



Climate Update



Peter Goble
Colorado Climate Center

**Presented to
Water Availability Task Force
February 21, 2023
Denver, CO**

Agenda

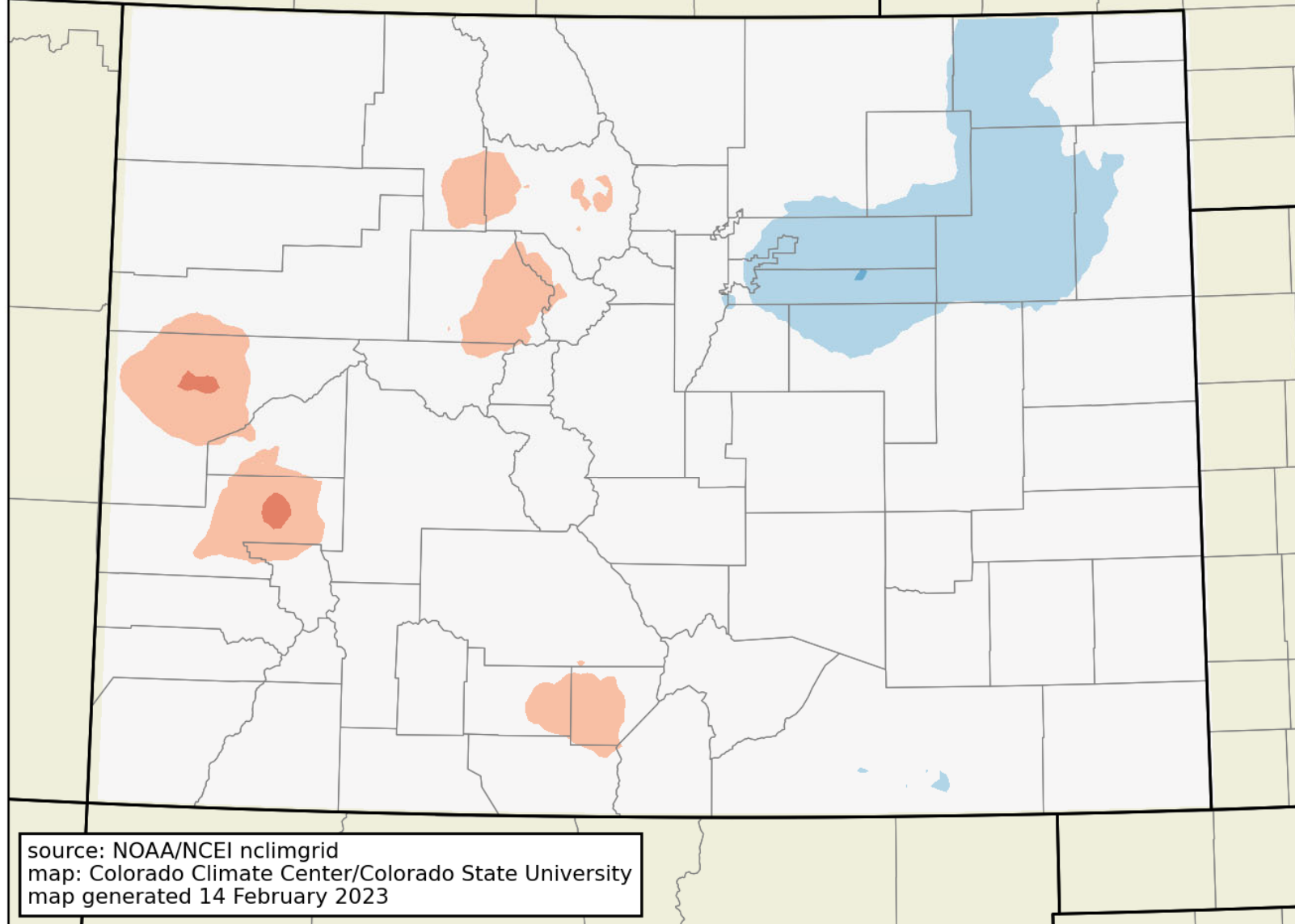
- Current seasonal climate conditions update
- Drought update
- Seasonal Forecast info (when are we going to get spring moisture?)

Colorado statewide average temperature and precipitation, October - January

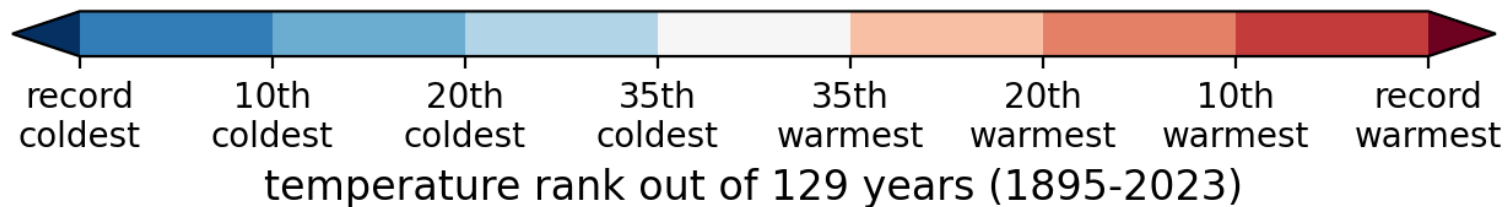


average temperature rank: January 2023

statewide anomaly from 1901-2000 avg: $+0.5^{\circ}\text{F}$
statewide rank: 70th warmest/60th coldest

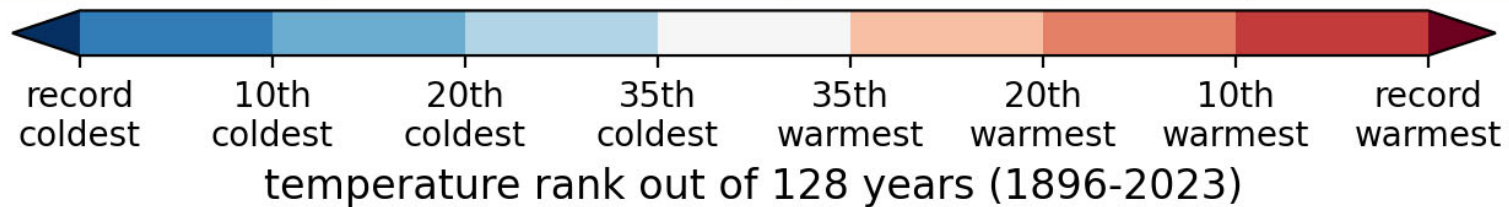
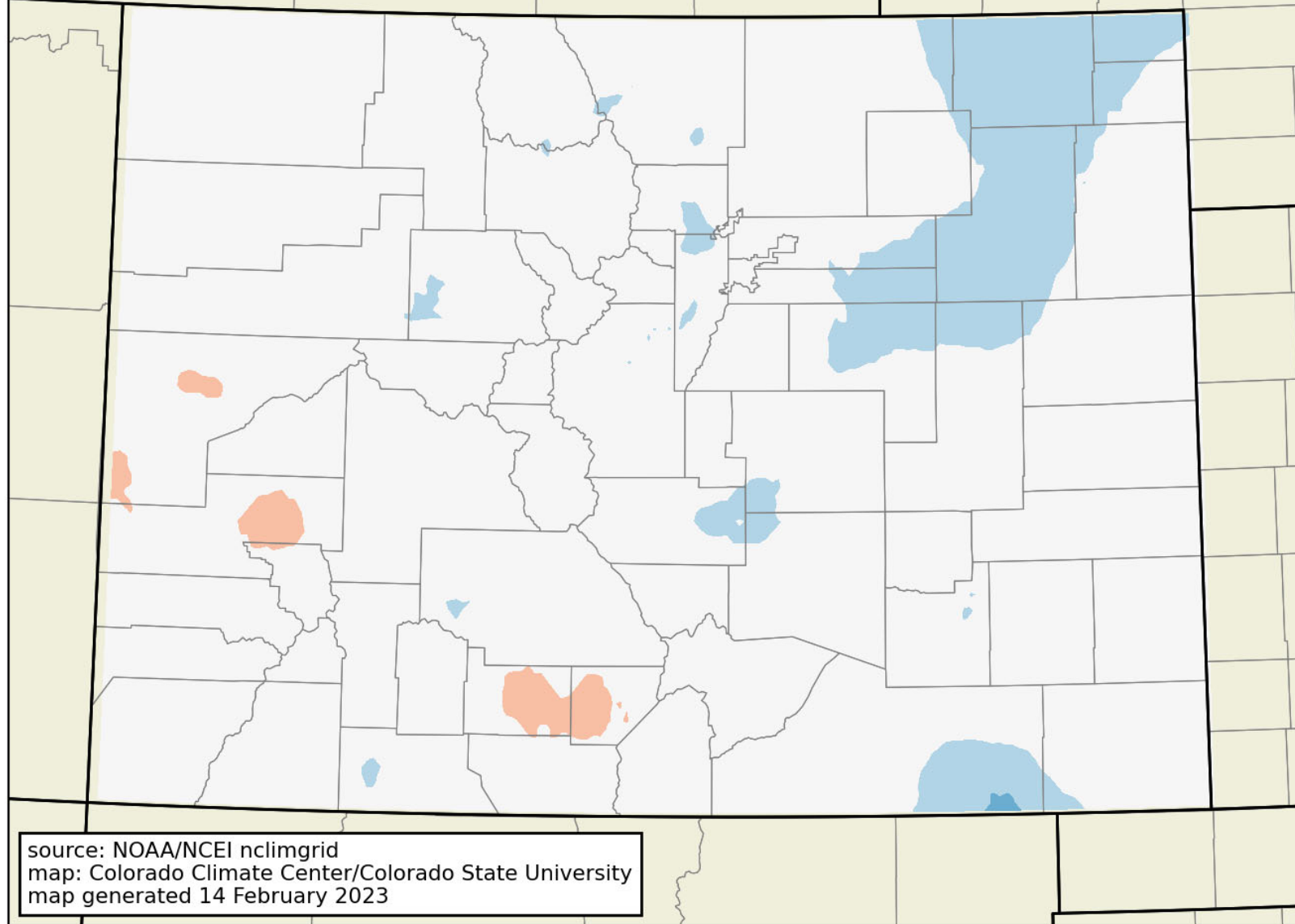


source: NOAA/NCEI nclimgrid
map: Colorado Climate Center/Colorado State University
map generated 14 February 2023



average temperature rank: 4 months ending January 2023 (Oct-Jan)

statewide anomaly from 1901-2000 avg: -0.1°F
statewide rank: 73rd warmest/56th coldest

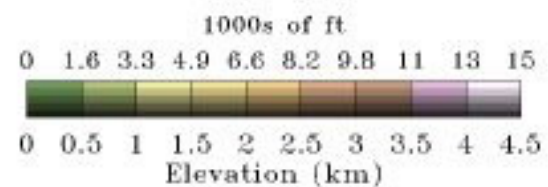
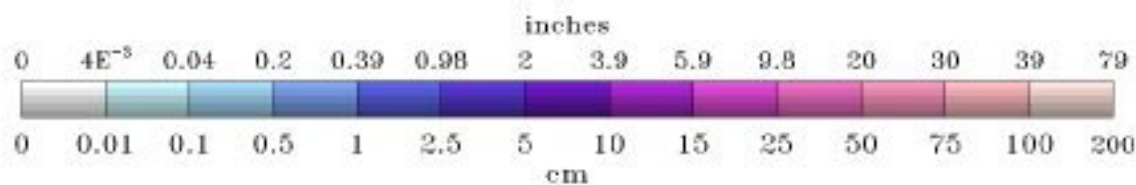
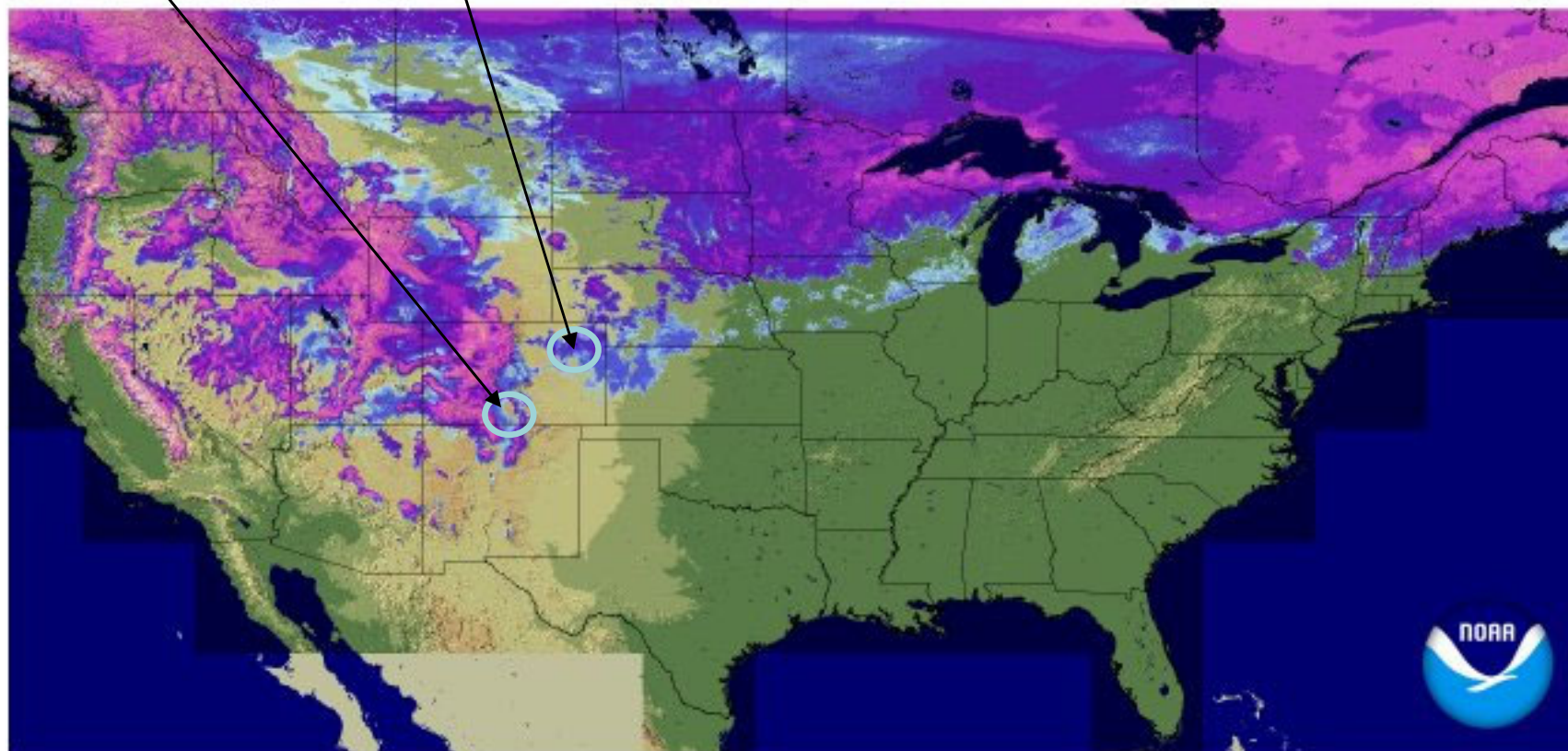


