



# *Climate Update*



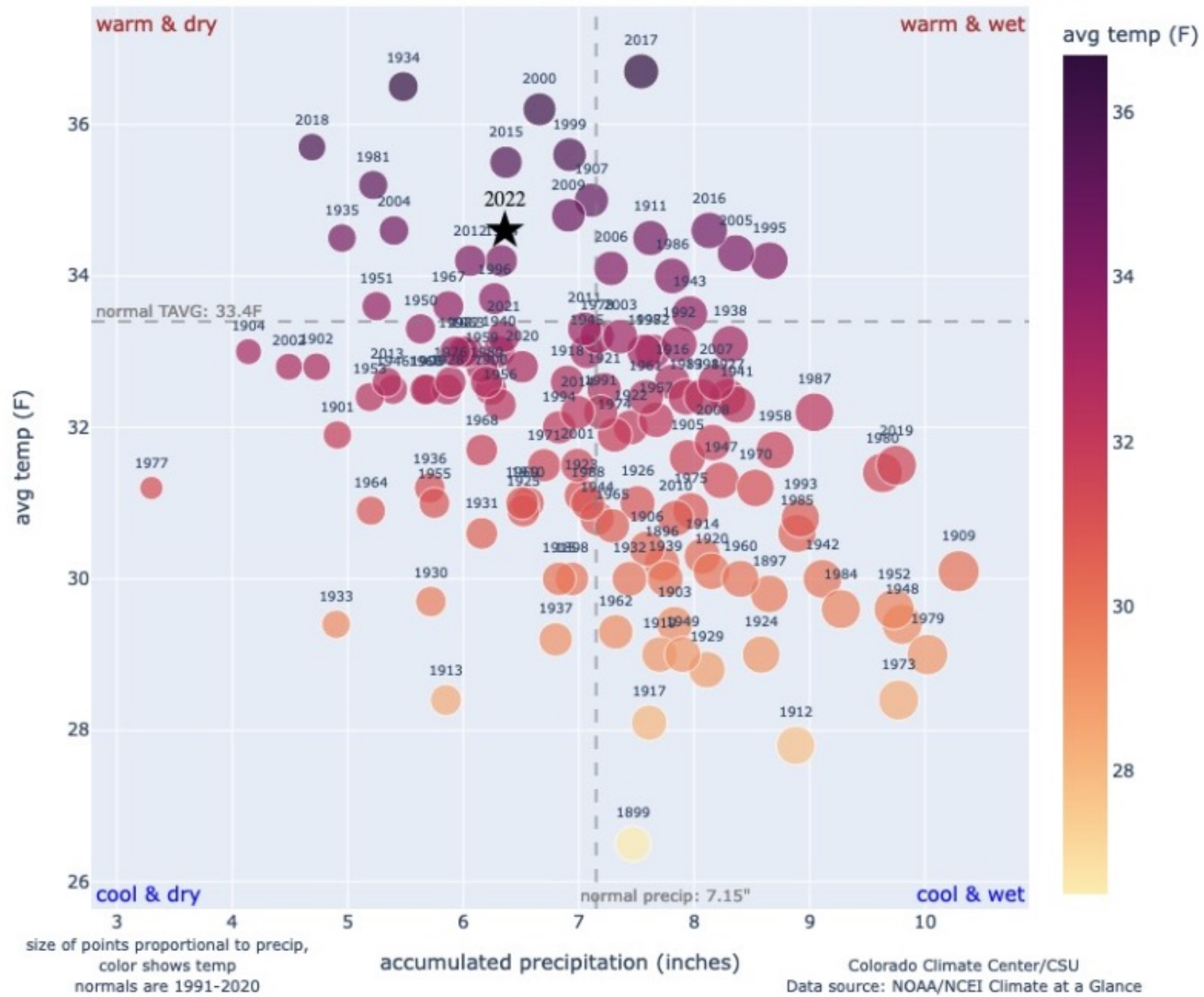
Peter Goble  
Colorado Climate Center

Presented to  
Water Availability Task Force  
April 19, 2022  
Denver, CO

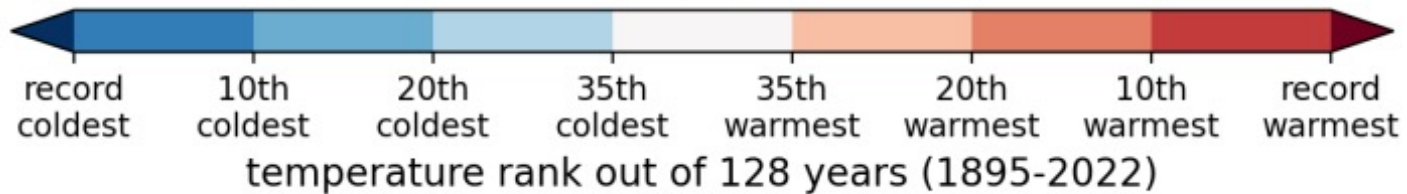
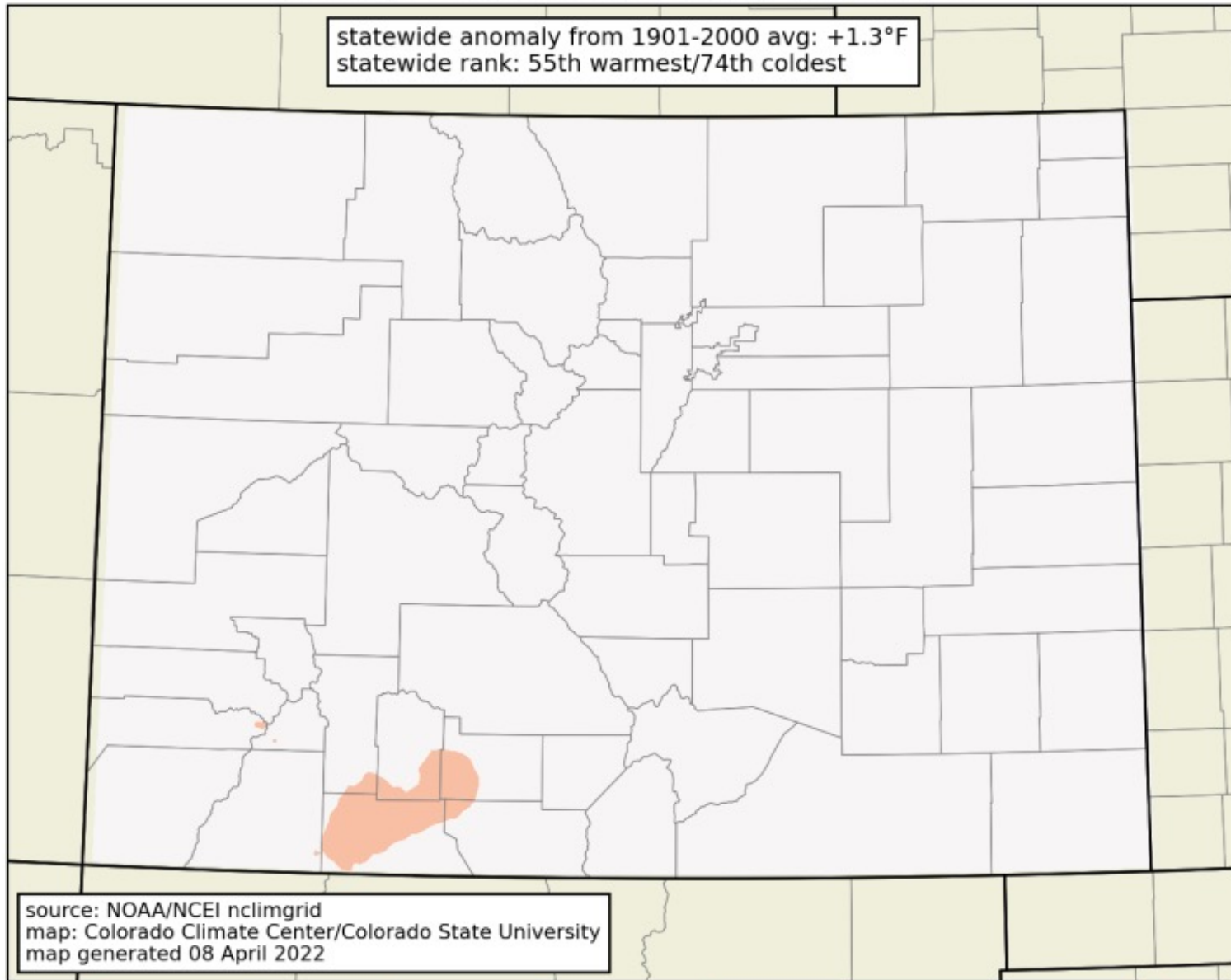
# Agenda

- 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 - March

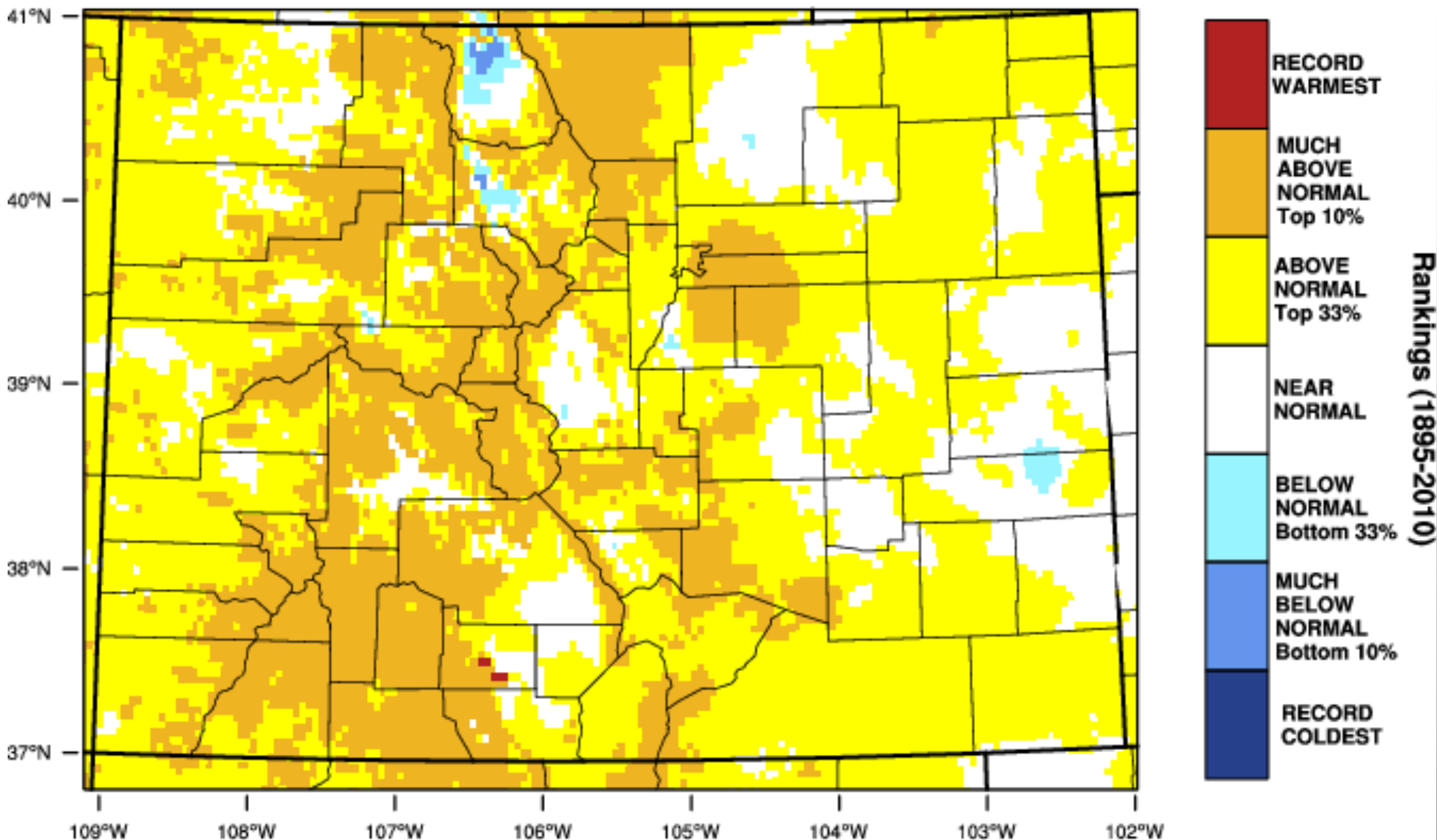


# average temperature rank: March 2022



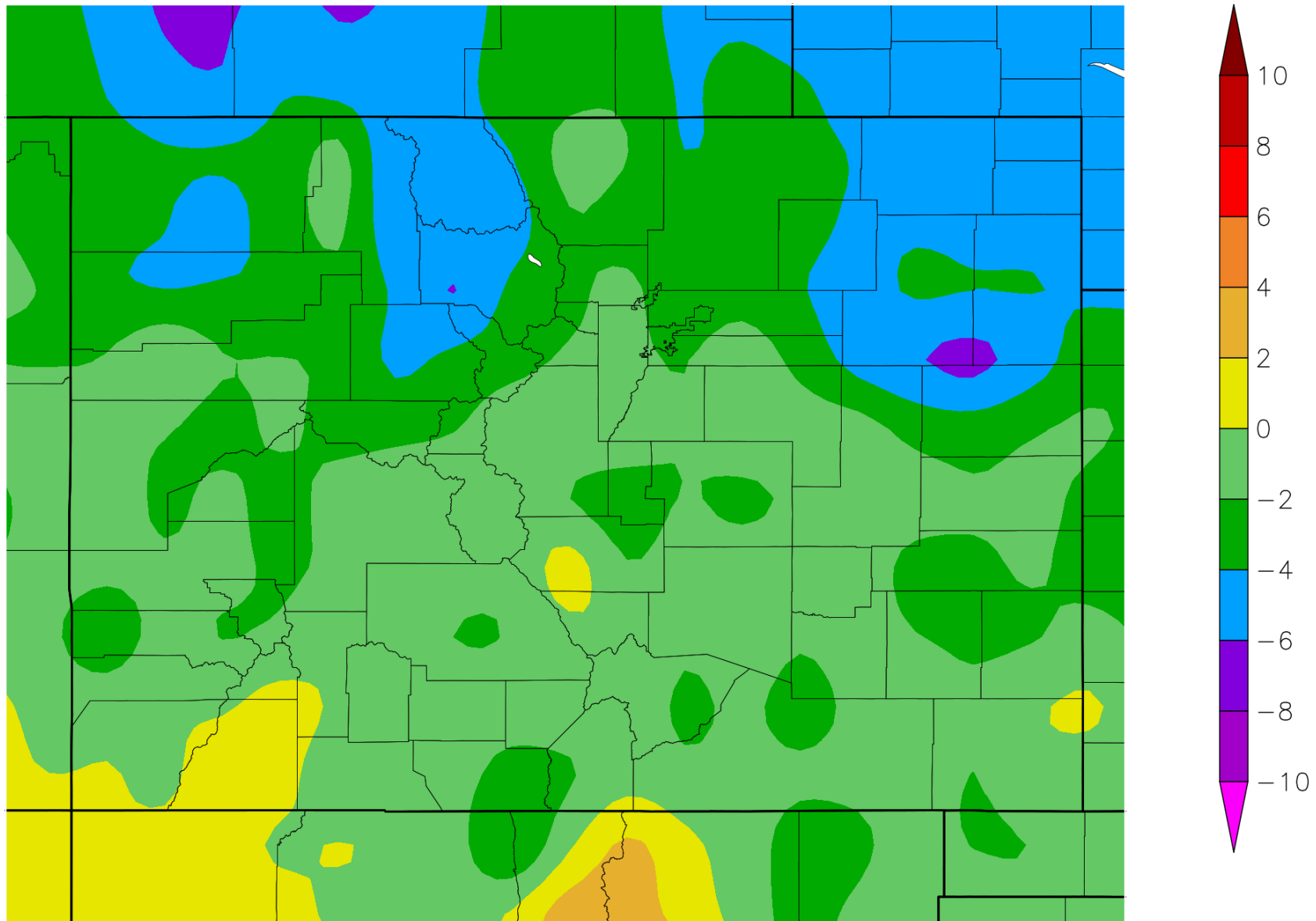
# Colorado - Mean Temperature

## October-March 2022 Percentile



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 APR 2022

# Departure from Normal Temperature (F) 4/1/2022 - 4/17/2022



## Maximum 3-day wind run (miles) at select CoAgMET stations

### Fort Collins

	Station	windrun_3day
date		
2014-04-29	ftc01	1249.46
2014-04-30	ftc01	1238.89
1998-02-28	ftc01	1132.01
1998-03-01	ftc01	1113.31
1999-05-06	ftc01	1101.45

### Kersey

	Station	windrun_3day
date		
2014-04-29	ksy01	1437.23
2022-04-07	ksy01	1312.40
1999-05-06	ksy01	1311.33
2014-04-30	ksy01	1274.49
1998-02-27	ksy01	1246.16

### Yuma

	Station	windrun_3day
date		
2014-04-29	yum02	1730.51
1998-03-01	yum02	1650.36
2014-04-30	yum02	1619.97
1998-02-28	yum02	1586.36
1998-02-27	yum02	1553.43
1999-05-06	yum02	1541.63
2022-04-07	yum02	1494.59

### Burlington

	Station	windrun_3day
date		
2014-04-30	brl02	1669.12
2014-04-29	brl02	1618.67
2022-04-07	brl02	1596.11
2021-01-16	brl02	1524.91
1998-03-01	brl02	1517.39

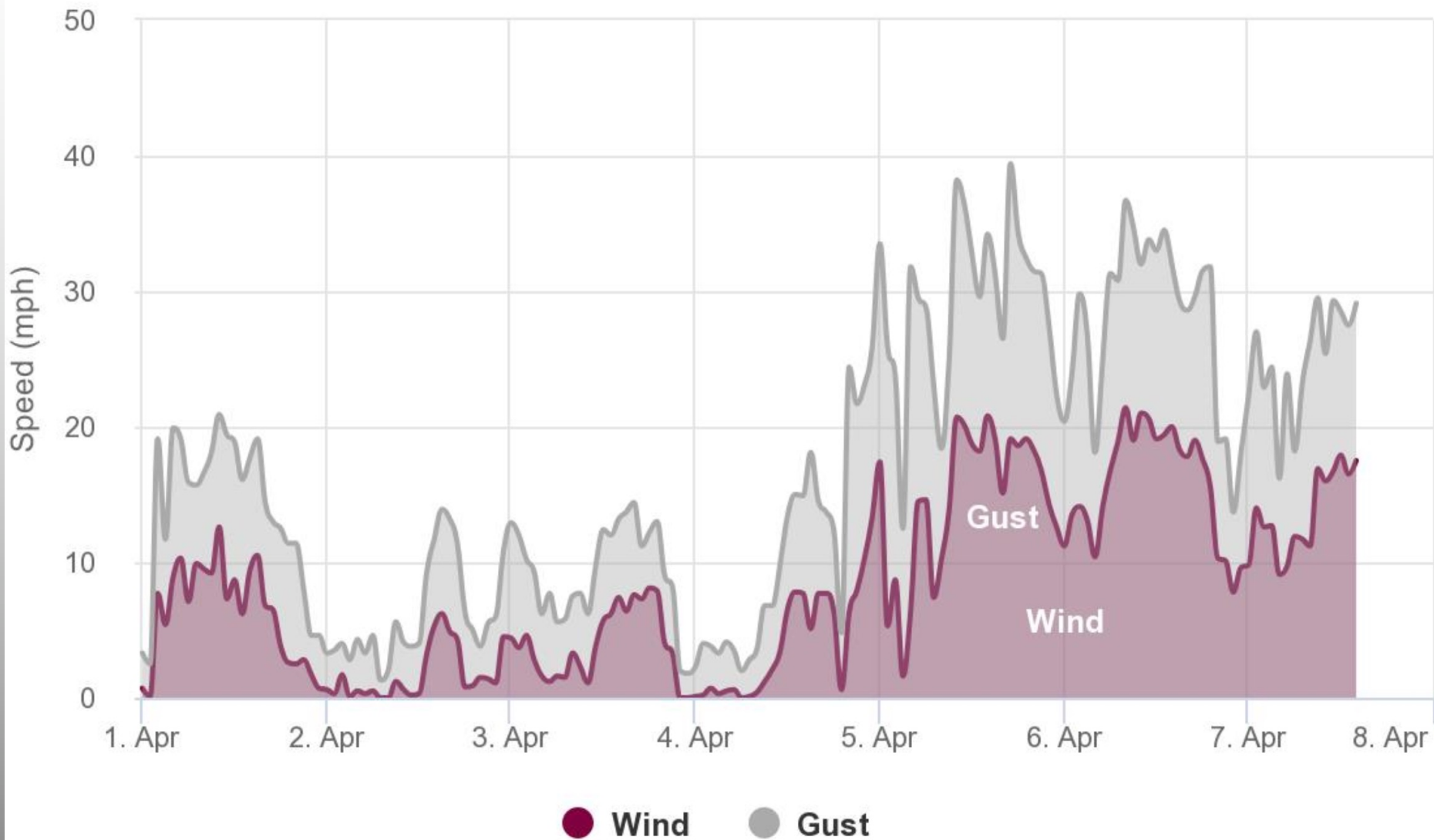
\*dates are the last day of the 3-day period

The wind has been relentless!

