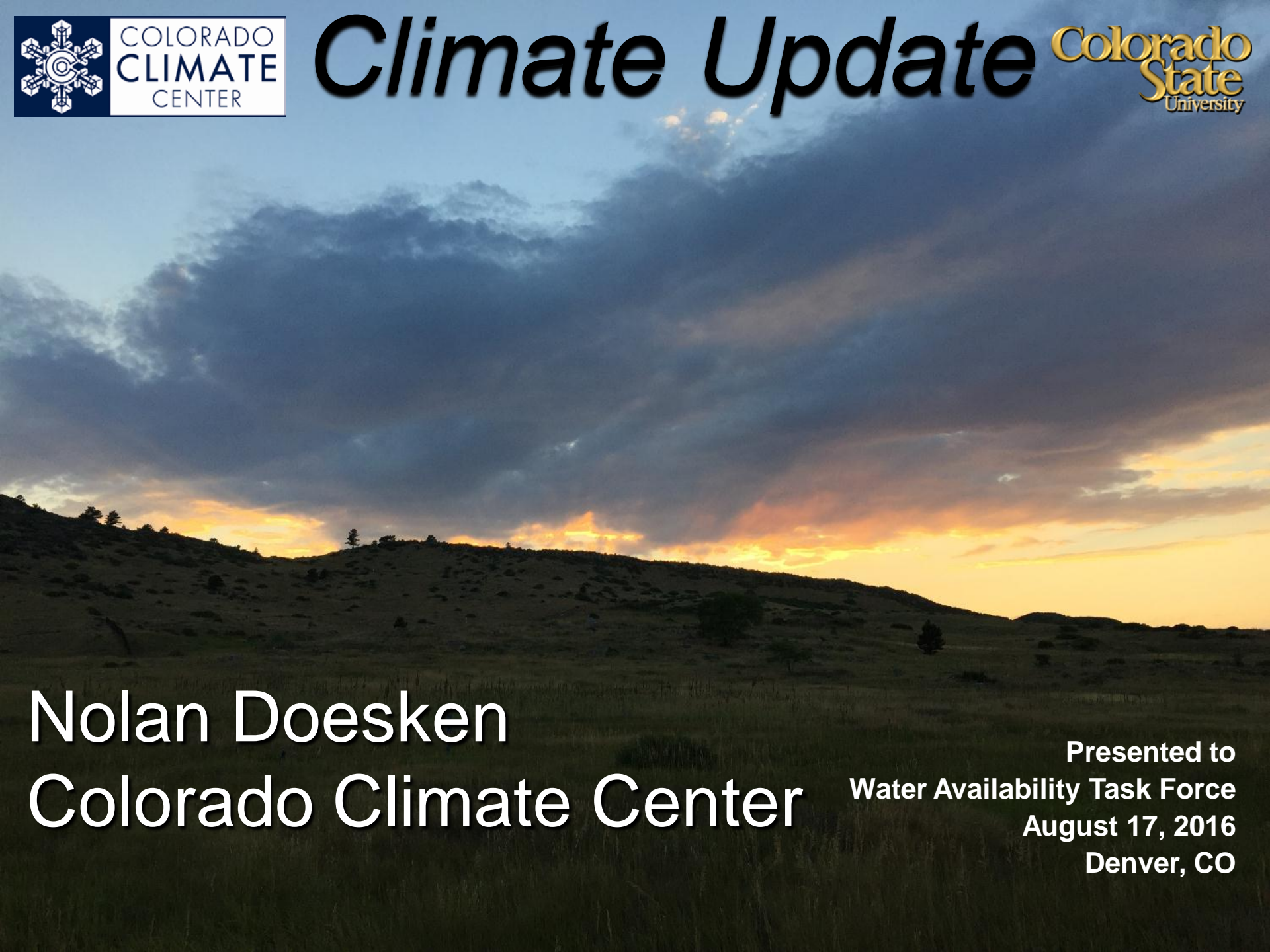




Climate Update

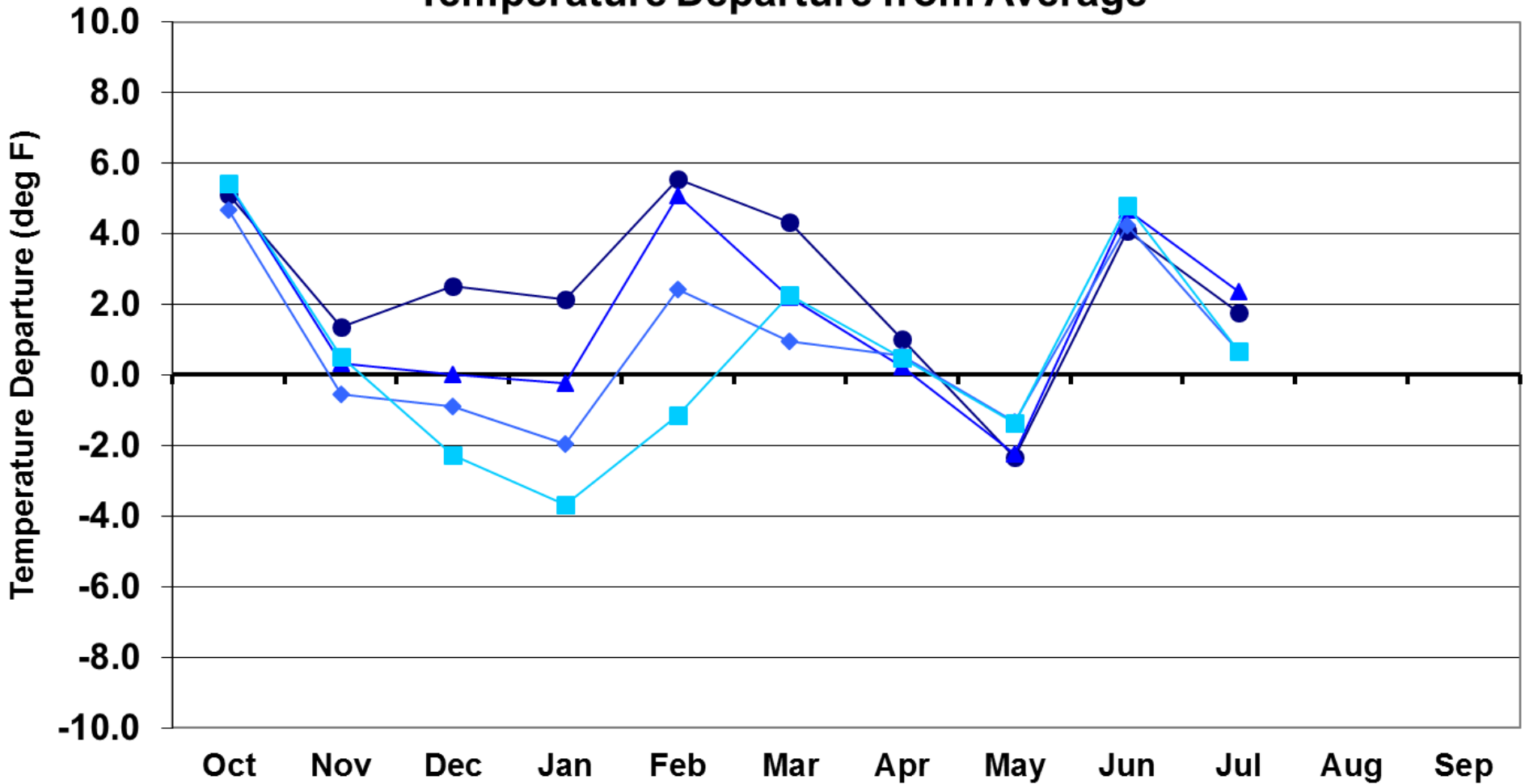


Nolan Doesken
Colorado Climate Center

Presented to
Water Availability Task Force
August 17, 2016
Denver, CO

Water Year 2016 Temperature Departures

Water Year 2016
Temperature Departure from Average



● Eastern Plains

▲ Foothills

◆ Mountains

■ Western Valleys

July 2016 Average Temperature History for Colorado (NCEI)

Colorado, Average Temperature, July

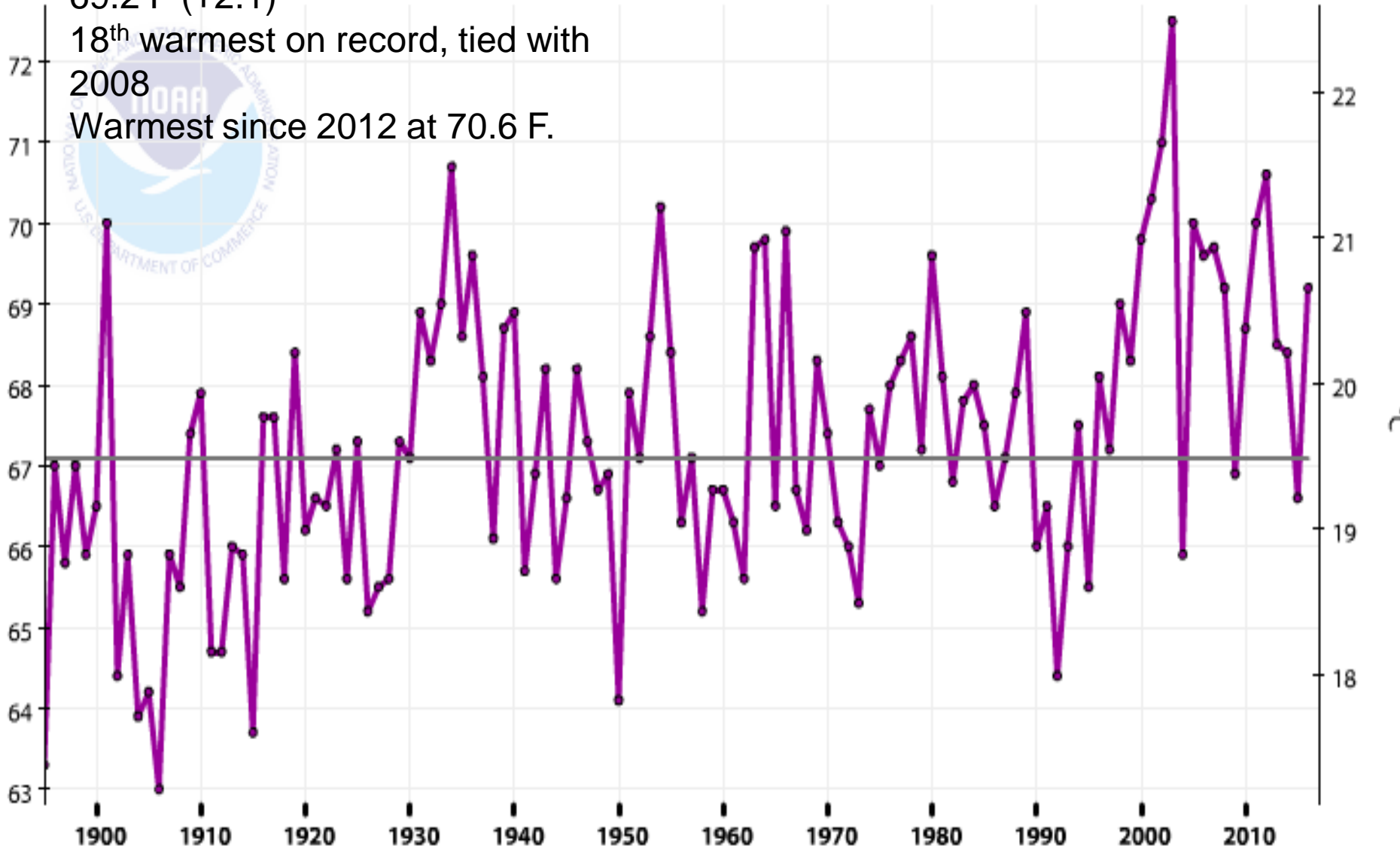
— 1901-2000
Avg: 67.1°F

—●— Avg Temperature

69.2 F (+2.1)

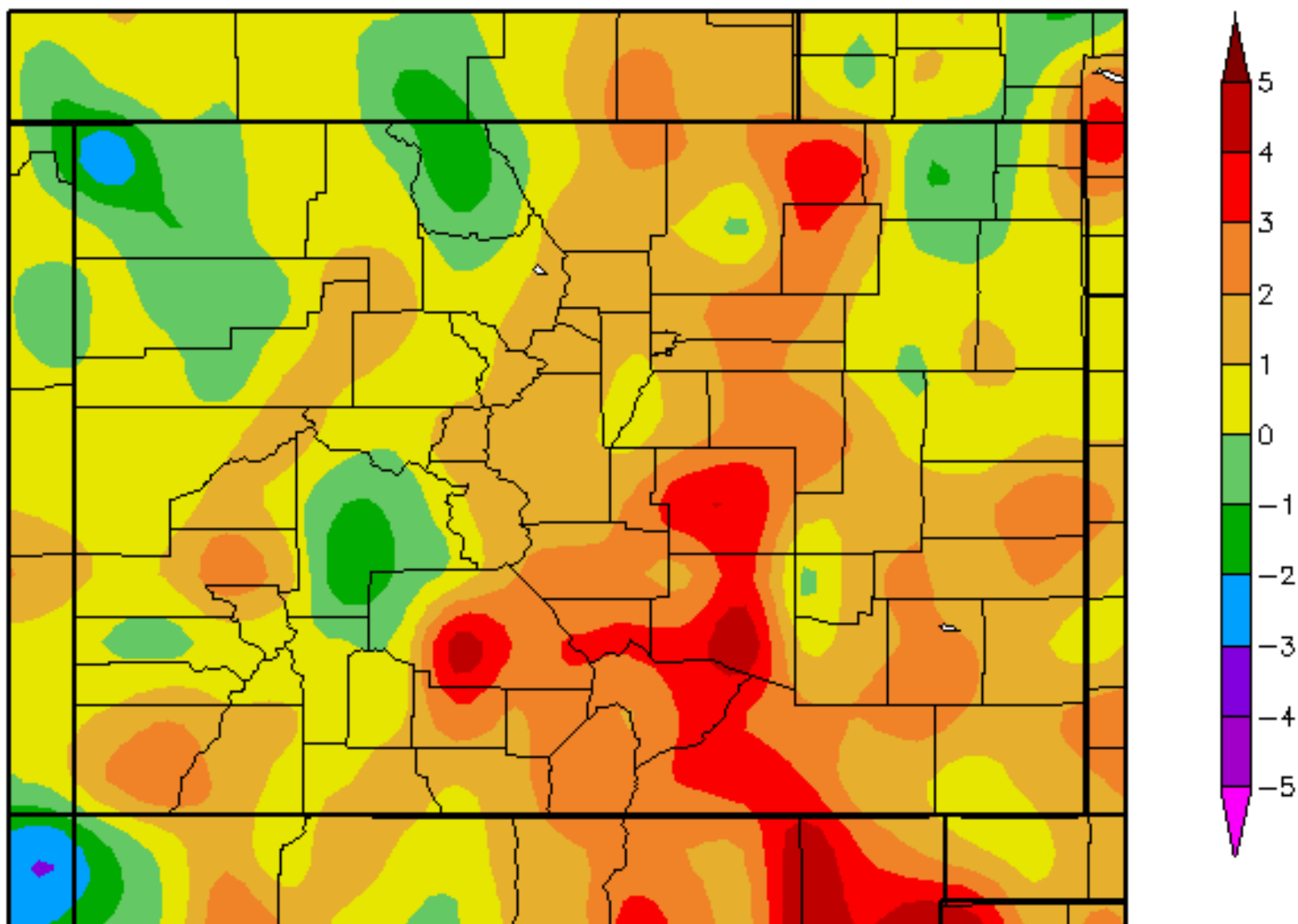
18th warmest on record, tied with
2008

Warmest since 2012 at 70.6 F.



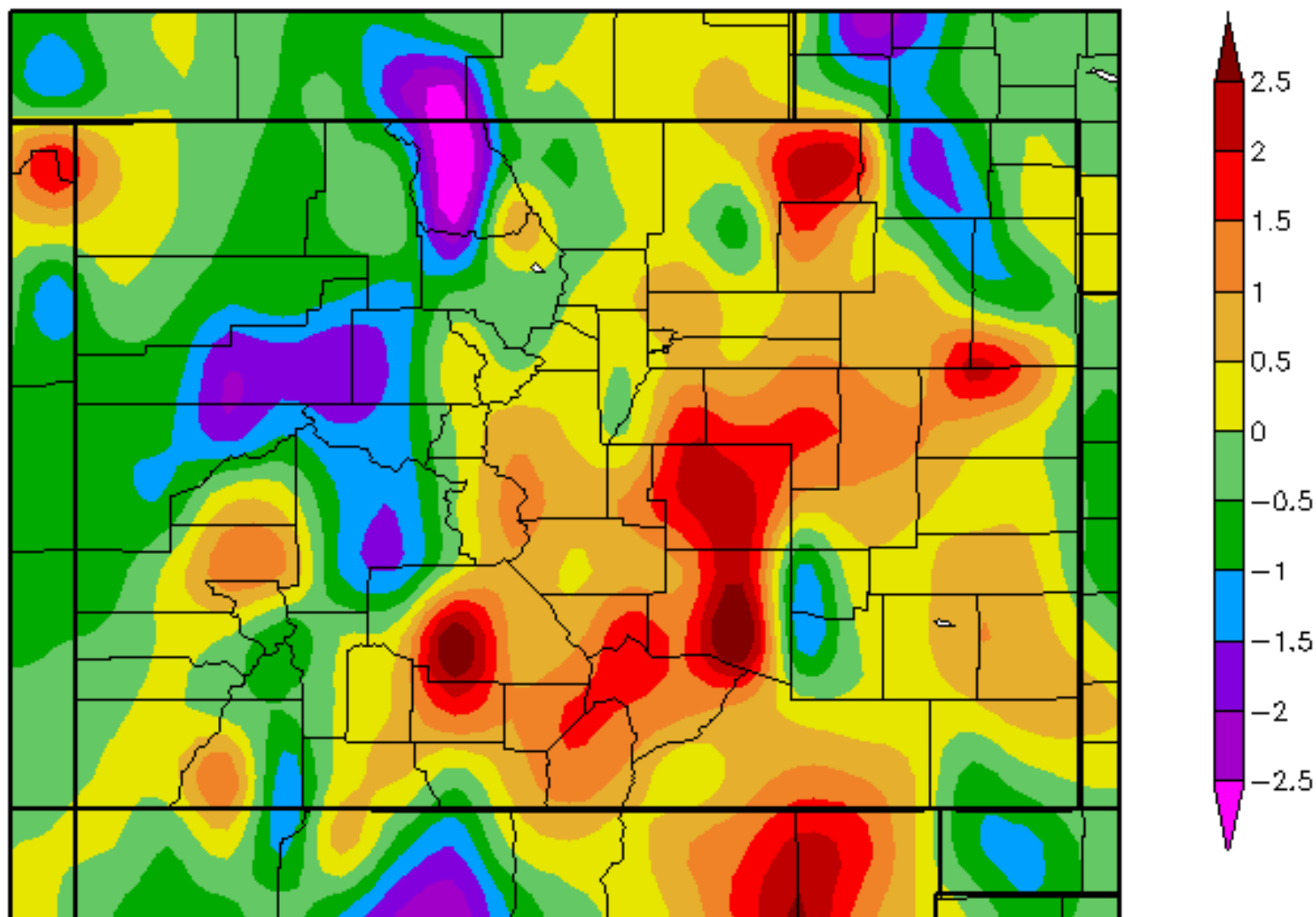
Departure from Normal Temperature (F)

7/1/2016 - 7/31/2016



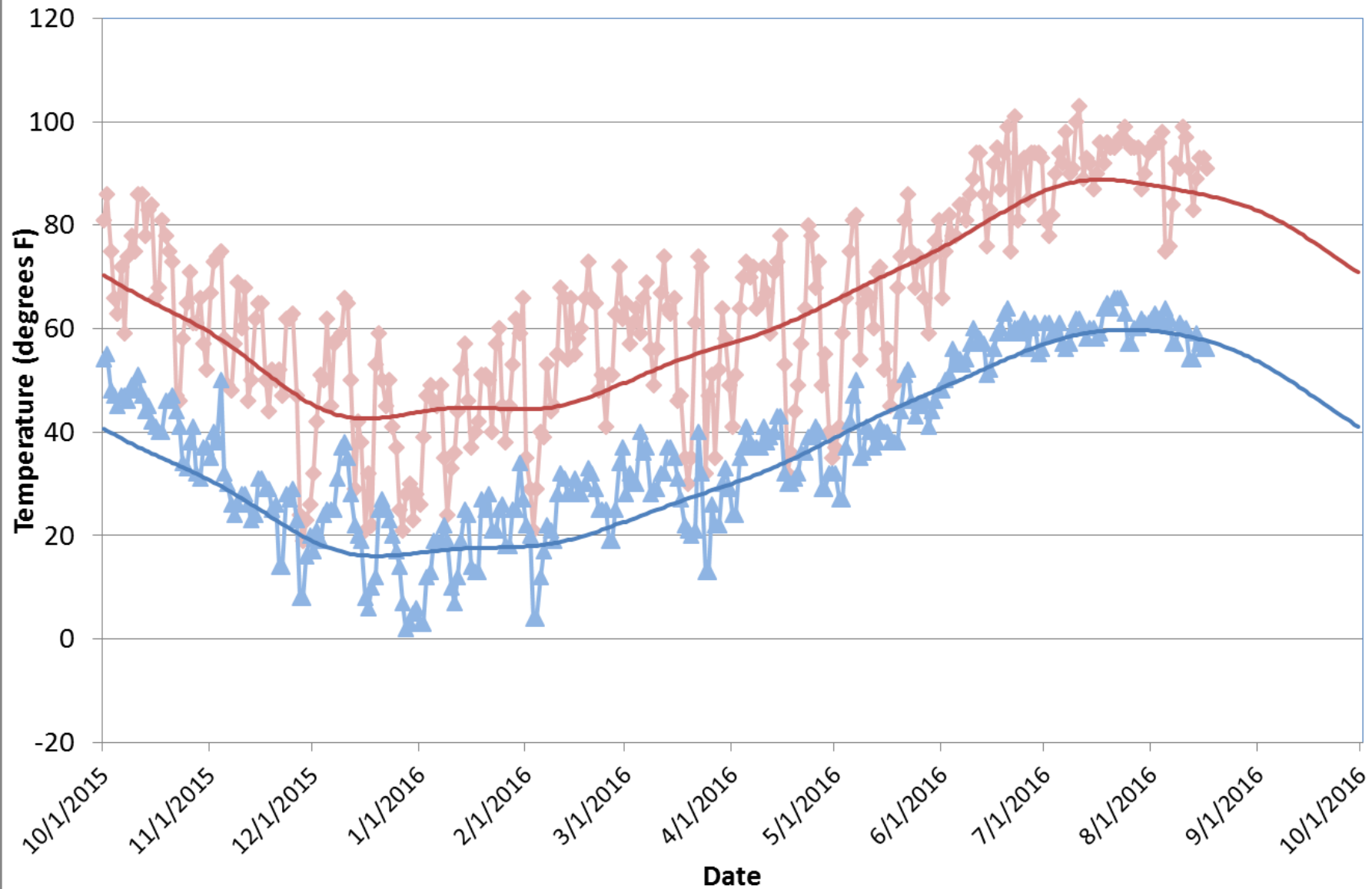
Departure from Normal Temperature (F)

8/1/2016 - 8/16/2016



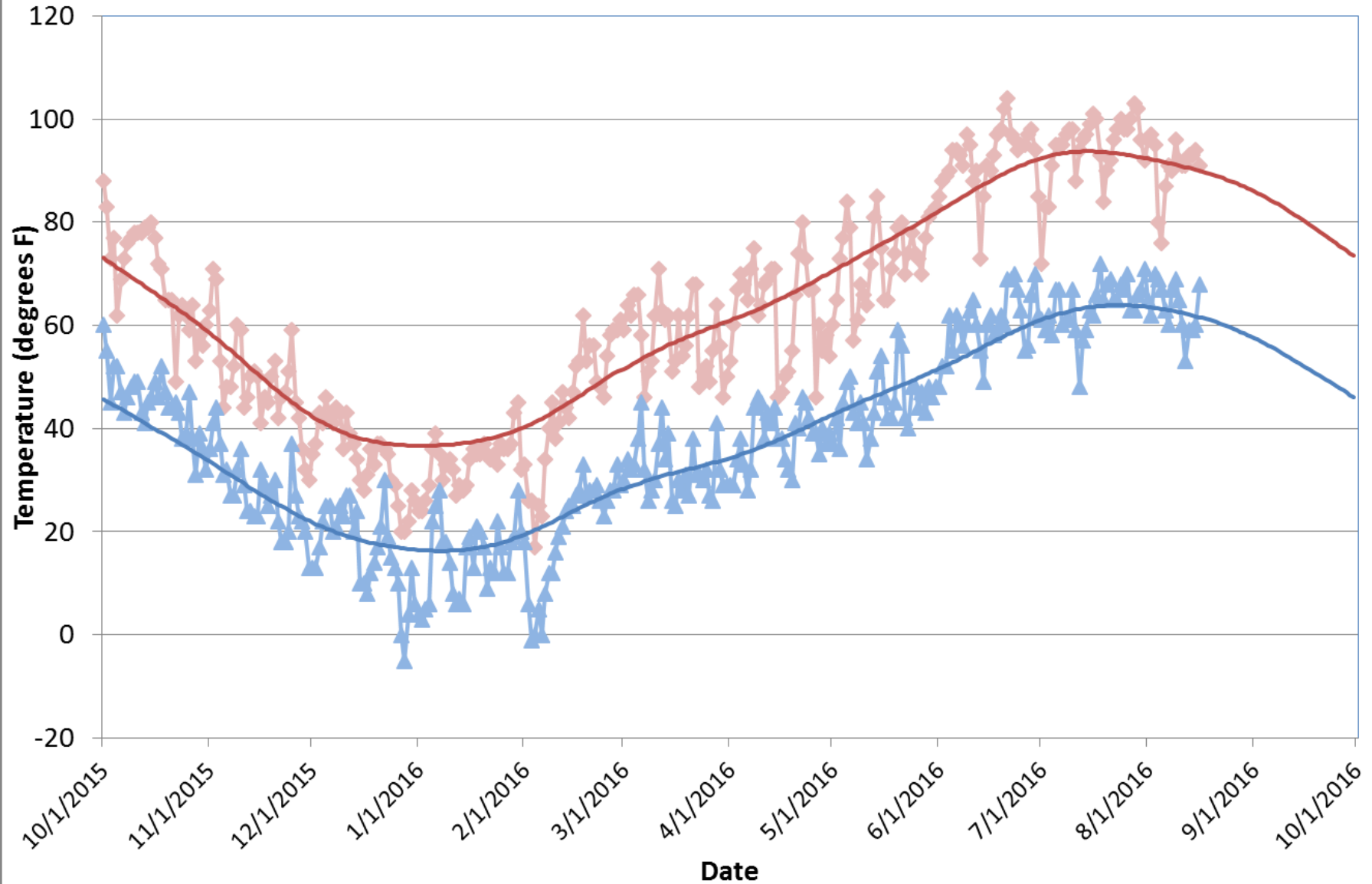
Denver-Stapleton Daily Max/Min Temperatures with Normals, Water Year 2016

