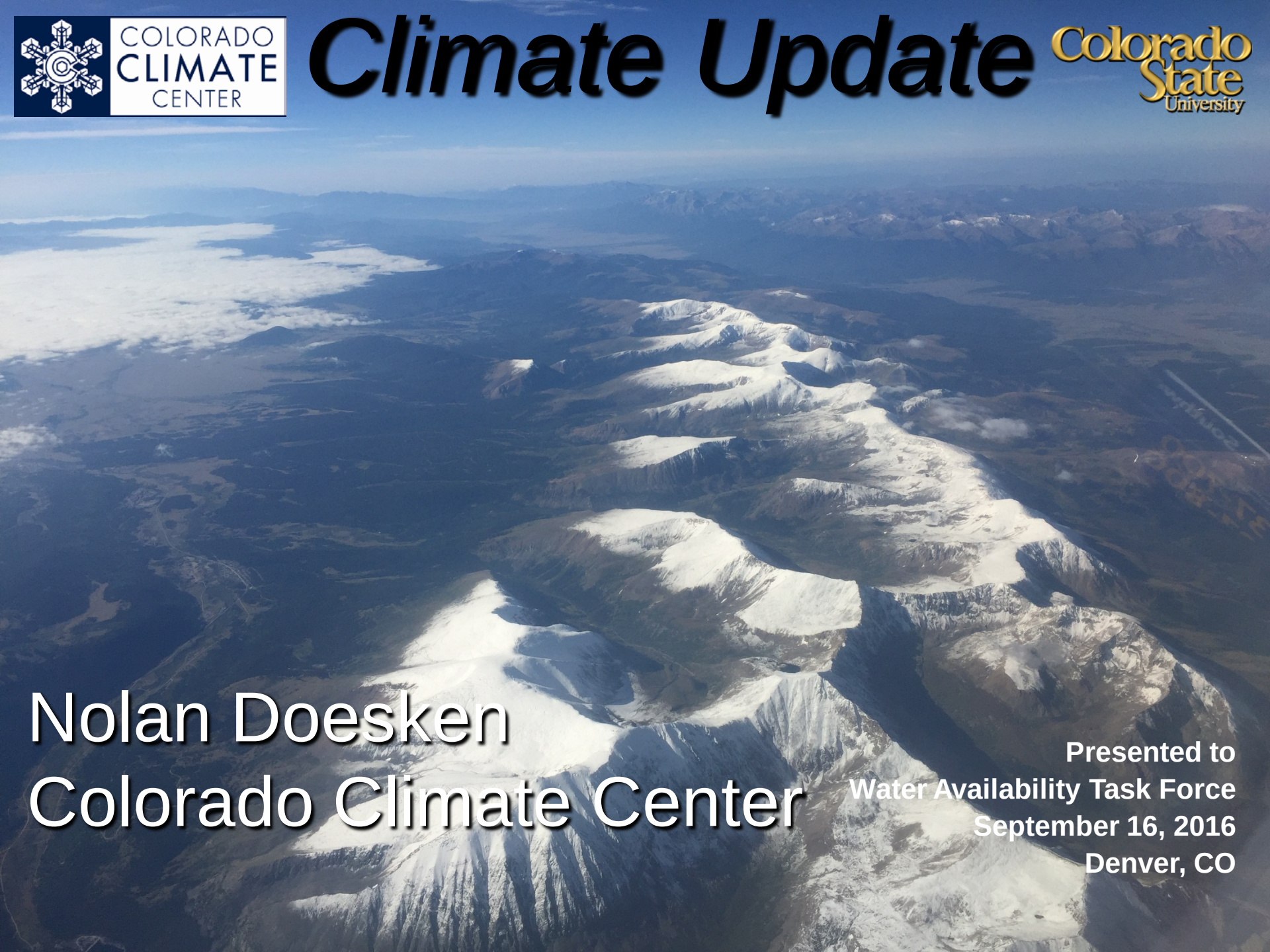
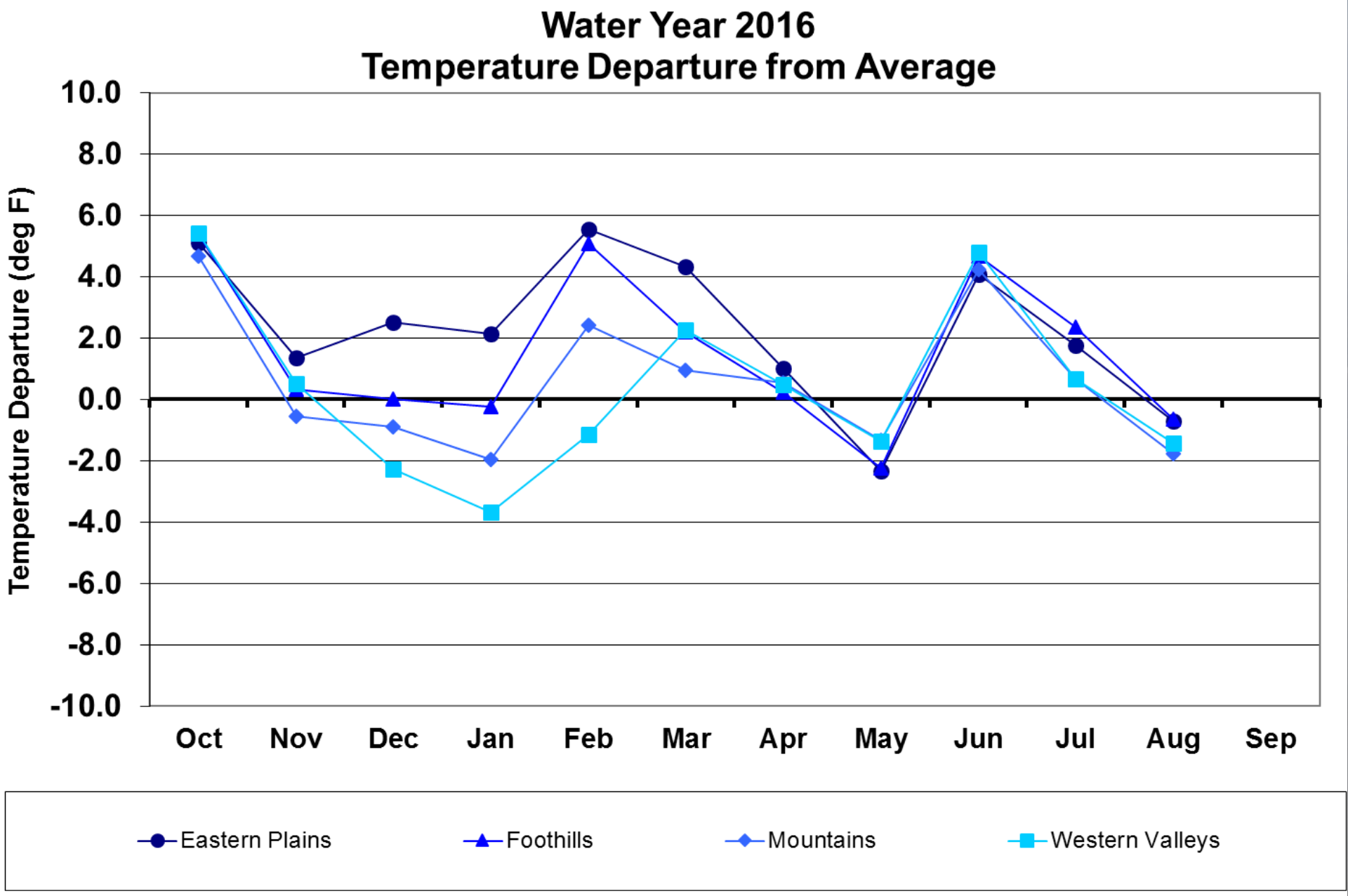


Climate Update

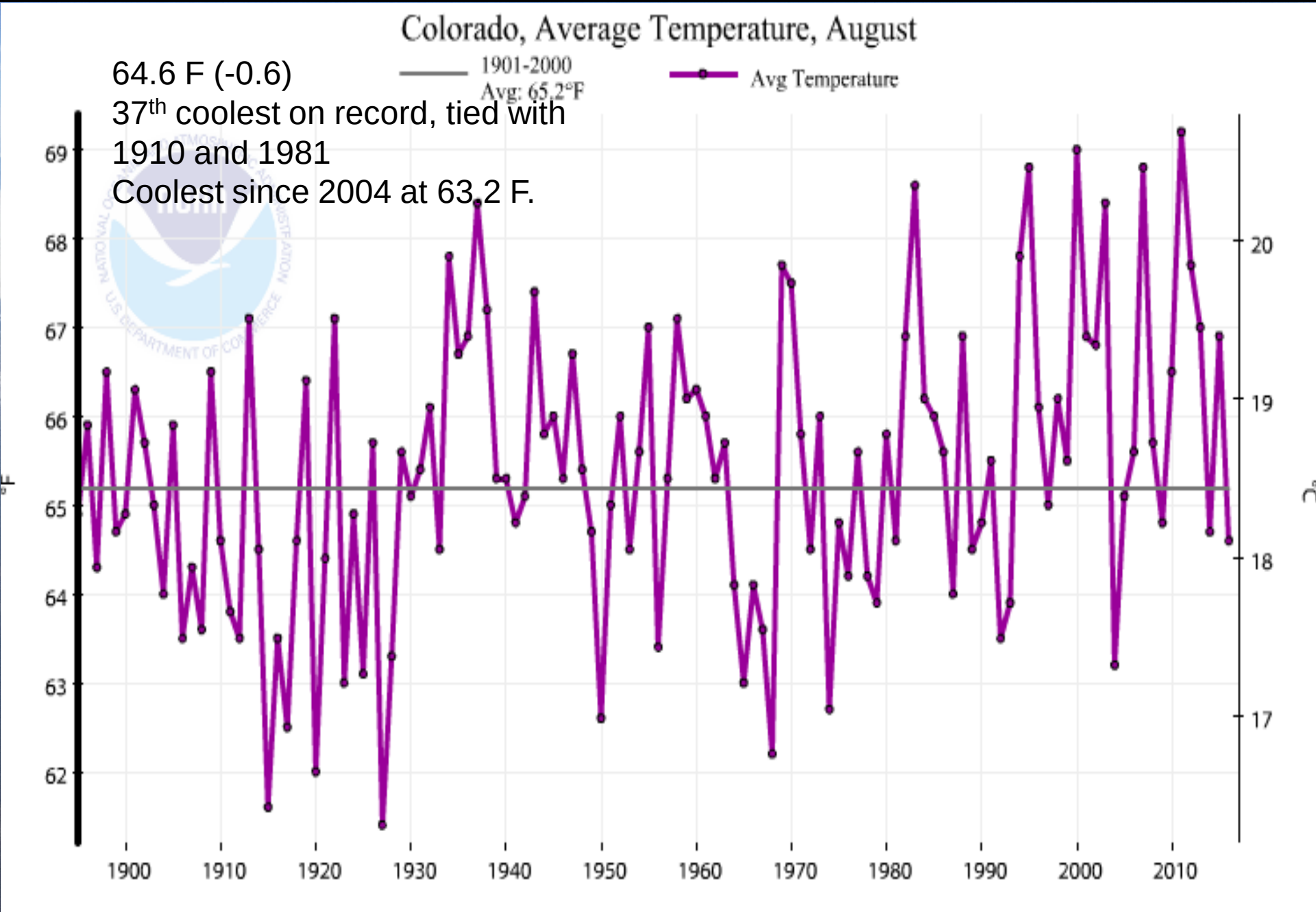
Nolan Doesken
Colorado Climate Center

Presented to
Water Availability Task Force
September 16, 2016
Denver, CO

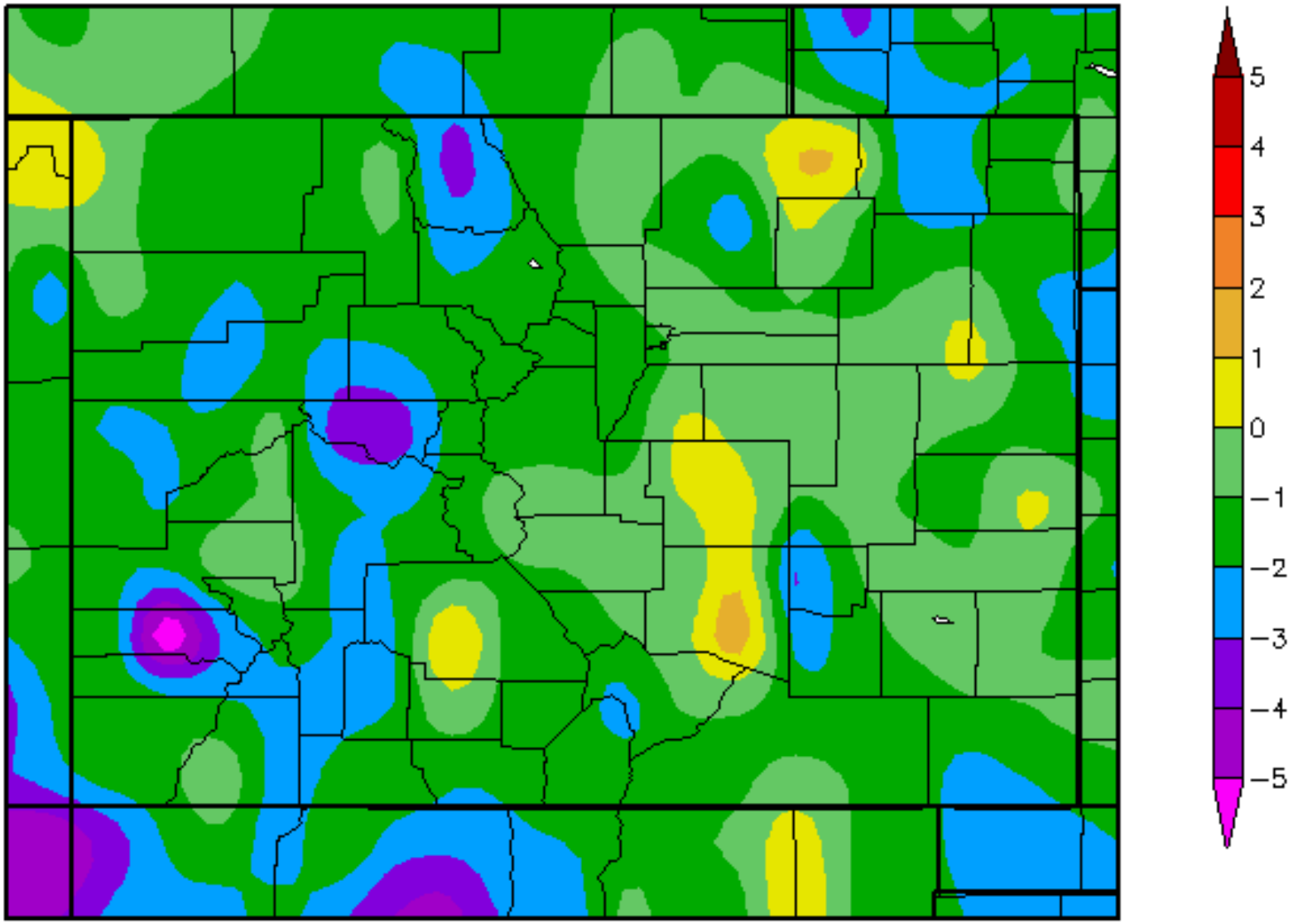
Water Year 2016 Temperature Departures



Aug 2016 Average Temperature History for Colorado (NCEI)



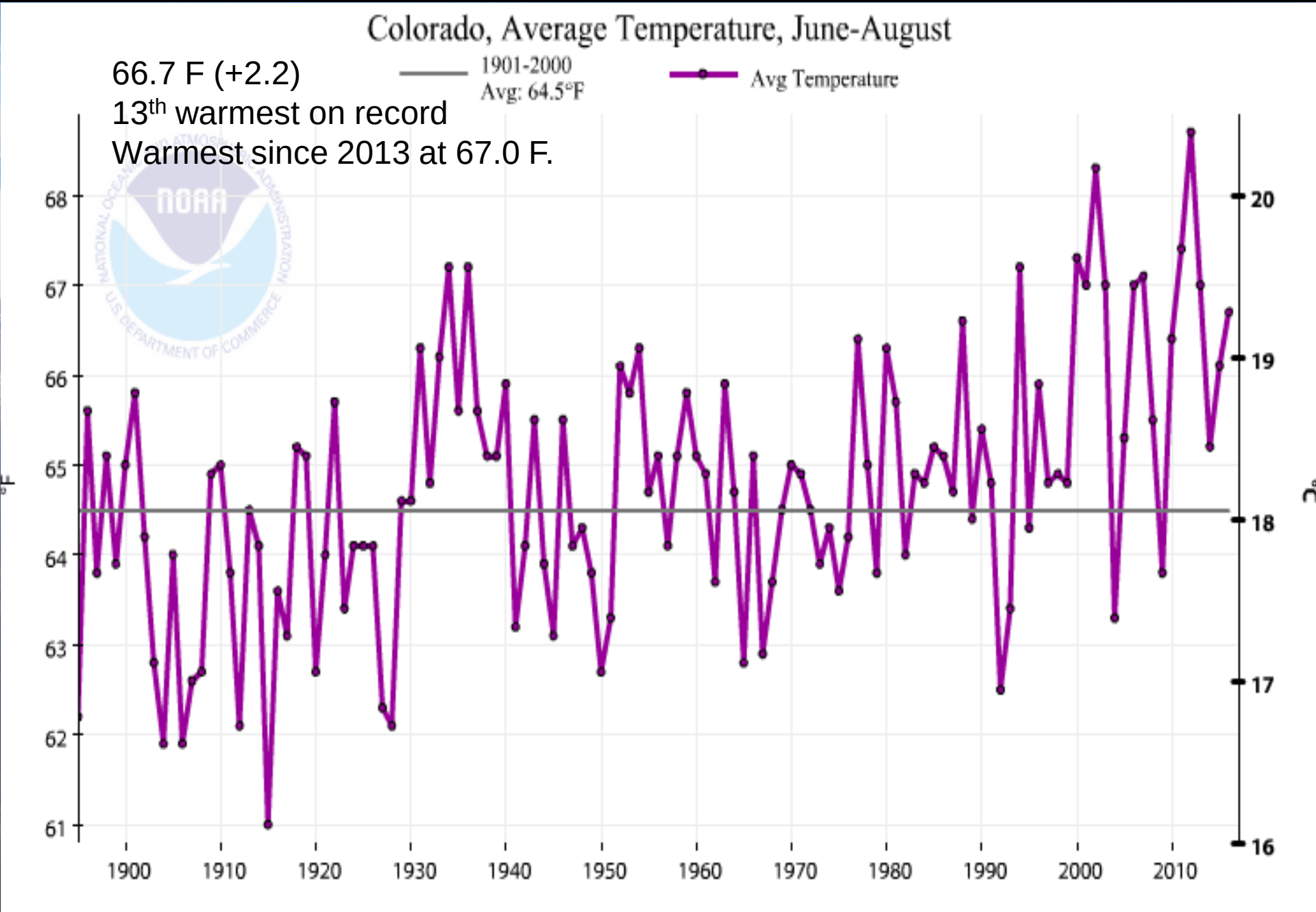
Departure from Normal Temperature (F)
8/1/2016 – 8/31/2016



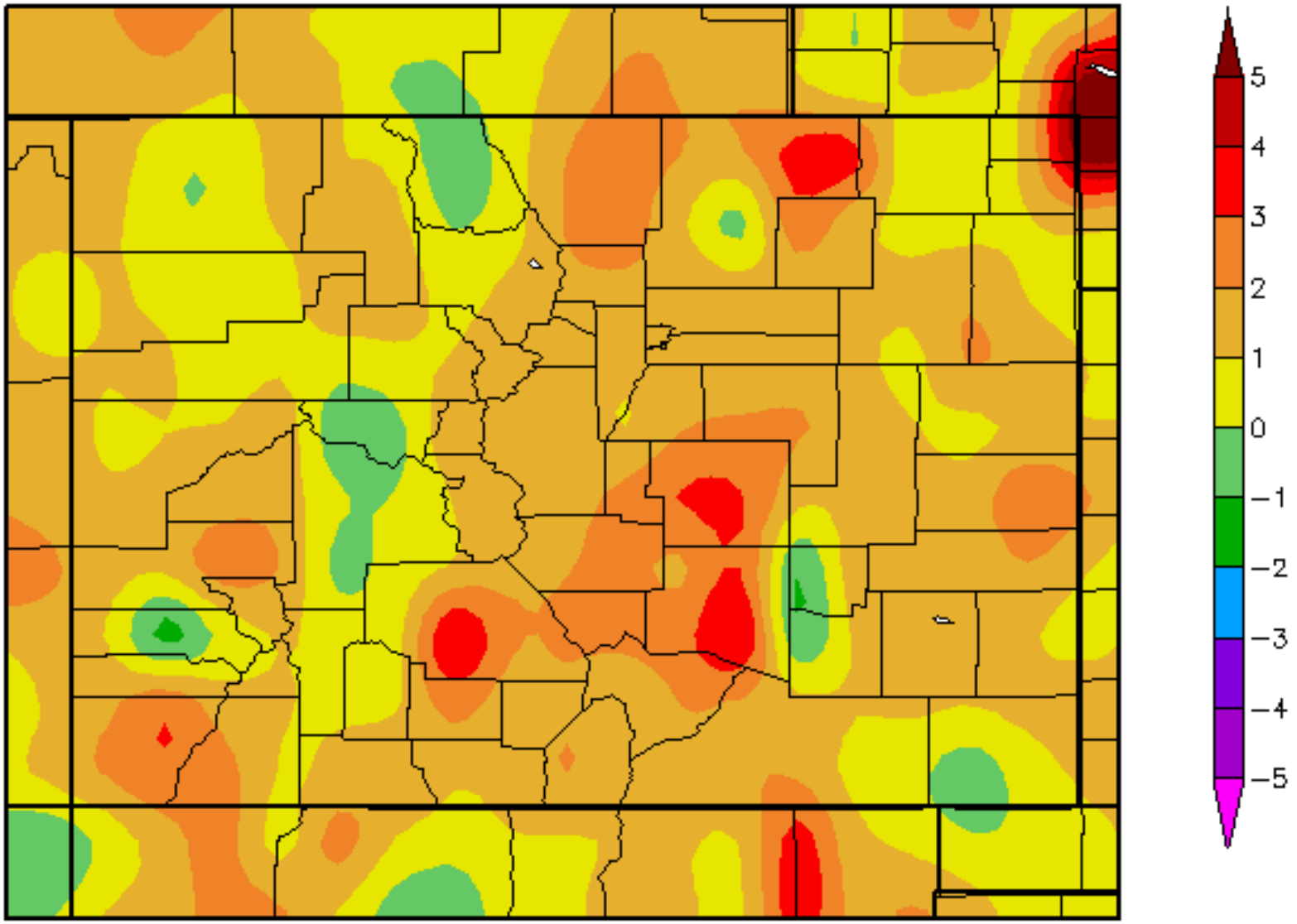
Generated 9/11/2016 at HPRCC using provisional data.

Regional Climate Centers

Summer 2016 Average Temperature History for Colorado (NCEI)



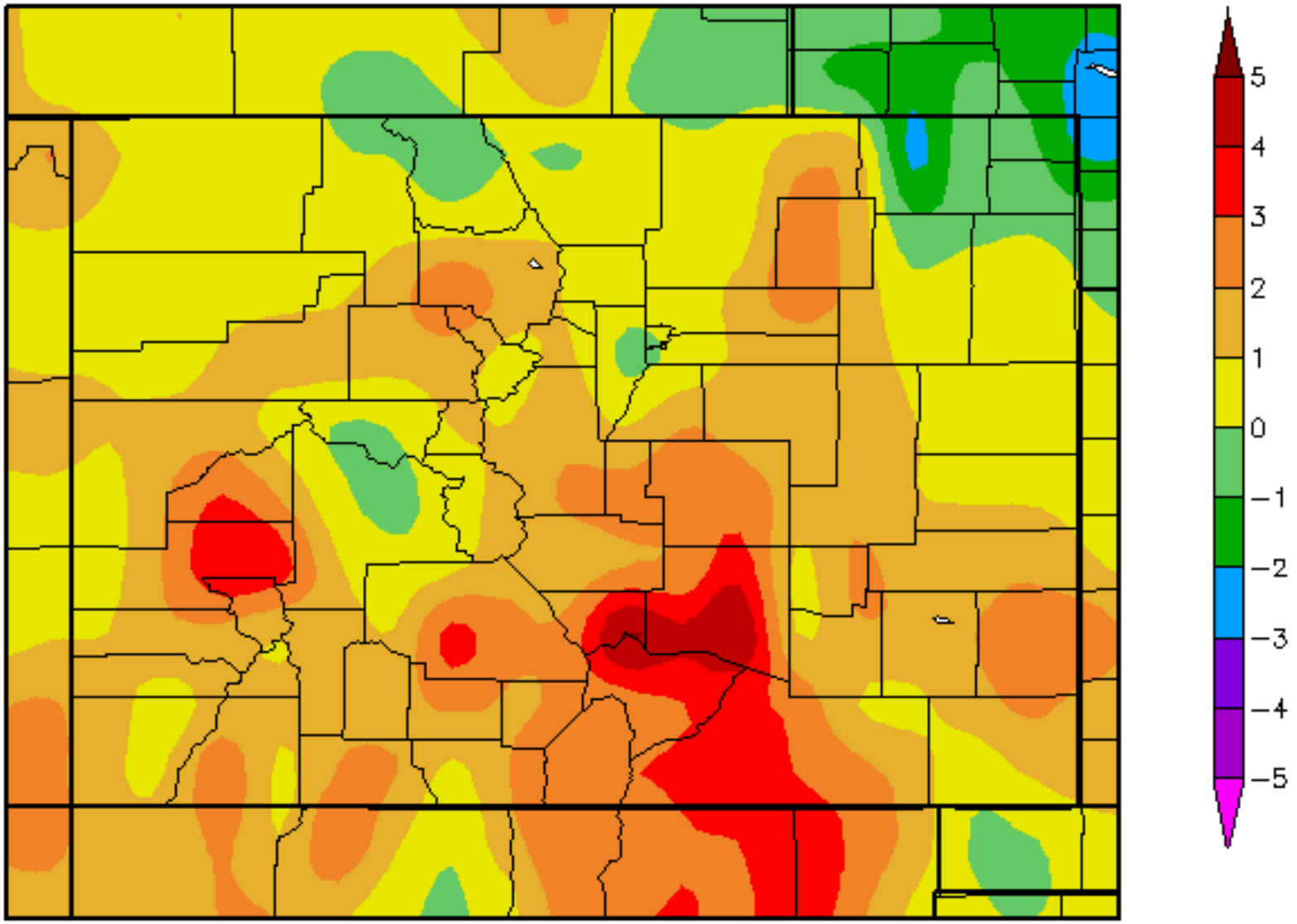
Departure from Normal Temperature (F)
6/1/2016 – 8/31/2016



Generated 9/11/2016 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature (F)
9/1/2016 – 9/14/2016



