

# *Climate Update*

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**Colorado Climate Center**

**Atmospheric Science Department**  
**Colorado State University**

Presented to  
Water Availability Task Force  
August 26, 2009  
Denver, CO

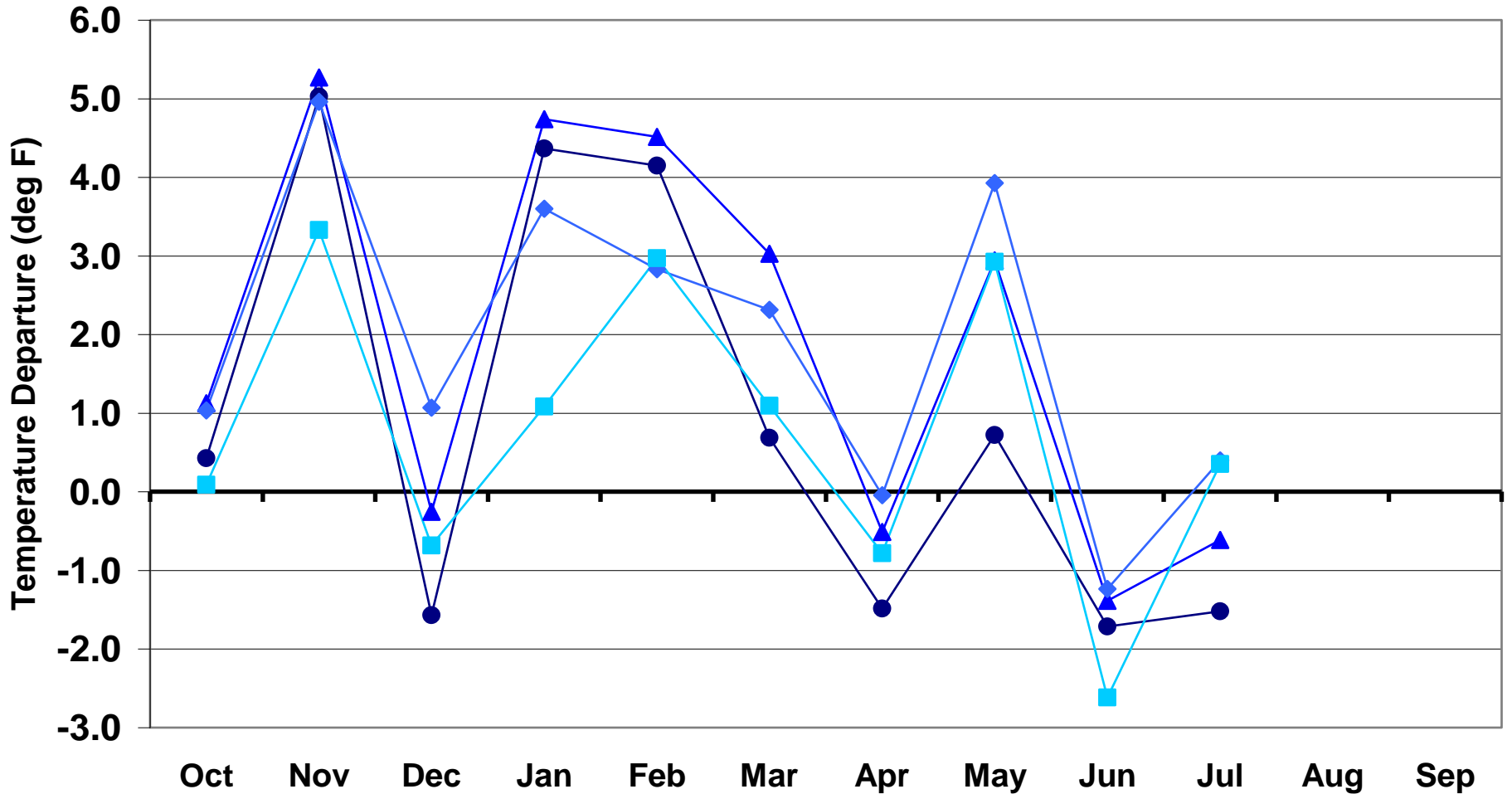
Prepared by Wendy Ryan



**Colorado State University**  
Colorado Climate Center  
*Knowledge to Go Places*

# Water Year 2009 Temperature Departures

## Water Year 2009



● Eastern Plains

▲ Foothills

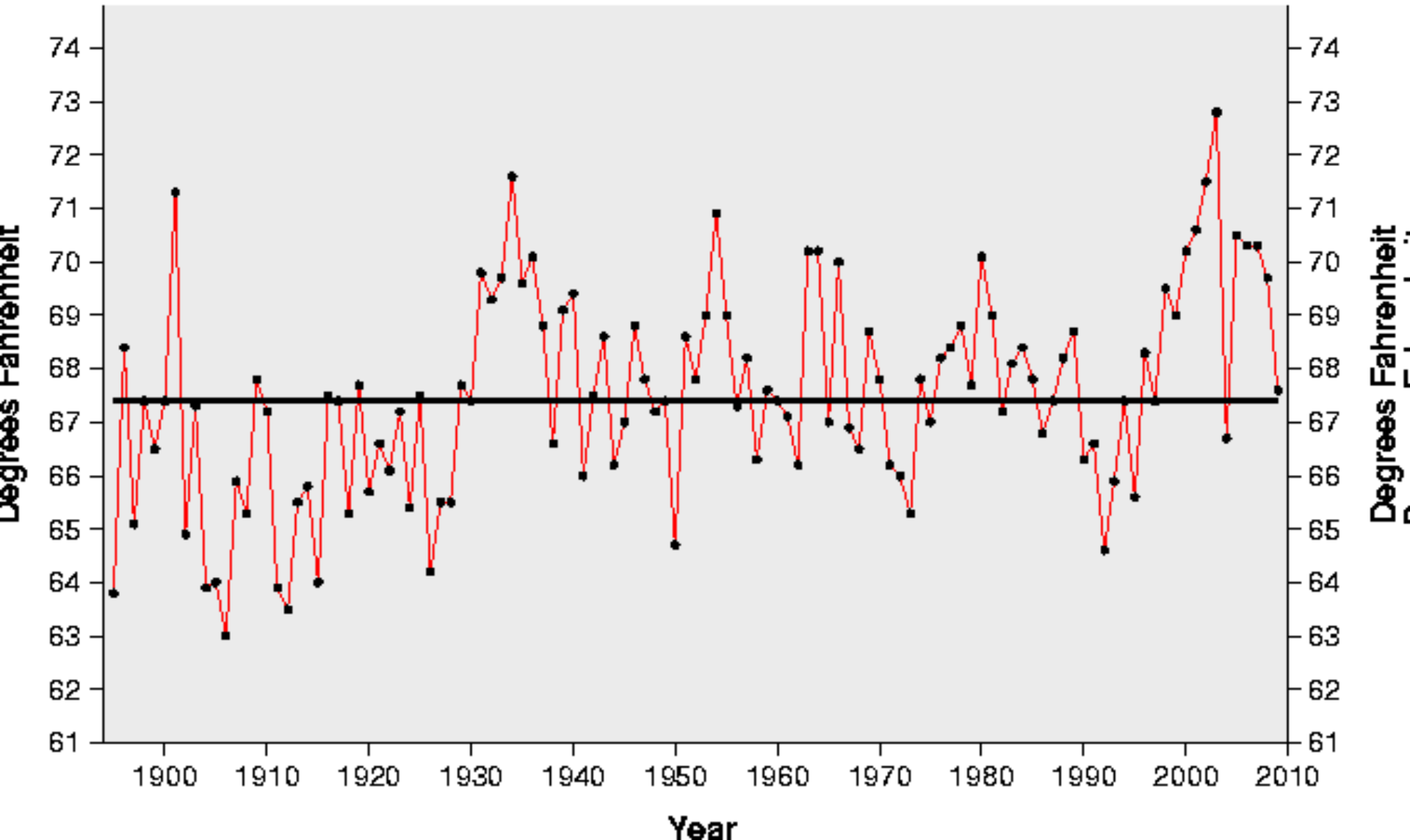
◆ Mountains

■ Western Valleys

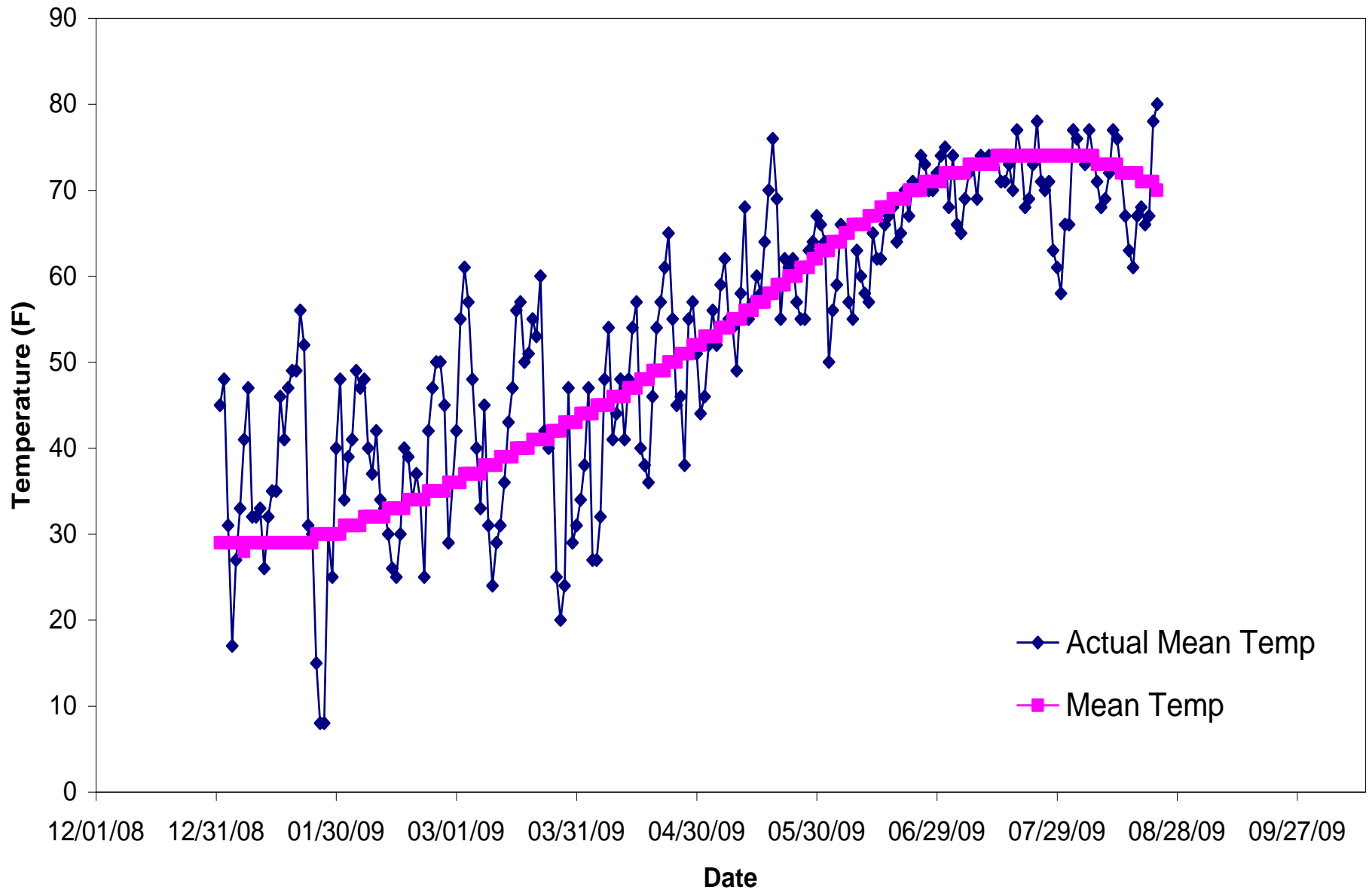
# July Average Temperature History for Colorado (NCDC)

