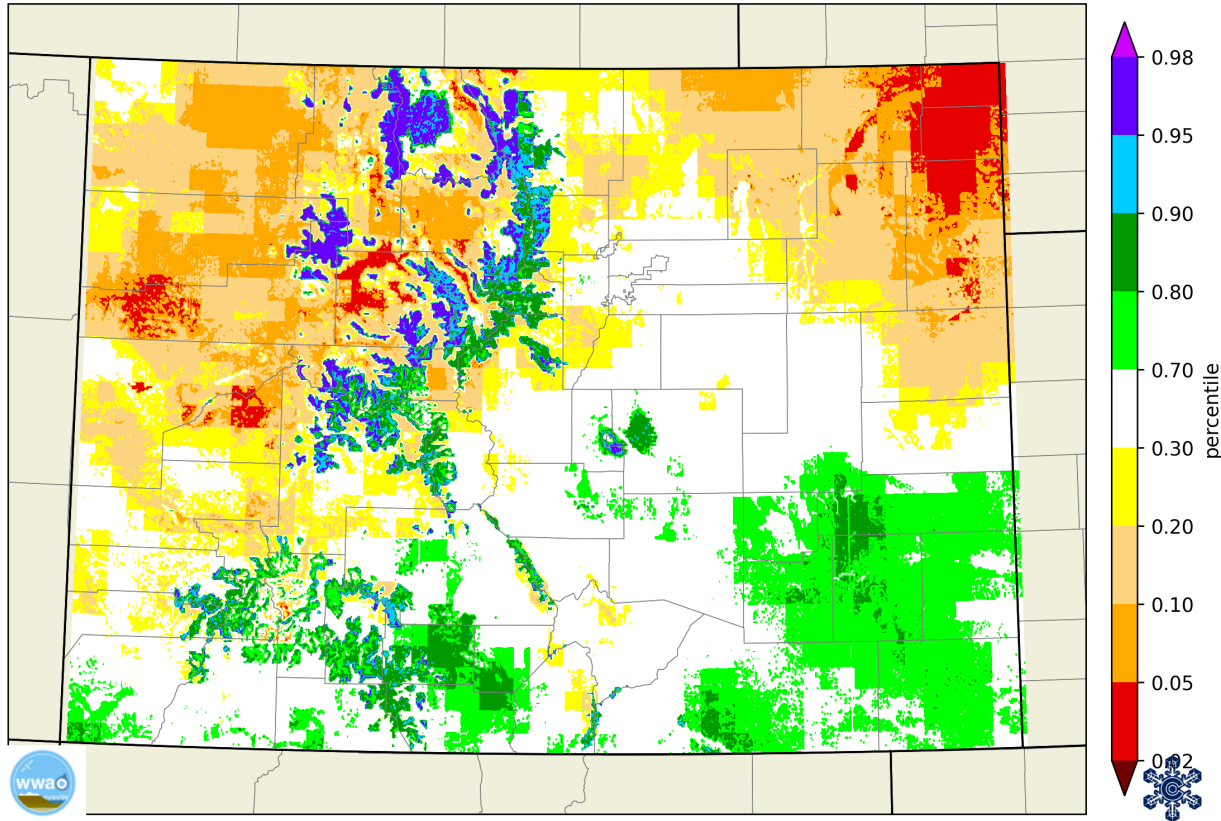


Change since beginning of the Water Year

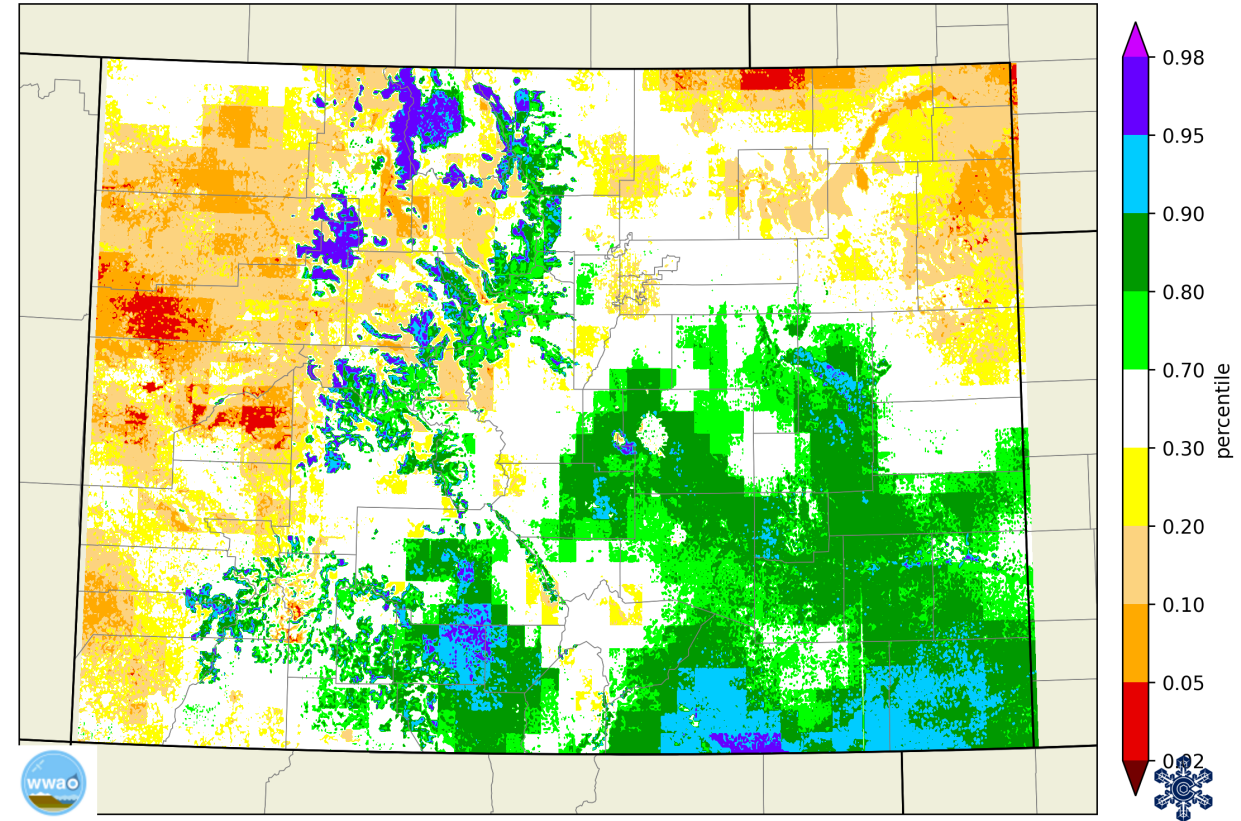
Worsening conditions in western CO, improvements over the Front Range