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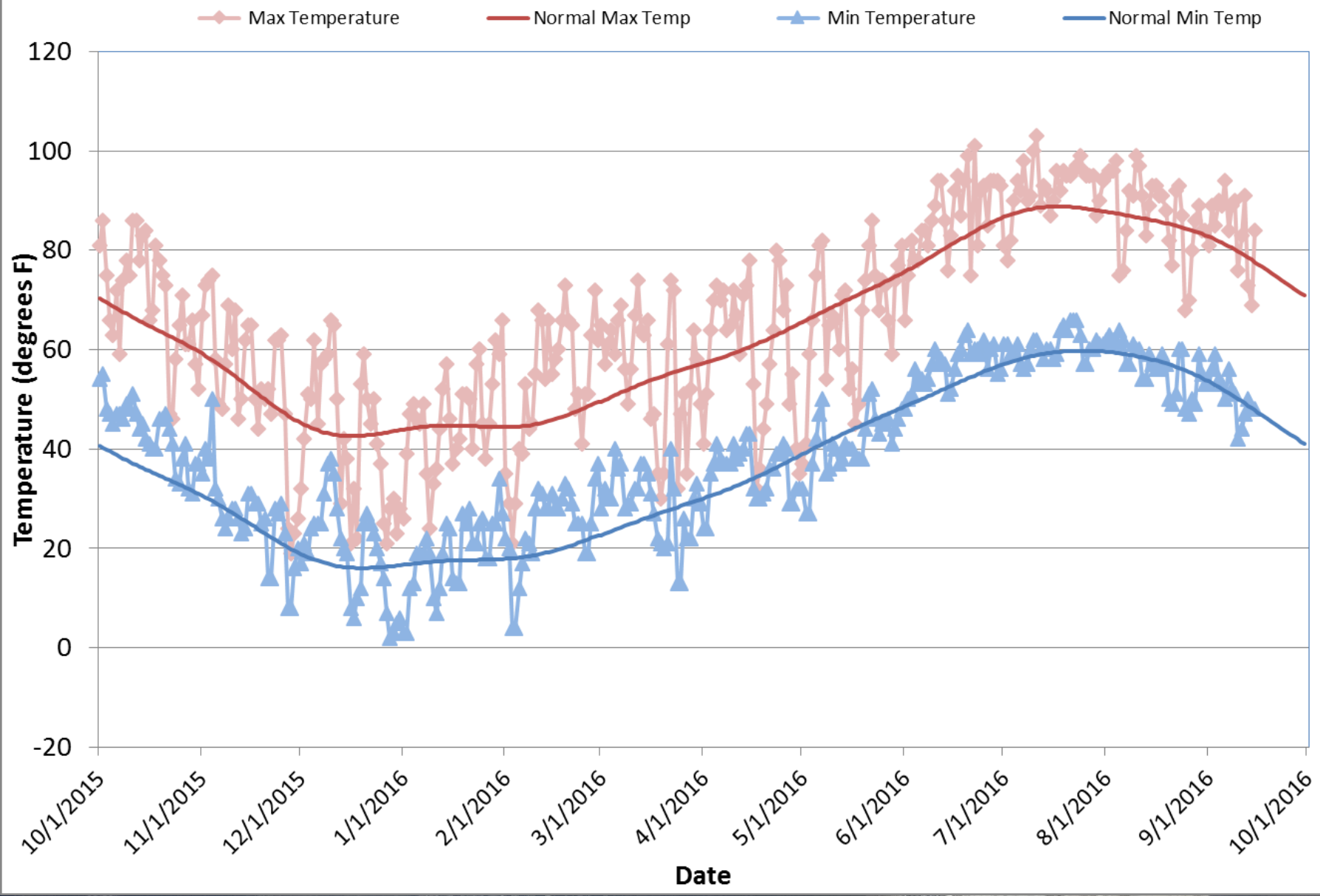
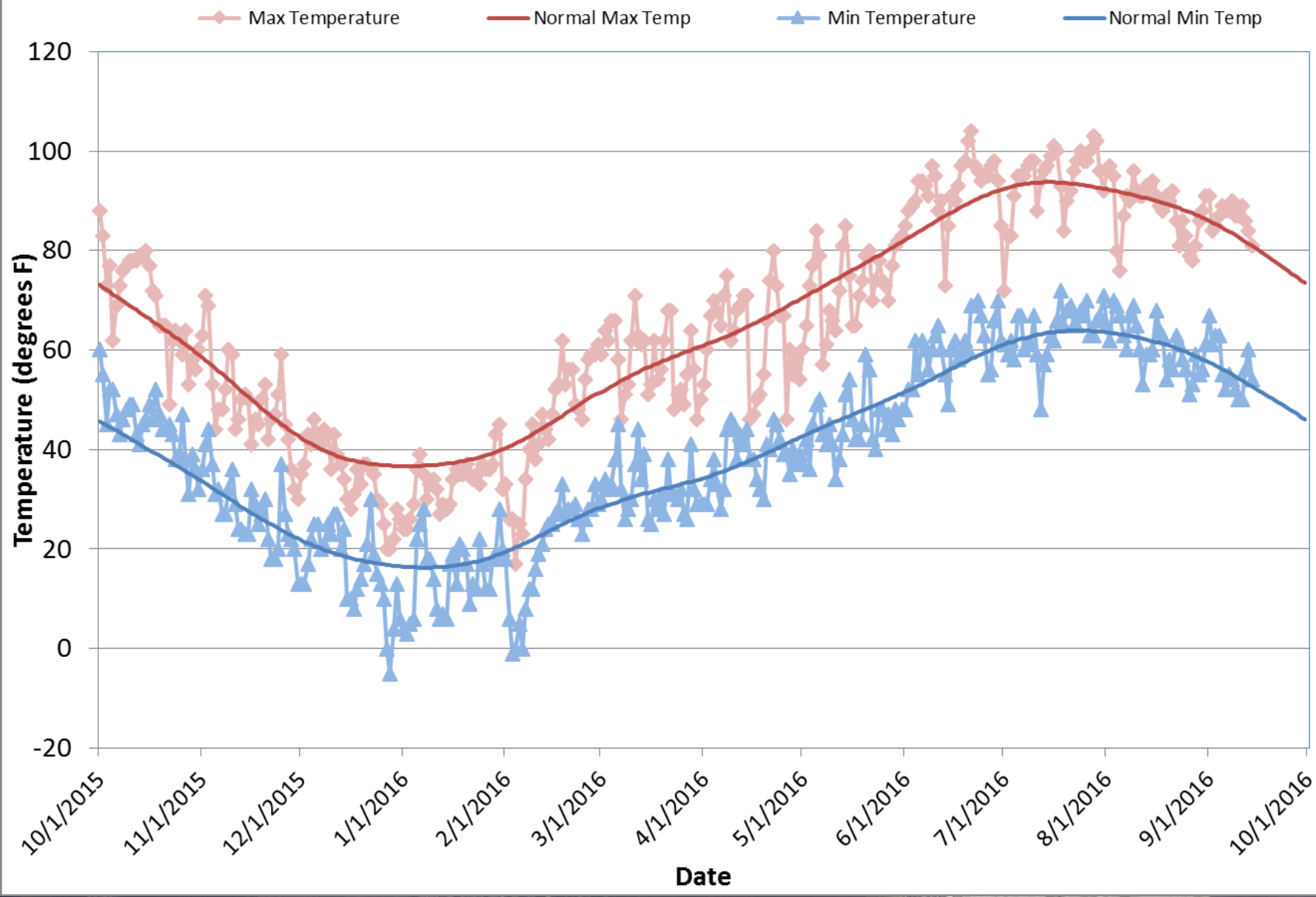
Regional Climate Centers

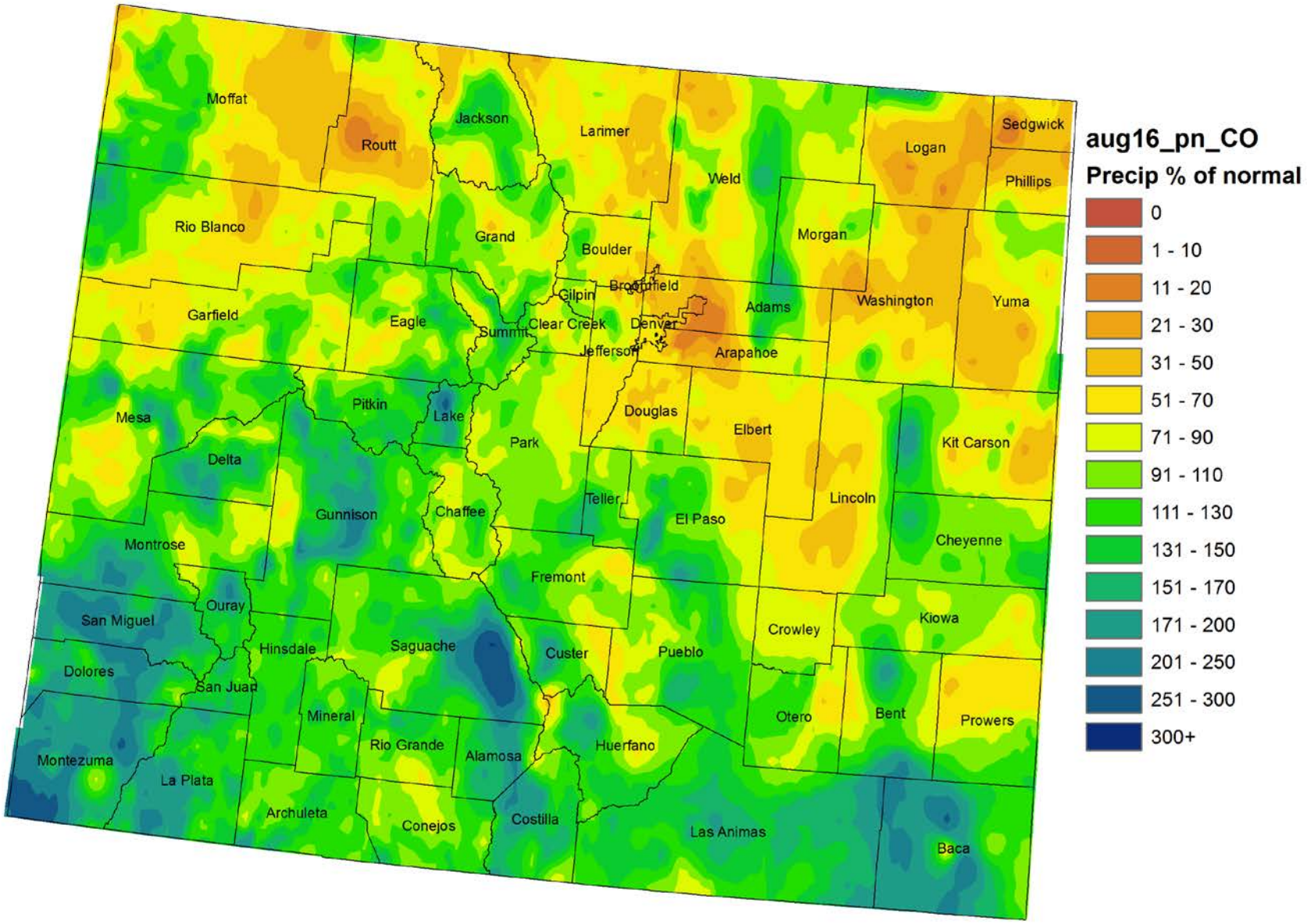
Denver-Stapleton Daily Max/Min Temperatures with Normals, Water Year 2016



Grand Junction Daily Max/Min Temperature with Normals, WY 2016

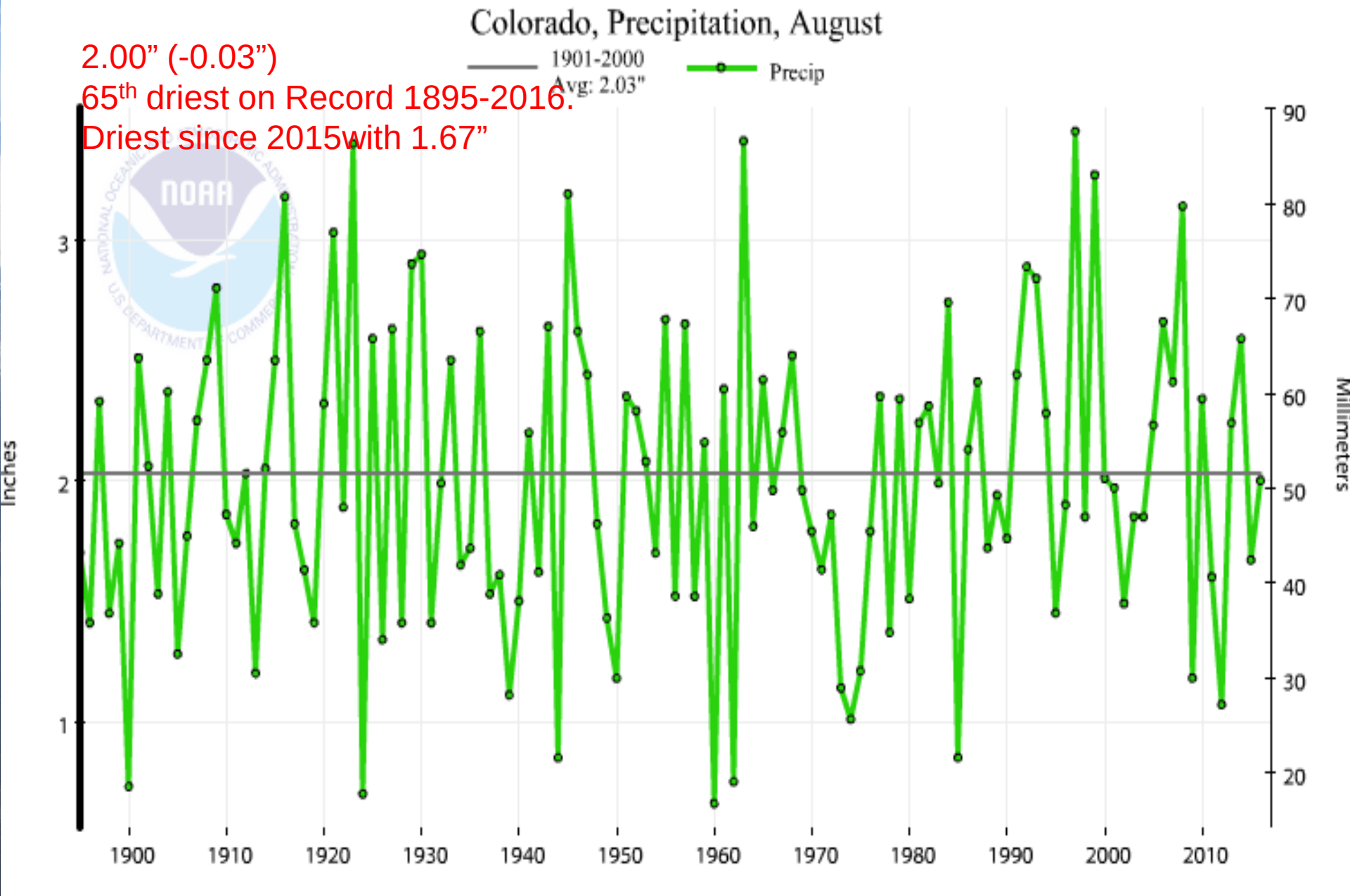


Colorado August 2016 Precipitation as a Percentage of Normal

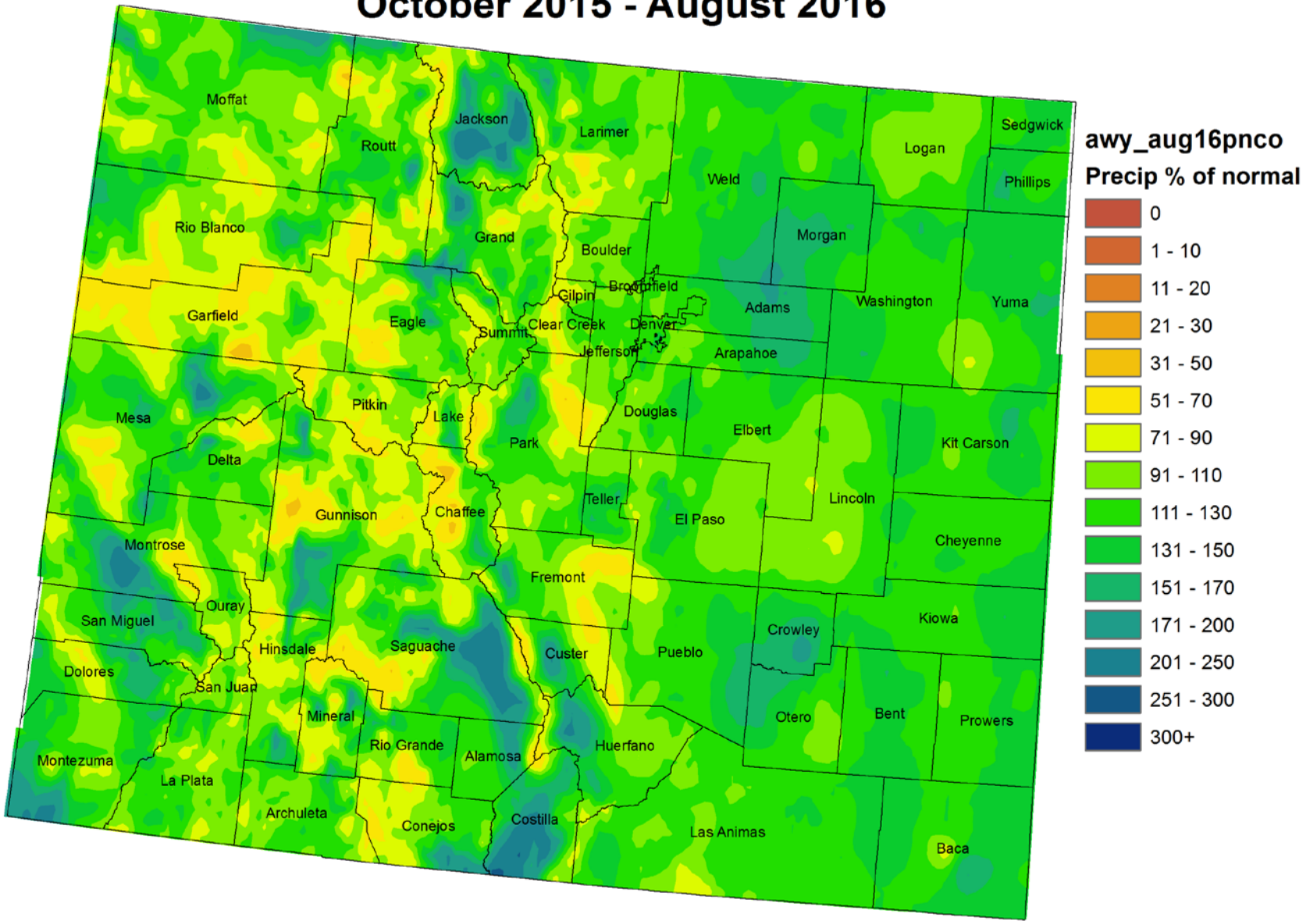


Aug 2016 Statewide Precipitation

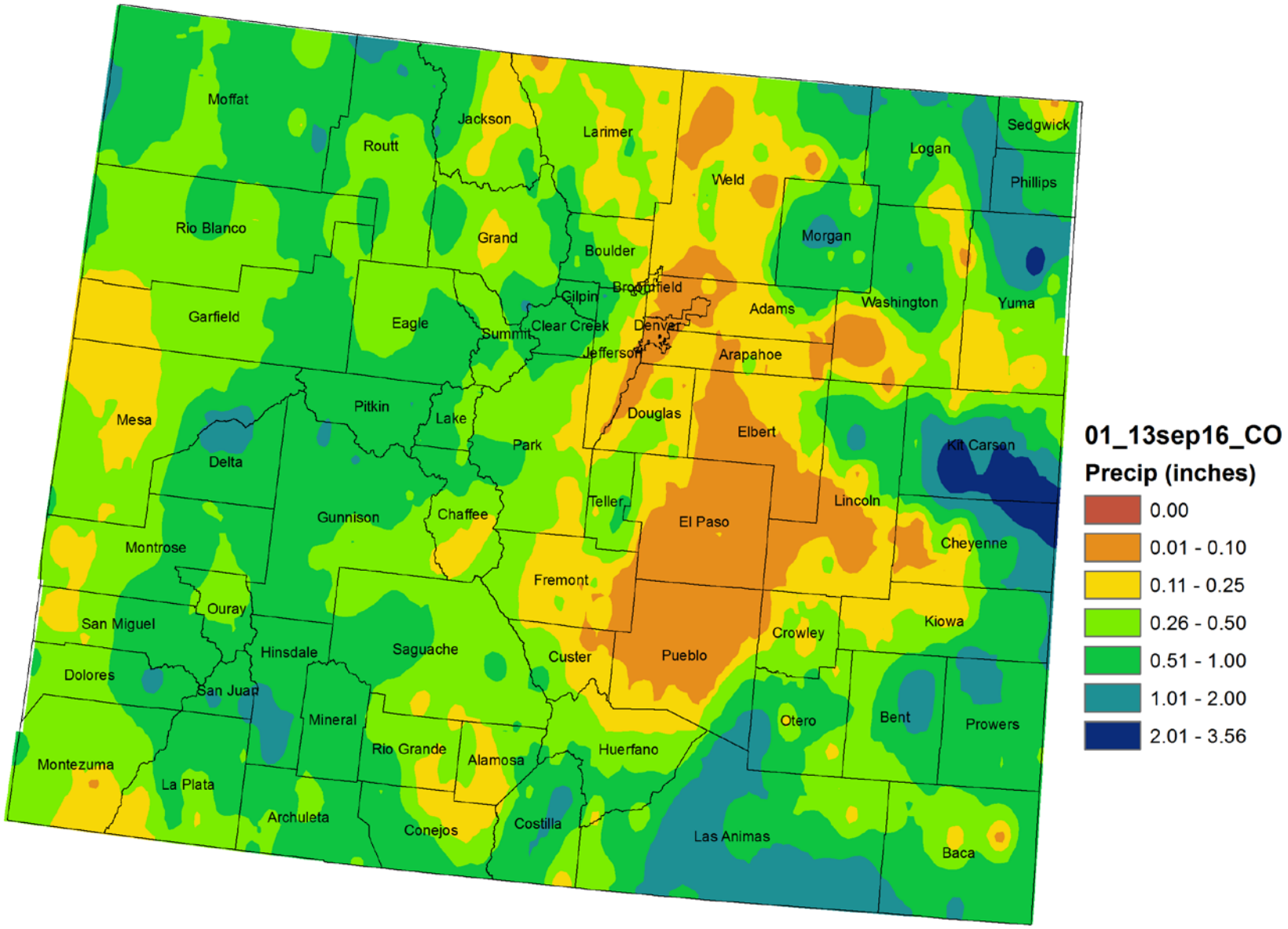
2.00” (-0.03”)
65th driest on Record 1895-2016.
Driest since 2015with 1.67”



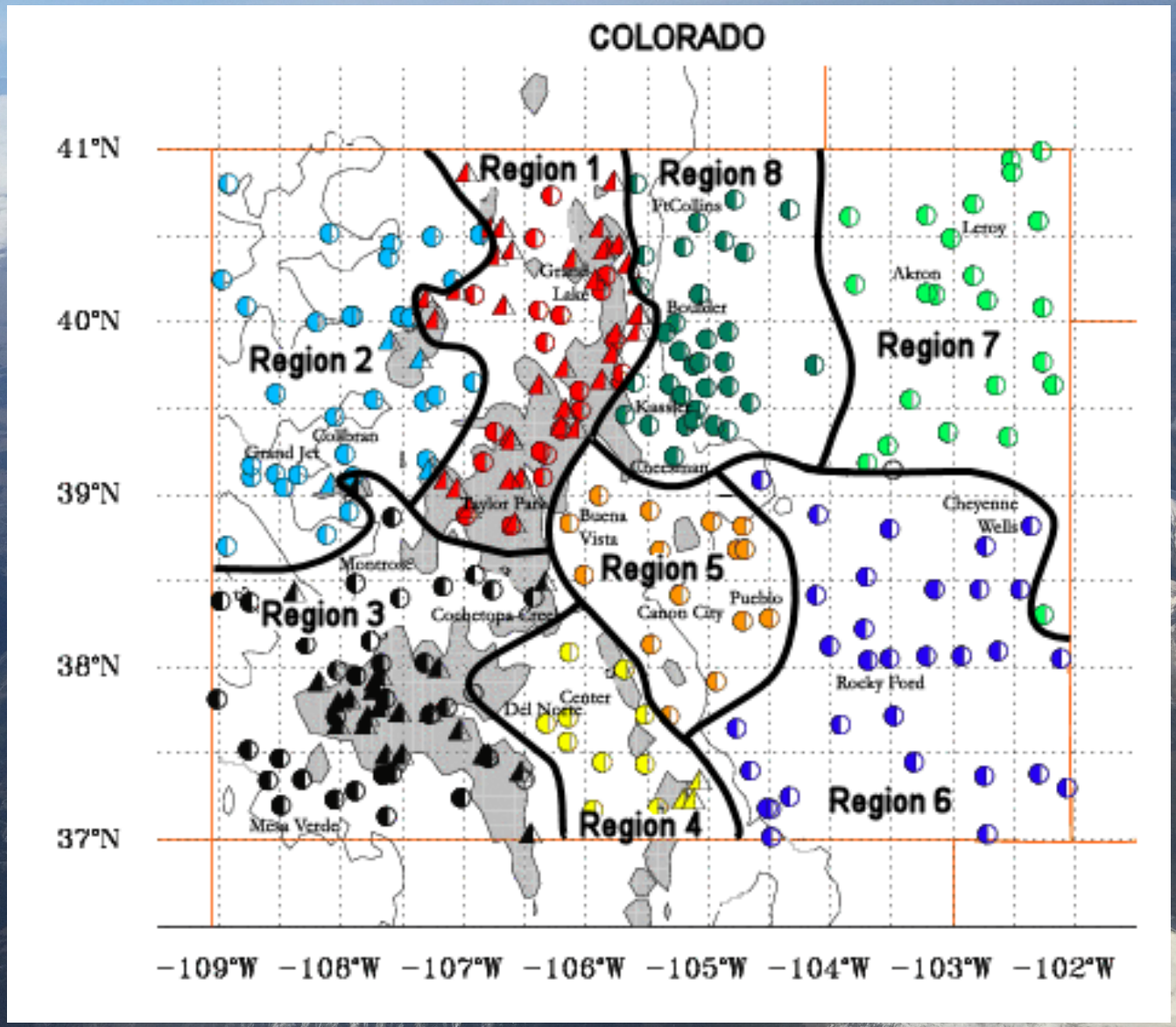
Colorado Water Year 2016 Precipitation as a Percentage of Normal October 2015 - August 2016