**—** Actual Temperature  
**—** Average Temperature

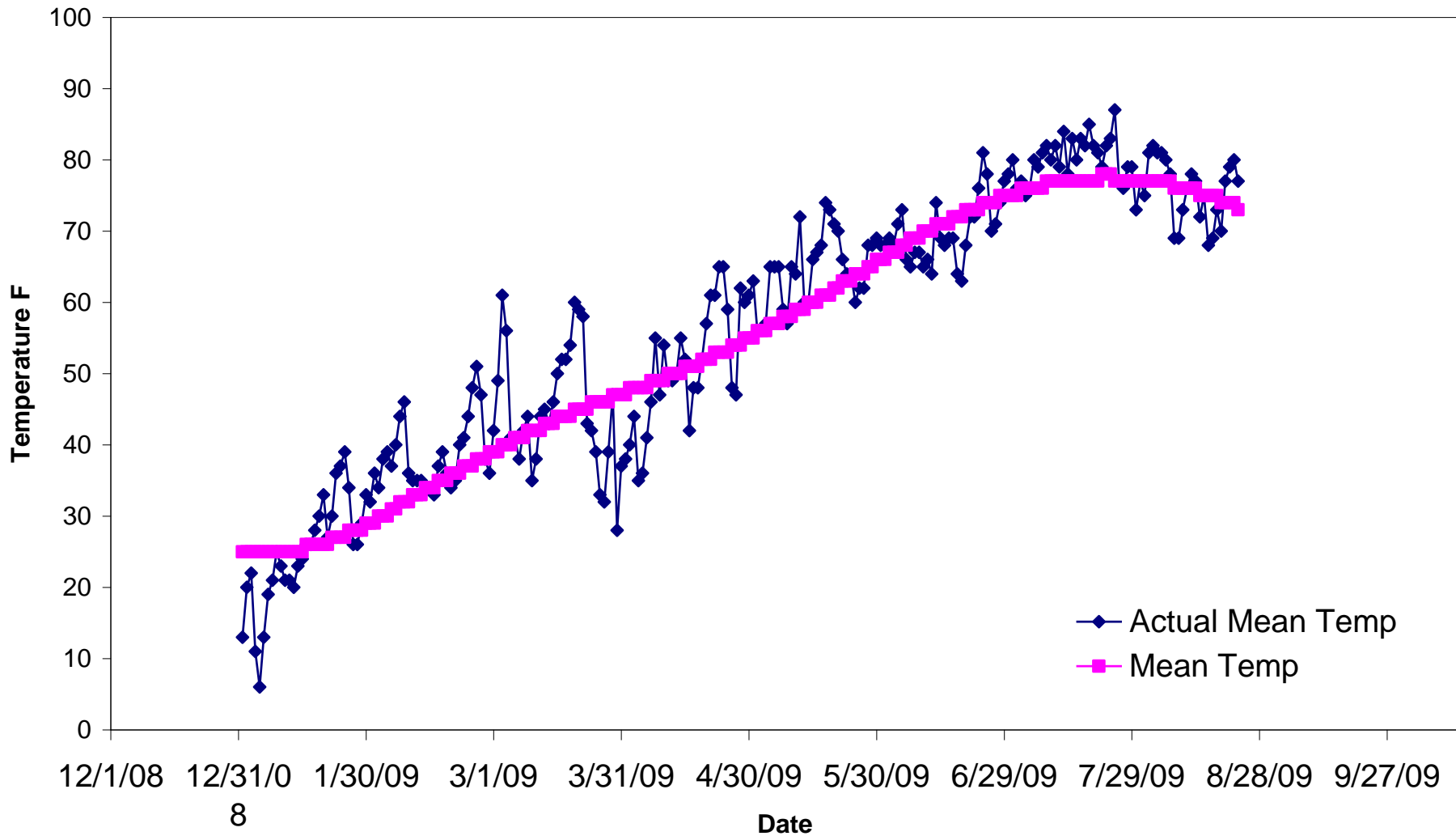
Rank: 67.6 degrees is 64<sup>th</sup> coolest for period of record 1895-2009



# Denver, CO Jan 1 - Aug 23 2009 Mean and Actual Daily Temperature



# Grand Junction Jan 1 - Aug 23 2009 Mean and Actual Daily Temperatures



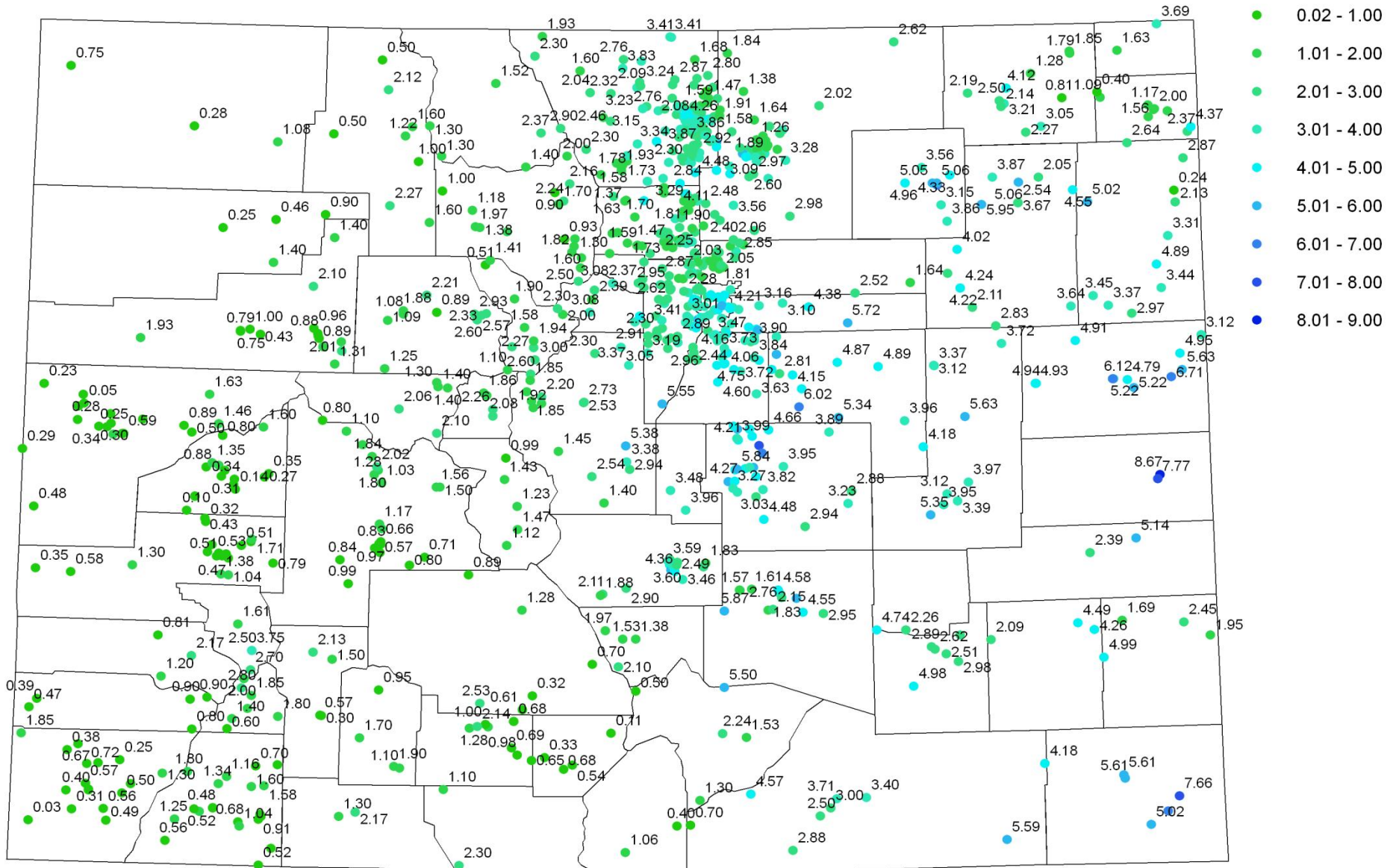


# July 2009 Precipitation (in)

## Legend

July\_09

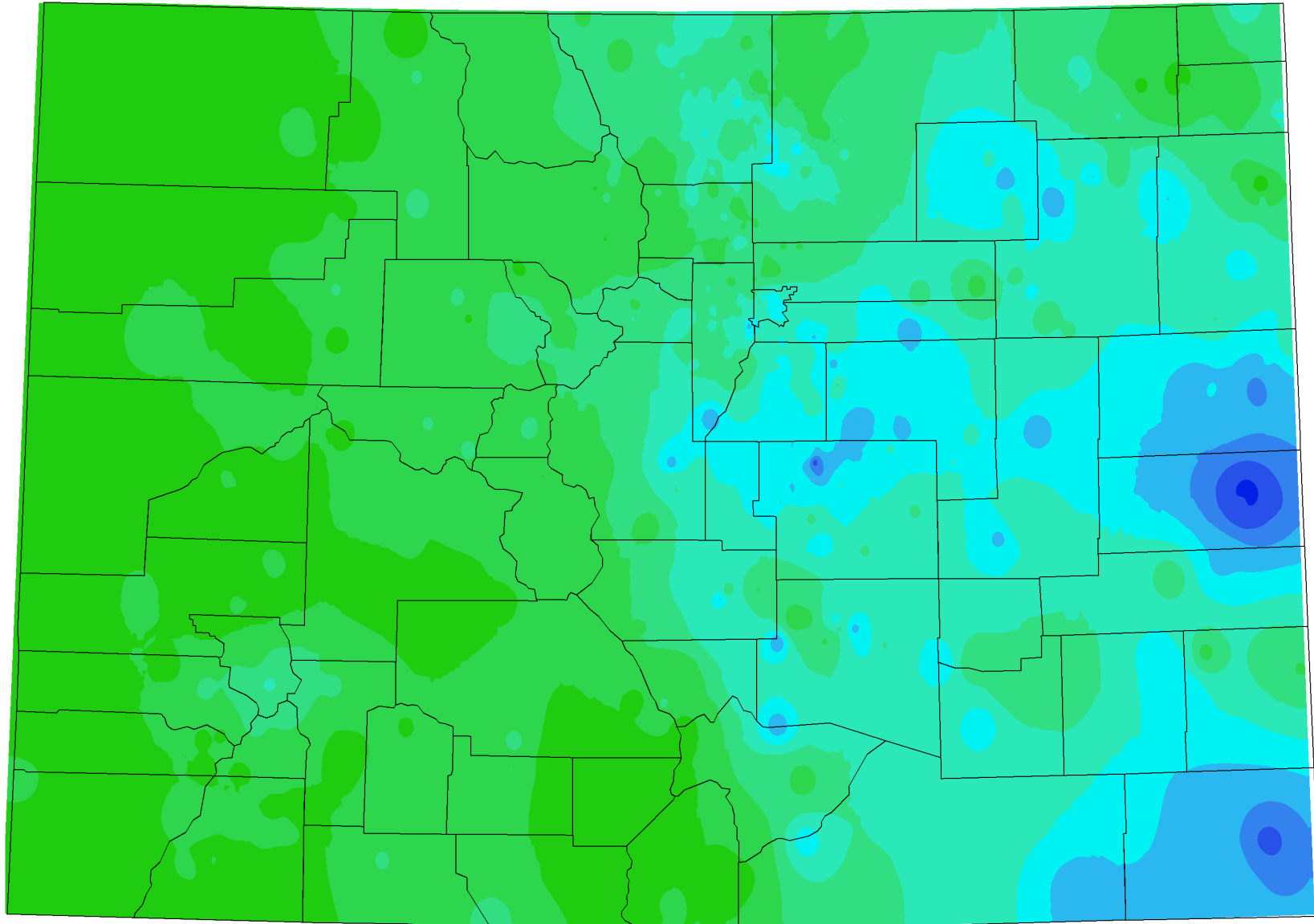
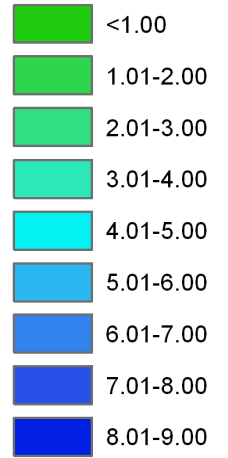
July