WLDAS 10-cm Soil moisture percentile, 15 May 2025



WLDAS 1-meter Soil moisture percentile, 15 May 2025

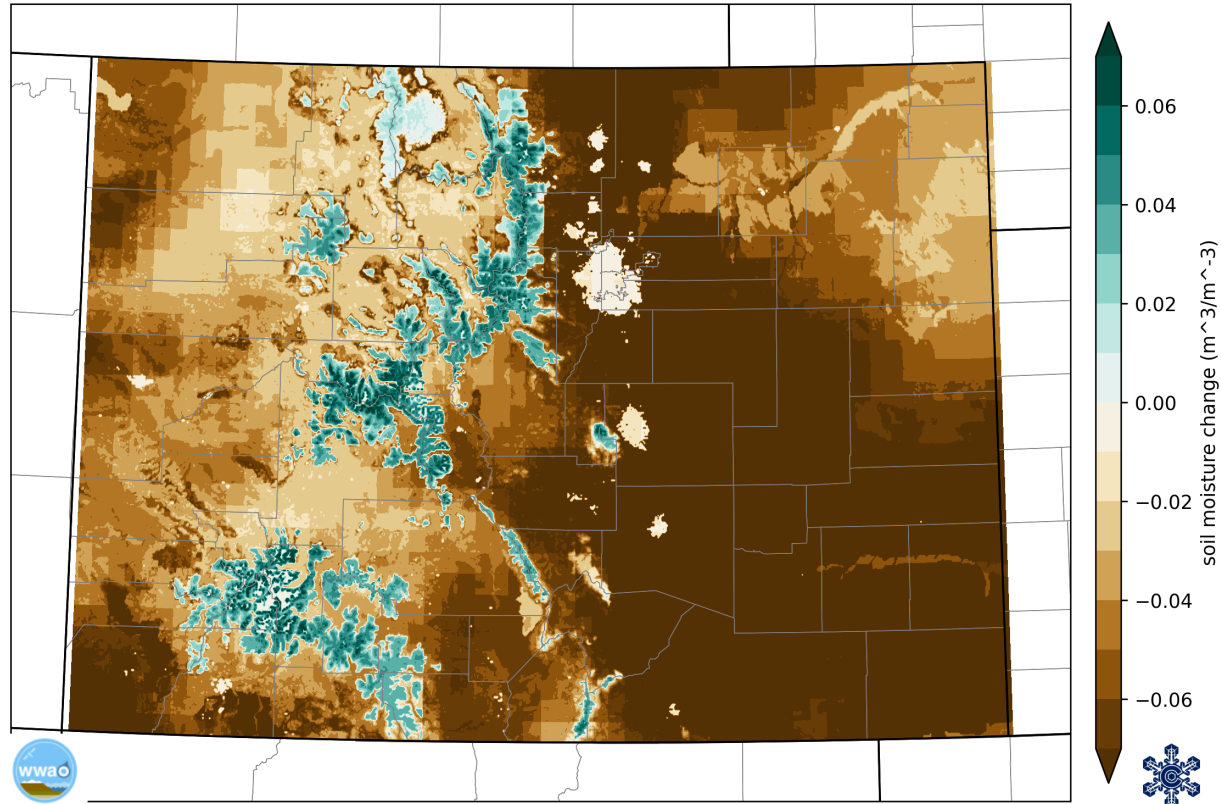


Soil moisture decreasing in NE Colorado, decent in the SE from early May precip.

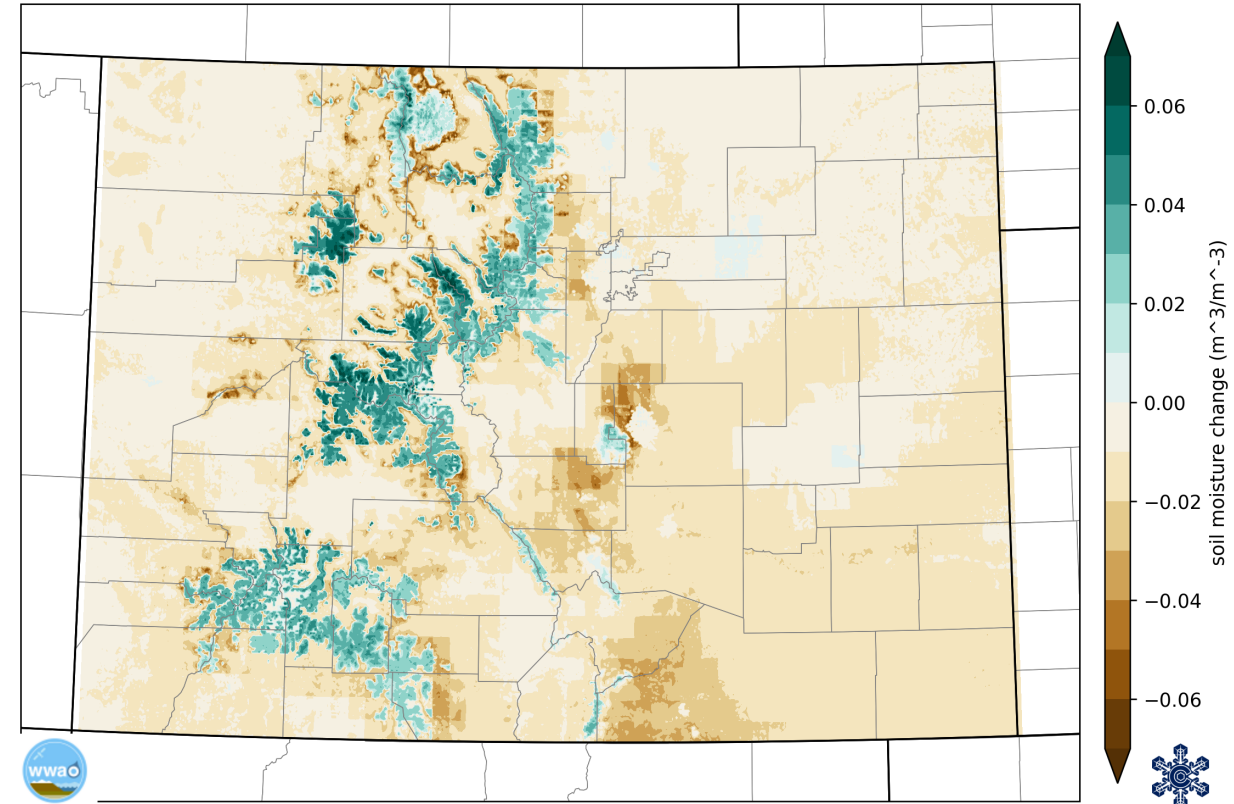
Low values remain in the west.



WLDAS 7-day change in 10-cm soil moisture, 15 May 2025



WLDAS 7-day change in 1-meter soil moisture, 15 May 2025



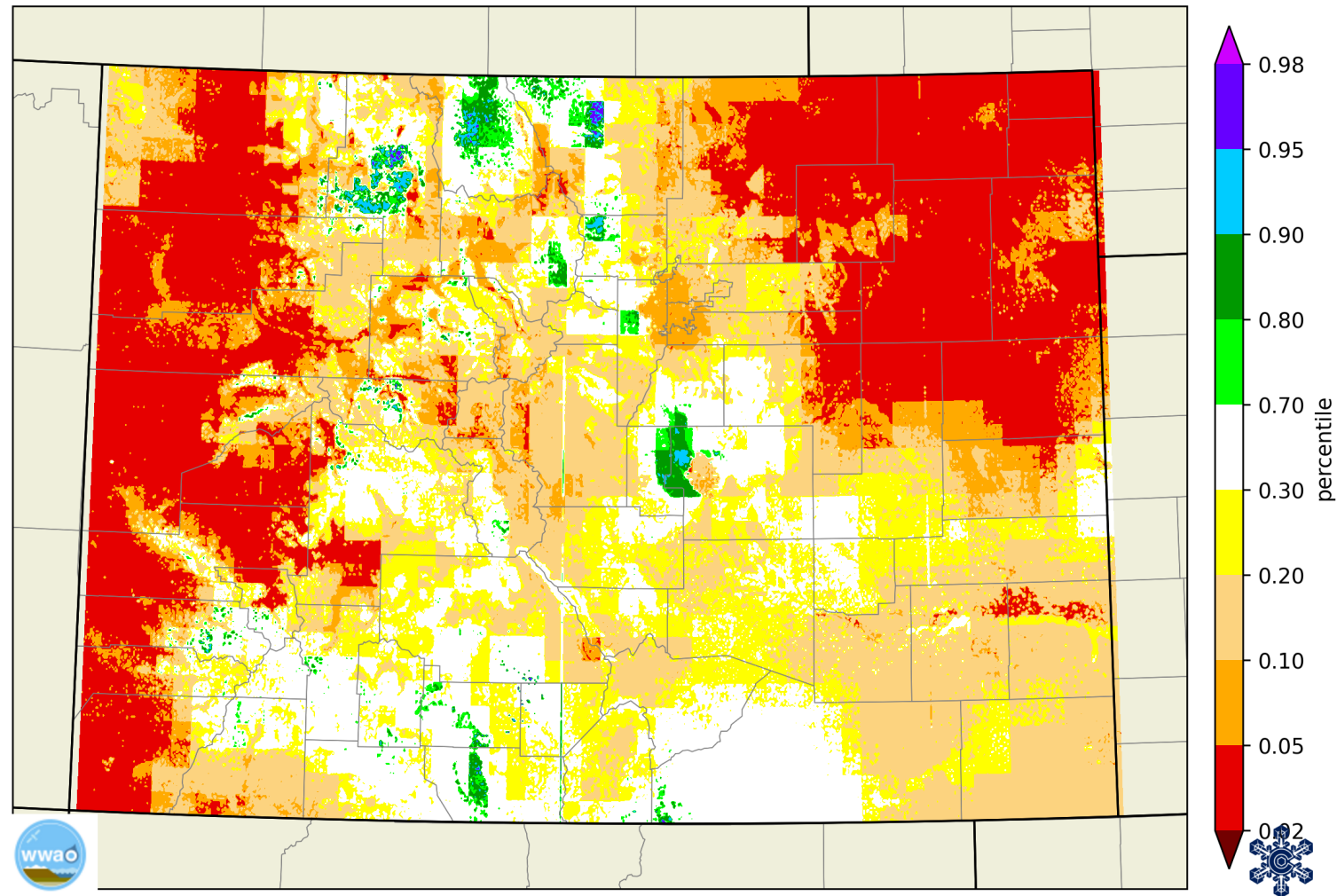
Change in 10-cm and 1-m soil moisture— new graphics on our website!

