Colorado Climate Update

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Assistant State Climatologist

Water Availability Task Force

January 18, 2023

COLORADO CLIMATE CENTER

ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

COLORADO CLIMATE CENTER

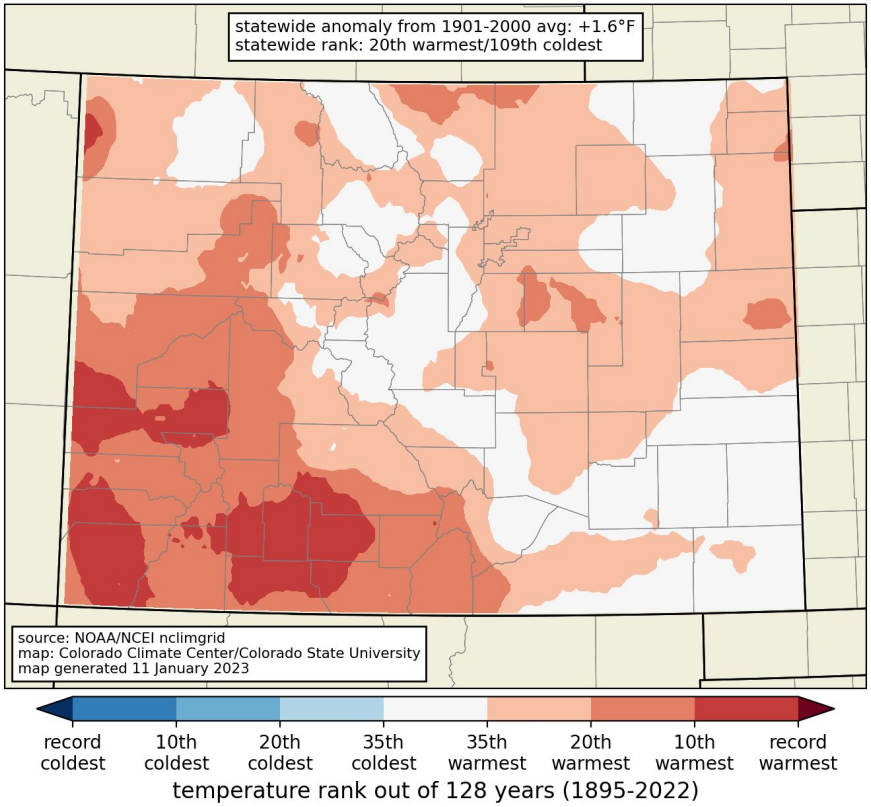
2022 Calendar year

WY2023 to date

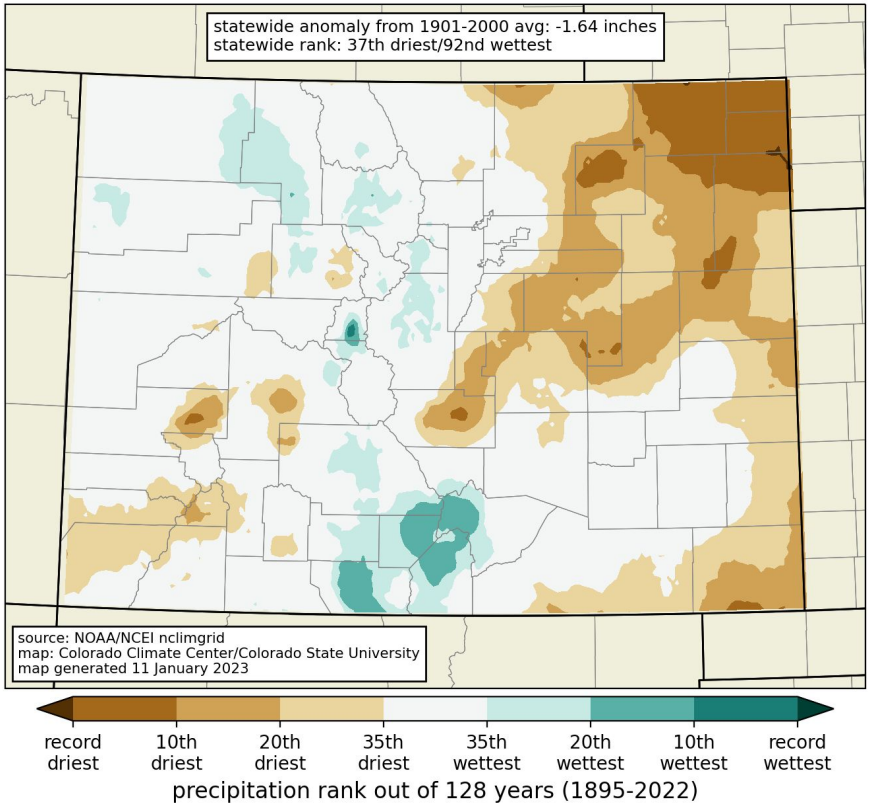
Current Conditions

Temperature and precipitation in 2022

average temperature rank: 12 months ending December 2022 (Jan-Dec)

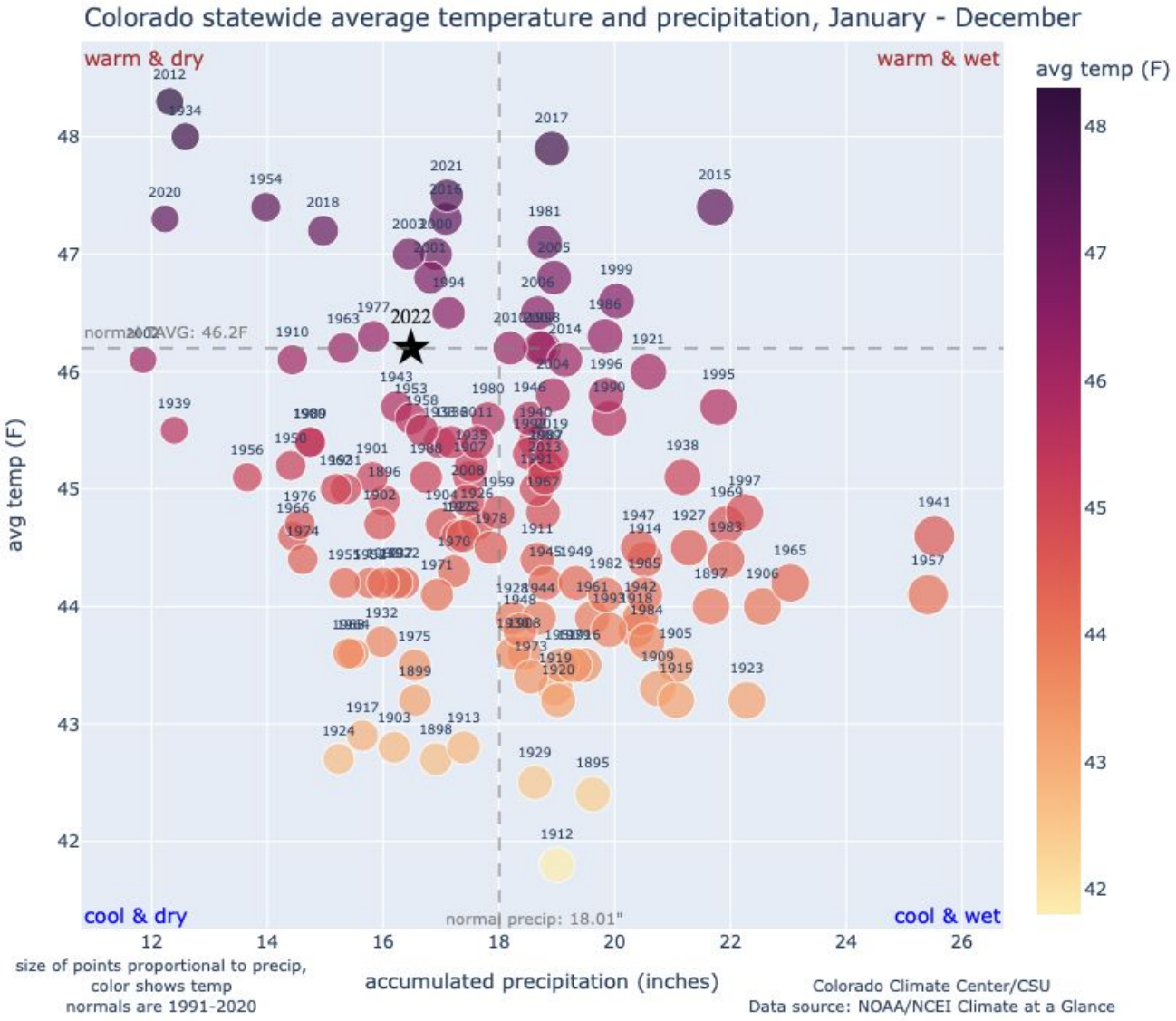


precipitation rank: 12 months ending December 2022 (Jan-Dec)

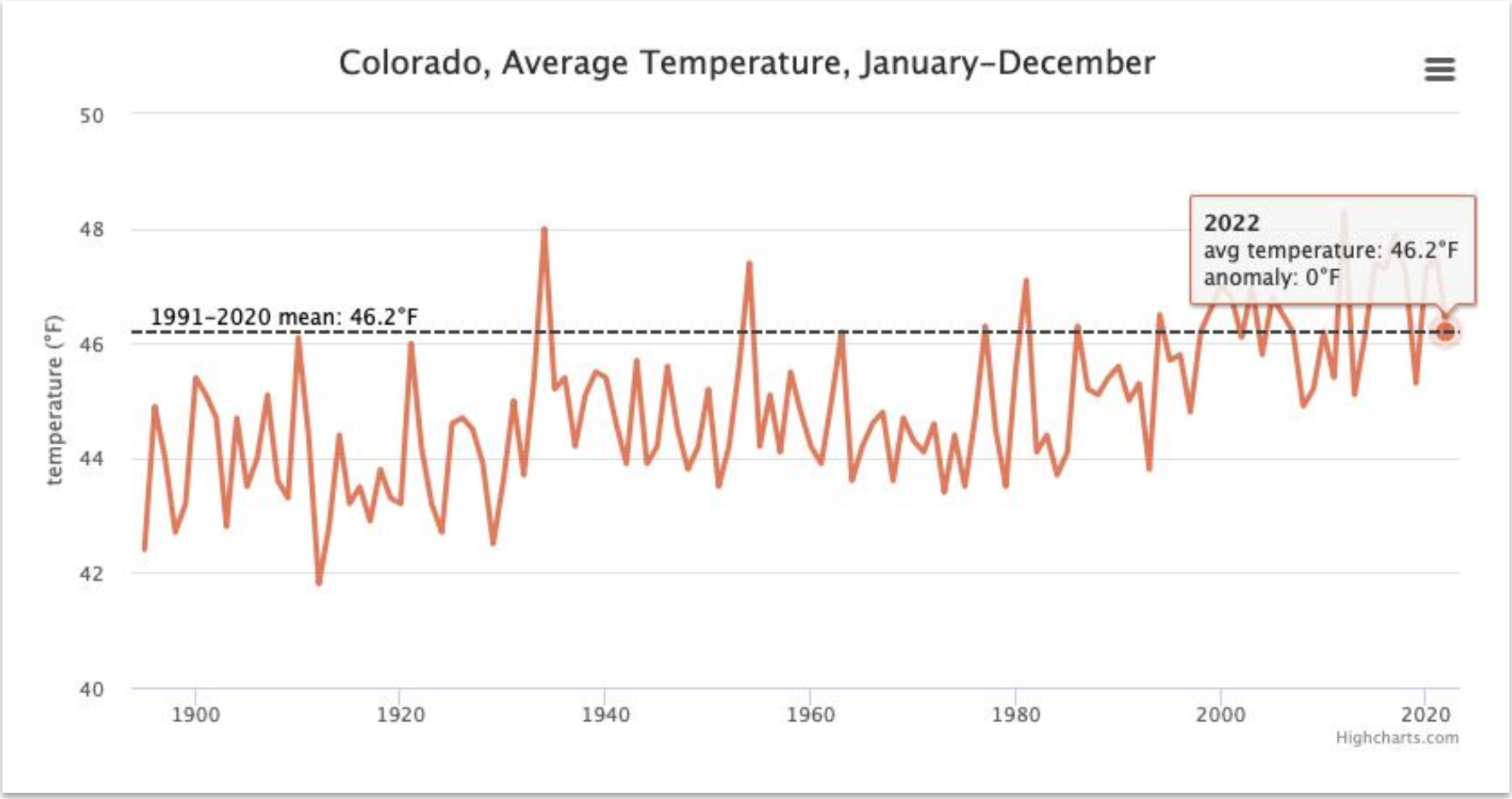


20th warmest and 37th driest year in the 128-year record.

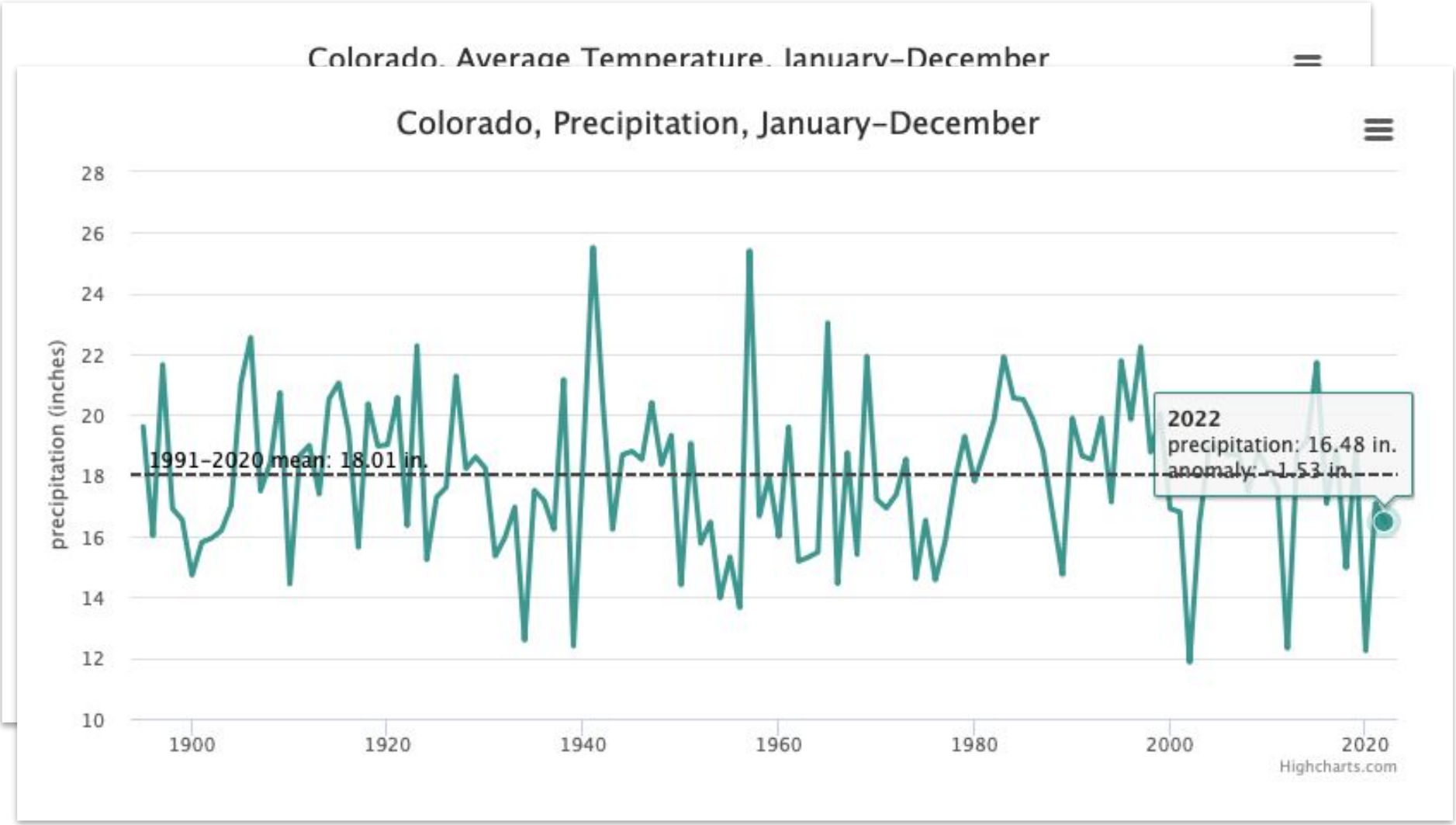
Temperature and precipitation in 2022



Temperature and precipitation in 2022

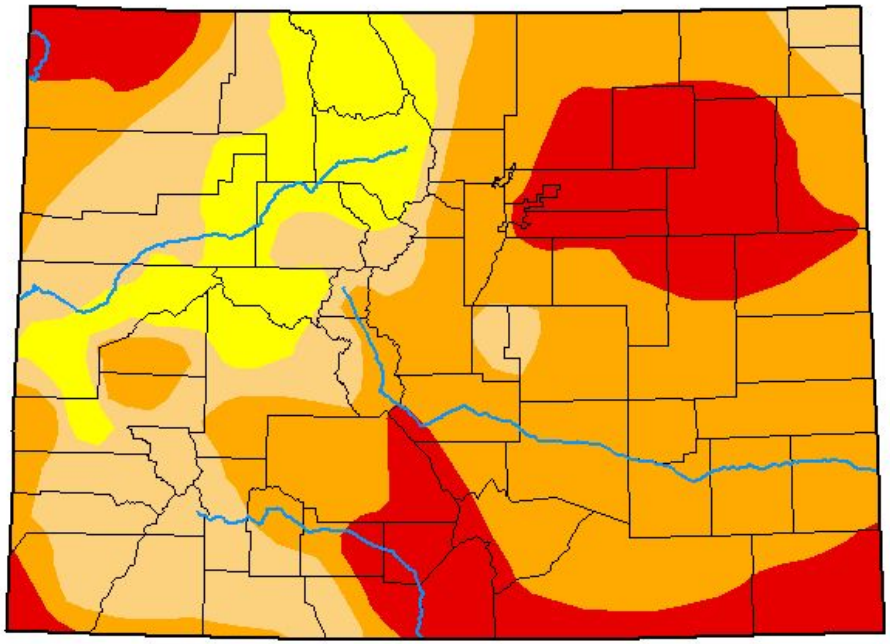


Temperature and precipitation in 2022



Evolution of drought through 2022

U.S. Drought Monitor
Colorado



January 25, 2022
(Released Thursday, Jan. 27, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	88.32	65.93	20.68	0.00
Last Week 01-18-2022	0.00	100.00	88.32	65.93	19.70	0.00
3 Months Ago 10-26-2021	4.44	95.56	74.89	29.73	11.13	1.95
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 01-26-2021	0.00	100.00	100.00	90.65	73.11	24.91