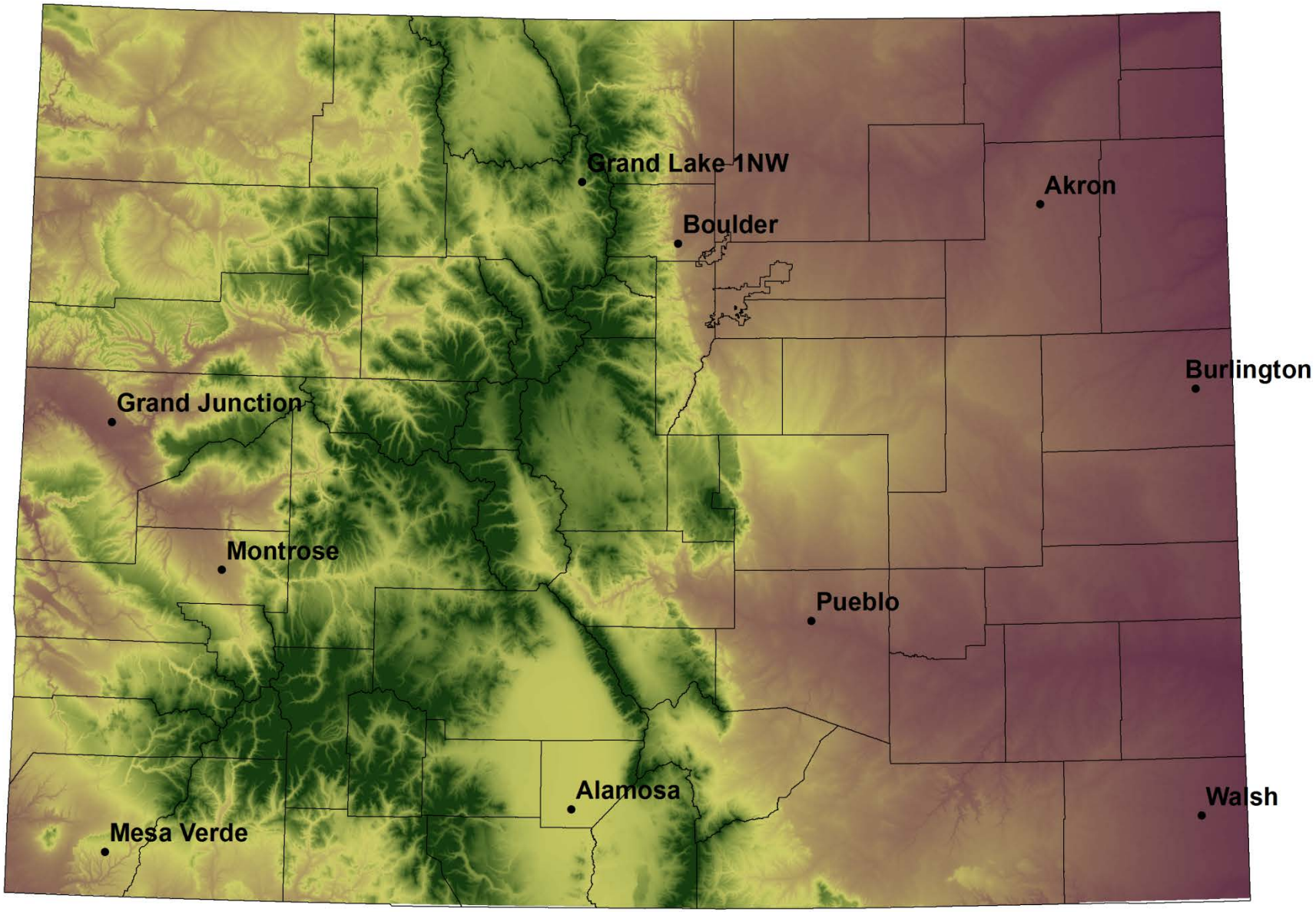
Colorado Month to Date Precipitation
1 - 13 September 2016



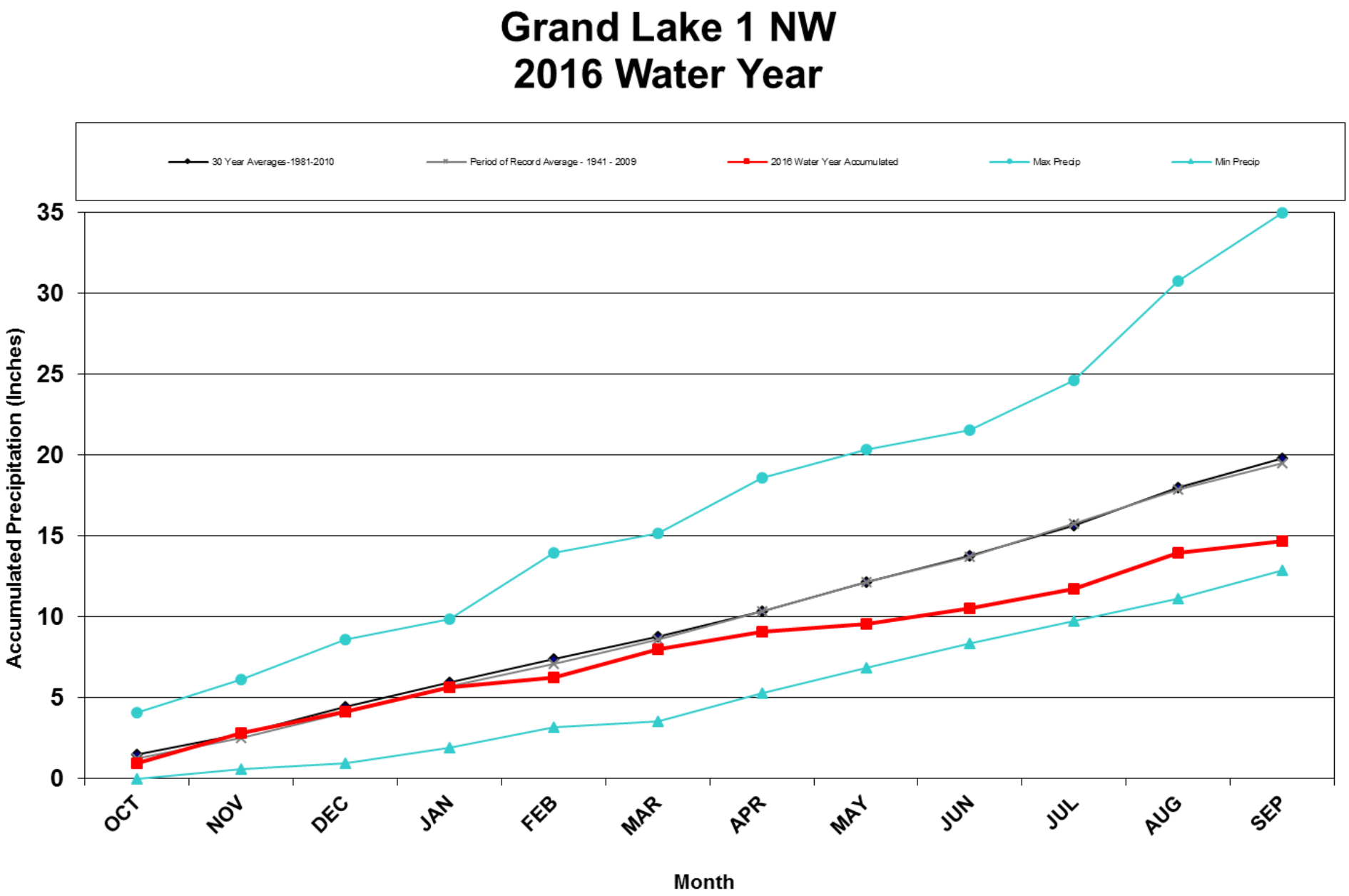
Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



