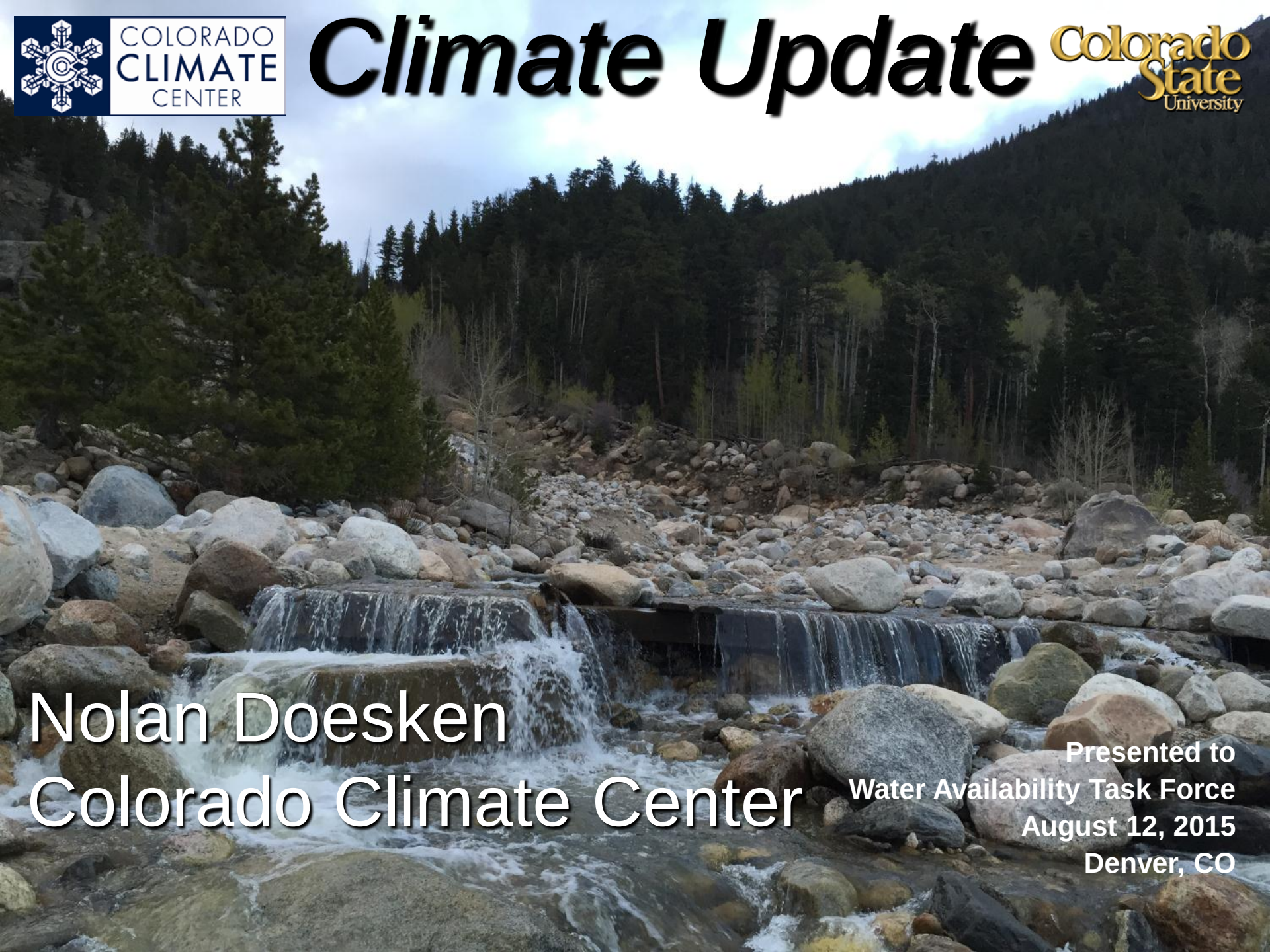
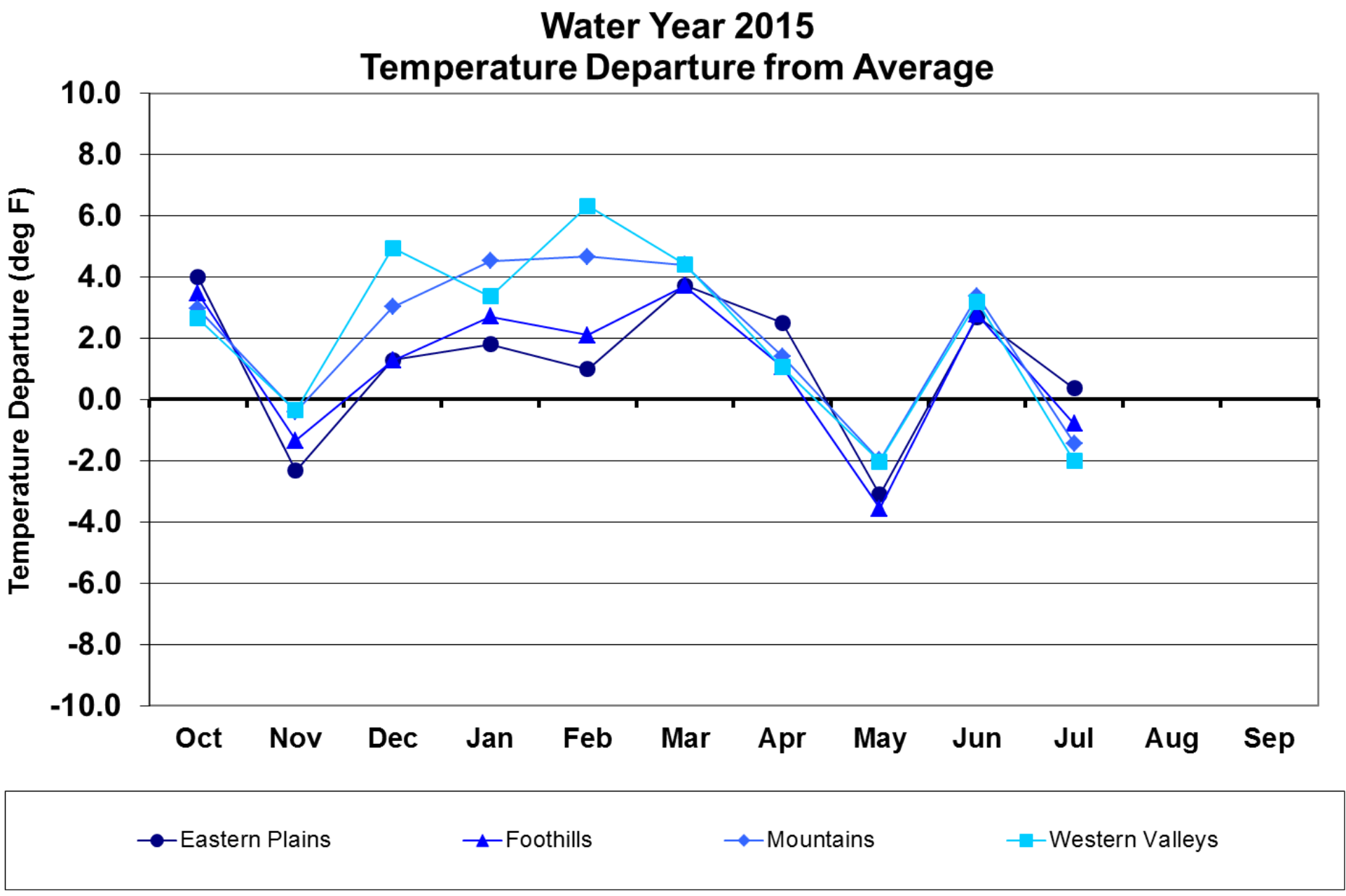


Climate Update

Nolan Doesken
Colorado Climate Center

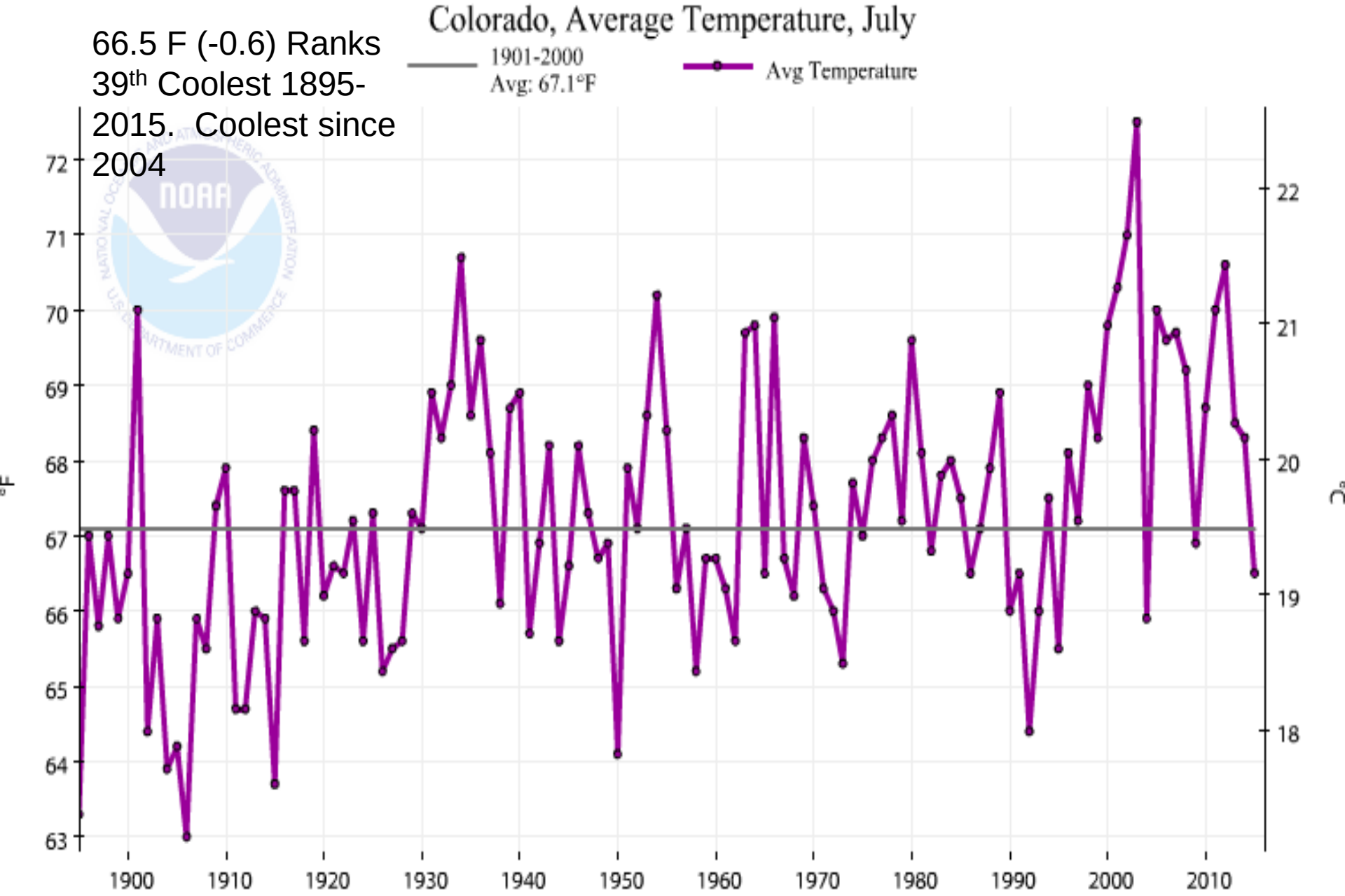
Presented to
Water Availability Task Force
August 12, 2015
Denver, CO

Water Year 2015 Temperature Departures

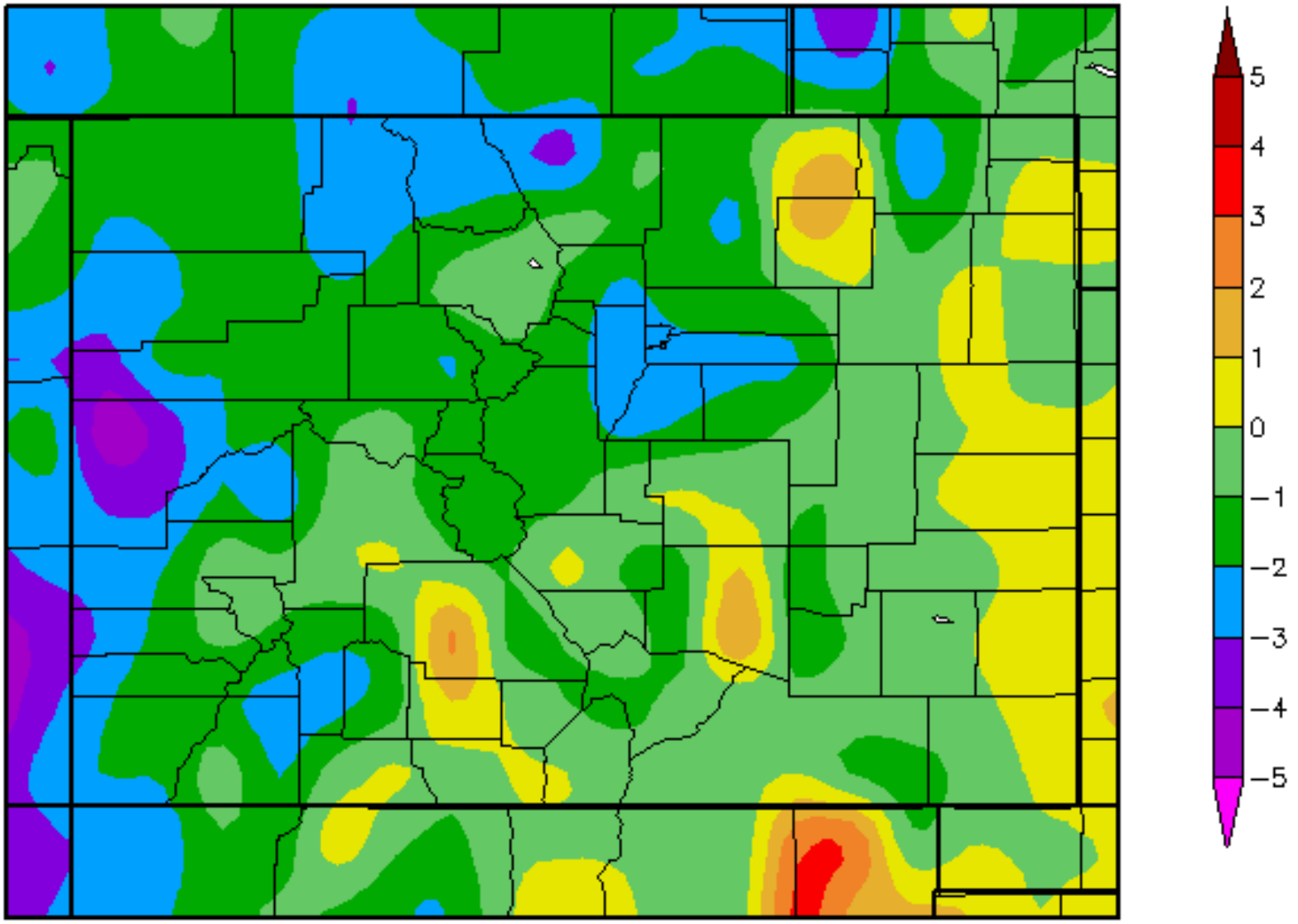


July 2015 Average Temperature History for Colorado (NCDC)

66.5 F (-0.6) Ranks 39th Coolest 1895-2015. Coolest since 2004



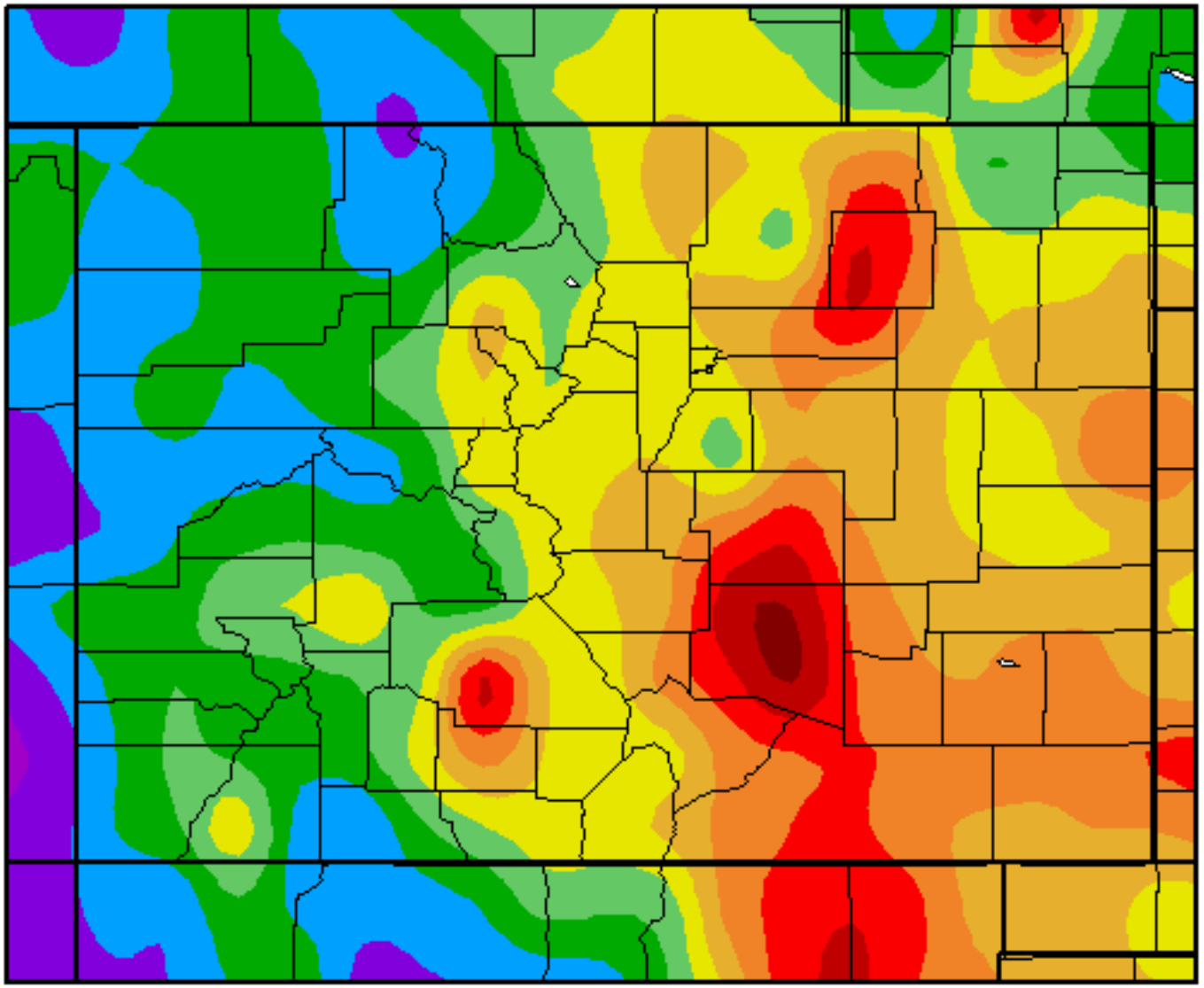
Departure from Normal Temperature (F)
7/1/2015 – 7/31/2015



Generated 8/5/2015 at HPRCC using provisional data.

Regional Climate Centers

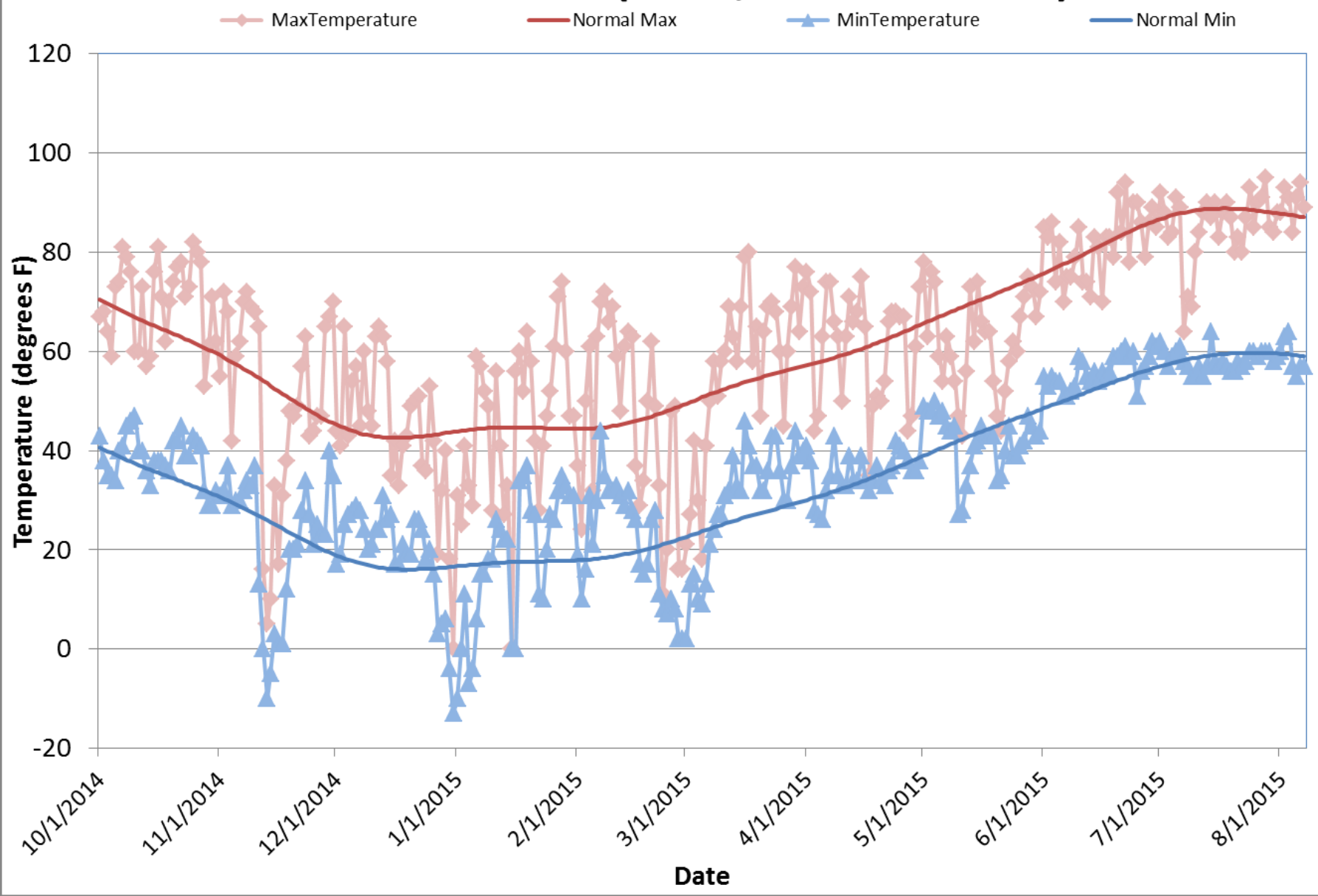
Departure from Normal Temperature (F)
8/1/2015 – 8/10/2015



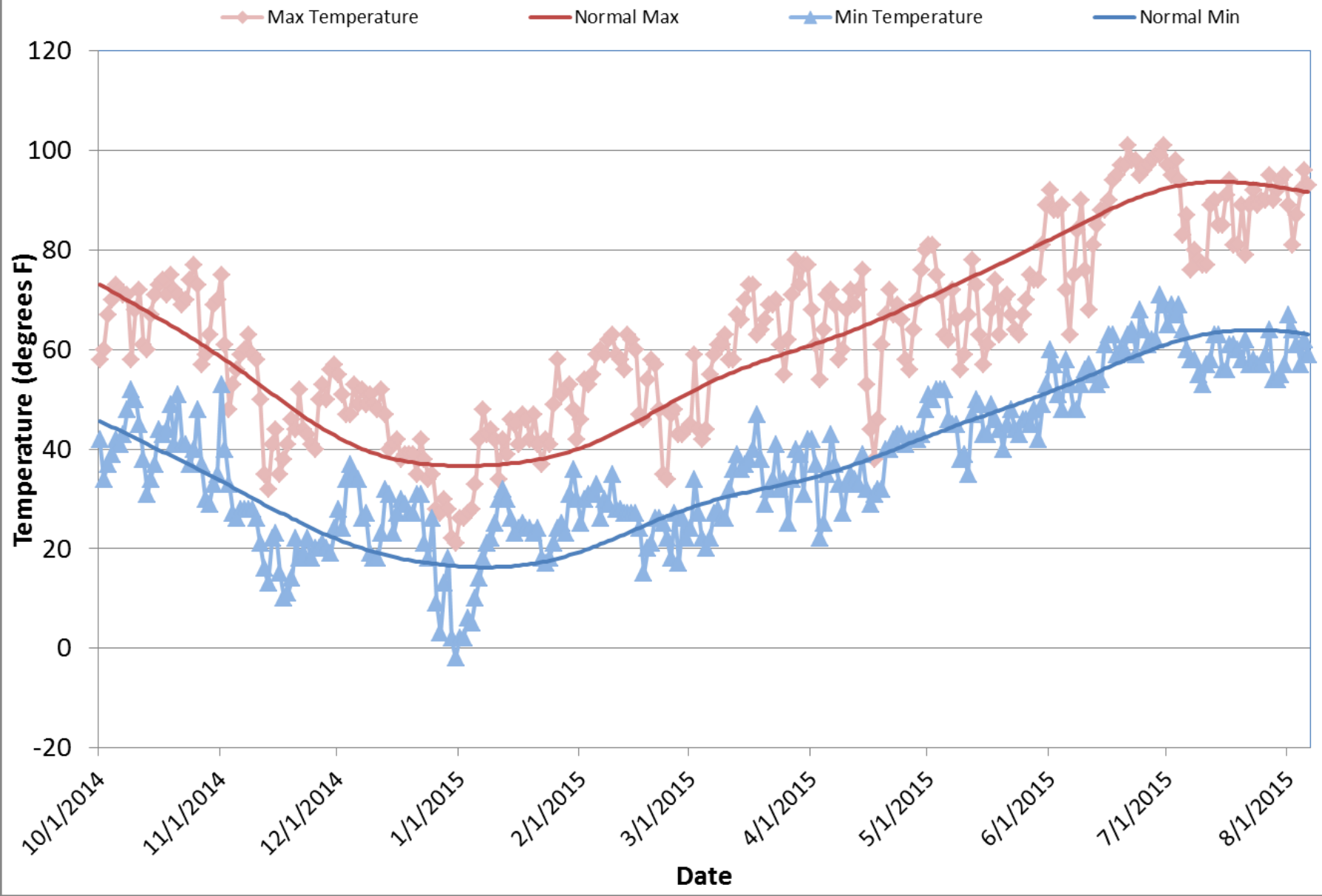
Generated 8/11/2015 at HPRCC using provisional data.