This is not only irritating, but evaporates moisture at much higher than normal rates

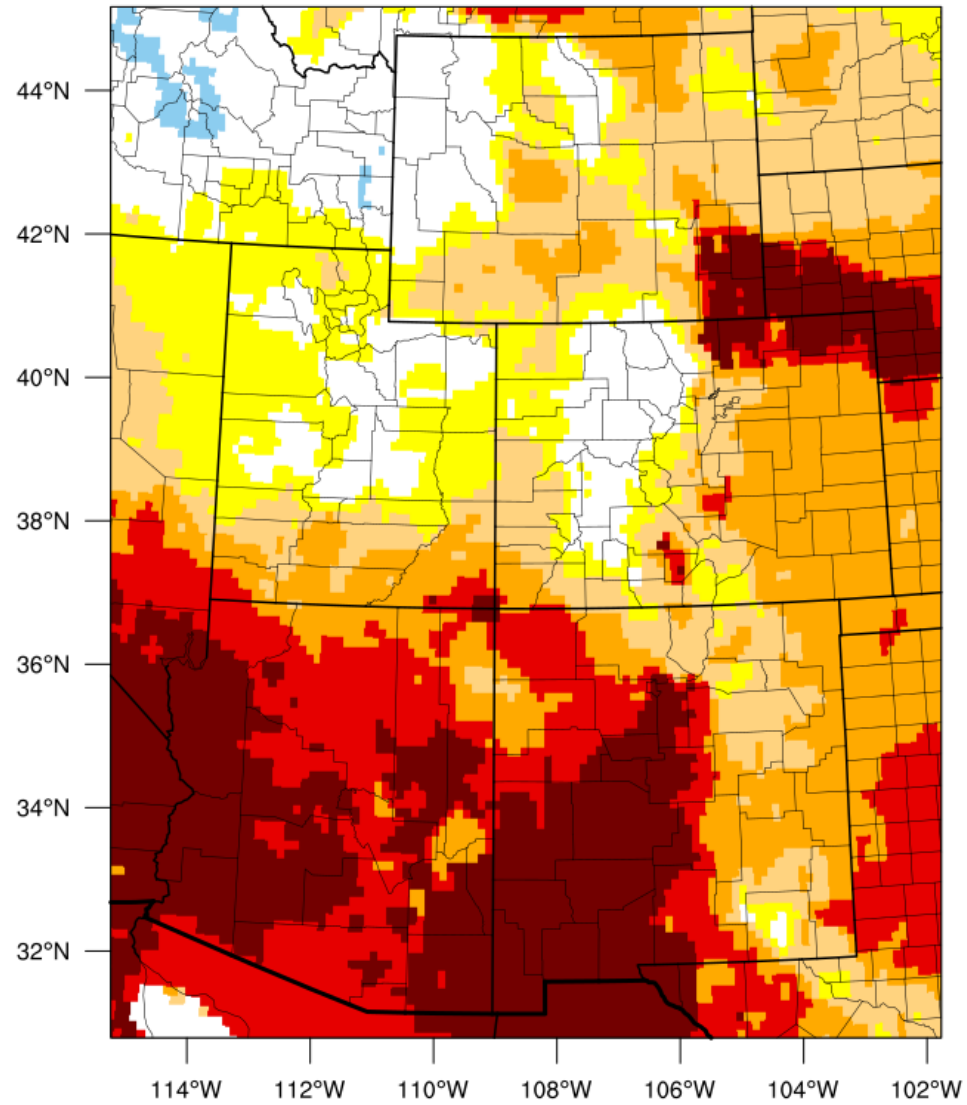
# Wind and Gust Speeds for Fort Collins AERC (FTC01)

Mar 31 - Apr 7, 2022



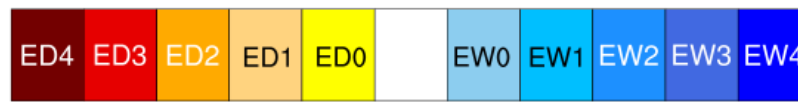


# 1-week EDDI categories for April 11, 2022



Drought categories

Wetness categories



100% 98% 95% 90% 80% 70% 30% 20% 10% 5% 2% 0%  
(EDDI-percentile category breaks: 100% = driest; 0% = wettest)

# Is it Getting Windier?

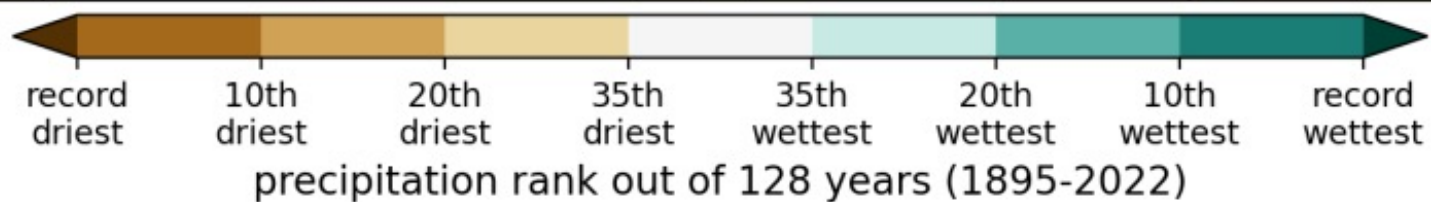
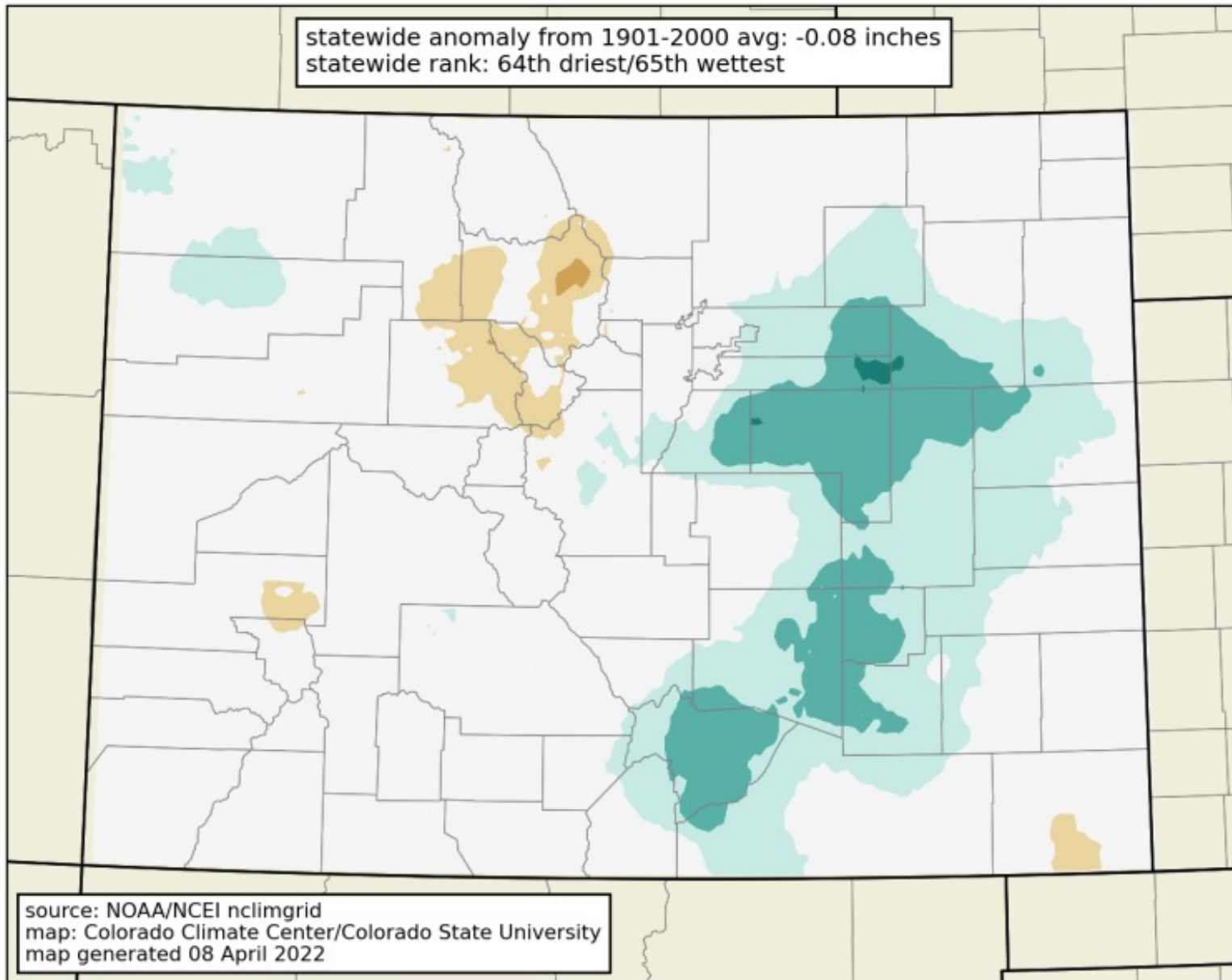
We get asked this frequently, but the evidence available does not support the claim (though evidence is more limited for wind than temperature and precipitation)

Climate models do not suggest that we should expect a windier future

April is the windiest month of the year in Colorado, and La Niña springs are significantly more windy than El Niño

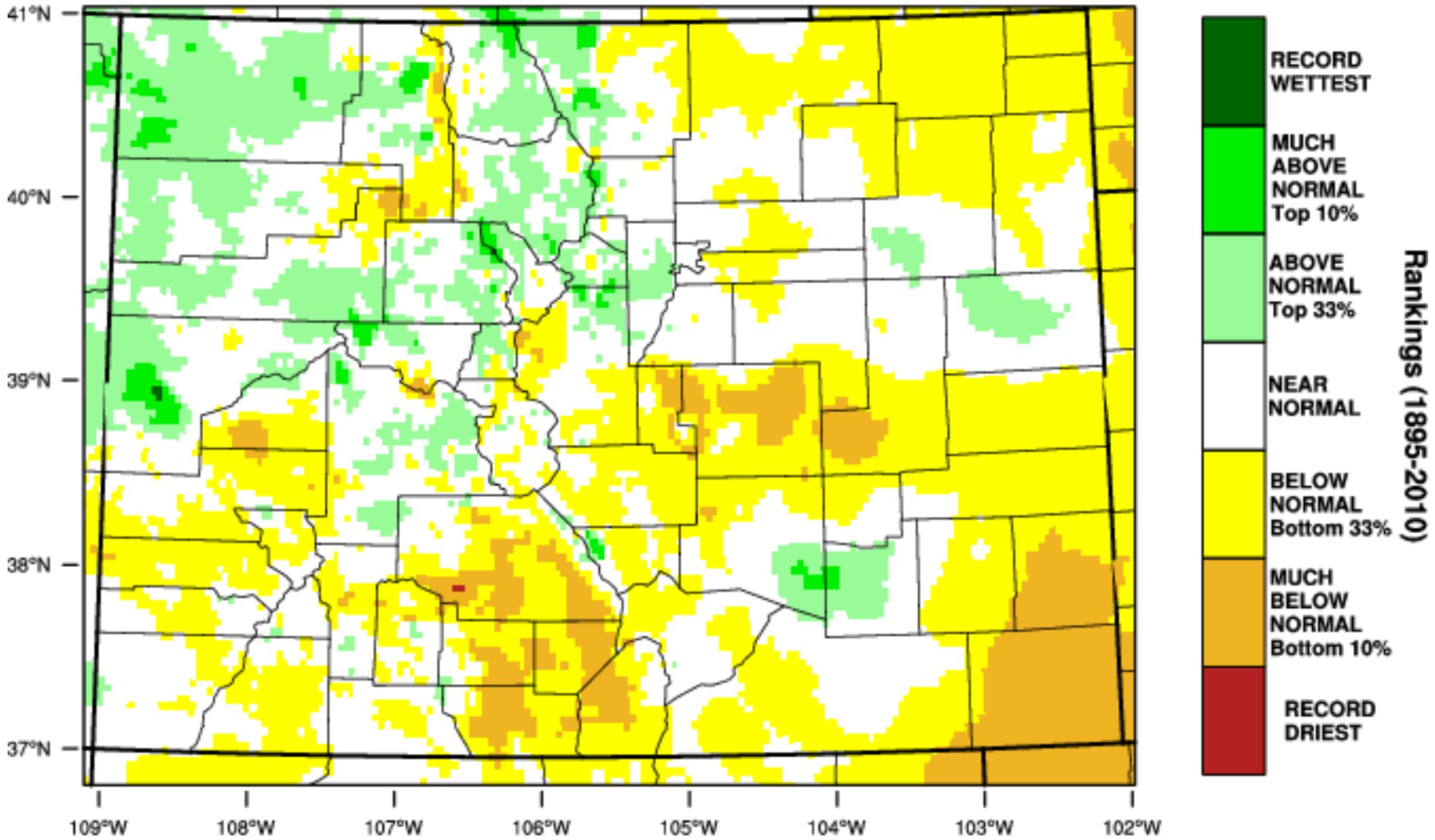
# precipitation rank: March 2022

statewide anomaly from 1901-2000 avg: -0.08 inches  
statewide rank: 64th driest/65th wettest



# Colorado - Precipitation

## October-March 2022 Percentile



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 APR 2022

QPE: Quantitative  
Precipitation Estimates

Download

About NWS  
Precip Analysis

Other Useful  
Information

Survey &  
Feedback

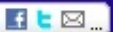
Regional / RFC  
Precip Data

Displaying Month to Date Percent of Normal Precipitation  
Valid on: April 18, 2022 12:00 UTC

