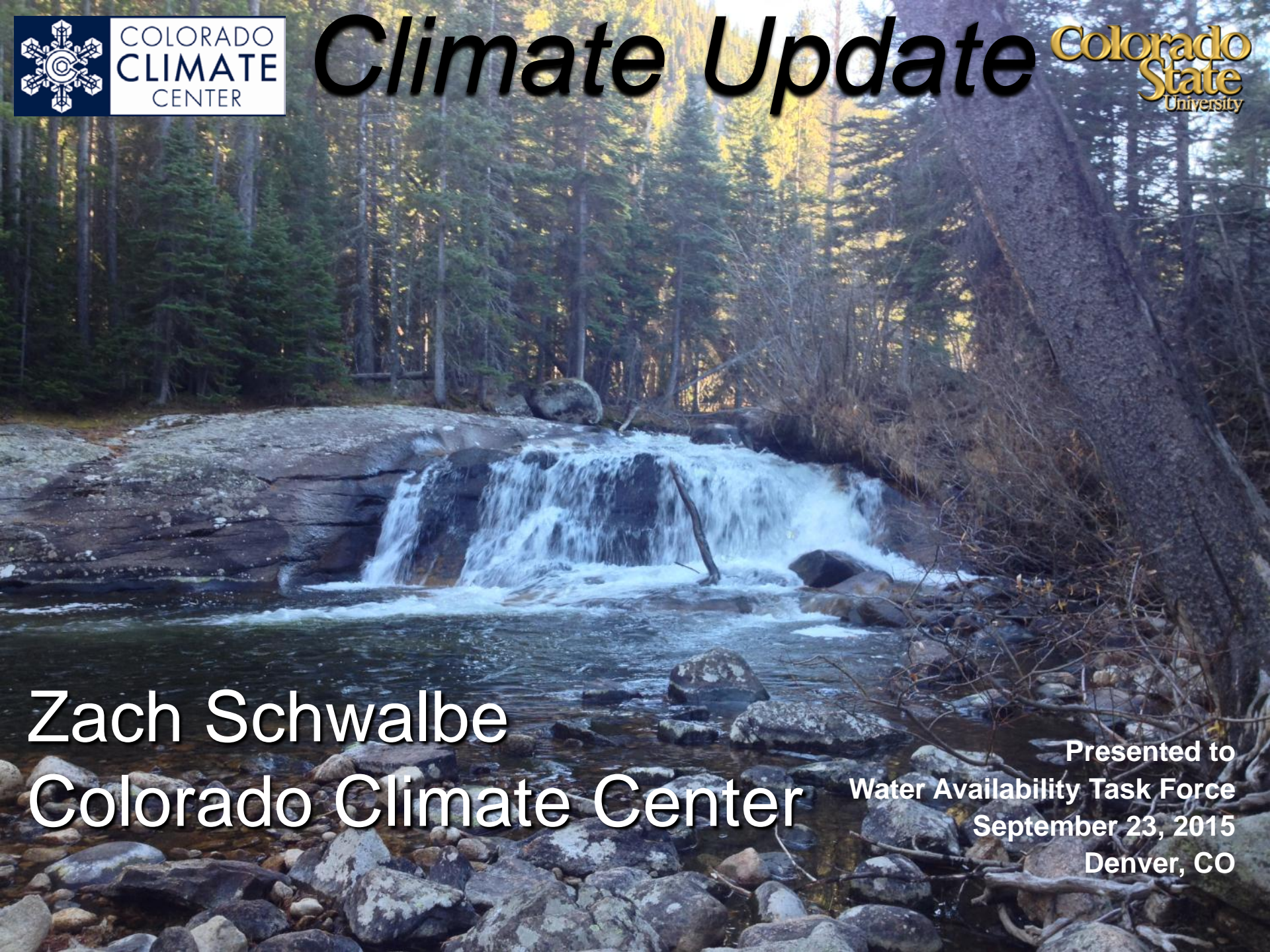




Climate Update

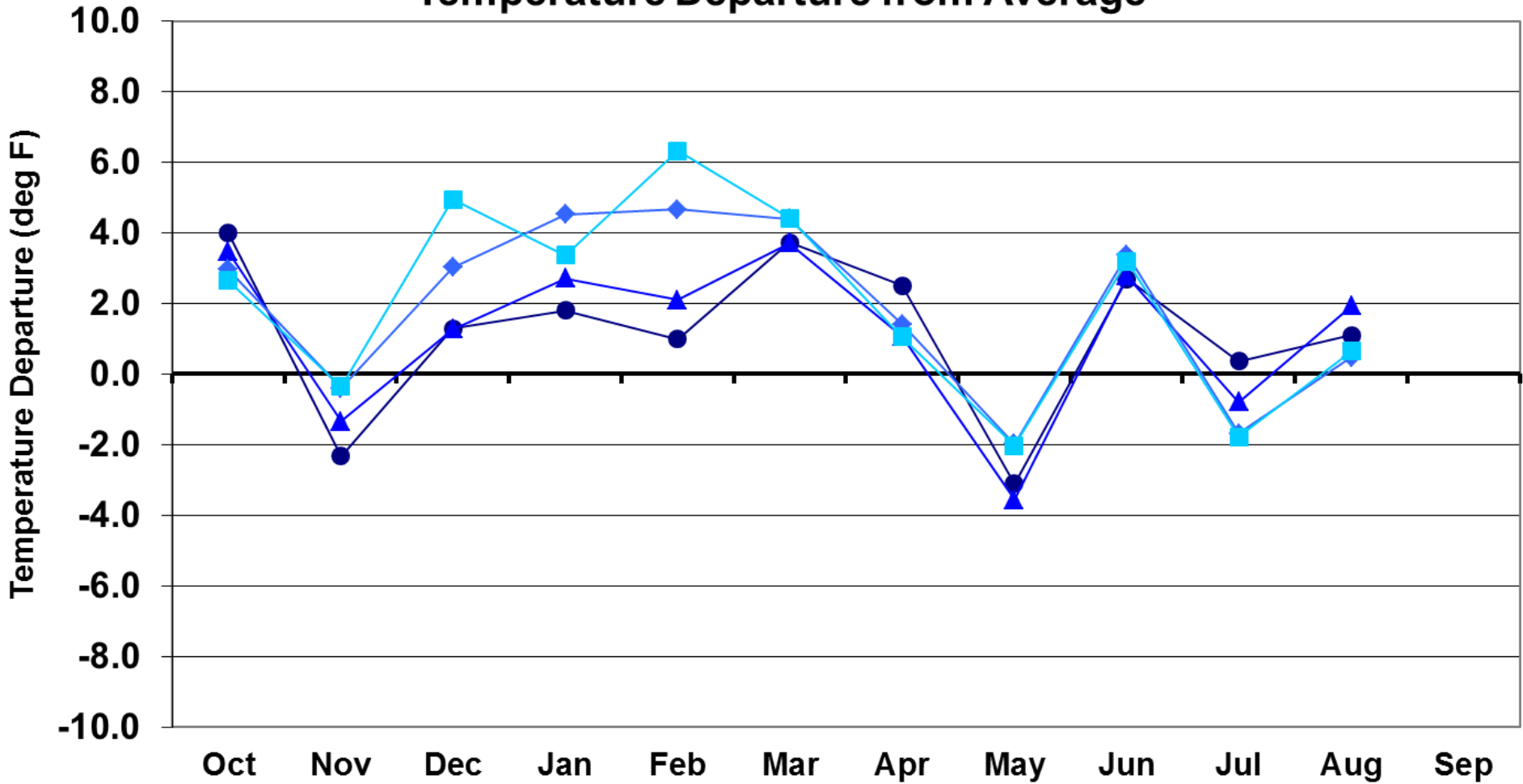


Zach Schwalbe
Colorado Climate Center

Presented to
Water Availability Task Force
September 23, 2015
Denver, CO

Water Year 2015 Temperature Departures

Water Year 2015
Temperature Departure from Average



● Eastern Plains

▲ Foothills

◆ Mountains

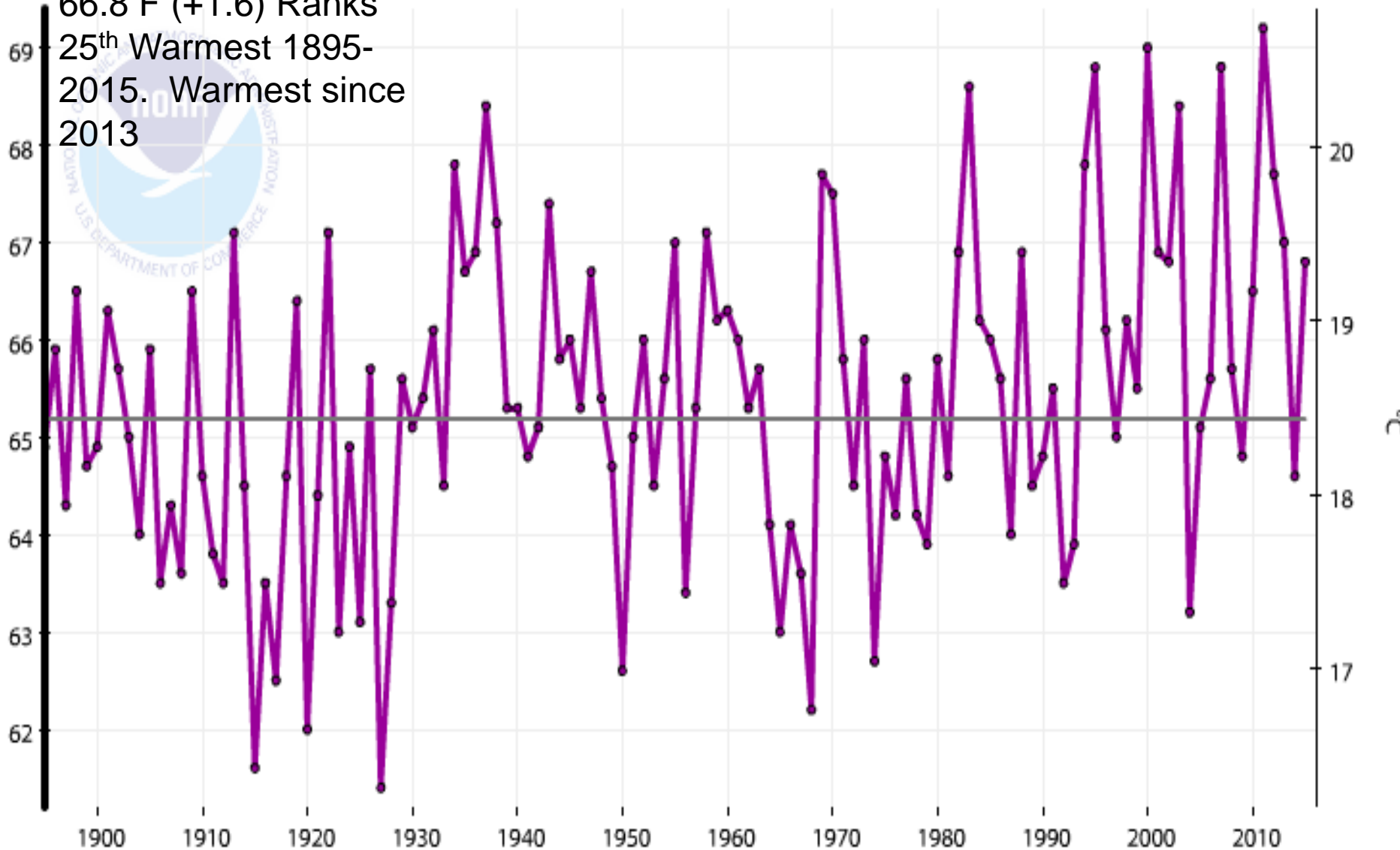
■ Western Valleys

Aug 2015 Average Temperature History for Colorado (NCEI)

Colorado, Average Temperature, August

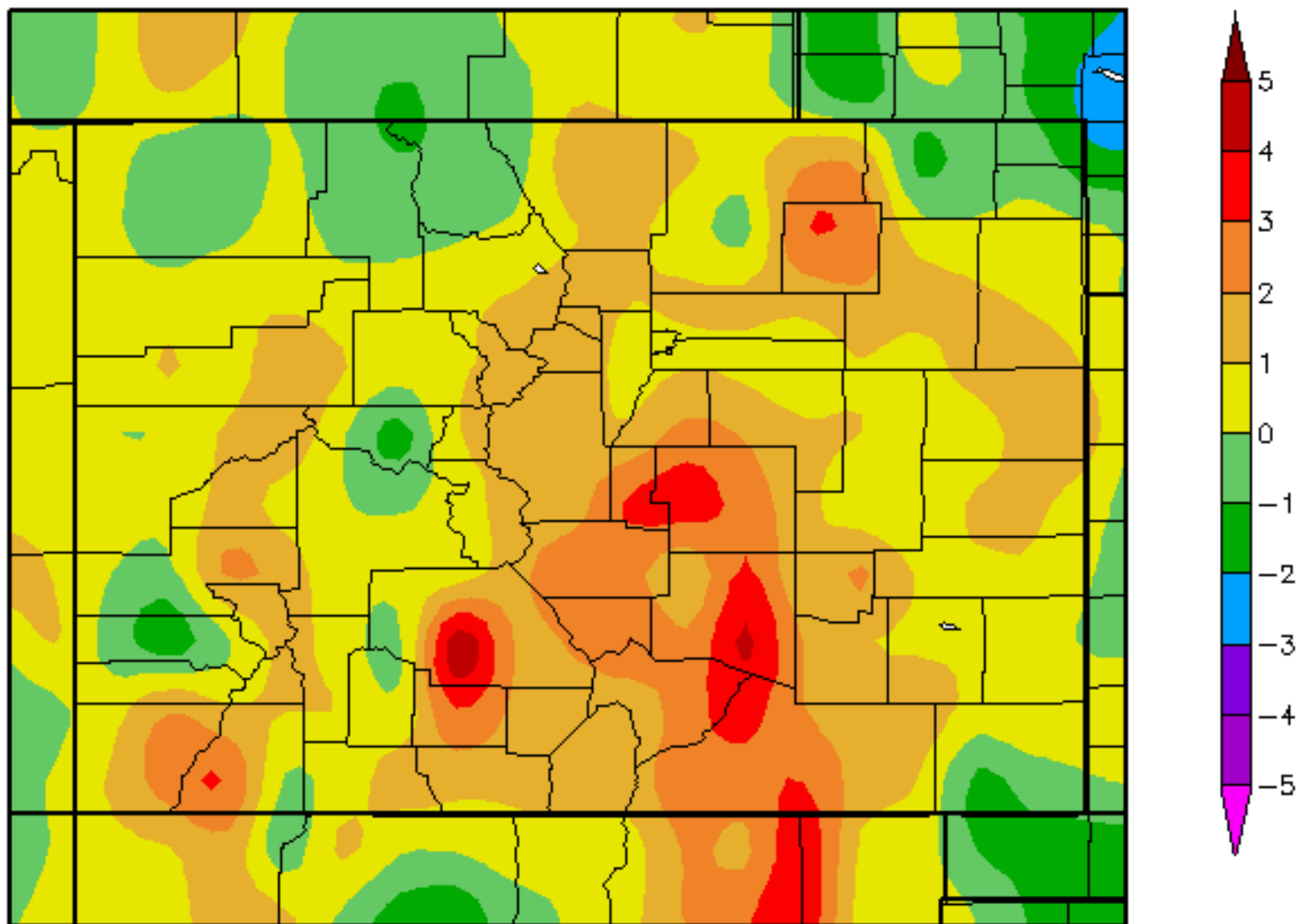
— 1901-2000 Avg: 65.2°F —●— Avg Temperature

66.8 F (+1.6) Ranks
25th Warmest 1895-
2015. Warmest since
2013



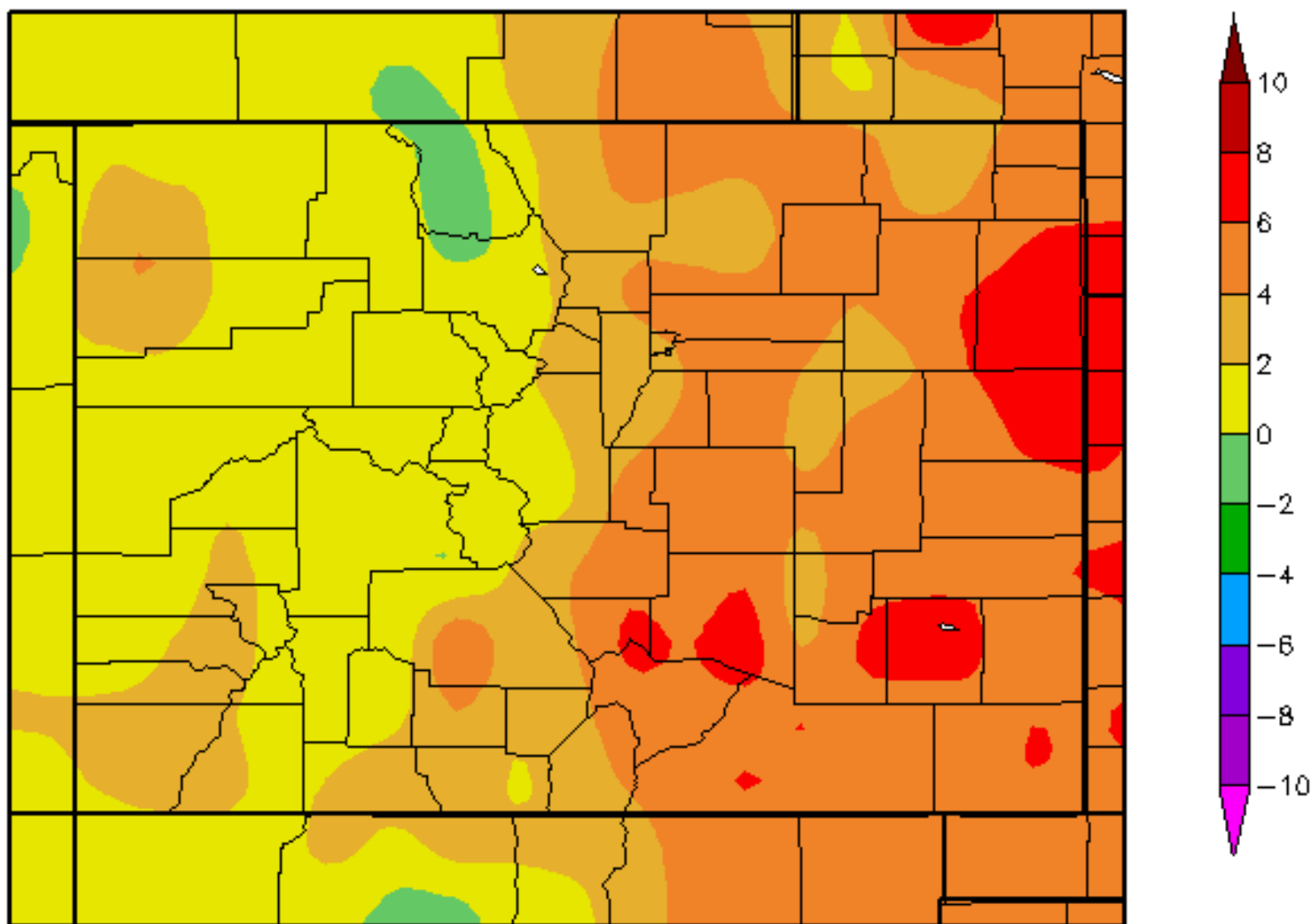
Departure from Normal Temperature (F)

8/1/2015 – 8/31/2015



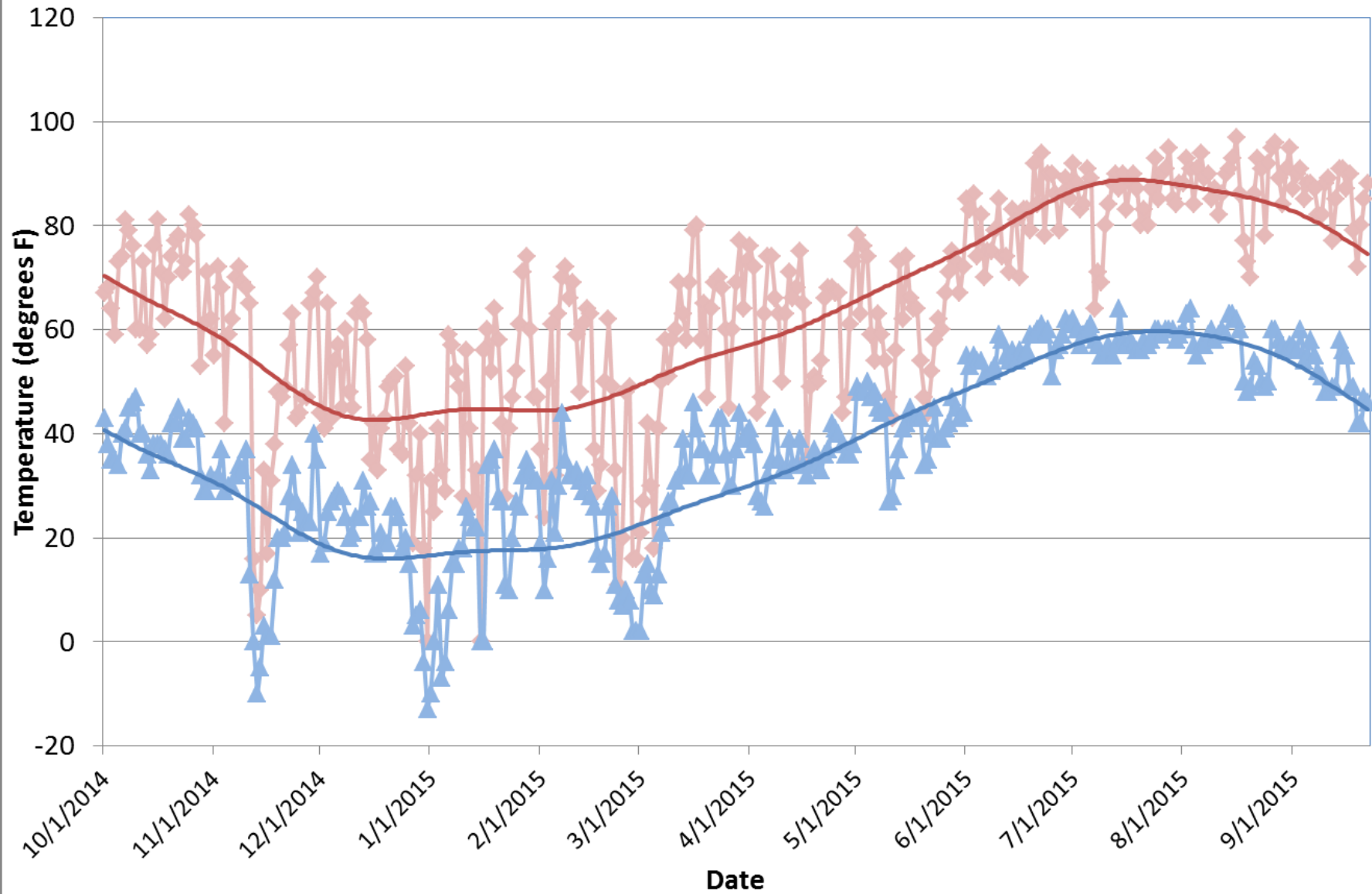
Departure from Normal Temperature (F)

9/1/2015 – 9/21/2015



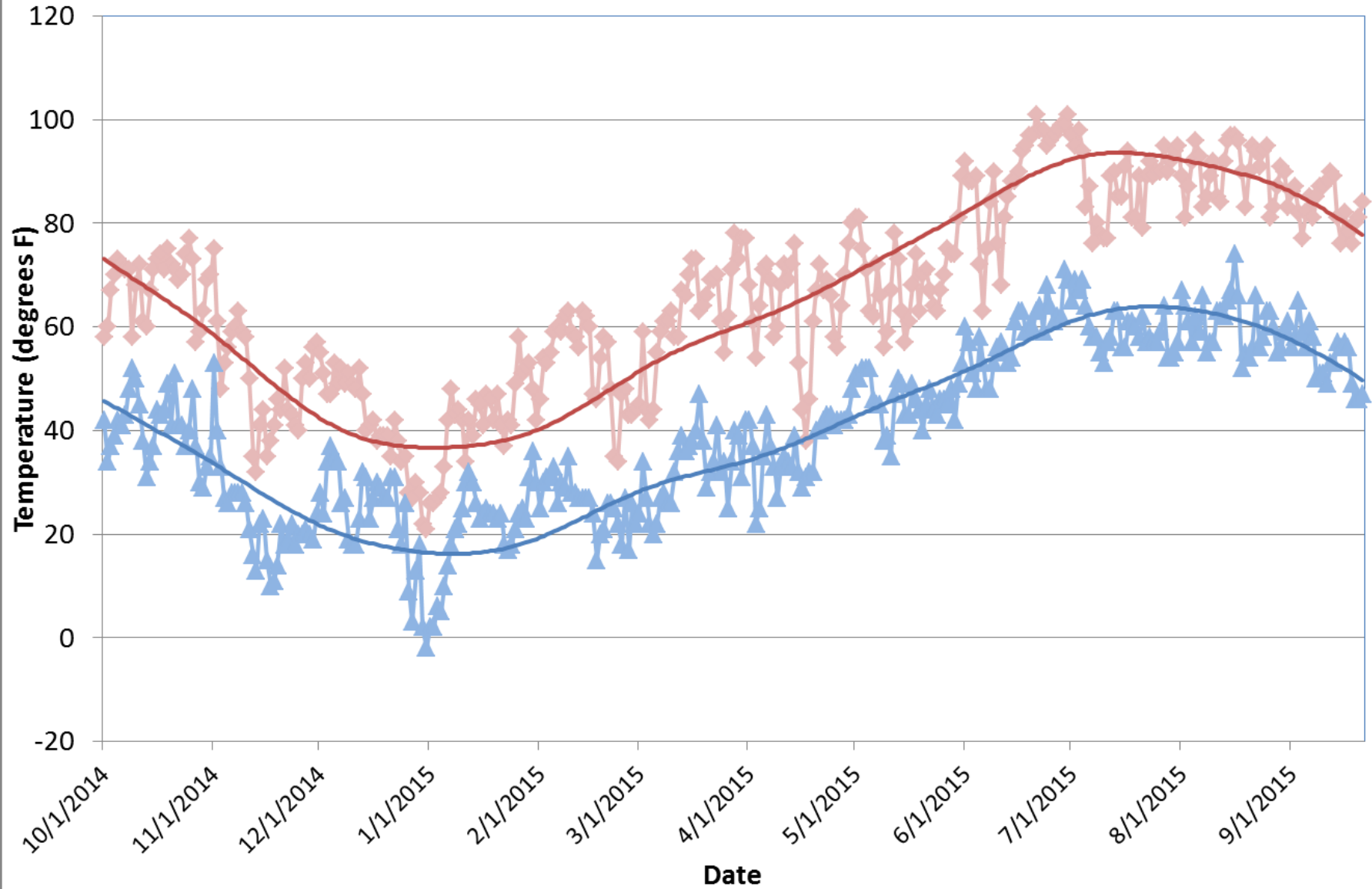
Denver-Stapleton Daily Max/Min Temperature with Normal (Oct 1, 2014 - Present)

