

# Colorado Climate Center — *WATF Climate Update*

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**Russ Schumacher, state climatologist**

**Water Availability Task Force**

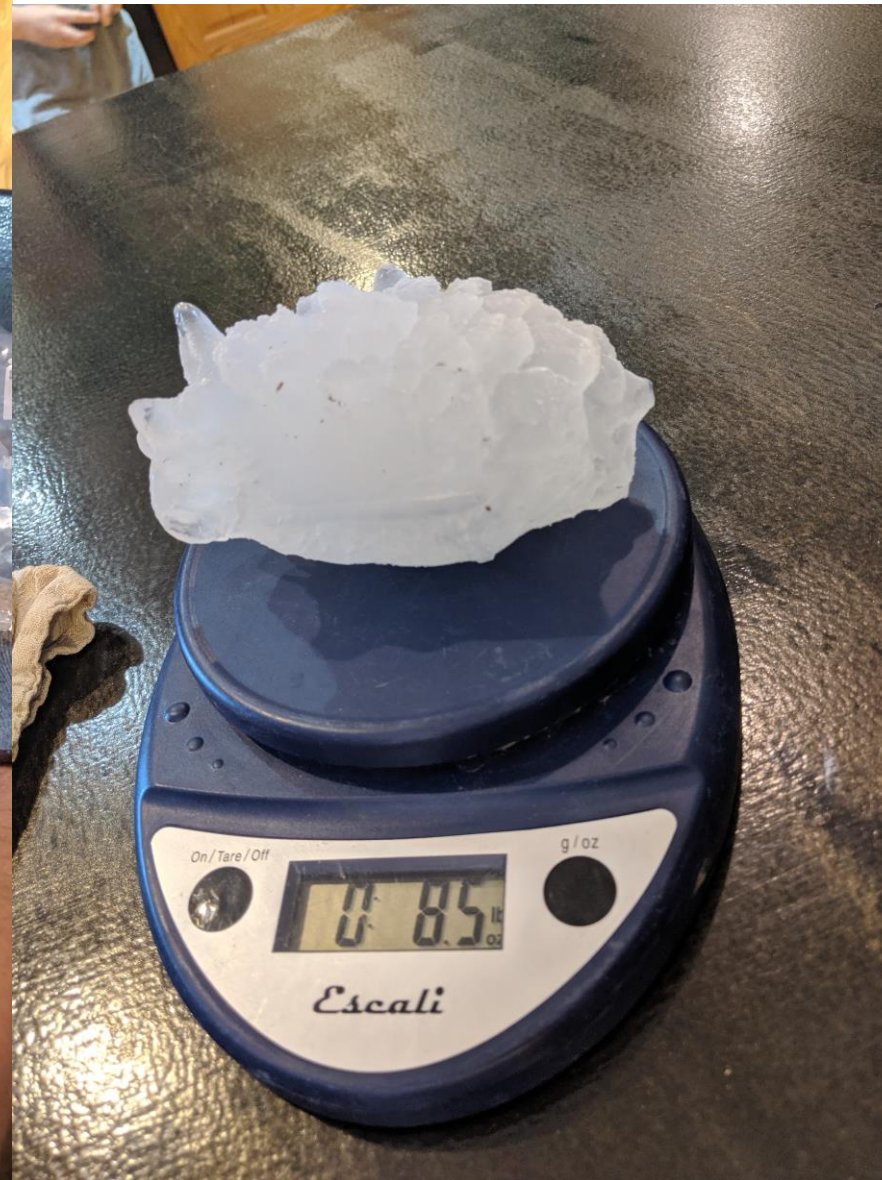
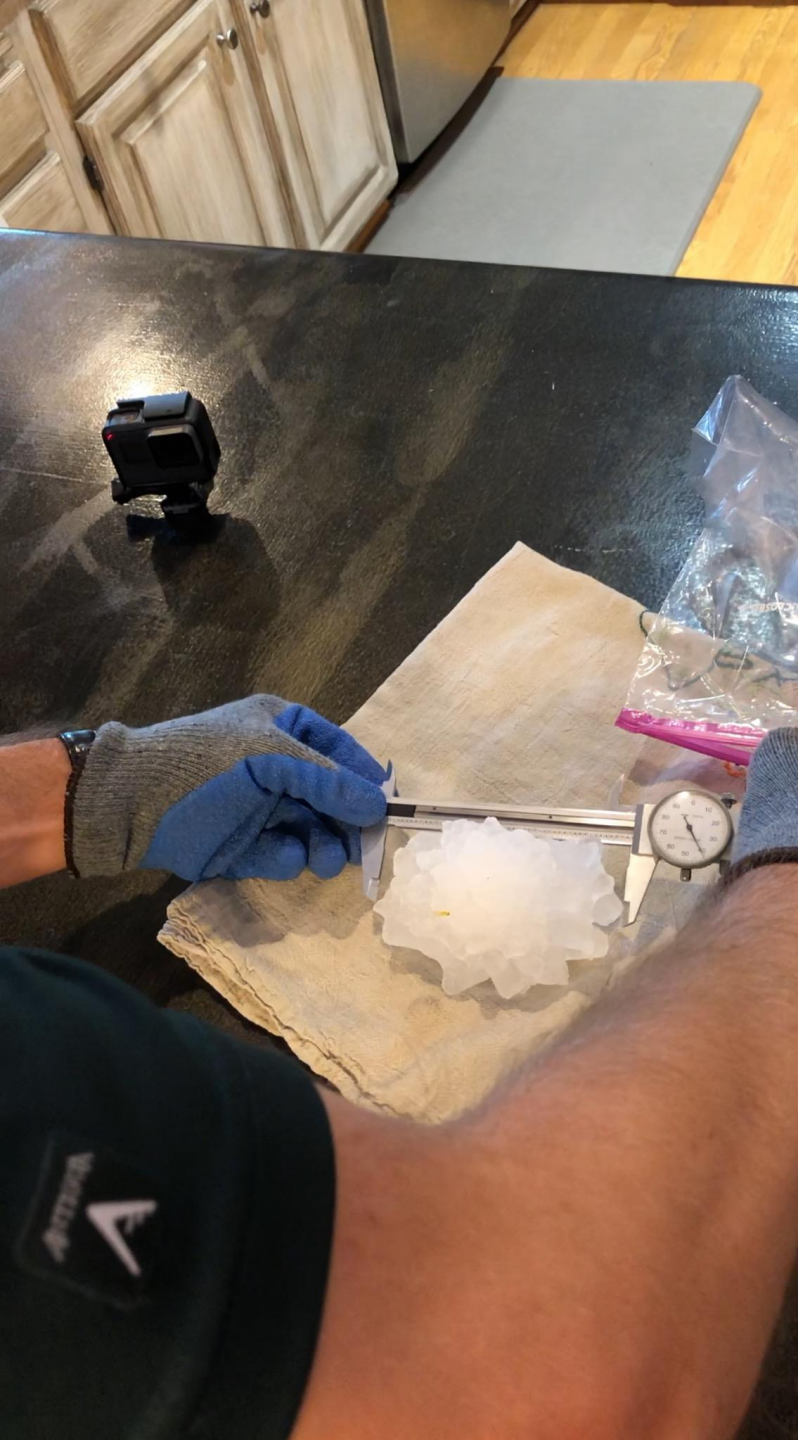
**August 27, 2019**



COLORADO  
**CLIMATE**  
CENTER



**ATMOSPHERIC SCIENCE**  
COLORADO STATE UNIVERSITY



## 2019 Water Year To Date

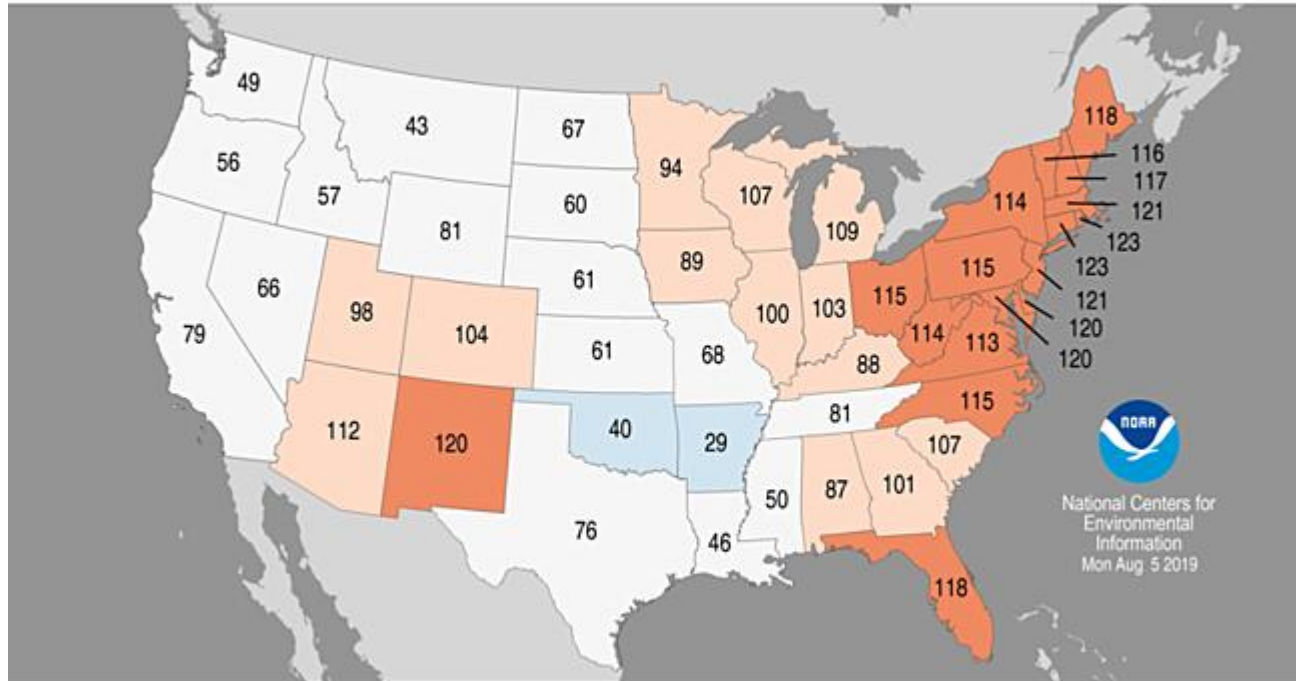
temperature, precipitation,  
evaporative demand



## Statewide Average Temperature Ranks

July 2019

Period: 1895–2019



Water year thus far: 0.1°F below the 20<sup>th</sup> century average

Month	T Rank (of 125 years)	Above, below, or near avg?
Oct	35 <sup>th</sup>	below
Nov	39 <sup>th</sup>	below
Dec	80 <sup>th</sup>	near
Jan	90 <sup>th</sup>	above
Feb	28 <sup>th</sup>	below
Mar	66 <sup>th</sup>	near
Apr	108 <sup>th</sup>	above
May	5 <sup>th</sup>	much below
June	42 <sup>nd</sup>	below
July	104 <sup>th</sup>	above

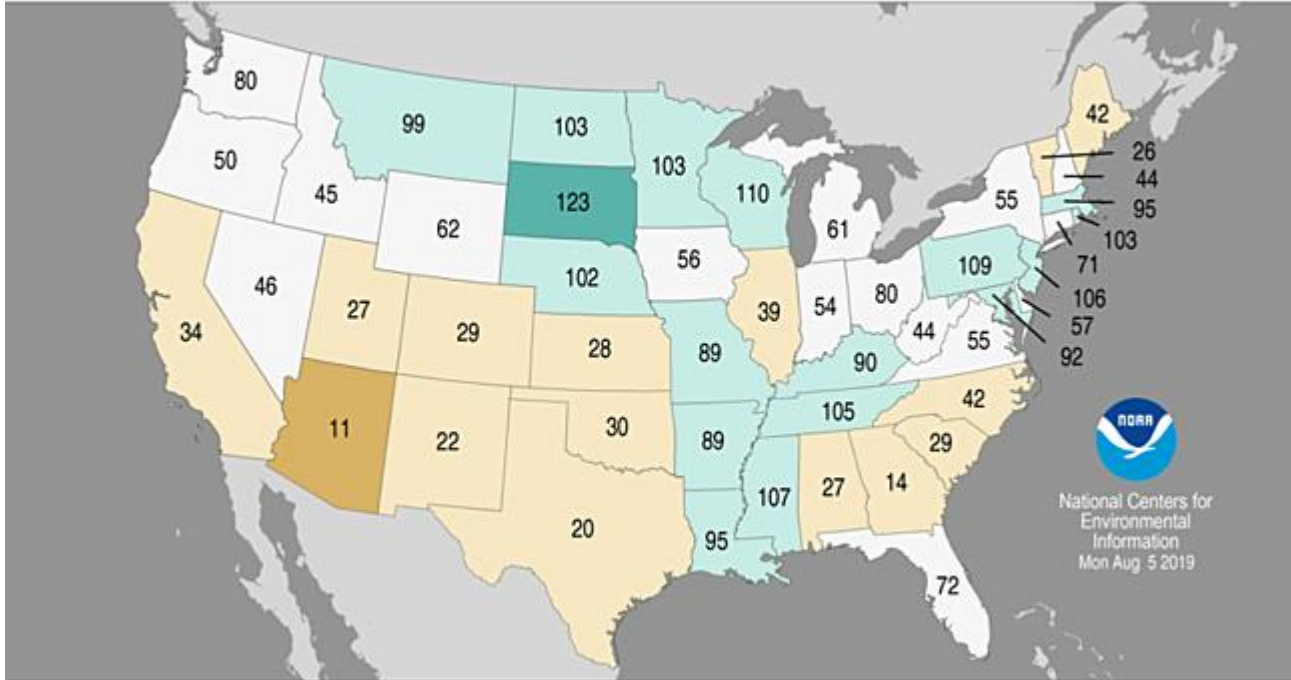




## Statewide Precipitation Ranks

July 2019

Period: 1895–2019



**16<sup>th</sup> wettest October – July**

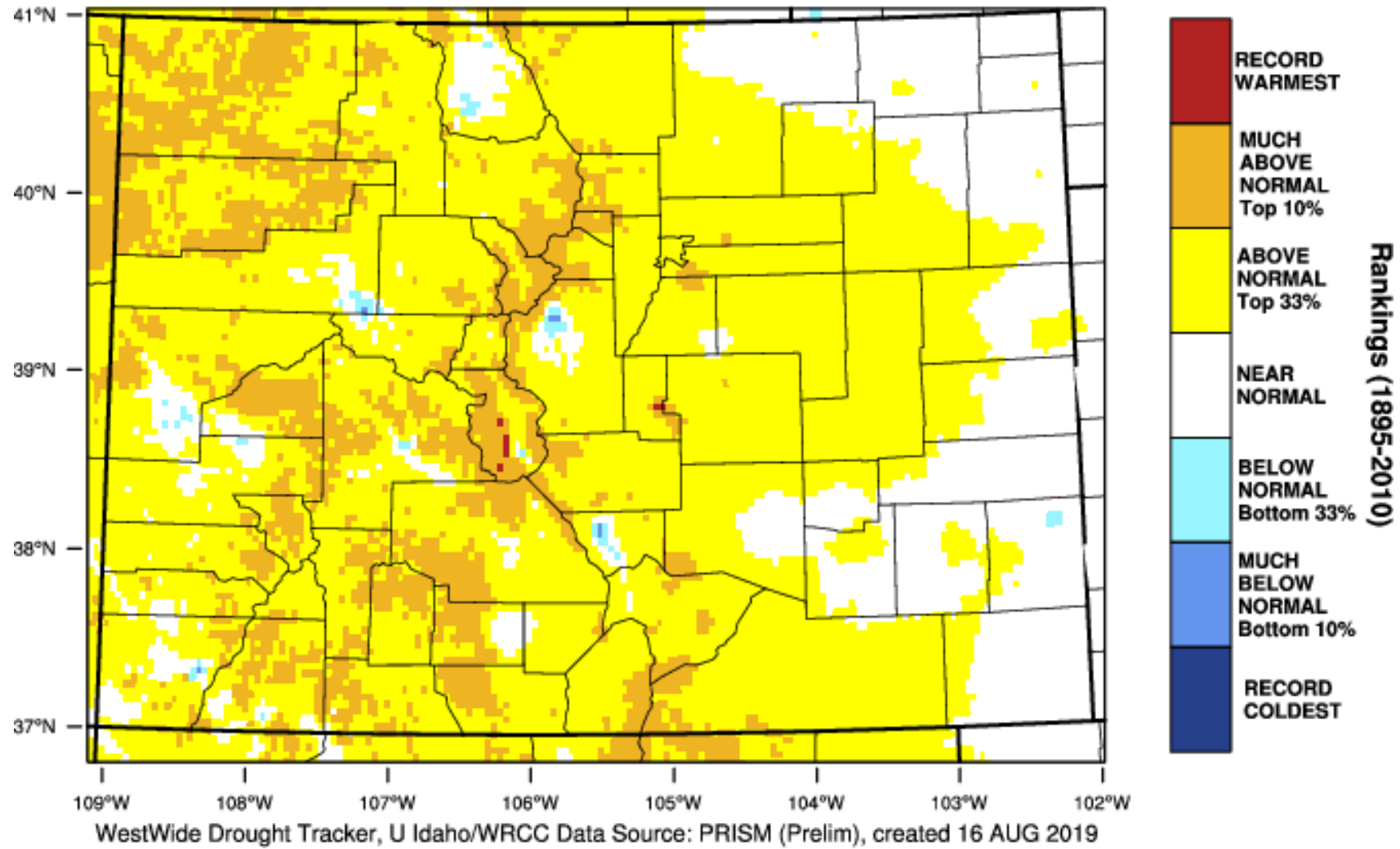
Month	P Rank (of 125 years)	Above, below, or near avg?
Oct	112 <sup>th</sup>	above
Nov	45 <sup>th</sup>	near
Dec	31 <sup>st</sup>	below
Jan	94 <sup>th</sup>	above
Feb	109 <sup>th</sup>	above
Mar	120 <sup>th</sup>	much above
Apr	42 <sup>nd</sup>	below
May	111 <sup>th</sup>	above
June	82 <sup>nd</sup>	near
July	29 <sup>th</sup>	below