Regional Climate Centers

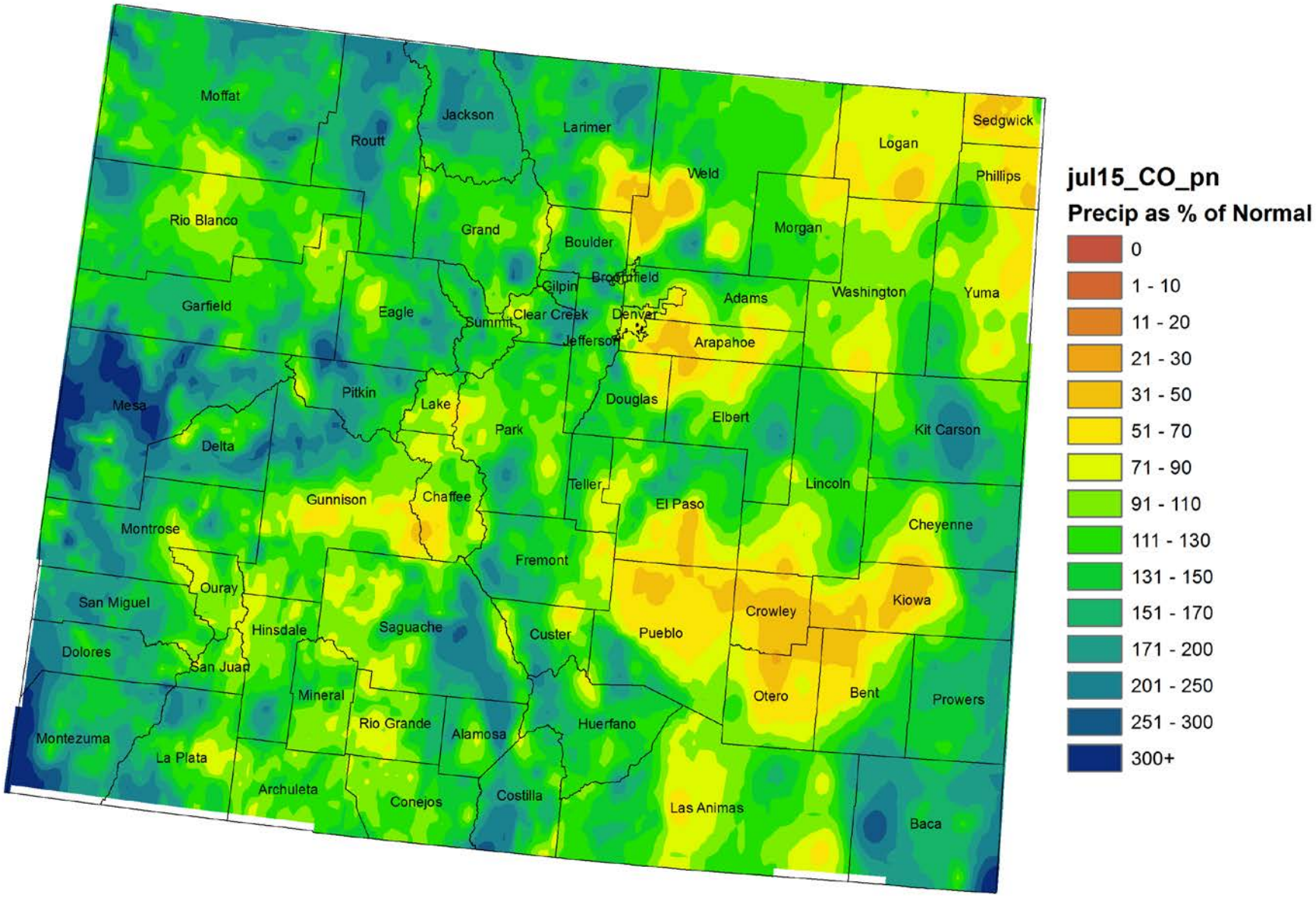
Denver-Stapleton Daily Max/Min Temperature with Normal (Oct 1, 2014 - Present)



Grand Junction Daily Max/Min Temperature with Normals (Oct 1, 2014 - Present)



Colorado July 2015 Precipitation as a Percentage of Normal

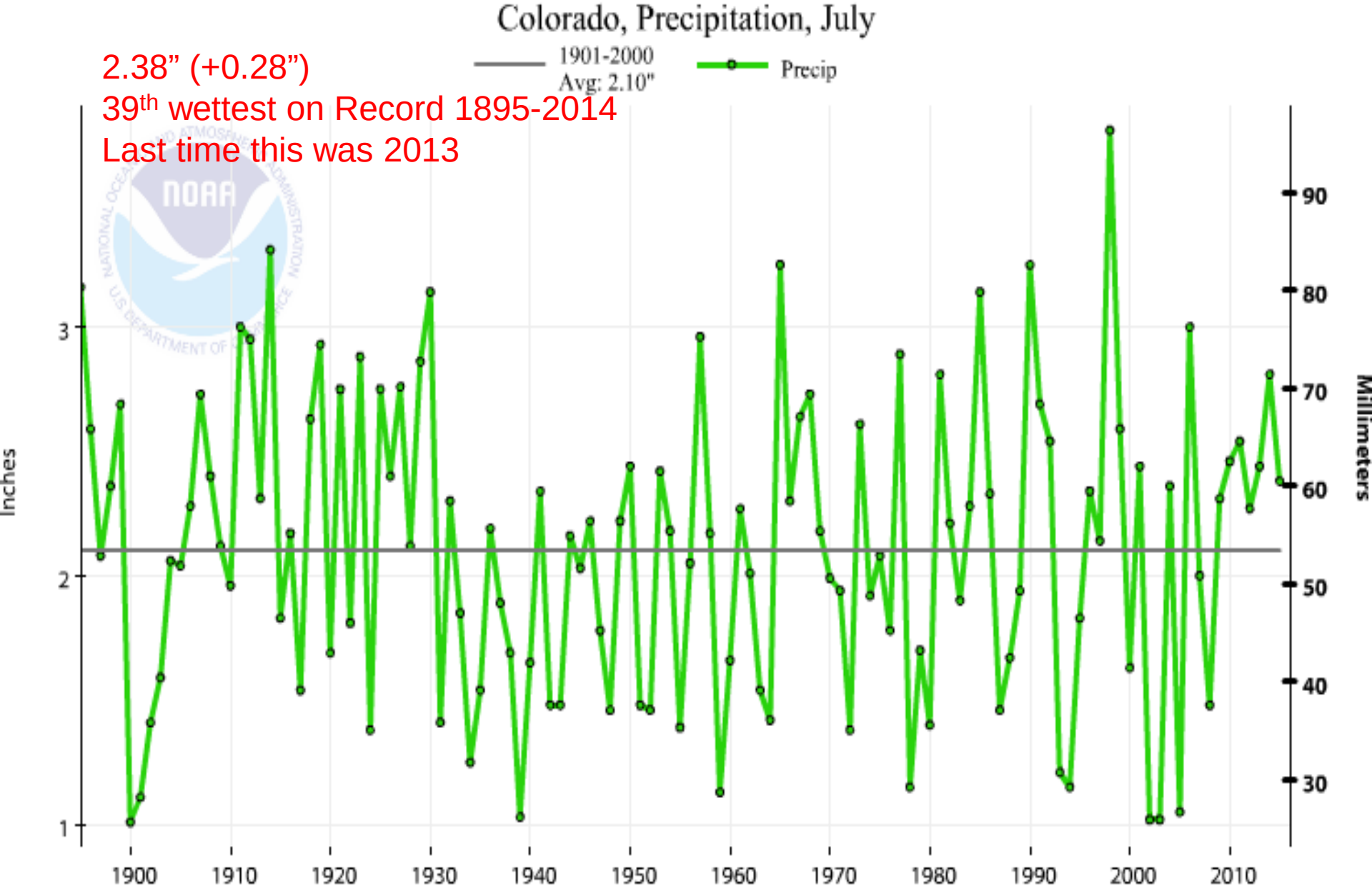


July 2015 Statewide Precipitation

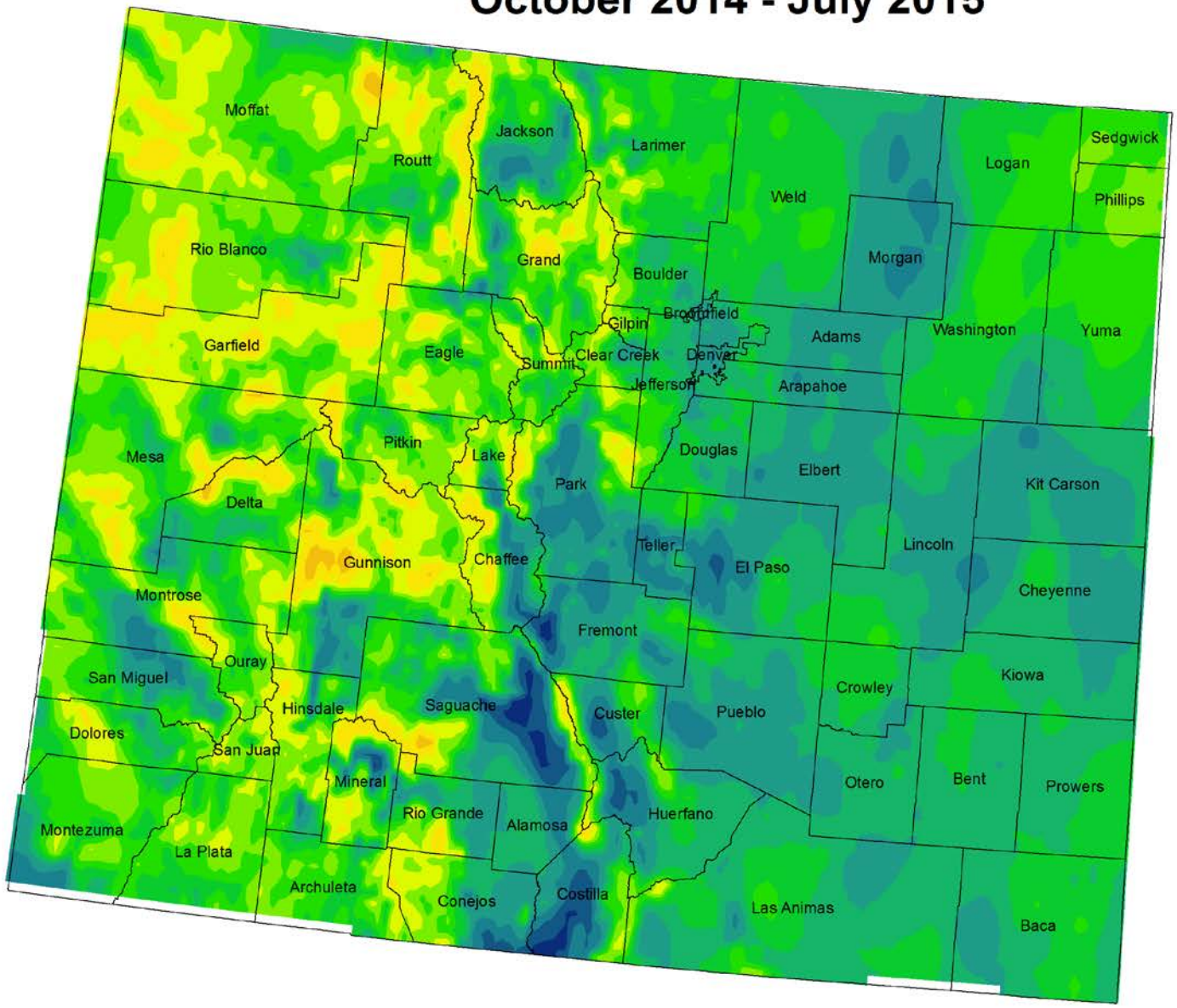
2.38” (+0.28”)

39th wettest on Record 1895-2014

Last time this was 2013



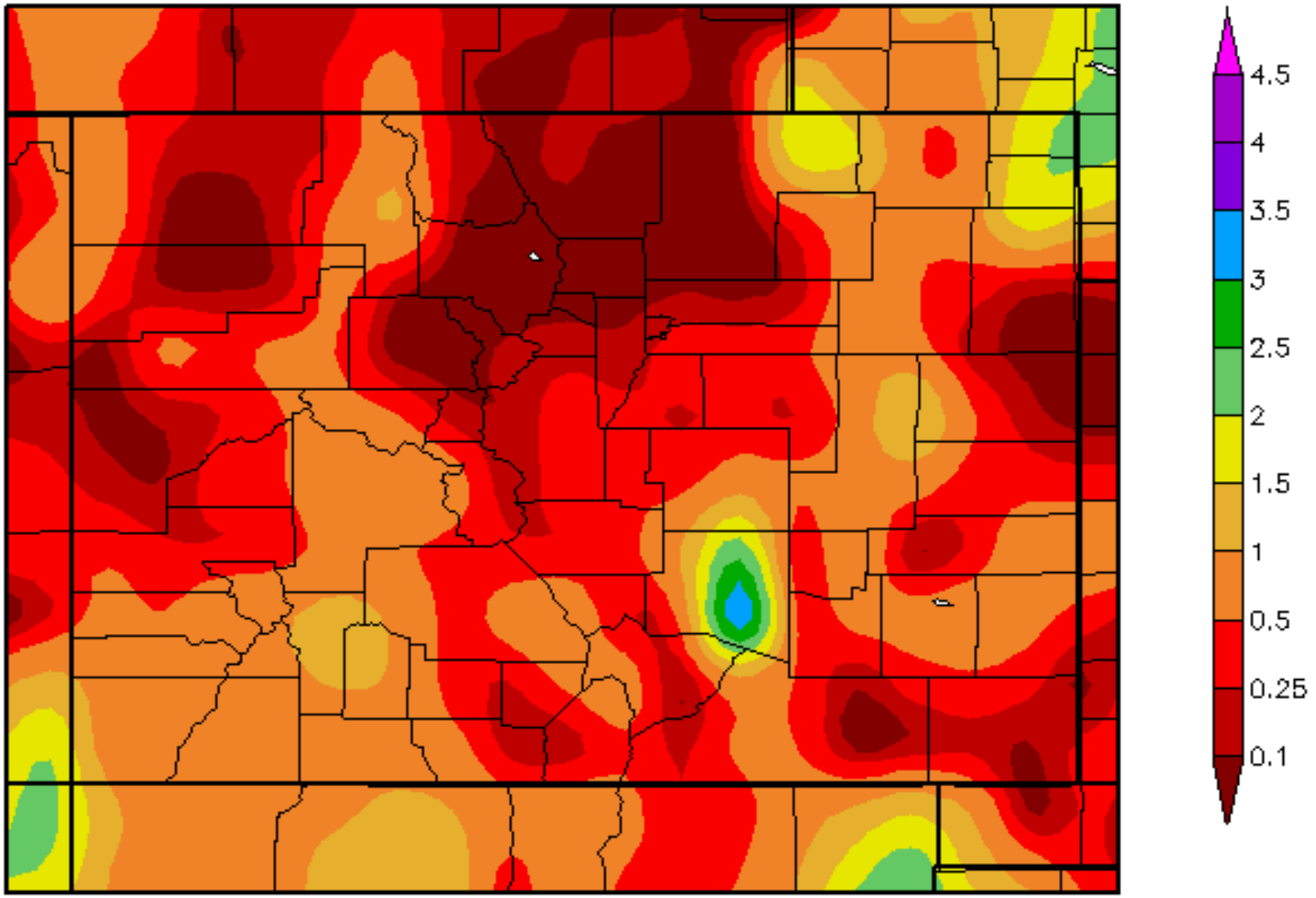
Colorado Water Year Precipitation as a Percentage of Normal October 2014 - July 2015



awy_jul_pn_co
Precip % 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+

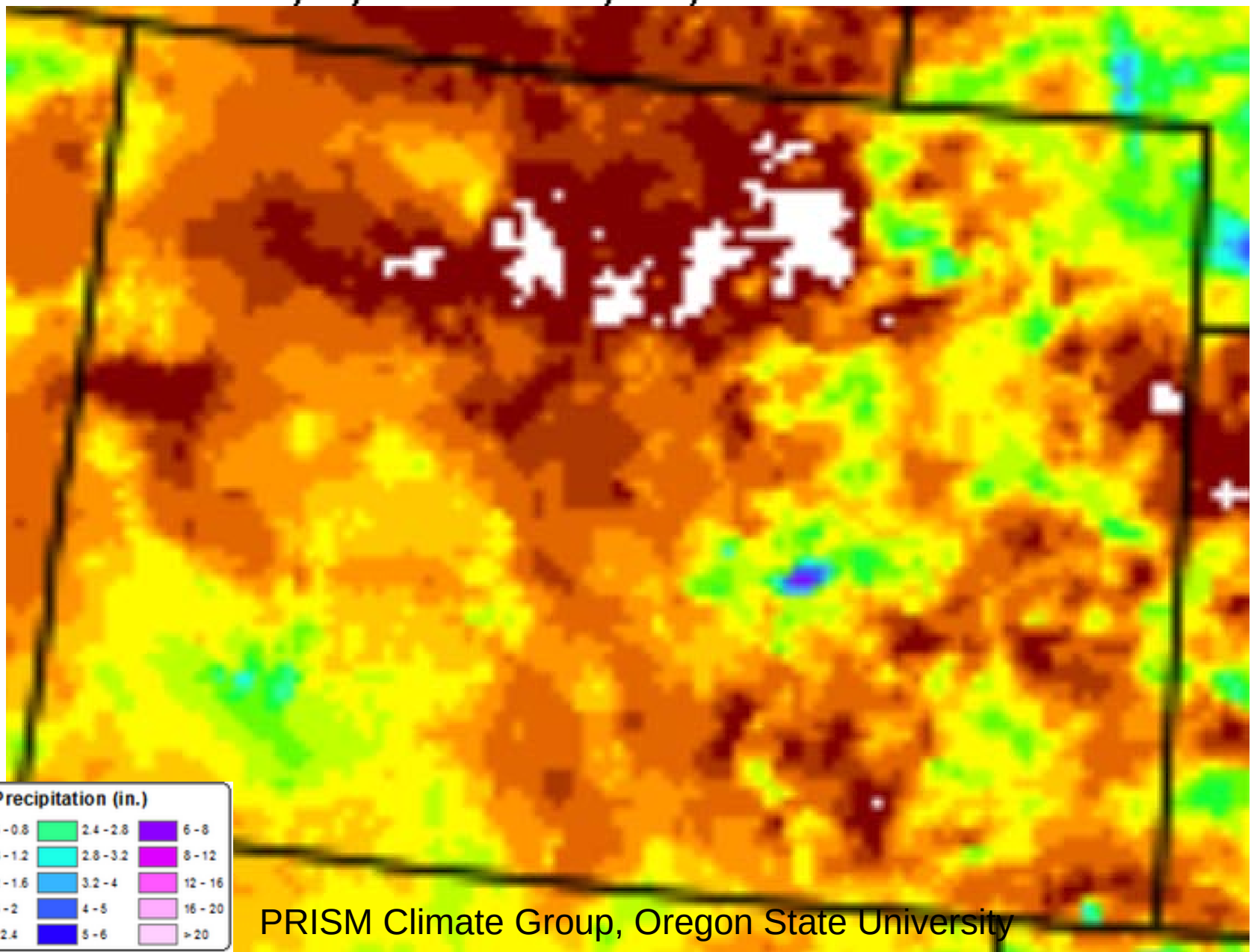
Precipitation (in)
8/1/2015 – 8/10/2015



Generated 8/11/2015 at HPRCC using provisional data.

Regional Climate Centers

Precipitation (in)
8/1/2015 – 8/10/2015

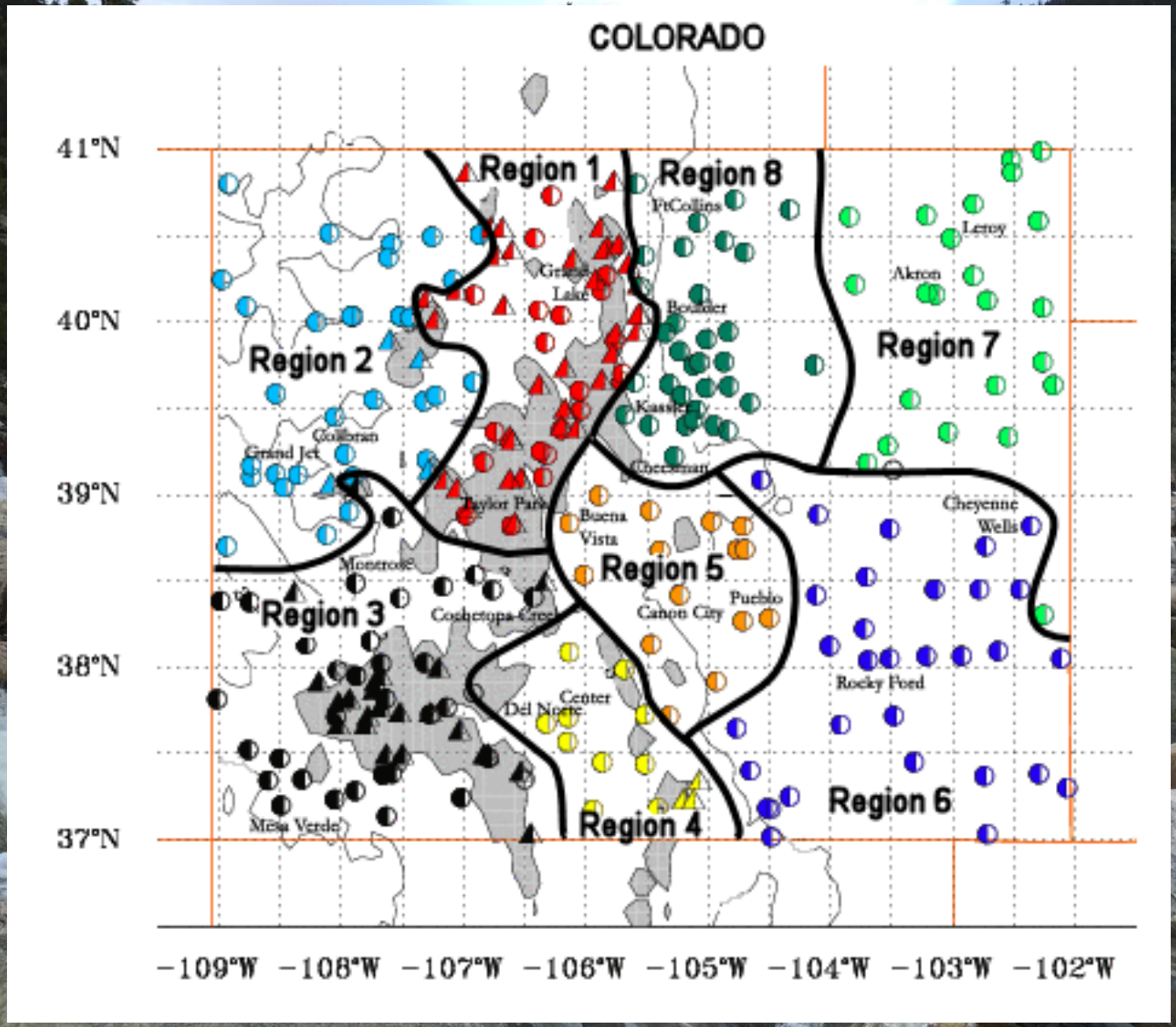


Monthly Precipitation (in.)

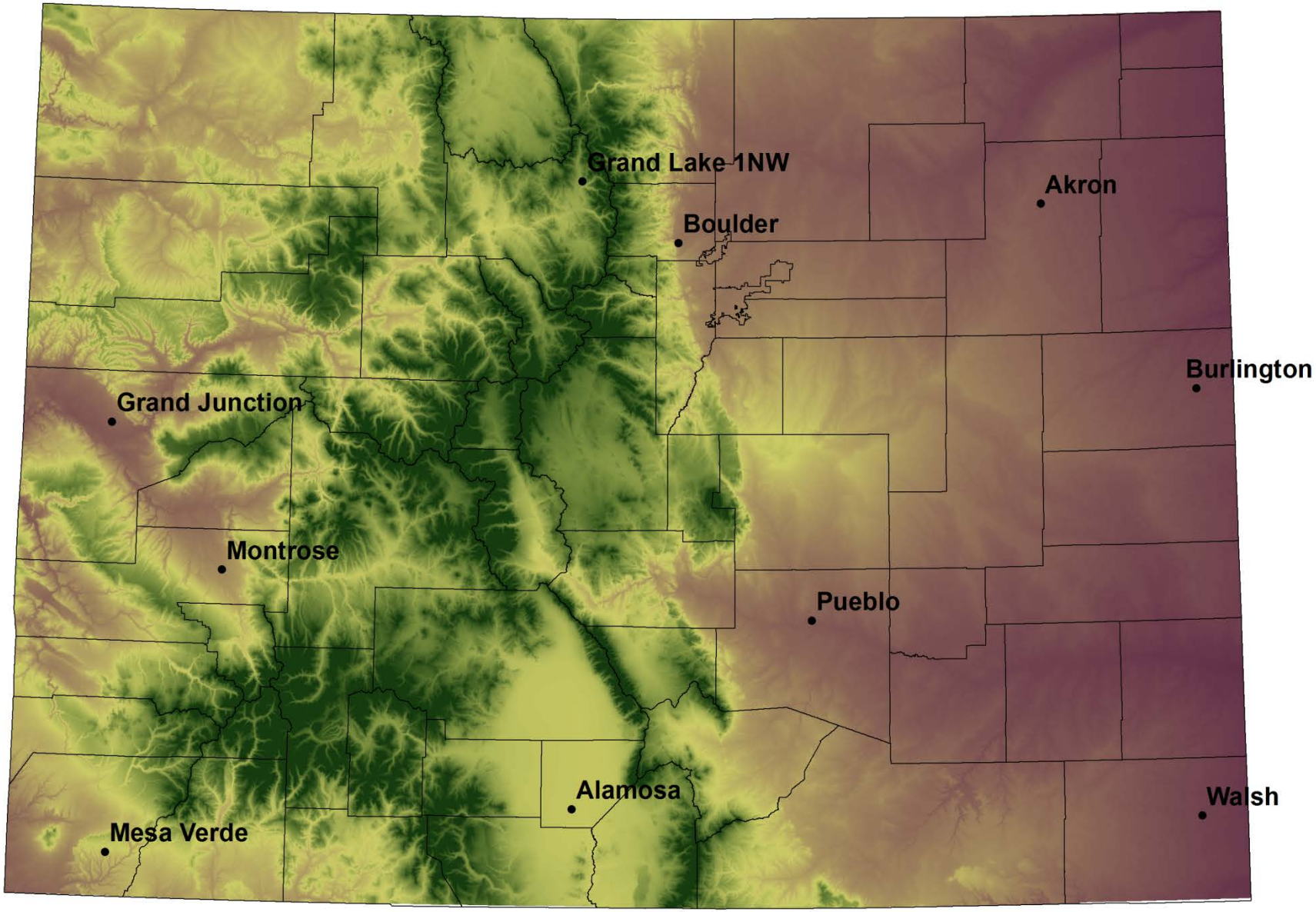
<0.01	0.6 - 0.8	2.4 - 2.8	6 - 8
.01 - 0.1	0.8 - 1.2	2.8 - 3.2	8 - 12
0.1 - 0.2	1.2 - 1.6	3.2 - 4	12 - 16
0.2 - 0.4	1.6 - 2	4 - 5	16 - 20
0.4 - 0.6	2 - 2.4	5 - 6	>20

PRISM Climate Group, Oregon State University

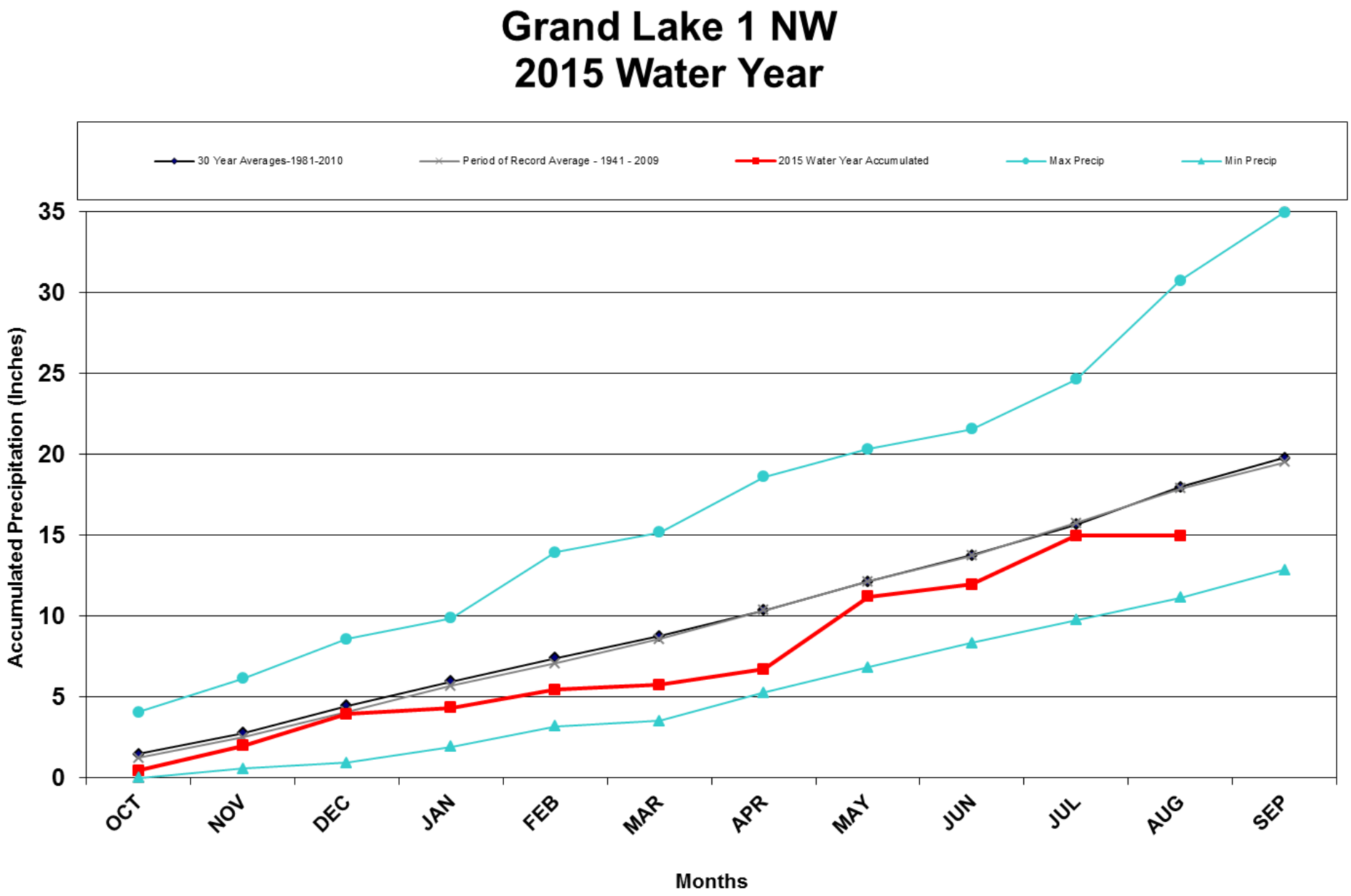
Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