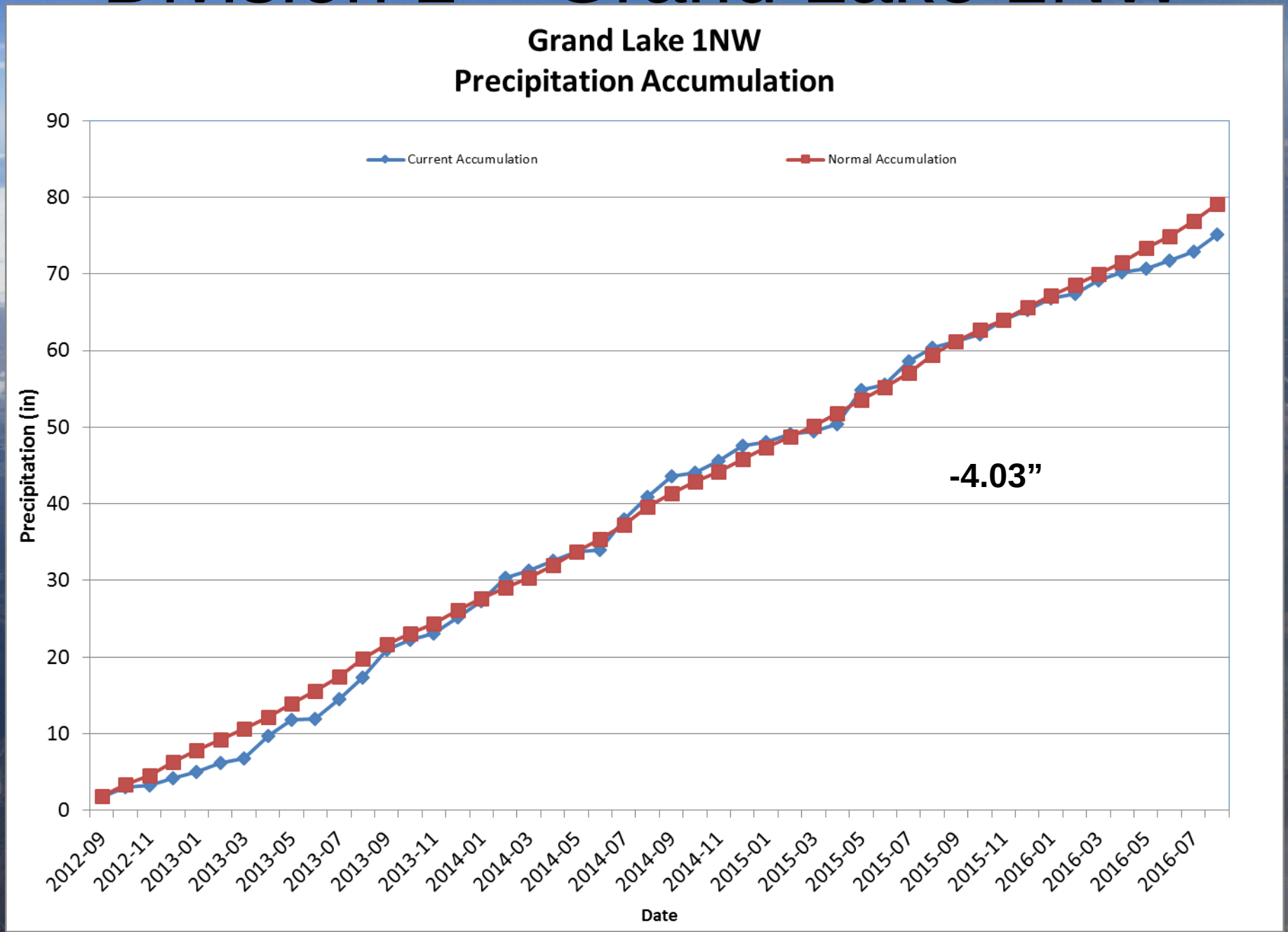
NWS Cooperative Stations for WATF



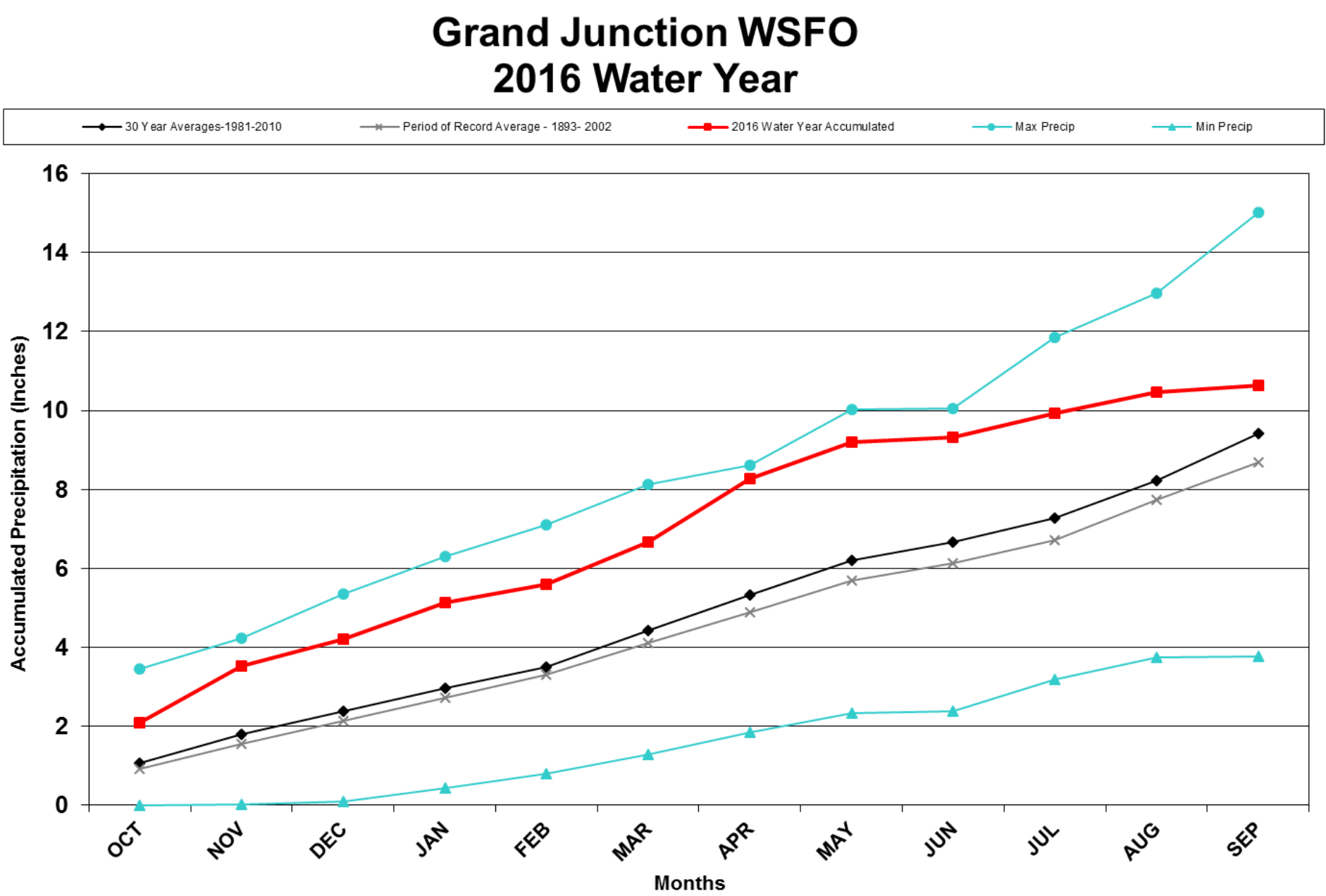
Division 1 – Grand Lake 1NW



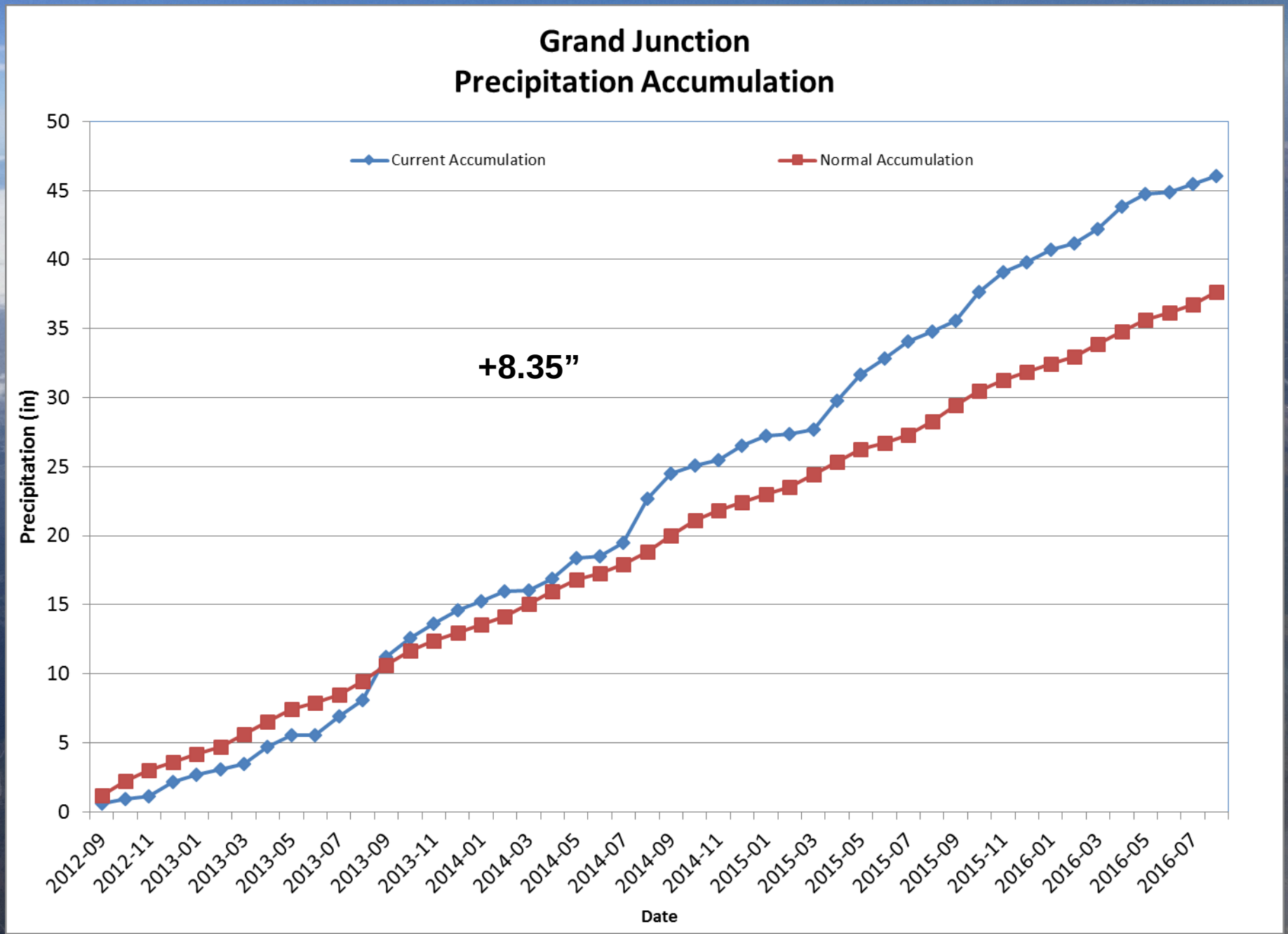
Division 1 – Grand Lake 1NW



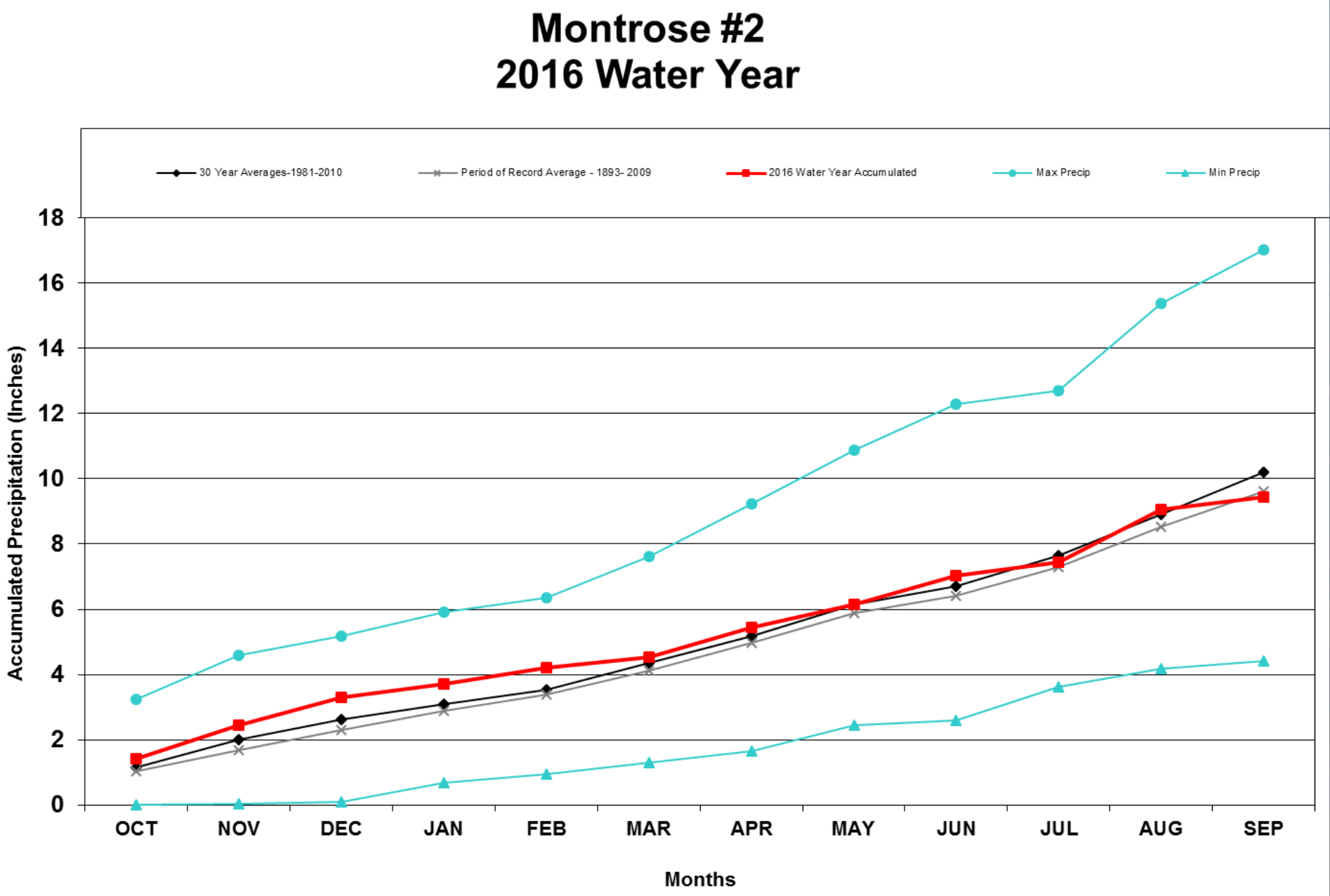
Division 2 – Grand Junction



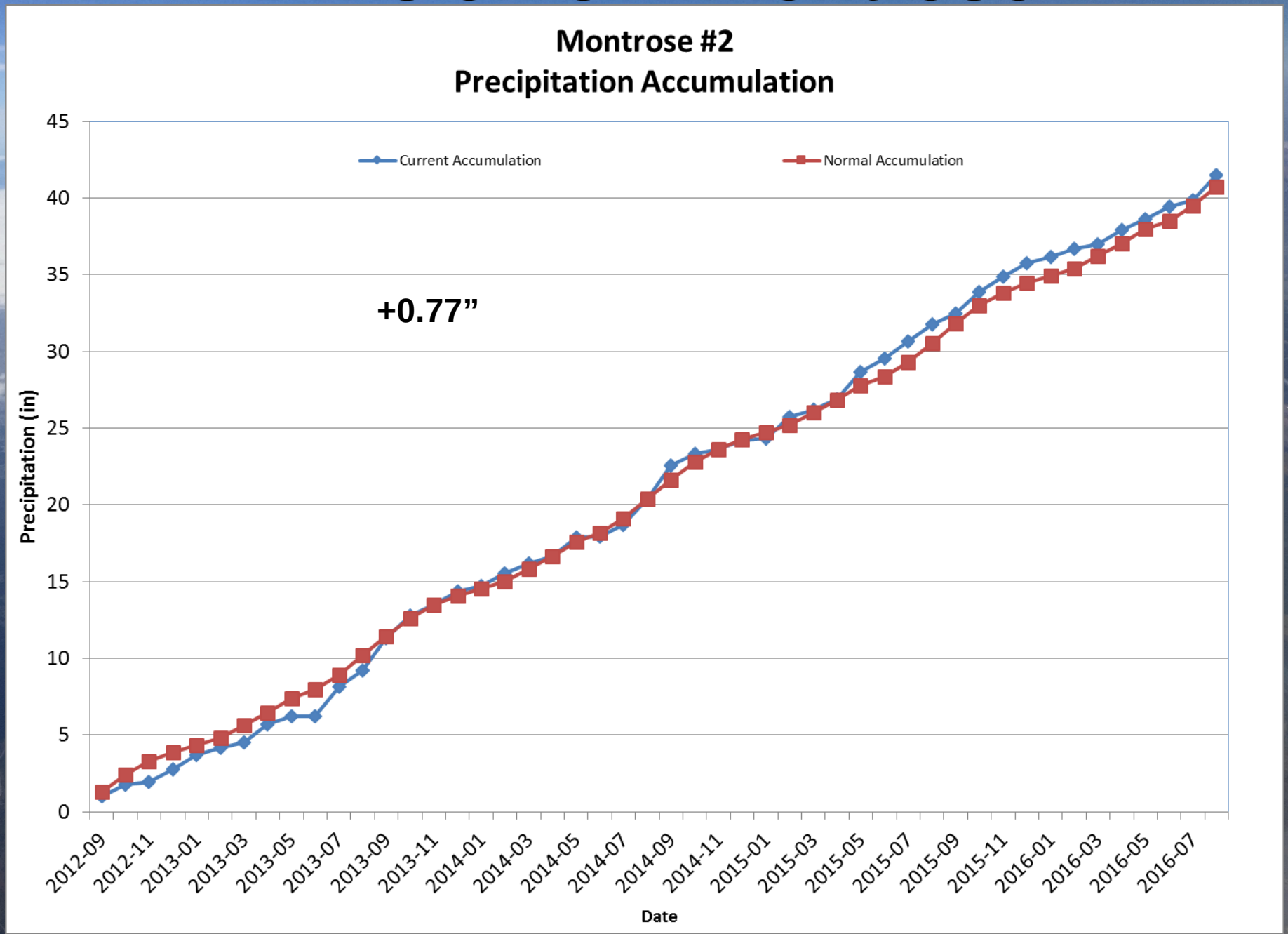
Division 2 – Grand Junction



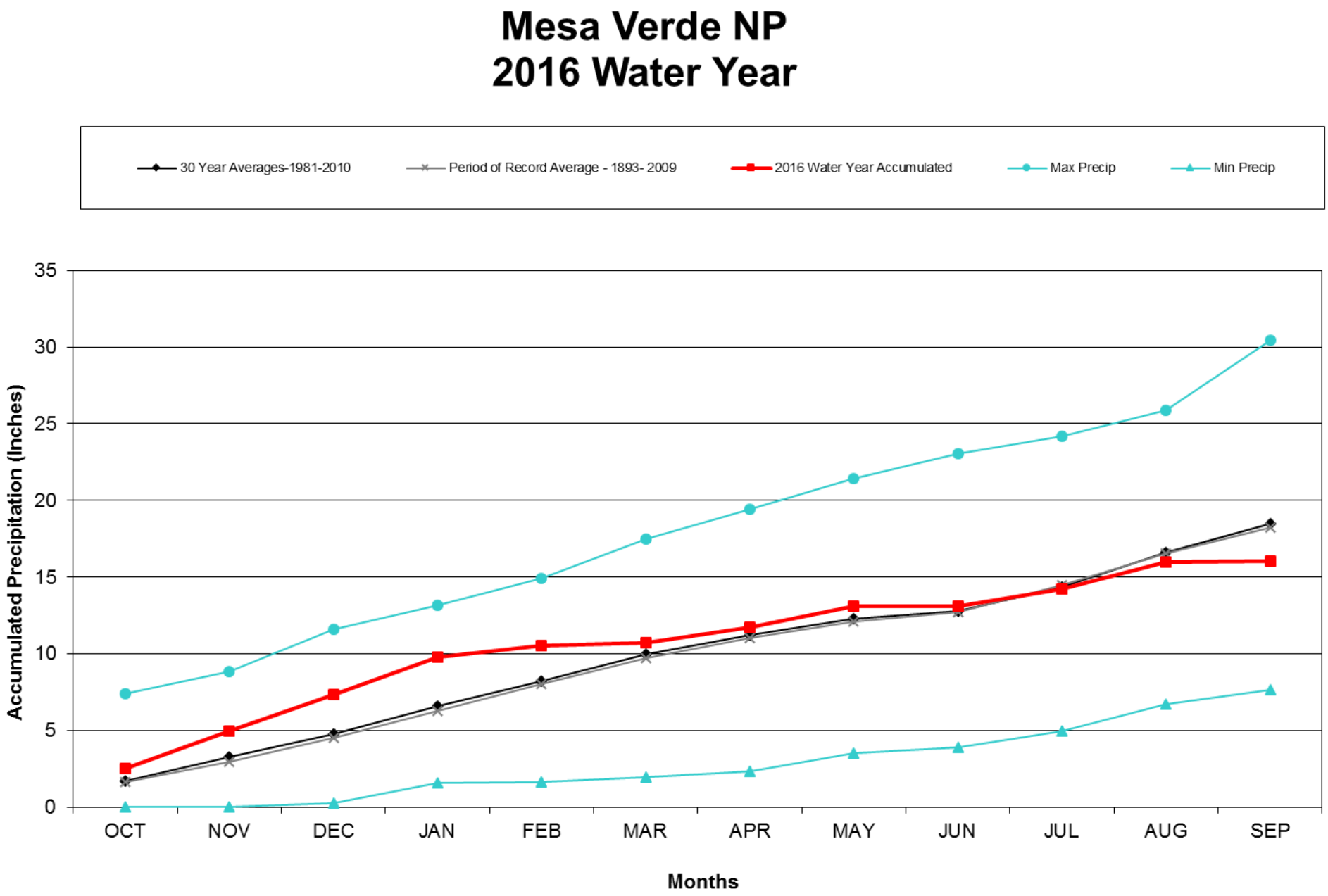
Division 3 – Montrose



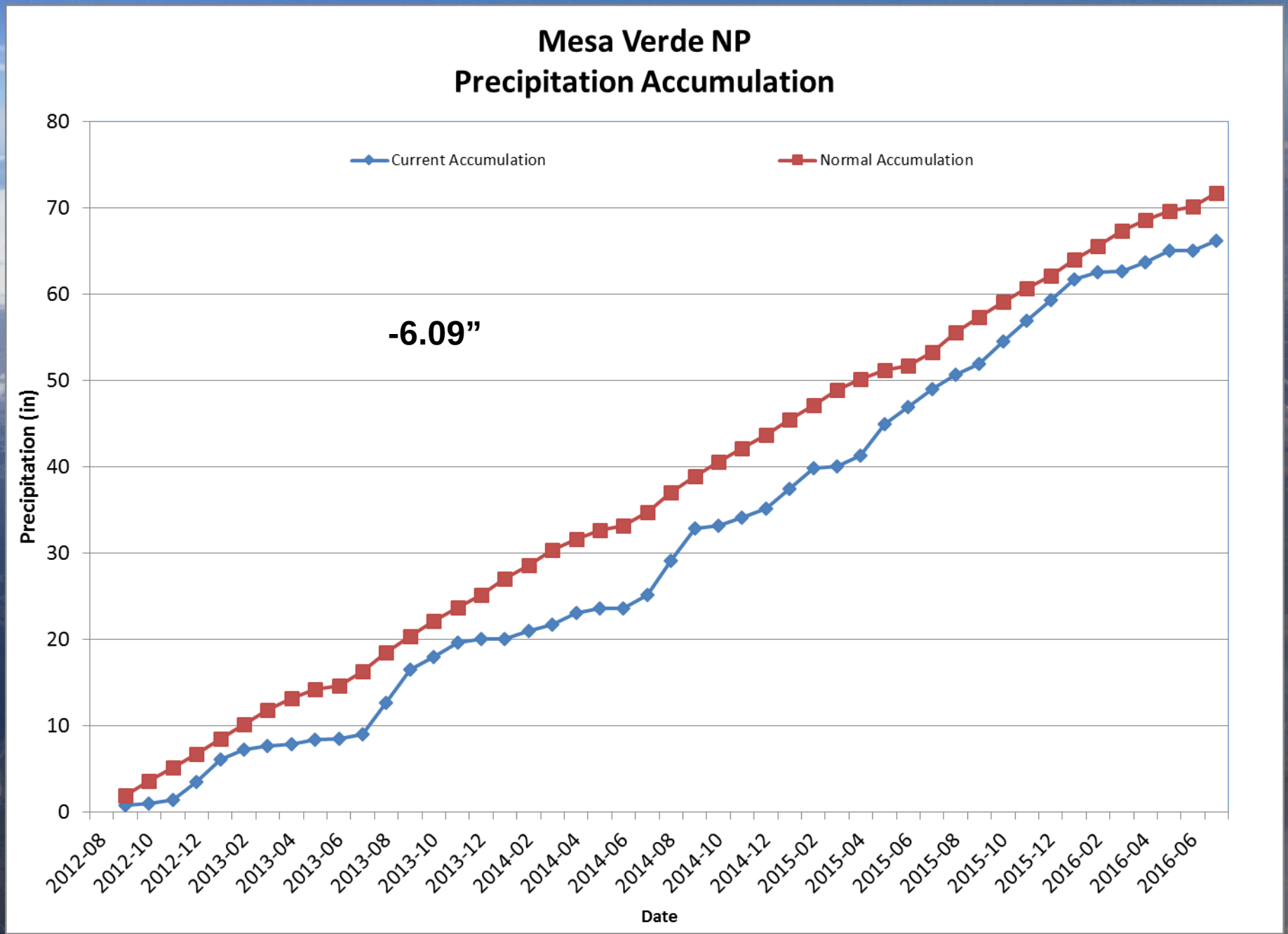
Division 3 – Montrose



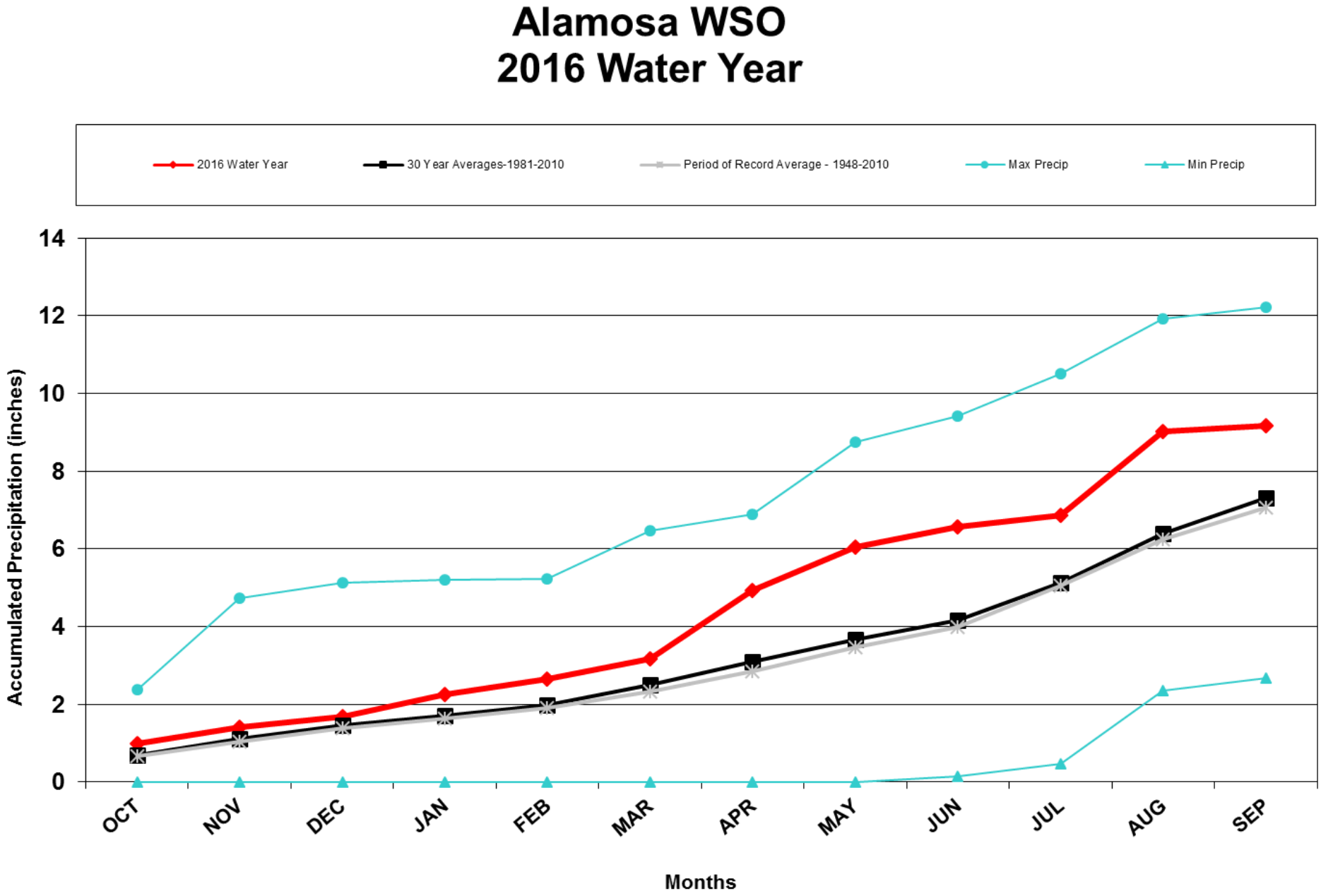
Division 3 – Mesa Verde NP



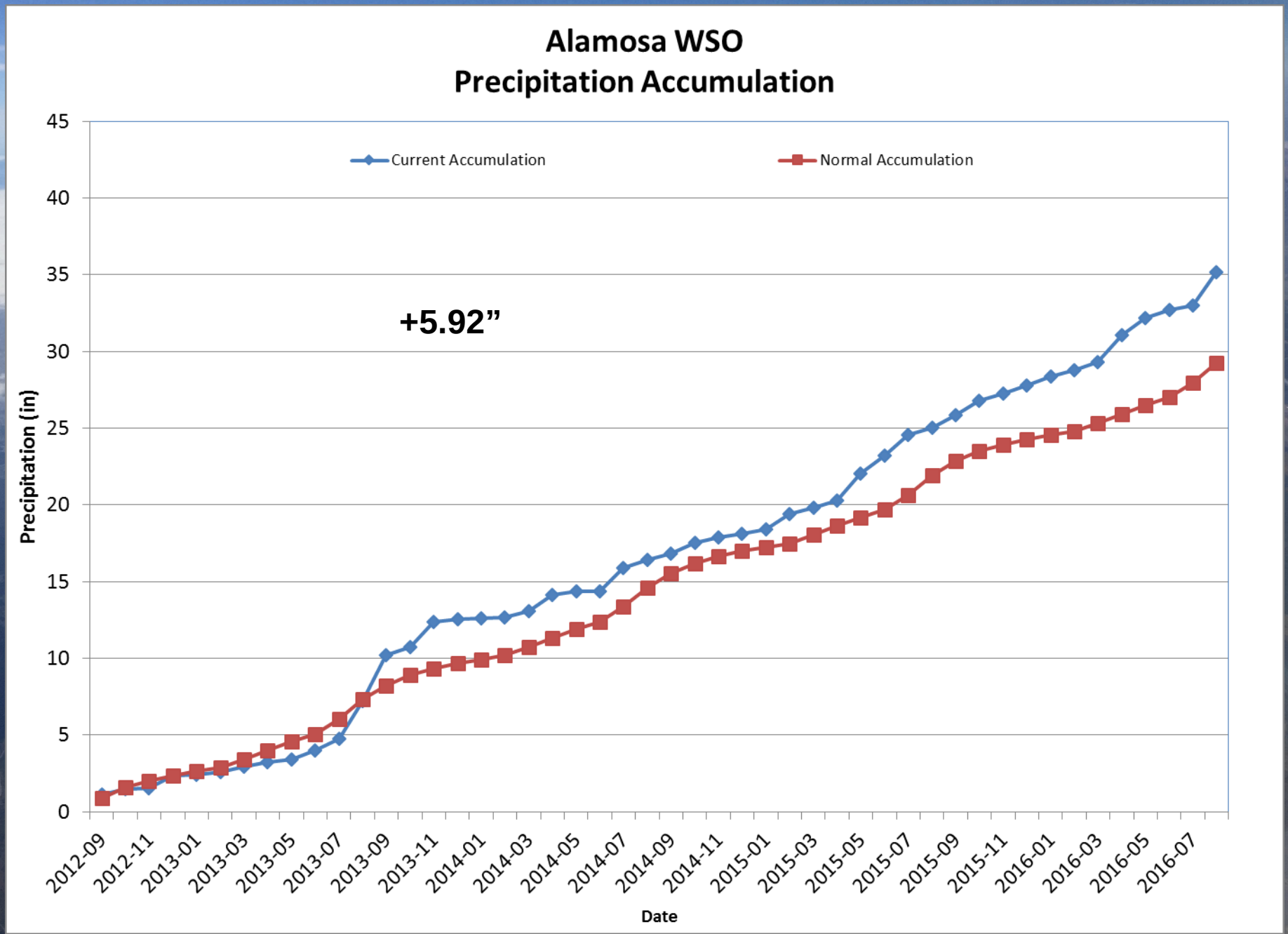
Division 3 – Mesa Verde NP



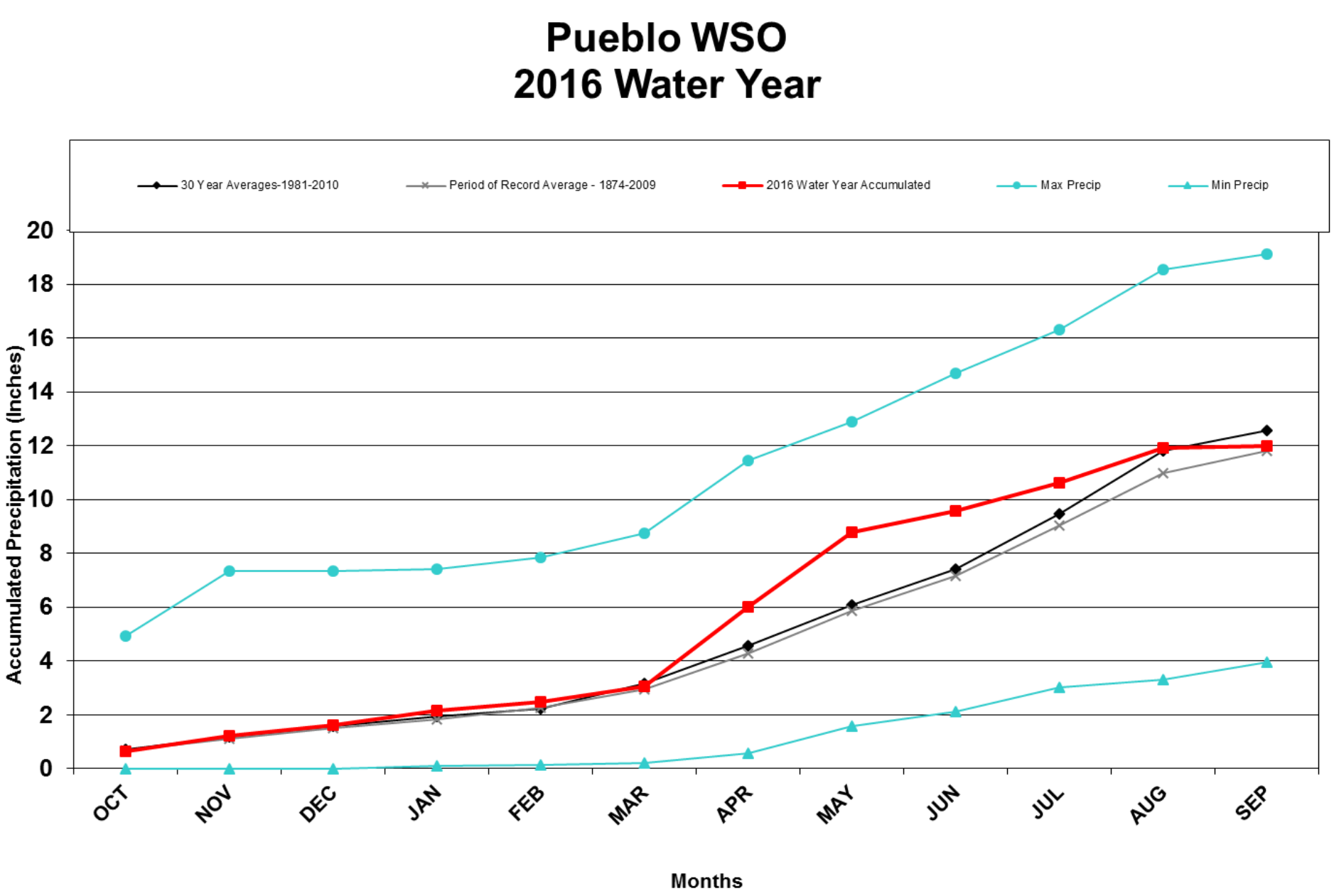
Division 4 – Alamosa



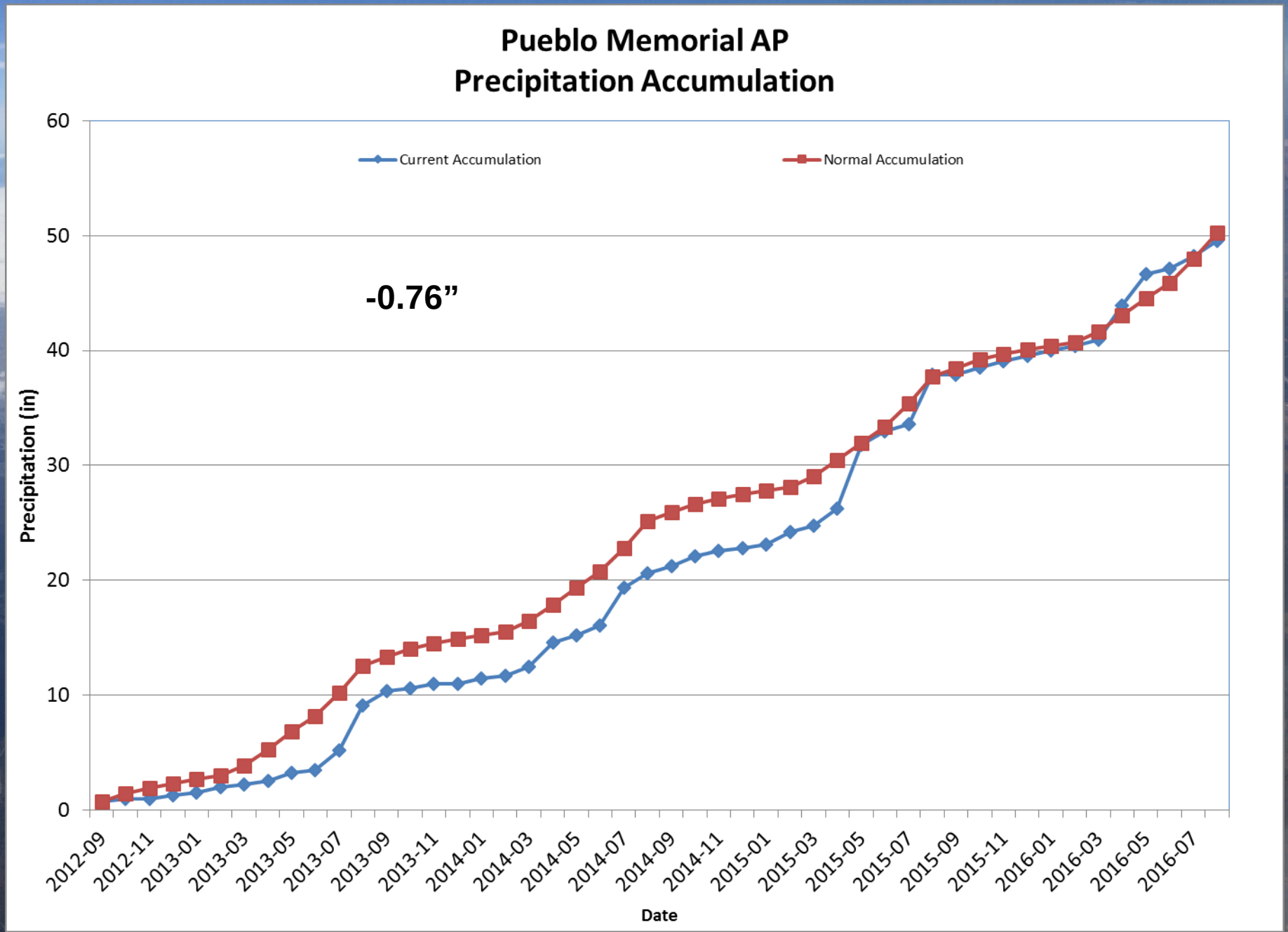
Division 4 – Alamosa



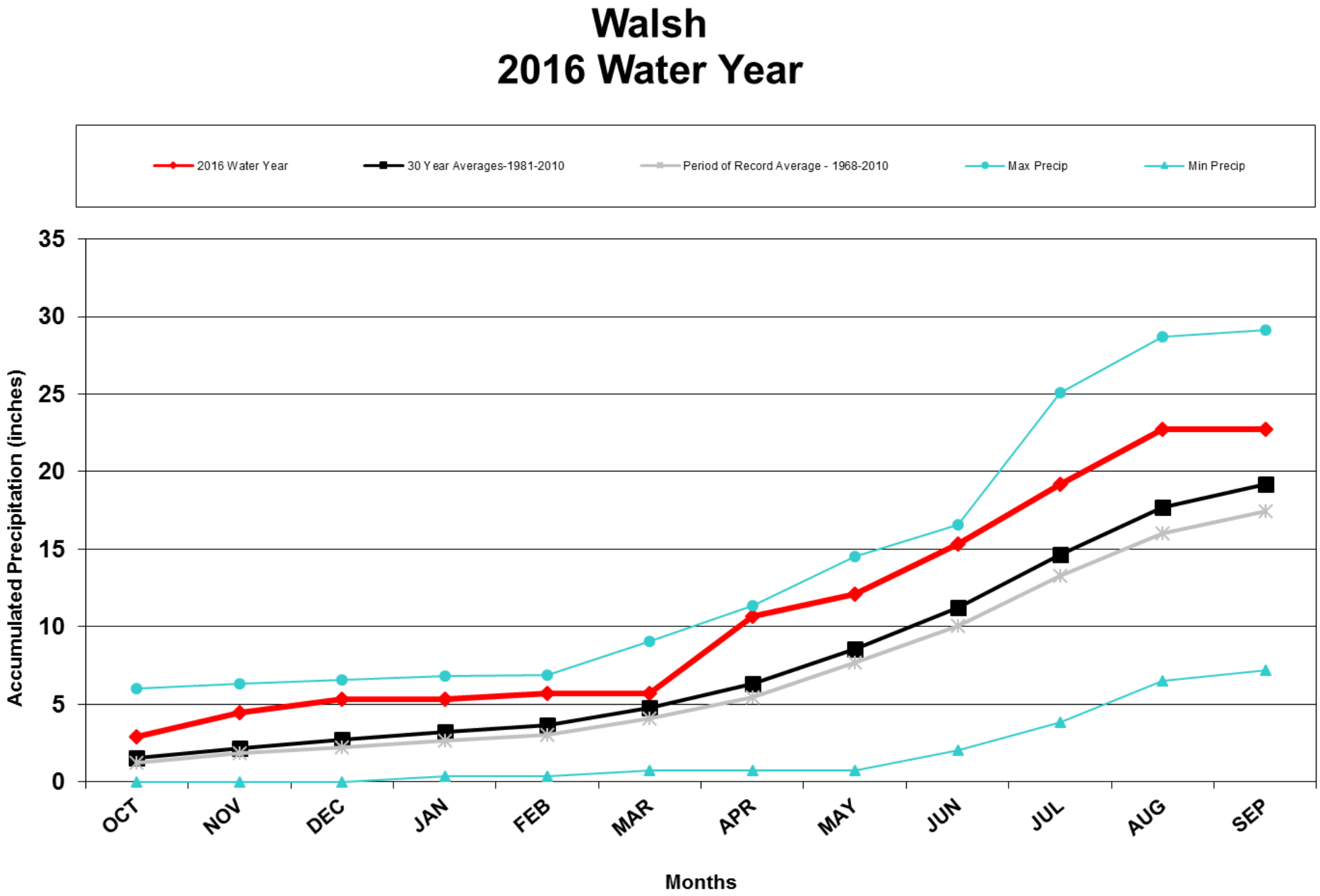
Division 5 – Pueblo



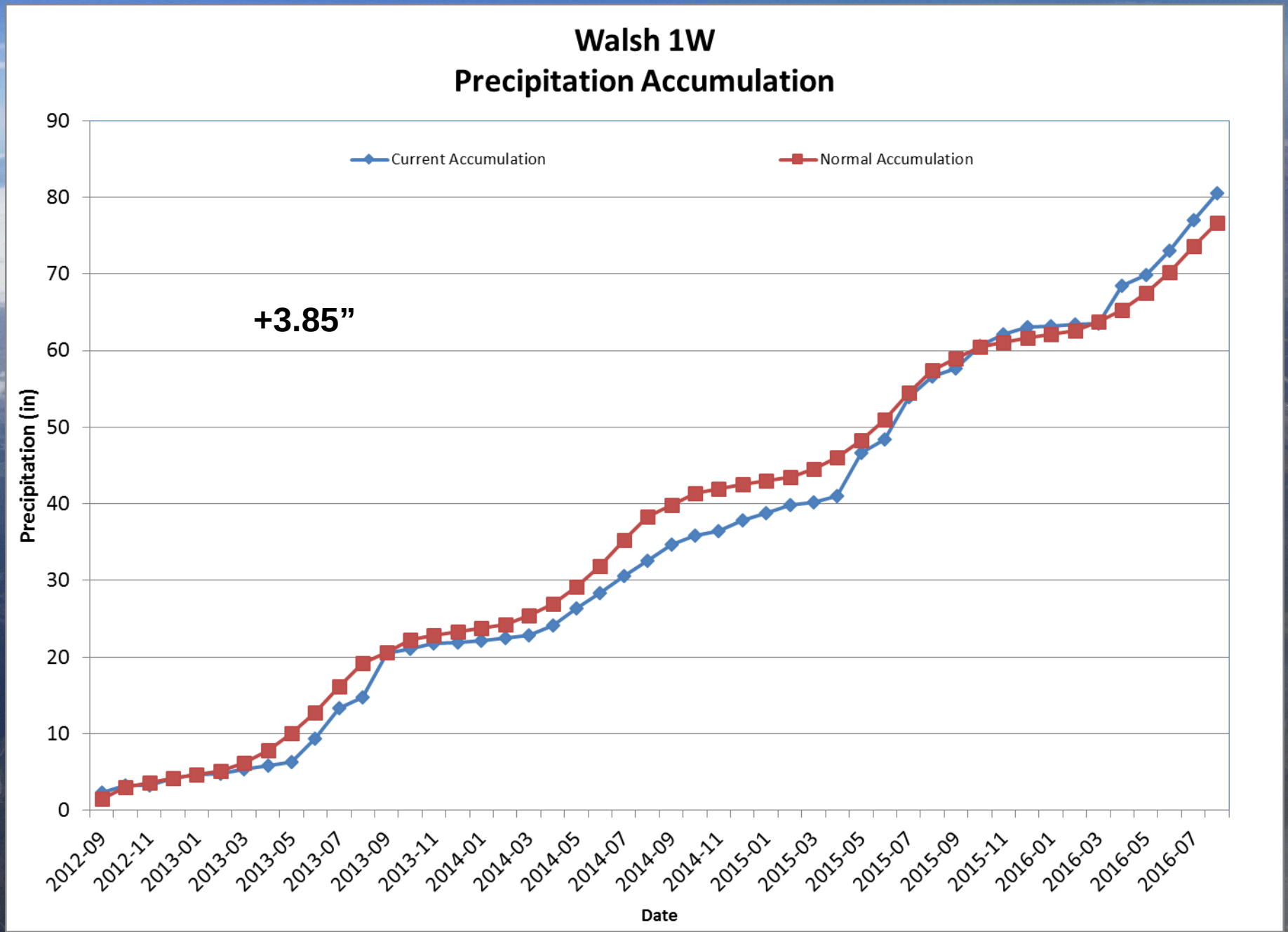
Division 5 – Pueblo



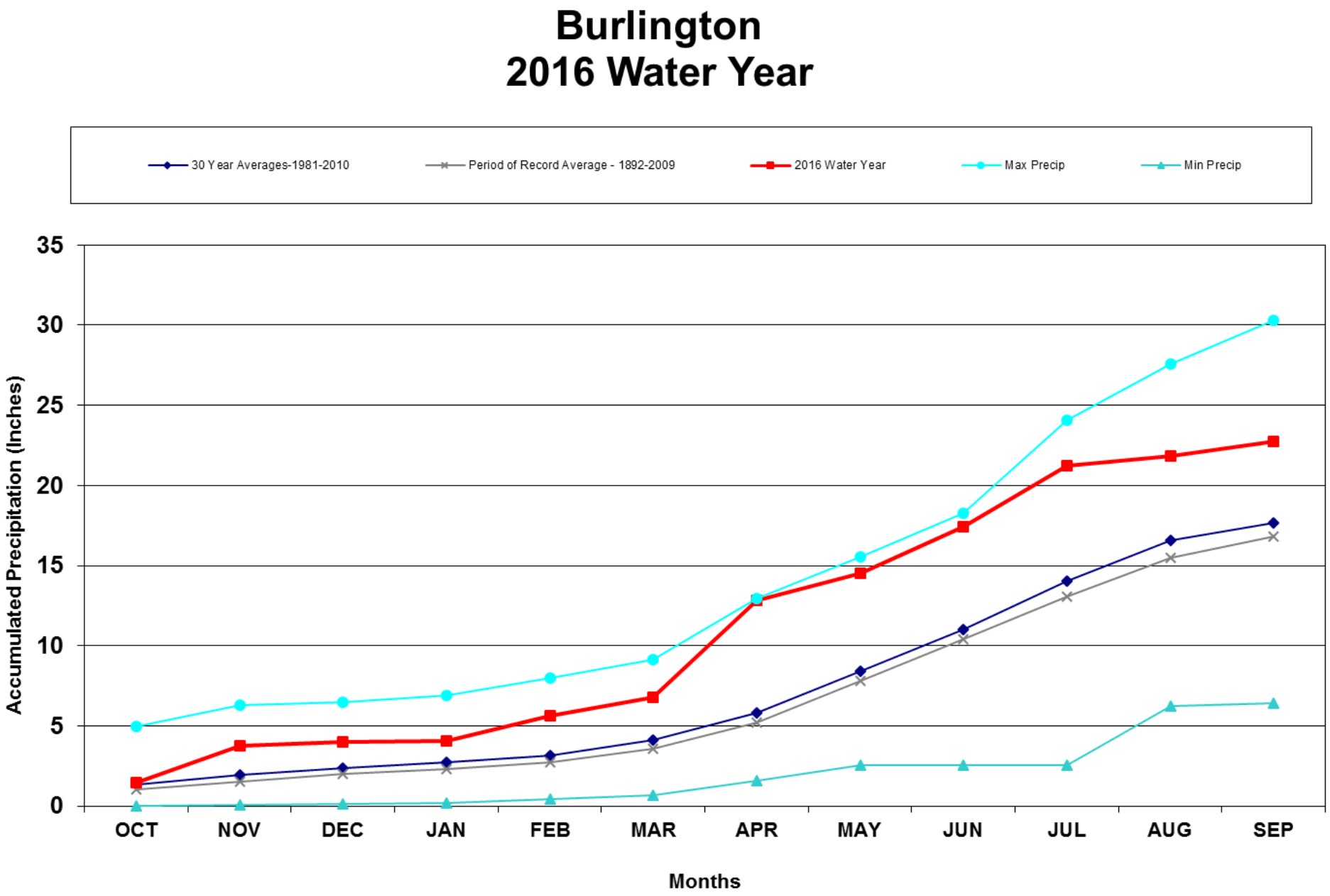
Division 6 - Walsh



