

Colorado Climate Update

Russ Schumacher, state climatologist

Water Conditions Monitoring Committee

September 22, 2025



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

Water Year 2025 so far

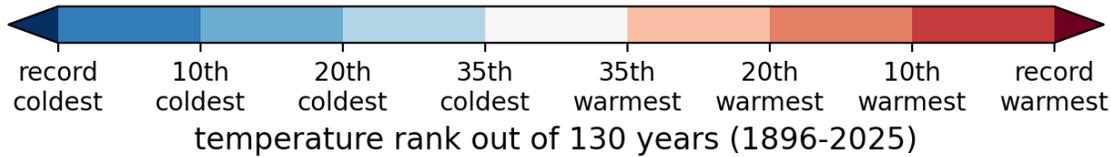
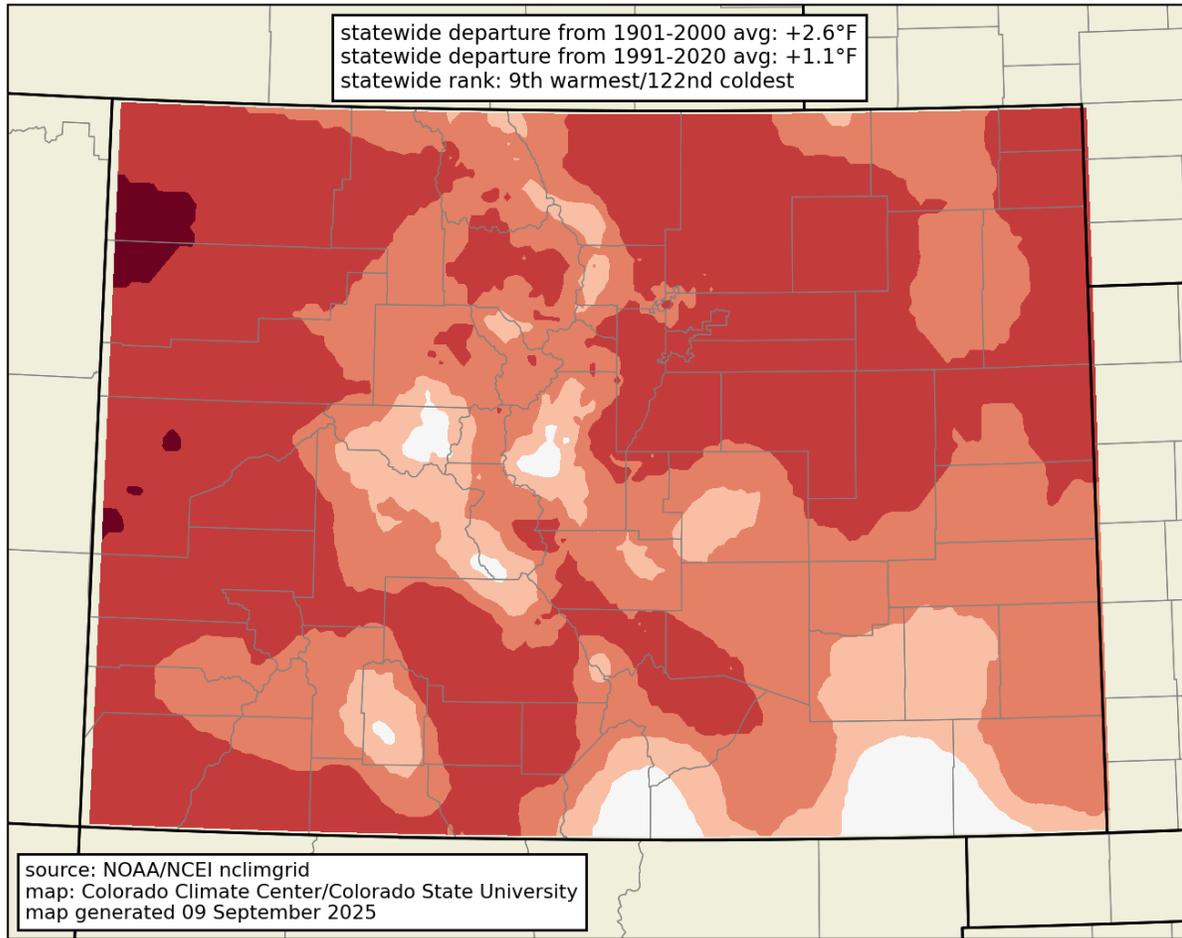
temperature, precipitation, etc.



Lawn Lake Alluvial Fan,
Rocky Mountain National Park
September 17



average temperature rank
11 months ending August 2025 (Oct-Aug)

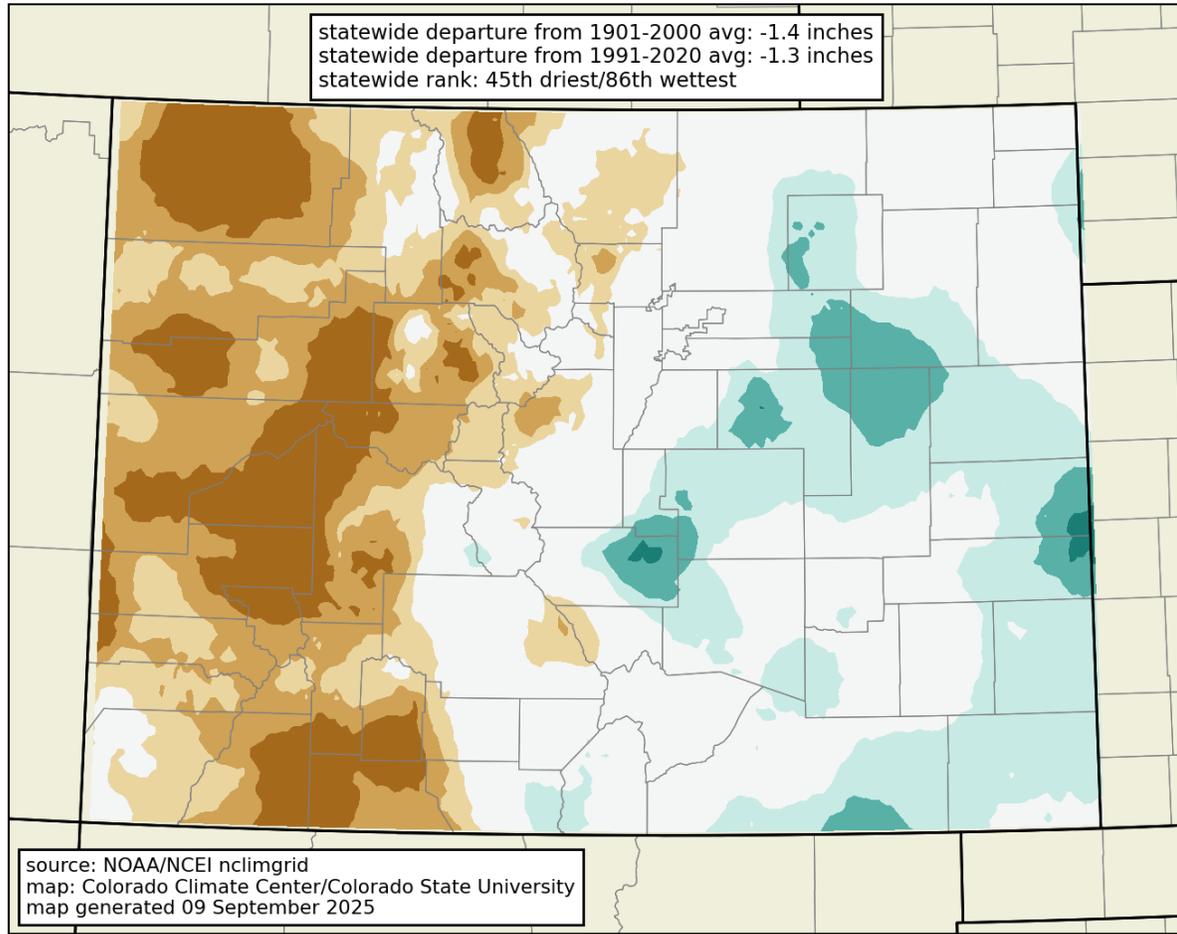


Statewide: Tied for 9th warmest October-August
(out of 131 years of records)

Month	T Rank (of 131 years)	Above, below, or near 20 th century avg?
Oct	2 nd warmest	much above
Nov	45 th coldest	near avg
Dec	3 rd warmest	much above
Jan	24 th coldest	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
Aug	17 th warmest	above



precipitation rank
11 months ending August 2025 (Oct-Aug)



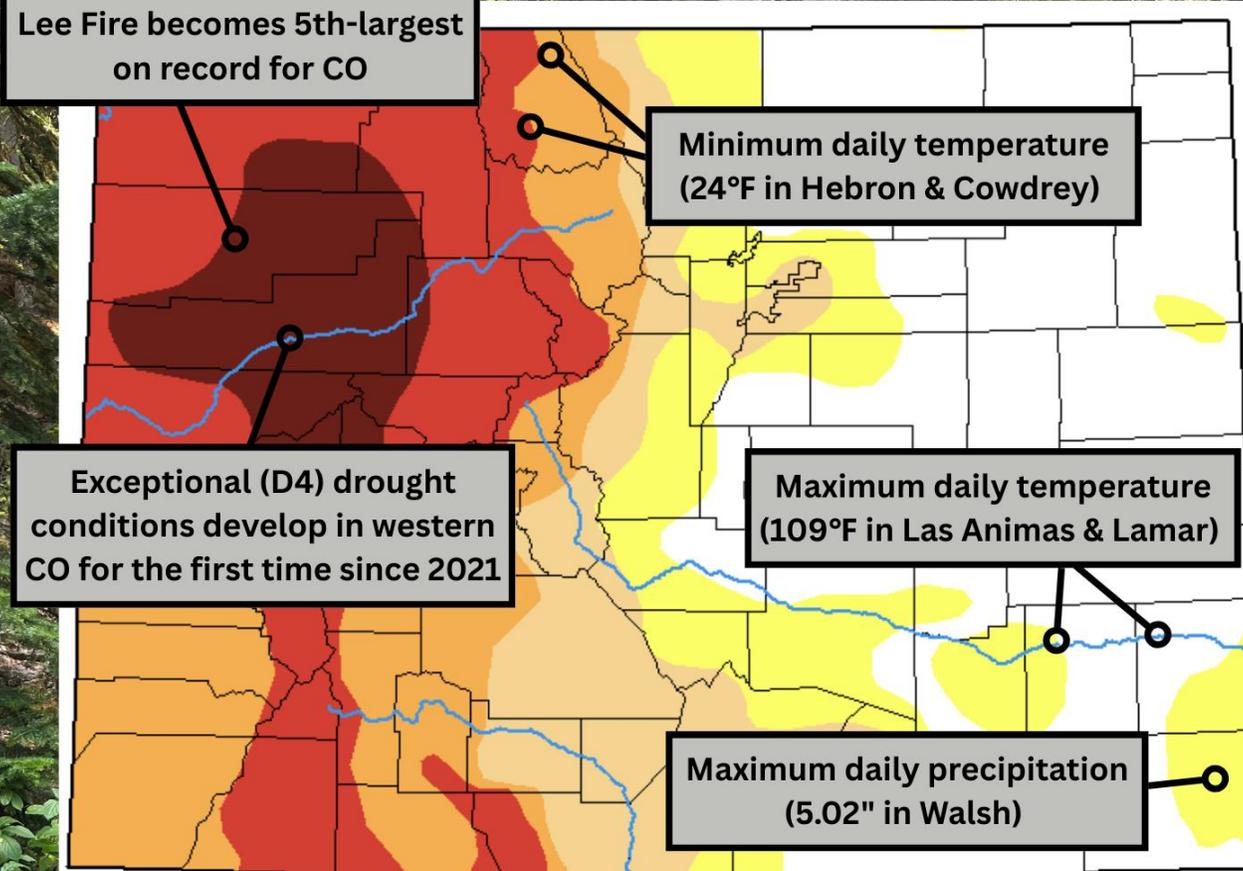
Statewide: 45th driest/86th wettest October-August

Month	P Rank (of 131 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
Aug	52 nd wettest	near average



August 2025

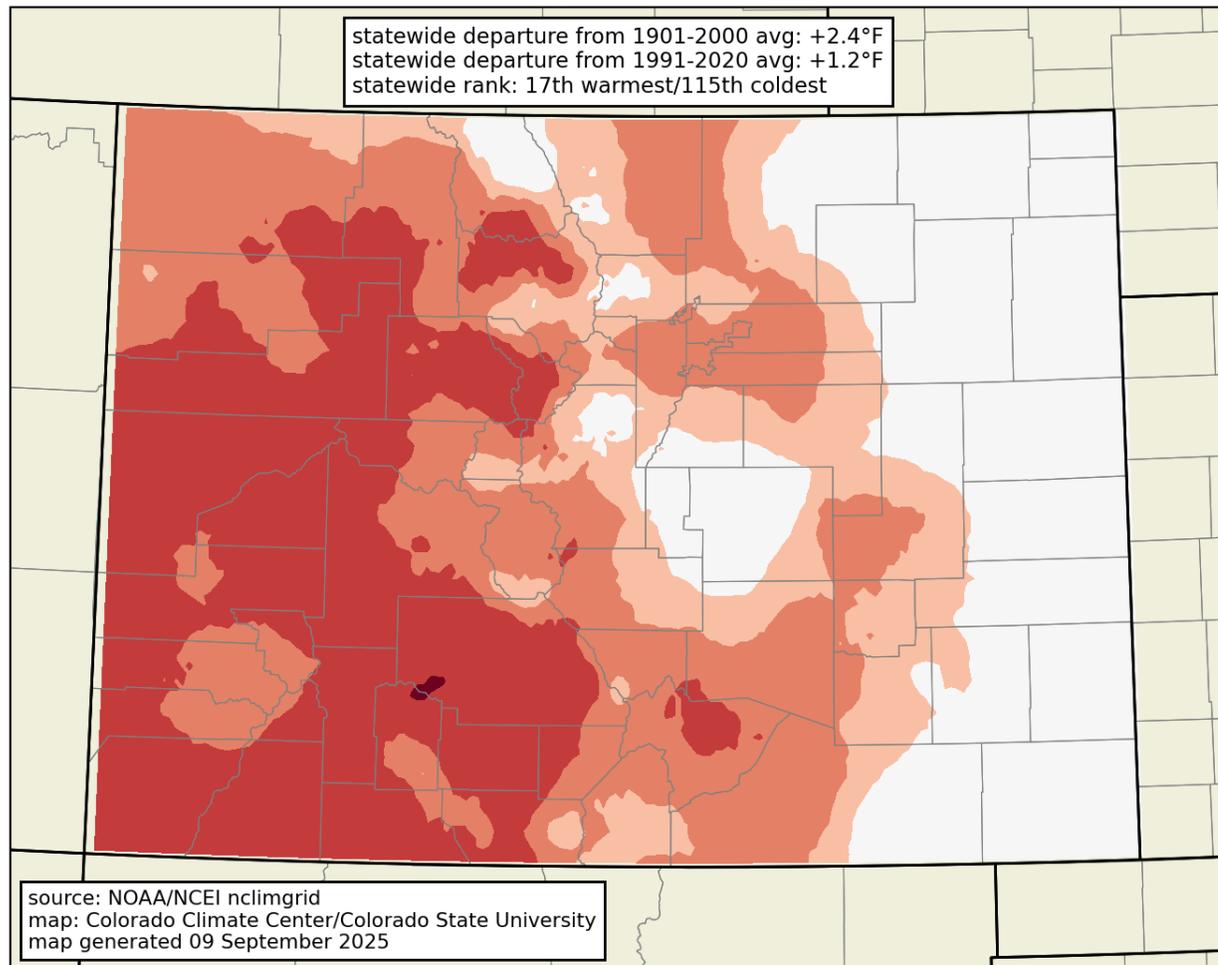
Colorado Monthly Climate Summary



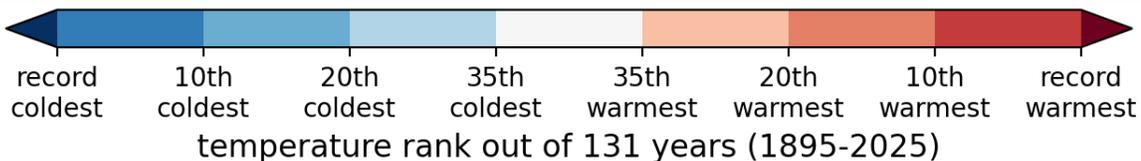
https://climate.colostate.edu/monthly_summary.html



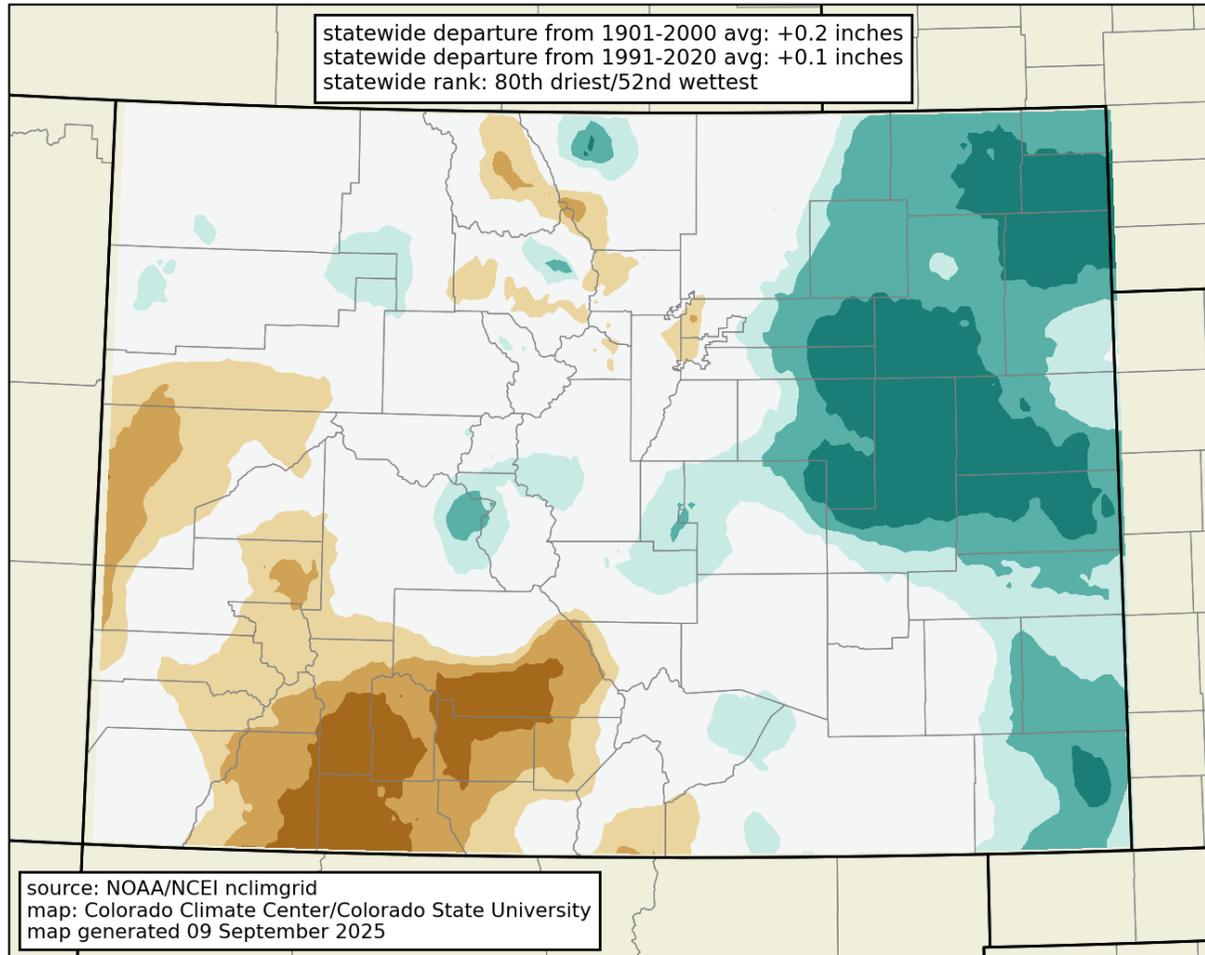
average temperature rank August 2025



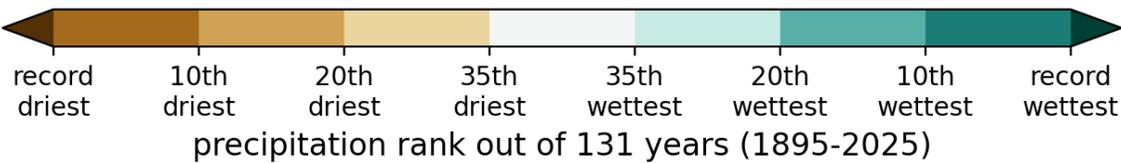
- It was a top-10 warm August across most of western Colorado
- Statewide it was the 7th consecutive month that was warmer than average



