Colorado Climate Update – Winter status and spring outlook

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Water Availability Task Force

March 22, 2022

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ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

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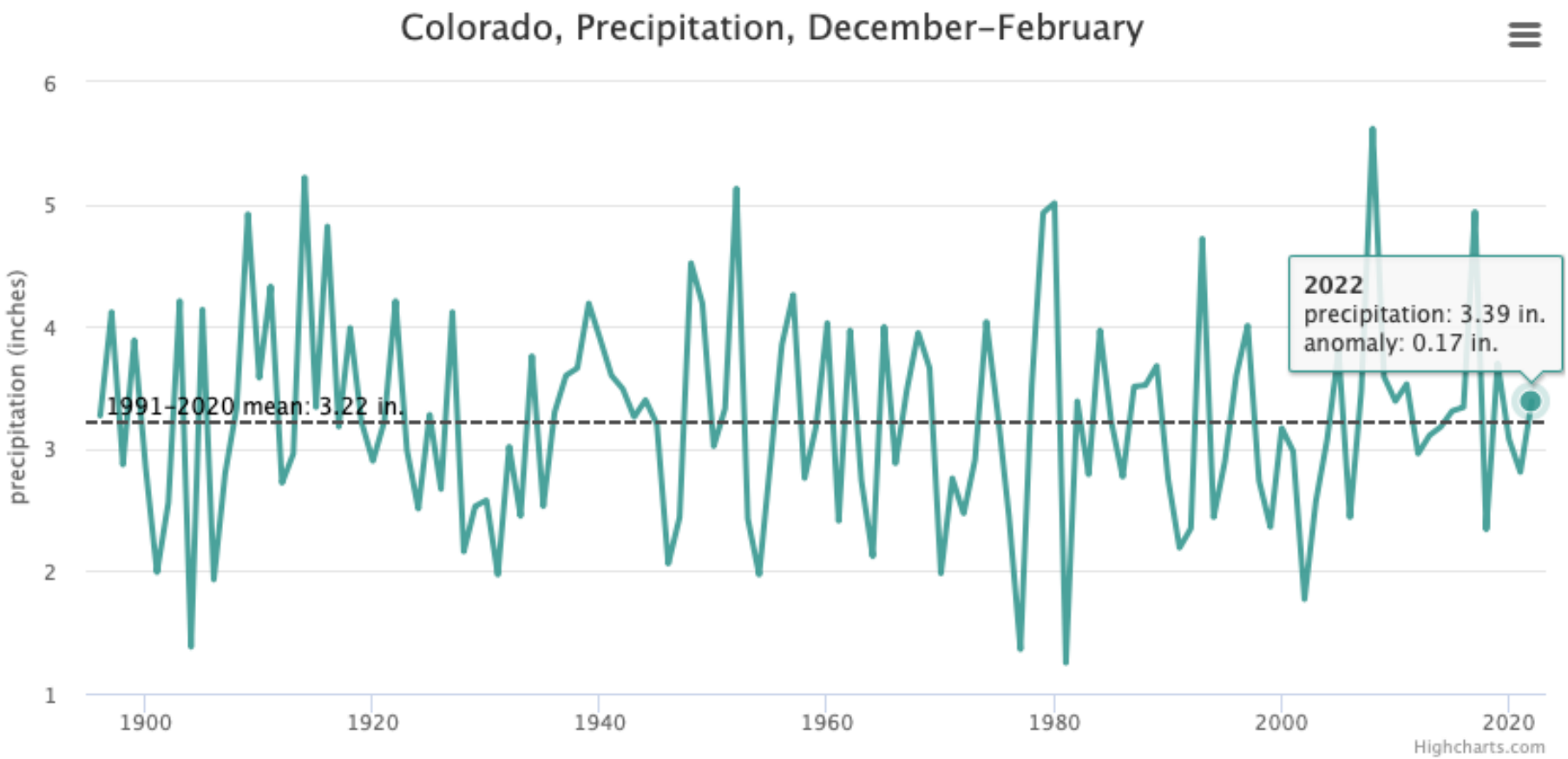
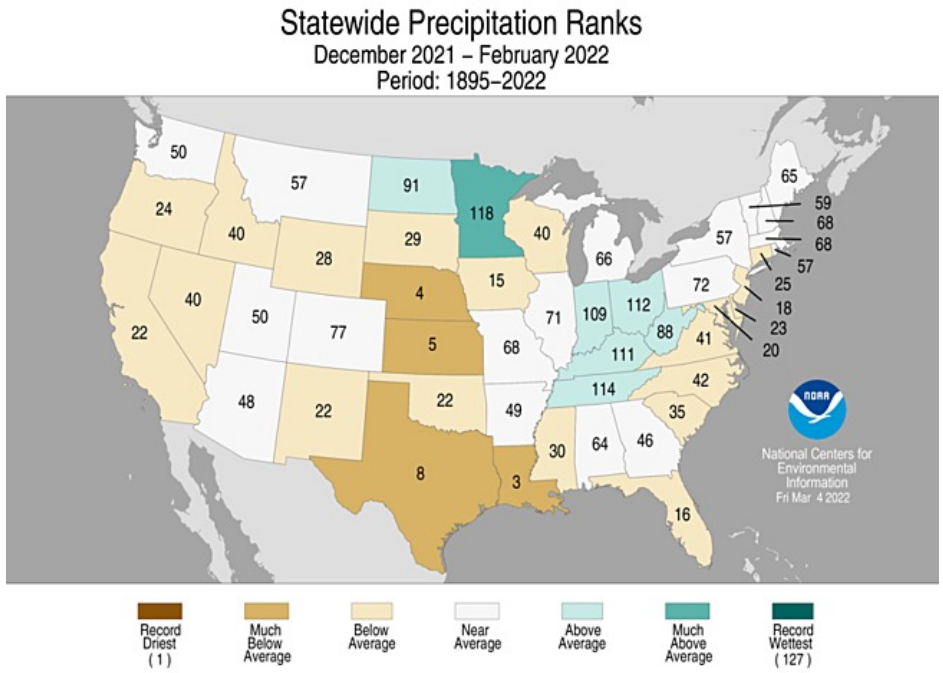
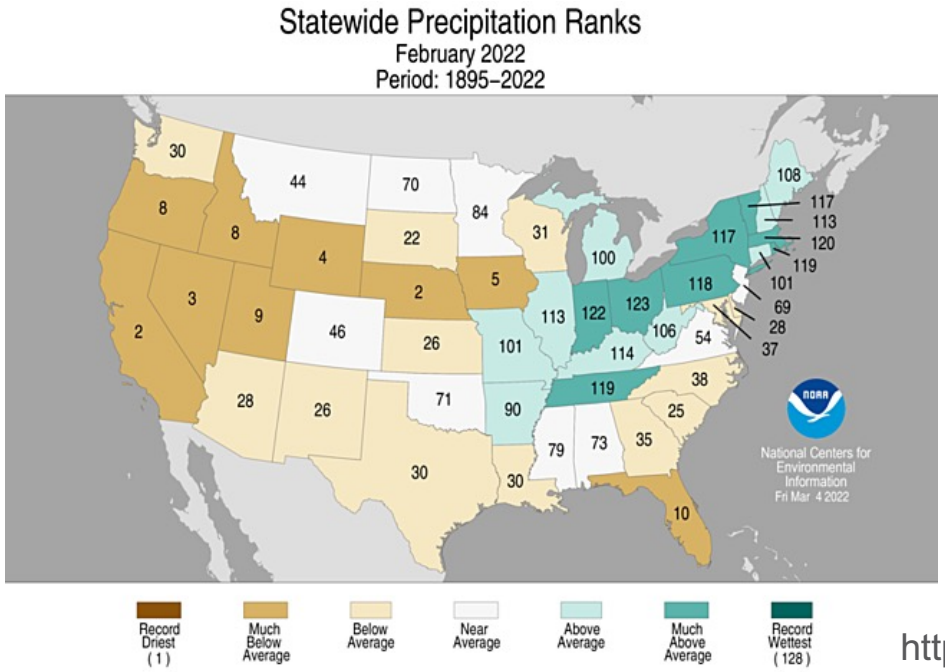
2022 Water Year to Date



Winter 2021-22 was slightly wetter than average and ranked as the 50th wettest winter in the 128-year record.

https://climate.colostate.edu/co_cag/cag_time.html

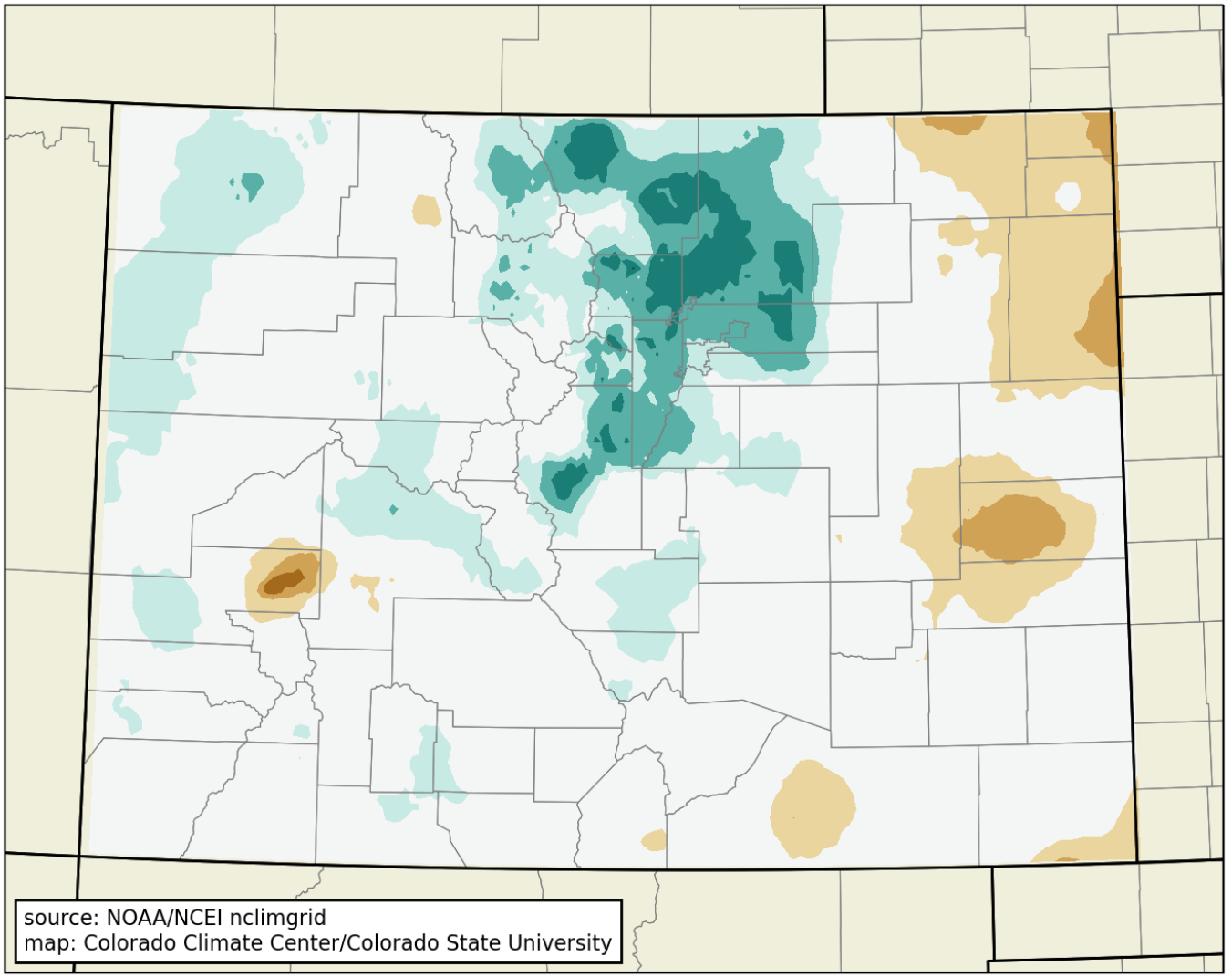


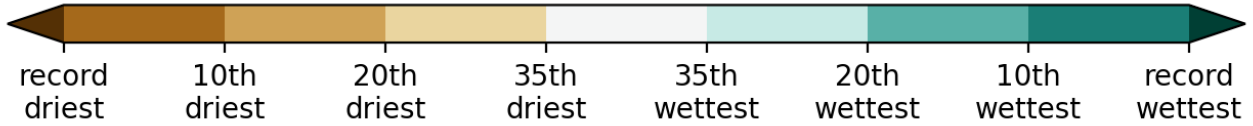


Month	P Rank (of 128 years)	Above, below, or near 20th century avg?
Oct	62nd driest	near avg
Nov	10th driest	much below
Dec	13th wettest	much above
Jan	40th driest	below
Feb	46th driest	near avg
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

