

Colorado Climate Update

Winter status and spring outlook

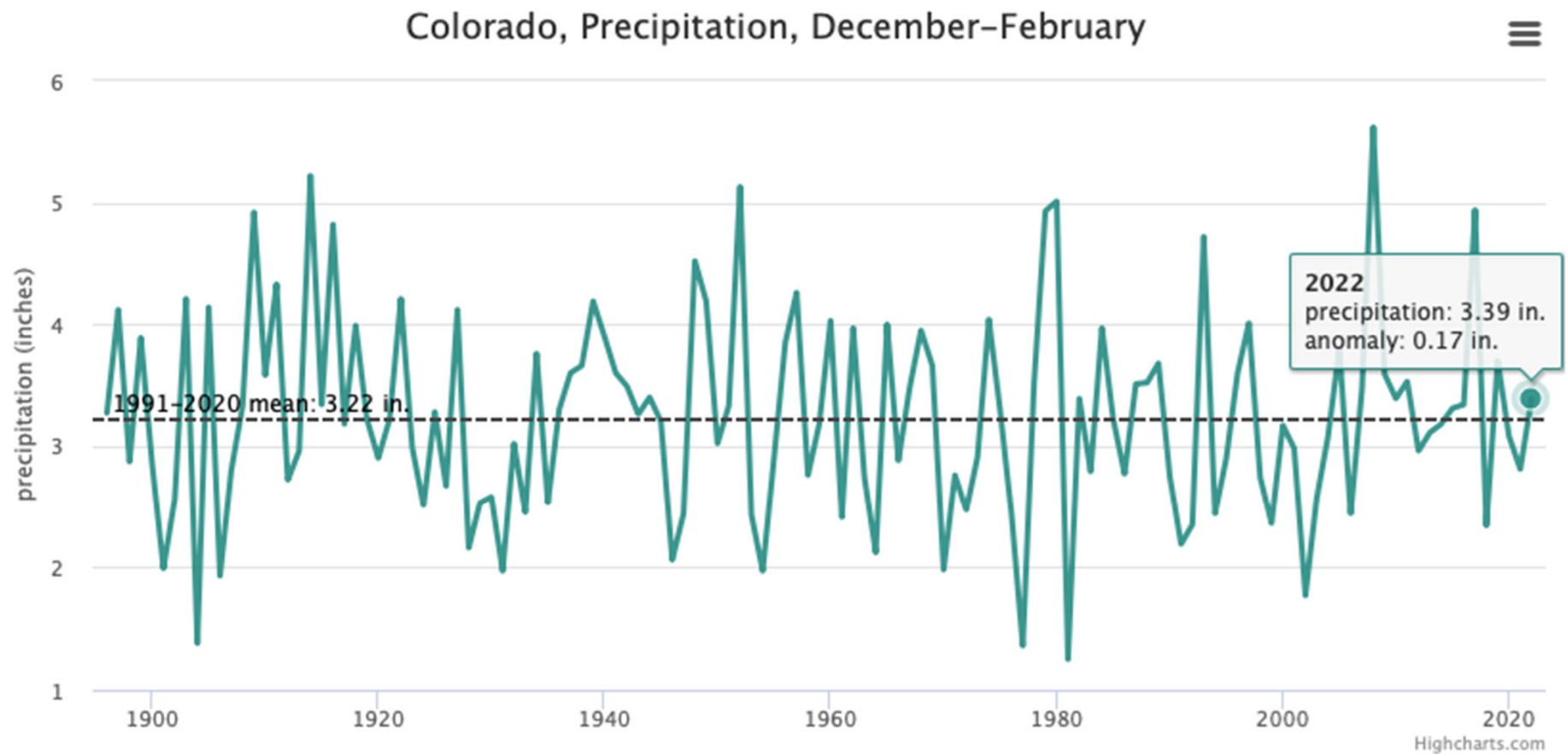
Dr. Becky Bolinger
Assistant State Climatologist

Water Availability Task Force
March 2022



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.

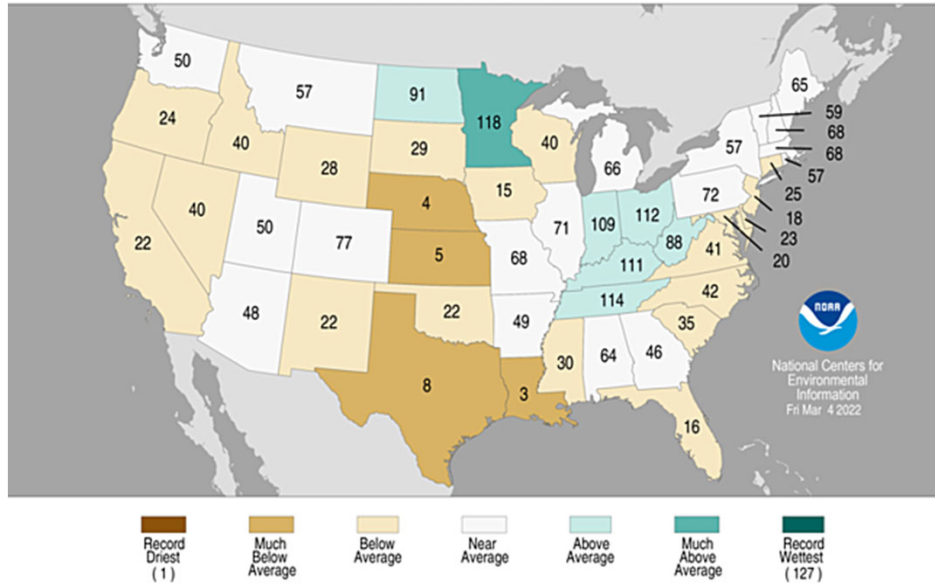
https://climate.colostate.edu/co_cag/cag_time.html



Statewide Precipitation Ranks

December 2021 – February 2022

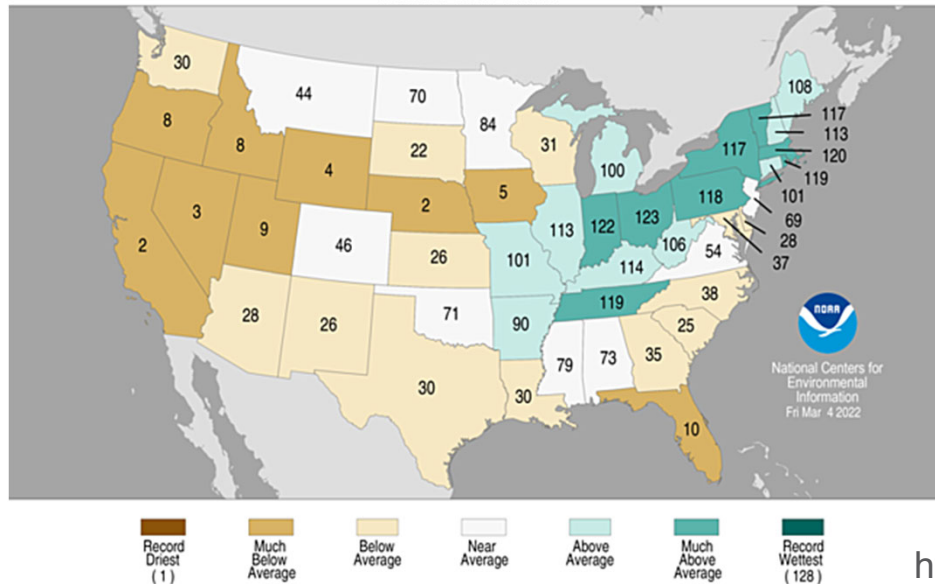
Period: 1895–2022



Statewide Precipitation Ranks

February 2022

Period: 1895–2022

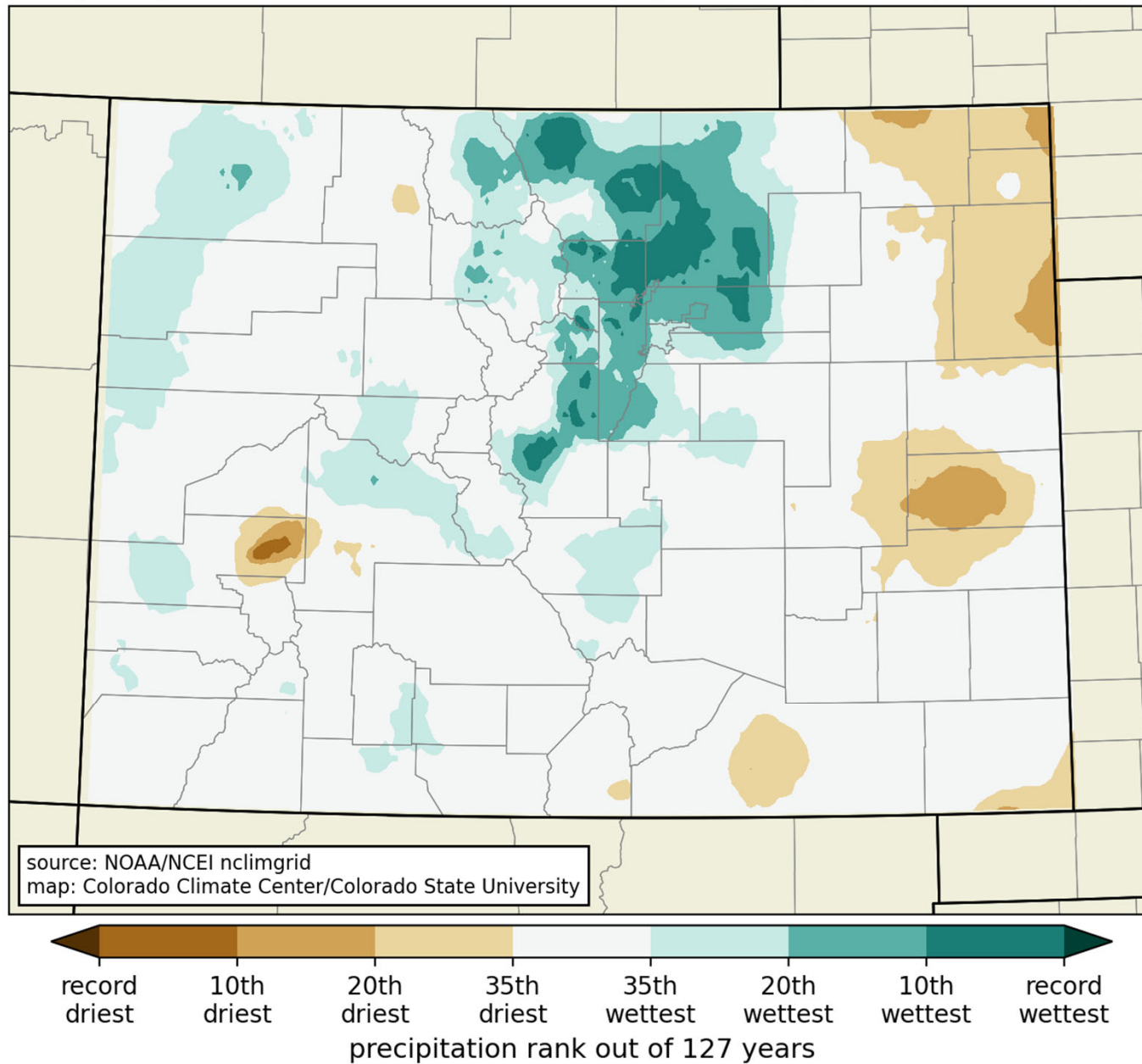


Month	P Rank (of 128 years)	Above, below, or near 20 th century avg?
Oct	62 nd driest	near avg
Nov	10 th driest	much below
Dec	13 th wettest	much above
Jan	40 th driest	below
Feb	46 th driest	near avg
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