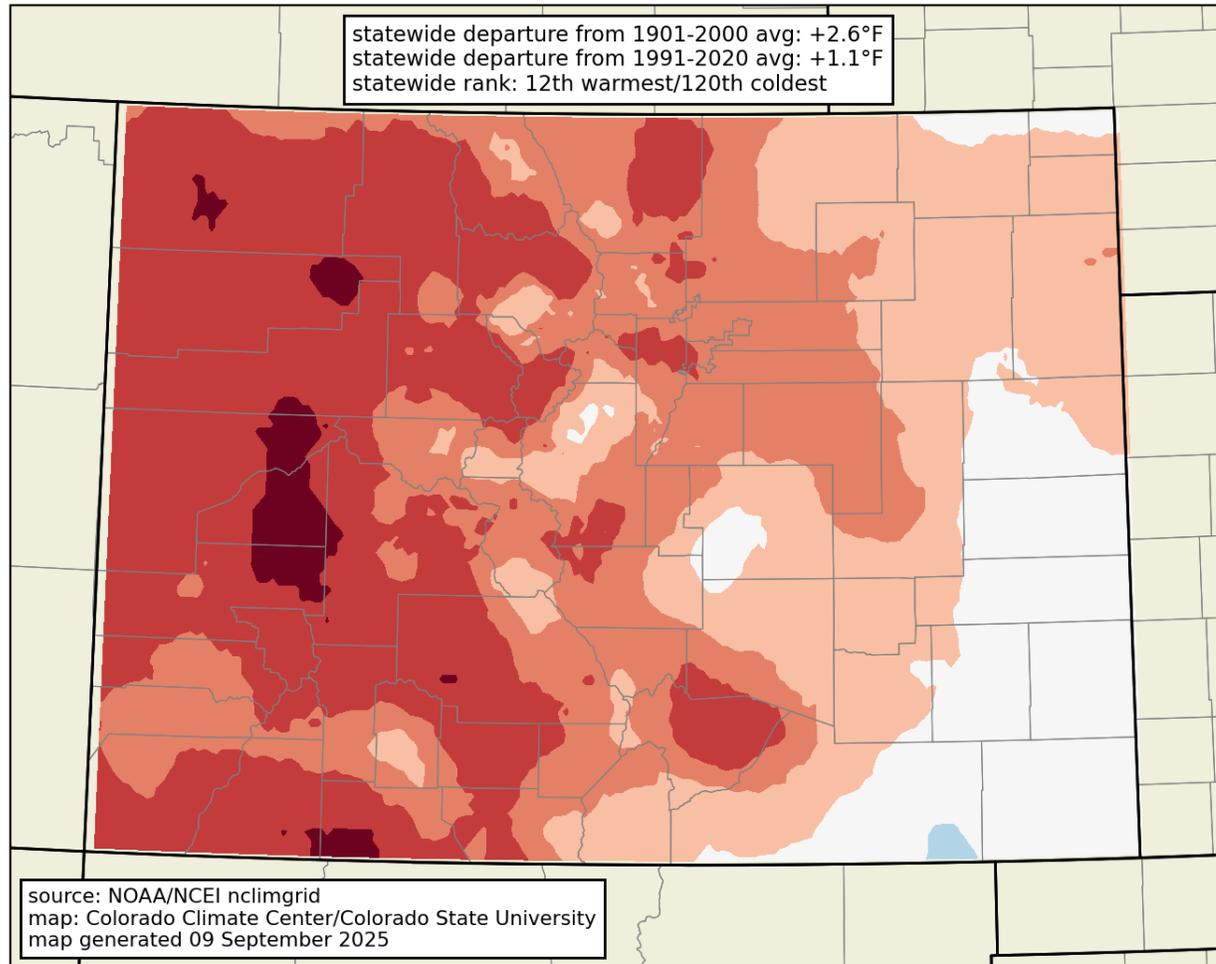
precipitation rank
August 2025



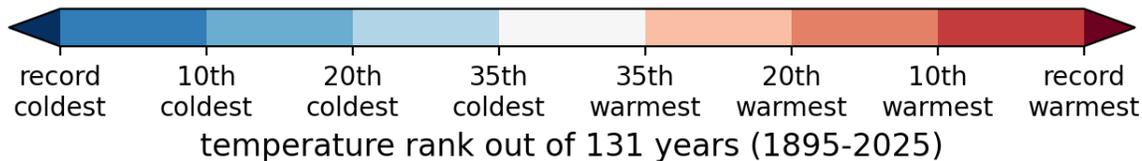
This map is rather misleading for northwestern Colorado, as it reflects 3 weeks of extreme dryness followed by a week of very welcome rainfall that brought monthly totals near average



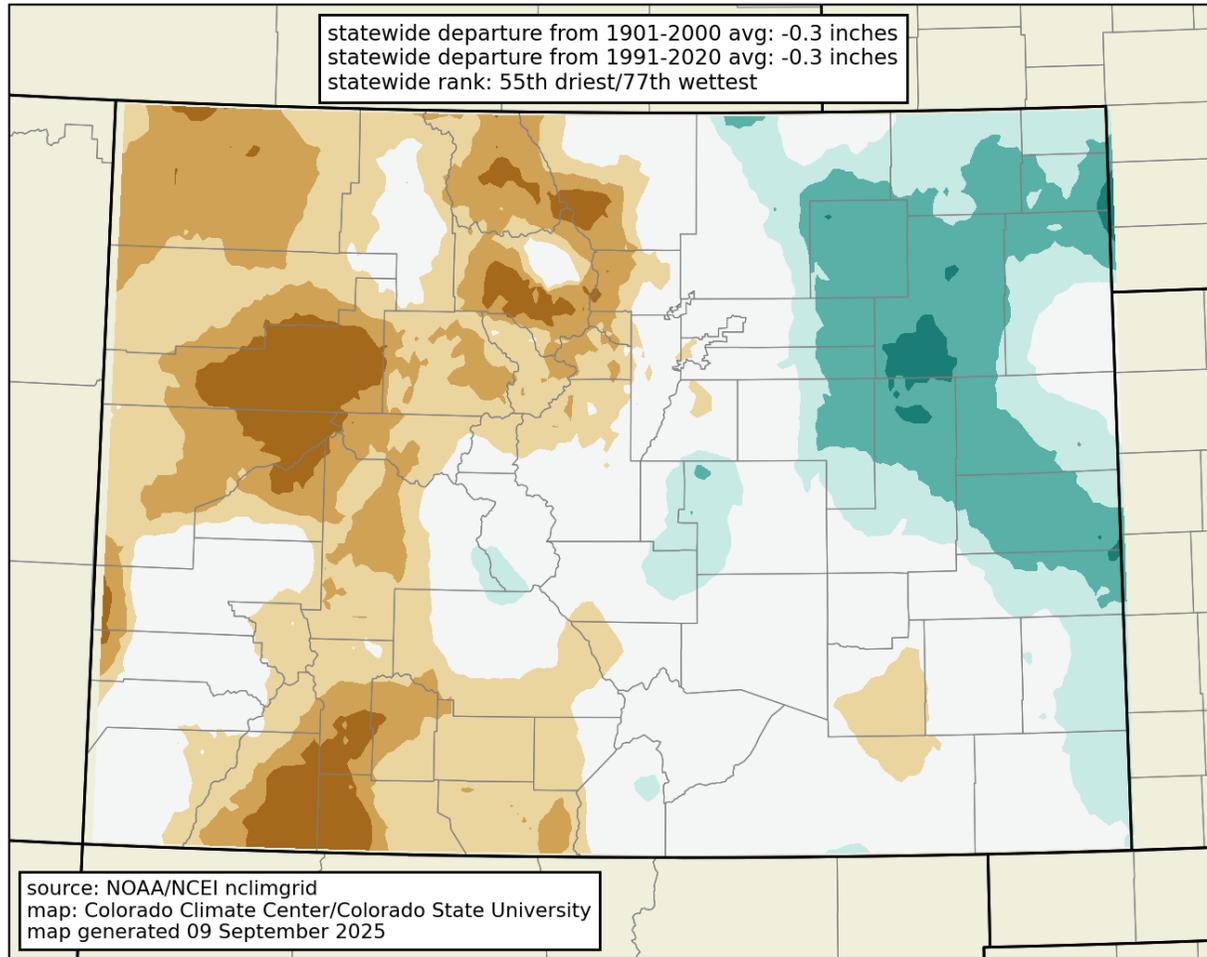
average temperature rank
3 months ending August 2025 (Jun-Aug)



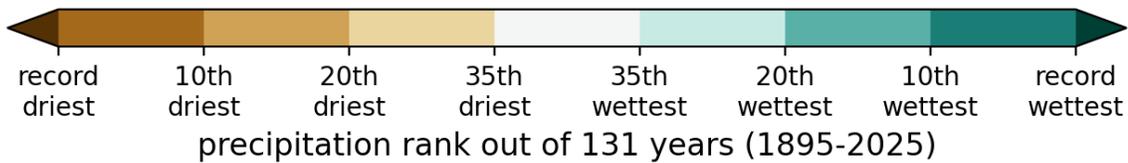
Climatological summer (June-July-August) much warmer than average across western Colorado; the eastern plains were closer to average temperature



precipitation rank
3 months ending August 2025 (Jun-Aug)



Summer was dry for most of western Colorado; wetter than average for the northeastern Plains

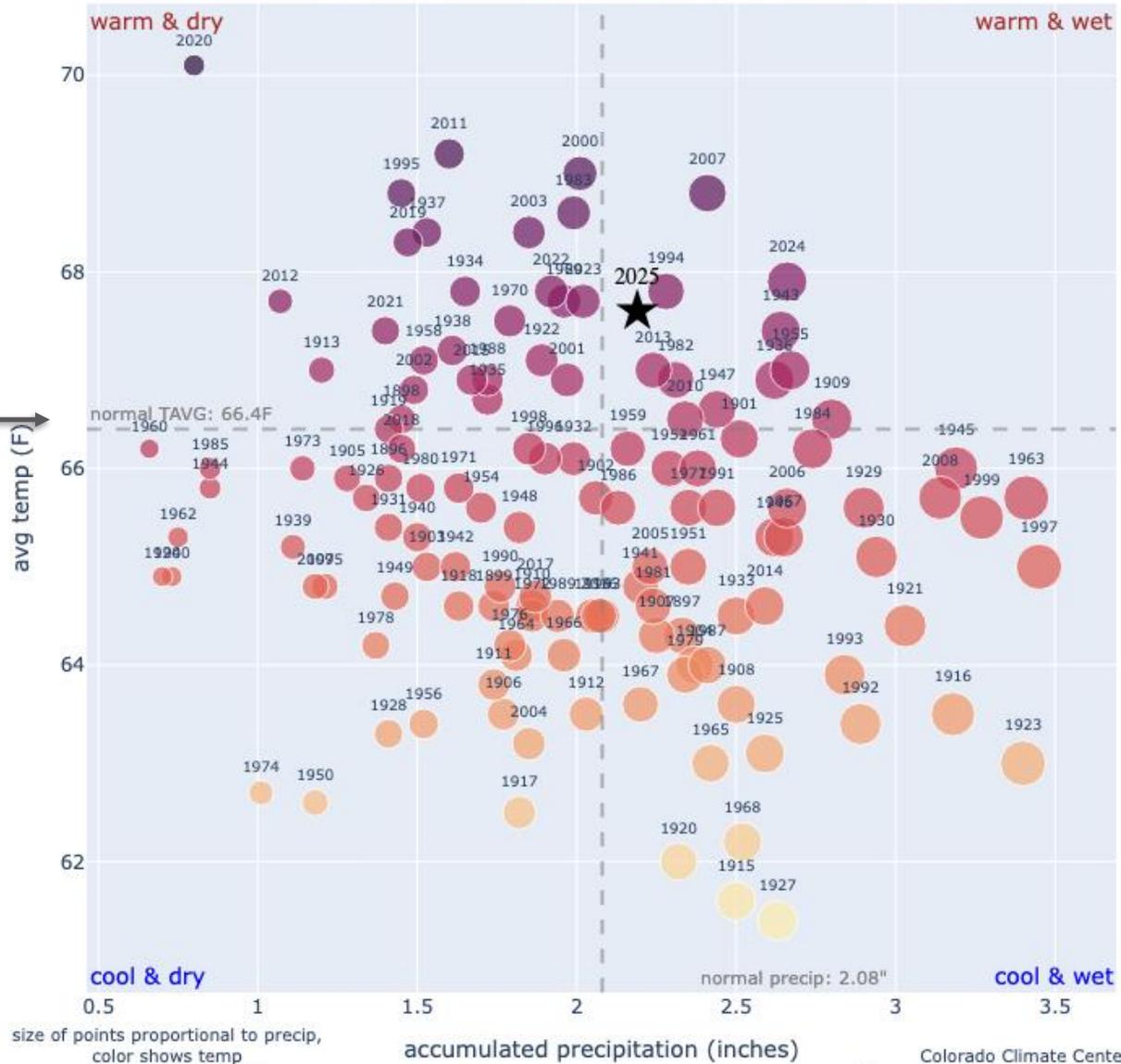


Colorado statewide average temperature and precipitation, August

Warm & dry

August 2025

1991-2020 avg temp



Warm & wet

Warmer and a little wetter than average in August

Cool & dry

Cool & wet

size of points proportional to precip, color shows temp normals are 1991-2020

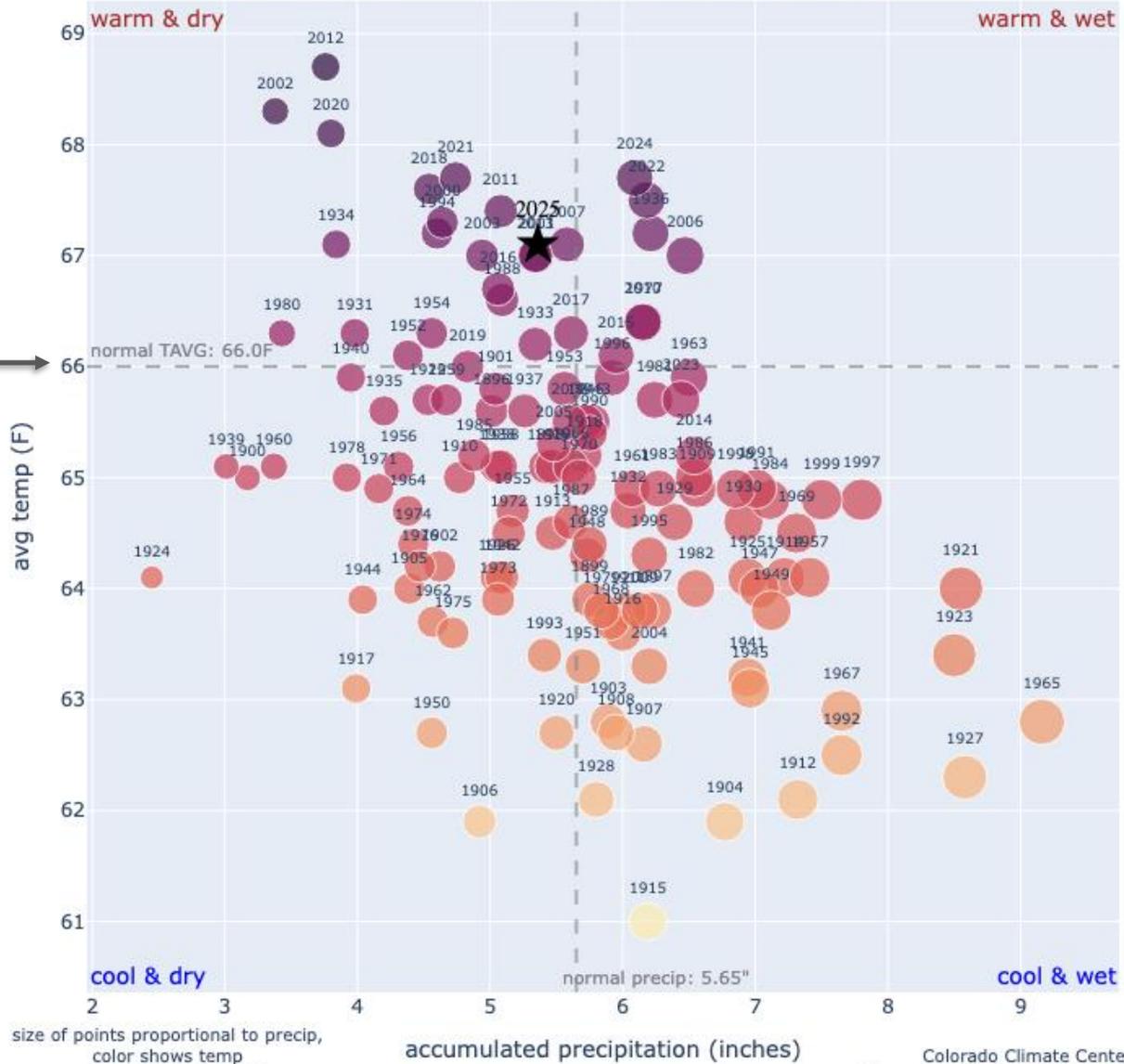
Colorado Climate Center/CSU Data source: NOAA/NCEI Climate at a Glance