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

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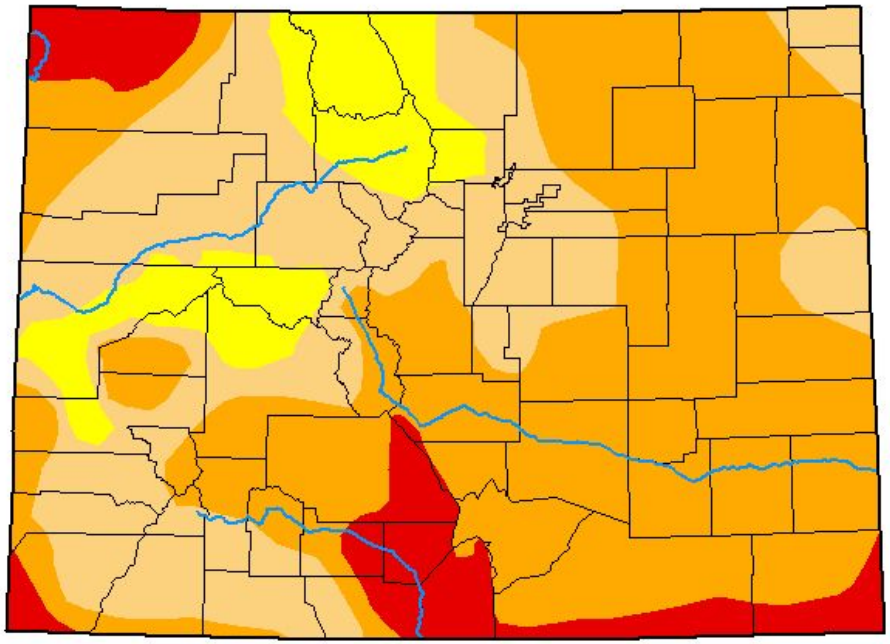
droughtmonitor.unl.edu

U.S. Drought Monitor
Colorado



February 22, 2022
(Released Thursday, Feb. 24, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	90.41	58.82	8.55	0.00
Last Week *02-15-2022*	0.00	100.00	90.41	59.81	8.55	0.00
3 Months Ago *11-23-2021*	0.00	100.00	88.10	40.83	8.75	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 *02-23-2021*	0.00	100.00	98.57	88.76	56.93	15.89

Intensity:

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

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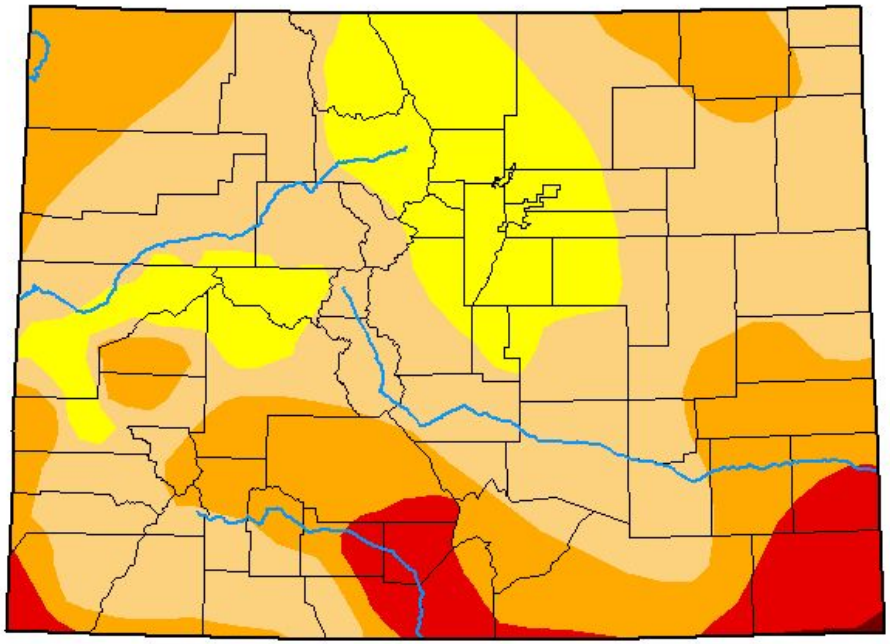

March 29, 2022
(Released Thursday, Mar. 31, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	82.85	33.50	7.11	0.13
Last Week *03-22-2022*	0.00	100.00	82.83	33.50	7.11	0.13
3 Months Ago *12-28-2021*	0.00	100.00	100.00	67.27	22.21	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 *03-30-2021*	0.00	100.00	92.31	61.69	32.13	14.65

Intensity:

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

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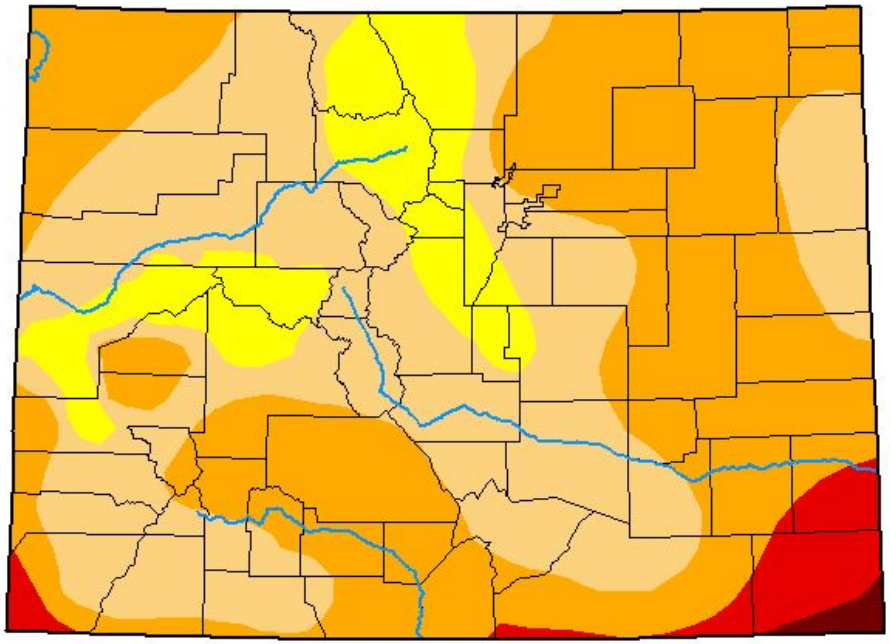
U.S. Drought Monitor
Colorado



April 26, 2022

(Released Thursday, Apr. 28, 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	88.57	47.62	4.46	0.53
Last Week *04-19-2022*	0.00	100.00	86.78	33.13	4.45	0.53
3 Months Ago *01-25-2022*	0.00	100.00	88.32	65.93	20.68	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 *04-27-2021*	1.19	98.81	89.13	60.45	32.13	16.68

Intensity:

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

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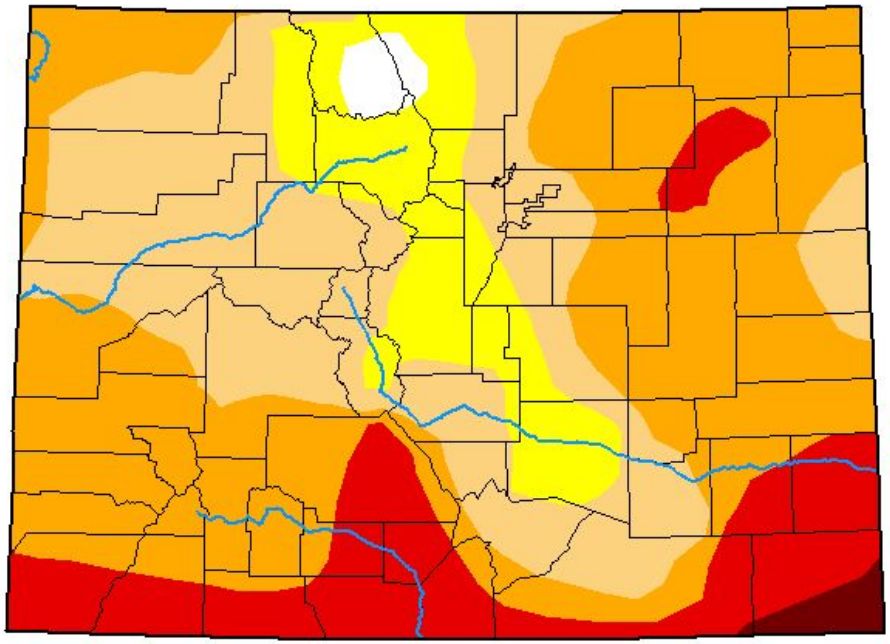

May 31, 2022
(Released Thursday, Jun. 2, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.09	98.91	87.50	57.03	15.50	0.99
Last Week *05-24-2022*	0.00	100.00	89.73	59.61	18.12	2.61
3 Months Ago *03-01-2022*	0.00	100.00	91.57	57.26	8.27	0.09
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 *06-01-2021*	51.10	48.90	43.36	35.53	29.15	16.39

Intensity:

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

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Author:
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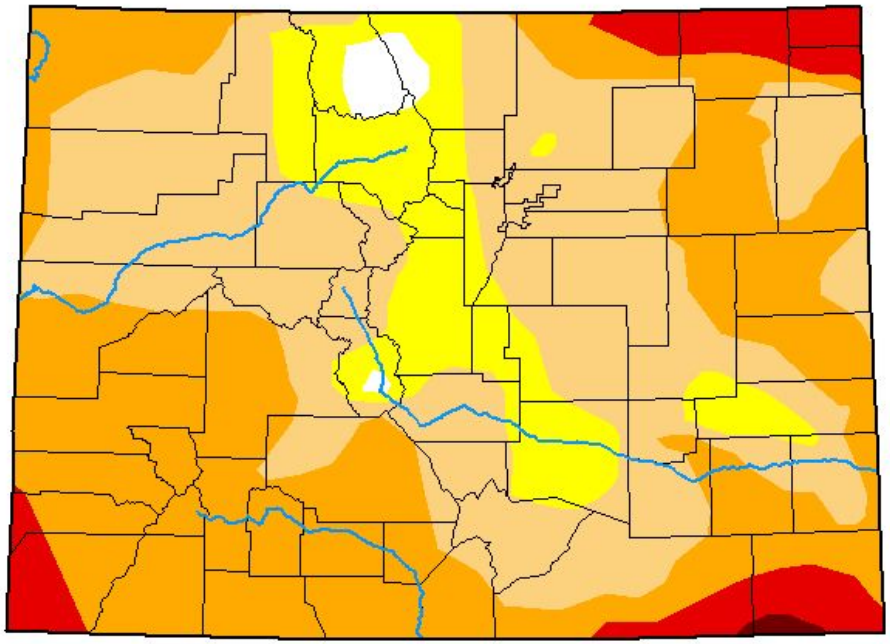
Colorado



June 28, 2022

(Released Thursday, Jun. 30, 2022)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.17	98.83	86.07	44.87	5.90	0.23
Last Week *06-21-2022*	1.09	98.91	81.55	43.08	12.76	0.23
3 Months Ago *03-29-2022*	0.00	100.00	82.85	33.50	7.11	0.13
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 *06-29-2021*	54.48	45.52	41.62	36.37	29.95	17.52

Intensity:

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

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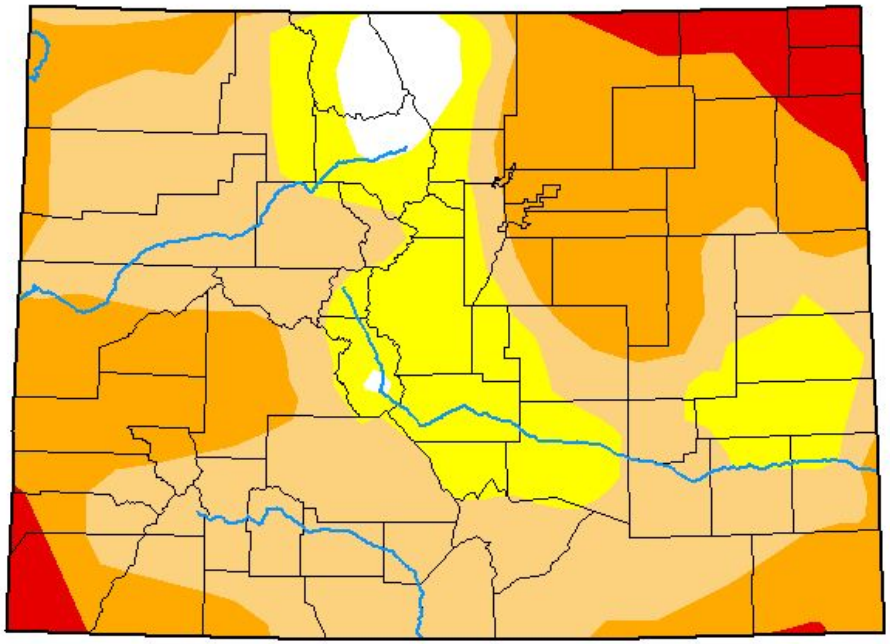

July 26, 2022
(Released Thursday, Jul. 28, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.78	97.22	79.49	37.00	4.95	0.00
Last Week 07-19-2022	2.78	97.22	82.26	40.36	4.91	0.00
3 Months Ago 04-26-2022	0.00	100.00	88.57	47.62	4.46	0.53
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 07-27-2021	56.19	43.81	38.16	32.98	26.82	15.43

Intensity:

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

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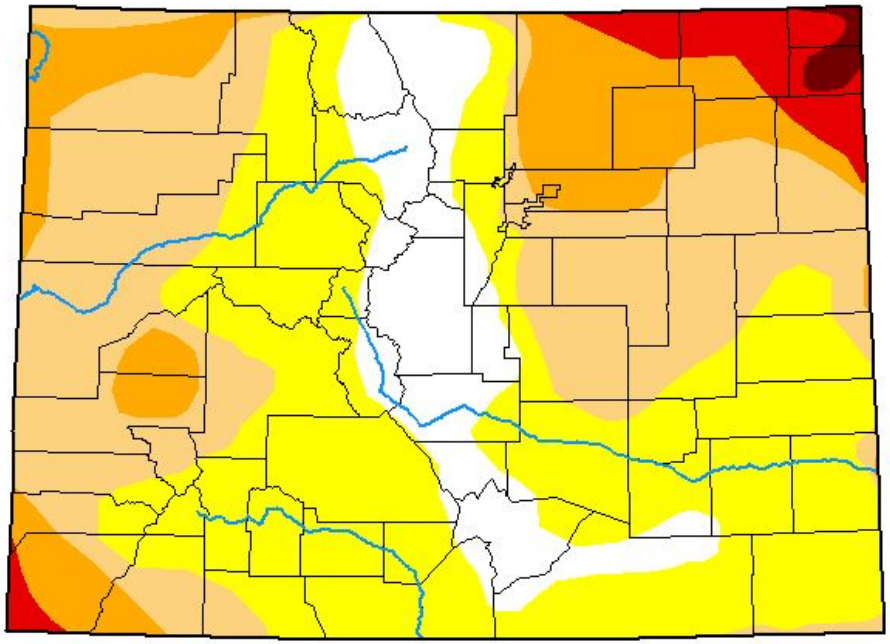

August 30, 2022

(Released Thursday, Sep. 1, 2022)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.14	86.86	46.41	16.96	4.17	0.59
Last Week *08-23-2022*	12.67	87.33	56.65	22.68	4.70	0.58
3 Months Ago *05-31-2022*	1.09	98.91	87.50	57.03	15.50	0.99
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 *08-31-2021*	49.43	50.57	36.47	24.44	15.05	3.91

Intensity:

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

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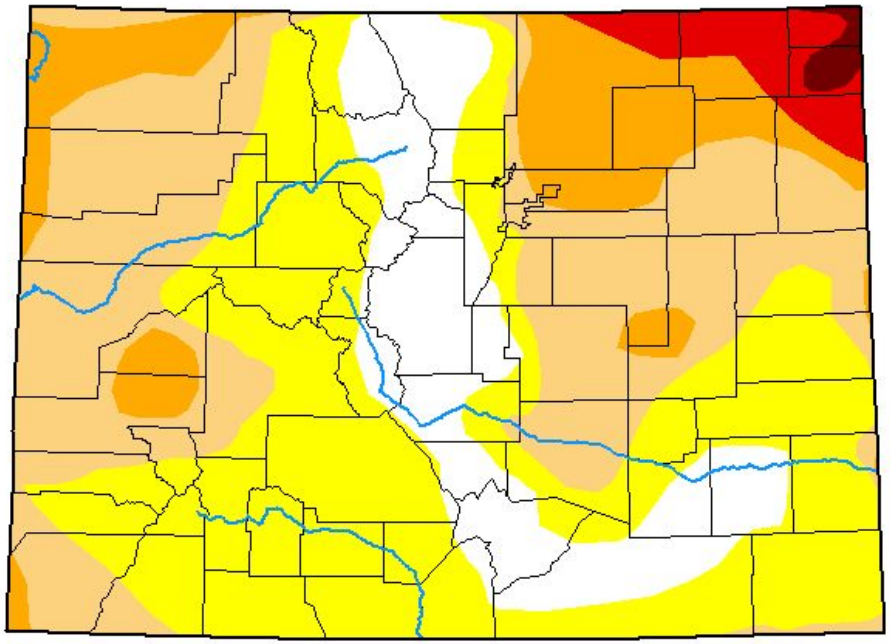

September 27, 2022
(Released Thursday, Sep. 29, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	15.46	84.54	45.65	15.47	3.73	0.57
Last Week *09-20-2022*	15.72	84.28	47.84	17.53	3.91	0.57
3 Months Ago *06-28-2022*	1.17	98.83	86.07	44.87	5.90	0.23
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 *09-28-2021*	12.72	87.28	46.42	26.30	15.05	3.91

Intensity:

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

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Author:
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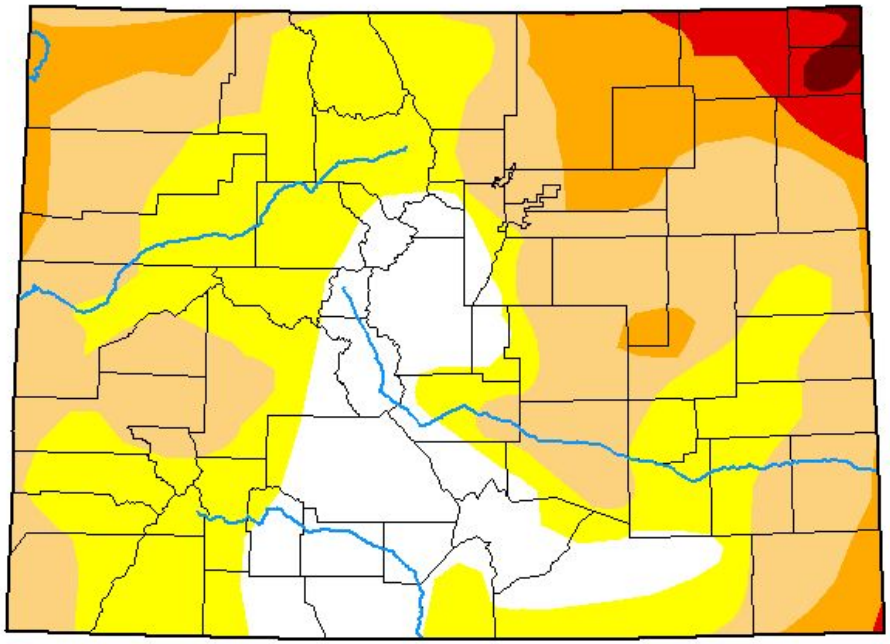
Colorado



October 25, 2022
(Released Thursday, Oct. 27, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.78	82.22	48.66	14.56	3.13	0.57
Last Week 10-18-2022	23.00	77.00	43.01	14.02	3.09	0.57
3 Months Ago 07-26-2022	2.78	97.22	79.49	37.00	4.95	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 09-27-2022	15.46	84.54	45.65	15.47	3.73	0.57
One Year Ago 10-26-2021	4.44	95.56	74.89	29.73	11.13	1.95

Intensity:

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

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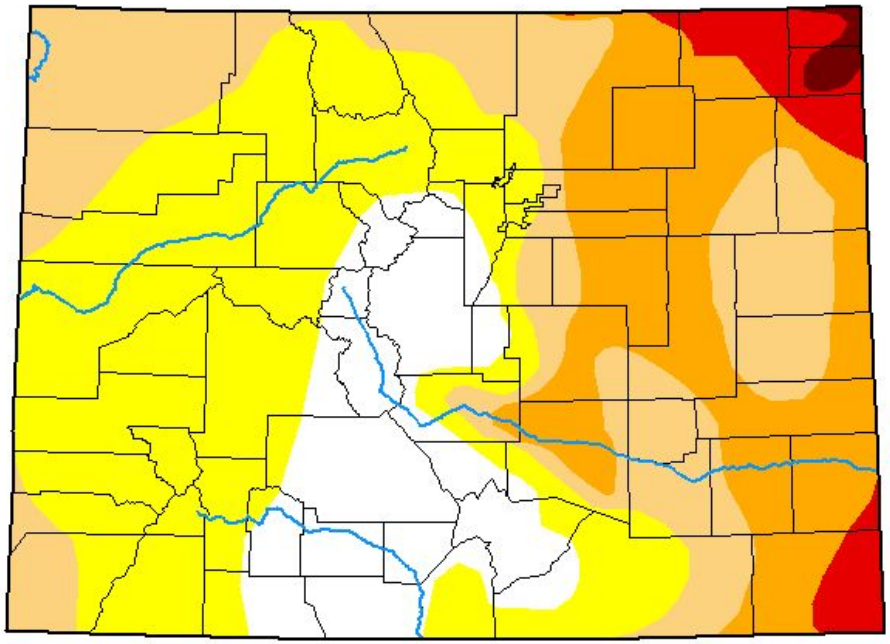
Colorado



November 29, 2022
(Released Thursday, Dec. 1, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	16.25	83.75	47.20	23.68	4.34	0.57
Last Week *11-22-2022*	16.27	83.73	49.35	25.20	4.34	0.57
3 Months Ago *08-30-2022*	13.14	86.86	46.41	16.96	4.17	0.59
Start of Calendar Year *01-04-2022*	0.00	100.00	95.49	67.08	22.25	0.00
Start of Water Year *09-27-2022*	15.46	84.54	45.65	15.47	3.73	0.57
One Year Ago *11-30-2021*	0.00	100.00	95.45	52.30	14.34	0.00

Intensity:

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

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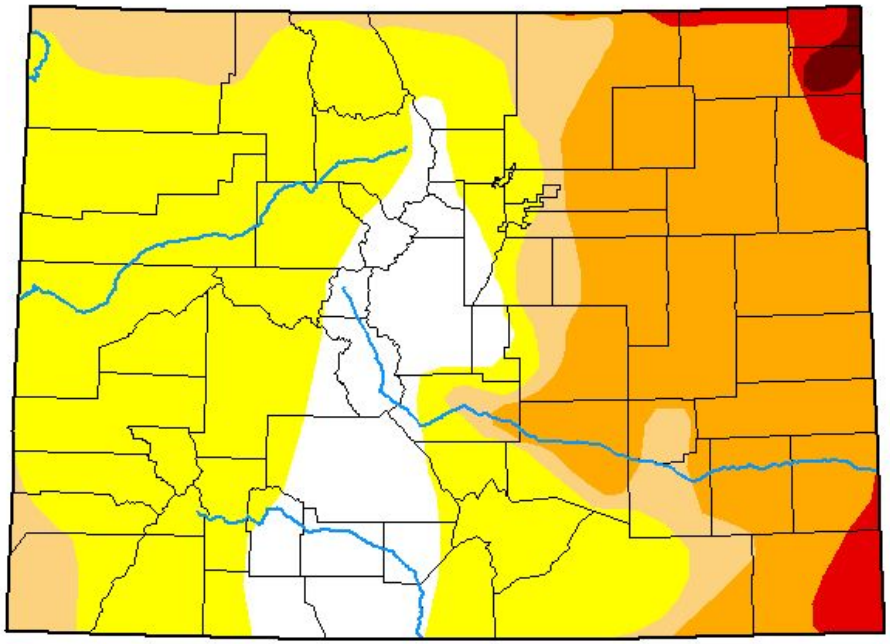
U.S. Drought Monitor
Colorado



December 27, 2022
(Released Thursday, Dec. 29, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.75	86.25	42.37	30.79	3.23	0.53
Last Week *12-20-2022*	16.26	83.74	43.34	30.79	3.23	0.53
3 Months Ago *09-27-2022*	15.46	84.54	45.65	15.47	3.73	0.57
Start of Calendar Year *01-04-2022*	0.00	100.00	95.49	67.08	22.25	0.00
Start of Water Year *09-27-2022*	15.46	84.54	45.65	15.47	3.73	0.57
One Year Ago *12-28-2021*	0.00	100.00	100.00	67.27	22.21	0.00

Intensity:

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

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NCEI/NOAA

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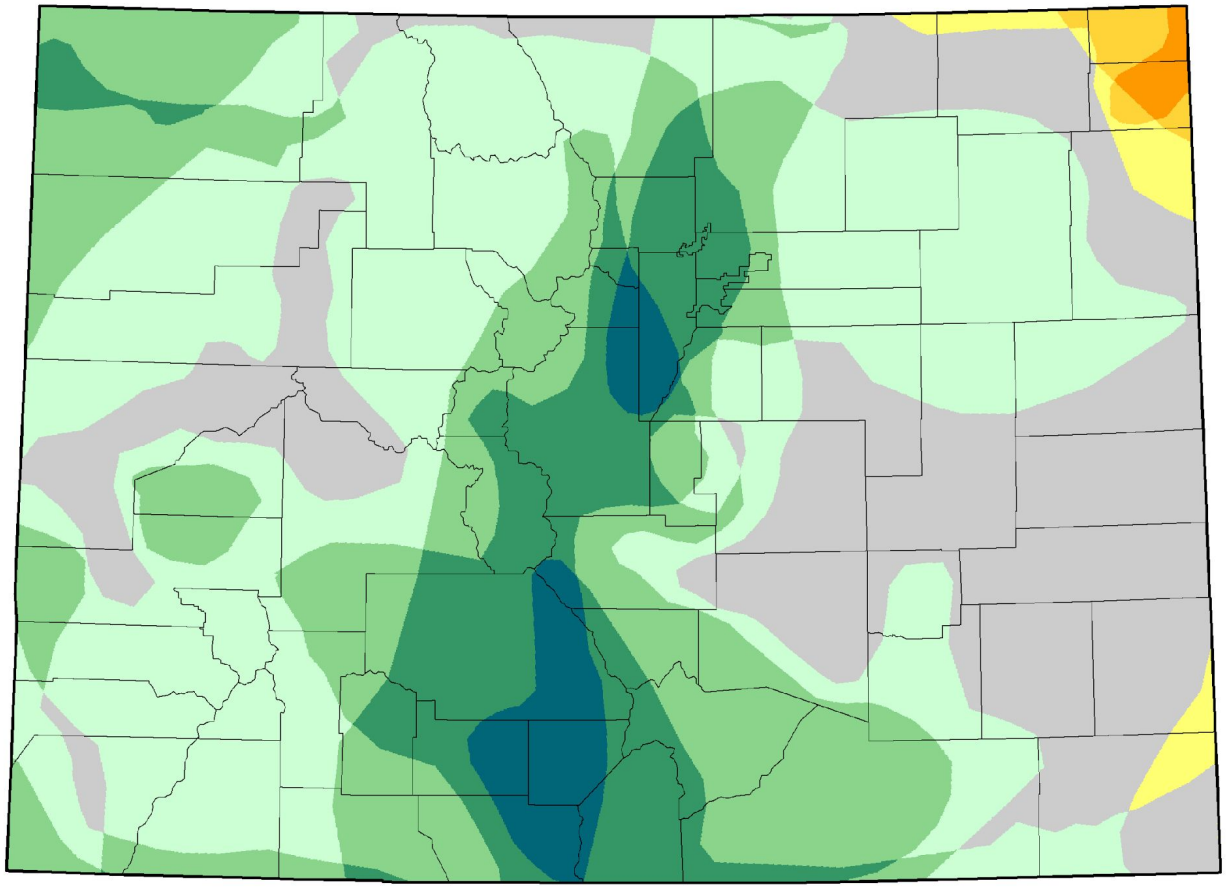
U.S. Drought Monitor Class Change - Colorado