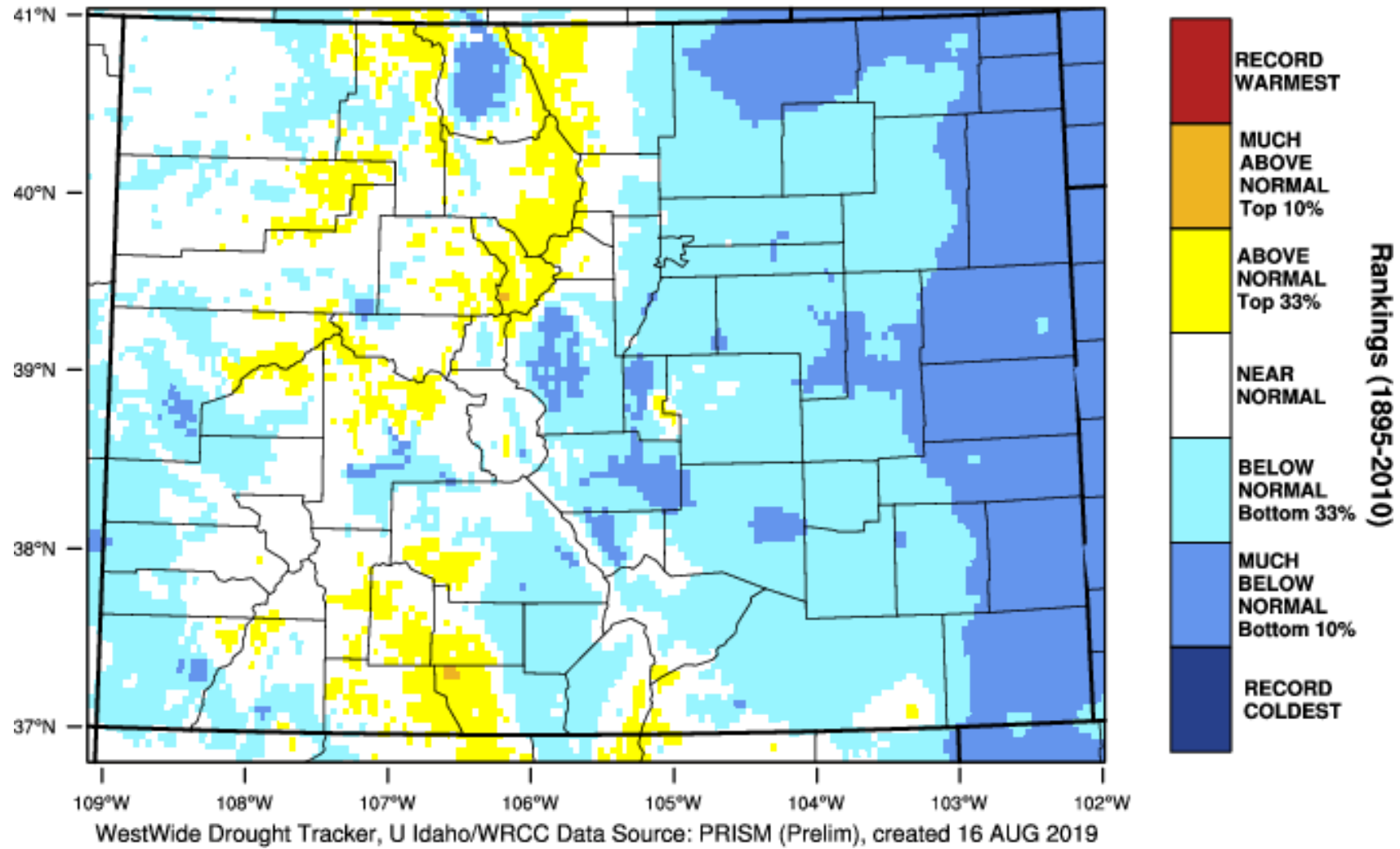
## Colorado - Mean Temperature

July 2019 Percentile

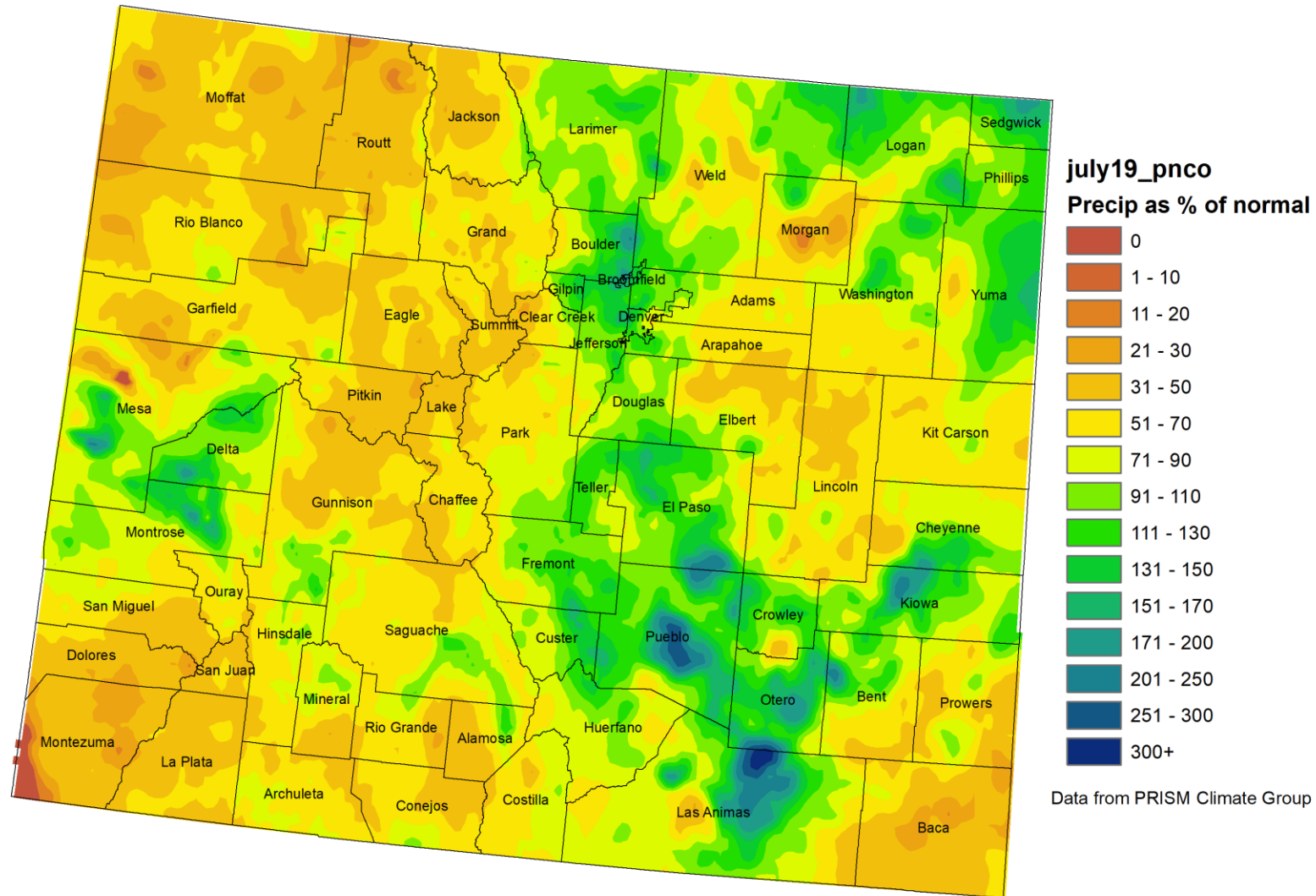


## Colorado - Mean Temperature

October-July 2019 Percentile



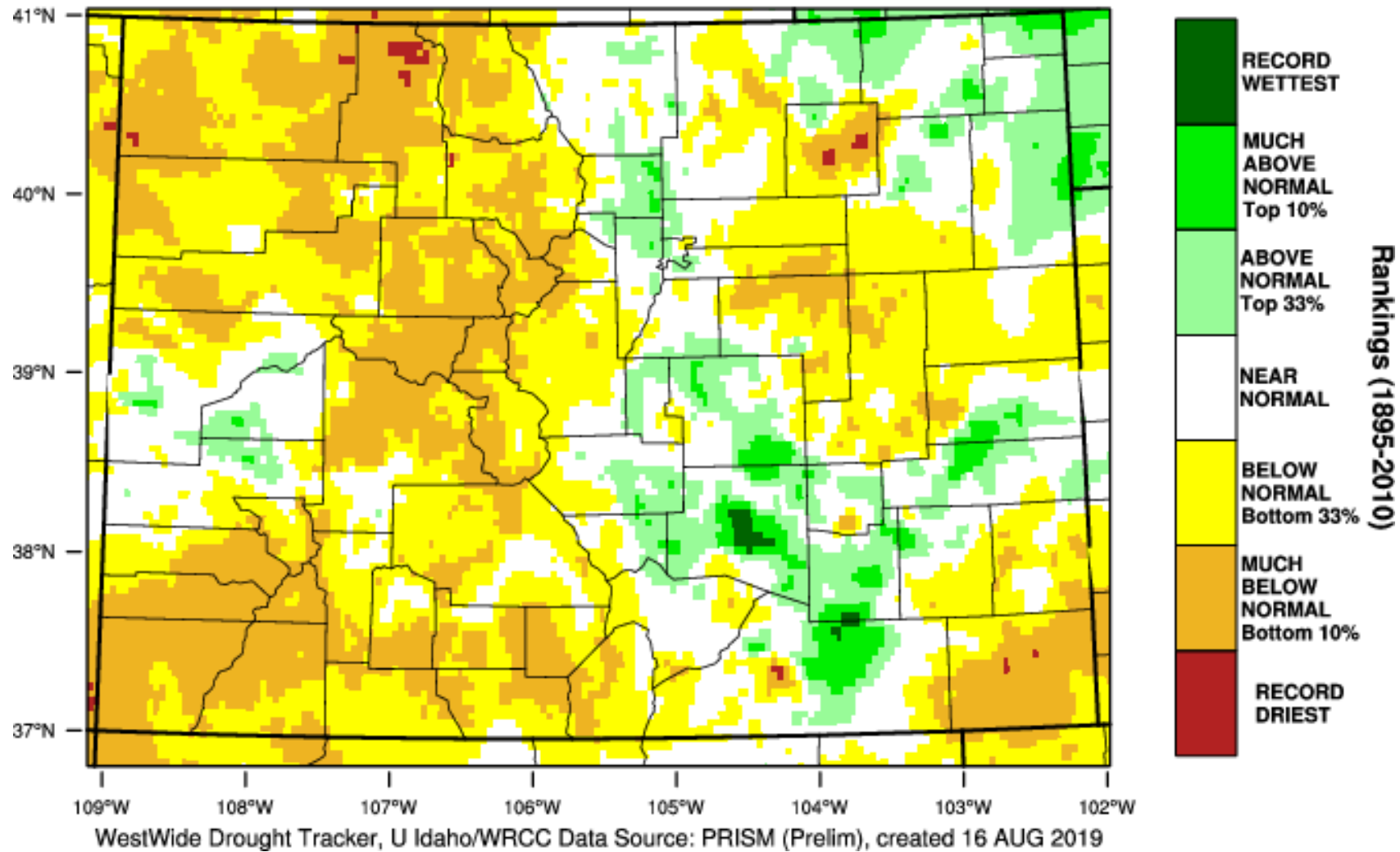
# Colorado July 2019 Precipitation as a Percentage of Normal



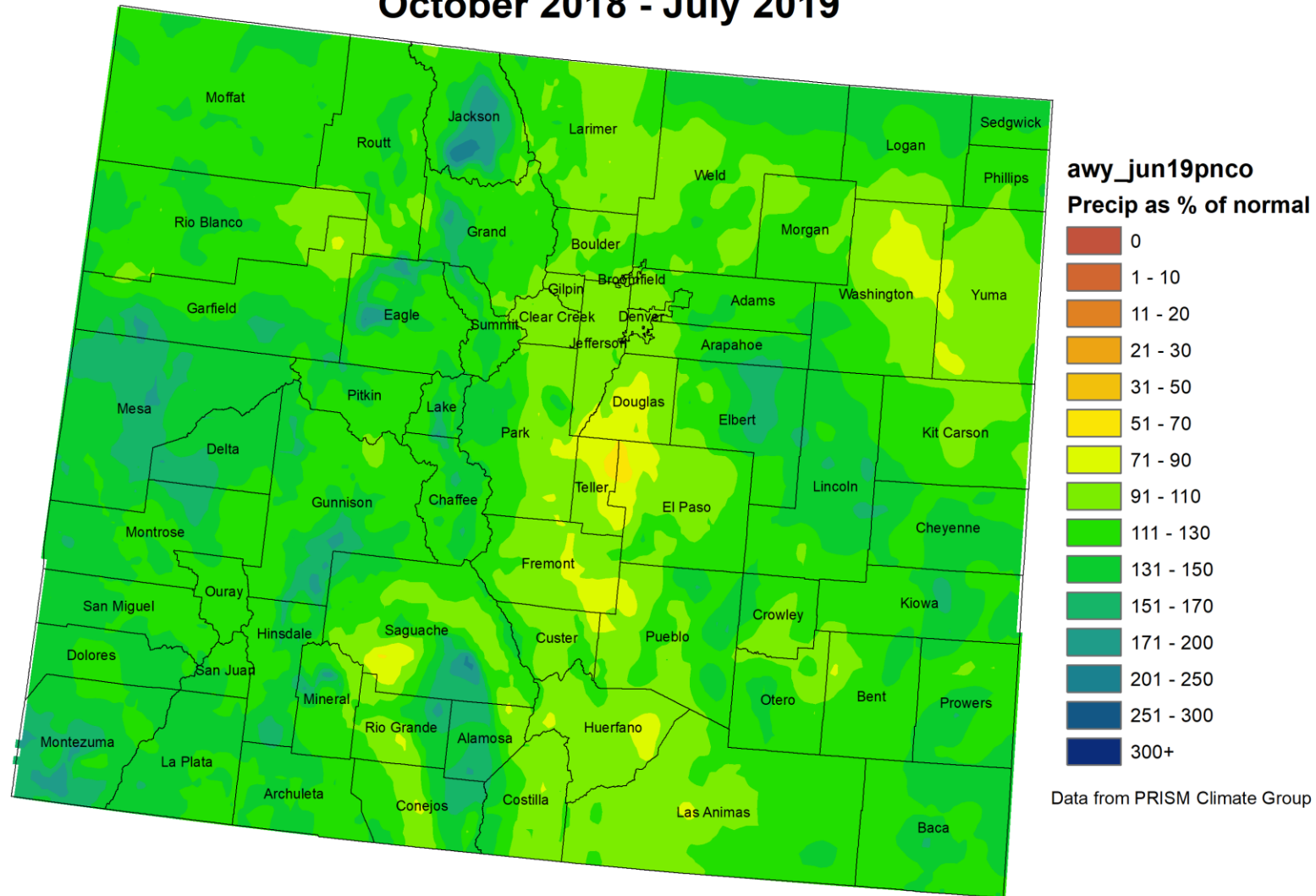


## Colorado - Precipitation

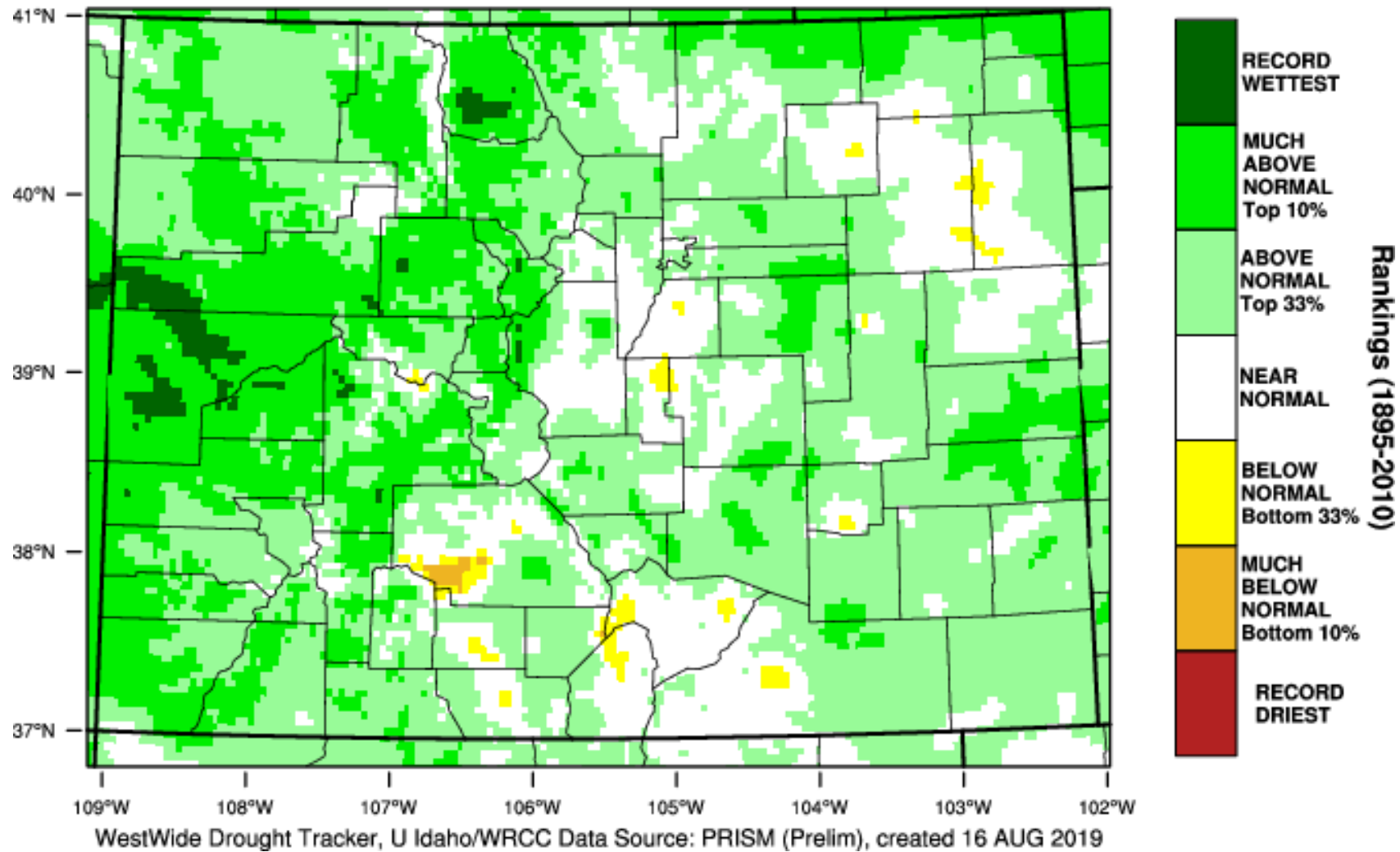
July 2019 Percentile



# Colorado Water Year 2019 Precipitation as a Percentage of Normal October 2018 - July 2019

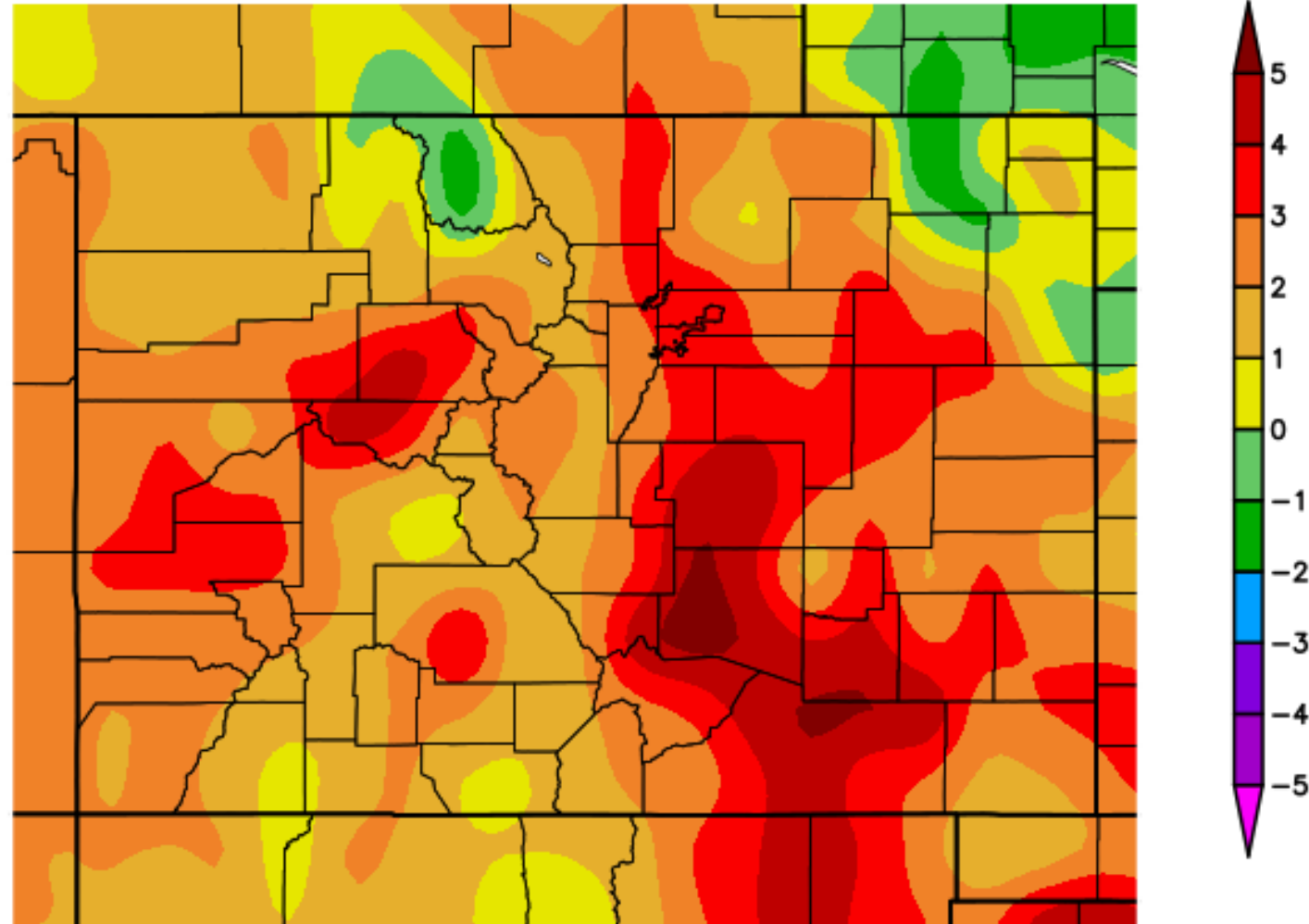


# Colorado - Precipitation October-July 2019 Percentile





# Departure from Normal Temperature (F) 8/1/2019 – 8/25/2019



Generated 8/26/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers



# 90-Degree Days

90 Degree Days	2019 Total	Since July 1st
Fort Collins	31	27
Boulder	33	29
Denver	30	34
		26
		49
		23
		34
		46
		49
Cortez	45	43
Dillon	0	0



**NWS Pueblo**   
@NWSPueblo

The temperature has met or exceeded 99 degrees in Pueblo the last 6 days (Aug 15-20). This is the latest 3, 4, 5, and 6 day stretch of 99+ degree days at Pueblo Memorial Airport since data collection began in 1954.  
[#cowx](#)

7:05 PM · Aug 20, 2019 · [Twitter Web App](#)



# Daily records

(Water year thus far:  
Oct 1 – Aug 21)

Weather Record Broken	Record broken for a day	Record broken for a month
Highest max temperature	234	5
Highest min temperature	940	37
Lowest max temperature	1373	20
Lowest min temperature	718	5
Precipitation	1241	45
Snowfall	364	9

Source: <https://www.ncdc.noaa.gov/cdo-web/datatools/records>

**Note: we are currently investigating the observation of 115F at John Martin Dam on July 20, which if confirmed would be a new state record for maximum temperature**





Compare to  
last water  
year:

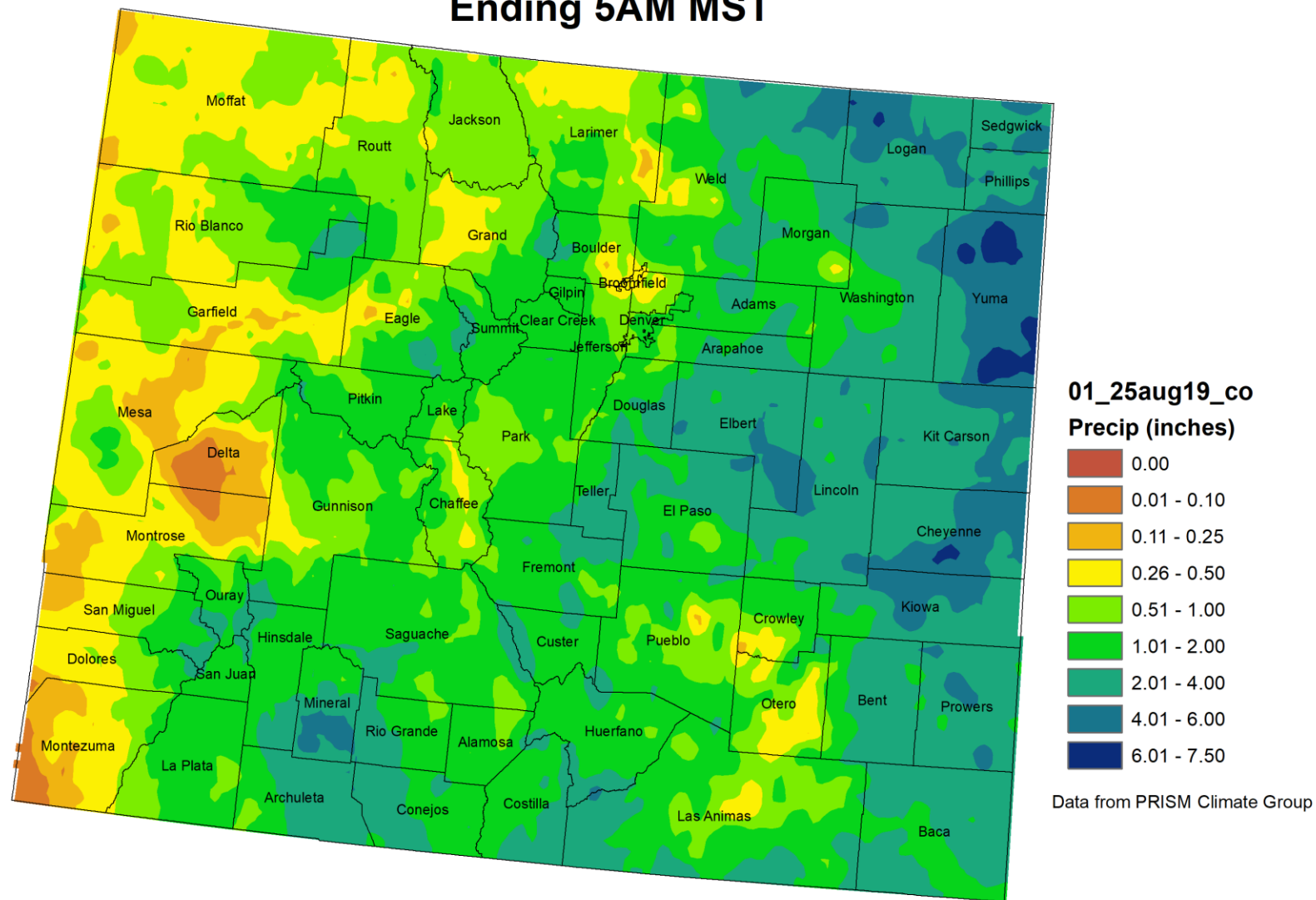
NUMBER OF DAILY AND MONTHLY STATION RECORDS BROKEN in CO

Weather Record Broken	Record broken for a day	Record broken for a month
Highest Max Temperature	1,696	22
Highest Min Temperature	2,971	100
Lowest Max Temperature	560	0
Lowest Min Temperature	292	0
Highest Precipitation	786	17
Highest Snowfall	196	2

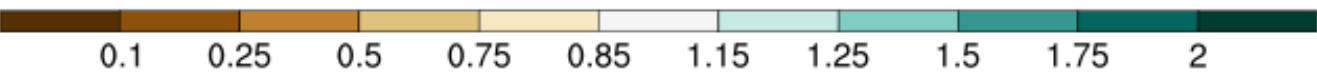
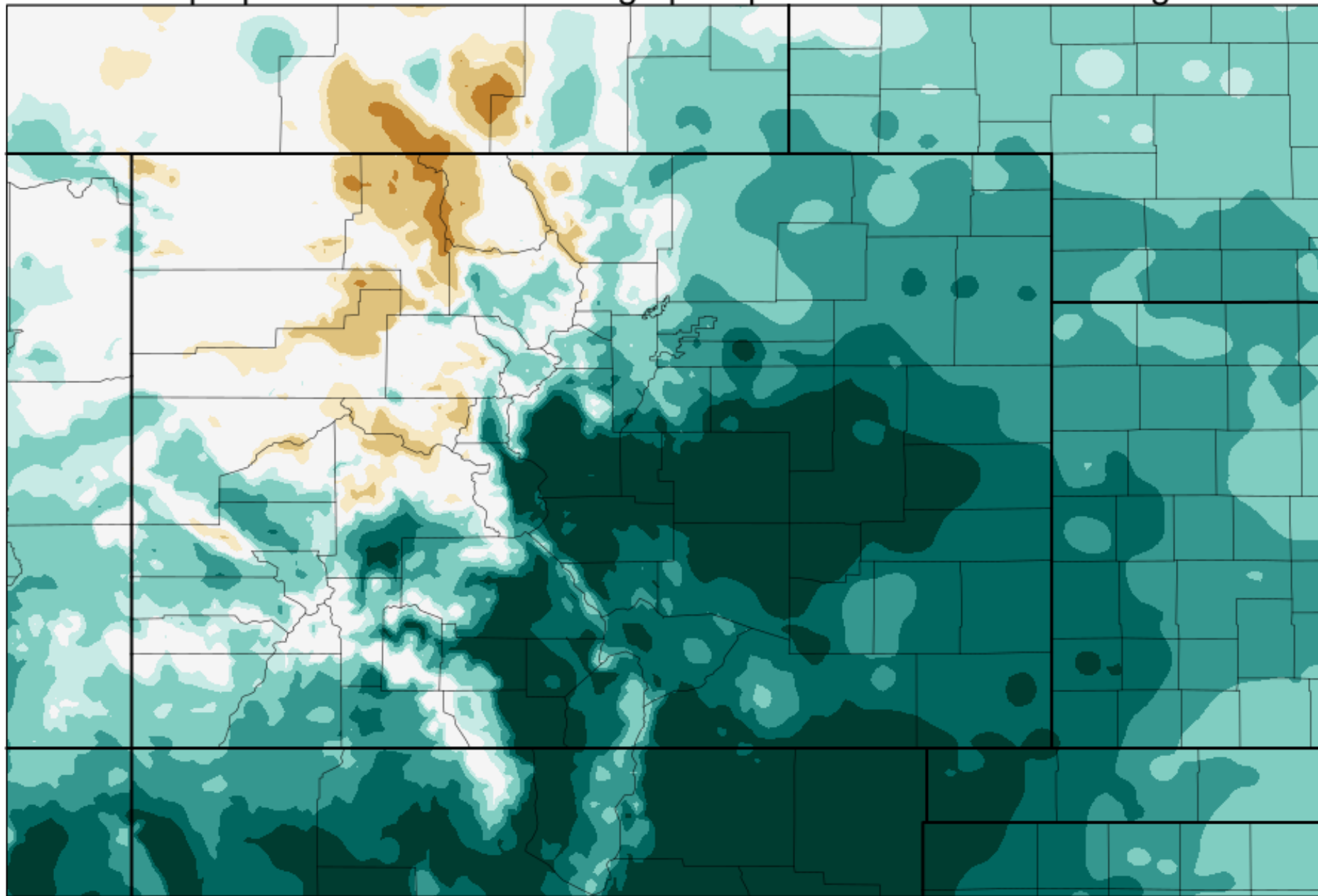
From NOAA NCEP's Select U.S. Records: [www.ncdc.noaa.gov/extremes/records](http://www.ncdc.noaa.gov/extremes/records)



# Colorado Month to Date Precipitation 1 - 25 August 2019 Ending 5AM MST



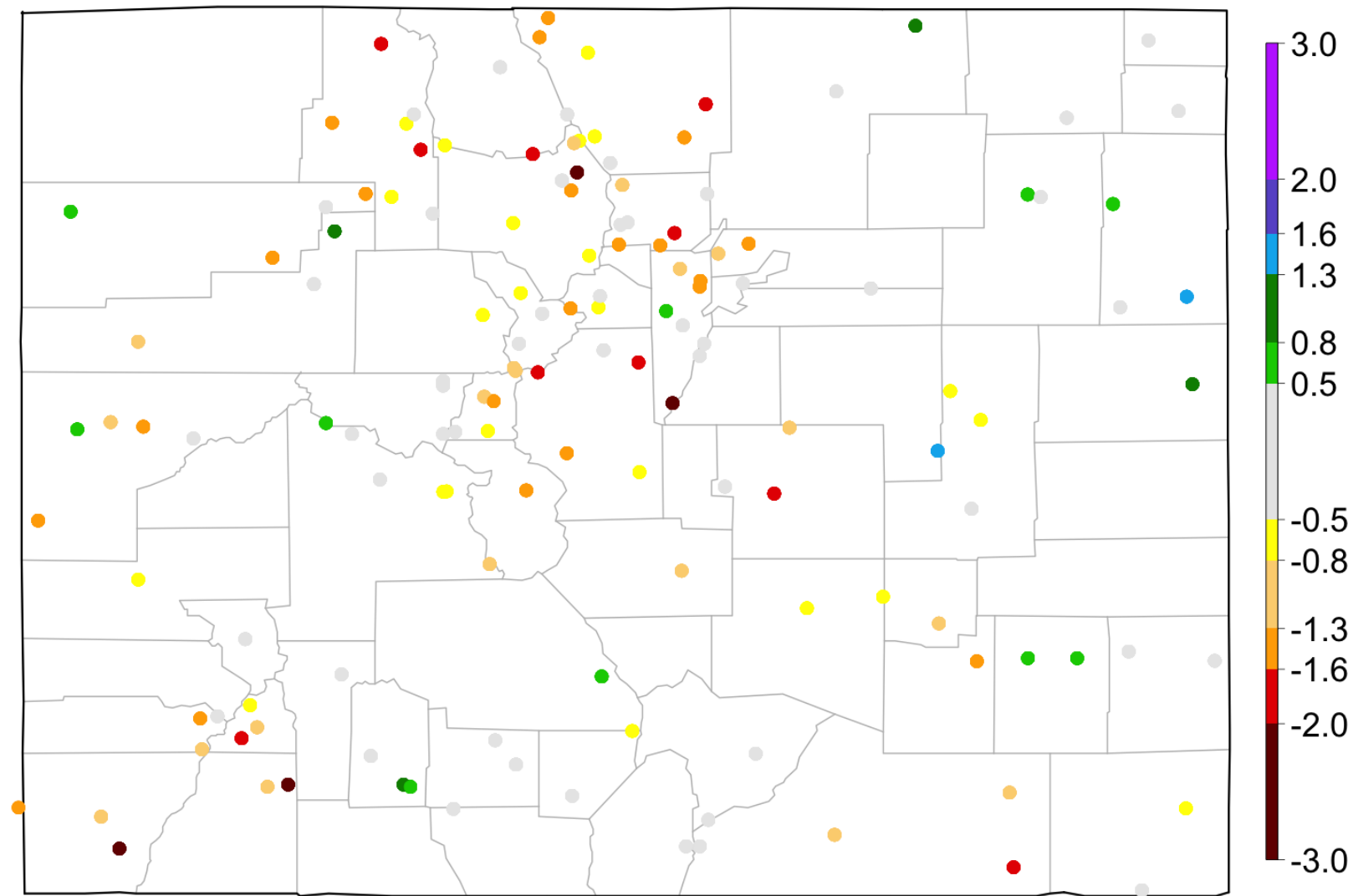
# PRISM proportion of annual average precipitation in this month: August



Proportion of precip relative to 1/12th



# 30-day SPI: 7/26/2019 - 8/24/2019

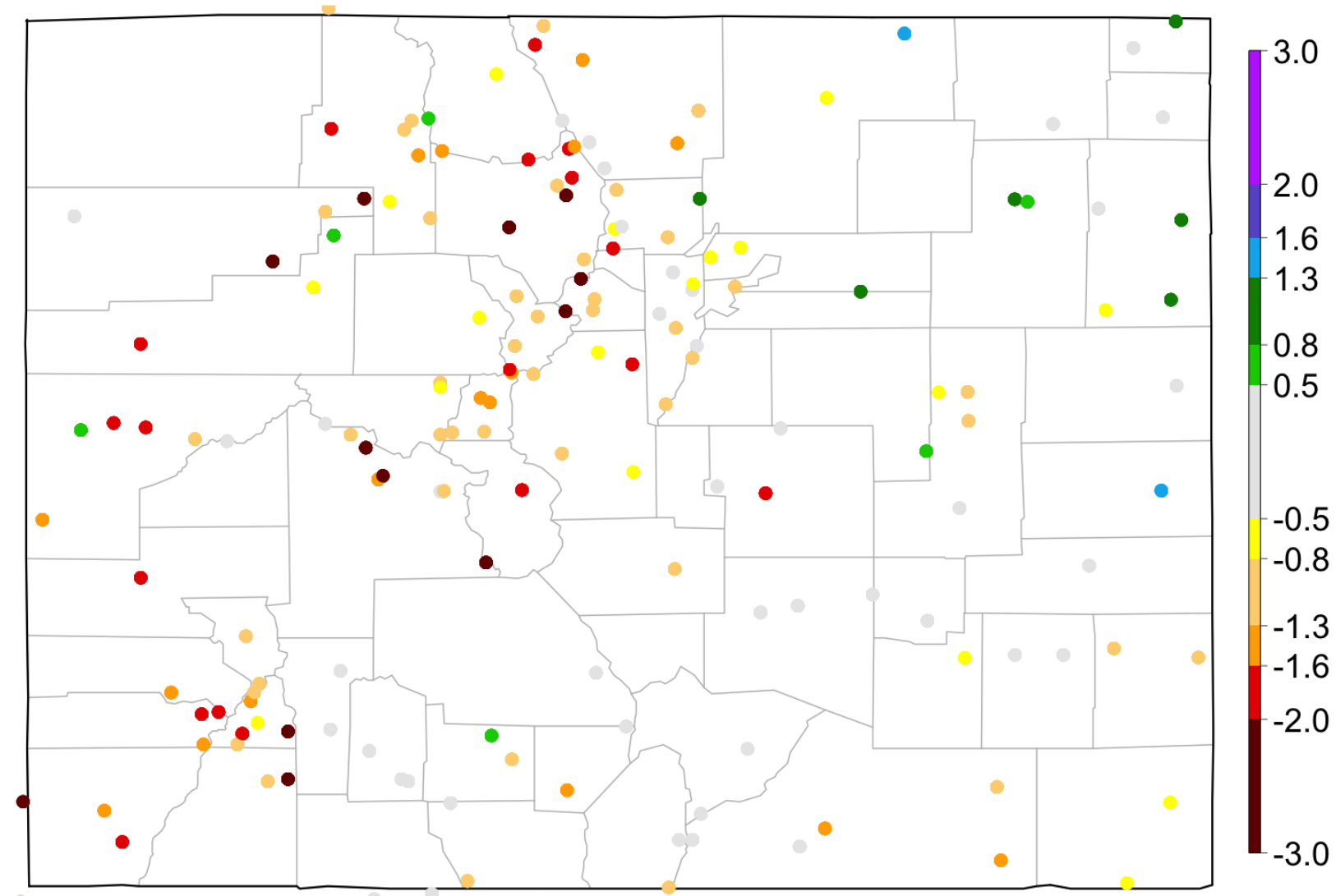


Data from High Plains Regional Climate Center and ACIS

[nl](#)



# 60-day SPI: 6/26/2019 - 8/24/2019

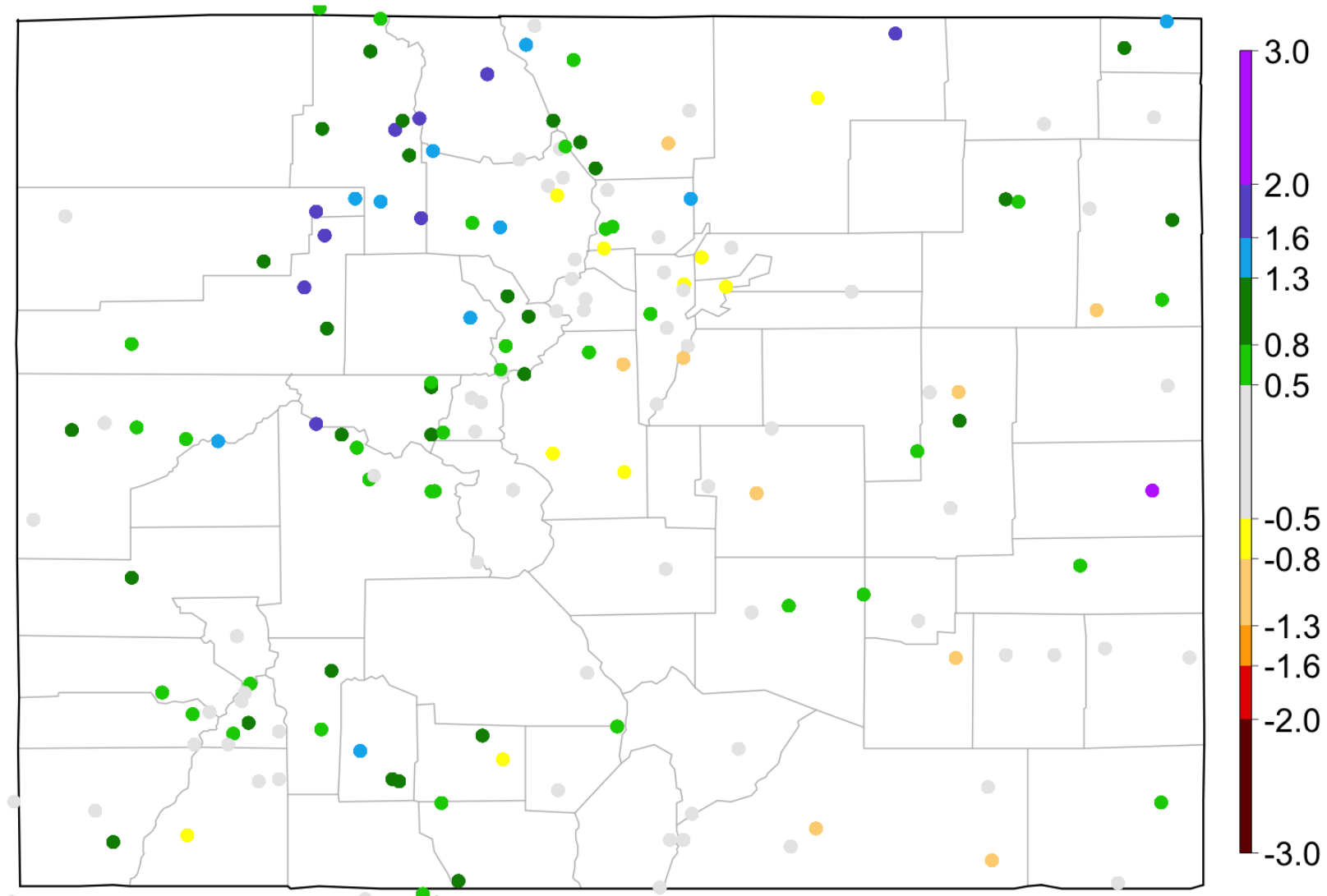


Data from High Plains Regional Climate Center and ACIS

[nl](#)



# 120-day SPI: 4/27/2019 - 8/24/2019

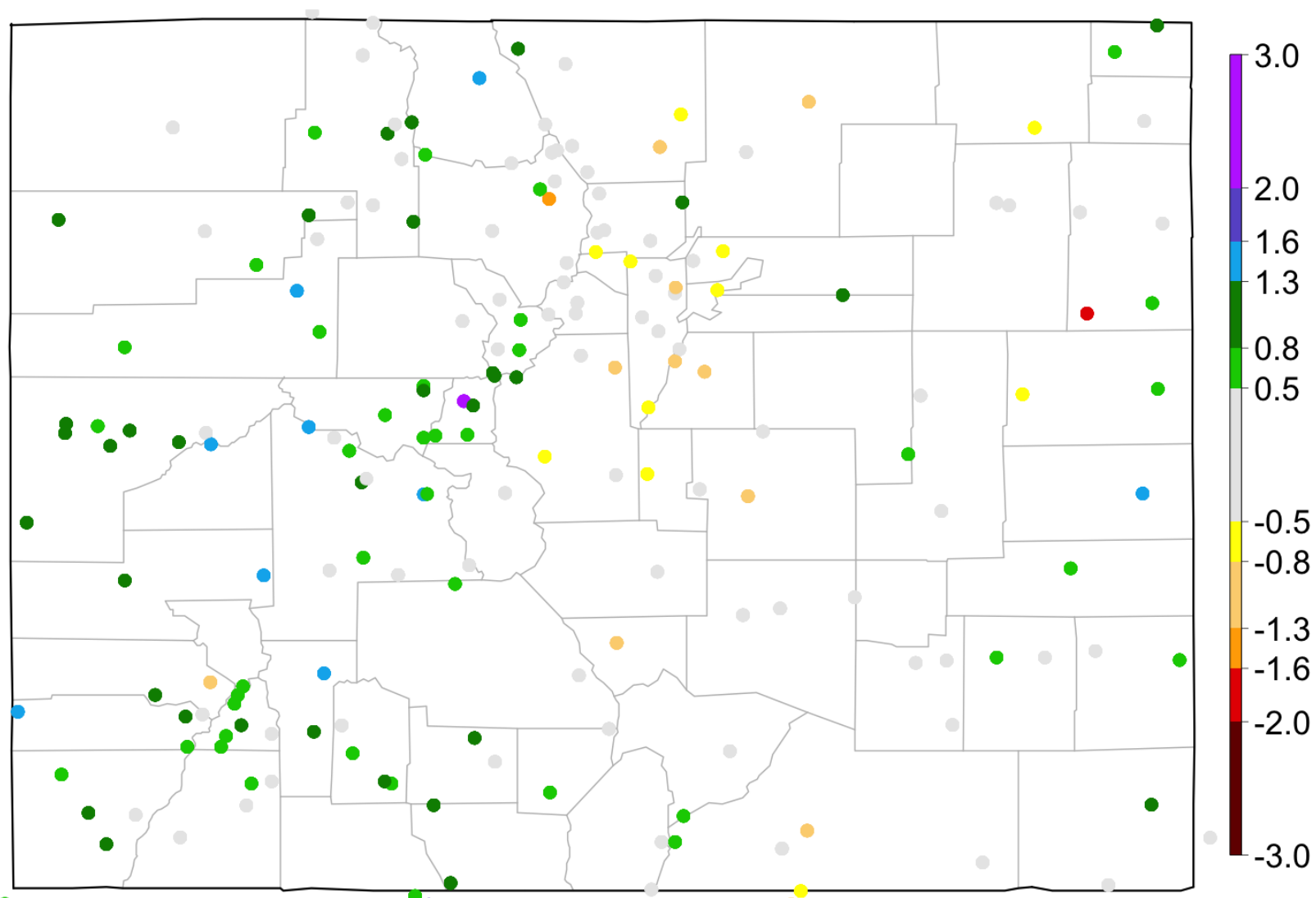


Data from High Plains Regional Climate Center and ACIS

[nl](#)