Colorado statewide average temperature and precipitation, June - August

Warm & dry
Summer 2025

1991-2020 avg temp →



avg temp (F) **Warm & wet**

Warmer and a little drier than average for summer statewide

Cool & dry

Cool & wet

size of points proportional to precip,
color shows temp
normals are 1991-2020

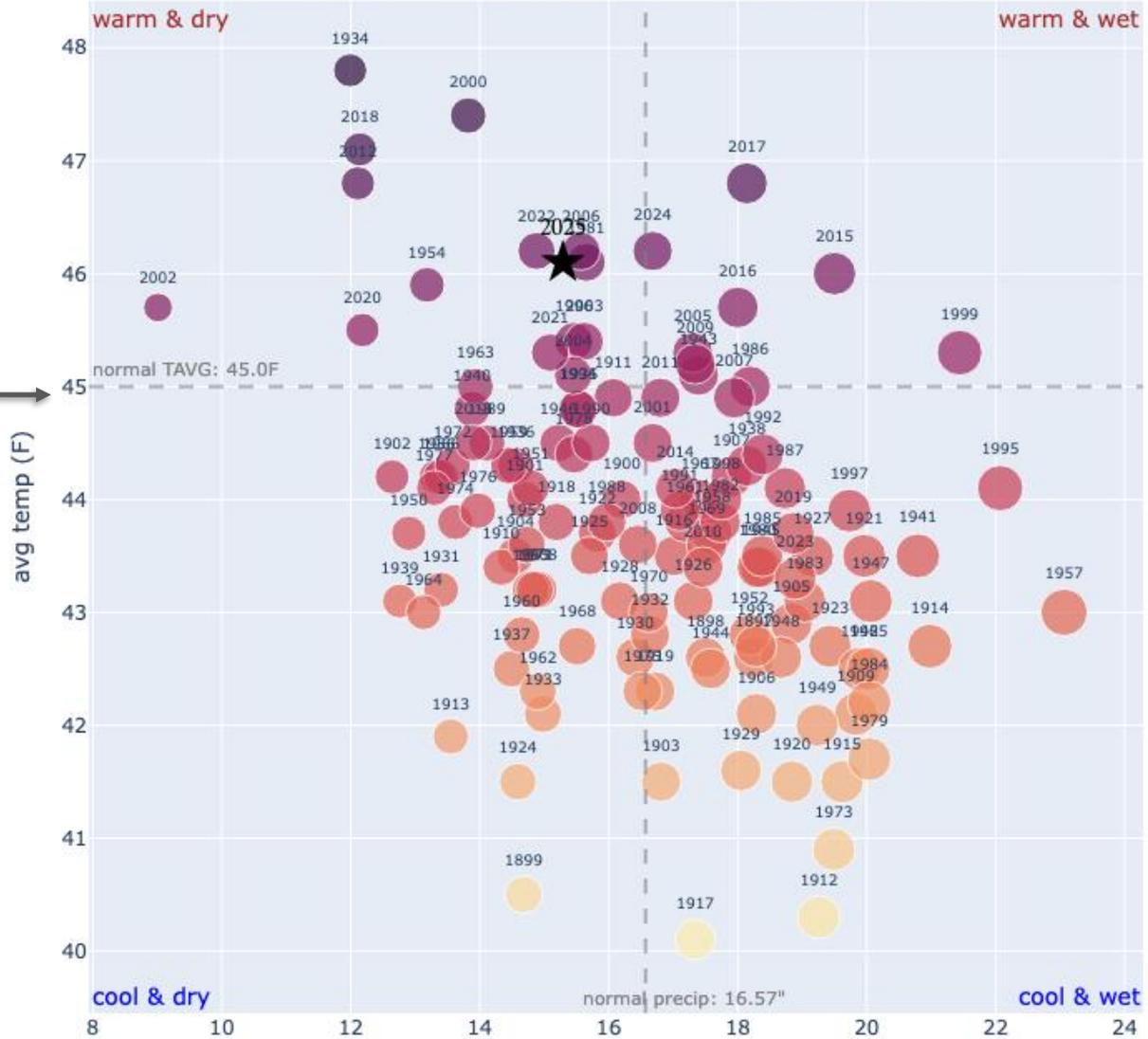
Colorado Climate Center/CSU
Data source: NOAA/NCEI Climate at a Glance



Colorado statewide average temperature and precipitation, October - August

Warm & dry
 October 2024-
 August 2025

1991-2020 avg temp →



avg temp (F) **Warm & wet**

For the water year, in
 the warm and dry
 quadrant
 statewide...

Cool & dry

Cool & wet

size of points proportional to precip,
 color shows temp
 normals are 1991-2020

Colorado Climate Center/CSU
 Data source: NOAA/NCEI Climate at a Glance

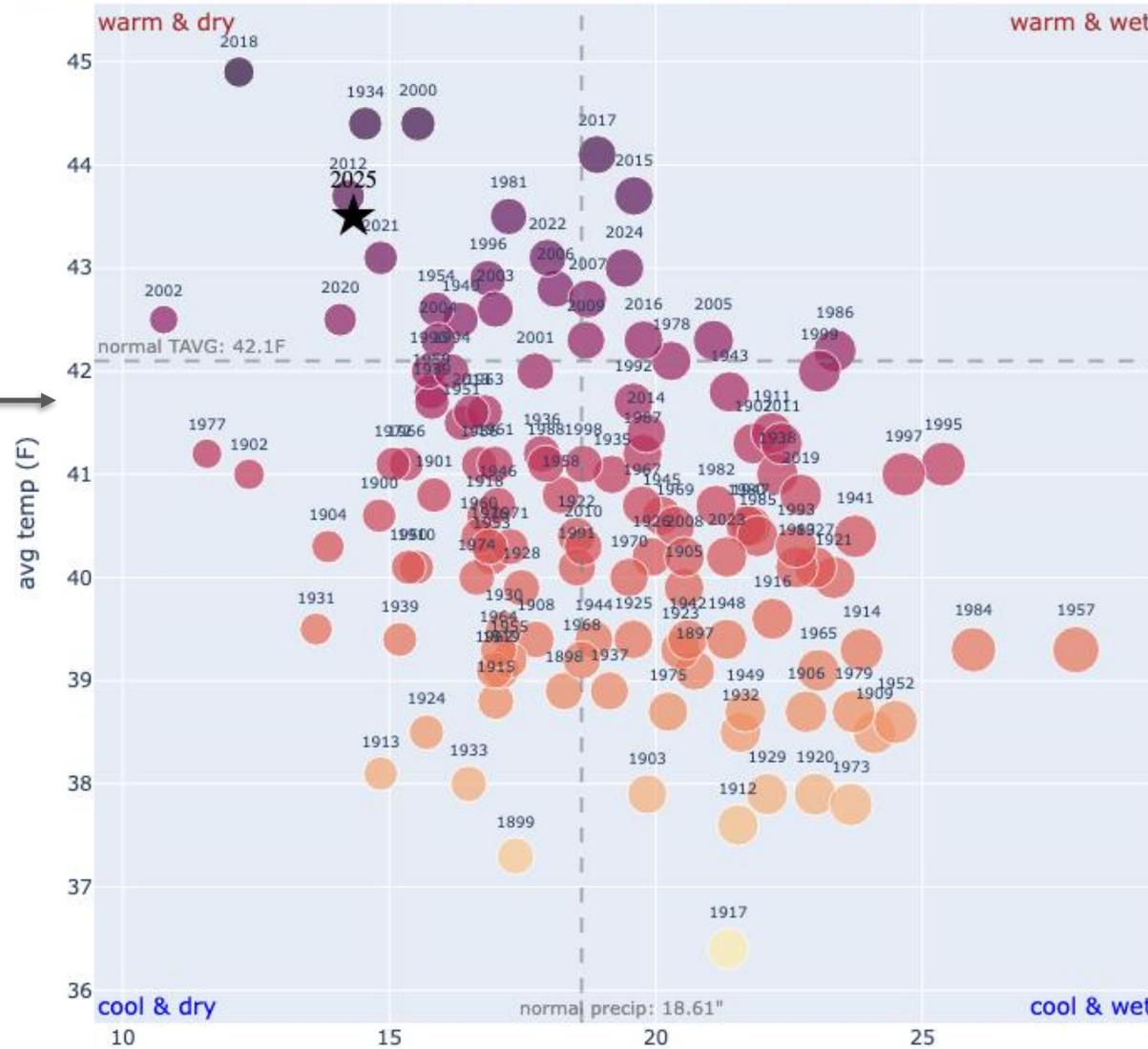


Colorado CD2 (Colorado drainage) average temperature and precipitation, October - August

Warm & dry

**October 2024-
August 2025,
Colorado River
Drainage**

1991-2020 avg temp →



Warm & wet

**For western
Colorado, in the
same part of the
chart as some
historic drought
years like 1934,
2012, 2020, 2021, but
not as bad as 1977,
2002, or 2018**

Cool & dry

Cool & wet

size of points proportional to precip,
color shows temp
normals are 1991-2020

Colorado Climate Center/CSU
Data source: NOAA/NCEI Climate at a Glance



August wildfires

Wildfires continued to ignite and grow across the western half of the state throughout early-mid August as hot, dry, breezy conditions persisted. The Lee Fire, located southwest of Meeker, grew to be the 5th largest wildfire on record for Colorado at over 137,000 acres burned (nearly the size of the 2002 Hayman Fire).

Several other fires grew quickly in August as well, including the Turner Gulch (31,699 acres), Stoner Mesa (10,249 acres) and Derby (5453 acres) fires

2025 has been the most active wildfire season for Colorado since the record-breaking 2020 season.

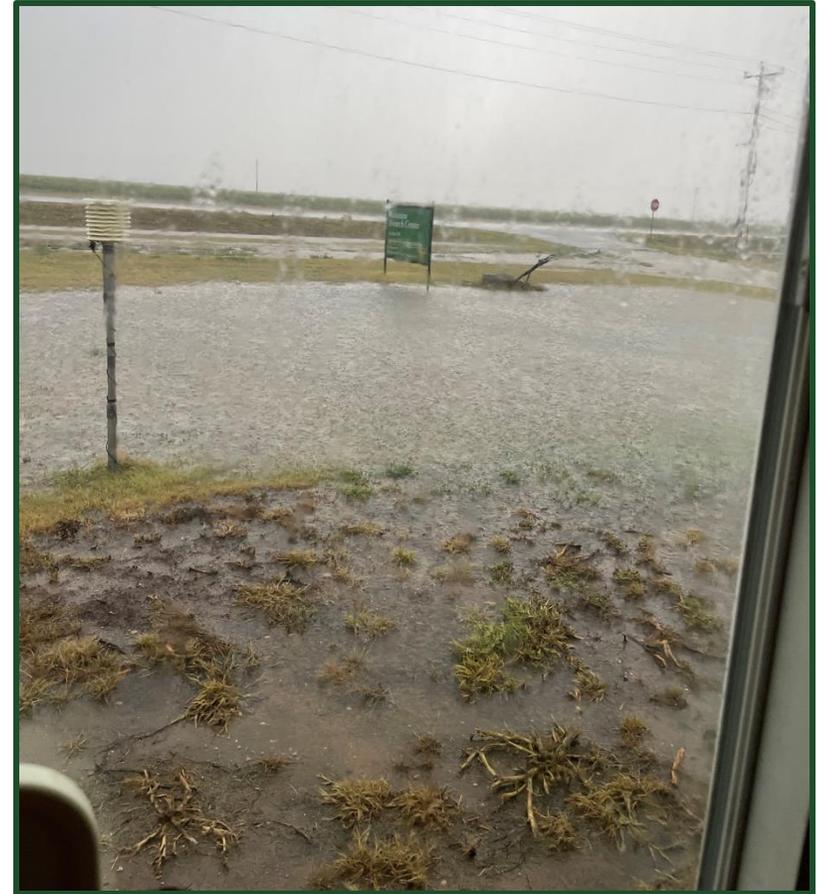


Lee Fire viewed from Meeker, CO on August 4th (photo via Kristie Davis).



Flooding in late August and September

At CSU's Plainsman Research Center in Walsh, 5.02" of rain was recorded on August 30, which is the wettest single day in the history of that station, with records dating back to the late 1960s.



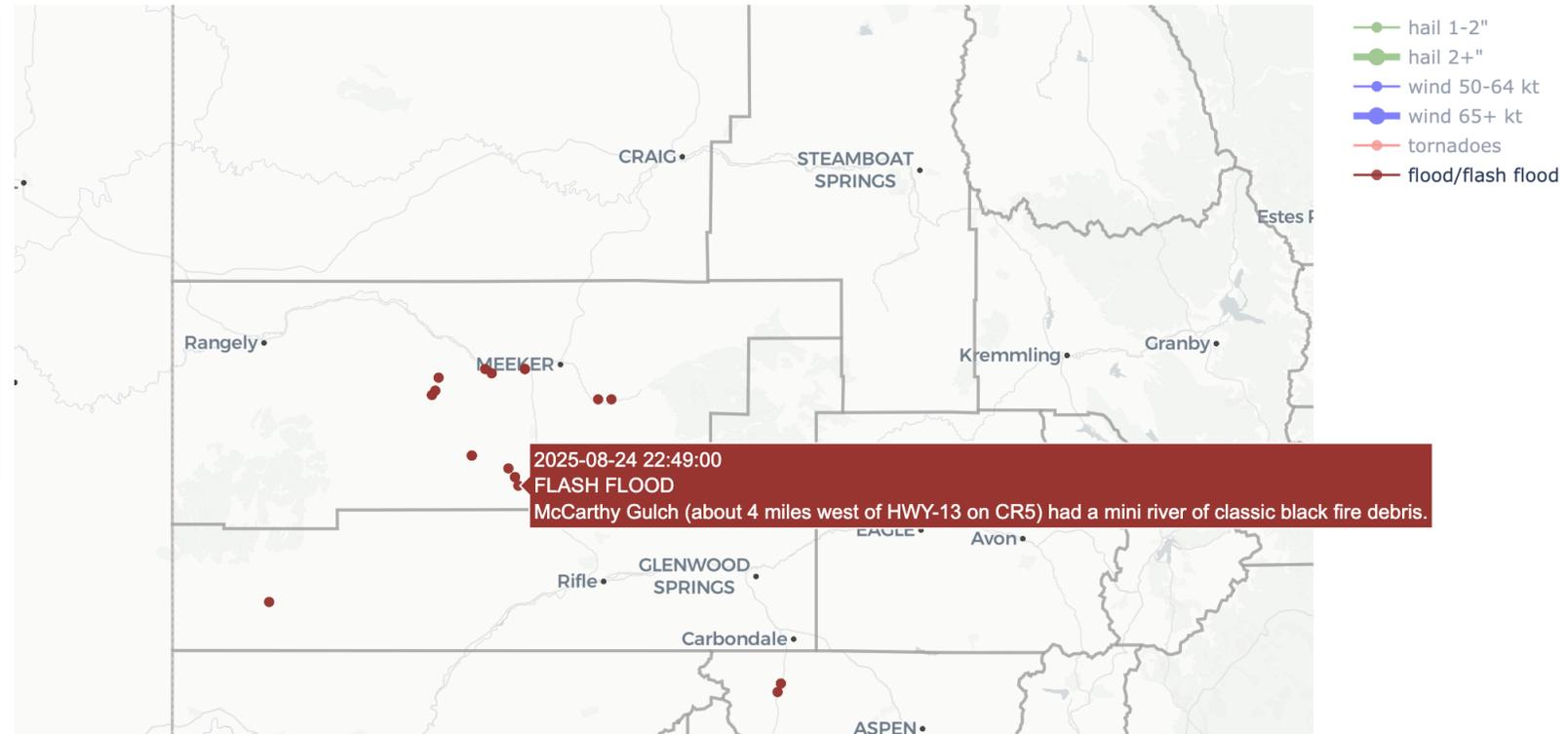
Flooding at the CSU Plainsman Research Center, Walsh, CO (photo via Zane Jenkins).



Flooding in late August and September

Many flash floods and debris flows have been reported on the Lee and Elk burn scars, including “a mini river of classic black fire debris” on August 24

Colorado PRELIMINARY severe thunderstorm and flood/flash flood reports, 2025



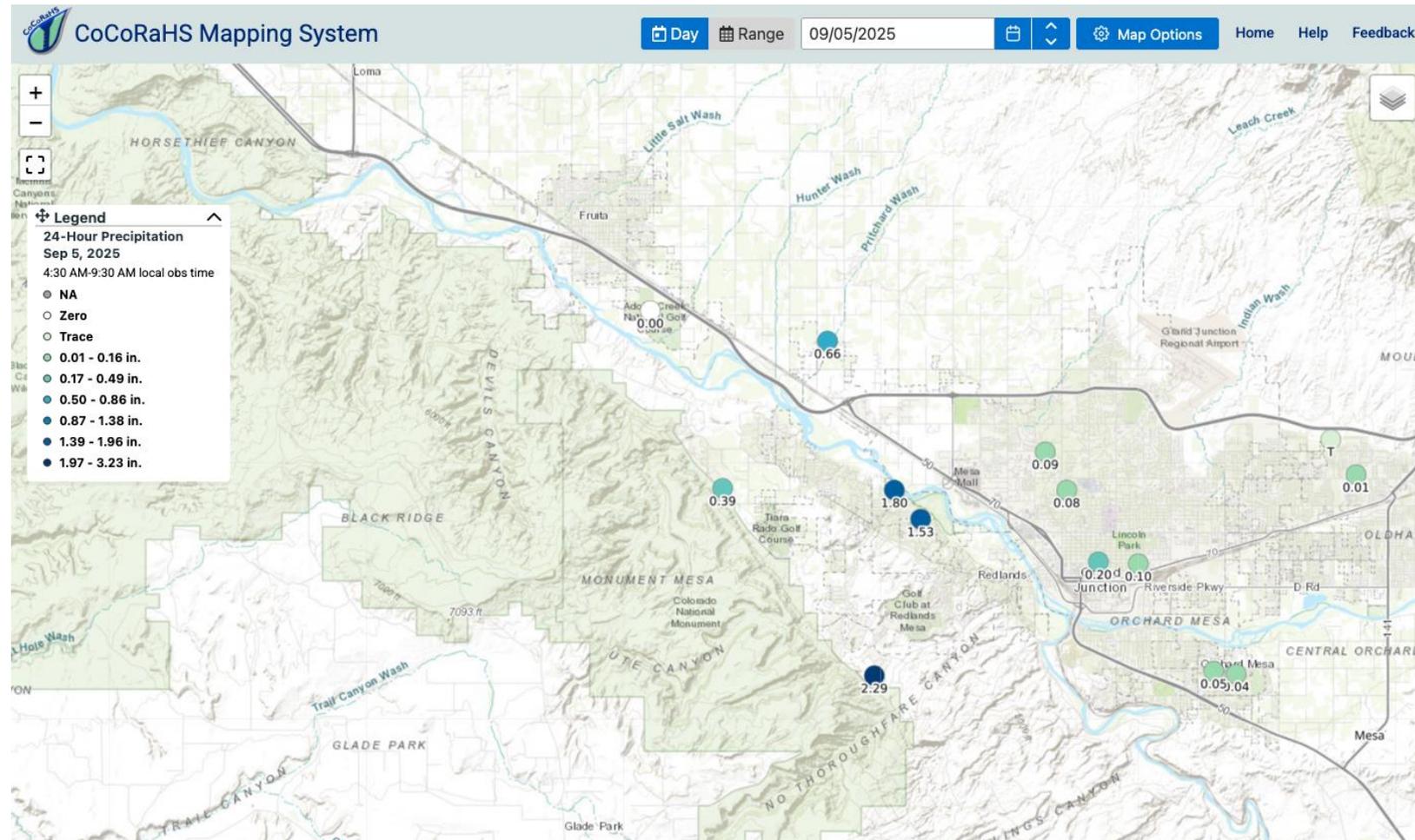
https://climate.colostate.edu/ytd_severe_storms.html



