

Colorado Climate Update

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COLORADO
CLIMATE
CENTER

Water Conditions Monitoring
Committee

August 26, 2025



ATMOSPHERIC SCIENCE
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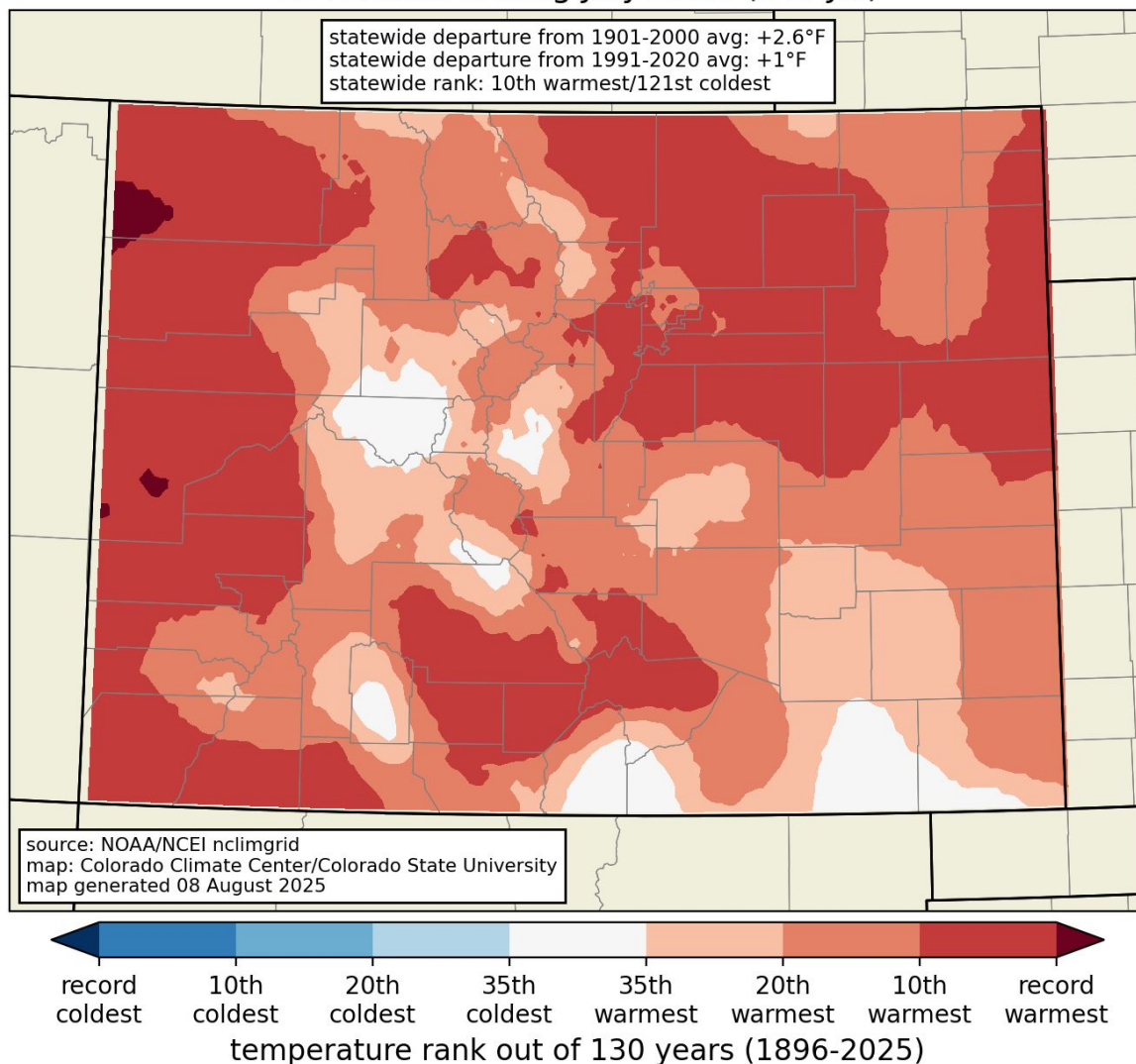
Water Year 2025 so far

Temperature, precipitation, and
more



Fire whirl in the Lee Fire on August 8
Image source: Inciweb, The Colorado Sun

average temperature rank
10 months ending July 2025 (Oct-Jul)

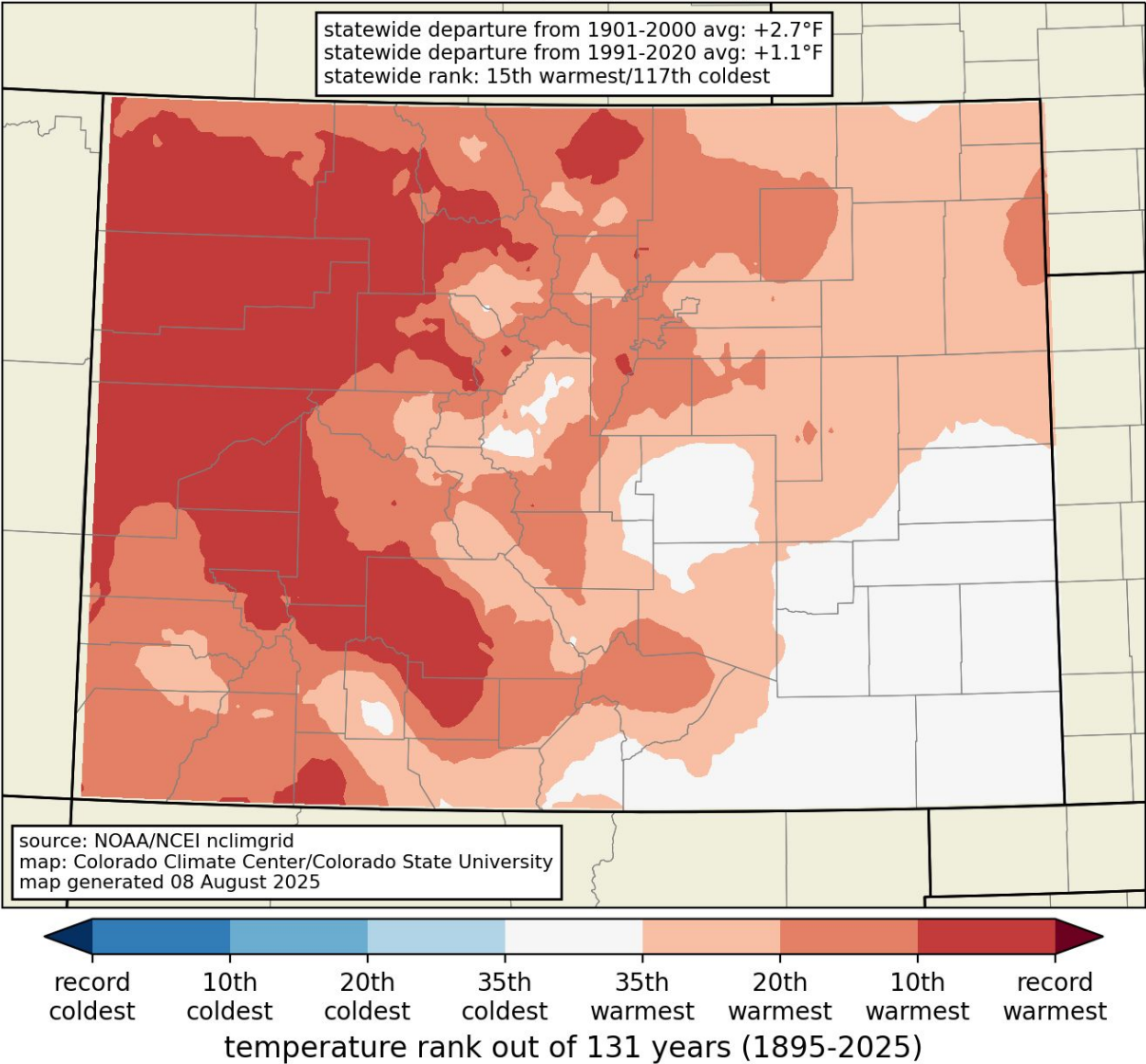


Statewide: Tied for 10th warmest first 10 months of the water year

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
May	56 th warmest	near avg
Jun	21 st warmest	above
Jul	24 th warmest	above



average temperature rank
2 months ending July 2025 (Jun-Jul)

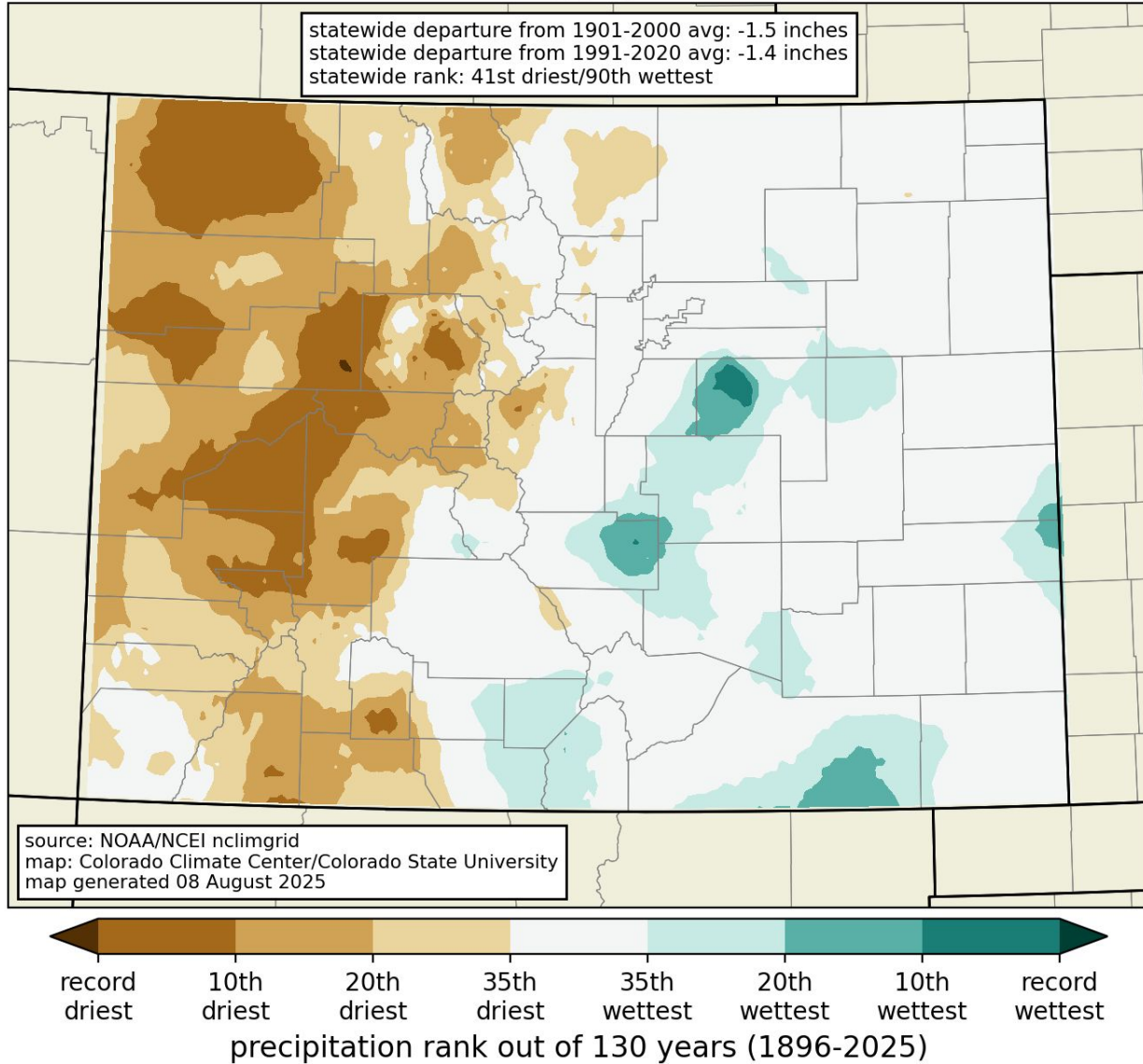


Most of the West Slope experienced a top-10 warmest June-July.

Month	T Rank (of 130 years)	Above, below, or near 20 th century avg?
Jun	21 st warmest	above
Jul	24 th warmest	above

Statewide: Tied for 15th warmest June-July on record

precipitation rank 10 months ending July 2025 (Oct-Jul)



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
May	59 th wettest	near average
Jun	54 th wettest	near average
Jul	29 th driest	below

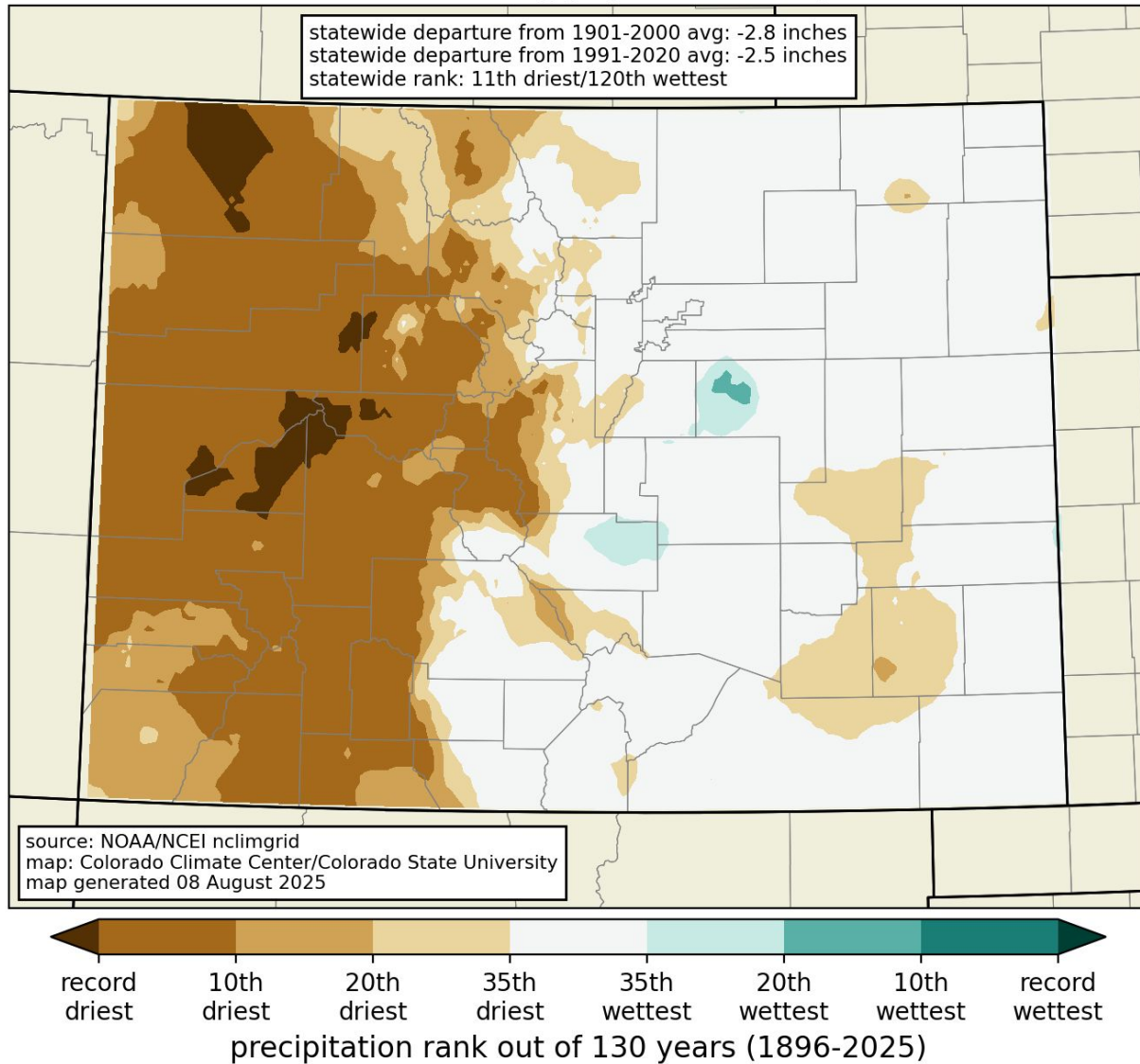
Statewide: 41st driest first 10 months of the water year



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precipitation rank
8 months ending July 2025 (Dec-Jul)



Removing the major November snowstorm paints a more dire picture. And the story is very different for the eastern vs. western half of the state

Several spots on the West Slope have had a record or near-record Dec-Jul. Conditions have been near-normal for areas east of the Divide

Statewide: 11th driest Dec-July on record

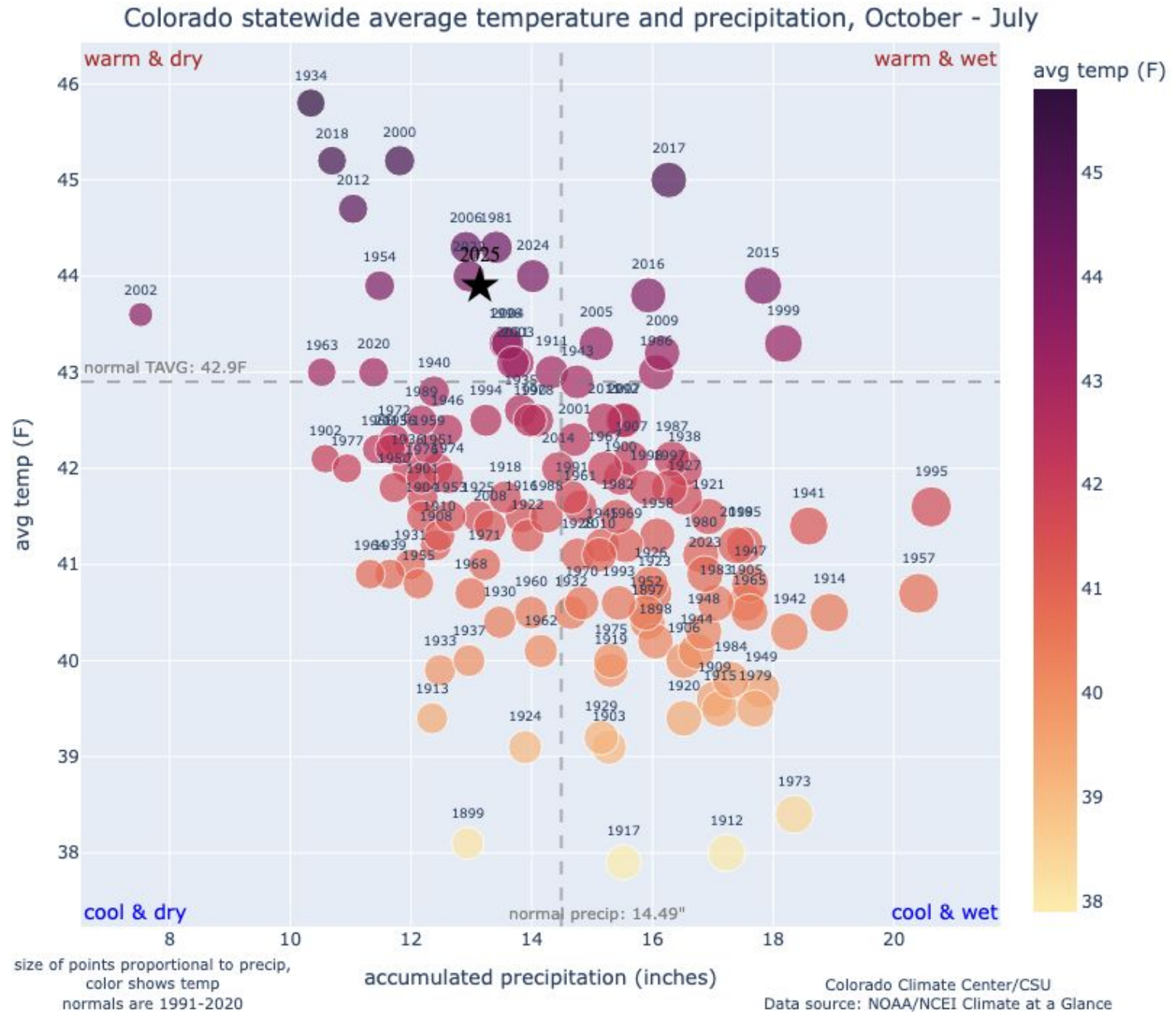


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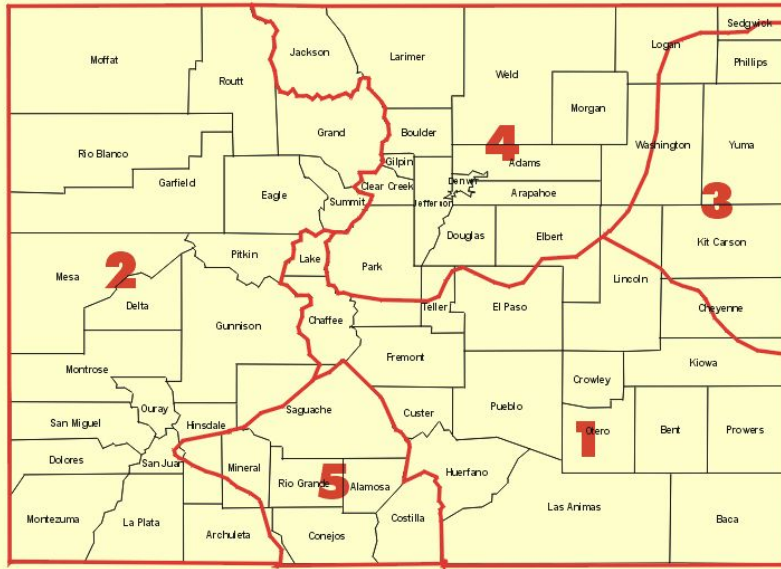
Quadrant chart: WY 2025

