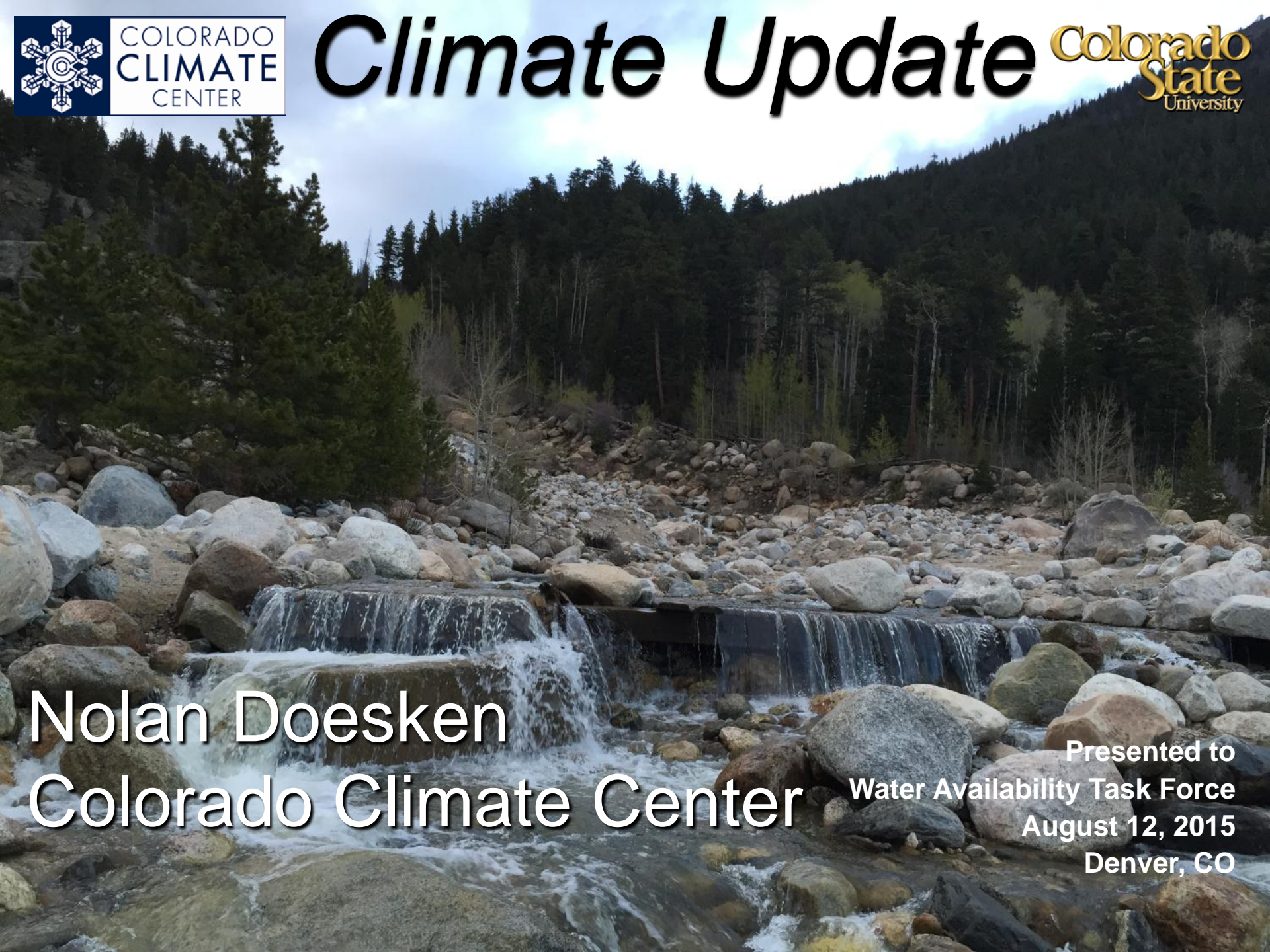




Climate Update



Nolan Doesken
Colorado Climate Center

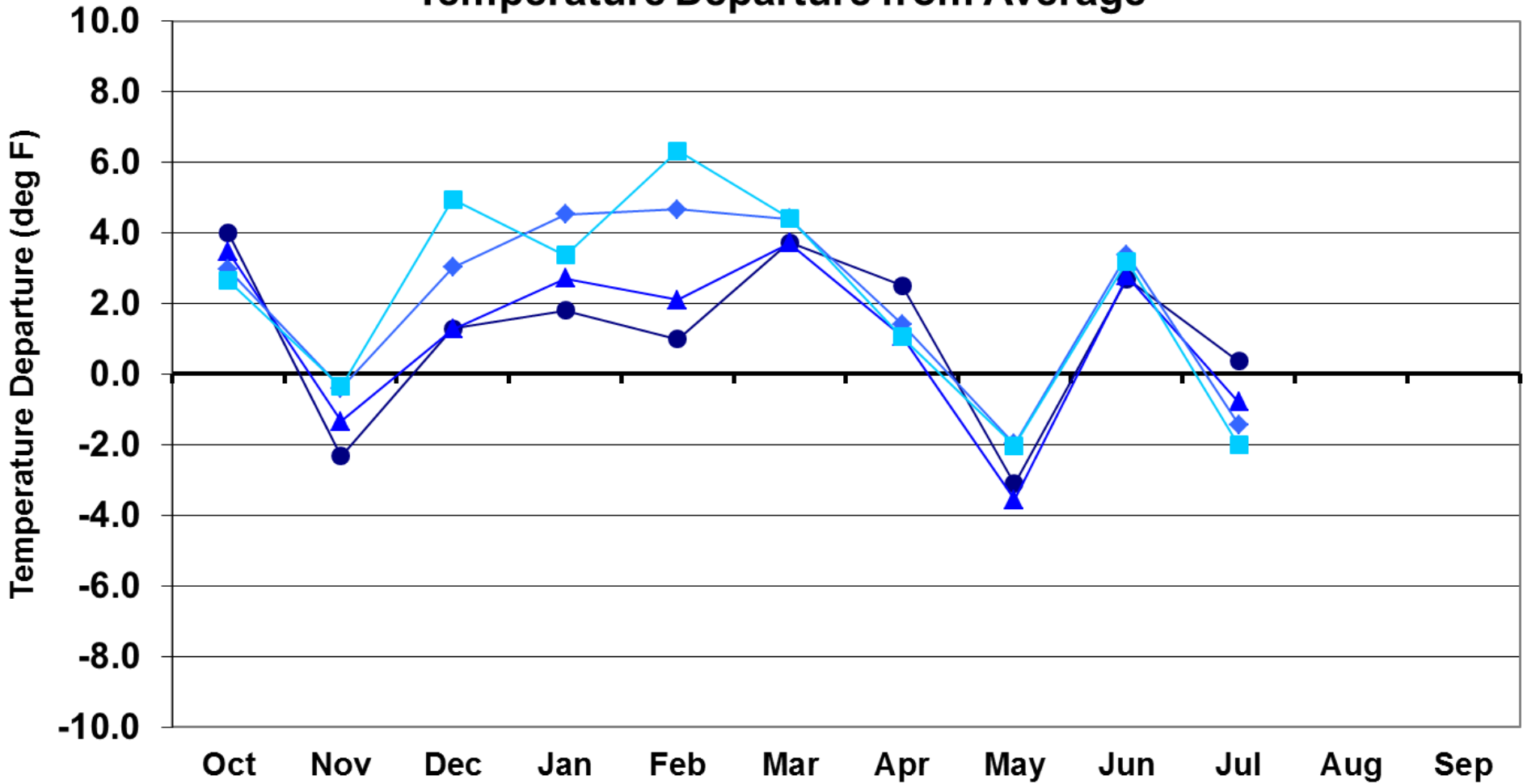
Presented to
Water Availability Task Force
August 12, 2015
Denver, CO

Points I hope to make

- Summer temperatures have been moderate
- Precipitation has been skimpy for the normally wet late-July, early-Aug “monsoon” window but still good for the summer as a whole
- Evapotranspiration rates are about what we expect for this time of year, but seasonal accumulated ETr is below average
- Overall water supplies still really good for this time of year although soil moisture has been declining

Water Year 2015 Temperature Departures

Water Year 2015
Temperature Departure from Average



● Eastern Plains

▲ Foothills

◆ Mountains

■ Western Valleys

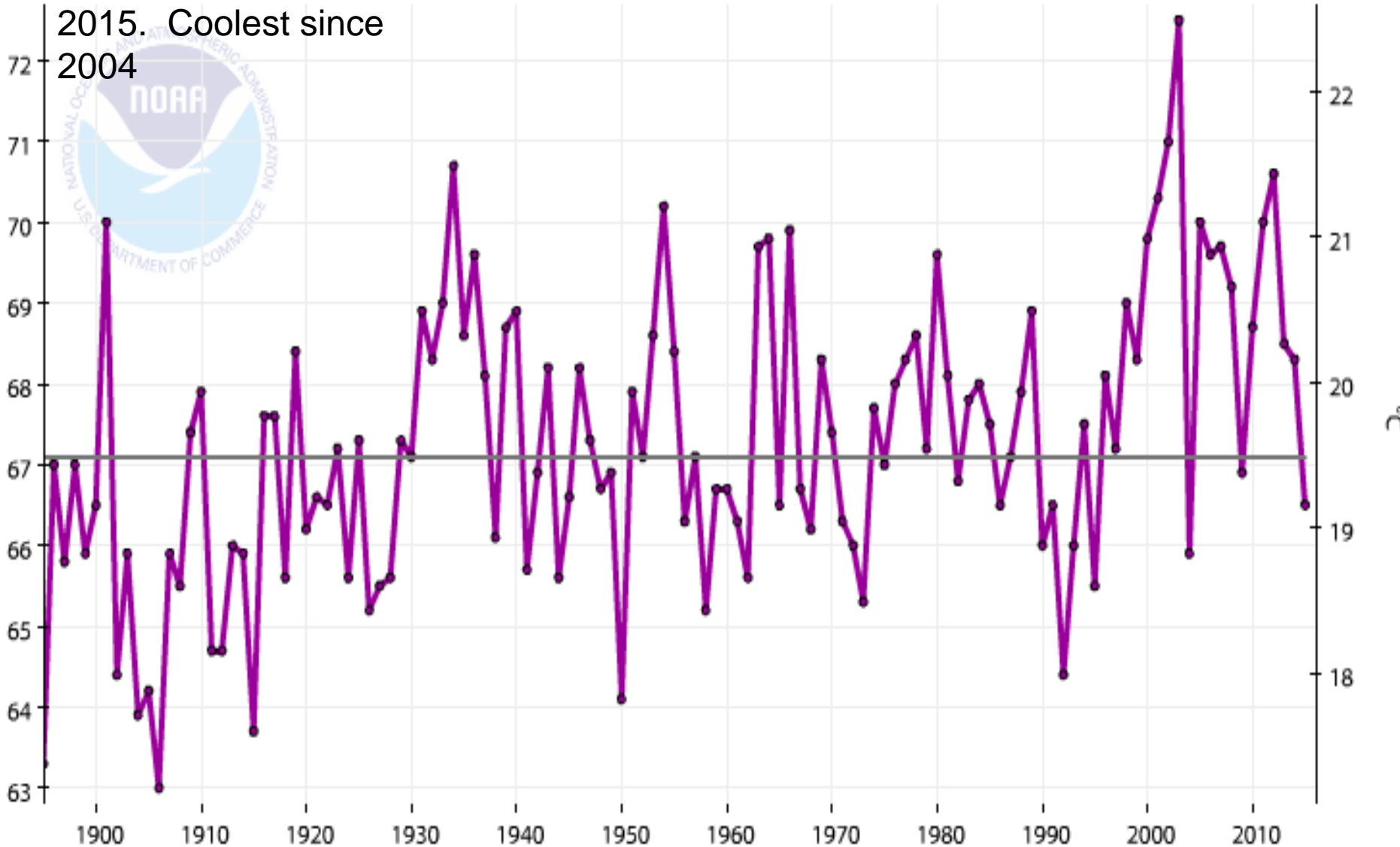
July 2015 Average Temperature History for Colorado (NCDC)

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

Colorado, Average Temperature, July

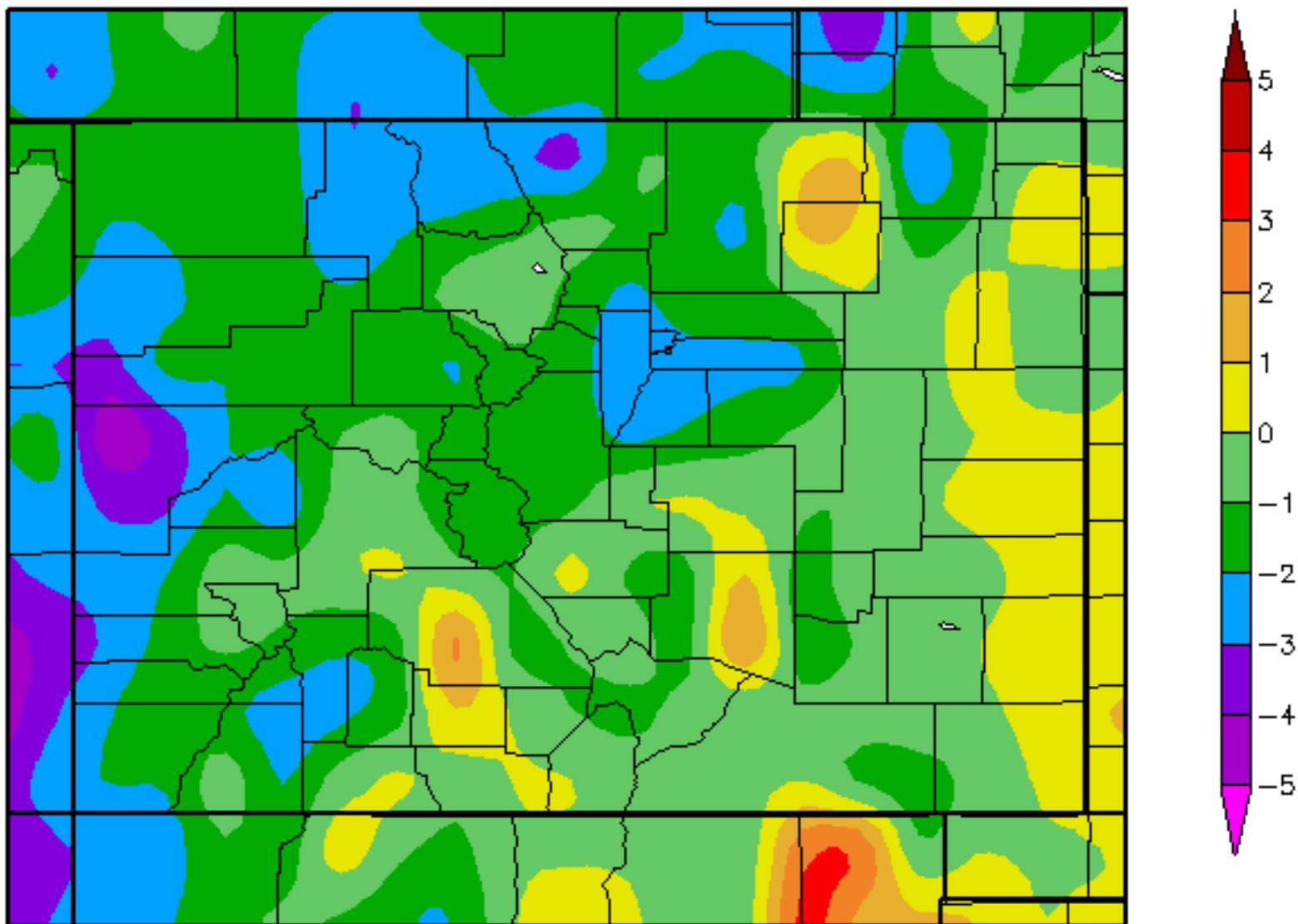
— 1901-2000
Avg: 67.1°F

—●— Avg Temperature



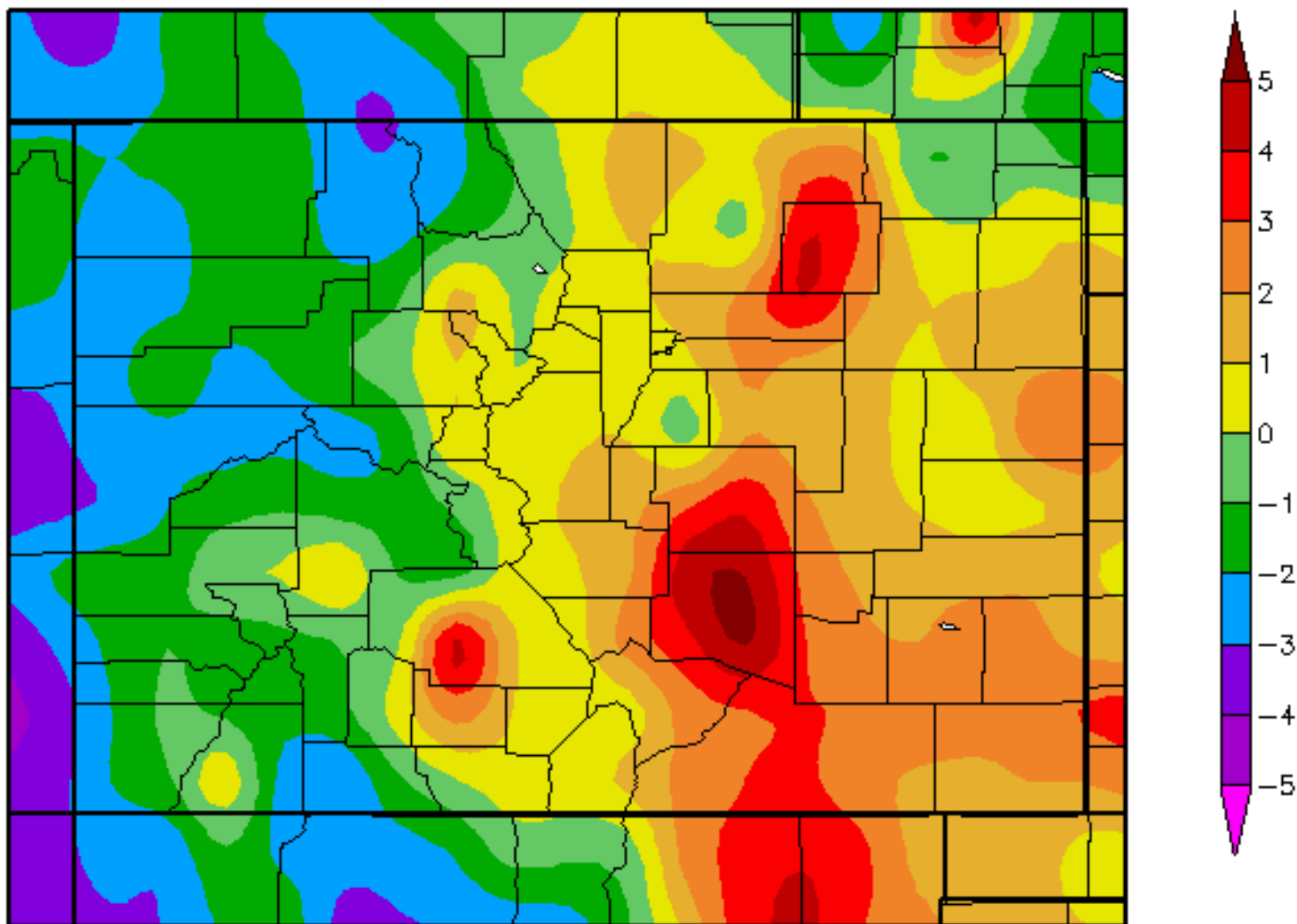
Departure from Normal Temperature (F)

7/1/2015 – 7/31/2015



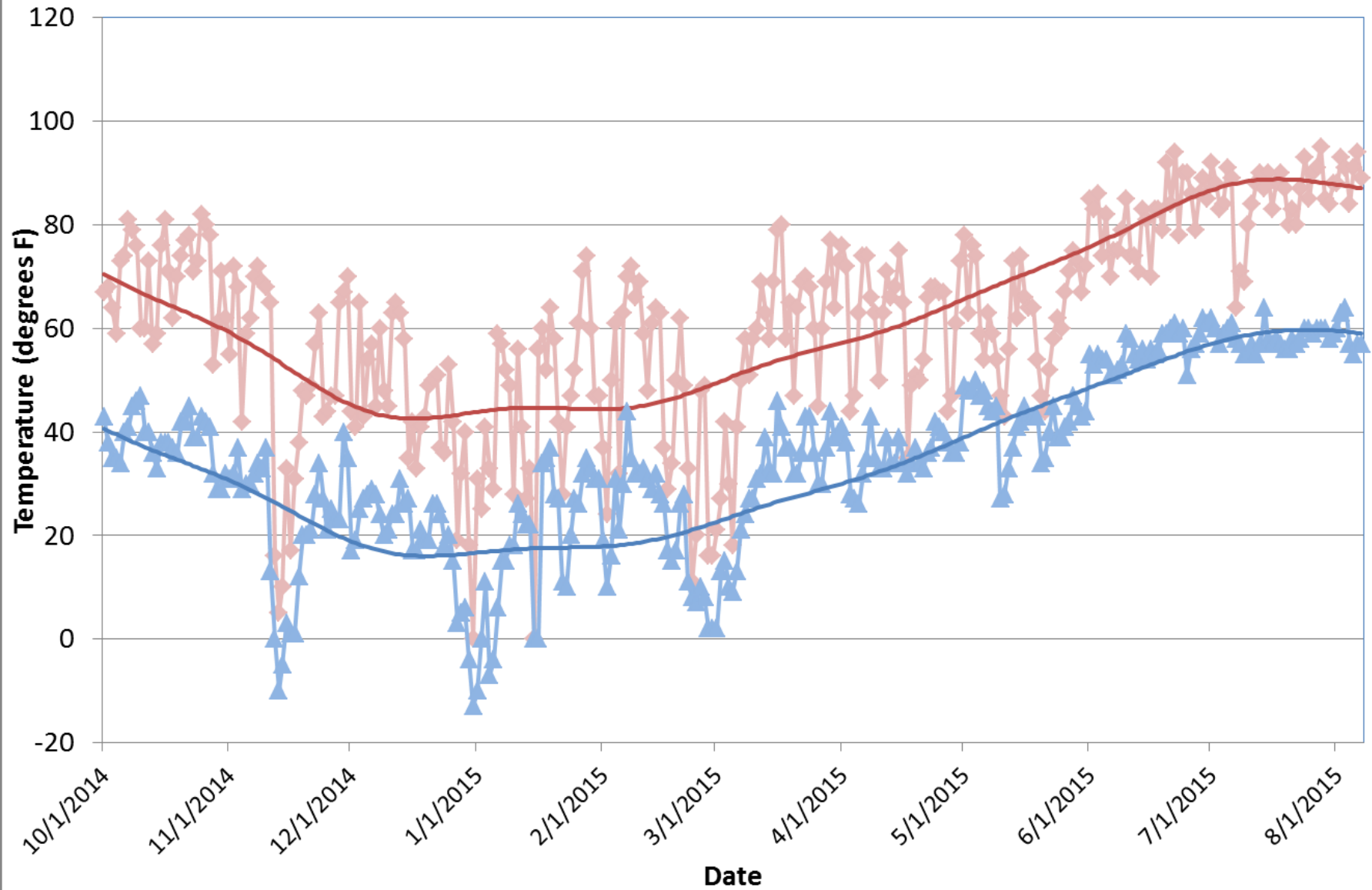
Departure from Normal Temperature (F)

8/1/2015 – 8/10/2015



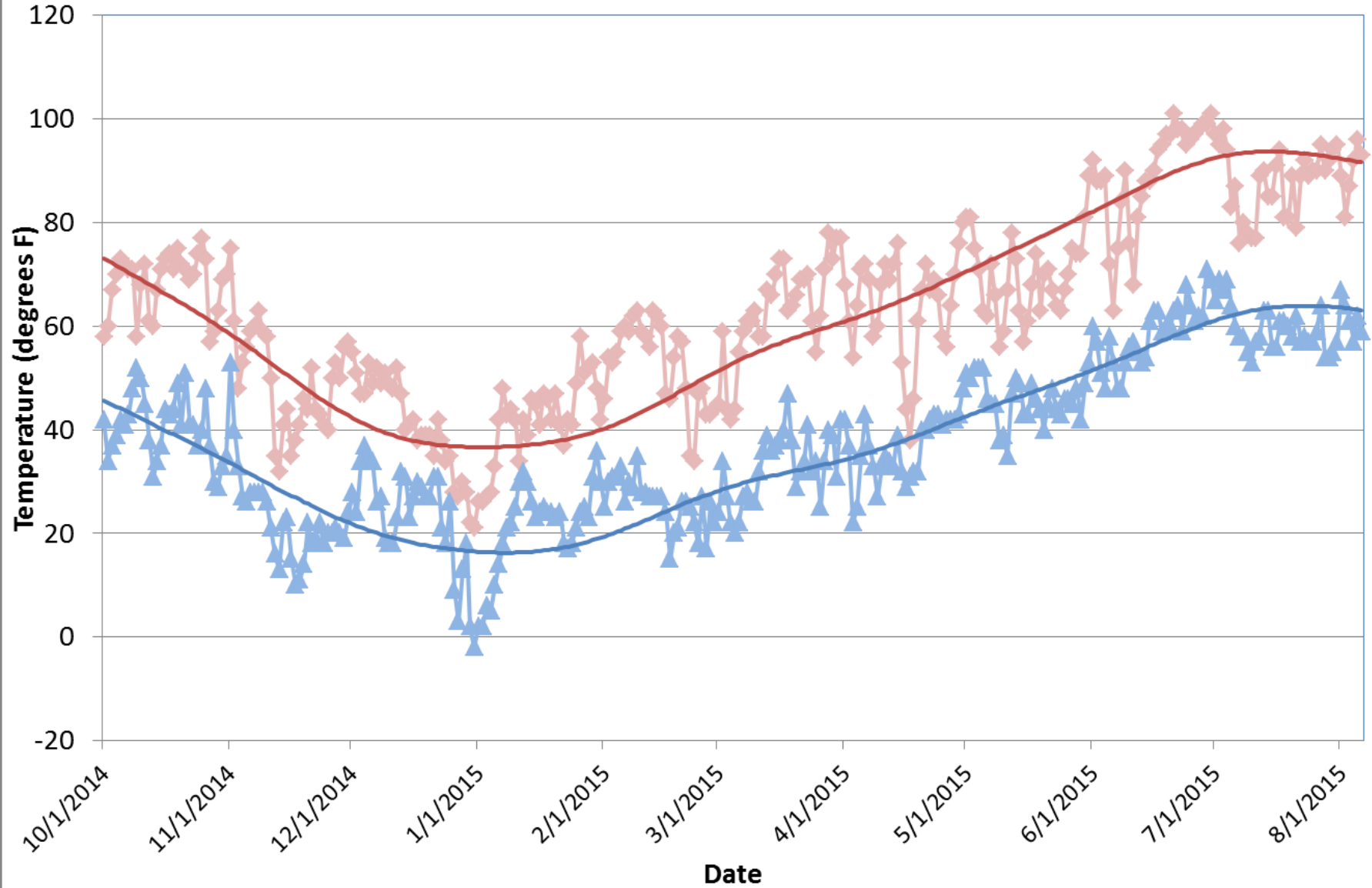
Denver-Stapleton Daily Max/Min Temperature with Normal (Oct 1, 2014 - Present)

MaxTemperature Normal Max MinTemperature Normal Min

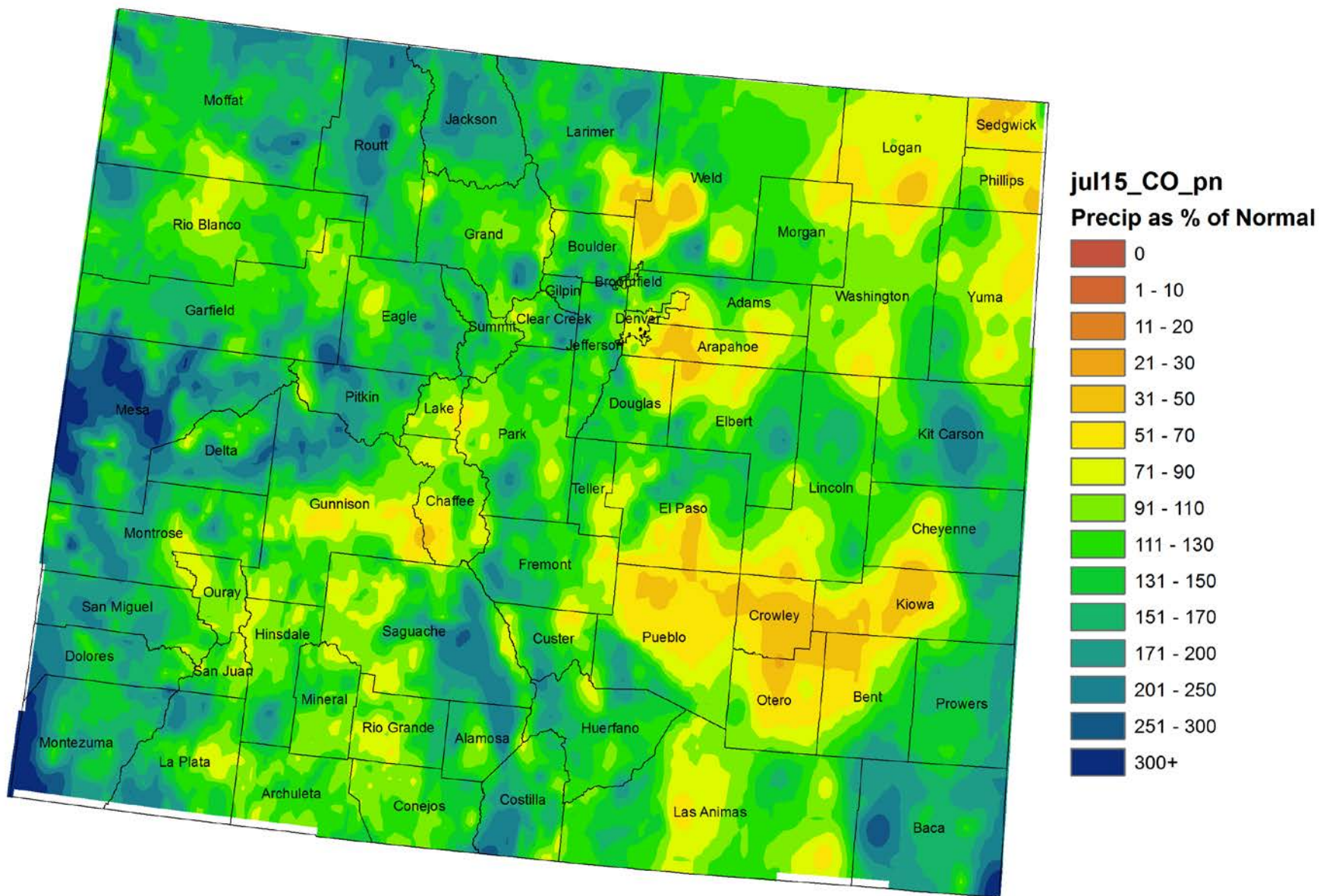


Grand Junction Daily Max/Min Temperature with Normals (Oct 1, 2014 - Present)

