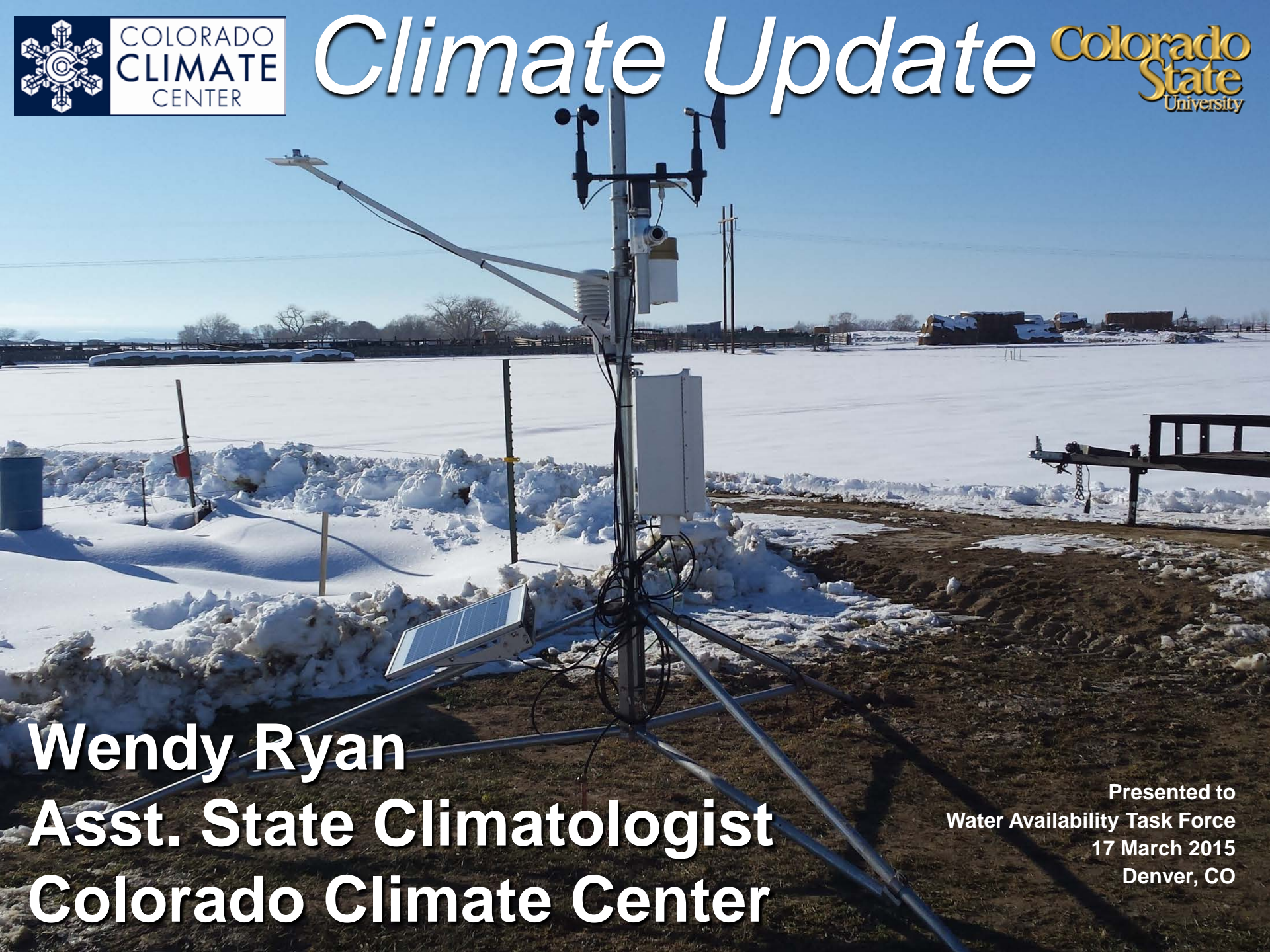




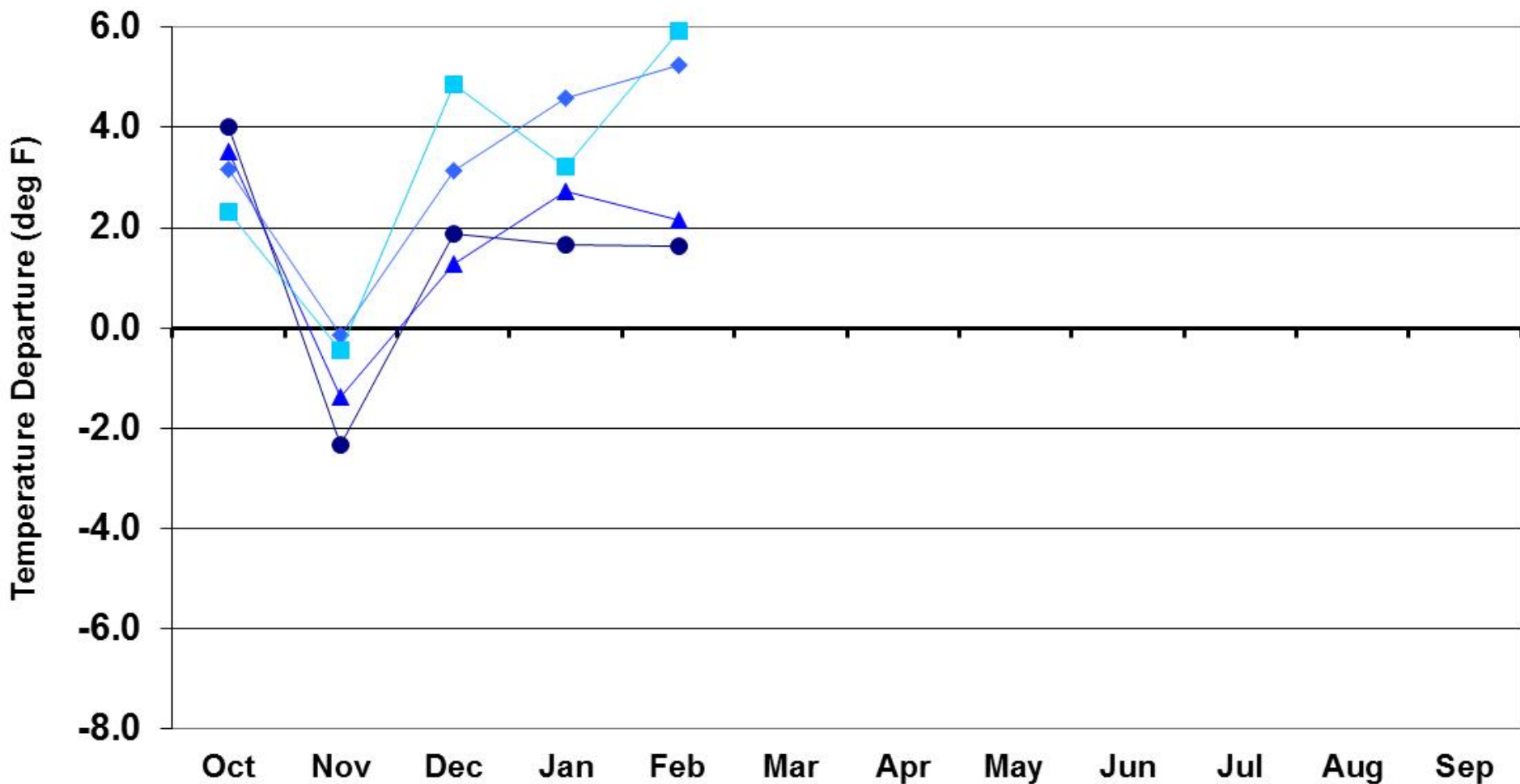
Climate Update



Wendy Ryan
Asst. State Climatologist
Colorado Climate Center

Presented to
Water Availability Task Force
17 March 2015
Denver, CO

Water Year 2015 Temperature Departures



● Eastern Plains

▲ Foothills

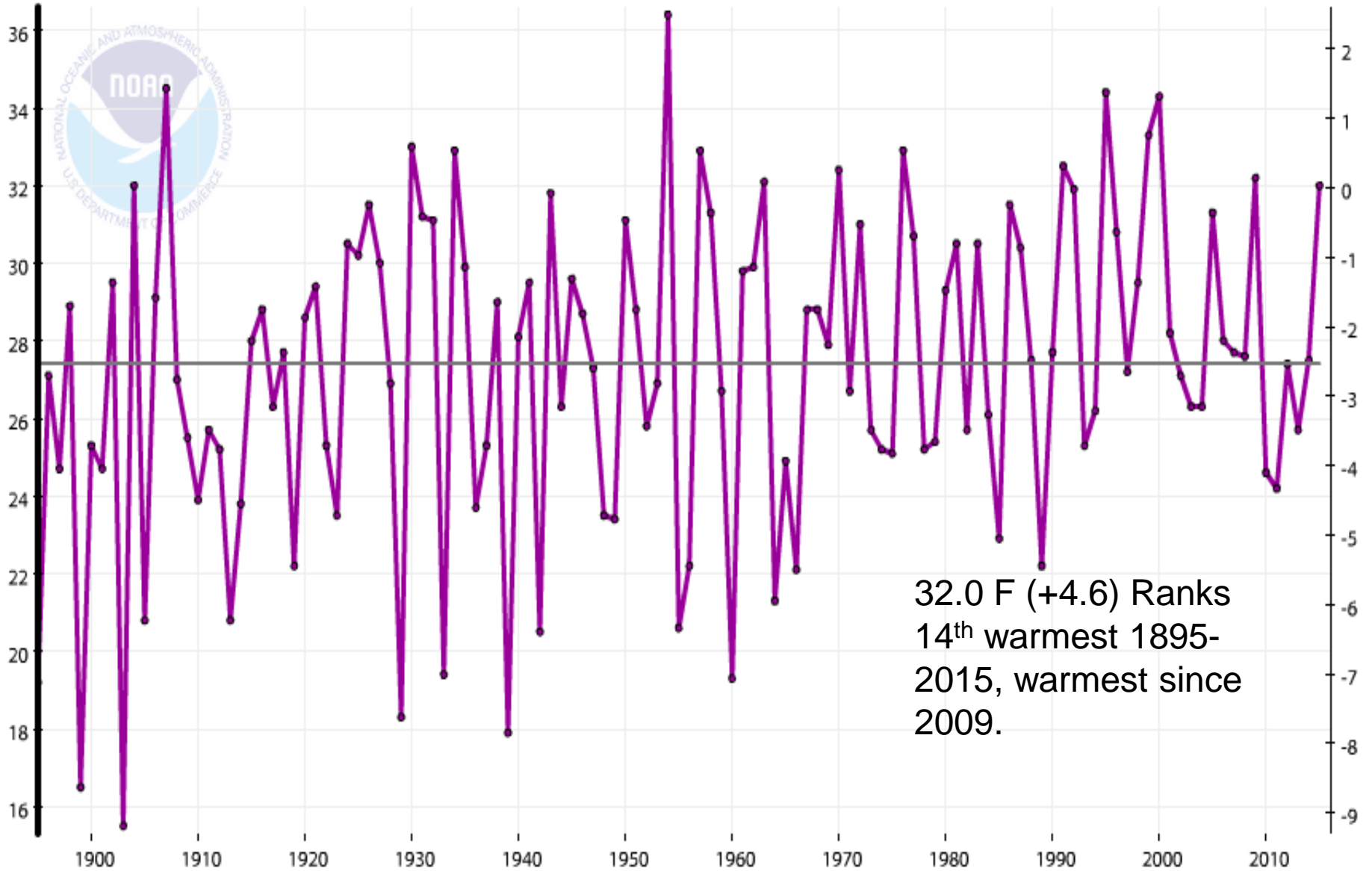
◆ Mountains

■ Western Valleys

February Average Temperature History for Colorado (NCDC)

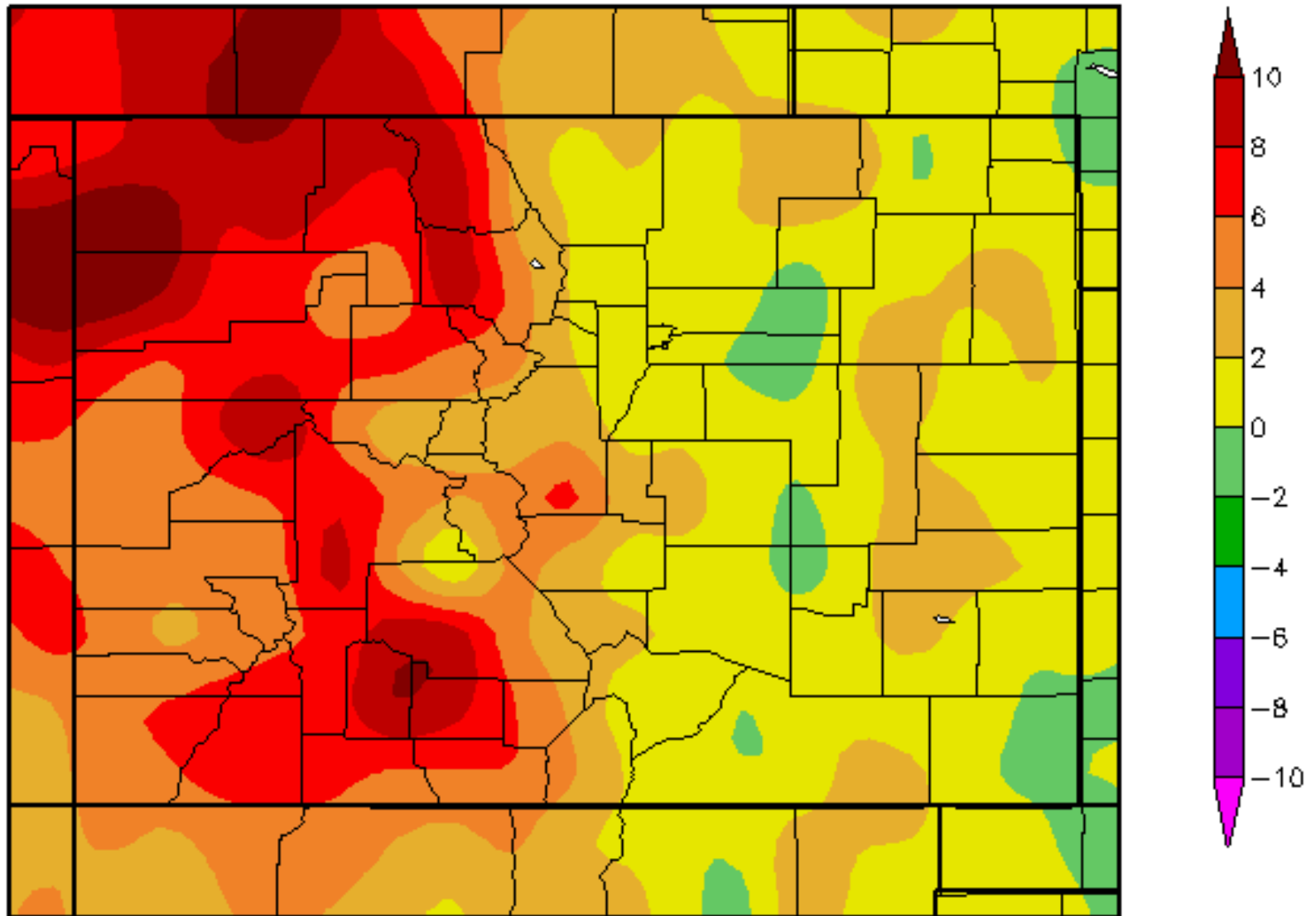
Colorado, Average Temperature, February

— 1901-2000 Avg: 27.4°F
—●— Avg Temperature



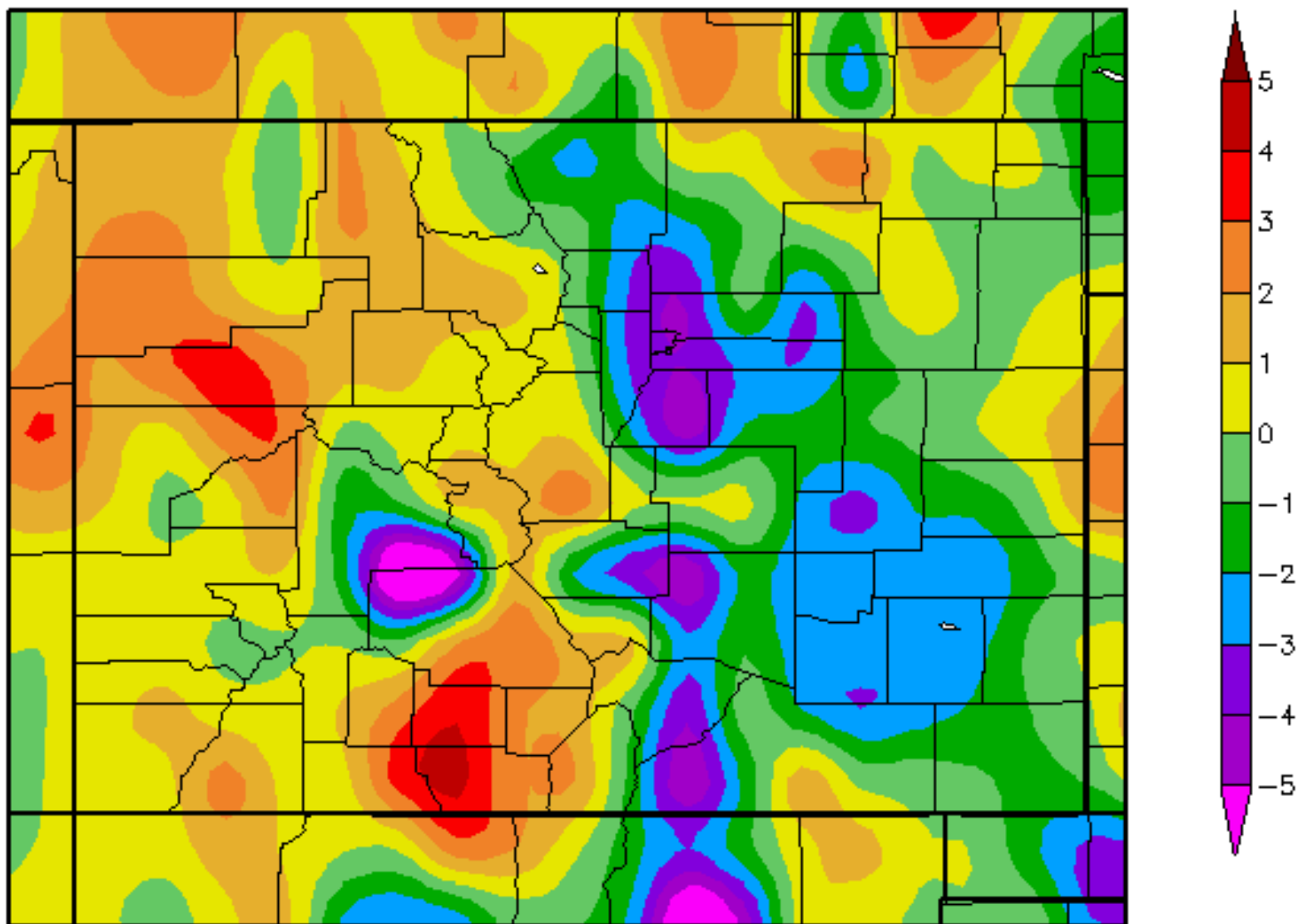
Departure from Normal Temperature (F)

2/1/2015 - 2/28/2015

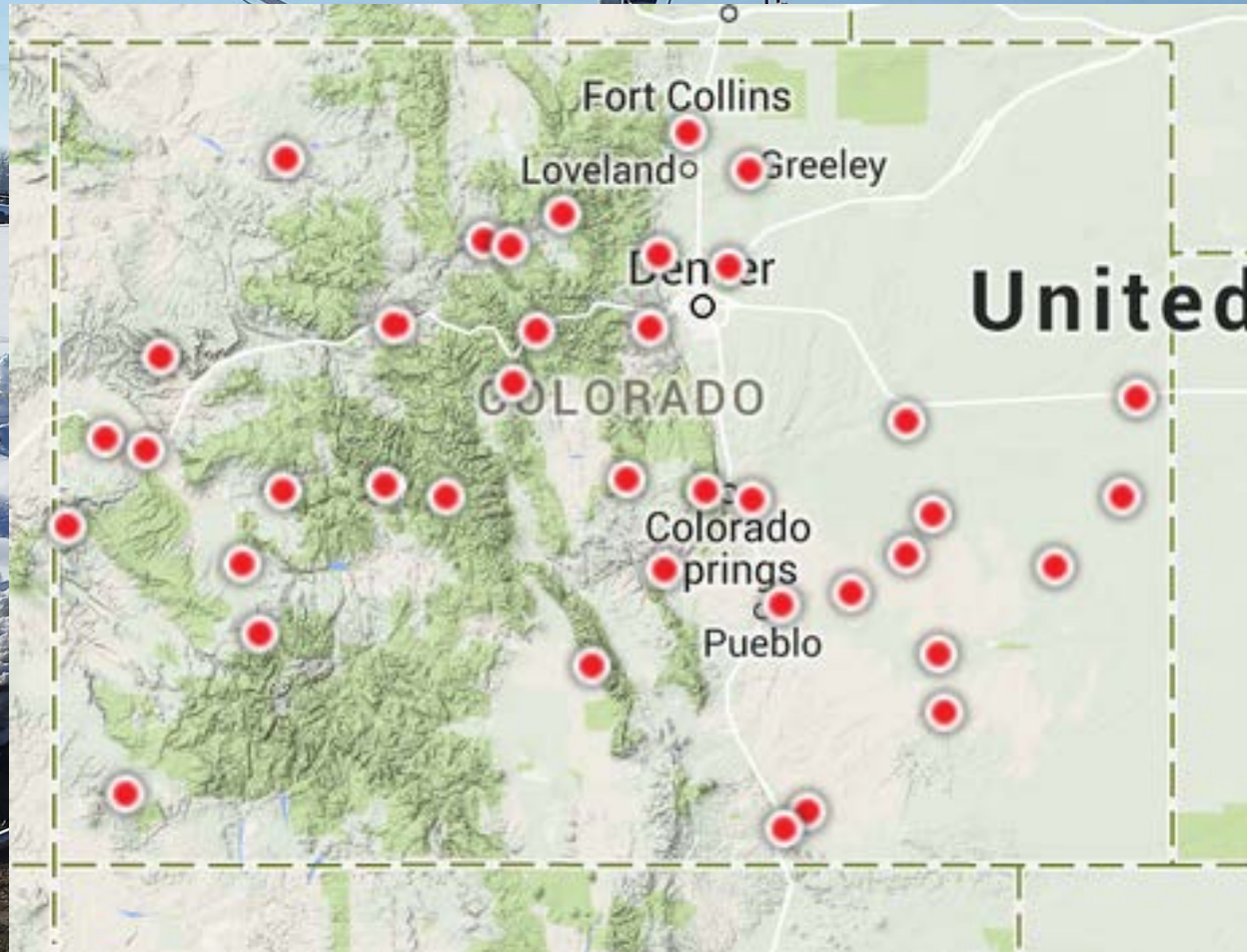


Departure from Normal Temperature (F)

3/1/2015 - 3/15/2015

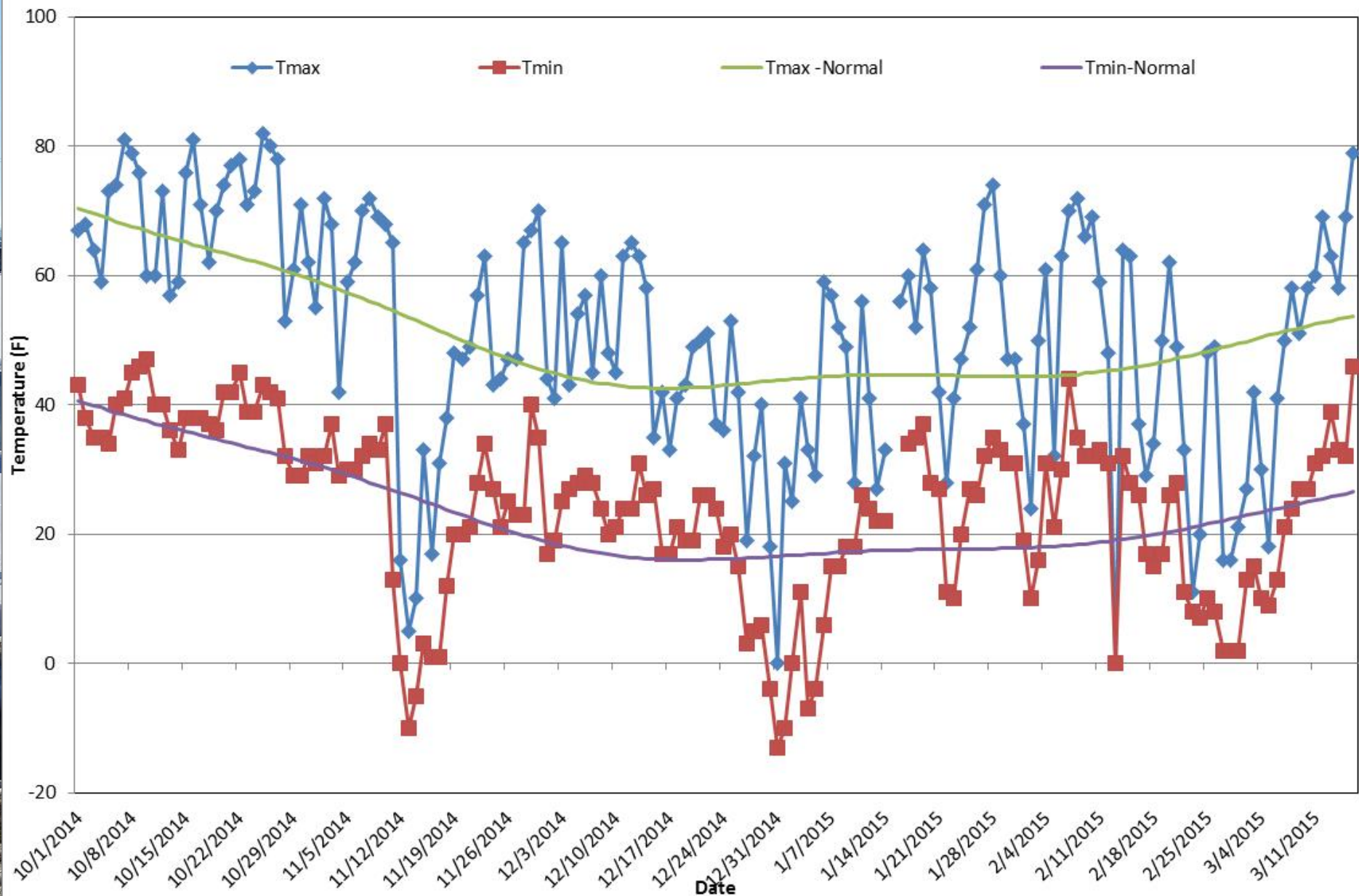


January 2015 – 103 Daily Tmax Records tied/broken
February 2015 – 221 Tmax Records tied/broken

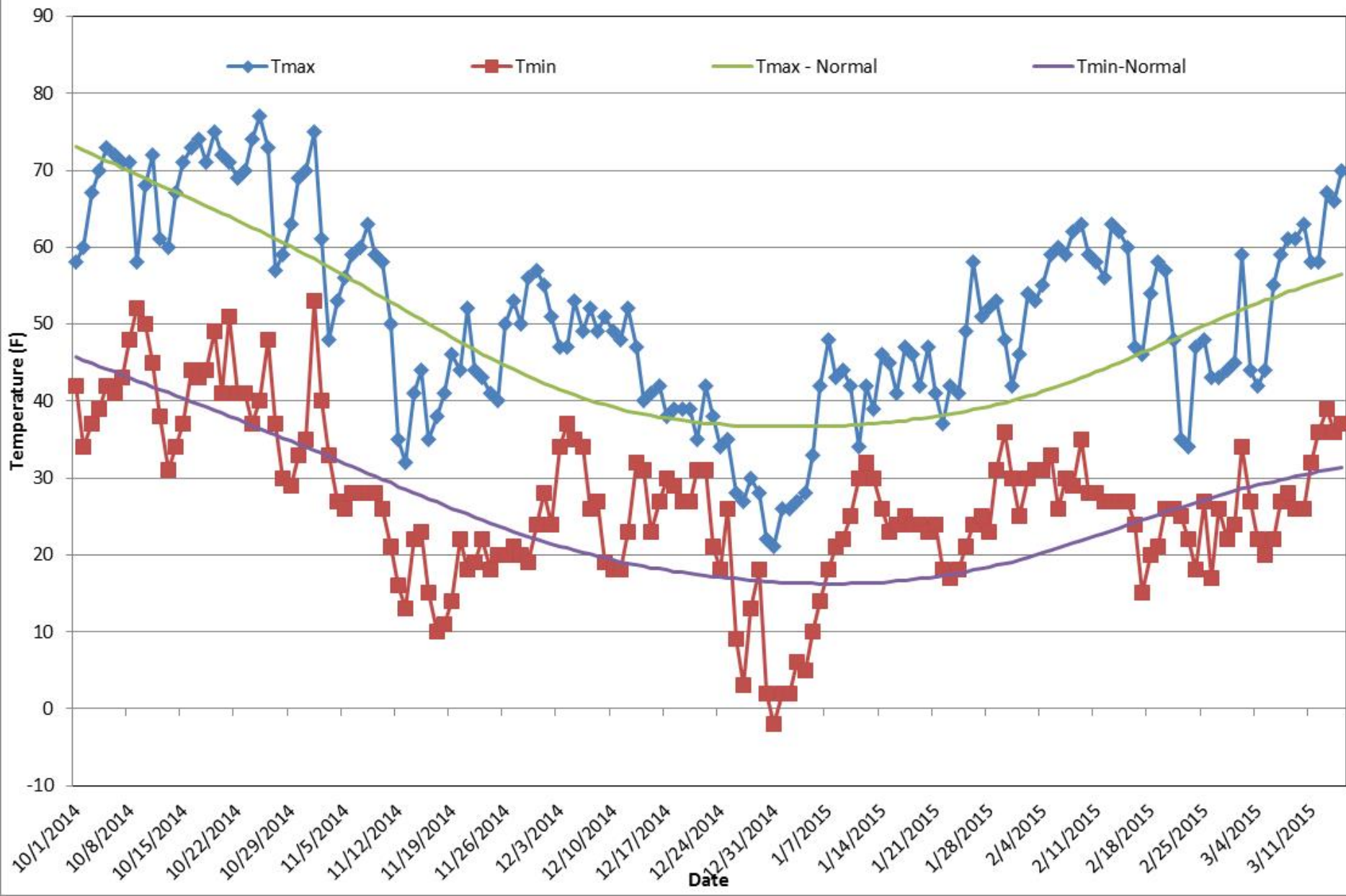


February 2015 Daily Tmax Records Set

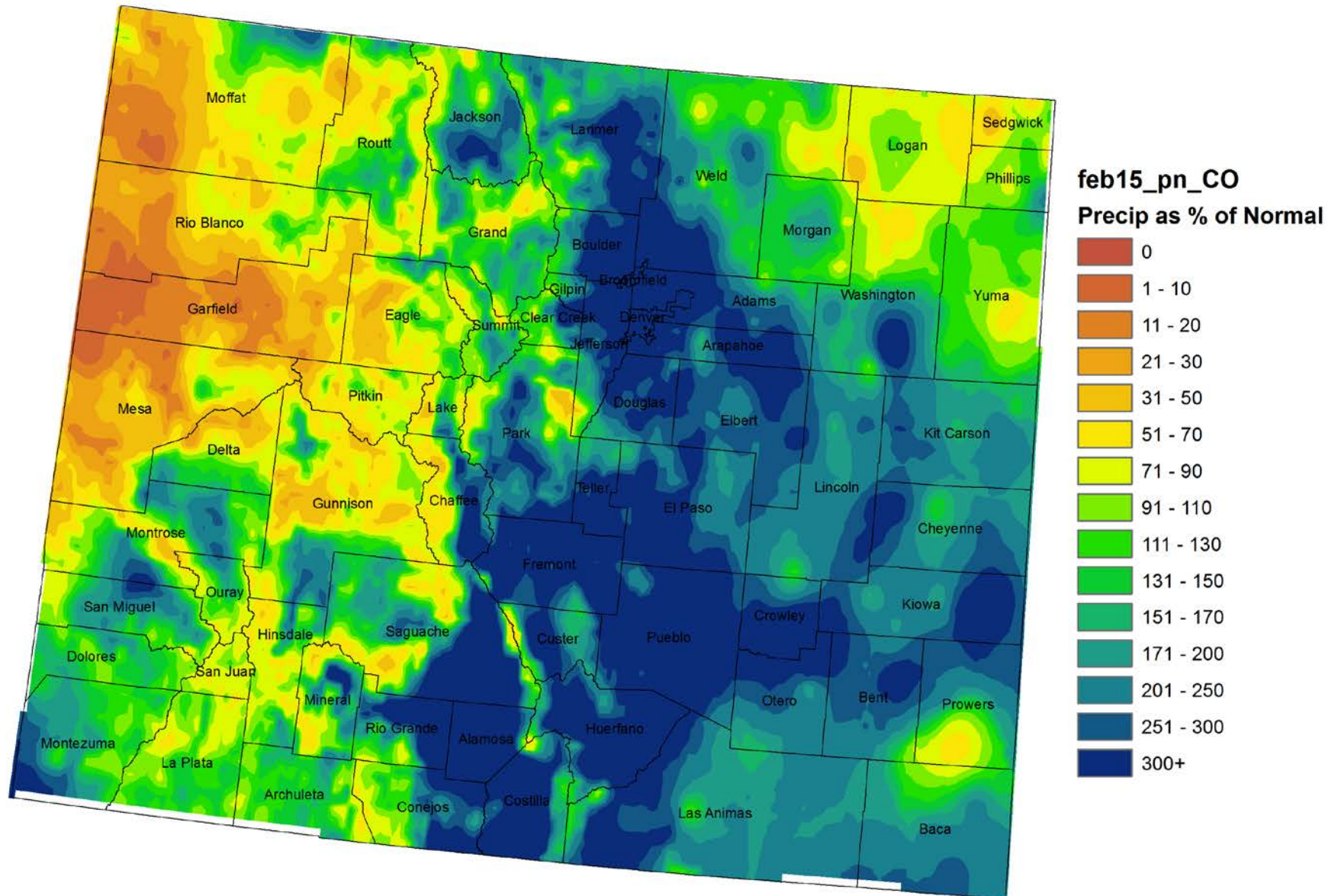
Denver-Stapleton Temperatures Oct 2014-Current



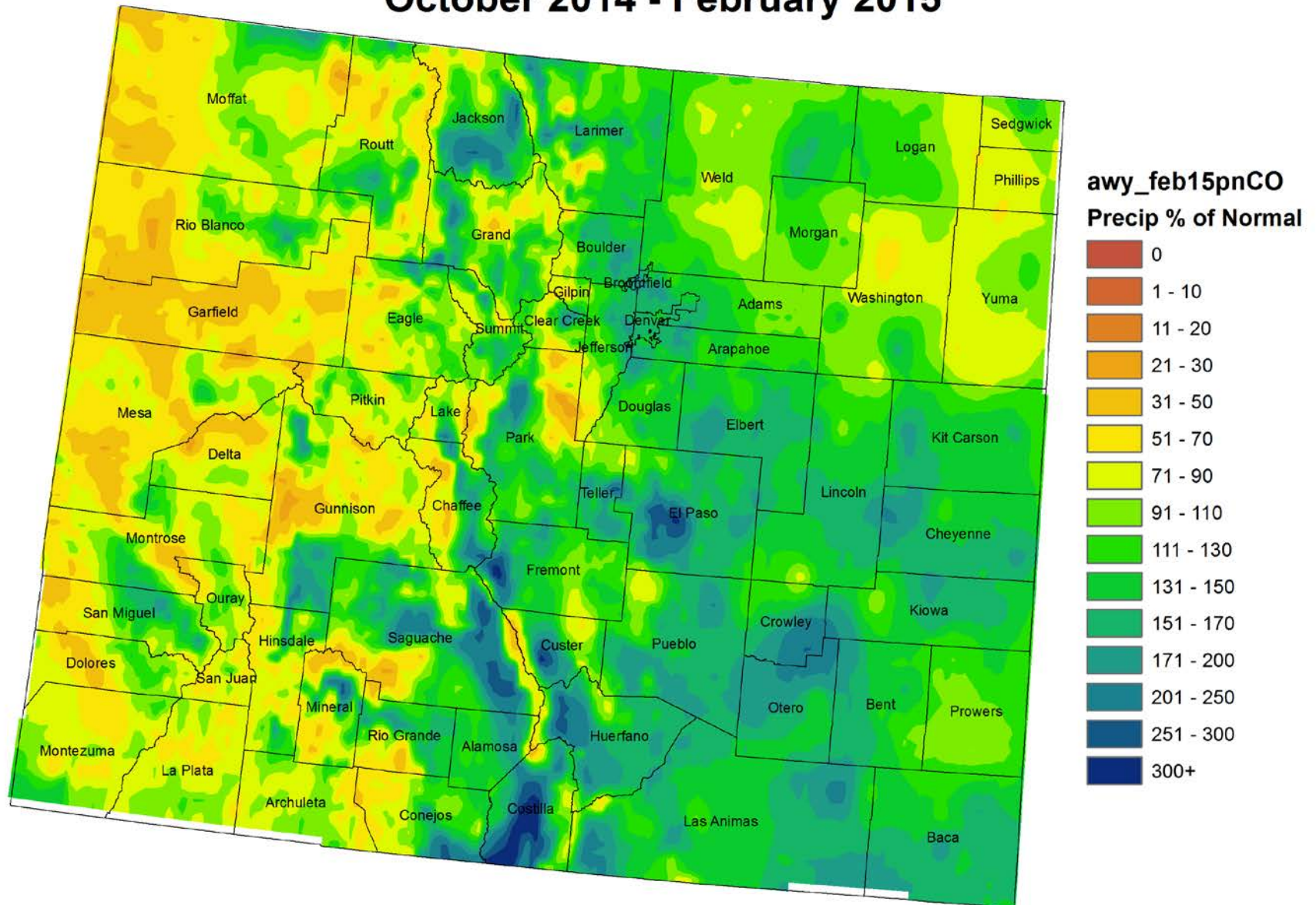
Grand Junction Temperatures Oct 2014-Current



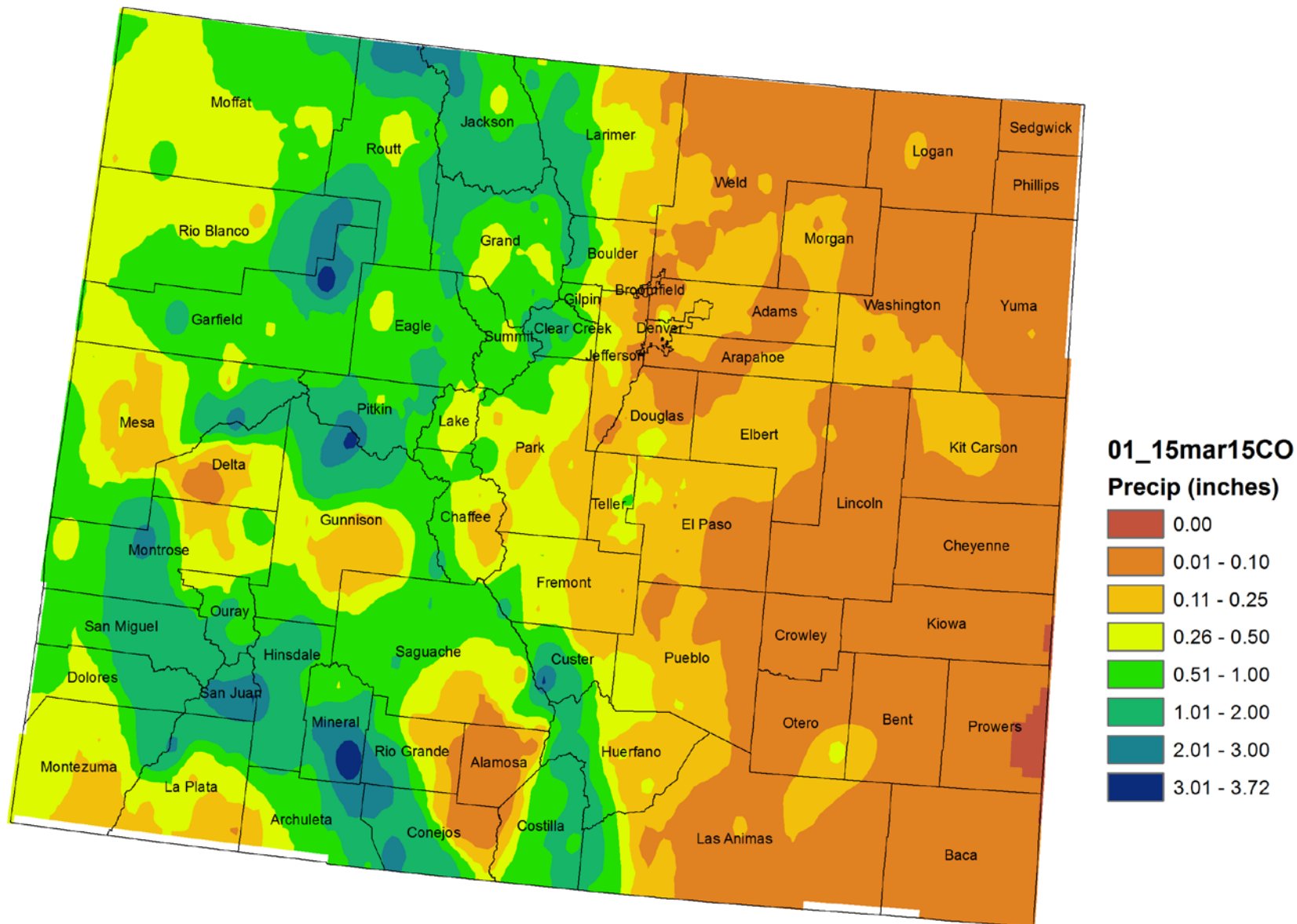
Colorado February 2015 Precipitation as a Percentage of Normal



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



Colorado Month to Date Precipitation 1 - 15 March 2015

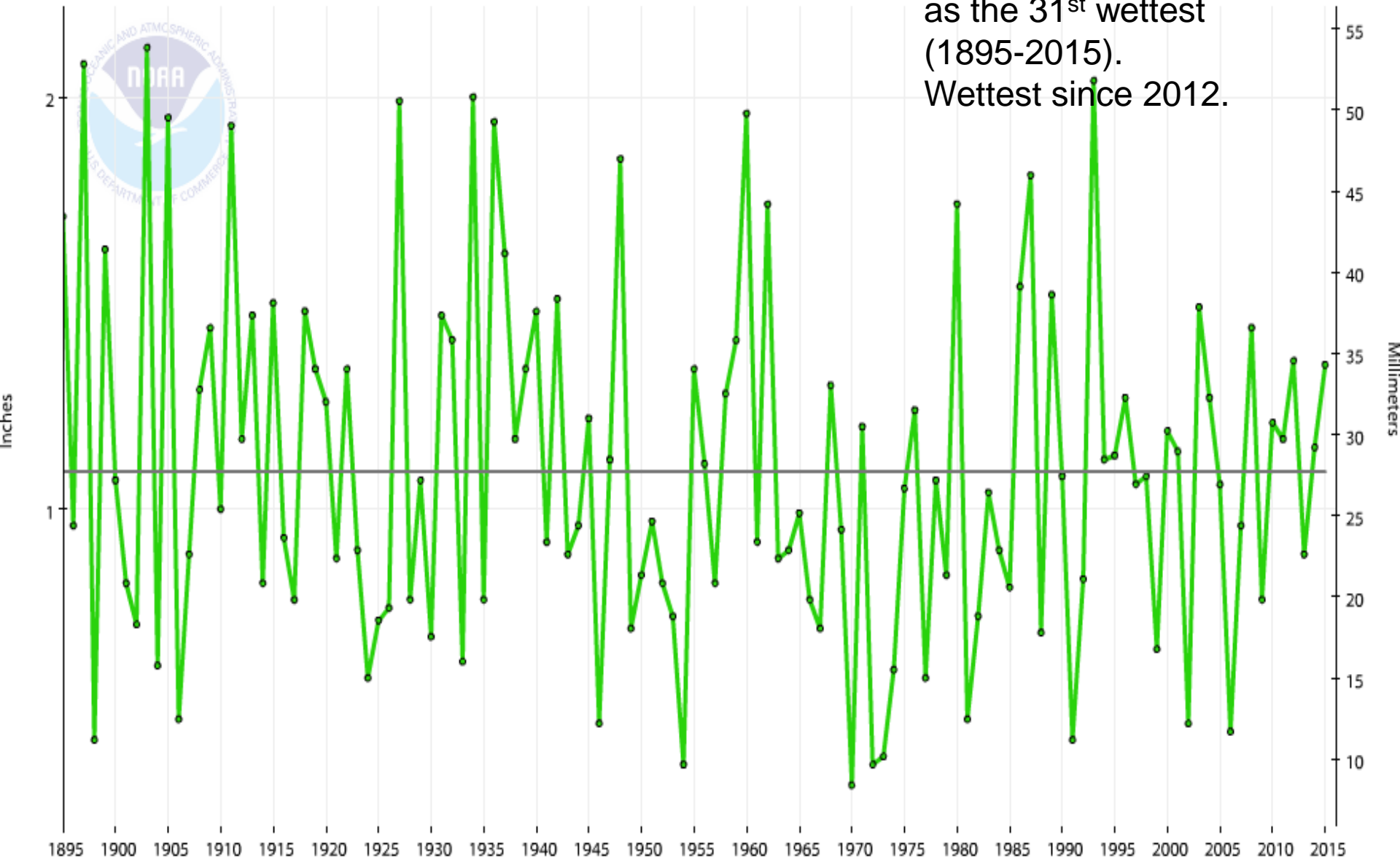


February Precipitation History for Colorado (NCDC)

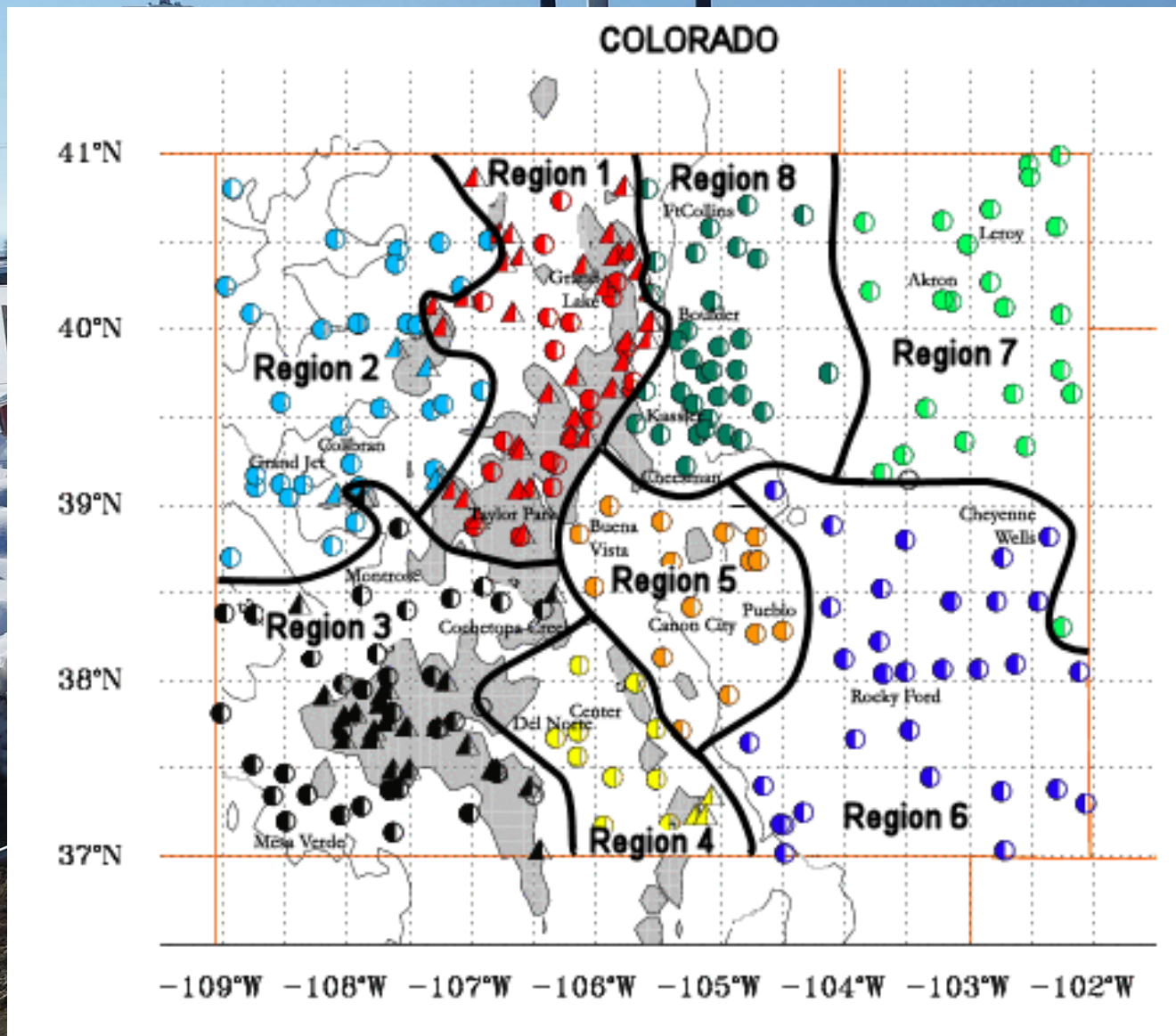
Colorado, Precipitation, February

— 1901-2000 Avg: 1.09" —●— Precip

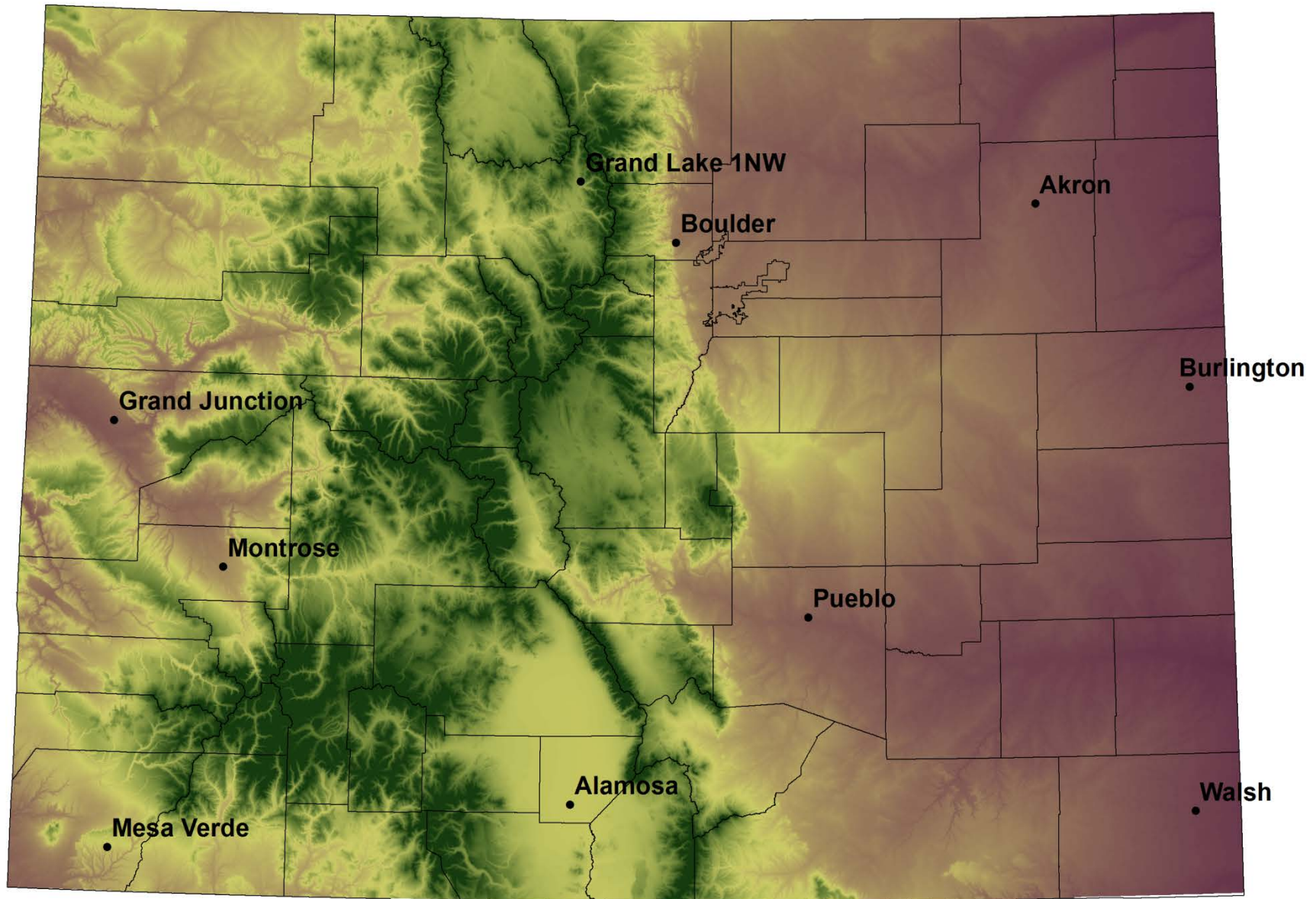
1.35" (+0.26") ranks as the 31st wettest (1895-2015).
Wettest since 2012.



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

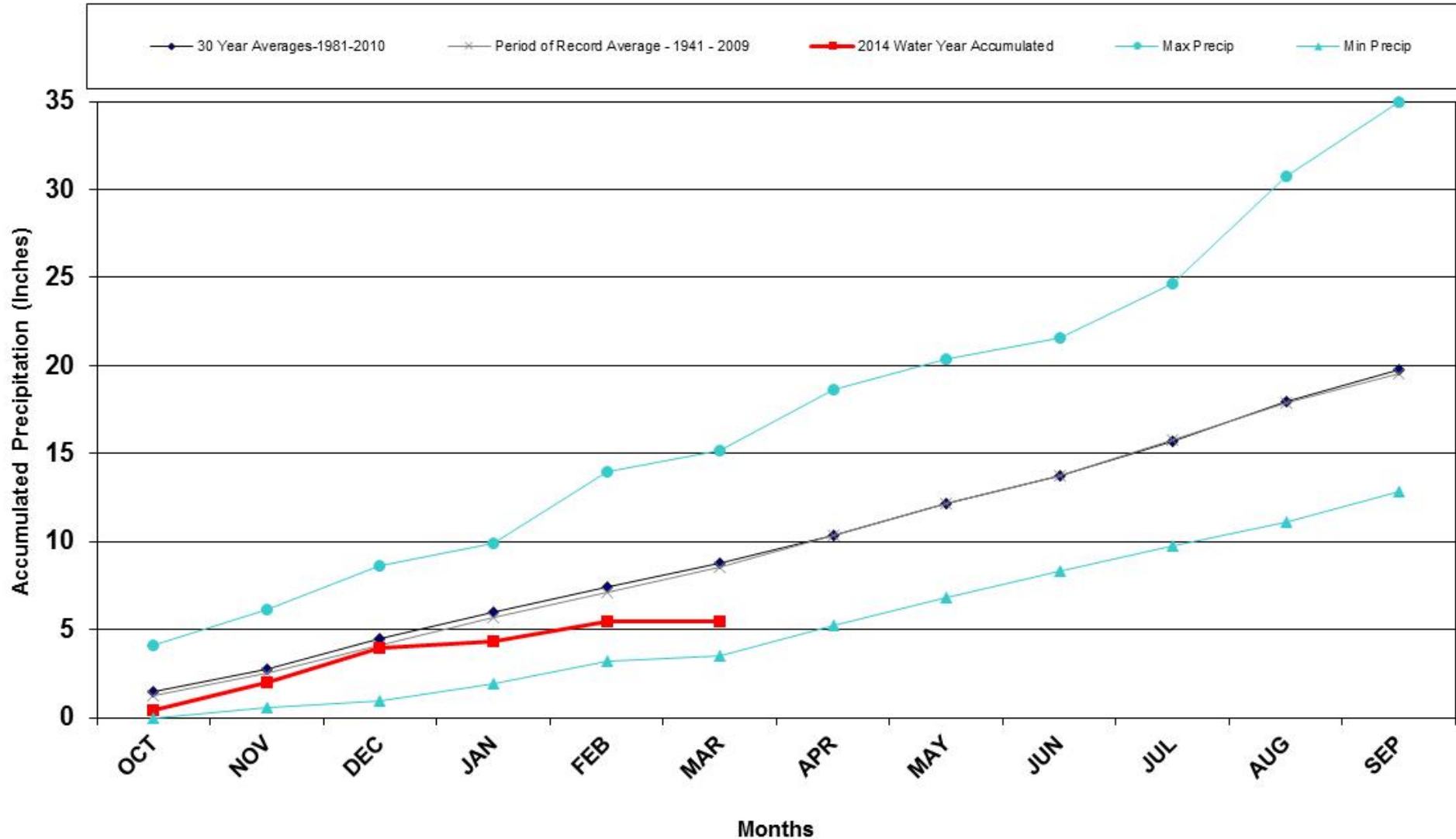


NWS Cooperative Stations for WATF



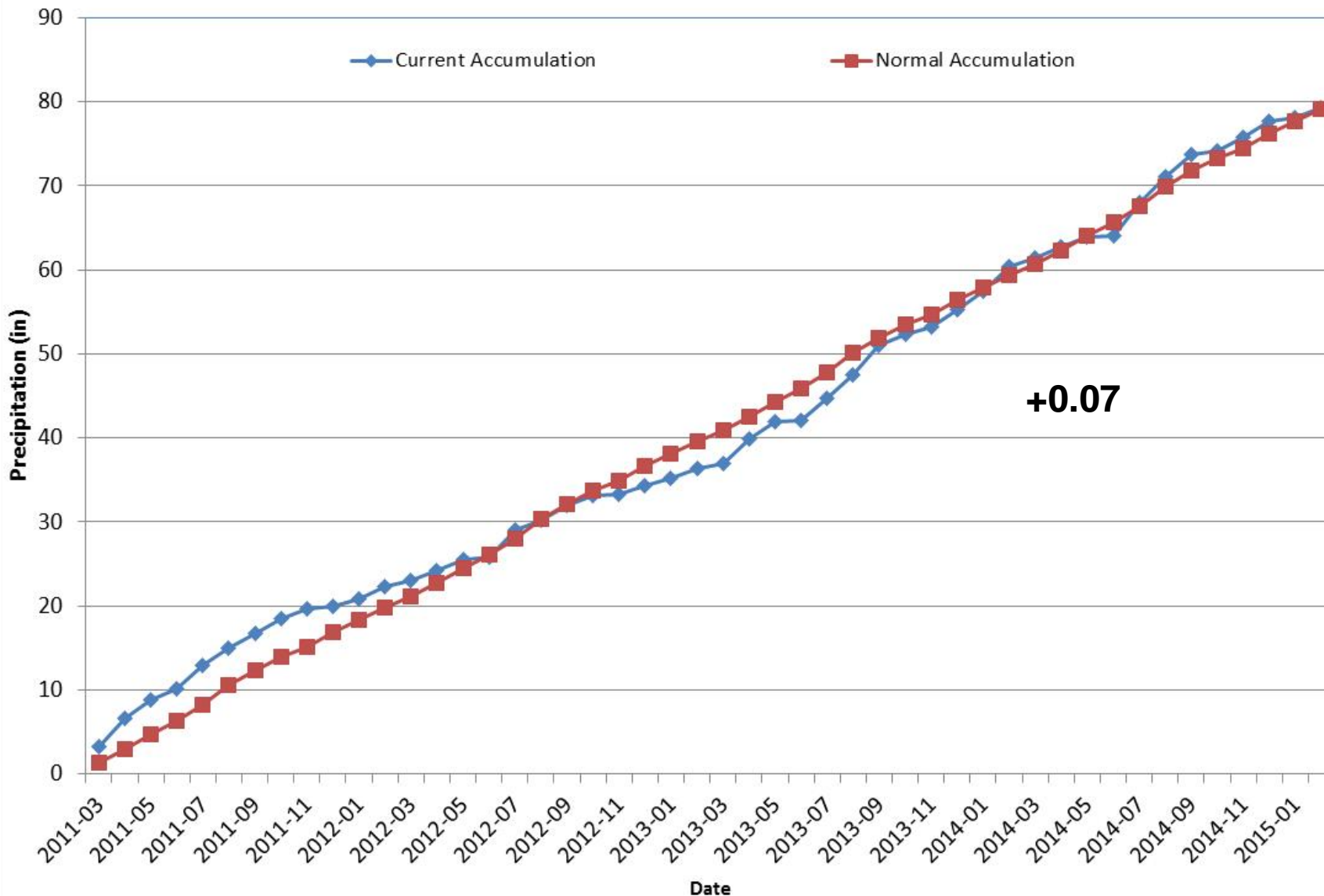
Division 1 – Grand Lake 1NW

Grand Lake 1 NW 2015 Water Year



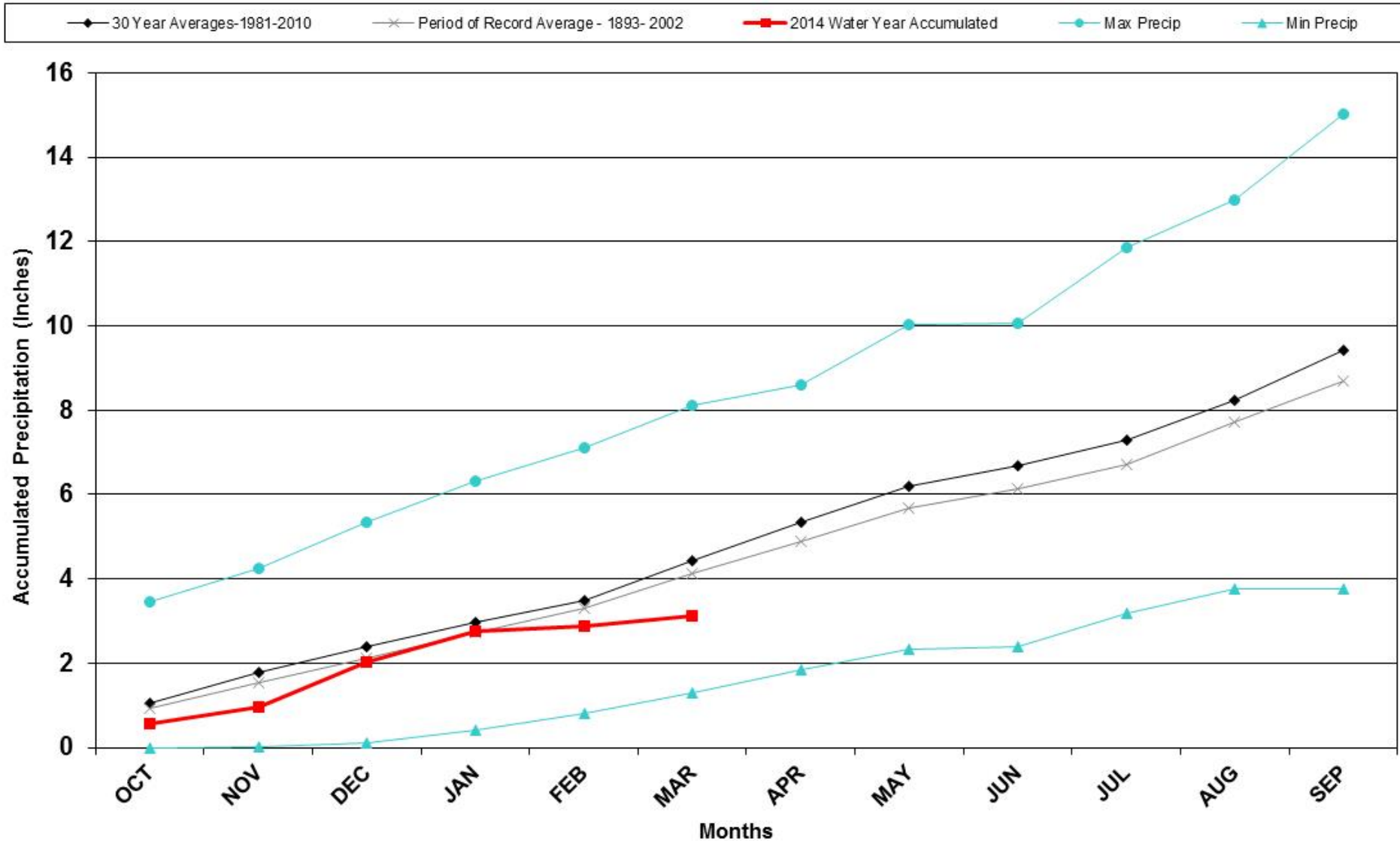
Division 1 – Grand Lake 1NW

Grand Lake 1NW Precipitation Accumulation



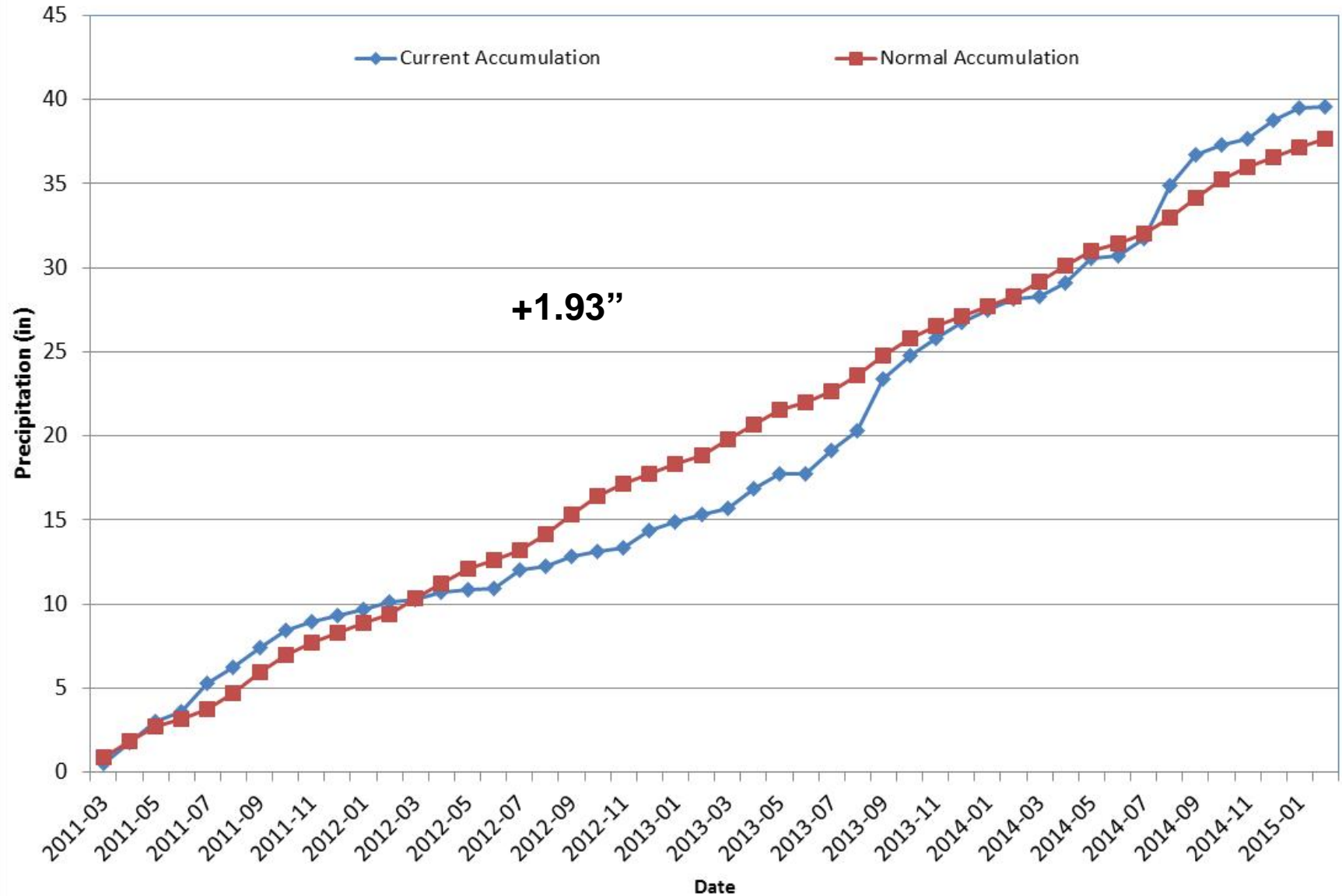
Division 2 – Grand Junction

Grand Junction WSFO 2015 Water Year



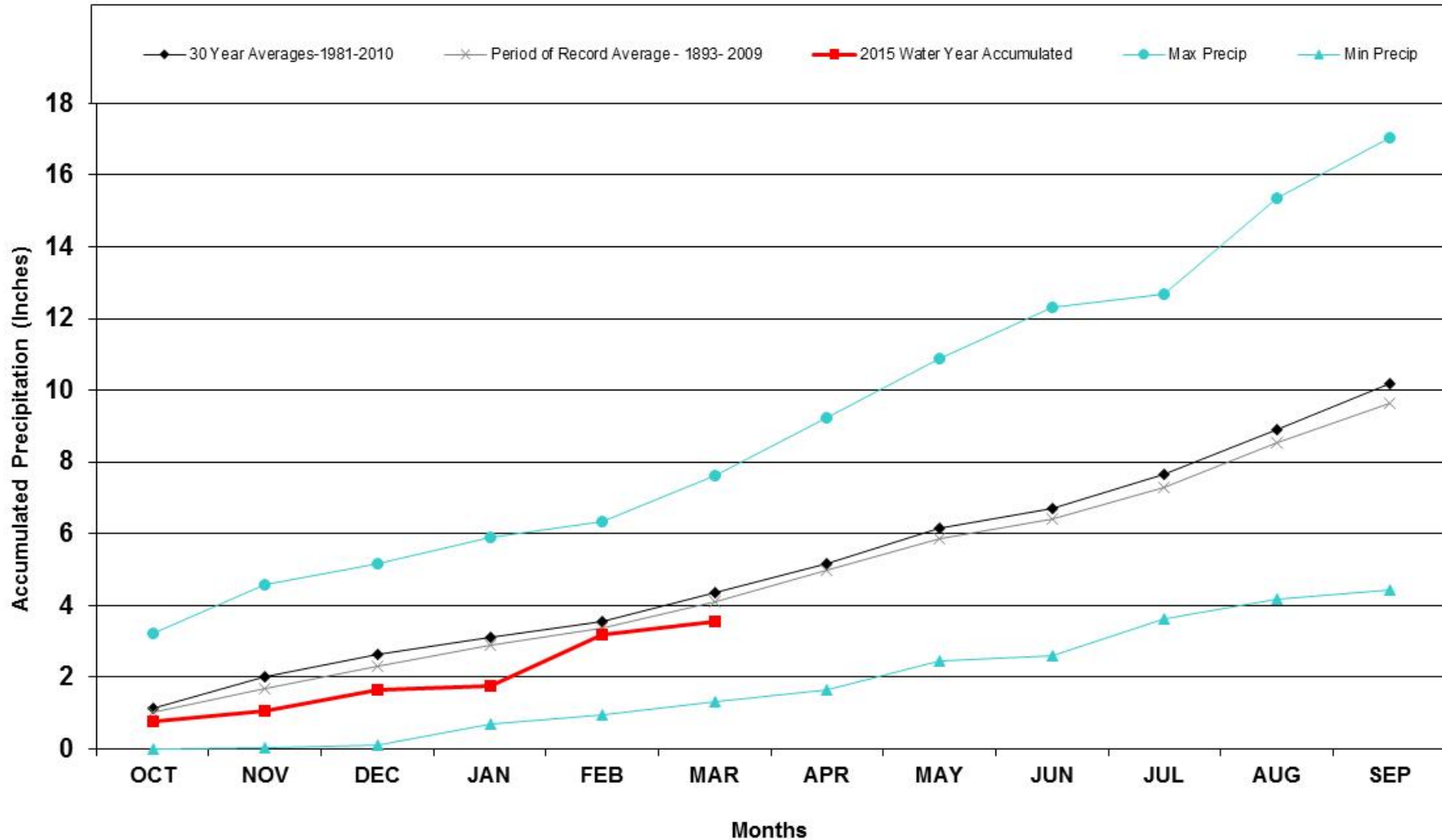
Division 2 – Grand Junction

Grand Junction Precipitation Accumulation



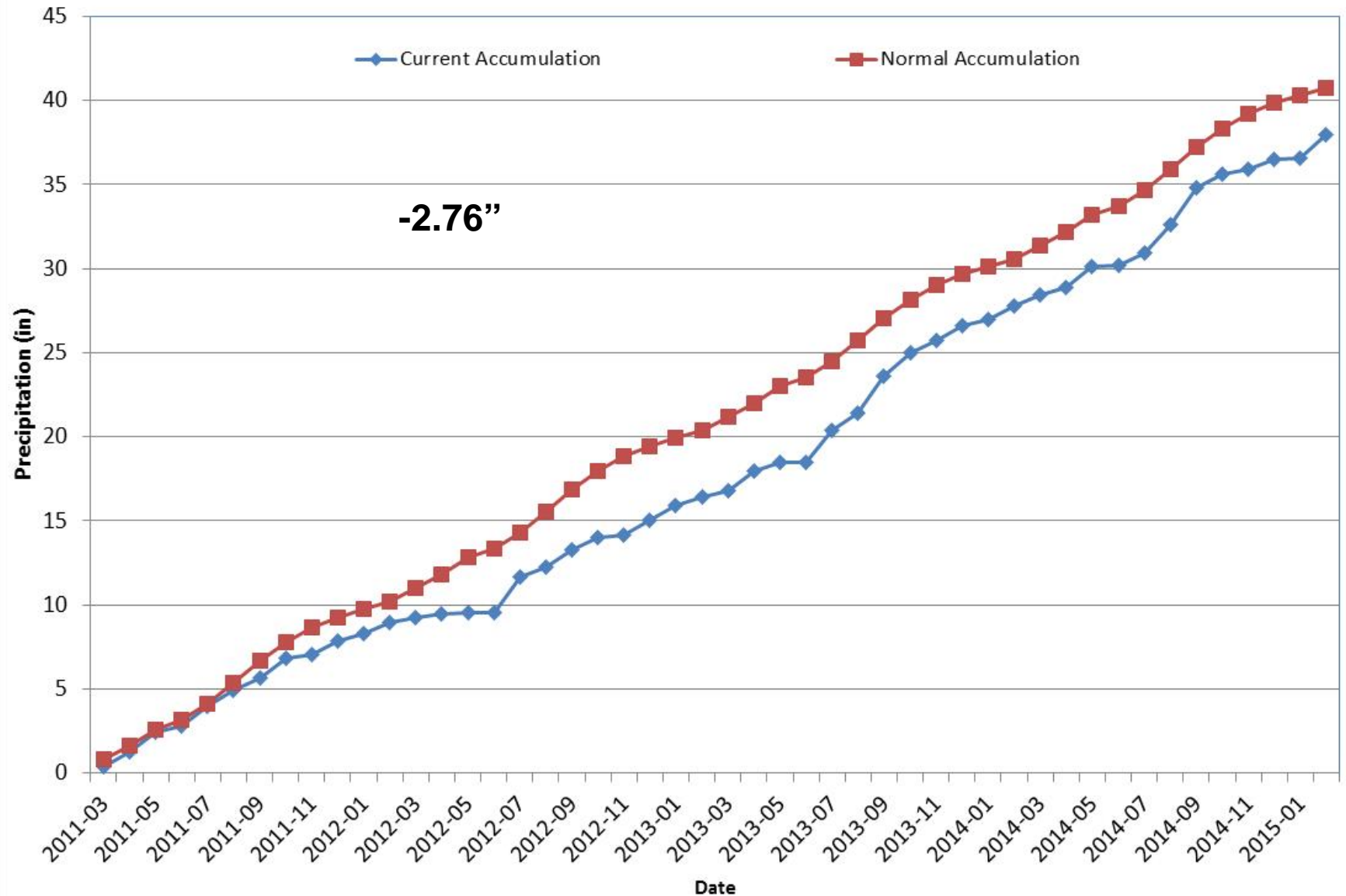
Division 3 – Montrose

Montrose #2 2015 Water Year



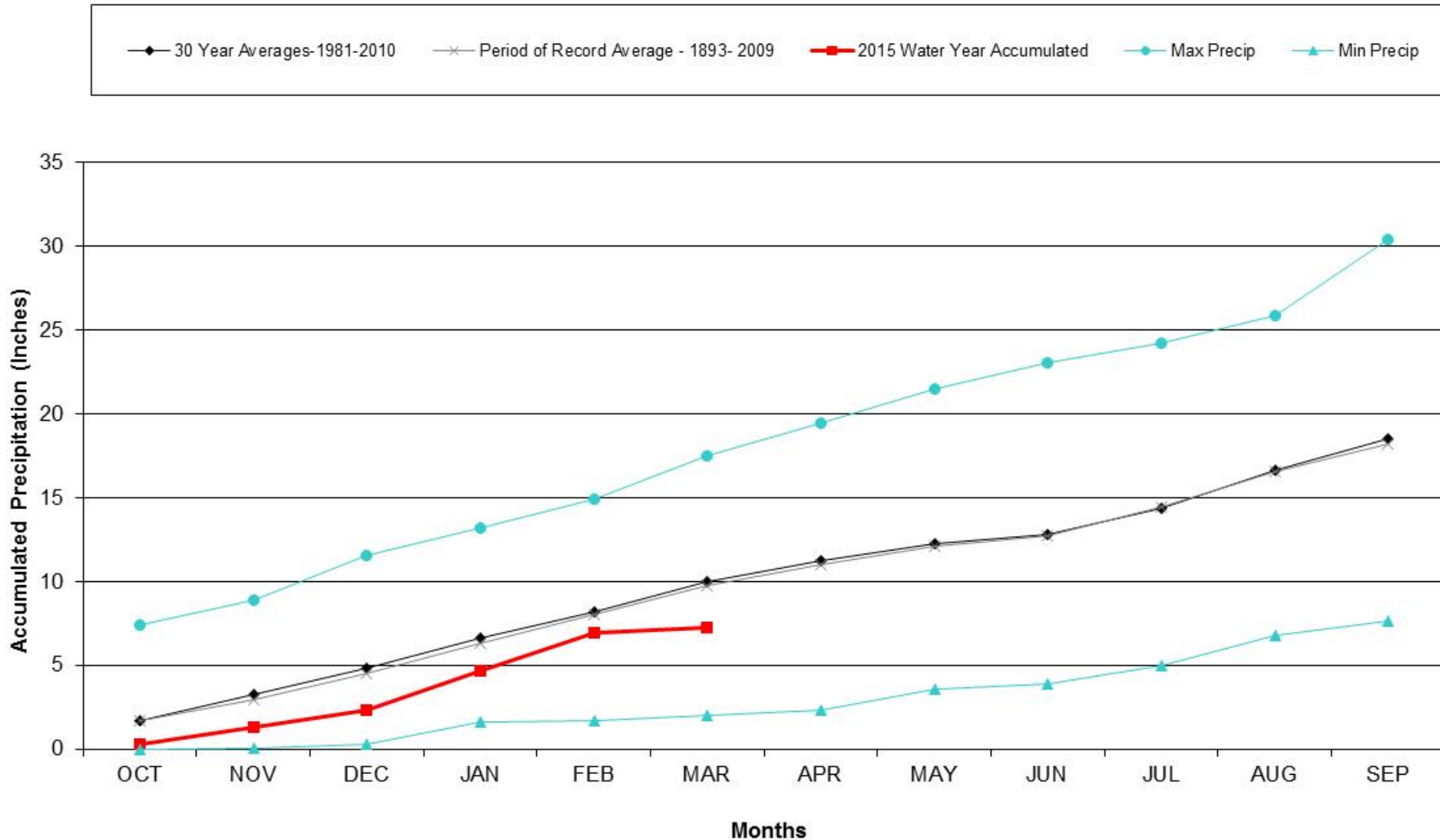
Division 3 – Montrose

Montrose #2 Precipitation Accumulation



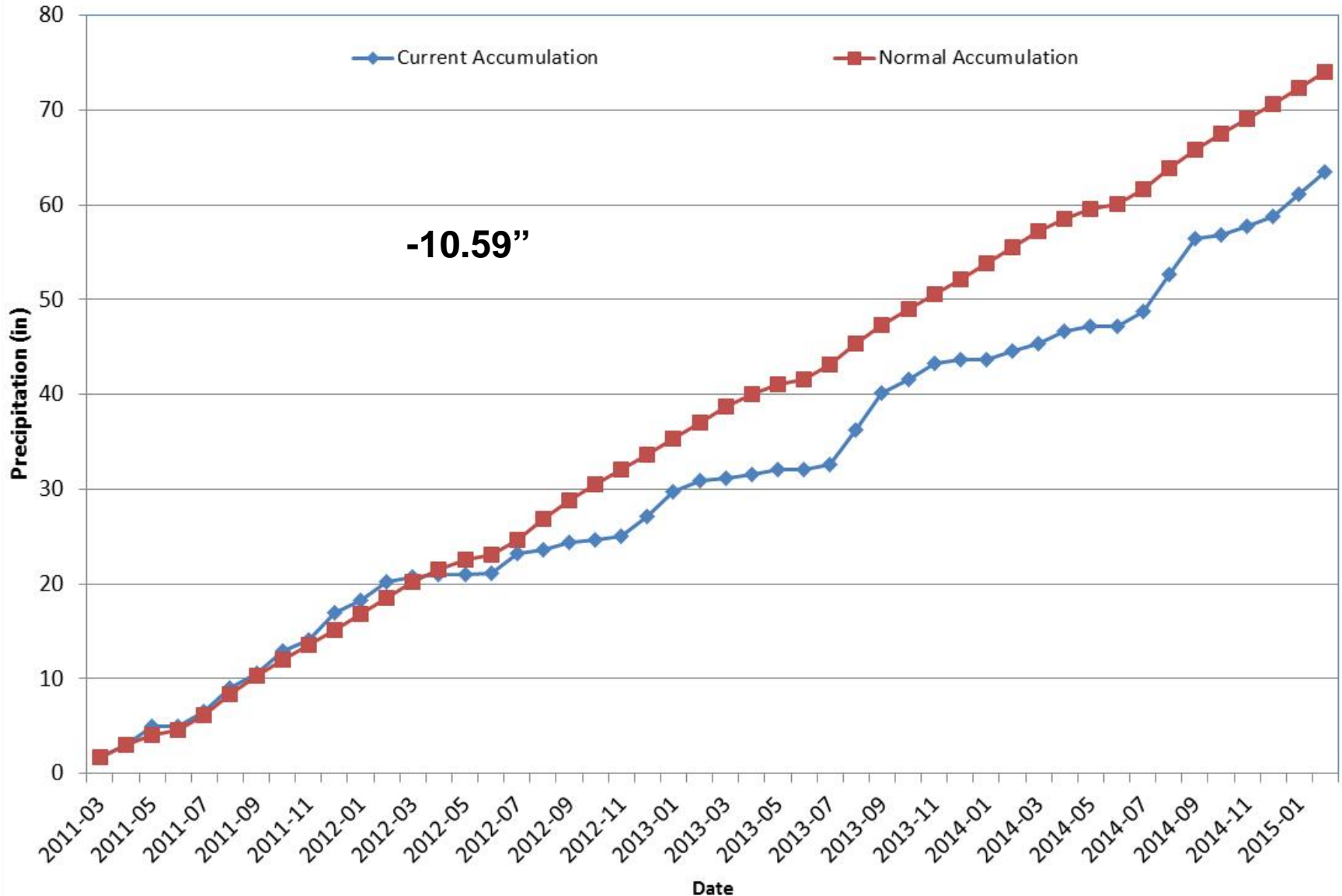
Division 3 – Mesa Verde NP

Mesa Verde NP 2015 Water Year



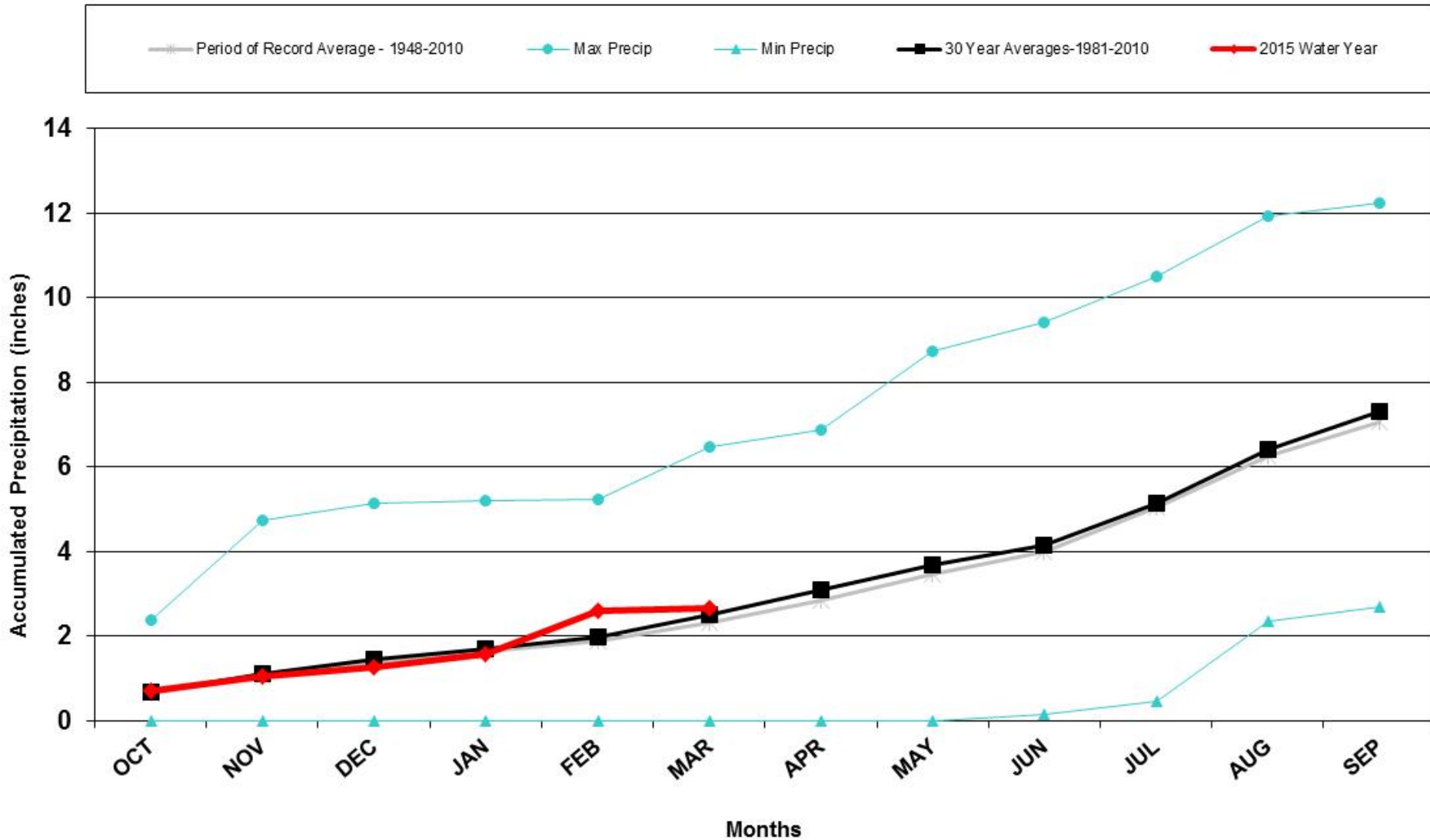
Division 3 – Mesa Verde NP

Mesa Verde NP Precipitation Accumulation



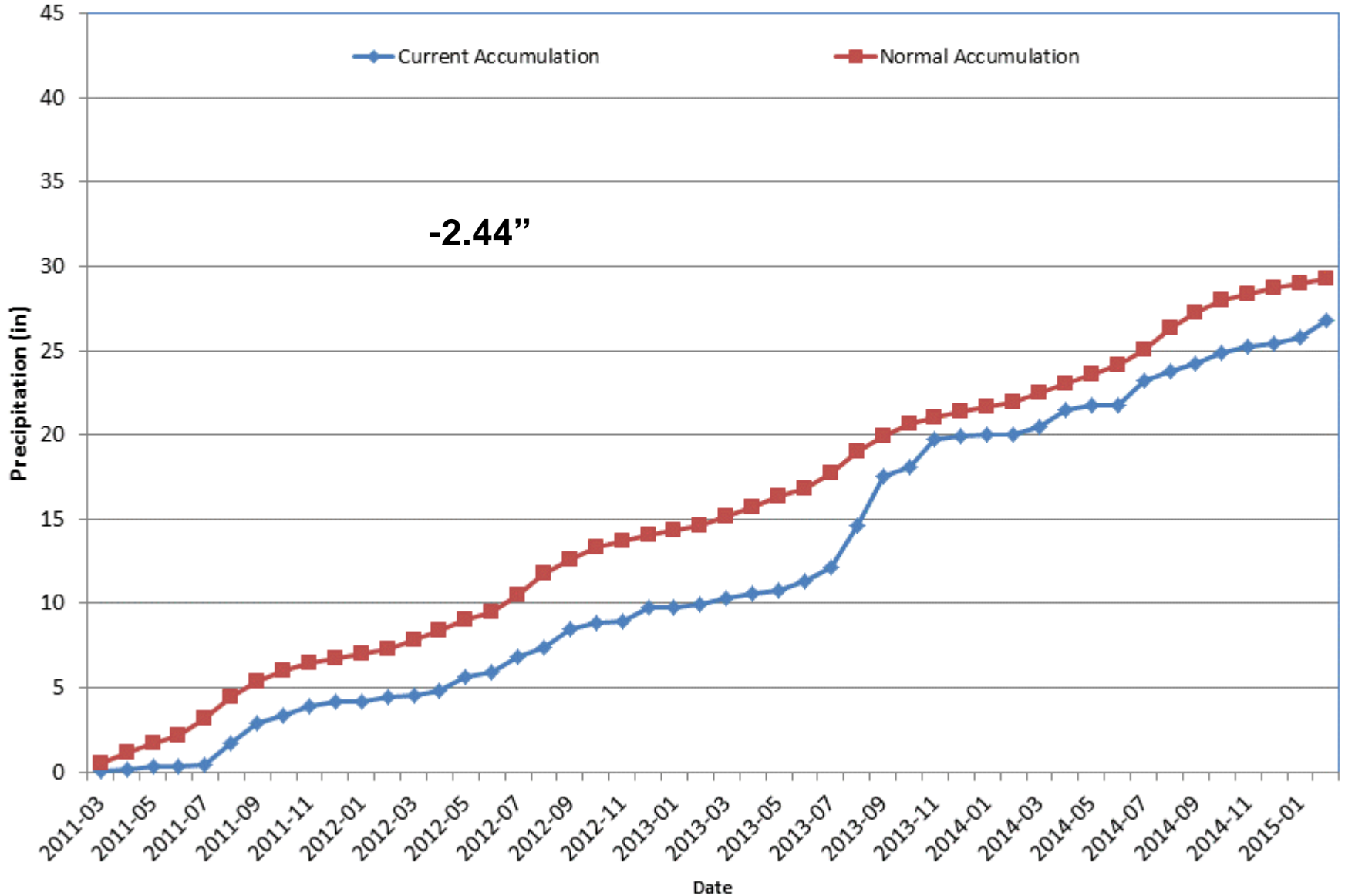
Division 4 – Alamosa

Alamosa WSO 2015 Water Year



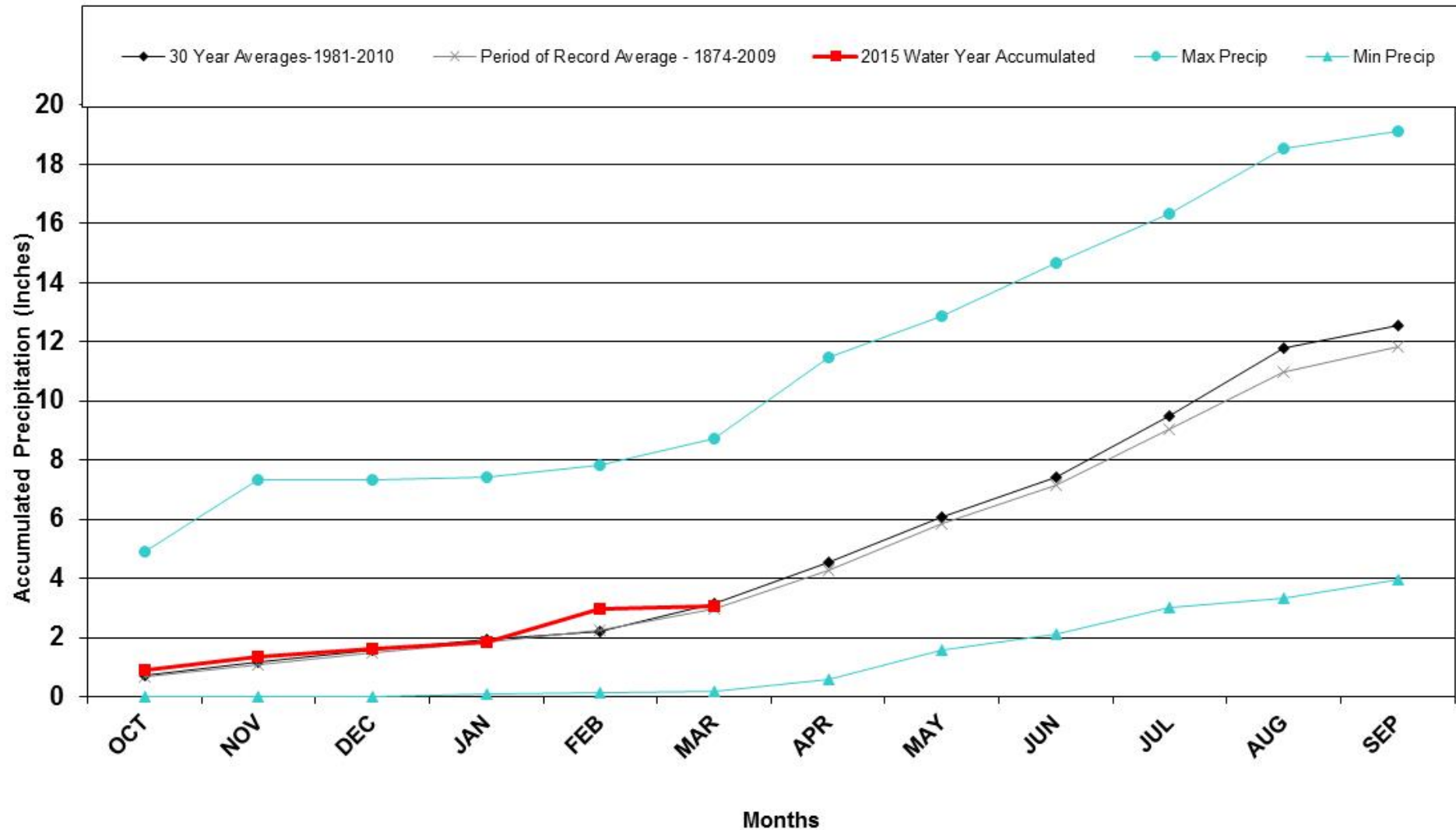
Division 4 – Alamosa

Alamosa WSO Precipitation Accumulation



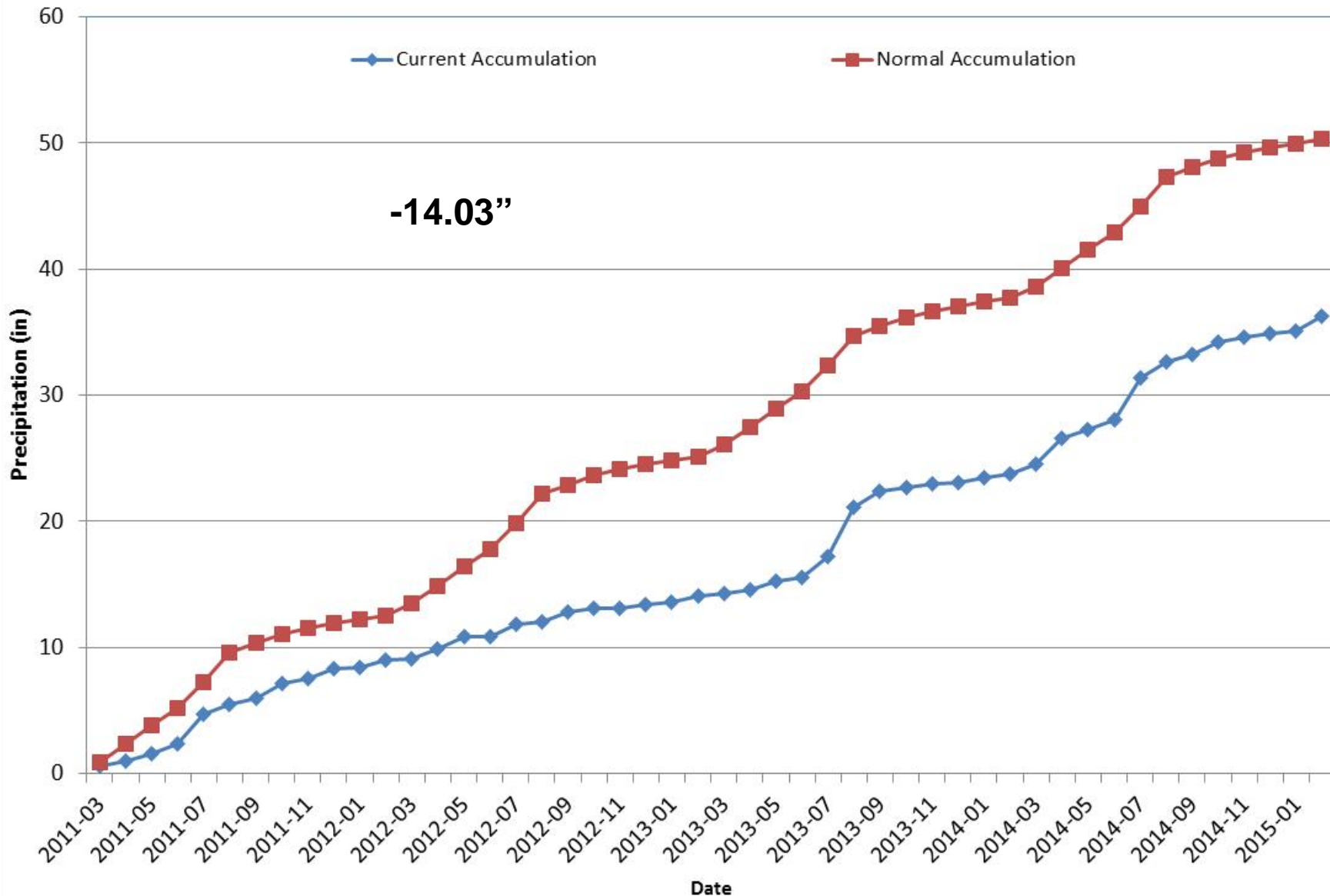
Division 5 – Pueblo

Pueblo WSO 2015 Water Year



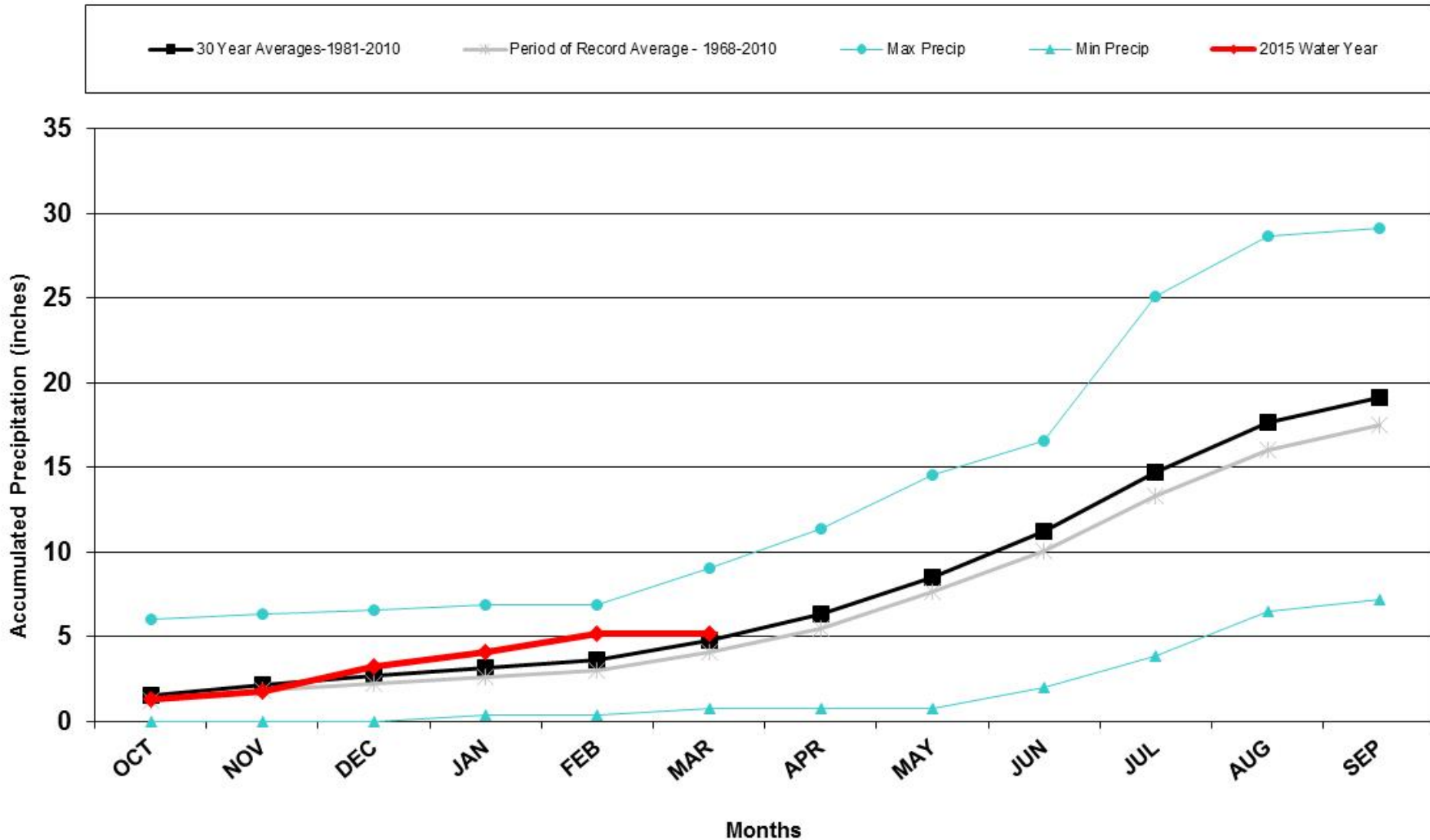
Division 5 – Pueblo

Pueblo Memorial AP Precipitation Accumulation



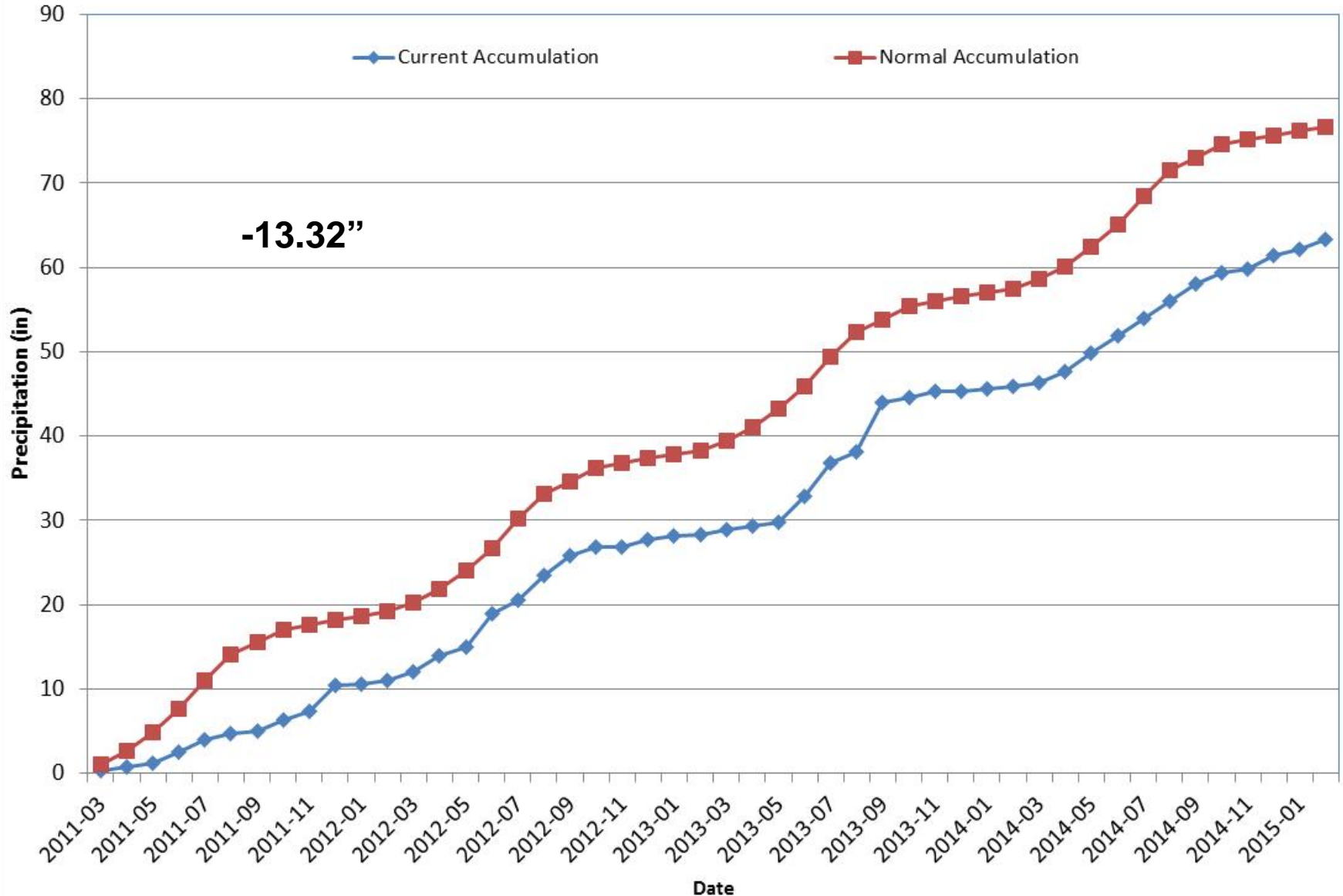
Division 6 - Walsh

Walsh 2015 Water Year



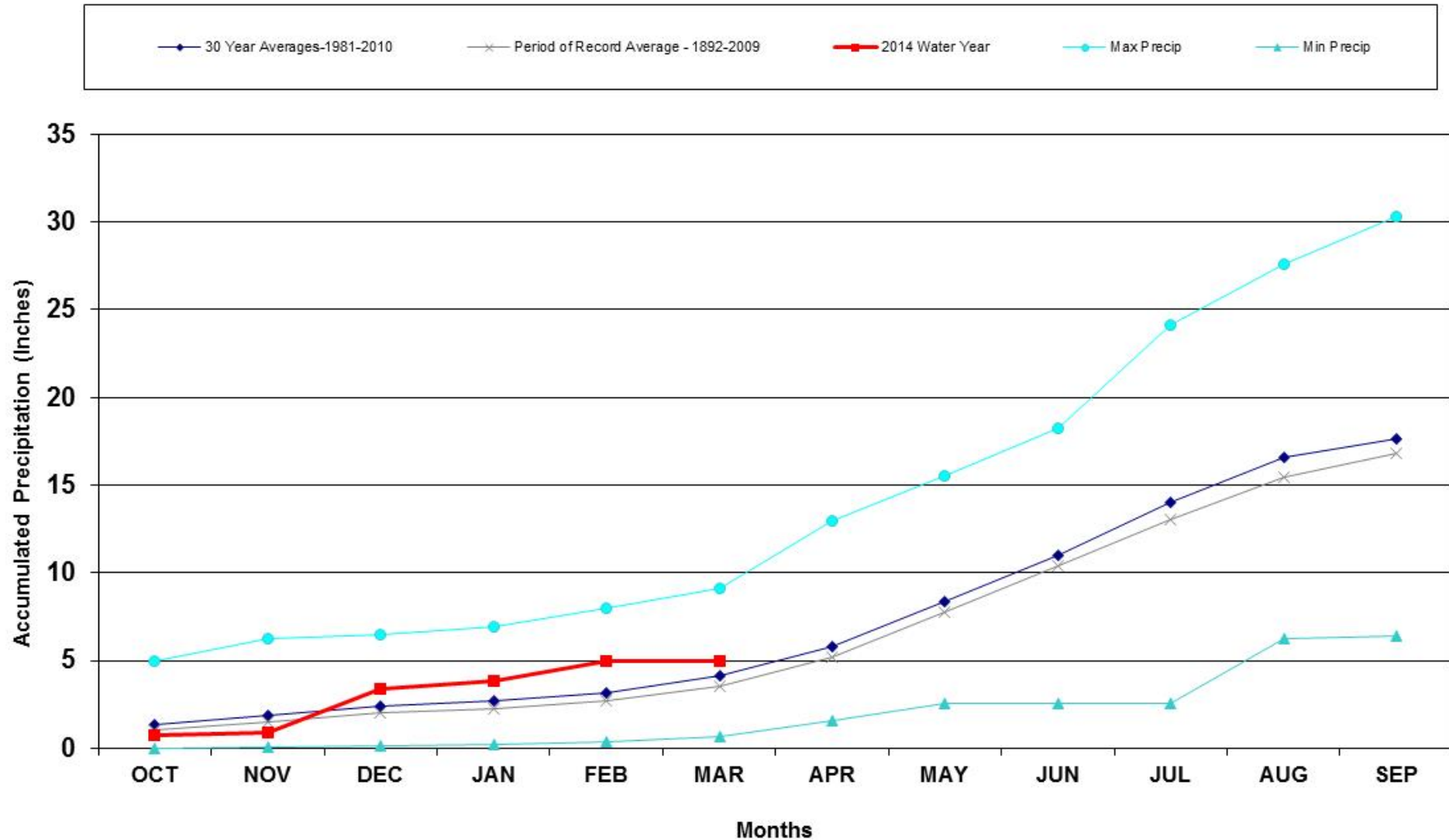
Division 6 - Walsh

Walsh 1W Precipitation Accumulation



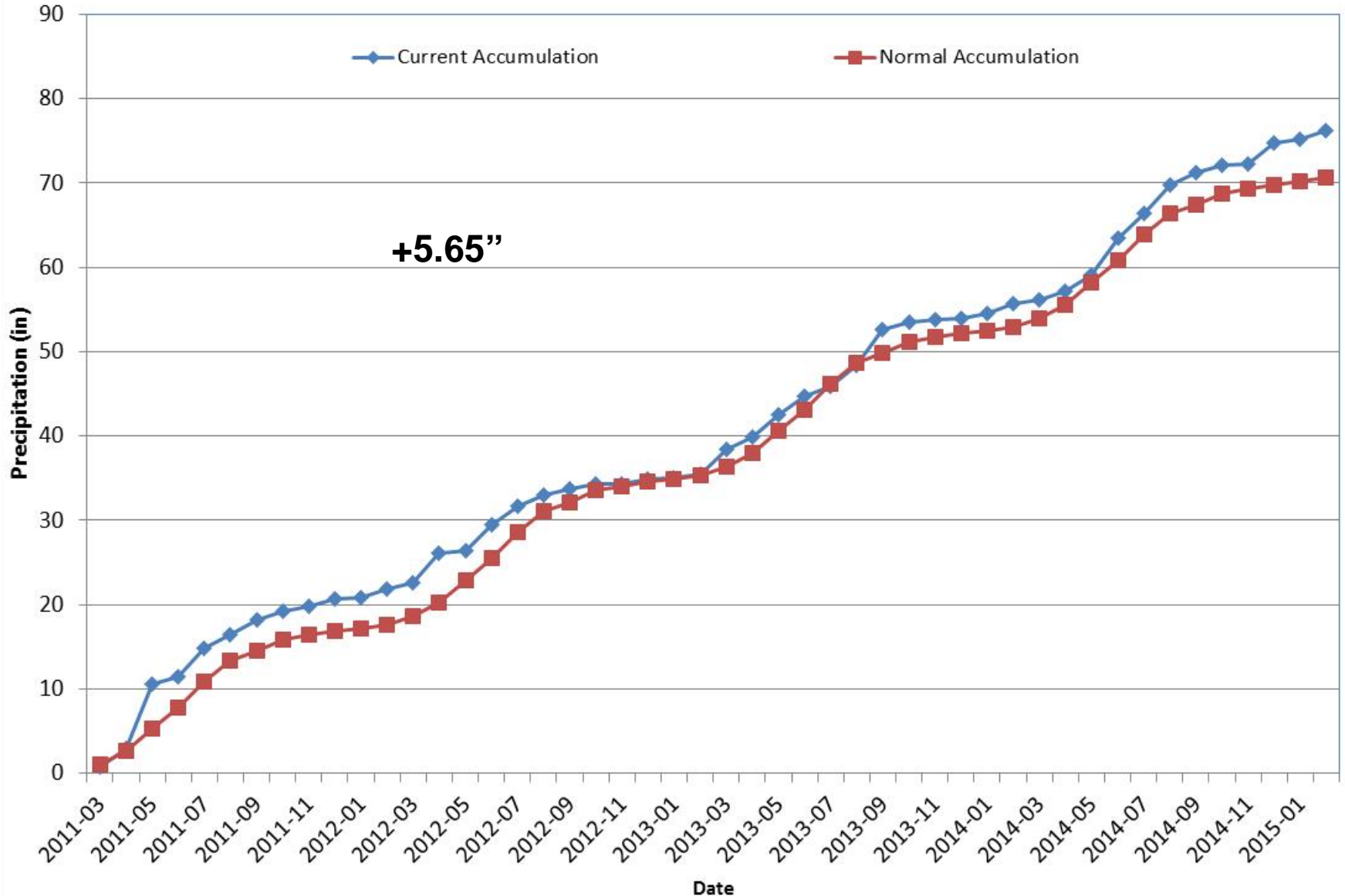
Division 6 - Burlington

Burlington 2015 Water Year



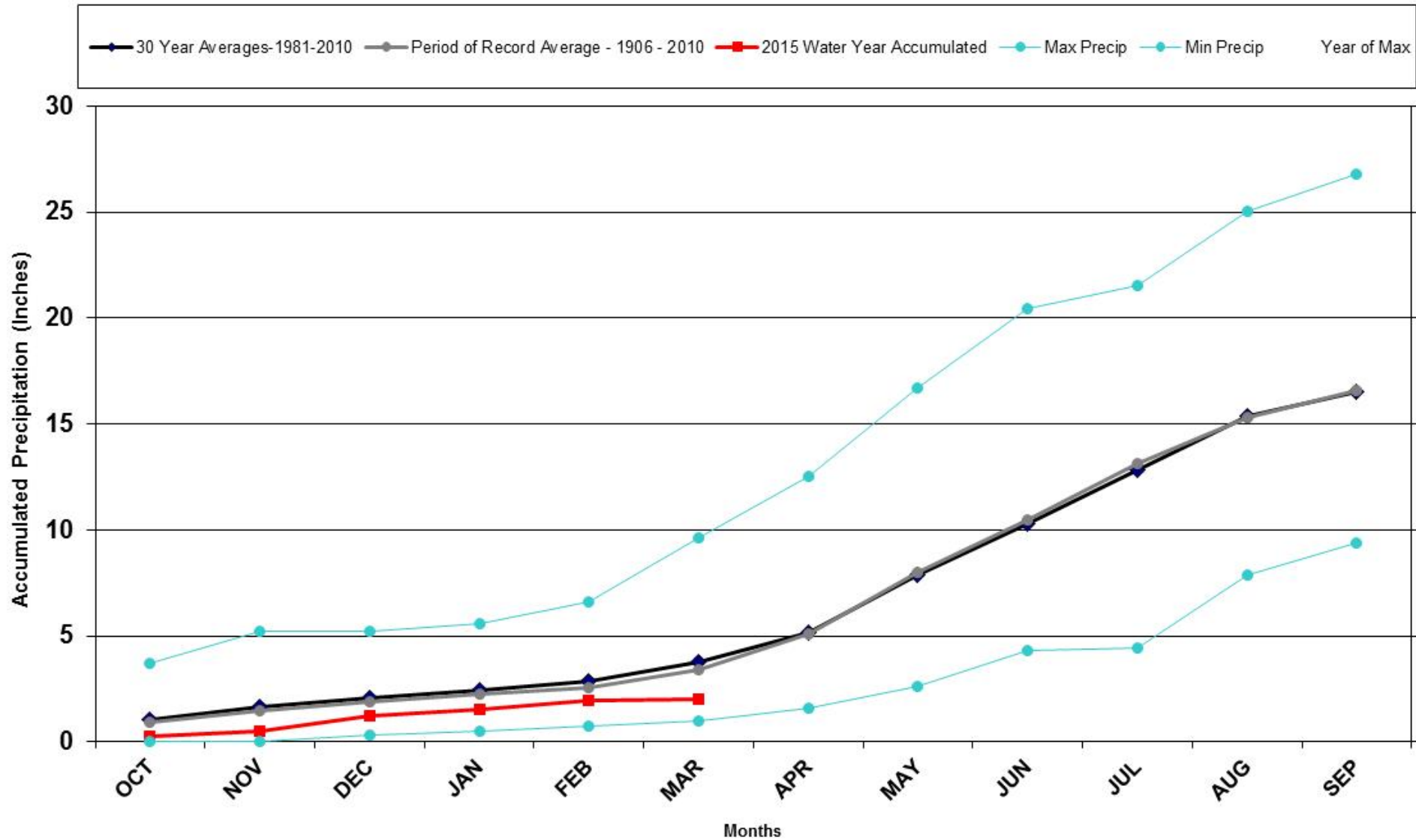
Division 6 - Burlington

Burlington, CO Precipitation Accumulation



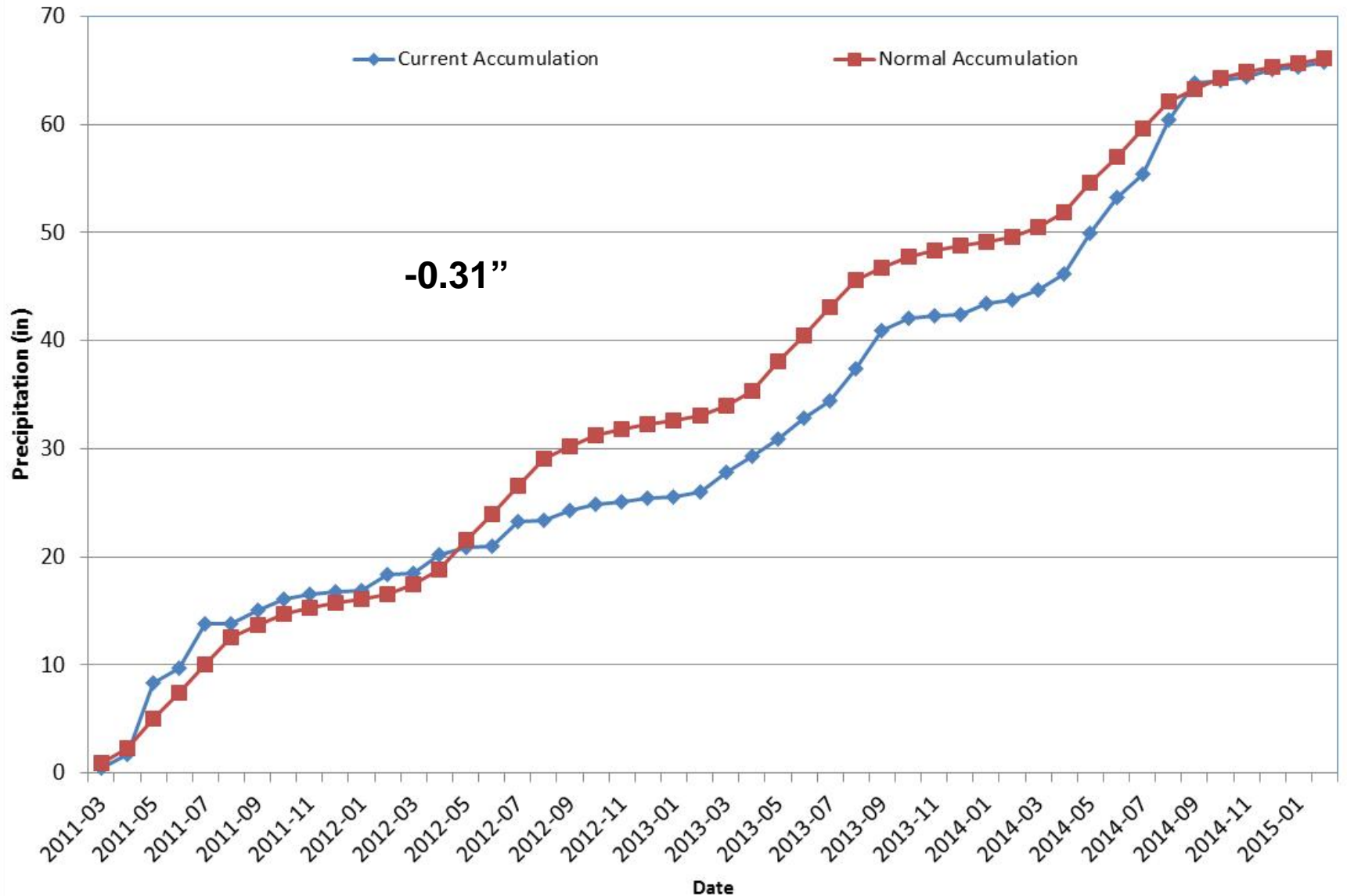
Division 7 – Akron

Akron 4E 2015 Water Year



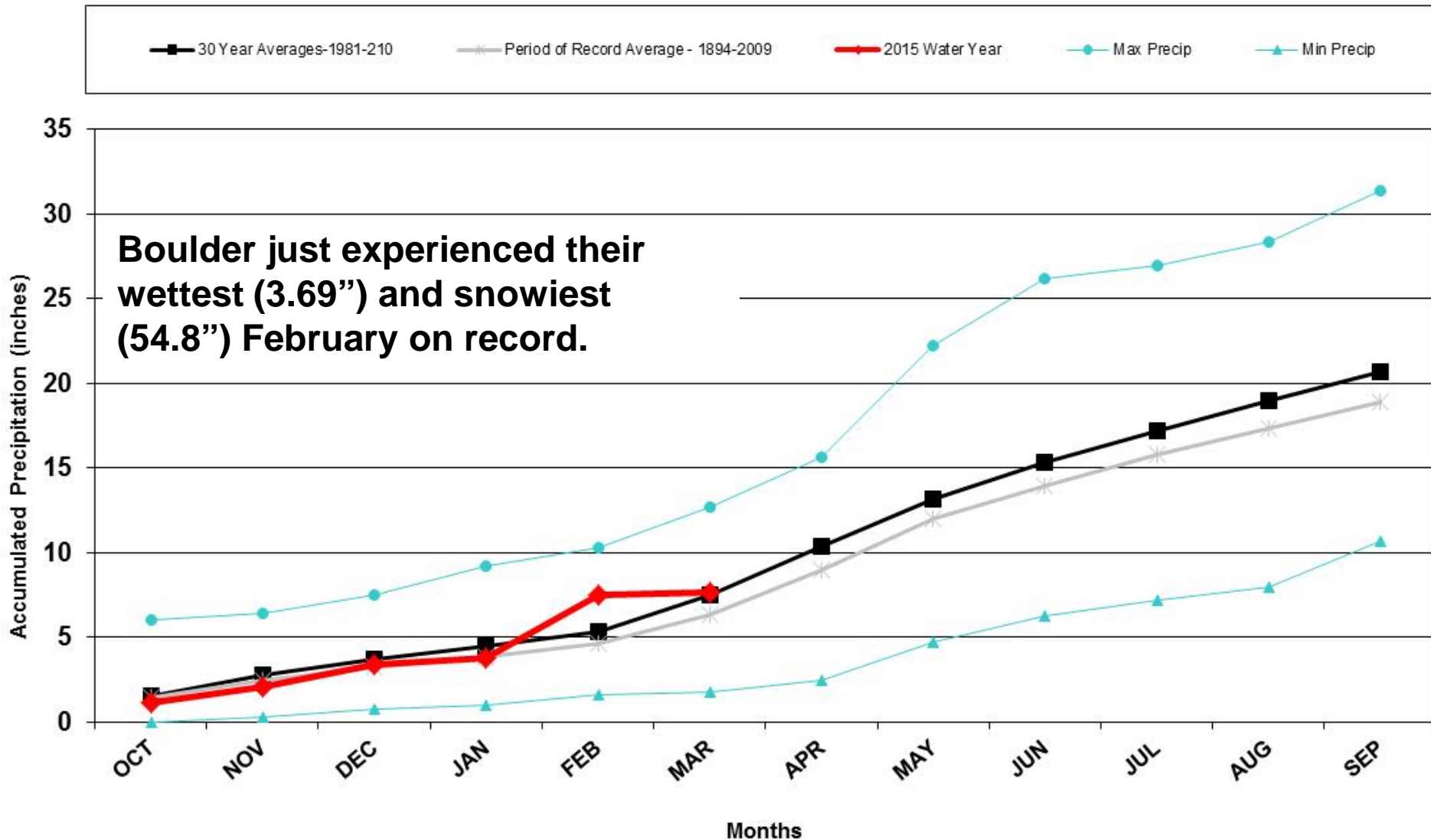
Division 7 – Akron

Akron 4E Precipitation Accumulation



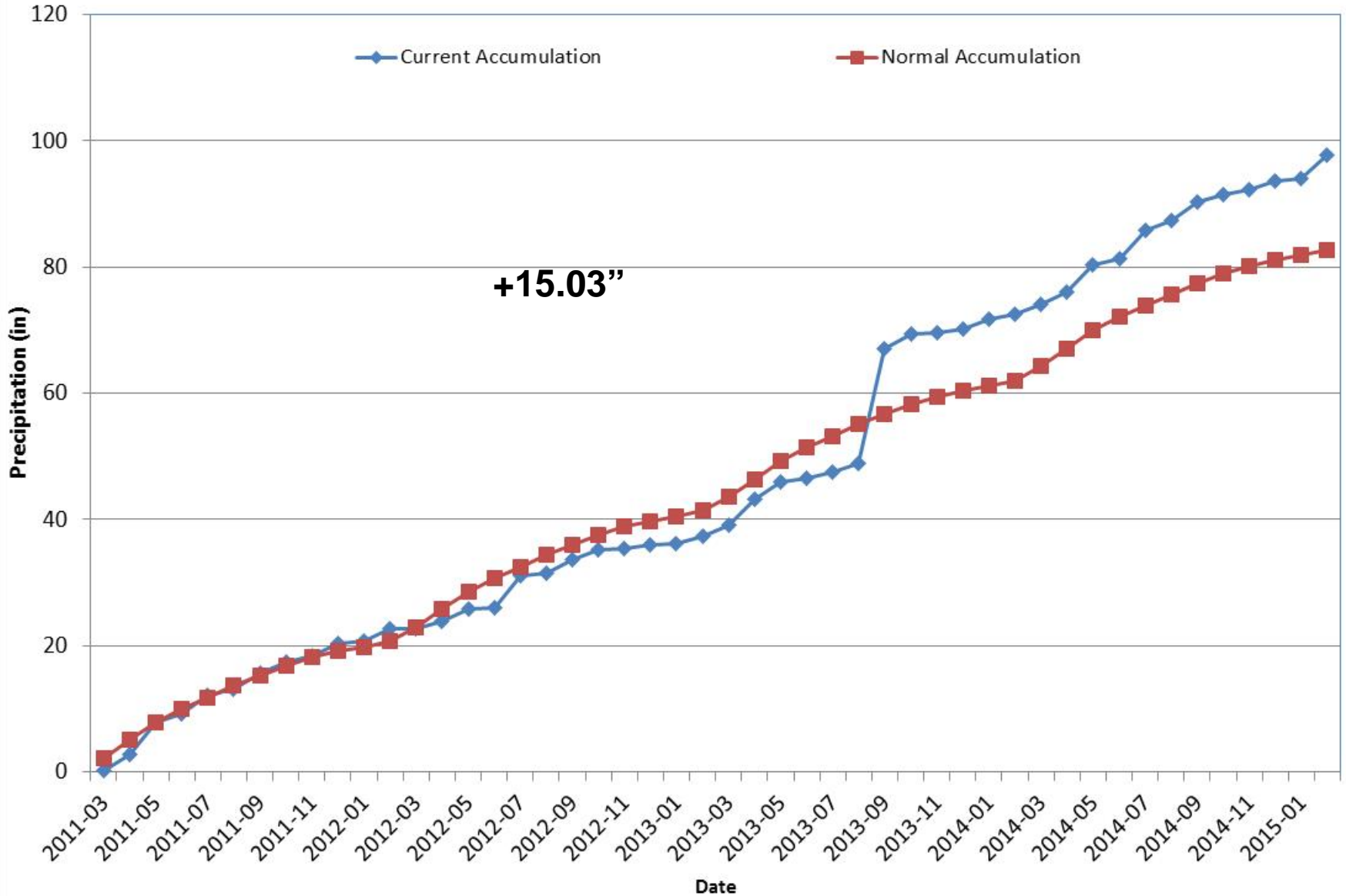
Division 8 - Boulder

Boulder 2015 Water Year



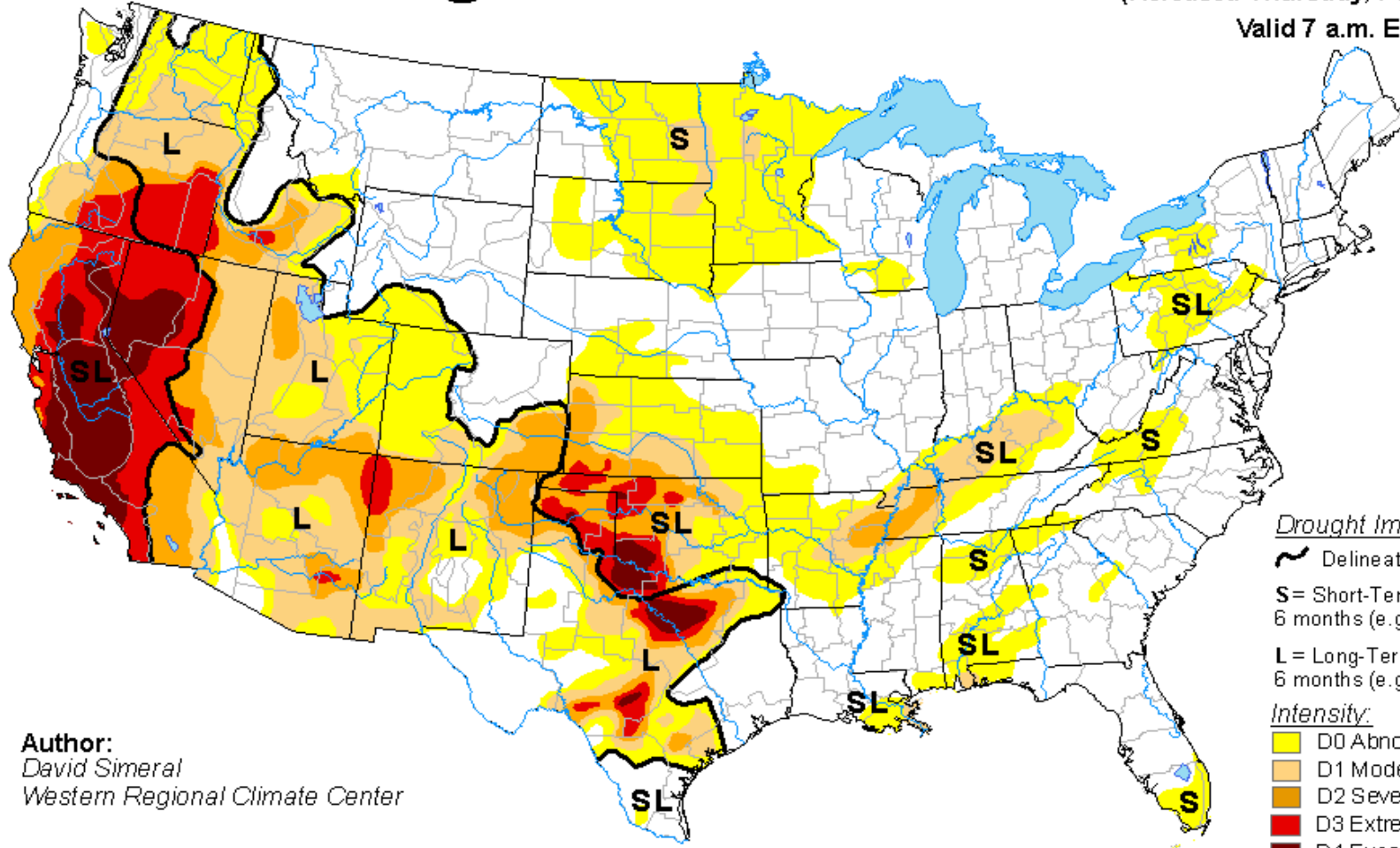
Division 8 - Boulder

Boulder Precipitation Accumulation



U.S. Drought Monitor

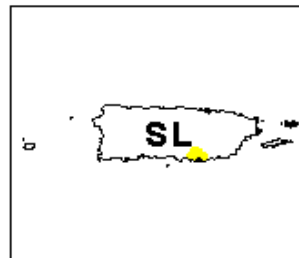
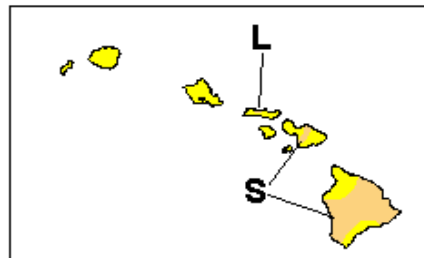
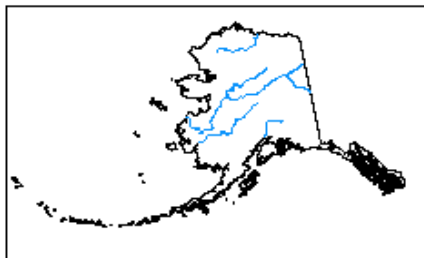
February 10, 2015
(Released Thursday, Feb. 12, 2015)
Valid 7 a.m. EST



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.



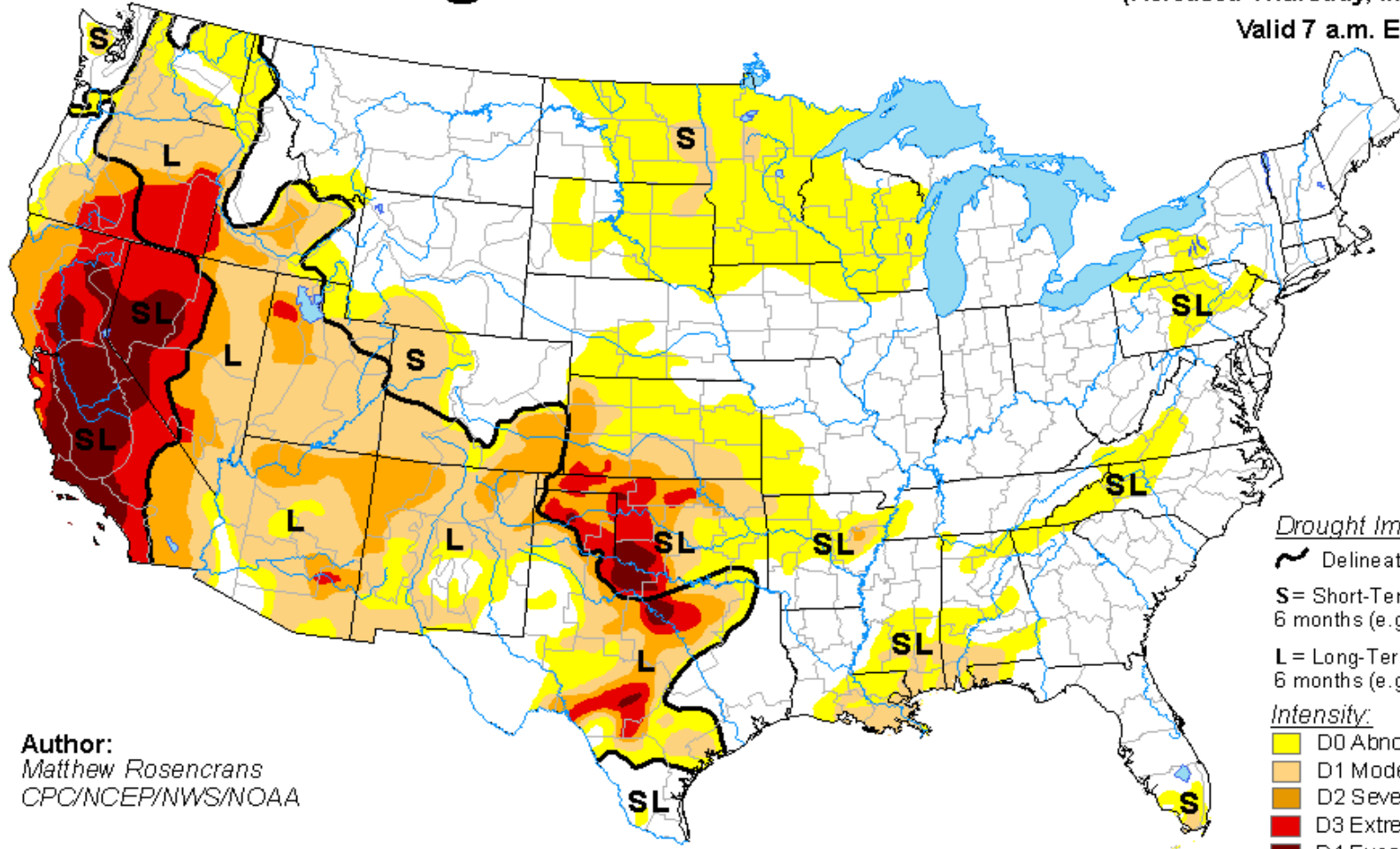
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

March 10, 2015


(Released Thursday, Mar. 12, 2015)

Valid 7 a.m. EST








Author:
Matthew Rosenkrans
CPC/NCEP/NWS/NOAA

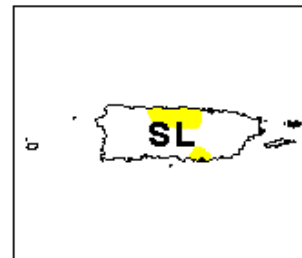
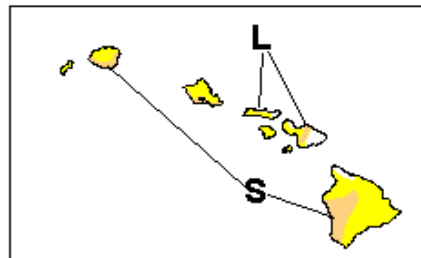
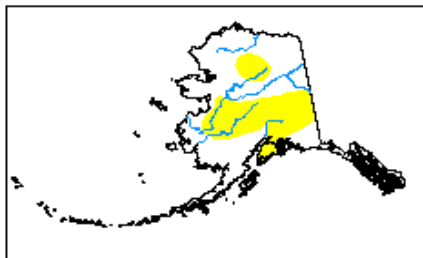
Drought Impact Types:

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

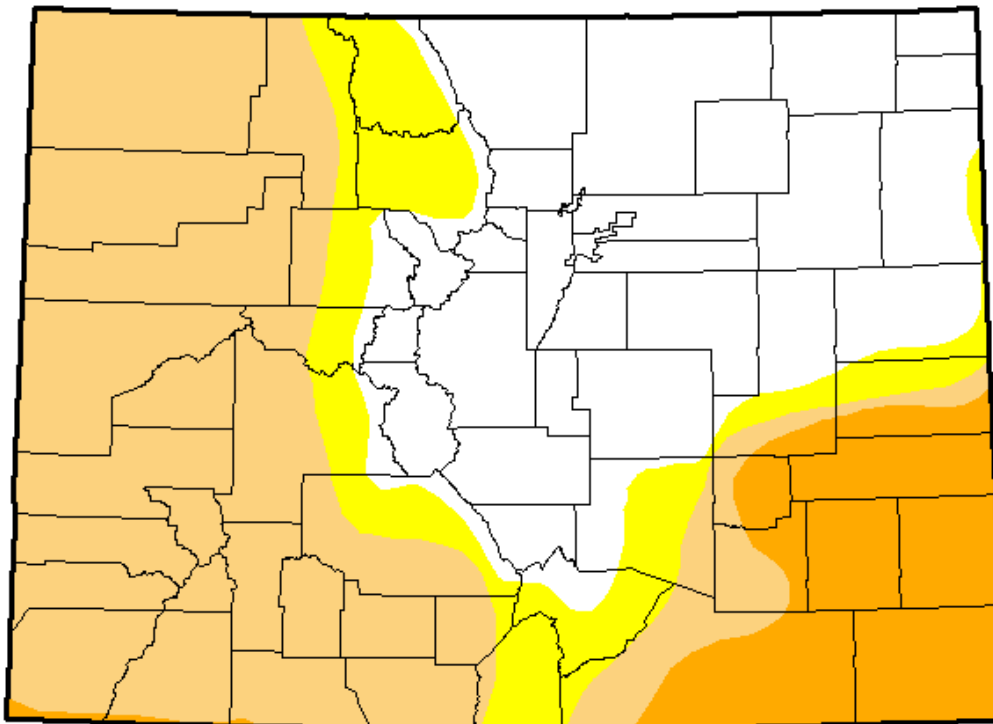
U.S. Drought Monitor

Colorado

March 10, 2015
 (Released Thursday, Mar. 12, 2015)
 Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.97	63.03	51.51	12.20	0.00	0.00
Last Week <i>3/3/2015</i>	36.97	63.03	51.46	12.20	0.00	0.00
3 Months Ago <i>12/9/2014</i>	69.87	30.13	21.26	12.26	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>3/11/2014</i>	38.90	61.10	21.36	13.54	4.23	1.47



Intensity:



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

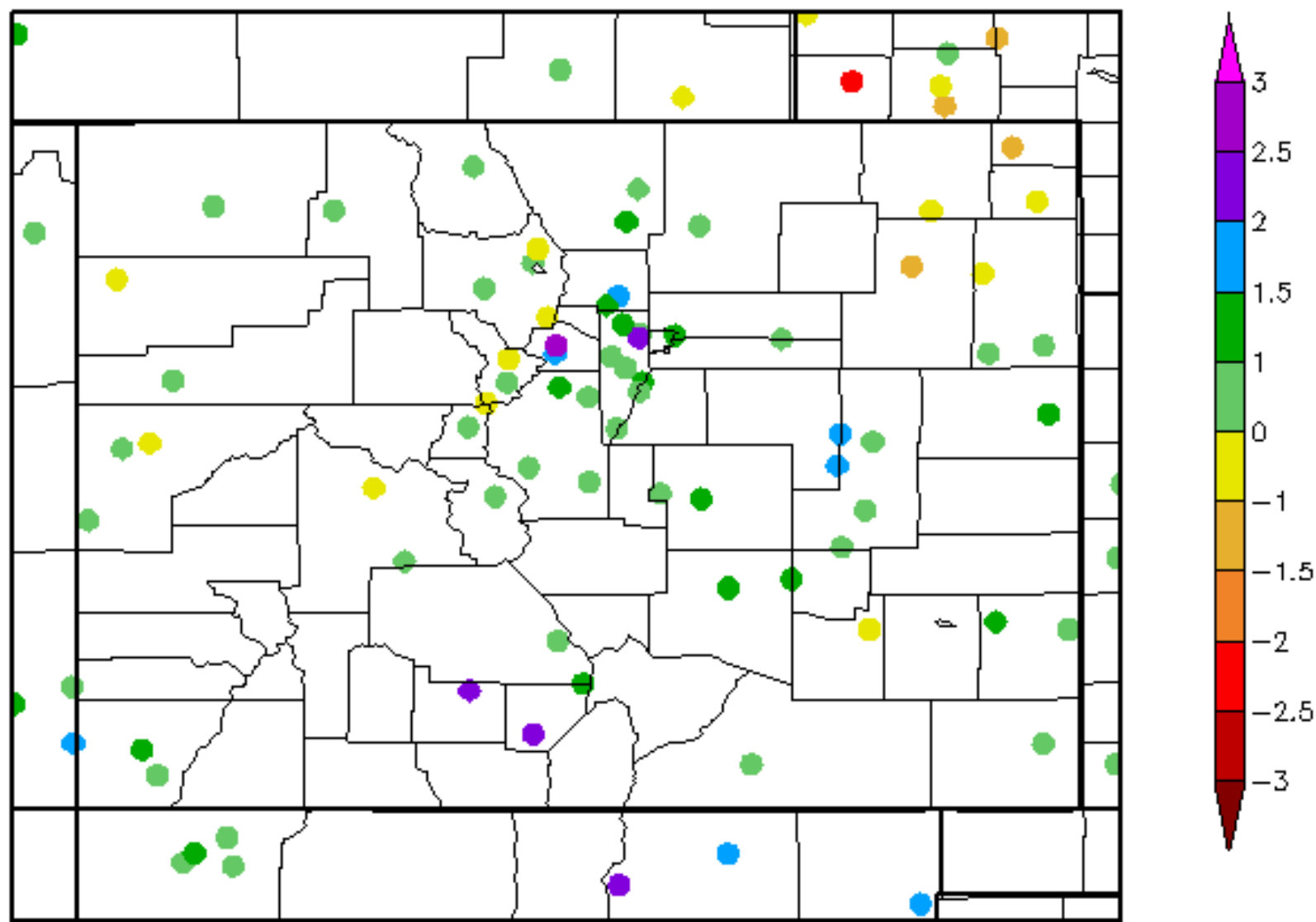
Author:

*Matthew Rosenkrans
 CPC/NCEP/NWS/NOAA*



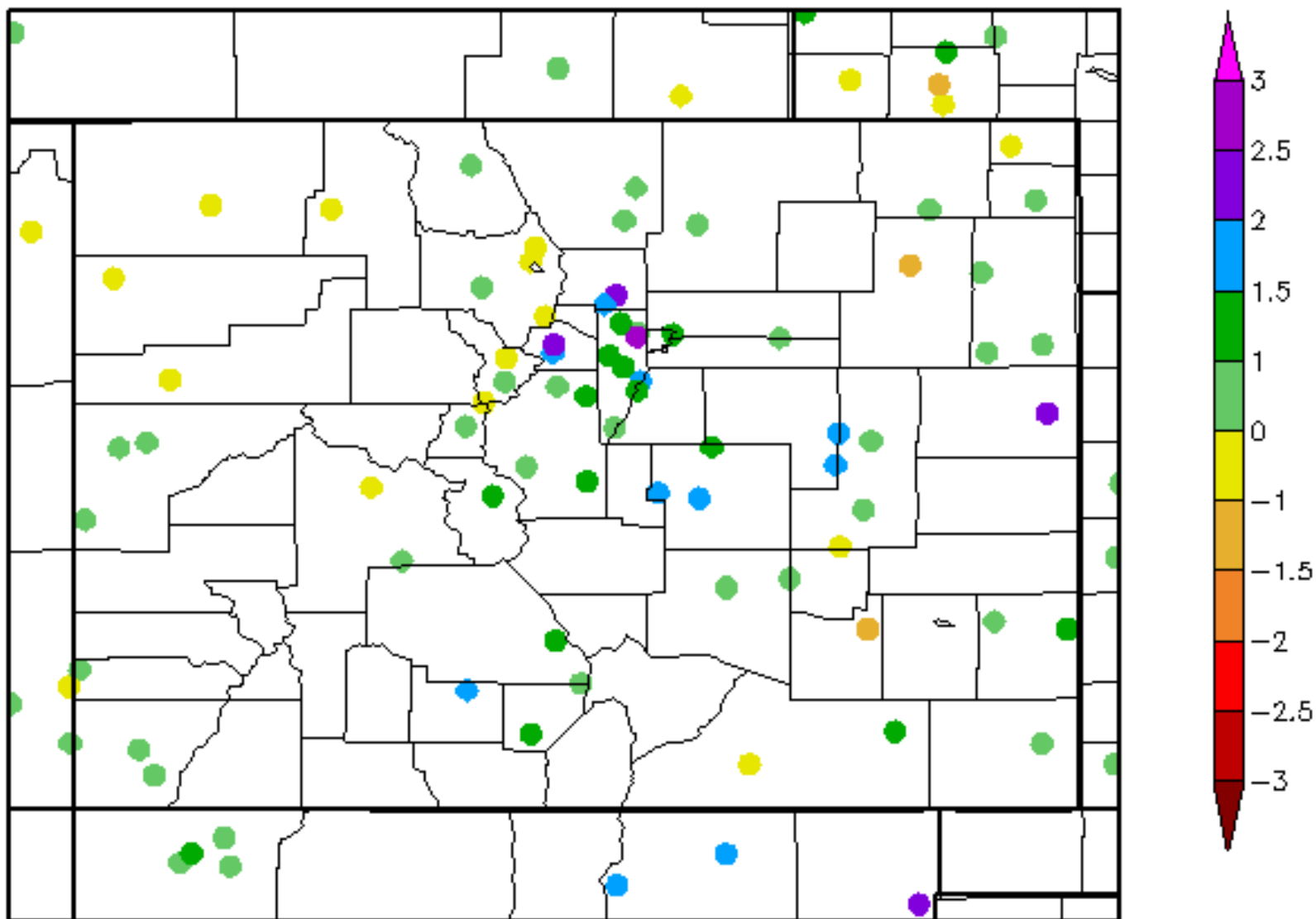
30 Day SPI

2/14/2015 - 3/15/2015



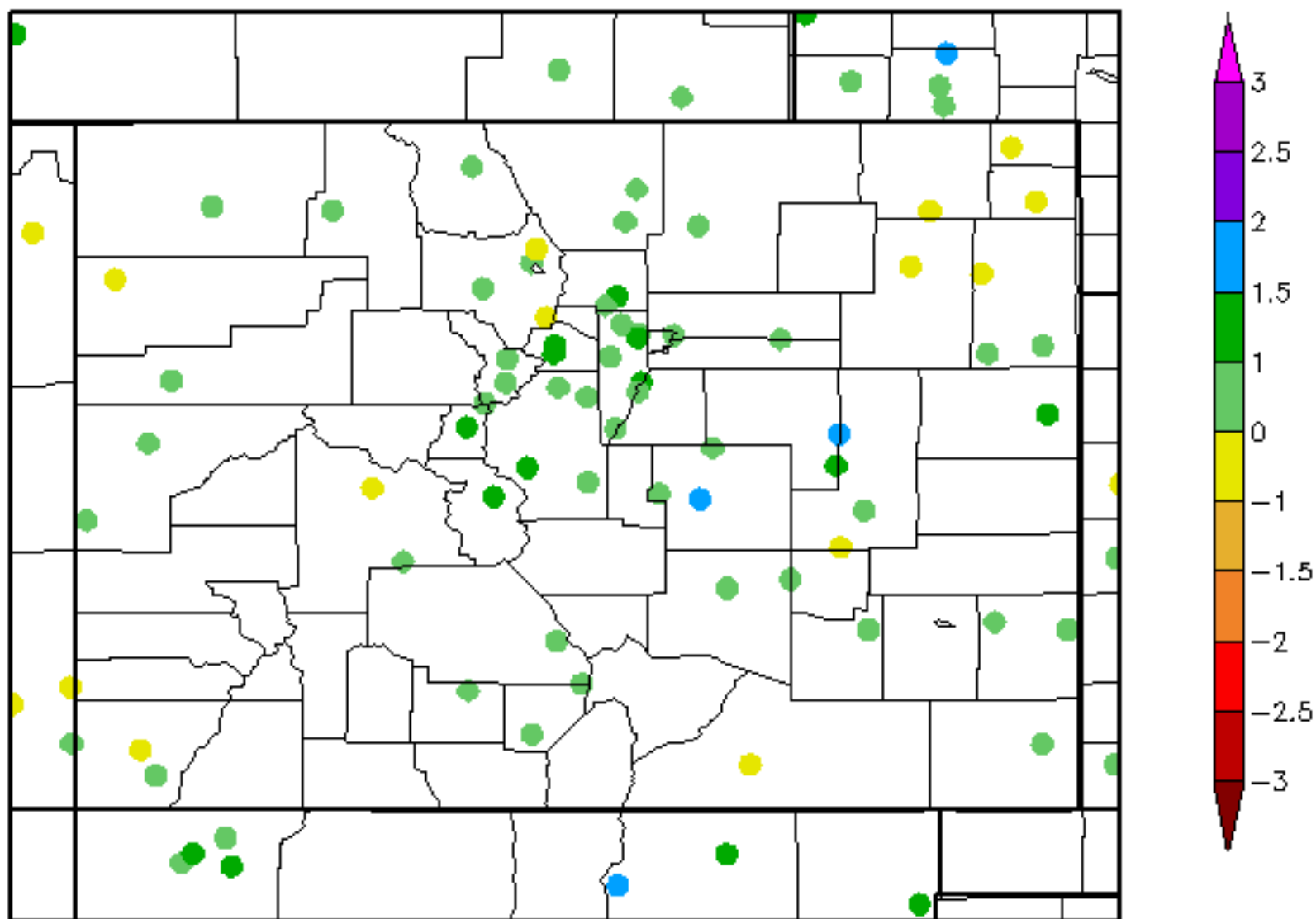
90 Day SPI

12/16/2014 - 3/15/2015



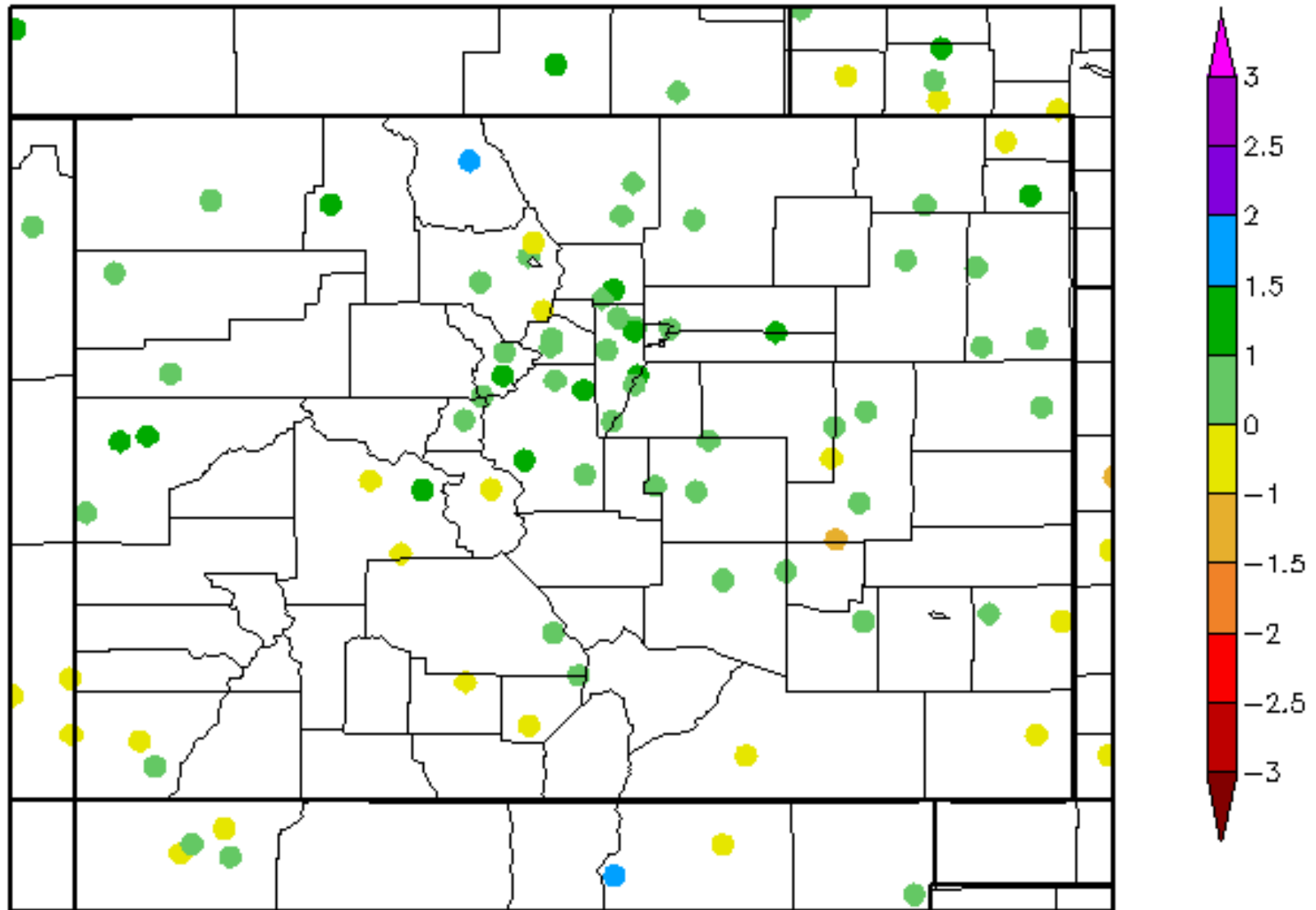
6 Month SPI

9/16/2014 - 3/15/2015



12 Month SPI

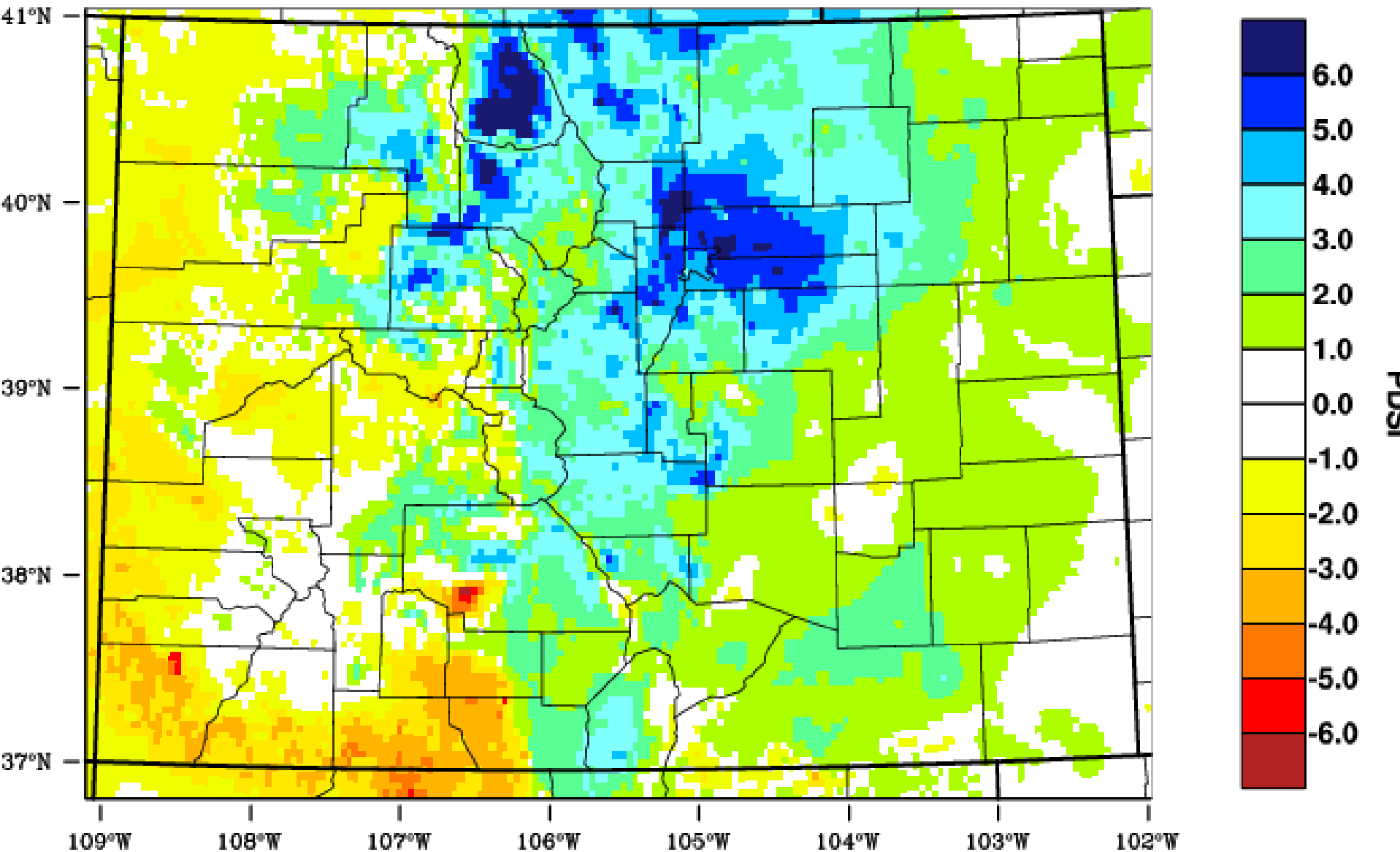
3/16/2014 - 3/15/2015



Palmer

Colorado - PDSI

February 2015



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

Next, let's talk about flood risk. Colorado floods come in several flavors



Main flood types for Colorado

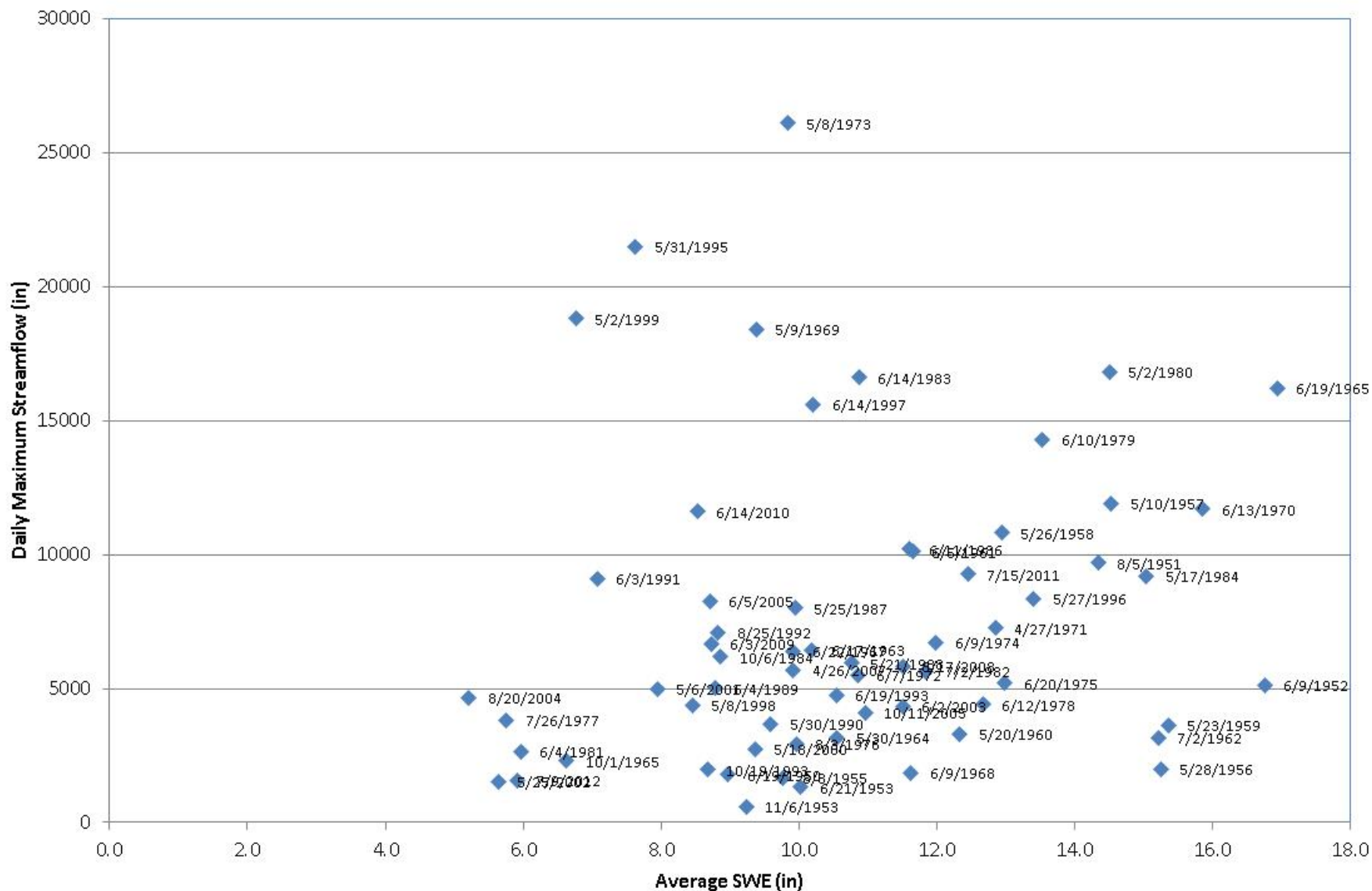
- Snowmelt Floods
 - Common, not extreme – large volumes, modest peak flows
- Rain on Snow
 - possible but uncommon
- Widespread Spring Rains
 - very possible
- Late spring “hybrids”
 - Large scale, organized low pressure, upslope with some convective activity.
 - Rare/extreme – 1965
- Summer flash floods
 - common, intense, local
- Fall rains
 - Tropical moisture and “hybrid” upslope/convective systems -- more likely western Colorado but (1902, 1911, 1938, 1970, 1972, 1997, and 2013)

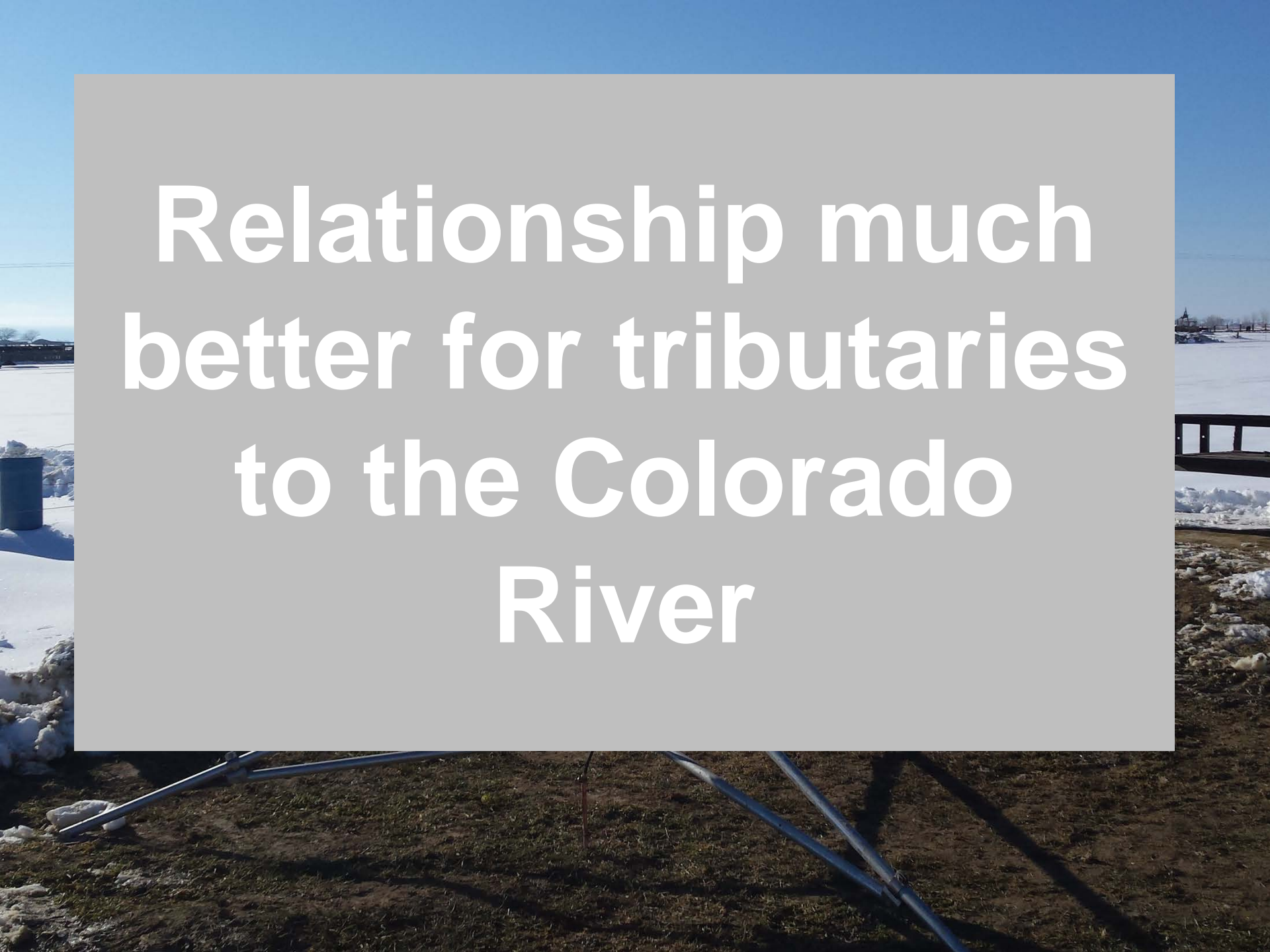


**Snowpack versus peak
flow --**

**Not a simple
relationship in the
South Platte watershed**

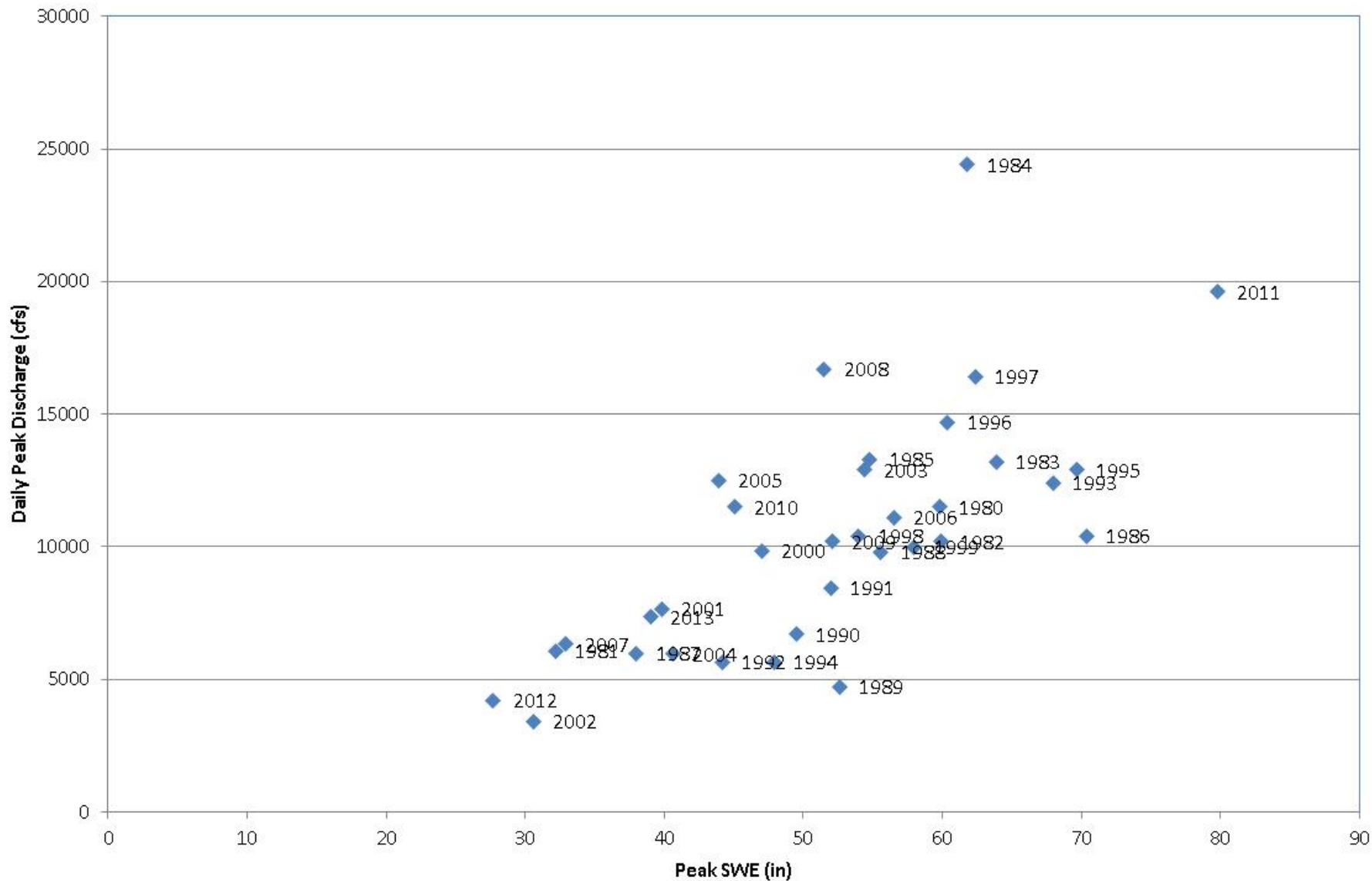
South Platte Basin Average Apr 1 SWE vs. Max Daily Streamflow (cfs) at Kersey 1950-2012



A winter landscape with snow, a blue sky, and a wooden bridge in the background. The text is overlaid on a semi-transparent grey box.

Relationship much better for tributaries to the Colorado River

Tower SnoTel Peak SWE (in) vs. Yampa at Maybell Daily Peak Discharge (cfs) 1980-2013



Colorado Climate Center

Data and Power Point Presentations available for downloading

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



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