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

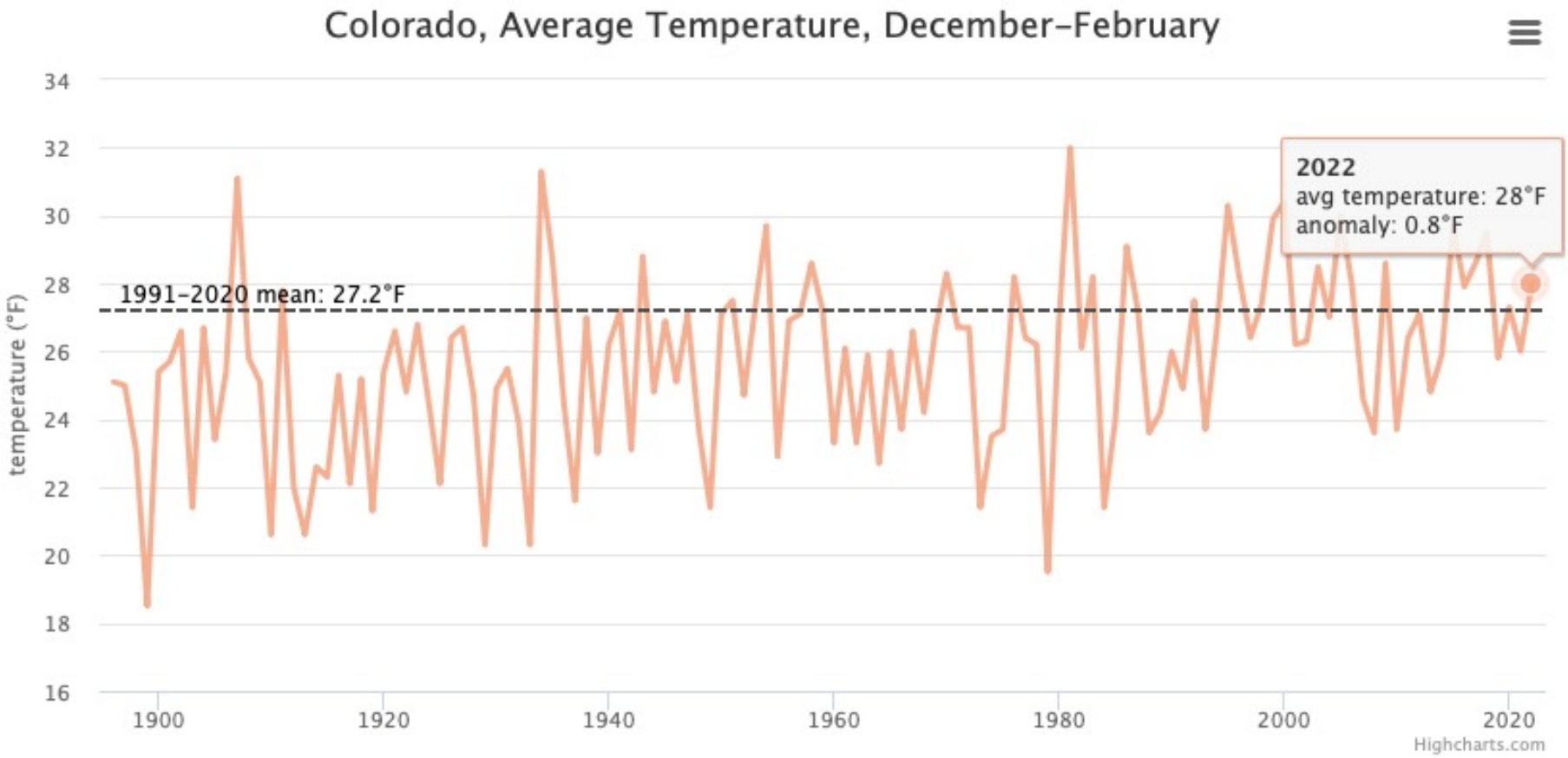
precipitation rank: 3 months ending February 2022 (Dec-Feb)





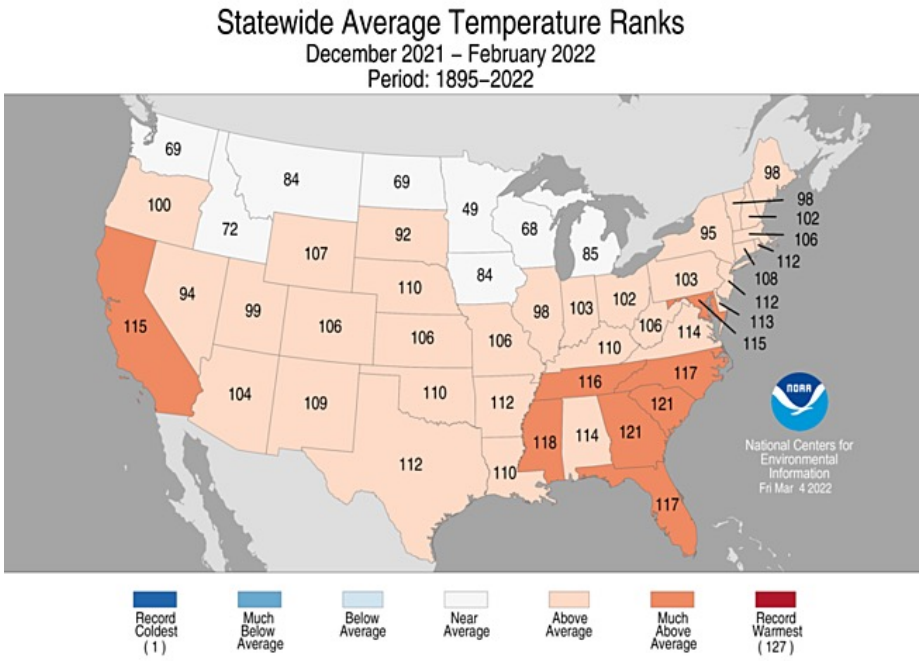
precipitation rank out of 127 years

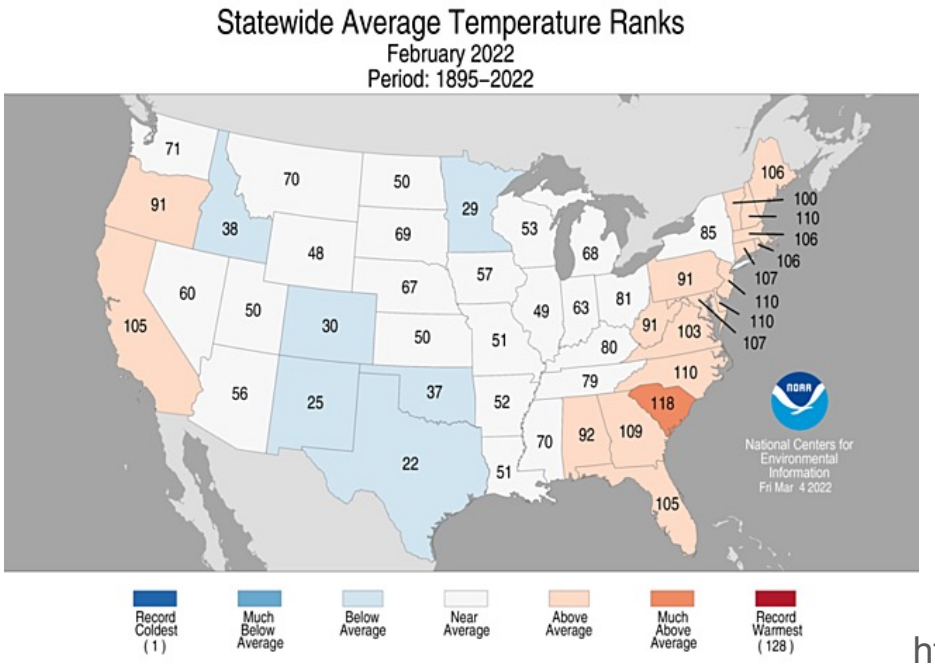
https://climate.colostate.edu/co_cag/rank_maps.html



Winter 2021-22 was a little warmer than average, mostly due to the magnitude of warm anomalies from December.

https://climate.colostate.edu/co_cag/cag_time.html

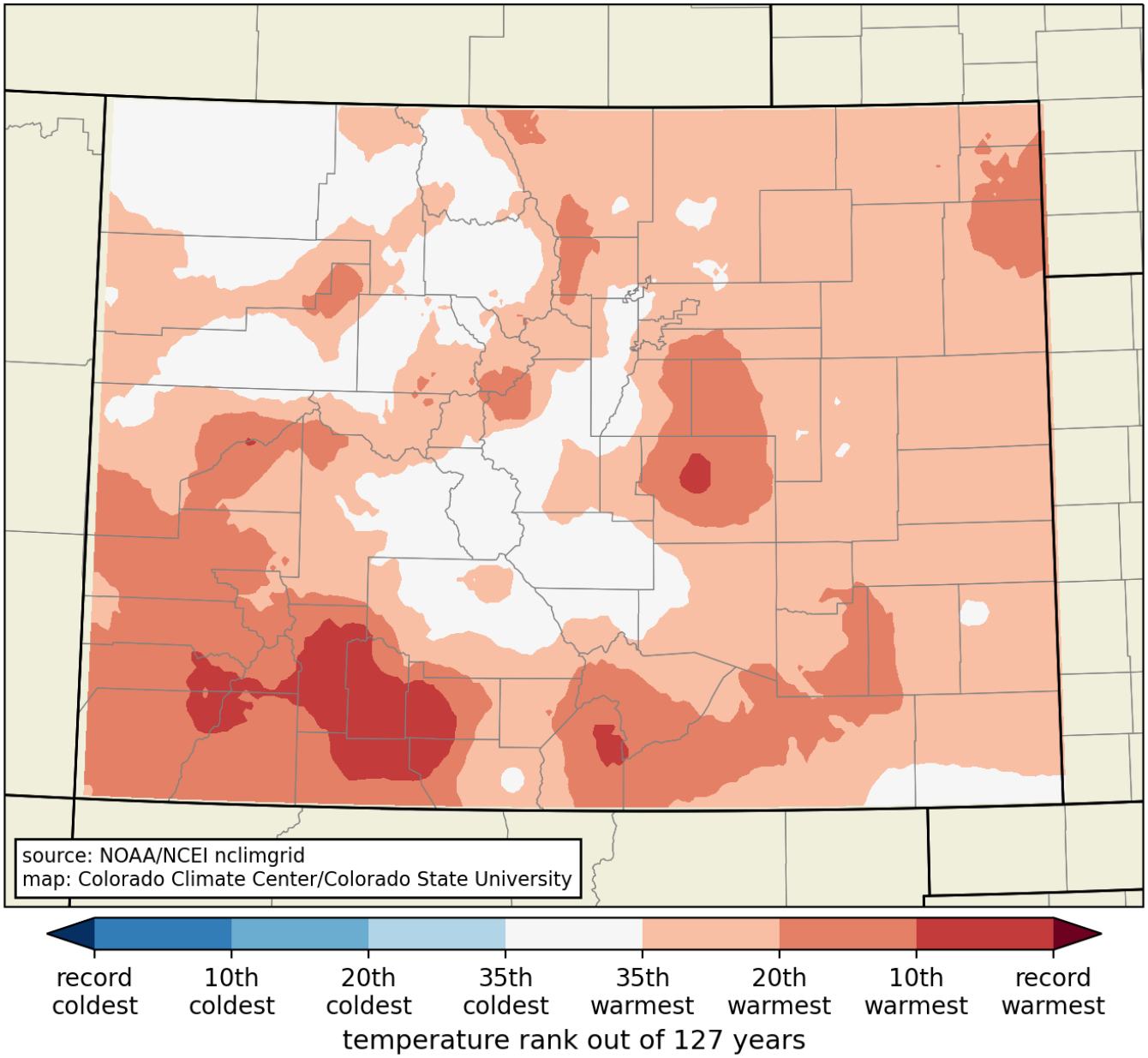




Month	T Rank (of 127 years)	Above, below, or near 20th century avg?
Oct	41st warmest	above
Nov	3rd warmest	much above
Dec	2nd warmest	much above
Jan	33rd warmest	above
Feb	30th coolest	below
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