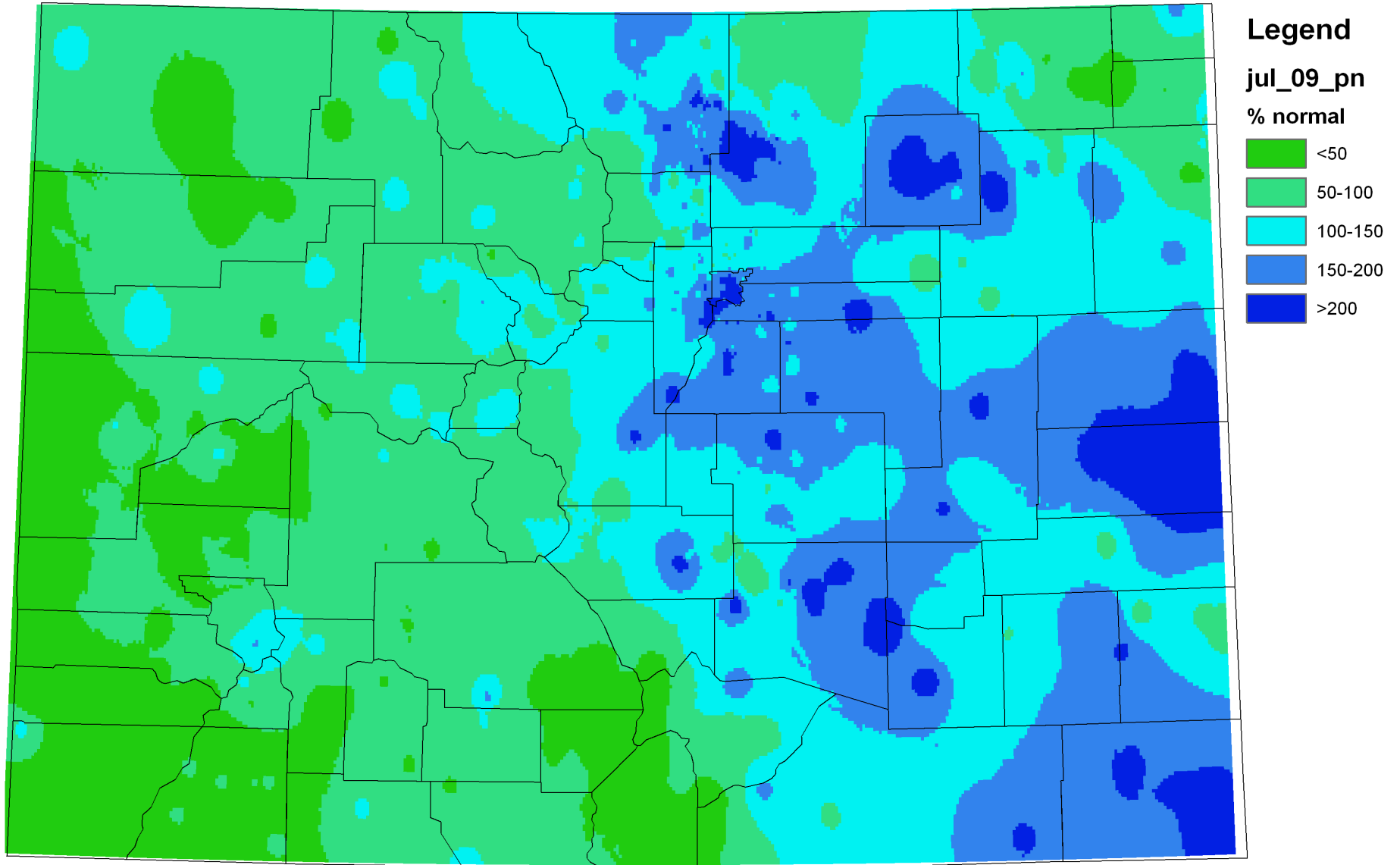
# July 2009 Precipitation (in)

## Legend

PPT

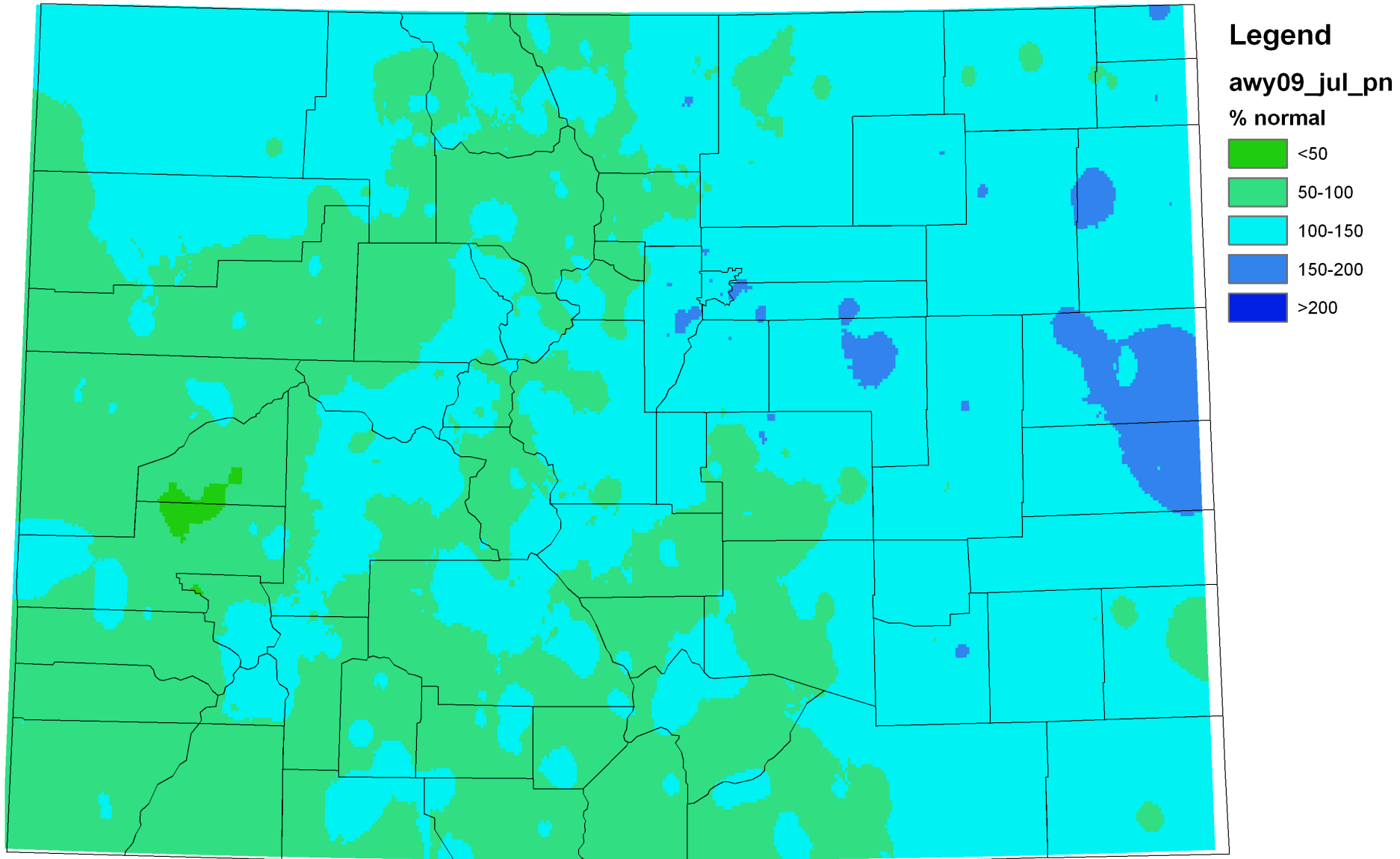


# July 2009 Precipitation as Percent of Normal





# Water Year 2009 Precipitation as Percent of Normal (Oct 08 - July 09)



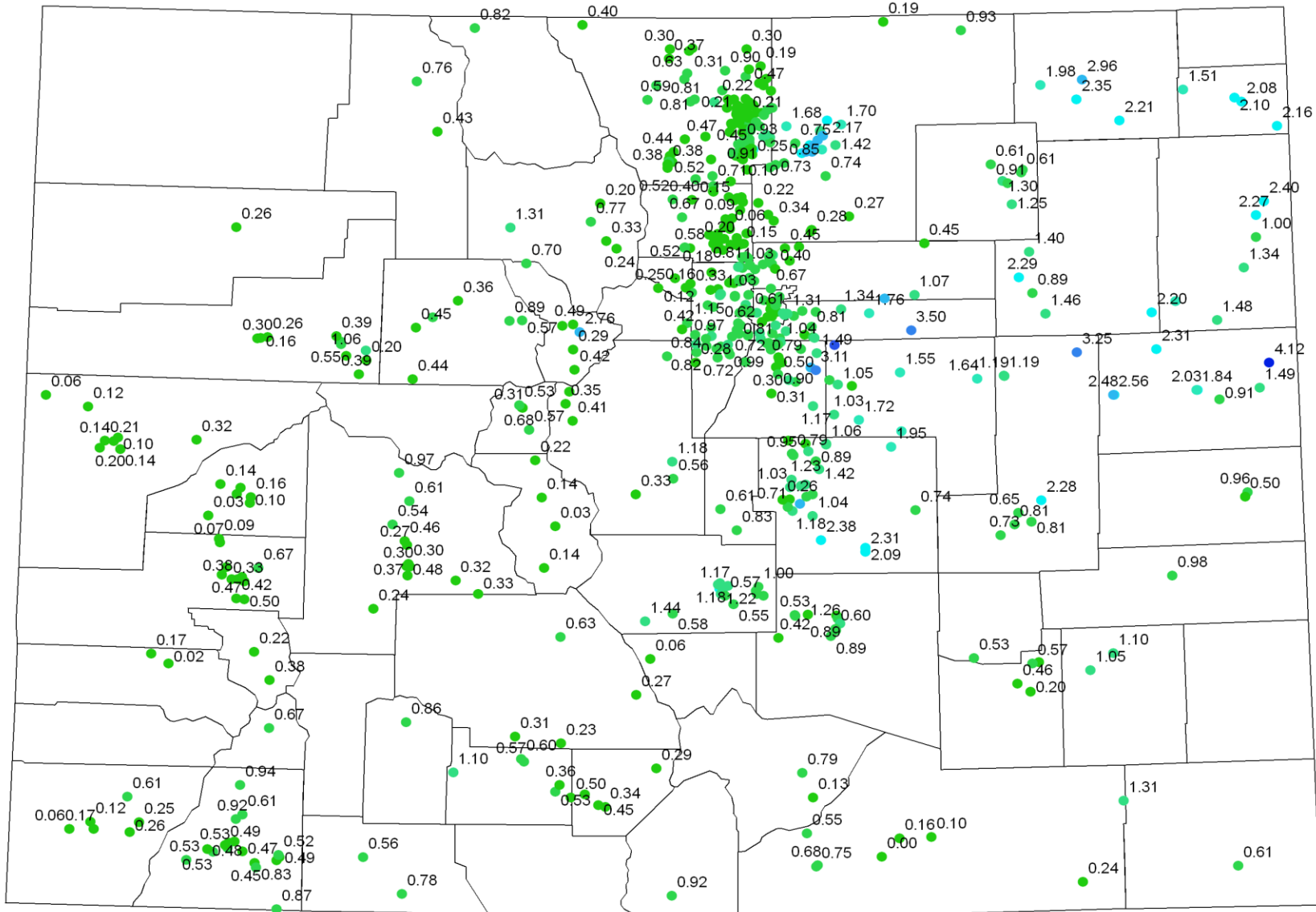
# August 2009 (through Aug 23rd) Precipitation (in) CoCoRaHS only