MaxTemperature Normal Max MinTemperature Normal Min

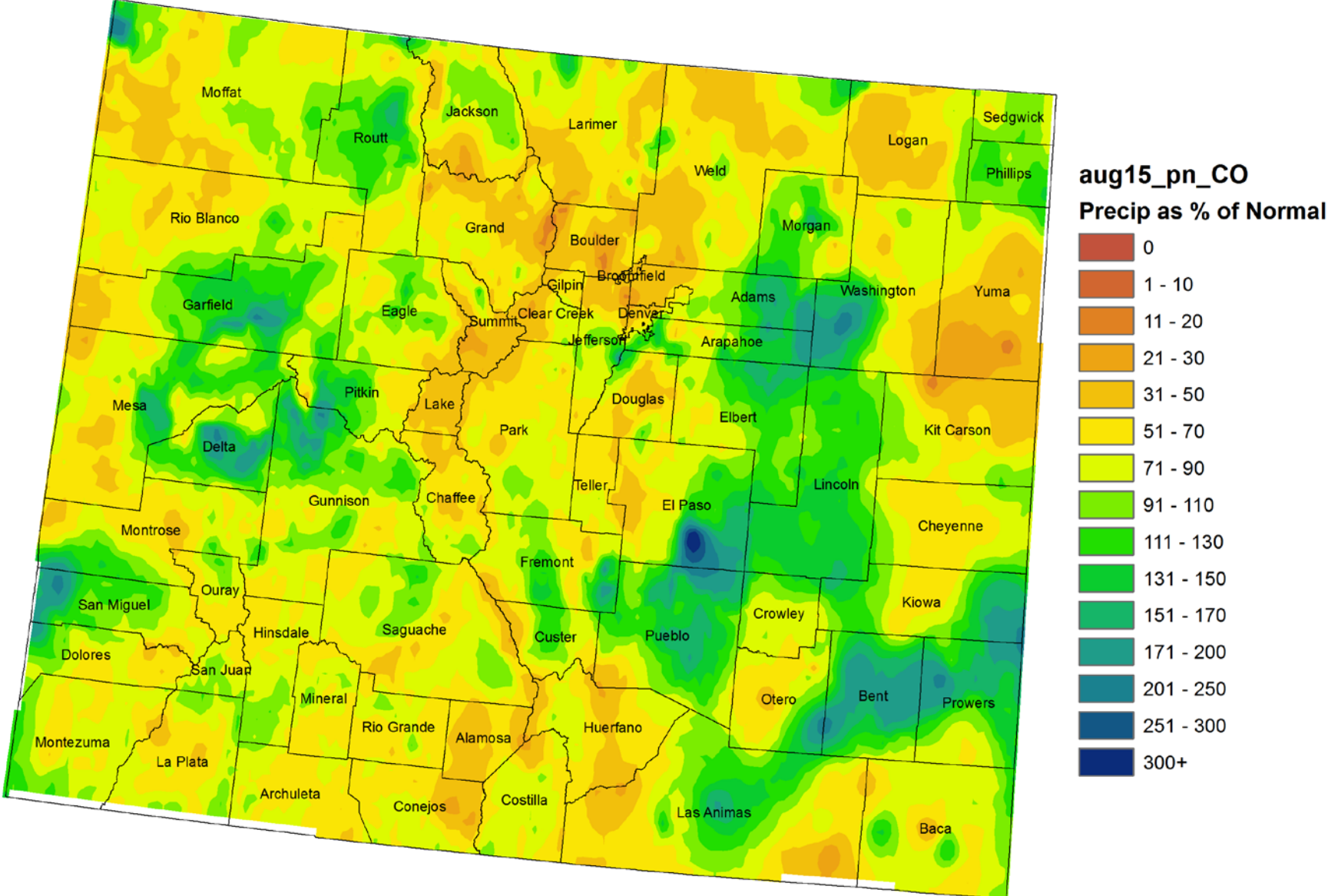


Grand Junction Daily Max/Min Temperature with Normals (Oct 1, 2014 - Present)

Max Temperature Normal Max Min Temperature Normal Min



Colorado August 2015 Precipitation as a Percentage of Normal



August 2015 Statewide Precipitation

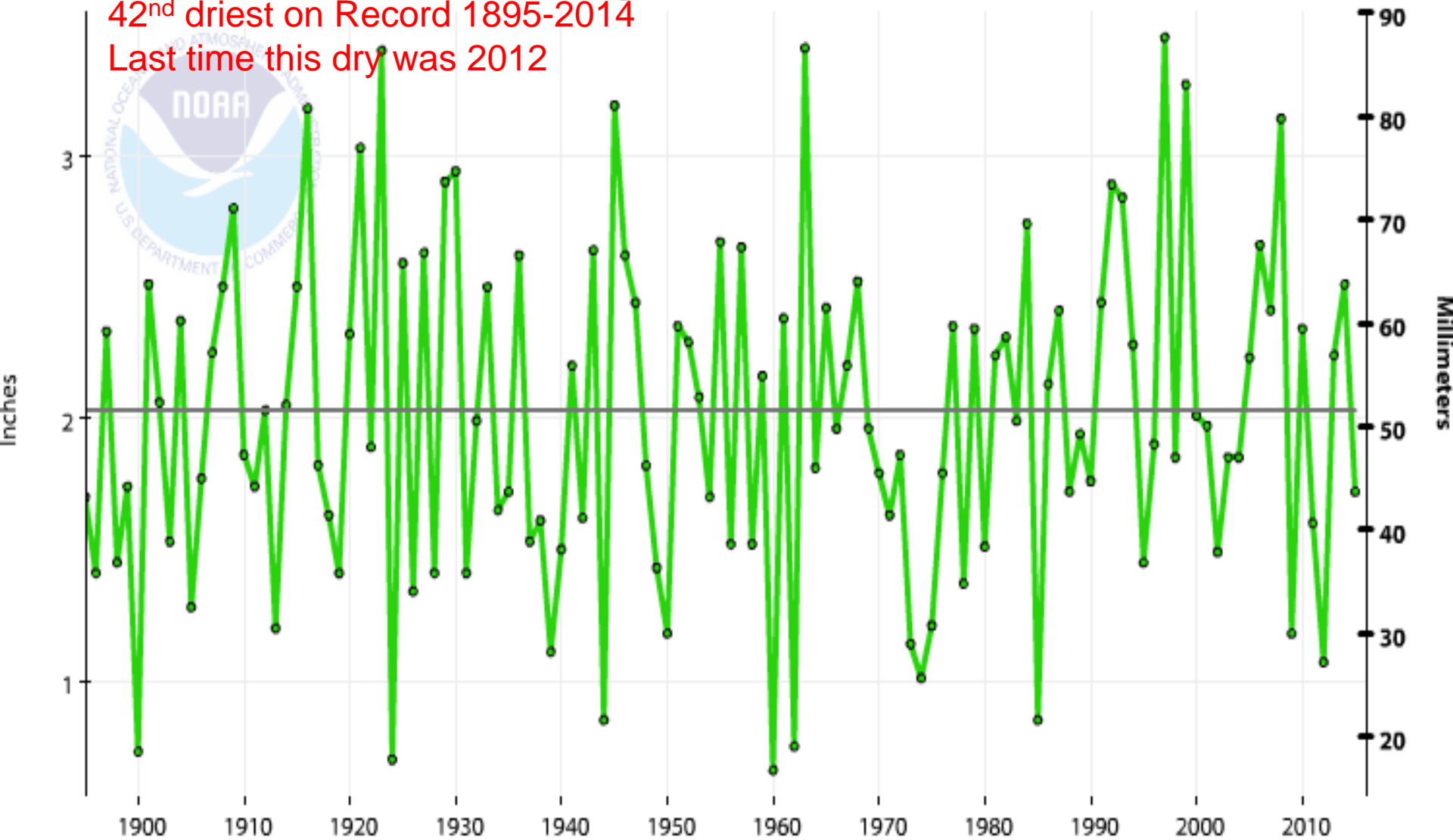
Colorado, Precipitation, August

— 1901-2000 Avg: 2.03" —●— Precip

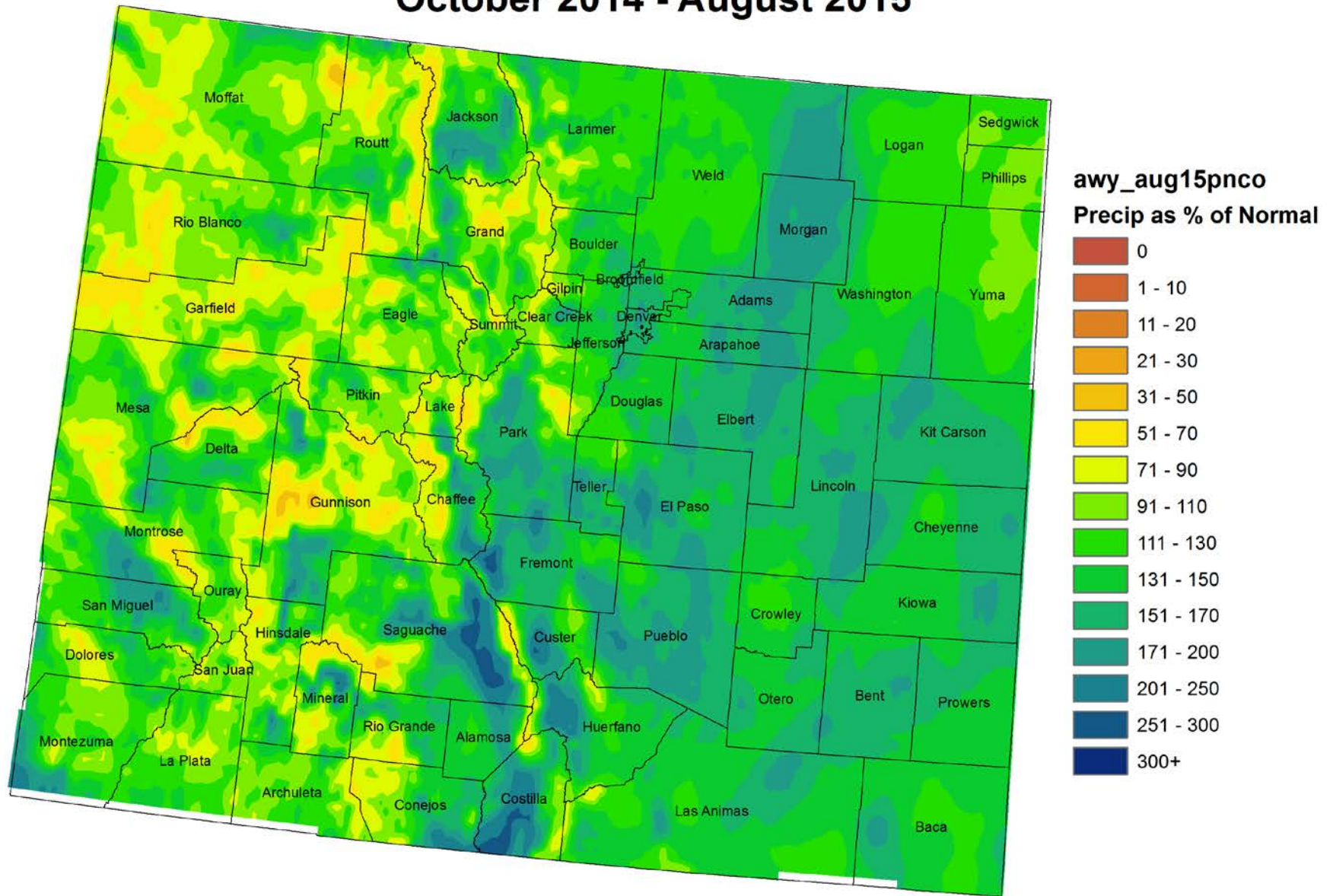
1.72" (-0.31")

42nd driest on Record 1895-2014

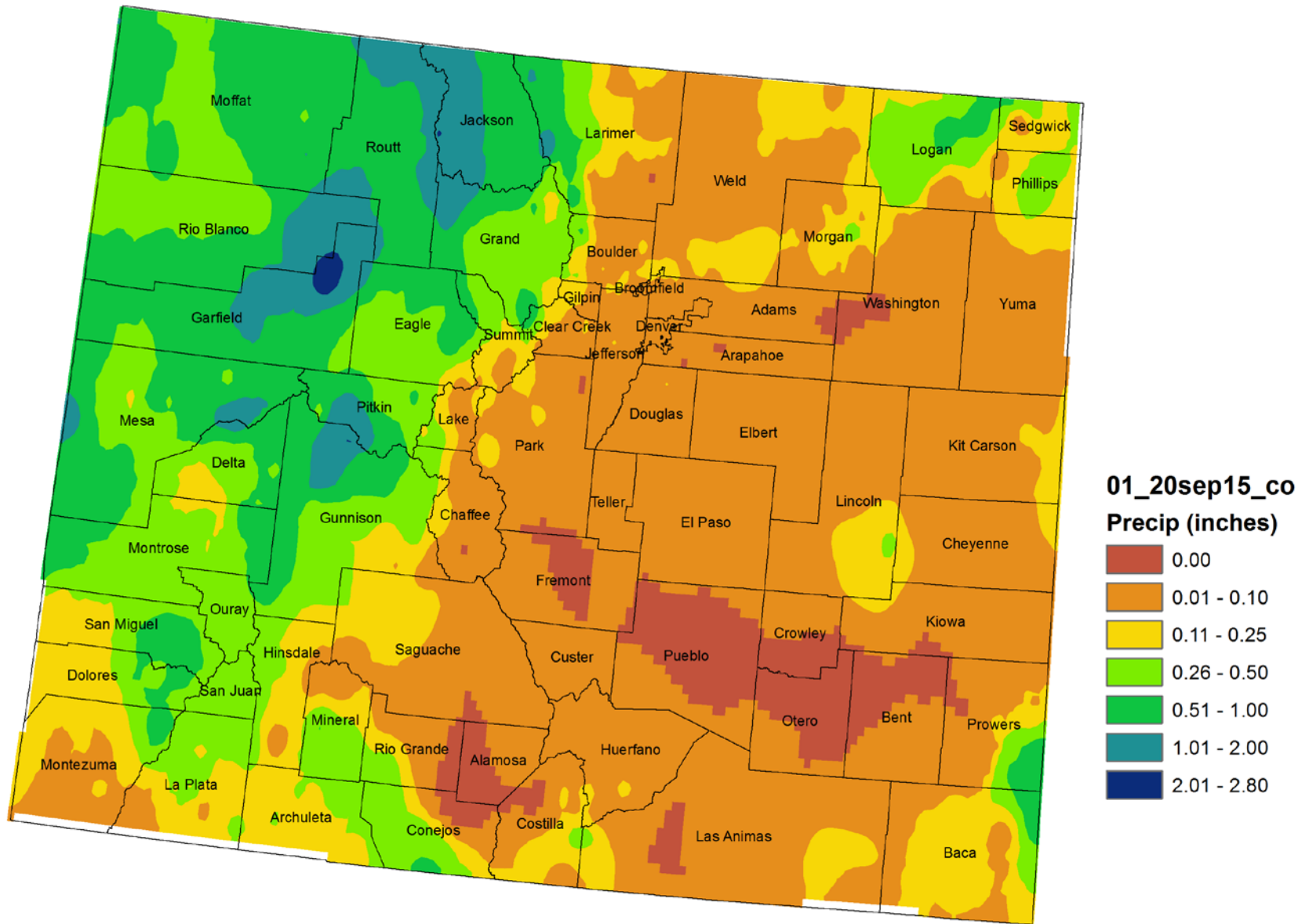
Last time this dry was 2012



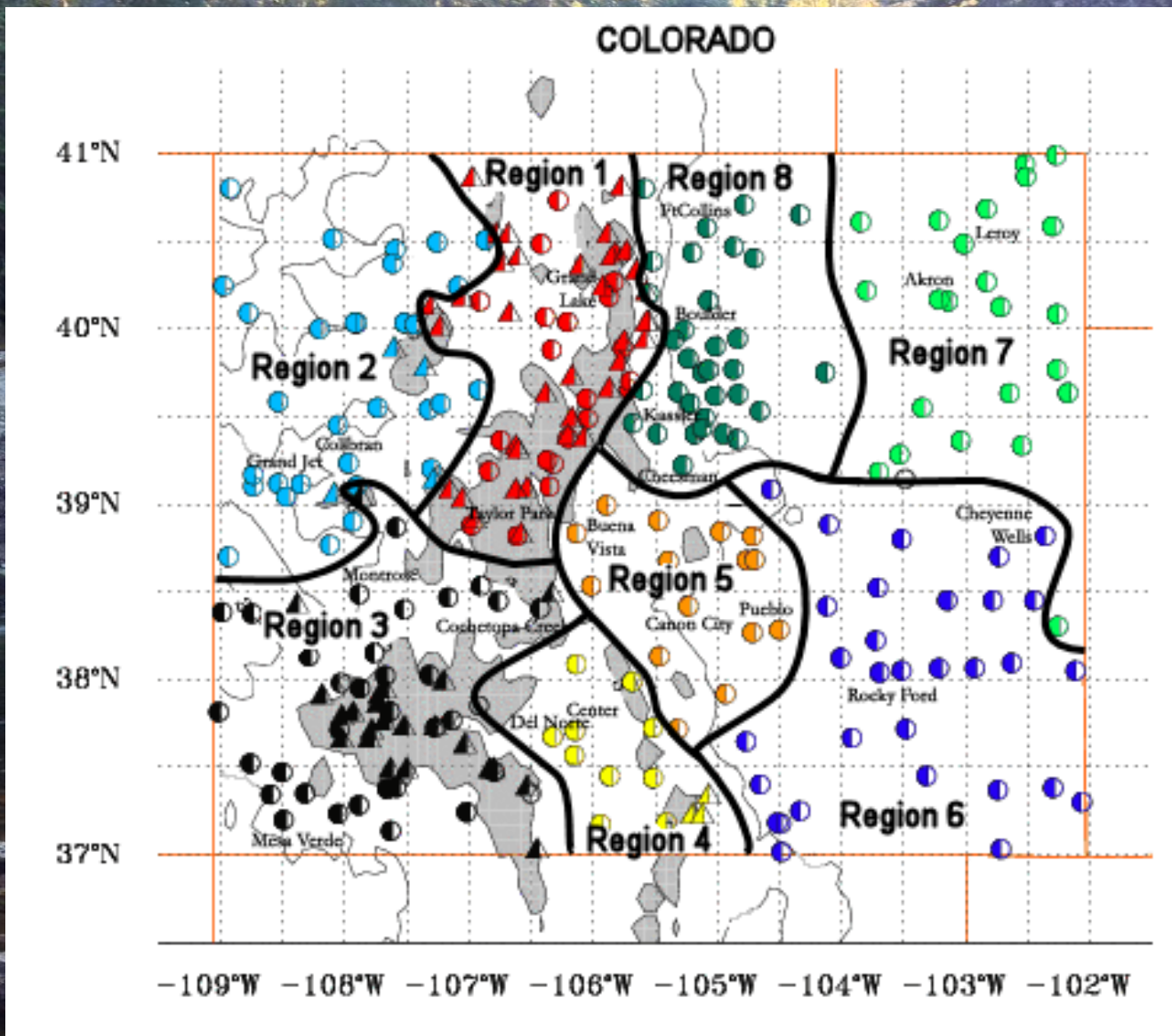
Colorado Water Year 2015 Precipitation as a Percentage of Normal October 2014 - August 2015



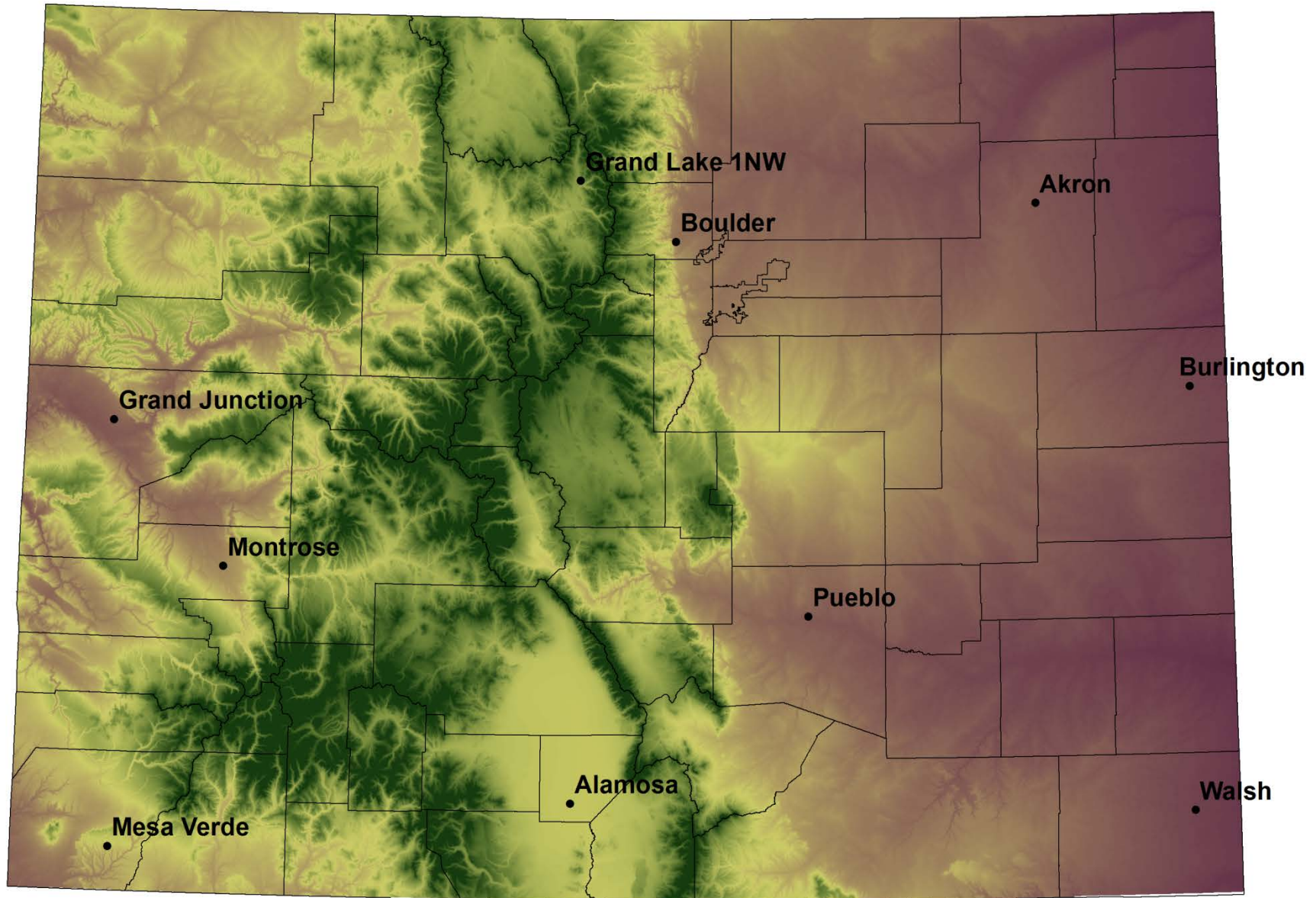
Colorado Month to Date Precipitation 1 - 20 September 2015



