

# Colorado Climate Center – *WATF Climate Update*

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**Russ Schumacher, state climatologist**

**Water Availability Task Force**

**August 25, 2020**



**ATMOSPHERIC SCIENCE**  
**COLORADO STATE UNIVERSITY**

# Water year 2020 to date:

temperature, precipitation, snow, evaporative demand



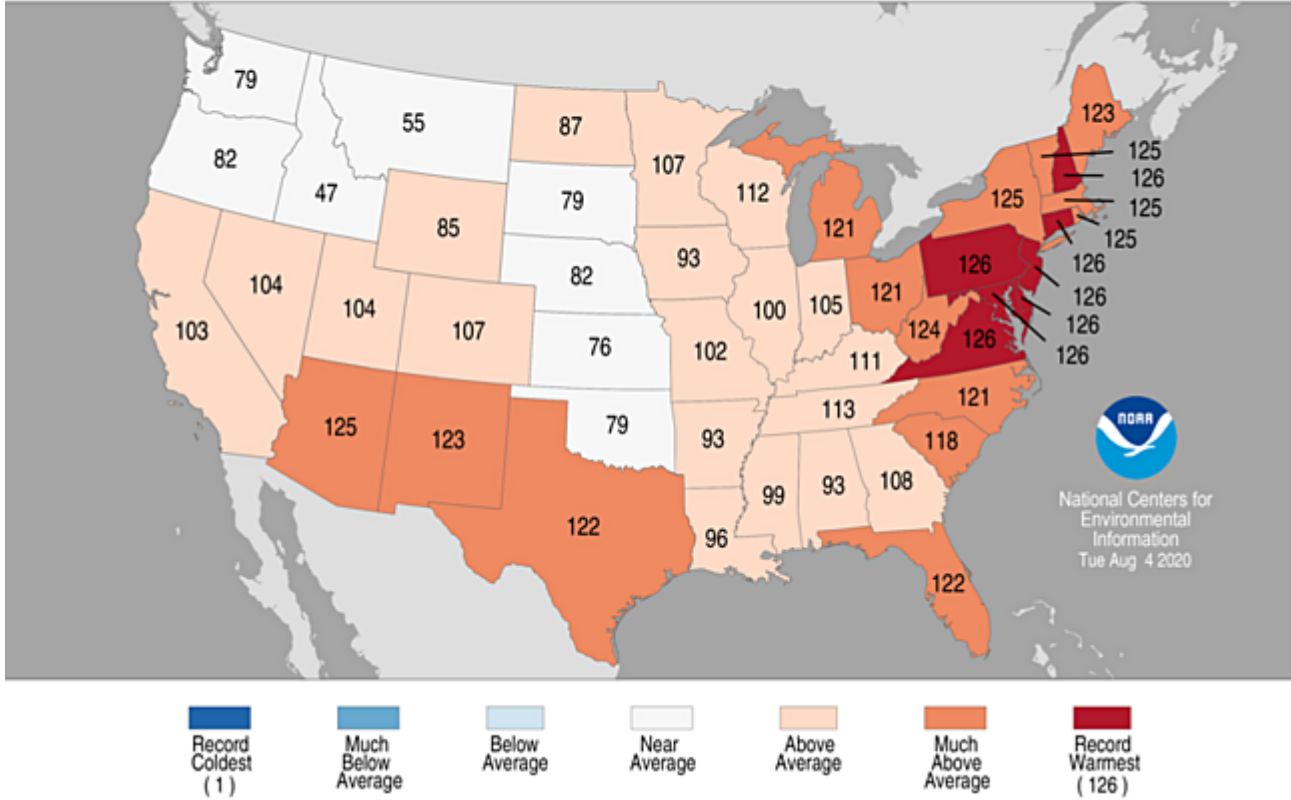
Williams Fork fire, August 15,  
photo from Frisco by Vincent Davis on  
twitter,

<https://twitter.com/Vincent15945195/status/1294768879059832835/photo/3>



# Statewide Average Temperature Ranks

July 2020  
Period: 1895-2020



Water year through July: **1.7°F above average**  
**Ranked 108<sup>th</sup> out of 125 October-July periods**

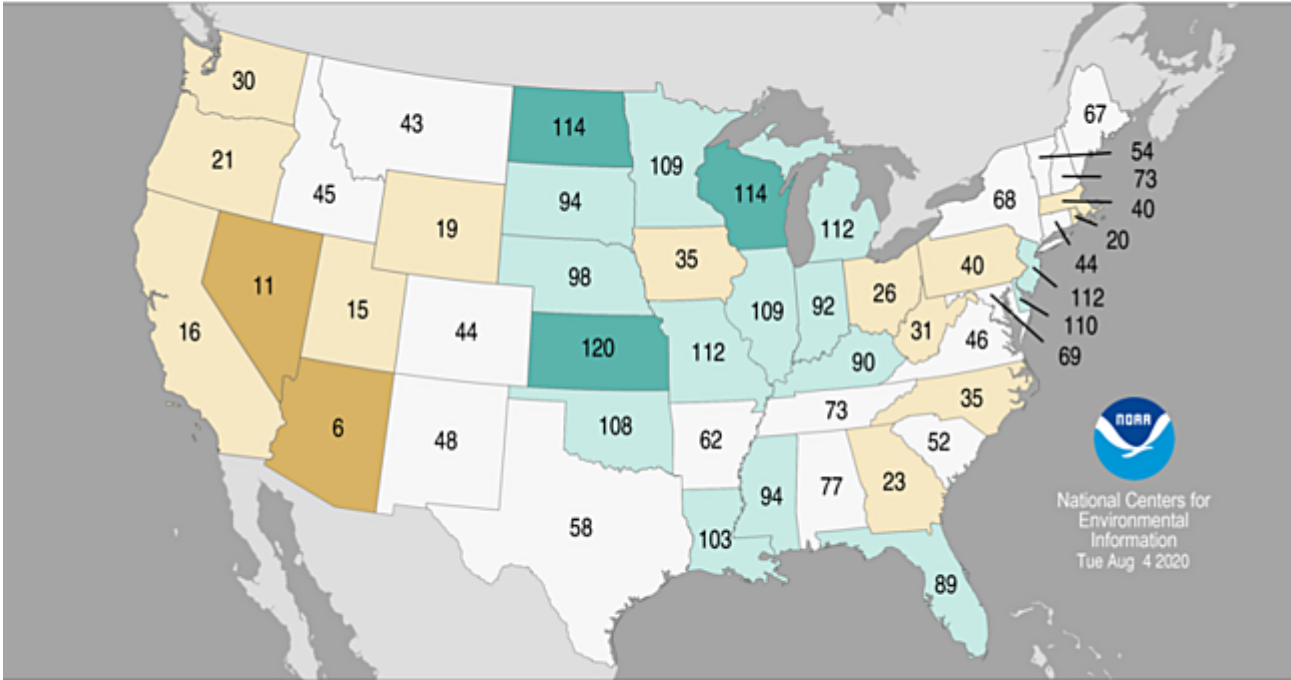
Calendar year through July: **2.6°F above average**  
**Ranked 114<sup>th</sup> out of 125 Jan-July periods**

Month	T Rank (of 125 years)	Above, below, or near avg?
Oct	4 <sup>th</sup>	<b>much below</b>
Nov	90 <sup>th</sup>	<b>above</b>
Dec	101 <sup>st</sup>	<b>above</b>
Jan	101 <sup>st</sup>	<b>above</b>
Feb	47 <sup>th</sup>	<b>near avg</b>
Mar	113 <sup>th</sup>	<b>above</b>
Apr	63 <sup>rd</sup>	<b>near avg</b>
May	118 <sup>th</sup>	<b>much above</b>
June	111 <sup>th</sup>	<b>much above</b>
July	107 <sup>th</sup>	<b>above</b>



# Statewide Precipitation Ranks

July 2020  
Period: 1895–2020



National Centers for Environmental Information  
Tue Aug 4 2020

Month	P Rank (of 125 years)	Above, below, or near avg?
Oct	42 <sup>nd</sup>	below
Nov	68 <sup>th</sup>	near
Dec	83 <sup>rd</sup>	near
Jan	36 <sup>th</sup>	below
Feb	67 <sup>th</sup>	near
Mar	53 <sup>rd</sup>	near
Apr	6 <sup>th</sup>	much below
May	18 <sup>th</sup>	below
Jun	53 <sup>rd</sup>	near
Jul	44 <sup>th</sup>	near

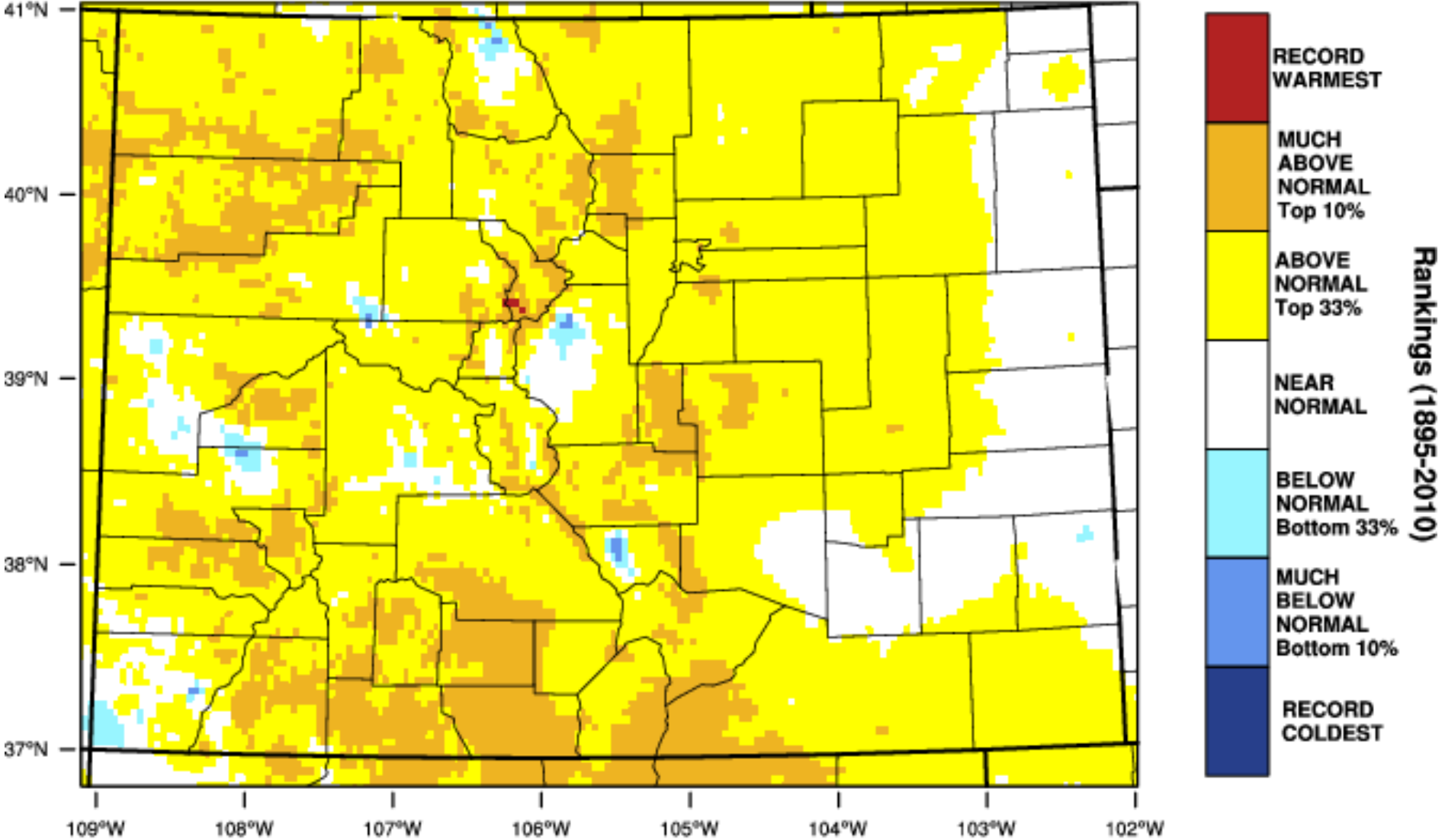
**Water year through July: 3.32” below the 20<sup>th</sup> century avg**  
**Ranked 8<sup>th</sup> driest out of 125 October-July periods**  
**For comparison: 2017-18 was 5<sup>th</sup> driest October-July**  
**Calendar year through July: 8<sup>th</sup> driest on record**

**Last 12 months: 3<sup>rd</sup> driest August-July (only 01-02 and 62-63 drier)**



# Colorado - Mean Temperature

## July 2020 Percentile



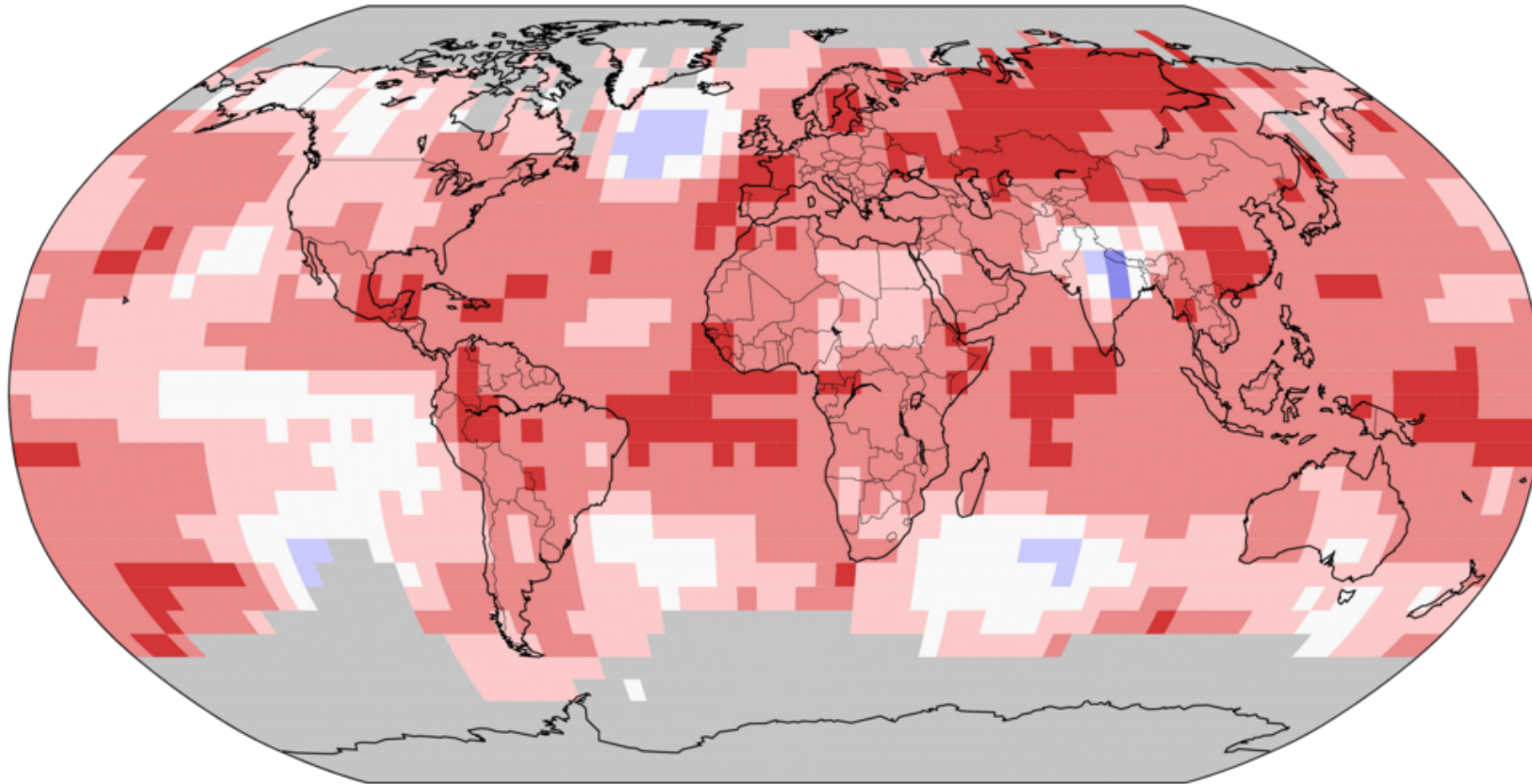
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020



# Land & Ocean Temperature Percentiles Jan–Jul 2020

NOAA's National Centers for Environmental Information

Data Source: NOAA GlobalTemp v5.0.0–20200808



**Globally, 2<sup>nd</sup> warmest year-to-date through July, trailing only 2016**

“the year 2020 is very likely to rank among the five warmest years on record”



Record Coldest

Much Cooler than Average

Cooler than Average

Near Average

Warmer than Average

Much Warmer than Average

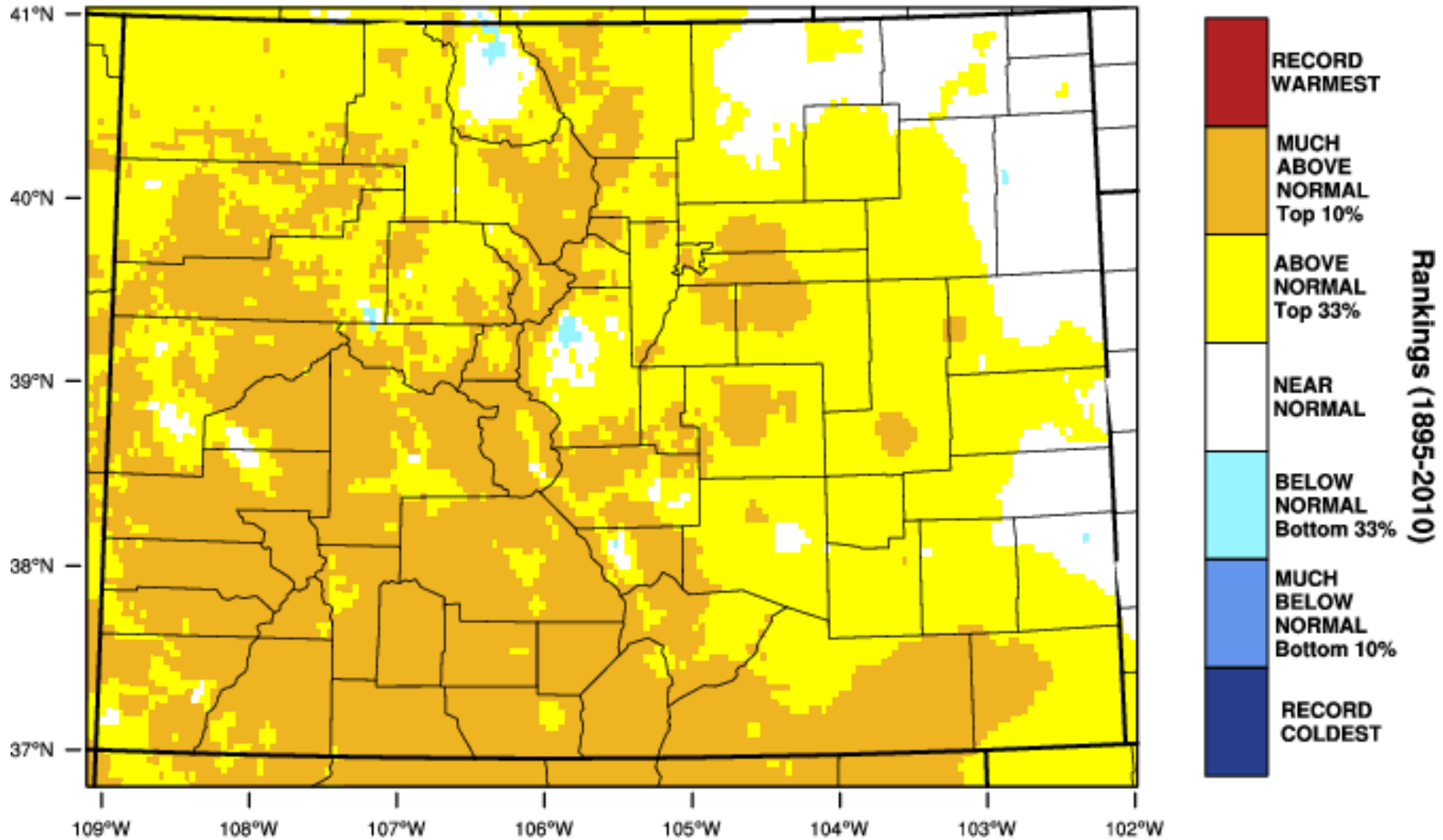
Record Warmest

GHCNM v4.0.1.20200807.qfe



# Colorado - Mean Temperature

## April-July 2020 Percentile

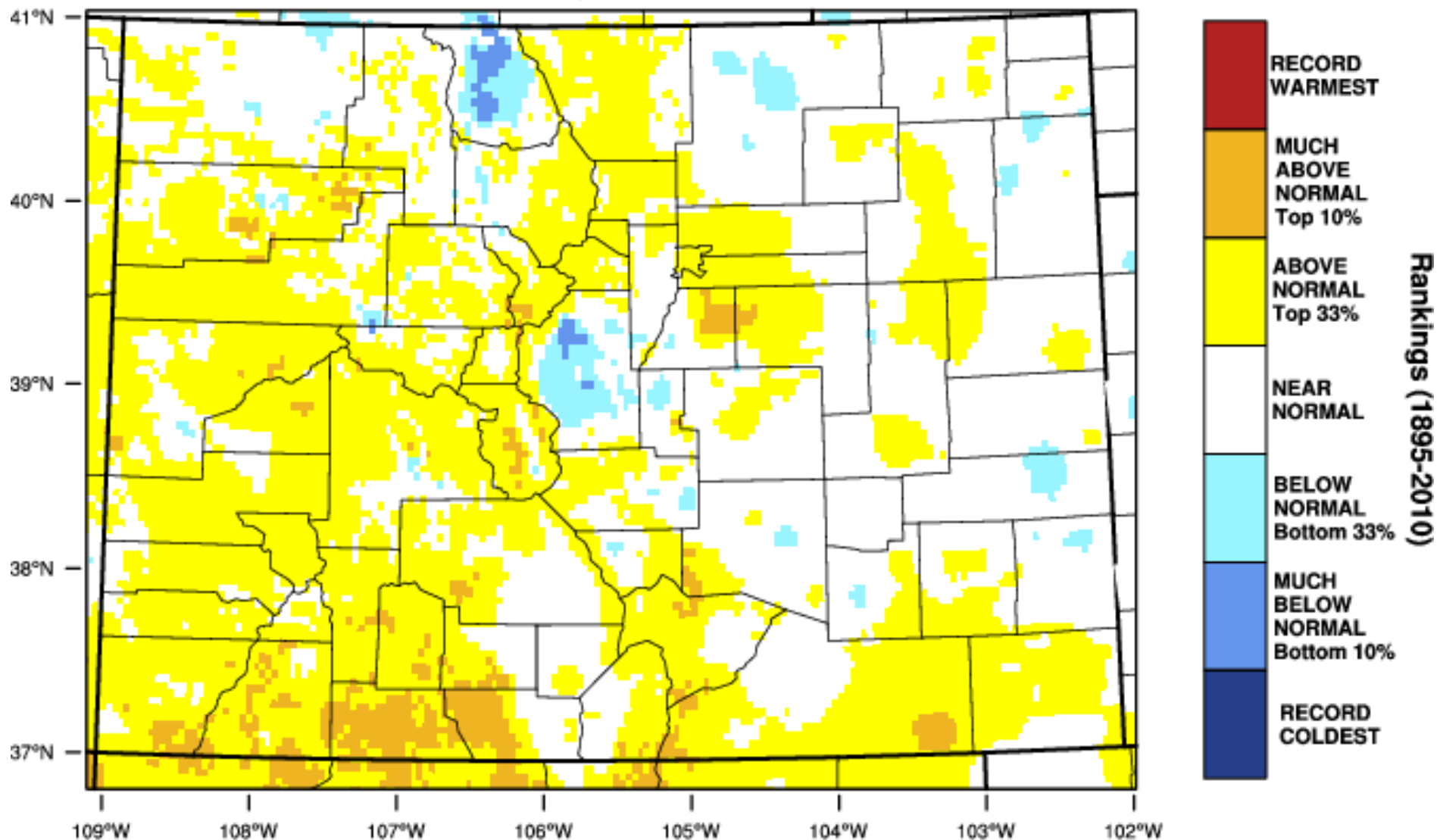


WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020



# Colorado - Mean Temperature

## October-July 2020 Percentile

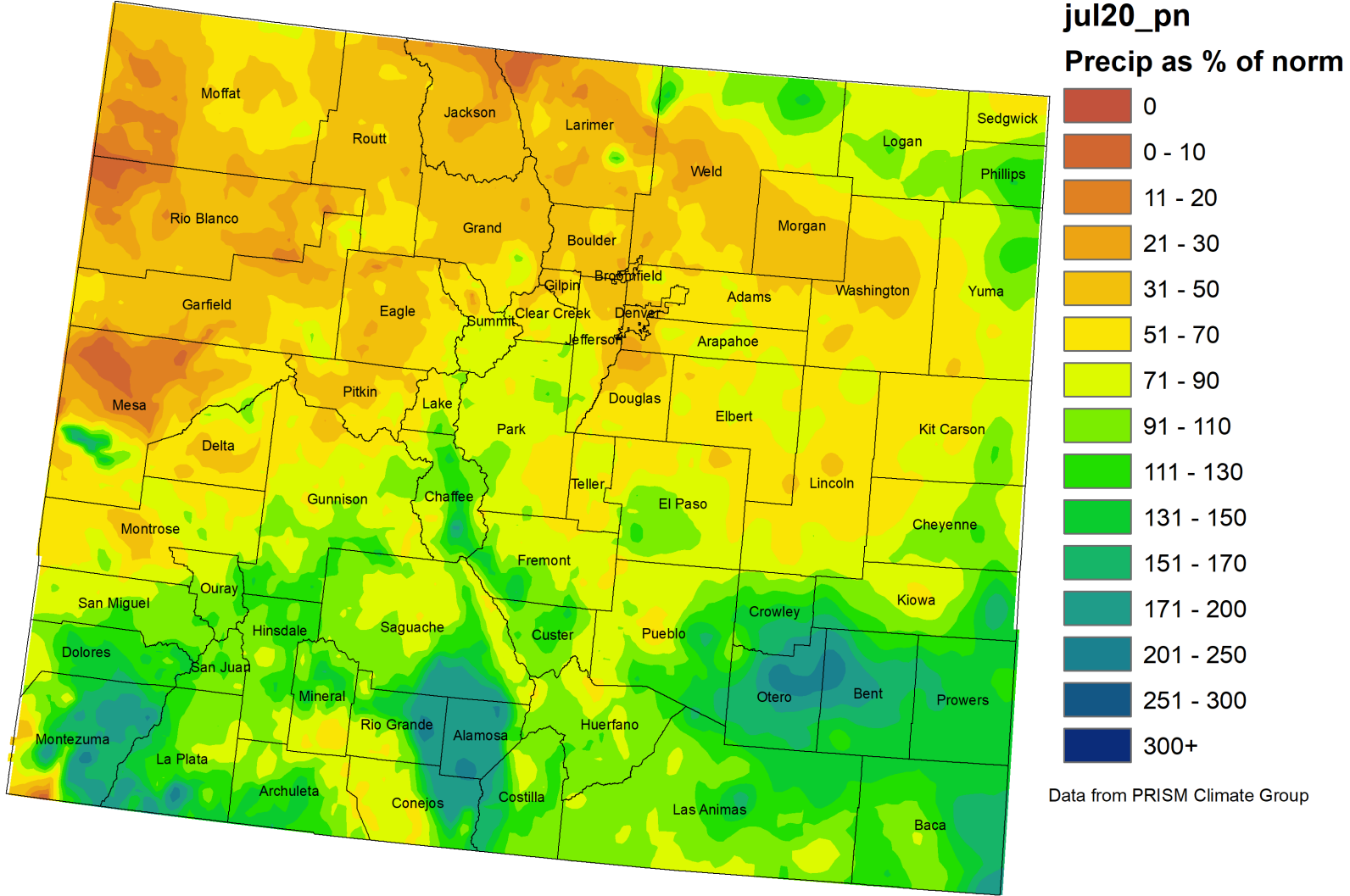


WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020



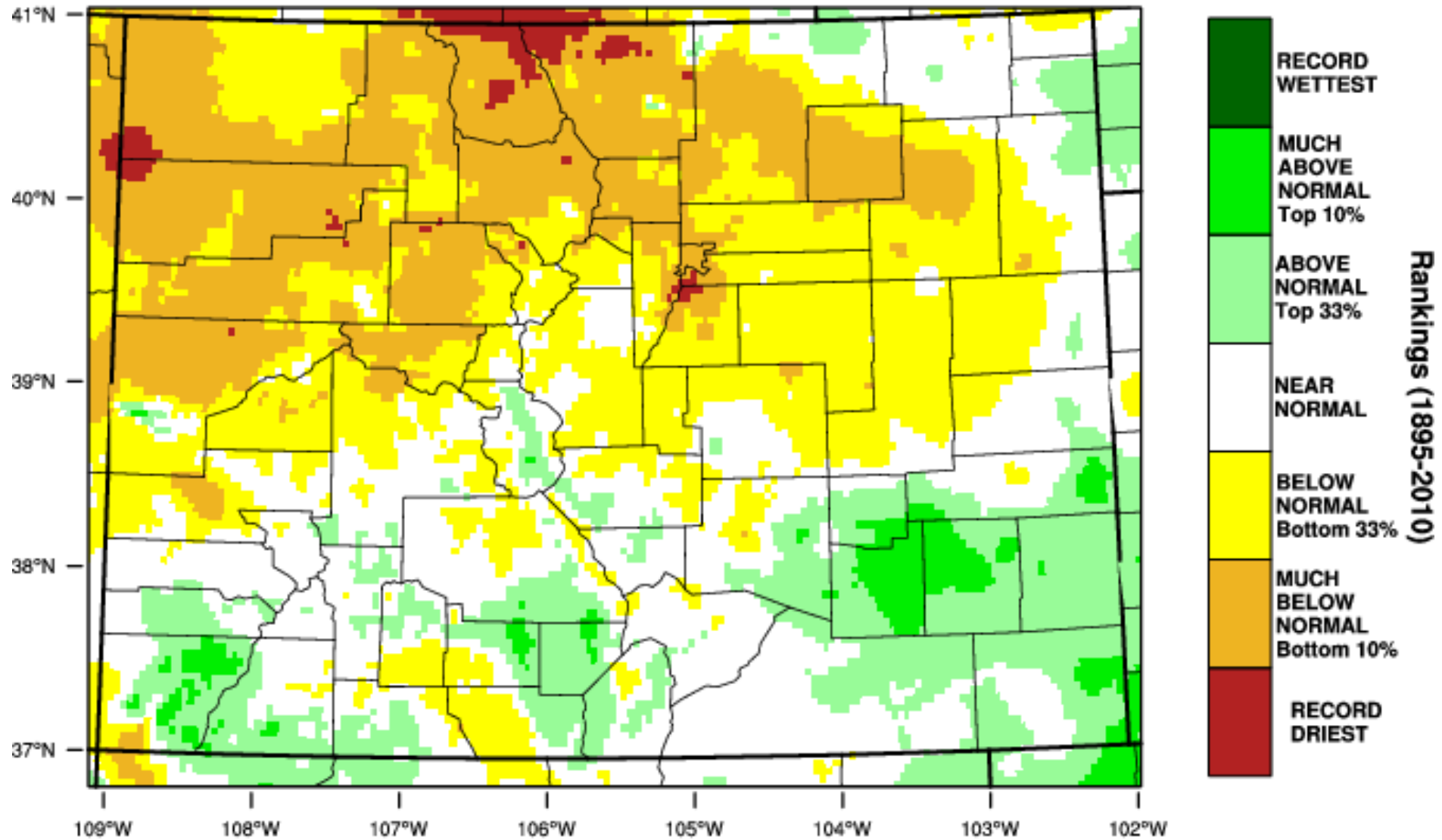


# Colorado July 2020 Precipitation as a Percentage of Normal



# Colorado - Precipitation

## July 2020 Percentile

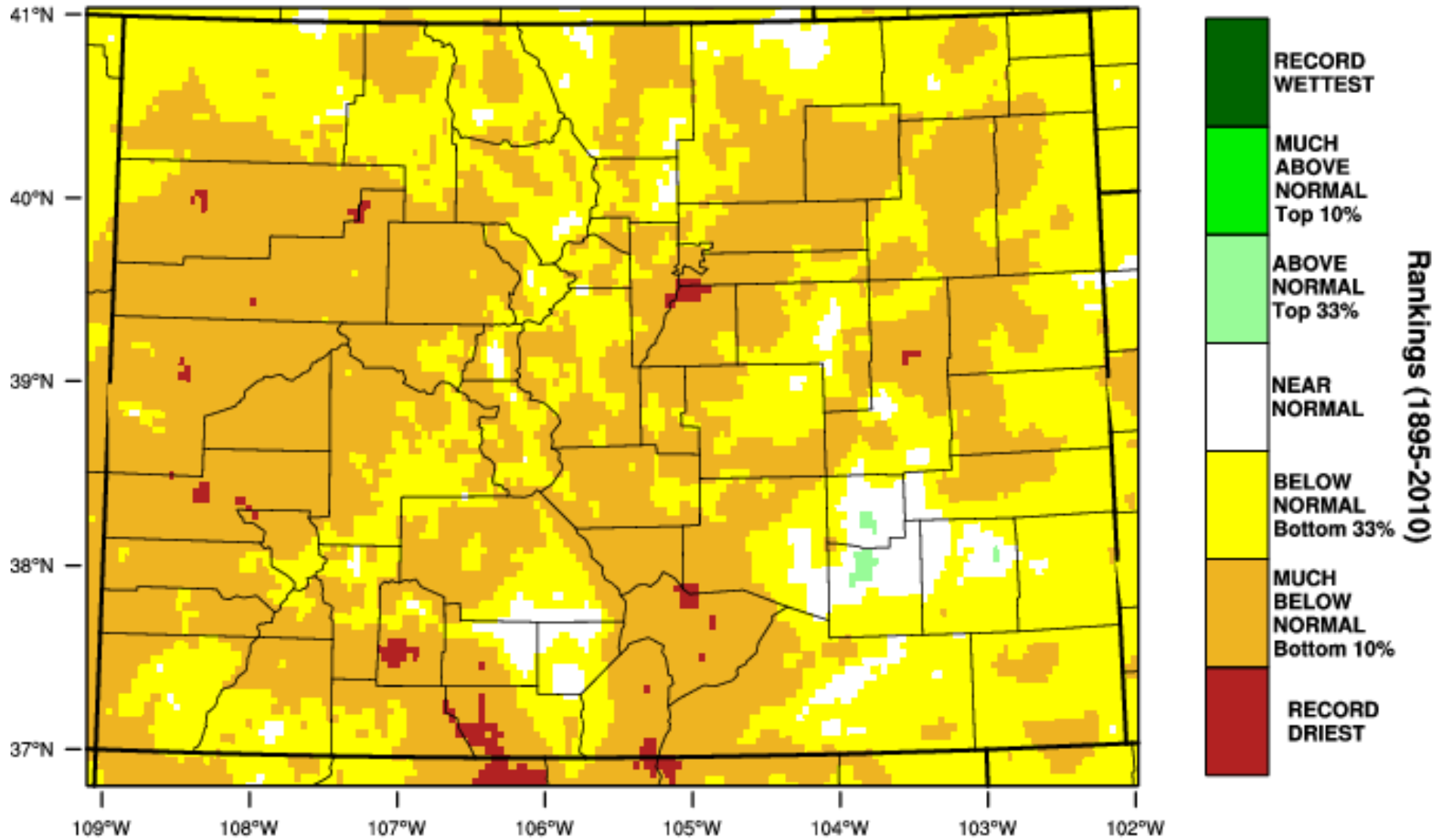


WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020



# Colorado - Precipitation

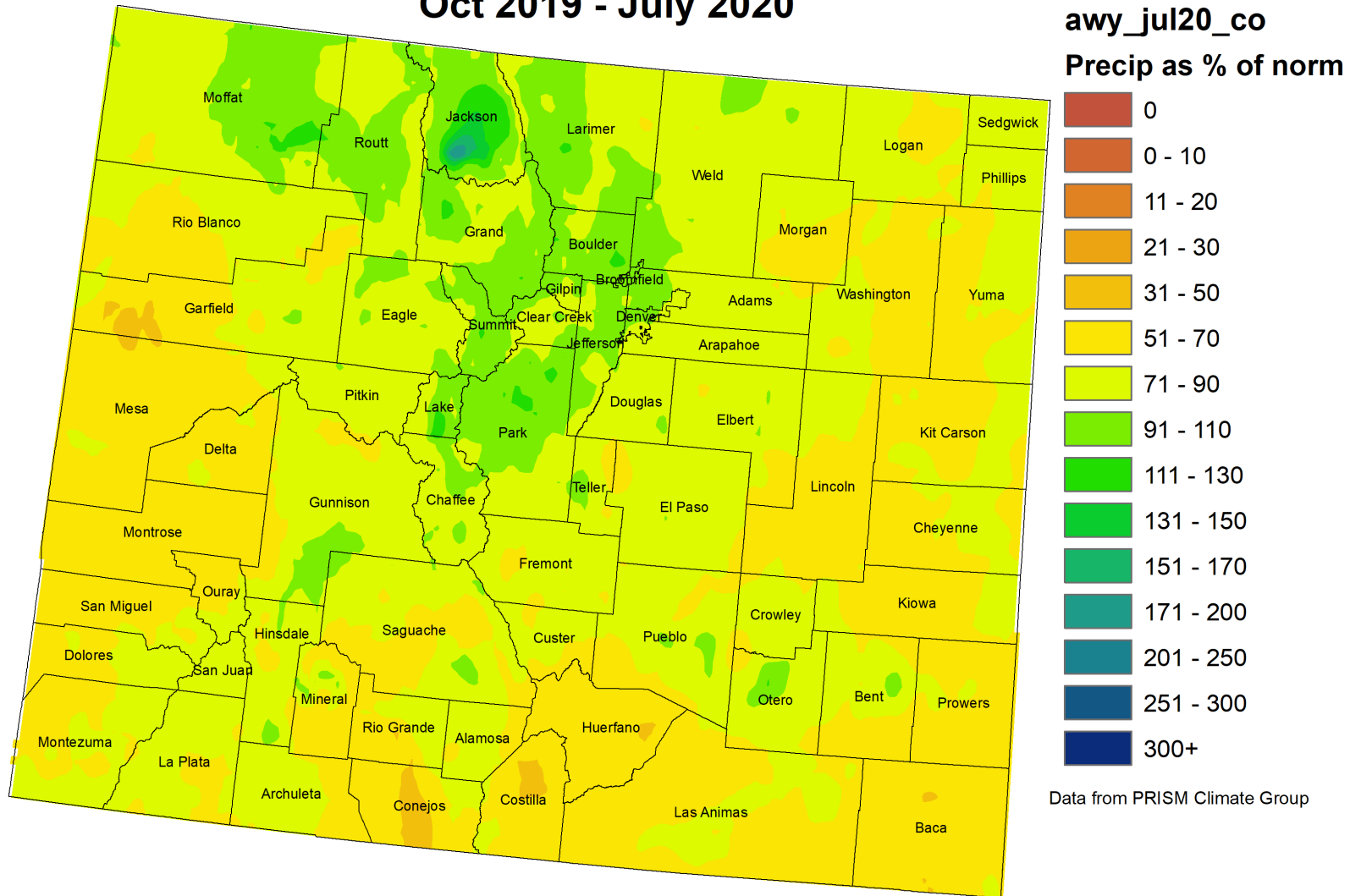
## April-July 2020 Percentile



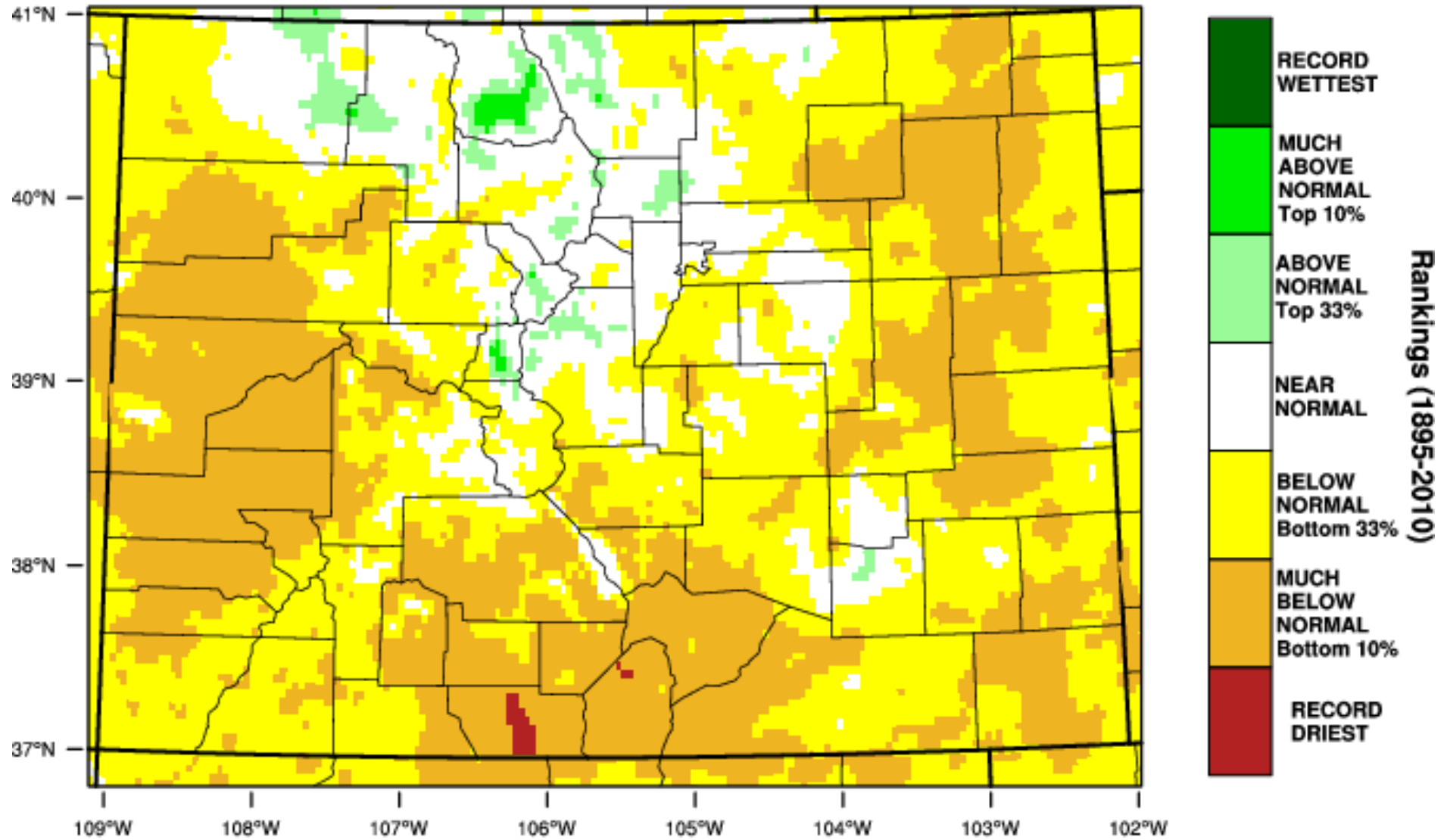
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020