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

average temperature rank: 3 months ending February 2022 (Dec-Feb)



https://climate.colostate.edu/co_cag/rank_maps.html

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Current Conditions

Temperature

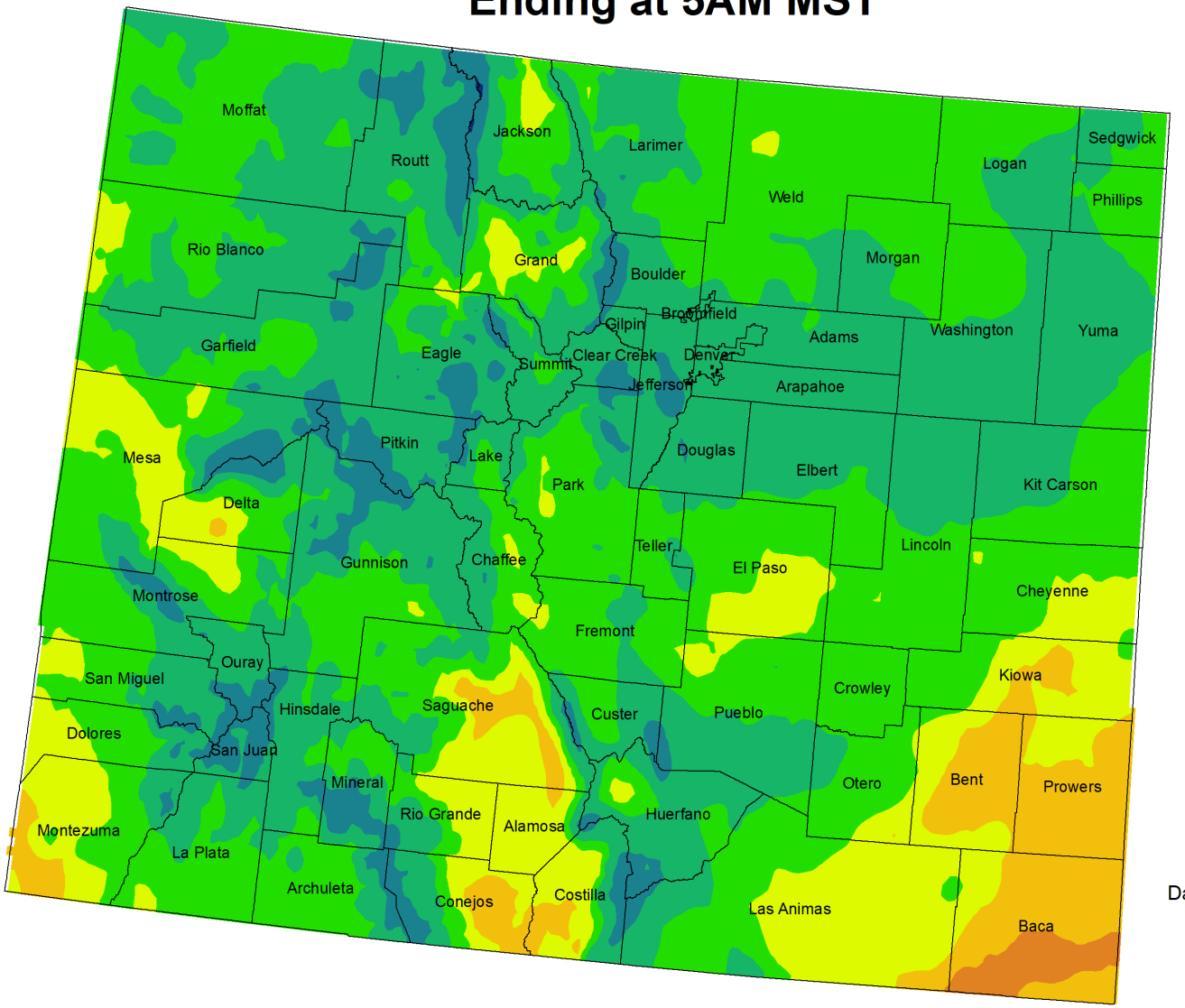
Precipitation

Evaporative Demand

Soil Moisture

Vegetation

Colorado Month to Date Precipitation
1 - 21 March 2022
Ending at 5AM MST



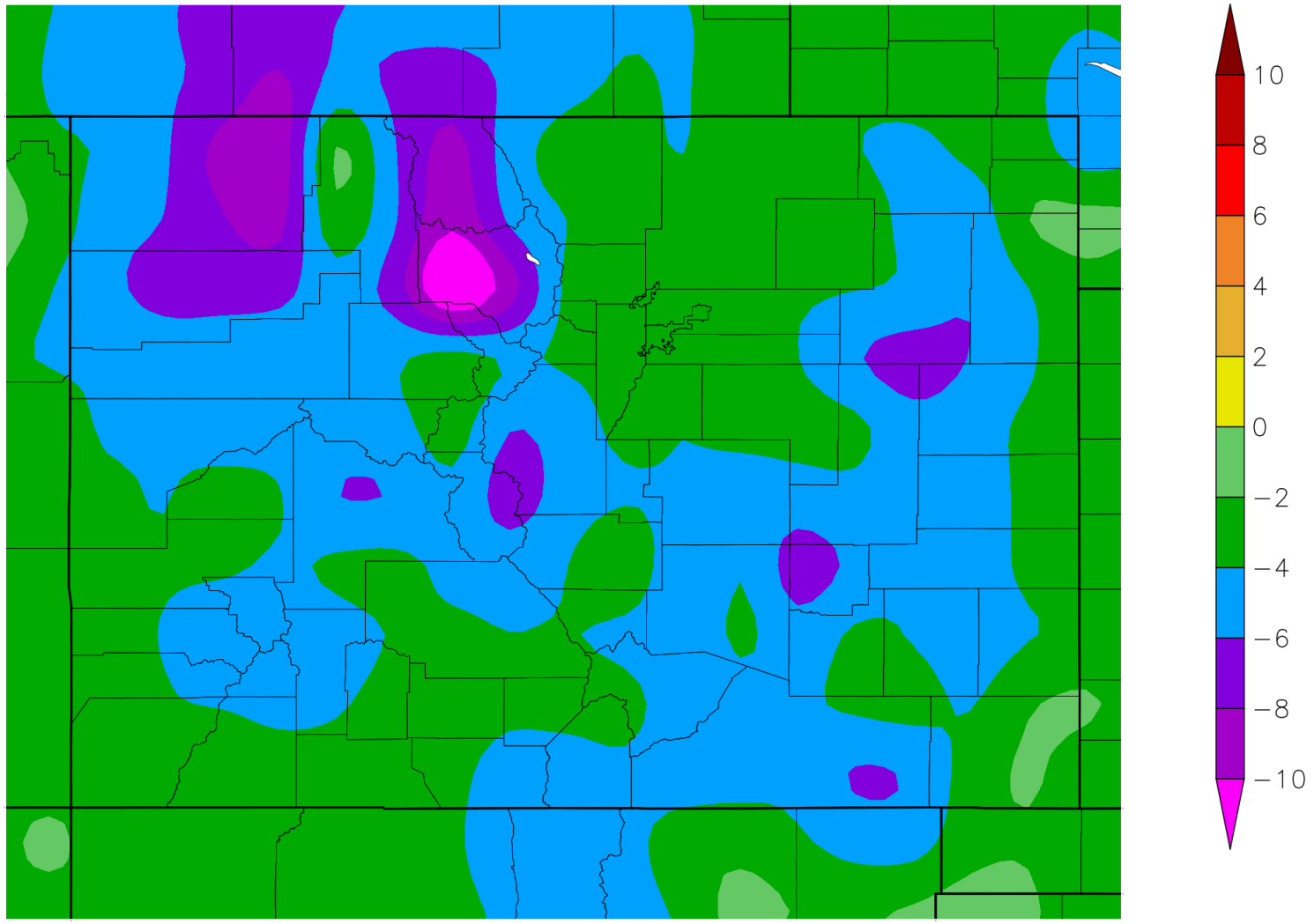
01_21mar22

Precip (inches)

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.25 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 4.30

Data from PRISM Climate Group

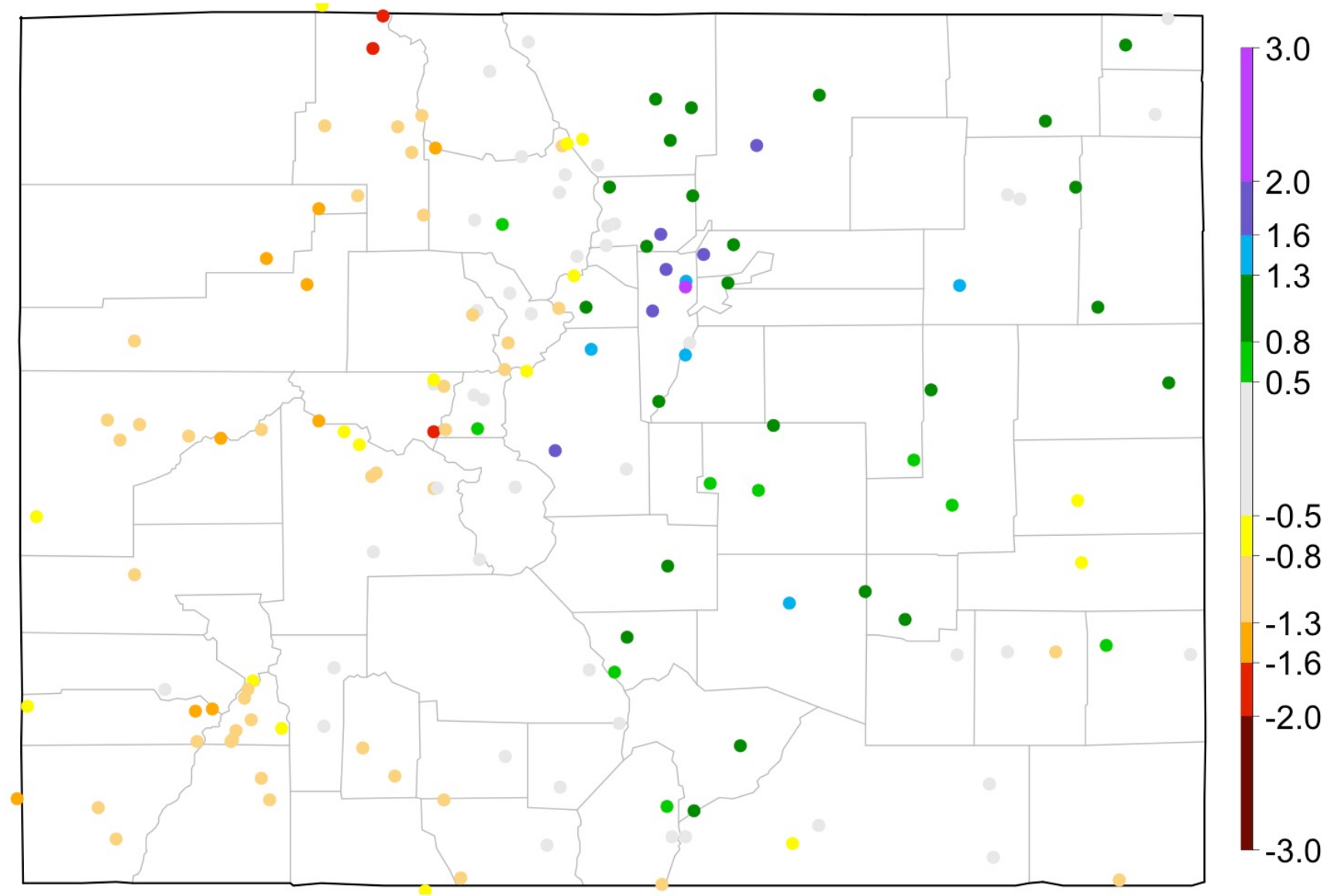
Departure from Normal Temperature (F)
3/1/2022 – 3/20/2022