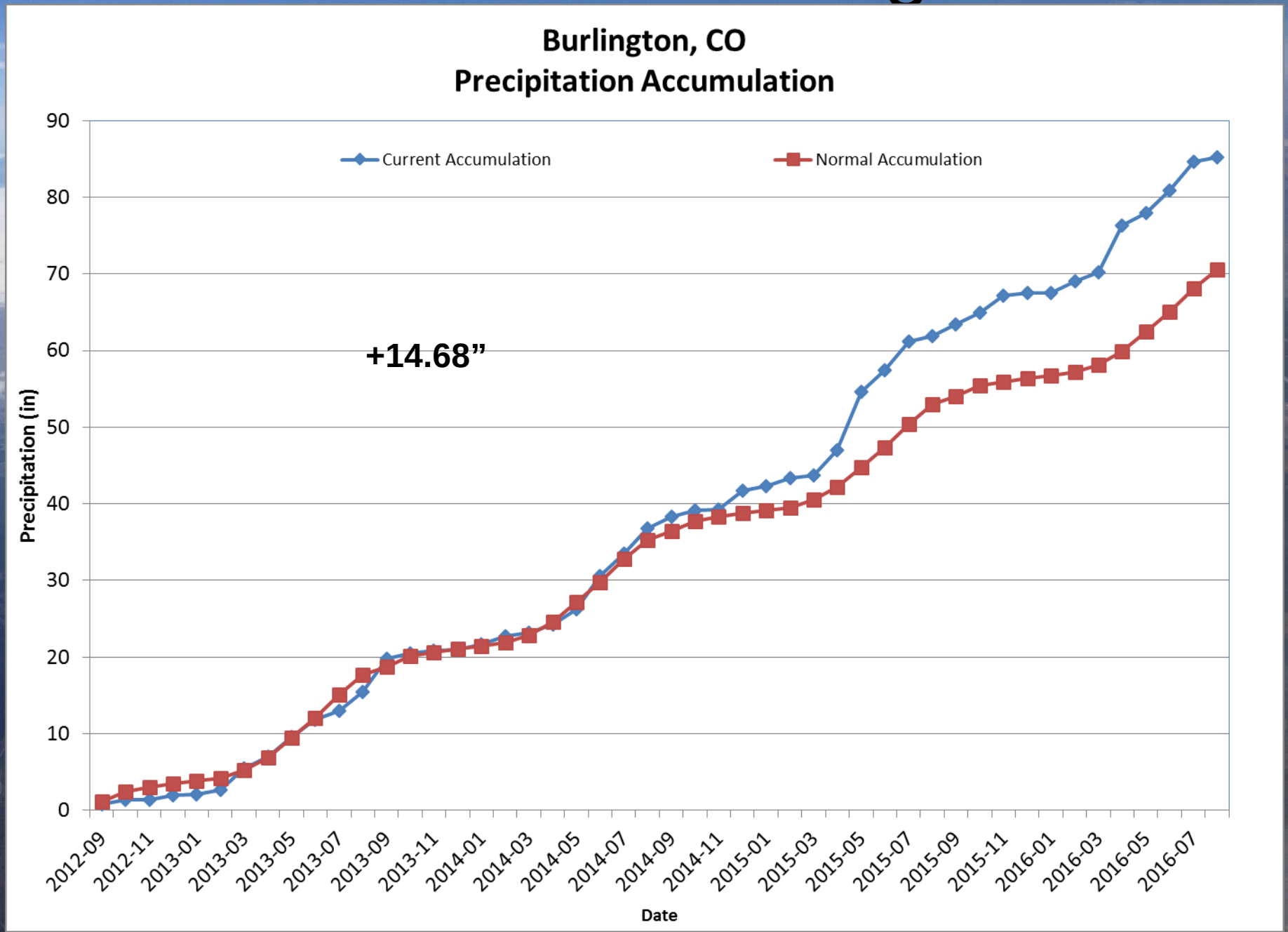
Division 6 - Walsh



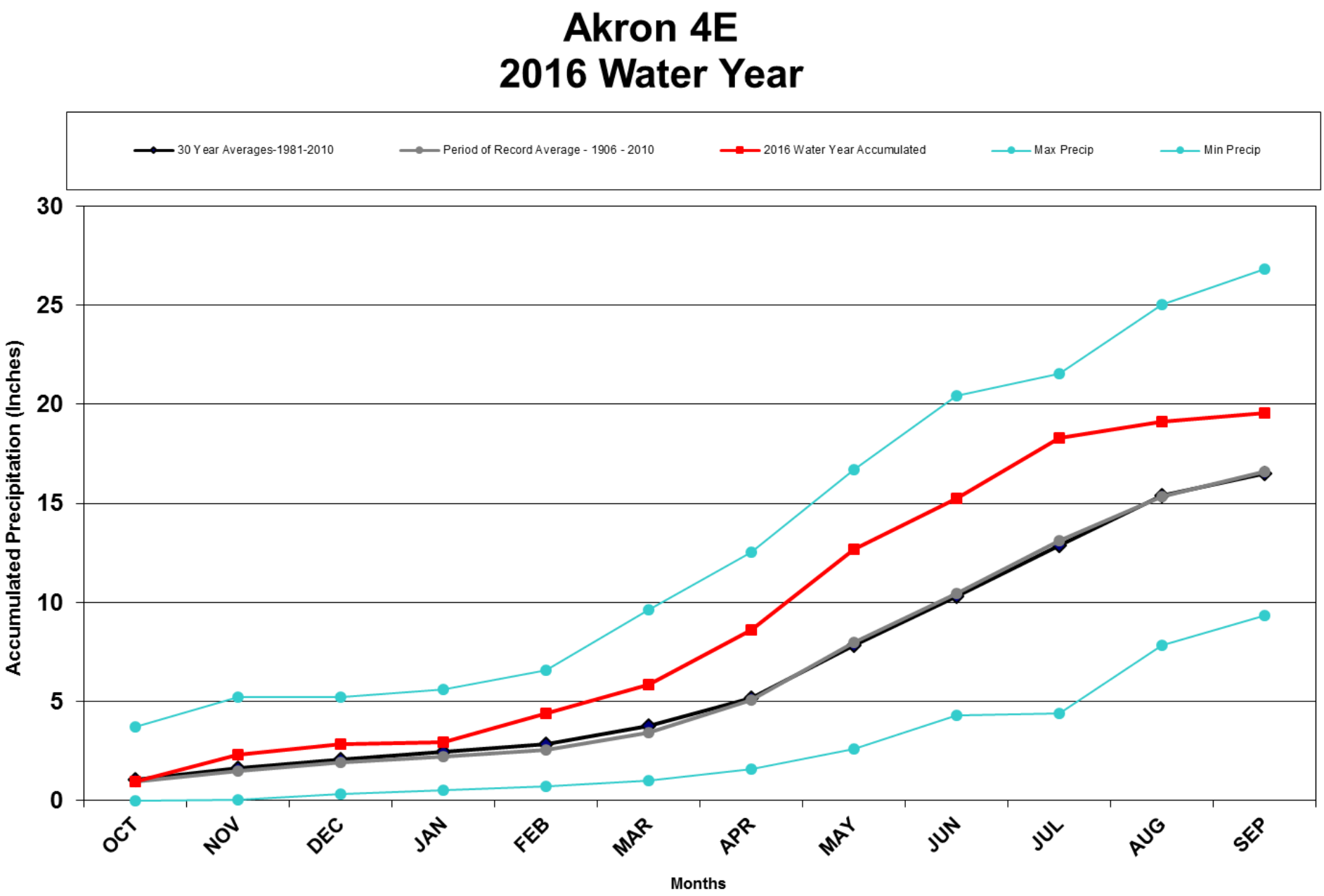
Division 6 - Burlington



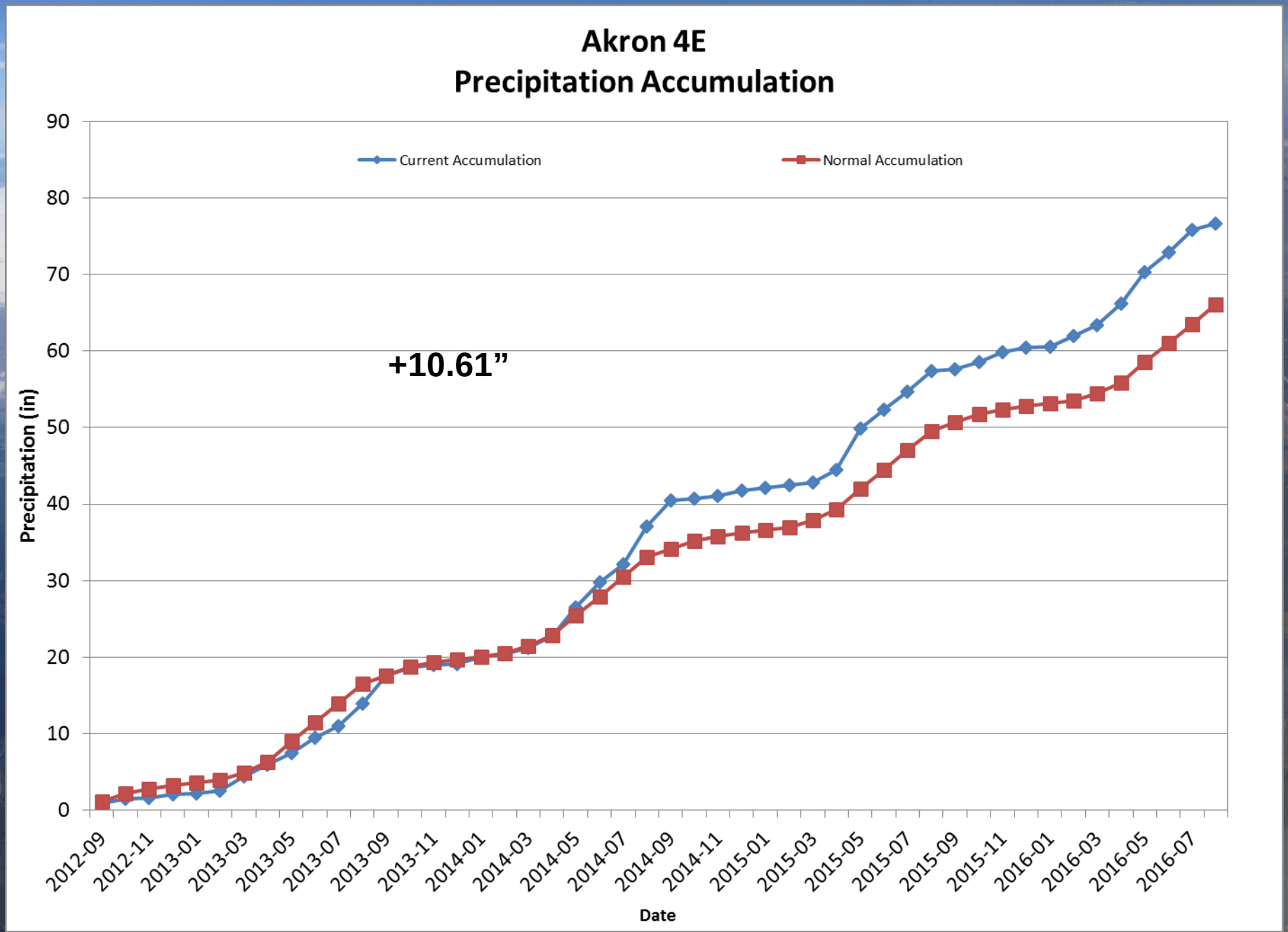
Division 6 - Burlington



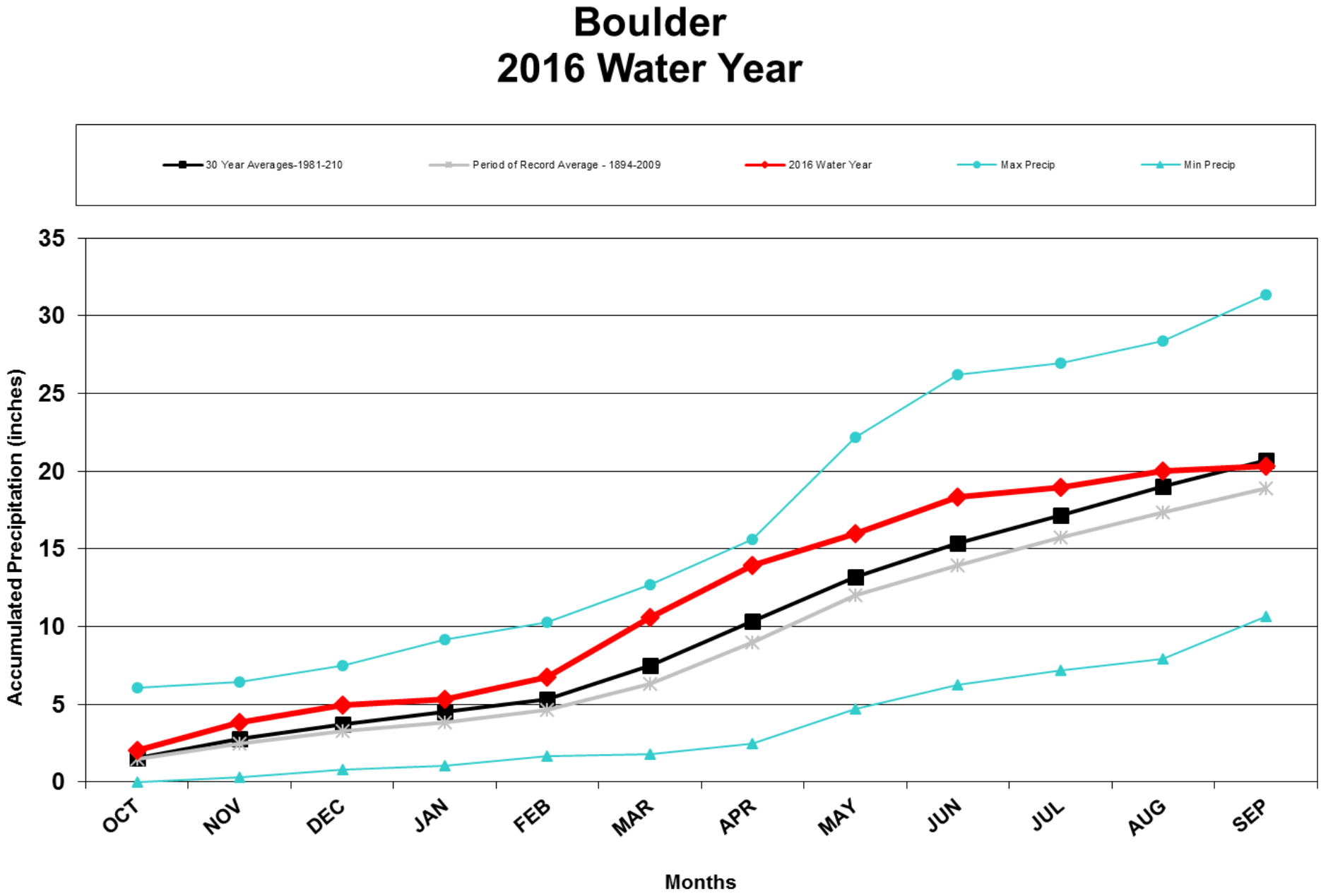
Division 7 – Akron



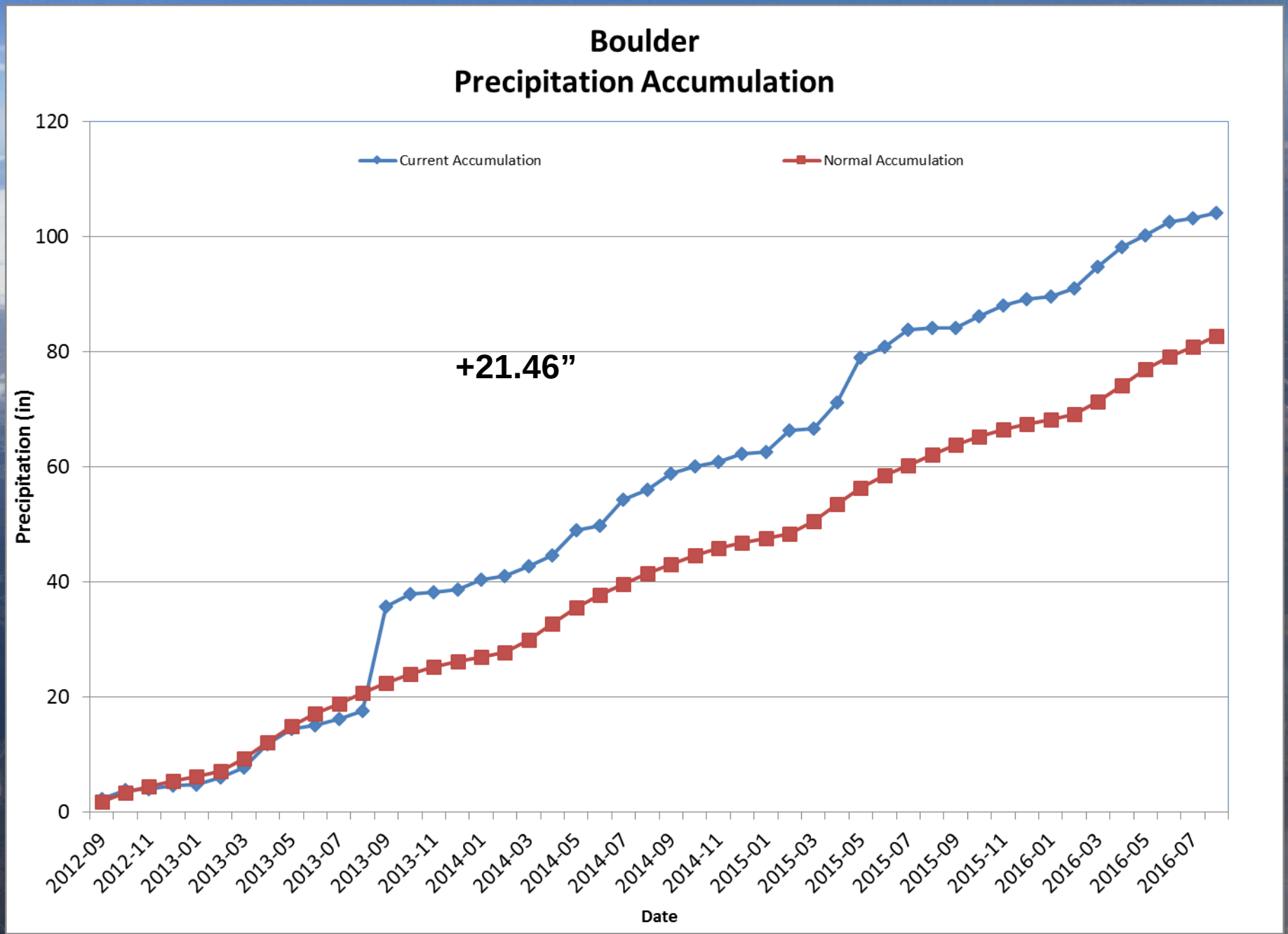
Division 7 – Akron



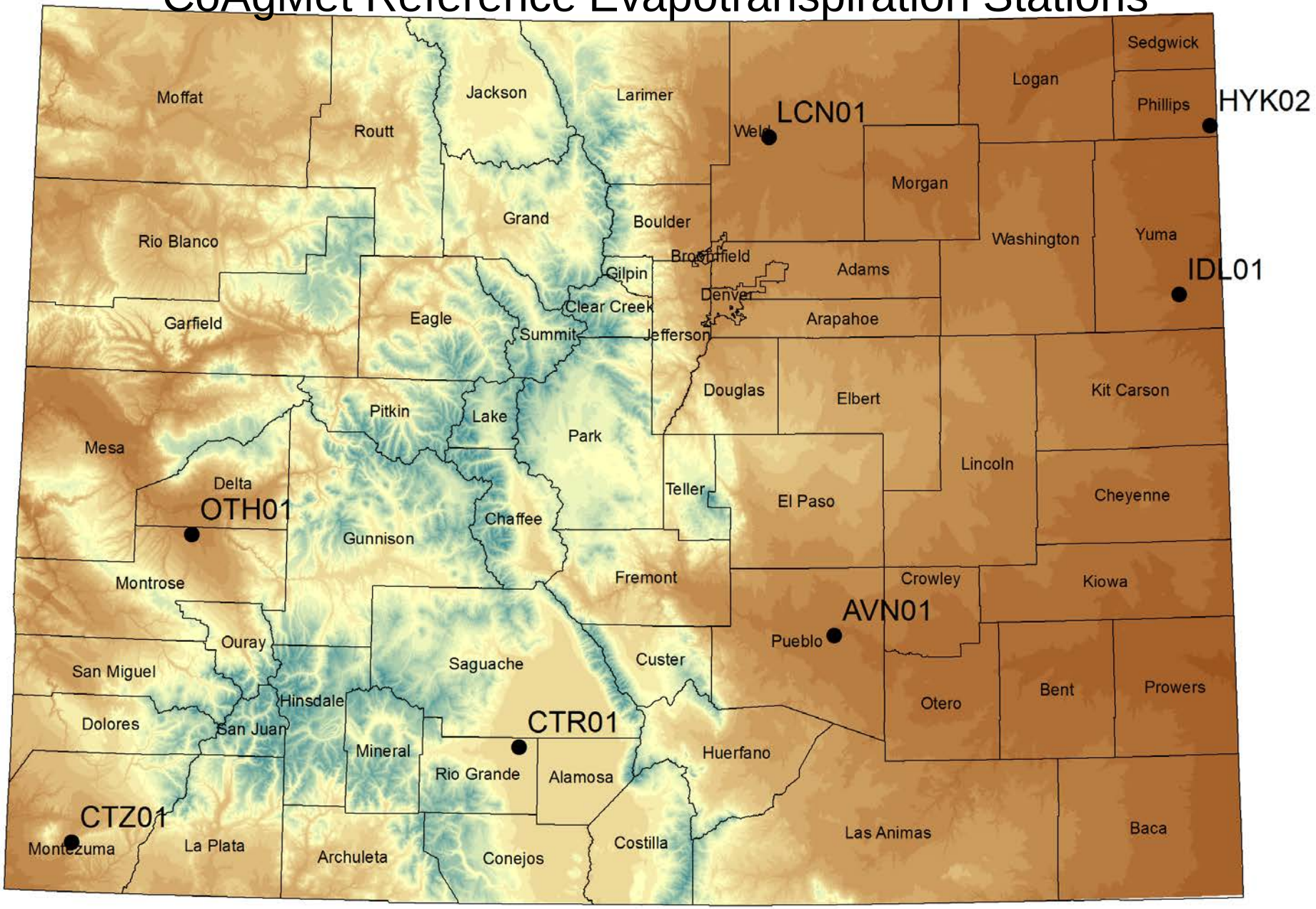
Division 8 - Boulder

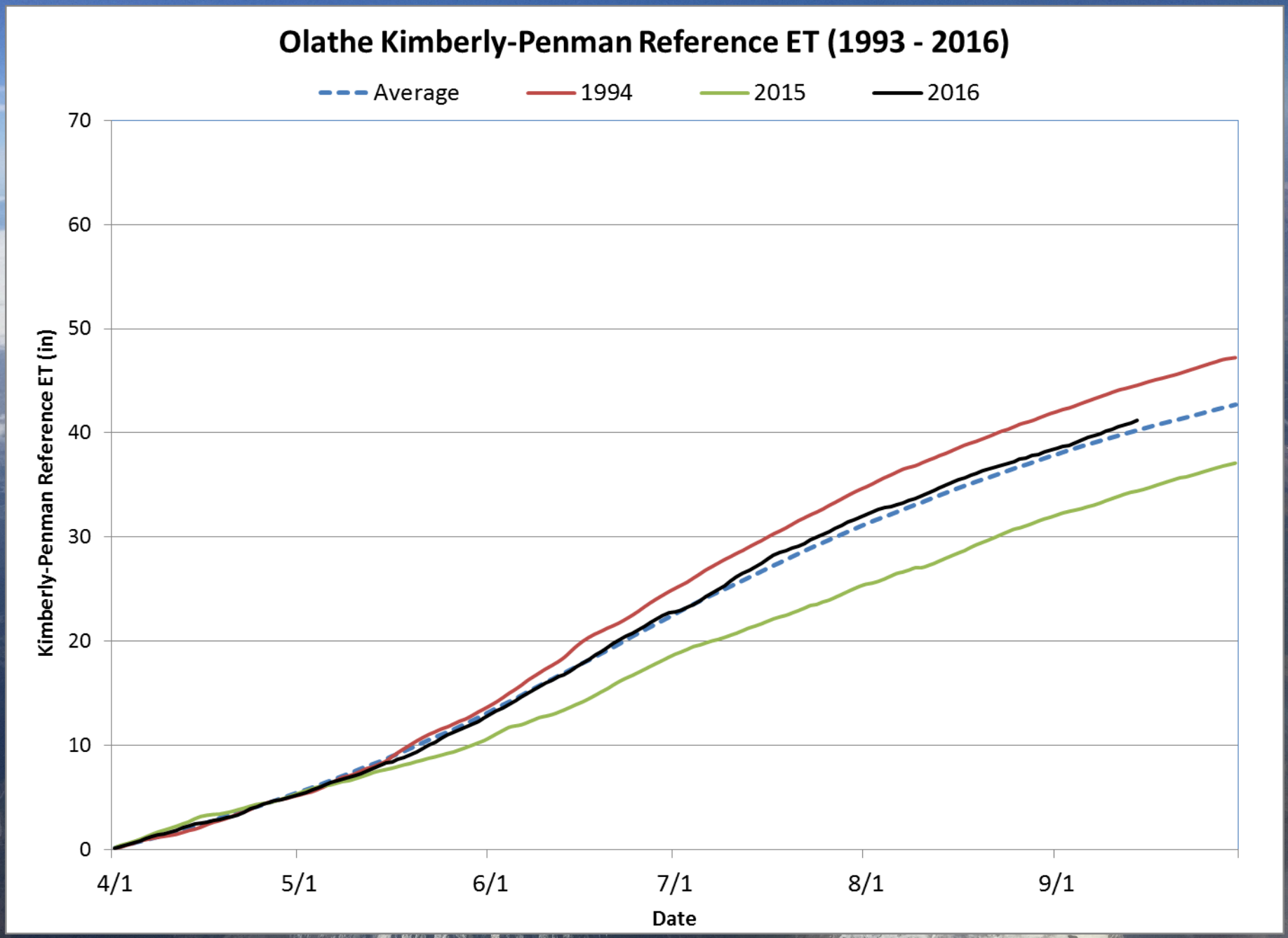


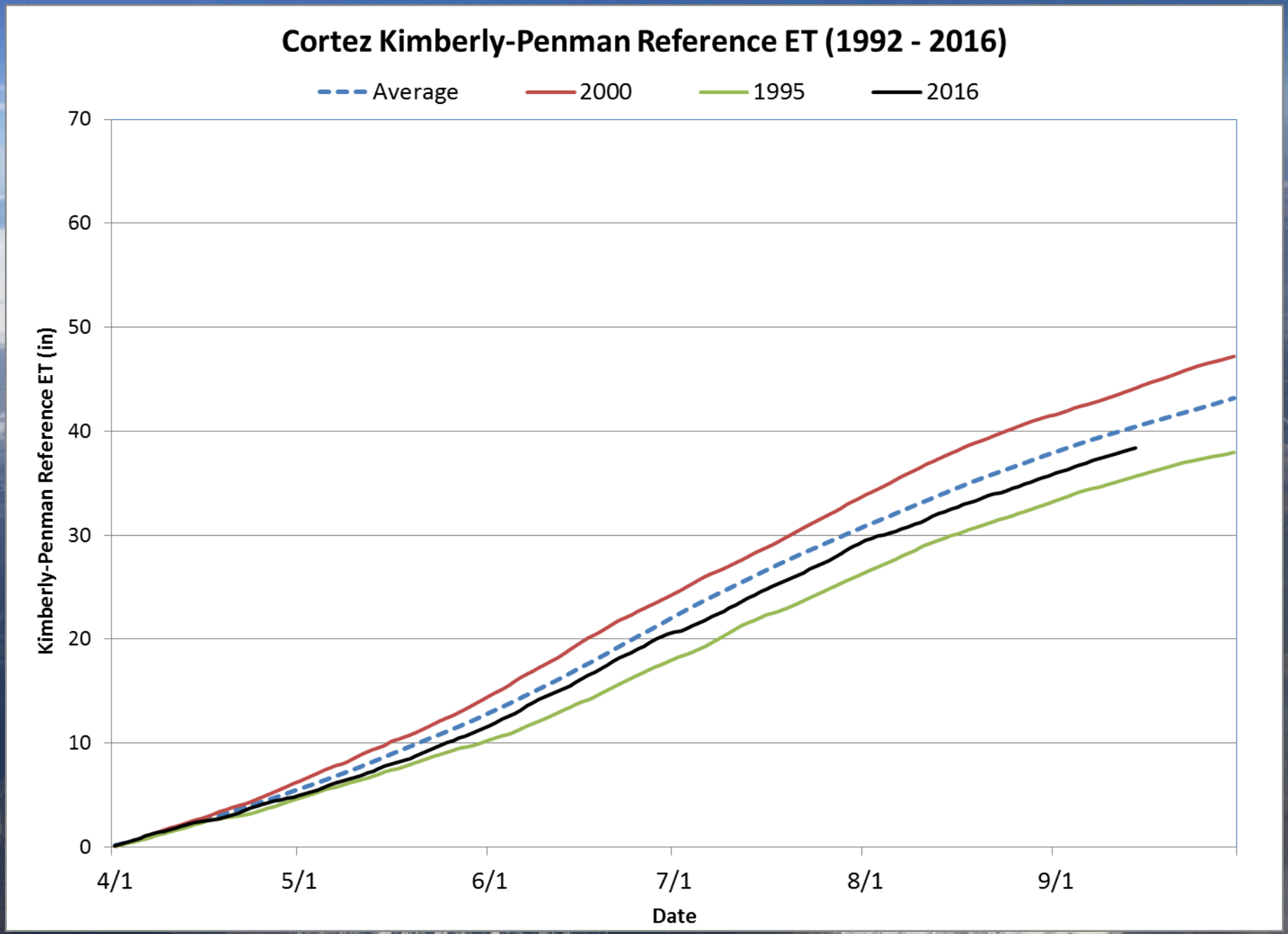
Division 8 - Boulder

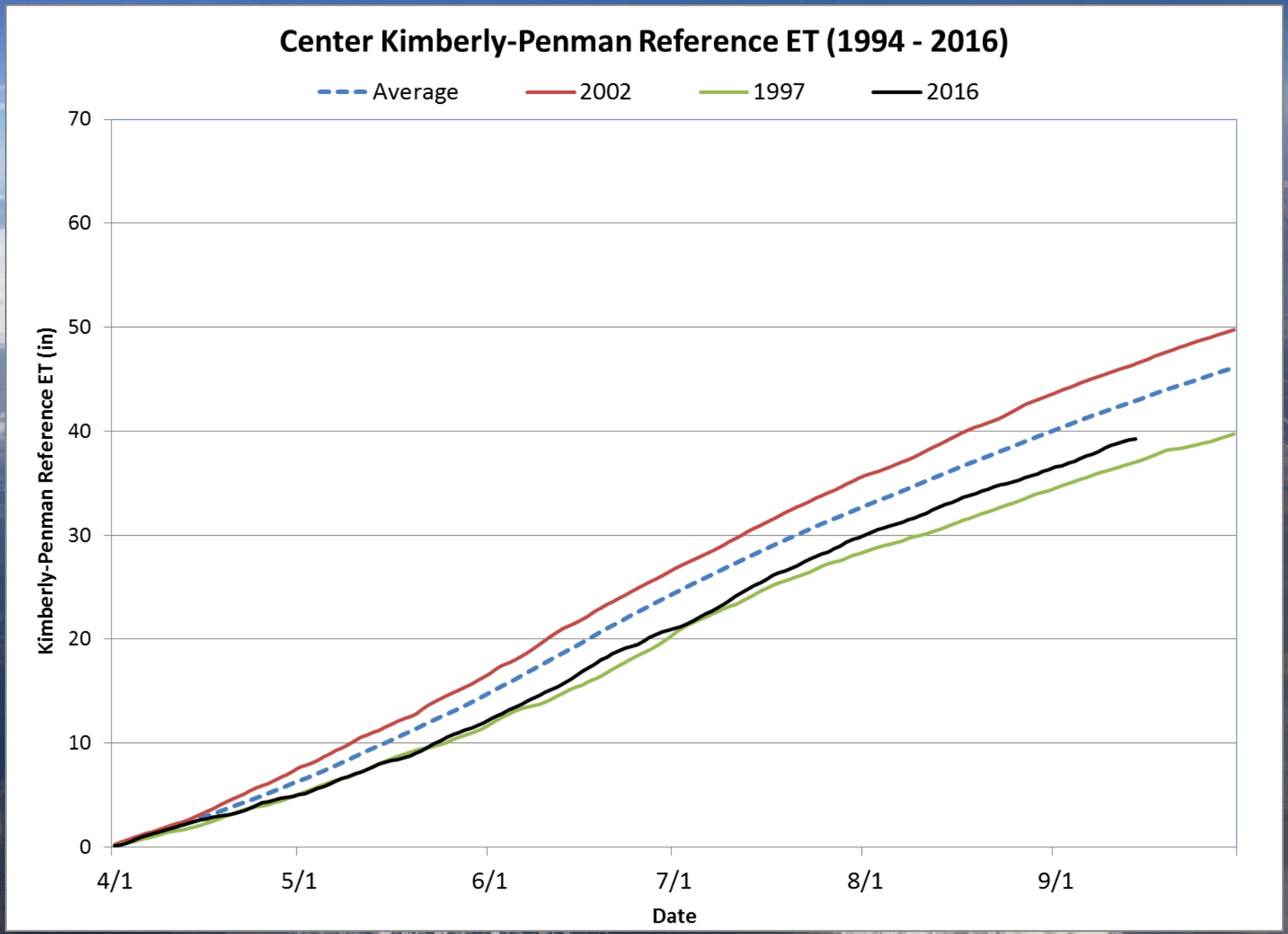


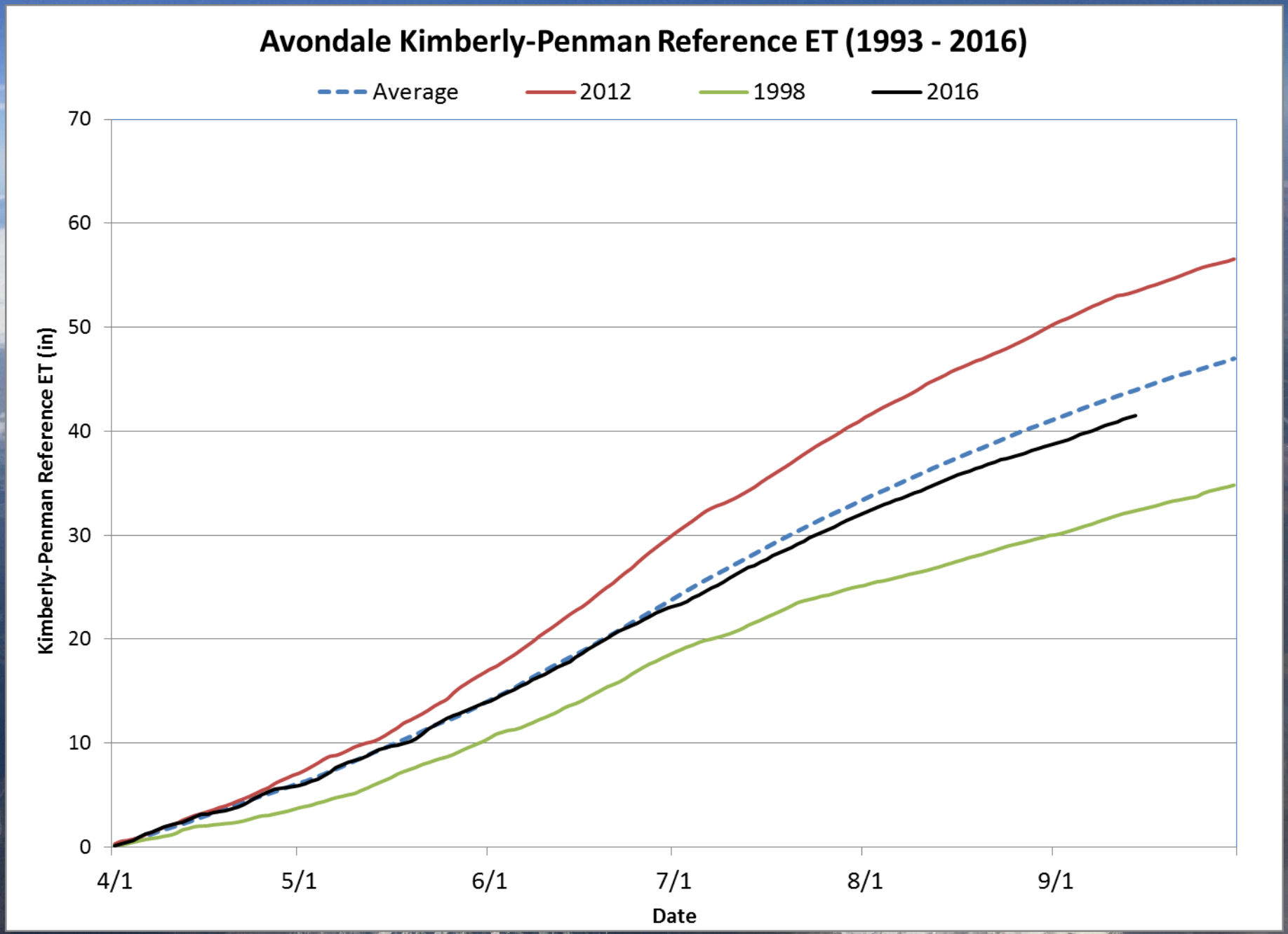
CoAgMet Reference Evapotranspiration Stations

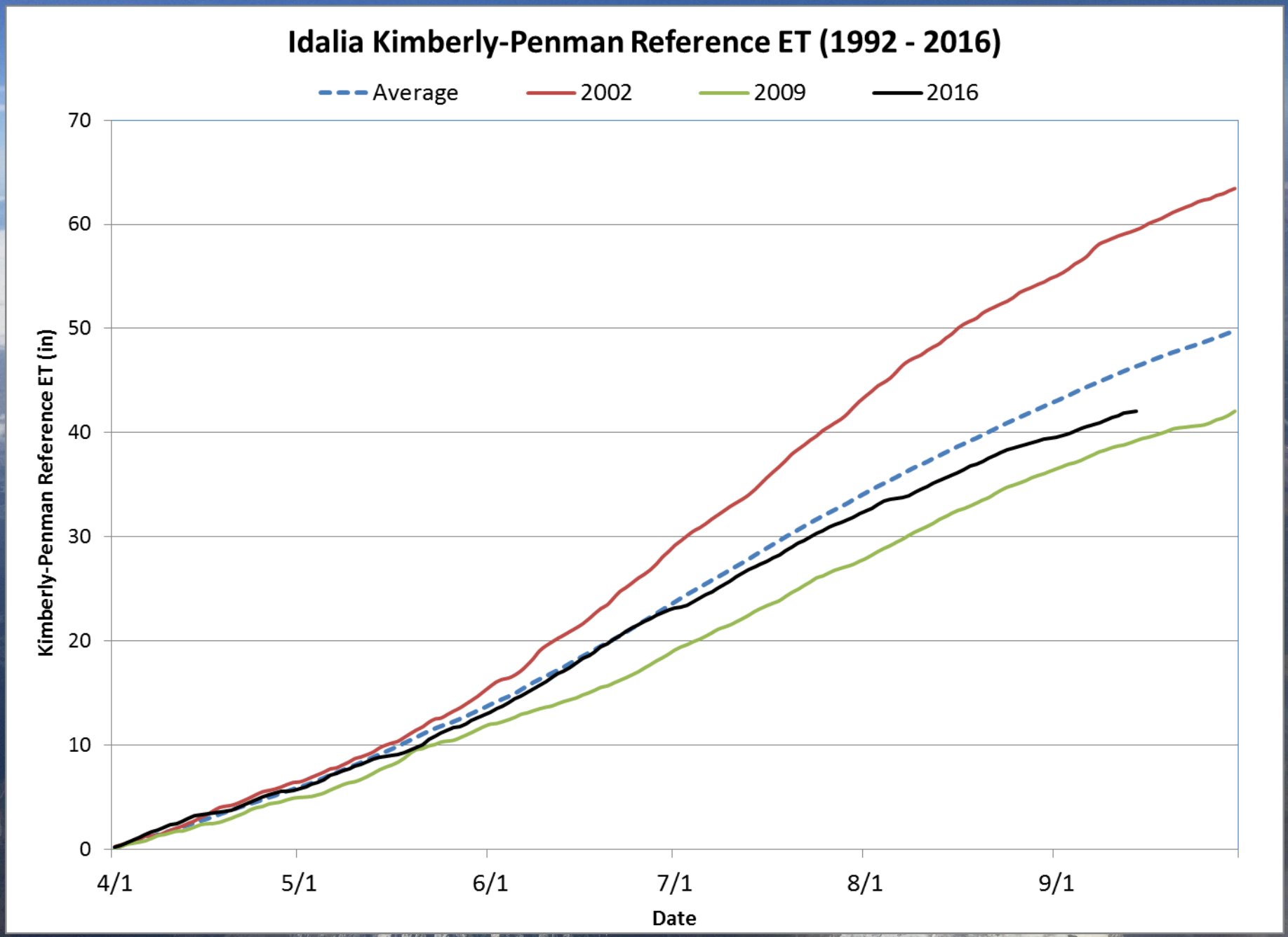



Olathe Kimberly-Penman Reference ET (1993 - 2016)
Average
1994
2015
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Cortez Kimberly-Penman Reference ET (1992 - 2016)
Average
2000
1995
2016
Kimberly-Penman Reference ET (in)
70
60
50
40
30
20
10
0
4/1
5/1
6/1
7/1
8/1
9/1
Date