Start of Calendar Year

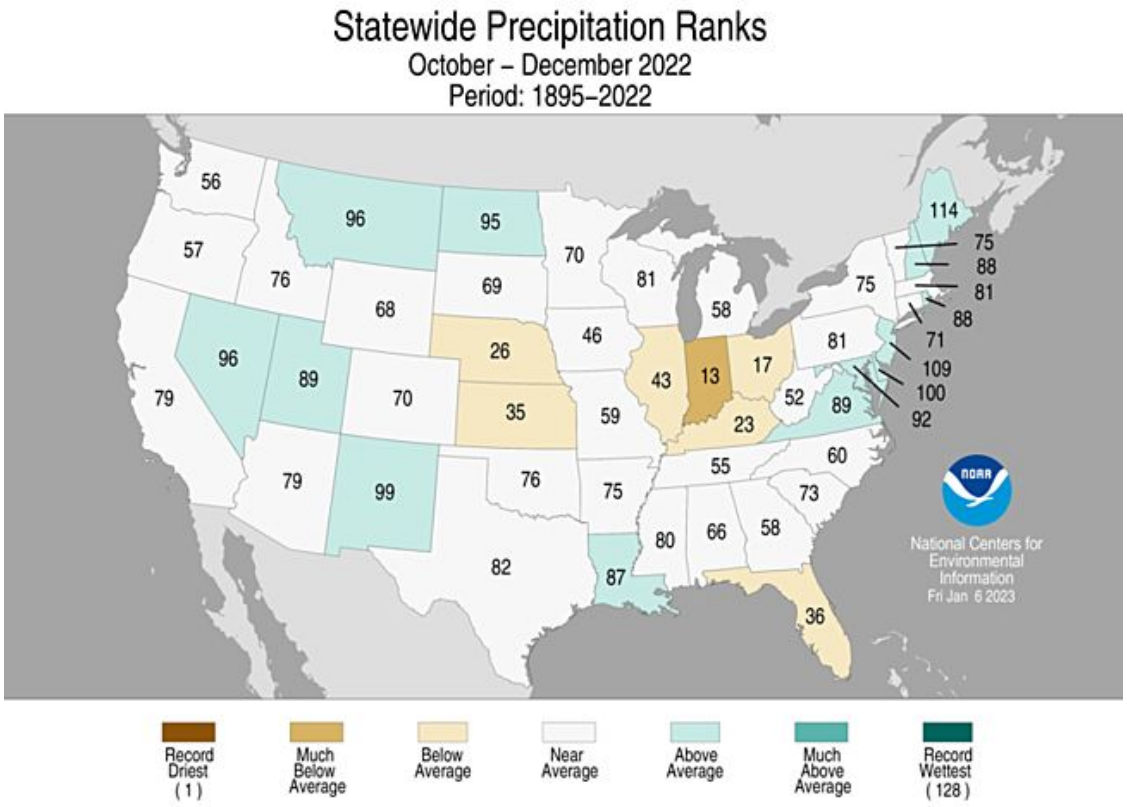


December 27, 2022
compared to
January 4, 2022

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

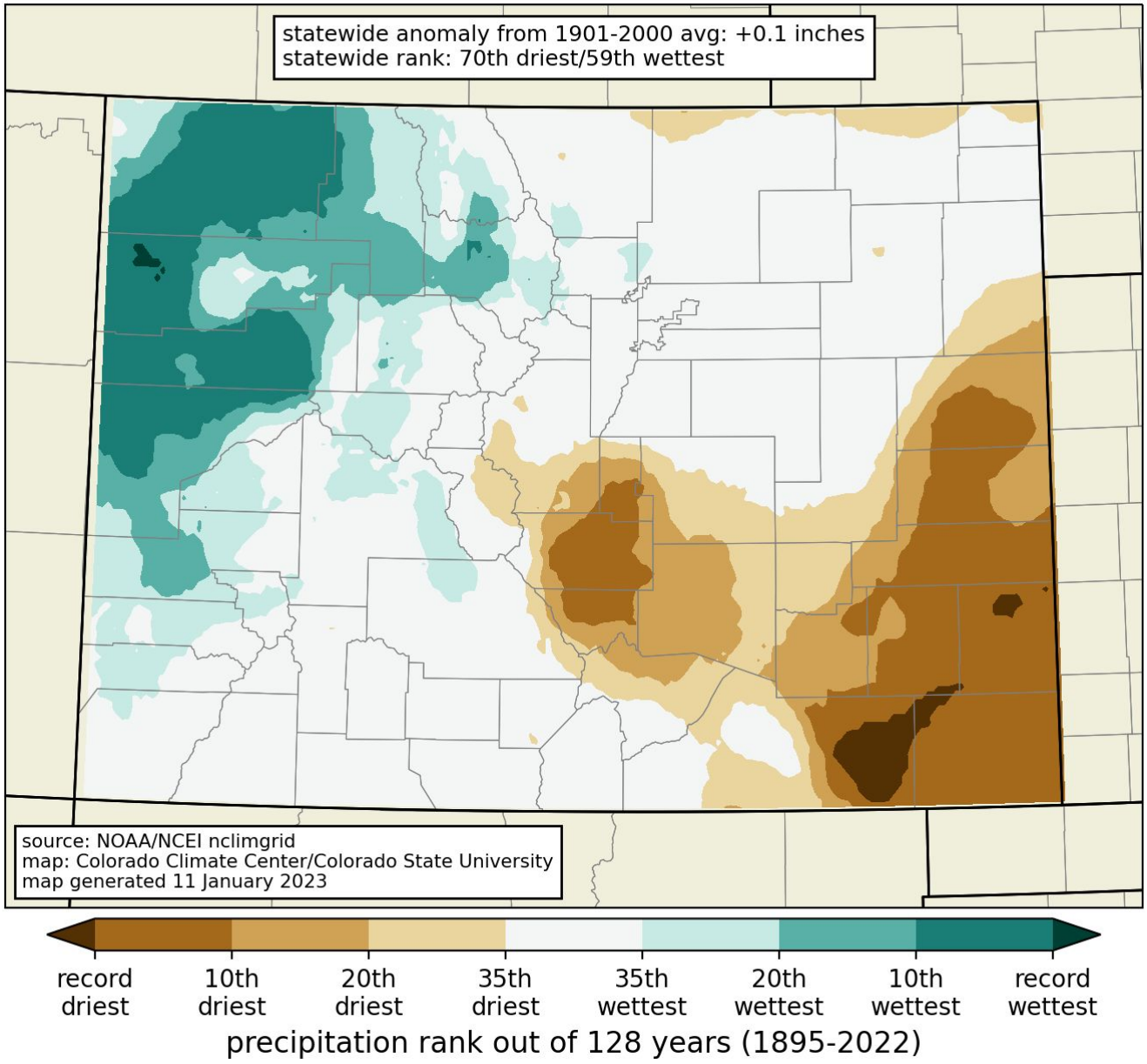
Water Year 2023 so far…



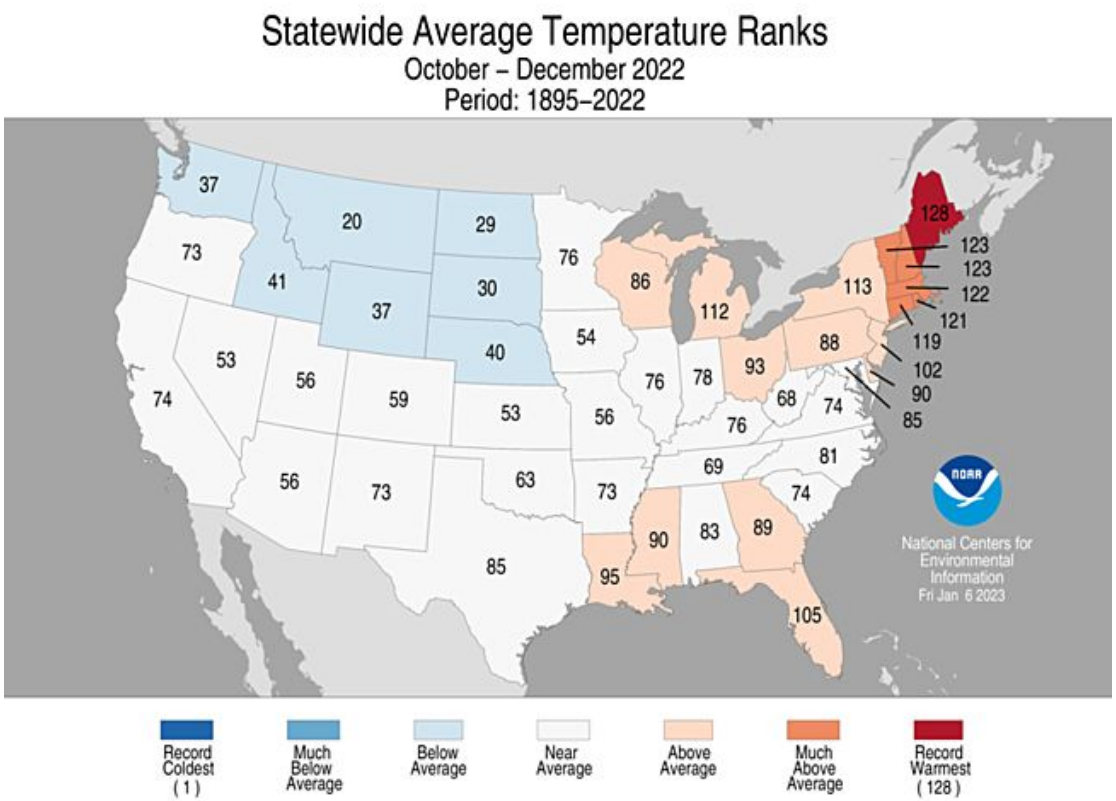
Month	P Rank (of 128 years)	Above, below, or near 20th century avg?
Oct	62nd driest	near avg
Nov	52nd driest	near avg
Dec	20th wettest	above
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

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

precipitation rank: 3 months ending December 2022 (Oct-Dec)



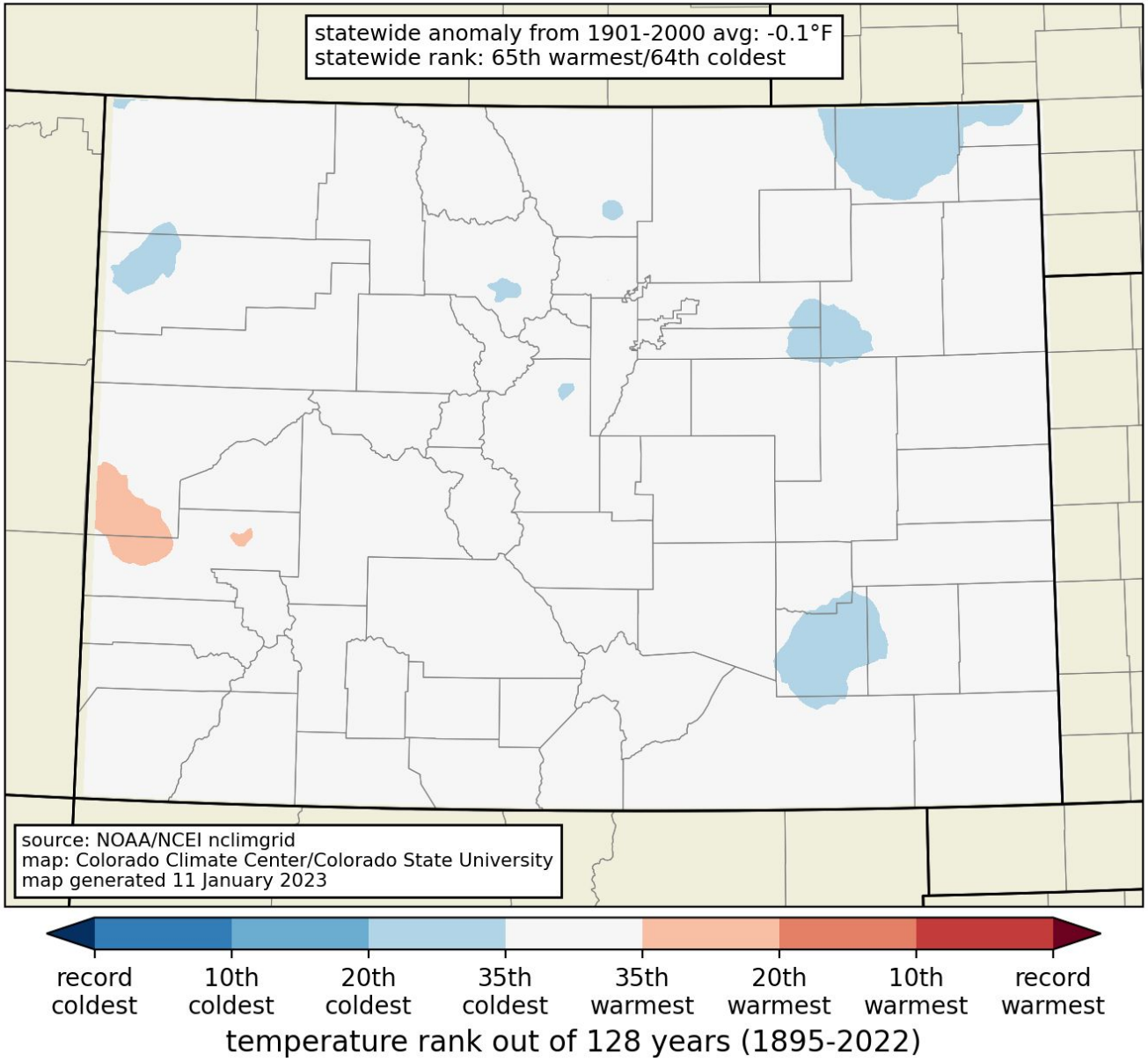
https://climate.colostate.edu/co_cag/rank_maps.html



Month	T Rank (of 127 years)	Above, below, or near 20th century avg?
Oct	45th warmest	near avg
Nov	31st coolest	below
Dec	62nd warmest	near avg
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

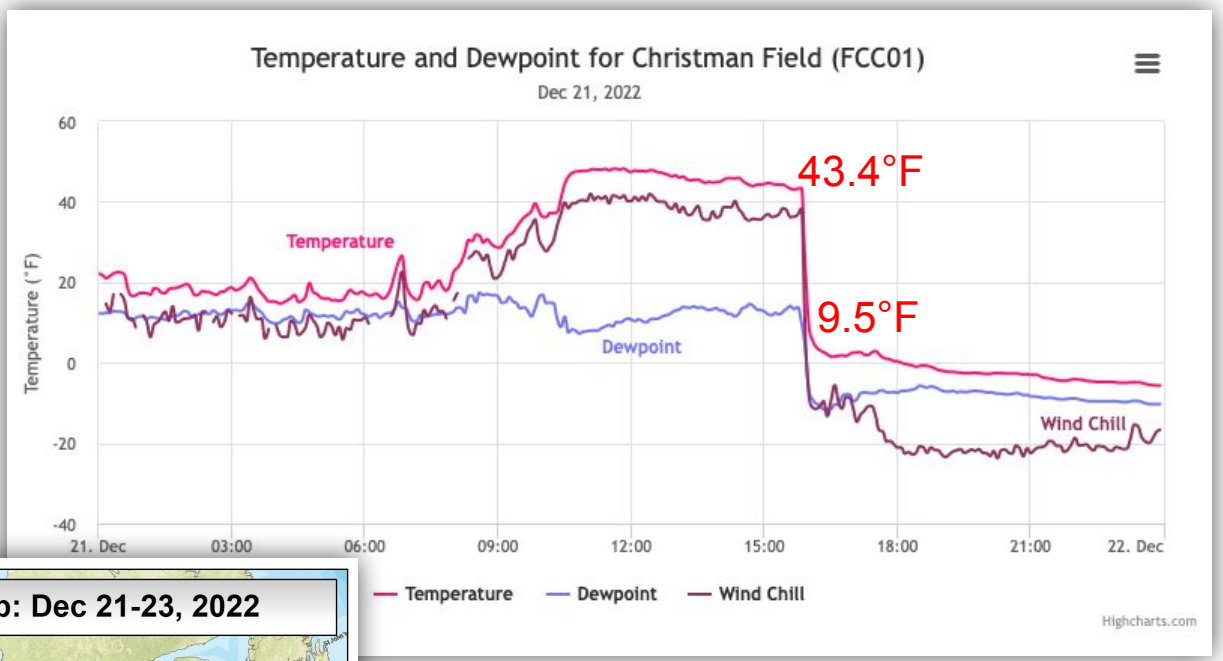
https://www.ncdc.noaa.gov/temp-and-precip/us-maps/

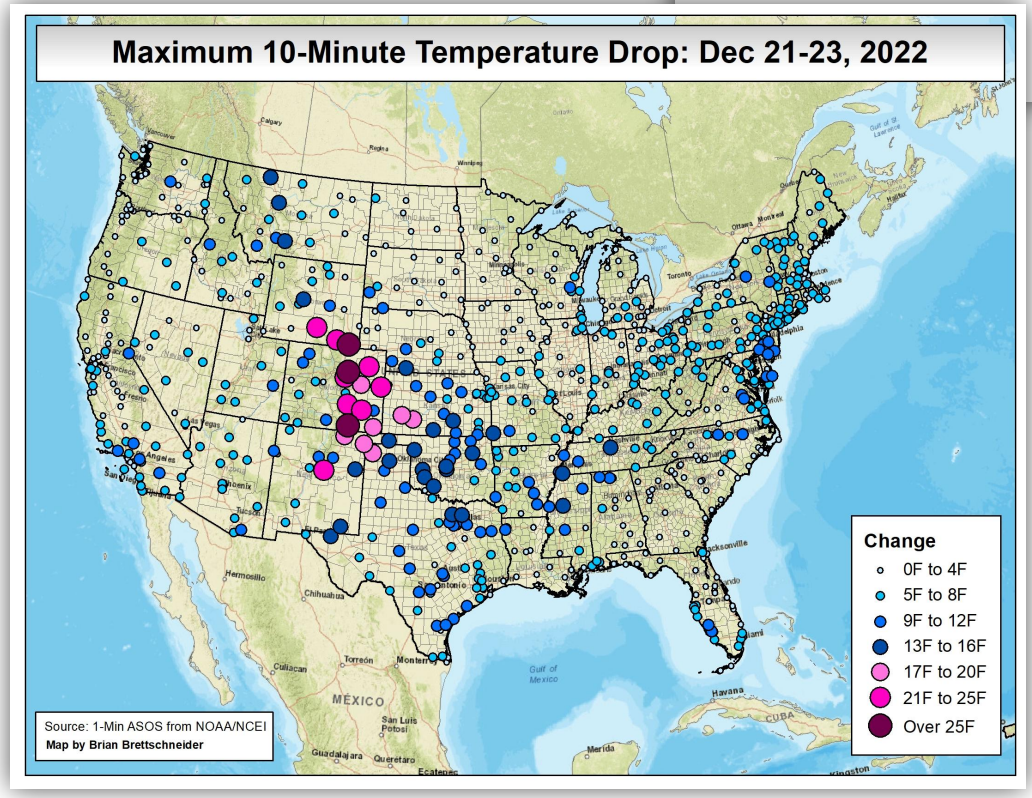
average temperature rank: 3 months ending December 2022 (Oct-Dec)



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

December cold front



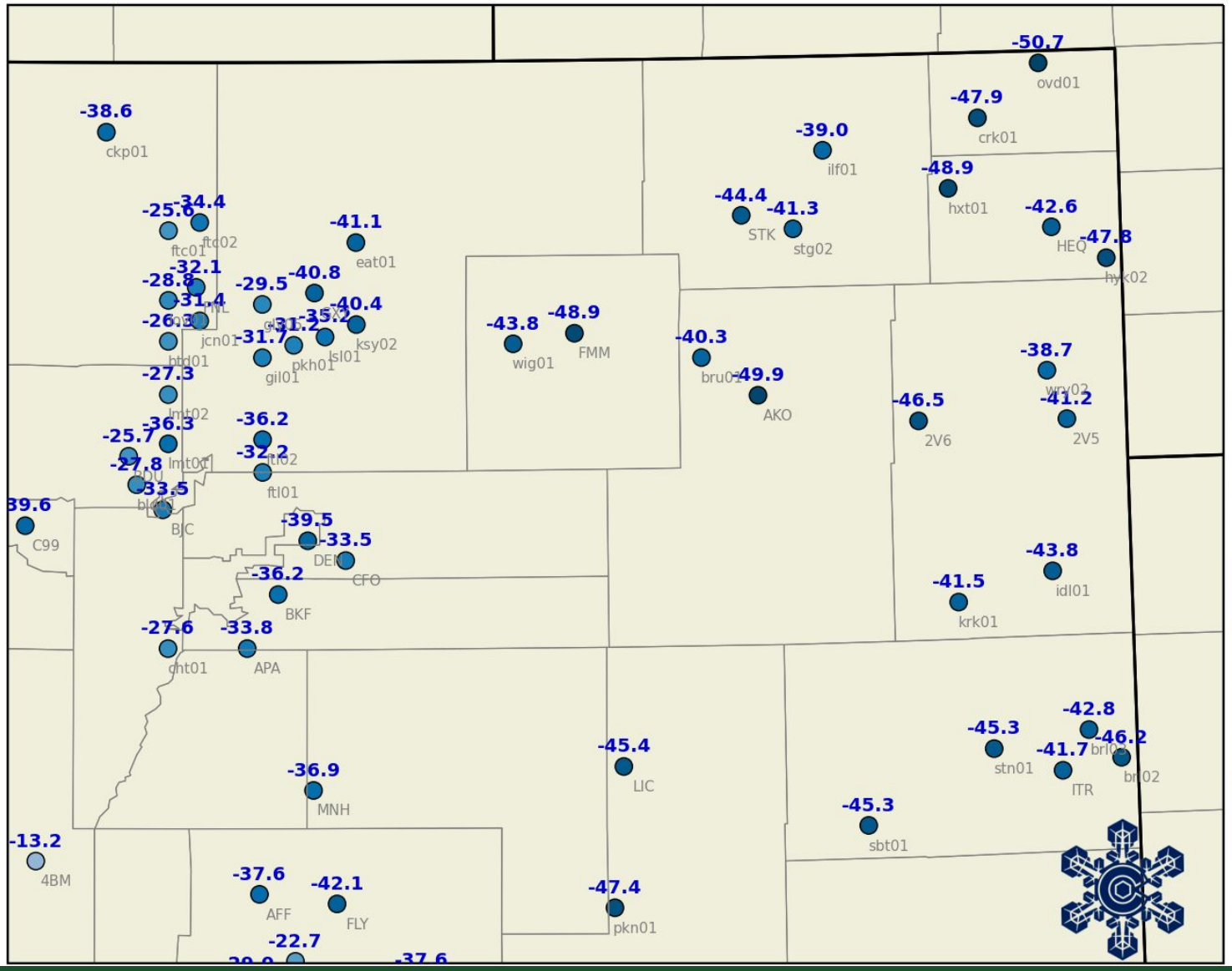


From 3:50 – 4:00pm, the Christman Field station dropped from 43.4°F to 9.5°F. That's a drop of 33.9°F in 10 minutes!