# Colorado Water Year 2020 Precipitation as a Percentage of Normal Oct 2019 - July 2020



# Colorado - Precipitation October-July 2020 Percentile



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2020

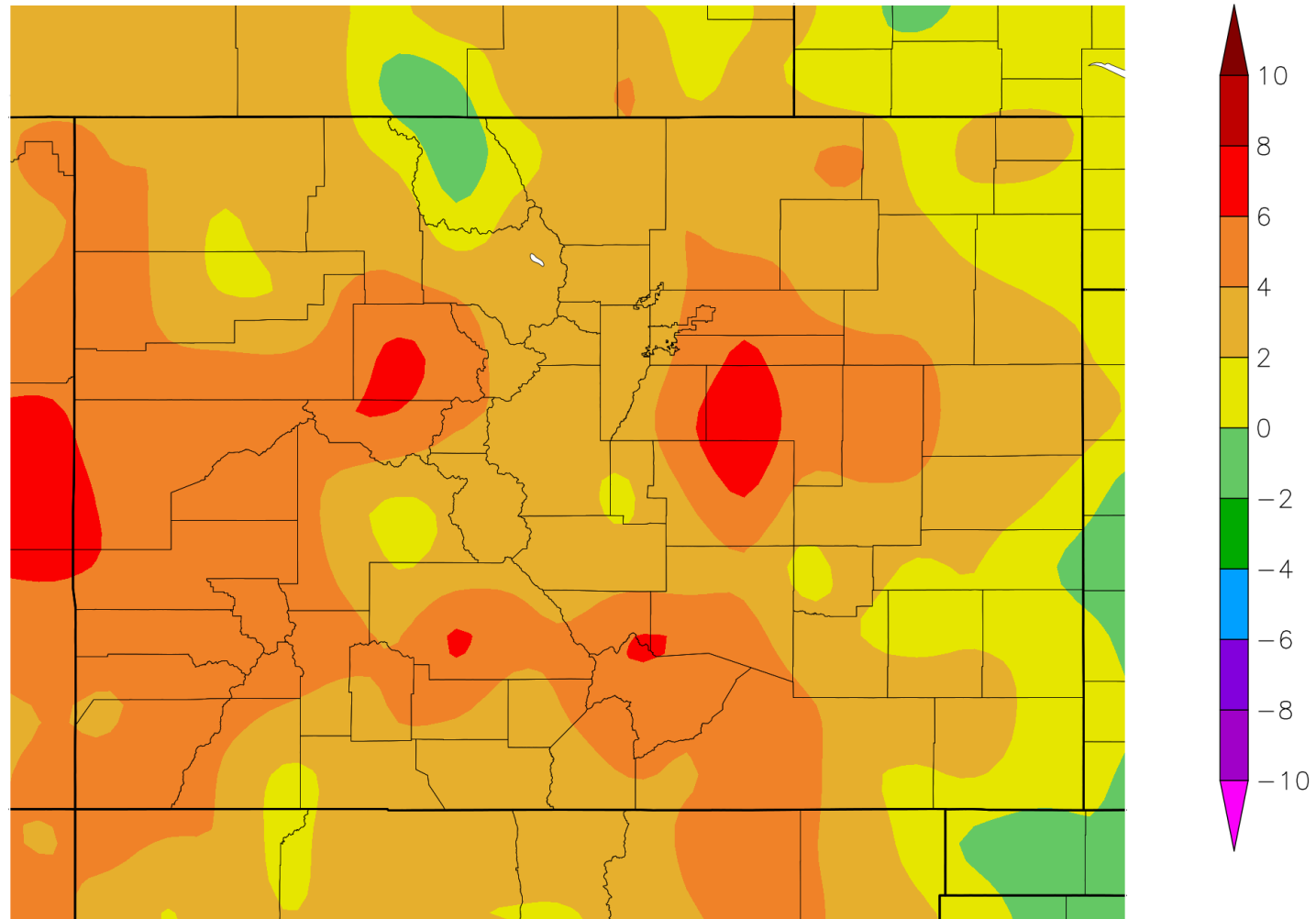


# August thus far

**August 2020 will go down as one of the most extreme summer months in recorded history for western Colorado**



# Departure from Normal Temperature (F) 8/1/2020 - 8/23/2020

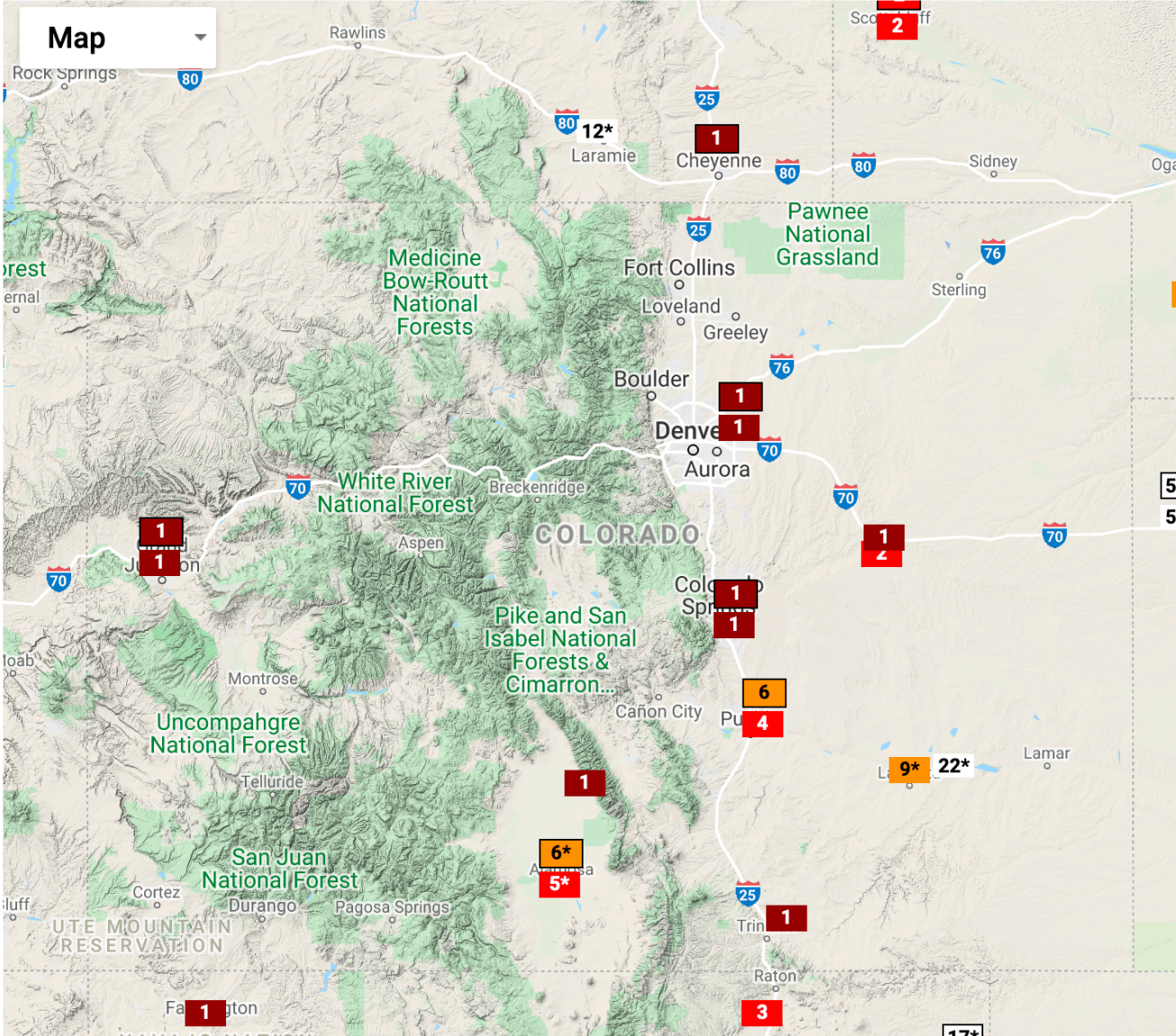


Generated 8/24/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers



# Observed Average Mean Temperature for Aug 1 2020 to Aug 23 2020 (796 stations)



**Variable**  
Mean Temp

**Values**  
Average

**Date**  
Sun 8/23/2020

**Period**  
Month to Date

**Station Display**  
Rankings  
 Show ThreadEx [?]

Show Perspectives  
[Show Map URL](#)  
[Export as CSV](#)

**Legend Rank**

- Highest
- 2nd-5th
- 6th-10th
- 
- 10th-6th
- 5th-2nd
- Lowest

\* Indicates tied ranking

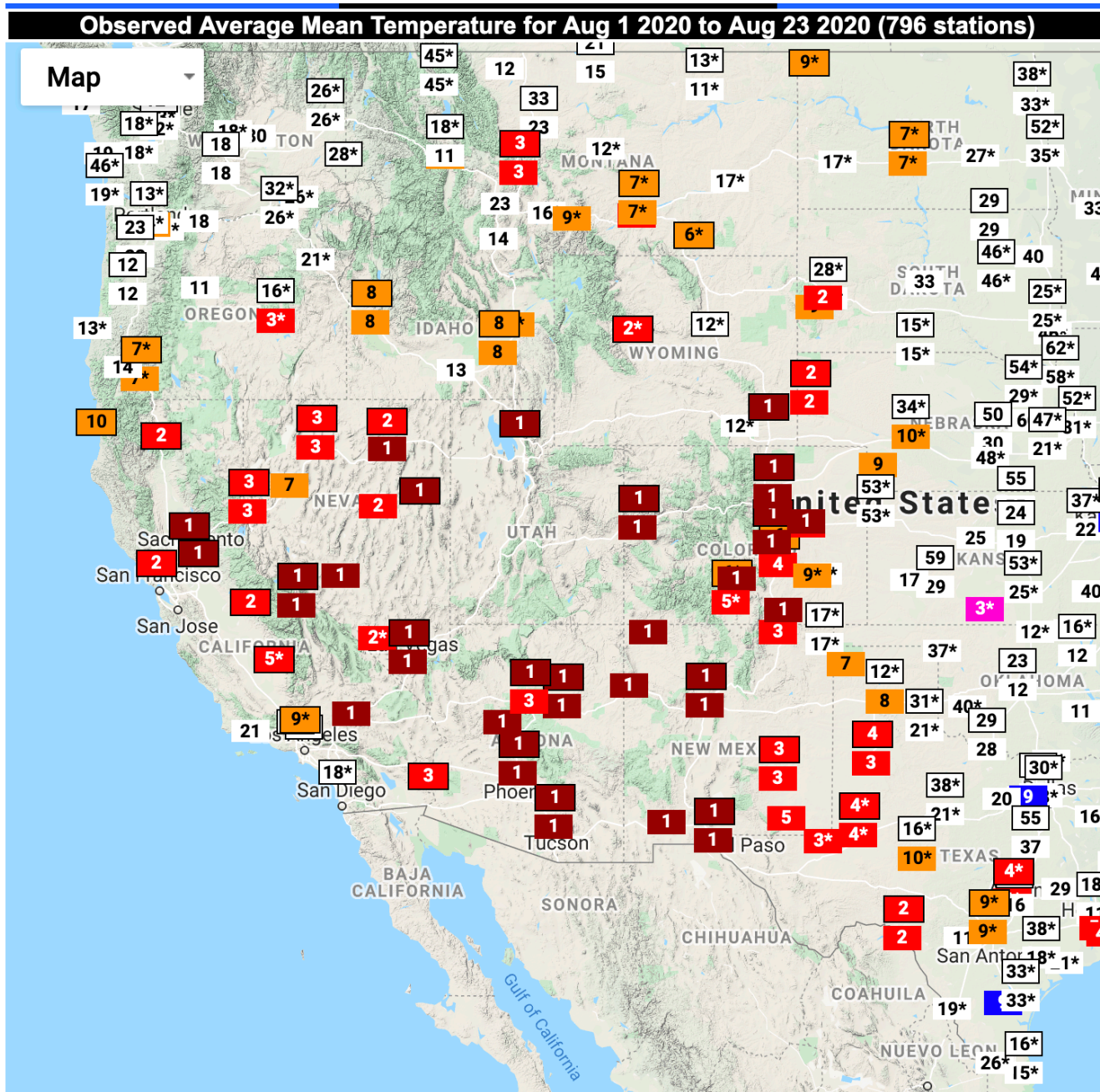
Climate Perspectives  
Powered by ACIS  
NOAA Regional Climate Centers



## Temperature ranks at long-term stations for August thus far







**Variable**  
Mean Temp

**Values**  
Average

**Date**  
Sun 8/23/2020

**Period**  
Month to Date

**Station Display**  
Rankings  
 Show ThreadEx [?]

Show Perspectives  
[Show Map URL](#)  
[Export as CSV](#)

**Legend**  
Rank

- Highest
- 2nd-5th
- 6th-10th
- 
- 10th-6th
- 5th-2nd
- Lowest

\* Indicates tied ranking

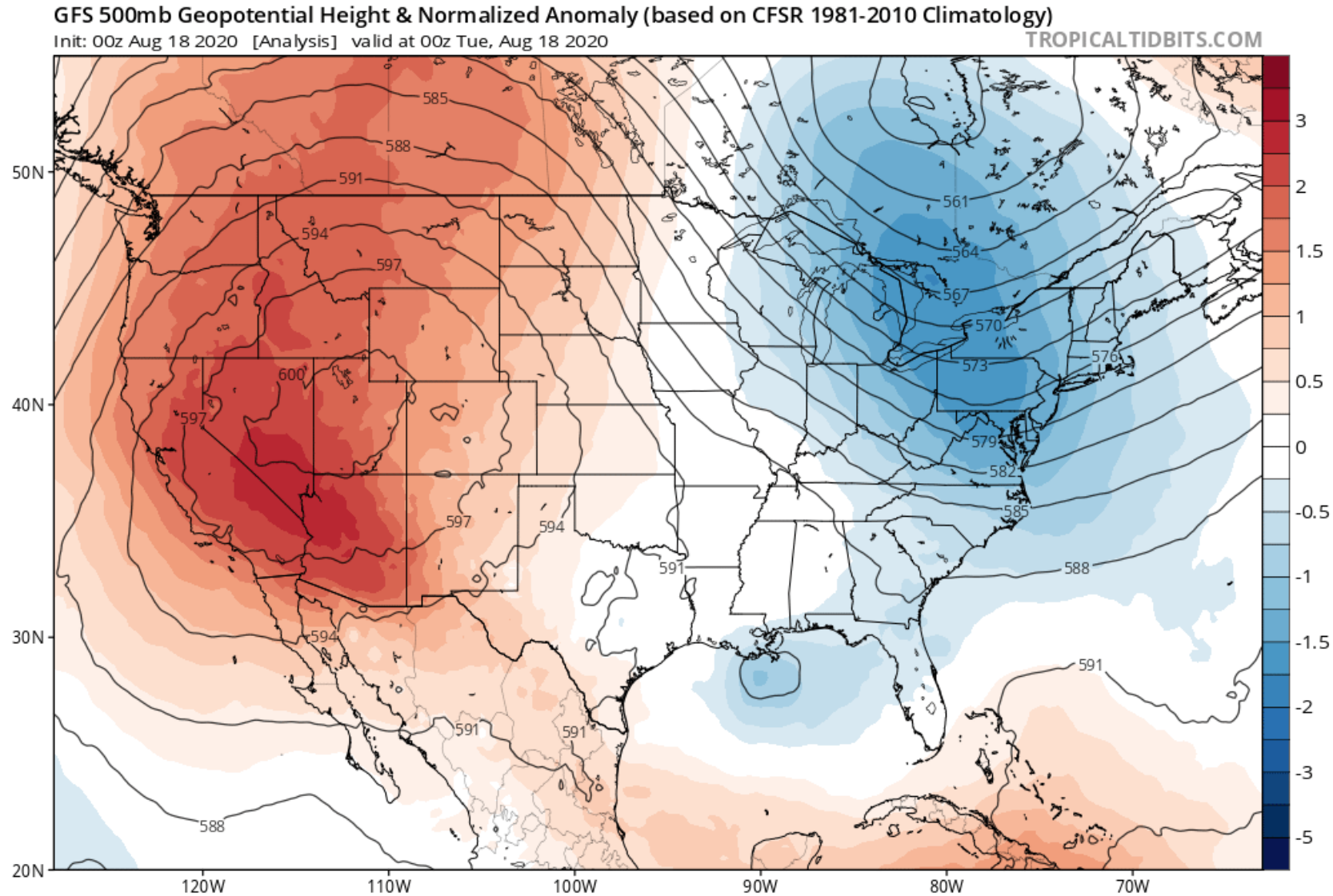
**Climate Perspectives**



# Temperature ranks at long-term stations for August thus far



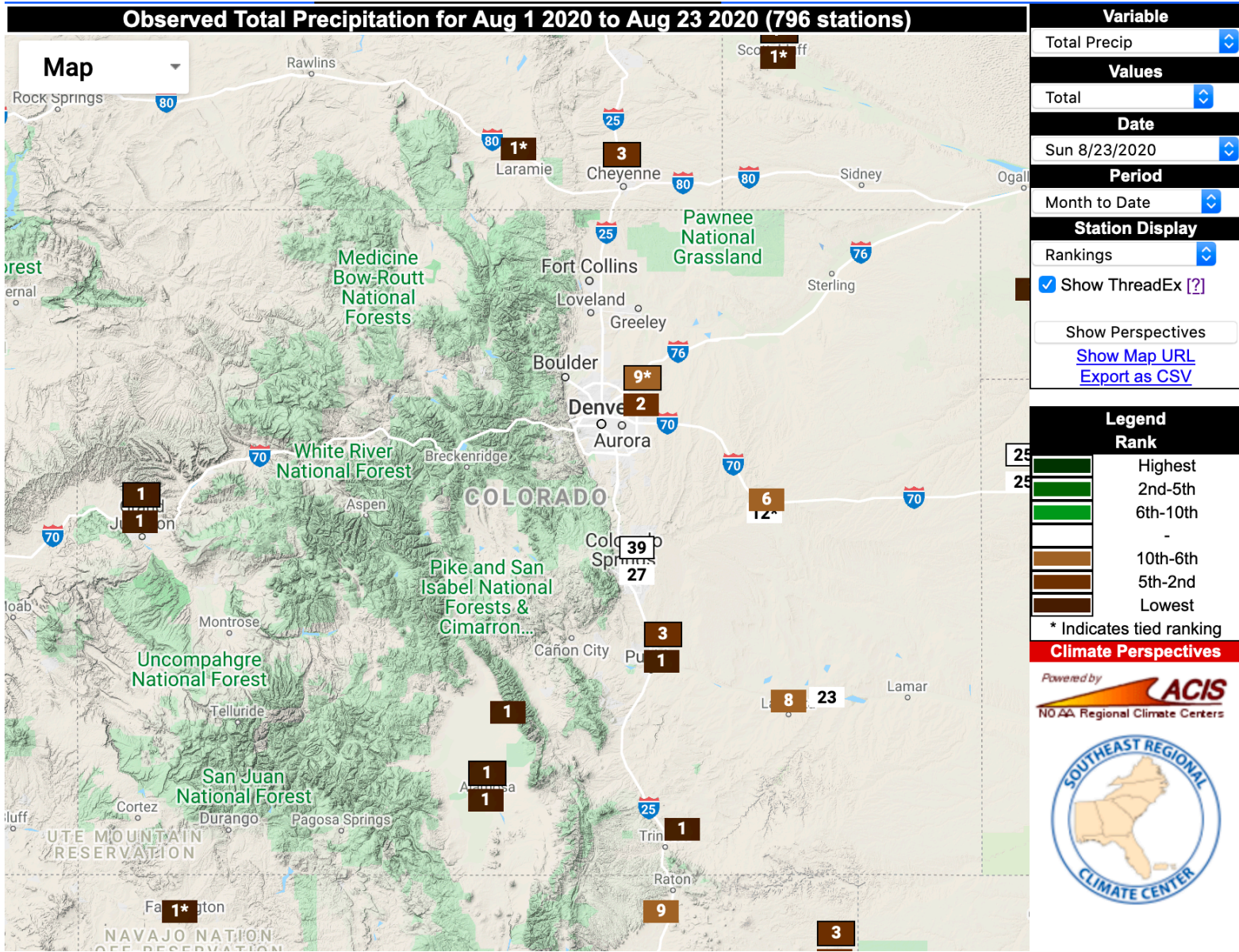
# We've been stuck under an unmoving high-pressure ridge



# Some temperature records

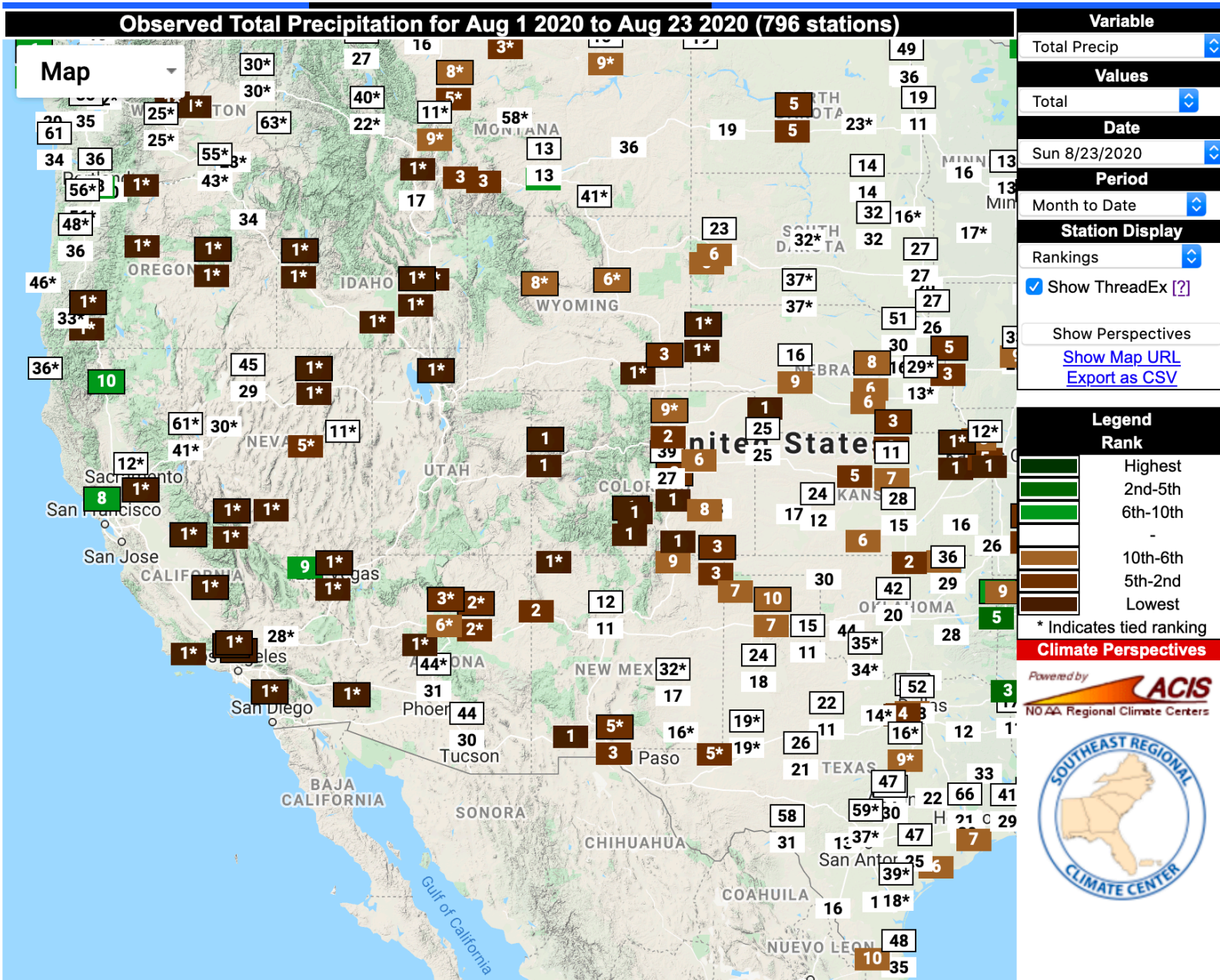
- Alamosa: highest August temperature on record (92F on August 19); set or tied daily high temperature records on 10 of the 23 days in August so far (there were some issues with the thermometer at Alamosa back in the spring, but those have been resolved; these are legit records)
- Grand Junction: tied August monthly record (103F on August 2 and 3); set or tied daily high temperature records on 6 days in August so far; 2<sup>nd</sup> most August 100-degree days; 6<sup>th</sup> most 100-degree days in a summer
- Denver: now 2<sup>nd</sup> most 90-degree days on record (behind only 2012)
- Fort Collins: now 4<sup>th</sup> most 90-degree days on record





Precipitation ranks at long-term stations for August thus far

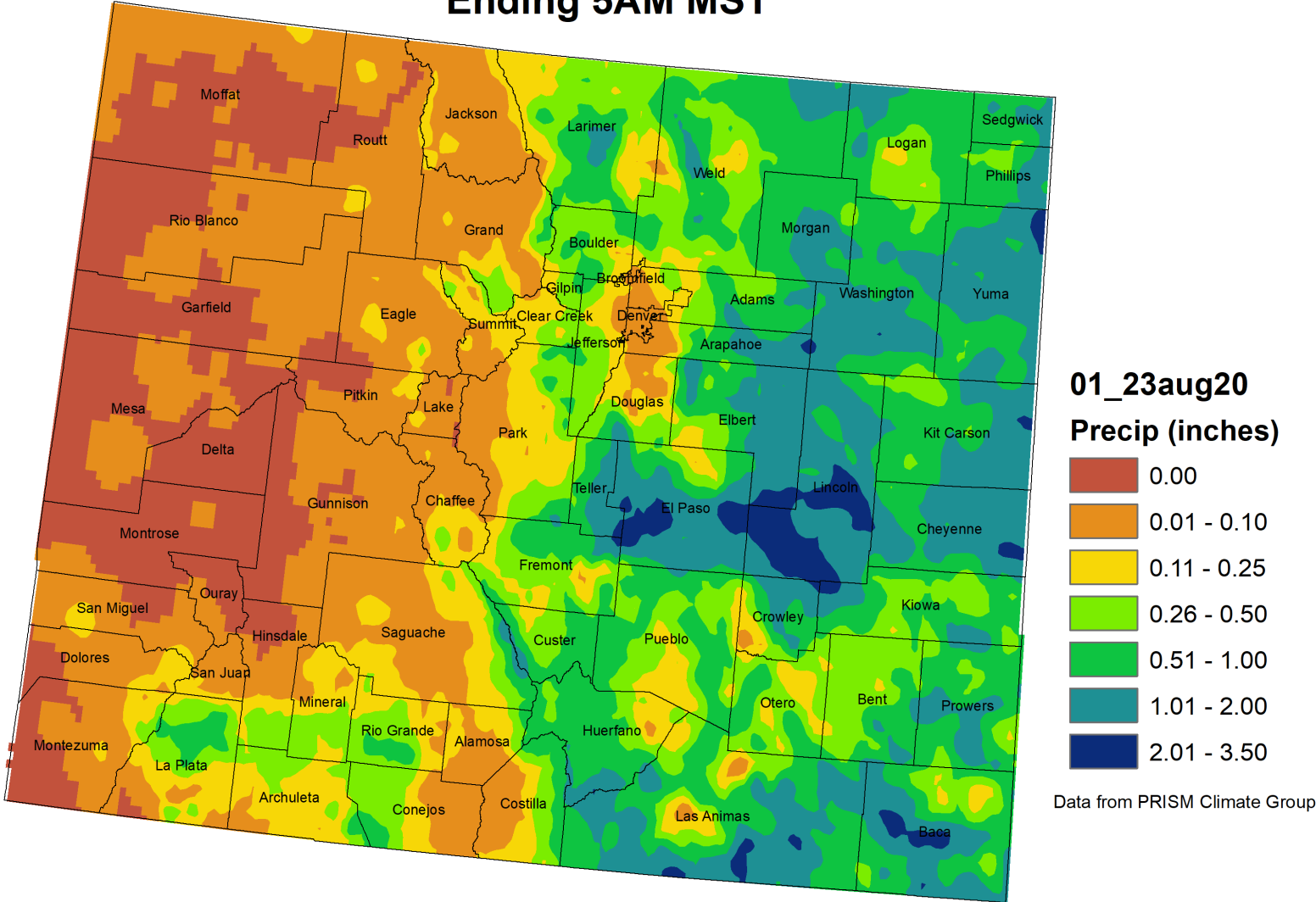




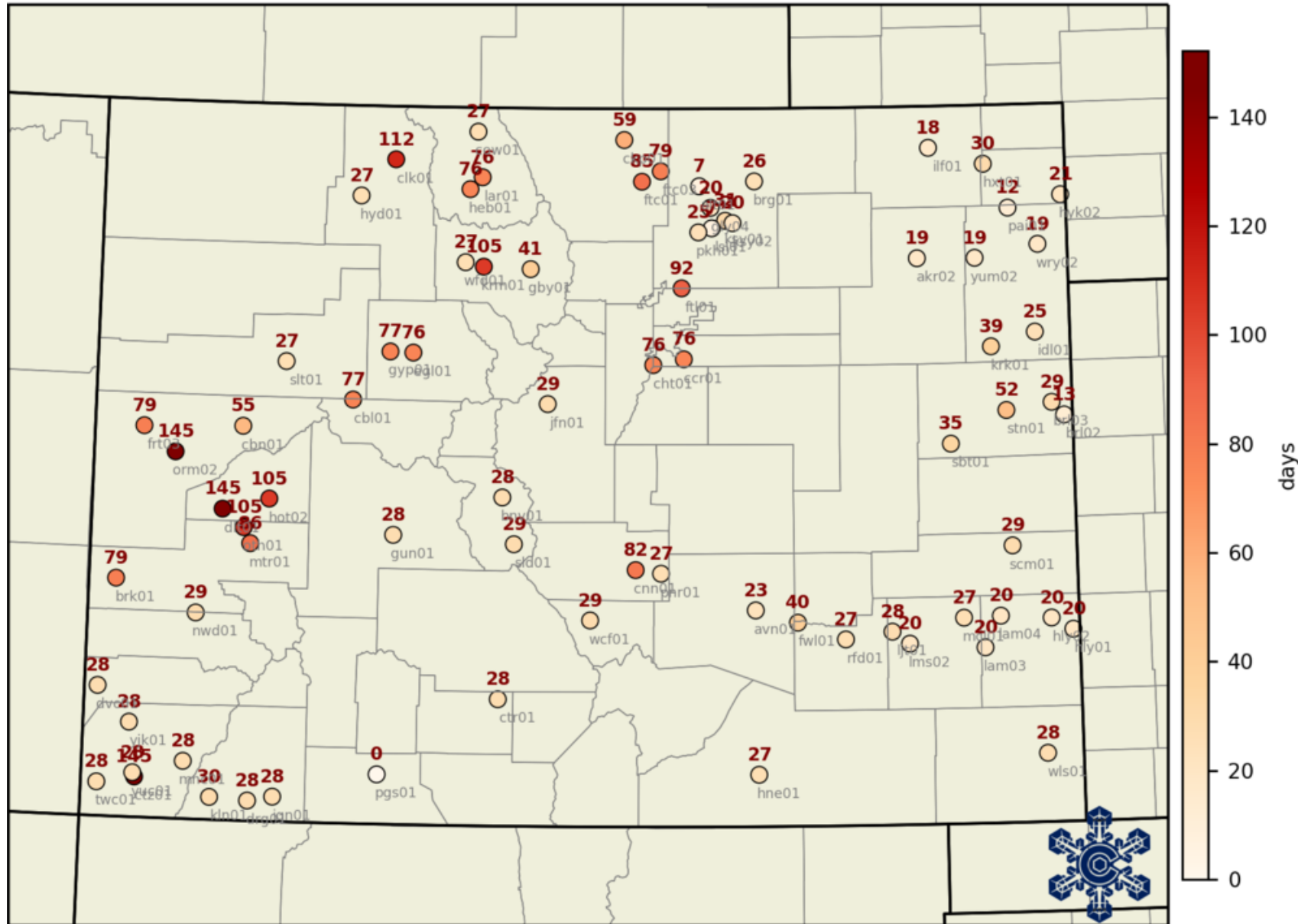
Precipitation ranks at long-term stations for August thus far