Center Kimberly-Penman Reference ET (1994 - 2016)
Average
2002
1997
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Avondale Kimberly-Penman Reference ET (1993 - 2016)
Average
2012
1998
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Idalia Kimberly-Penman Reference ET (1992 - 2016)
Average
2002
2009
2016
70
60
50
40
30
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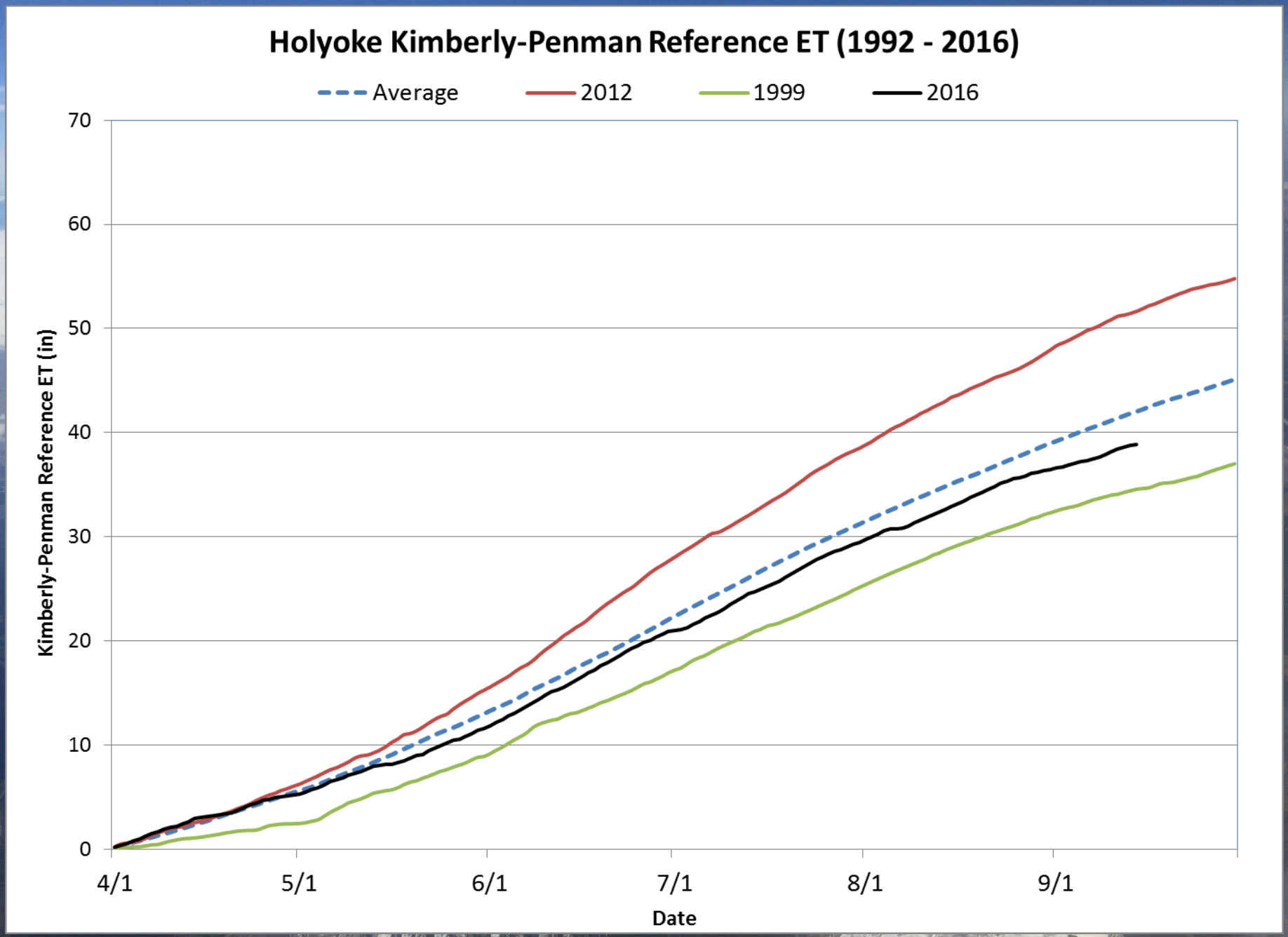
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date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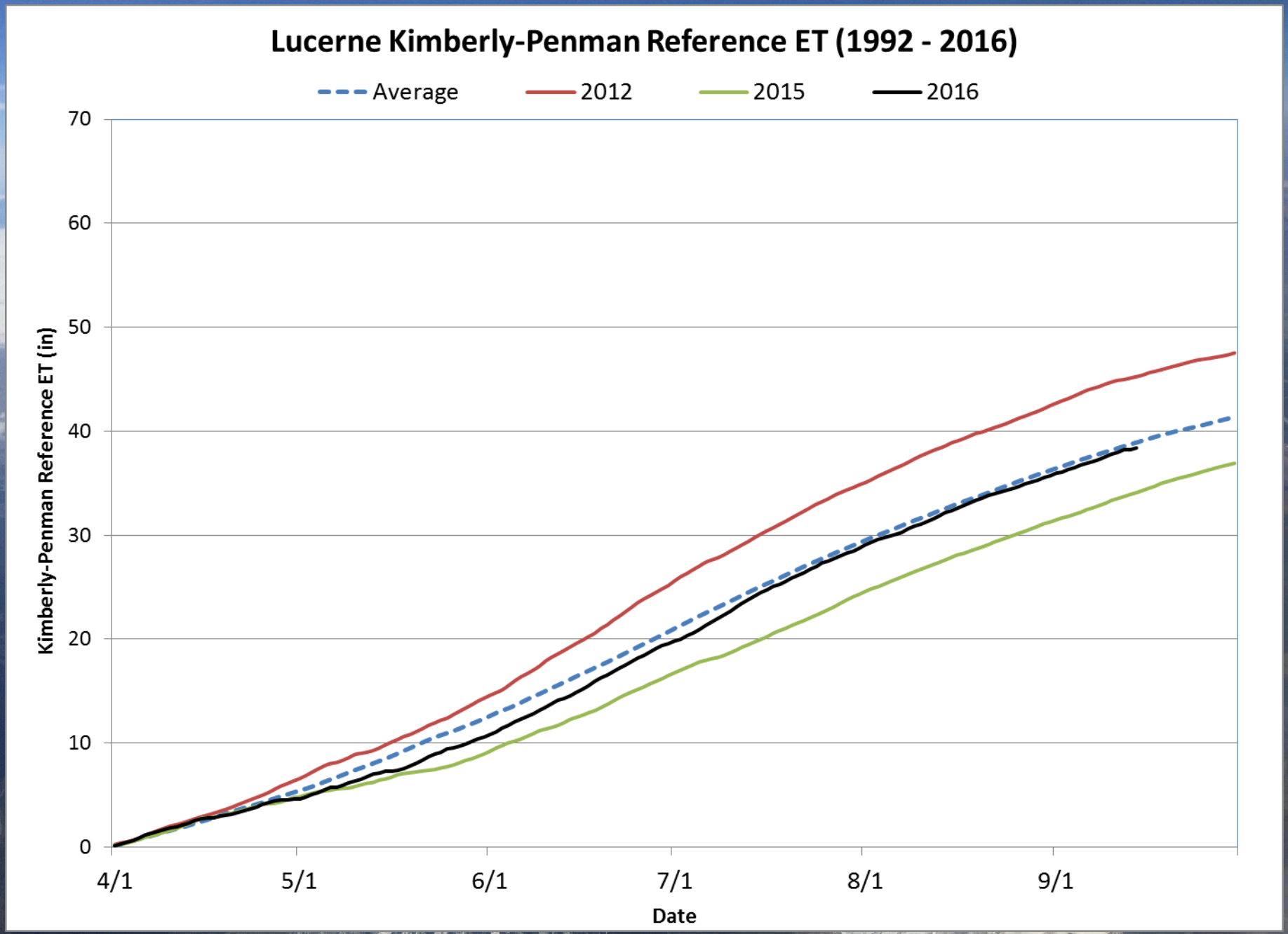
Average
2012
1999
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Lucerne Kimberly-Penman Reference ET (1992 - 2016)
Average
2012
2015
2016
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60
50
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10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
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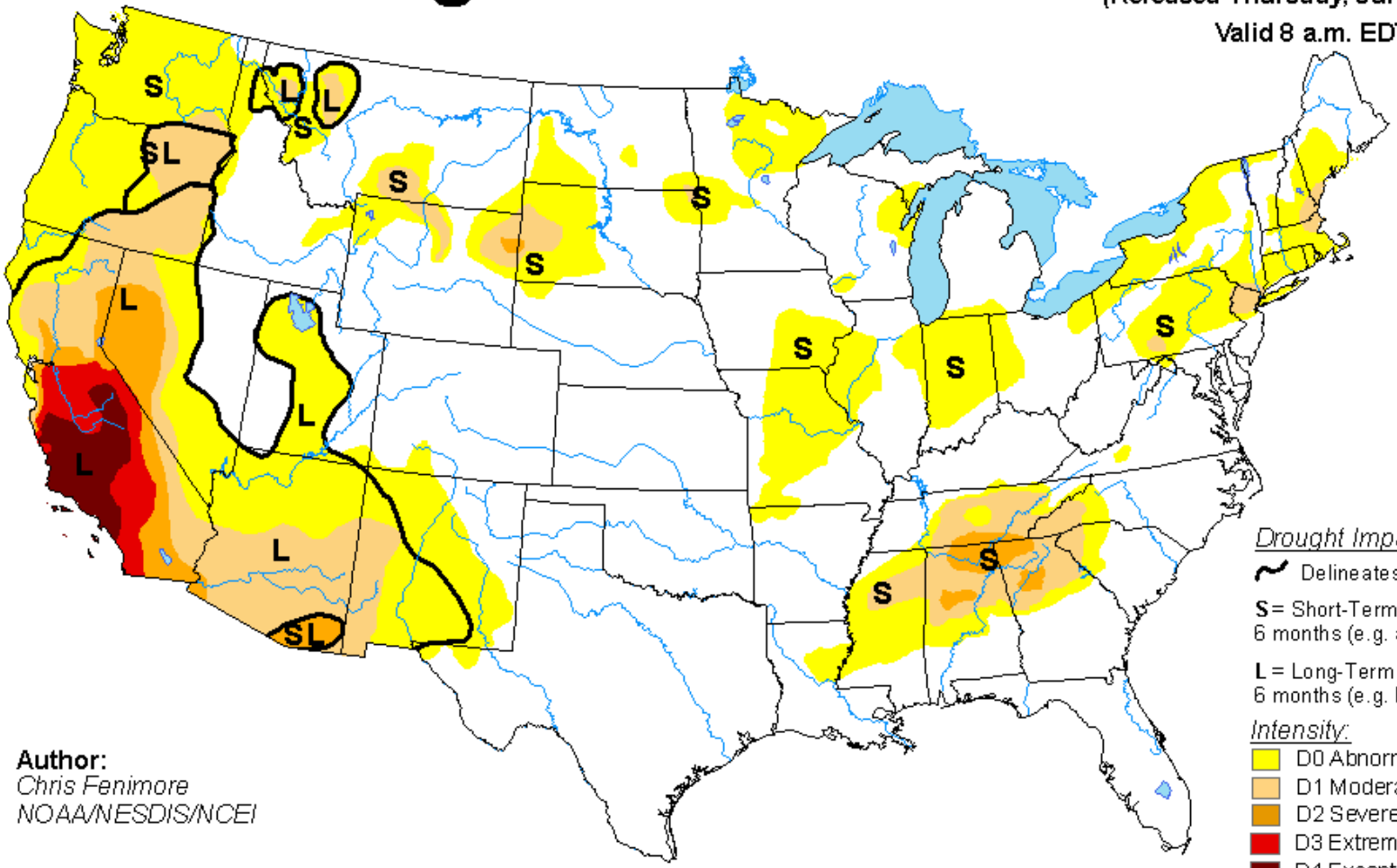
Date