Courtesy Brian Brettschneider

December cold front

Colorado ASOS, CoAgMET, and Northern Water minimum wind chill (°F): 21-22 December 2022



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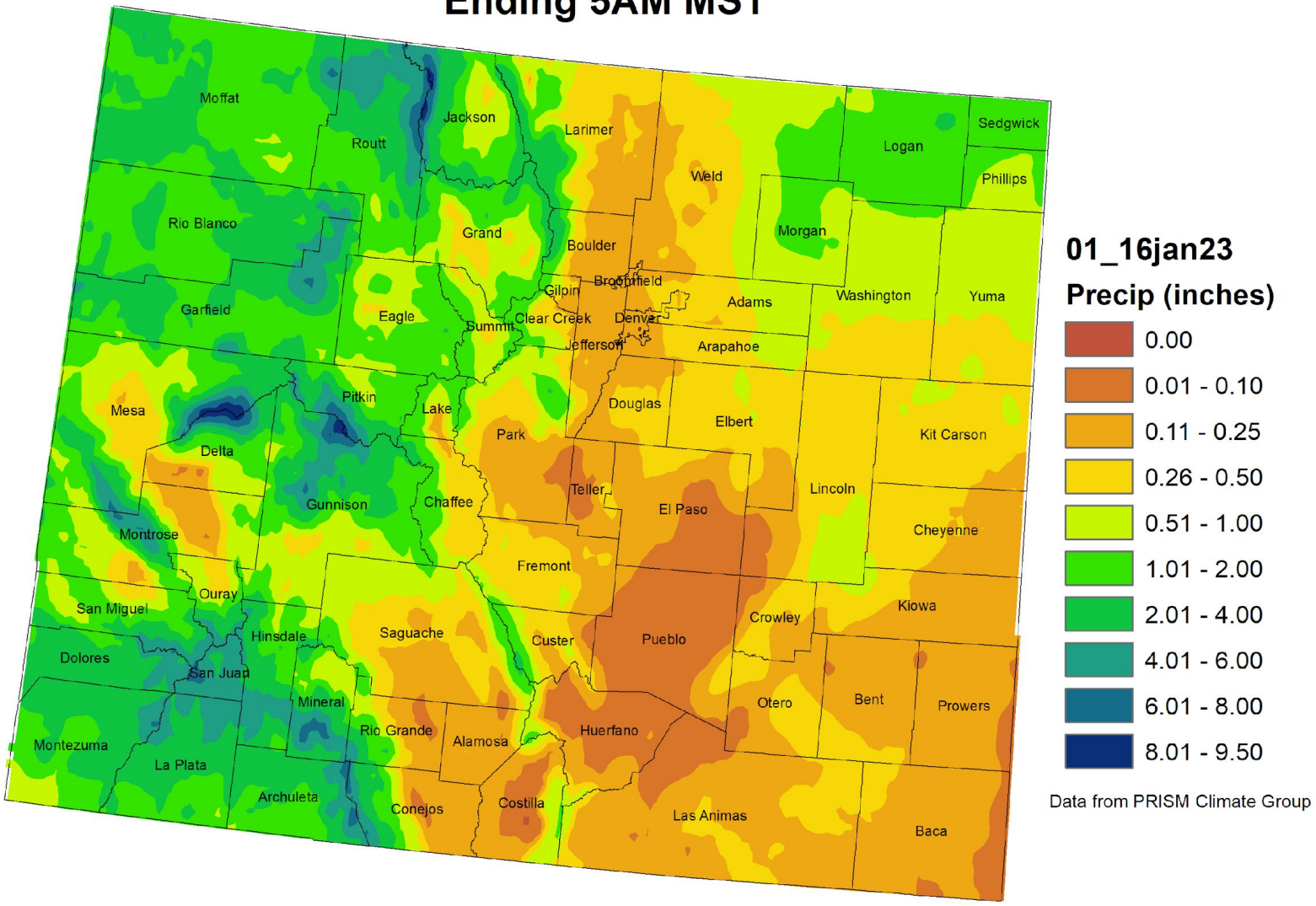
Current Conditions

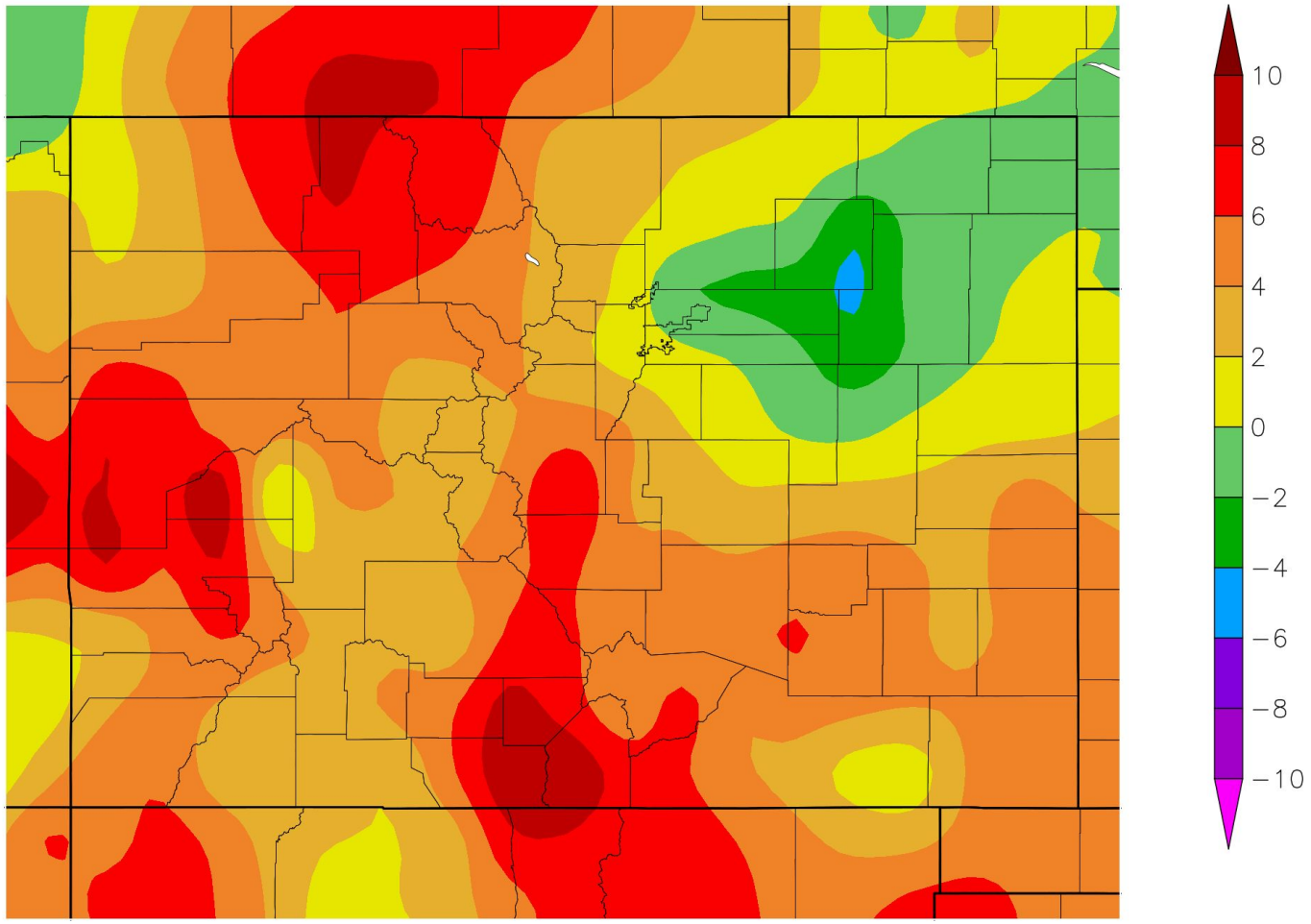
Colorado Month to Date Precipitation
1 - 16 January 2023
Ending 5AM MST