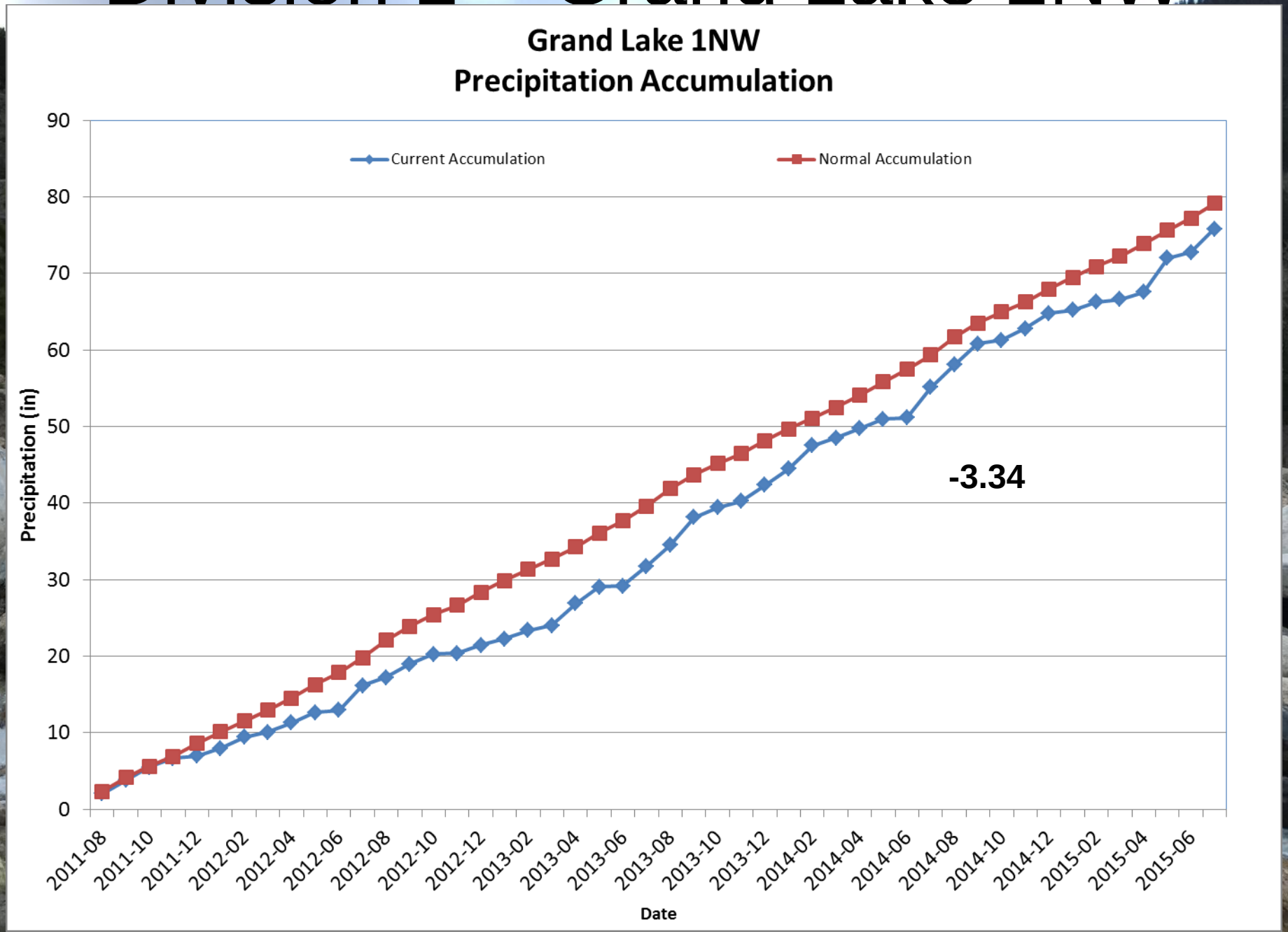
NWS Cooperative Stations for WATF



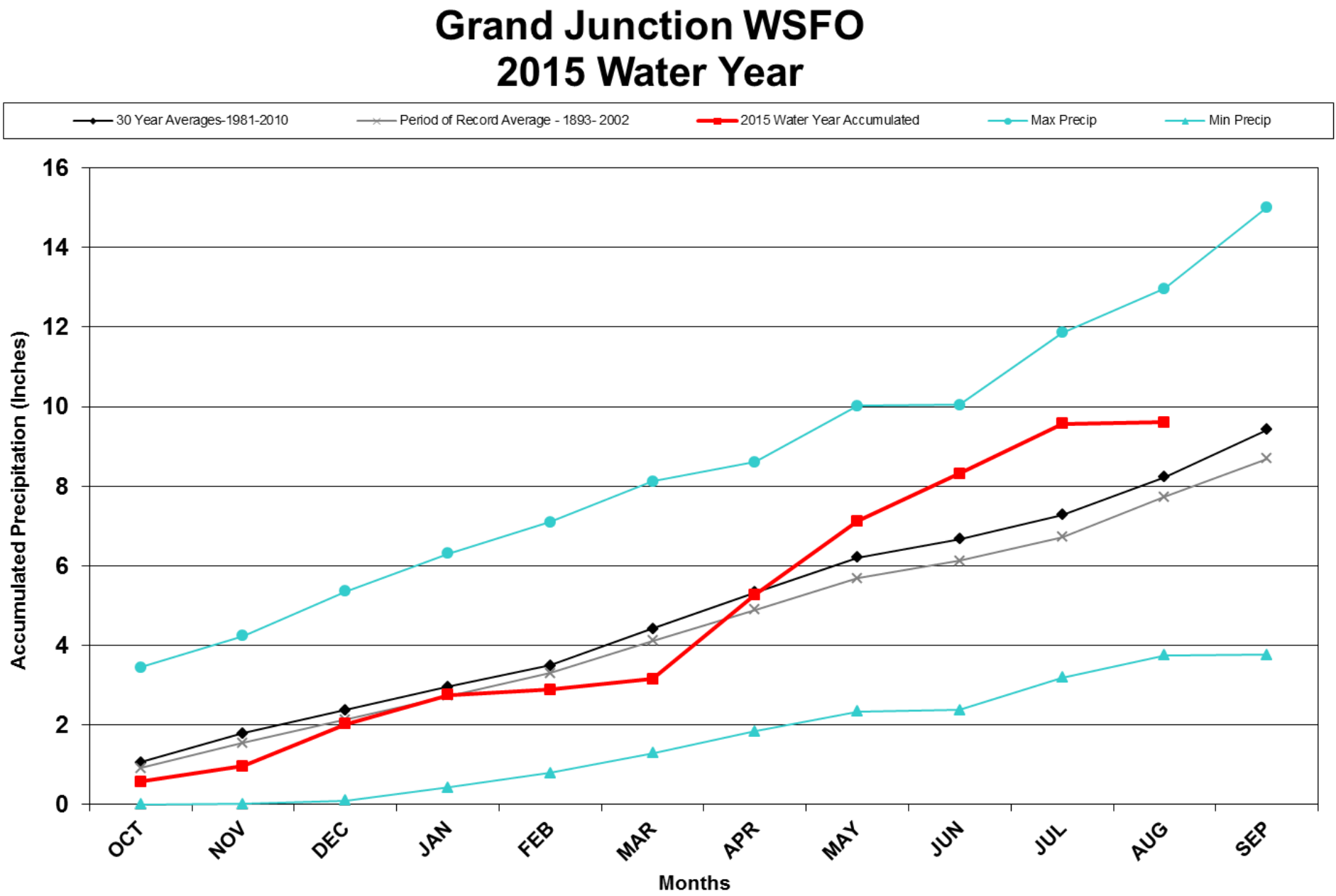
Division 1 – Grand Lake 1NW



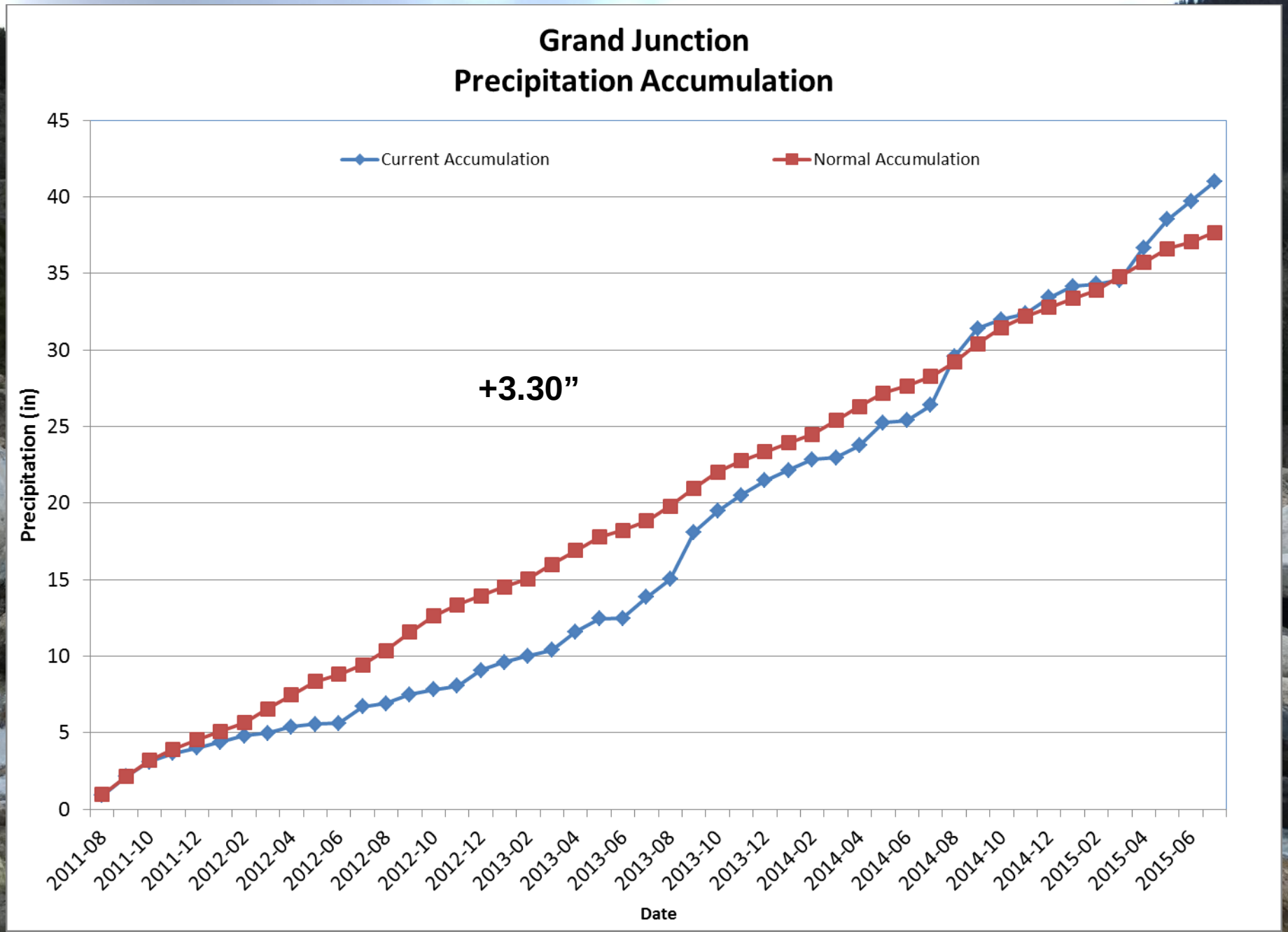
Division 1 – Grand Lake 1NW



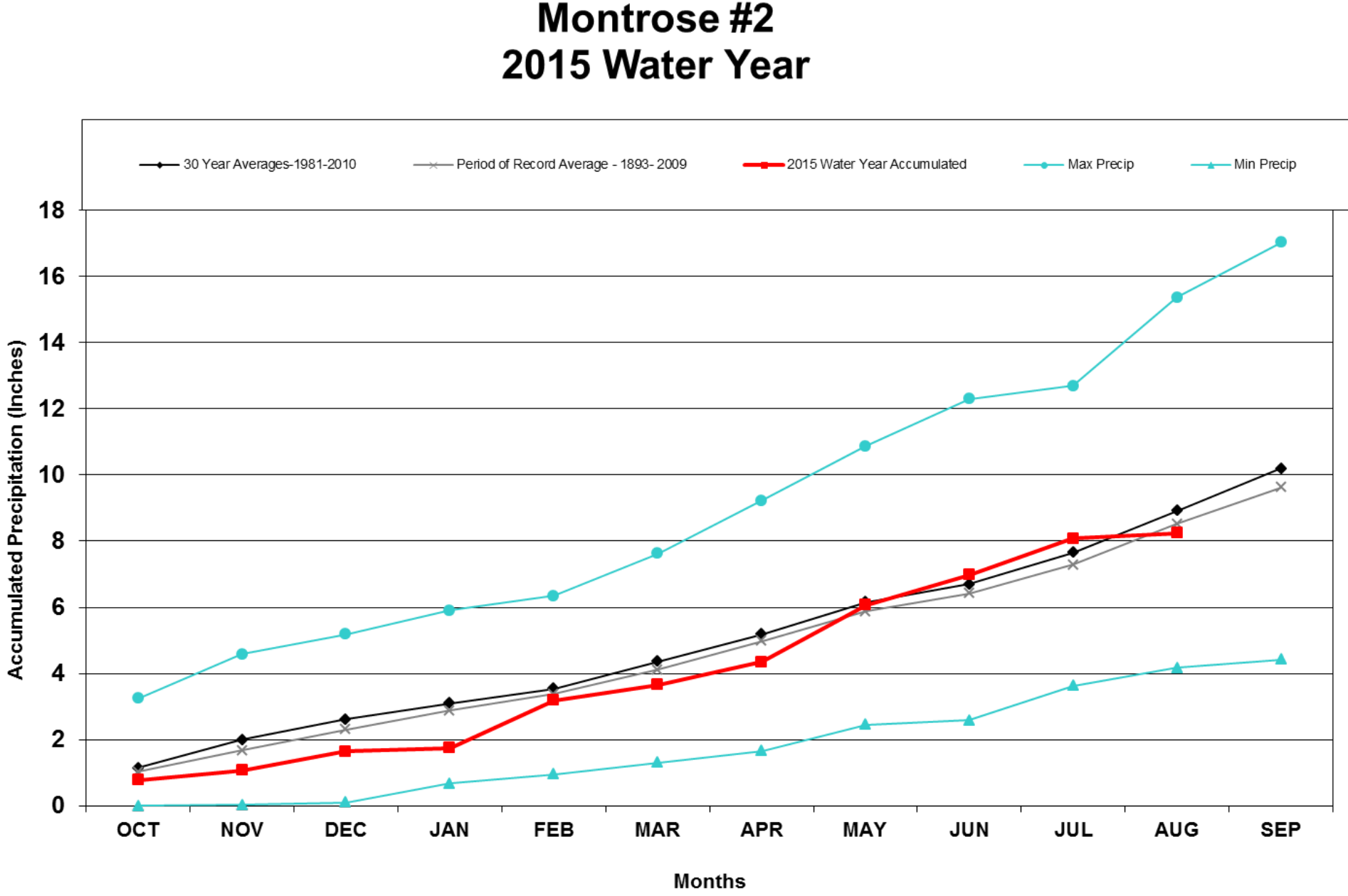
Division 2 – Grand Junction



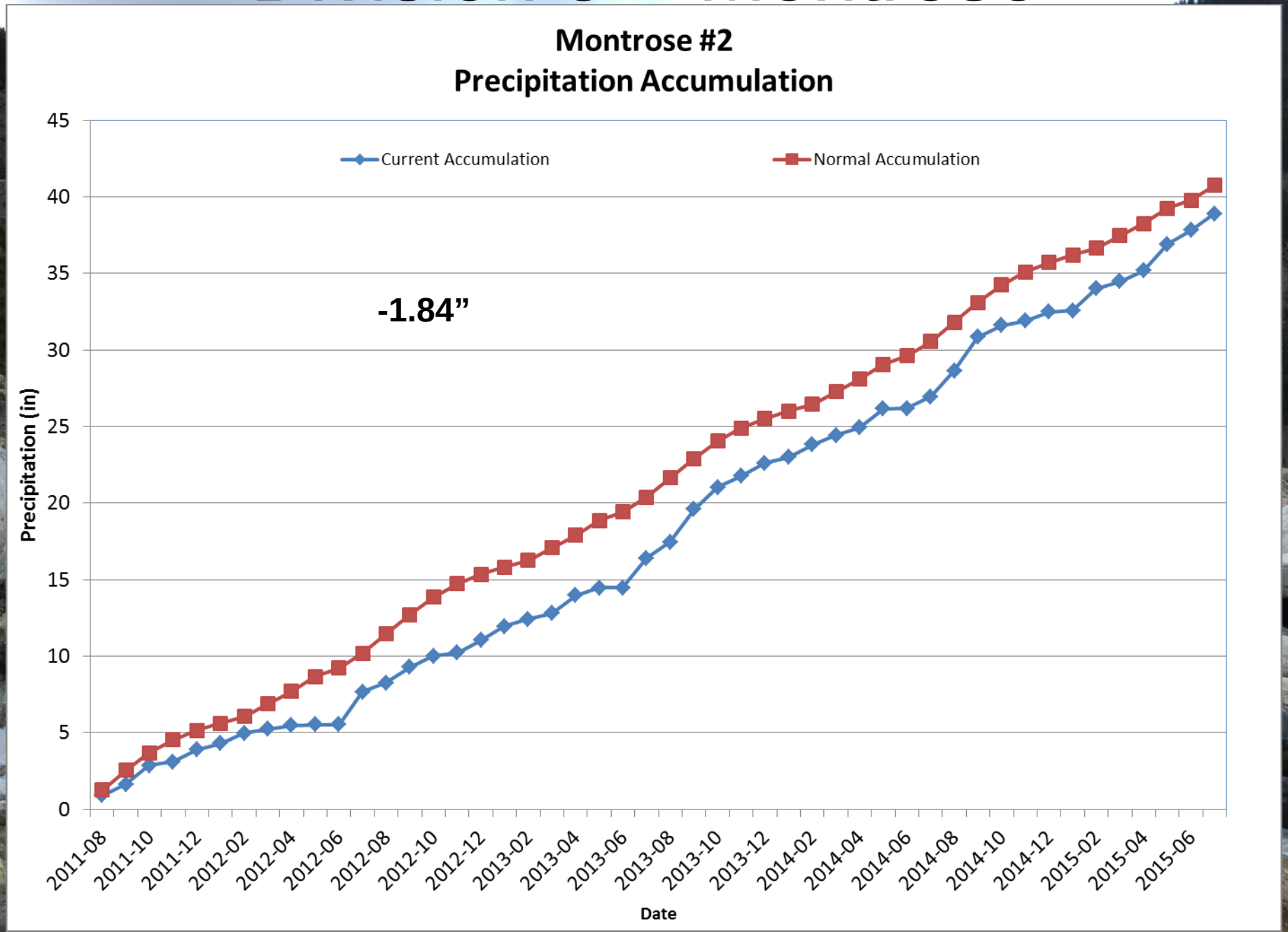
Division 2 – Grand Junction



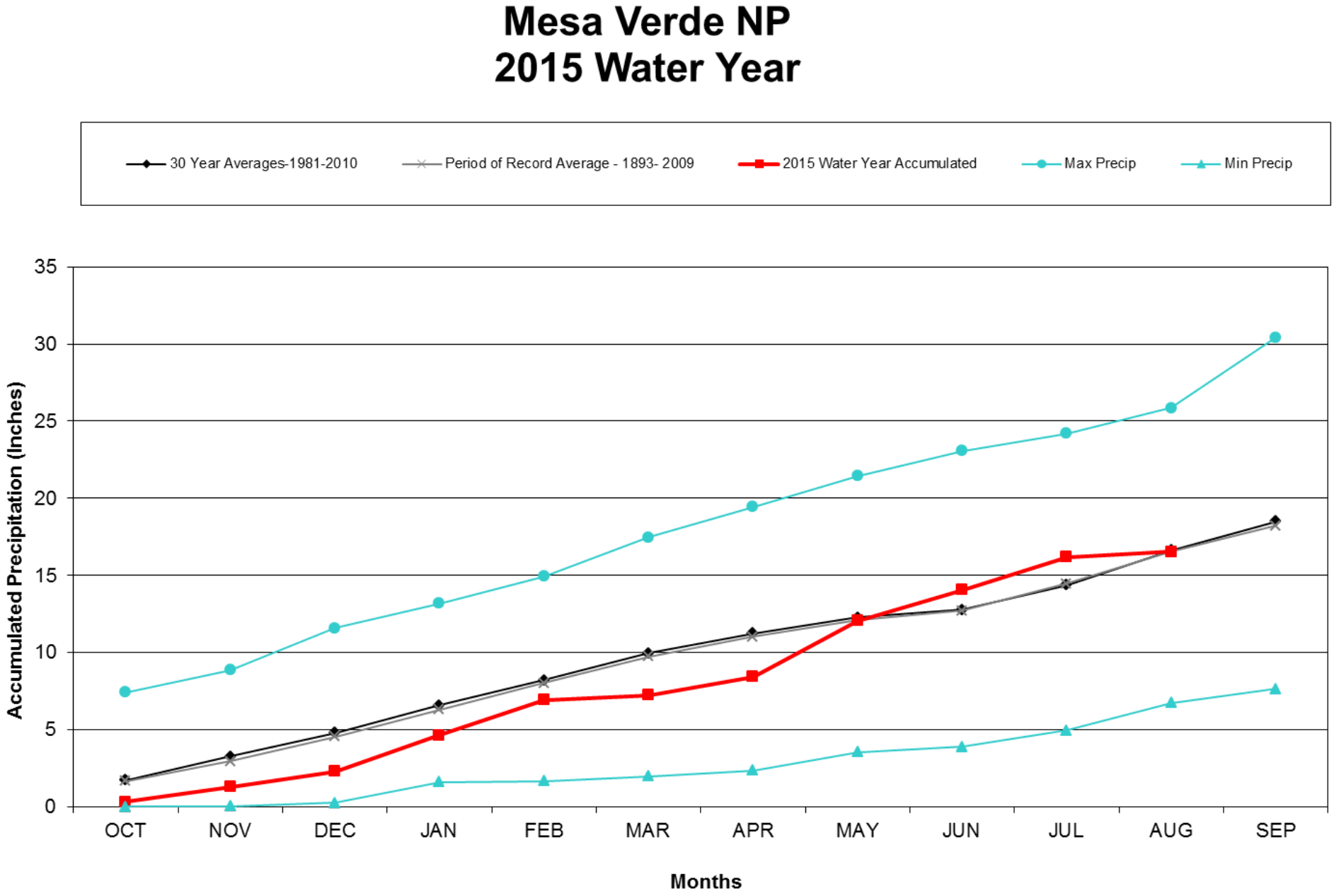
Division 3 – Montrose



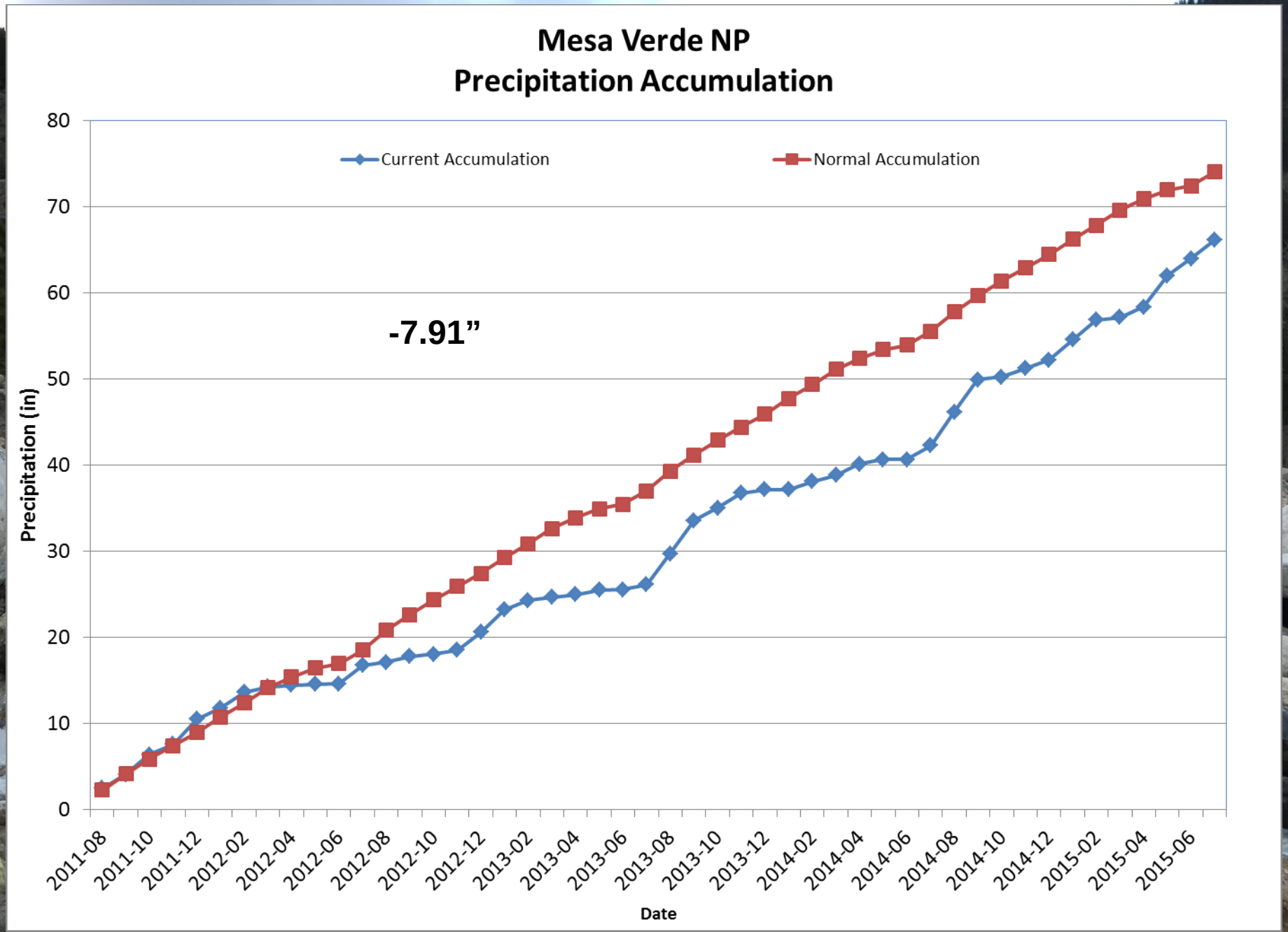
Division 3 – Montrose



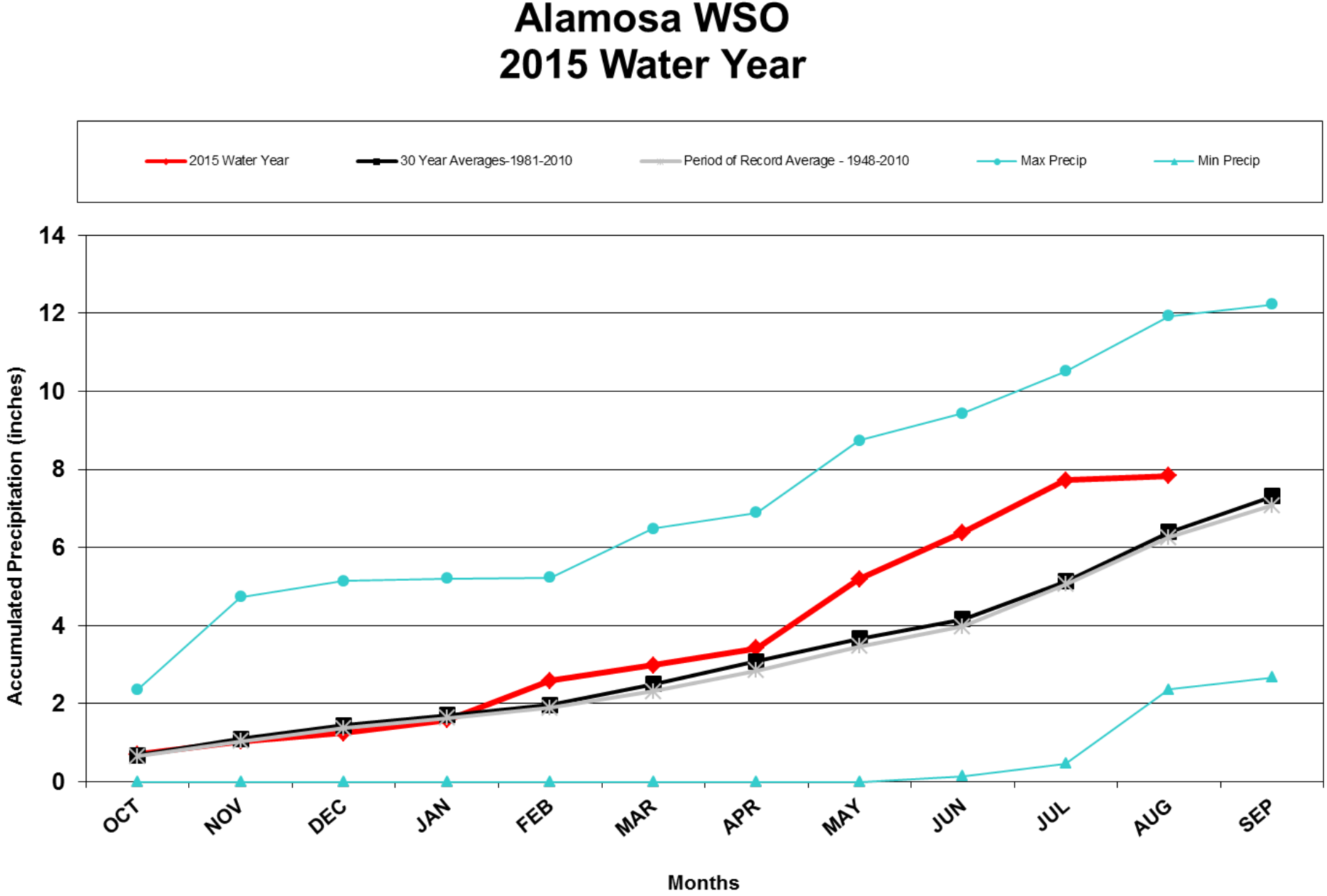