Generated 3/21/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

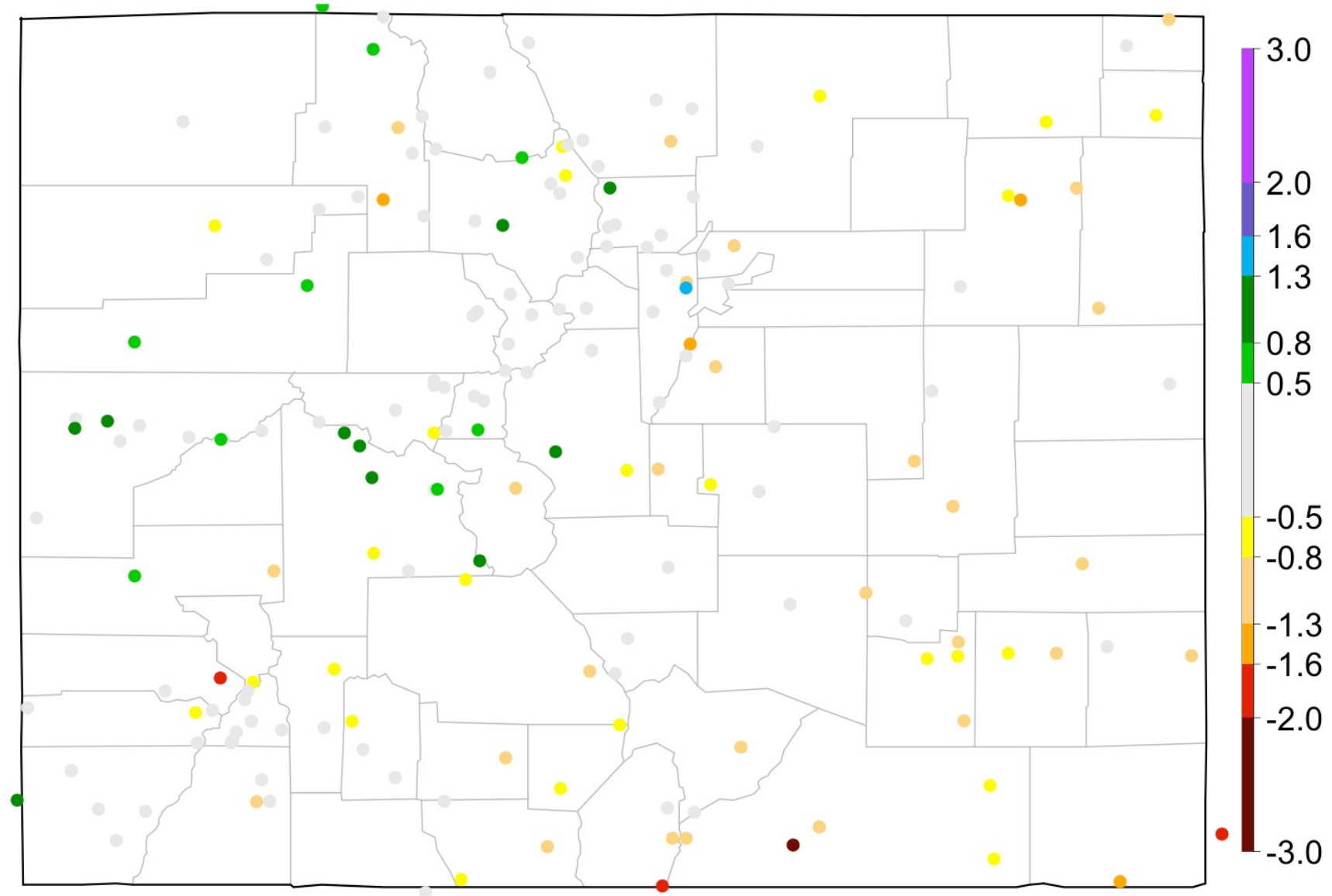
Year-to-date SPI: 2022/01/01 - 2022/03/20



Data from High Plains Regional Climate Center and ACIS

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

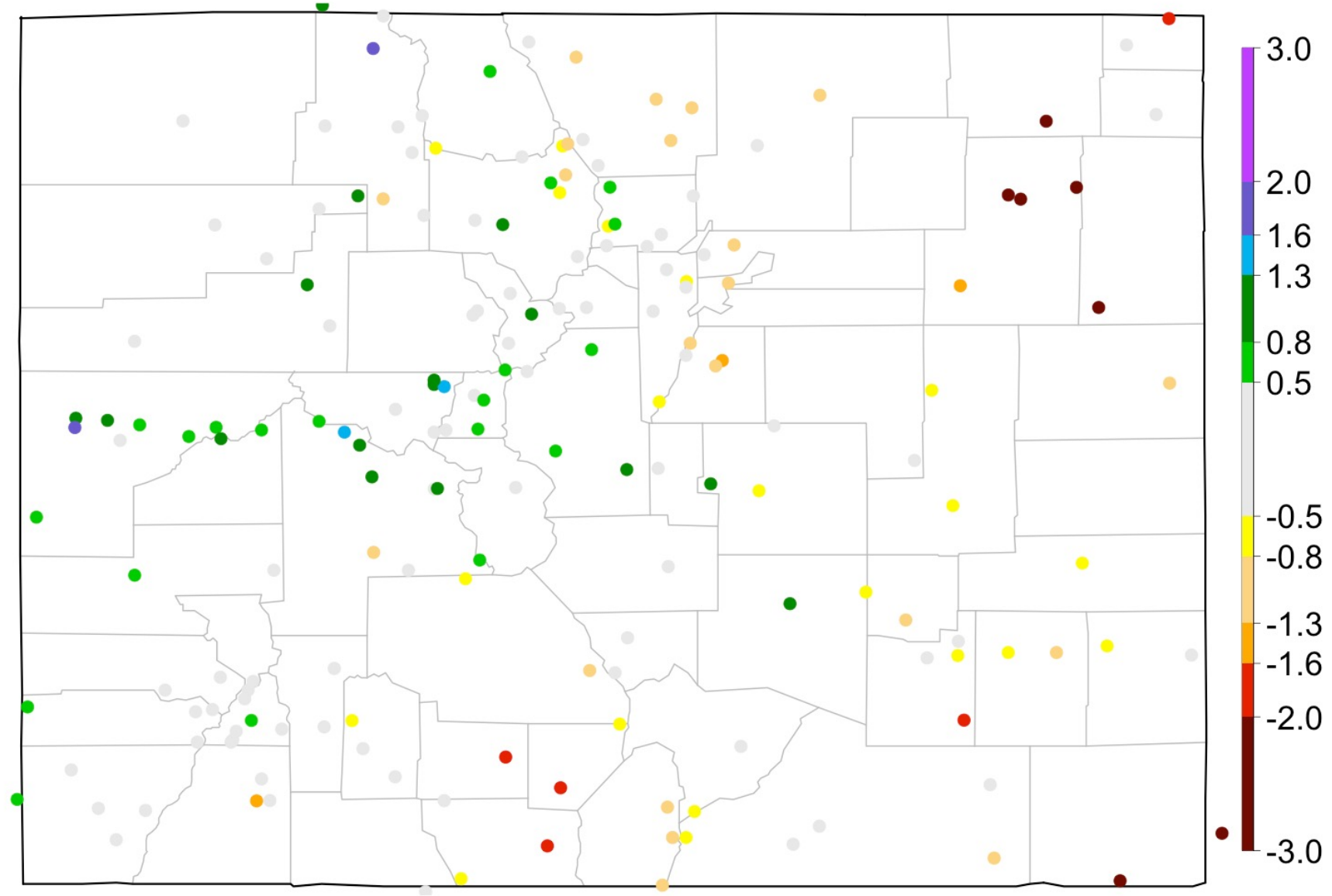
Water-year-to-date SPI: 2021/10/01 - 2022/03/20