Print this map

Permalink

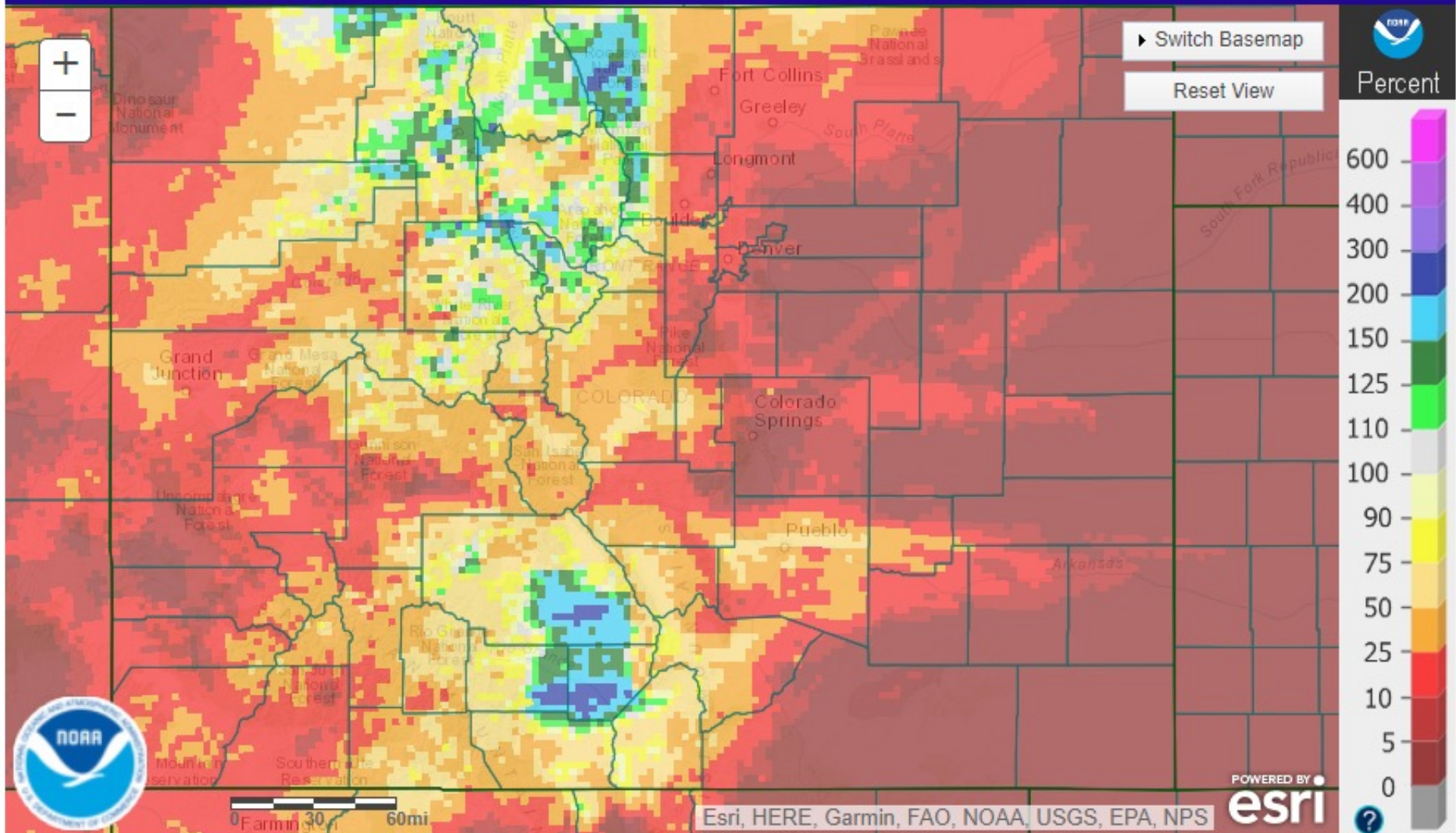
BOOKMARK



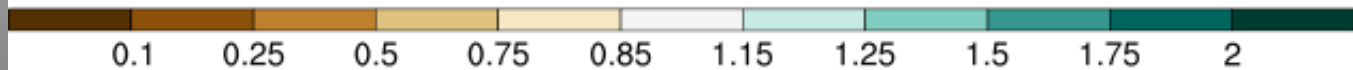
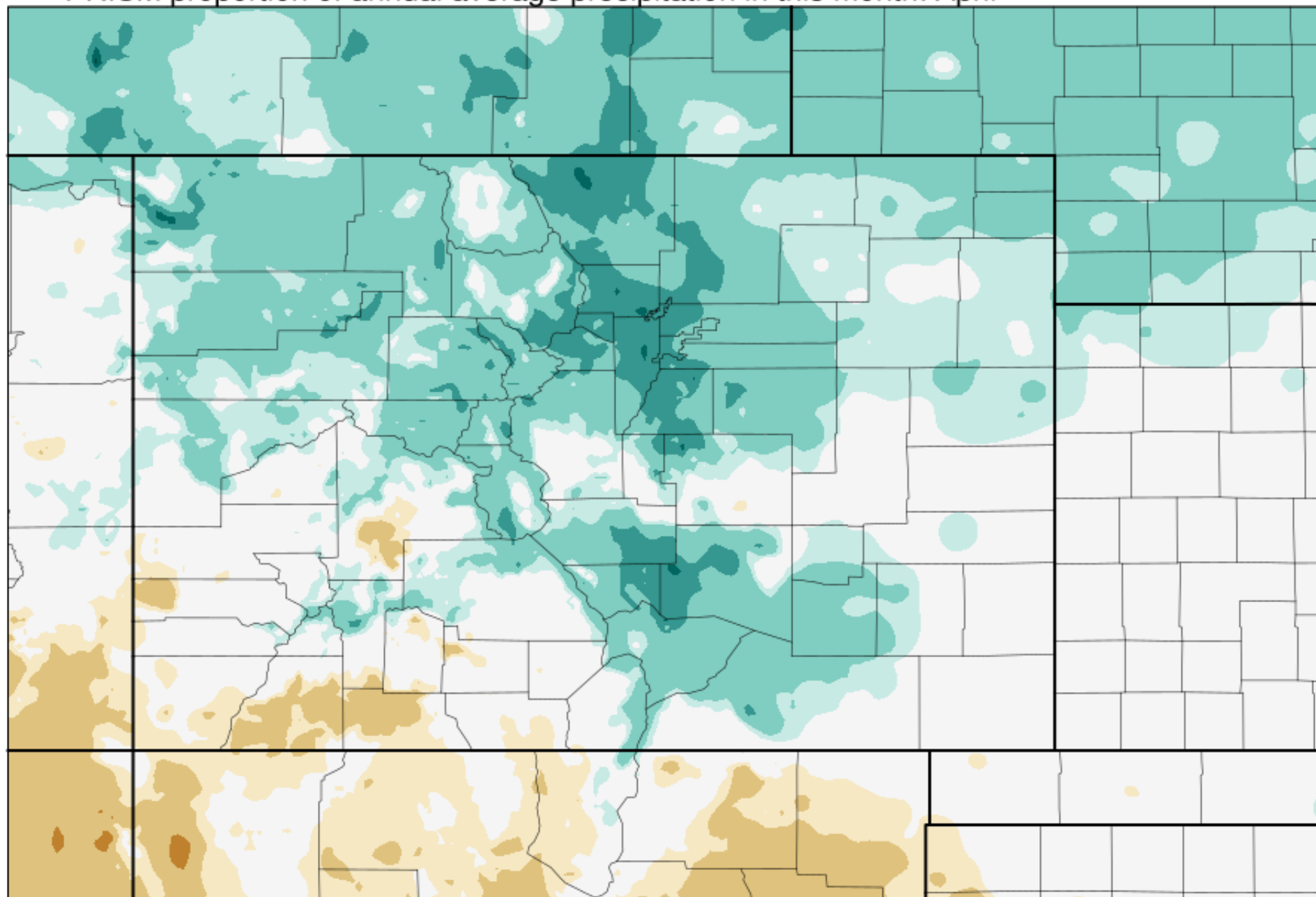
What is UTC time?

Map Help

Find address or location



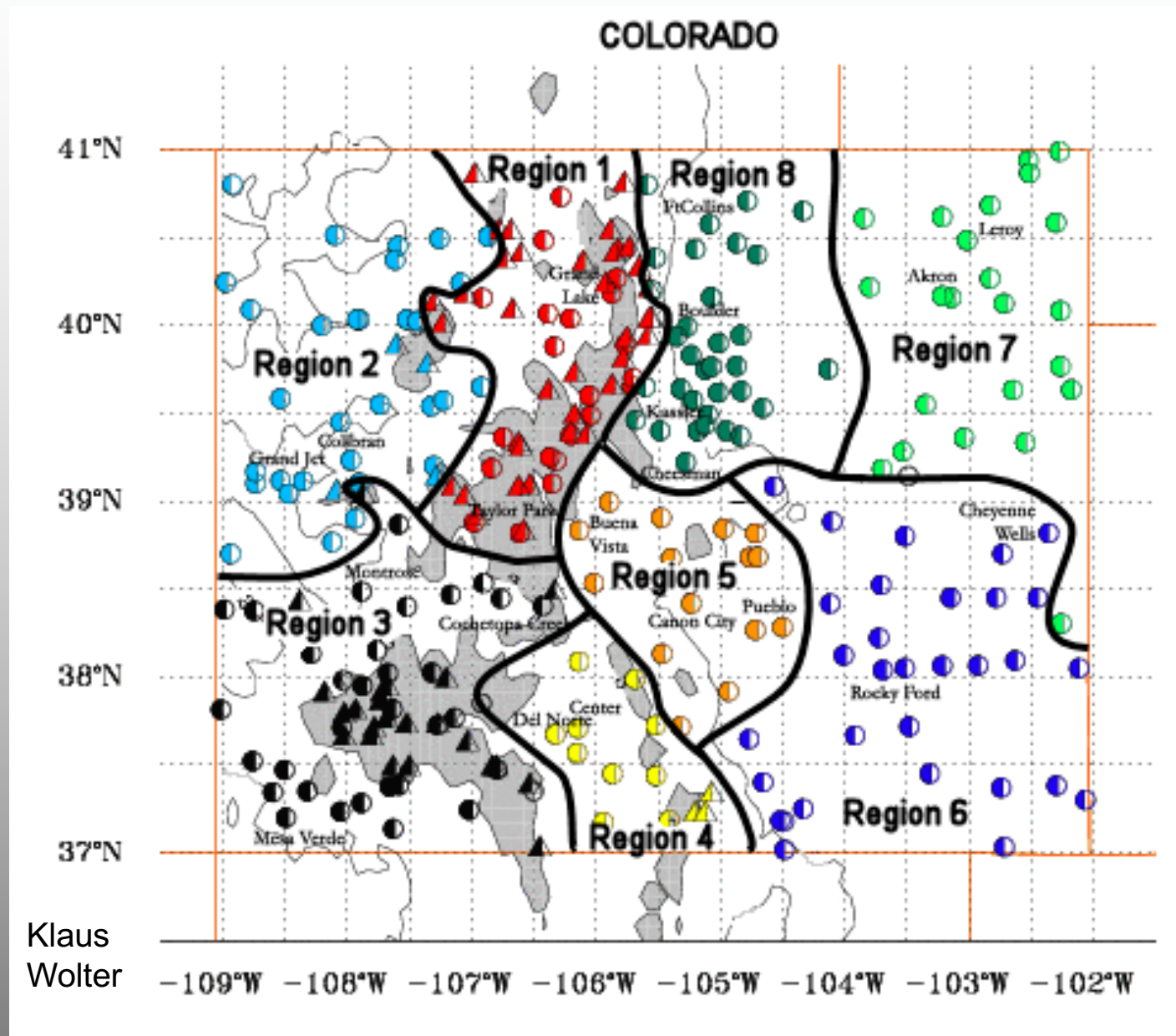
# PRISM proportion of annual average precipitation in this month: April



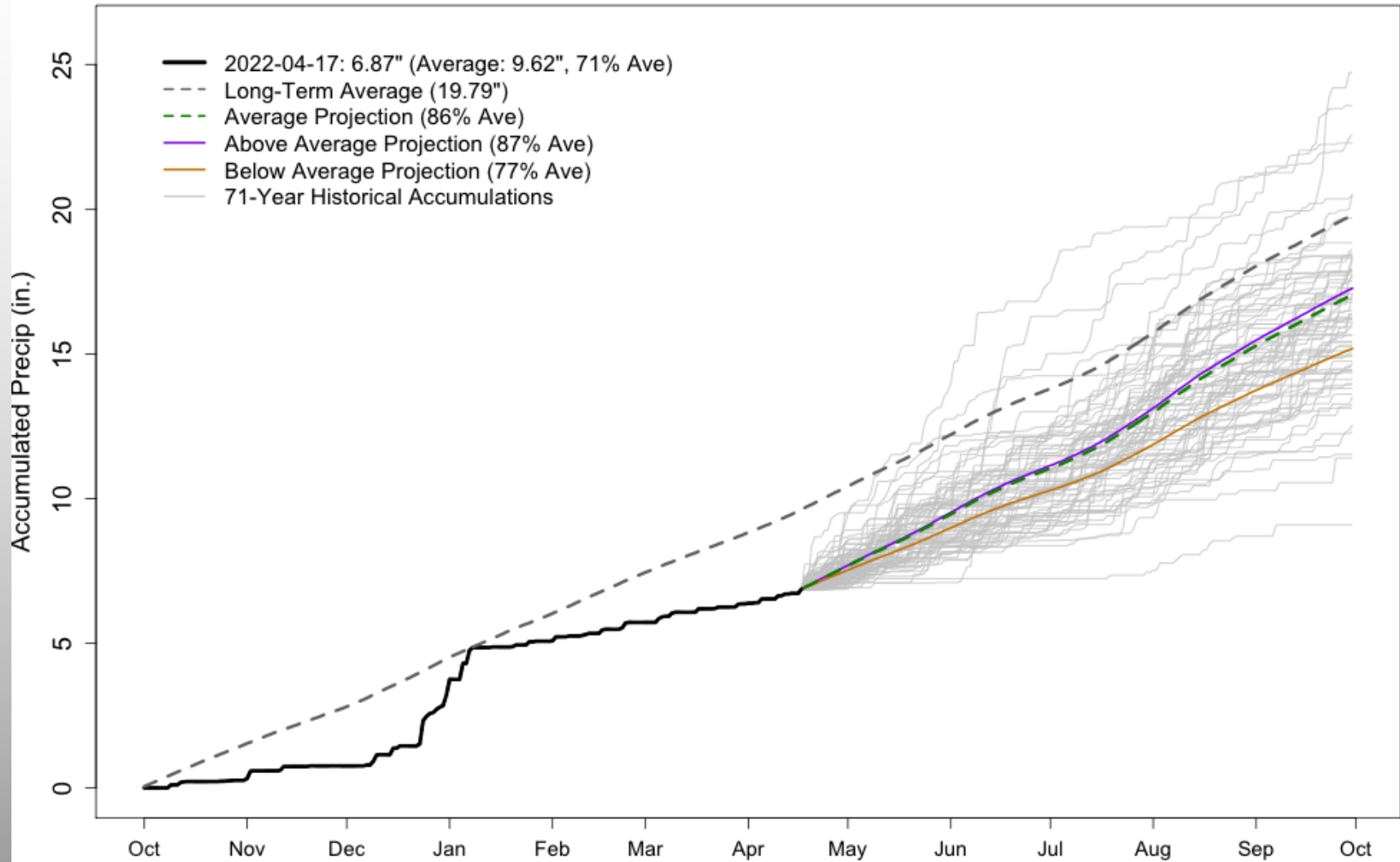
Proportion of precip relative to 1/12th

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

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

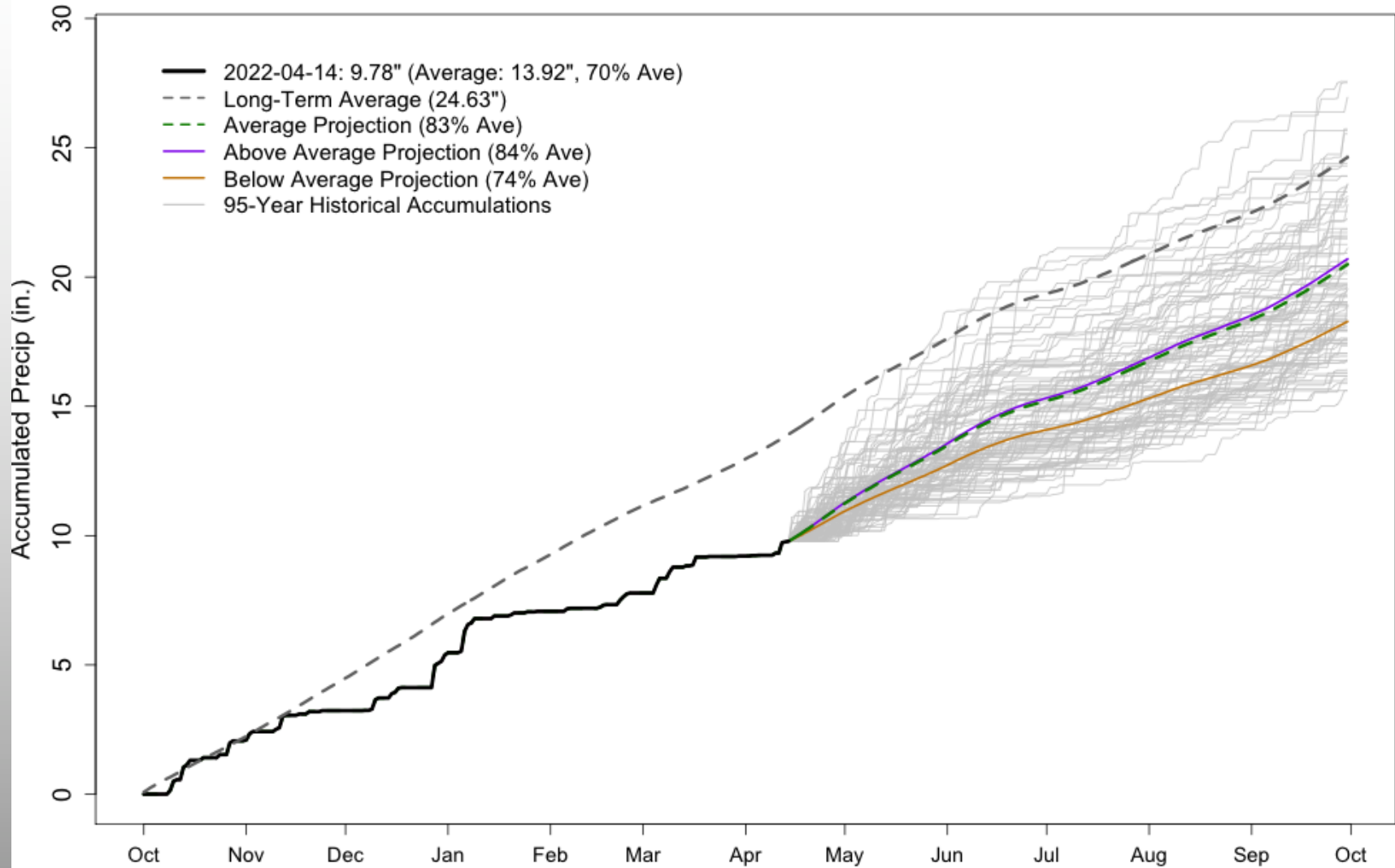


## GRAND LAKE 1 NW WY2022 Precipitation Projections

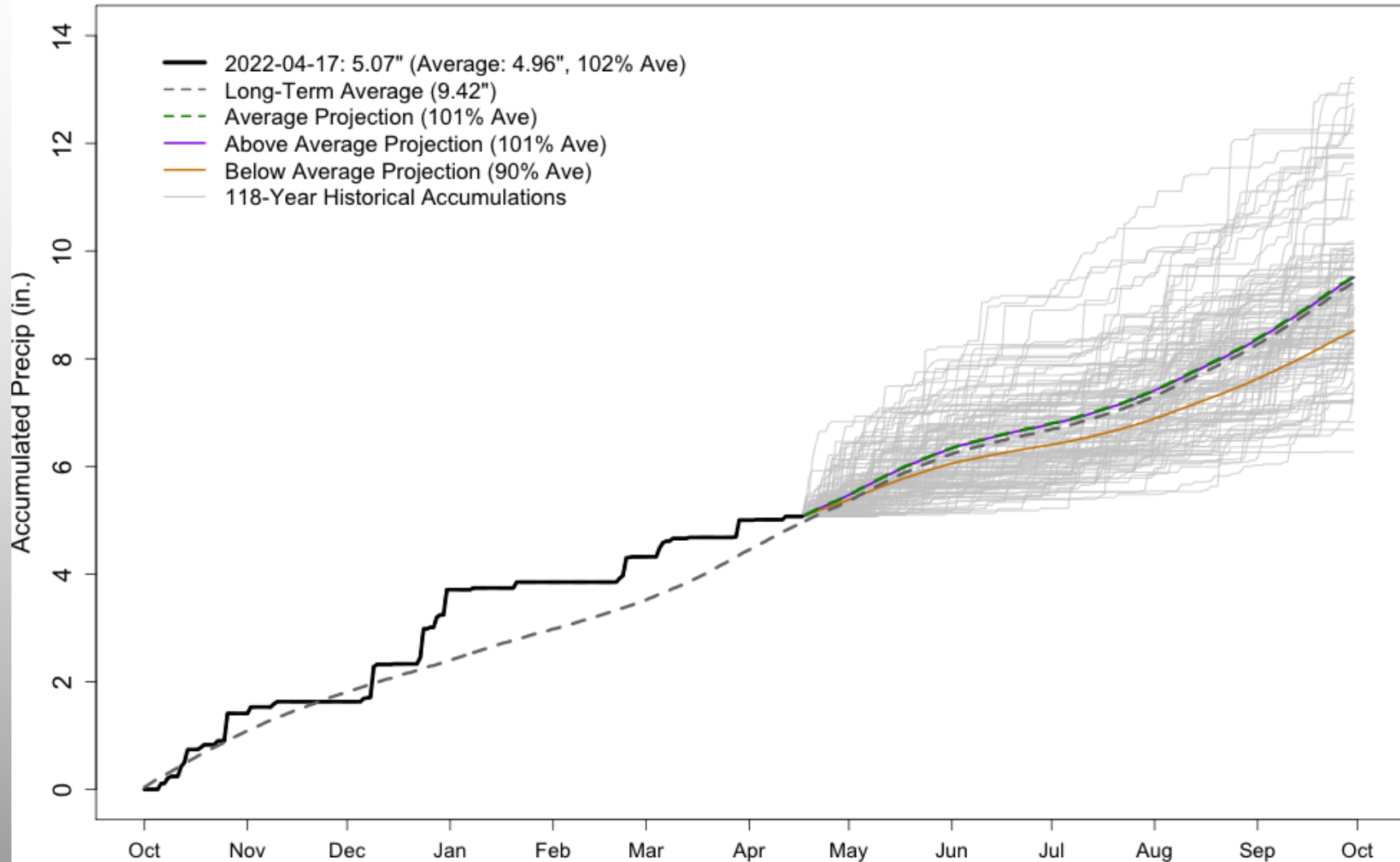




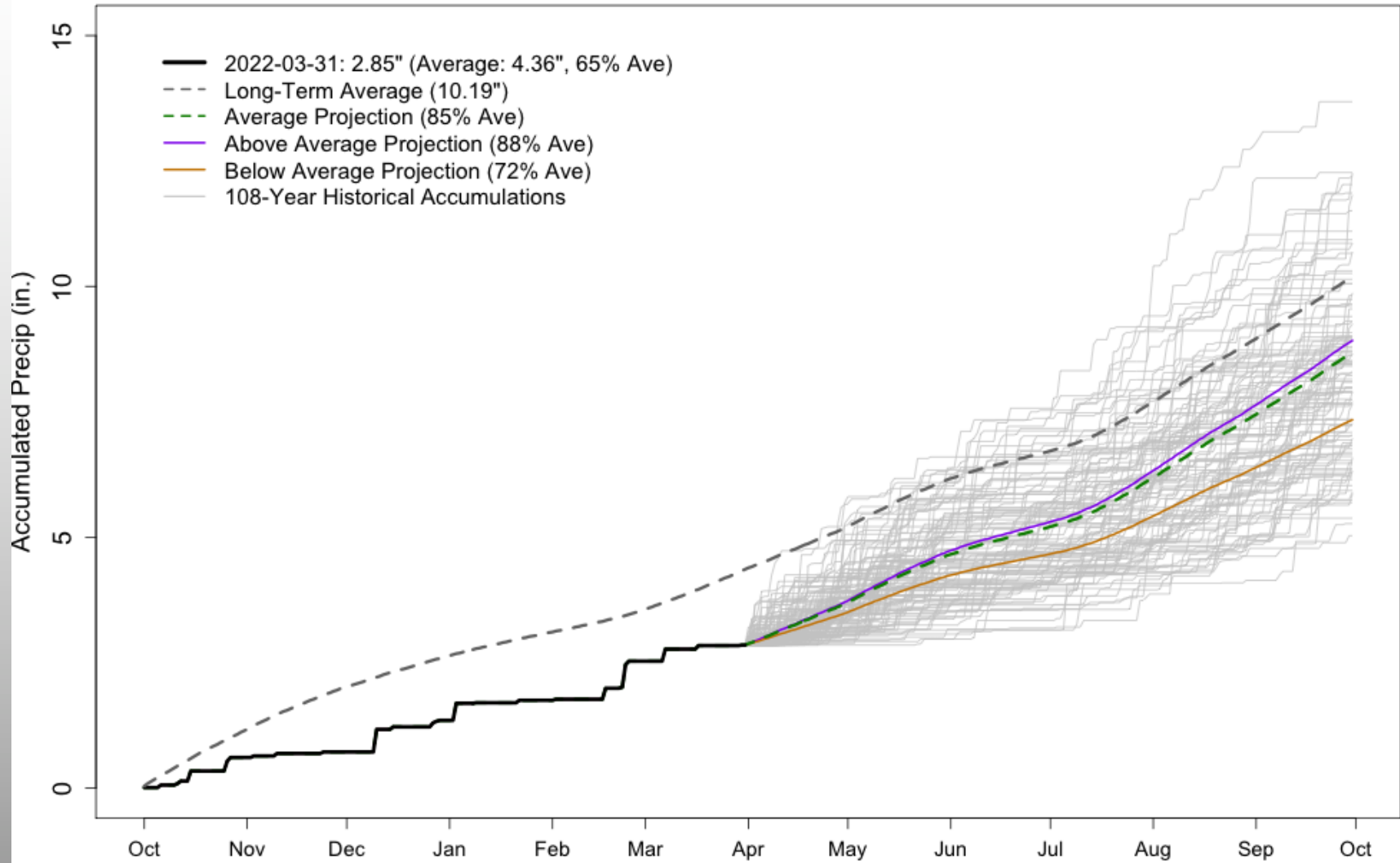
## STEAMBOAT SPRINGS WY2022 Precipitation Projections