Max Temperature Normal Max Min Temperature Normal Min



Colorado July 2015 Precipitation as a Percentage of Normal



July 2015 Statewide Precipitation

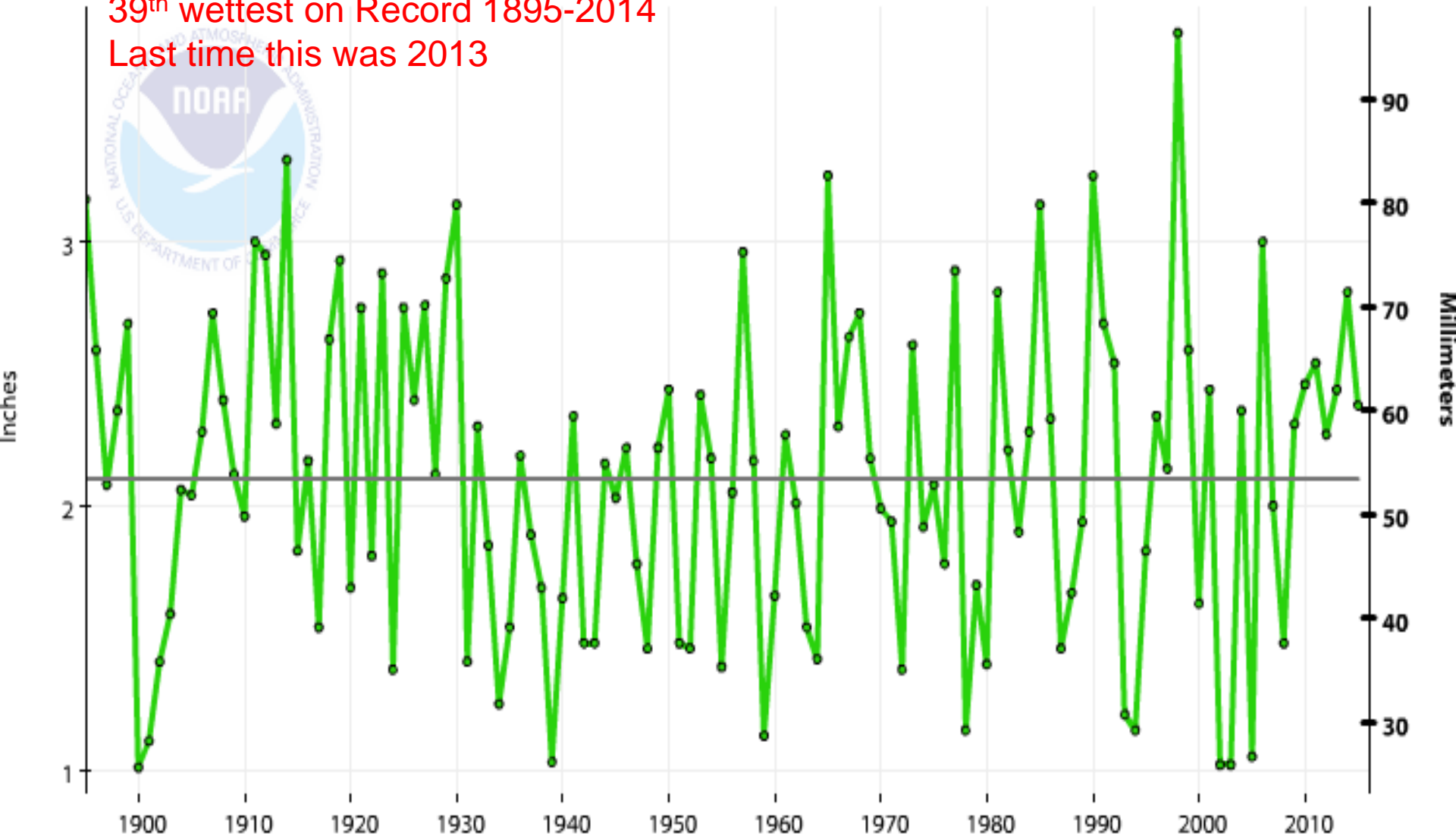
Colorado, Precipitation, July

2.38" (+0.28")

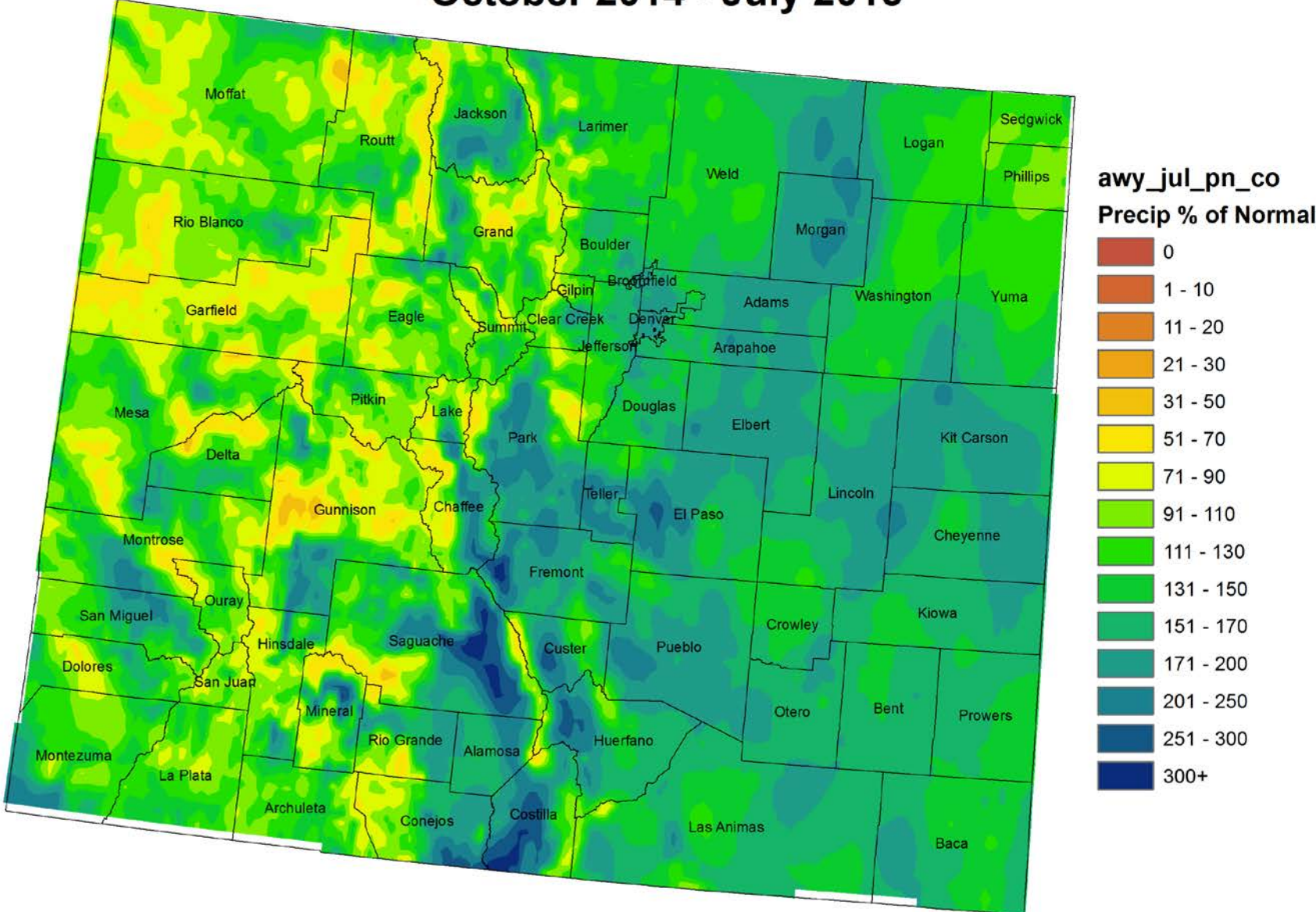
39th wettest on Record 1895-2014

Last time this was 2013

— 1901-2000 Avg: 2.10" ●— Precip

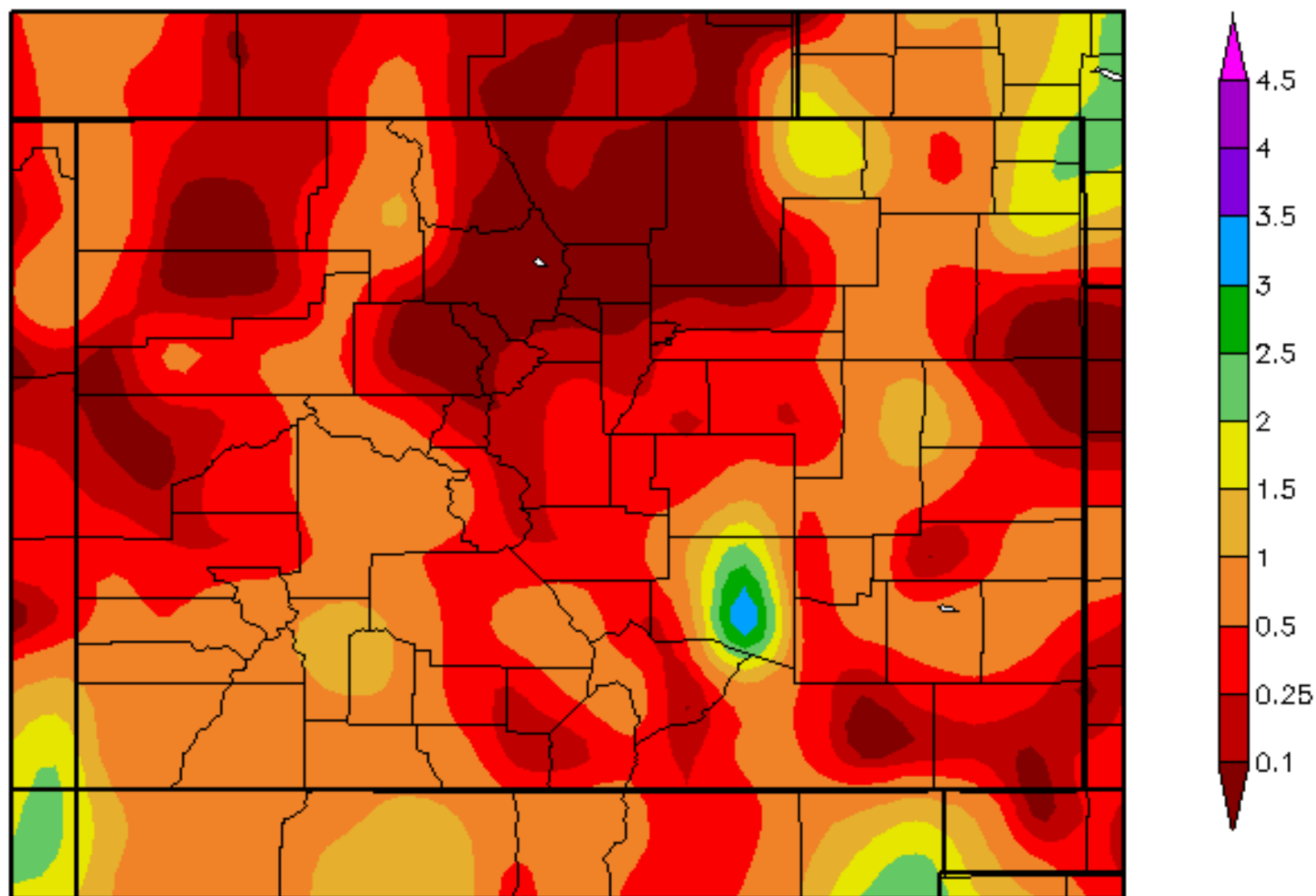


Colorado Water Year Precipitation as a Percentage of Normal October 2014 - July 2015



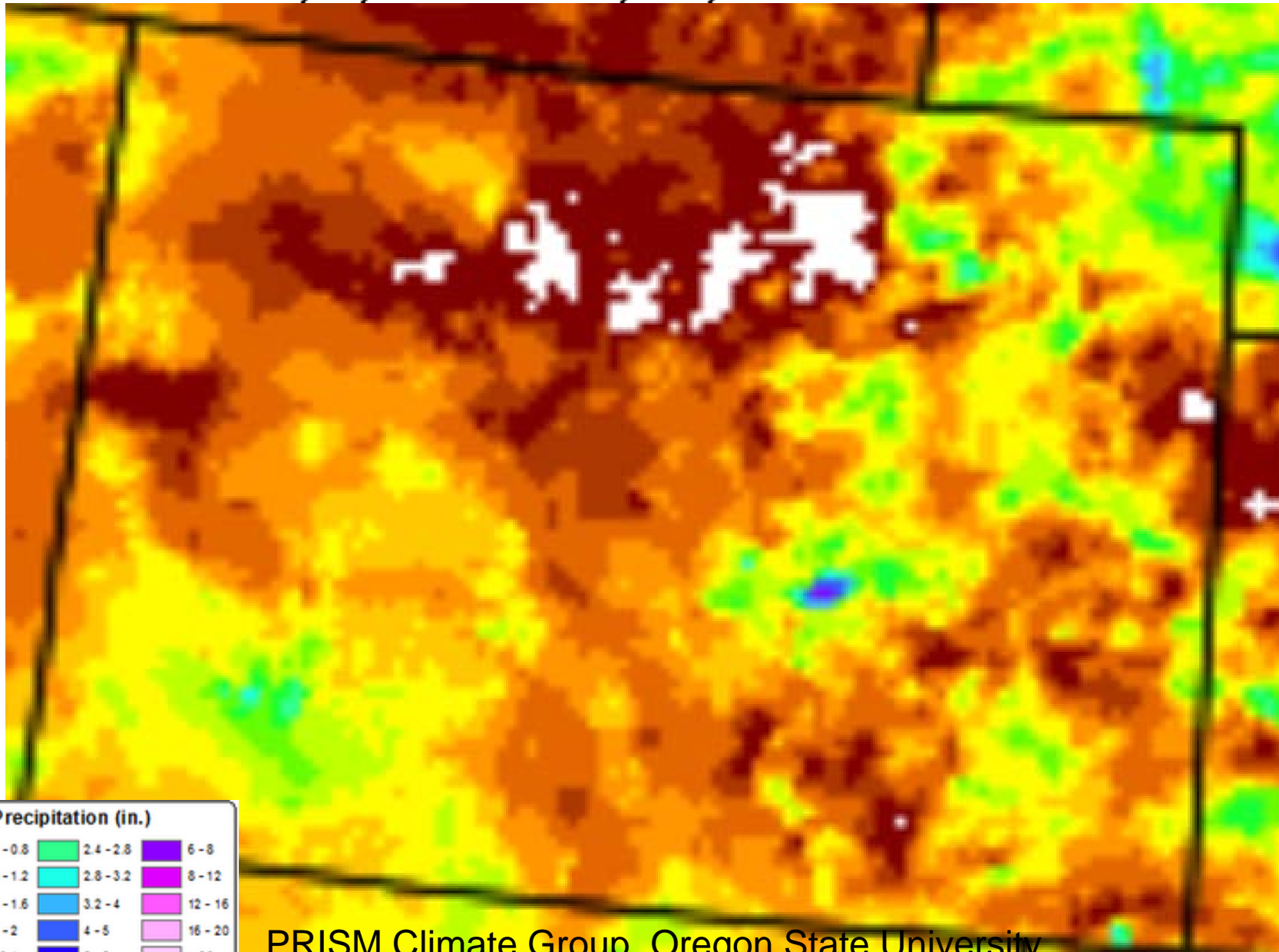
Precipitation (in)

8/1/2015 - 8/10/2015



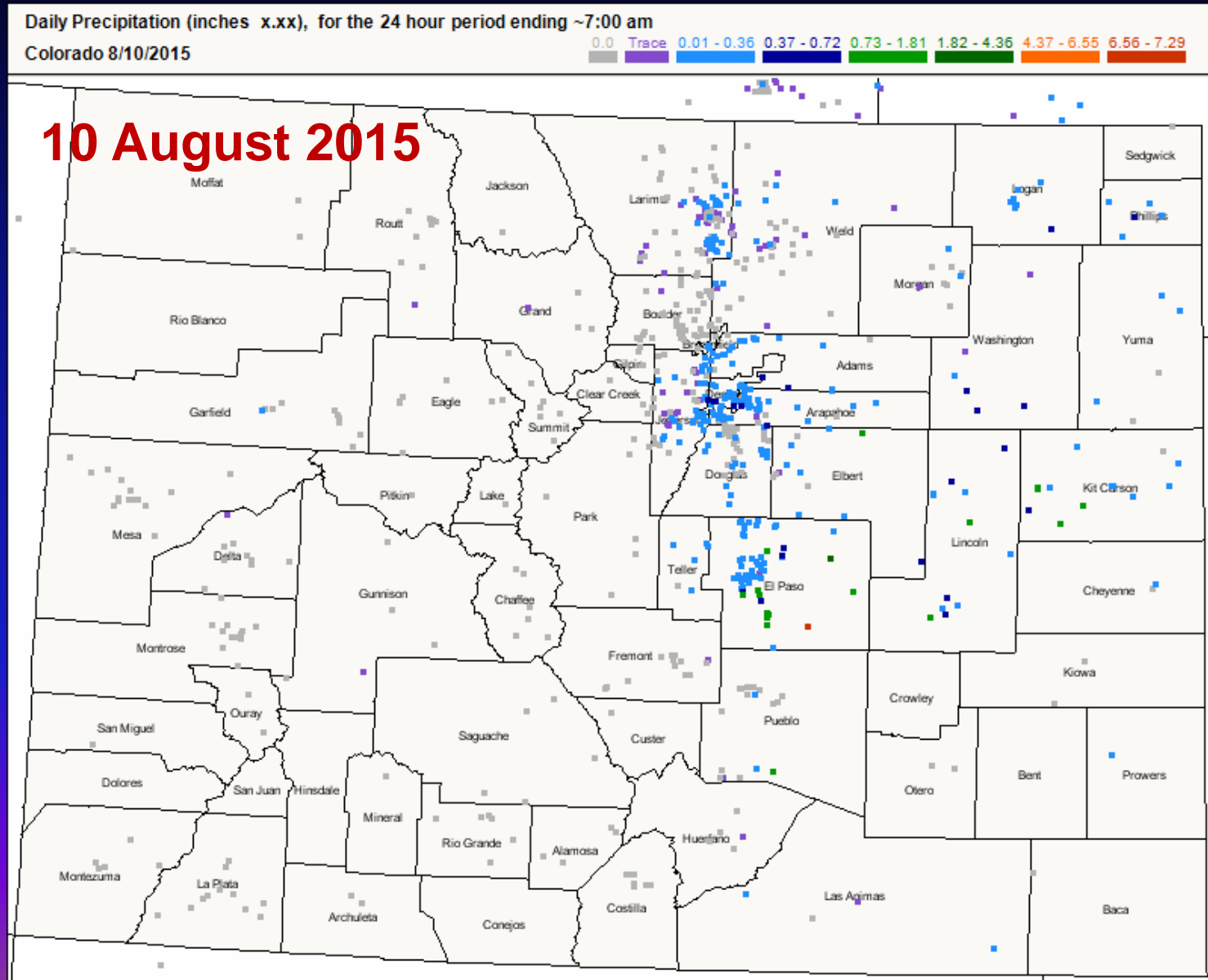
Precipitation (in)