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

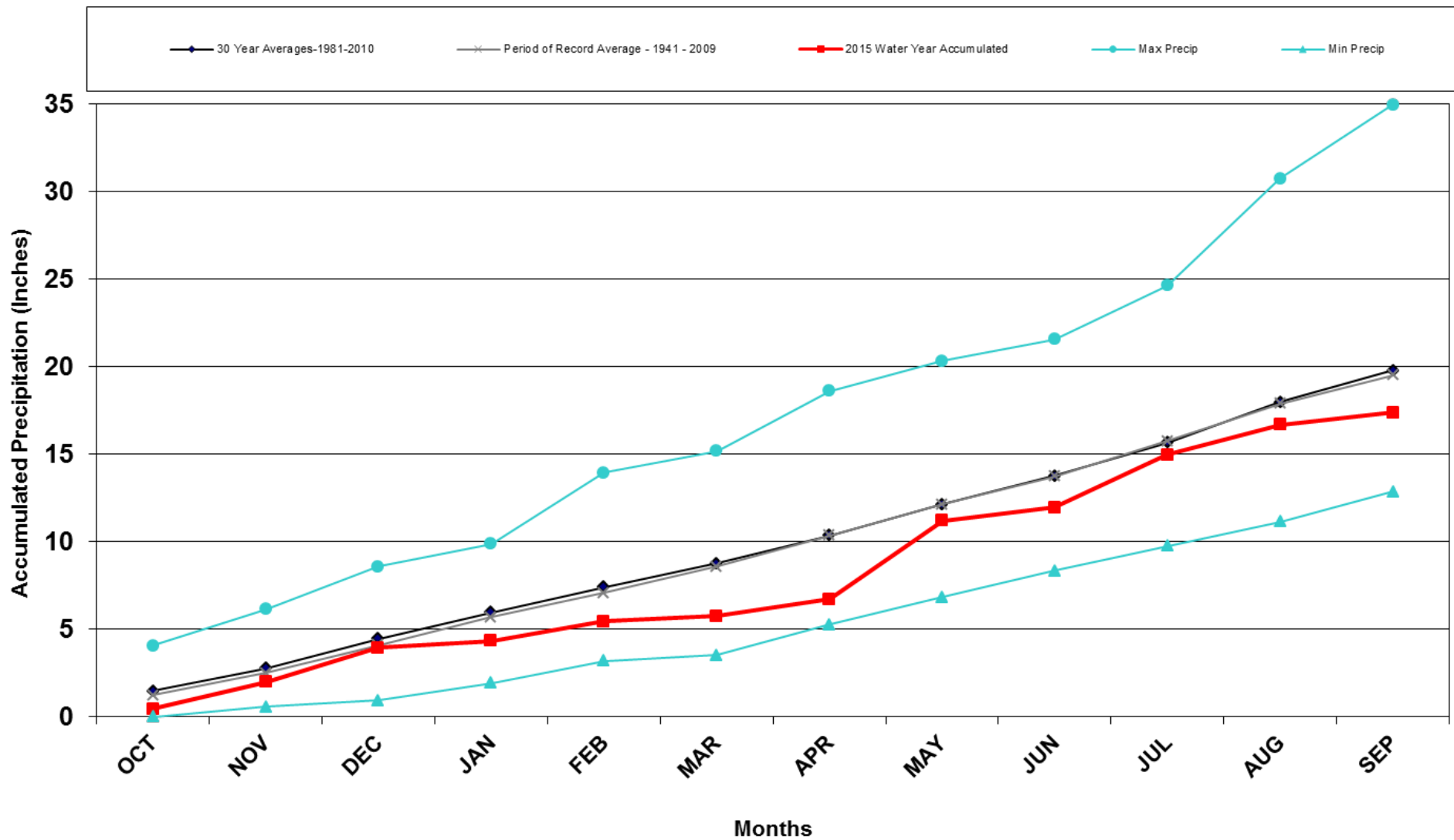


NWS Cooperative Stations for WATF



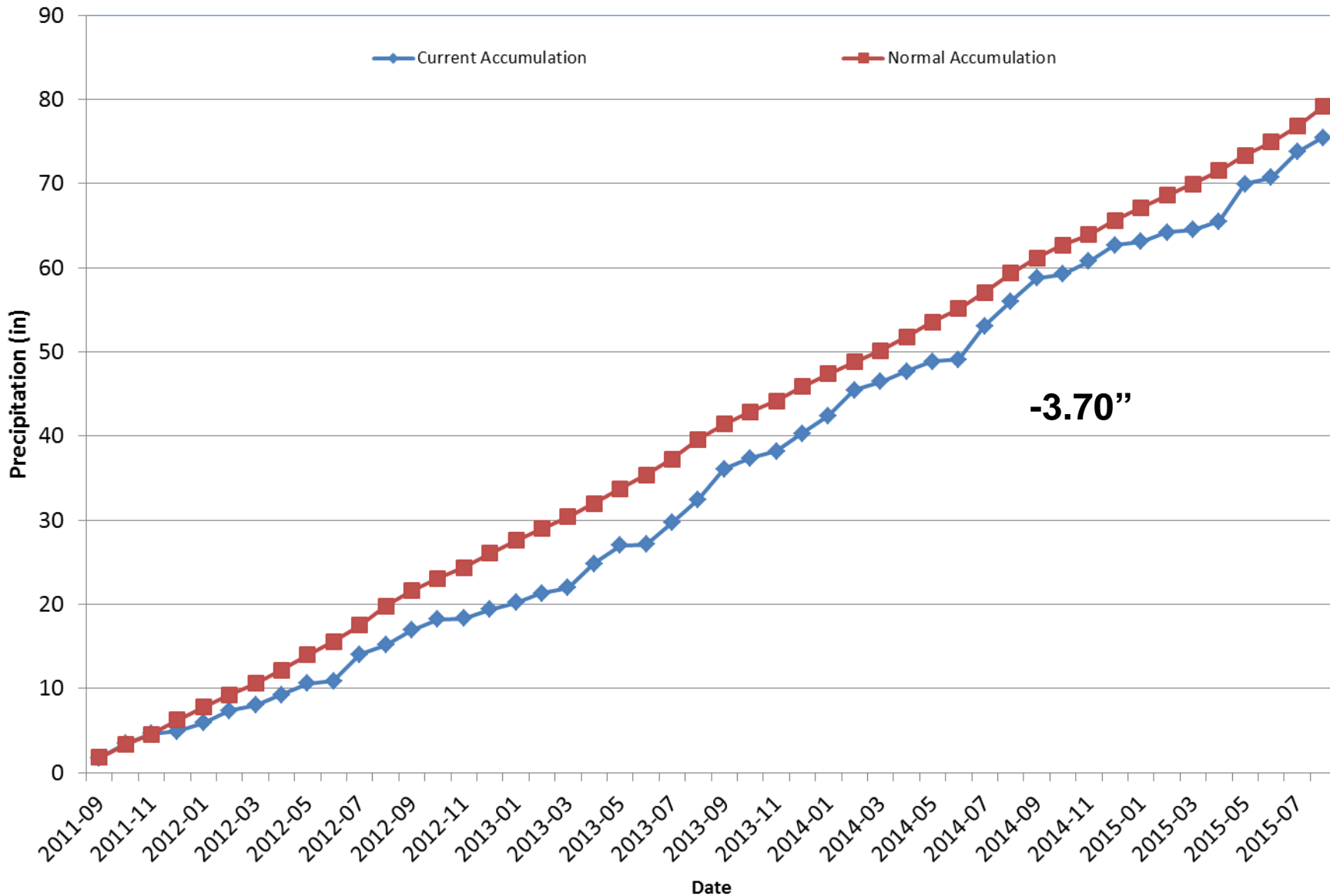
Division 1 – Grand Lake 1NW

Grand Lake 1 NW 2015 Water Year



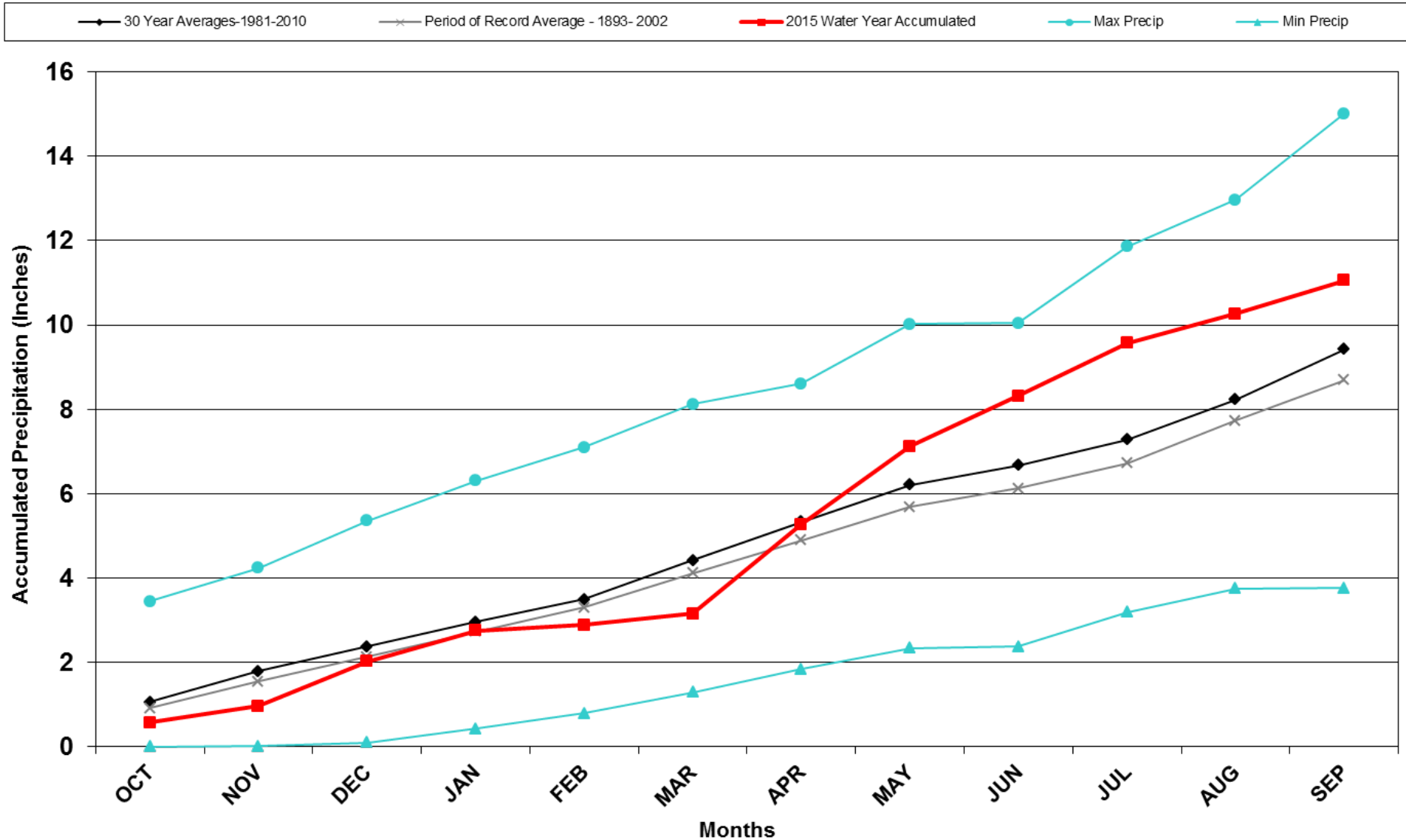
Division 1 – Grand Lake 1NW

Grand Lake 1NW Precipitation Accumulation



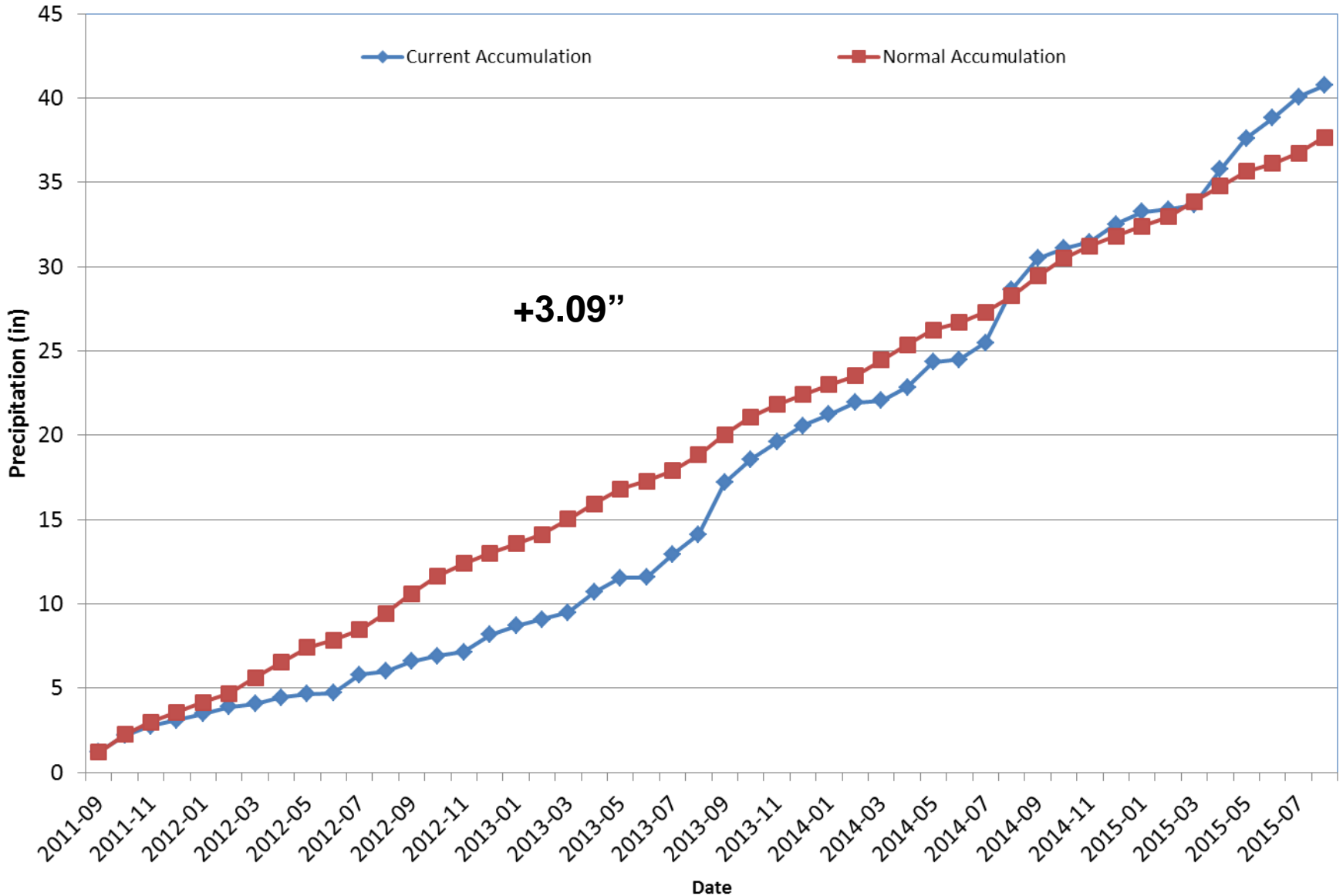
Division 2 – Grand Junction

Grand Junction WSFO 2015 Water Year



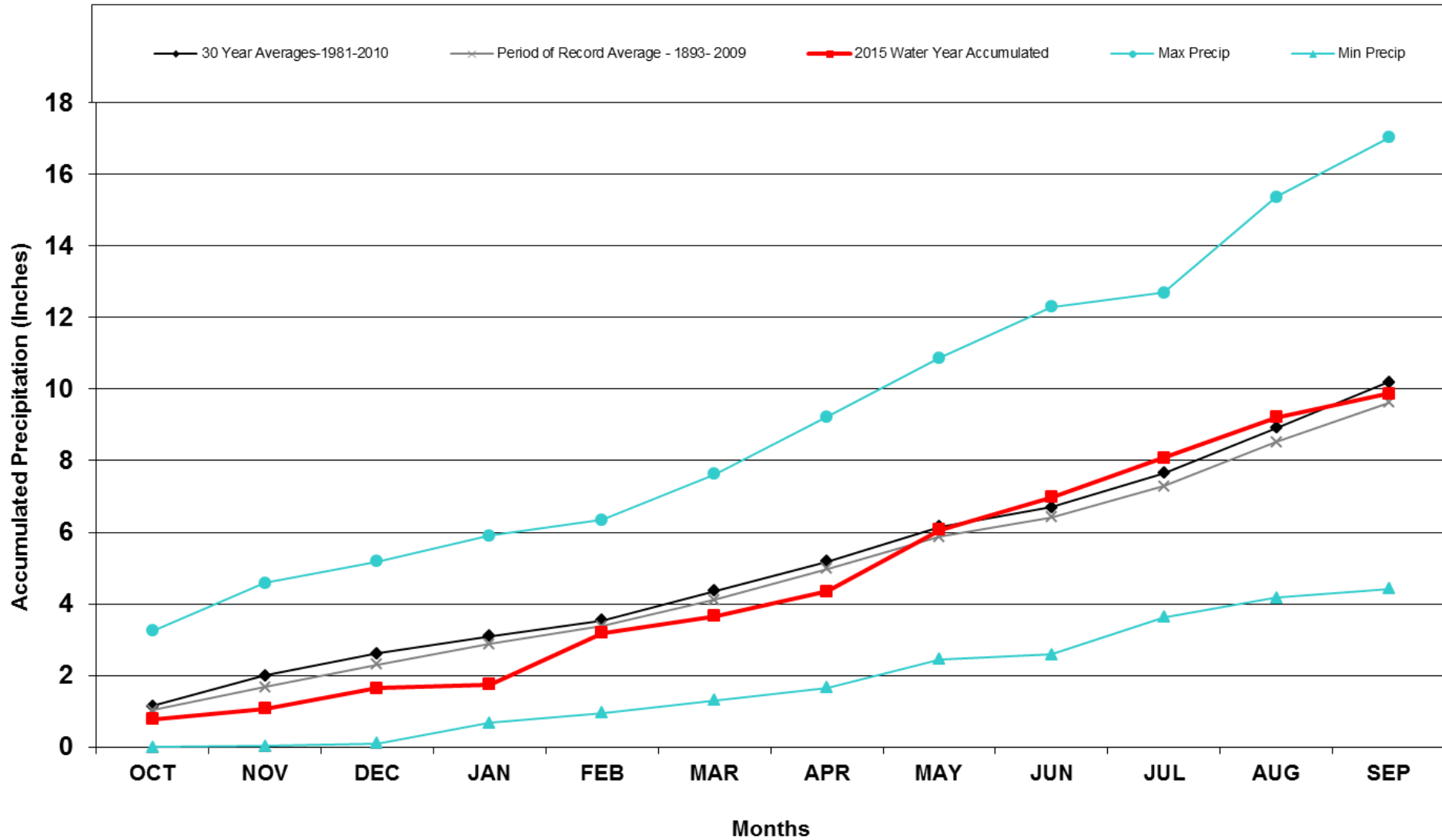
Division 2 – Grand Junction

Grand Junction Precipitation Accumulation



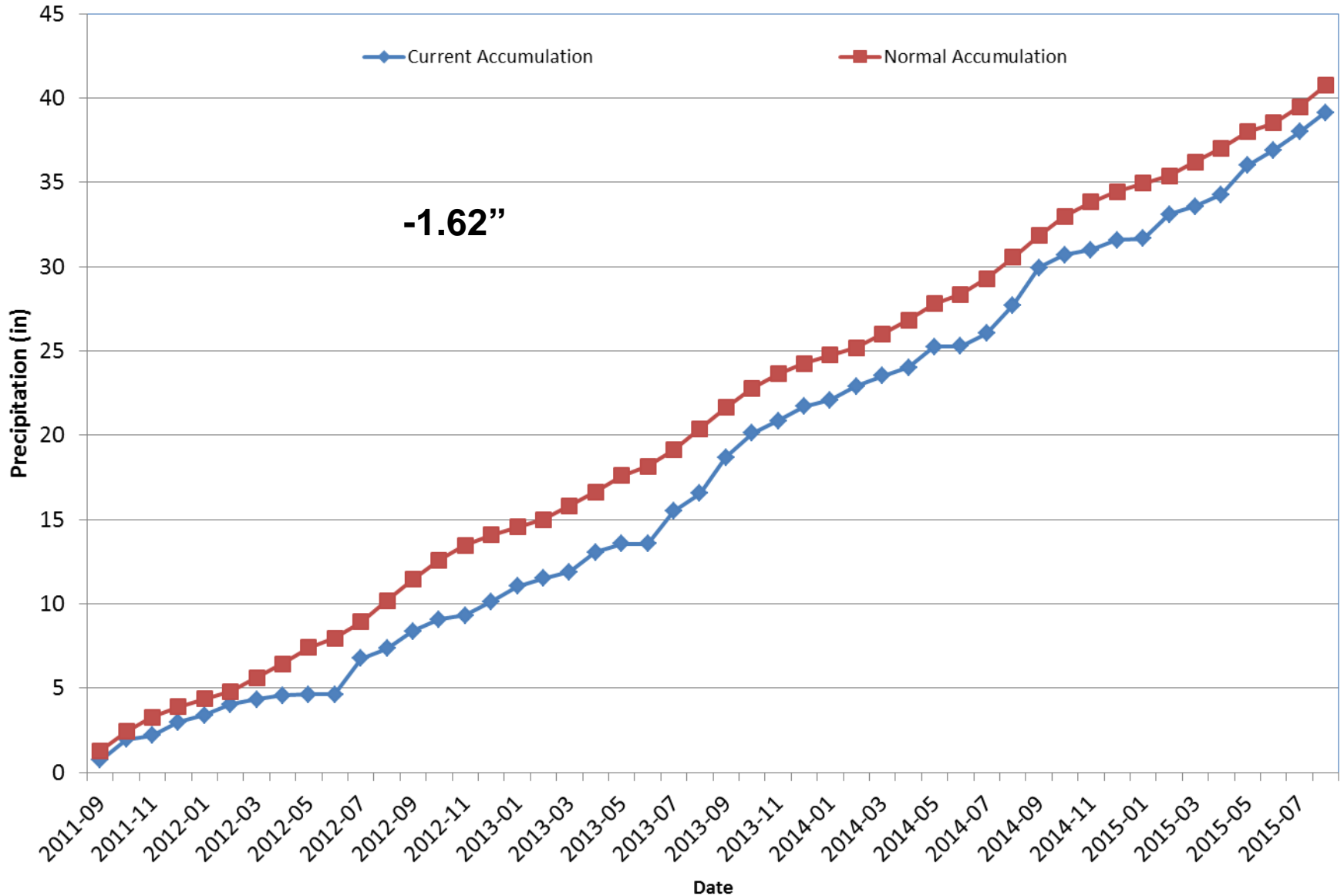
Division 3 – Montrose

Montrose #2 2015 Water Year



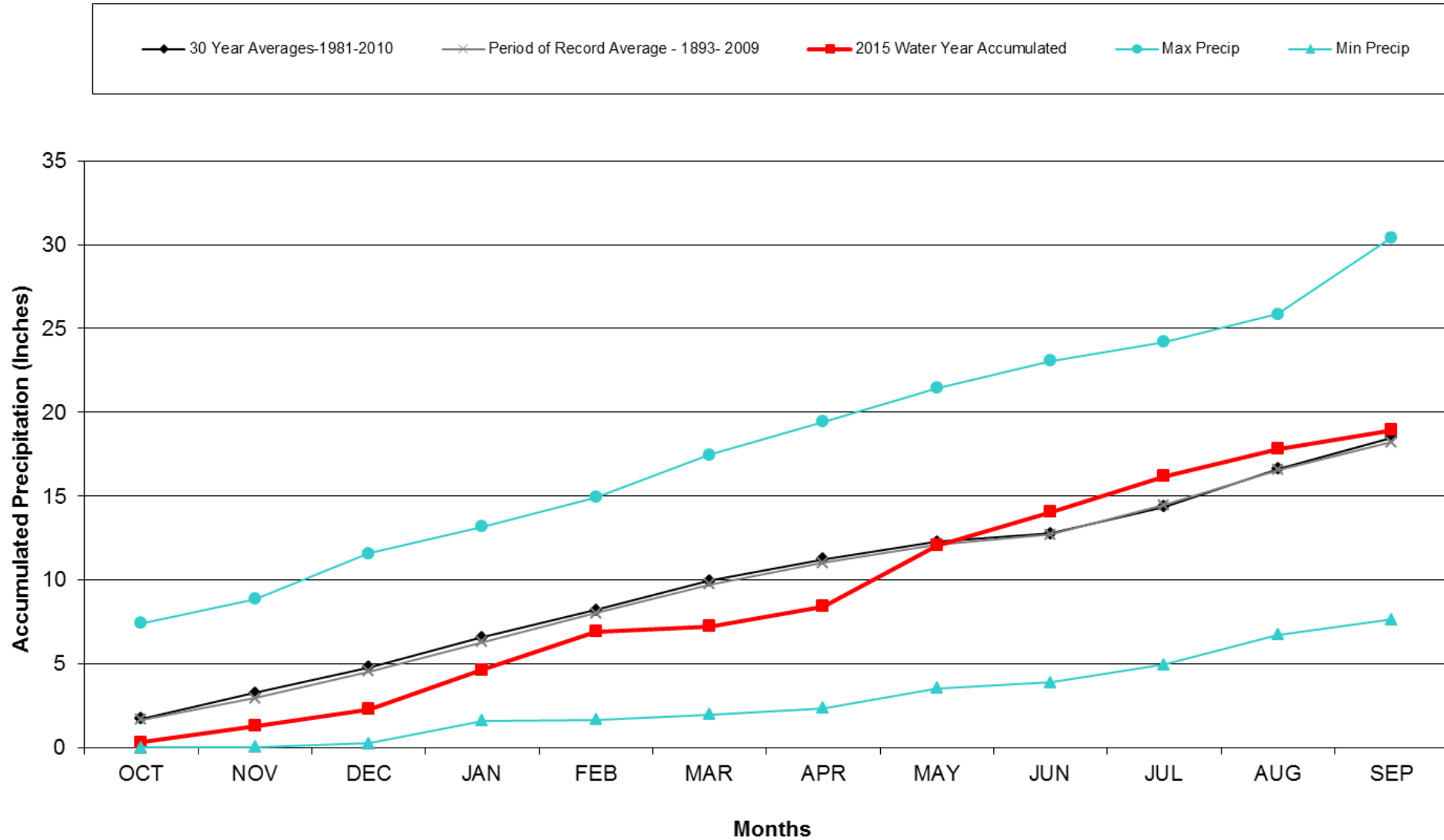
Division 3 – Montrose

Montrose #2 Precipitation Accumulation



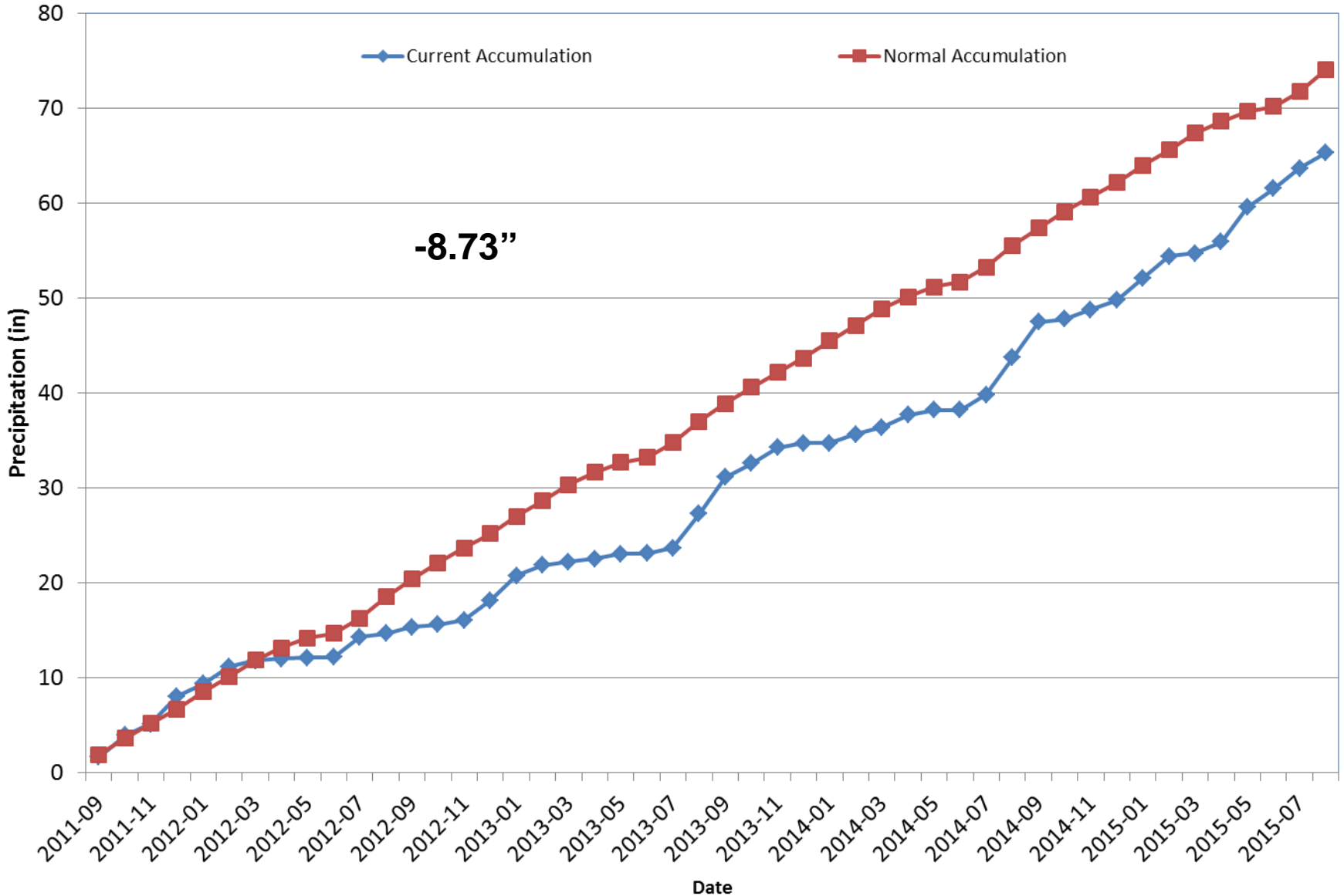
Division 3 – Mesa Verde NP