Data from PRISM Climate Group

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

Departure from Normal Temperature (F)
1/1/2023 – 1/16/2023

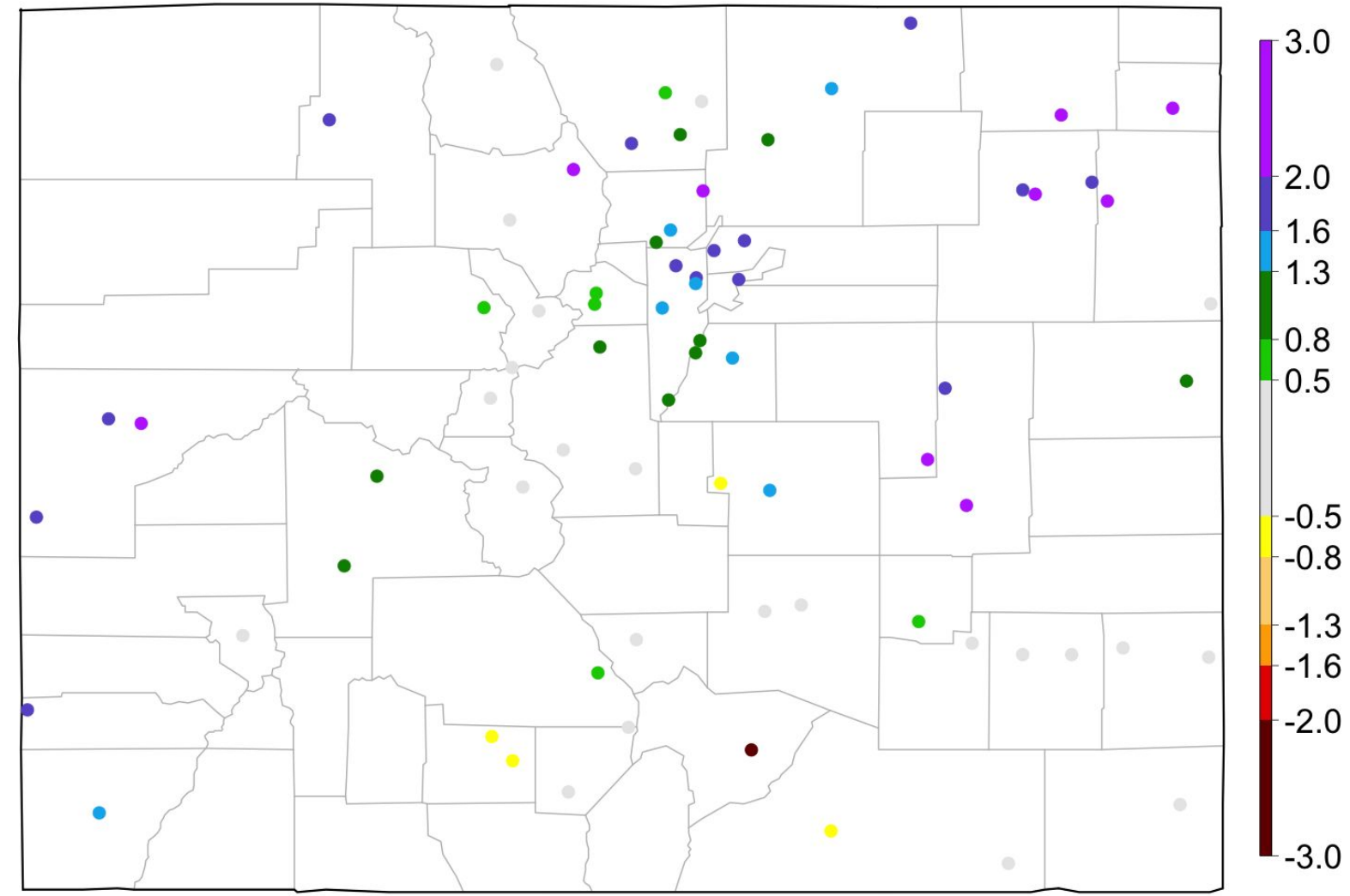


Generated 1/17/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

https://hprcc.unl.edu/products/maps/acis/hprcc/co/MonthTDeptHPRCC-CO.png

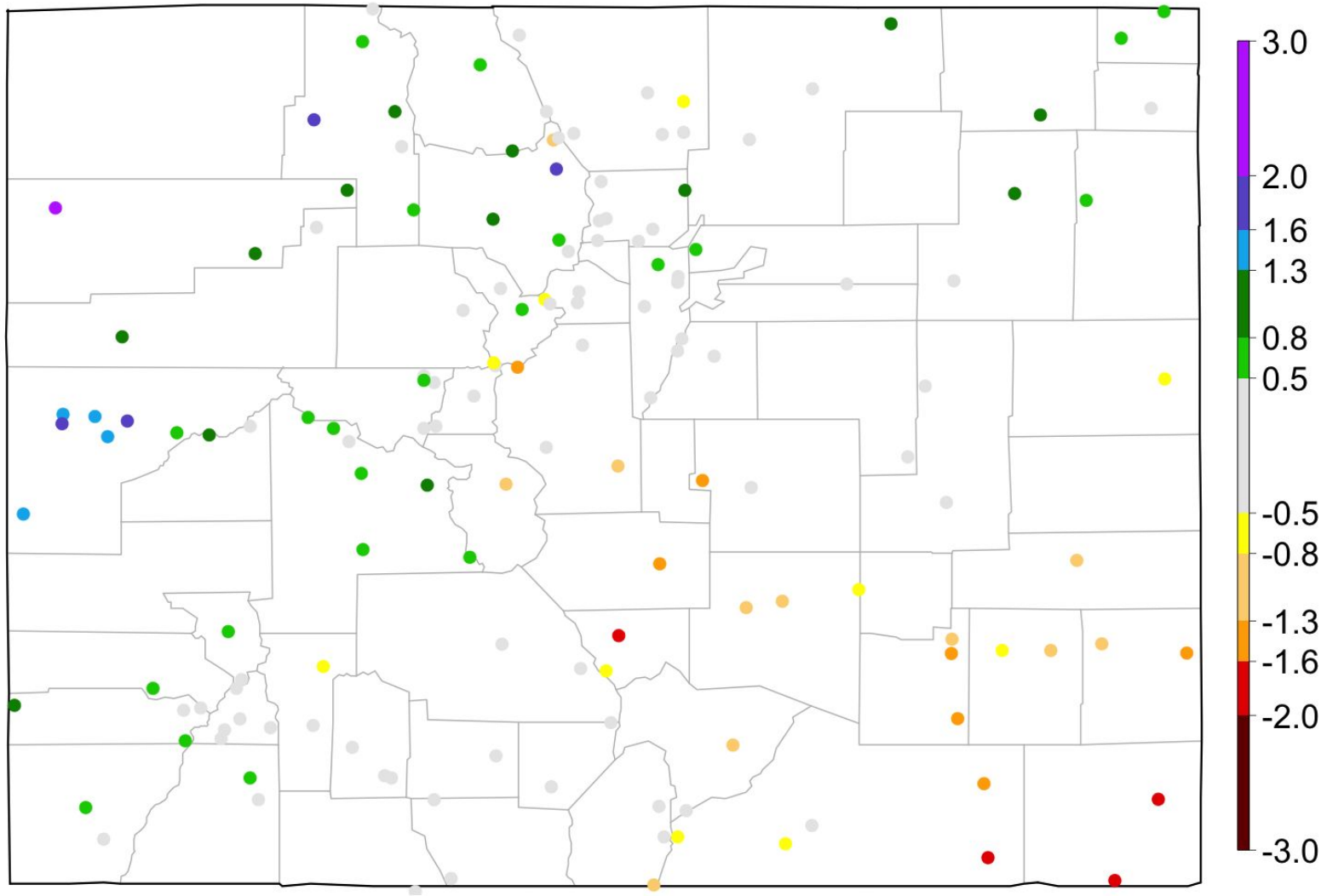
30-day SPI: 2022/12/18 - 2023/01/16



Data from High Plains Regional Climate Center and ACIS

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

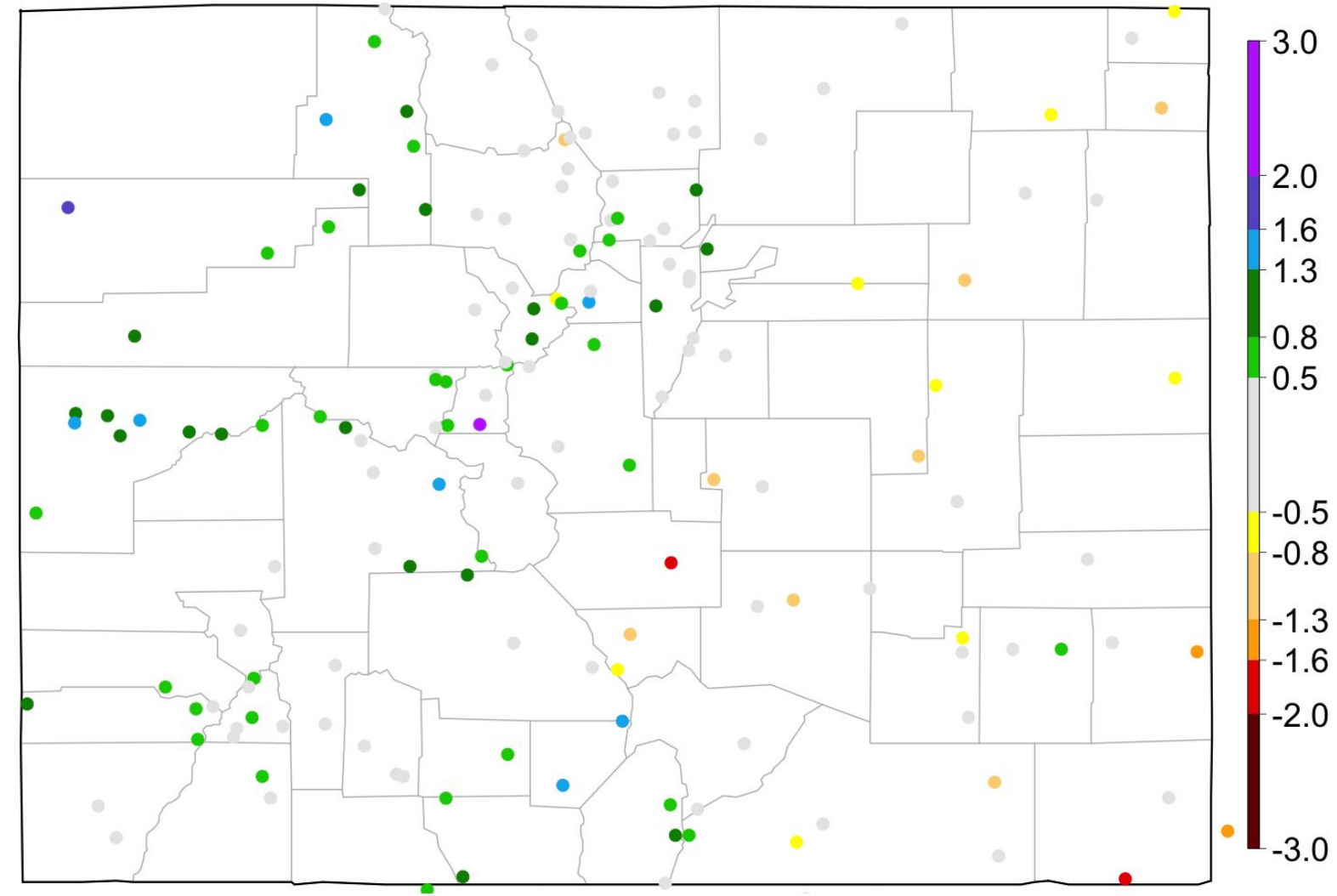
Water-year-to-date SPI: 2022/10/01 - 2023/01/16



Data from High Plains Regional Climate Center and ACIS

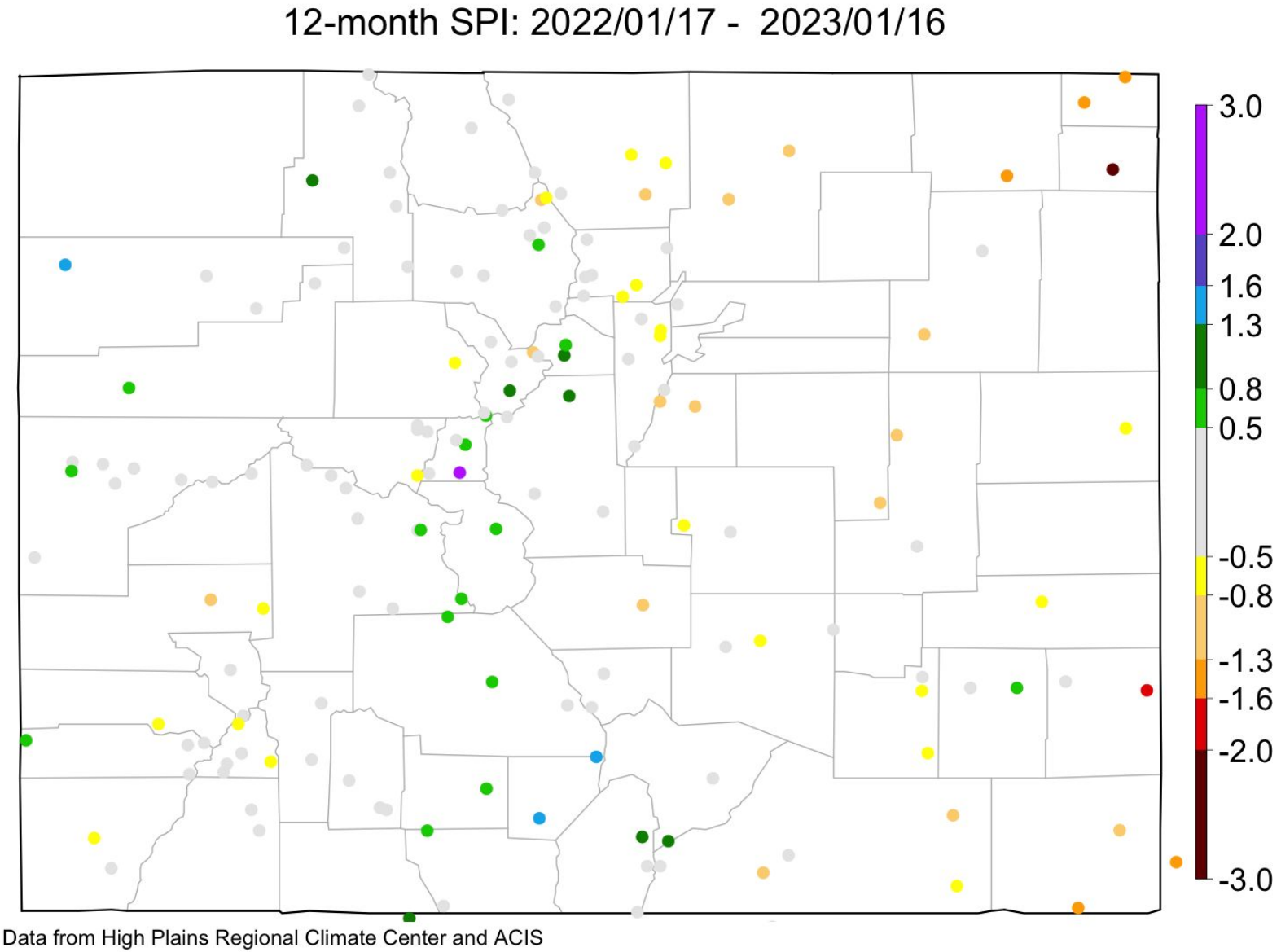
https://climate.colostate.edu/drought/

6-month SPI: 2022/07/17 - 2023/01/16



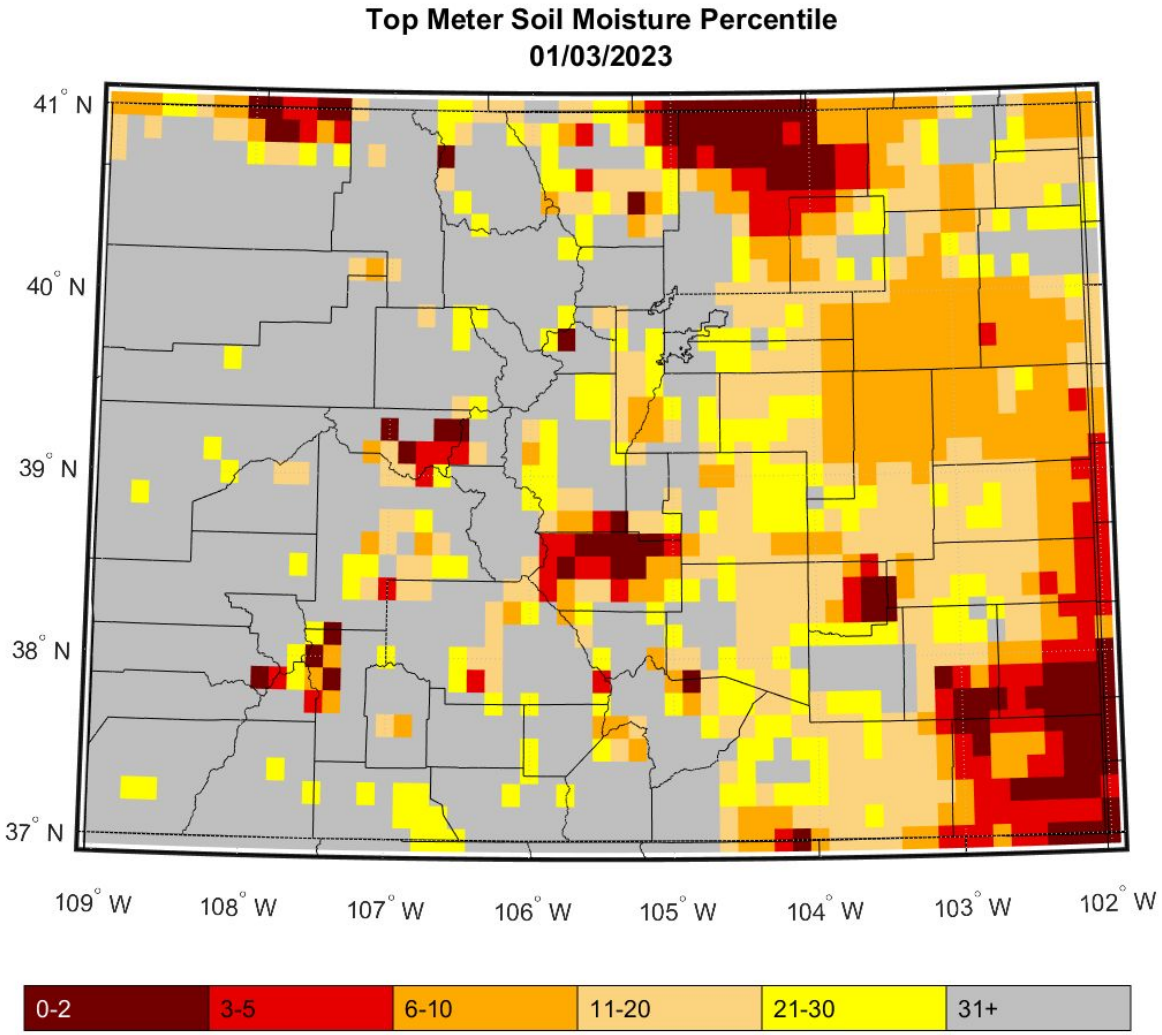
Data from High Plains Regional Climate Center and ACIS

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



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

Soil Moisture



https://climate.colostate.edu/drought

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Drought

National Drought

Colorado Drought

Some Drought Facts

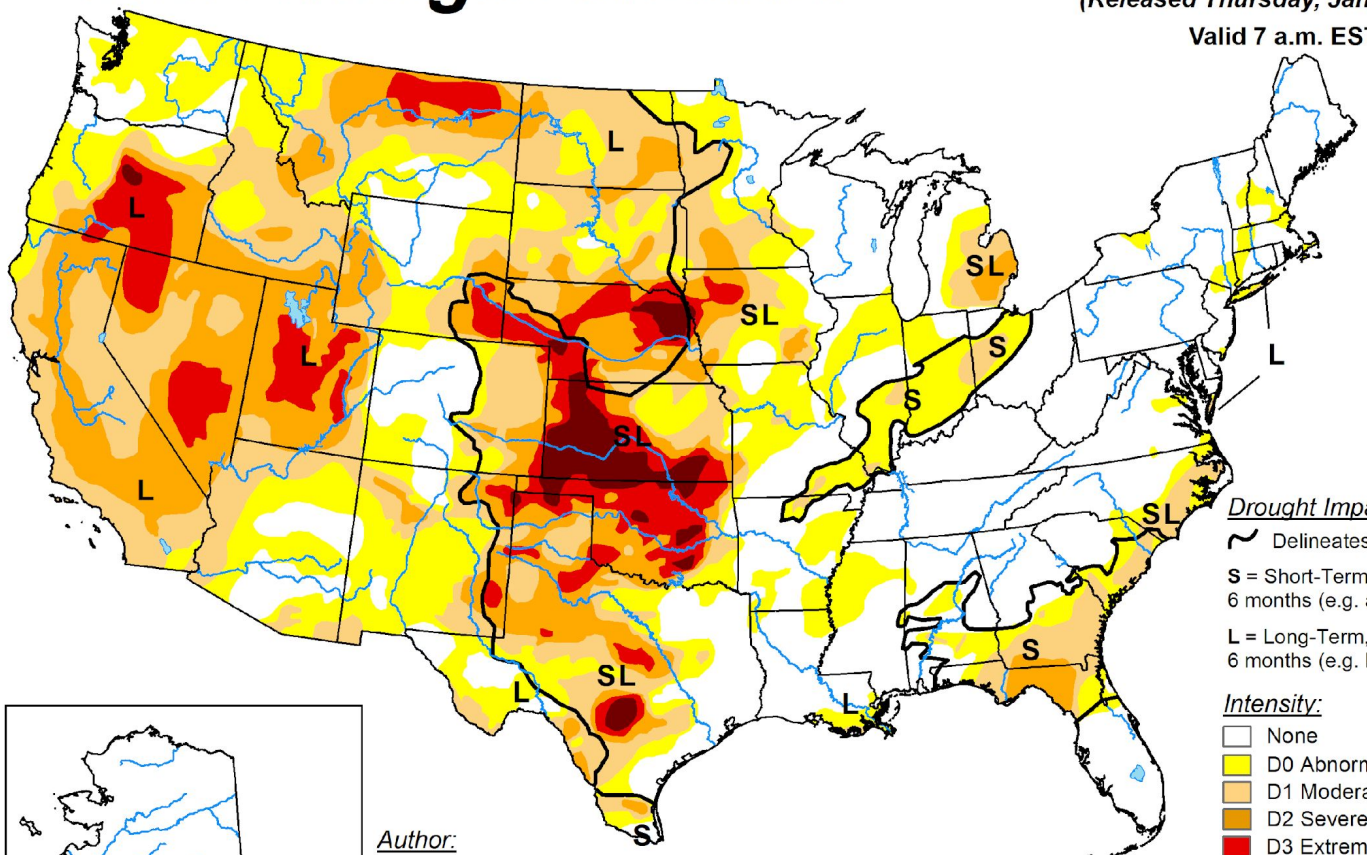
Photo courtesy Nick Trainor, Arapahoe County

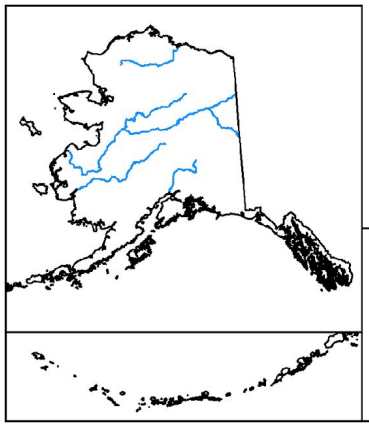
U.S. Drought Monitor

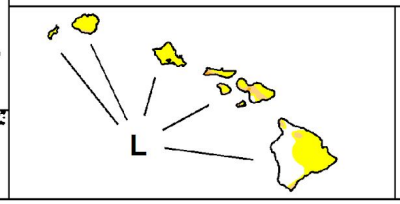
January 10, 2023

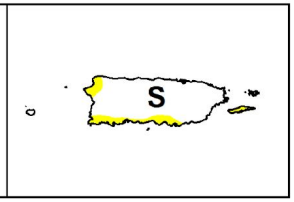
(Released Thursday, Jan. 12, 2023)

Valid 7 a.m. EST









Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

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:

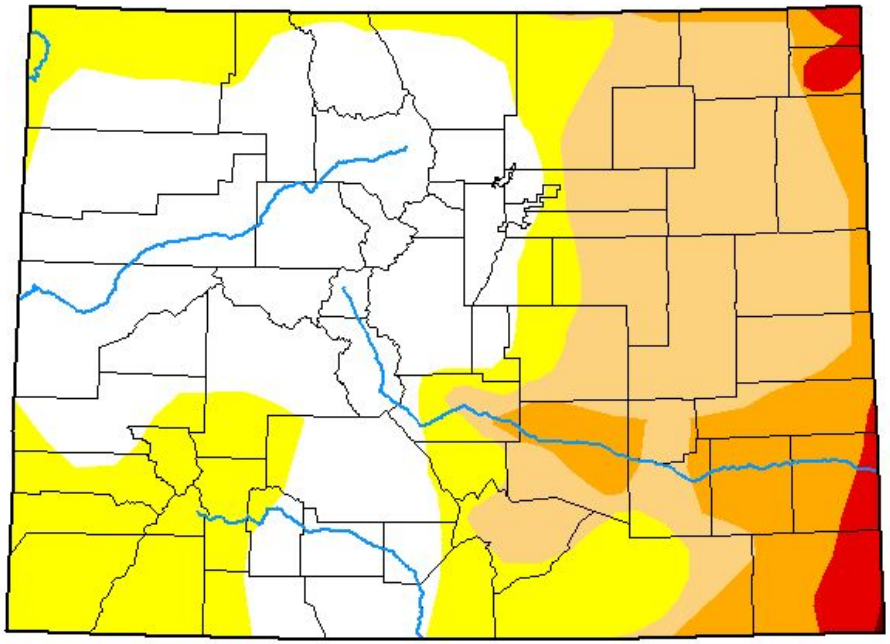
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