Statewide, firmly in the
warmer and drier than
average category

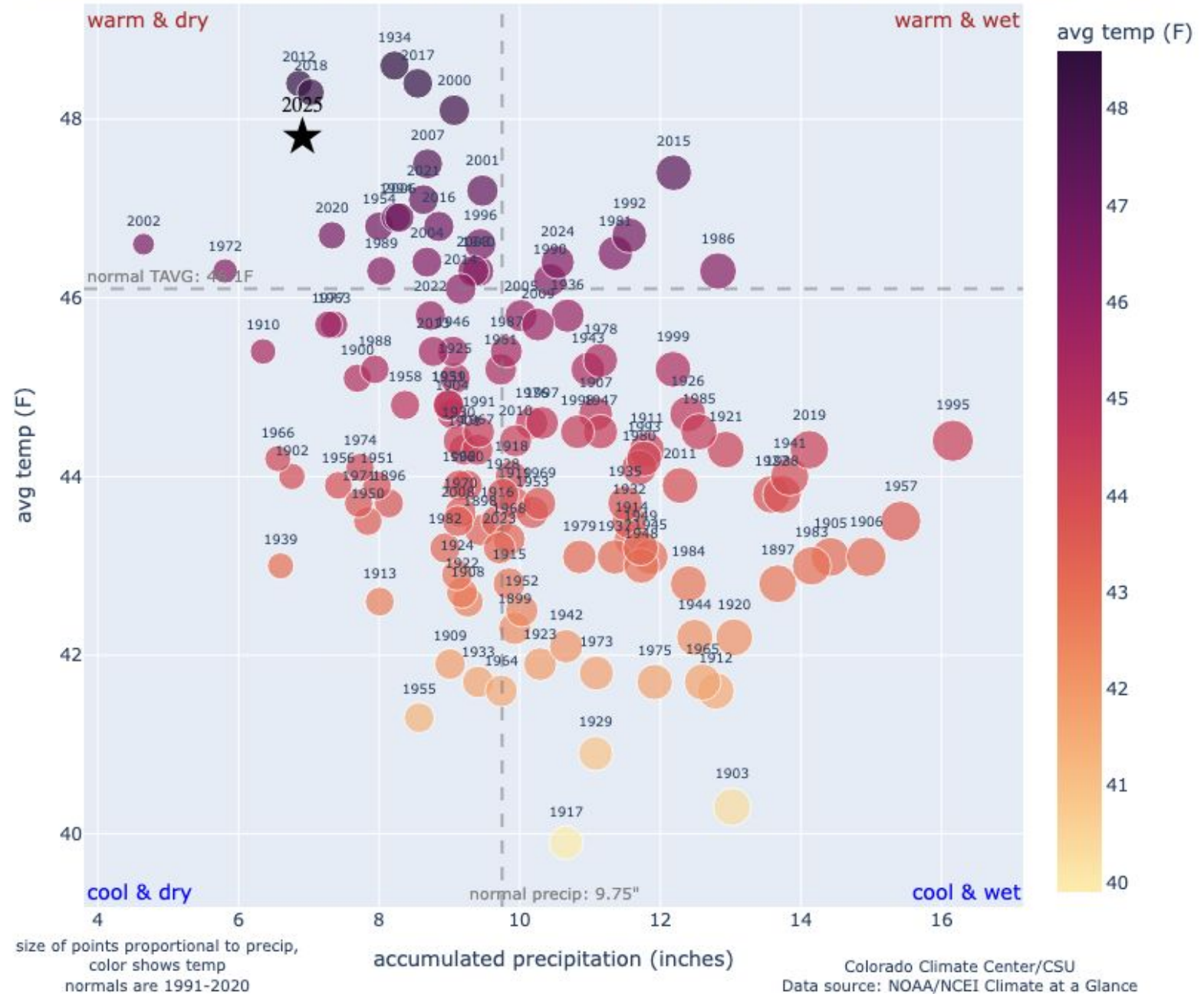


Quadrant chart: last 6 months, Colorado Drainage division

Similarly dry to 2012, 2018



Colorado CD2 (Colorado drainage) average temperature and precipitation, February - July



July 2025 and August so far

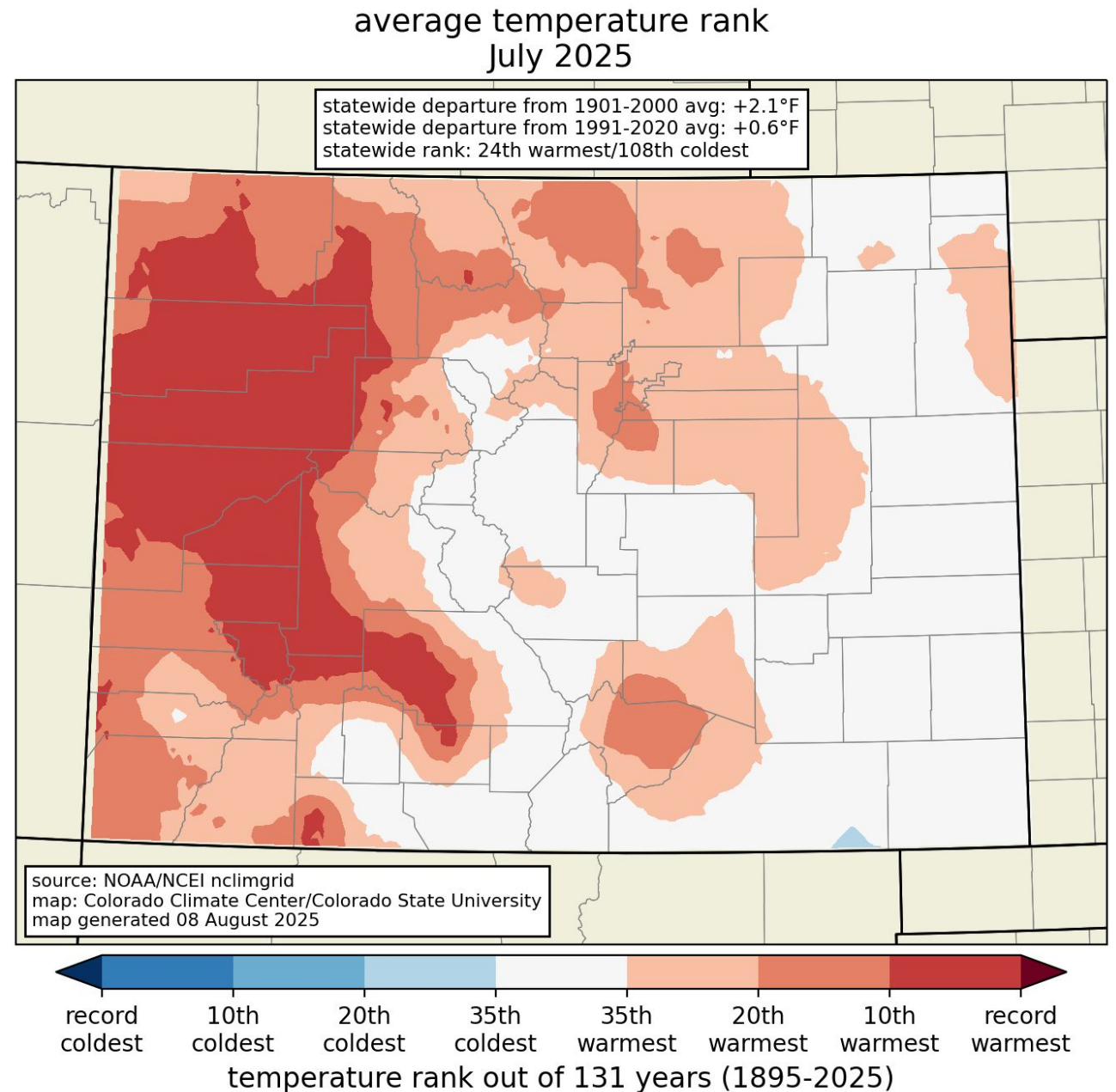


Lee Fire viewed from Meeker, CO on Aug. 4
Photo from Kristie Davis

July temperature rankings

July 2025 was tied for the 24th warmest on record statewide.

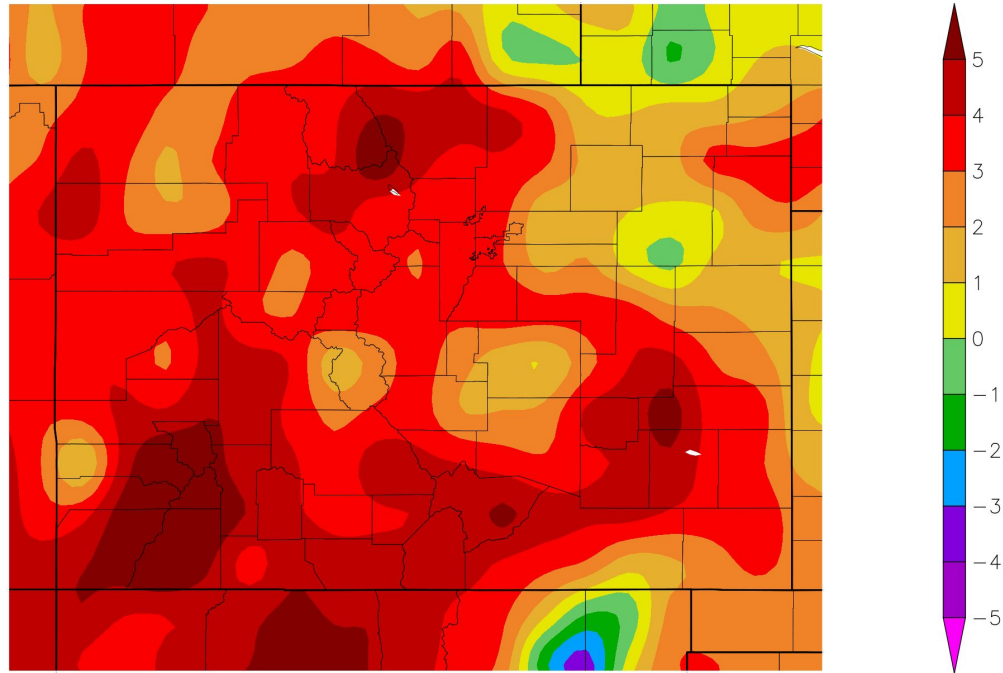
For much of the West Slope, it ranked among the top-10 warmest. Parts of the Eastern Plains and mountains were also above-average



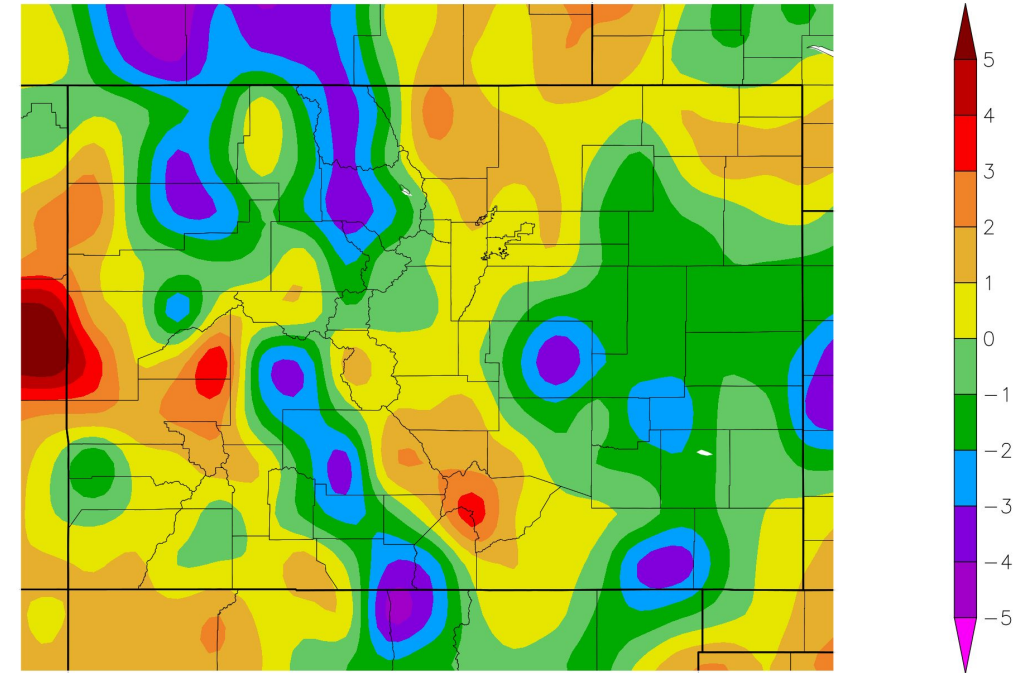
Why did July not rank hotter?

Maximum temperatures were well above average, but minimum temperatures were cooler than average

Departure from Normal Average Maximum Temperature (F)
7/26/2025 – 8/24/2025



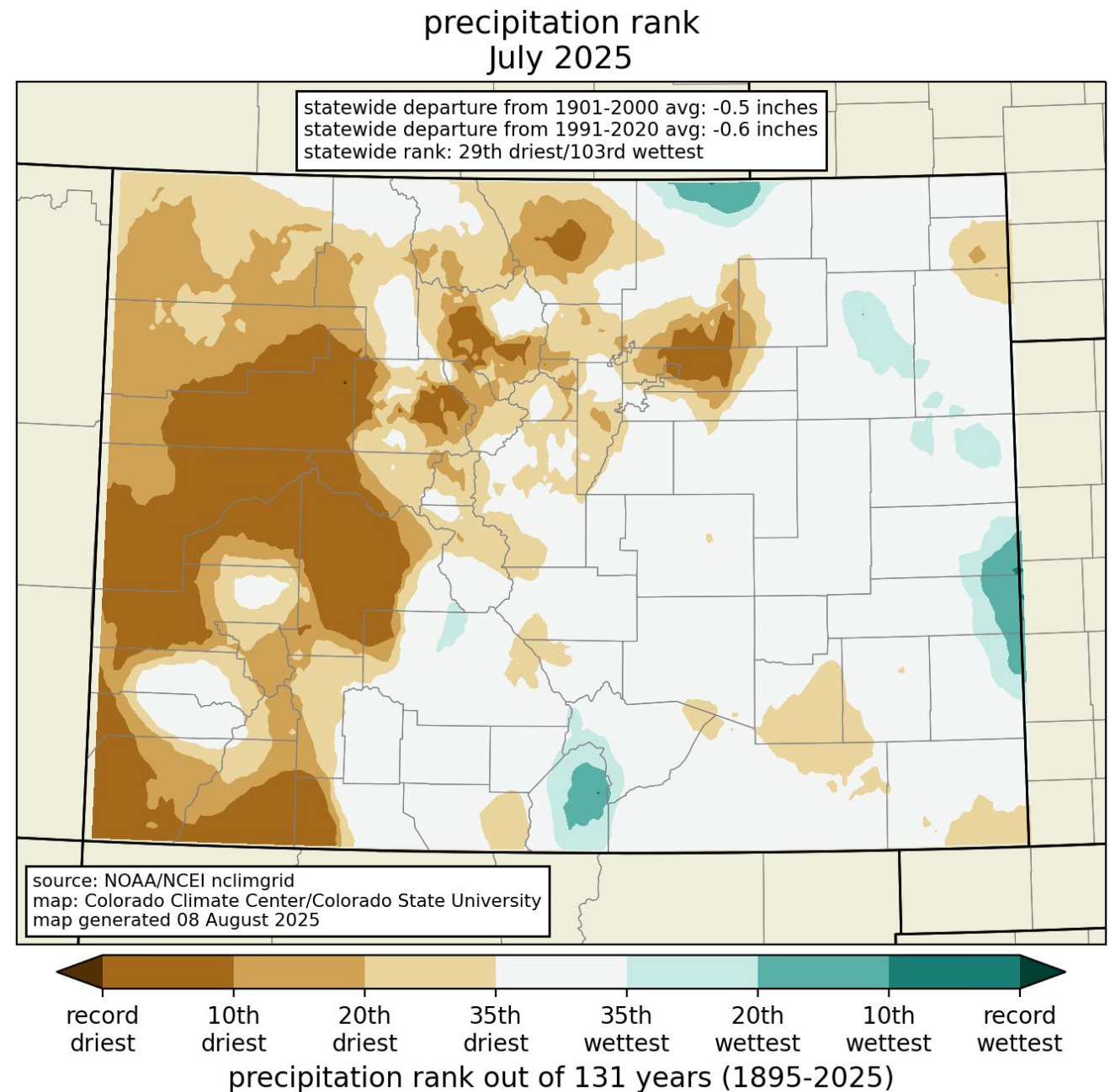
Departure from Normal Average Minimum Temperature (F)
7/26/2025 – 8/24/2025



July precipitation rankings

July 2025 was the 29th driest on record statewide.