## Legend

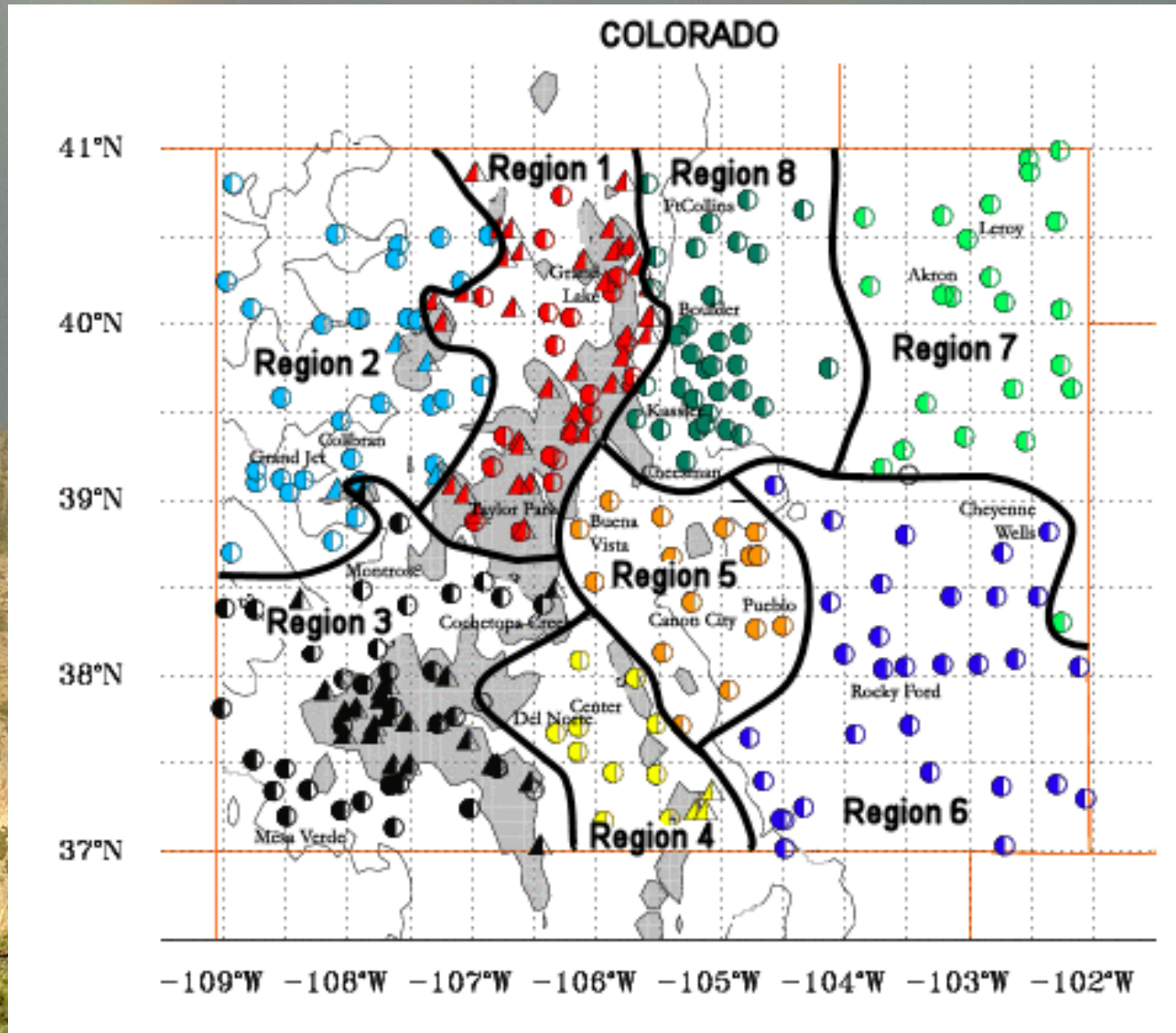
Aug\_09

aug

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 4.50

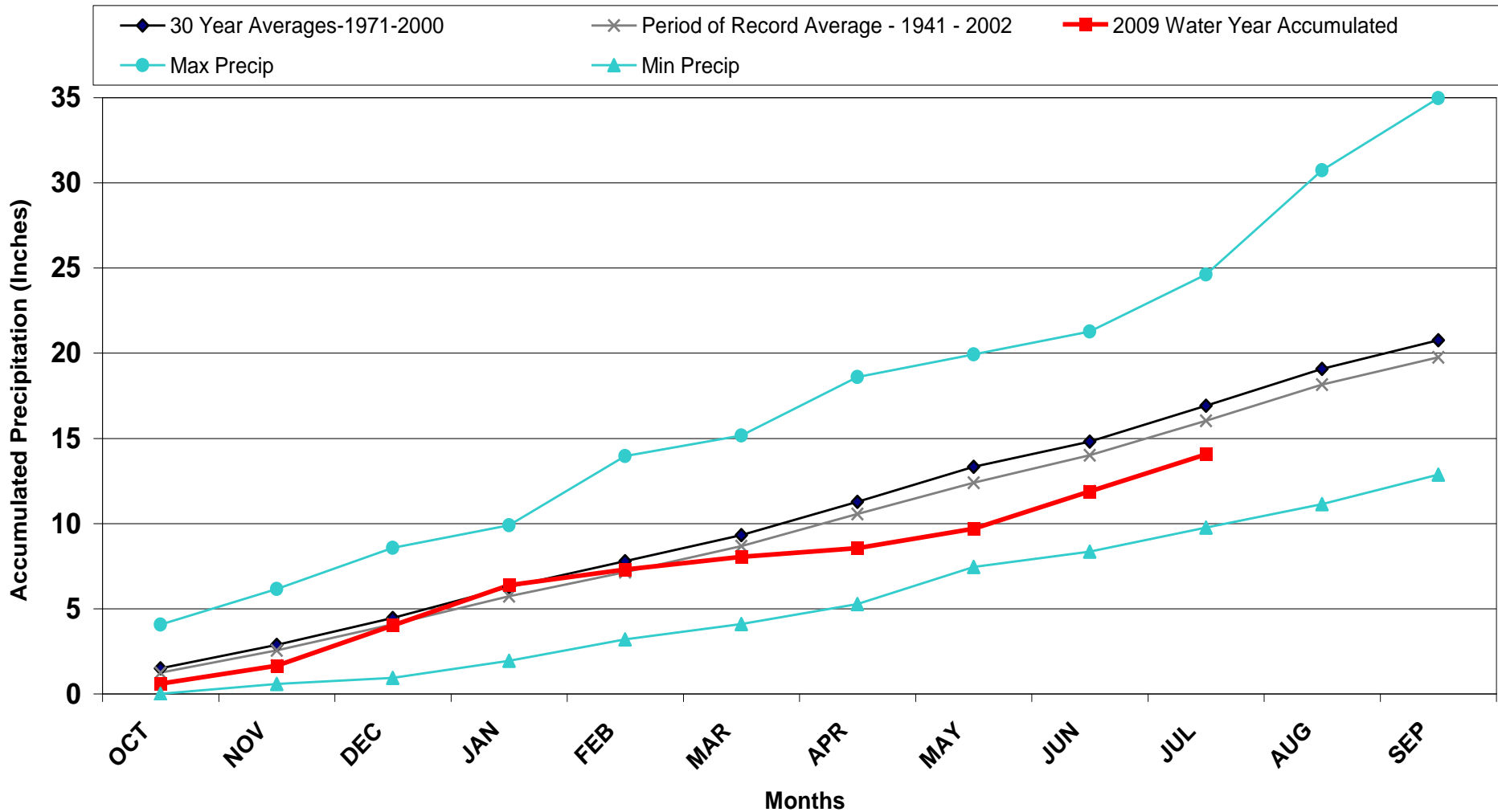


# Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



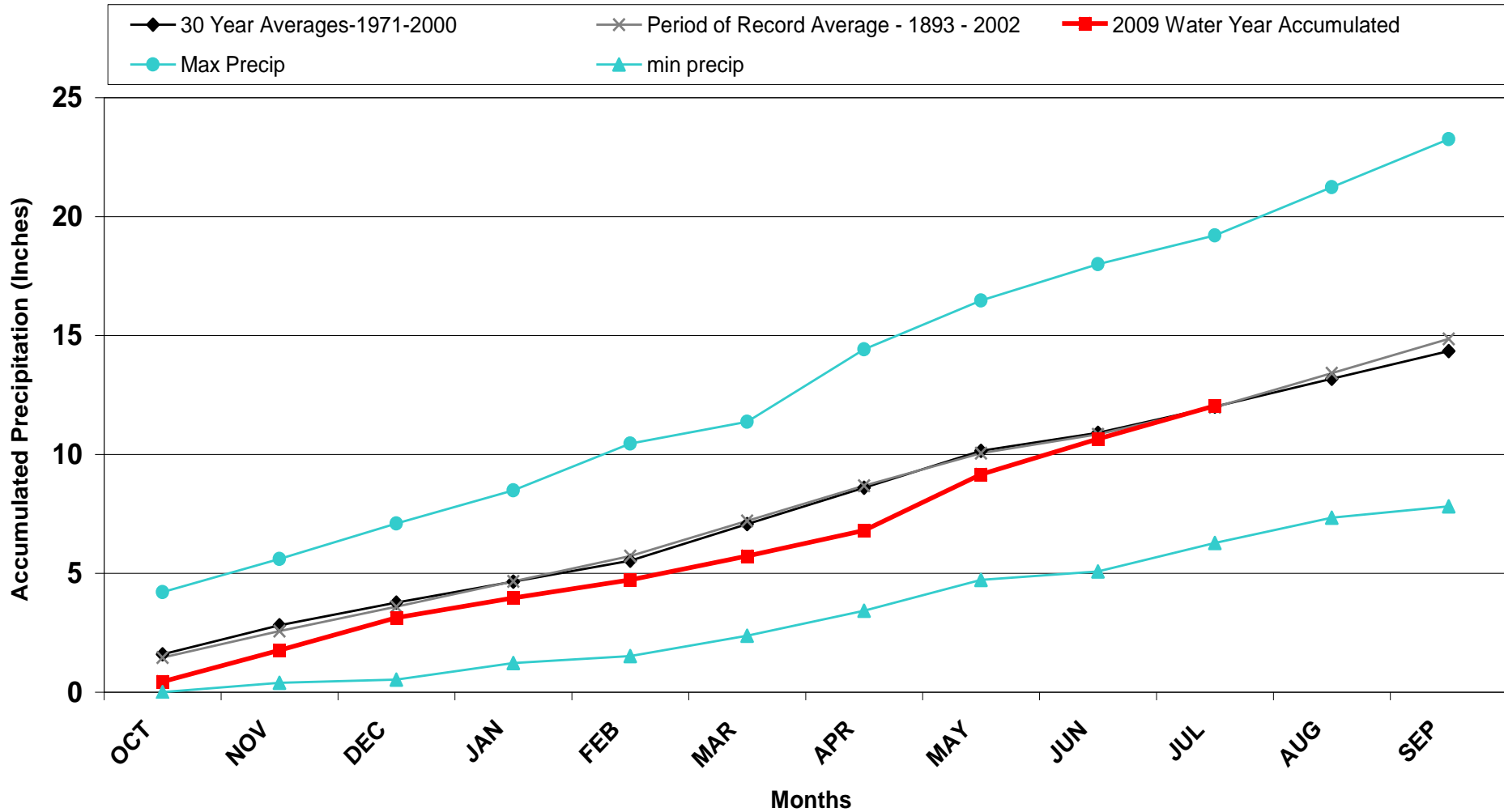
# Division 1 – Grand Lake 1NW

## Grand Lake 1 NW 2009 Water Year



# Division 2 – Collbran

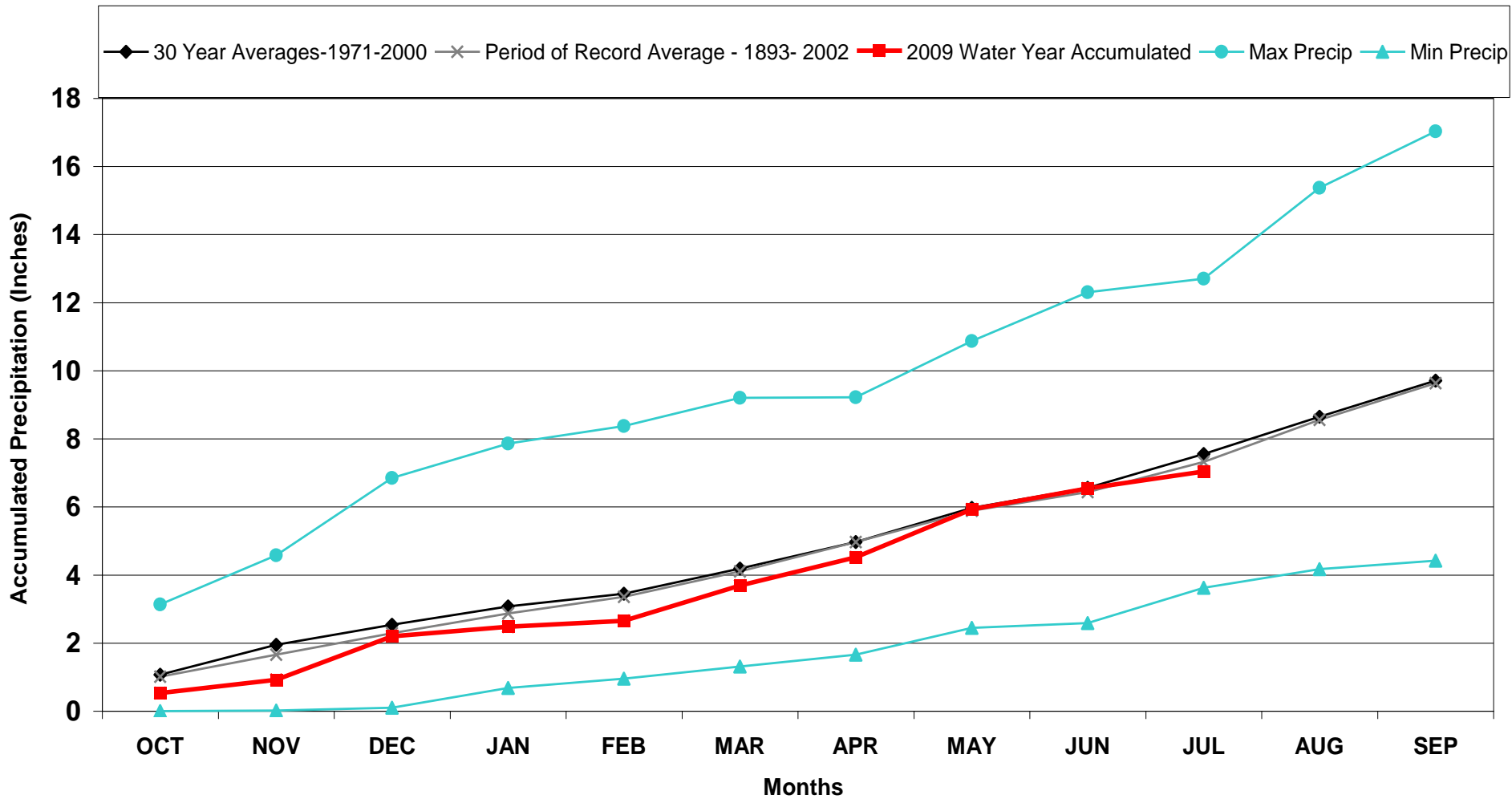