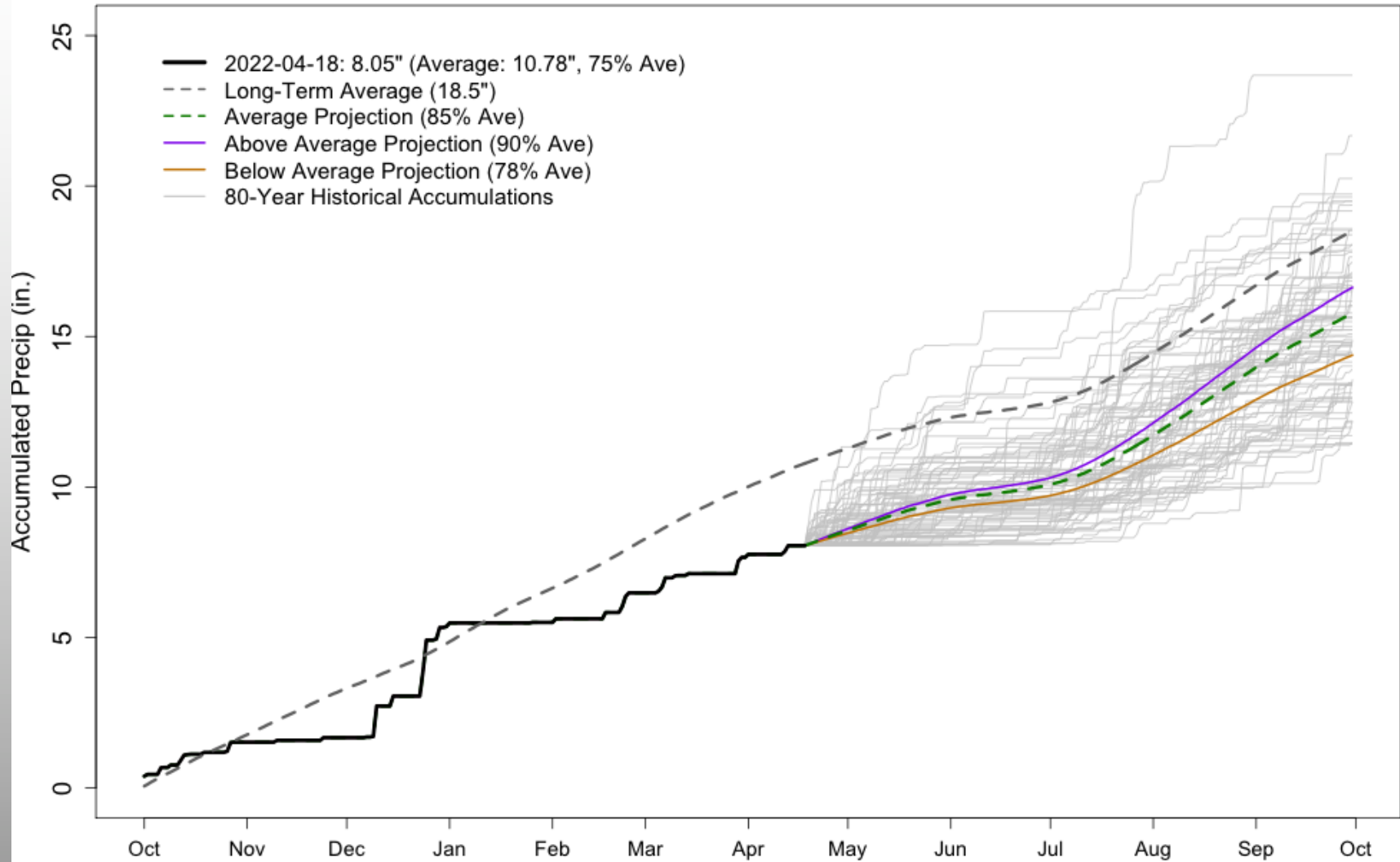
## GRAND JUNCTION WALKER FIELD WY2022 Precipitation Projections



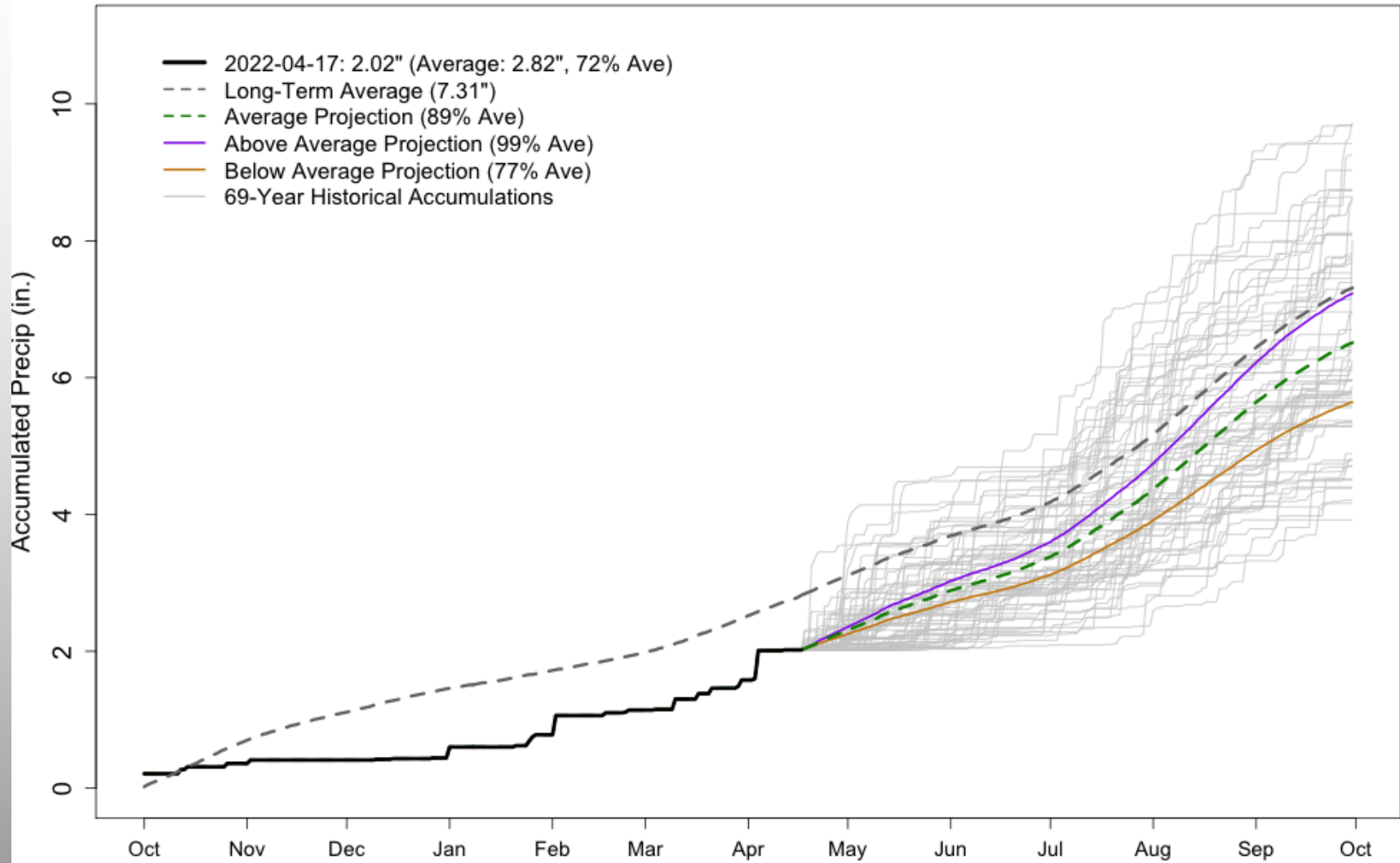
## MONTROSE NO 2 WY2022 Precipitation Projections



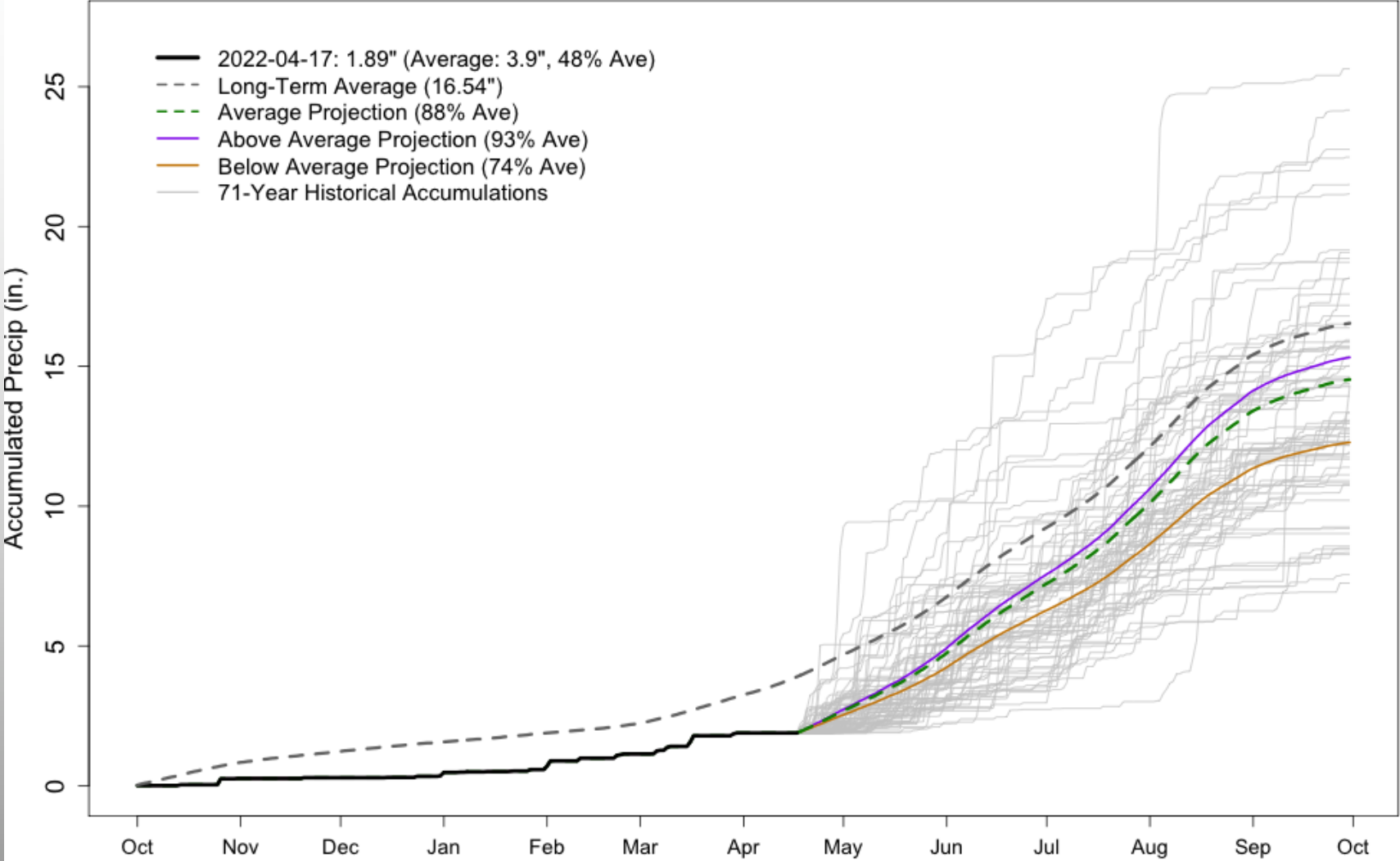
## MESA VERDE NP WY2022 Precipitation Projections



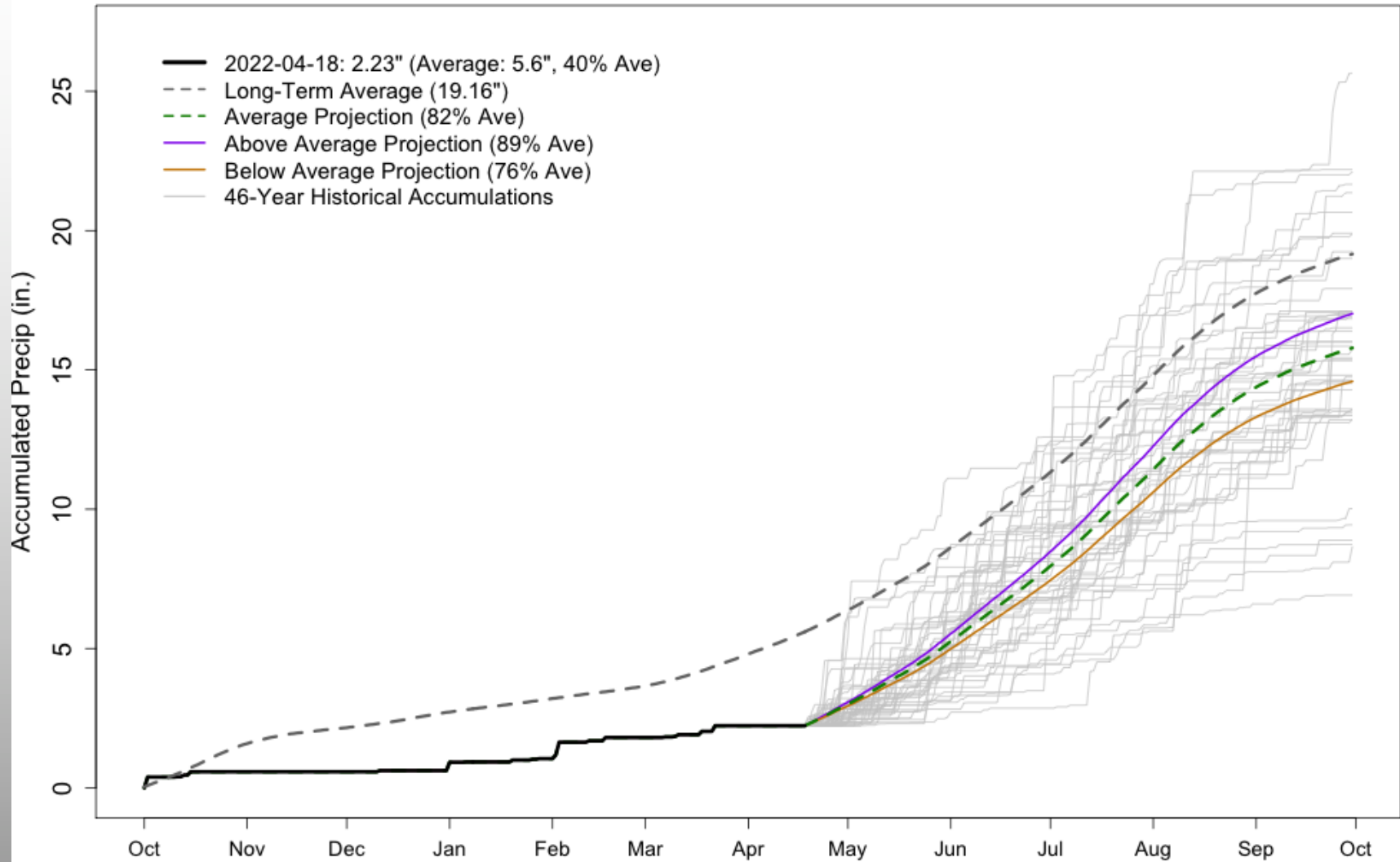
## ALAMOSA-BERGMAN FIELD WY2022 Precipitation Projections



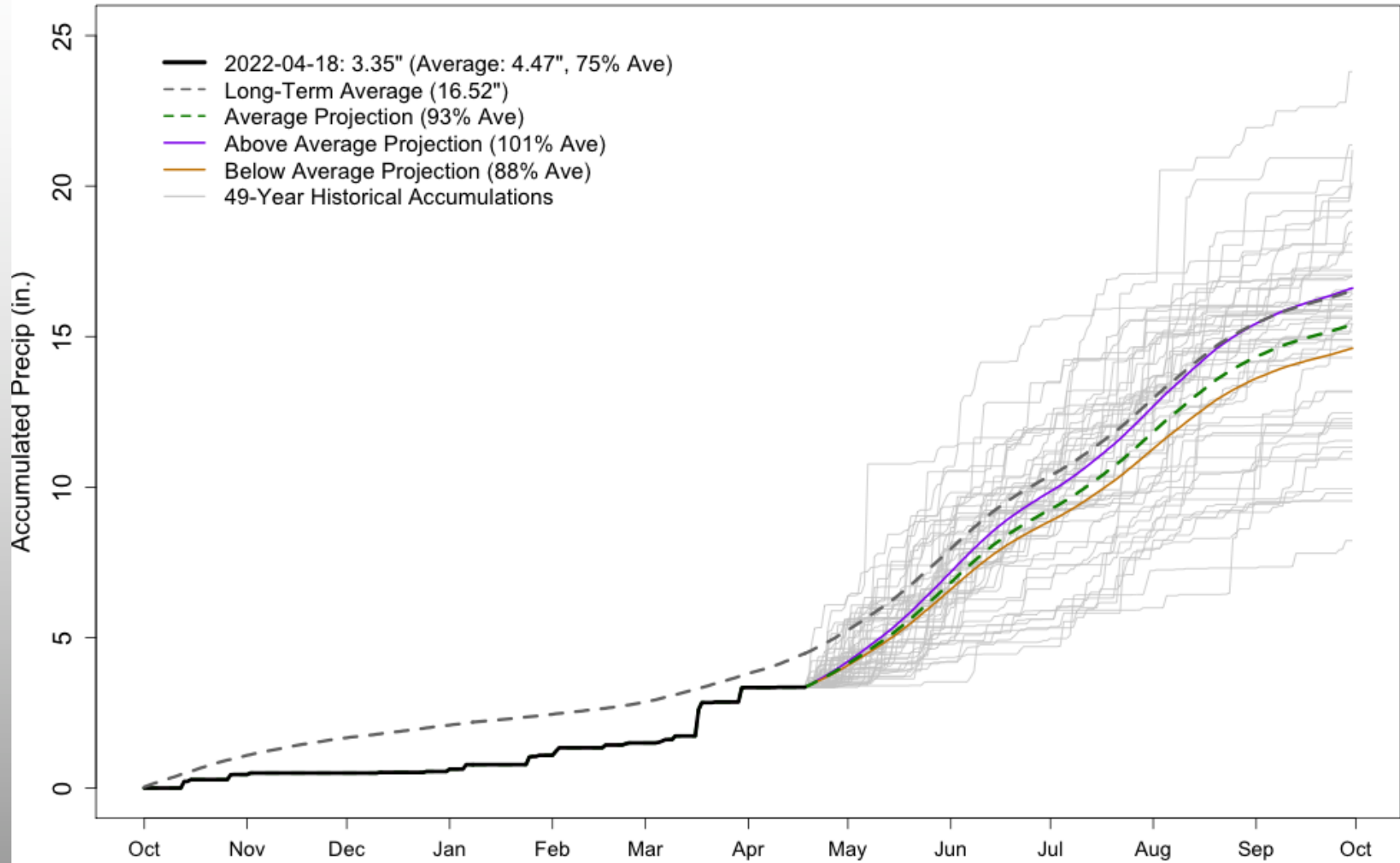
# COLORADO SPRINGS MUNICIPAL AP WY2022 Precipitation Projections