Division 3 – Mesa Verde NP



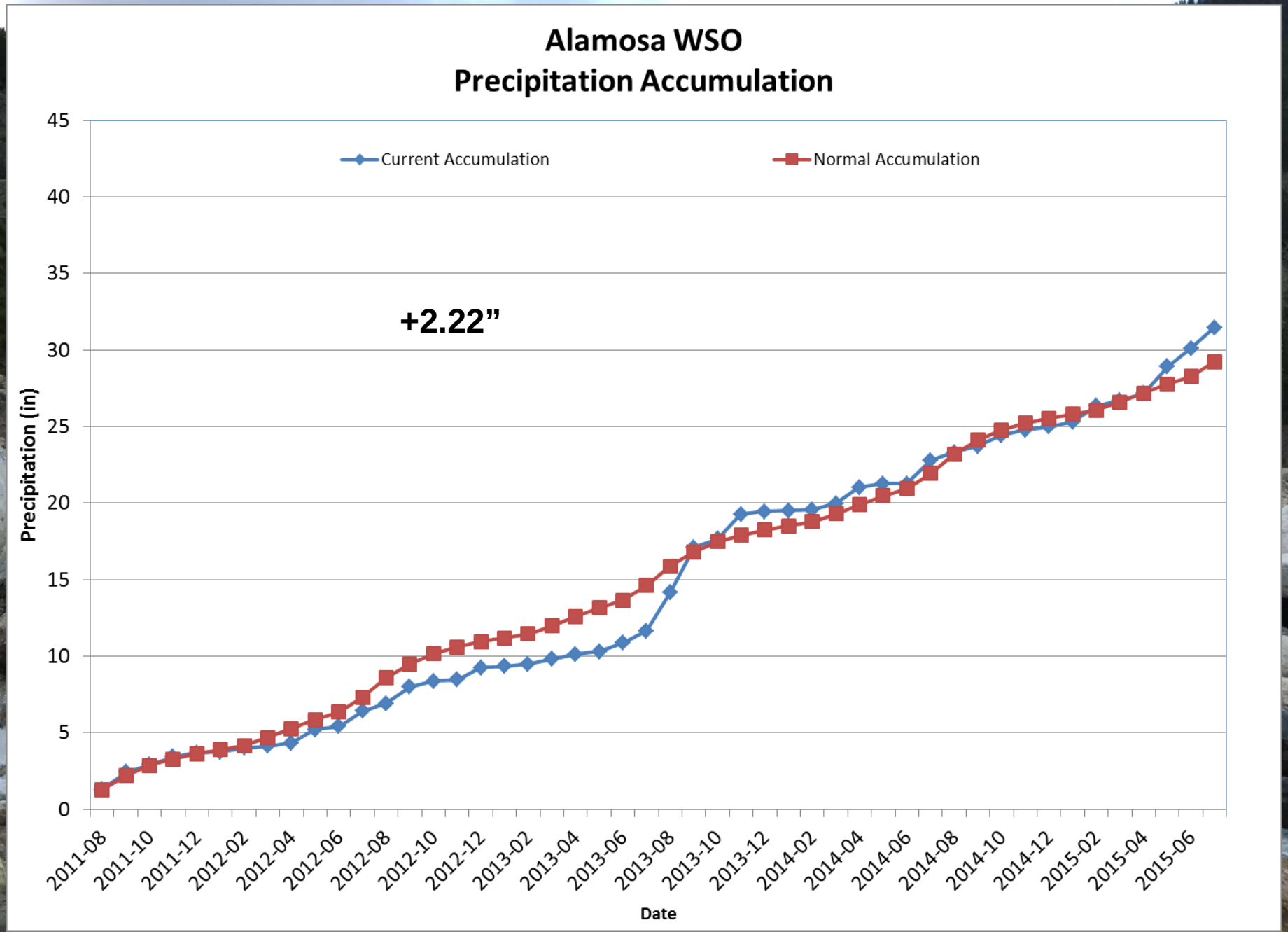
Division 3 – Mesa Verde NP



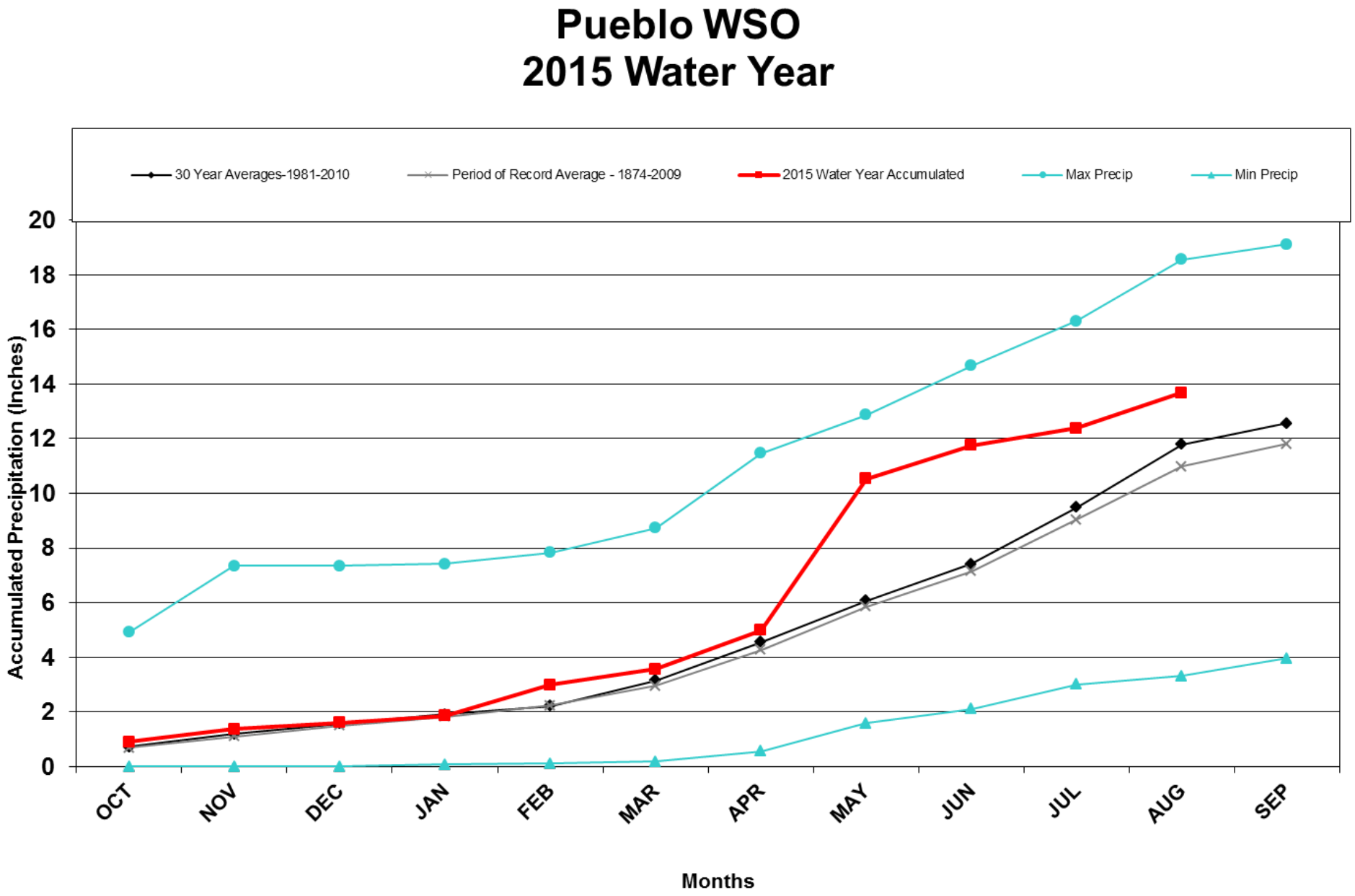
Division 4 – Alamosa



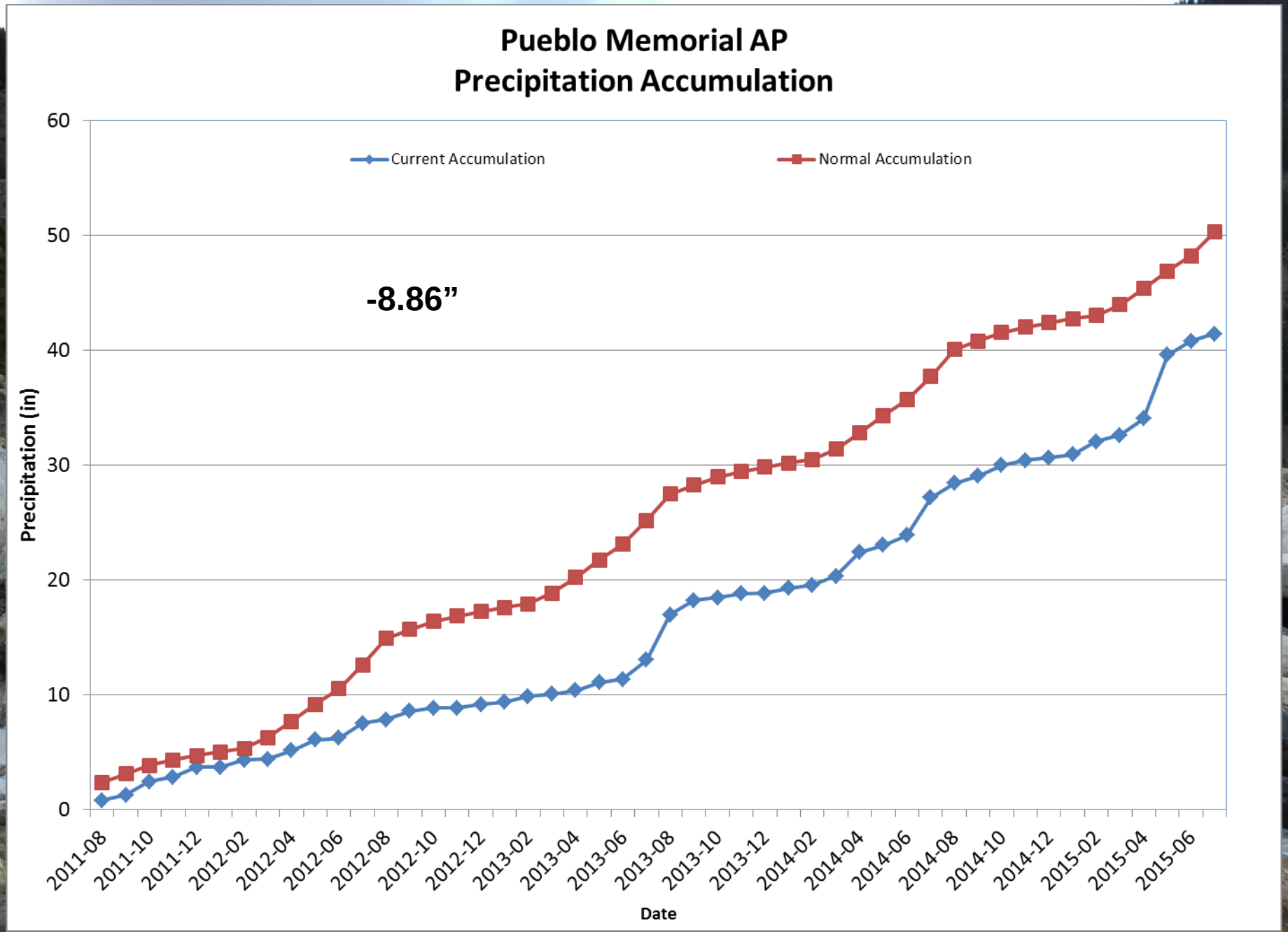
Division 4 – Alamosa



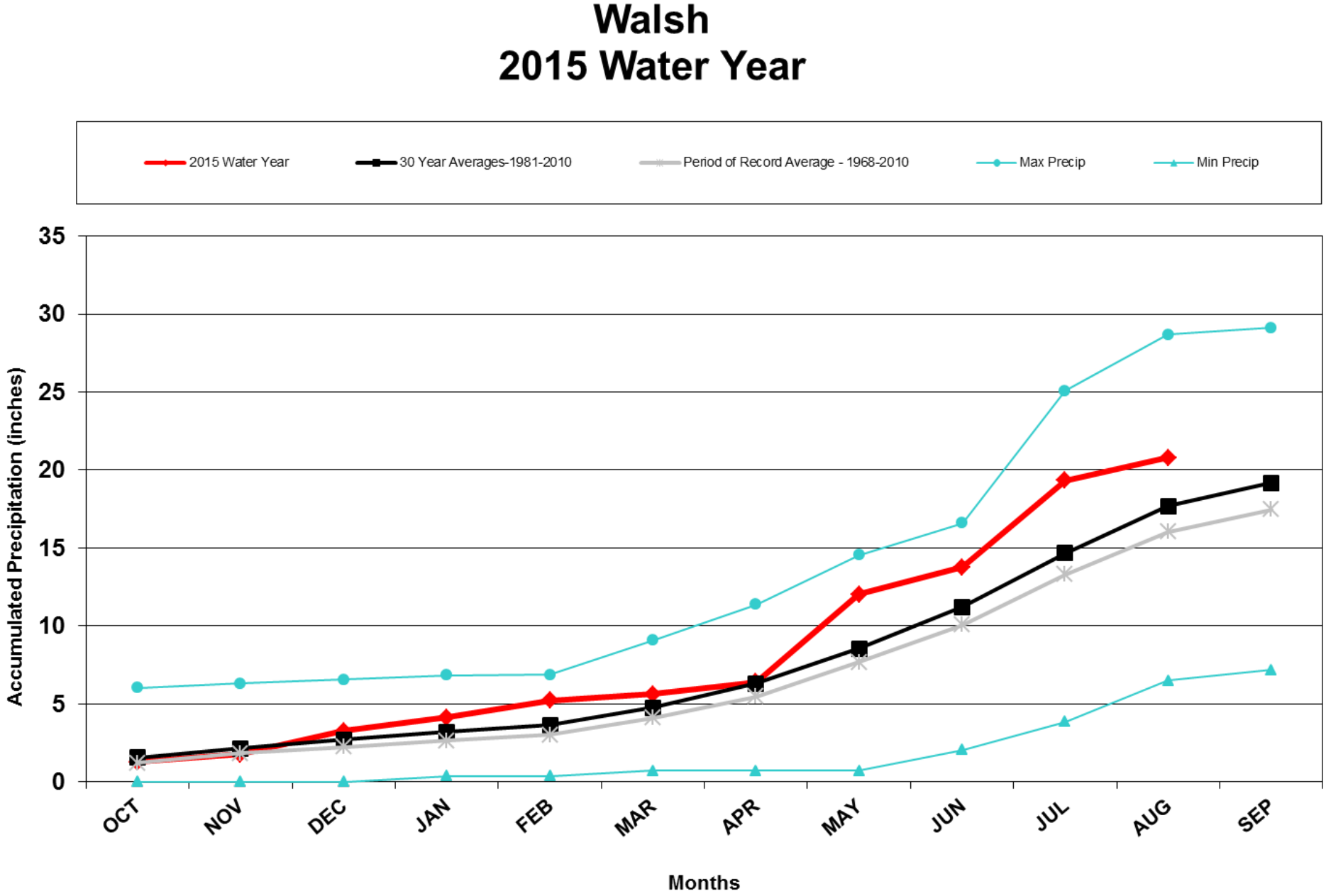
Division 5 – Pueblo



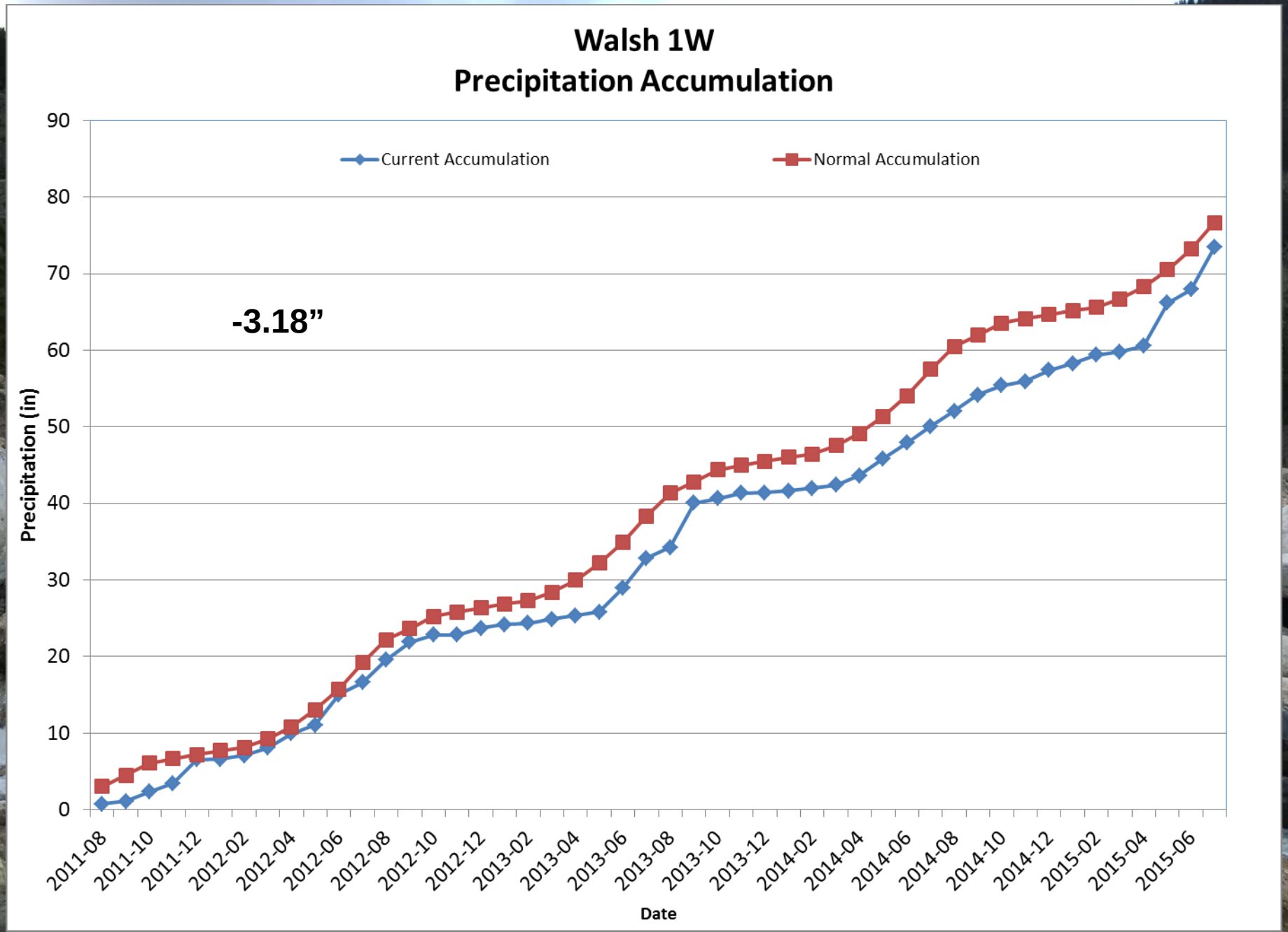
Division 5 – Pueblo



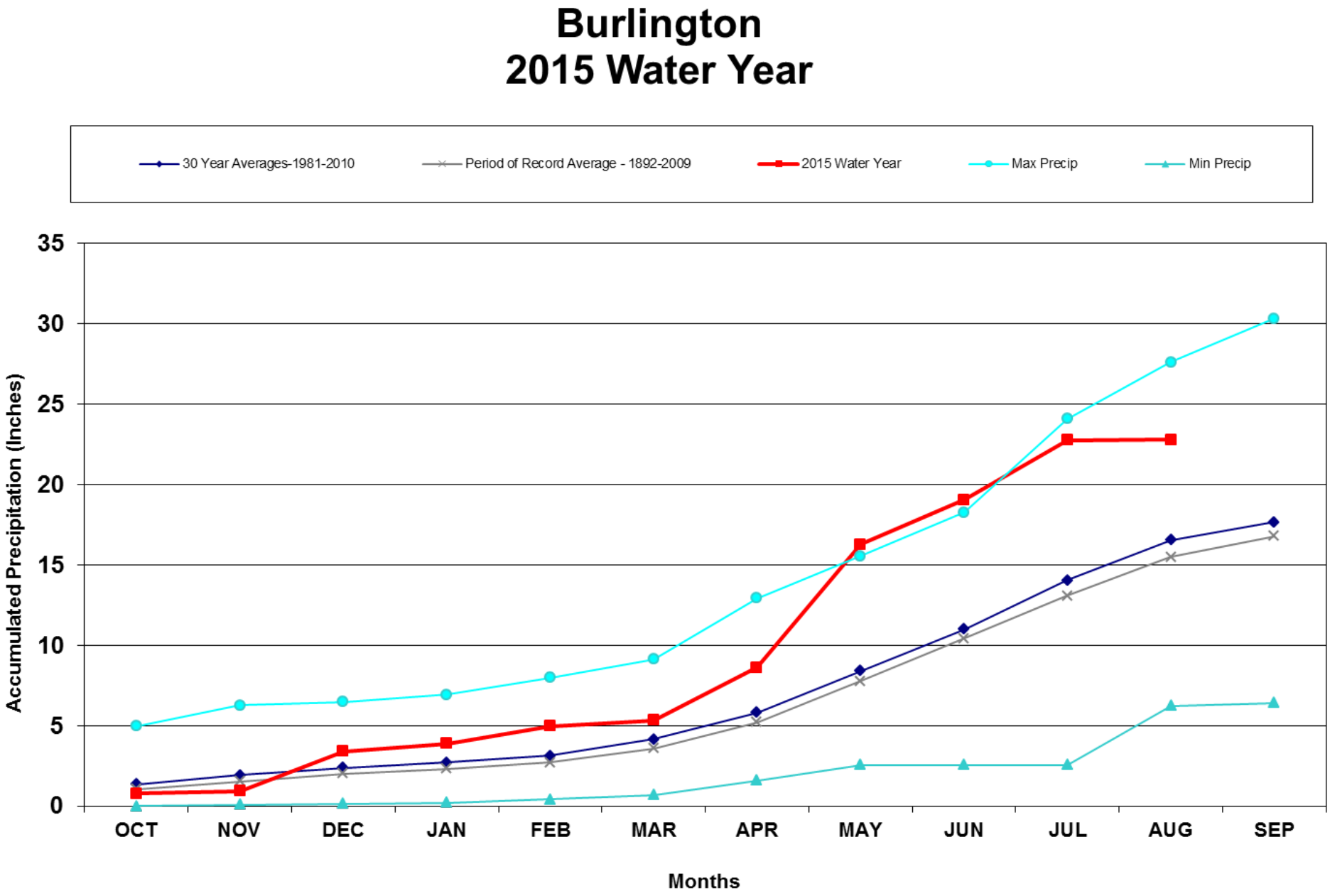
Division 6 - Walsh



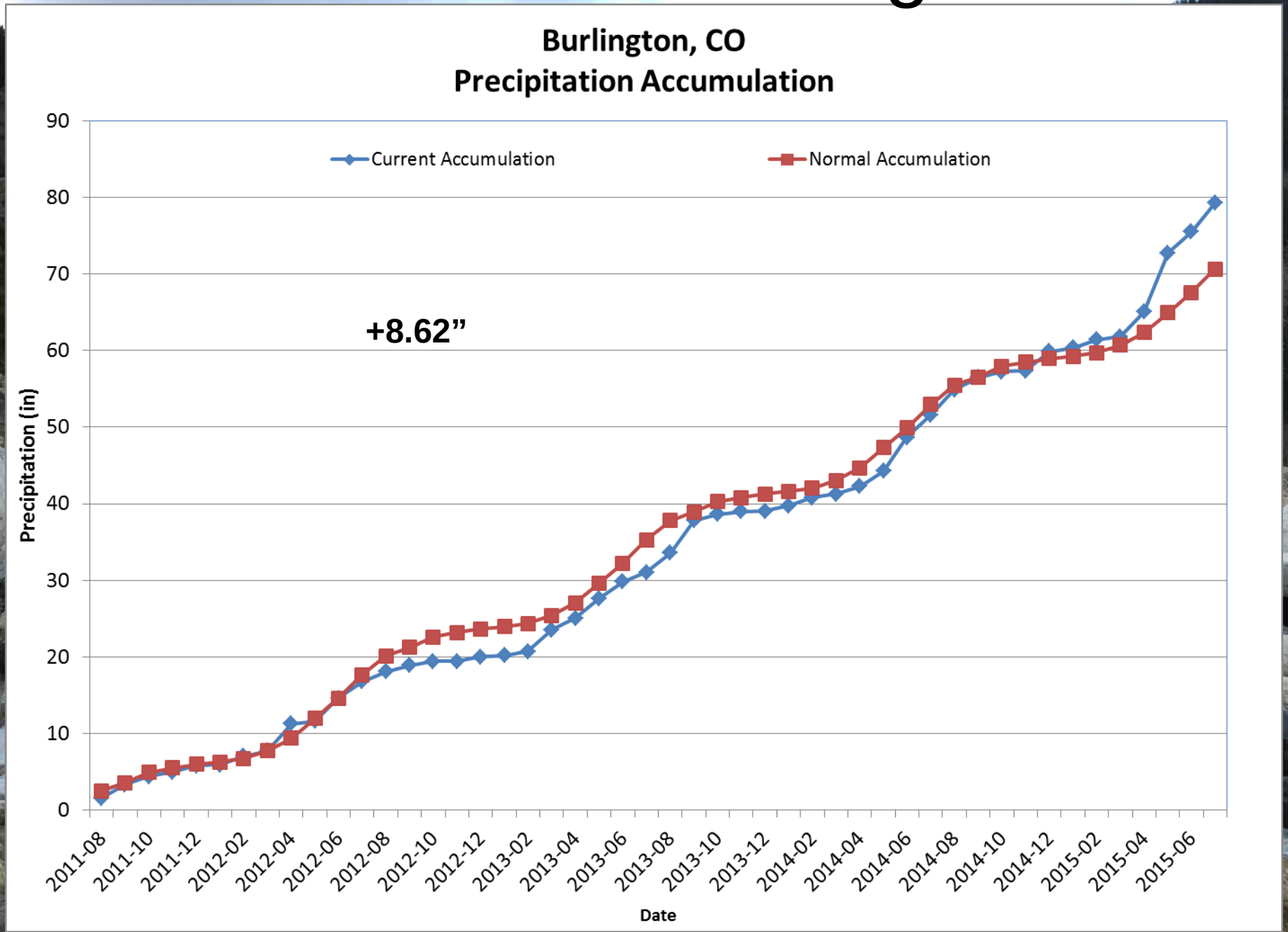
Division 6 - Walsh



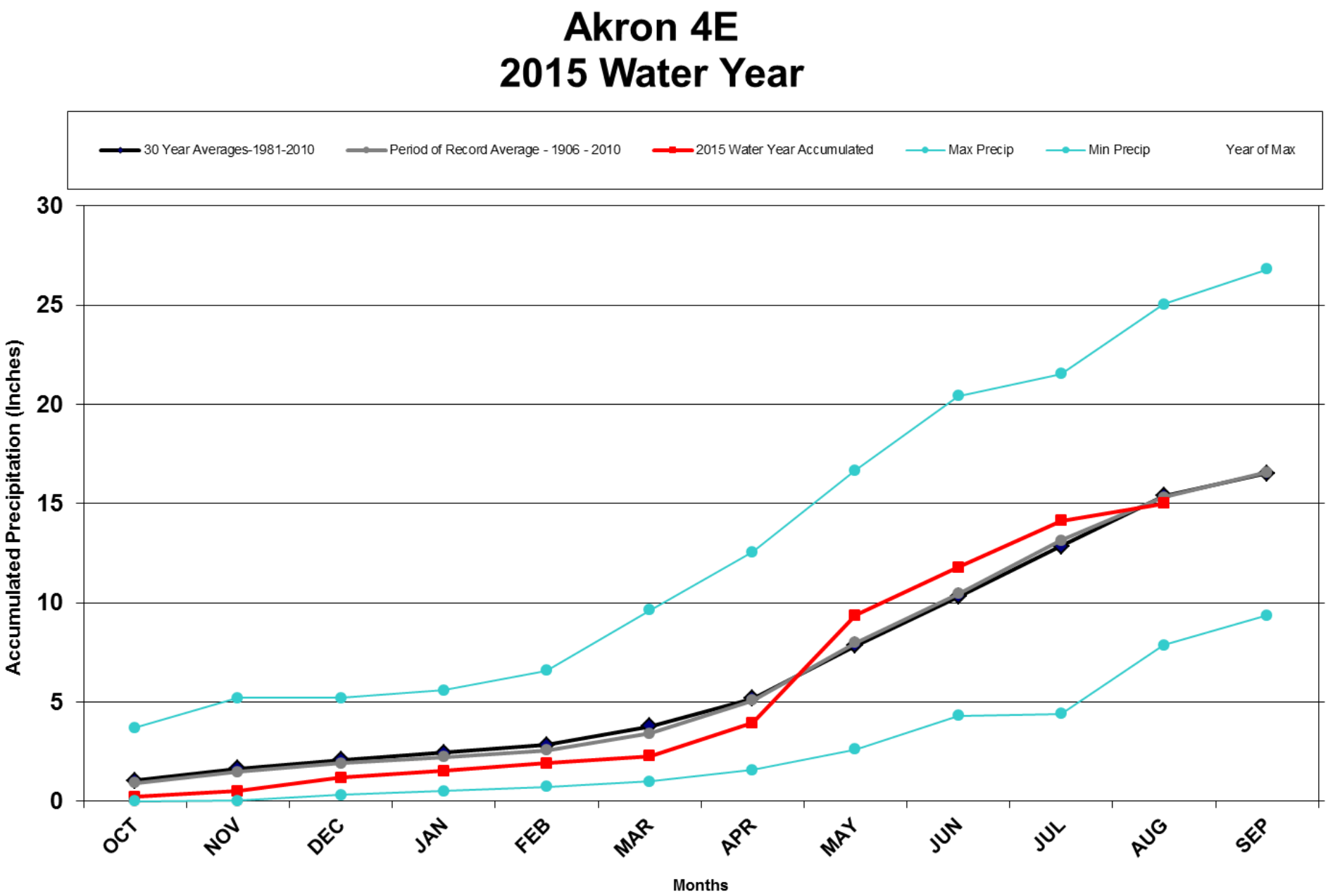