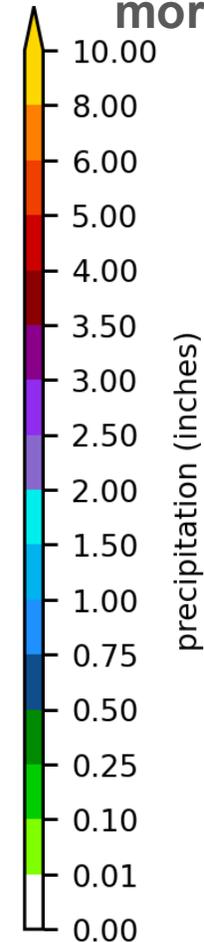
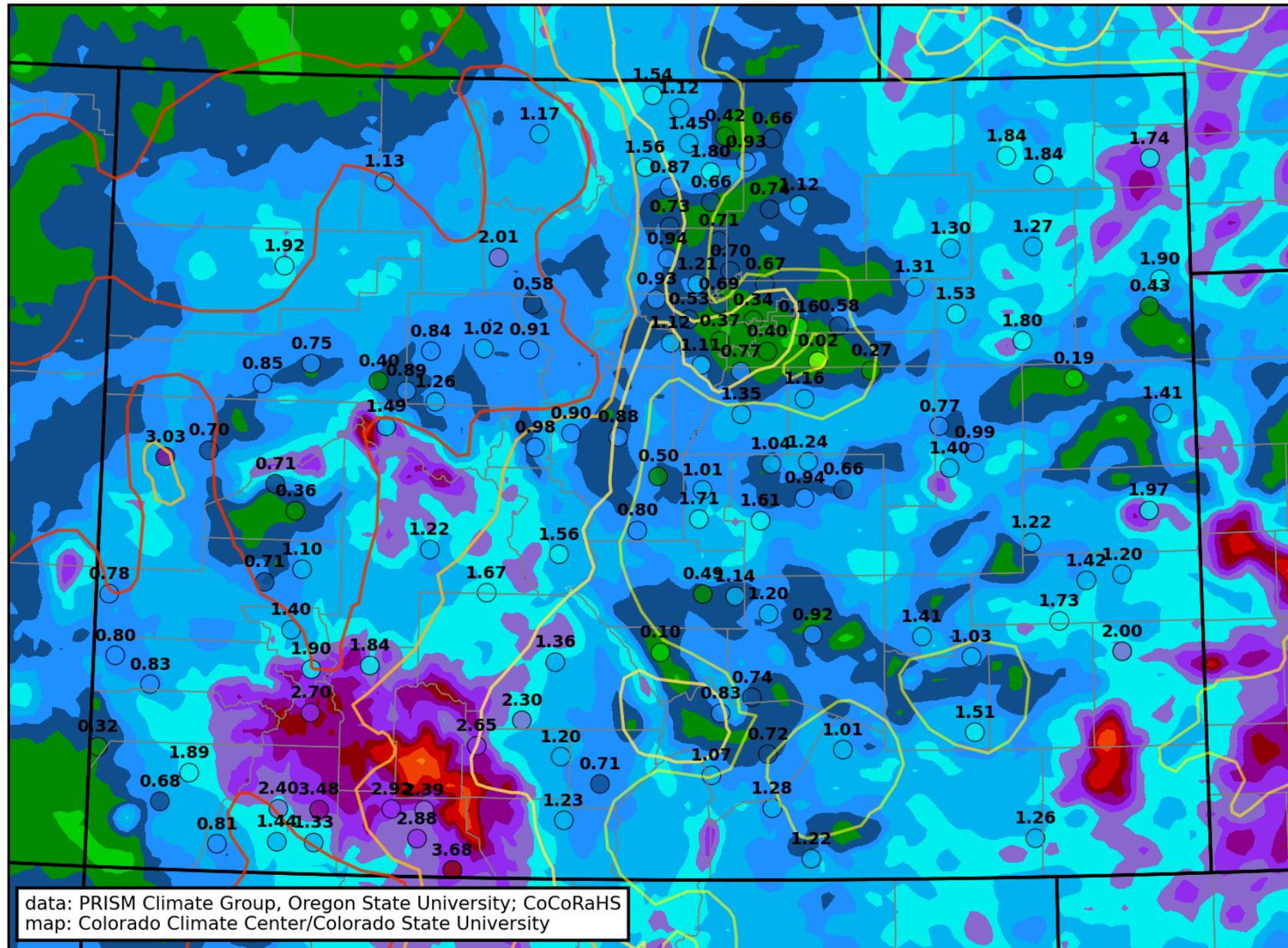
Flooding in late August and September

The Redlands south of Grand Junction had over 2” of rain in 2-3 hours on September 4, which has an estimated return period of over 200 years for that location.

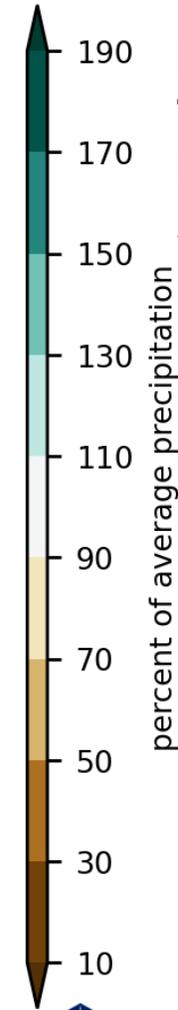
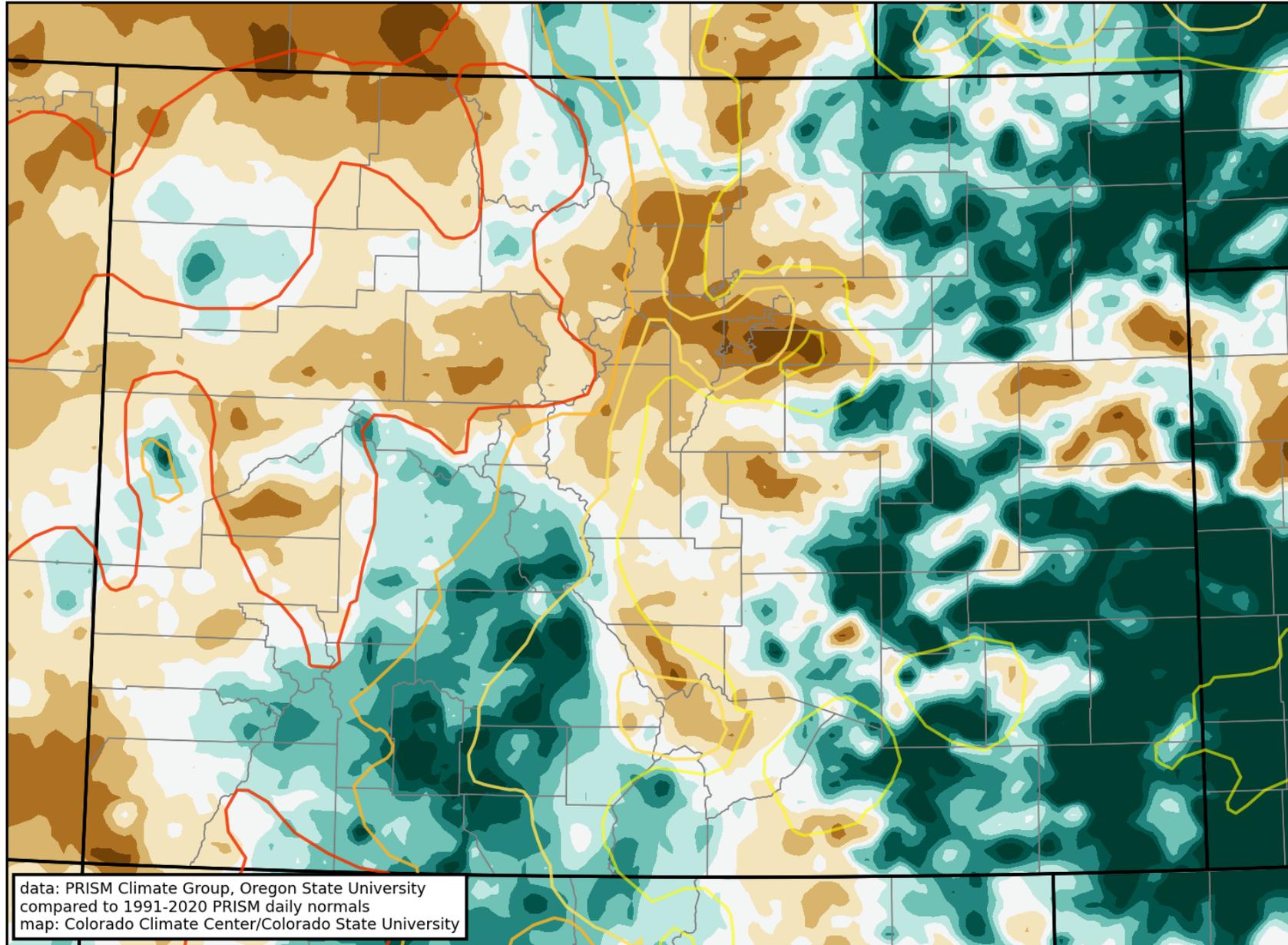
Flash flooding and debris flows were reported from this storm as well.



September precipitation through Monday morning (22nd)



September percent of normal precipitation through the morning of the 22nd

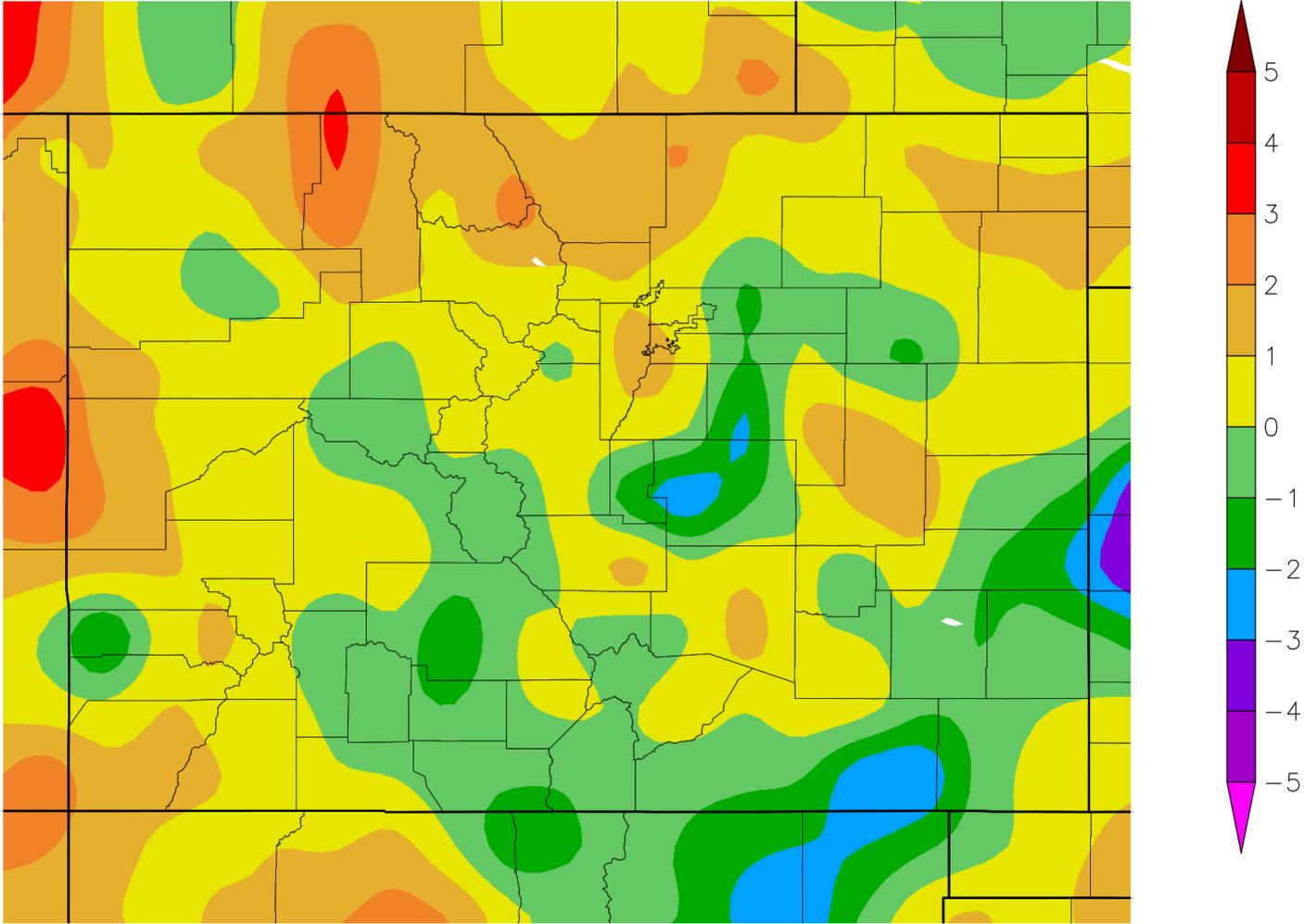


data: PRISM Climate Group, Oregon State University
compared to 1991-2020 PRISM daily normals
map: Colorado Climate Center/Colorado State University



Departure from Normal Temperature (F) 9/1/2025 - 9/21/2025

September
departure from
normal temperature
through the 21st



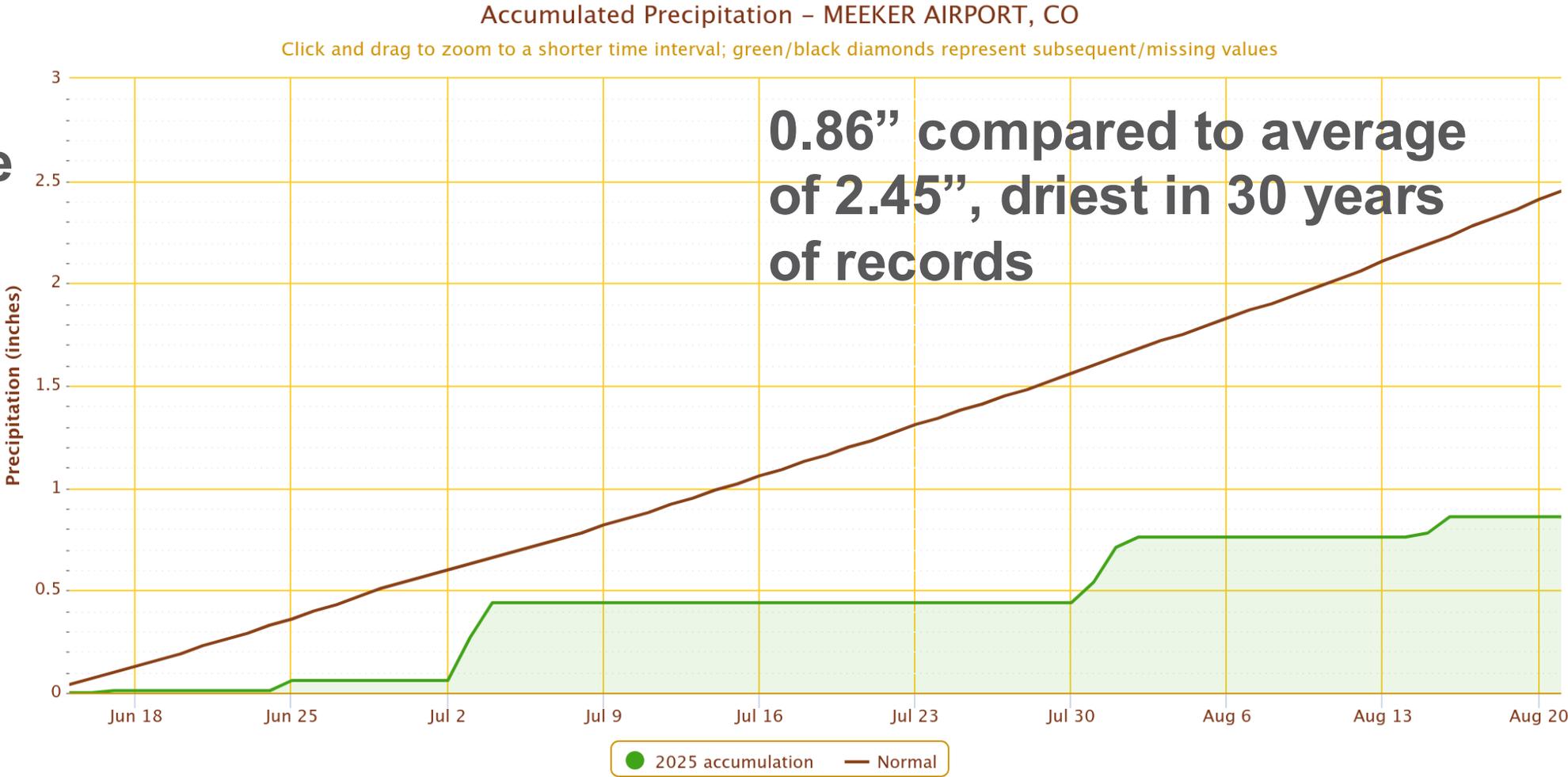
Generated 9/22/2025 using provisional data.