Snow Water Equivalent

2023-02-20 06 UTC

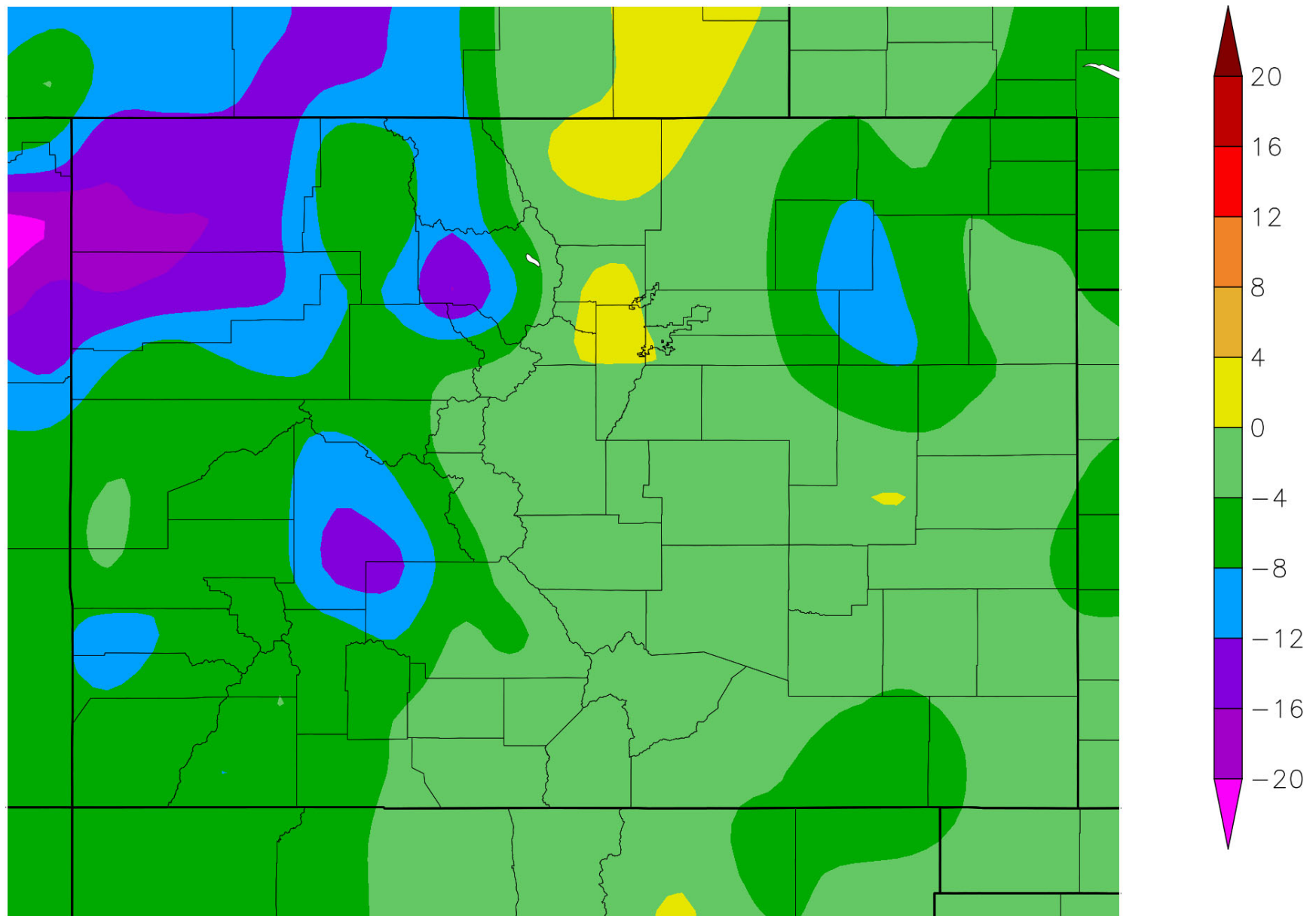
No
snow

Snow



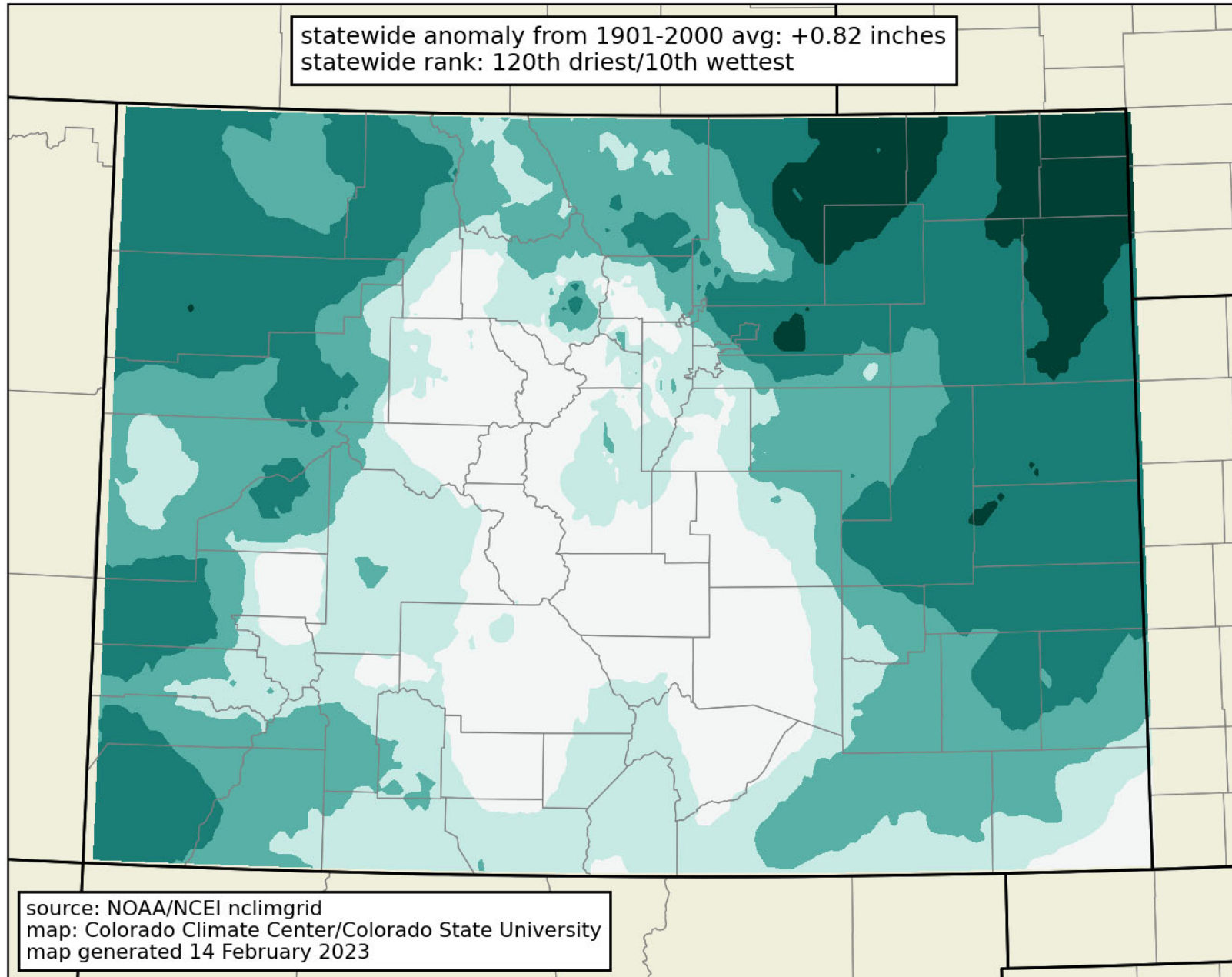
Departure from Normal Temperature (F)

2/1/2023 – 2/19/2023

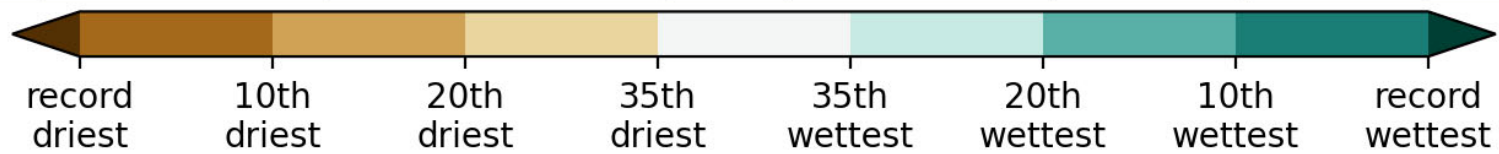


precipitation rank: January 2023

statewide anomaly from 1901-2000 avg: +0.82 inches
statewide rank: 120th driest/10th wettest

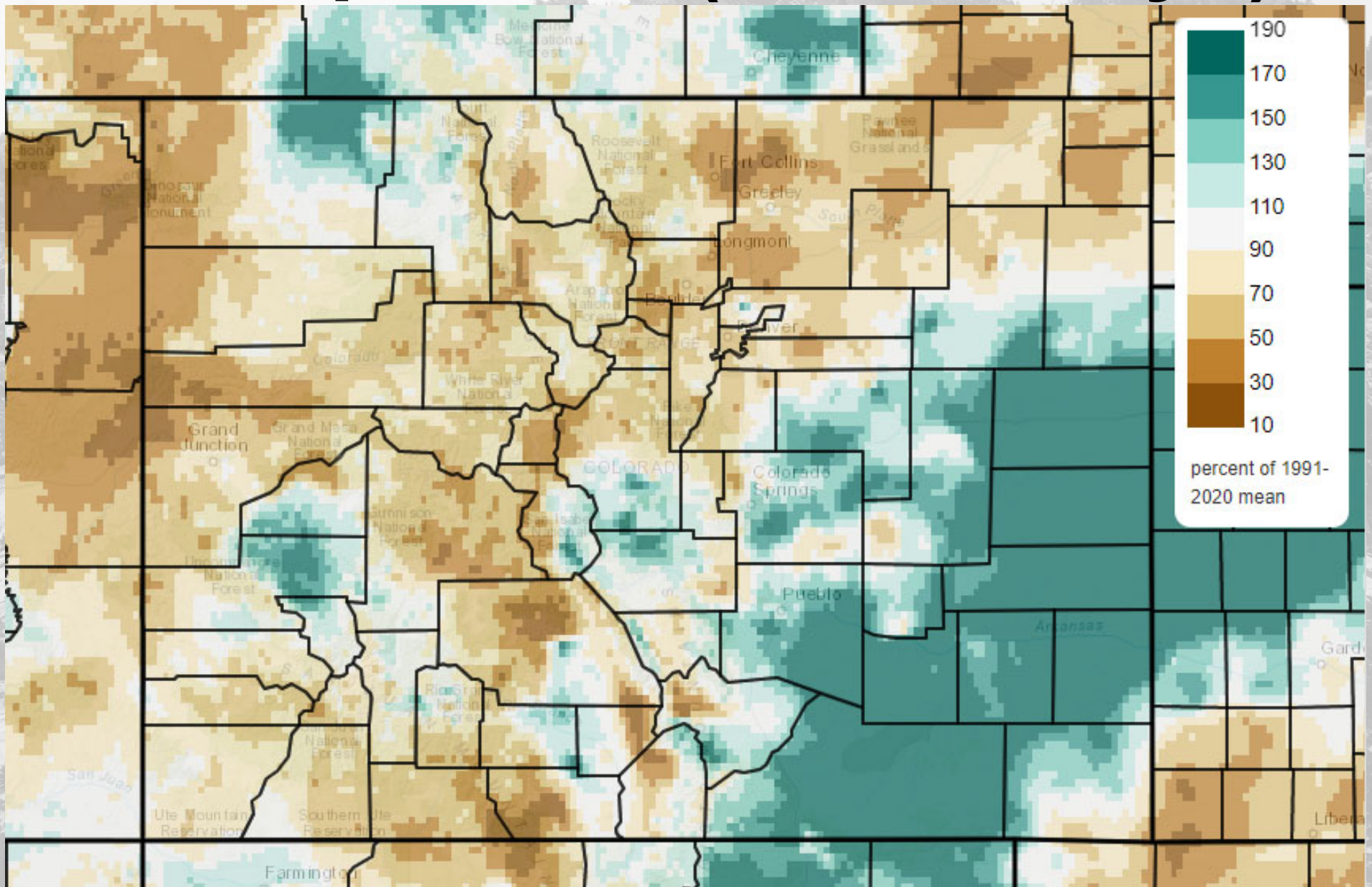


source: NOAA/NCEI nclimgrid
map: Colorado Climate Center/Colorado State University
map generated 14 February 2023

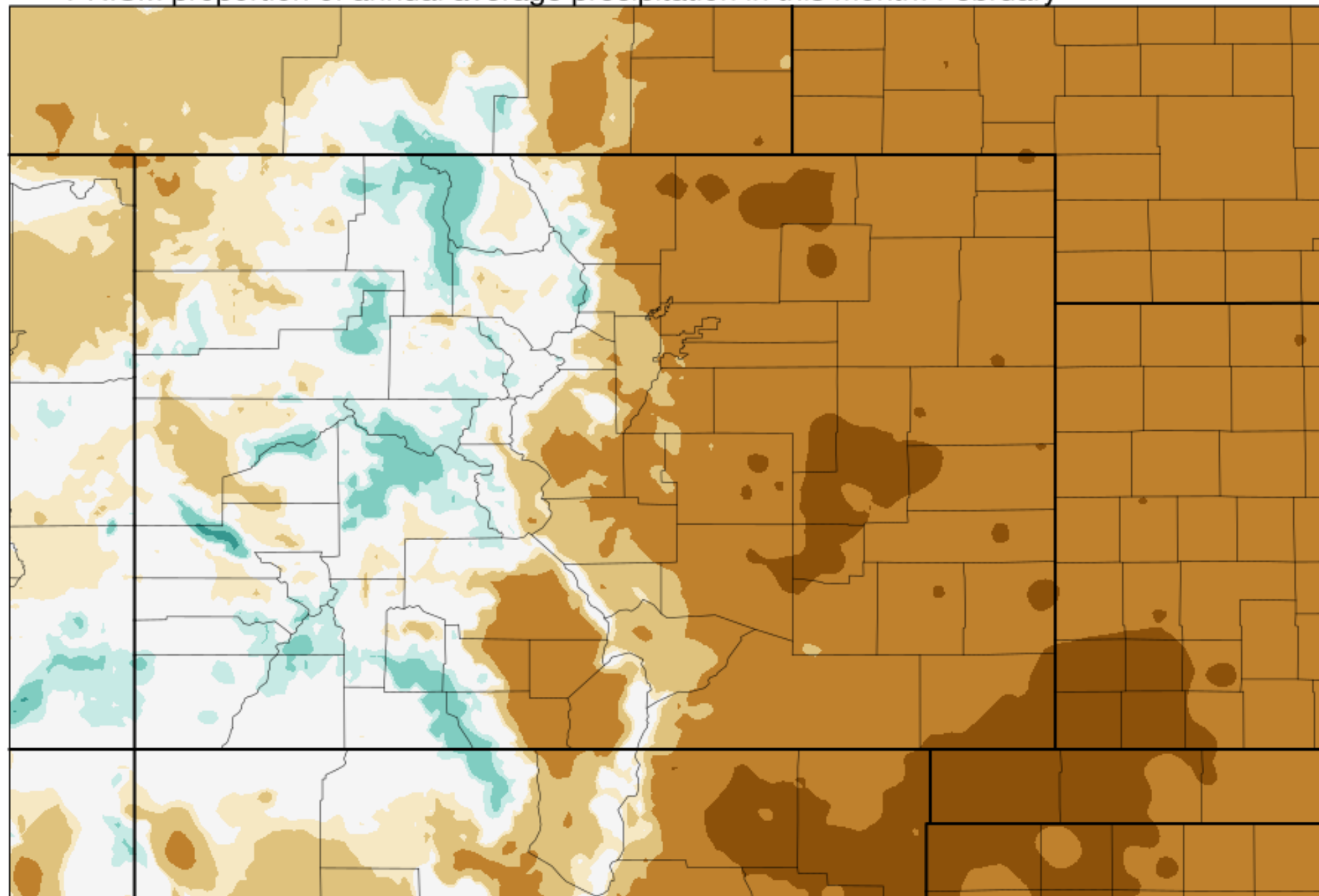


precipitation rank out of 129 years (1895-2023)

Percent of Normal Precipitation (last 30 days)



PRISM proportion of annual average precipitation in this month: February



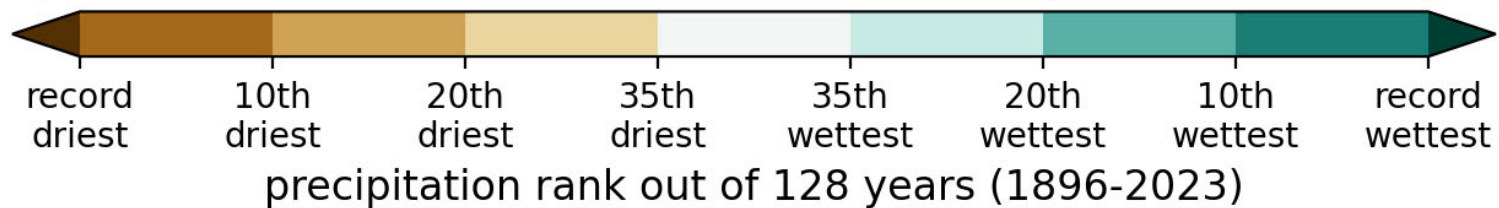
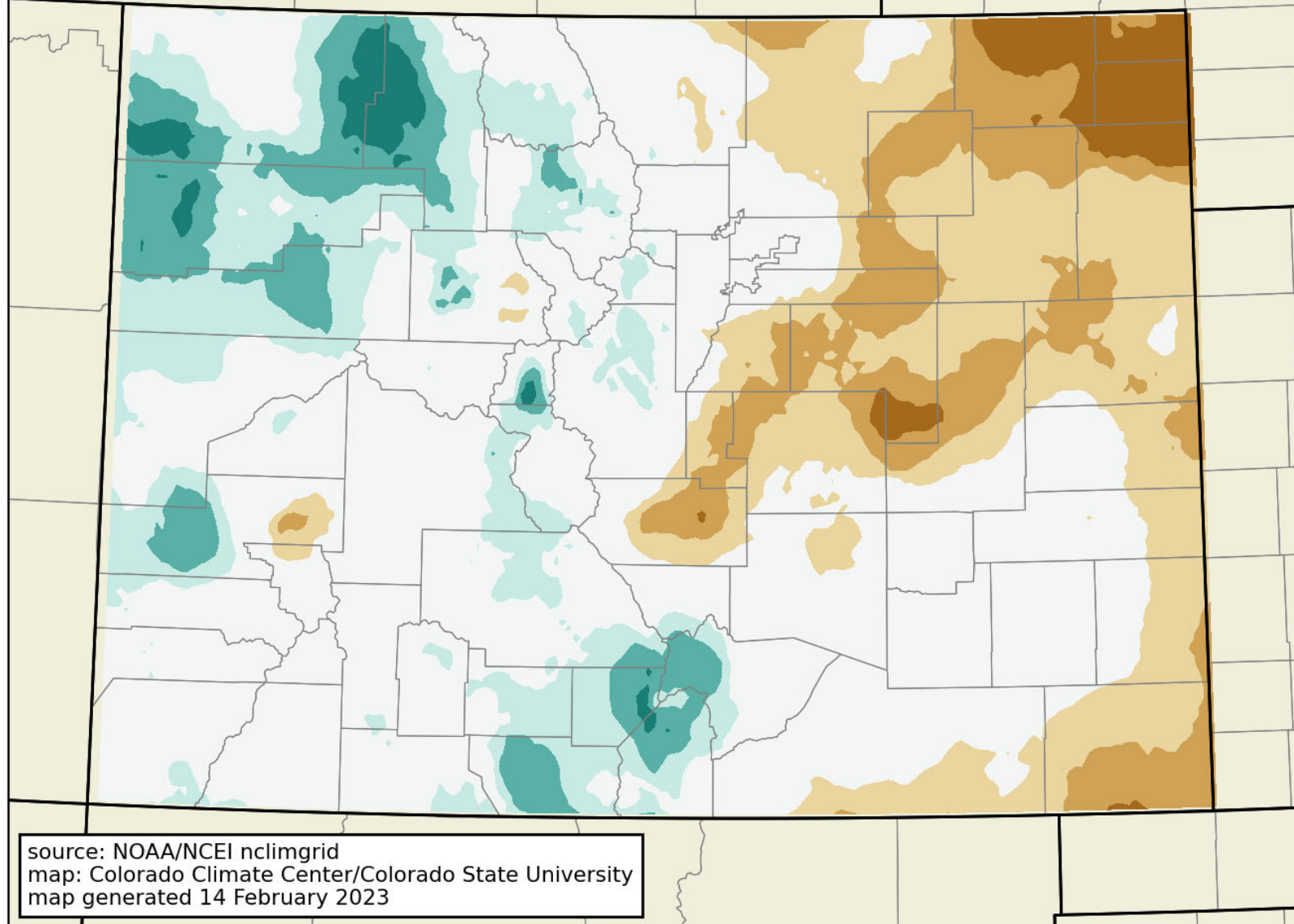
0.1 0.25 0.5 0.75 0.85 1.15 1.25 1.5 1.75 2