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



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



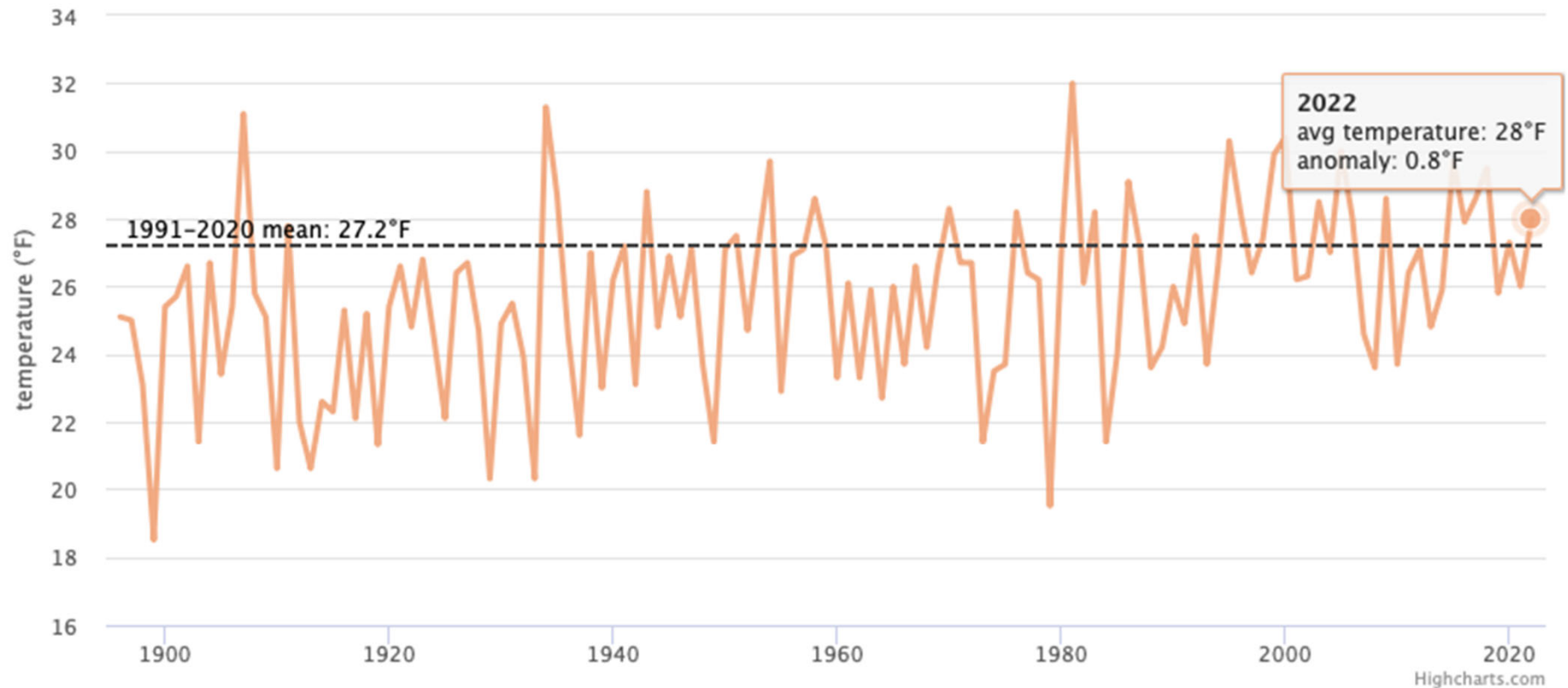
https://climate.colostate.edu/co_cag/rank_maps.html



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Colorado, Average Temperature, December–February

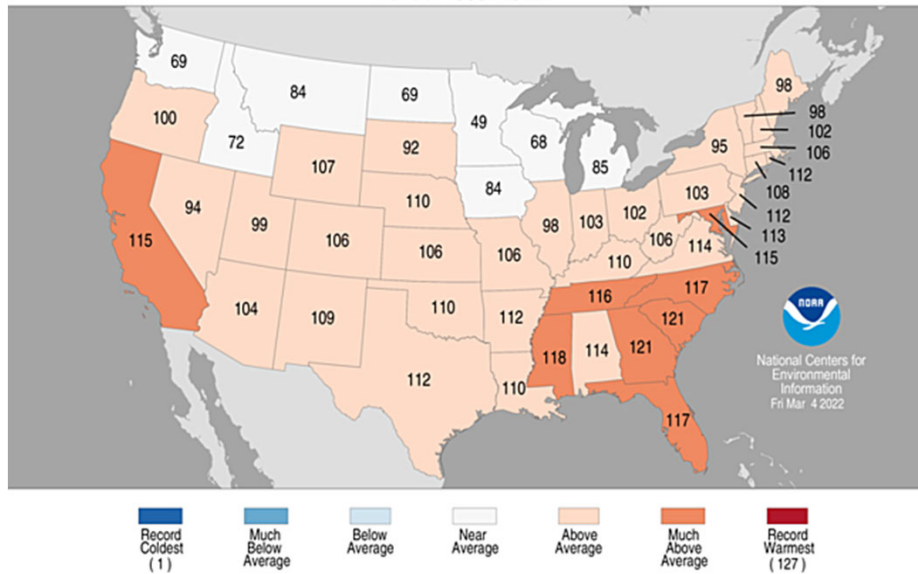


Winter 2021-22 was a little warmer than average, mostly due to the magnitude of warm anomalies from December.

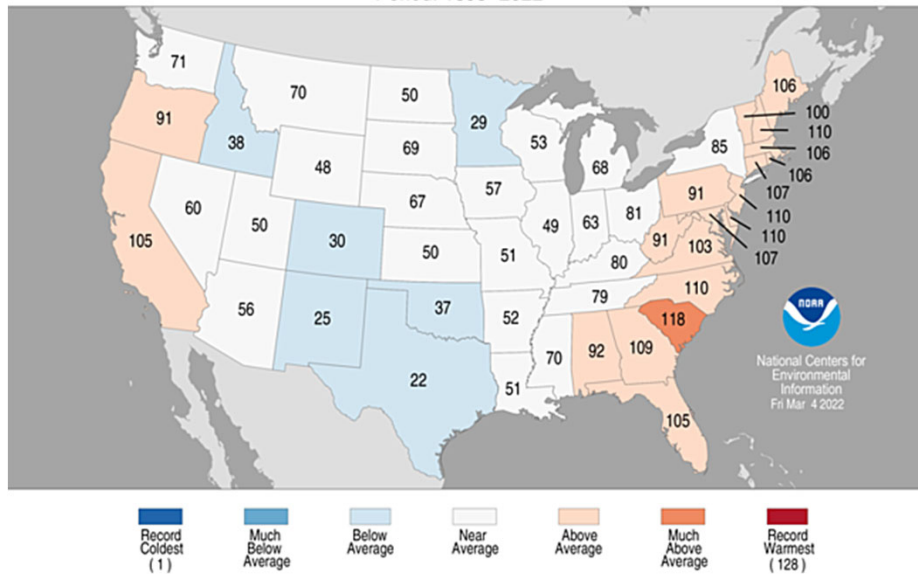
https://climate.colostate.edu/co_cag/cag_time.html



Statewide Average Temperature Ranks
December 2021 – February 2022
Period: 1895–2022



Statewide Average Temperature Ranks
February 2022
Period: 1895–2022

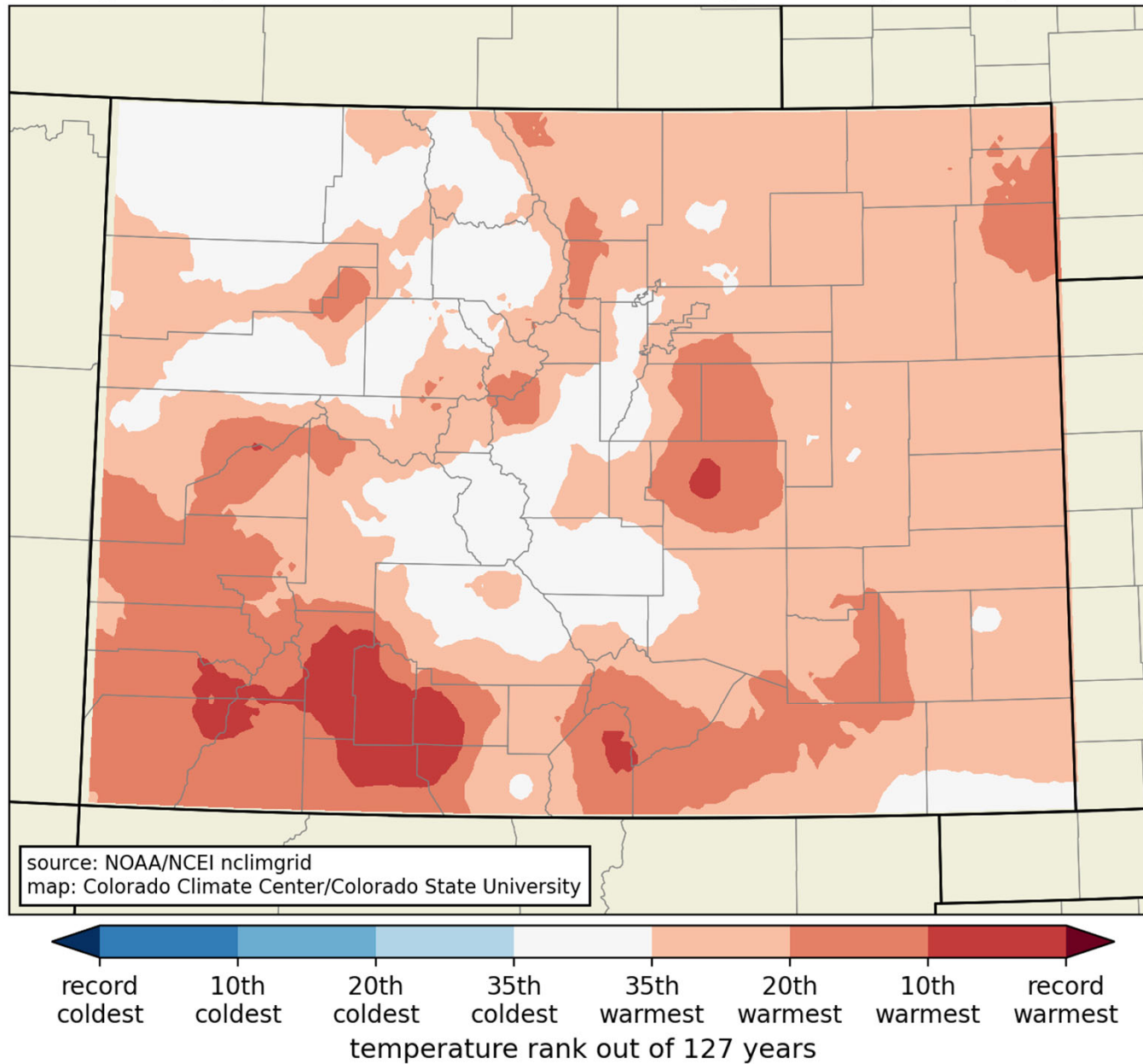


Month	T Rank (of 127 years)	Above, below, or near 20 th century avg?
Oct	41 st warmest	above
Nov	3 rd warmest	much above
Dec	2 nd warmest	much above
Jan	33 rd warmest	above
Feb	30 th coolest	below
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