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

Increasing soil moisture over the high terrain due to snowmelt; drying out elsewhere



WLDAS Terrestrial Water Storage percentile, 15 May 2025



Terrestrial water storage: ground water + soil moisture + snowpack





Outlook

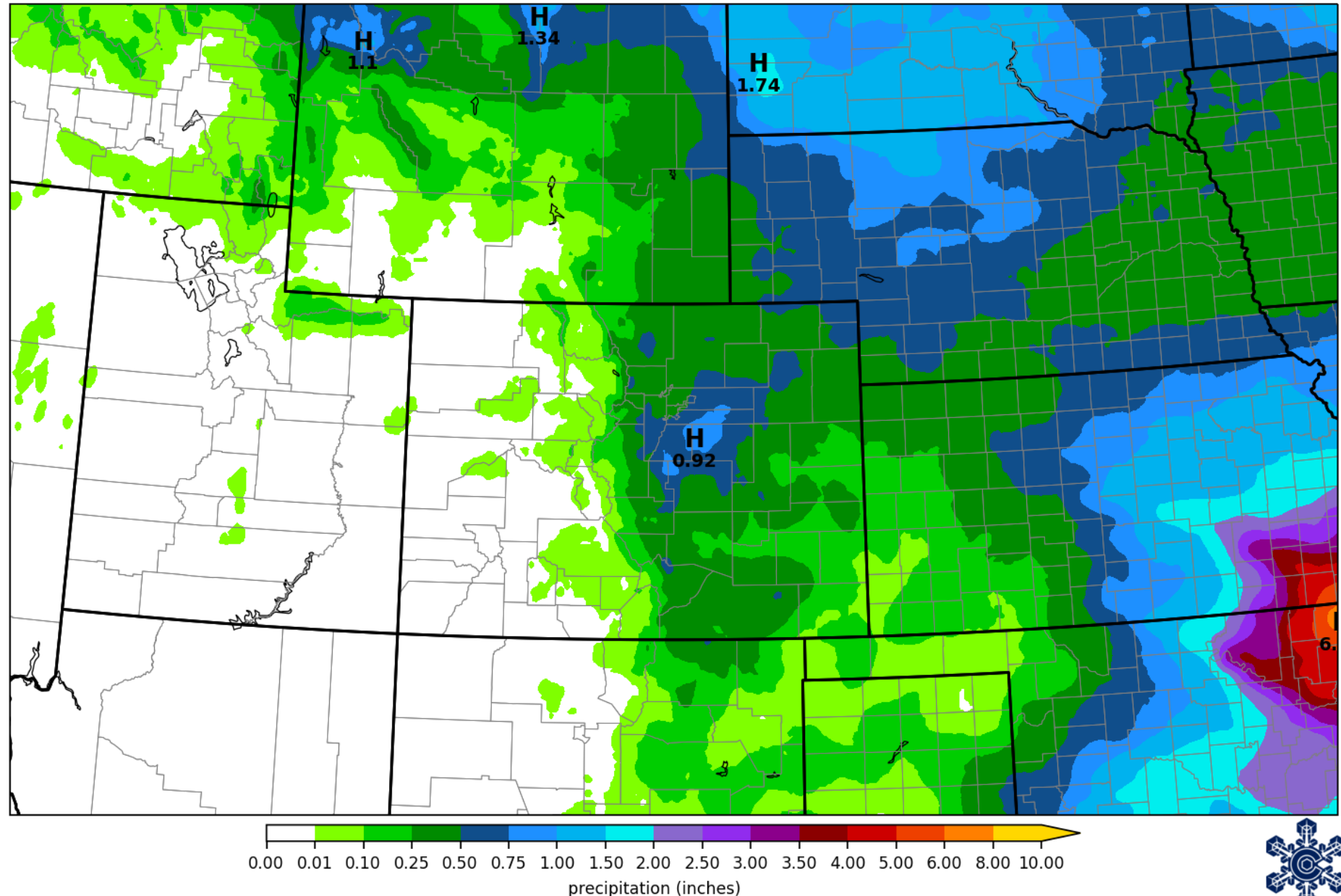


NOAA 7-day precipitation forecast

Afternoon
thunderstorms
possible over the
east, chances
increase over the
weekend

NOAA Weather Prediction Center
7-day precipitation forecast

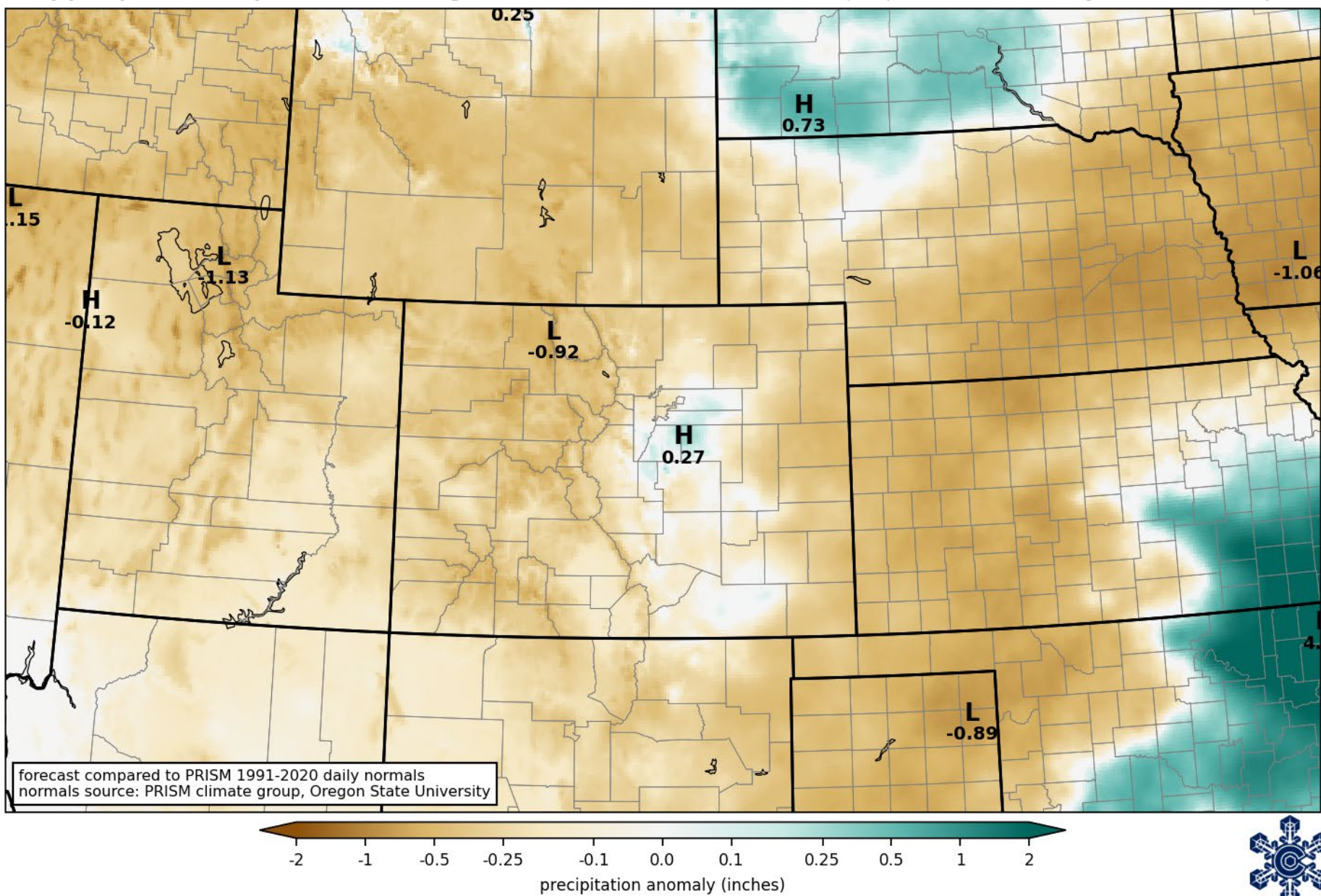
forecast issued 1200 UTC Tue 20 May 2025
precipitation in 168 hrs ending 1200 UTC Tue 27 May 2025