Proportion of precip relative to 1/12th

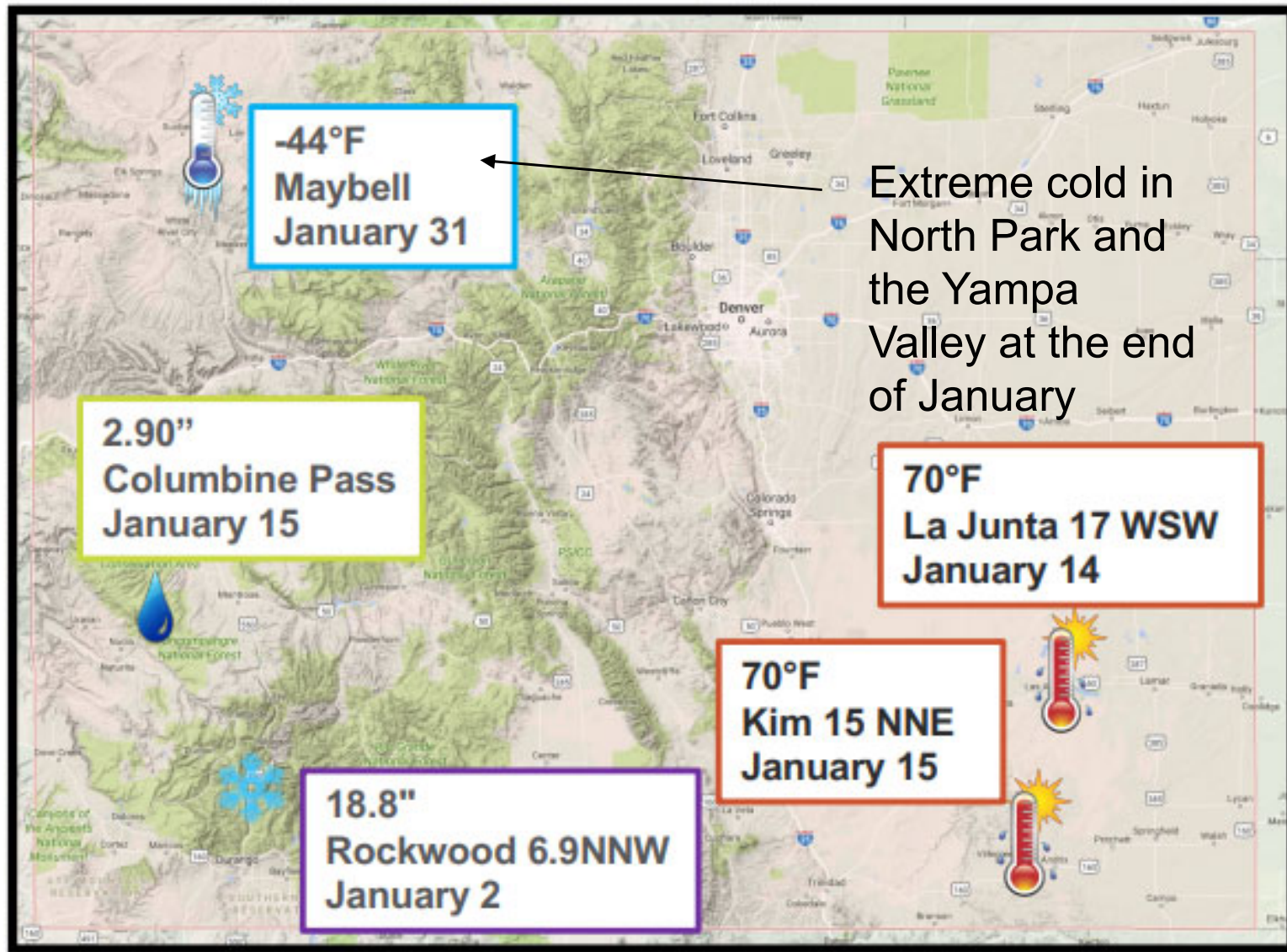
data: 1991-2020 normals, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
map: Russ Schumacher/Colorado Climate Center/Colorado State University

precipitation rank: 12 months ending January 2023 (Feb-Jan)

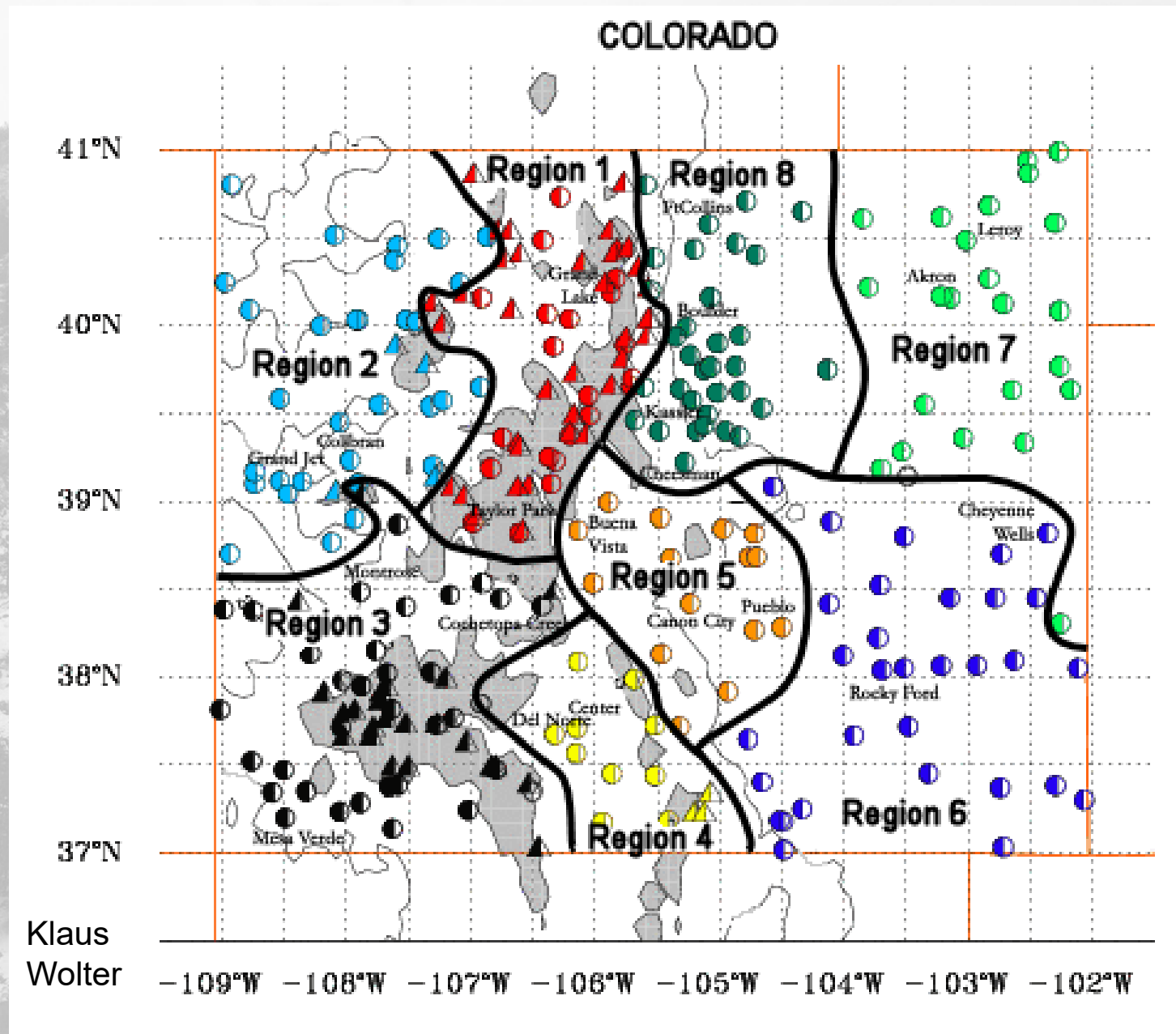
statewide anomaly from 1901-2000 avg: -0.5 inches
statewide rank: 59th driest/70th wettest



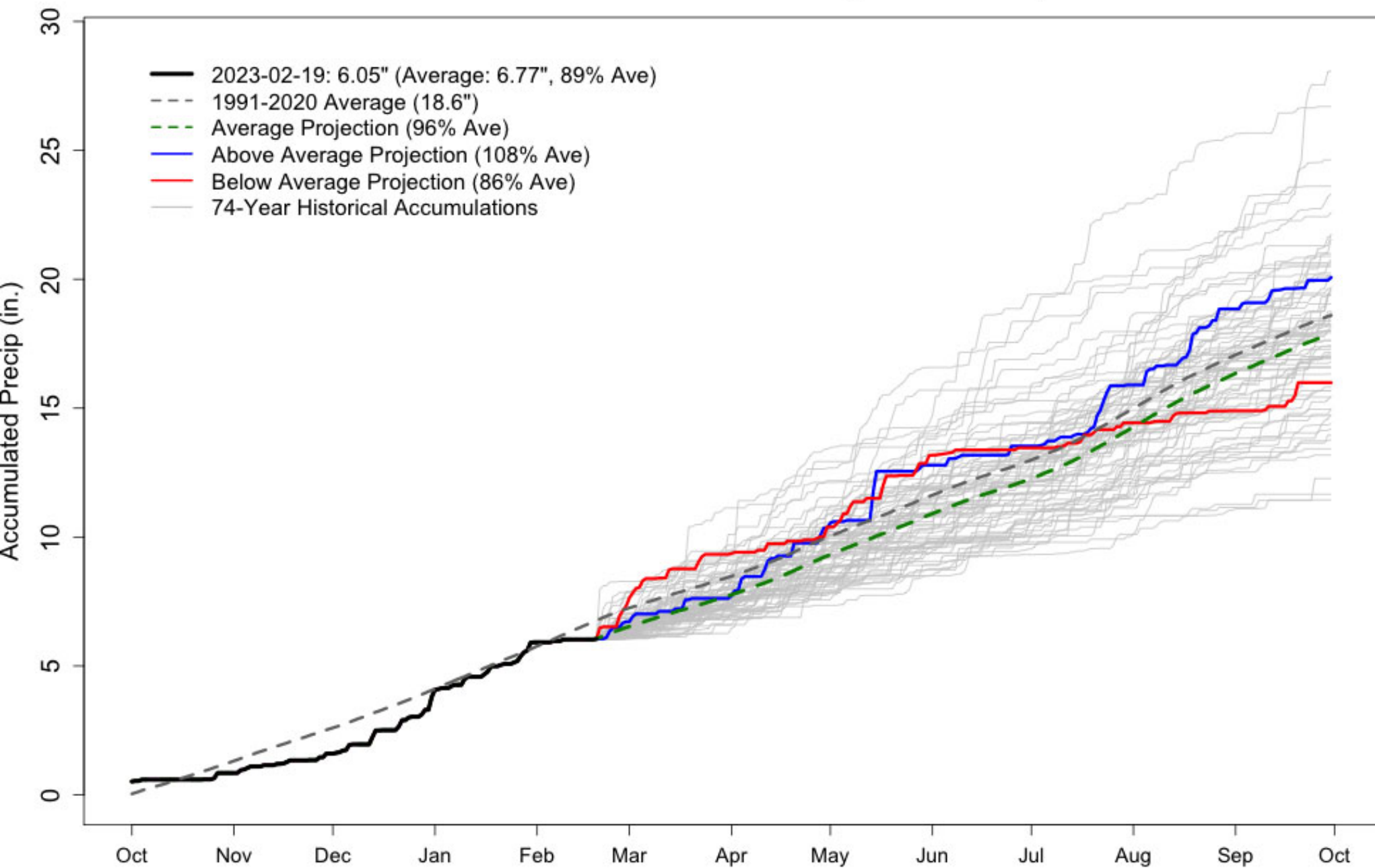
state extremes



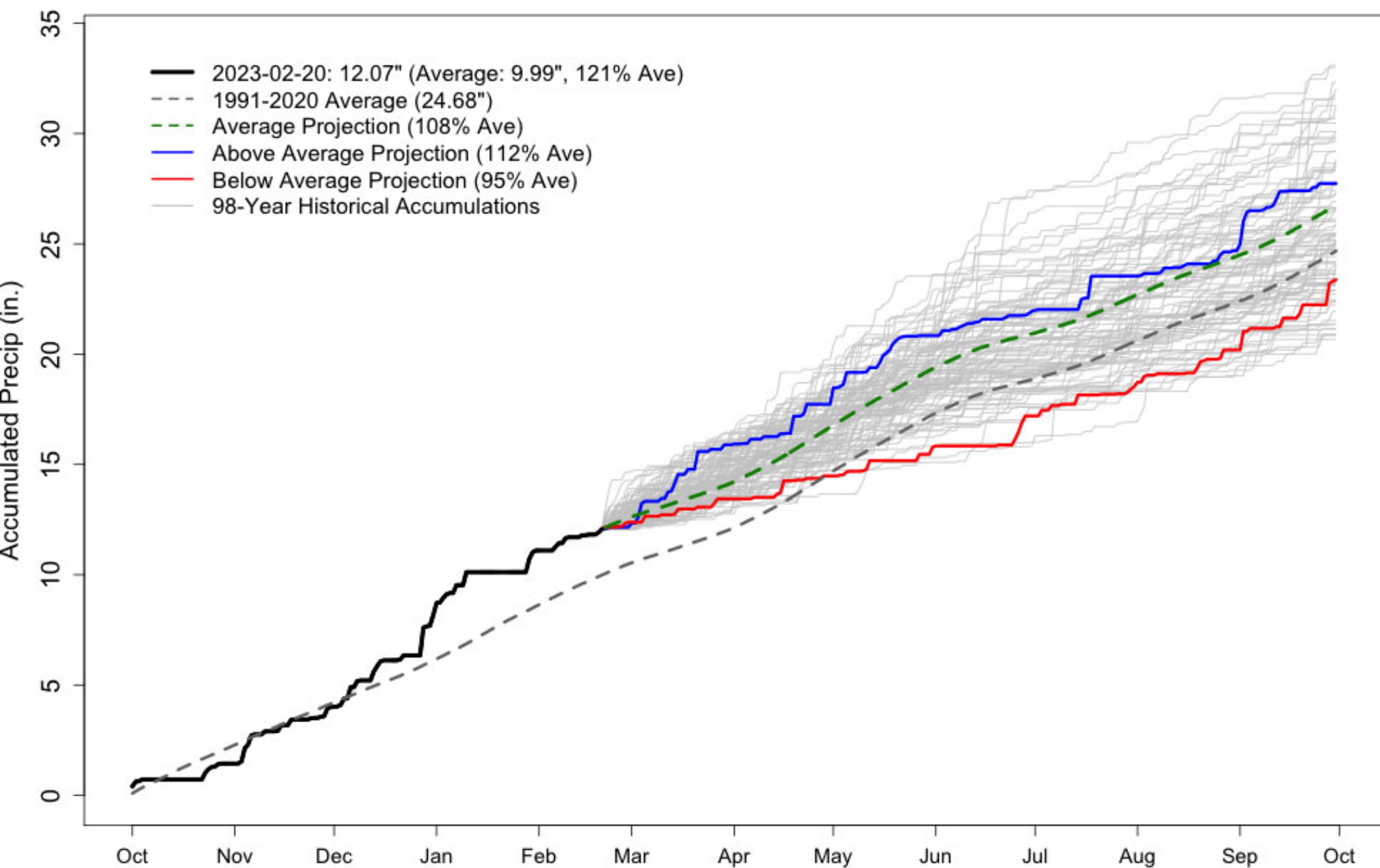
Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



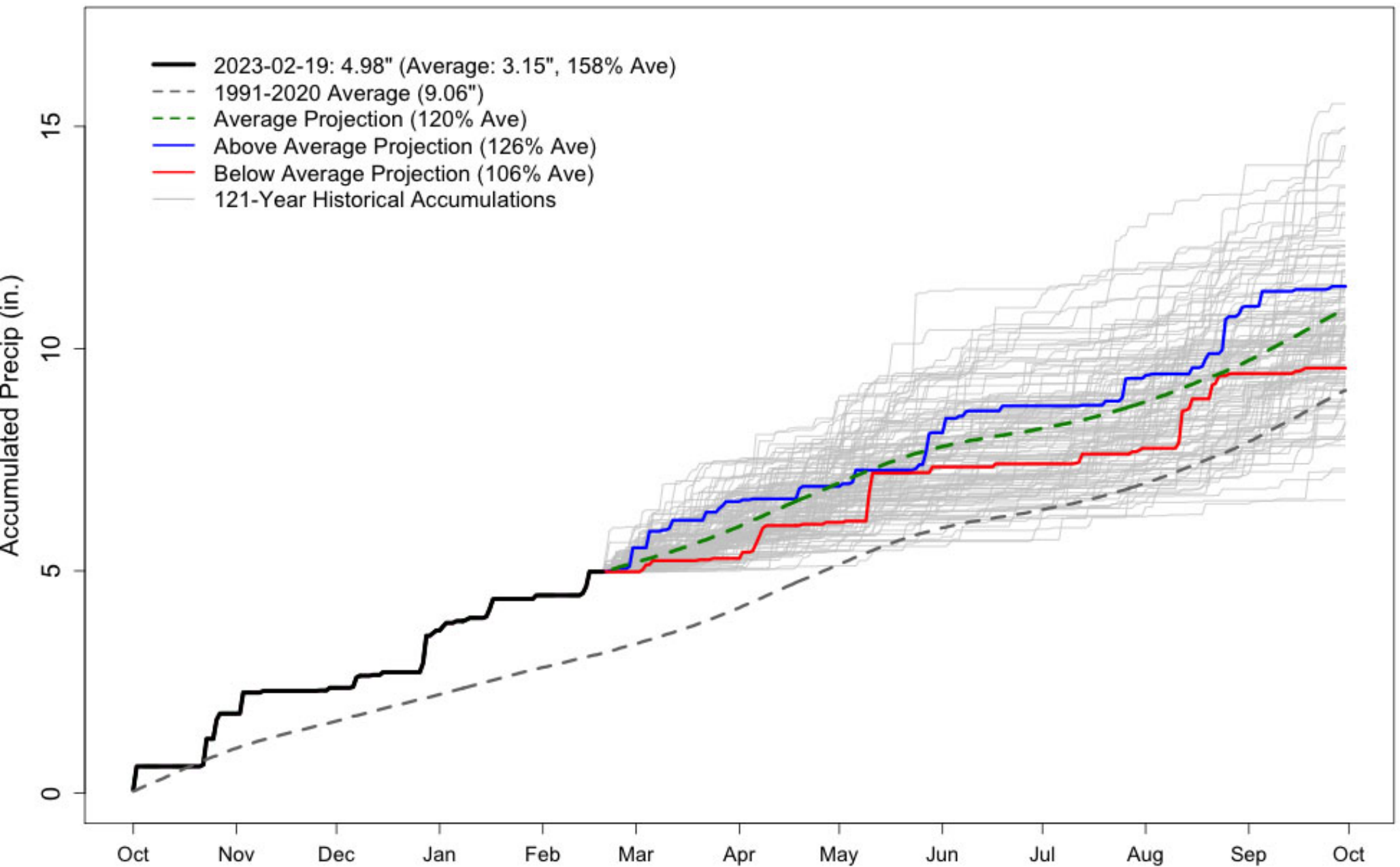
GRAND LAKE 1 NW WY2023 Precipitation Projections