## Collbran 2SW 2009 Water Year





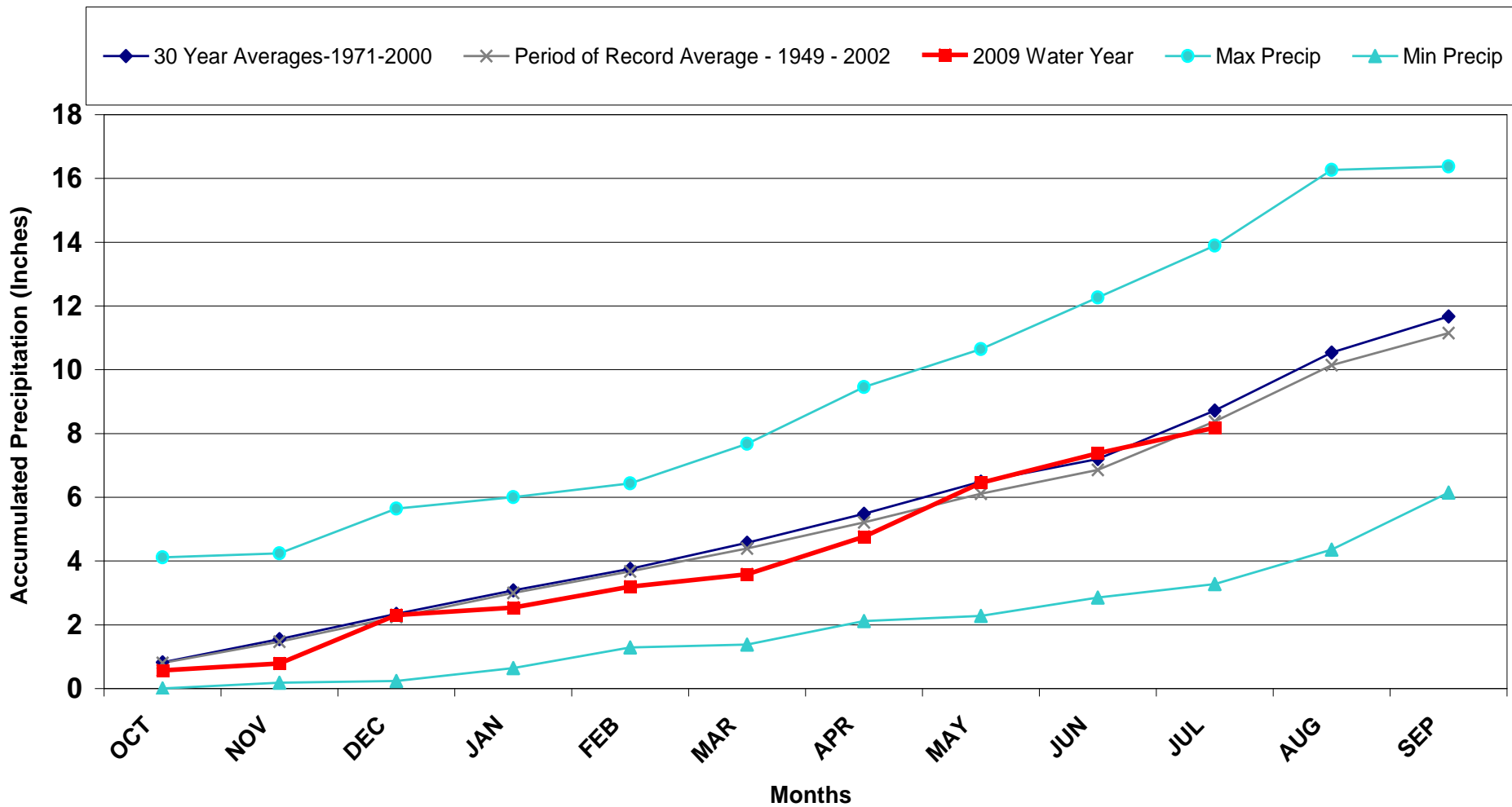
# Division 3 – Montrose

## Montrose #2 2009 Water Year



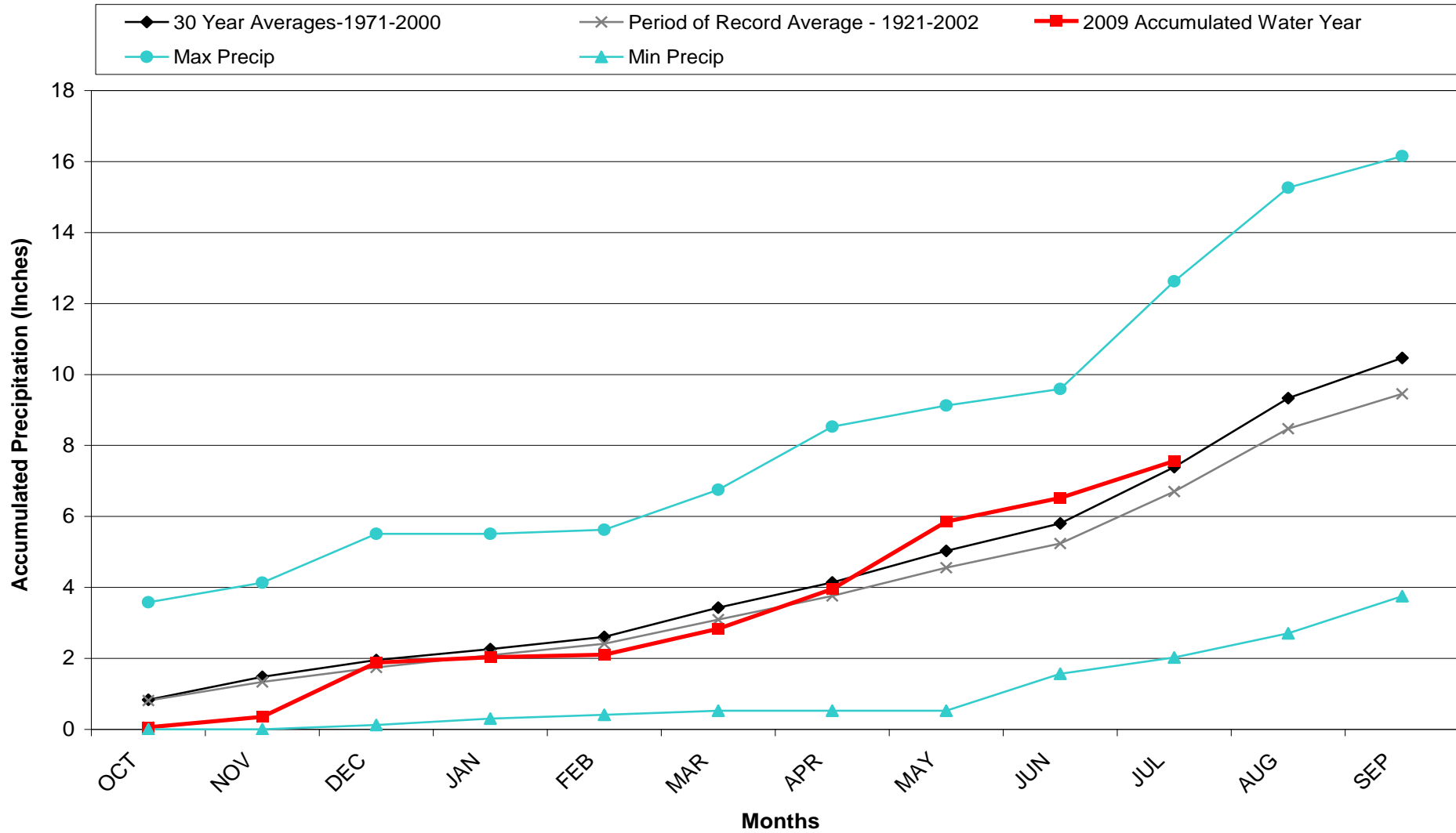
# Division 3 – Cochetopa Creek

## Cochetopa Creek 2009 Water Year



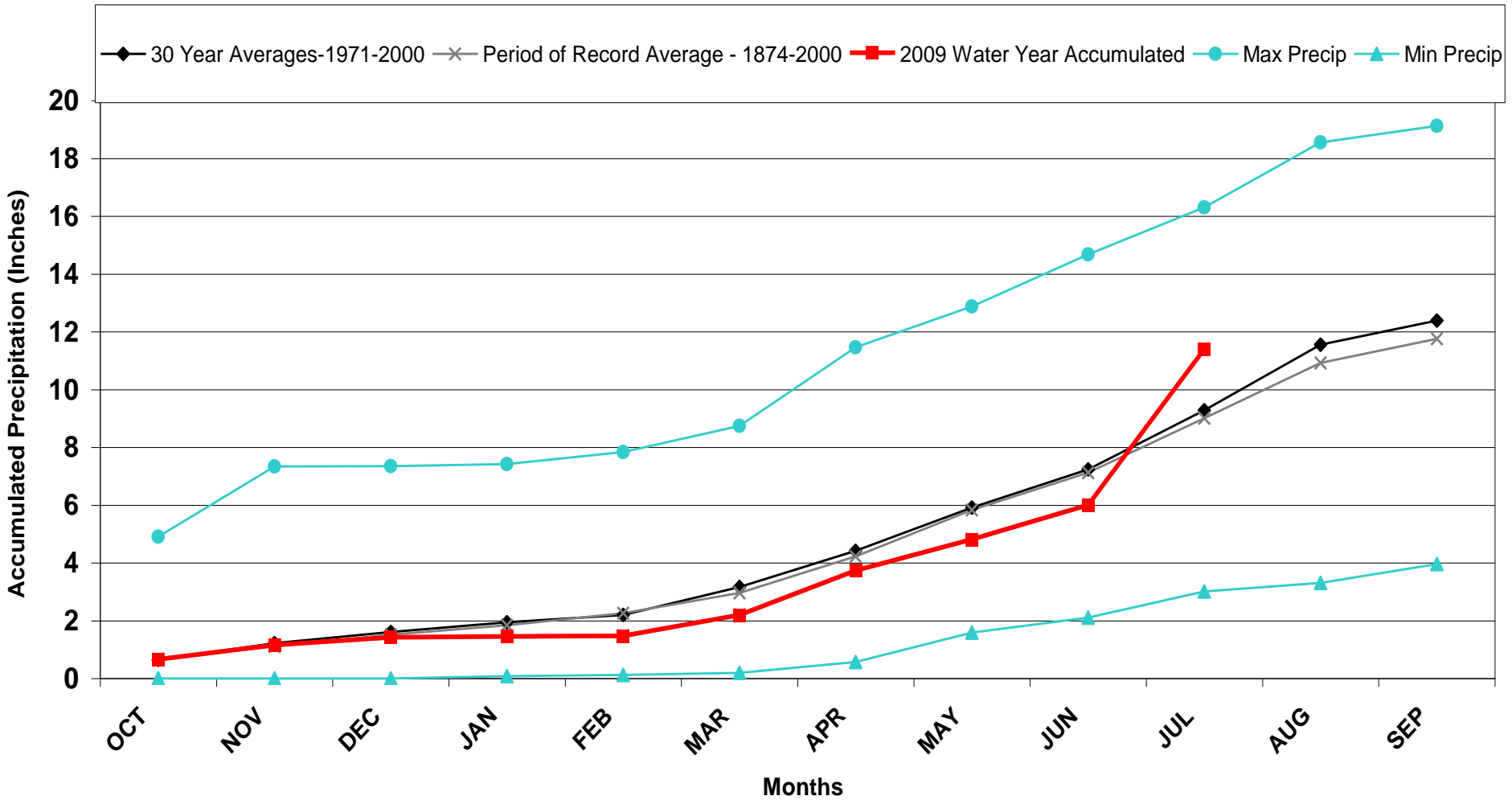
# Division 4 – Del Norte

## Del Norte 2008 Water Year



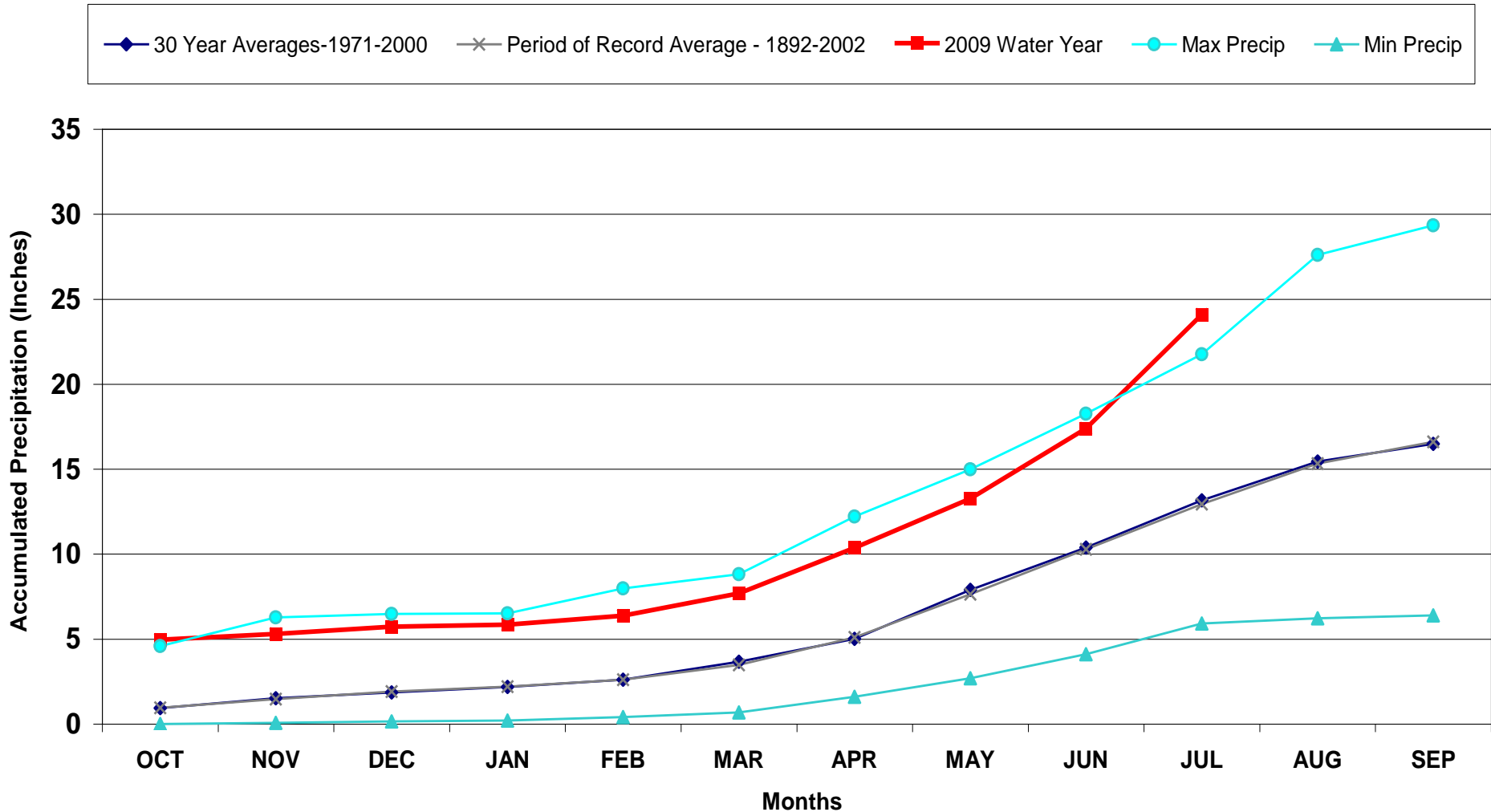
