Colorado Climate Update for WATF

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Along with: Zach Schwalbe, Becky Bolinger, Peter Goble, Dani Talmadge, Nolan Doesken

COLORADO CLIMATE CENTER

Water Availability Task Force meeting
February 2019

ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

COLORADO
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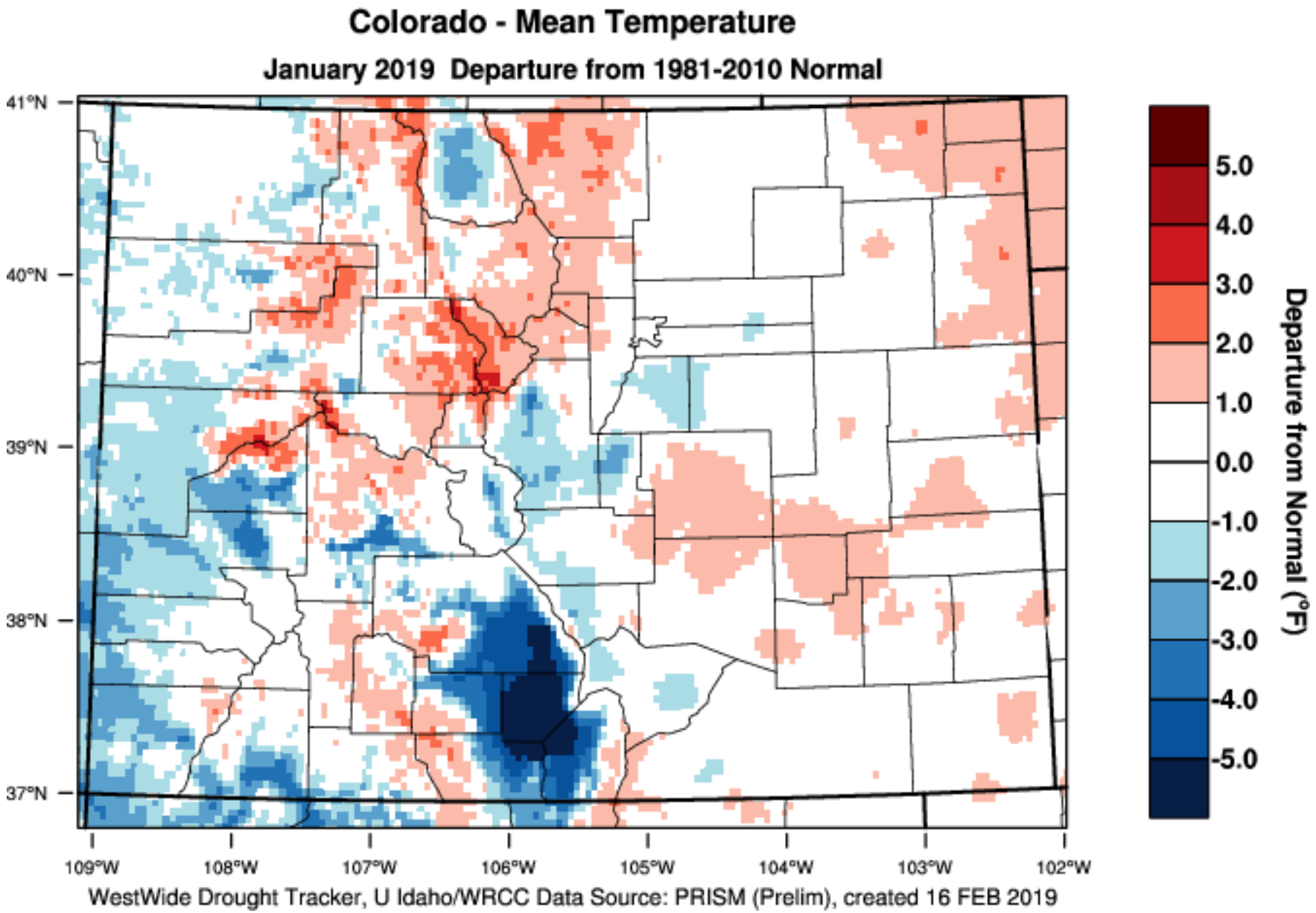
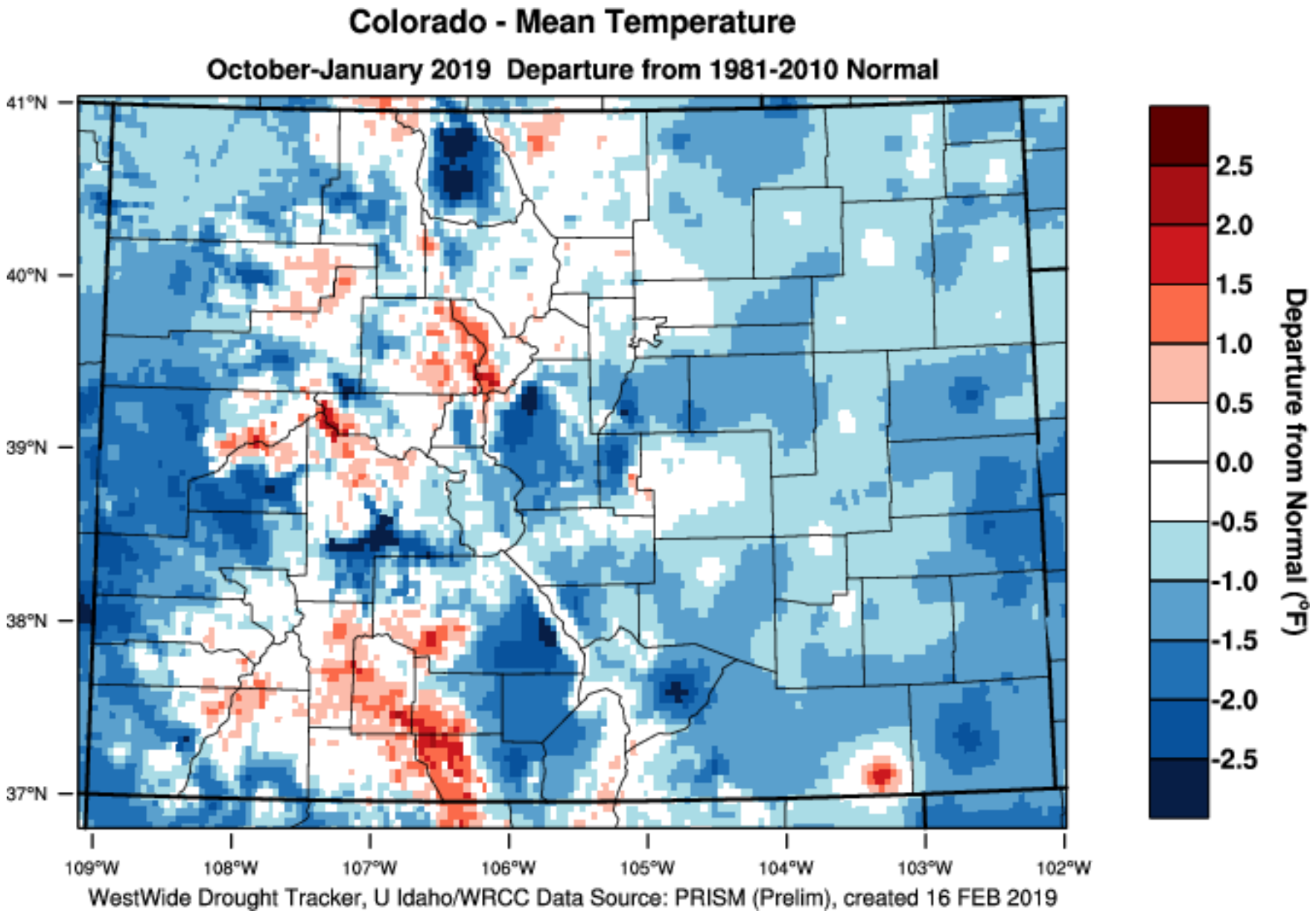
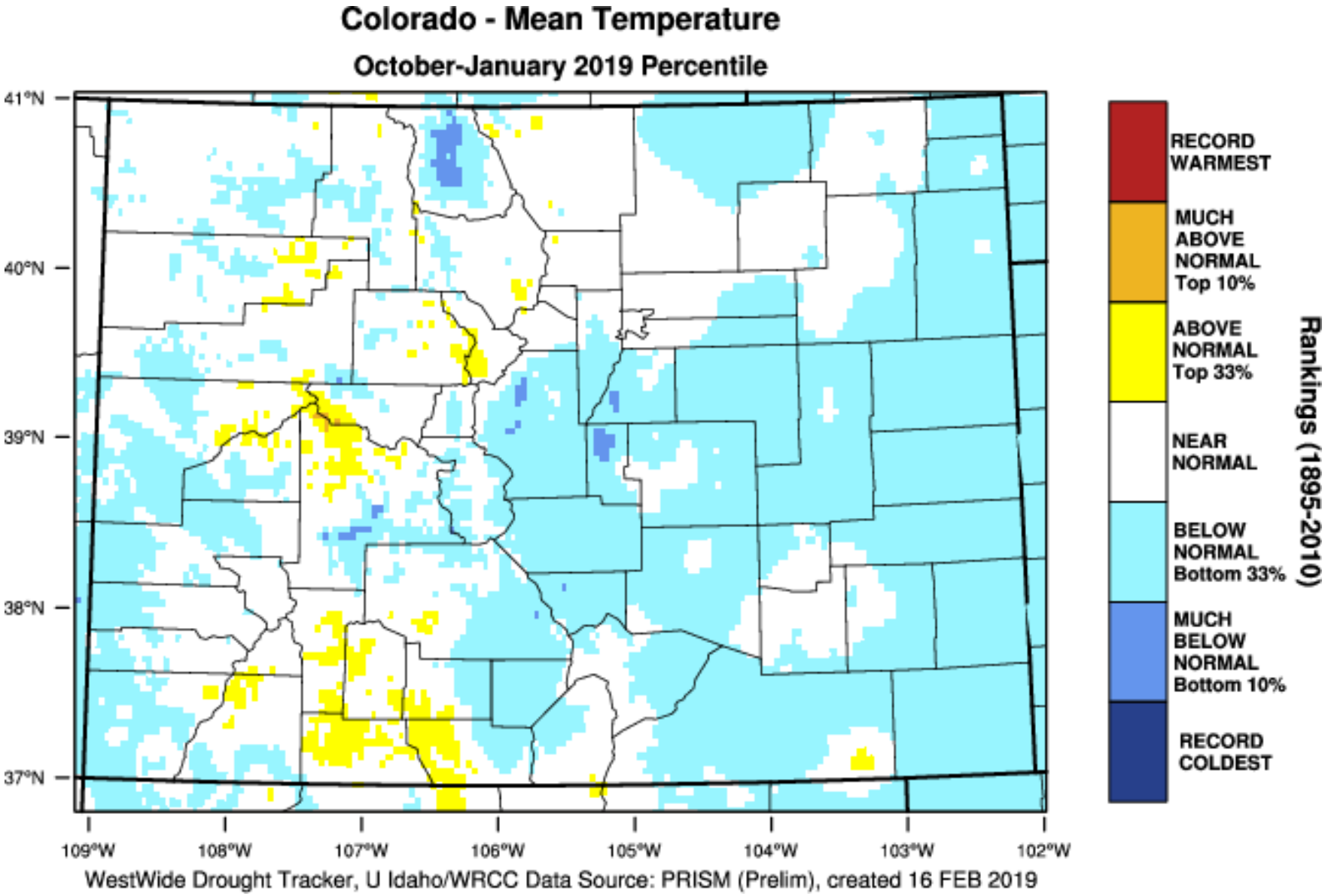
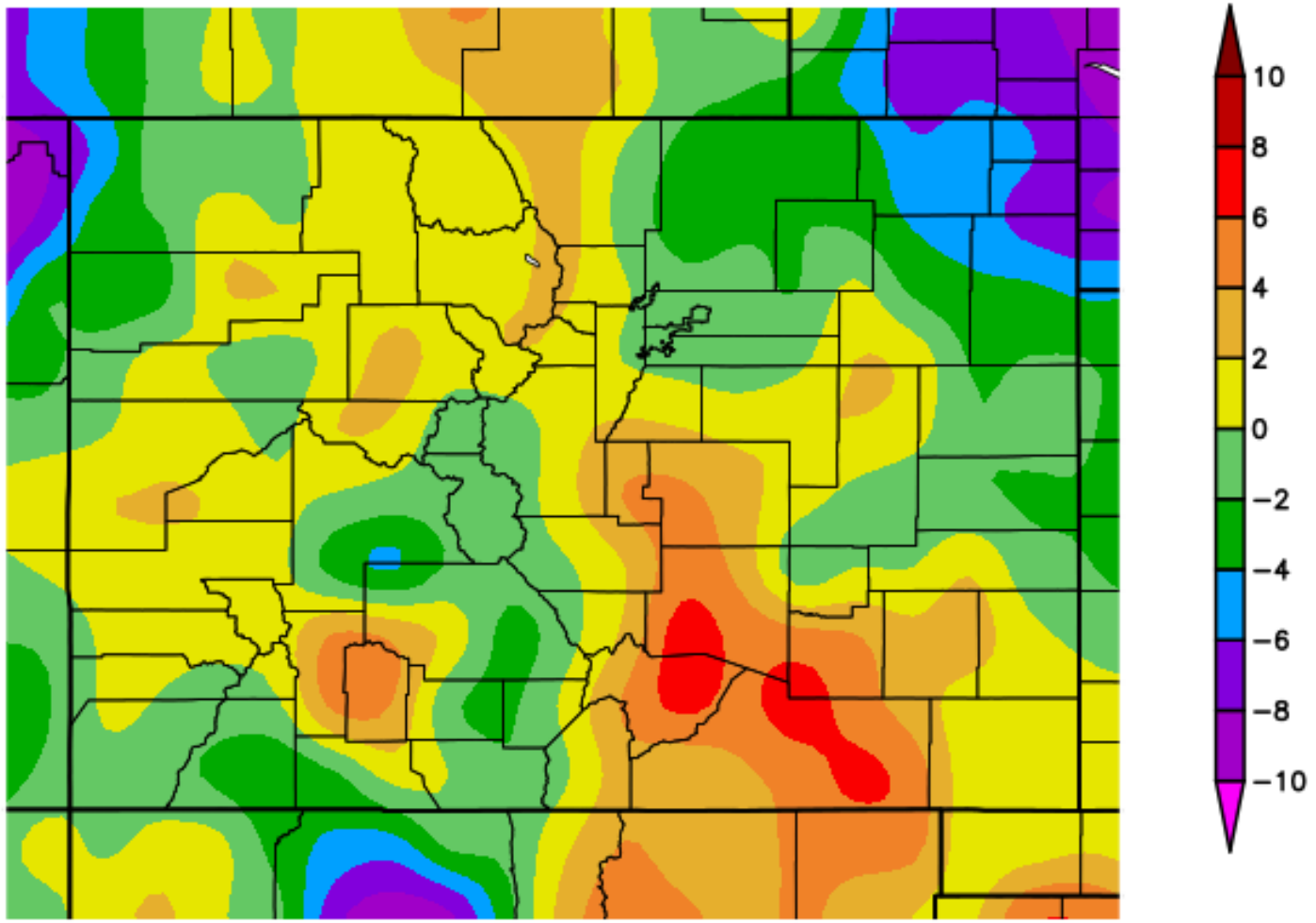
Water Year 2019 – Temperature


Colorado - Mean Temperature
January 2019 Departure from 1981-2010 Normal
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
Departure from Normal (°F)
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019


Colorado - Mean Temperature
October-January 2019 Departure from 1981-2010 Normal
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
Departure from Normal (°F)
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019


Colorado - Mean Temperature
October-January 2019 Percentile
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
RECORD WARMEST
MUCH ABOVE NORMAL Top 10%
ABOVE NORMAL Top 33%
NEAR NORMAL
BELOW NORMAL Bottom 33%
MUCH BELOW NORMAL Bottom 10%
RECORD COLDEST
Rankings (1895-2010)
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019

Departure from Normal Temperature (F)
2/1/2019 – 2/17/2019



Generated 2/18/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

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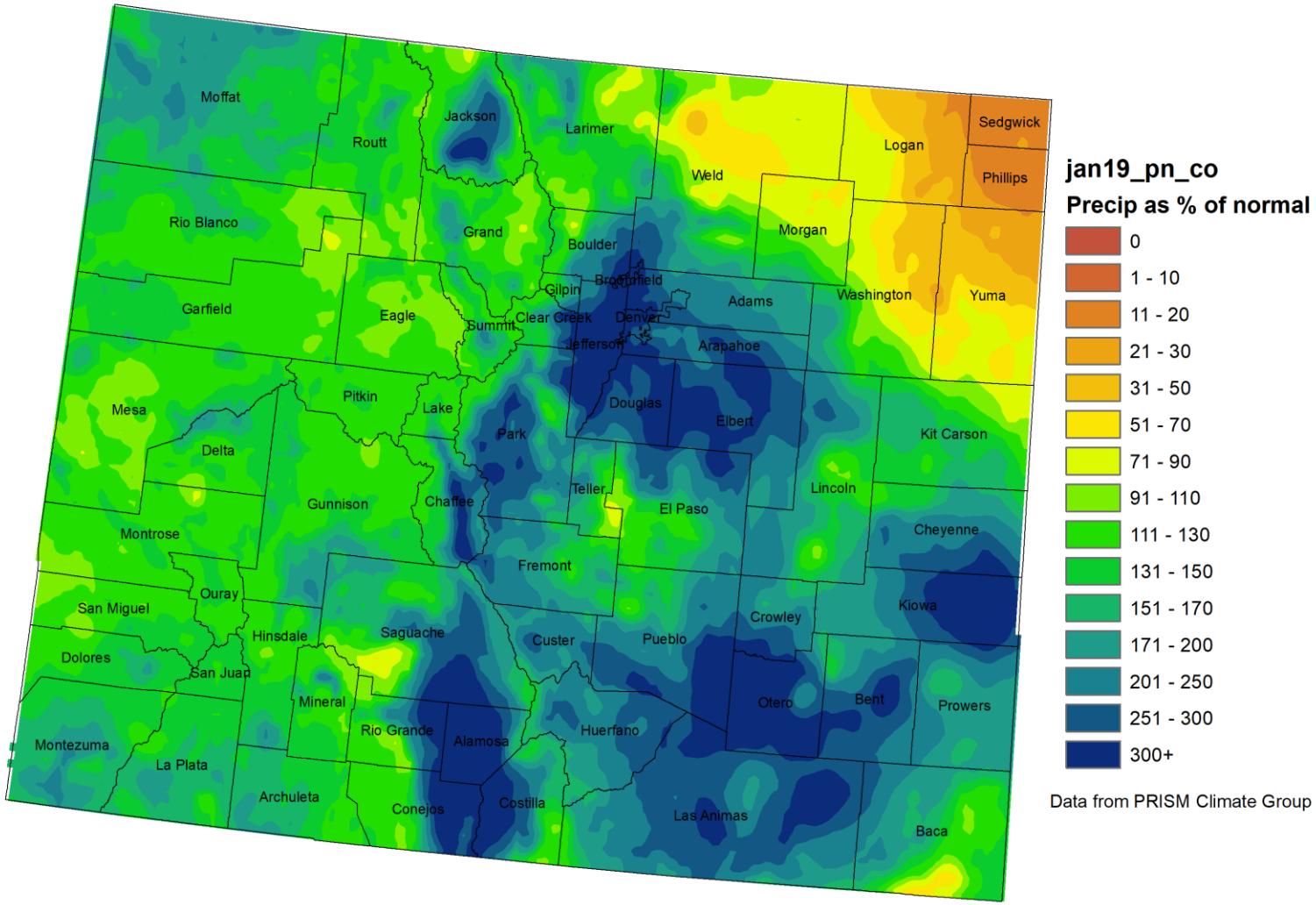
(credit: Durango Herald)

Water Year 2019 – Precipitation

Colorado January 2019 Precipitation as a Percentage of Normal

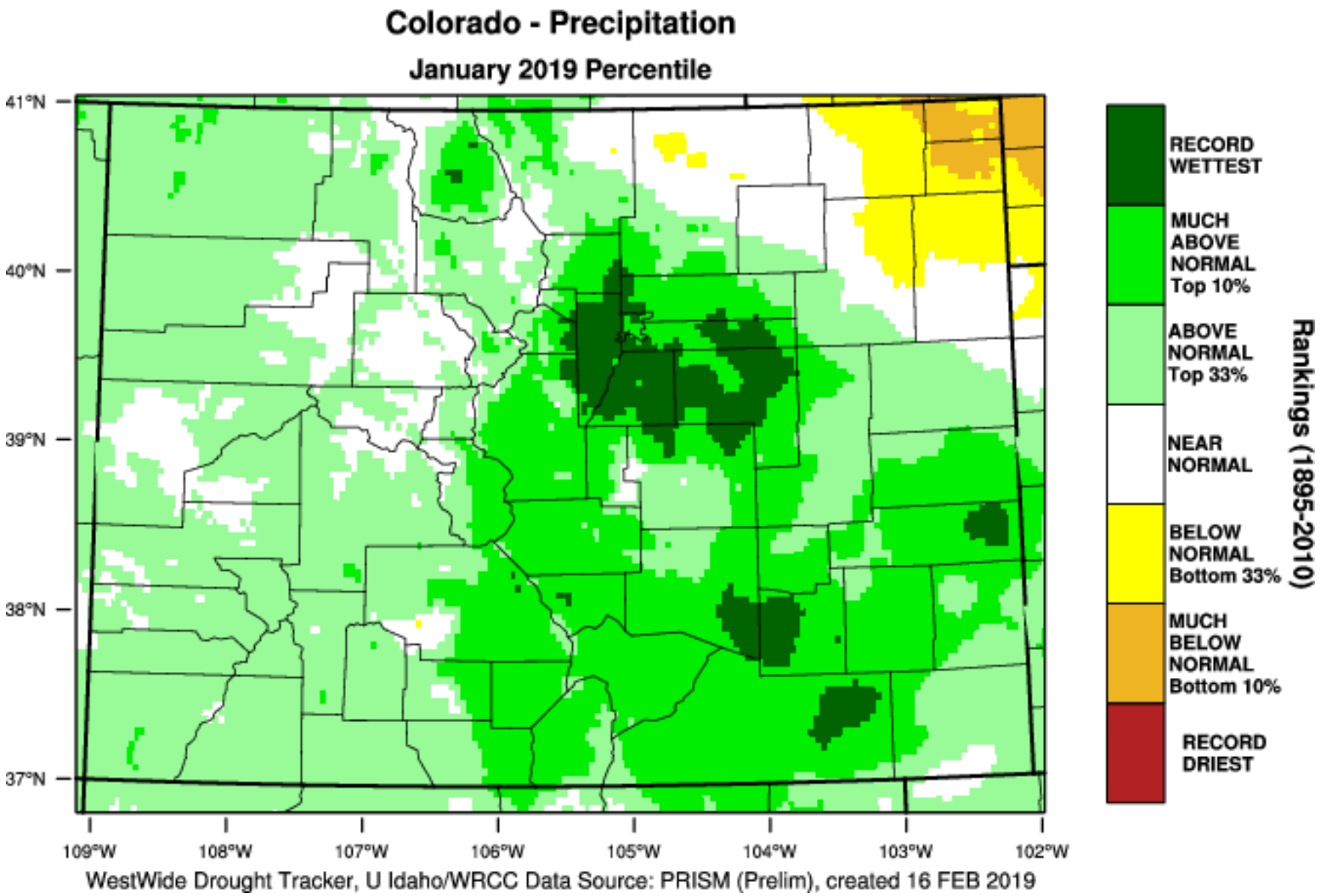


jan19_pn_co

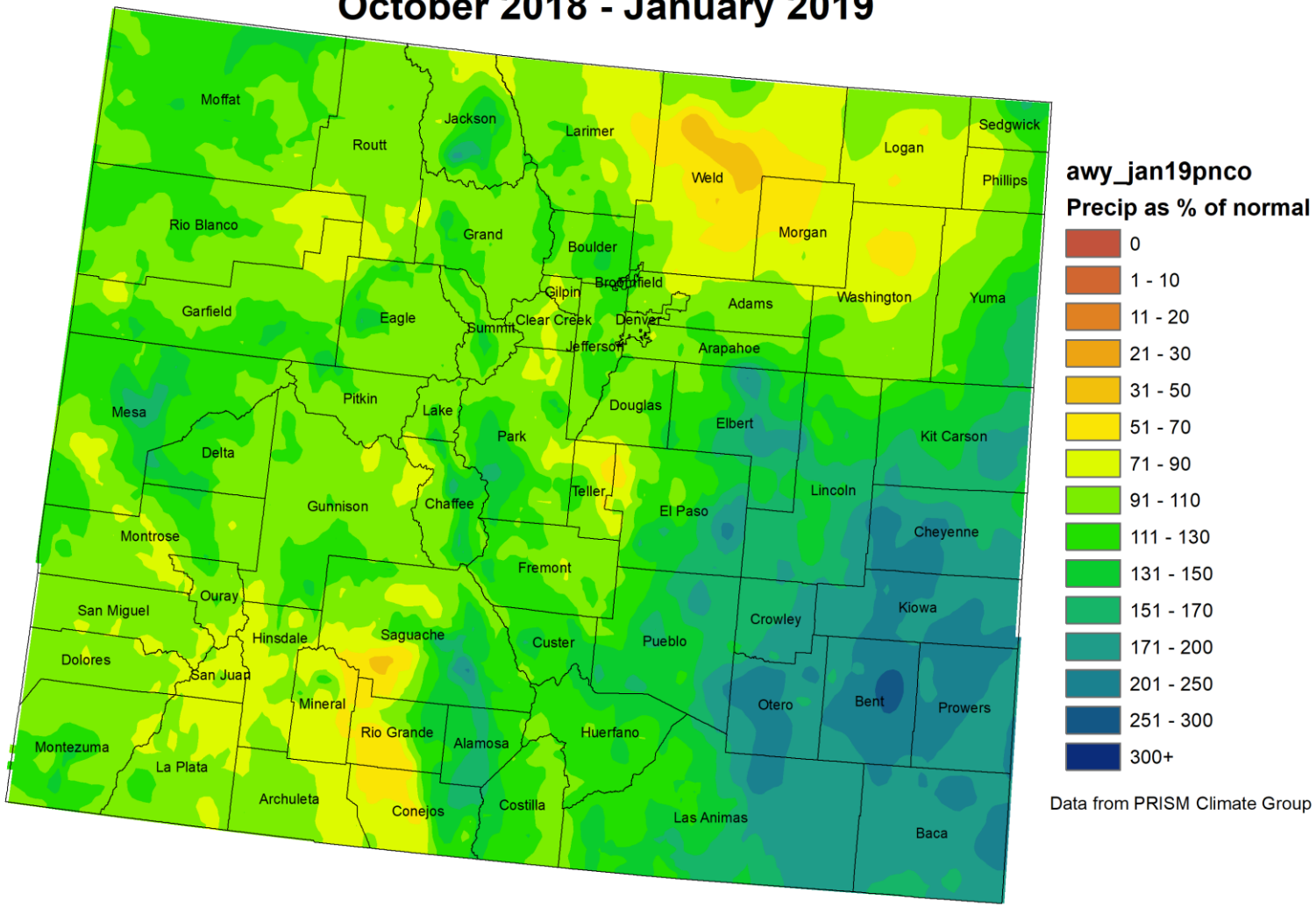
Precip as % of normal

- 0
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 - 170
- 171 - 200
- 201 - 250
- 251 - 300
- 300+

Data from PRISM Climate Group


Colorado - Precipitation
January 2019 Percentile
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
RECORD WETTEST
MUCH ABOVE NORMAL Top 10%
ABOVE NORMAL Top 33%
NEAR NORMAL
BELOW NORMAL Bottom 33%
MUCH BELOW NORMAL Bottom 10%
RECORD DRIEST
Rankings (1895-2010)
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019

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



awy_jan19pnco

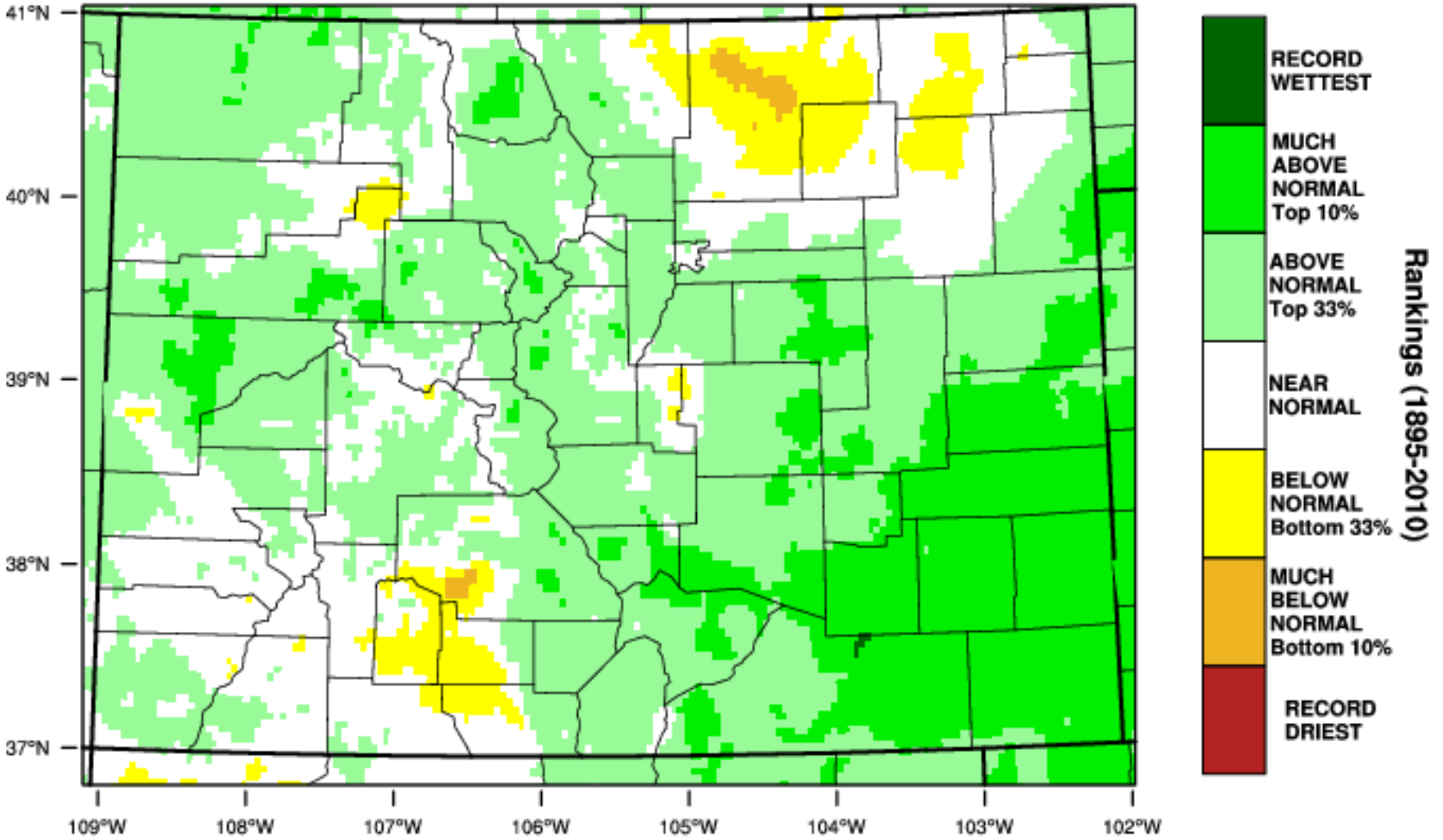
Precip as % of normal

- 0
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 - 170
- 171 - 200
- 201 - 250
- 251 - 300
- 300+

Data from PRISM Climate Group

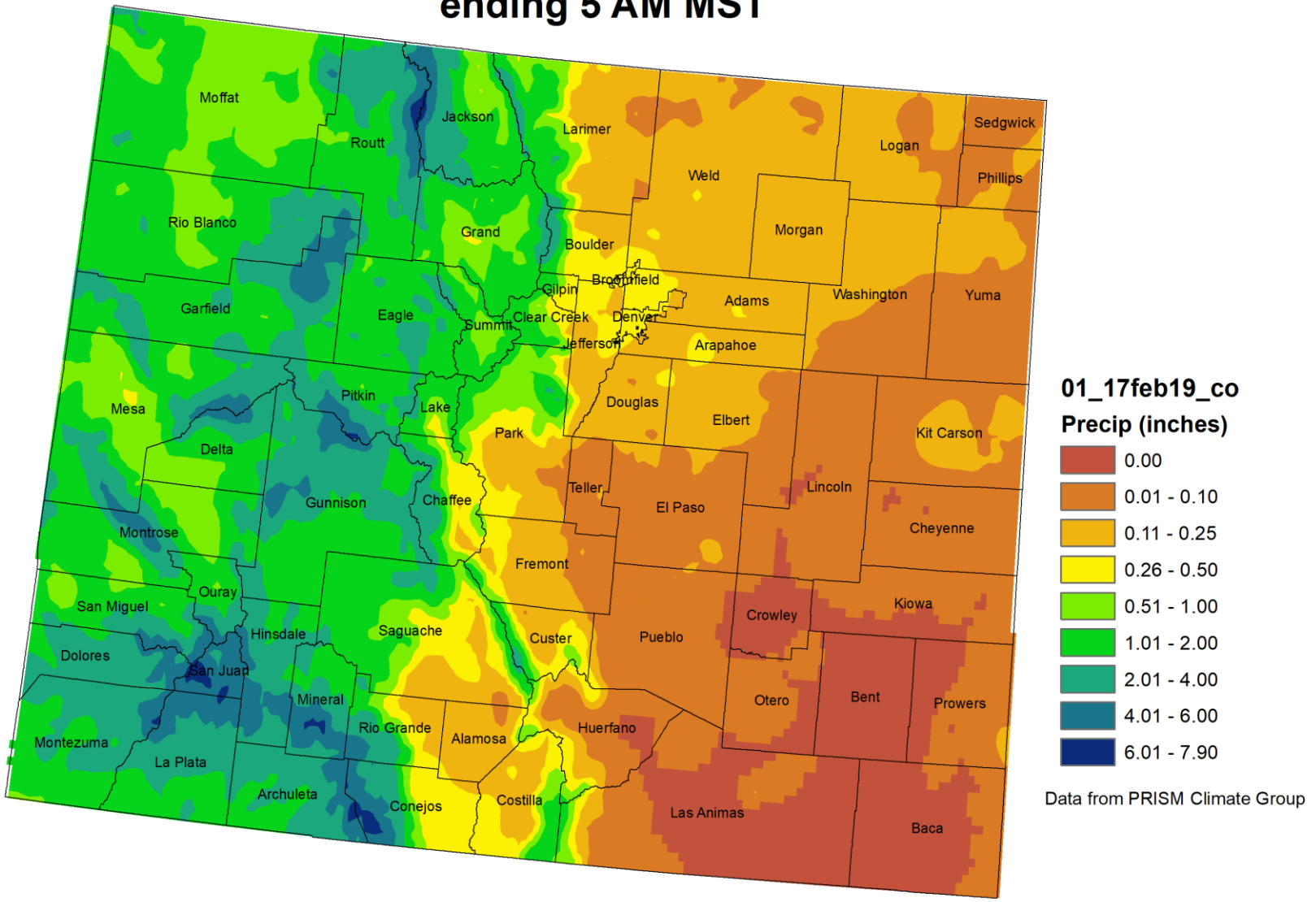
Colorado - Precipitation

October-January 2019 Percentile



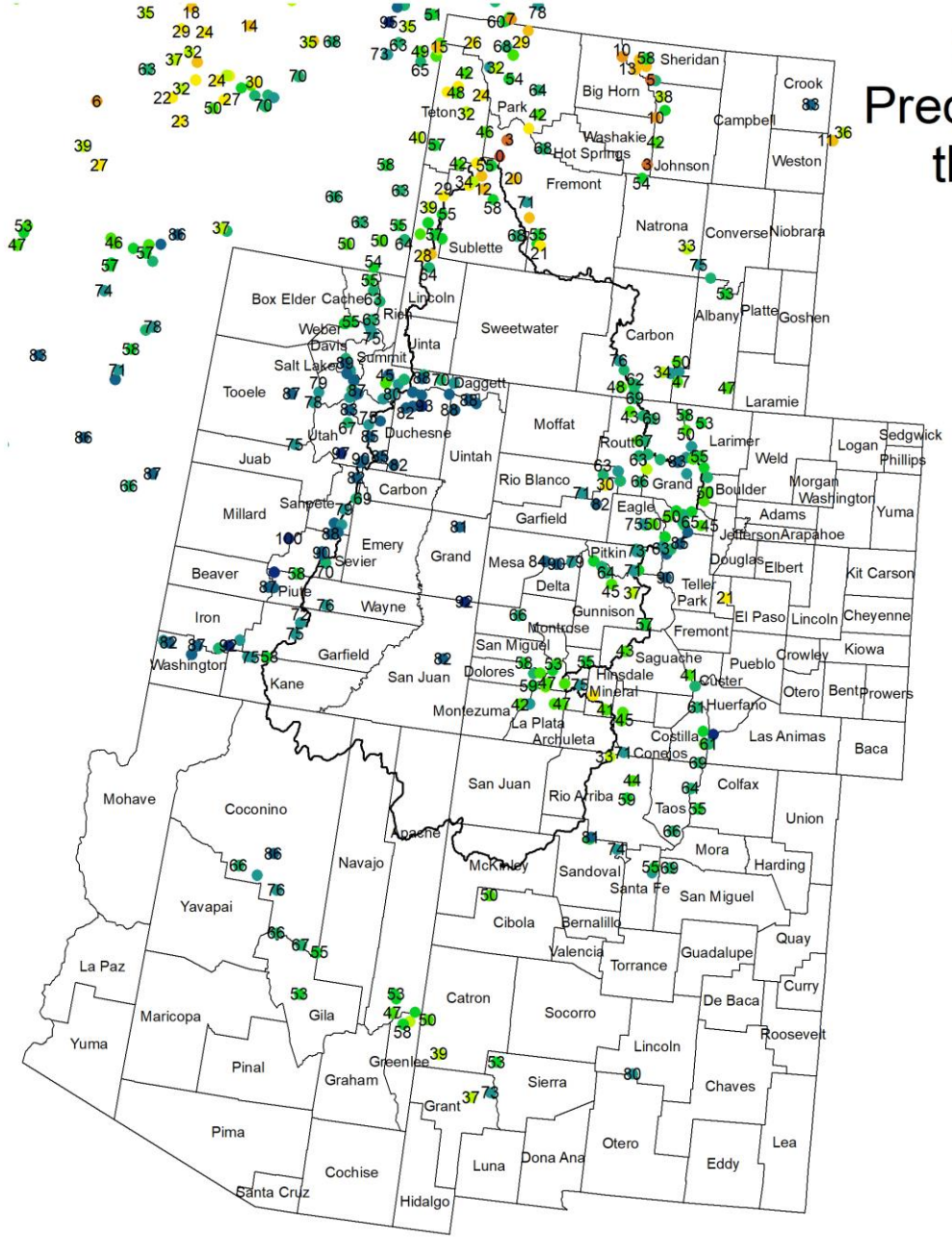
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019

Colorado Month to Date Precipitation
1 - 17 February 2019
ending 5 AM MST



Data from PRISM Climate Group

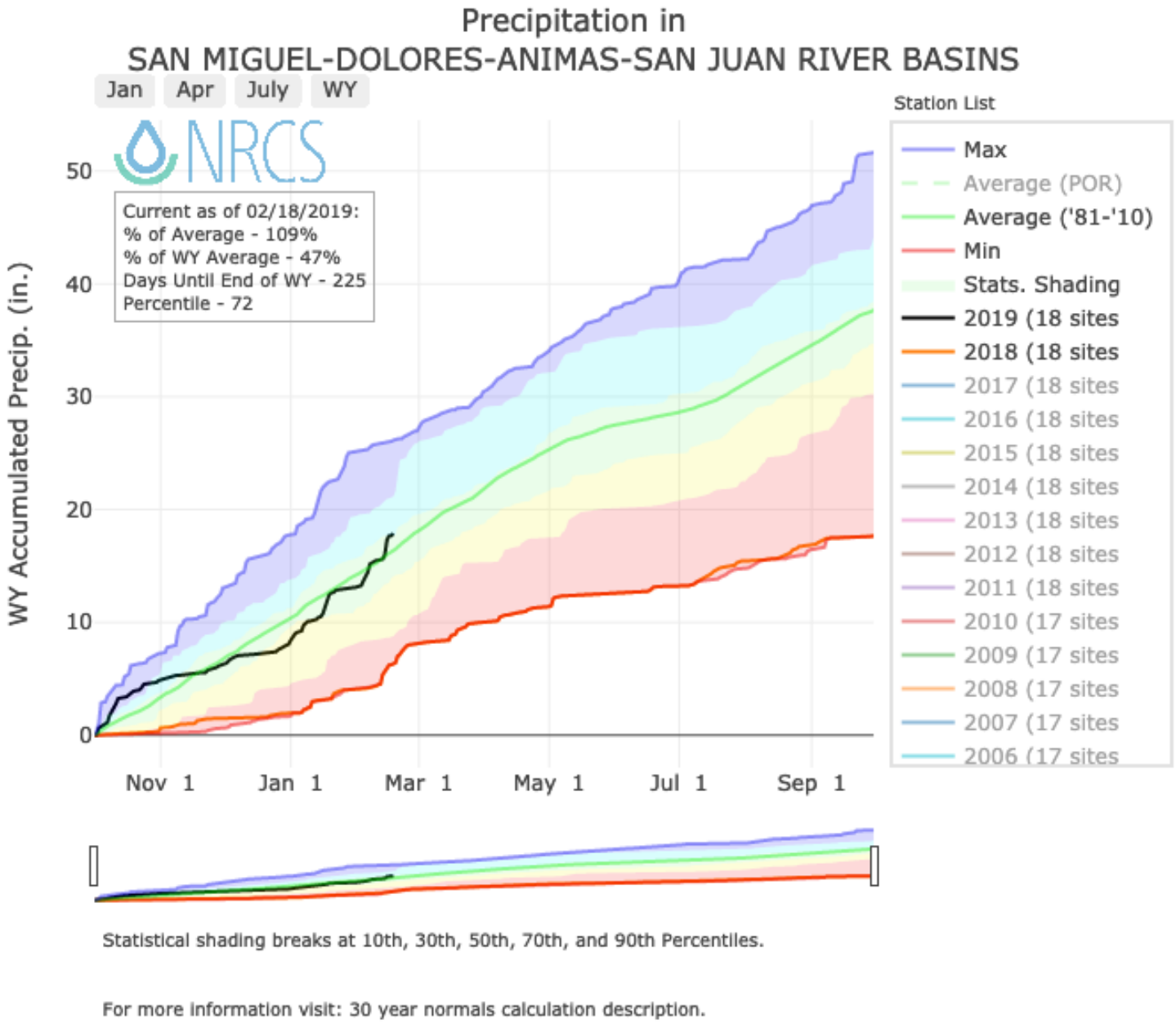
Snotel Water Year 2019 Precipitation Percentile Ranking through 11 February 2019



Percentile_POR

- D4: 0 - 2
- D3: 3 - 5
- D2: 6 - 10
- D1: 11 - 20
- D0: 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100
- Upper Colorado River Basin

Station with 15+ year of data

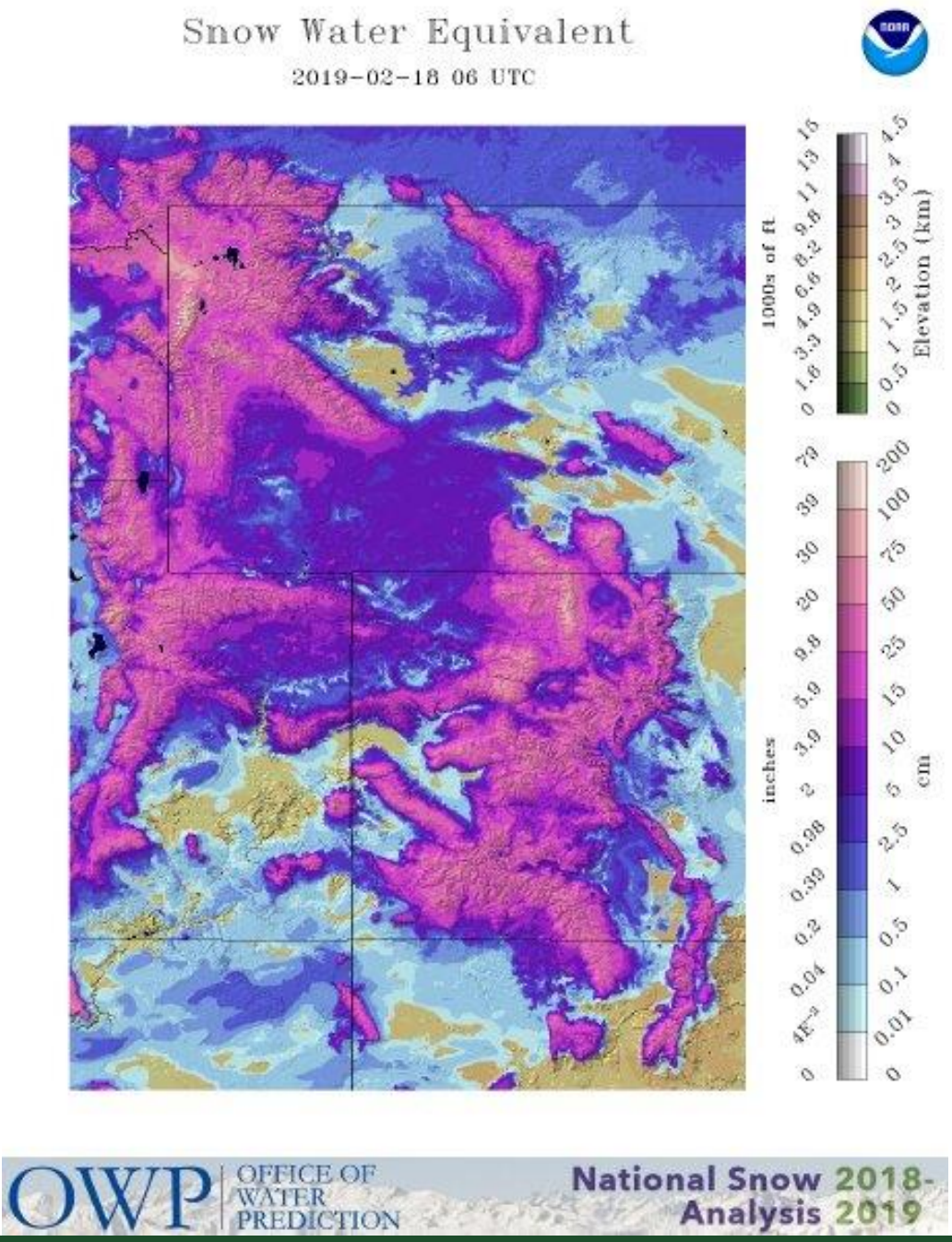


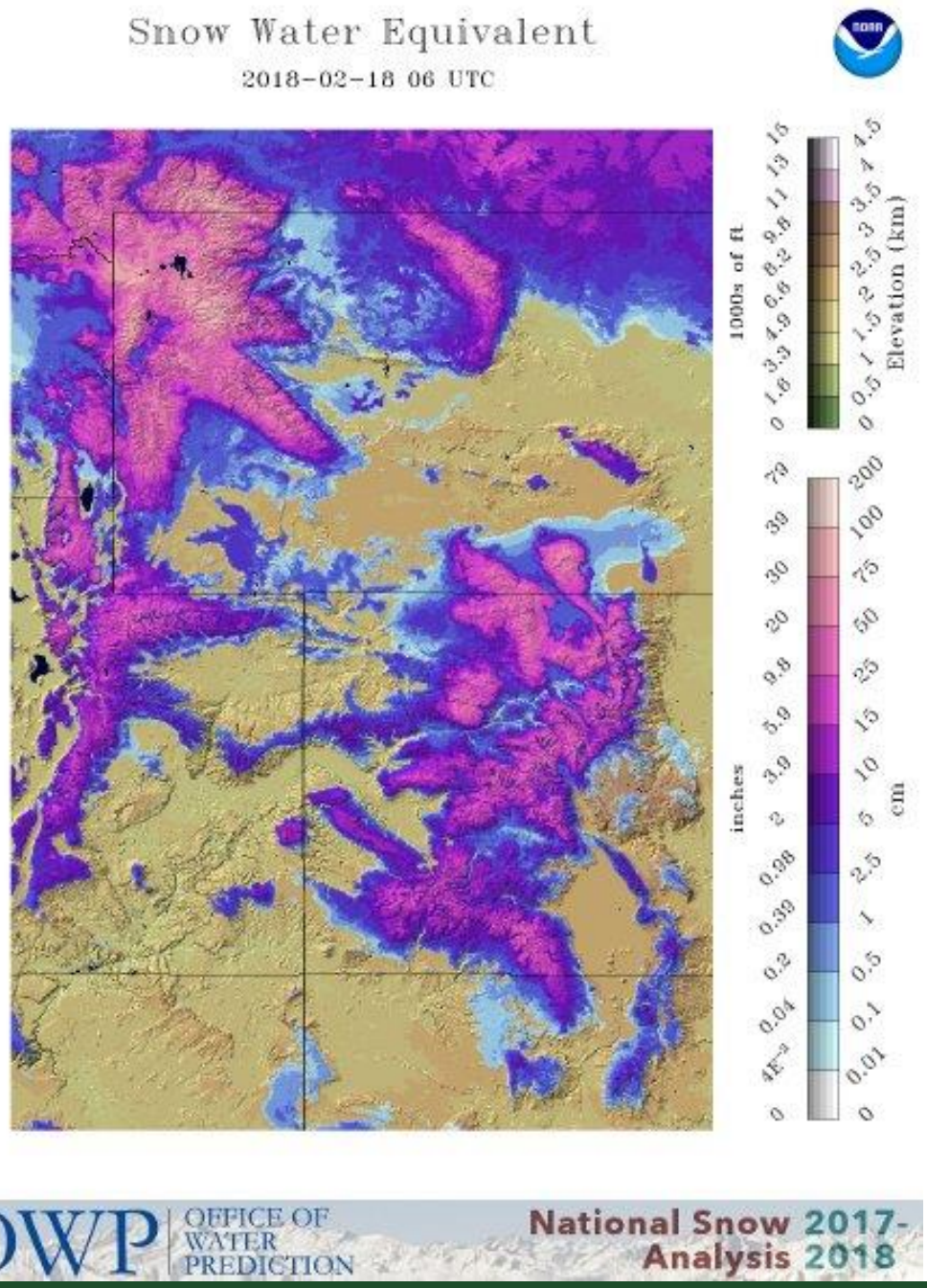
Basin average of 4.8” in February thus far

17.9” since October 1

Last year: 17.6” for the entire water year

NOHRSC snow analysis: Feb 2019





NOHRSC snow analysis: Feb 2018 (last year)

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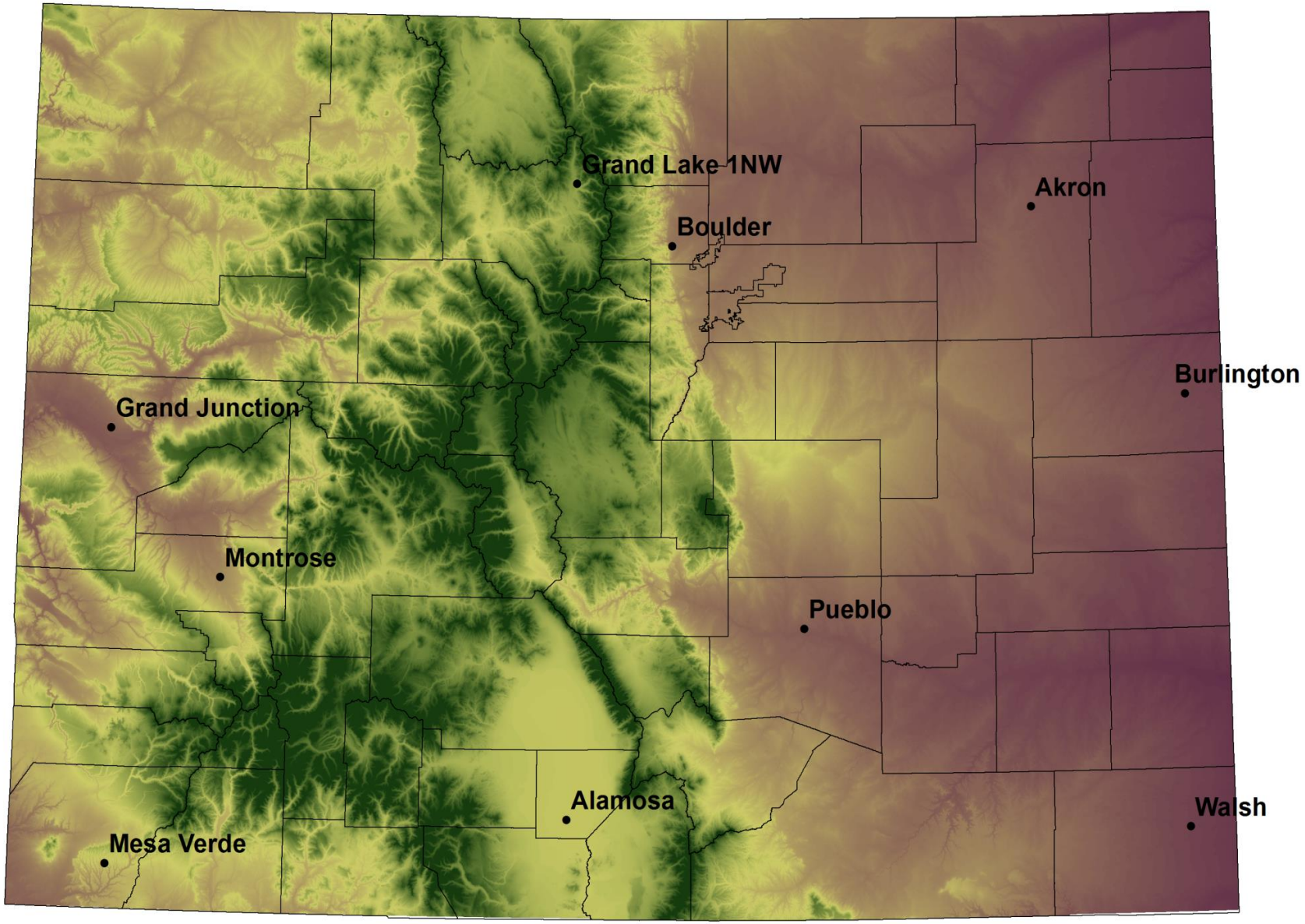
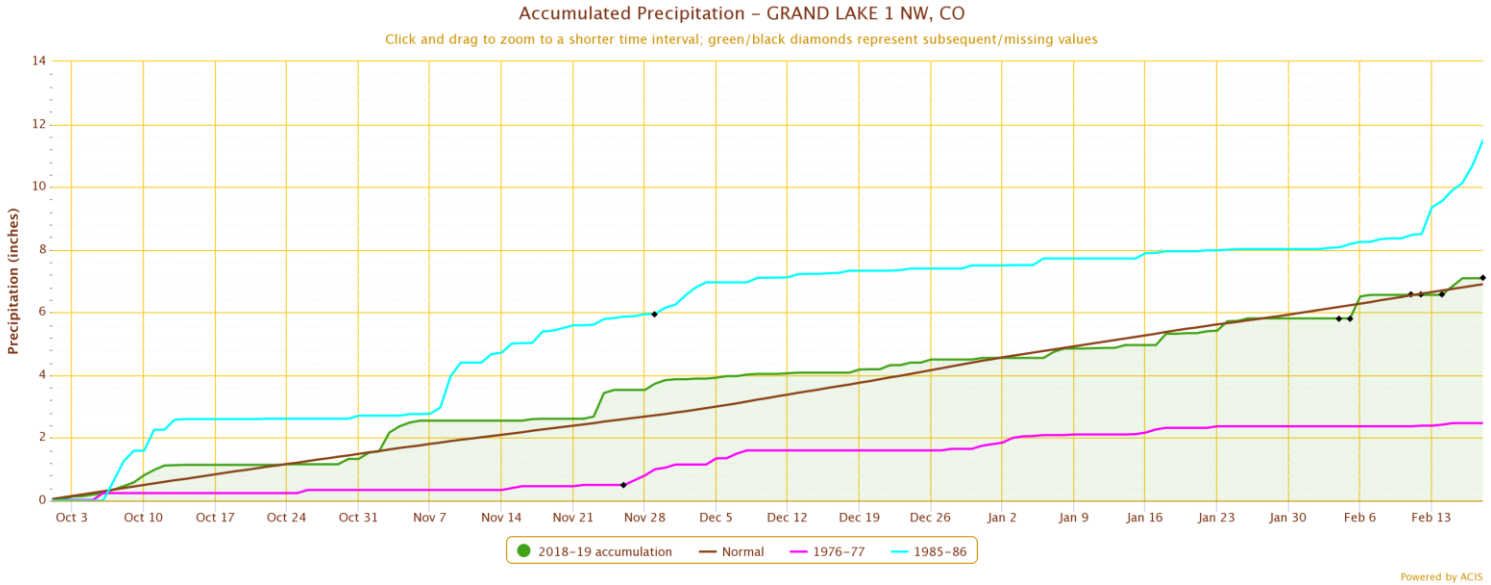
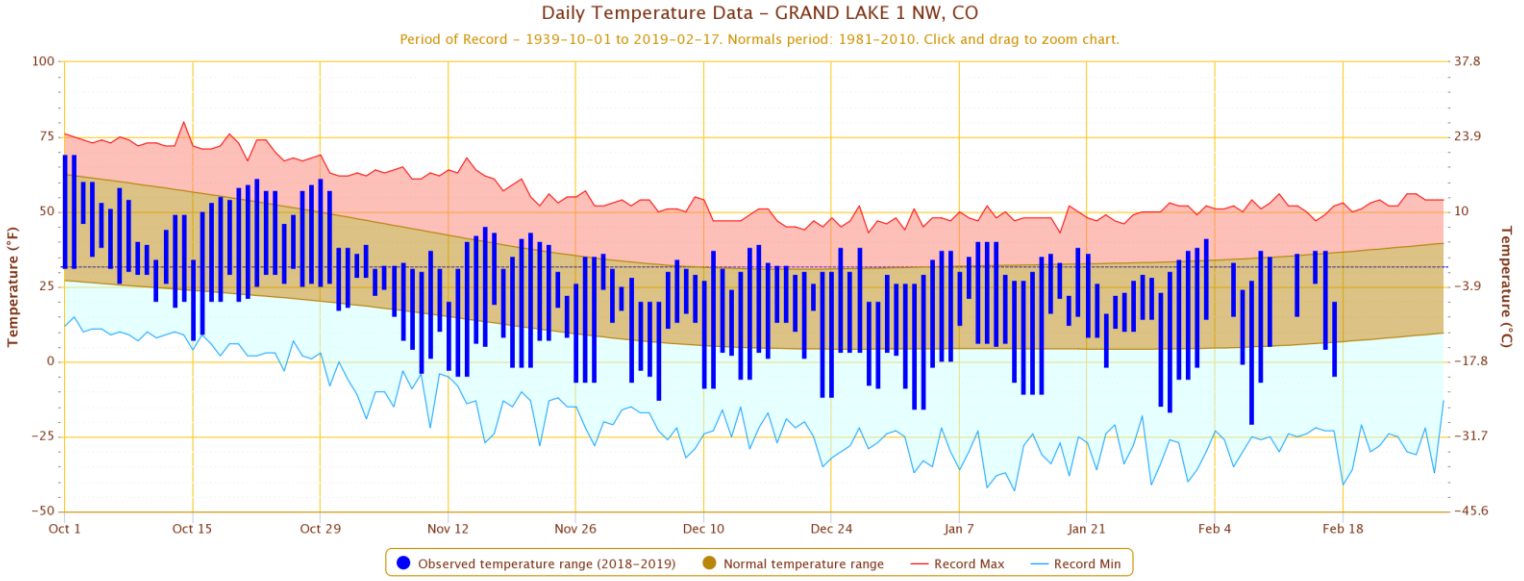
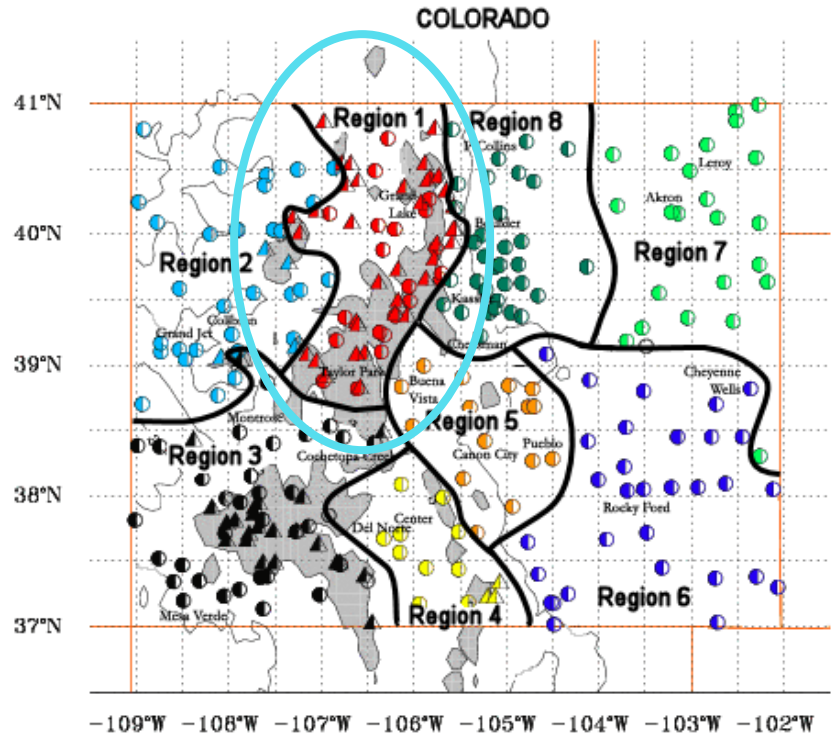
NWS Cooperative Stations for WATF

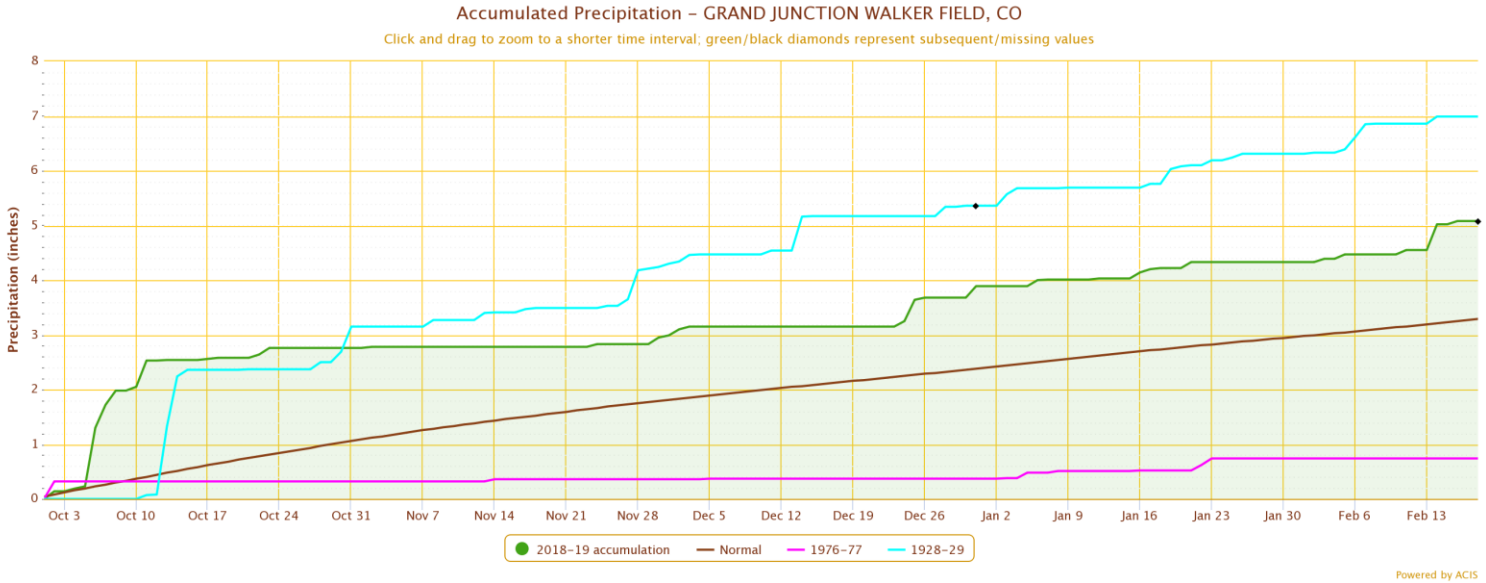


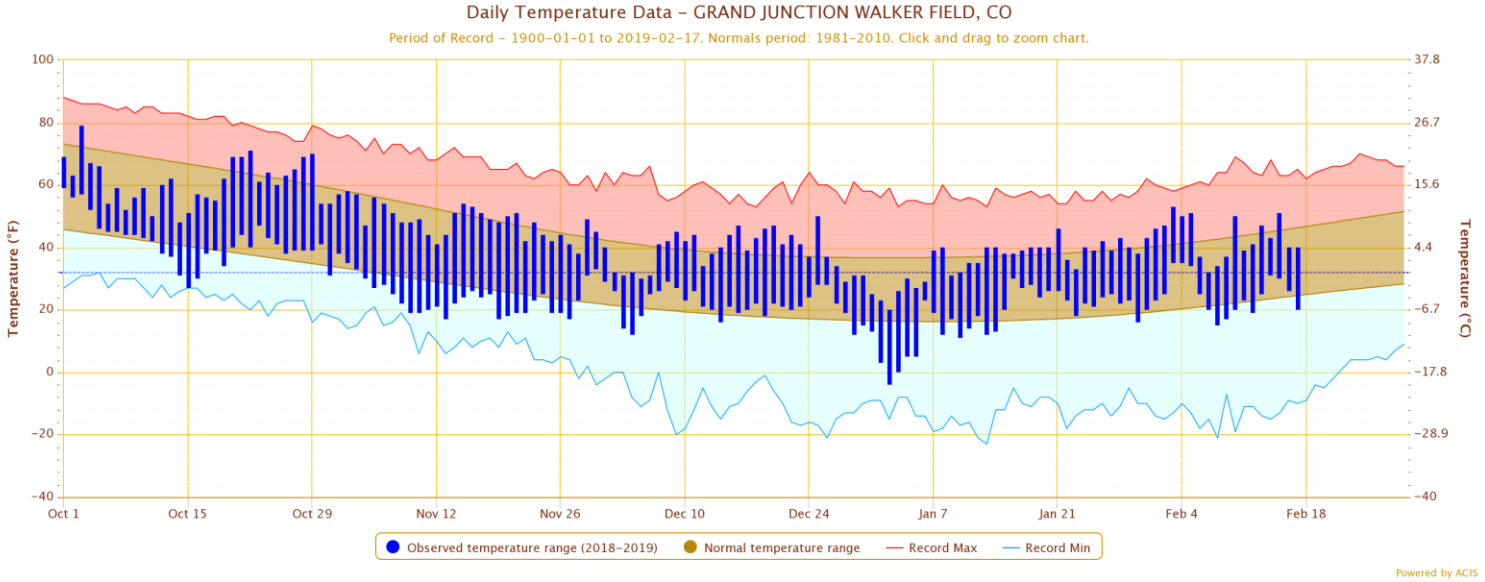
Water Year 2019 – Station Updates

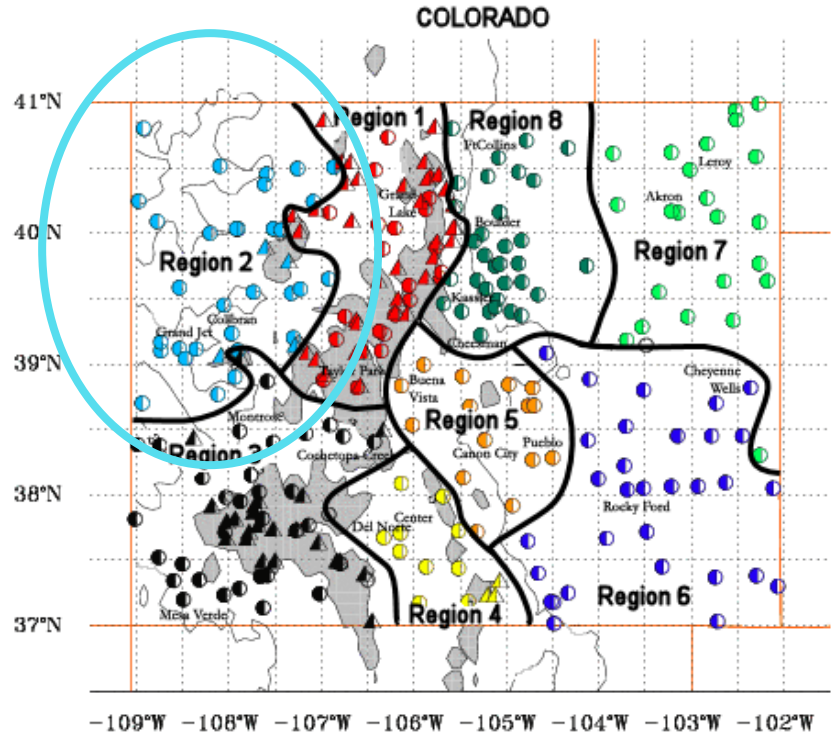

Accumulated Precipitation – GRAND LAKE 1 NW, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
2
4
6
8
10
12
14
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018–19 accumulation
Normal
1976–77
1985–86
Powered by ACIS


Daily Temperature Data – GRAND LAKE 1 NW, CO
Period of Record – 1939–10–01 to 2019–02–17. Normals period: 1981–2010. Click and drag to zoom chart.
Temperature (°F)
100
75
50
25
0
−25
−50
Temperature (°C)
37.8
23.9
10
−3.9
−17.8
−31.7
−45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018–2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS


COLORADO
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
41°N
40°N
39°N
38°N
37°N
−109°W
−108°W
−107°W
−106°W
−105°W
−104°W
−103°W
−102°W
Grand Junction
Taylor Park
Buena Vista
Cañon City
Pueblo
Cheyenne Wells
Rocky Ford
Akron
Leroy
Mesa Verde
Del Norte
Center


Accumulated Precipitation – GRAND JUNCTION WALKER FIELD, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
1
2
3
4
5
6
7
8
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1976-77
1928-29
Powered by ACIS


Daily Temperature Data – GRAND JUNCTION WALKER FIELD, CO
Period of Record – 1900-01-01 to 2019-02-17. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
100
80
60
40
20
0
-20
-40
Temperature (°C)
37.8
26.7
15.6
4.4
-6.7
-17.8
-28.9
-40
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS


COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Leroy
Akron
Glenwood
Grand Jct
Buena Vista
Cheyenne Wells
Montrose
Canon City
Pueblo
Rocky Ford
Center
Del Norte
Mesa Verde

ColoClimateCenter
@ColoradoClimate

Following

In addition to the daily record, there was another precipitation milestone at Grand Junction yesterday: they now have more precipitation through 4.5 months of this water year than in the *entire* 2018 water year. 5.02" since October 1; only 4.65" from Oct 2017-Sep 2018. #cowx

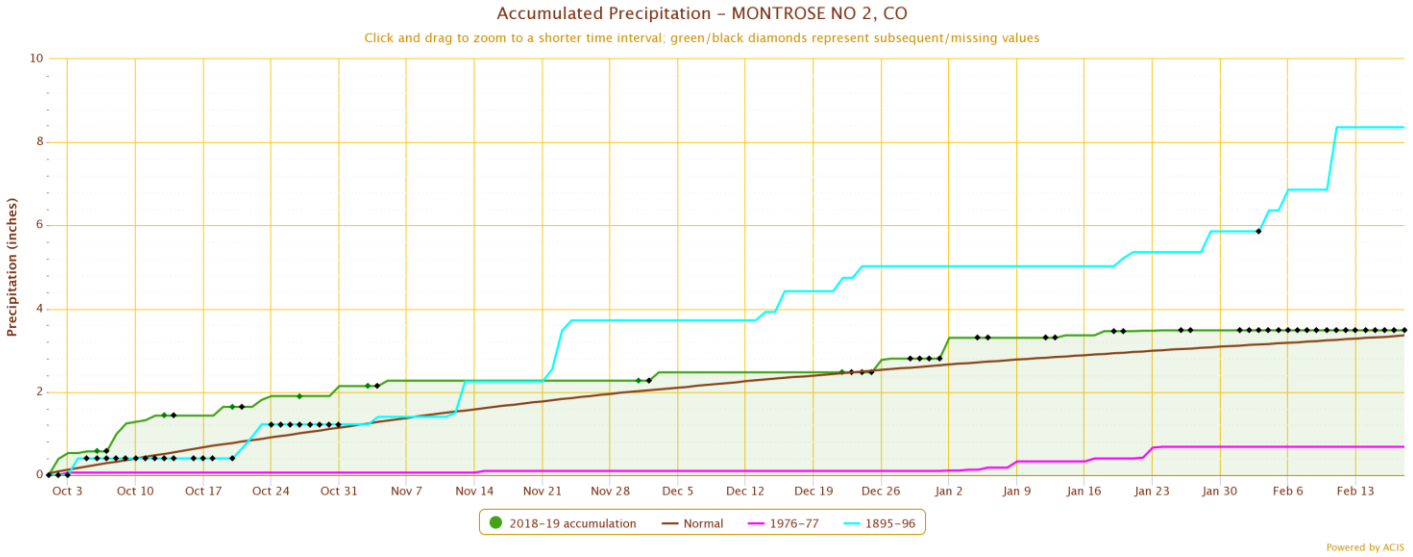
NWS Grand Junction @NWSGJT

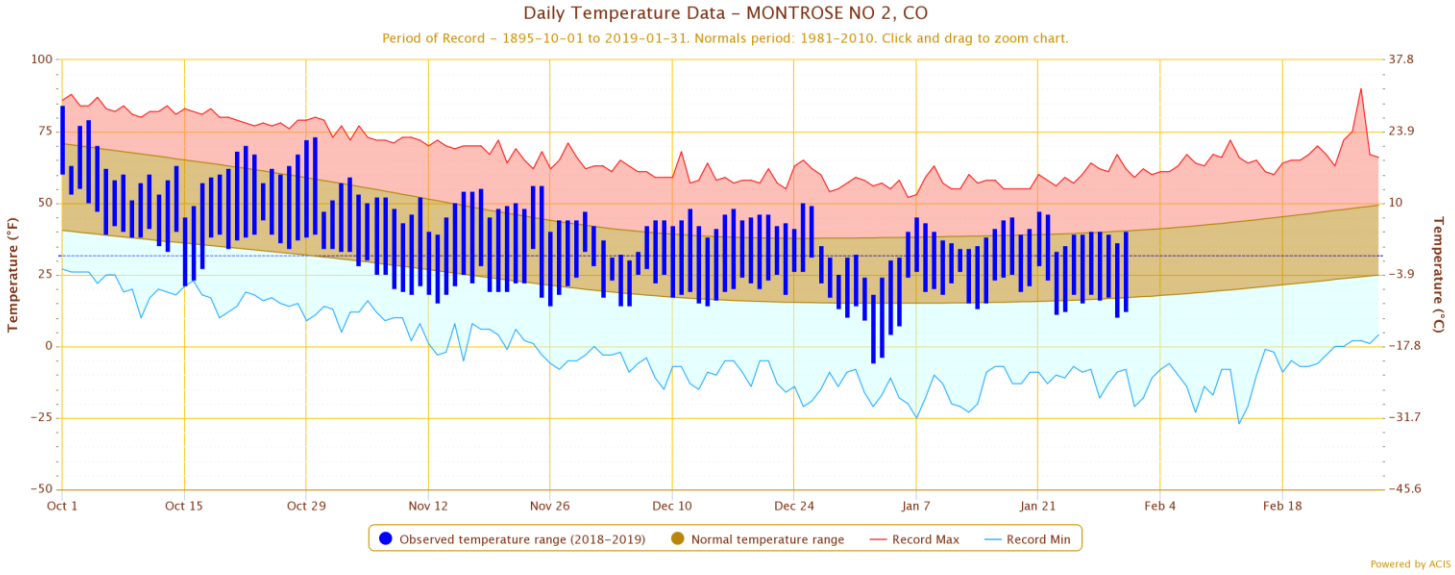
Grand Junction broke the daily record rainfall amount yesterday with 0.47 inches of #rain. This breaks the old #record of 0.43 inches of rain set back in 1942 (Records go back to 1893)! #COwx

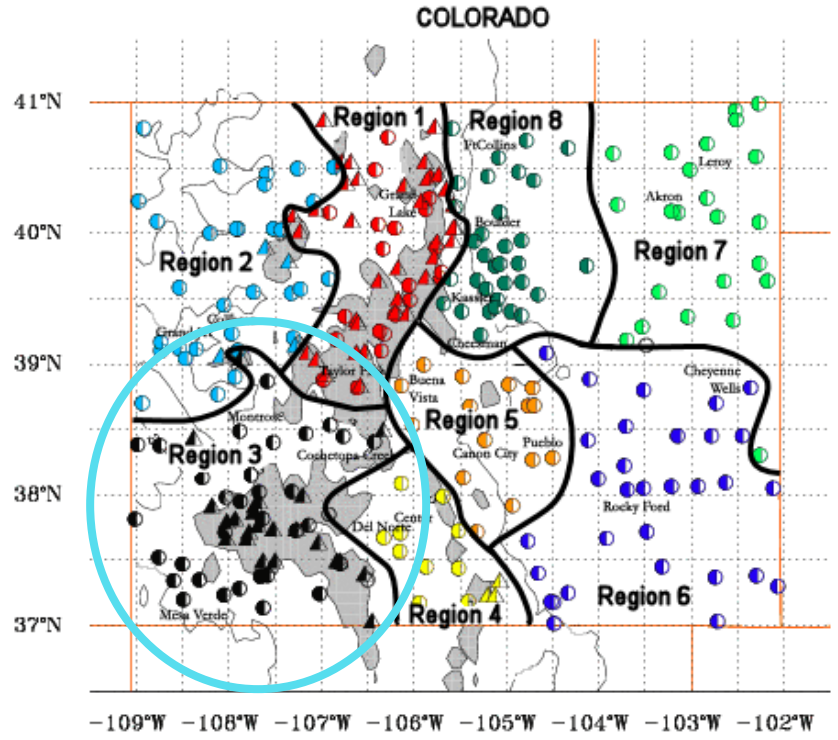
11:27 AM - 15 Feb 2019

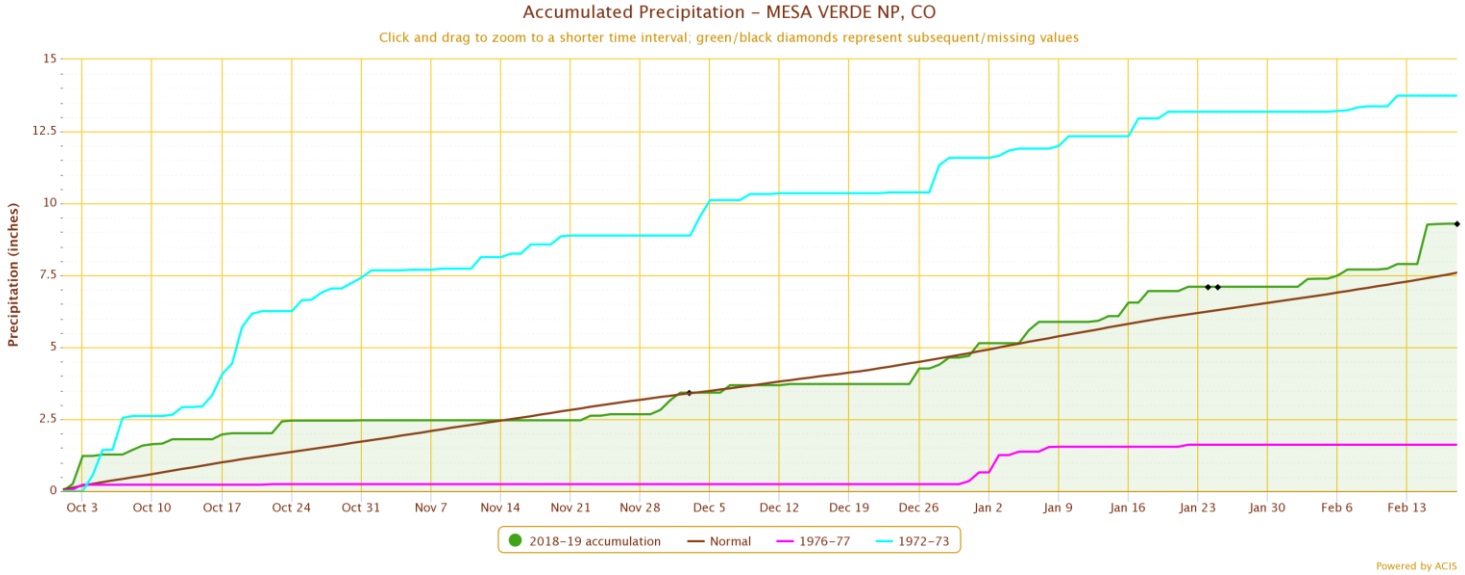
4 Retweets **14** Likes

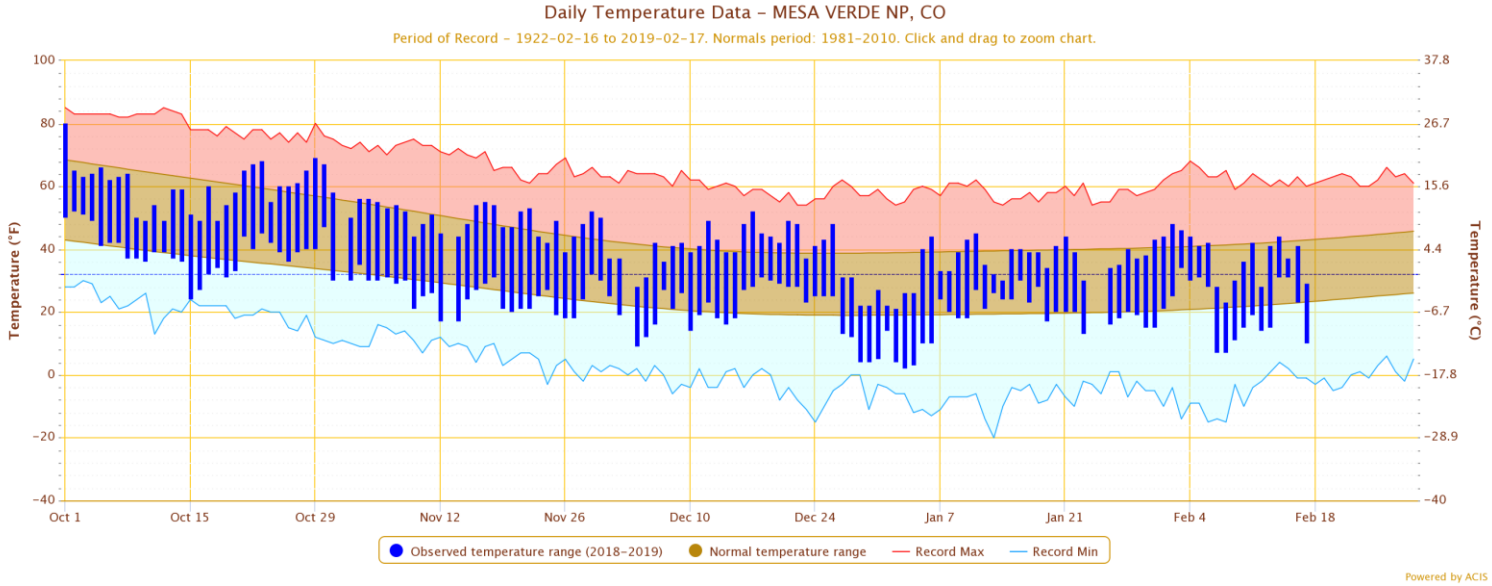
4 14

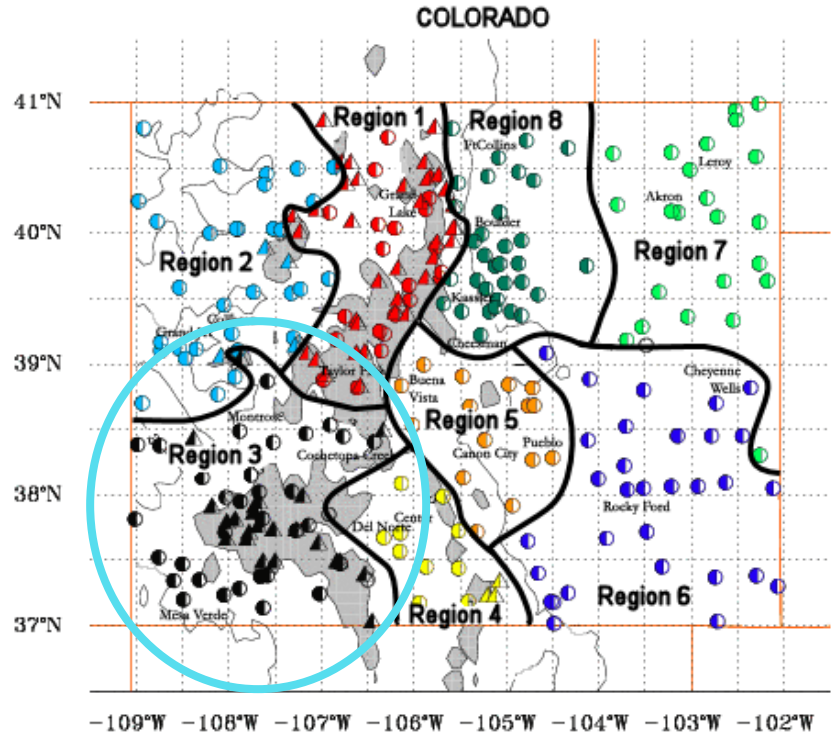

Accumulated Precipitation – MONTROSE NO 2, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
10
8
6
4
2
0
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1976-77
1895-96
Powered by ACIS


Daily Temperature Data – MONTROSE NO 2, CO
Period of Record – 1895-10-01 to 2019-01-31. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
100
75
50
25
0
-25
-50
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Temperature (°C)
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS

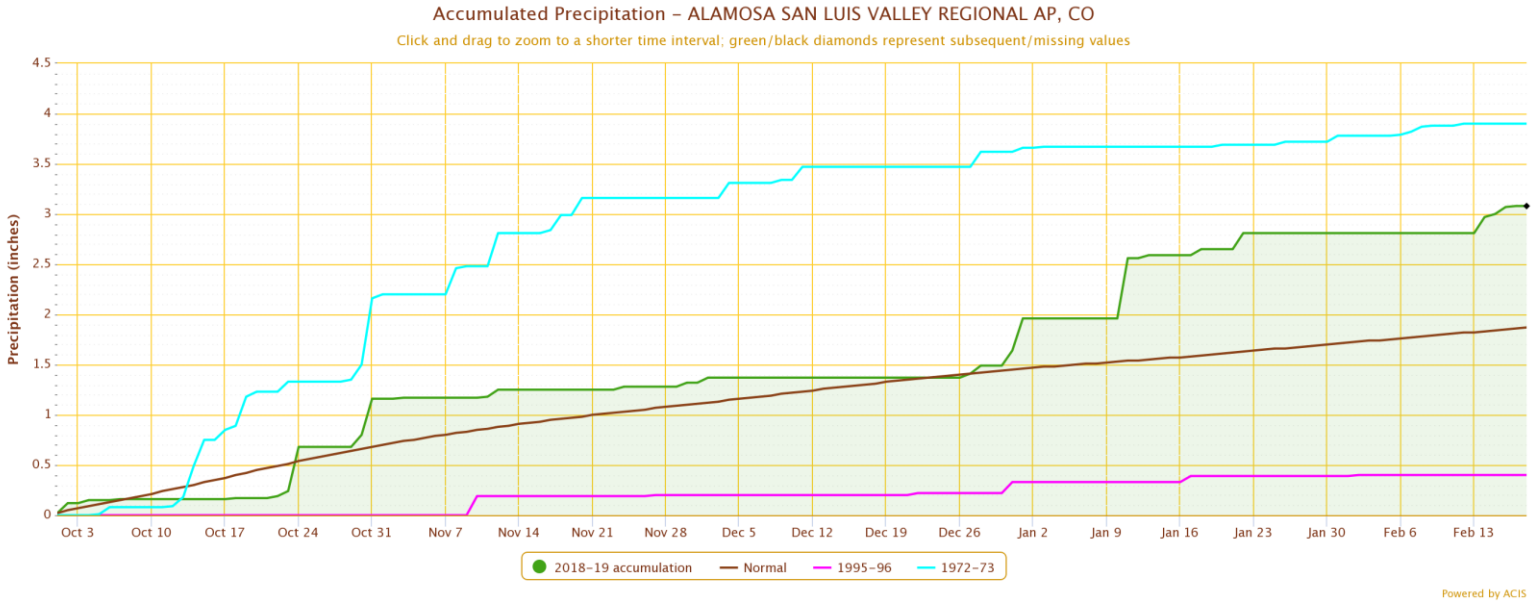

COLORADO
41°N
40°N
39°N
38°N
37°N
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Akron
Leroy
Grand
Taylor R.
Buena Vista
Cheyenne Wells
Montrose
Coshetopa Creek
Canon City
Pueblo
Del Norte
Rocky Ford
Mesa Verde
−109°W
−108°W
−107°W
−106°W
−105°W
−104°W
−103°W
−102°W

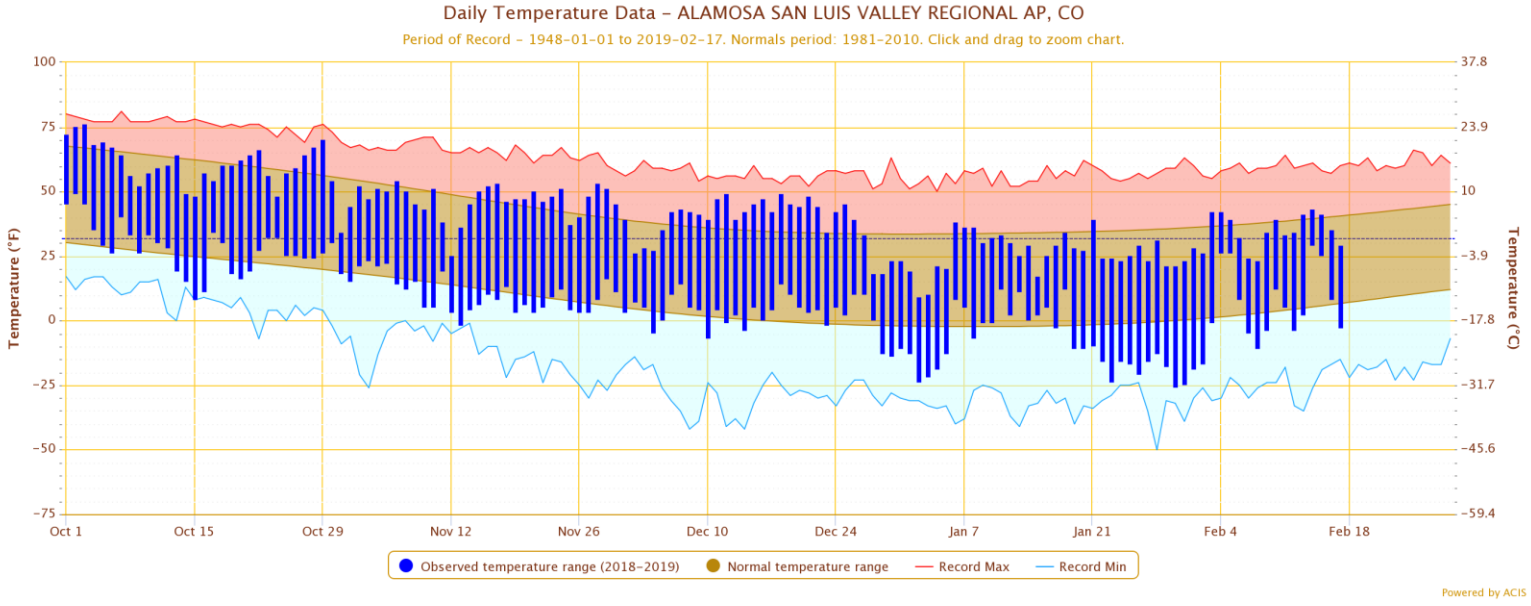


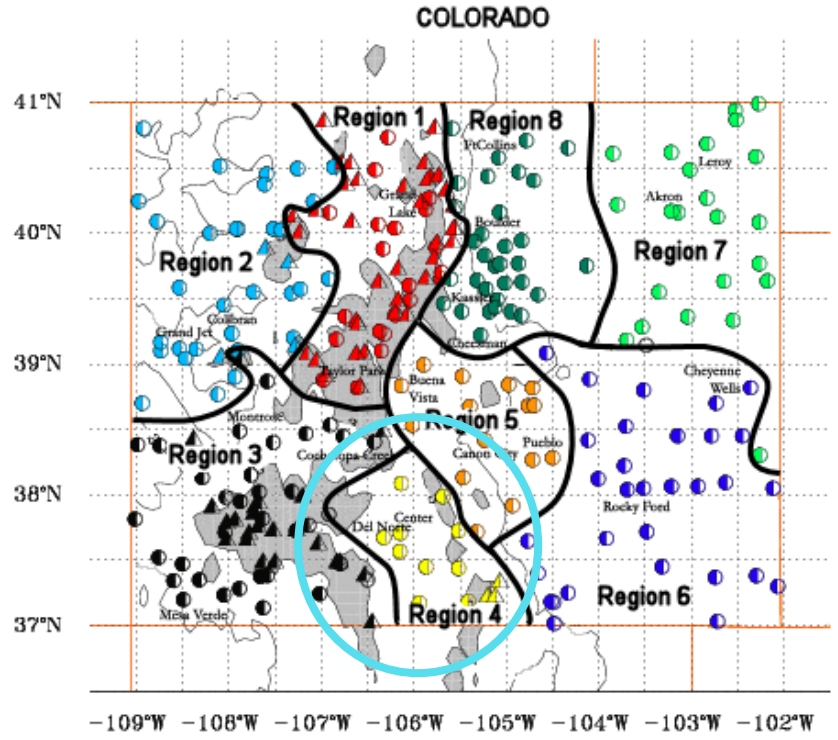


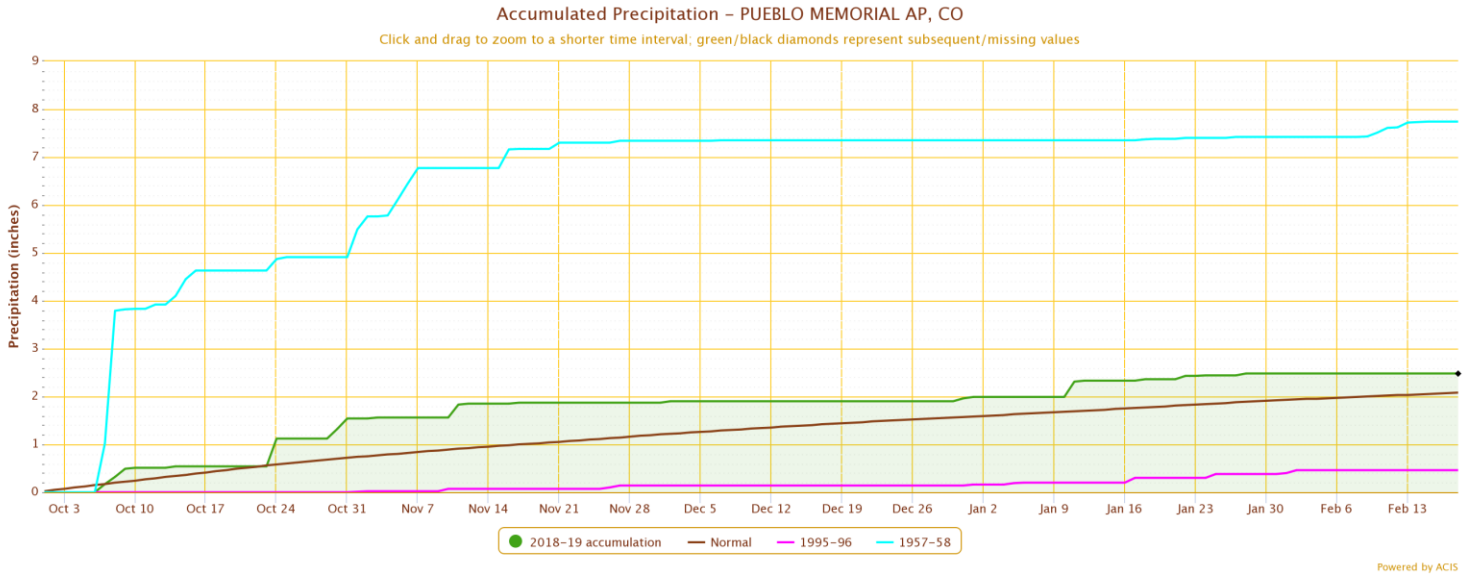


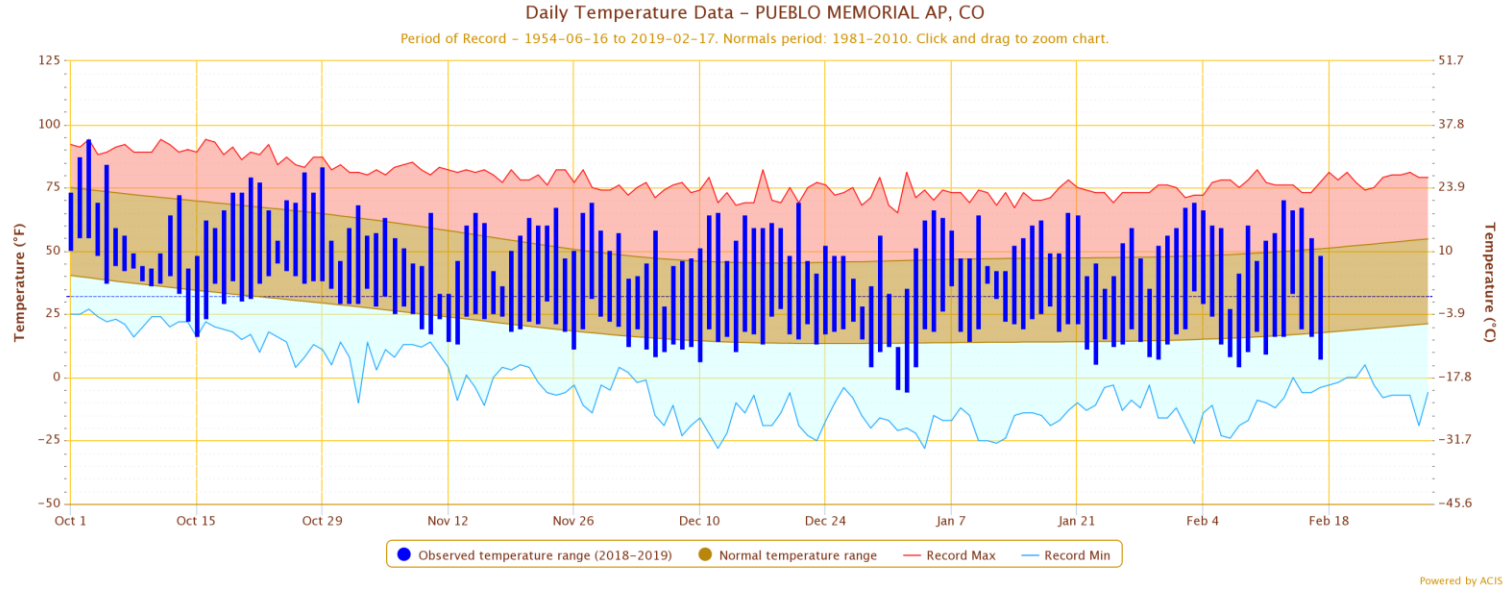
Mesa Verde has also surpassed their precip from all of last water year (9.29” through Feb 17; 8.06” all of WY2018)

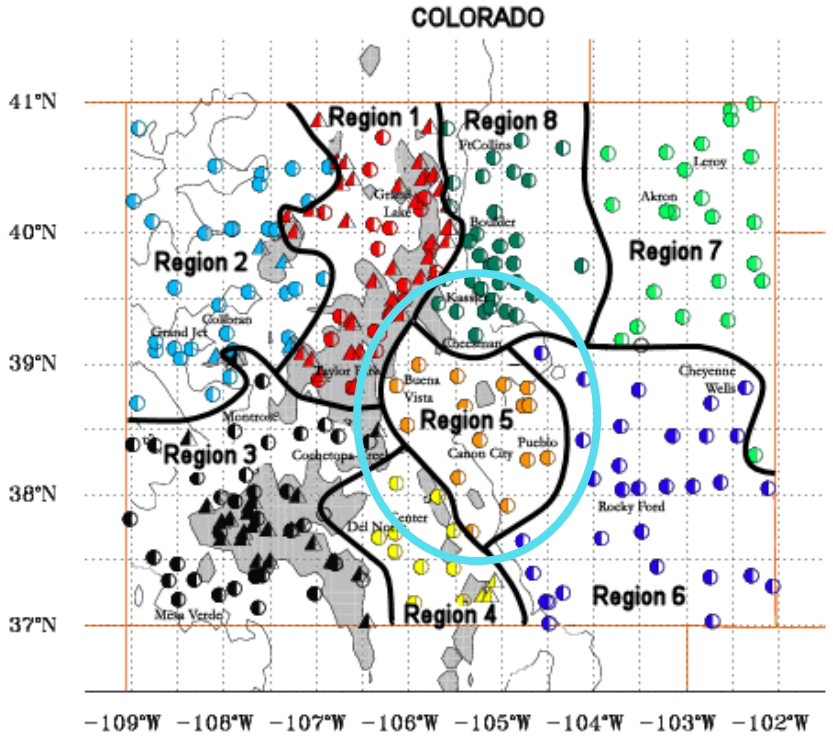

Accumulated Precipitation – ALAMOSA SAN LUIS VALLEY REGIONAL AP, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1995-96
1972-73
Powered by ACIS

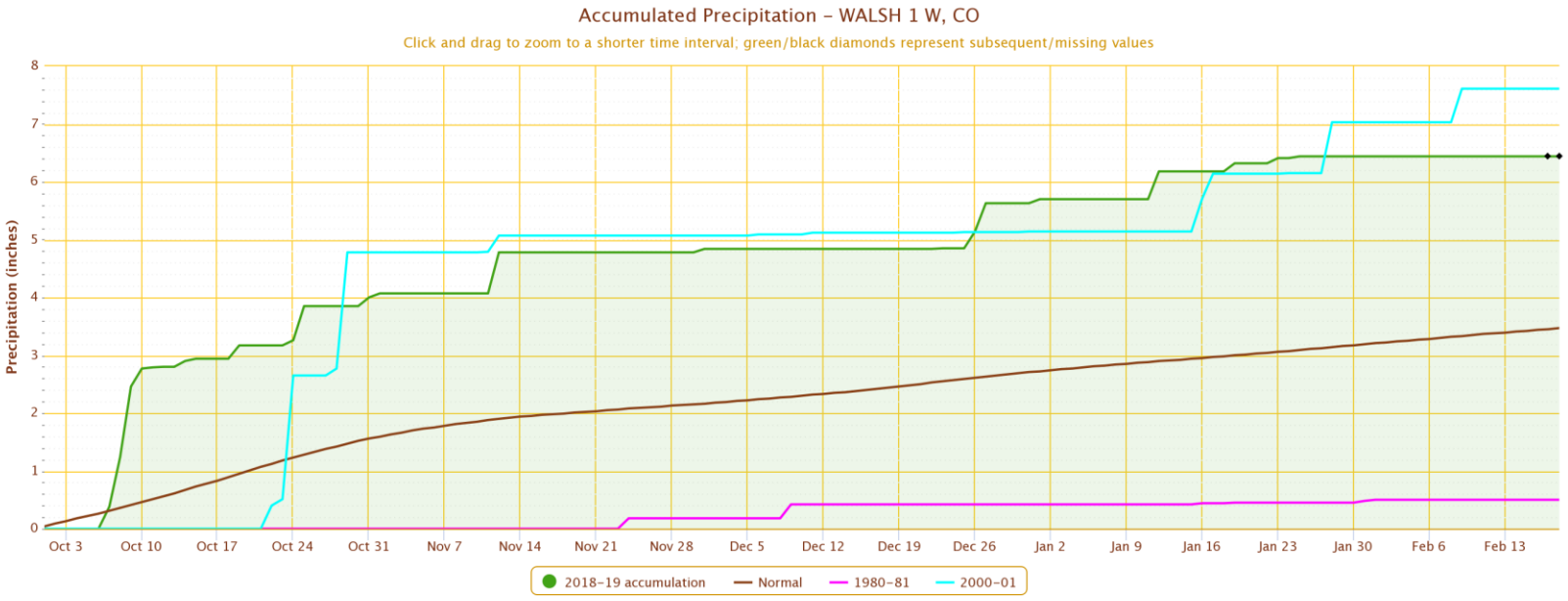

Daily Temperature Data – ALAMOSA SAN LUIS VALLEY REGIONAL AP, CO
Period of Record – 1948-01-01 to 2019-02-17. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
100
75
50
25
0
-25
-50
-75
Temperature (°C)
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
-59.4
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS

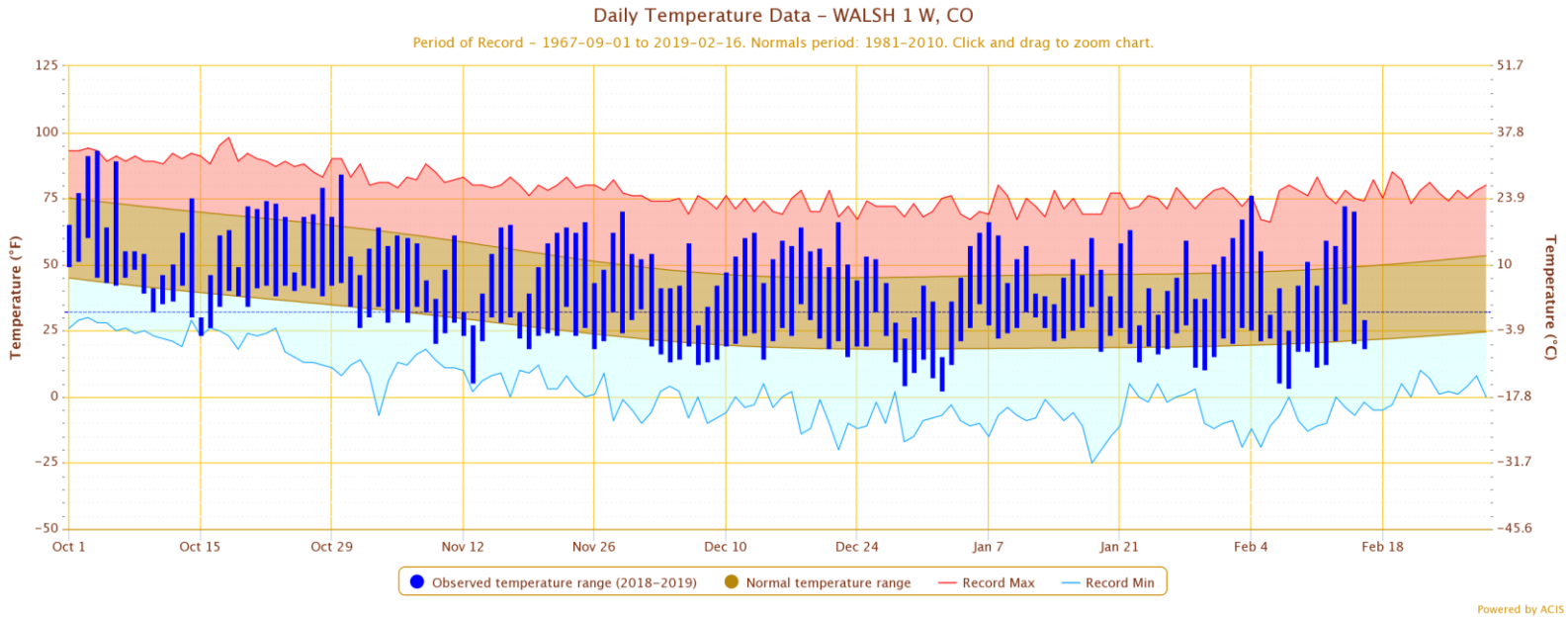

COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Leroy
Akron
Grand Junction
Gateway
Taylor Park
Buena Vista
Cheyenne Wells
Rocky Ford
Center
Del Norte
Mesa Verde

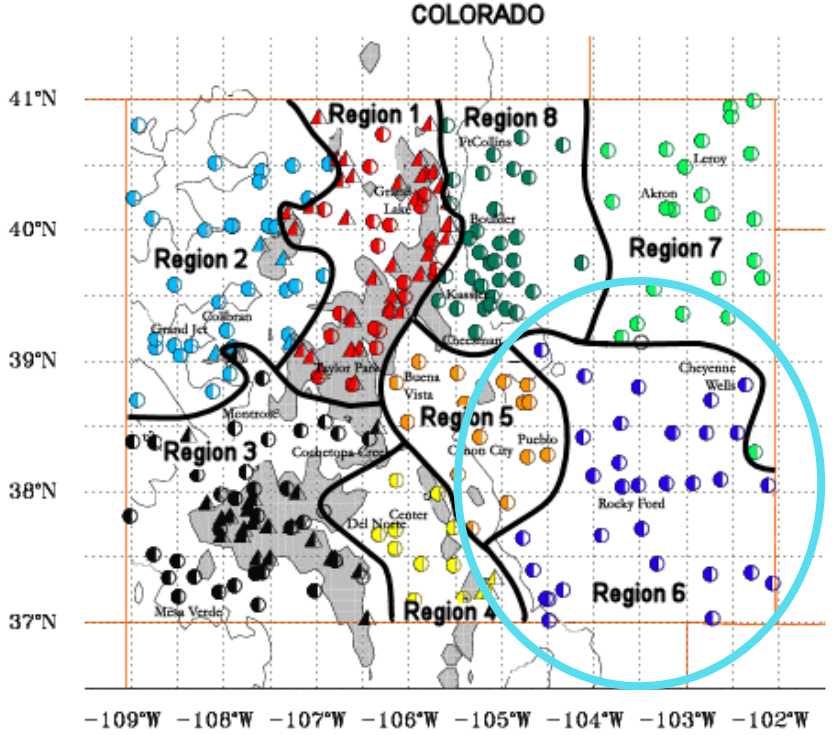

Accumulated Precipitation – PUEBLO MEMORIAL AP, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
1
2
3
4
5
6
7
8
9
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1995-96
1957-58
Powered by ACIS

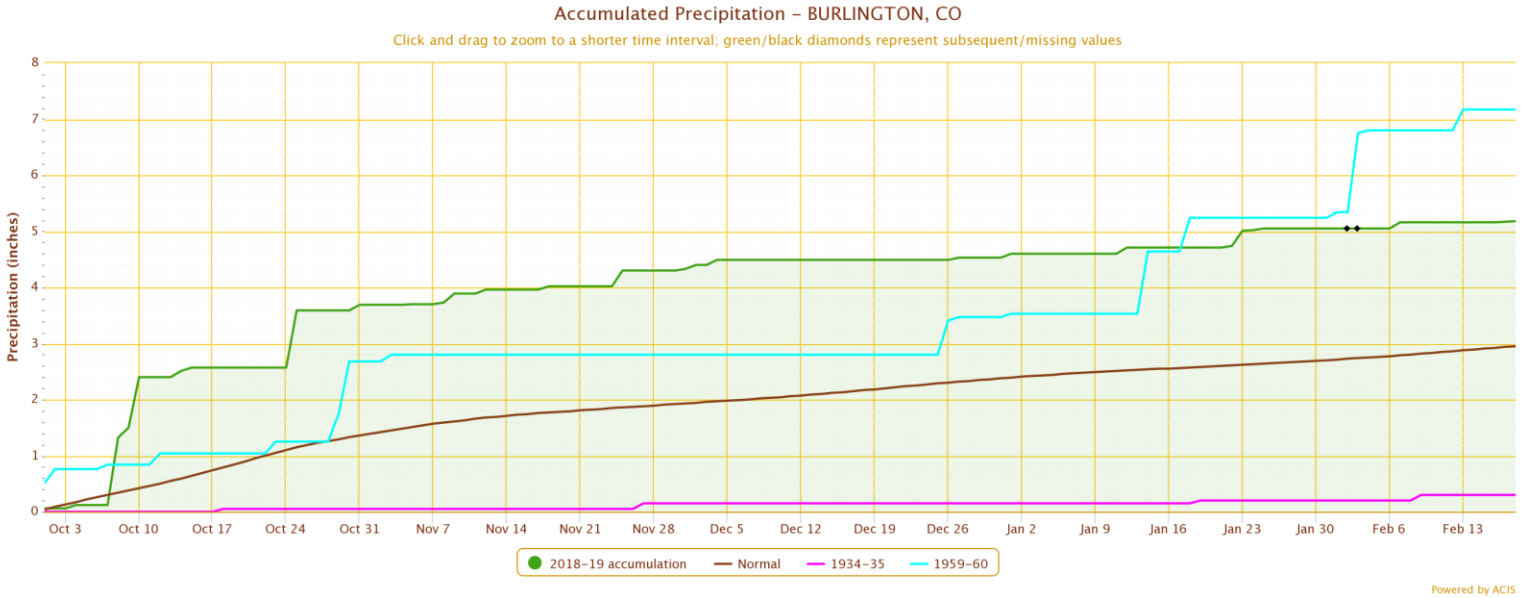

Daily Temperature Data – PUEBLO MEMORIAL AP, CO
Period of Record – 1954-06-16 to 2019-02-17. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
125
100
75
50
25
0
-25
-50
Temperature (°C)
51.7
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS

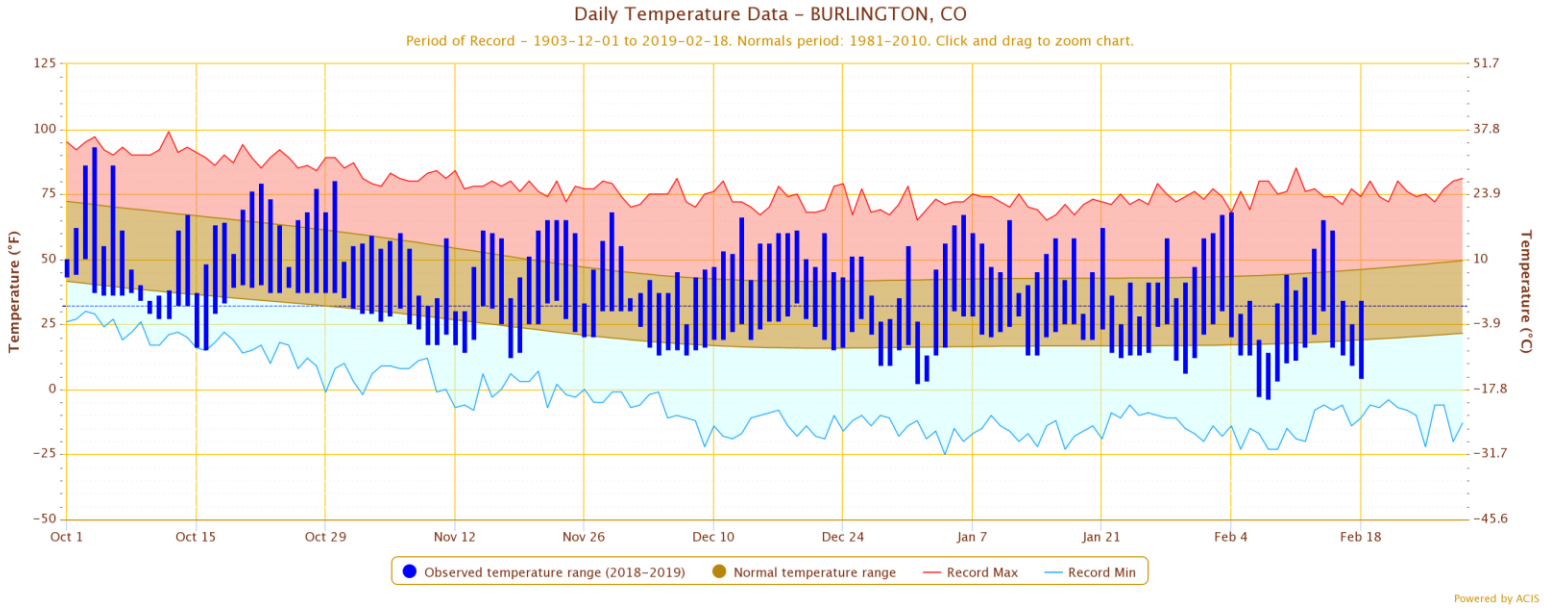

COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Leroy
Akron
Grand Junction
Gunnison
Buena Vista
Pueblo
Canon City
Cheyenne Wells
Rocky Ford
Mesa Verde

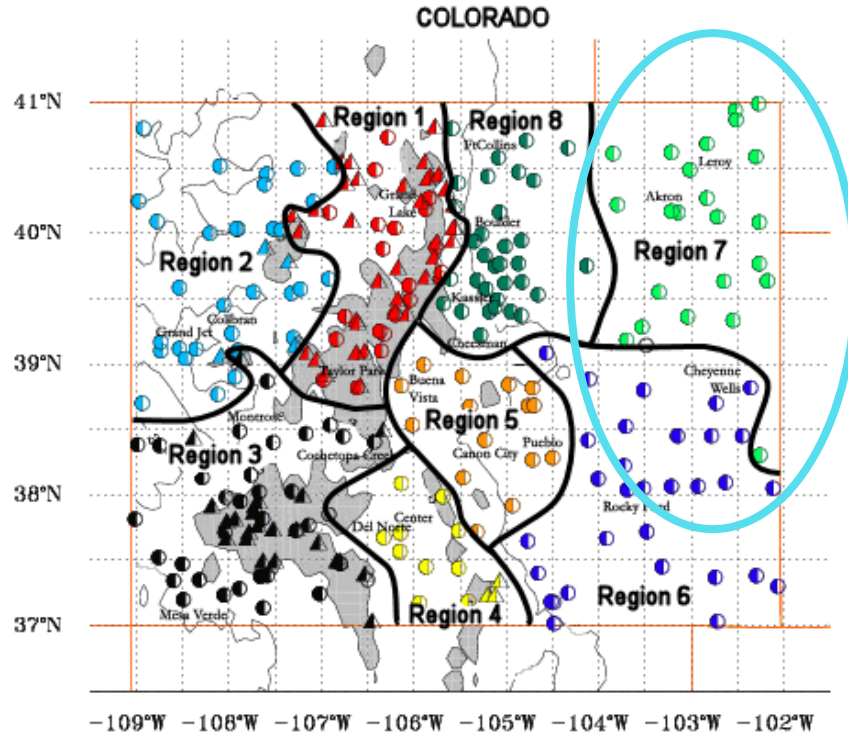

Accumulated Precipitation – WALSH 1 W, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
1
2
3
4
5
6
7
8
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1980-81
2000-01
Powered by ACIS

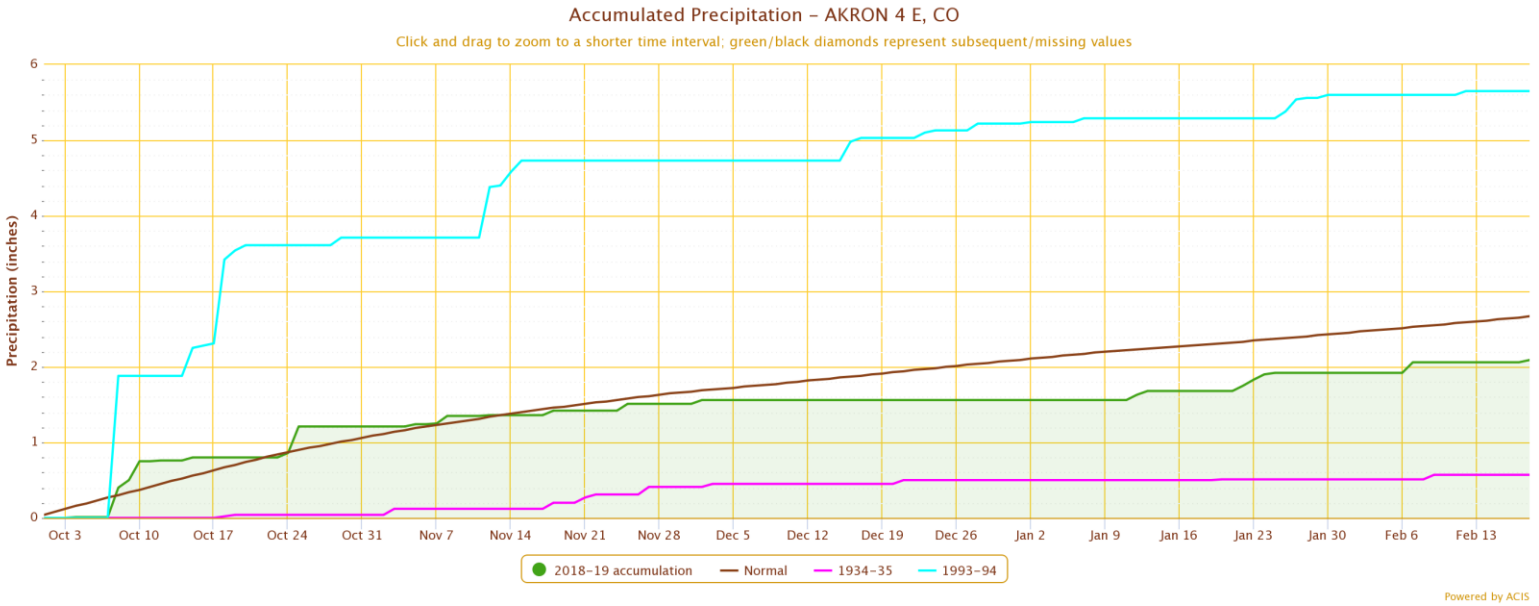

Daily Temperature Data – WALSH 1 W, CO
Period of Record – 1967-09-01 to 2019-02-16. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
125
100
75
50
25
0
-25
-50
Temperature (°C)
51.7
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS

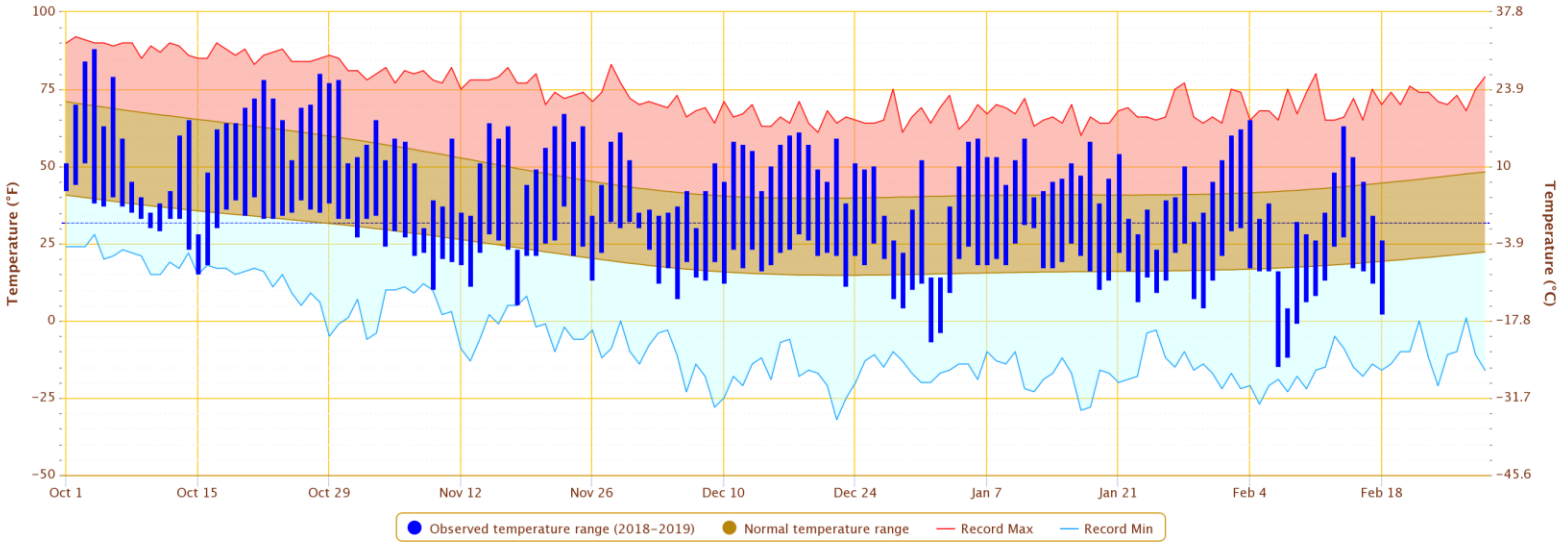

COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Leroy
Akron
Glenwood Springs
Grand Junction
Gunnison
Taylor Park
Buena Vista
Montrose
Cheyenne Wells
Canon City
Pueblo
Rocky Ford
Cortez
Mesa Verde
Center
Del Norte

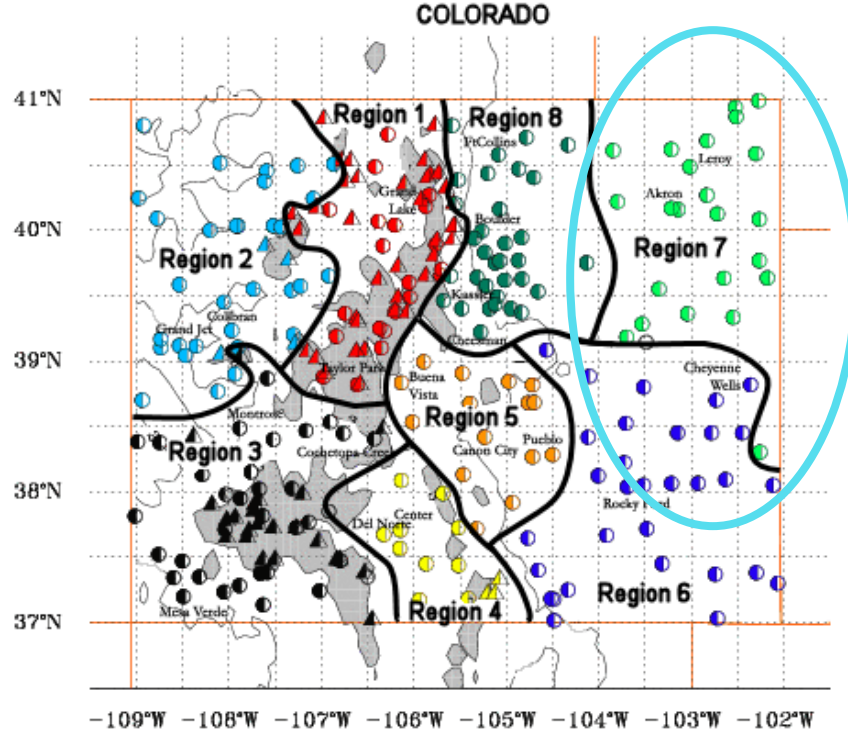

Accumulated Precipitation – BURLINGTON, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
1
2
3
4
5
6
7
8
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1934-35
1959-60
Powered by ACIS

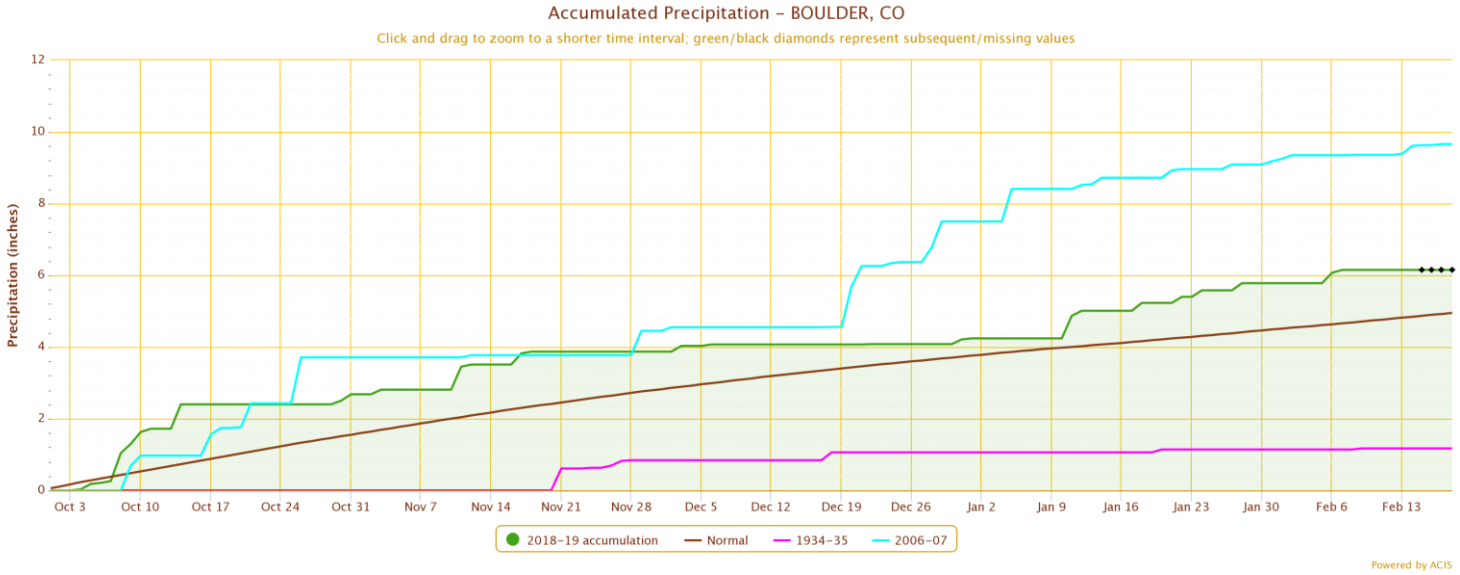

Daily Temperature Data – BURLINGTON, CO
Period of Record – 1903-12-01 to 2019-02-18. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
125
100
75
50
25
0
-25
-50
Temperature (°C)
51.7
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS

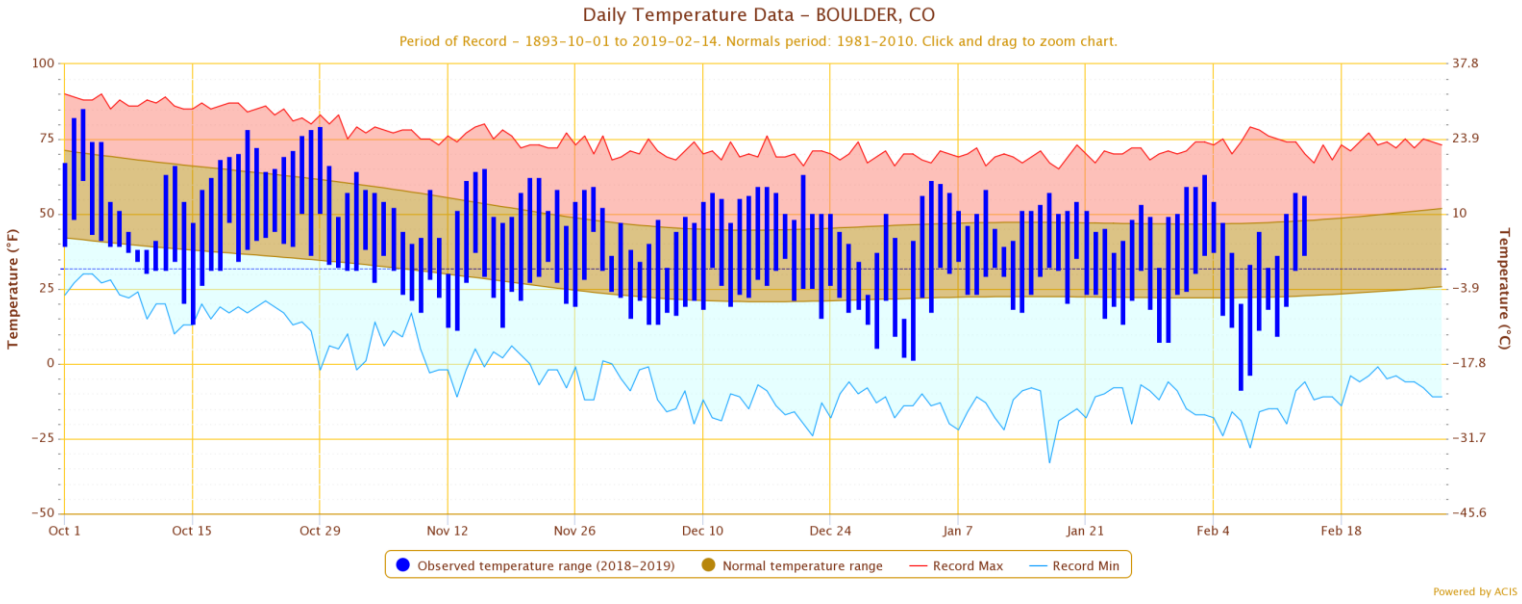

COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Leroy
Akron
Boulder
Grand Lake
Granby
Grand Junction
Gunnison
Taylor Park
Buena Vista
Montrose
Cheyenne Wells
Canon City
Pueblo
Del Norte
Center
Mesa Verde

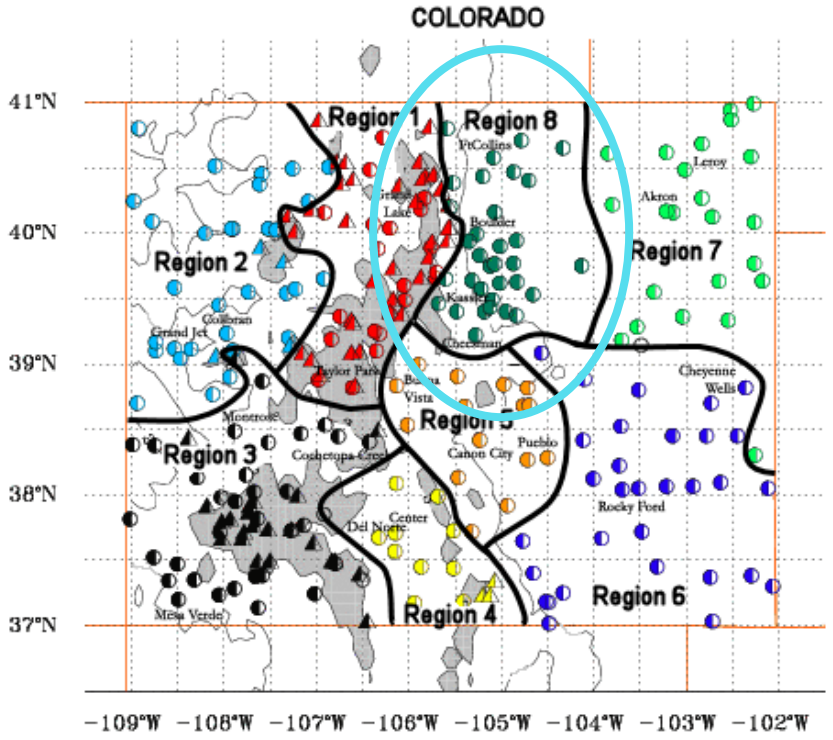

Accumulated Precipitation – AKRON 4 E, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
1
2
3
4
5
6
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1934-35
1993-94
Powered by ACIS


Daily Temperature Data – AKRON 4 E, CO
Period of Record – 1893-06-01 to 2019-02-18. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
100
75
50
25
0
-25
-50
Temperature (°C)
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS


COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Greeley
Lake
Boulder
Leroy
Akron
Grand Junction
Gunnison
Taylor Park
Buena Vista
Montrose
Cheyenne Wells
Canon City
Pueblo
Del Norte
Center
Mesa Verde


Accumulated Precipitation – BOULDER, CO
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values
Precipitation (inches)
0
2
4
6
8
10
12
Oct 3
Oct 10
Oct 17
Oct 24
Oct 31
Nov 7
Nov 14
Nov 21
Nov 28
Dec 5
Dec 12
Dec 19
Dec 26
Jan 2
Jan 9
Jan 16
Jan 23
Jan 30
Feb 6
Feb 13
2018-19 accumulation
Normal
1934-35
2006-07
Powered by ACIS

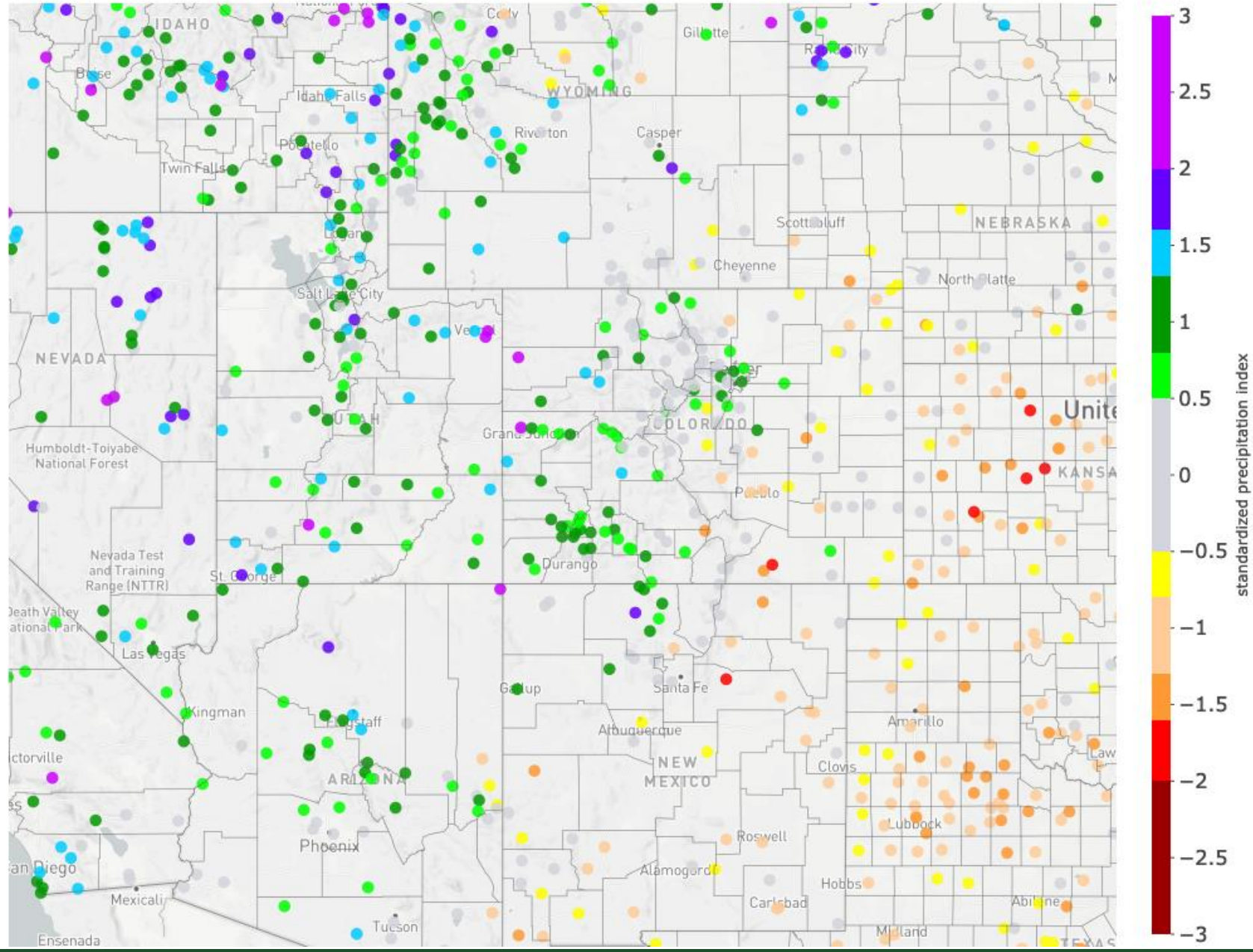

Daily Temperature Data – BOULDER, CO
Period of Record – 1893-10-01 to 2019-02-14. Normals period: 1981-2010. Click and drag to zoom chart.
Temperature (°F)
100
75
50
25
0
-25
-50
Temperature (°C)
37.8
23.9
10
-3.9
-17.8
-31.7
-45.6
Oct 1
Oct 15
Oct 29
Nov 12
Nov 26
Dec 10
Dec 24
Jan 7
Jan 21
Feb 4
Feb 18
Observed temperature range (2018-2019)
Normal temperature range
Record Max
Record Min
Powered by ACIS


COLORADO
41°N
40°N
39°N
38°N
37°N
-109°W
-108°W
-107°W
-106°W
-105°W
-104°W
-103°W
-102°W
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Fort Collins
Loveland
Estes Park
Boulder
Grand Junction
Gunnison
Salida
Buena Vista
Canon City
Pueblo
Cheyenne Wells
Akron
Leroy
Rocky Ford
Monte Vista
Del Norte
Center
Mesa Verde

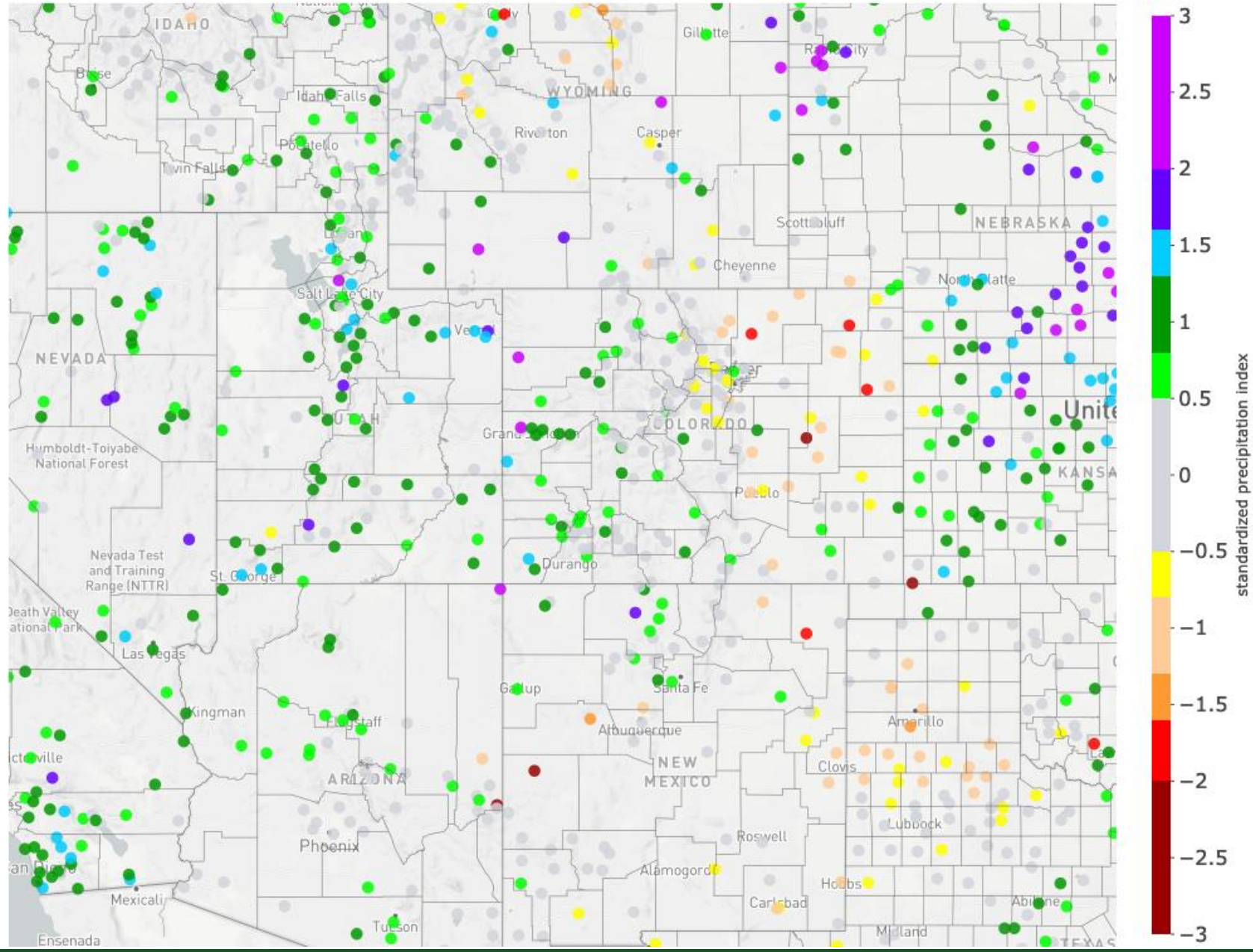
COLORADO
CLIMATE
CENTER

Colorado Drought

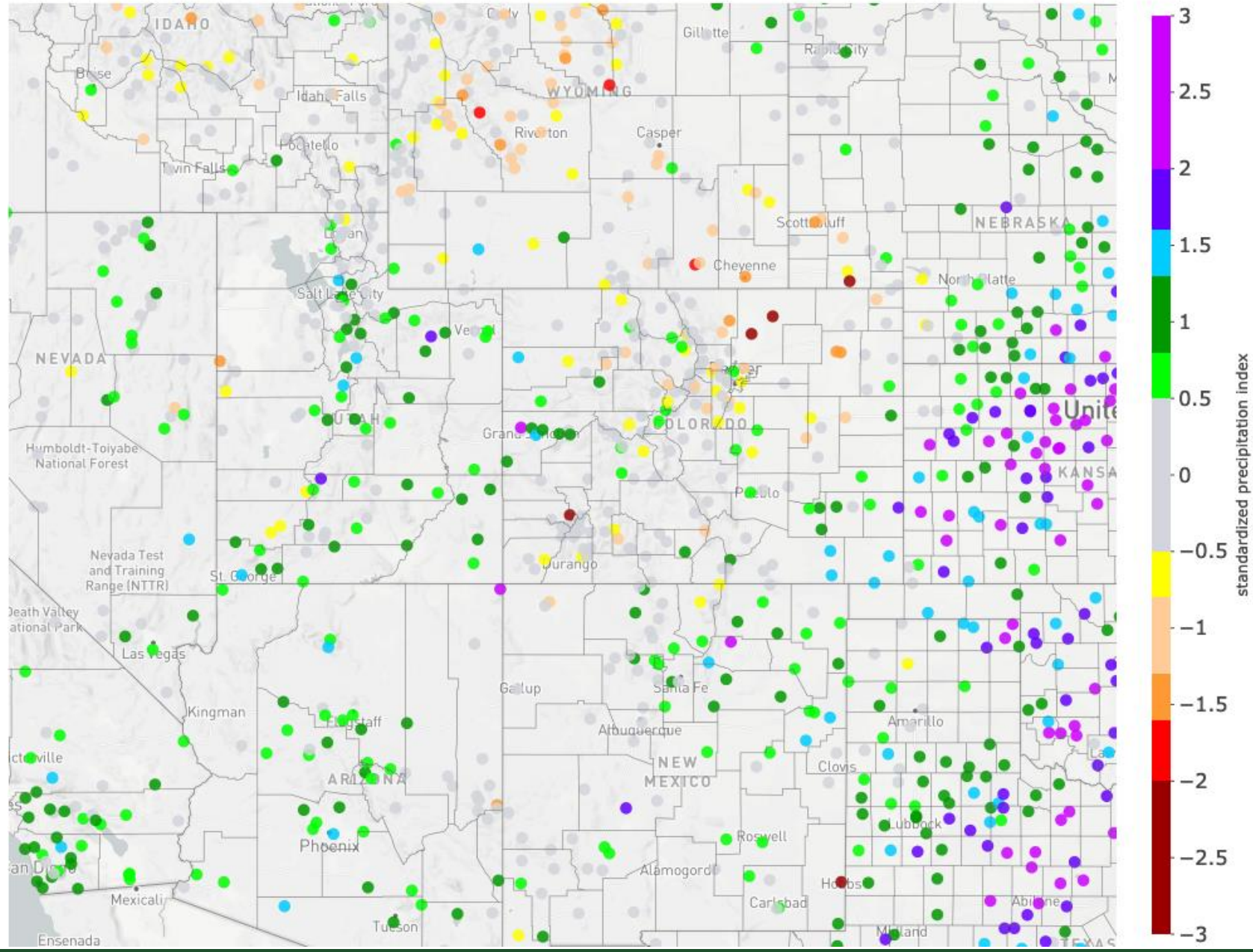
30-day Standardized Precipitation Index: 1/19/2019 - 2/17/2019



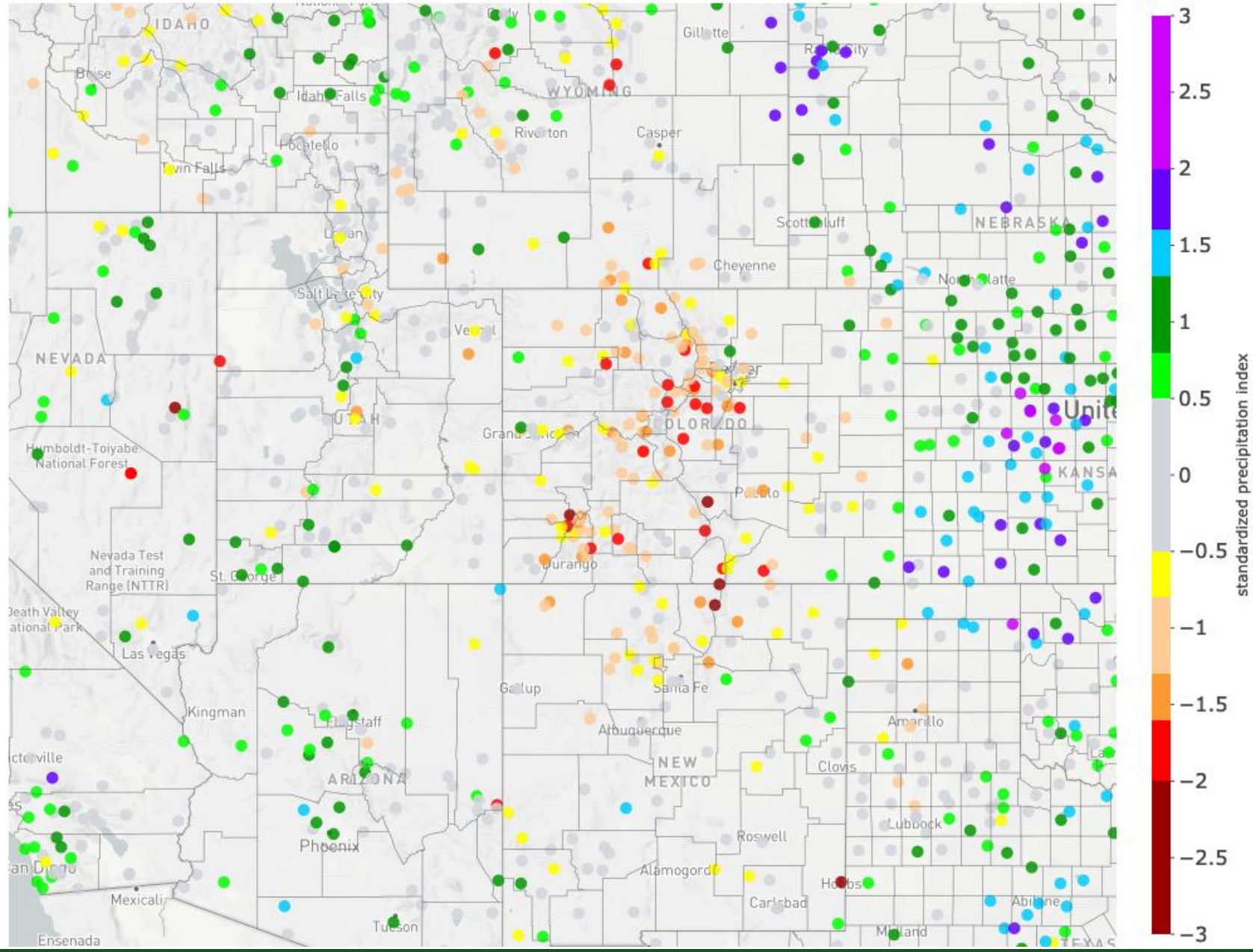
90-day Standardized Precipitation Index: 11/20/2018 - 2/17/2019

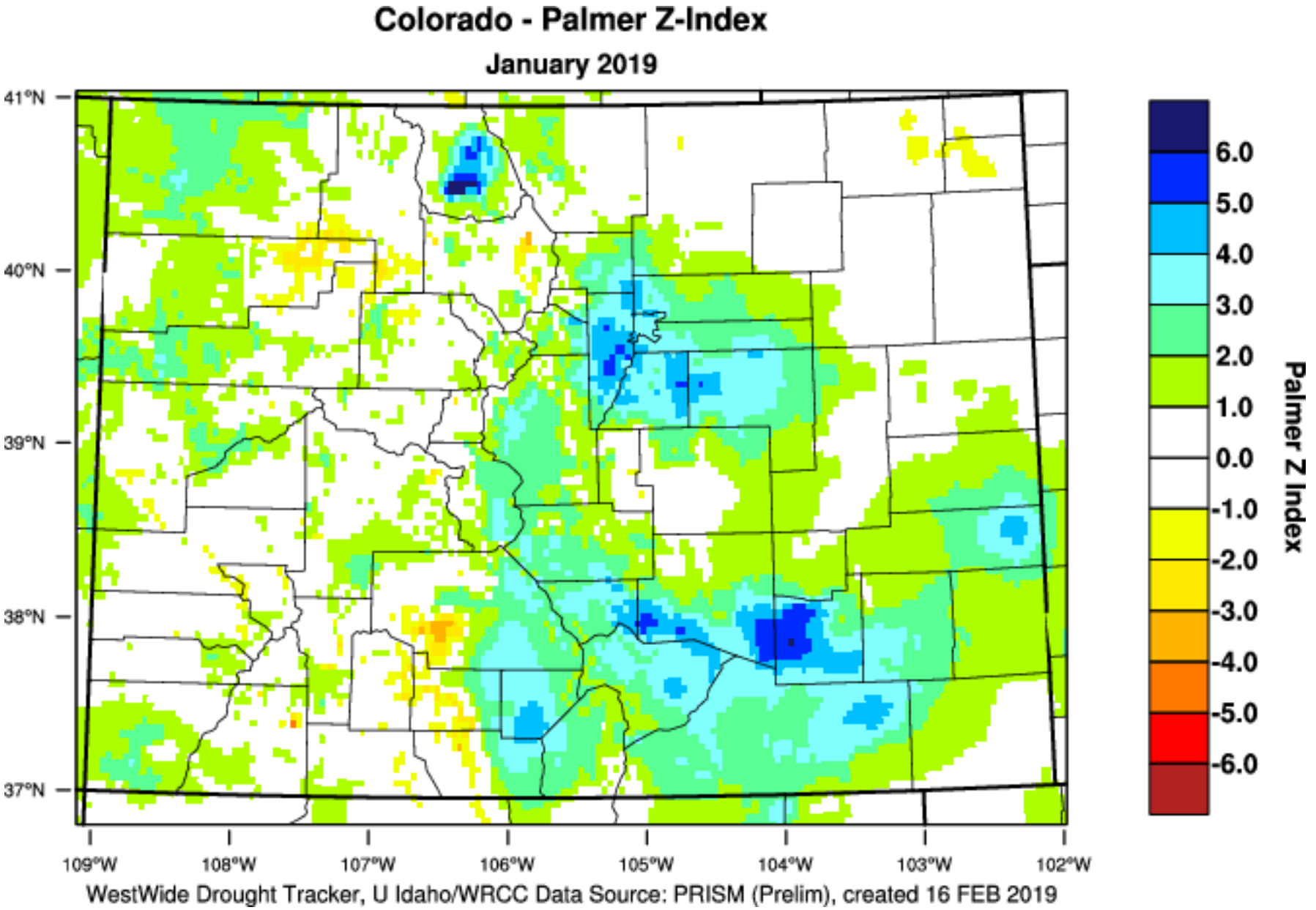


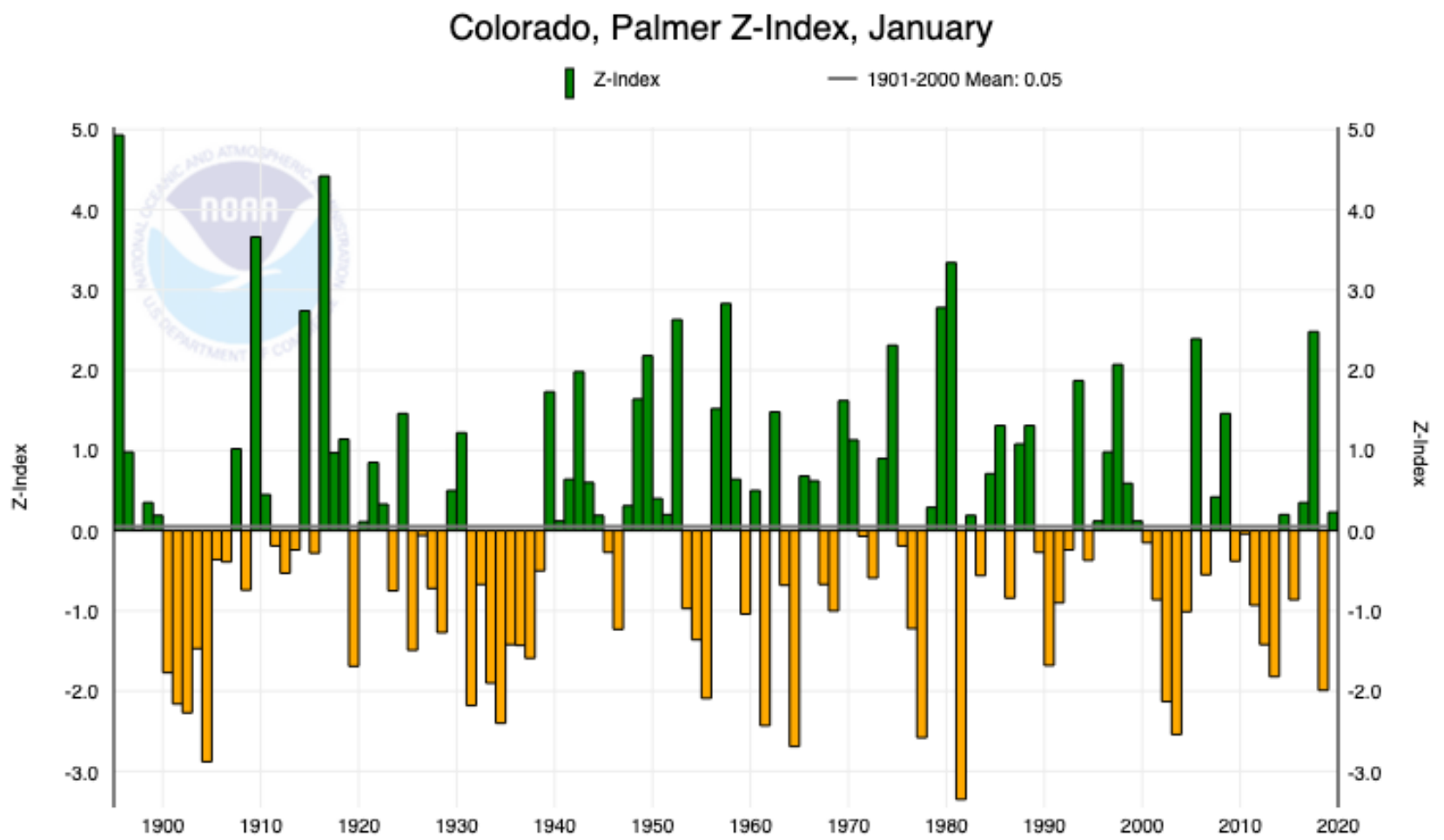
6-month Standardized Precipitation Index: 8/18/2018 - 2/17/2019



12-month Standardized Precipitation Index: 2/18/2018 - 2/17/2019




Colorado - Palmer Z-Index
January 2019
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
Palmer Z Index
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 FEB 2019

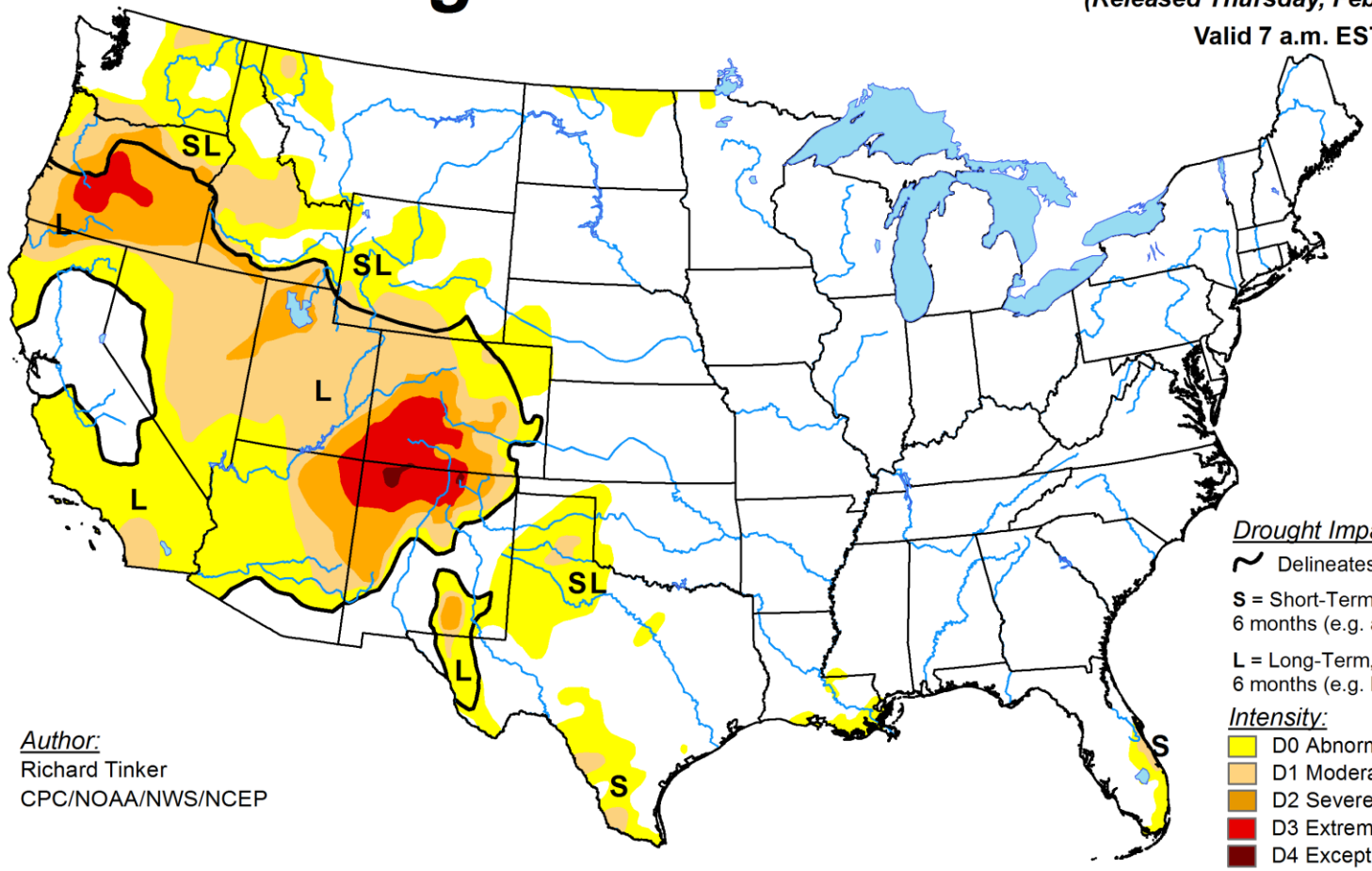

Colorado, Palmer Z-Index, January
Z-Index
1901-2000 Mean: 0.05
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020

U.S. Drought Monitor

February 12, 2019

(Released Thursday, Feb. 14, 2019)

Valid 7 a.m. EST



Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

Drought Impact Types:

Delineates dominant impacts

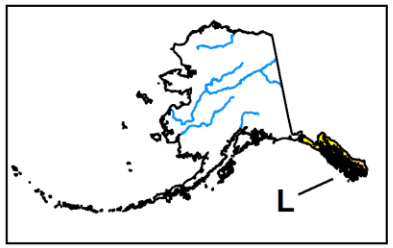
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

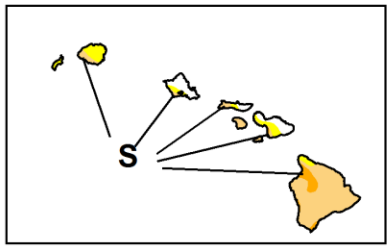
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

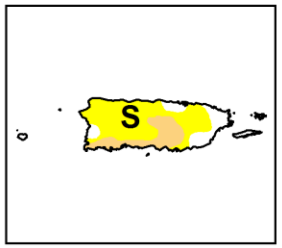
Intensity:

- 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.







USDA NDMC

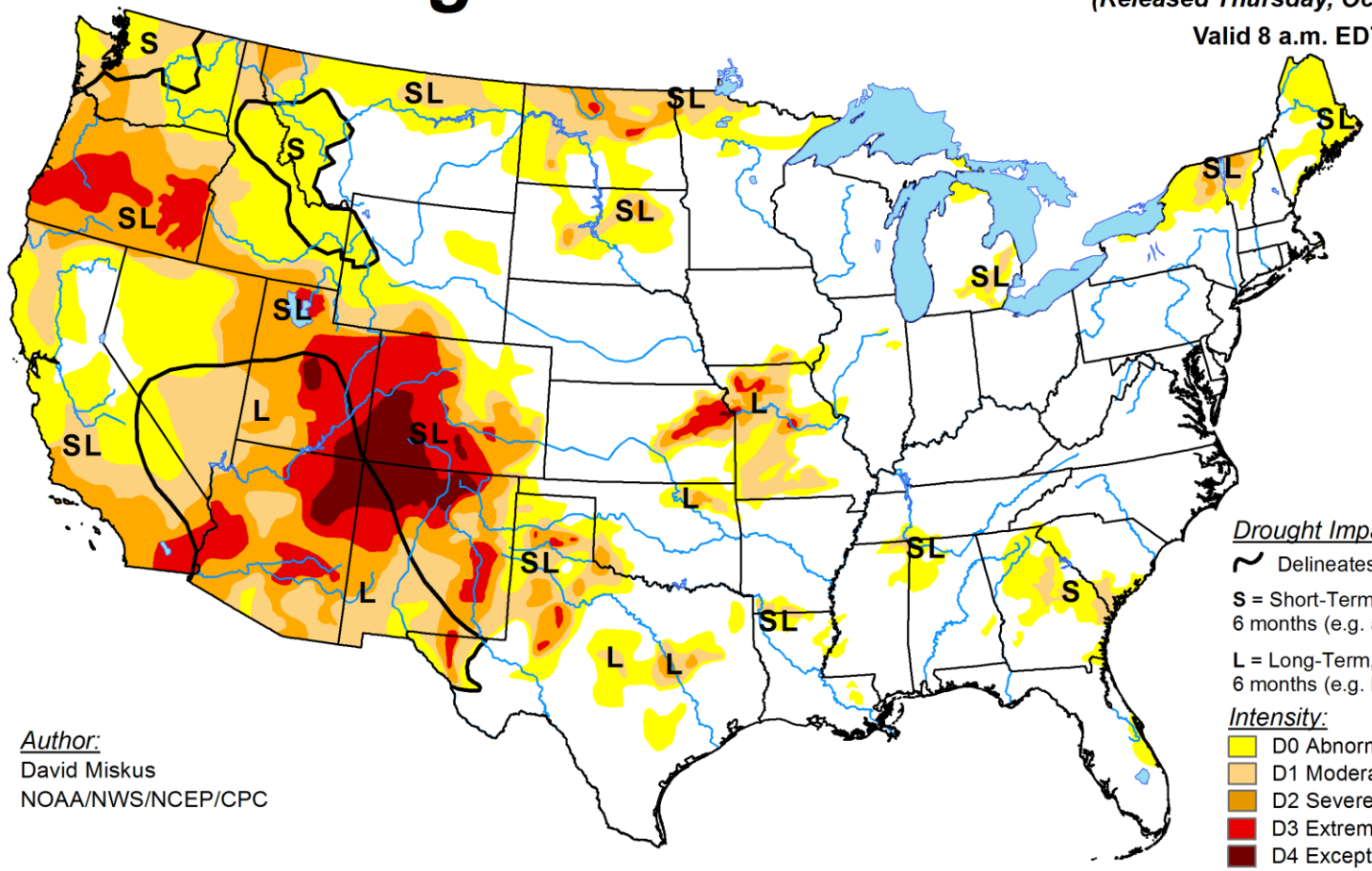
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

October 2, 2018

(Released Thursday, Oct. 4, 2018)

Valid 8 a.m. EDT



Author:
David Miskus
NOAA/NWS/NCEP/CPC

Drought Impact Types:

~ Delineates dominant impacts

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L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

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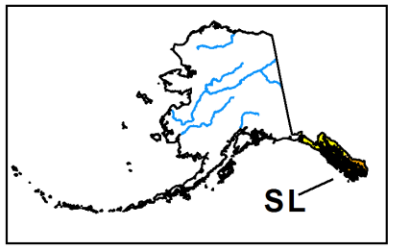
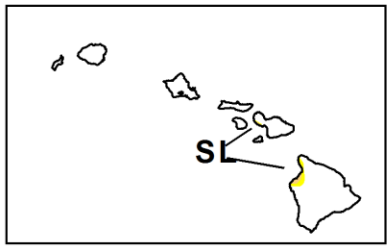
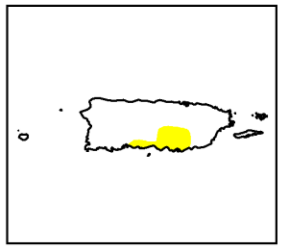


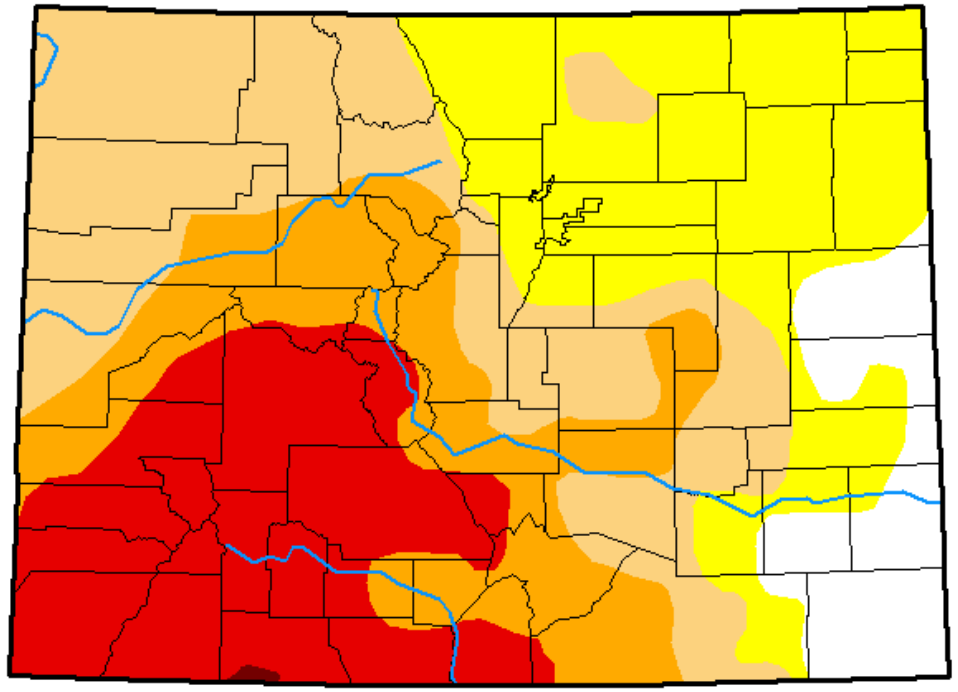




USDA NDMC NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Colorado



February 12, 2019
(Released Thursday, Feb. 14, 2019)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.15	91.85	67.16	39.69	21.84	0.11
Last Week *02-05-2019*	8.14	91.86	67.16	40.83	22.05	2.96
3 Months Ago *11-13-2018*	16.64	83.36	66.26	54.82	34.13	13.35
Start of Calendar Year *01-01-2019*	17.94	82.06	66.26	54.91	27.11	11.22
Start of Water Year *09-25-2018*	14.19	85.81	72.30	64.41	48.47	16.21
One Year Ago *02-13-2018*	8.59	91.41	71.18	33.51	0.00	0.00

Intensity:

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

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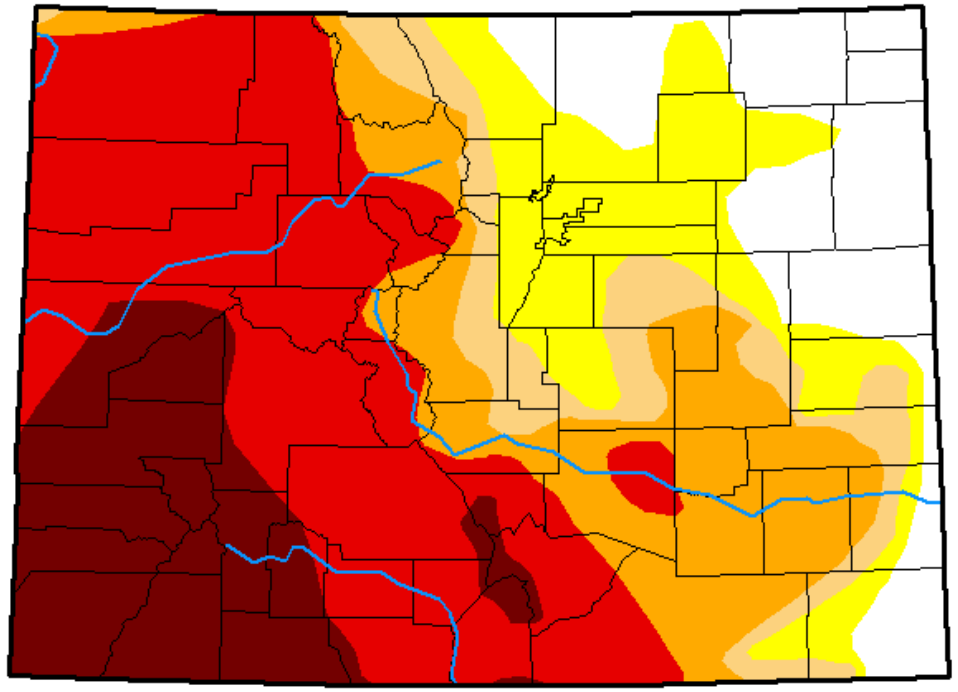
Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Colorado



October 2, 2018
(Released Thursday, Oct. 4, 2018)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	14.19	85.81	72.30	64.41	48.47	16.21
Last Week *09-25-2018*	14.19	85.81	72.30	64.41	48.47	16.21
3 Months Ago *07-03-2018*	20.46	79.54	67.30	52.31	36.46	8.81
Start of Calendar Year *01-02-2018*	6.57	93.43	33.53	7.27	0.00	0.00
Start of Water Year *09-25-2018*	14.19	85.81	72.30	64.41	48.47	16.21
One Year Ago *10-03-2017*	70.54	29.46	3.70	0.00	0.00	0.00

Intensity:

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

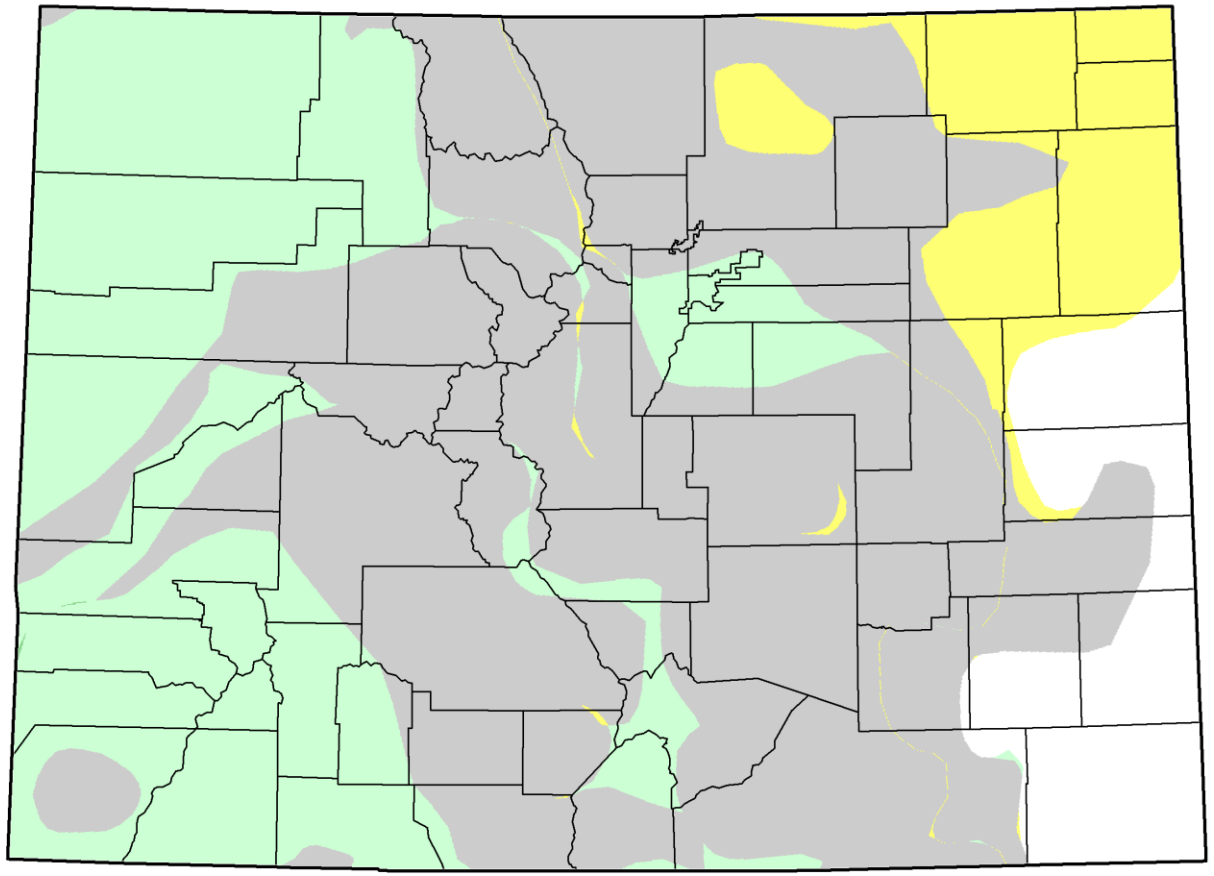
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
David Miskus
NOAA/NWS/NCEP/CPC

http://droughtmonitor.unl.edu/

U.S. Drought Monitor Class Change - Colorado

1 Month



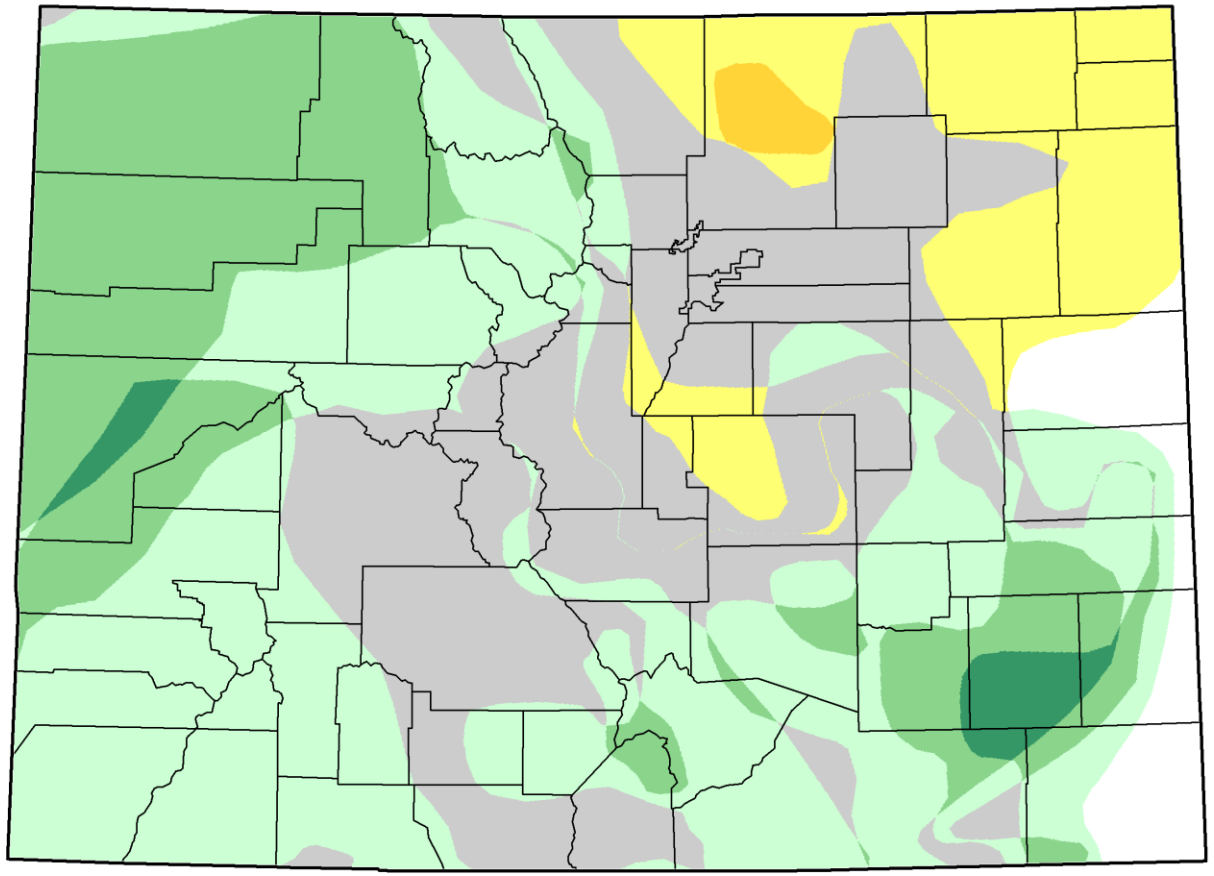
February 12, 2019
compared to
January 15, 2019

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

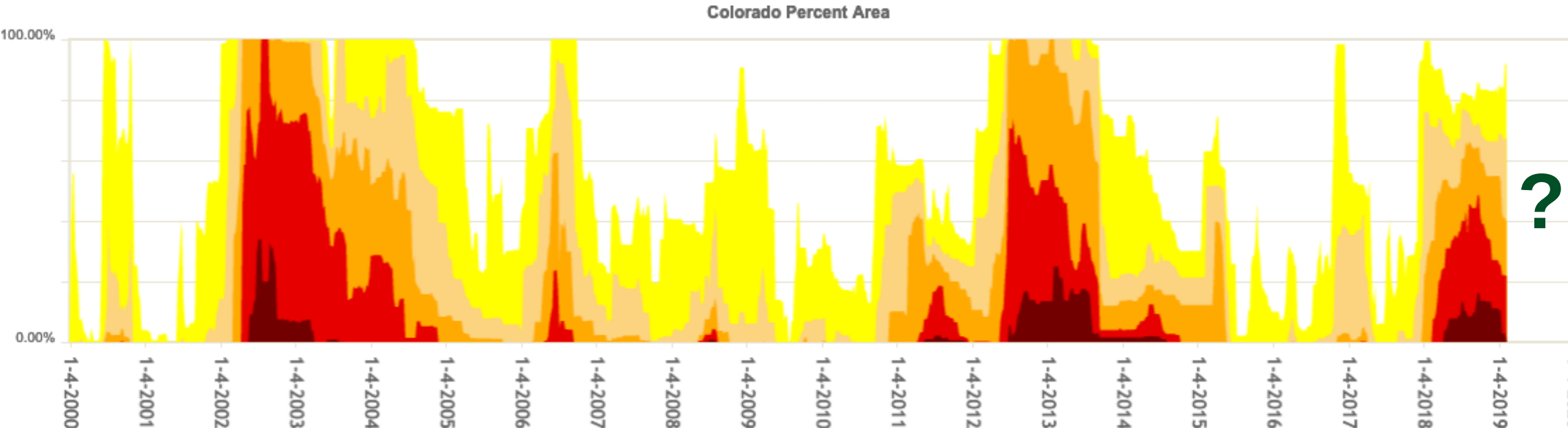


February 12, 2019
compared to
September 25, 2018

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

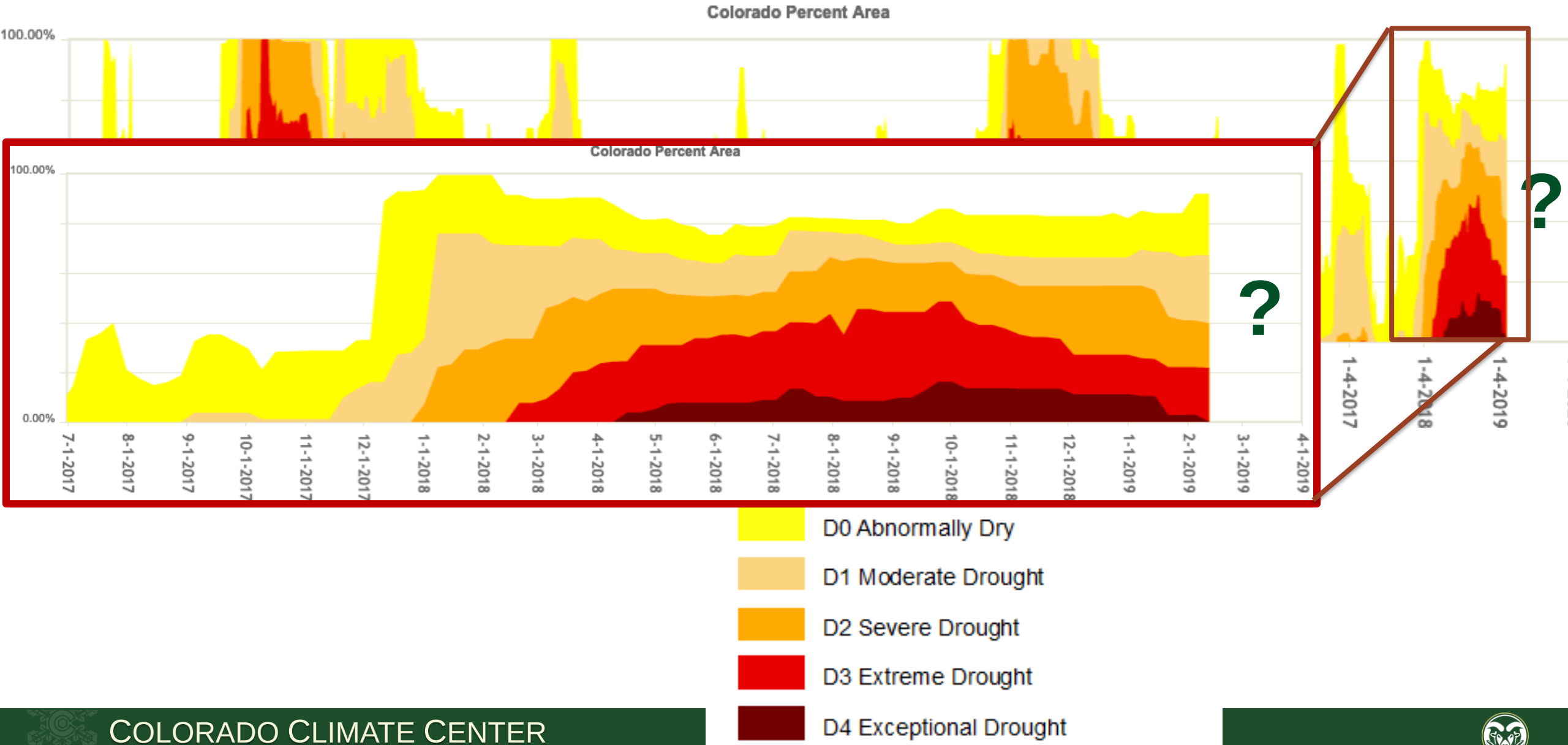
US Drought Monitor: Colorado

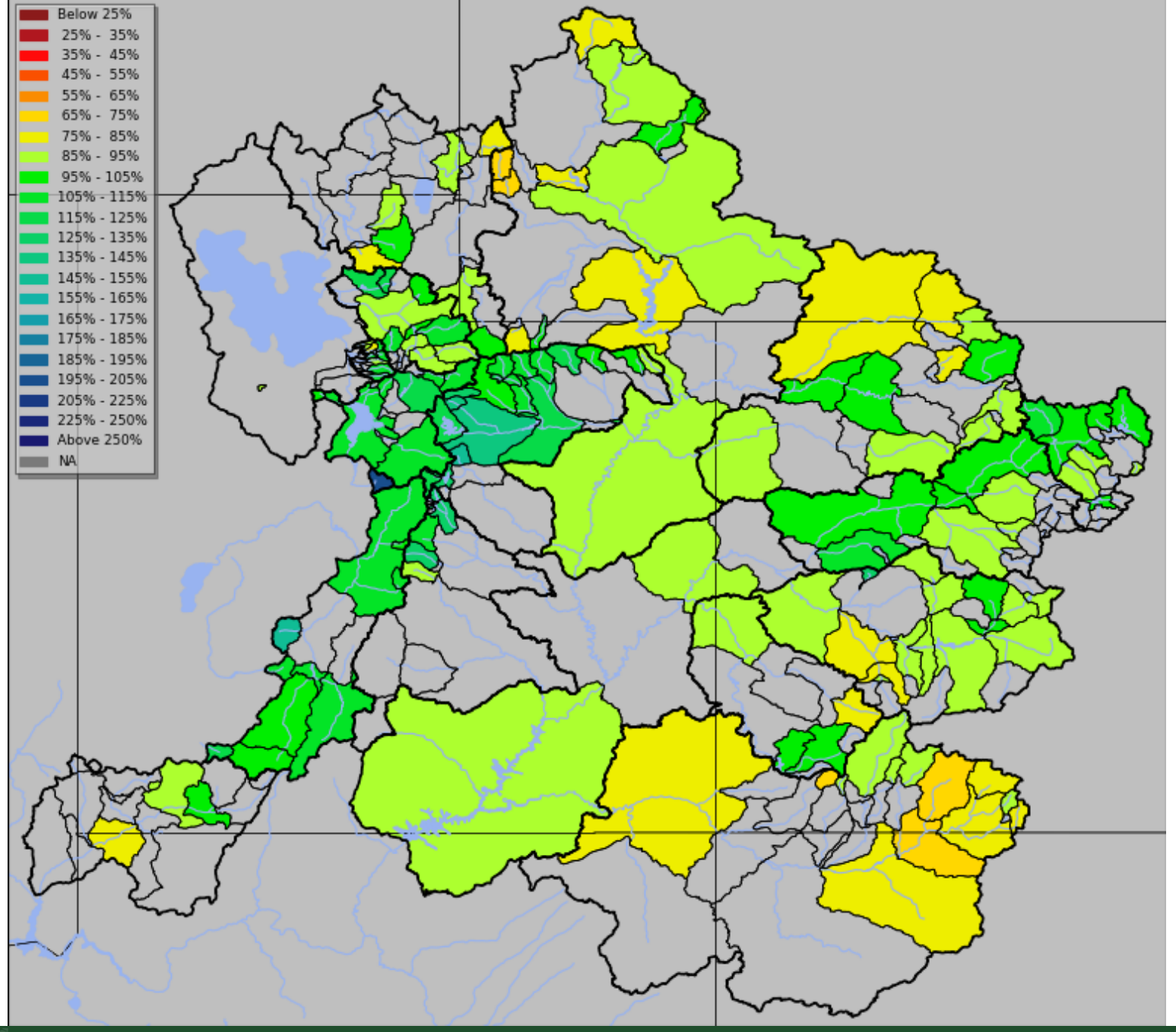


Intensity:

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

US Drought Monitor: Colorado





CBRFC water supply forecast updated Feb 15

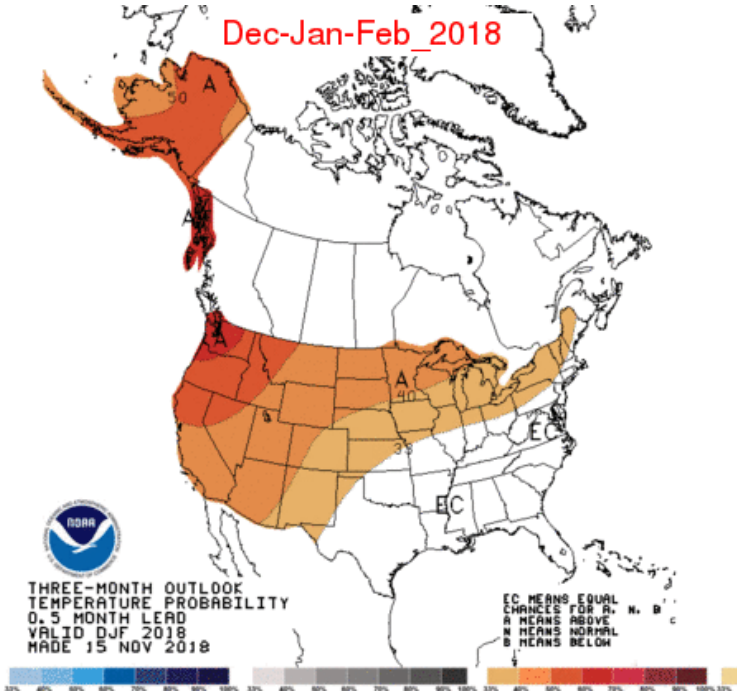
April-July water supply as % of average

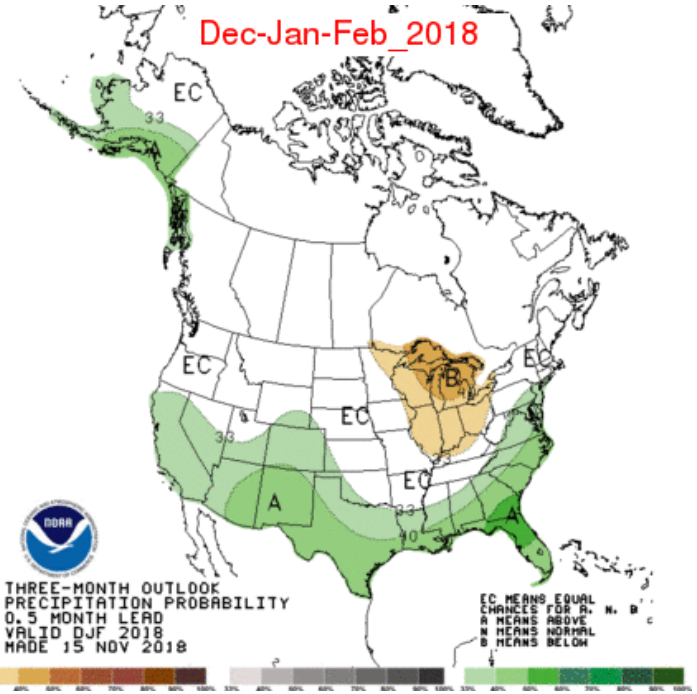
Forecast inflow into Powell: 84% of average

COLORADO
CLIMATE
CENTER

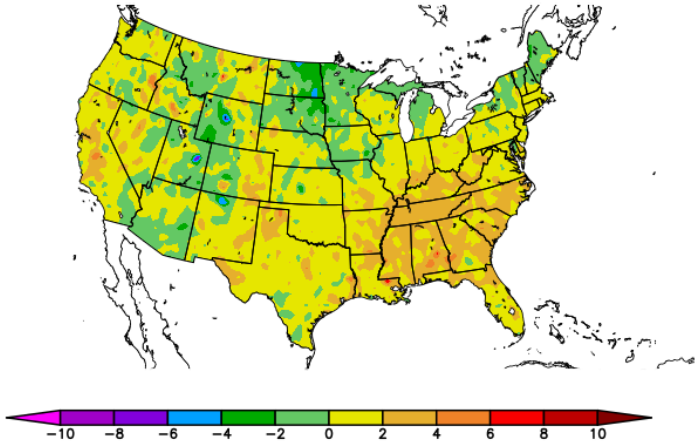
Outlook

Looking back...





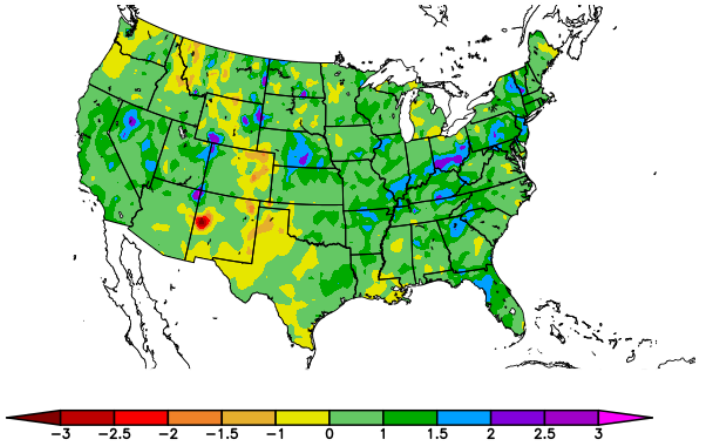
Departure from Normal Temperature (F)
11/20/2018 – 2/17/2019



Generated 2/18/2019 at HPRCC using provisional data.

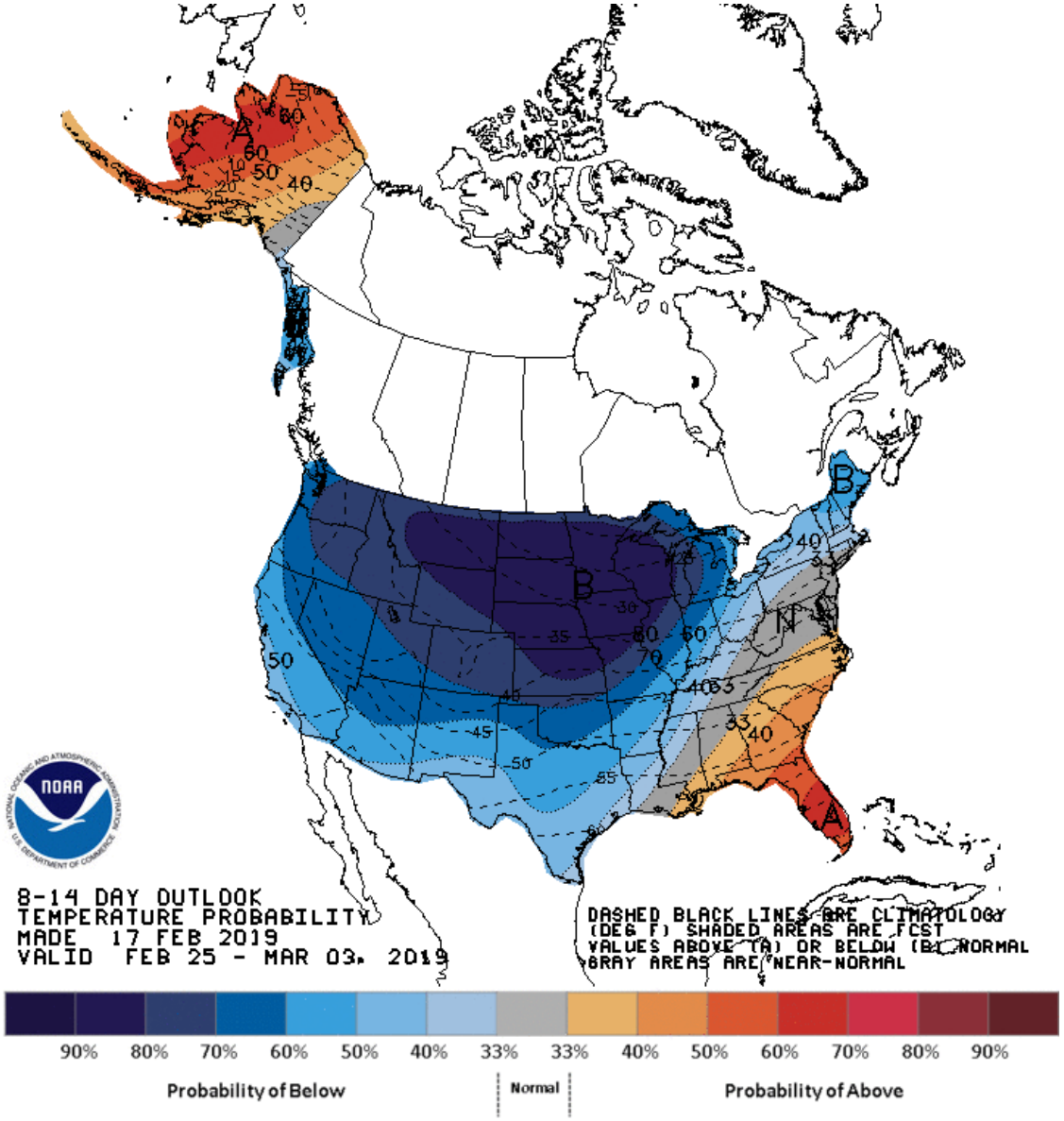
NOAA Regional Climate Cente

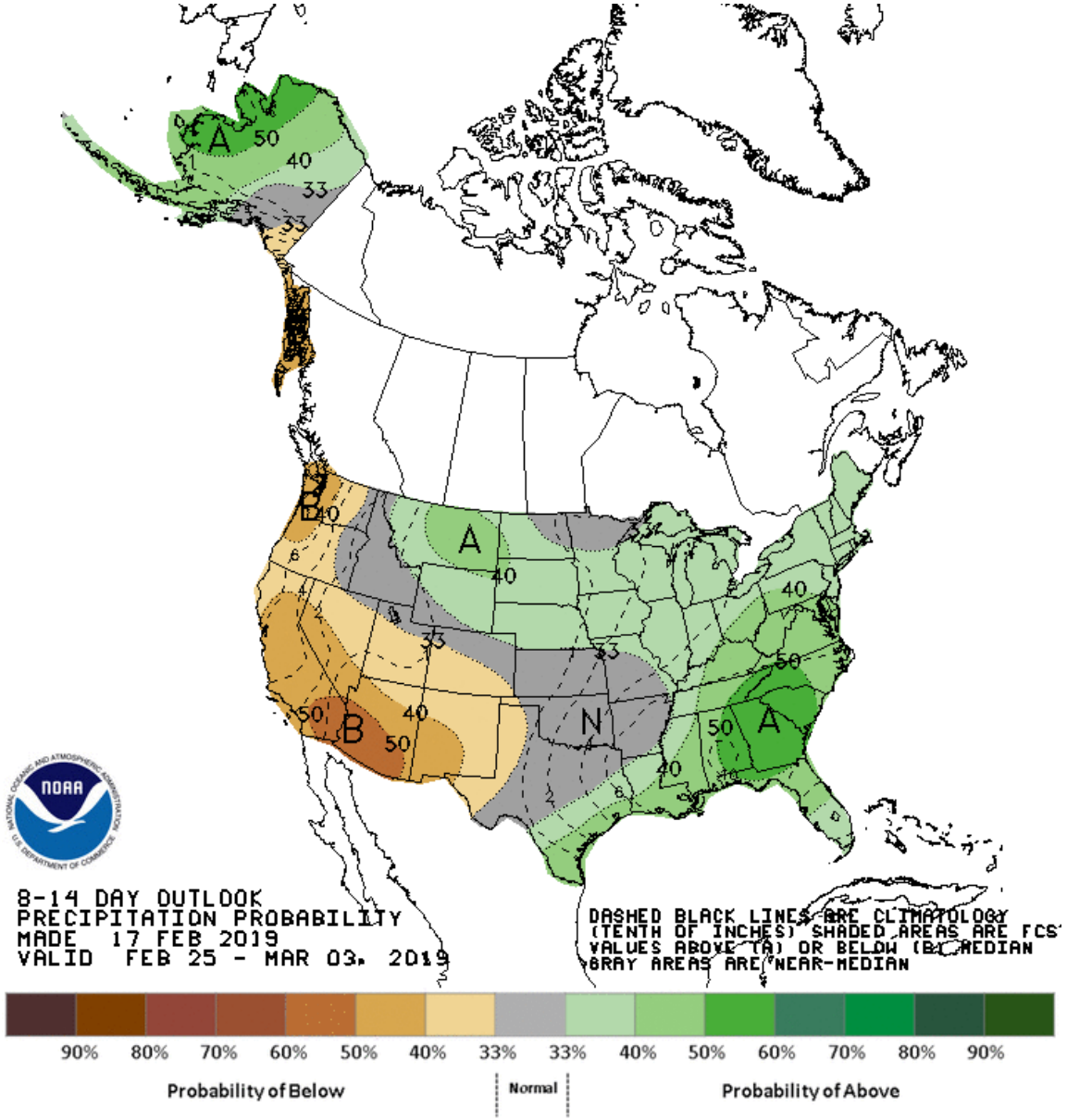
90 Day SPI
11/19/2018 – 2/16/2019

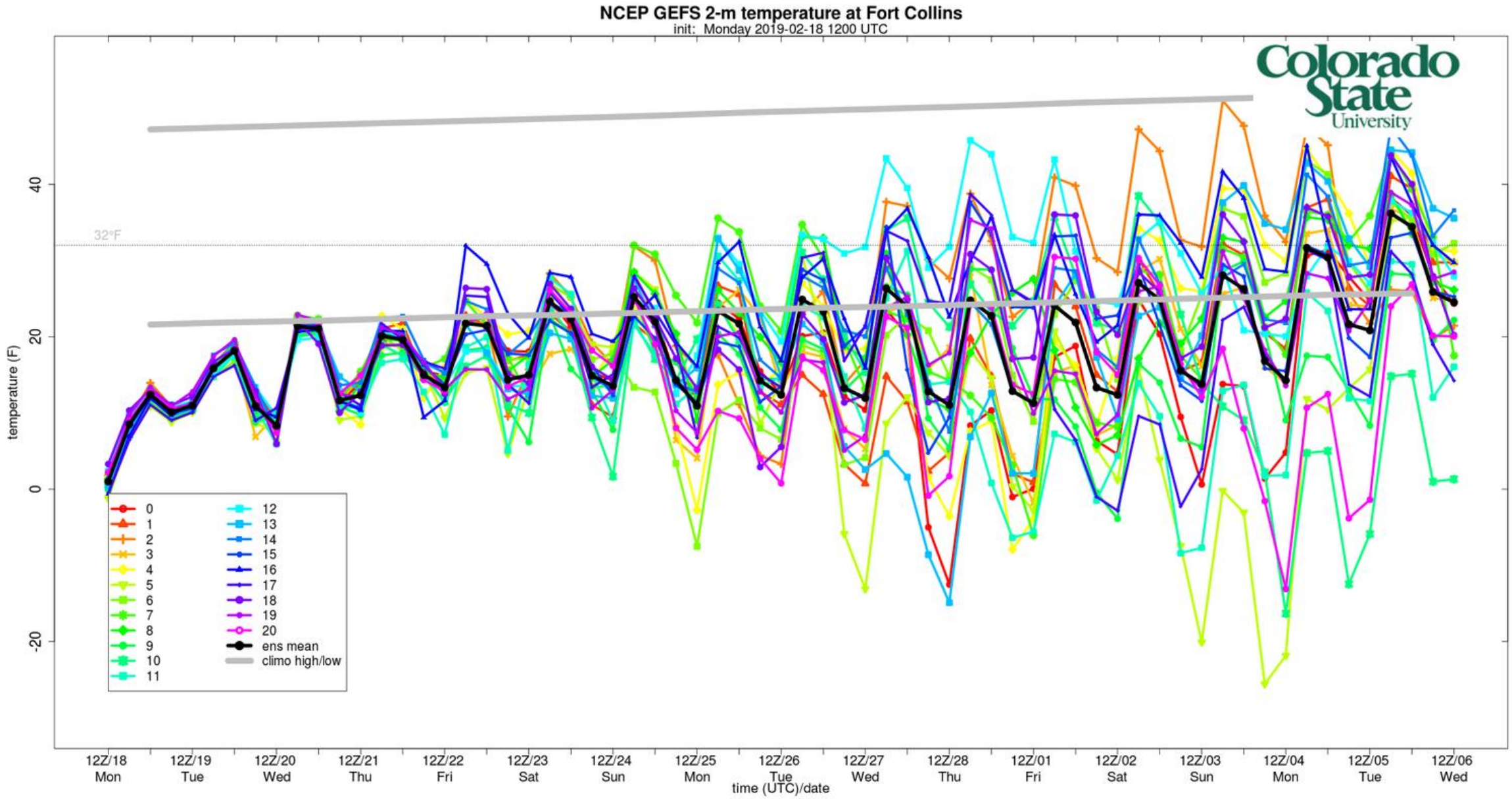


Generated 2/17/2019 at HPRCC using provisional data.

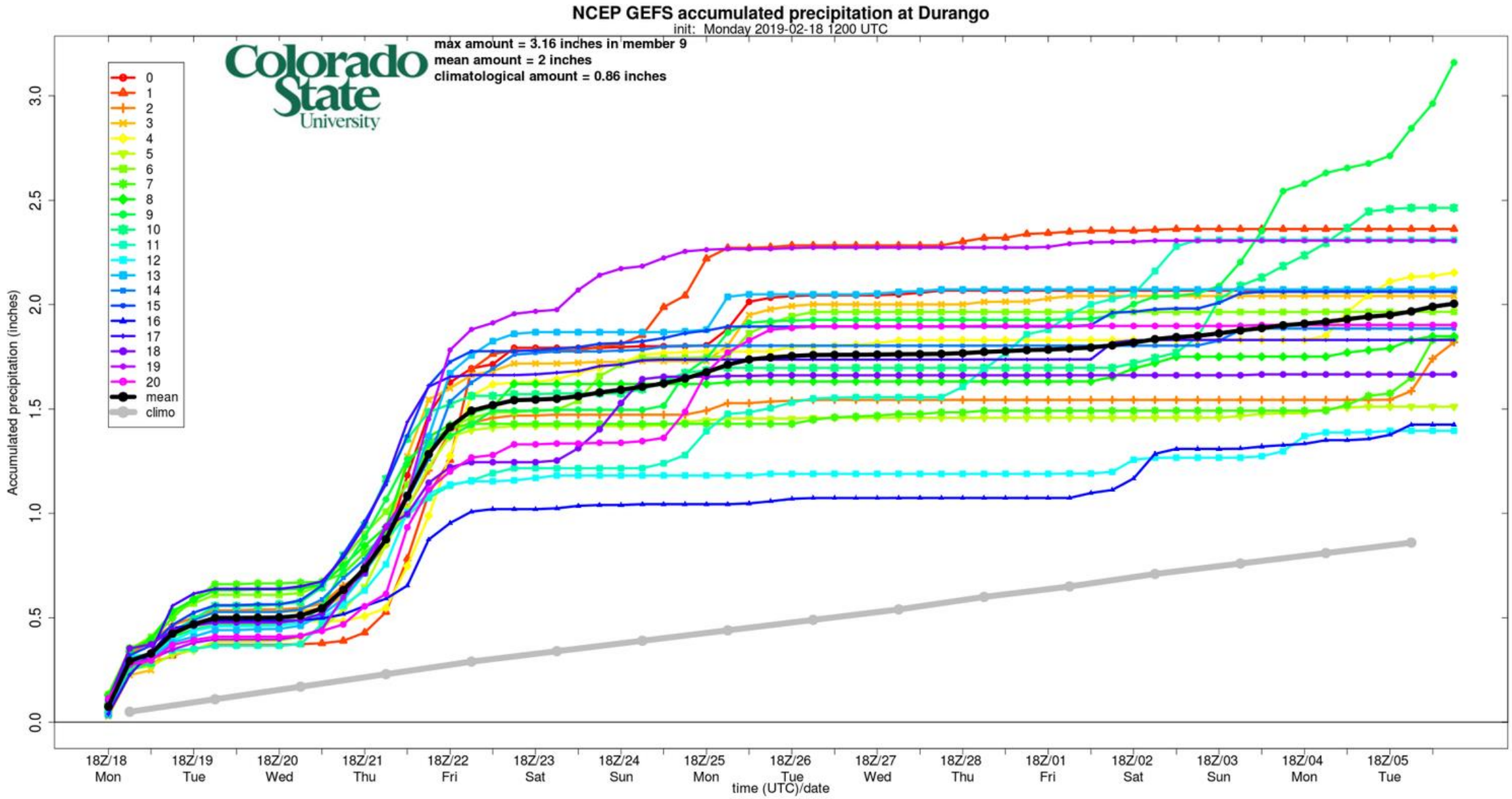
NOAA Regional Climate Centers


8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 17 FEB 2019
VALID FEB 25 - MAR 03. 2019
DASHED BLACK LINES ARE CLIMATOLOGY
(DEG F) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above


8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 17 FEB 2019
VALID FEB 25 - MAR 03. 2019
DASHED BLACK LINES ARE CLIMATOLOGY
(TENTH OF INCHES) SHADED AREAS ARE FCS
VALUES ABOVE (A) OR BELOW (B) MEDIAN
GRAY AREAS ARE NEAR-MEDIAN
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above


NCEP GEFS 2-m temperature at Fort Collins
init: Monday 2019-02-18 1200 UTC
Colorado State University
temperature (F)
40
32°F
20
0
-20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
ens mean
climo high/low
12Z/18 Mon
12Z/19 Tue
12Z/20 Wed
12Z/21 Thu
12Z/22 Fri
12Z/23 Sat
12Z/24 Sun
12Z/25 Mon
12Z/26 Tue
12Z/27 Wed
12Z/28 Thu
12Z/01 Fri
12Z/02 Sat
12Z/03 Sun
12Z/04 Mon
12Z/05 Tue
12Z/06 Wed
time (UTC)/date

(March 6)


NCEP GEFS accumulated precipitation at Durango
init: Monday 2019-02-18 1200 UTC
max amount = 3.16 inches in member 9
mean amount = 2 inches
climatological amount = 0.86 inches
Colorado State University
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
mean
climo
Accumulated precipitation (inches)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
18Z/18 Mon
18Z/19 Tue
18Z/20 Wed
18Z/21 Thu
18Z/22 Fri
18Z/23 Sat
18Z/24 Sun
18Z/25 Mon
18Z/26 Tue
18Z/27 Wed
18Z/28 Thu
18Z/01 Fri
18Z/02 Sat
18Z/03 Sun
18Z/04 Mon
18Z/05 Tue
time (UTC)/date

(March 6)

El Niño-Southern Oscillation (ENSO)

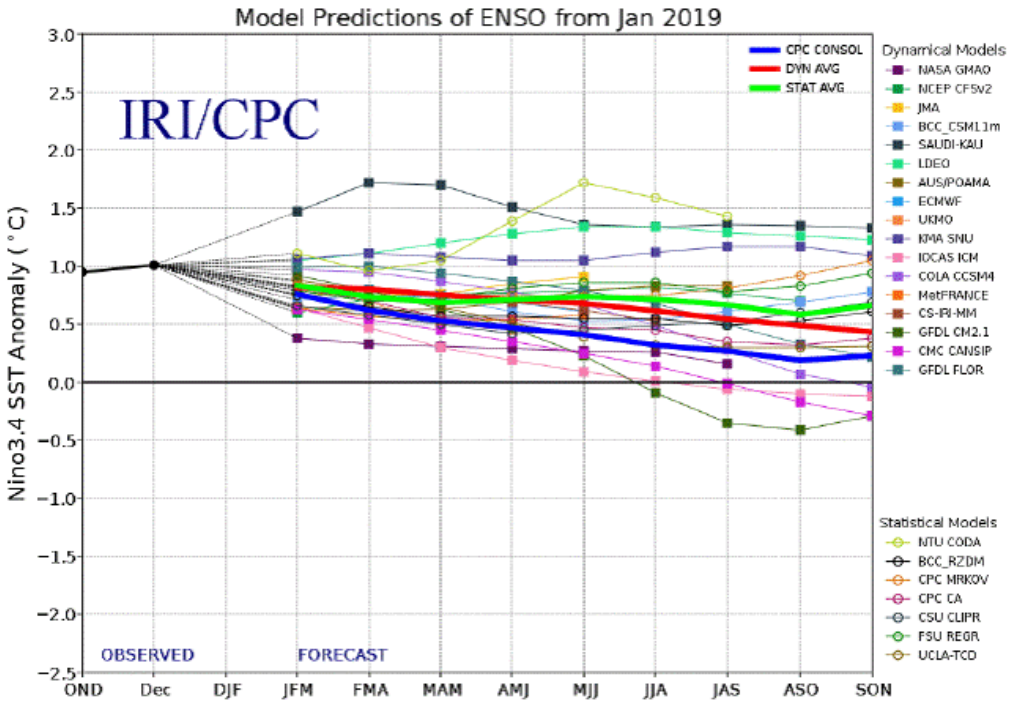
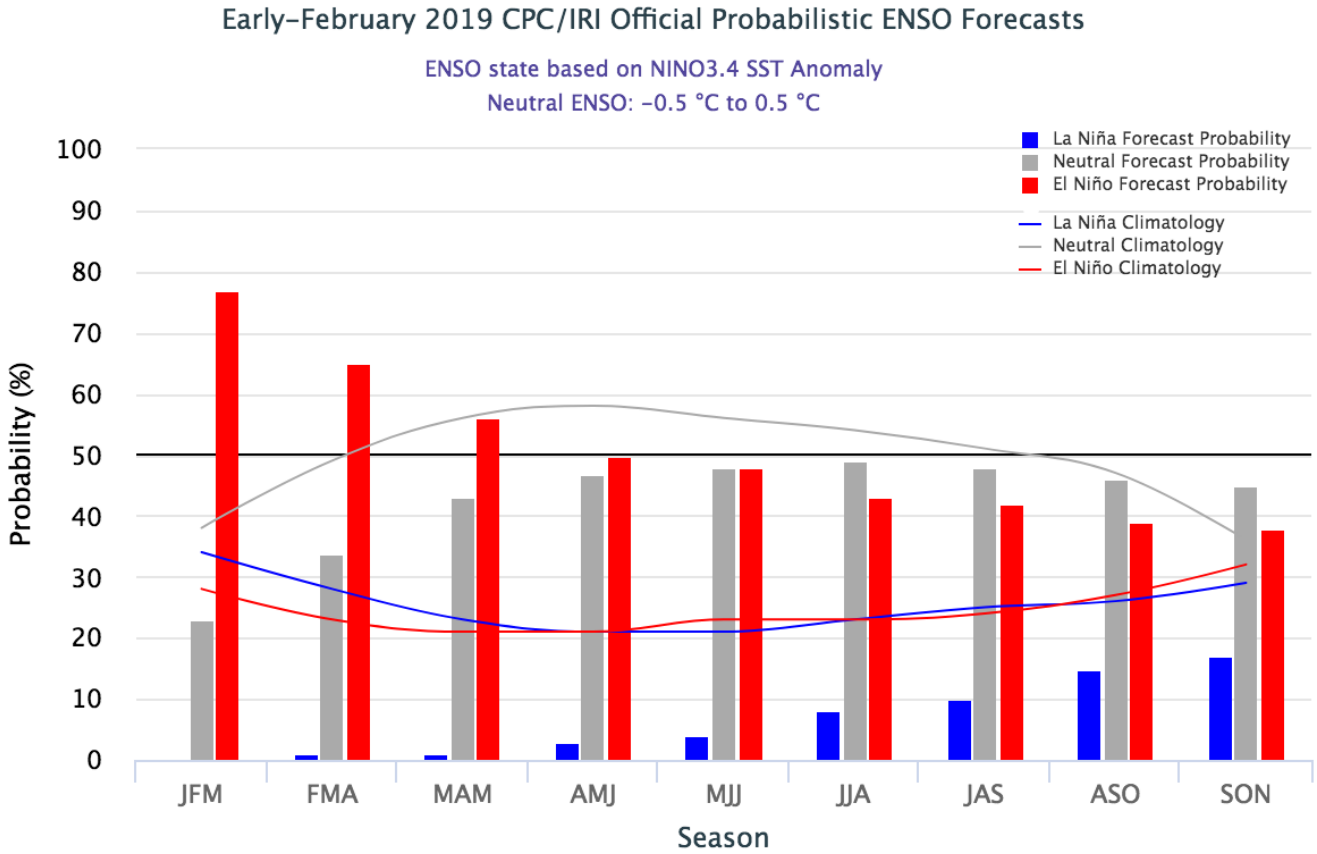
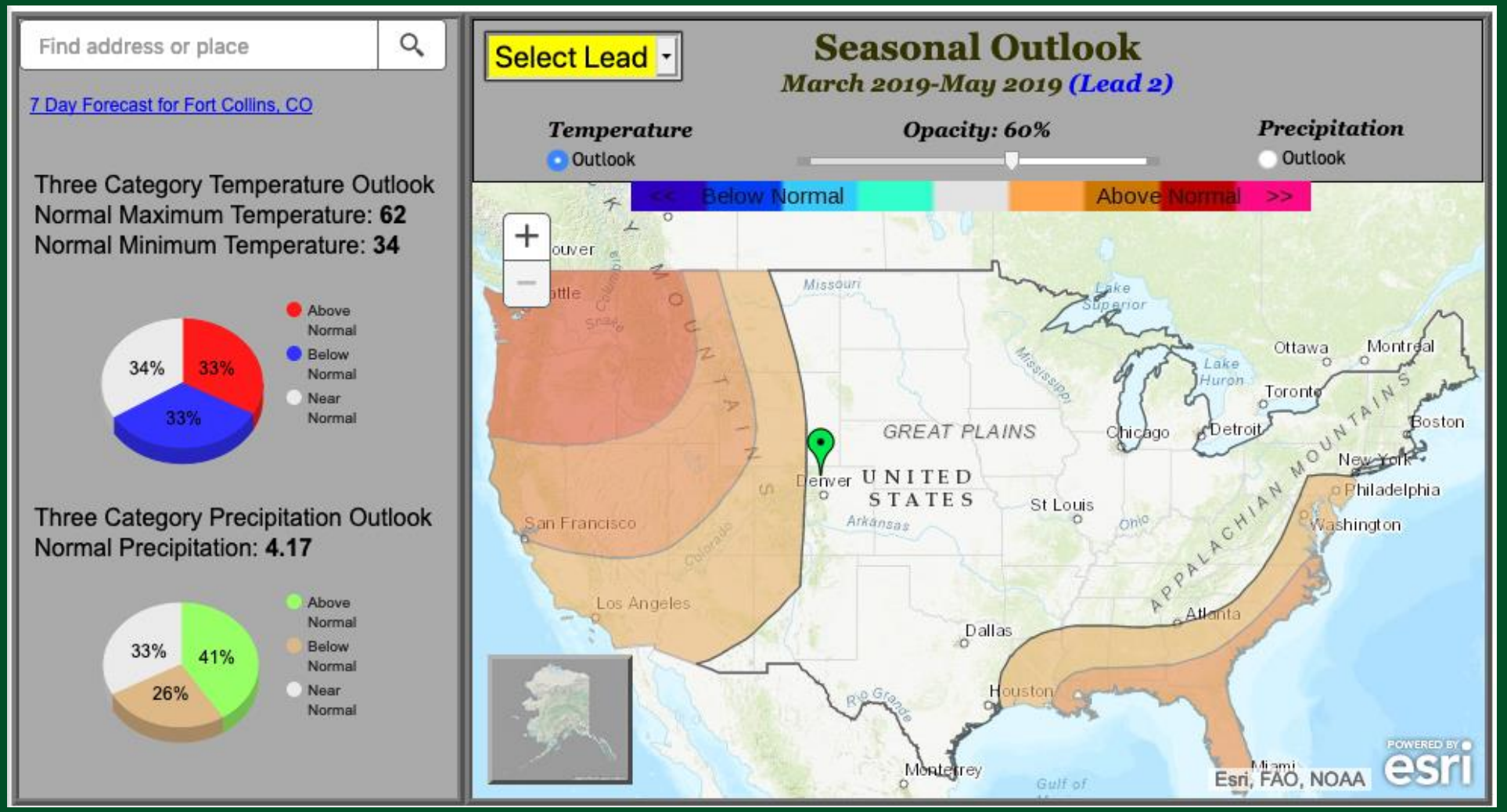


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 19 January 2019.

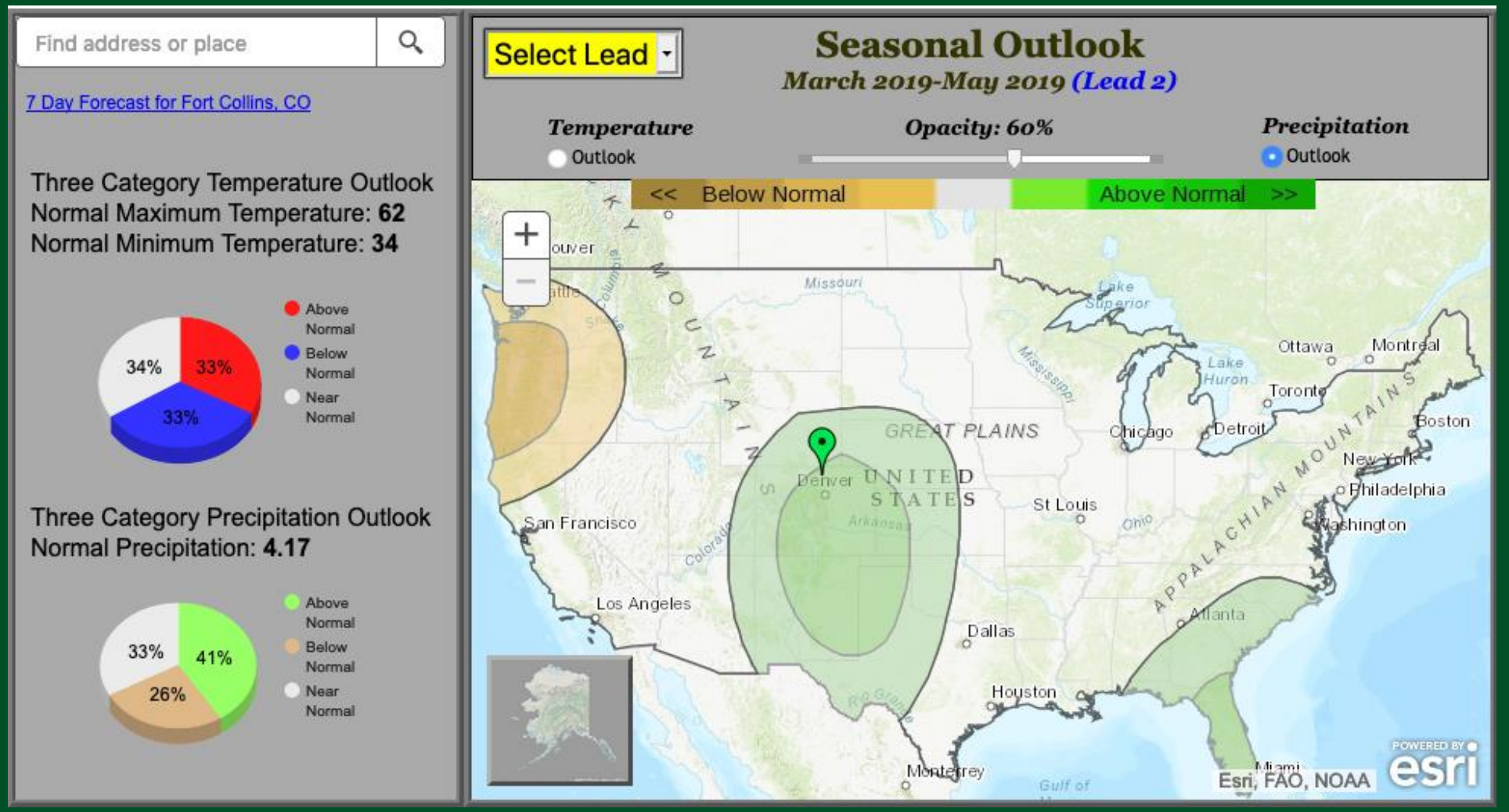


El Niño finally officially arrived last week
55% probability that it persists through May
Not expected to be strong or have very significant impacts

Spring (March-April-May) outlook



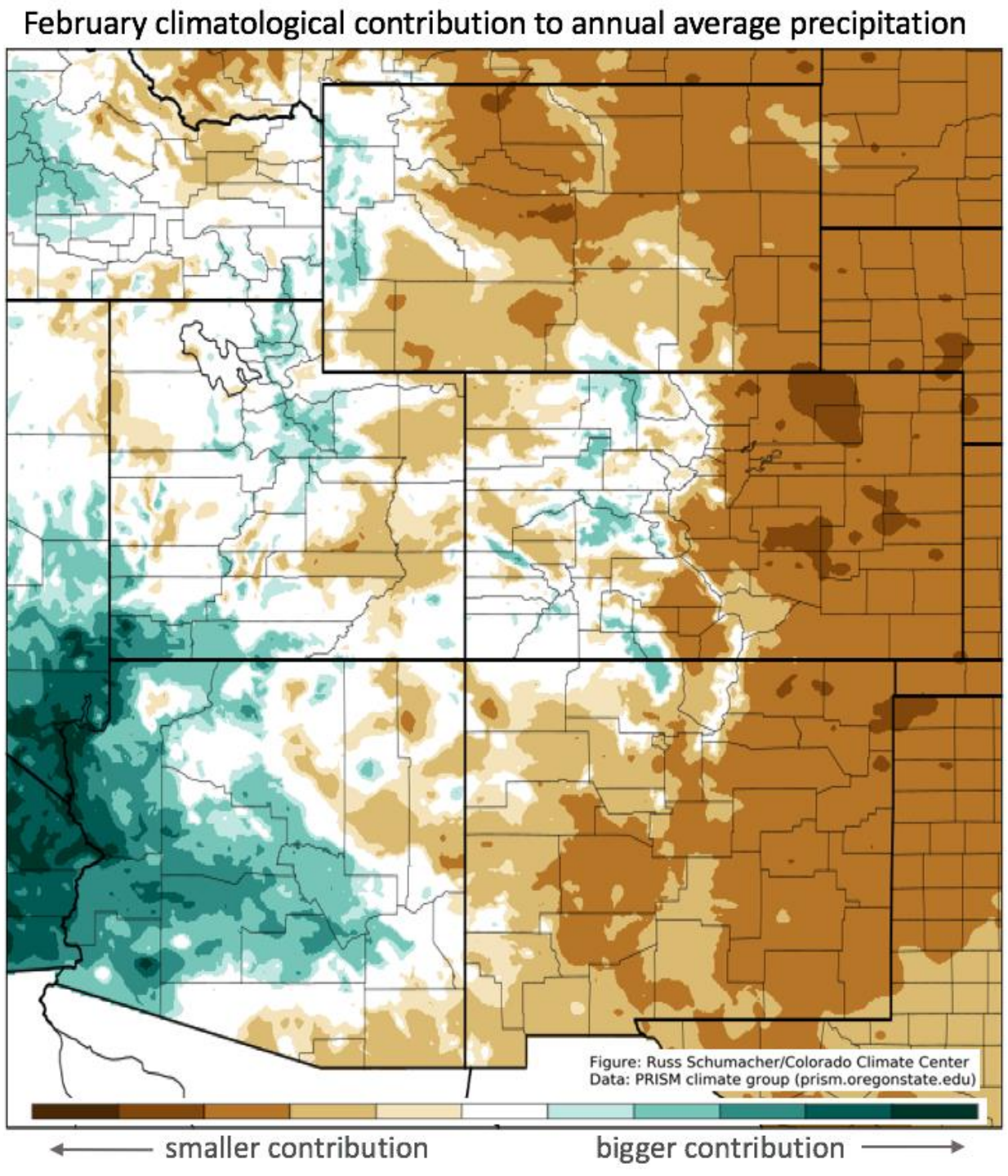
Spring (March-April-May) outlook



How important are the spring months to the total annual average precipitation?

February

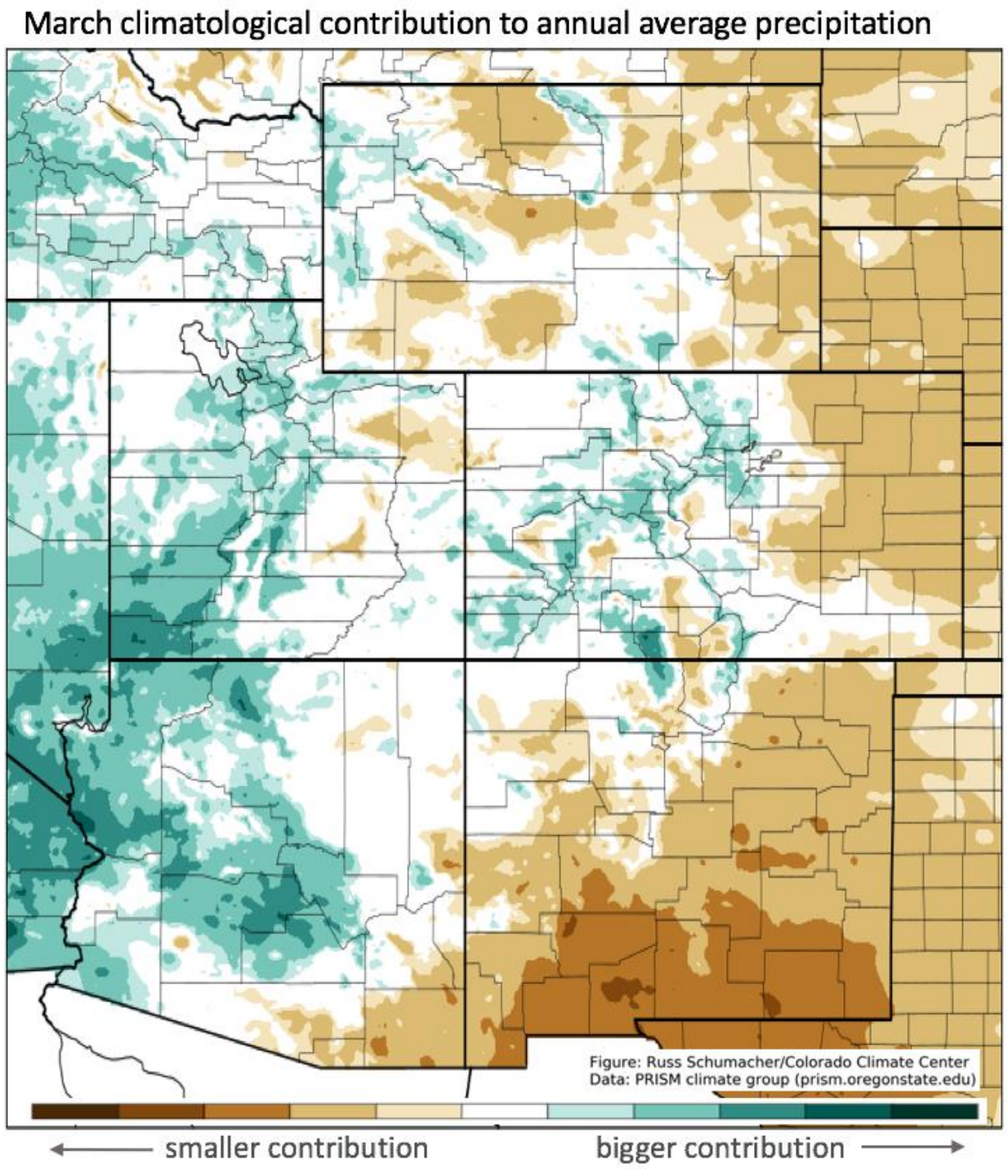
Brown: much less than 1/12th of the annual precip
Green: much more than 1/12th of the annual precip



How important are the spring months to the total annual average precipitation?

March

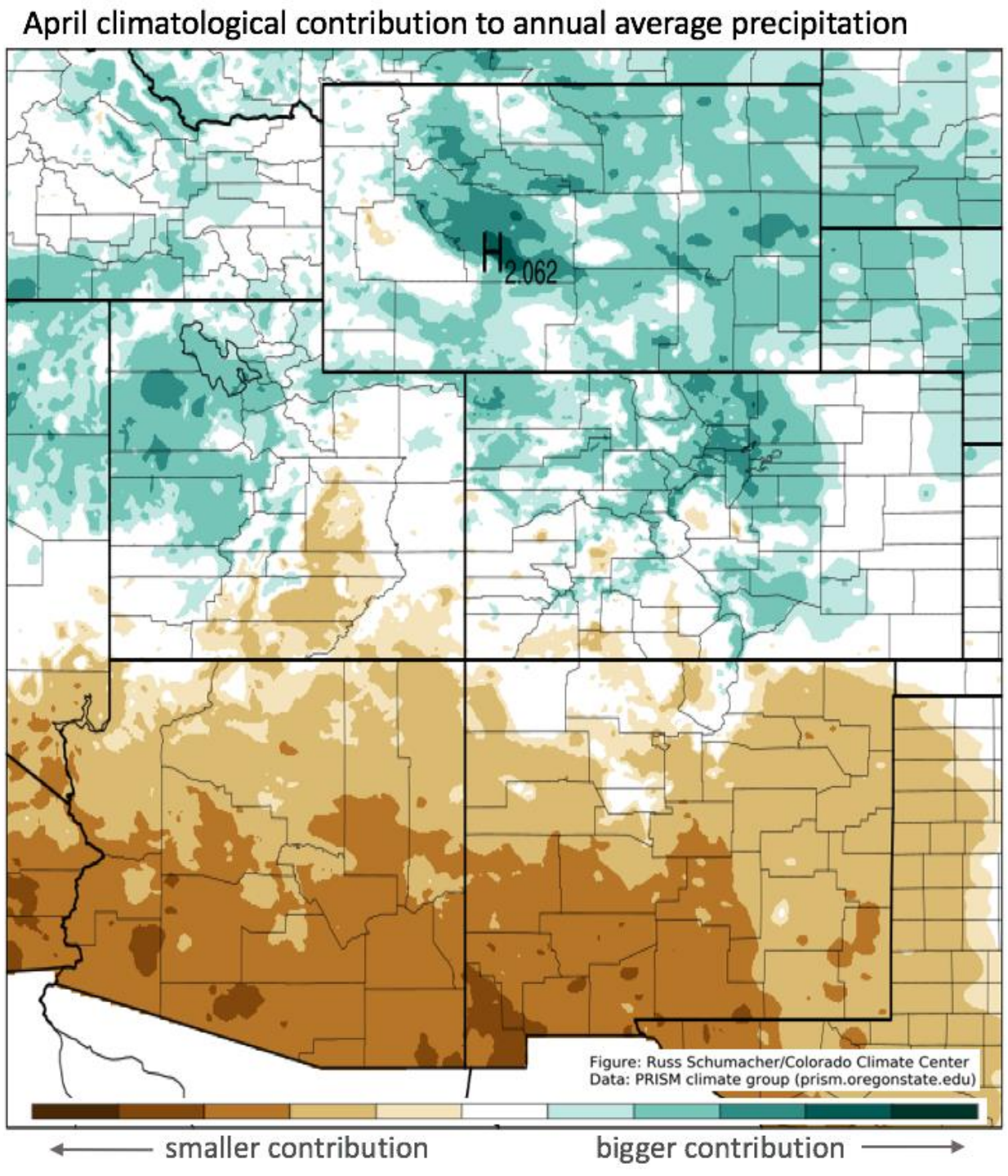
Brown: much less than 1/12th of the annual precip
Green: much more than 1/12th of the annual precip



How important are the spring months to the total annual average precipitation?

April

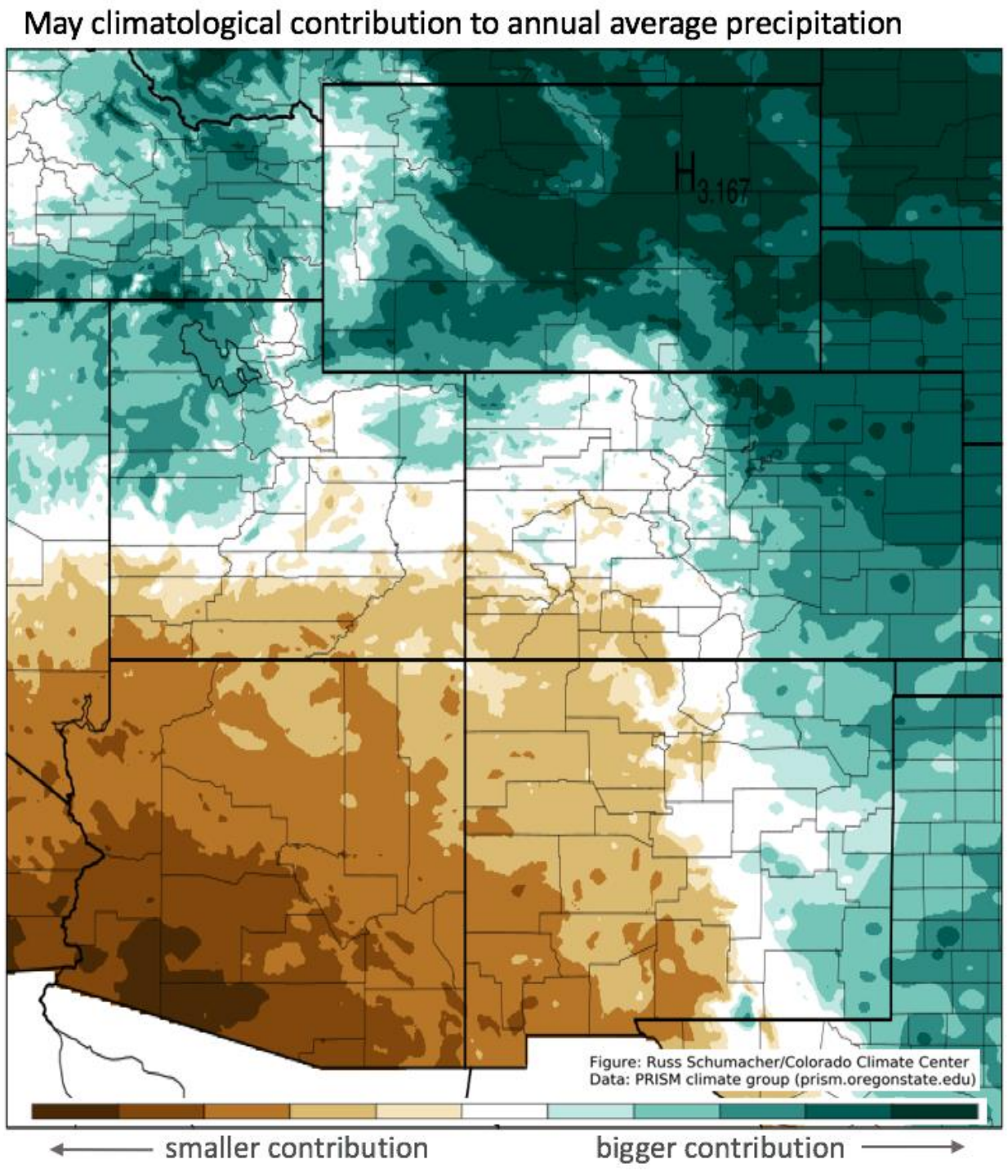
Brown: much less than 1/12th of the annual precip
Green: much more than 1/12th of the annual precip



How important are the spring months to the total annual average precipitation?

May

Brown: much less than 1/12th of the annual precip
Green: much more than 1/12th of the annual precip



Summary

- February has been a big month for snowfall in the mountains, especially in the San Juans
- Drought conditions have improved considerably – there is now only a small sliver of D4 (exceptional) drought left in Colorado
- Furthermore, temperatures since the beginning of the water year have been near normal to a bit cooler than normal
- But because of long-term water deficits in western Colorado, drought is likely to persist at least until the spring snowmelt/runoff season

Thank you!

russ.schumacher@colostate.edu

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