Top-10 dry July for some of CO, including parts of the West Slope, Four Corners, northern Front Range



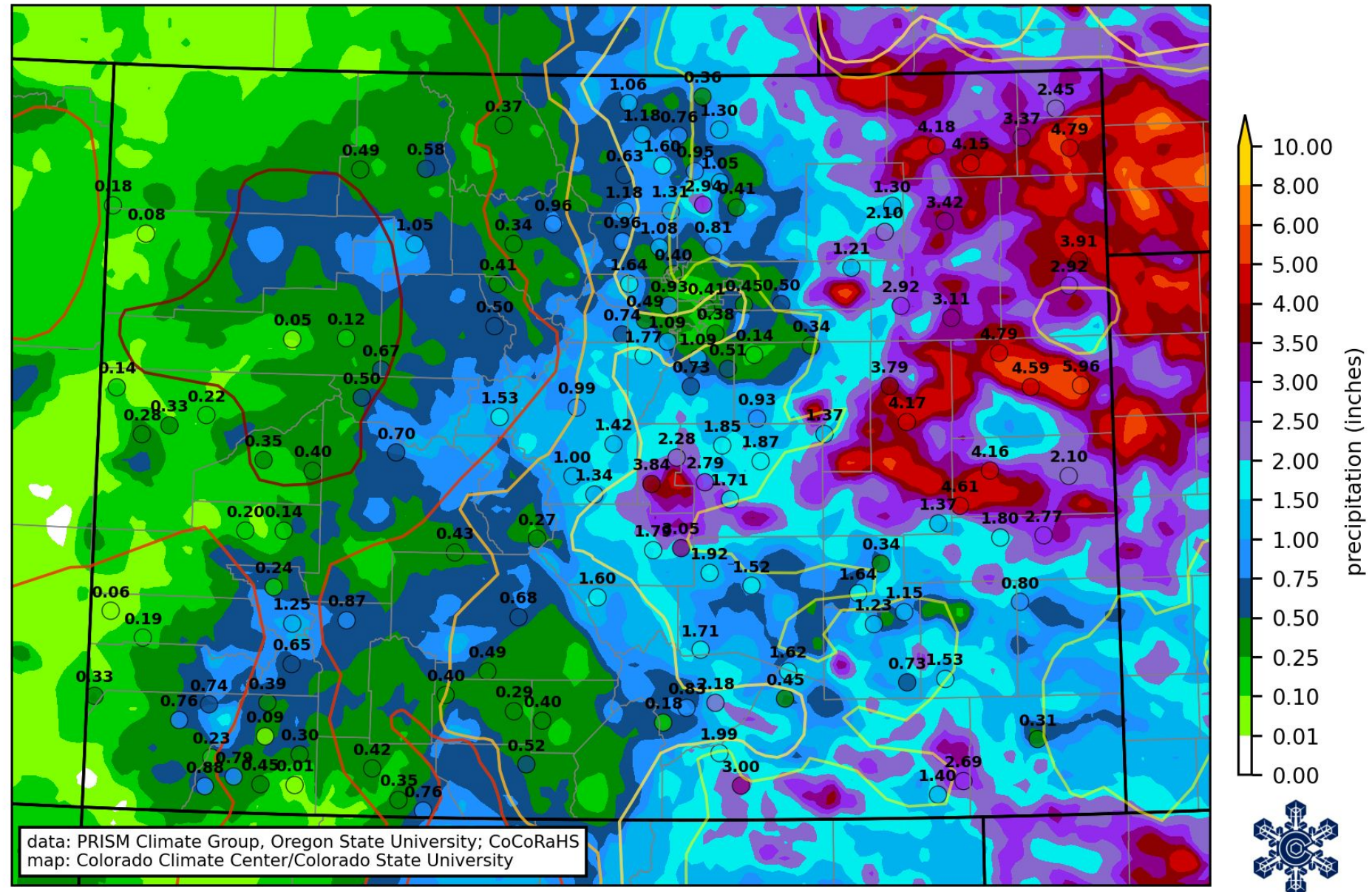
August precipitation
through yesterday

Northeast Plains and
Colorado Springs
area have benefitted
the most

West of the Divide,
heaviest rain has
occurred over the
Flat Tops and San
Juans

PRISM and CoCoRaHS month-to-date precipitation, US Drought Monitor

through 6:00am MDT Mon 25 August 2025

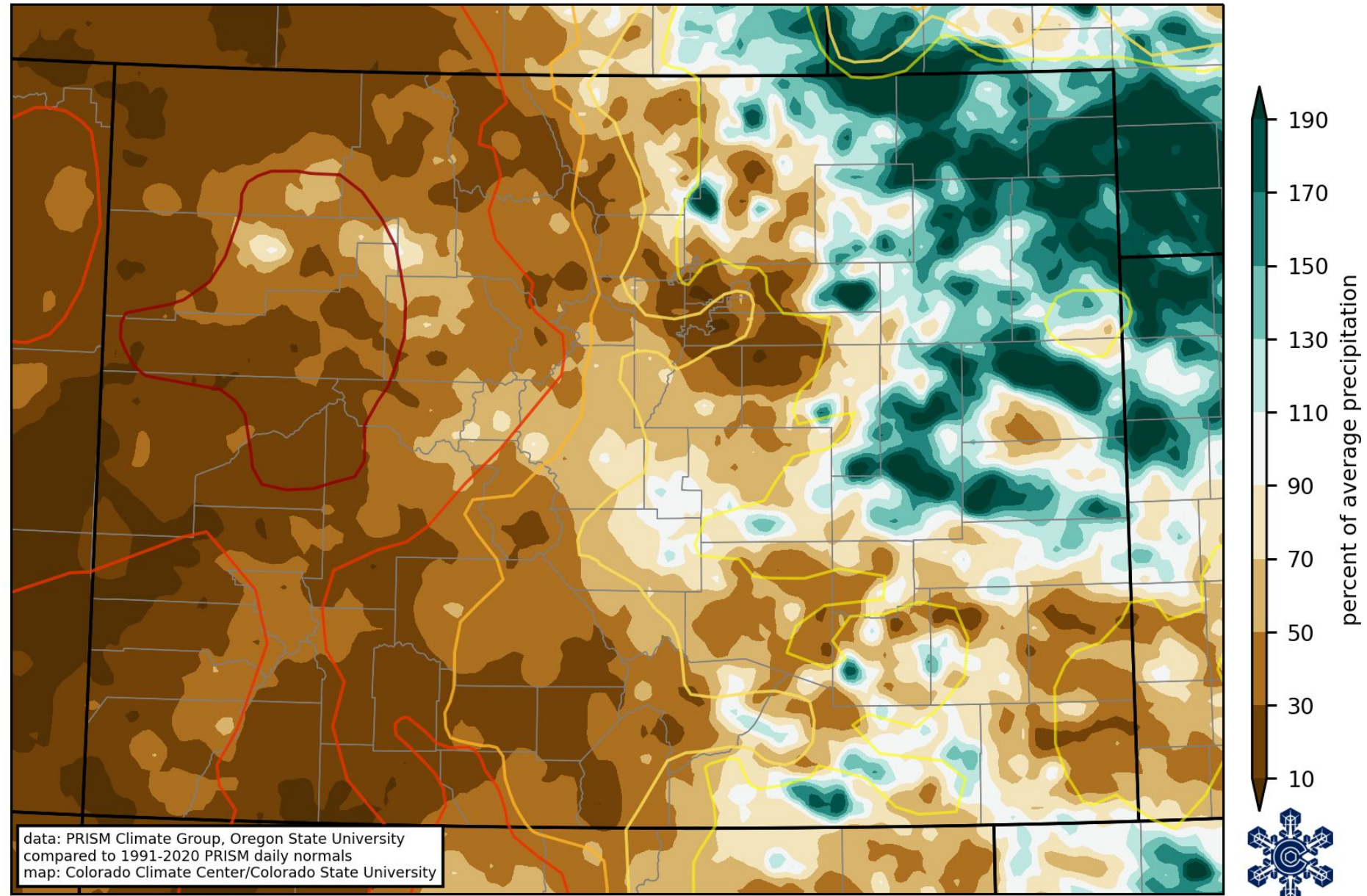


Note areas that have missed out so far: Denver Metro, NW, Grand Mesa, Four Corners



Percent of normal
precipitation

Despite recent rains,
still running below
average in many
areas



August precipitation is key for much of southern and western Colorado.

month of maximum average precipitation

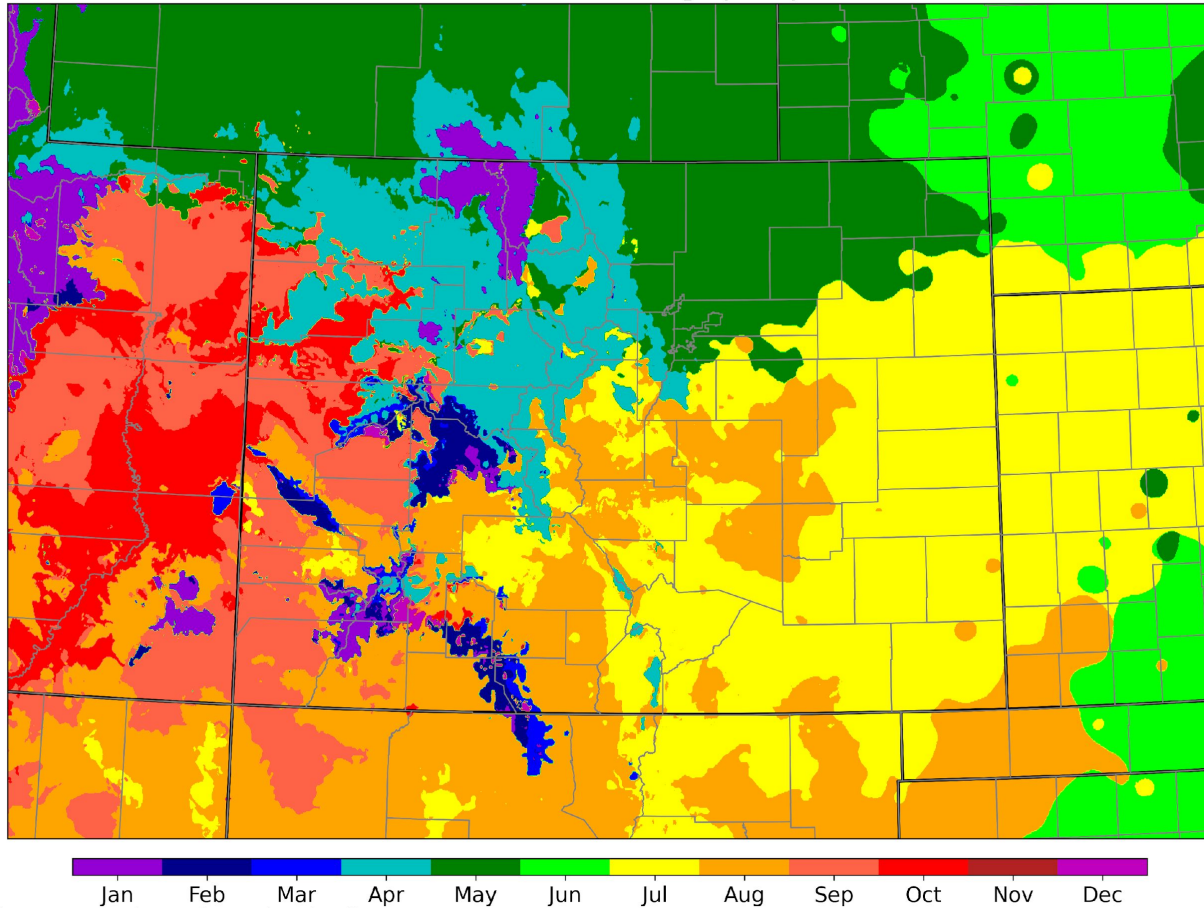
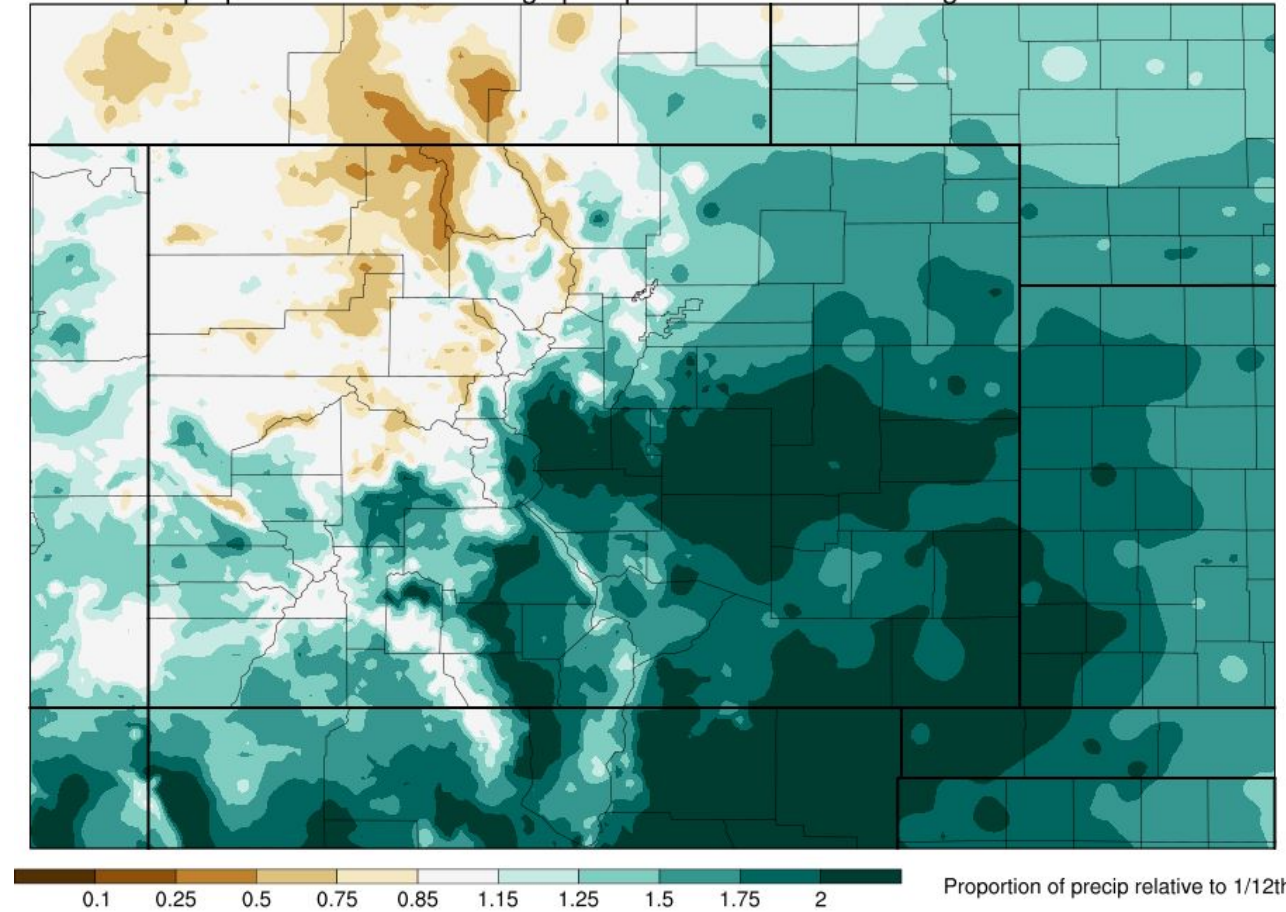


Figure: Russ Schumacher/Colorado Climate Center
Data: PRISM climate group (prism.oregonstate.edu), 1991-2020 normals

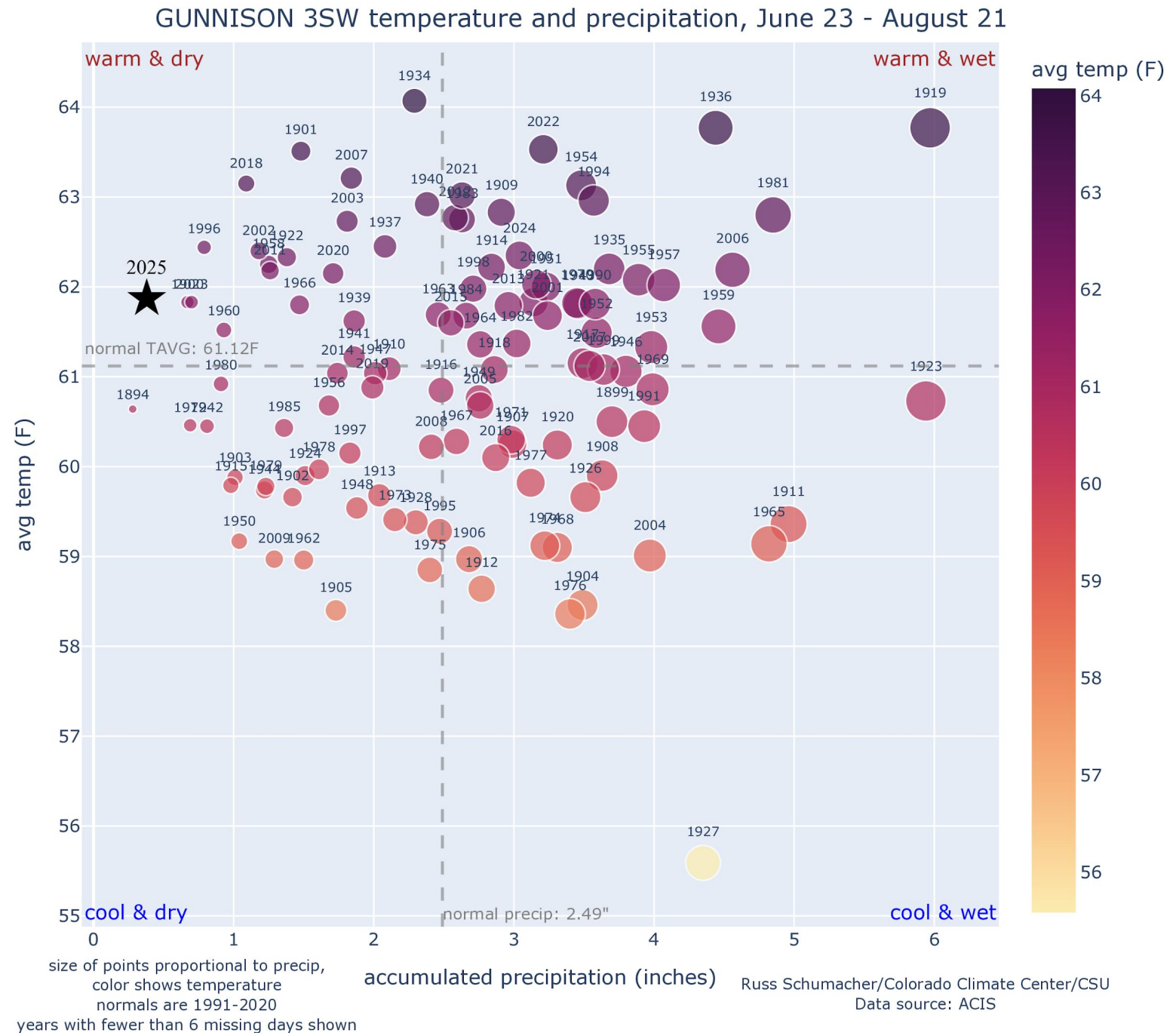
PRISM proportion of annual average precipitation in this month: August



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

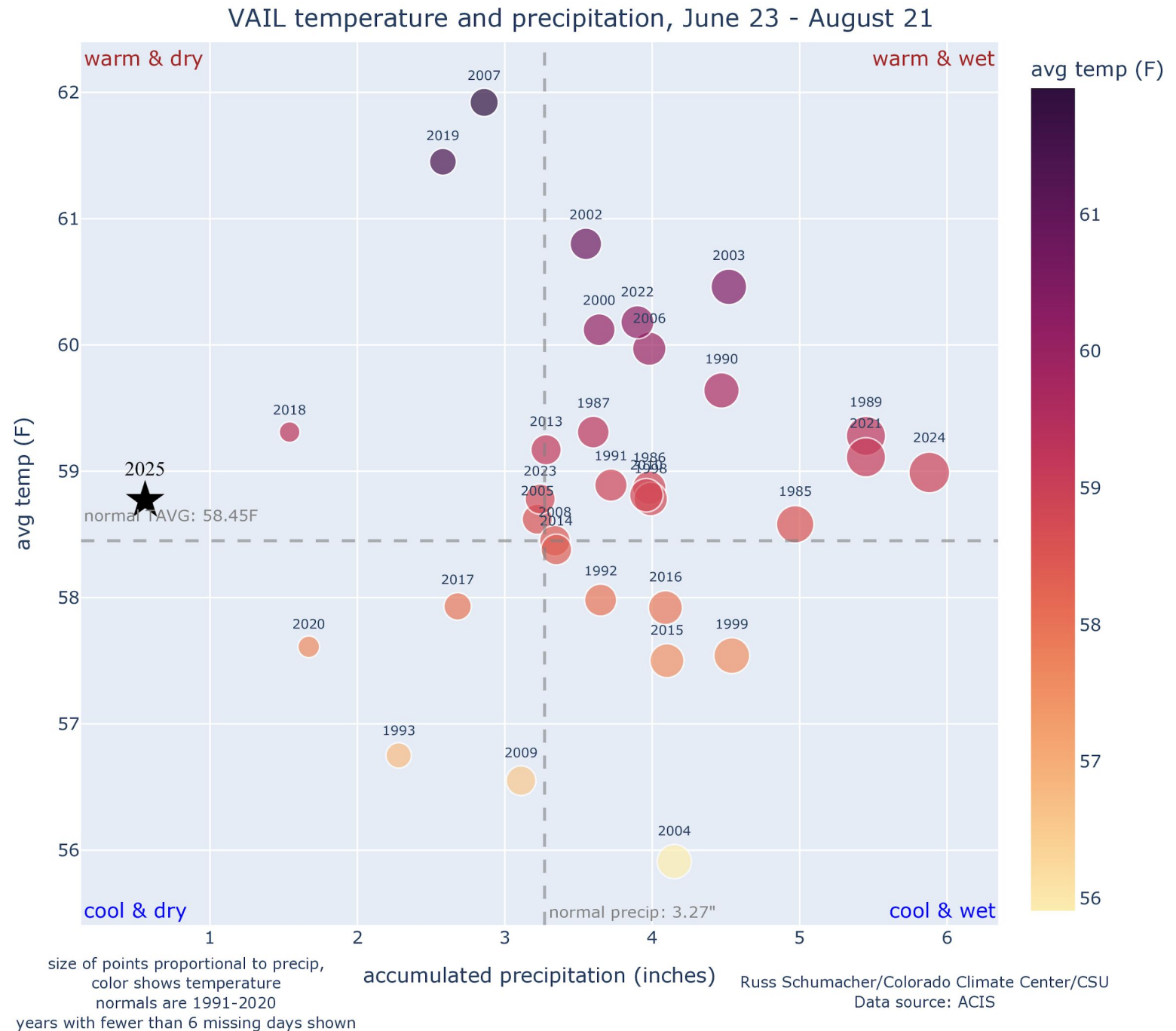
Lack of Summer Precipitation

The 60-day period from June 23 to August 21 was the second-driest on record for Gunnison