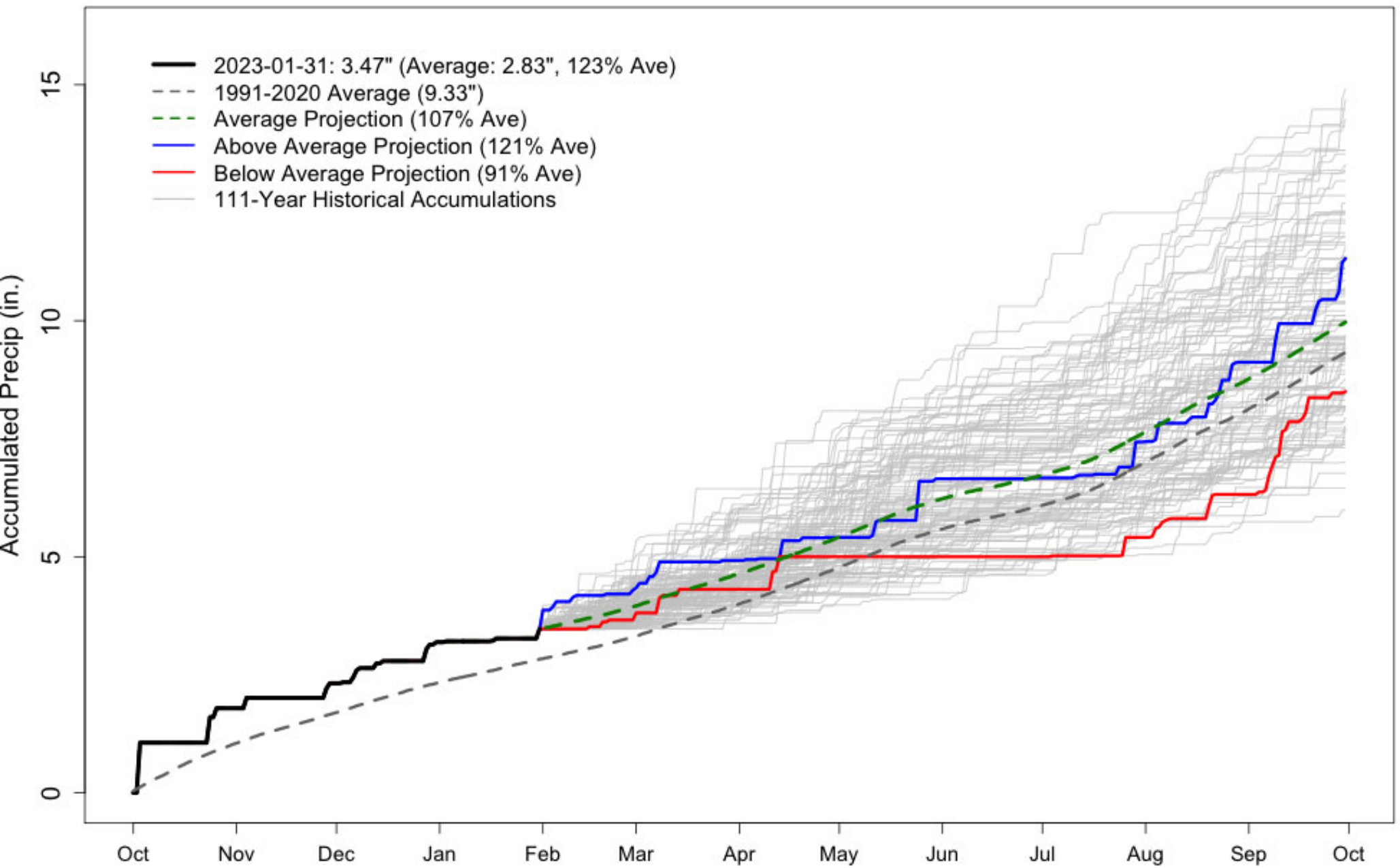
STEAMBOAT SPRINGS WY2023 Precipitation Projections



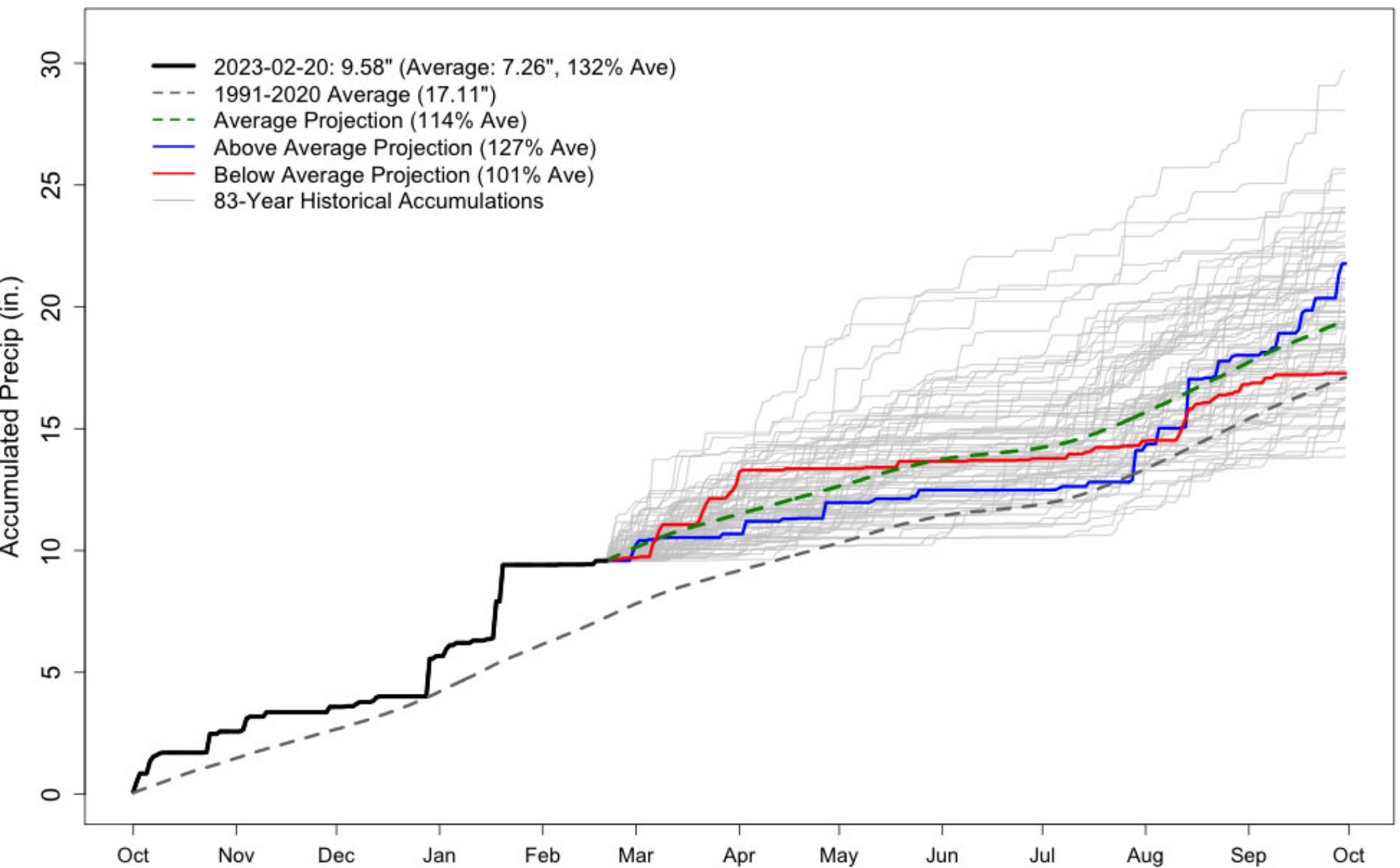
GRAND JUNCTION WALKER FIELD WY2023 Precipitation Projections



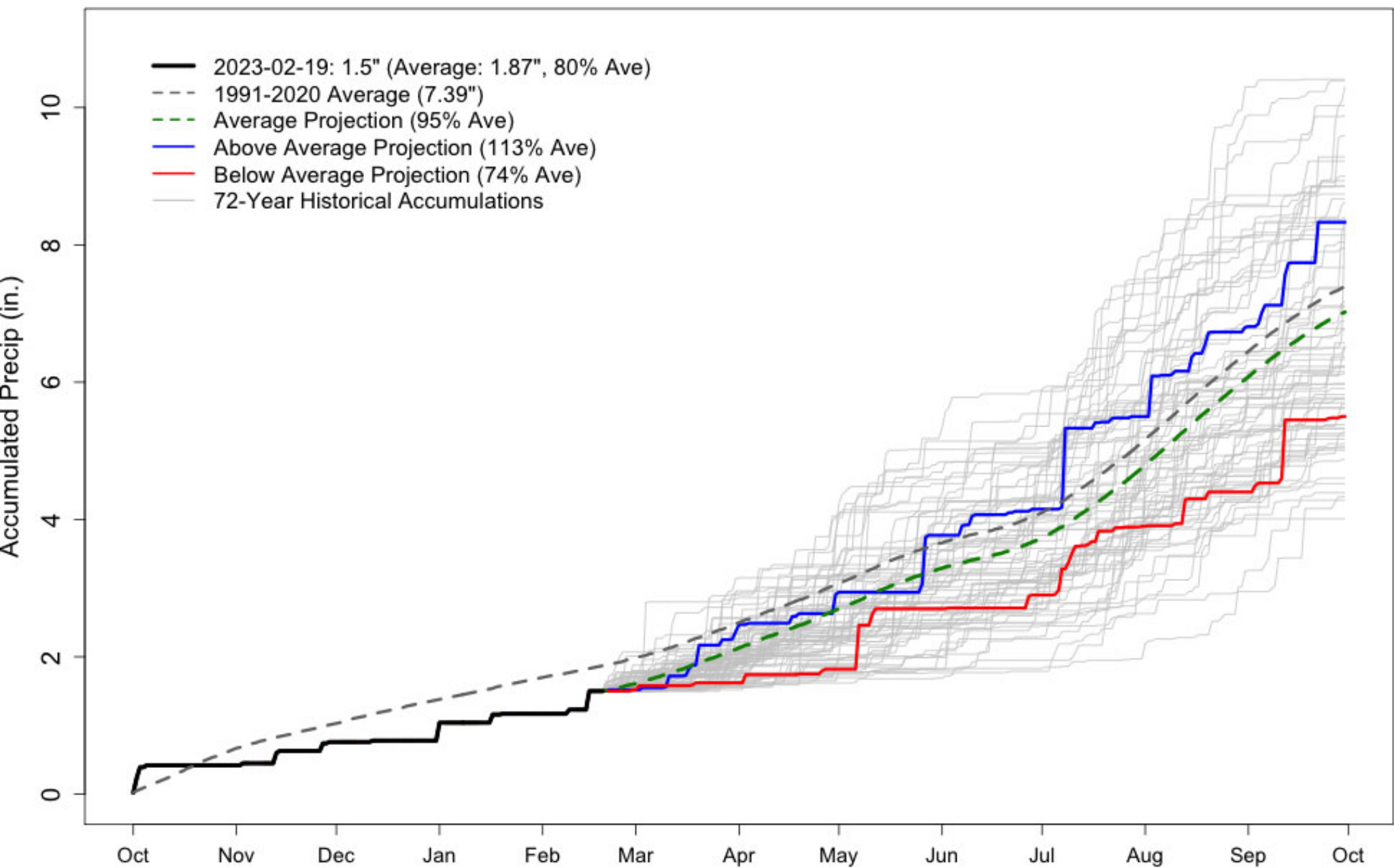
MONTROSE NO 2 WY2023 Precipitation Projections



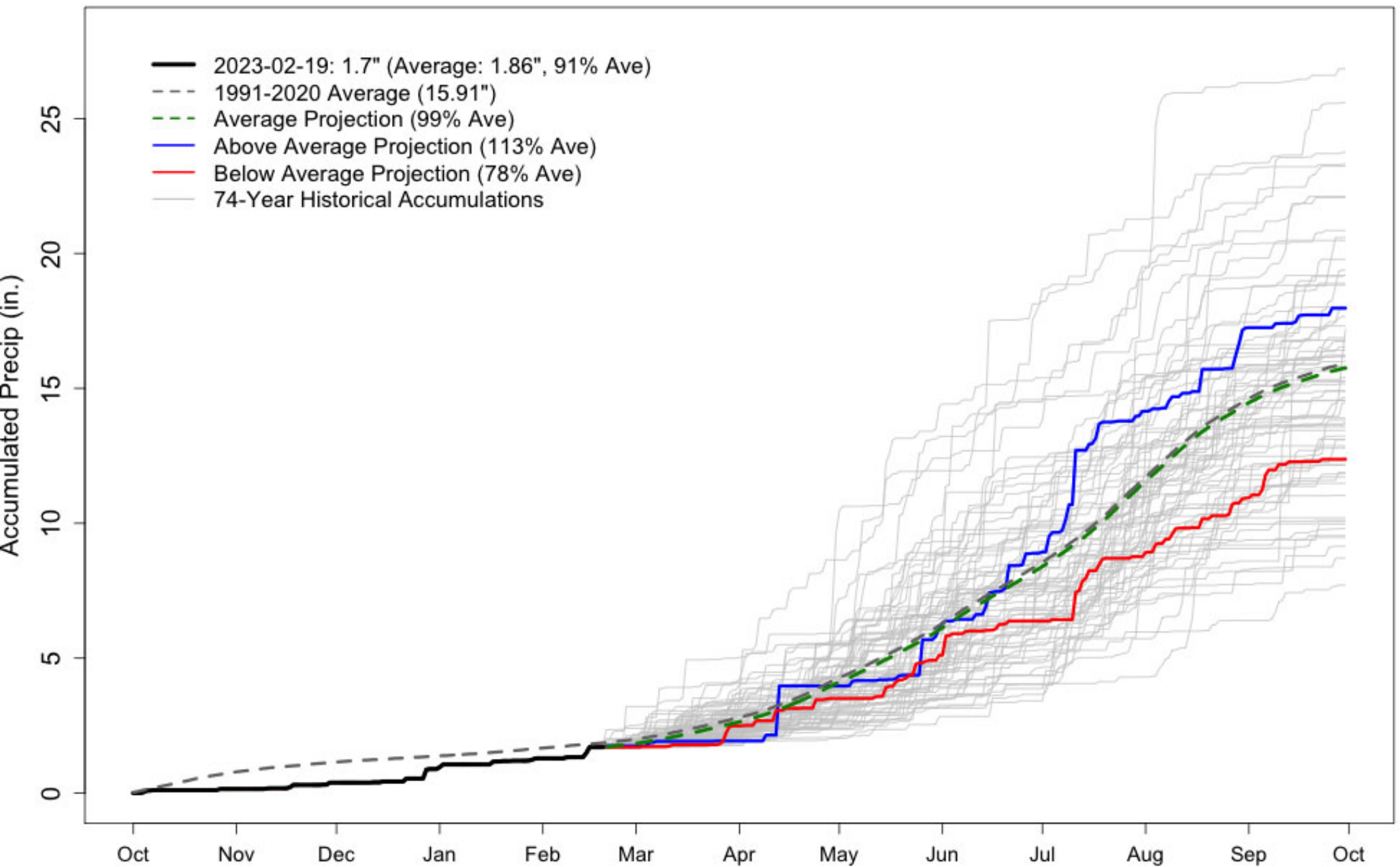
MESA VERDE NP WY2023 Precipitation Projections



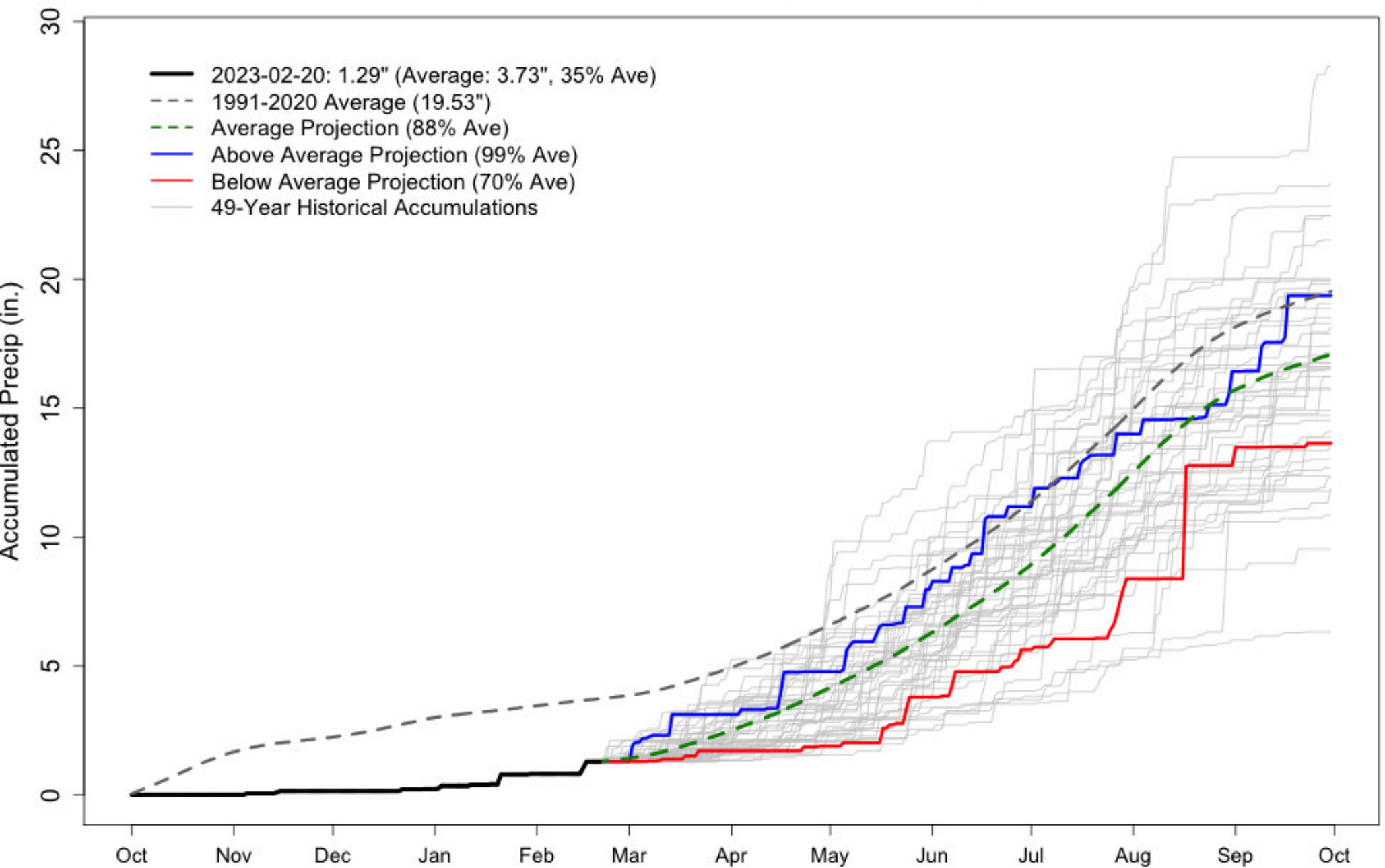
ALAMOSA-BERGMAN FIELD WY2023 Precipitation Projections