Data from High Plains Regional Climate Center and ACIS

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

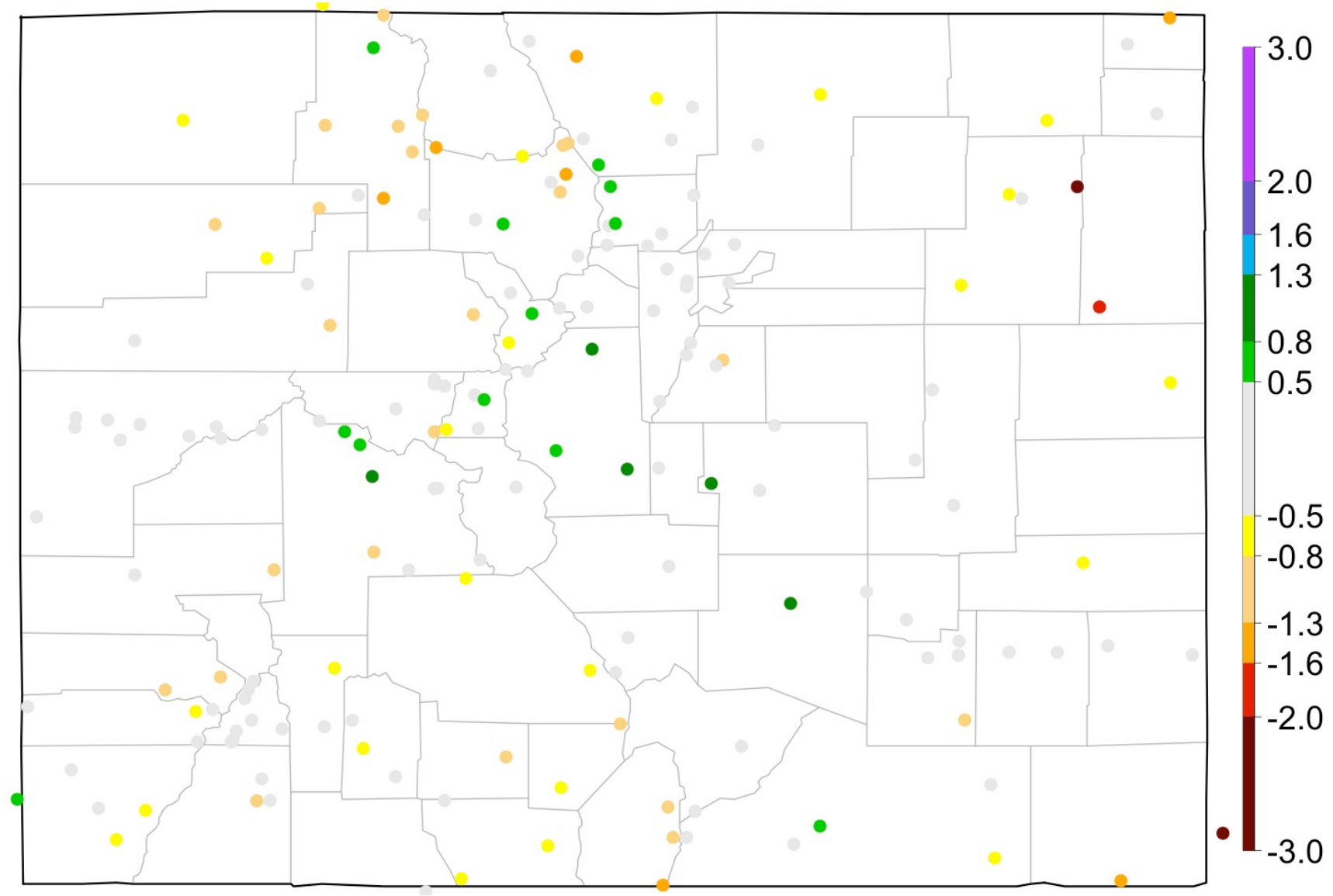
9-month SPI: 2021/06/21 - 2022/03/20



Data from High Plains Regional Climate Center and ACIS

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

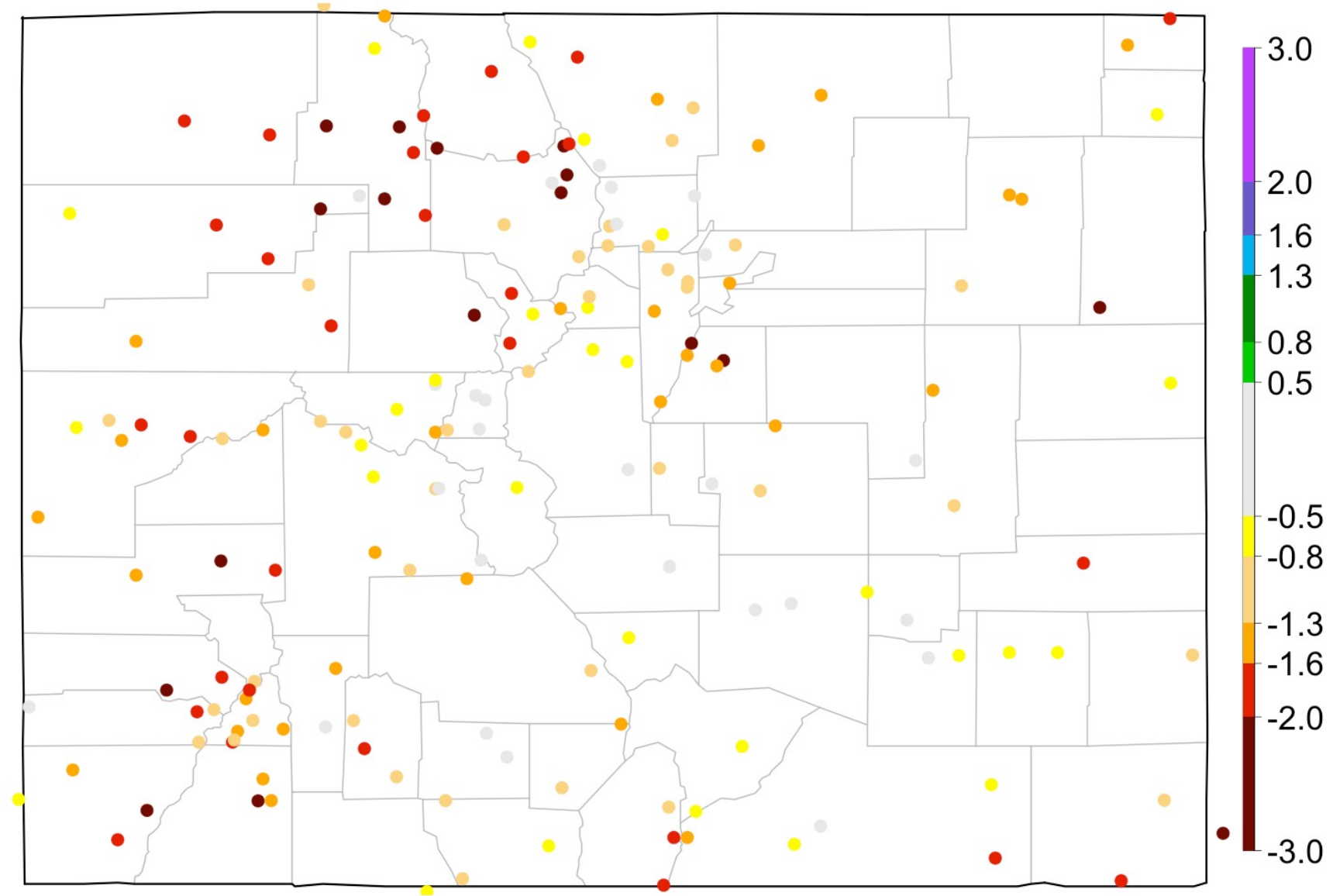
12-month SPI: 2021/03/21 - 2022/03/20



Data from High Plains Regional Climate Center and ACIS

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

24-month SPI: 2020/03/21 - 2022/03/20



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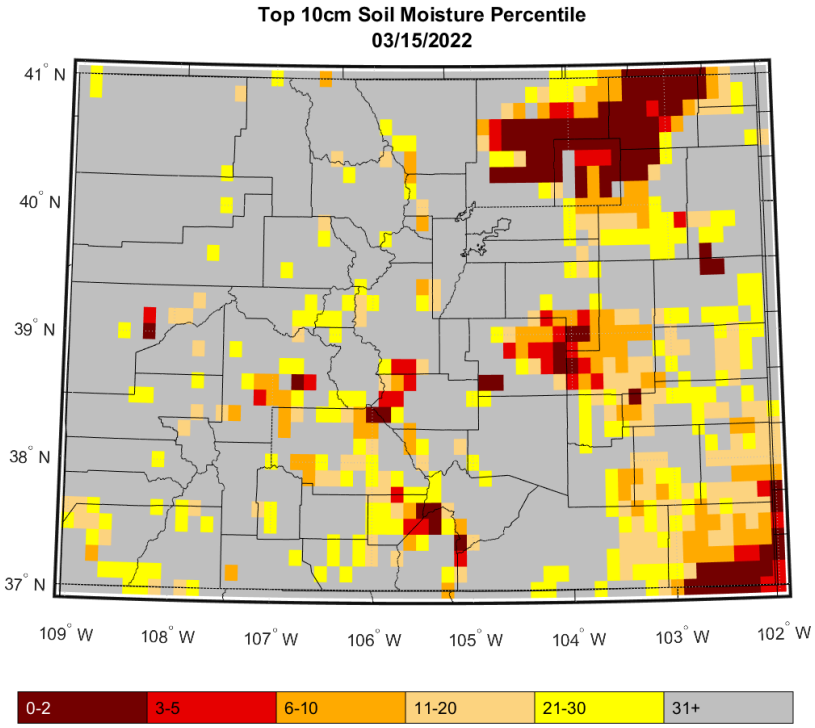
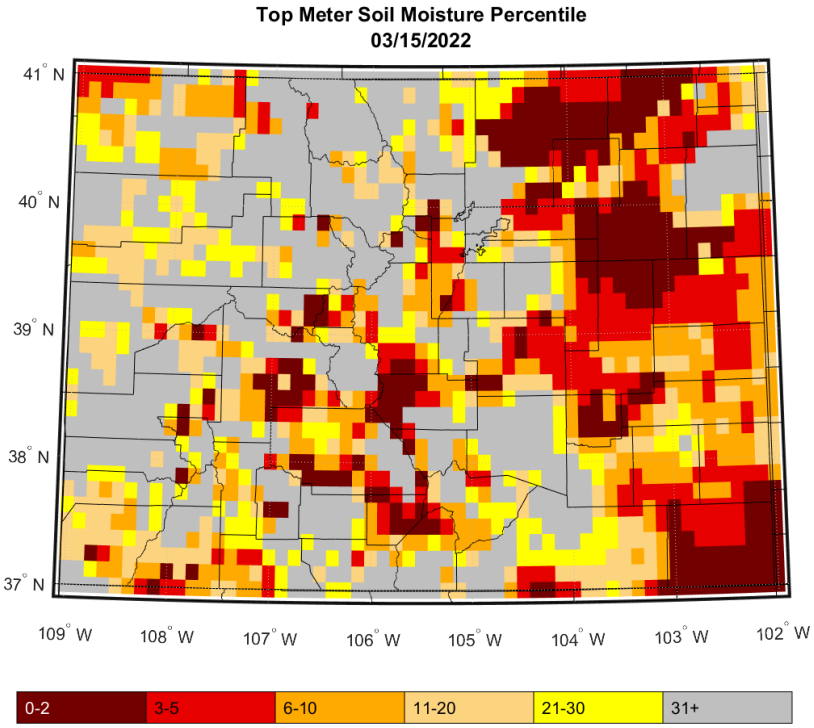
https://climate.colostate.edu/drought/

Soil Moisture

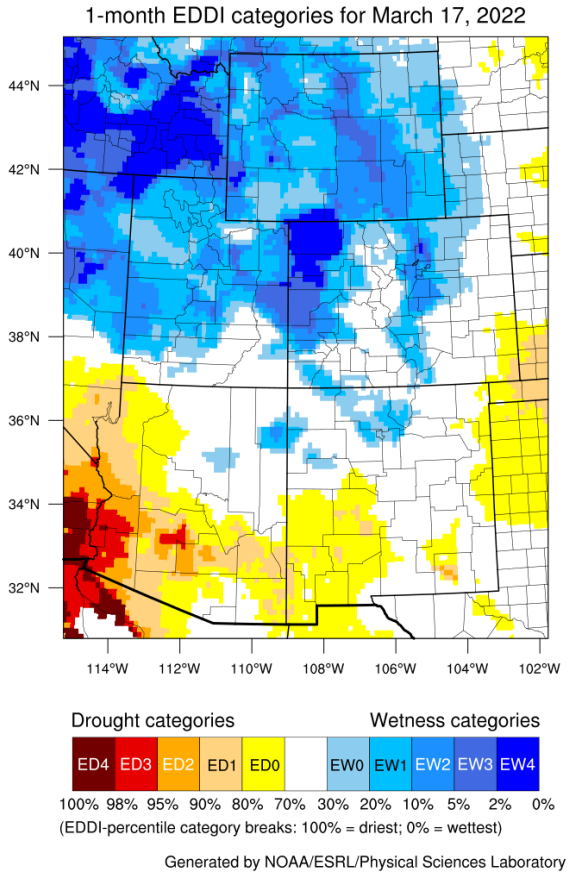


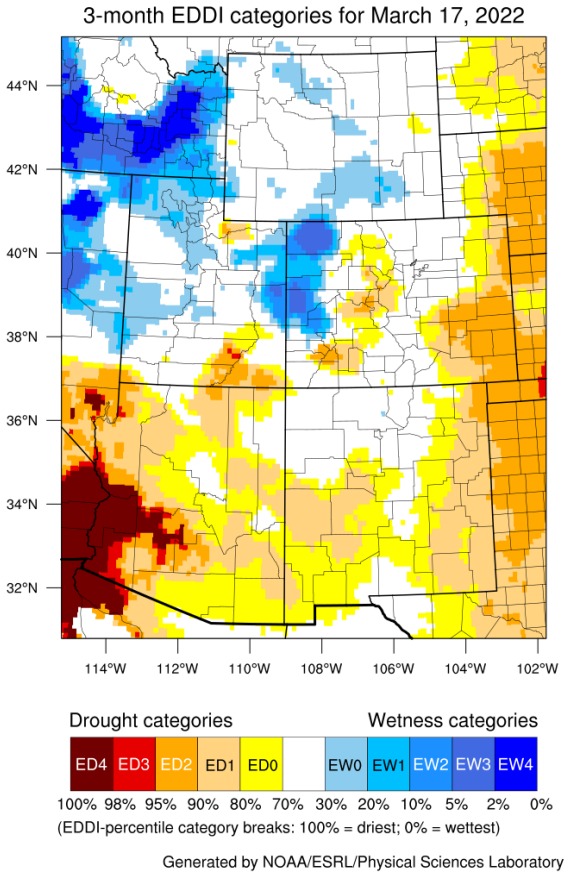


Total column soil moisture showing dryness across the Eastern Plains. This could possibly drive more warm anomalies in the spring and summer, inhibit precipitation with more dry air being fluxed into the atmosphere.

https://climate.colostate.edu/drought

Evaporative Demand





EDDI combines temperature, solar radiation, wind, and humidity – compares to historical record for that time period shown. Is there “evaporative demand” in the winter? No, but this may give an indication of the relative health of the ground.