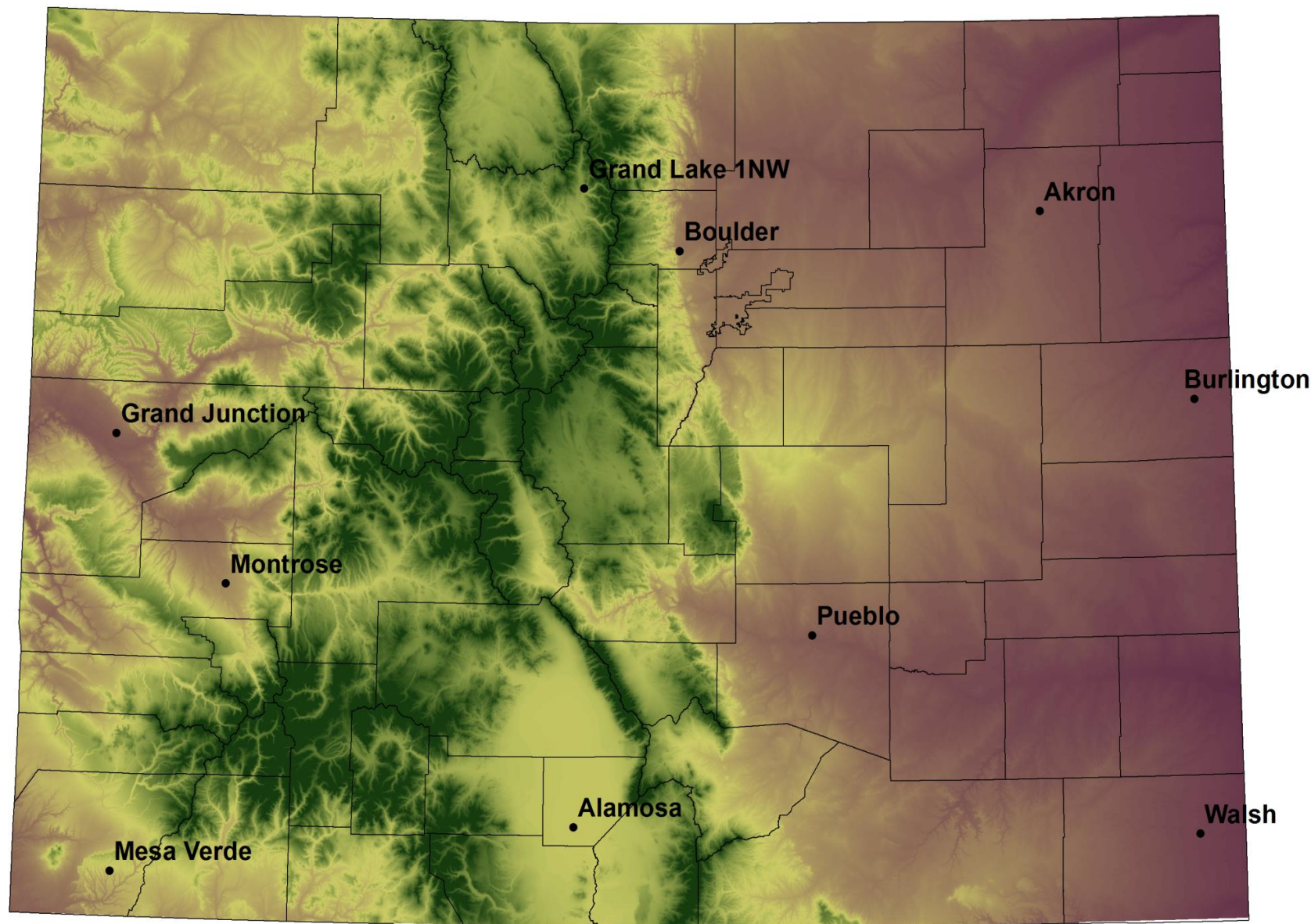
# 12-month SPI: 8/25/2018 - 8/24/2019



Data from High Plains Regional Climate Center and ACIS



## NWS Cooperative Stations for WATF

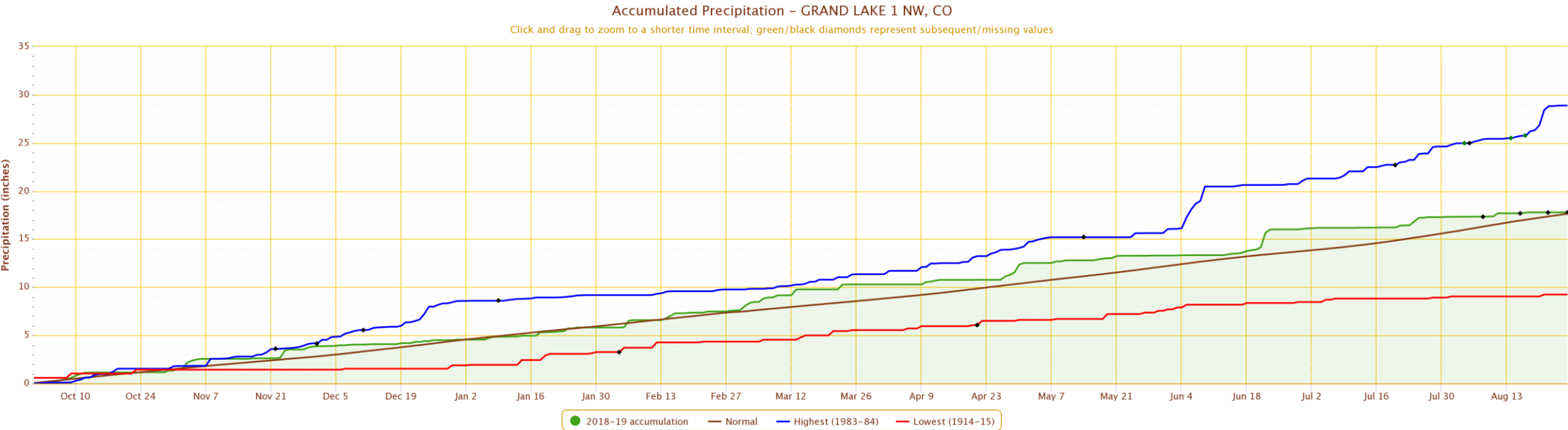


Water Year 2019 –  
Station Updates





# Grand Lake



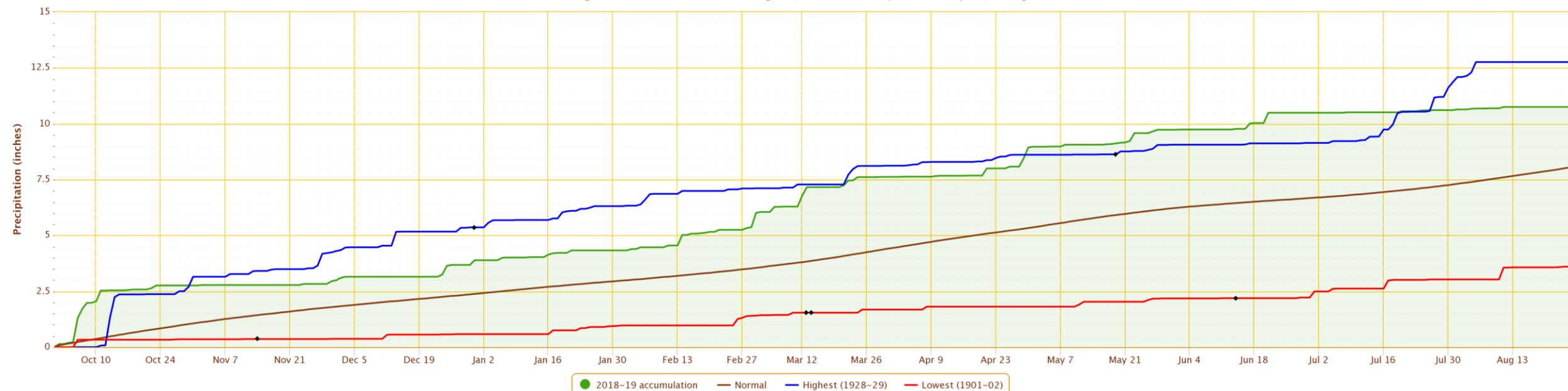
Powered by ACIS



# Grand Junction

Accumulated Precipitation – GRAND JUNCTION WALKER FIELD, CO

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

5<sup>th</sup> wettest on record through  
this point in the water year

But July-August have been  
2<sup>nd</sup> driest on record...

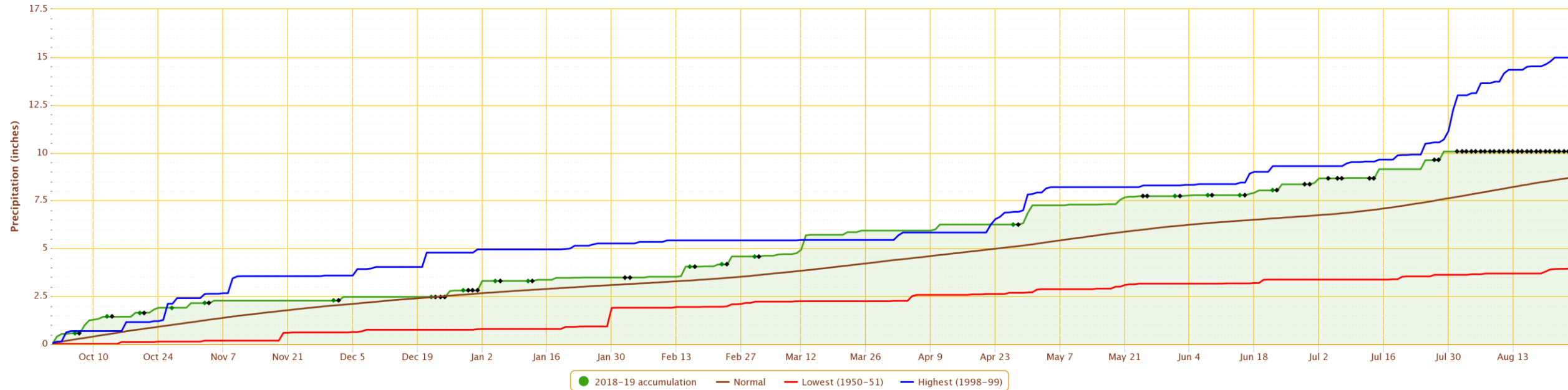
2.7" above average



# Montrose

Accumulated Precipitation – MONTROSE NO 2, CO

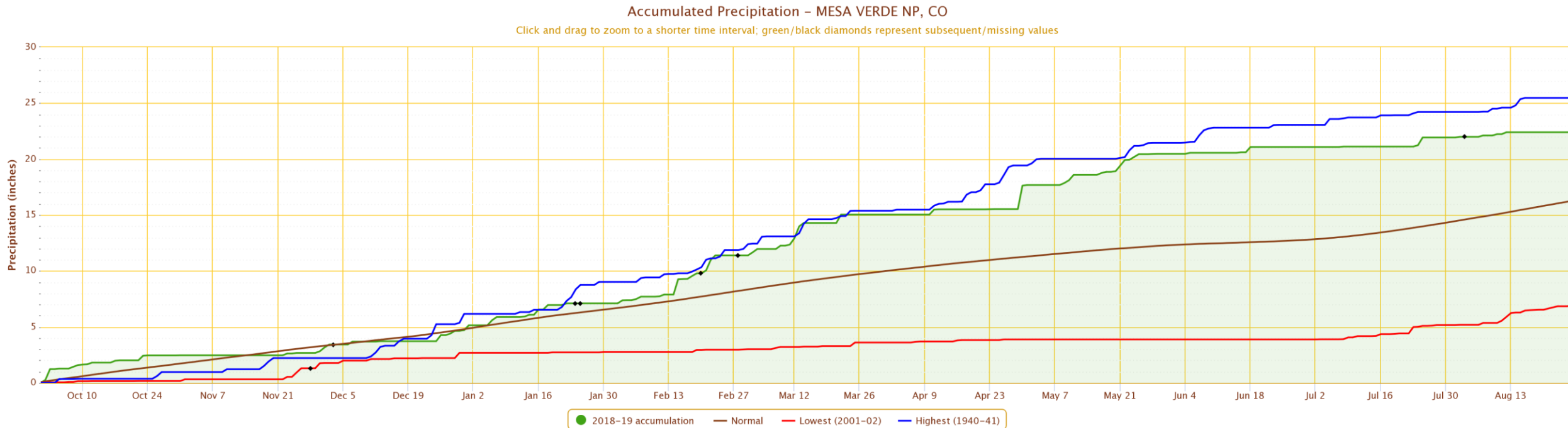
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS



# Mesa Verde NP



Powered by ACIS

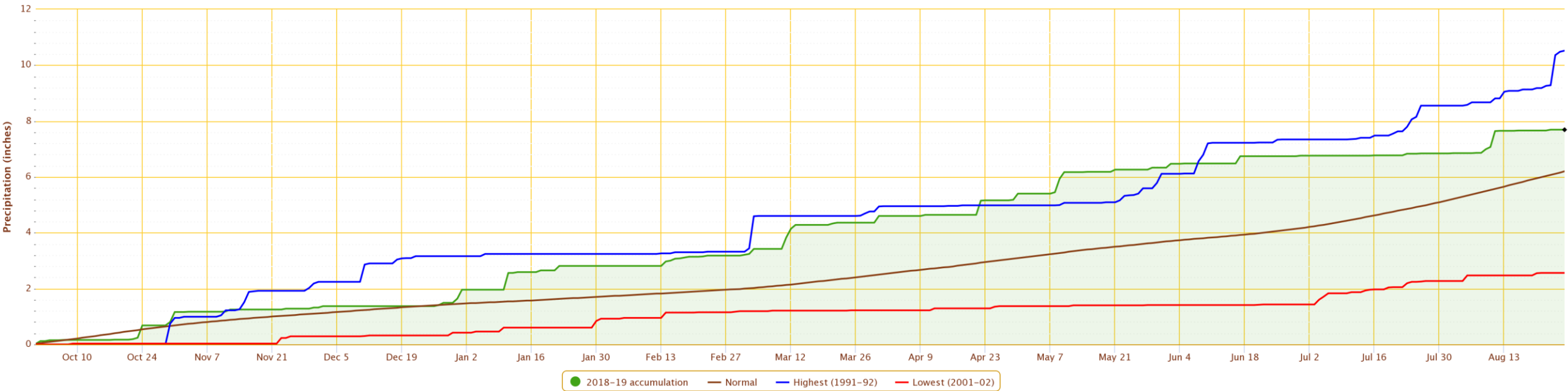
8<sup>th</sup> wettest on record through  
this point in the water year

6.1" above average



# Alamosa

Accumulated Precipitation – ALAMOSA SAN LUIS VALLEY REGIONAL AP, CO  
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

1.5" above average

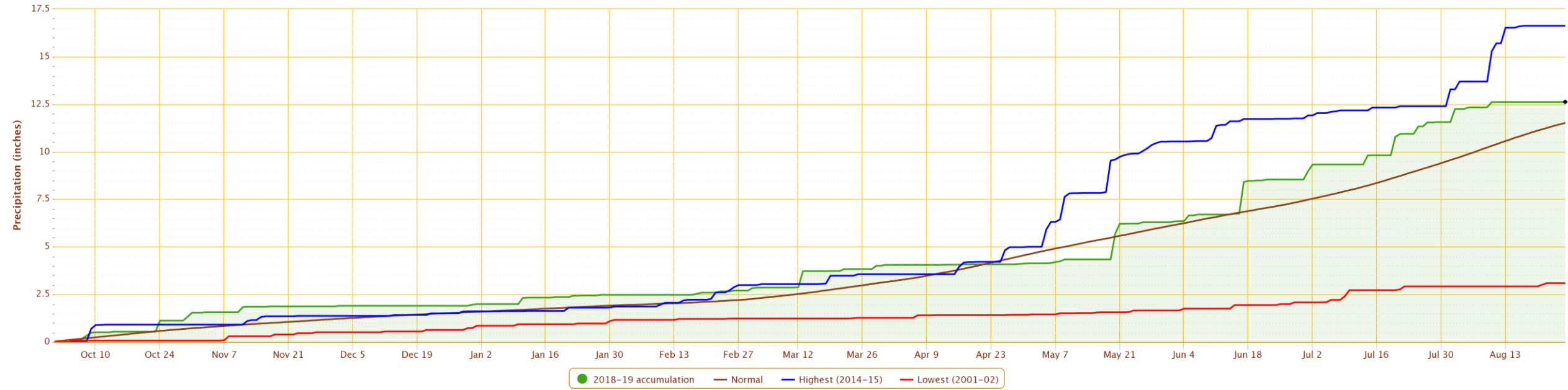




# Pueblo

## Accumulated Precipitation – PUEBLO MEMORIAL AP, CO

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



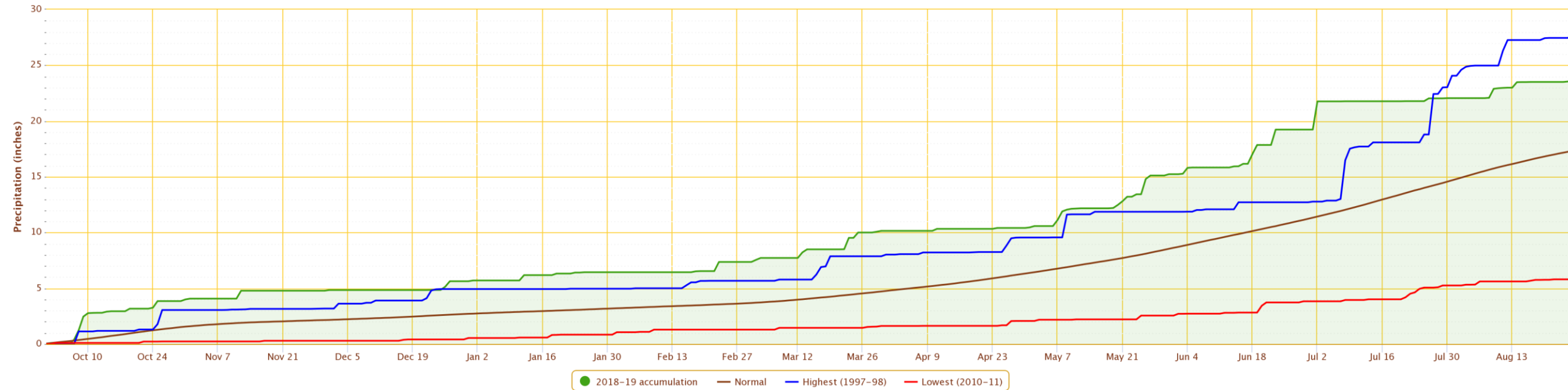
Powered by ACIS

1.1" above average



# Walsh

Accumulated Precipitation – WALSH 1 W, CO  
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