Mesa Verde NP 2015 Water Year



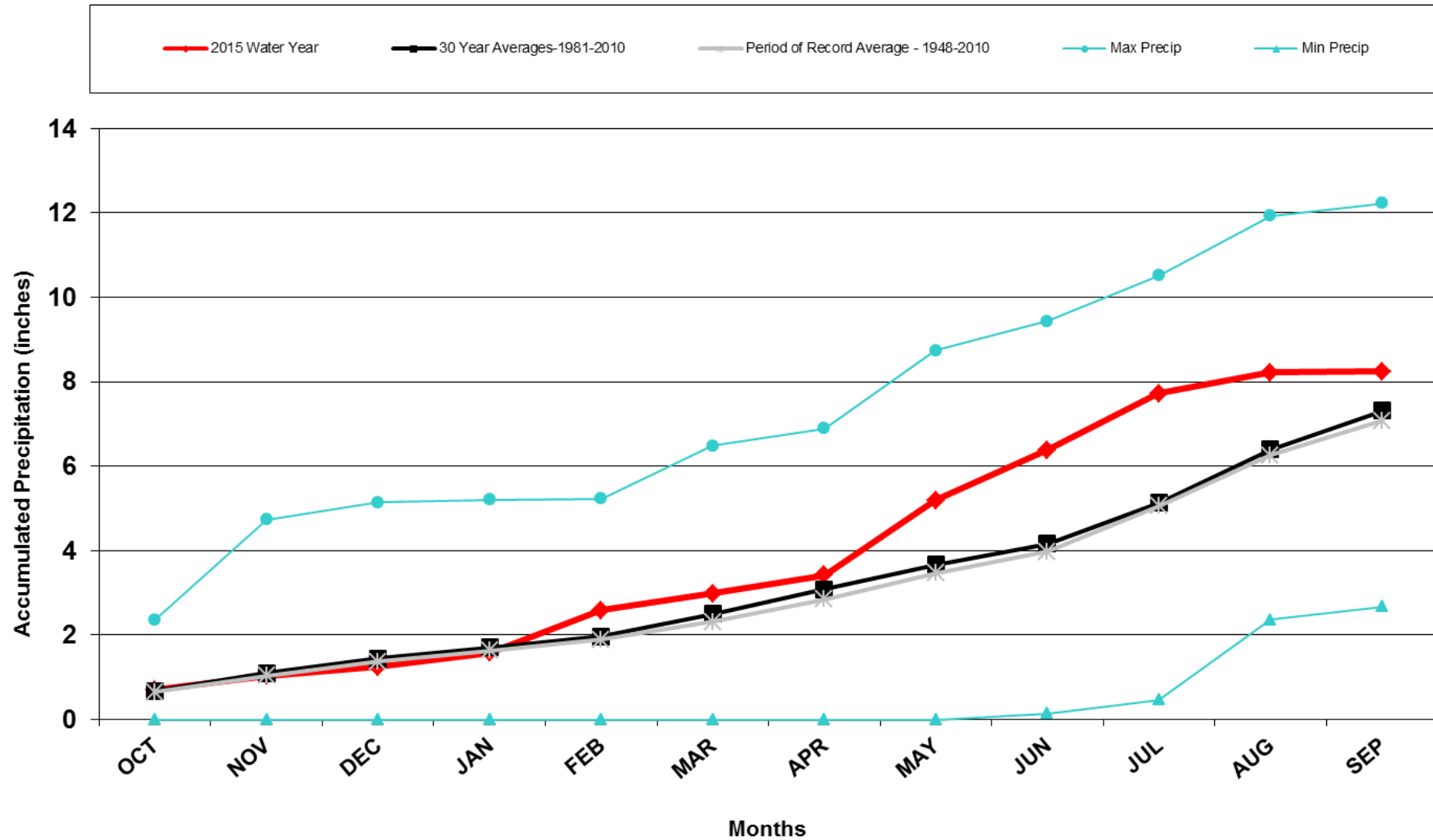
Division 3 – Mesa Verde NP

Mesa Verde NP Precipitation Accumulation



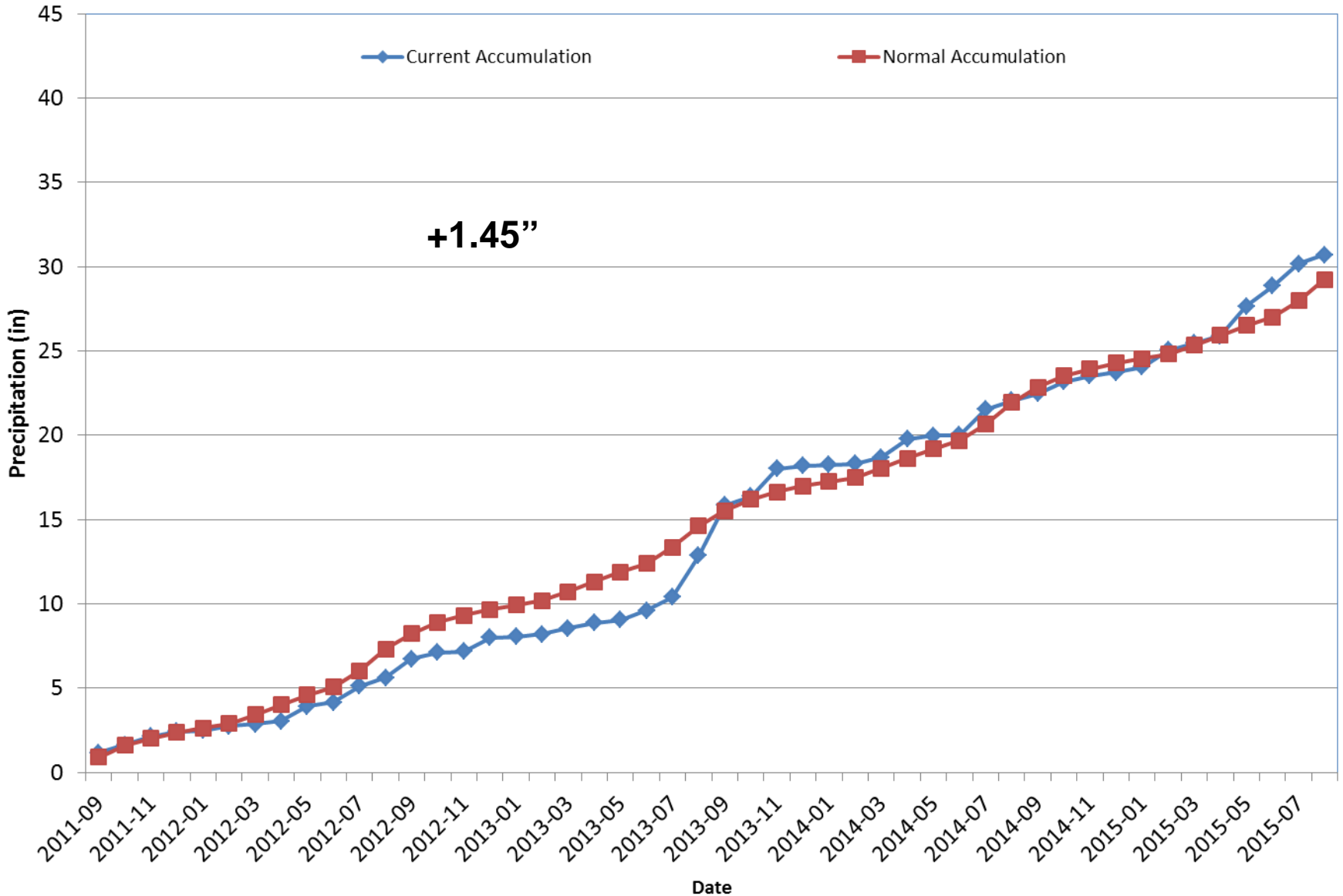
Division 4 – Alamosa

Alamosa WSO 2015 Water Year



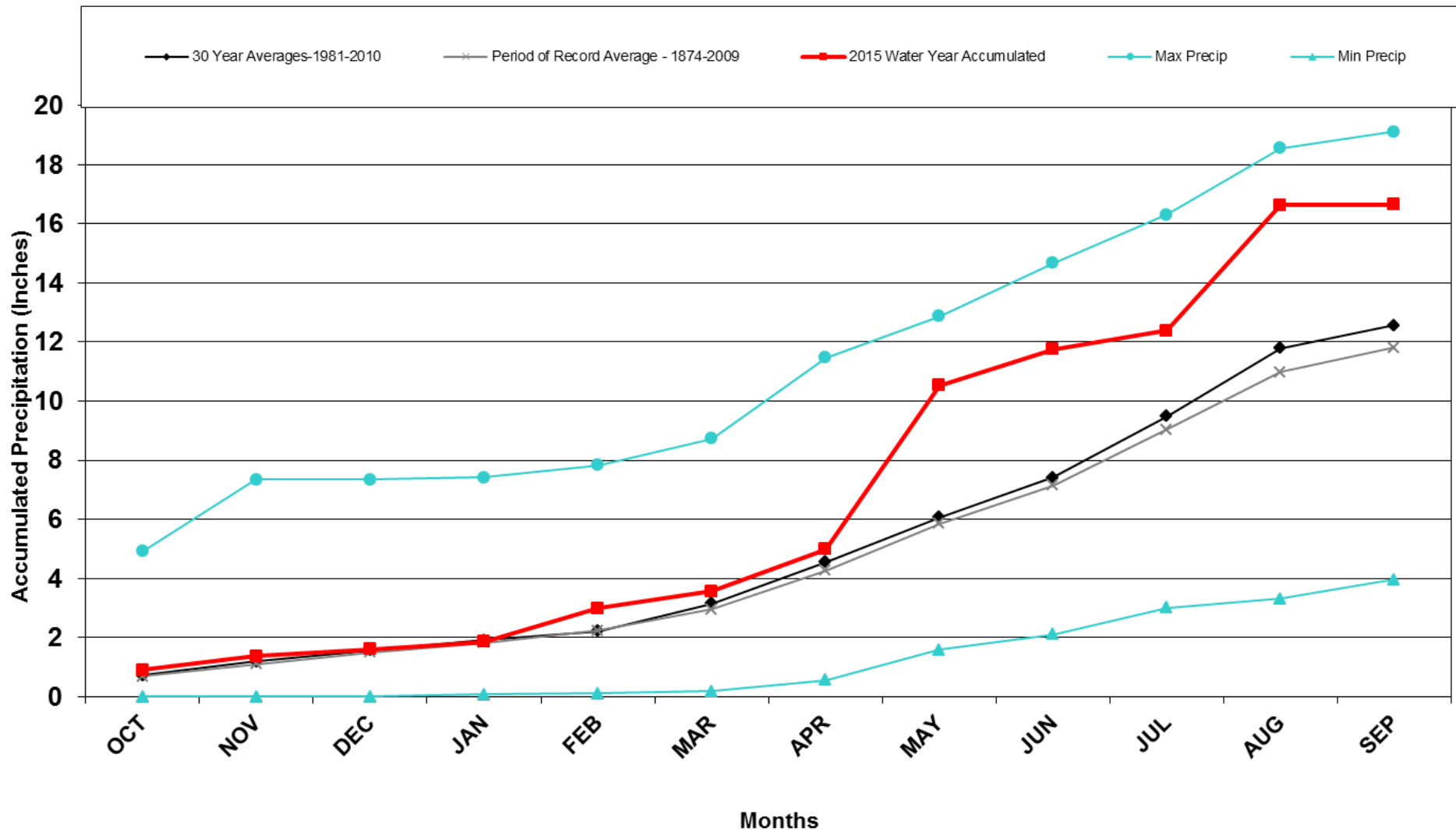
Division 4 – Alamosa

Alamosa WSO Precipitation Accumulation



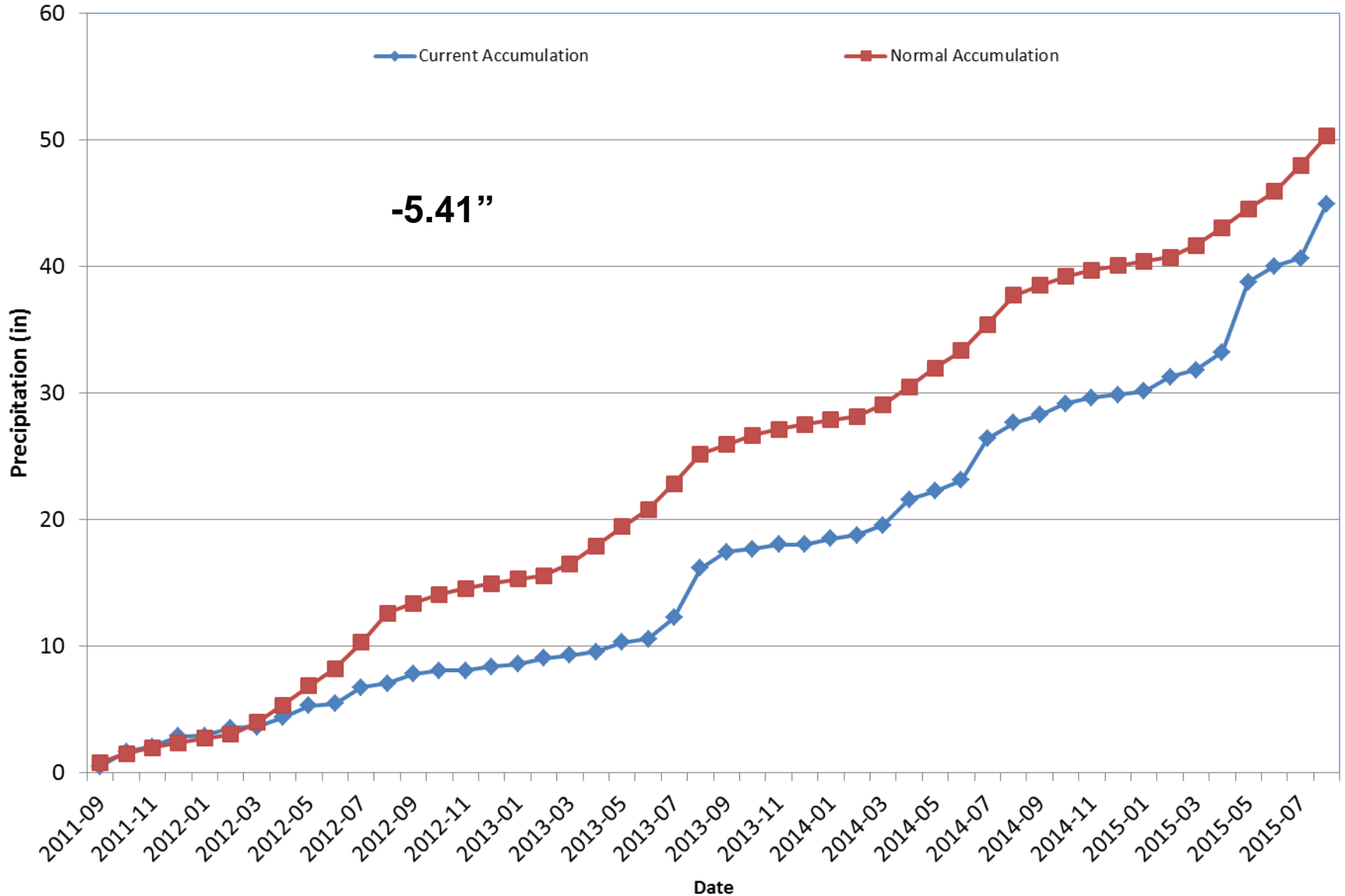
Division 5 – Pueblo

Pueblo WSO 2015 Water Year



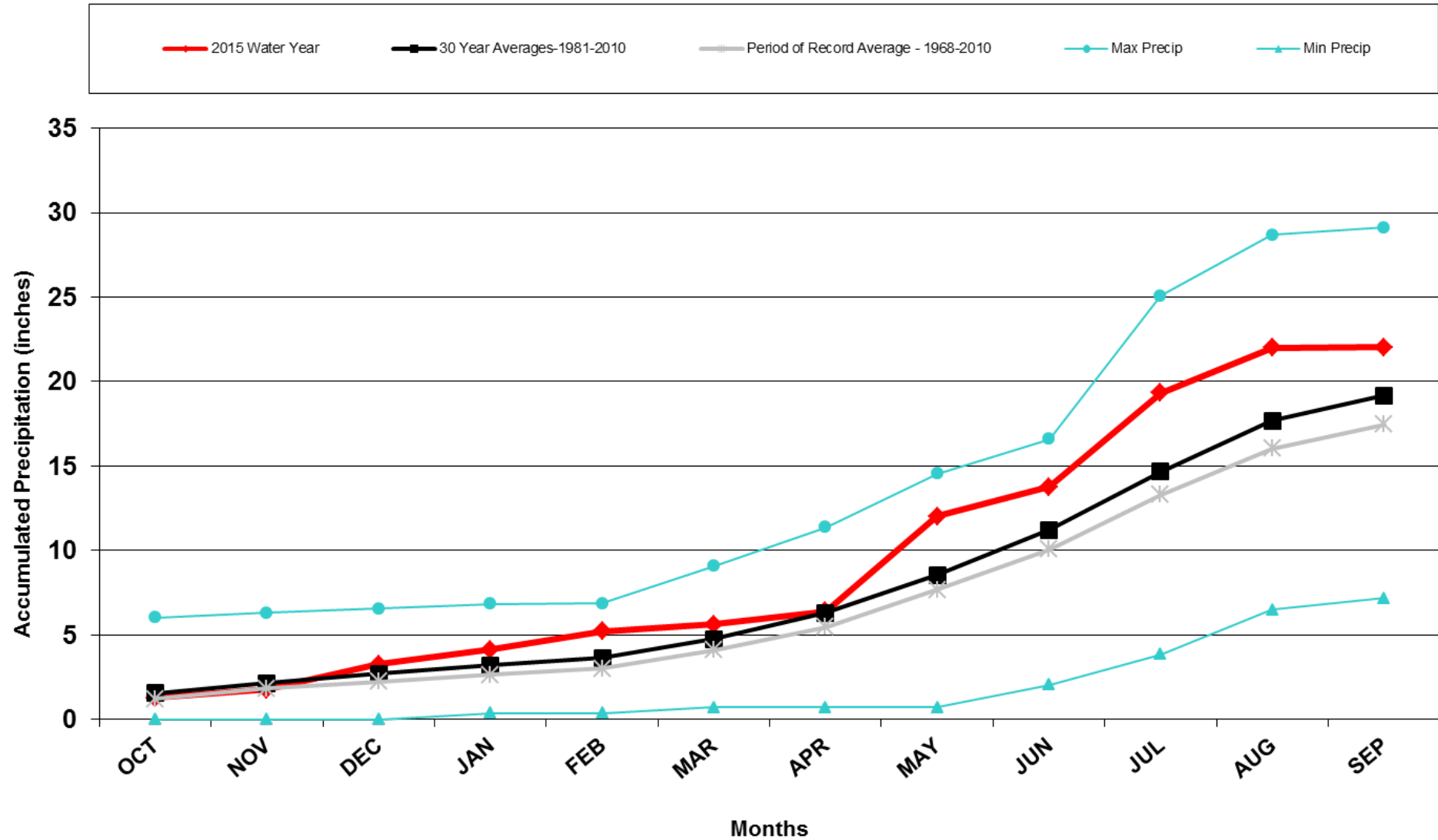
Division 5 – Pueblo

Pueblo Memorial AP Precipitation Accumulation



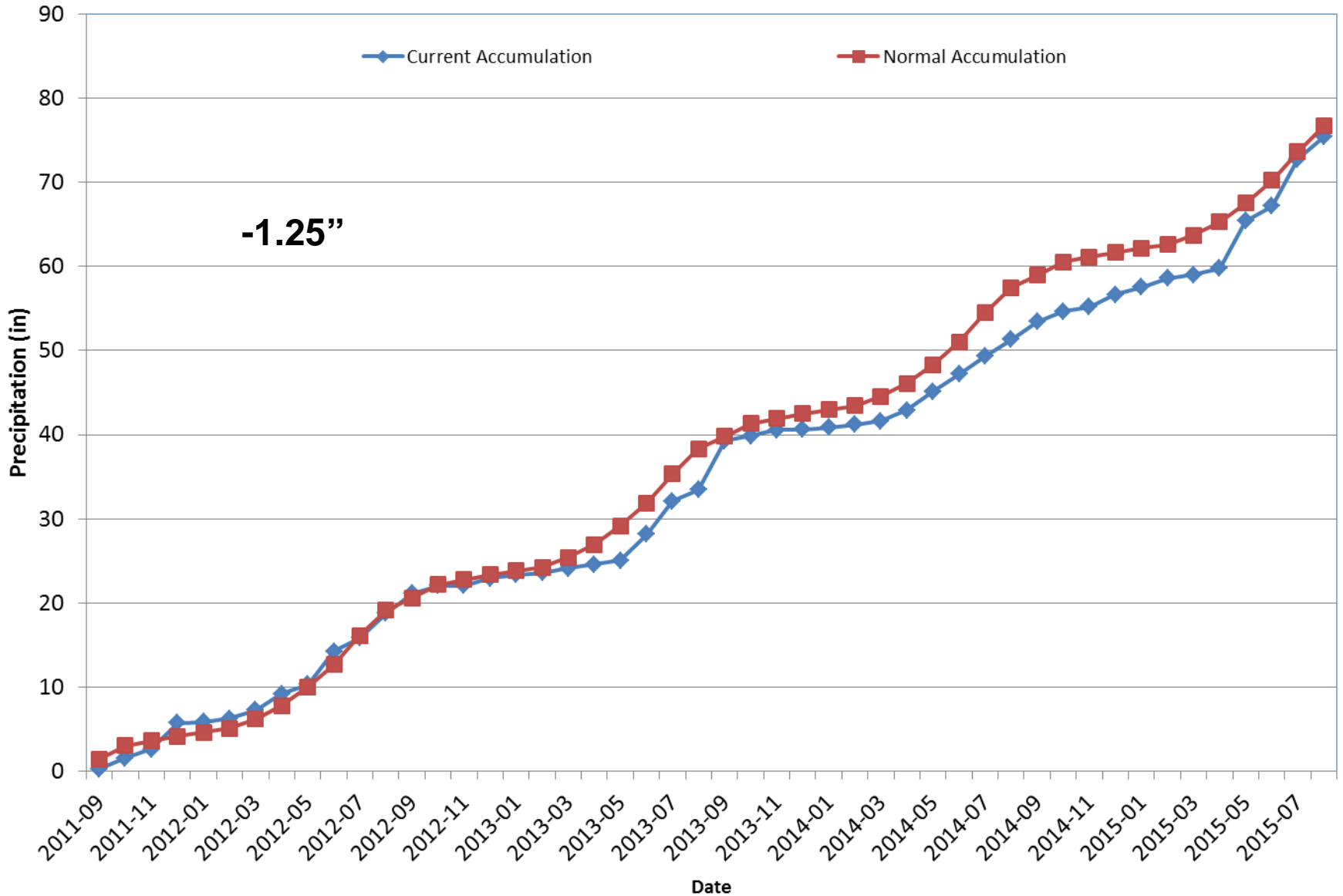
Division 6 - Walsh

Walsh 2015 Water Year



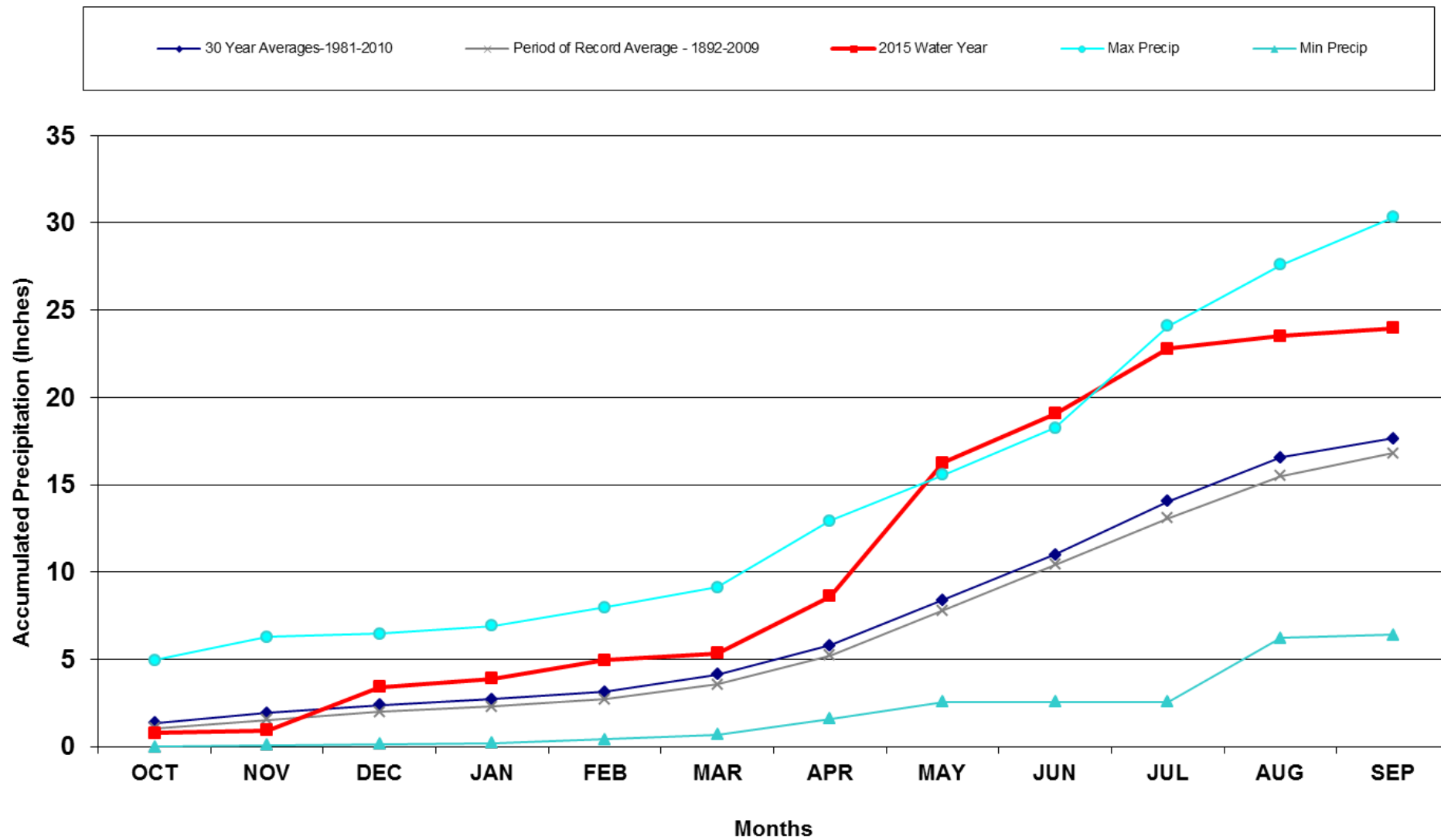
Division 6 - Walsh

Walsh 1W Precipitation Accumulation



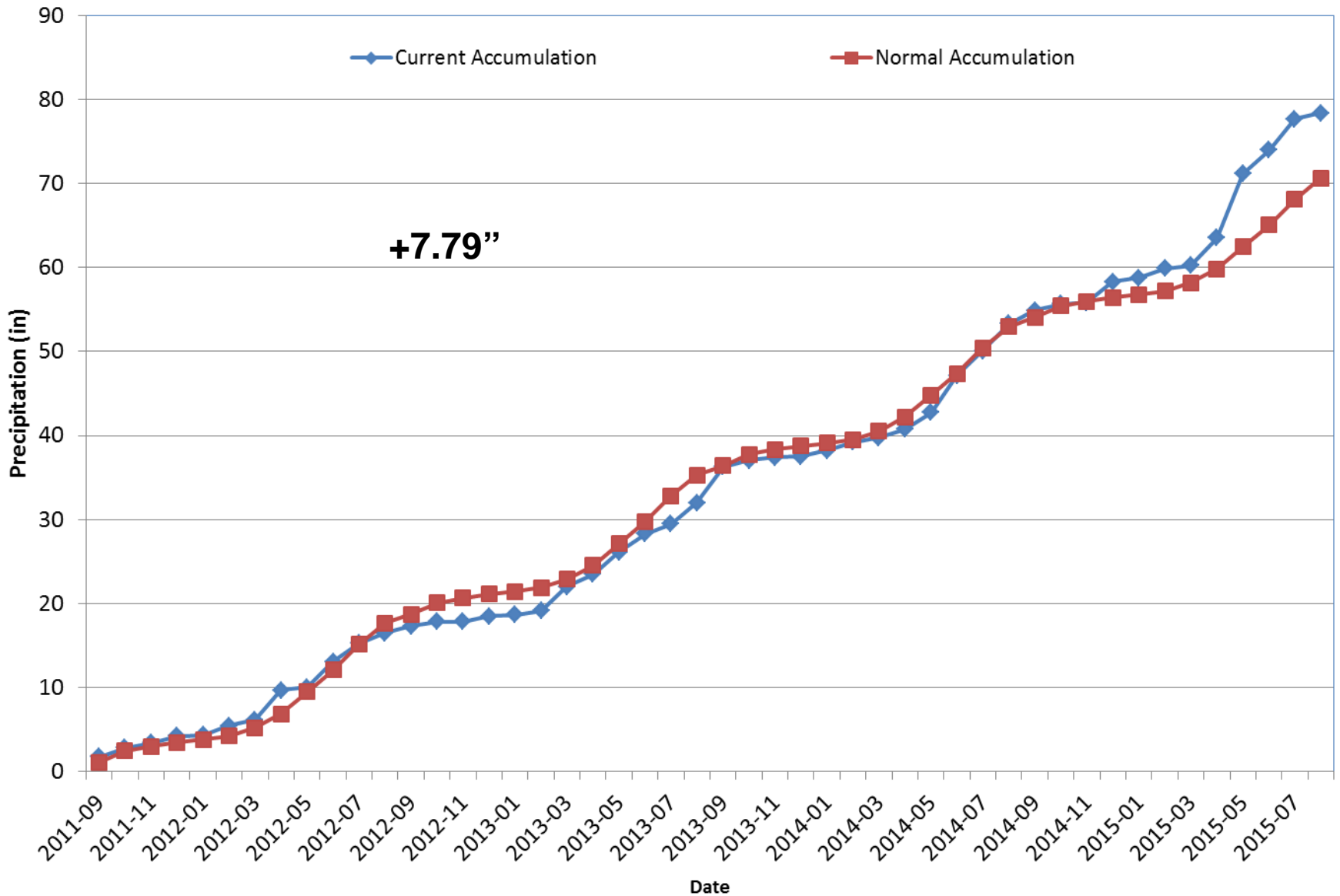
Division 6 - Burlington

Burlington 2015 Water Year