NOAA 7-day precipitation forecast (difference from average)

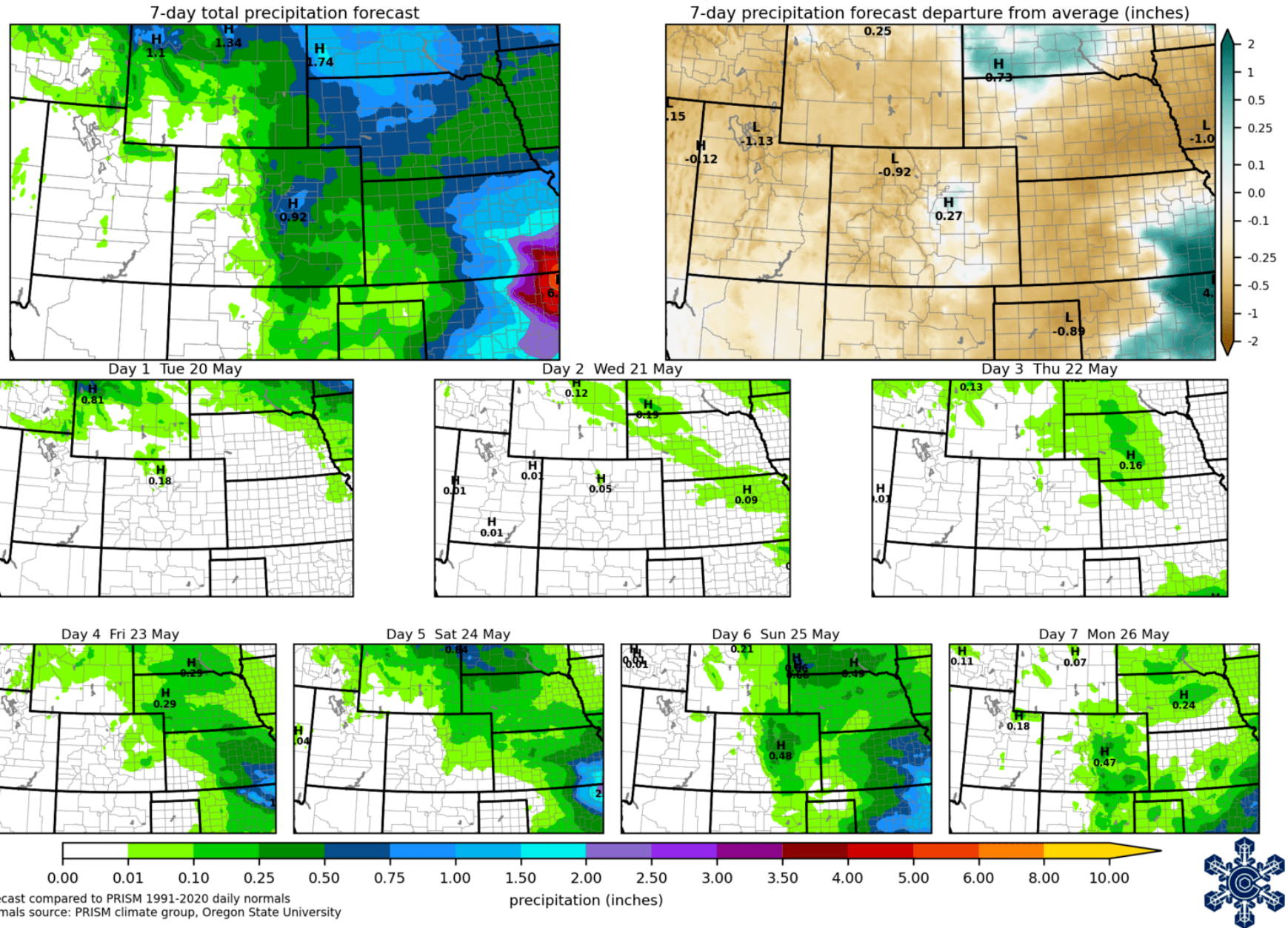
NOAA Weather Prediction Center
7-day precip forecast departure from average

forecast issued 1200 UTC Tue 20 May 2025
precipitation in 168 hrs ending 1200 UTC Tue 27 May 2025



NOAA 7-day precipitation forecast

NOAA Weather Prediction Center precipitation forecast
issued 1200 UTC Tue 20 May 2025

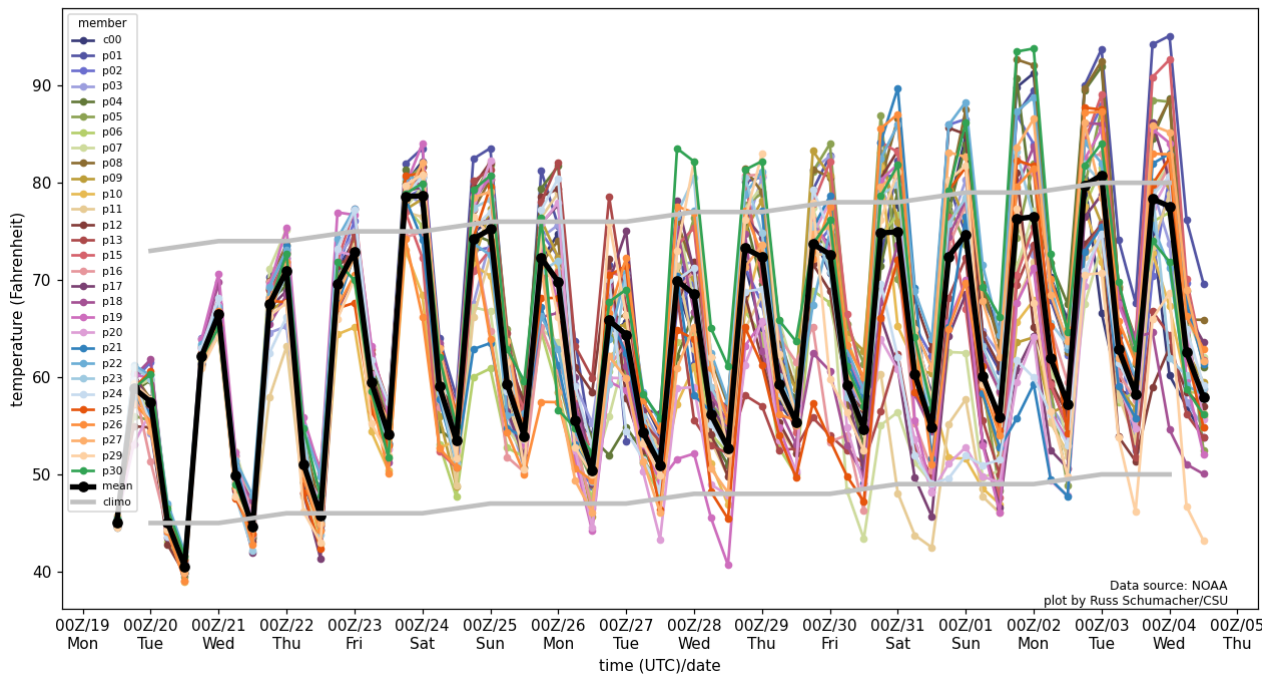


Quick-look maps on our
drought page:

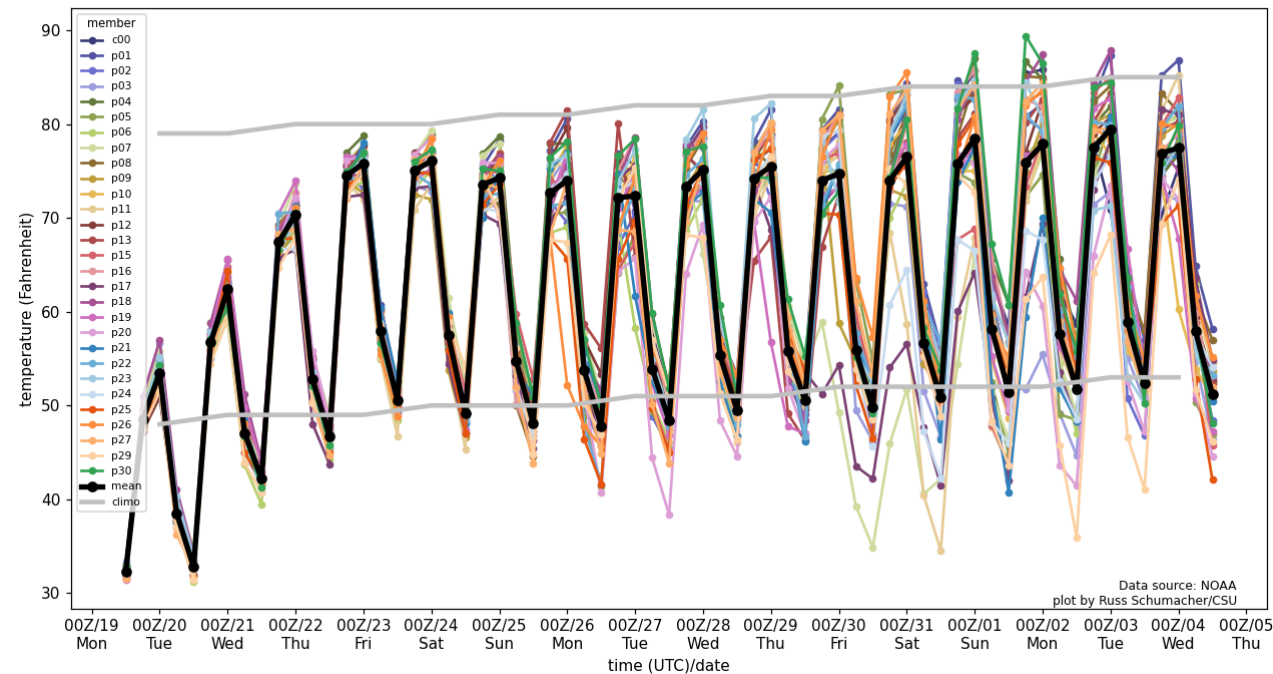
[https://climate.colostate.edu/
drought/#outlook](https://climate.colostate.edu/drought/#outlook)

Ensemble temperature outlook: warming trend through the weekend, slight cooldown early next week (and possibly some precipitation), then temperatures expected to rebound as we head into June

Denver



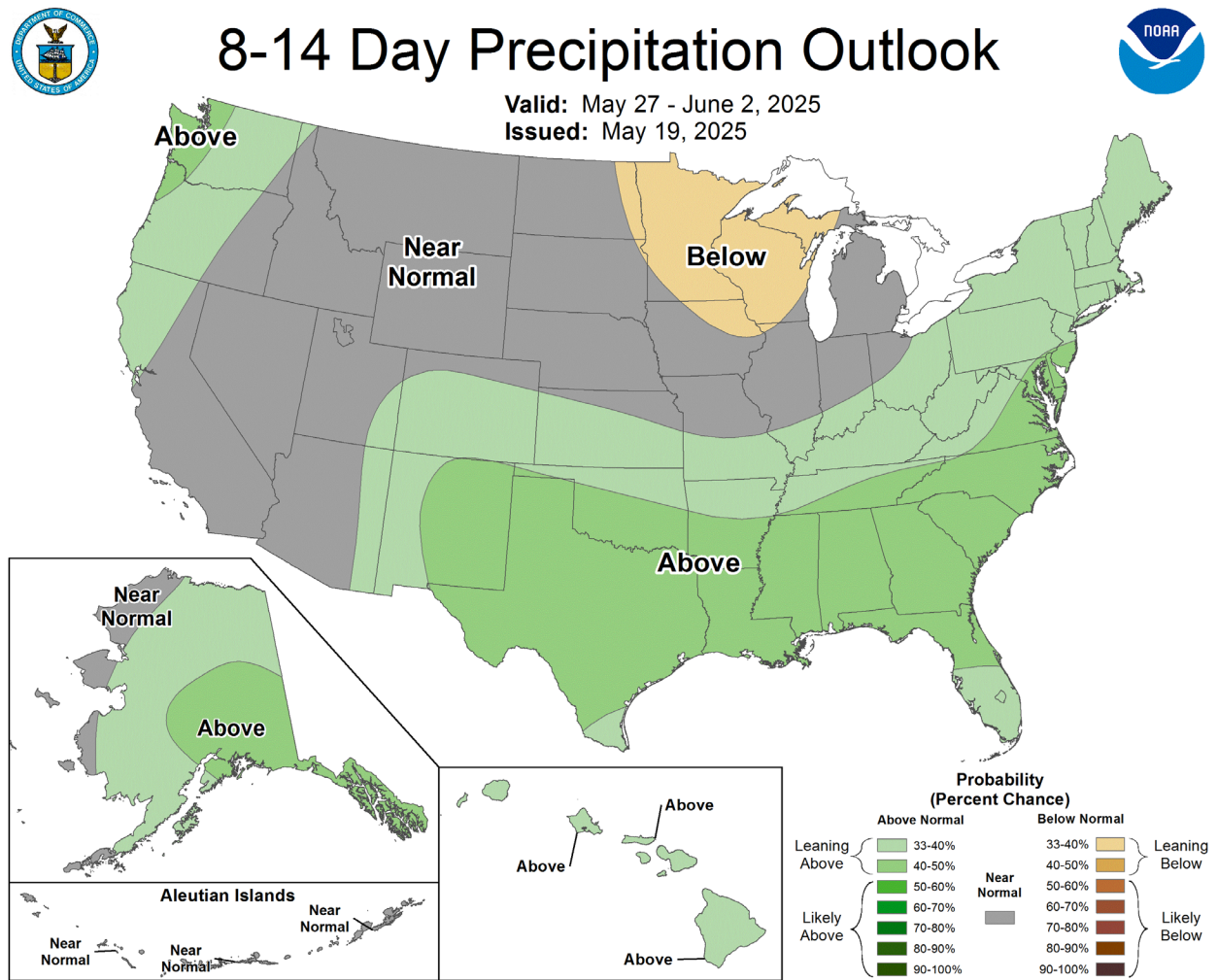
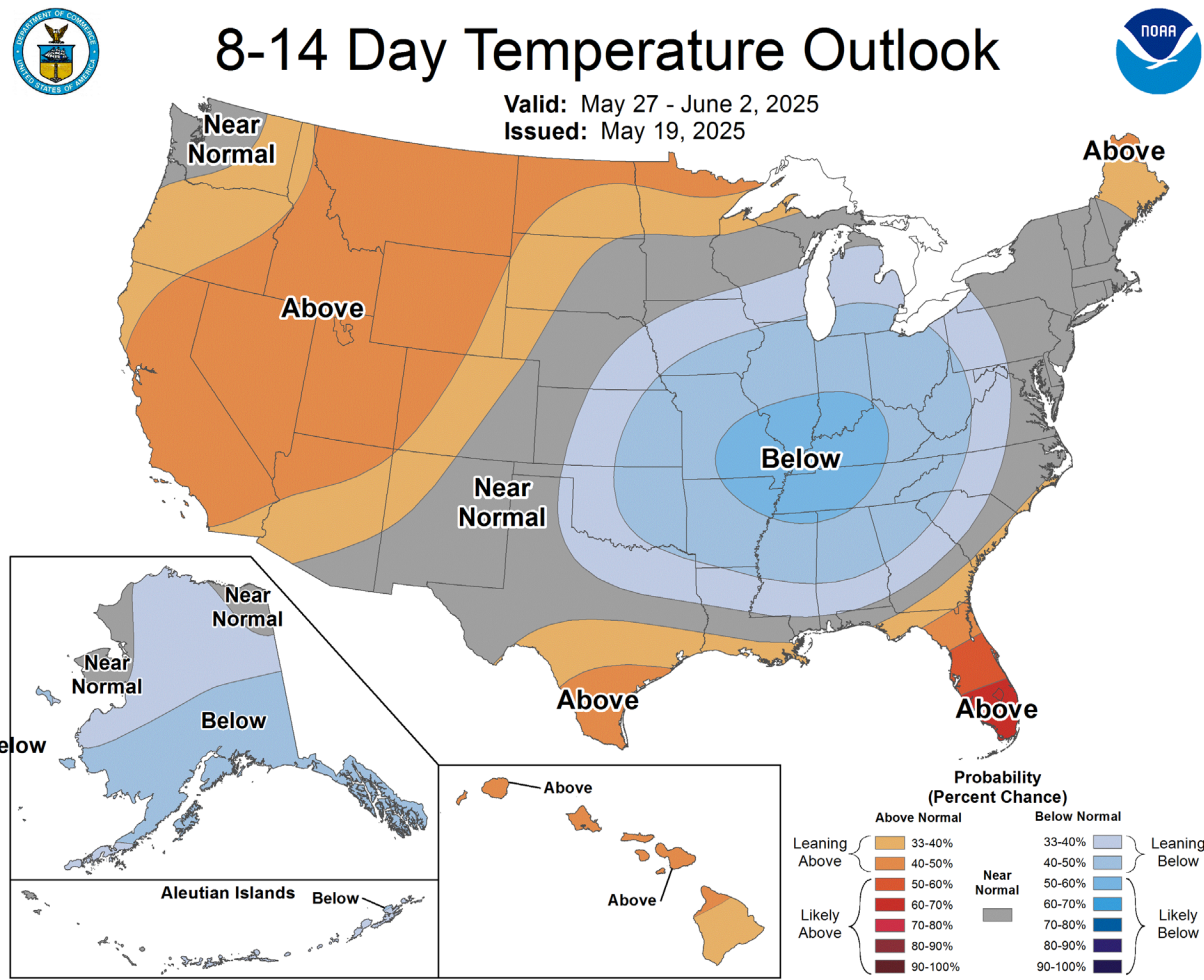
Grand Junction