◆ Max Temperature — Normal Max Temp ▲ Min Temperature — Normal Min Temp

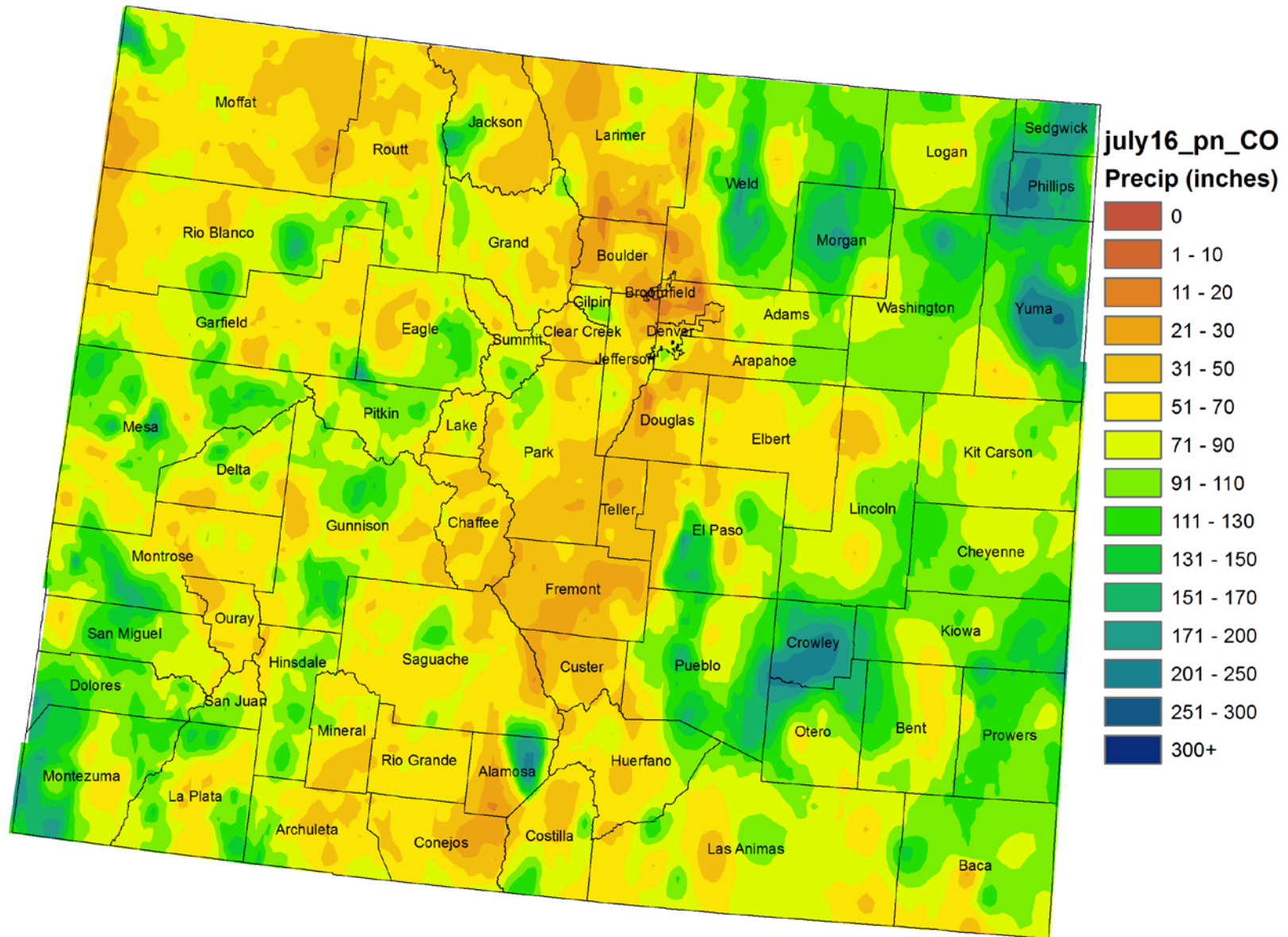


Grand Junction Daily Max/Min Temperature with Normals, WY 2016

Max Temperature Normal Max Temp Min Temperature Normal Min Temp



Colorado July 2016 Precipitation as a Percentage of Normal



July 2016 Statewide Precipitation

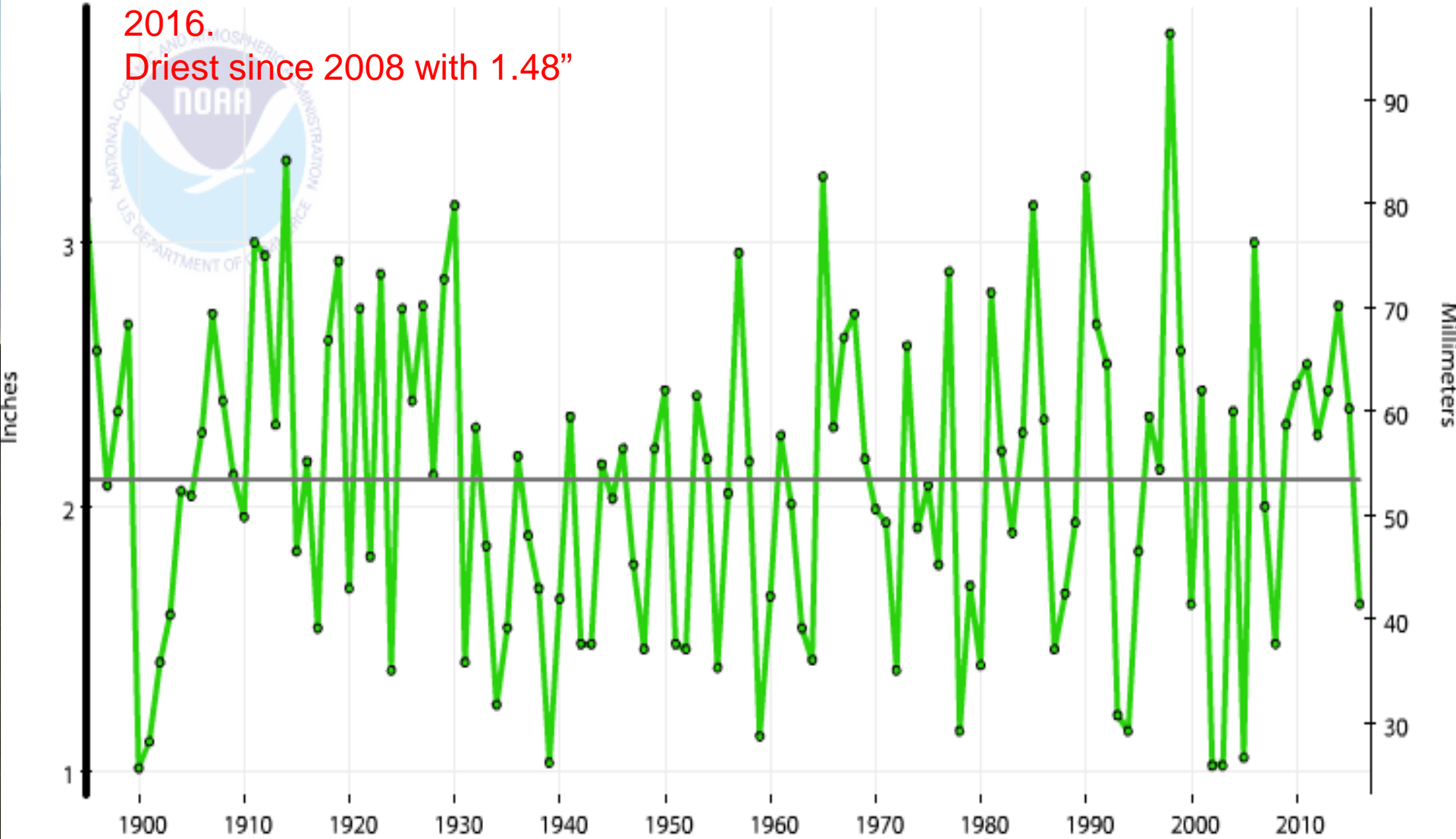
Colorado, Precipitation, July

1.63" (-0.47")

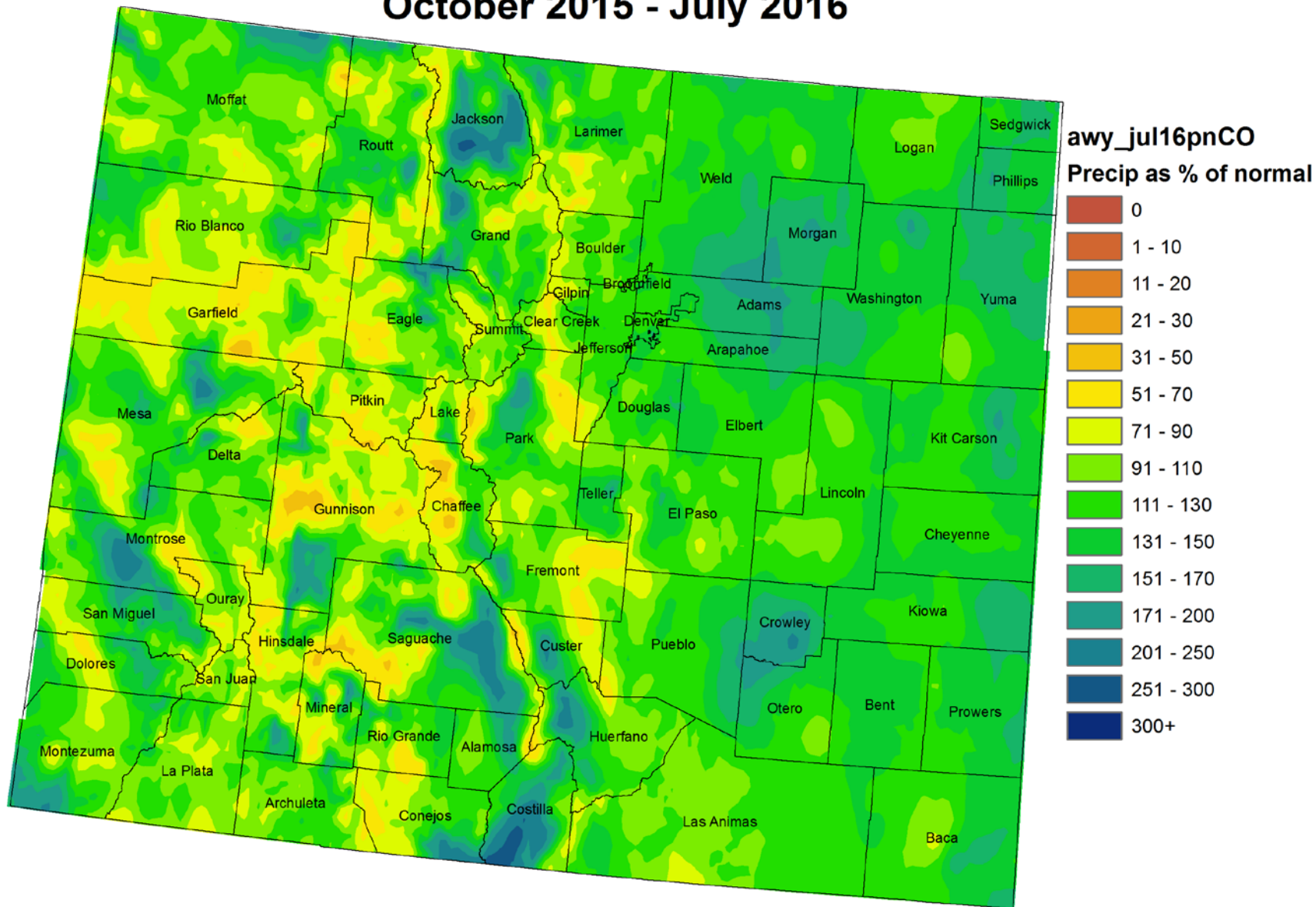
30th driest on Record 1895-2016.

Driest since 2008 with 1.48"

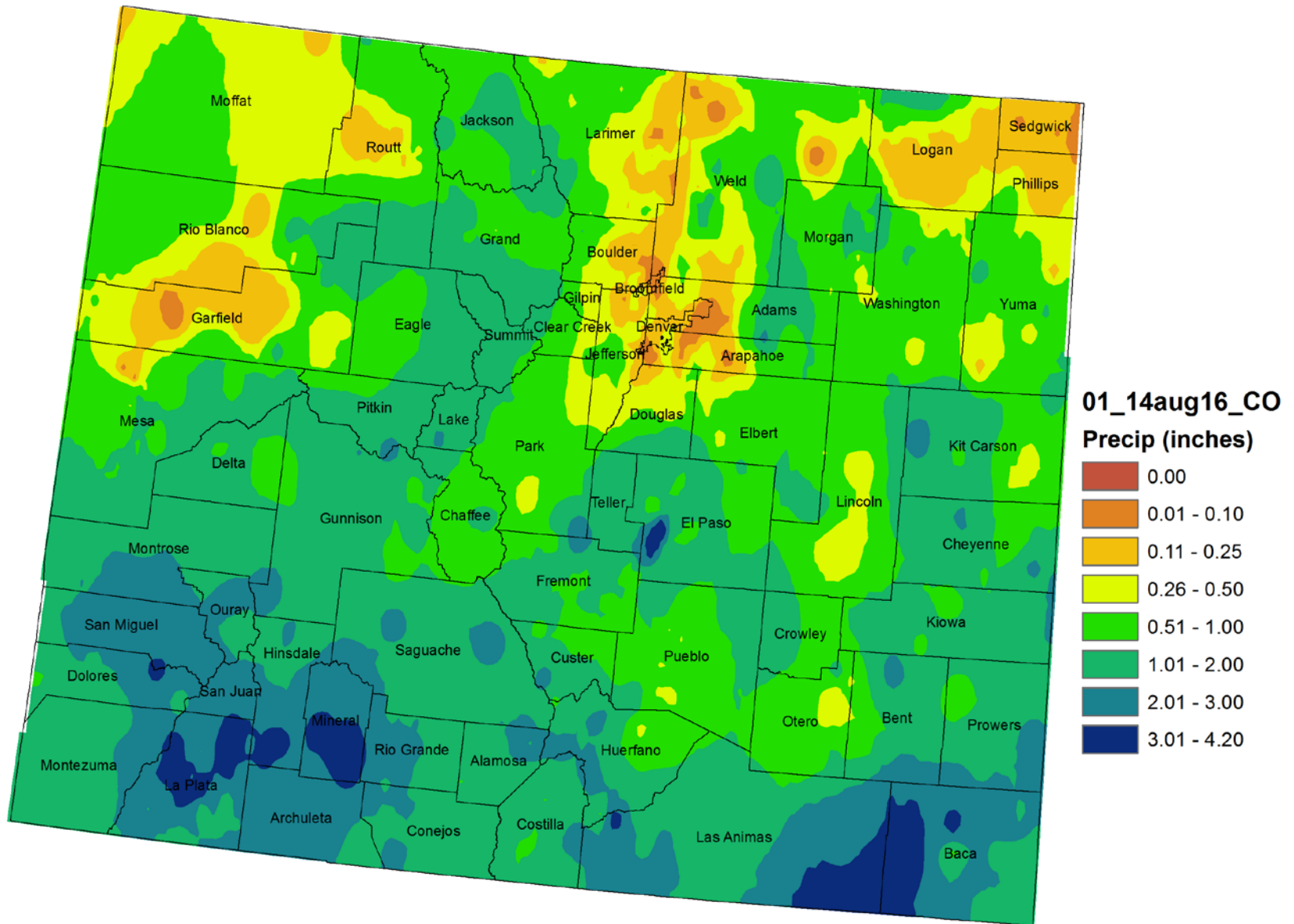
1901-2000 Avg: 2.10" Precip



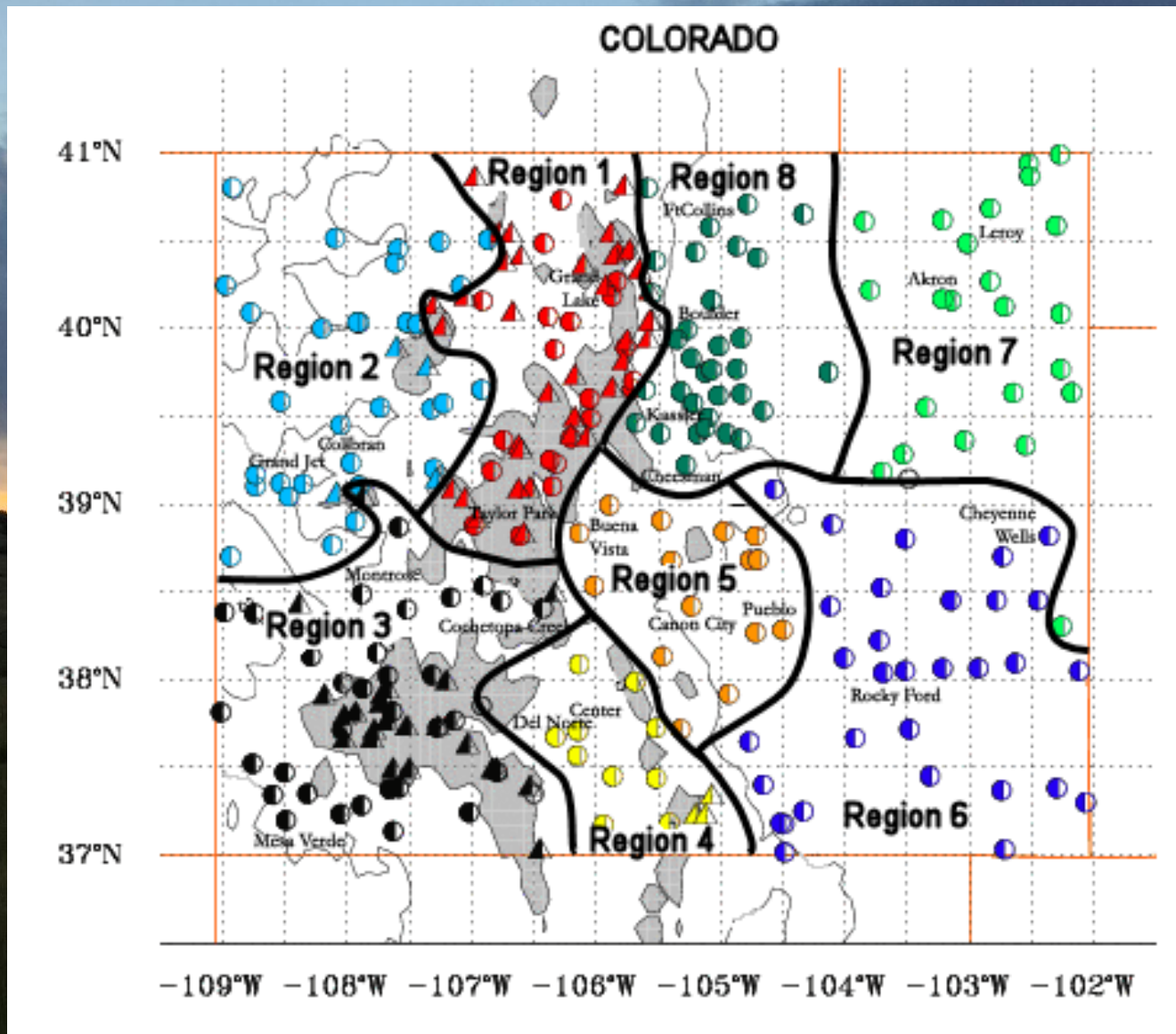
Colorado Water Year Precipitation as a Percentage of Normal October 2015 - July 2016



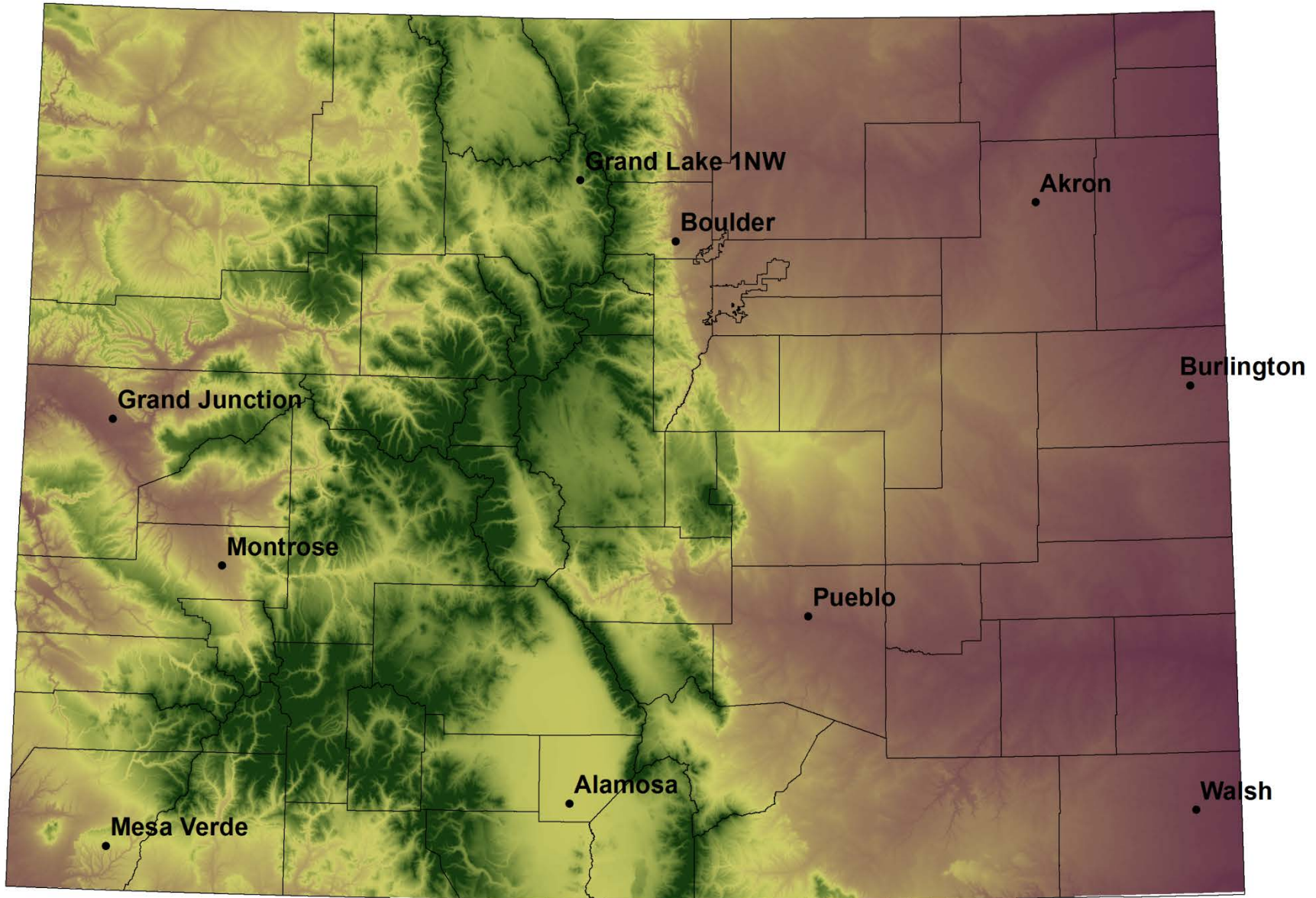
Colorado Month to Date Precipitation 1 - 14 August 2016



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

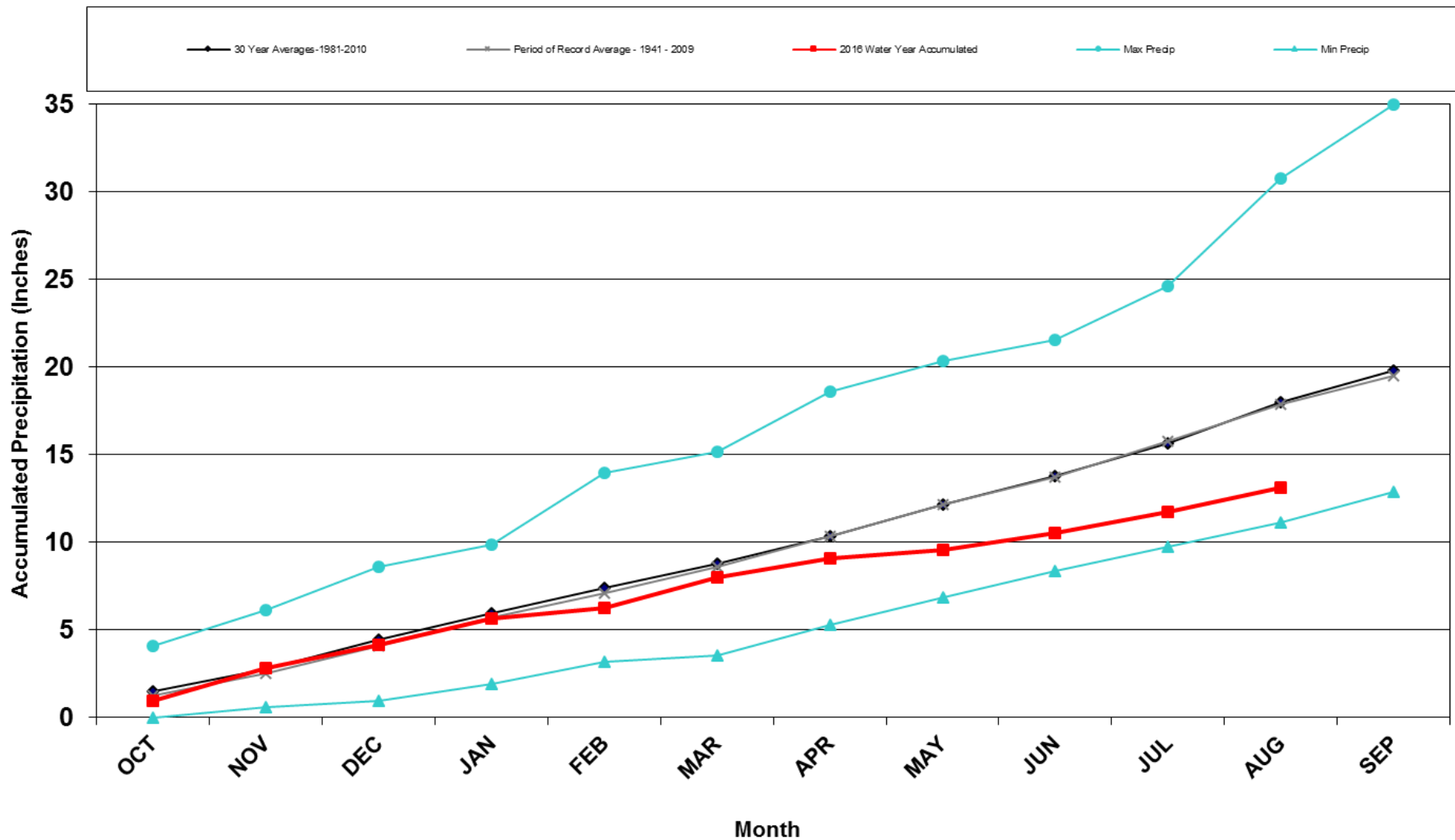


NWS Cooperative Stations for WATF



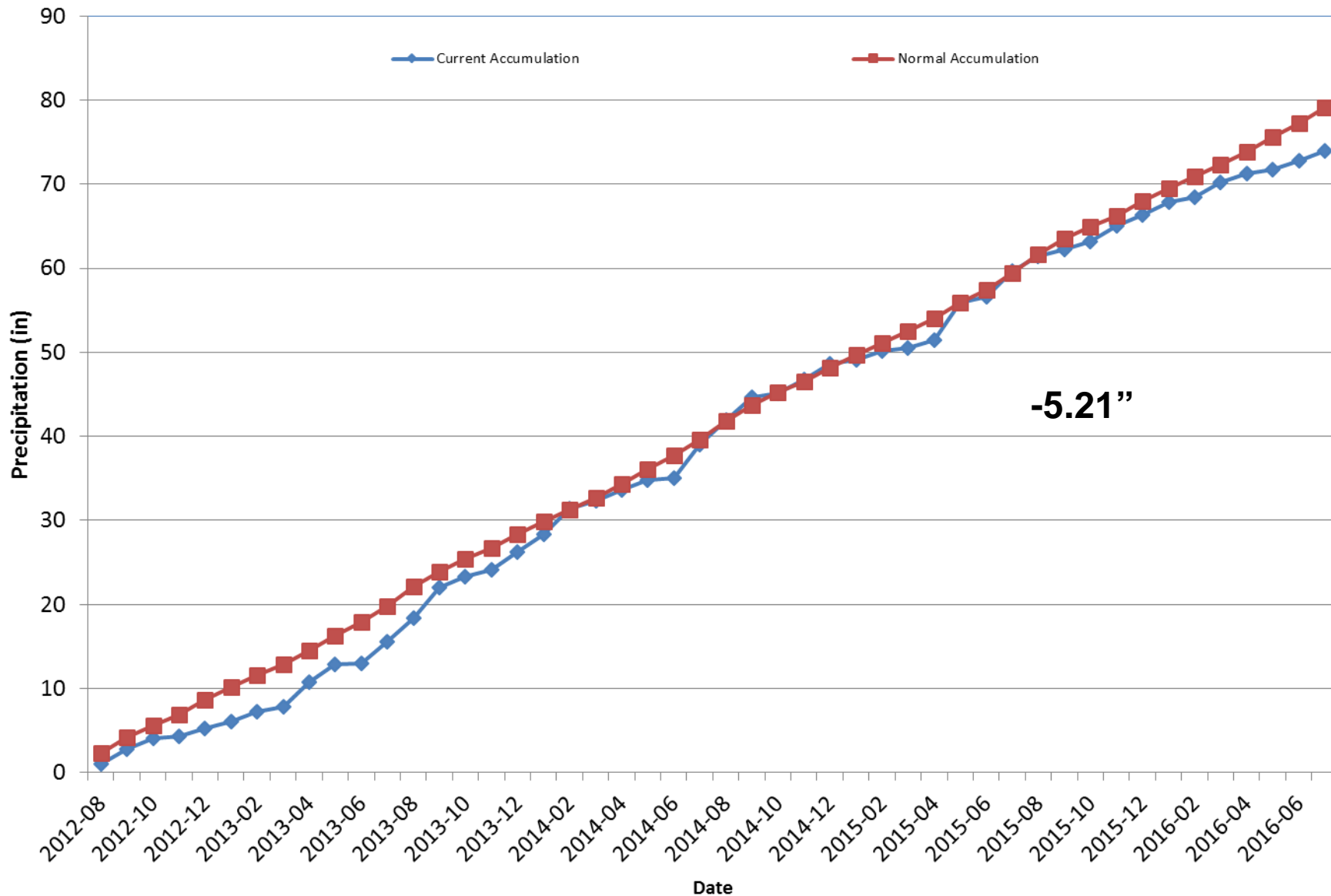
Division 1 – Grand Lake 1NW

Grand Lake 1 NW 2016 Water Year



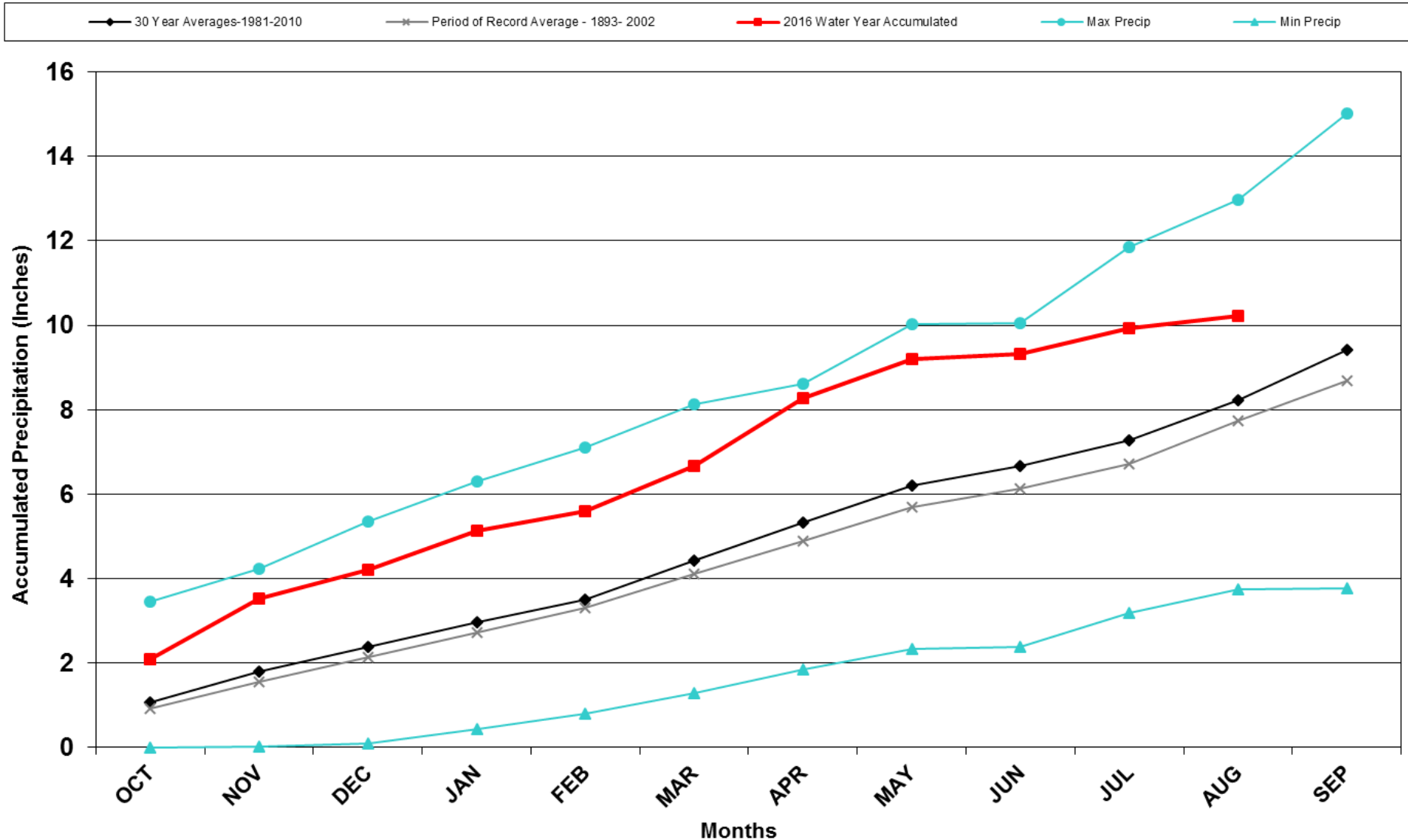
Division 1 – Grand Lake 1NW

Grand Lake 1NW Precipitation Accumulation



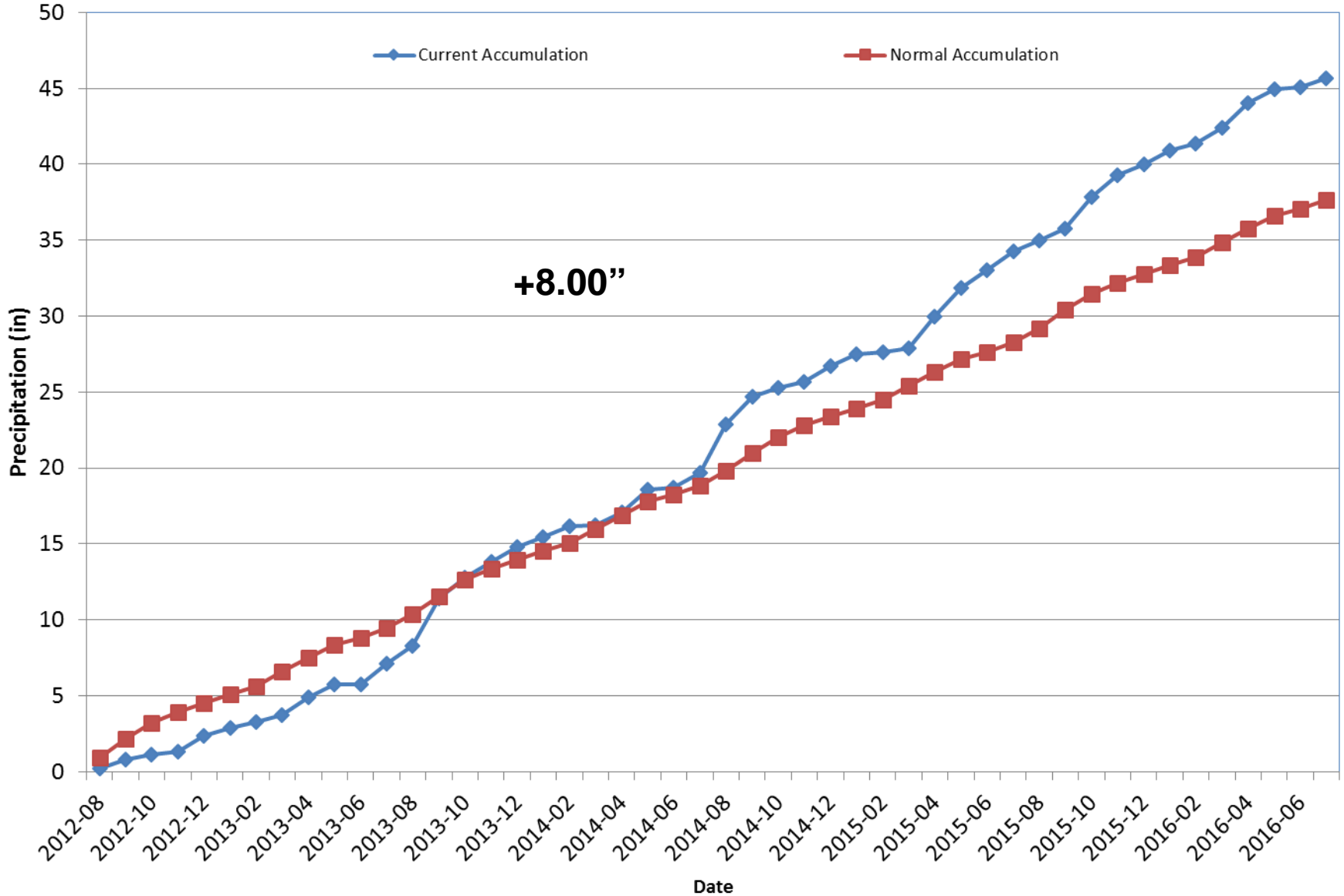
Division 2 – Grand Junction

Grand Junction WSFO 2016 Water Year



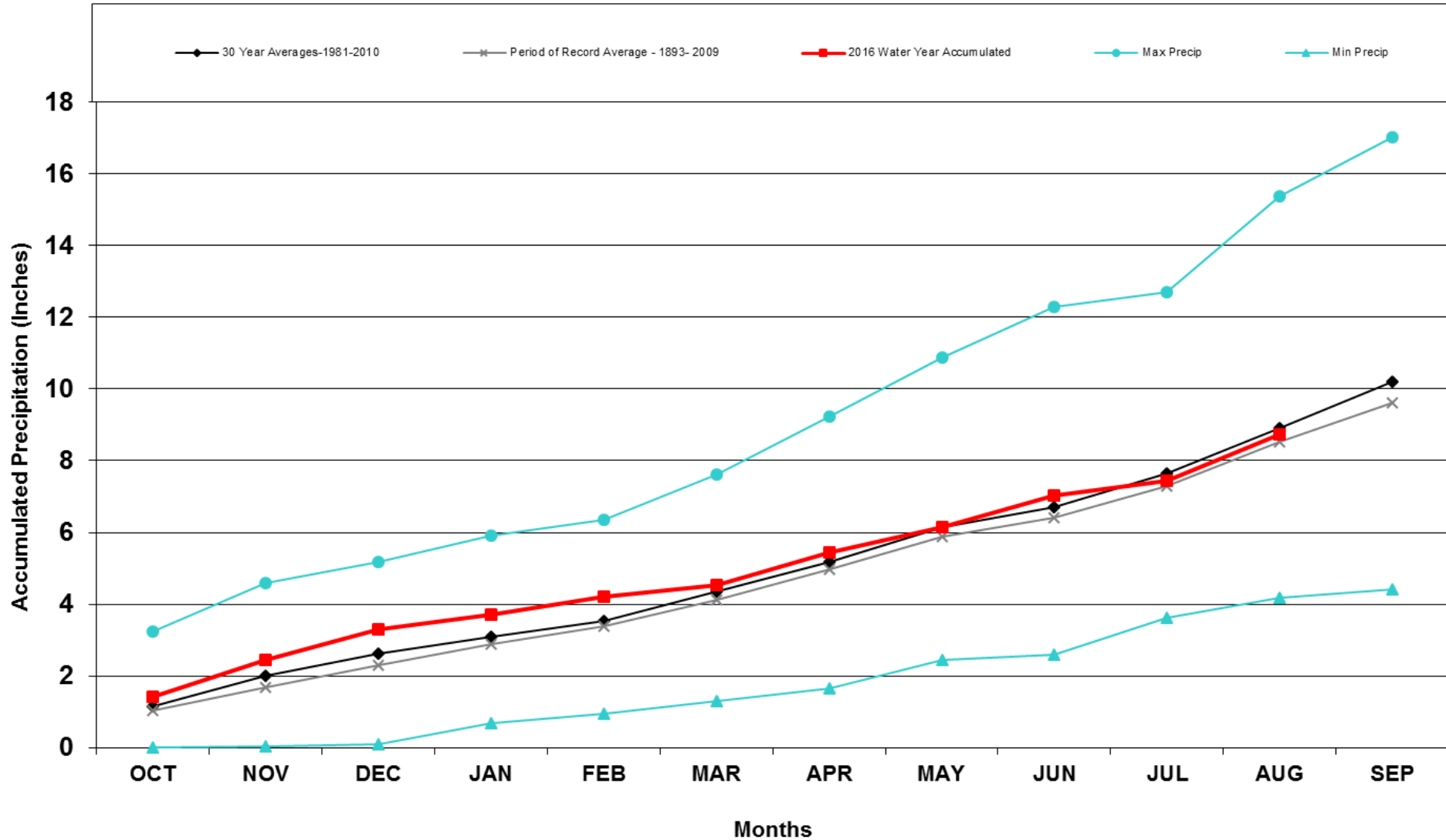
Division 2 – Grand Junction

Grand Junction Precipitation Accumulation



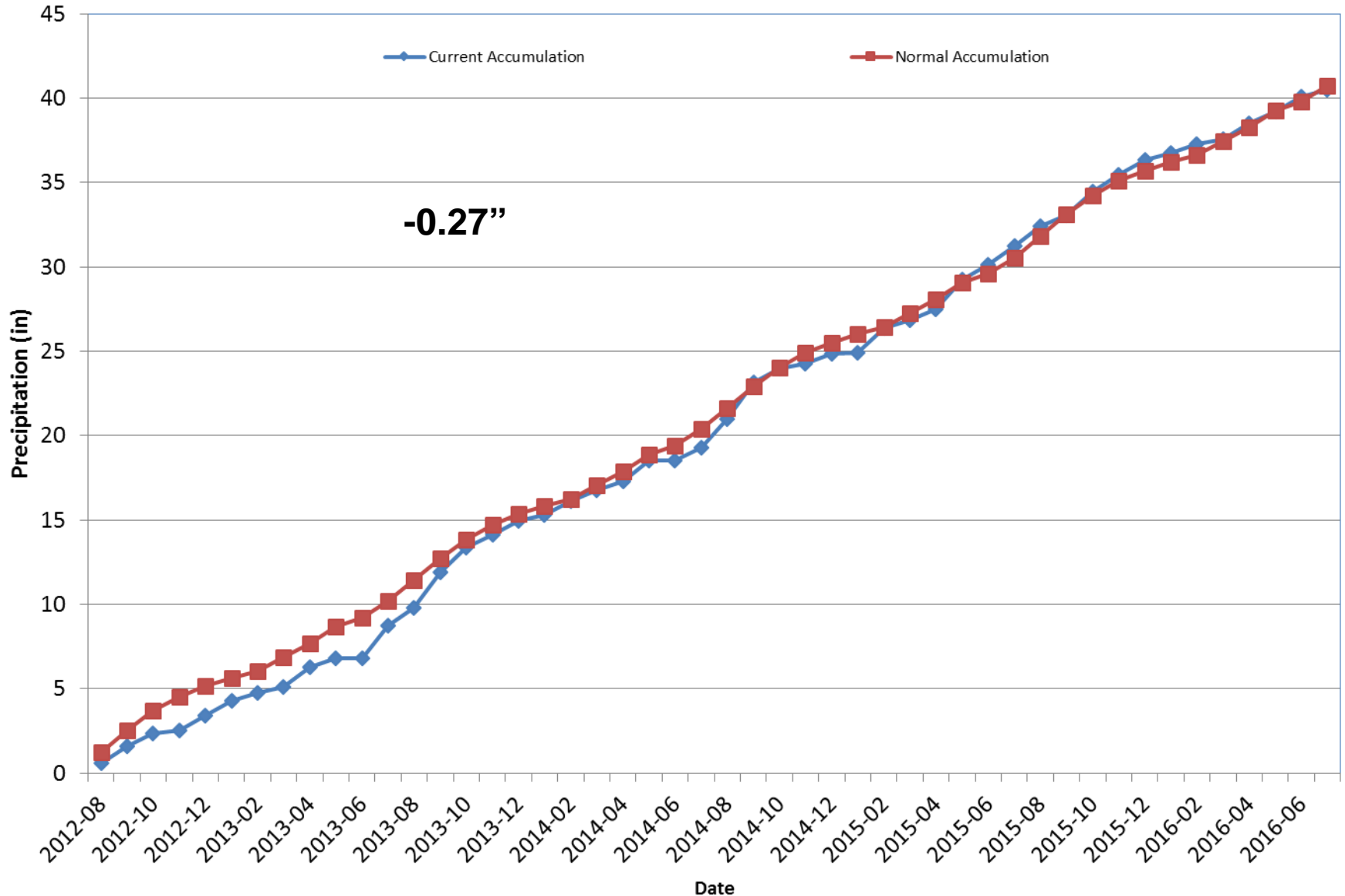
Division 3 – Montrose

Montrose #2 2016 Water Year



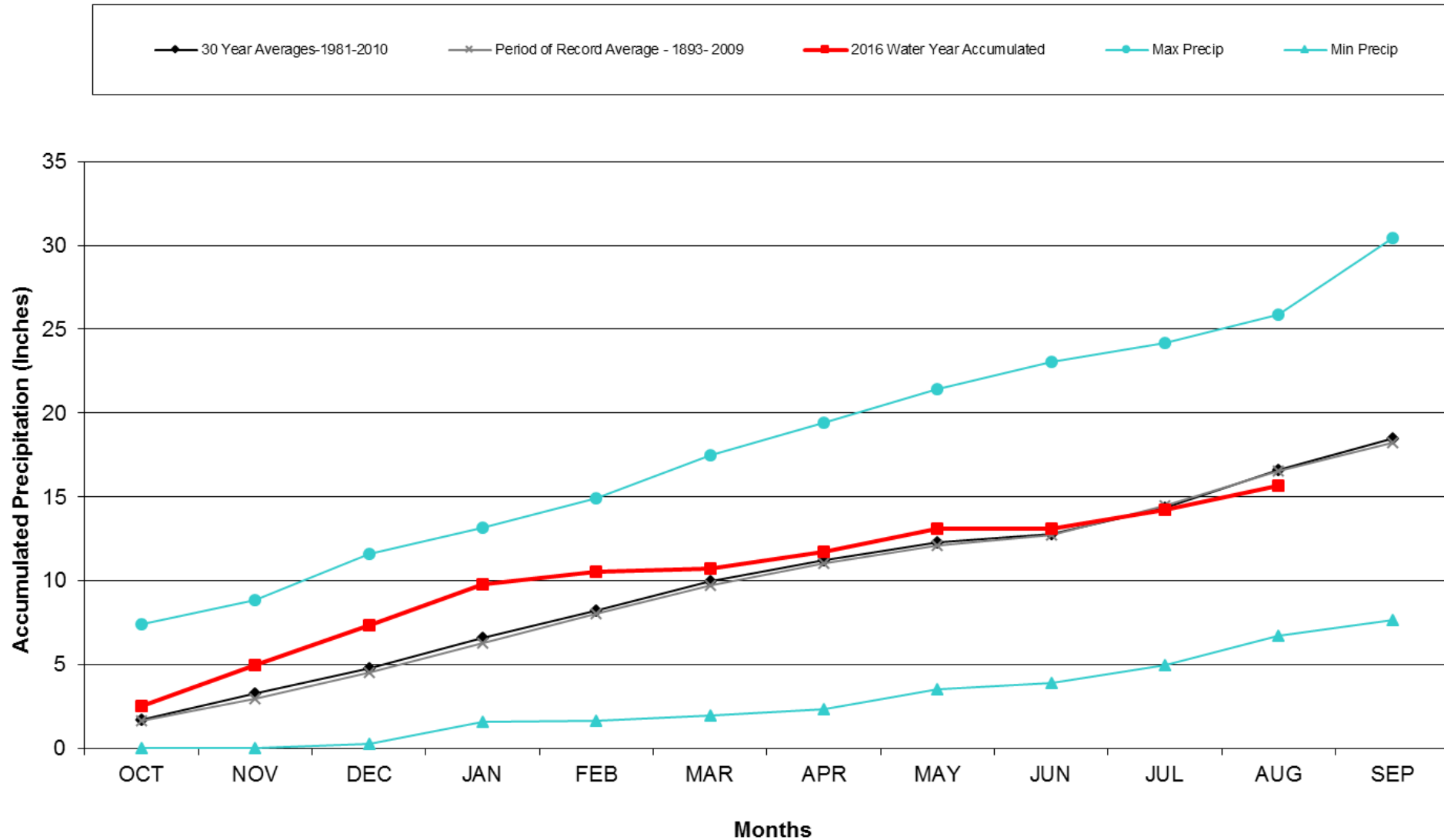
Division 3 – Montrose

Montrose #2 Precipitation Accumulation



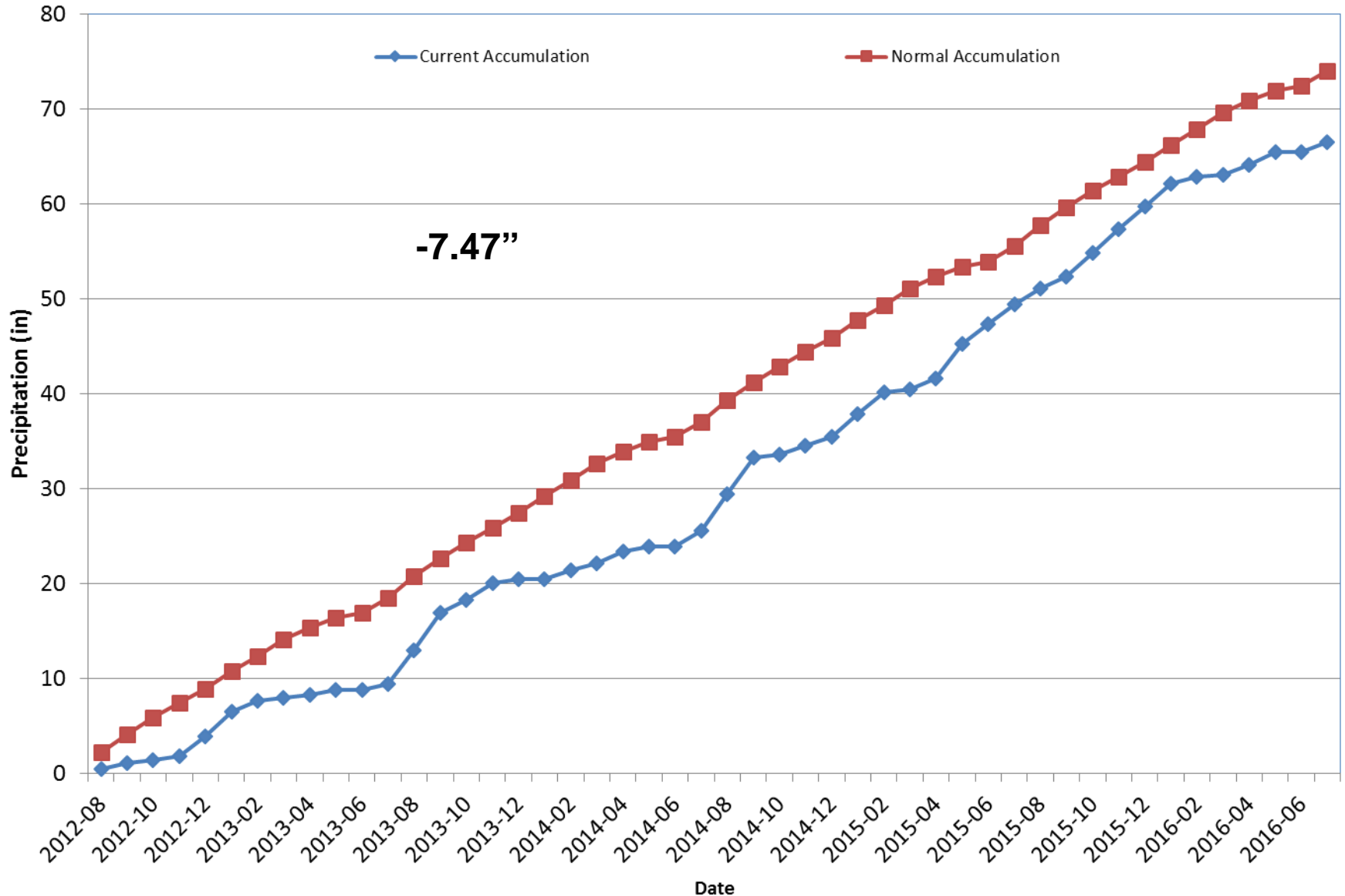
Division 3 – Mesa Verde NP

Mesa Verde NP 2016 Water Year



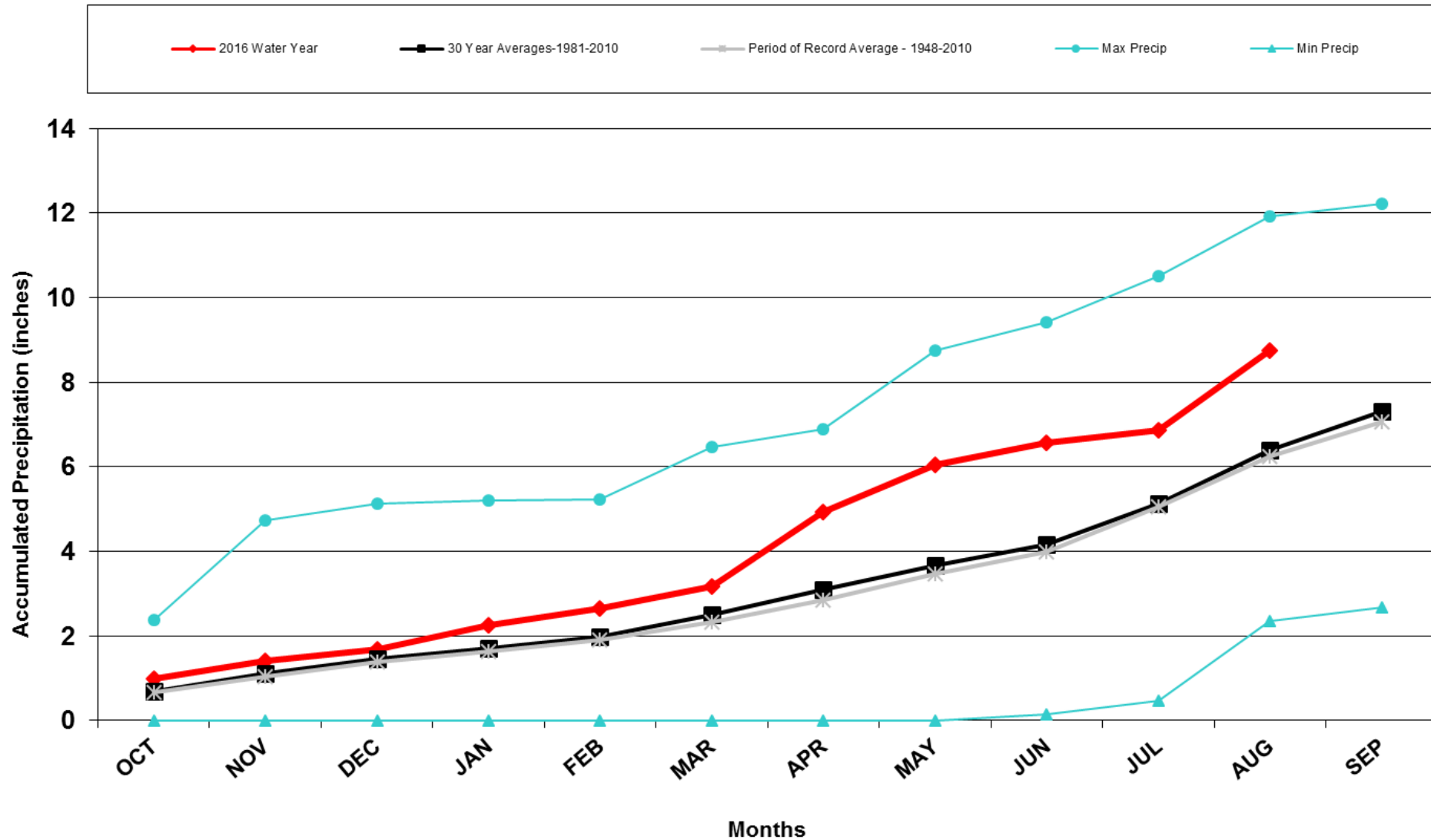
Division 3 – Mesa Verde NP

Mesa Verde NP Precipitation Accumulation



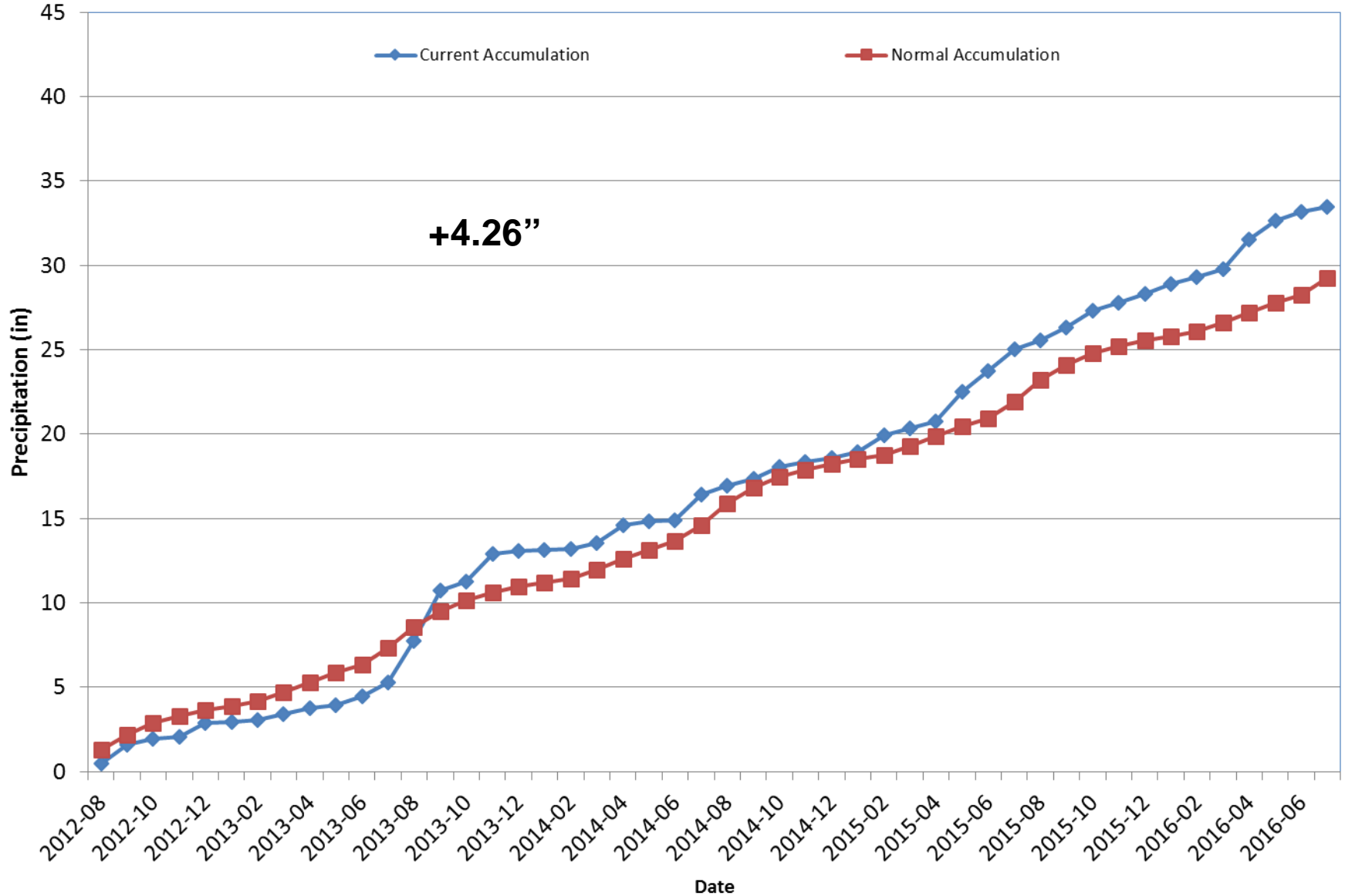
Division 4 – Alamosa

Alamosa WSO 2016 Water Year



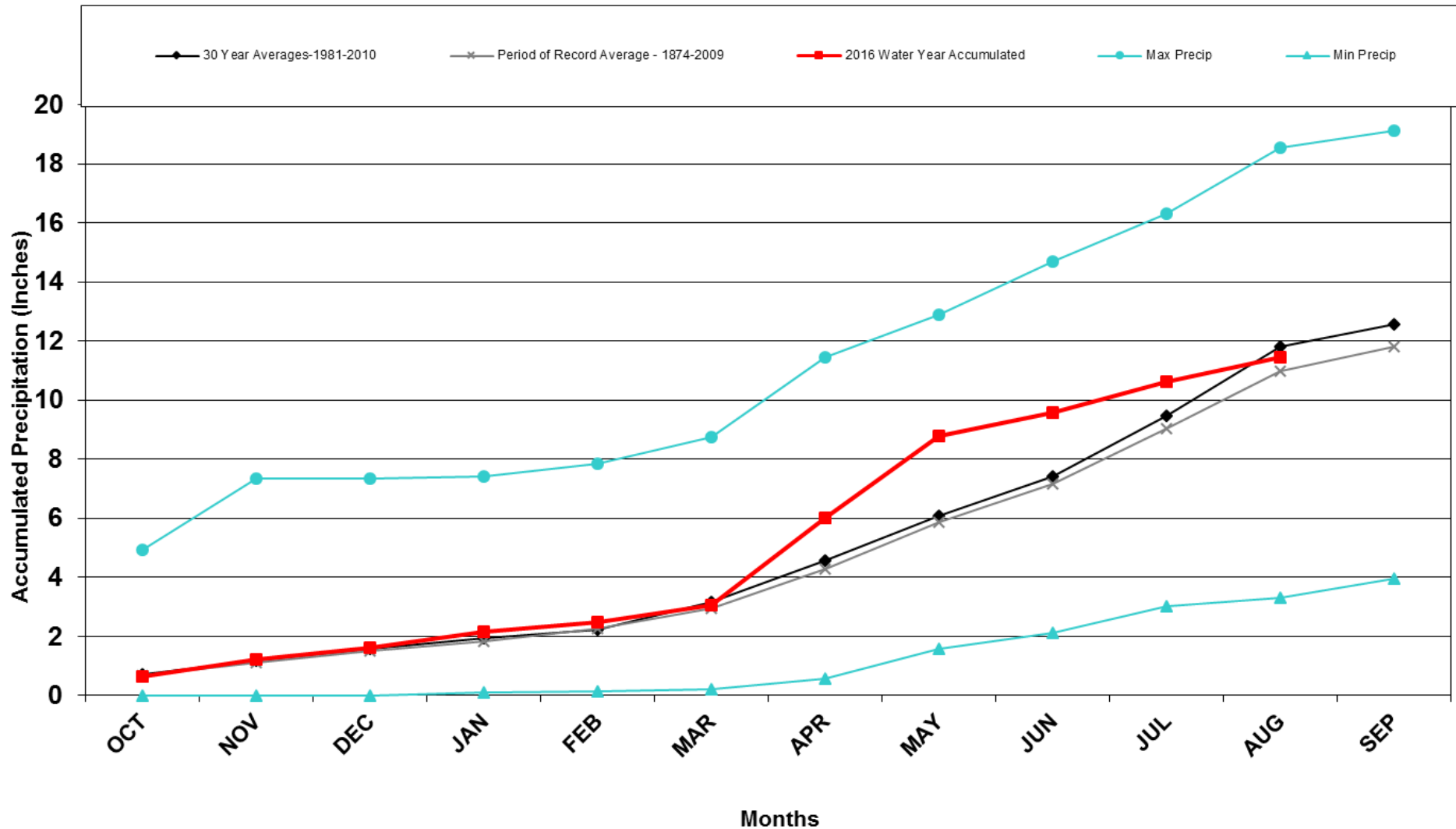
Division 4 – Alamosa

Alamosa WSO Precipitation Accumulation



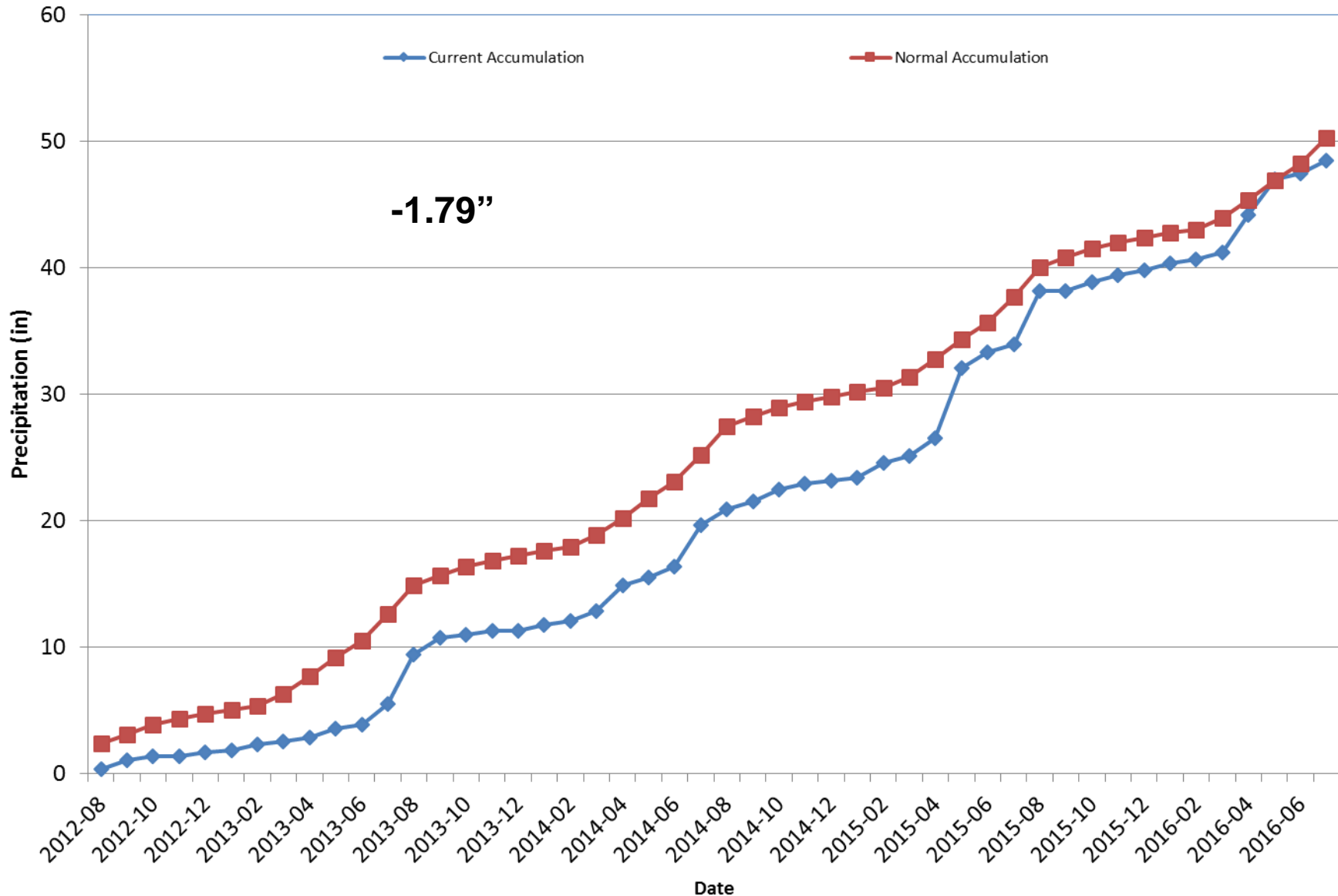
Division 5 – Pueblo

Pueblo WSO 2016 Water Year



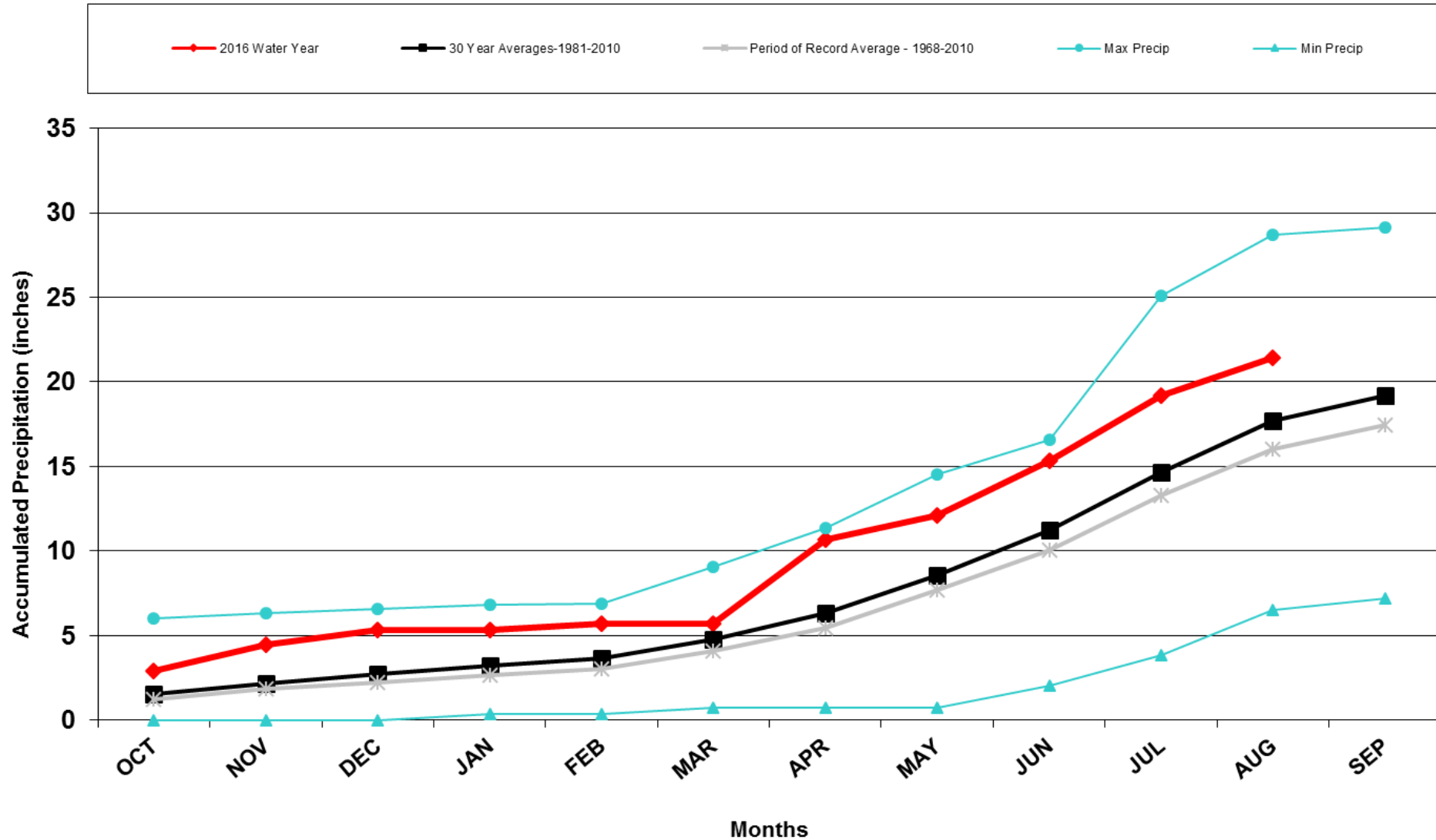
Division 5 – Pueblo

Pueblo Memorial AP Precipitation Accumulation



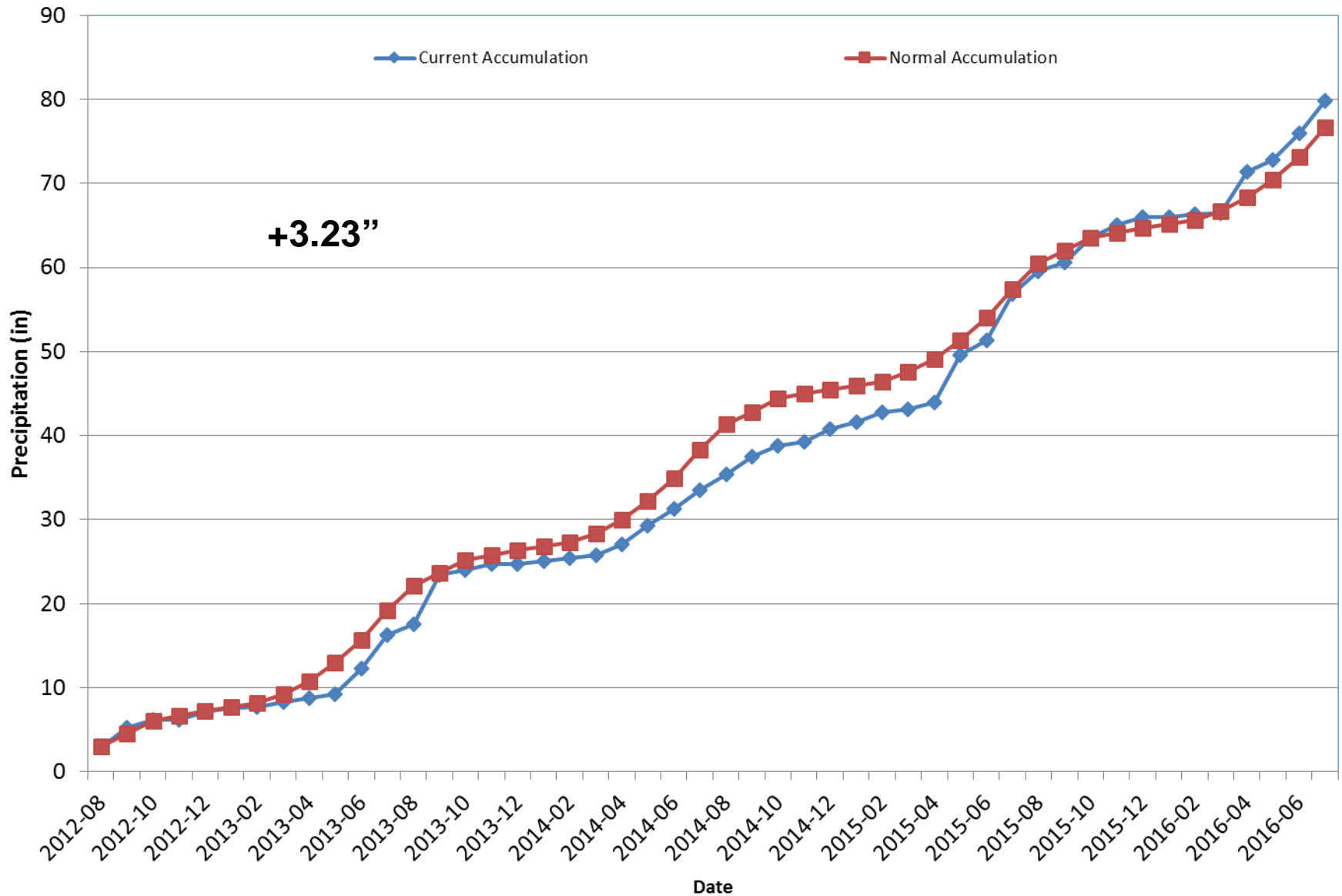
Division 6 - Walsh

Walsh 2016 Water Year



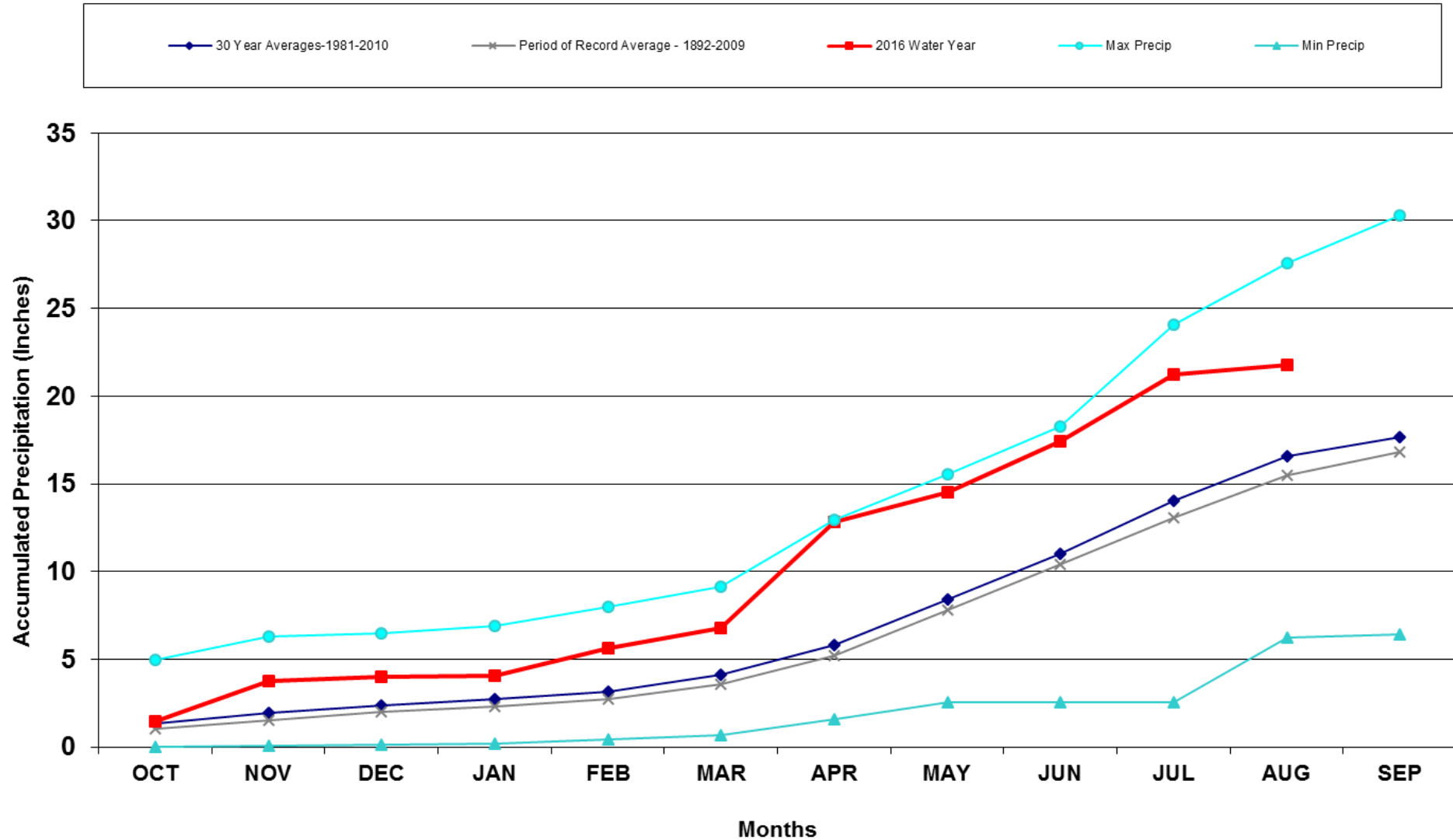
Division 6 - Walsh

Walsh 1W Precipitation Accumulation



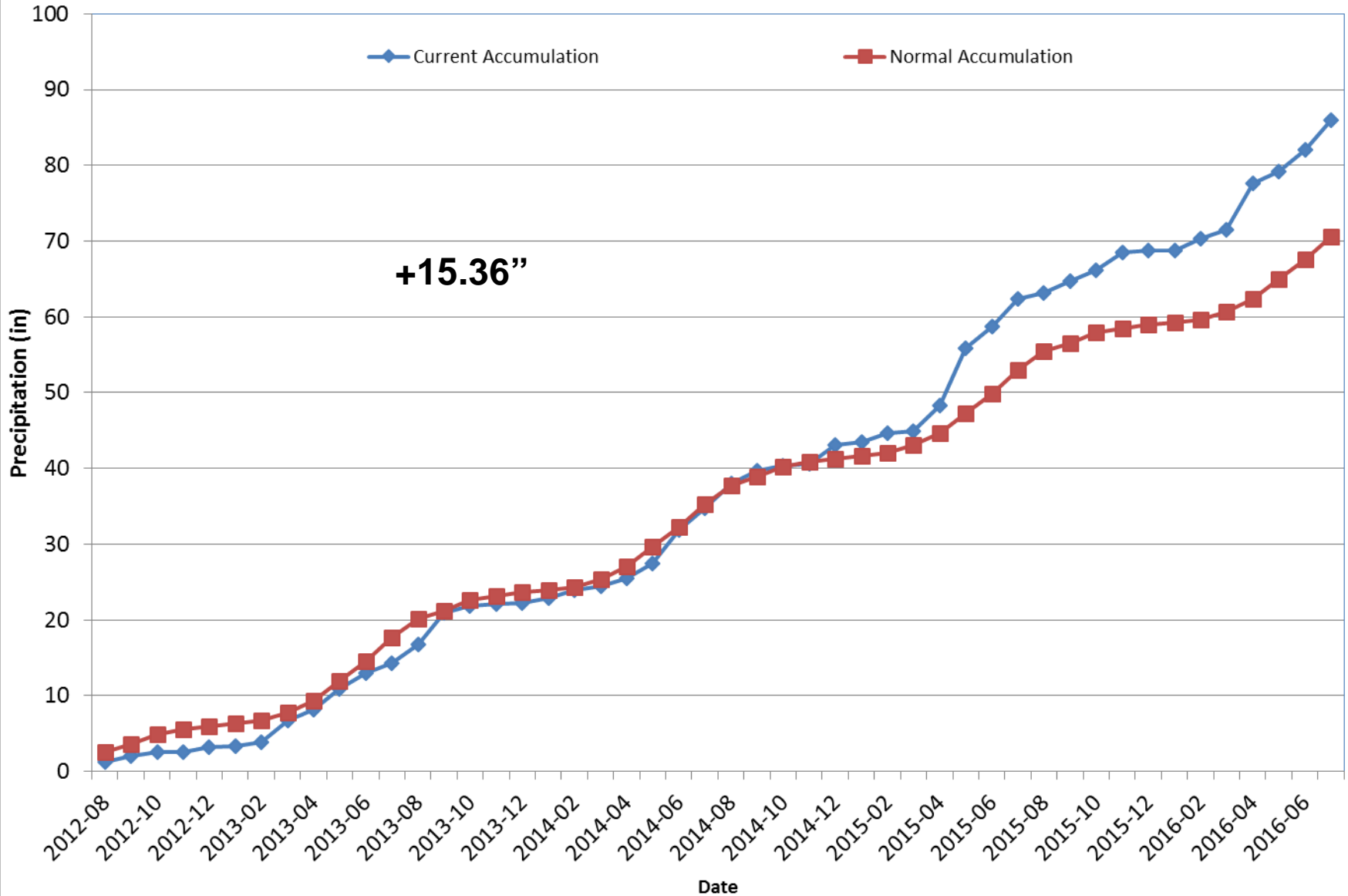
Division 6 - Burlington

Burlington 2016 Water Year



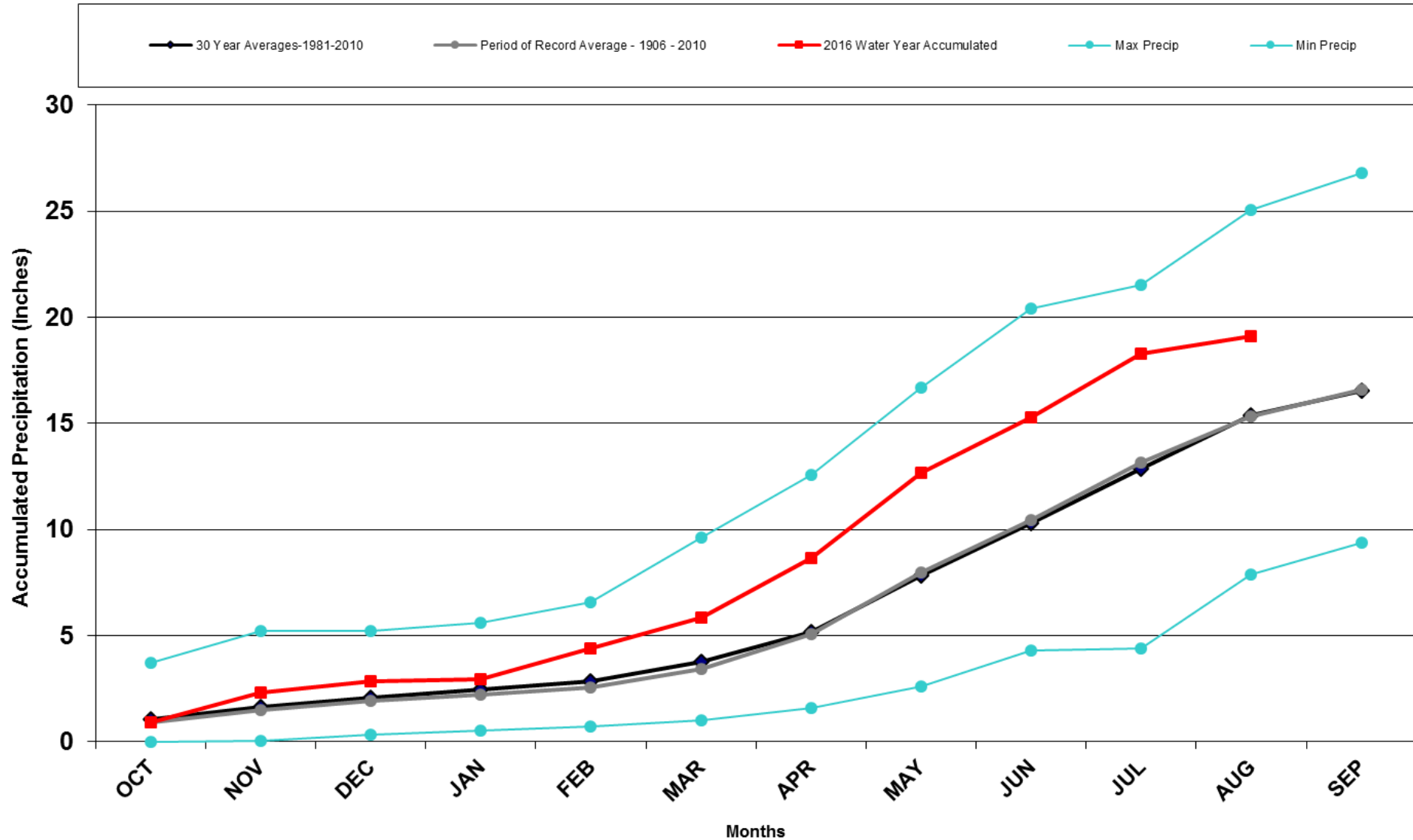
Division 6 - Burlington

Burlington, CO Precipitation Accumulation



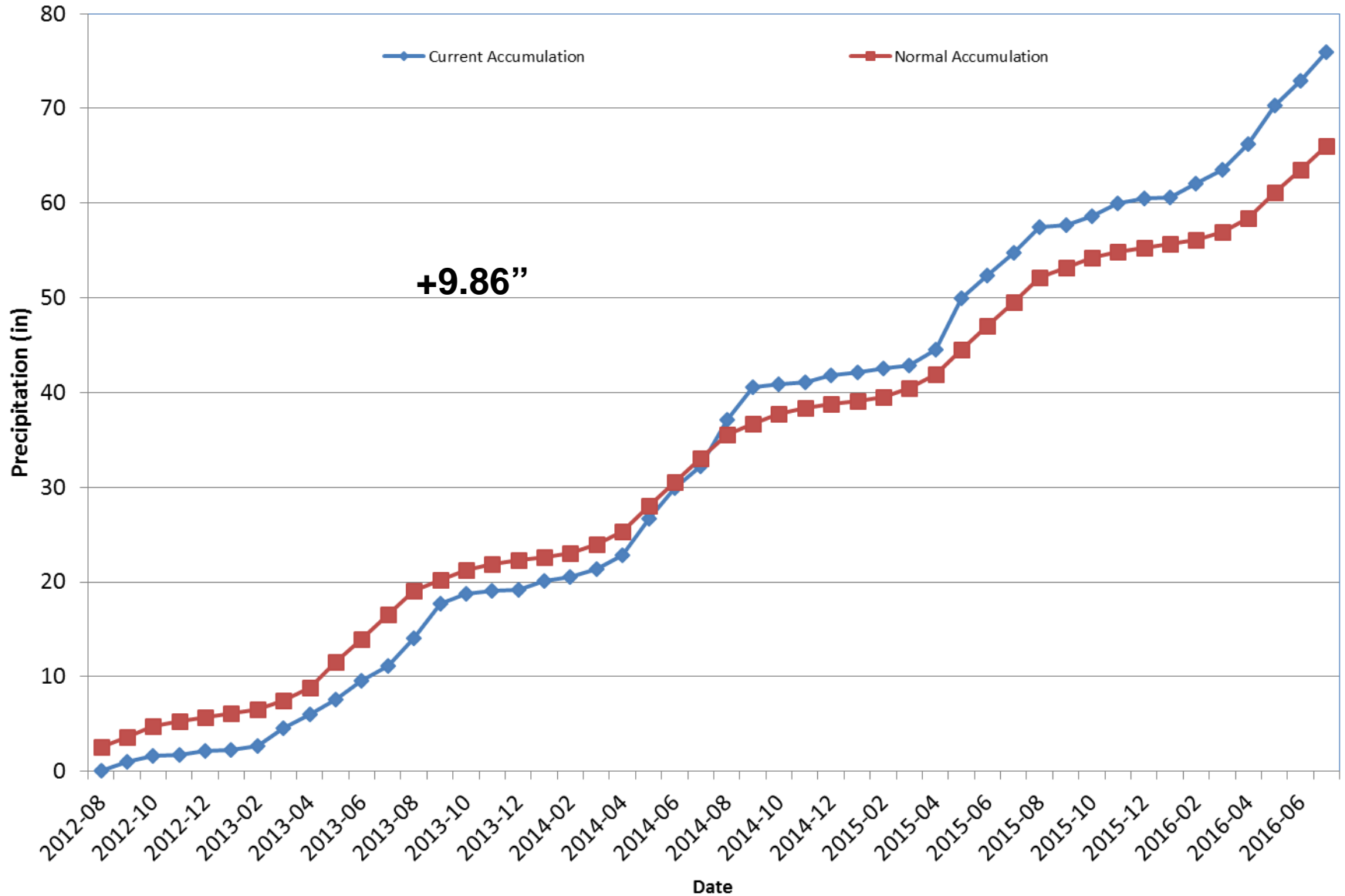
Division 7 – Akron

Akron 4E 2016 Water Year



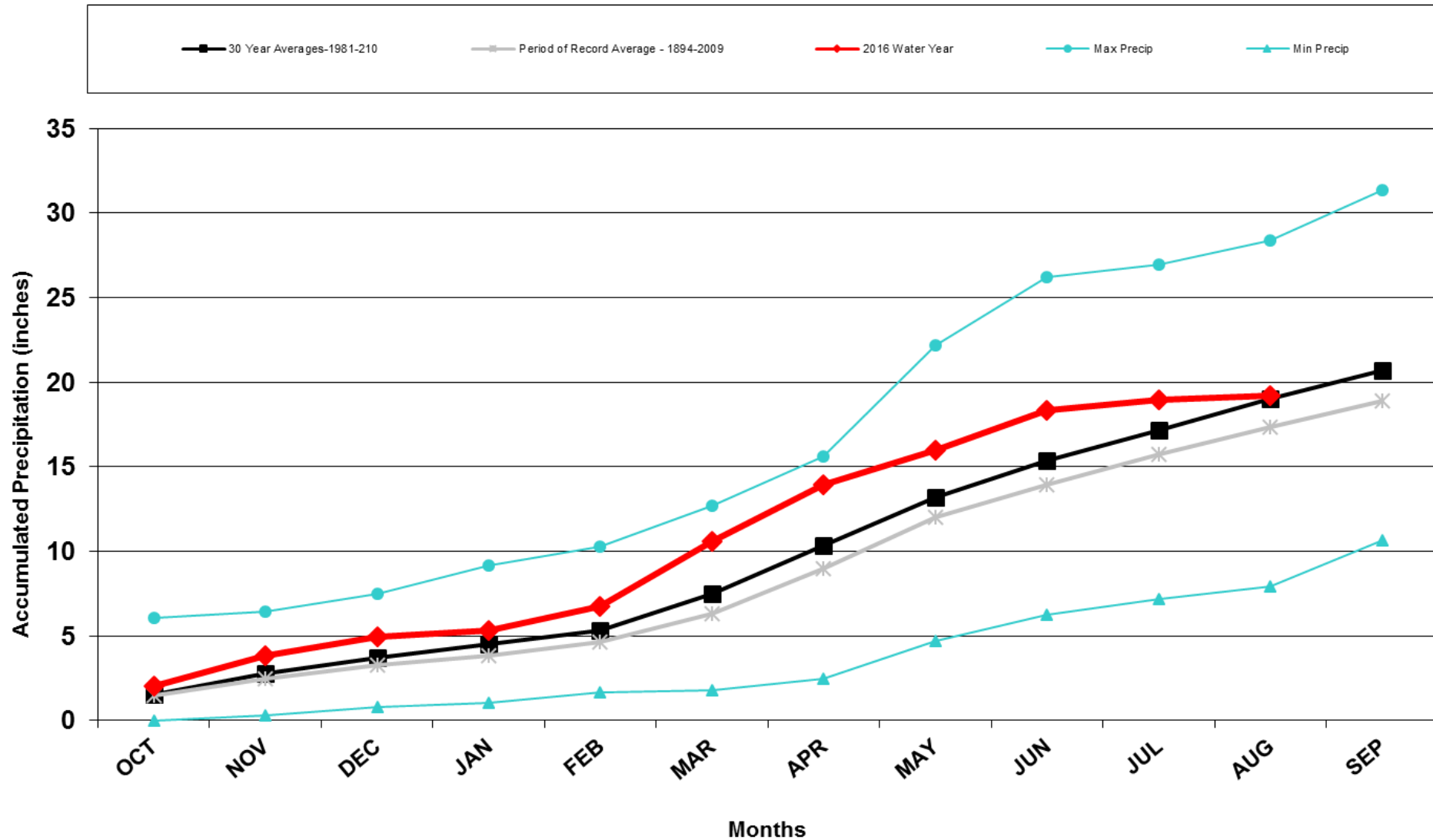
Division 7 – Akron

Akron 4E Precipitation Accumulation



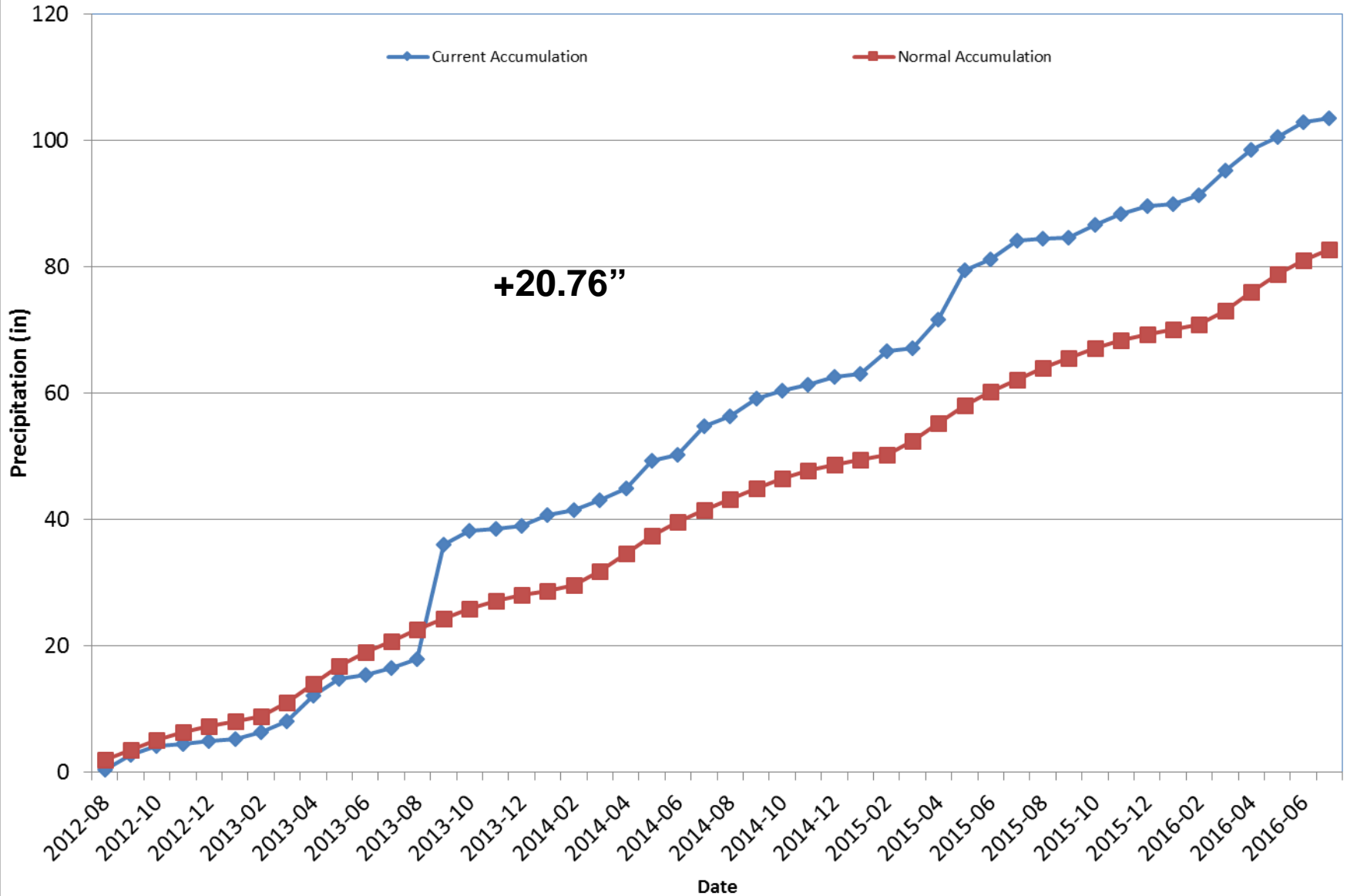
Division 8 - Boulder

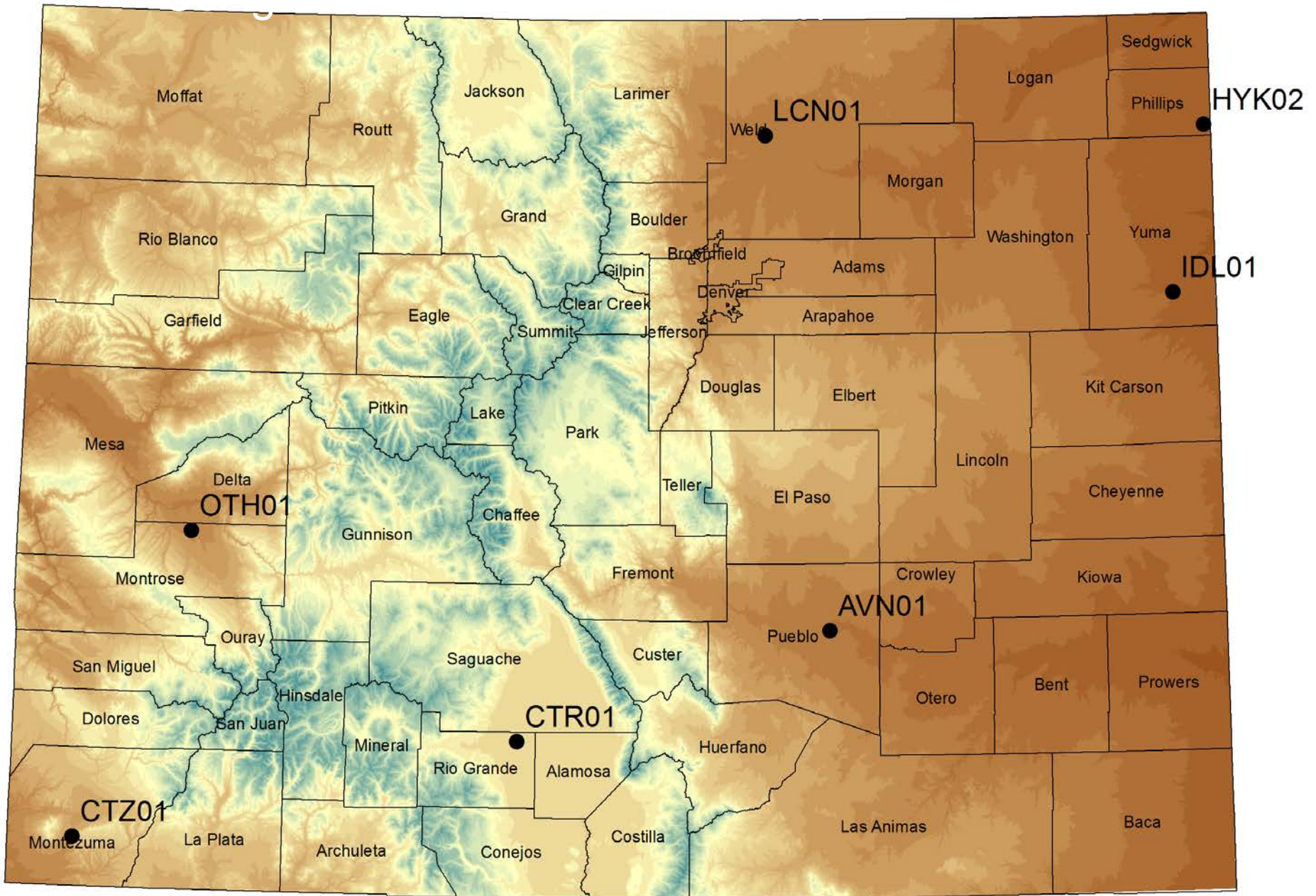
Boulder 2016 Water Year



Division 8 - Boulder

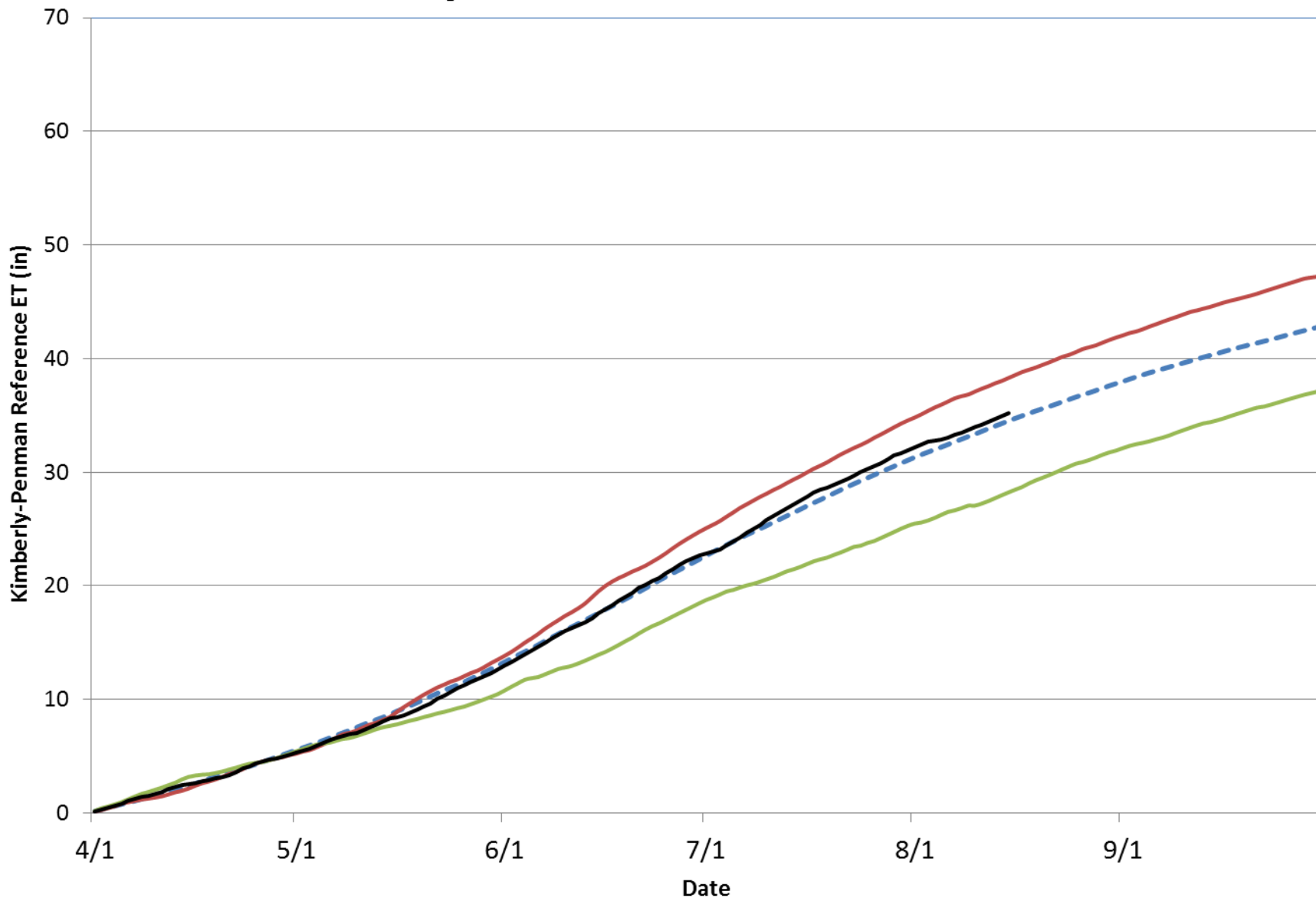
Boulder Precipitation Accumulation





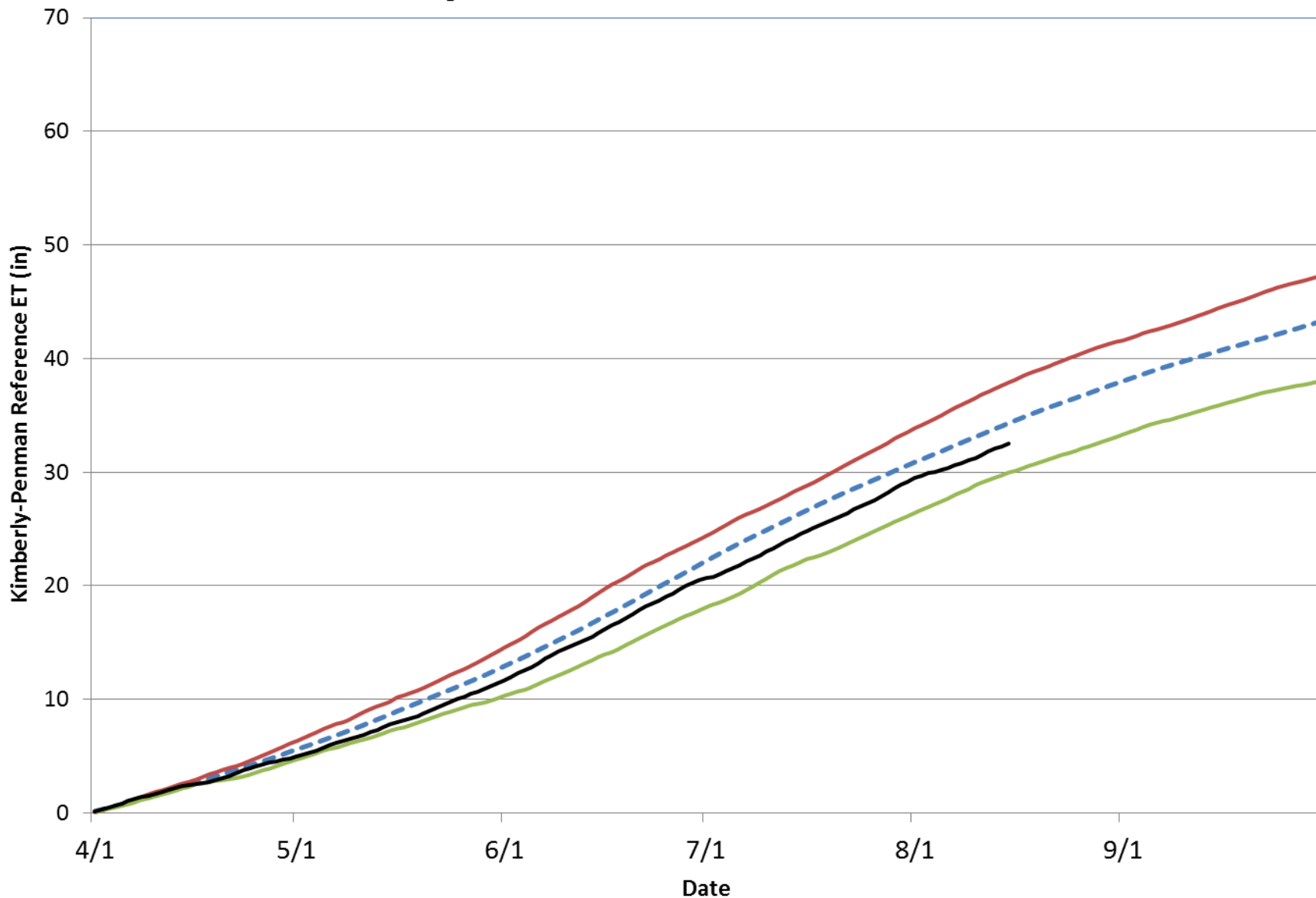
Olathe Kimberly-Penman Reference ET (1993 - 2016)

--- Average — 1994 — 2015 — 2016



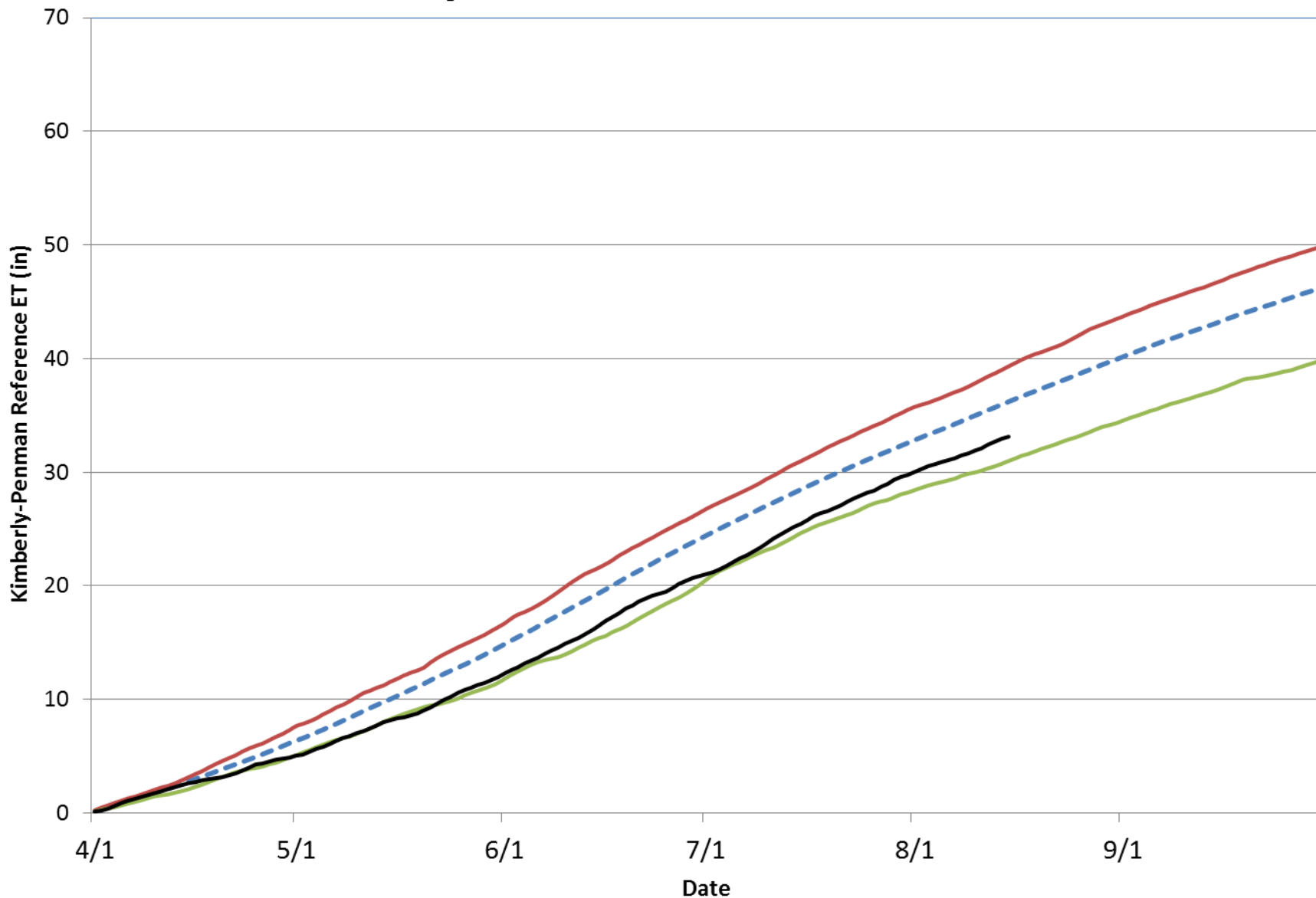
Cortez Kimberly-Penman Reference ET (1992 - 2016)

--- Average — 2000 — 1995 — 2016



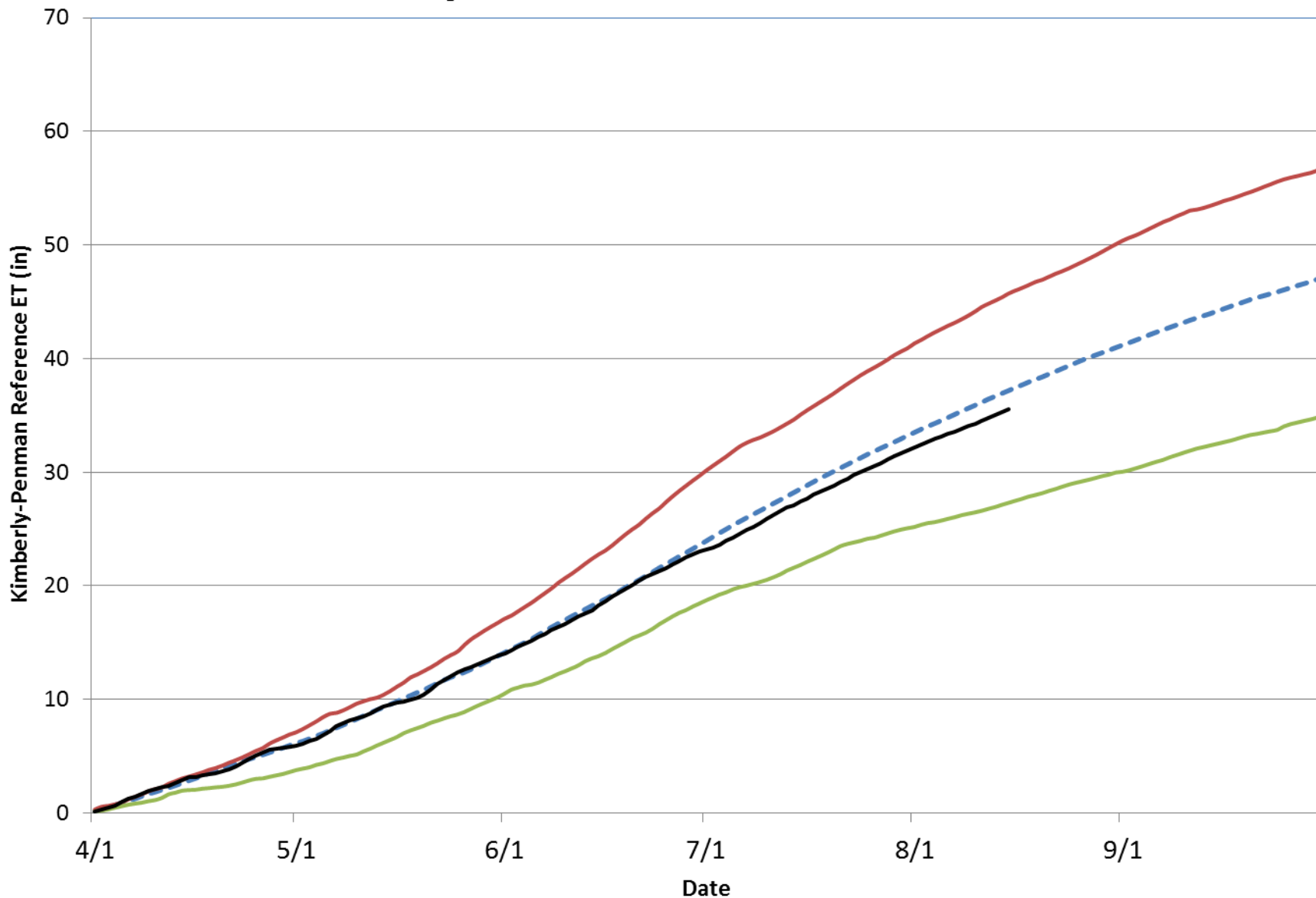
Center Kimberly-Penman Reference ET (1994 - 2016)

--- Average — 2002 — 1997 — 2016



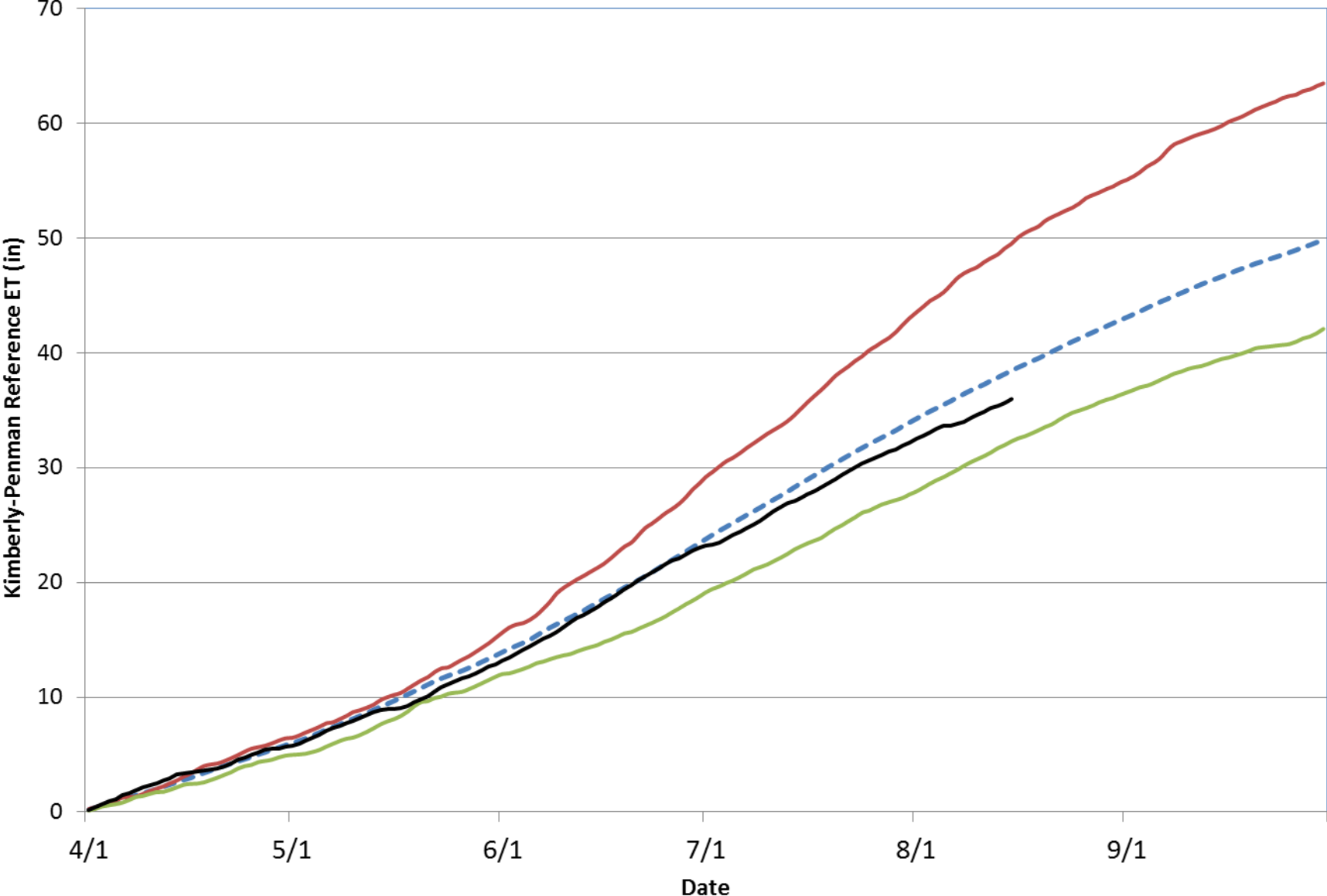
Avondale Kimberly-Penman Reference ET (1993 - 2016)

--- Average — 2012 — 1998 — 2016



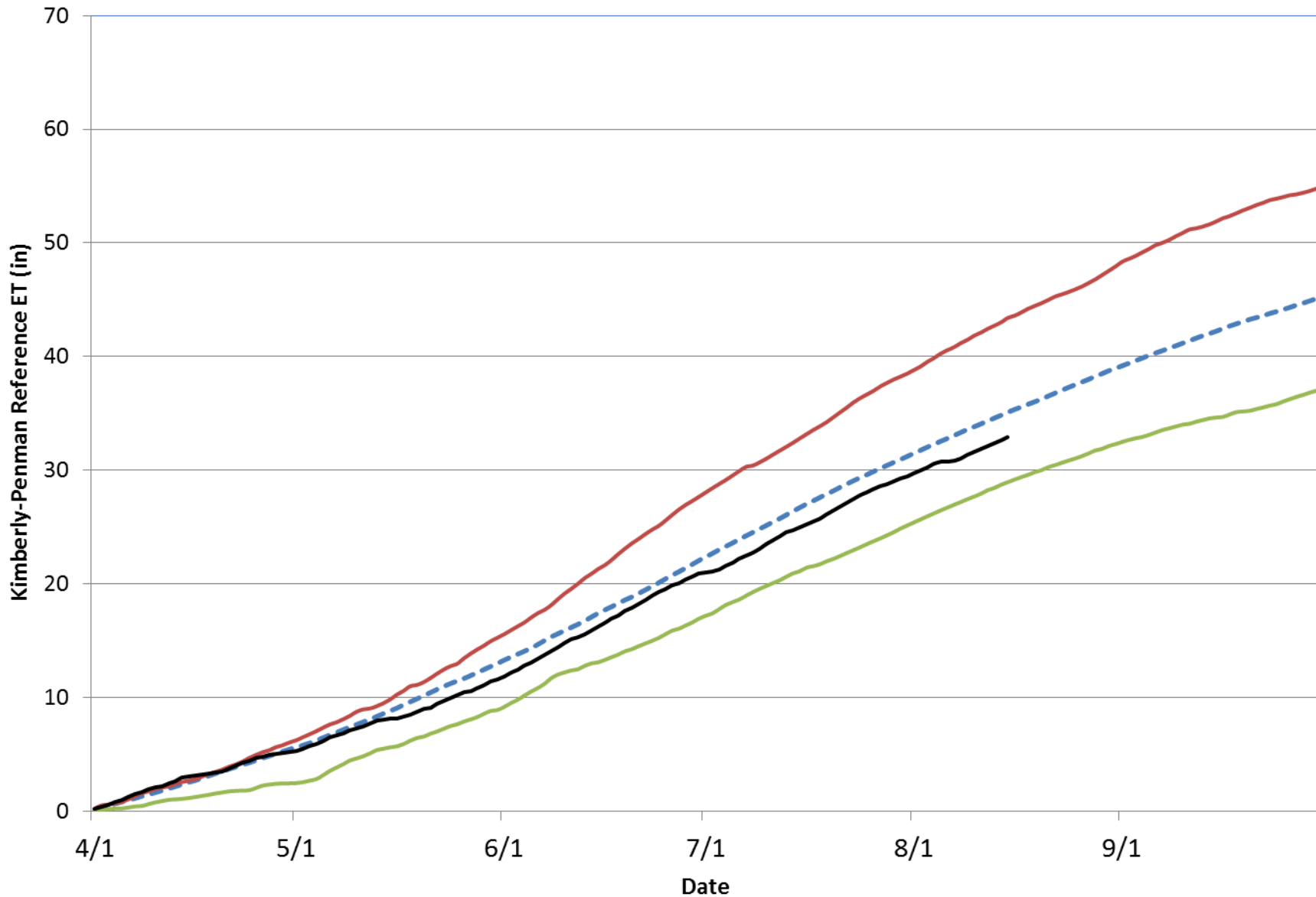
Idalia Kimberly-Penman Reference ET (1992 - 2016)

--- Average — 2002 — 2009 — 2016



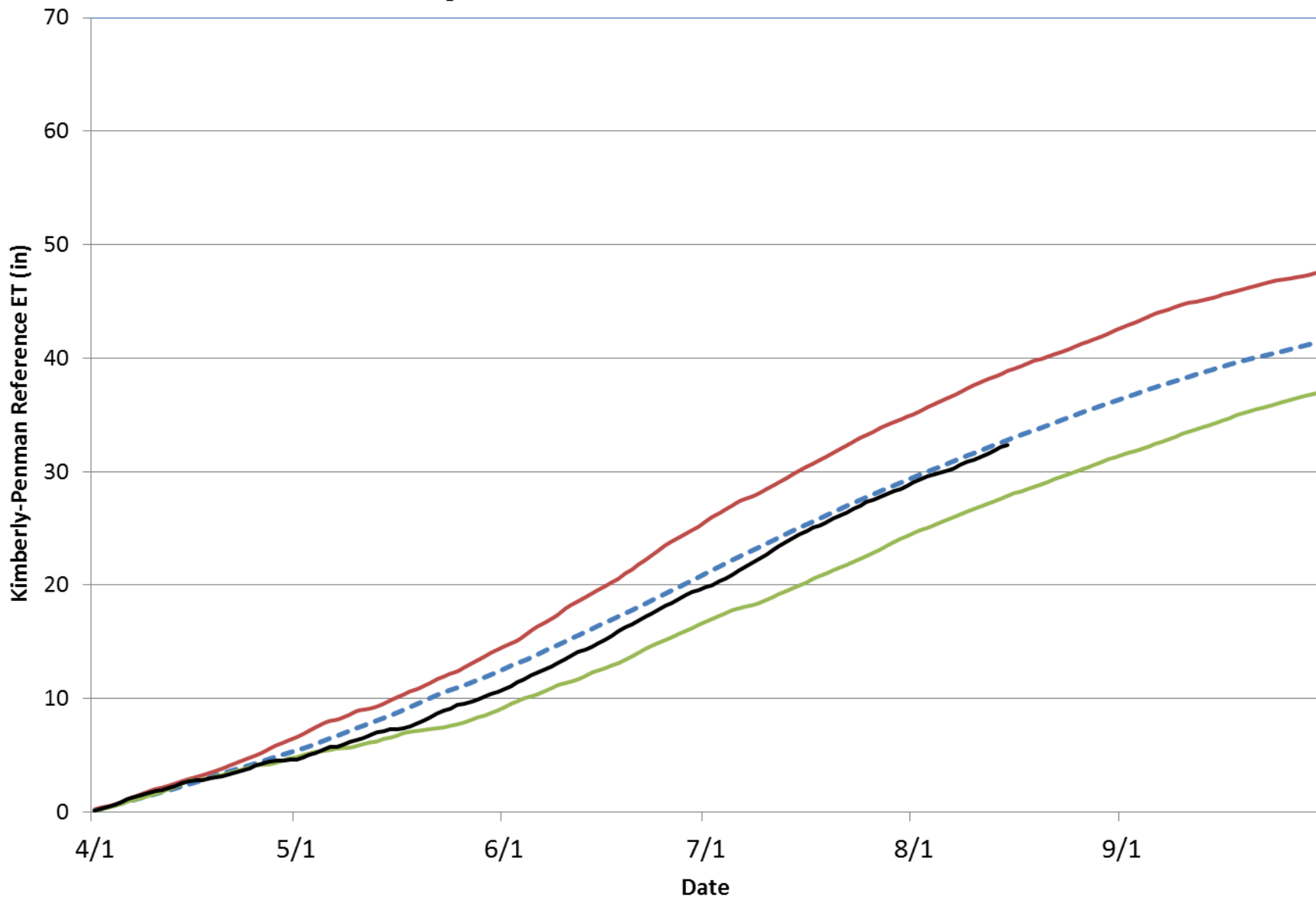
Holyoke Kimberly-Penman Reference ET (1992 - 2016)

--- Average — 2012 — 1999 — 2016



Lucerne Kimberly-Penman Reference ET (1992 - 2016)

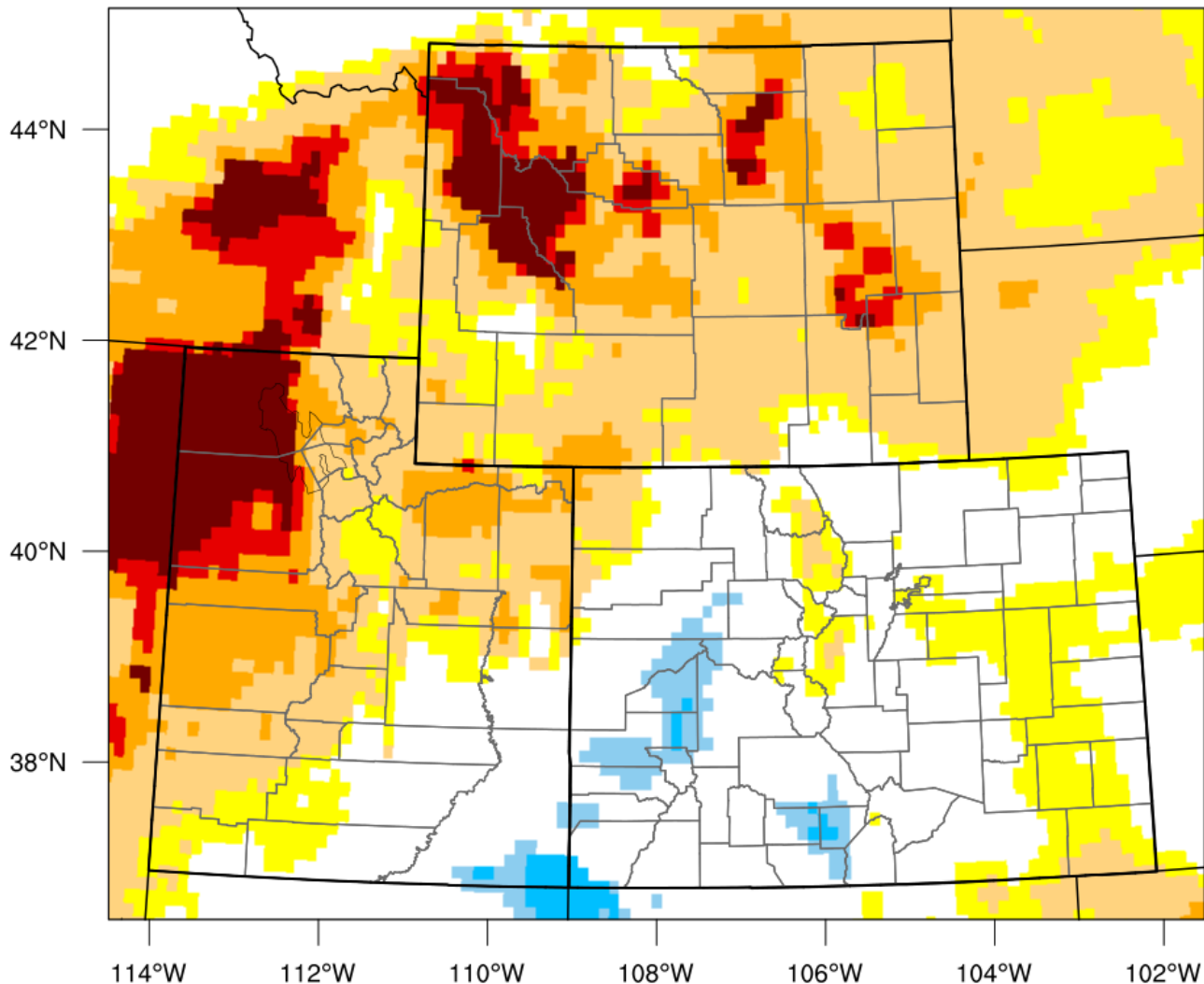
--- Average — 2012 — 2015 — 2016





4-Week
Evaporative
Demand
Drought
Index for
August 10,
2016

4-week EDDI categories for August 10, 2016



Drought categories

Wetness categories



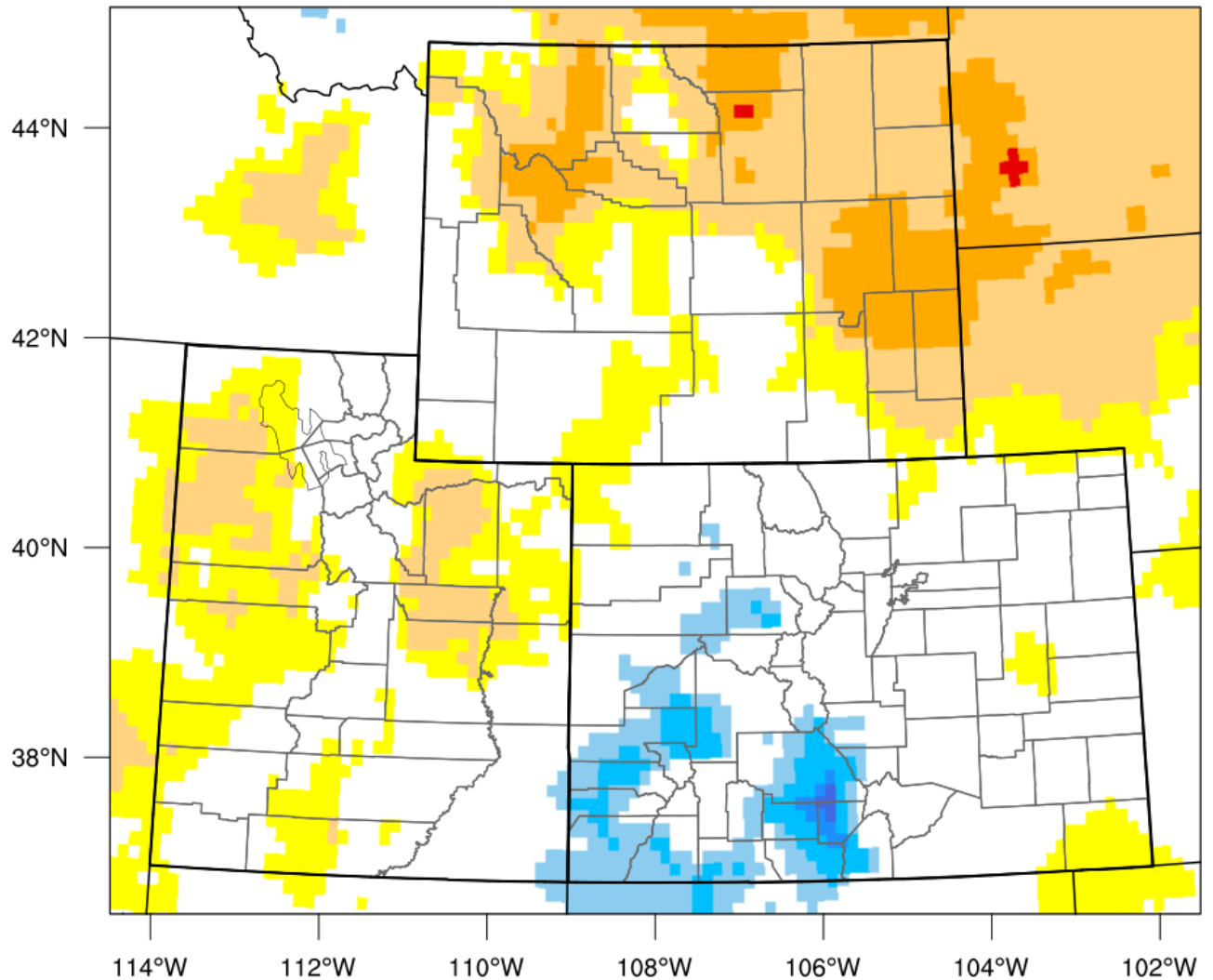
100% 98% 95% 90% 80% 70% 30% 20% 10% 5% 2% 0%

(EDDI-percentile category breaks: 100% = driest; 0% = wettest)



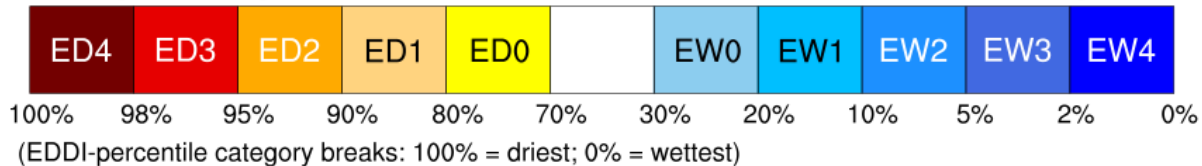
12-Week
Evaporative
Demand
Drought
Index for
August 10,
2016

12-week EDDI categories for August 10, 2016



Drought categories

Wetness categories

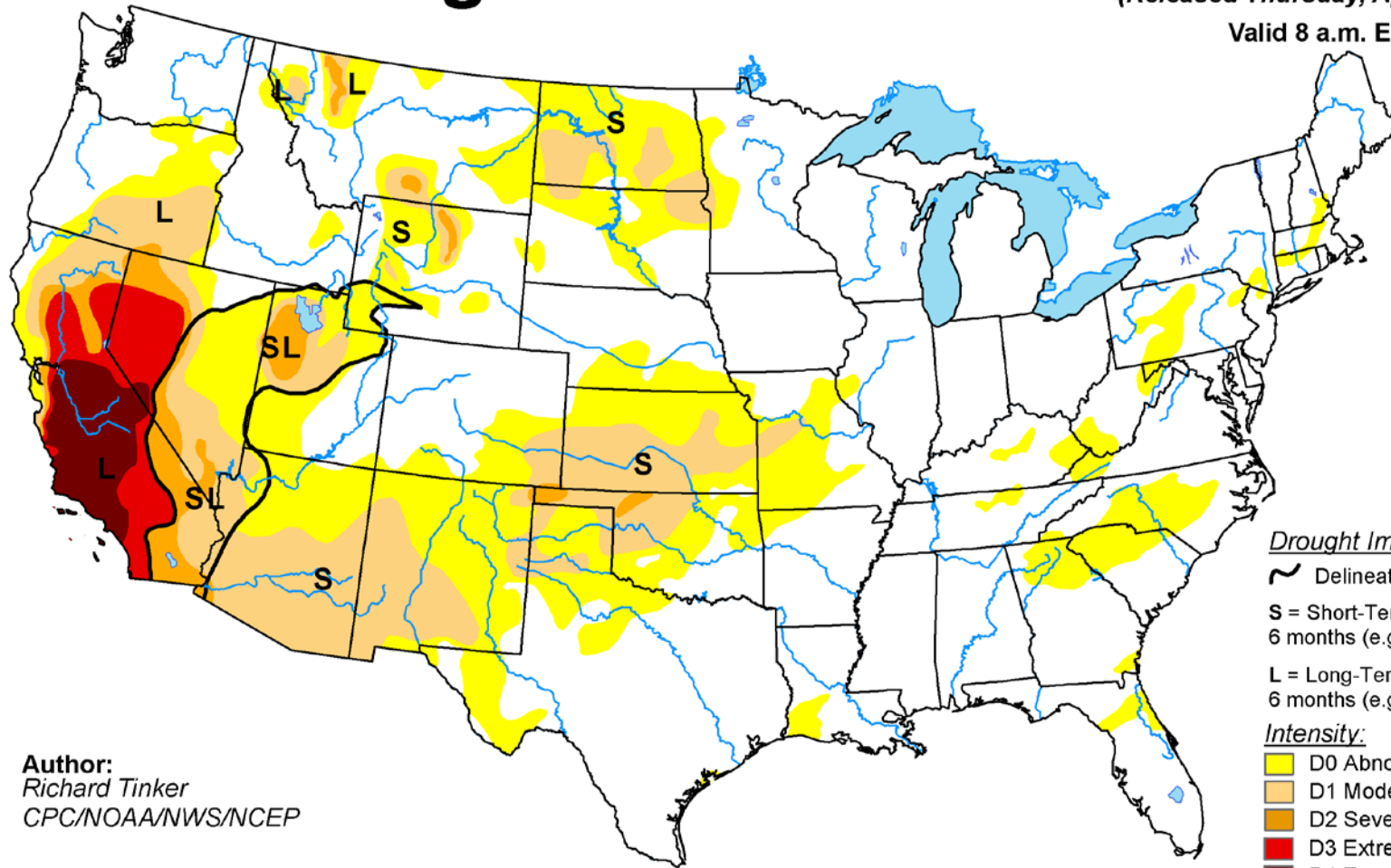


U.S. Drought Monitor

April 12, 2016

(Released Thursday, Apr. 14, 2016)

Valid 8 a.m. EDT



Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

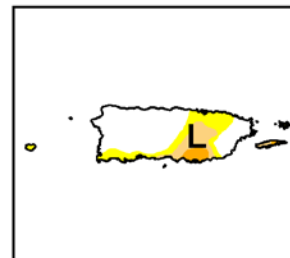
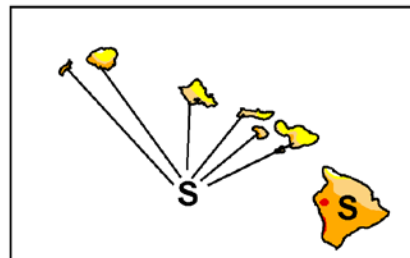
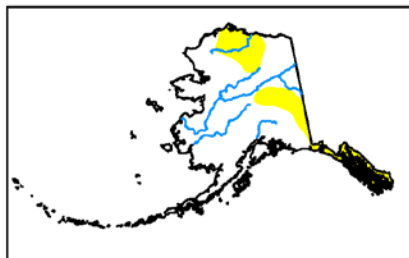
Drought Impact Types:

- ~ 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.



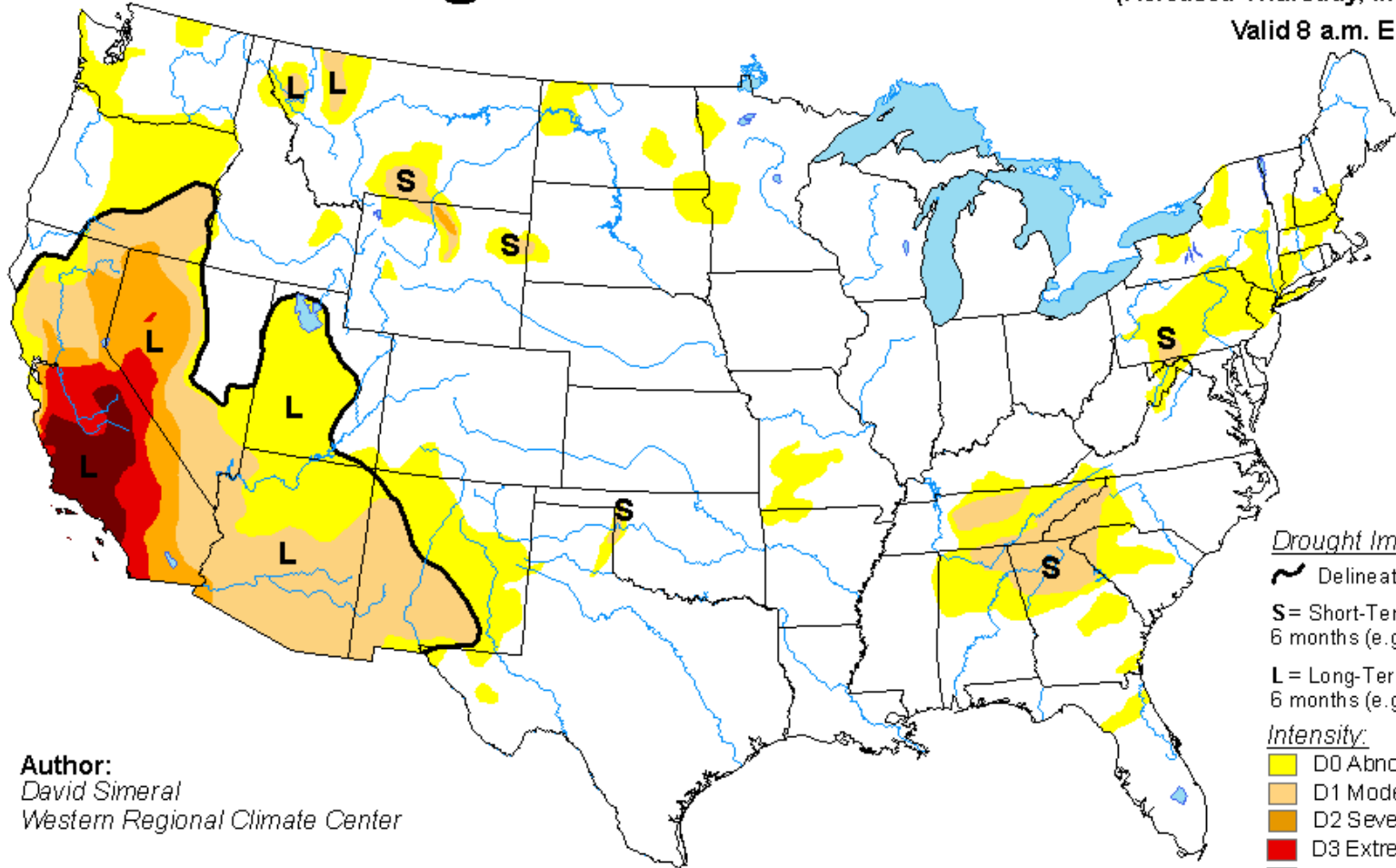
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

May 17, 2016

(Released Thursday, May. 19, 2016)

Valid 8 a.m. EDT



Drought Impact Types:

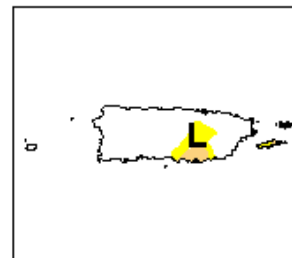
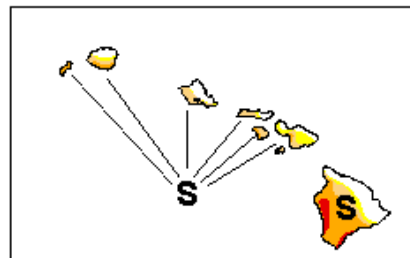
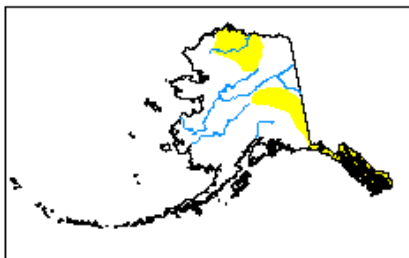
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Author:
David Simeral
Western Regional Climate Center

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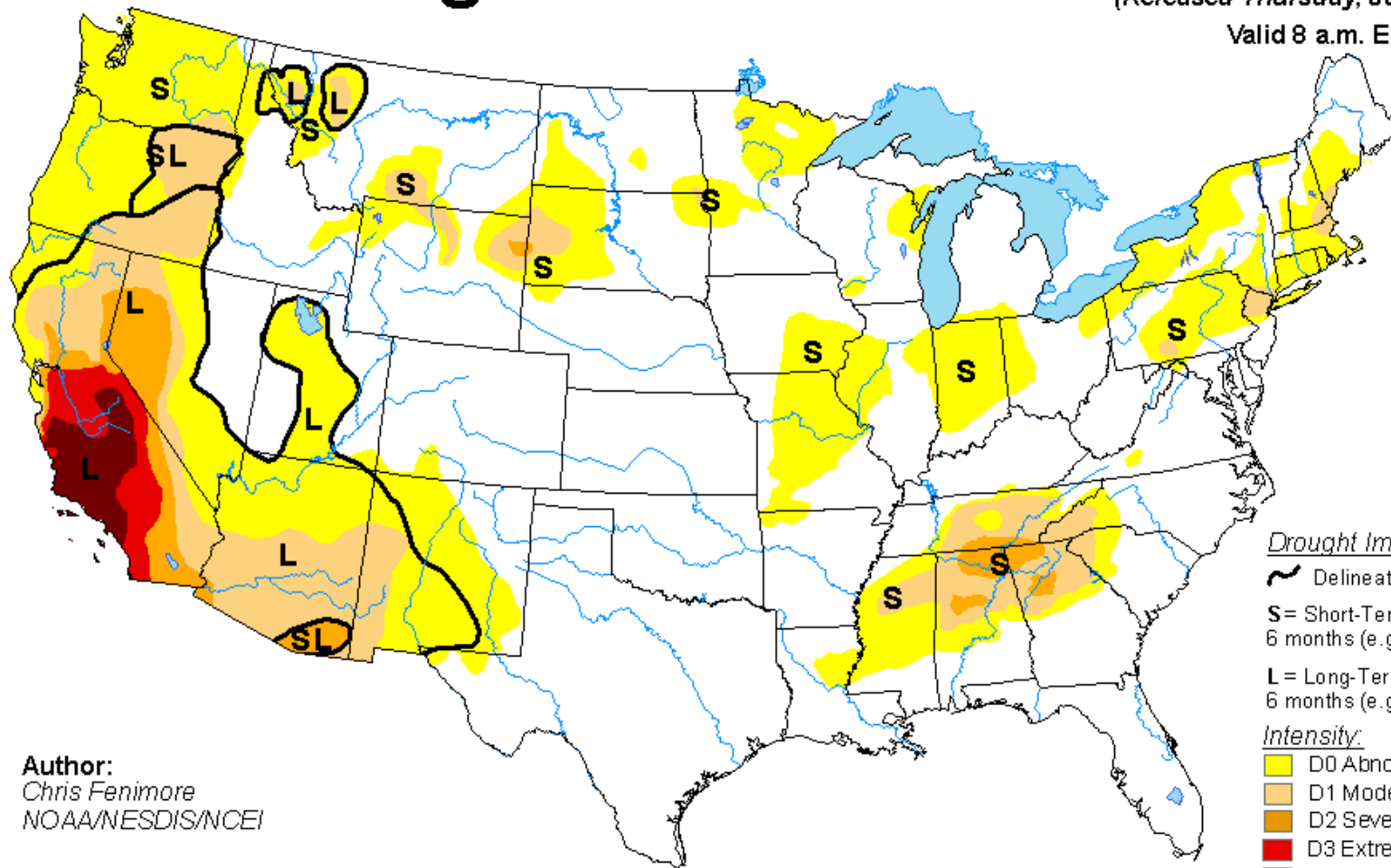
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

June 14, 2016


(Released Thursday, Jun. 16, 2016)

Valid 8 a.m. EDT








Author:
Chris Fenimore
NOAA/NESDIS/NCEI

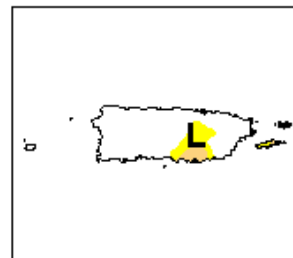
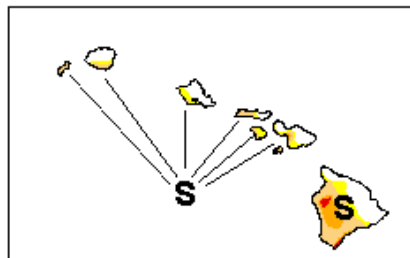
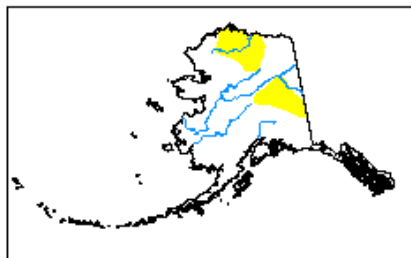
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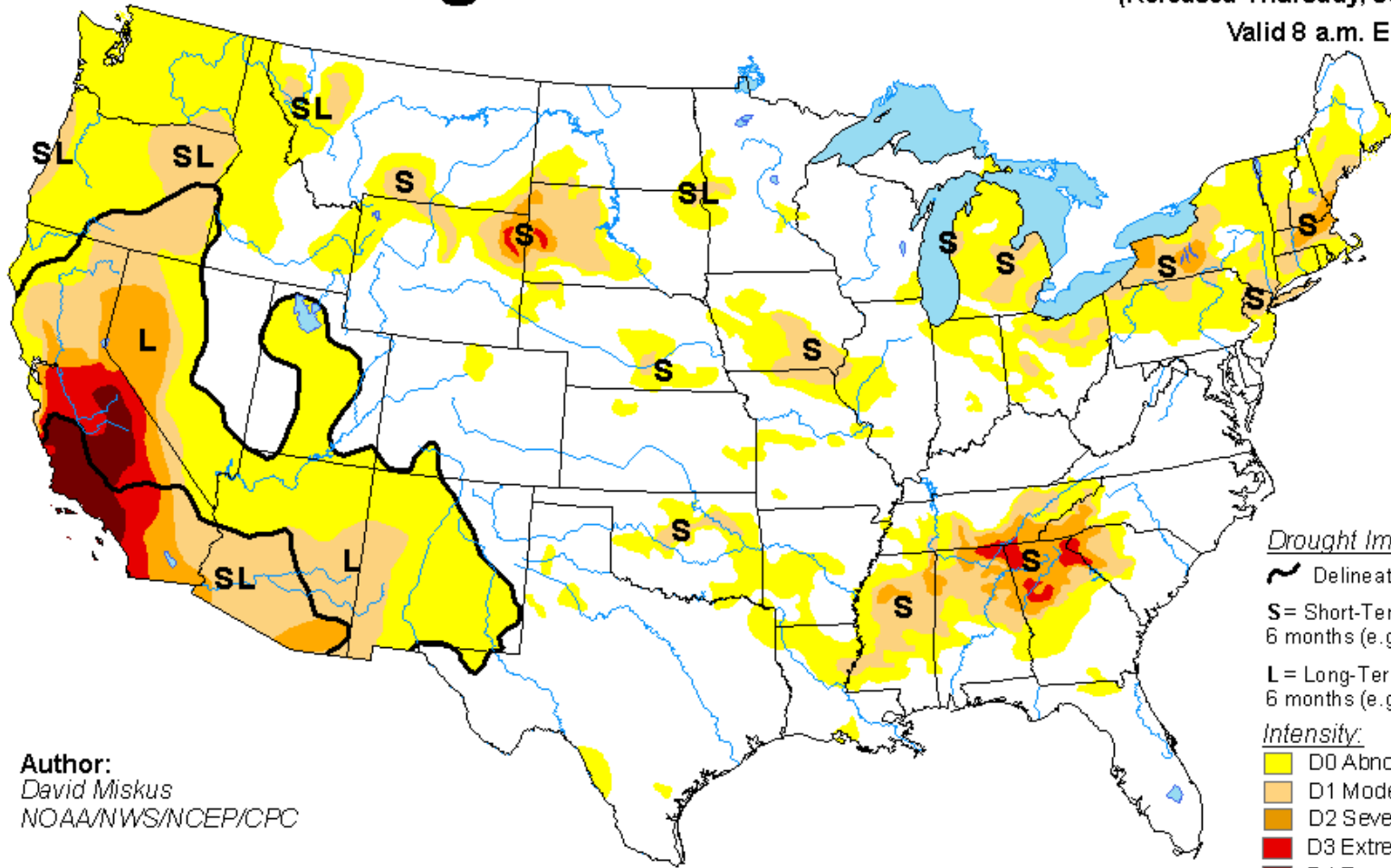
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

July 12, 2016


(Released Thursday, Jul. 14, 2016)

Valid 8 a.m. EDT








Author:
David Miskus
NOAA/NWS/NCEP/CPC

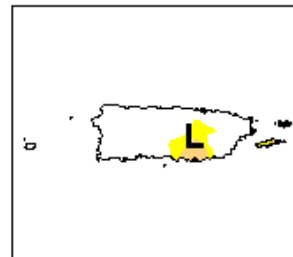
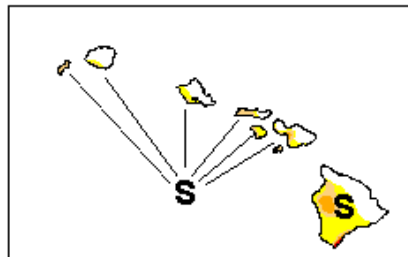
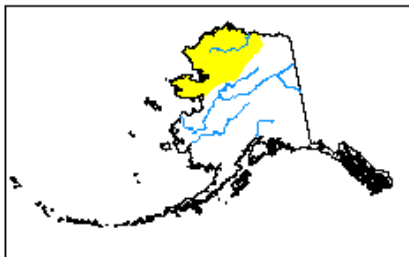
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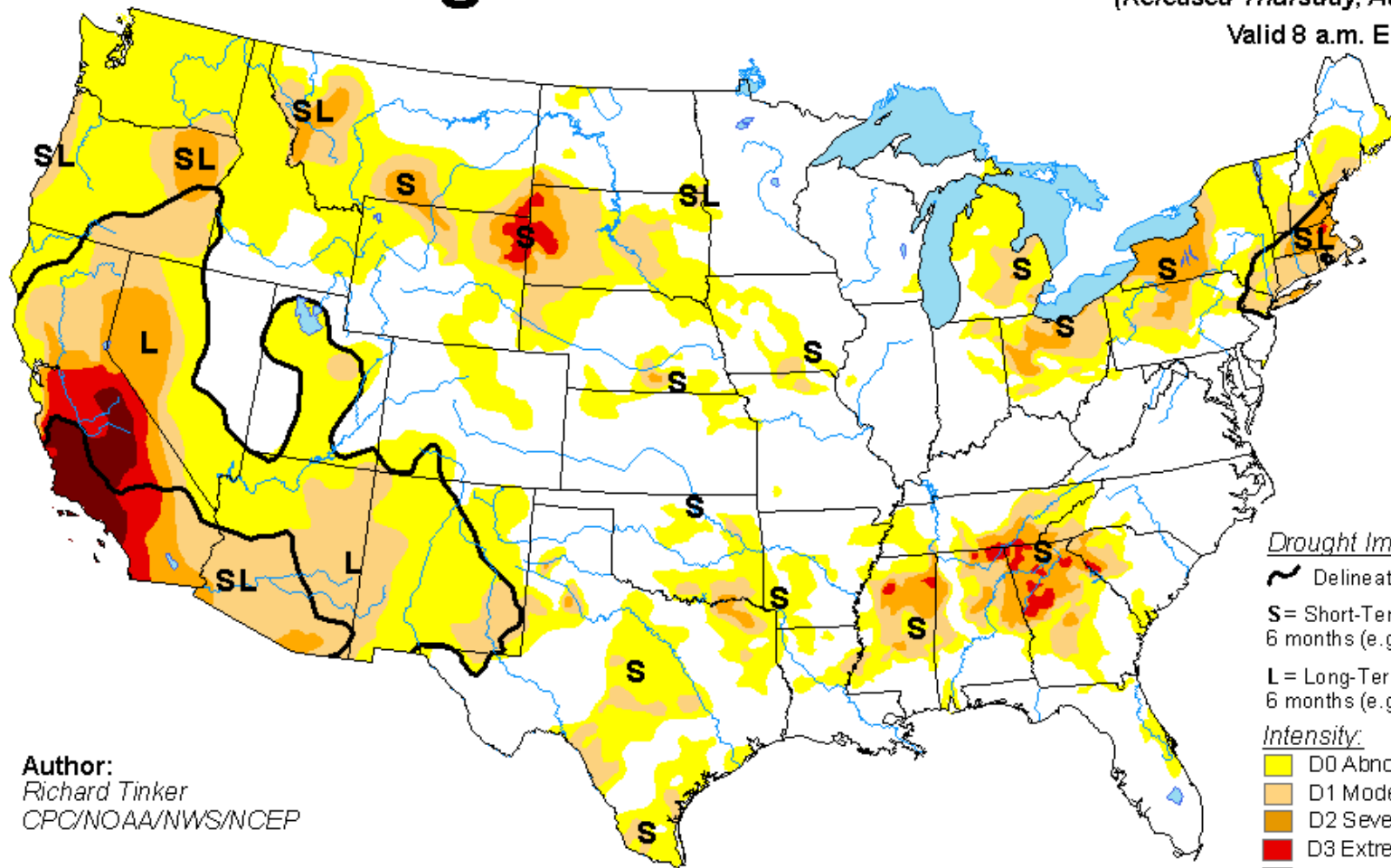
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<http://droughtmonitor.unl.edu/>


U.S. Drought Monitor

August 9, 2016
 (Released Thursday, Aug. 11, 2016)
 Valid 8 a.m. EDT








Author:
 Richard Tinker
 CPC/NOAA/NWS/NCEP

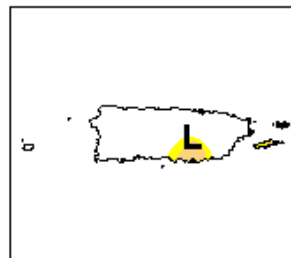
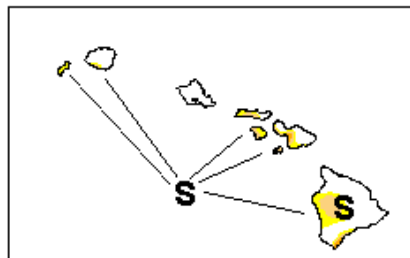
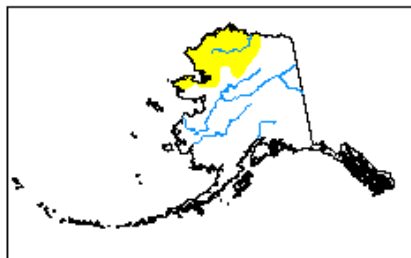
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<http://droughtmonitor.unl.edu/>

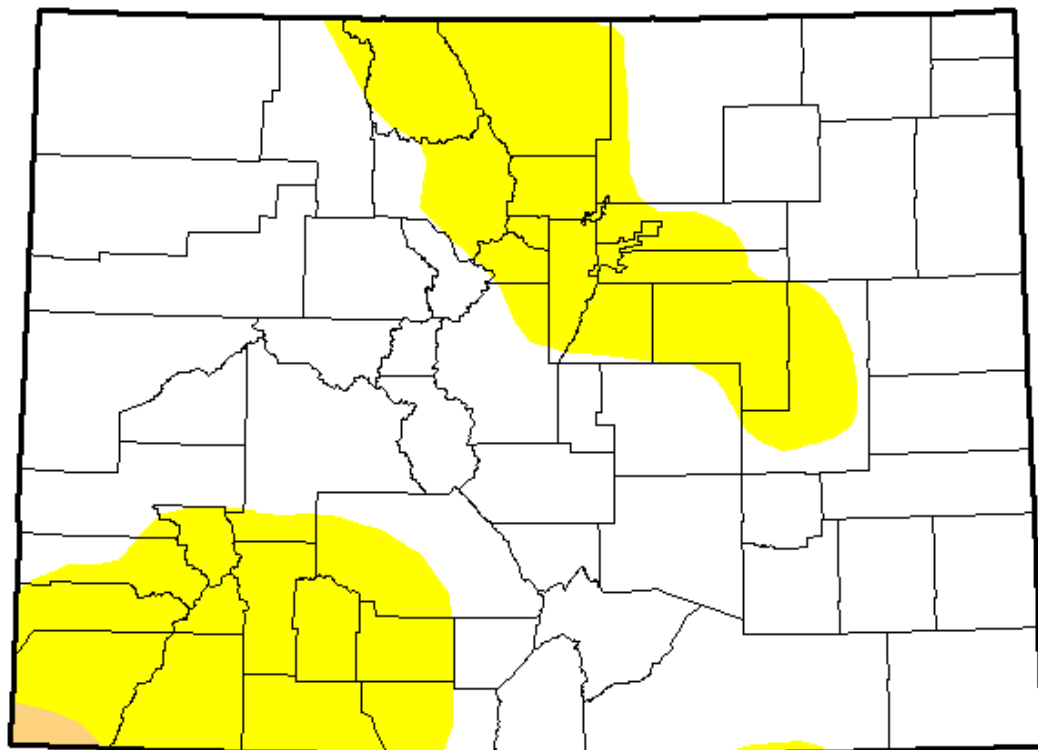
U.S. Drought Monitor

Colorado

August 9, 2016
 (Released Thursday, Aug. 11, 2016)
 Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	73.34	26.66	0.38	0.00	0.00	0.00
Last Week 8/2/2016	80.95	19.05	0.38	0.00	0.00	0.00
3 Months Ago 5/10/2016	95.22	4.78	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 8/11/2015	97.96	2.04	0.00	0.00	0.00	0.00



Intensity:



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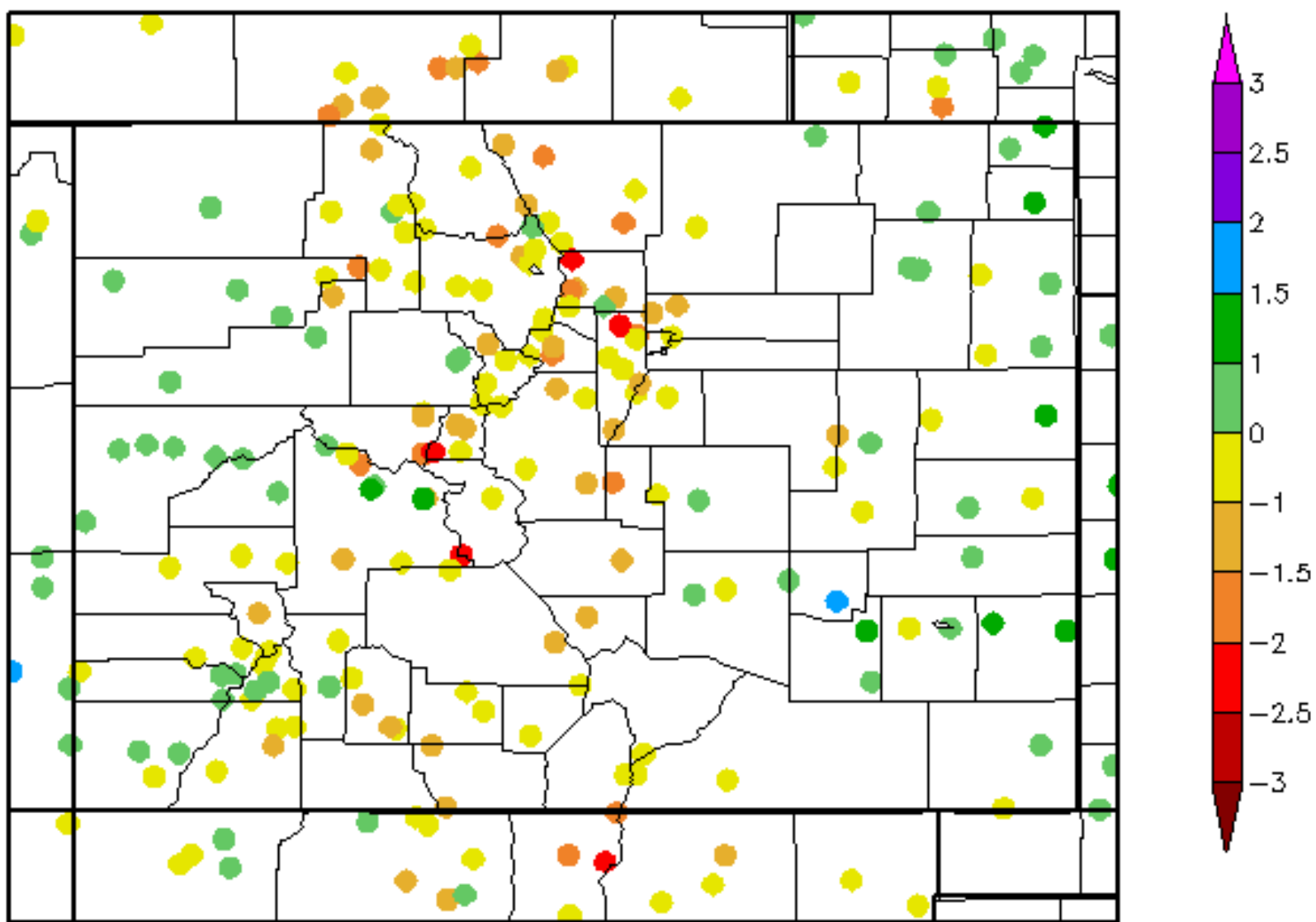
Author:

Richard Tinker
 CPC/NOAA/NWS/NCEP



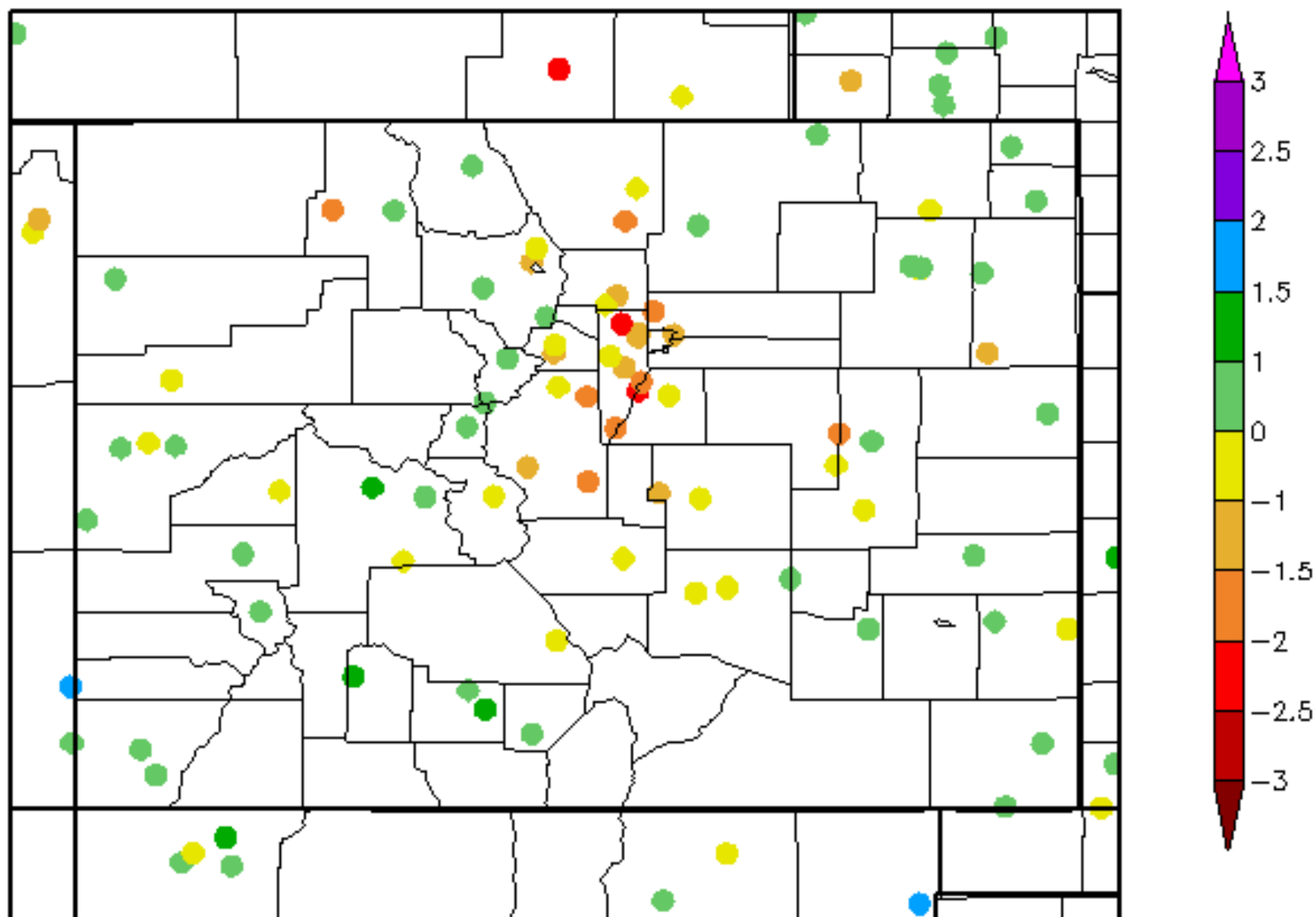
Monthly SPI

7/1/2016 - 7/31/2016



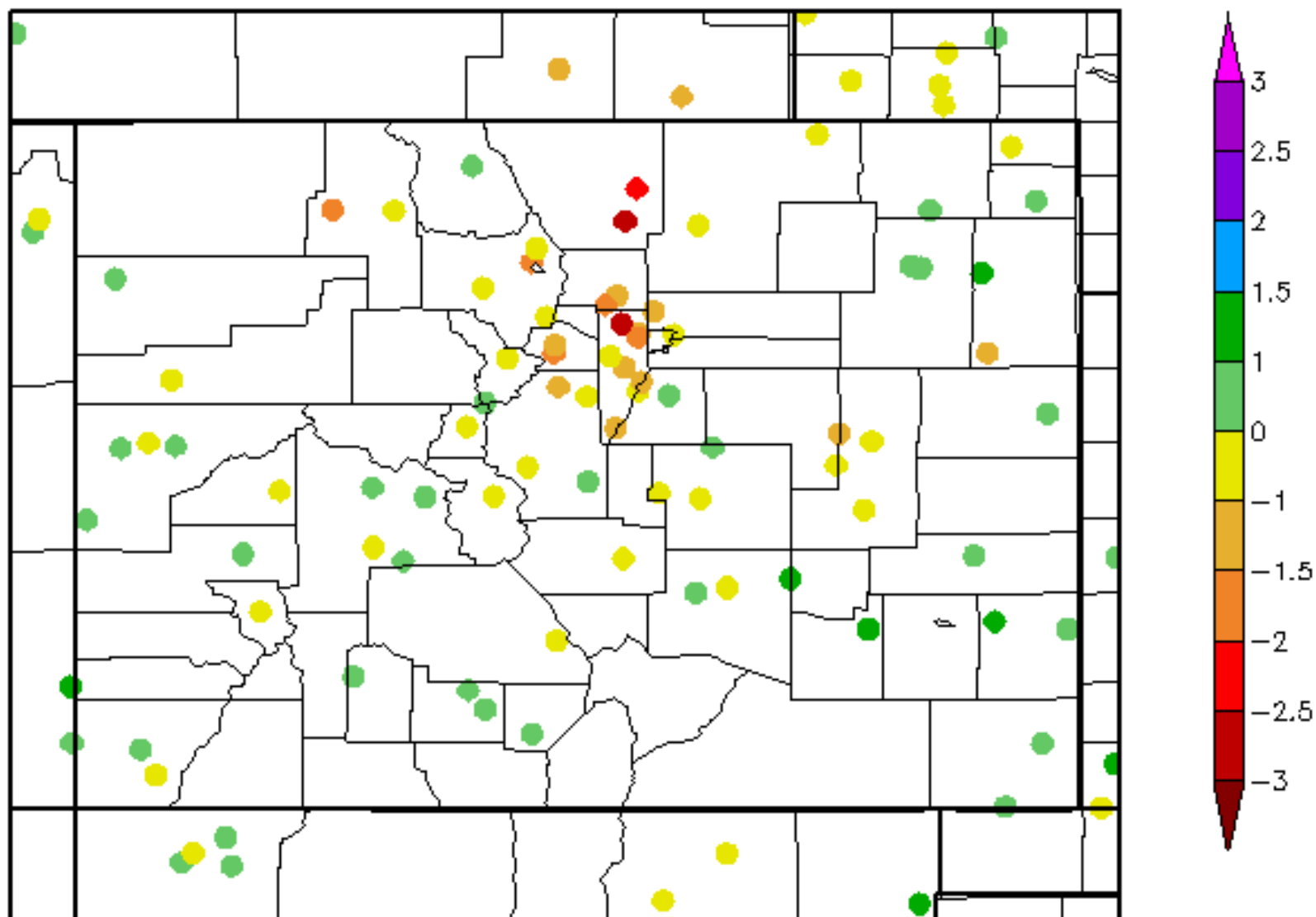
30 Day SPI

7/17/2016 - 8/15/2016



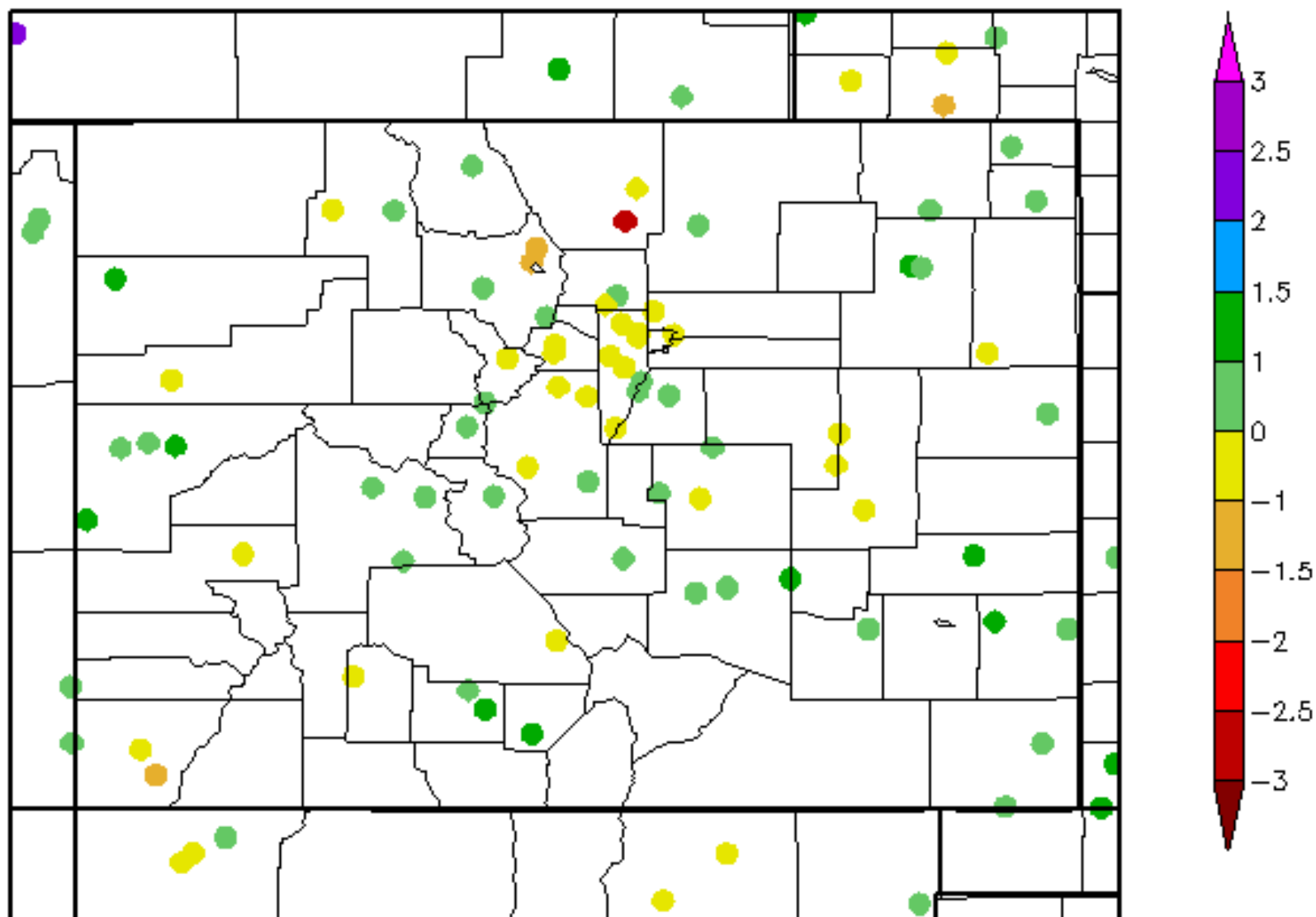
90 Day SPI

5/18/2016 - 8/15/2016



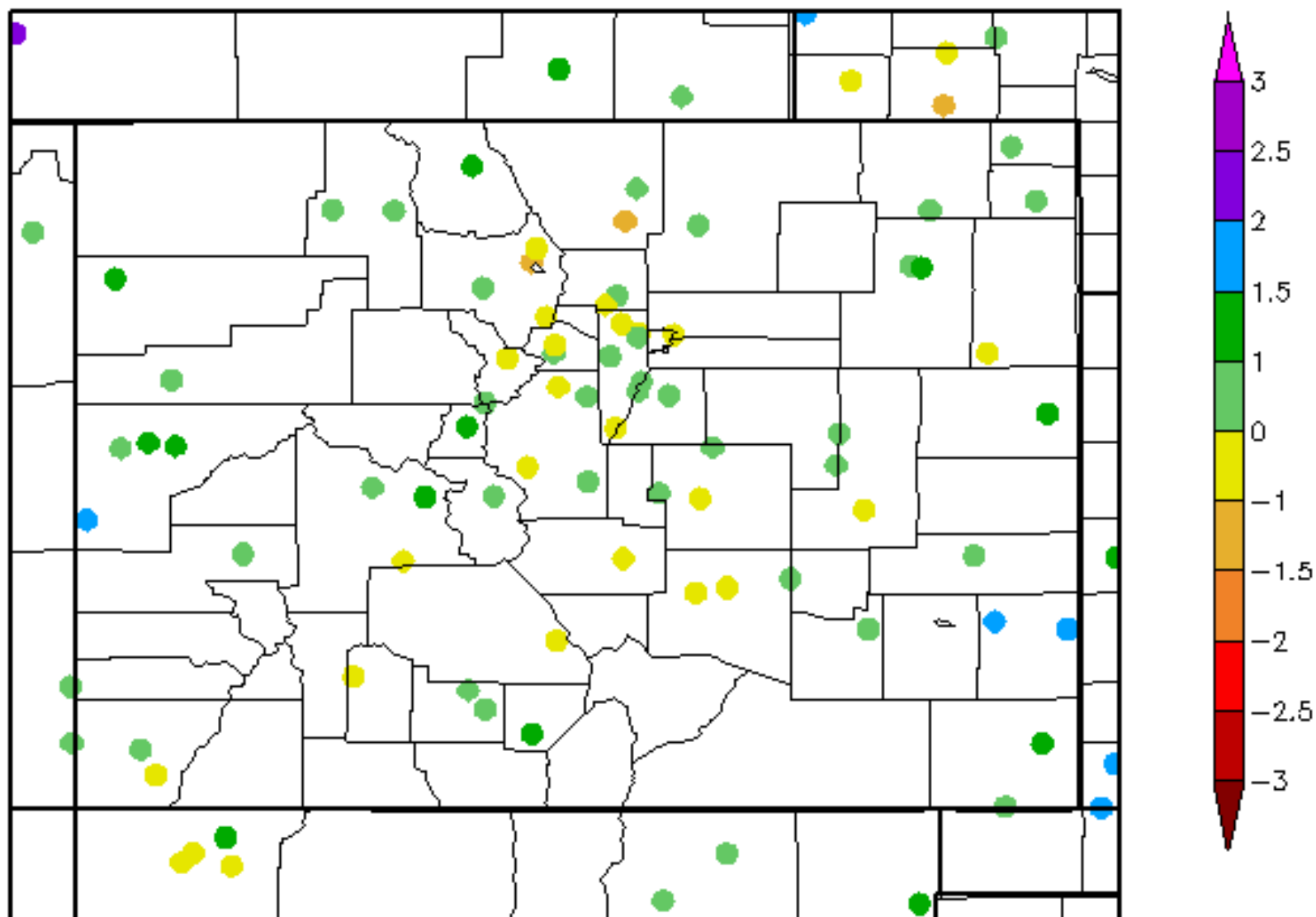
6 Month SPI

2/16/2016 - 8/15/2016



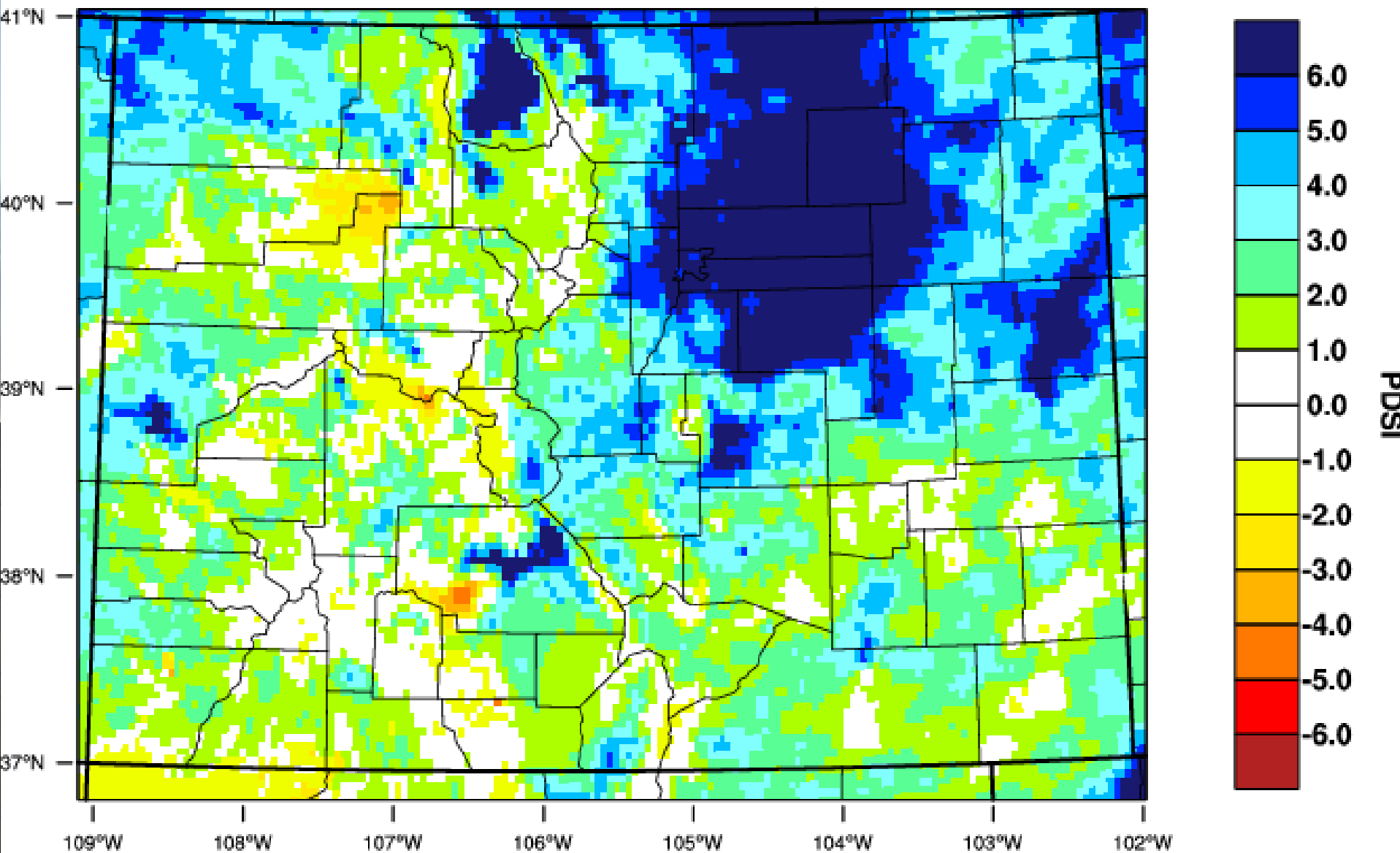
12 Month SPI

8/16/2015 - 8/15/2016



Colorado - PDSI

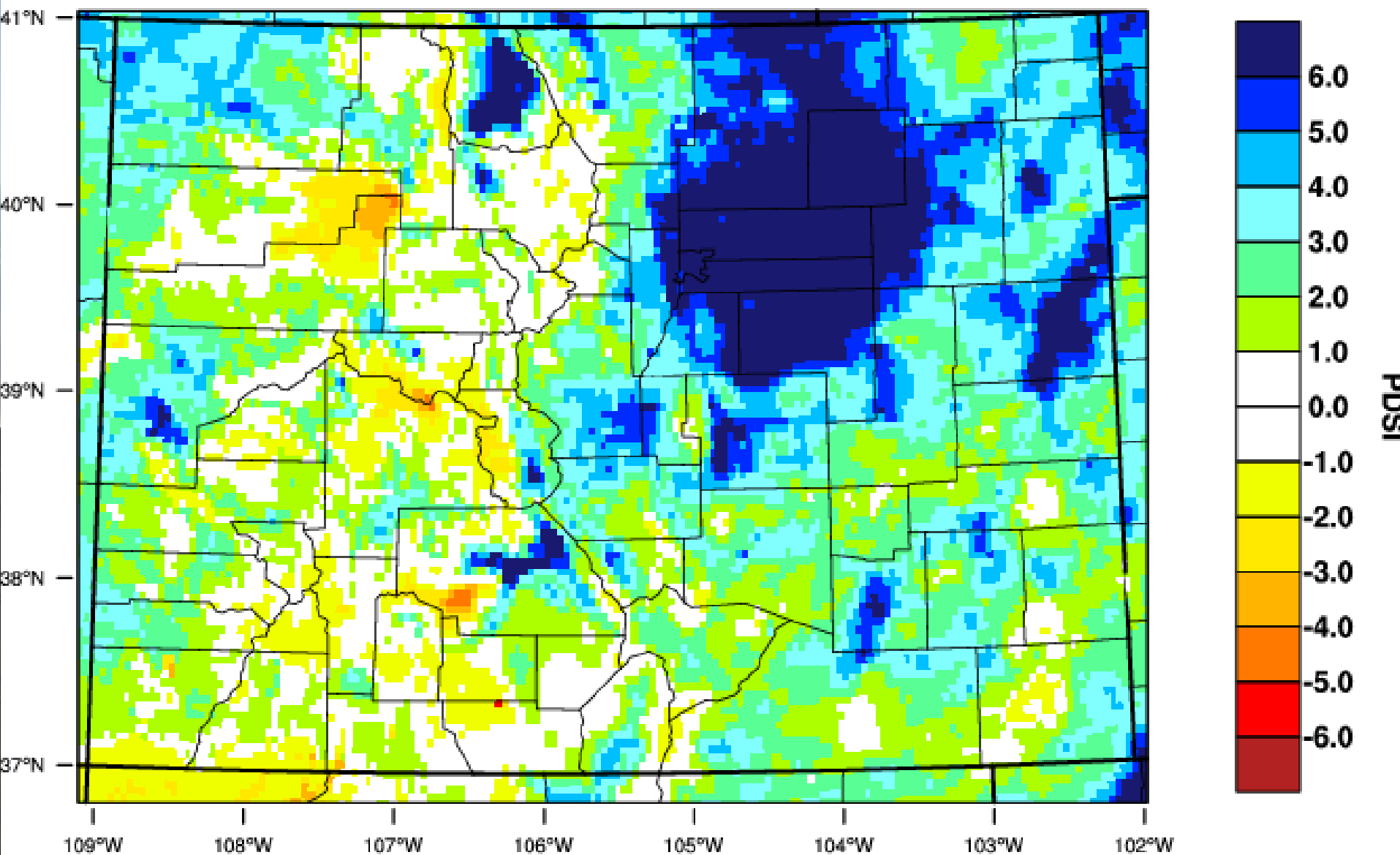
May 2016



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

Colorado - PDSI

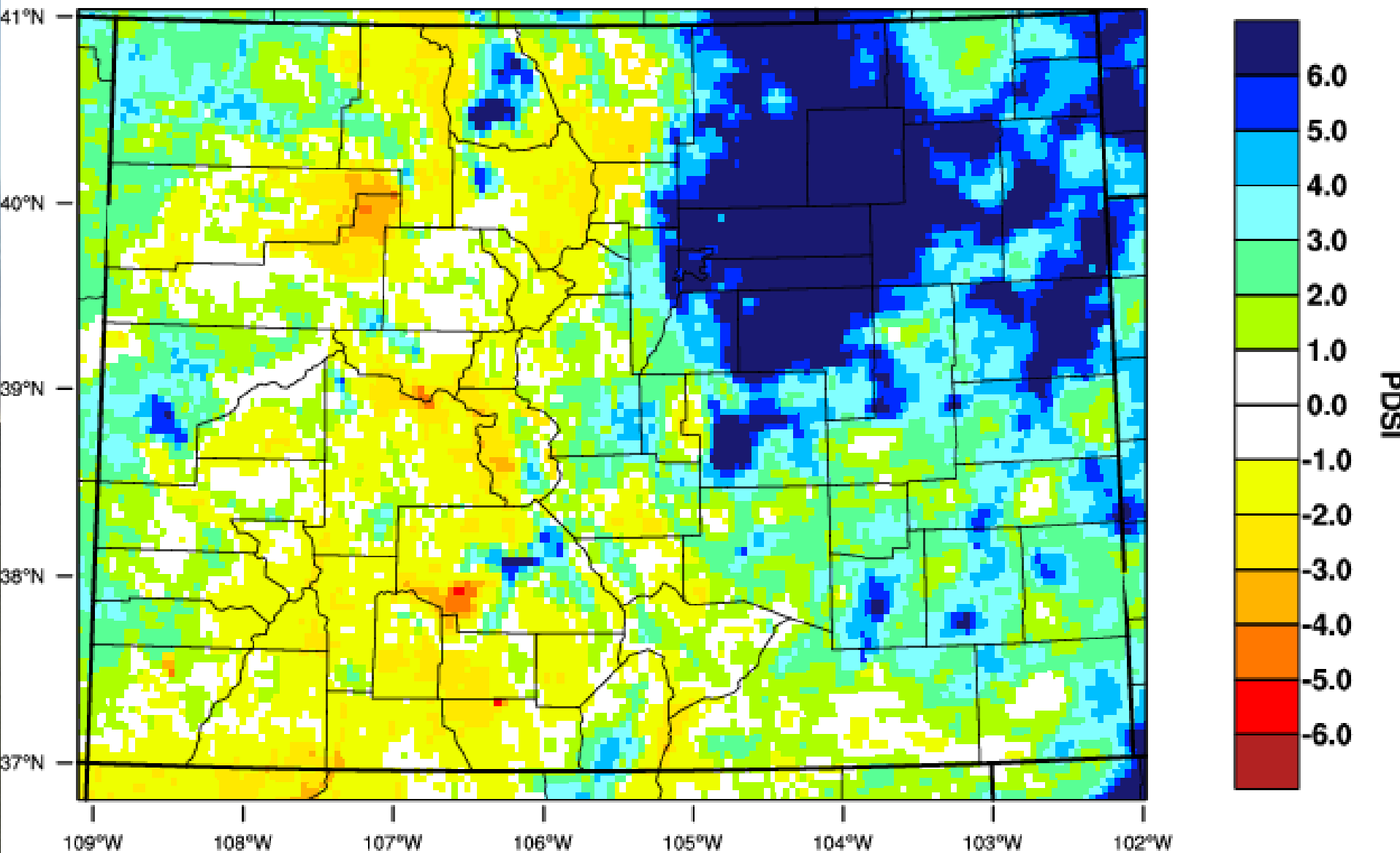
June 2016



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

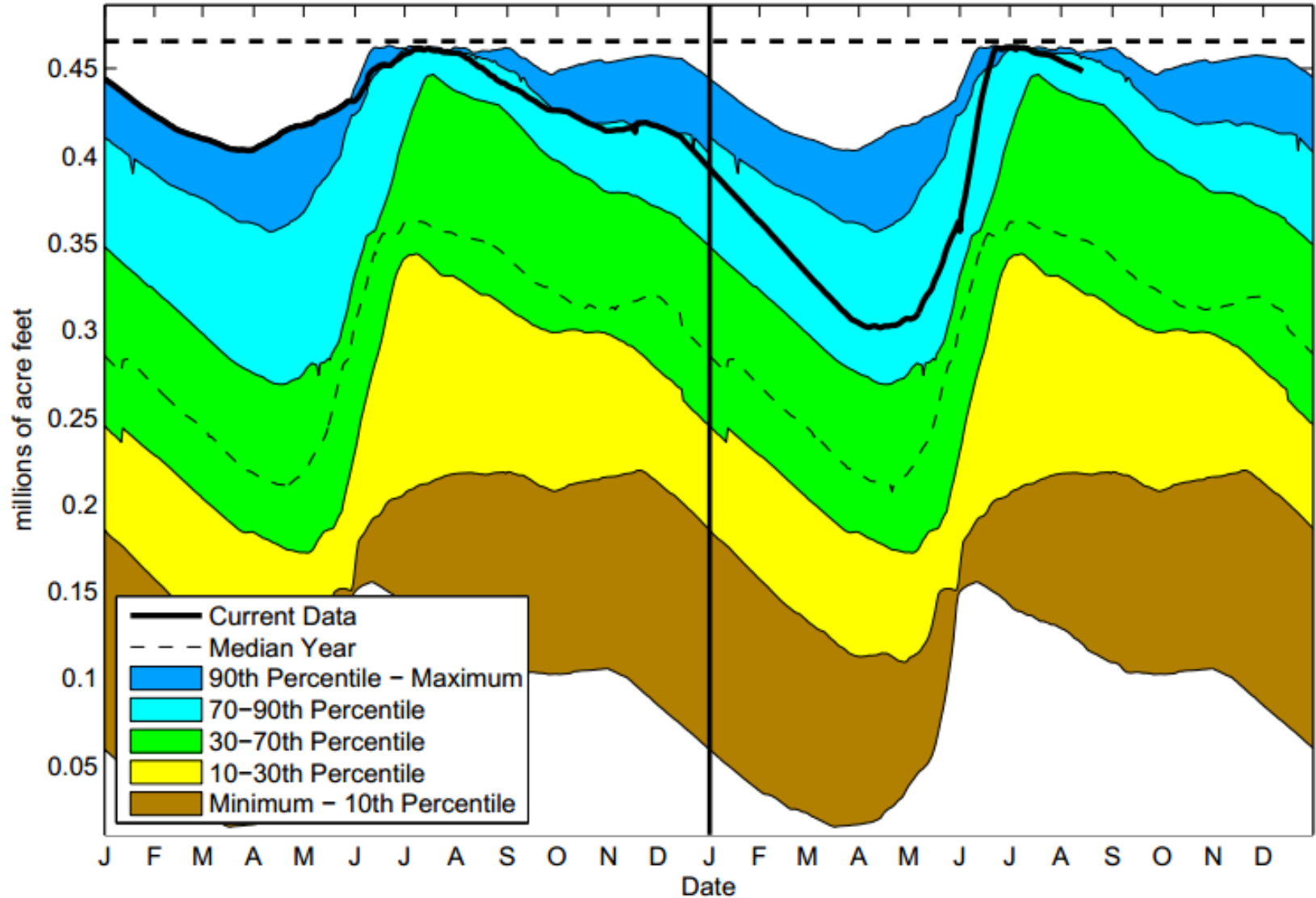
Colorado - PDSI

July 2016

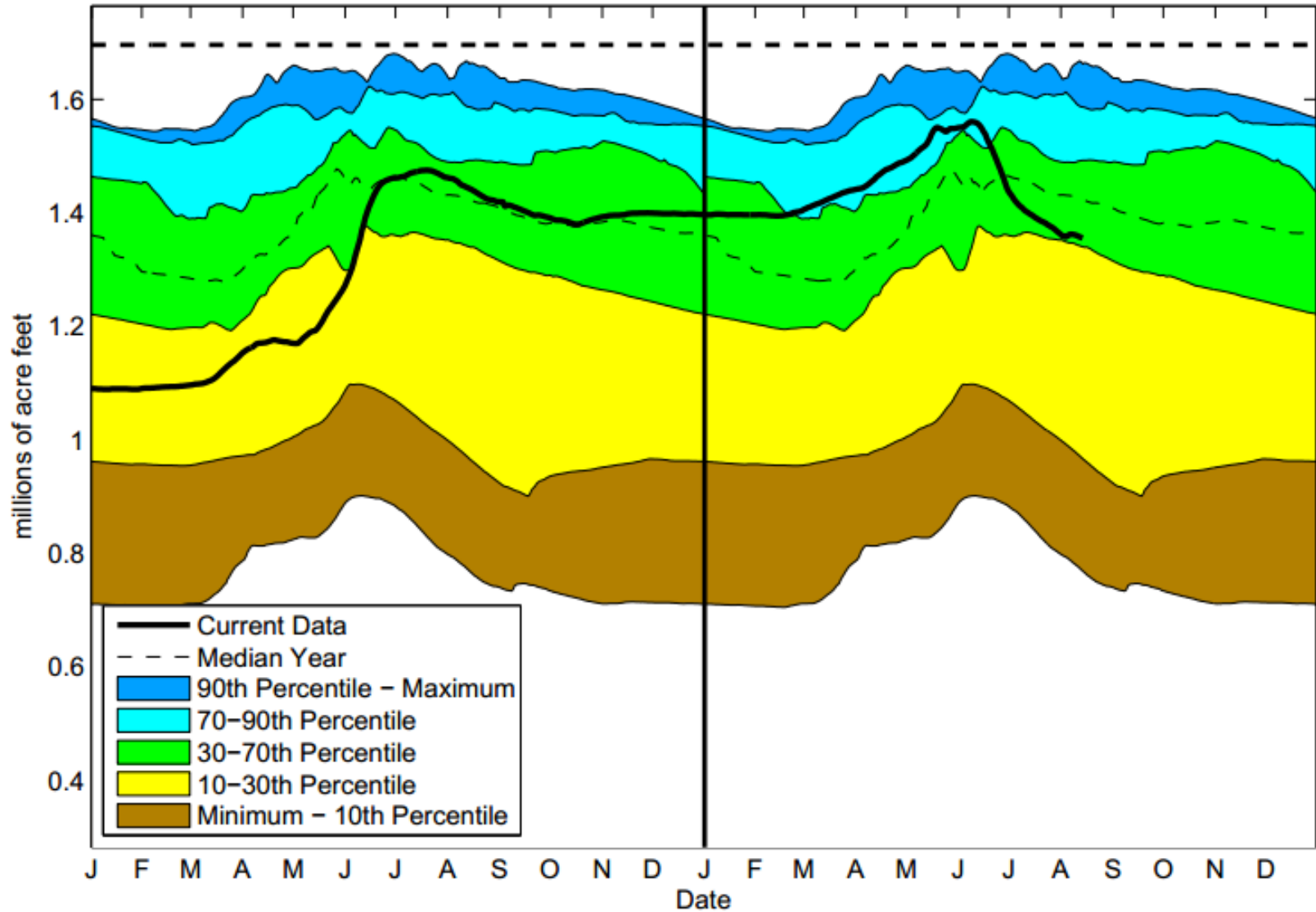


WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 AUG 2016

Lake Granby Reservoir Level 08/14/2016
127 Percent of 2000-2015 Average



Navajo Reservoir Level 08/14/2016
100 Percent of 1985-2015 Average



Colorado Climate Center

Data and Power Point Presentations available for downloading

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