Division 6 - Burlington



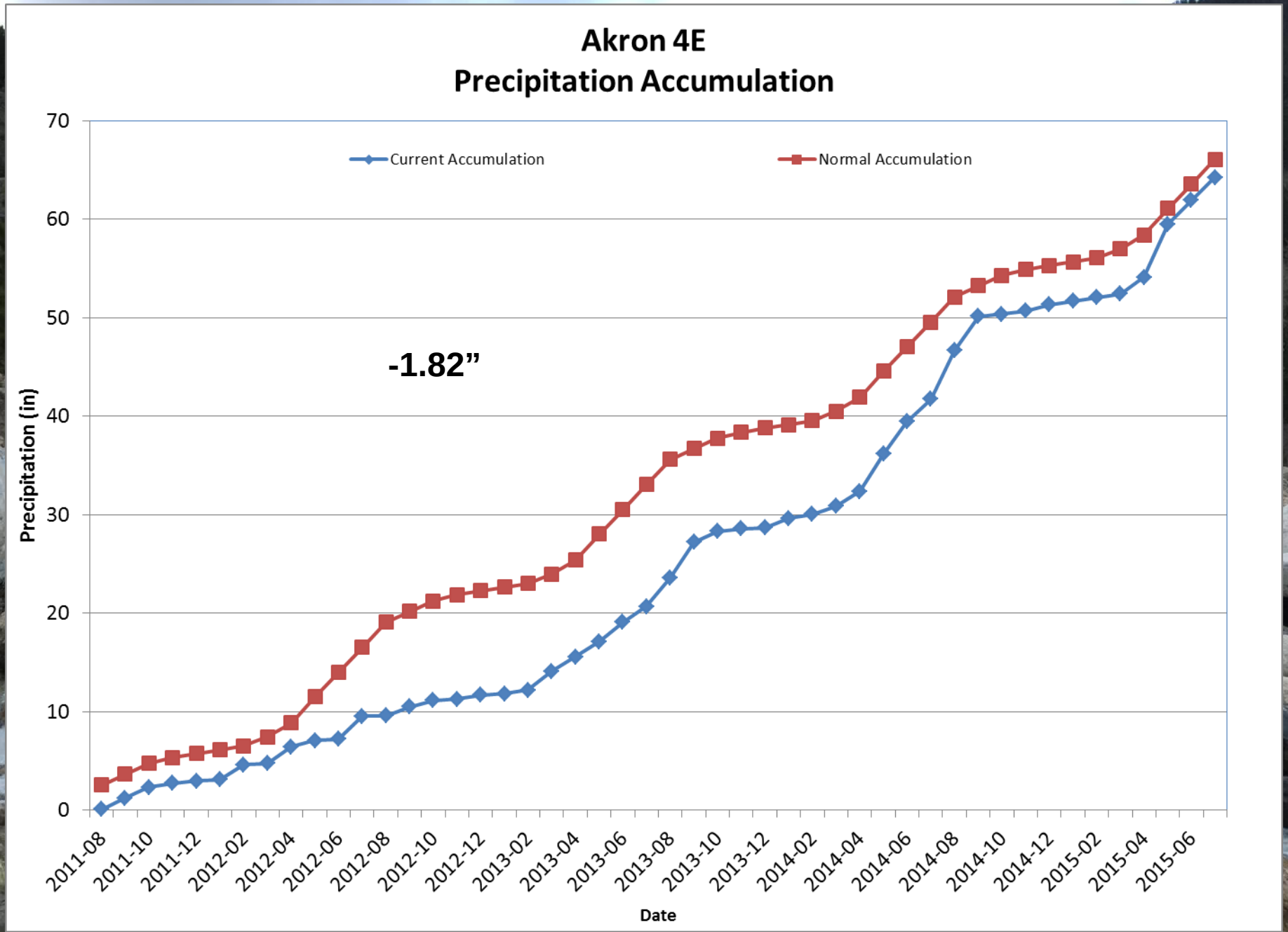
Division 6 - Burlington



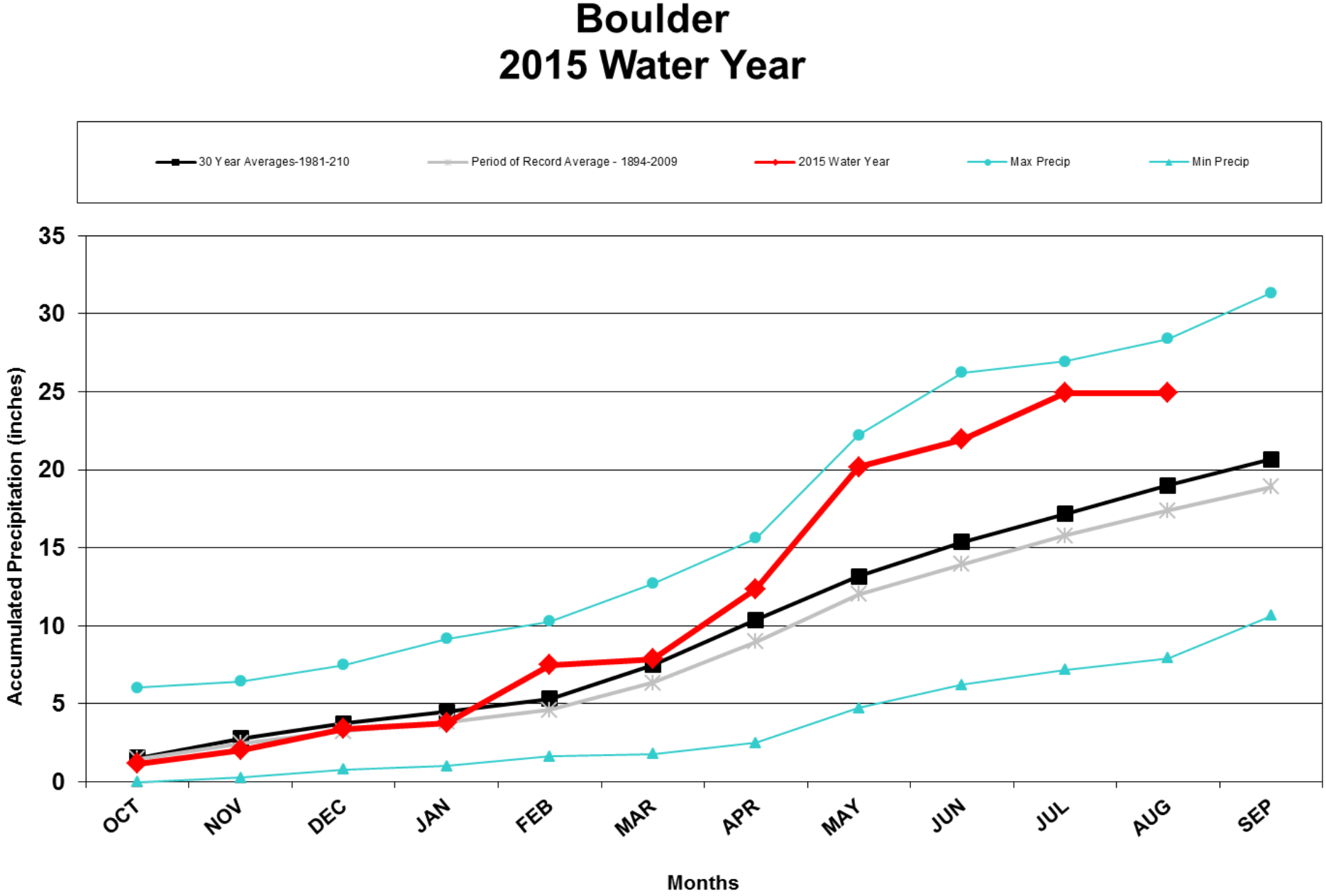
Division 7 – Akron



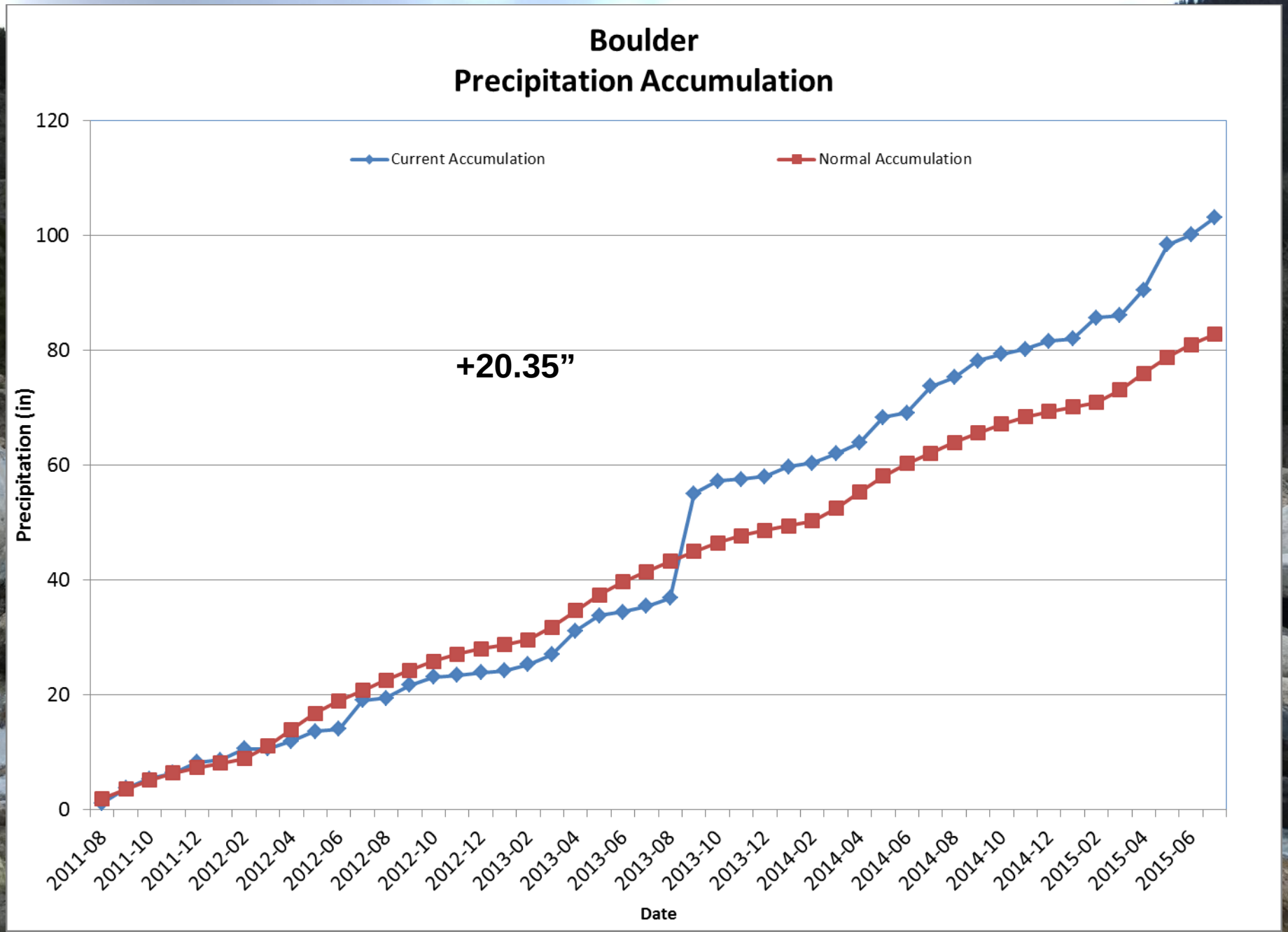
Division 7 – Akron



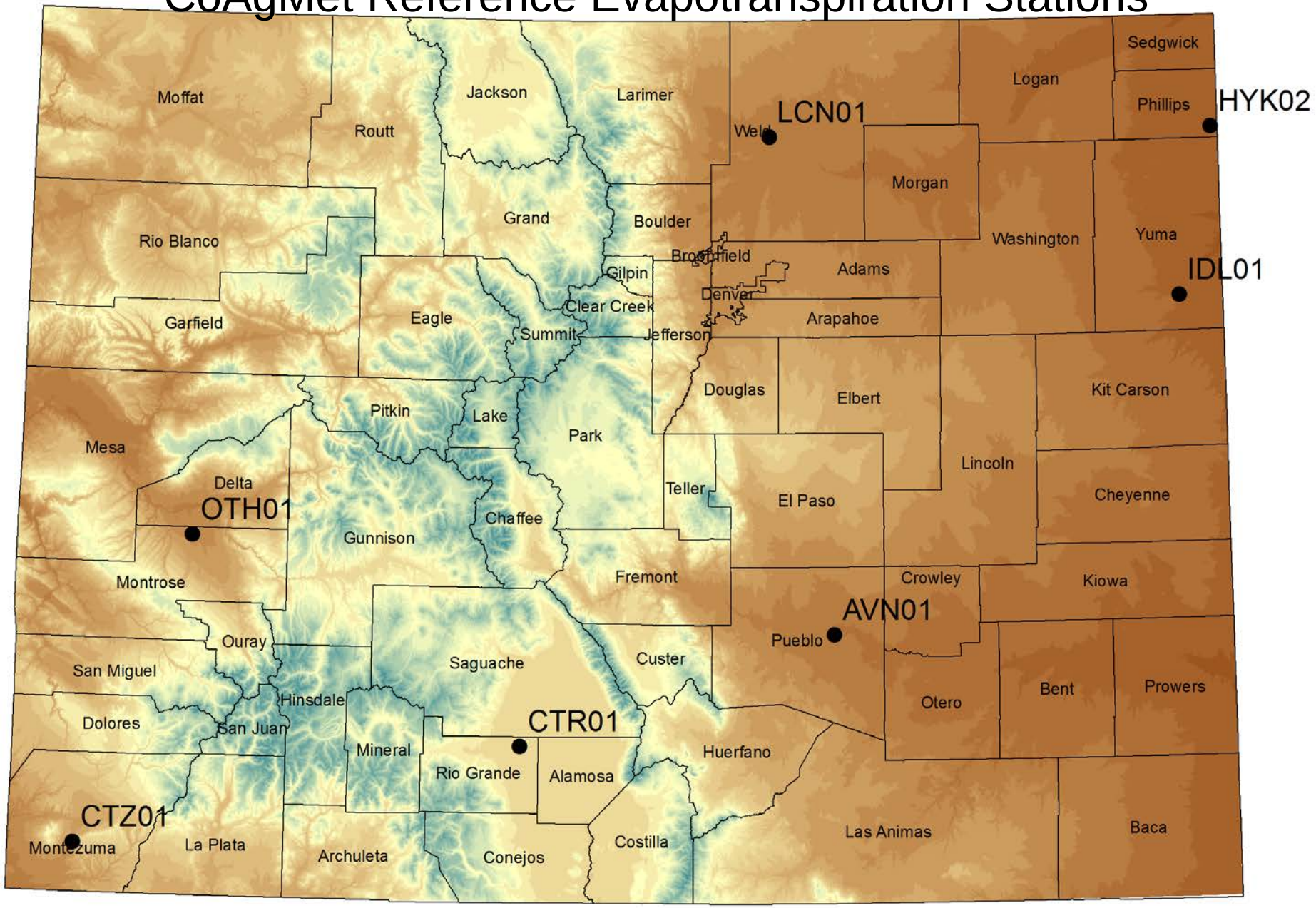
Division 8 - Boulder

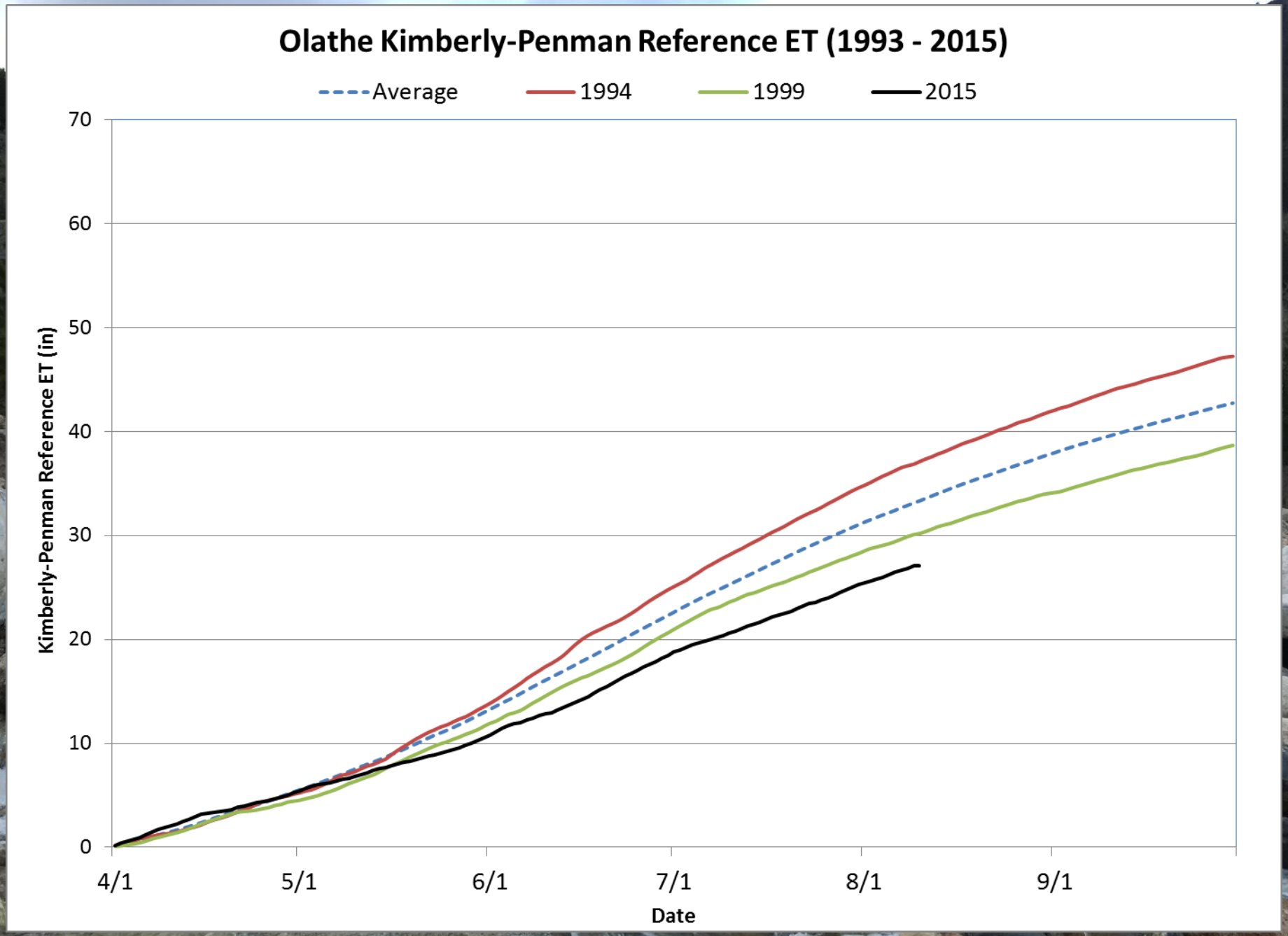


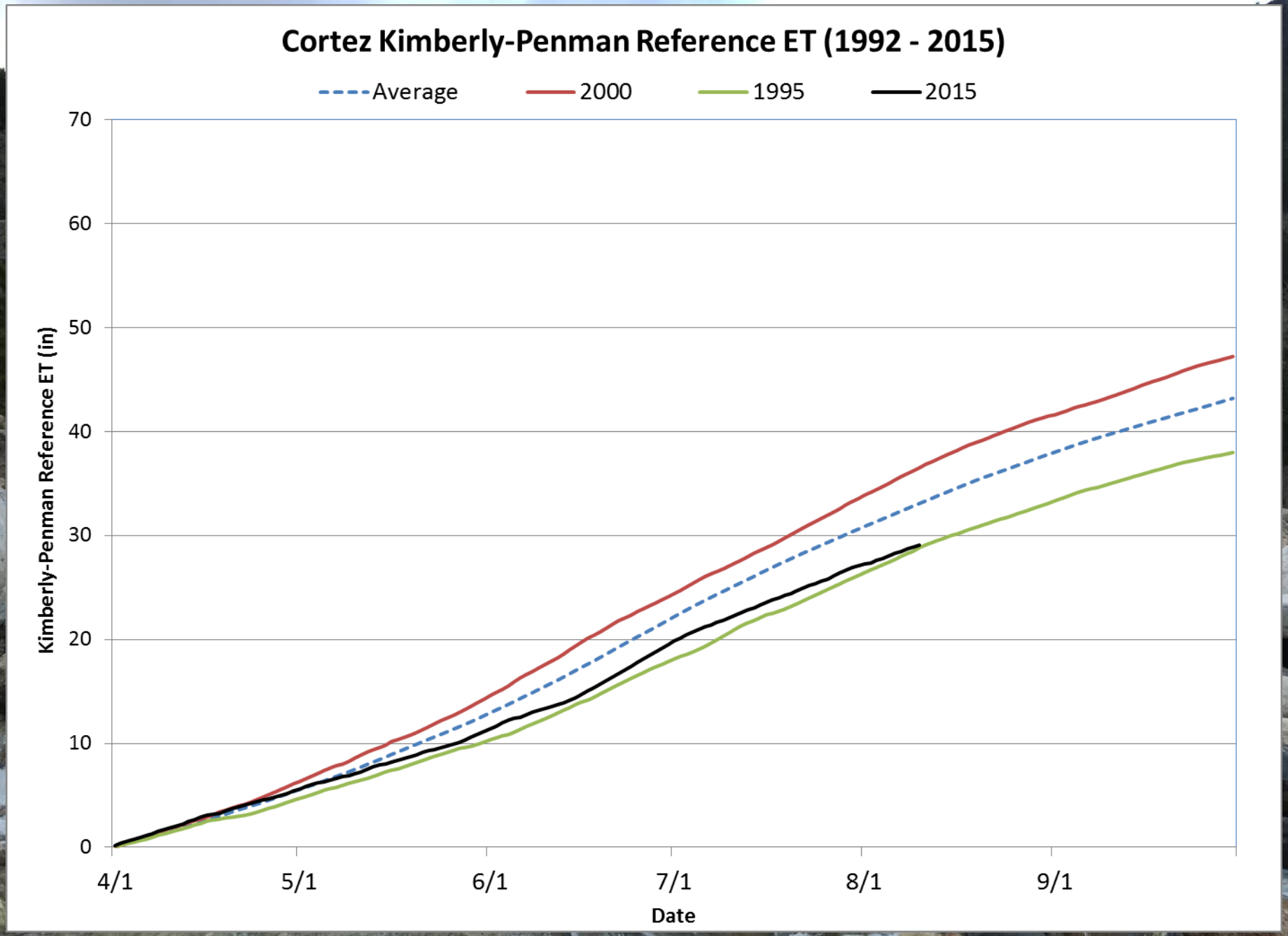
Division 8 - Boulder

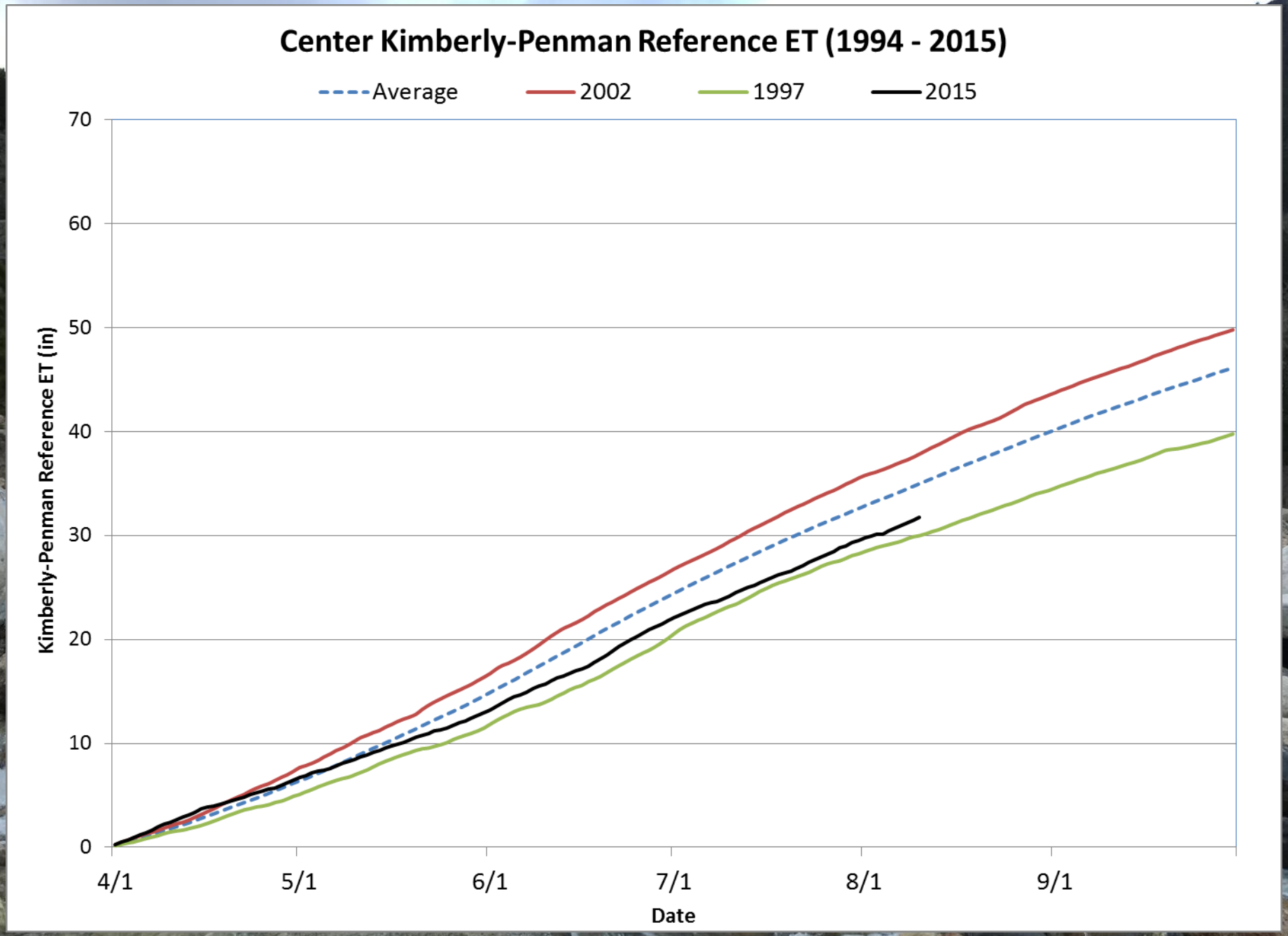


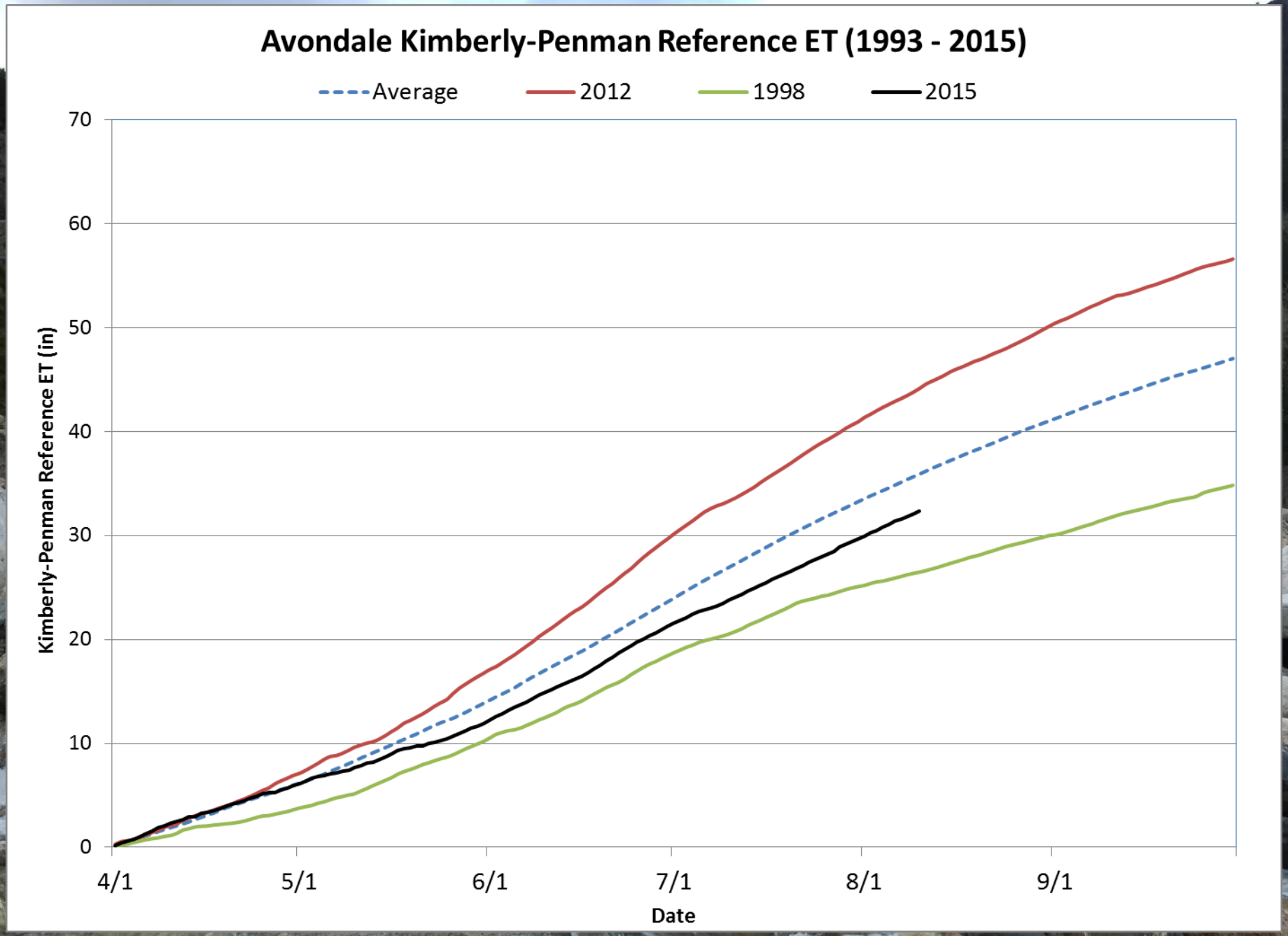
CoAgMet Reference Evapotranspiration Stations