8/1/2015 - 8/10/2015

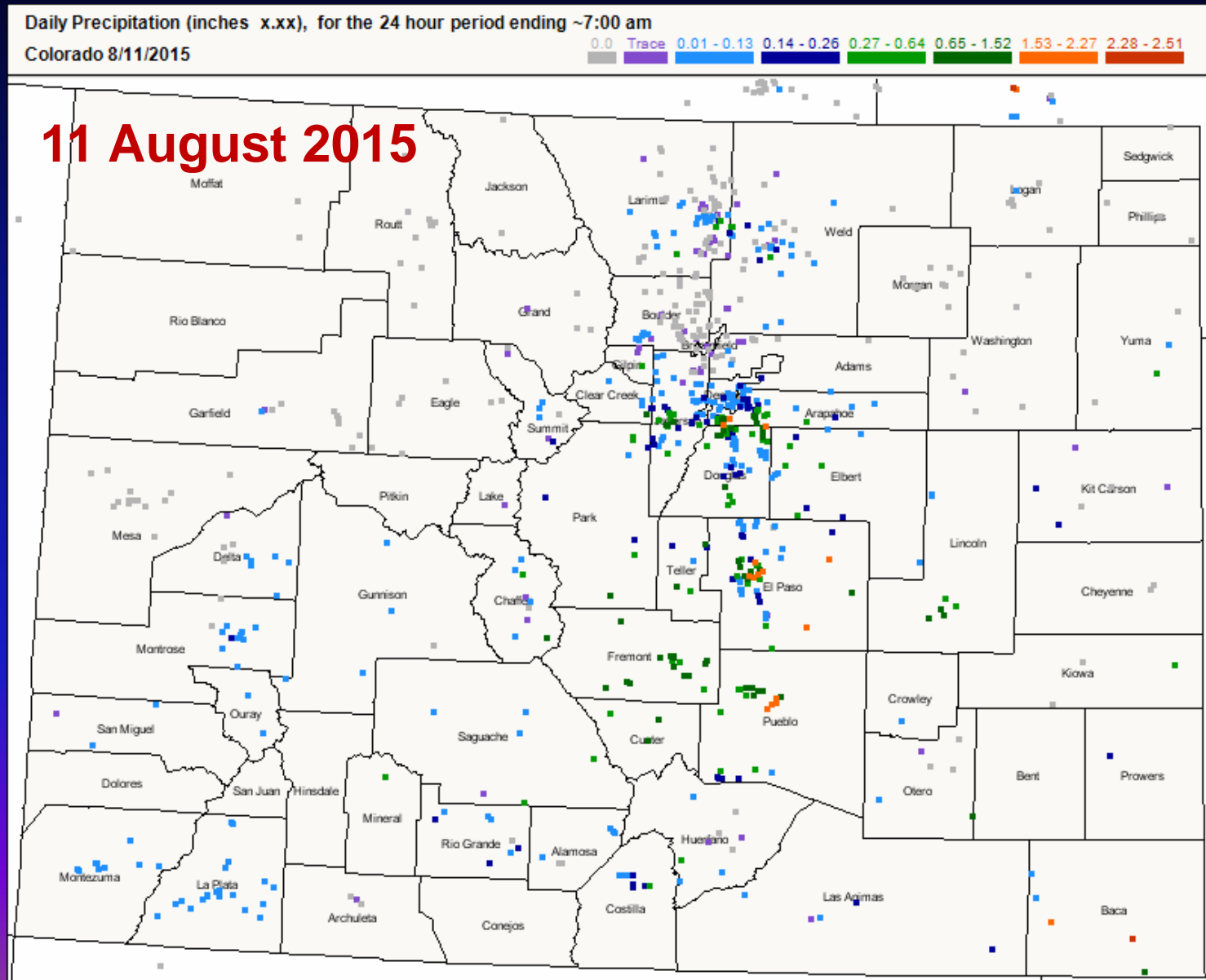


PRISM Climate Group, Oregon State University

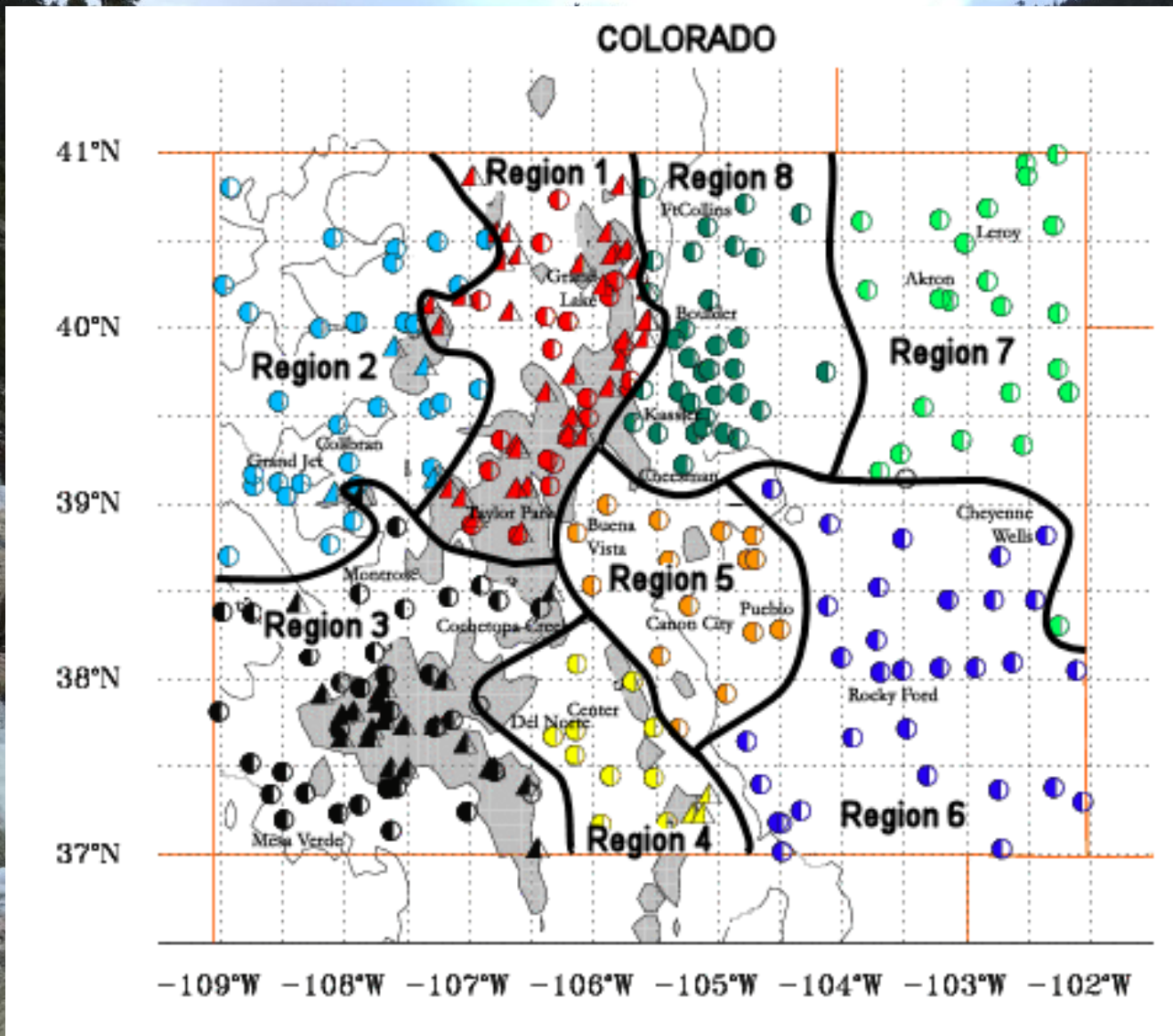
Three Cheers for CoCoRaHS



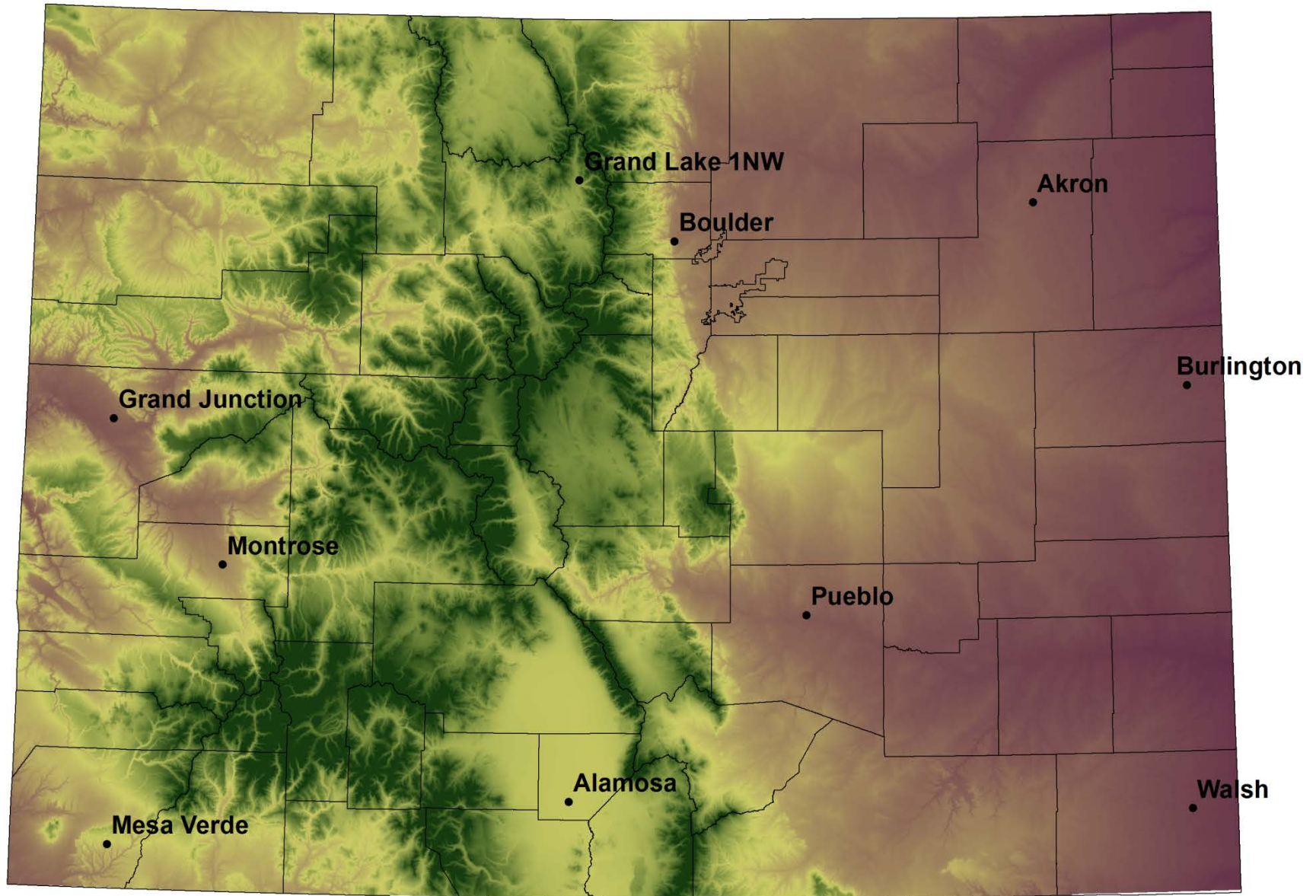
Three Cheers for CoCoRaHS



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

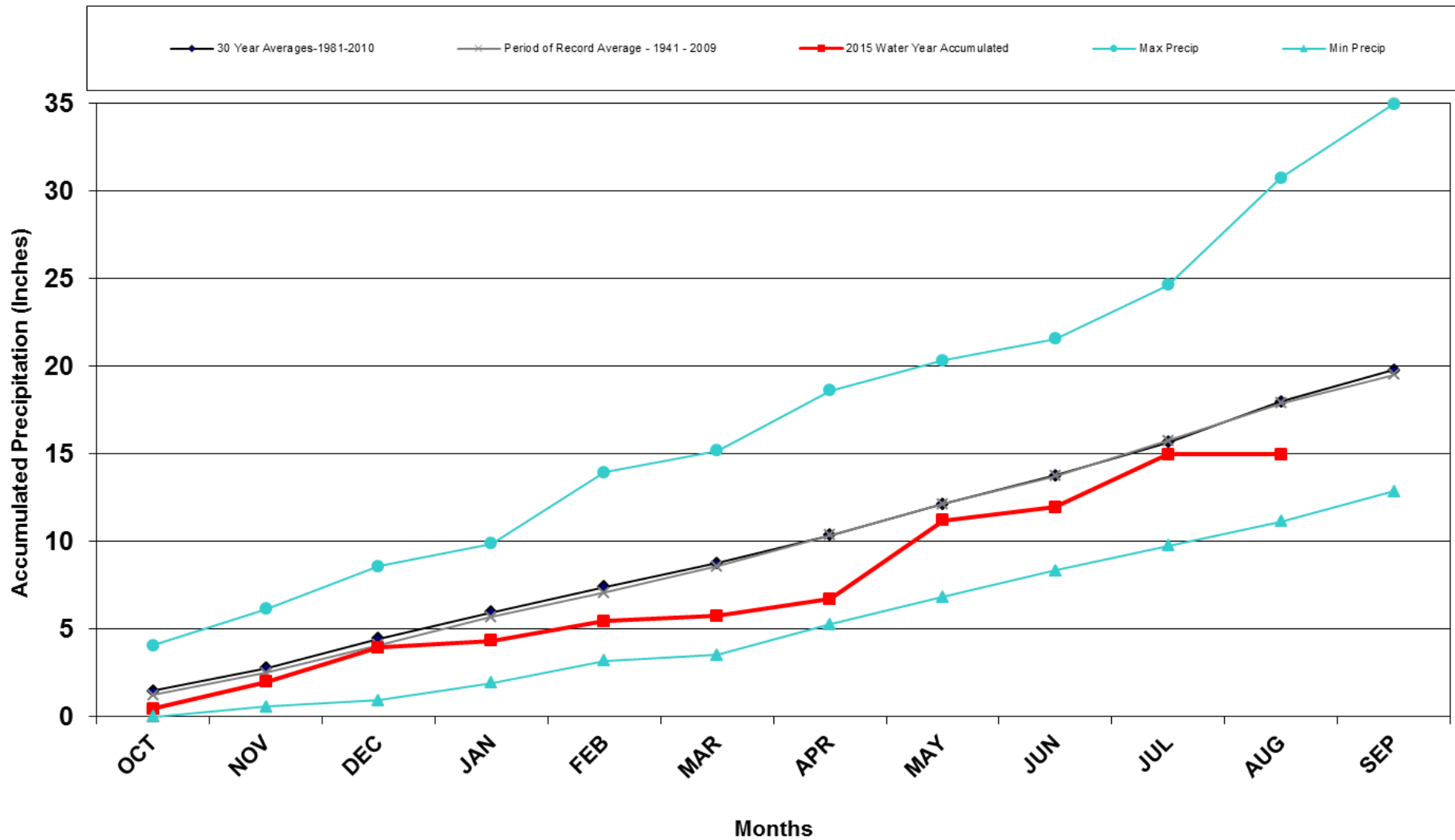


NWS Cooperative Stations for WATF



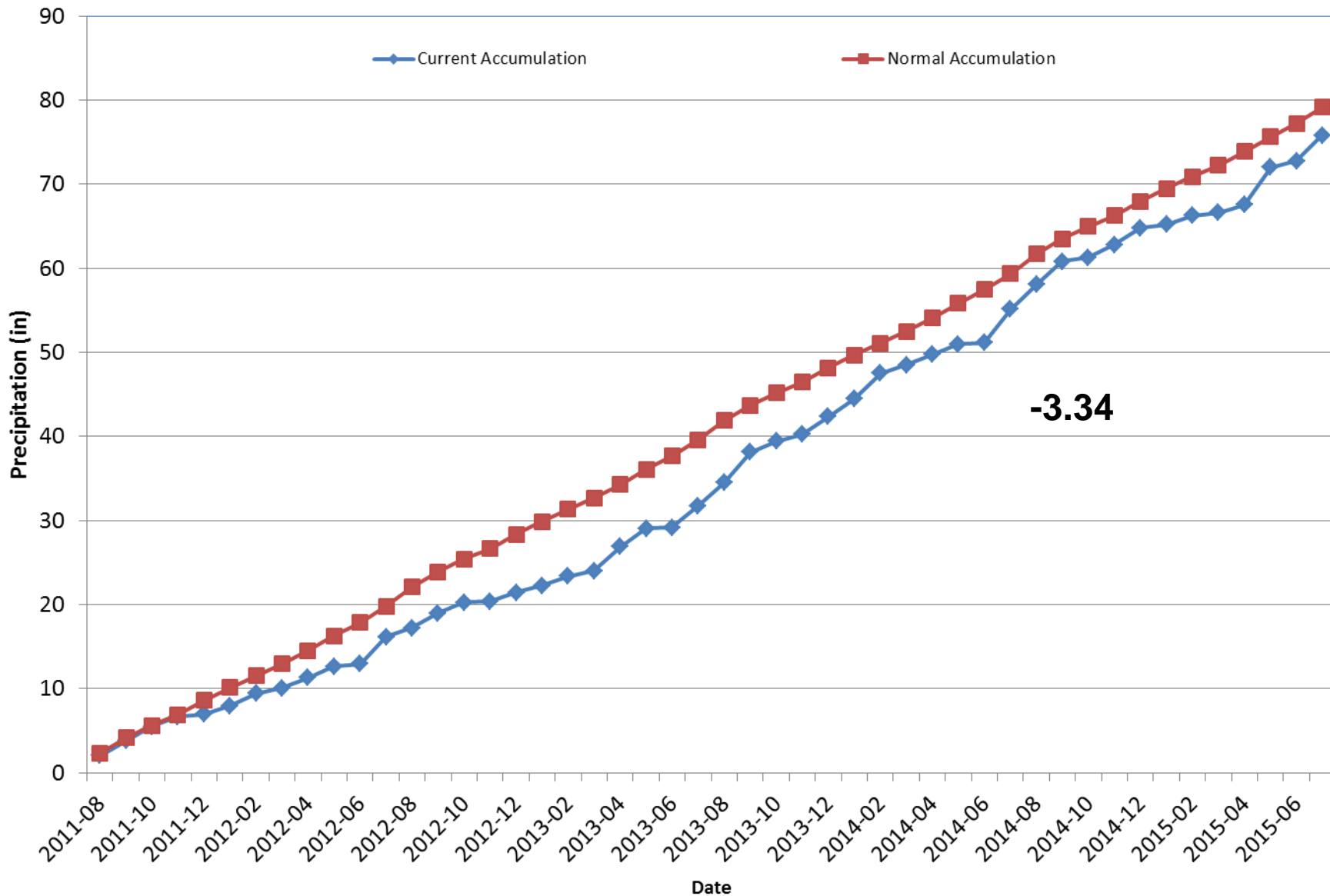
Division 1 – Grand Lake 1NW

Grand Lake 1 NW 2015 Water Year



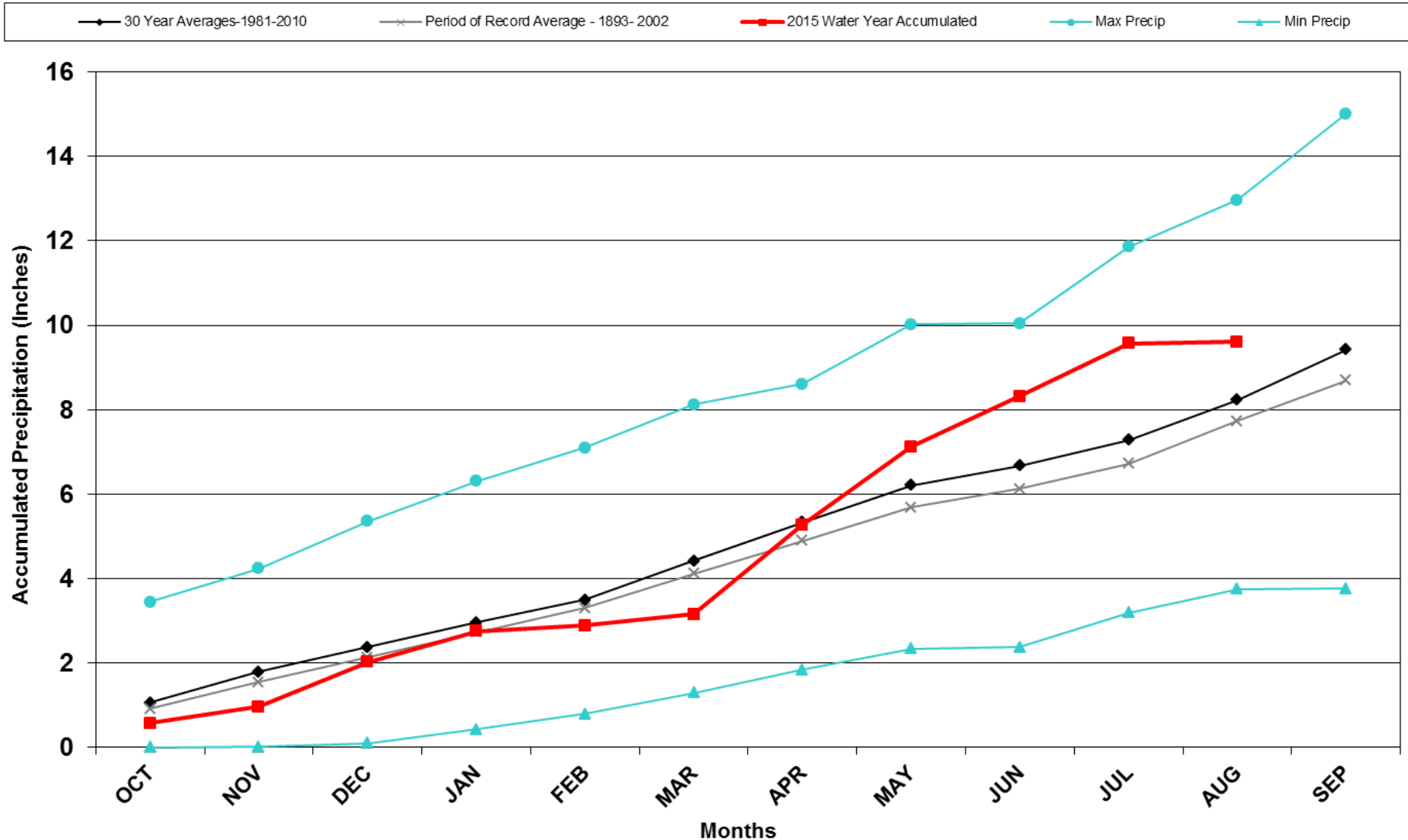
Division 1 – Grand Lake 1NW

Grand Lake 1NW Precipitation Accumulation



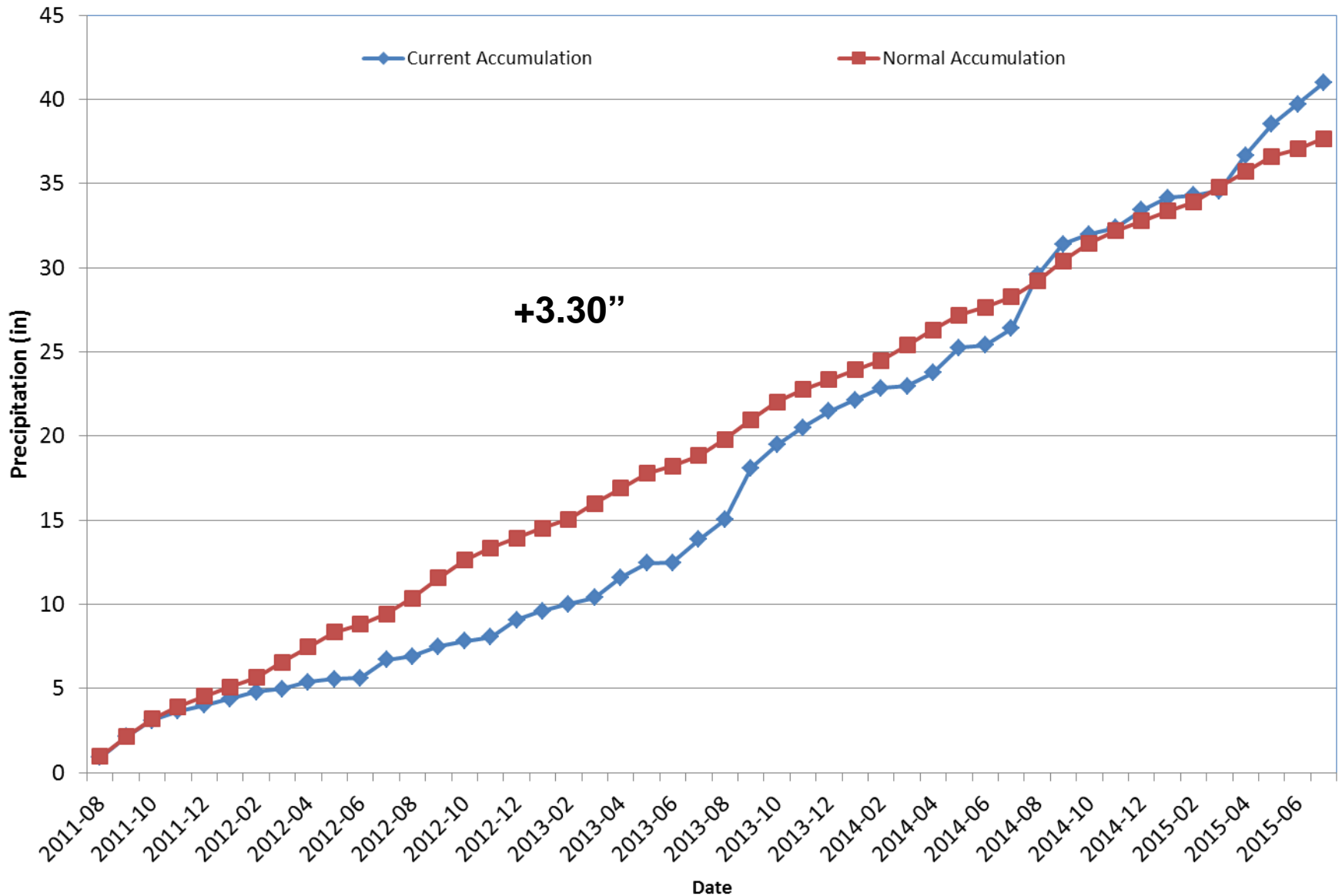
Division 2 – Grand Junction

Grand Junction WSFO 2015 Water Year



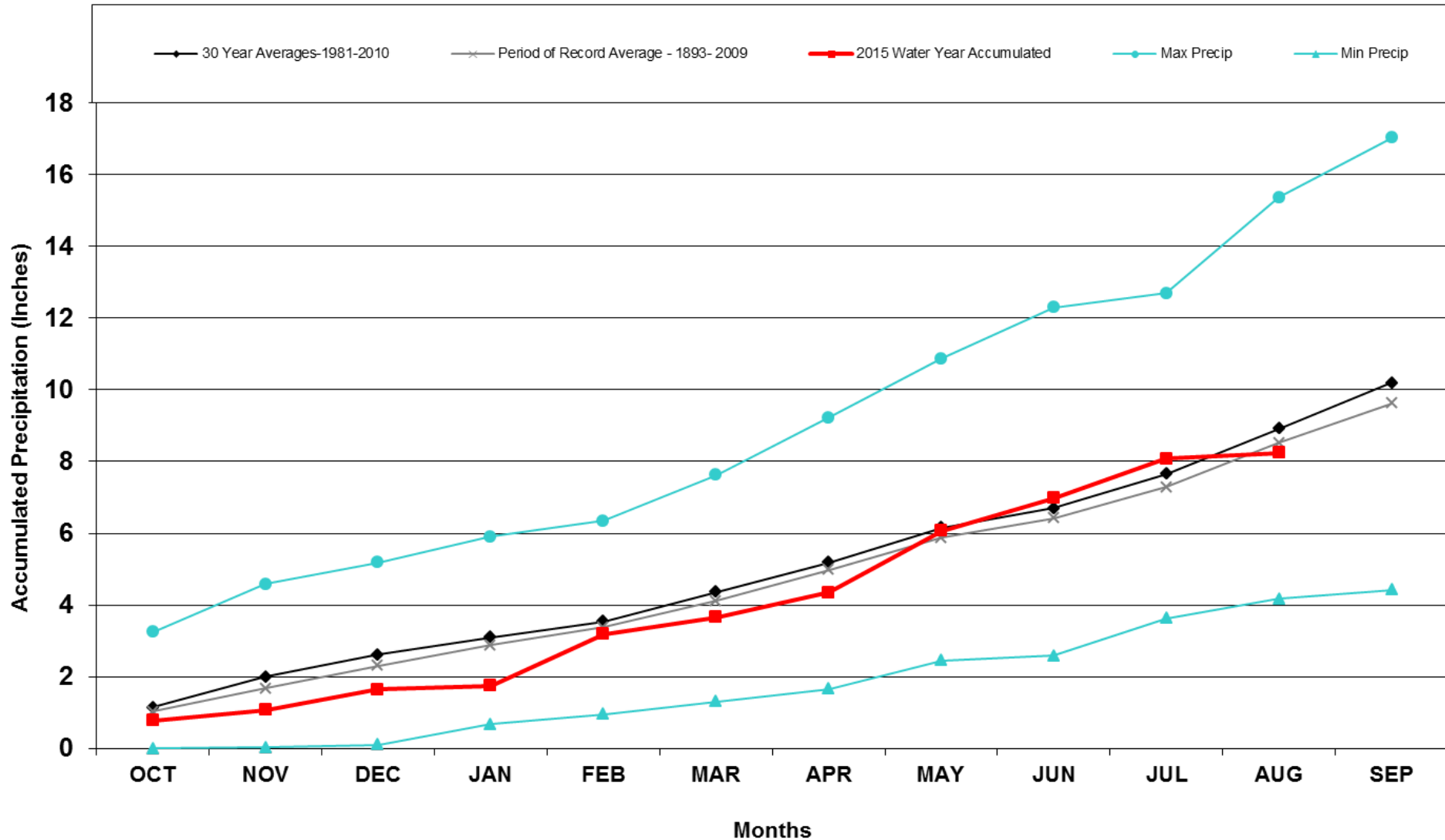
Division 2 – Grand Junction

Grand Junction Precipitation Accumulation



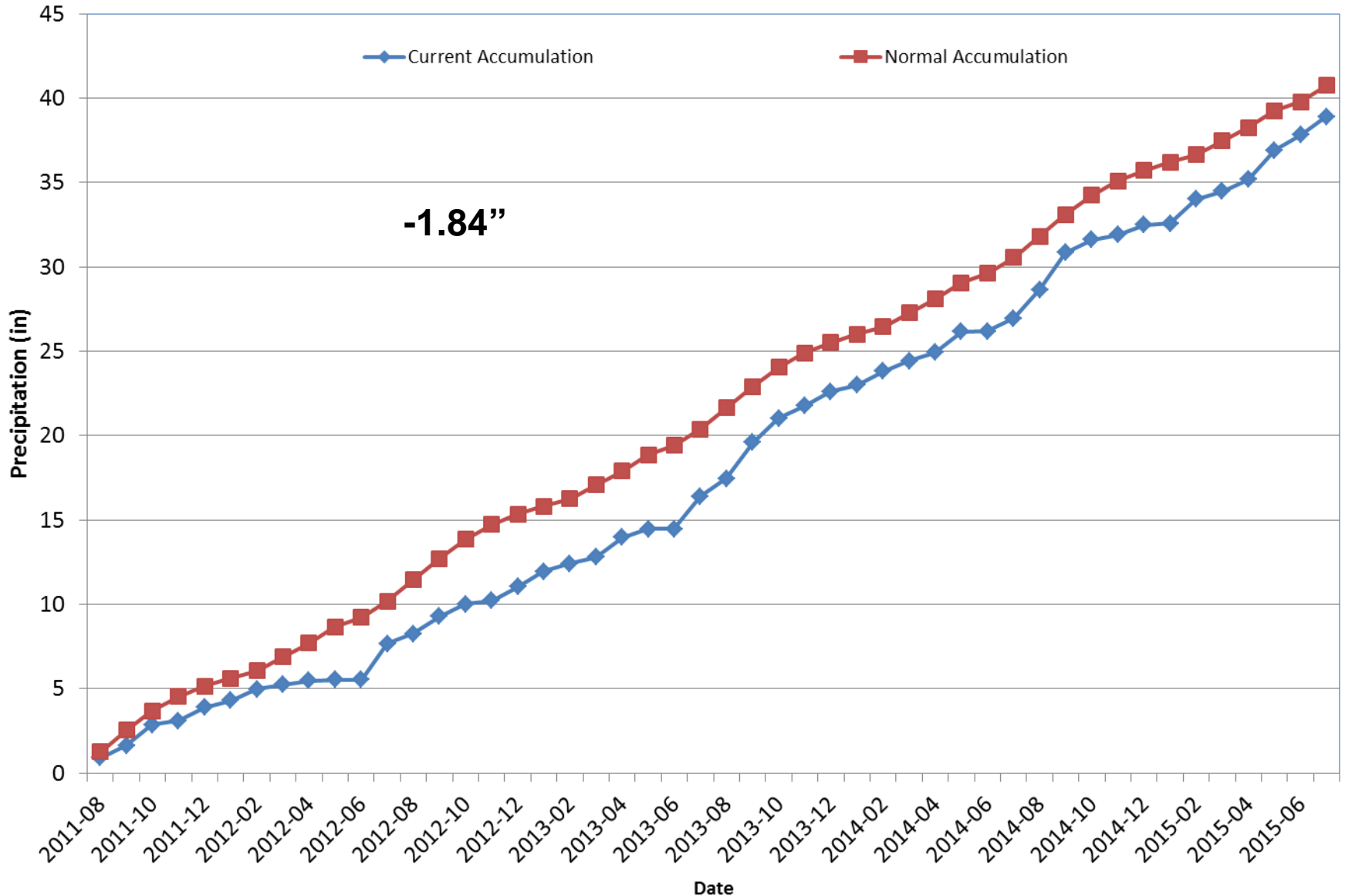