First 90°F day?
(Avg: ~June 6 for Denver, May 31 for Grand Junction)



End of May-early June is forecasted to be warmer than average (especially for western CO) and perhaps wetter than average

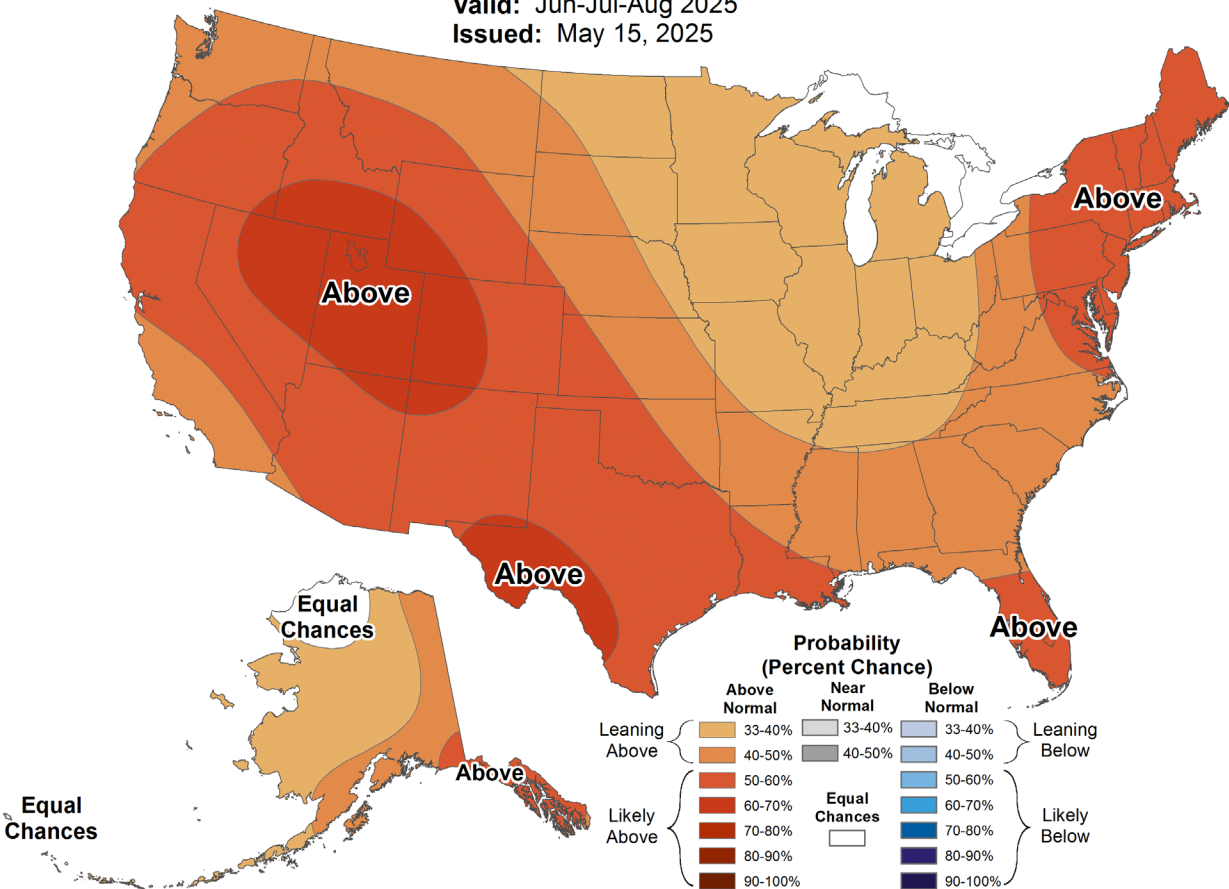


Summer is expected to feature above-normal temperatures and near or below-normal precipitation