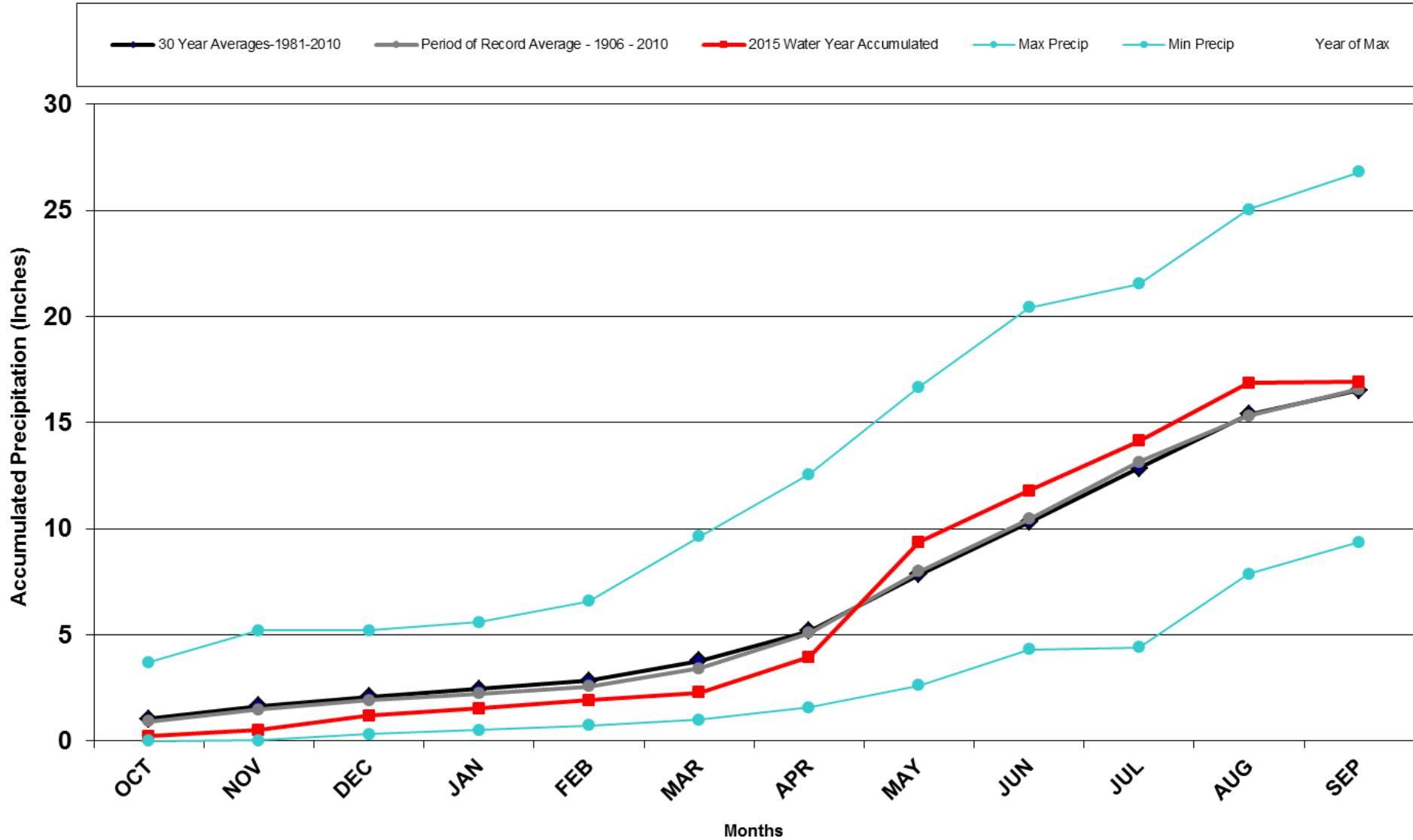
Division 6 - Burlington

Burlington, CO Precipitation Accumulation



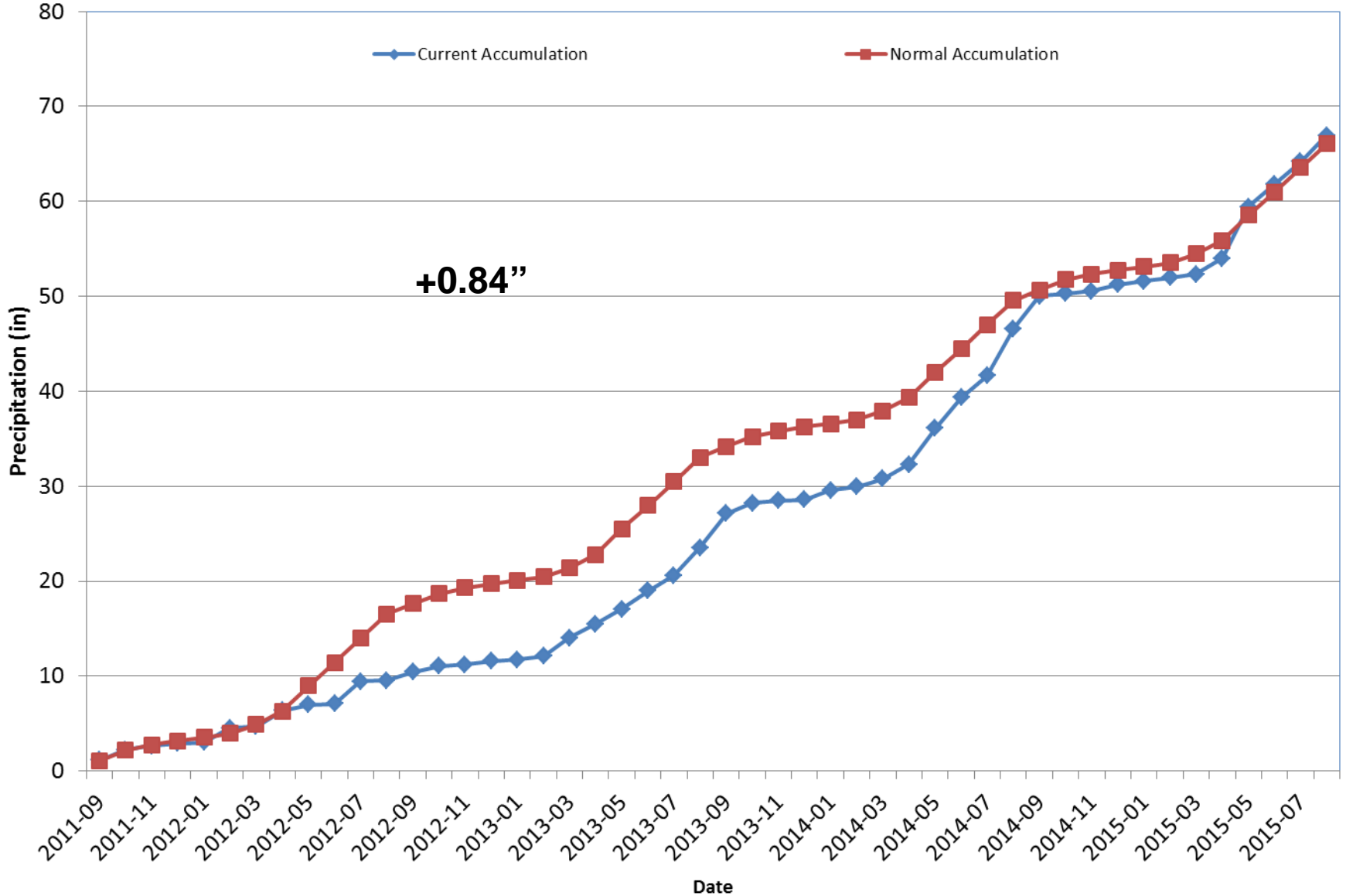
Division 7 – Akron

Akron 4E 2015 Water Year



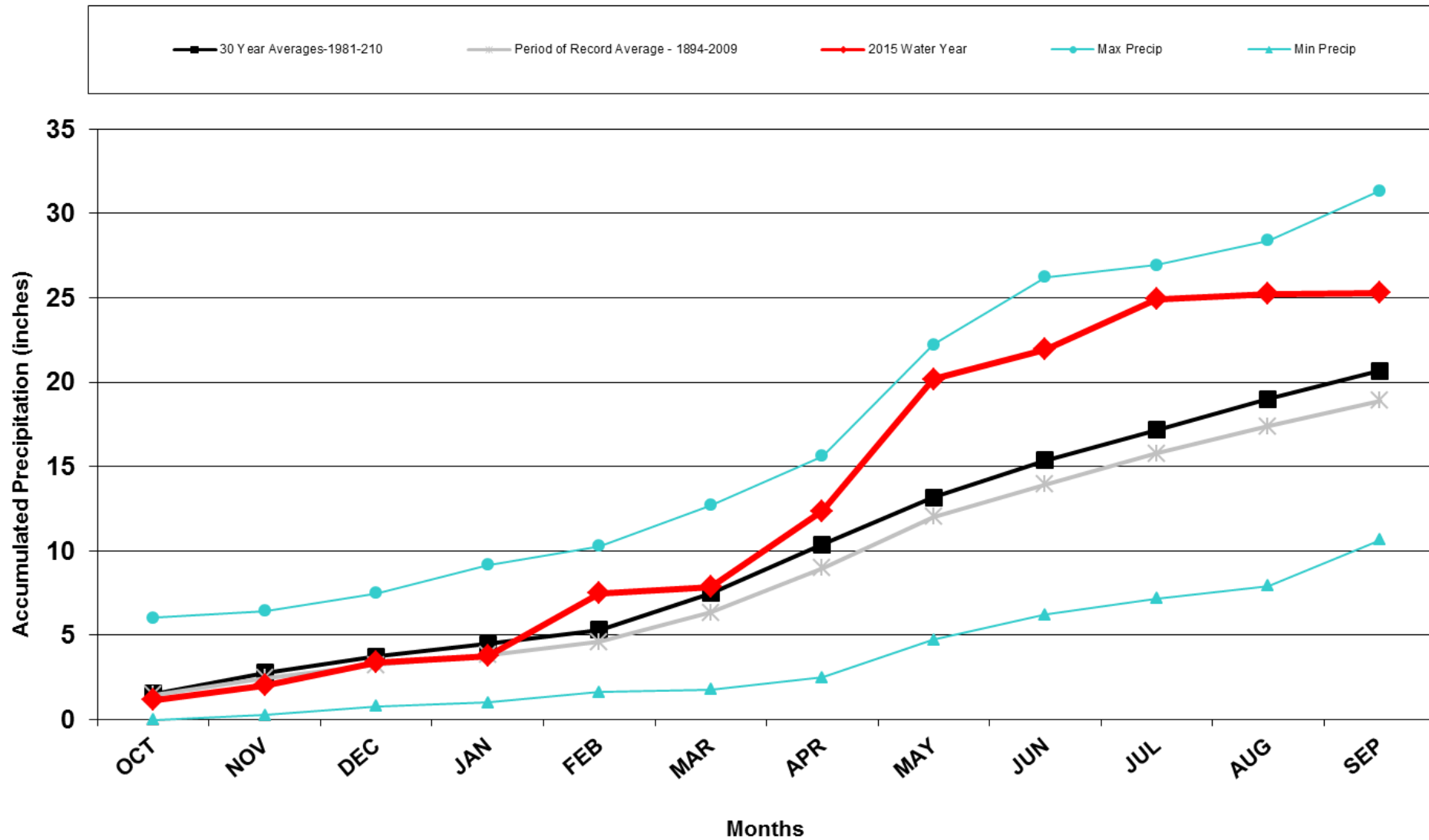
Division 7 – Akron

Akron 4E Precipitation Accumulation



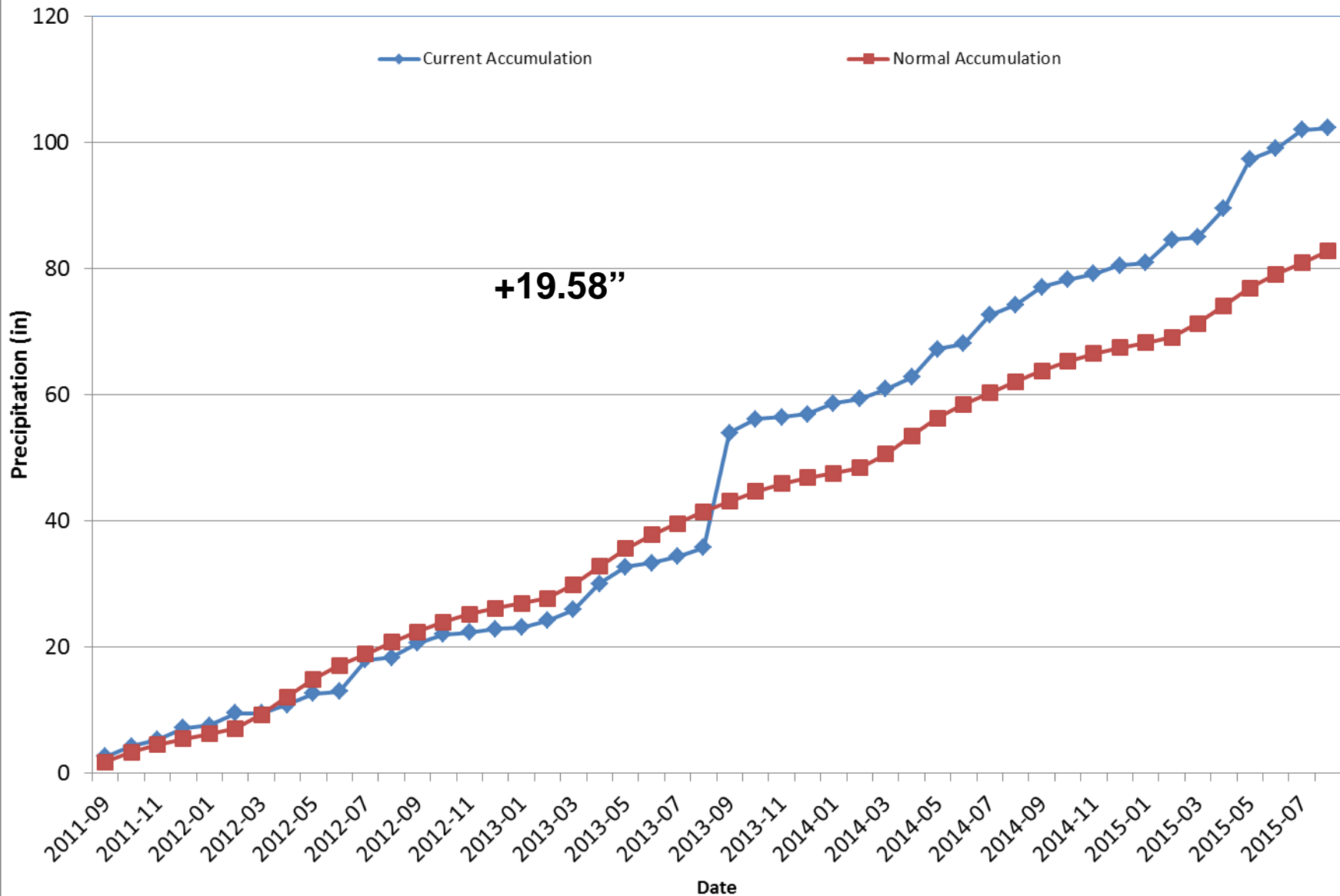
Division 8 - Boulder

Boulder 2015 Water Year

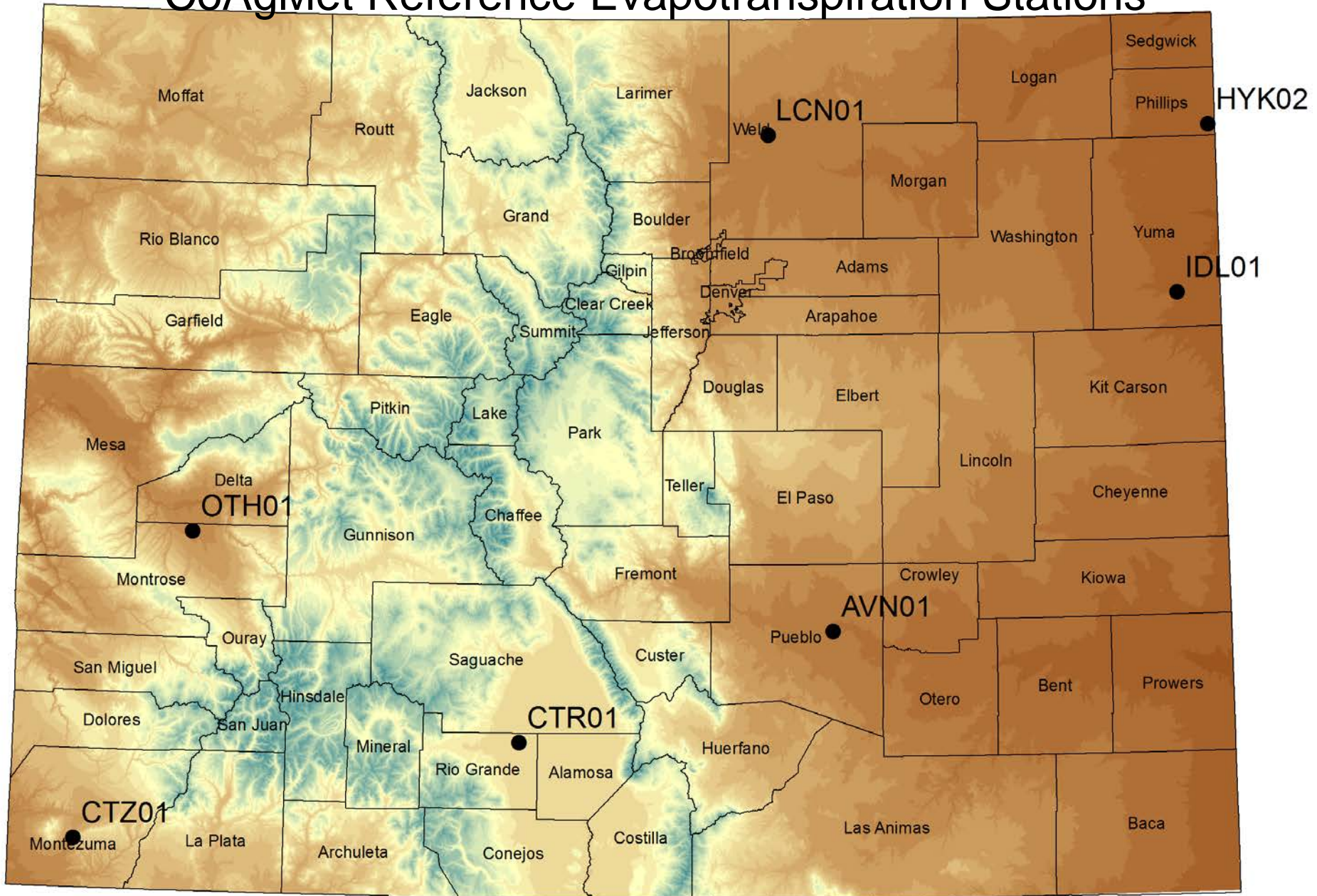


Division 8 - Boulder

Boulder Precipitation Accumulation

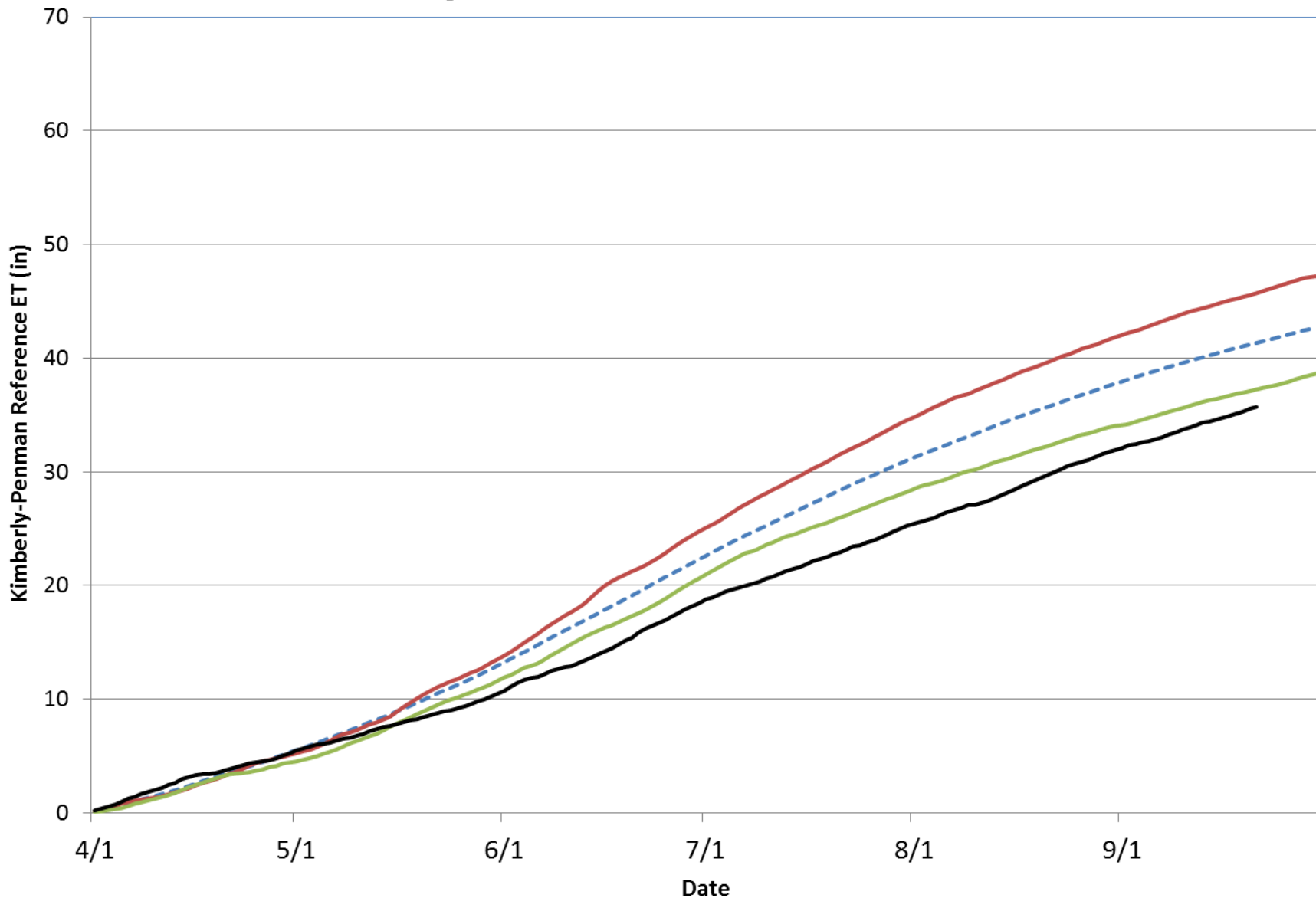


CoAgMet Reference Evapotranspiration Stations



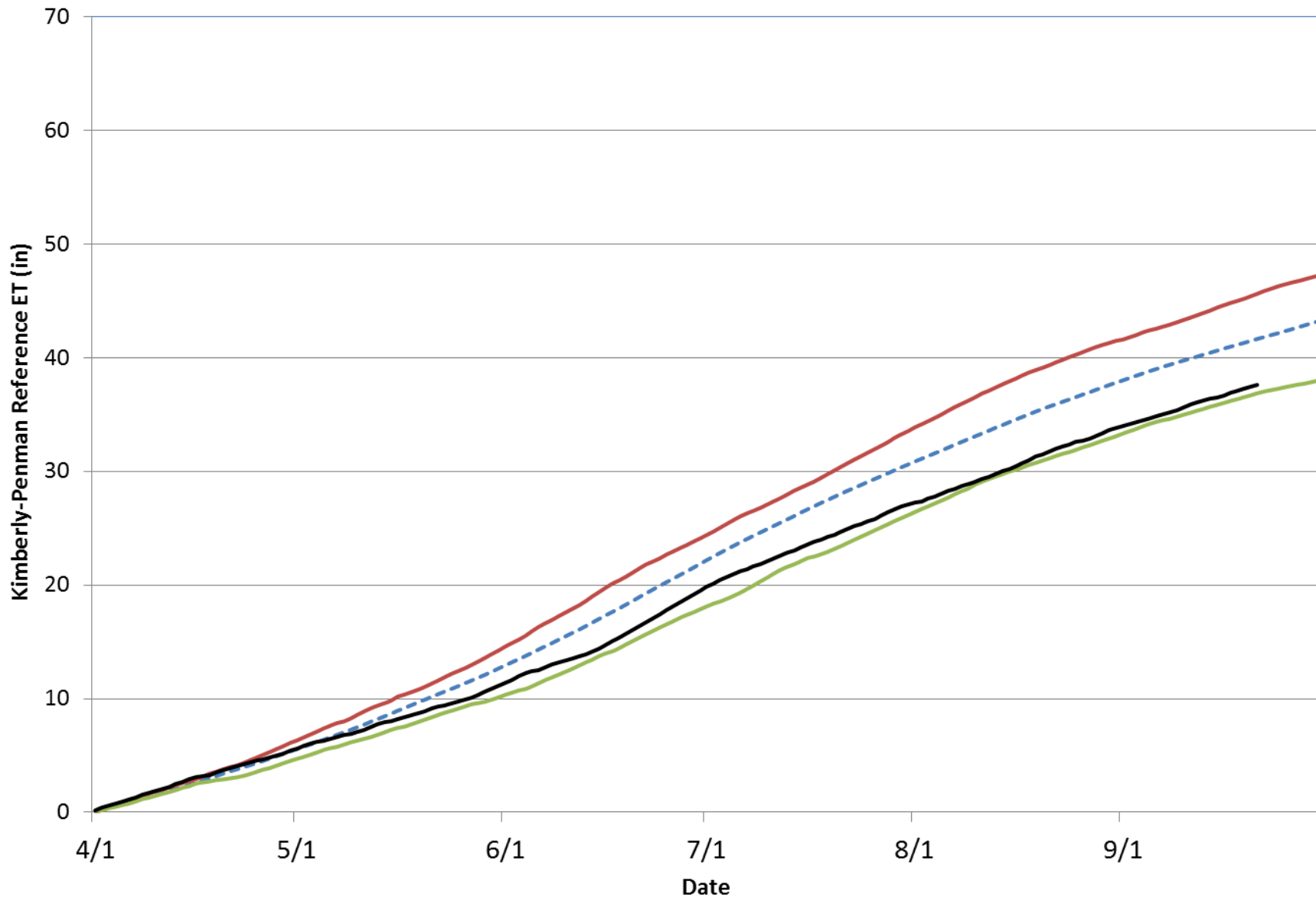
Olathe Kimberly-Penman Reference ET (1993 - 2015)

--- Average — 1994 — 1999 — 2015



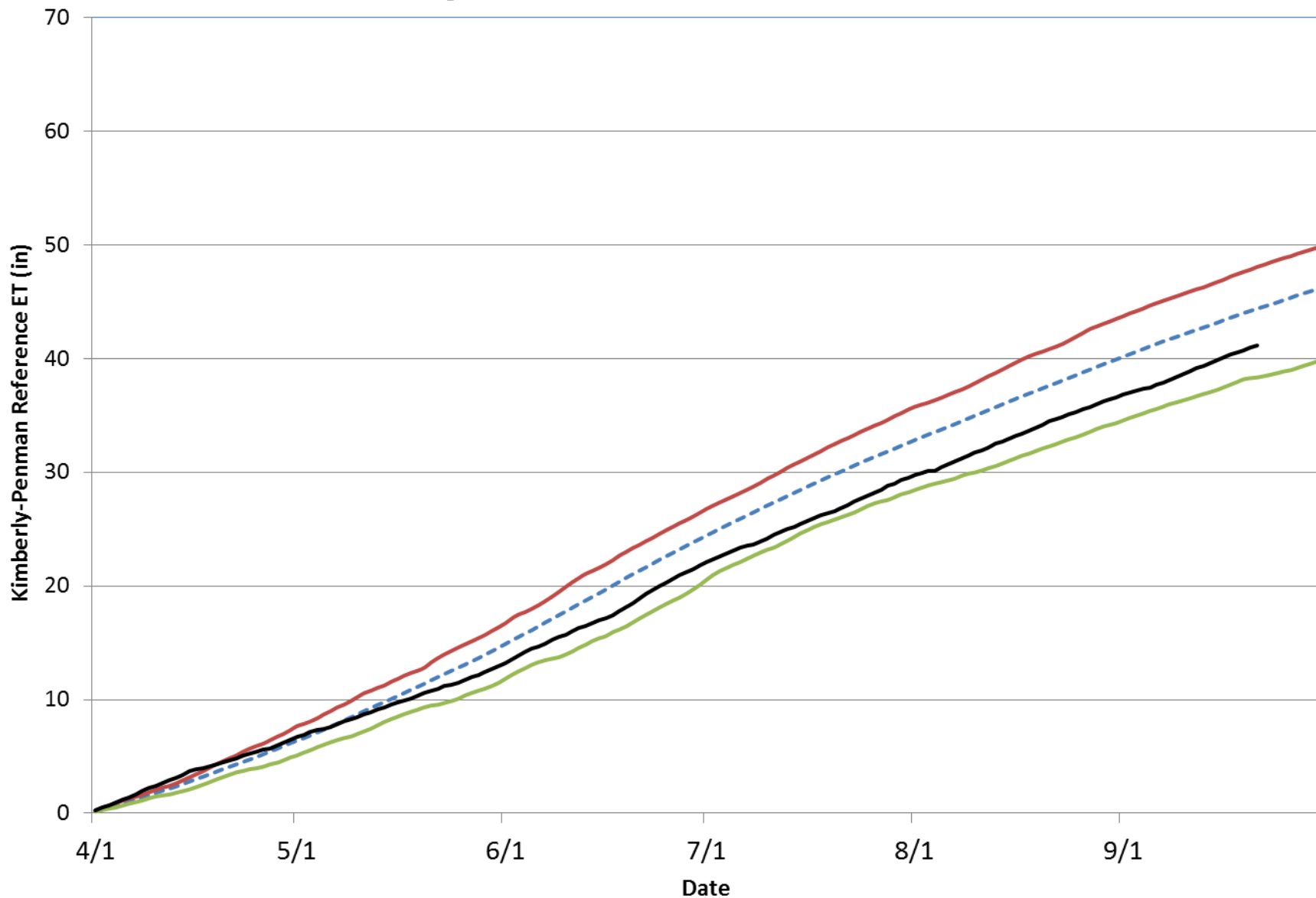
Cortez Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2000 — 1995 — 2015