# Division 5 – Pueblo

## Pueblo WSO 2009 Water Year



# Division 6 - Burlington

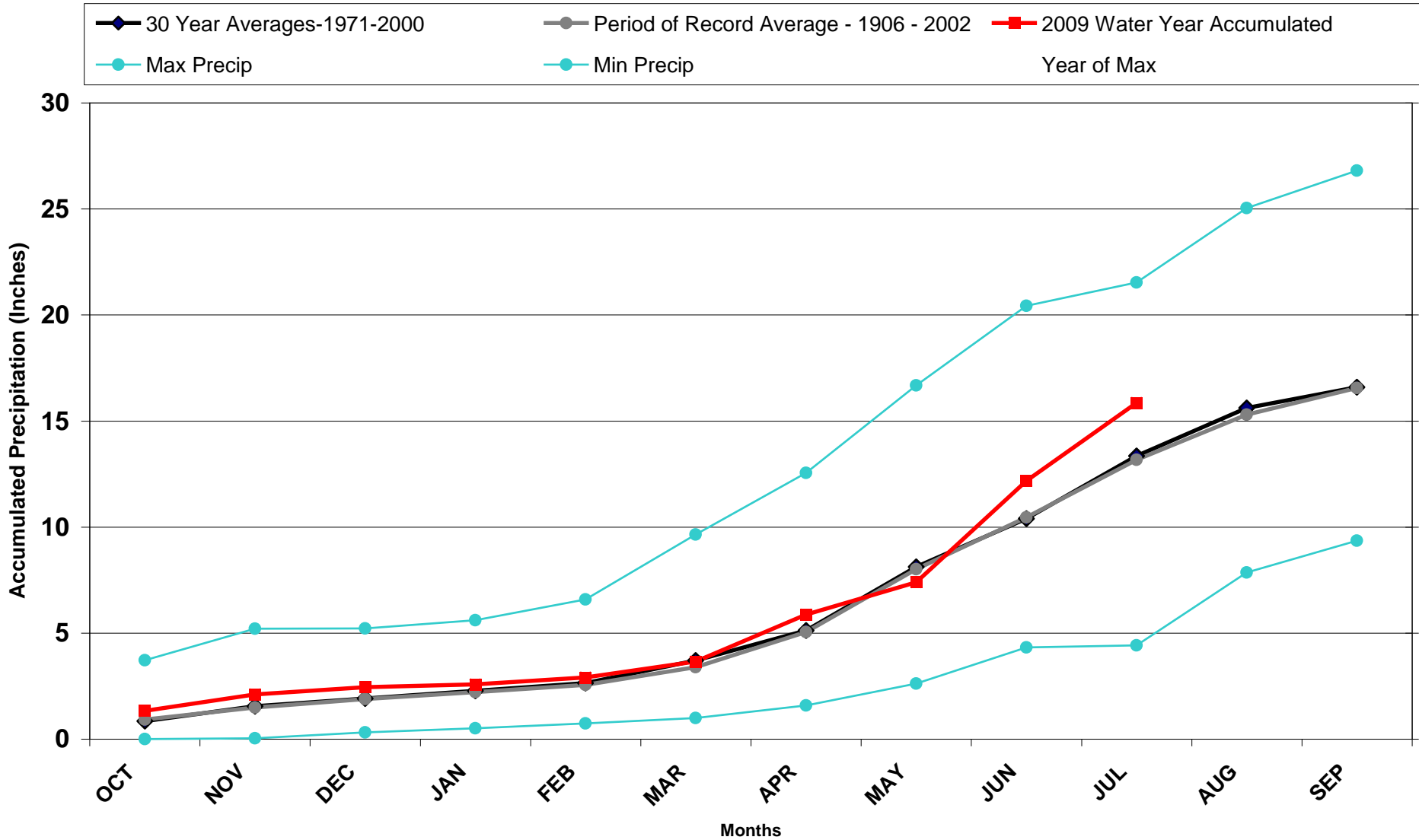
## Burlington 2009 Water Year





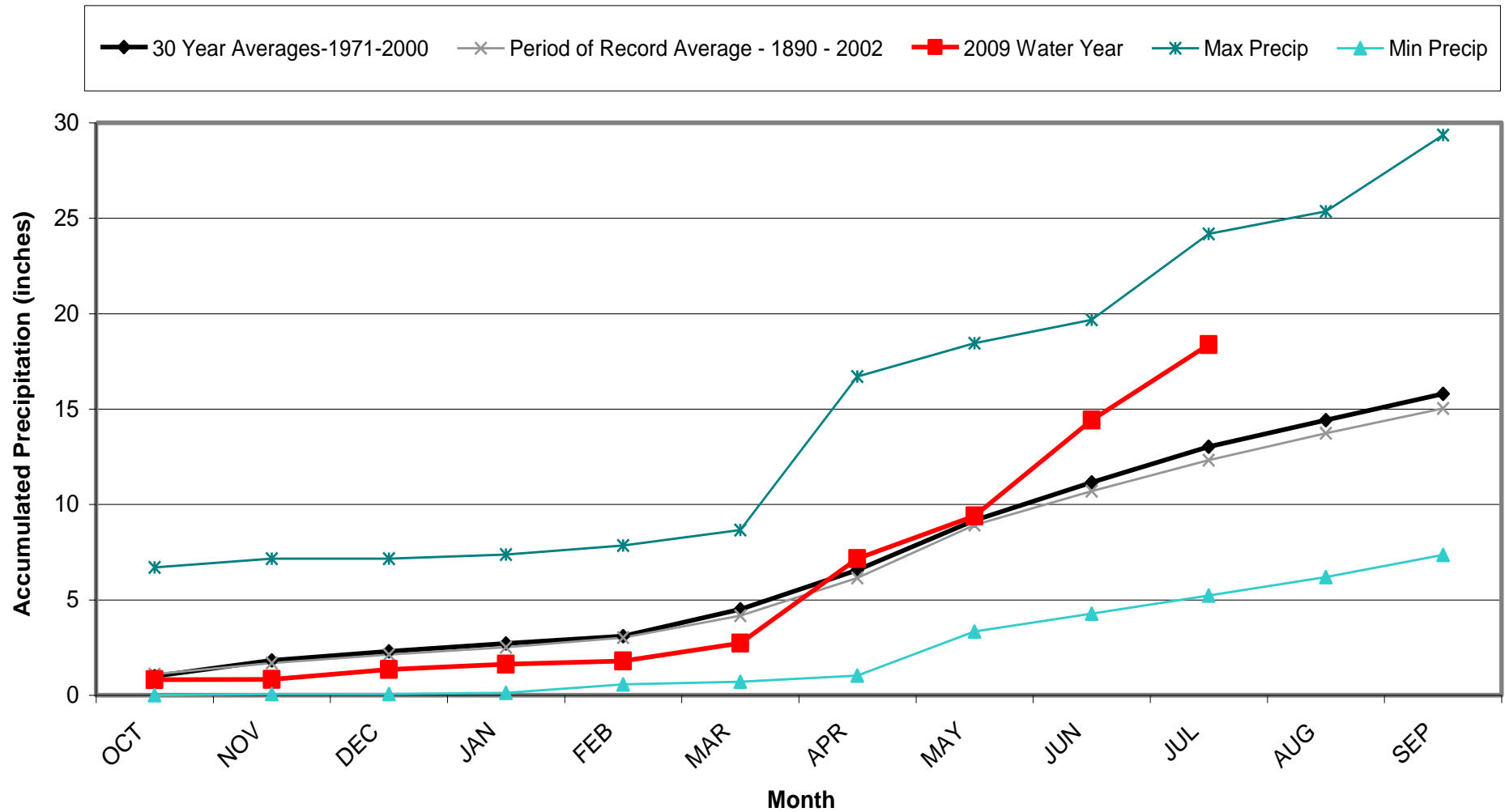
# Division 7 – Akron

## Akron 4E 2009 Water Year



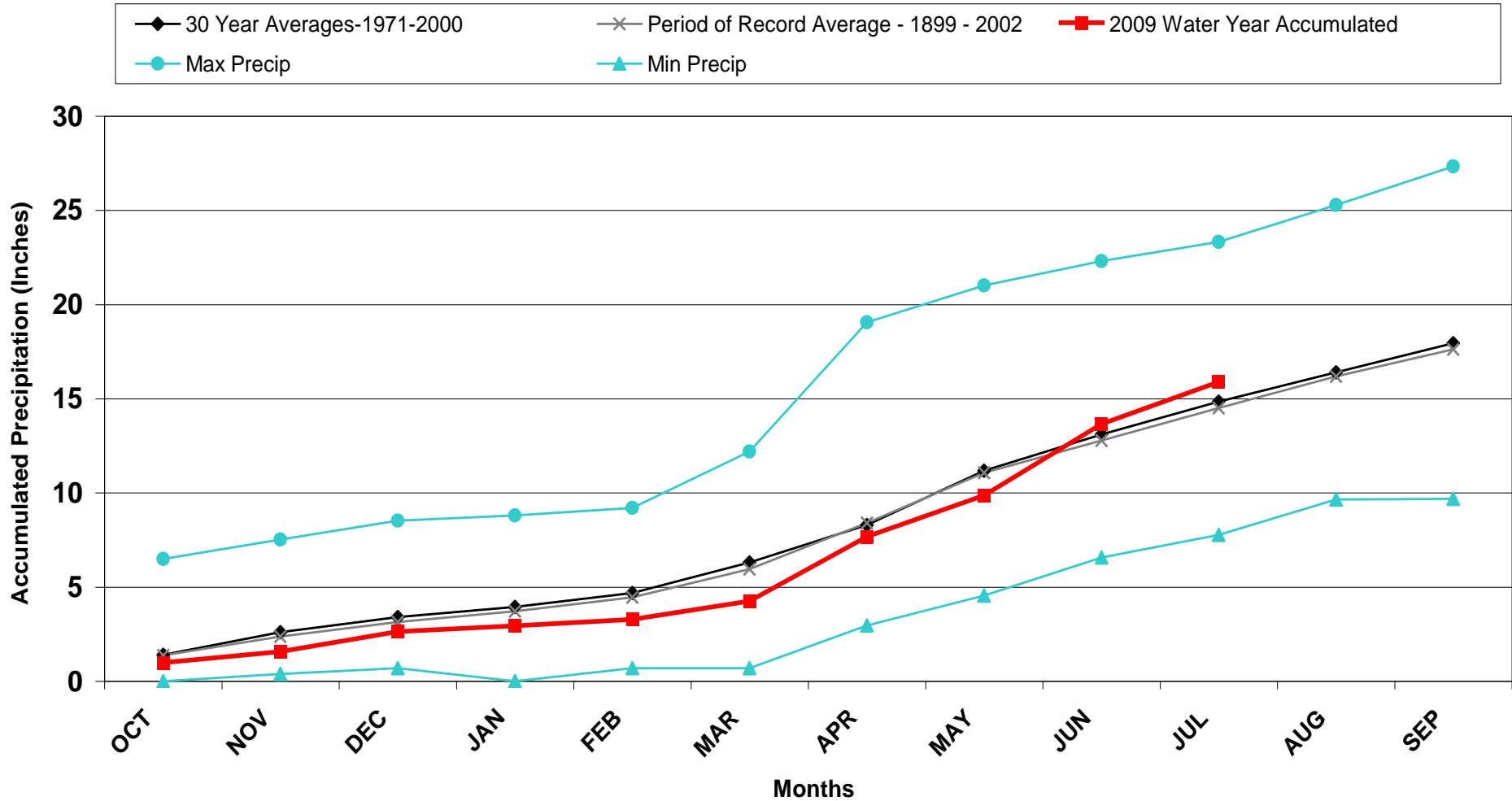
# Division 8 – Fort Collins

## Fort Collins 2009 Water Year



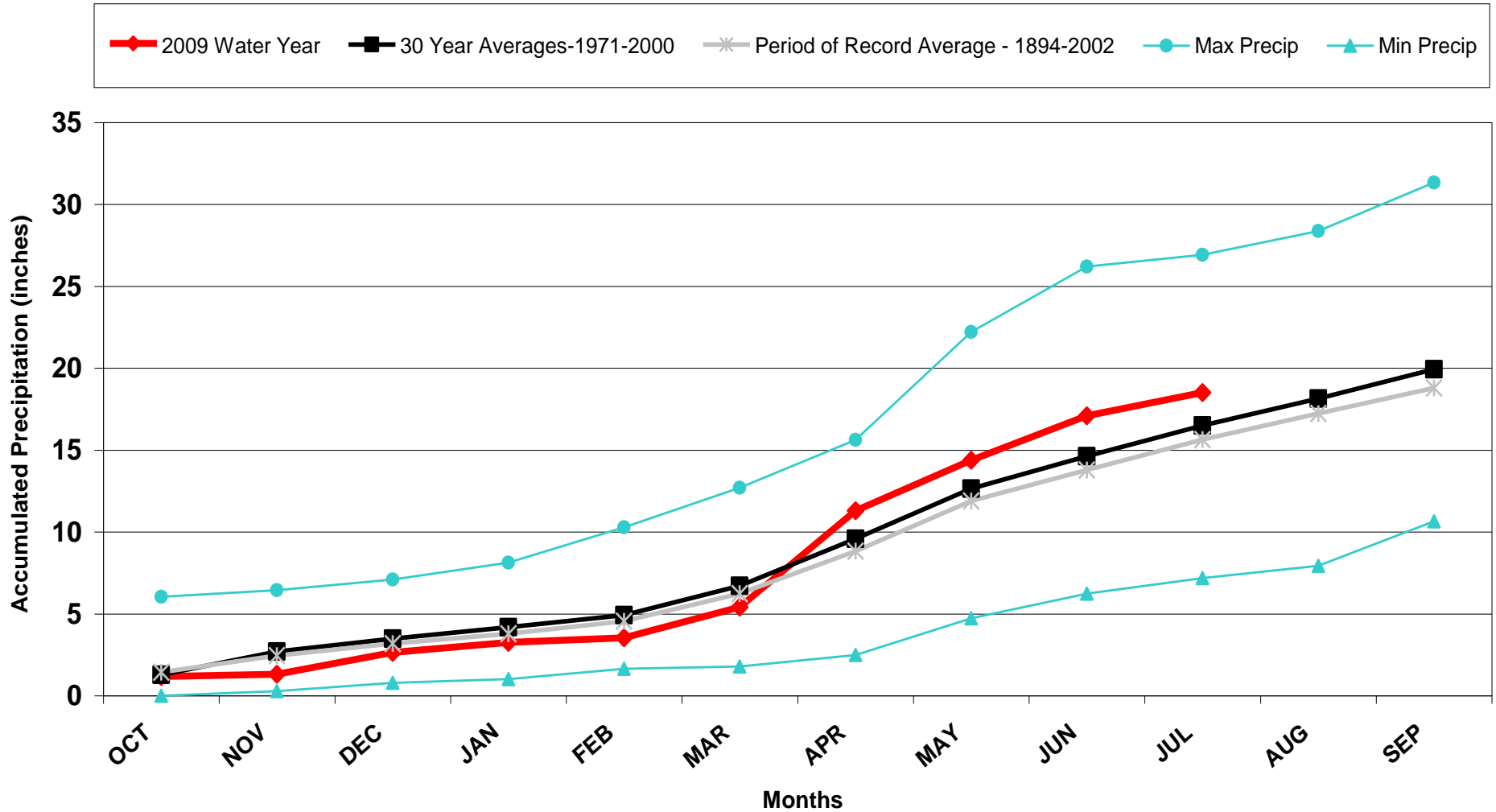