## WALSH 1 W WY2022 Precipitation Projections

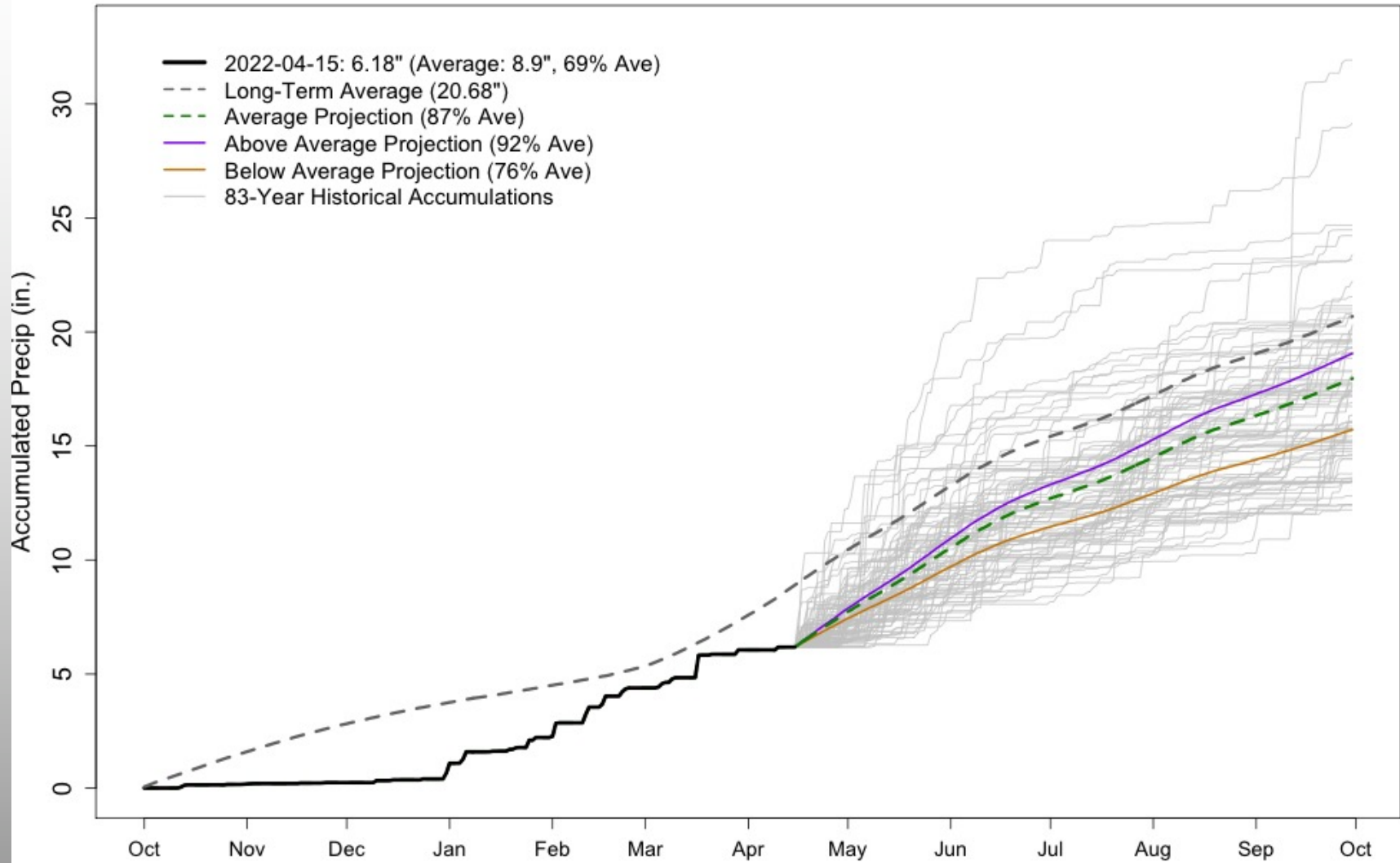


## AKRON 4 E WY2022 Precipitation Projections

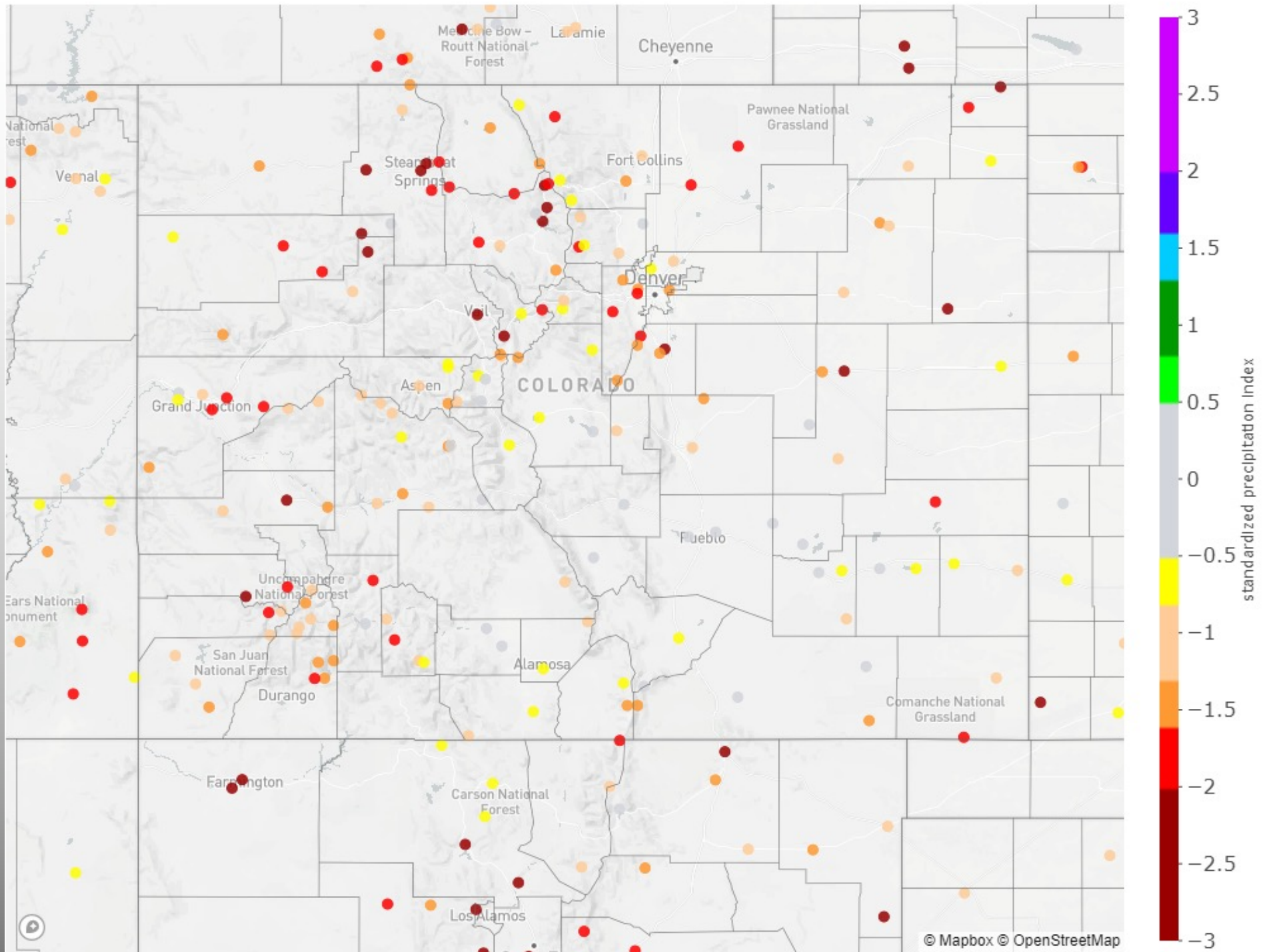




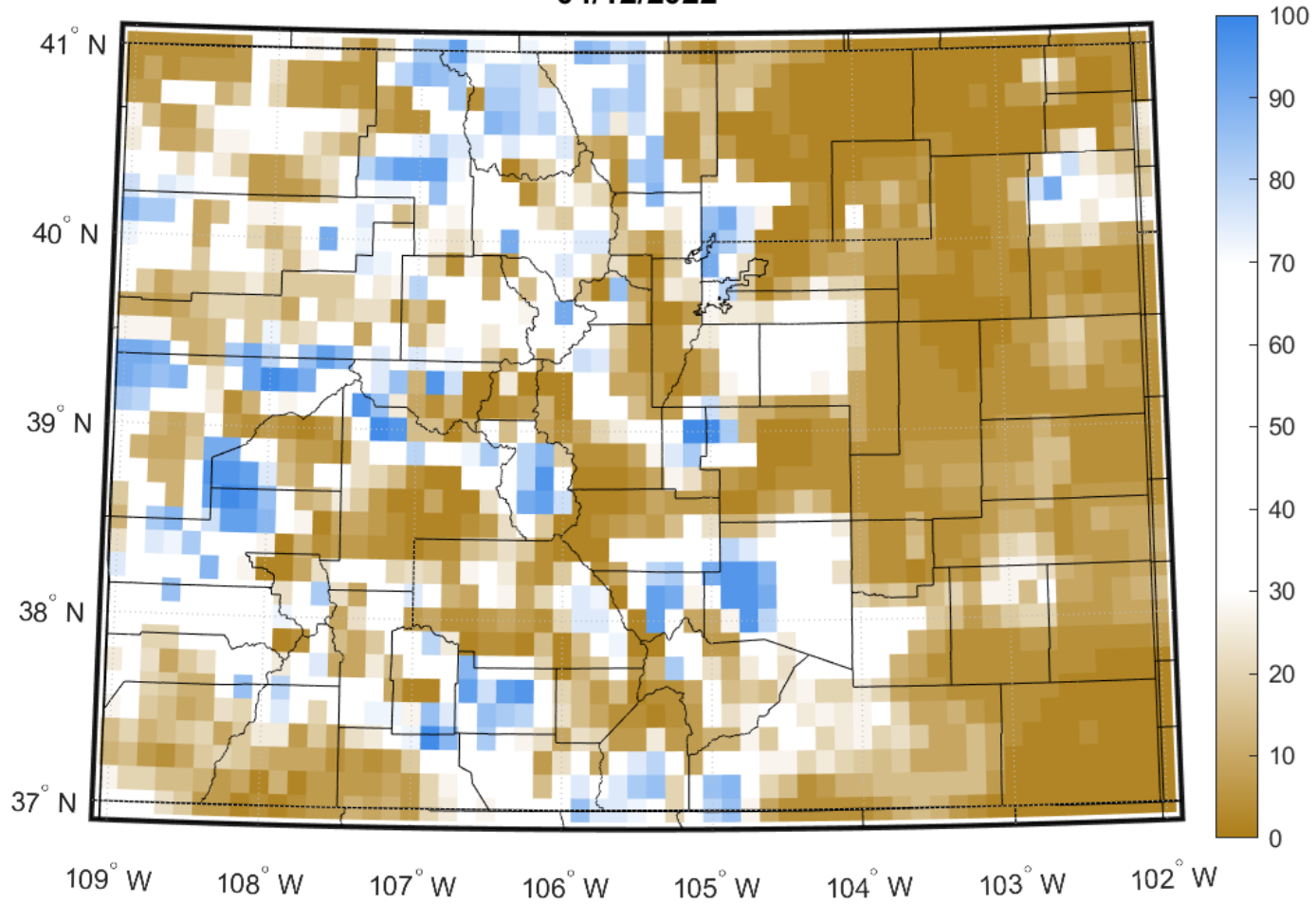
## BOULDER WY2022 Precipitation Projections



# 24-month Standardized Precipitation Index: 2020/04/18 - 2022/04/17



**Top Meter Soil Moisture Percentile**  
**04/12/2022**

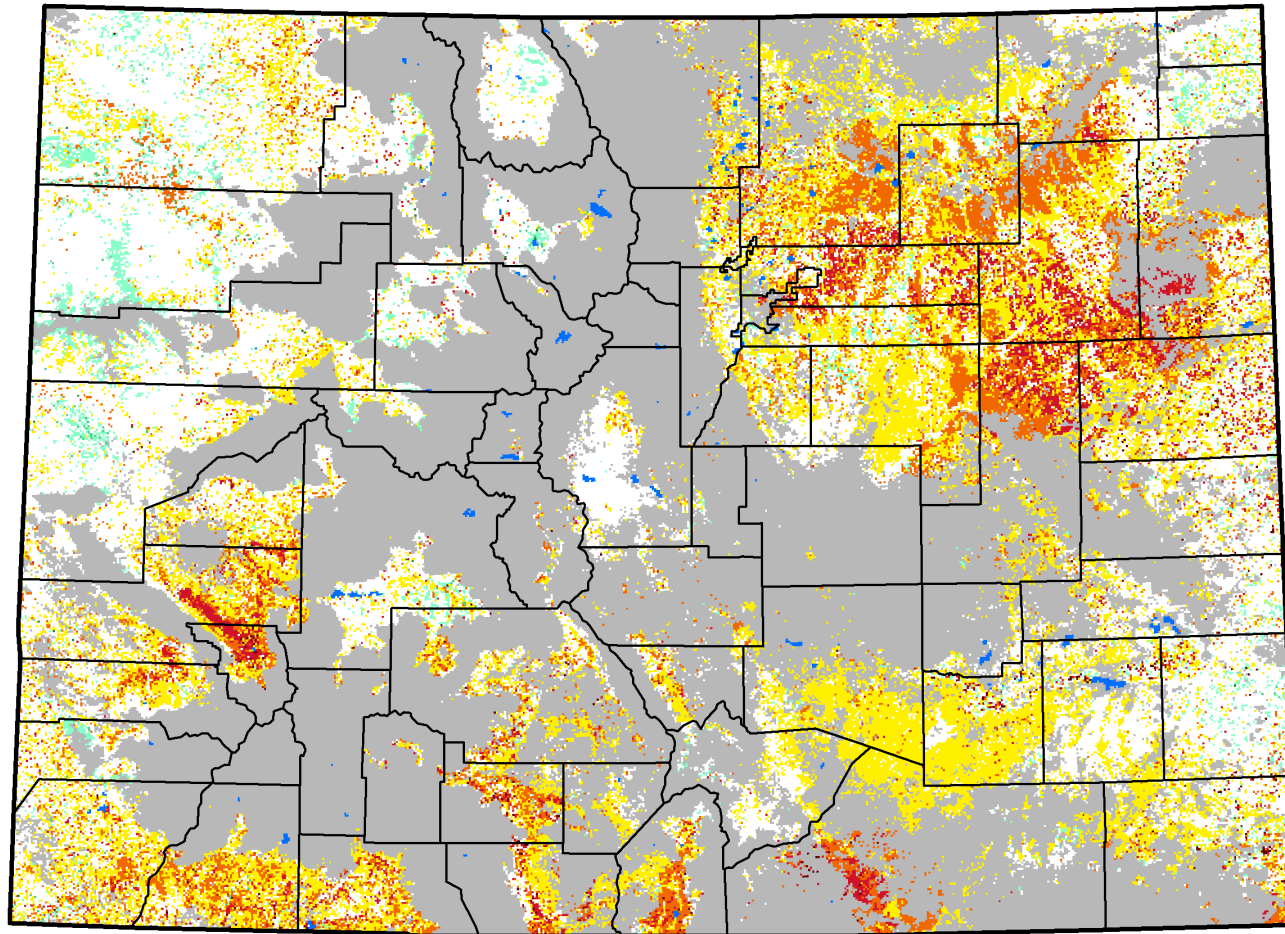


Data from North American Land Data Assimilation Systems NOAH Model

# Vegetation Drought Response Index

Complete: Colorado

April 10, 2022



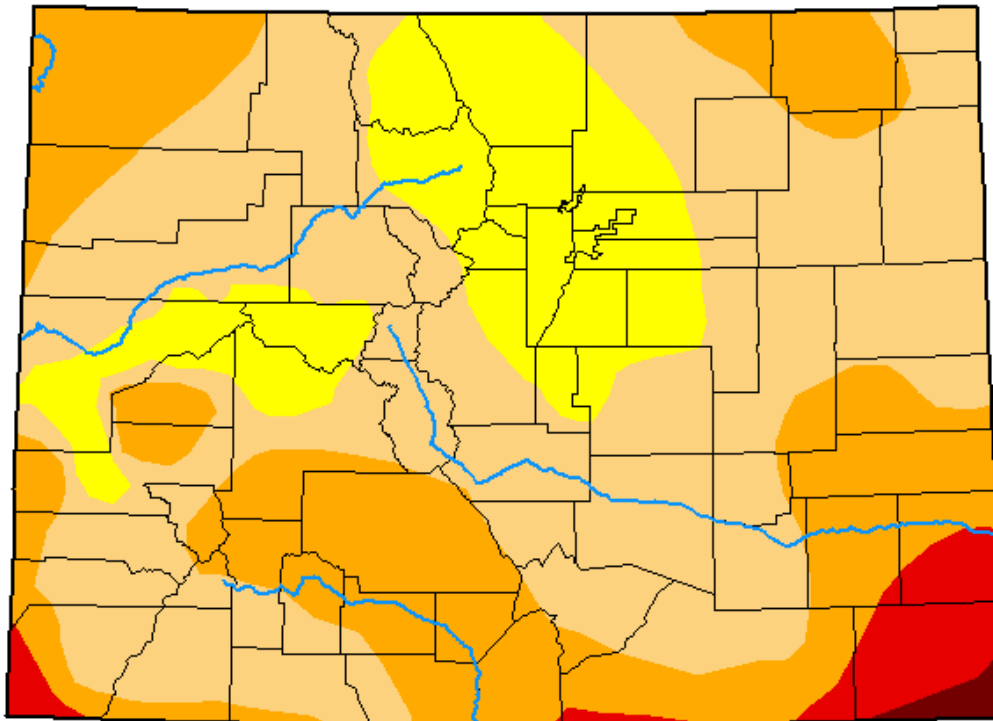
## Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-drought stress
- Near Normal
- Unusually Moist
- Very Moist
- Extreme Moist
- Out of Season
- Water