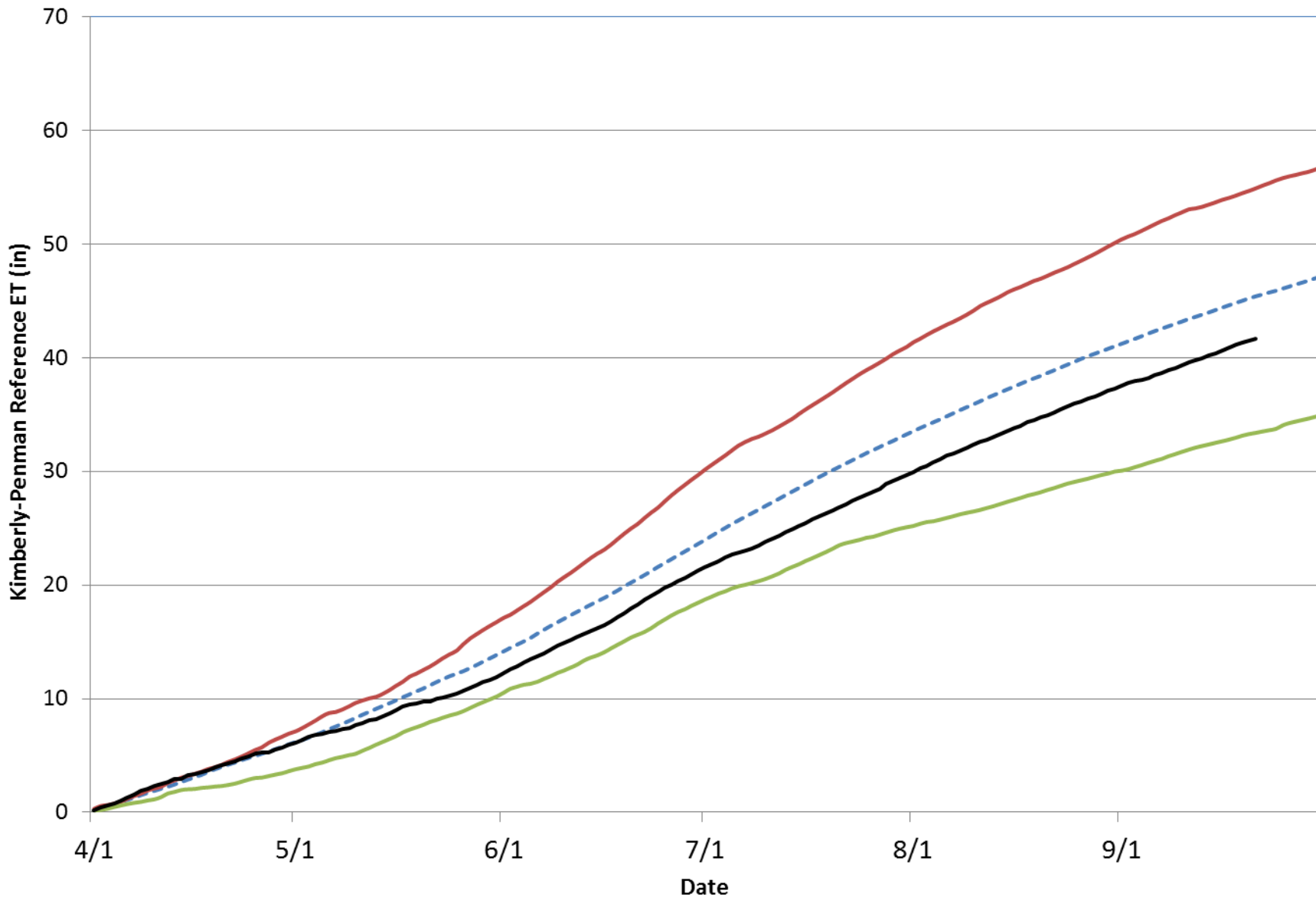
Center Kimberly-Penman Reference ET (1994 - 2015)

--- Average — 2002 — 1997 — 2015



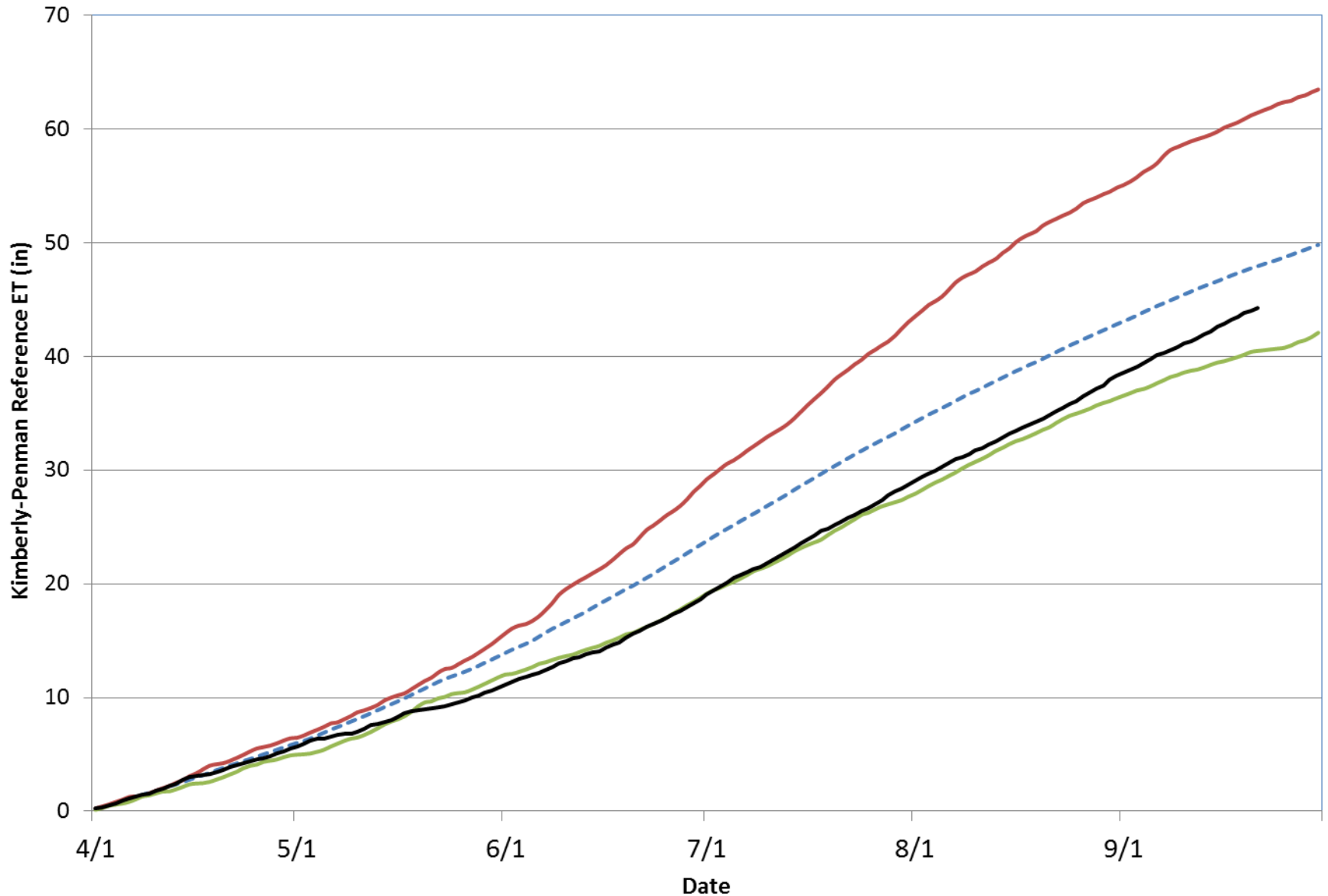
Avondale Kimberly-Penman Reference ET (1993 - 2015)

--- Average — 2012 — 1998 — 2015



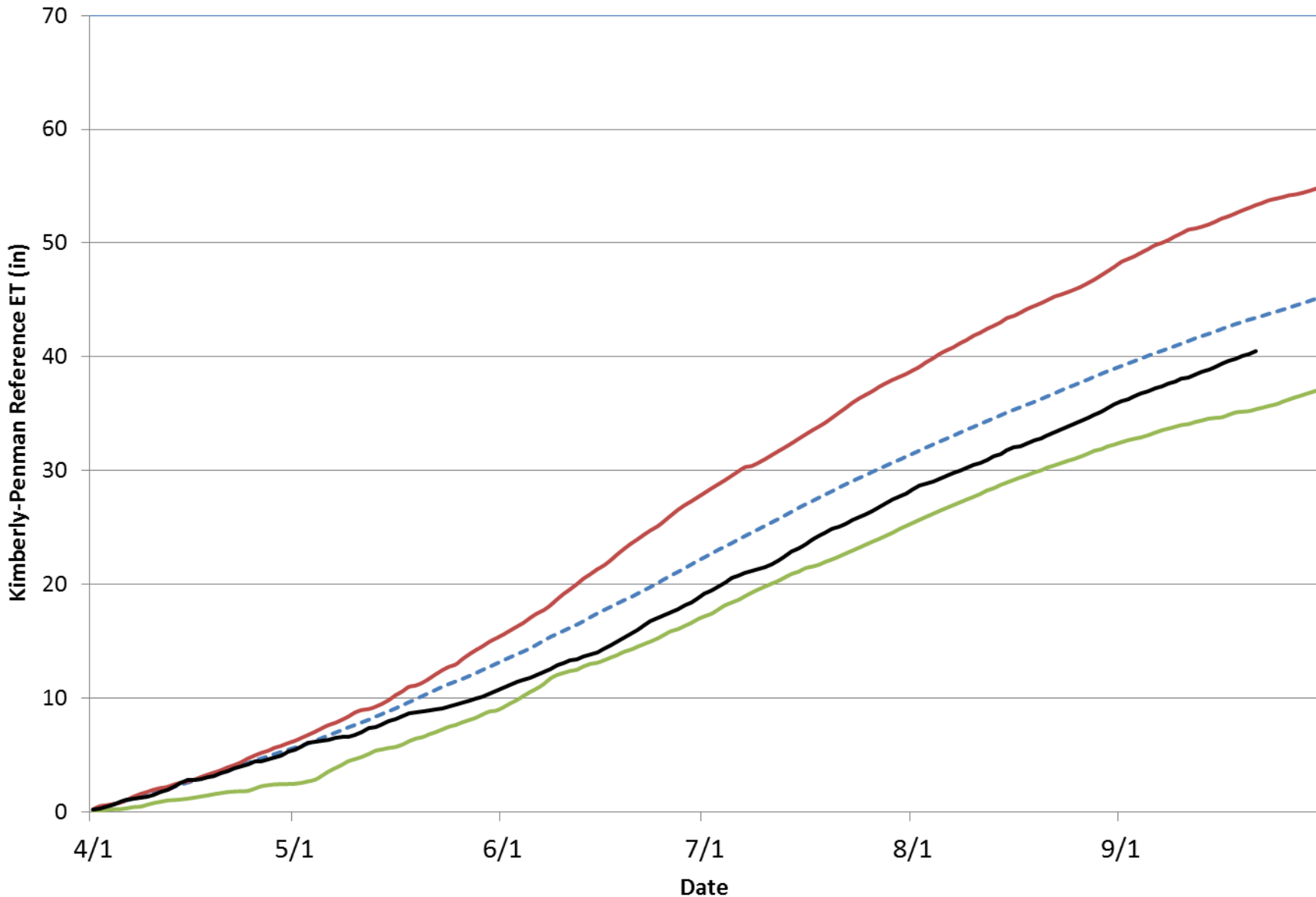
Idalia Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2002 — 2009 — 2015



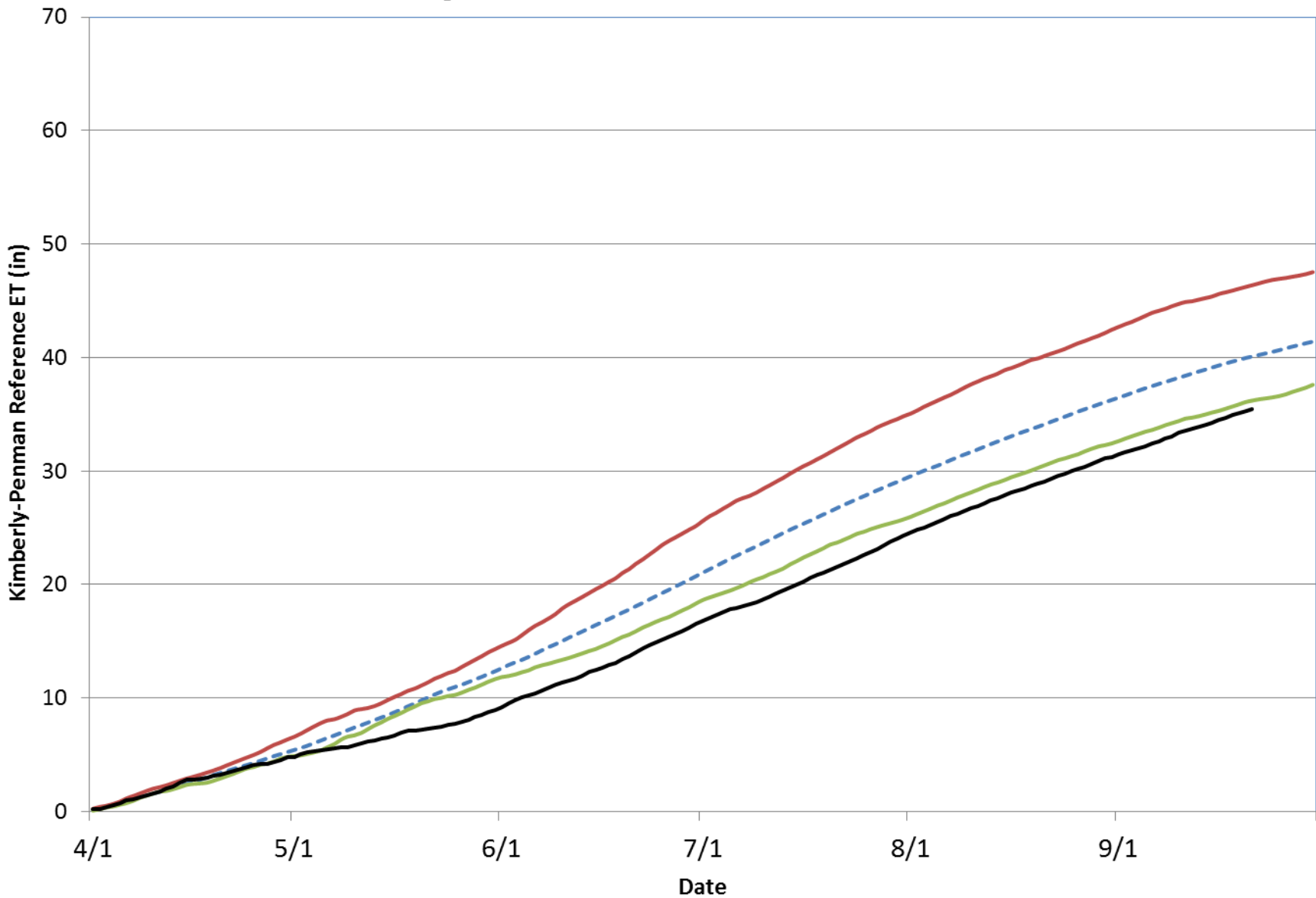
Holyoke Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2012 — 1999 — 2015



Lucerne Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2012 — 2009 — 2015

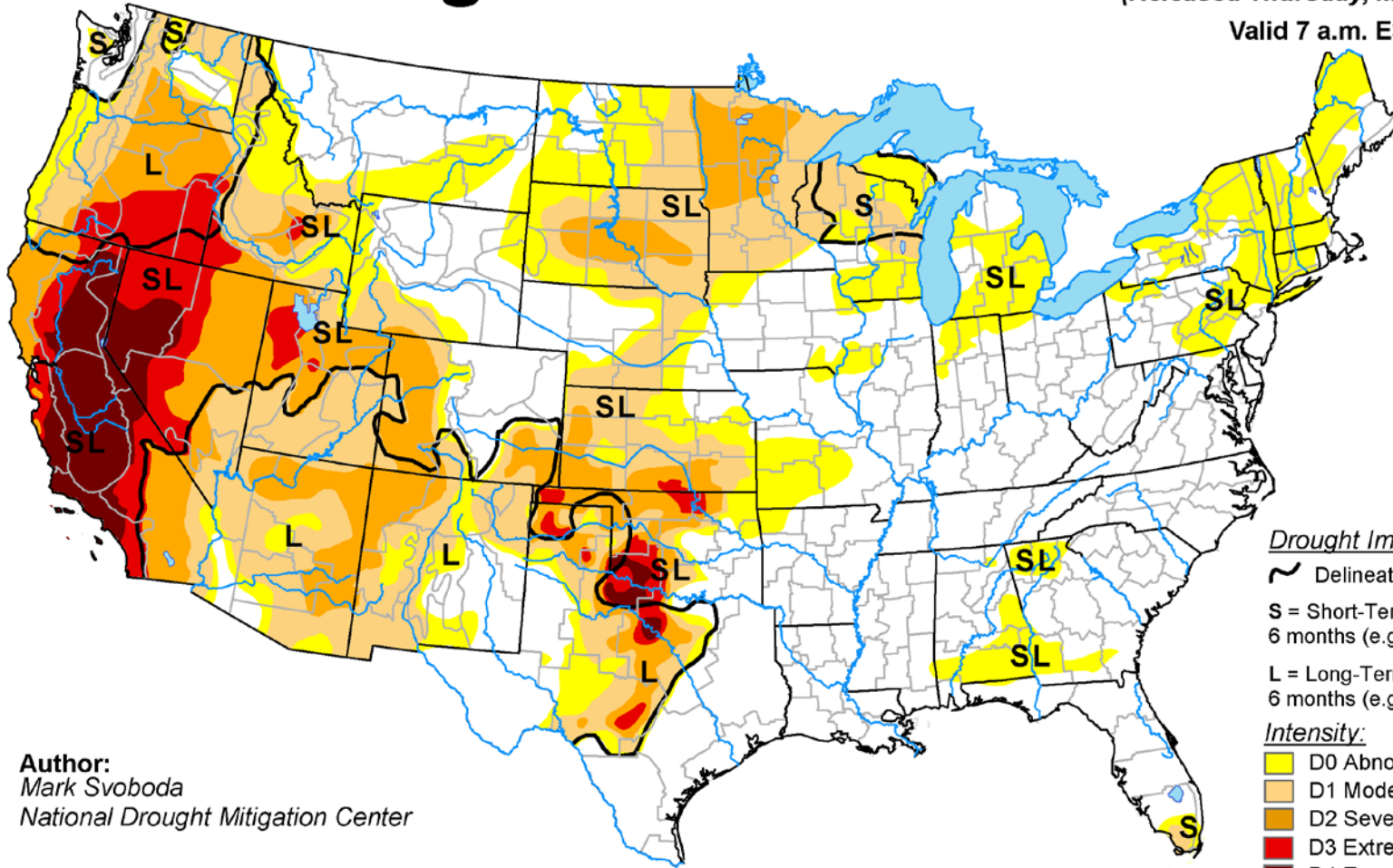


U.S. Drought Monitor

May 5, 2015


(Released Thursday, May. 7, 2015)

Valid 7 a.m. EST








Author:
Mark Svoboda
National Drought Mitigation Center

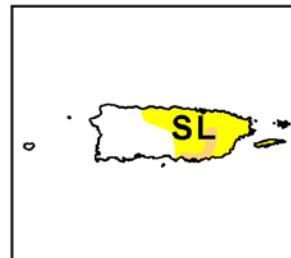
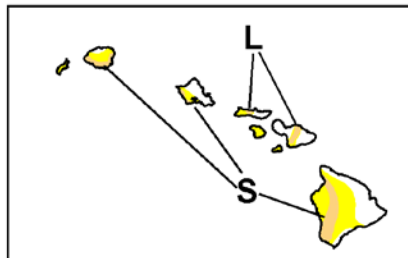
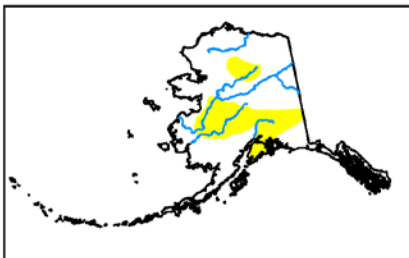
Drought Impact Types:

-  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.



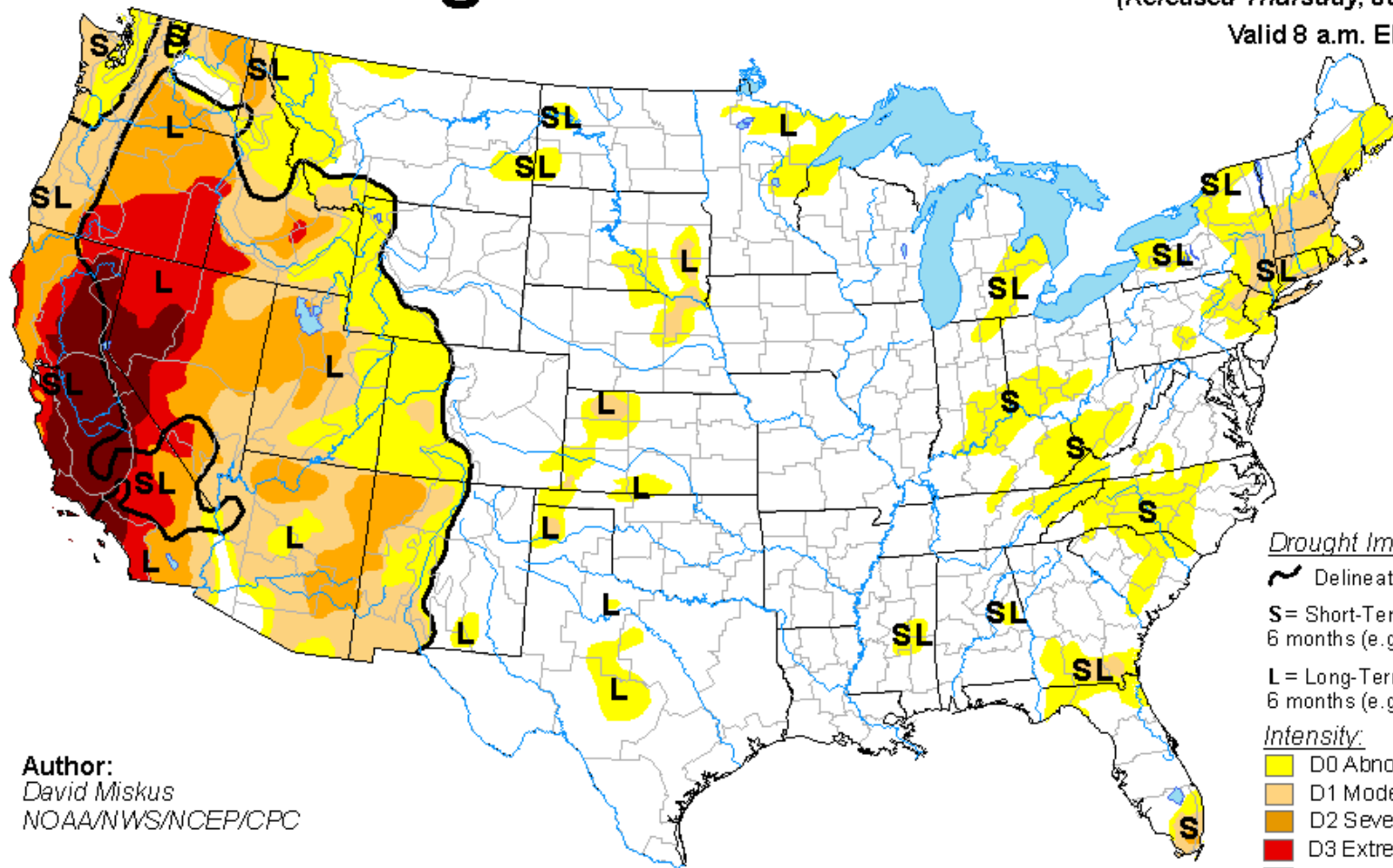
<http://droughtmonitor.unl.edu/>

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:

Yellow: D0 Abnormally Dry

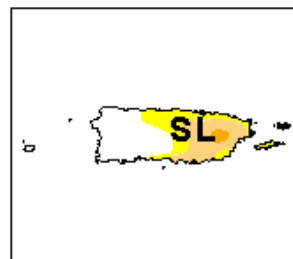
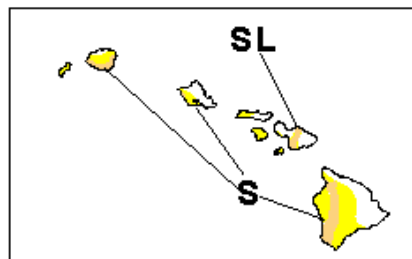
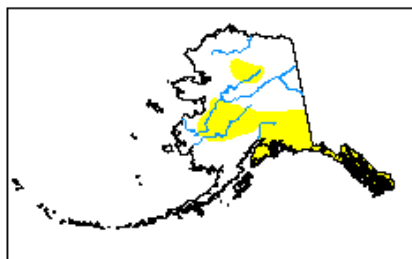
Light Orange: D1 Moderate Drought

Dark Orange: D2 Severe Drought

Red: D3 Extreme Drought

Dark Red: D4 Exceptional Drought

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



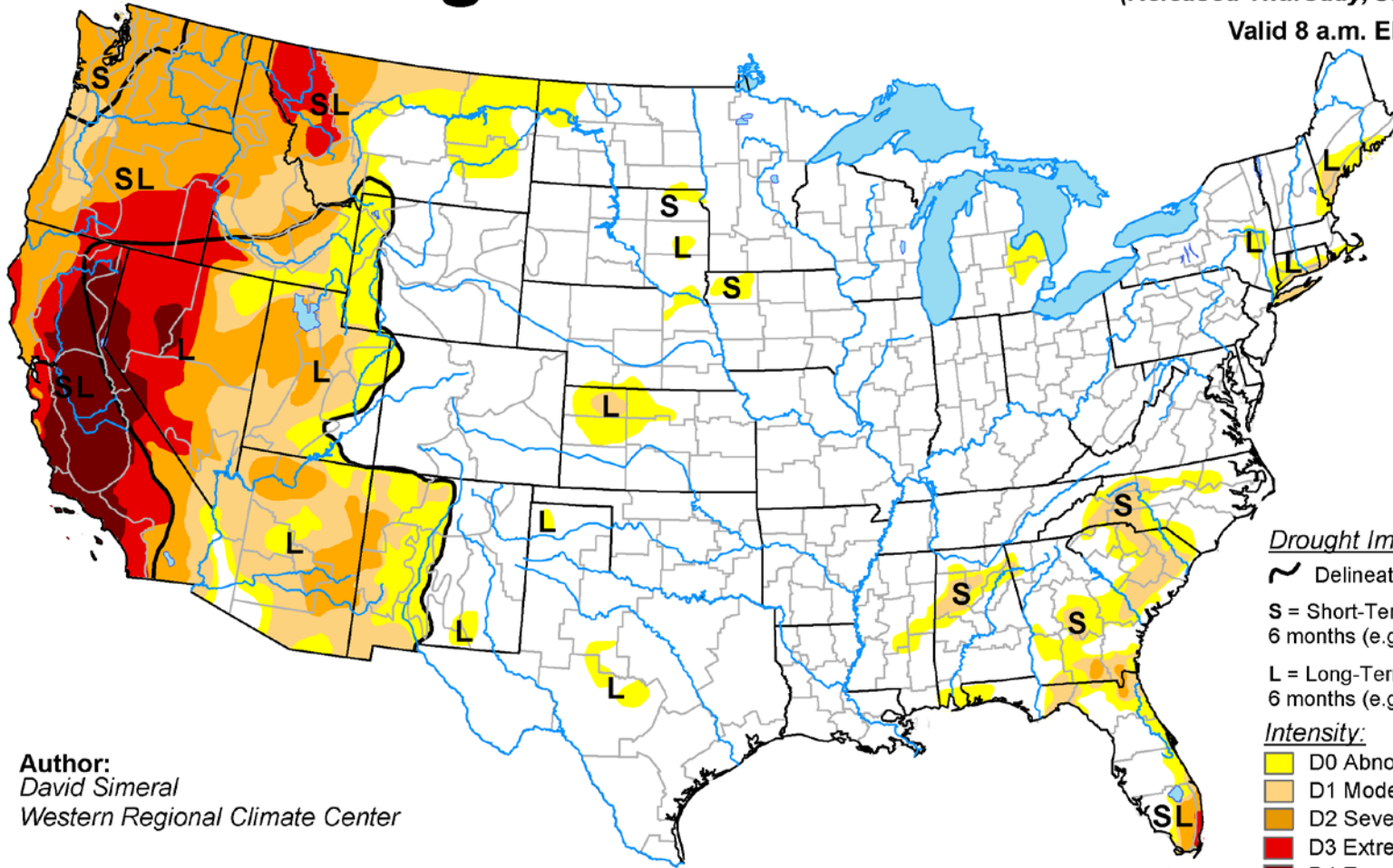
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