<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

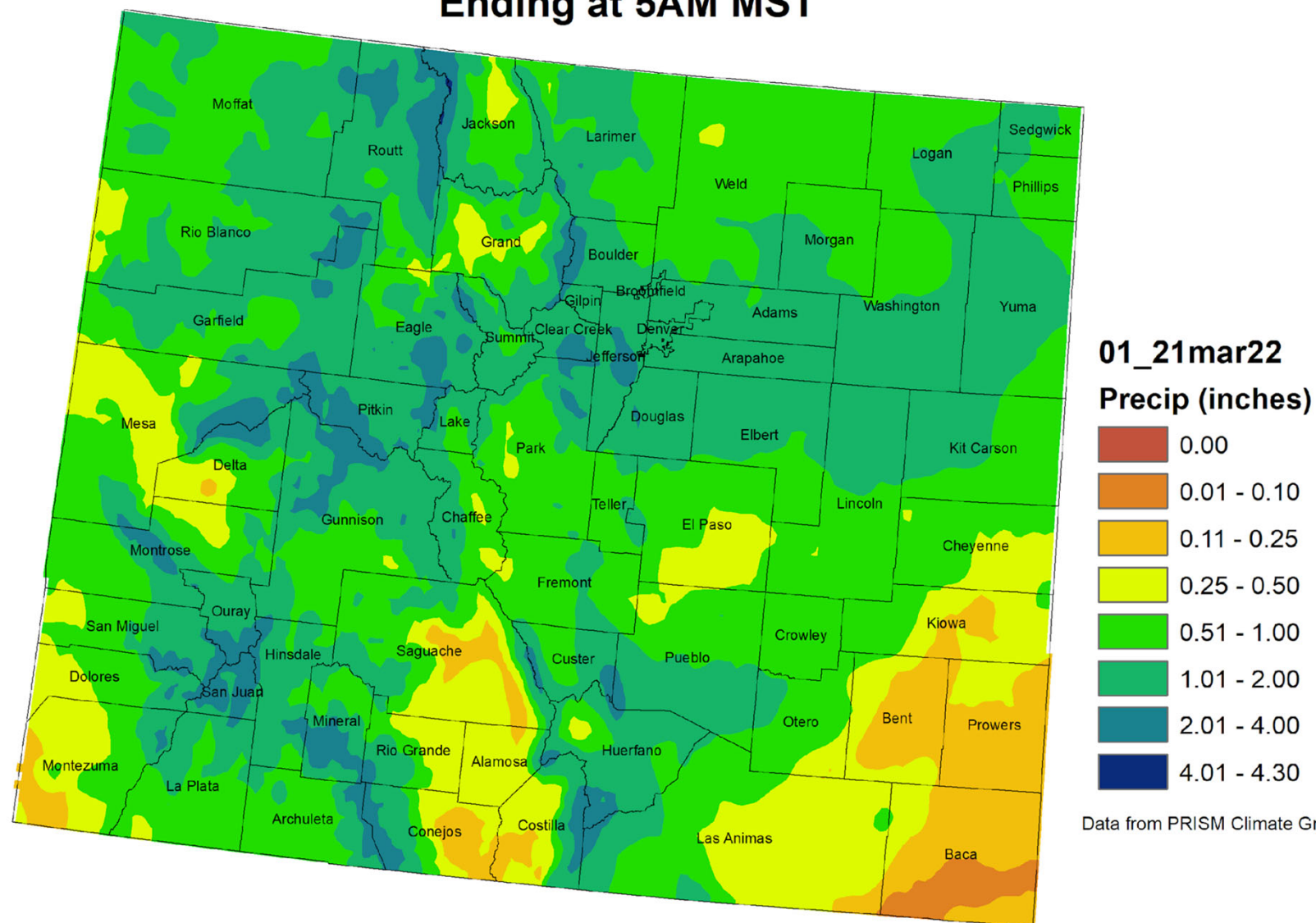
Evaporative Demand

Soil Moisture

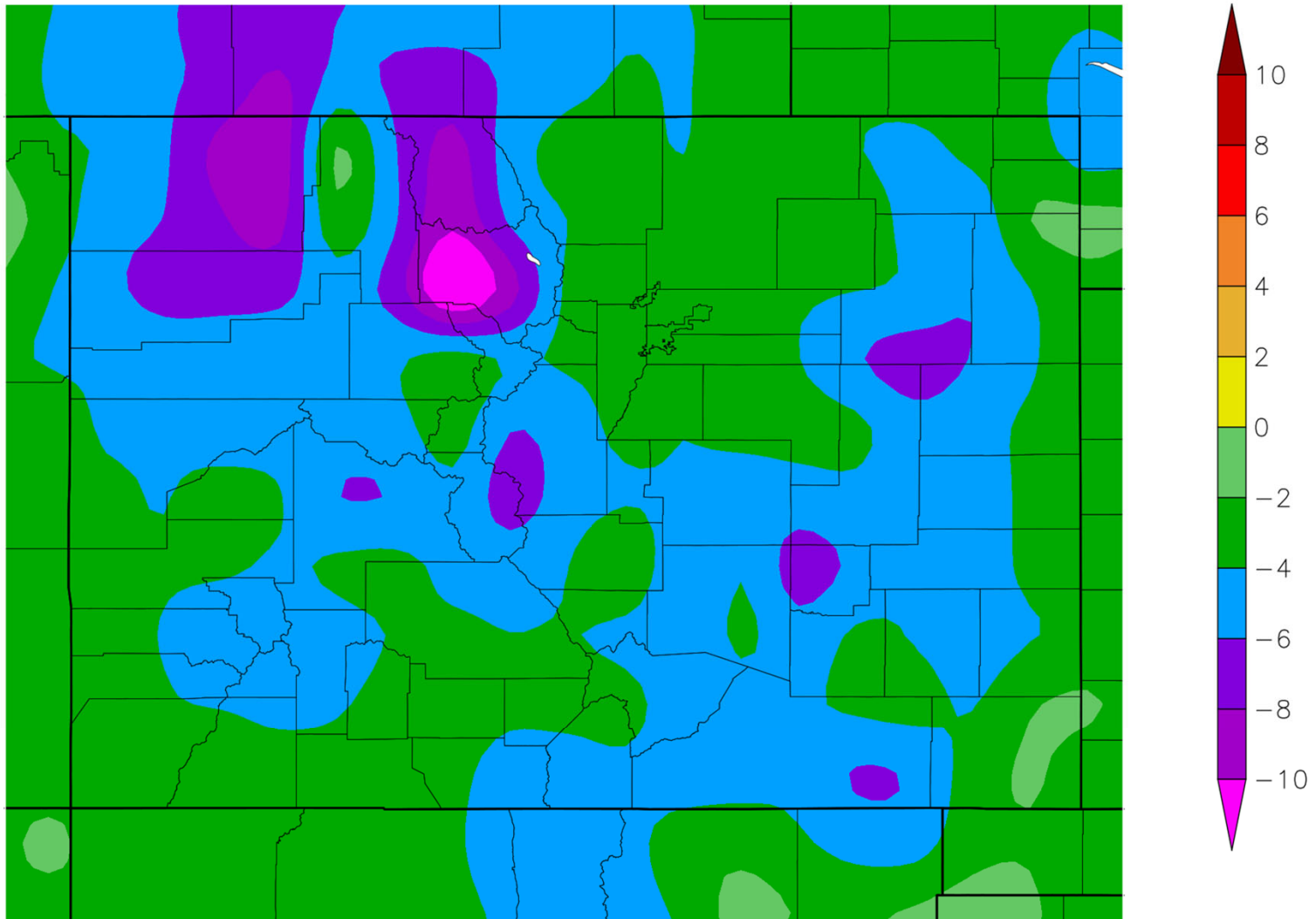
Vegetation



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



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



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

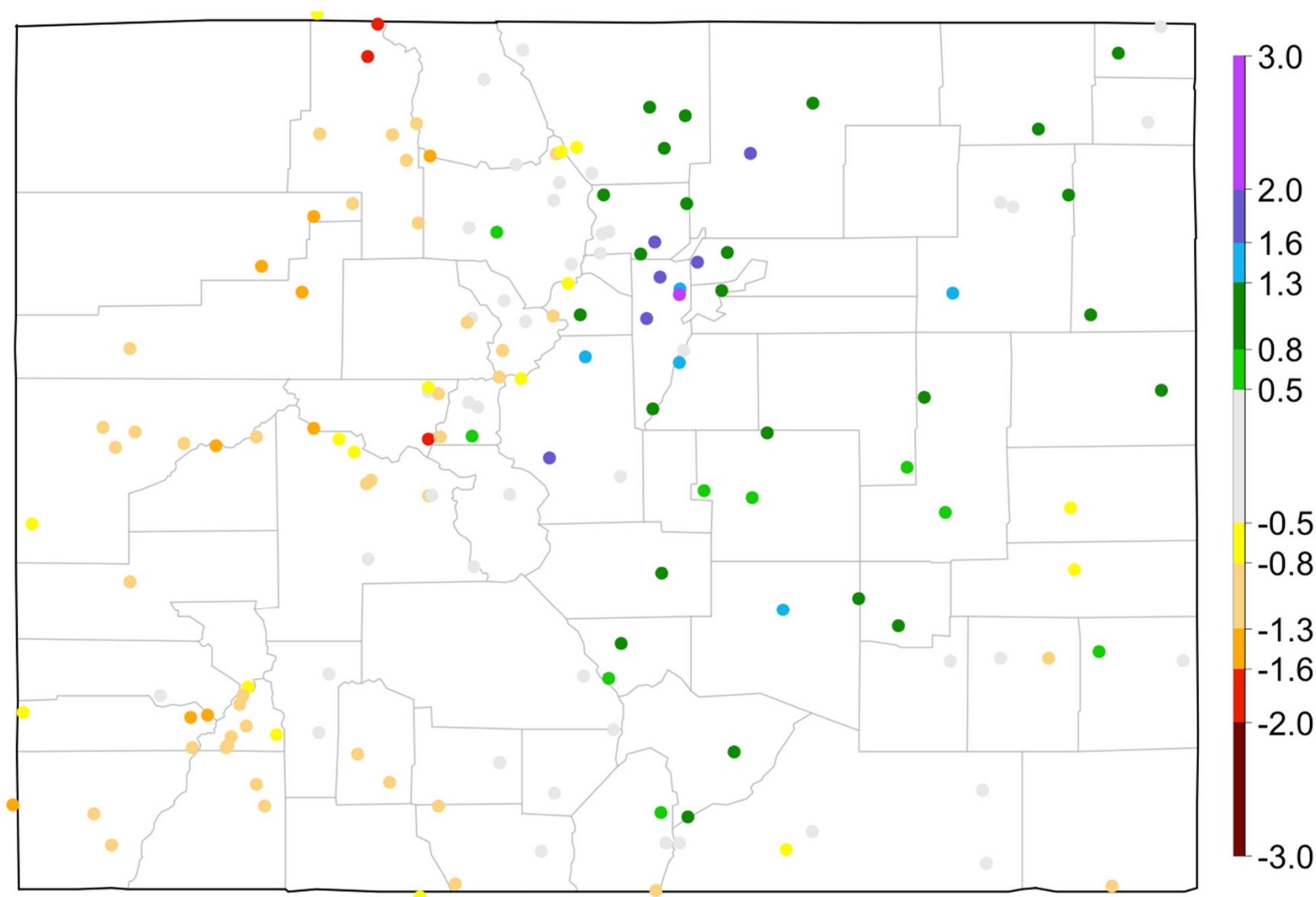
NOAA Regional Climate Centers



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