# U.S. Drought Monitor Colorado

**April 12, 2022**  
(Released Thursday, Apr. 14, 2022)  
Valid 8 a.m. EDT



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	82.90	31.94	4.32	0.53
<b>Last Week</b> <i>04-05-2022</i>	0.00	100.00	82.85	31.94	4.32	0.13
<b>3 Months Ago</b> <i>01-11-2022</i>	0.00	100.00	88.32	65.93	20.59	0.00
<b>Start of Calendar Year</b> <i>01-04-2022</i>	0.00	100.00	95.49	67.08	22.25	0.00
<b>Start of Water Year</b> <i>09-28-2021</i>	12.72	87.28	46.42	26.30	15.05	3.91
<b>One Year Ago</b> <i>04-13-2021</i>	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

*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>*

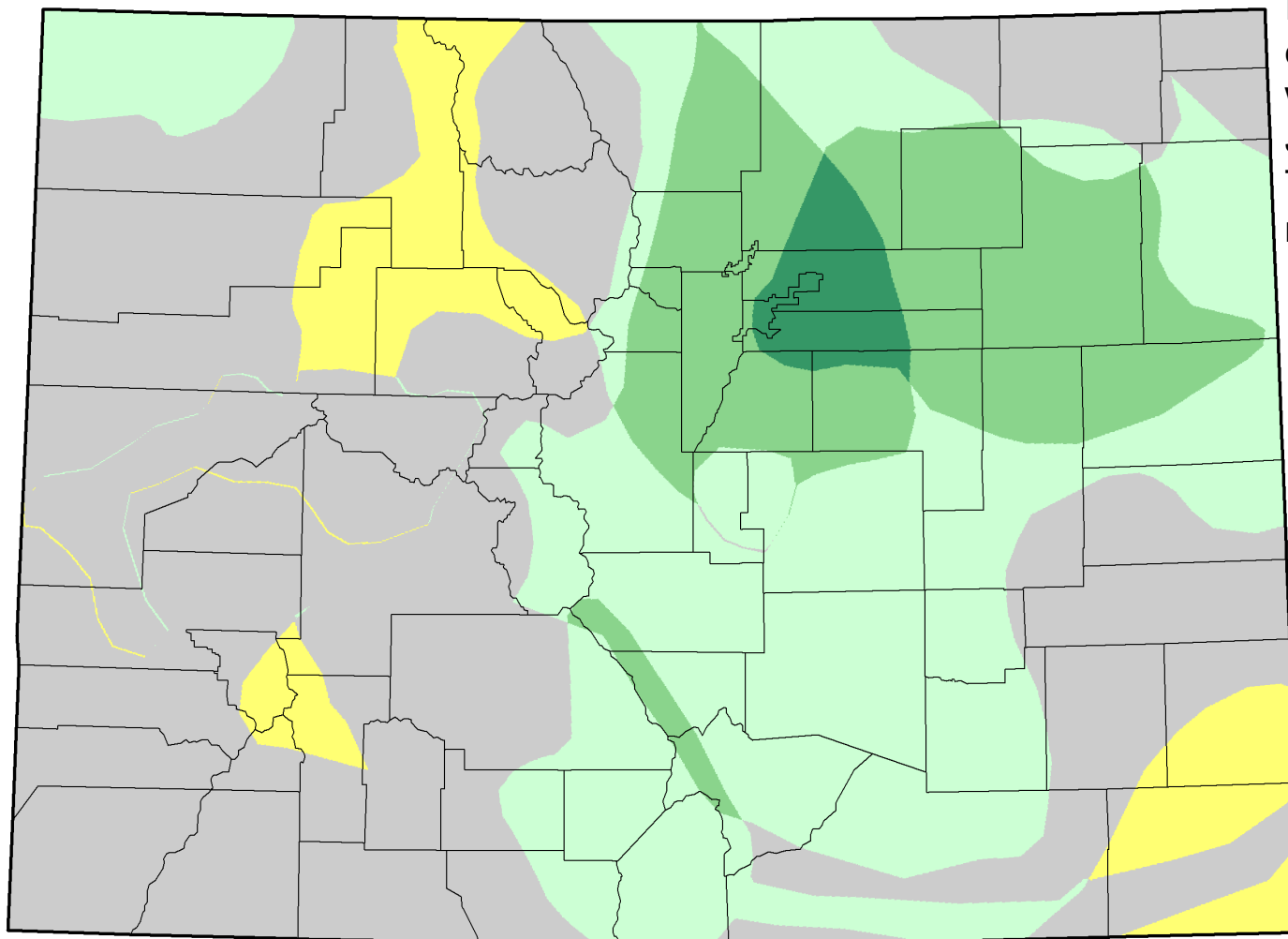
Author:

Richard Tinker  
CPC/NOAA/NWS/NCEP



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

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














Improvements  
east of divide from  
wet  
January/February.  
Things have  
regressed since



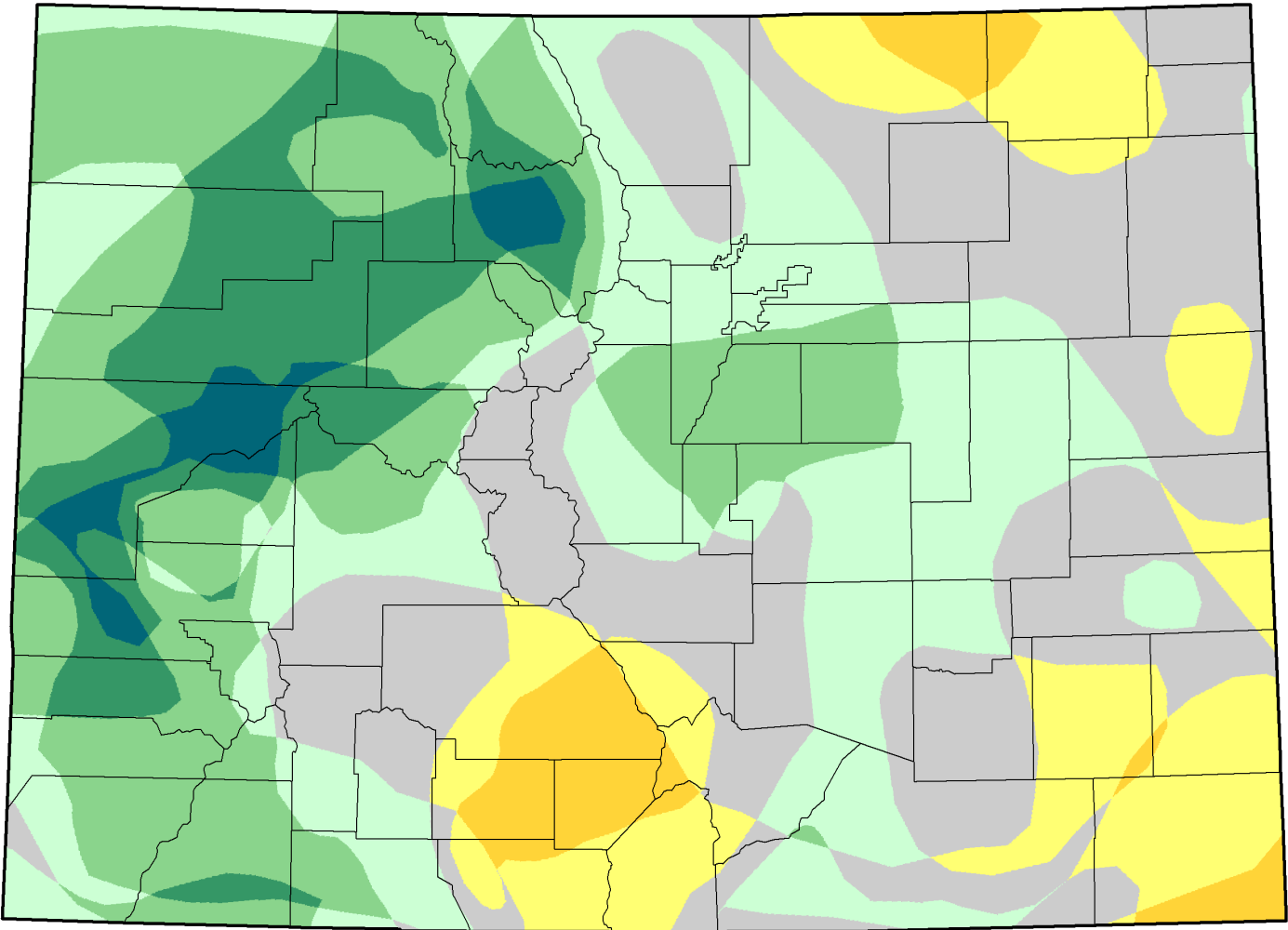
April 12, 2022  
compared to  
January 18, 2022

[droughtmonitor.unl.edu](http://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

Big improvements west of divide (last summer monsoon)

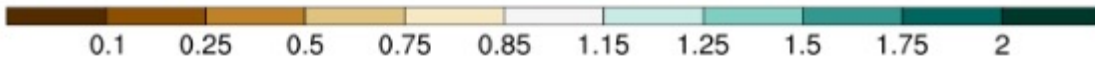
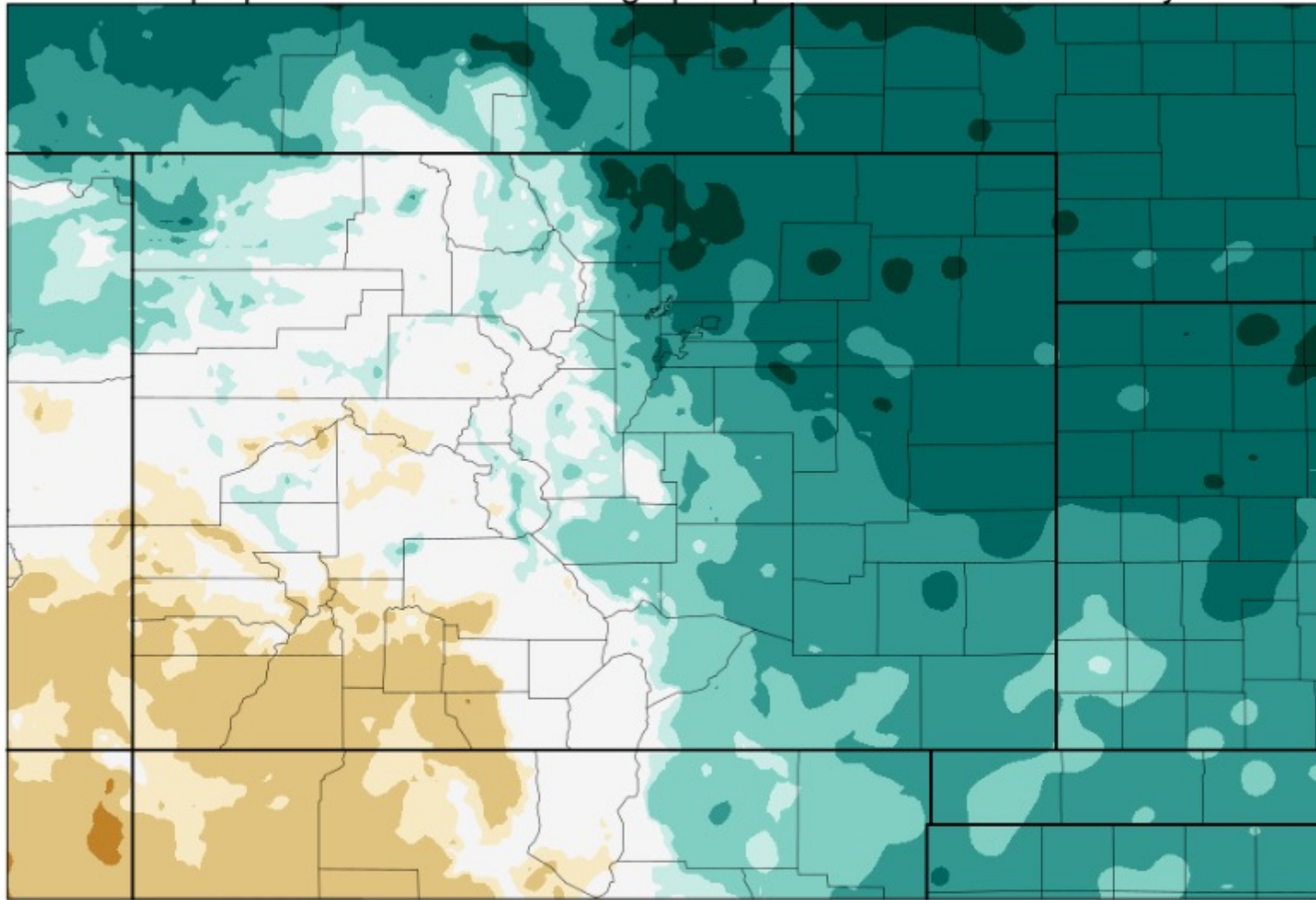


- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

April 12, 2022  
compared to  
April 13, 2021

# Seasonal Outlook

PRISM proportion of annual average precipitation in this month: May



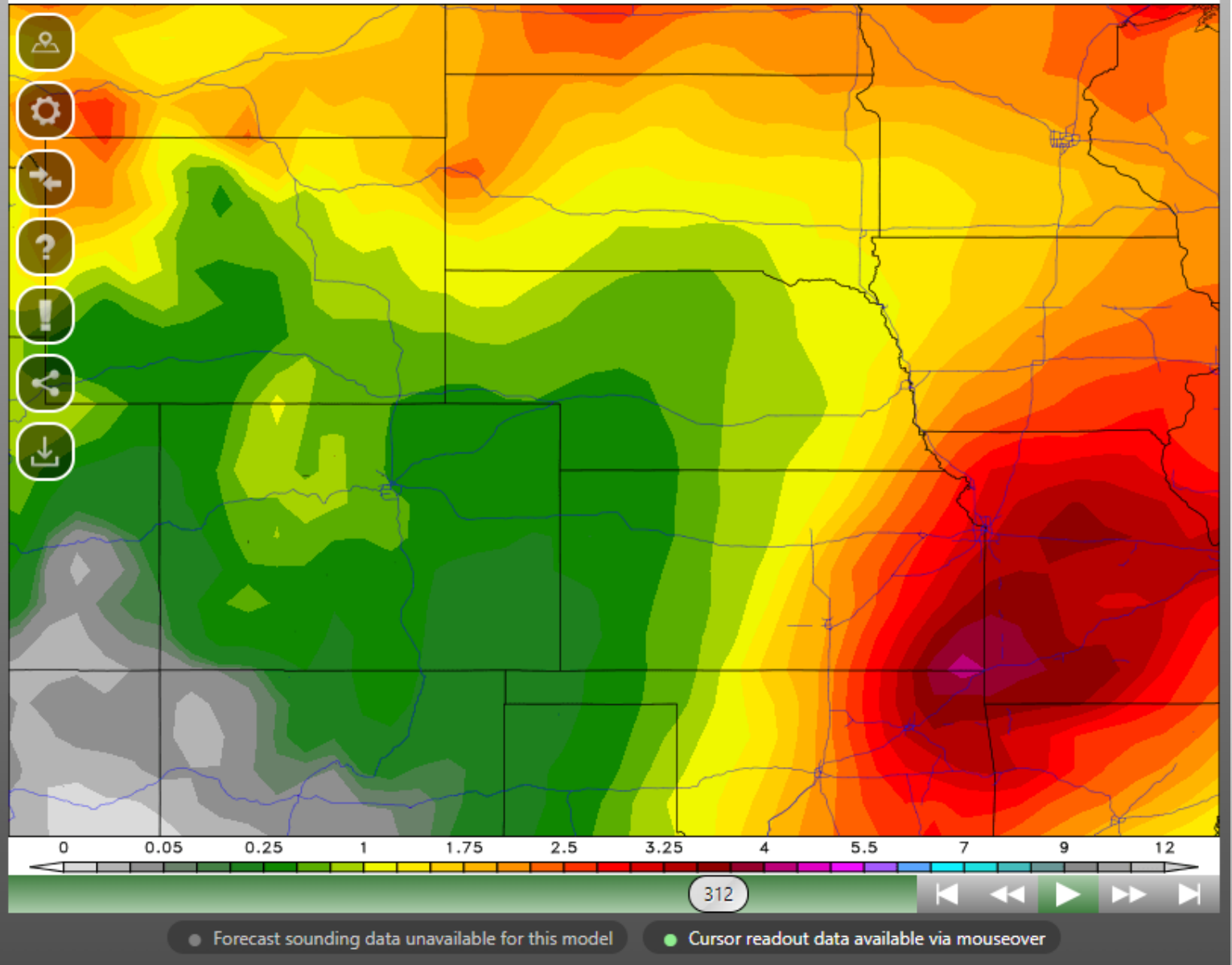
Russ Schumacher/Colorado Climate Center

Proportion of precip relative to 1/12th

The wet season is mostly over for the high country. We now wait to see how temperatures impact demand

The wet season is just beginning for the eastern plains. Next six weeks are critical



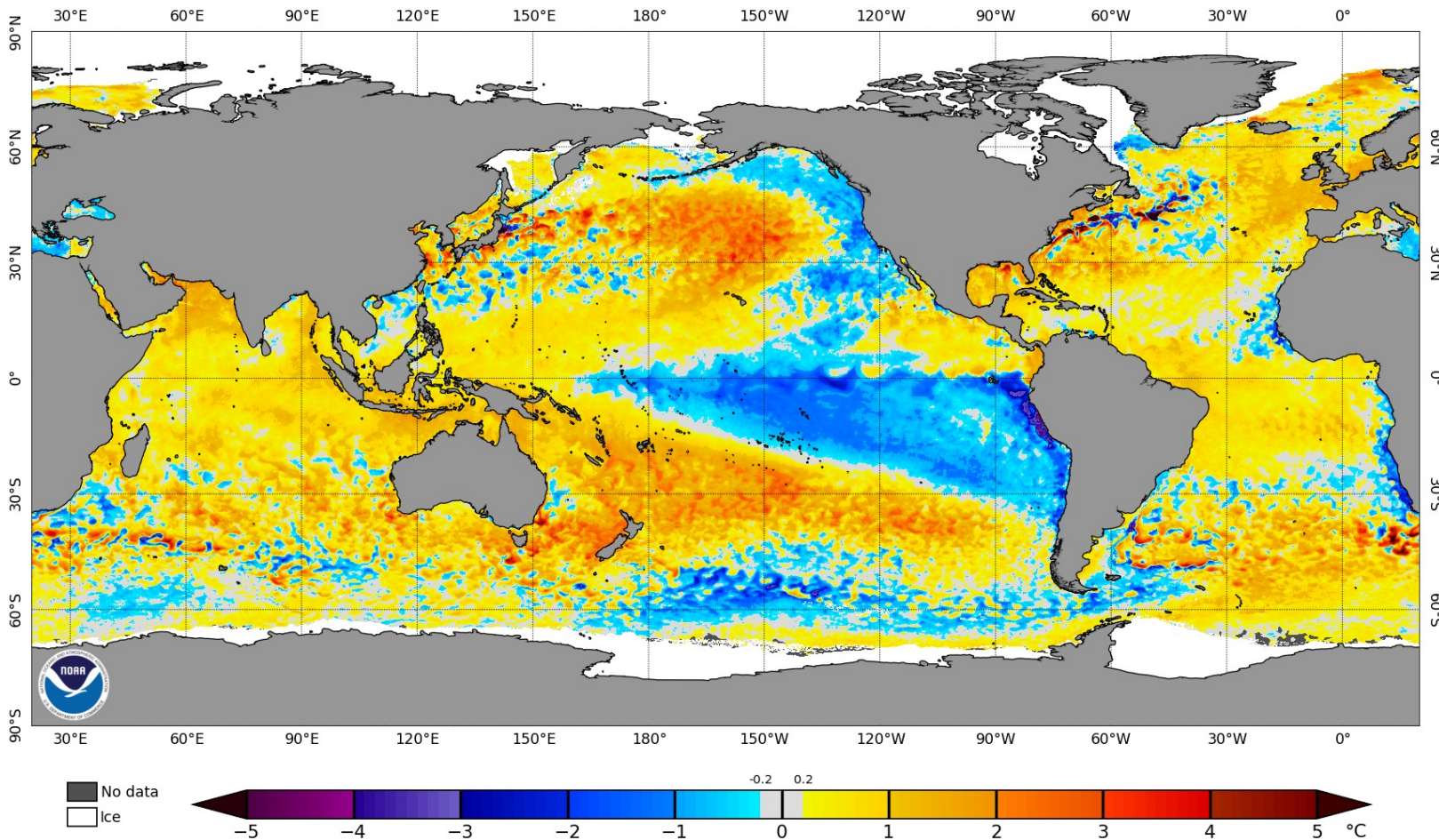


Weather model forecasts for the remainder of April show wimpy precipitation amounts: near normal in the northern Rockies, well below normal everywhere else

Probably not done with wind

# Current Sea Surface Temperature Pattern

NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 17 Apr 2022

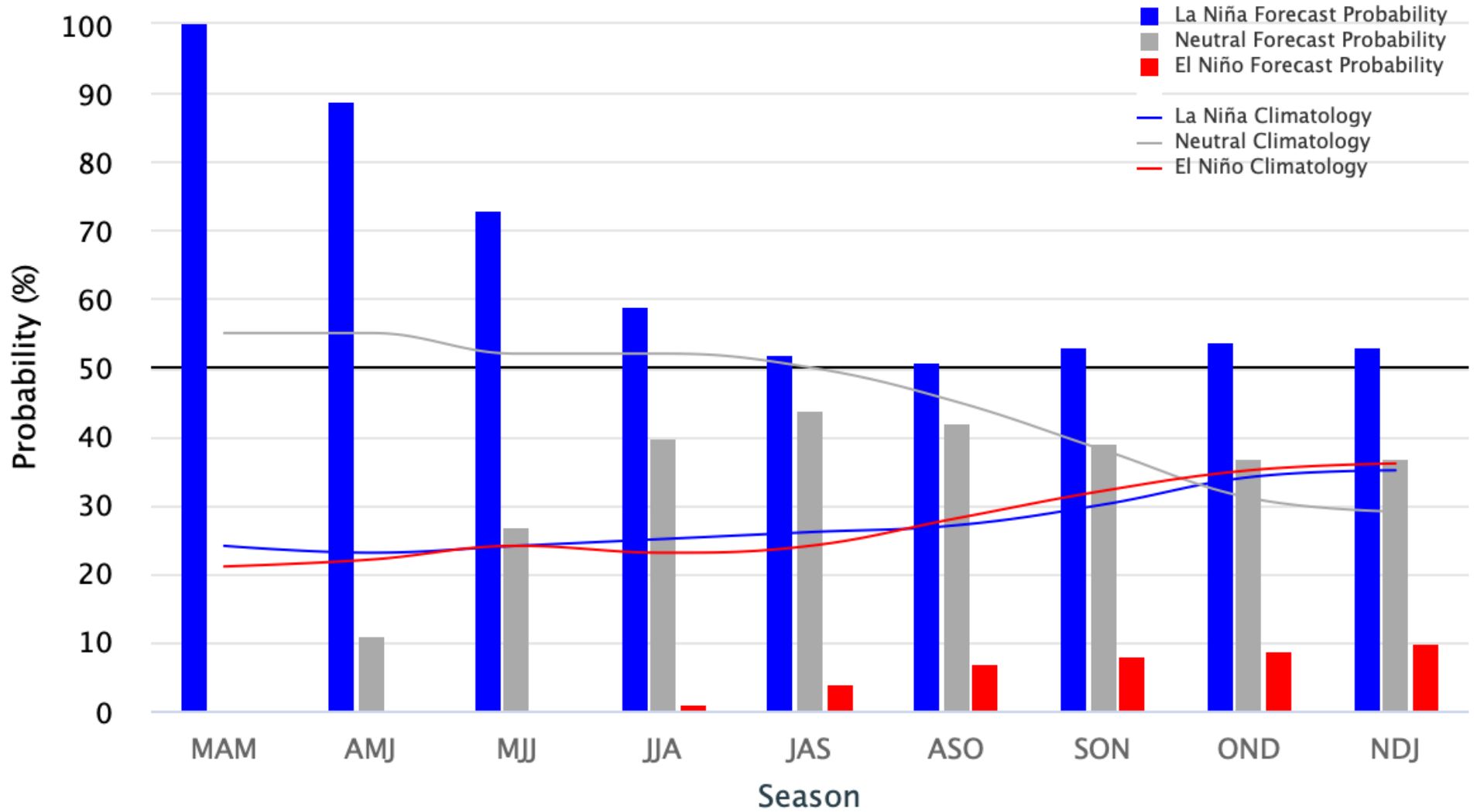


La Niña has not let go yet.

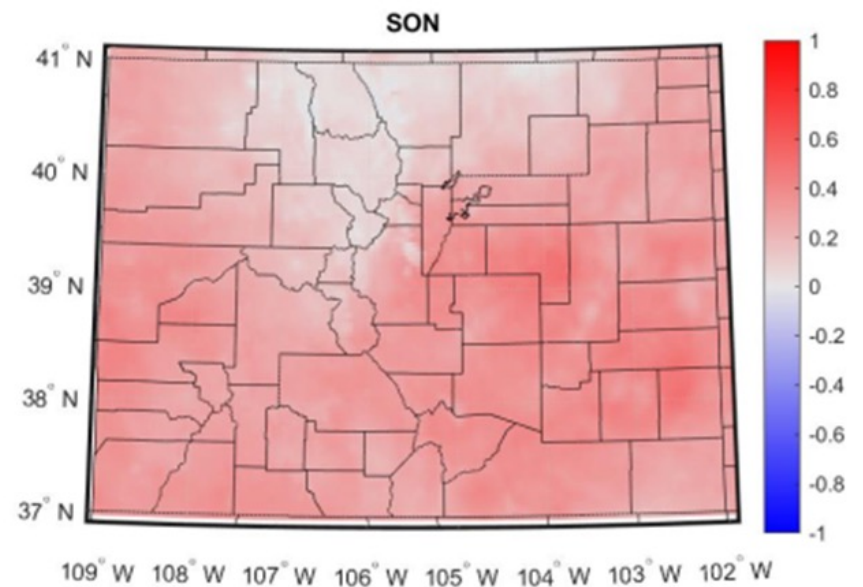
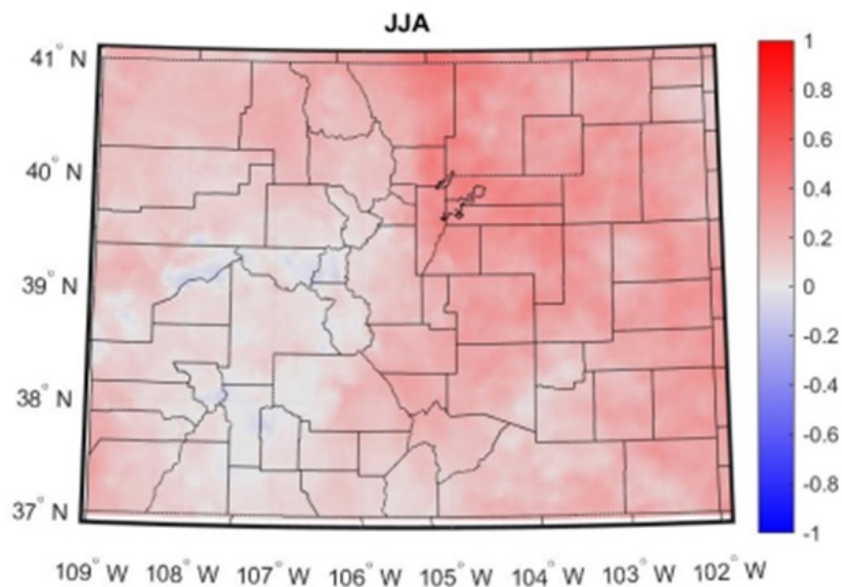
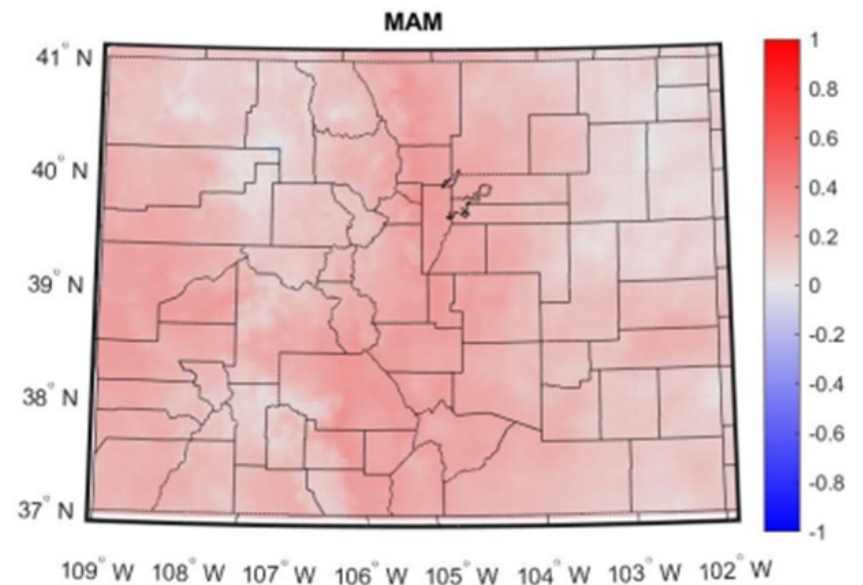
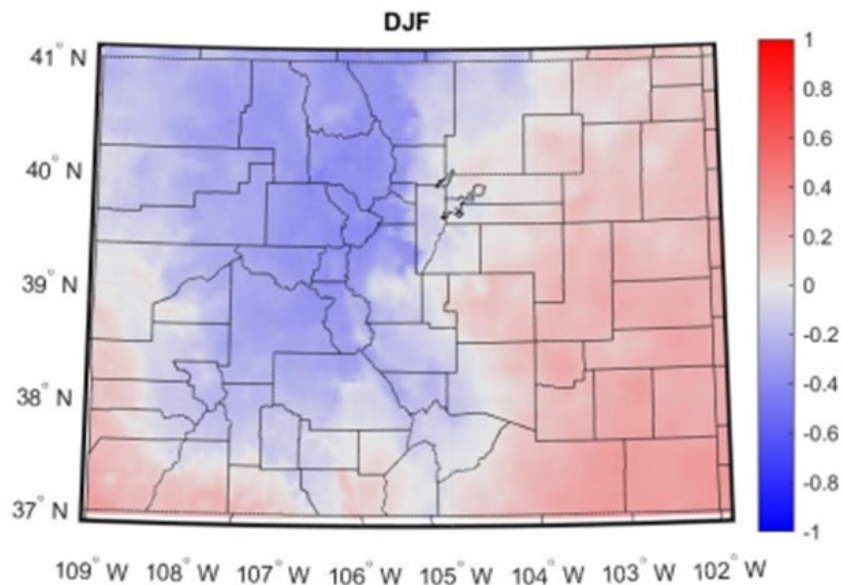
3<sup>rd</sup> year La Niña possible (which is rare)

# Early-April 2022 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly  
Neutral ENSO:  $-0.5\text{ }^{\circ}\text{C}$  to  $0.5\text{ }^{\circ}\text{C}$

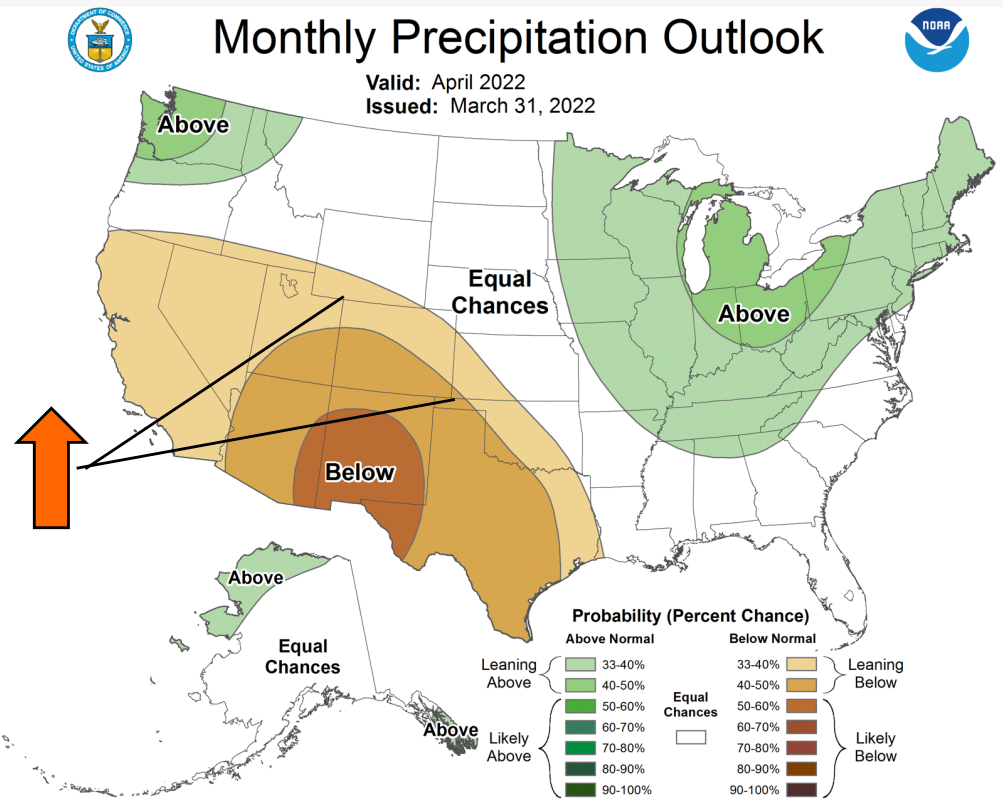
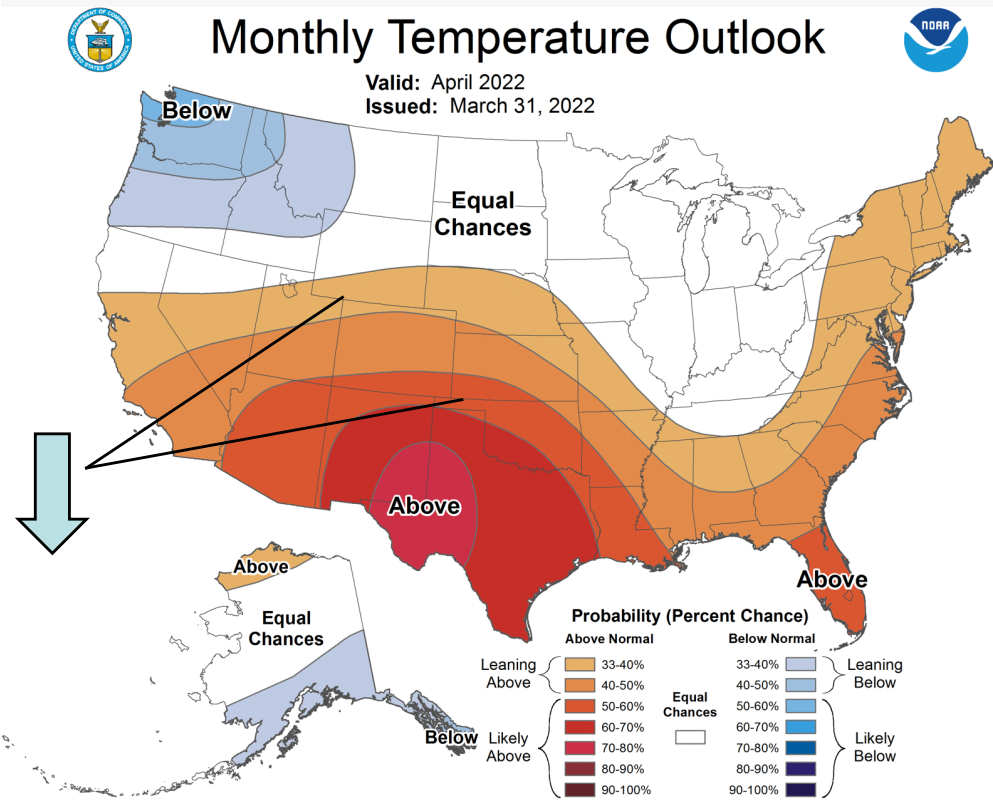


# Correlation Between ENSO ONI and Seasonal Precipitation in Colorado (1951-2020)



Blue = La Niña wetter   Red = El Niño wetter

# April Forecast



Wet springs are less common during La Niña, especially a 2<sup>nd</sup> year La Niña

We are off to a slow start

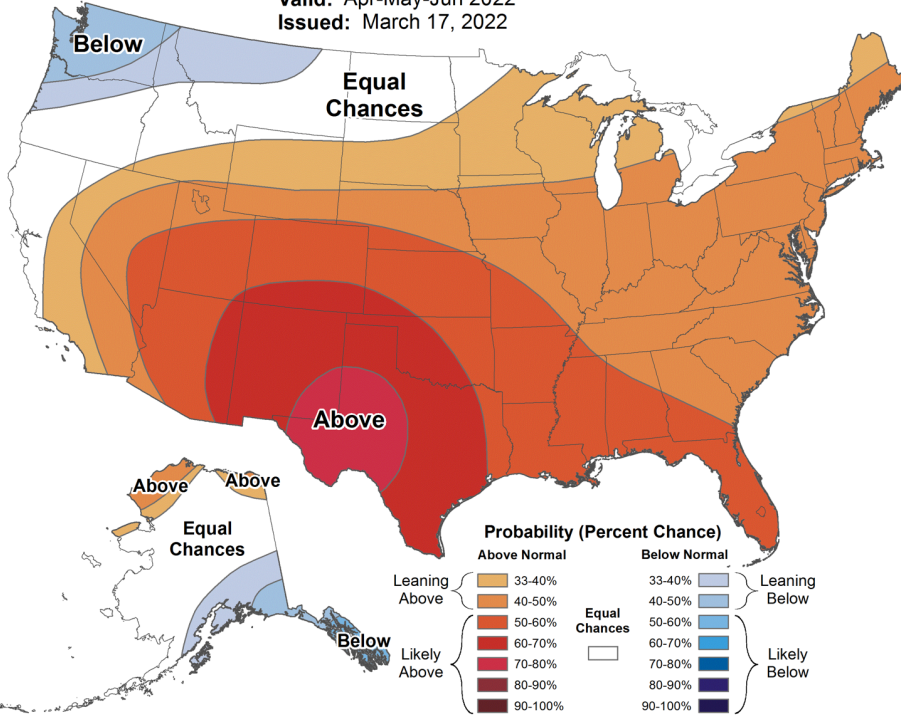
# April-June Outlook



## Seasonal Temperature Outlook



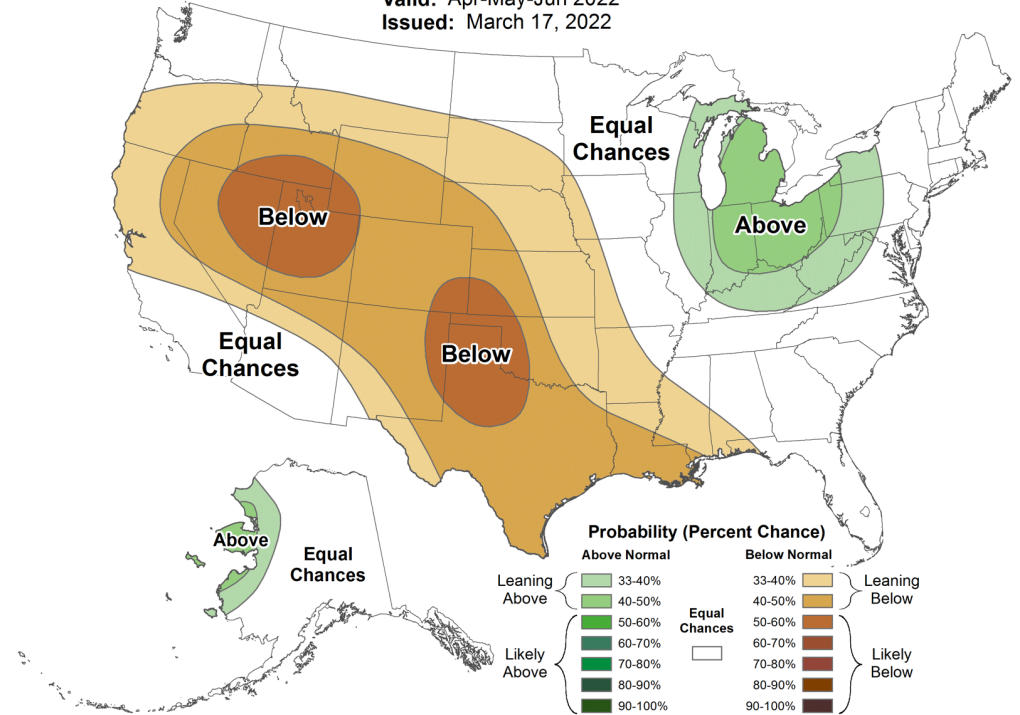
Valid: Apr-May-Jun 2022  
 Issued: March 17, 2022



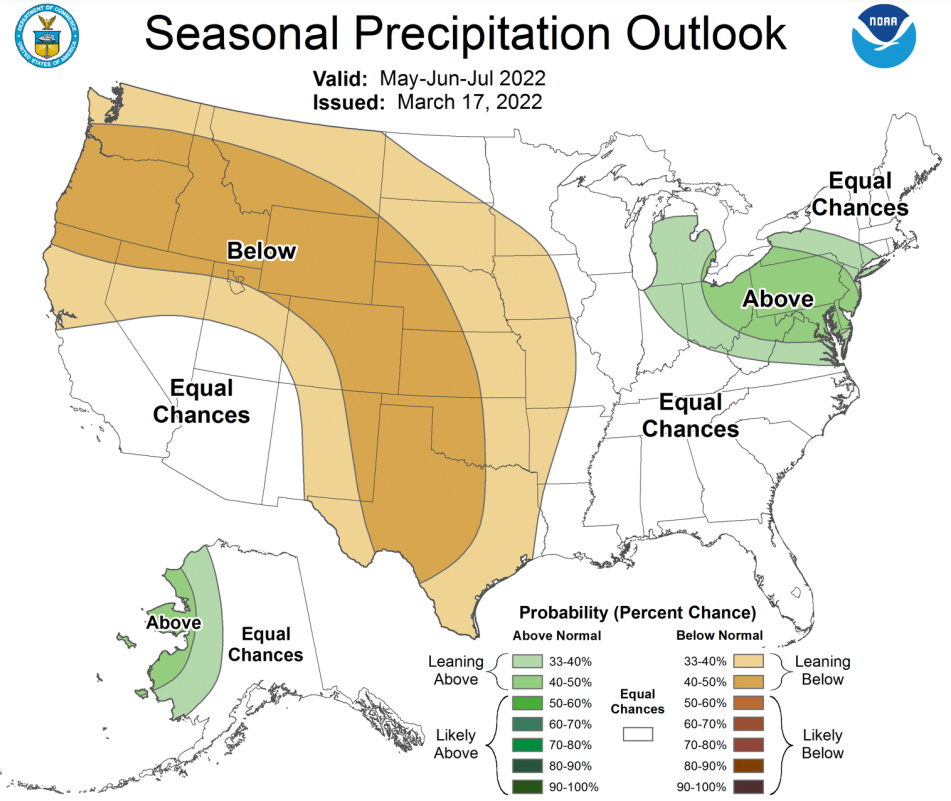
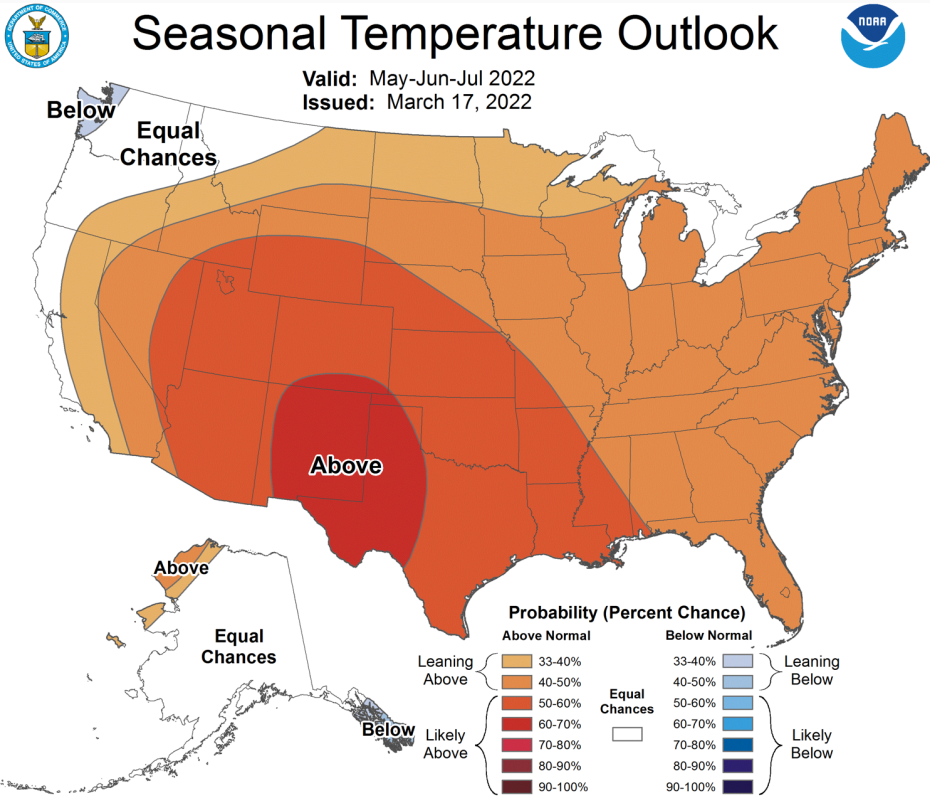
## Seasonal Precipitation Outlook



Valid: Apr-May-Jun 2022  
 Issued: March 17, 2022



# CPC May-July Outlook



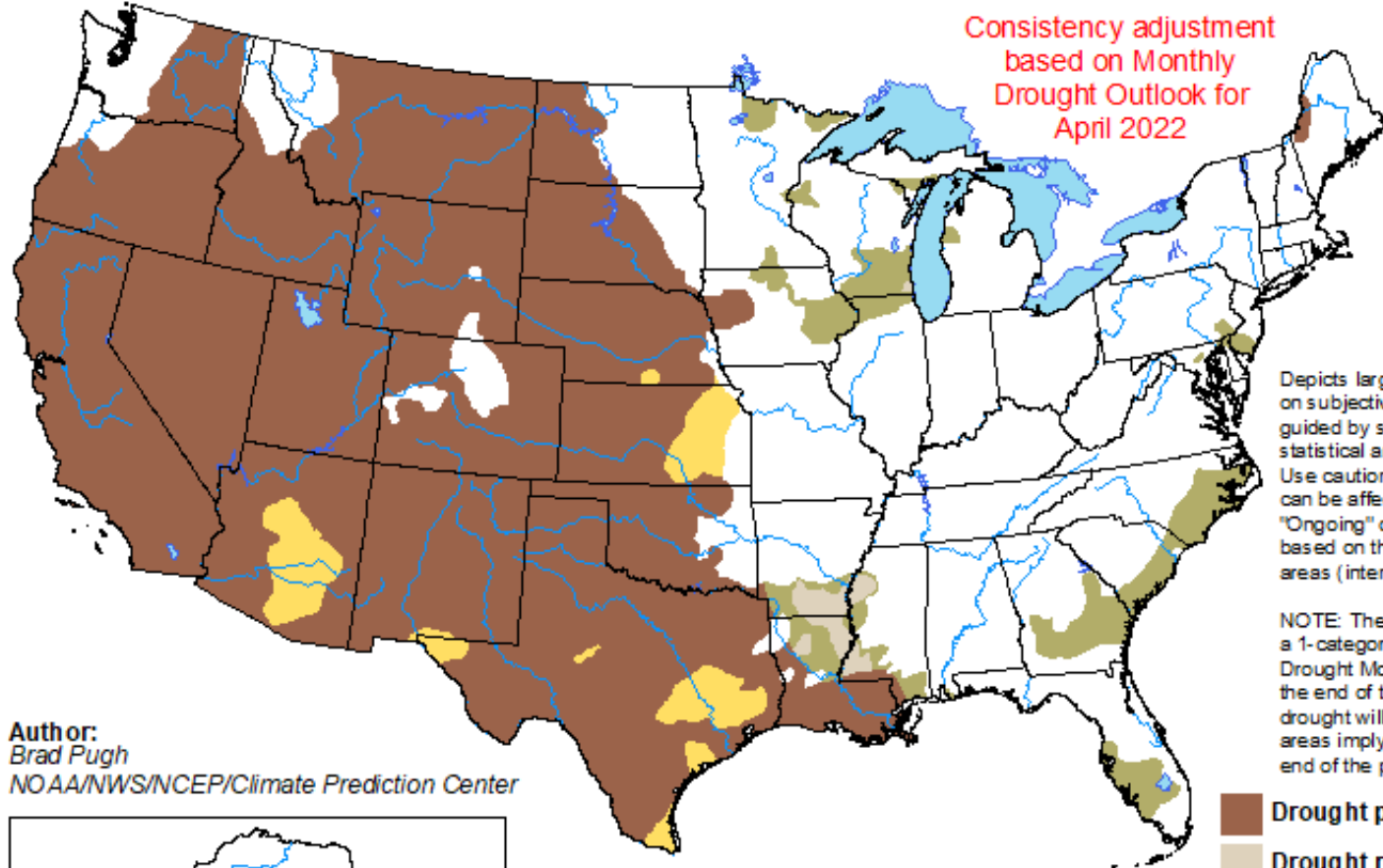
Land/atmosphere feedbacks could keep summer dry if spring is dry

# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid for April 1 - June 30, 2022  
Released March 31, 2022

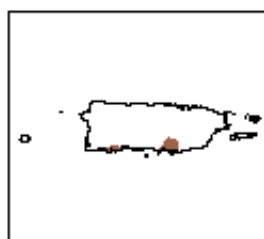
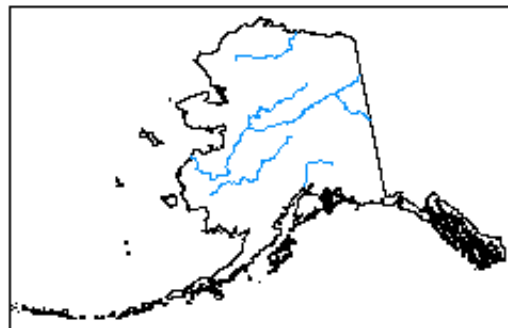
Consistency adjustment  
based on Monthly  
Drought Outlook for  
April 2022







Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:  
Brad Pugh  
NOAA/NWS/NCEP/Climate Prediction Center



-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



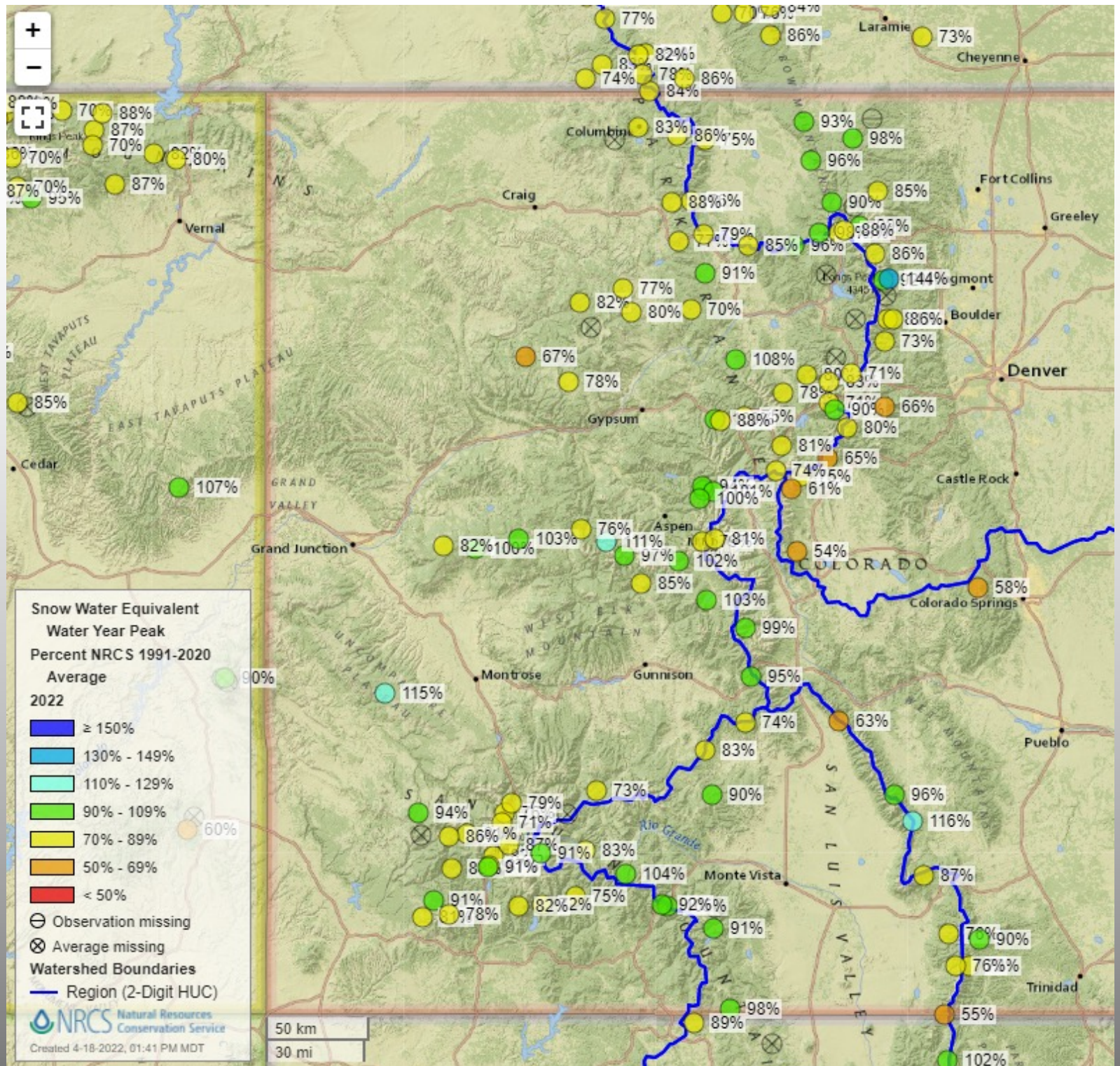
<http://go.usa.gov/3eZ73>



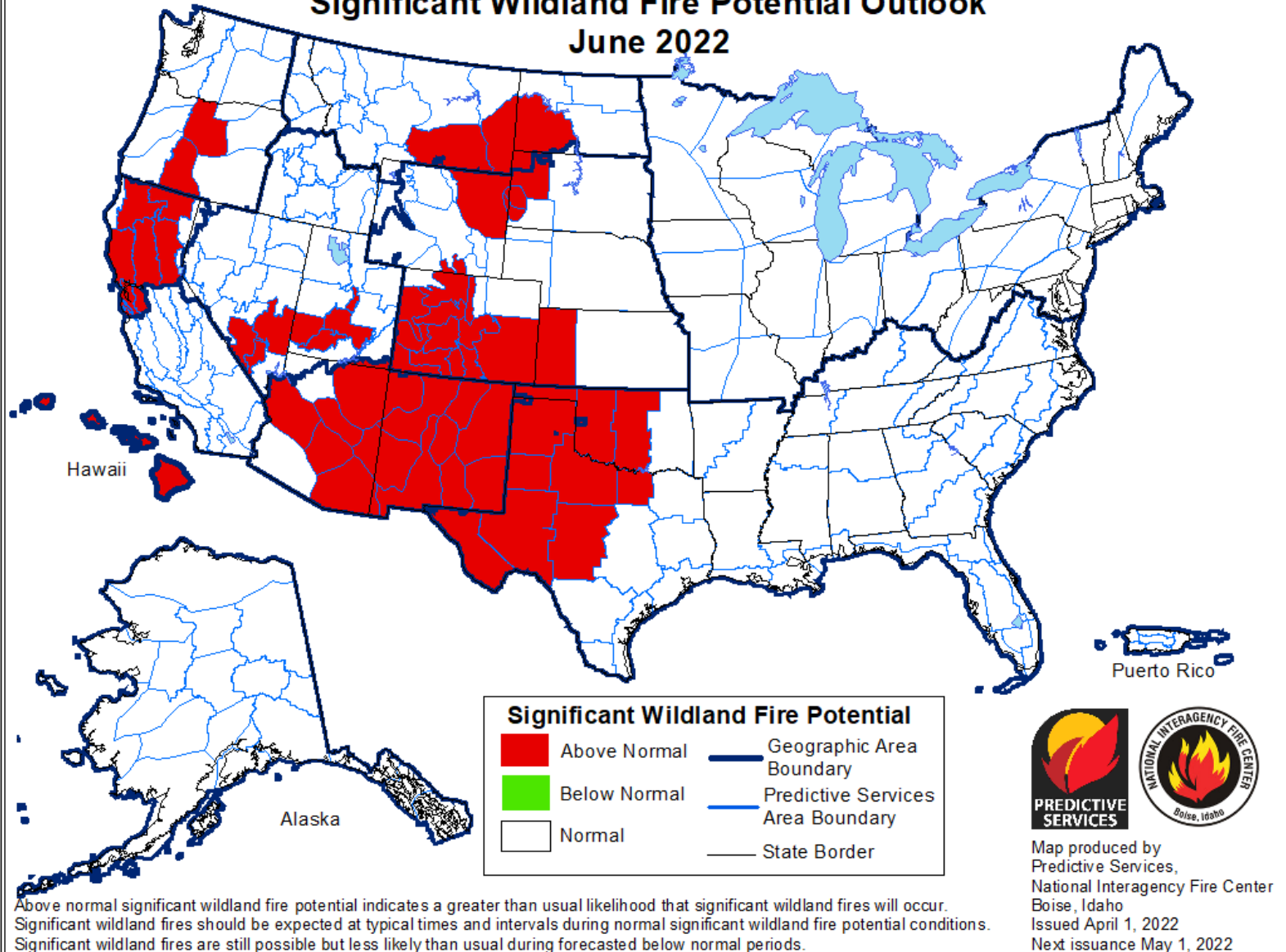
Peak snowpack was higher this year than last, and antecedent soil conditions were better

Still far from a drought buster

More from NRCS



## Significant Wildland Fire Potential Outlook June 2022



An early melt and a warm, dry summer forecast leaves us vulnerable to another big fire year

The threat will shift from our plains/foothills to our mountains as the snow melts

# Takeaways

- We saw a mix of conditions in March: cool and on the wet side early. Warm and on the dry side late. Overall, it was average
- Long-term conditions are still well on the dry side of normal. This is reflected in soils, plant stress, and surface water
- What happens over the next 4-6 weeks will be crucial for our water supply
- La Niña is not letting go, and may stick around for a 3<sup>rd</sup> year. This reduces our chances of drought recovery this spring and summer.
- Our summers are getting hotter. The current seasonal forecast is a reflection of this. The coming season will come with above normal risk for fires across much of the state, and low water storage in western Colorado and beyond

# Colorado Climate Center

Thanks, and let's keep in touch!

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Russ Schumacher – [russ.Schumacher@colostate.edu](mailto:russ.Schumacher@colostate.edu)

Becky Bolinger – [becky.bolinger@colostate.edu](mailto:becky.bolinger@colostate.edu)

Zach Schwalbe – [zach.Schwalbe@colostate.edu](mailto:zach.Schwalbe@colostate.edu)

Viewing this, and previous WATF Briefings:

[http://climate.colostate.edu/ccc\\_archive.html](http://climate.colostate.edu/ccc_archive.html)