July 14, 2015

(Released Thursday, Jul. 16, 2015)

Valid 8 a.m. EDT



Author:
David Simeral
Western Regional Climate Center

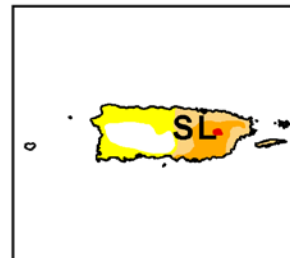
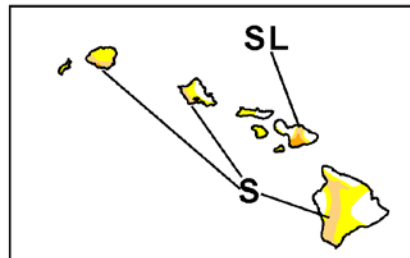
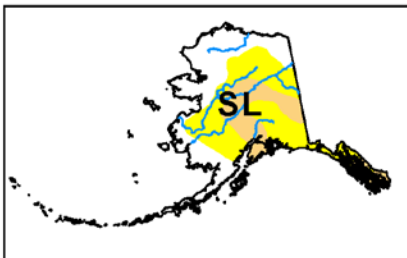
Drought Impact Types:

- ~ 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

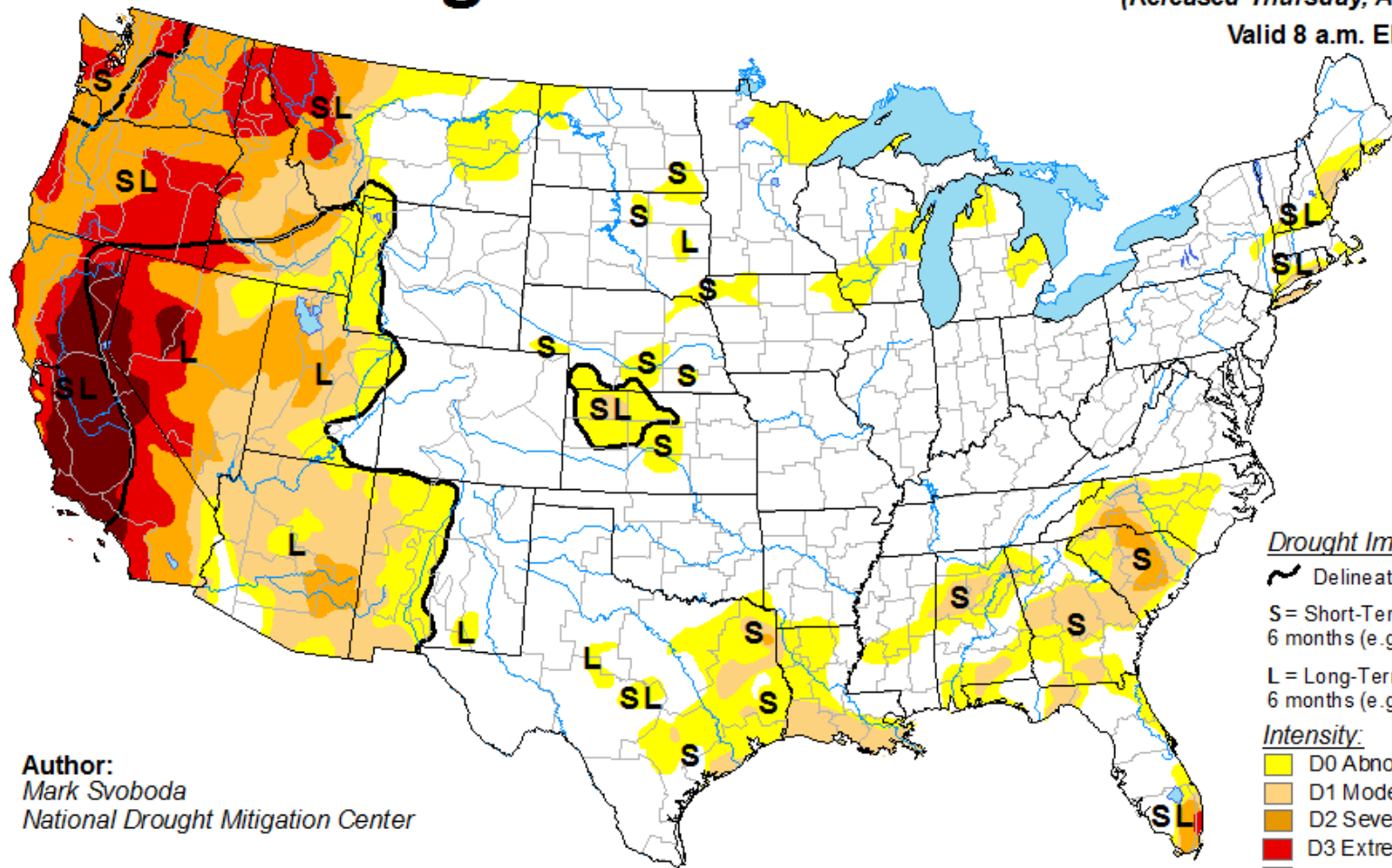
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<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

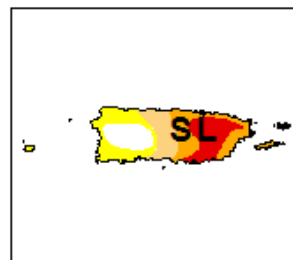
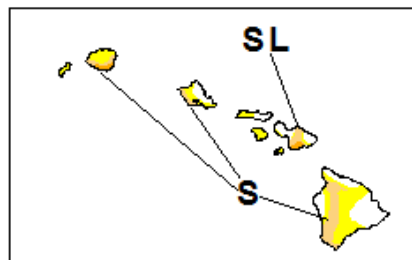
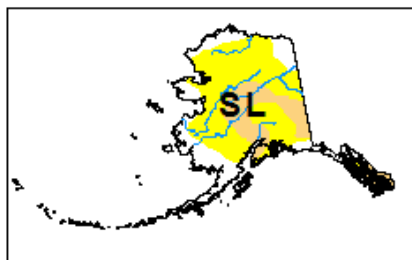
Drought Impact Types:

-  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.

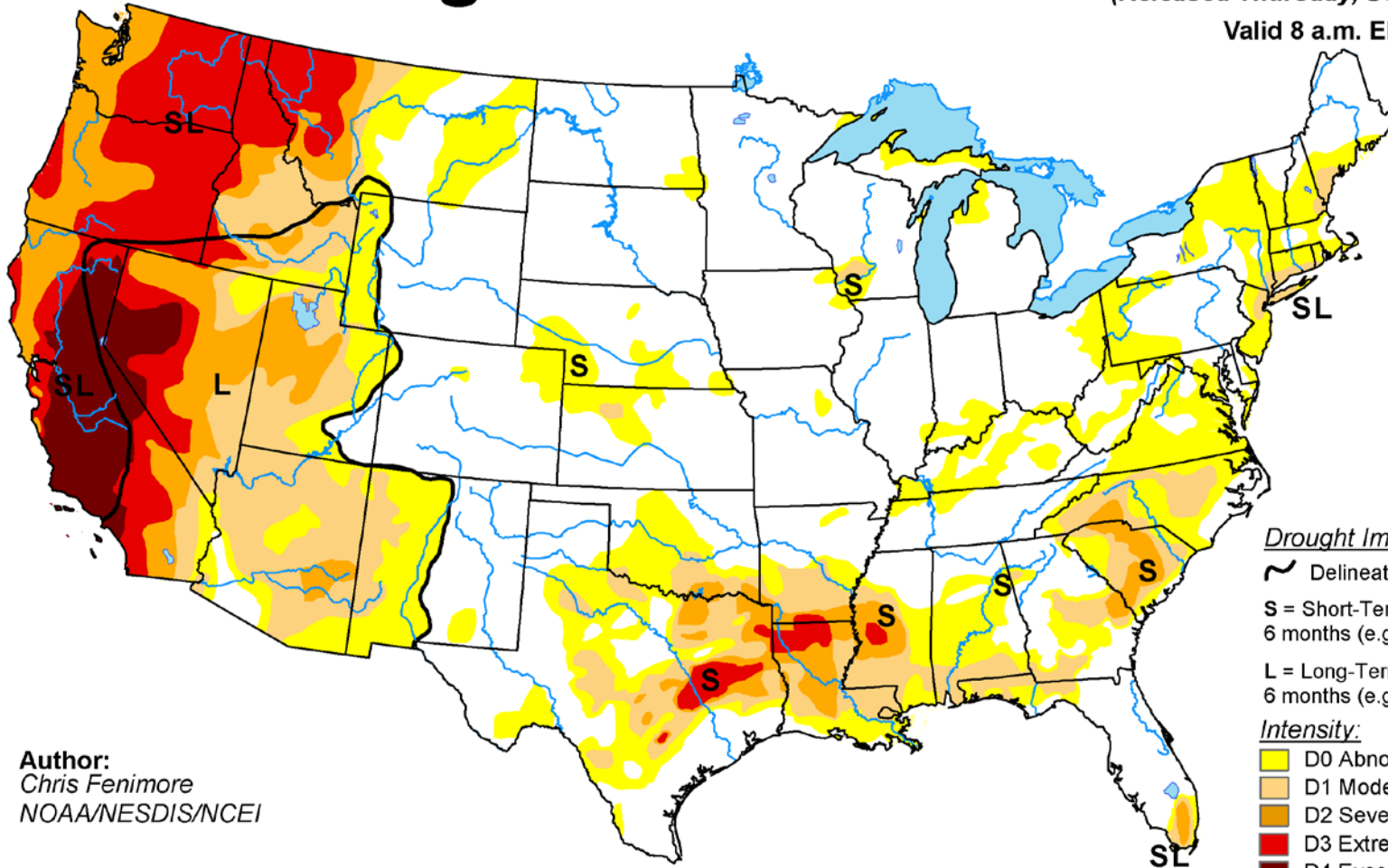


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

September 15, 2015
(Released Thursday, Sep. 17, 2015)

Valid 8 a.m. EDT



Author:
Chris Fenimore
NOAA/NESDIS/NCEI

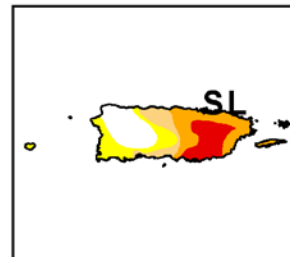
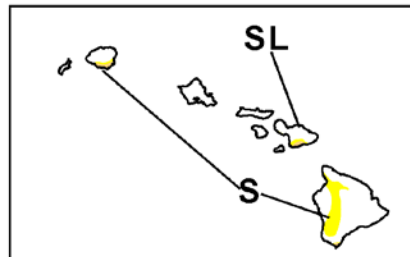
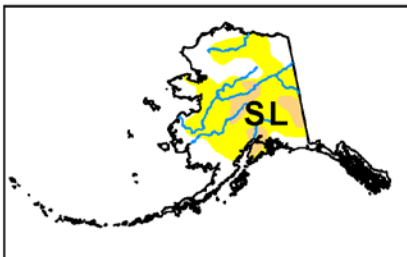
Drought Impact Types:

- ~ 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.

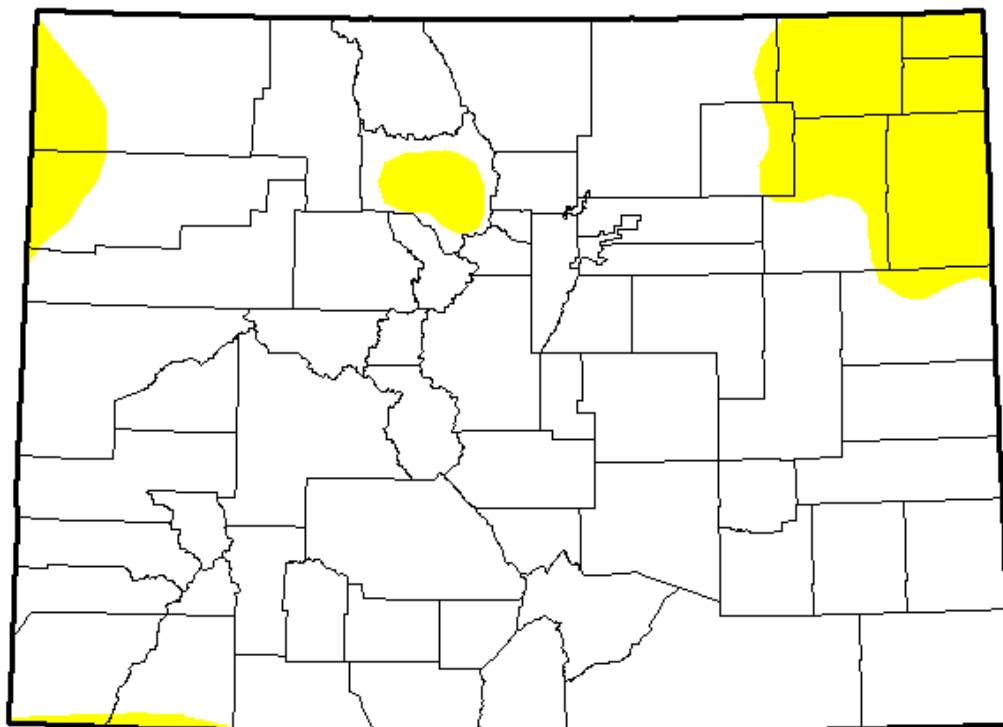


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

Colorado

September 15, 2015
 (Released Thursday, Sep. 17, 2015)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	89.49	10.51	0.00	0.00	0.00	0.00
Last Week 9/8/2015	89.55	10.45	0.00	0.00	0.00	0.00
3 Months Ago 6/16/2015	74.22	25.78	0.00	0.00	0.00	0.00
Start of Calendar Year 12/31/2014	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 9/16/2014	63.98	36.02	25.12	15.56	2.67	0.00

Intensity:

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

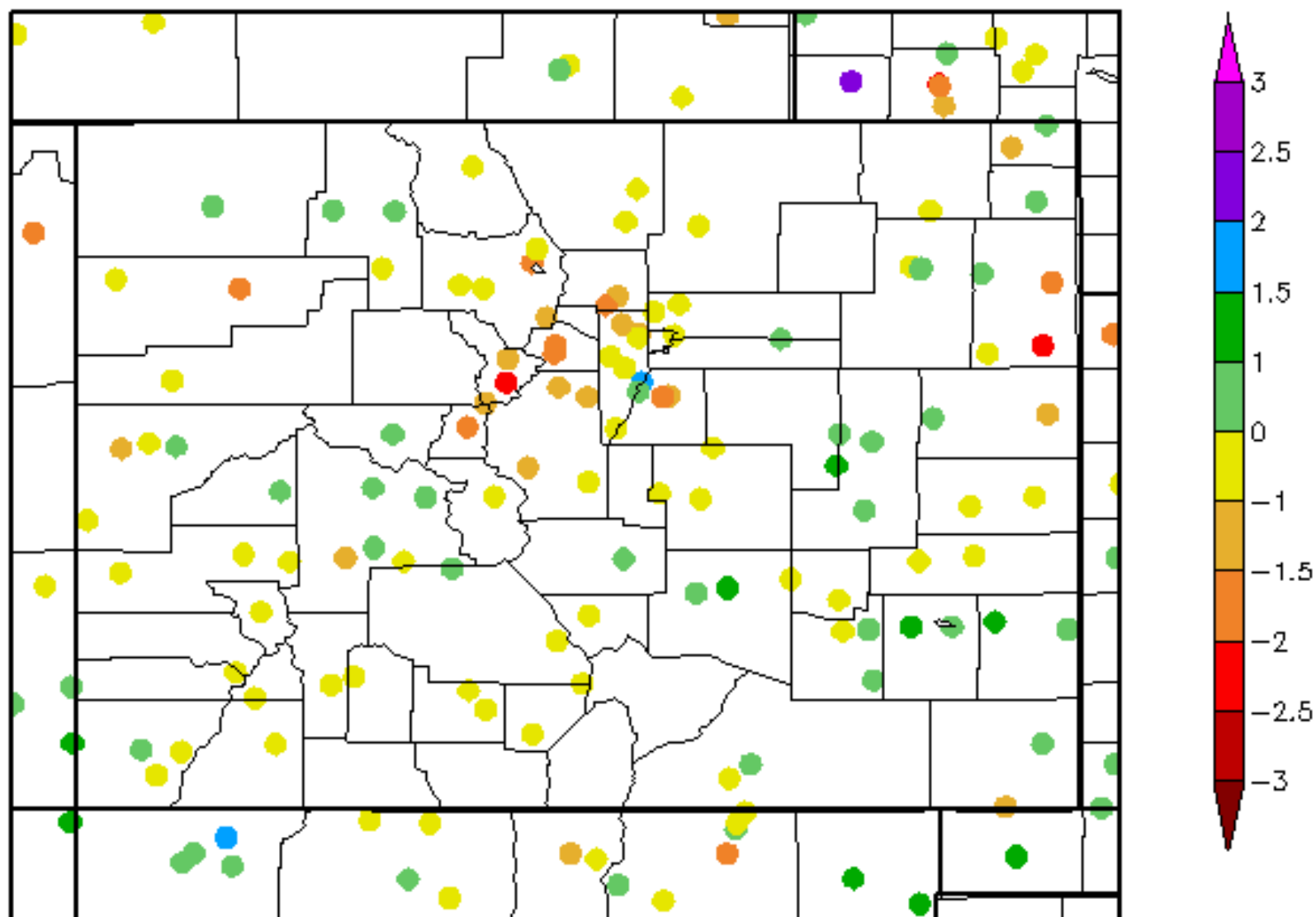
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
 Chris Fenimore
 NOAA/NESDIS/NCEI