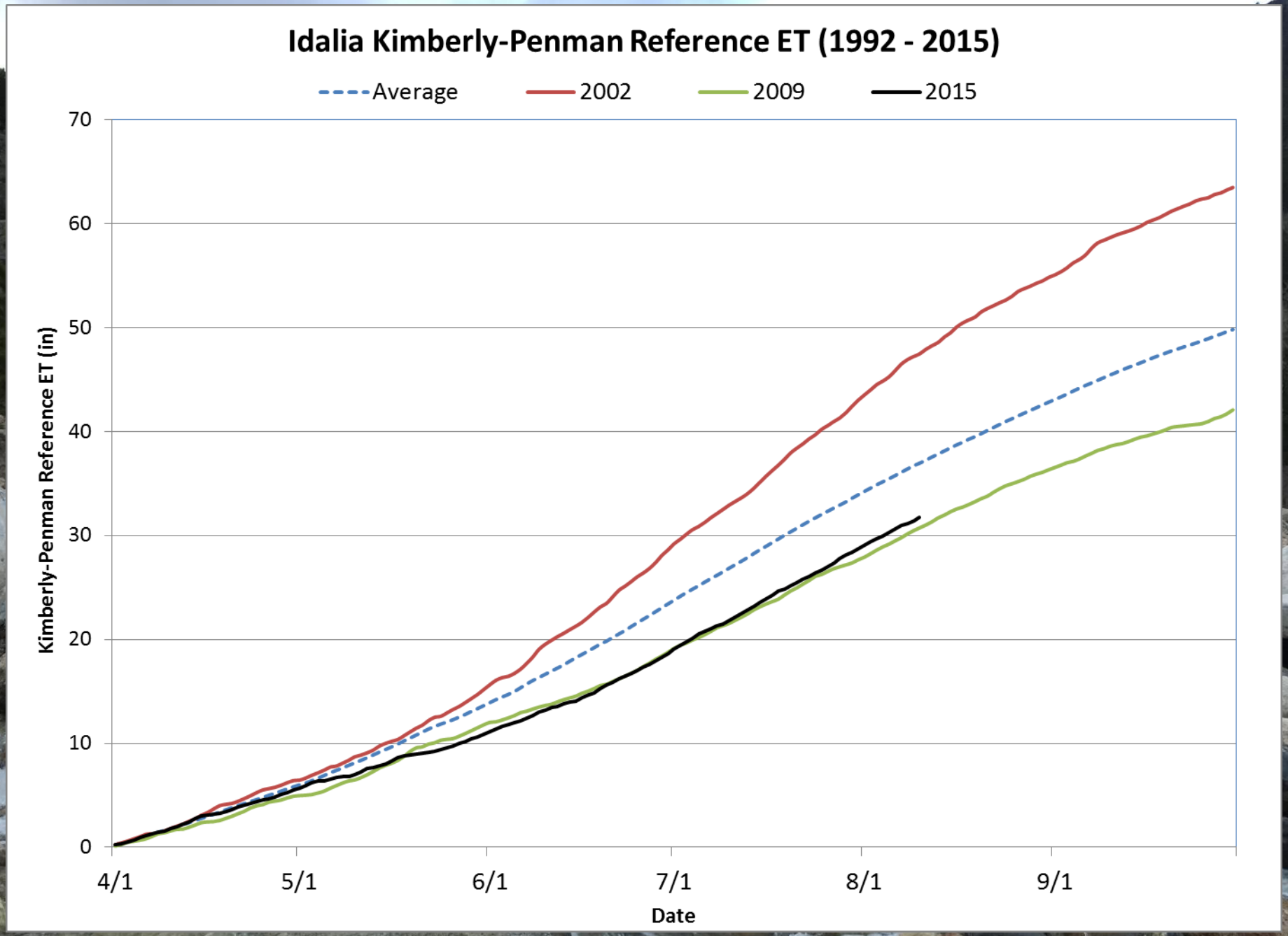


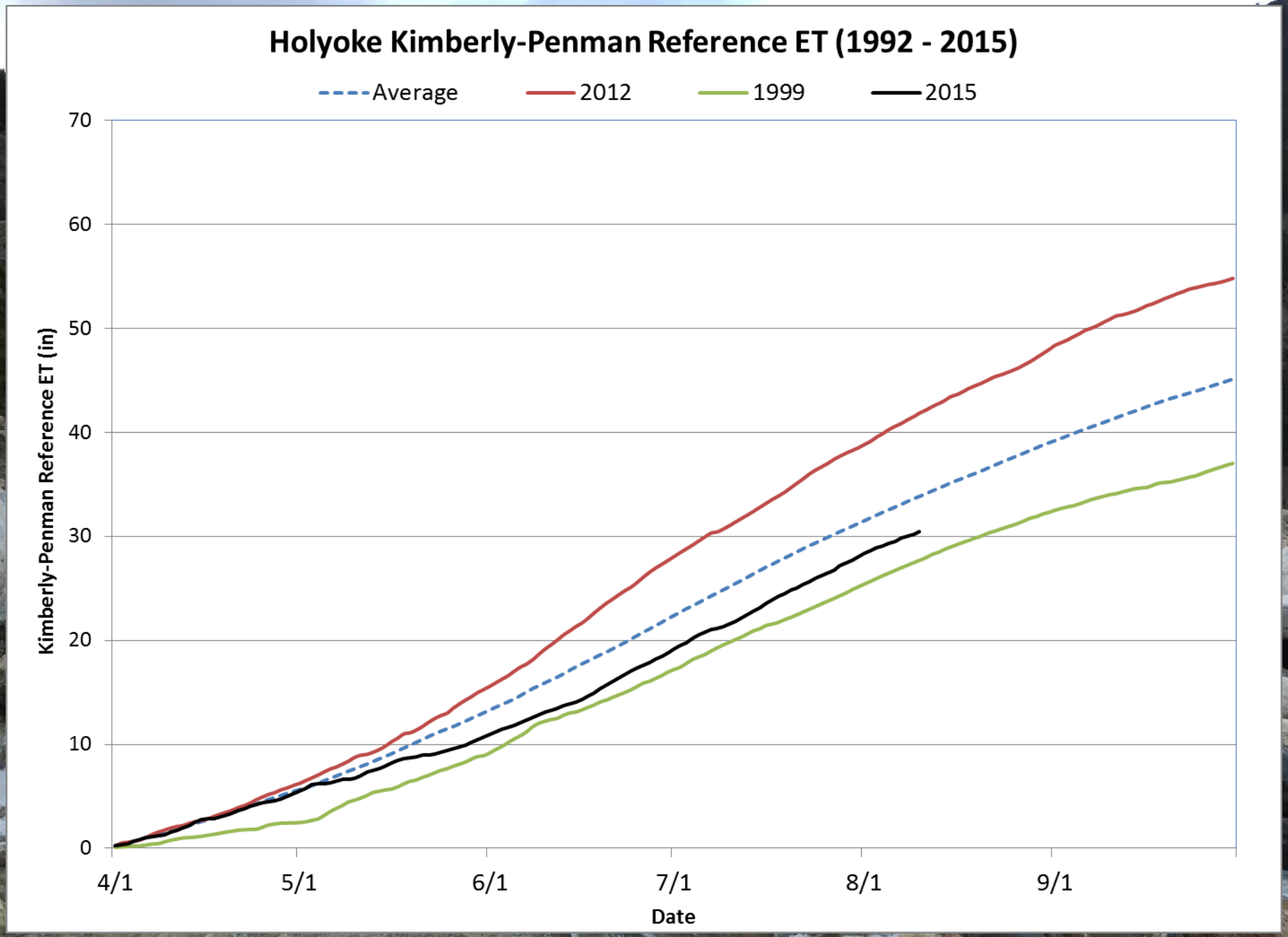

Olathe Kimberly-Penman Reference ET (1993 - 2015)
Average
1994
1999
2015
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

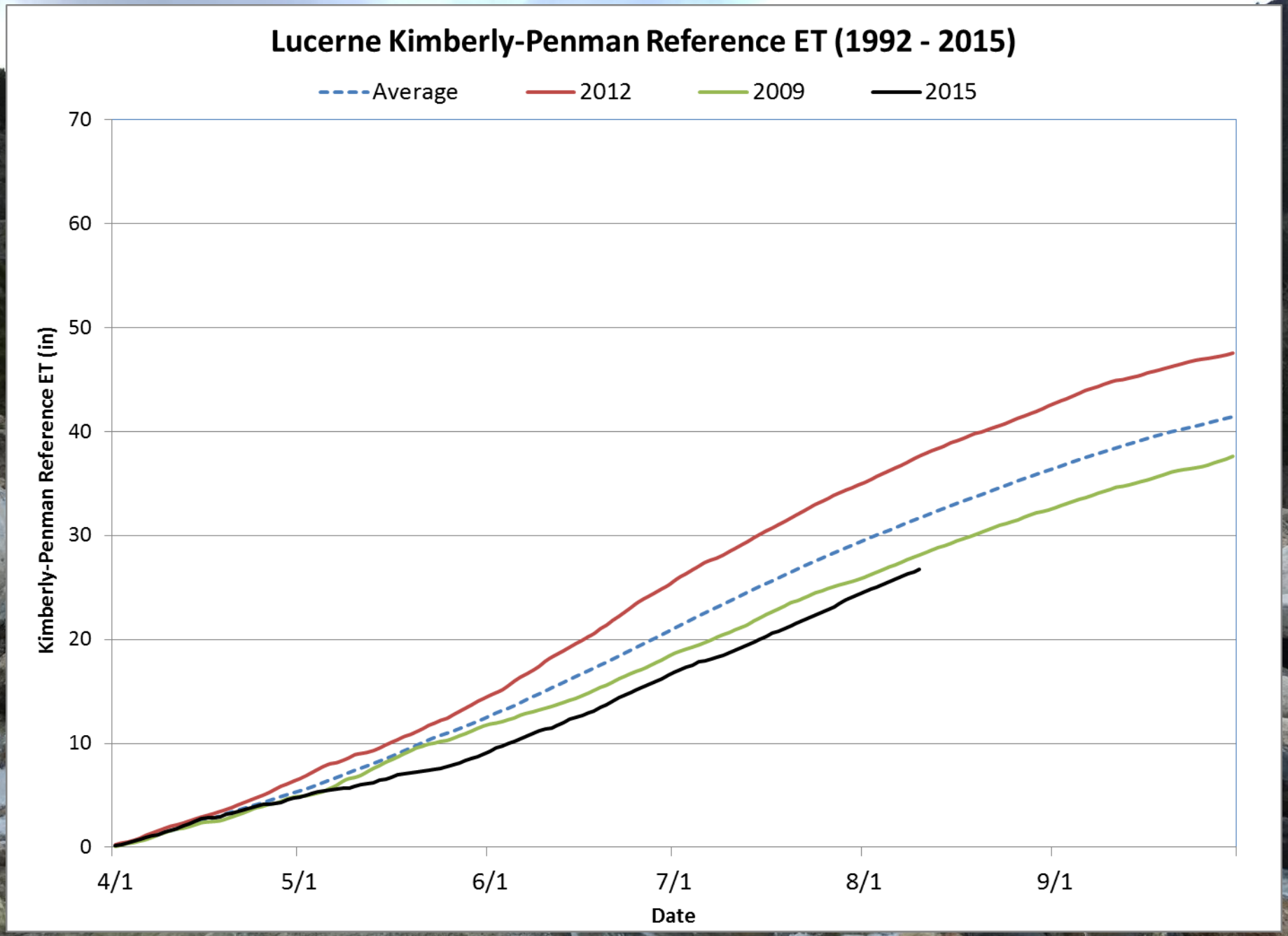

Cortez Kimberly-Penman Reference ET (1992 - 2015)
Average
2000
1995
2015
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Center Kimberly-Penman Reference ET (1994 - 2015)
Average
2002
1997
2015
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 - 2015)
Average
2012
1998
2015
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 - 2015)
Average
2002
2009
2015
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


Holyoke Kimberly-Penman Reference ET (1992 - 2015)
Average
2012
1999
2015
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

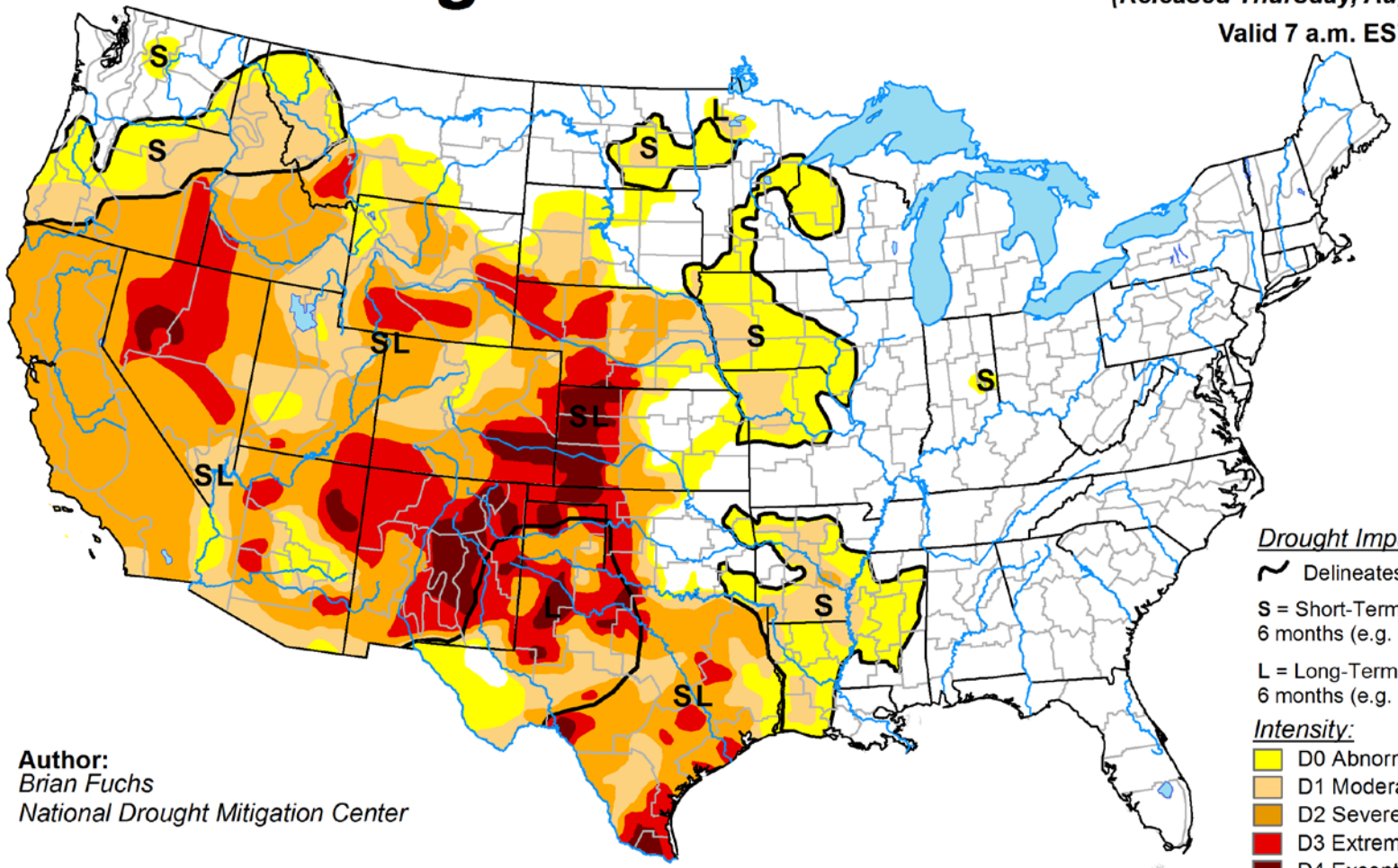

Lucerne Kimberly-Penman Reference ET (1992 - 2015)
Average
2012
2009
2015
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

U.S. Drought Monitor

August 6, 2013

(Released Thursday, Aug. 8, 2013)

Valid 7 a.m. EST



Author:
Brian Fuchs
National Drought Mitigation Center

Drought Impact Types:

~ Delineates dominant impacts

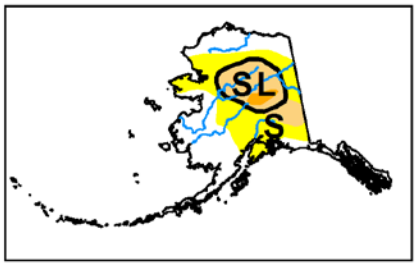
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

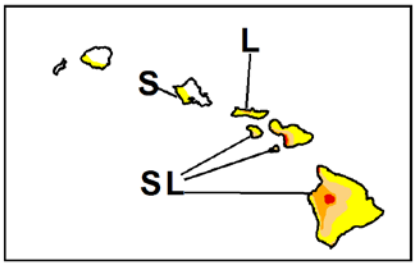
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

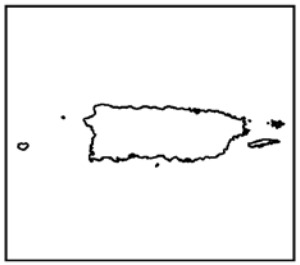
Intensity:

- D0 Abnormally Dry
- 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

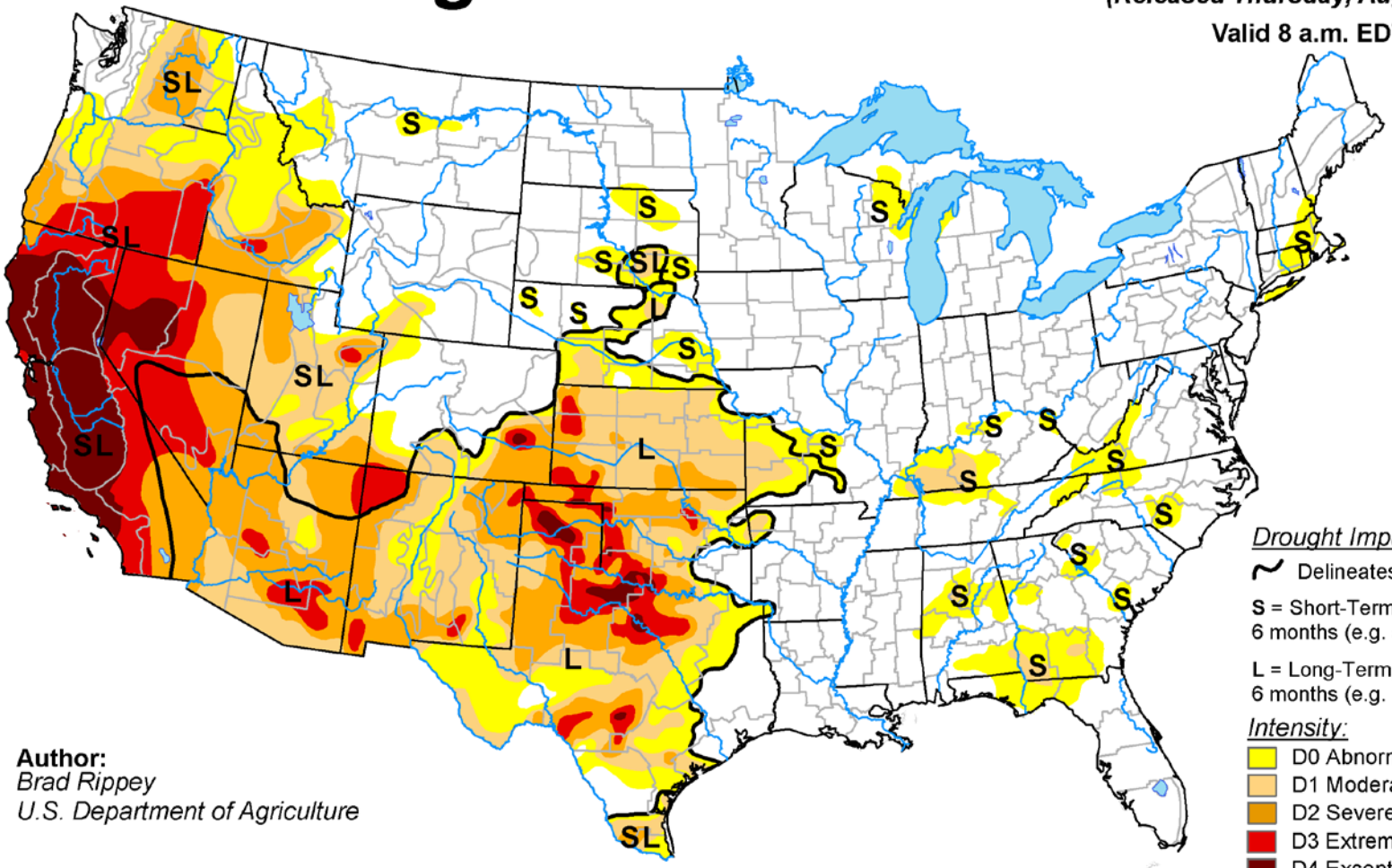
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

August 5, 2014

(Released Thursday, Aug. 7, 2014)

Valid 8 a.m. EDT



Author:
Brad Rippey
U.S. Department of Agriculture

Drought Impact Types:

~ Delineates dominant impacts

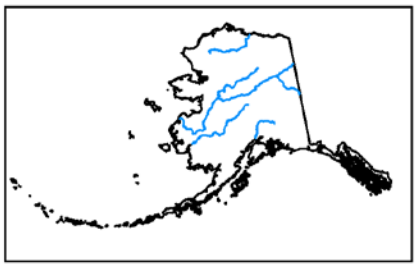
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

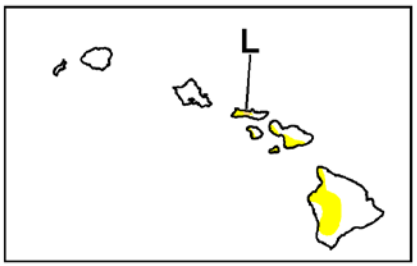
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

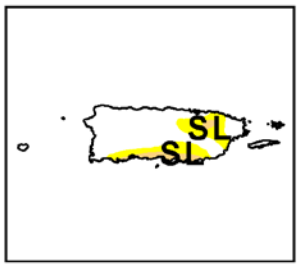
Intensity:

- 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

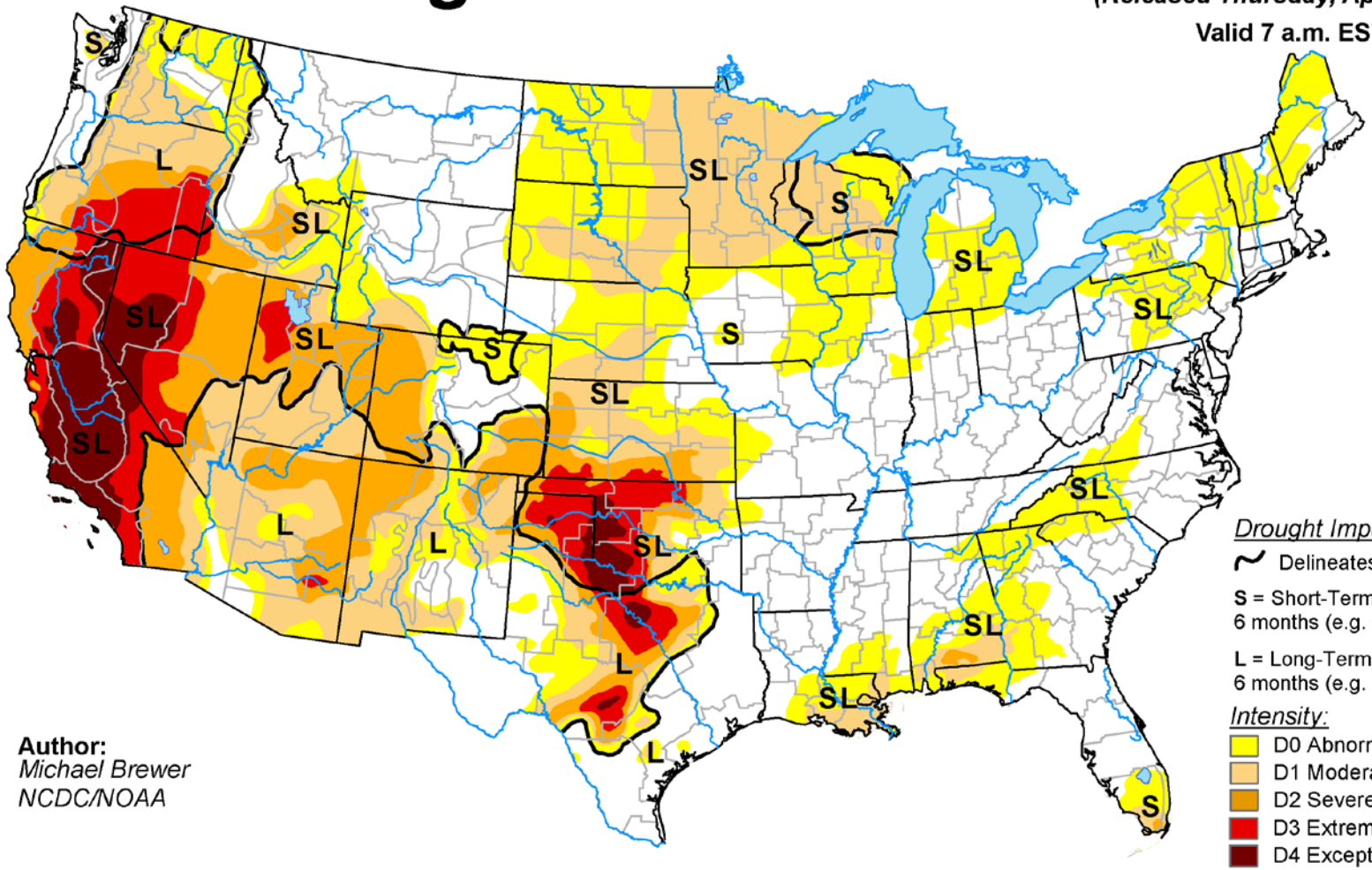
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

April 7, 2015

(Released Thursday, Apr. 9, 2015)

Valid 7 a.m. EST



Author:
Michael Brewer
NCDC/NOAA

Drought Impact Types:

~ Delineates dominant impacts

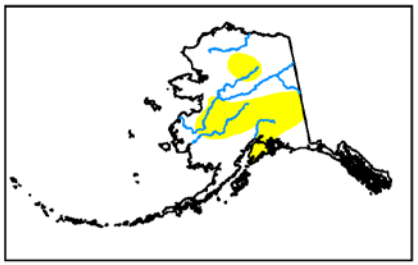
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

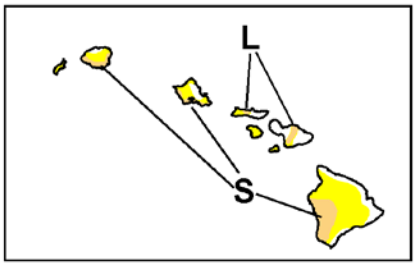
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