USDA NDMC NOAA

droughtmonitor.unl.edu

U.S. Drought Monitor
Colorado



January 10, 2023
(Released Thursday, Jan. 12, 2023)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	39.98	60.02	35.67	12.28	2.28	0.04
Last Week 01-03-2023	39.97	60.03	33.83	12.28	1.91	0.01
3 Months Ago 10-11-2022	23.00	77.00	43.01	13.55	3.09	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 01-11-2022	0.00	100.00	88.32	65.93	20.59	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
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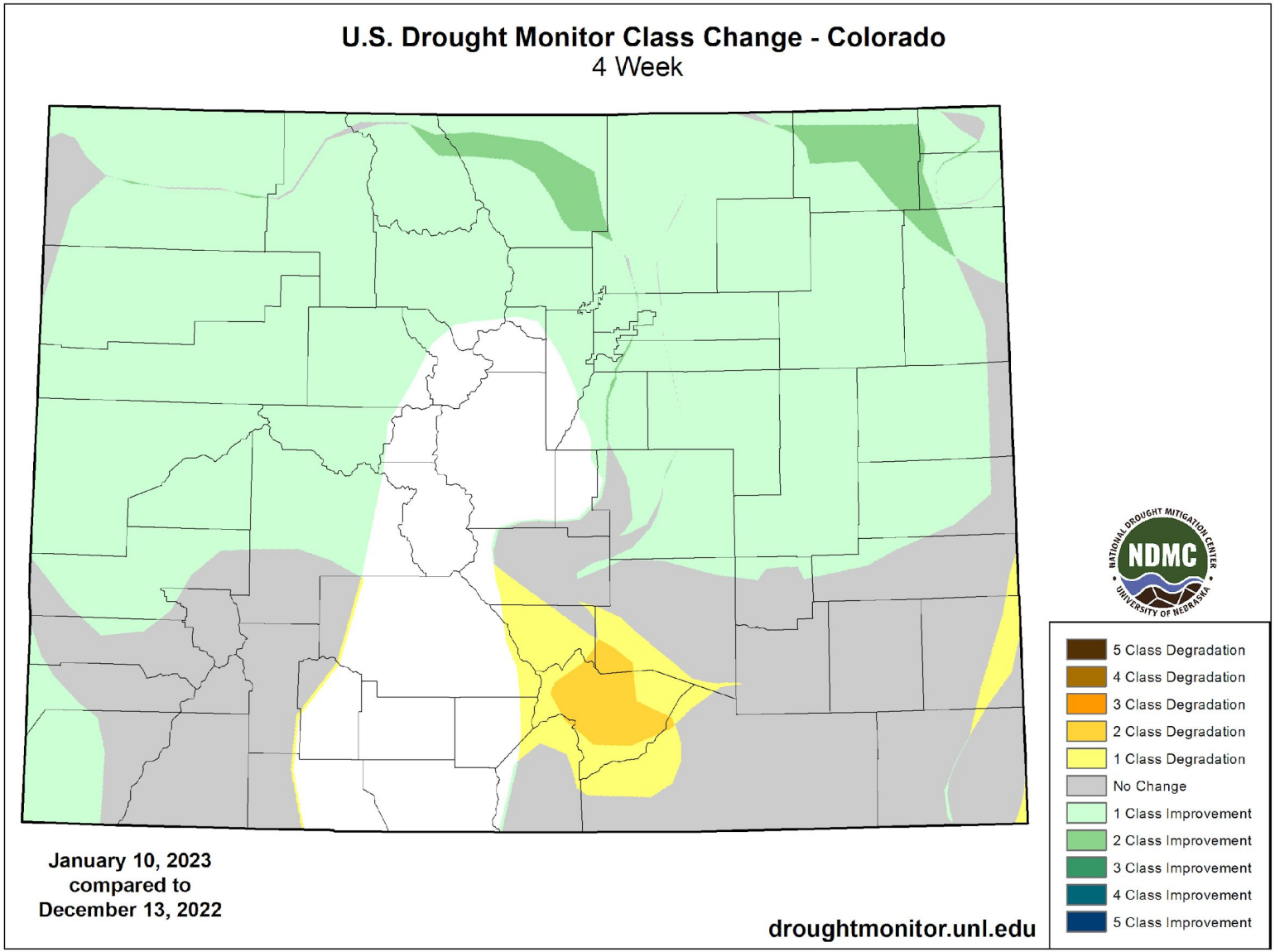


We can expect to see continued improvements over western CO and northeast CO, with more degradations possible for southeast CO.

Outlook

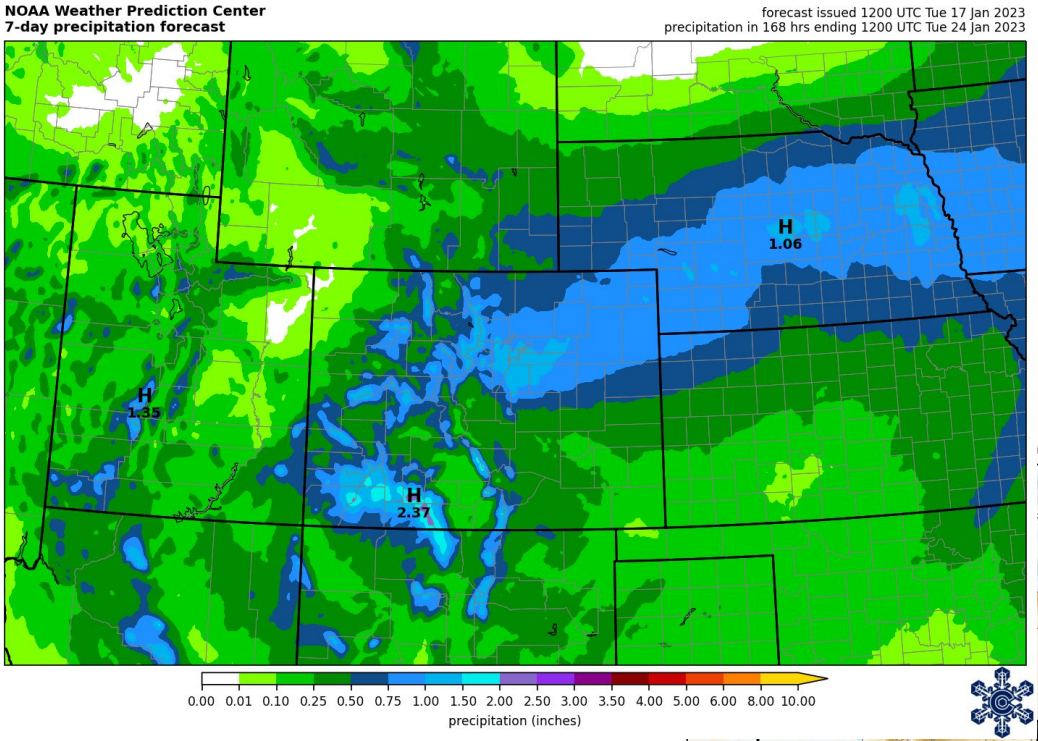
Next 7 days

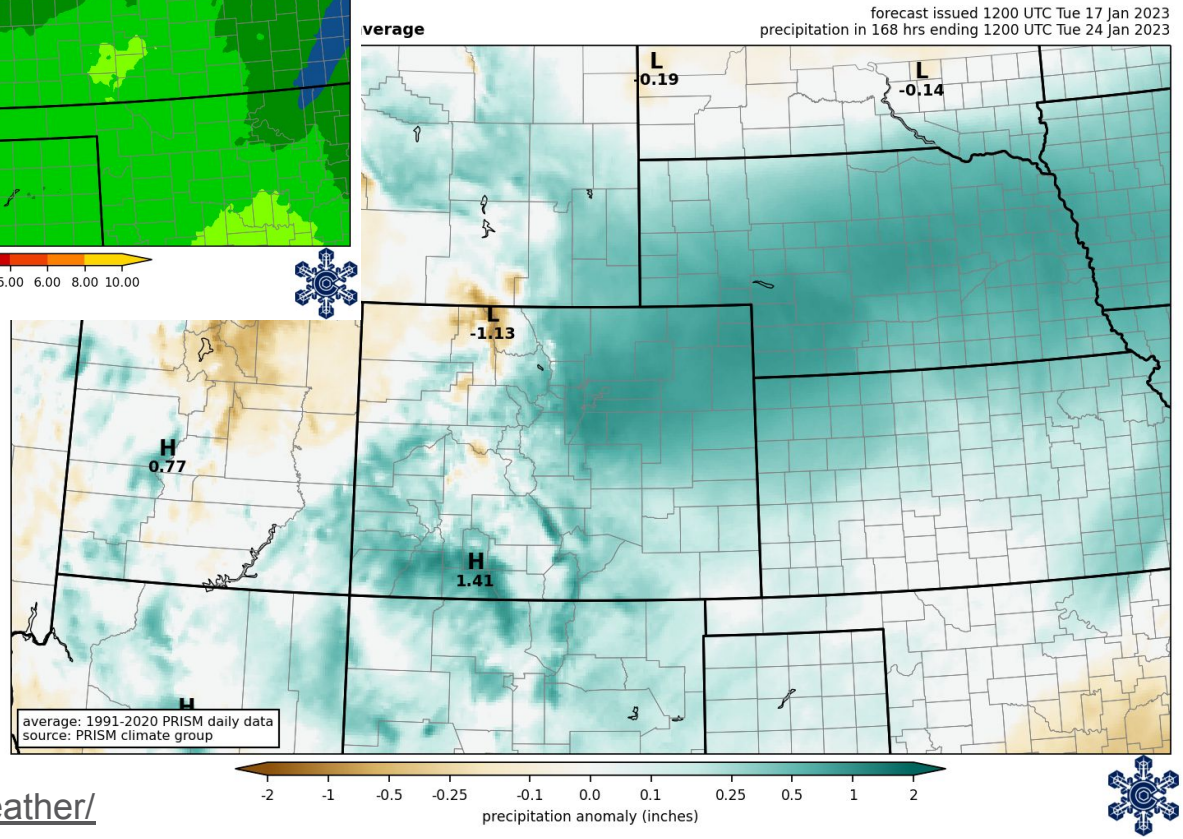
8-14 day Outlook

CPC Outlooks

La Niña

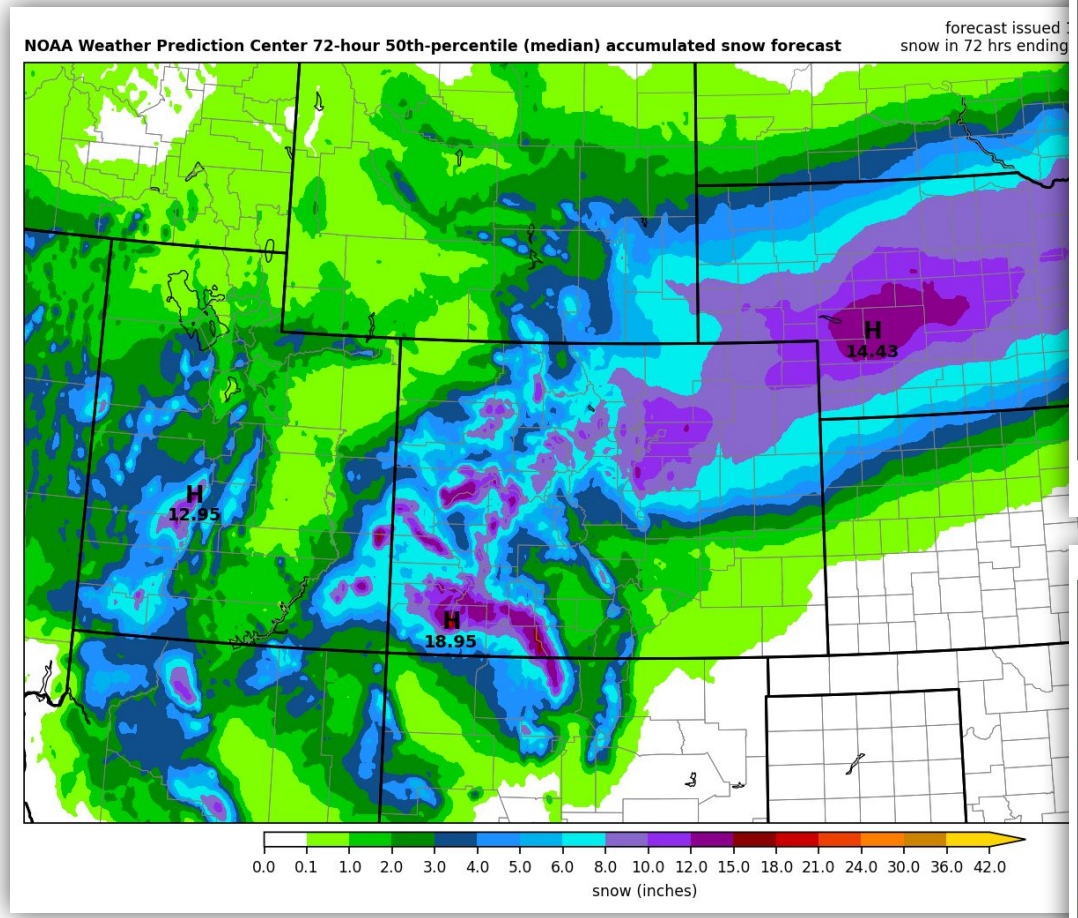
NOAA 7-day precip forecast

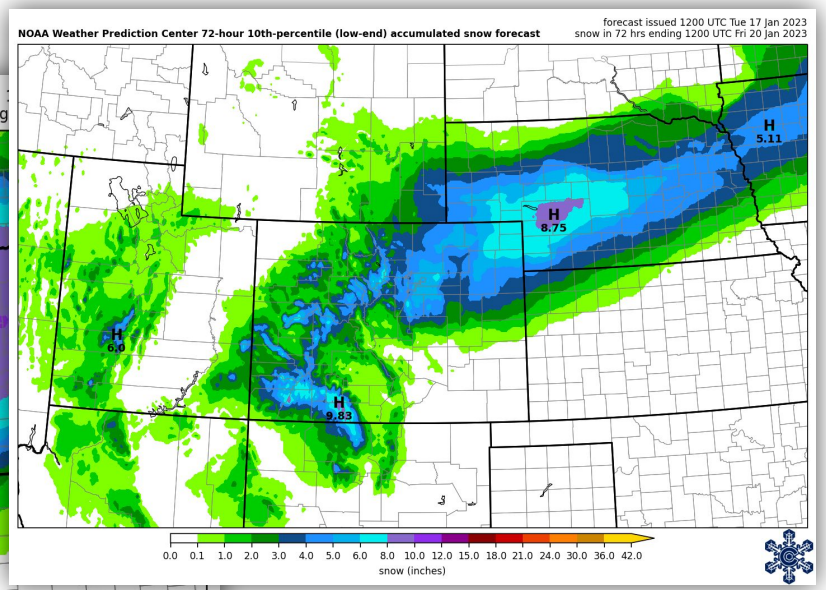


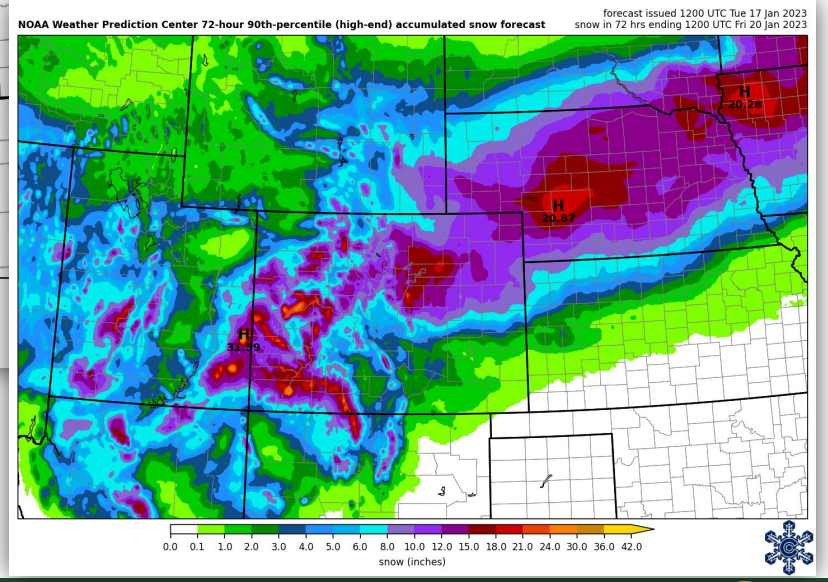


http://schumacher.atmos.colostate.edu/weather/

Snow forecast product (72 hours)