Division 3 – Montrose

Montrose #2 2015 Water Year



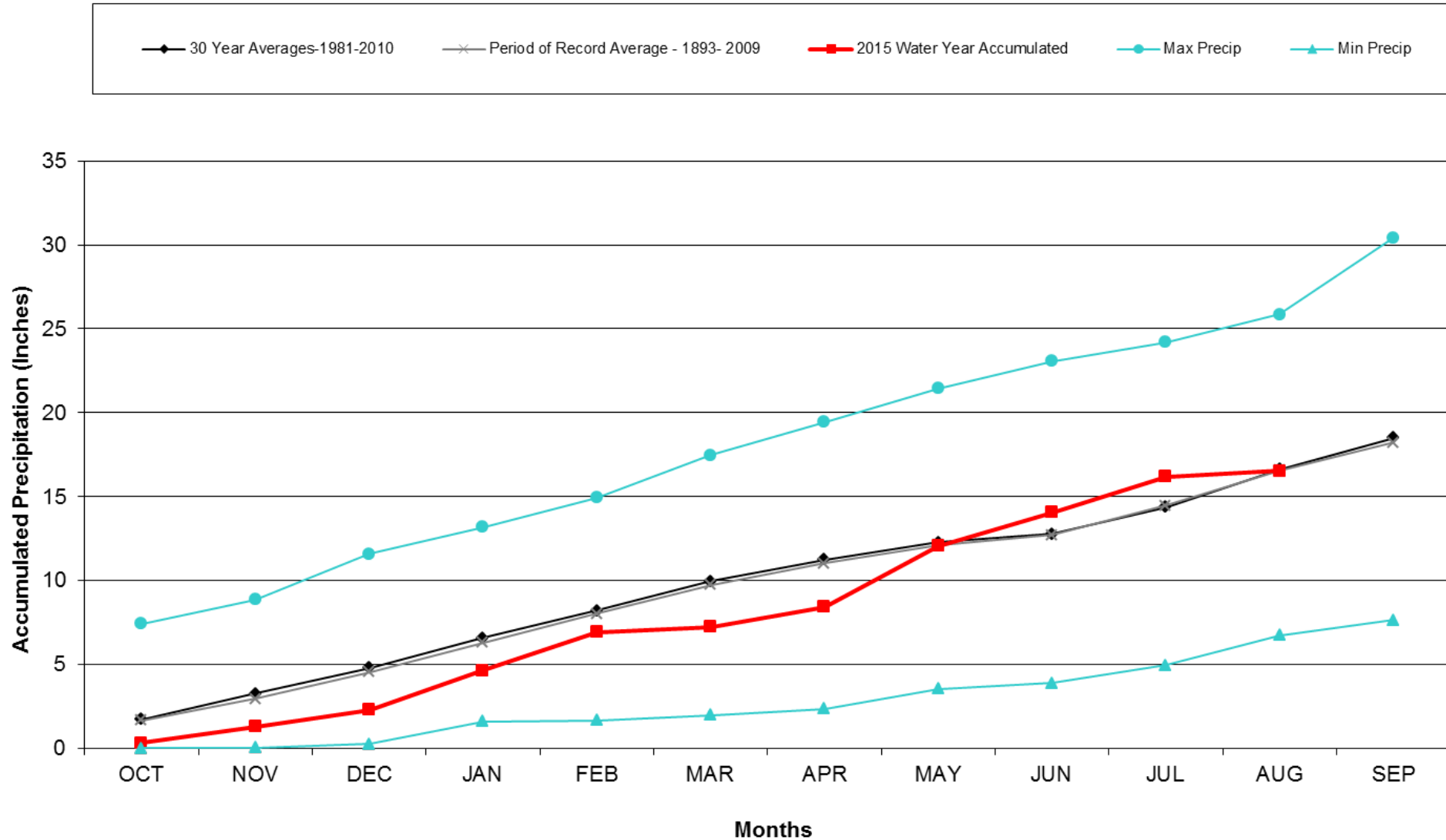
Division 3 – Montrose

Montrose #2 Precipitation Accumulation



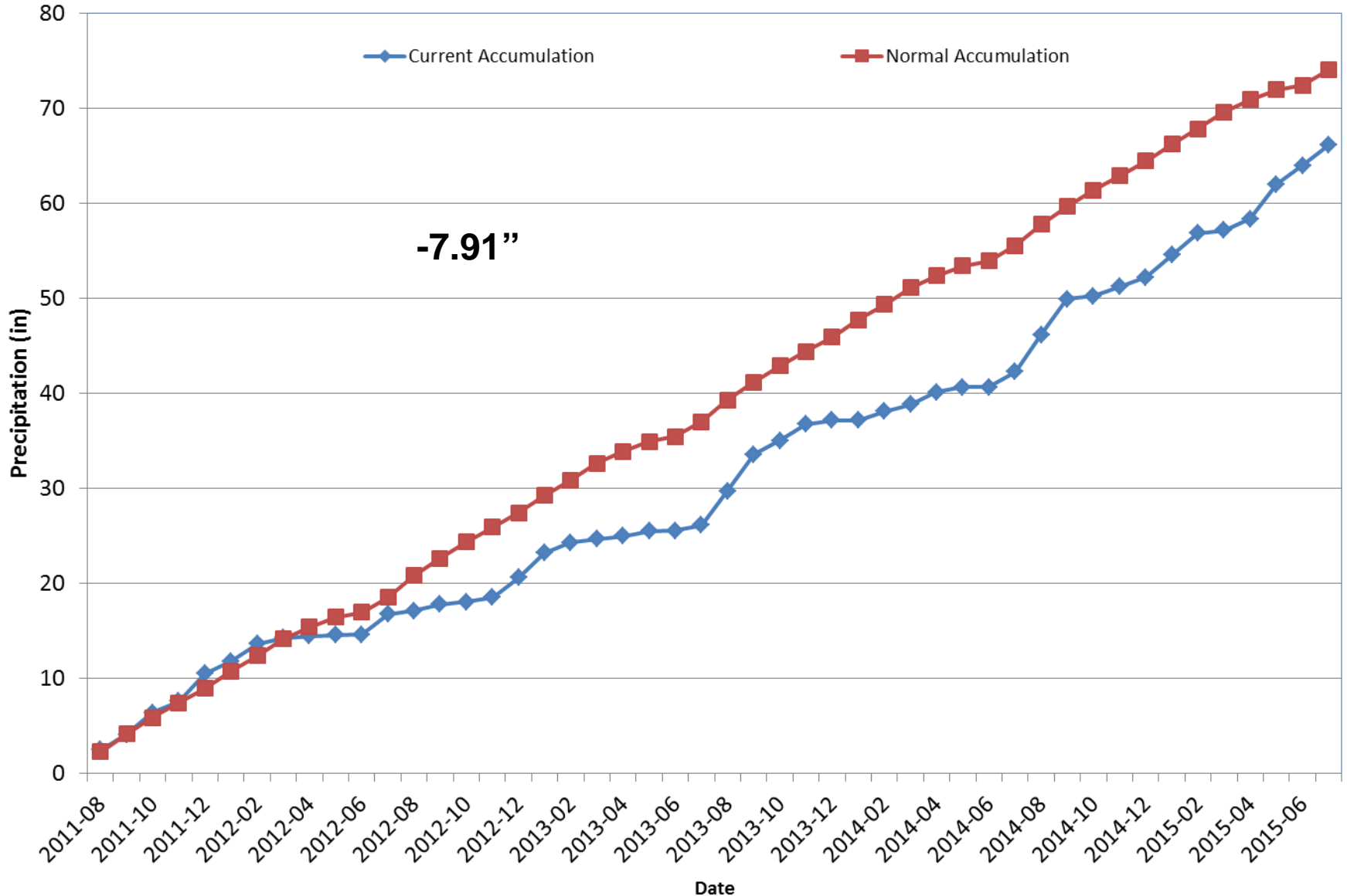
Division 3 – Mesa Verde NP

Mesa Verde NP 2015 Water Year



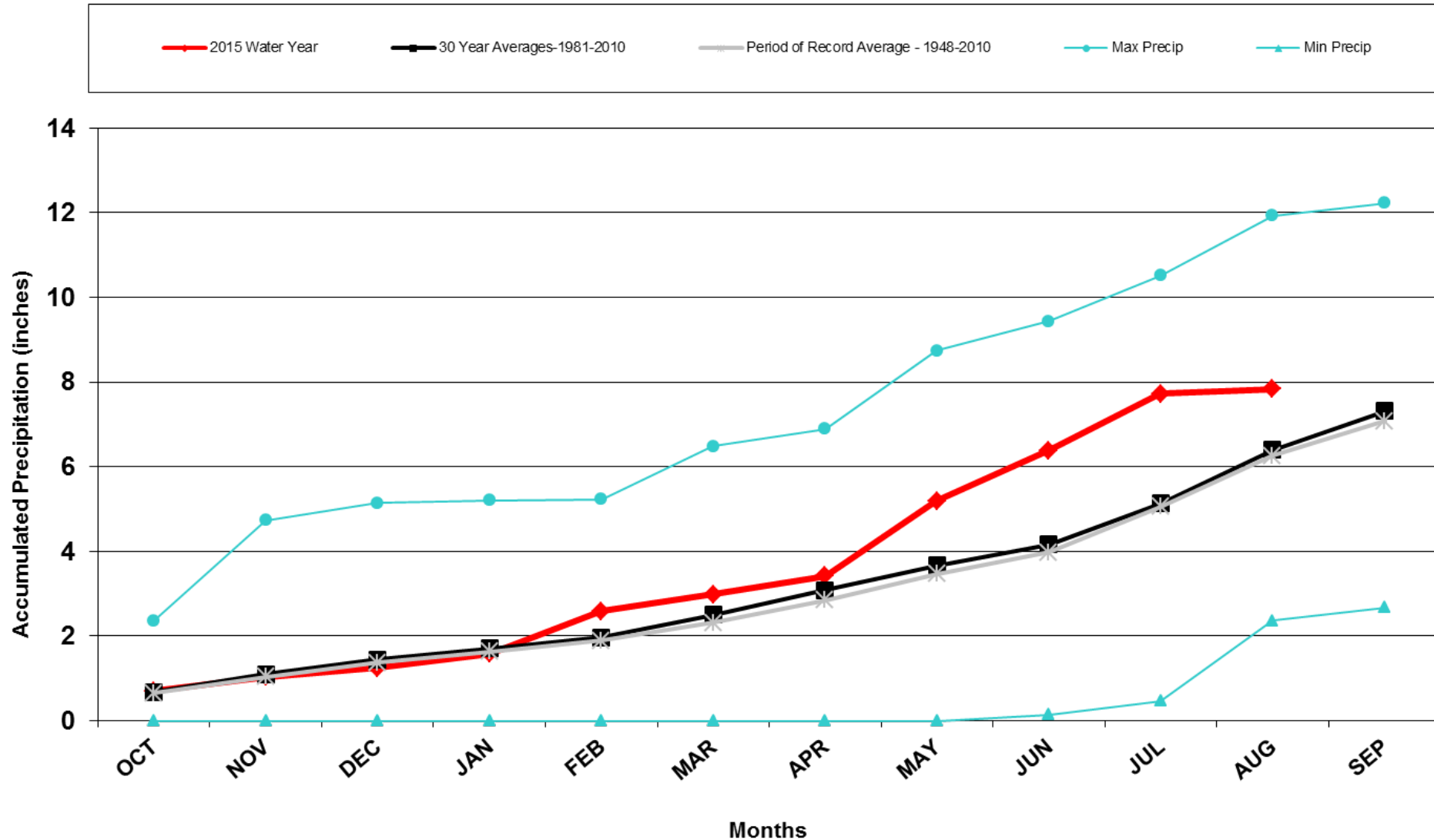
Division 3 – Mesa Verde NP

Mesa Verde NP Precipitation Accumulation



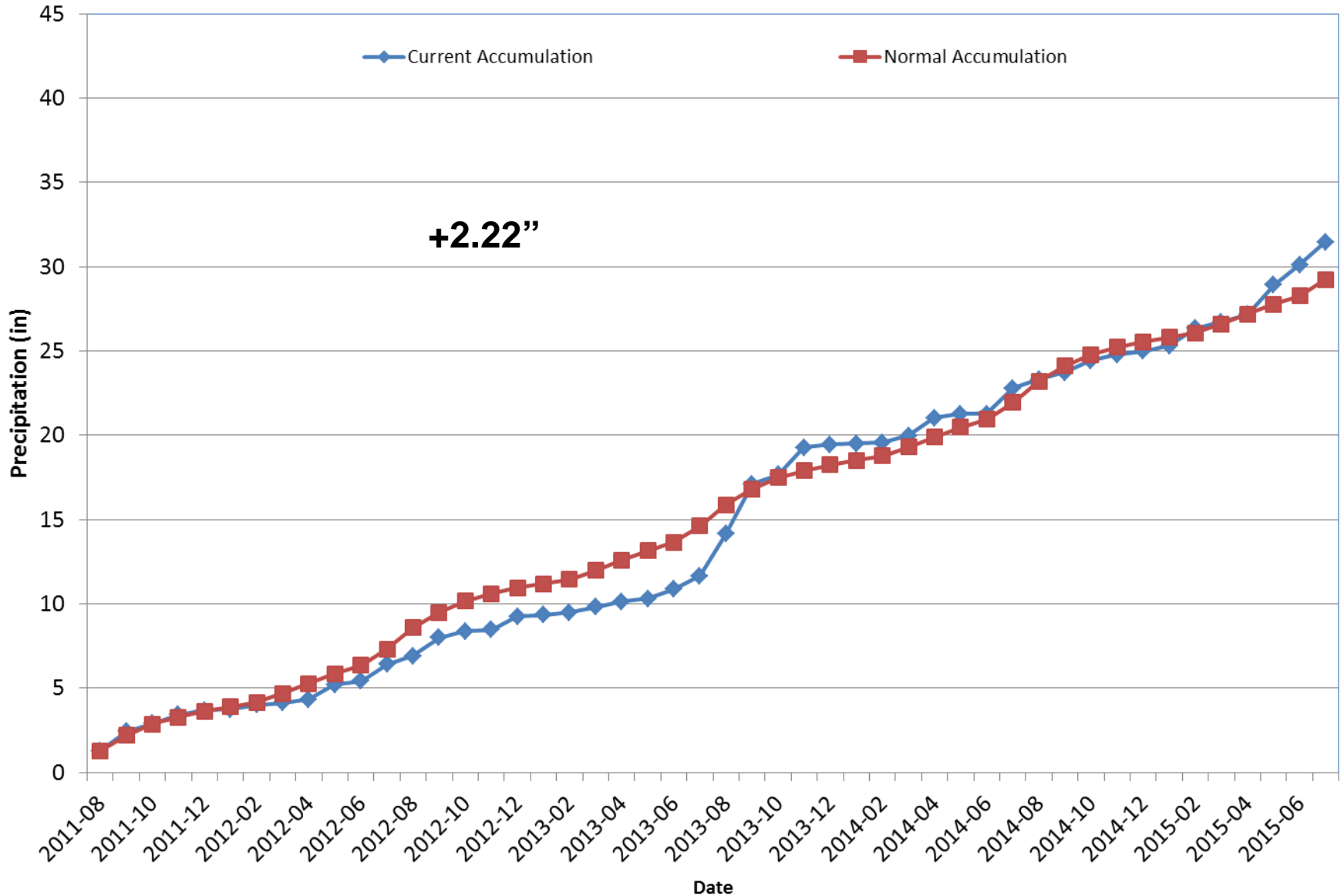
Division 4 – Alamosa

Alamosa WSO 2015 Water Year



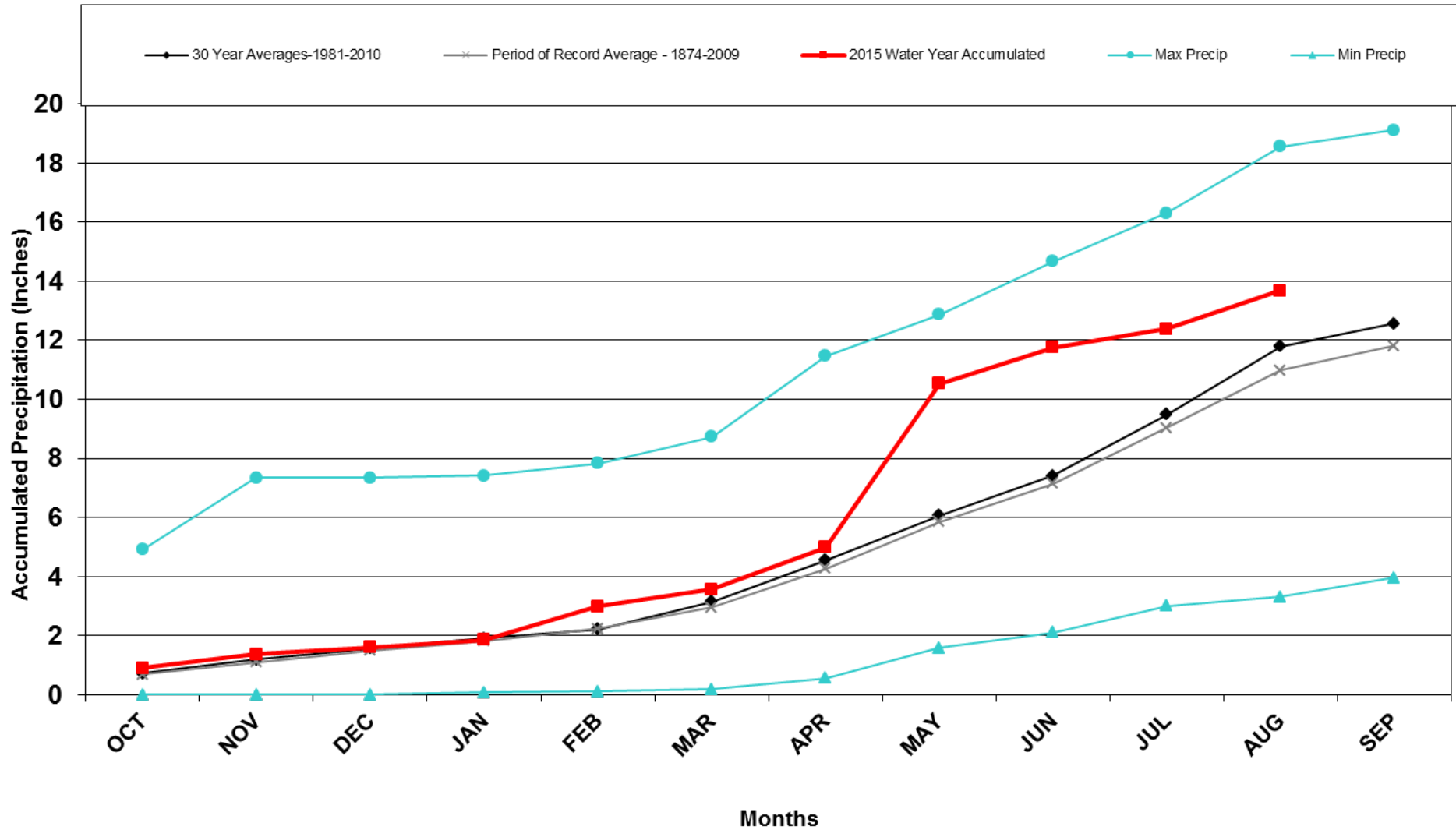
Division 4 – Alamosa

Alamosa WSO Precipitation Accumulation



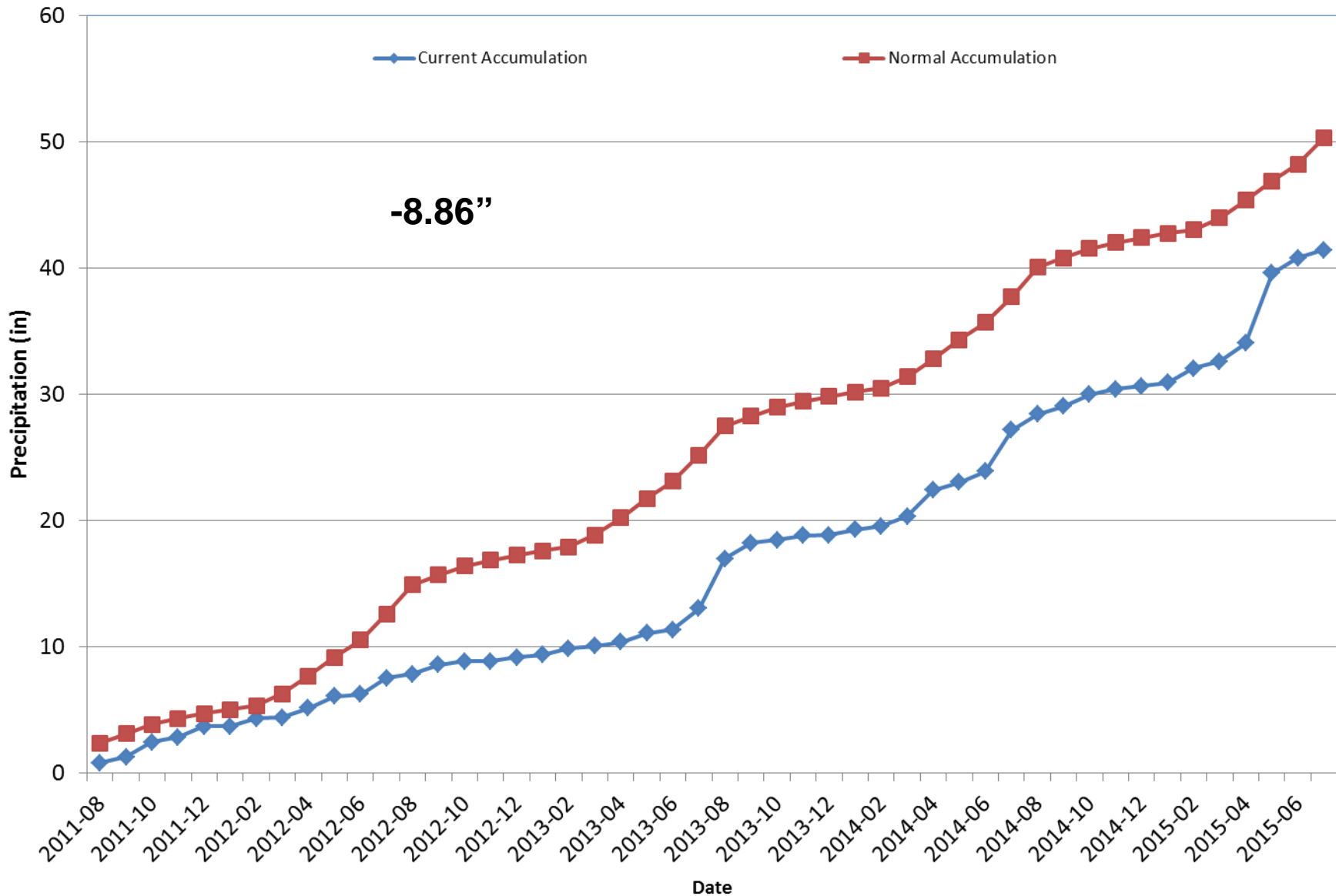
Division 5 – Pueblo

Pueblo WSO 2015 Water Year



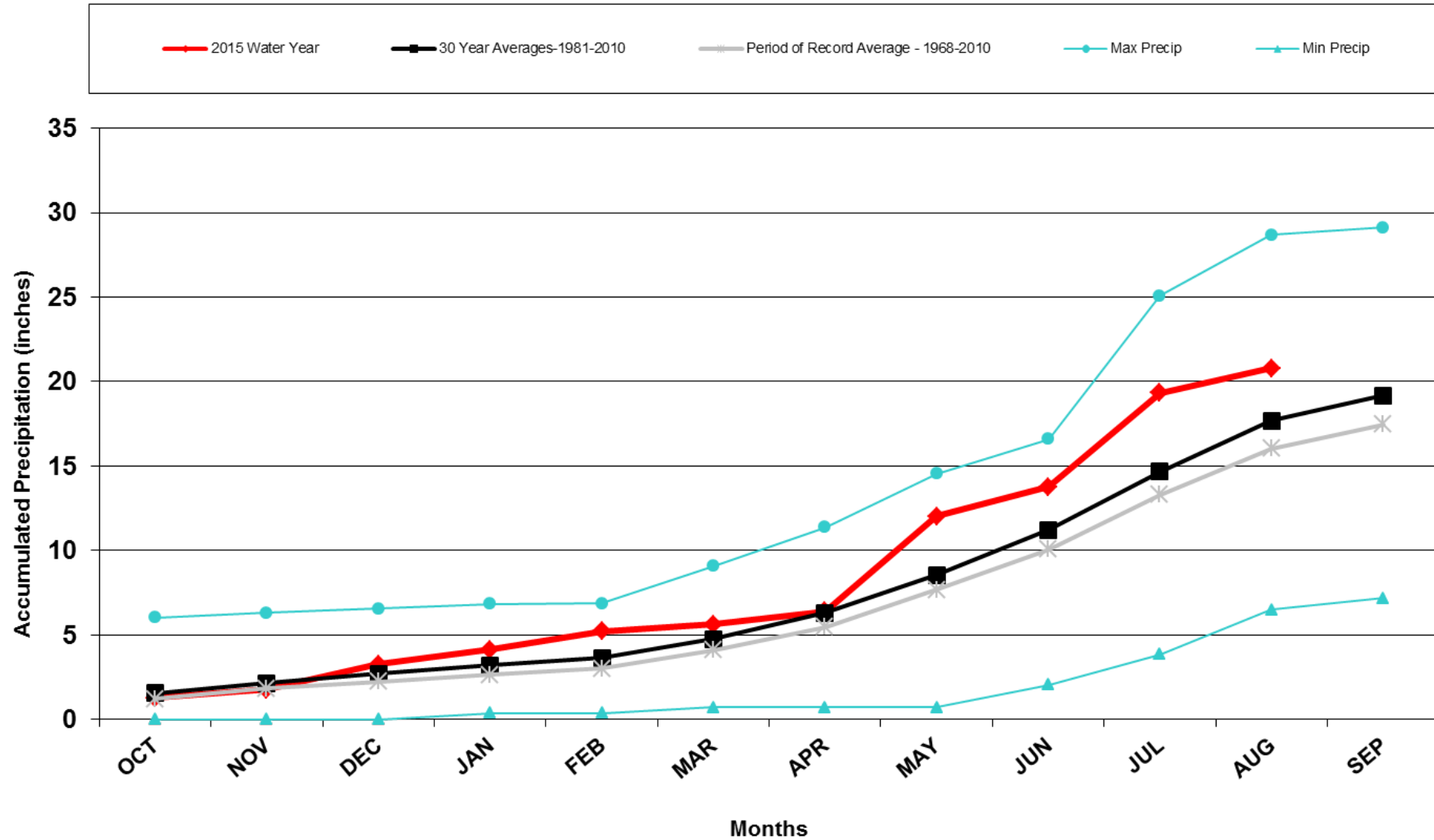
Division 5 – Pueblo

Pueblo Memorial AP Precipitation Accumulation



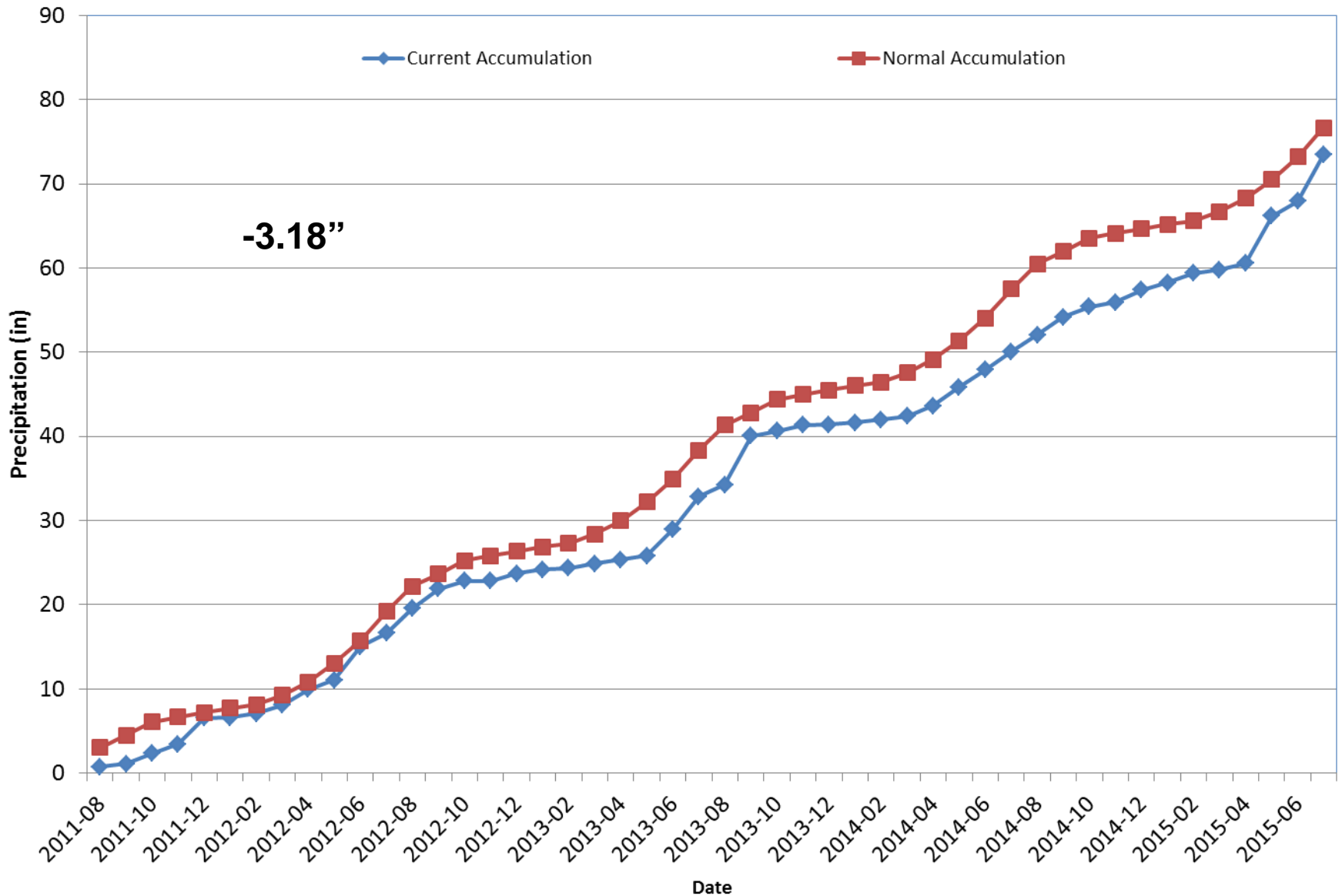
Division 6 - Walsh

Walsh 2015 Water Year