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

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Drought

National Drought

Colorado Drought

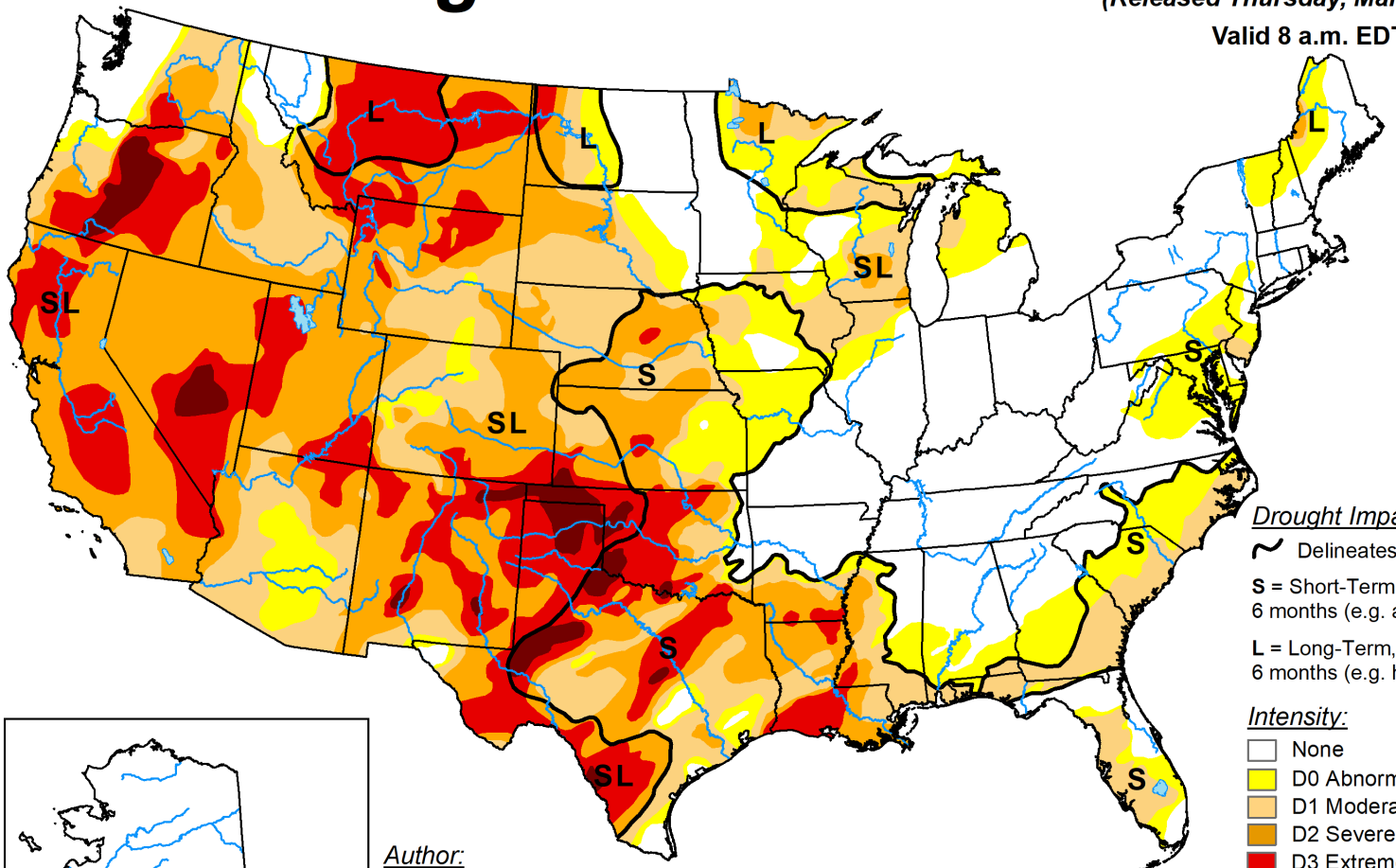
Some Drought Facts

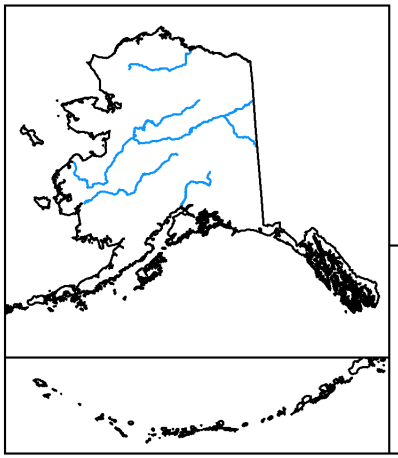
U.S. Drought Monitor

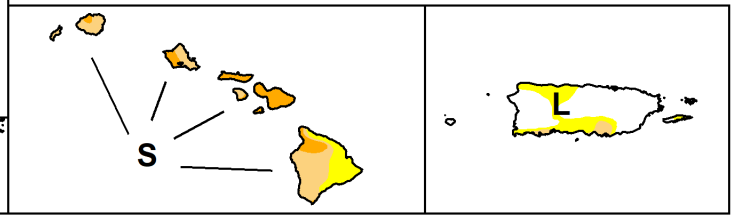
March 15, 2022

(Released Thursday, Mar. 17, 2022)

Valid 8 a.m. EDT







Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Author:

Adam Hartman

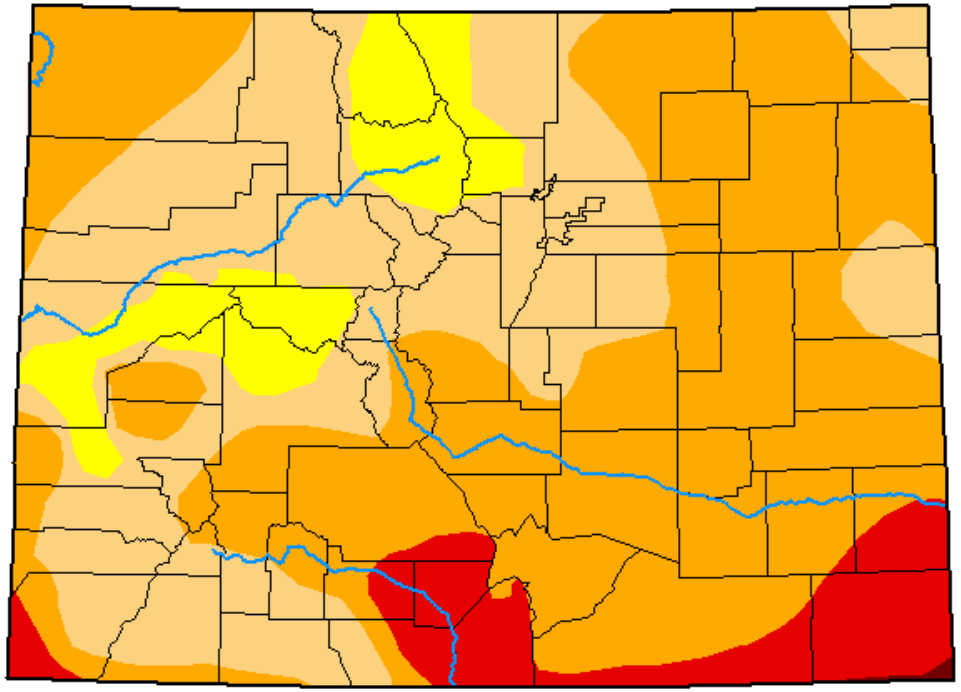
NOAA/NWS/NCEP/CPC

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

droughtmonitor.unl.edu

U.S. Drought Monitor

Colorado



March 15, 2022

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Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	91.57	56.87	8.30	0.13
Last Week *03-08-2022*	0.00	100.00	91.57	57.26	6.10	0.13
3 Months Ago *12-14-2021*	0.00	100.00	99.86	67.90	19.18	0.00
Start of Calendar Year *01-04-2022*	0.00	100.00	95.49	67.08	22.25	0.00
Start of Water Year *09-28-2021*	12.72	87.28	46.42	26.30	15.05	3.91
One Year Ago *03-16-2021*	0.00	100.00	95.76	71.47	38.64	15.10

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
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NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu

We've had D3 or D4 drought somewhere in our state for the last 97 weeks in a row.