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

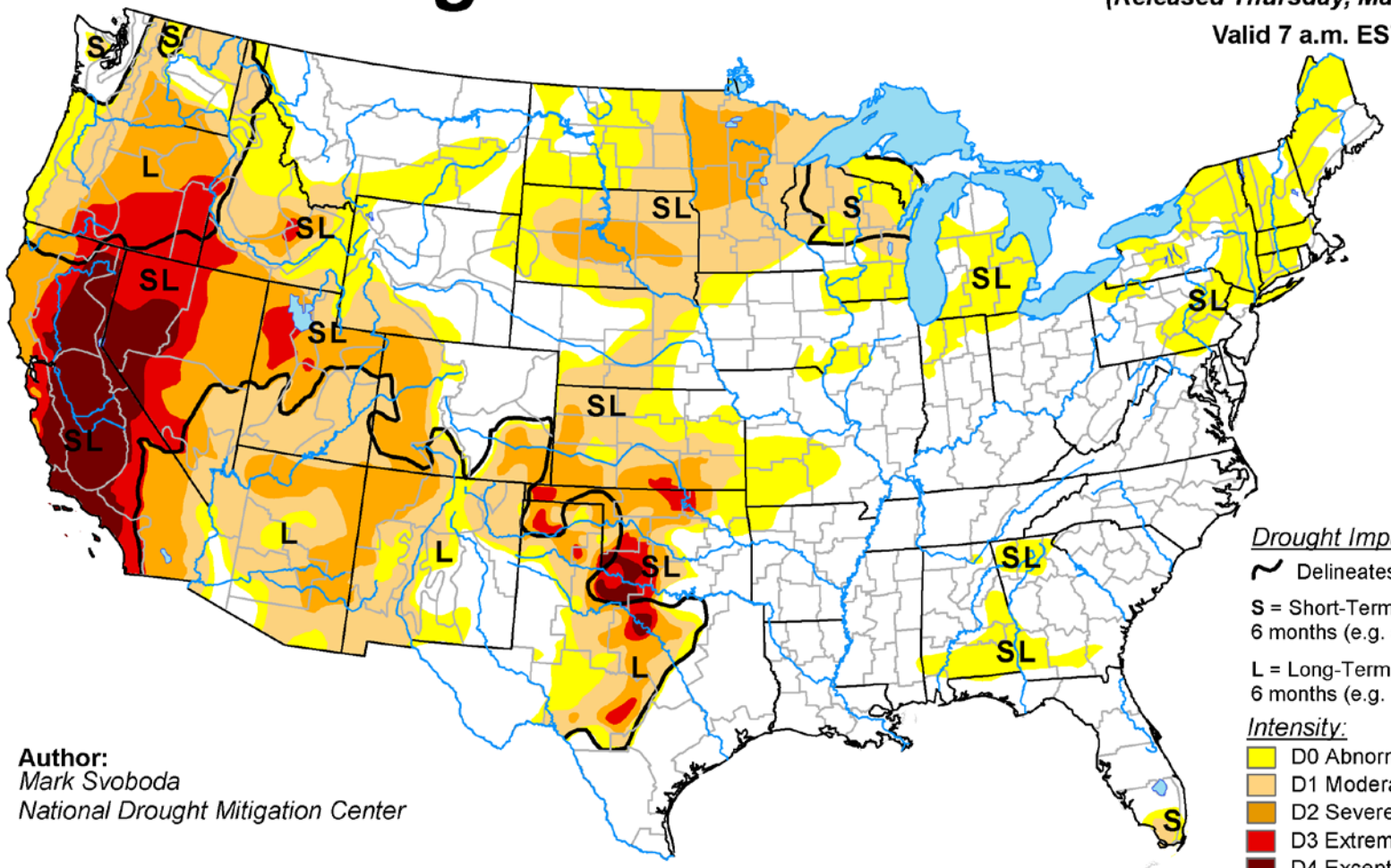
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

May 5, 2015

(Released Thursday, May. 7, 2015)

Valid 7 a.m. EST



Author:
Mark Svoboda
National Drought Mitigation Center

Drought Impact Types:

~ Delineates dominant impacts

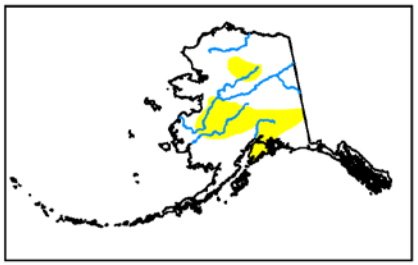
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

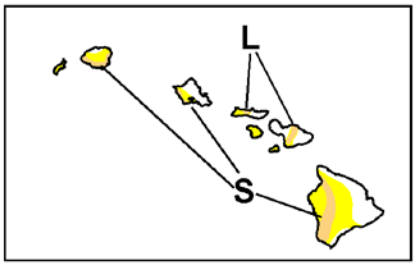
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

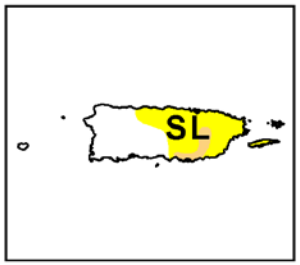
Intensity:

- D0 Abnormally Dry
- 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

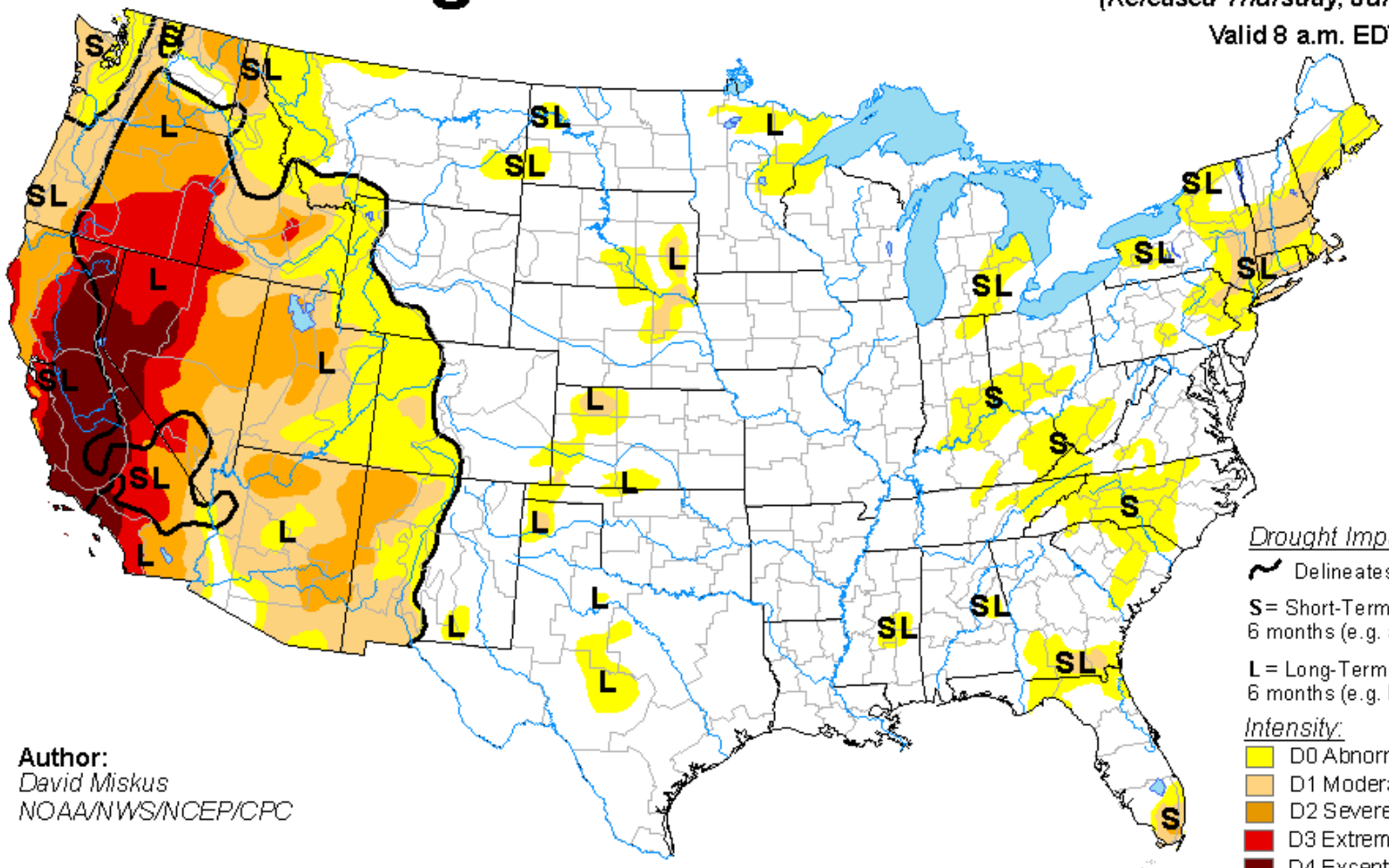
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

June 9, 2015

(Released Thursday, Jun. 11, 2015)

Valid 8 a.m. EDT



Author:
David Miskus
NOAA/NWS/NCEP/CPC

Drought Impact Types:

~ Delineates dominant impacts

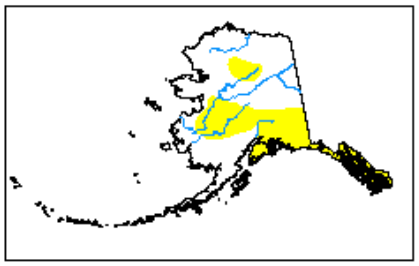
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

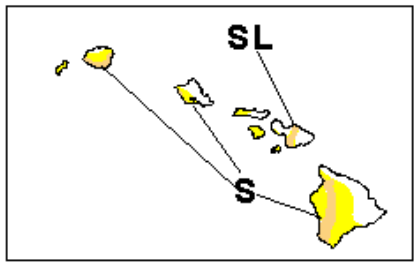
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

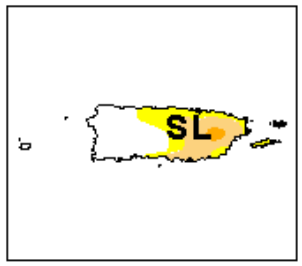
Intensity:

- 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

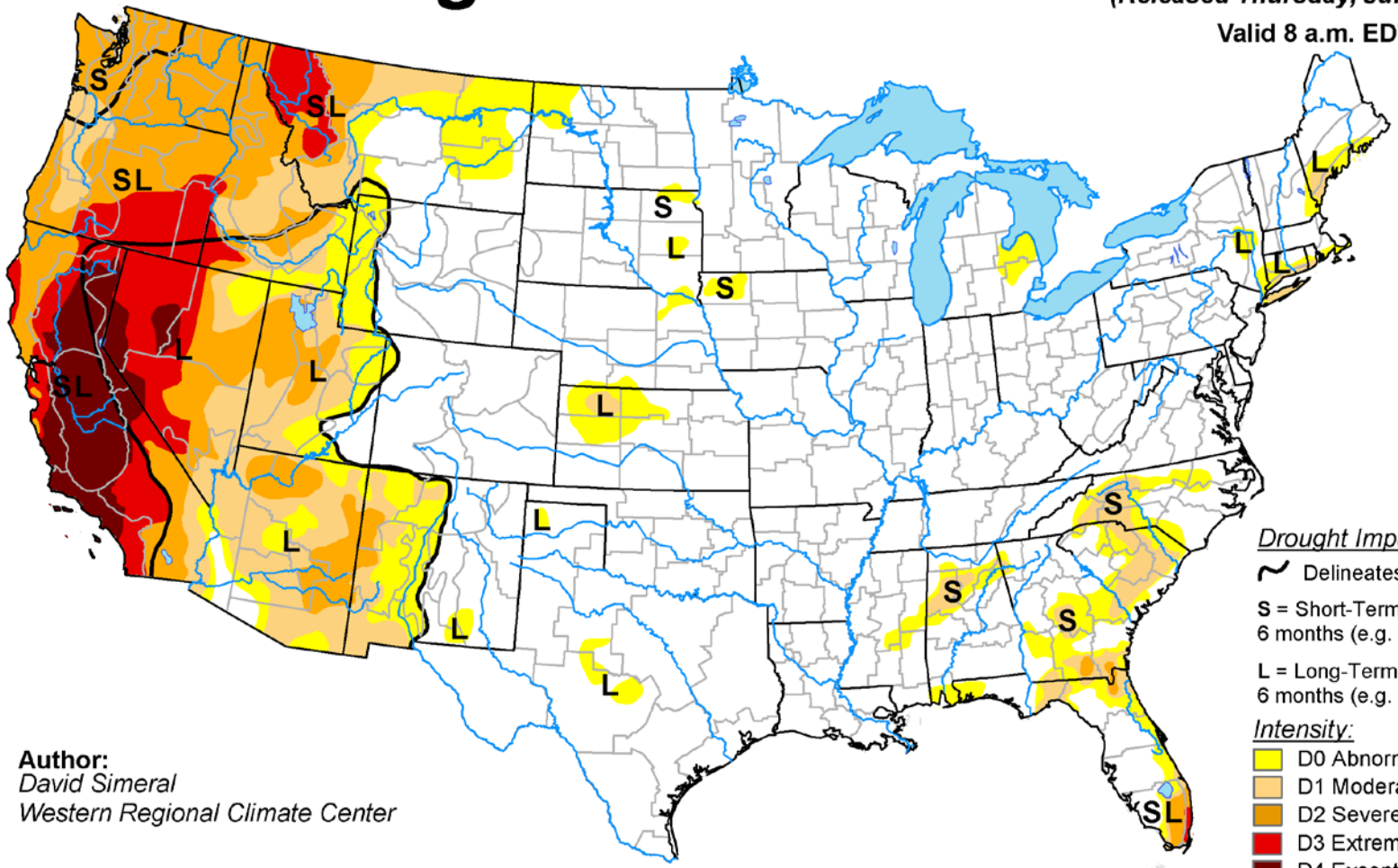
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

July 14, 2015

(Released Thursday, Jul. 16, 2015)

Valid 8 a.m. EDT



Author:
David Simeral
Western Regional Climate Center

Drought Impact Types:

~ Delineates dominant impacts

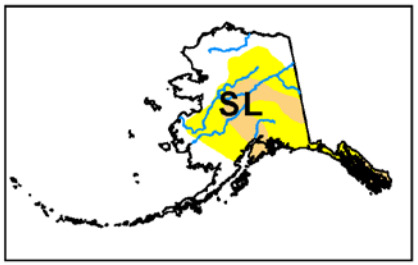
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

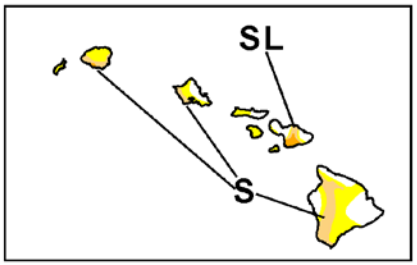
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

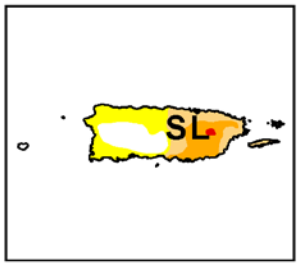
Intensity:

- 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

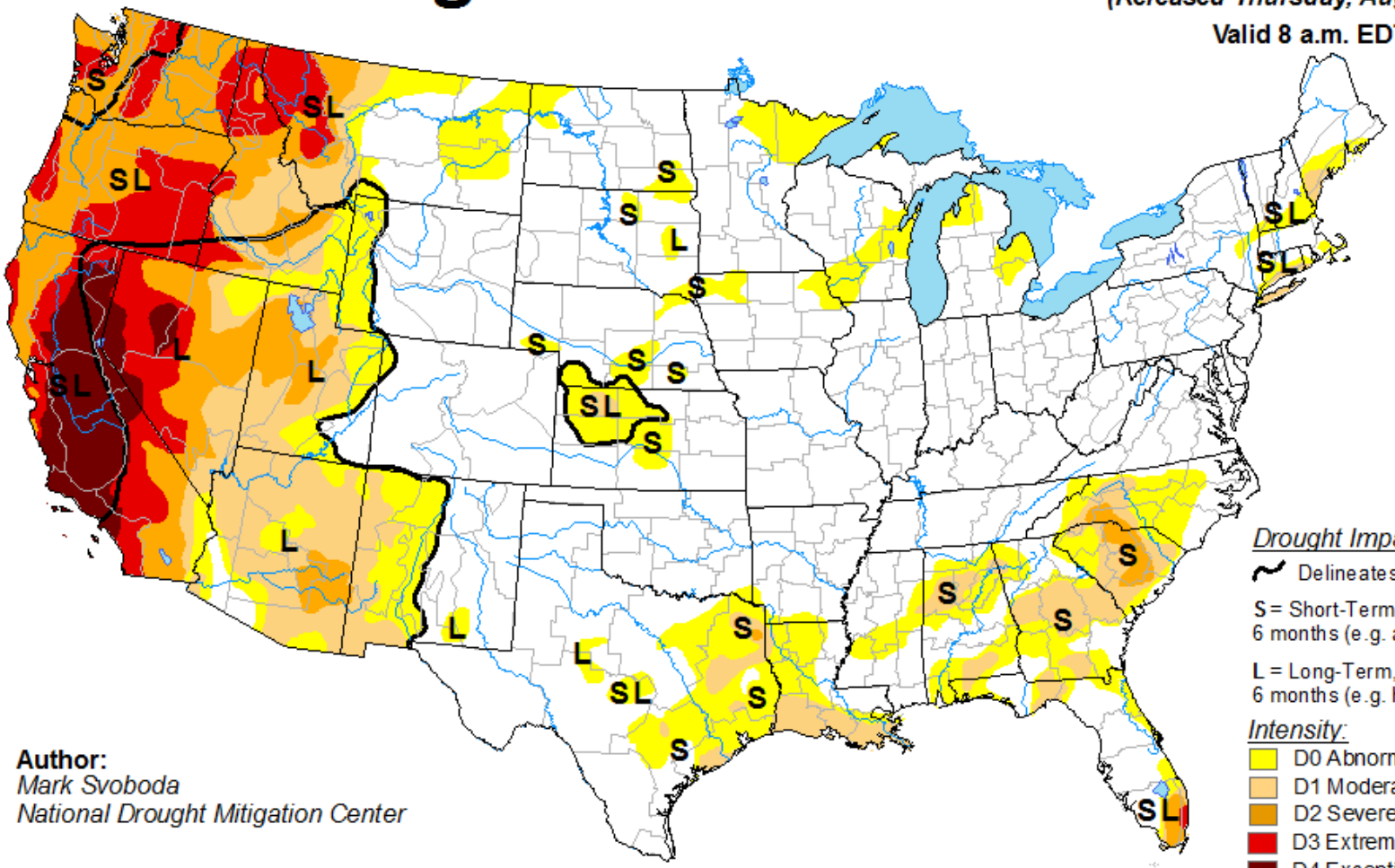
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

August 4, 2015

(Released Thursday, Aug. 6, 2015)

Valid 8 a.m. EDT



Author:
Mark Svoboda
National Drought Mitigation Center

Drought Impact Types:

Delineates dominant impacts

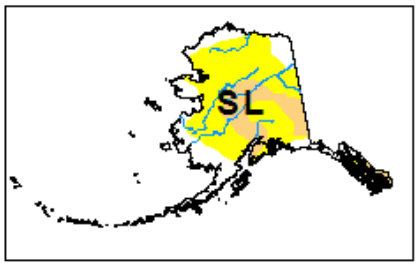
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

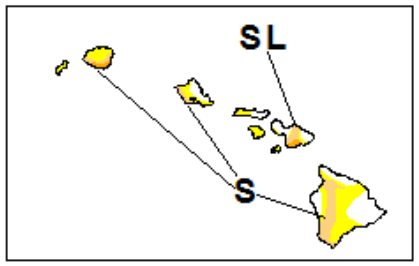
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

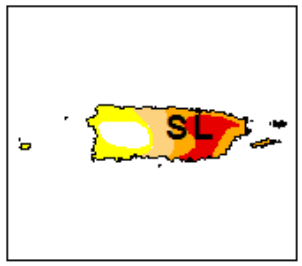
Intensity:

- D0 Abnormally Dry
- 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.





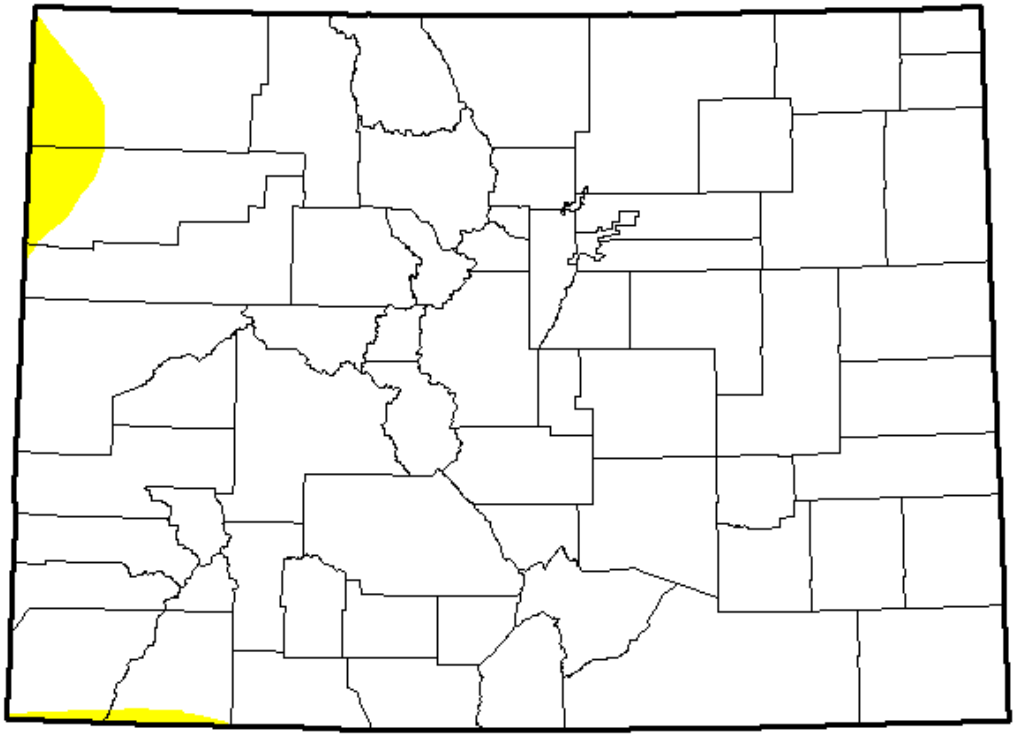


USDA National Drought Mitigation Center

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

Colorado



August 4, 2015

(Released Thursday, Aug. 6, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	97.95	2.05	0.00	0.00	0.00	0.00
Last Week 7/28/2015	97.95	2.05	0.00	0.00	0.00	0.00
3 Months Ago 5/5/2015	42.17	57.83	50.50	31.78	0.00	0.00
Start of Calendar Year 12/30/2014	69.87	30.13	21.26	12.26	0.00	0.00
Start of Water Year 9/30/2014	68.96	31.04	22.94	13.82	2.31	0.00
One Year Ago 8/5/2014	59.92	40.08	26.96	15.52	2.67	0.52

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.

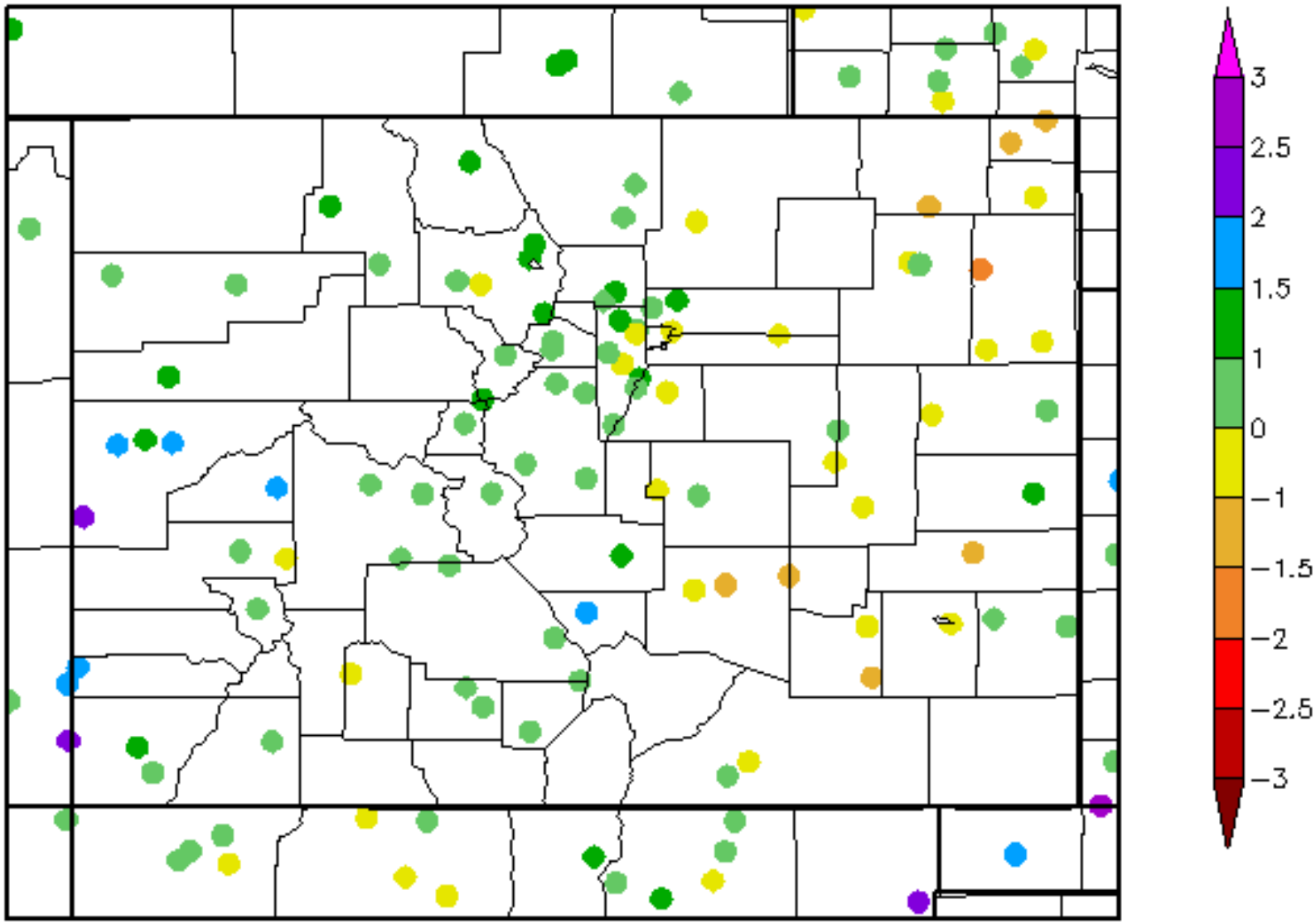
Author:

Mark Svoboda

National Drought Mitigation Center

http://droughtmonitor.unl.edu/

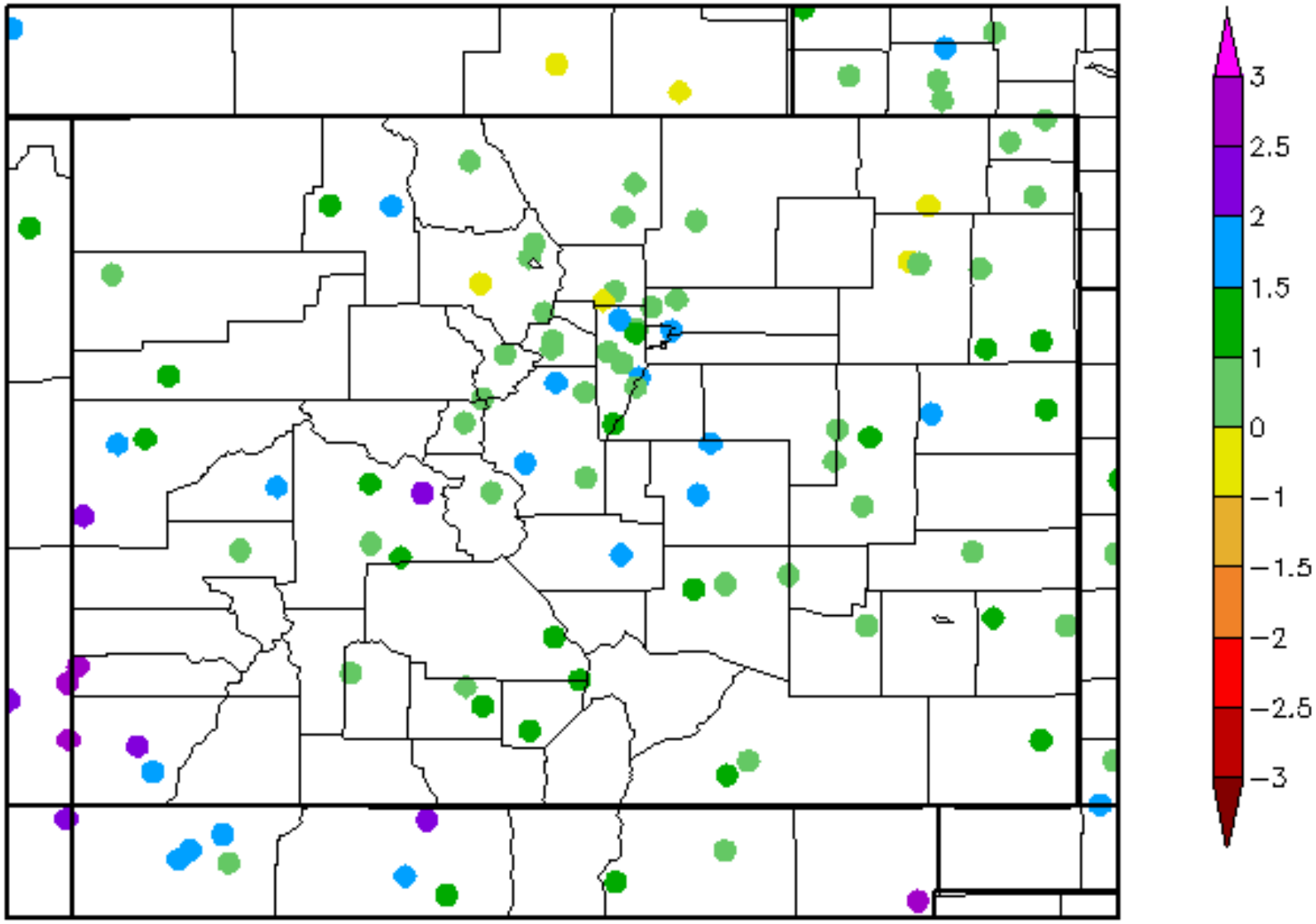
Monthly SPI
7/1/2015 – 7/31/2015



Generated 8/5/2015 at HPRCC using provisional data.