Data from High Plains Regional Climate Center and ACIS

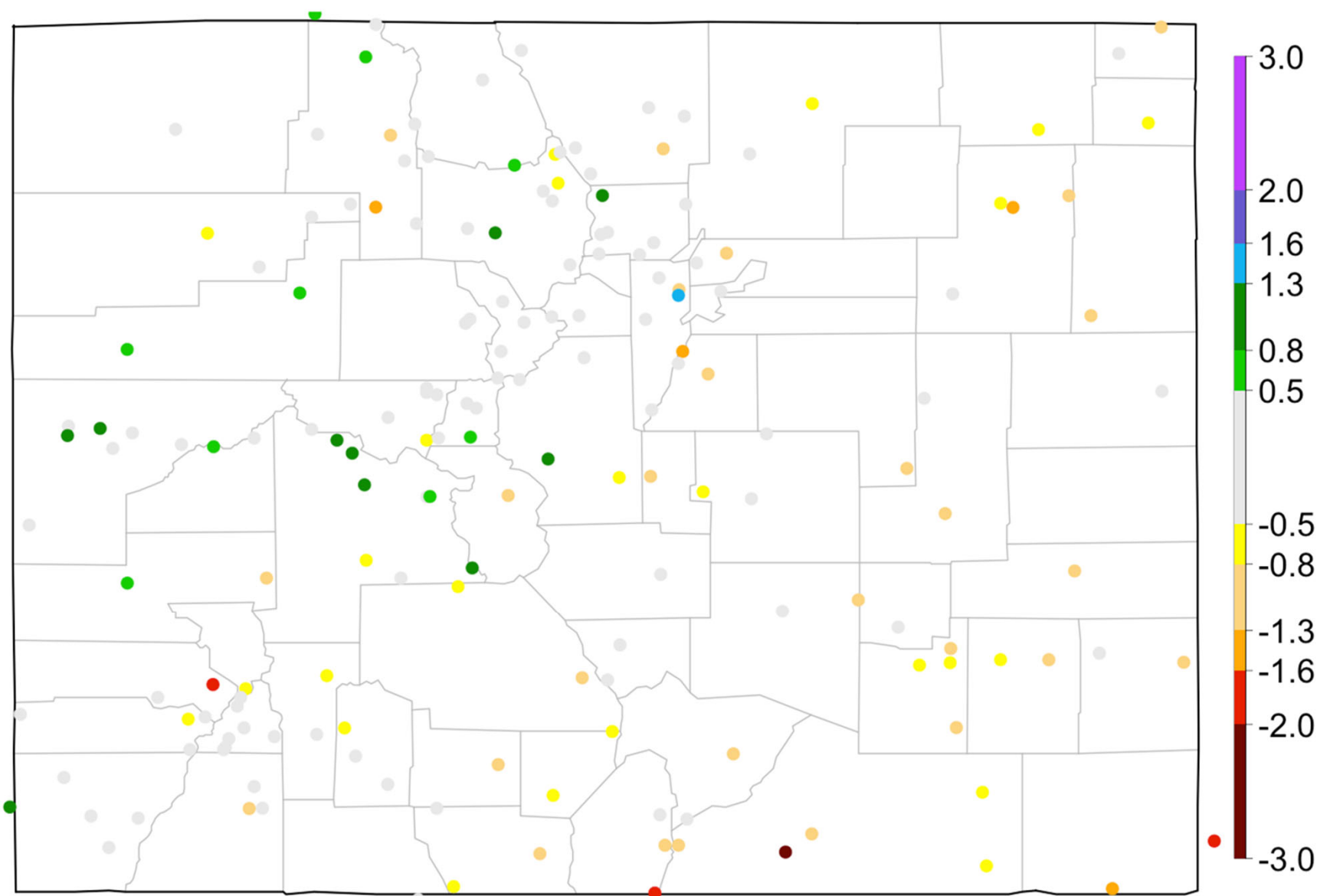
<https://climate.colostate.edu/drought/>



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



Data from High Plains Regional Climate Center and ACIS

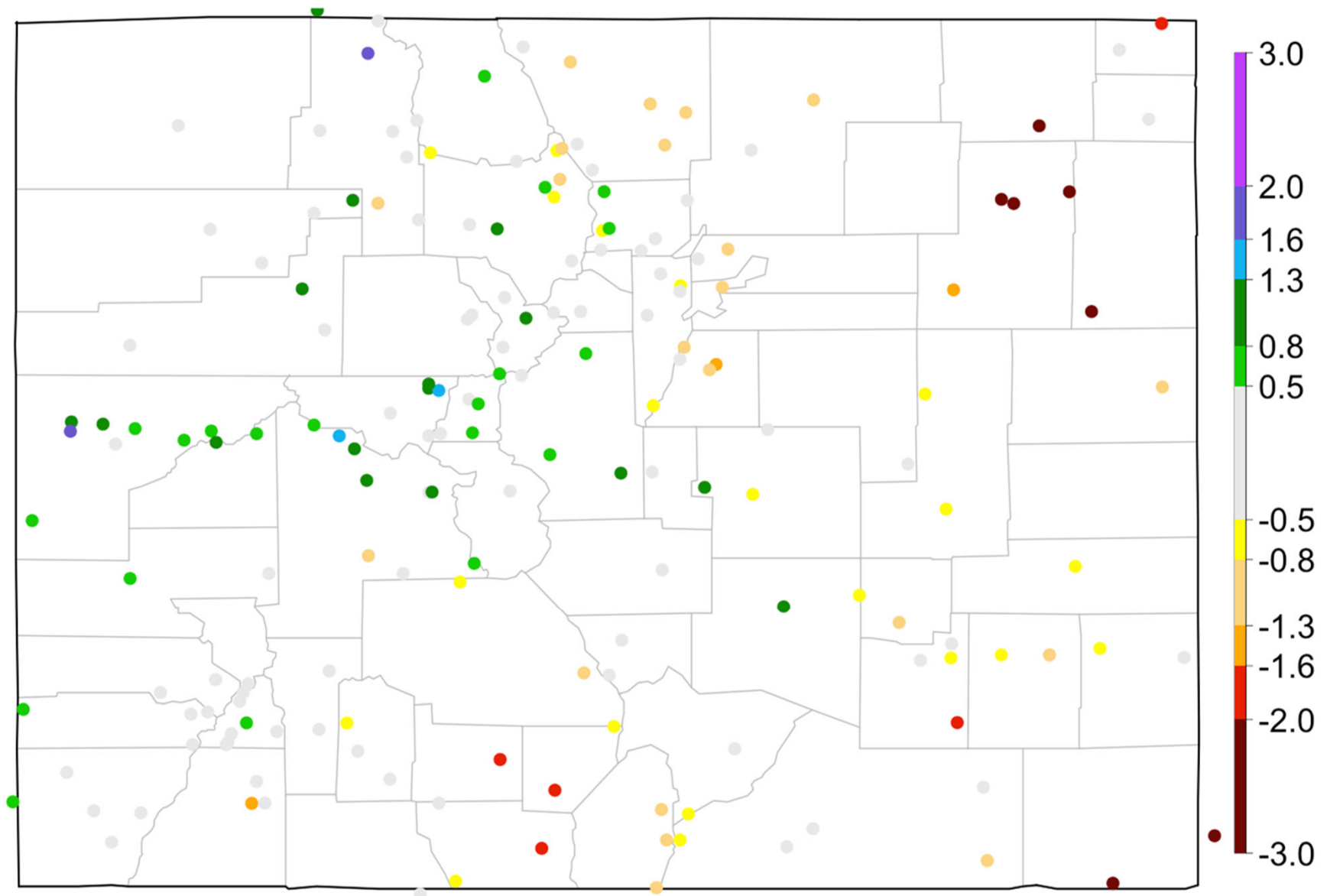
<https://climate.colostate.edu/drought/>



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



Data from High Plains Regional Climate Center and ACIS

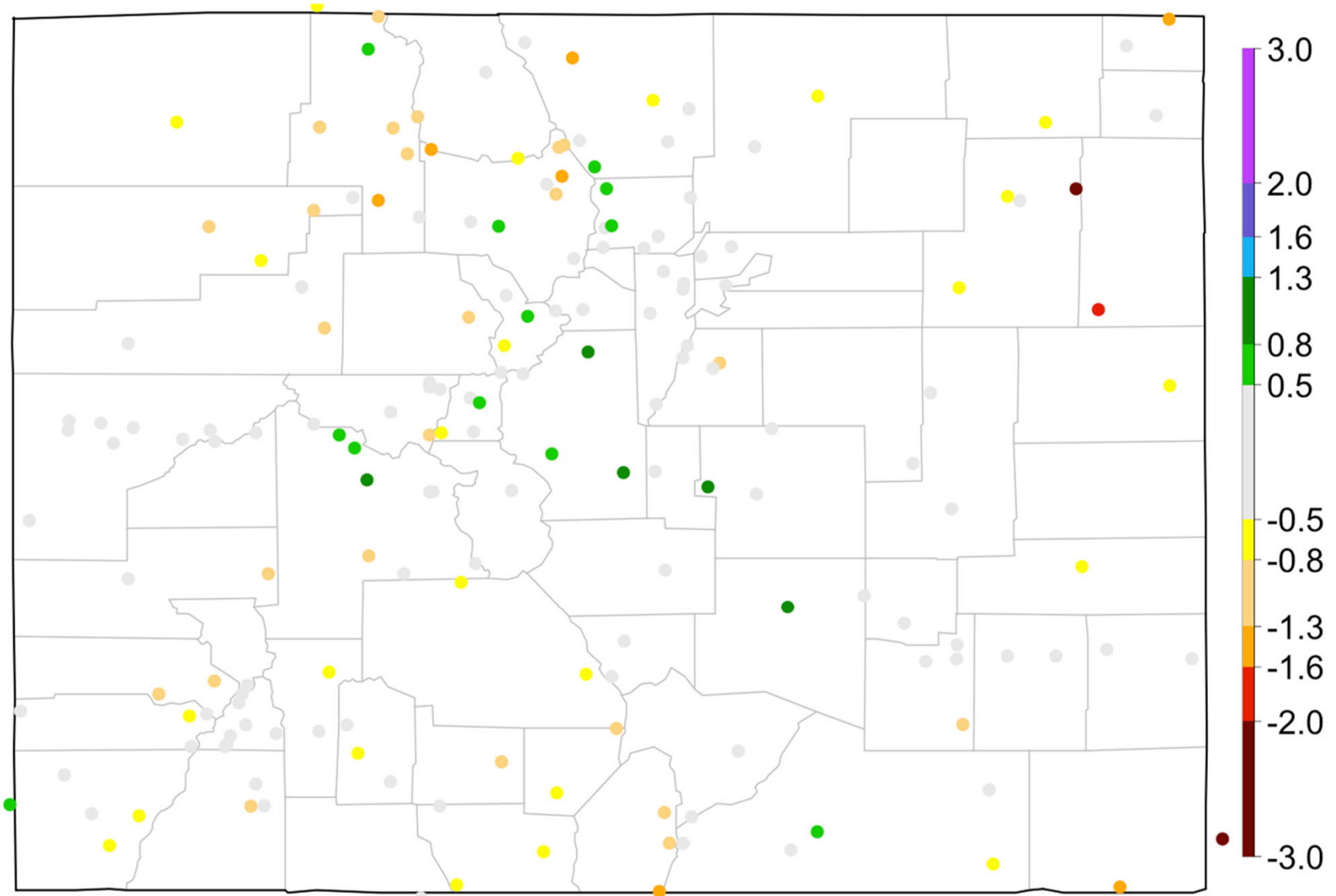
<https://climate.colostate.edu/drought/>