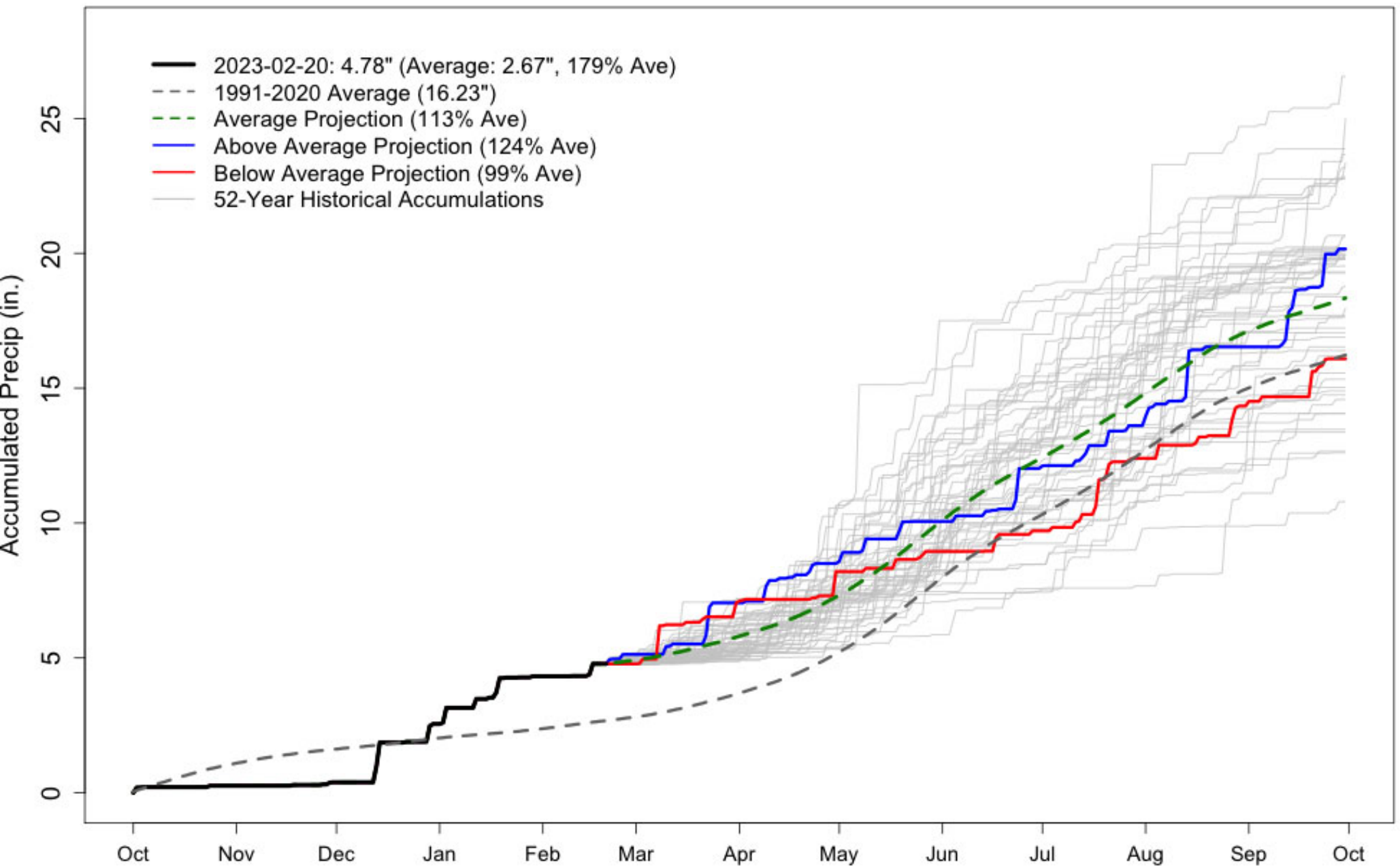
COLORADO SPRINGS MUNICIPAL AP WY2023 Precipitation Projections



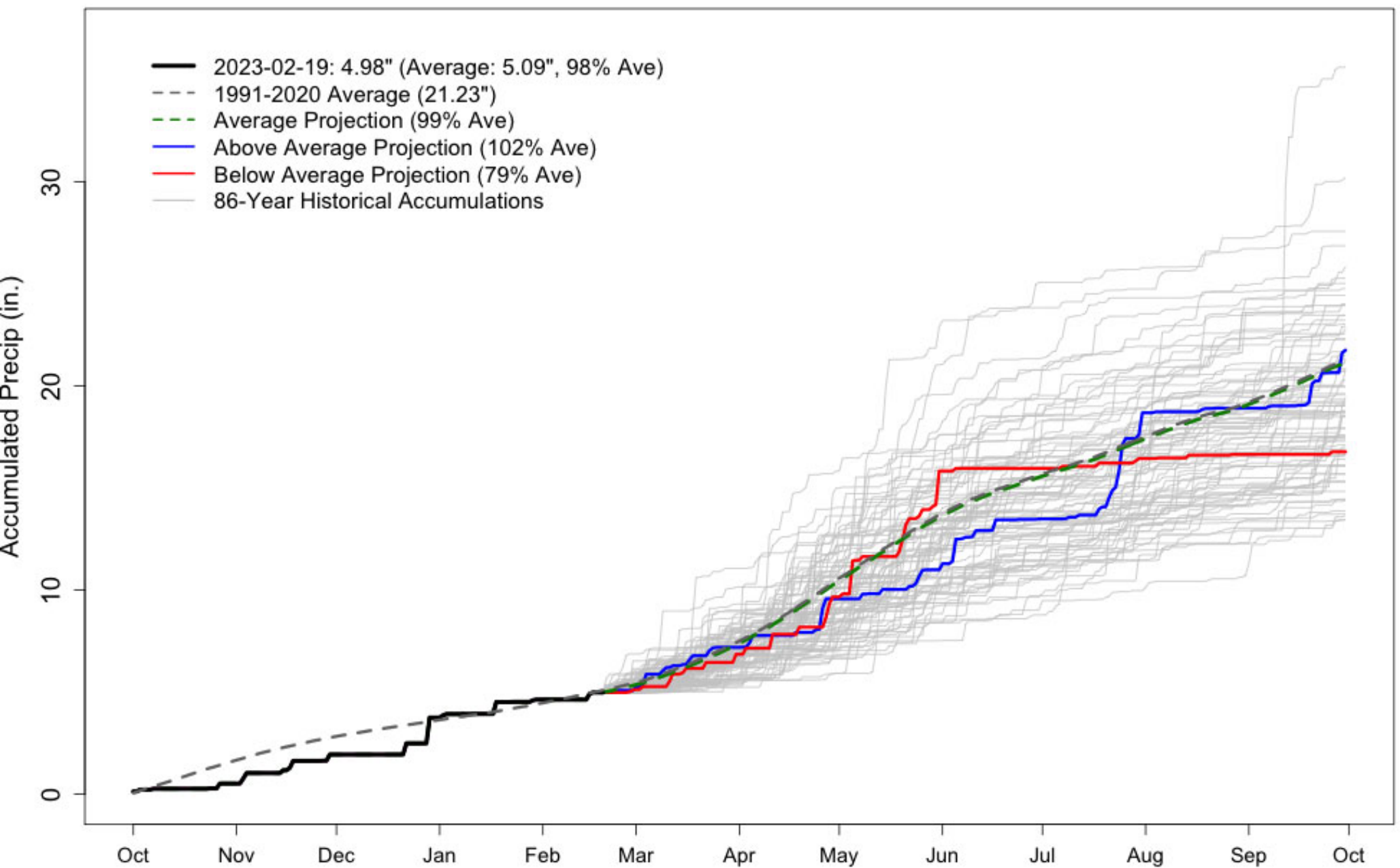
WALSH 1 W WY2023 Precipitation Projections



AKRON 4 E WY2023 Precipitation Projections



BOULDER WY2023 Precipitation Projections



Drought Update

- Mostly good news/improvements since beginning of water year!
- Long term drought remains out east (we'll see what the spring brings)

U.S. Drought Monitor Colorado

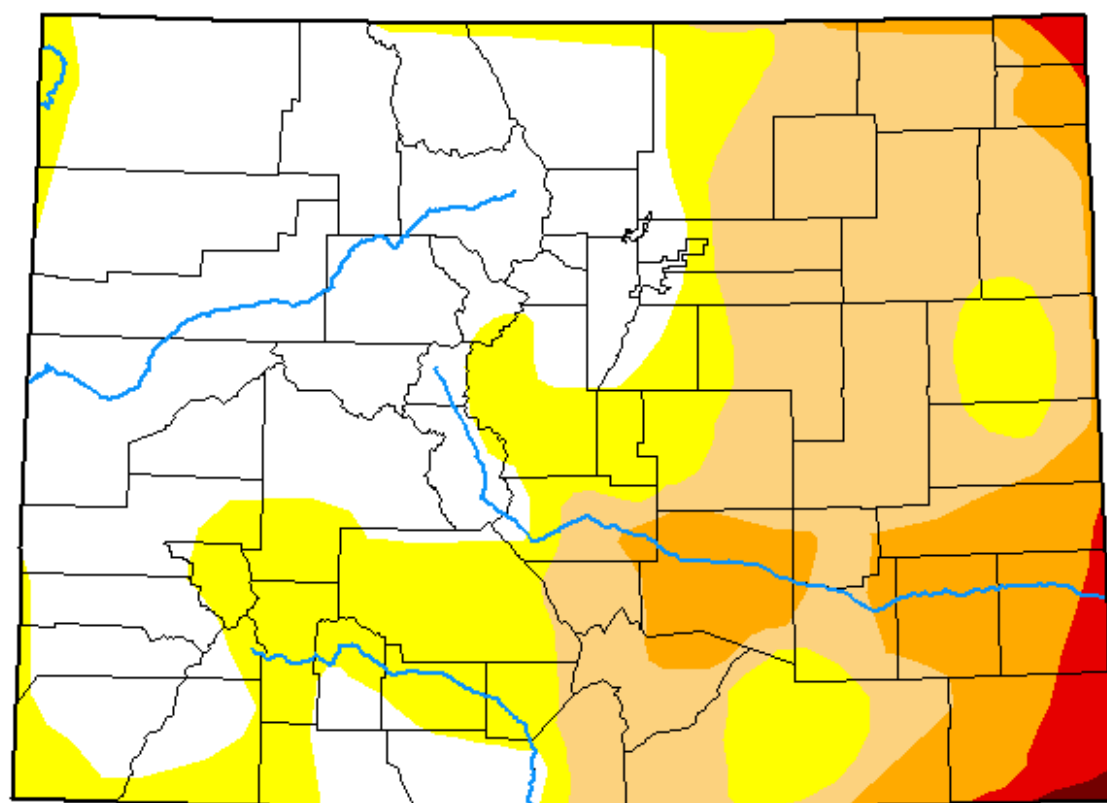
February 14, 2023

(Released Thursday, Feb. 16, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.35	58.65	37.42	12.29	2.00	0.16
Last Week 02-07-2023	41.33	58.67	37.42	12.29	1.99	0.16
3 Months Ago 11-15-2022	16.91	83.09	48.60	23.69	3.29	0.57
Start of Calendar Year 01-03-2023	39.97	60.03	33.83	12.28	1.91	0.01
Start of Water Year 09-27-2022	15.46	84.54	45.65	15.47	3.73	0.57
One Year Ago 02-15-2022	0.00	100.00	90.41	59.81	8.55	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>

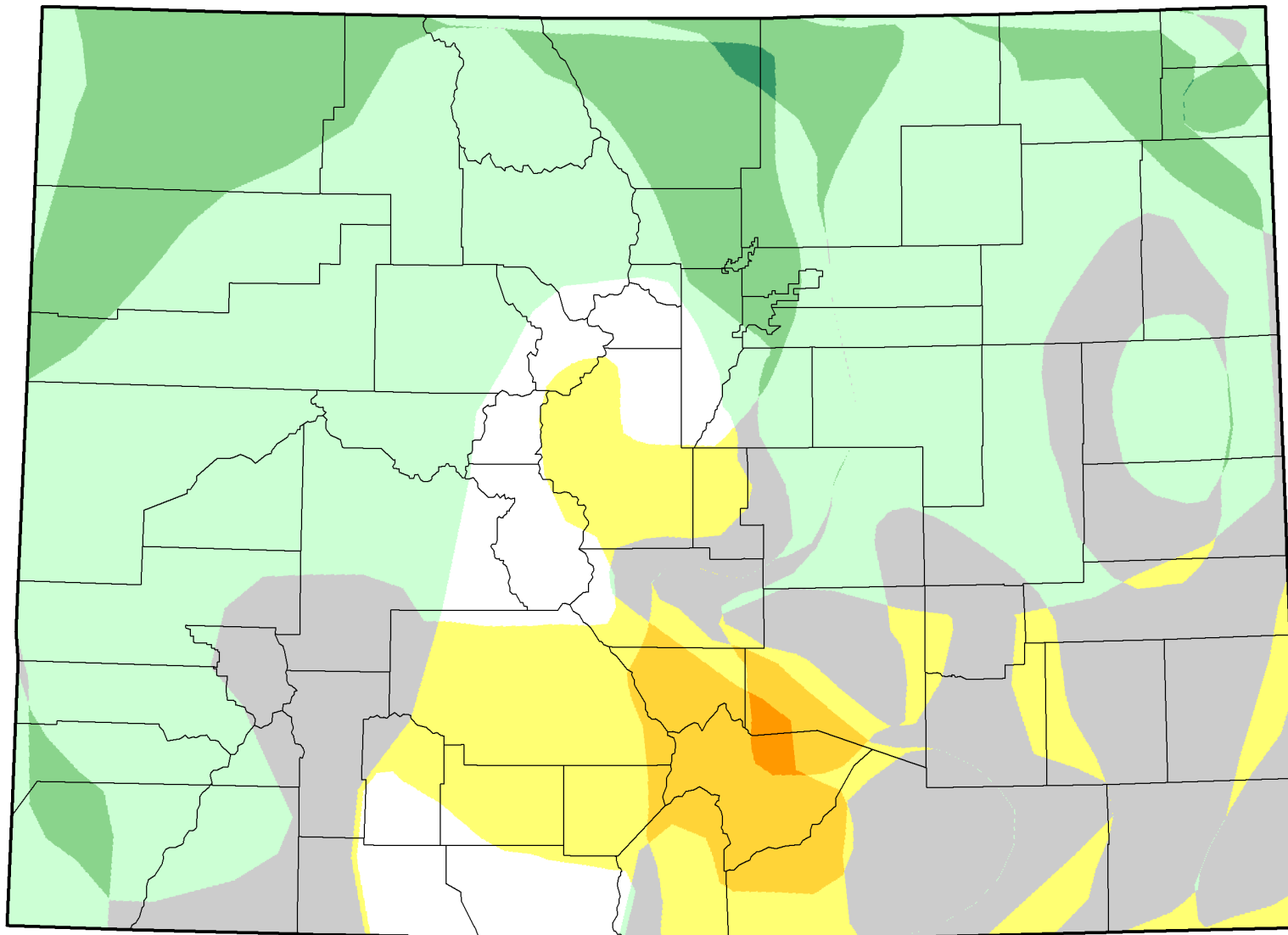
Author:

Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

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



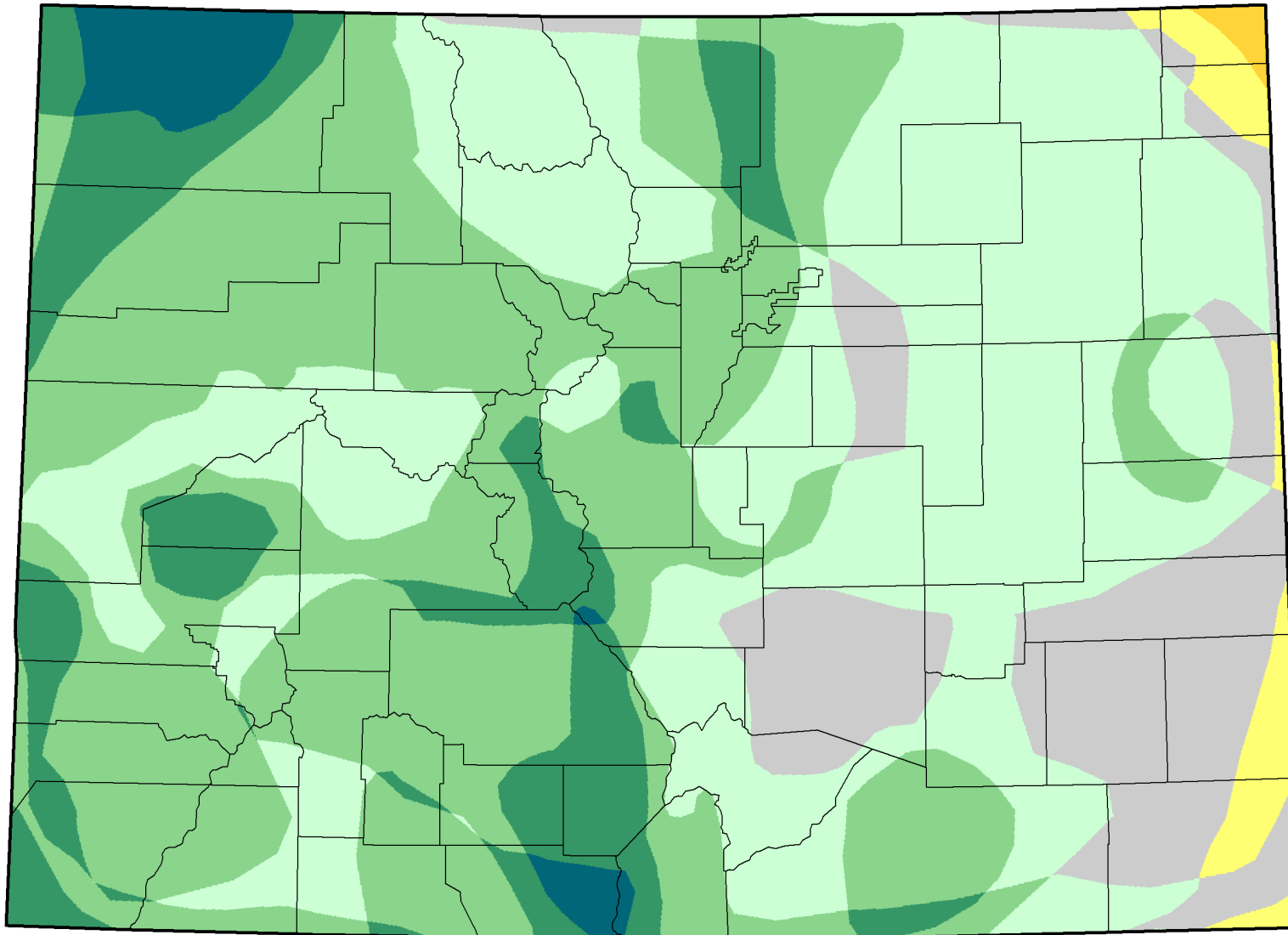
February 14, 2023
compared to
November 22, 2022