2<sup>nd</sup> wettest on record through  
this point in the water year

But 4.1" below average since  
July 3

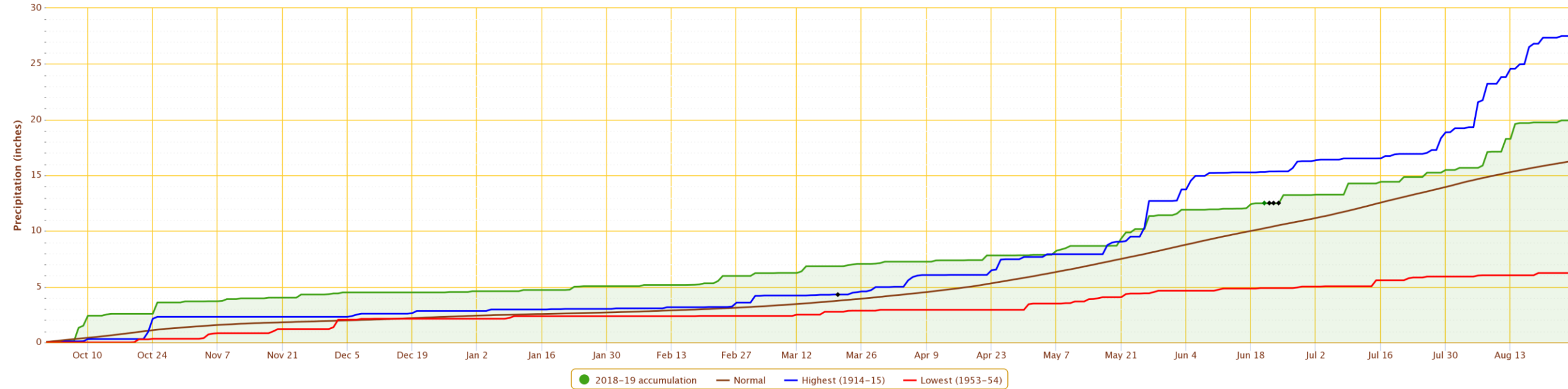
6.2" above average



# Burlington

## Accumulated Precipitation – BURLINGTON, CO

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



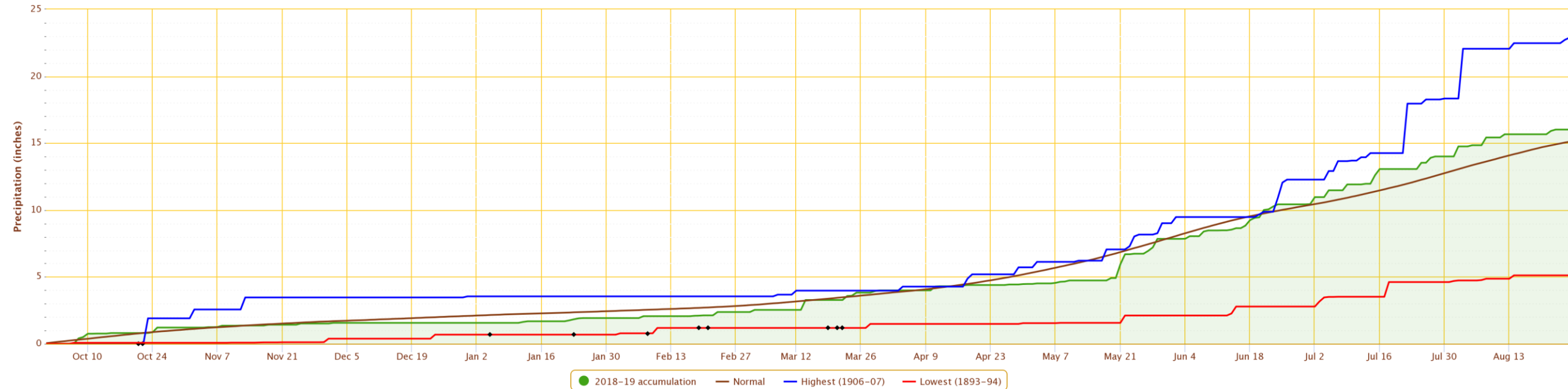
Powered by ACIS



# Akron

## Accumulated Precipitation - AKRON 4 E, CO

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



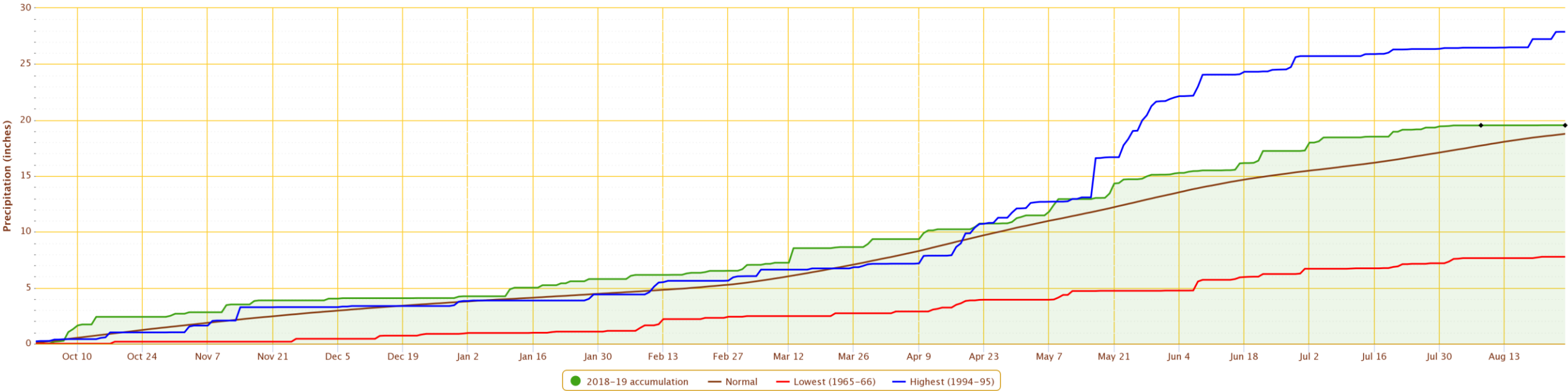
Powered by ACIS



# Boulder

Accumulated Precipitation – BOULDER, CO

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values

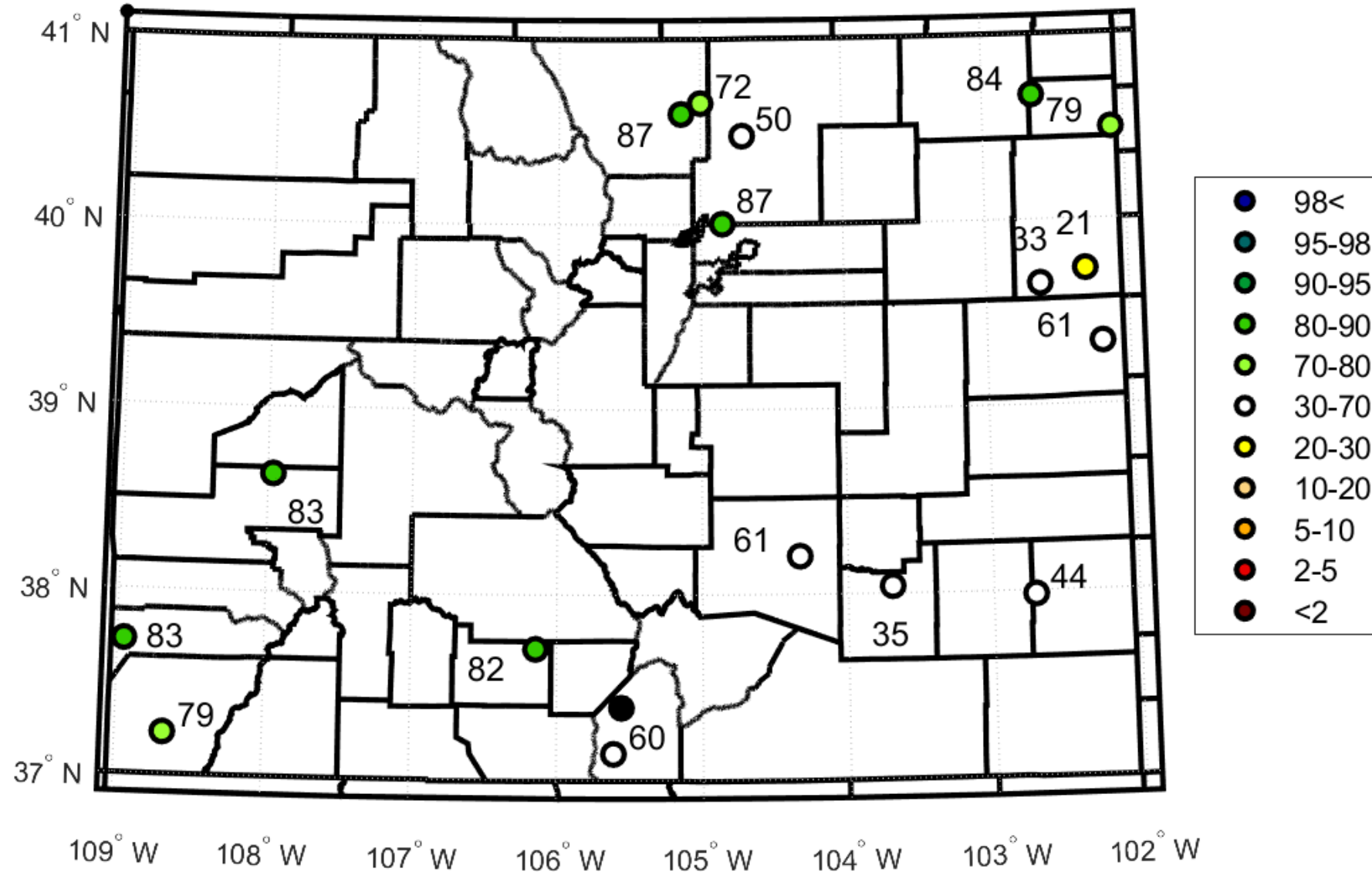


Powered by ACIS

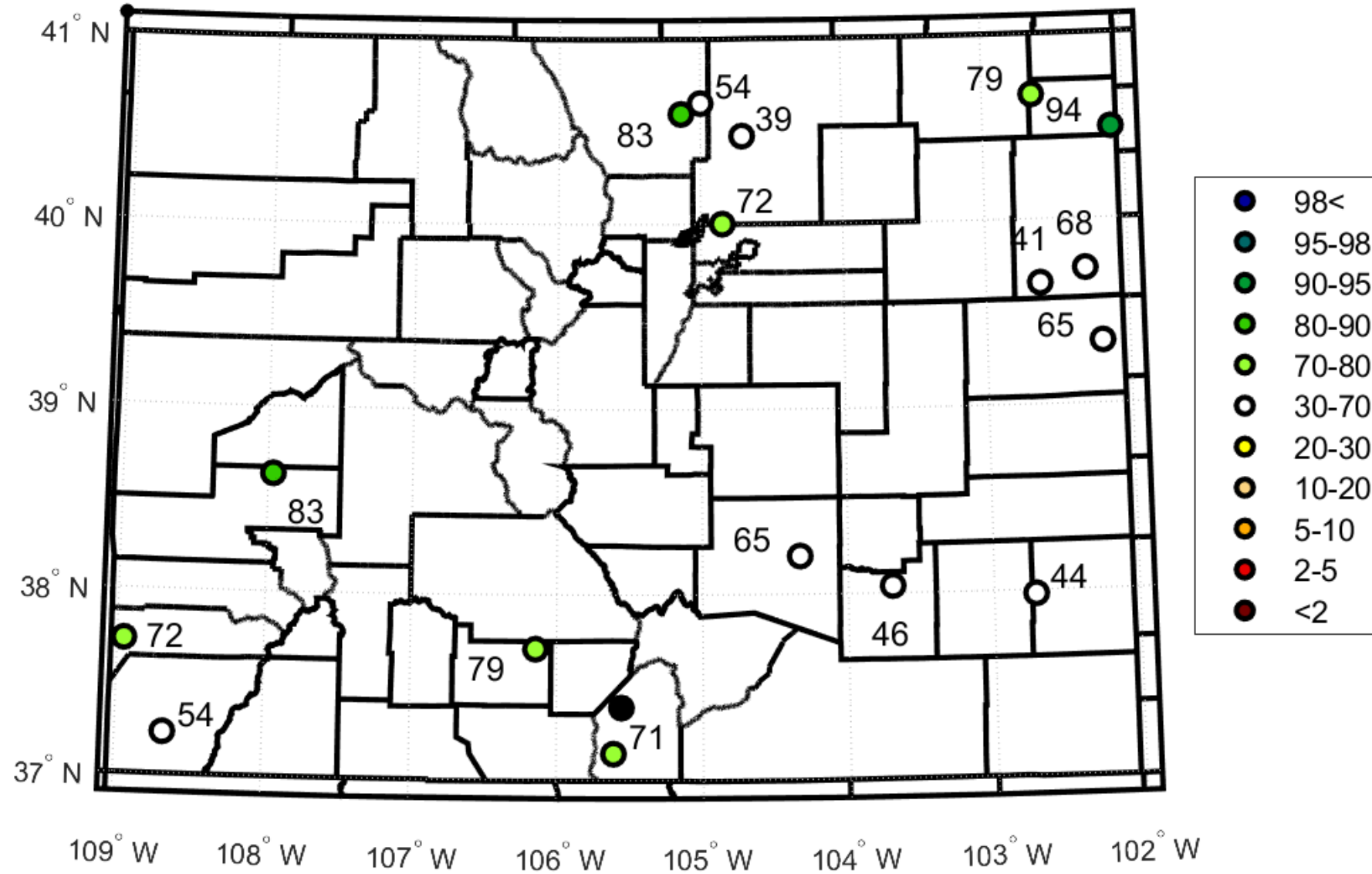




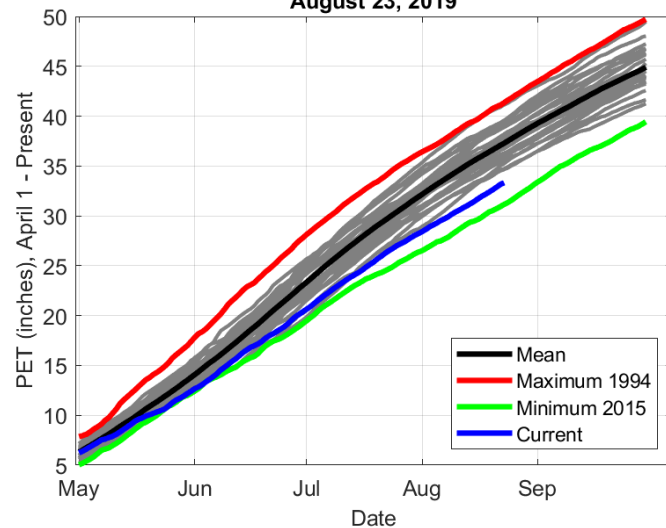
# Growing Season Water Balance (P/PET) Percentiles July 19, 2019



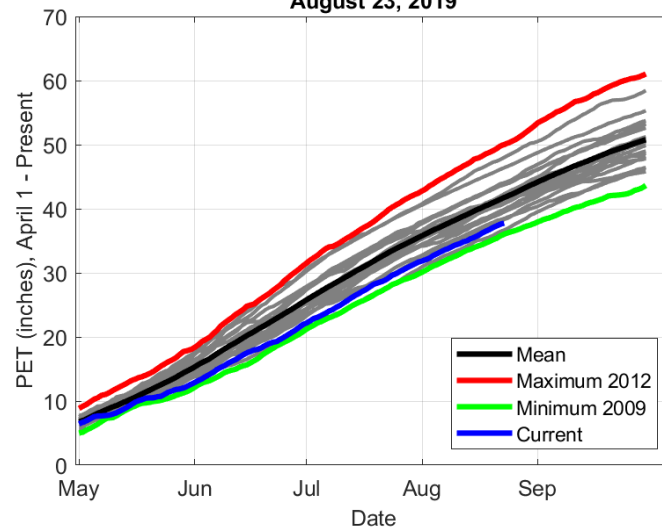
# Growing Season Water Balance (P/PET) Percentiles August 23, 2019



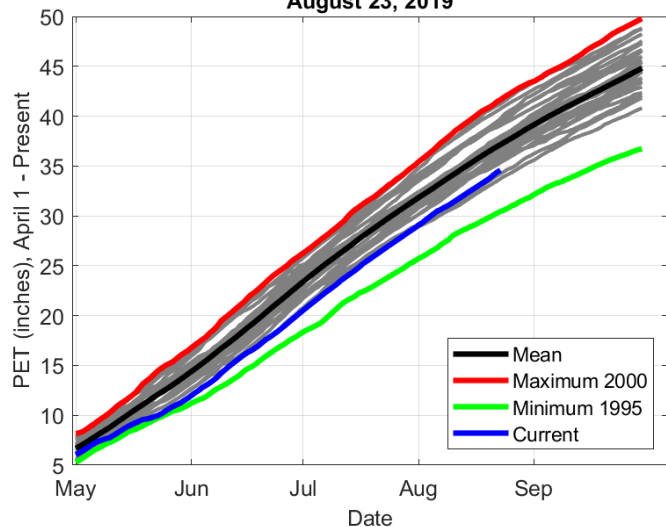
**Olathe Growing Season Evaporative Demand**  
August 23, 2019



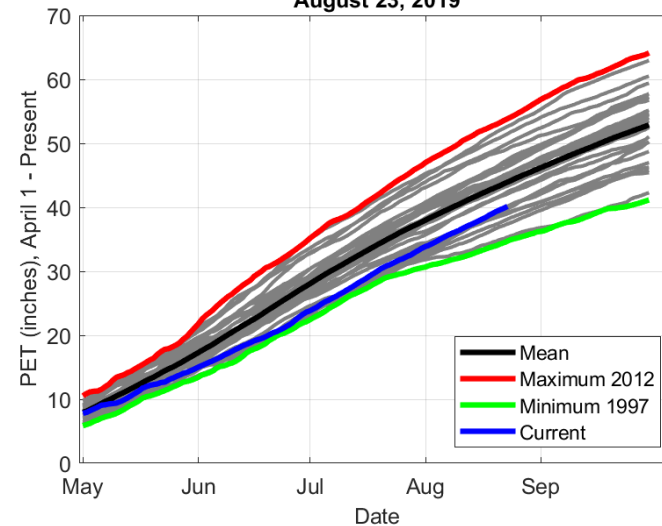
**Haxtun Growing Season Evaporative Demand**  
August 23, 2019



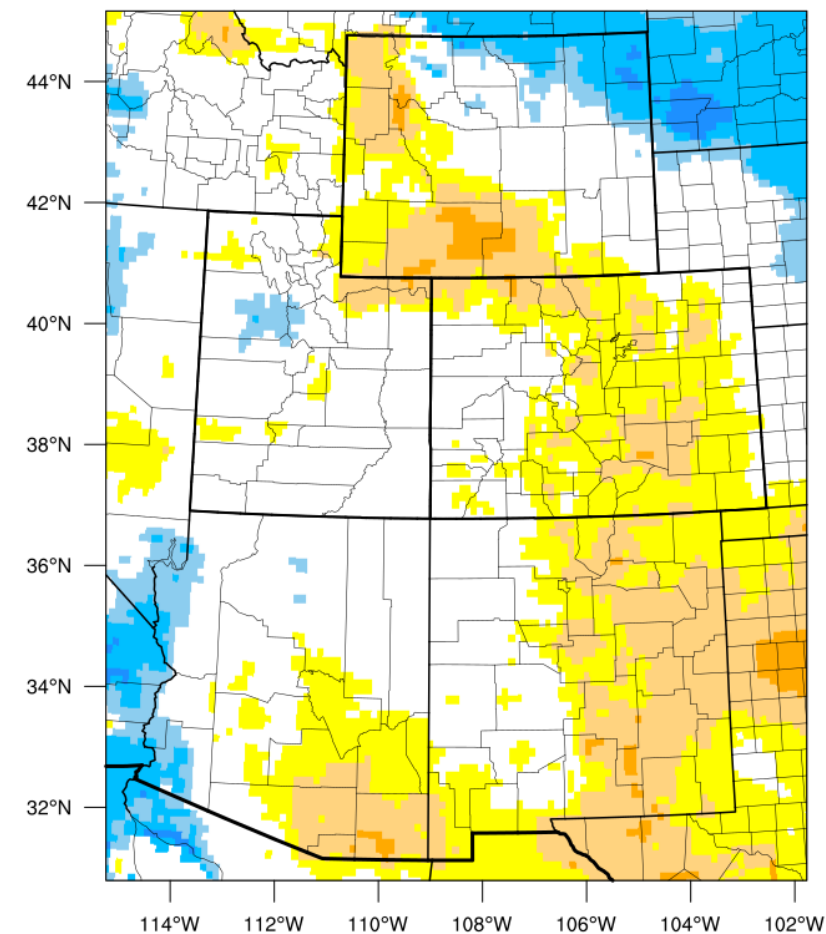
**Cortez Growing Season Evaporative Demand**  
August 23, 2019



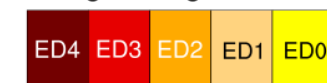
**Avondale Growing Season Evaporative Demand**  
August 23, 2019