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



Data from High Plains Regional Climate Center and ACIS

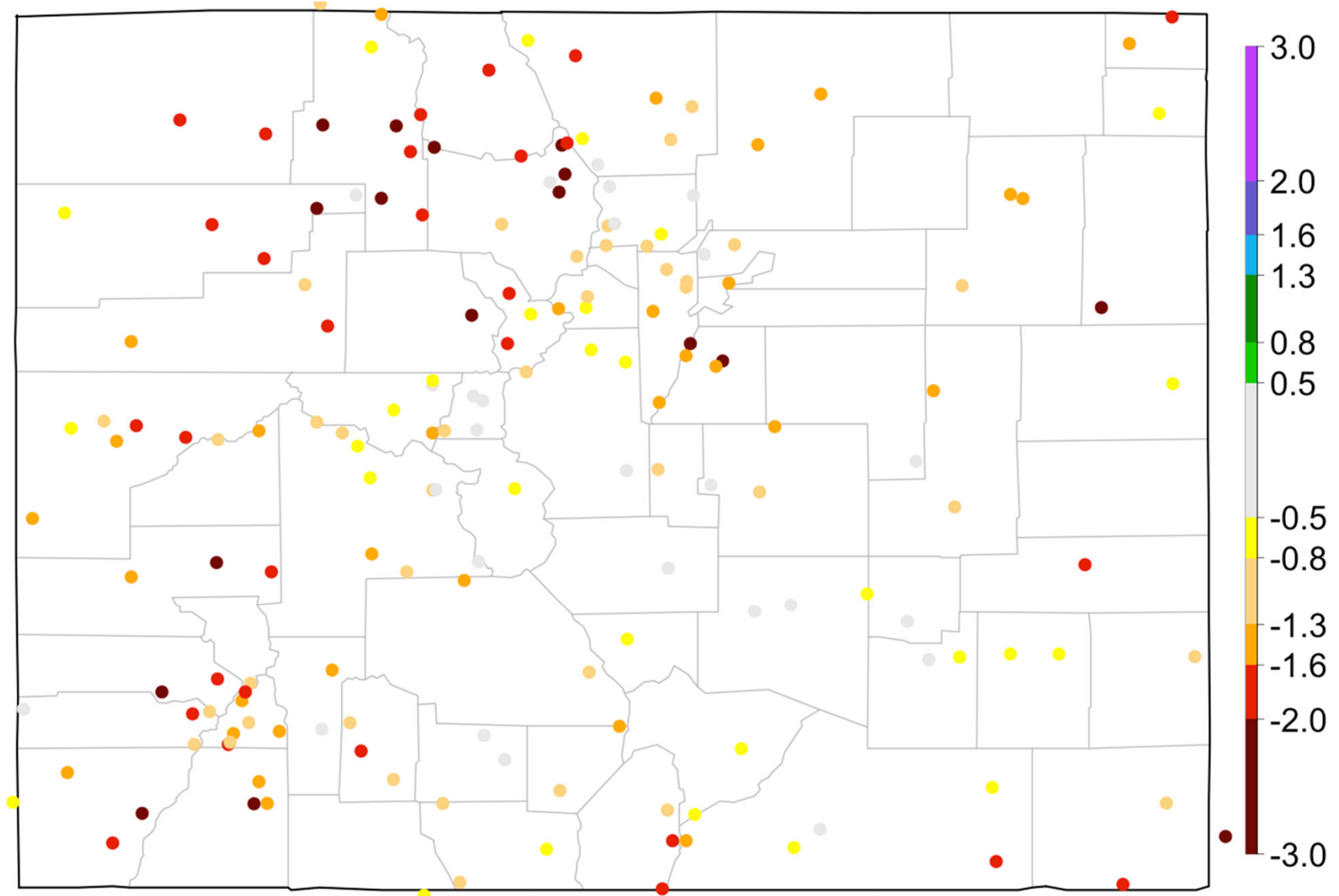
<https://climate.colostate.edu/drought/>



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



Data from High Plains Regional Climate Center and ACIS

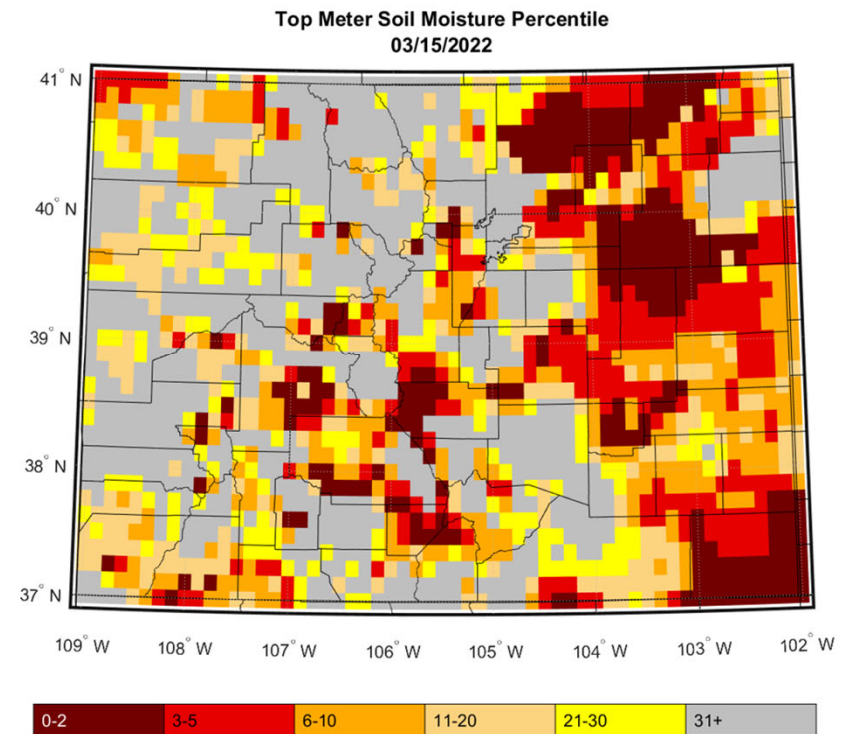
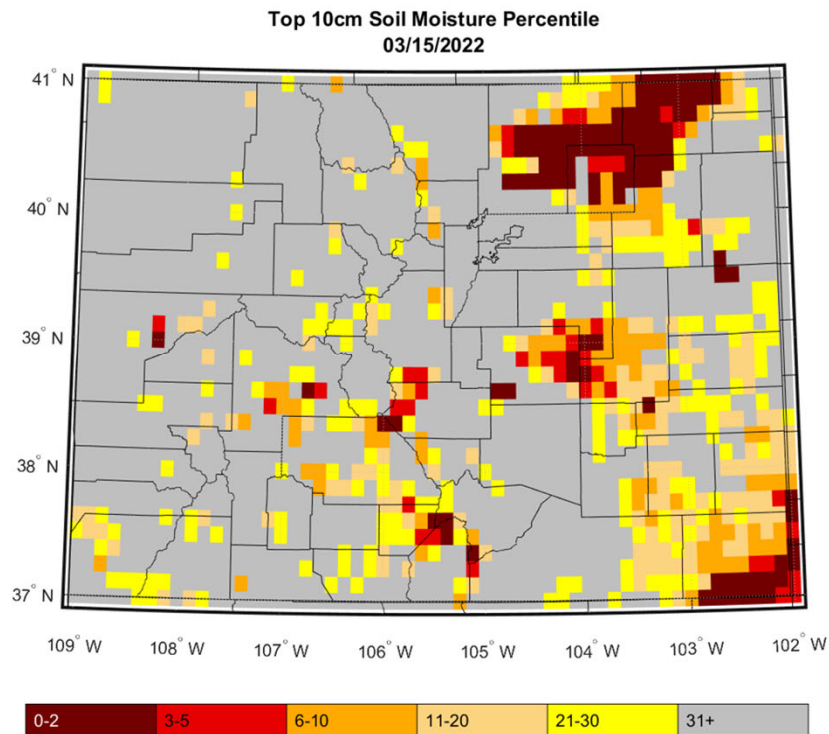
<https://climate.colostate.edu/drought/>



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Soil Moisture

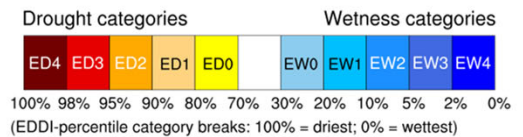
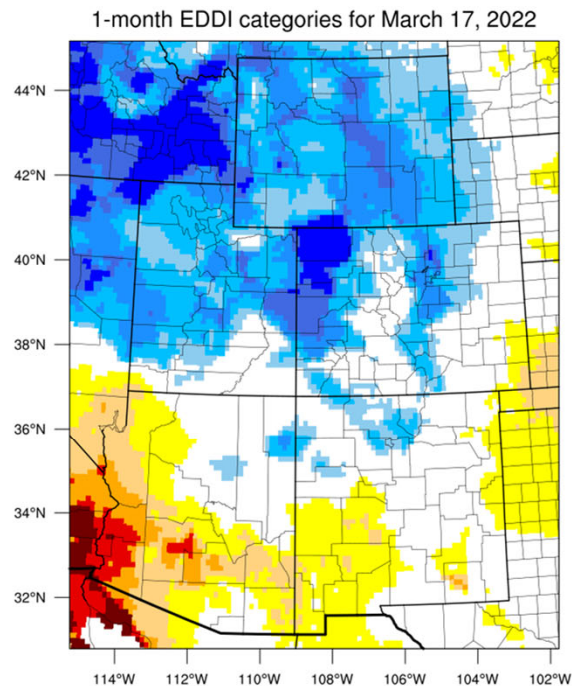


Total column soil moisture showing dryness across the Eastern Plains. This could possibly drive more warm anomalies in the spring and summer, inhibit precipitation with more dry air being fluxed into the atmosphere.