U.S. Drought Monitor

June 14, 2016

(Released Thursday, Jun. 16, 2016)

Valid 8 a.m. EDT



Author:
Chris Fenimore
NOAA/NESDIS/NCEI

Drought Impact Types:

~ Delineates dominant impacts

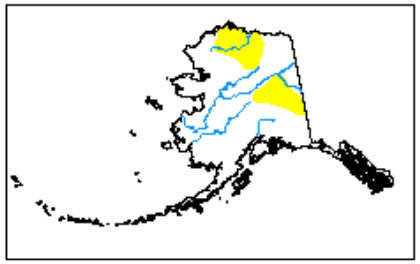
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

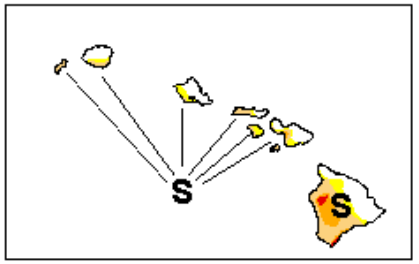
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

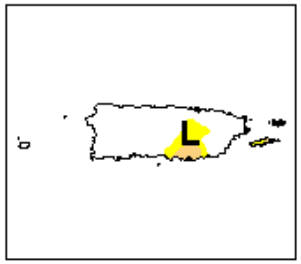
Intensity:

- 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

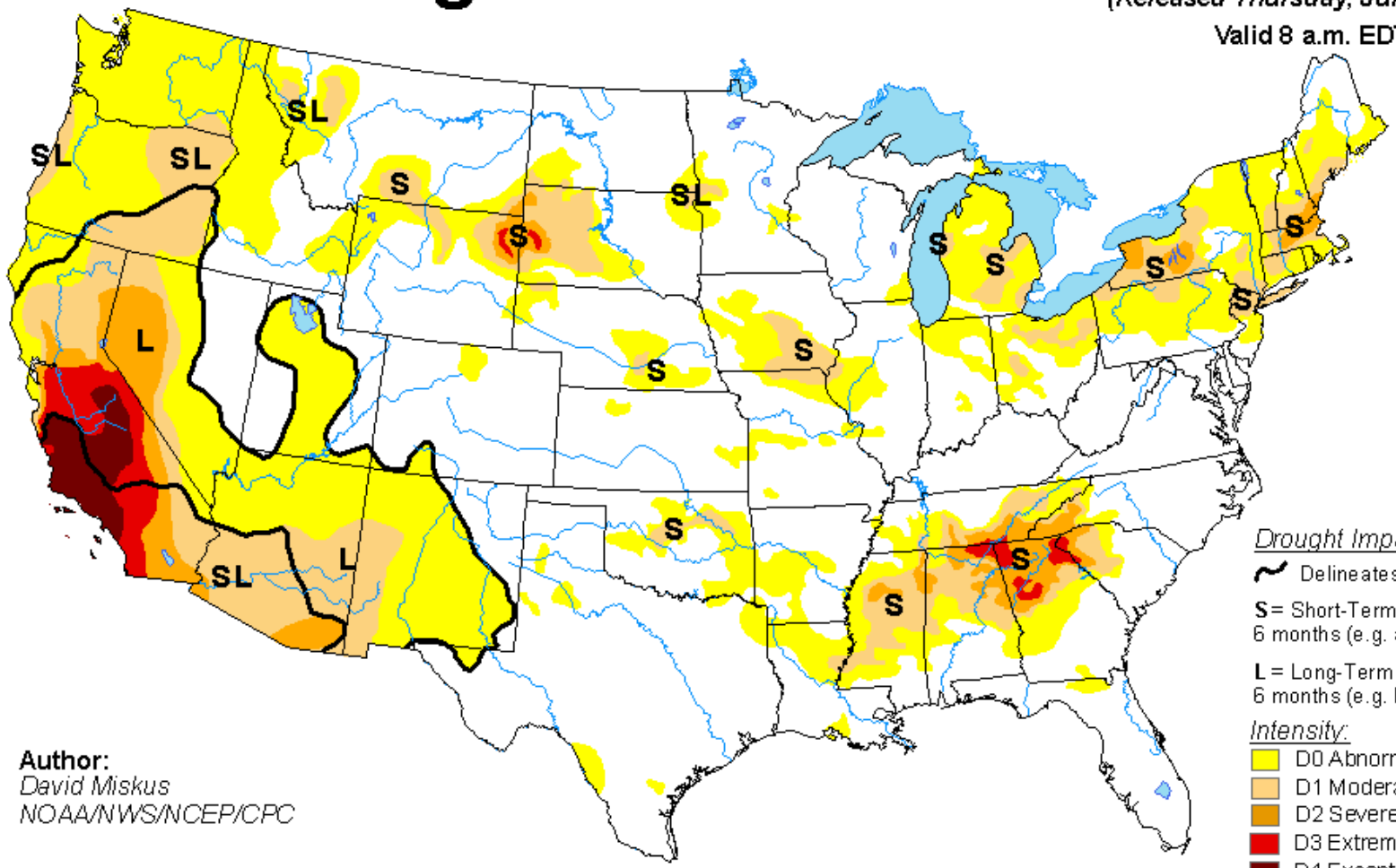
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

July 12, 2016

(Released Thursday, Jul. 14, 2016)

Valid 8 a.m. EDT



Author:
David Miskus
NOAA/NWS/NCEP/CPC

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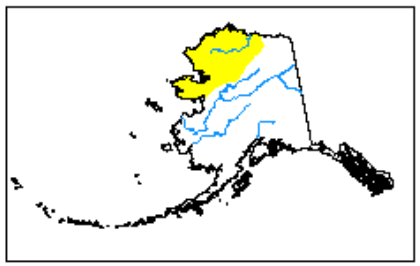
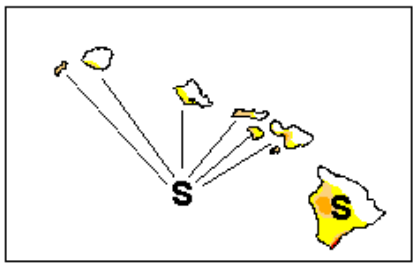
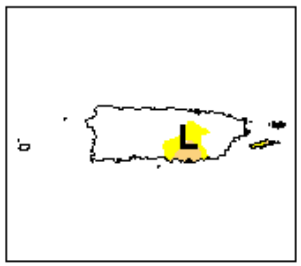




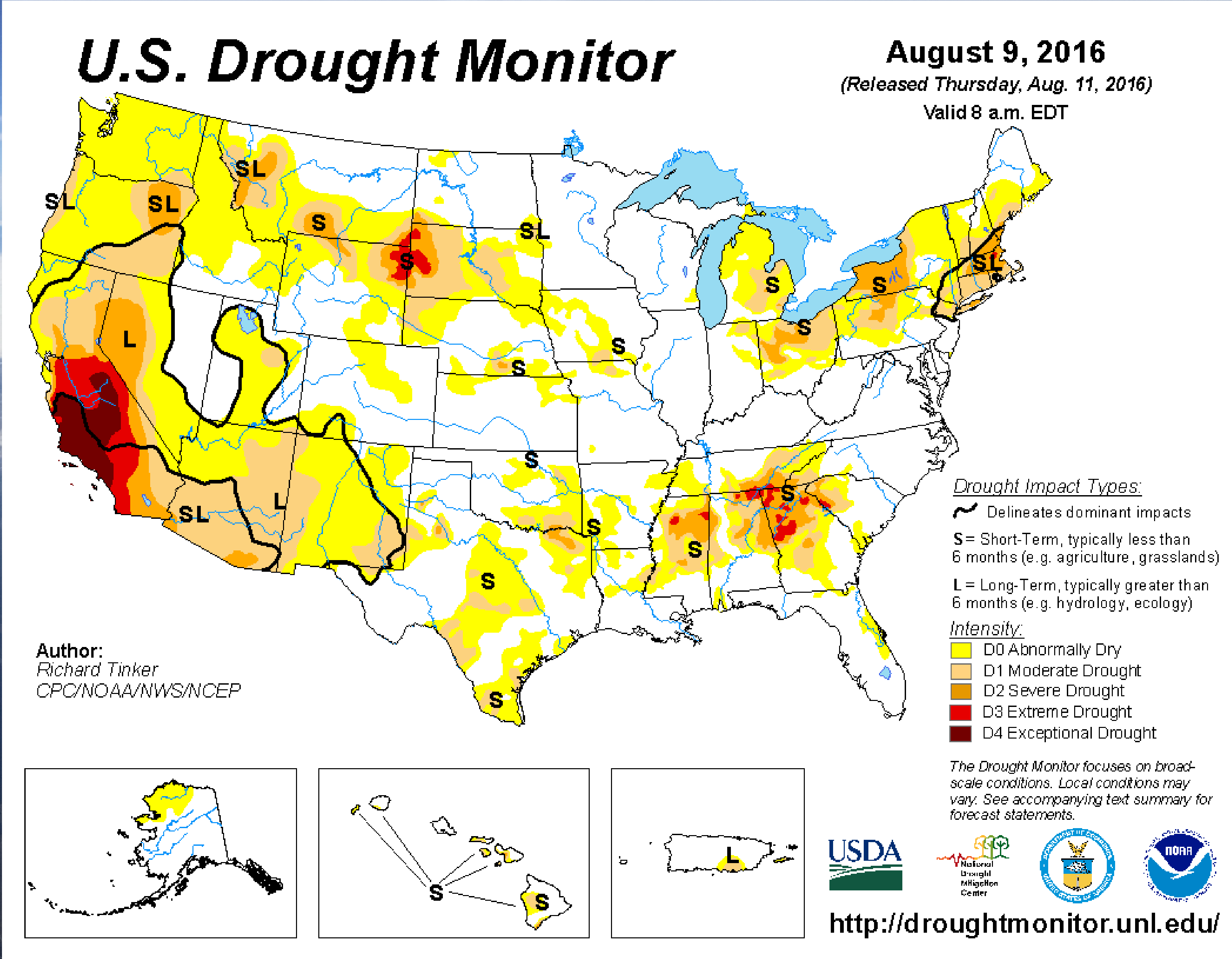


USDA

National Drought Mitigation Center

NOAA

http://droughtmonitor.unl.edu/

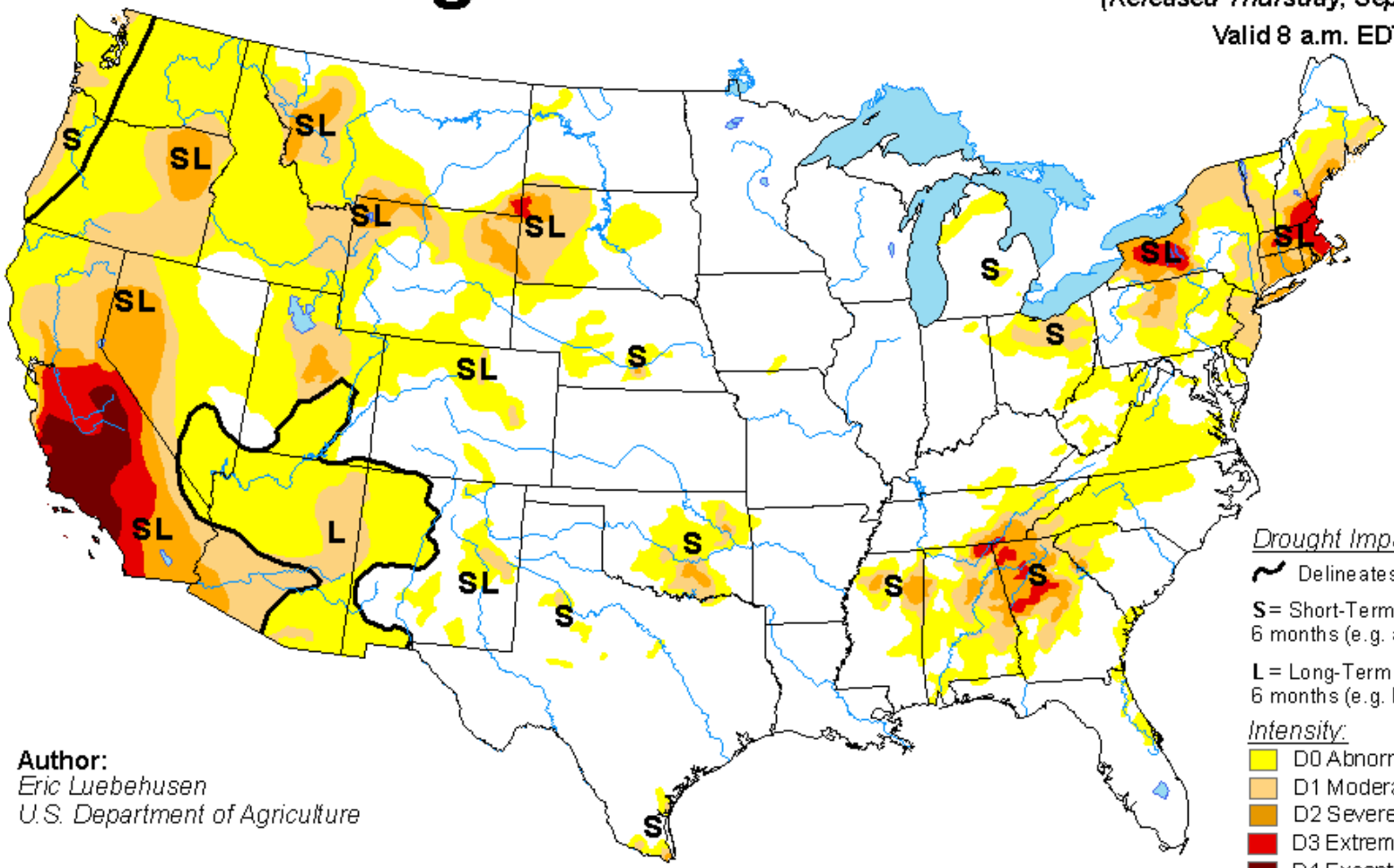

U.S. Drought Monitor
August 9, 2016
(Released Thursday, Aug. 11, 2016)
Valid 8 a.m. EDT
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)
Intensity:
D0 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.
Author:
Richard Tinker
CPC/NOAA/NWS/NCEP
USDA
National Drought Mitigation Center
NOAA
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

September 13, 2016

(Released Thursday, Sep. 15, 2016)

Valid 8 a.m. EDT



Author:
Eric Luebehusen
U.S. Department of Agriculture

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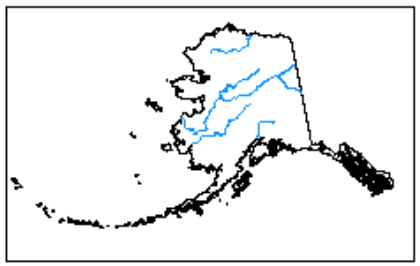
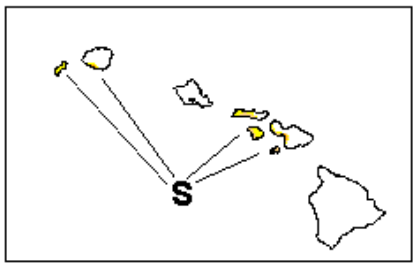
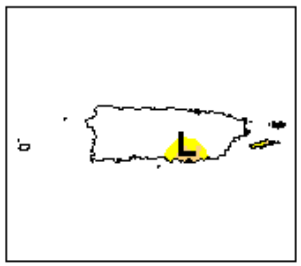






USDA

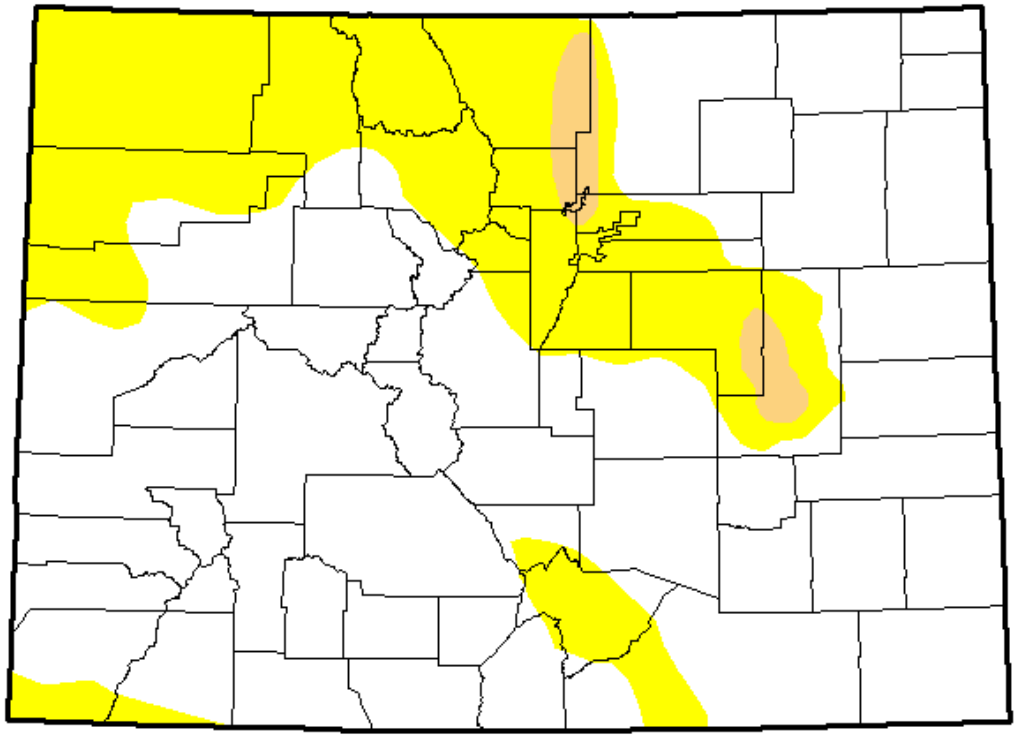
National Drought Mitigation Center

NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

Colorado



September 13, 2016

(Released Thursday, Sep. 15, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	71.75	28.25	1.79	0.00	0.00	0.00
Last Week *9/6/2016*	77.40	22.60	1.09	0.00	0.00	0.00
3 Months Ago *6/14/2016*	96.17	3.83	0.00	0.00	0.00	0.00
Start of Calendar Year *12/29/2015*	90.02	9.98	0.00	0.00	0.00	0.00
Start of Water Year *9/29/2015*	71.49	28.51	0.00	0.00	0.00	0.00
One Year Ago *9/15/2015*	89.49	10.51	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
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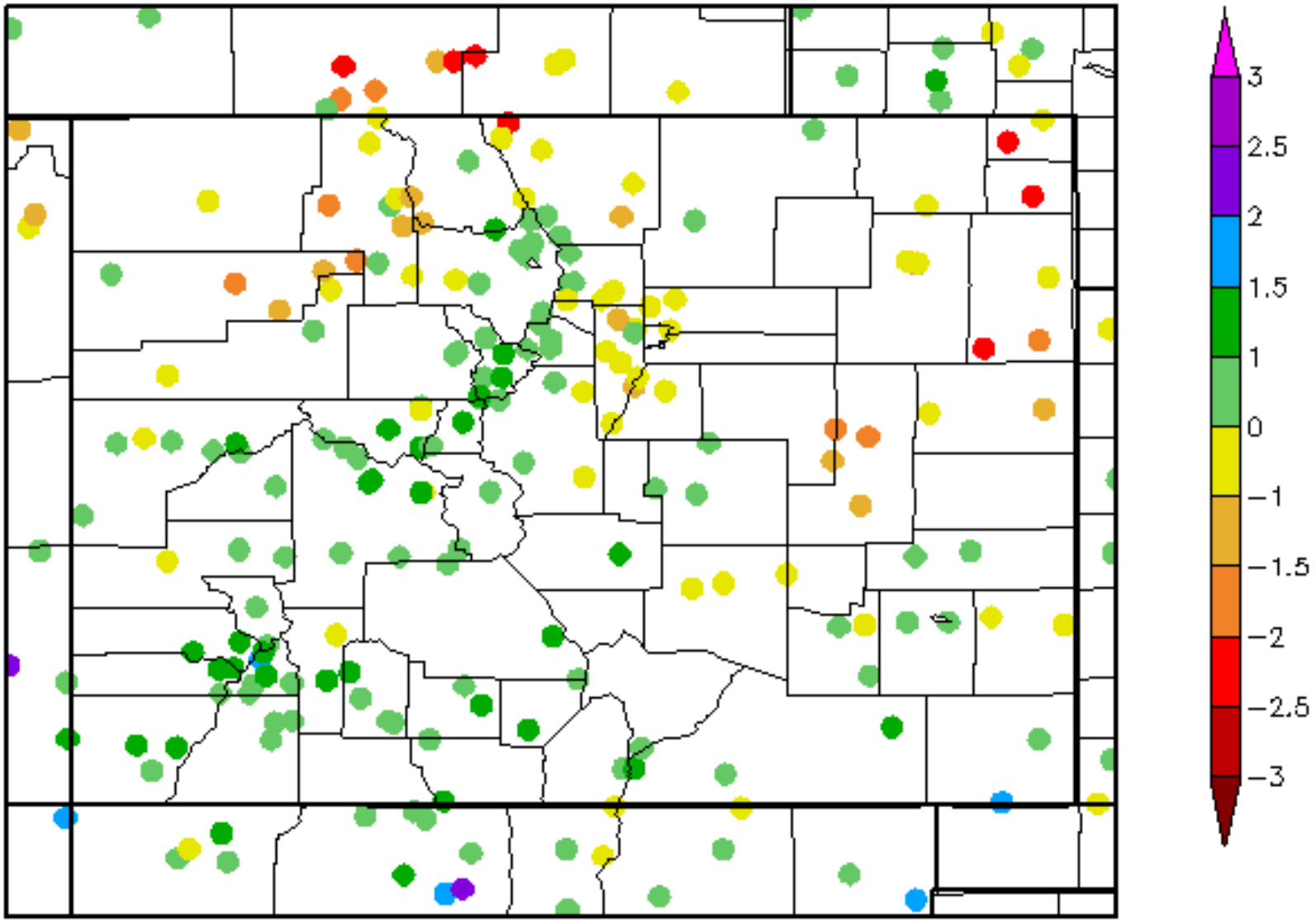
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Eric Luebehusen
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

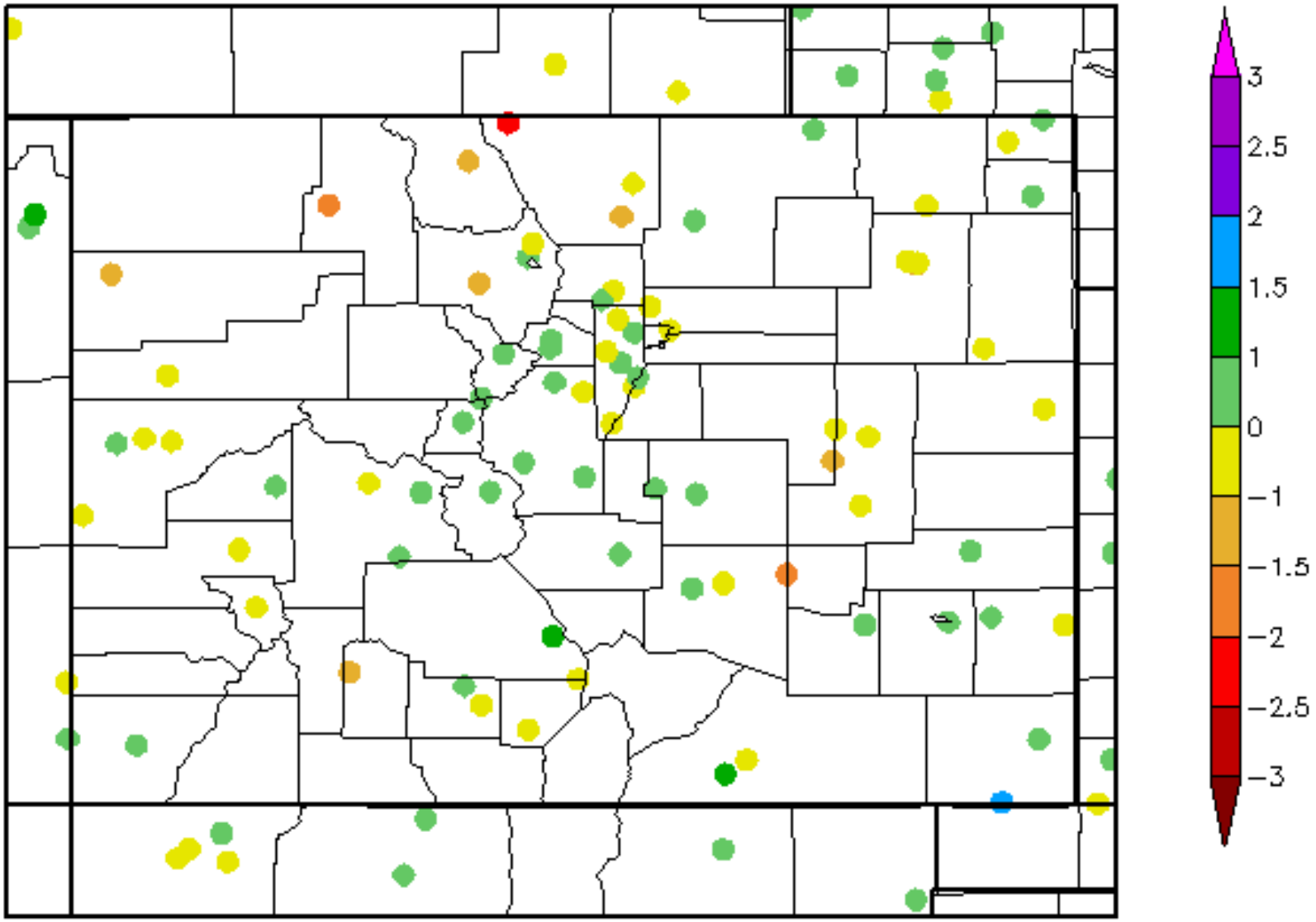
Monthly SPI
8/1/2016 – 8/31/2016



Generated 9/11/2016 at HPRCC using provisional data.