**1-month EDDI categories for August 21, 2019**



**Drought categories**



**Wetness categories**



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

Generated by NOAA/ESRL/Physical Sciences Division







# Drought

National Drought

Colorado Drought

Colorado Drought Facts

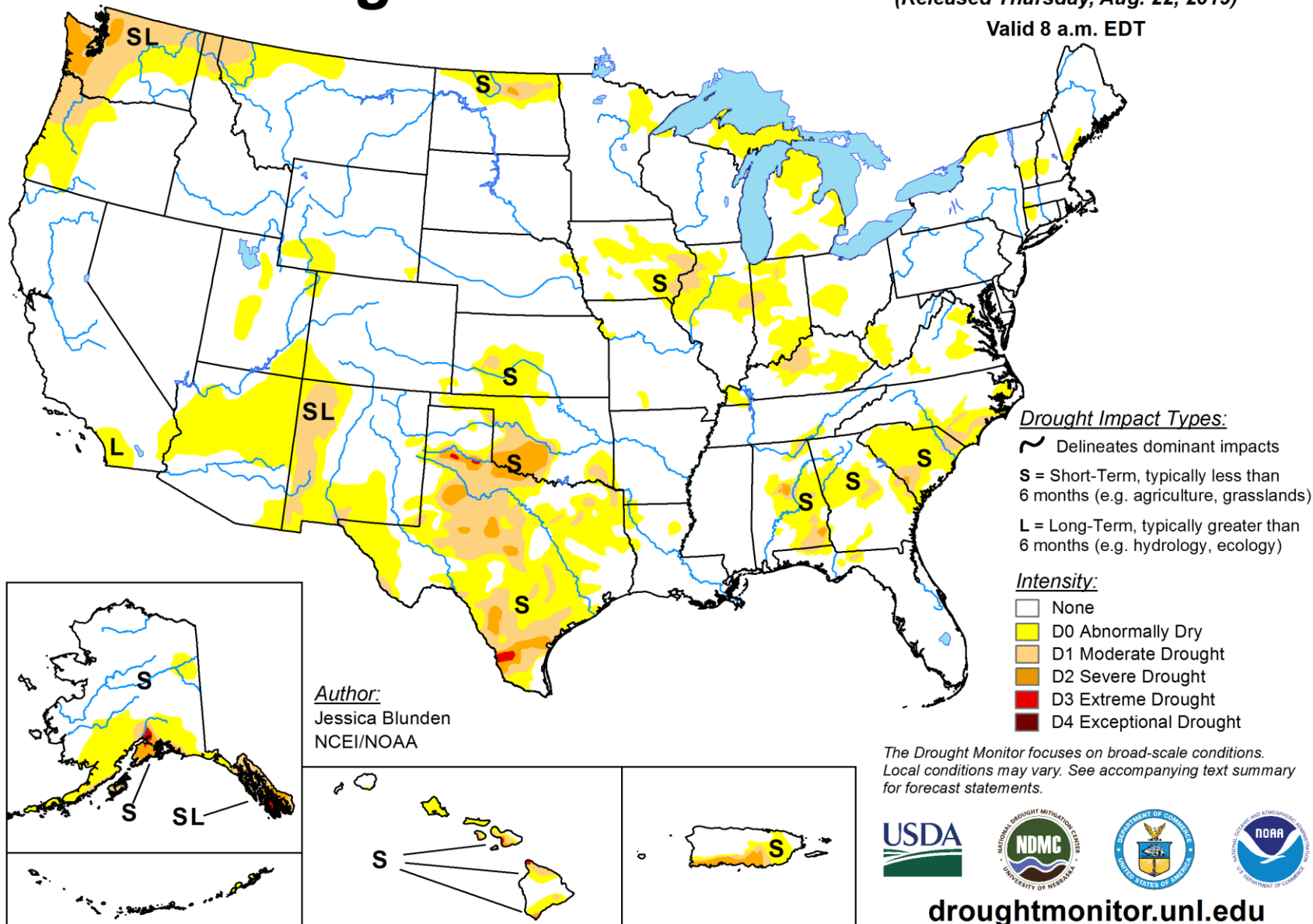


# U.S. Drought Monitor

August 20, 2019

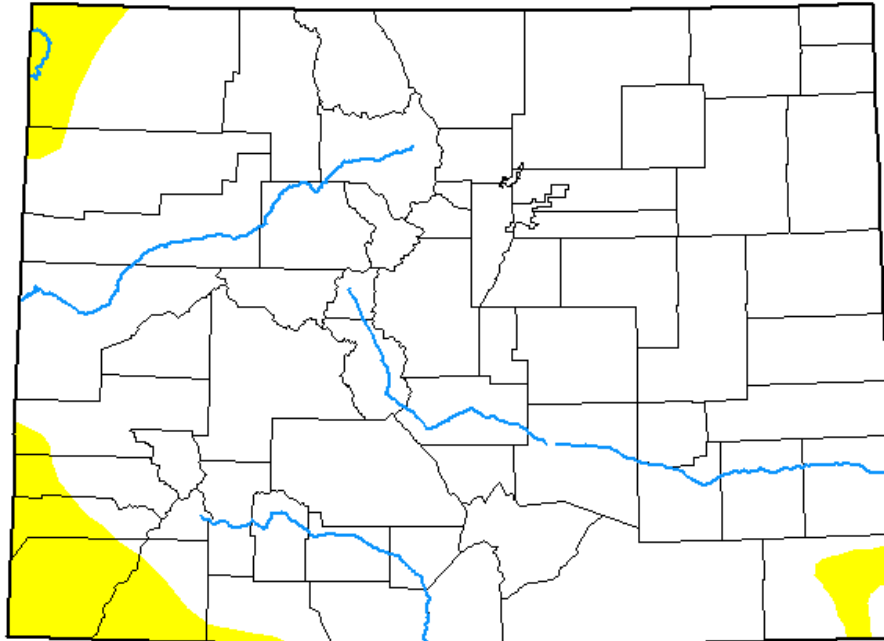
(Released Thursday, Aug. 22, 2019)

Valid 8 a.m. EDT





# U.S. Drought Monitor Colorado



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

*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	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

Author:

Jessica Blunden  
NCEI/NOAA



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



# Colorado Drought Monitor Facts

- Prior to May of this year:
  - Since the beginning of the US Drought Monitor, our state had never been completely free of D0 – D4.
  - Our previous record smallest amount of D0 occurred in May 2001, when only 0.13% of our state showed D0.
- As of May 28, 2019:
  - We became the last state to finally report a week of no D0-D4.
  - We had 8 straight weeks of an empty map, but that streak ended on July 23

Week	None	D0-D4
2019-05-21	99.99	0.01
2019-05-28	100.00	0.00
2019-06-04	100.00	0.00
2019-06-11	100.00	0.00
2019-06-18	100.00	0.00
2019-06-25	100.00	0.00
2019-07-02	100.00	0.00
2019-07-09	100.00	0.00
2019-07-16	100.00	0.00
2019-07-23	96.93	3.07





## Outlook

Next 7 days

8-14 day Outlook

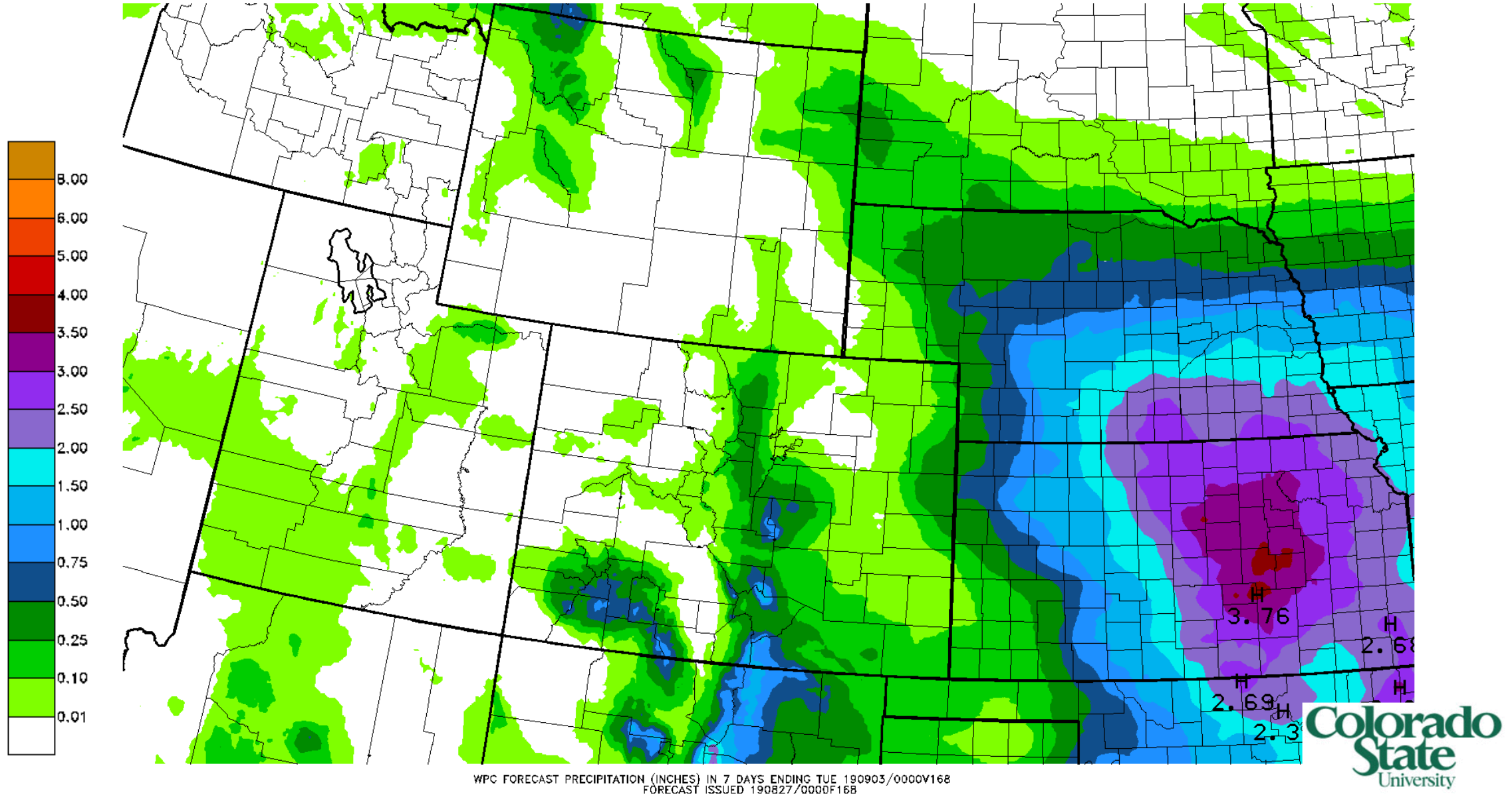
CPC Outlooks

Precipitation Projections

What is happening with El Niño?



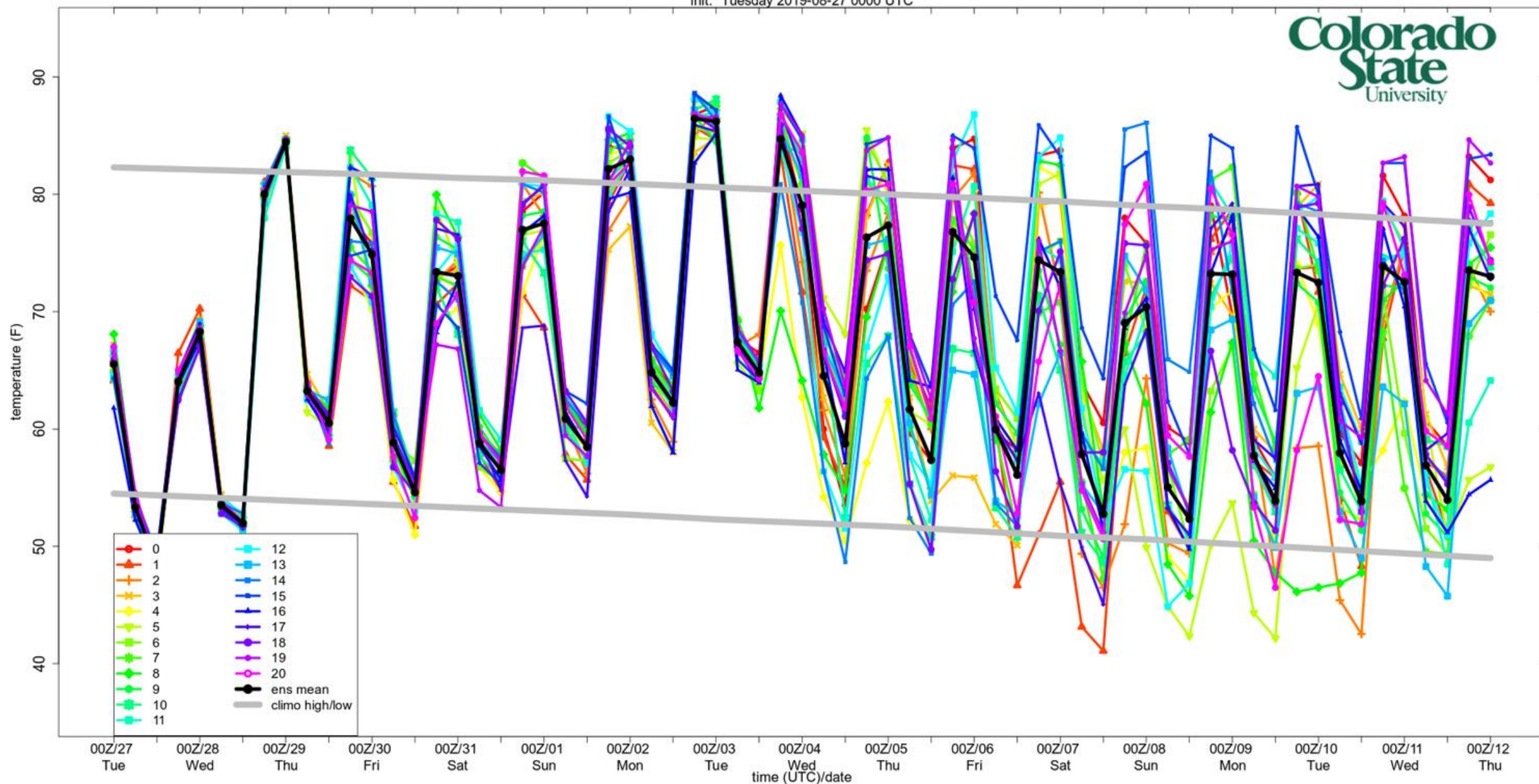
# NOAA 7-day precip forecast



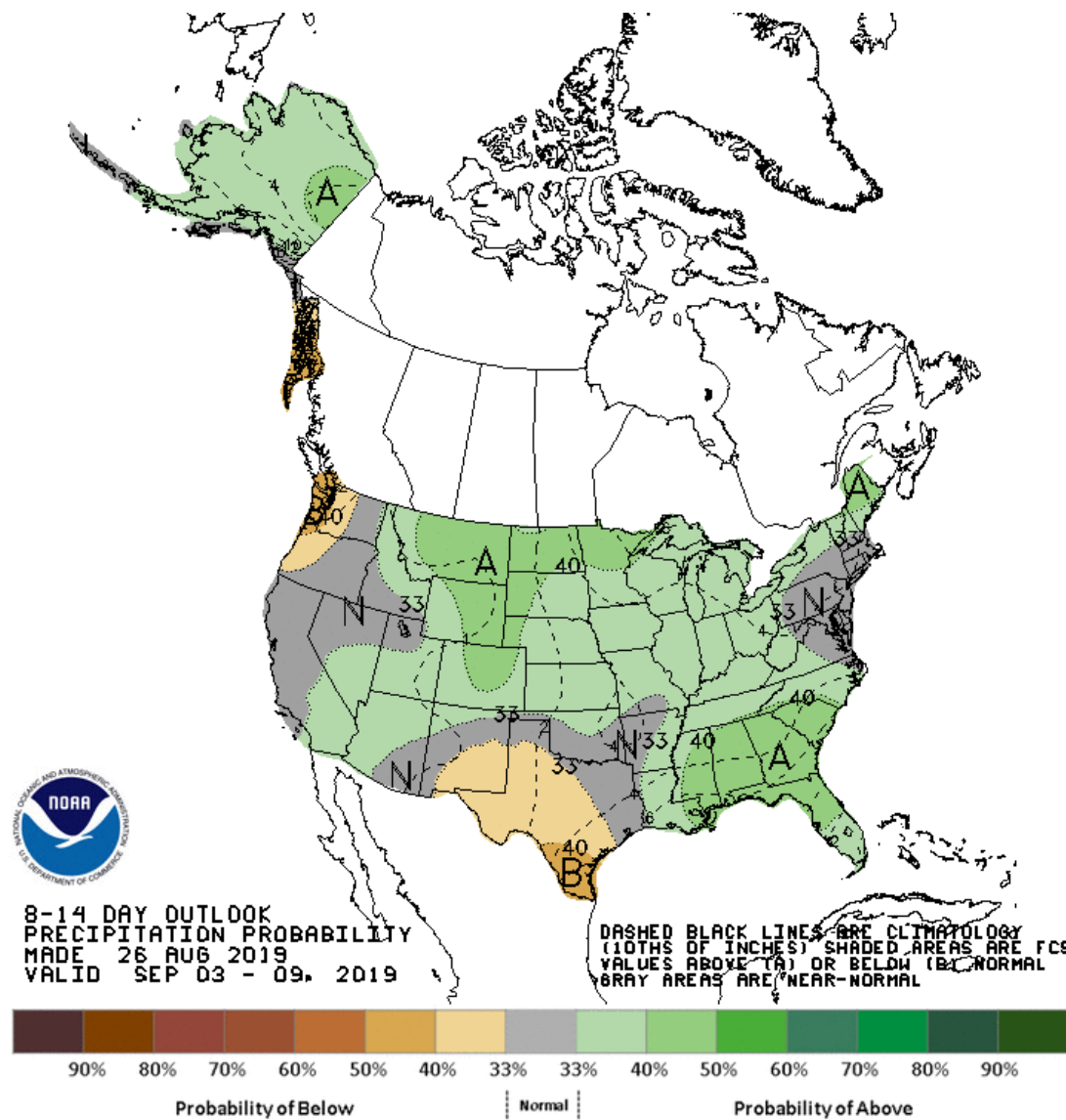
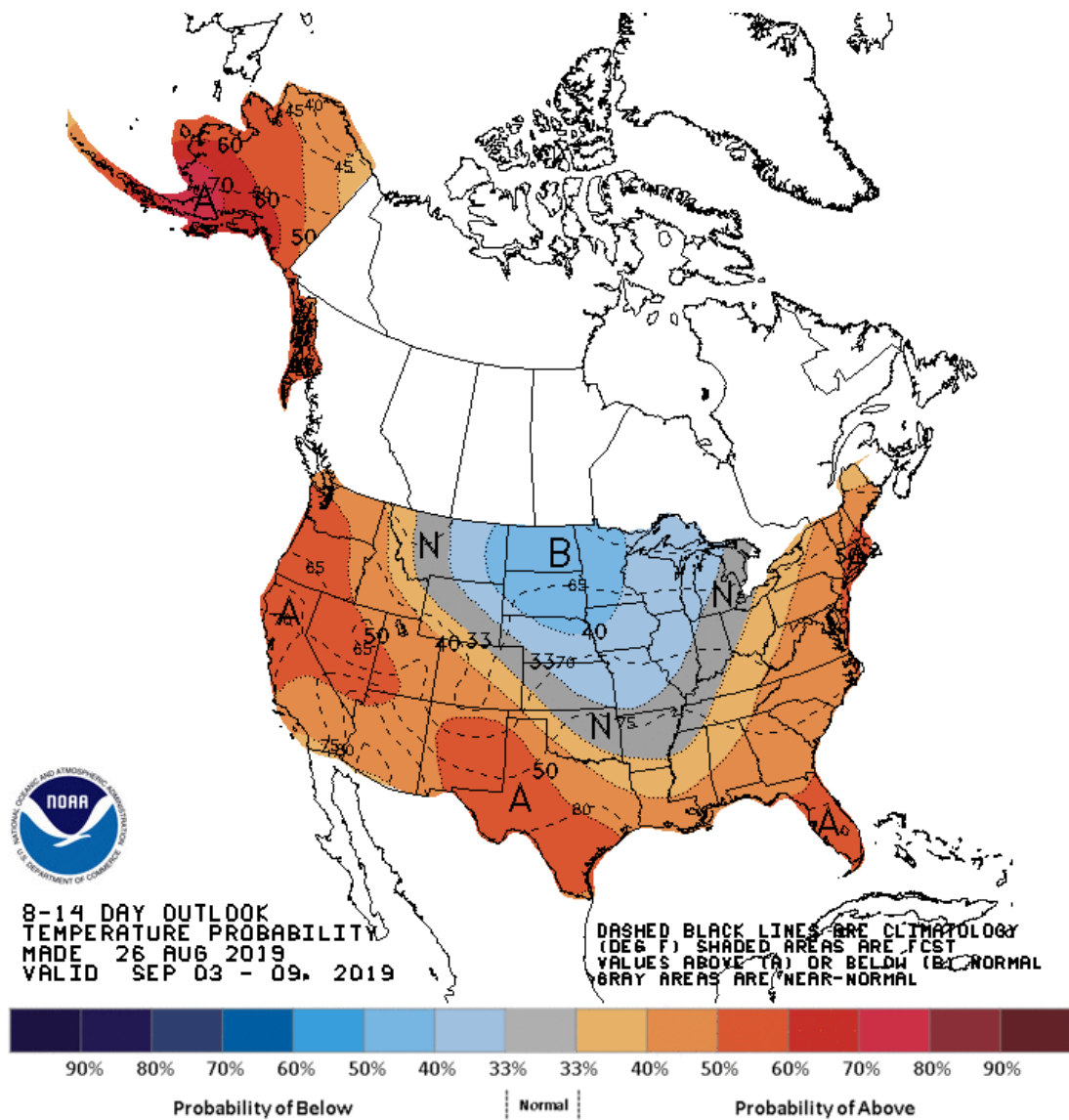