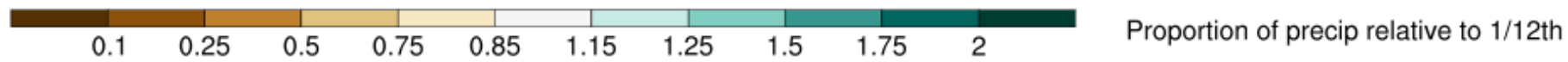
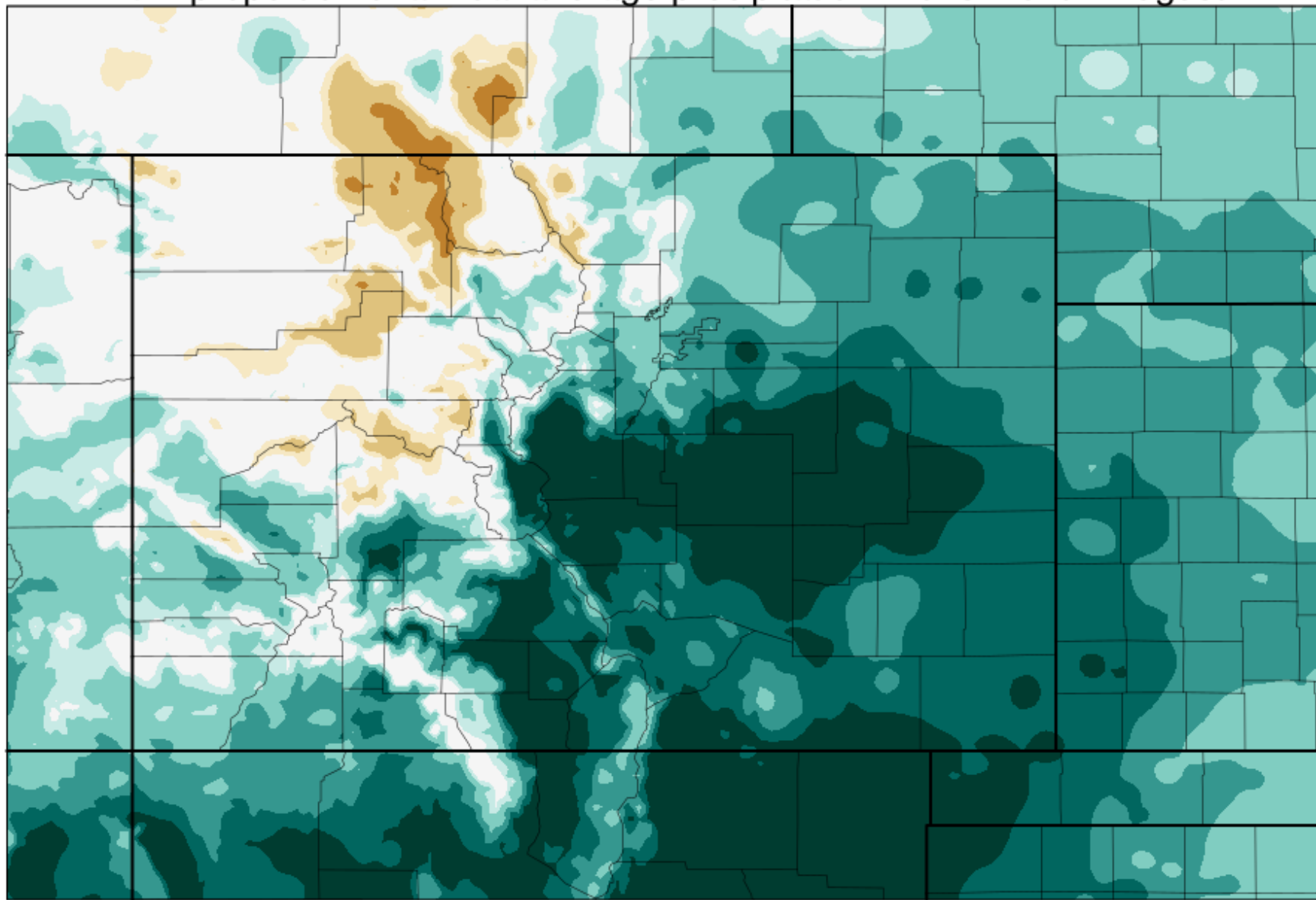
# Colorado Month to Date Precipitation 1 - 23 August 2020 Ending 5AM MST



CoAgMET consecutive days (since April 1) with less than 0.25" of rain: 24 Aug 2020



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

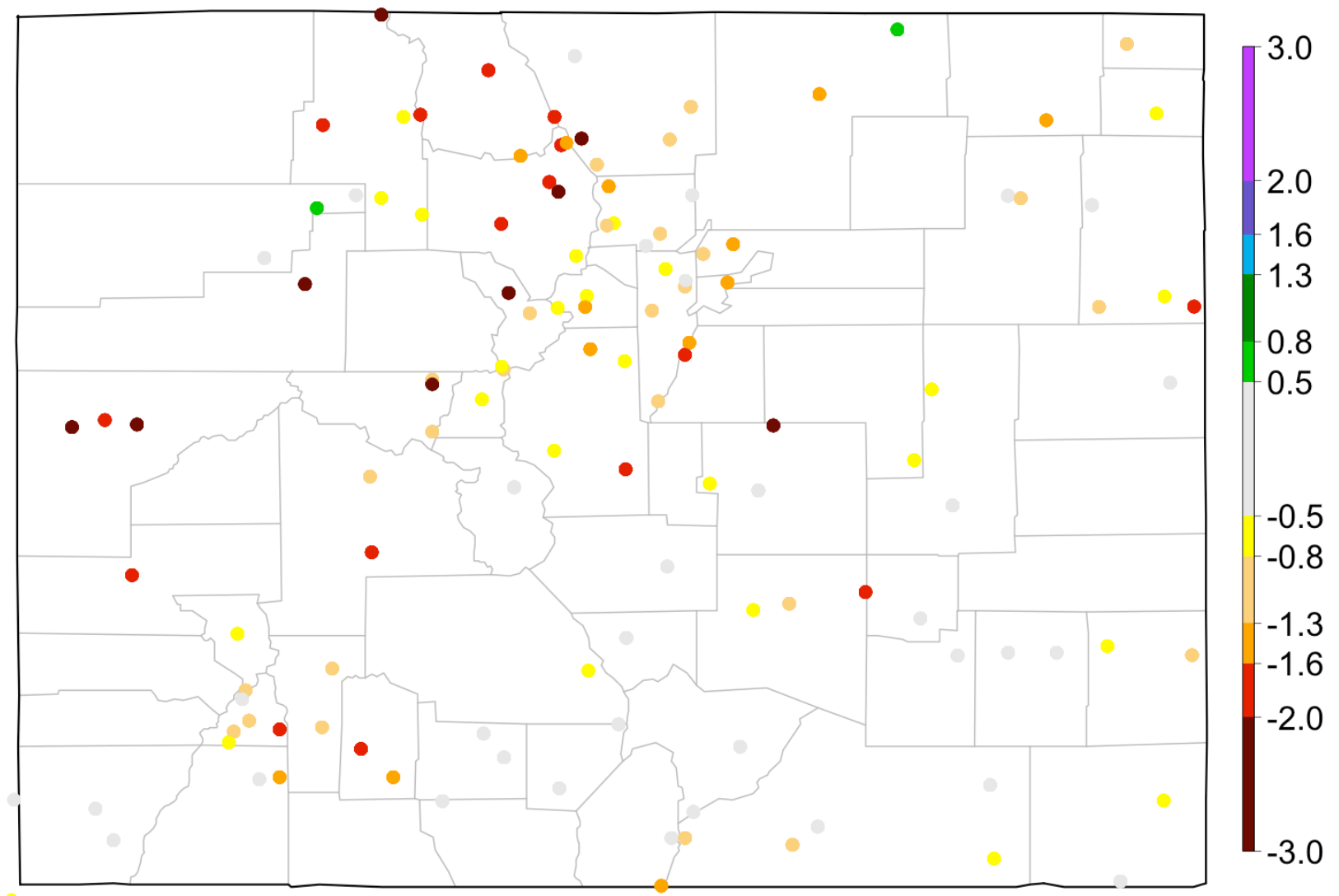


Russ Schumacher/Colorado Climate Center





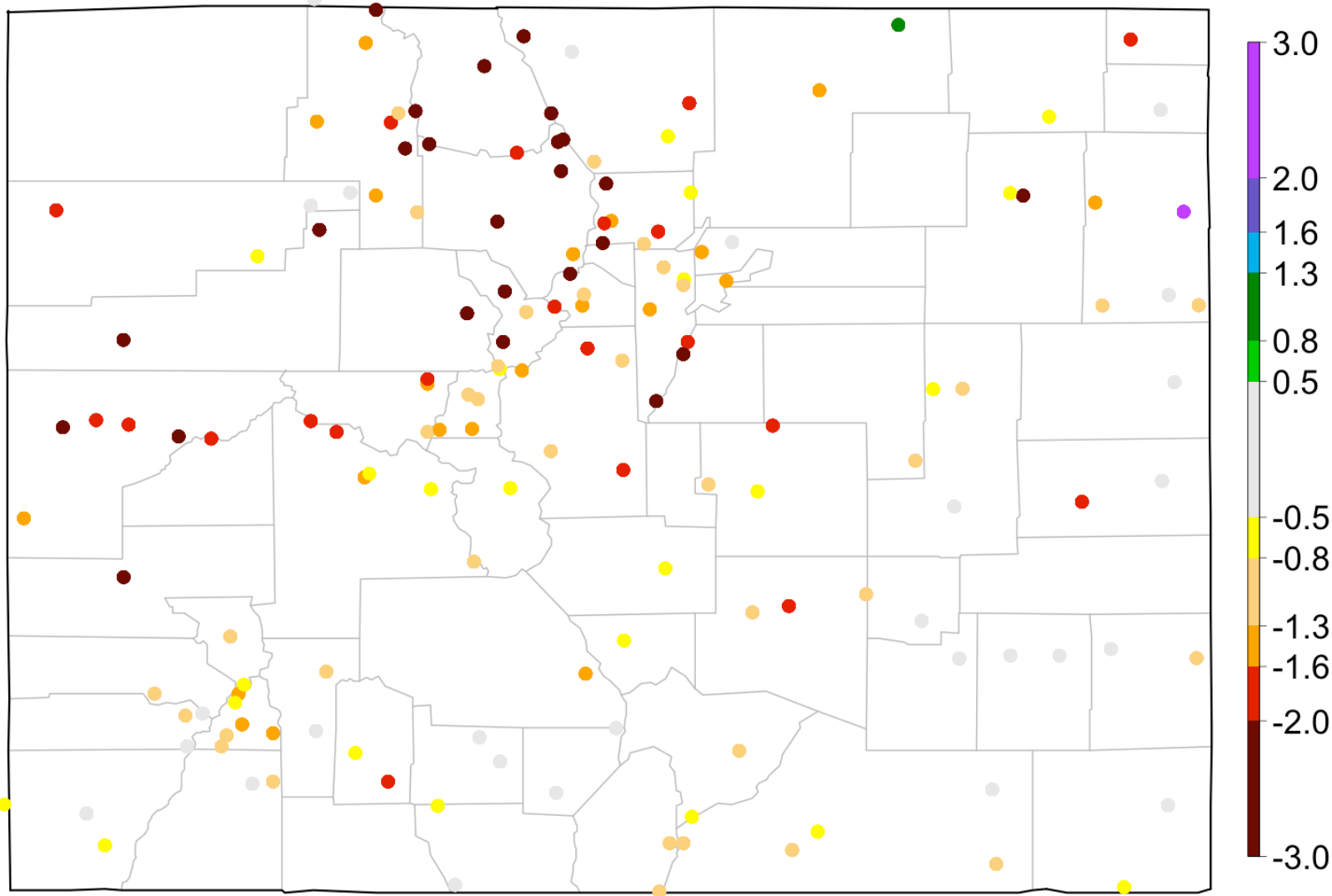
# 30-day SPI: 2020/07/24 - 2020/08/22



Data from High Plains Regional Climate Center and ACIS

[nl](#)

60-day SPI: 2020/06/24 - 2020/08/22

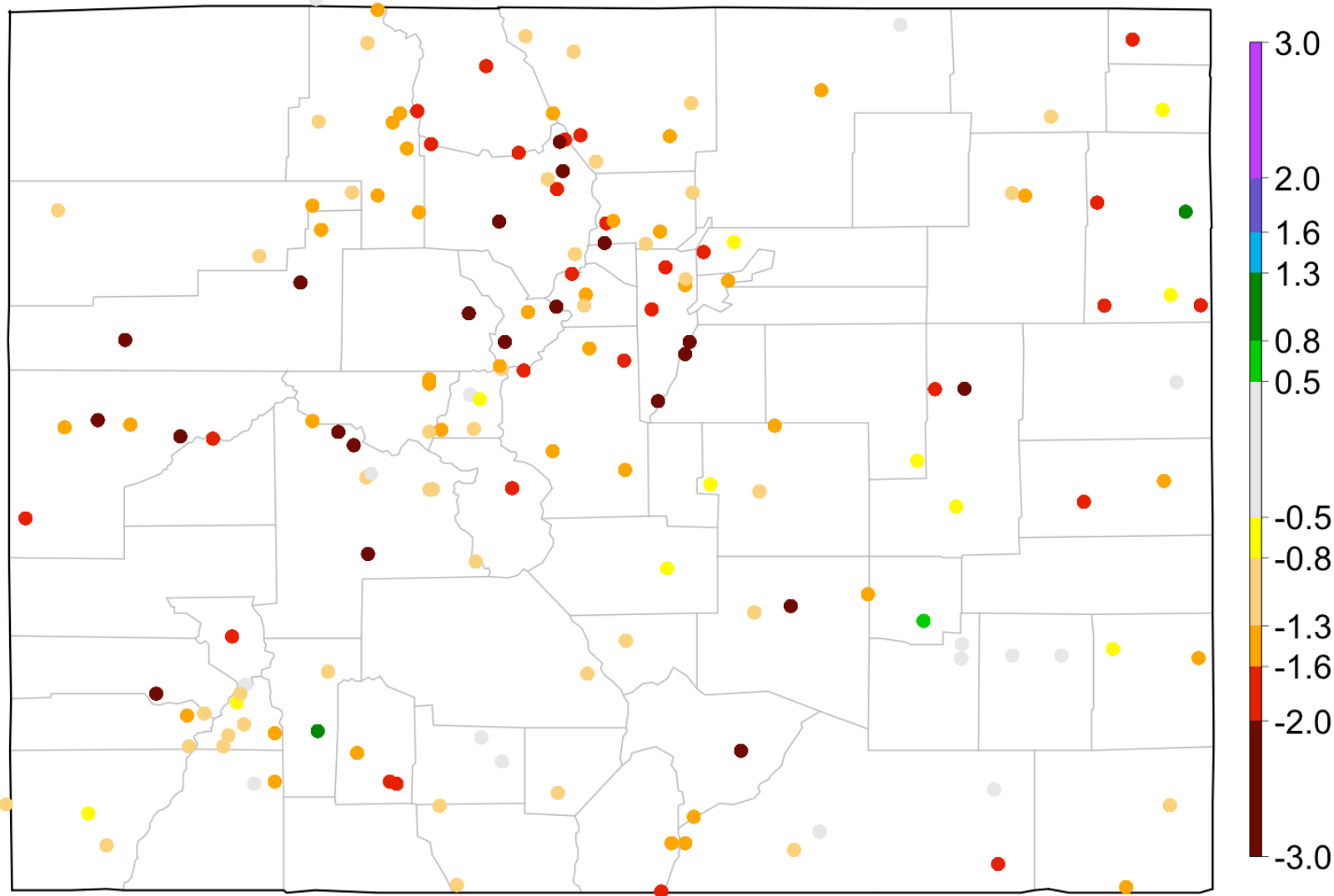


Data from High Plains Regional Climate Center and ACIS

[nl](#)



120-day SPI: 2020/04/25 - 2020/08/22

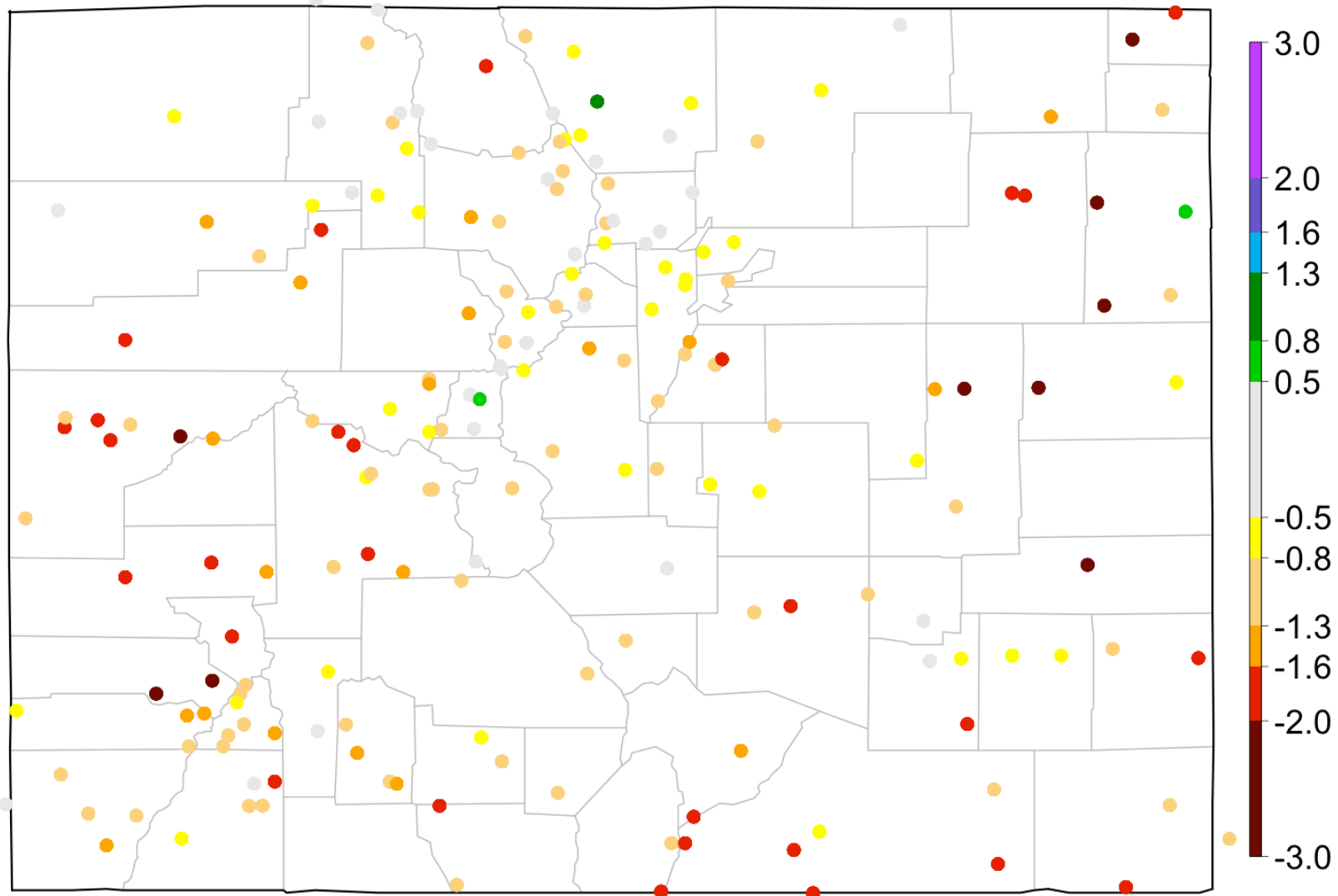


Data from High Plains Regional Climate Center and ACIS

[nl](#)



# Water-year-to-date SPI: 2020/10/01 - 2020/08/22



Data from High Plains Regional Climate Center and ACIS

[nl](#)





Cameron Peak smoke plume, August 14  
Taken by me from Fort Collins City Park

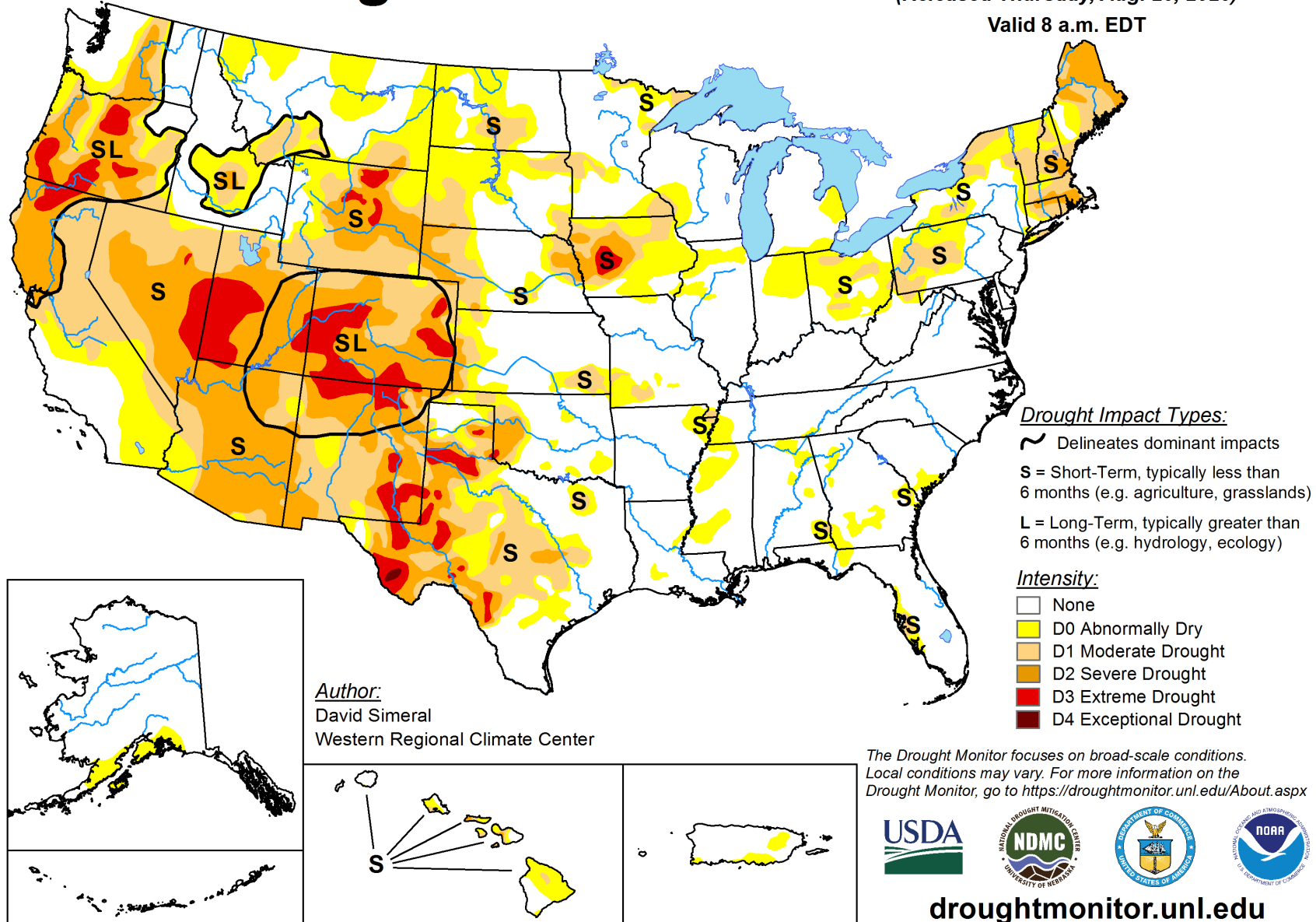
## Drought Conditions



# U.S. Drought Monitor

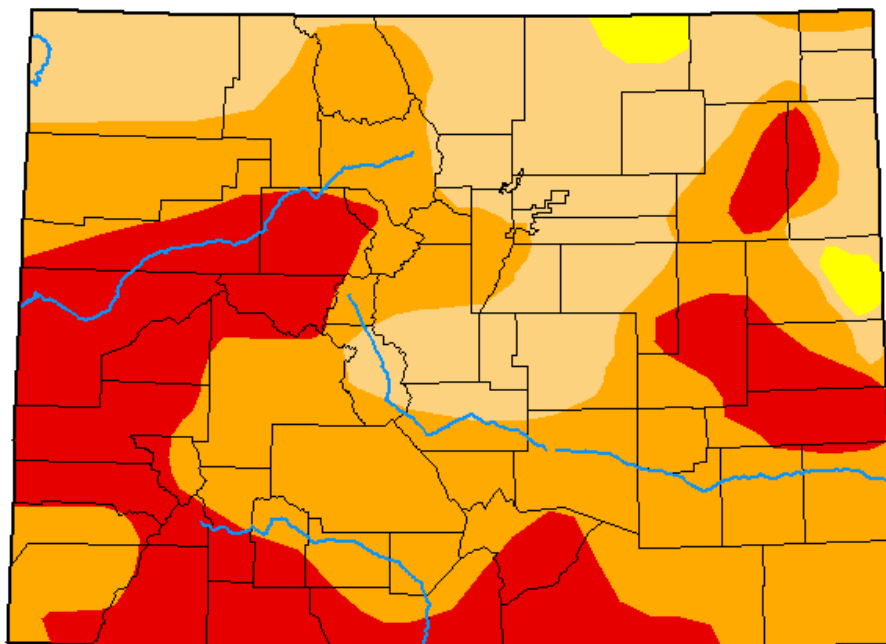
August 18, 2020  
(Released Thursday, Aug. 20, 2020)

Valid 8 a.m. EDT



# U.S. Drought Monitor Colorado

**August 18, 2020**  
(Released Thursday, Aug. 20, 2020)  
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	98.76	72.69	27.31	0.00
<b>Last Week</b> <i>08-11-2020</i>	0.00	100.00	93.87	61.43	23.66	0.00
<b>3 Months Ago</b> <i>05-19-2020</i>	23.22	76.78	65.20	46.31	17.52	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	31.72	68.28	51.19	20.11	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	30.14	69.86	27.53	0.00	0.00	0.00
<b>One Year Ago</b> <i>08-20-2019</i>	93.35	6.65	0.00	0.00	0.00	0.00

Intensity:



*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:

David Simeral  
Western Regional Climate Center



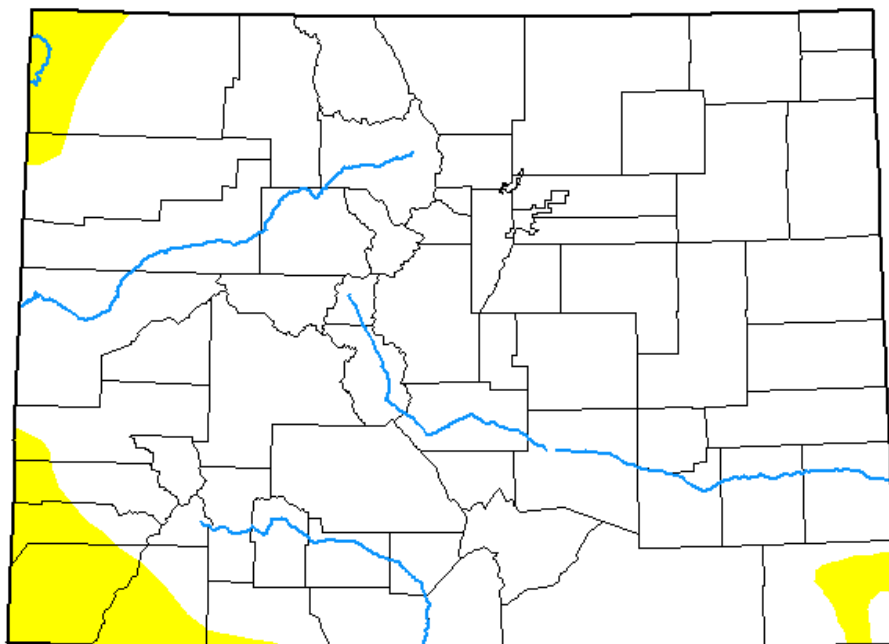
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# U.S. Drought Monitor Colorado

**August 20, 2019**  
(Released Thursday, Aug. 22, 2019)  
Valid 8 a.m. EDT

One year ago



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	93.35	6.65	0.00	0.00	0.00	0.00
<b>Last Week</b> 08-13-2019	93.35	6.65	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> 05-21-2019	99.99	0.01	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-01-2019	17.94	82.06	66.26	54.91	27.11	11.22
<b>Start of Water Year</b> 09-25-2018	14.19	85.81	72.30	64.41	48.47	16.21
<b>One Year Ago</b> 08-21-2018	18.57	81.43	74.46	65.88	45.46	8.50

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. See accompanying text summary for forecast statements.*

Author:

Jessica Blunden  
NCEI/NOAA



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

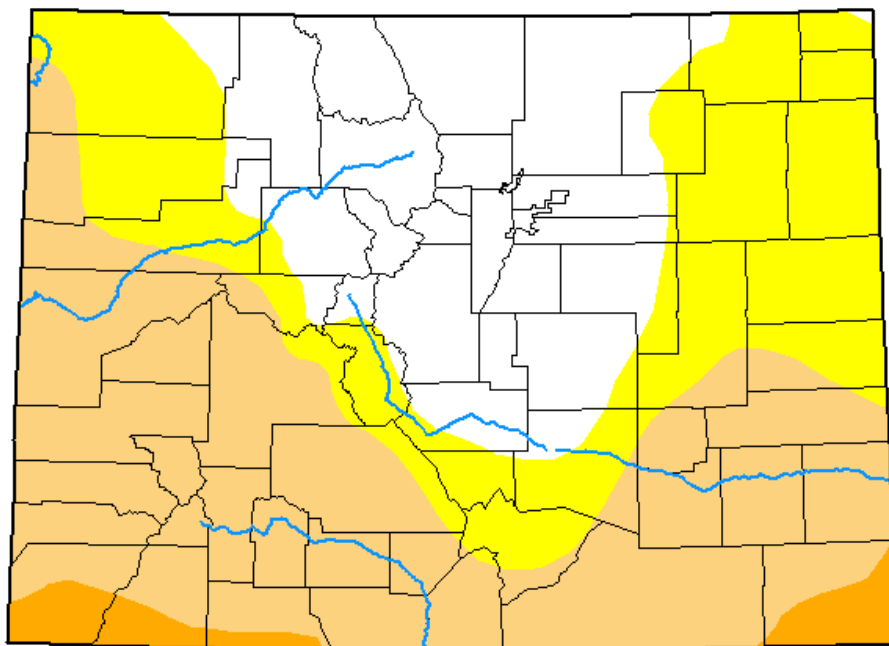




# U.S. Drought Monitor Colorado

**February 18, 2020**  
(Released Thursday, Feb. 20, 2020)  
Valid 7 a.m. EST

# Six months ago



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	28.74	71.26	43.82	3.30	0.00	0.00
<b>Last Week</b> <i>02-11-2020</i>	27.72	72.28	43.82	3.30	0.00	0.00
<b>3 Months Ago</b> <i>11-19-2019</i>	25.19	74.81	59.95	32.23	0.00	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	31.72	68.28	51.19	20.11	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	30.14	69.86	27.53	0.00	0.00	0.00
<b>One Year Ago</b> <i>02-19-2019</i>	8.15	91.85	67.16	39.69	10.21	0.11

Intensity:



*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:

David Miskus  
NOAA/NWS/NCEP/CPC



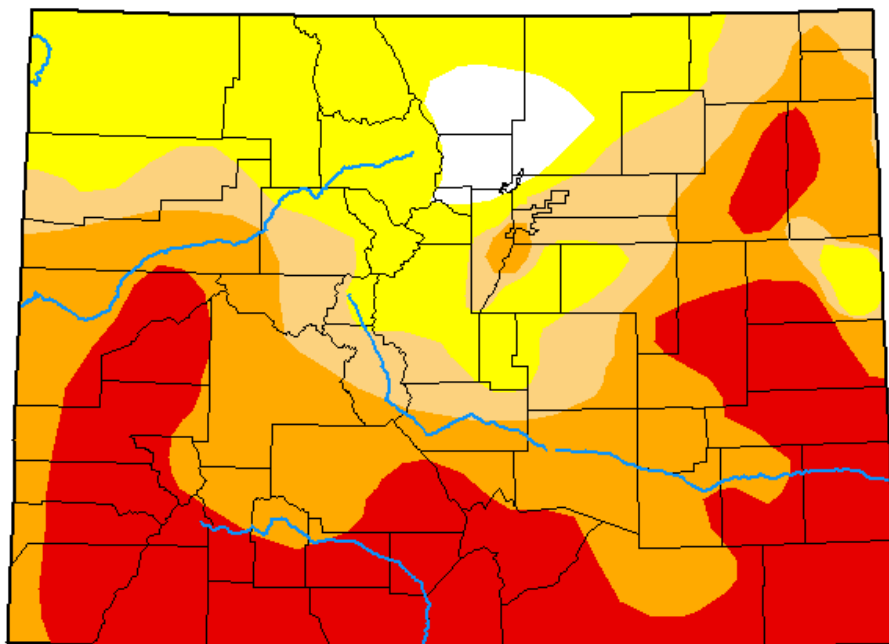
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# U.S. Drought Monitor Colorado

**July 21, 2020**  
(Released Thursday, Jul. 23, 2020)  
Valid 8 a.m. EDT

One month  
ago



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	2.95	97.05	73.99	60.34	31.77	0.00
<b>Last Week</b> <i>07-14-2020</i>	4.64	95.36	70.20	57.84	36.91	0.00
<b>3 Months Ago</b> <i>04-21-2020</i>	33.26	66.74	53.58	28.51	0.00	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	31.72	68.28	51.19	20.11	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	30.14	69.86	27.53	0.00	0.00	0.00
<b>One Year Ago</b> <i>07-23-2019</i>	96.93	3.07	0.00	0.00	0.00	0.00

Intensity:



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Author:

Richard Heim  
NCEI/NOAA

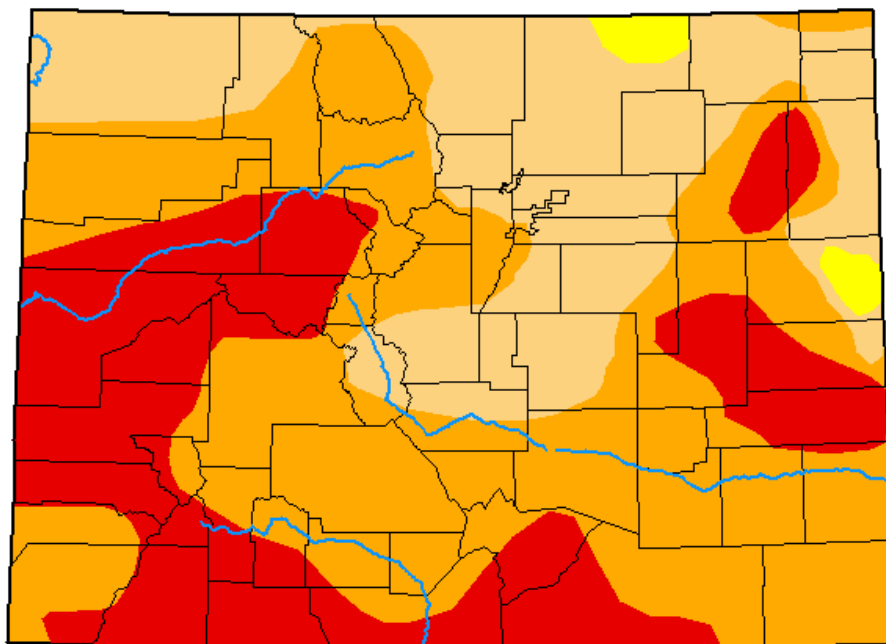


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# U.S. Drought Monitor Colorado

**August 18, 2020**  
(Released Thursday, Aug. 20, 2020)  
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	98.76	72.69	27.31	0.00
<b>Last Week</b> <i>08-11-2020</i>	0.00	100.00	93.87	61.43	23.66	0.00
<b>3 Months Ago</b> <i>05-19-2020</i>	23.22	76.78	65.20	46.31	17.52	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	31.72	68.28	51.19	20.11	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	30.14	69.86	27.53	0.00	0.00	0.00
<b>One Year Ago</b> <i>08-20-2019</i>	93.35	6.65	0.00	0.00	0.00	0.00

Intensity:



*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:

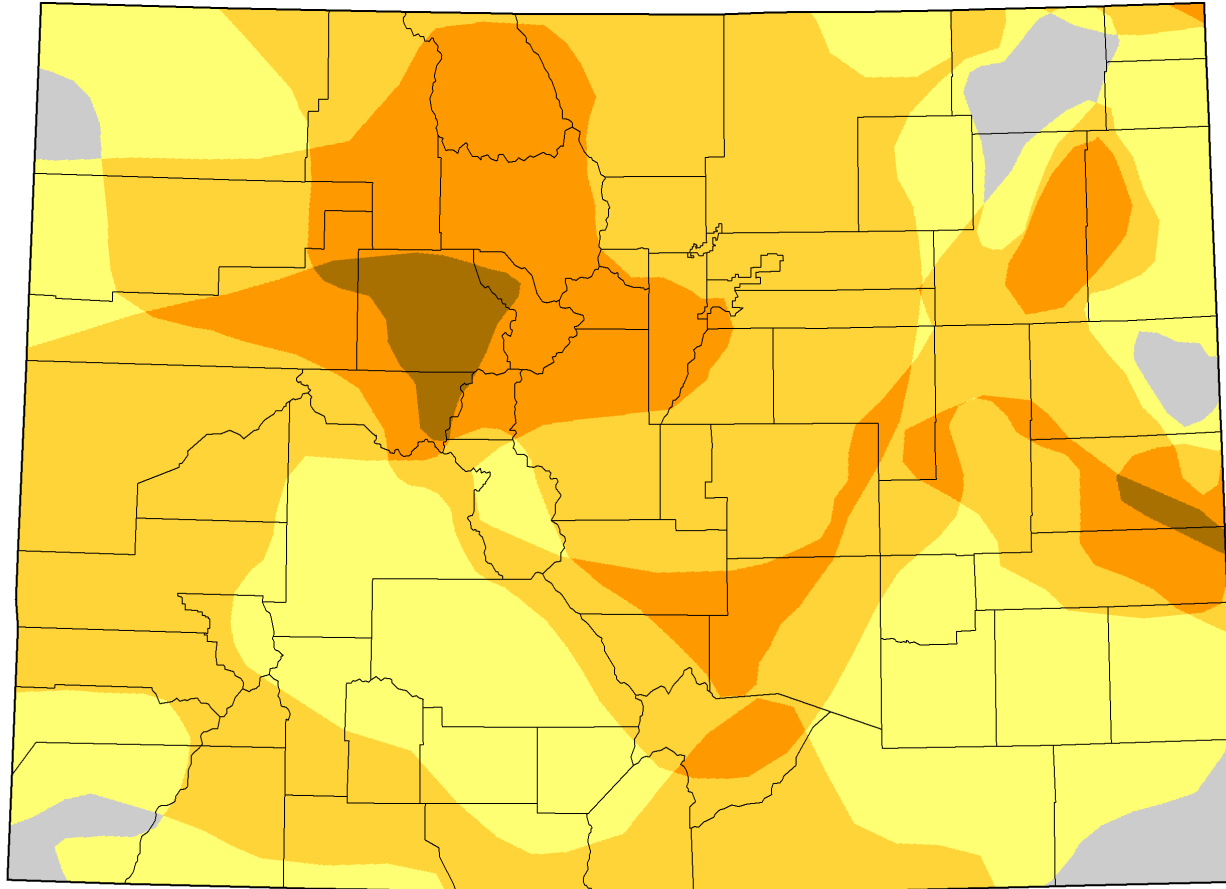
David Simeral  
Western Regional Climate Center



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



# U.S. Drought Monitor Class Change - Colorado 6 Months



August 18, 2020  
compared to  
March 3, 2020

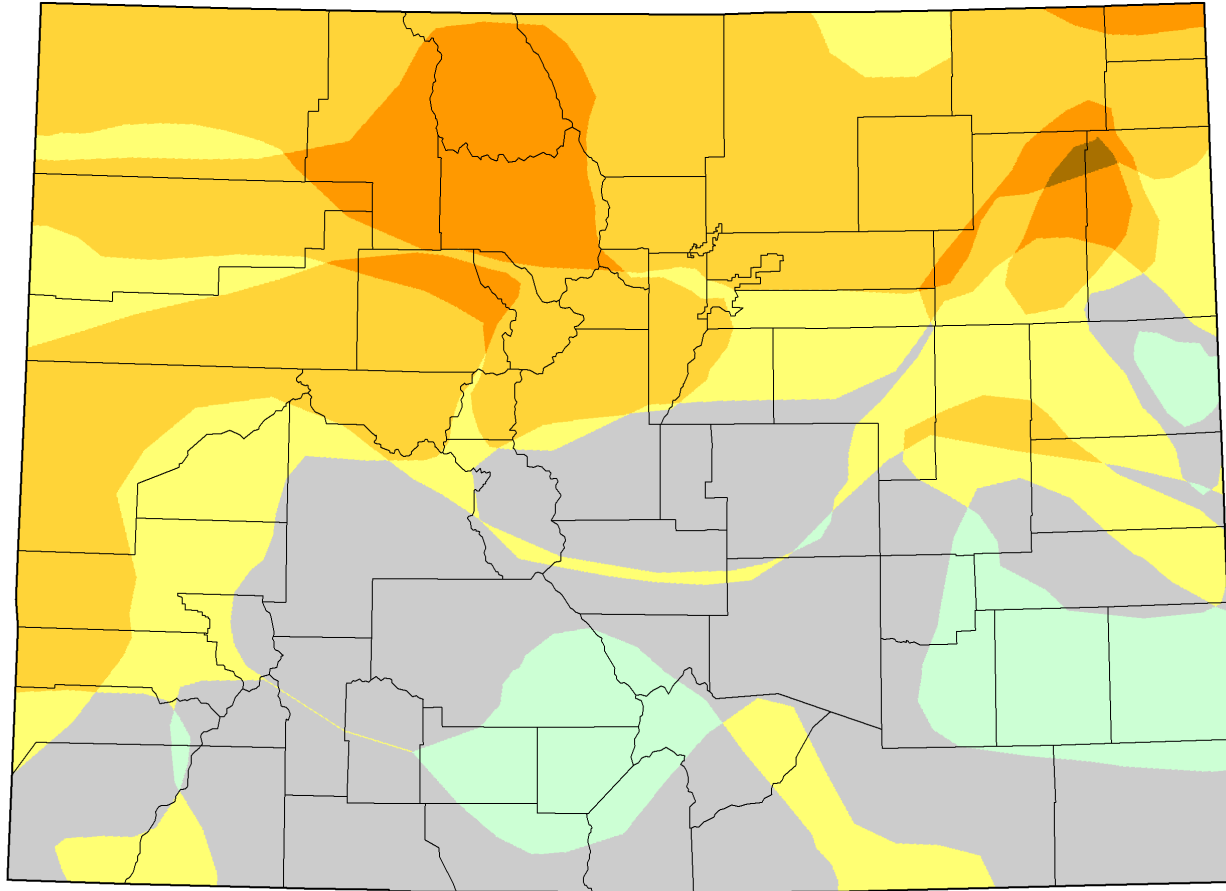
[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)



- 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 3 Months



August 18, 2020  
compared to  
May 26, 2020

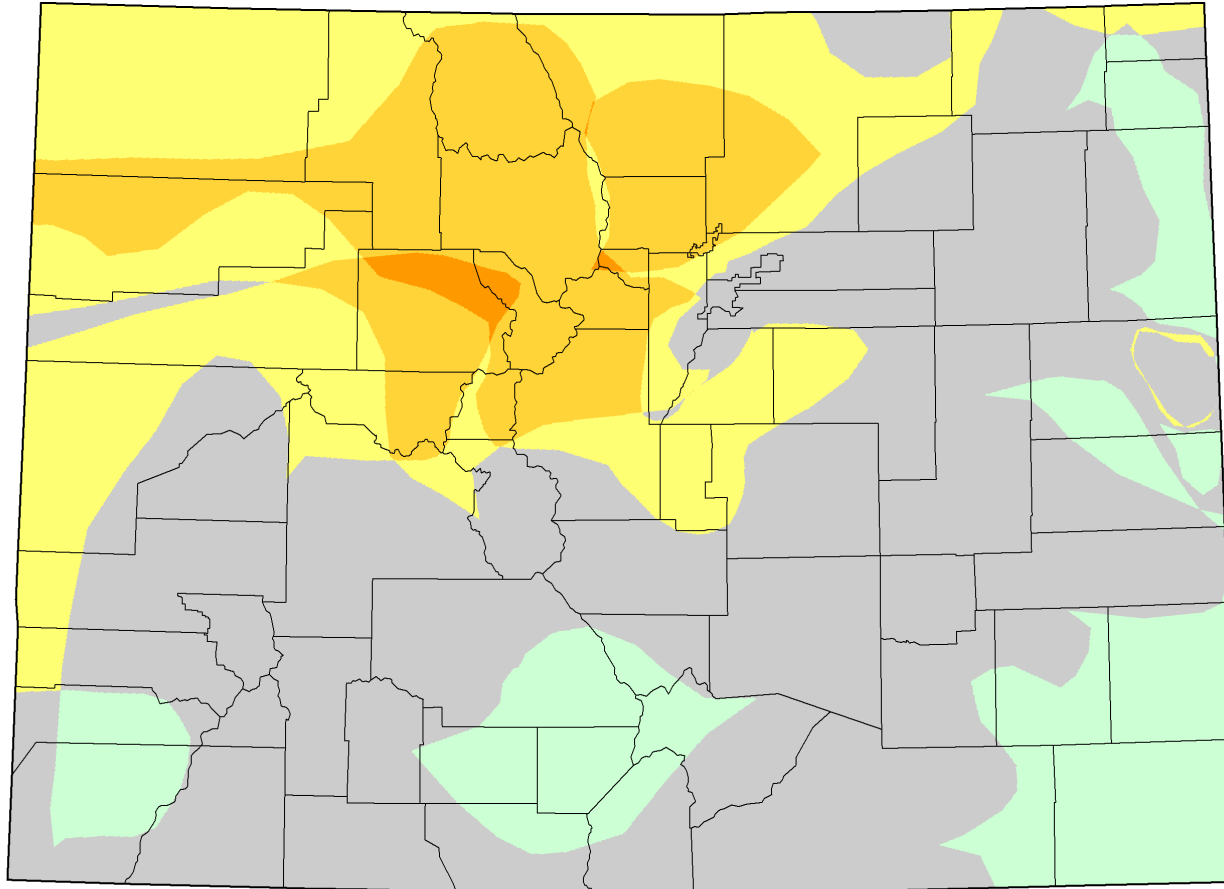
[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)



- 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 1 Month



August 18, 2020  
compared to  
July 21, 2020

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

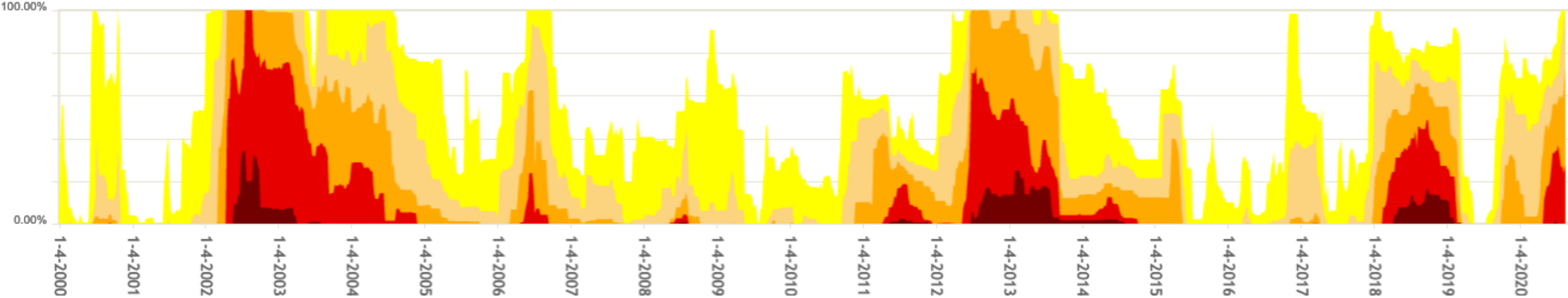


	5 Class Degradation
	4 Class Degradation
	3 Class Degradation
	2 Class Degradation
	1 Class Degradation
	No Change
	1 Class Improvement
	2 Class Improvement
	3 Class Improvement
	4 Class Improvement
	5 Class Improvement

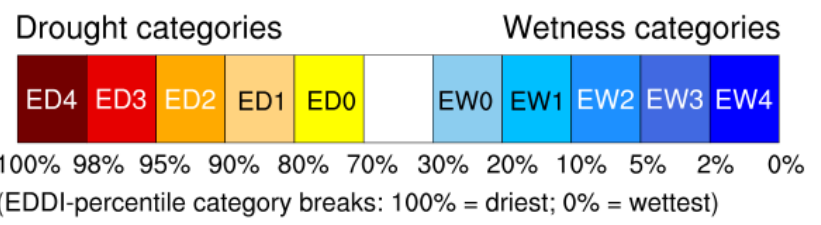
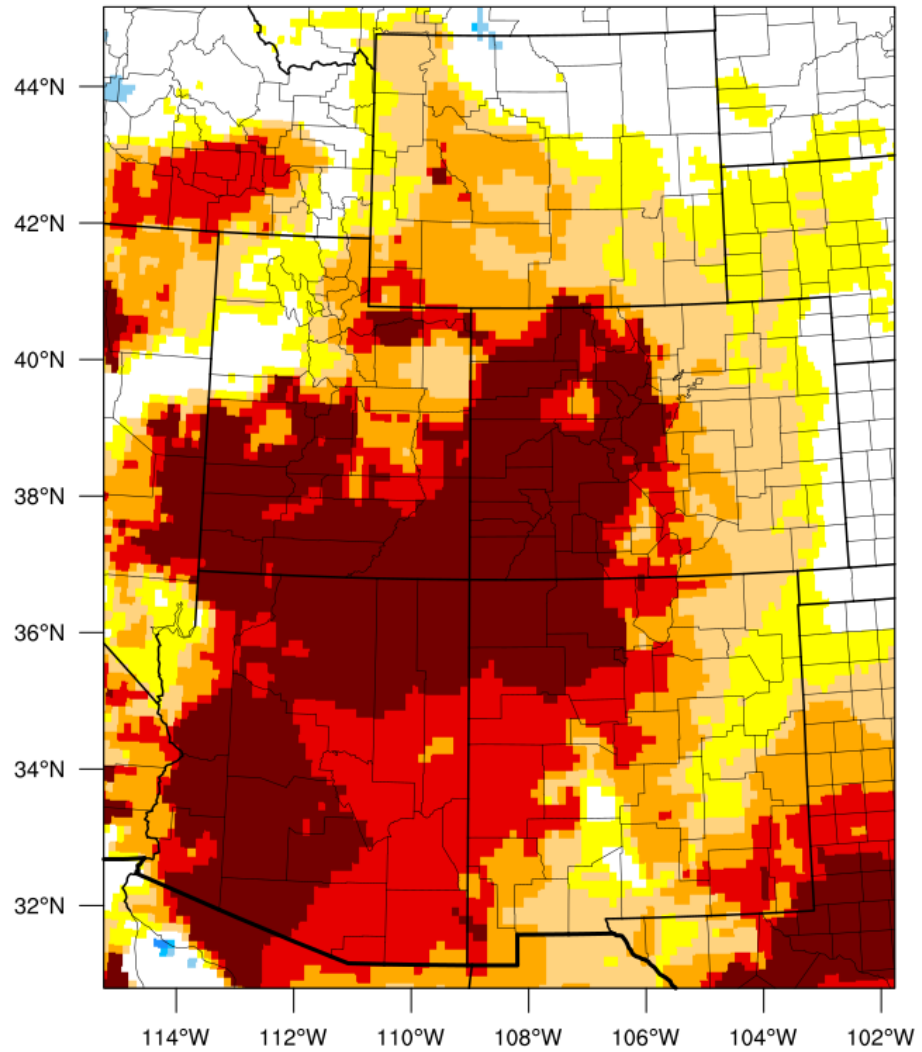


# US Drought Monitor, percent of Colorado in drought

Colorado Percent Area



3-week EDDI categories for August 19, 2020



# Evaporative Demand Drought Index

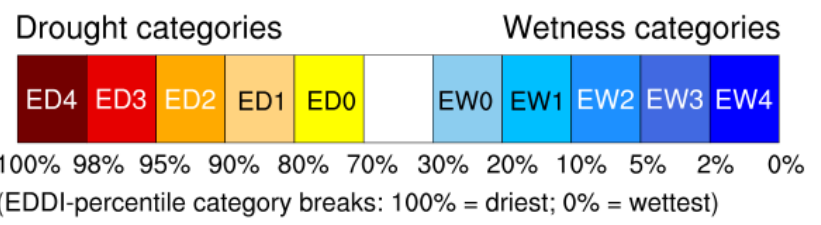
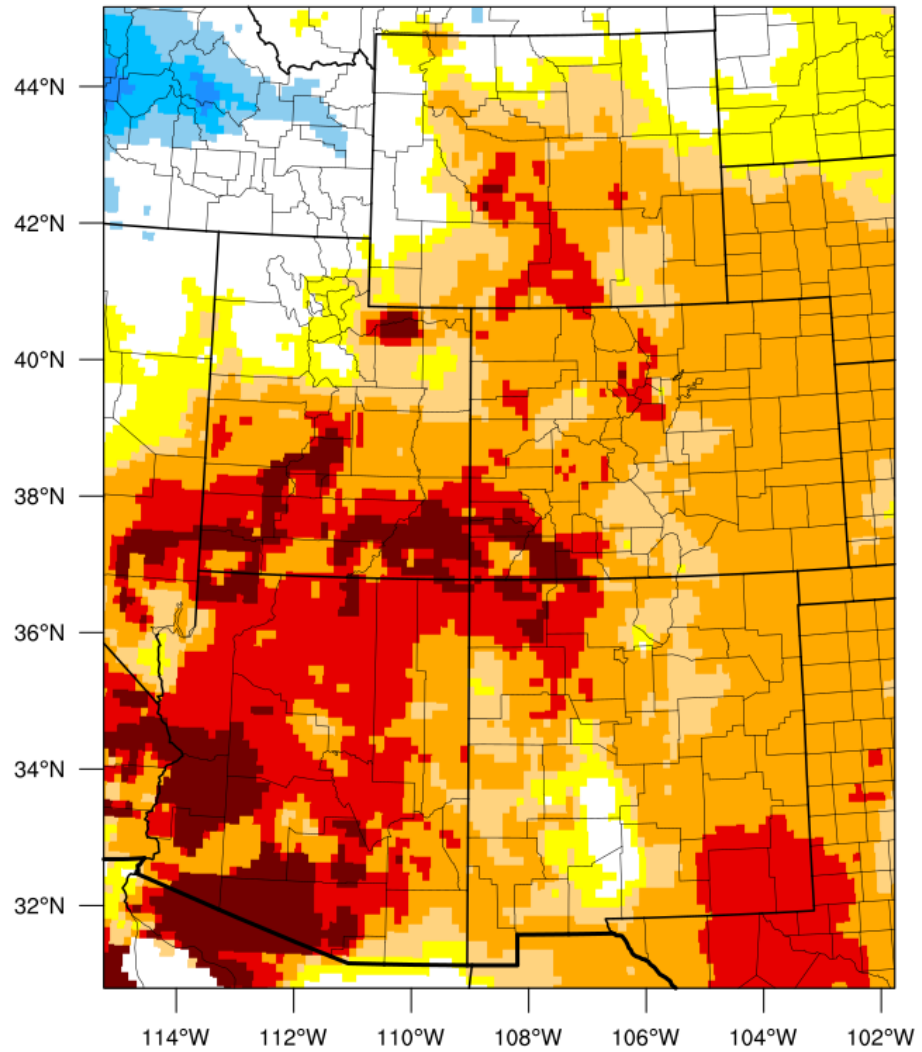
Record levels of evaporative demand across the west since the beginning of August

We expect more moisture, clouds, rain in August on the western slope, but not this year





3-month EDDI categories for August 18, 2020



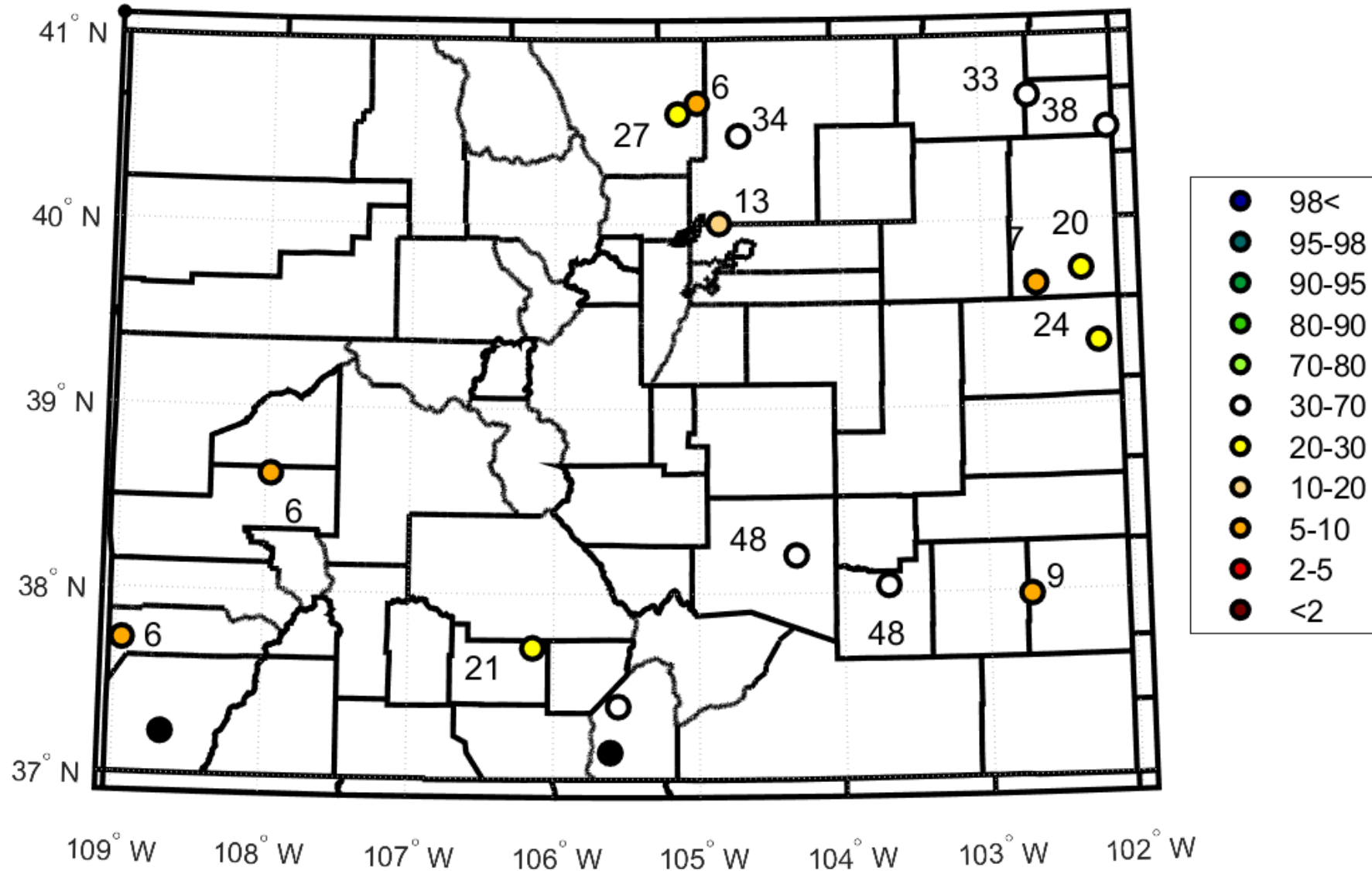
# Evaporative Demand Drought Index

Evaporative demand has  
been high statewide going  
back to May

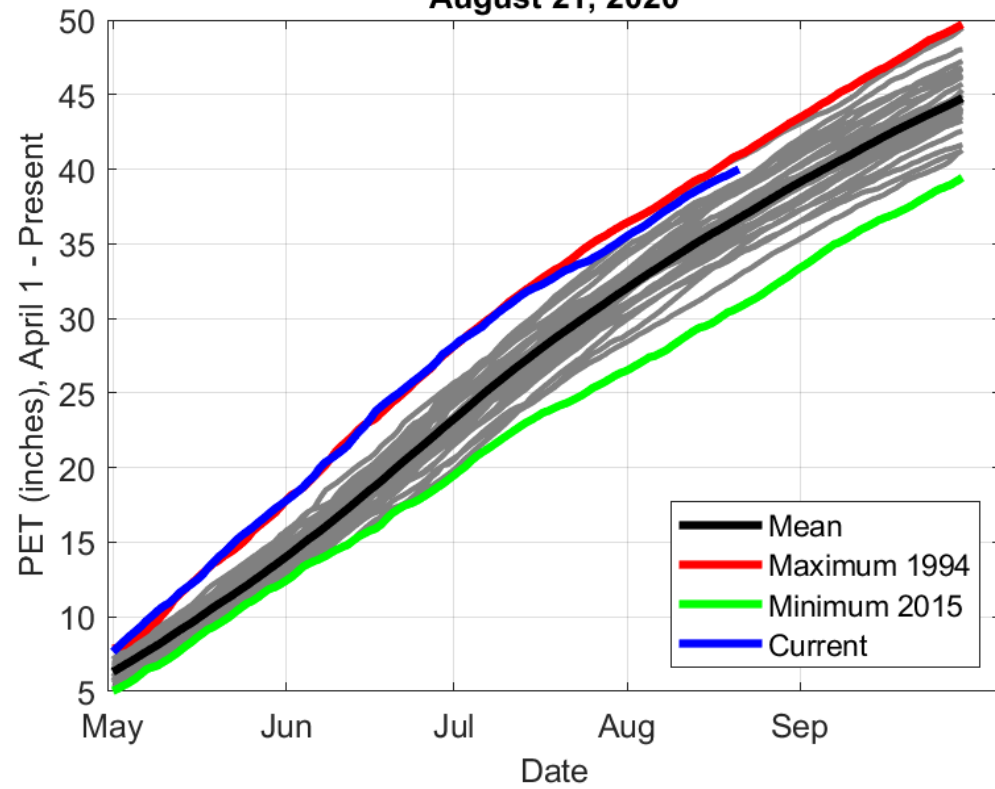


# Growing Season Water Balance (P/PET) Percentiles

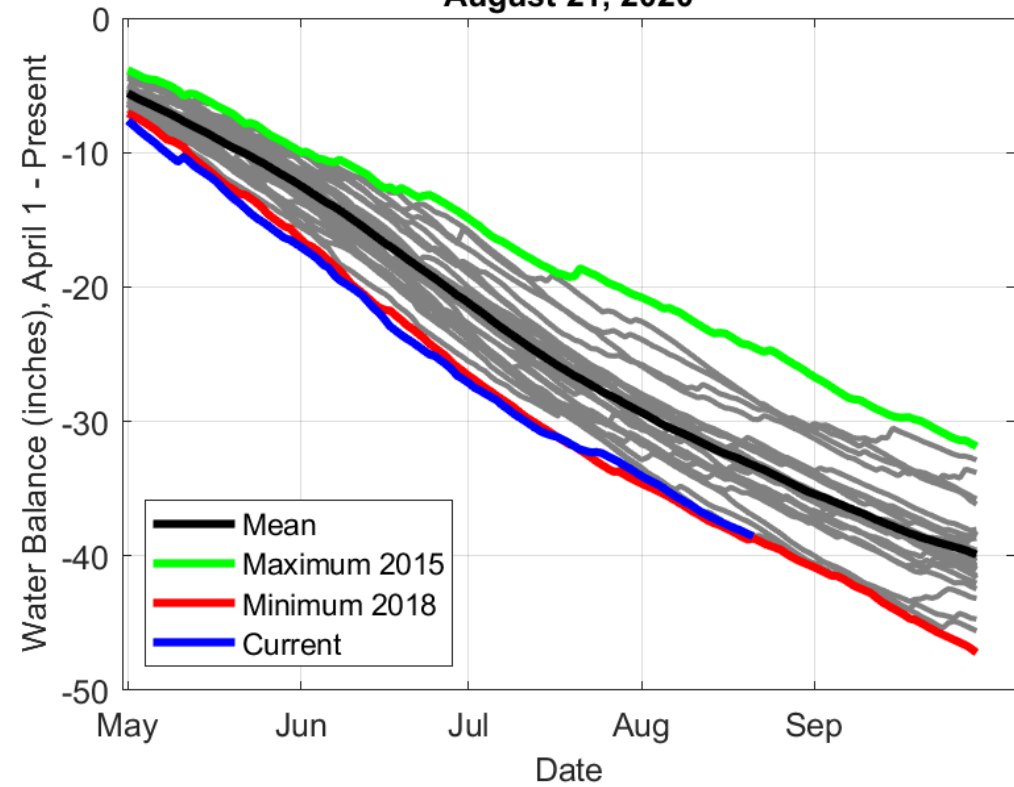
August 21, 2020



Olathe Growing Season Evaporative Demand  
August 21, 2020



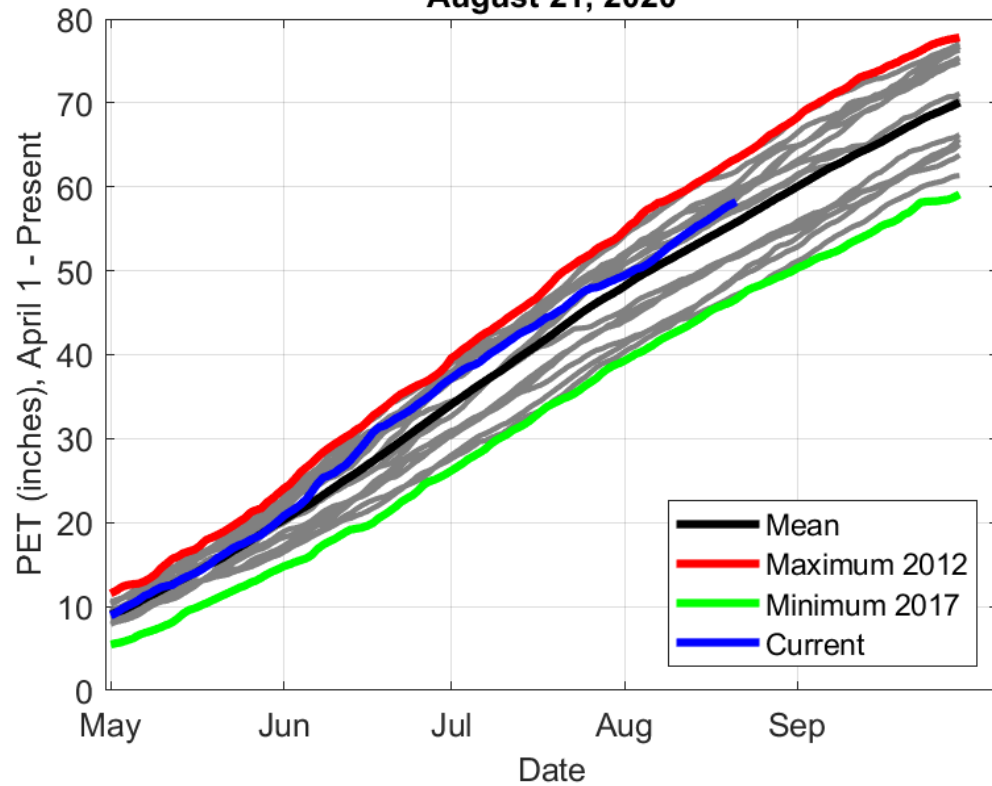
Olathe Growing Season Water Balance  
August 21, 2020



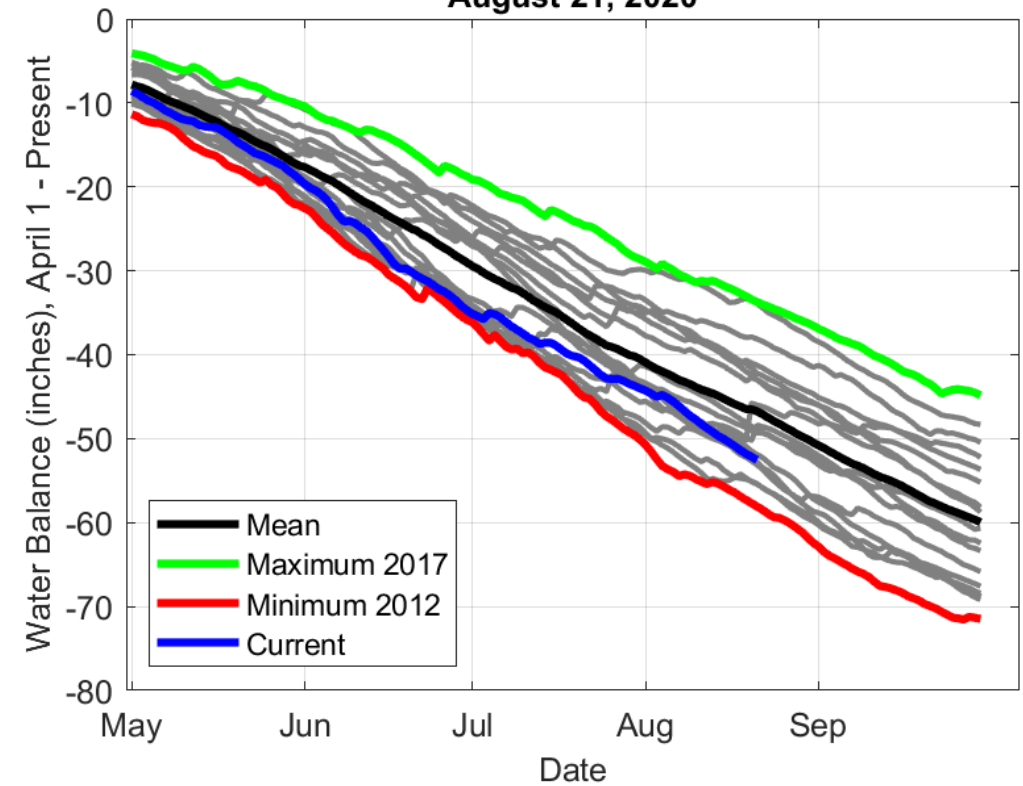
<http://climate.colostate.edu/~drought/et.php>



**Lamar Growing Season Evaporative Demand  
August 21, 2020**



**Lamar Growing Season Water Balance  
August 21, 2020**

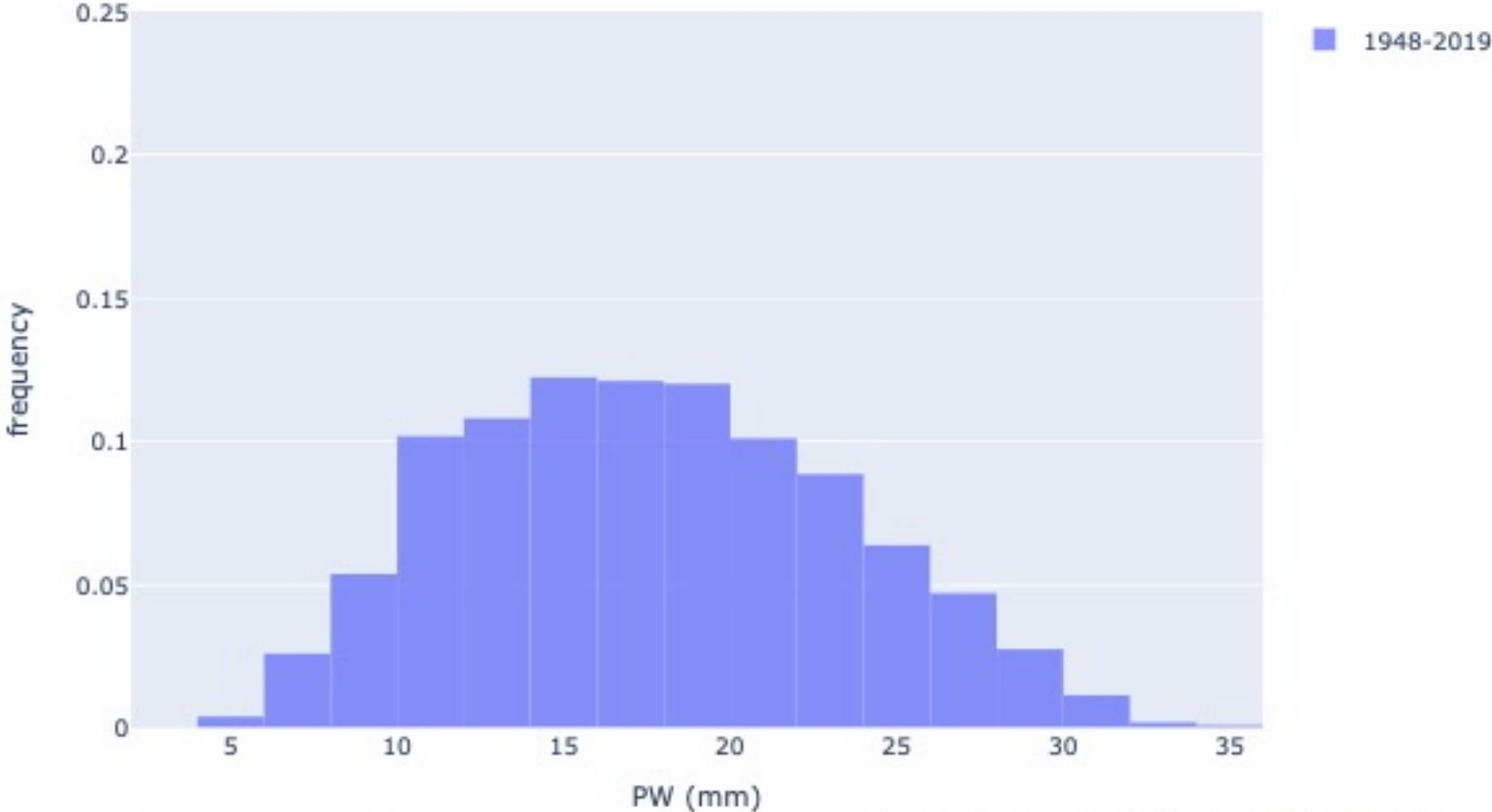


<http://climate.colostate.edu/~drought/et.php>



# Precipitable water (how much moisture is in the atmosphere)

Grand Junction August precipitable water histogram

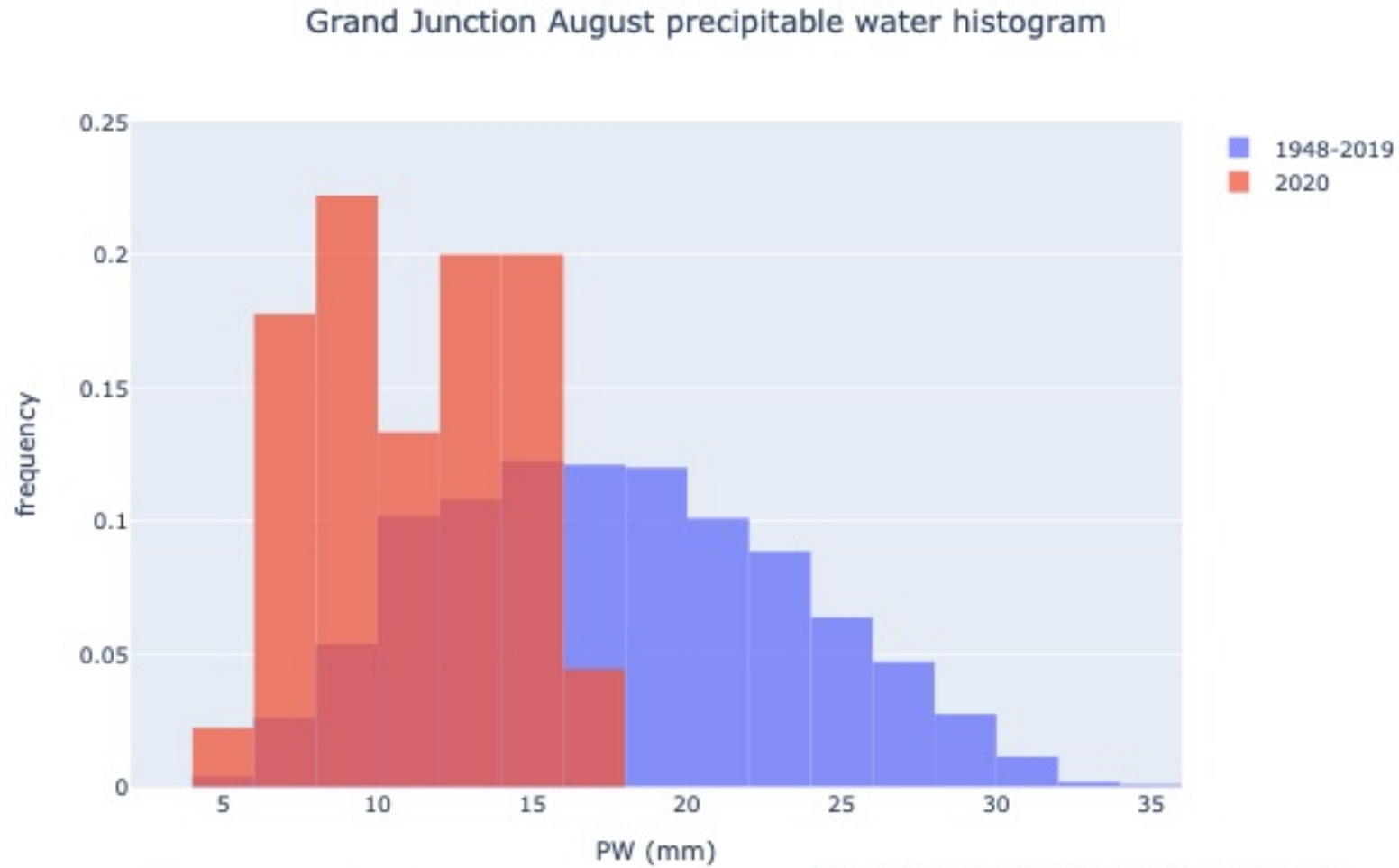


2020 data through 8-24

Russ Schumacher/Colorado Climate Center/CSU  
Source: NOAA Integrated Global Radiosonde Archive



# Precipitable water (how much moisture is in the atmosphere)

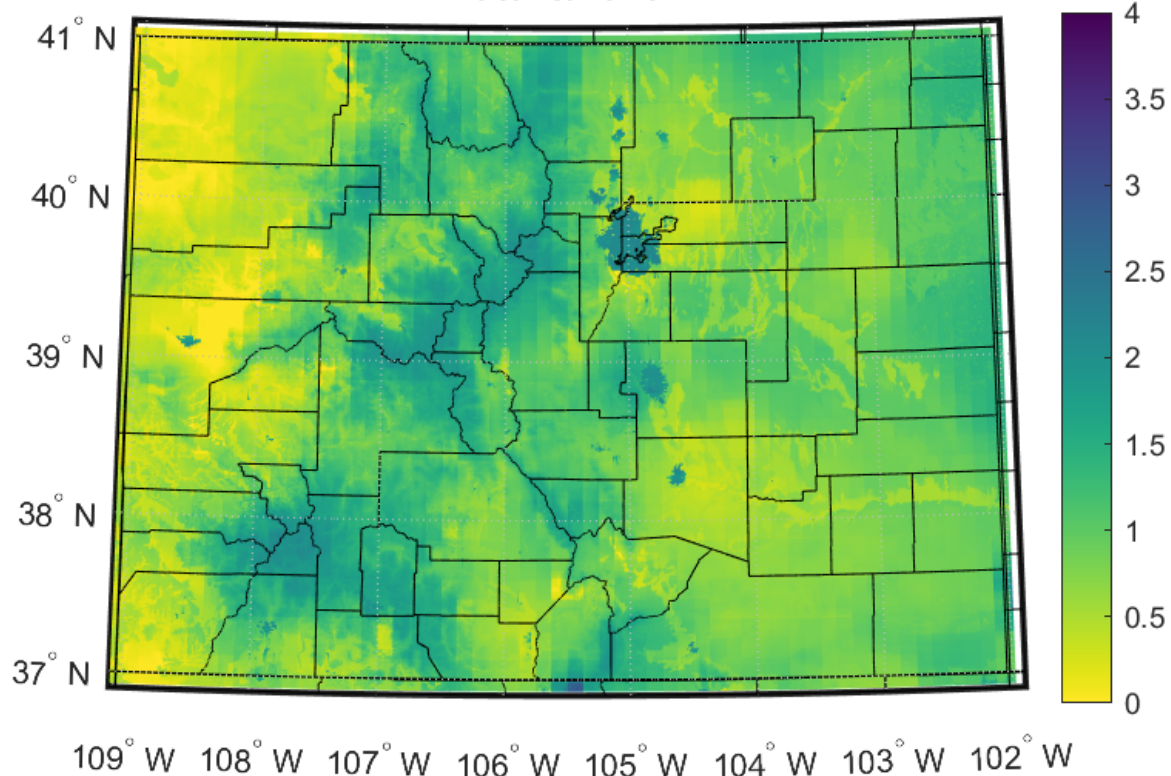


2020 data through 8-24

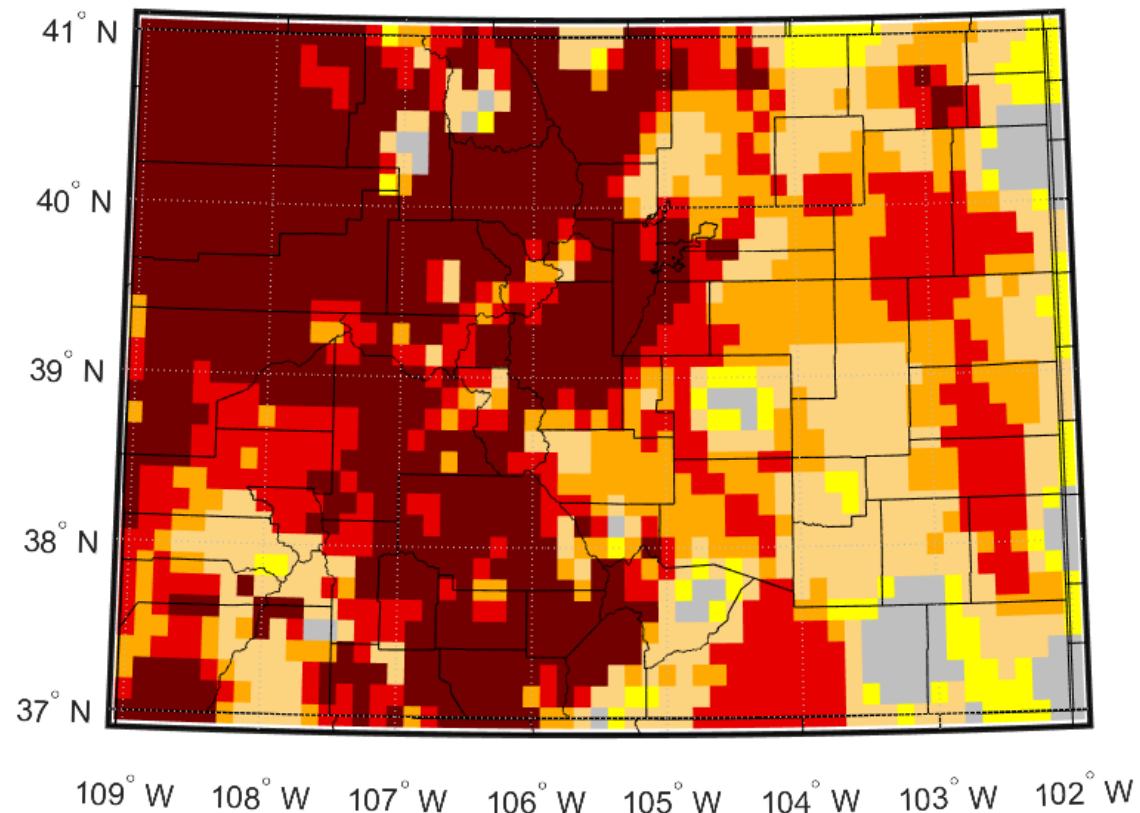
Russ Schumacher/Colorado Climate Center/CSU  
Source: NOAA Integrated Global Radiosonde Archive



**Top 10cm Available Plant Water (cm)**  
**08/15/2020**



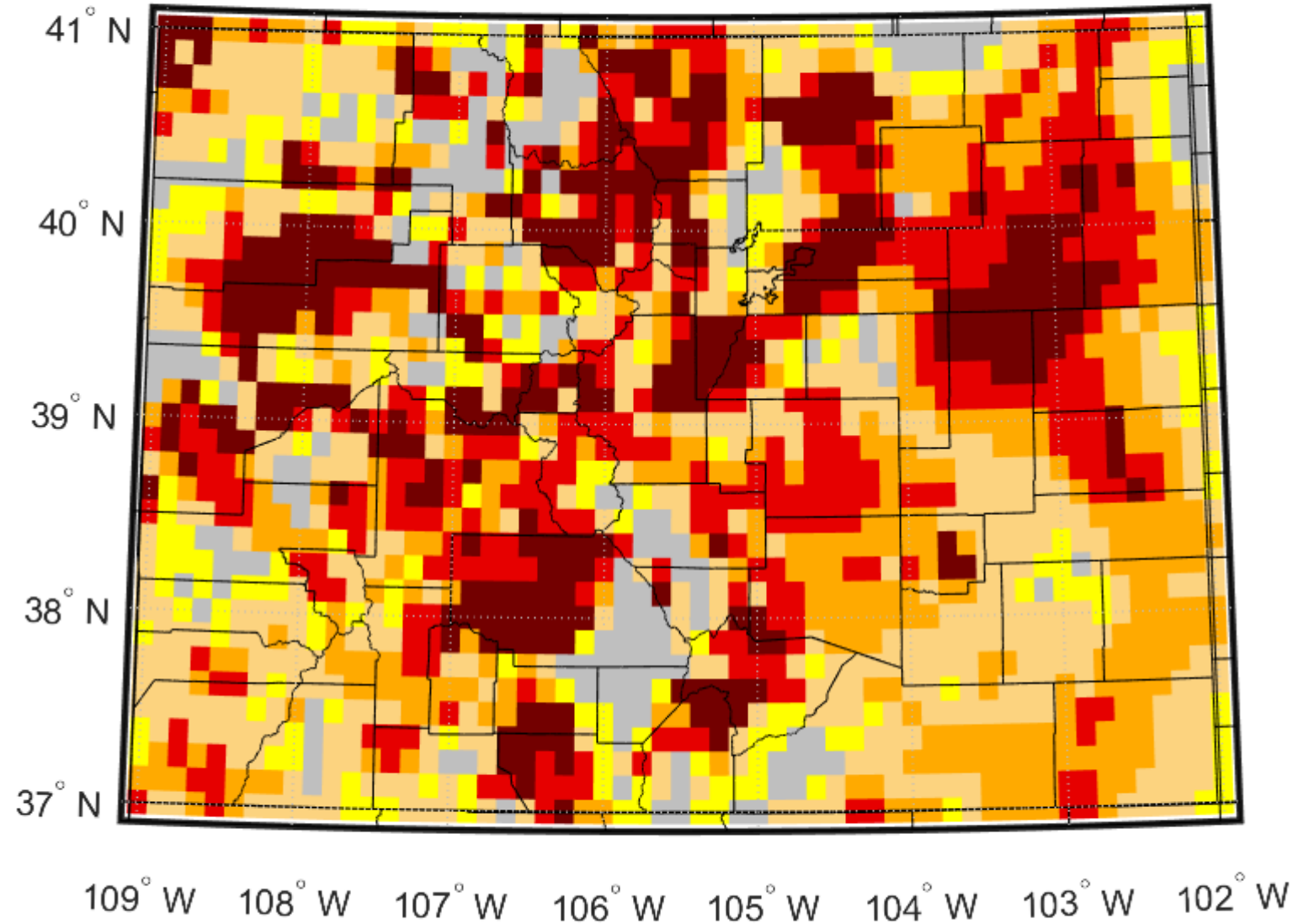
**Top 10cm Soil Moisture Drought Category**  
**08/19/2020**



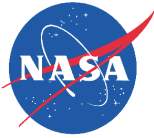
## Top Meter Soil Moisture Drought Category 08/19/2020

Deep soil moisture continues to be bad across most of the state

Dark red = drier than 2002,  
2012, 2018

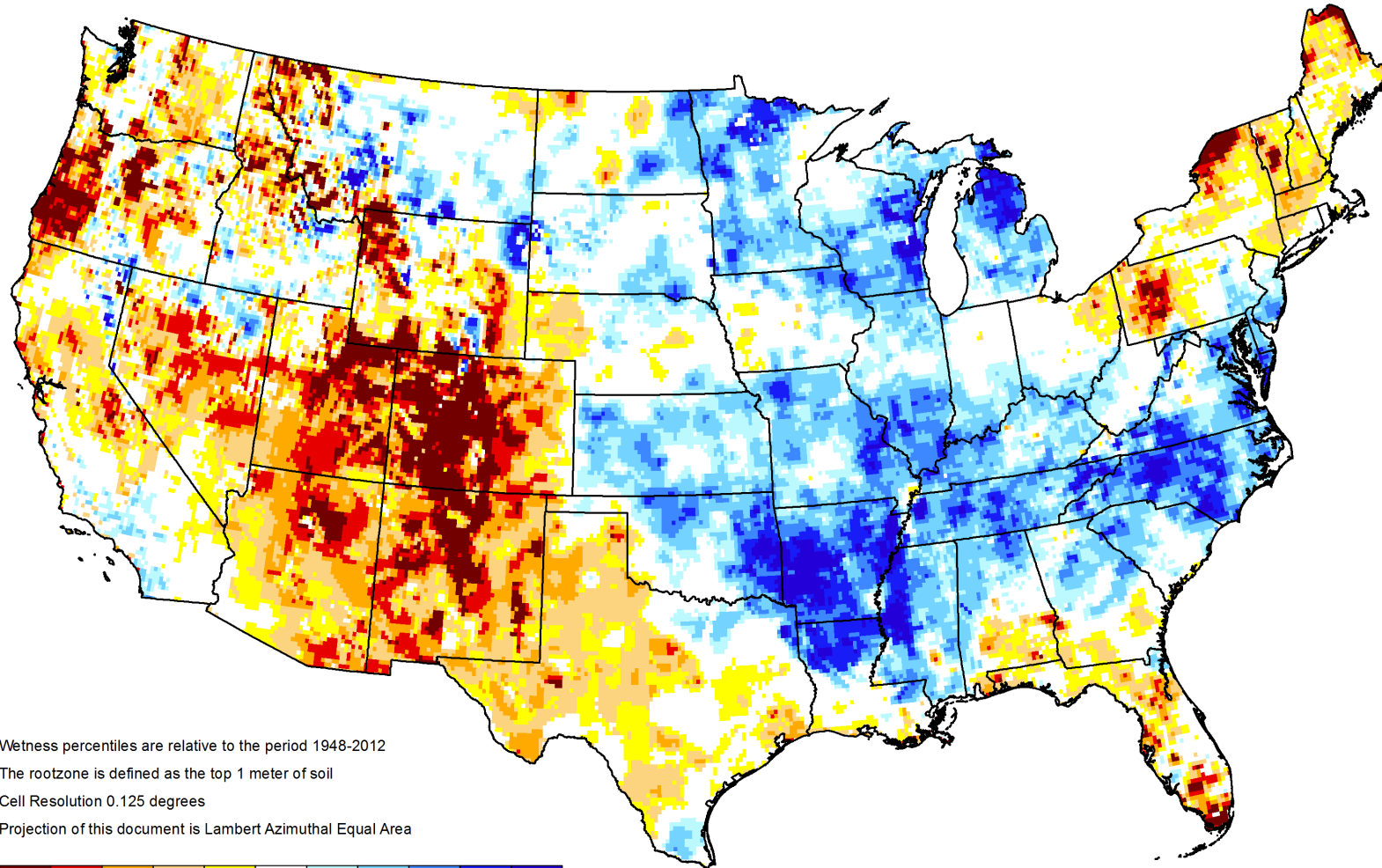




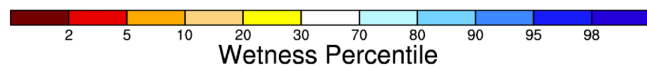


# GRACE-Based Root Zone Soil Moisture Drought Indicator

August 17, 2020



Wetness percentiles are relative to the period 1948-2012  
The rootzone is defined as the top 1 meter of soil  
Cell Resolution 0.125 degrees  
Projection of this document is Lambert Azimuthal Equal Area



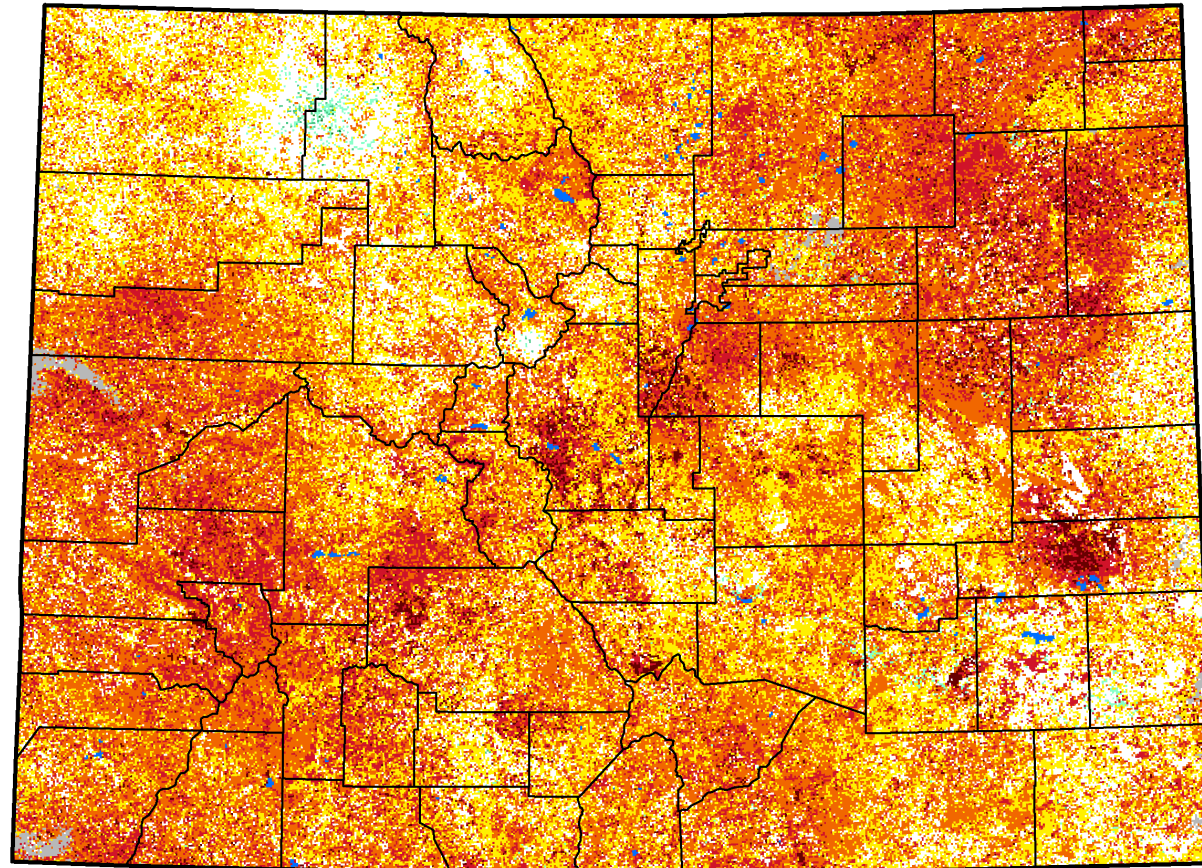
<https://nasagrace.unl.edu>



# Vegetation Drought Response Index

Complete: Colorado

August 23, 2020

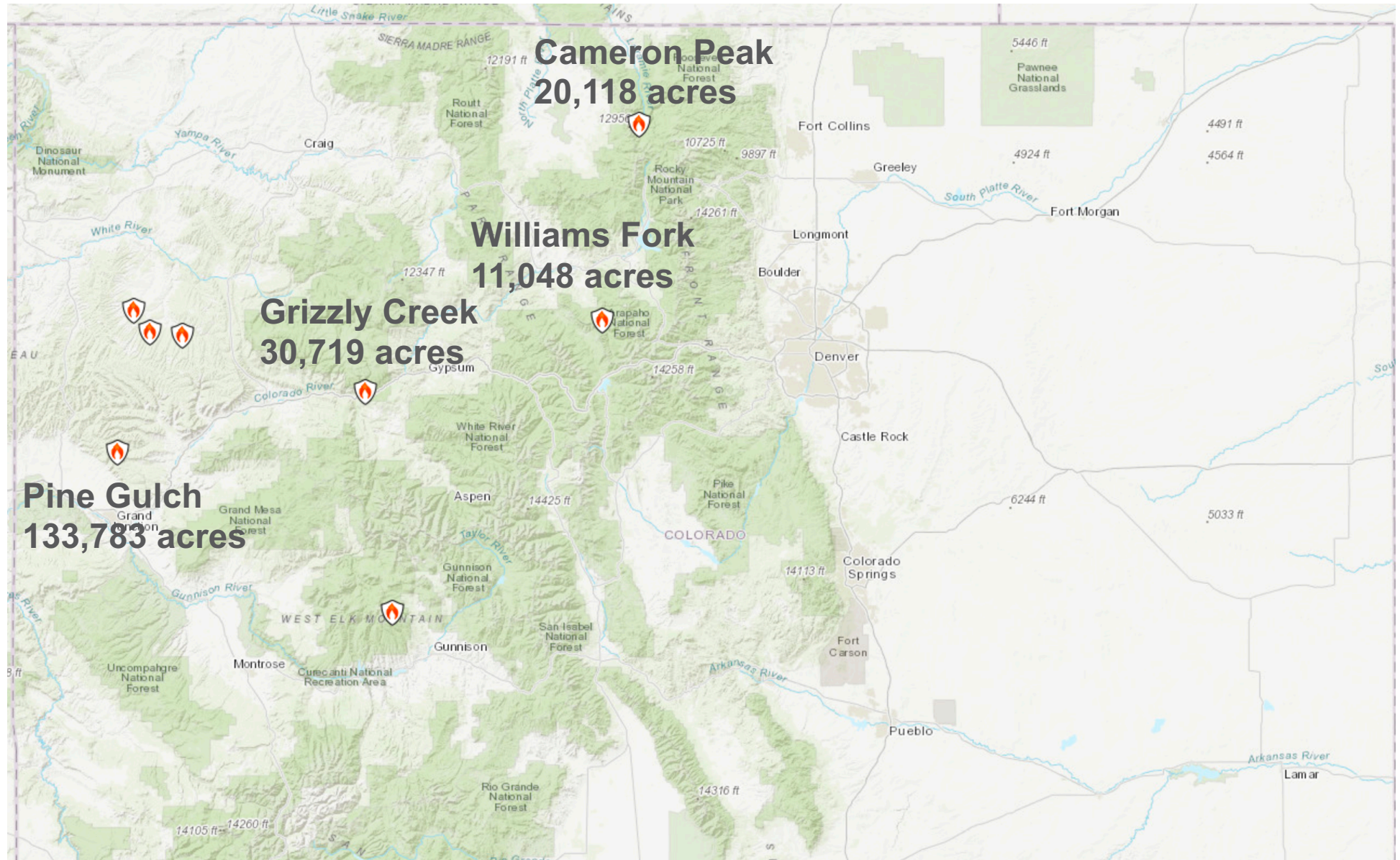


## Vegetation Condition

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



# Four large fires

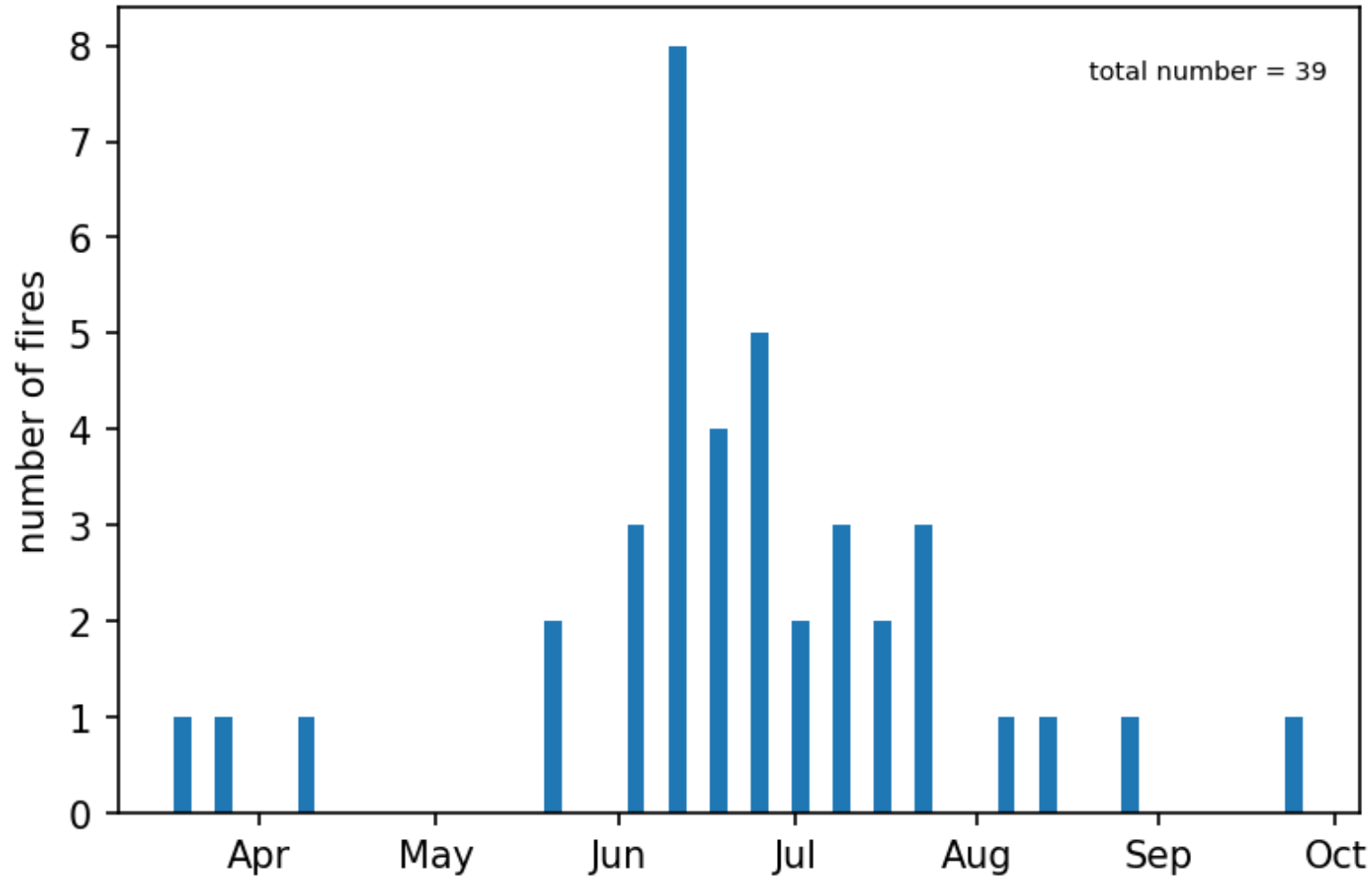


Numbers from inciweb on August 24



# August is not our usual large-fire season

start date of Colorado 10,000+ acre fires, 1992-2015 (by week)

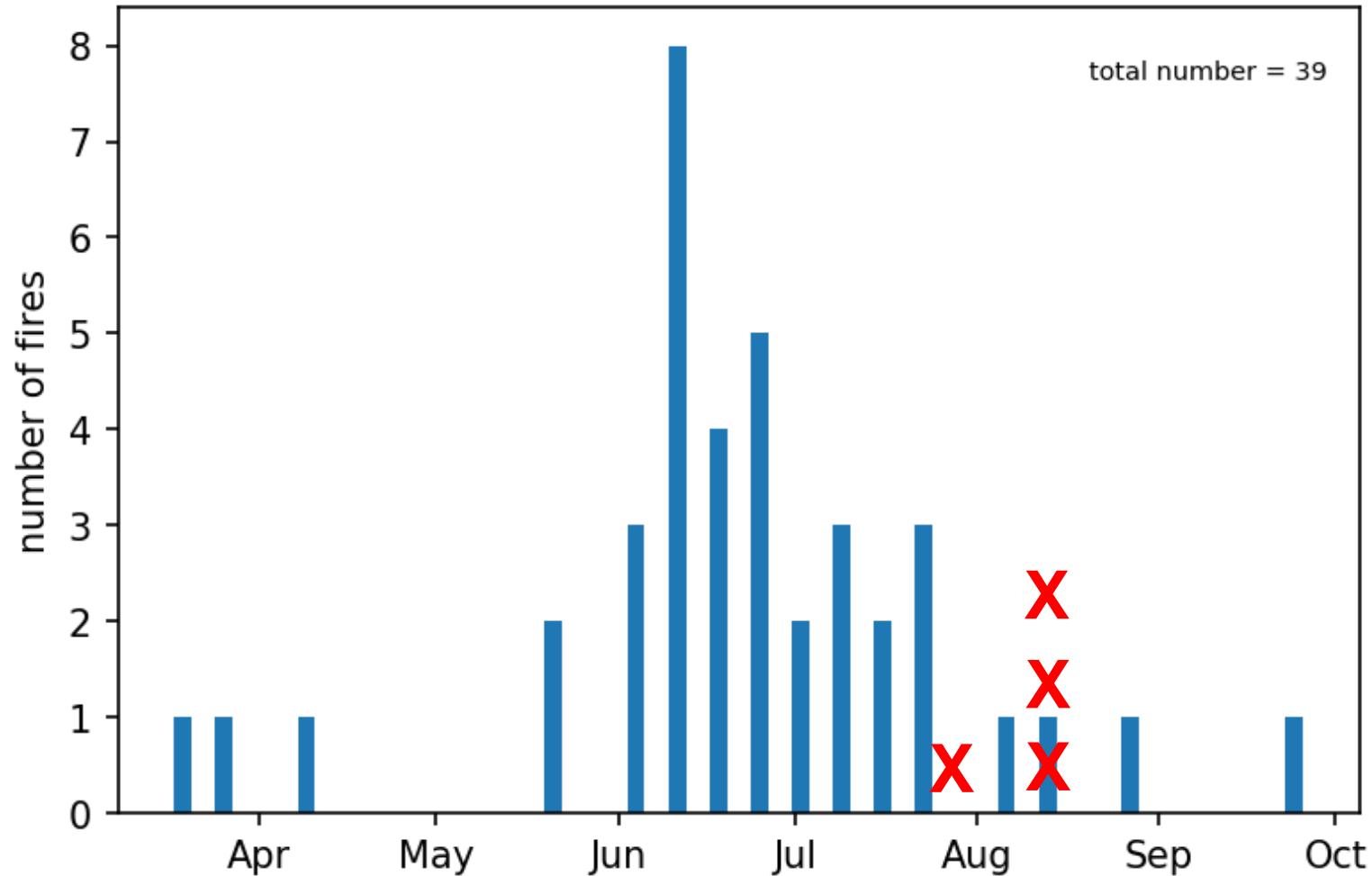


plot by Russ Schumacher/Colorado Climate Center  
data source: USDA Fire Program Analysis fire-occurrence database



# August is not our usual large-fire season

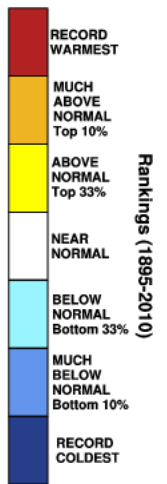
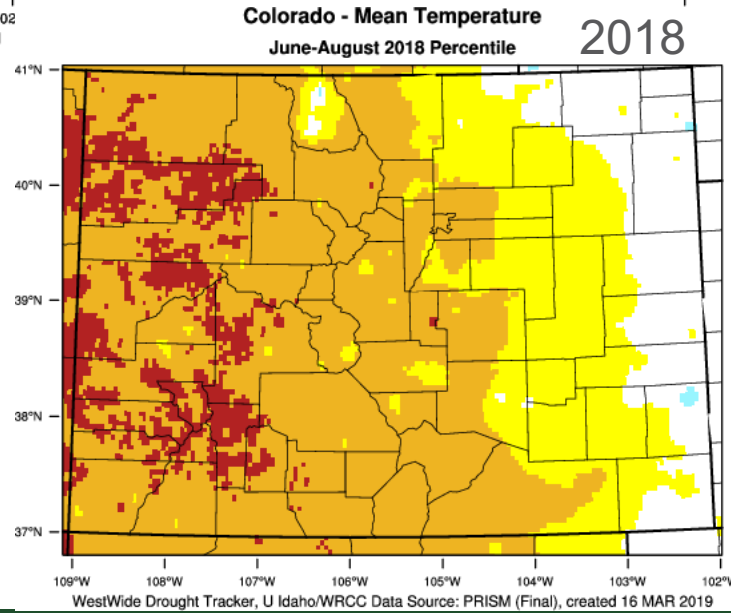
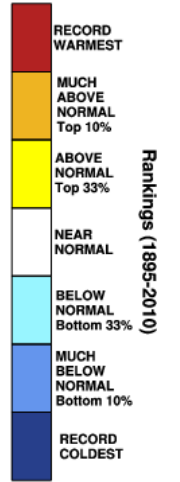
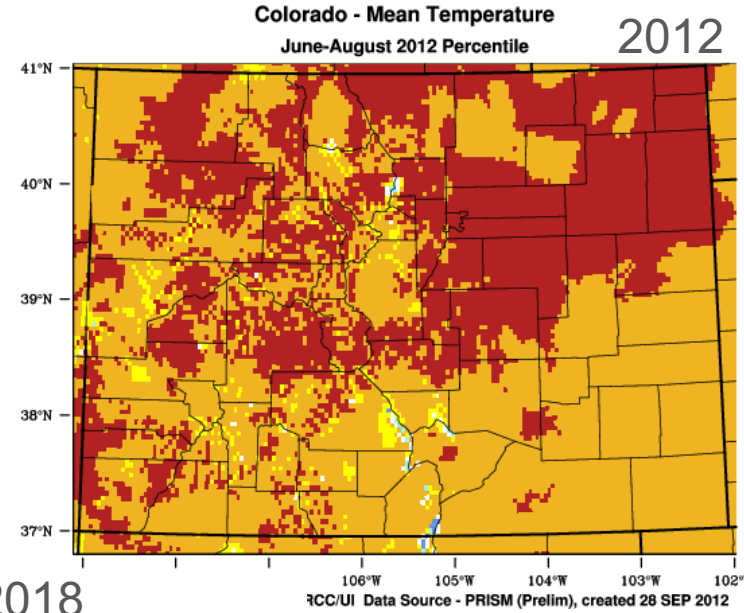
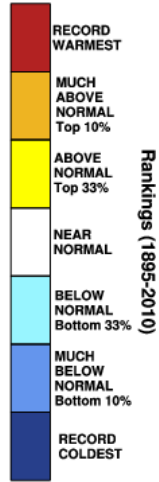
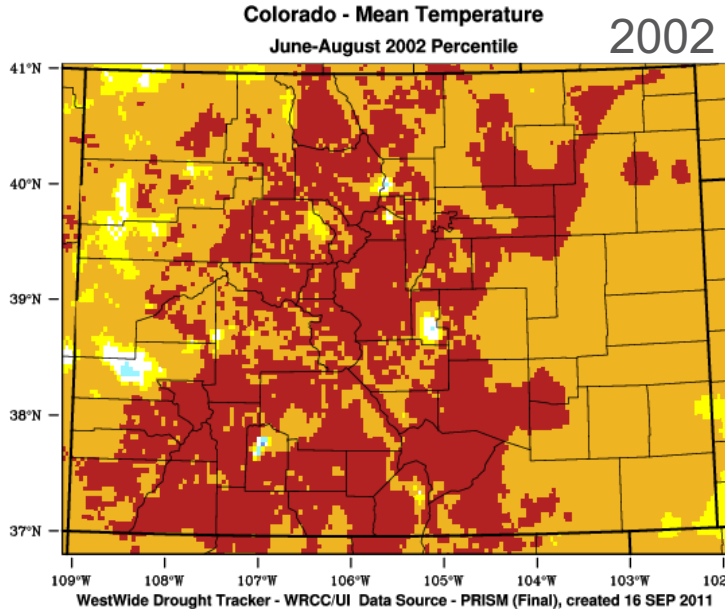
start date of Colorado 10,000+ acre fires, 1992-2015 (by week)



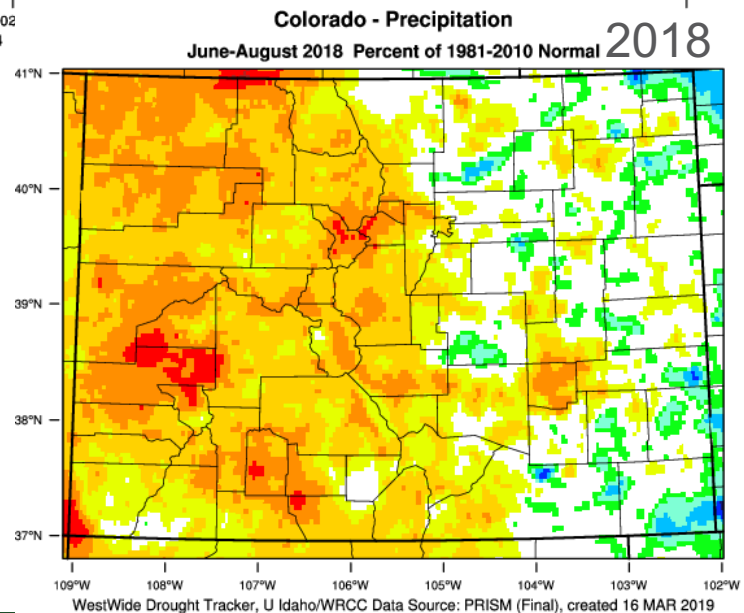
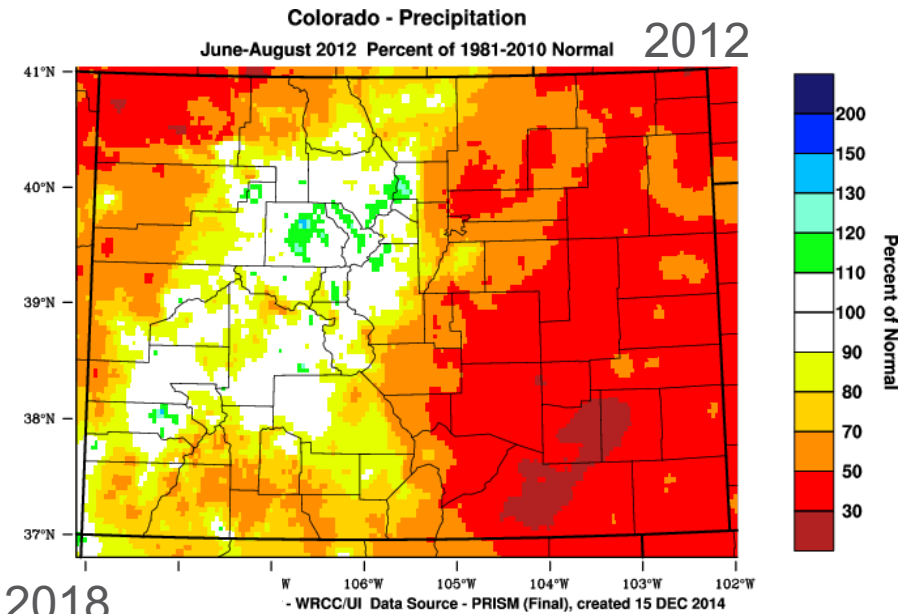
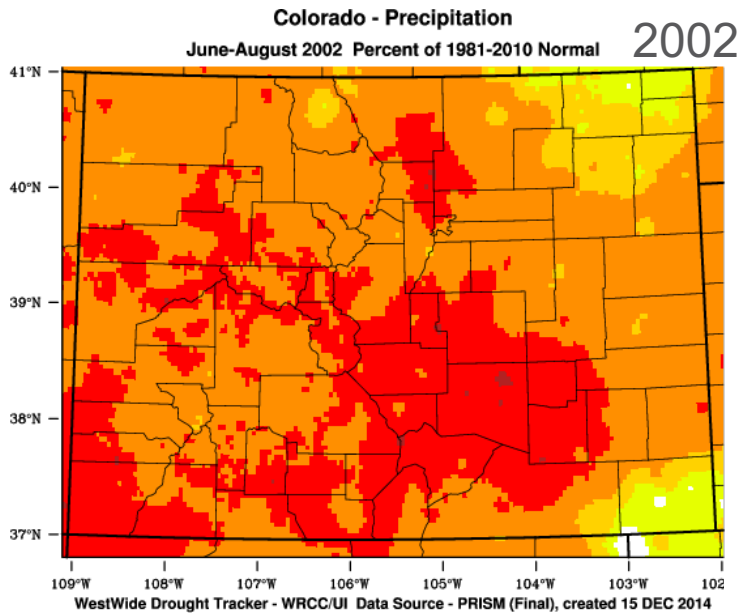
plot by Russ Schumacher/Colorado Climate Center  
data source: USDA Fire Program Analysis fire-occurrence database



# Comparison of recent droughts: summer temperature



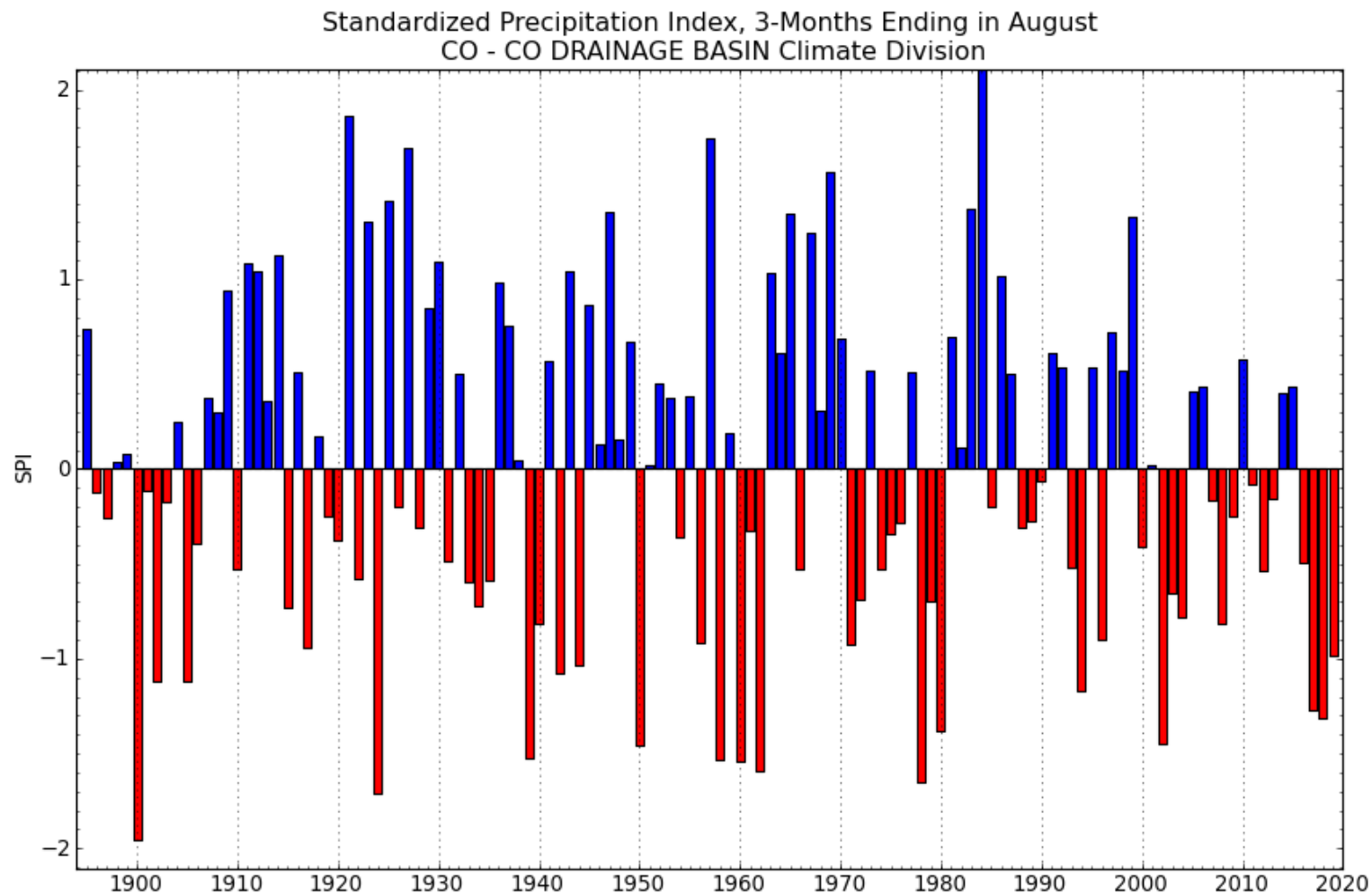
# Comparison of recent droughts: summer precip



- 2018 was more of an extreme snow drought in winter 2017-18, then made worse by a hot dry summer
- 2002 spring through summer was exceptionally dry; summer was hot and dry
- 2012 was most extreme in spring, but continued into summer



# Standardized precipitation index: summer in western Colorado

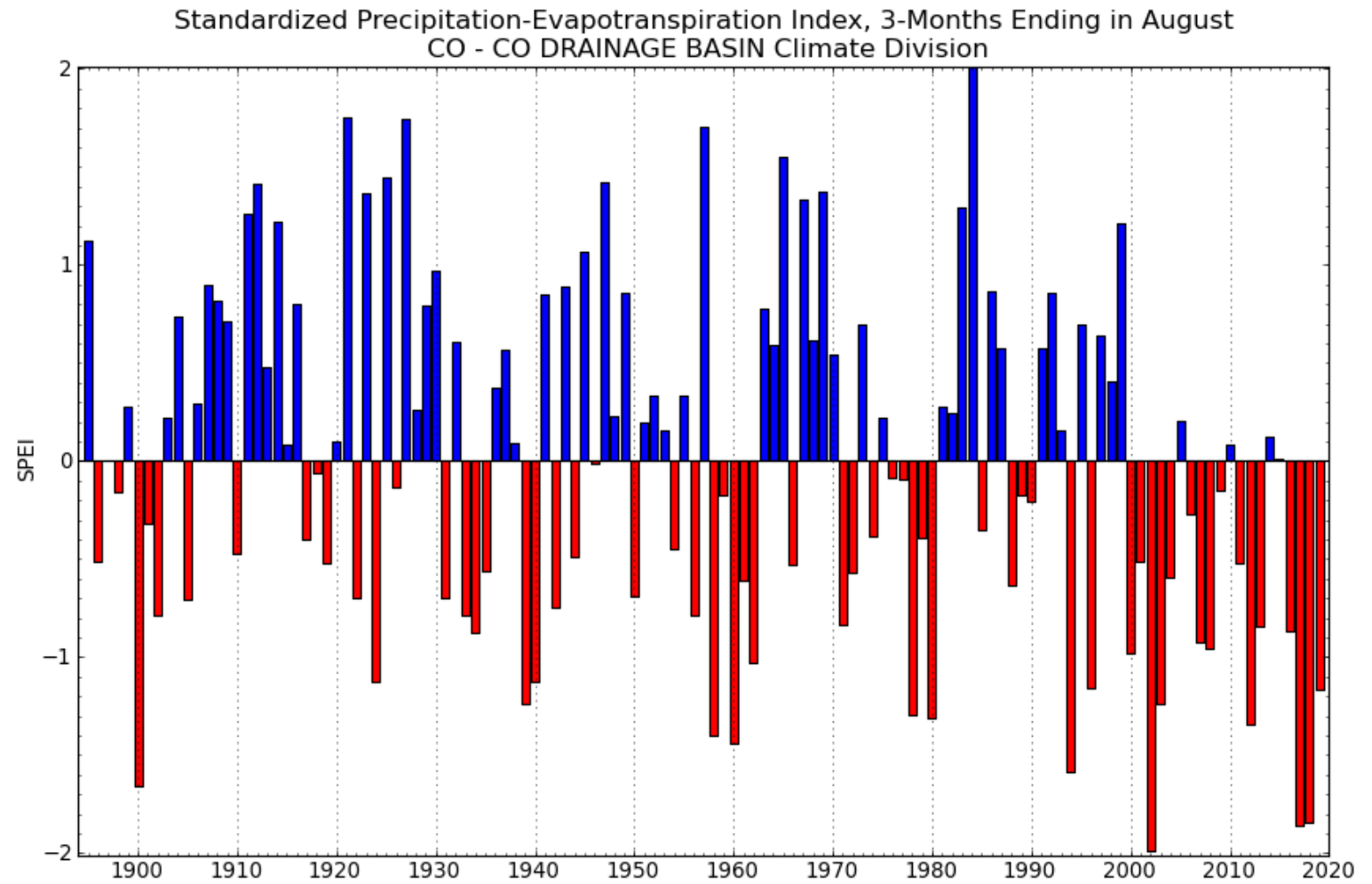


Data Source: WRCC/UI, Created: 8-25-2020





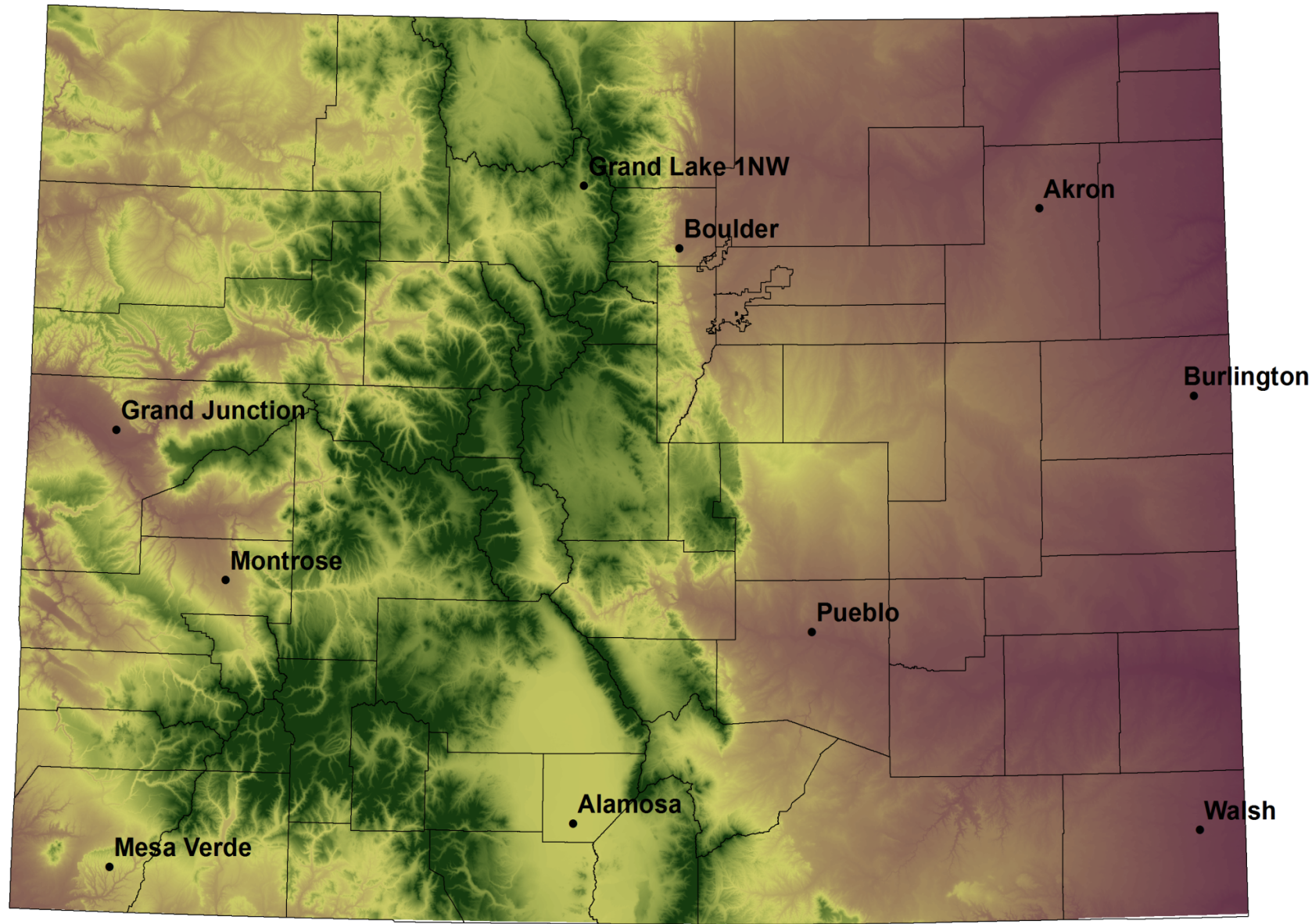
# Standardized precipitation-evapotranspiration index: summer in western Colorado



Data Source: WRCC/UI, Created: 8-25-2020



# NWS Cooperative Stations for WATF

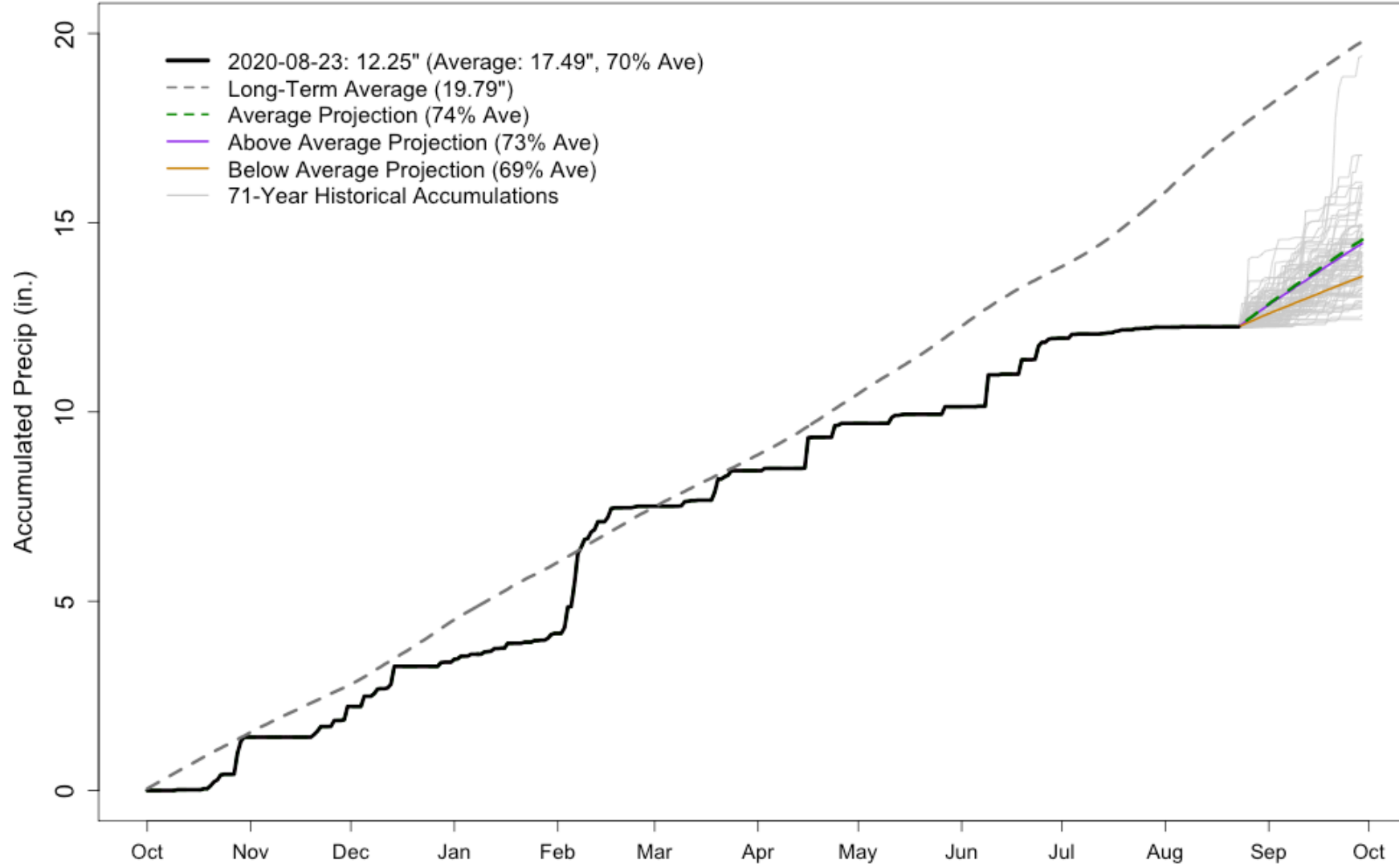


## Water Year 2020 – Station Updates



# Grand Lake

## GRAND LAKE 1 NW WY2020 Precipitation Projections



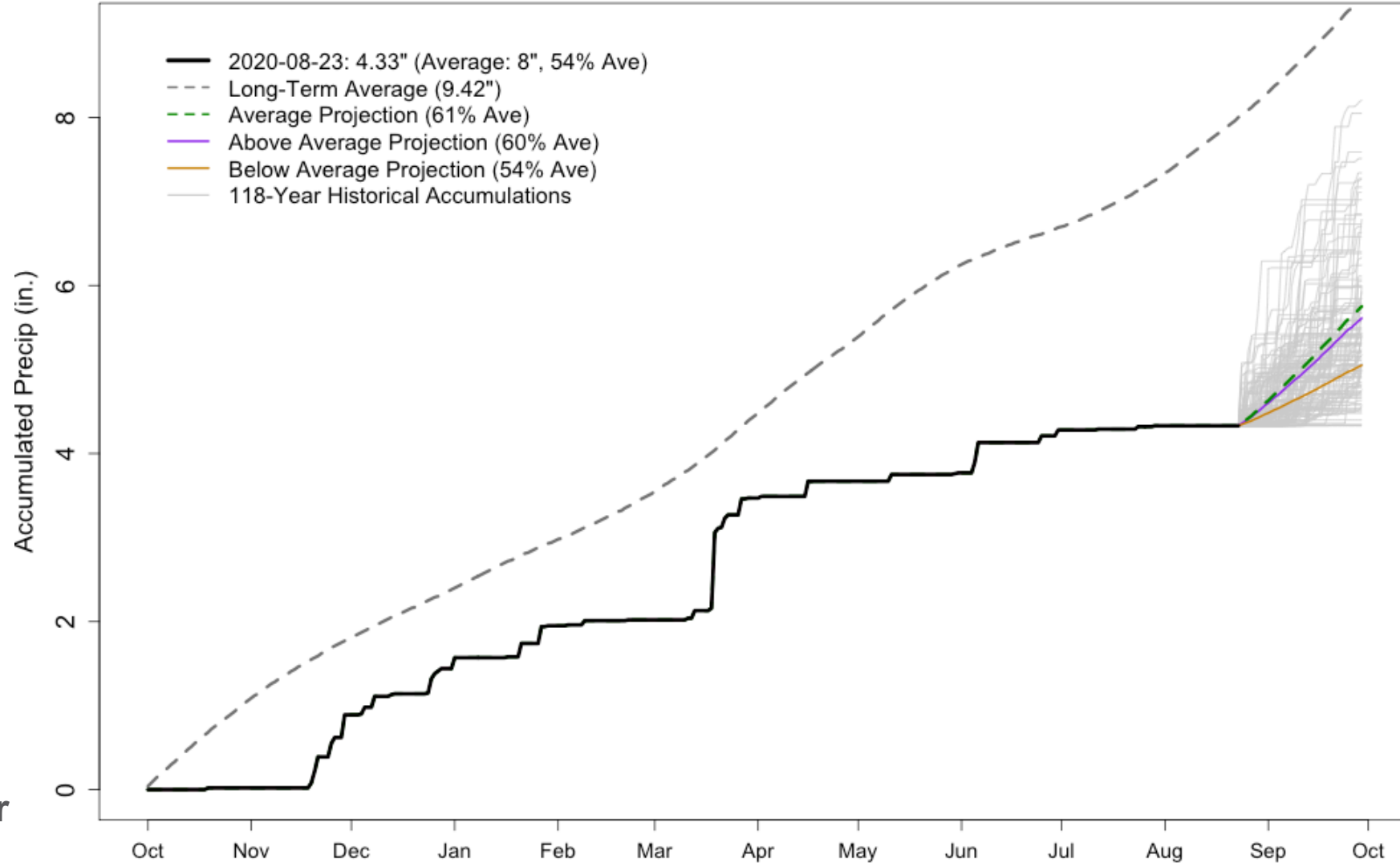
**Driest on record  
since July 1**

**Normal: 3.74"  
2020: 0.30"**



# Grand Junction

## GRAND JUNCTION WALKER FIELD WY2020 Precipitation Projections



**Driest on record since April 1 and July 1**

**5<sup>th</sup> driest WY to date**

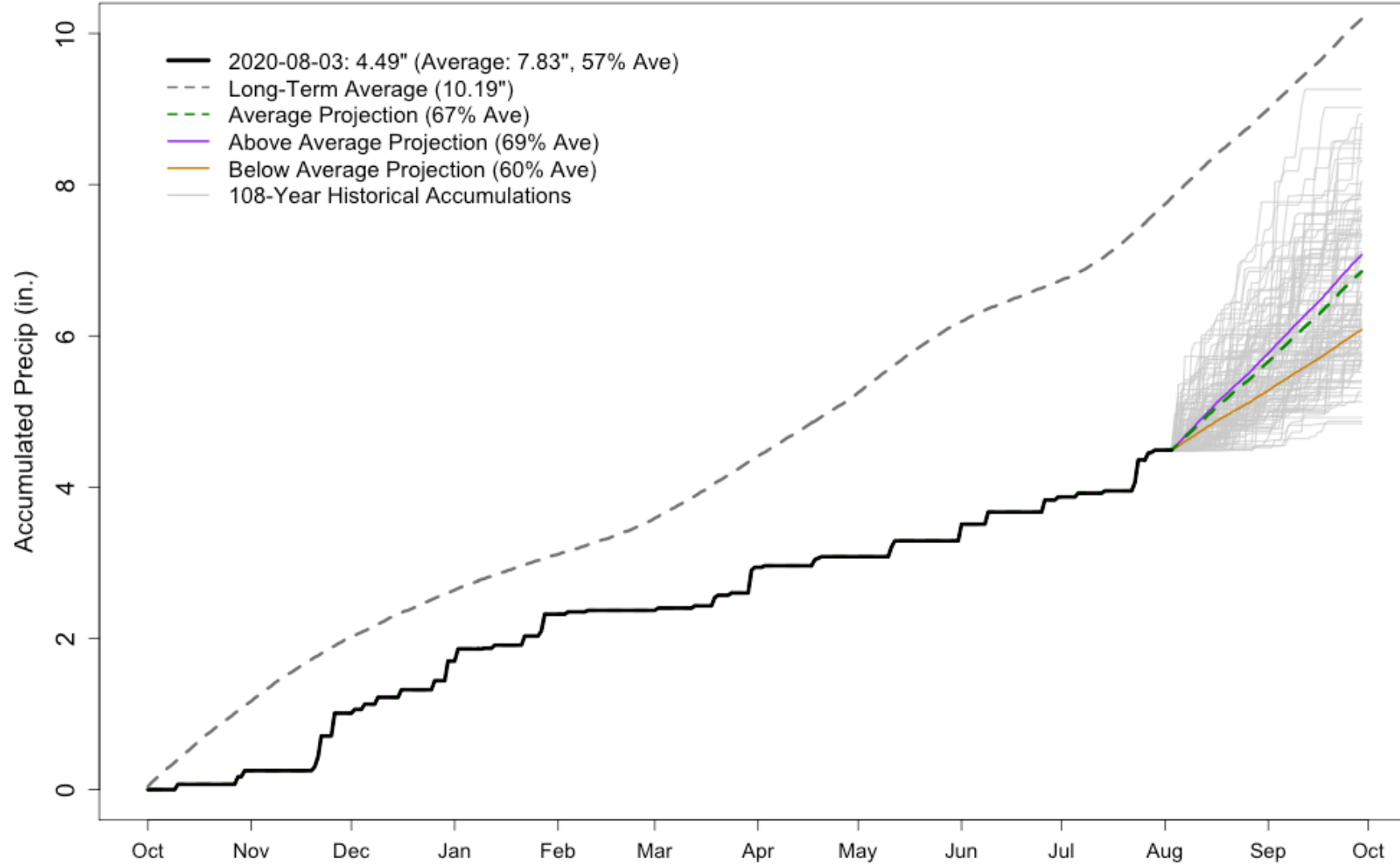
**Since April 1:  
Normal: 3.58"  
2020: 0.86"**

**Zero precip so far in August**



# Montrose

## MONTROSE NO 2 WY2020 Precipitation Projections



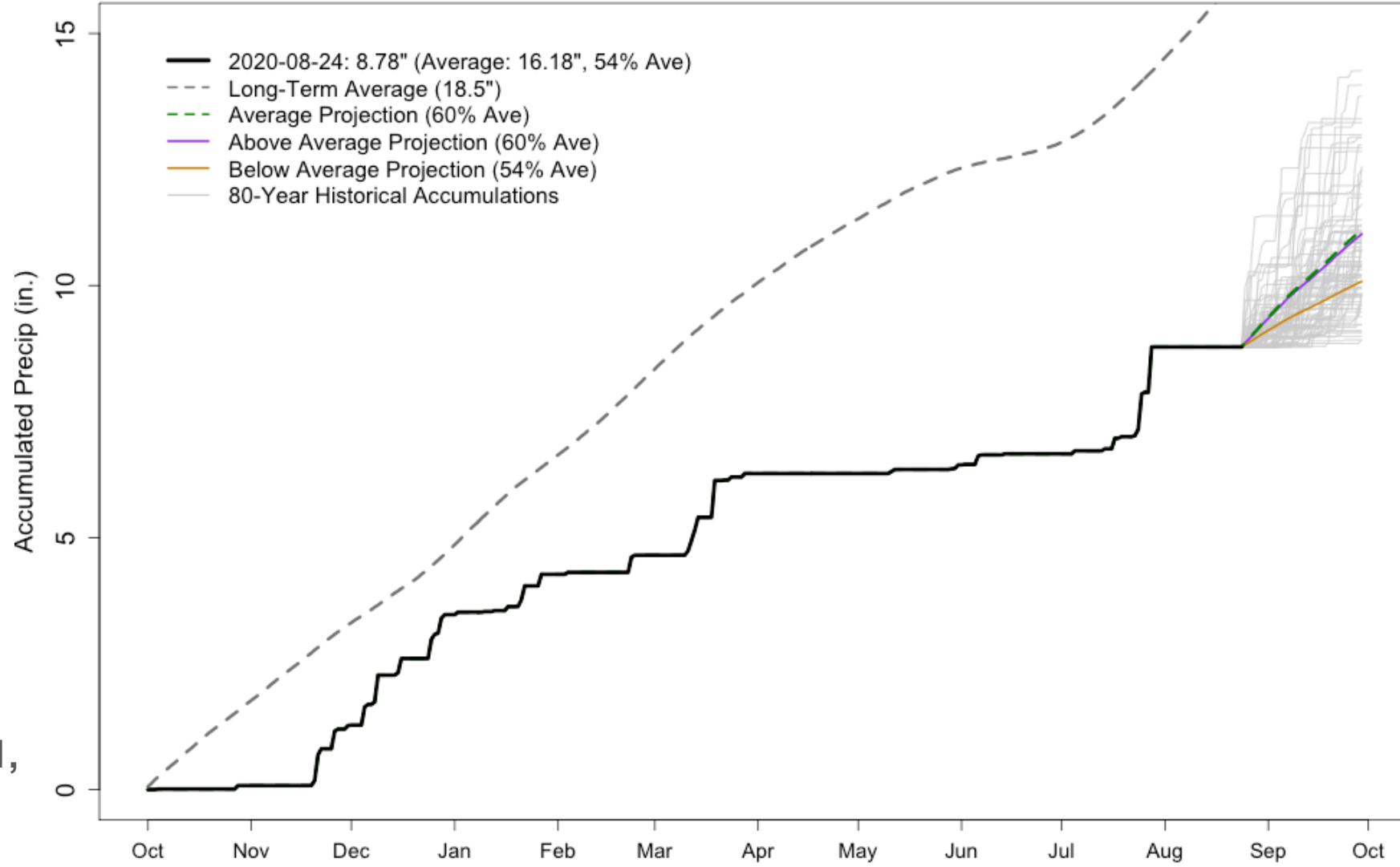
Note this only goes through August 3

Montrose airport has no precip in August



# Mesa Verde NP

## MESA VERDE NP WY2020 Precipitation Projections



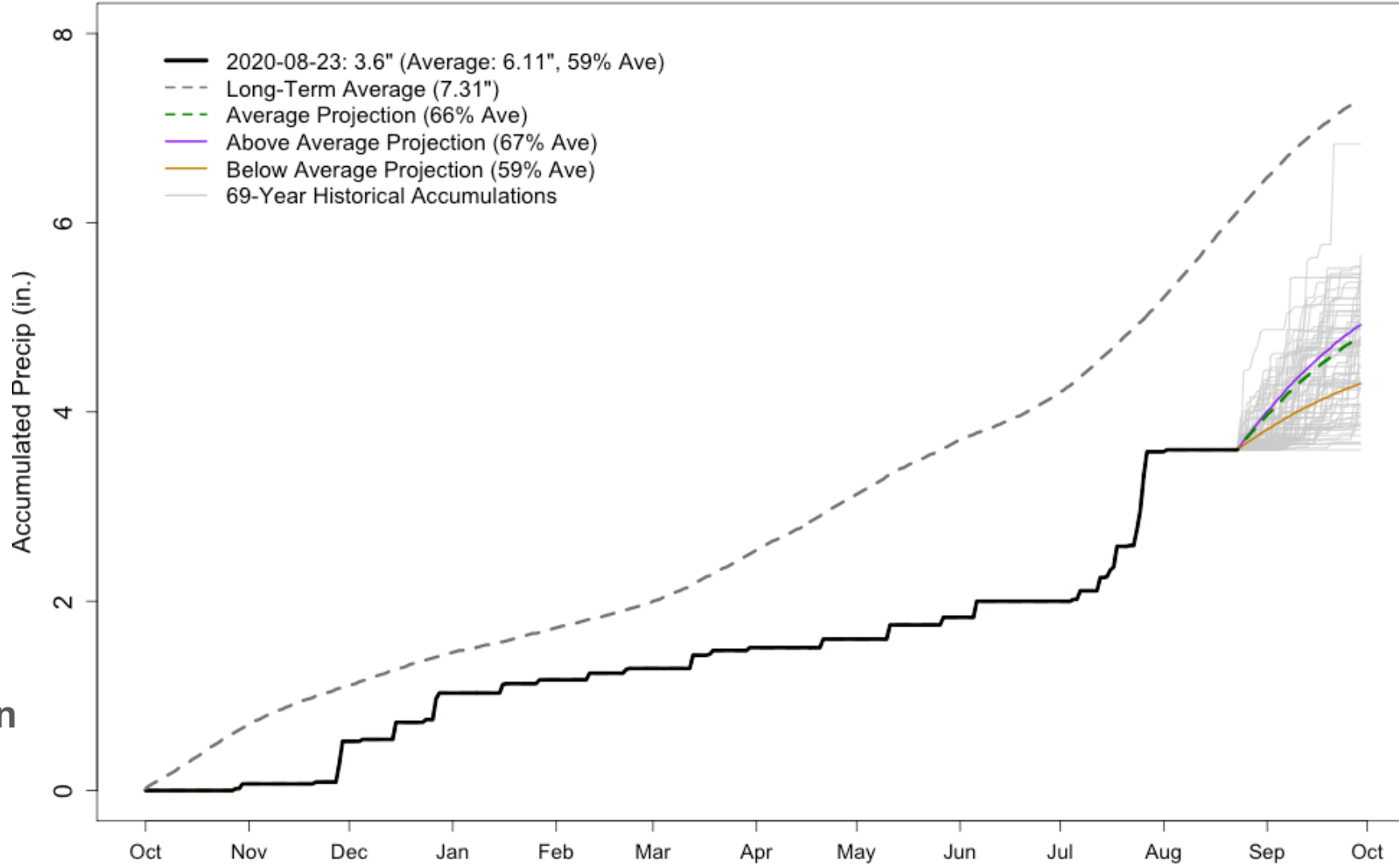
4<sup>th</sup> driest water year to date

Only 2002, 1951, 2018 drier



# Alamosa

## ALAMOSA-BERGMAN FIELD WY2020 Precipitation Projections



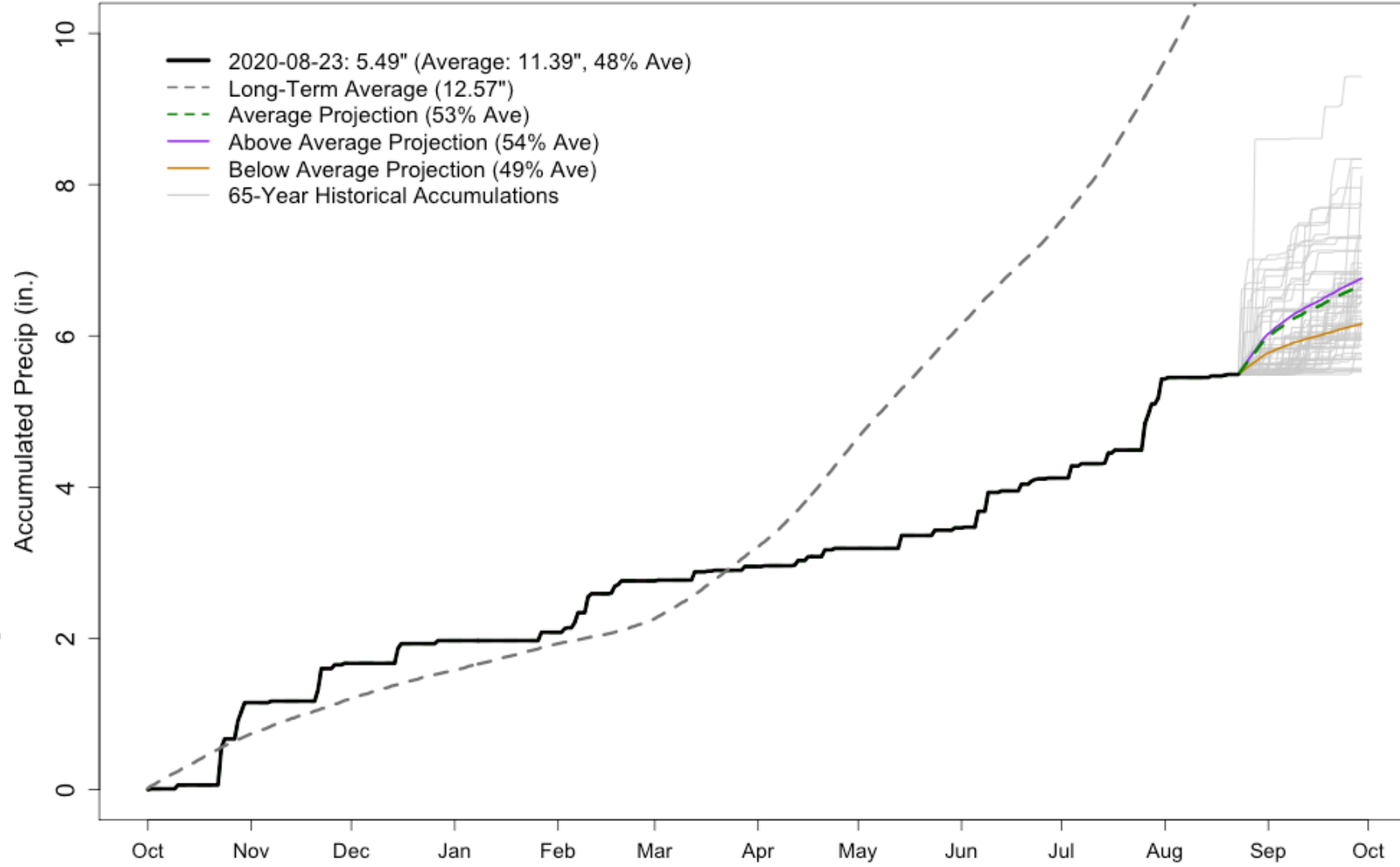
9<sup>th</sup> driest water year to date

Driest August on record thus far  
Normal: 0.98"  
2020: 0.01"



# Pueblo

## PUEBLO MEMORIAL AIRPORT WY2020 Precipitation Projections



4<sup>th</sup> driest water year to date

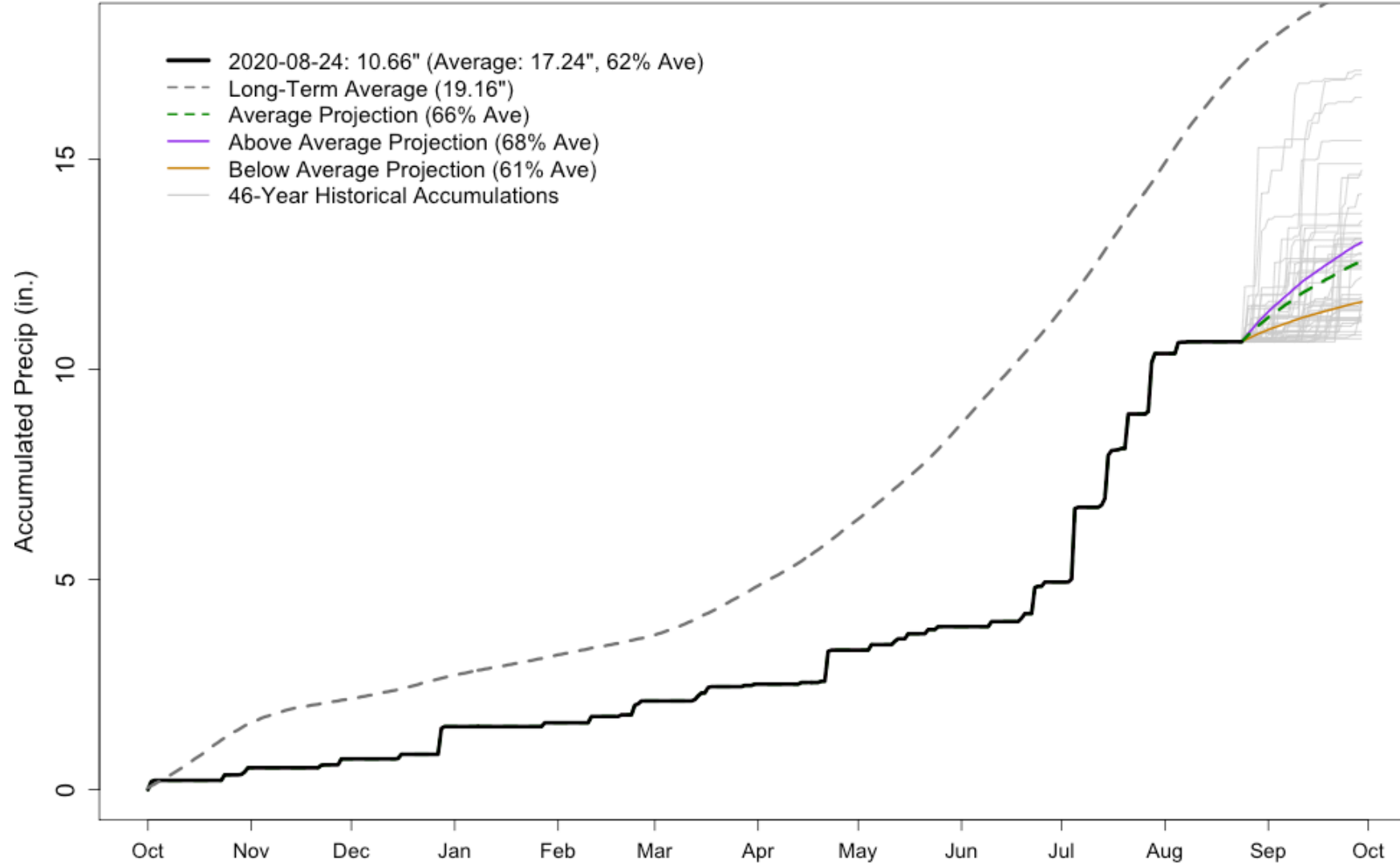
Only 2002, 1935, 1966 drier

2<sup>nd</sup> driest since April 1



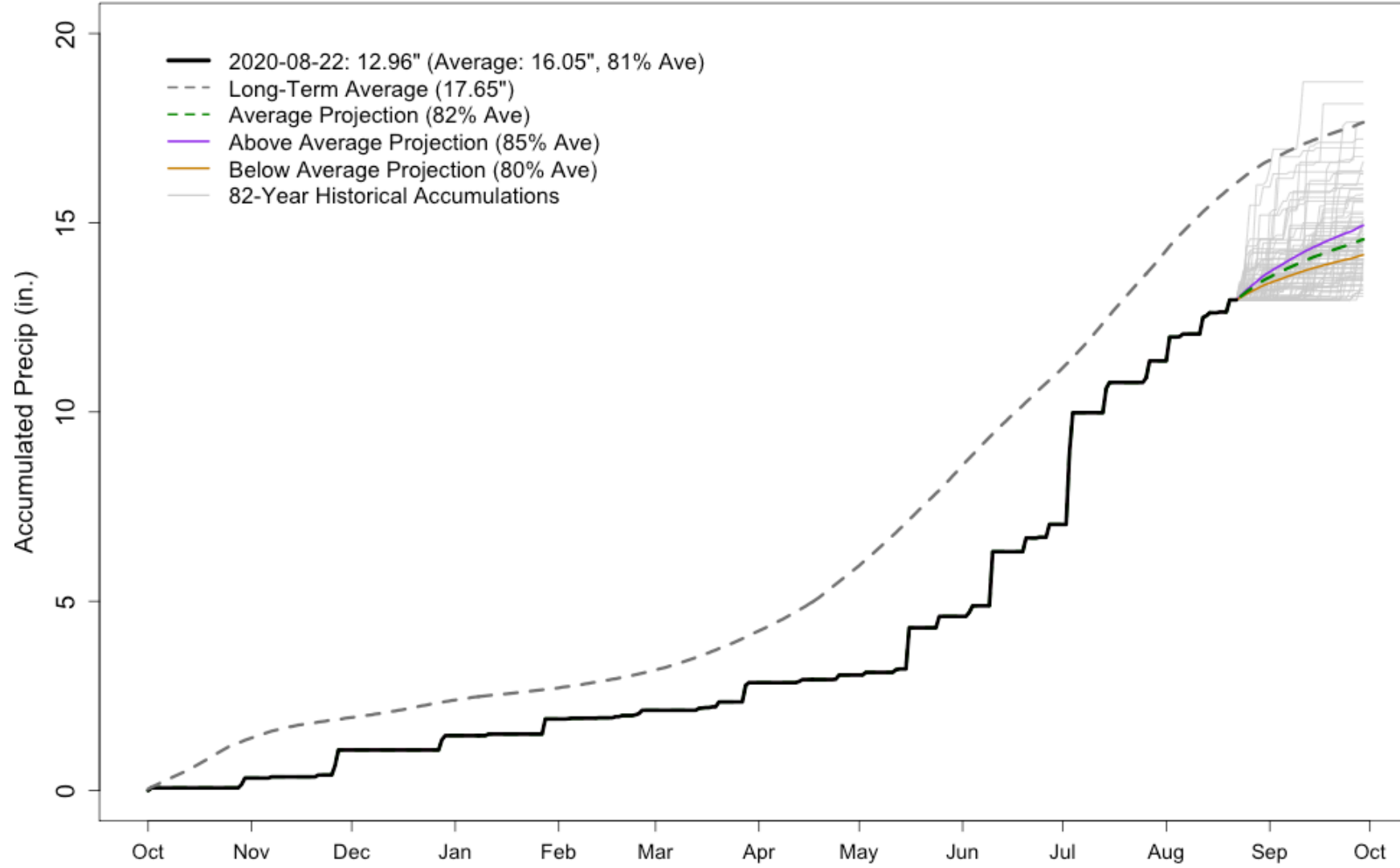


### WALSH 1 W WY2020 Precipitation Projections



# Burlington

## BURLINGTON WY2020 Precipitation Projections

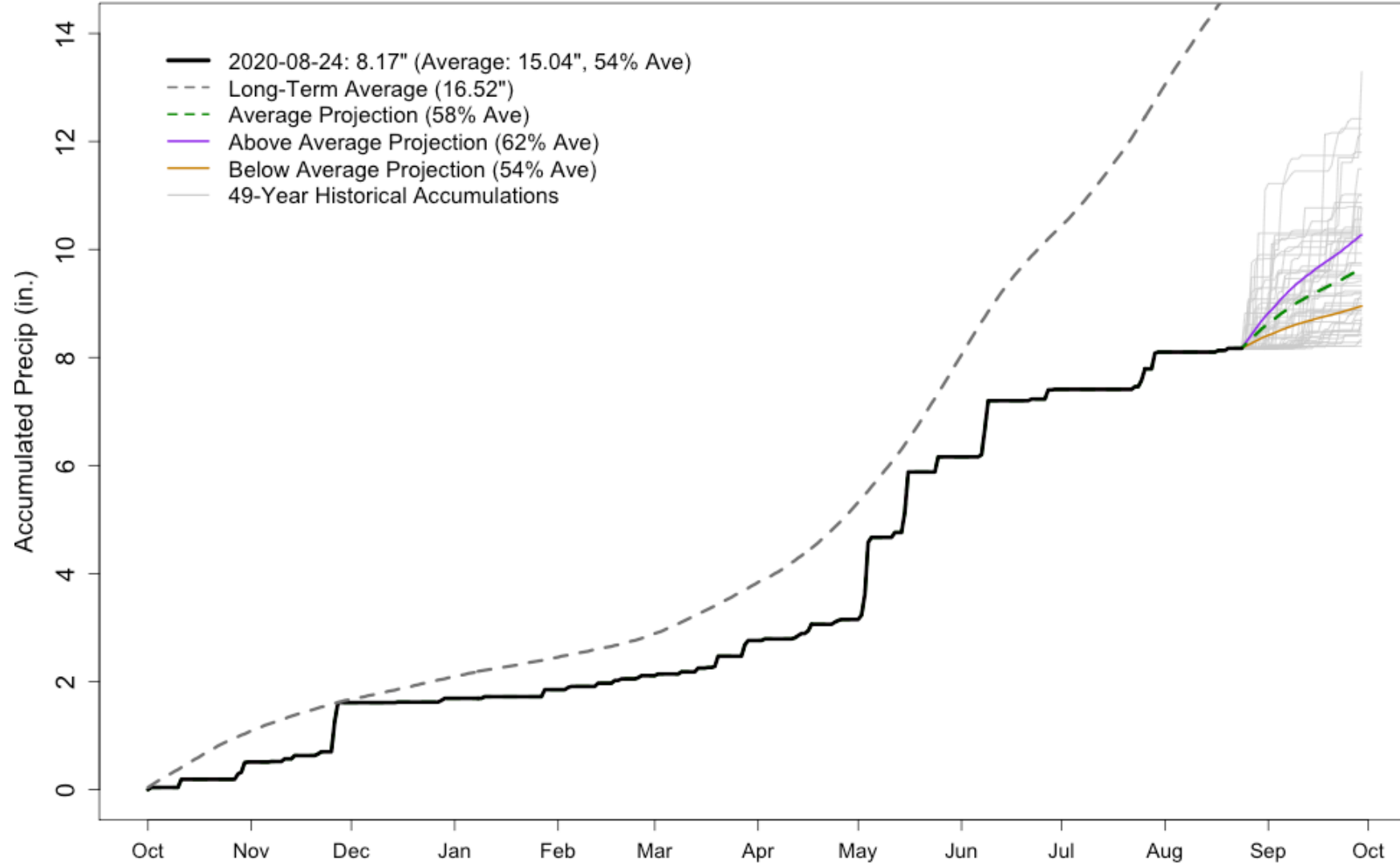


Above normal  
since June 1!



# Akron

## AKRON 4 E WY2020 Precipitation Projections



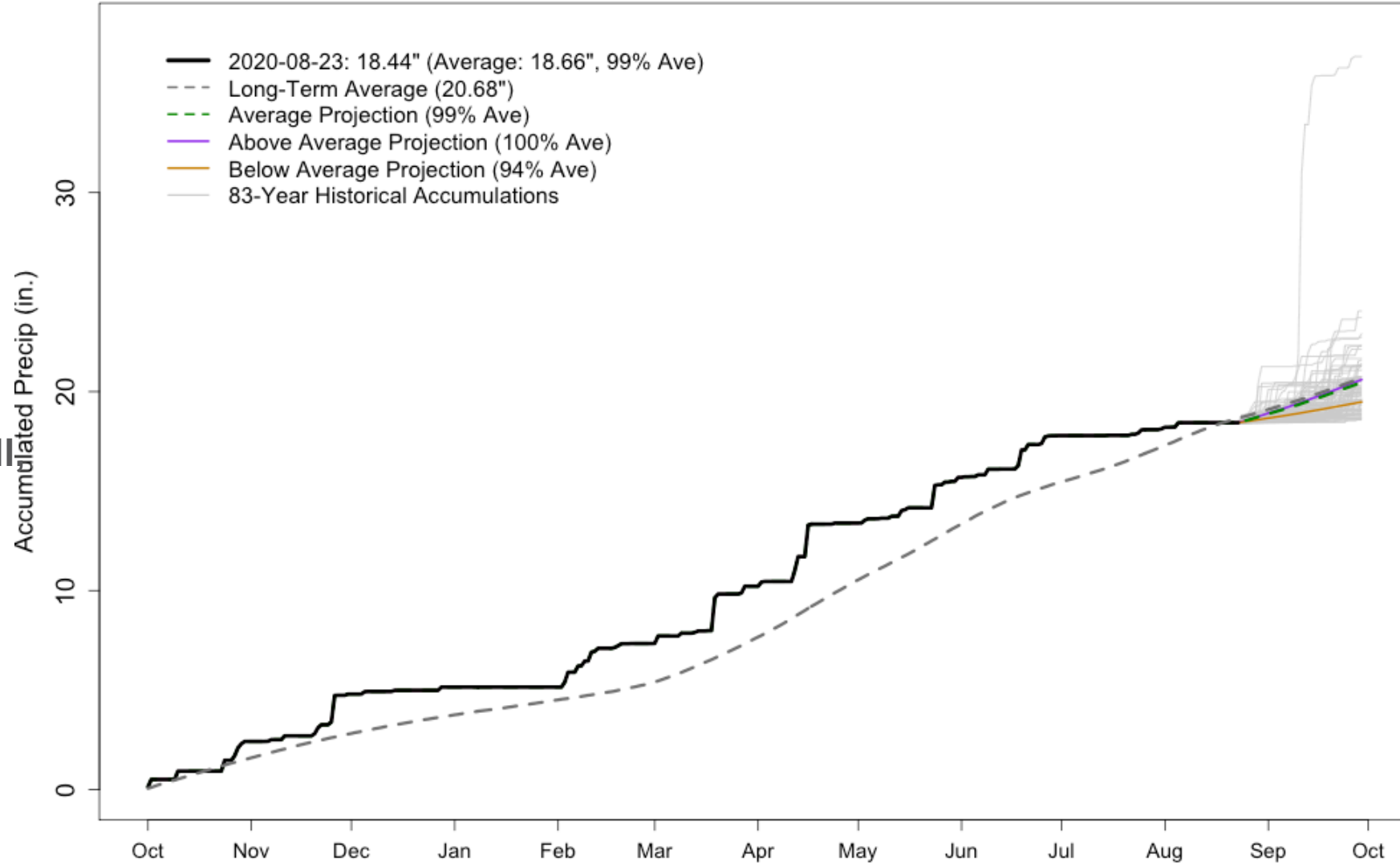
**3<sup>rd</sup> driest WY to date, only 2002, 1911 drier**

**\*may have under-reported some rain this month, so may not be quite this bad, but still bad**



# Boulder

## BOULDER WY2020 Precipitation Projections



Record snowfall yet now below-normal for precip over the water year

3<sup>rd</sup> driest on record since July 1





## Outlook

Next 7 days

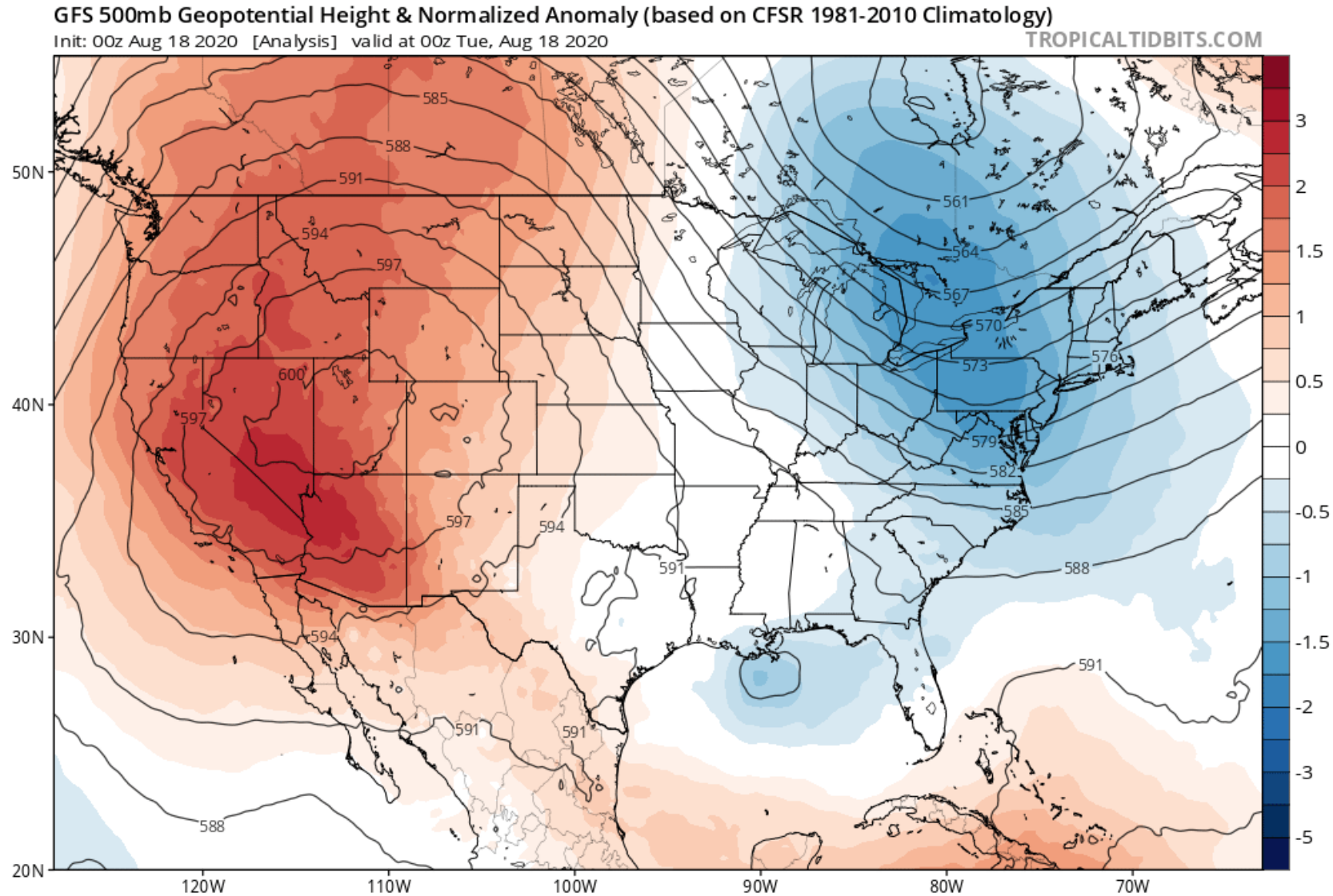
8-14 day Outlook

CPC Outlooks

What's happening with El Niño?



# We've been stuck under an unmoving high pressure ridge

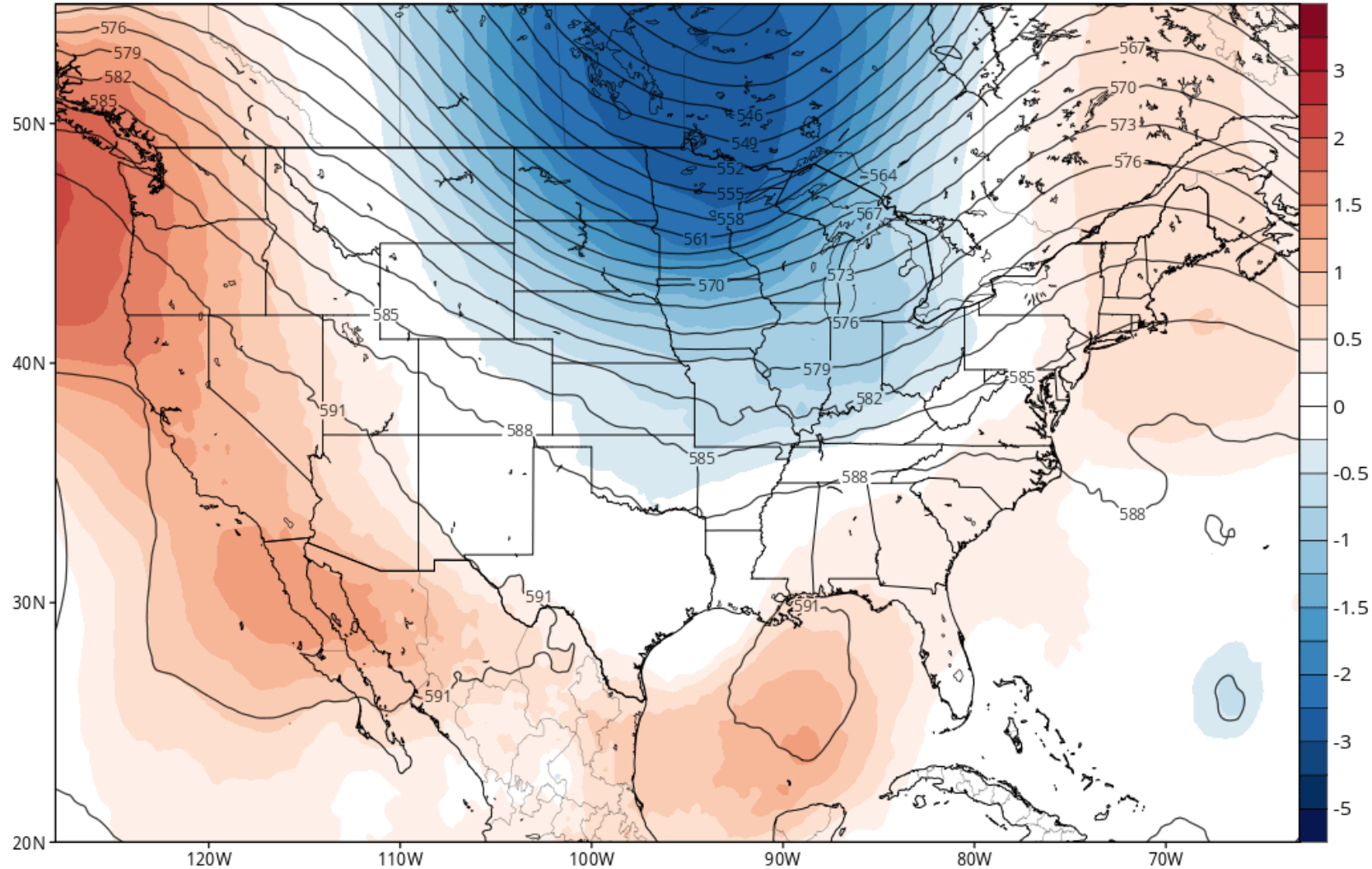


# An actual pattern change around September 1!

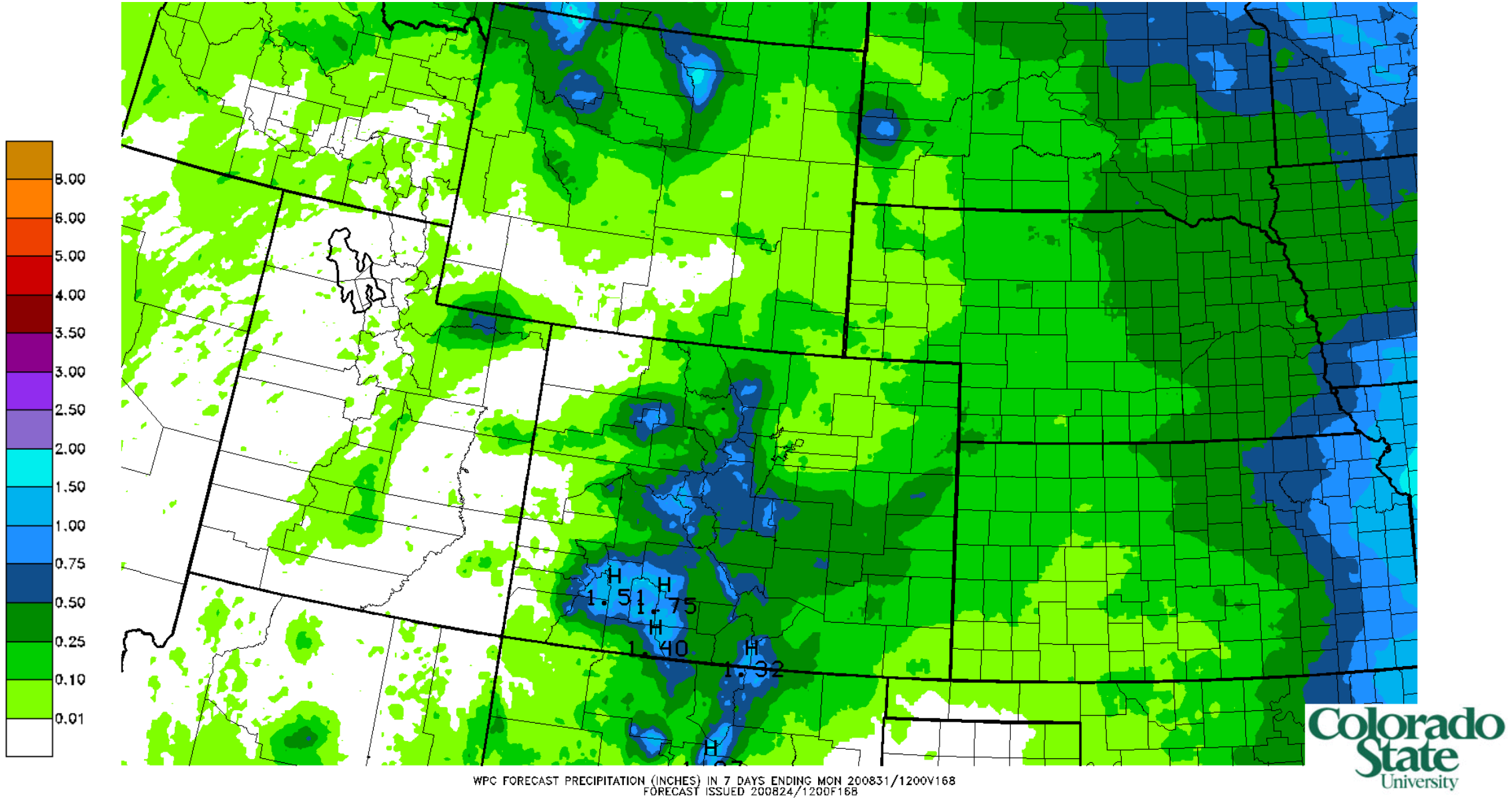
GFS 500mb Geopotential Height & Normalized Anomaly (based on CFSR 1981-2010 Climatology)

Init: 18z Aug 24 2020 Forecast Hour: [180] valid at 06z Tue, Sep 01 2020

TROPICALTIDBITS.COM

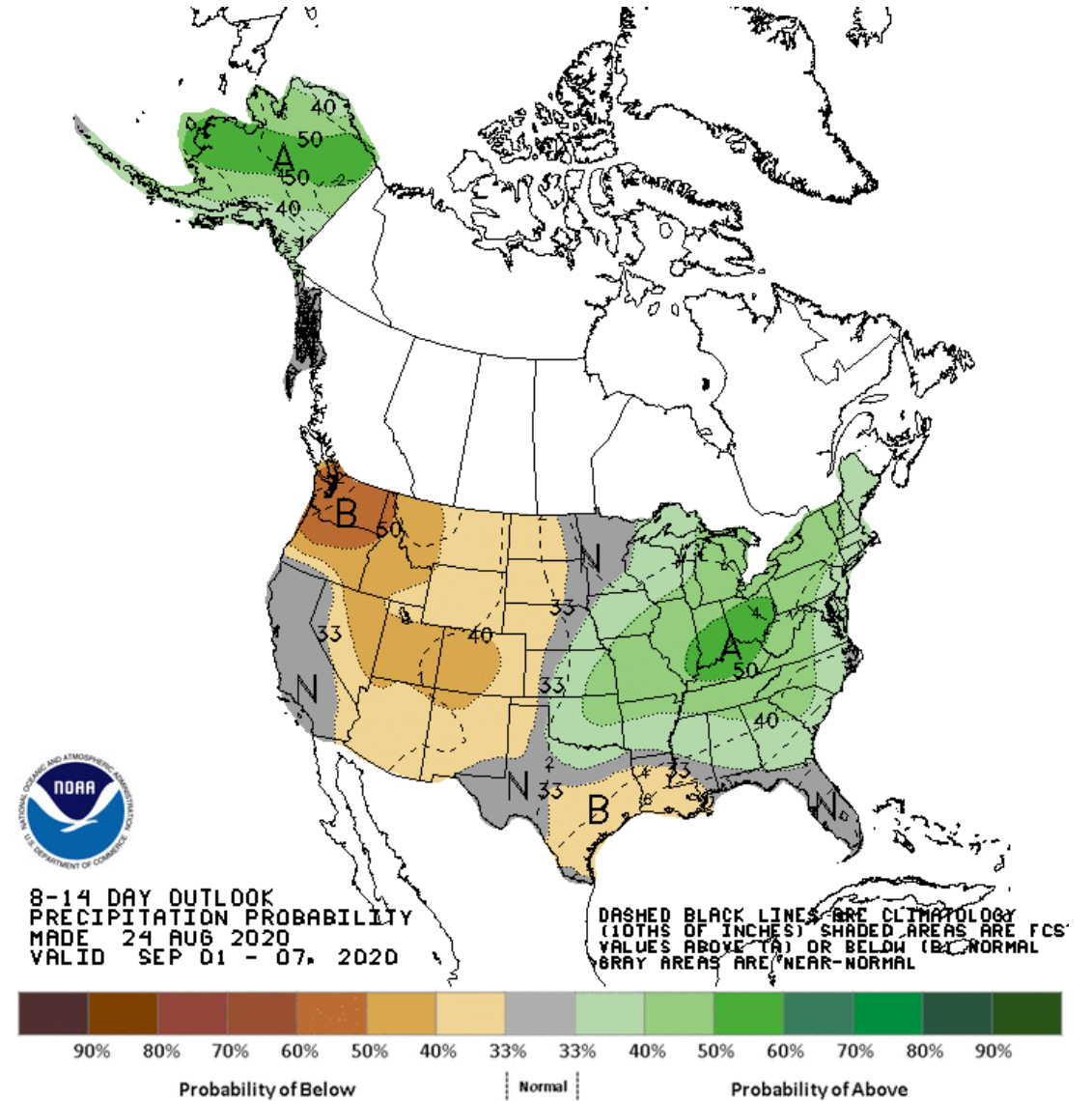
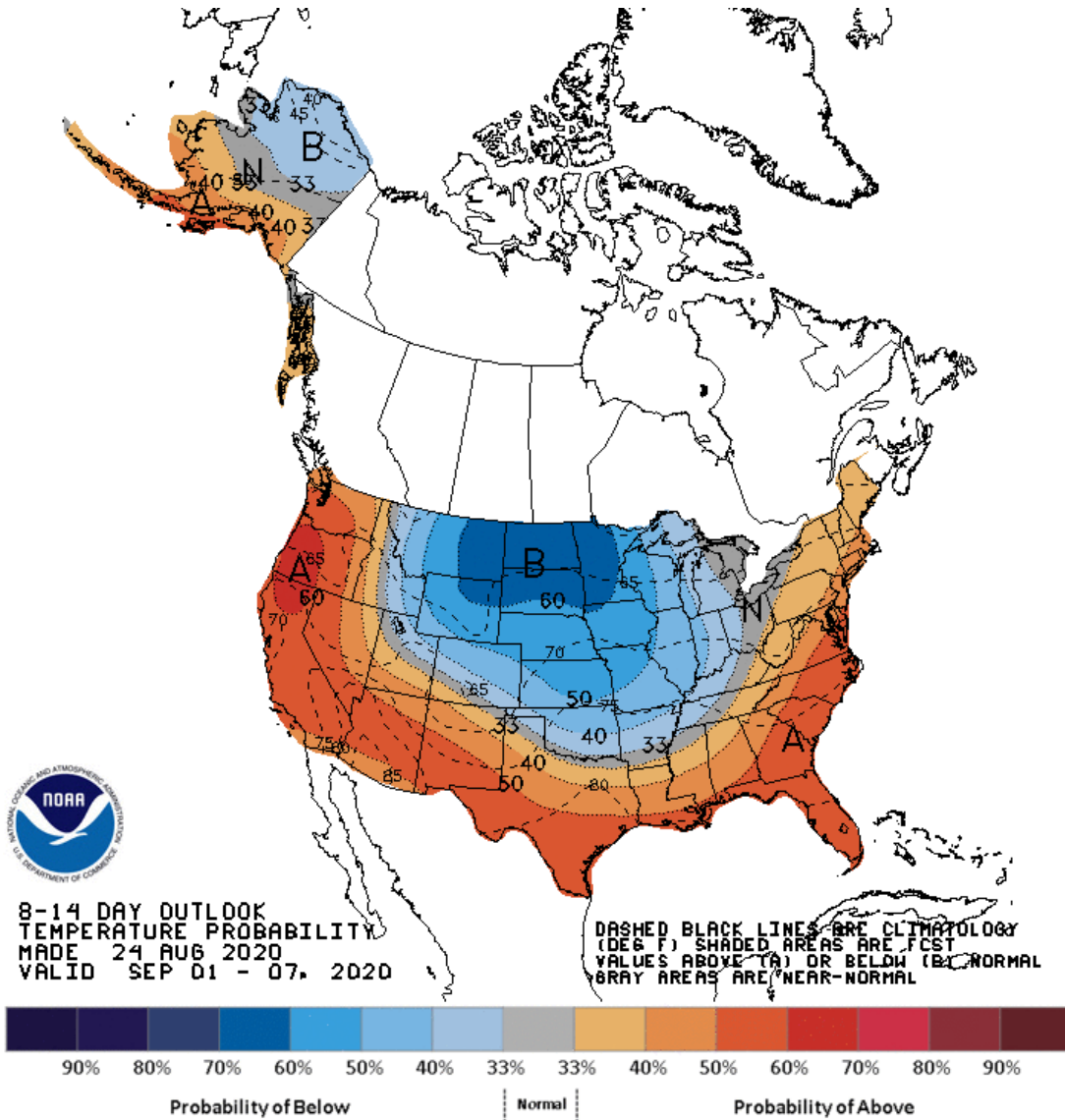


# NOAA 7-day precip forecast

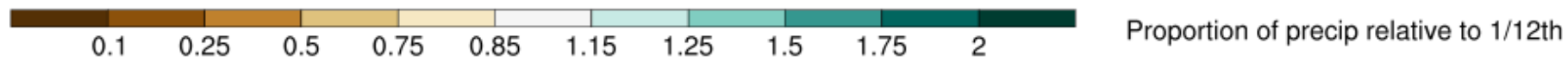
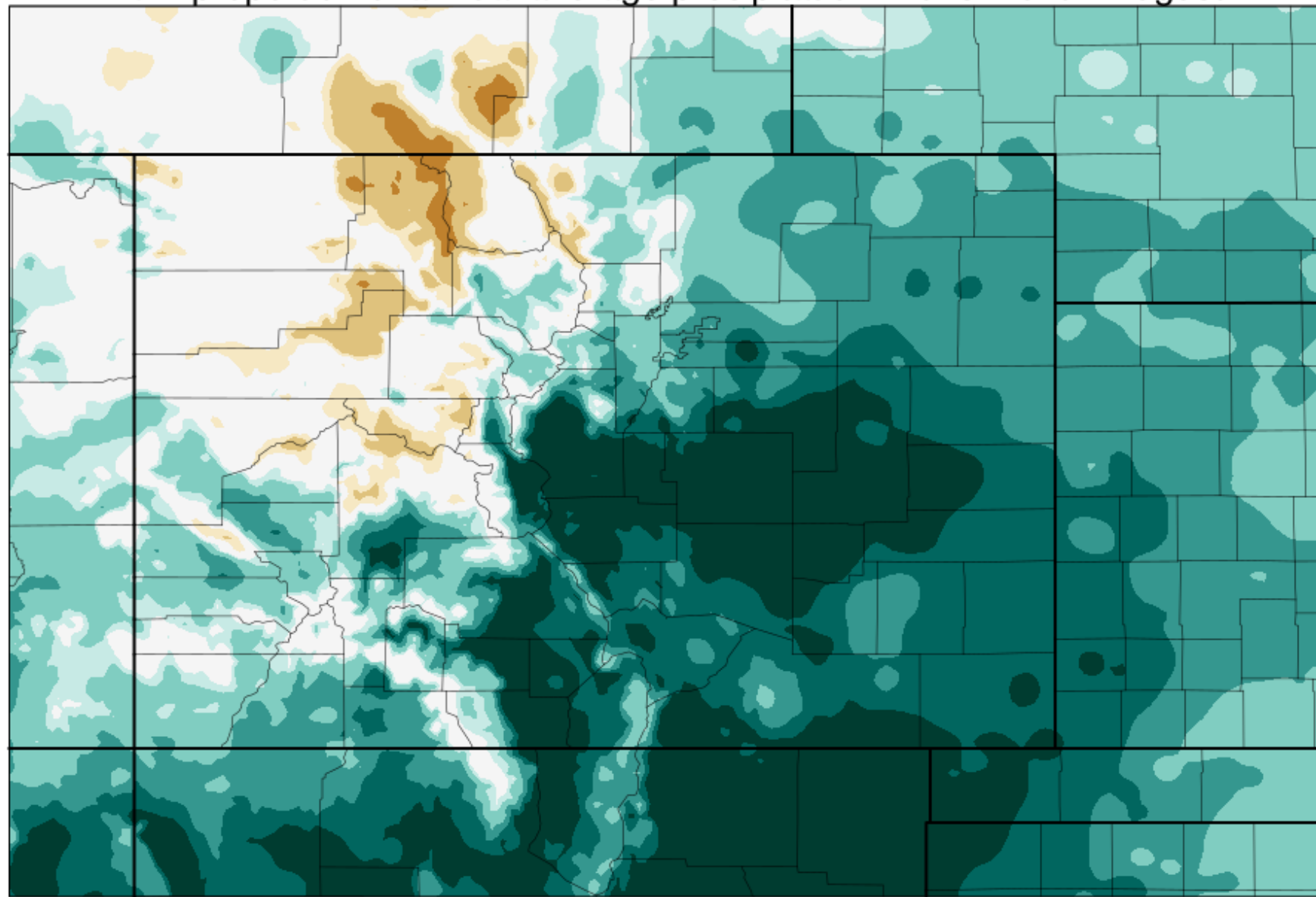




# 8-14 day outlook



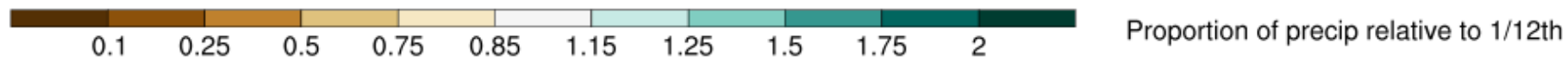
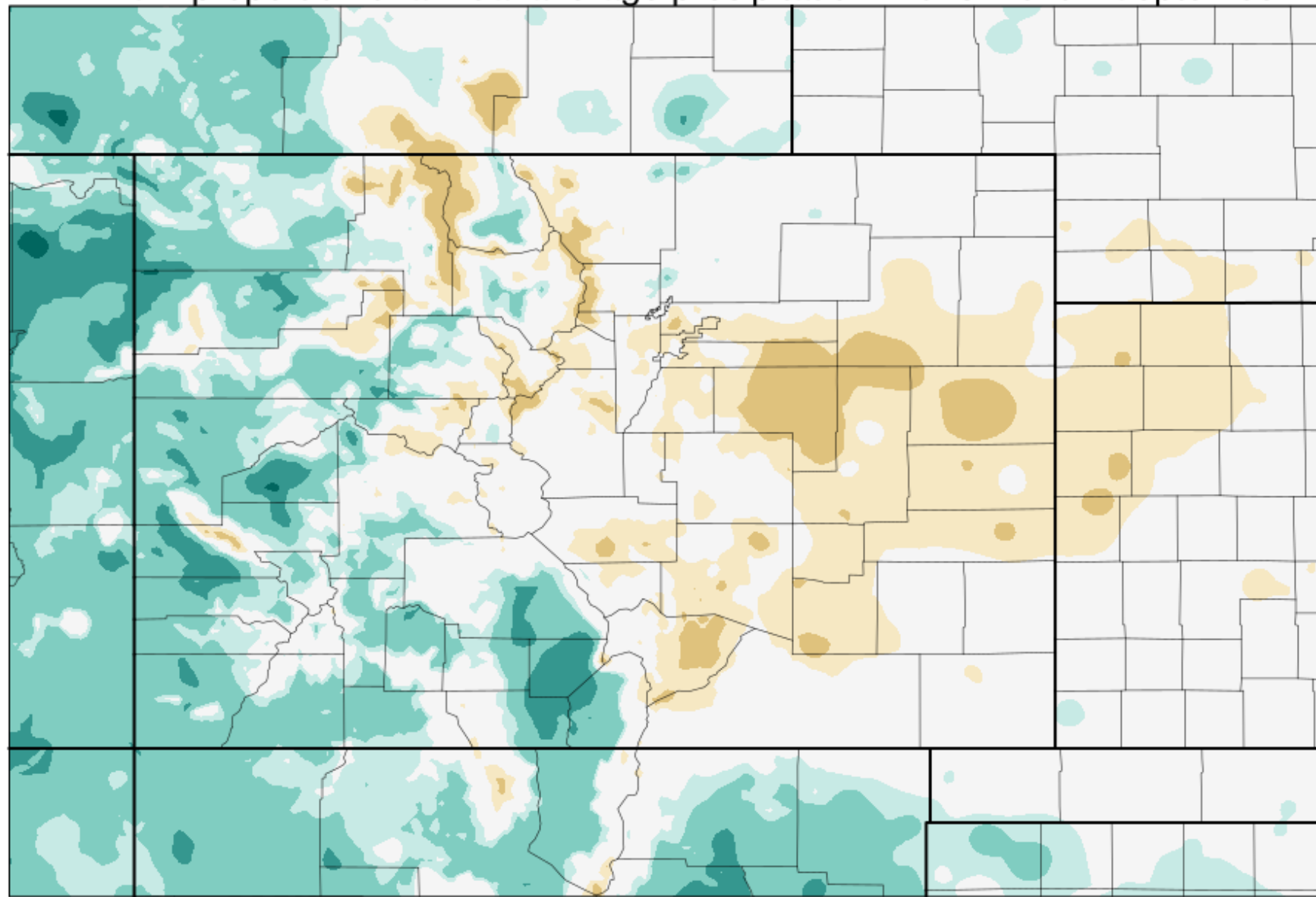
# PRISM proportion of annual average precipitation in this month: August



Russ Schumacher/Colorado Climate Center



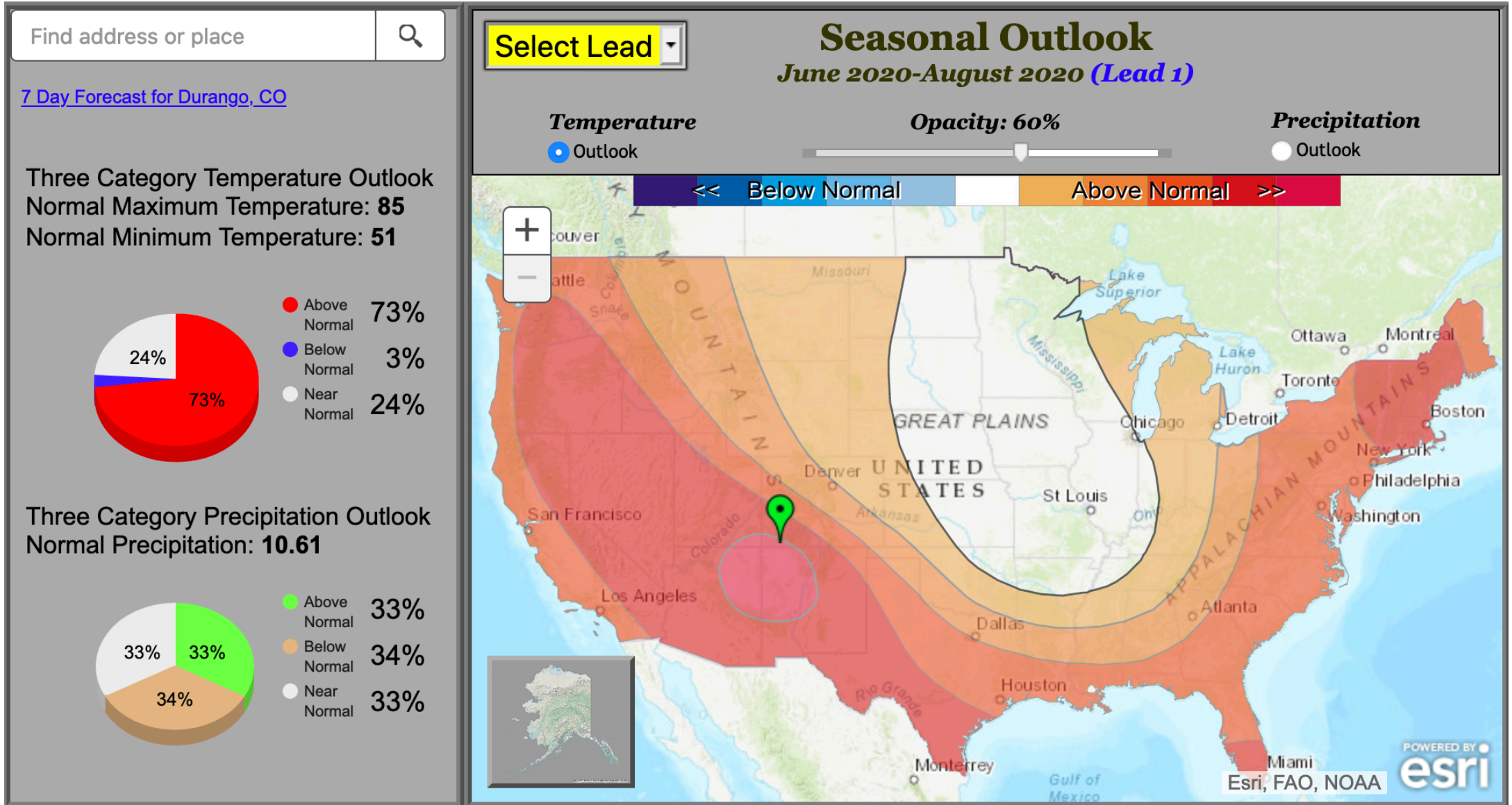
# PRISM proportion of annual average precipitation in this month: September



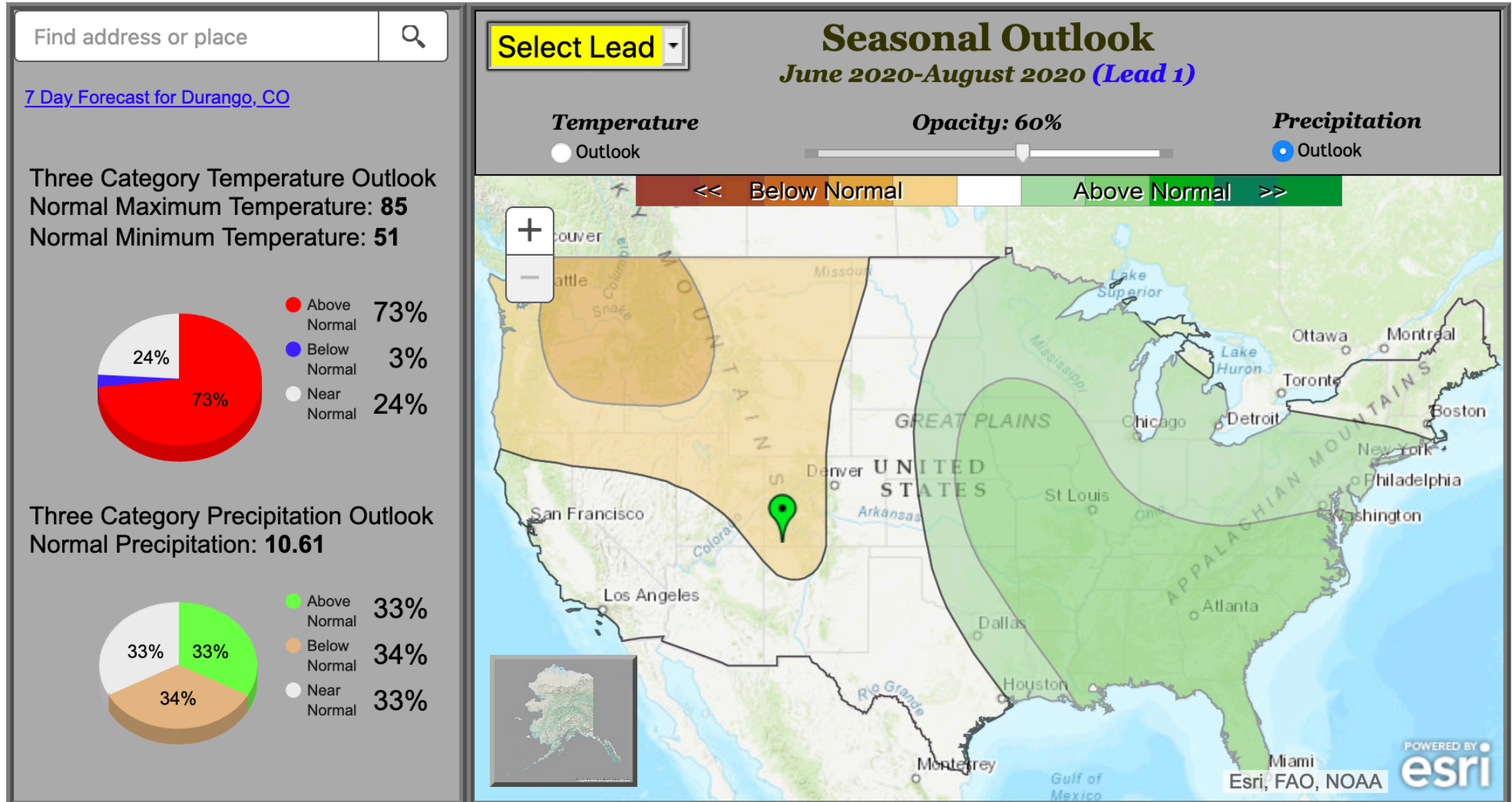
Russ Schumacher/Colorado Climate Center



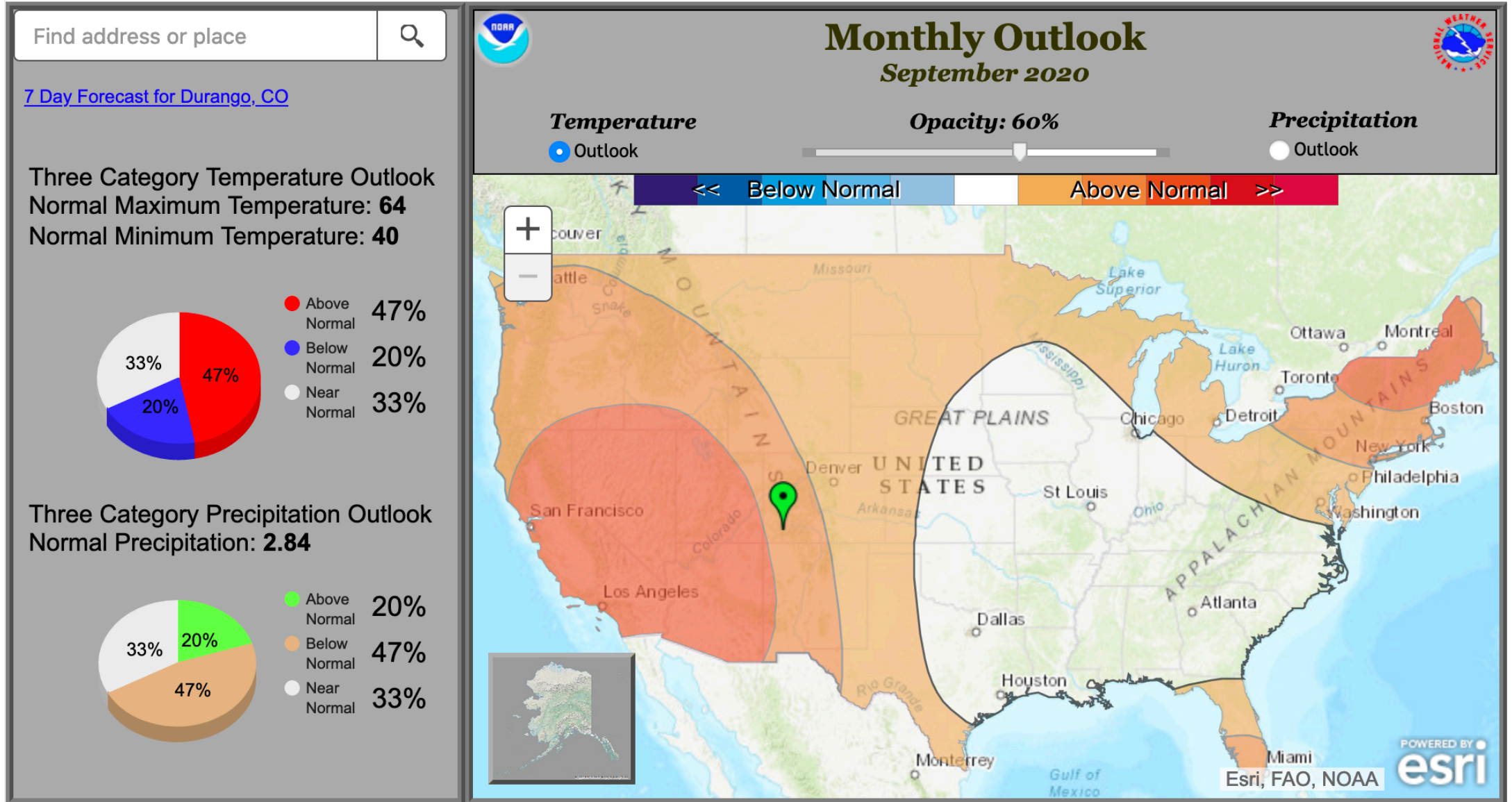
# A look back at CPC outlooks for summer...



# A look back at CPC outlooks for summer...



# September outlook

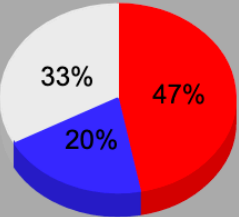
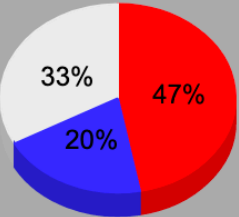
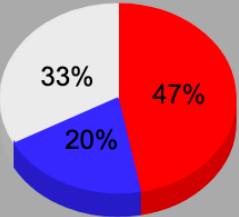


# September outlook

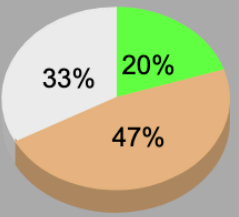
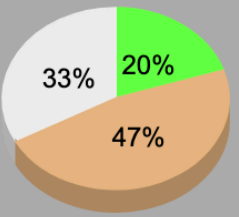
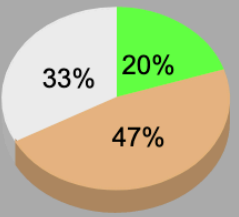
Find address or place

[7 Day Forecast for Durango, CO](#)

Three Category Temperature Outlook  
Normal Maximum Temperature: **64**  
Normal Minimum Temperature: **40**

	Above Normal	47%
	Below Normal	20%
	Near Normal	33%

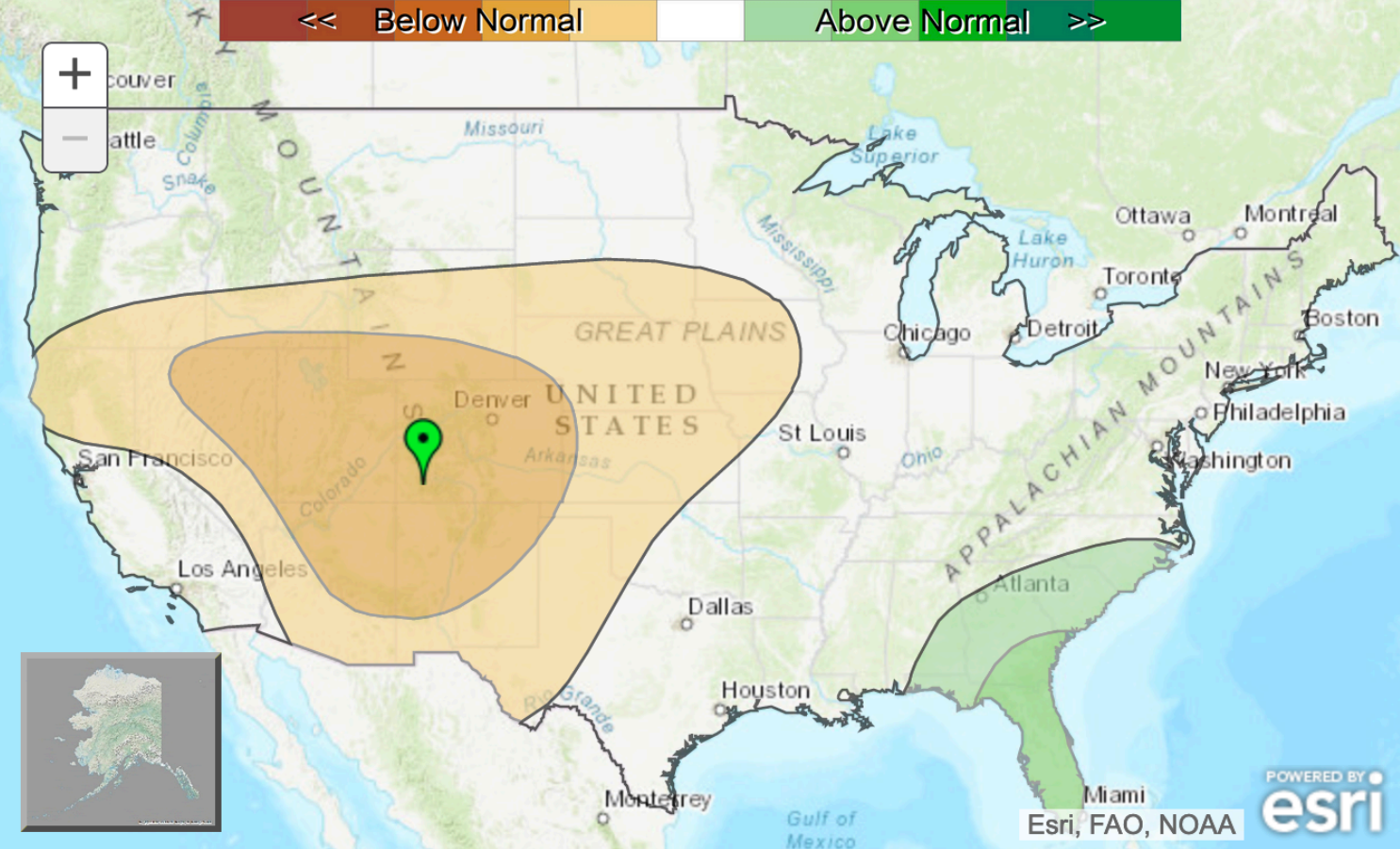
Three Category Precipitation Outlook  
Normal Precipitation: **2.84**

	Above Normal	20%
	Below Normal	47%
	Near Normal	33%

## Monthly Outlook September 2020

**Temperature**      **Opacity: 60%**      **Precipitation**  
● Outlook            ● Outlook

<< Below Normal      Above Normal >>

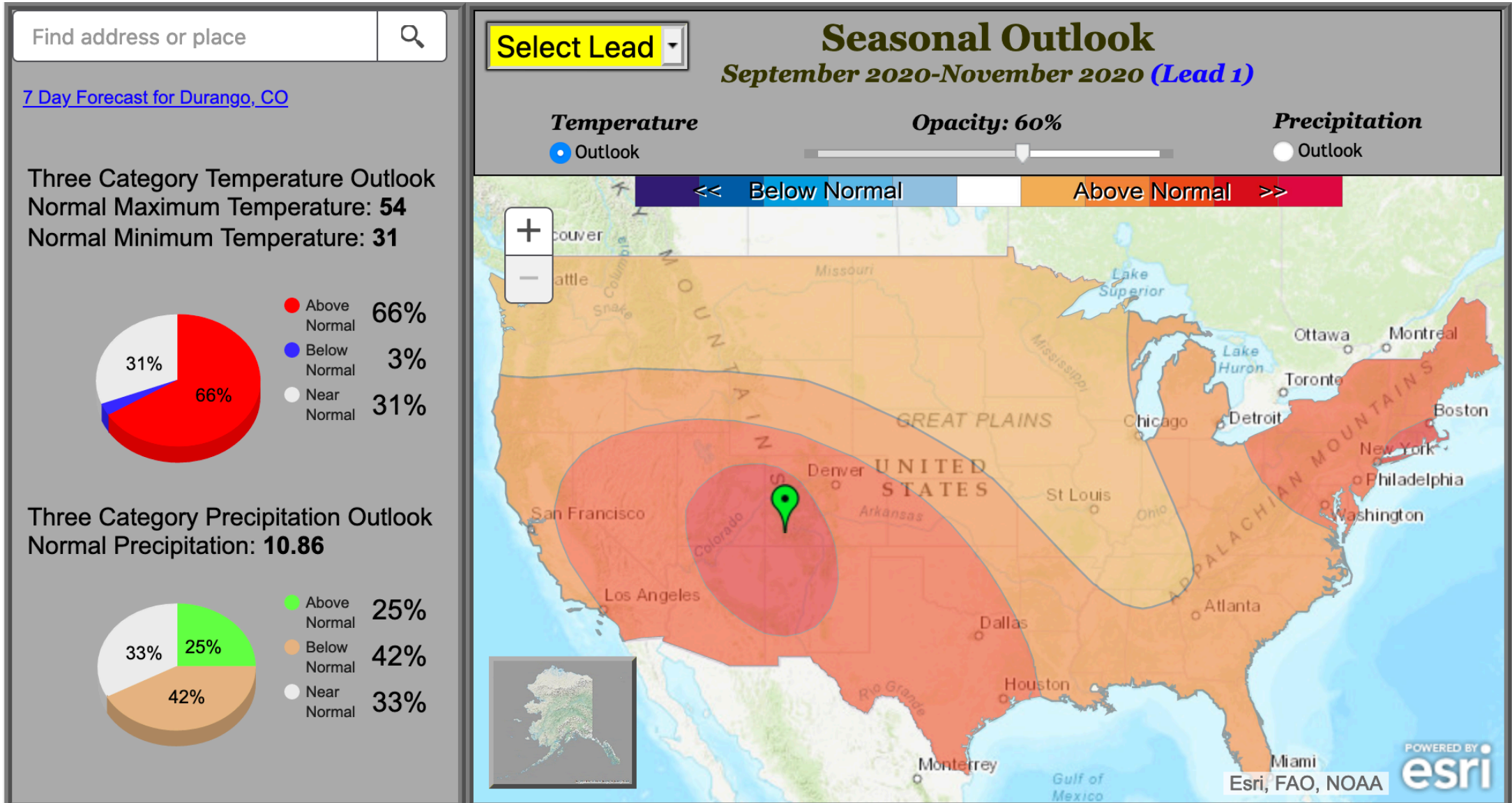


Map showing the United States with a green pin in Colorado. The map displays temperature outlooks for September 2020, with a legend indicating 'Below Normal' (orange) and 'Above Normal' (green). Major cities and geographical features are labeled.

POWERED BY **esri**  
Esri, FAO, NOAA

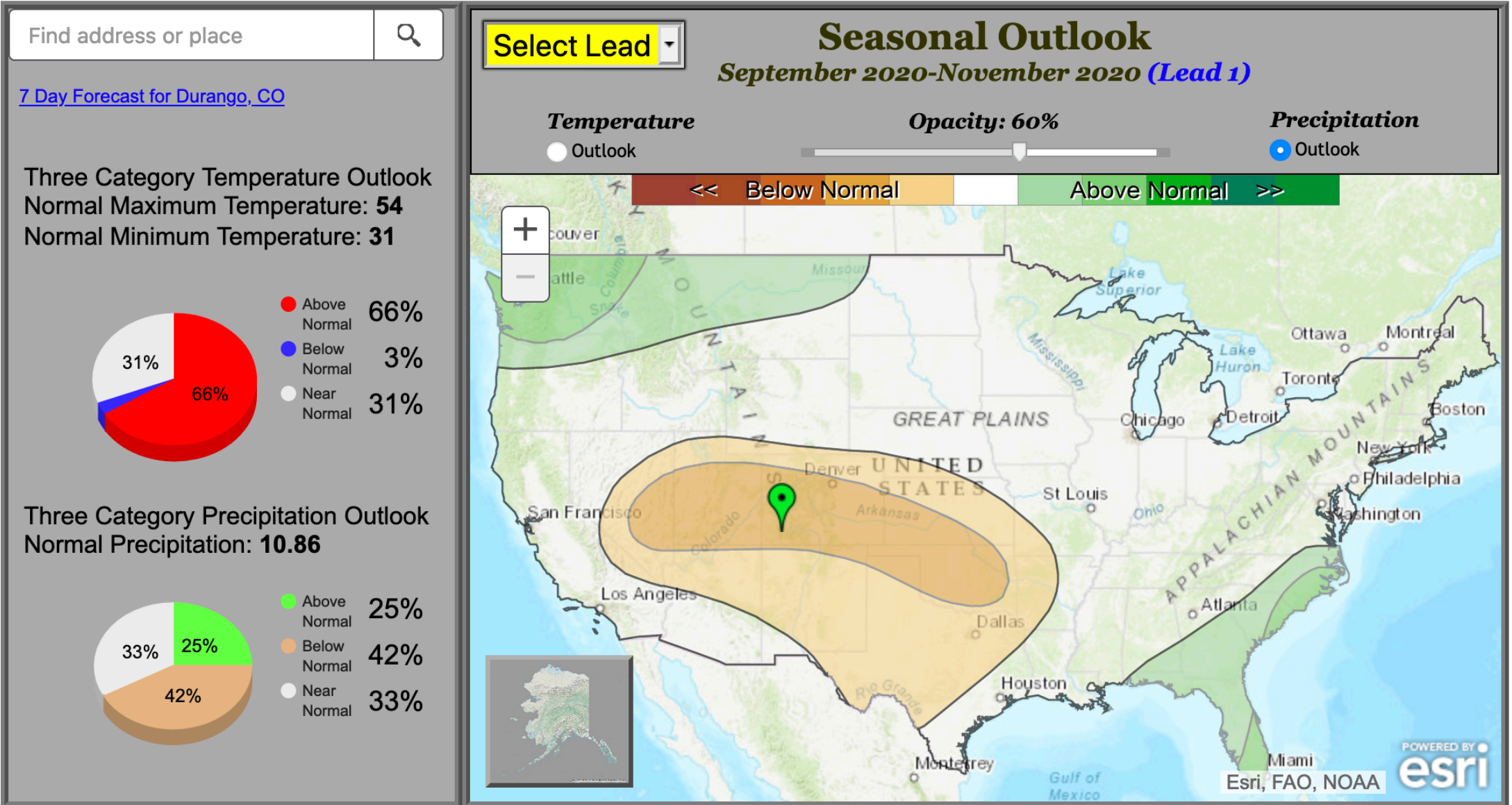


# September-October-November outlook





# September-October-November outlook



# La Niña in the works?

Early-August 2020 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly  
Neutral ENSO: -0.5 °C to 0.5 °C

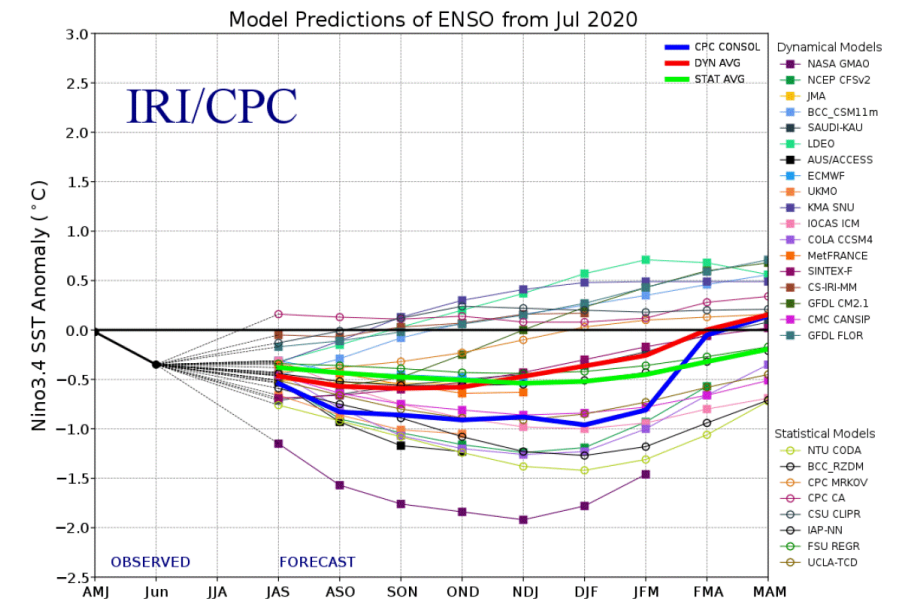
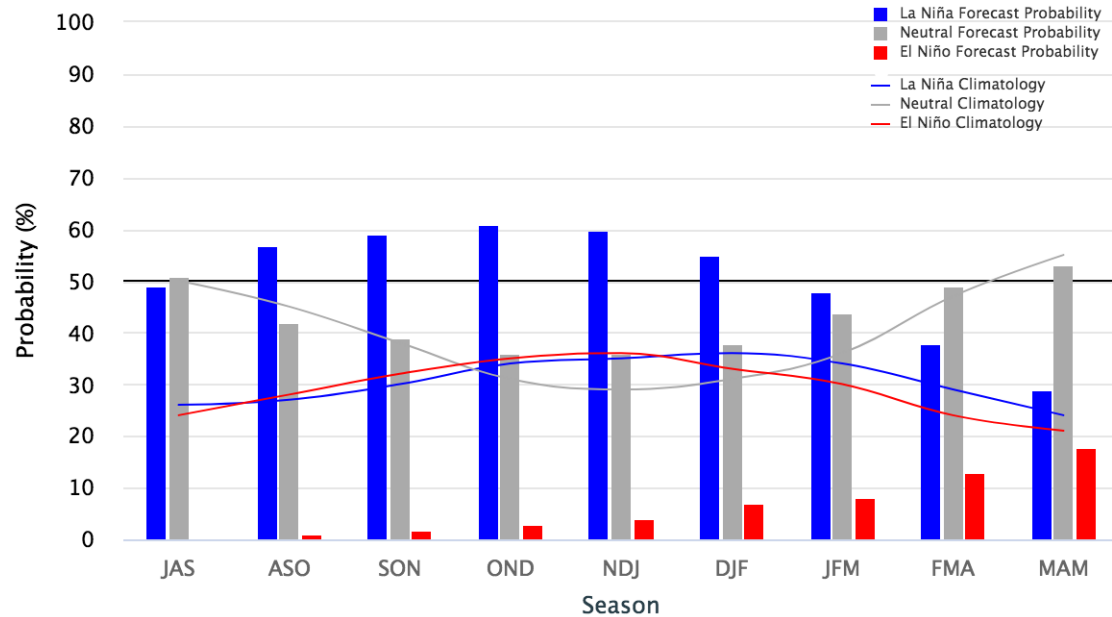


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 20 July 2020.

La Niña watch: 60% chance of La Niña development this fall, extending through winter

La Niña winters tend to be snowy north and less-snowy south, though the signal isn't that strong. CPC outlooks favor warmer-than-normal conditions through next spring, especially in southern Colorado



# Summary points

- Since April, Colorado has been anomalously warm and dry, leading to development and expansion of drought across the state
- August has been exceptionally hot and dry, especially in western Colorado and across the west
- 99% of the state in drought; 73% in D2 (extreme drought) or worse
- Four large fires are burning at an unusual time in the summer
- Some minor relief in the near term, with better rain chances in the mountains later this week and a cold front around September 1
- Longer-term outlooks don't look promising, with warm conditions continuing, and the likely development of La Niña in the fall



[russ.schumacher@colostate.edu](mailto:russ.schumacher@colostate.edu)

To view this and other presentations:  
[http://climate.colostate.edu/ccc\\_archive.html](http://climate.colostate.edu/ccc_archive.html)

Thank you!

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ATMOSPHERIC SCIENCE  
COLORADO STATE UNIVERSITY