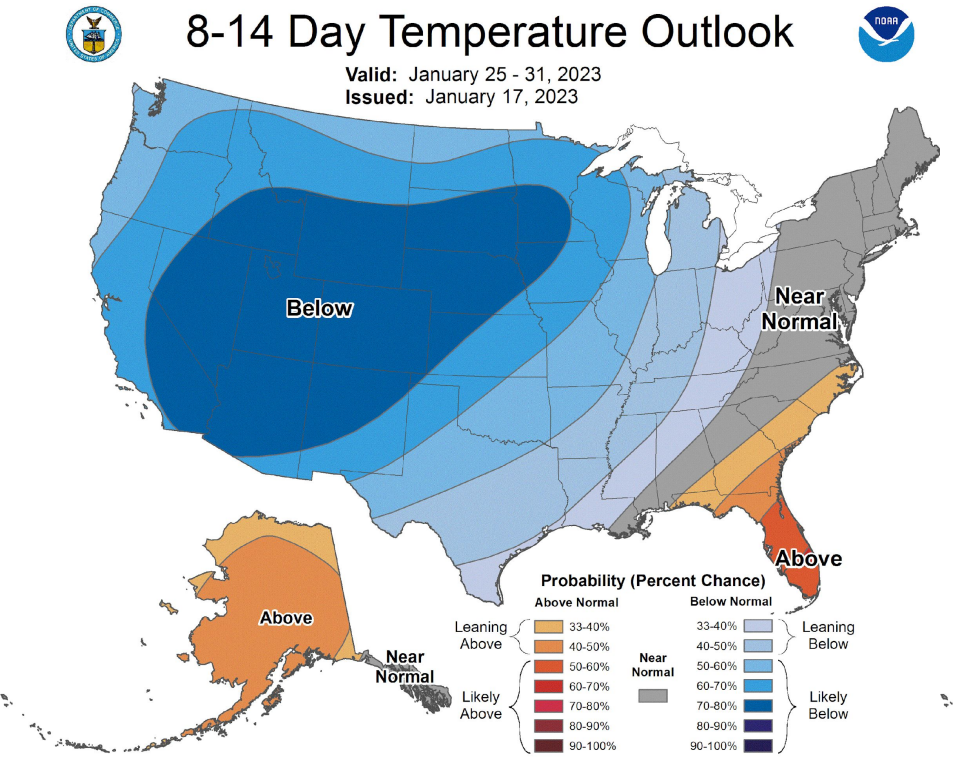


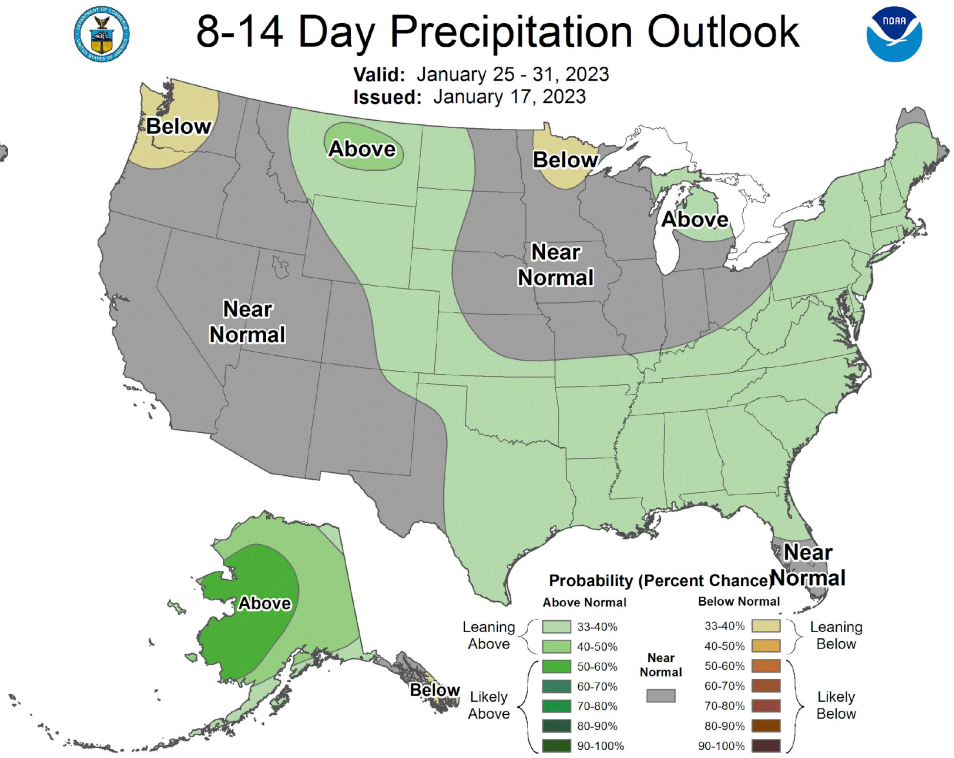




https://climate.colostate.edu/ski-dashboard/

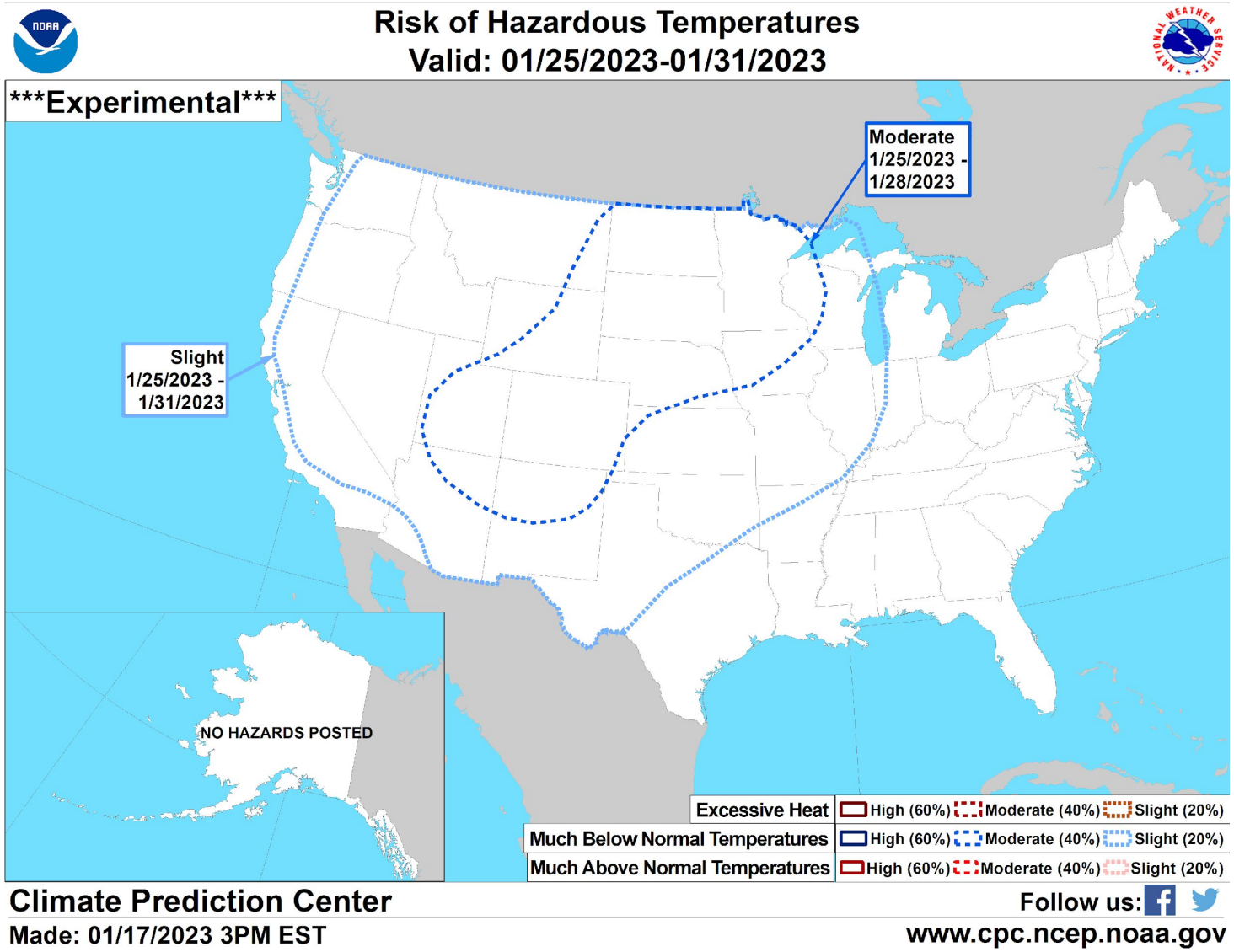
8-14 day outlook





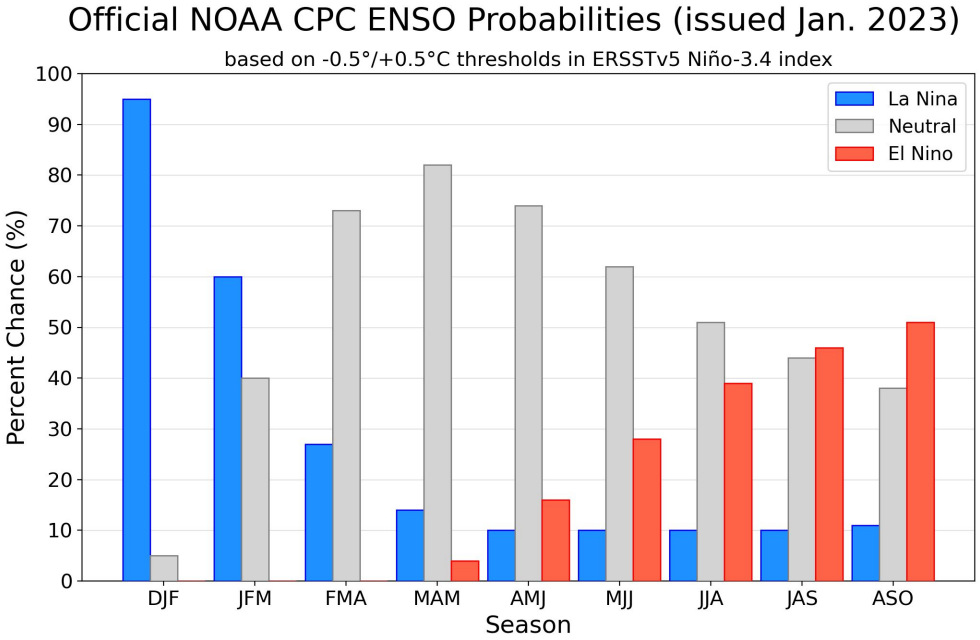
https://www.cpc.ncep.noaa.gov

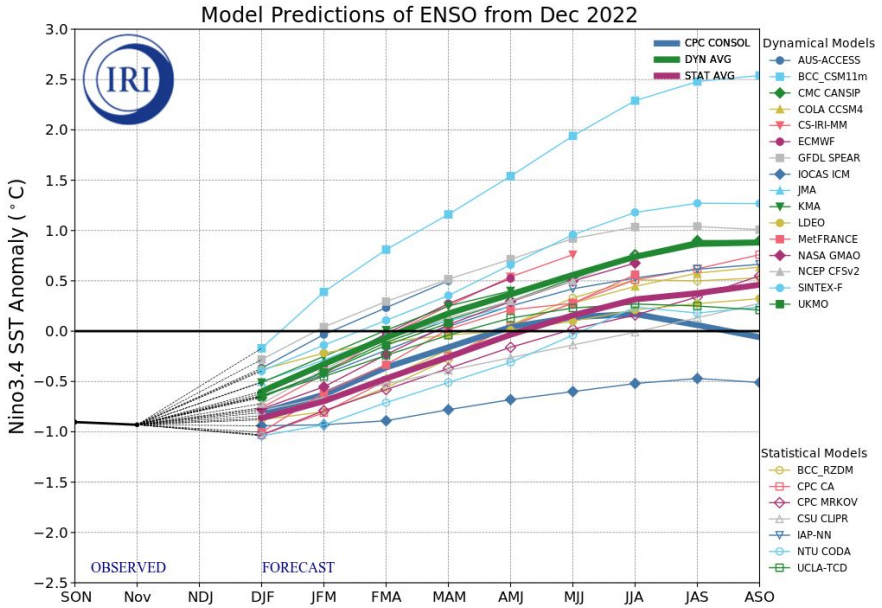
8-14 day hazards



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

What's the ENSO forecast?

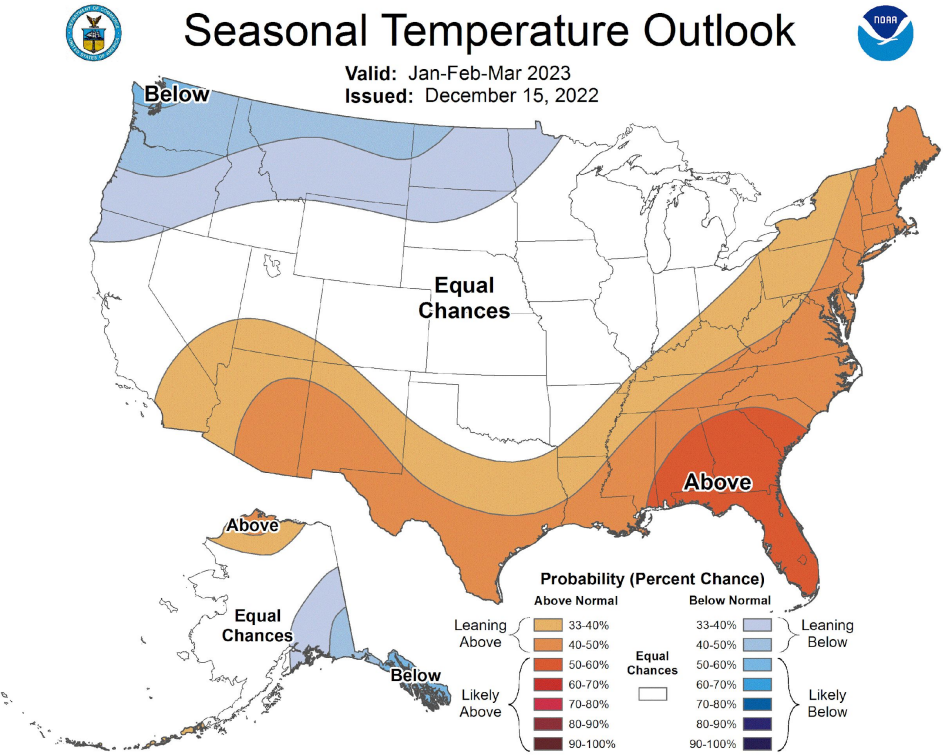


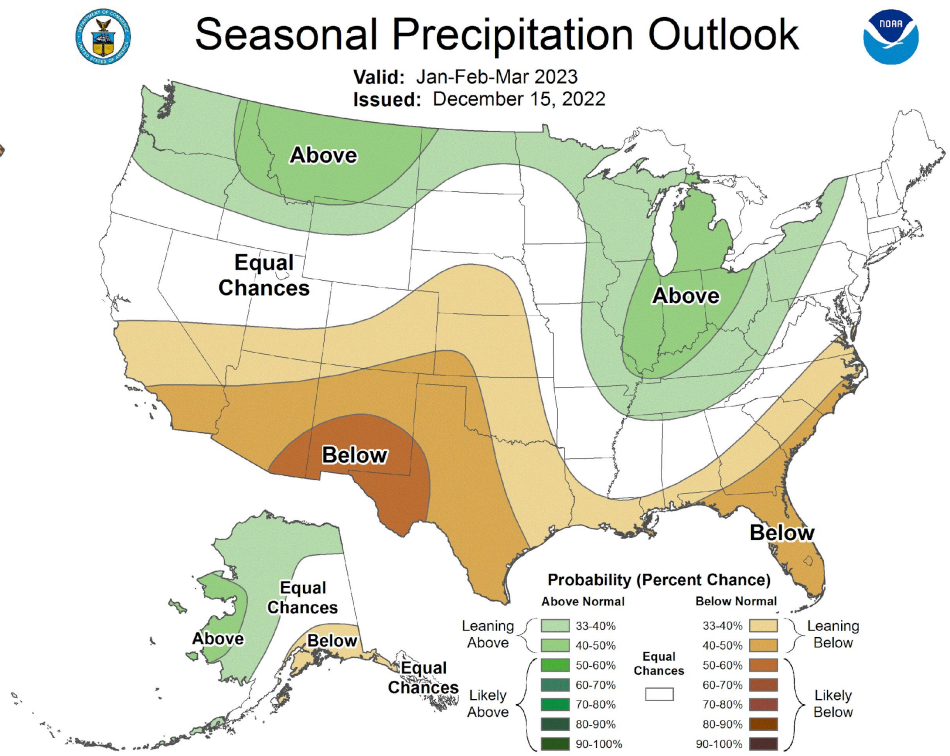


CPC/IRI January 12, 2022: Several models (11 out of 18) in the plume predict SSTs to transition from the level of a La Niña to ENSO-neutral state during Jan-Mar, 2023. According to the early-December CPC ENSO forecast, La Niña and ENSO-neutral conditions are equally likely (50/50) during Jan-Mar 2023, with ENSO-neutral becoming the most likely category in subsequent three seasons. However, based on the objective ENSO forecasts, La Niña is expected to transition into ENSO-neutral during Jan-Mar 2023, which remains the most likely category until Apr-Jun 2023. The likelihood of El Niño remains low through Apr-Jun 2023 (49% chance), and becomes the dominant category thereafter with probabilities in the 60-66% range.

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

Seasonal outlook





The last seasonal outlook released from CPC shows a La Niña pattern. This will probably shift over the next couple of months as La Niña continues to weaken and transition to neutral conditions.

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

Key Takeaways

- Conditions looking good in the mountains and northeast CO
- Drought is a pressing issue in southeast CO right now
- La Niña likely to weaken the rest of winter, with neutral conditions to take over sometime in the spring
- This could be good news for the Eastern Plains
- Climate Prediction Center is uncertain about our temperature patterns as we head into spring
- Slight leaning toward drier than average, especially the southern part of the state. But will that hold true of La Niña is no longer a factor?

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

Thank you

COLORADO CLIMATE CENTER

ATMOSPHERIC SCIENCE
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