Outlook

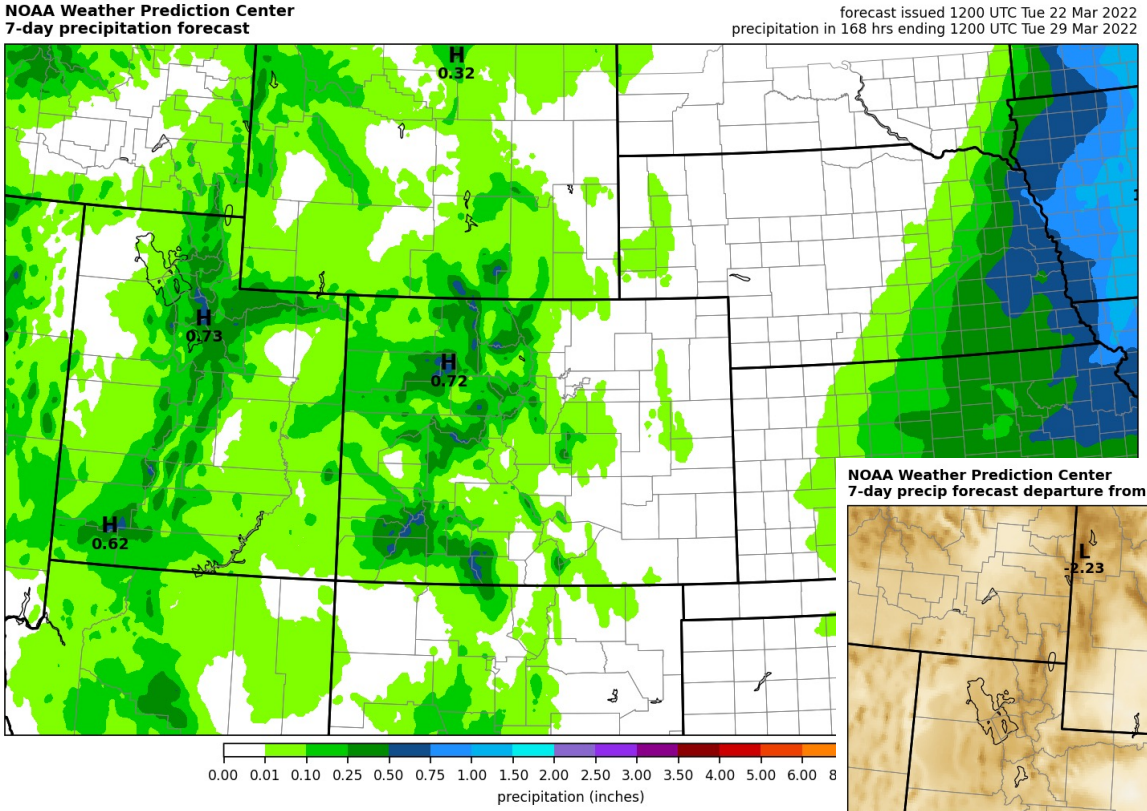
Next 7 days

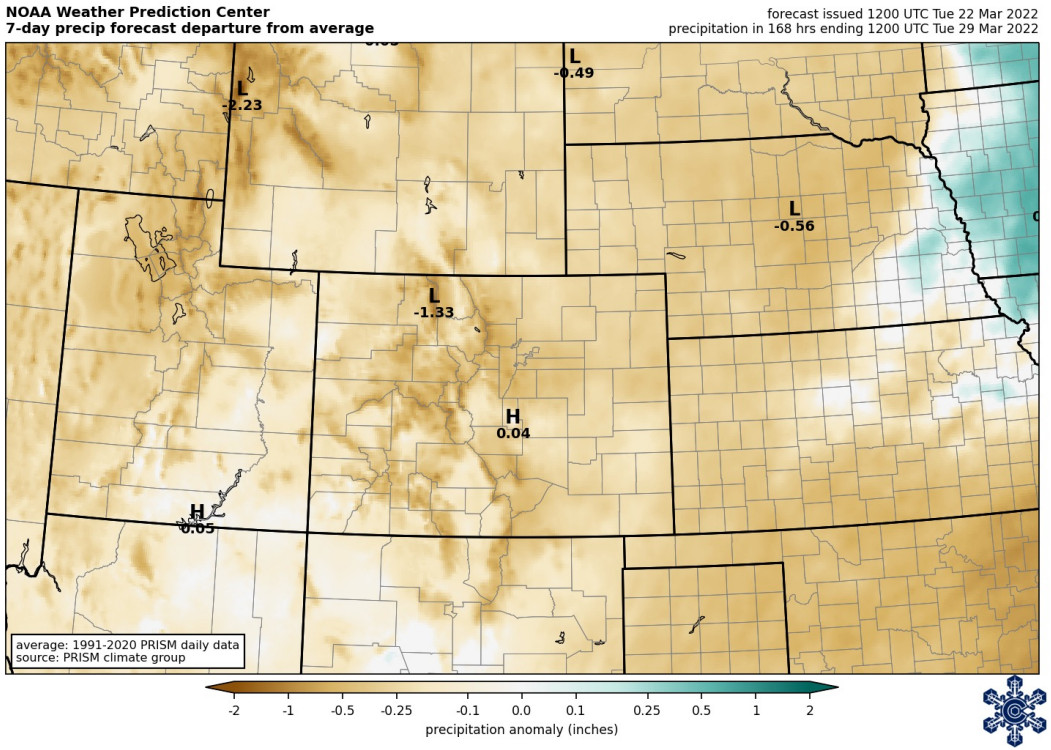
8-14 day Outlook

CPC Outlooks

La Niña

NOAA 7-day precip forecast

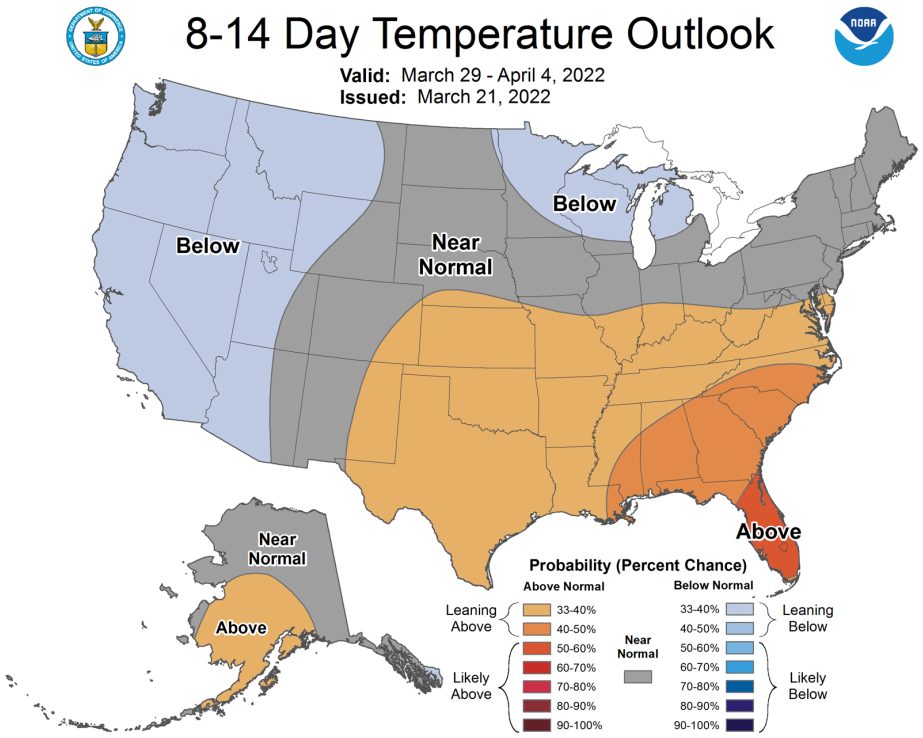


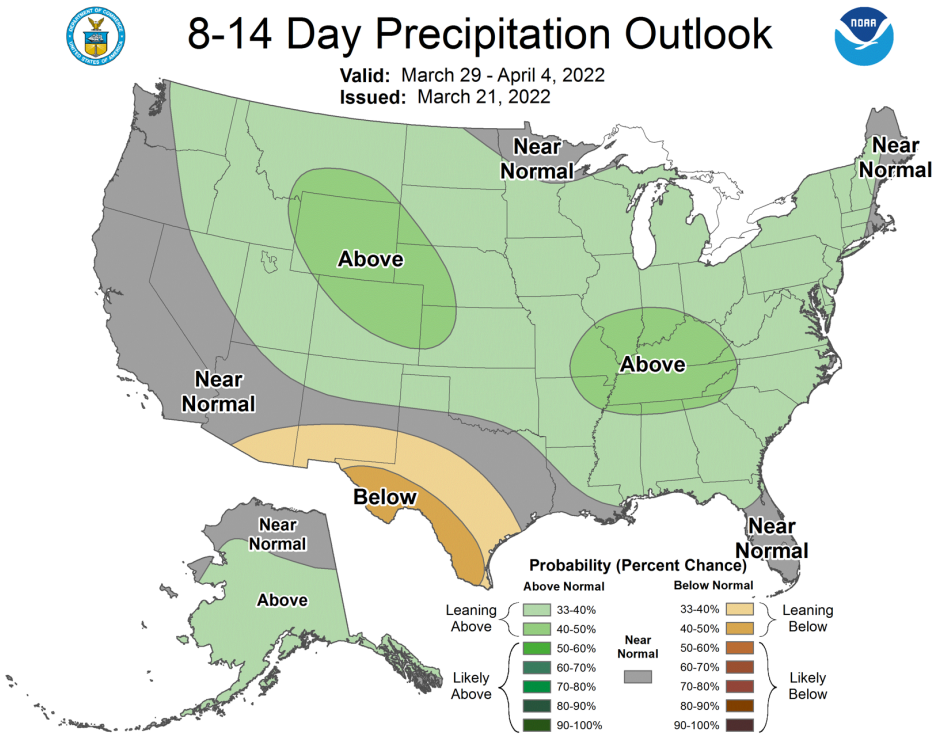


http://schumacher.atmos.colostate.edu/weather/

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

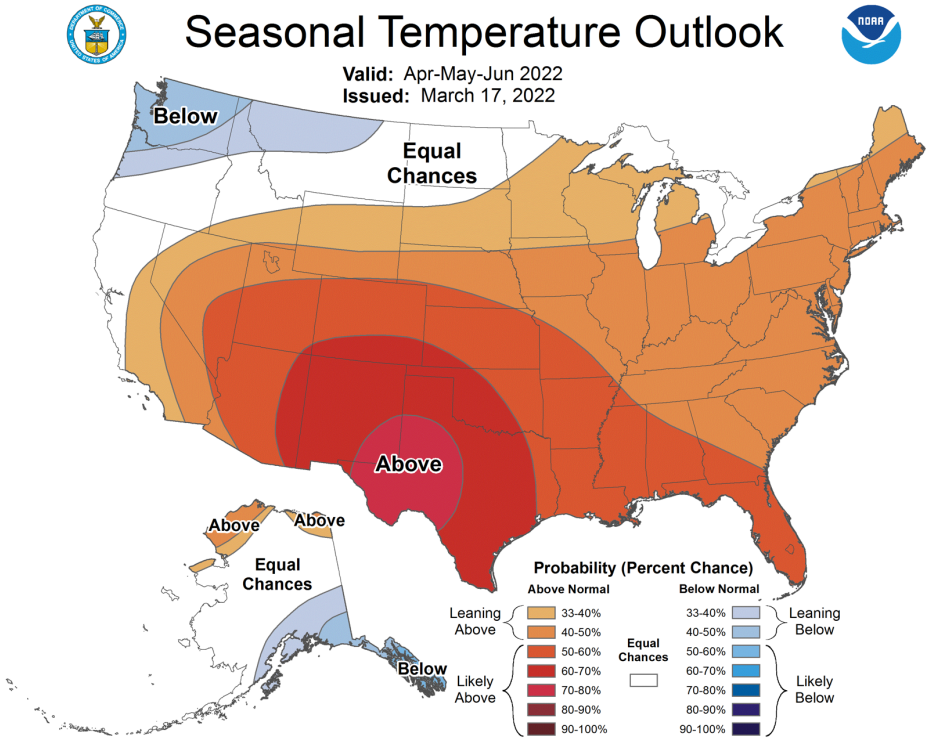
8-14 day outlook

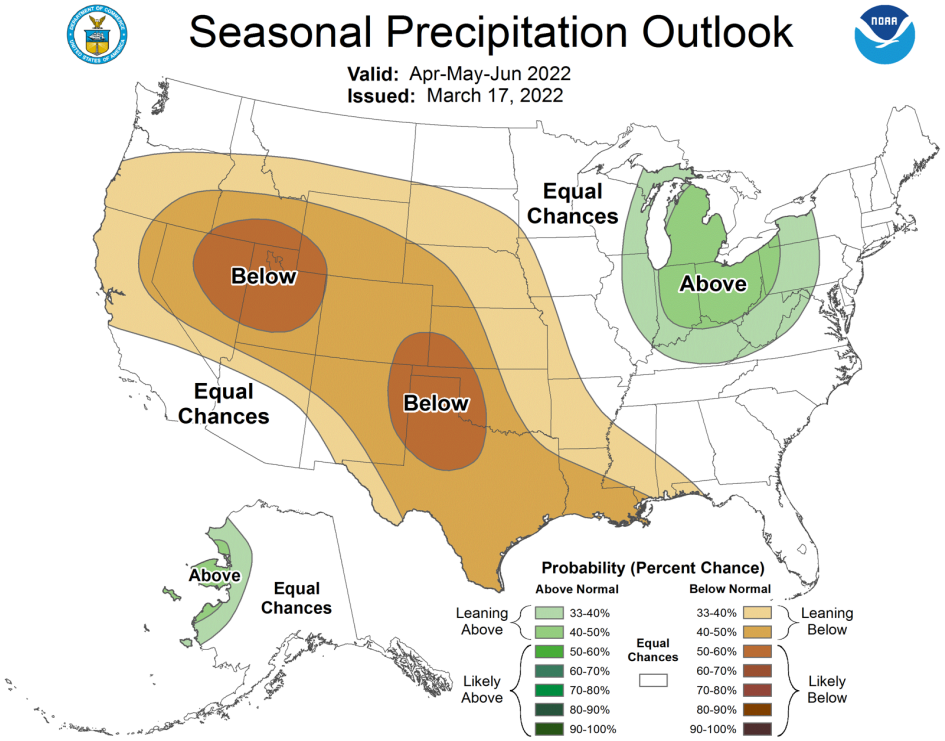




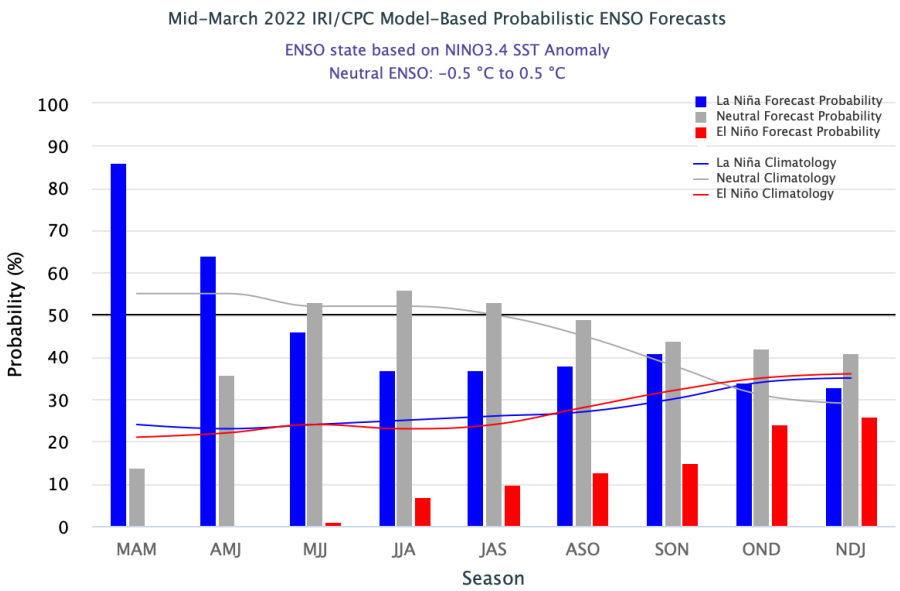
Seasonal outlook

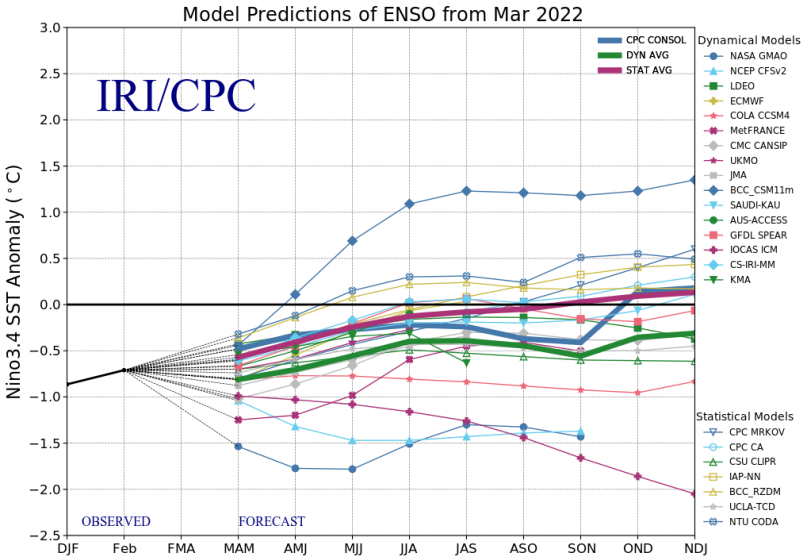
https://www.cpc.ncep.noaa.gov





What's the ENSO forecast?

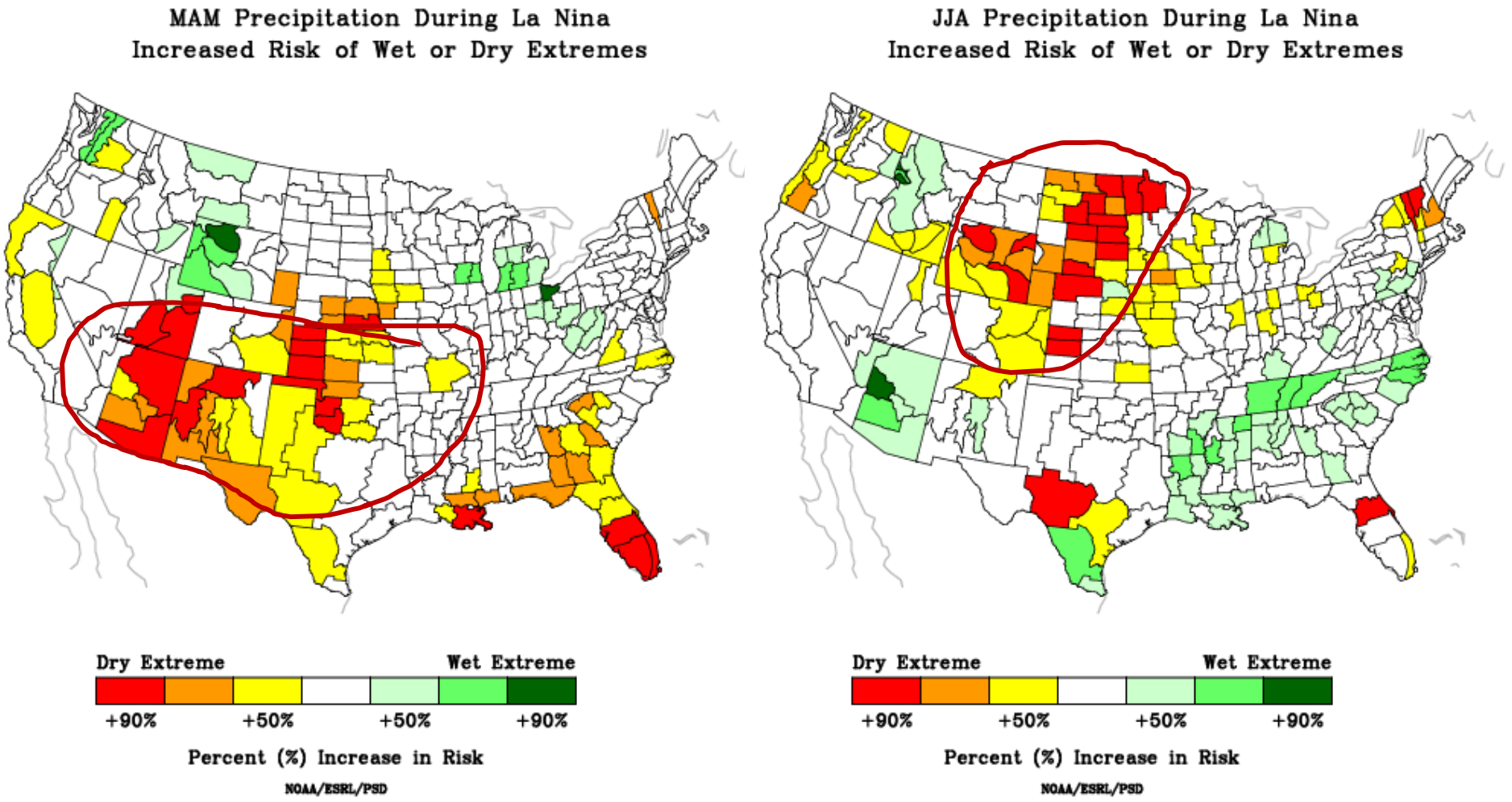




CPC/IRI March 18, 2021: A large majority of the models in the plume predict SSTs to stay below-normal at the level of a weak La Niña until Apr-Jun, and then return to ENSO-neutral levels in May-Jul 2022. Similar to the most-recent official CPC/IRI ENSO Outlook issued on March 10, 2022, this objective model-based ENSO outlook also predicts a continuation of the La Niña event with high probability during Apr-Jun. However, there is a slight