# NCEP GEFS 2-m temperature at Fort Collins

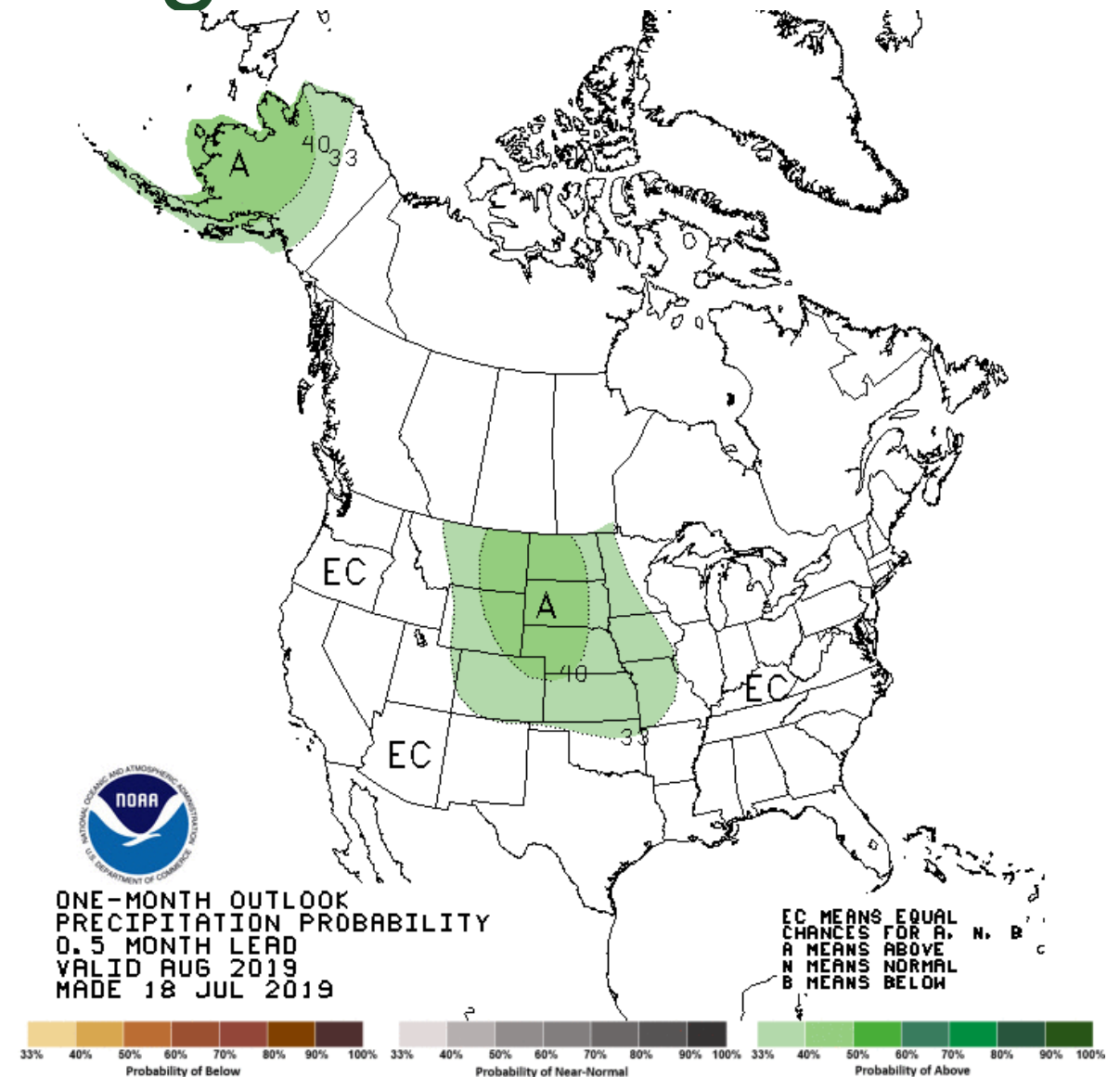
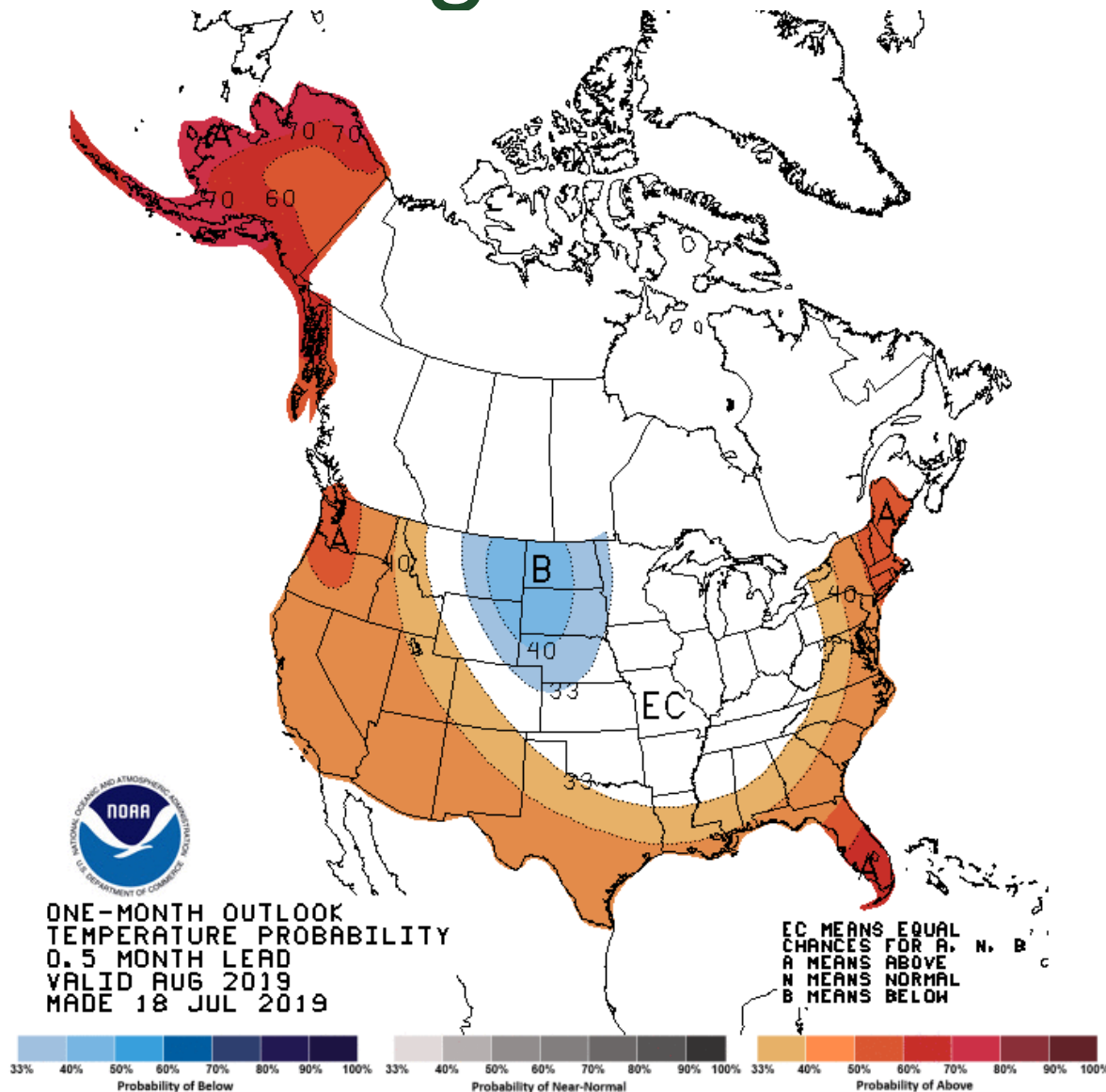
init: Tuesday 2019-08-27 0000 UTC



# 8-14 day outlook

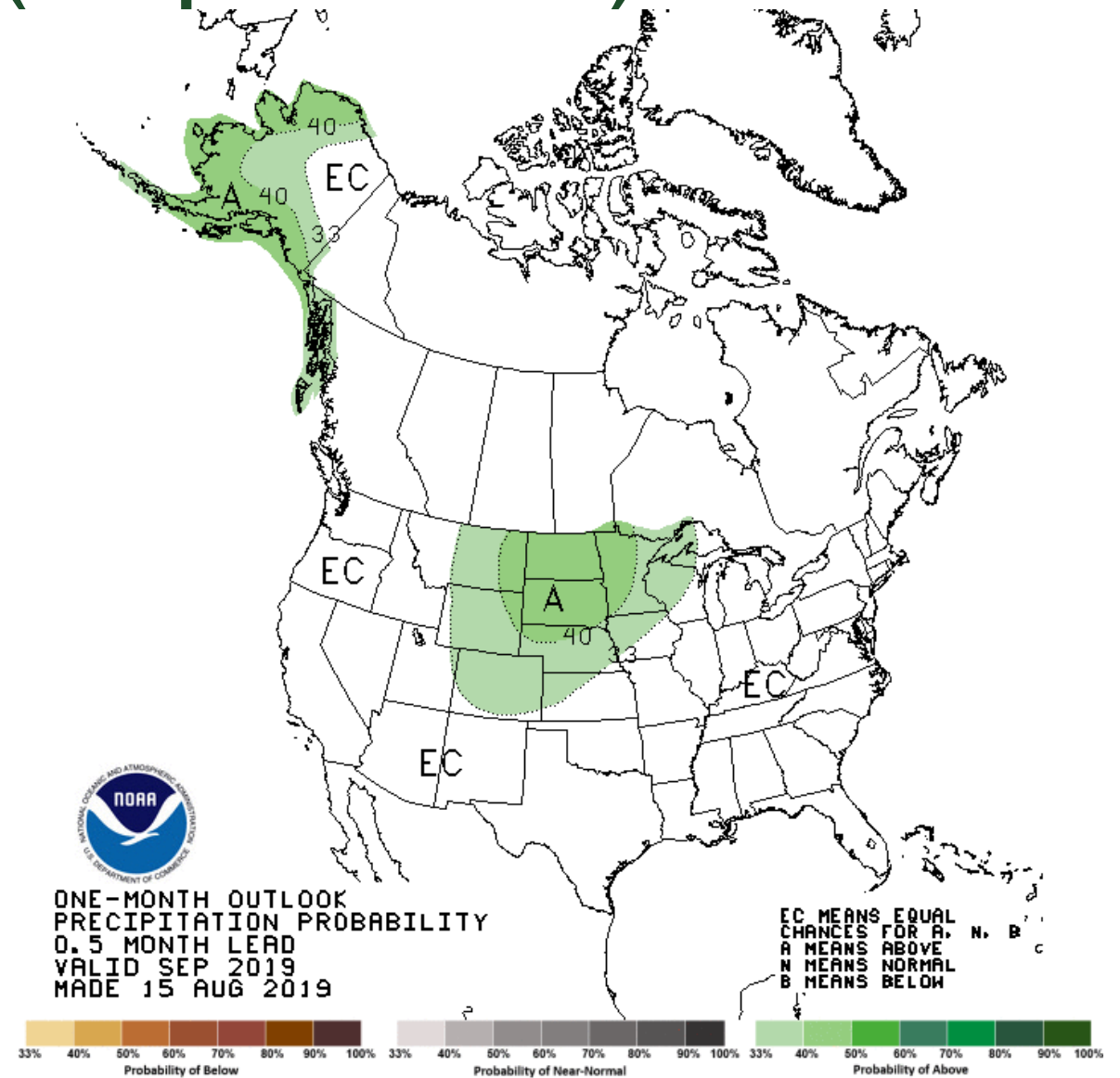
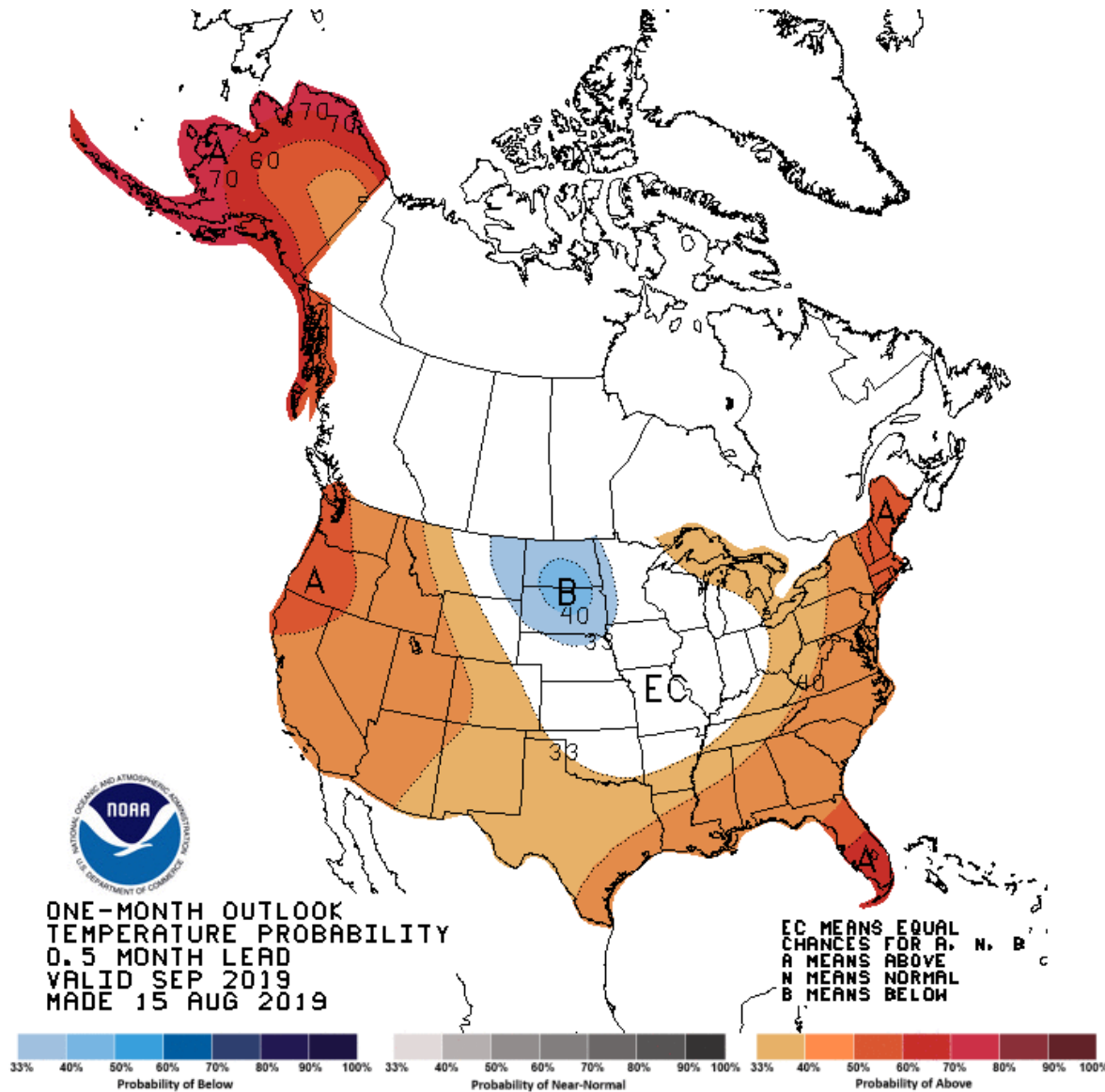


# Looking back at the August outlook...

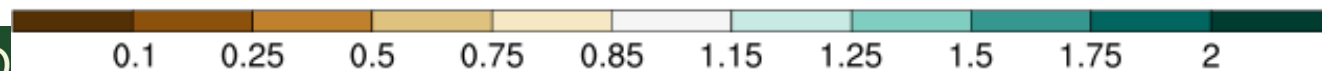
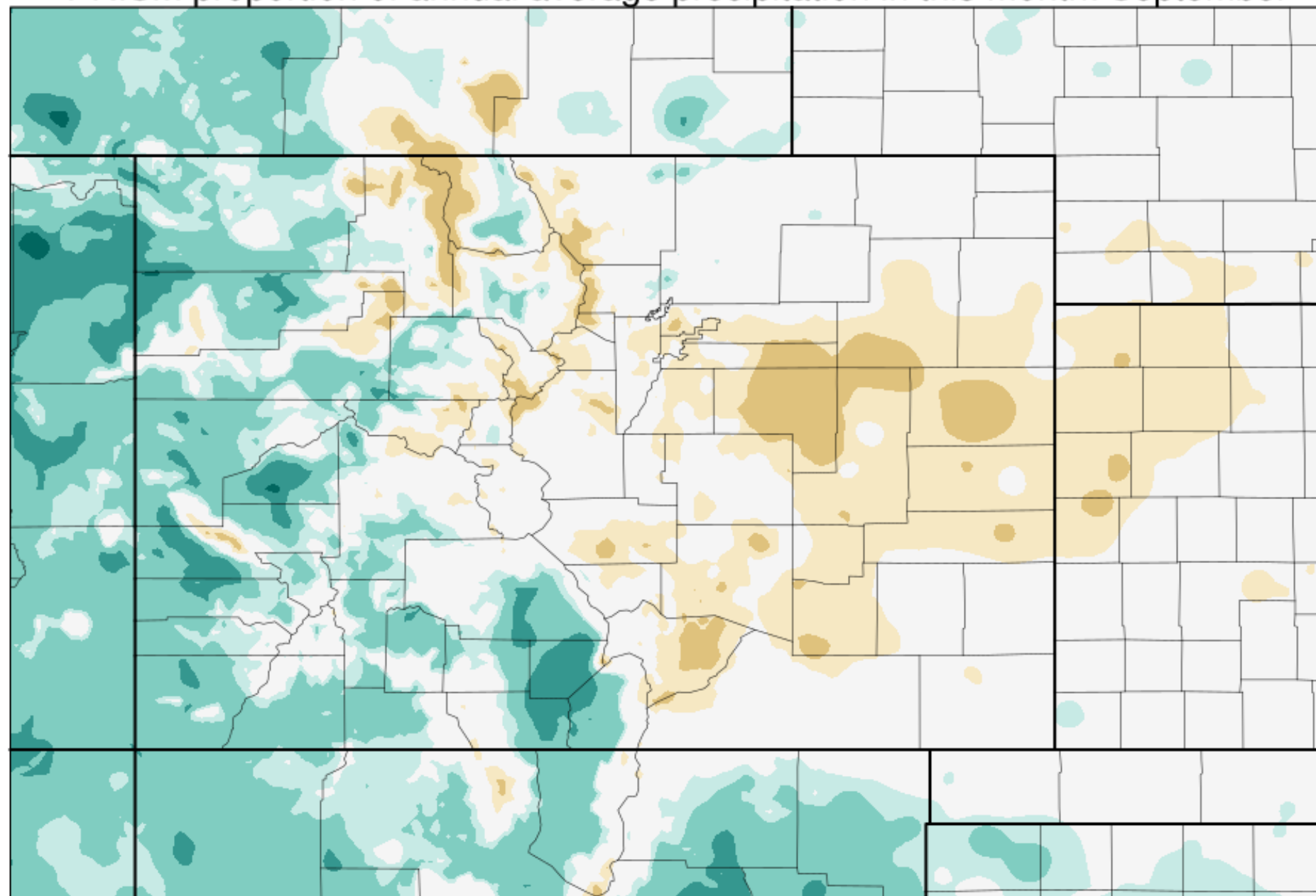