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 52 Week

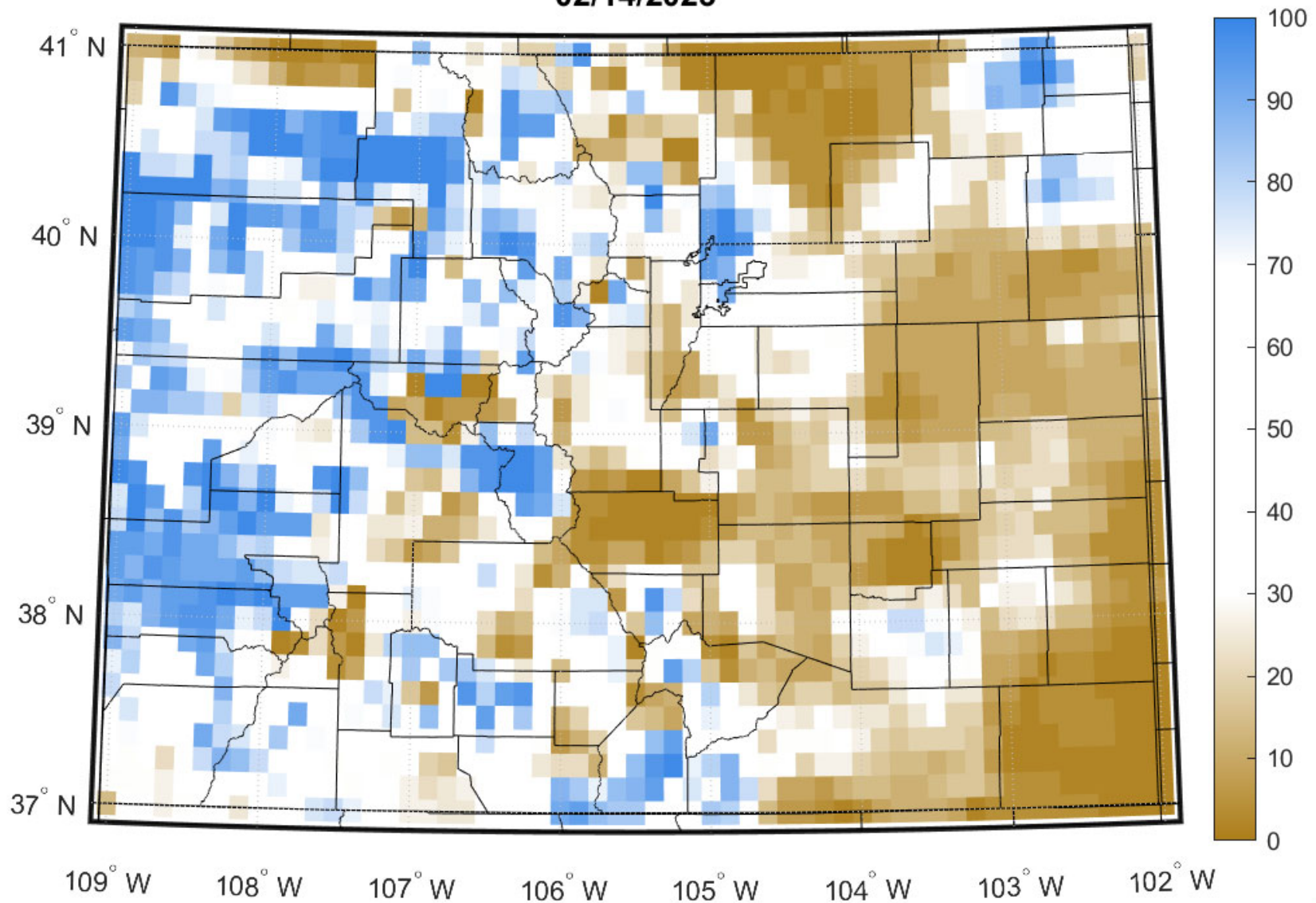


February 14, 2023
compared to
February 15, 2022

droughtmonitor.unl.edu

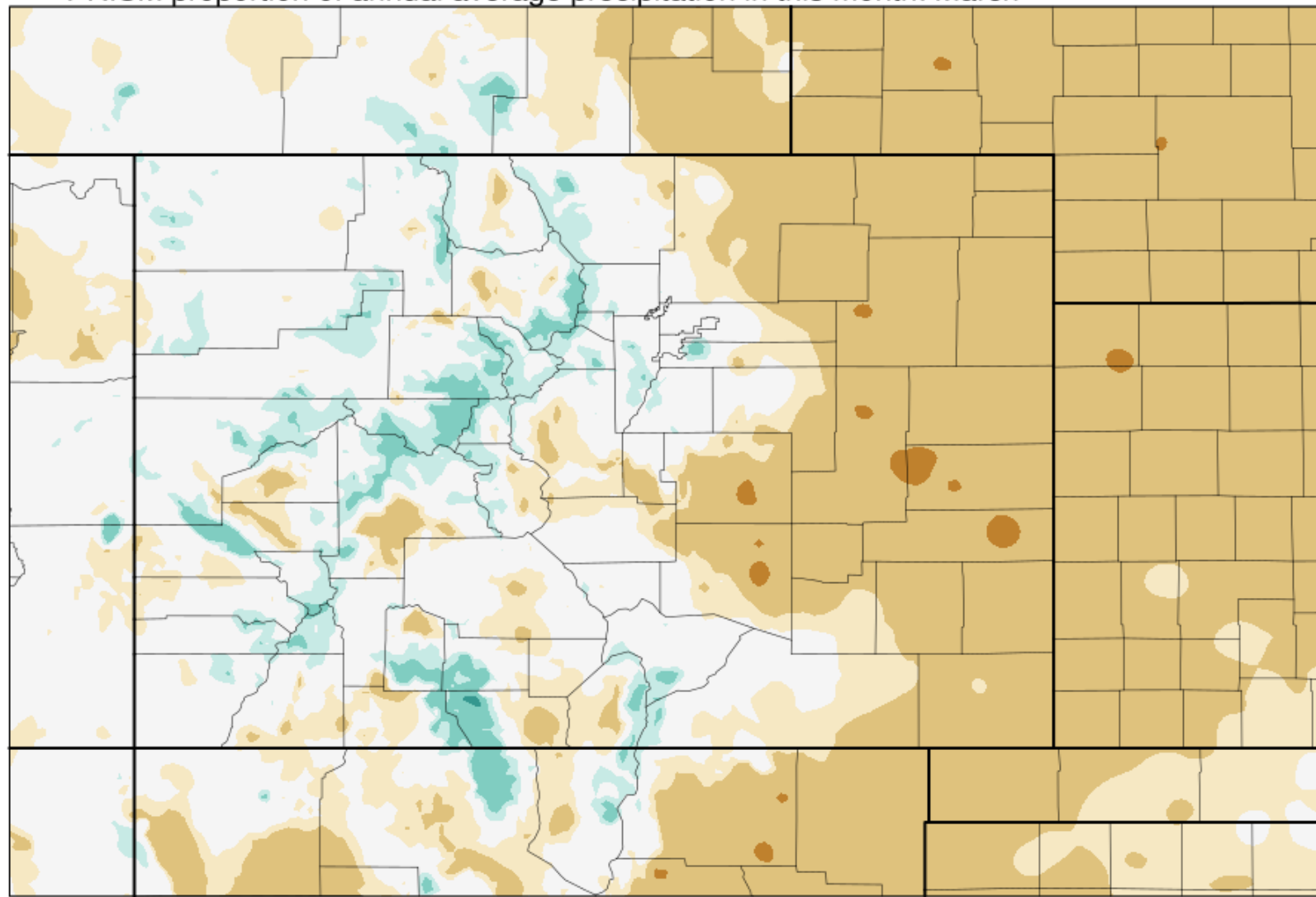
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

Top Meter Soil Moisture Percentile 02/14/2023



Seasonal Outlook

PRISM proportion of annual average precipitation in this month: March

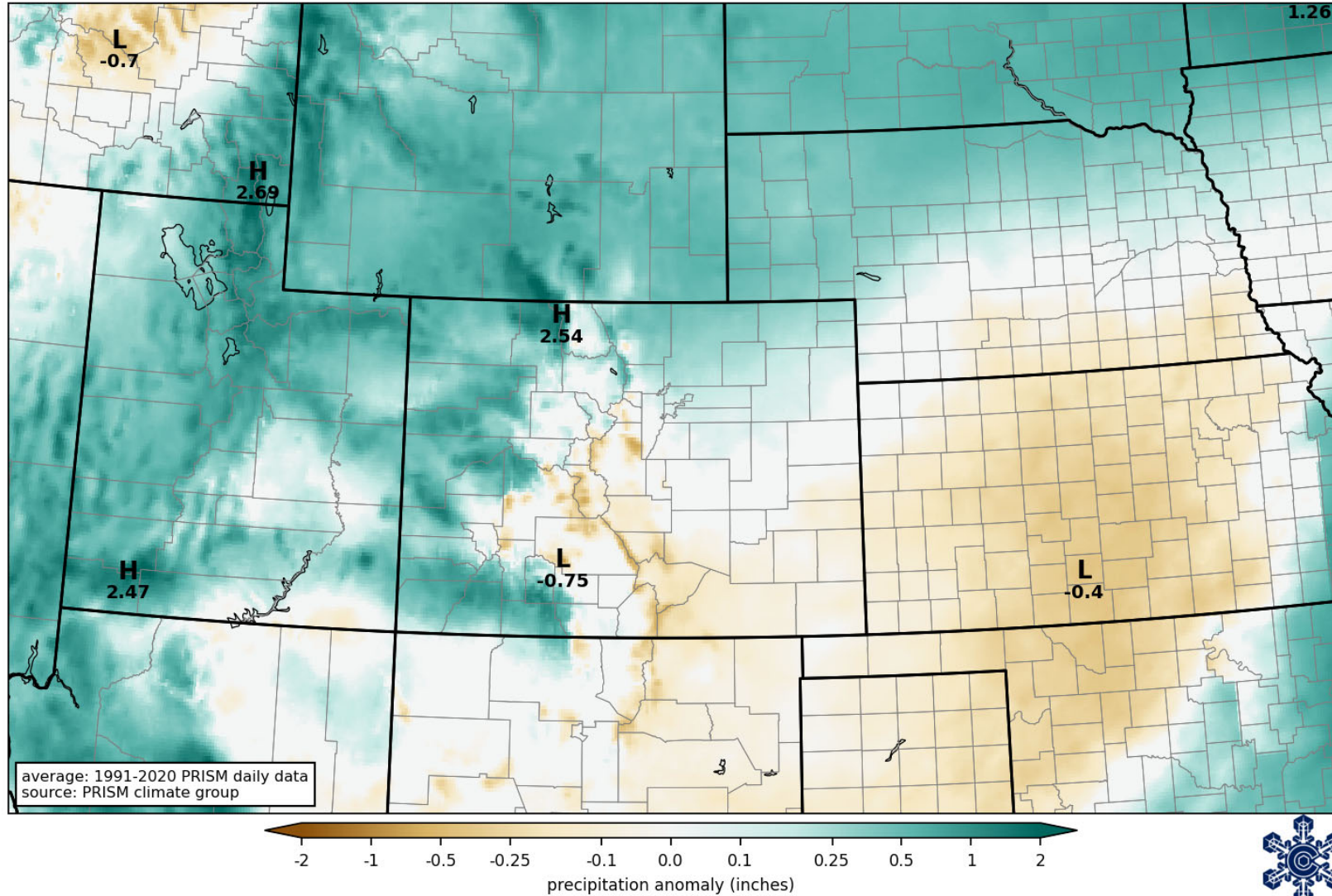


0.1 0.25 0.5 0.75 0.85 1.15 1.25 1.5 1.75 2

Proportion of precip relative to 1/12th

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

Still a mountain snow month, but March conditions become important on the Front Range and Eastern Plains



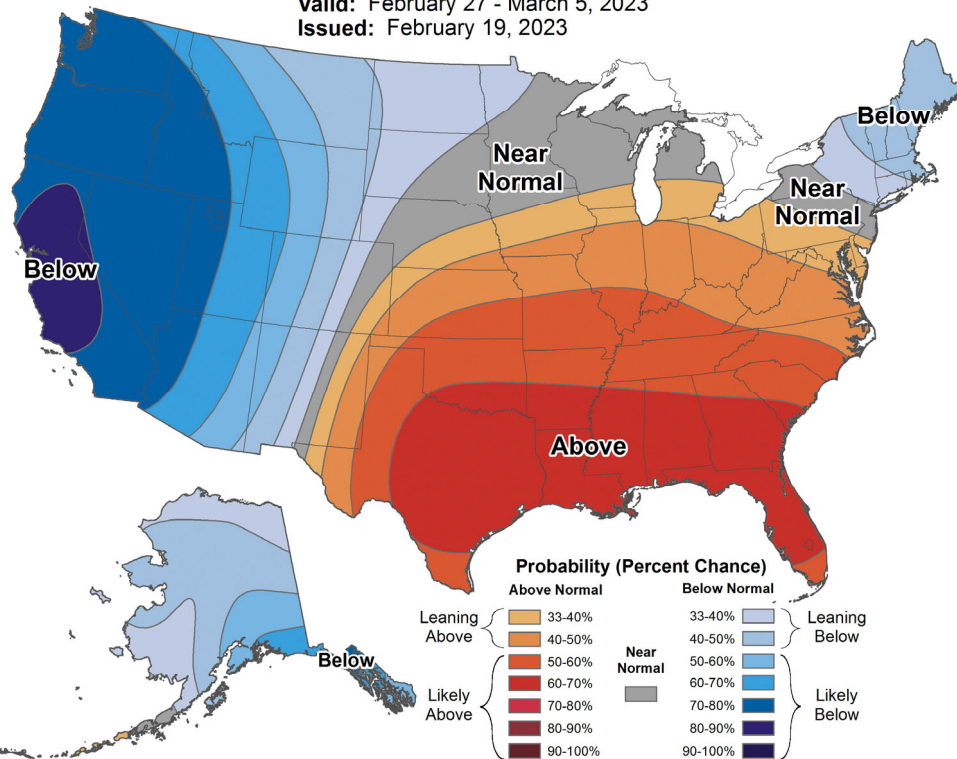
An arctic airmass dropping in from the northwest tomorrow will bring snow and another round of cold temperatures

This storm is unlikely to dive south of the Palmer Divide



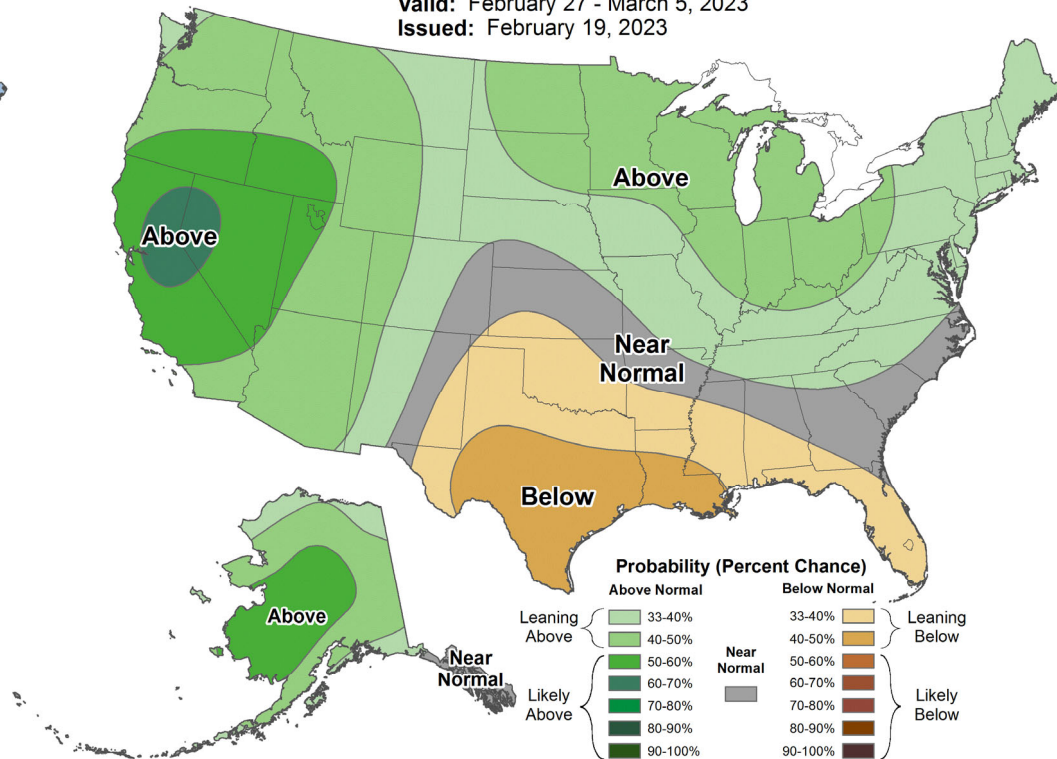
8-14 Day Temperature Outlook

Valid: February 27 - March 5, 2023
Issued: February 19, 2023



8-14 Day Precipitation Outlook

Valid: February 27 - March 5, 2023
Issued: February 19, 2023



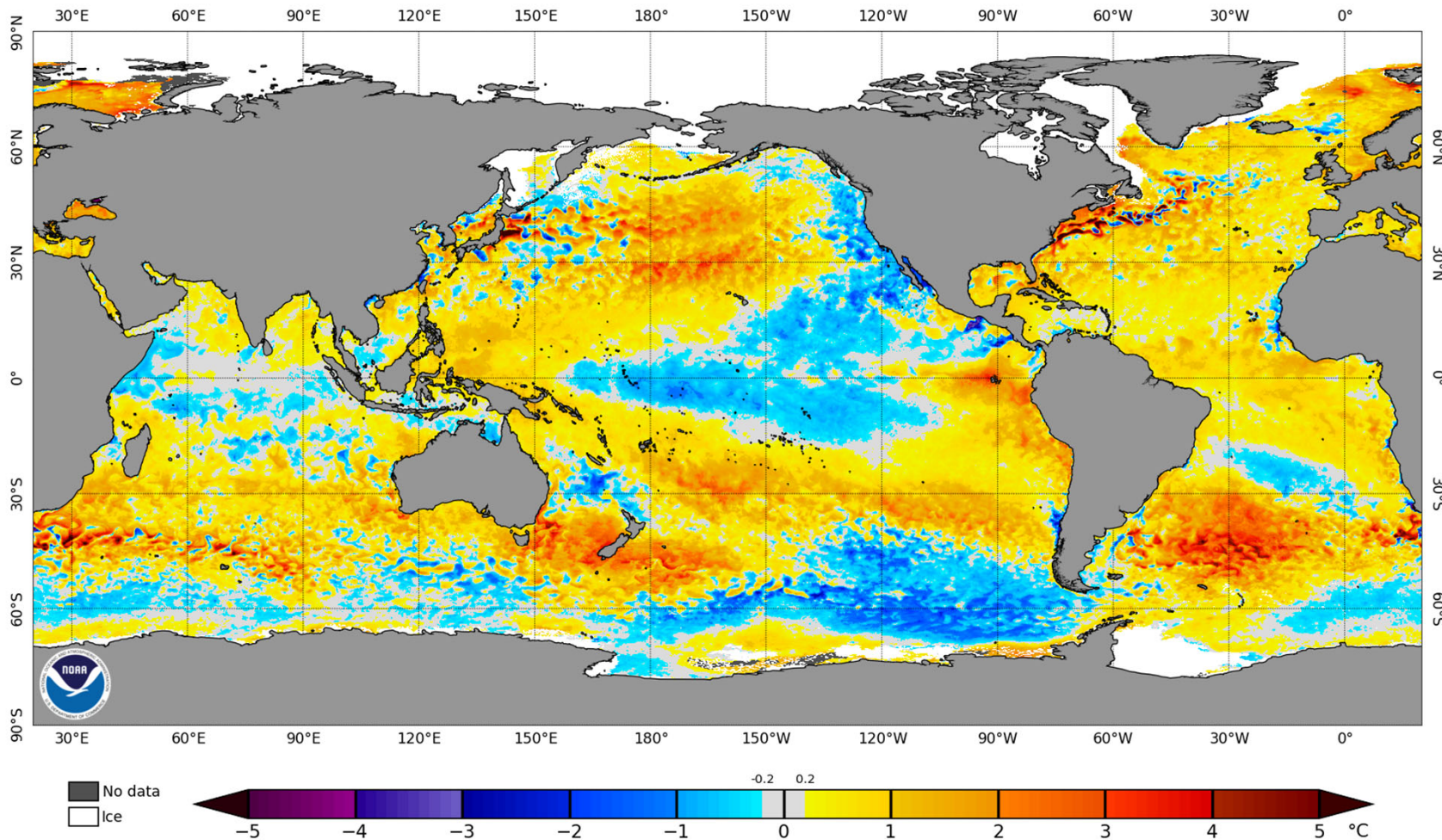
Active weather expected to persist out west.