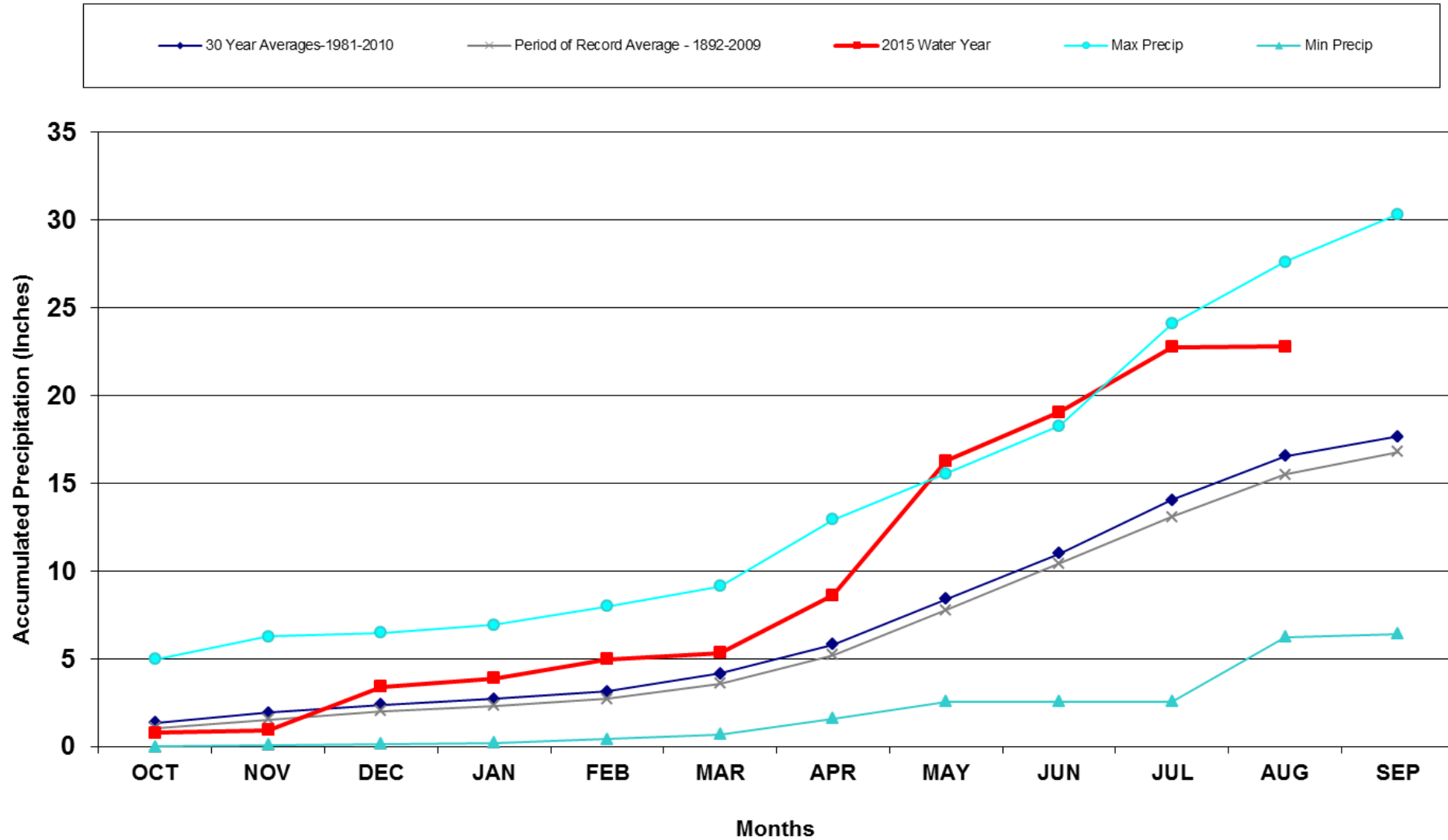
Division 6 - Walsh

Walsh 1W Precipitation Accumulation



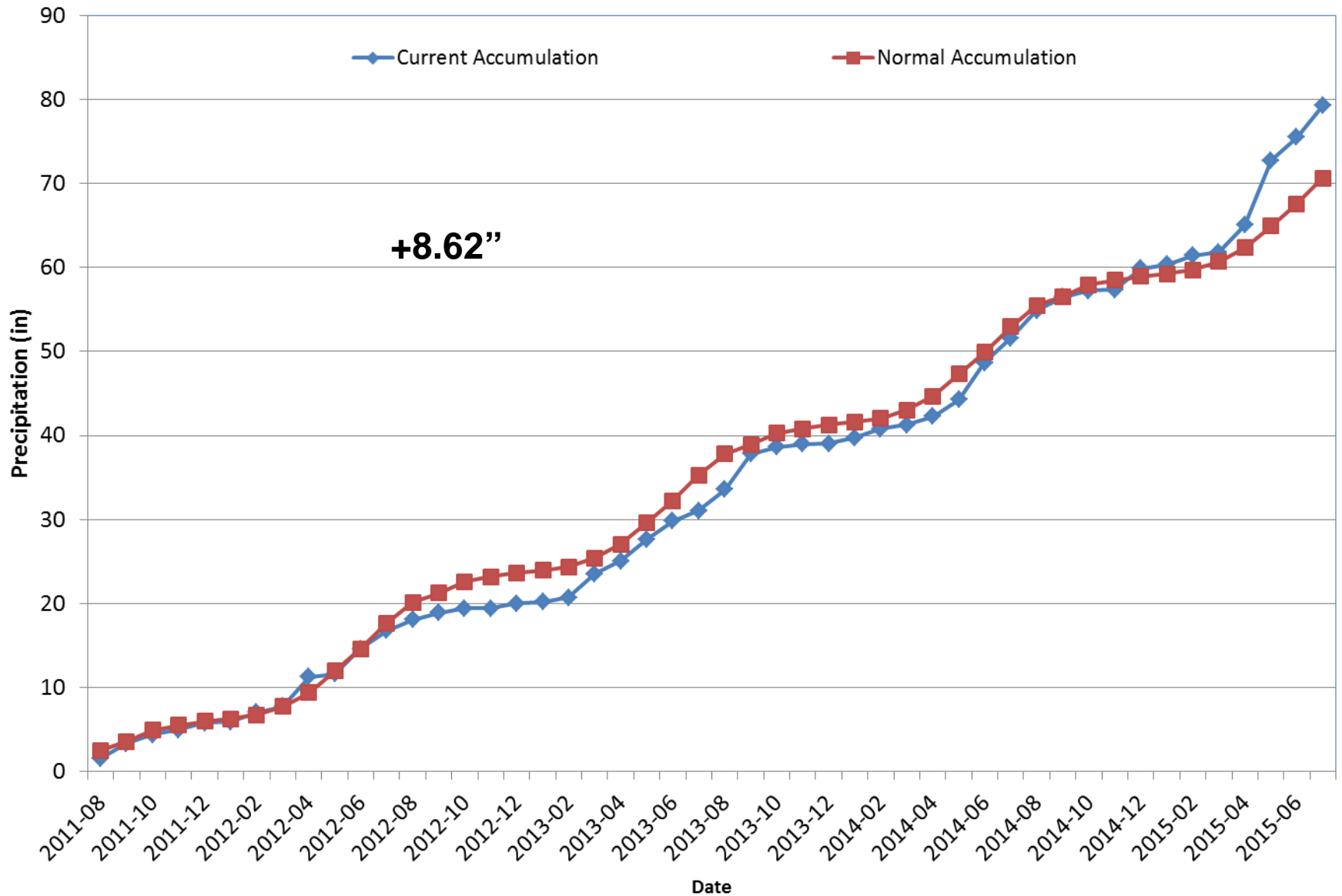
Division 6 - Burlington

Burlington 2015 Water Year



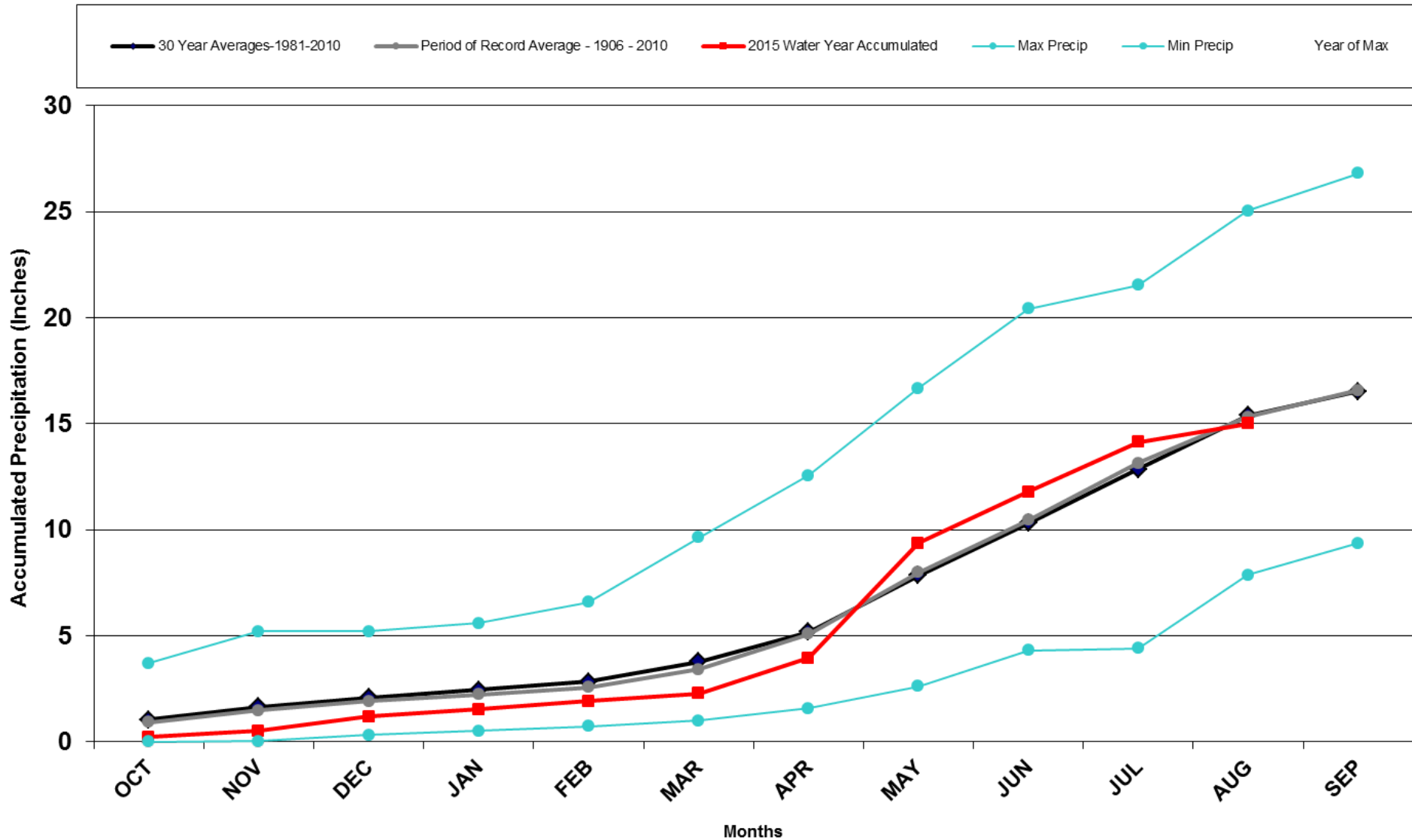
Division 6 - Burlington

Burlington, CO Precipitation Accumulation



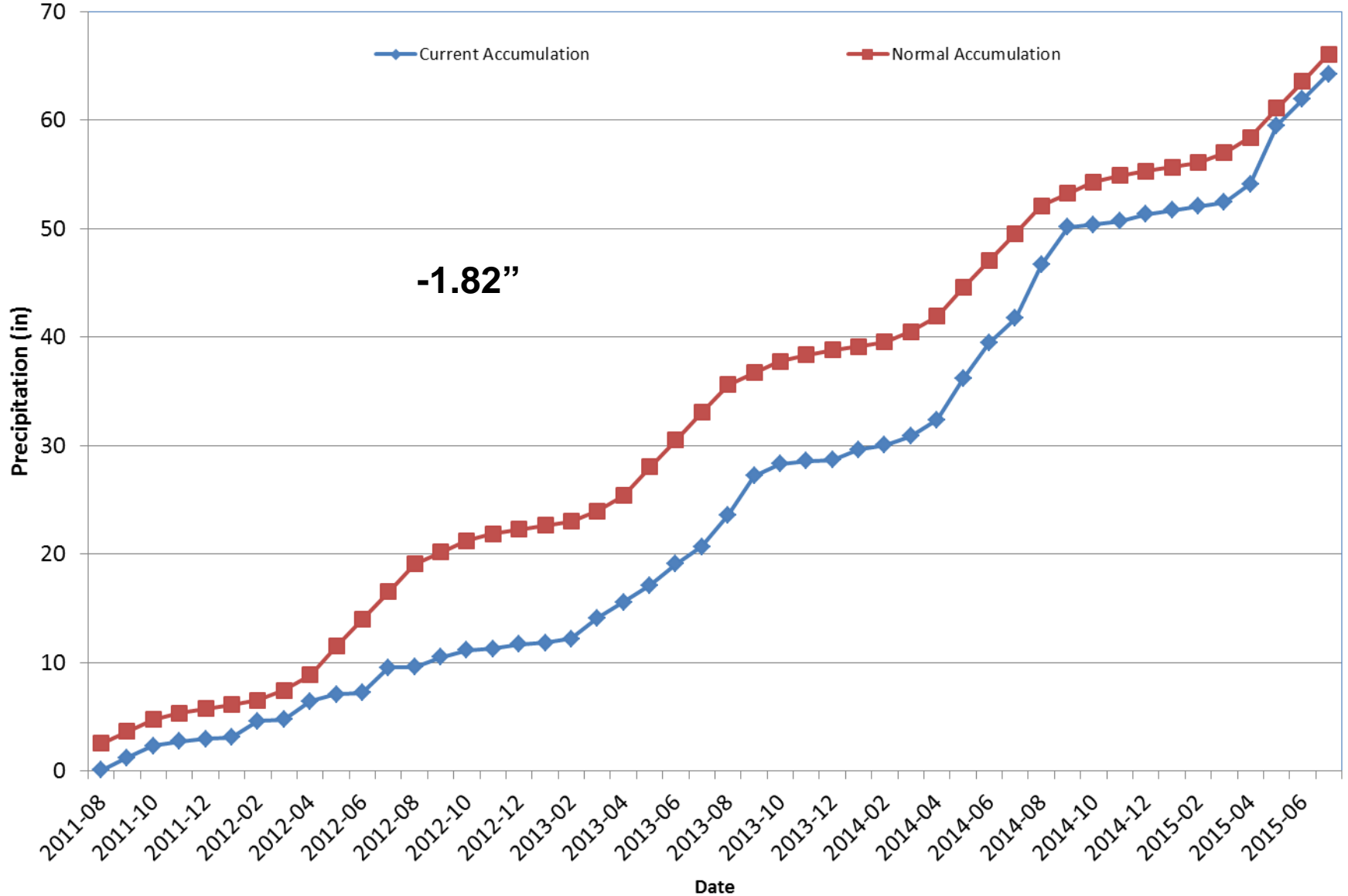
Division 7 – Akron

Akron 4E 2015 Water Year



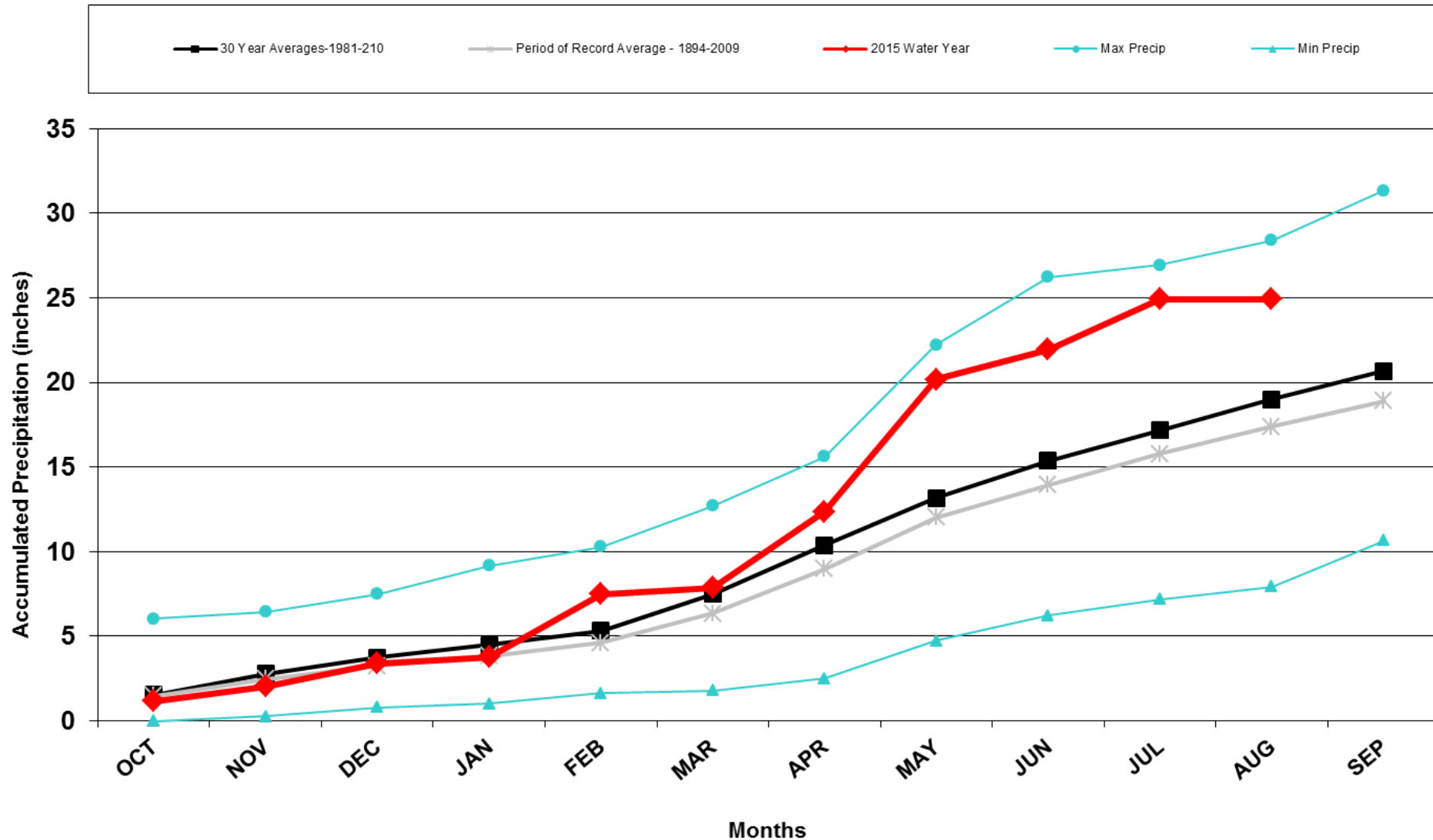
Division 7 – Akron

Akron 4E Precipitation Accumulation



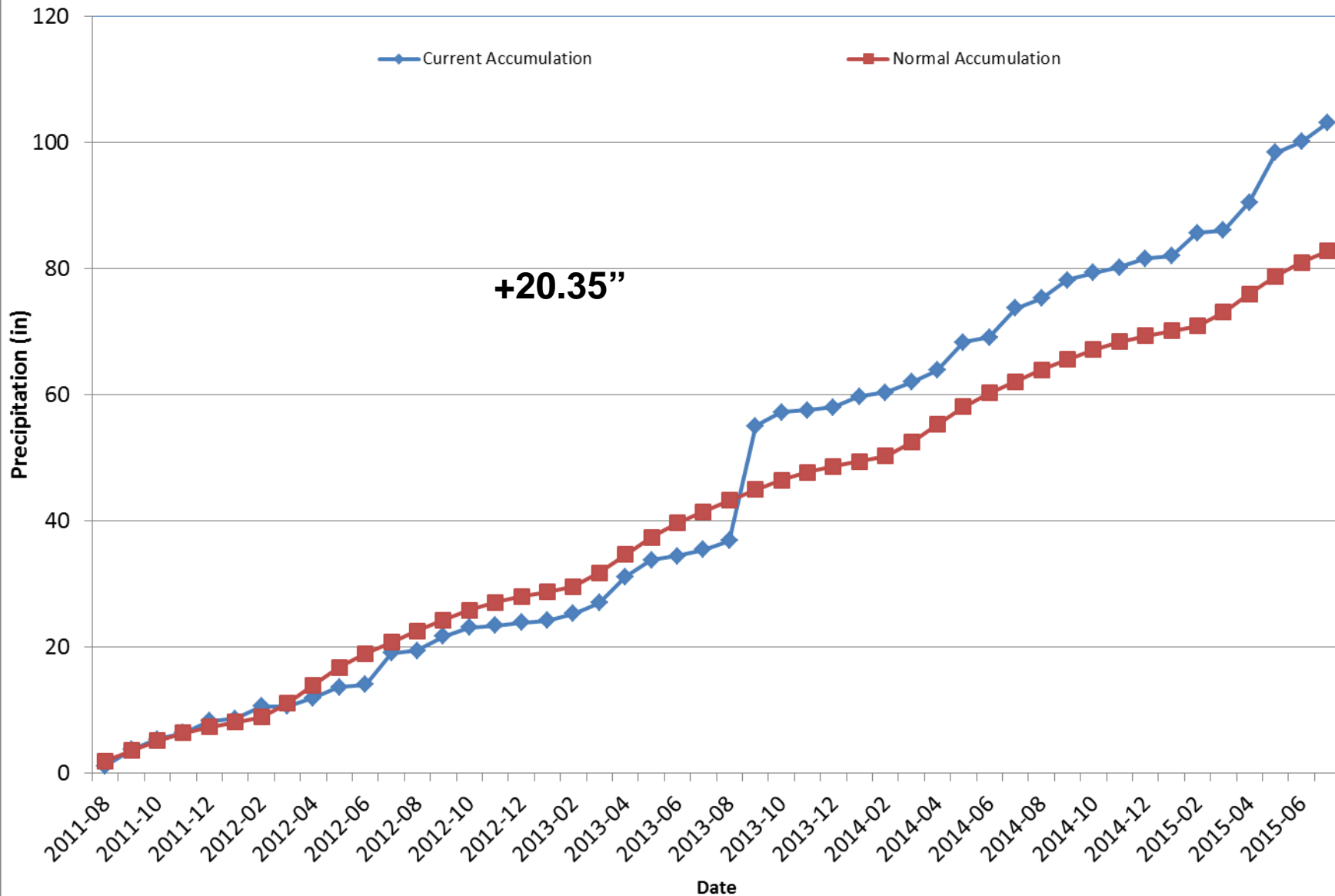
Division 8 - Boulder

Boulder 2015 Water Year

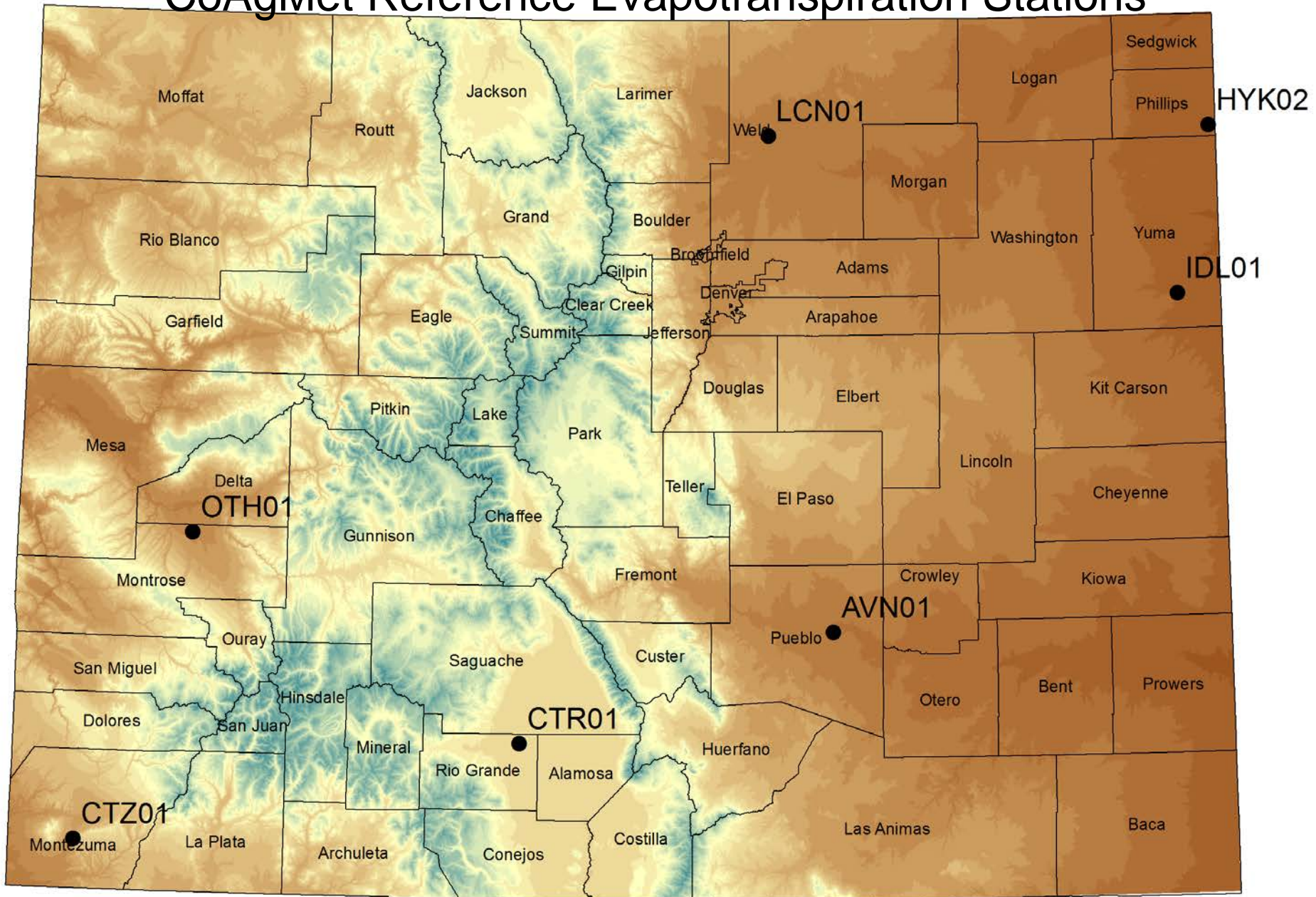


Division 8 - Boulder

Boulder Precipitation Accumulation

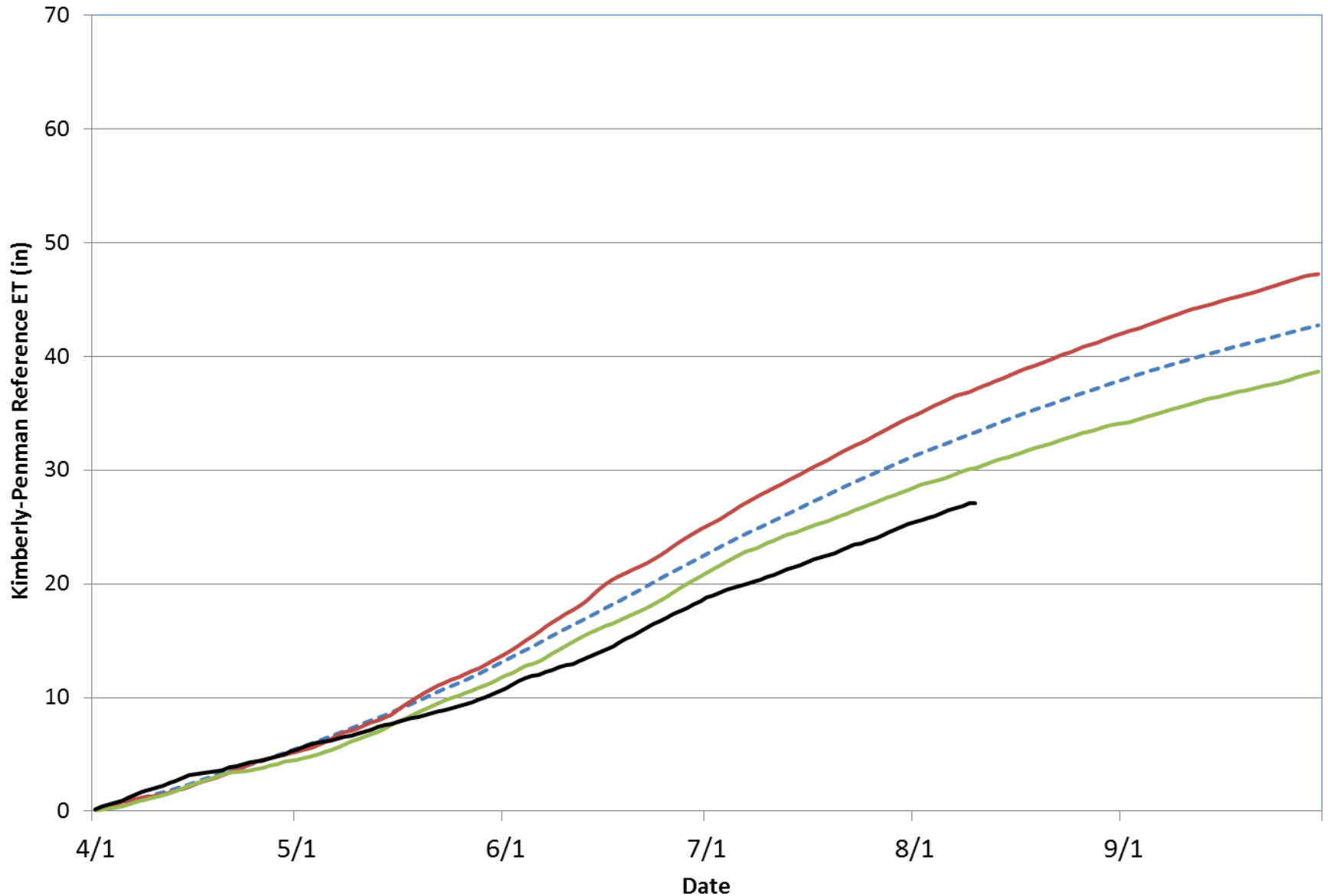


CoAgMet Reference Evapotranspiration Stations



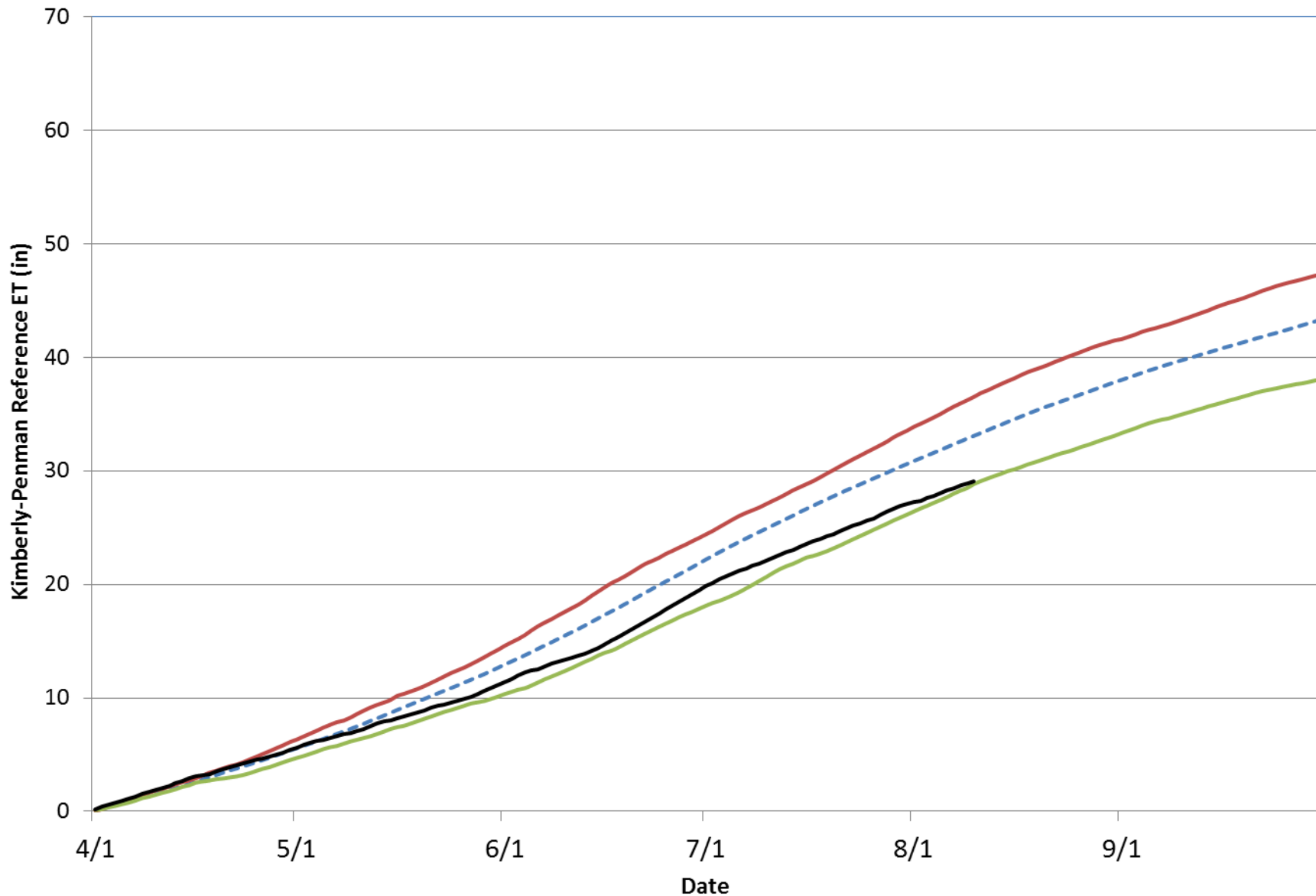
Olathe Kimberly-Penman Reference ET (1993 - 2015)

--- Average — 1994 — 1999 — 2015



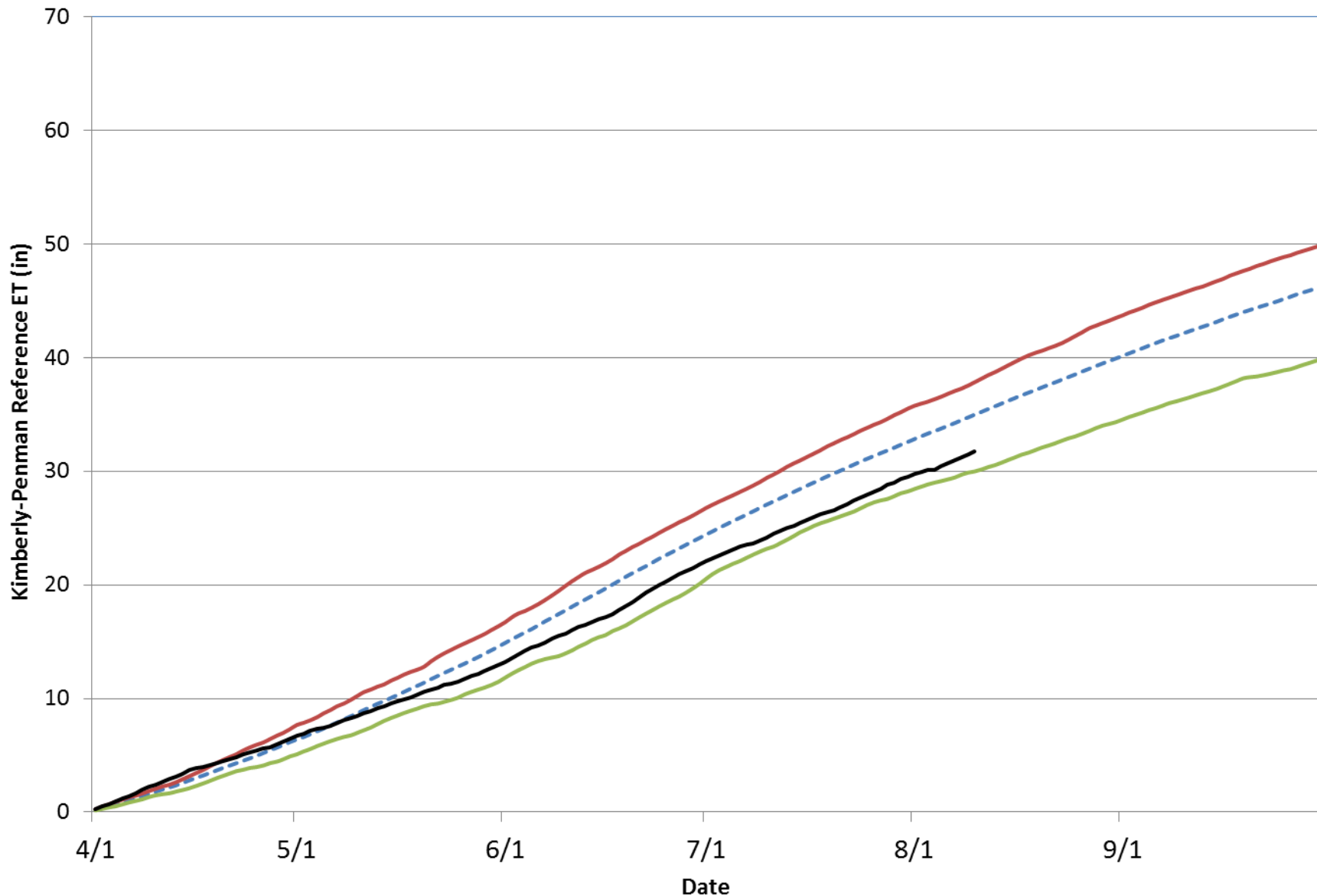
Cortez Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2000 — 1995 — 2015

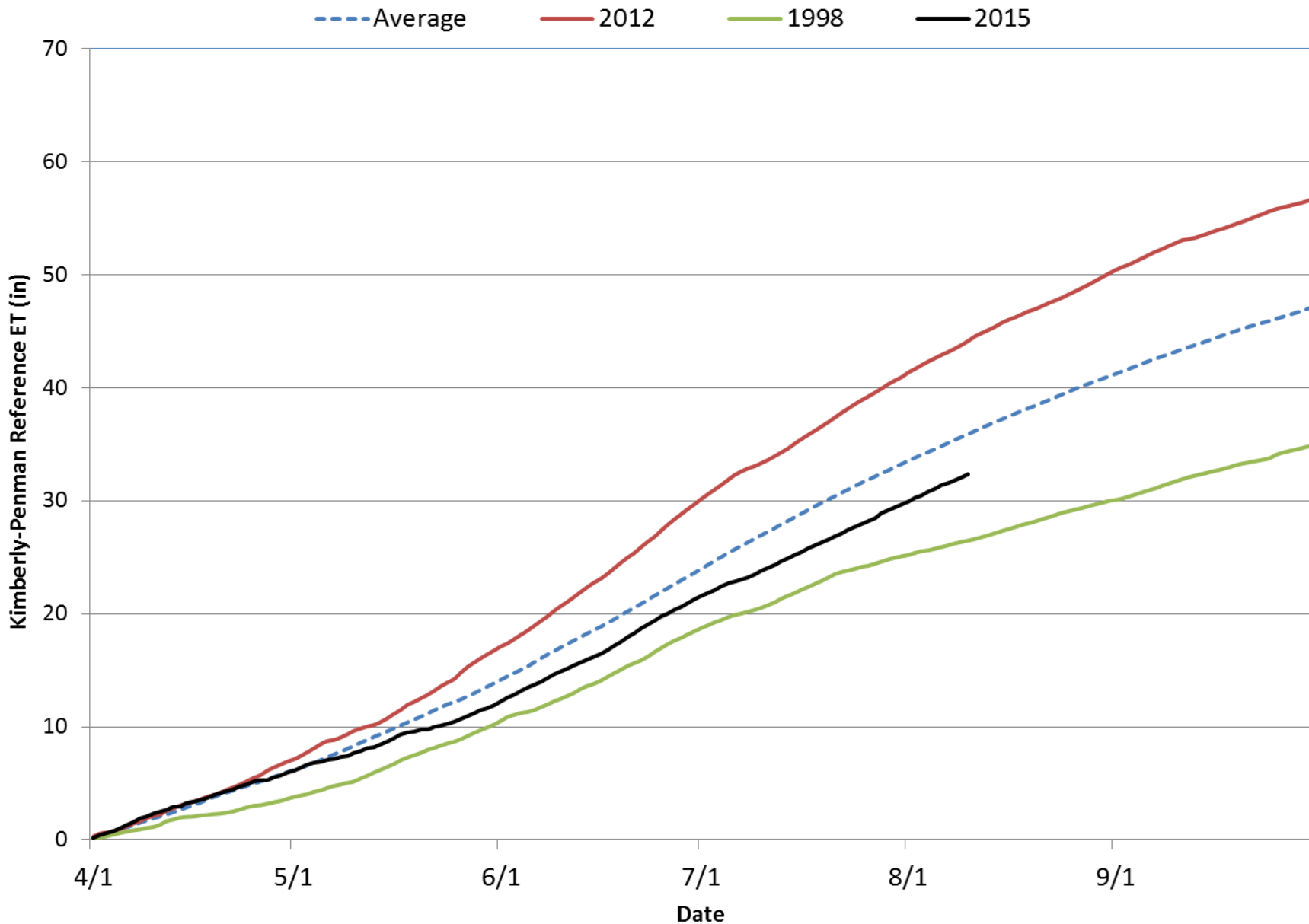


Center Kimberly-Penman Reference ET (1994 - 2015)

--- Average — 2002 — 1997 — 2015

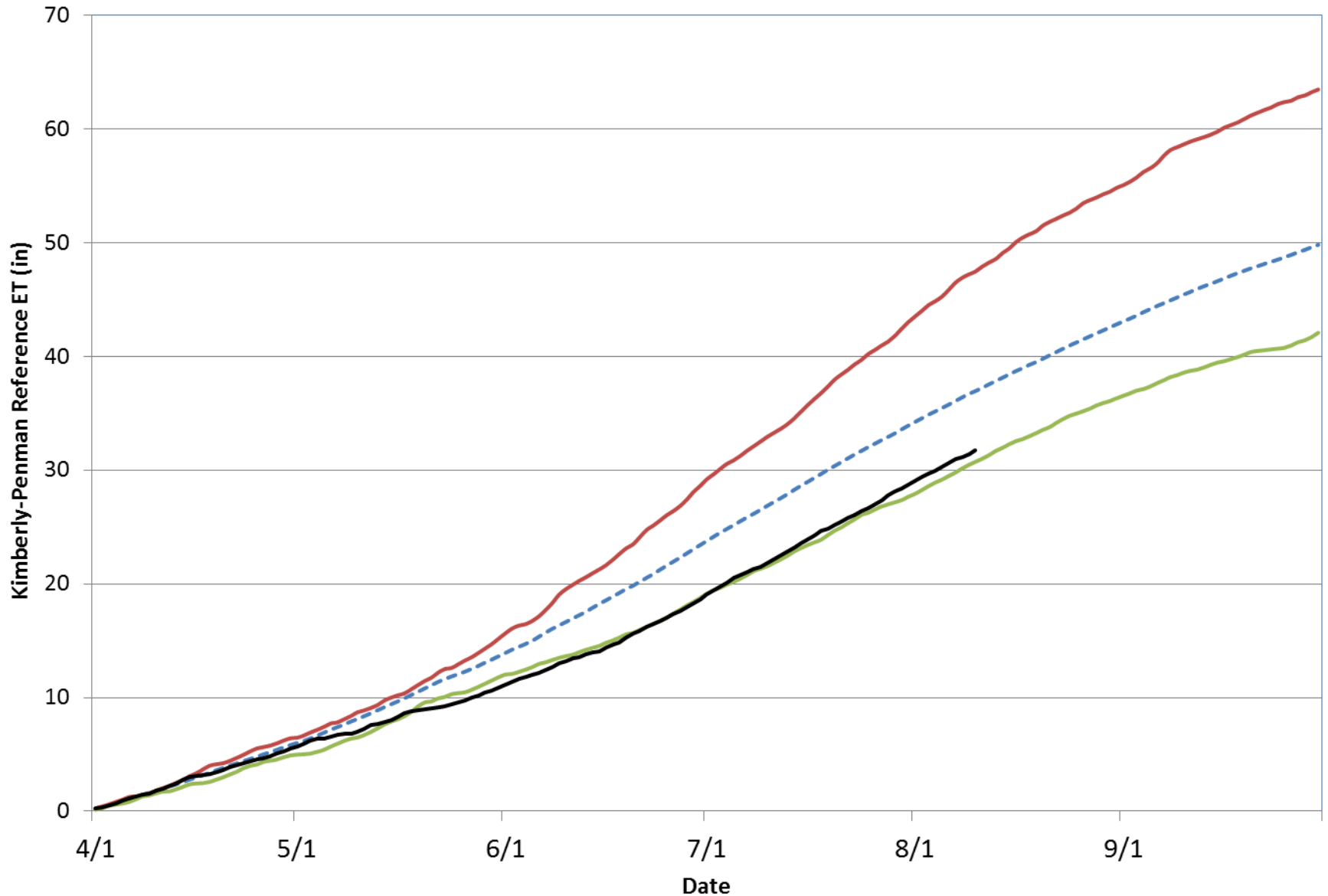


Avondale Kimberly-Penman Reference ET (1993 - 2015)

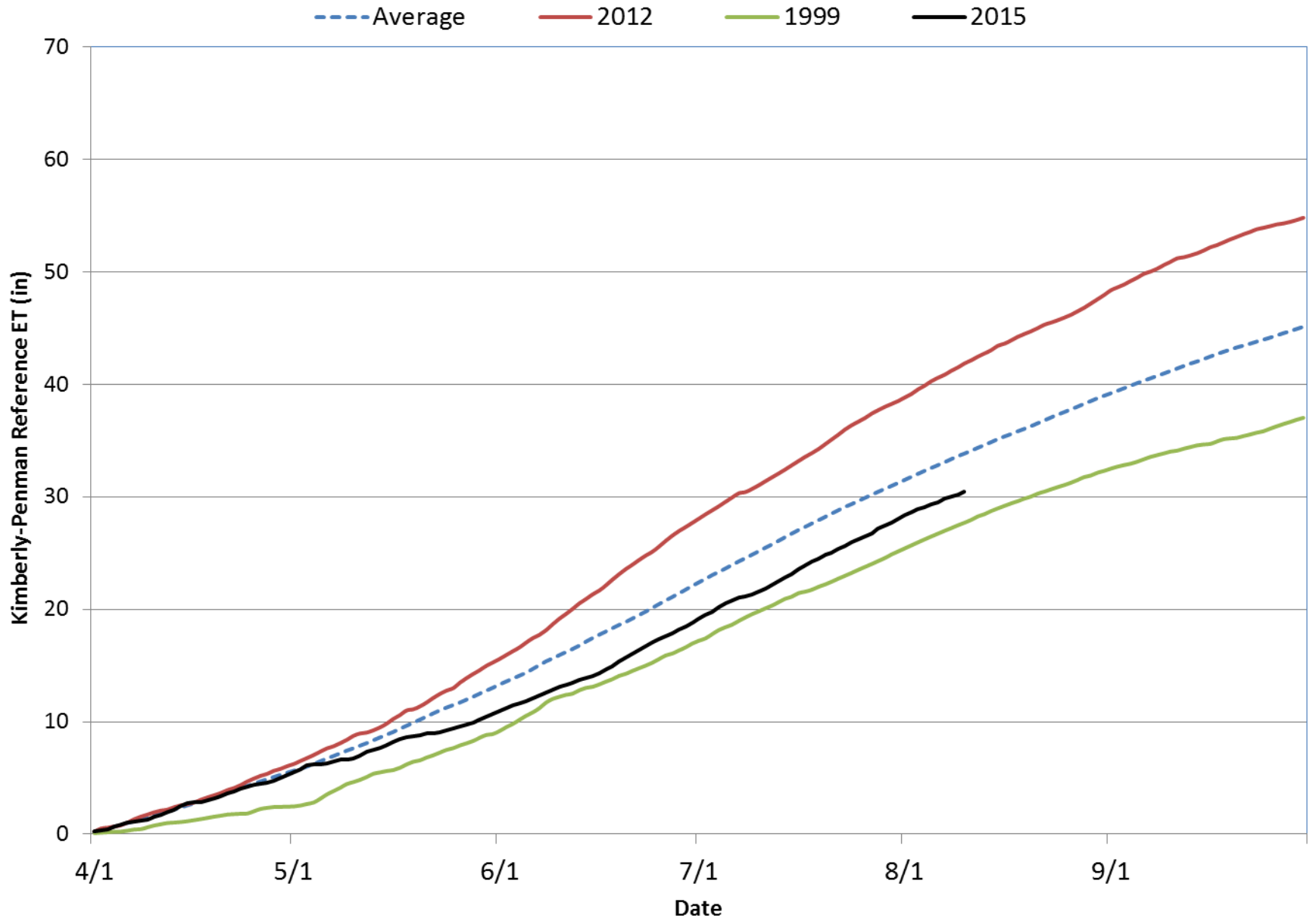


Idalia Kimberly-Penman Reference ET (1992 - 2015)

--- Average — 2002 — 2009 — 2015

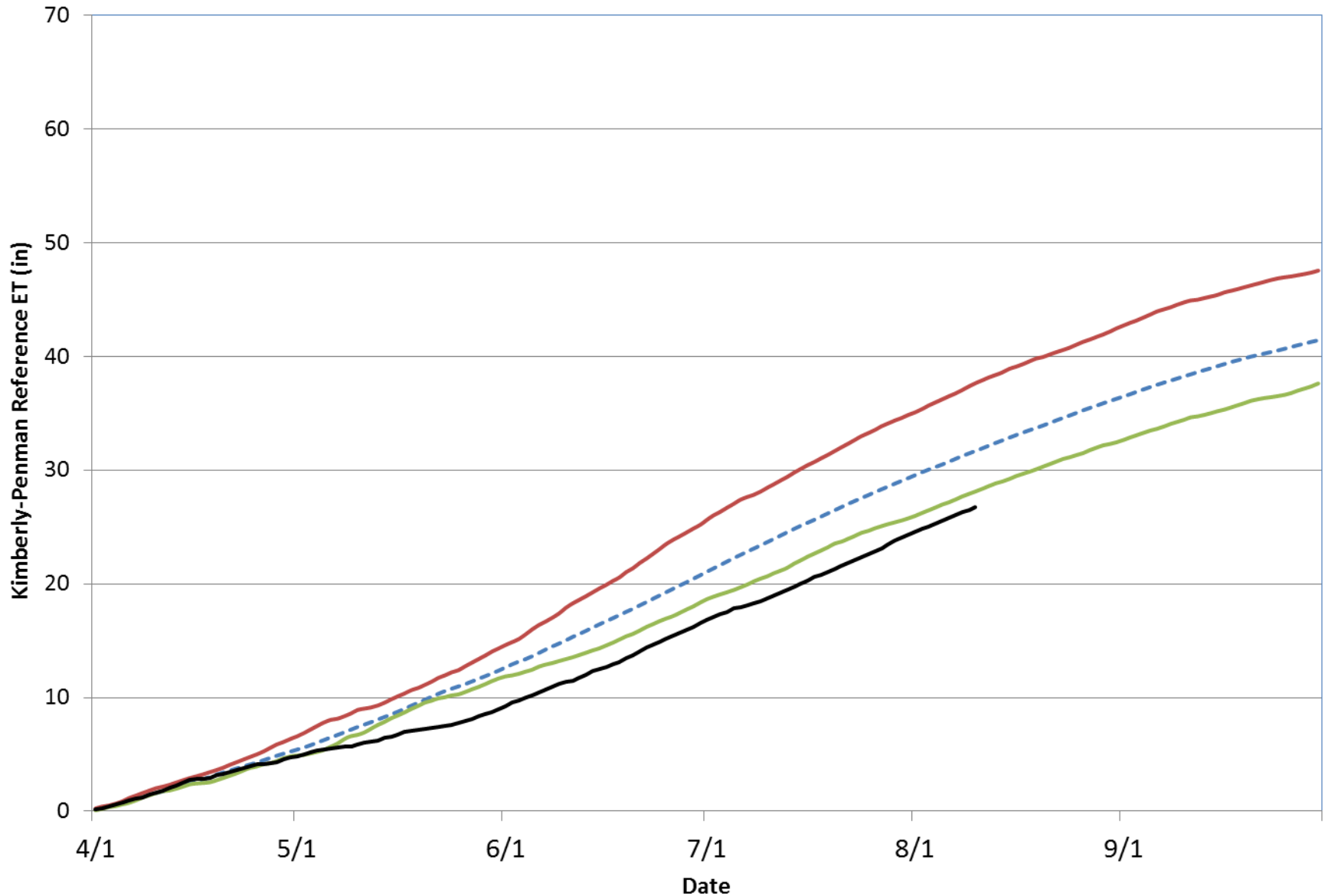


Holyoke Kimberly-Penman Reference ET (1992 - 2015)



Lucerne Kimberly-Penman Reference ET (1992 - 2015)

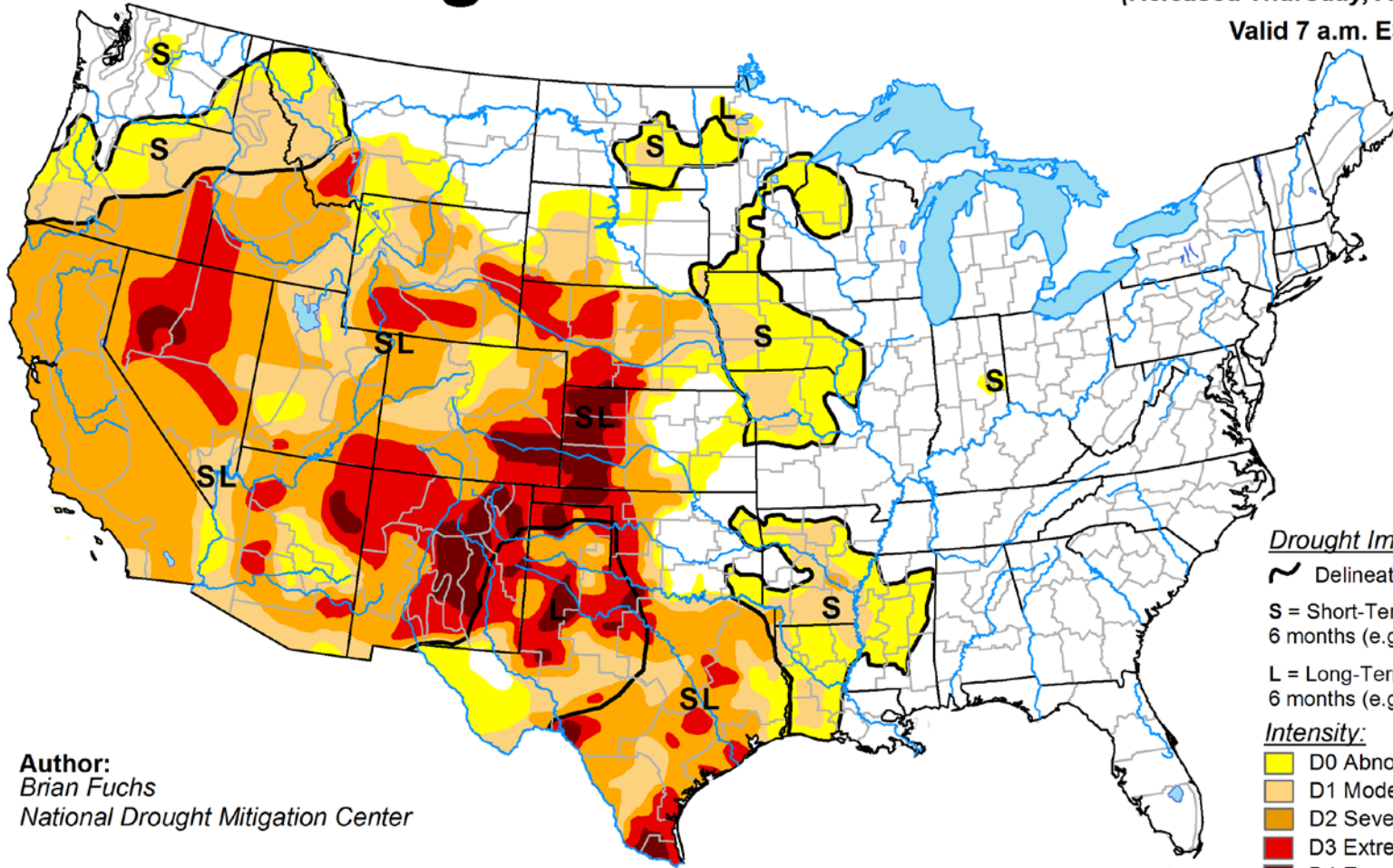
--- Average — 2012 — 2009 — 2015



U.S. Drought Monitor

August 6, 2013
(Released Thursday, Aug. 8, 2013)

Valid 7 a.m. EST



Author:
Brian Fuchs
National Drought Mitigation Center

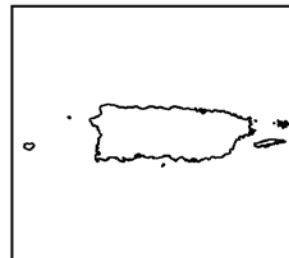
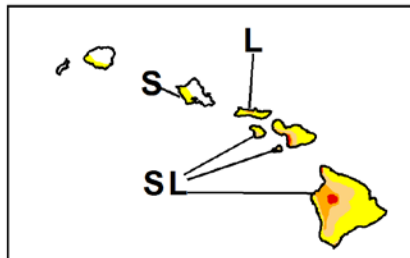
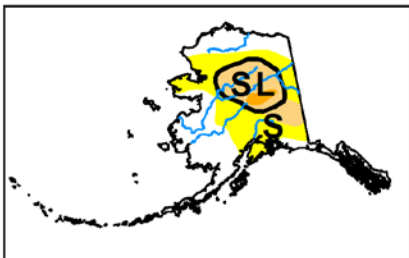
Drought Impact Types:

- ~ 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:

- Yellow: D0 Abnormally Dry
- Light Orange: D1 Moderate Drought
- Orange: D2 Severe Drought
- Red: D3 Extreme Drought
- Dark Red: D4 Exceptional Drought

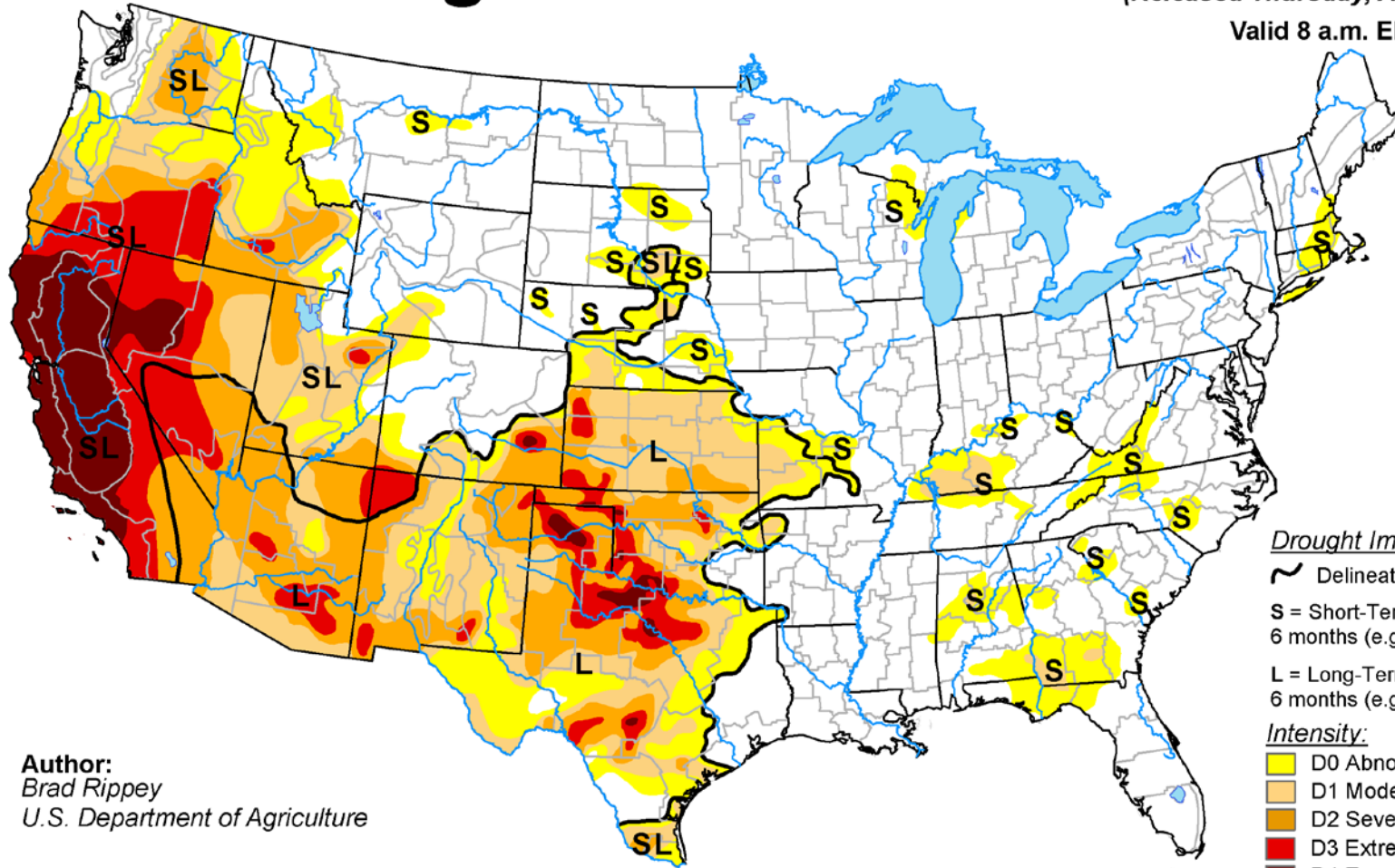
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



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

U.S. Drought Monitor

August 5, 2014
 (Released Thursday, Aug. 7, 2014)
 Valid 8 a.m. EDT

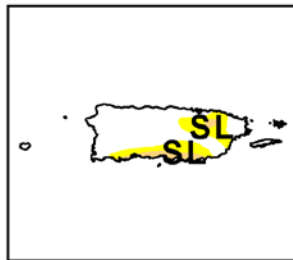
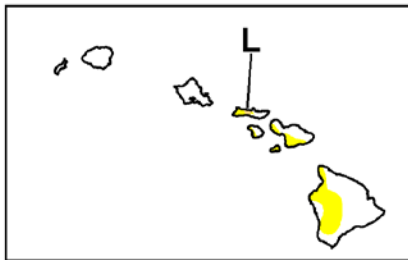
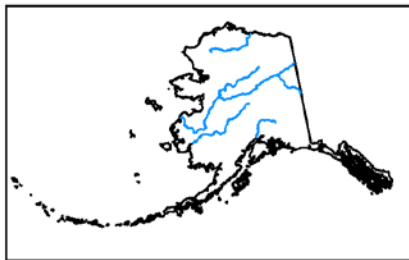


Author:
 Brad Rippey
 U.S. Department of Agriculture

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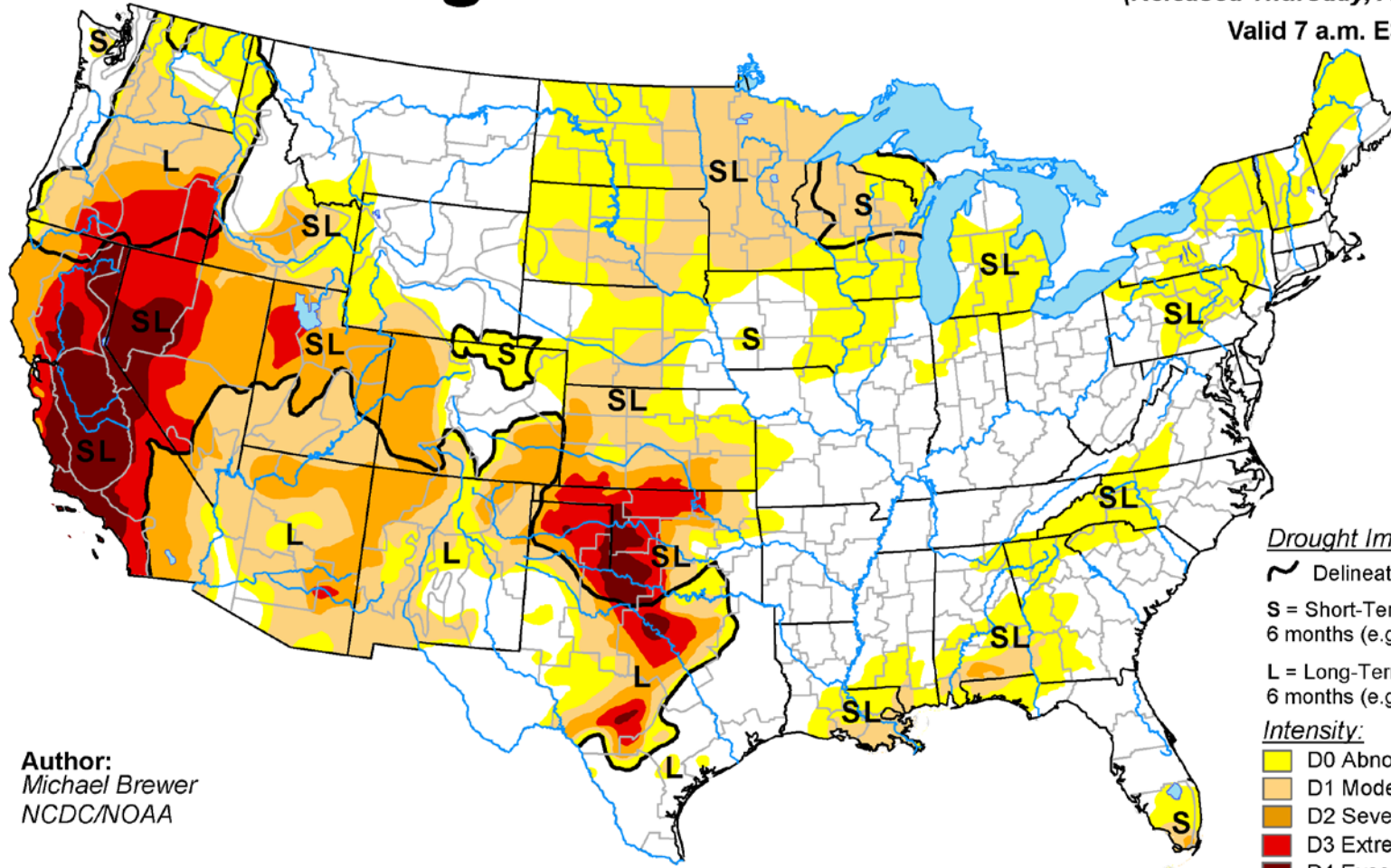
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

April 7, 2015


(Released Thursday, Apr. 9, 2015)

Valid 7 a.m. EST








Author:
Michael Brewer
NCDC/NOAA

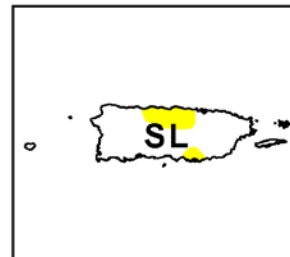
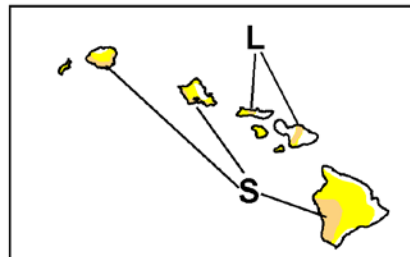
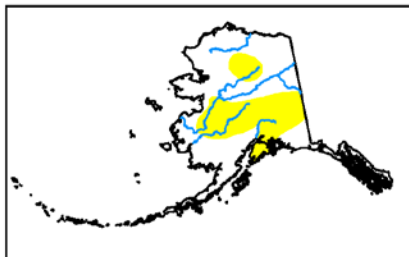
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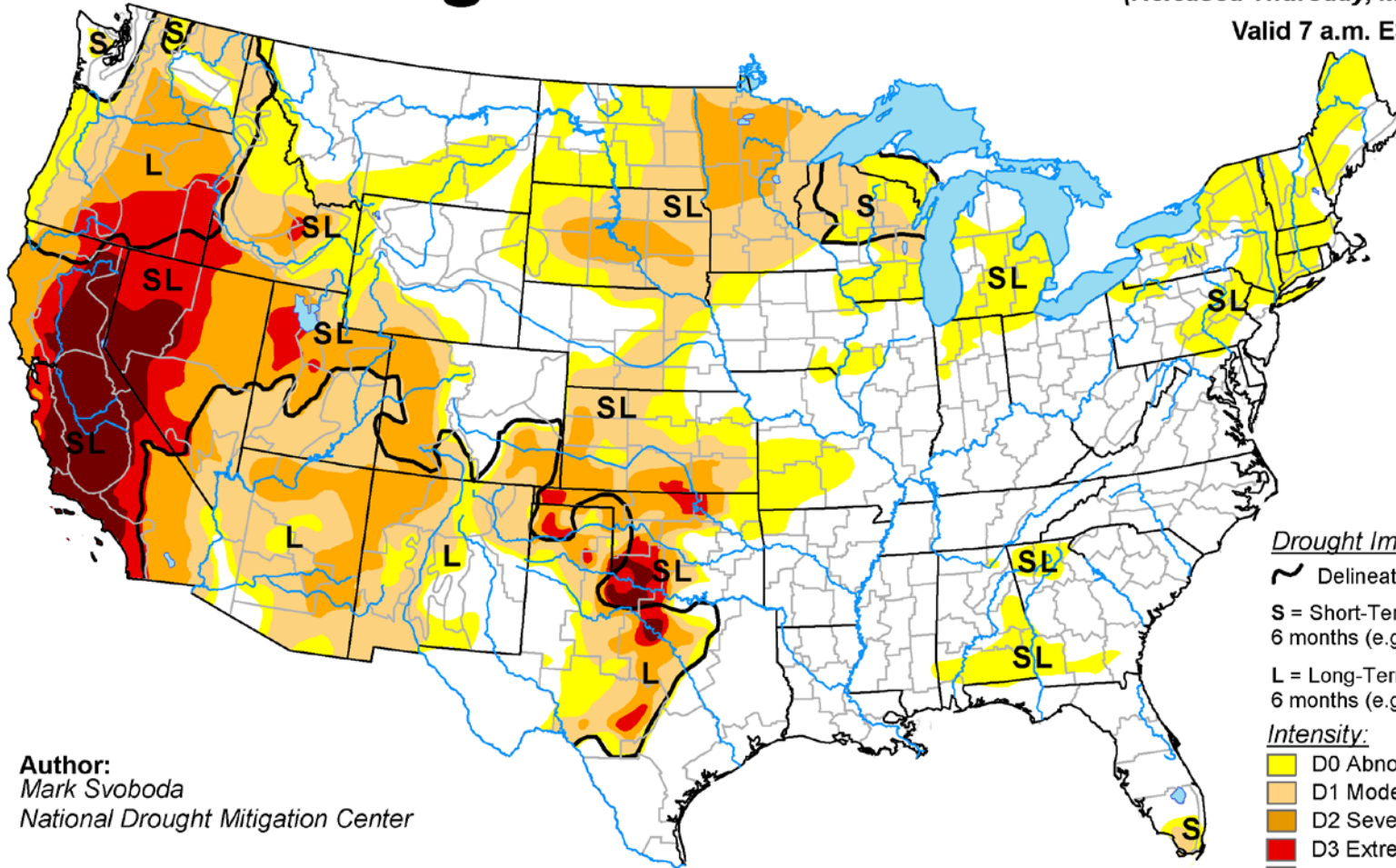
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

May 5, 2015


(Released Thursday, May. 7, 2015)

Valid 7 a.m. EST








Author:
Mark Svoboda
National Drought Mitigation Center

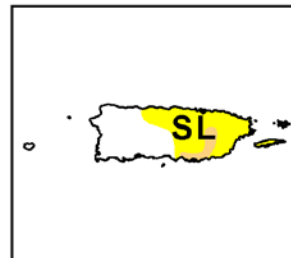
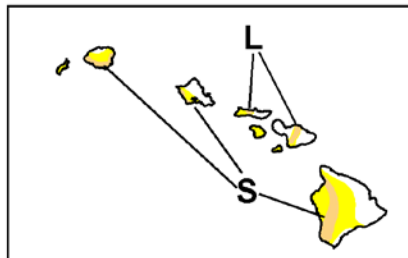
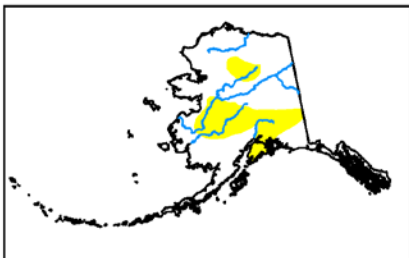
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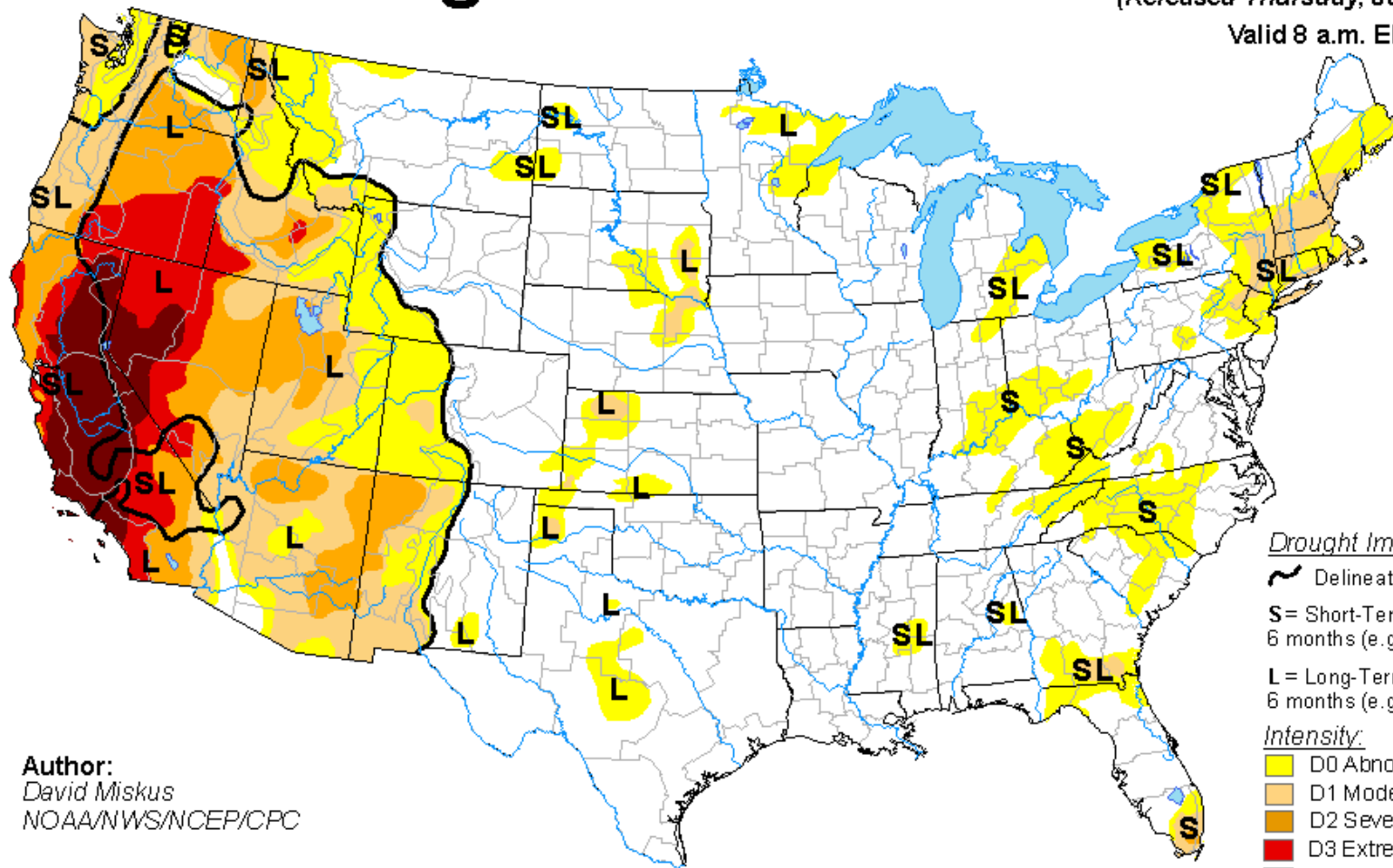
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

June 9, 2015

(Released Thursday, Jun. 11, 2015)

Valid 8 a.m. EDT



Author:
David Miskus
NOAA/NWS/NCEP/CPC

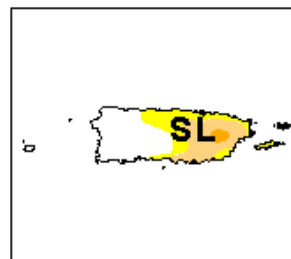
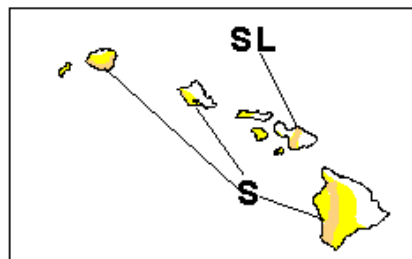
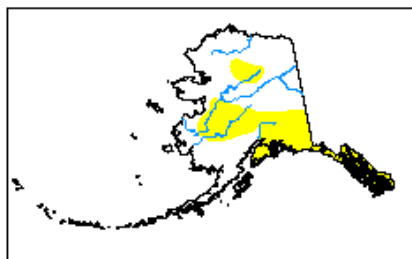
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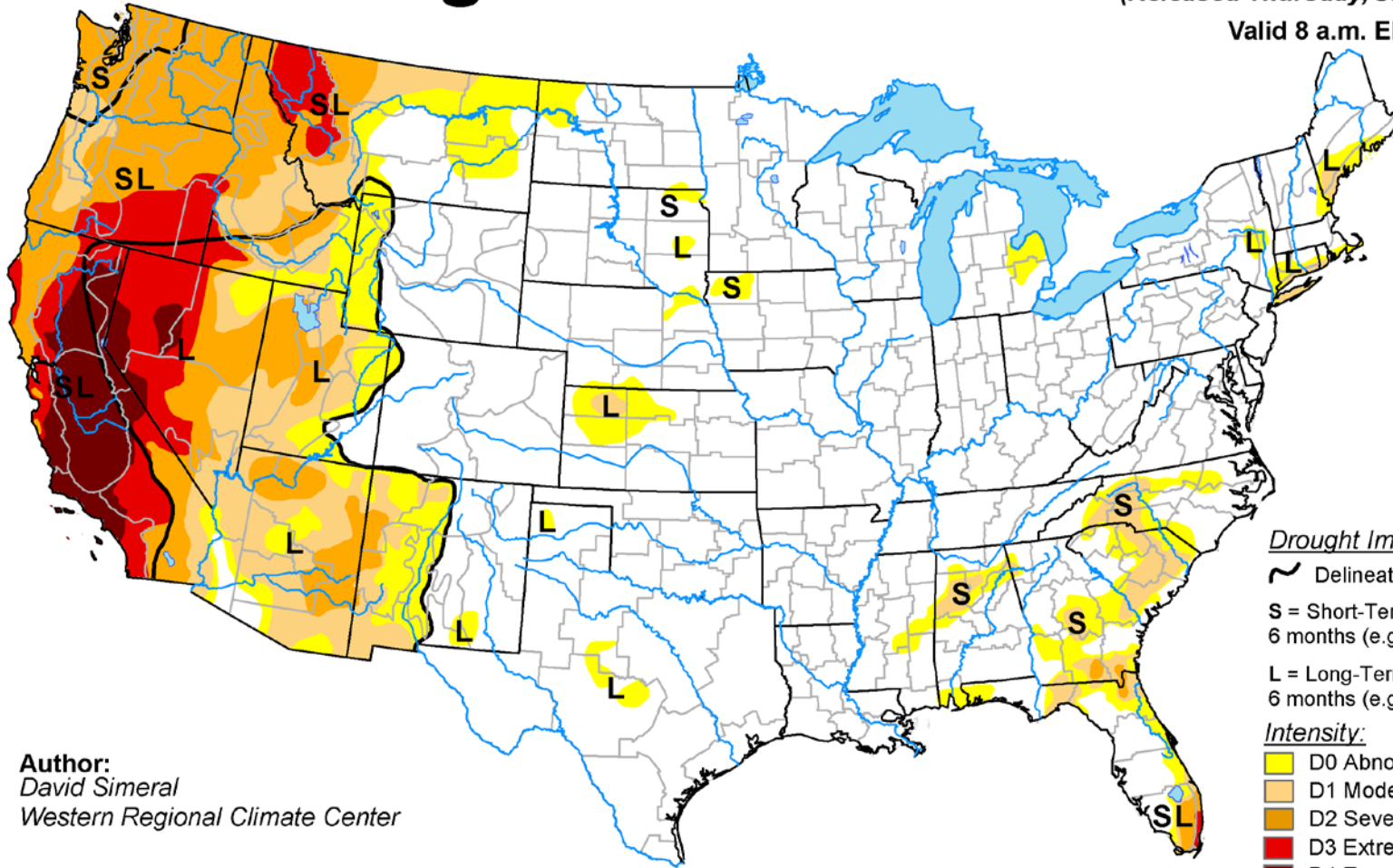
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

July 14, 2015

(Released Thursday, Jul. 16, 2015)

Valid 8 a.m. EDT



Author:
David Simeral
Western Regional Climate Center

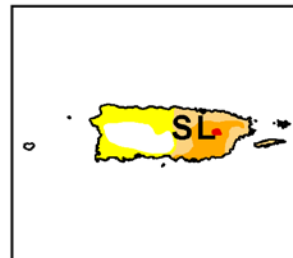
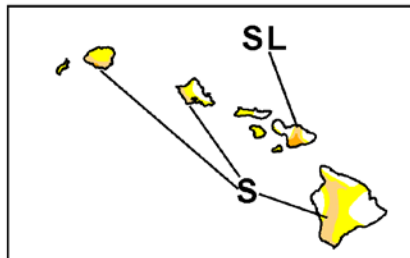
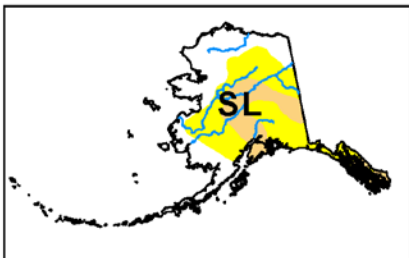
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- D3 Extreme Drought
- D4 Exceptional Drought

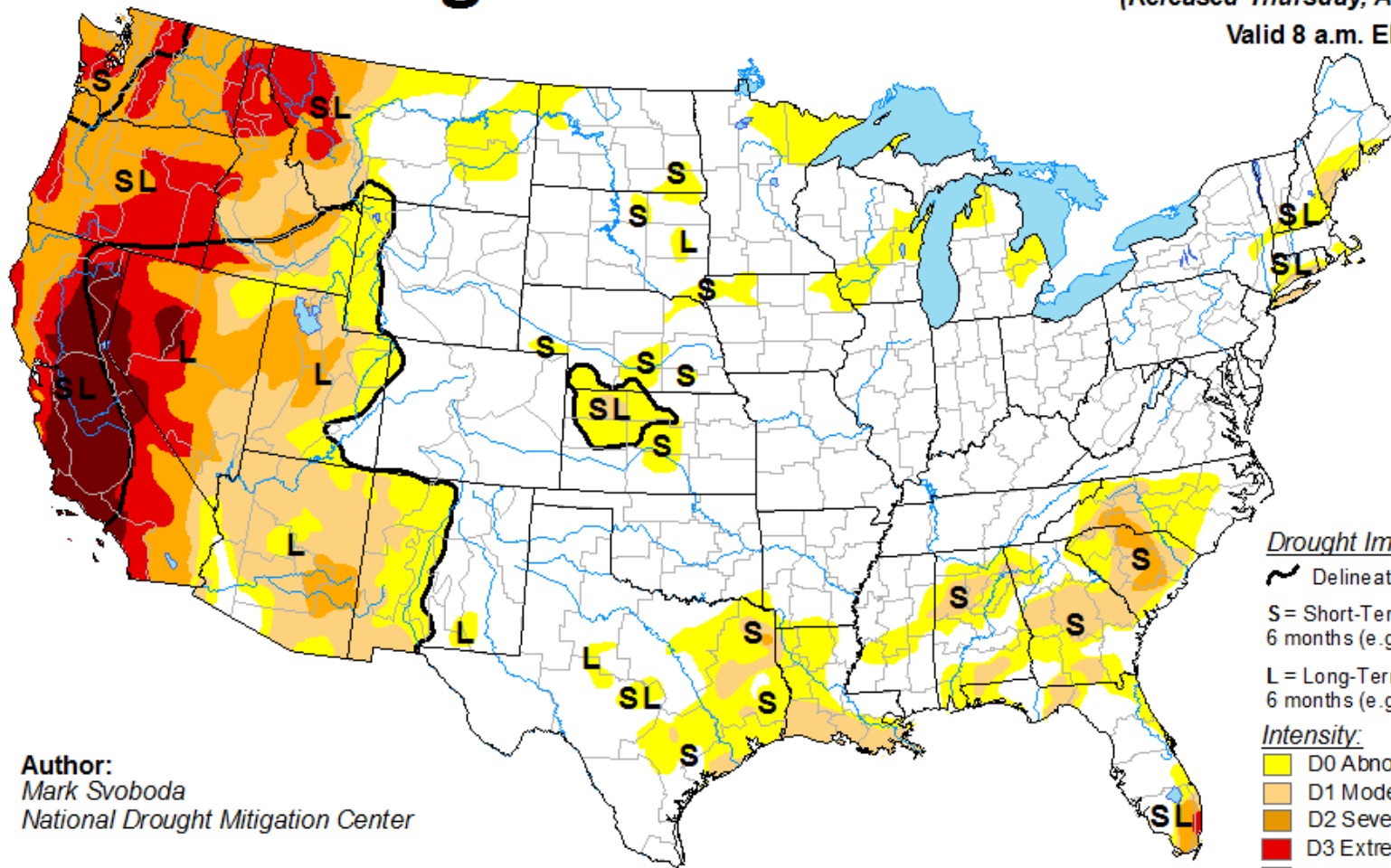
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<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

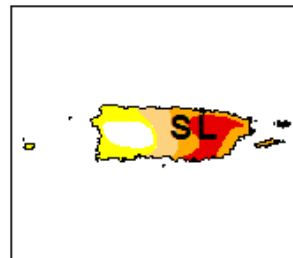
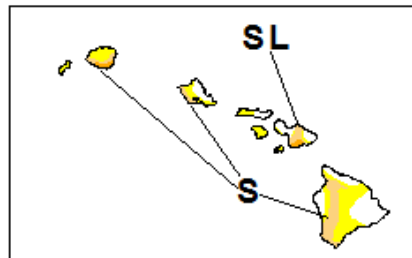
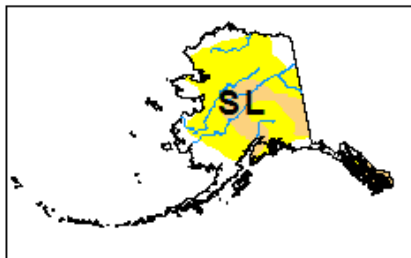
 D1 Moderate Drought

 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.

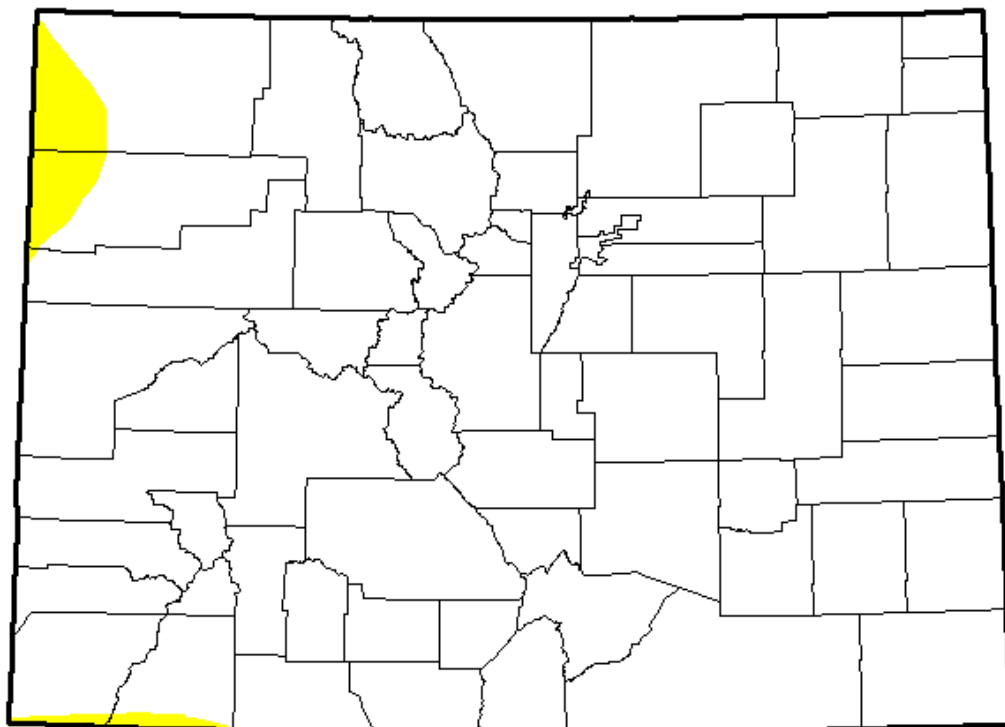


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U.S. Drought Monitor

Colorado

August 4, 2015
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 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 <i>7/28/2015</i>	97.95	2.05	0.00	0.00	0.00	0.00
3 Months Ago <i>5/5/2015</i>	42.17	57.83	50.50	31.78	0.00	0.00
Start of Calendar Year <i>12/31/2014</i>	69.87	30.13	21.26	12.26	0.00	0.00
Start of Water Year <i>9/30/2014</i>	68.96	31.04	22.94	13.82	2.31	0.00
One Year Ago <i>8/5/2014</i>	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

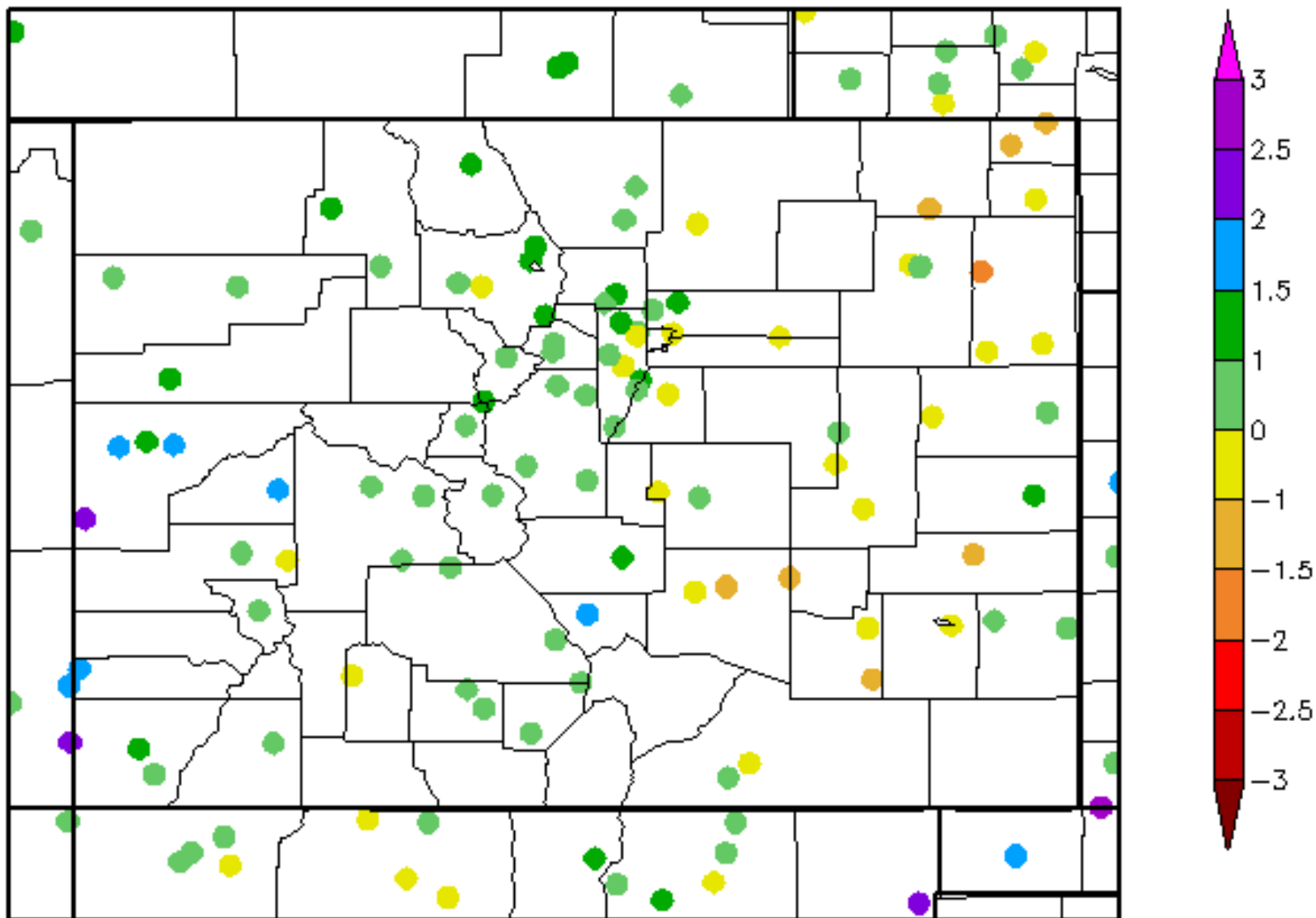
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 National Drought Mitigation Center



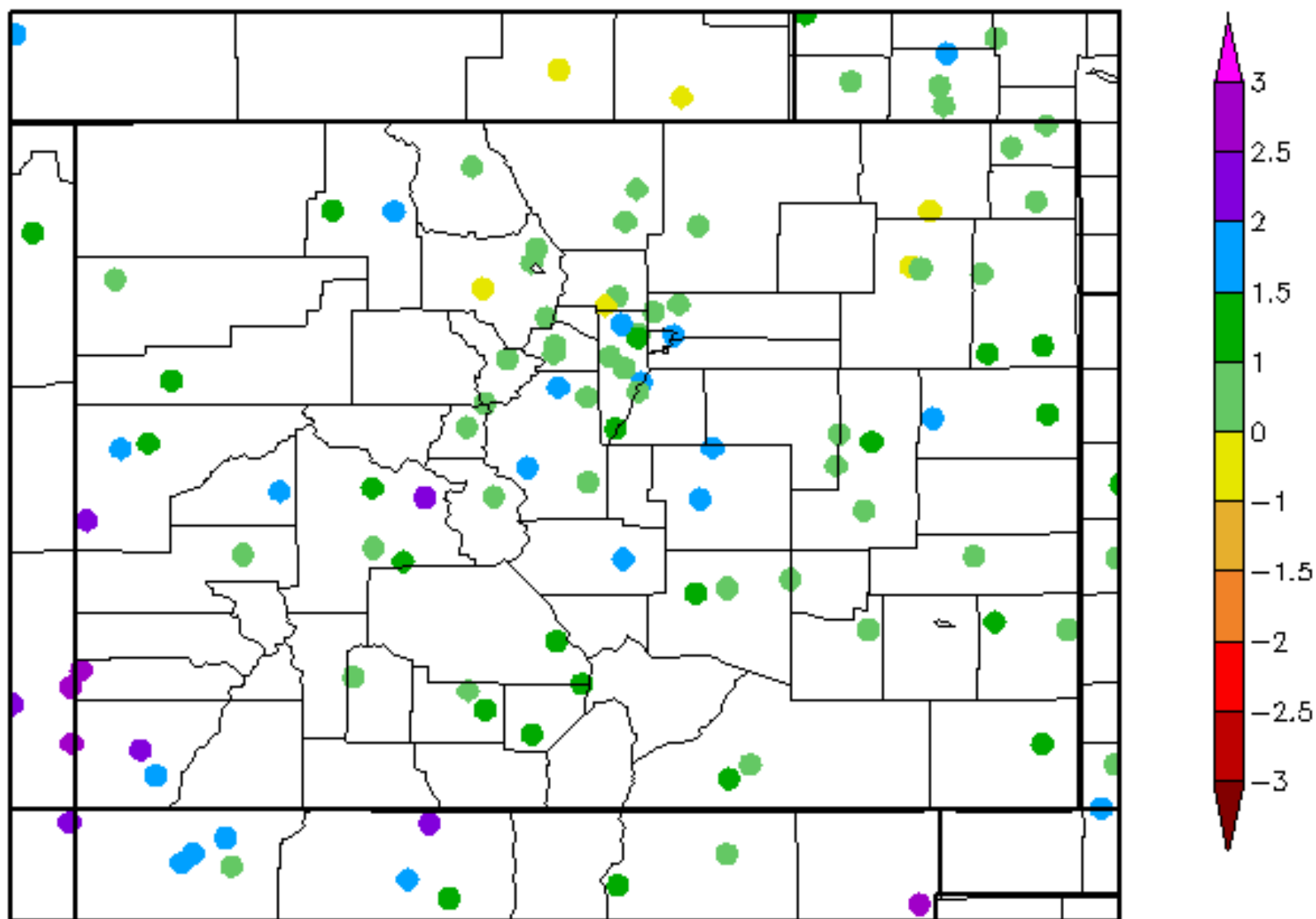
Monthly SPI

7/1/2015 - 7/31/2015



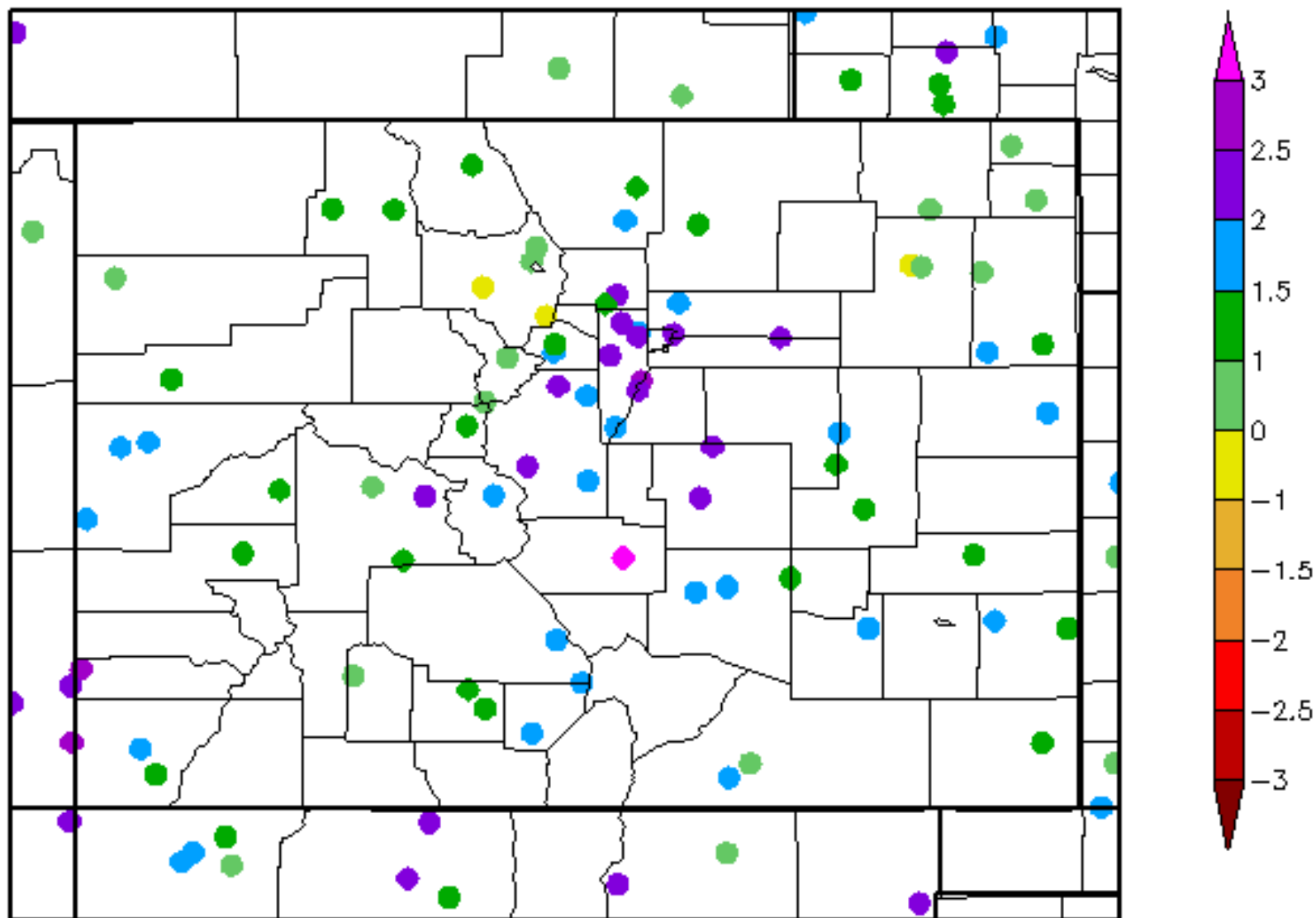
90 Day SPI

5/13/2015 - 8/10/2015



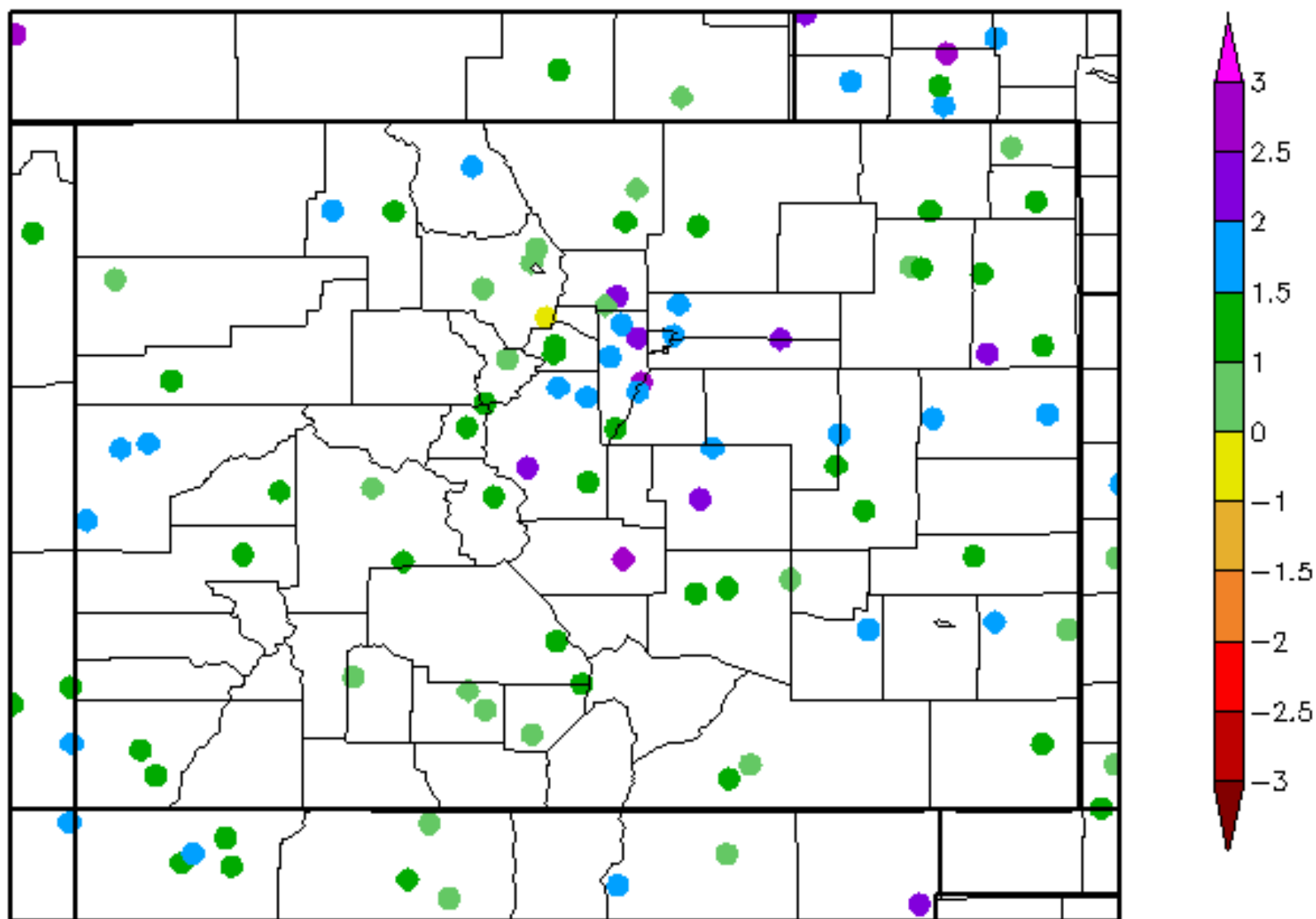
6 Month SPI

2/11/2015 - 8/10/2015



12 Month SPI

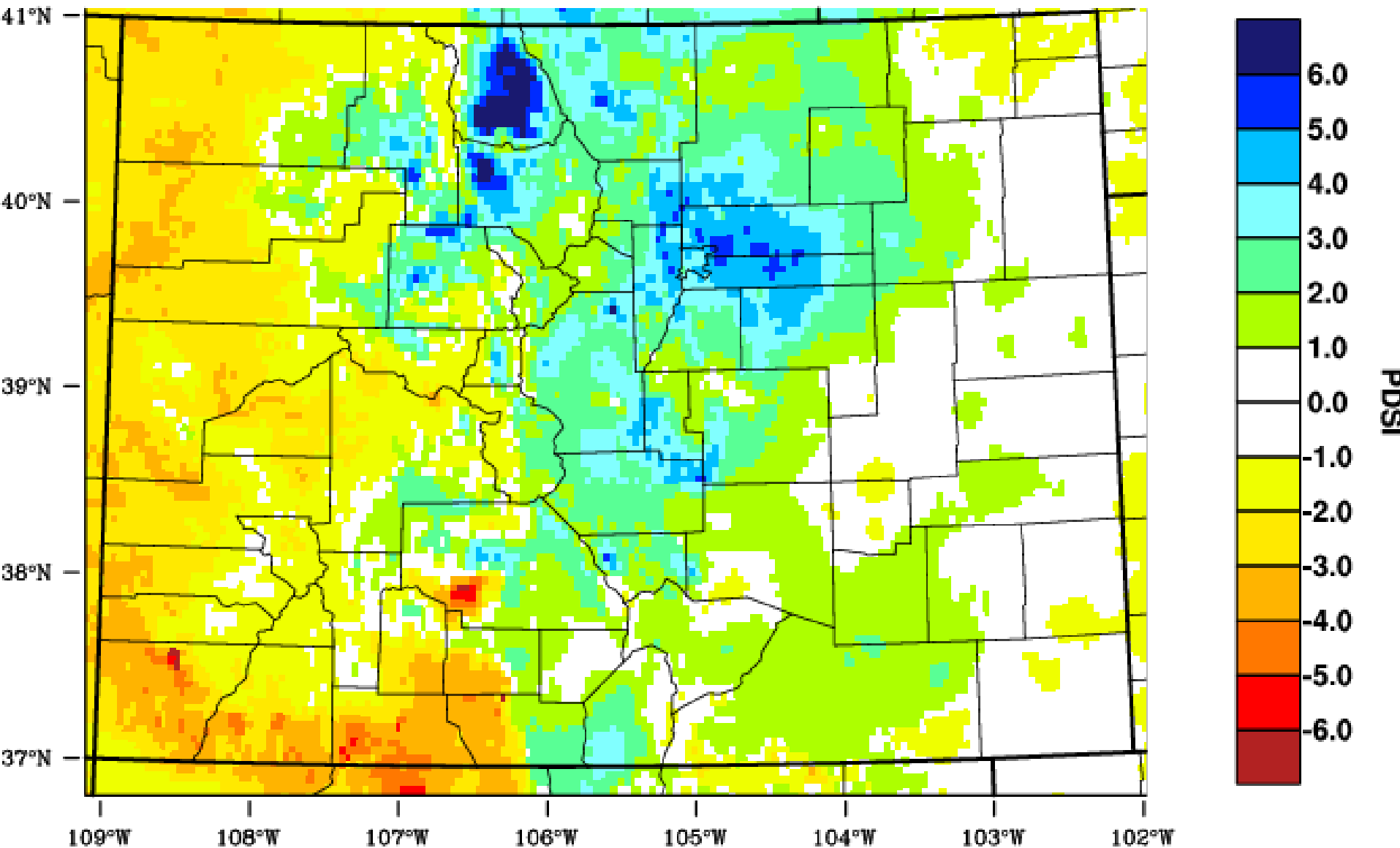
8/11/2014 - 8/10/2015



Palmer

Colorado - PDSI

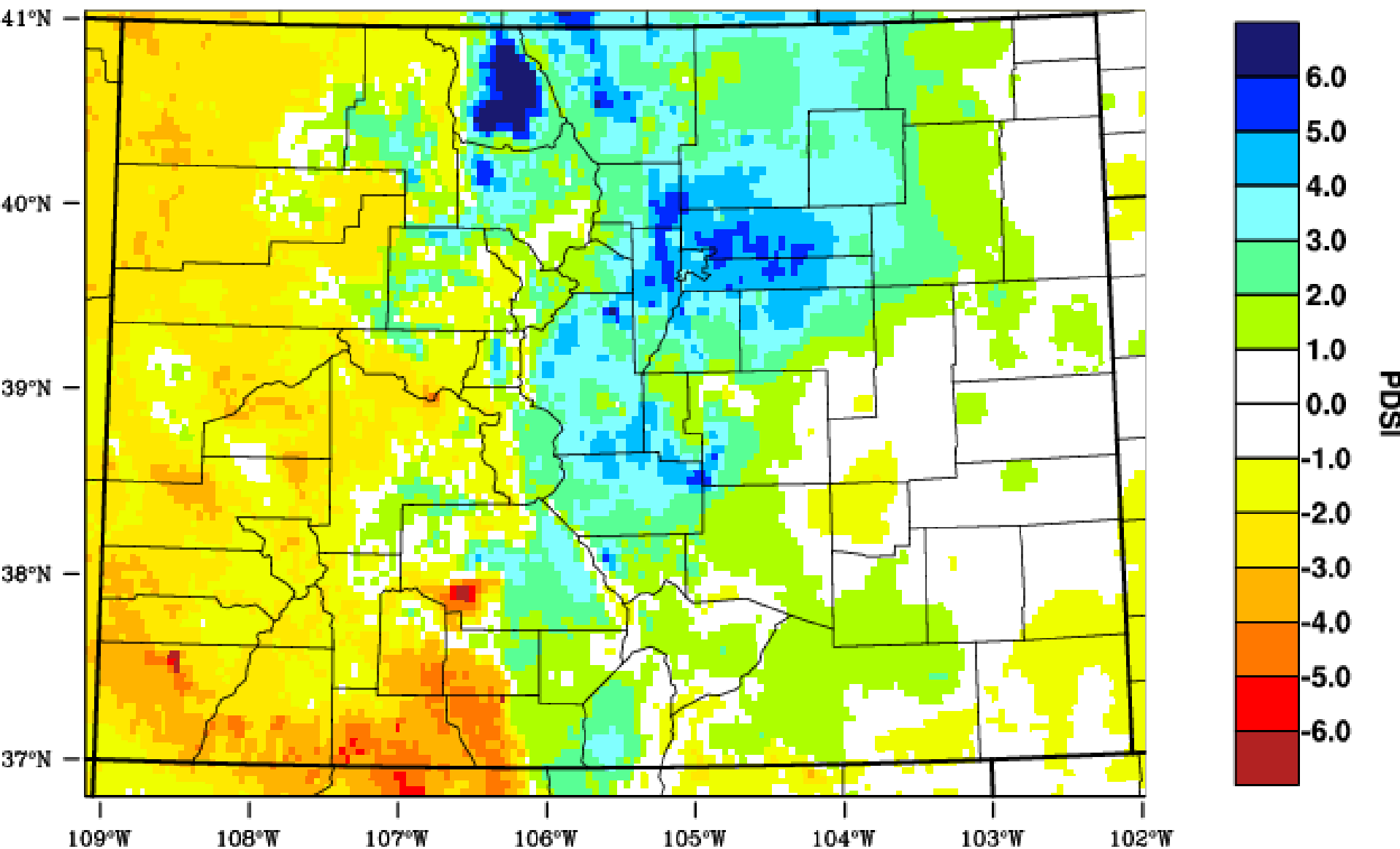
March 2015



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

Colorado - PDSI

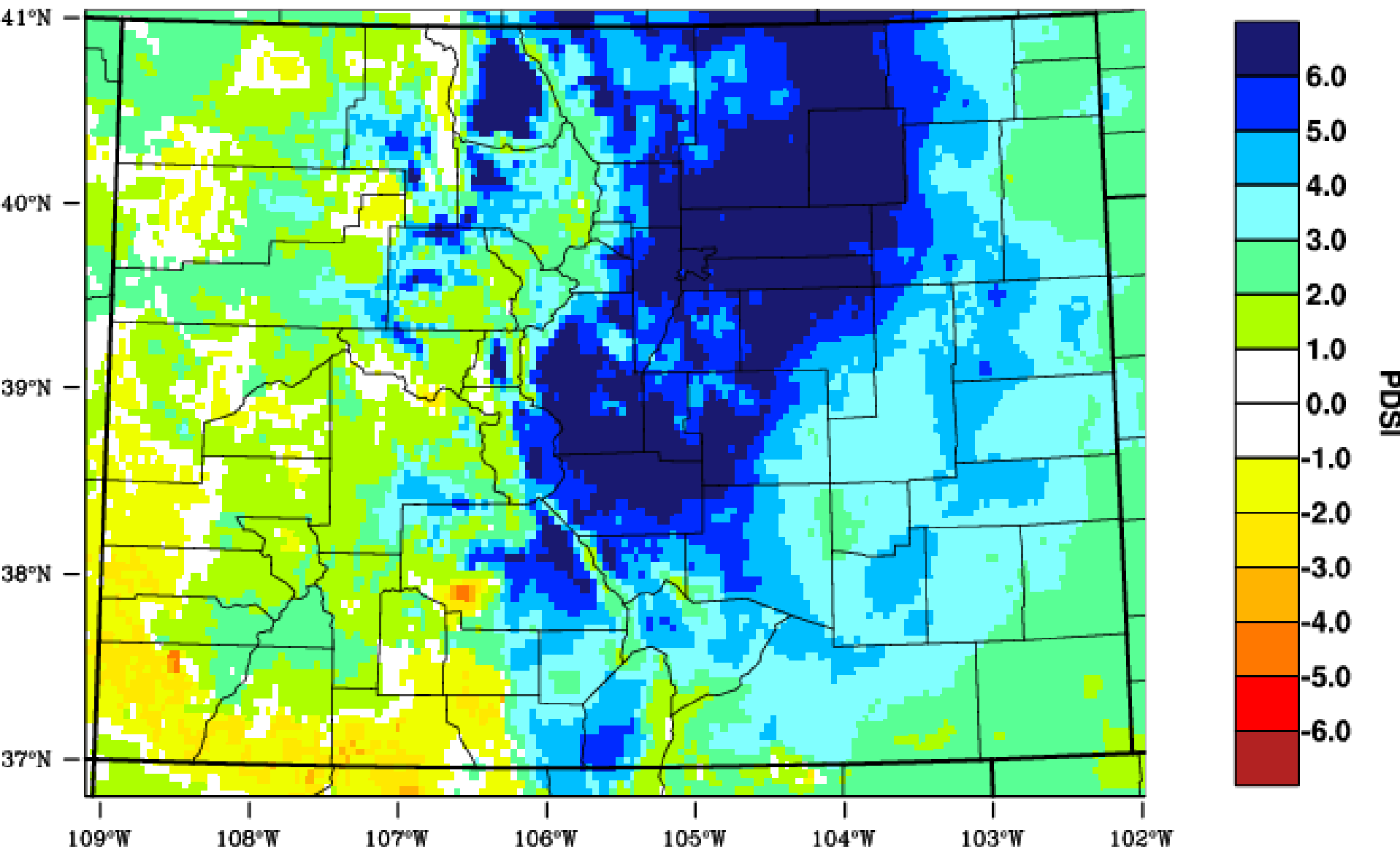
April 2015



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

Colorado - PDSI

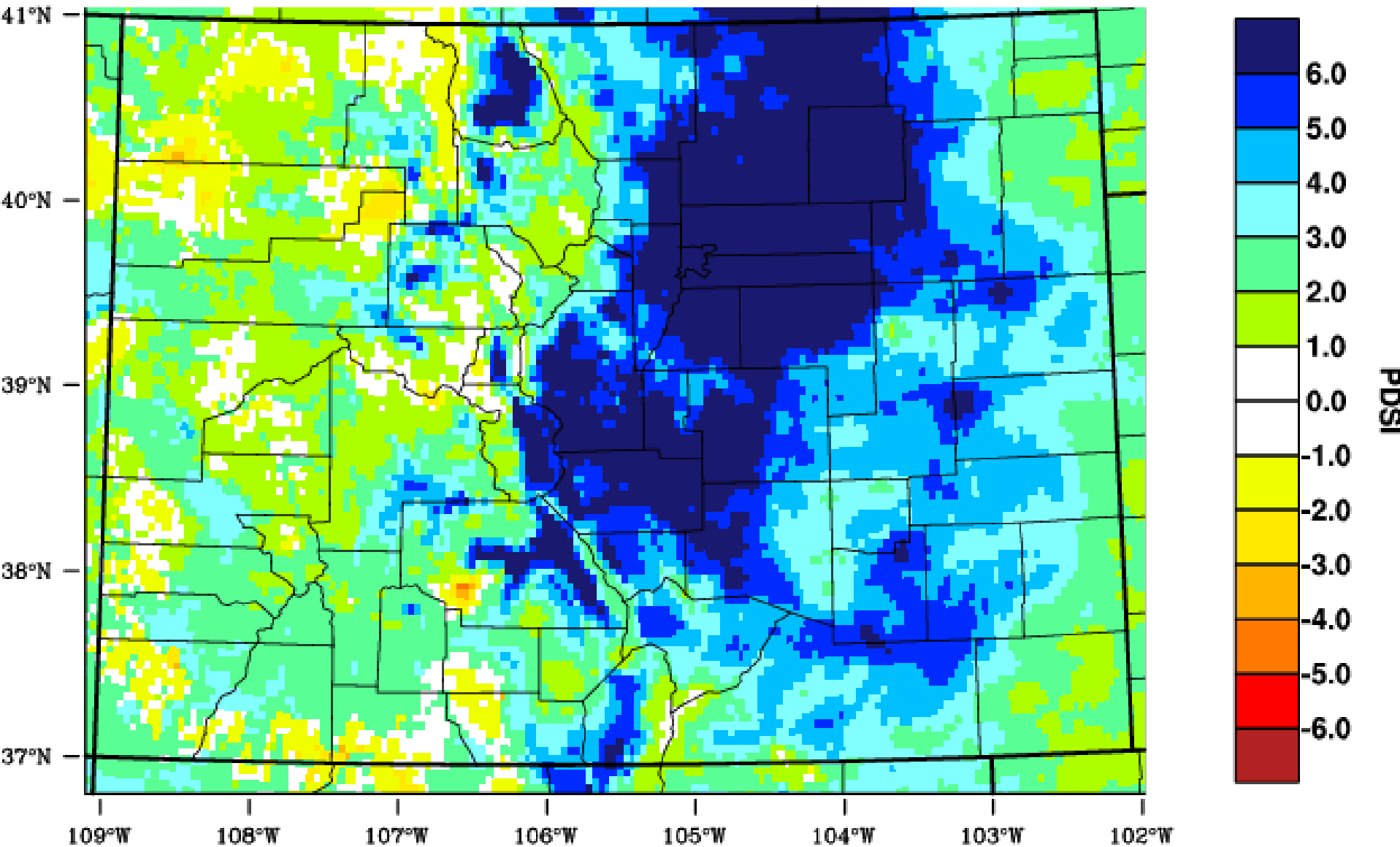
May 2015



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

Colorado - PDSI

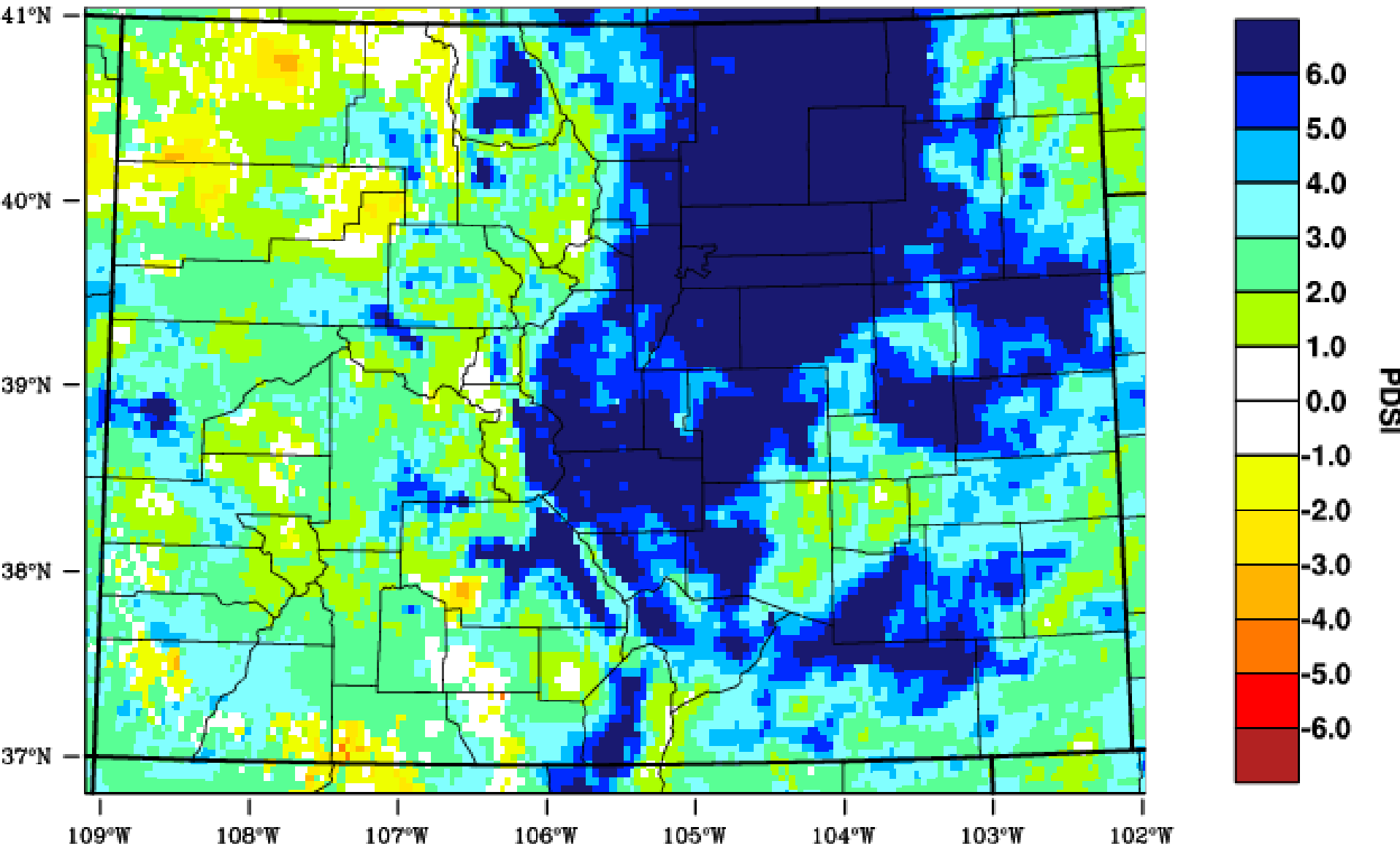
June 2015



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

Points I hope I made

- Summer temperatures have been moderate
- Precipitation has been skimpy for the normally wet late-July, early-Aug “monsoon” window but still good for the summer as a whole
- Evapotranspiration rates are about what we expect for this time of year, but seasonal accumulated ETr is below average
- Overall water supplies still really good for this time of year although soil moisture has been declining

Don't forget to help!!!!!!

COCORAHHS

**We still need a lot more folks to join
the Community Collaborative Rain, Hail and
Snow Network**

<http://www.cocorahhs.org>

or see me today

Colorado Climate Center

Data and Power Point Presentations available for downloading

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



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