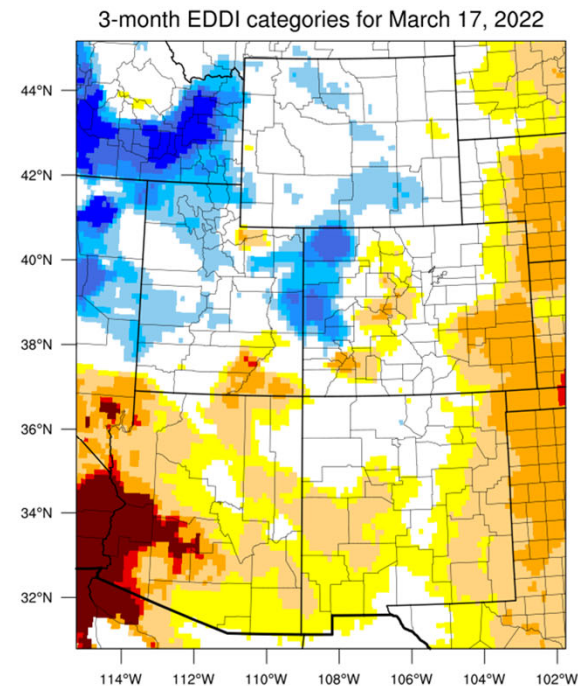
<https://climate.colostate.edu/drought>



Evaporative Demand



Generated by NOAA/ESRL/Physical Sciences Laboratory



Generated by NOAA/ESRL/Physical Sciences Laboratory

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/>



Drought

National Drought

Colorado Drought

Some Drought Facts

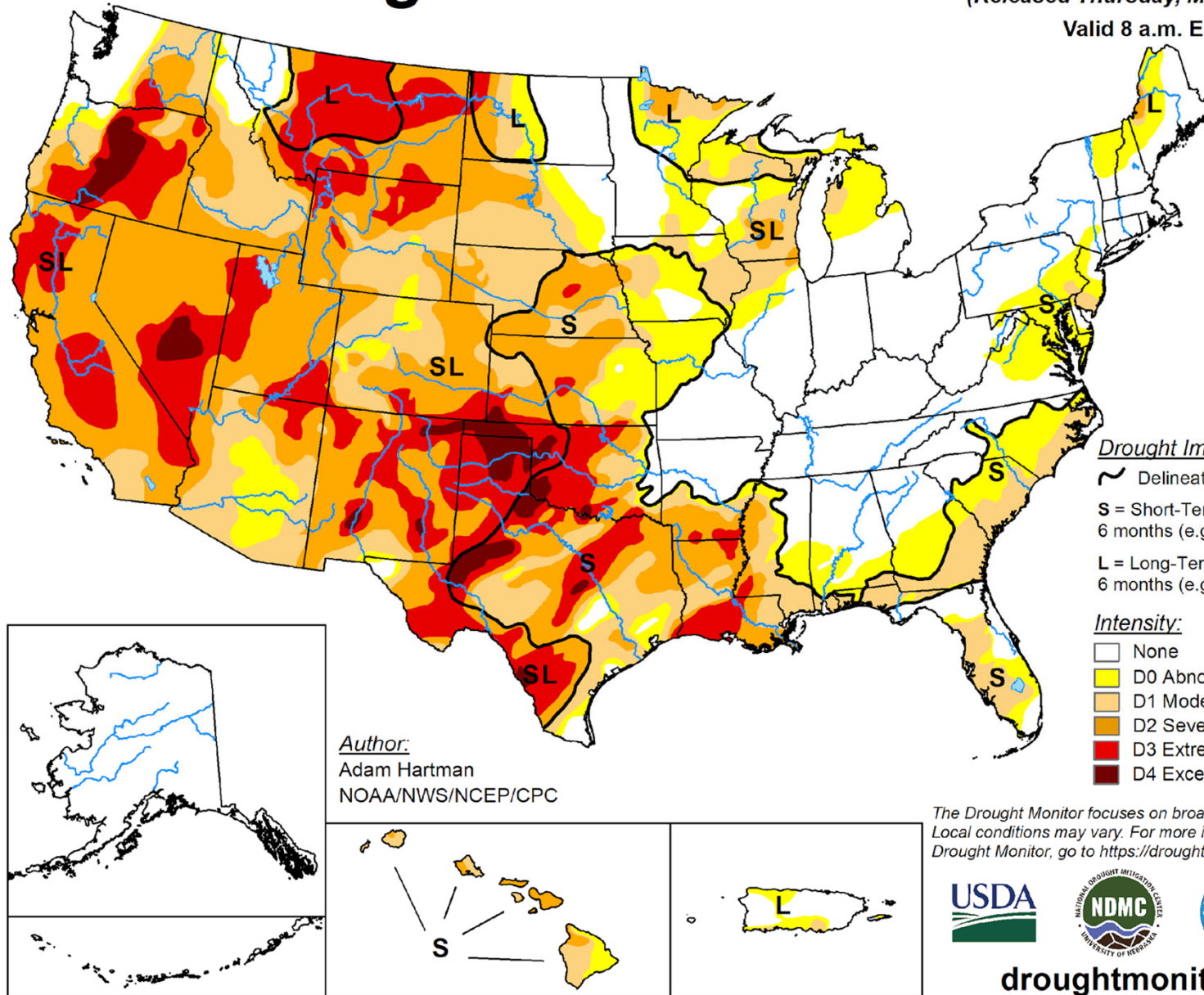


U.S. Drought Monitor

March 15, 2022

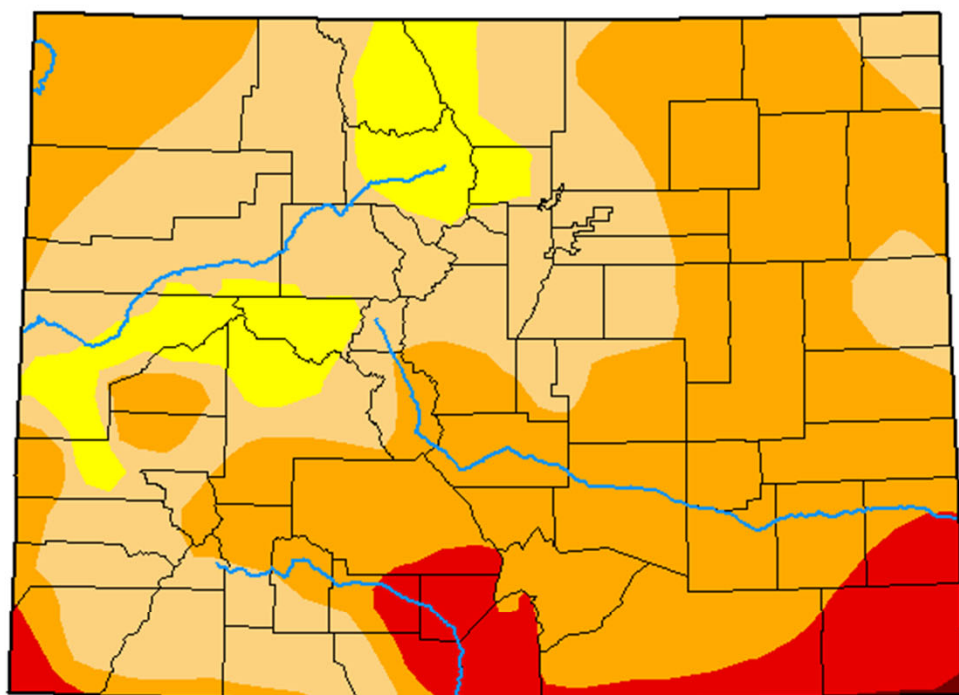
(Released Thursday, Mar. 17, 2022)

Valid 8 a.m. EDT



U.S. Drought Monitor Colorado

March 15, 2022
(Released Thursday, Mar. 17, 2022)
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	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:

Adam Hartman
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

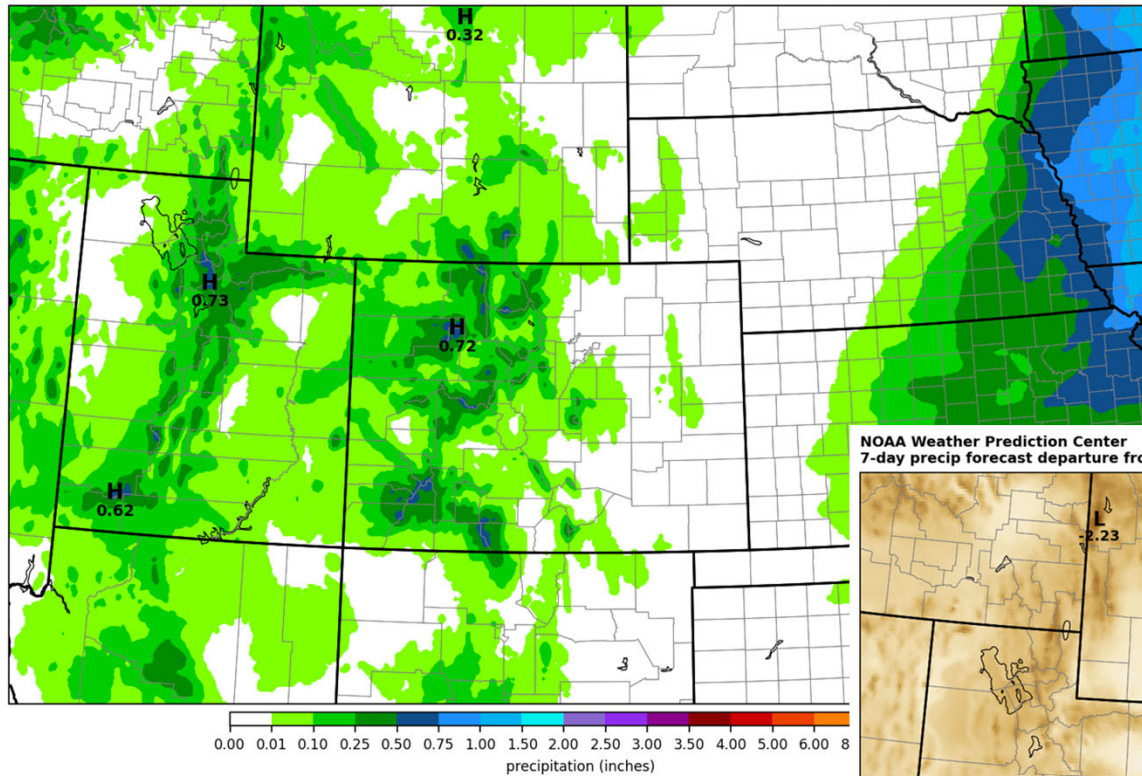
CPC Outlooks

La Niña

NOAA 7-day precip forecast

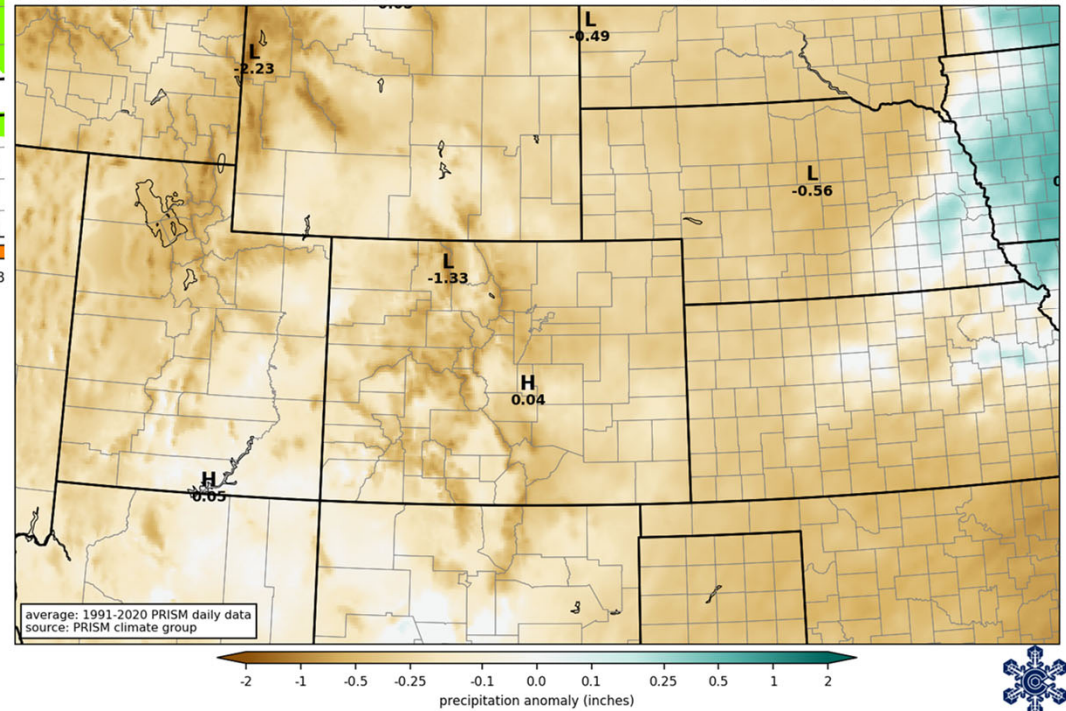
NOAA Weather Prediction Center
7-day precipitation forecast

forecast issued 1200 UTC Tue 22 Mar 2022
precipitation in 168 hrs ending 1200 UTC Tue 29 Mar 2022