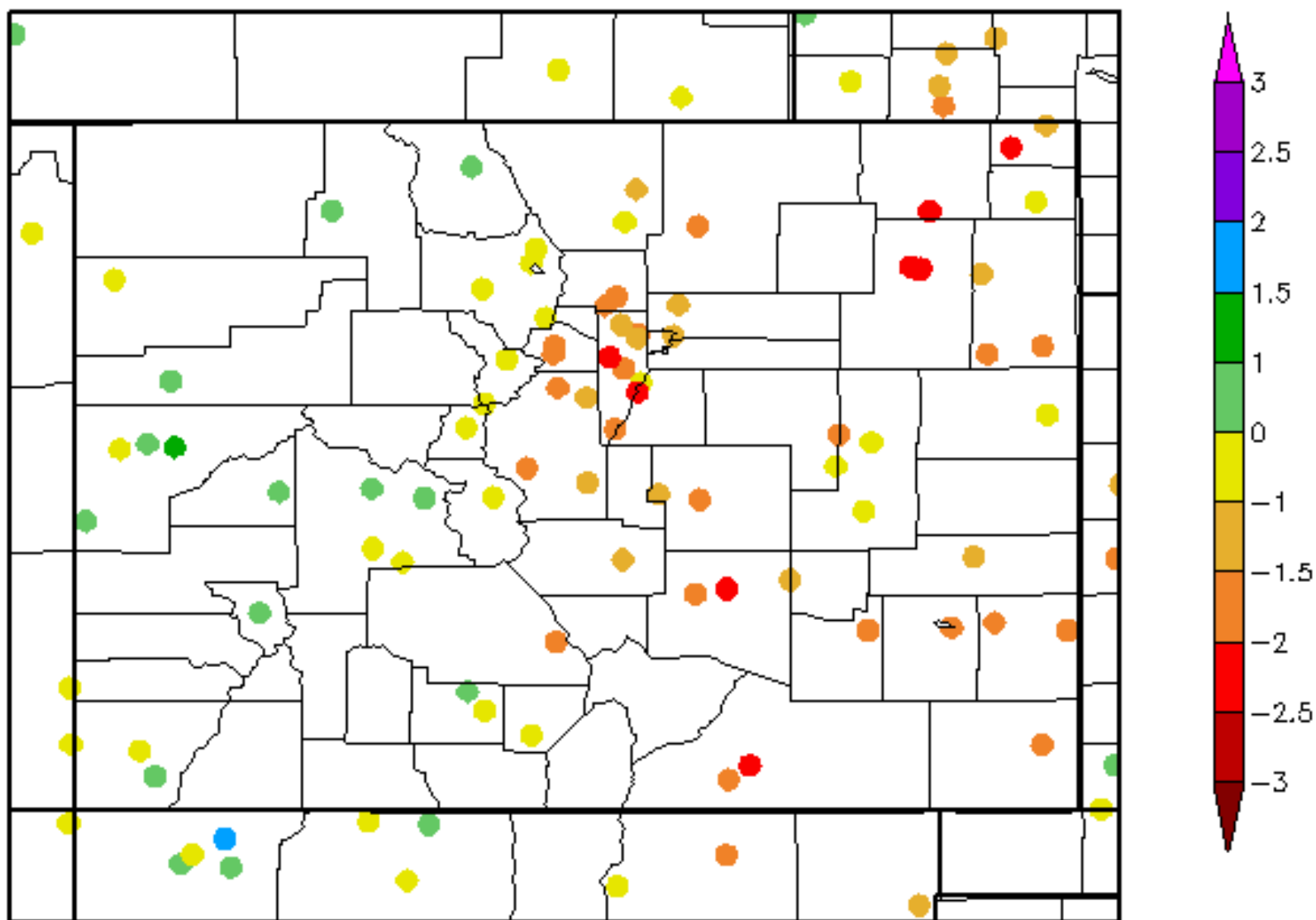
Monthly SPI

8/1/2015 - 8/31/2015



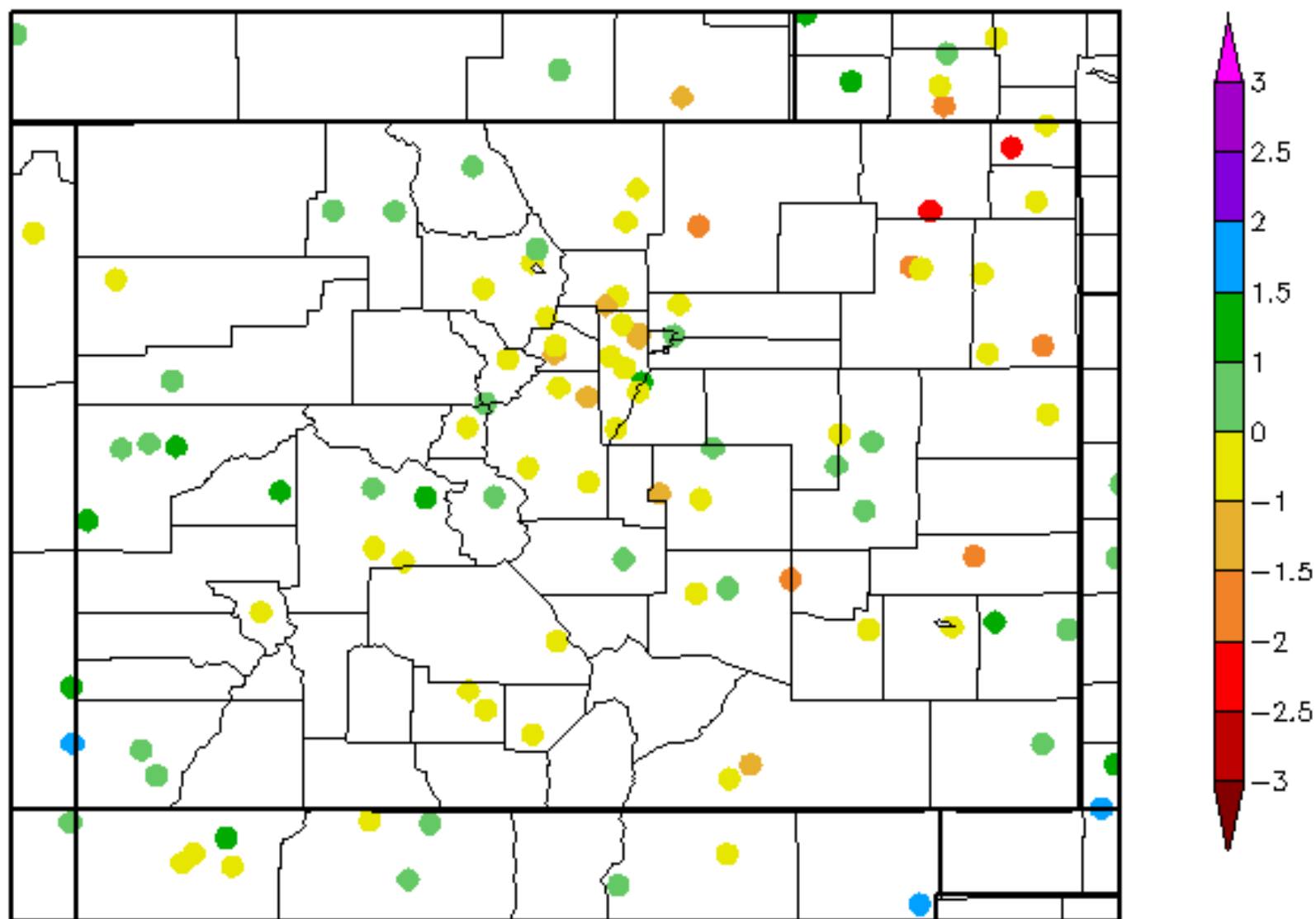
30 Day SPI

8/23/2015 - 9/21/2015



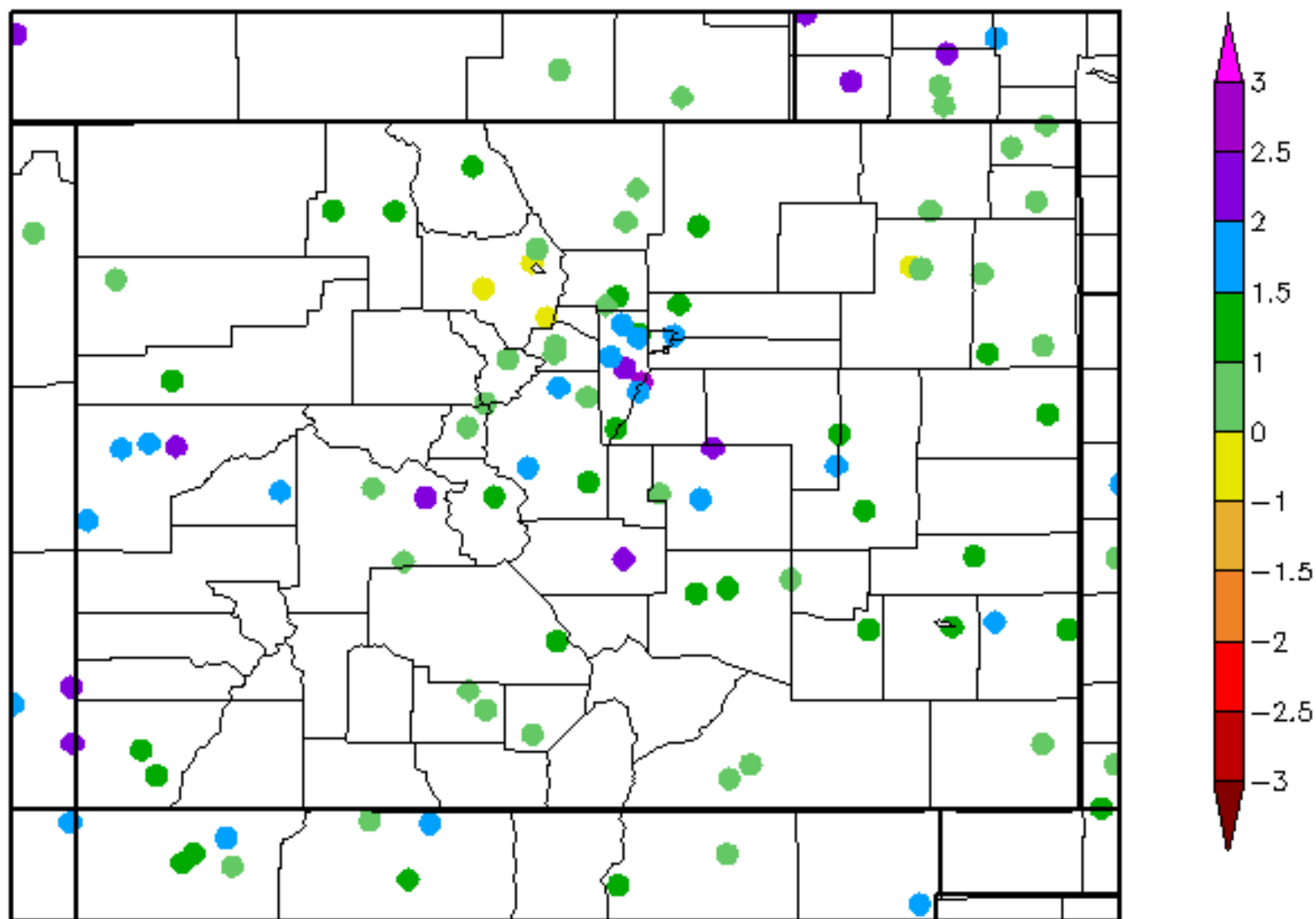
90 Day SPI

6/24/2015 - 9/21/2015



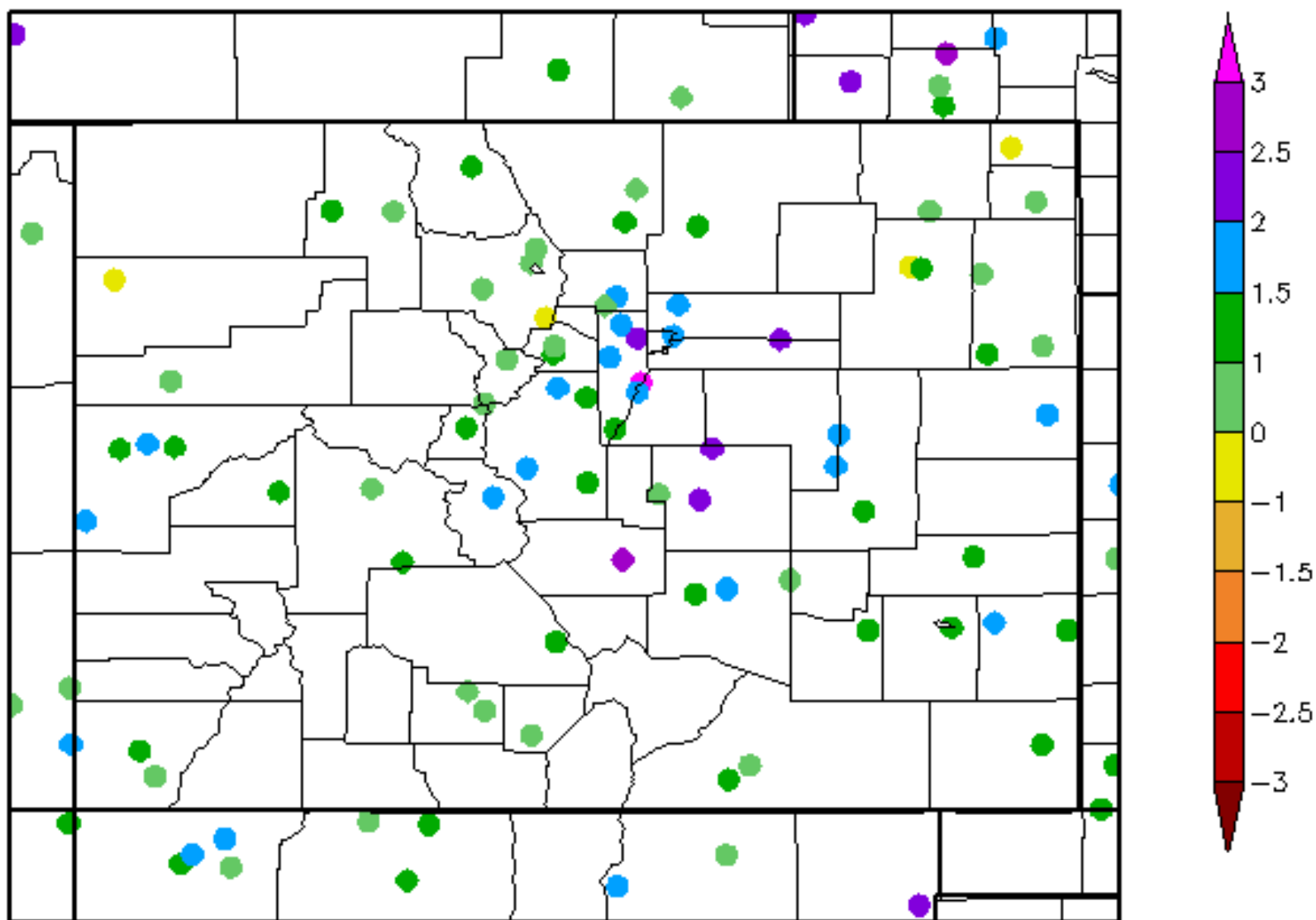
6 Month SPI

3/22/2015 - 9/21/2015



12 Month SPI

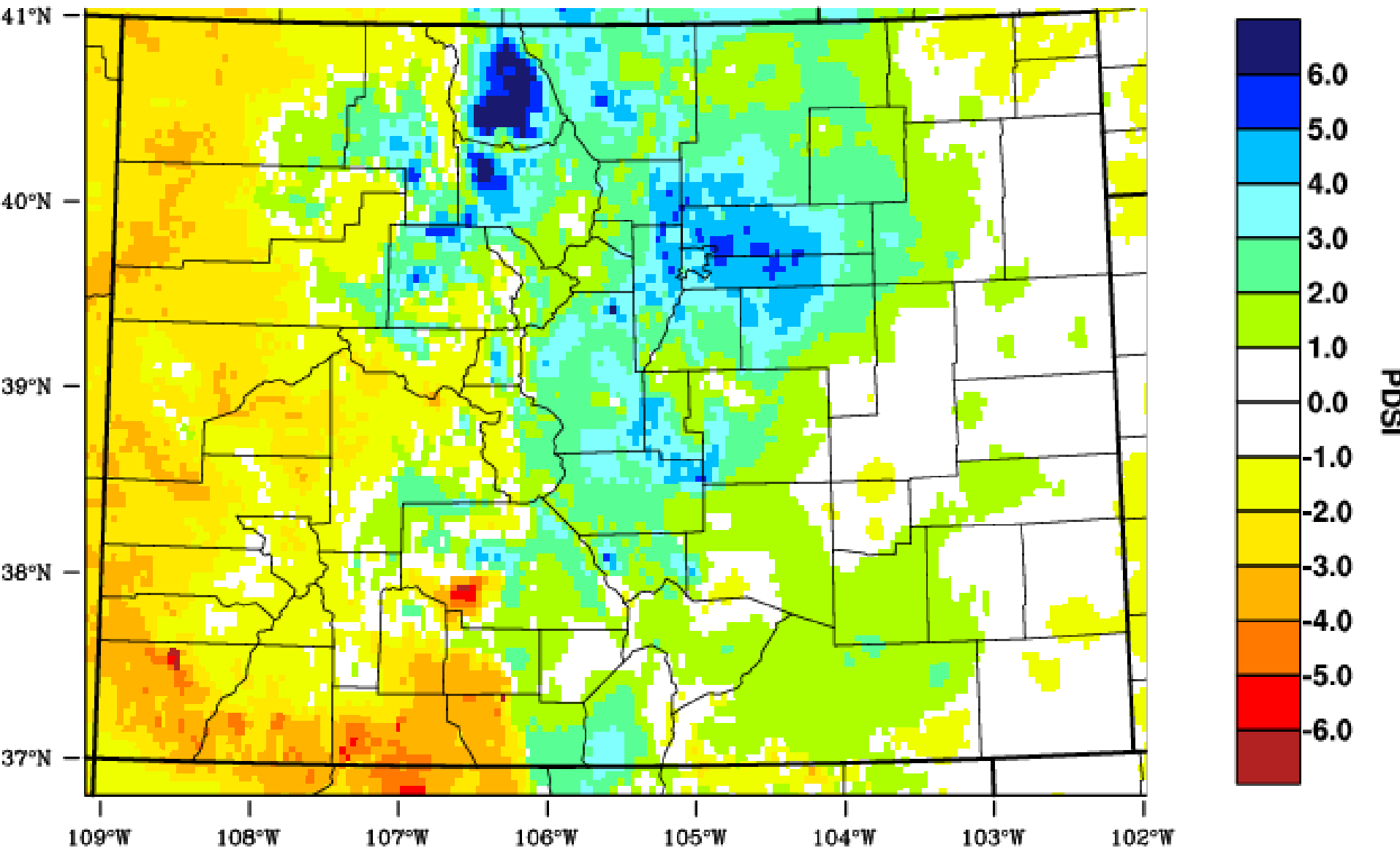
9/22/2014 - 9/21/2015



Palmer

Colorado - PDSI

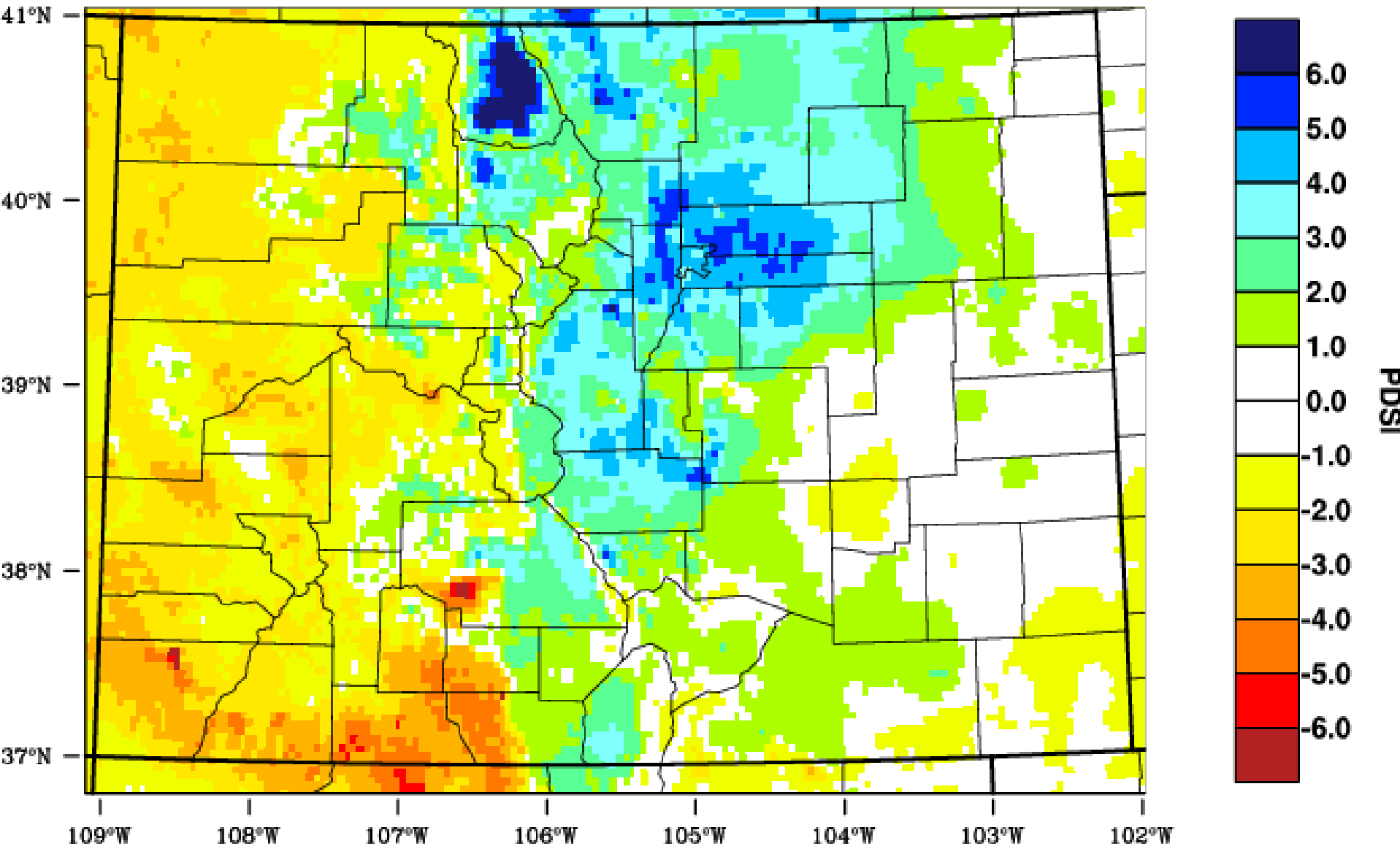
March 2015



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

Colorado - PDSI

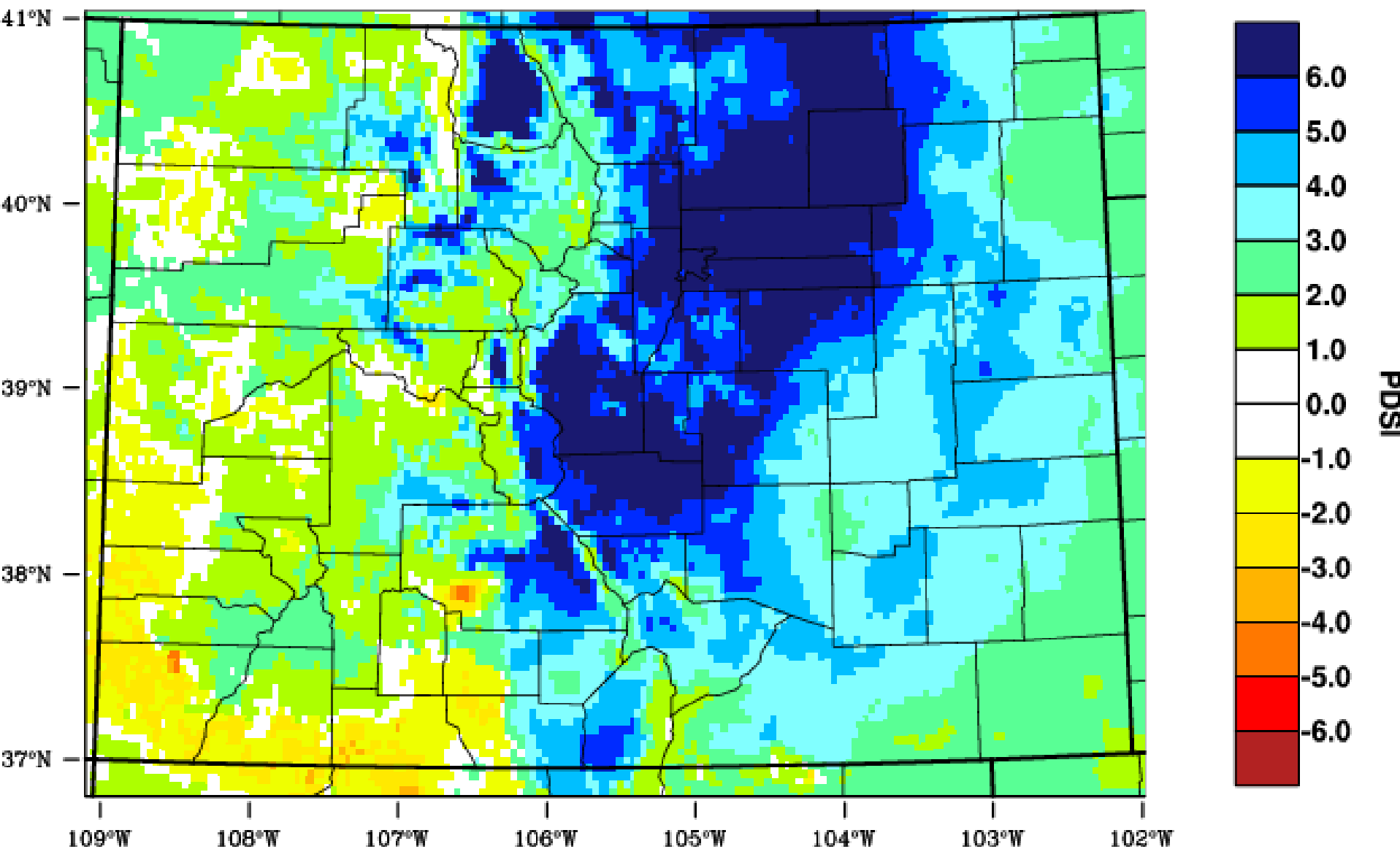
April 2015



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

Colorado - PDSI

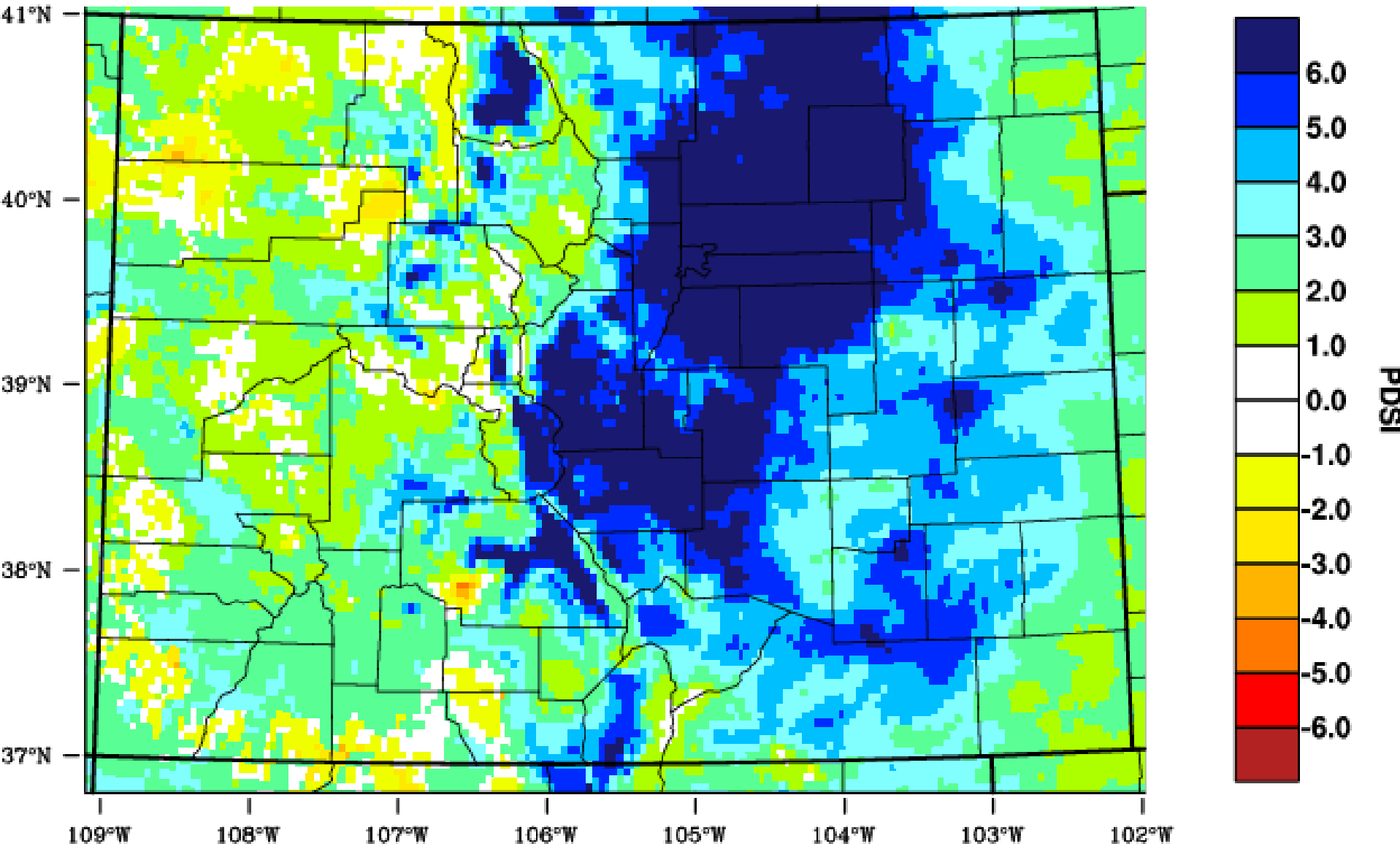
May 2015



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

Colorado - PDSI

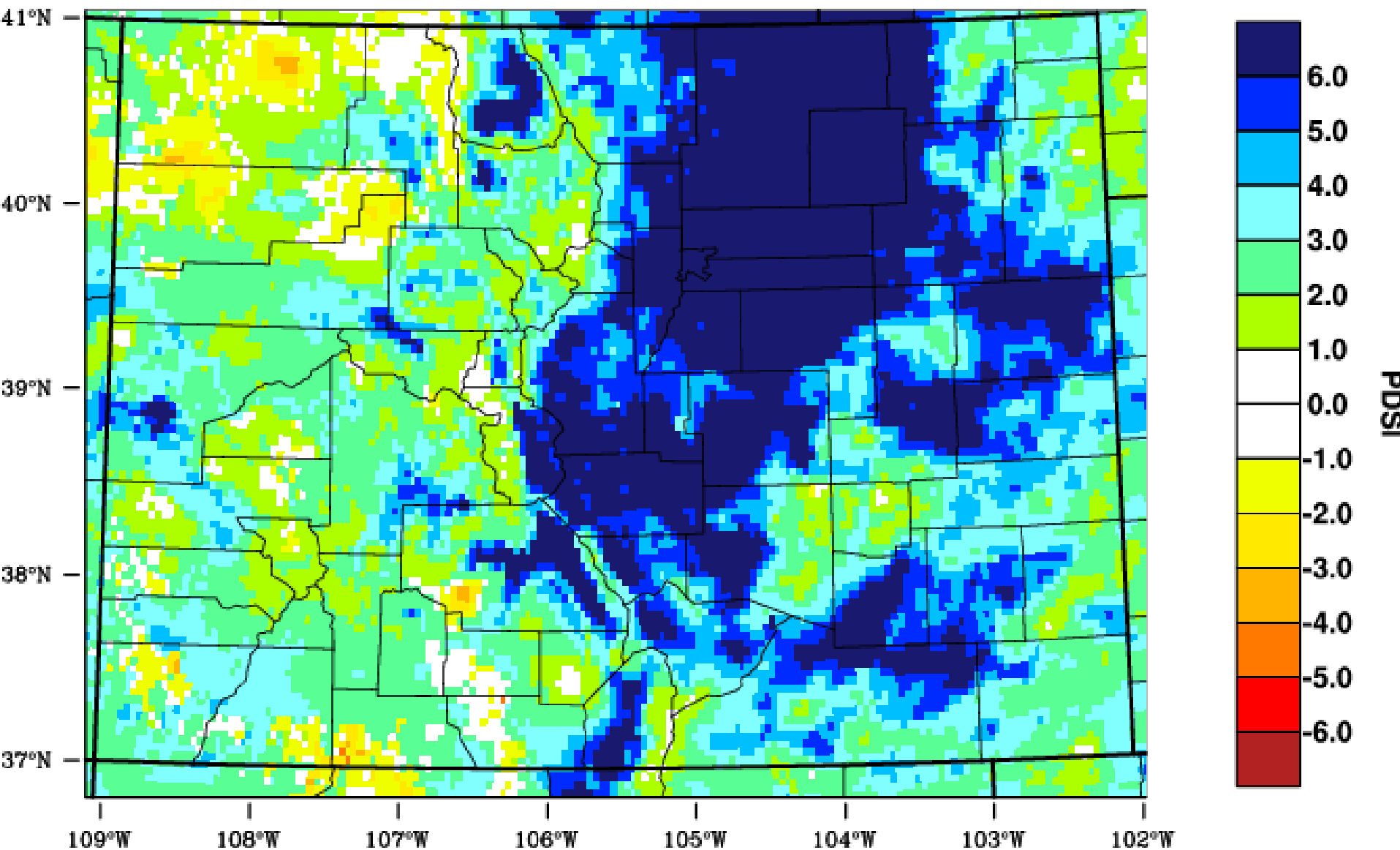
June 2015



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

Colorado - PDSI

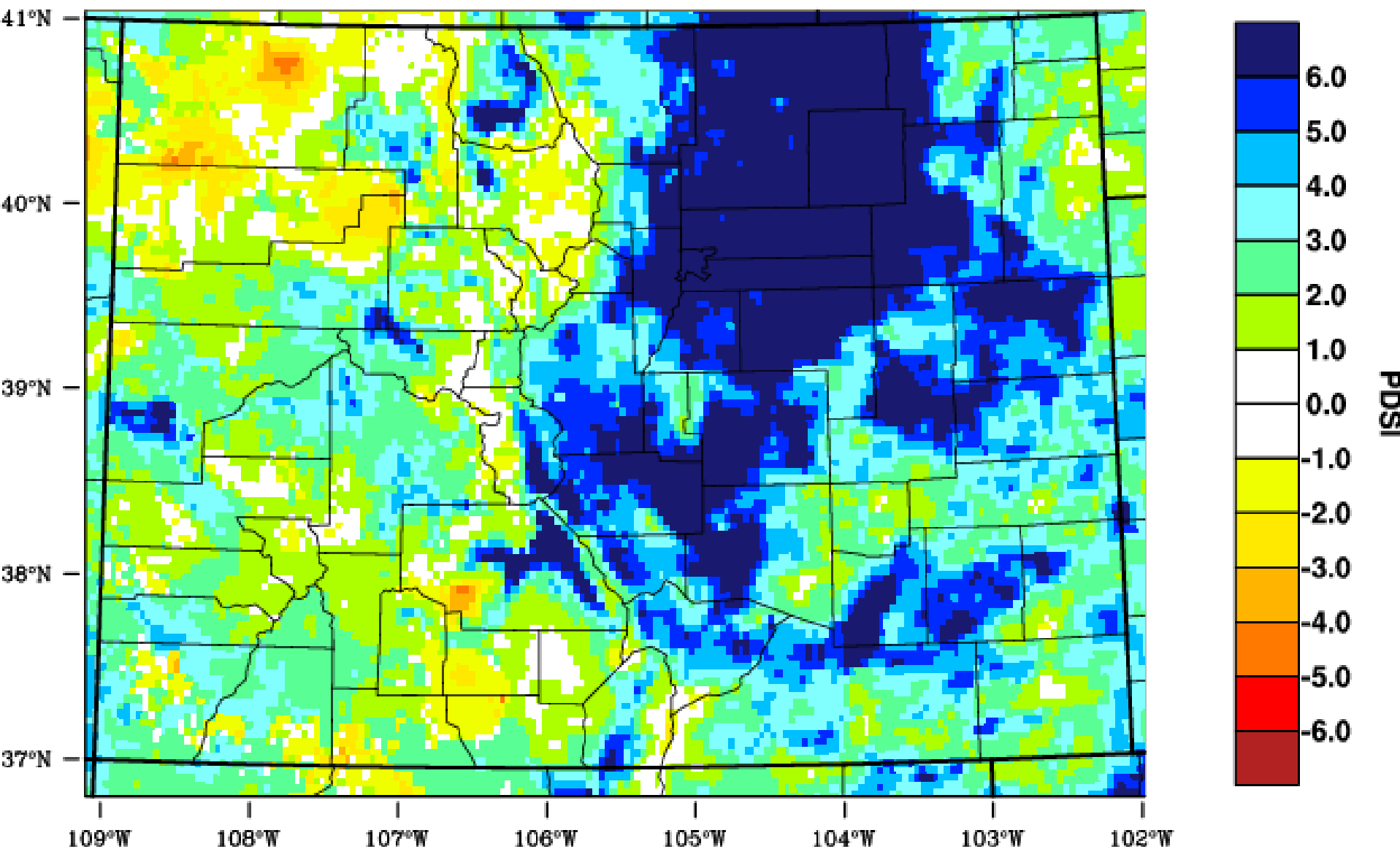
July 2015



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

Colorado - PDSI

August 2015



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

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