ACIS Web Services



June 15-August 21 precipitation at Meeker

Remarkable turnaround at Meeker over the last month

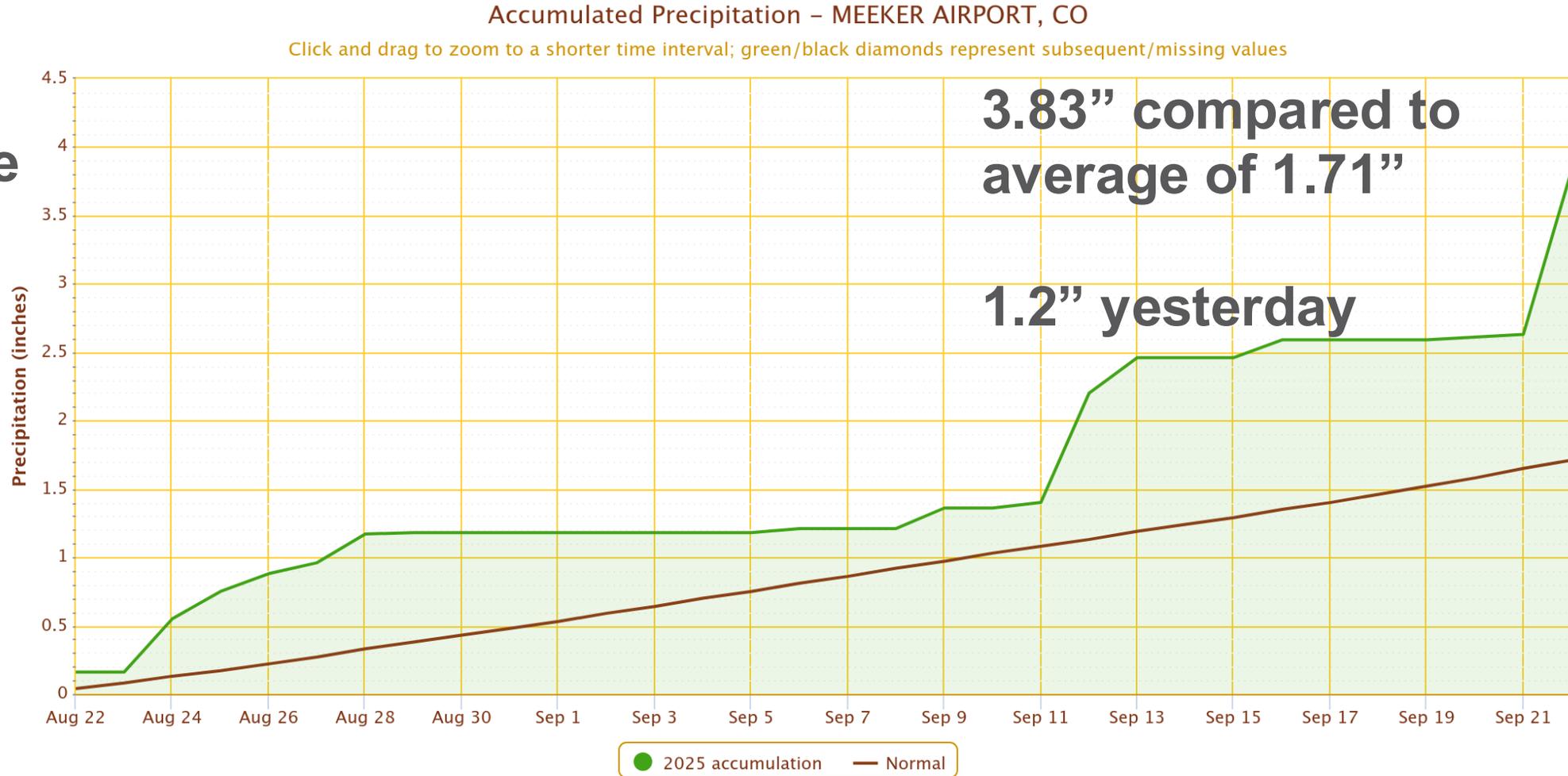


Powered by ACIS



August 22-Sept 22 precipitation at Meeker

Remarkable turnaround at Meeker over the last month

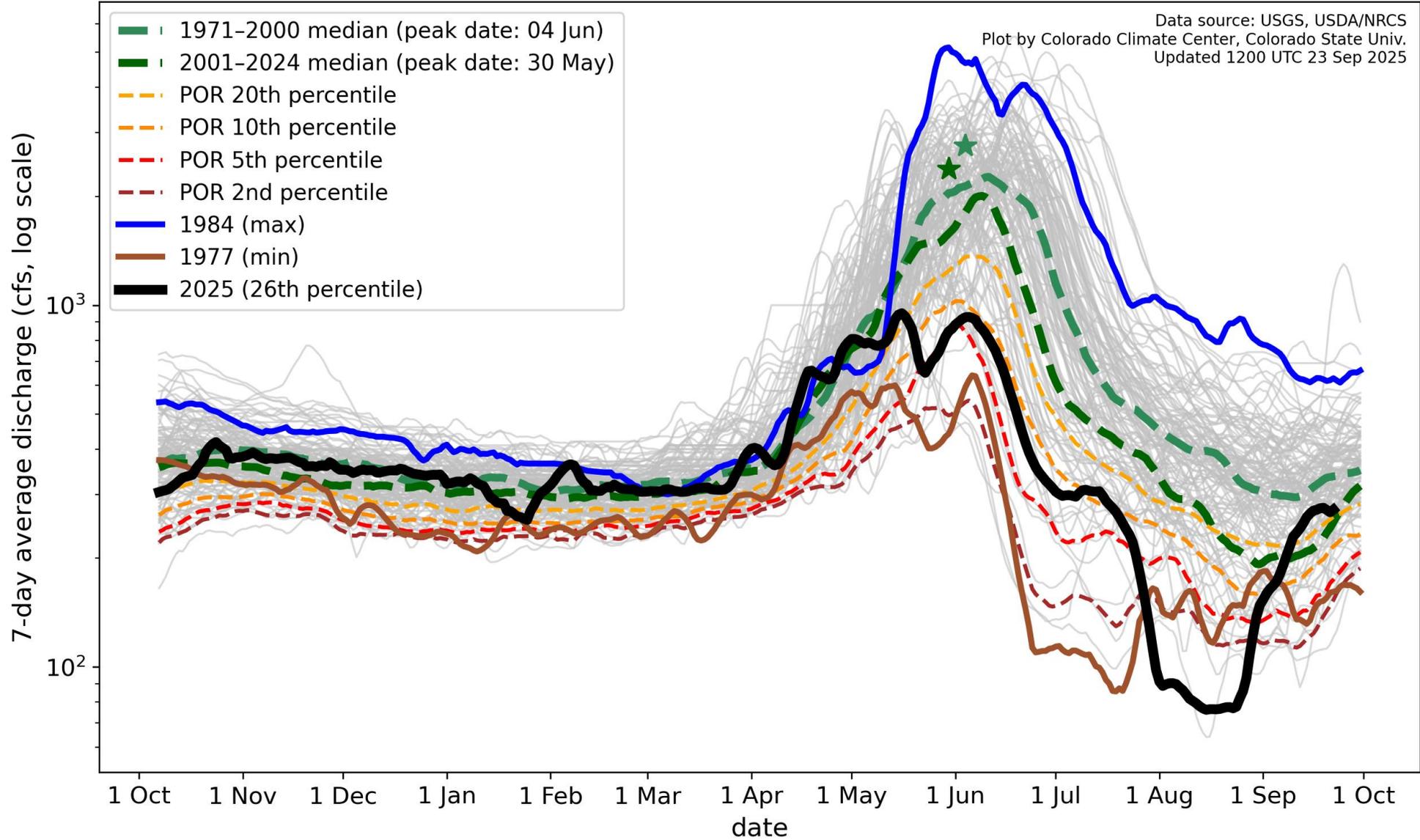


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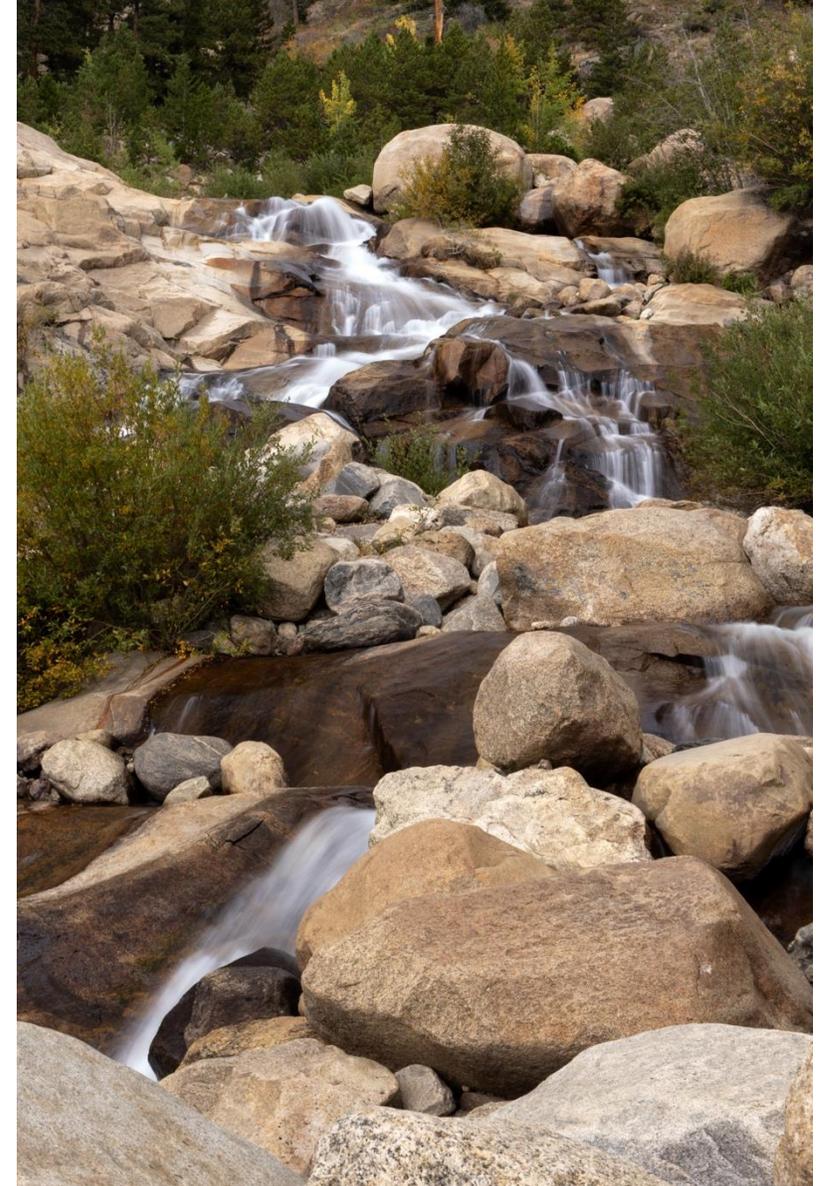


Remarkable turnaround at Meeker over the last month

water year discharge, White River near Meeker, 1902-2025 (121 years)



Drought conditions



Lawn Lake Alluvial Fan, RMNP
Photo by Caleb Steele



U.S. Drought Monitor Colorado

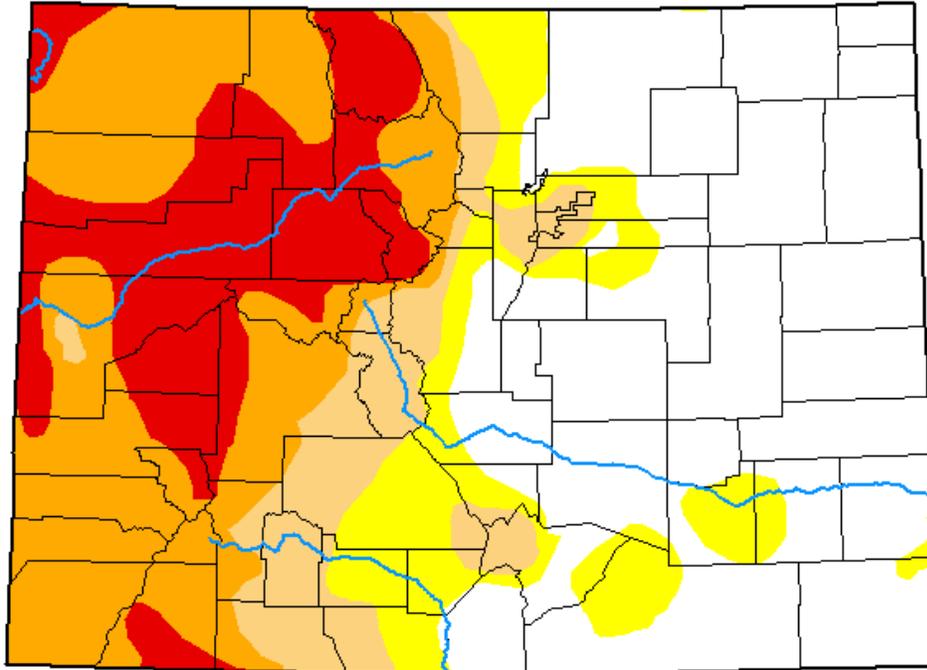
September 16, 2025

(Released Thursday, Sep. 18, 2025)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.96	58.04	46.59	37.24	15.36	0.00
Last Week 09-09-2025	39.73	60.27	49.49	40.89	24.26	0.00
3 Months Ago 06-17-2025	40.43	59.57	44.54	20.13	5.39	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 09-17-2024	58.19	41.81	19.69	3.37	0.00	0.00



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme 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:

Adam Allgood
NOAA/NWS/NCEP/CPC



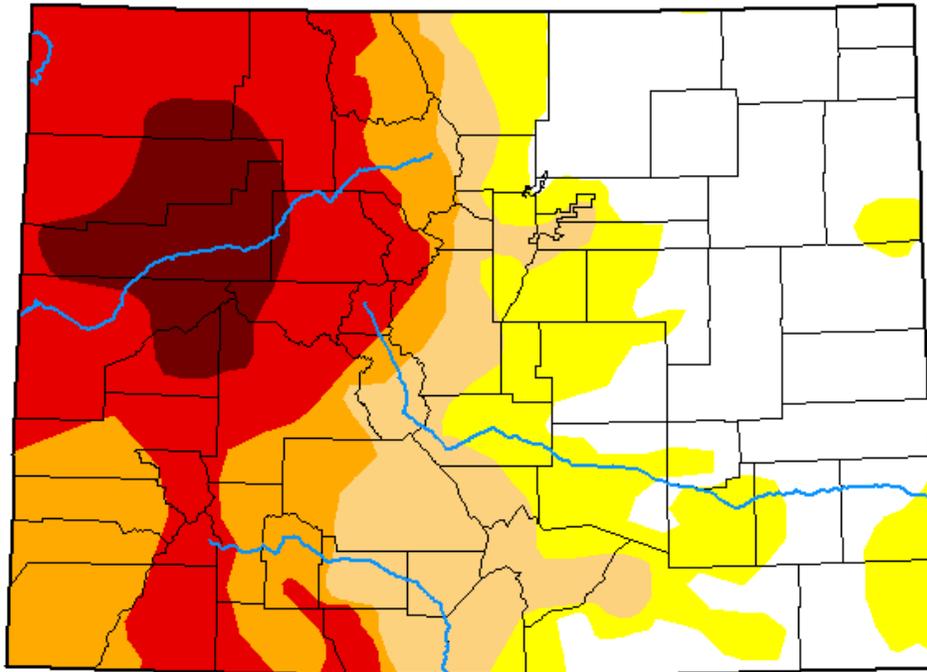
droughtmonitor.unl.edu



U.S. Drought Monitor Colorado

August 19, 2025
(Released Thursday, Aug. 21, 2025)
Valid 8 a.m. EDT

At the last WCMC meeting...



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
- D0 Abnormally Dry
- D1 Moderate Drought
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- D4 Exceptional Drought

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Author:

Lindsay Johnson
National Drought Mitigation Center

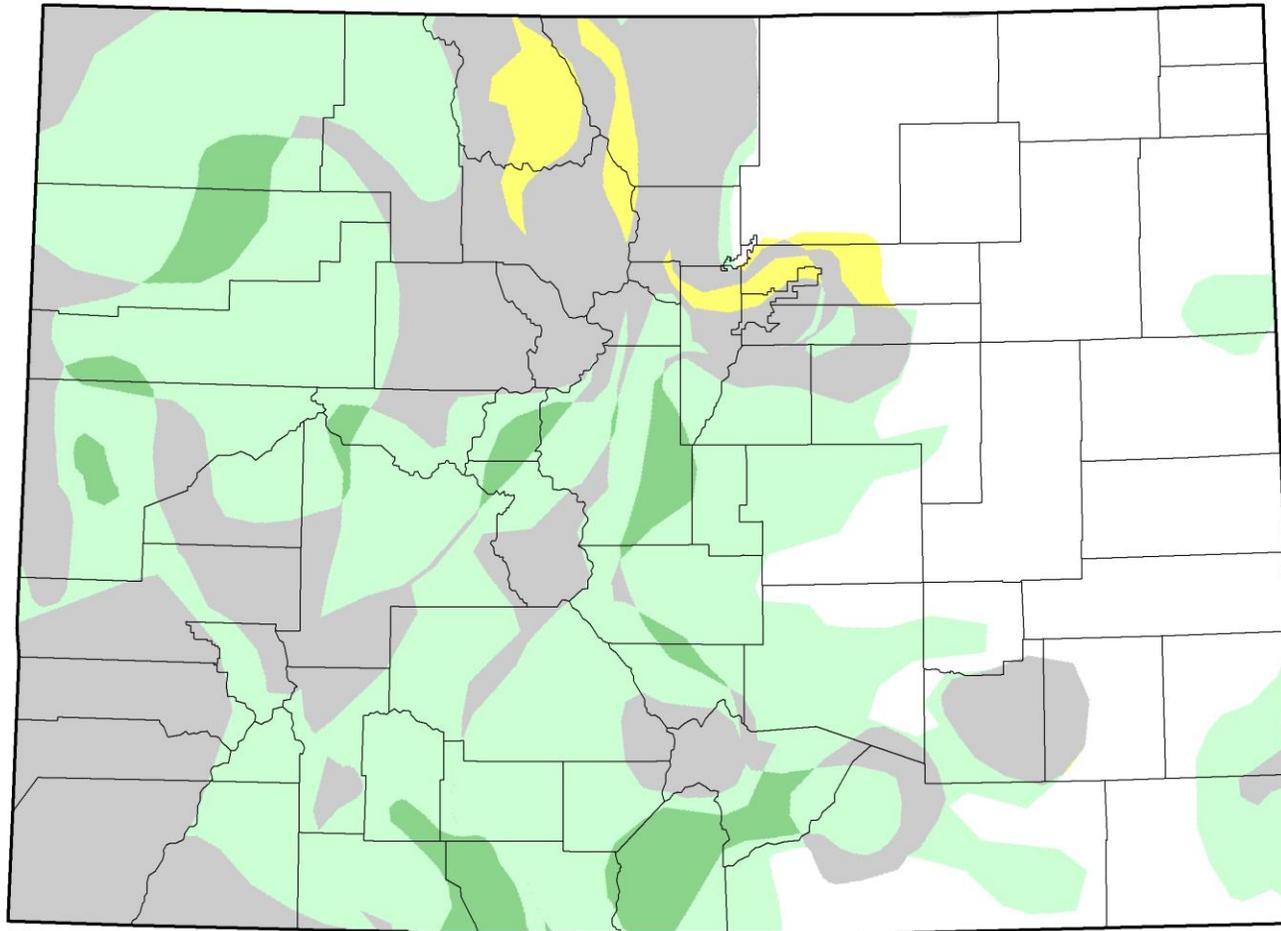


droughtmonitor.unl.edu



Change in the last 4 weeks

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



September 16, 2025
compared to
August 19, 2025

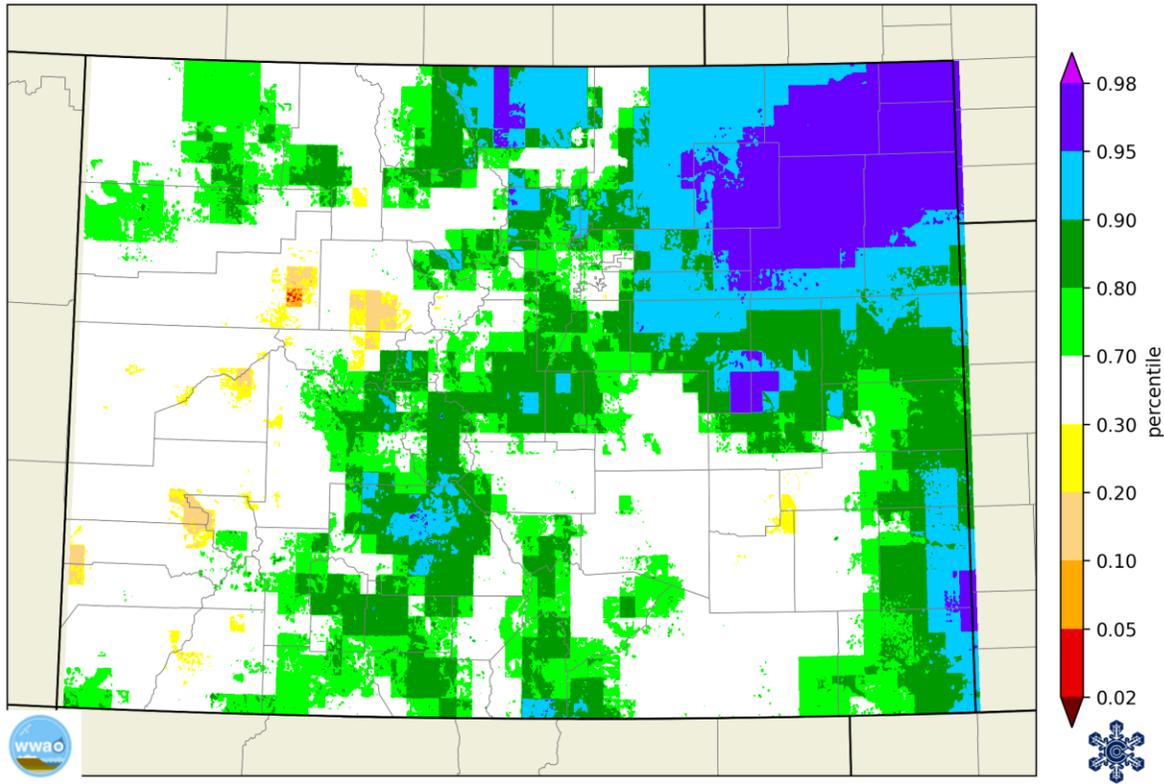
droughtmonitor.unl.edu



- 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

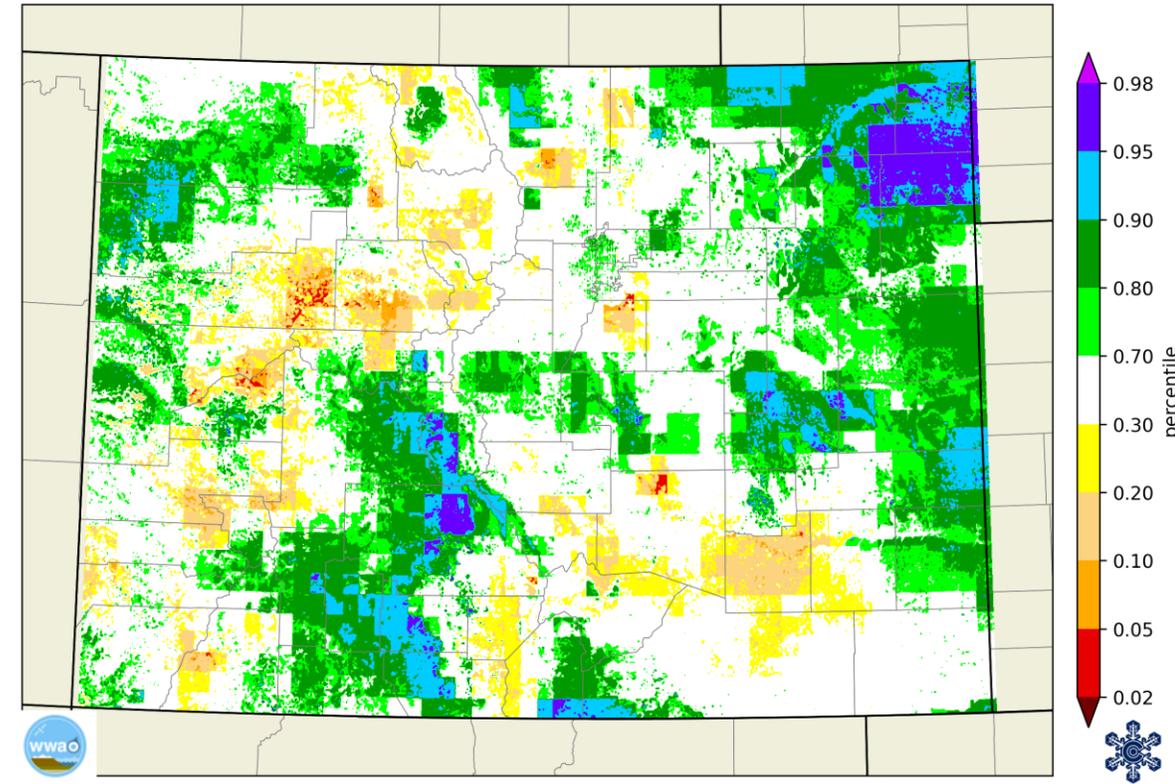


WLDAS 10-cm Soil moisture percentile, 18 Sep 2025



Shallow soil moisture: top 10 cm

WLDAS 1-meter Soil moisture percentile, 18 Sep 2025

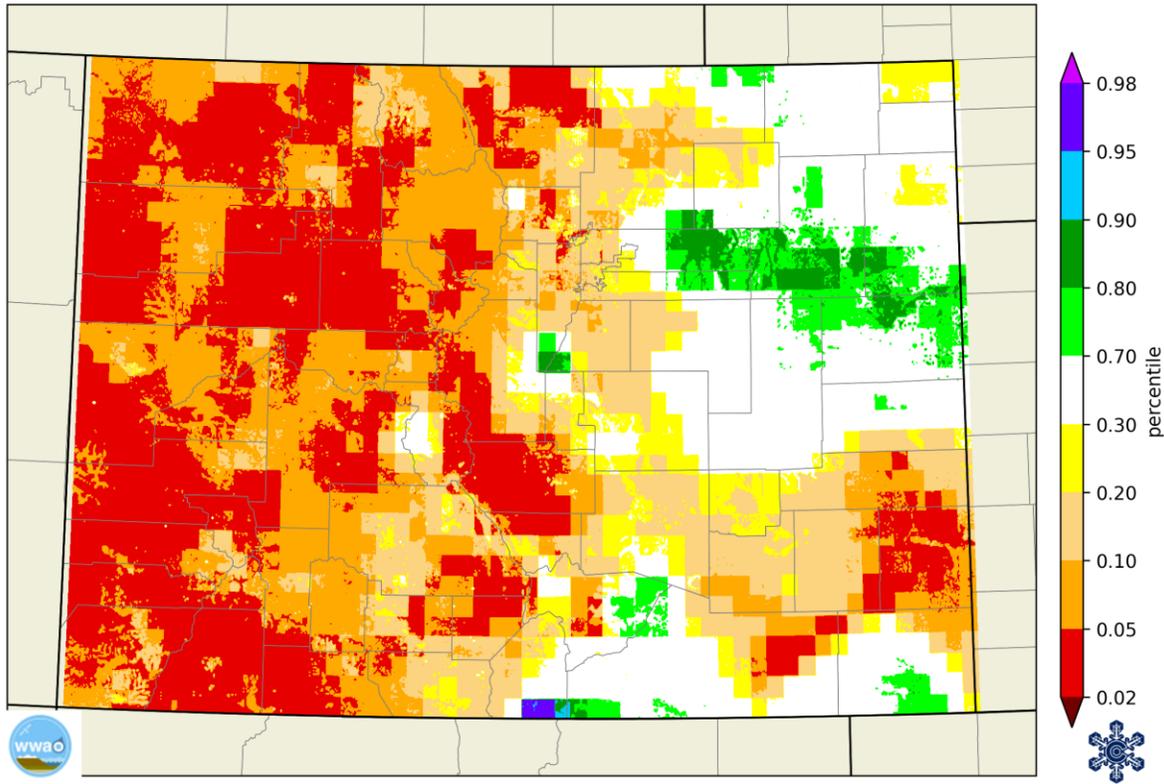


Deep soil moisture: top 1 meter

Soil moisture has recovered significantly in western Colorado from the rain of the last 3-4 weeks. Soils in eastern Colorado generally have near-average to above-average moisture.

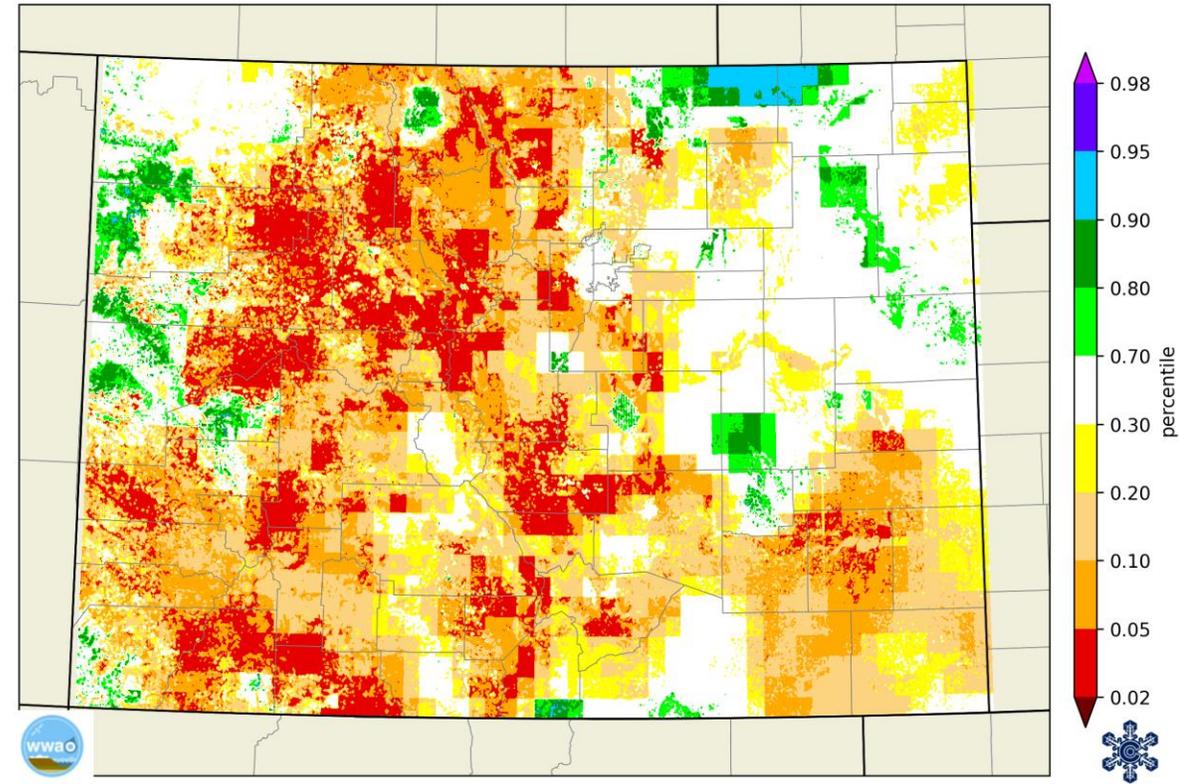


WLDAS 10-cm Soil moisture percentile, 22 Aug 2025



Shallow soil moisture: top 10 cm

WLDAS 1-meter Soil moisture percentile, 22 Aug 2025

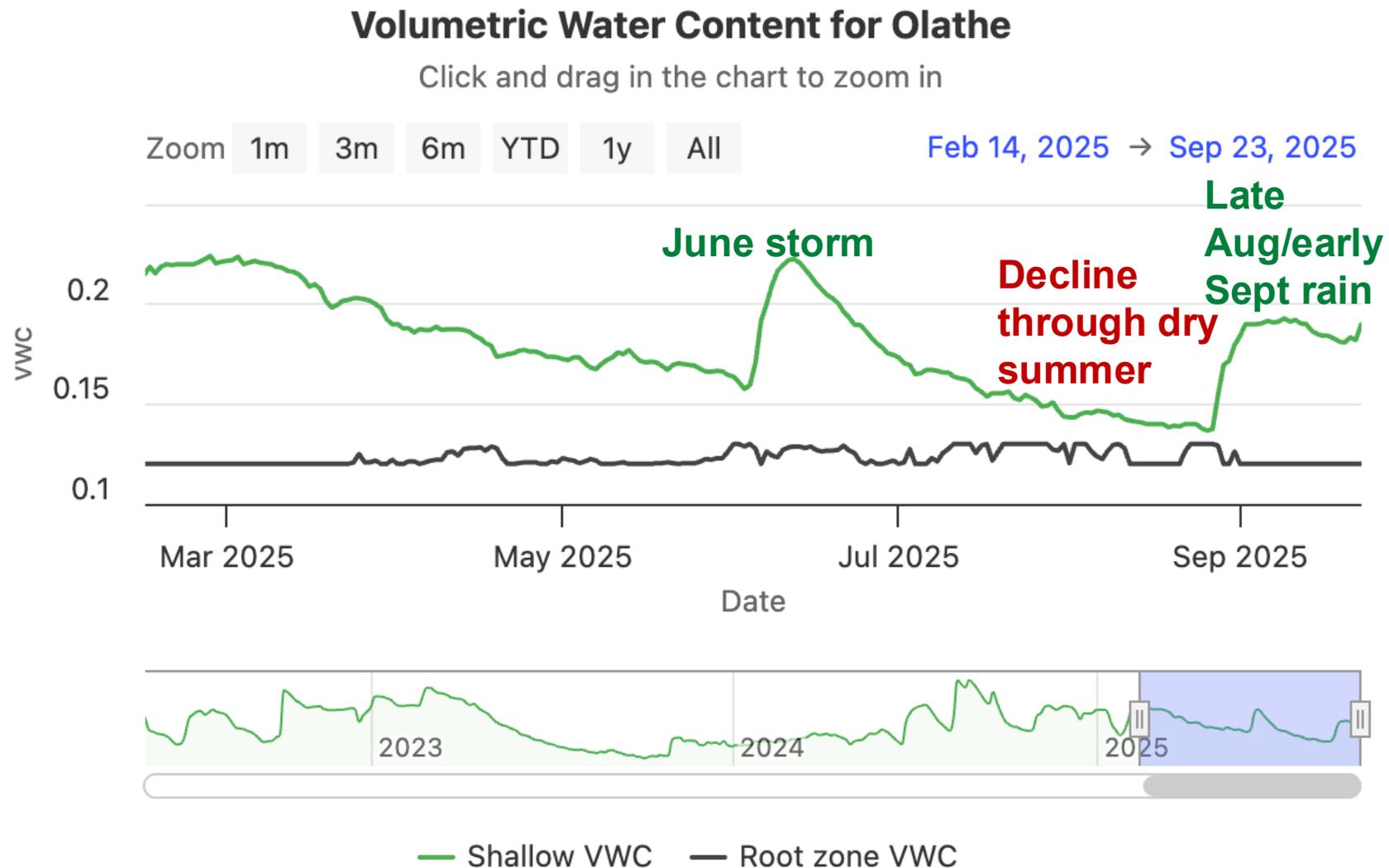


Deep soil moisture: top 1 meter

Here's what they looked like on August 22...



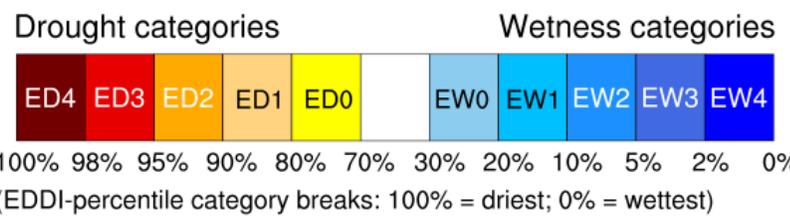
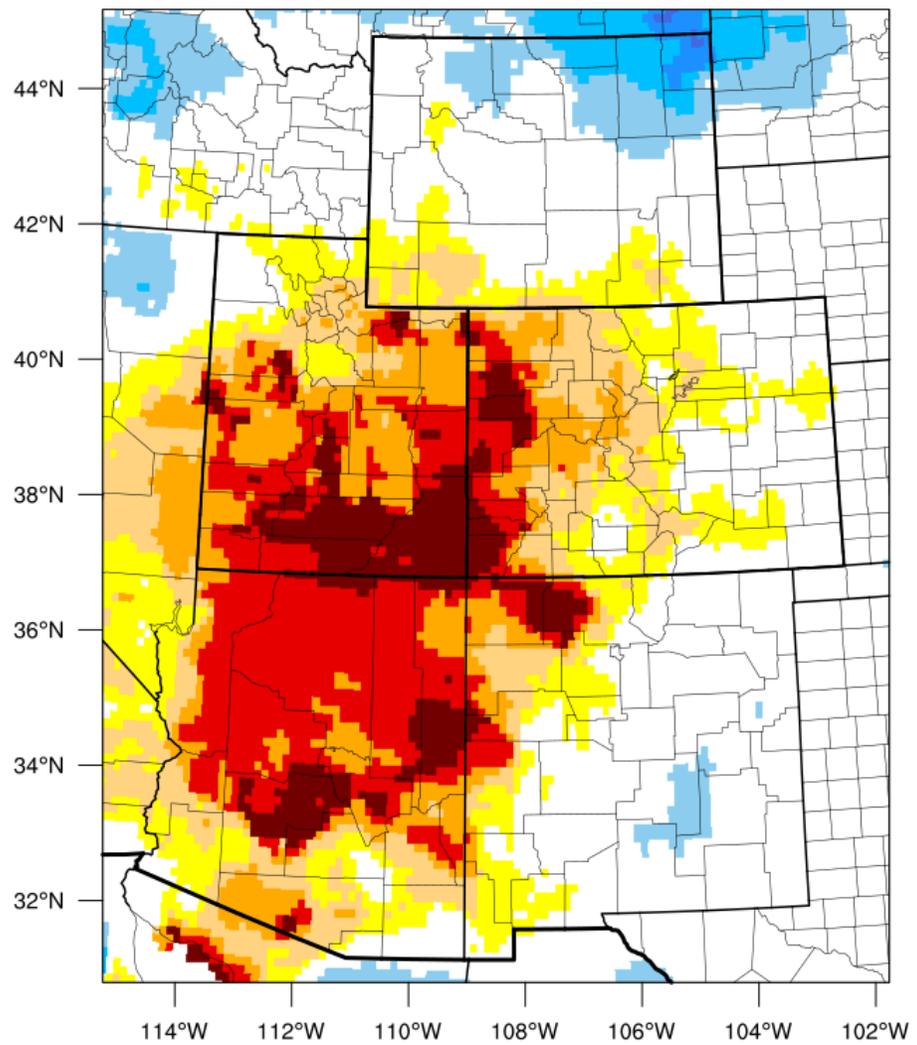
CoAgMET soil moisture sensor at Olathe shows this recovery from extremely low soil moisture in mid-August



Highcharts.com



3-month EDDI categories for September 17, 2025



Evaporative Demand Drought Index

Even with the cloudy and wet conditions over the last month, evaporative demand over the last 3 months has still been extremely high



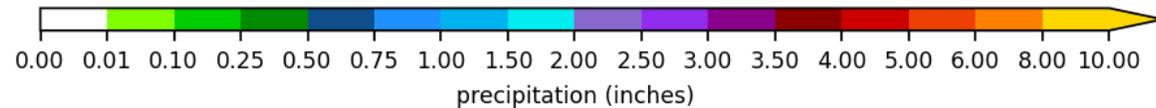
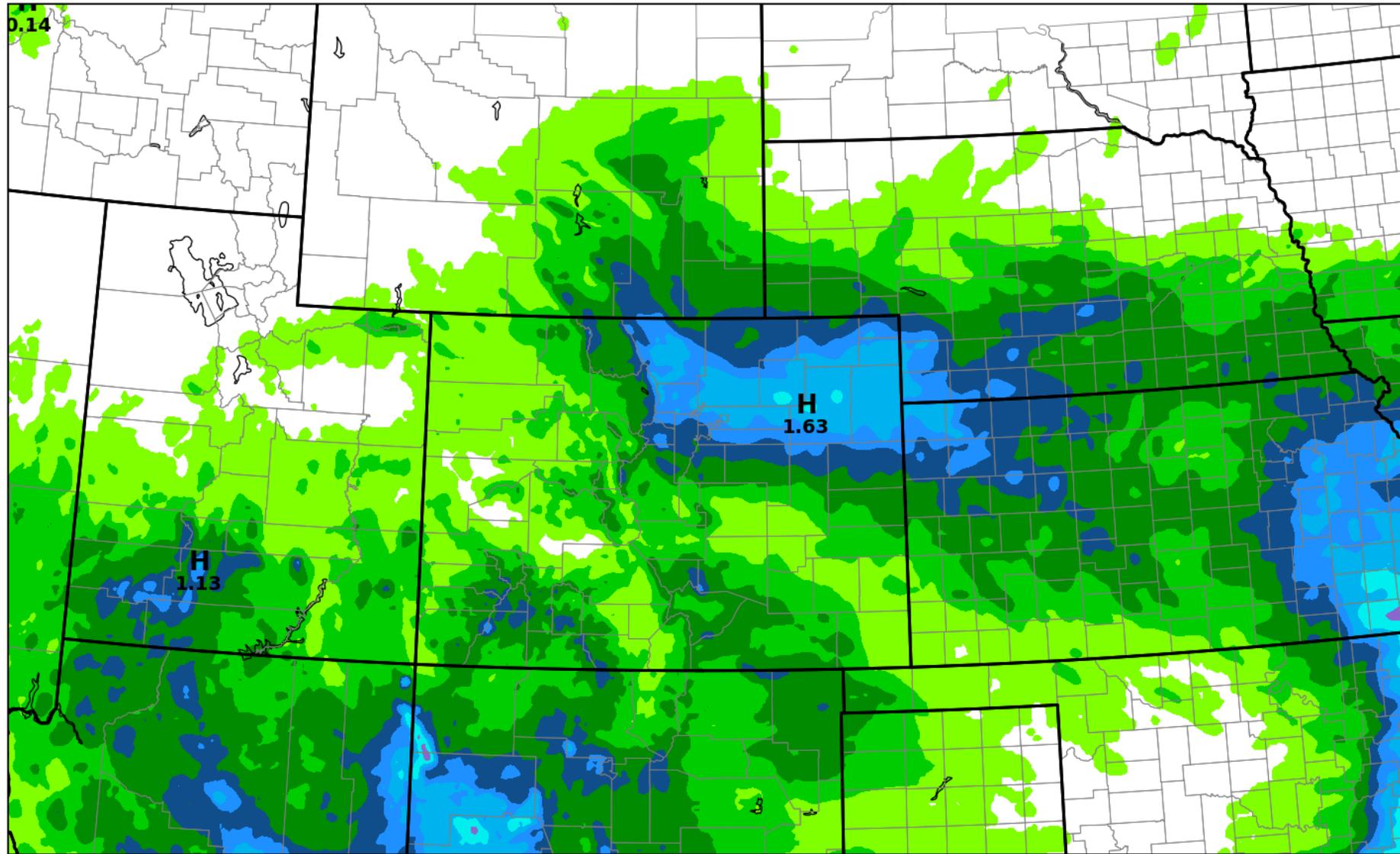