Blocking high pressure over Central US may keep eastern CO warm and dry.

Forecast model ensembles mostly keep W CO wet, but eastern CO is more of a tossup

Current Sea Surface Temperature Pattern

NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 19 Feb 2023

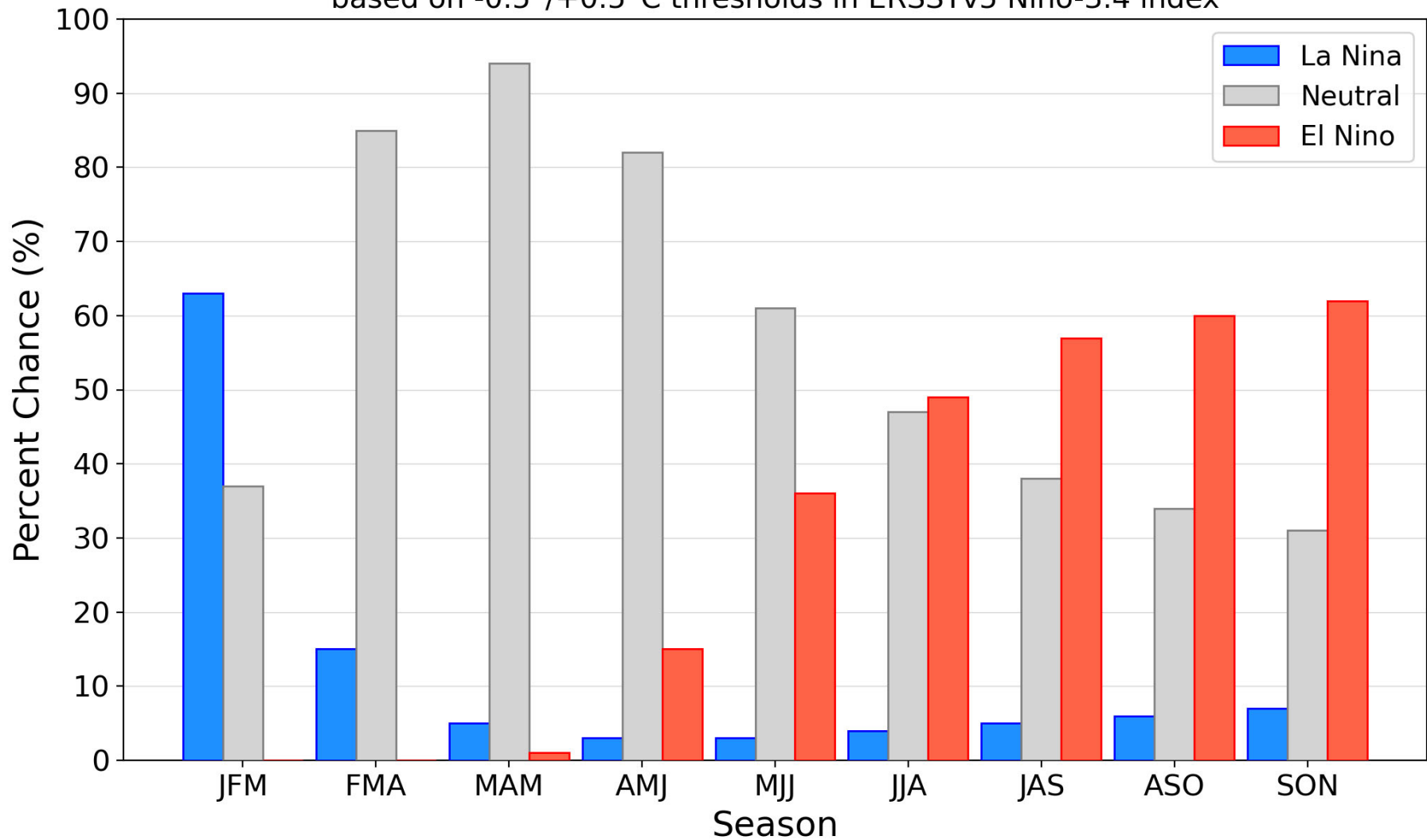


La Niña is finally weakening

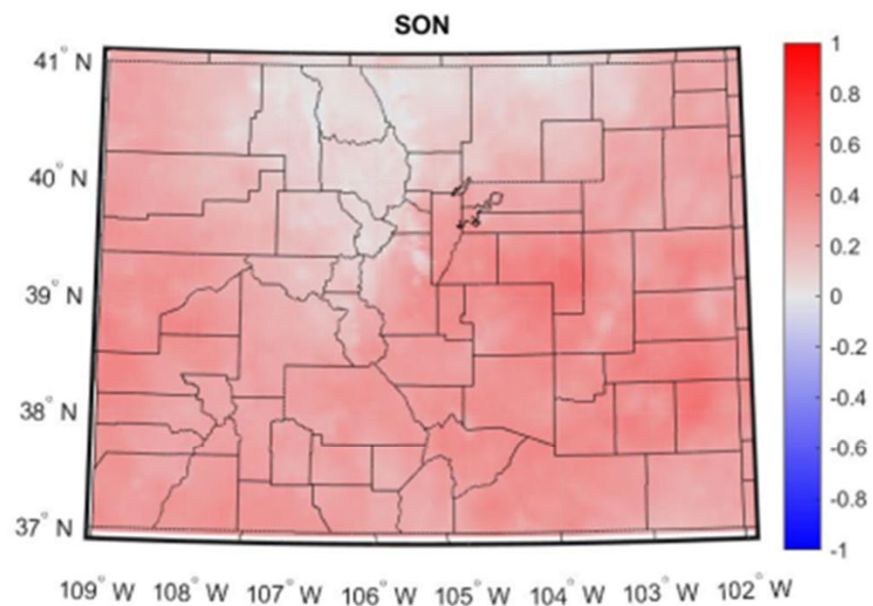
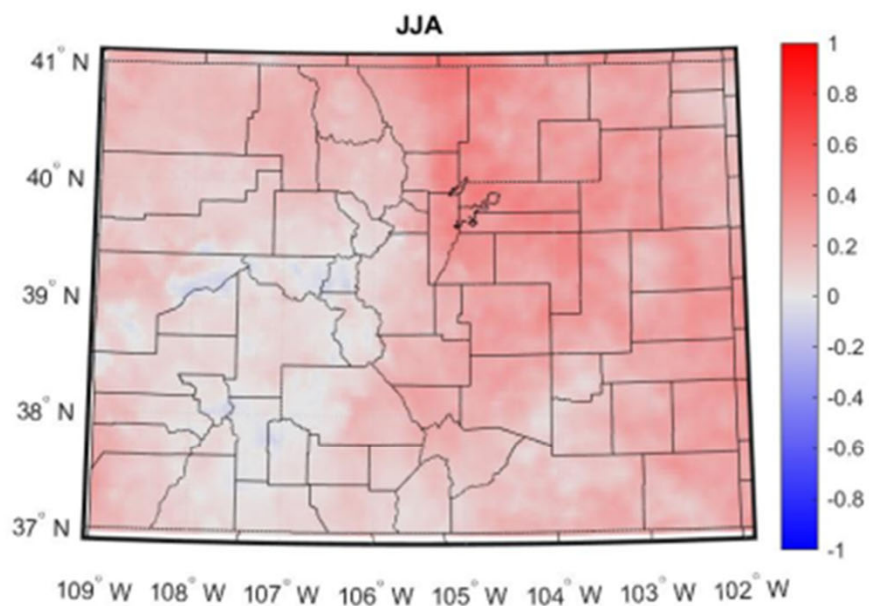
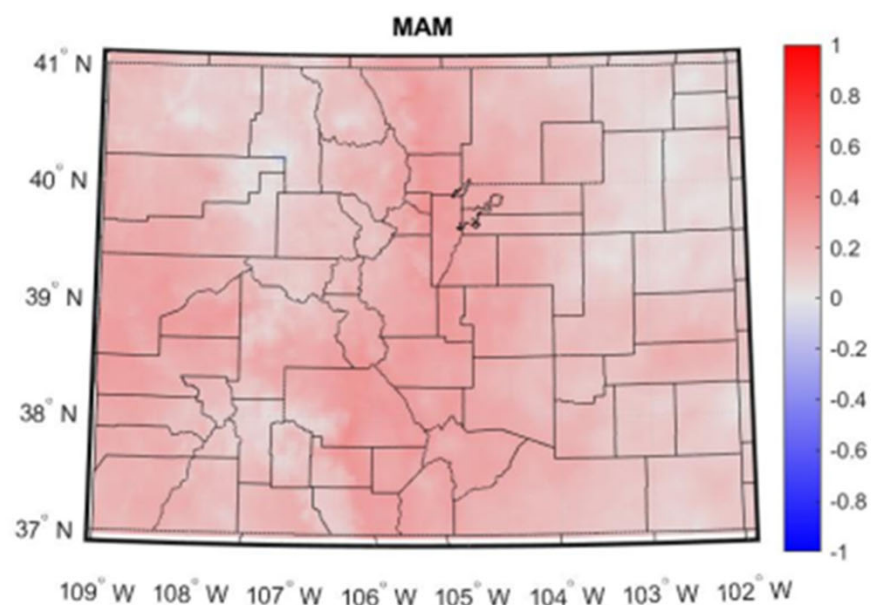
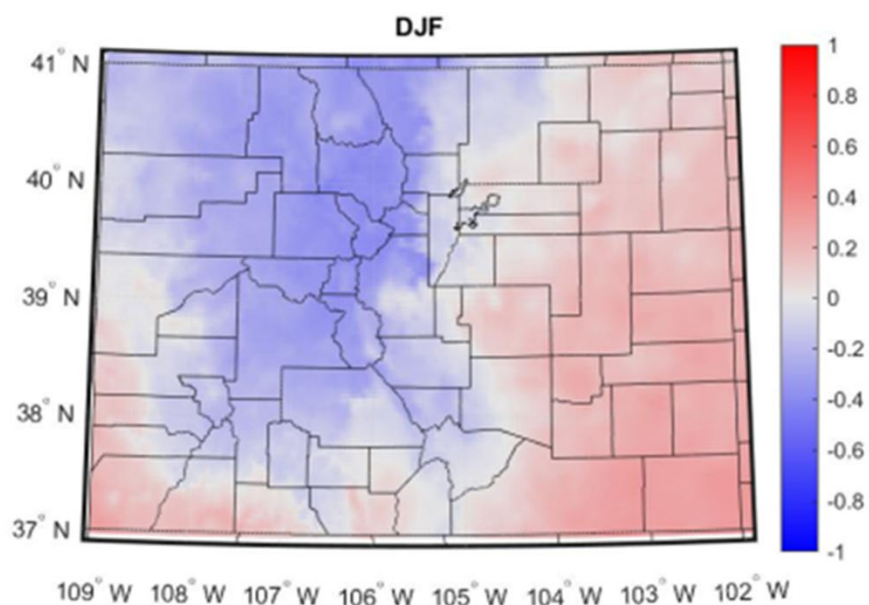
Still seeing cold currents between here and Hawaii

Official NOAA CPC ENSO Probabilities (issued Feb. 2023)

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



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



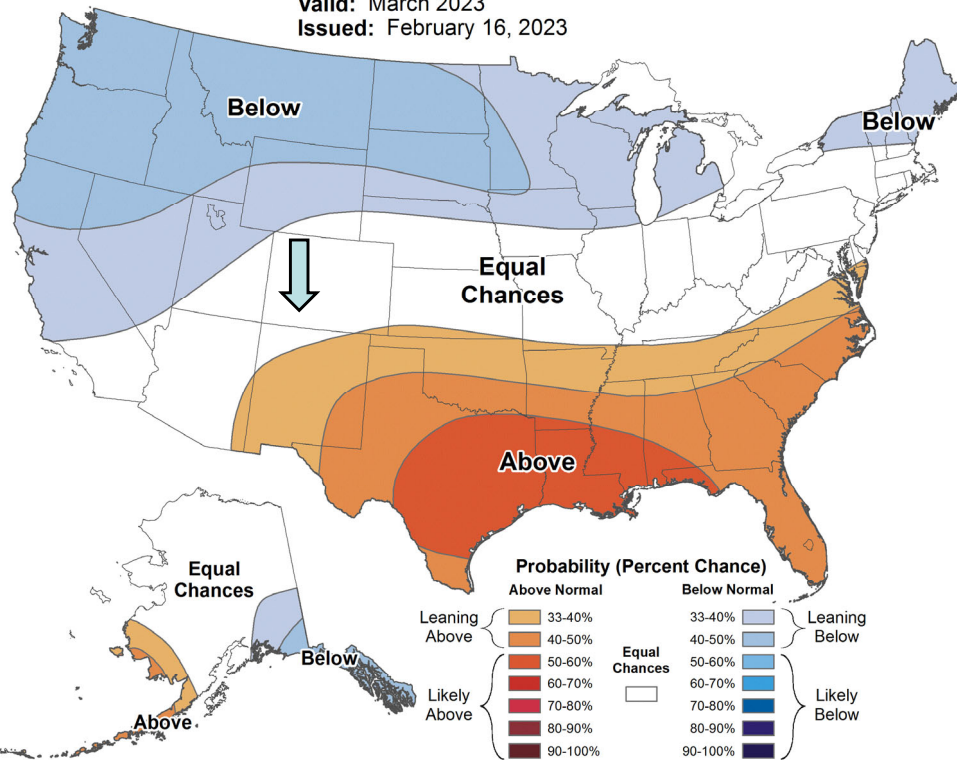
Blue = La Niña wetter Red = El Niño wetter

March Outlook



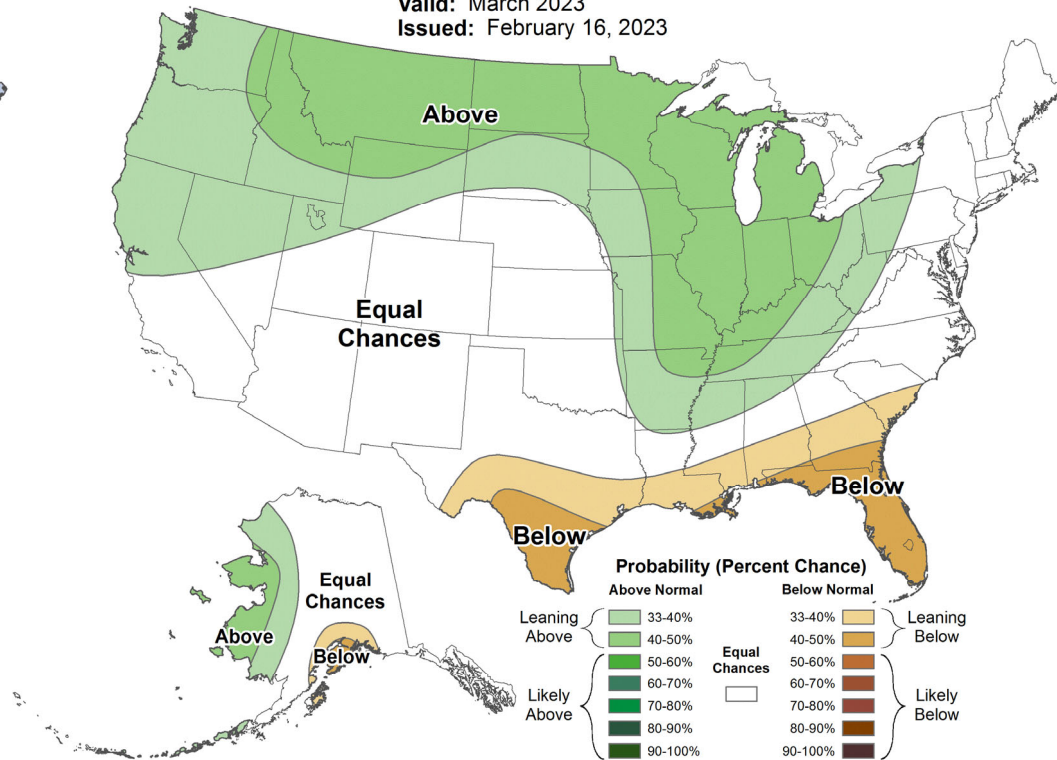
Monthly Temperature Outlook

Valid: March 2023
Issued: February 16, 2023



Monthly Precipitation Outlook

Valid: March 2023
Issued: February 16, 2023



CPC favoring persistence of current La Niña-like pattern in March.