Regional Climate Centers

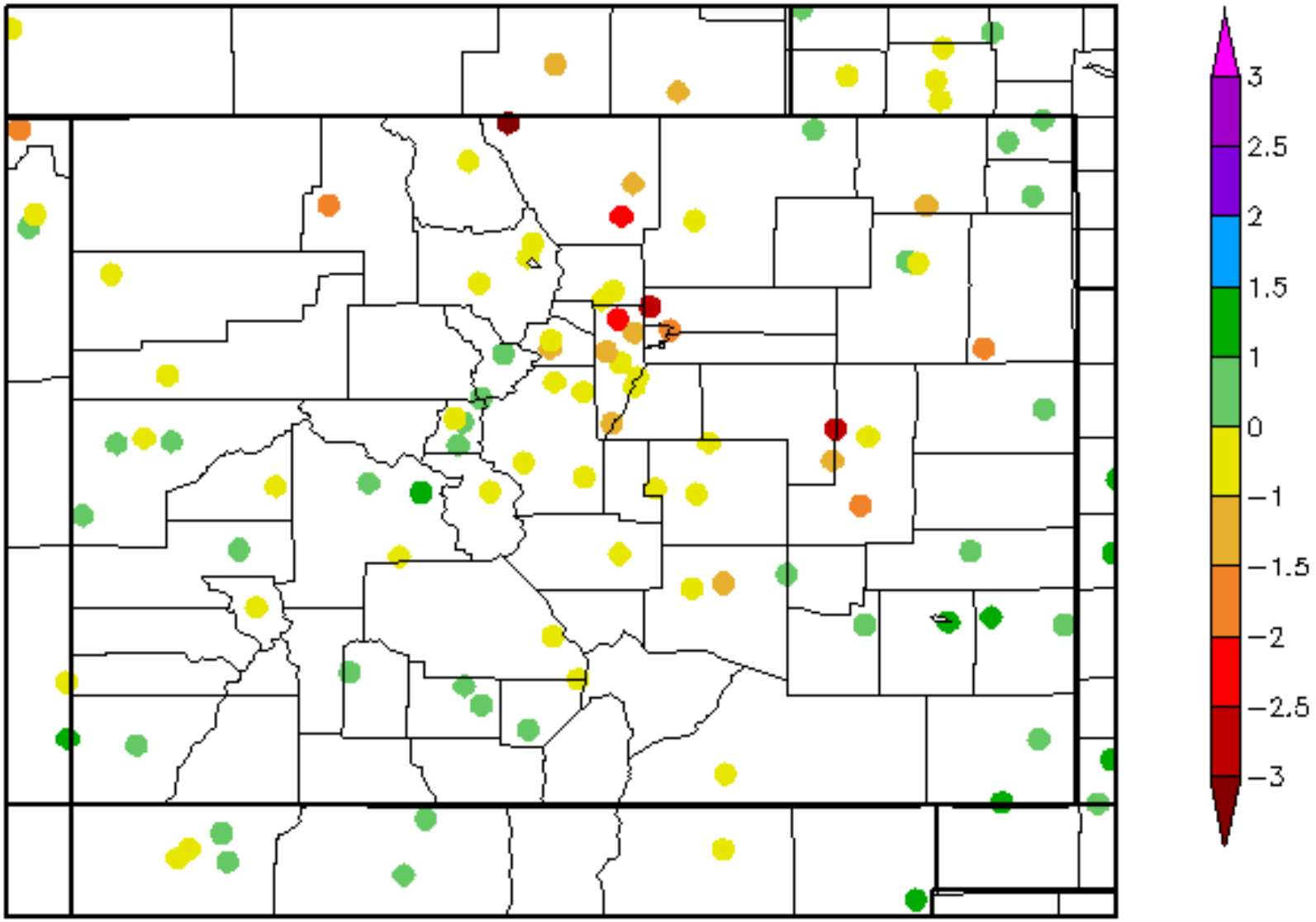
30 Day SPI
8/16/2016 – 9/14/2016



Generated 9/15/2016 at HPRCC using provisional data.

Regional Climate Centers

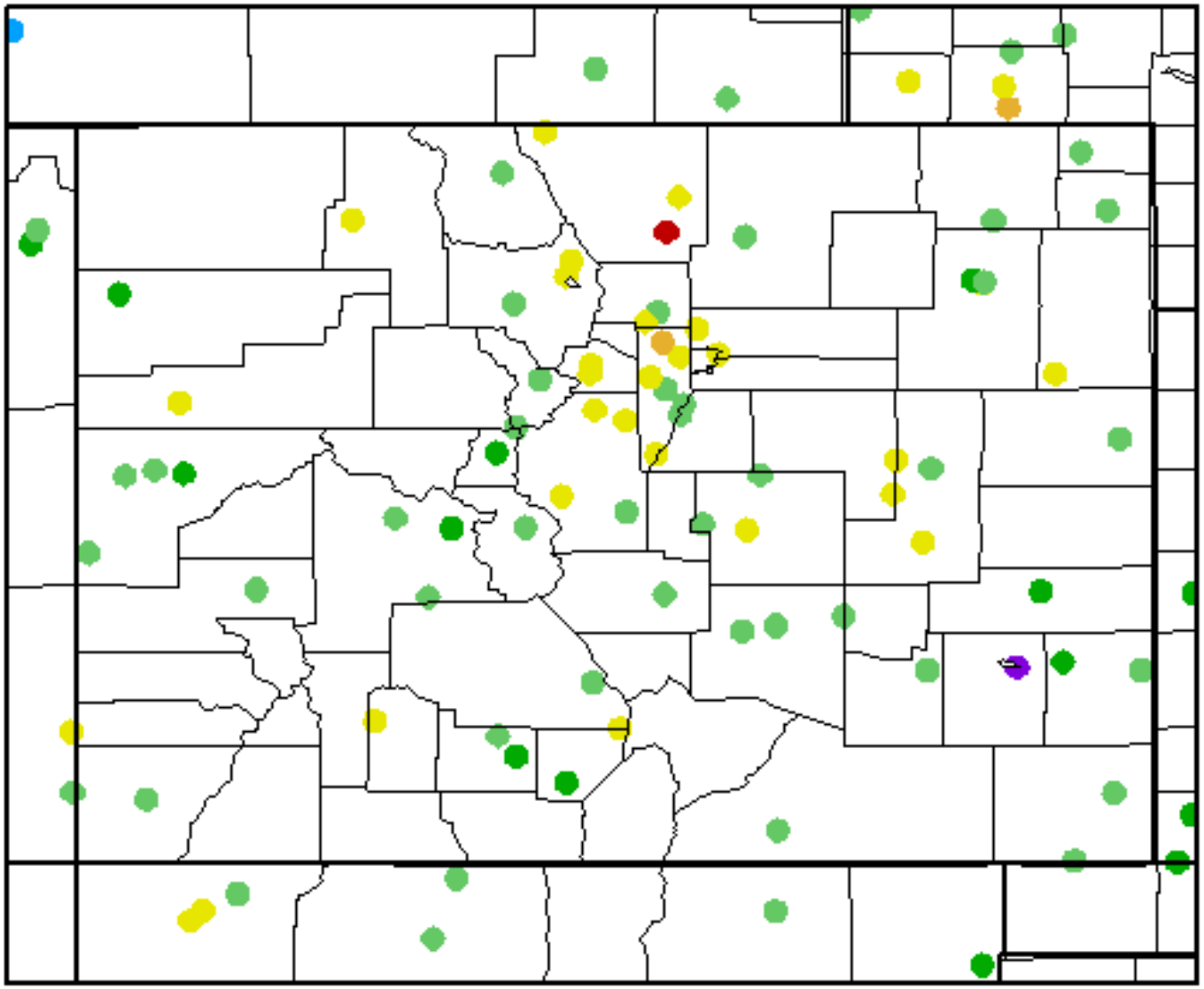
90 Day SPI
6/17/2016 – 9/14/2016



Generated 9/15/2016 at HPRCC using provisional data.

Regional Climate Centers

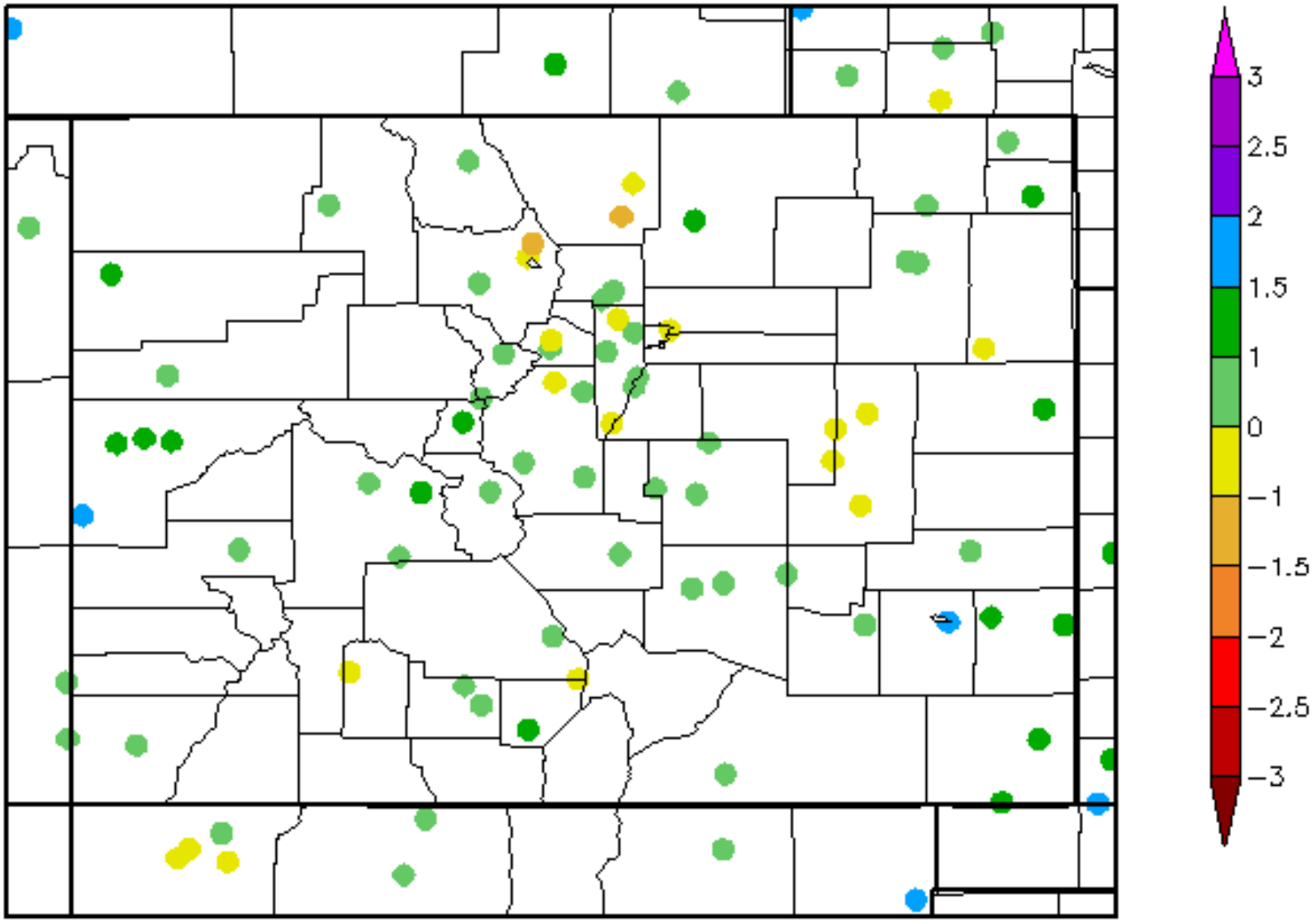
6 Month SPI
3/15/2016 – 9/14/2016



Generated 9/15/2016 at HPRCC using provisional data.

Regional Climate Centers

12 Month SPI
9/15/2015 – 9/14/2016

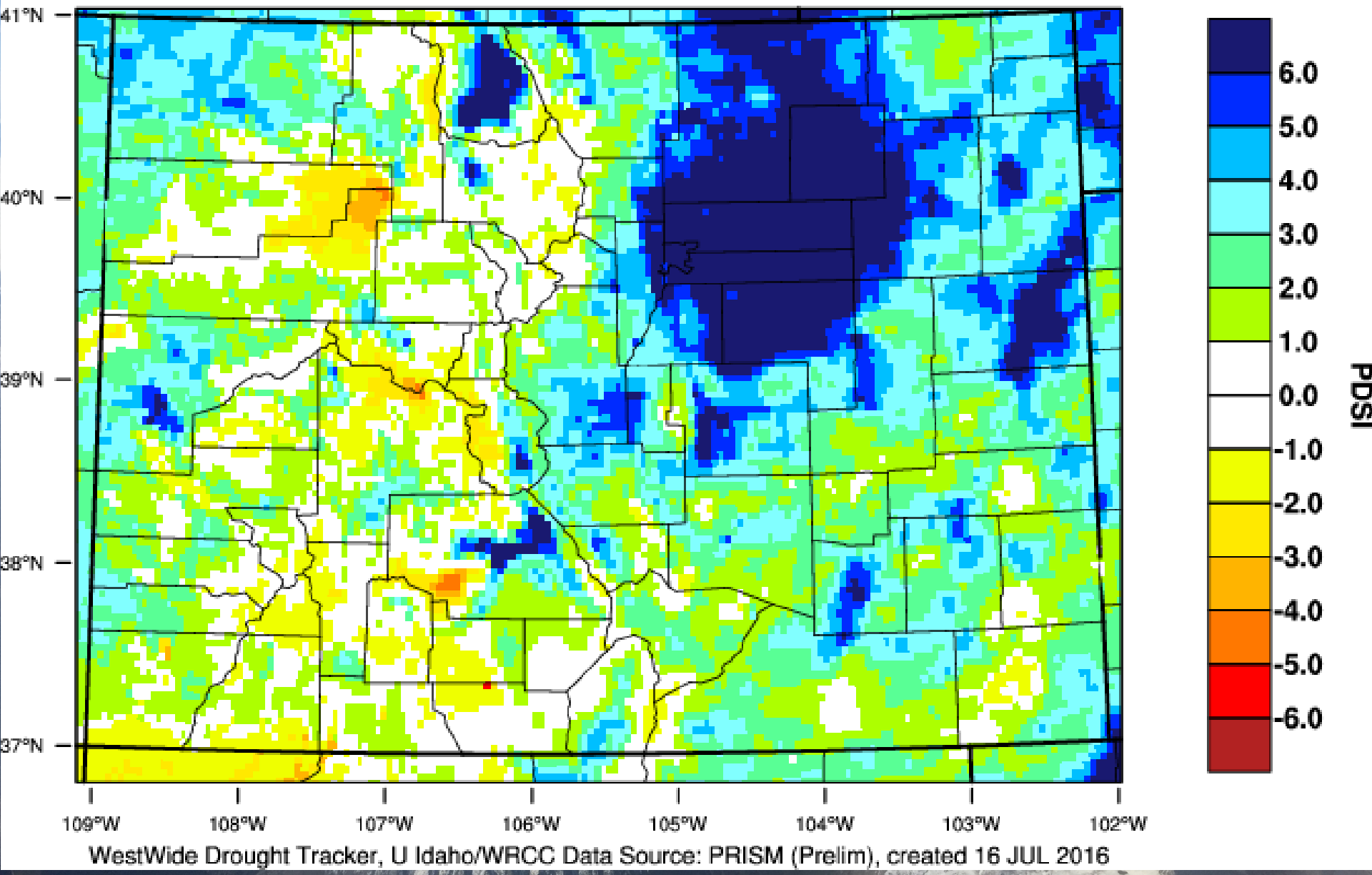


Generated 9/15/2016 at HPRCC using provisional data.

Regional Climate Centers

Colorado - PDSI

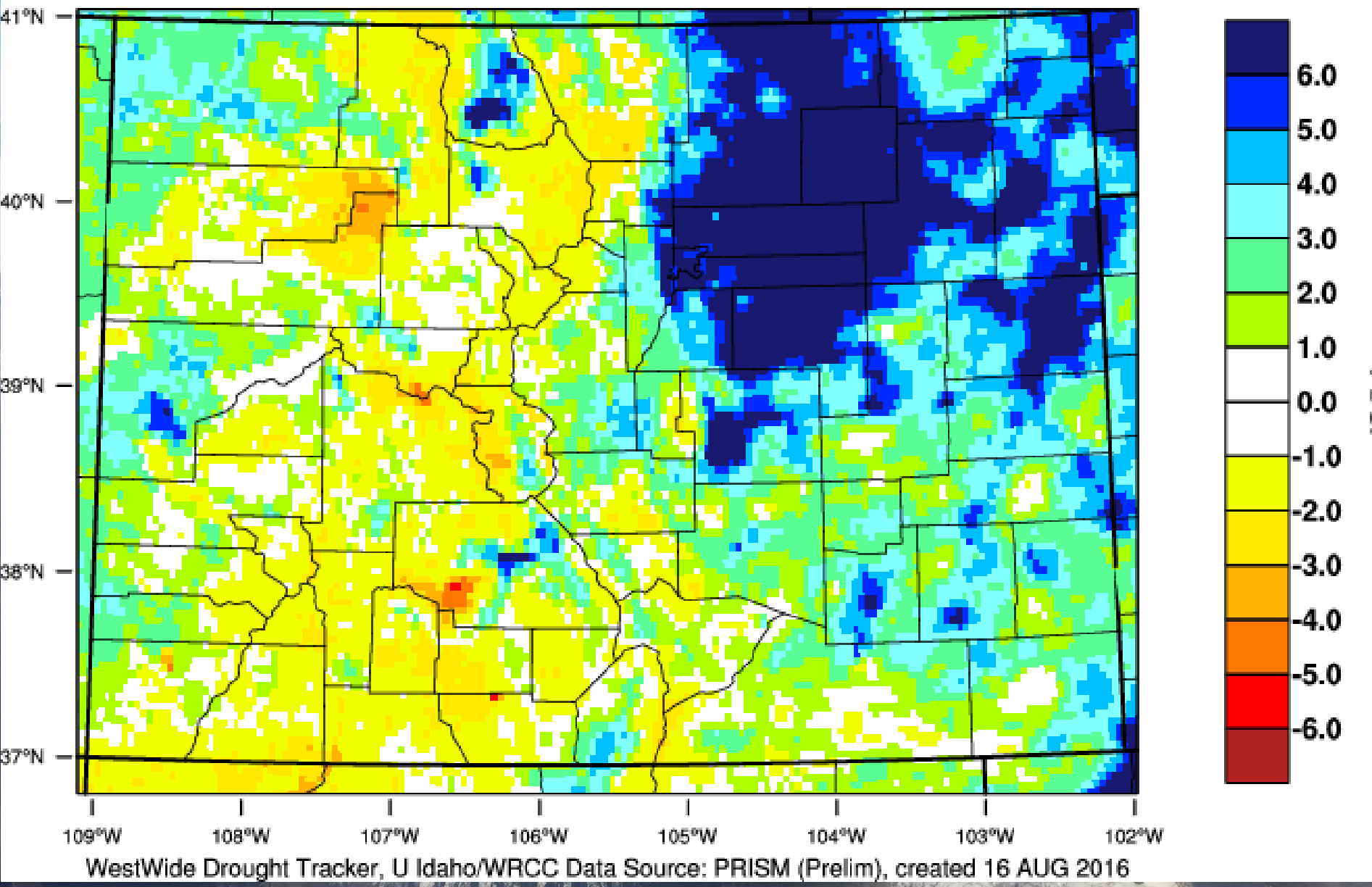
June 2016



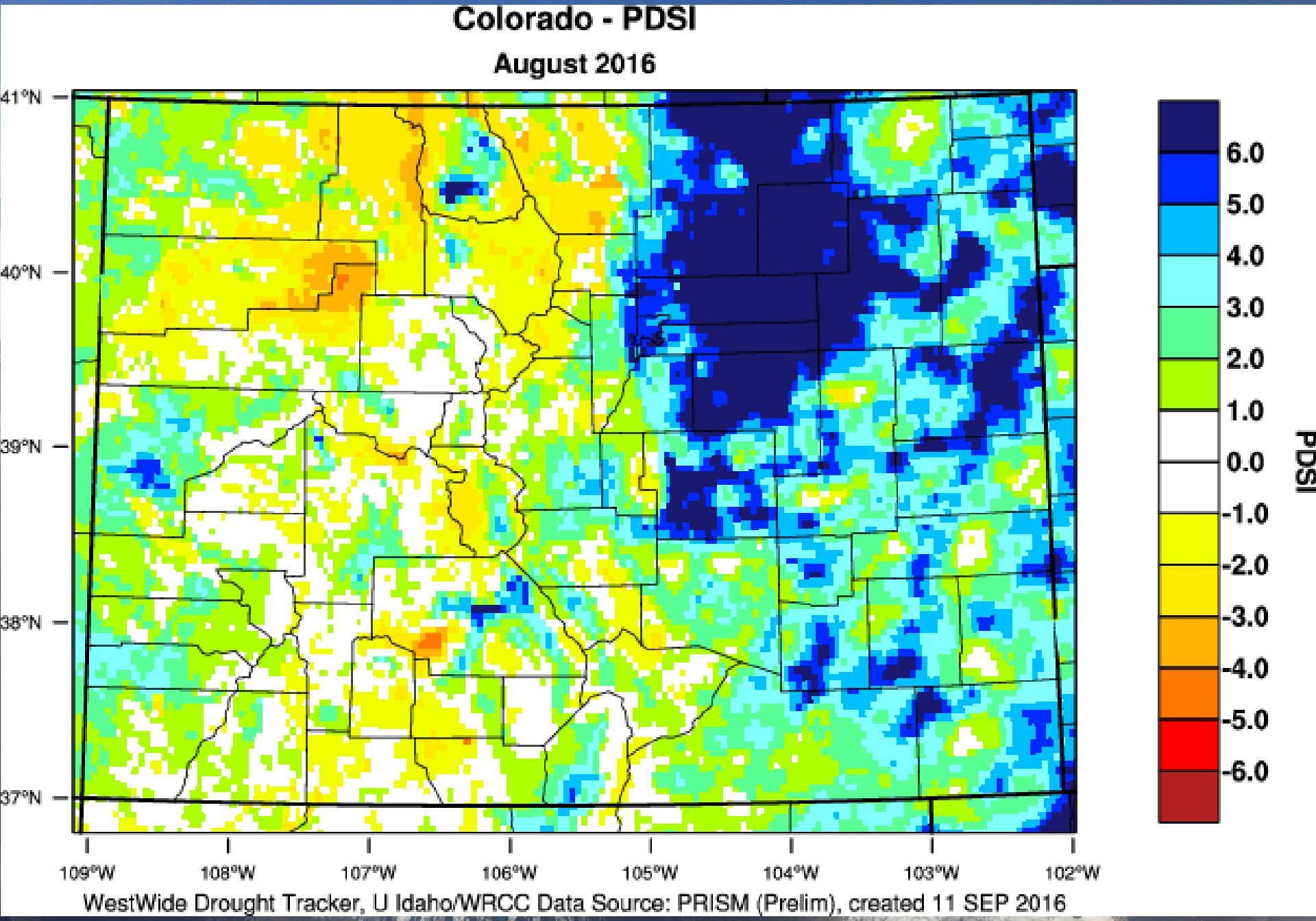
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 JUL 2016

Colorado - PDSI

July 2016



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2016


Colorado - PDSI
August 2016
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
PDSI
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 SEP 2016

Colorado Climate Center

Data and Power Point Presentations available for downloading

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

Colorado State University
Knowledge to Go Places