Outlook

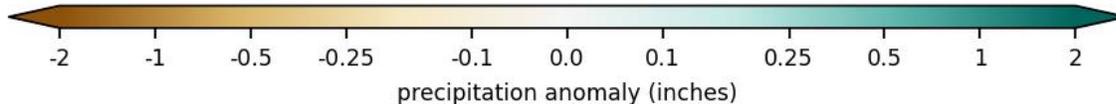
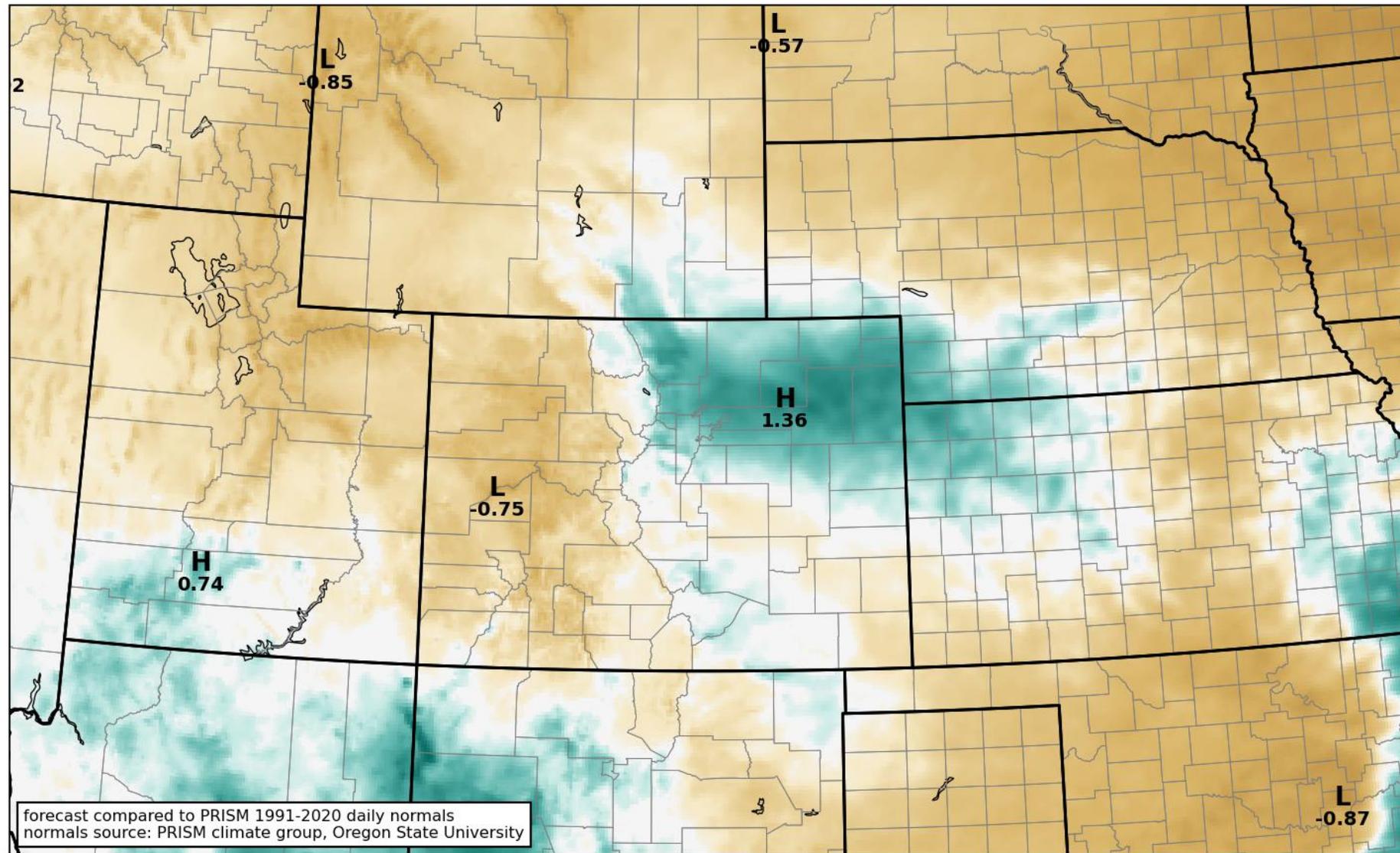


NOAA 7-day precipitation forecast

Widespread rain in
northern Colorado
today, then drying
out and warming
back up

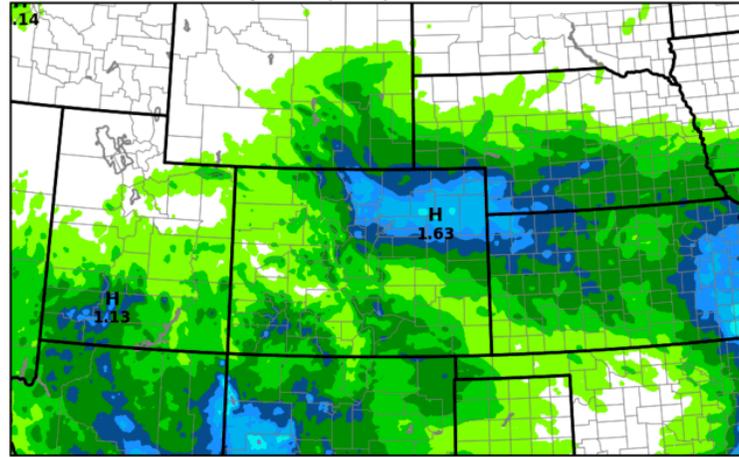


NOAA 7-day precipitation forecast (difference from average)



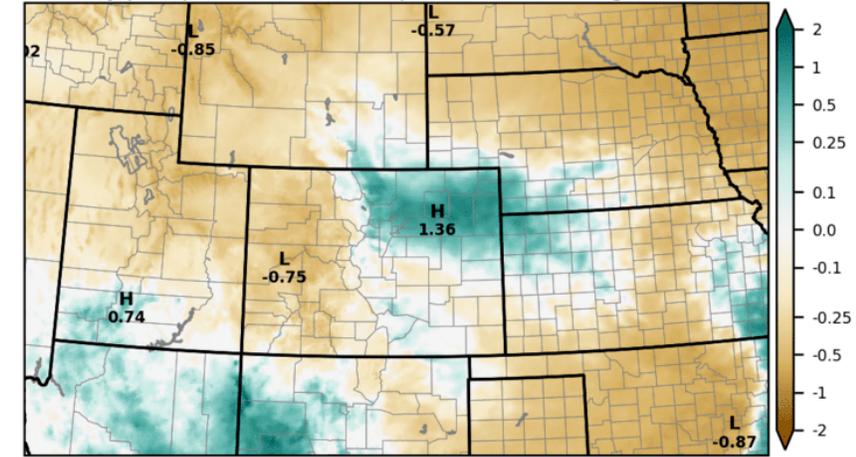
NOAA 7-day precipitation forecast

7-day total precipitation forecast



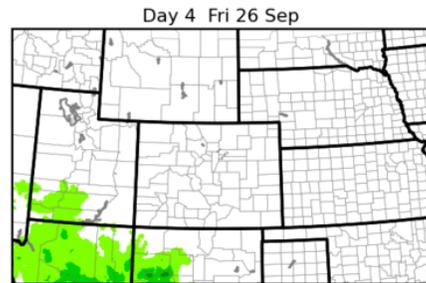
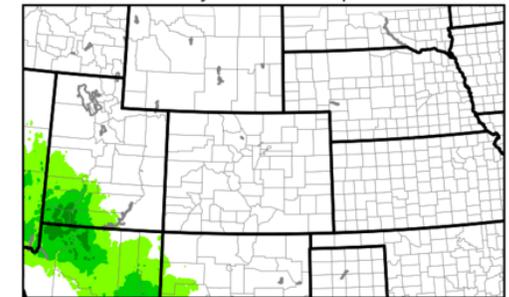
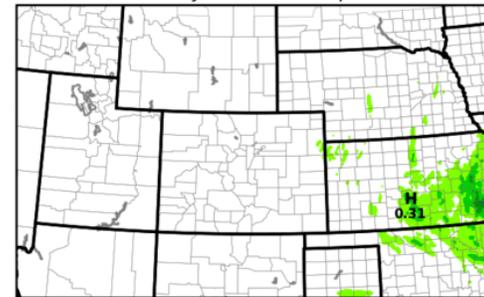
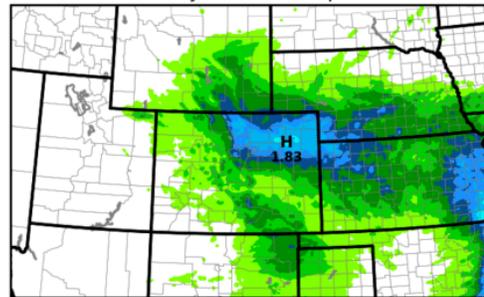
Day 1 Tue 23 Sep

7-day precipitation forecast departure from average (inches)



Day 2 Wed 24 Sep

Day 3 Thu 25 Sep



Day 4 Fri 26 Sep

Day 5 Sat 27 Sep

Day 6 Sun 28 Sep

Day 7 Mon 29 Sep



forecast compared to PRISM 1991-2020 daily normals
normals source: PRISM climate group, Oregon State University

precipitation (inches)



Quick-look maps on our
drought page:

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

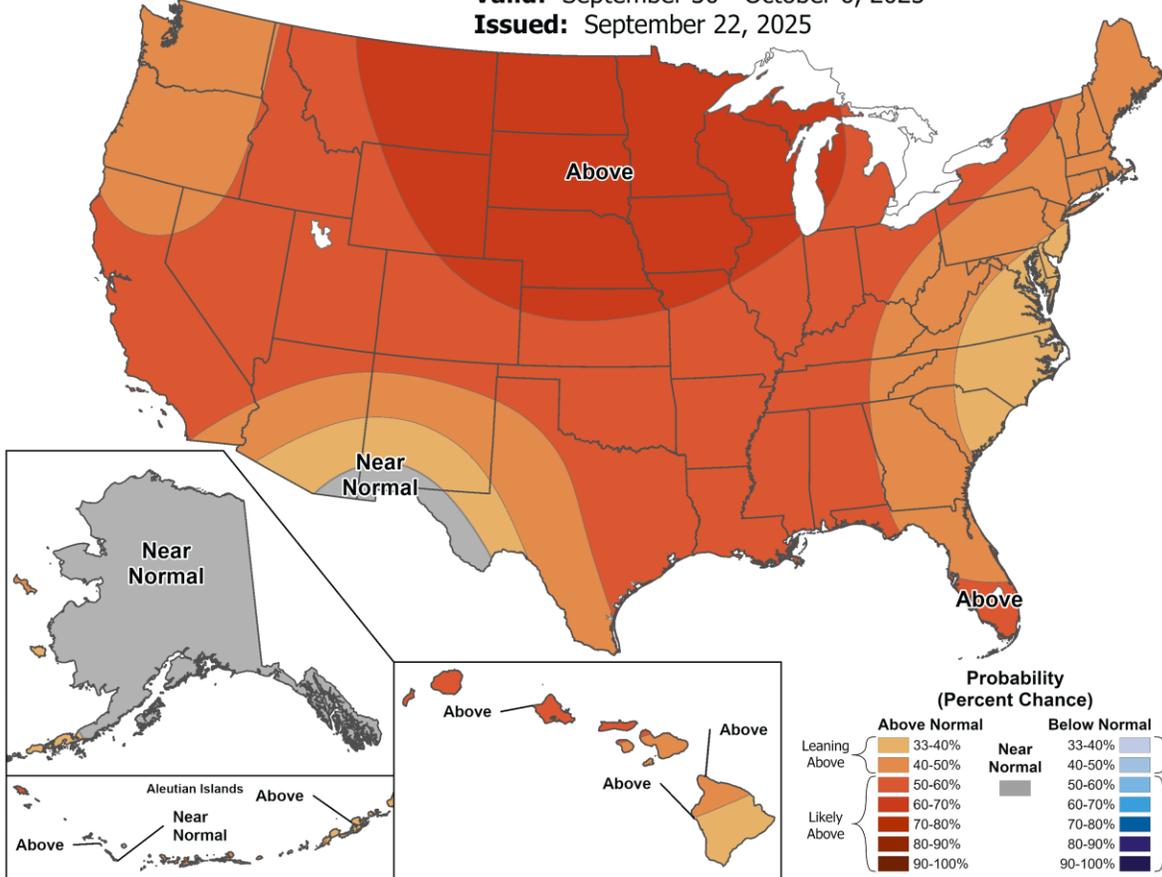


After today, turning warm again for an extended period



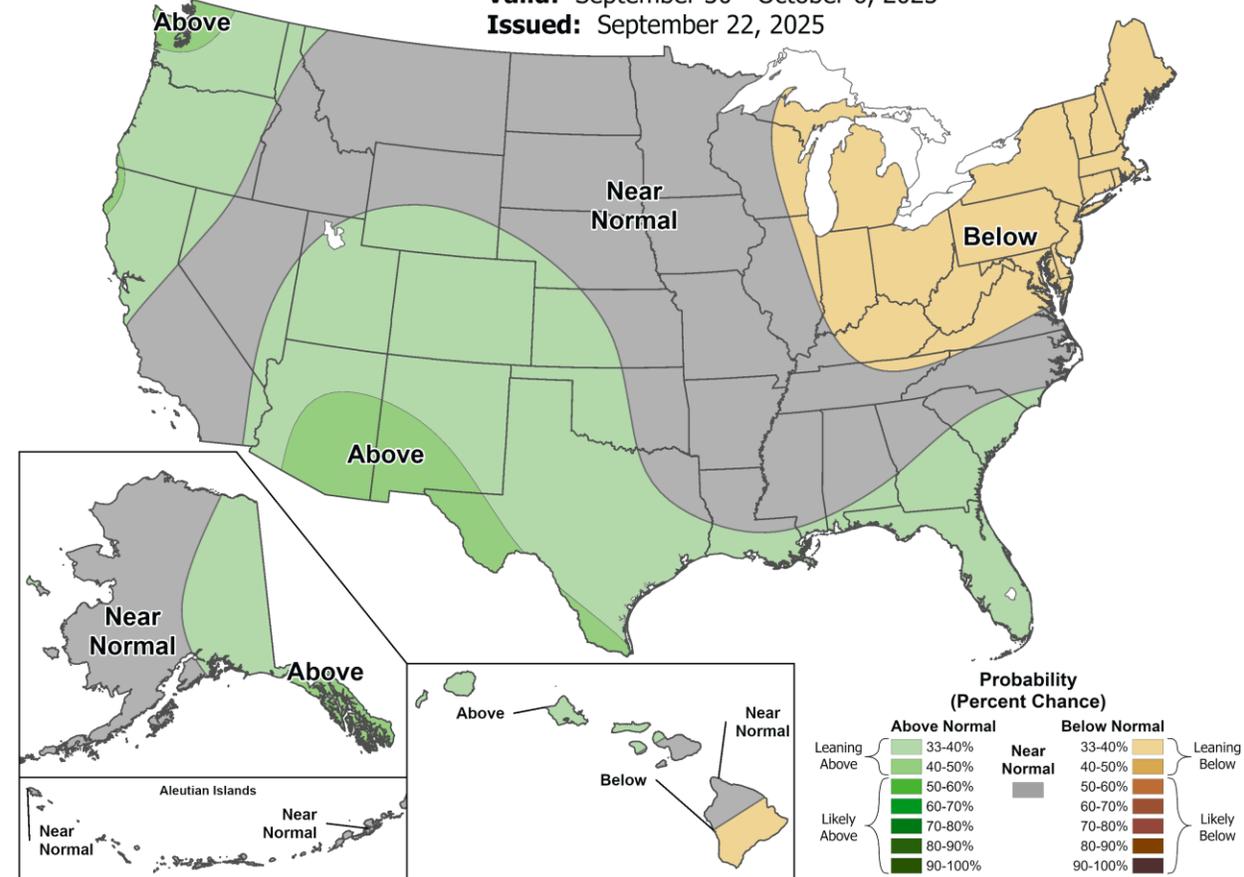
8-14 Day Temperature Outlook

Valid: September 30 - October 6, 2025
Issued: September 22, 2025



8-14 Day Precipitation Outlook

Valid: September 30 - October 6, 2025
Issued: September 22, 2025



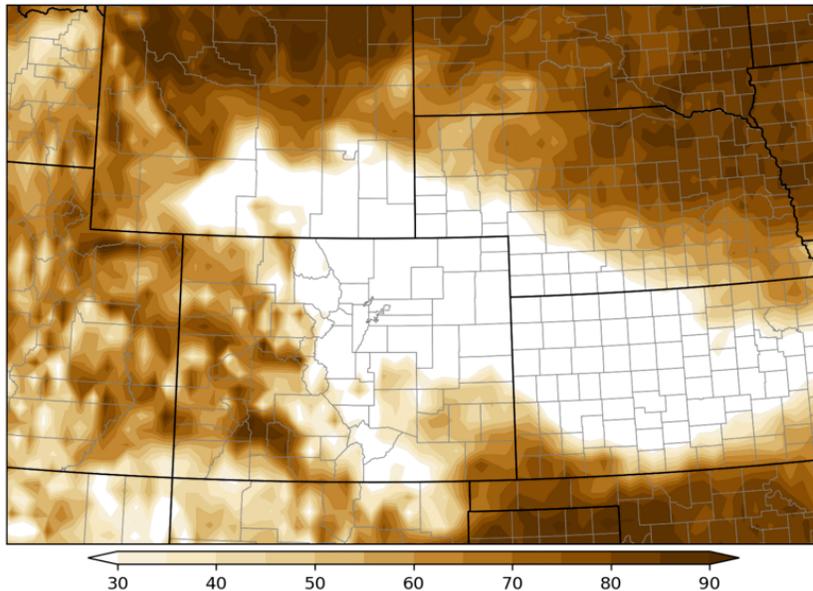
Will the next 15 days be above, below, or near average precipitation?