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

forecast issued 1200 UTC Tue 22 Mar 2022
precipitation in 168 hrs ending 1200 UTC Tue 29 Mar 2022

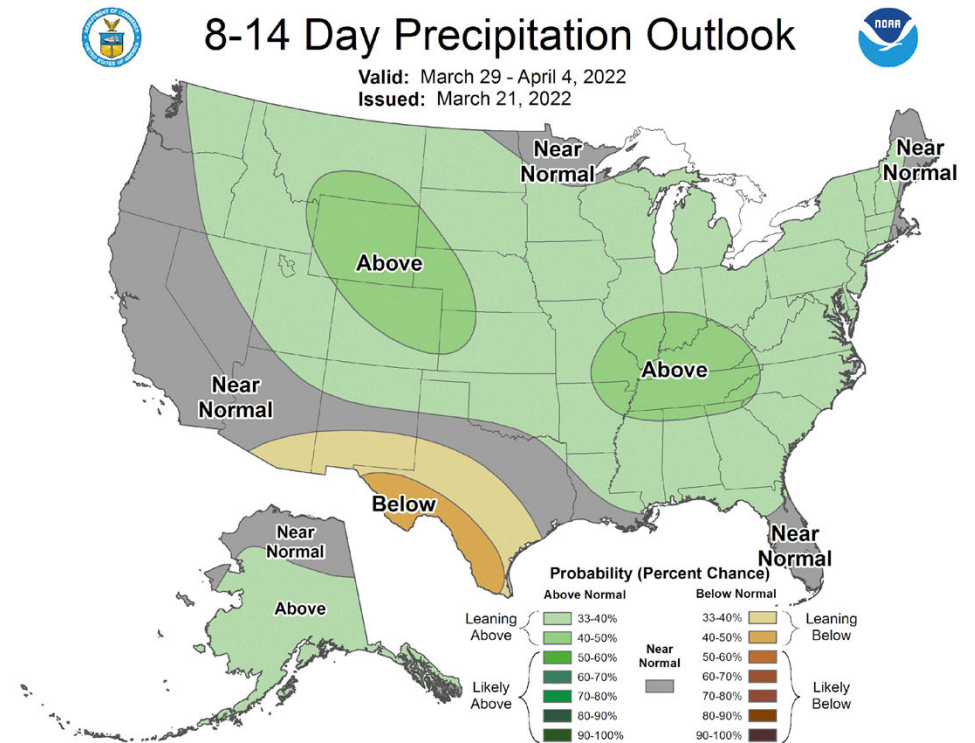
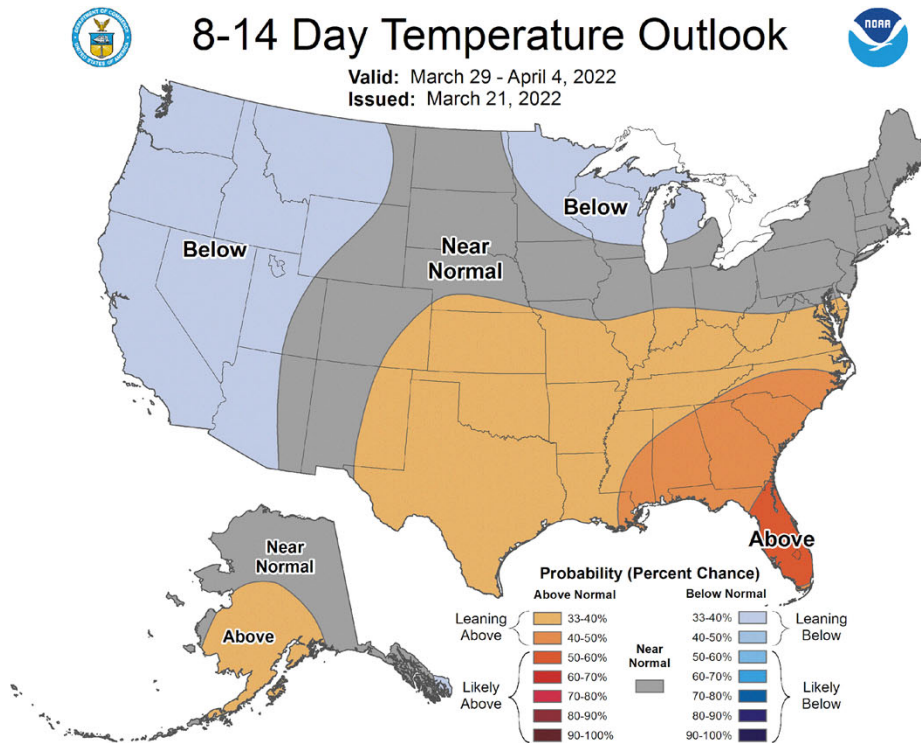


<http://schumacher.atmos.colostate.edu/weather/>

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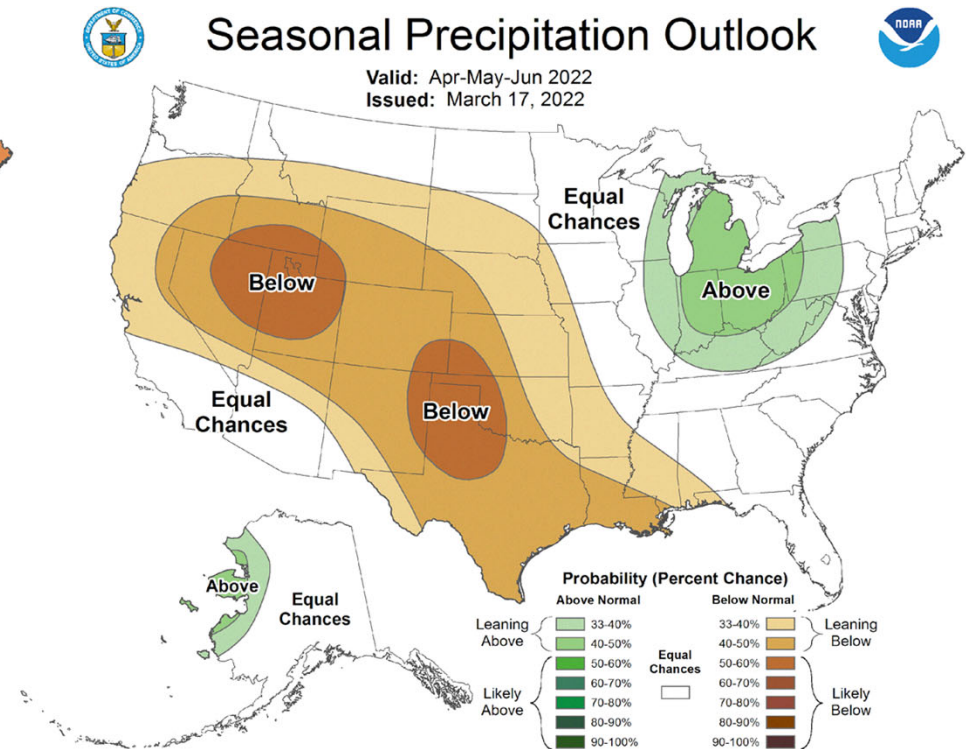
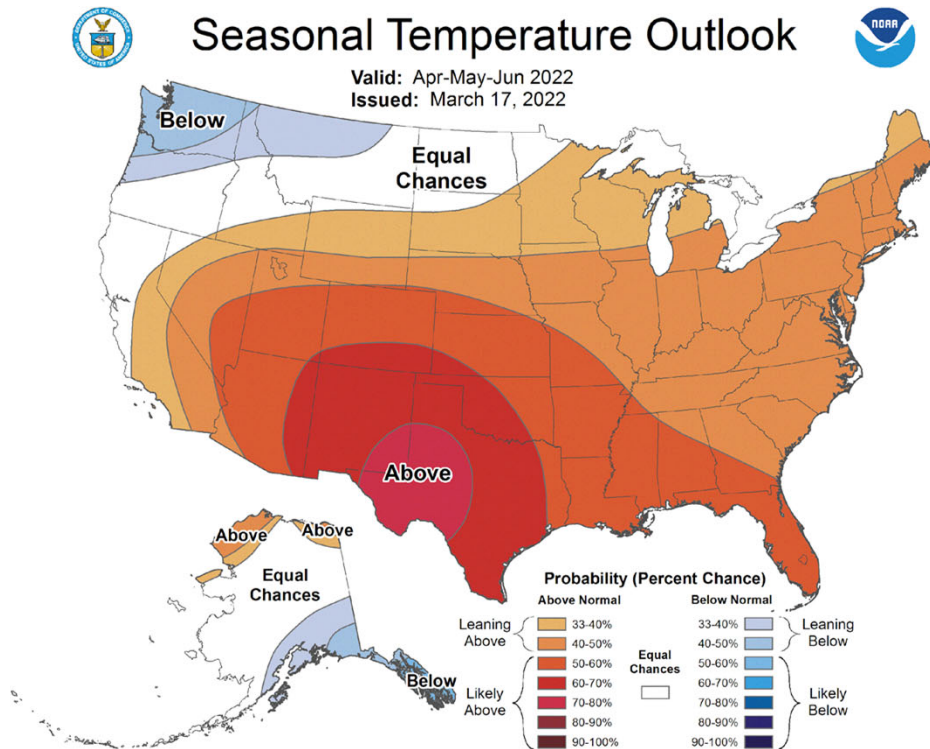