# One month outlook (September)

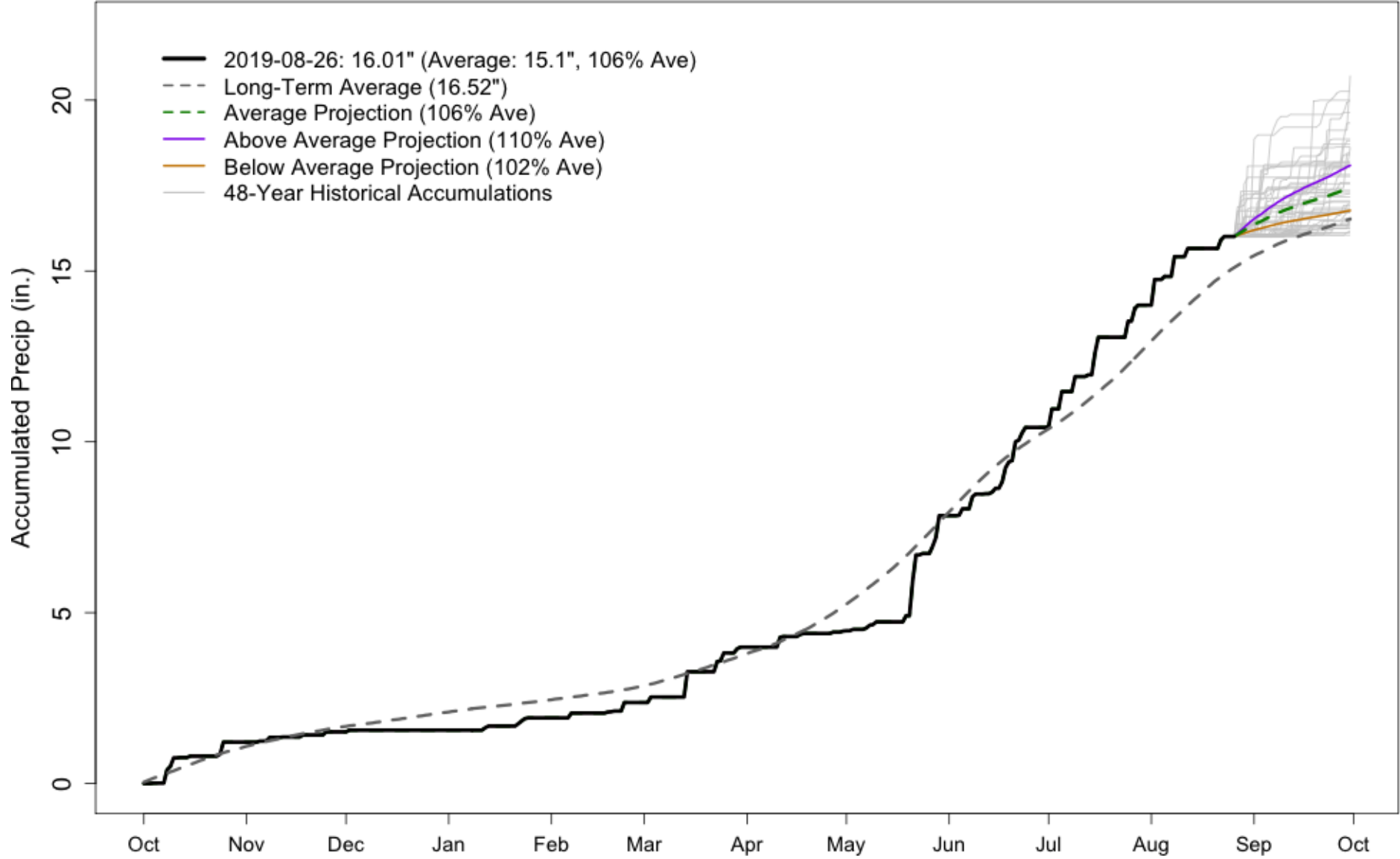


# PRISM proportion of annual average precipitation in this month: September

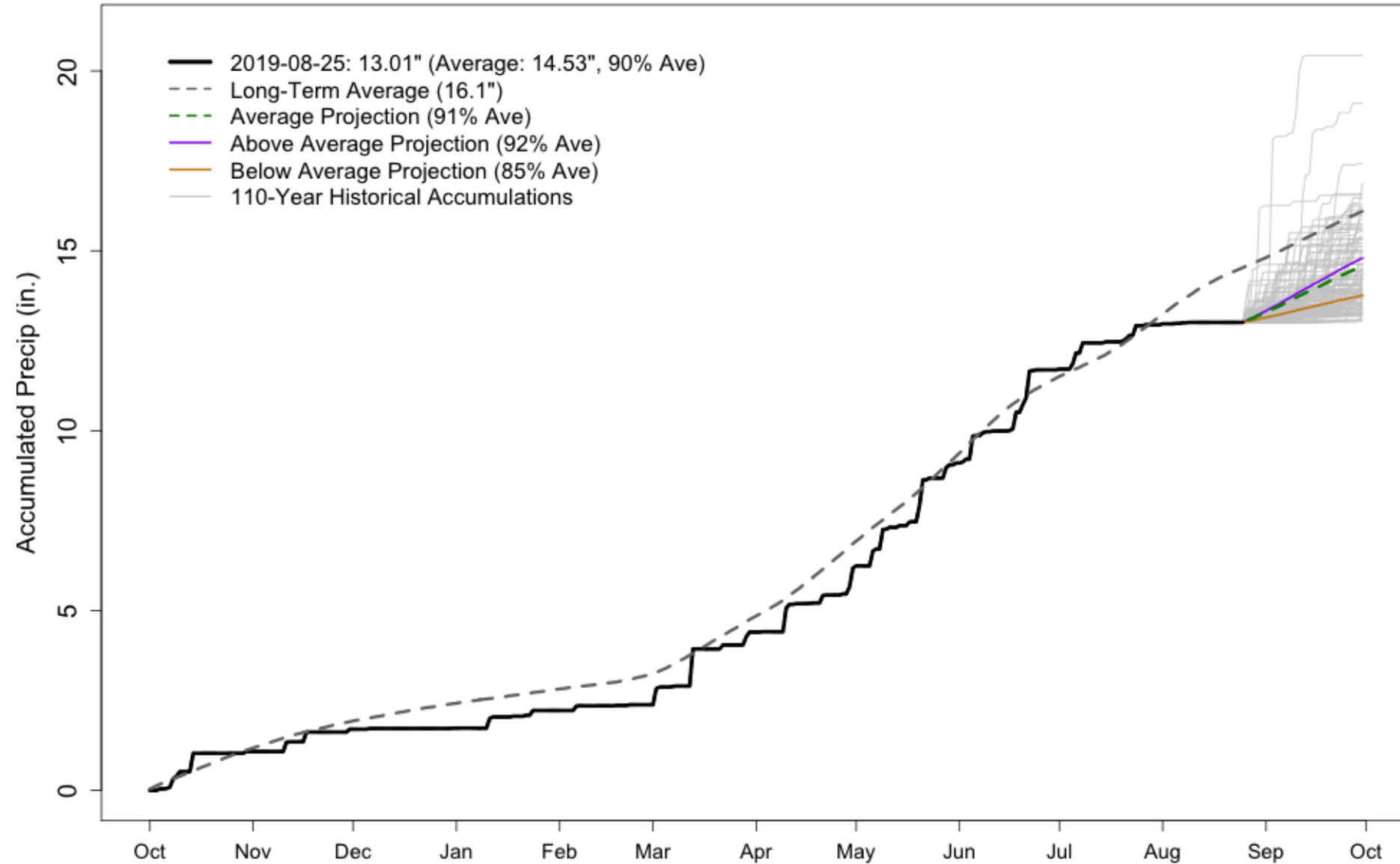


Proportion of precip relative to 1/12th

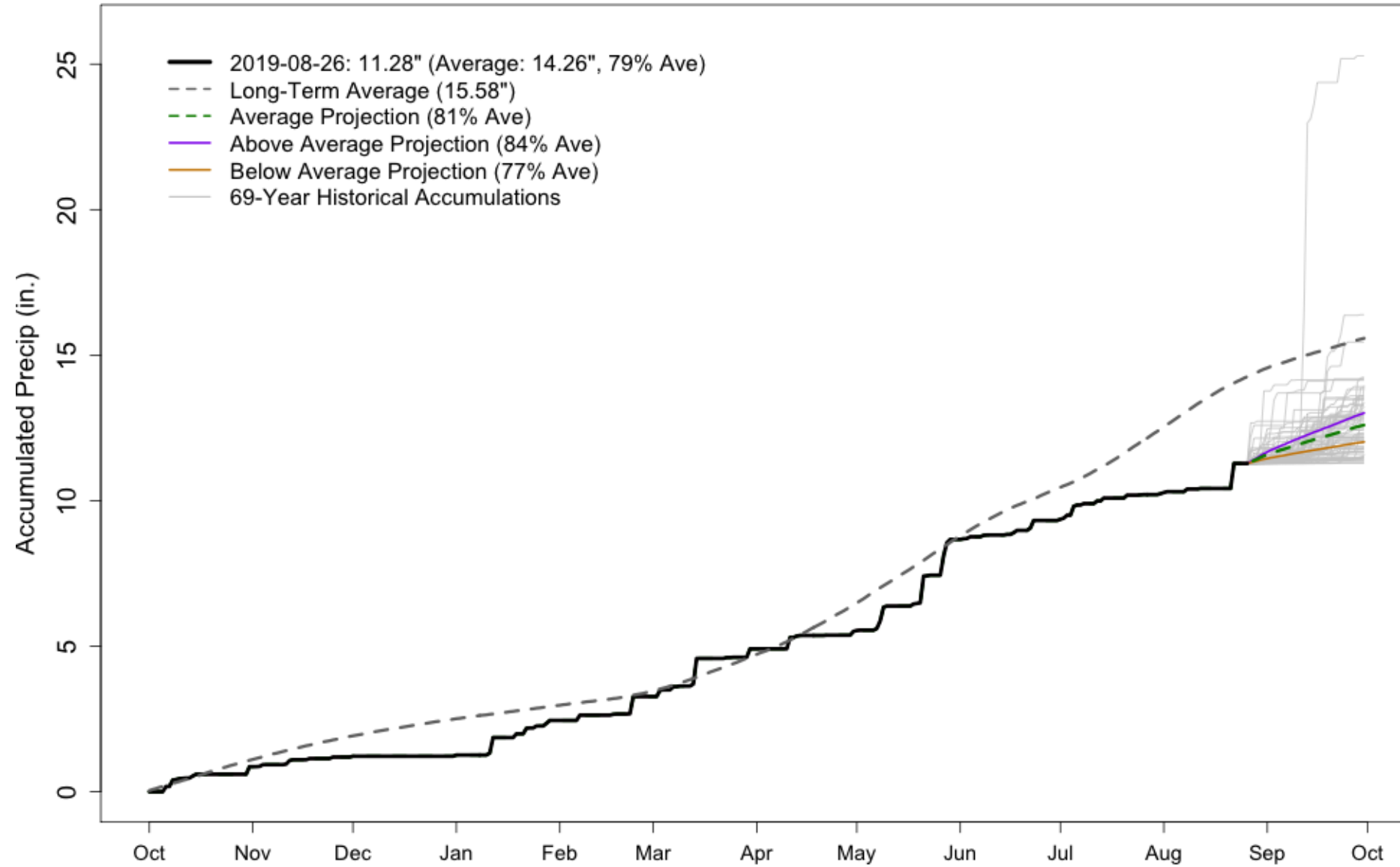
# AKRON 4 E WY2019 Precipitation Projections



## FORT COLLINS WY2019 Precipitation Projections



## DENVER-STAPLETON WY2019 Precipitation Projections



# What's the El Niño forecast?

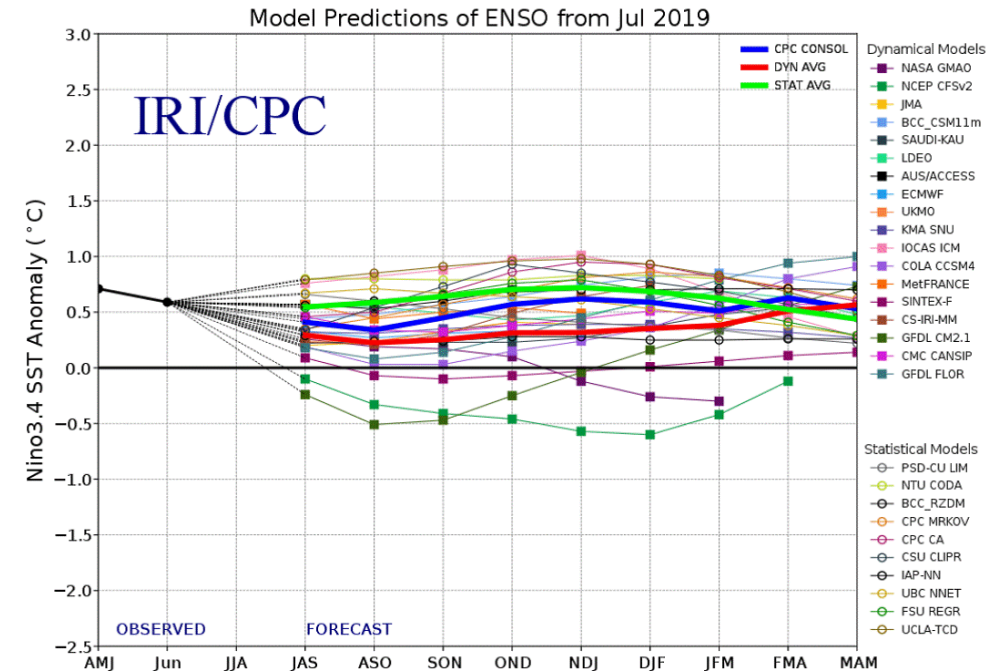
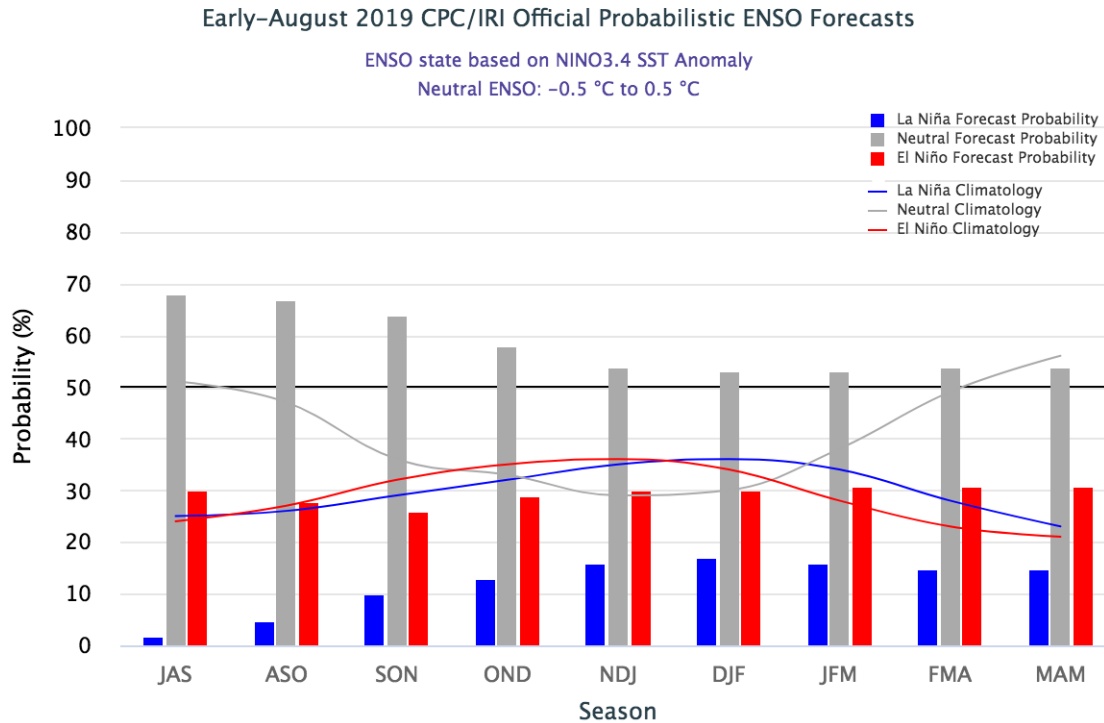


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $120^{\circ}\text{W}$ - $170^{\circ}\text{W}$ ). Figure updated 19 July 2019.

The El Niño is now over...back to neutral conditions  
Neutral conditions likely to continue through winter



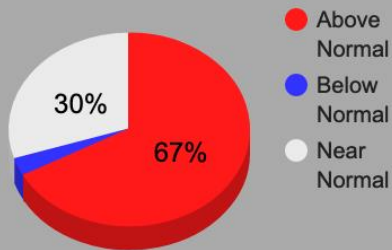
# Sept-Oct-Nov Outlook

Find address or place

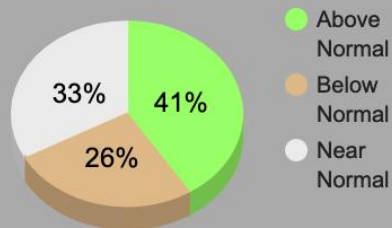


[7 Day Forecast for Durango, CO](#)

Three Category Temperature Outlook  
Normal Maximum Temperature: **54**  
Normal Minimum Temperature: **28**



Three Category Precipitation Outlook  
Normal Precipitation: **10.86**



Select Lead

## Seasonal Outlook September 2019-November 2019 (Lead 1)

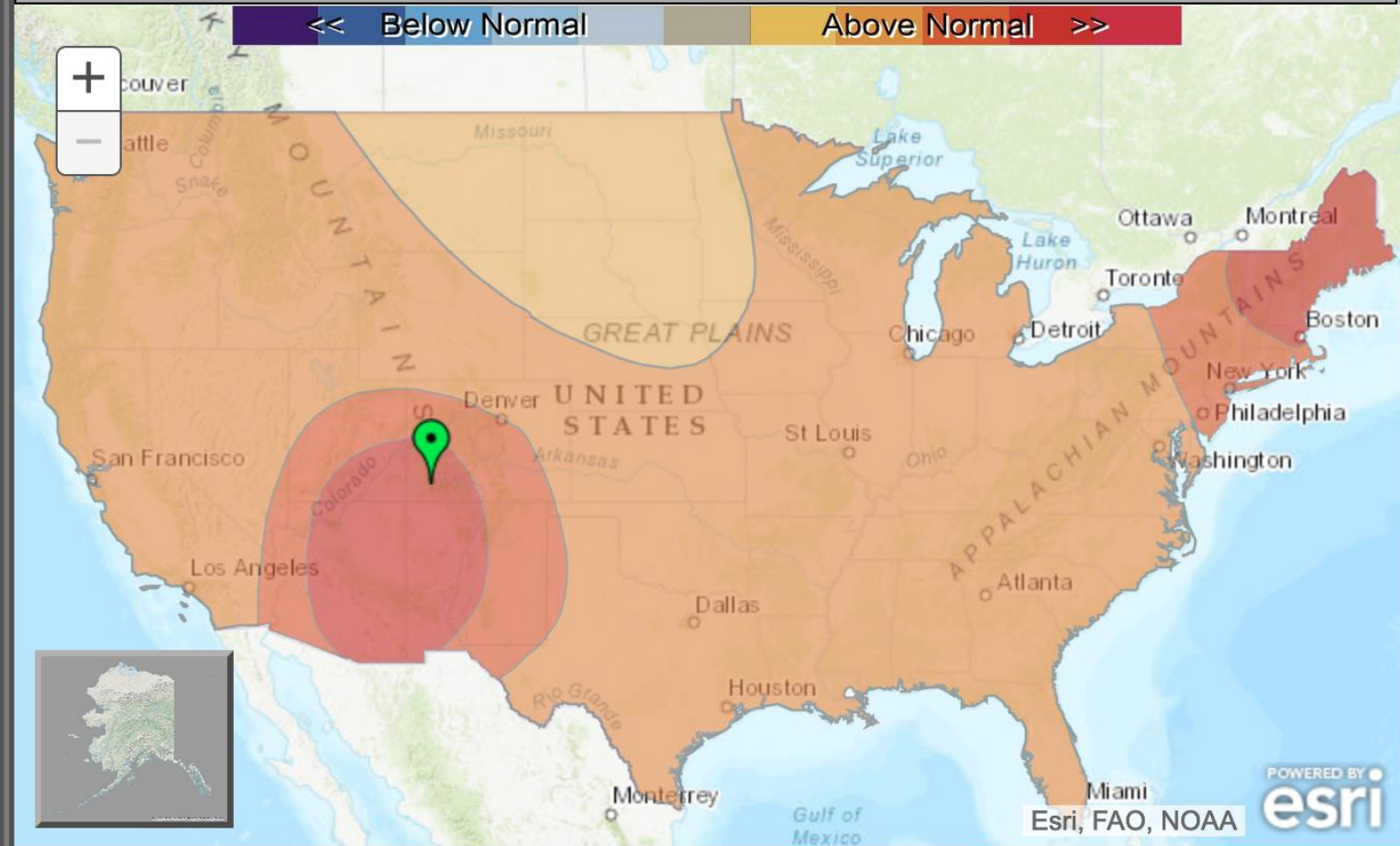
Temperature

Opacity: 60%

Precipitation

● Outlook

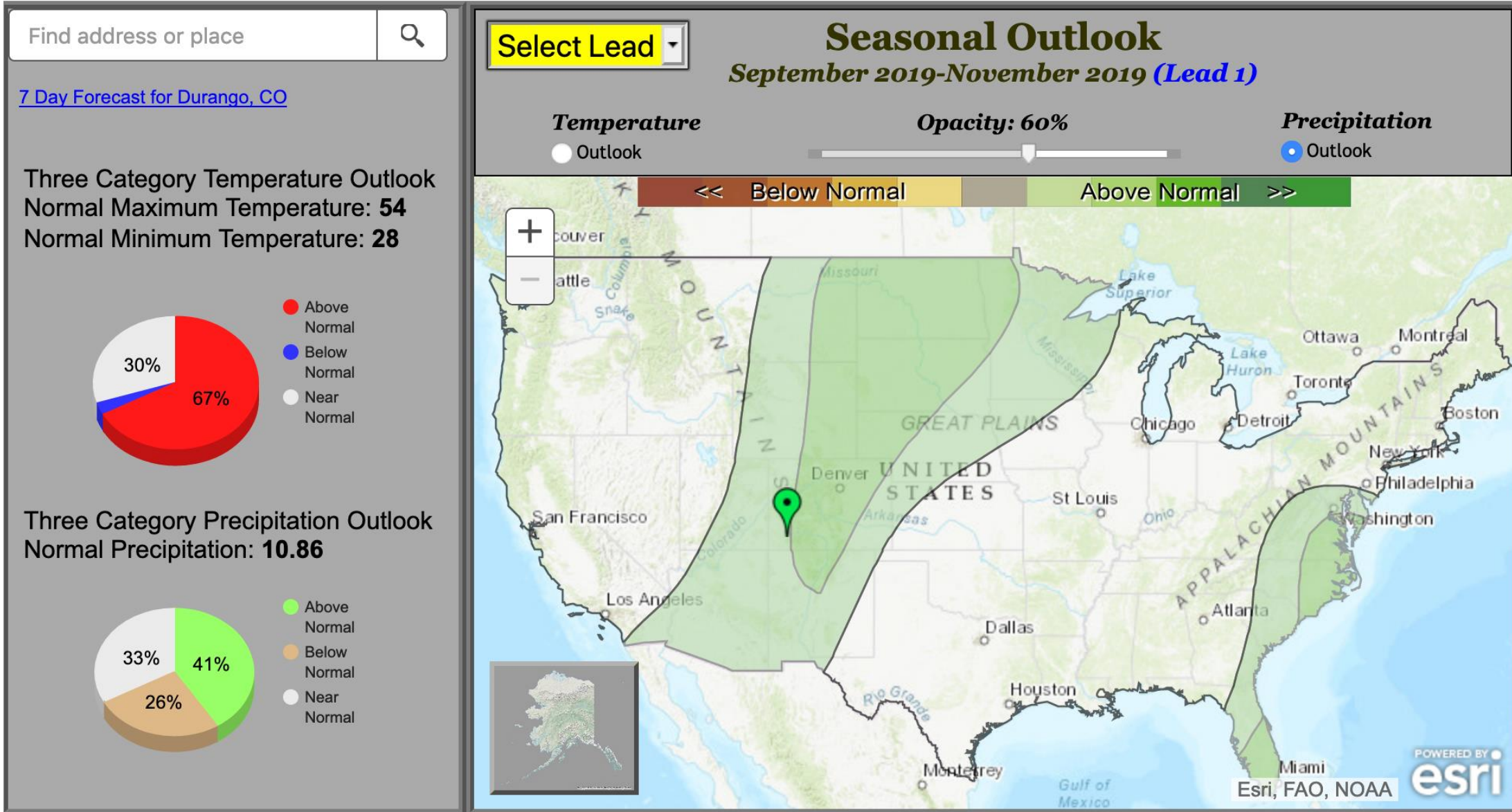
● Outlook





# Sept-Oct-Nov Outlook

Tendency toward warm, wet conditions projected through January



# Summary points

- After a cool May and June, July was warm across all but the far eastern Plains
- July was dry across western Colorado, with typical spotty rains east of the divide
- August has been hot! Lots of record high temperatures, will be among the top few warmest Augusts on record
- Not much monsoon; some very rainy (and hail-y) spots on the plains but many developing dry spots as well
- Still no drought in Colorado, but D0 (abnormally dry) has returned and is likely to expand this week. The great winter is now in tension with recent hot, dry conditions
- Continued warm and dry in the short term, longer-term outlooks tend toward warm and wet
- El Niño has ended and neutral conditions likely to continue through winter



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**Thank you!**

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