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

ECMWF Ensemble Prediction System
accumulated precipitation departure from average through 15 days (baseline: PRISM 1991-2020 daily normals)

initialized 0000 UTC Tue 23 Sep 2025
360-h forecast valid 0000 UTC Wed 08 Oct 2025

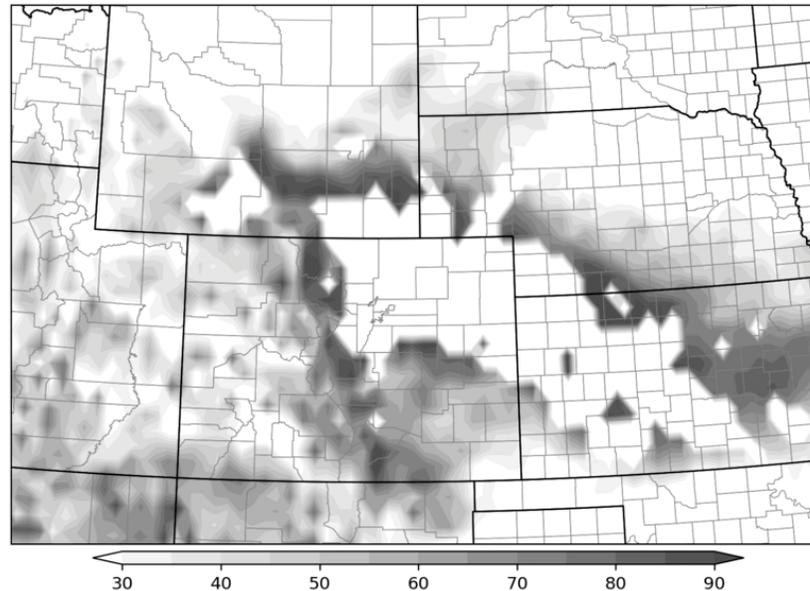
percent of EPS members at least 0.1" below average



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

Percent of members below average

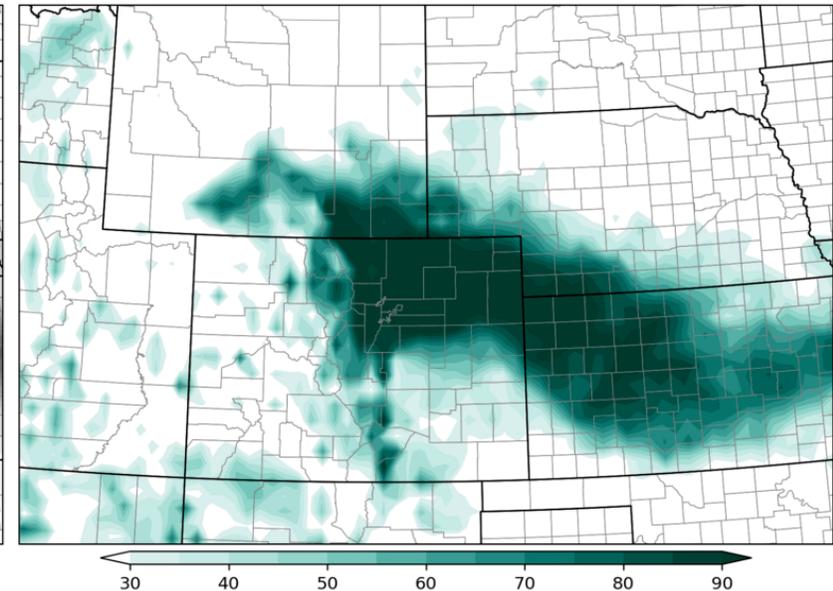
percent of EPS members within 0.1" of average



% of members

Percent of members within 0.1"

percent of EPS members at least 0.1" above average



% of members

Percent of members above avg

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



La Niña on its way back, but maybe only for a short stay?

Official NOAA CPC ENSO Probabilities (issued September 2025)

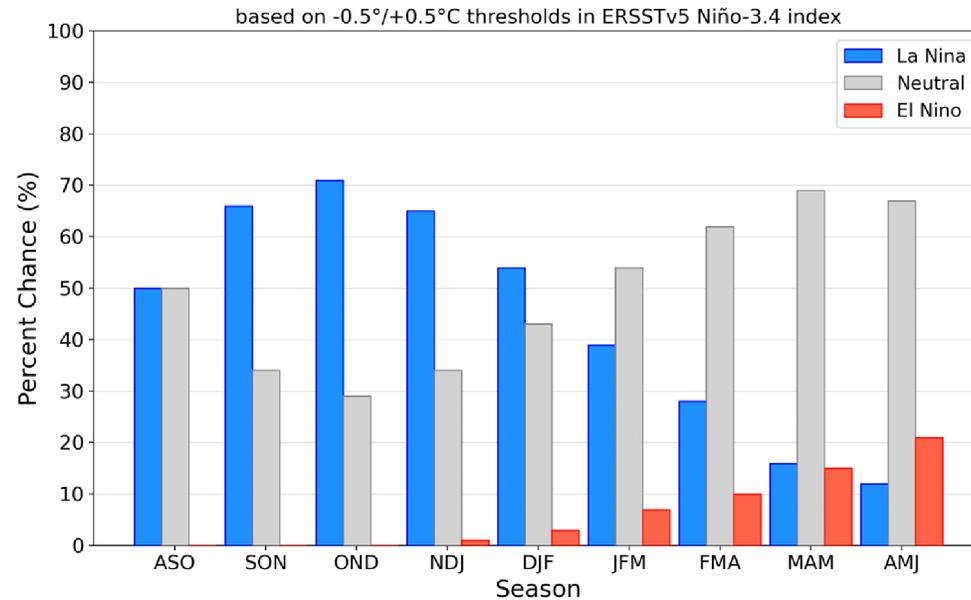


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N - 5°S , 120°W - 170°W). Figure updated 11 September 2025.

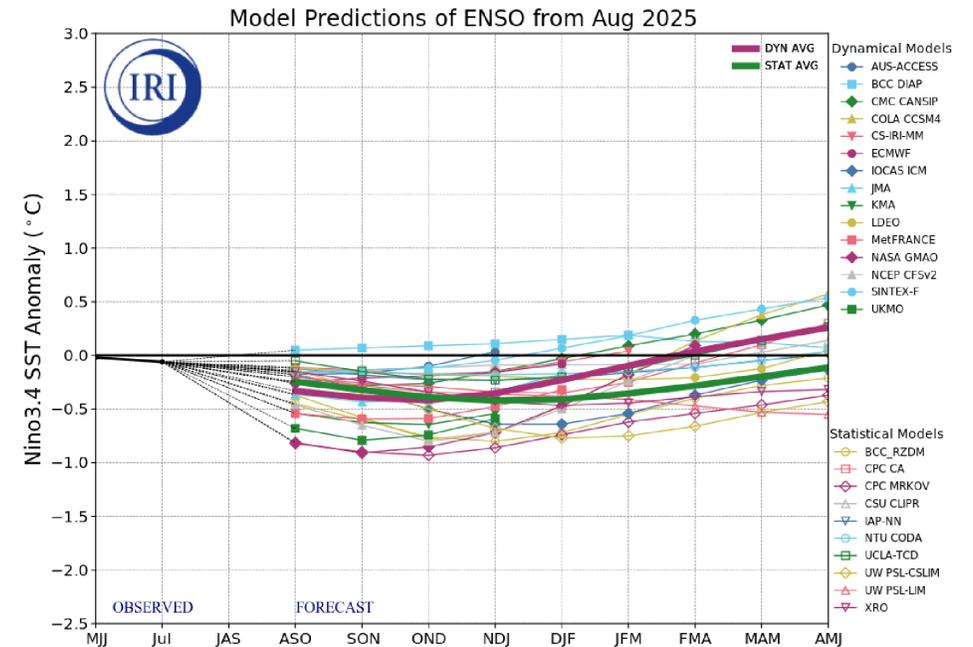


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N - 5°S , 120°W - 170°W). Figure updated 19 August 2025 by the International Research Institute (IRI) for Climate and Society.

“A transition from ENSO-neutral to La Niña is likely in the next couple of months, with a 71% chance of La Niña during October - December 2025. Thereafter, La Niña is favored but chances decrease to 54% in December 2025 - February 2026.”

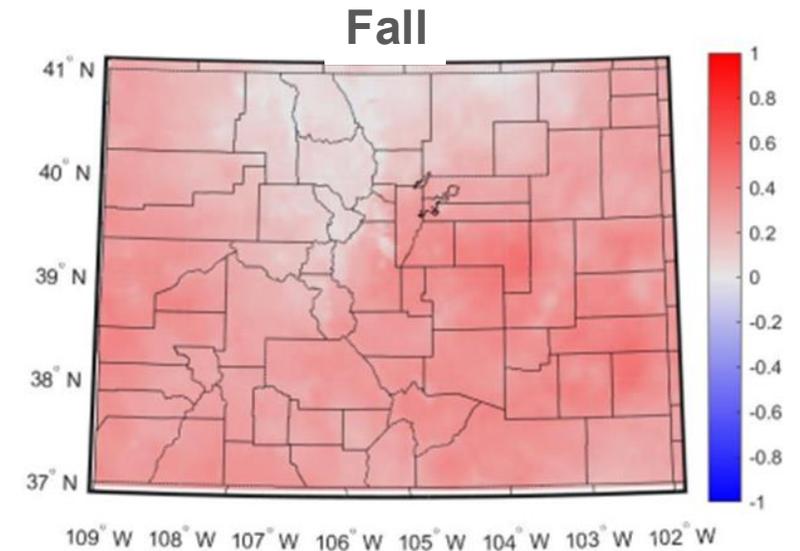
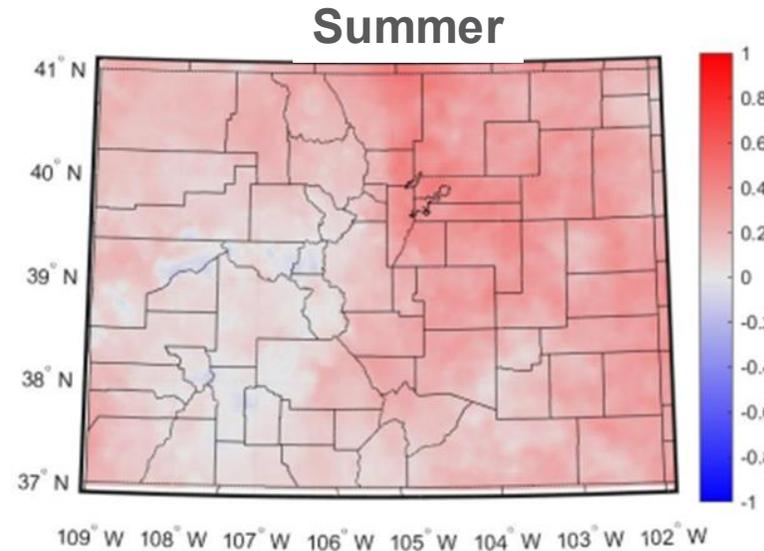
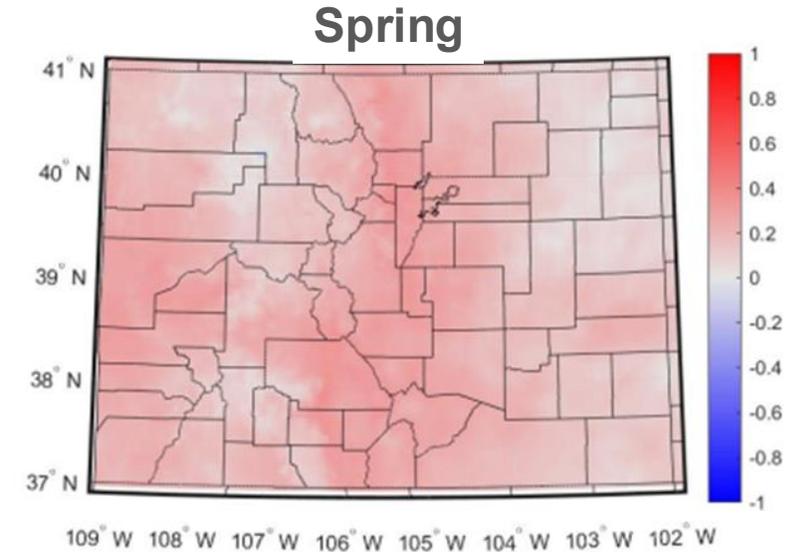
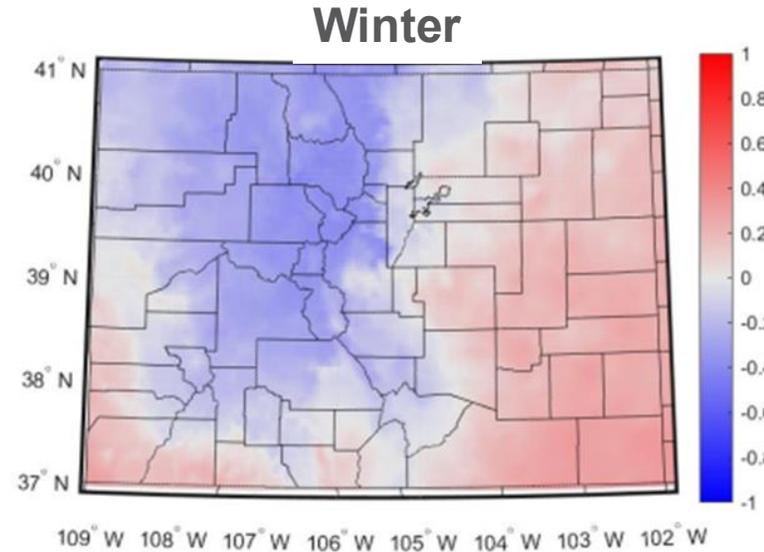
https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml



Which seasons tend to be wet or dry depending on the status of El Niño and La Niña?

Blue: La Niña wetter
Red: El Niño wetter

Correlation Between ENSO ONI and Seasonal Precipitation in Colorado (1951-2020)



Blue = La Niña wetter Red = El Niño wetter



NOAA's Oct-Nov-Dec temperature outlook

Find address or place

[7 Day Forecast for Alamosa, CO](#)

Three Category Temperature Outlook
Normal Maximum Temperature: **49**
Normal Minimum Temperature: **14**

	Above Normal	60%
	Below Normal	7%
	Near Normal	33%

Three Category Precipitation Outlook
Normal Precipitation: **2.80**

	Above Normal	22%
	Below Normal	45%
	Near Normal	33%

Seasonal Outlook

October 2025-December 2025 (Lead 1)

Temperature **Opacity: 60%** **Precipitation**

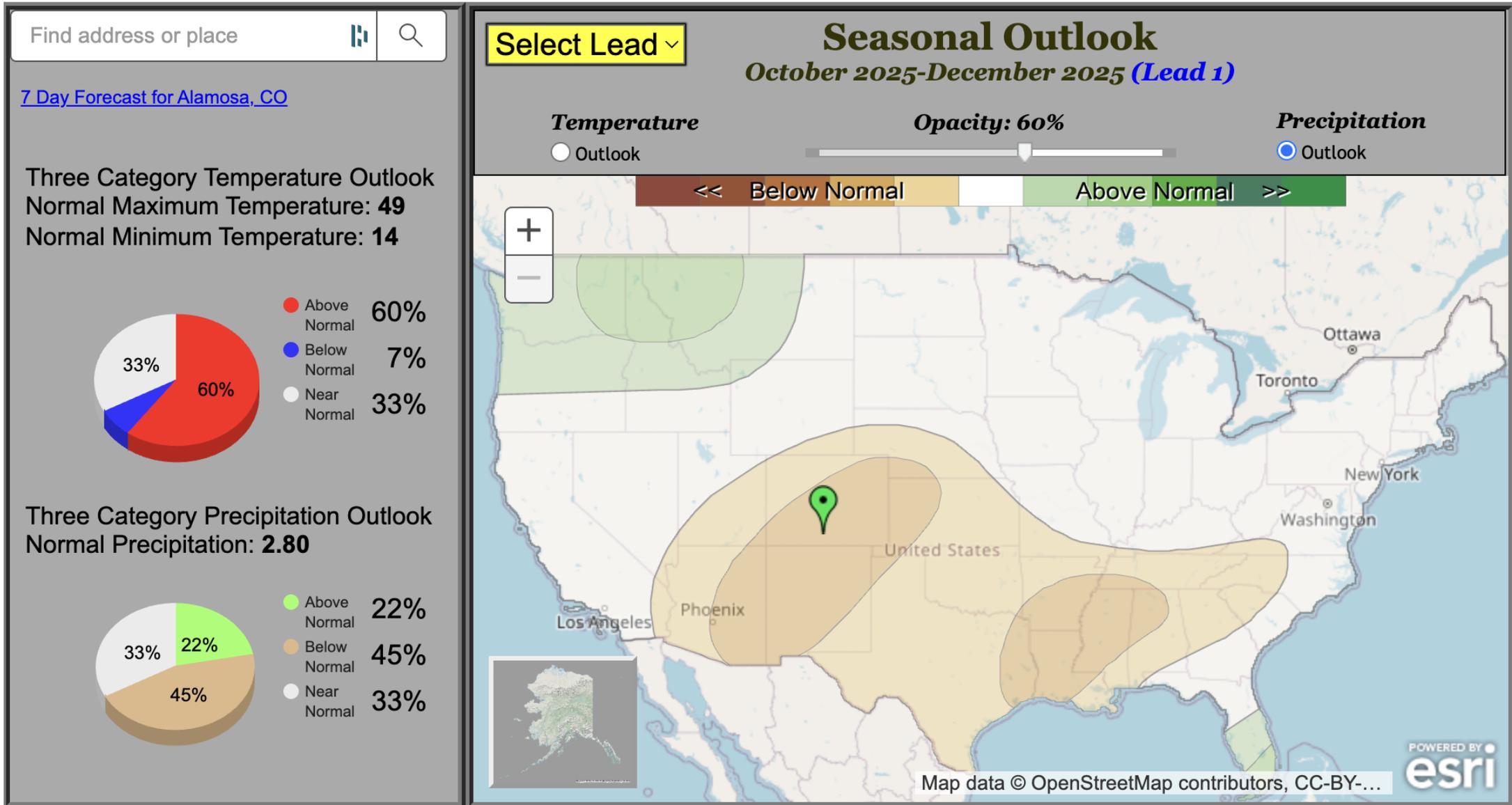
Outlook Outlook

<< Below Normal **Above Normal >>**

Map data © OpenStreetMap contributors, CC-BY-... **POWERED BY esri**



NOAA's Oct-Nov-Dec precipitation outlook



NOAA's winter (Dec-Jan-Feb) temperature outlook

Find address or place

[7 Day Forecast for Alamosa, CO](#)

Three Category Temperature Outlook
 Normal Maximum Temperature: **37**
 Normal Minimum Temperature: **3**

● Above Normal	37%
● Below Normal	30%
● Near Normal	33%

Three Category Precipitation Outlook
 Normal Precipitation: **2.29**

● Above Normal	32%
● Below Normal	35%
● Near Normal	33%

Select Lead ▾

Seasonal Outlook

December 2025-February 2026 (Lead 3)

Temperature

● Outlook

Opacity: 60%

Precipitation

● Outlook

<< Below Normal Above Normal >>

Map data © OpenStreetMap contributors, CC-BY-...



NOAA's winter (Dec-Jan-Feb) precipitation outlook

Find address or place

[7 Day Forecast for Alamosa, CO](#)

Three Category Temperature Outlook
 Normal Maximum Temperature: **37**
 Normal Minimum Temperature: **3**

● Above Normal	37%
● Below Normal	30%
● Near Normal	33%

Three Category Precipitation Outlook
 Normal Precipitation: **2.29**

● Above Normal	32%
● Below Normal	35%
● Near Normal	33%

Select Lead ▾

Seasonal Outlook

December 2025-February 2026 (Lead 3)

Temperature

Outlook

Opacity: 60%

Precipitation

Outlook

<< Below Normal Above Normal >>

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Takeaways

- Water Year 2025 has been warm and dry for western Colorado; closer to average precipitation for the eastern plains
- The exceptional drought of early-mid August is fortunately over in western Colorado. It is now a mid/long-term drought with large precipitation deficits and water supply concerns, rather than an acute drought with dry vegetation and extreme fire weather
- Flash flooding and debris flows have been observed recently on the Lee burn scar, as well as elsewhere in Colorado
- Cool and wet today, then an extended period of warmer-than-average conditions
- La Niña is expected to return in the fall and early winter, which is supporting an outlook tilted toward warmer and drier than average conditions for the rest of fall
- But La Niña may not last long, making the winter outlook even more uncertain than usual





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