

# Colorado Climate Center – *WATF Climate Update*

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Becky Bolinger

Water Availability Task Force

April 25, 2019



ATMOSPHERIC SCIENCE  
COLORADO STATE UNIVERSITY



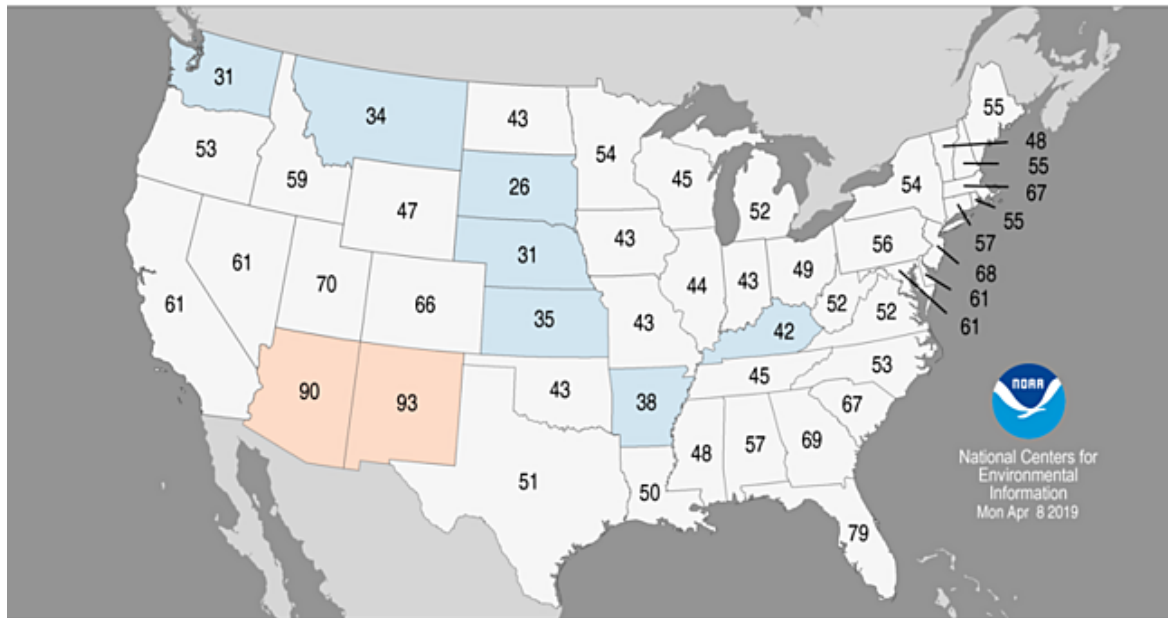
## 2019 Water Year To Date

temperature, precipitation,  
anomalies, drought conditions



## Statewide Average Temperature Ranks

March 2019  
Period: 1895–2019



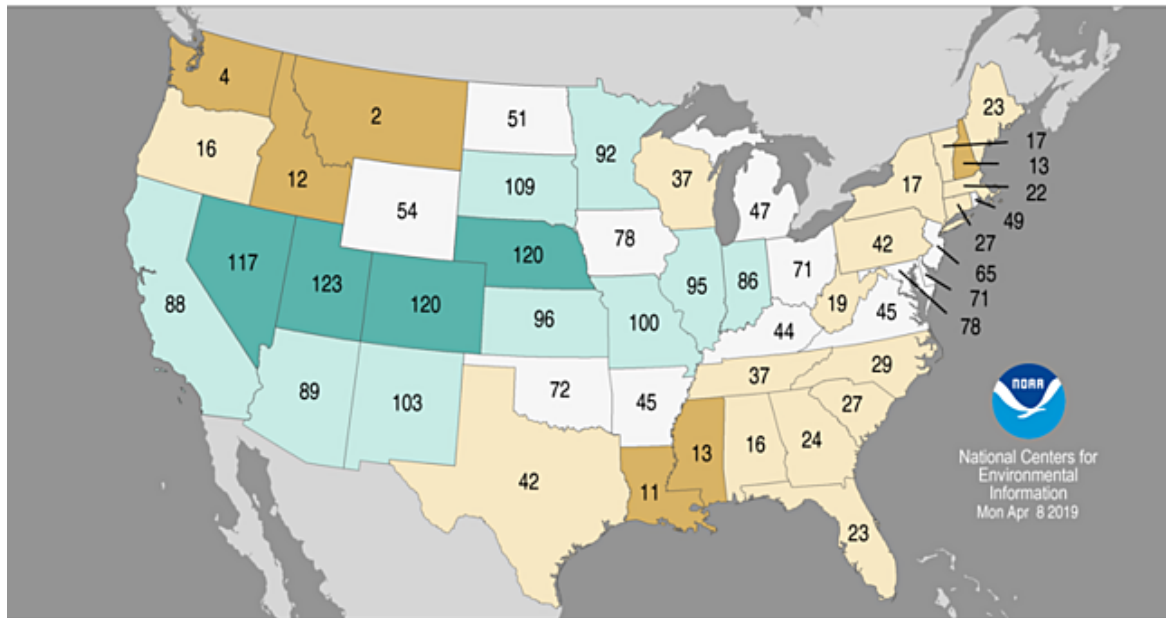
Month	T Rank	
Oct	35 <sup>th</sup>	colder
Nov	39 <sup>th</sup>	colder
Dec	80 <sup>th</sup>	average
Jan	36 <sup>th</sup>	warmer
Feb	28 <sup>th</sup>	colder
Mar	66 <sup>th</sup>	average



## Statewide Precipitation Ranks

March 2019

Period: 1895–2019

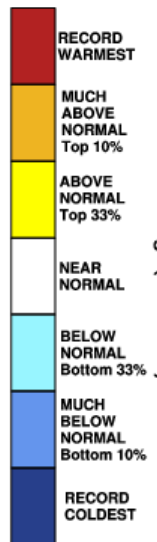
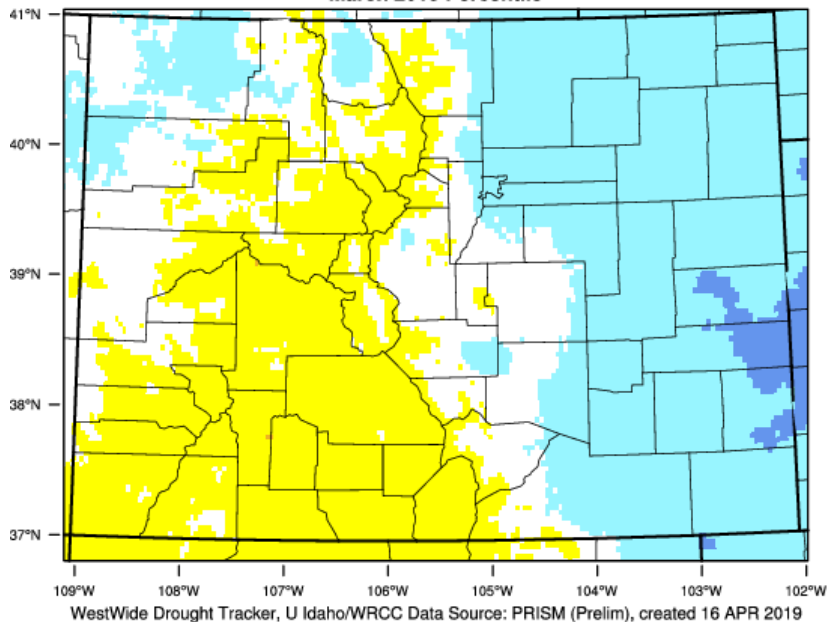


National Centers for Environmental Information  
Mon Apr 8 2019

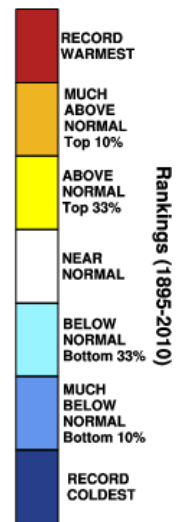
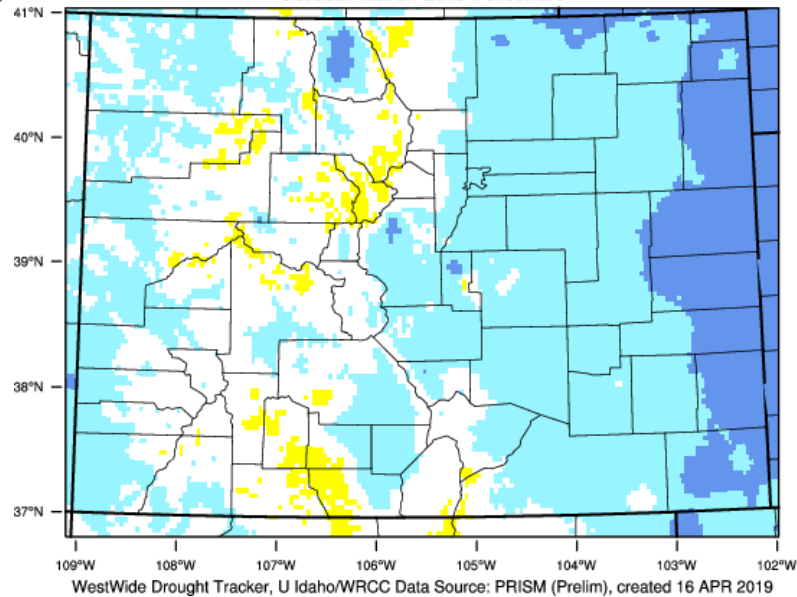
Month	P Rank	Condition
Oct	12 <sup>th</sup>	wetter
Nov	45 <sup>th</sup>	average
Dec	31 <sup>st</sup>	drier
Jan	32 <sup>nd</sup>	wetter
Feb	17 <sup>th</sup>	wetter
Mar	6 <sup>th</sup>	wetter



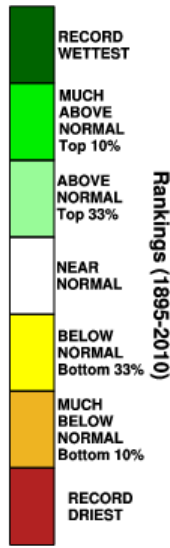
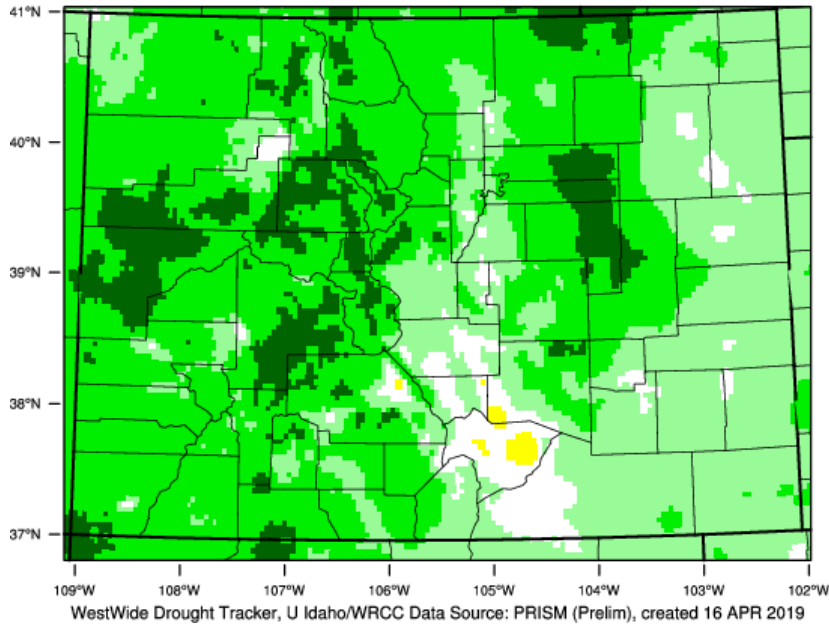
**Colorado - Mean Temperature**  
**March 2019 Percentile**



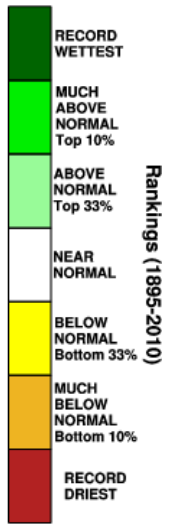
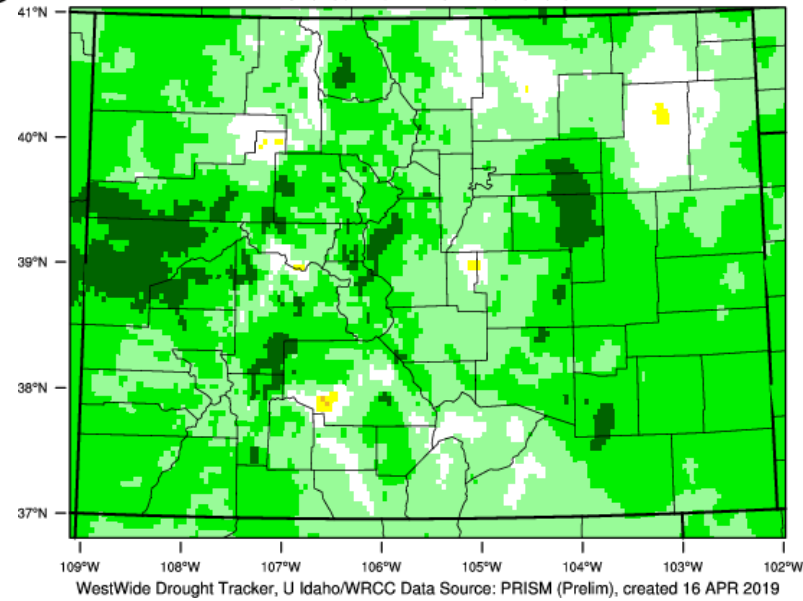
**Colorado - Mean Temperature**  
**October-March 2019 Percentile**



**Colorado - Precipitation**  
**March 2019 Percentile**

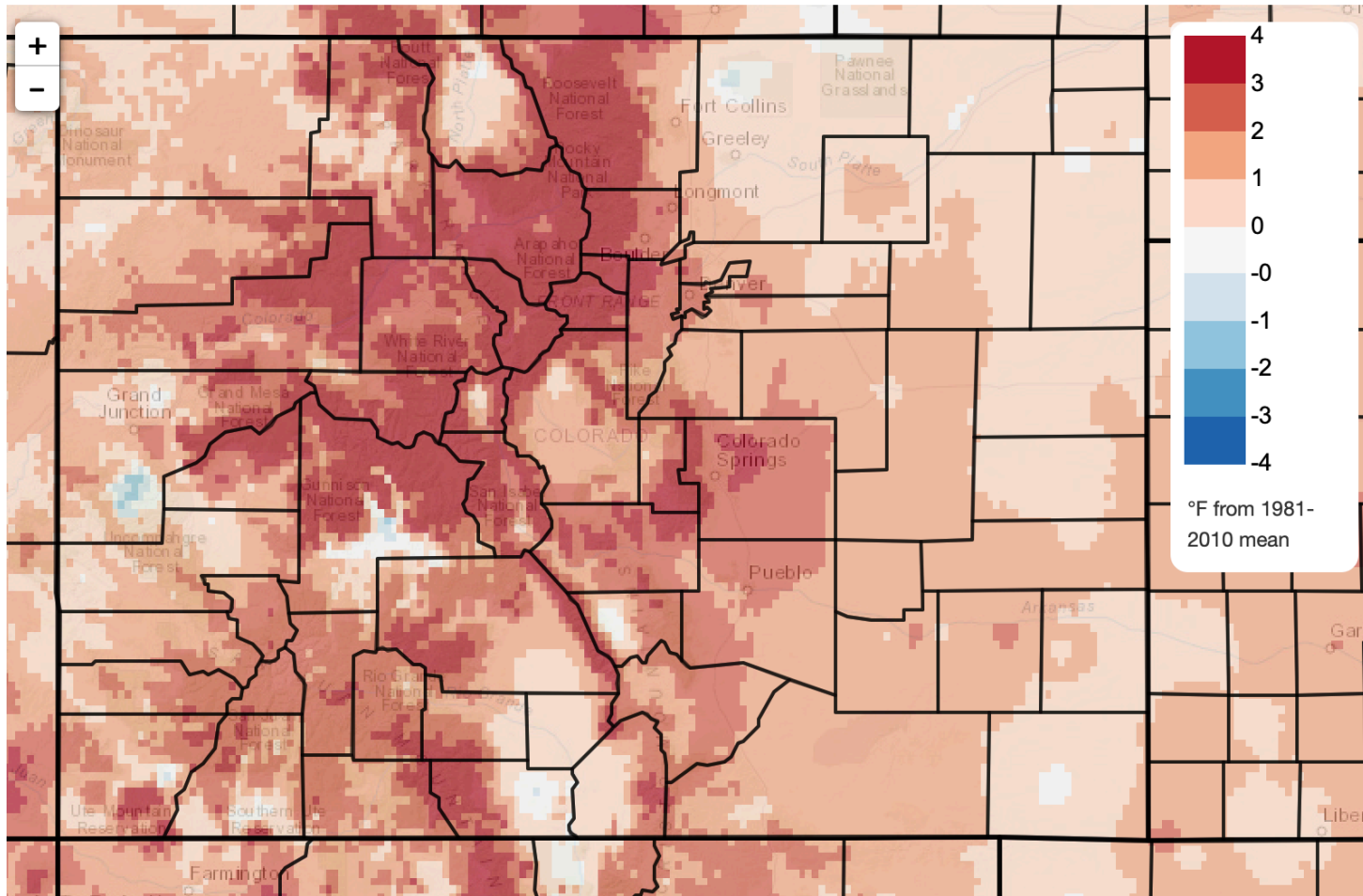


**Colorado - Precipitation**  
**October-March 2019 Percentile**



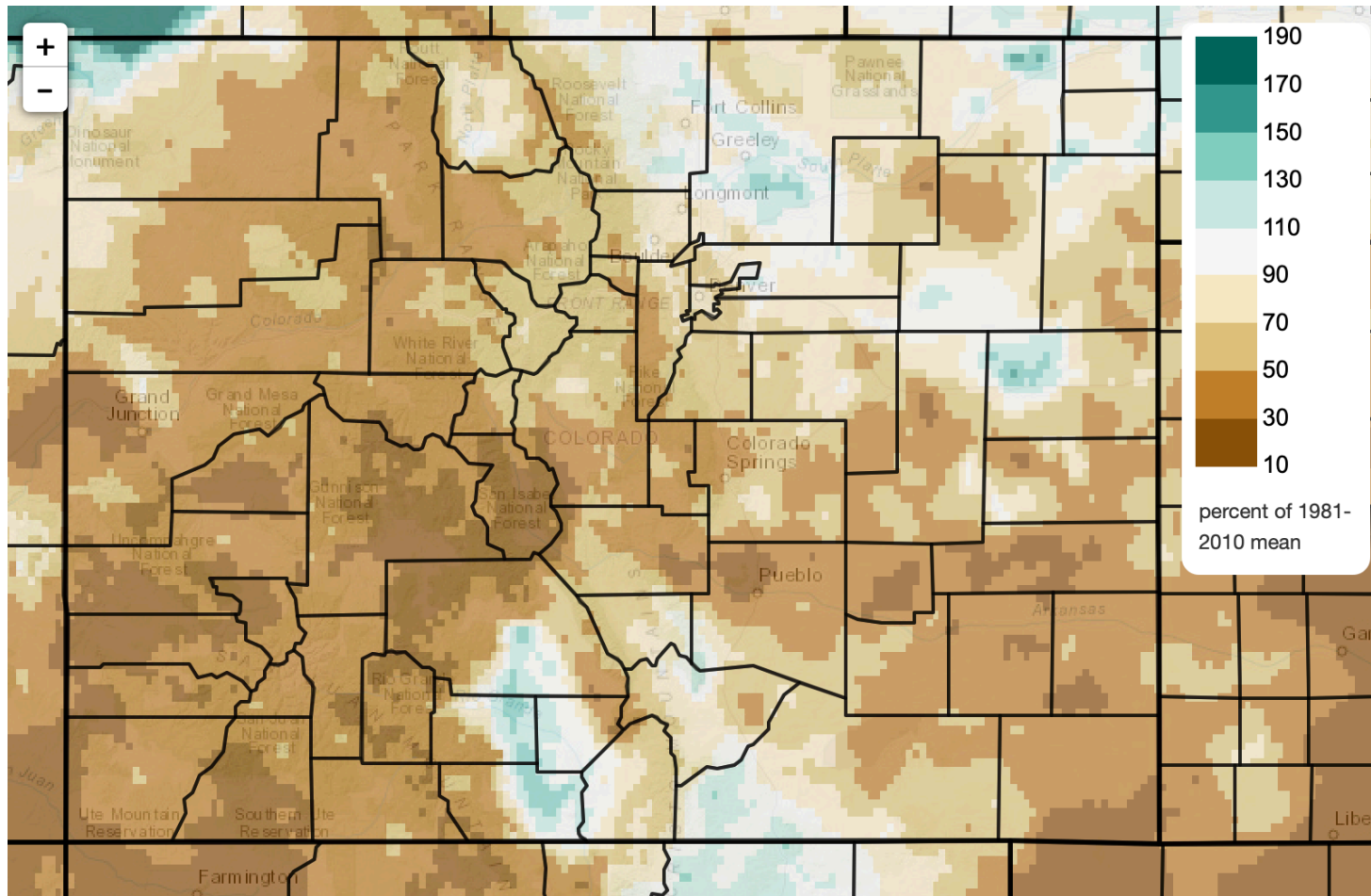
# Mean Daily Temperature Anomaly, Last 30 Days