8-14 day outlook

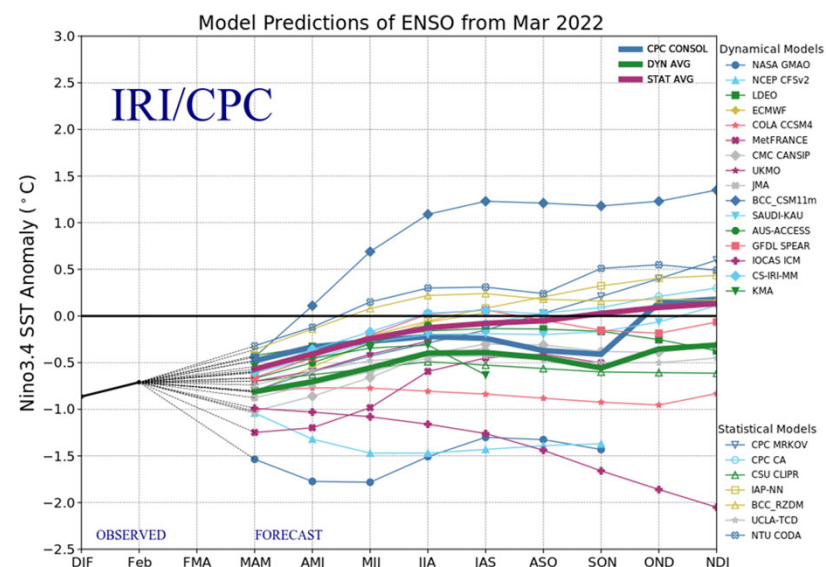
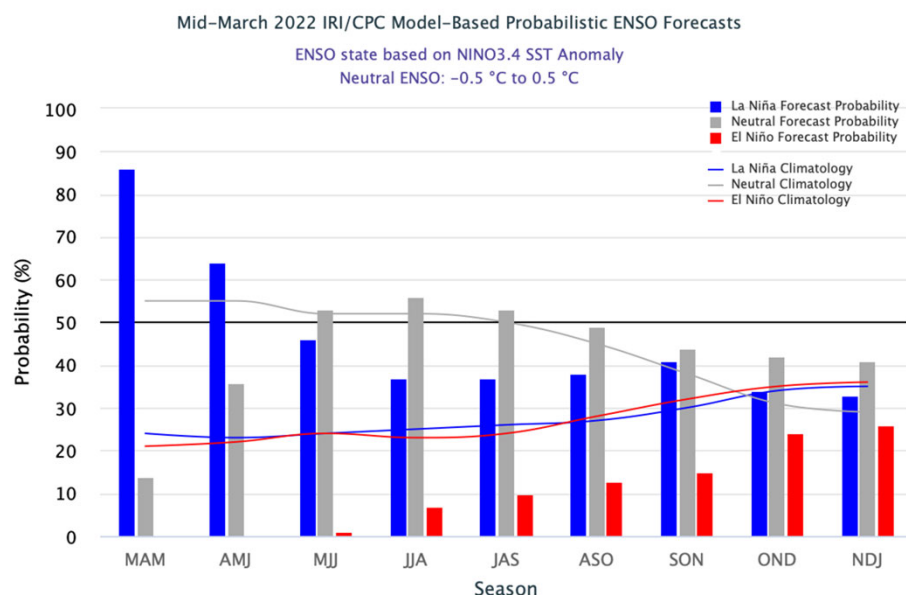


Seasonal outlook

<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).

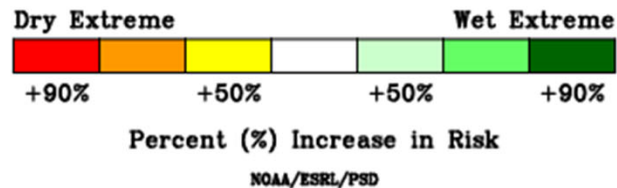
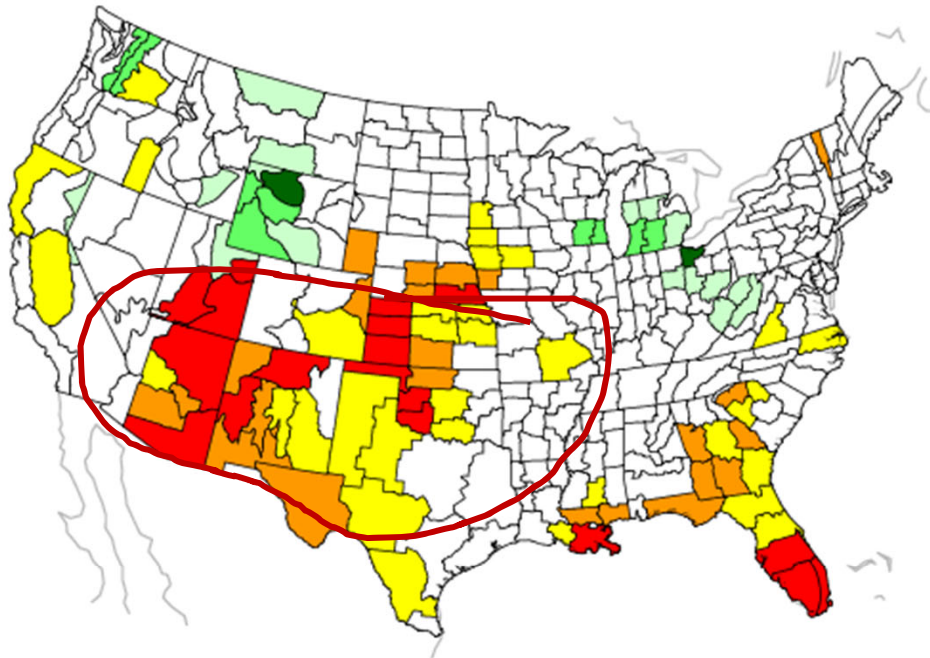
<https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>



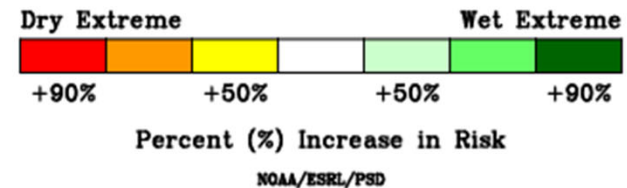
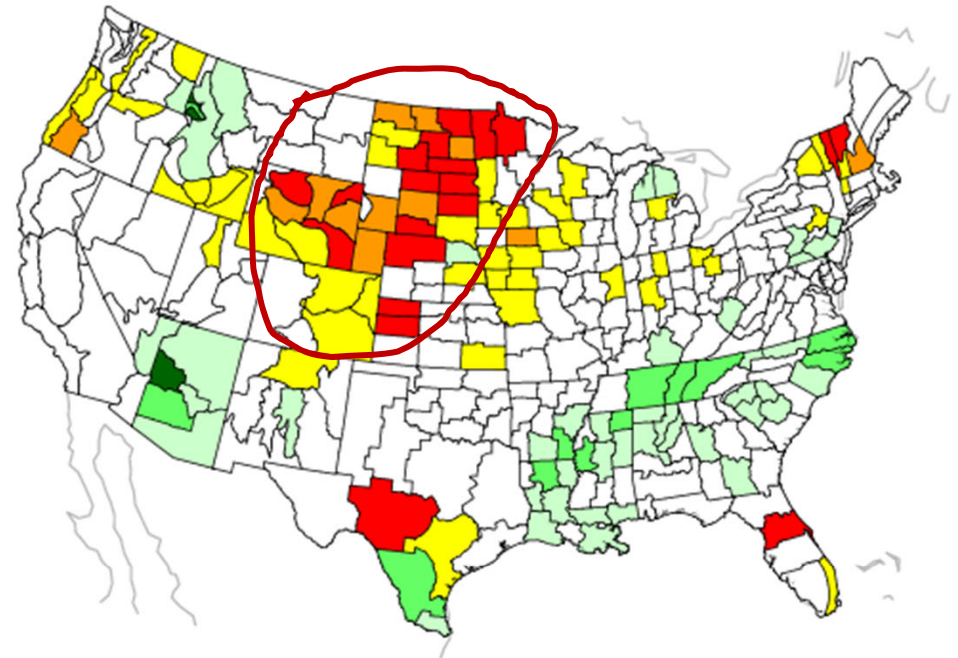


What does La Niña mean for
spring and summer?

MAM Precipitation During La Nina
Increased Risk of Wet or Dry Extremes



JJA Precipitation During La Nina
Increased Risk of Wet or Dry Extremes



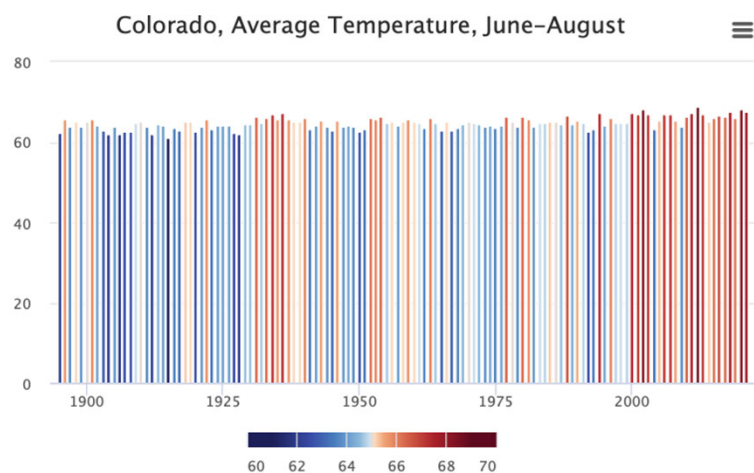
Risk of extremes during a La Niña, from <https://psl.noaa.gov/enso/climaterisks/>

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

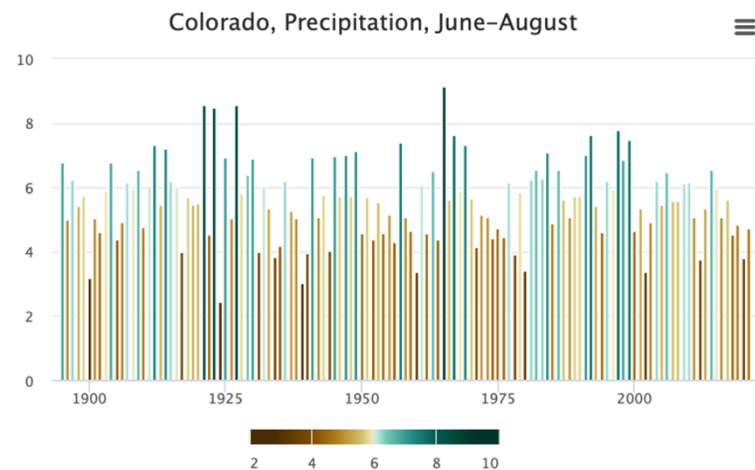


So, what *is* more likely to
impact our summer pattern?

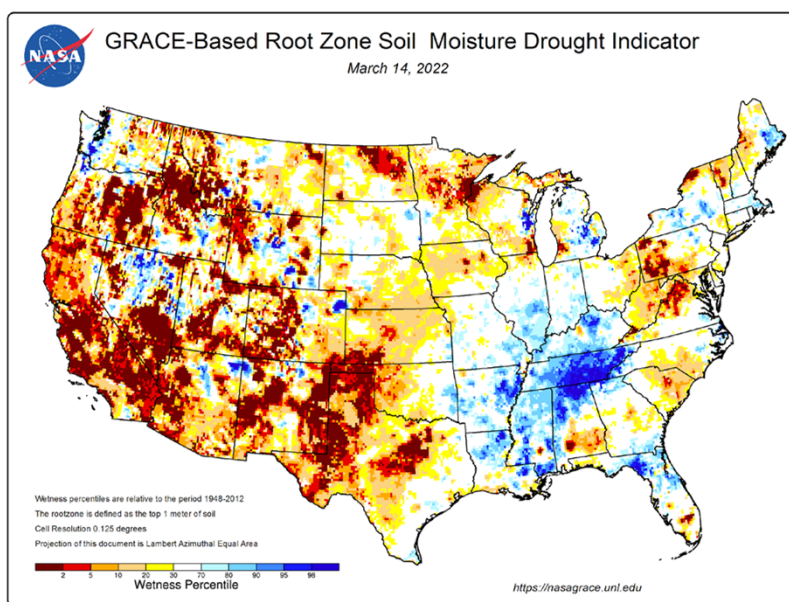




Our warming climate



A generally drier pattern



Antecedent soil moisture conditions could be a big player

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 @ClimateBecky

climate.colostate.edu

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

Thank you



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COLORADO STATE UNIVERSITY