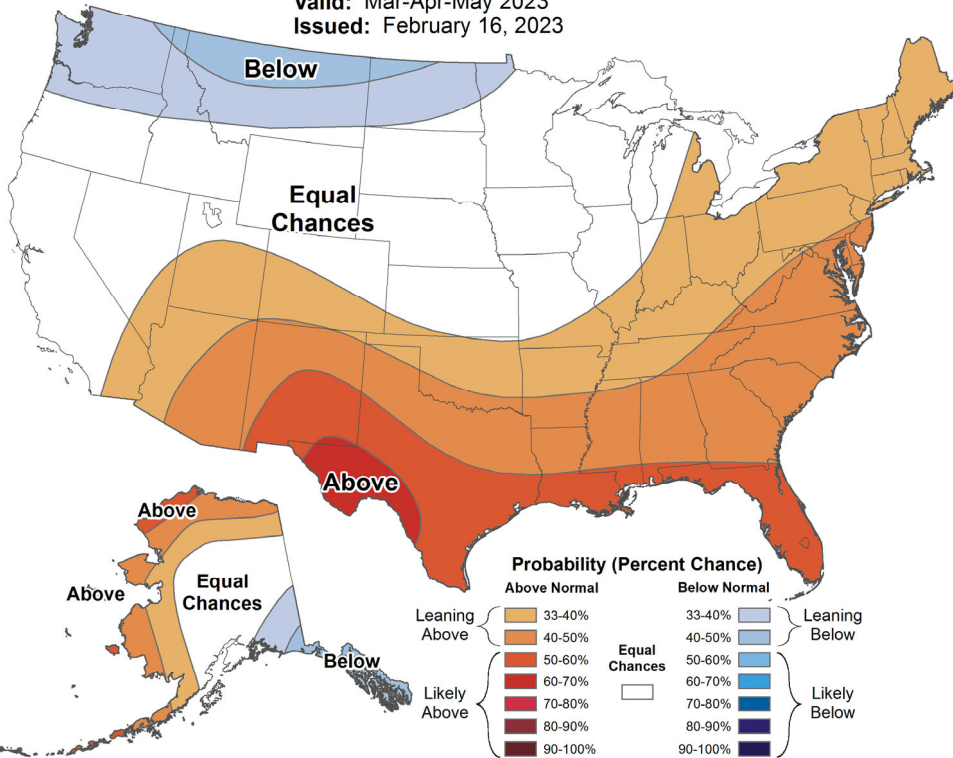
Current model guidance suggests a tilt towards cool and wet for W CO in early March

March-May Outlook



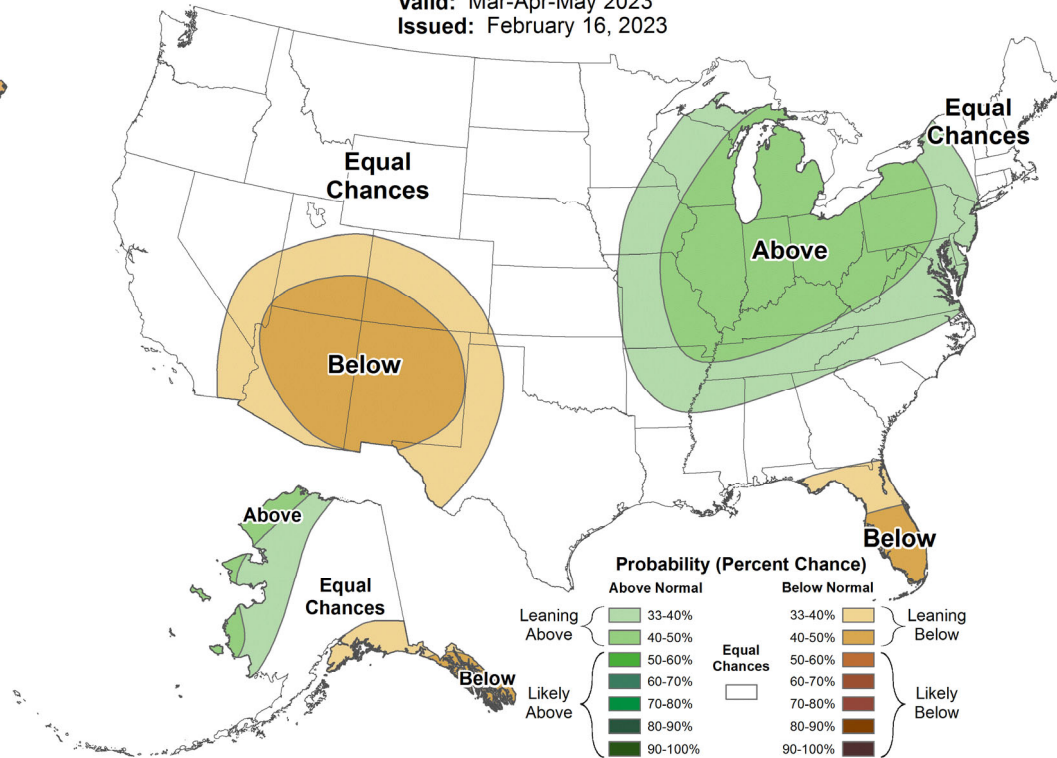
Seasonal Temperature Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023



Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023



Elevated probability of below normal precip in SW CO

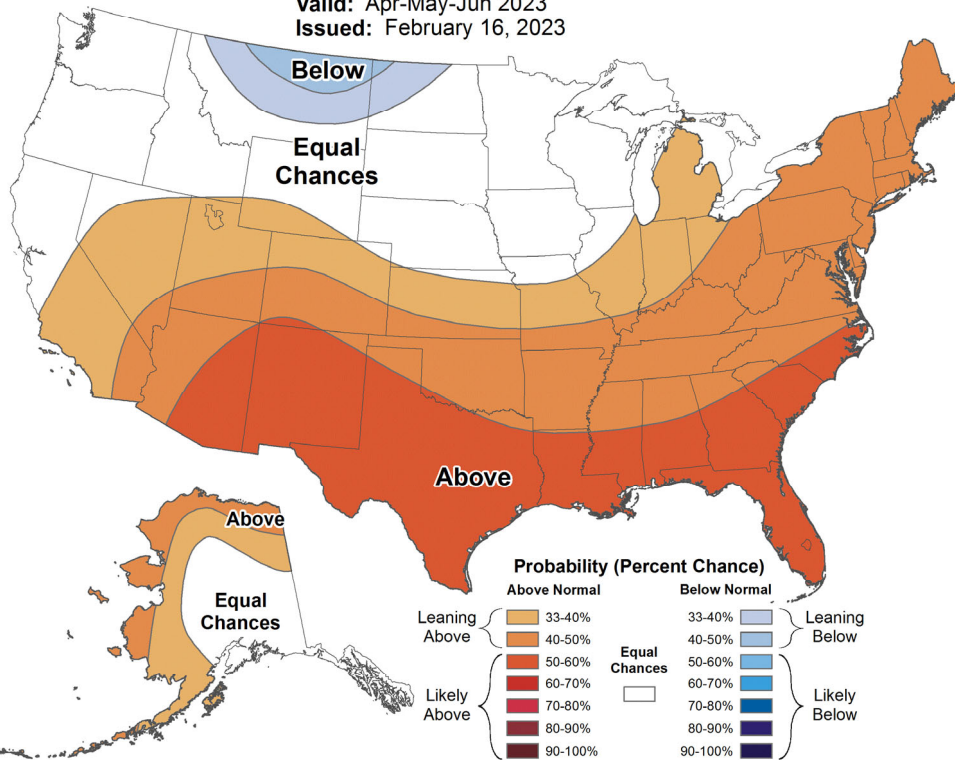
Mix of La Niña influence and trend



Seasonal Temperature Outlook



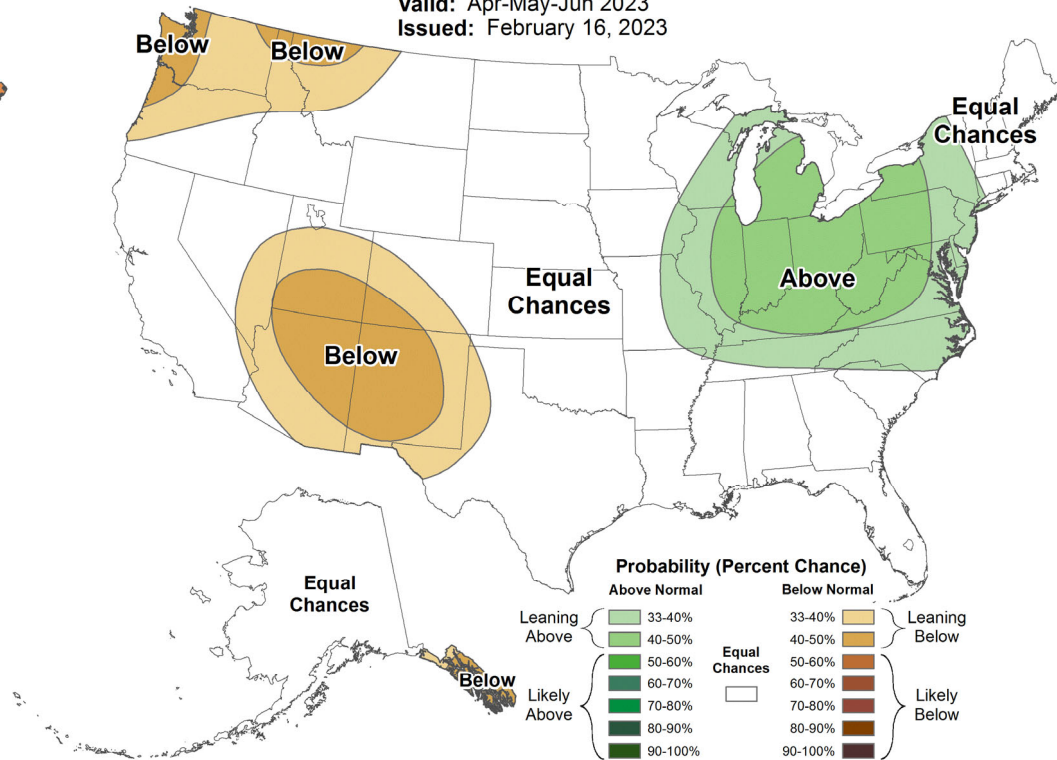
Valid: Apr-May-Jun 2023
Issued: February 16, 2023



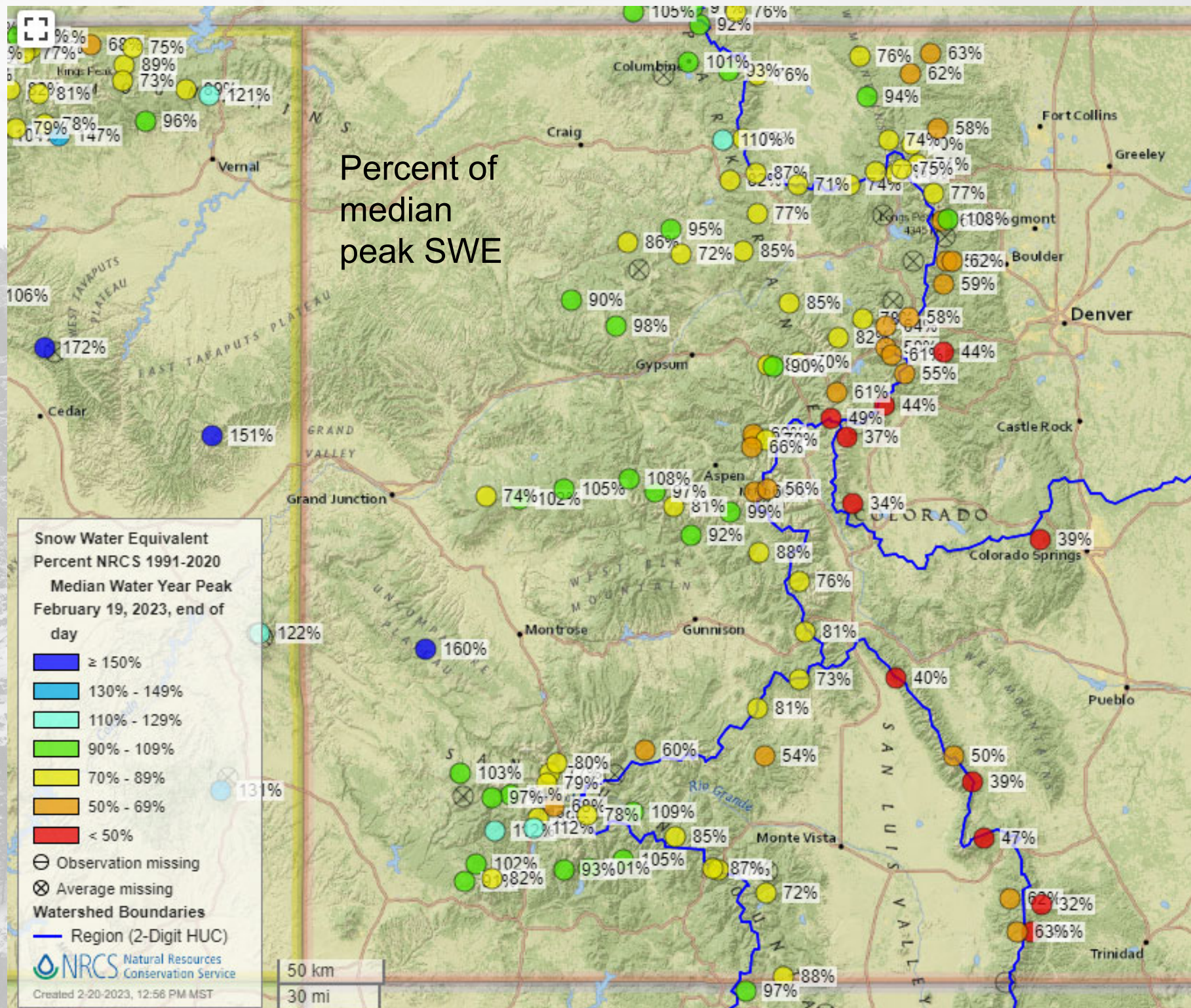
Seasonal Precipitation Outlook



Valid: Apr-May-Jun 2023
Issued: February 16, 2023



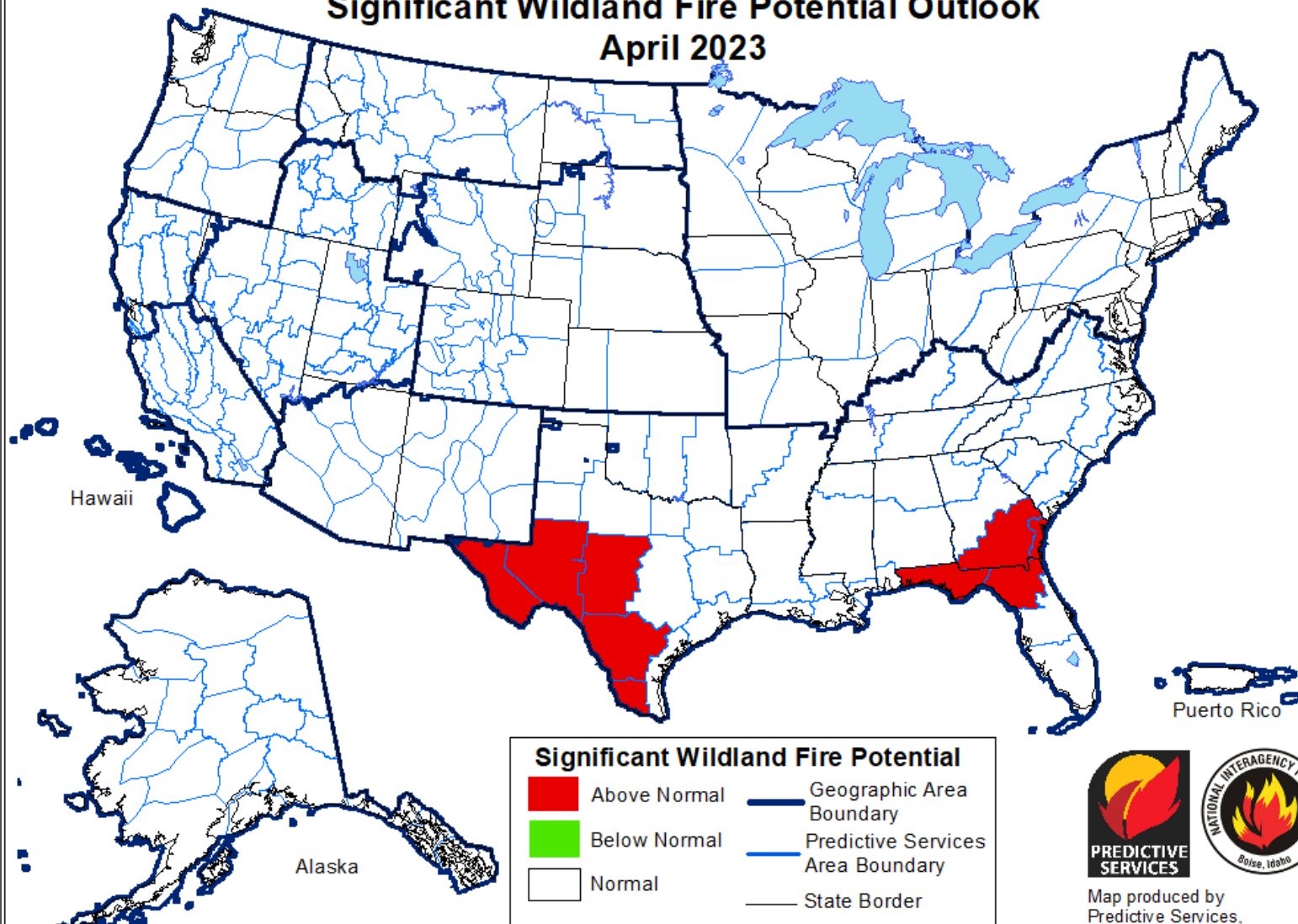
Elevated odds of warmer temperatures increase as summer begins



Yampa Basin likely to hit average peak SWE this week

More from NRCS

Significant Wildland Fire Potential Outlook April 2023



Above normal significant wildland fire potential indicates a greater than usual likelihood that significant wildland fires will occur. Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.



Map produced by
Predictive Services,
National Interagency Fire Center
Boise, Idaho
Issued February 1, 2023
Next issuance March 1, 2023

No elevated
fire outlooks
for March-
May.

This is good
news out east
where spring
brushfires in
dry/windy
conditions can
be
catastrophic

Takeaways

- We have tallied the coolest four month start to a water year since 2010, and the wettest since 2016.
- February is on the cool side of normal again (fourth month in a row). The San Juans are having a good month, but so far we have seen near normal statewide precipitation
- Long-term conditions are still on the dry side of normal for eastern Colorado. We'll still need the million dollar rains this spring
- What happens over the next 4-6 weeks will be crucial for our water supply
- La Niña is letting go. Neutral conditions are likely to dominate the equatorial Pacific this spring
- Overall, with the amount of precipitation/snowpack in place, we have reason to be optimistic at the state level. This is arguably the best things have looked since 2019, but a high runoff/water supply year is not yet a certainty

Colorado Climate Center

Thanks, and let's keep in touch!

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Becky Bolinger – becky.bolinger@colostate.edu

Viewing this, and previous WATF Briefings:

http://climate.colostate.edu/ccc_archive.html