2019/03/25 - 2019/04/23

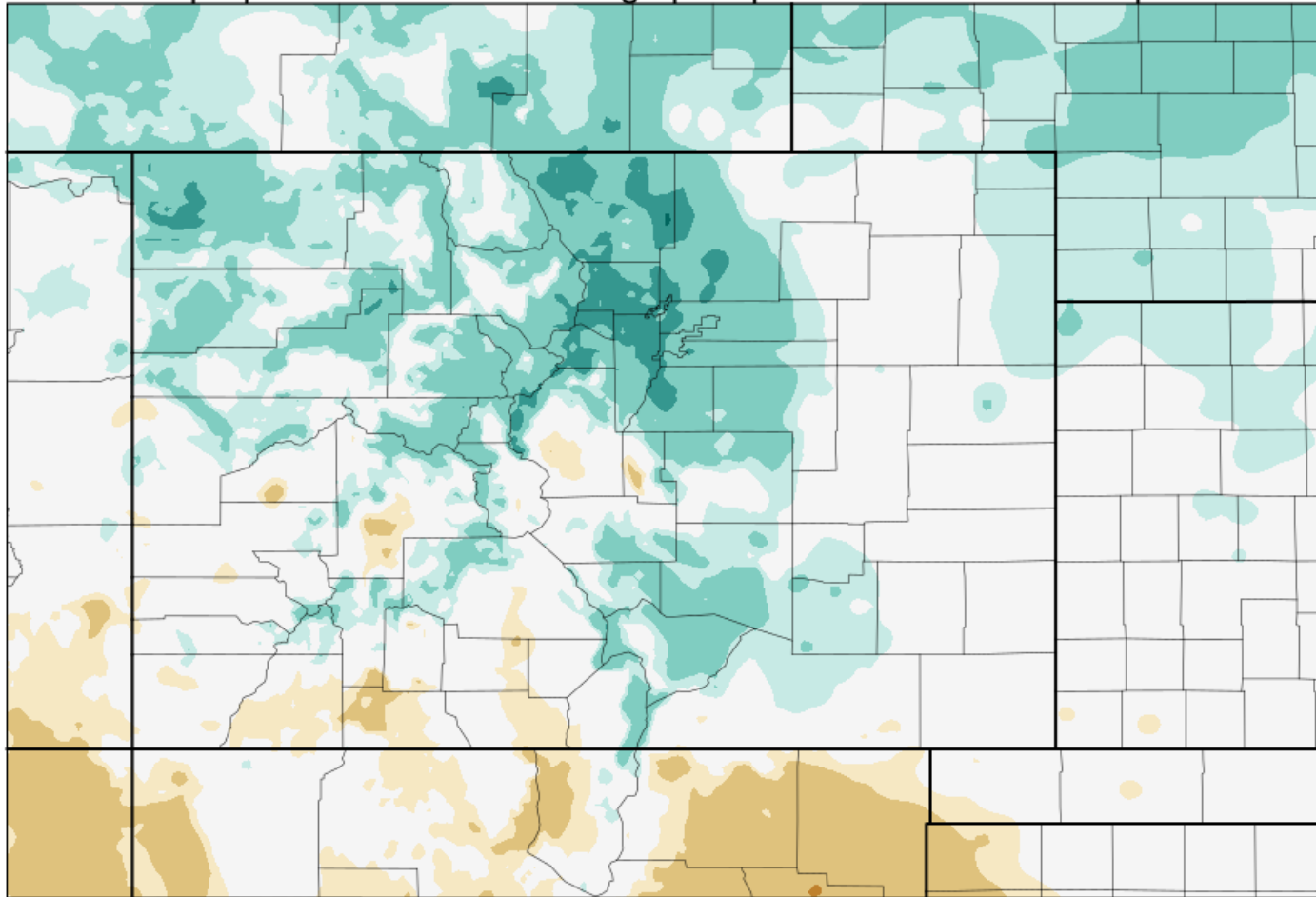


# Total Precipitation Anomaly, Last 30 Days

2019/03/25 - 2019/04/23



PRISM proportion of annual average precipitation in this month: April

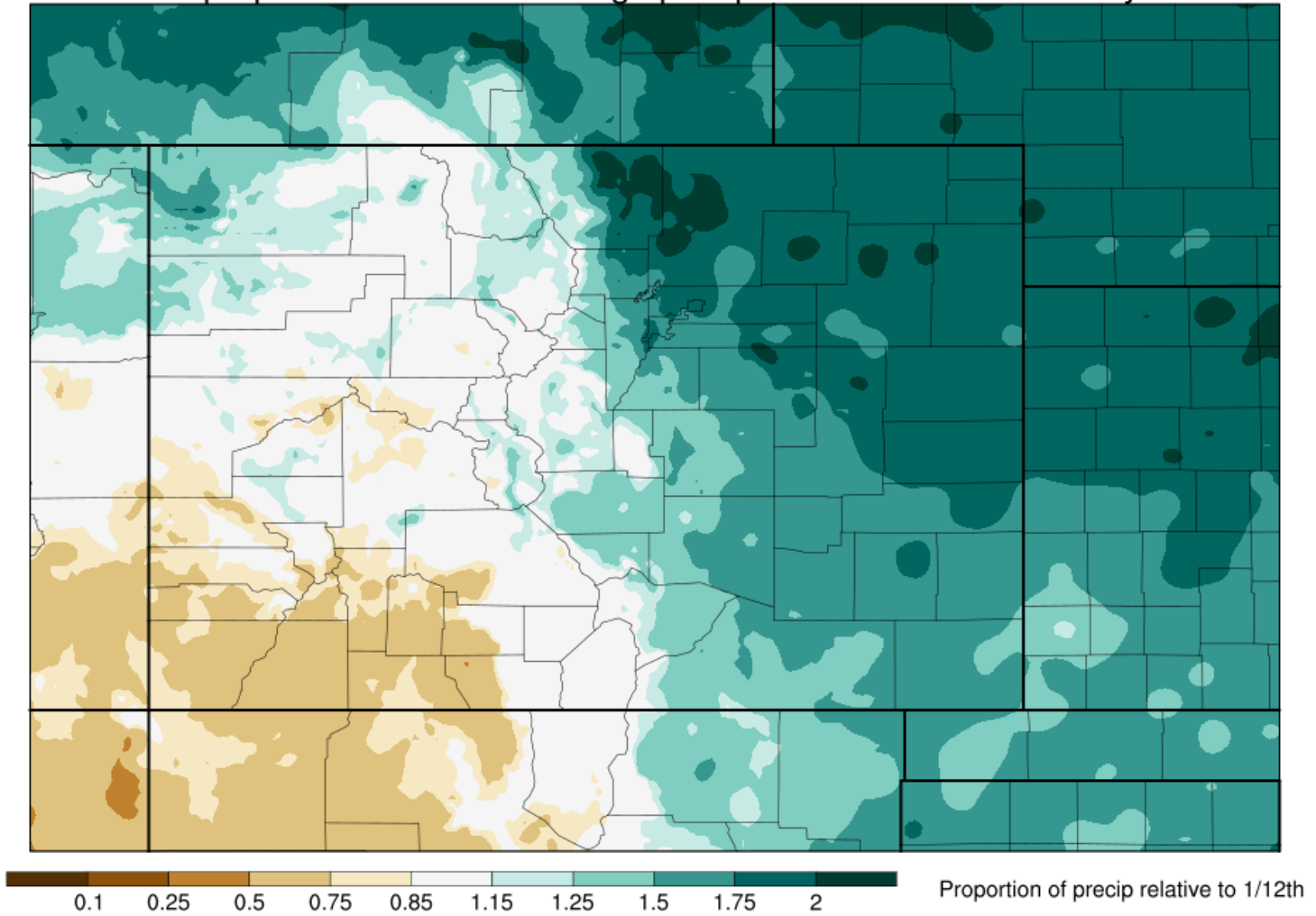


0.1 0.25 0.5 0.75 0.85 1.15 1.25 1.5 1.75 2 Proportion of precip relative to 1/12th

Russ Schumacher/Colorado Climate Center



PRISM proportion of annual average precipitation in this month: May

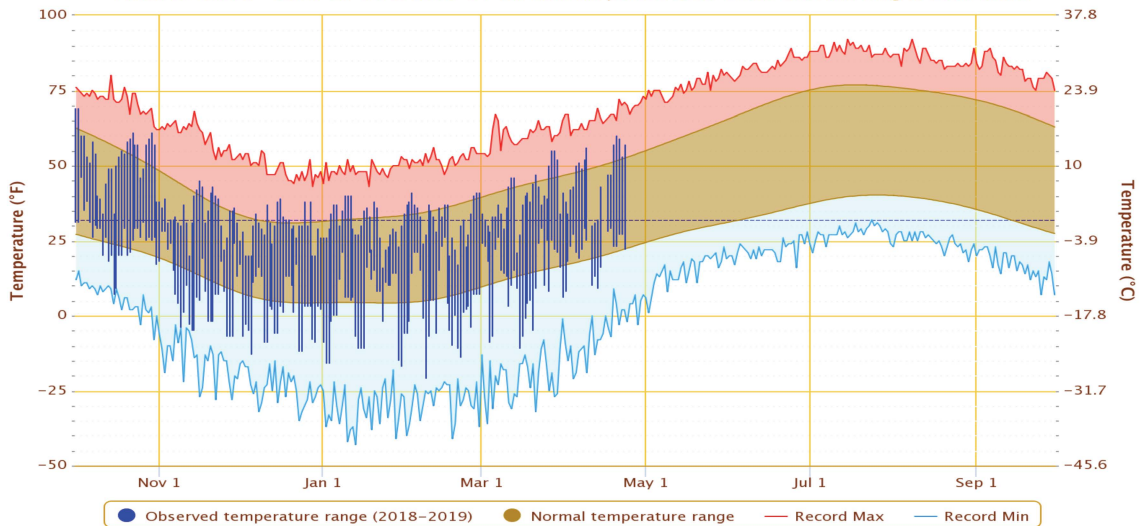


Russ Schumacher/Colorado Climate Center



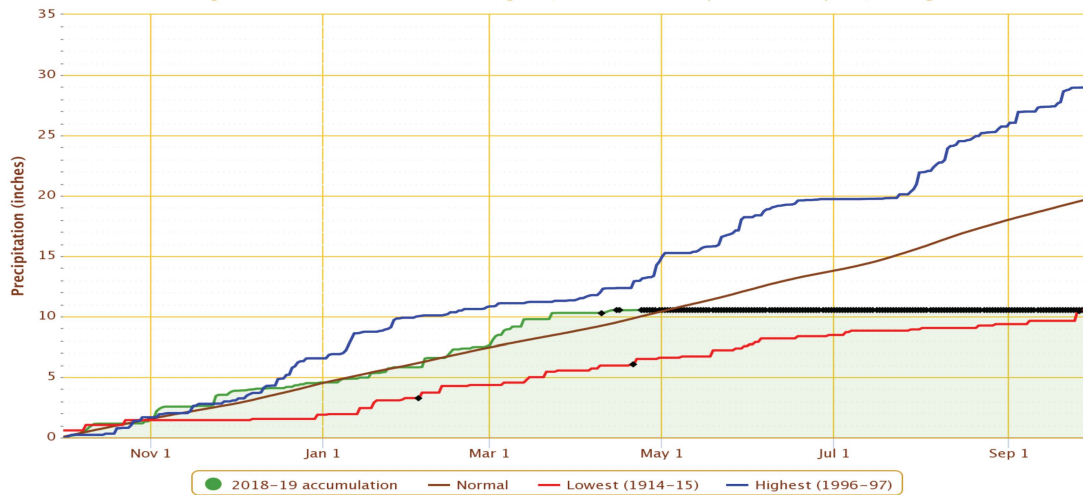
### Daily Temperature Data – GRAND LAKE 1 NW, CO

Period of Record – 1939–10–01 to 2019–04–23. Normals period: 1981–2010. Click and drag to zoom chart.



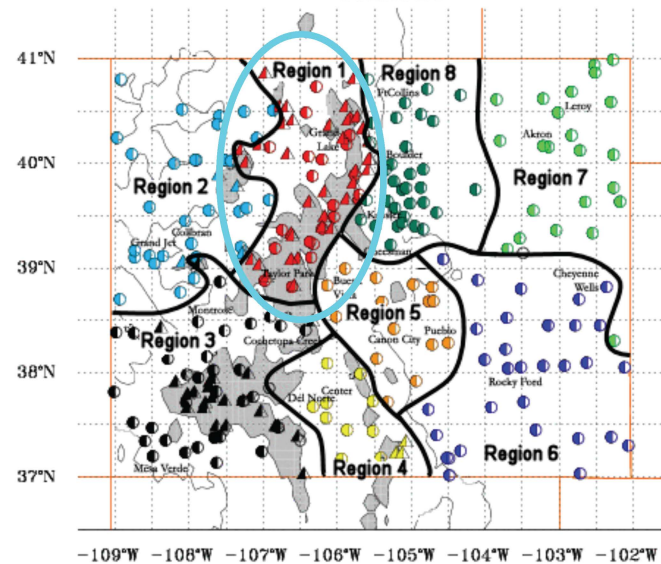
### Accumulated Precipitation – GRAND LAKE 1 NW, CO

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



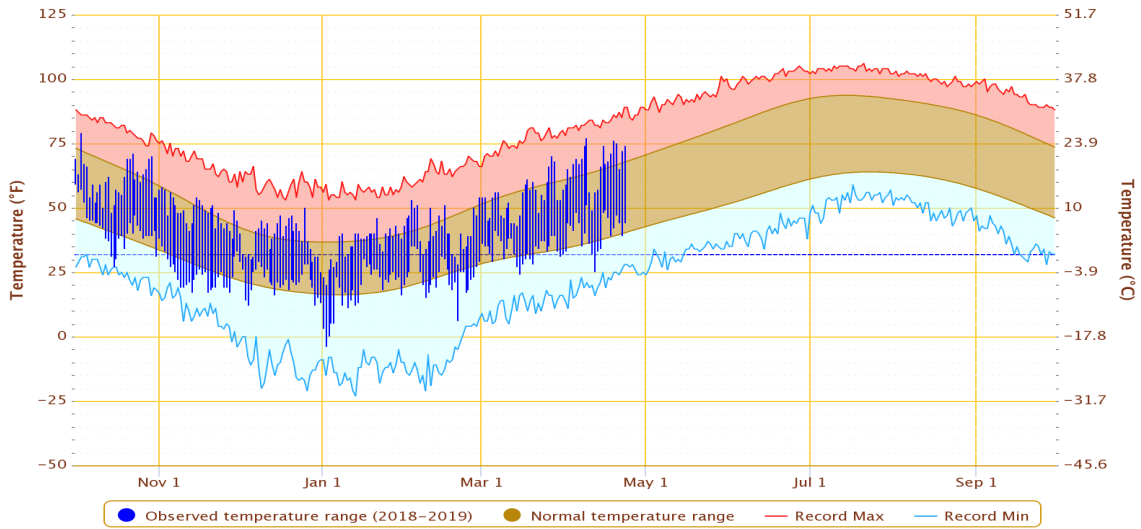
Powered by ACIS

### COLORADO



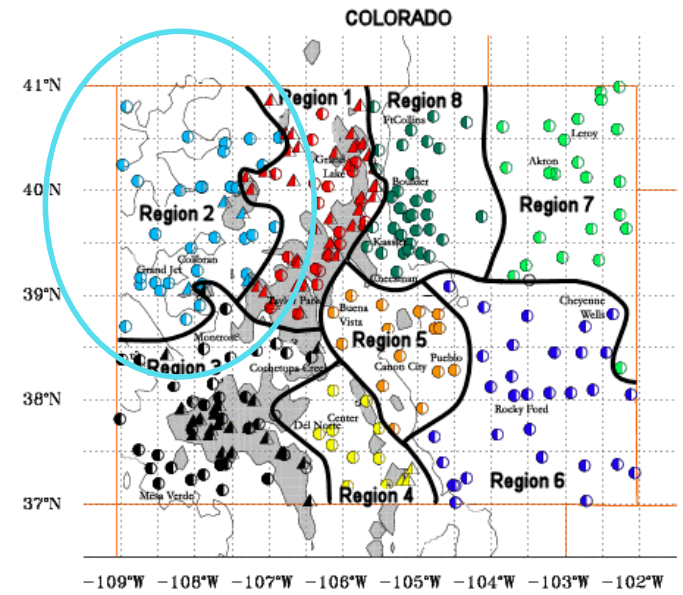
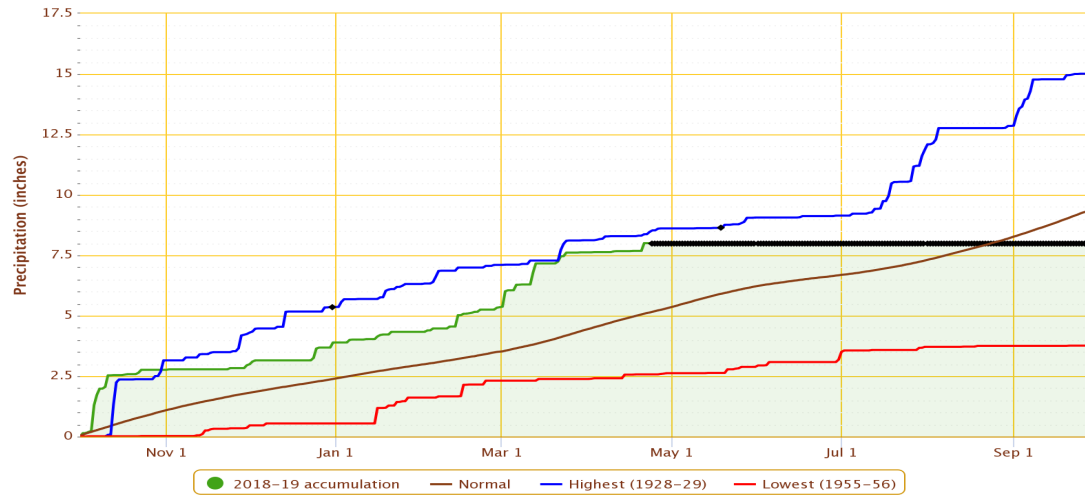
### Daily Temperature Data – GRAND JUNCTION WALKER FIELD, CO

Period of Record – 1900-01-01 to 2019-04-23. Normals period: 1981-2010. Click and drag to zoom chart.