Regional Climate Centers

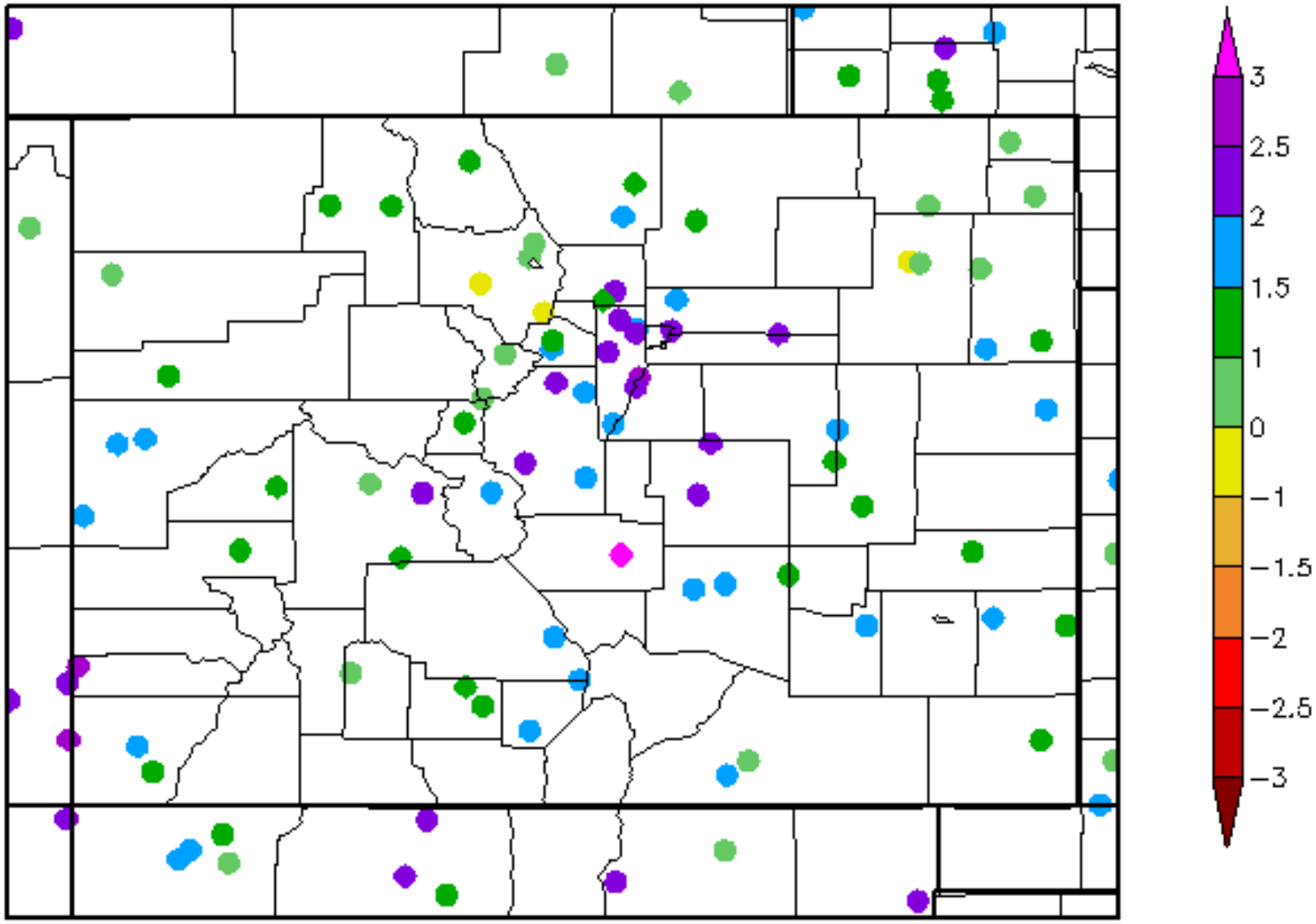
90 Day SPI
5/13/2015 – 8/10/2015



Generated 8/11/2015 at HPRCC using provisional data.

Regional Climate Centers

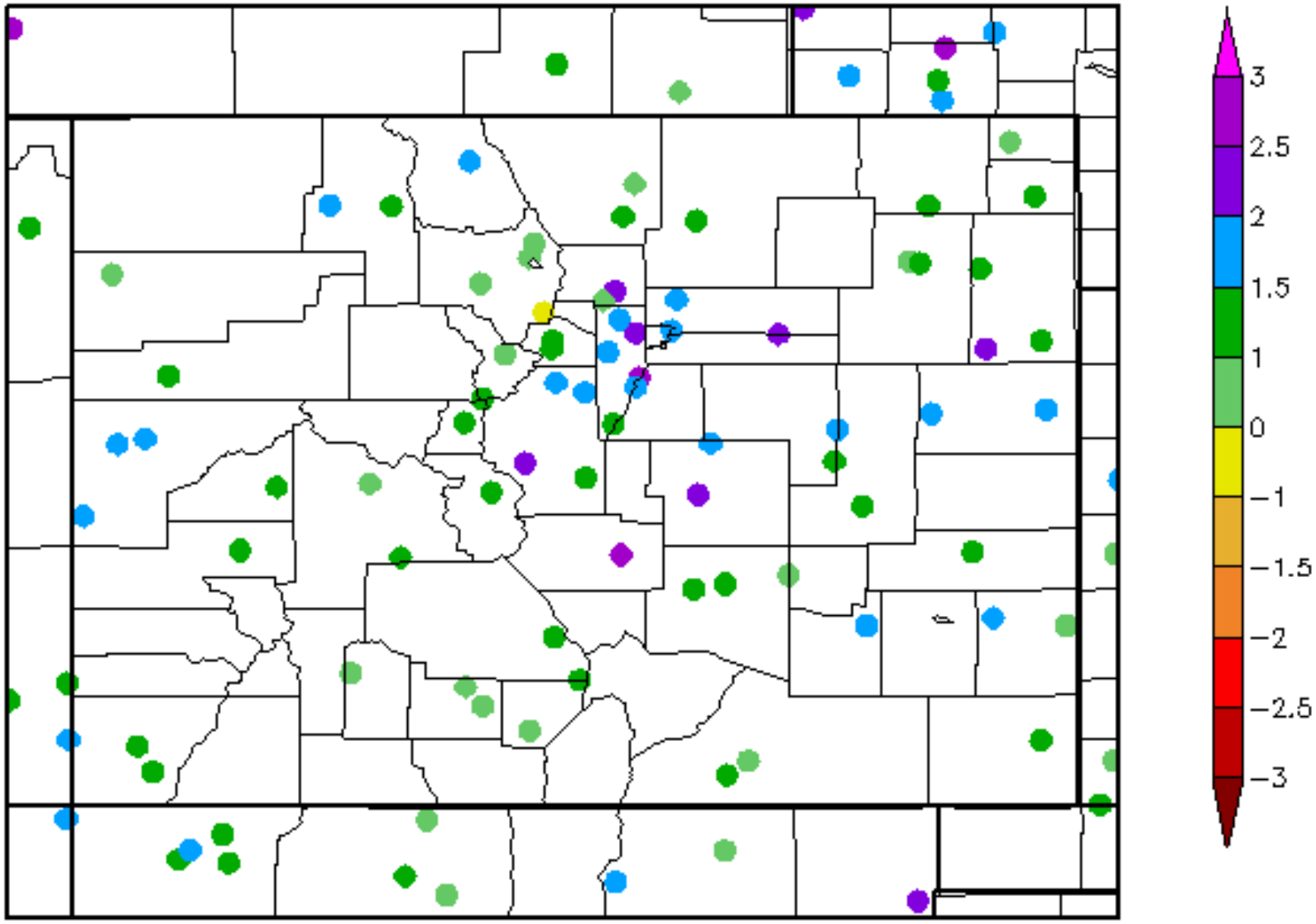
6 Month SPI
2/11/2015 – 8/10/2015



Generated 8/11/2015 at HPRCC using provisional data.

Regional Climate Centers

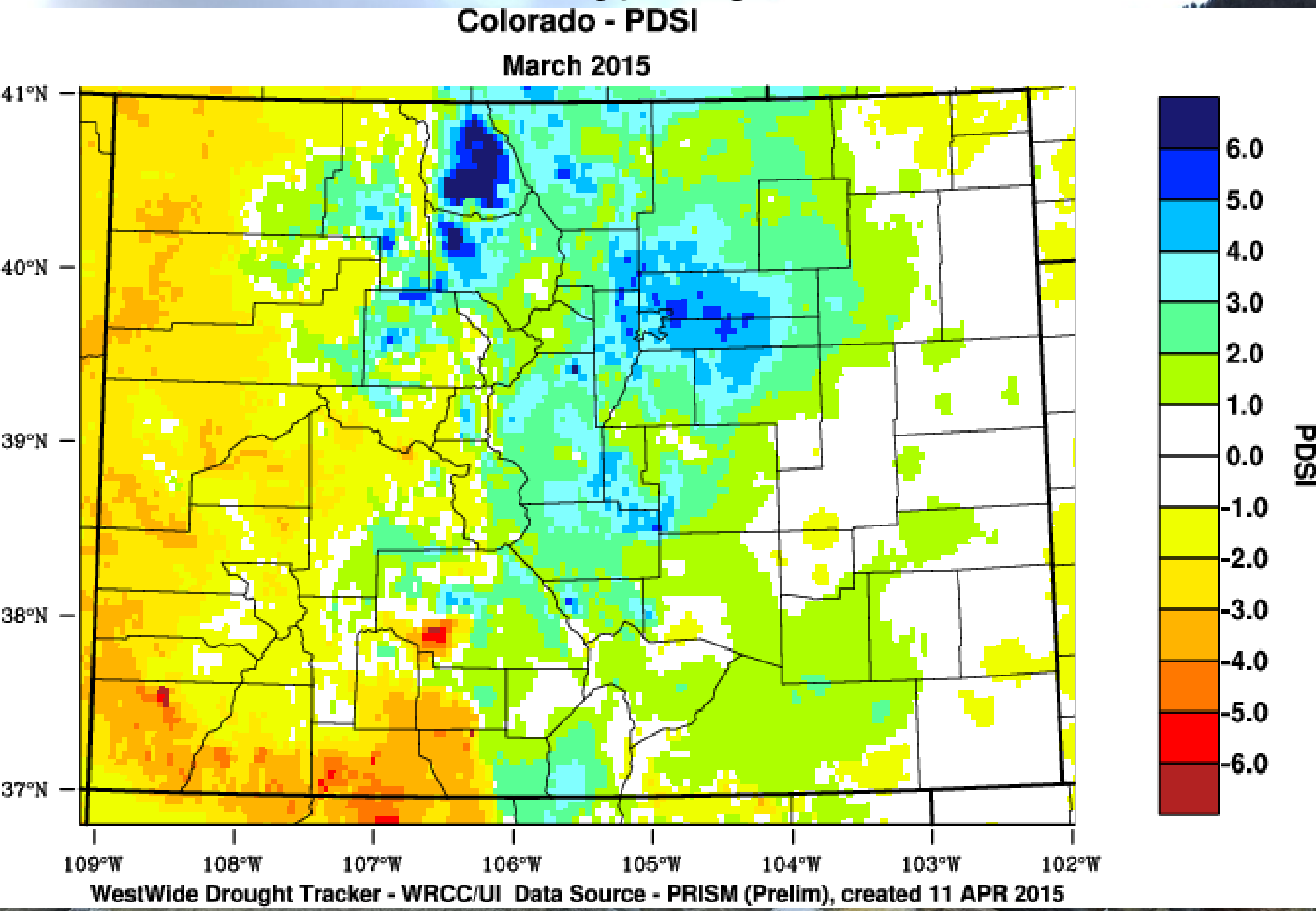
12 Month SPI
8/11/2014 – 8/10/2015



Generated 8/11/2015 at HPRCC using provisional data.

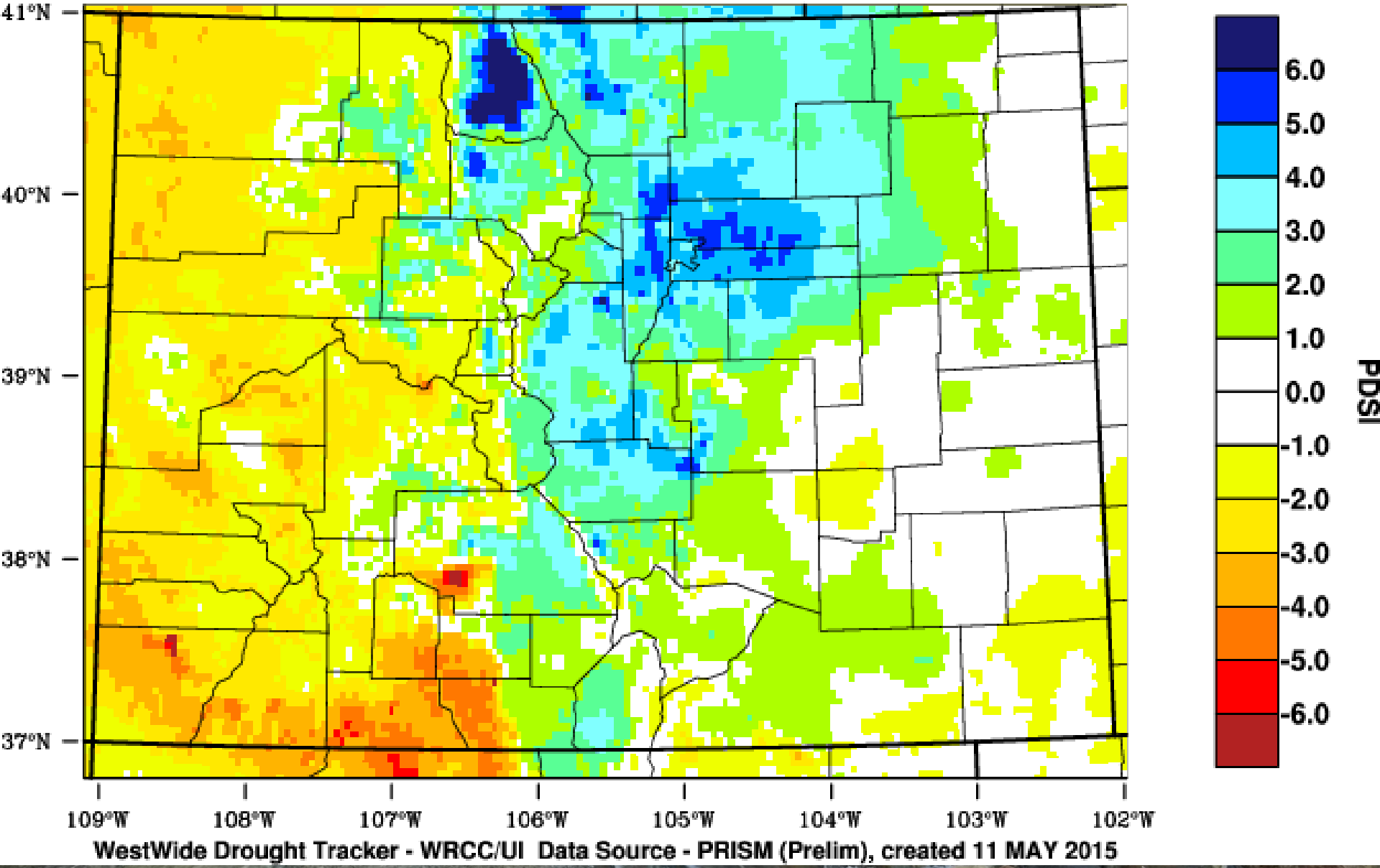
Regional Climate Centers

Palmer


Colorado - PDSI
March 2015
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 - WRCC/UI Data Source - PRISM (Prelim), created 11 APR 2015

Colorado - PDSI

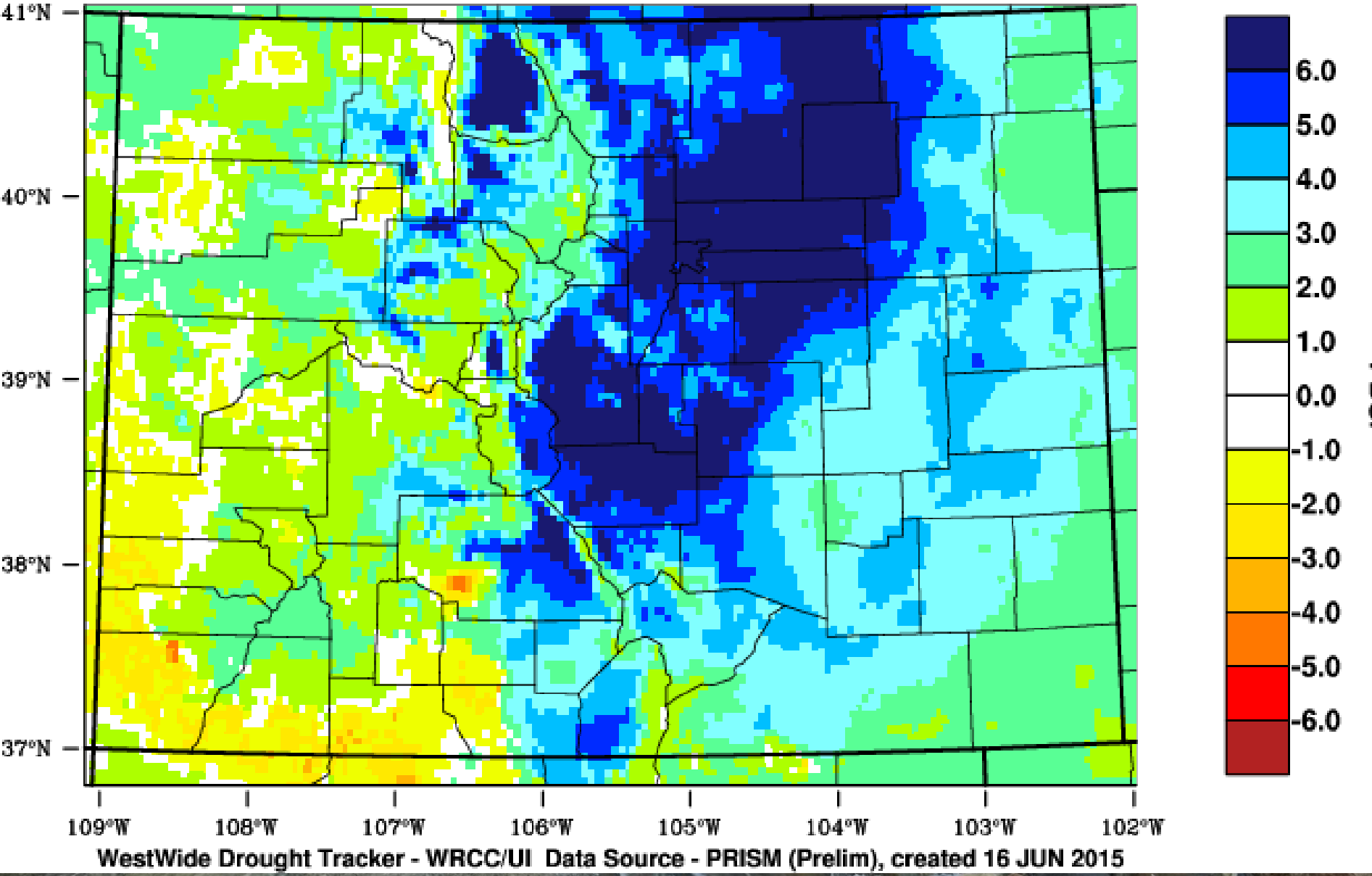
April 2015



WestWide Drought Tracker - WRCC/UI Data Source - PRISM (Prelim), created 11 MAY 2015

Colorado - PDSI

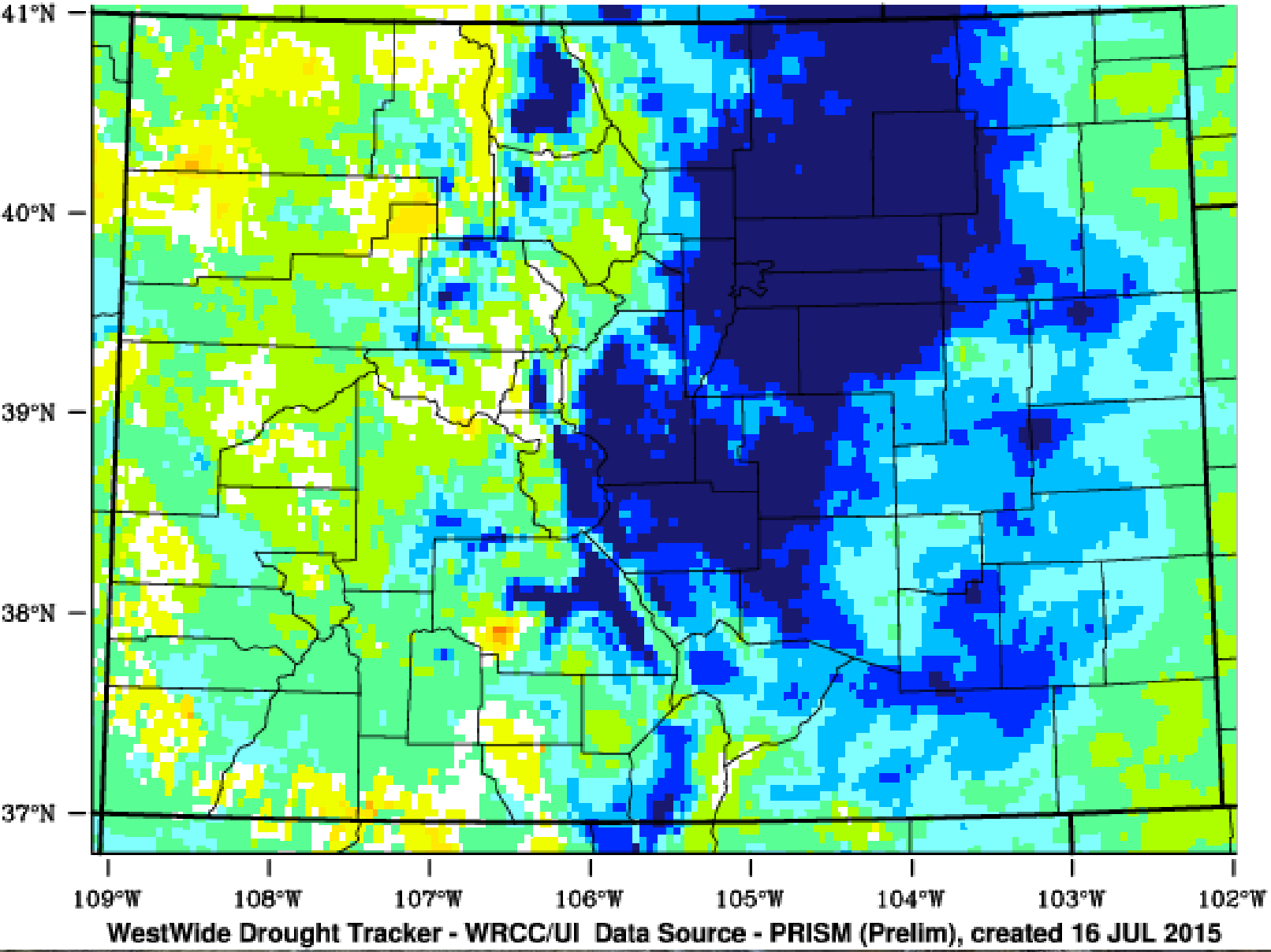
May 2015



WestWide Drought Tracker - WRCC/UI Data Source - PRISM (Prelim), created 16 JUN 2015

Colorado - PDSI

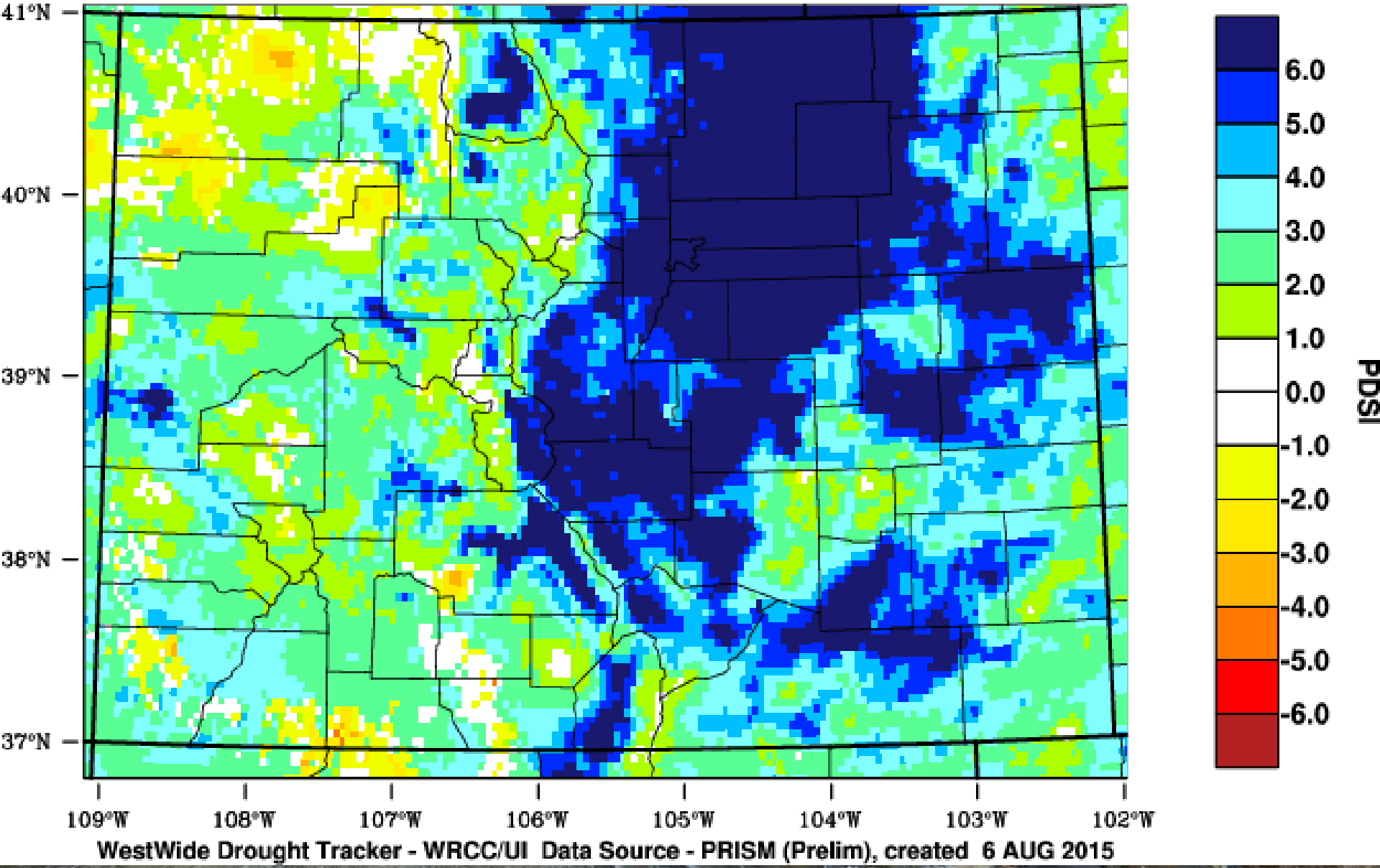
June 2015



WestWide Drought Tracker - WRCC/UI Data Source - PRISM (Prelim), created 16 JUL 2015

Colorado - PDSI

July 2015



WestWide Drought Tracker - WRCC/UI Data Source - PRISM (Prelim), created 6 AUG 2015

Colorado Climate Center

Data and Power Point Presentations available for downloading

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

Colorado State University
Knowledge to Go Places