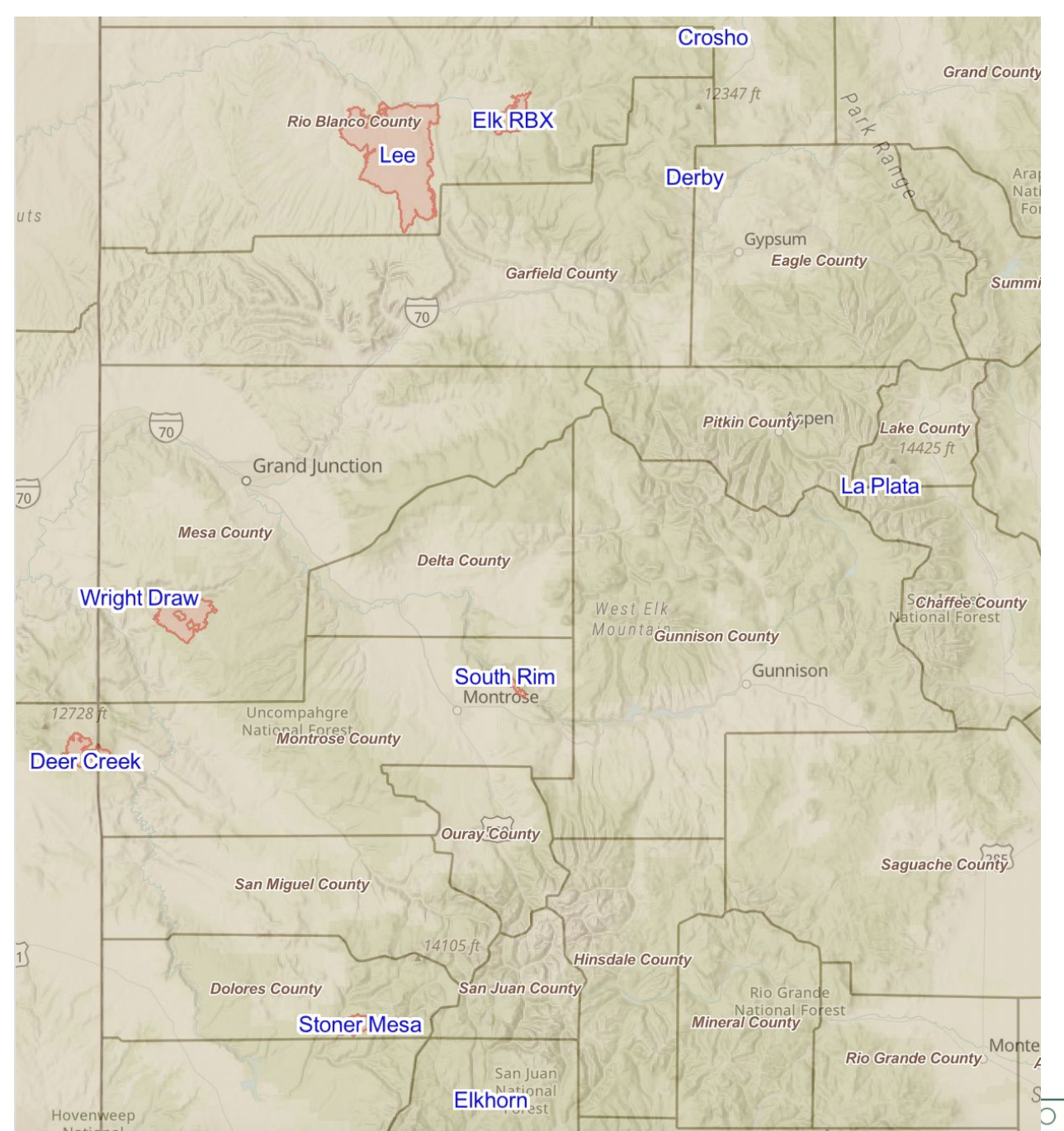
Lack of Summer Precipitation

Same 60-day period for Vail... 2025 has been the driest by far (though records date back ~40 years). Note 2024 was the wettest on record for this station!



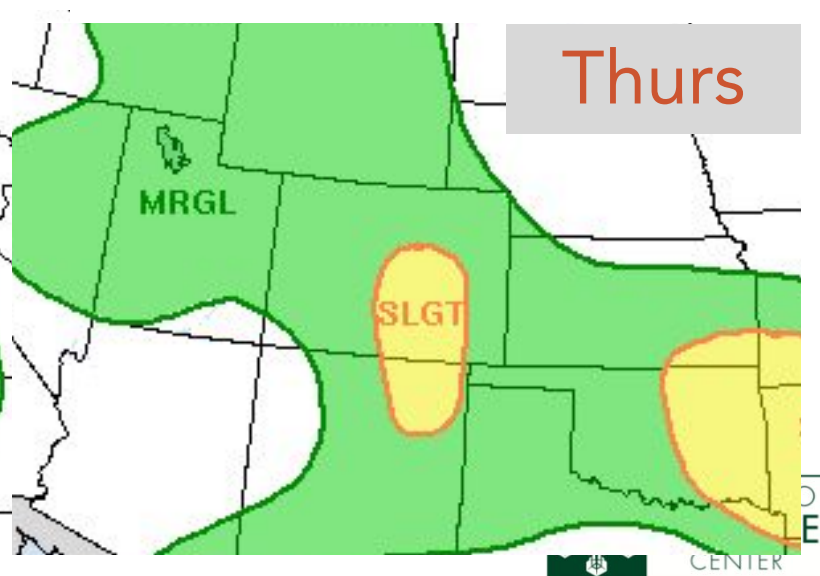
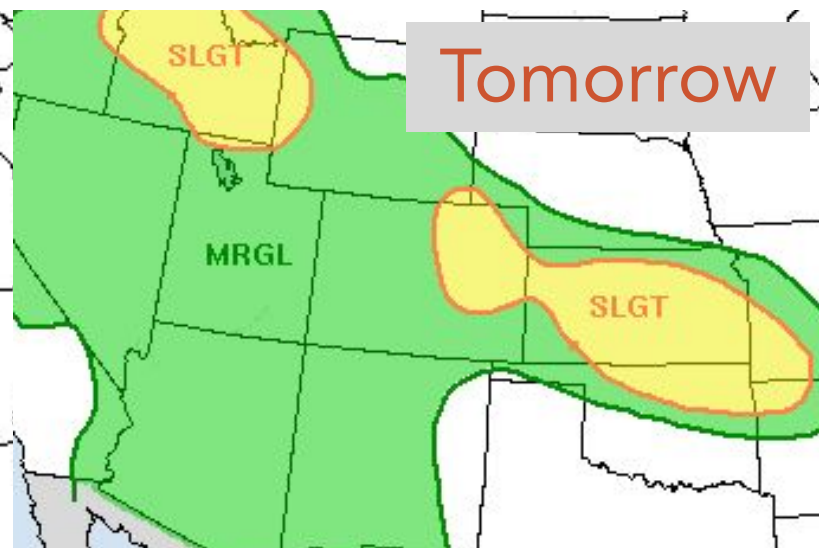
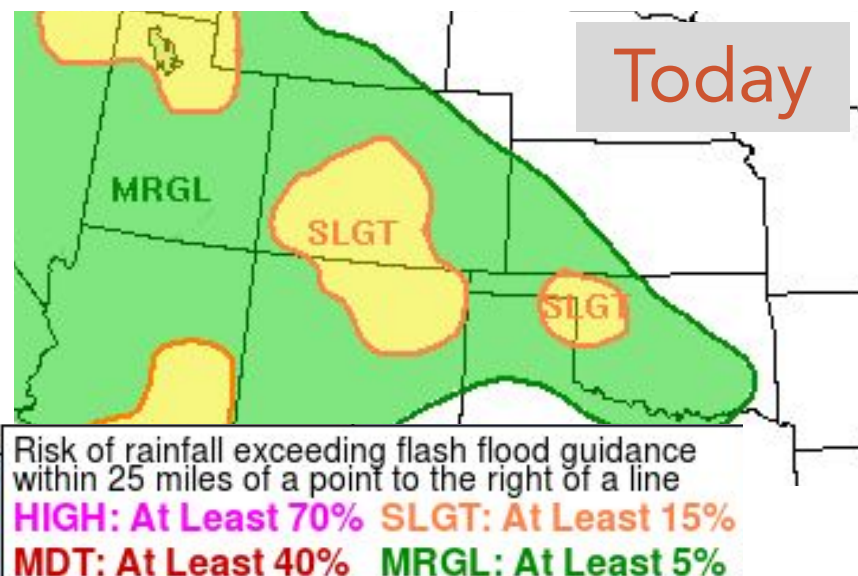
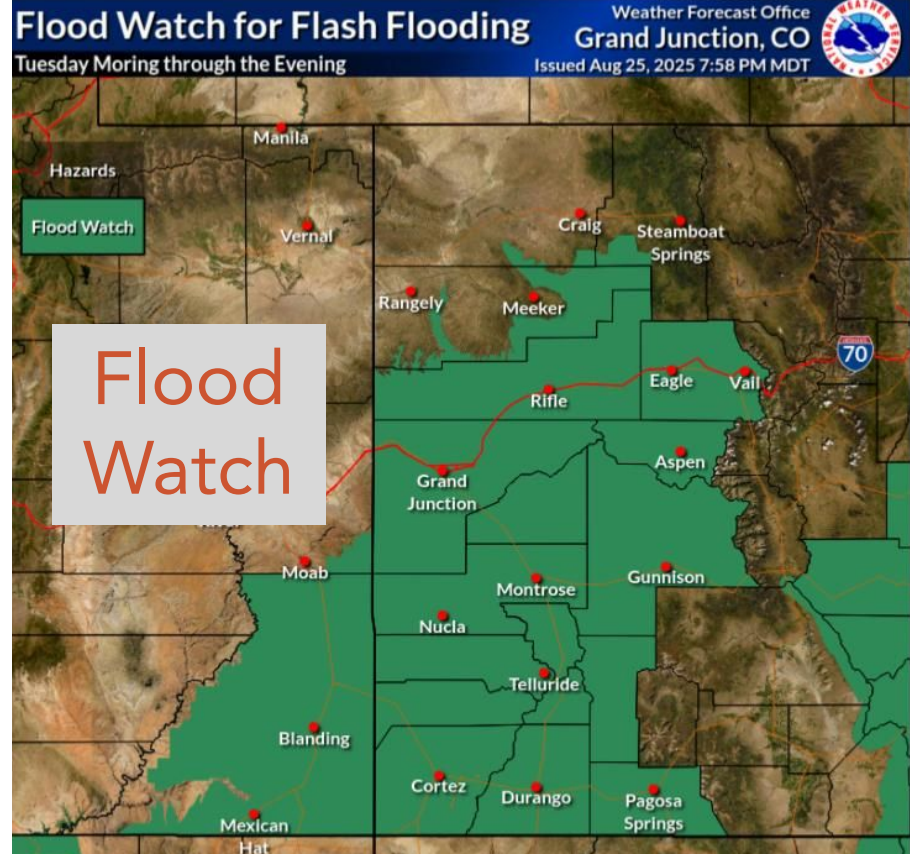
Wildfire activity

Several fires intensified during August, including the Lee Fire (now CO's 4th-largest on record in area burned at ~138k acres), Turner Gulch, South Rim (in Black Canyon of the Gunnison), Stoner Mesa, and now the Derby Fire (currently at 0% containment)



Burn scar flooding

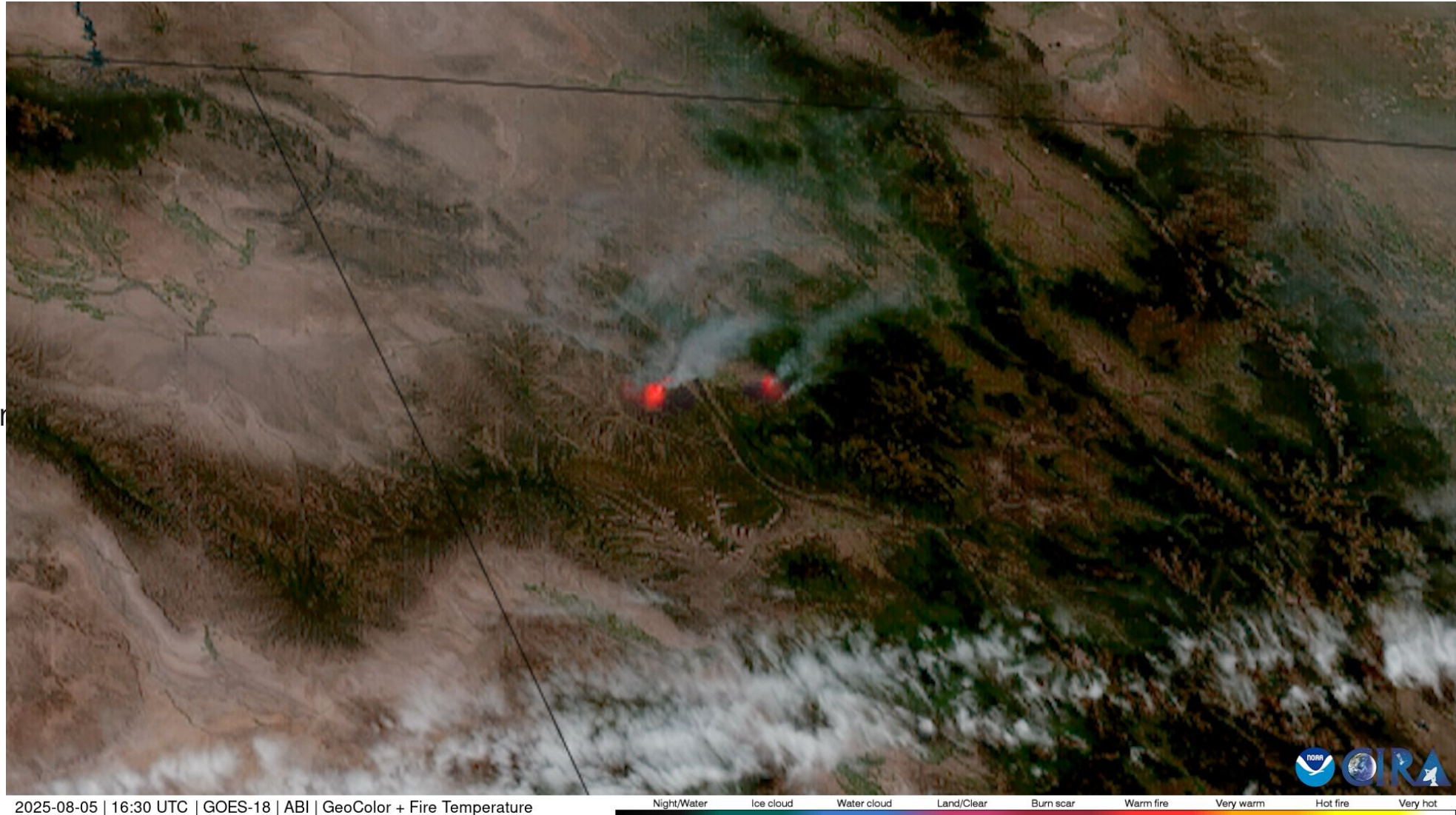
Some burn scar flooding has already occurred near the Lee Fire. Elevated flood risk through Thurs.



Drought Conditions

Wildfire smoke in western
CO on Aug. 5

Imagery from
CIRA/CSU/NOAA

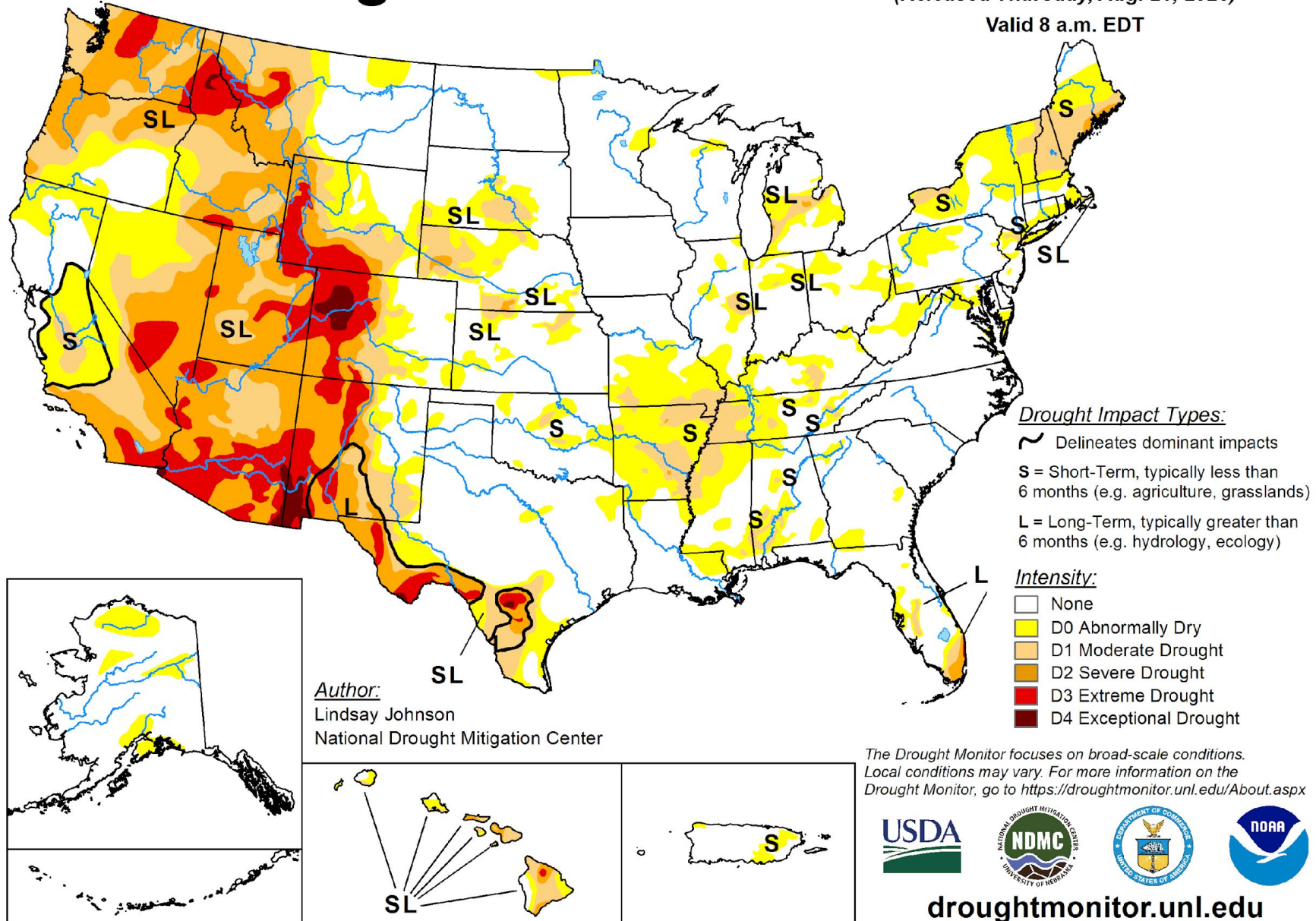


U.S. Drought Monitor

August 19, 2025

(Released Thursday, Aug. 21, 2025)

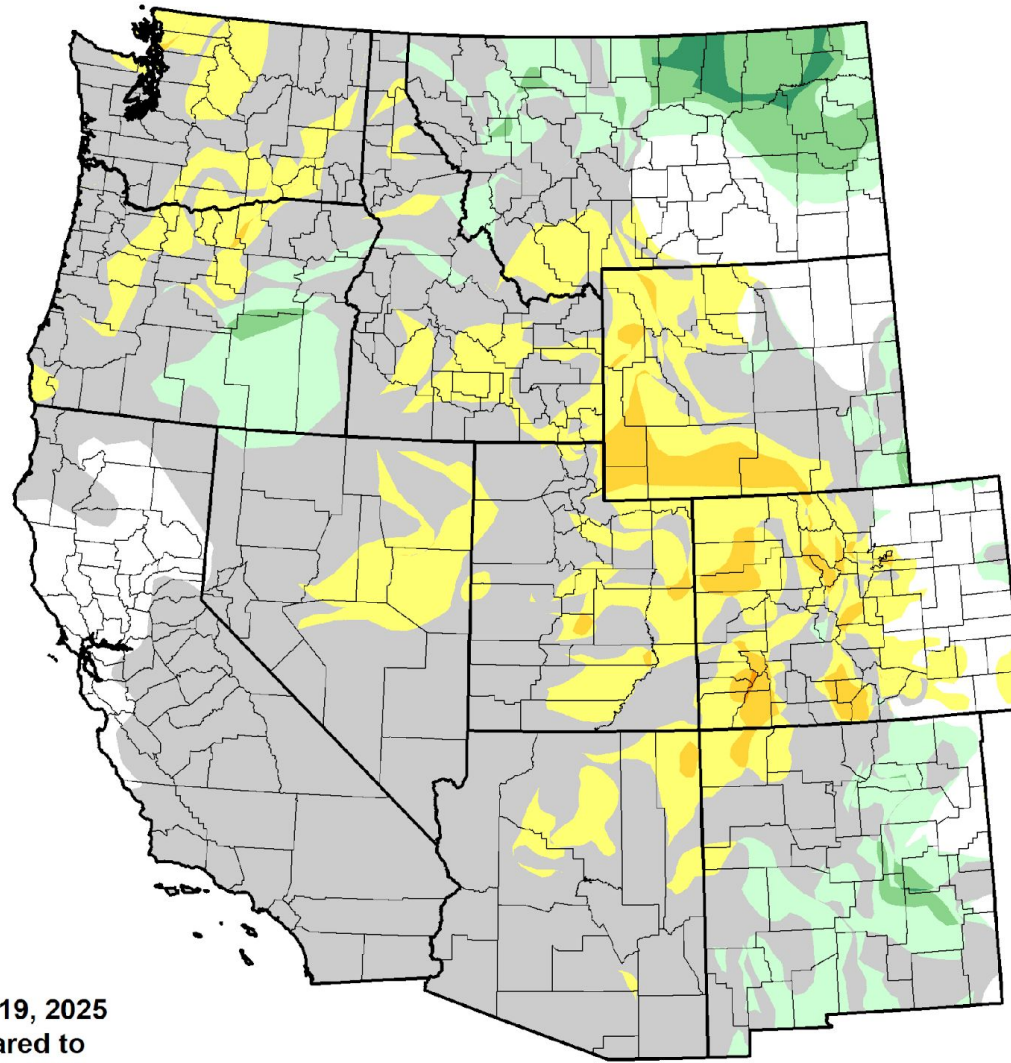
Valid 8 a.m. EDT



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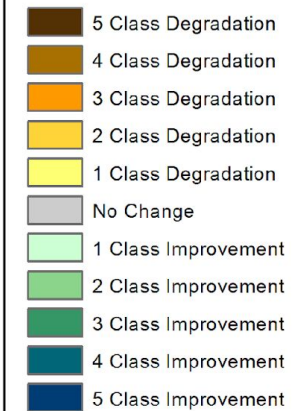


U.S. Drought Monitor Class Change - West 4 Week



August 19, 2025
compared to
July 22, 2025

droughtmonitor.unl.edu



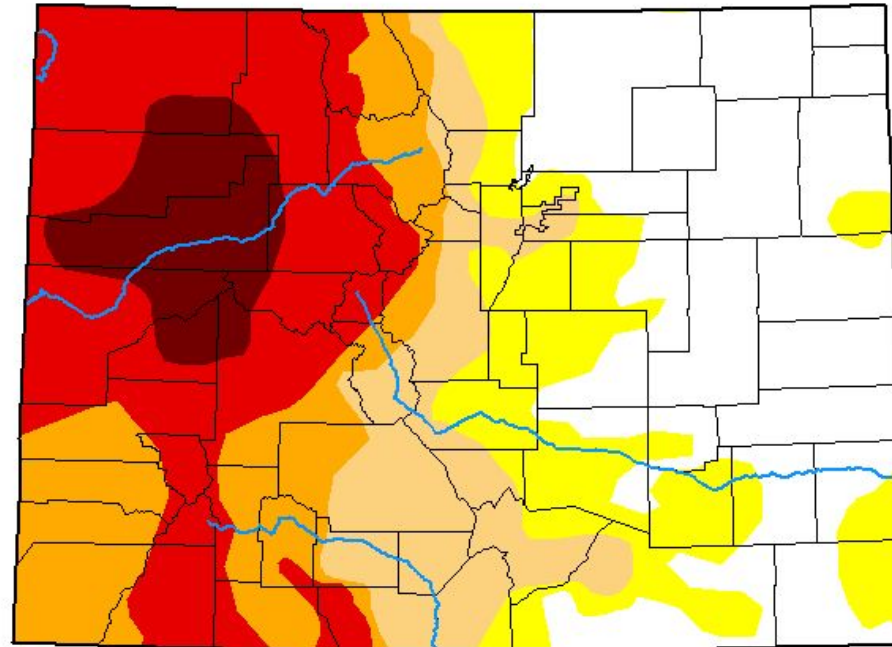
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U.S. Drought Monitor Colorado

Over half of CO is currently experiencing some level of drought.

Approximately 7% of the state is in exceptional (or D4) drought.



August 19, 2025

(Released Thursday, Aug. 21, 2025)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.40	69.60	54.15	42.29	28.92	7.05
Last Week 08-12-2025	37.87	62.13	47.28	40.16	20.30	7.05
3 Months Ago 05-20-2025	21.15	78.85	47.09	21.31	5.27	0.00
Start of Calendar Year 01-07-2025	71.40	28.60	10.78	4.08	0.98	0.00
Start of Water Year 10-01-2024	48.27	51.73	24.40	4.62	0.00	0.00
One Year Ago 08-20-2024	47.21	52.79	8.27	1.16	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:

Lindsay Johnson
National Drought Mitigation Center



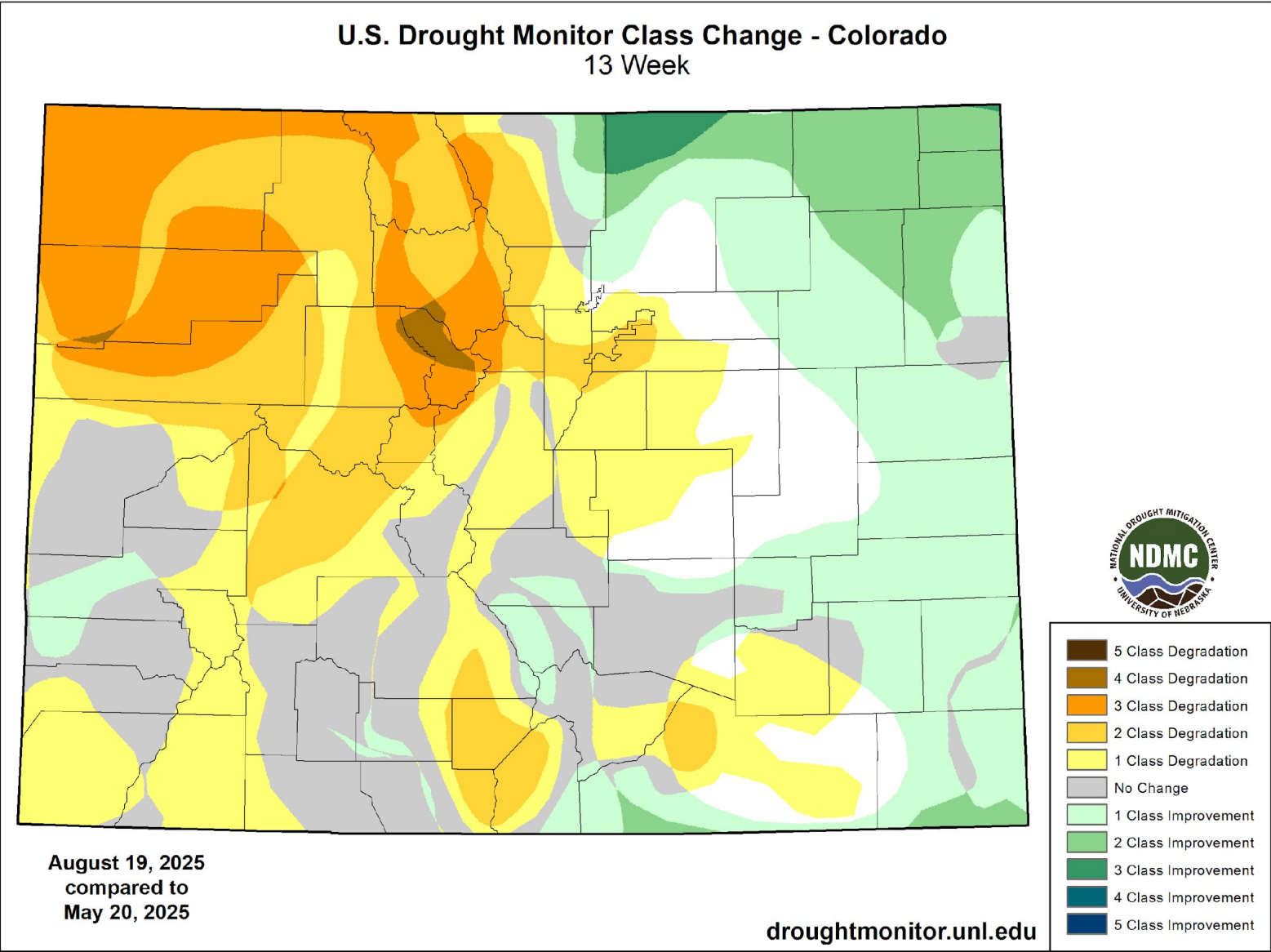
droughtmonitor.unl.edu



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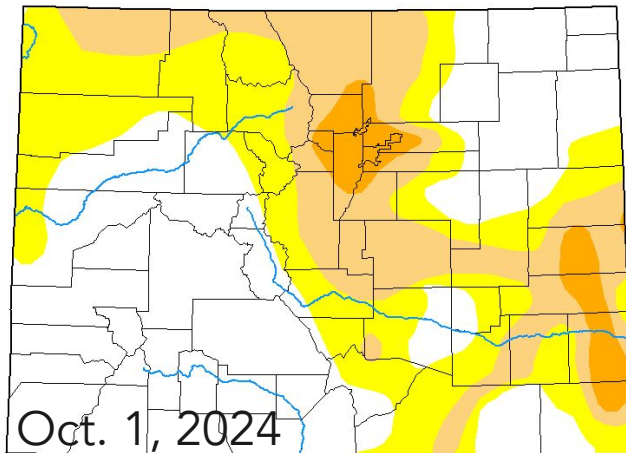


Change from mid-May to now

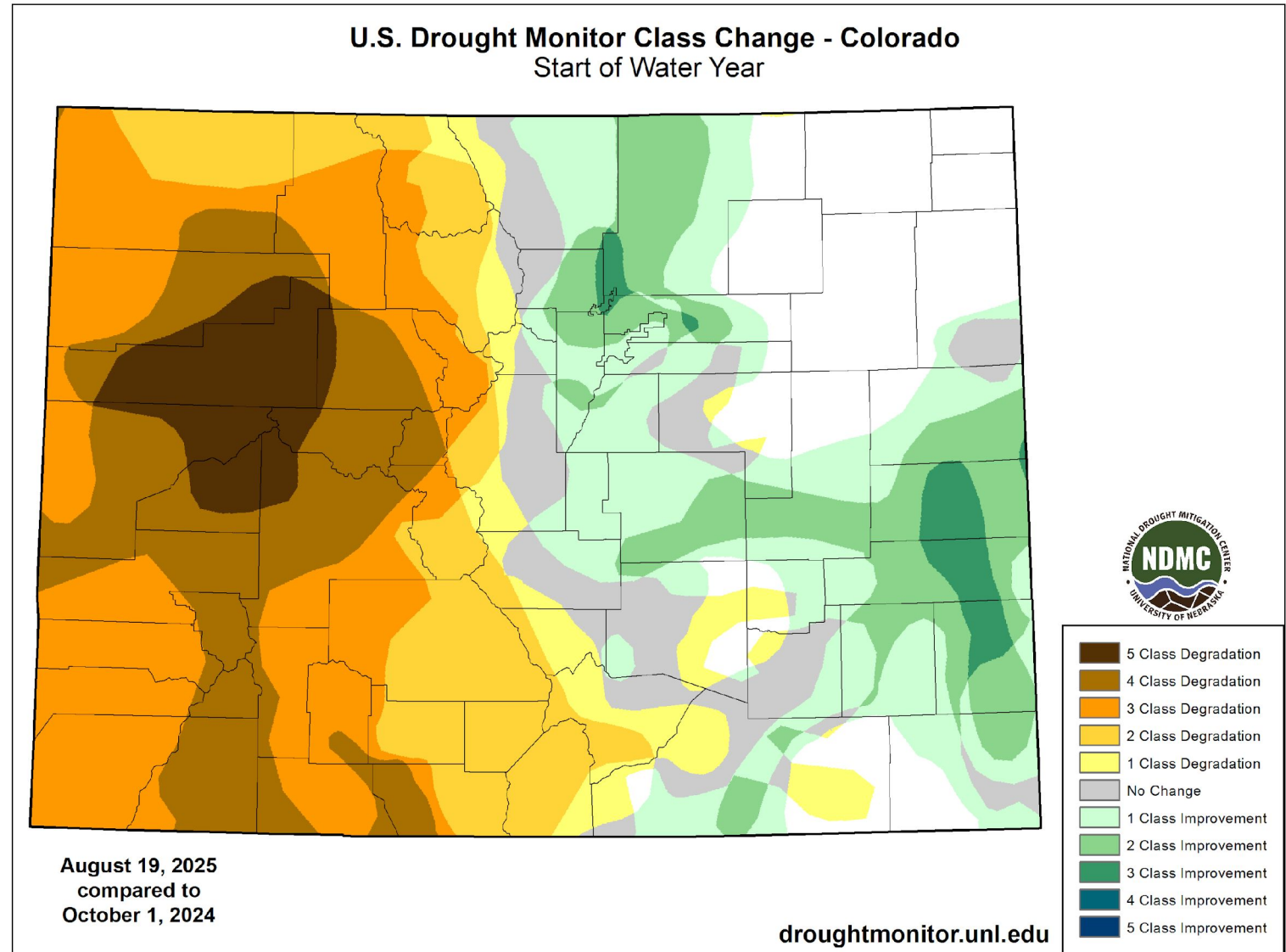


Areas west of the divide were basically drought-free at the start of WY2025, but that has changed dramatically.

TL;DR: Poor snowpack followed by hot, dry conditions this summer have led to deteriorating drought conditions over the West Slope. Consistent thunderstorm activity east of the Divide has relieved drought and prevented drought development.



Change from the start of the water year



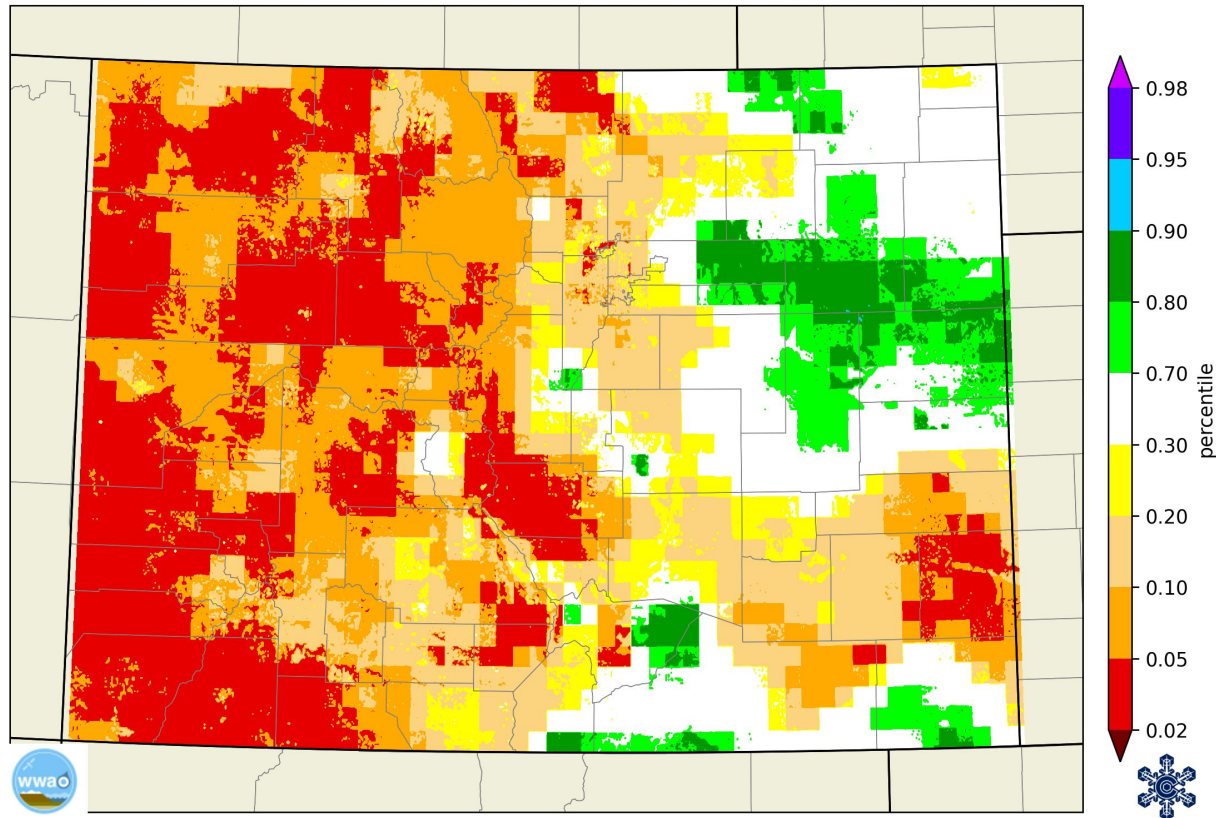
For a more in-depth look at drought during WY2025:
<https://climate.colostate.edu/blog/>



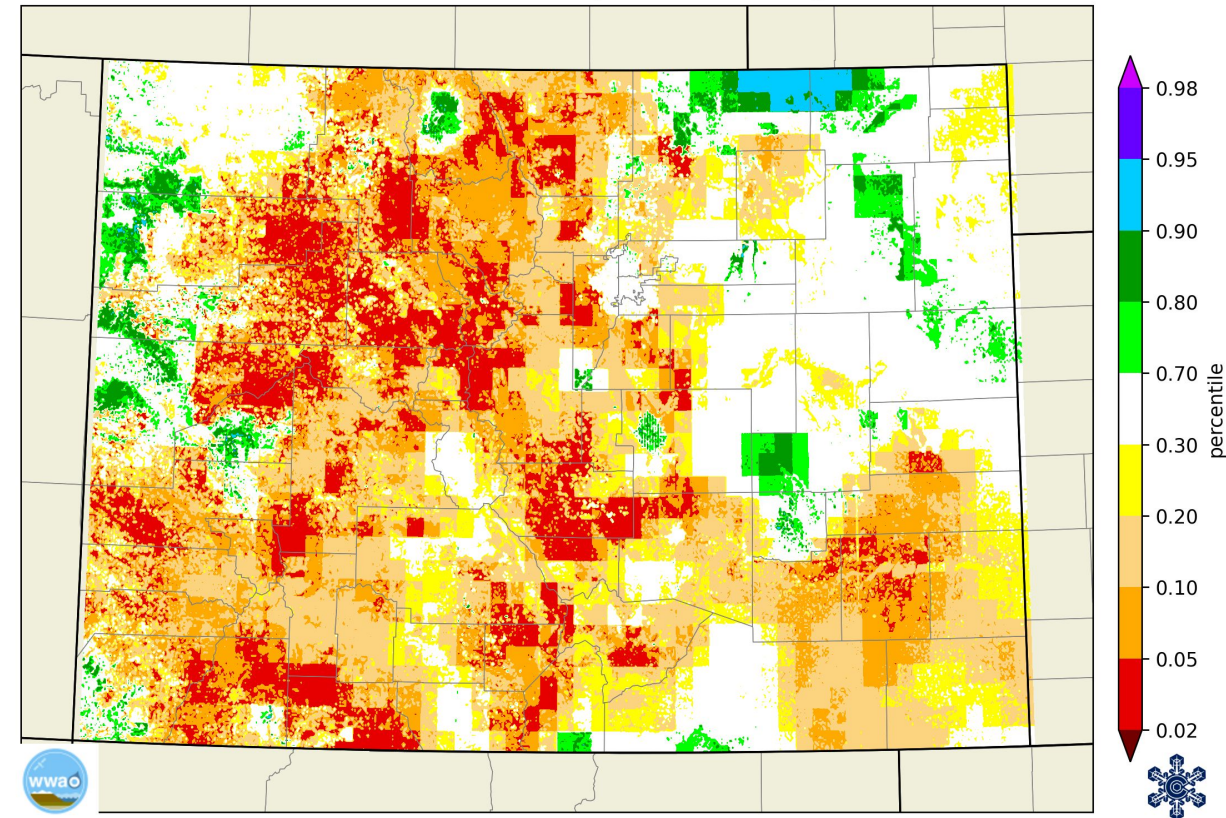
Soil Moisture

Low percentile soil moisture values across much of the western half of the state and parts of the Arkansas River Valley. Note this isn't taking recent precipitation into account

WLDAS 10-cm Soil moisture percentile, 21 Aug 2025



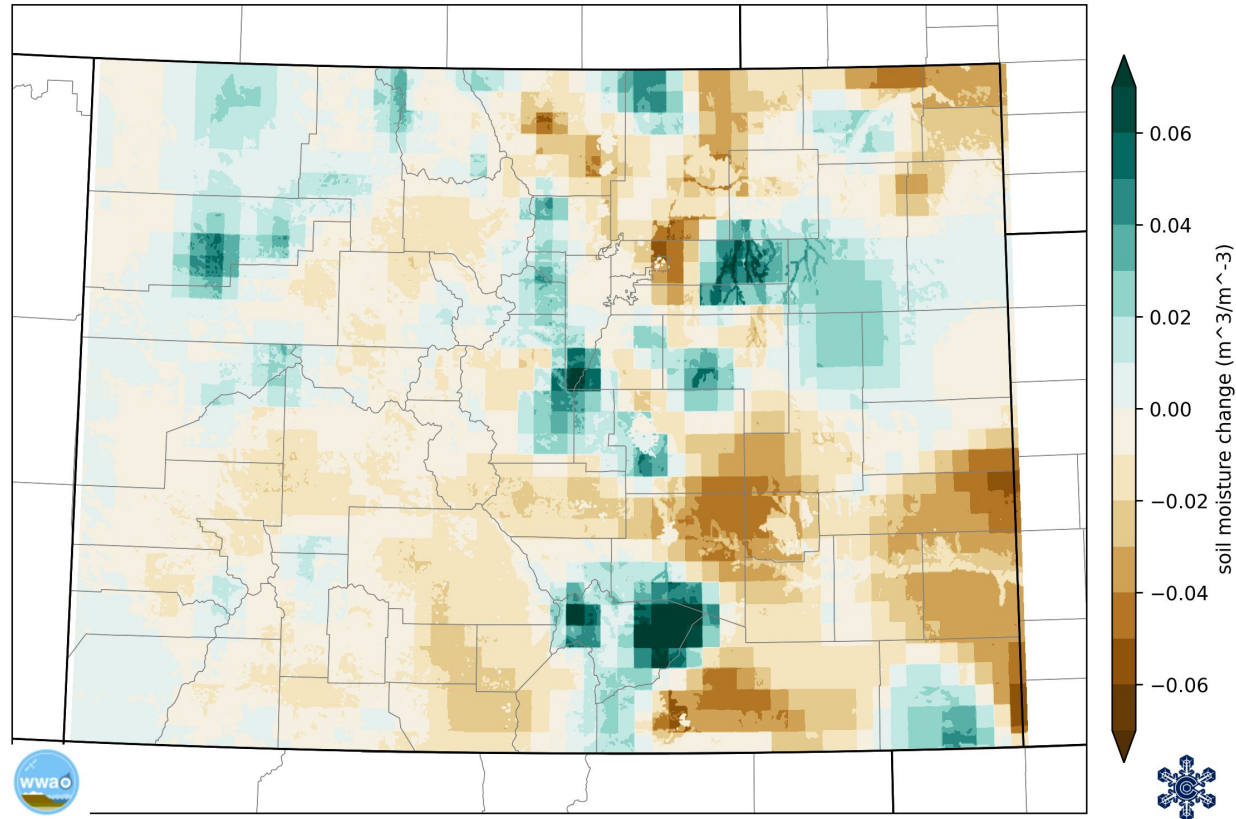
WLDAS 1-meter Soil moisture percentile, 21 Aug 2025



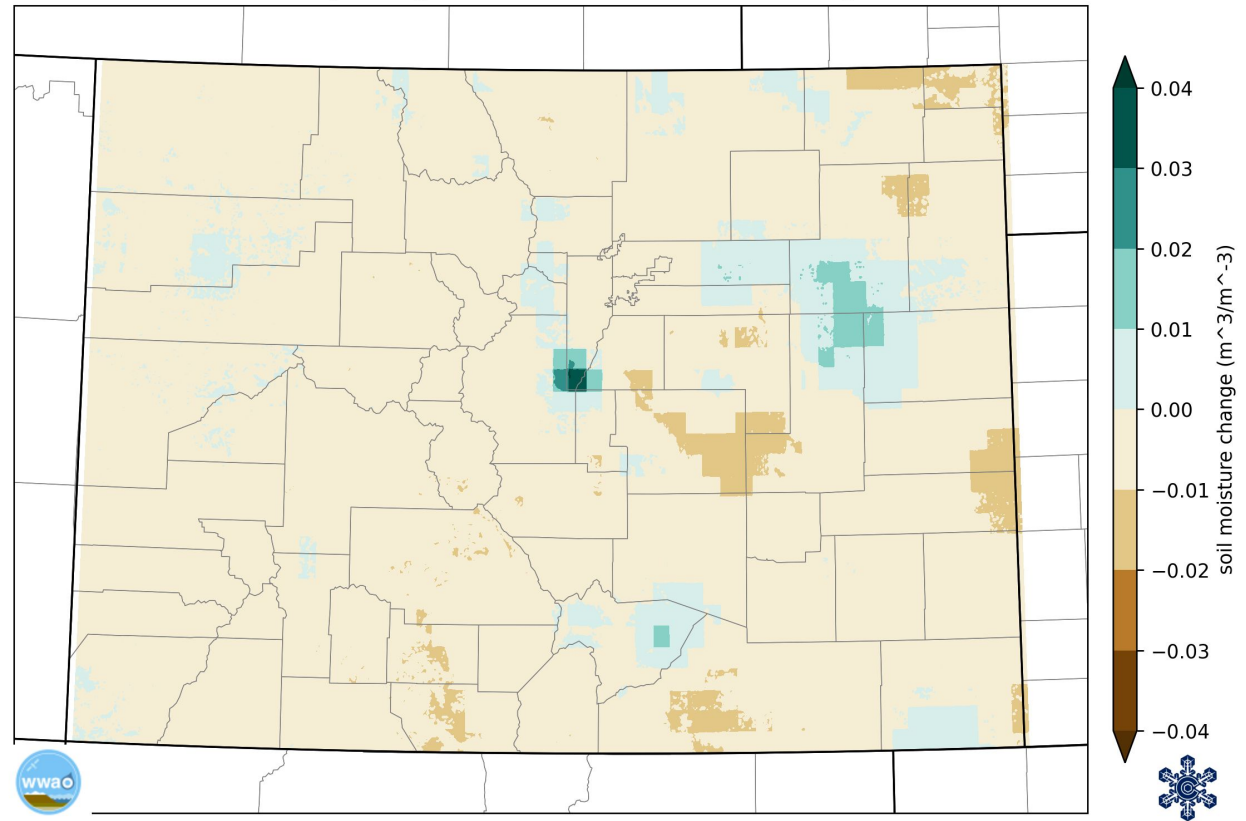
Soil Moisture

Mixed signals on the eastern plains, relatively steady conditions west

WLDAS 7-day change in 10-cm soil moisture, 21 Aug 2025



WLDAS 7-day change in 1-meter soil moisture, 21 Aug 2025

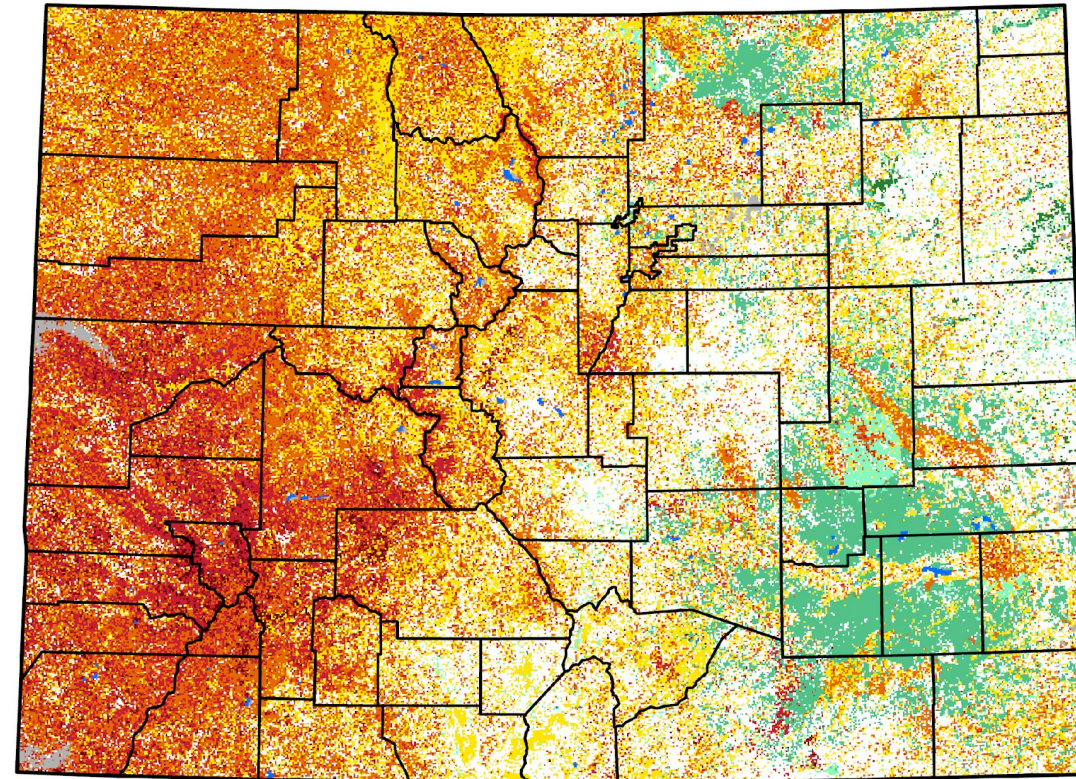


Drought indices +
satellite-derived vegetation
conditions

Severe to extreme drought
conditions– worst conditions
depicted around Ouray, San
Juan, Montrose, San Miguel
counties

Vegetation Drought Response Index Complete: Colorado

August 24, 2025



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-drought stress
- Near Normal
- Unusually Moist
- Very Moist
- Extreme Moist
- Out of Season
- Water



Outlook



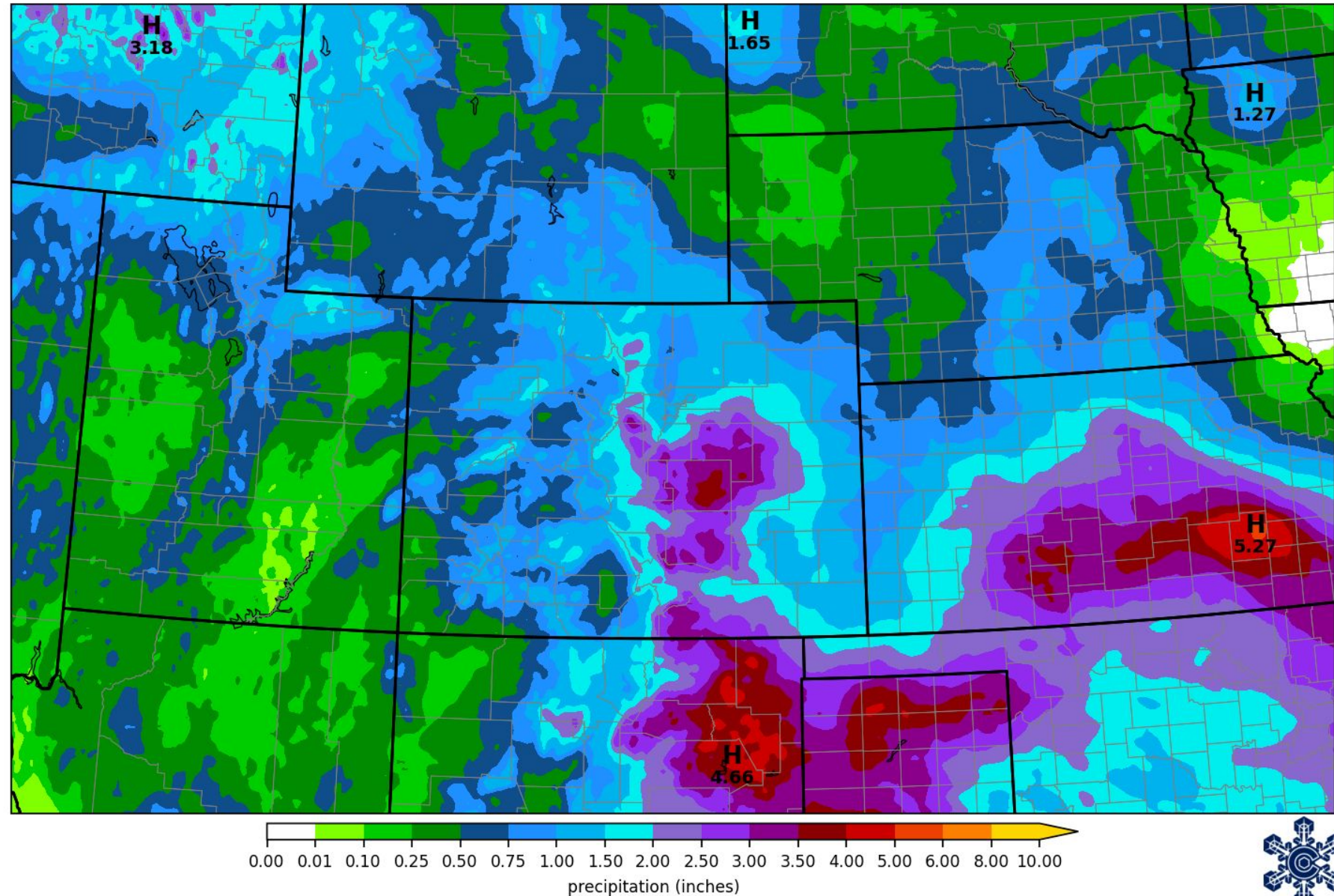
Steamboat Springs on Aug. 20

NOAA 7-day precipitation forecast

Widespread shower
& thunderstorm
activity, but local
totals will vary
substantially

NOAA Weather Prediction Center
7-day precipitation forecast

forecast issued 0000 UTC Tue 26 Aug 2025
precipitation in 168 hrs ending 0000 UTC Tue 02 Sep 2025

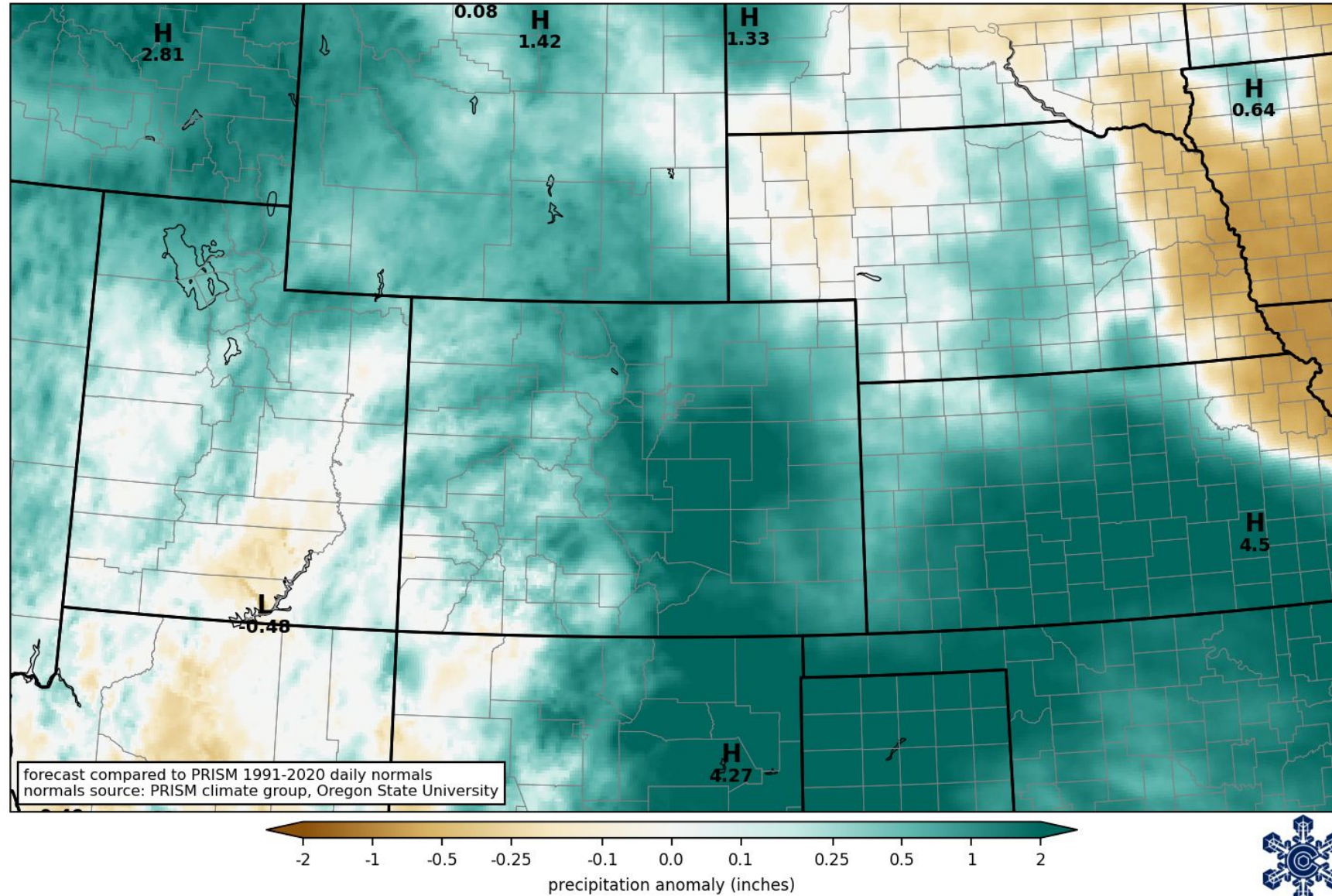


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NOAA 7-day precipitation forecast (difference from average)

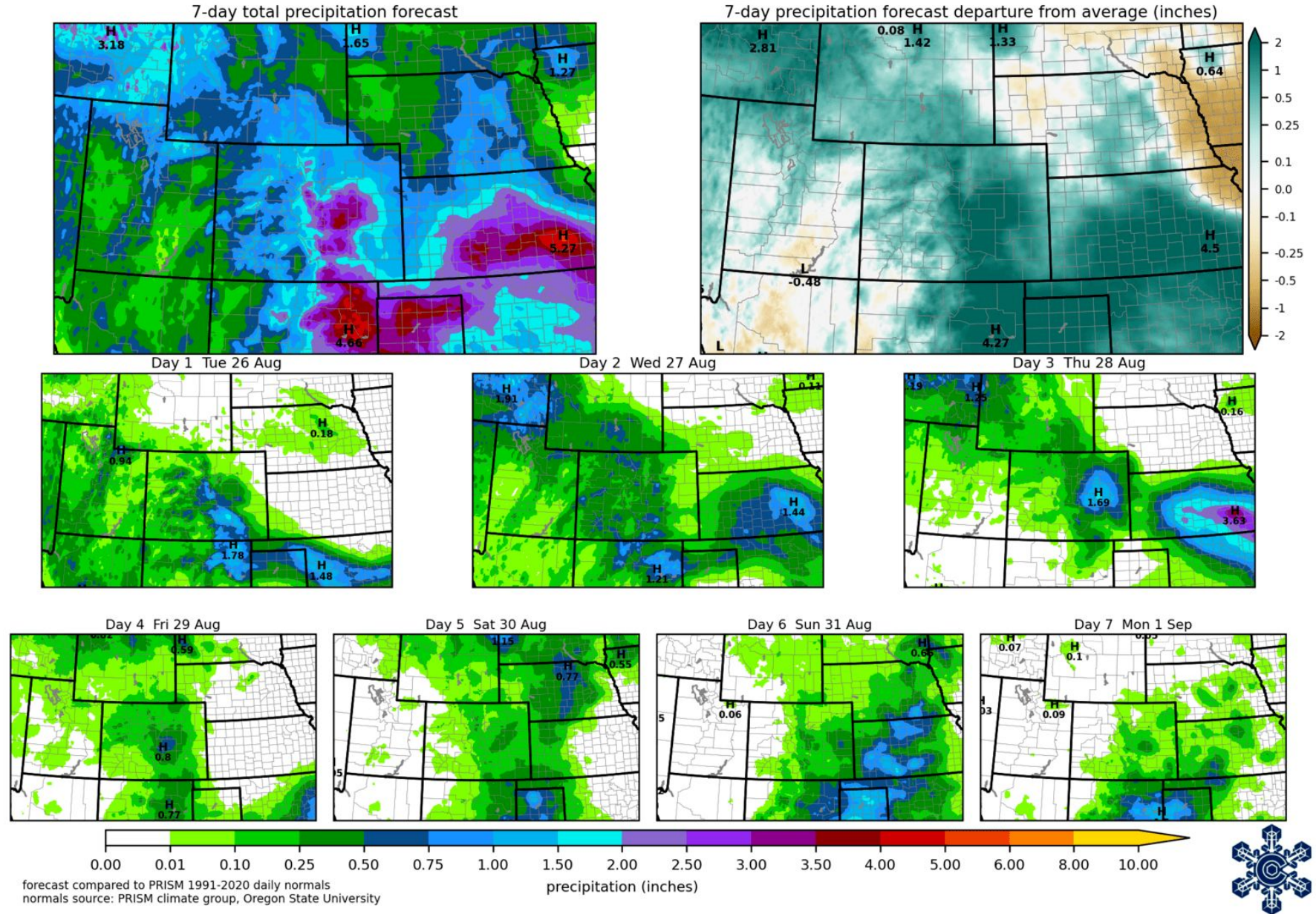
Above-average
precipitation nearly
everywhere!



NOAA Weather Prediction Center precipitation forecast
issued 0000 UTC Tue 26 Aug 2025

NOAA 7-day precipitation forecast (day-by-day)

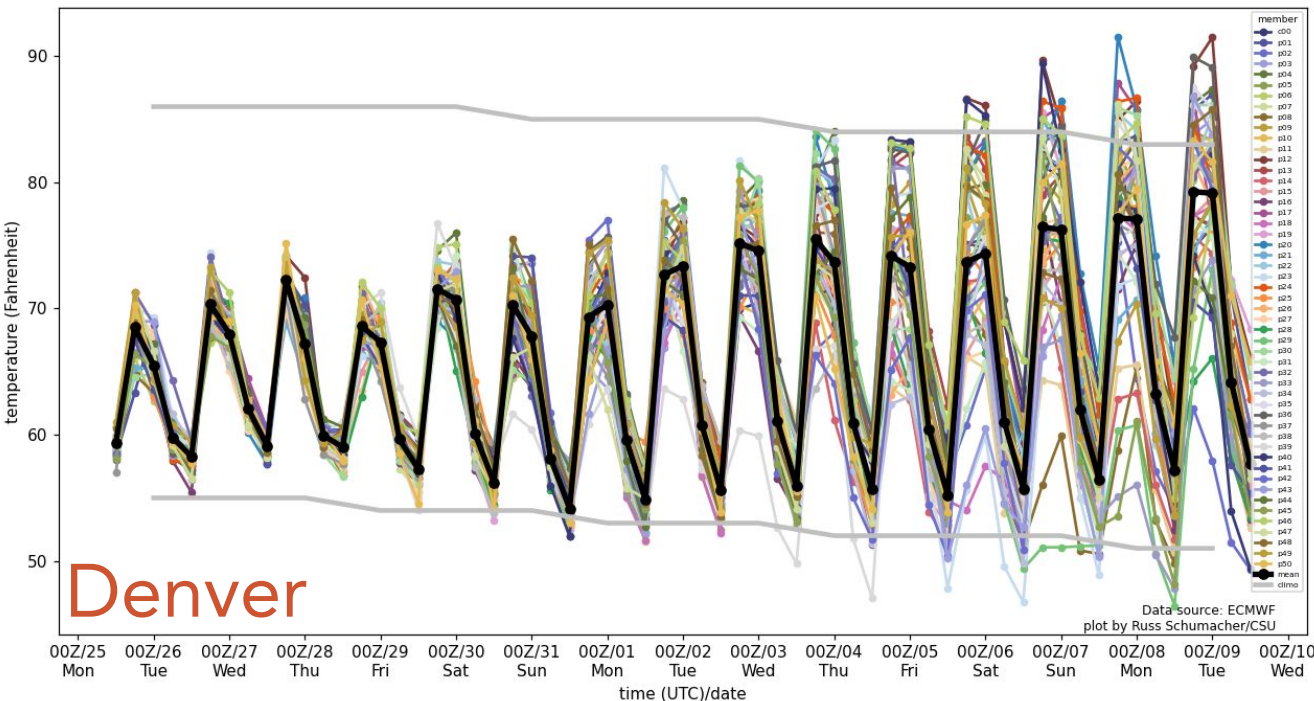
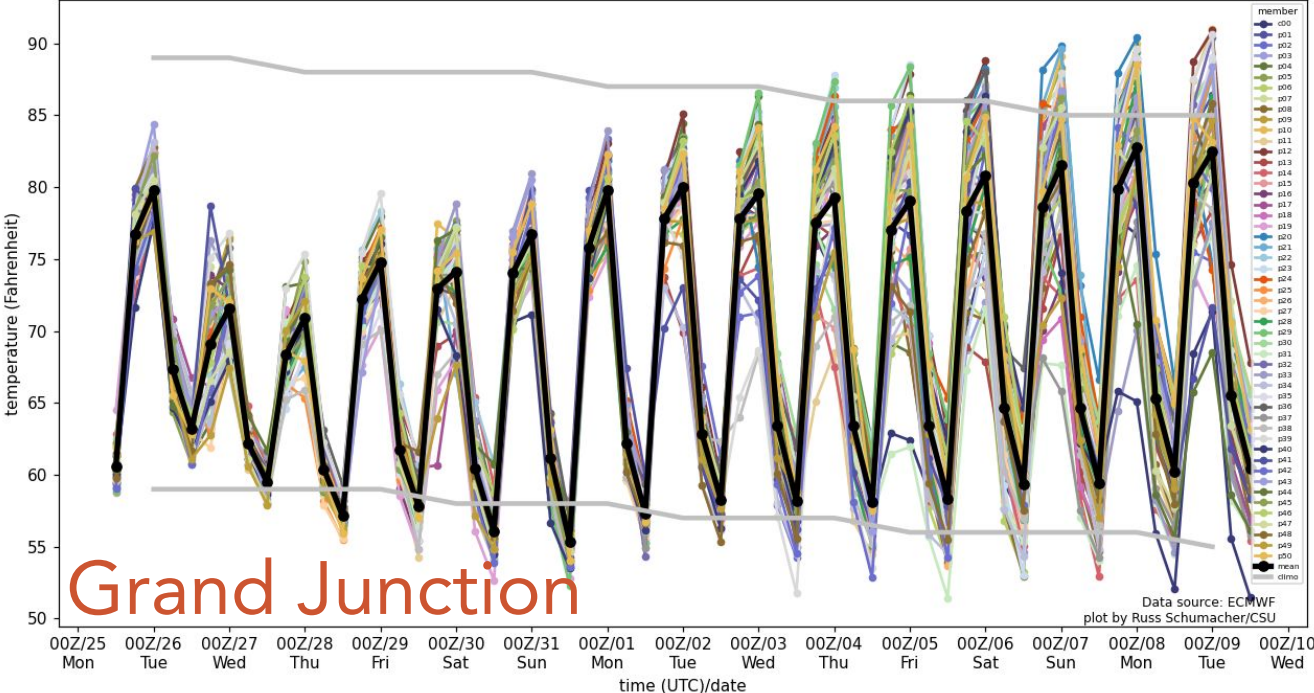
Drier west of the
Divide after Weds



Ensemble temperature outlook

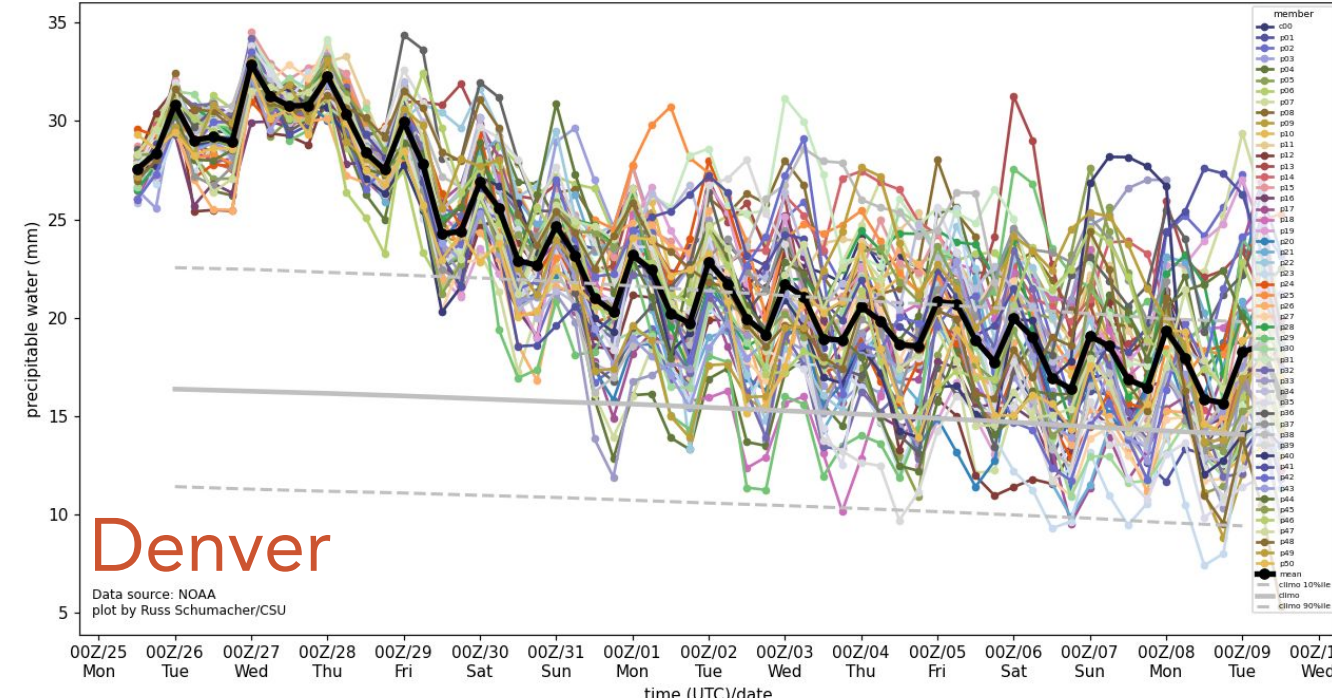
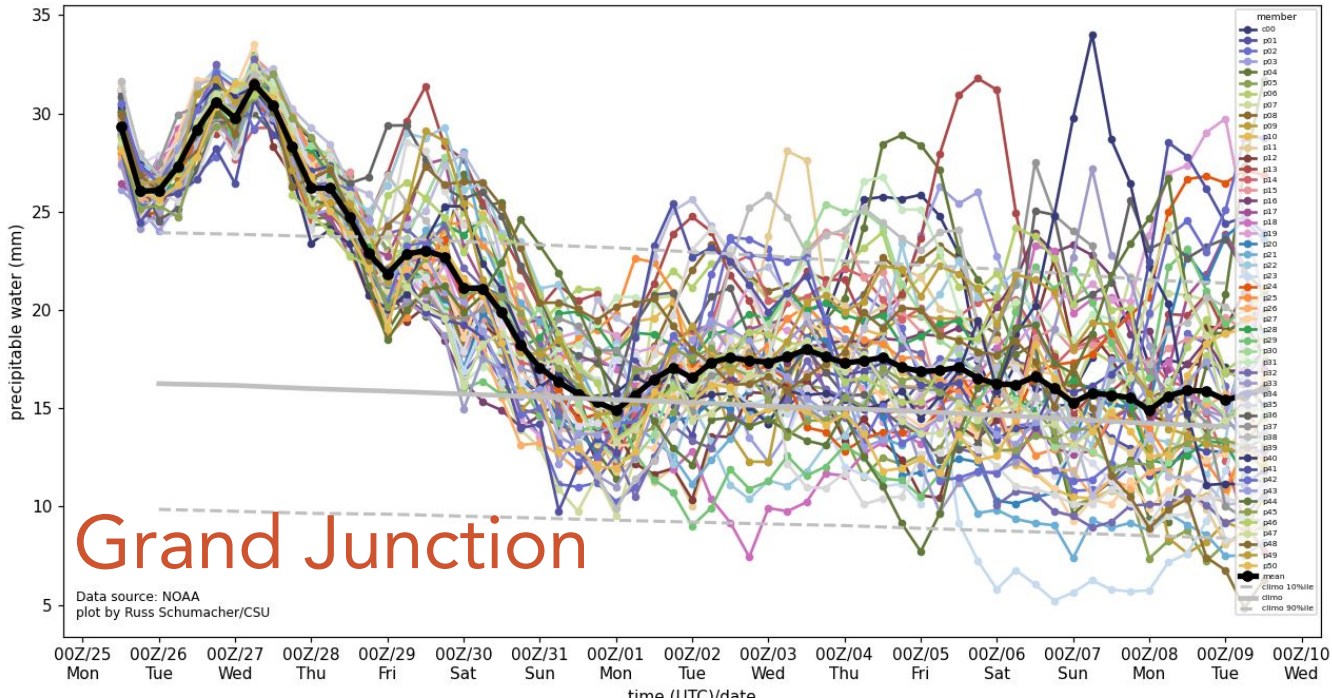
Steady warming trend after this weekend. We aren't done with summer heat yet.

Climatological last 90°F day is Sep. 7 (Grand Junction) and Sep. 5 (Denver)



Ensemble precipitable water: how's our forecasted moisture availability?

Values well-above average through
the end of the week

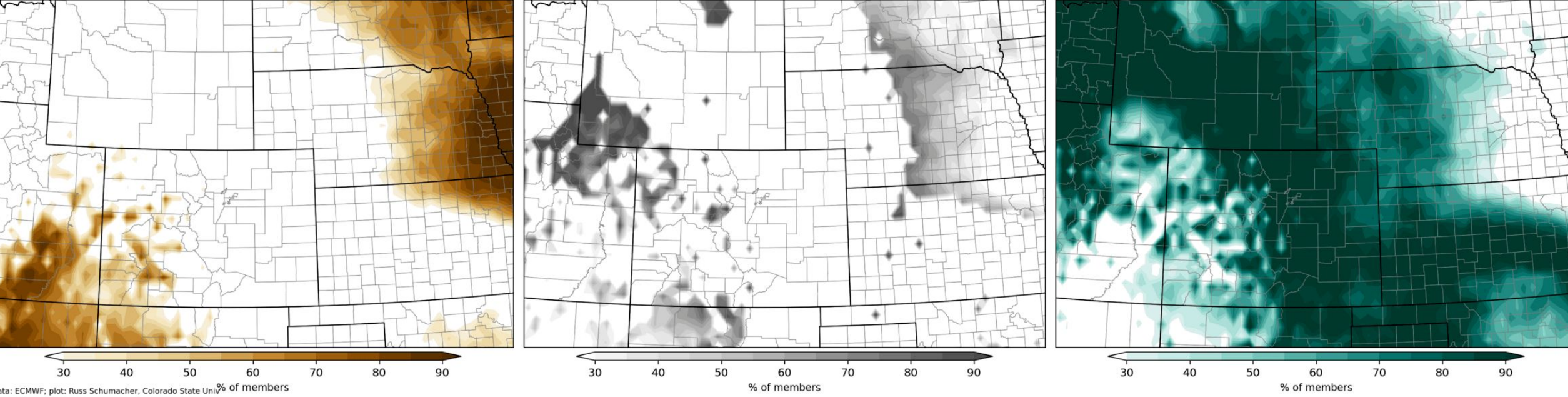


Will the next 15 days be above, below, or near-average precipitation?

Almost certainly wetter than average east of the Divide, less certain west

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 14 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
percent of EPS members at least 0.1" above average
initialized 0000 UTC Tue 26 Aug 2025
336-h forecast valid 0000 UTC Tue 09 Sep 2025



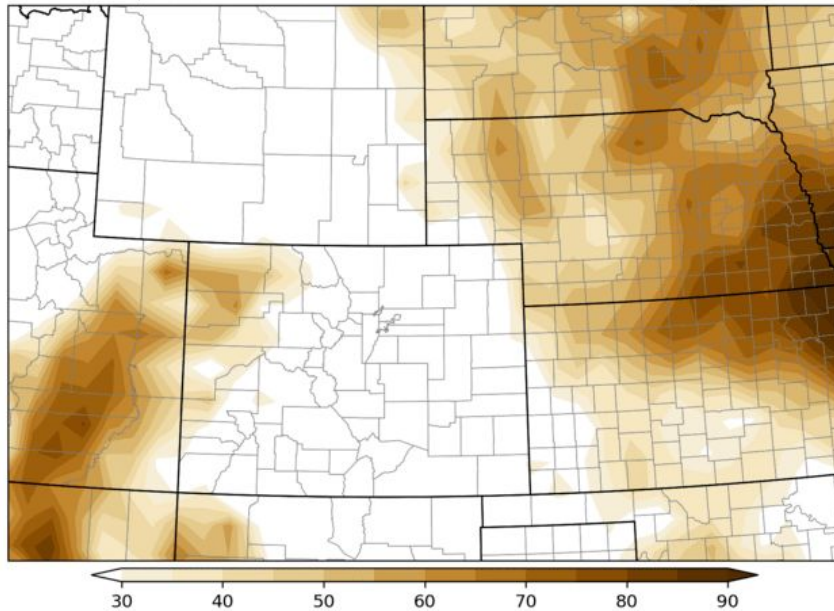
Percent of members below average Percent of members within 0.1" Percent of members above avg

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

Will the next 15 days be above, below, or near-average precipitation?

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

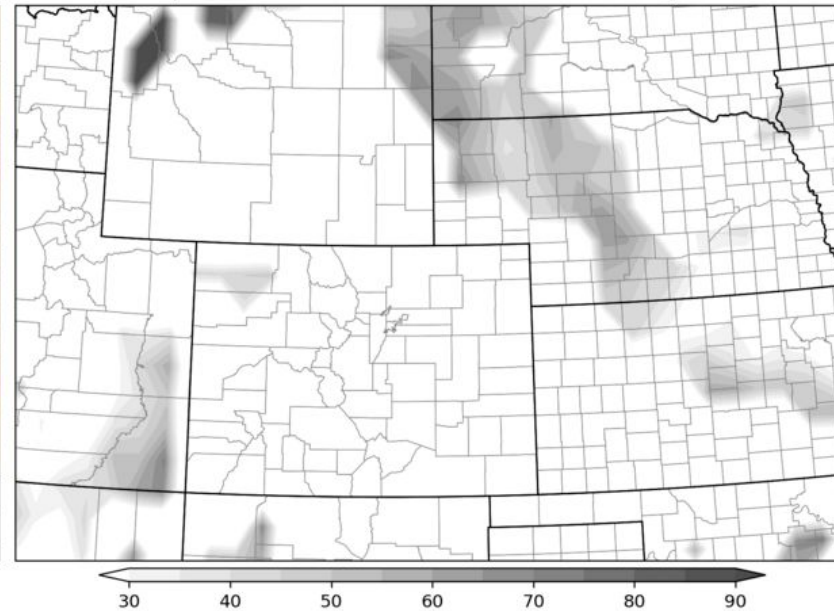
Global Ensemble Forecast System
accumulated precipitation departure from average through 14 days (baseline: PRISM 1991-2020 daily normals)
percent of GEFS members at least 0.1" below average



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

Percent of members below average

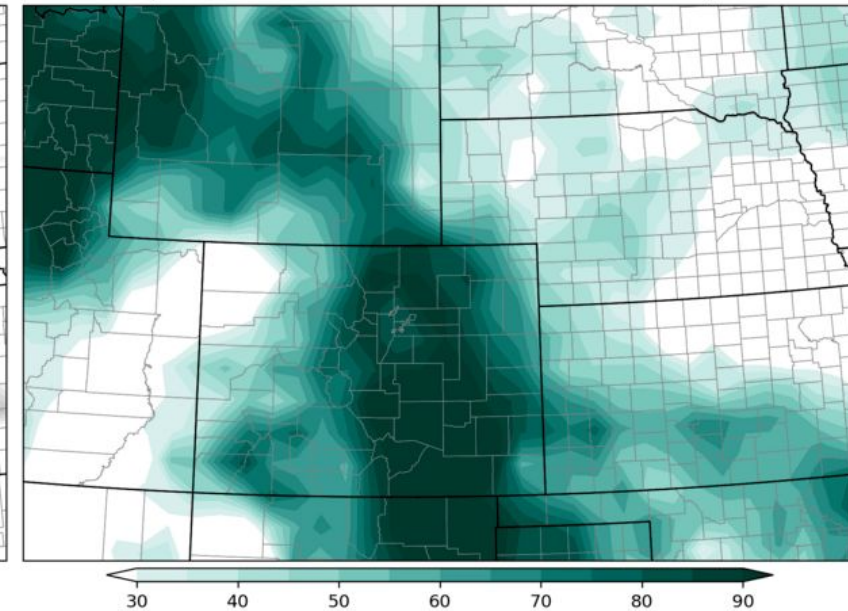
percent of GEFS members within 0.1" of average



Percent of members within 0.1"

initialized 0000 UTC Tue 26 Aug 2025
336-h forecast valid 0000 UTC Tue 09 Sep 2025

percent of GEFS members at least 0.1" above average



Percent of members above avg

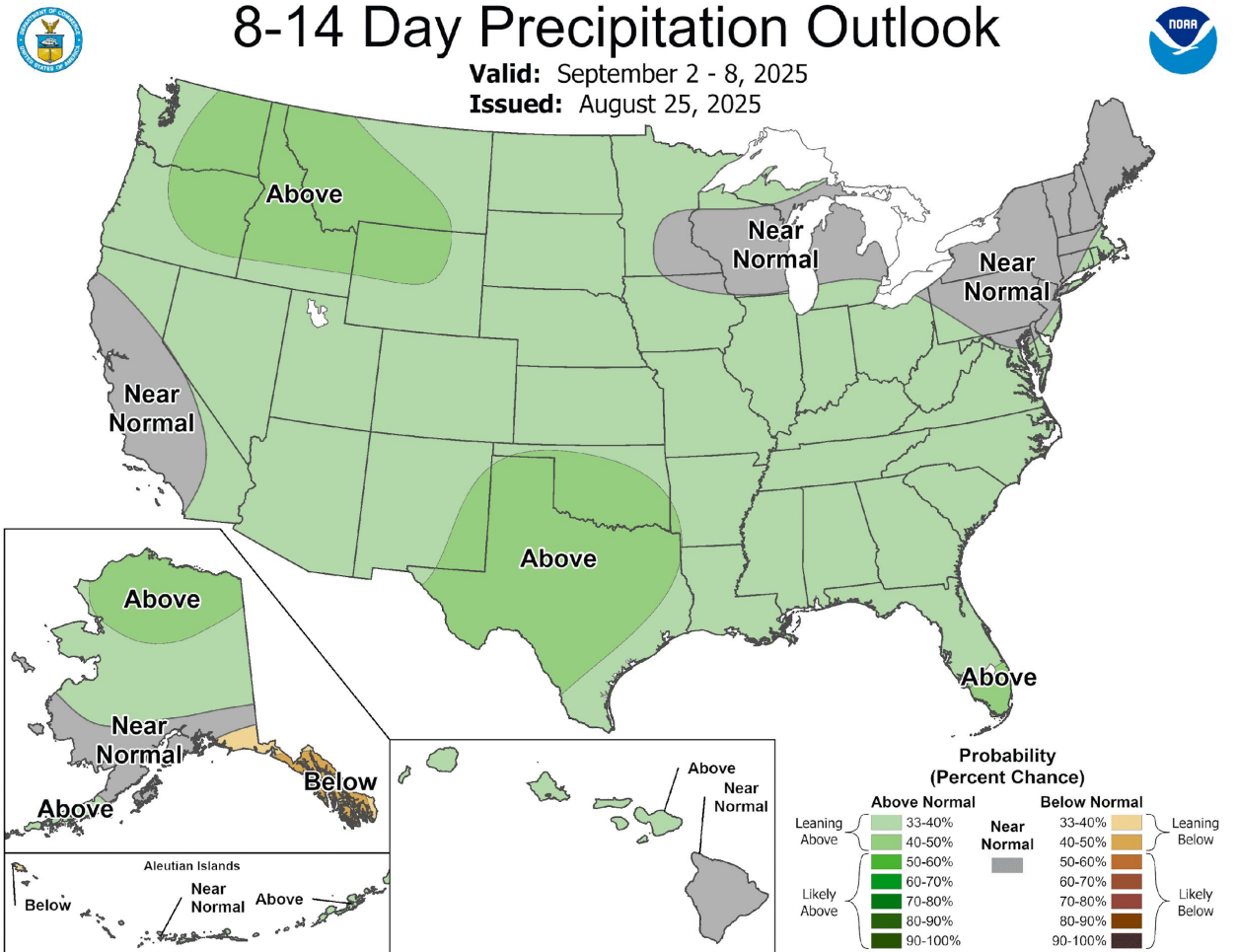
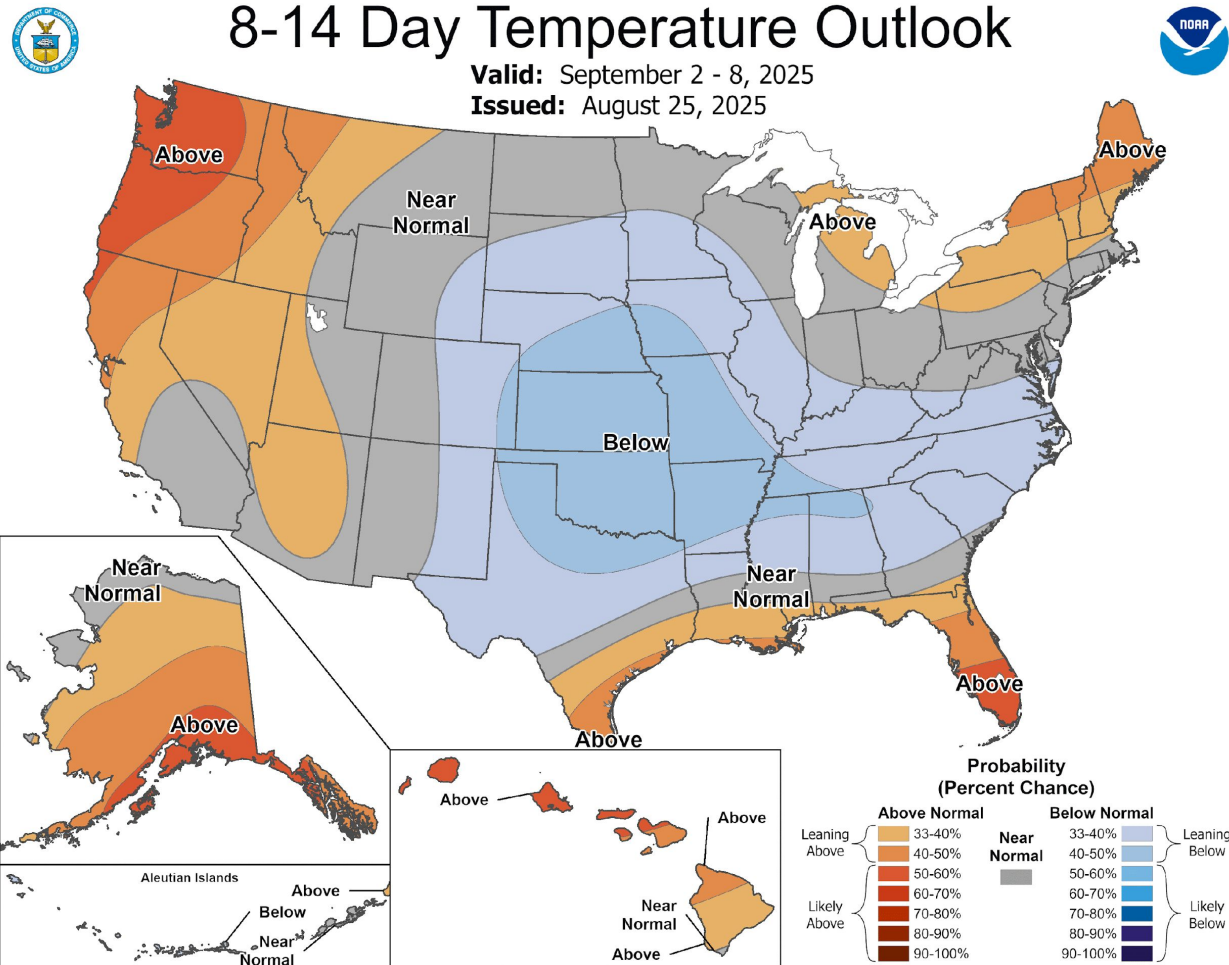
<https://schumacher.atmos.colostate.edu/weather/ecmwf.php>



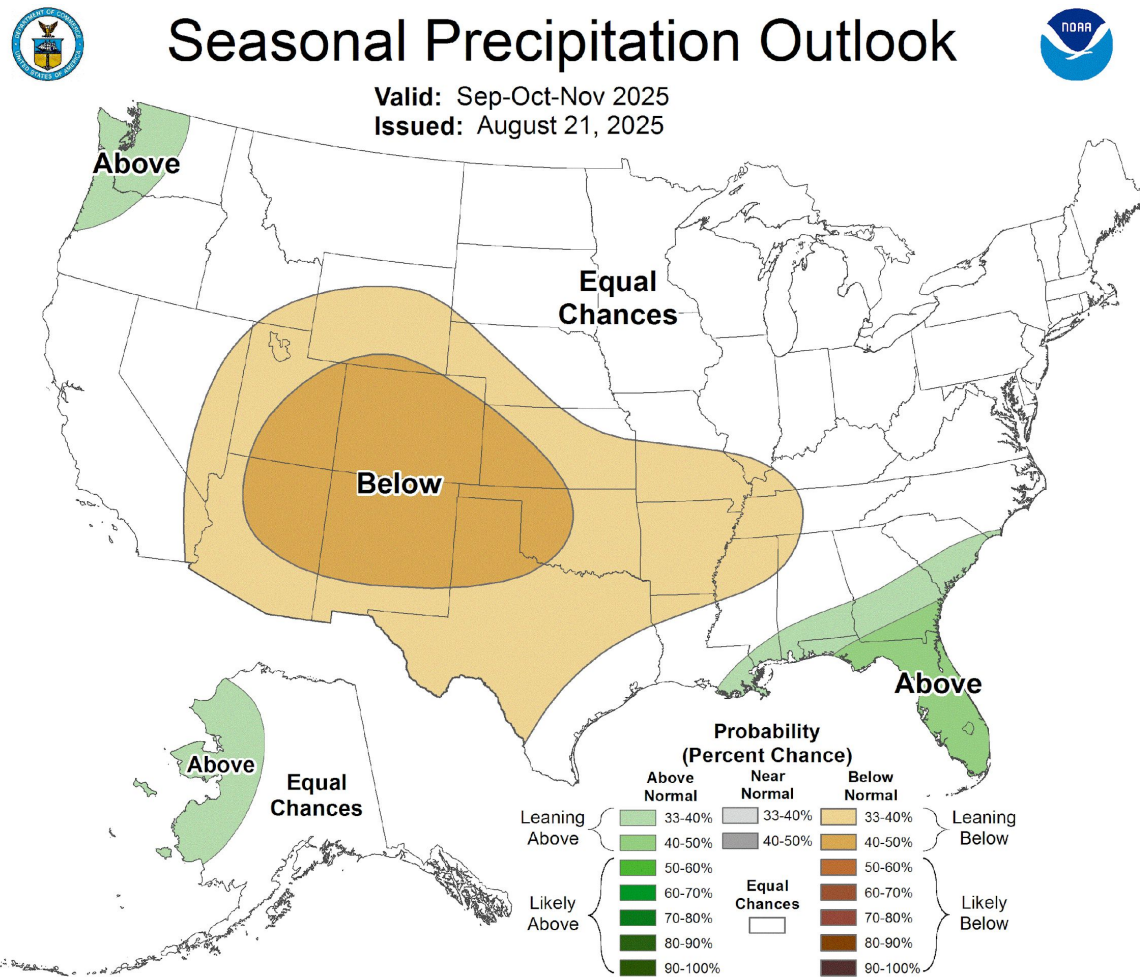
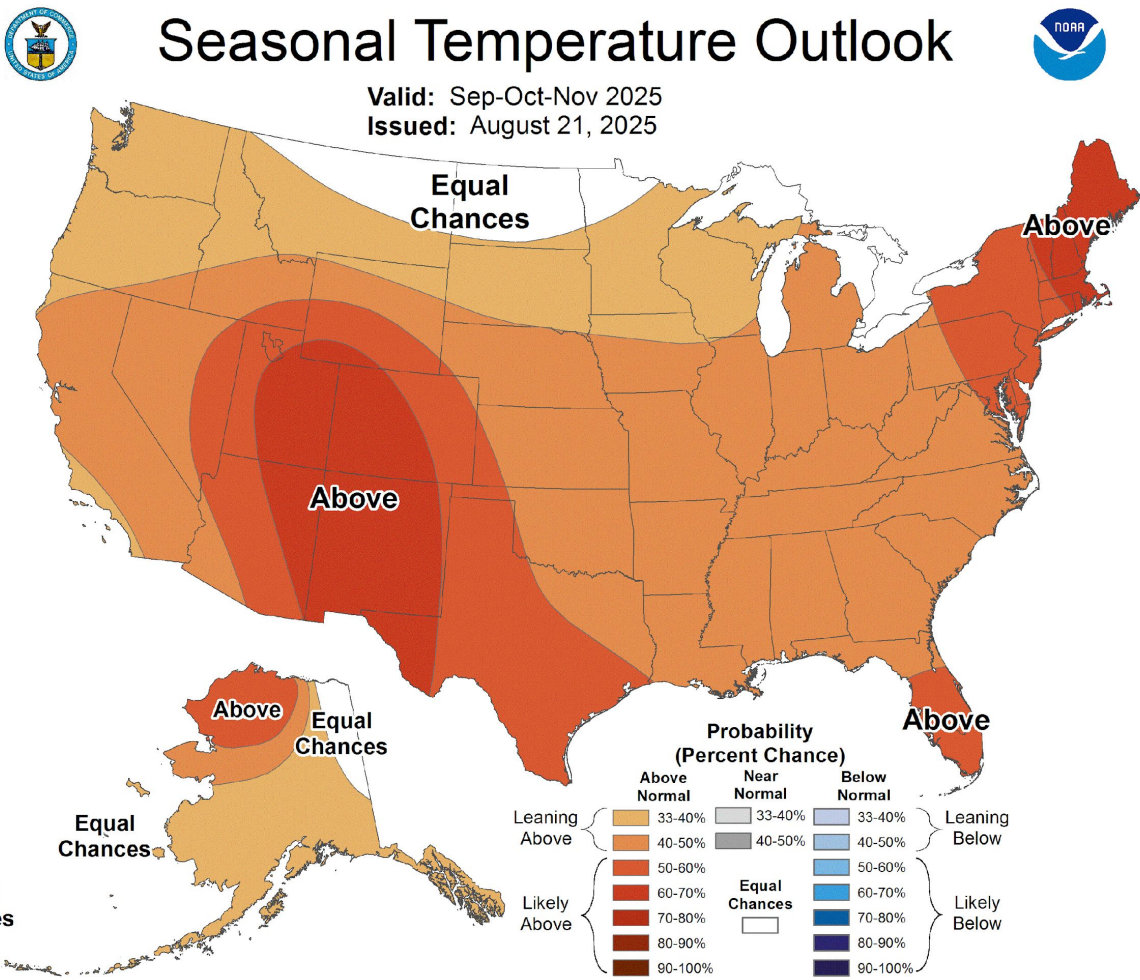
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8-14 day outlook: elevated chances for above-normal precipitation to persist into early Sep



Seasonal outlook: pattern shift expected in Sep. Elevated chances for above-normal temperatures and below-normal precipitation



ENSO outlook: La Niña watch in place.

"ENSO-neutral is most likely through the late Northern Hemisphere summer 2025 (56% chance in August-October). Thereafter, a brief period of La Niña conditions is favored in the fall and early winter 2025-26 before reverting to ENSO-neutral."

In CO, La Niña tends to bring drier than normal conditions during the fall months.

Official NOAA CPC ENSO Probabilities (issued August 2025)

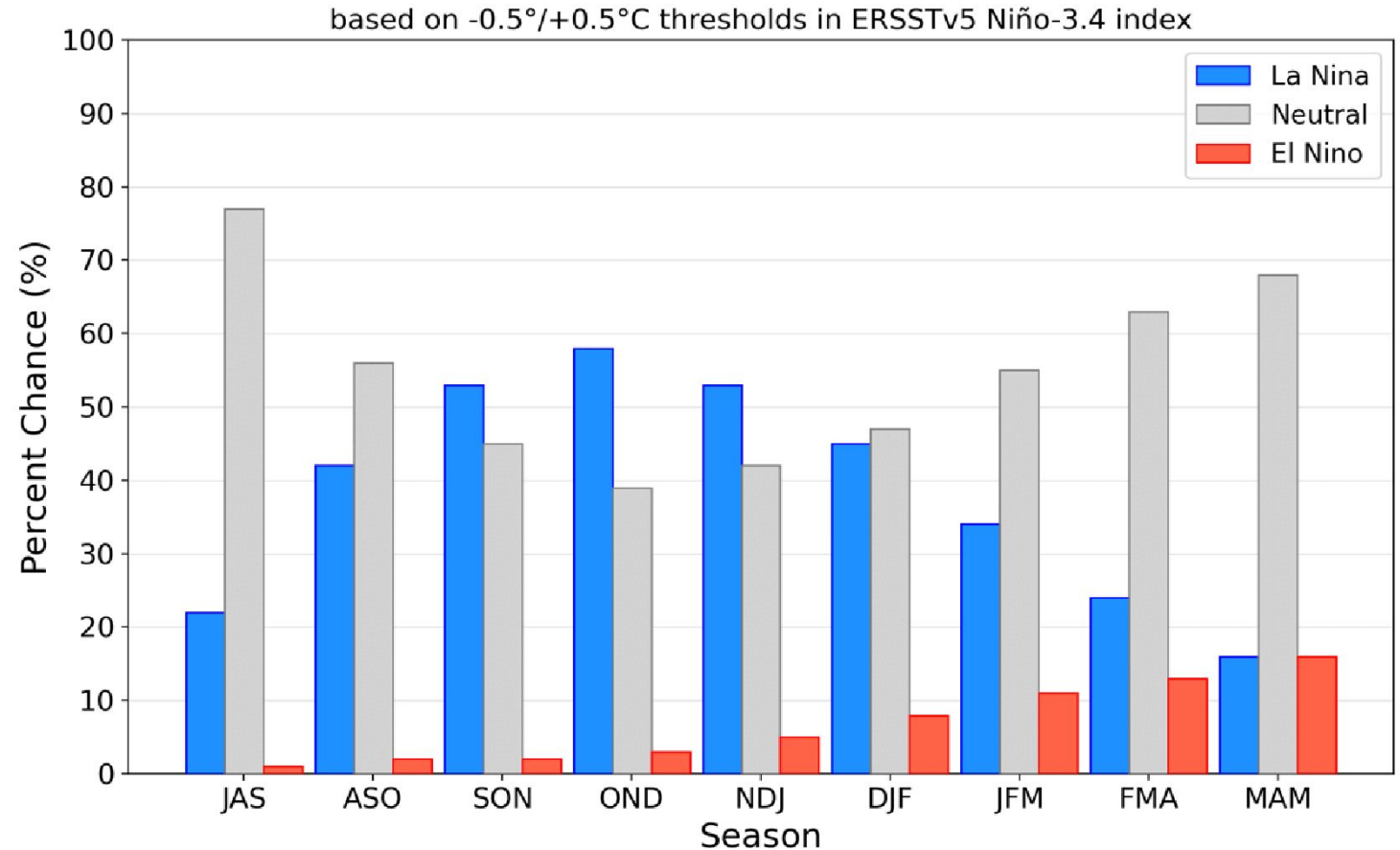


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N - 5°S , 120°W - 170°W). Figure updated 14 August 2025.



Key Takeaways

- WY 2025 has been abnormally warm and dry, with the worst conditions focused west of the divide
- July was the 6th consecutive month with statewide above-average temperatures
- Wildfires and drought have intensified across western CO over the past month
- Recent and upcoming precipitation will help in the short-term, but the outlook for fall is grim with La Niña conditions expected to develop



Thank you!



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WLDAS uses meteorological observables including precipitation, incoming shortwave and longwave radiation, near surface air temperature, humidity, wind speed, and surface pressure along with parameters such as vegetation class, soil texture, and elevation as inputs to a model that simulates land surface energy and water budget processes. Outputs of the model include soil moisture, snow depth and snow water equivalent, evapotranspiration, soil temperature, as well as derived quantities such as groundwater recharge and anomalies of the state variables.