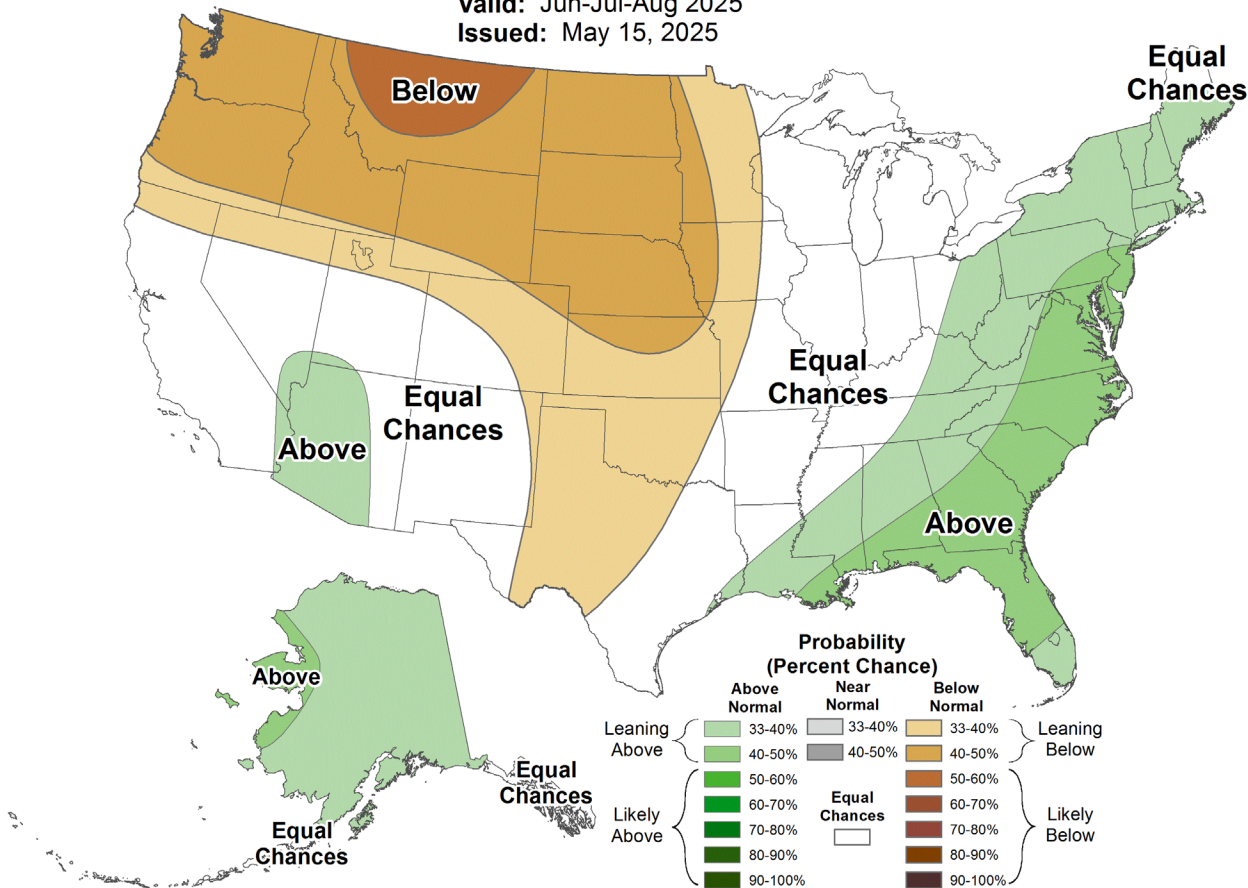
Seasonal Temperature Outlook

Valid: Jun-Jul-Aug 2025
Issued: May 15, 2025



Seasonal Precipitation Outlook

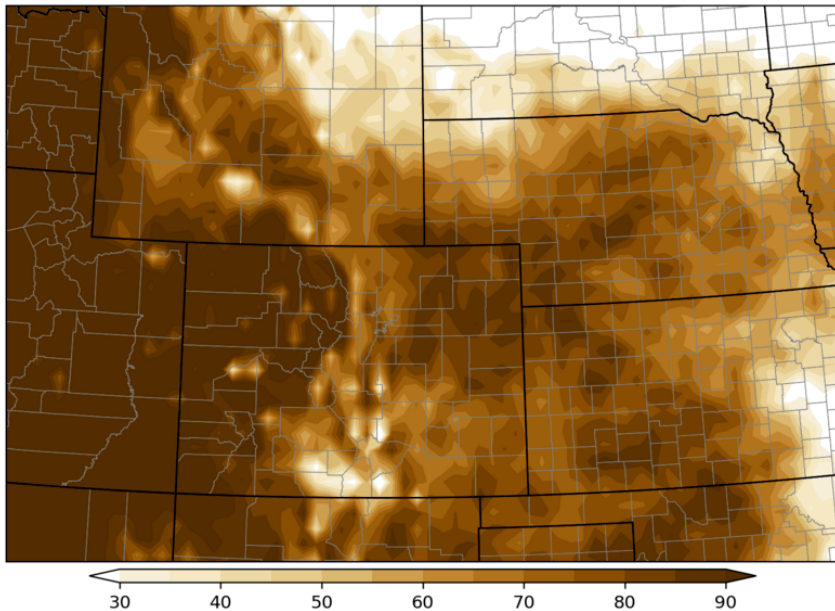
Valid: Jun-Jul-Aug 2025
Issued: May 15, 2025



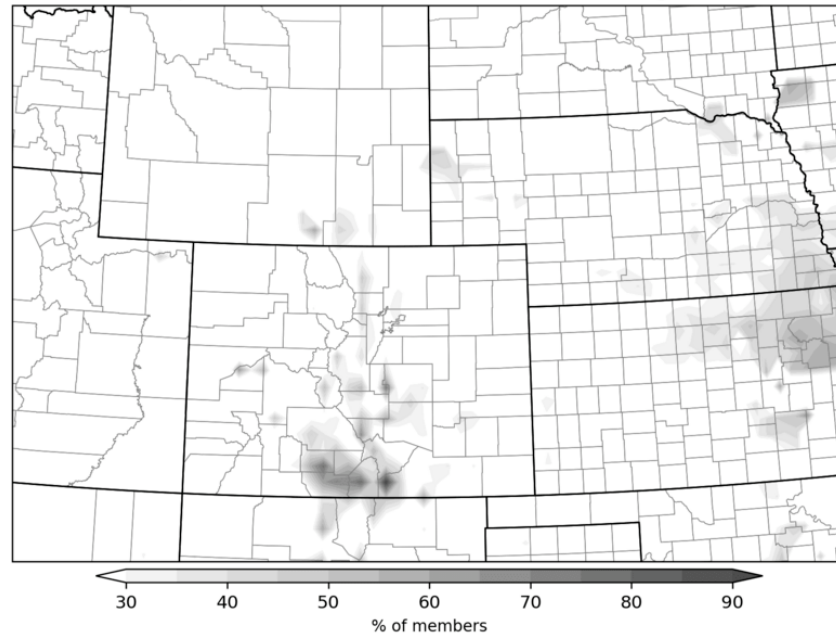
Will the next 15 days be above, below, or near average precipitation? Most members expect below average precipitation

Out of 50 different model forecasts, how many are at least 0.1" above/below average, or within 0.1" of average

ECMWF Ensemble Prediction System
accumulated precipitation departure from average through 15 days (baseline: PRISM 1991-2020 daily normals)
percent of EPS members at least 0.1" below average

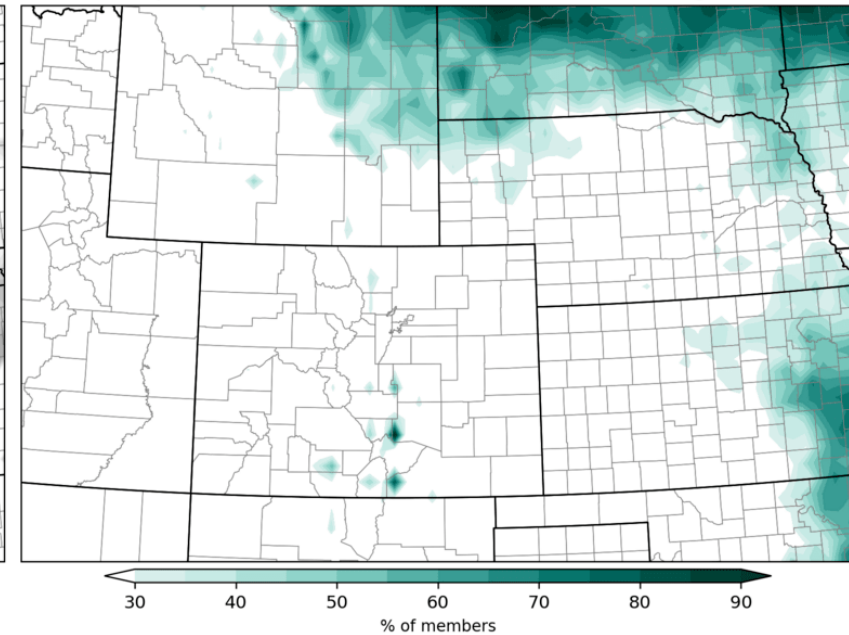


percent of EPS members within 0.1" of average



initialized 1200 UTC Mon 19 May 2025
360-h forecast valid 1200 UTC Tue 03 Jun 2025

percent of EPS members at least 0.1" above average



data: ECMWF; plot: Russ Schumacher, Colorado State Univ

Percent of members below average

Percent of members within 0.1"

Percent of members above avg

<https://schumacher.atmos.colostate.edu/weather/ecmwf.php>



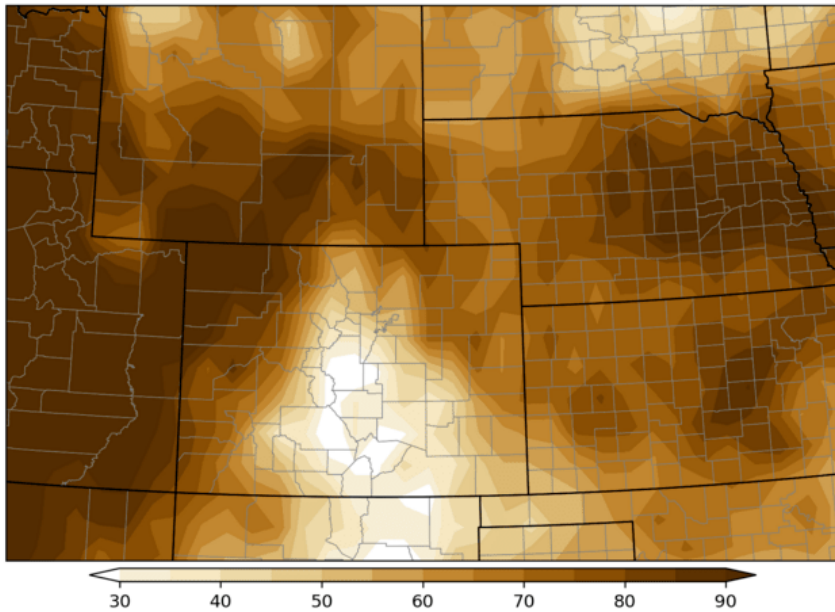
COLORADO CLIMATE CENTER



GEFS suggests a bit more uncertainty over the south-central part of the state

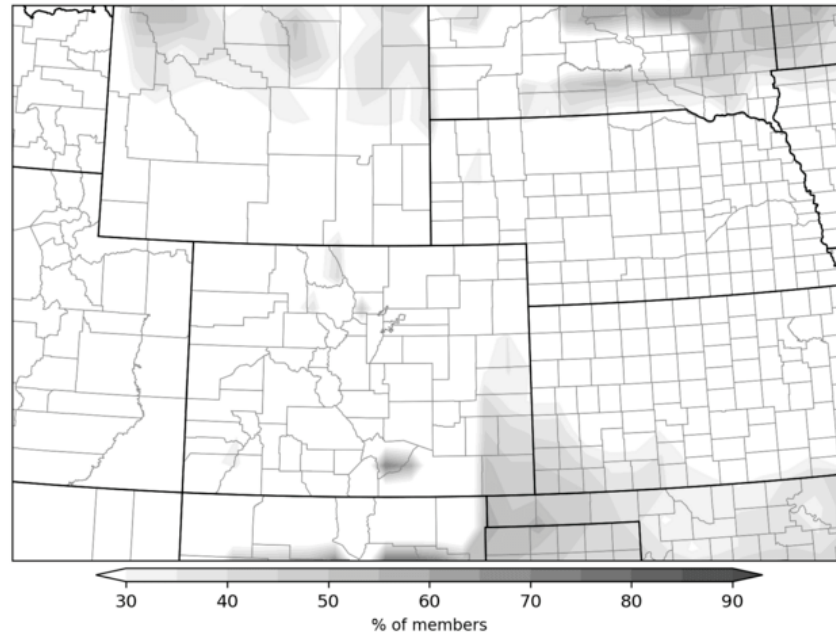
Out of 50 different model forecasts, how many are at least 0.1" above/below average, or within 0.1" of average