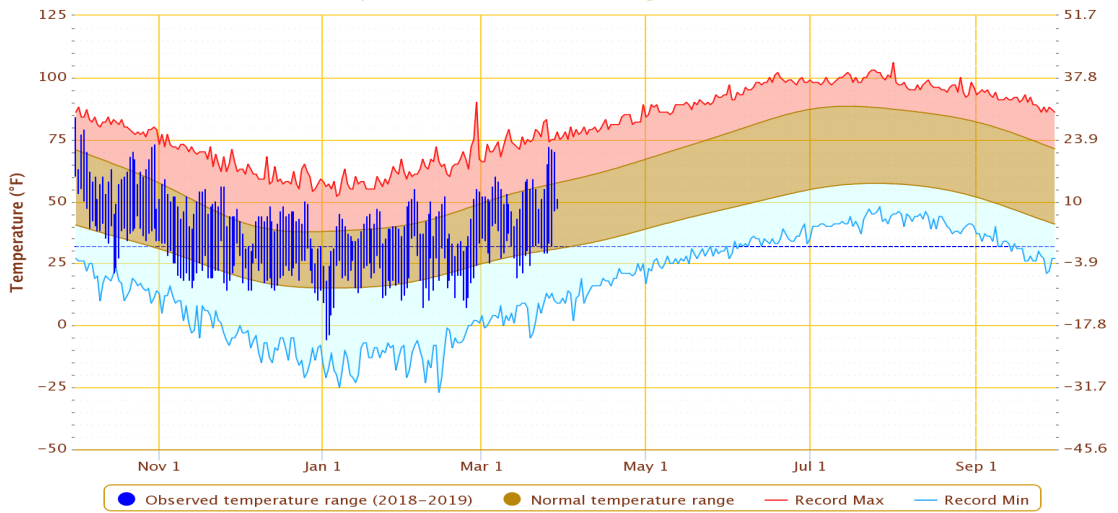
### Accumulated Precipitation – GRAND JUNCTION WALKER FIELD, CO

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



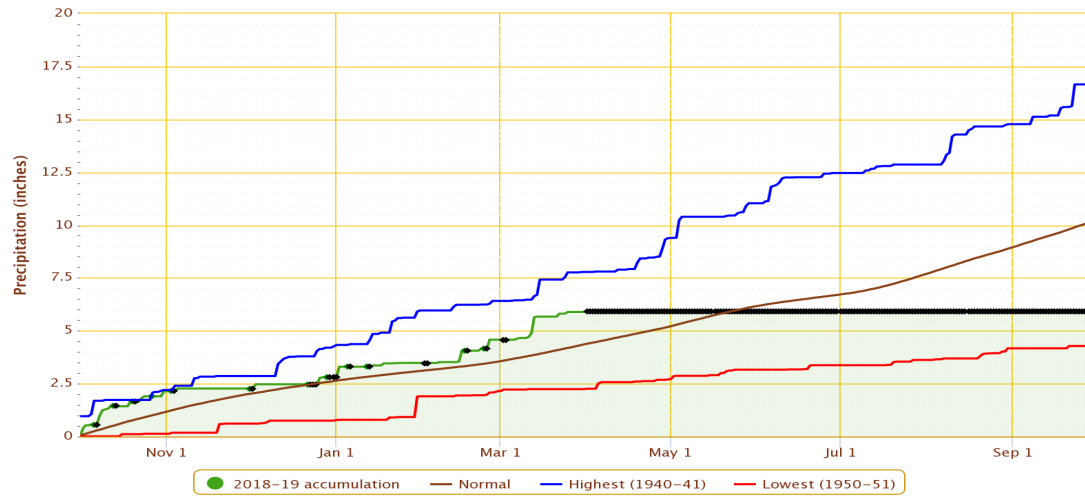
### Daily Temperature Data – MONTROSE NO 2, CO

Period of Record – Max temperature: 1895-10-01 to 2019-03-31; Min temperature: 1895-10-01 to 2019-03-29. Normals period: 1981-2010. Click and drag to zoom chart.



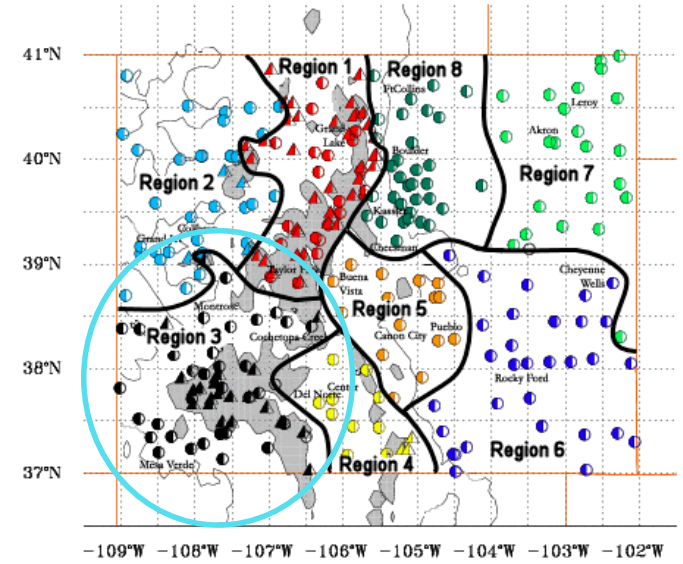
### Accumulated Precipitation – MONTROSE NO 2, CO

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



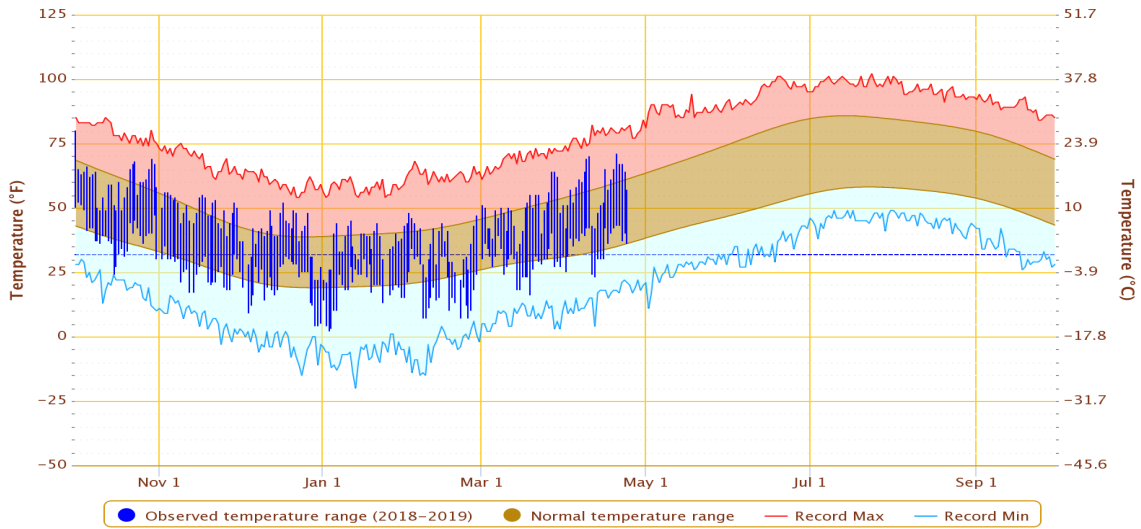
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### COLORADO



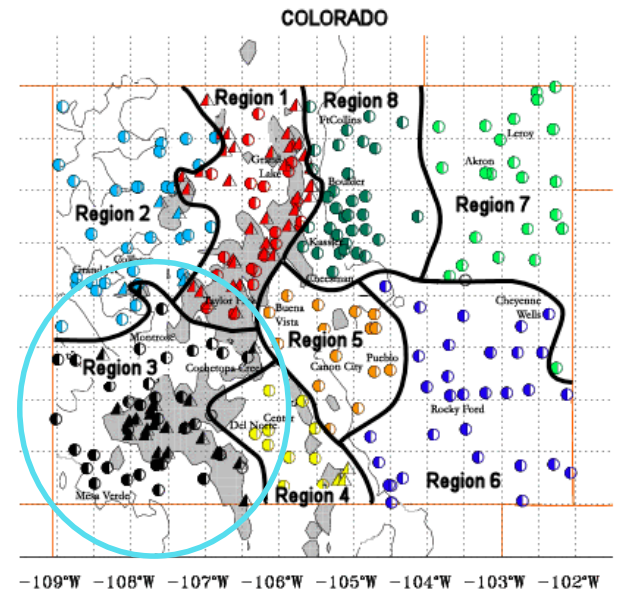
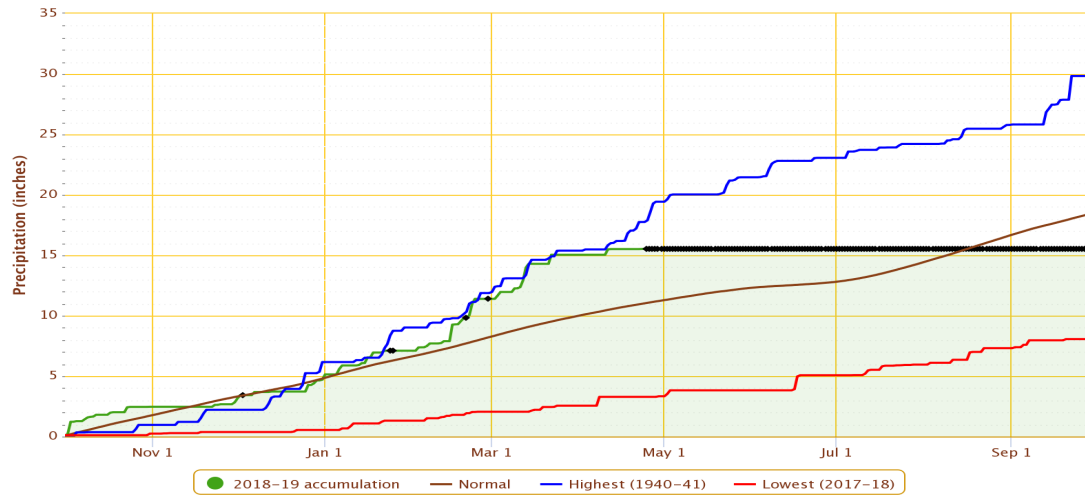
### Daily Temperature Data – MESA VERDE NP, CO

Period of Record – 1922–02–16 to 2019–04–24. Normals period: 1981–2010. Click and drag to zoom chart.



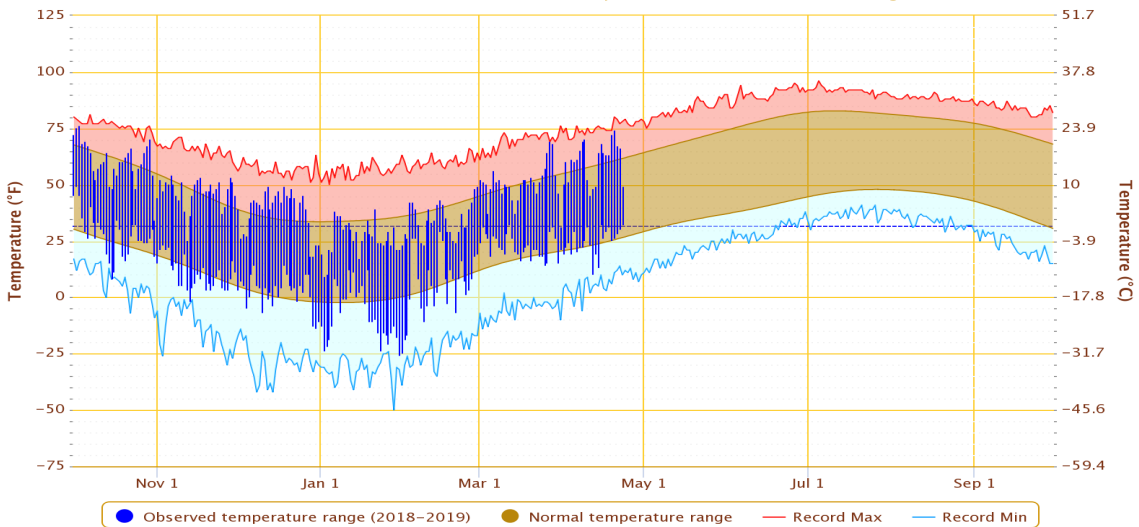
### Accumulated Precipitation – MESA VERDE NP, CO

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



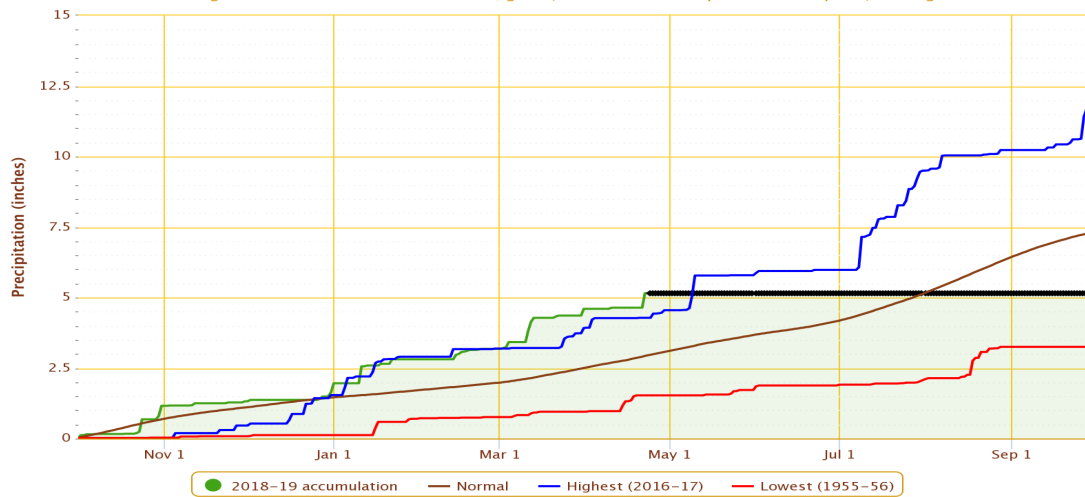
### Daily Temperature Data – ALAMOSA SAN LUIS VALLEY REGIONAL AP, CO

Period of Record – 1948-01-01 to 2019-04-23. Normals period: 1981-2010. Click and drag to zoom chart.



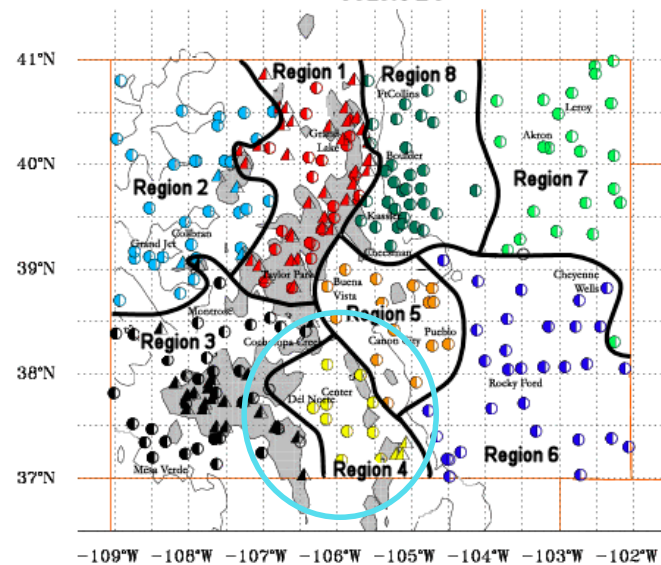
### Accumulated Precipitation – ALAMOSA SAN LUIS VALLEY REGIONAL AP, CO

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



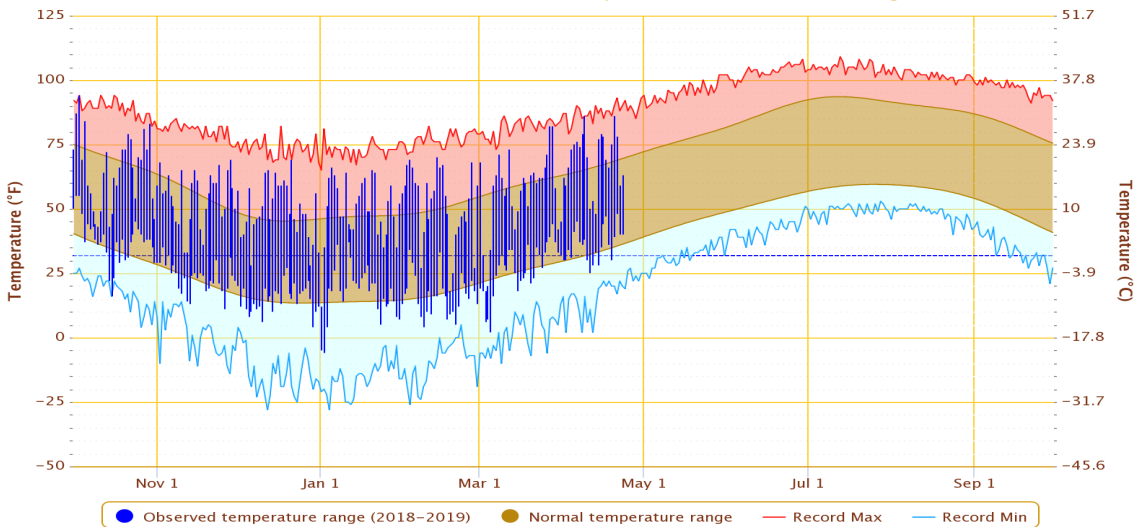
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### COLORADO



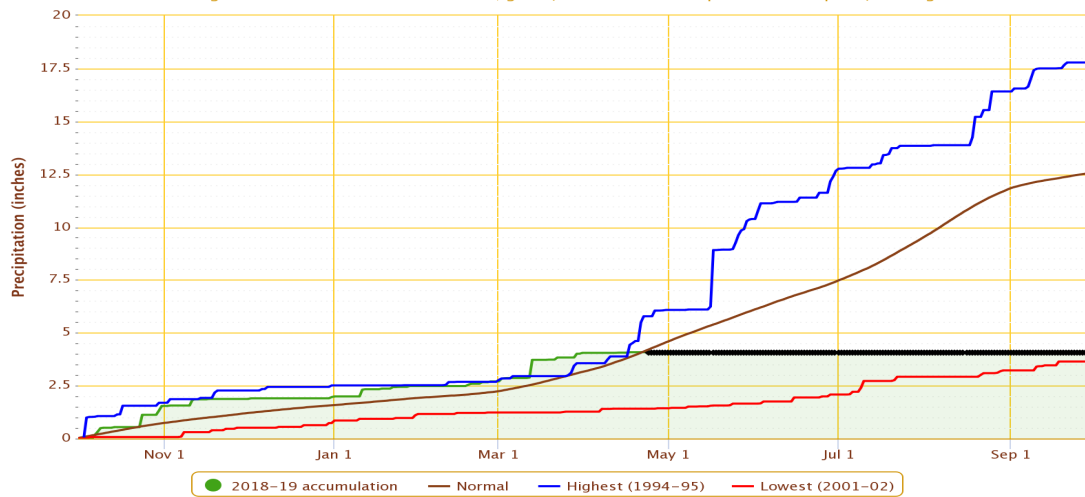
### Daily Temperature Data – PUEBLO MEMORIAL AP, CO

Period of Record – 1954-06-16 to 2019-04-23. Normals period: 1981-2010. Click and drag to zoom chart.



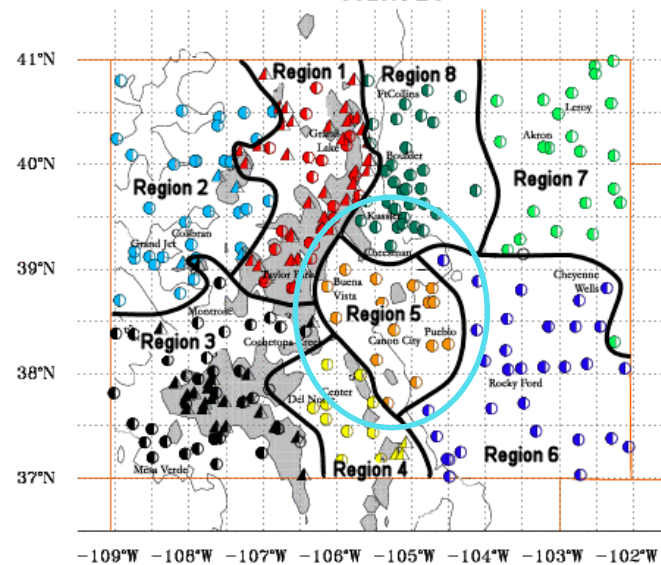
### Accumulated Precipitation – PUEBLO MEMORIAL AP, CO

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



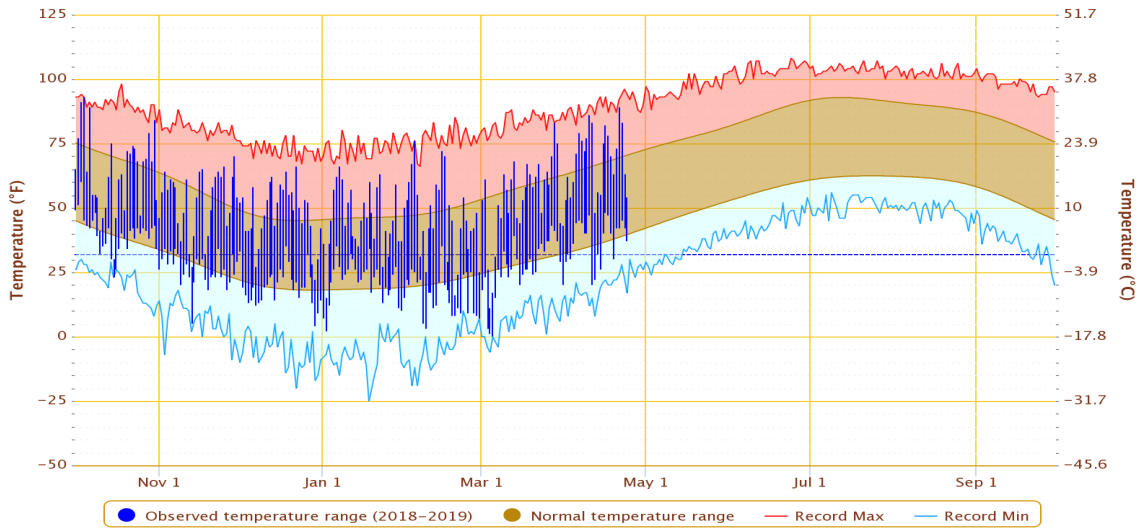
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### COLORADO



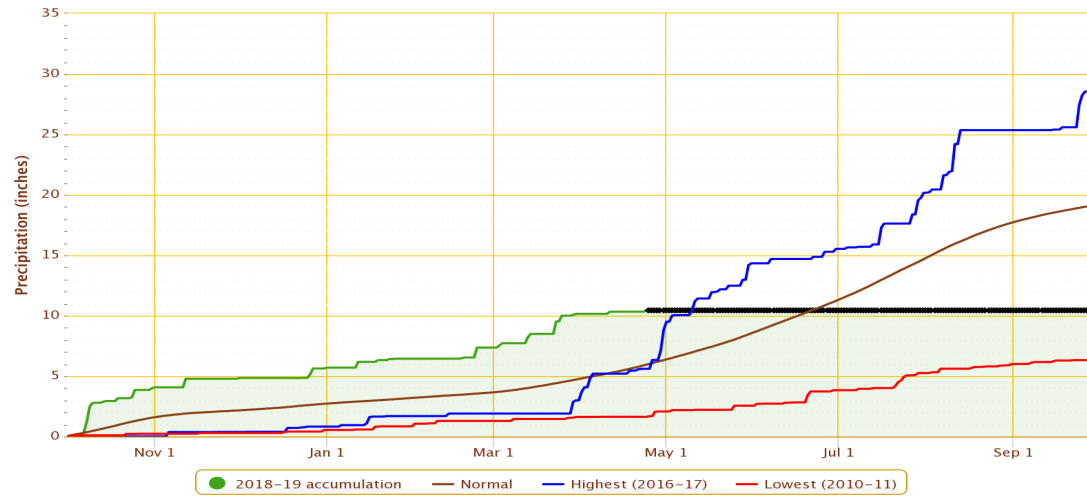
### Daily Temperature Data – WALSH 1 W, CO

Period of Record – 1967–09–01 to 2019–04–24. Normals period: 1981–2010. Click and drag to zoom chart.

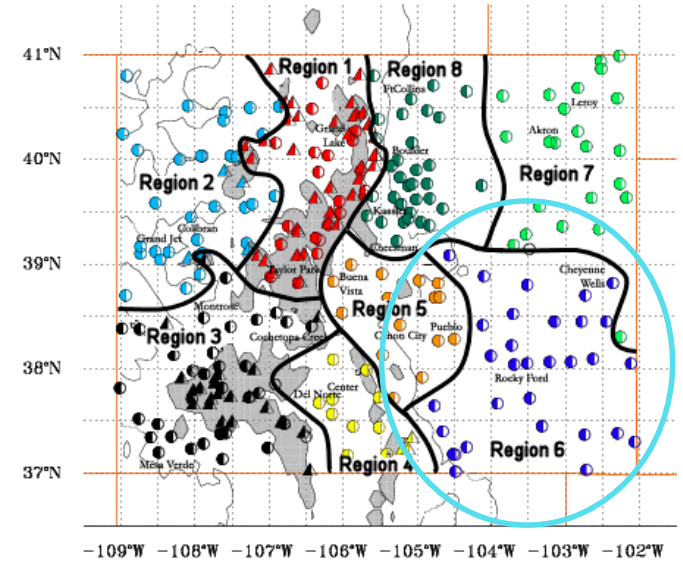


### Accumulated Precipitation – WALSH 1 W, CO

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

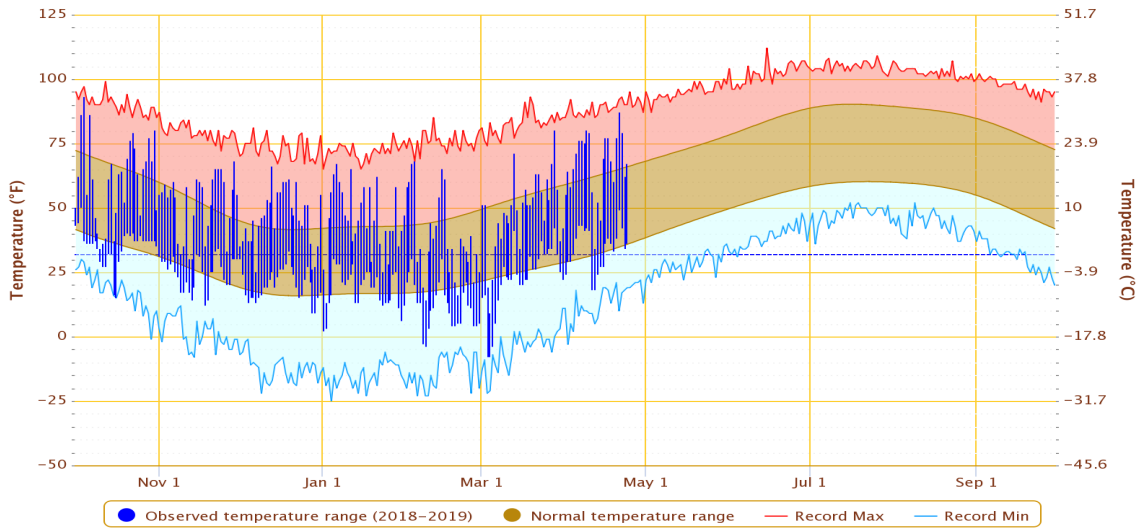


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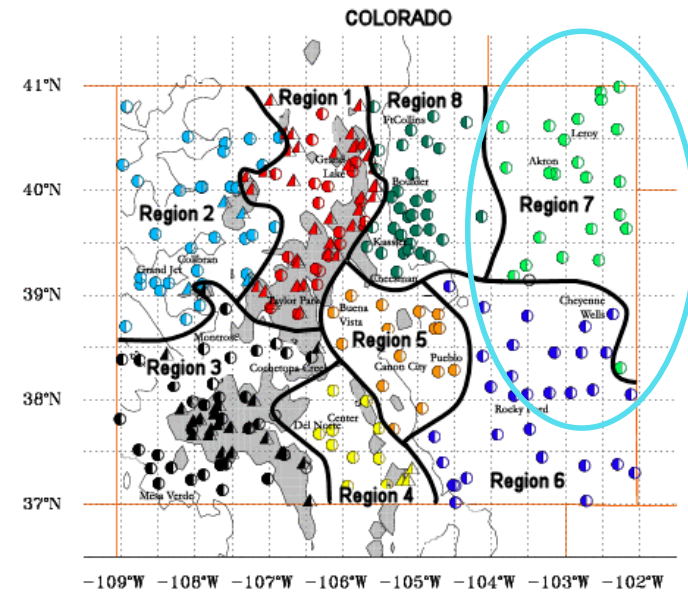
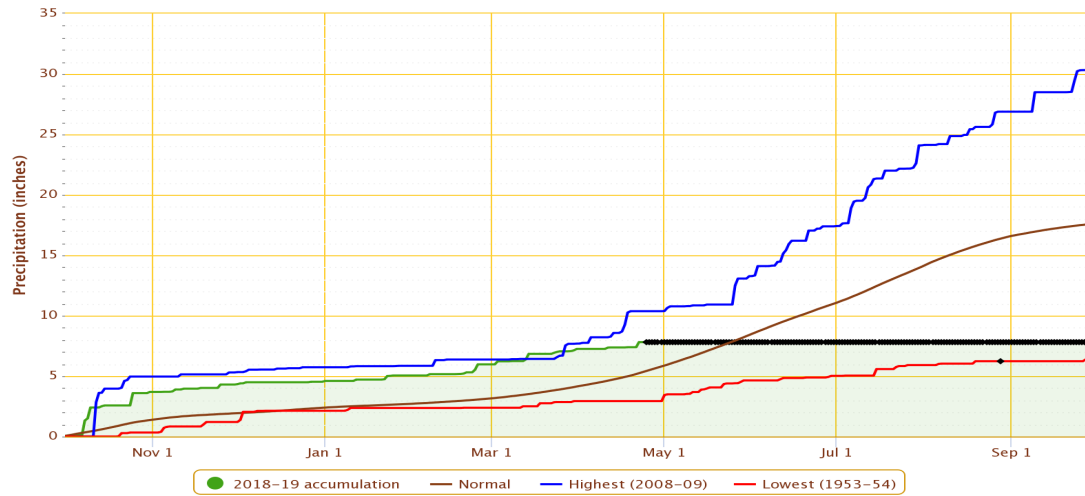
### Daily Temperature Data – BURLINGTON, CO

Period of Record – 1903–12–01 to 2019–04–24. Normals period: 1981–2010. Click and drag to zoom chart.



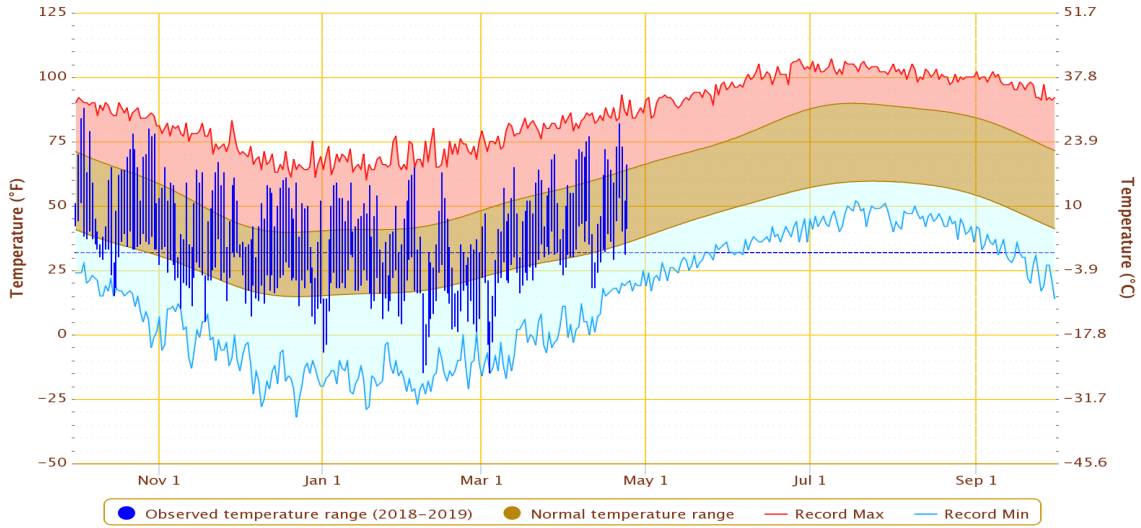
### Accumulated Precipitation – BURLINGTON, CO

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



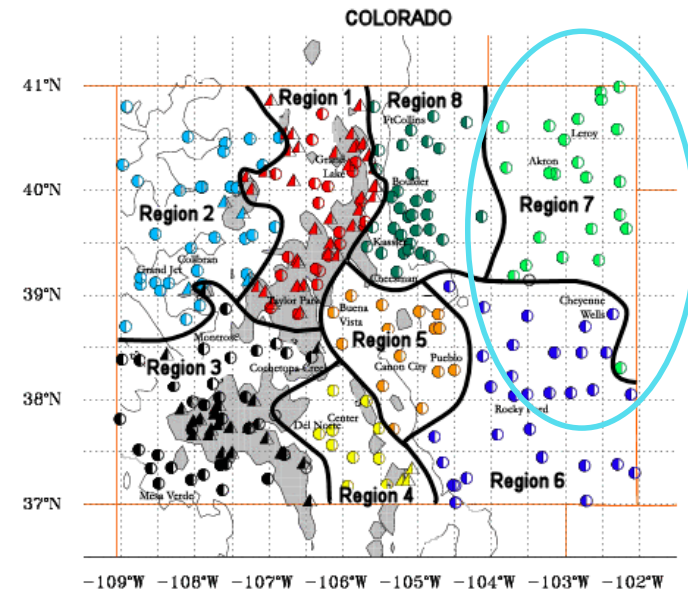
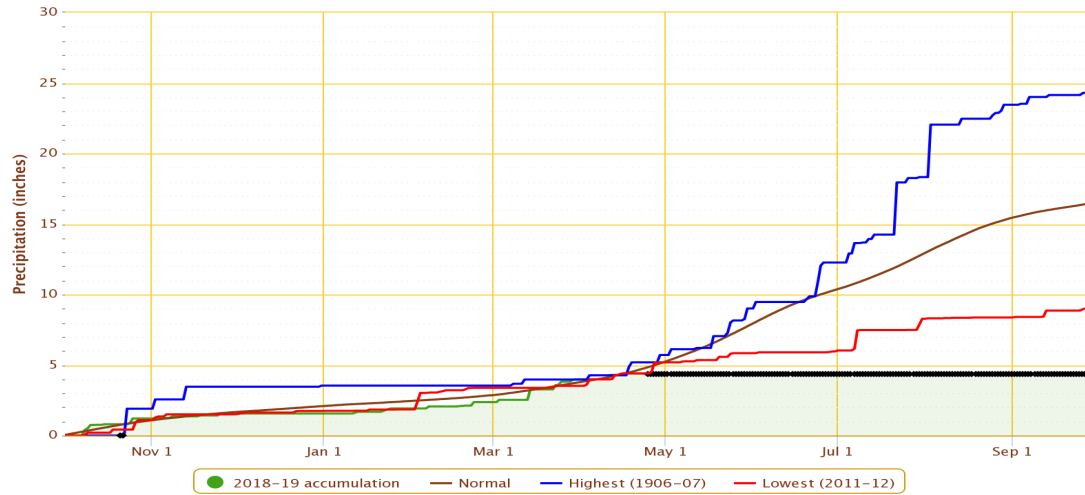
### Daily Temperature Data – AKRON 4 E, CO

Period of Record – 1893-06-01 to 2019-04-24. Normals period: 1981-2010. Click and drag to zoom chart.



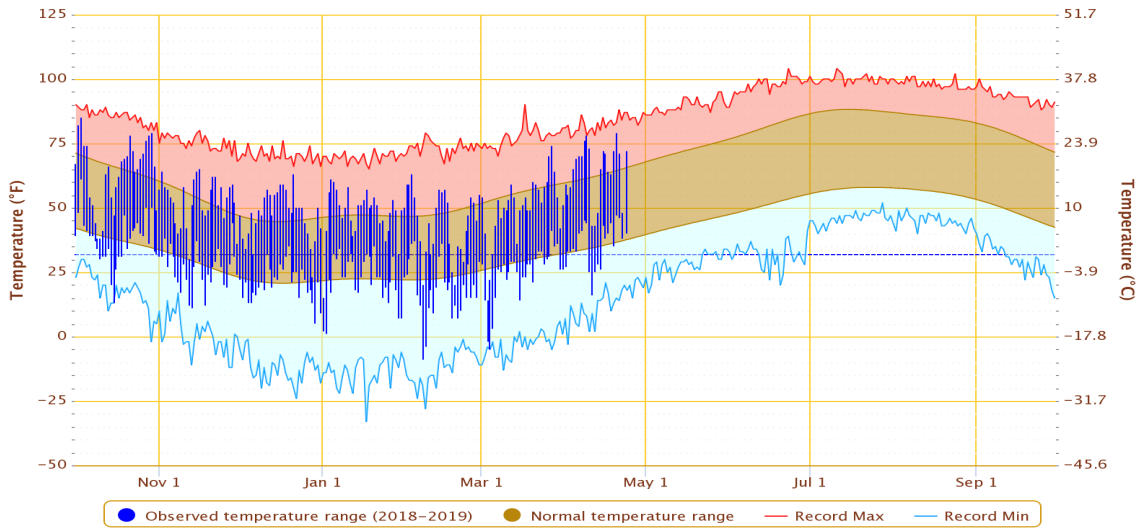
### Accumulated Precipitation – AKRON 4 E, CO

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



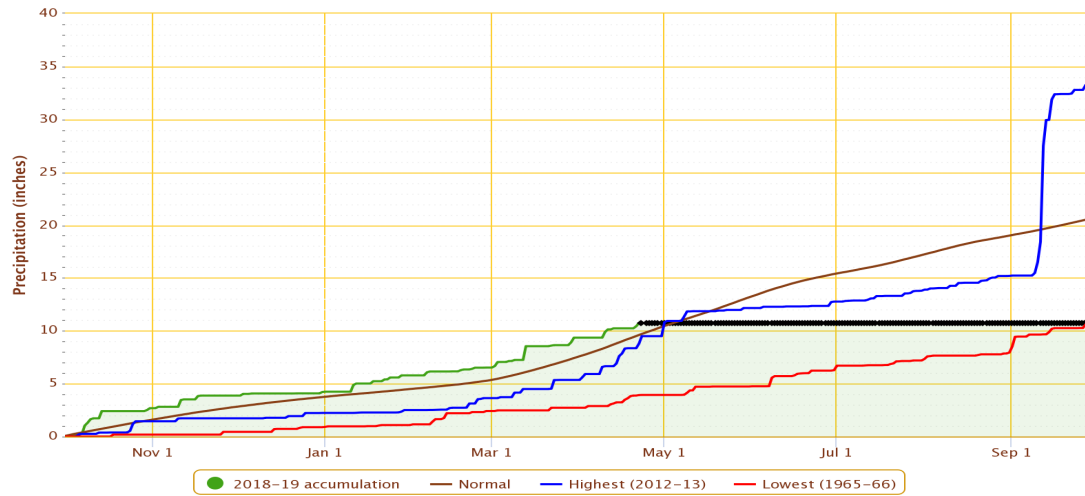
### Daily Temperature Data – BOULDER, CO

Period of Record – 1893–10–01 to 2019–04–24. Normals period: 1981–2010. Click and drag to zoom chart.



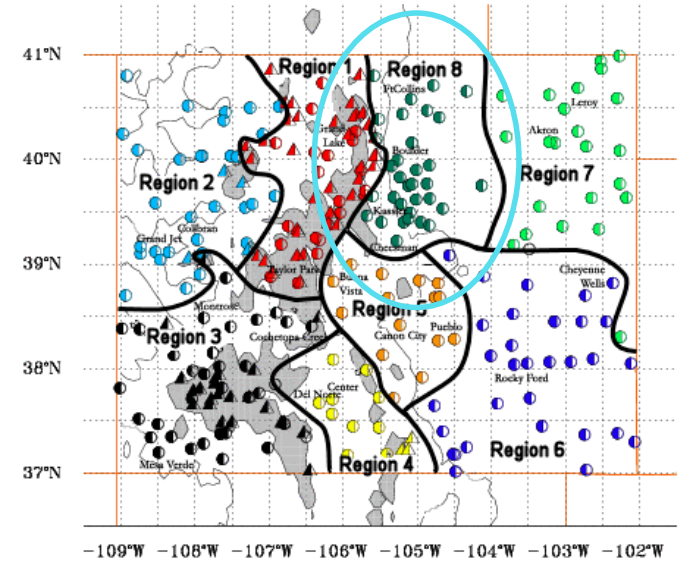
### Accumulated Precipitation – BOULDER, CO

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

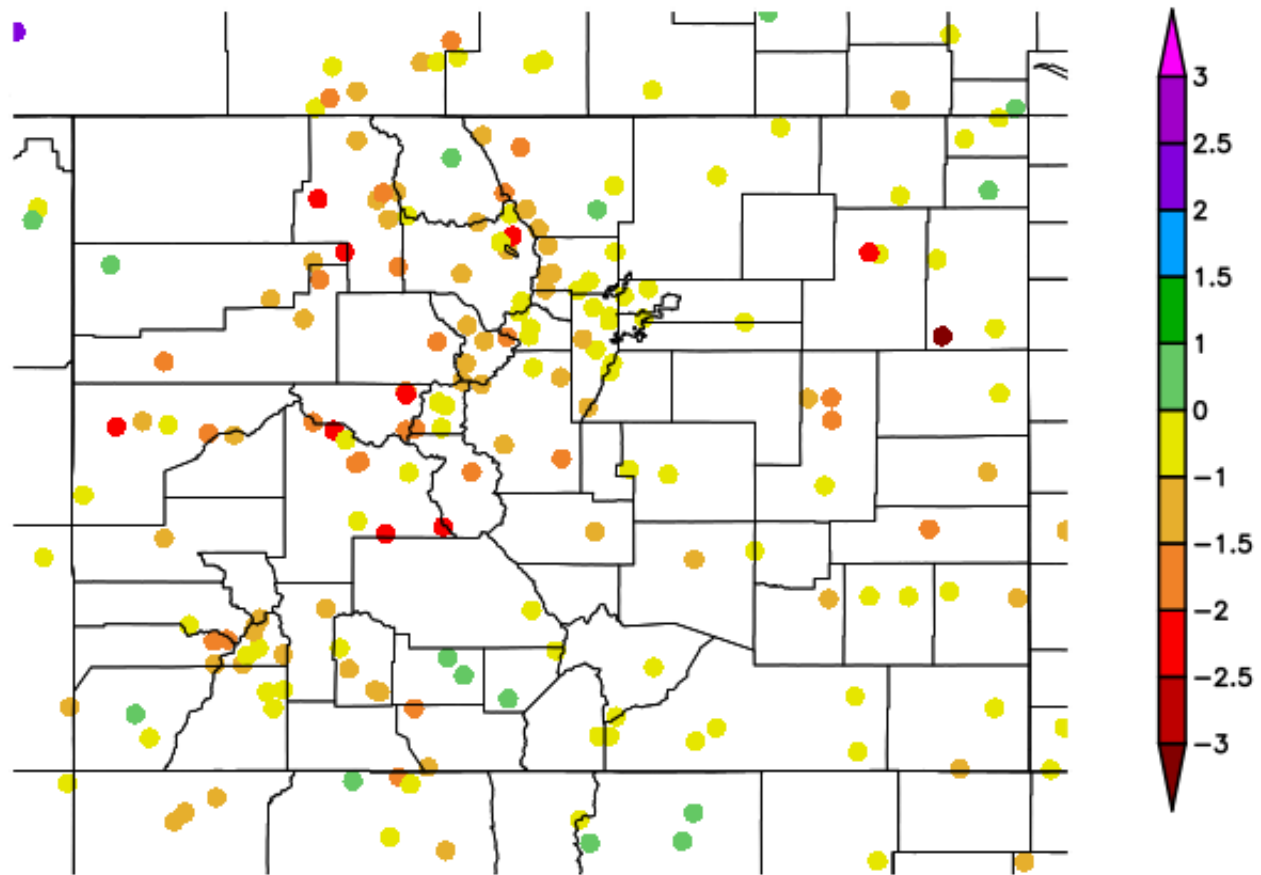


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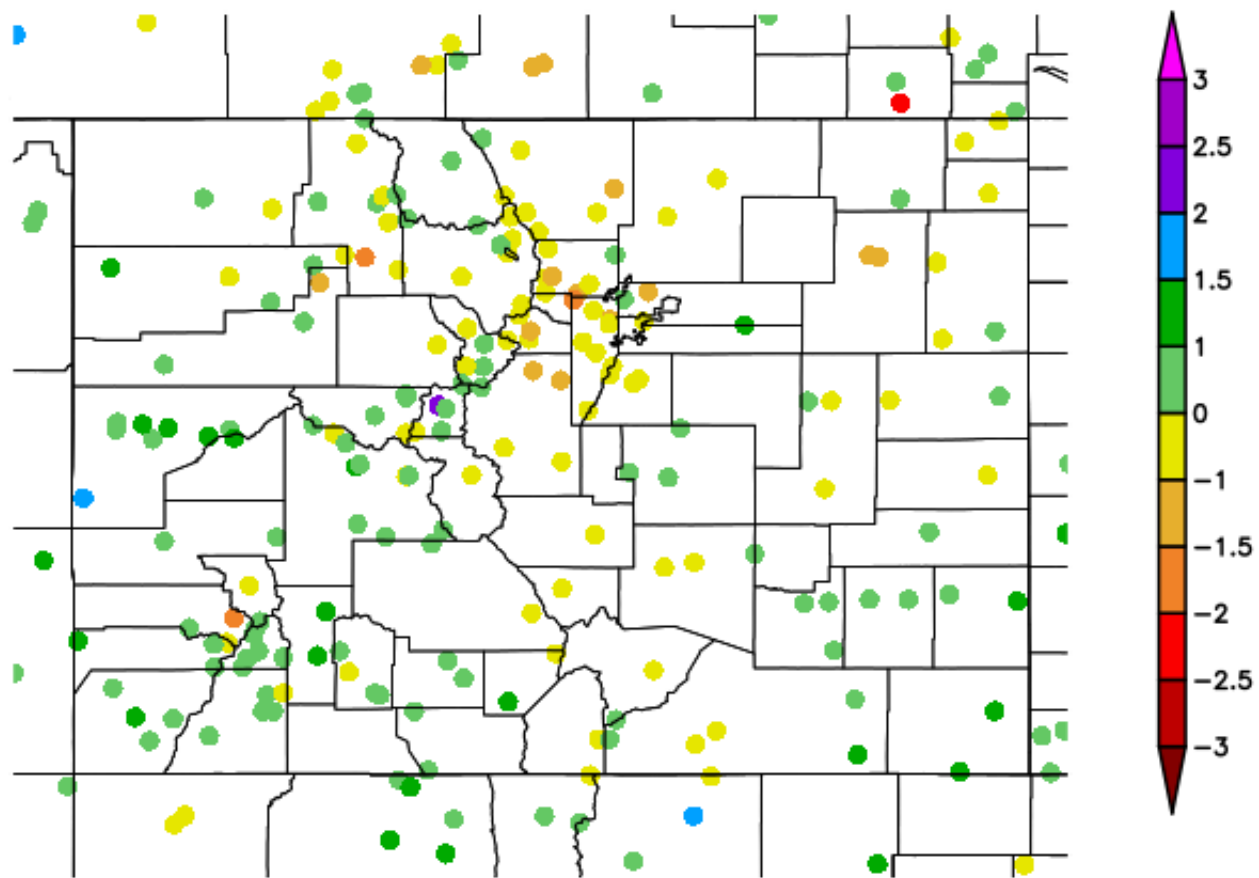
### COLORADO



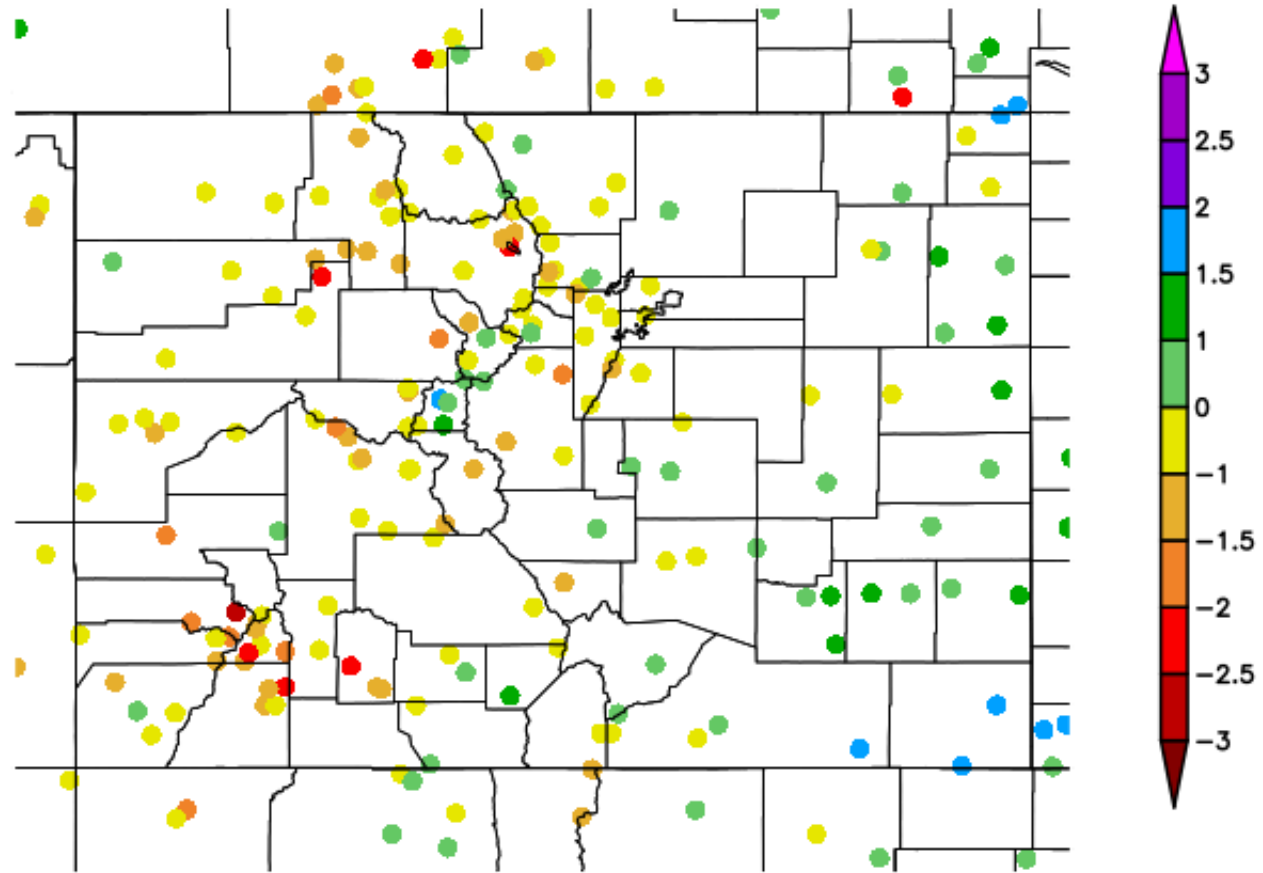
# 30 Day SPI 3/25/2019 - 4/23/2019



# 9 Month SPI 7/25/2018 - 4/24/2019

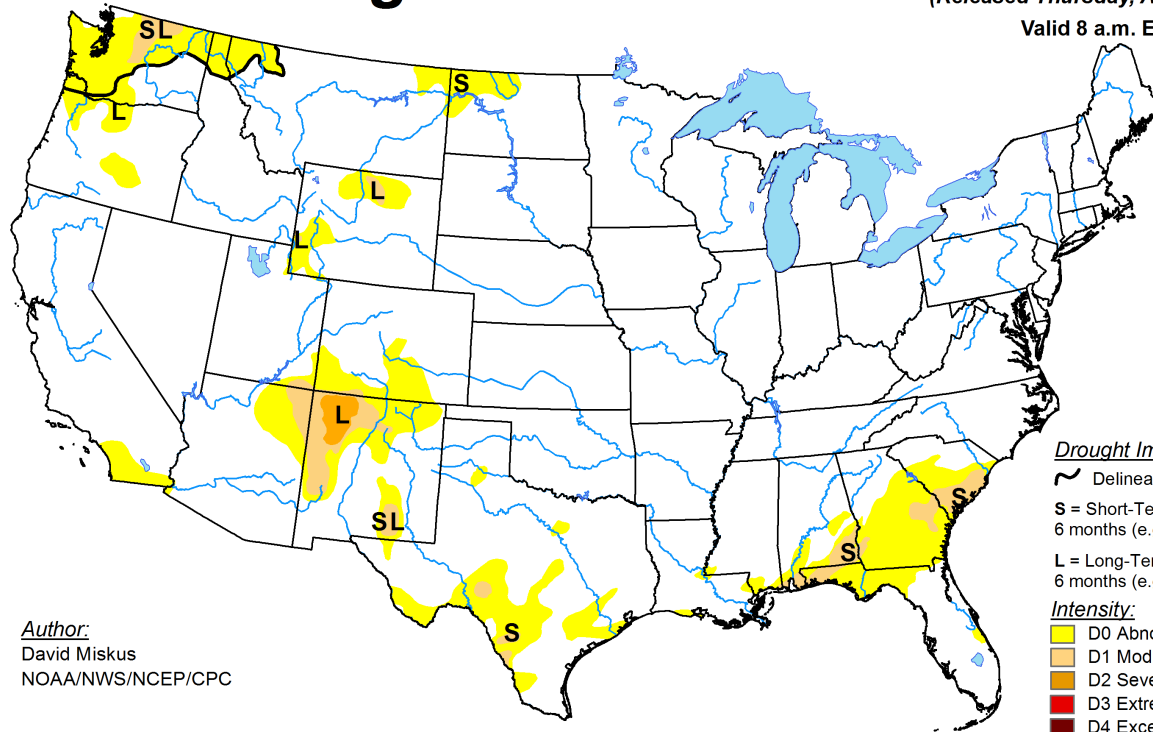


# 24 Month SPI 4/24/2017 - 4/23/2019



# U.S. Drought Monitor

April 23, 2019  
 (Released Thursday, Apr. 25, 2019)  
 Valid 8 a.m. EDT



*Author:*  
 David Miskus  
 NOAA/NWS/NCEP/CPC

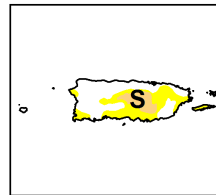
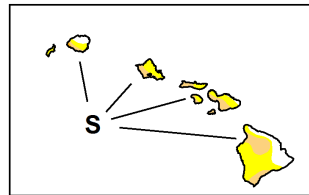
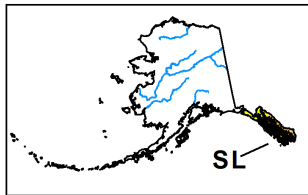
***Drought Impact Types:***

- ~ 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:***

- Yellow: D0 Abnormally Dry
- Light Orange: D1 Moderate Drought
- Dark Orange: D2 Severe Drought
- Red: D3 Extreme Drought
- Dark Red: D4 Exceptional Drought

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

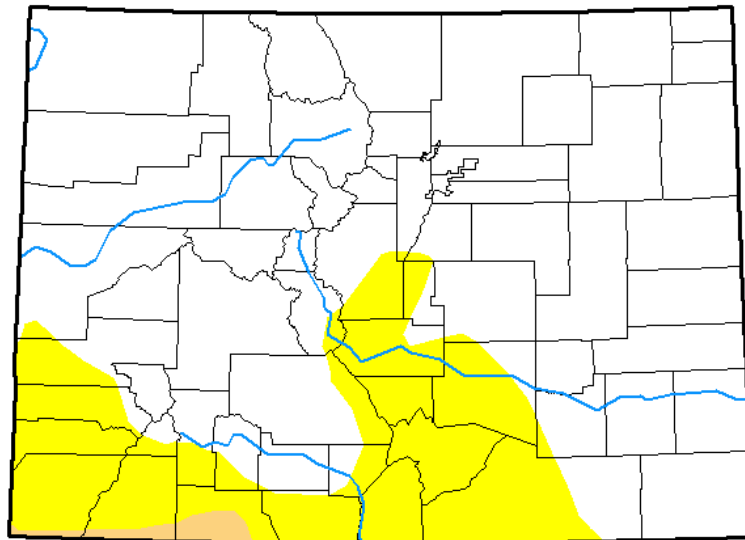


<http://droughtmonitor.unl.edu/>



# U.S. Drought Monitor Colorado

**April 23, 2019**  
(Released Thursday, Apr. 25, 2019)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	78.01	21.99	0.98	0.00	0.00	0.00
<b>Last Week</b> <i>04-16-2019</i>	78.01	21.99	4.74	0.00	0.00	0.00
<b>3 Months Ago</b> <i>01-22-2019</i>	15.91	84.09	68.49	42.41	22.04	2.79
<b>Start of Calendar Year</b> <i>01-01-2019</i>	17.94	82.06	66.26	54.91	27.11	11.22
<b>Start of Water Year</b> <i>09-25-2018</i>	14.19	85.81	72.30	64.41	48.47	16.21
<b>One Year Ago</b> <i>04-24-2018</i>	18.47	81.53	67.98	53.65	30.89	3.87

Intensity:

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

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

Author:

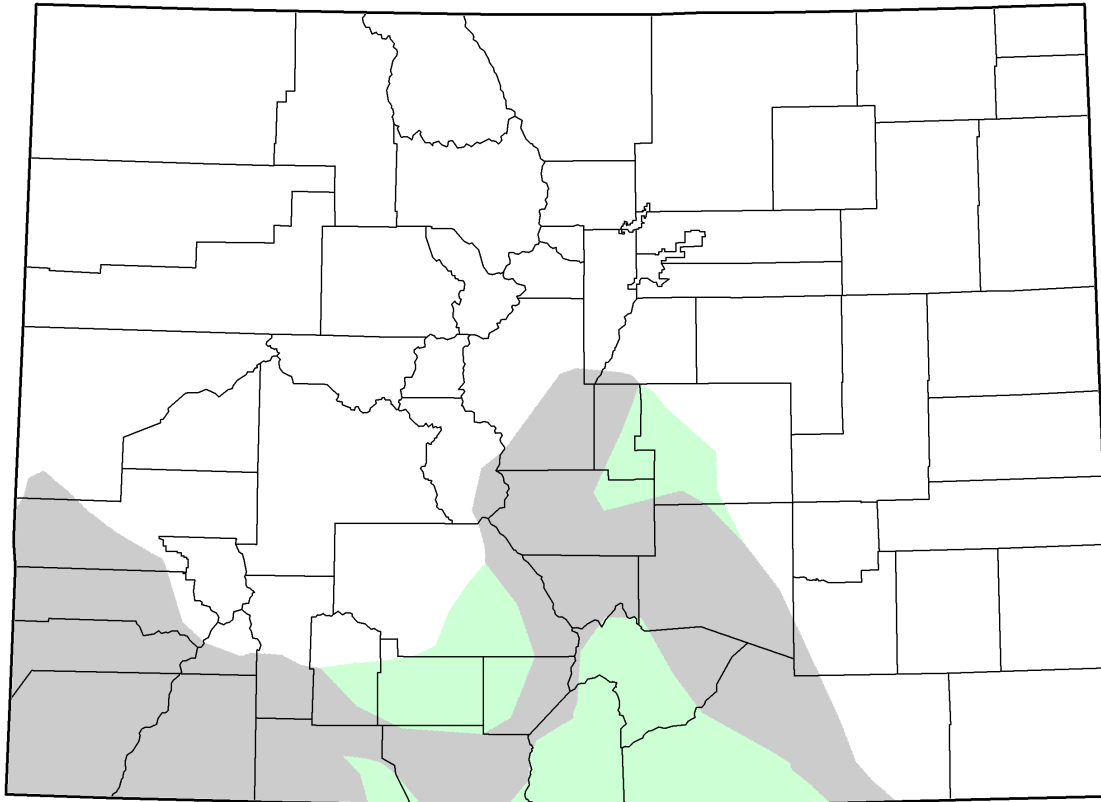
David Miskus  
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>



### U.S. Drought Monitor Class Change - Colorado 1 Month



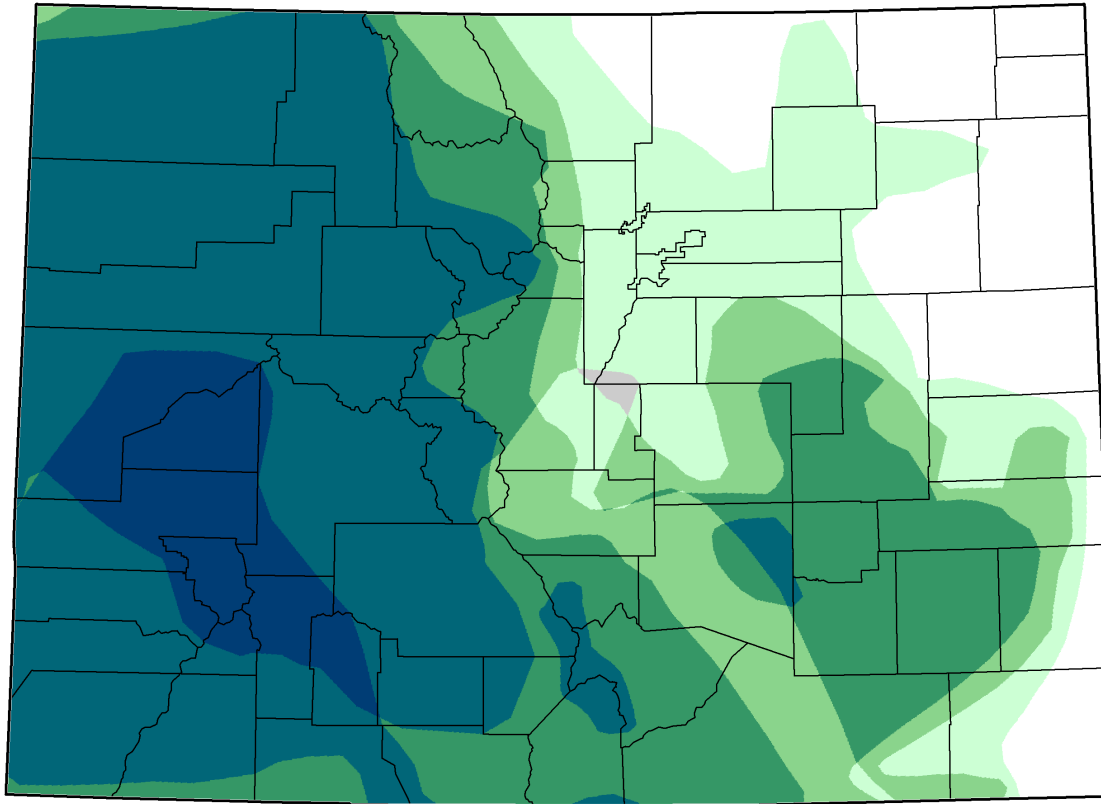
April 23, 2019  
compared to  
March 26, 2019

[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 Start of Water Year



April 23, 2019  
compared to  
September 25, 2018

[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

## Summer Outlook

What does El Niño mean?

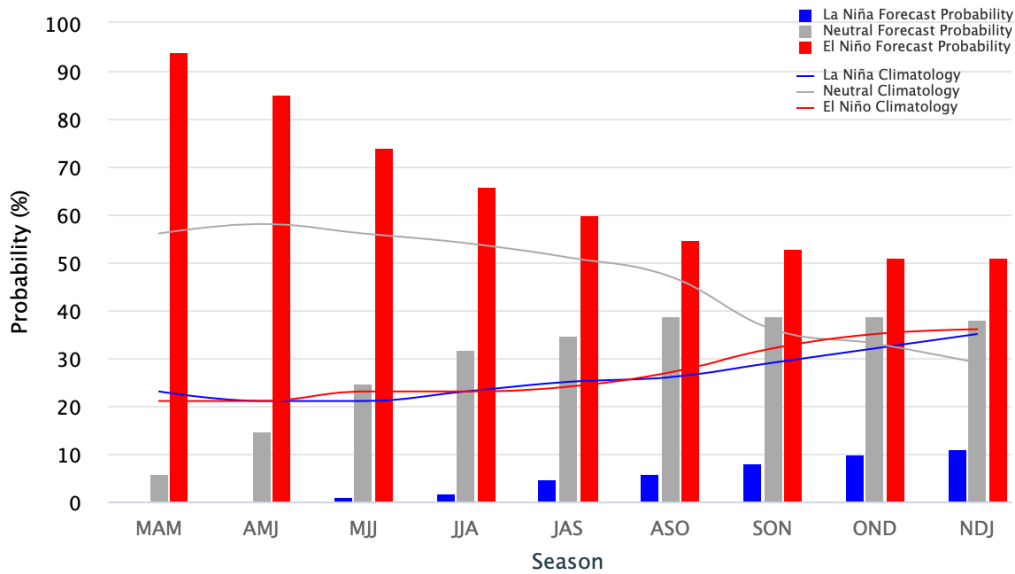
CPC Outlooks



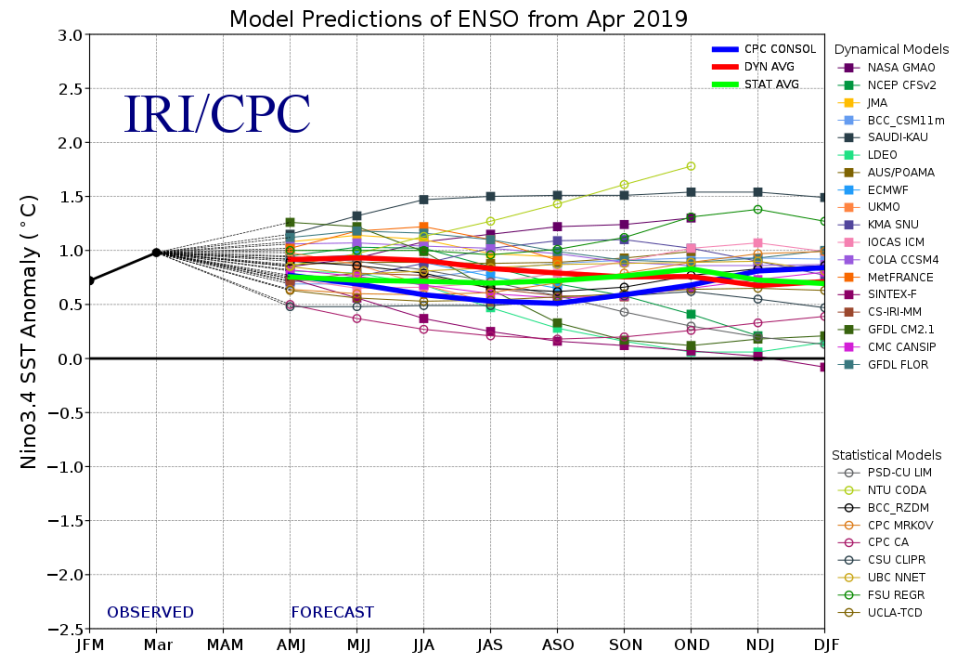
# What's the El Niño forecast?

Early-April 2019 CPC/IRI Official Probabilistic ENSO Forecasts

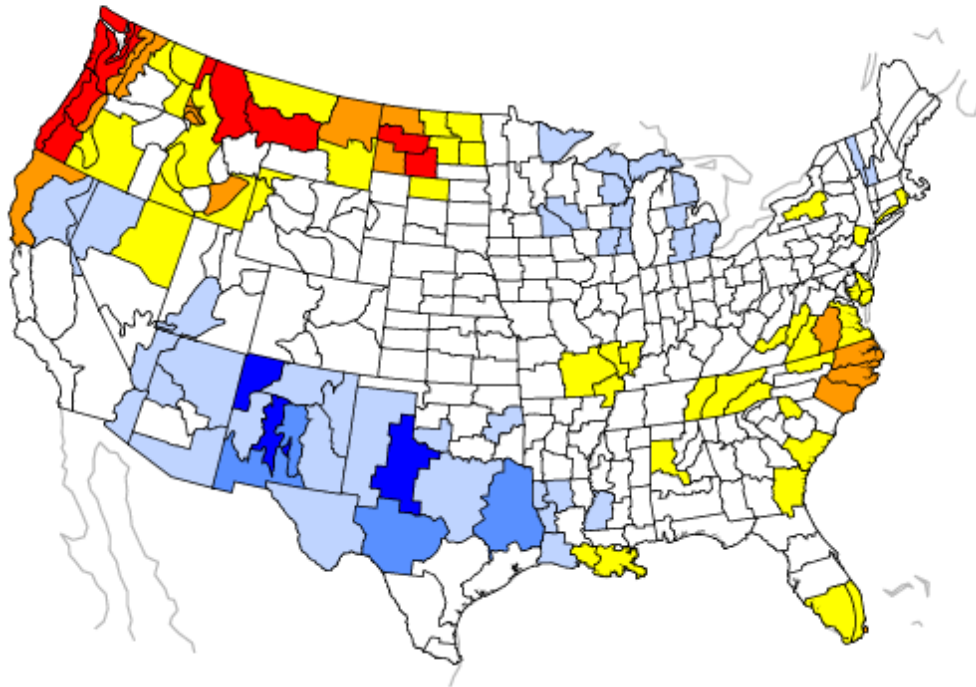
ENSO state based on NINO3.4 SST Anomaly  
Neutral ENSO: -0.5 °C to 0.5 °C



An El Niño advisory is in effect...



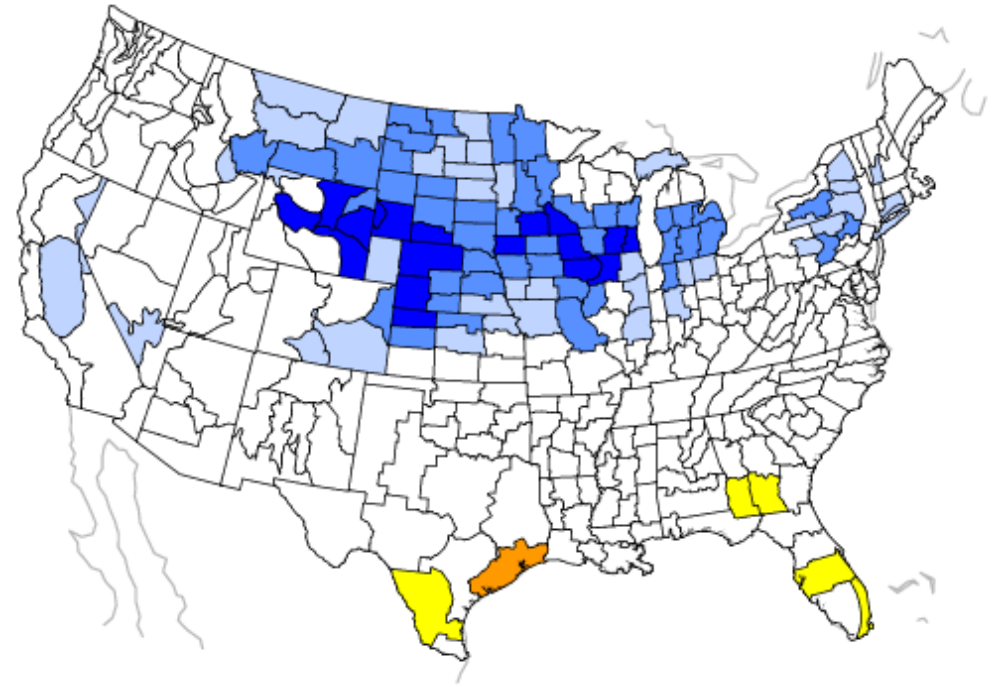
**MJJ Temperature During El Nino**  
**Increased Risk of Warm or Cold Extremes**



Percent (%) Increase in Risk

NOAA/ESRL/PSD

**JAS Temperature During El Nino**  
**Increased Risk of Warm or Cold Extremes**

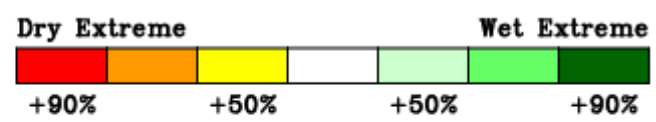
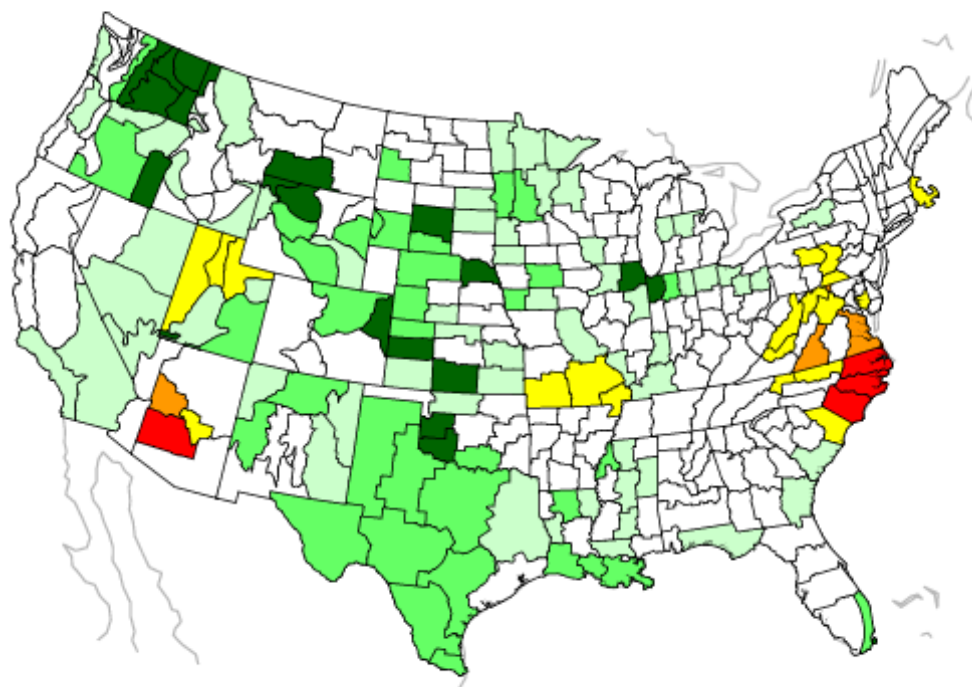


Percent (%) Increase in Risk

<https://www.esrl.noaa.gov/psd/enso/climaterisks/>



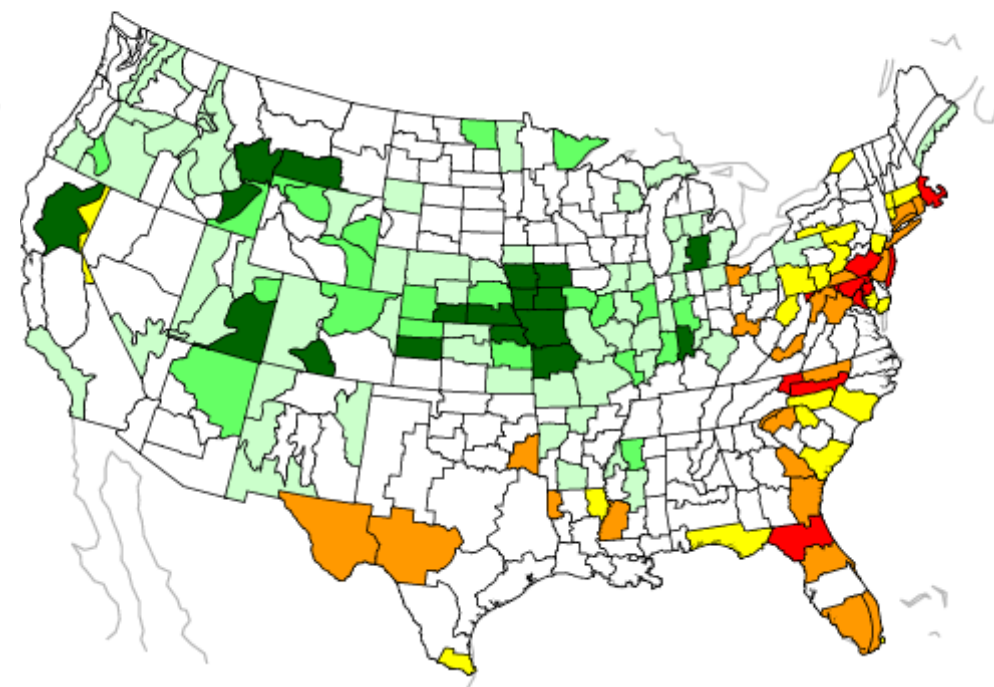
**MJJ Precipitation During El Nino**  
**Increased Risk of Wet or Dry Extremes**



Percent (%) Increase in Risk

NOAA/ESRL/PSD

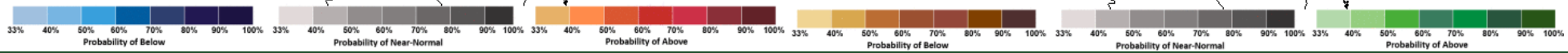
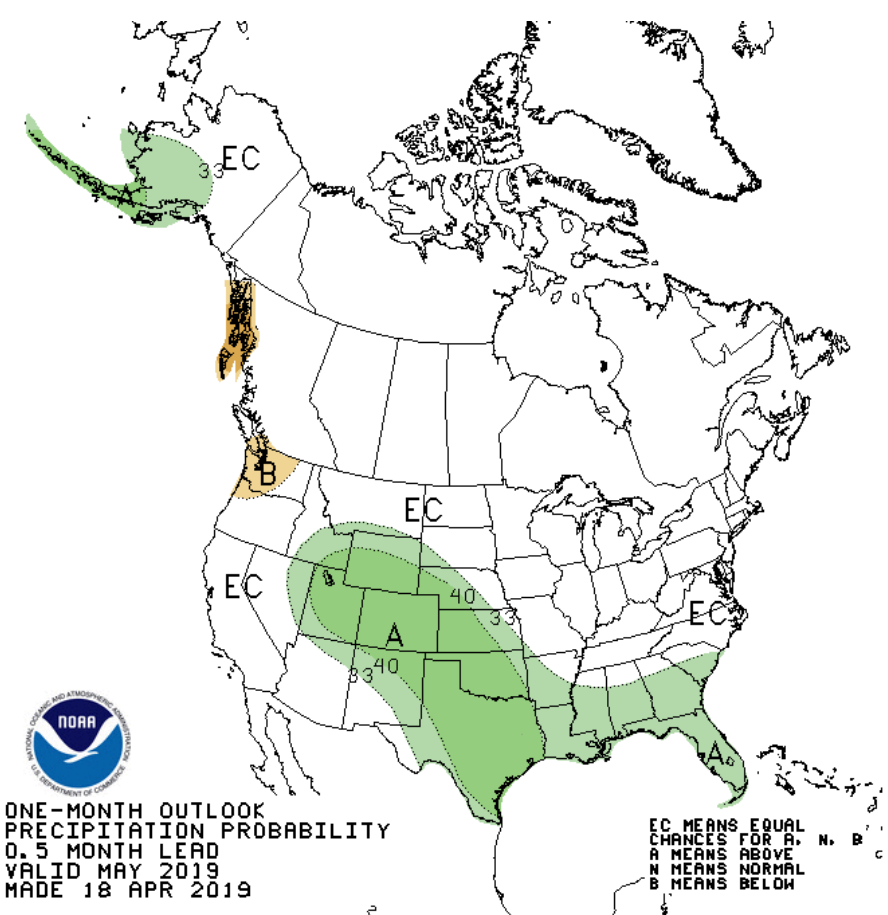
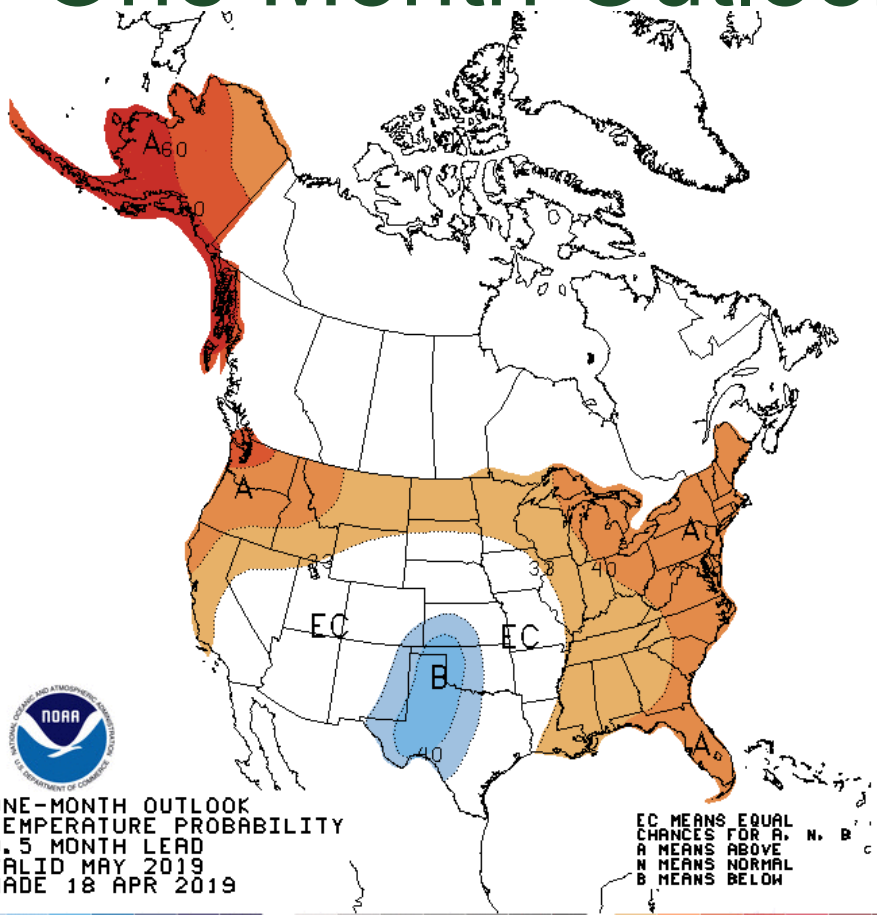
**JAS Precipitation During El Nino**  
**Increased Risk of Wet or Dry Extremes**



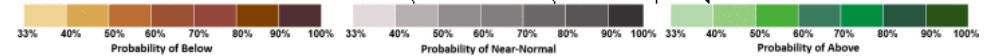
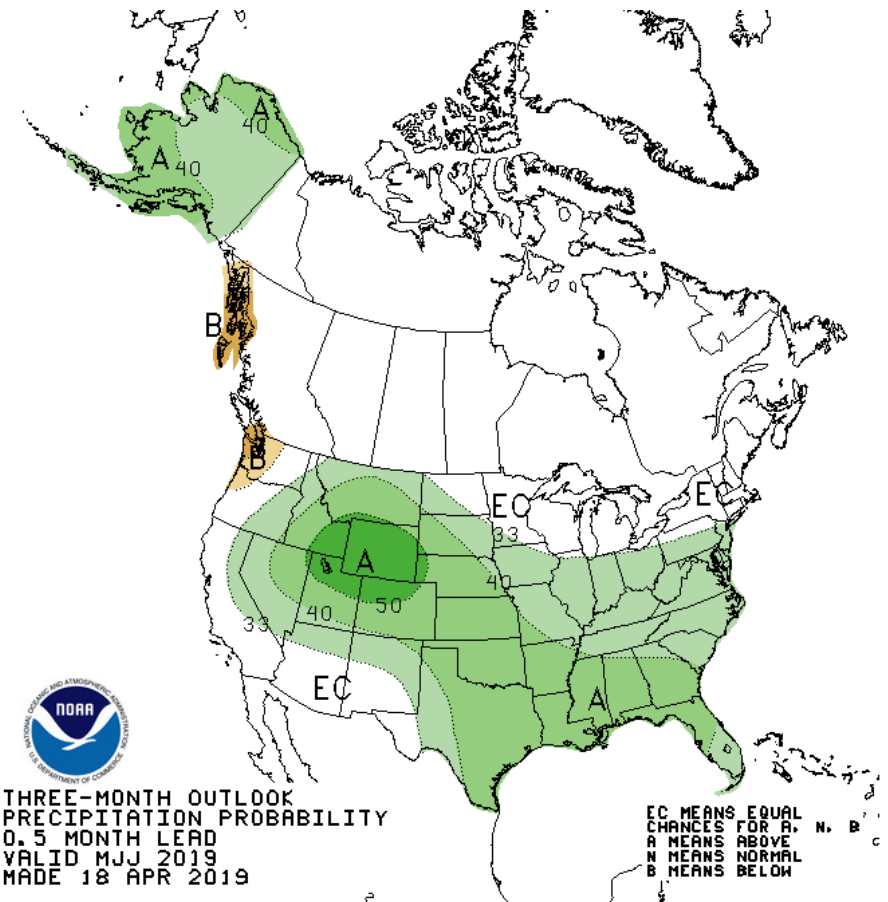
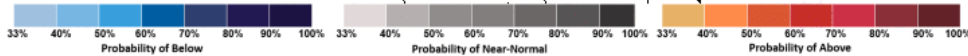
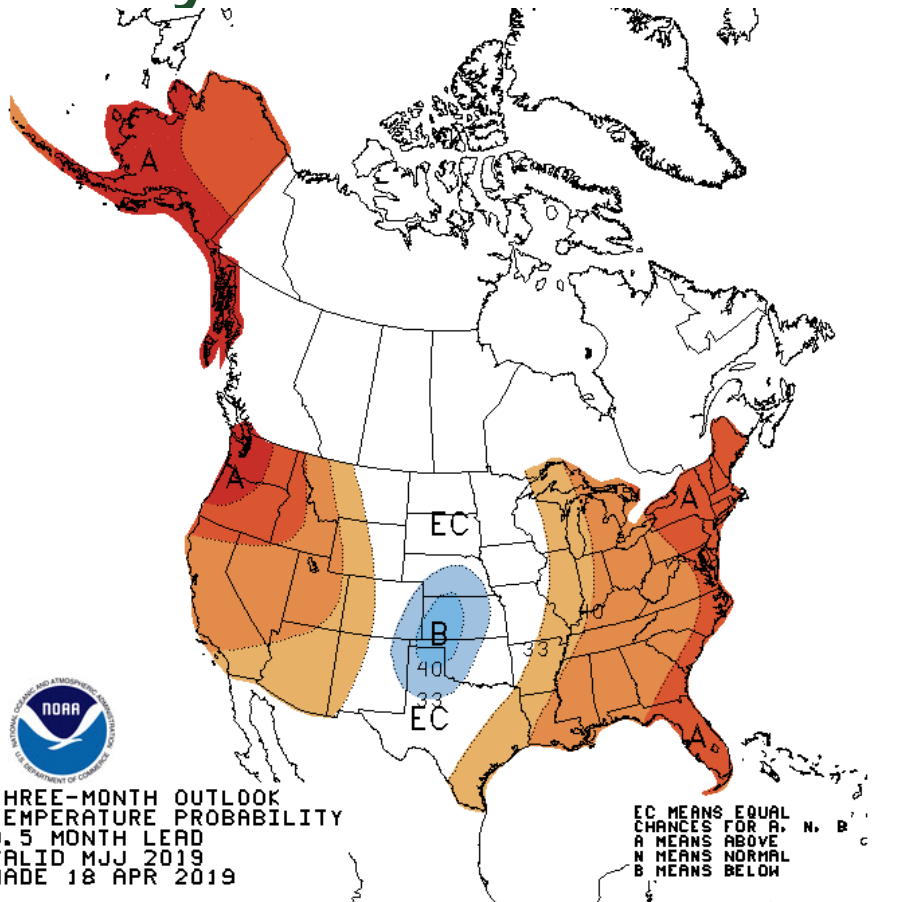
Percent (%) Increase in Risk

<https://www.esrl.noaa.gov/psd/enso/climaterisks/>

# One Month Outlook

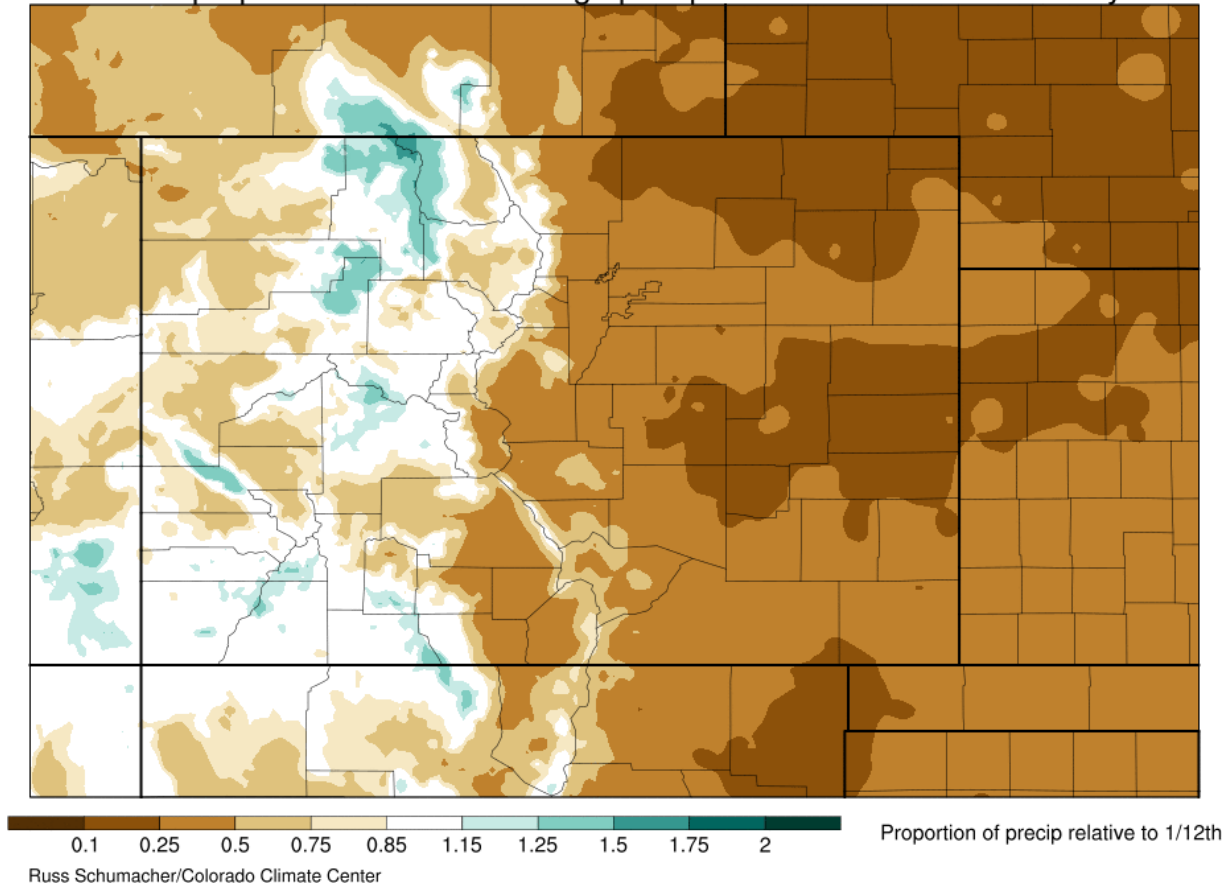


# May-Jun-Jul Outlook

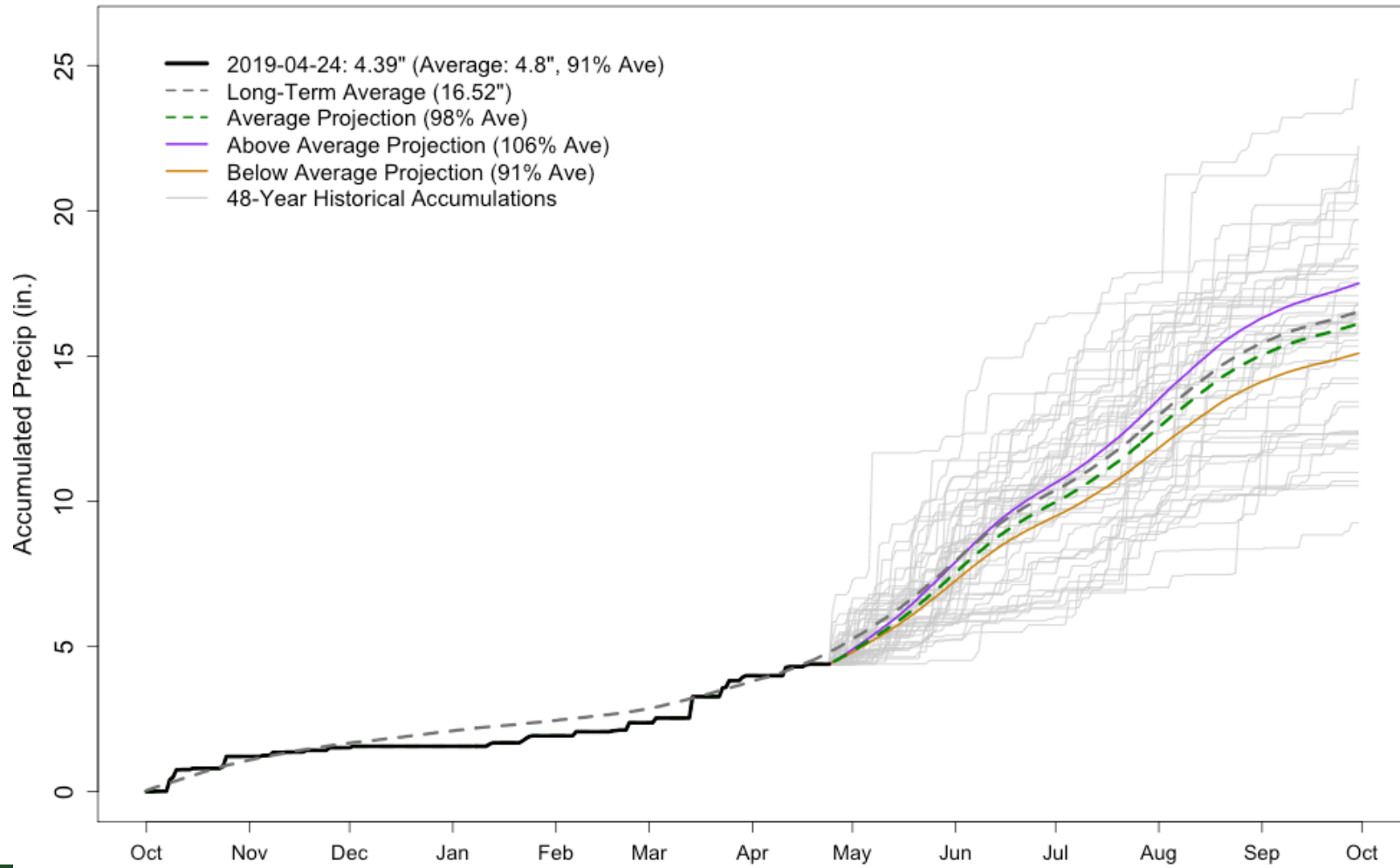


# The importance of summer precipitation

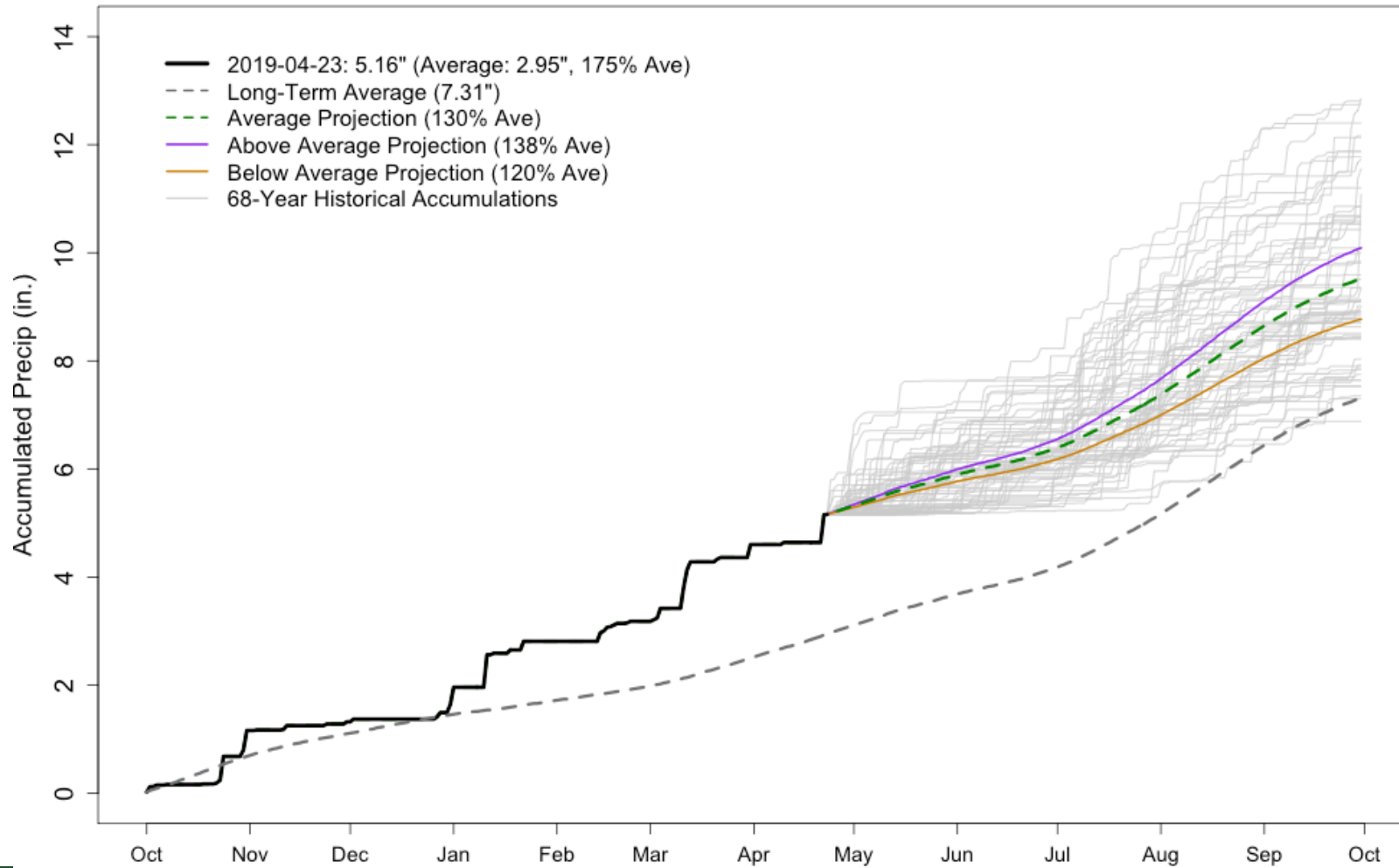
PRISM proportion of annual average precipitation in this month: January



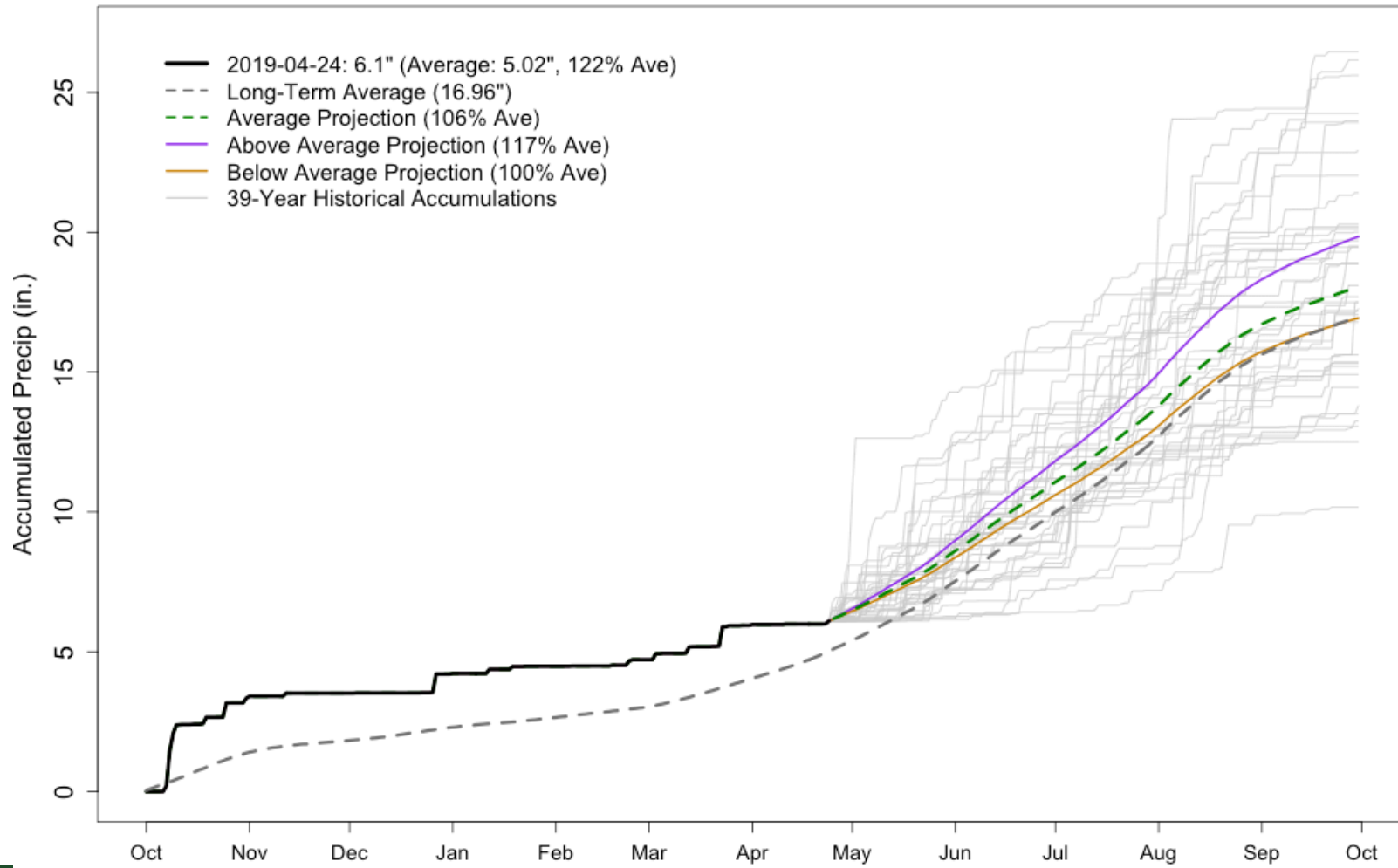
## AKRON 4 E WY2019 Precipitation Projections



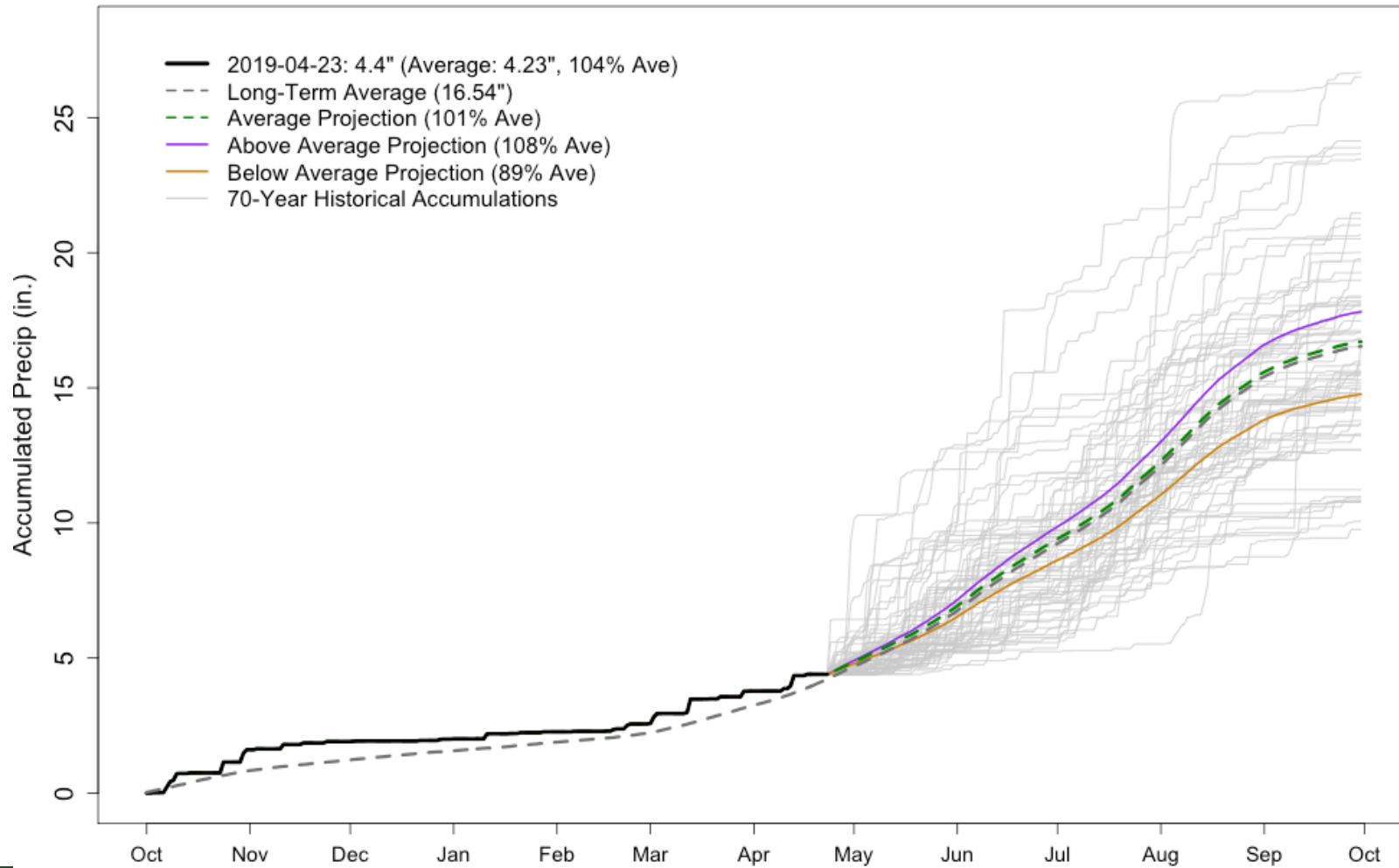
# ALAMOSA SAN LUIS VALLEY REGIONAL AP WY2019 Precipitation Projections



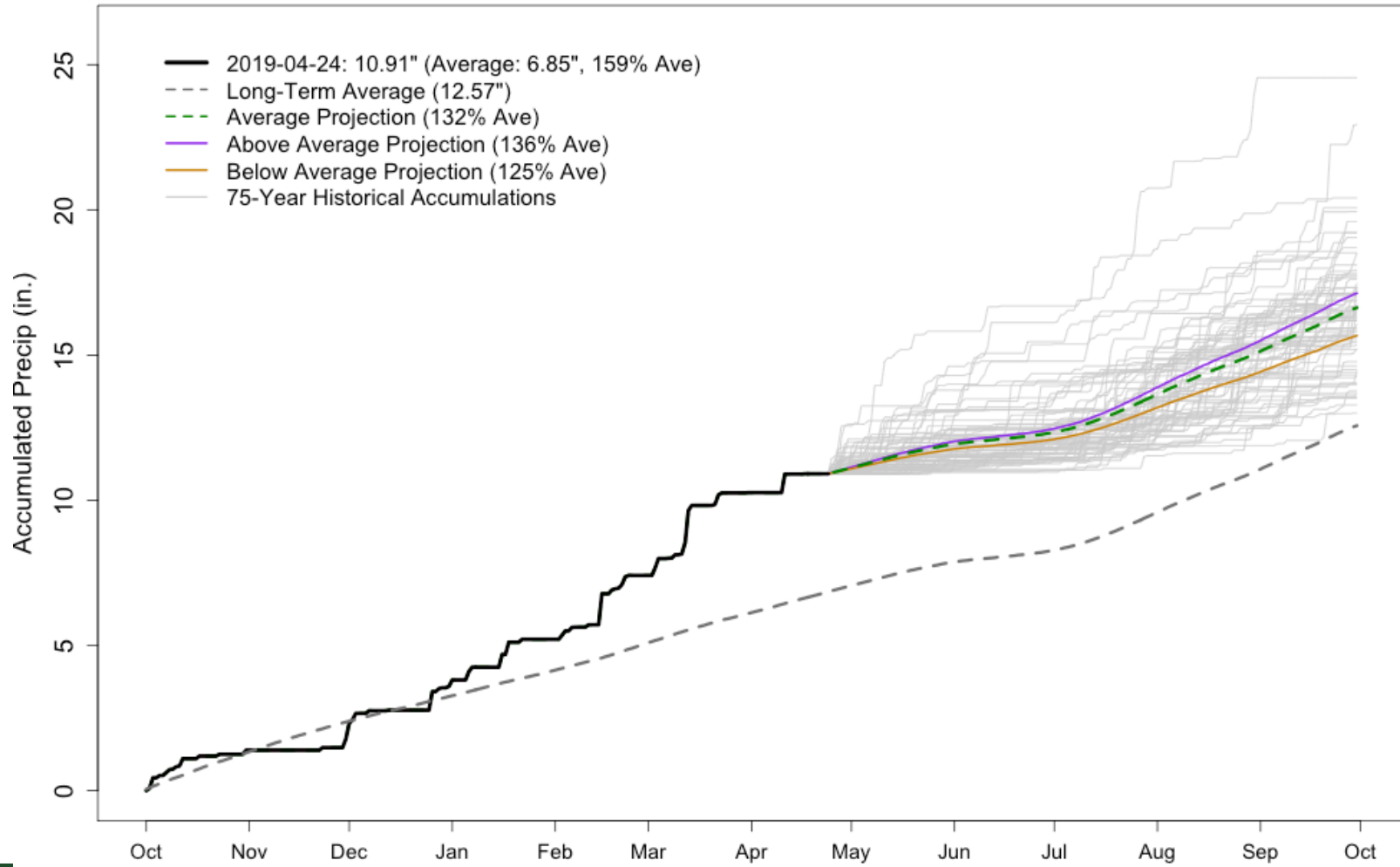
## CAMPO 7 S WY2019 Precipitation Projections



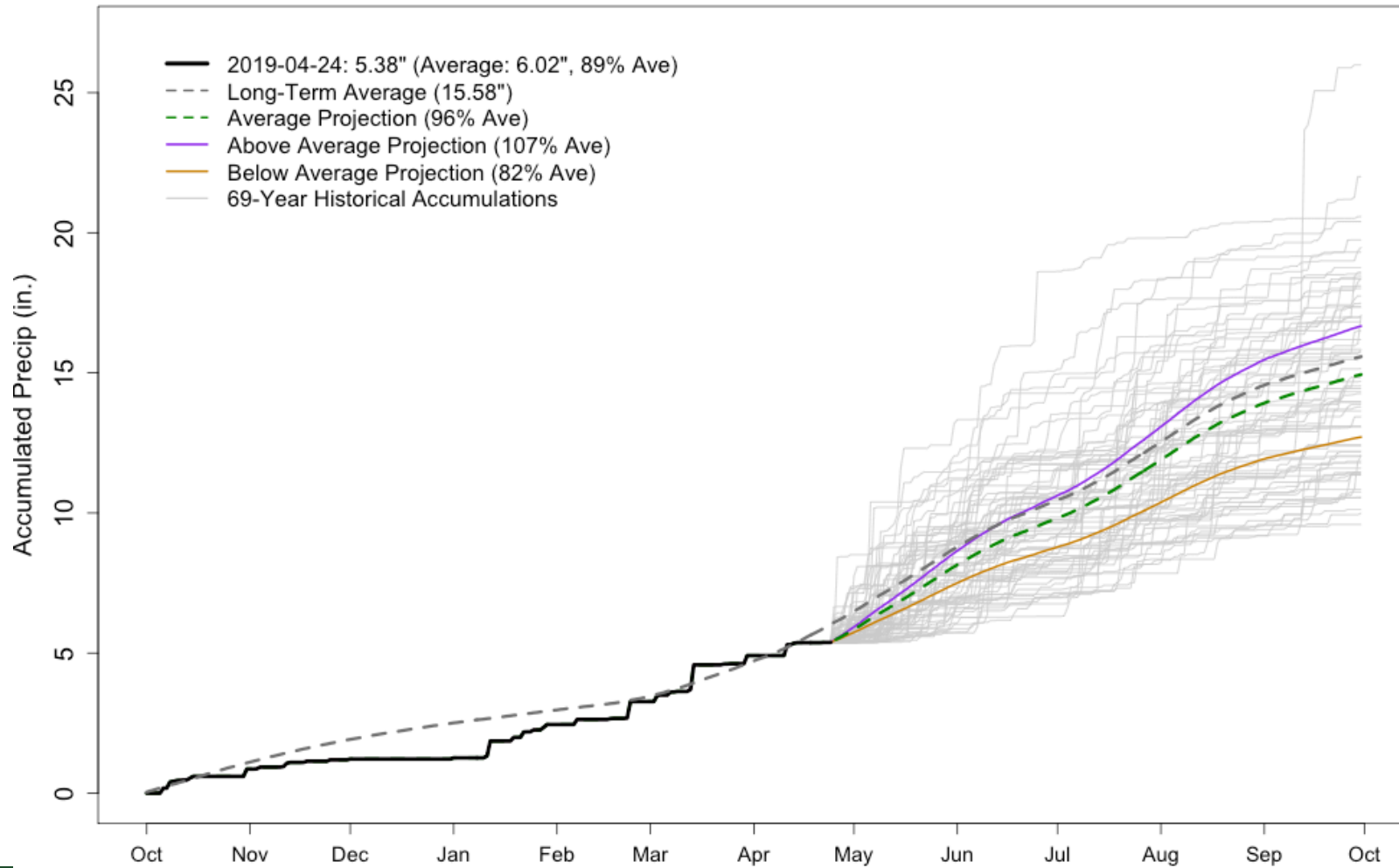
## COLORADO SPRINGS MUNICIPAL AP WY2019 Precipitation Projections



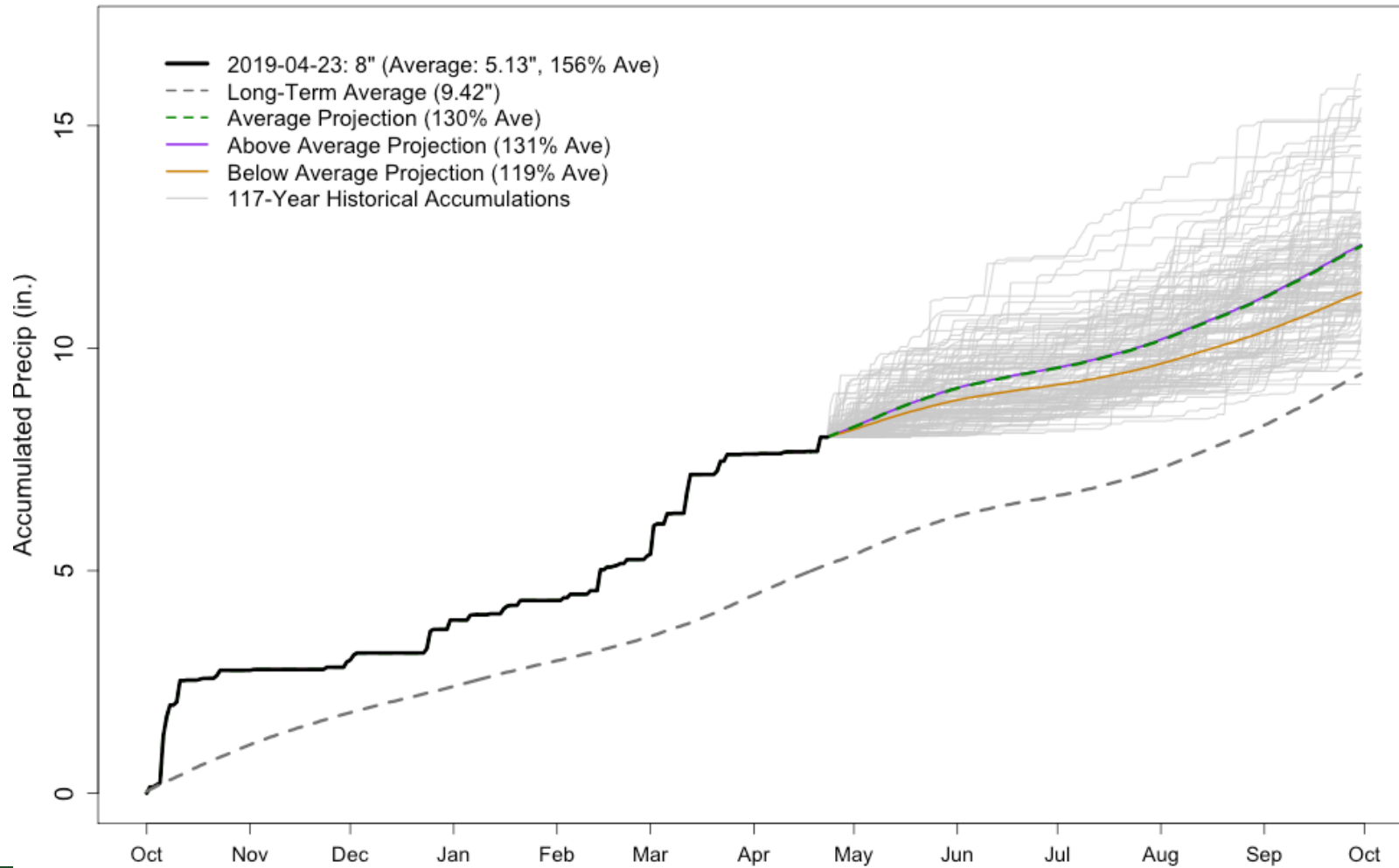
# CORTEZ WY2019 Precipitation Projections



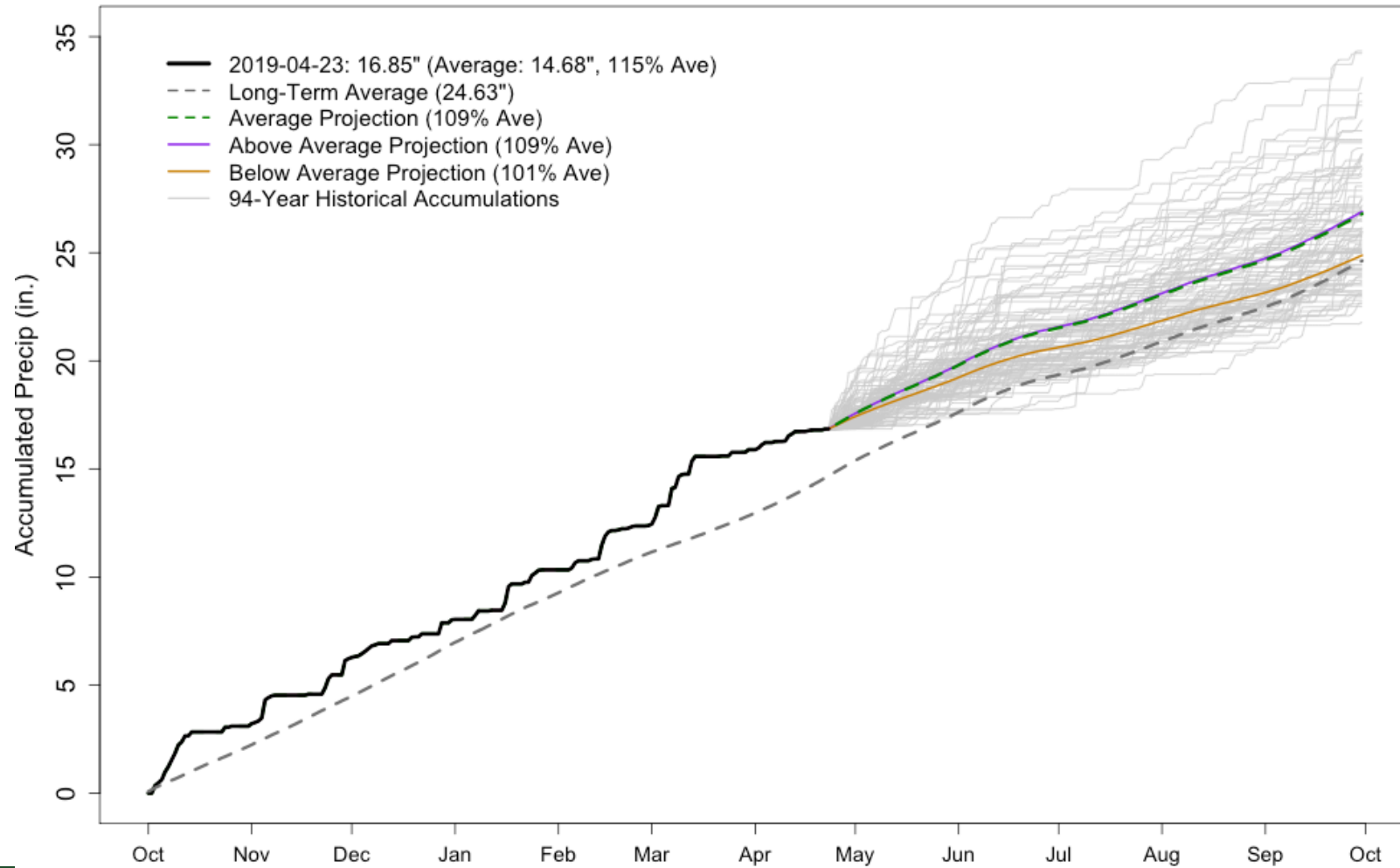
## DENVER-STAPELTON WY2019 Precipitation Projections



## GRAND JUNCTION WALKER FIELD WY2019 Precipitation Projections



## STEAMBOAT SPRINGS WY2019 Precipitation Projections



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**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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