disagreement between the two forecast methods on the dissipation of current event. The objective mid-March model-based forecast gives the transition to ENSO-neutral during May-Jul (53% chance), while early-March subjective consensus indicates the transition around Jul-Sep (with equal chances of 47%, for La Niña or ENSO-neutral).

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

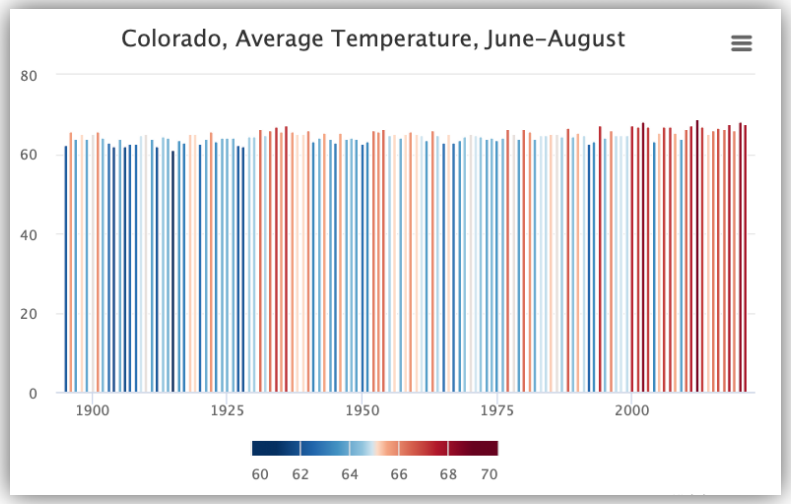
What does La Niña mean for spring and summer?



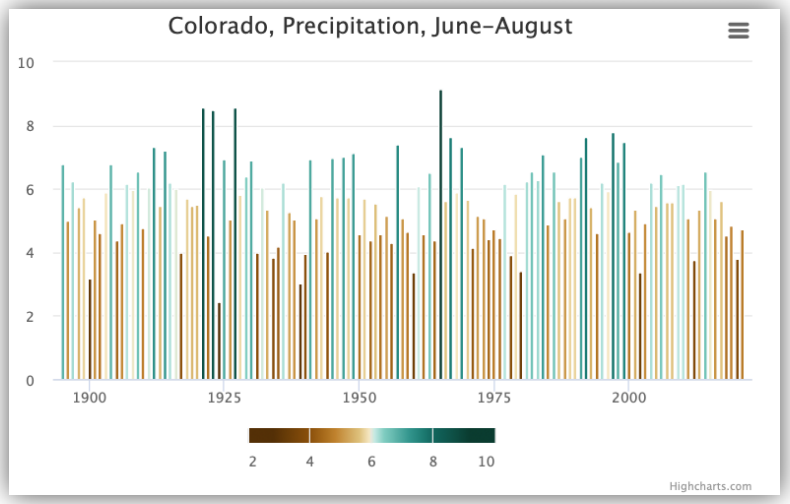
Risk of extremes during a La Niña, from https://psl.noaa.gov/enso/climaterisks/

Difficult to attribute specific patterns to ENSO during the summer. Local features play a more important role.

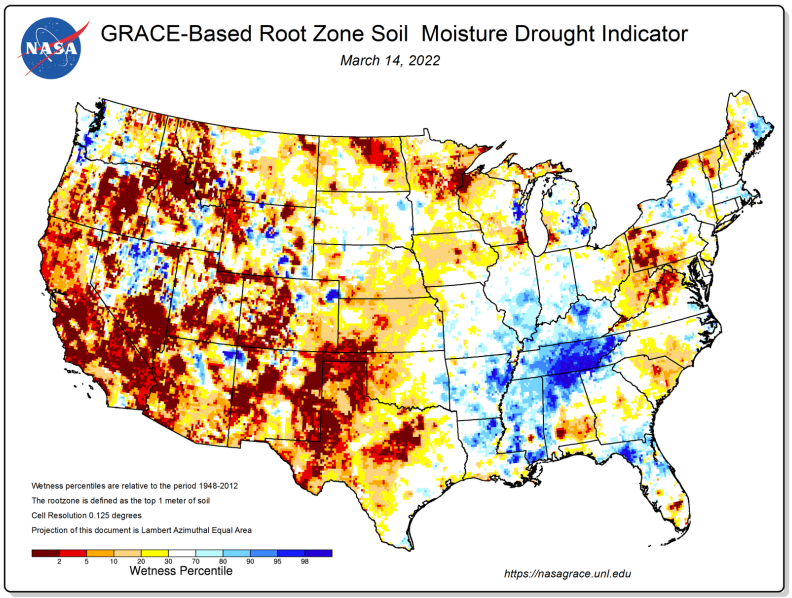
So, what *is* more likely to impact our summer pattern?



Our warming climate



A generally drier pattern



Antecedent soil moisture conditions could be a big player

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To view this and other presentations:
https://climate.colostate.edu/ccc_archive.html

Thank you

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