Global Ensemble Forecast System
accumulated precipitation departure from average through 16 days (baseline: PRISM 1991-2020 daily normals)
percent of GEFS members at least 0.1" below average



Percent of members below average

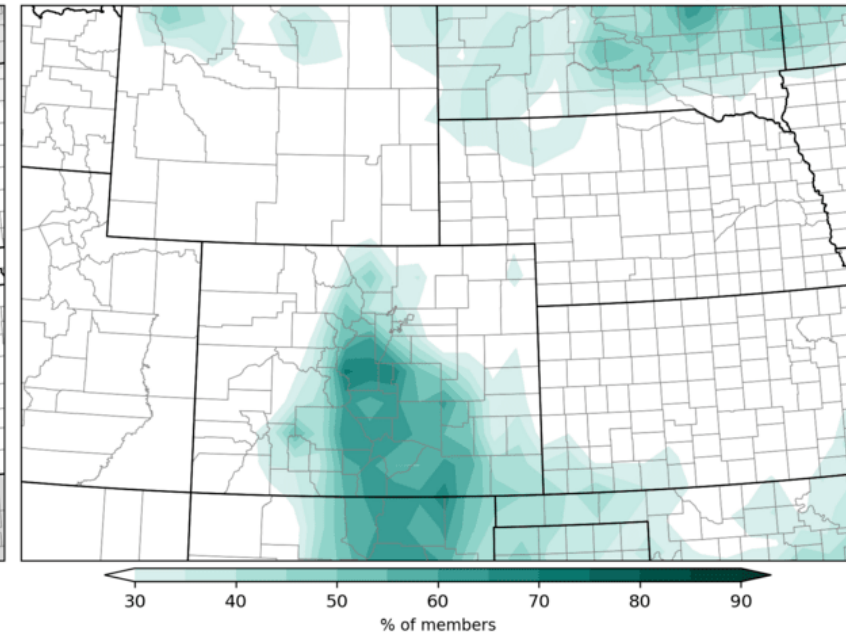
percent of GEFS members within 0.1" of average



Percent of members within 0.1"

initialized 0600 UTC Tue 20 May 2025
384-h forecast valid 0600 UTC Thu 05 Jun 2025

percent of GEFS members at least 0.1" above average



Percent of members above avg

<https://schumacher.atmos.colostate.edu/weather/ecmwf.php>



COLORADO CLIMATE CENTER



Now in neutral conditions – potential return of La Niña later this fall

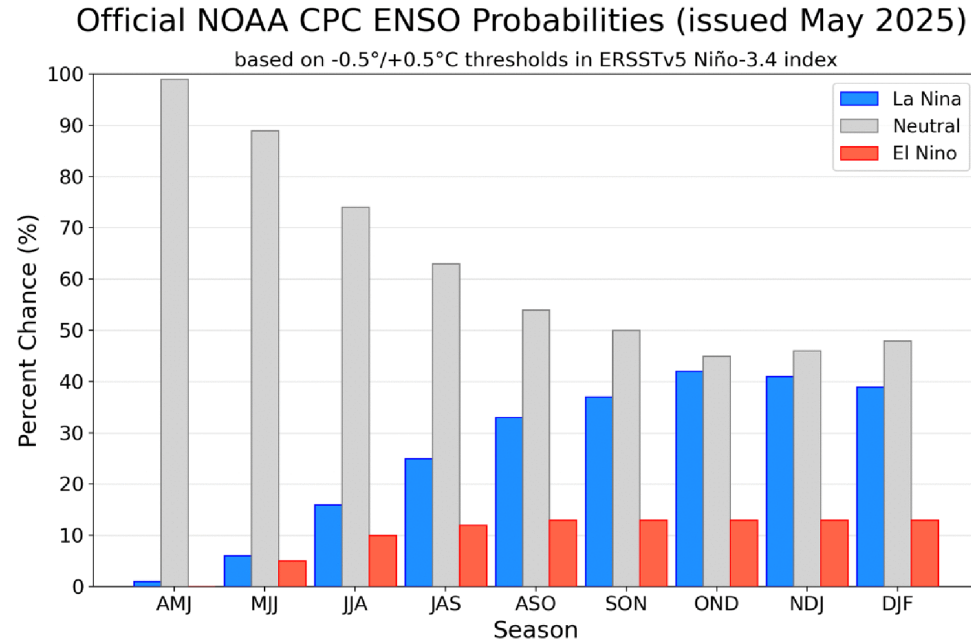


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N - 5°S , 120°W - 170°W). Figure updated 8 May 2025.

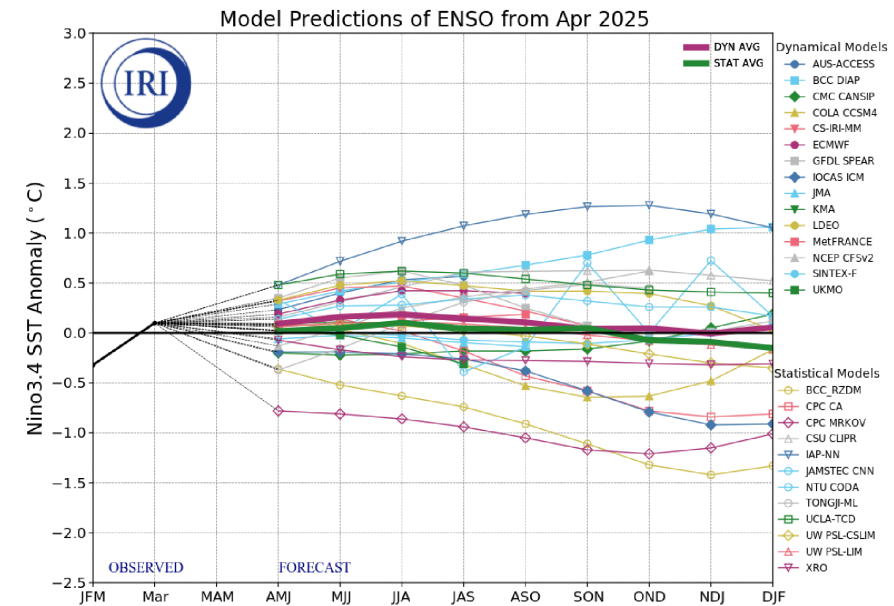


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N - 5°S , 120°W - 170°W). Figure updated 21 April 2025 by the International Research Institute (IRI) for Climate and Society.

“ENSO-neutral is favored through the Northern Hemisphere summer 2025 (74% chance during June-August), with chances exceeding 50% through August-October 2025”

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

Takeaways

- April 2024 was slightly warmer than average and drier than average
- First 7 months of Water Year 2025 is tied for the 10th warmest on record, and precipitation outside of the Nov snowstorm has been below average
- May so far...
 - Above average temperatures in northern CO; below average in the southern part of the state
 - Above average precipitation in southern CO, below average along the West Slope and northern CO
- Neutral ENSO conditions; possible redevelopment of La Niña in the fall
- Summer seasonal outlook suggests above-average temperatures and normal or below average precipitation (much greater uncertainty)





<https://climate.colostate.edu/>
allie.mazurek@colostate.edu

Subscribe for monthly updates!

<https://climate.colostate.edu/subscribe.html>

Thank you!

Or for even more in-depth information, subscribe to
our blog!

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



Bluesky

[@climate.colostate.edu](https://climate.colostate.edu/)



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY