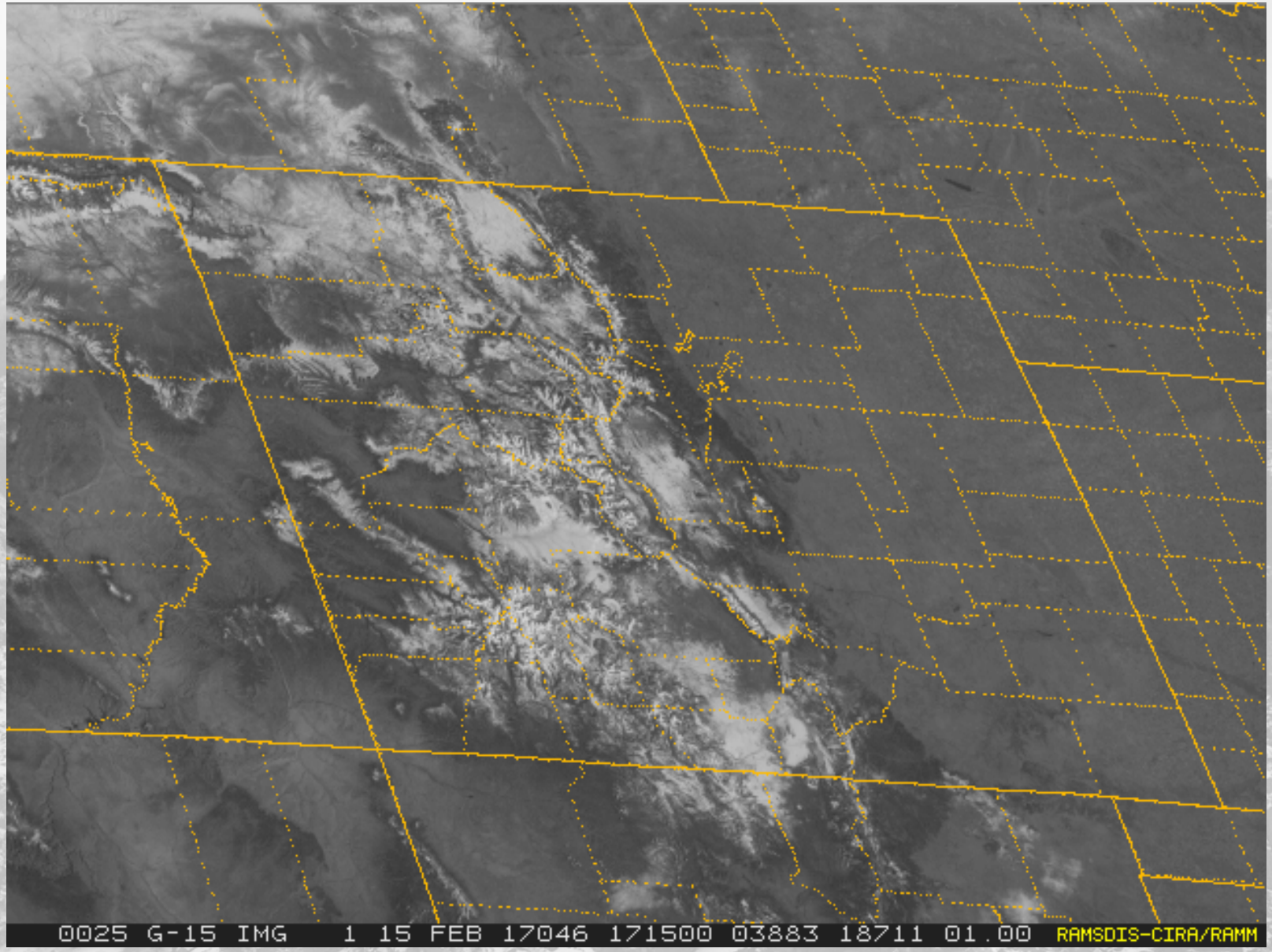
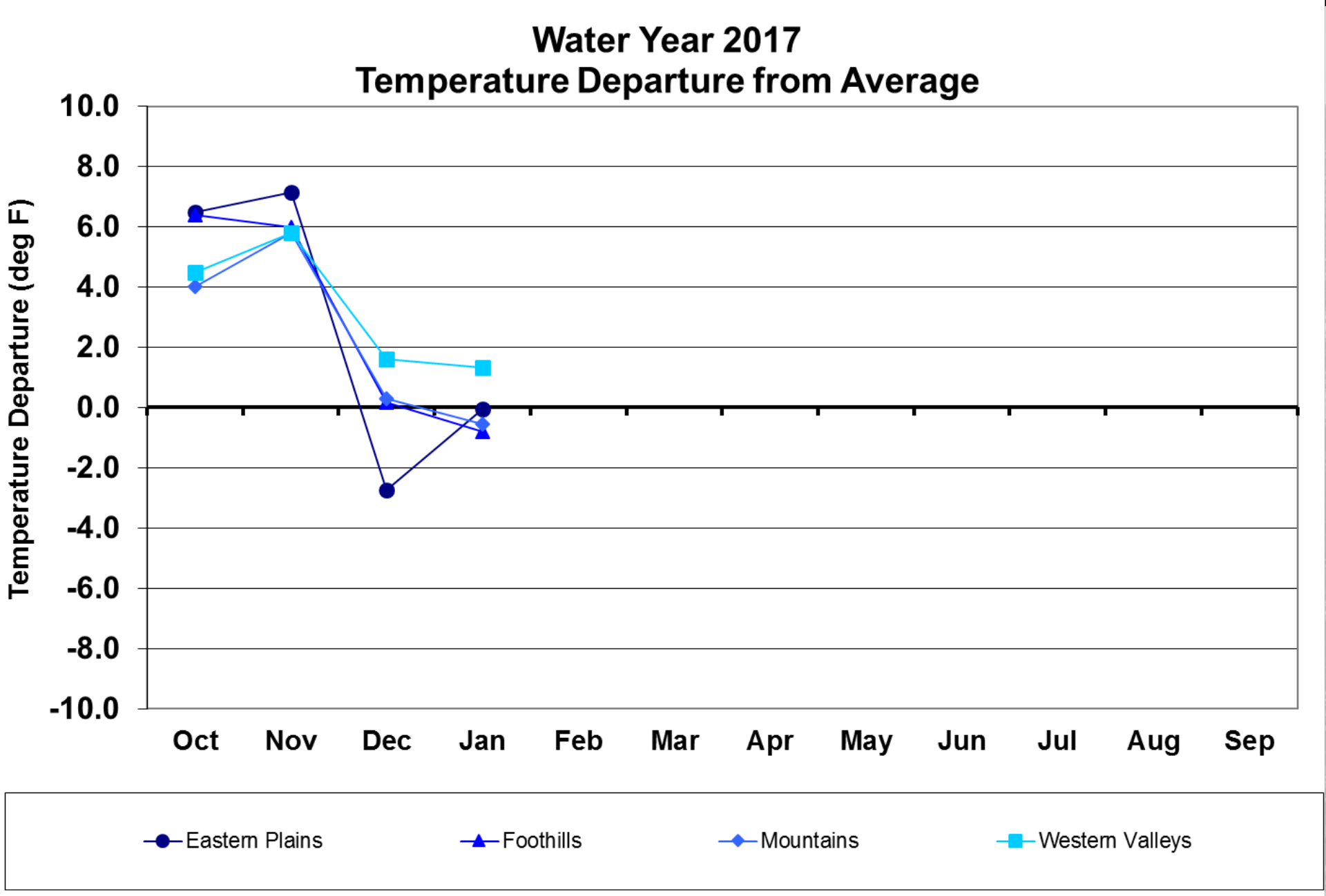
Climate Update

Peter Goble
Colorado Climate Center

Presented to
Water Availability Task Force
February 15, 2017
Denver, CO

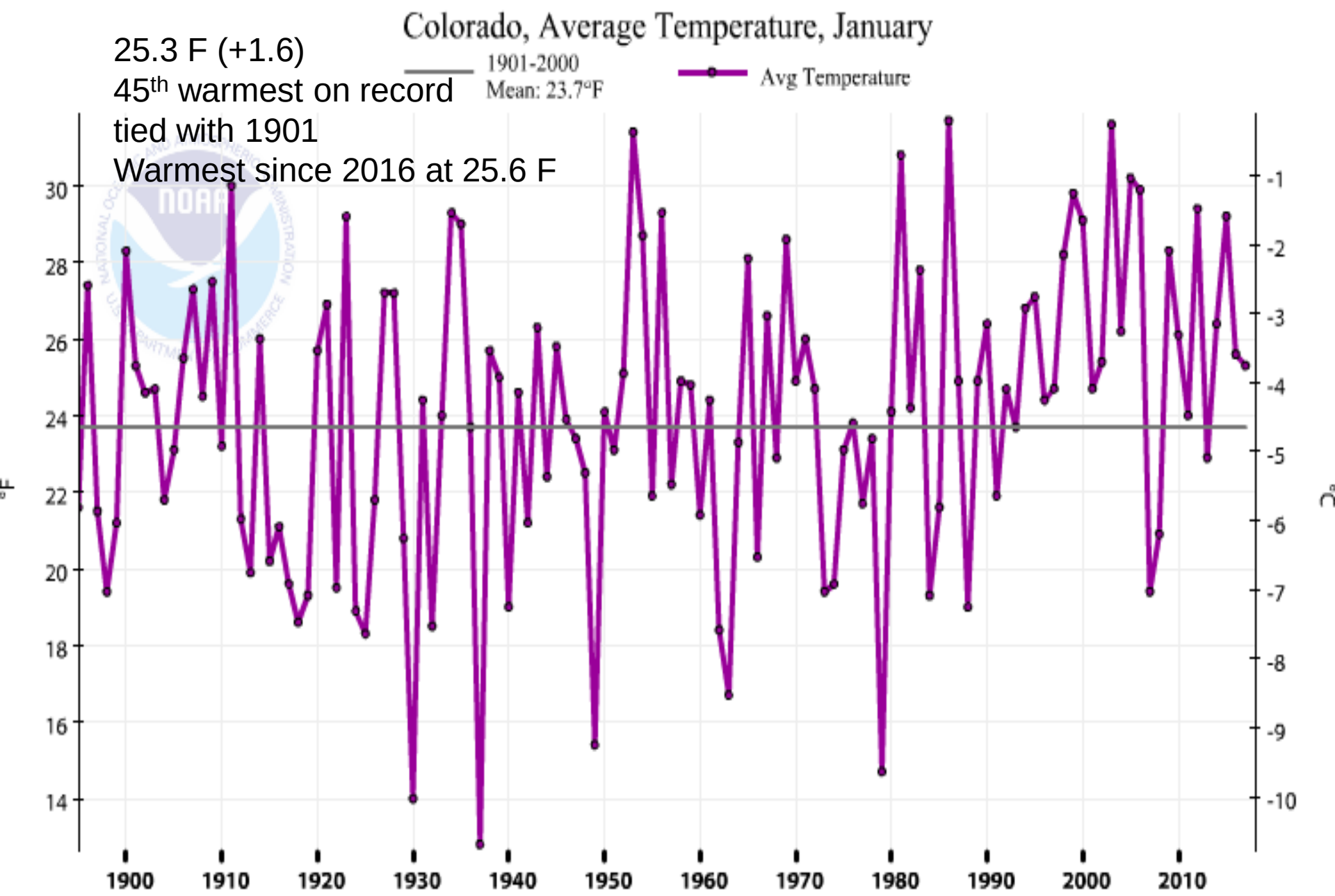

0025 G-15 IMG 1 15 FEB 17046 171500 03883 18711 01.00 RAMSDIS-CIRA/RAMM

Water Year 2017 Temperature Departures

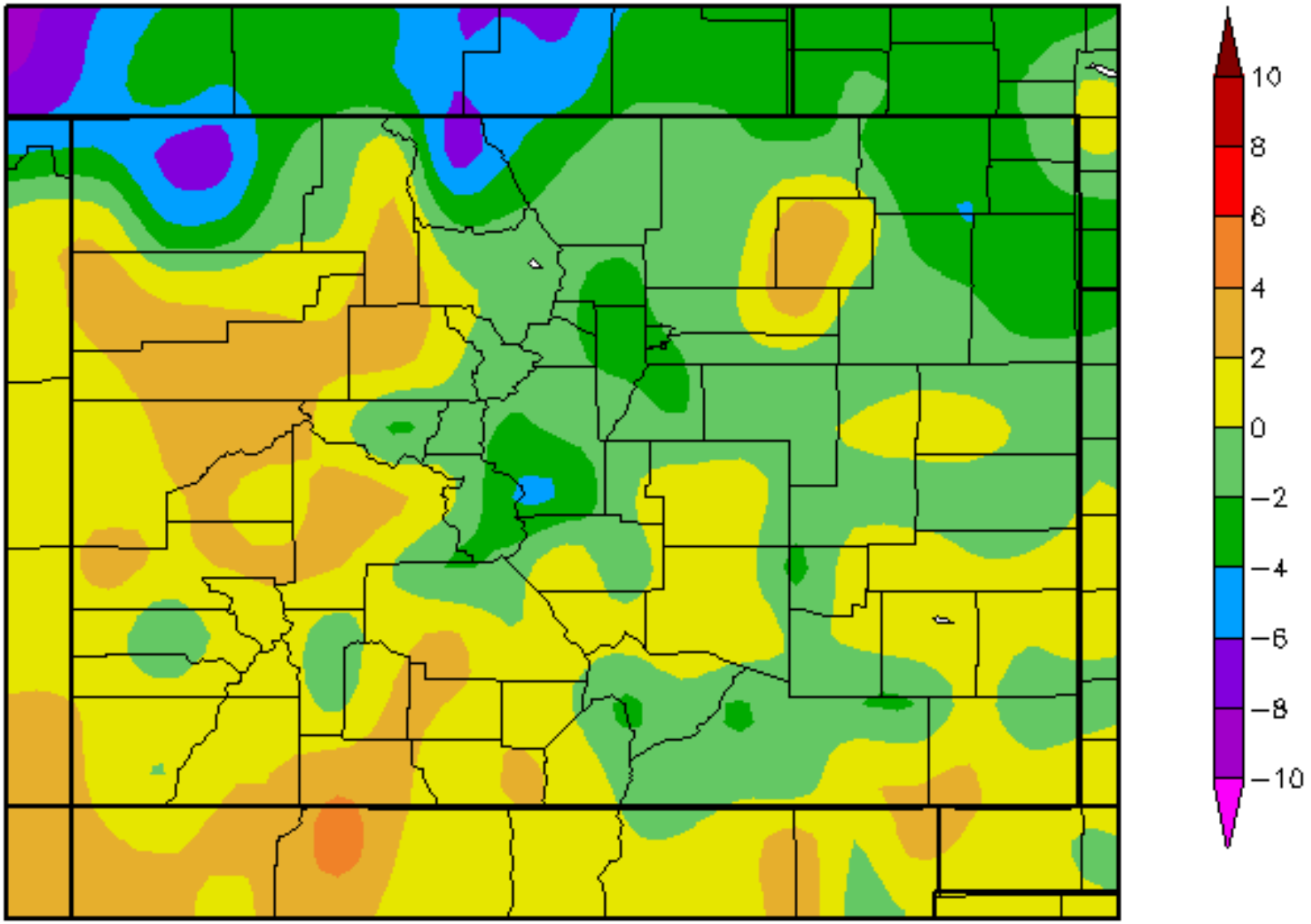


Jan 2016 Average Temperature History for Colorado (NCEI)

25.3 F (+1.6)
45th warmest on record
tied with 1901
Warmest since 2016 at 25.6 F



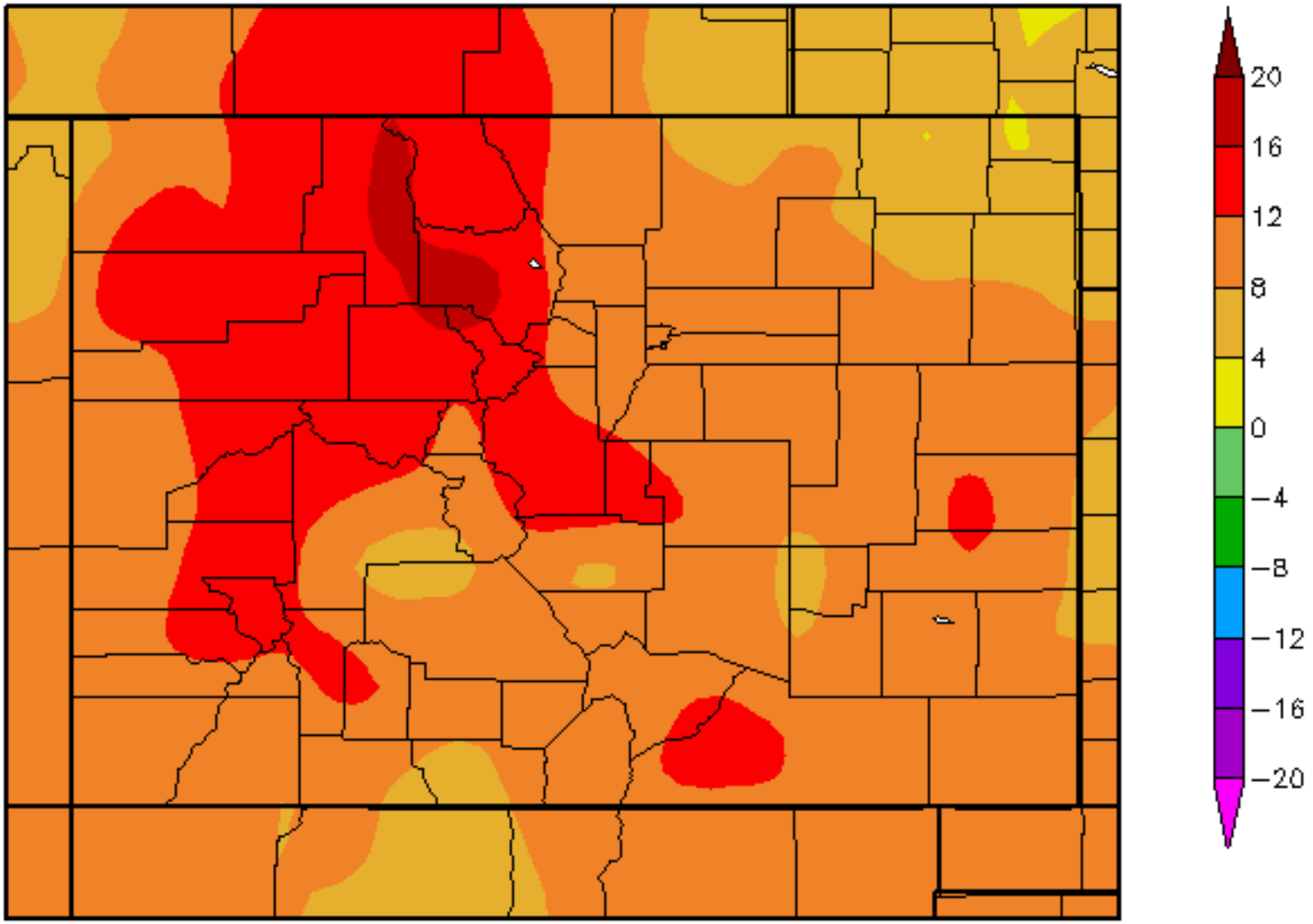
Departure from Normal Temperature (F)
1/1/2017 – 1/31/2017



Generated 2/11/2017 at HPRCC using provisional data.

Regional Climate Centers

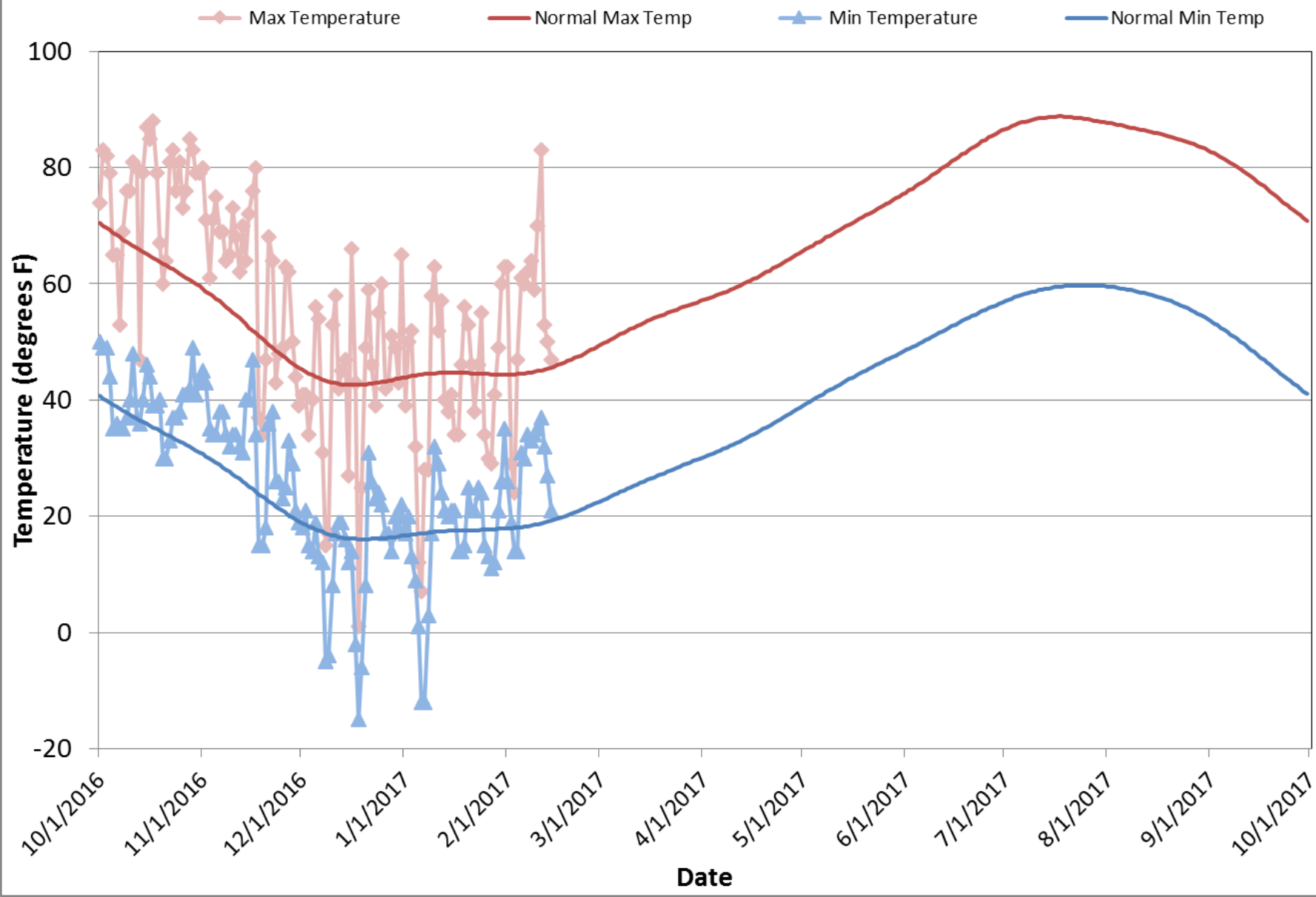
Departure from Normal Temperature (F)
2/1/2017 – 2/13/2017



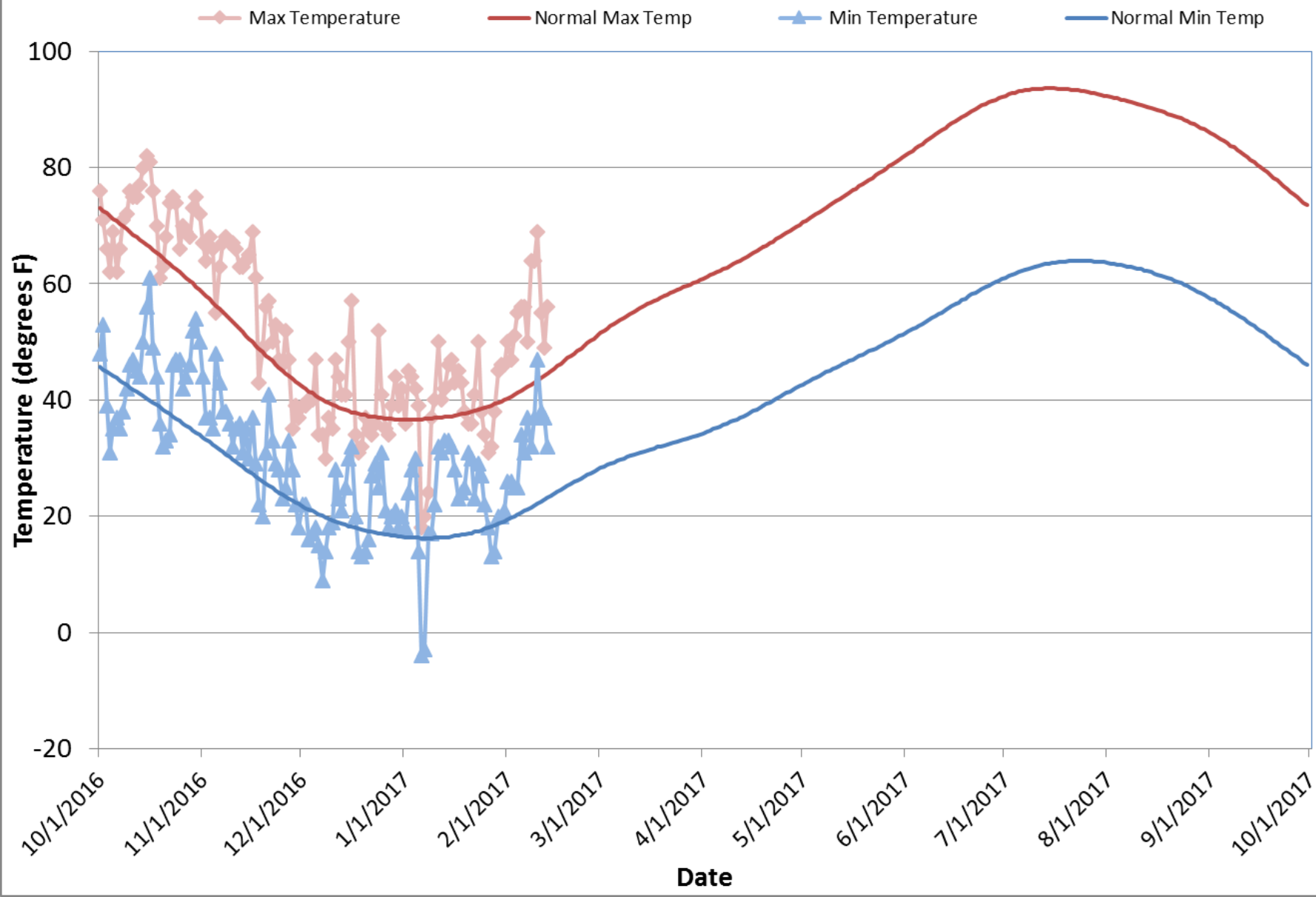
Generated 2/14/2017 at HPRCC using provisional data.

Regional Climate Centers

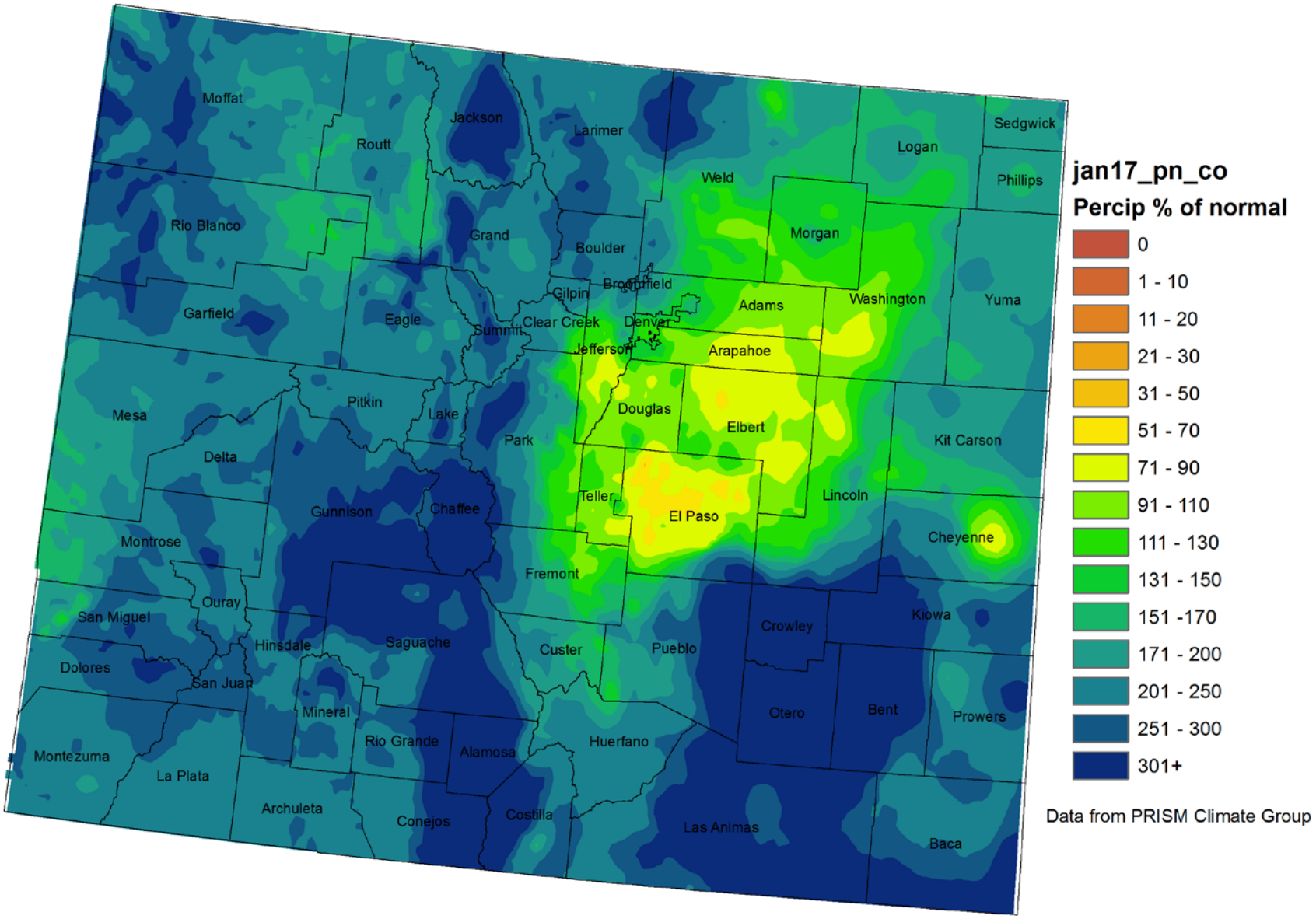
Denver-Stapleton Daily Max/Min Temperatures with Normals, Water Year 2017



Grand Junction Daily Max/Min Temperature with Normals, WY 2017



Colorado January 2017 Precipitation as a Percentage of Normal



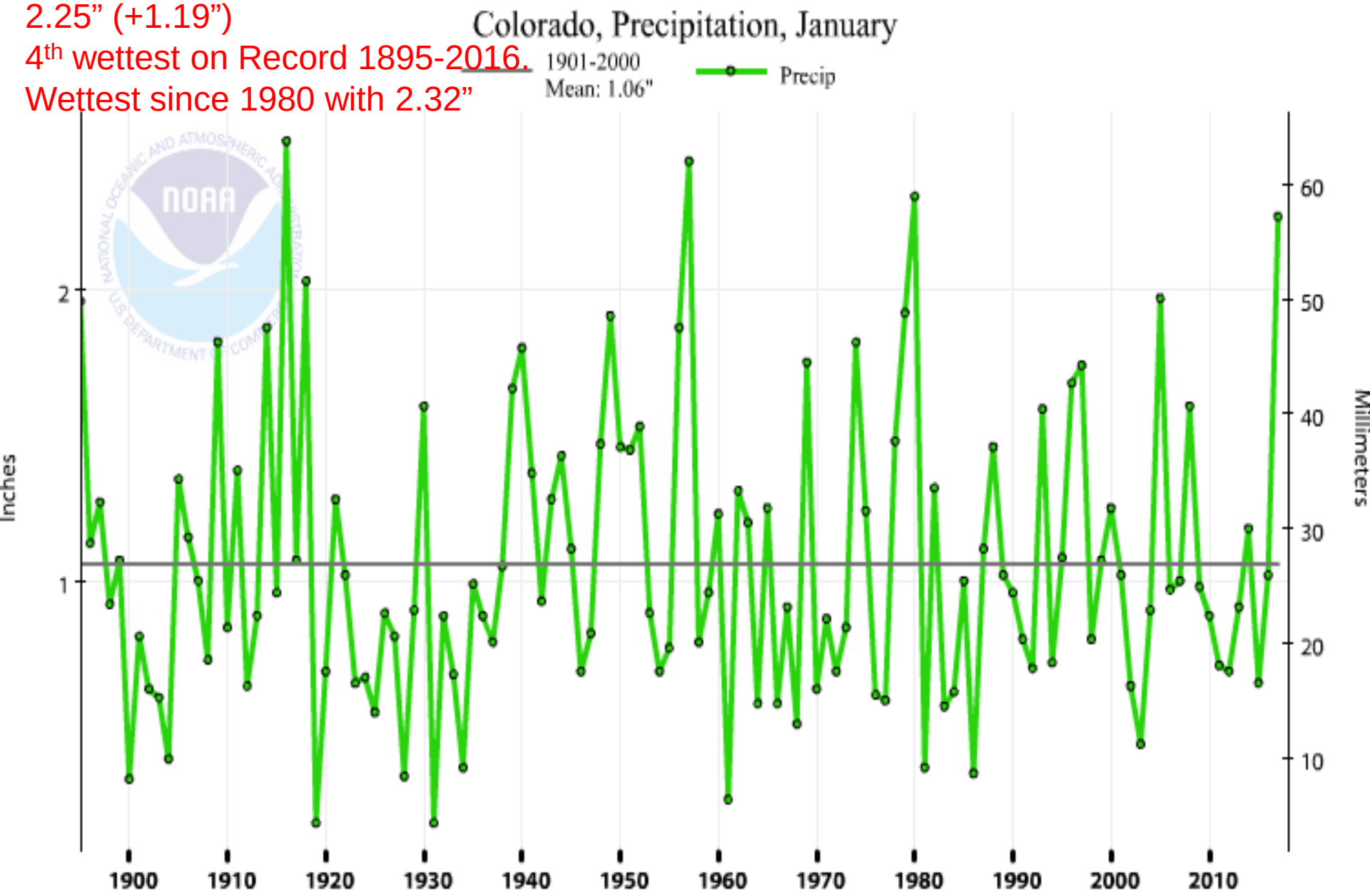
Data from PRISM Climate Group

Jan 2016 Statewide Precipitation

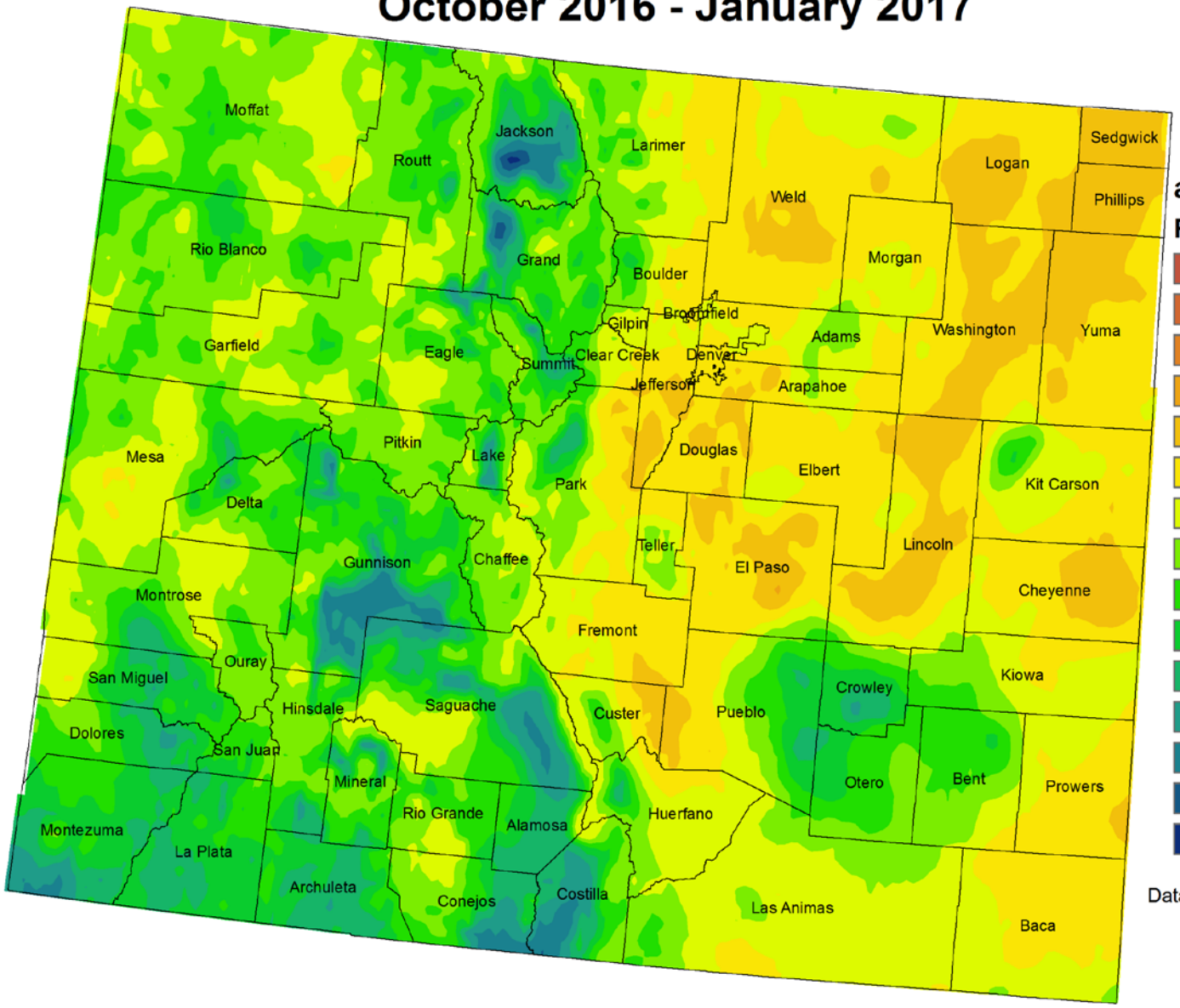
2.25” (+1.19”)

4th wettest on Record 1895-2016.

Wettest since 1980 with 2.32”



Colorado Water Year 2017 Precipitation as a Percentage of Normal October 2016 - January 2017

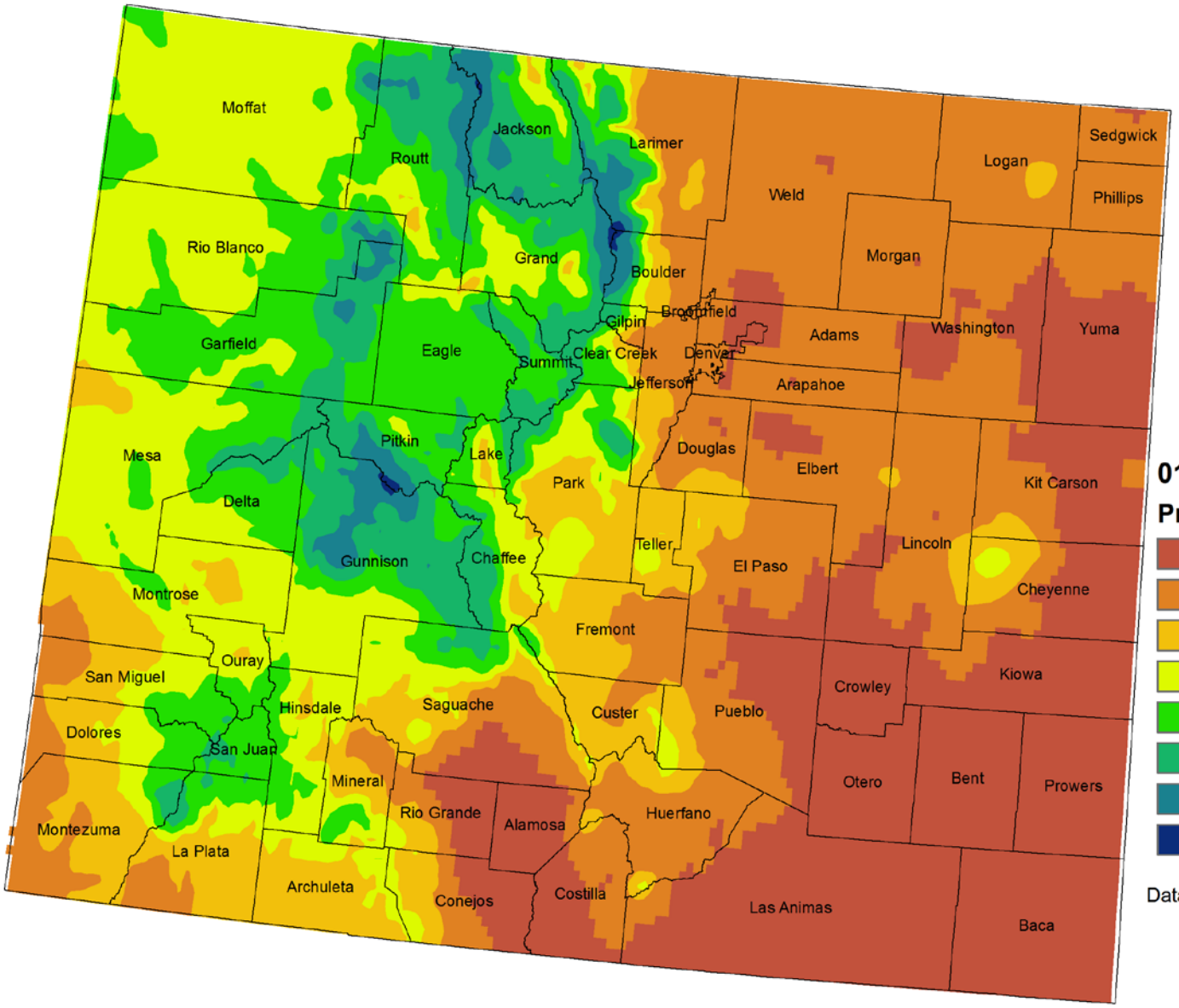


awy_jan17pnco
Precip as % of normal

- 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
- 301+

Data from PRISM Climate Group

Colorado Month to Date Precipitation
1 - 12 February 2017

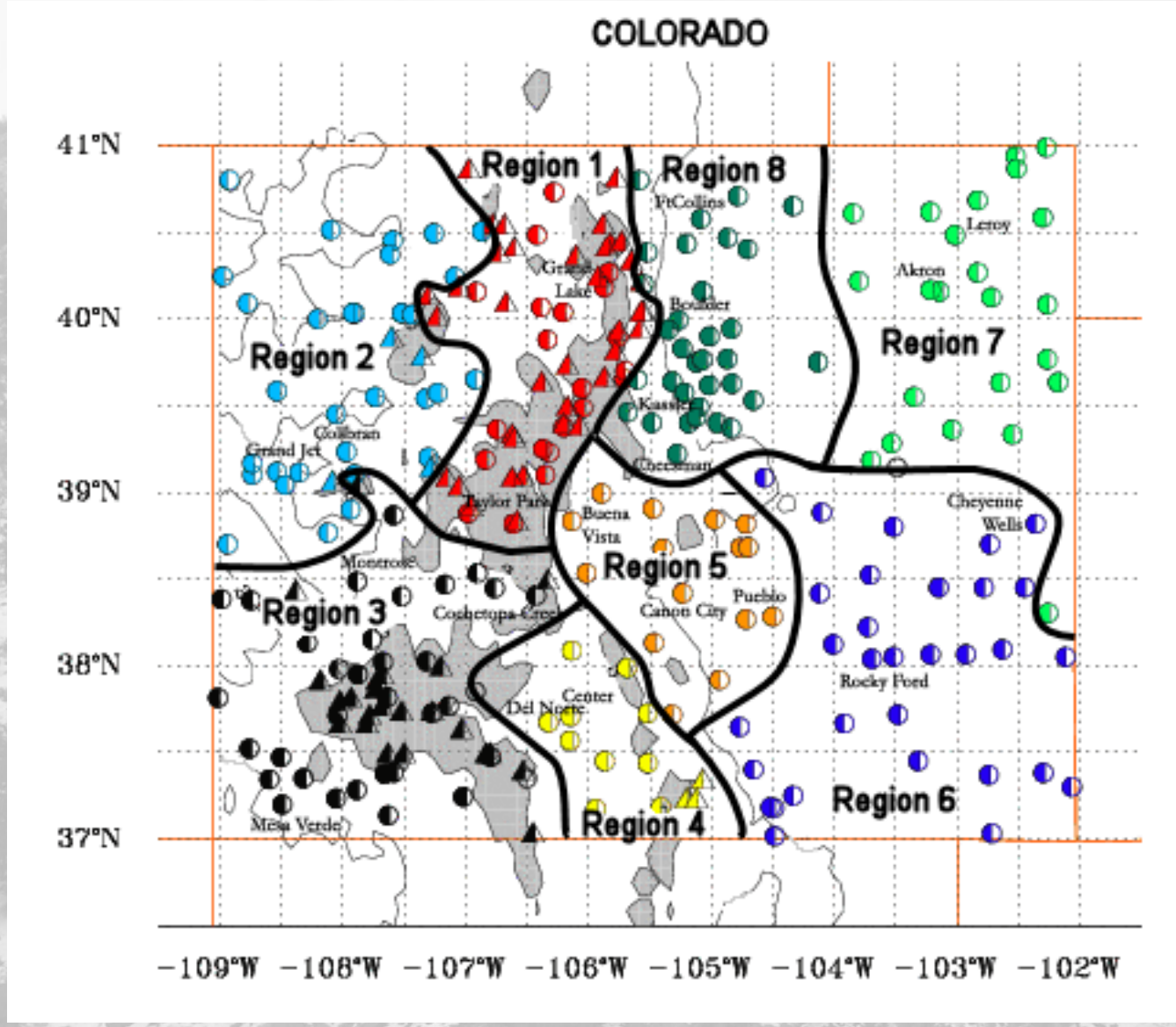


01_12feb17_co
Precip (inches)

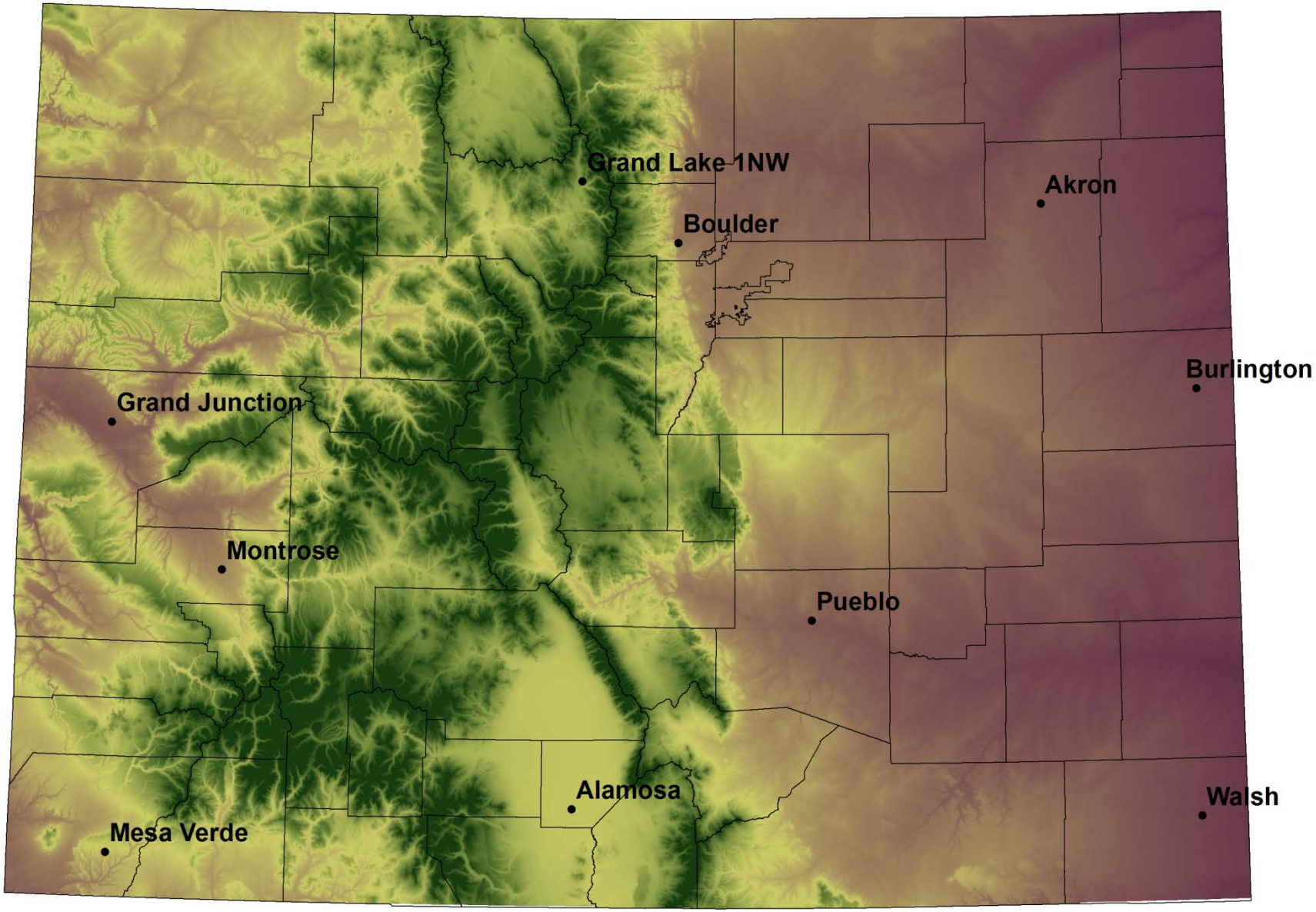
- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 5.05

Data from PRISM Climate Group

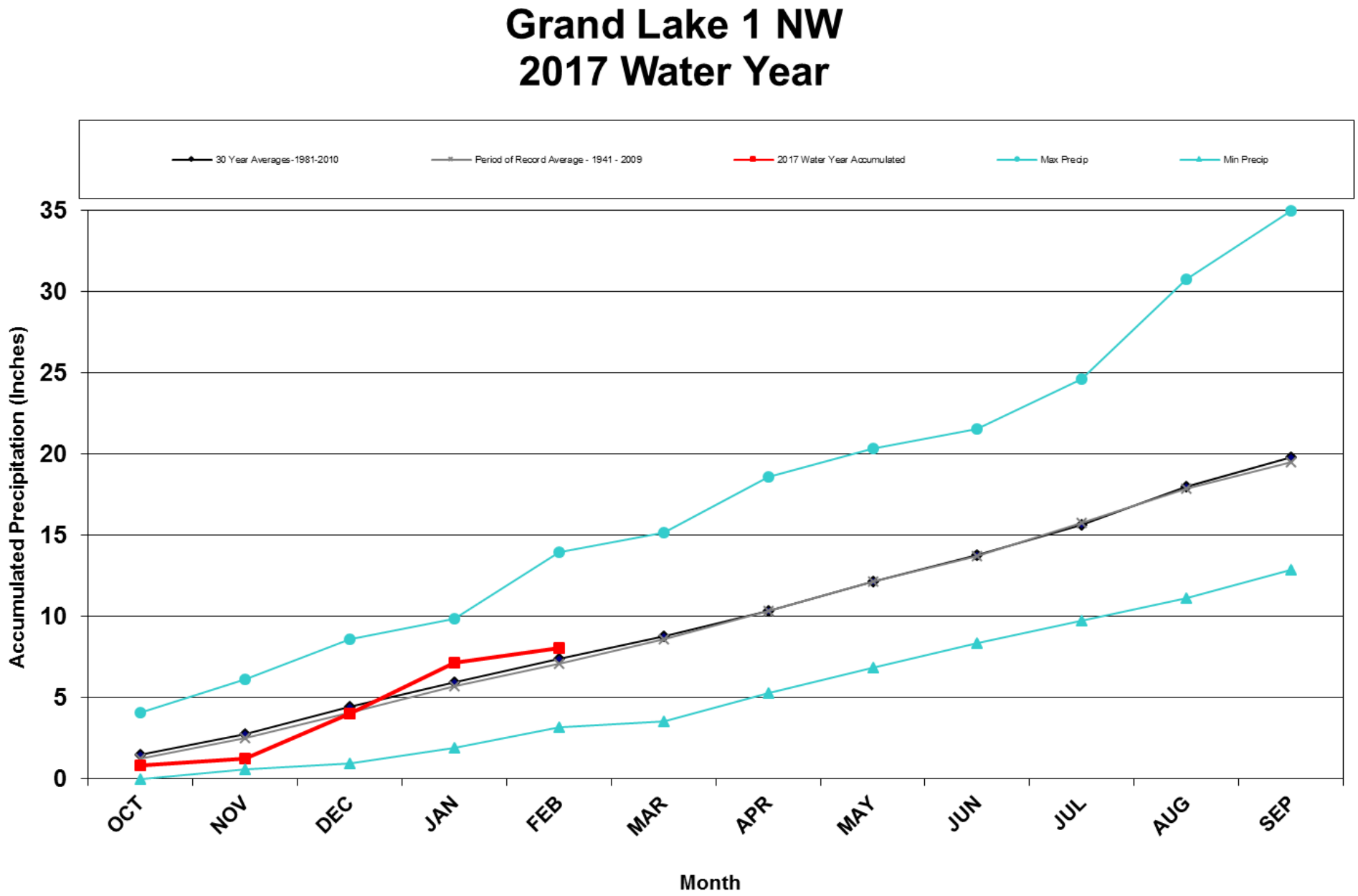
Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



NWS Cooperative Stations for WATF



Division 1 – Grand Lake 1NW



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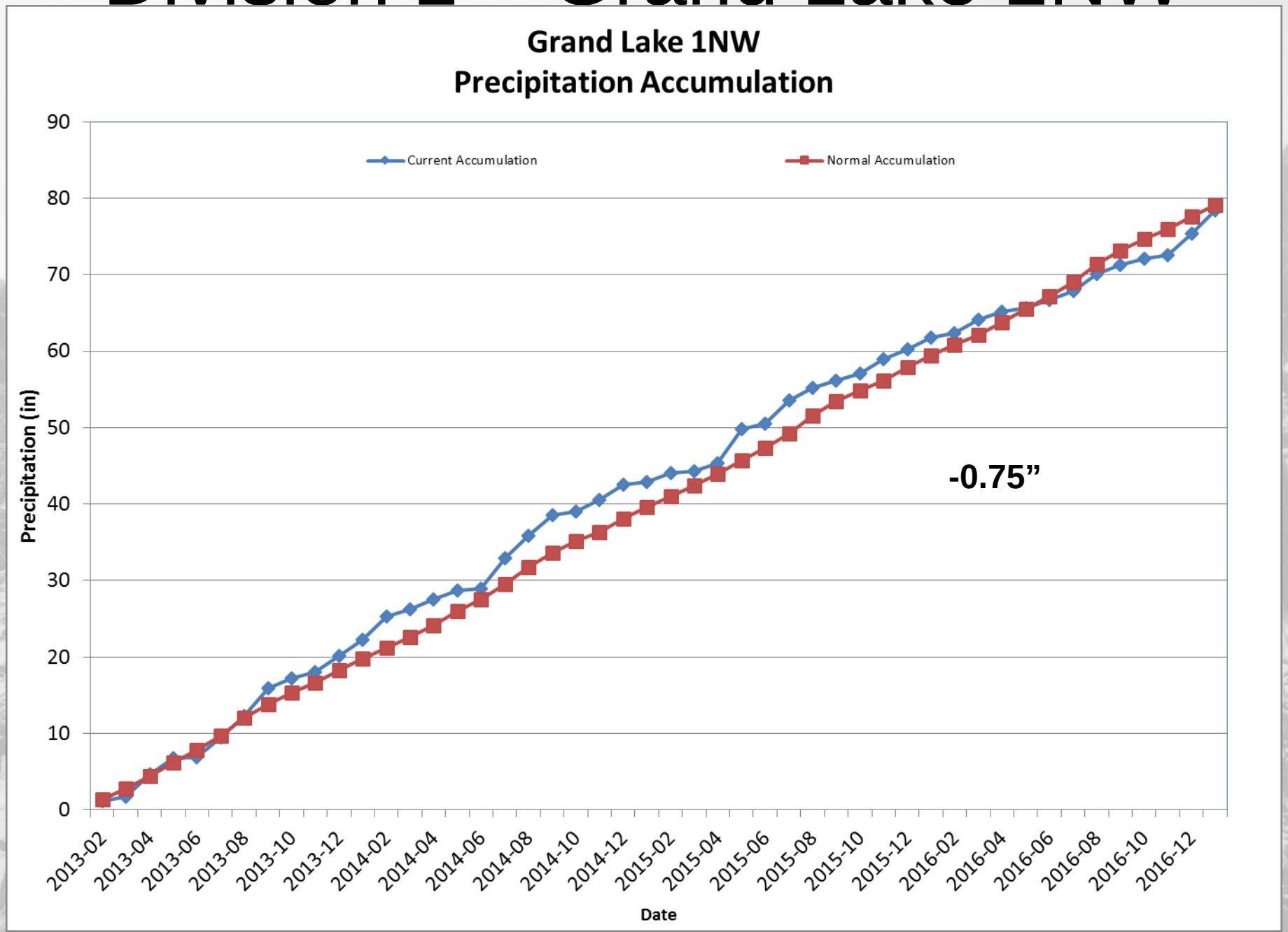
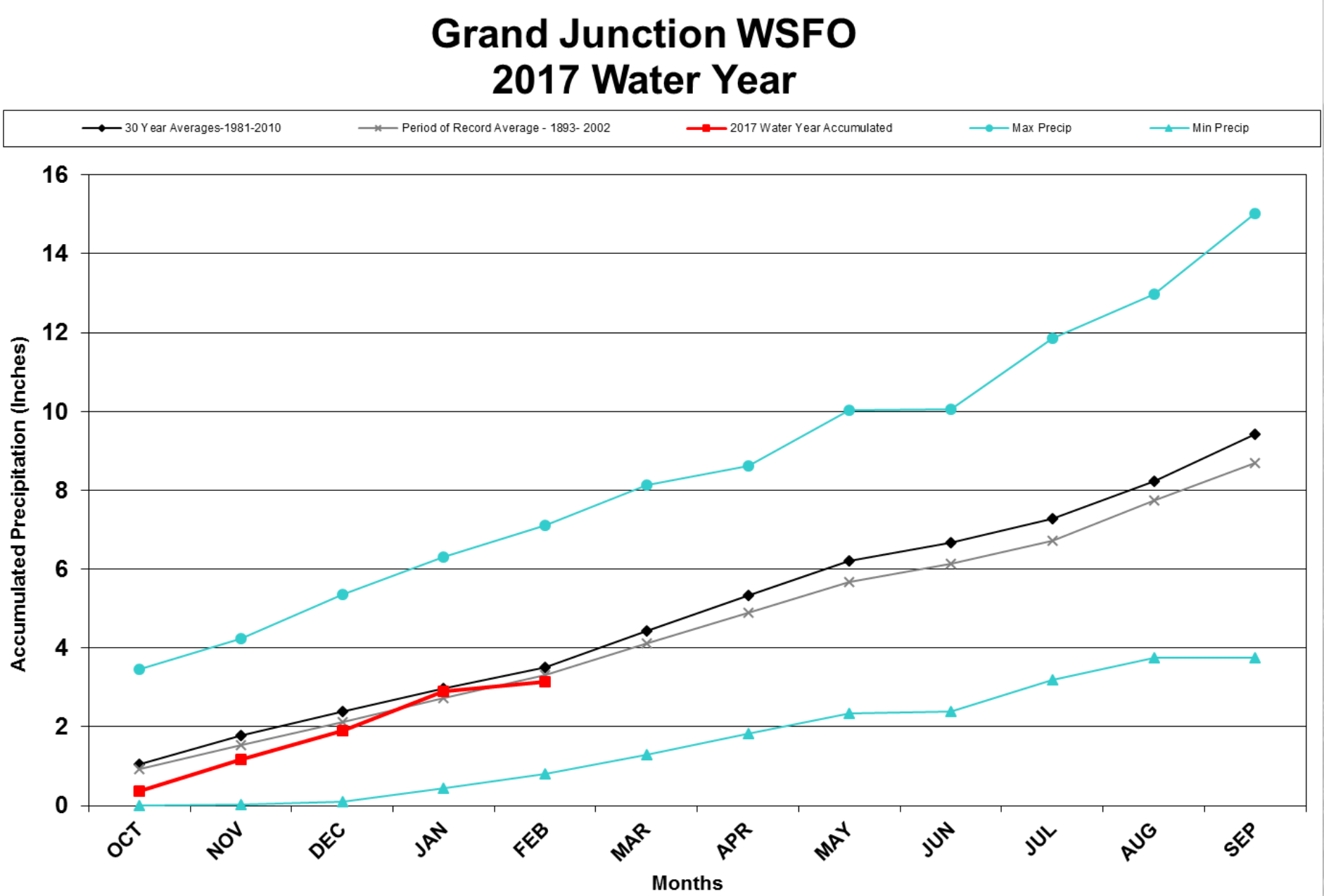


Division 2 – Grand Junction



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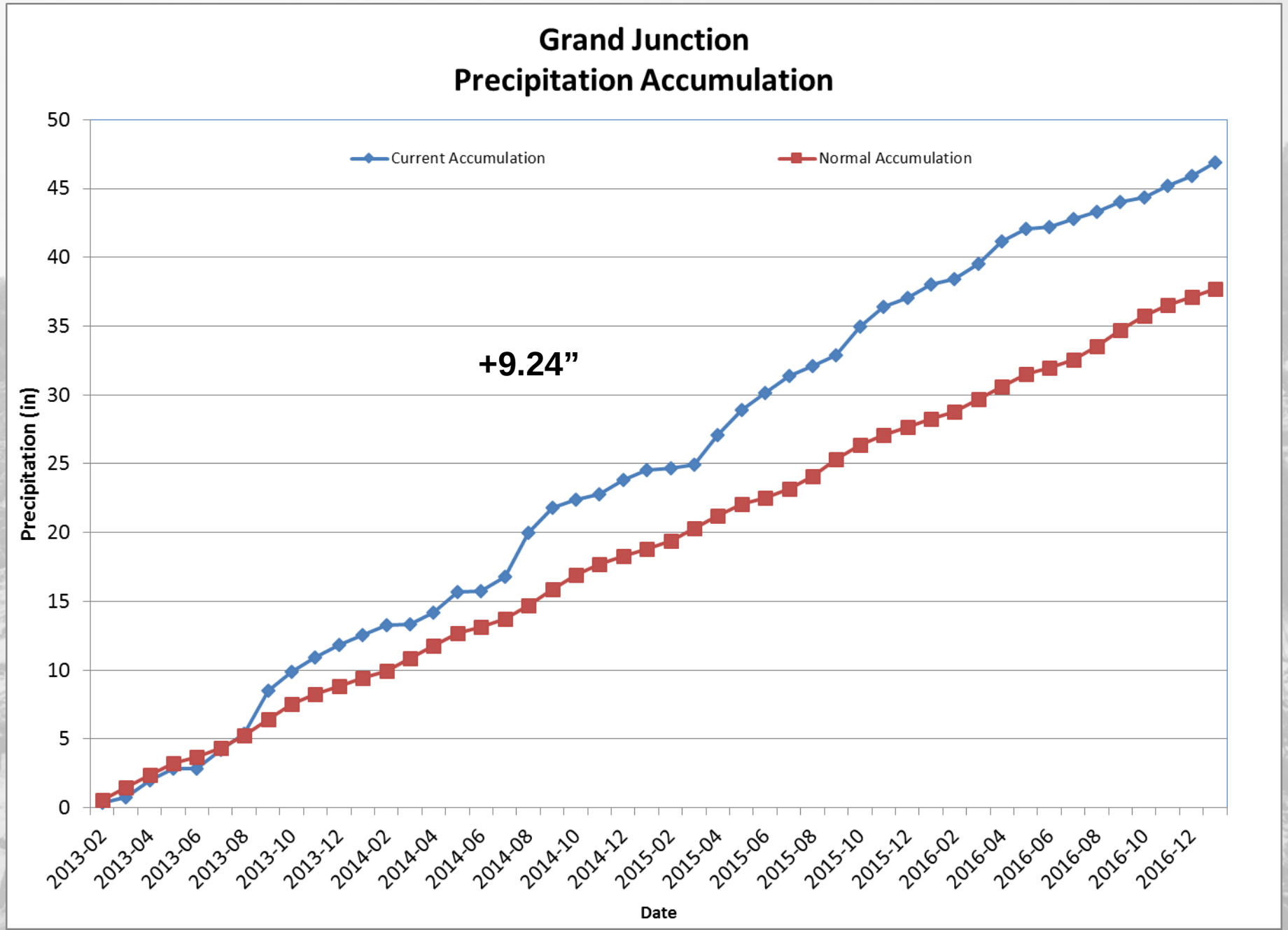
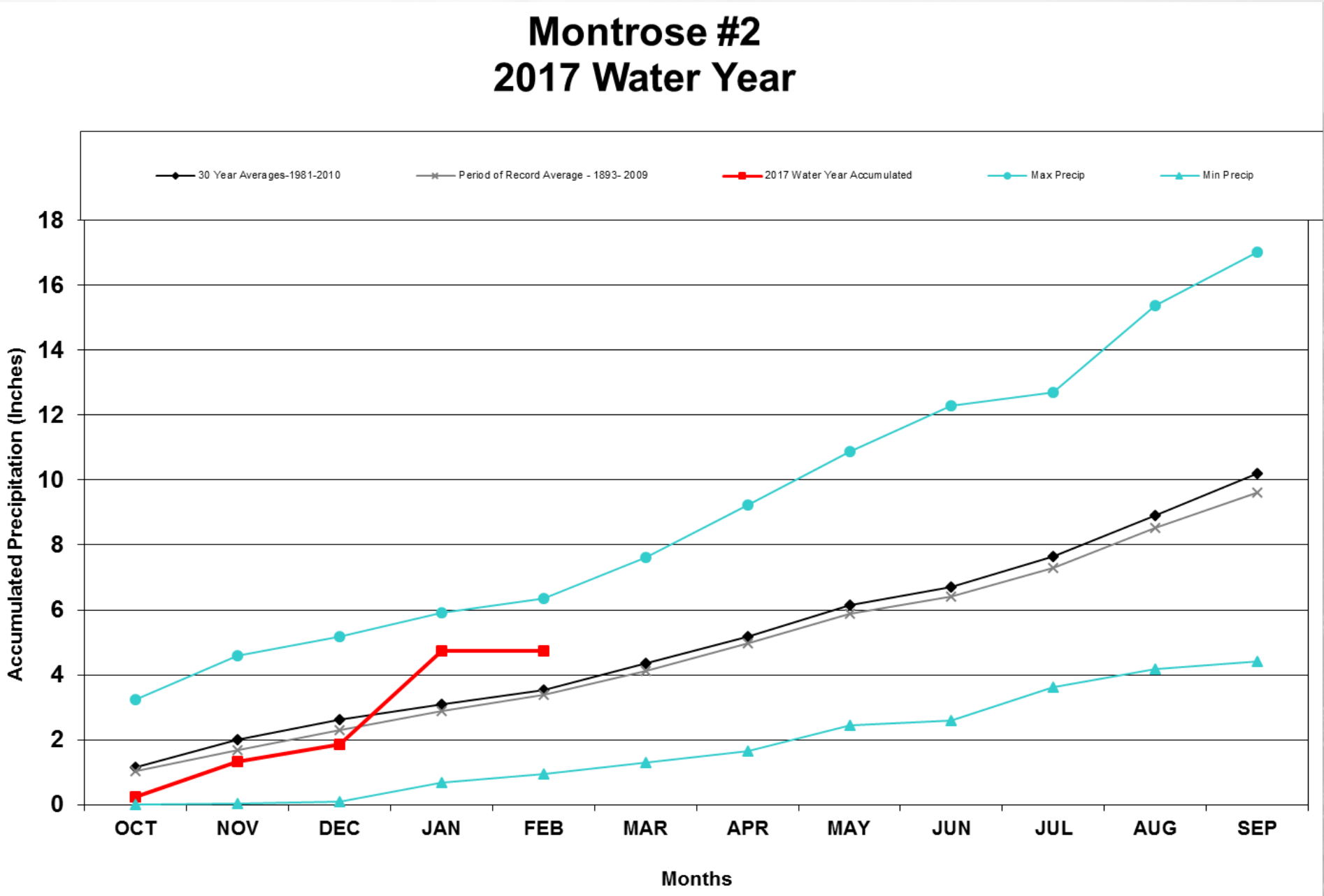
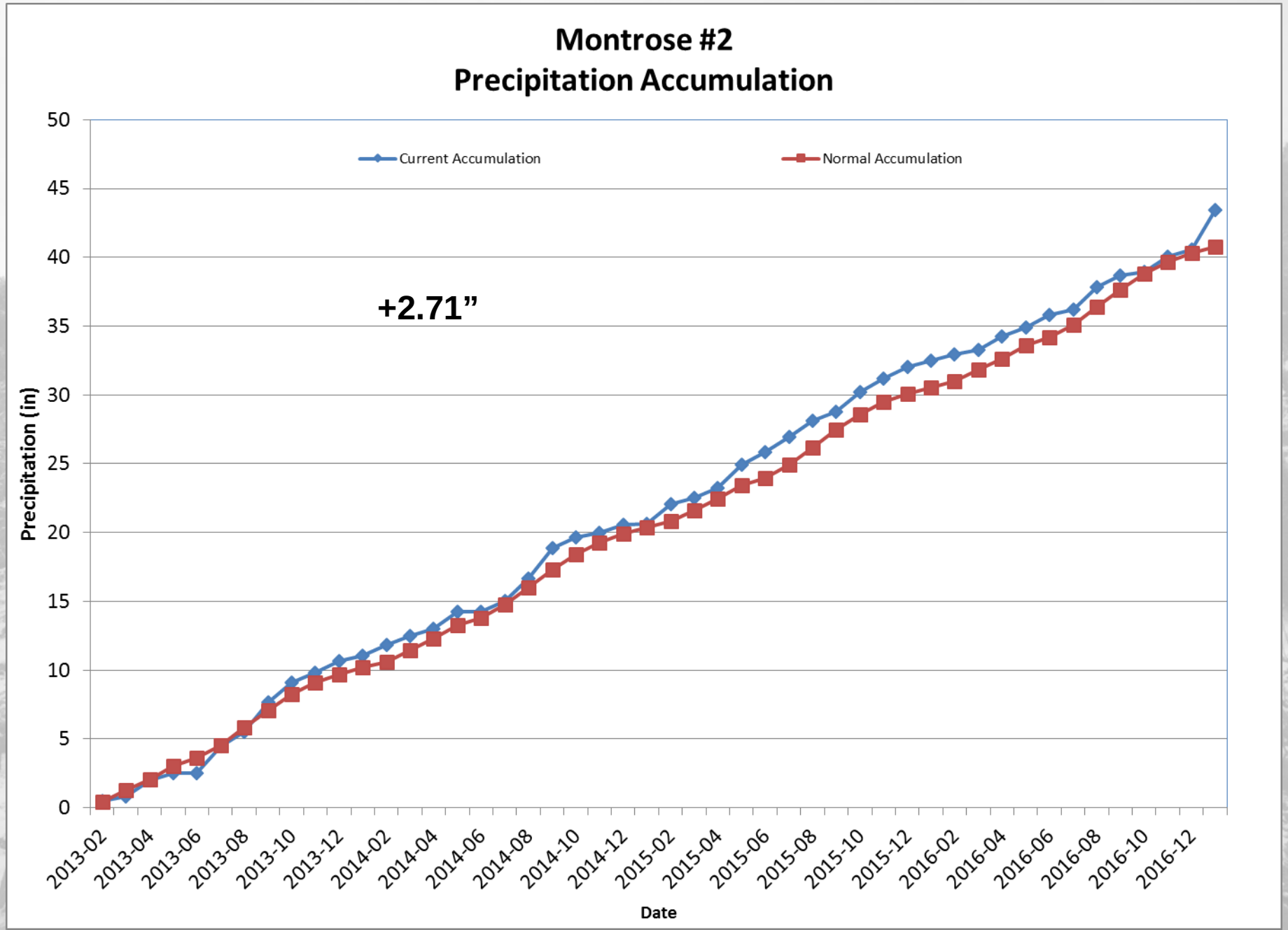


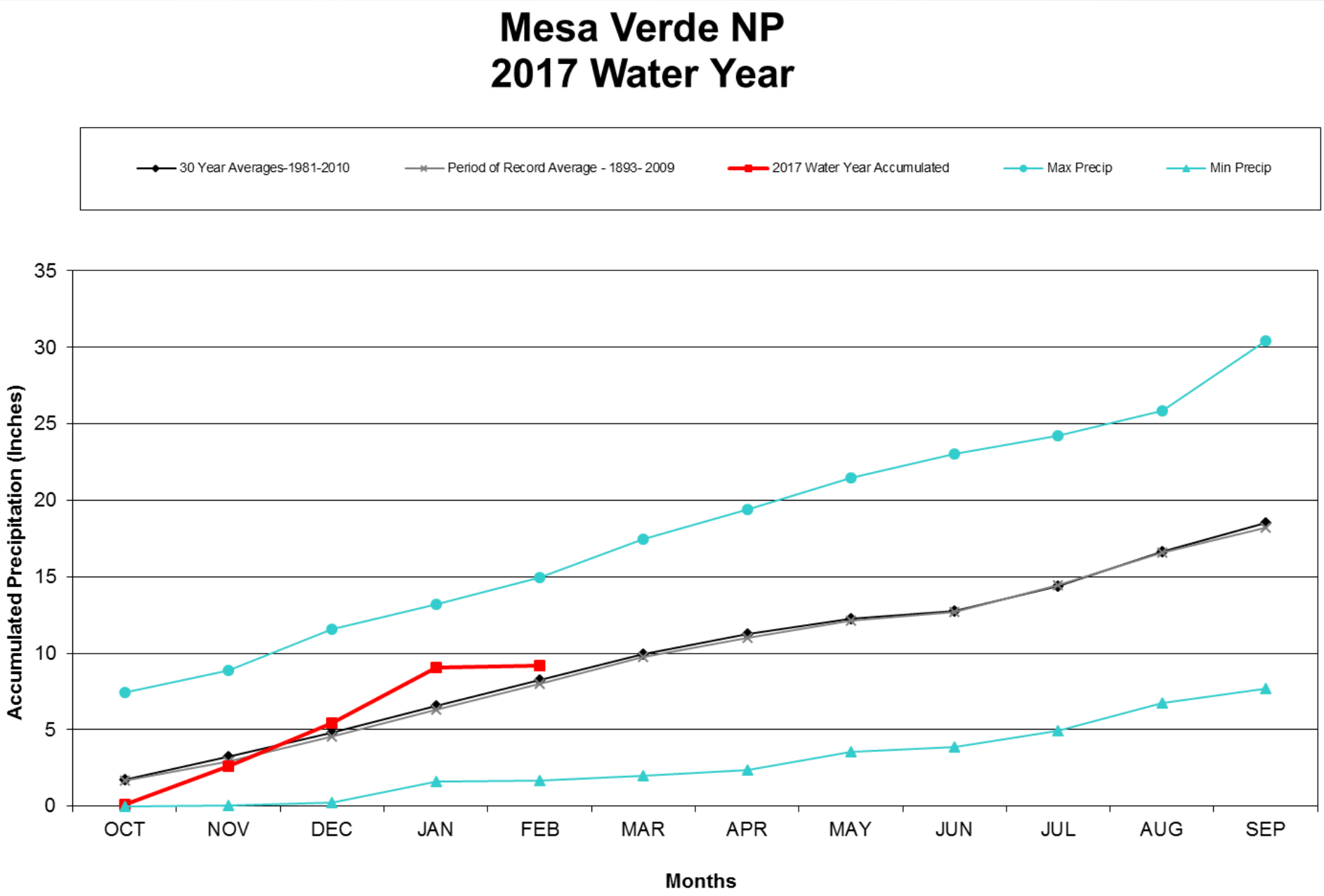
Division 3 – Montrose



Division 3 – Montrose



Division 3 – Mesa Verde NP



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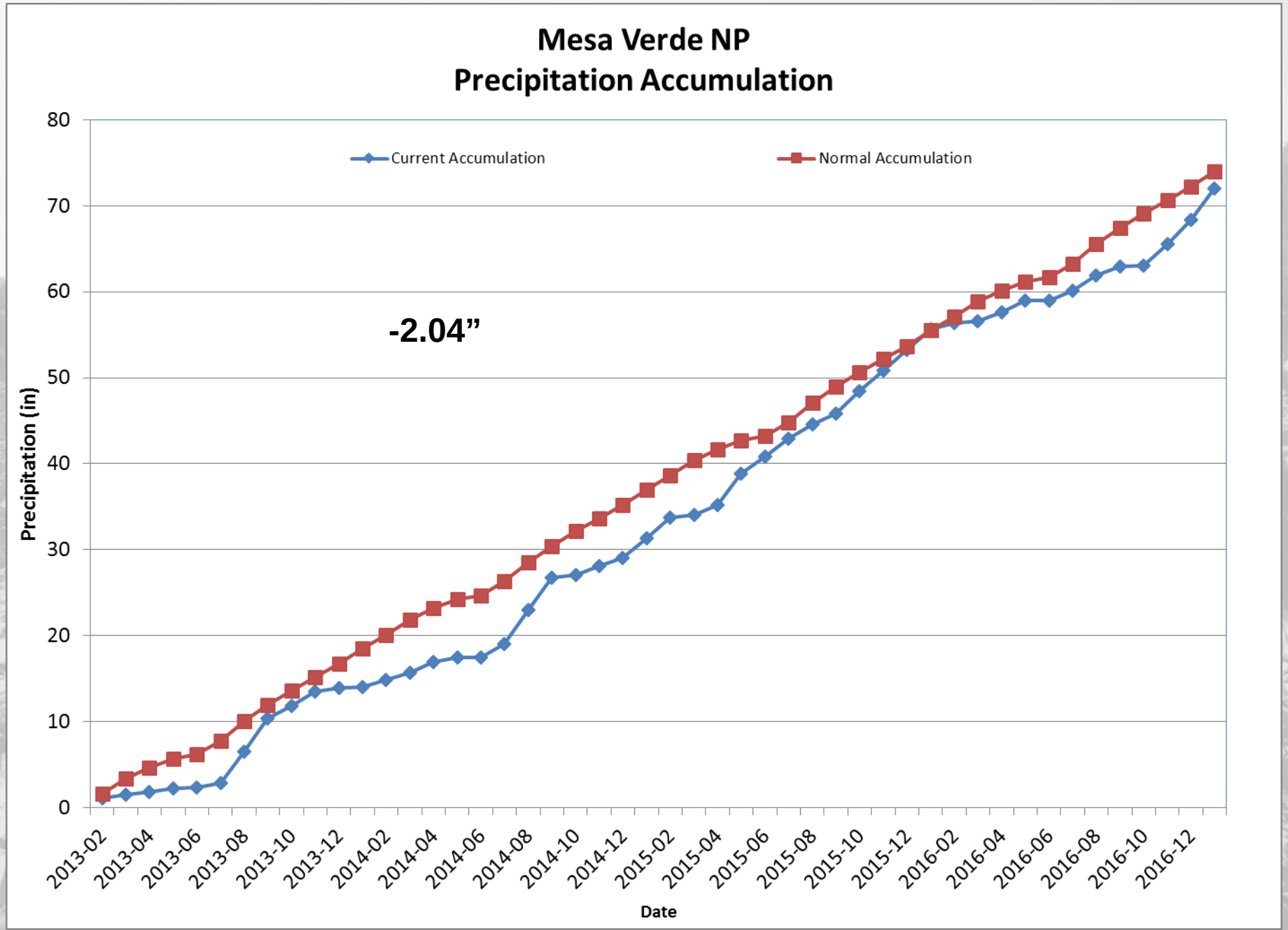
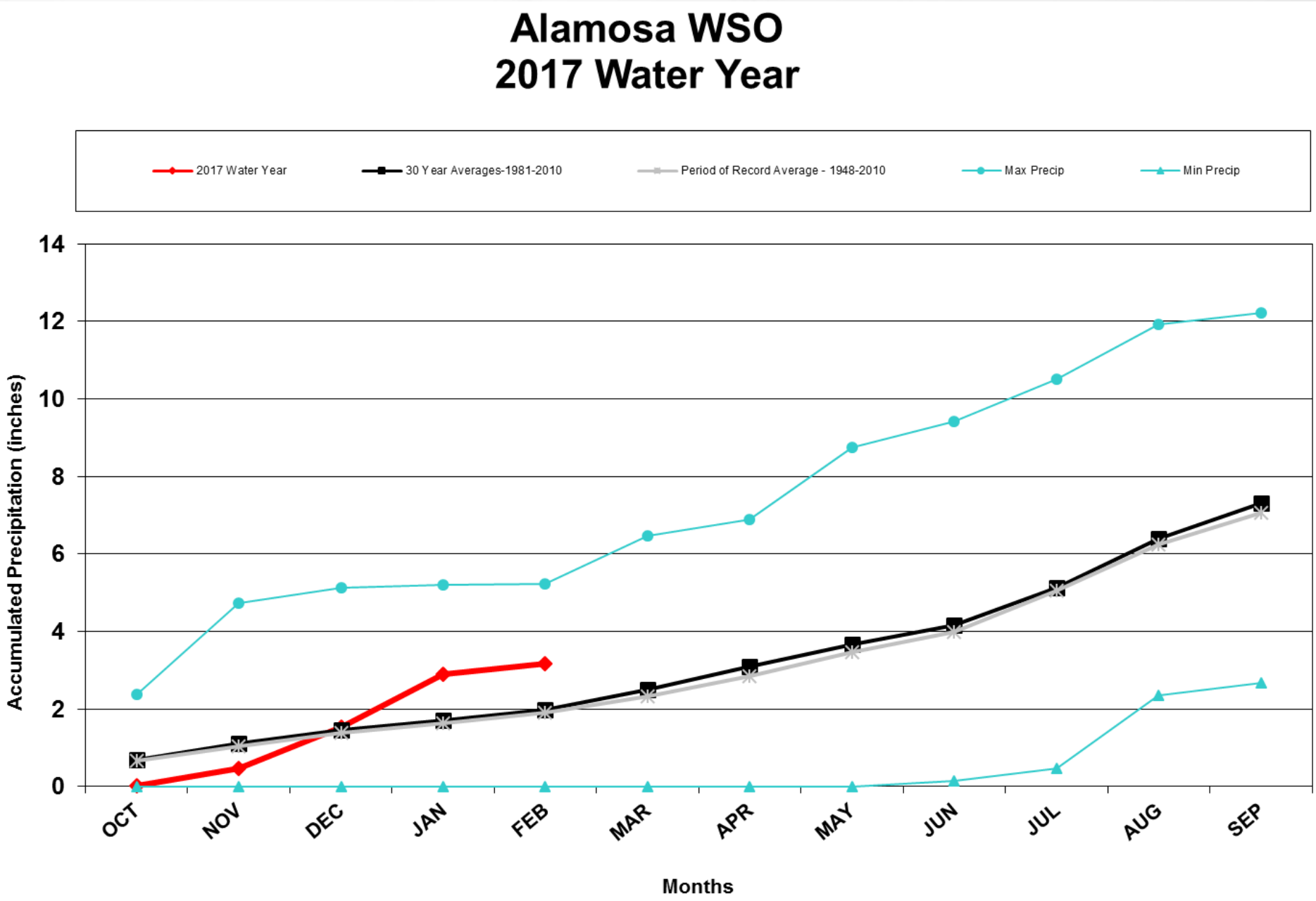


Division 4 – Alamosa



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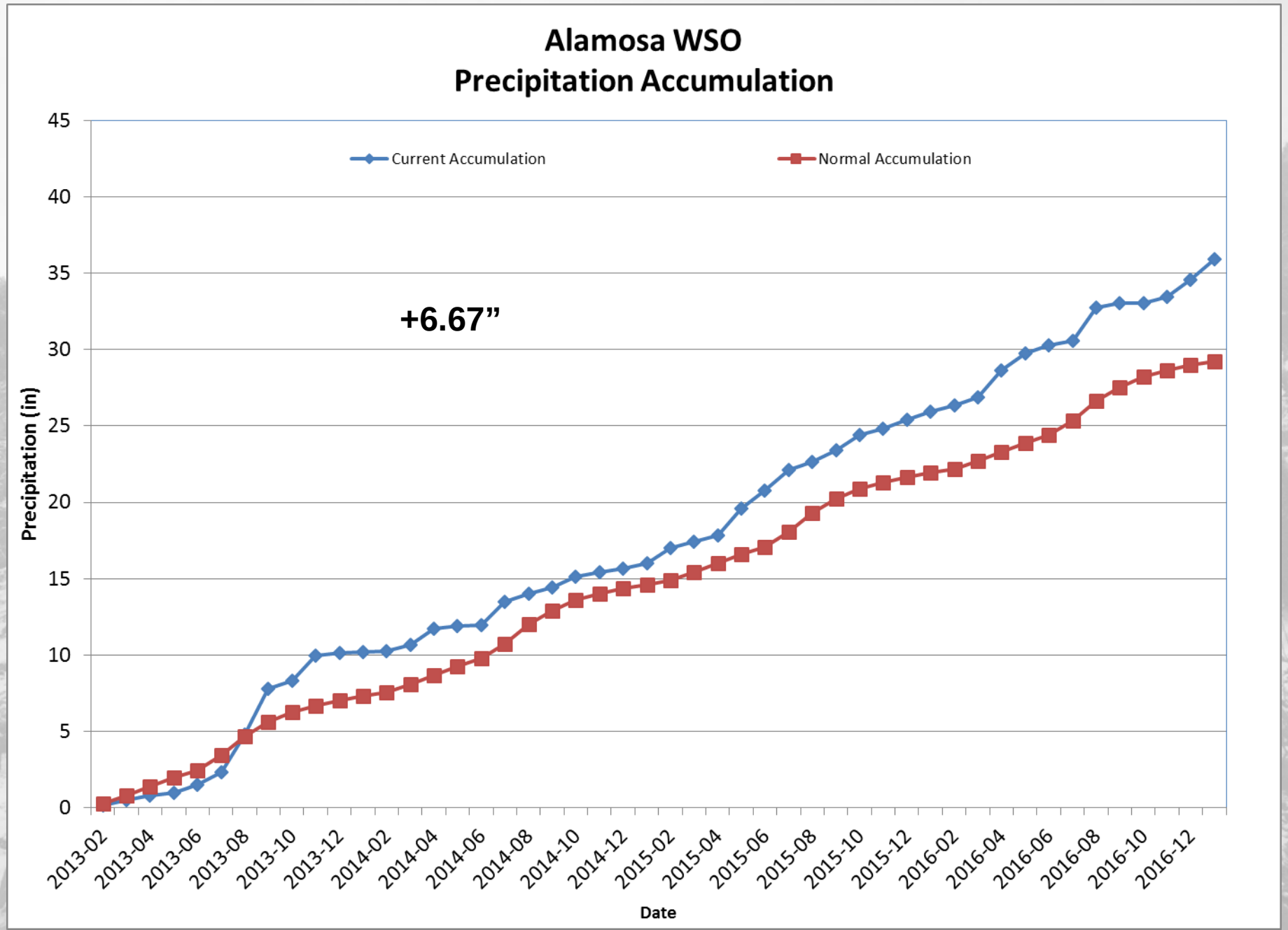
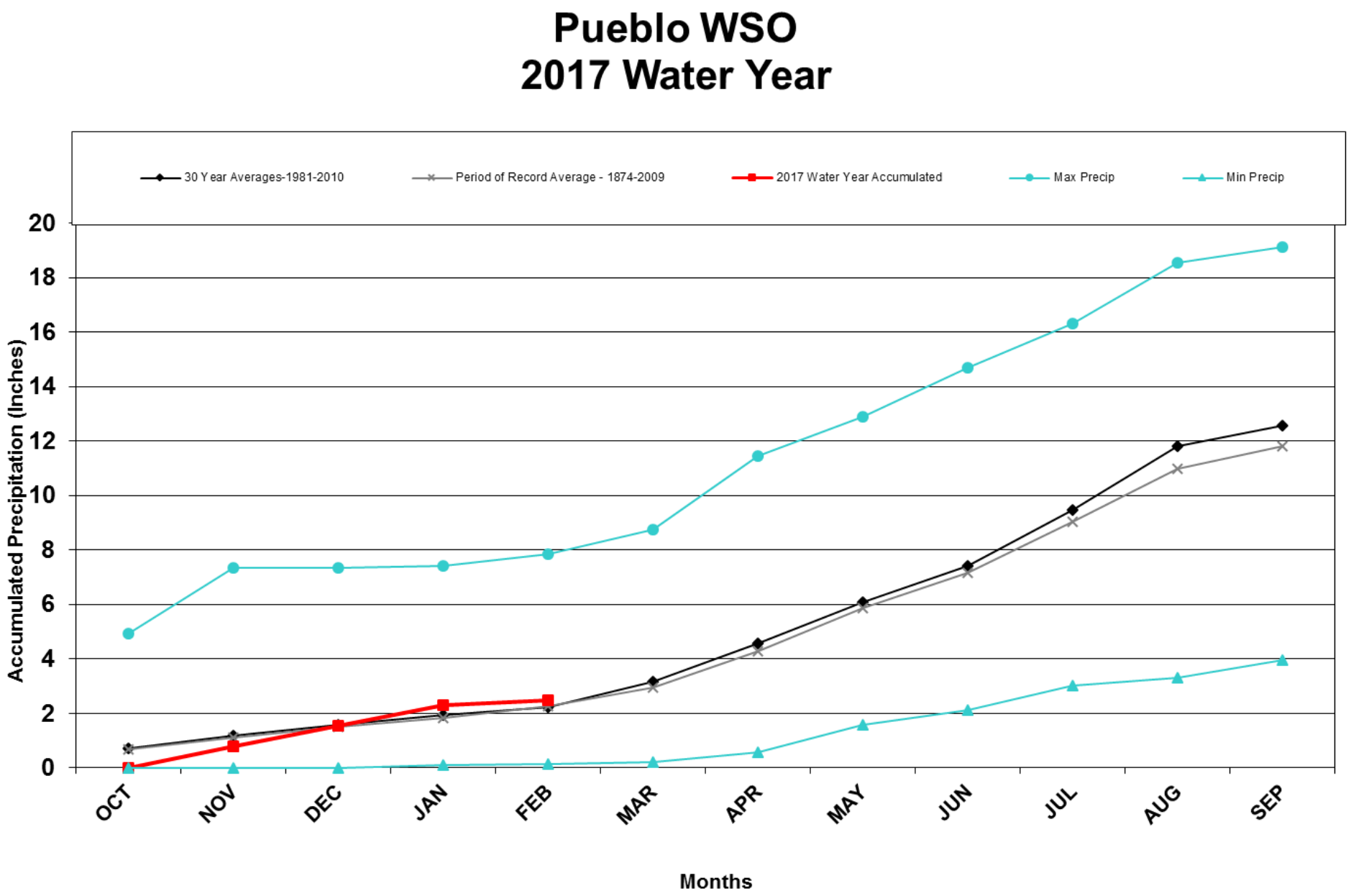


Division 5 – Pueblo



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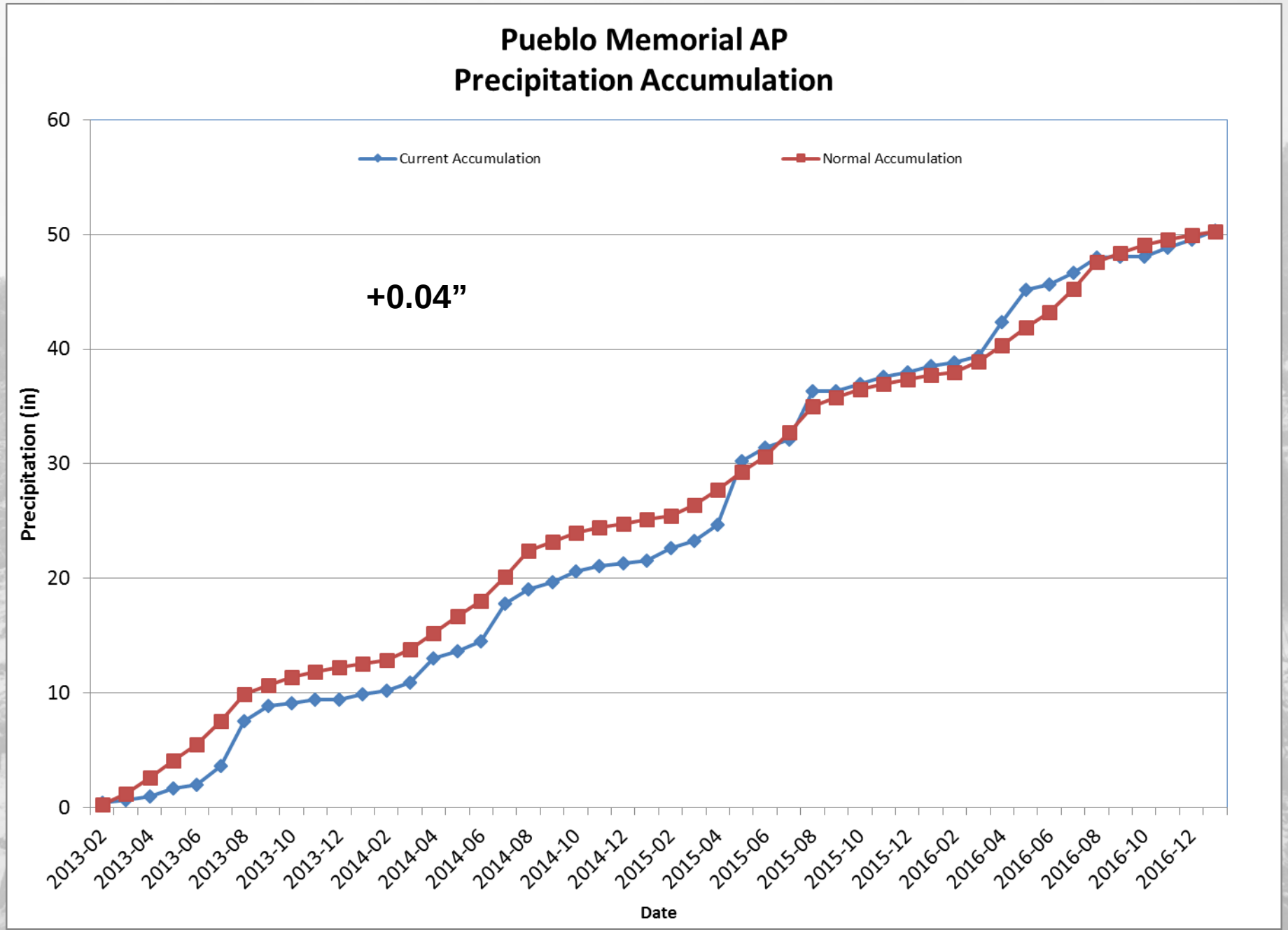
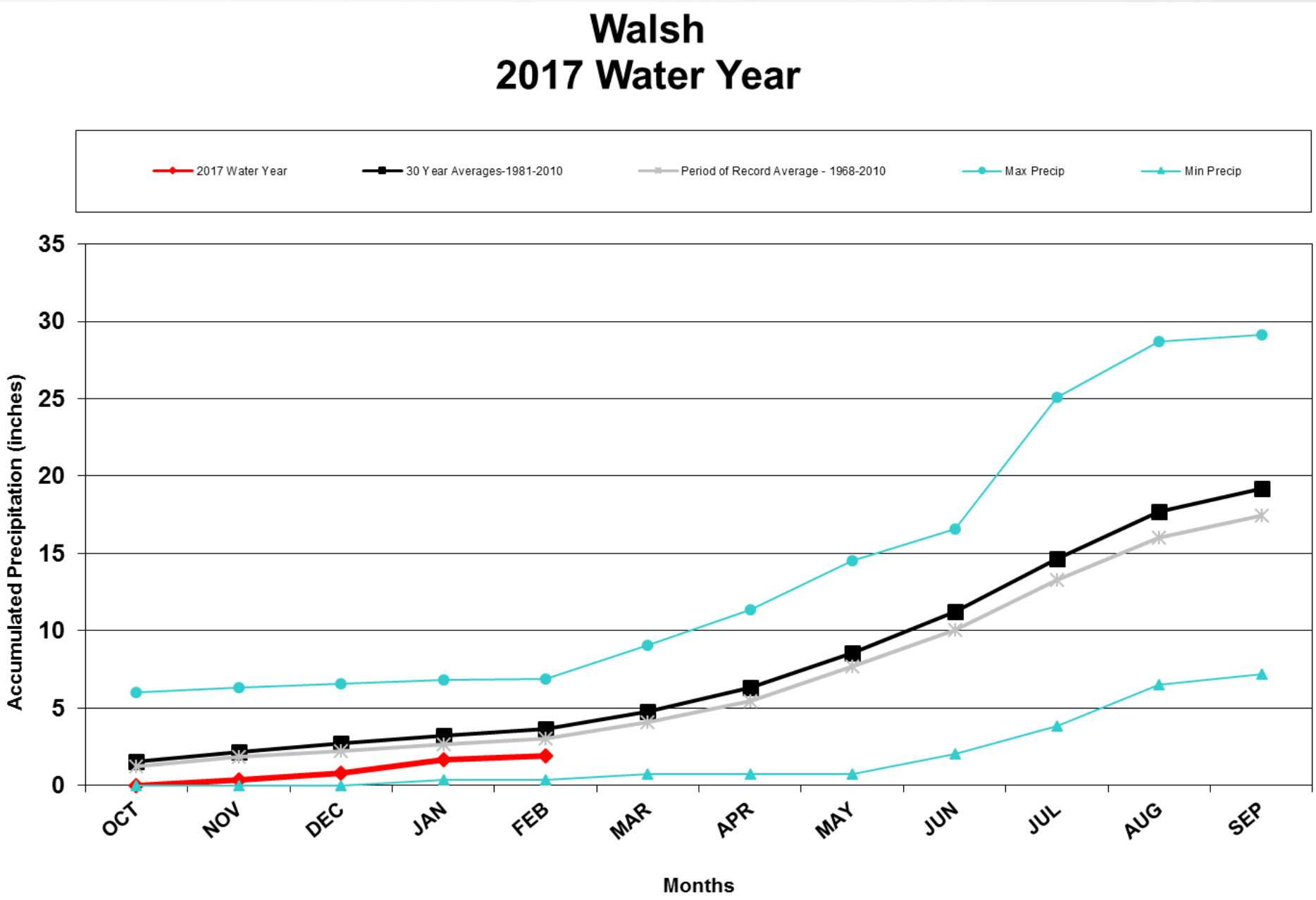
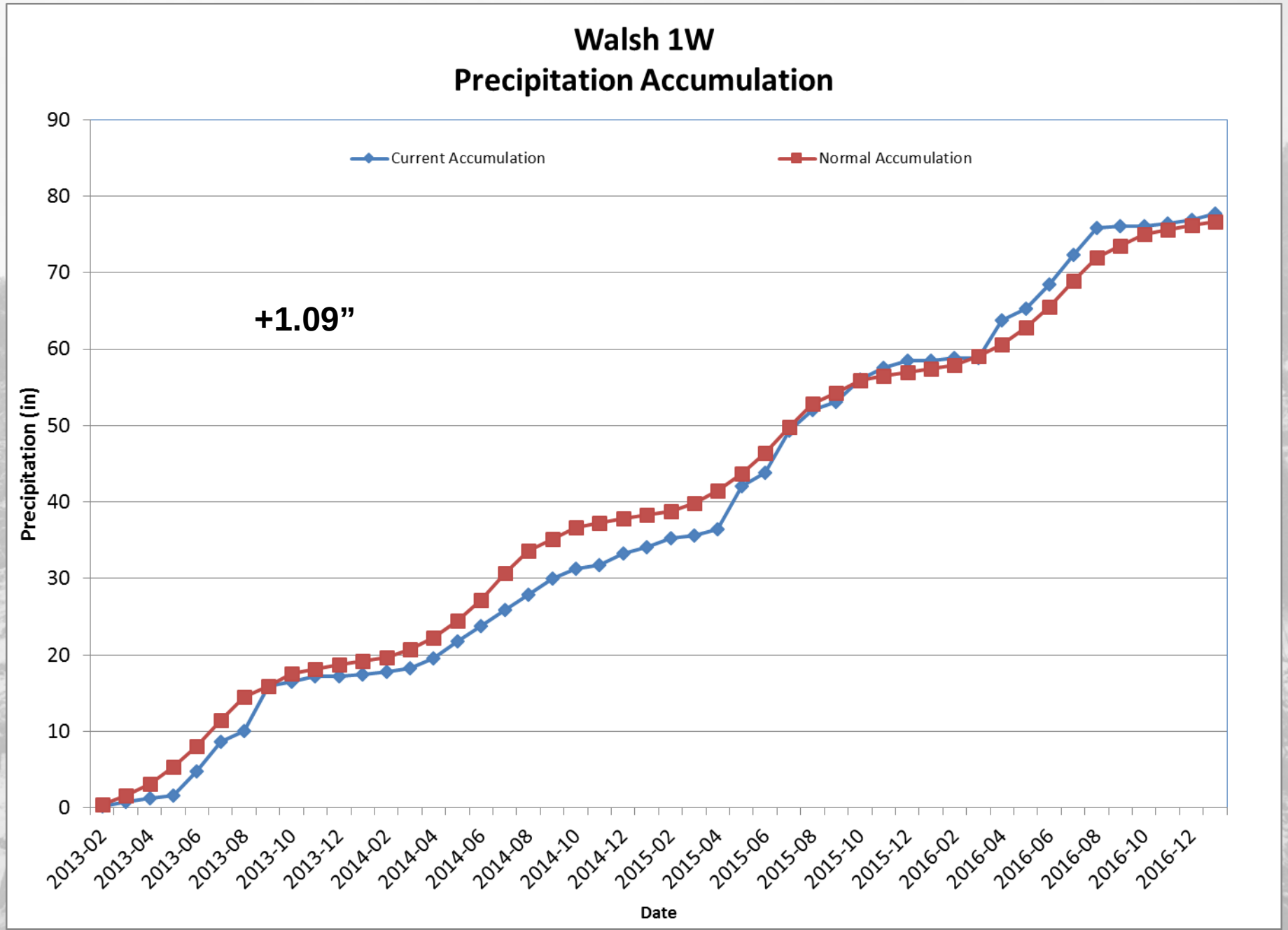


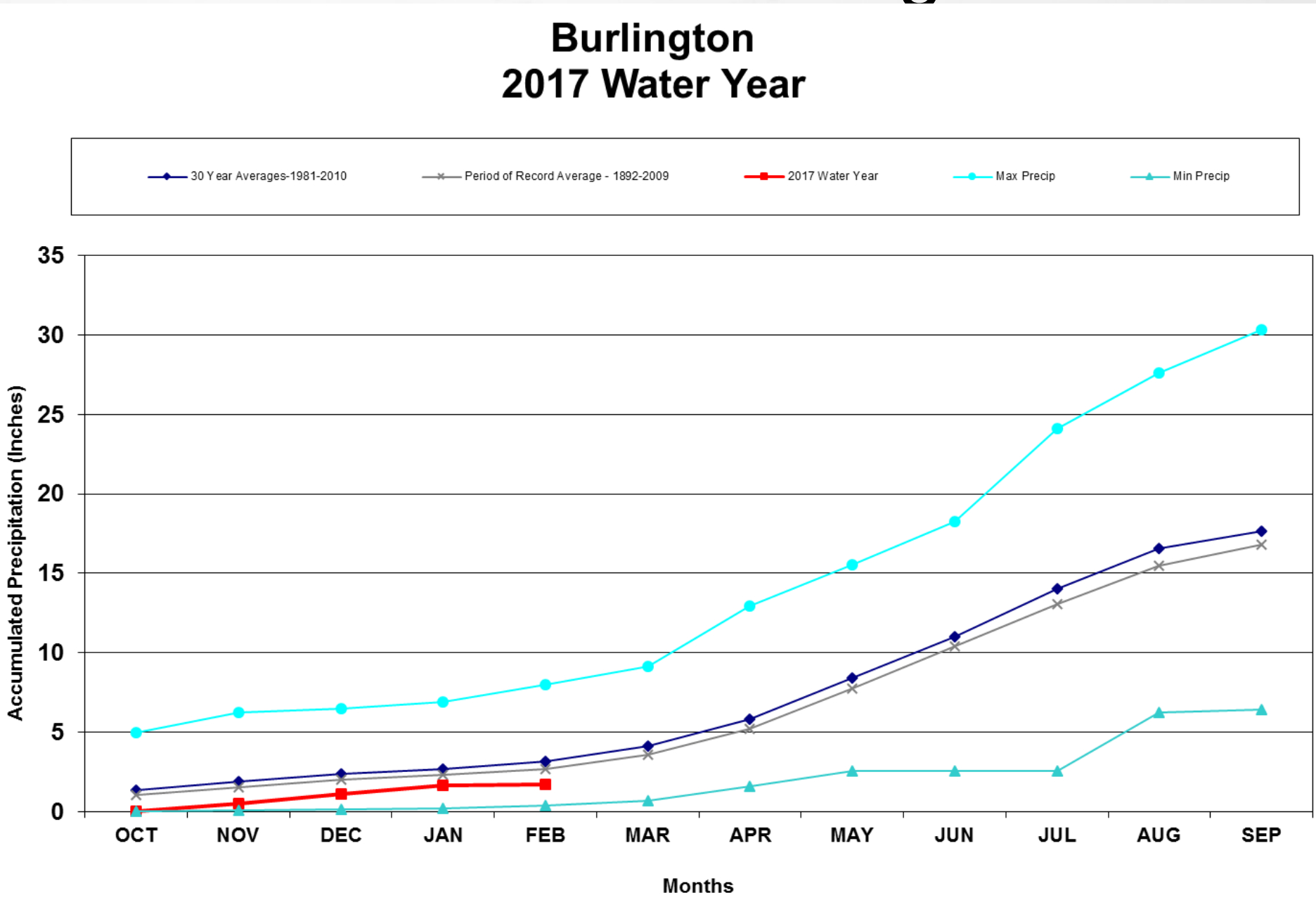
Division 6 - Walsh



Division 6 - Walsh



Division 6 - Burlington



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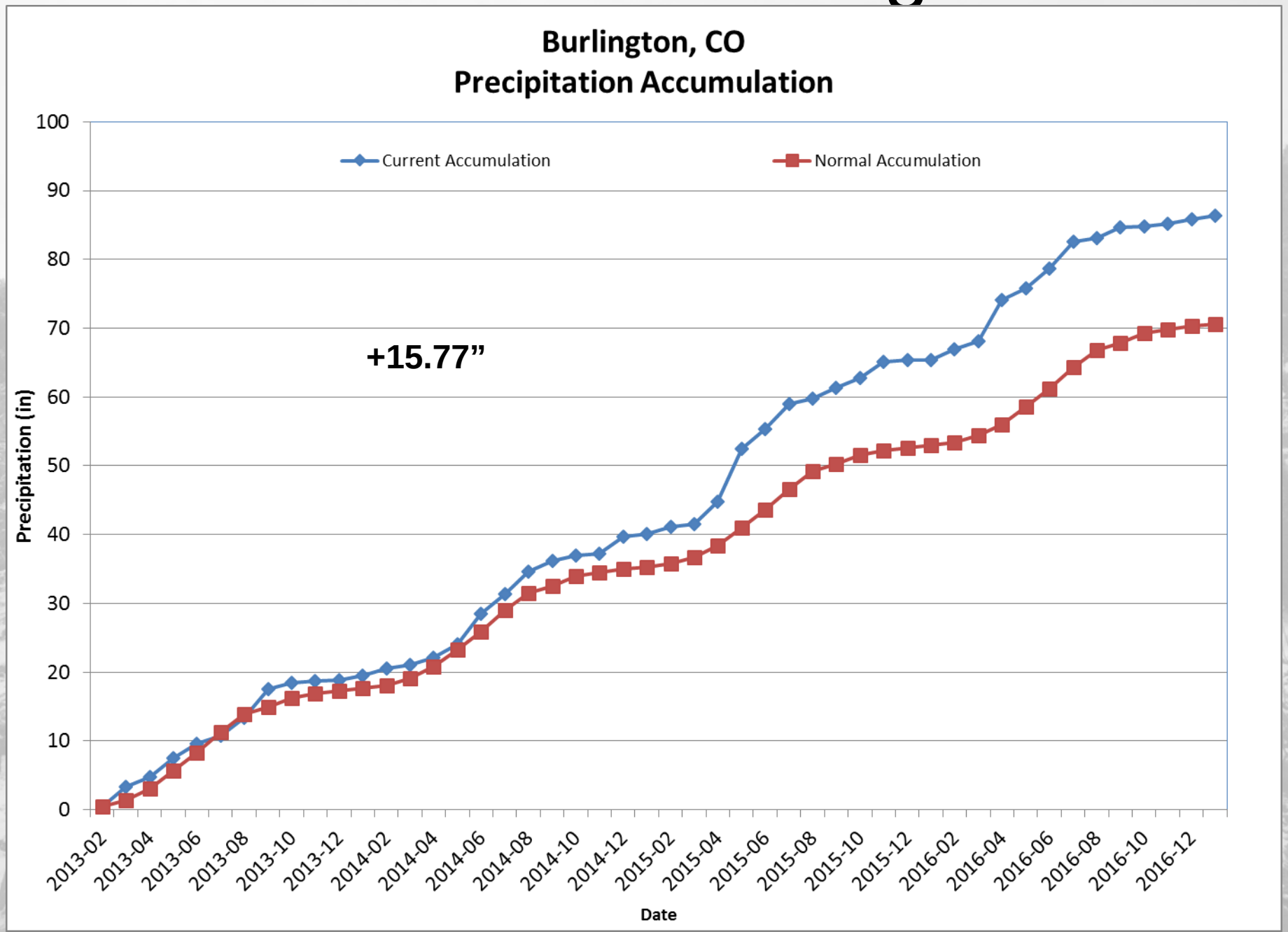
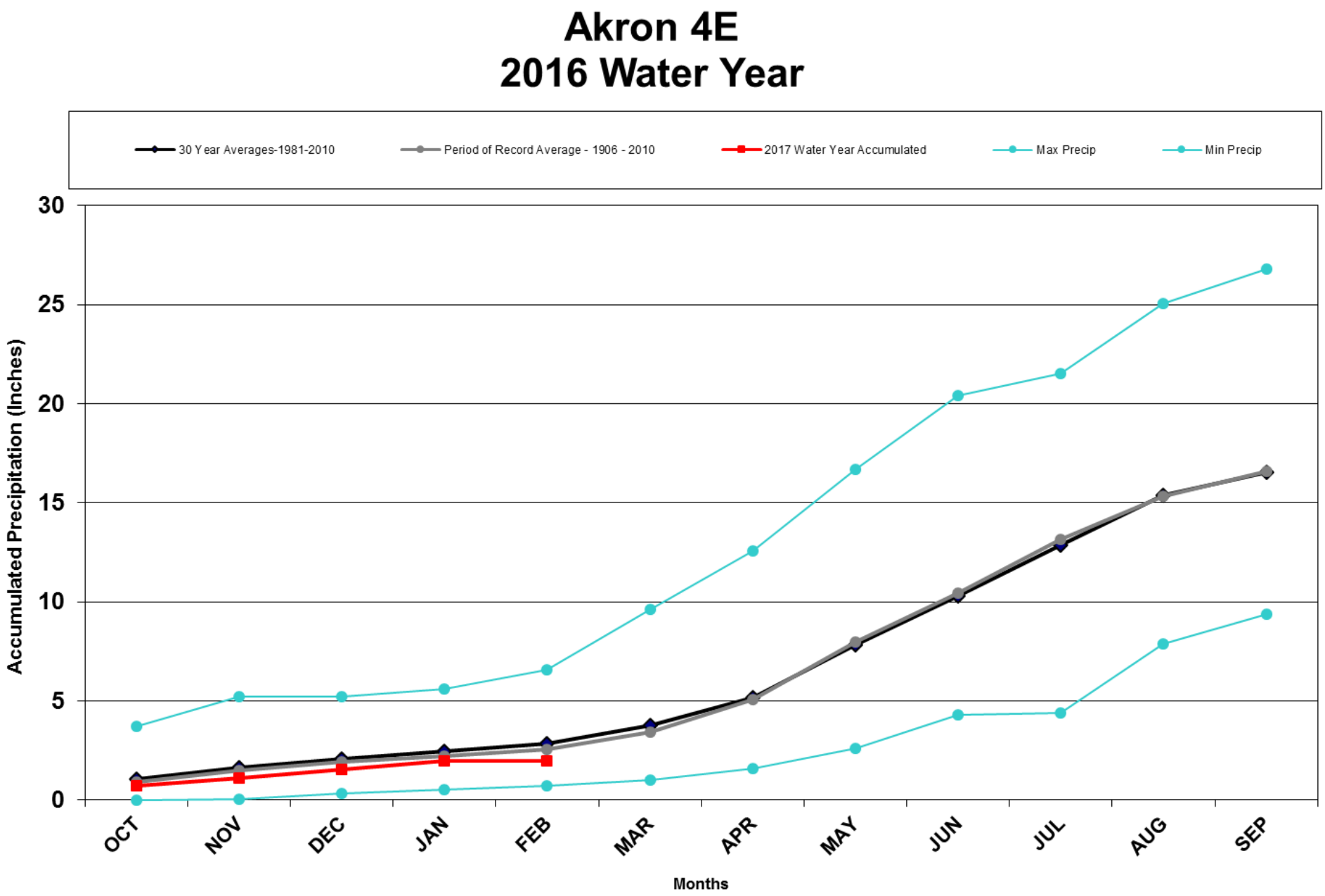
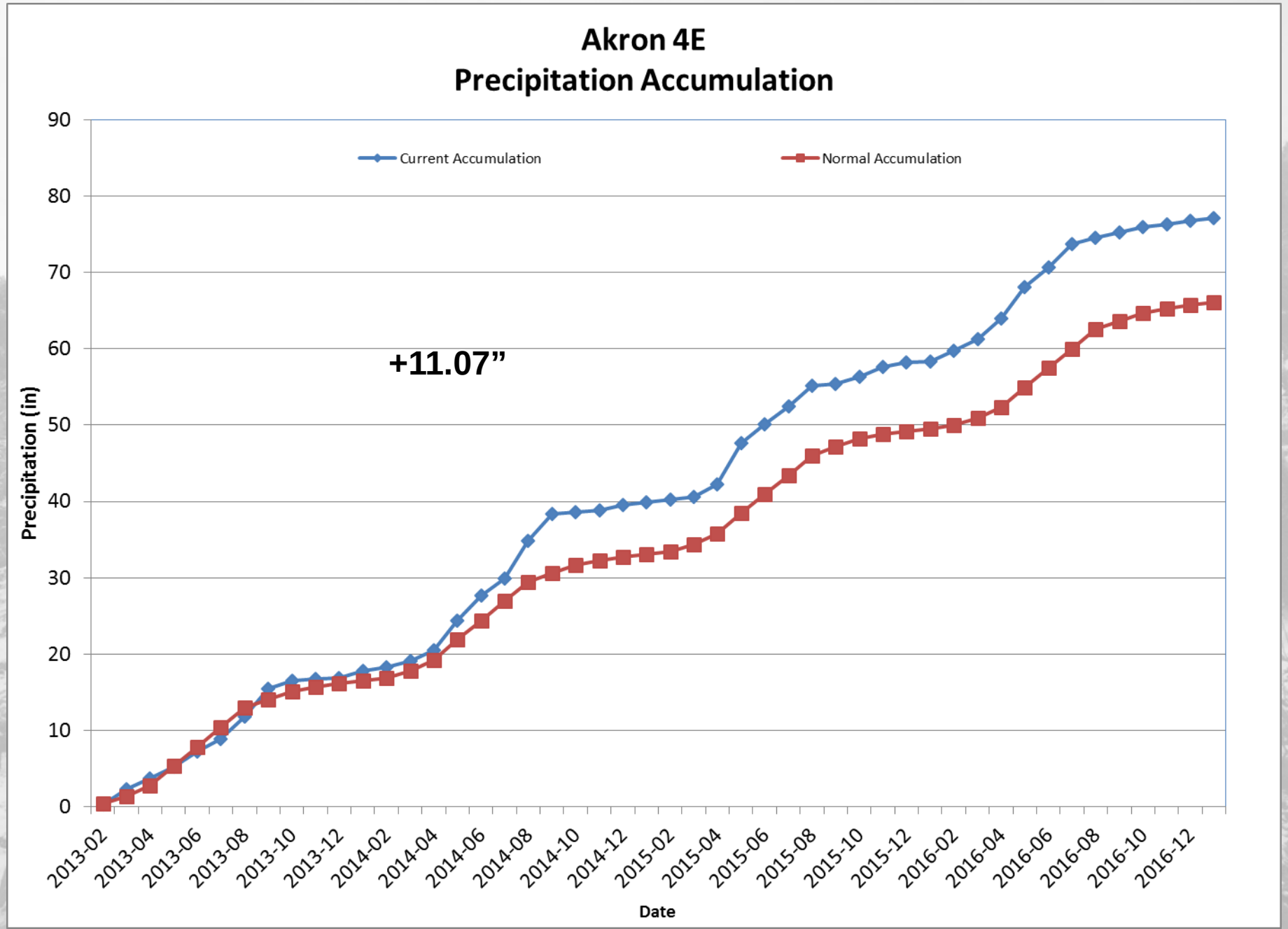


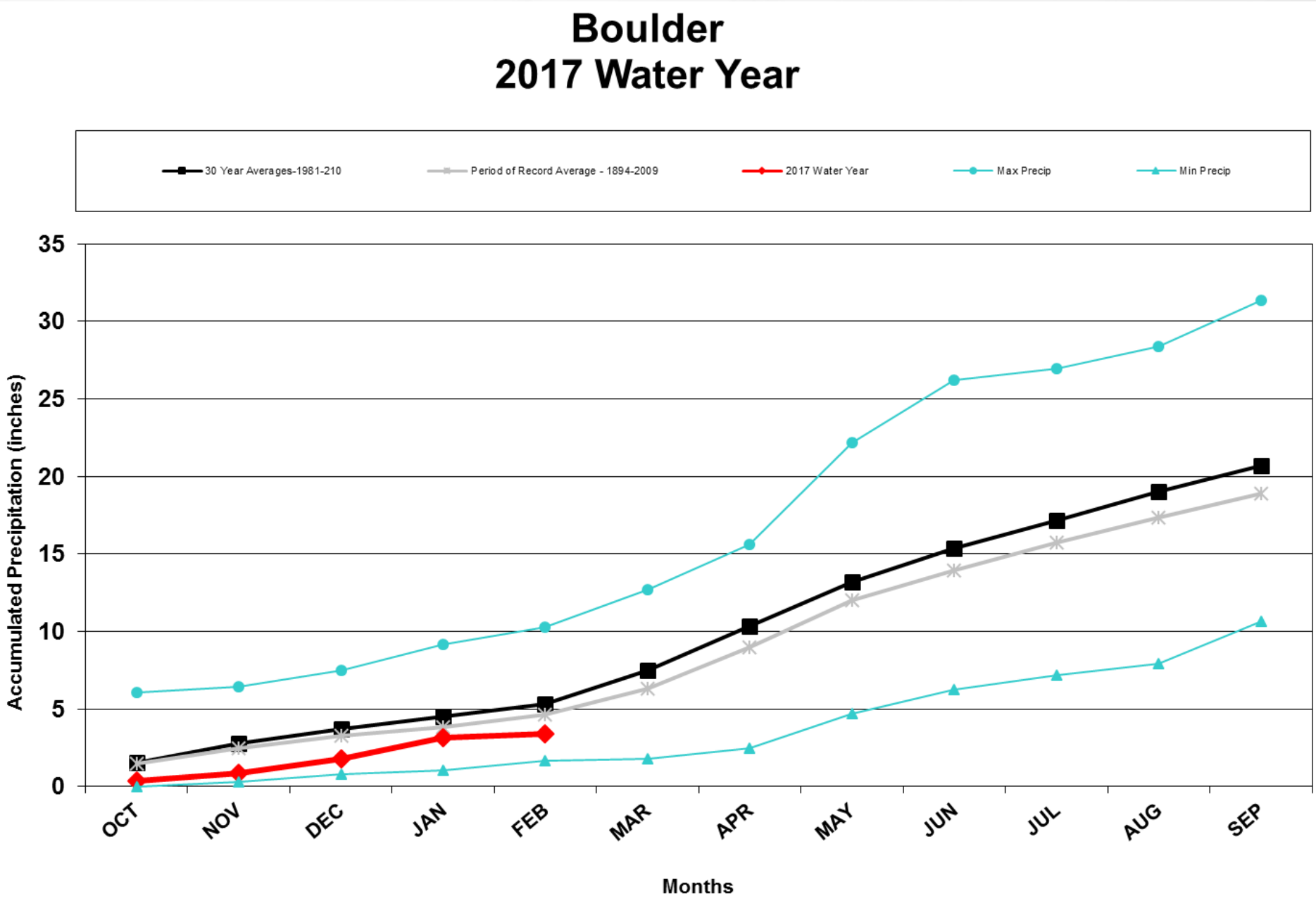
Division 7 – Akron



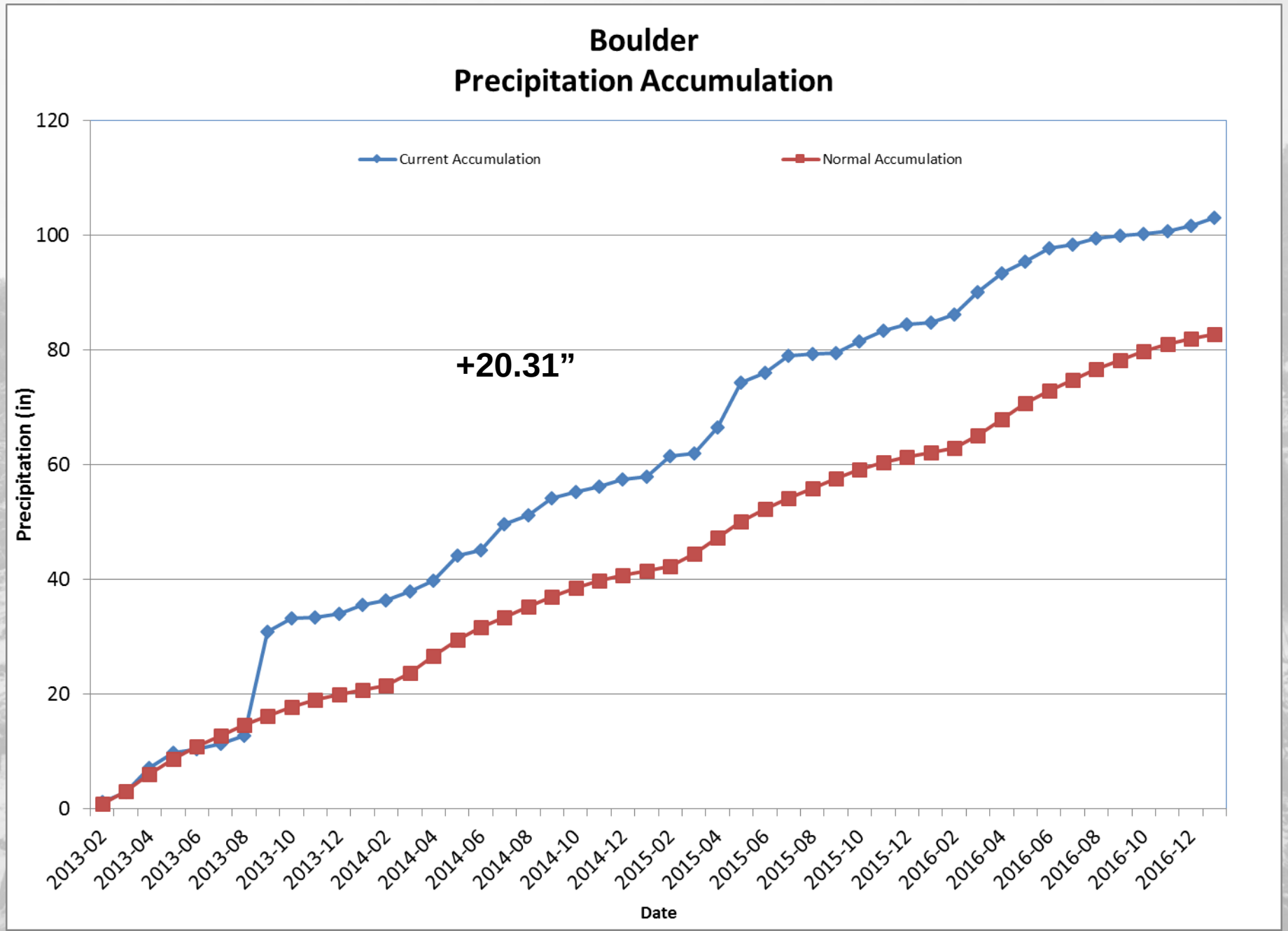
Division 7 – Akron



Division 8 - Boulder



Division 8 - Boulder

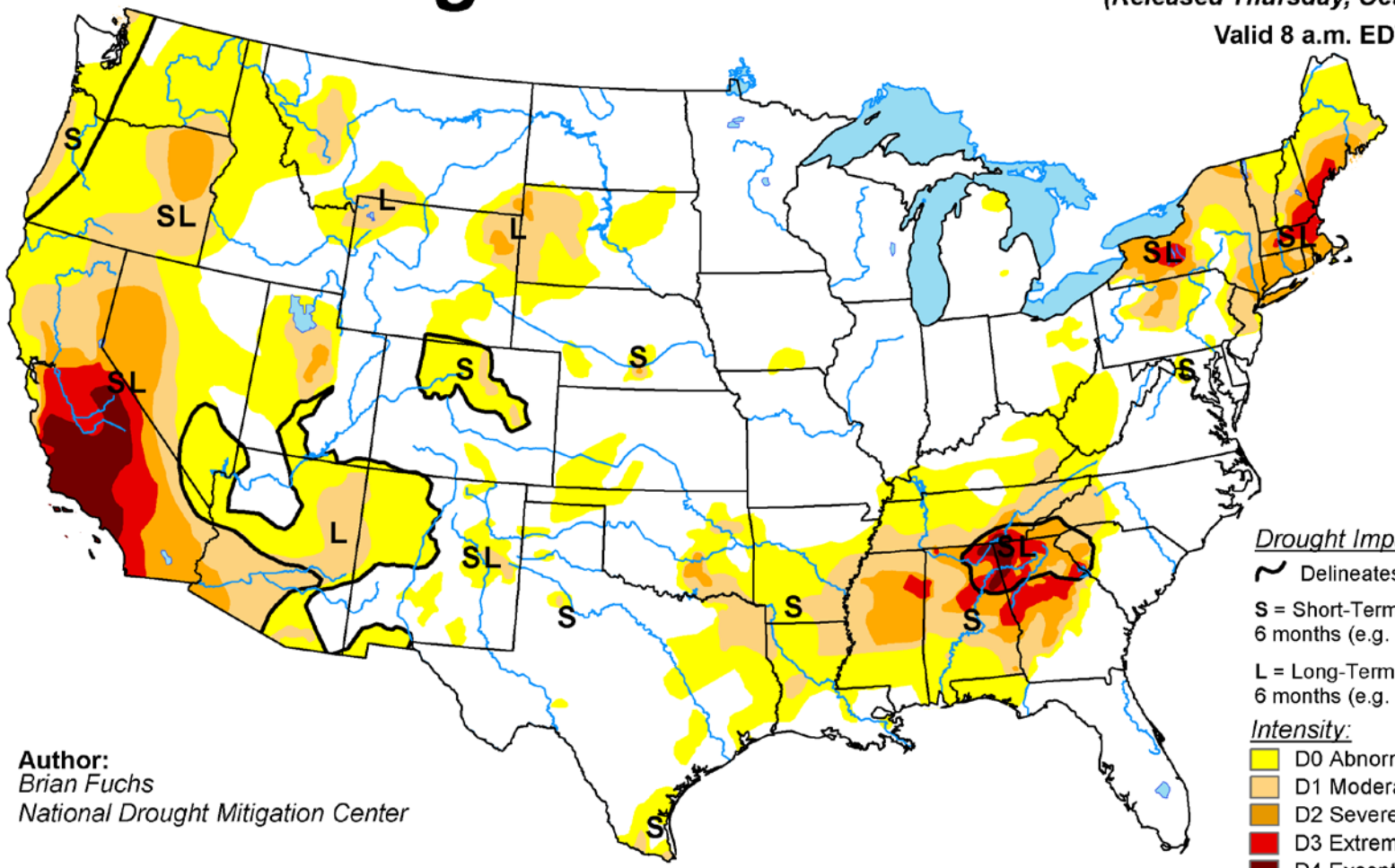


U.S. Drought Monitor

October 11, 2016

(Released Thursday, Oct. 13, 2016)

Valid 8 a.m. EDT



Author:
Brian Fuchs
National Drought Mitigation Center

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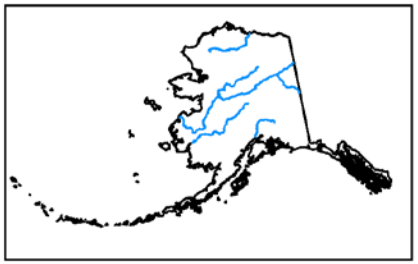
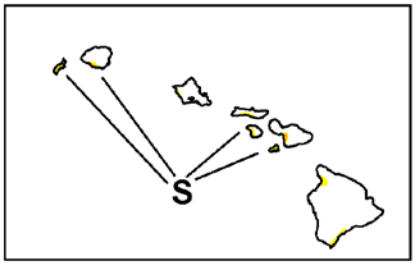
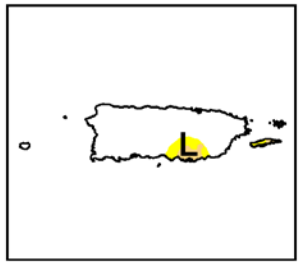
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.







USDA

National Drought Mitigation Center

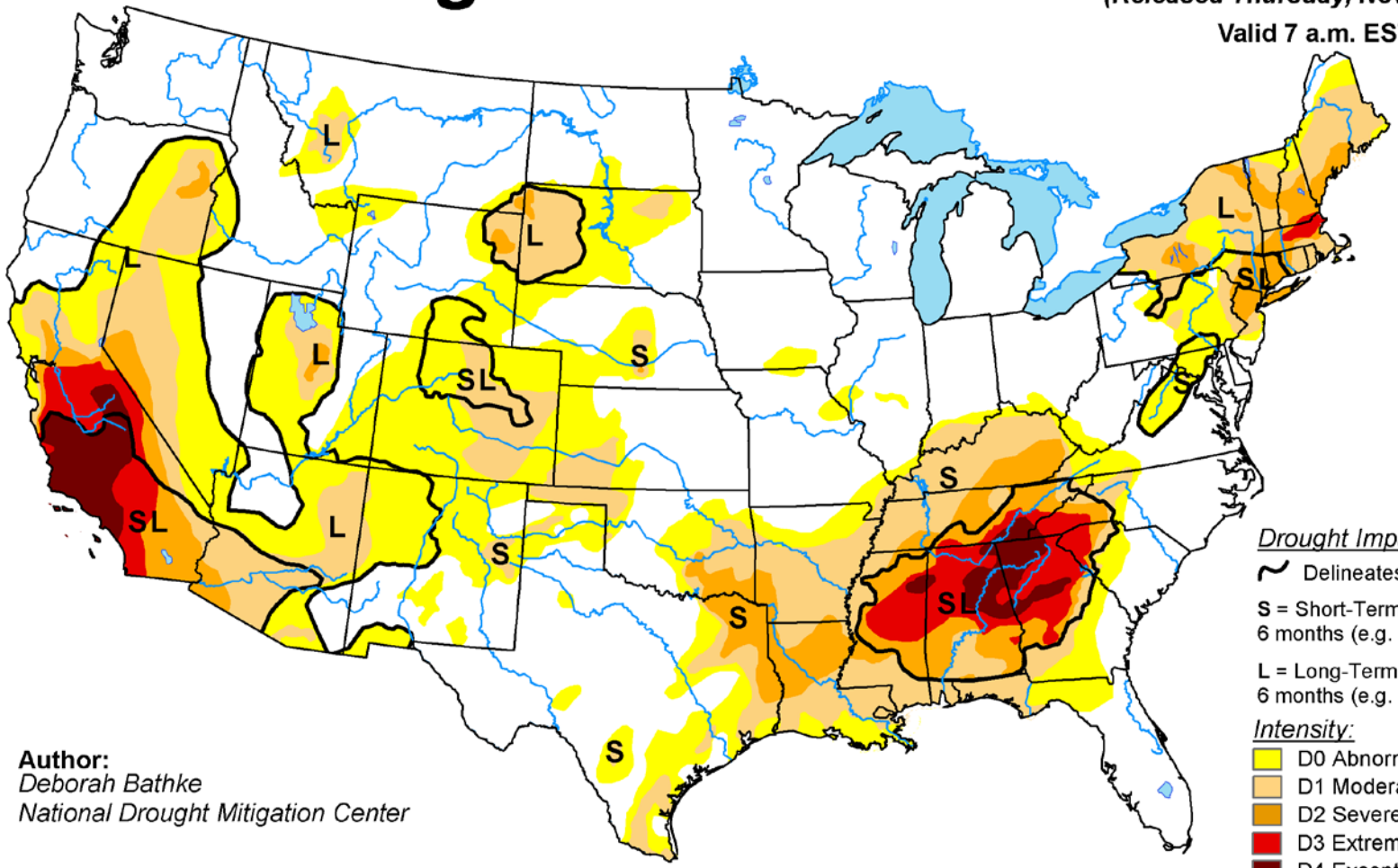
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

November 8, 2016

(Released Thursday, Nov. 10, 2016)

Valid 7 a.m. EST



Author:
Deborah Bathke
National Drought Mitigation Center

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~ Delineates dominant impacts

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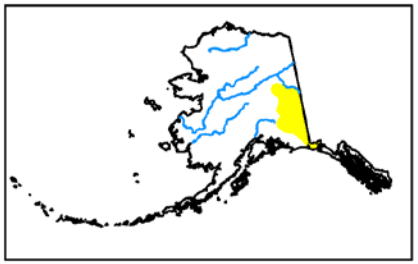

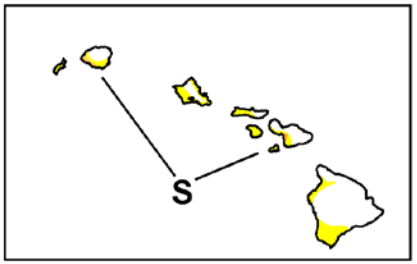

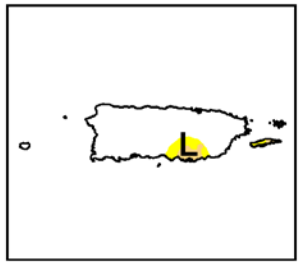

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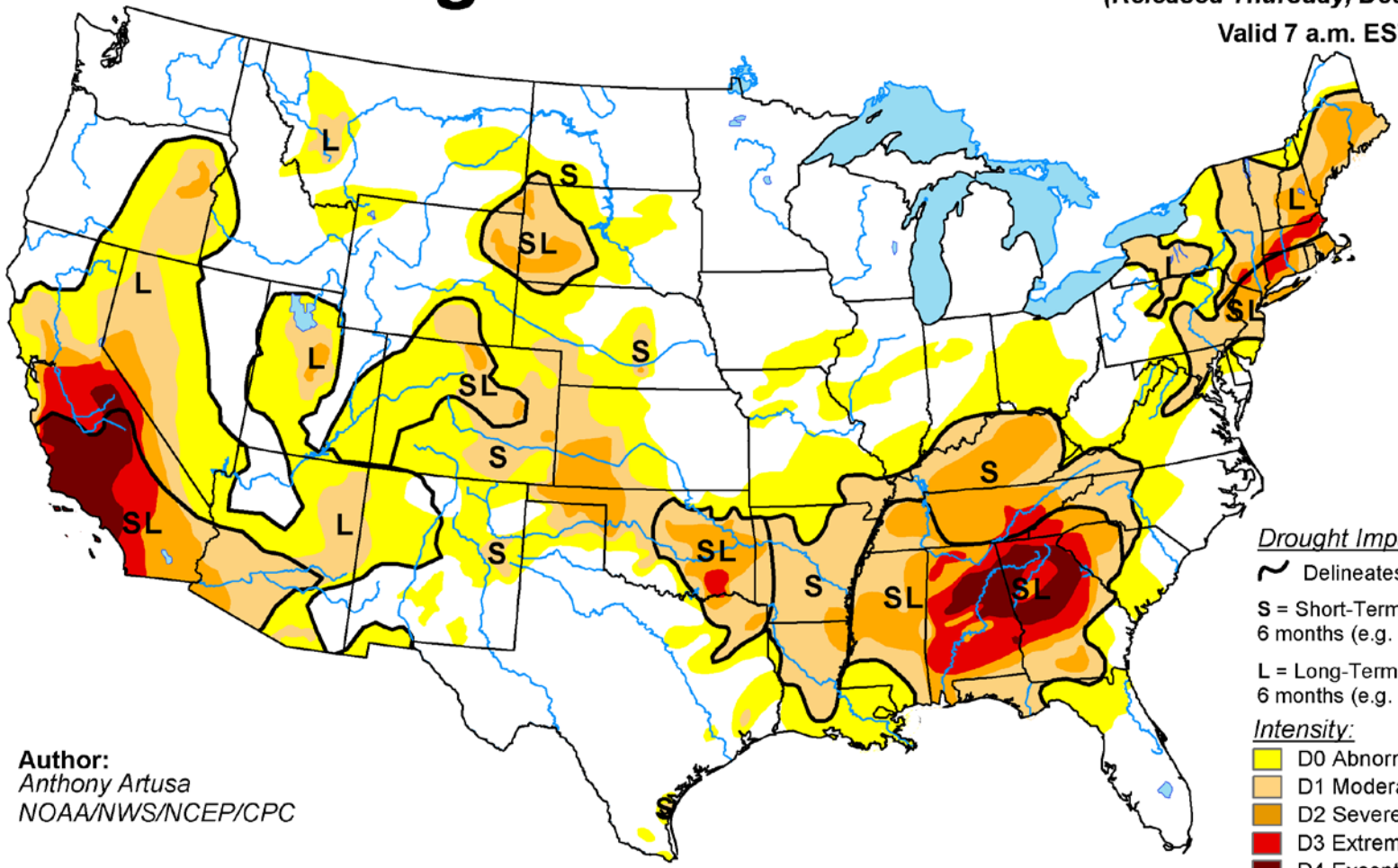
U.S. Drought Monitor

December 13, 2016

(Released Thursday, Dec. 15, 2016)

Valid 7 a.m. EST



Author:
Anthony Artusa
NOAA/NWS/NCEP/CPC

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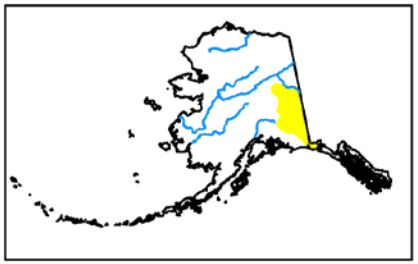

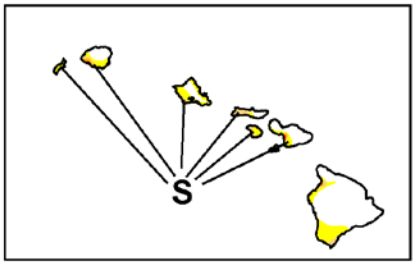

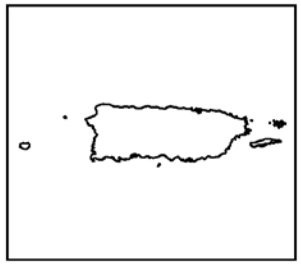

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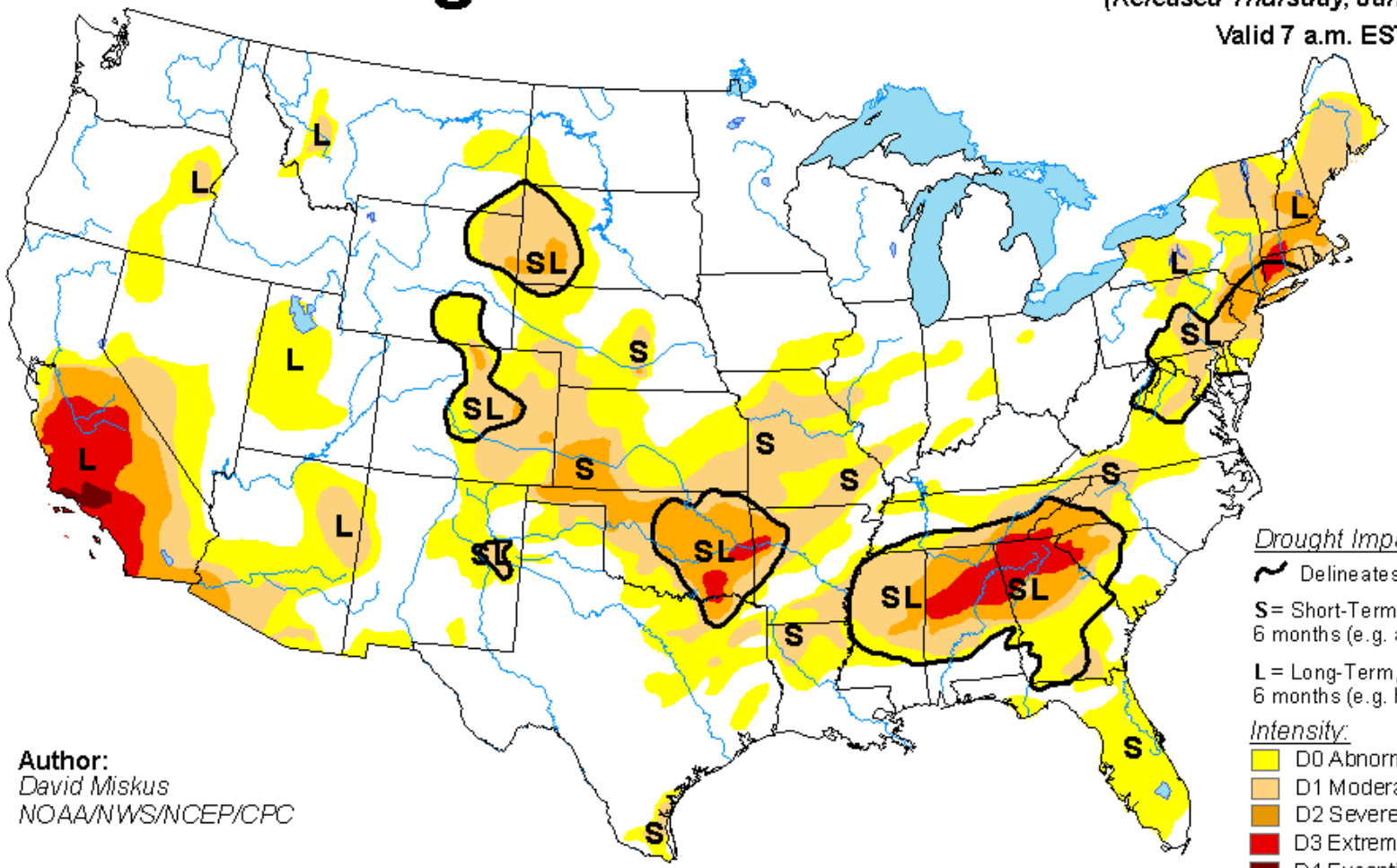
U.S. Drought Monitor

January 10, 2017

(Released Thursday, Jan. 12, 2017)

Valid 7 a.m. EST



Author:
David Miskus
NOAA/NWS/NCEP/CPC

Drought Impact Types:

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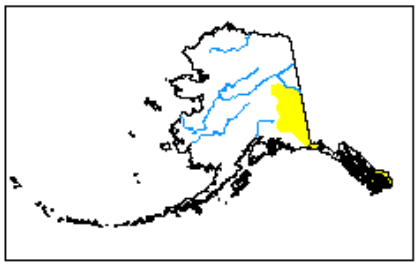

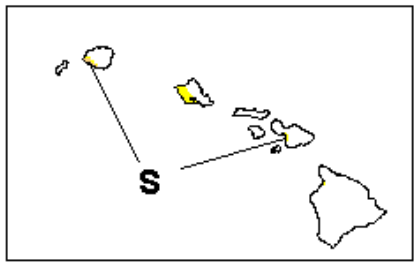

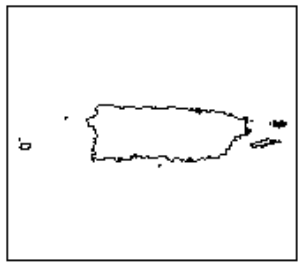

USDA

National Drought Mitigation Center

NOAA

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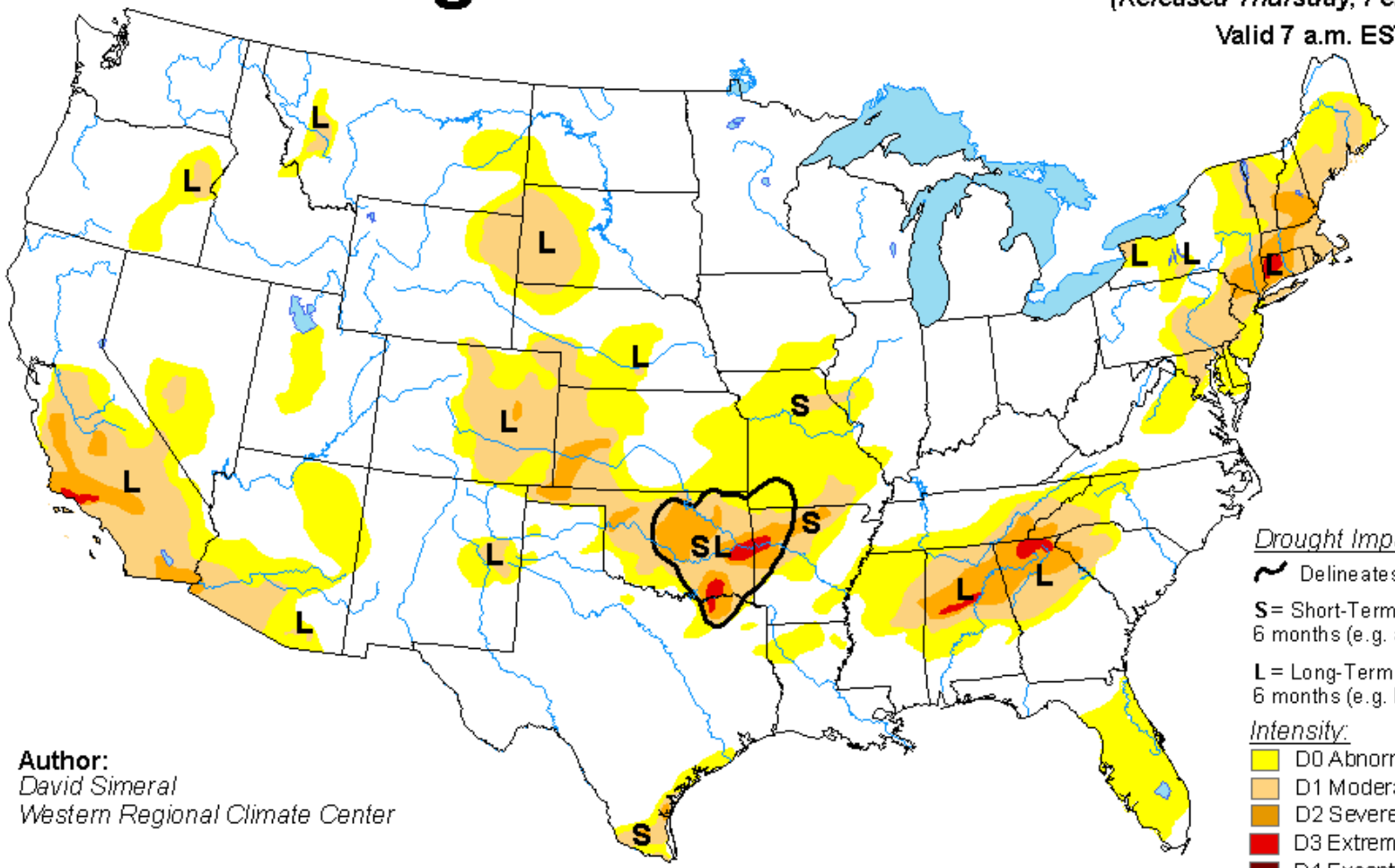
U.S. Drought Monitor

February 7, 2017

(Released Thursday, Feb. 9, 2017)

Valid 7 a.m. EST



Author:
David Simeral
Western Regional Climate Center

Drought Impact Types:

Delineates dominant impacts

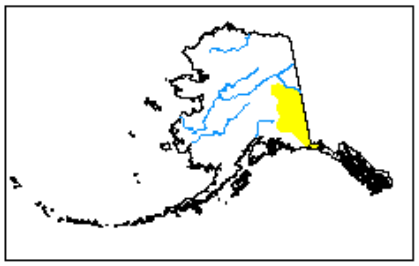
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

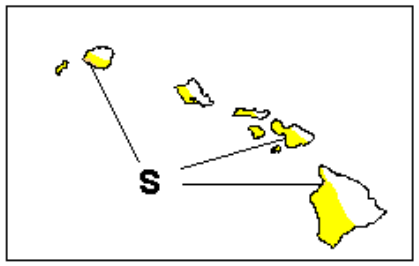
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

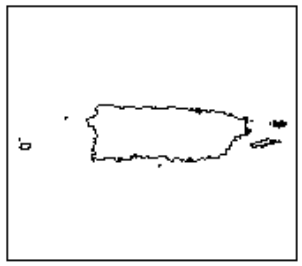
Intensity:

- 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.



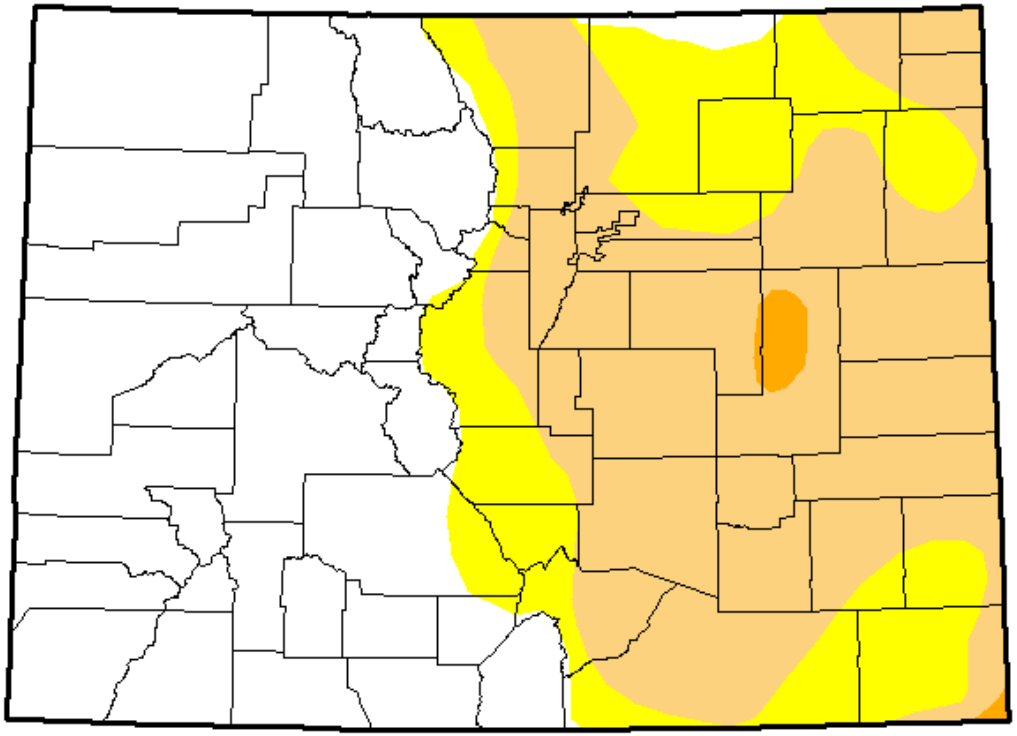




USDA | National Drought Mitigation Center | NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Colorado



February 7, 2017

(Released Thursday, Feb. 9, 2017)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.49	52.51	35.34	0.75	0.00	0.00
Last Week 1/31/2017	47.49	52.51	35.34	0.75	0.00	0.00
3 Months Ago 11/8/2016	1.60	98.40	30.84	0.00	0.00	0.00
Start of Calendar Year 1/3/2017	31.88	68.12	37.21	2.88	0.00	0.00
Start of Water Year 9/27/2016	70.49	29.51	2.45	0.00	0.00	0.00
One Year Ago 2/9/2016	92.65	7.35	0.00	0.00	0.00	0.00

Intensity:

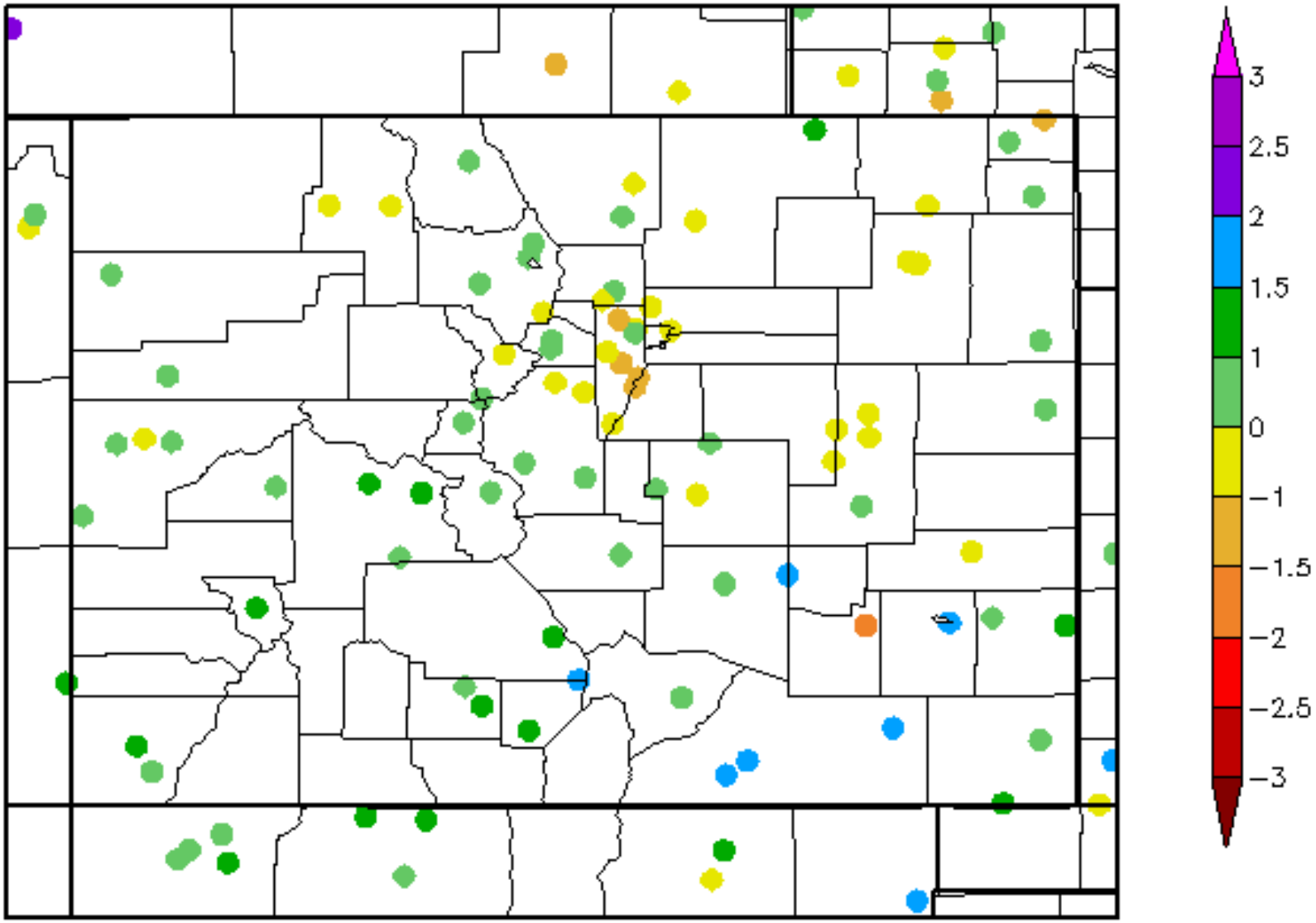
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

Author:
David Simeral
Western Regional Climate Center

http://droughtmonitor.unl.edu/

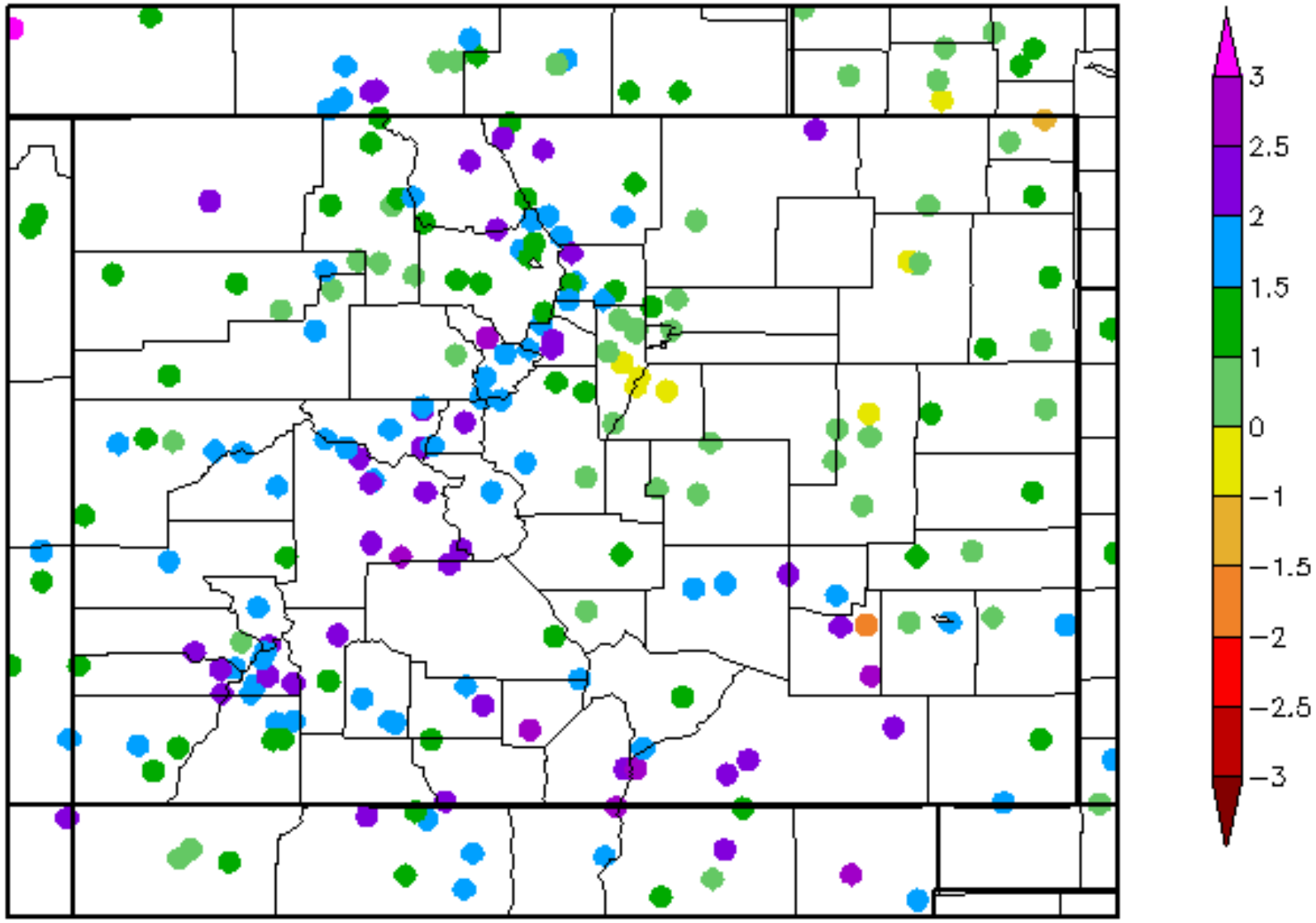
30 Day SPI
1/15/2017 – 2/13/2017



Generated 2/14/2017 at HPRCC using provisional data.

Regional Climate Centers

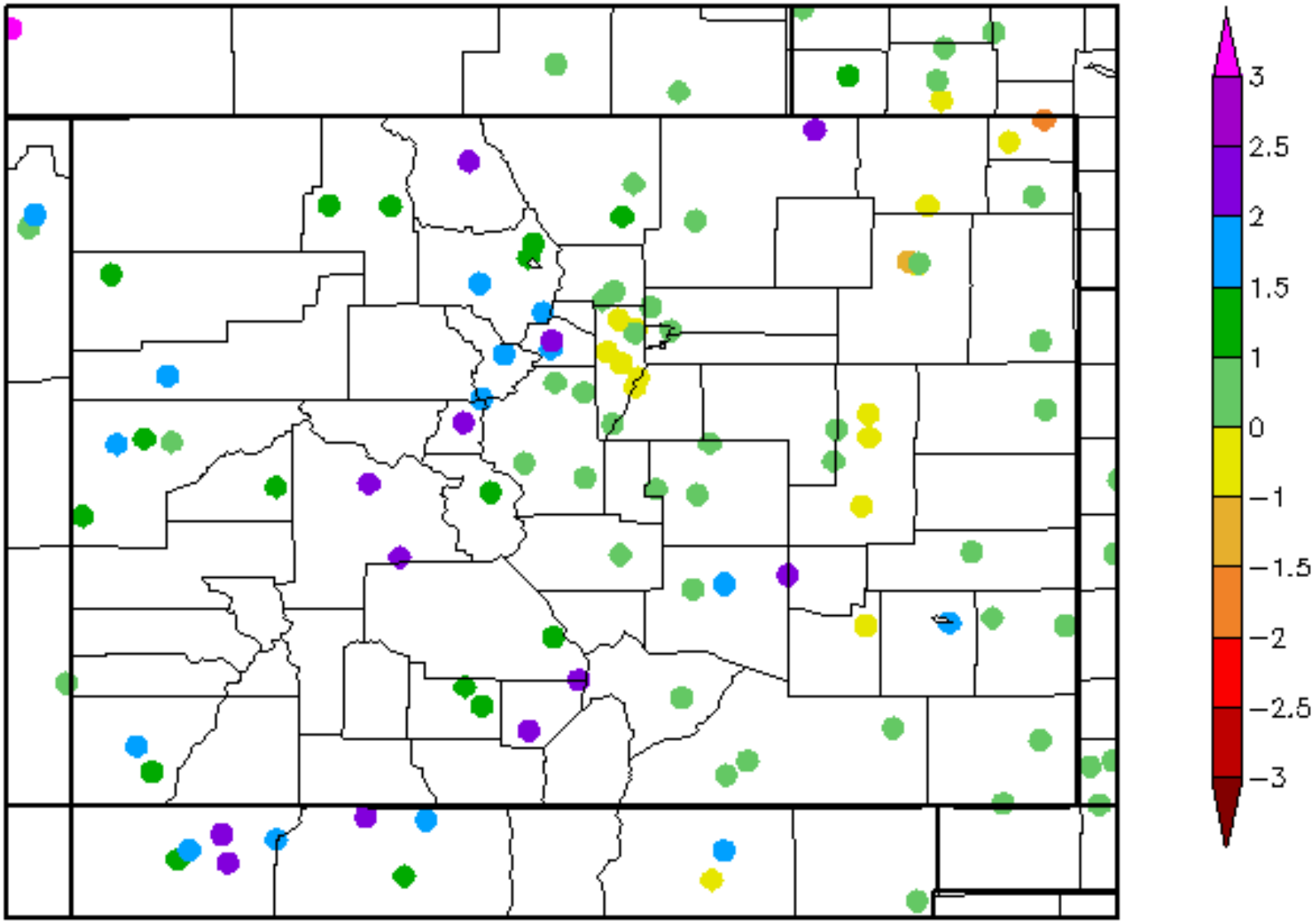
Monthly SPI
1/1/2017 – 1/31/2017



Generated 2/11/2017 at HPRCC using provisional data.

Regional Climate Centers

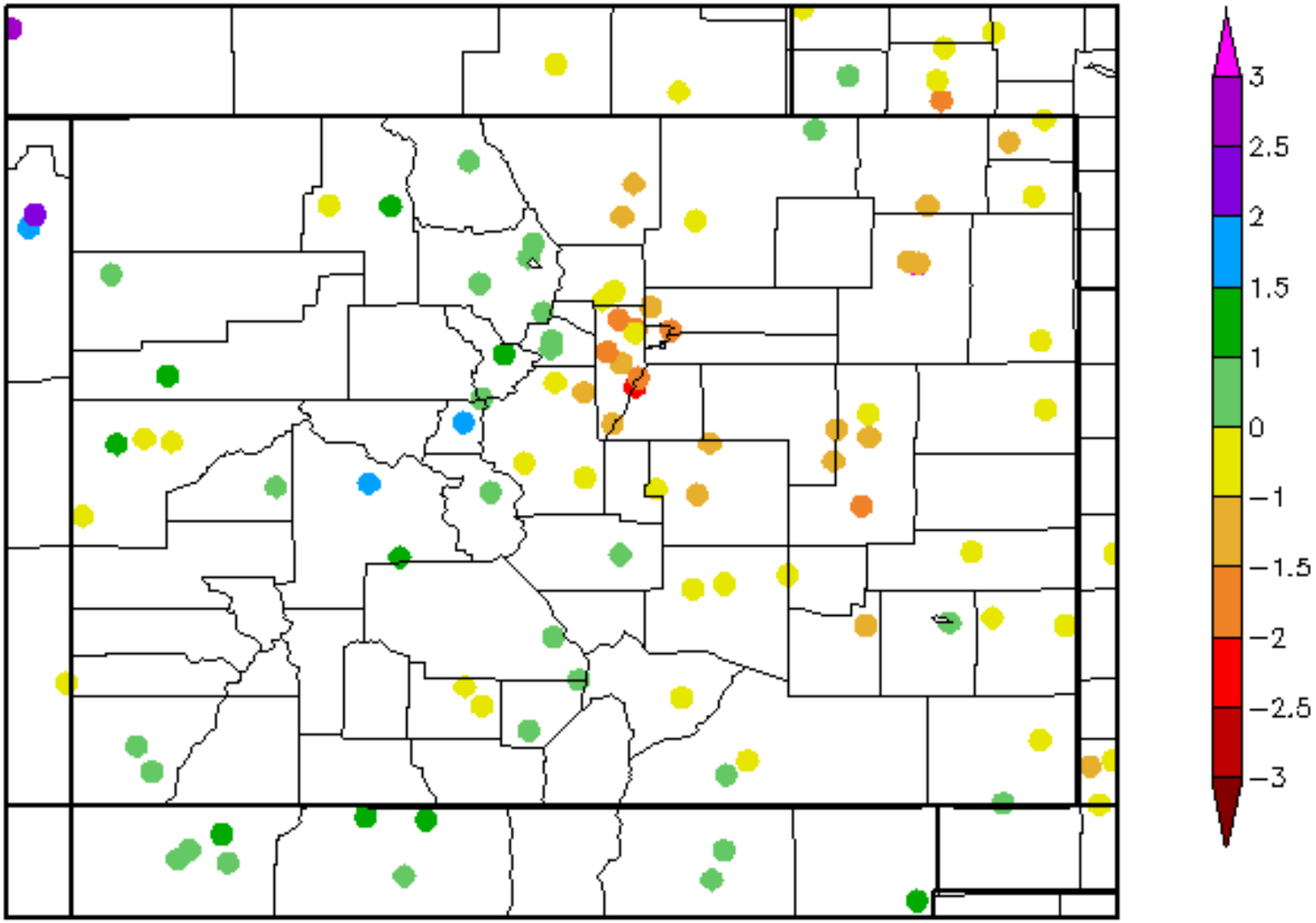
90 Day SPI
11/16/2016 – 2/13/2017



Generated 2/14/2017 at HPRCC using provisional data.

Regional Climate Centers

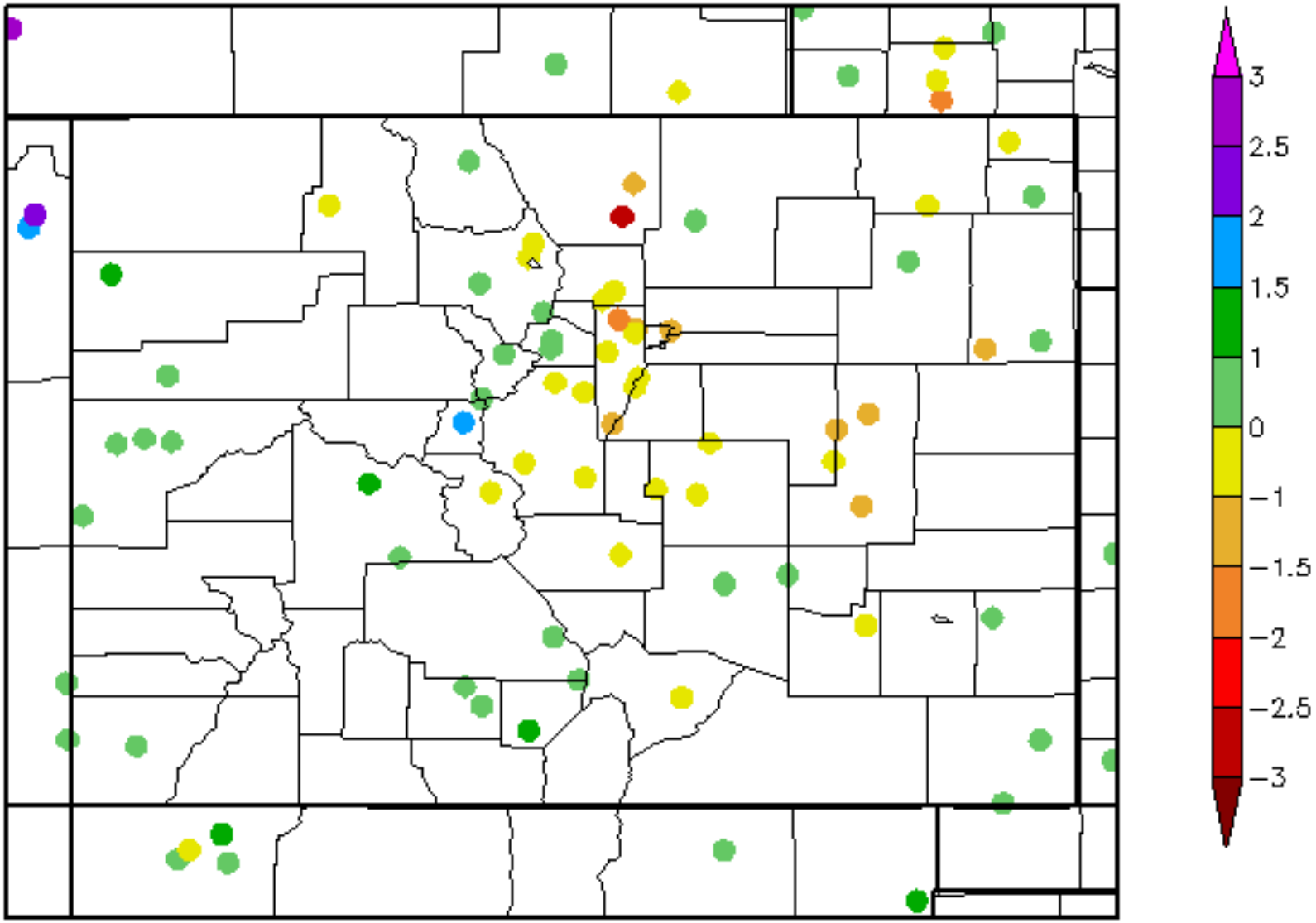
6 Month SPI
8/14/2016 – 2/13/2017



Generated 2/14/2017 at HPRCC using provisional data.

Regional Climate Centers

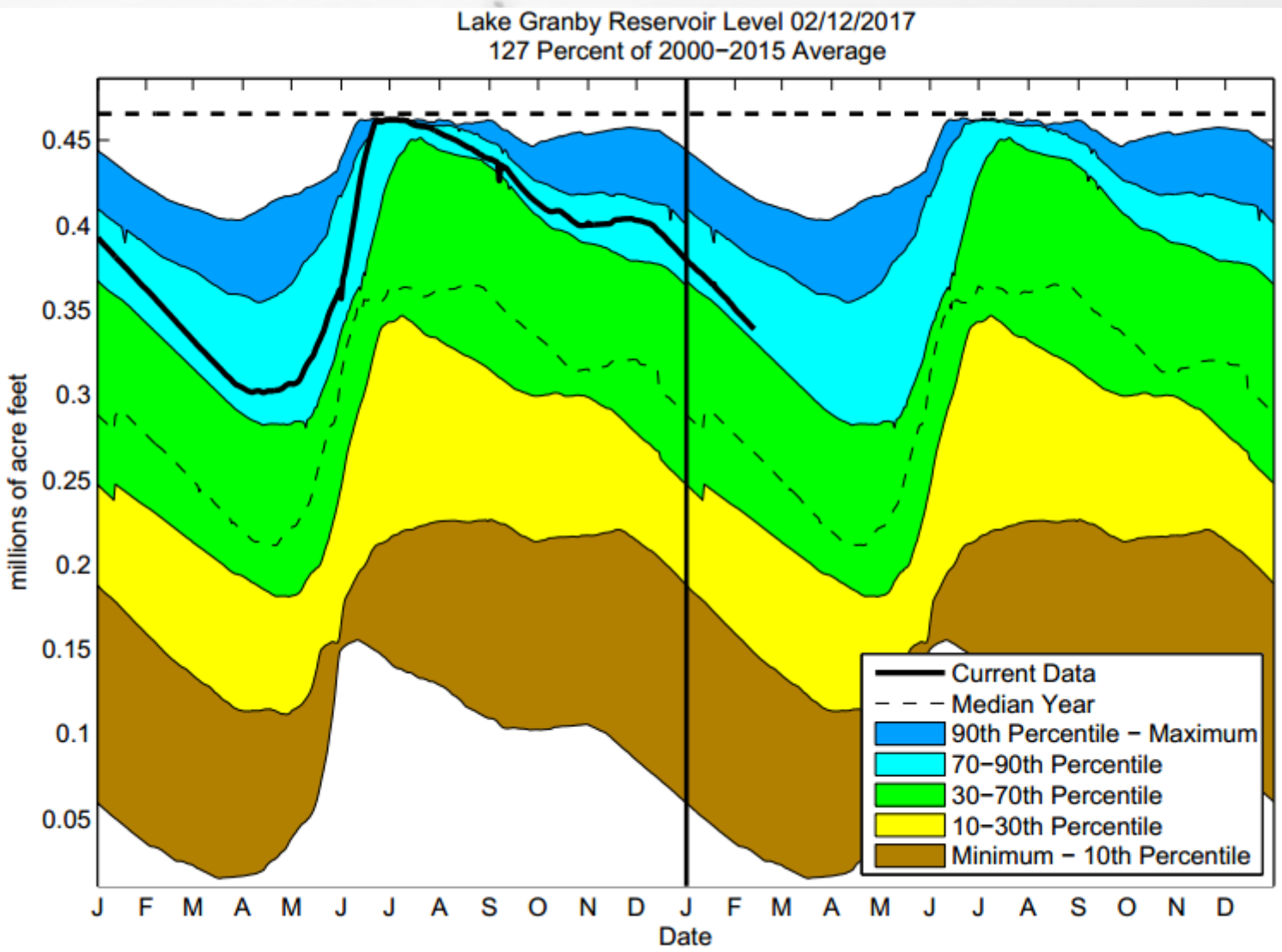
12 Month SPI
2/13/2016 – 2/12/2017

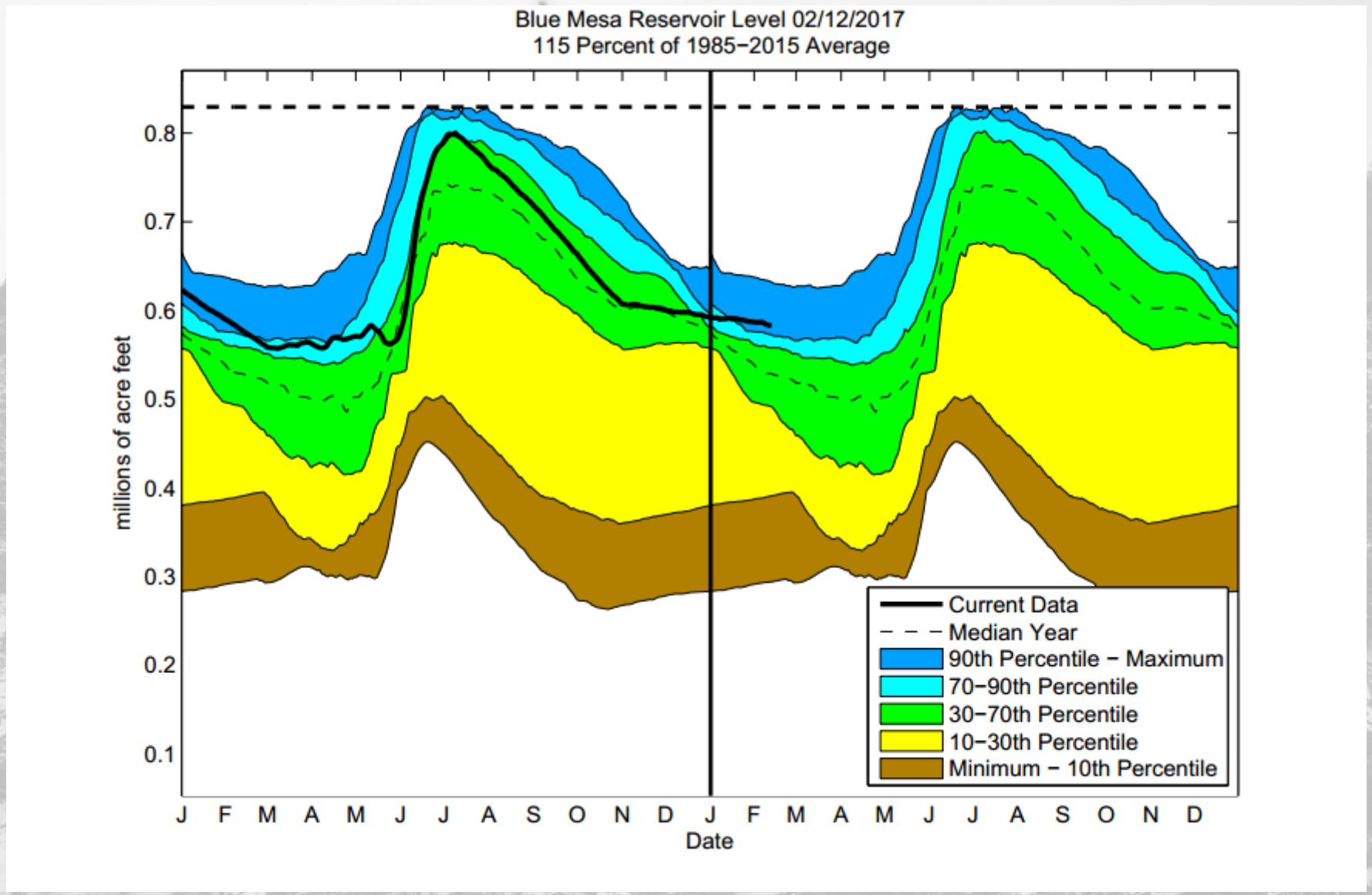


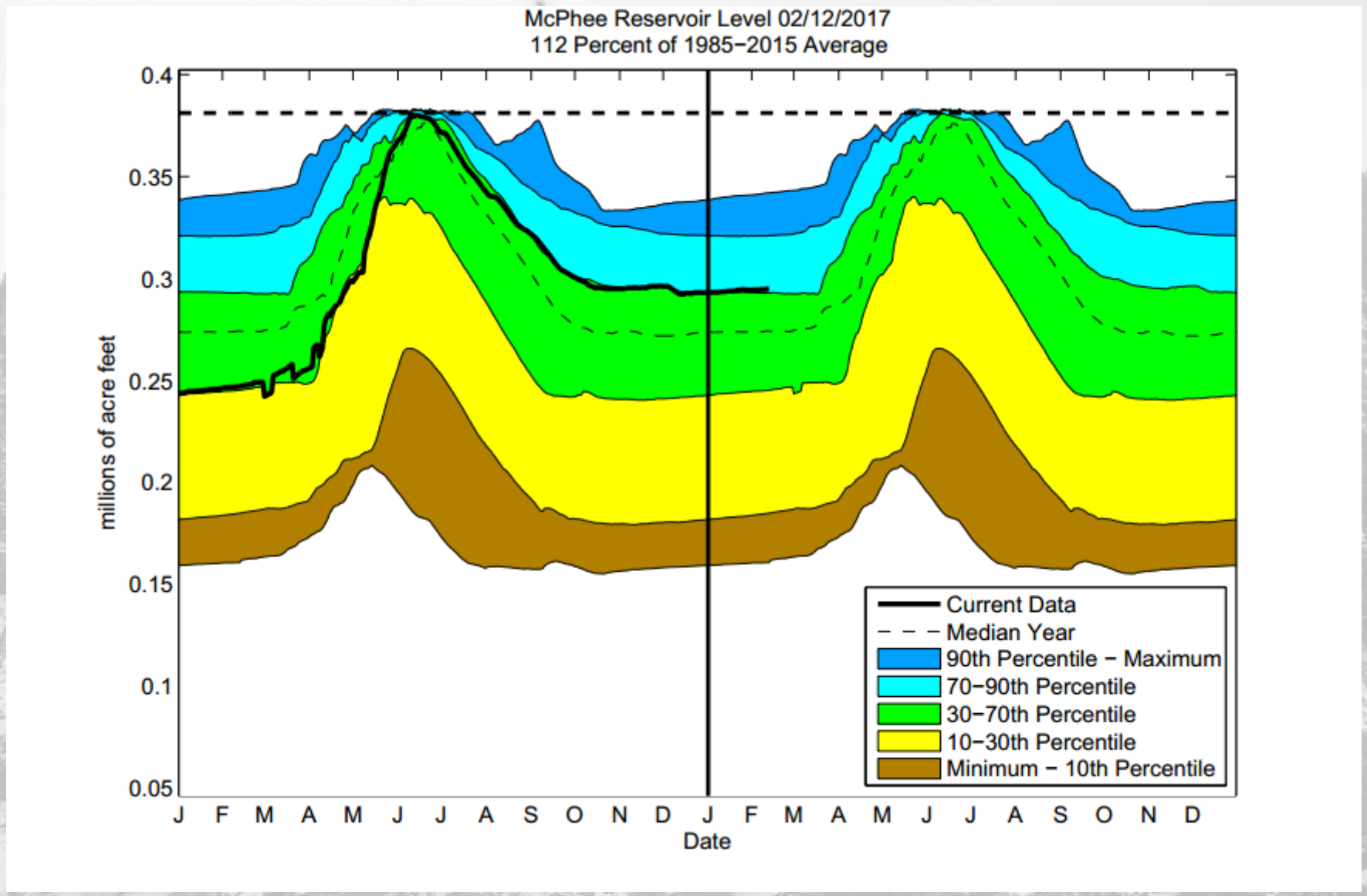
Generated 2/13/2017 at HPRCC using provisional data.

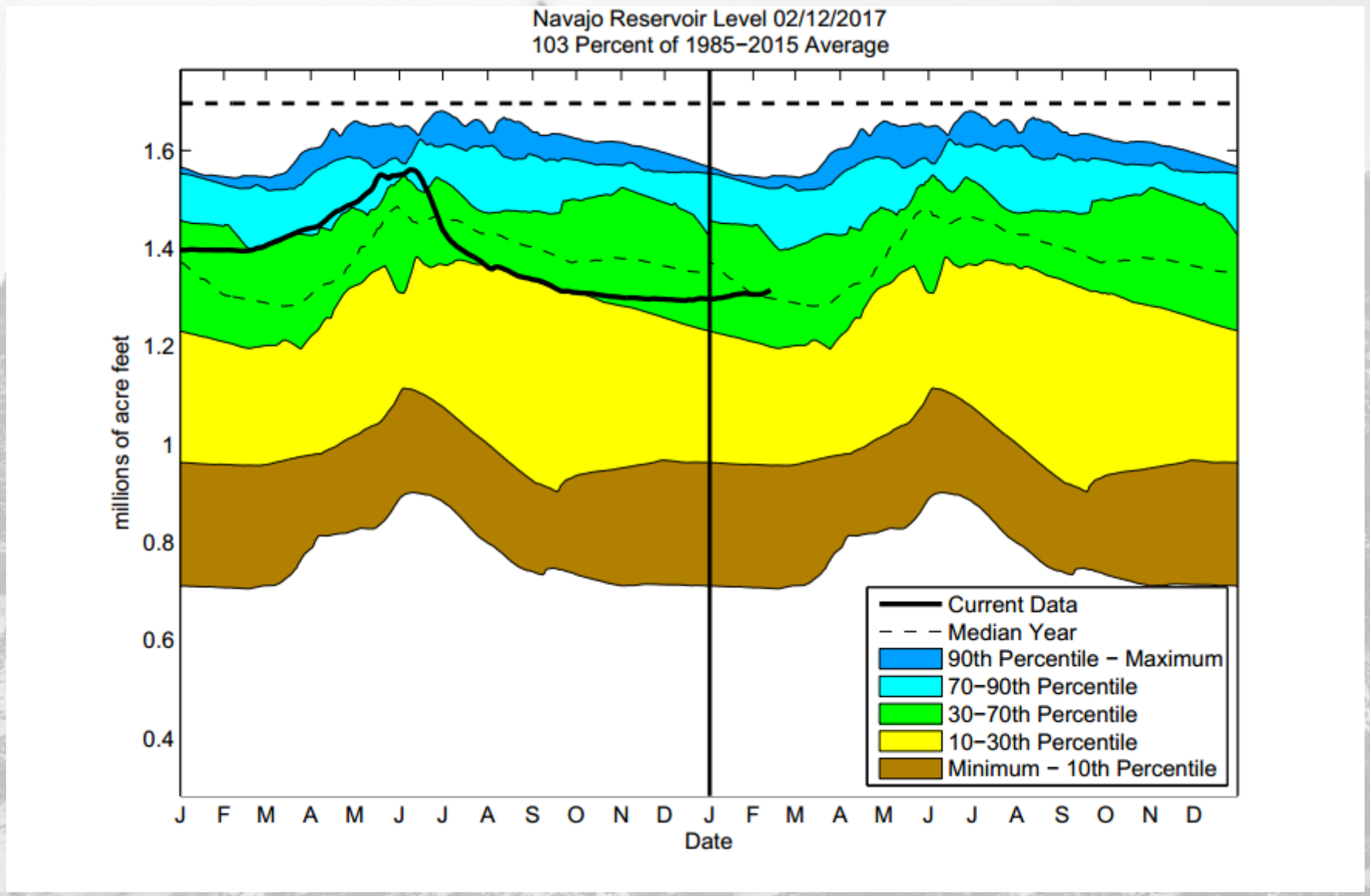
Regional Climate Centers

Reservoir and Soils Update


Lake Granby Reservoir Level 02/12/2017
127 Percent of 2000−2015 Average
millions of acre feet
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
J F M A M J J A S O N D J F M A M J J A S O N D
Date
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile


Blue Mesa Reservoir Level 02/12/2017
115 Percent of 1985−2015 Average
millions of acre feet
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
J F M A M J J A S O N D J F M A M J J A S O N D
Date
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile


McPhee Reservoir Level 02/12/2017
112 Percent of 1985−2015 Average
millions of acre feet
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
J F M A M J J A S O N D J F M A M J J A S O N D
Date
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile


Navajo Reservoir Level 02/12/2017
103 Percent of 1985−2015 Average
millions of acre feet
1.6
1.4
1.2
1
0.8
0.6
0.4
J F M A M J J A S O N D J F M A M J J A S O N D
Date
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile

DENVER WATER

Raw Water Supply Daily Report

Day: Monday
Date: 2/13/17

Reservoir Operations:

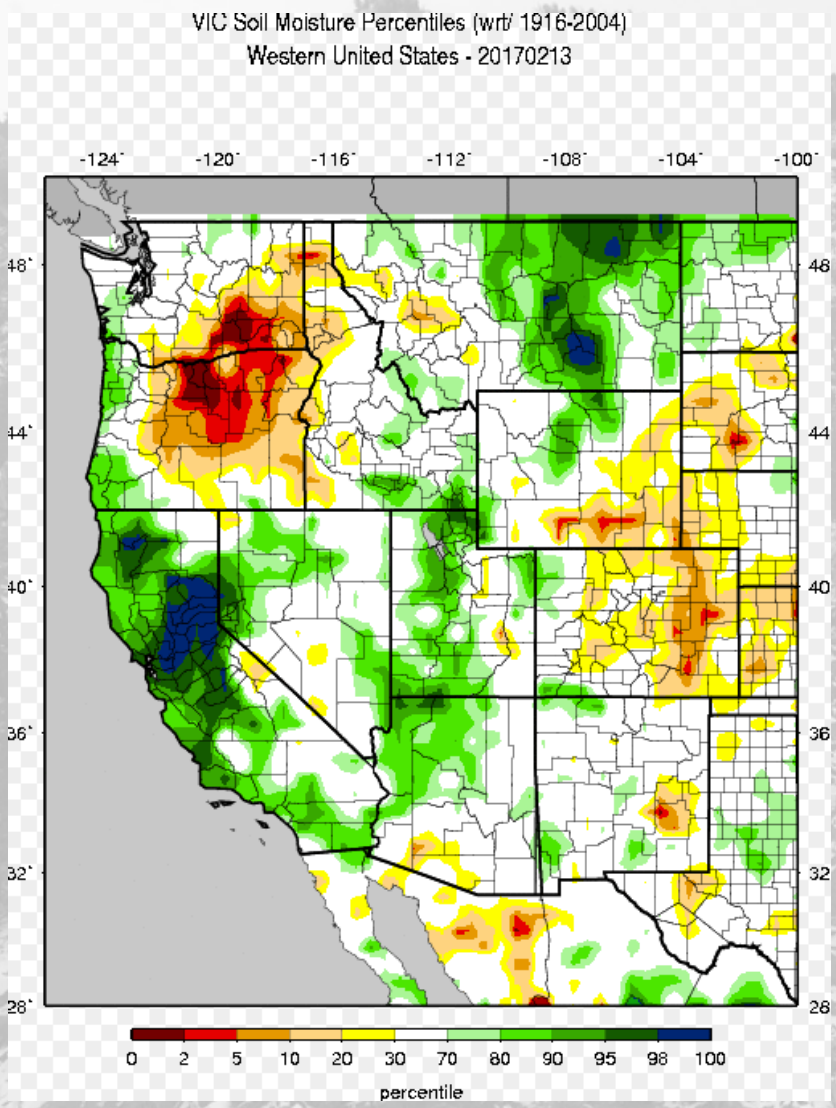
	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (ac-ft)	Change (ac-ft)	Full Elev. (feet)	Capacity (ac-ft)
South Platte System:							
Antero	5	5	8,939.34	14,690	0	8,942	19,881
Eleven Mile	57	74	8,597.53	99,589	-34	8,597	97,779
Cheesman	110	61	6,832.72	71,282	98	6,842	79,064
Strontia Springs	222	193	5,997.40	7,403	-4	6,002	7,863
Chatfield	75	93	5,431.26	26,048	-14	5,432	27,076
Marston	122	108	5,527.24	12,398	41	5,538	19,256
Soda Lakes	---	---	---	1,023	0		1,680
Platte Canyon	0	---	5,528.90	682	0	5,533	910
South Complex	1	1	---	2,857	-5		3,561
Harriman	---	---	5,621.66	689	-1	5,623	762
Moffat System:							
Gross	18	86	7,224.66	22,330	-136	7,282	41,811
Ralston	2	2	6,026.69	7,788	0	6,046	10,776
Upper Long Lake	0	0	6,075.30	849	0	6,088	1,519
Lower Long Lake	0	0	5,896.00	19	0	5,908	268
Western Slope:							
Dillon	78	98	9,006.42	225,086	-201	9,017	257,304
Williams Fork	75	75	7,795.29	73,957	0	7,811	96,822
Meadow Creek	1	1	9,942.57	18	0	9,995	5,370
Total System:				**566,708**	**-256**		**671,702**
Non-system							
Wolford Mountain	17	32	7,478.16	50,760	-30	7,489	65,985
Green Mountain	177	212	7,896.88	67,064	-70	7,950	153,639
Spinney Mountain	15	75	---	33,078	N/A		53,651

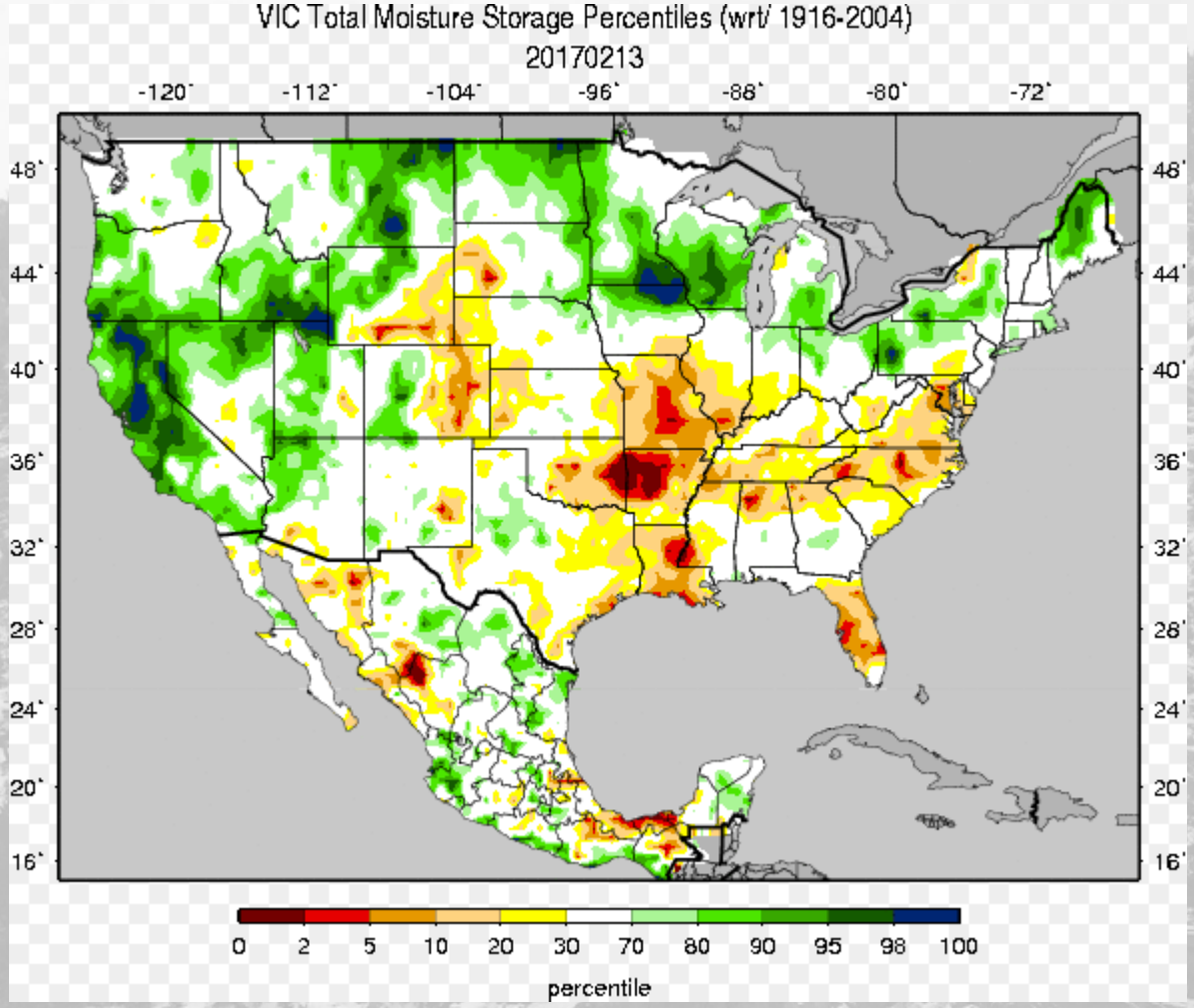
Raw Water Distribution:

(all flows in cubic feet per second, cfs)

South Platte System:	
Roberts Tunnel	81
Conduit 26 to Foothills TP	0
Conduit 20 to Marston Lake	122
From Diversion Dam	107
From Last Chance Pump	15
From Chatfield Pumps	0
Conduit 15 to Marston Lake	N/A
High Line Canal Total Flow	0
City Ditch at Washington Park	0
Harriman Ditch Total Flow	13
Metro Sewer Effluent Exchange	0
Bi-City Effluent Exchange	0
South Complex Exchange	N/A
Recycling Plant	0
Moffat System:	
Moffat Tunnel	7
Jones Pass Tunnel	0
South Boulder Canal	74
Long Lake Feeder Ditch	0
Ralston to Moffat TP	63
Ralston/Clear Creek Canal	0

Soil Moisture Update




VIC Total Moisture Storage Percentiles (wrt/ 1916-2004)
20170213
-120`
-112`
-104`
-96`
-88`
-80`
-72`
48`
44`
40`
36`
32`
28`
24`
20`
16`
0
2
5
10
20
30
70
80
90
95
98
100
percentile

Colorado Climate Center

Data and Power Point Presentations available for downloading

http://ccc.atmos.colostate.edu/droughtpresentations.php

COLORADO CLIMATE CENTER

Colorado State University

Knowledge to Go Places