# Division 8 – Kassler

## Kassler 2009 Water Year



# Division 8 - Boulder

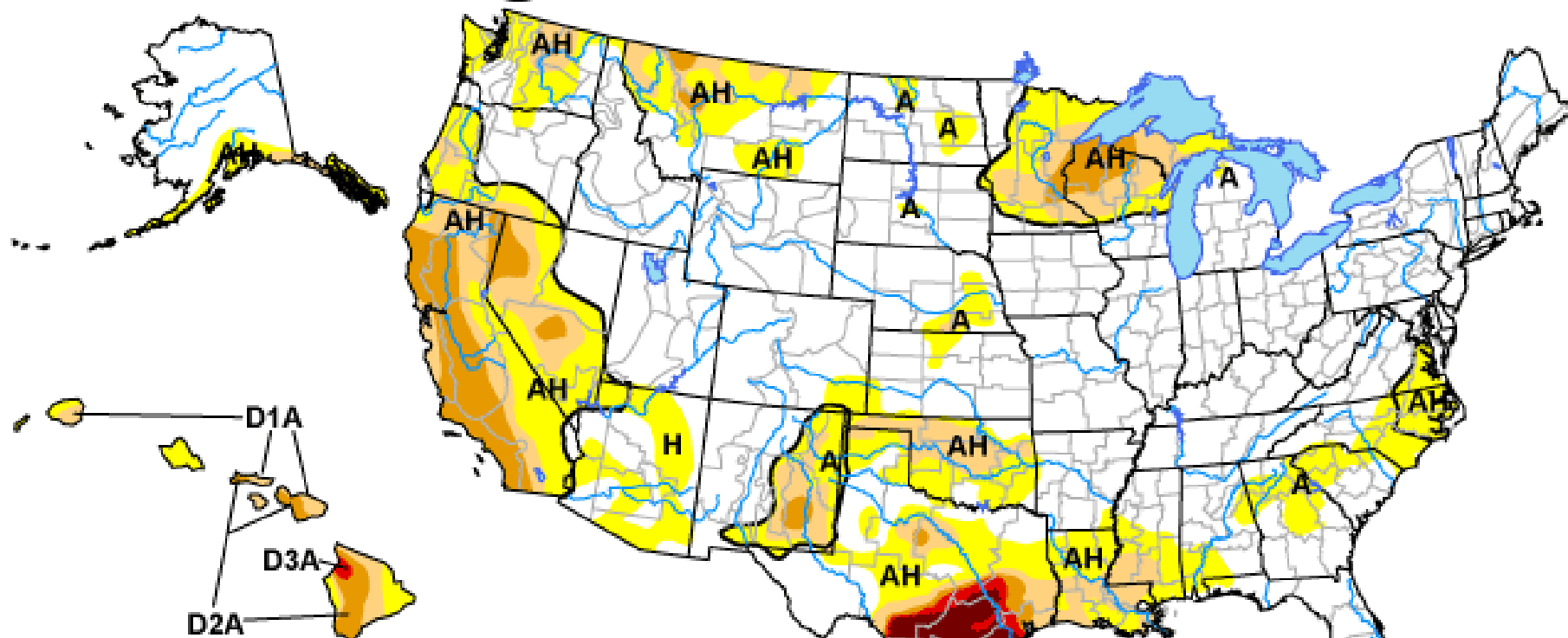
## Boulder 2009 Water Year








# U.S. Drought Monitor

July 14, 2009

Valid 8 a.m. EDT



## Intensity:

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

## Drought Impact Types:

-  Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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



<http://drought.unl.edu/dm>

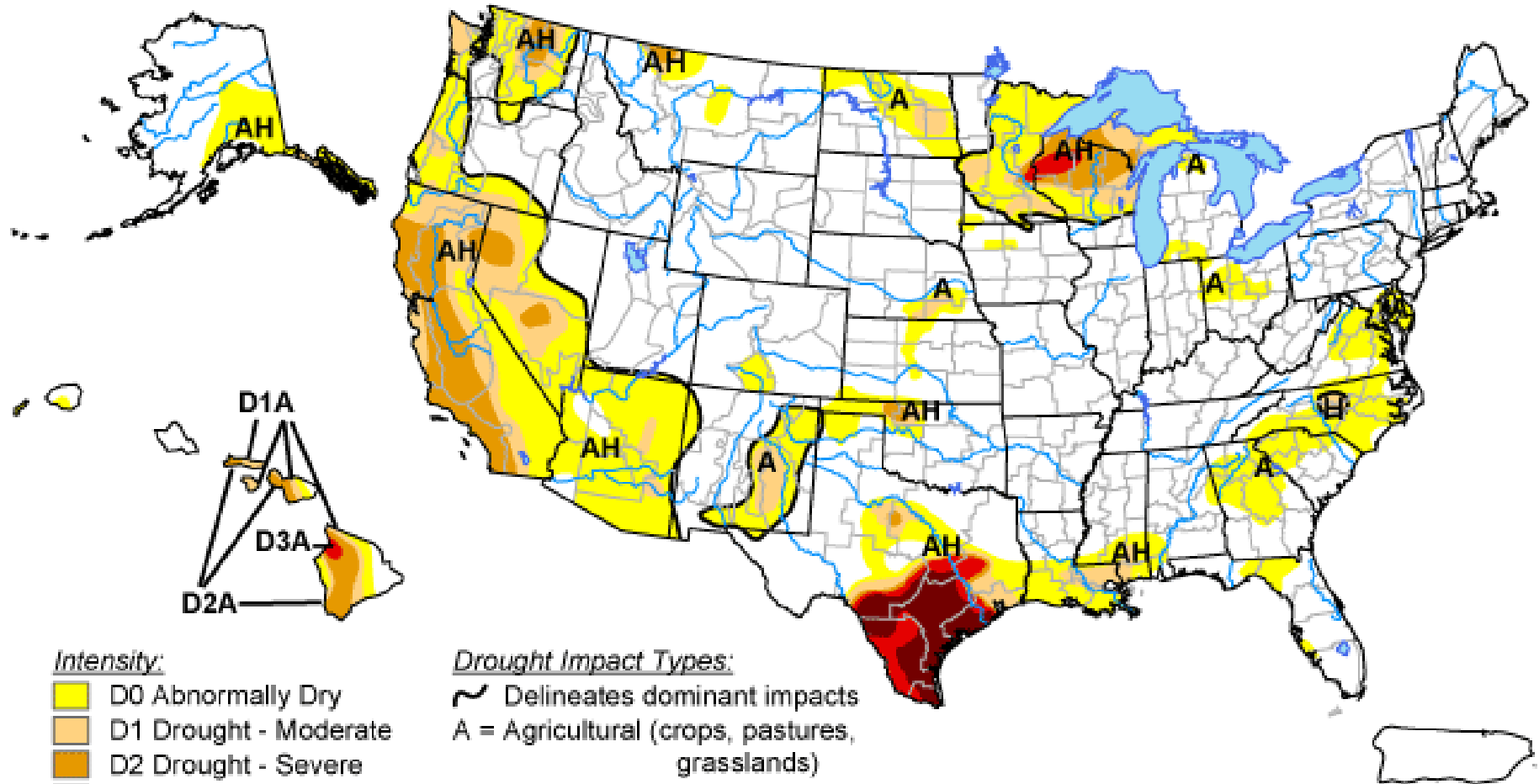
Released Thursday, July 16, 2009

Author: Eric Luebehusen, U.S. Department of Agriculture



# U.S. Drought Monitor

August 18, 2009  
Valid 8 a.m. EDT



## Intensity:

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

## Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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



Released Thursday, August 20, 2009

Author: Laura Edwards, Western Regional Climate Center

<http://drought.unl.edu/dm>

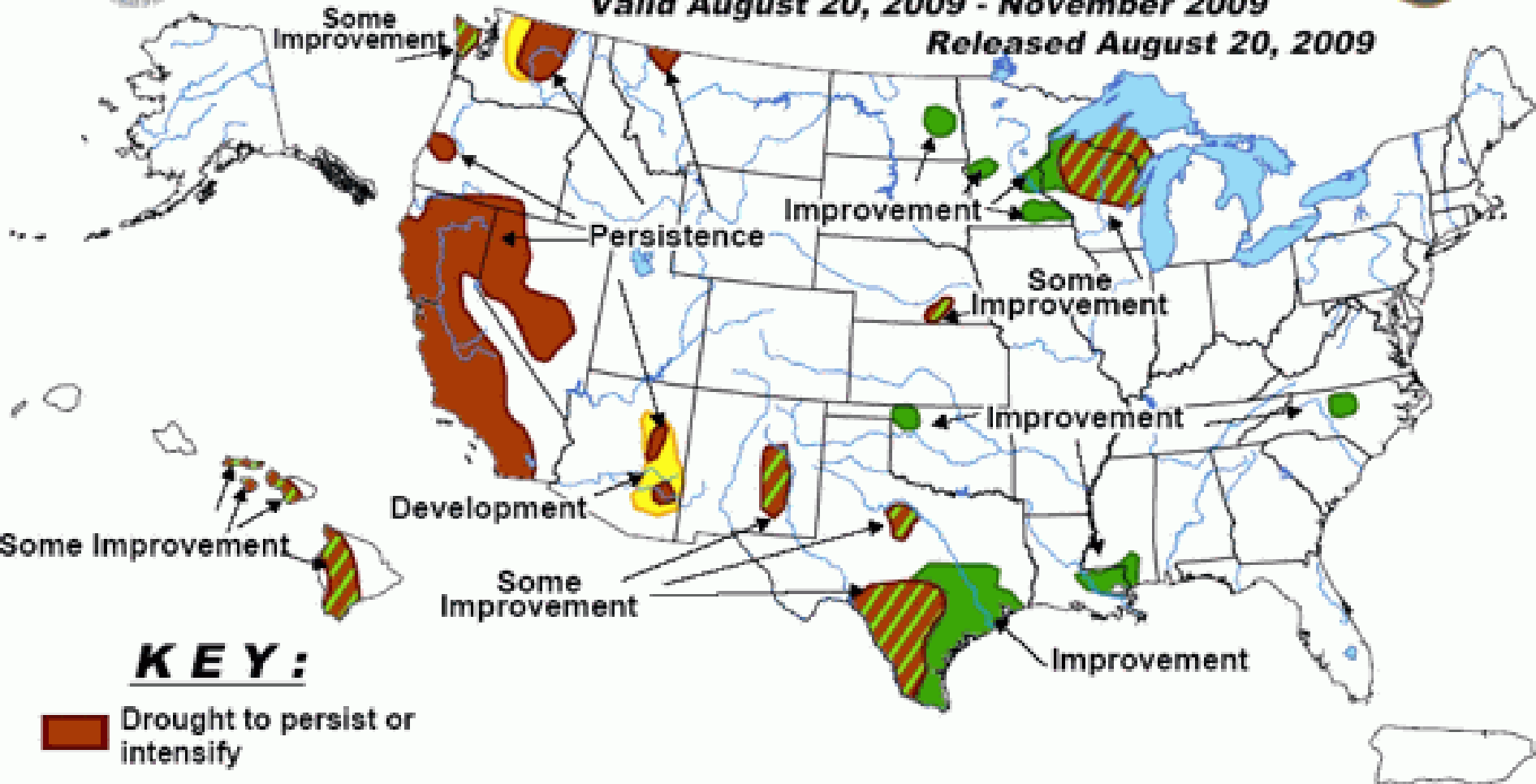


# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid August 20, 2009 - November 2009

Released August 20, 2009

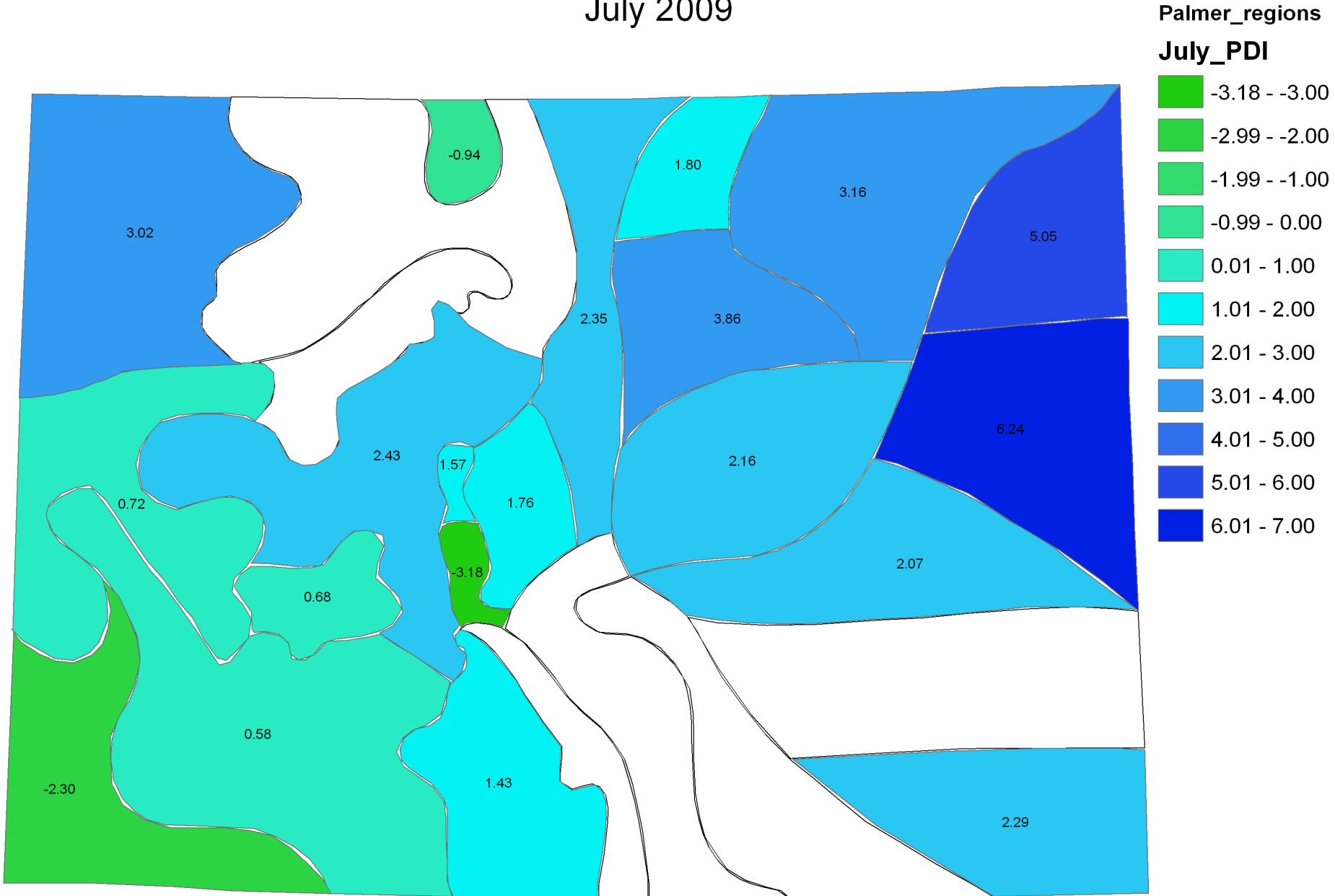


### **KEY:**

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. “Ongoing” drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

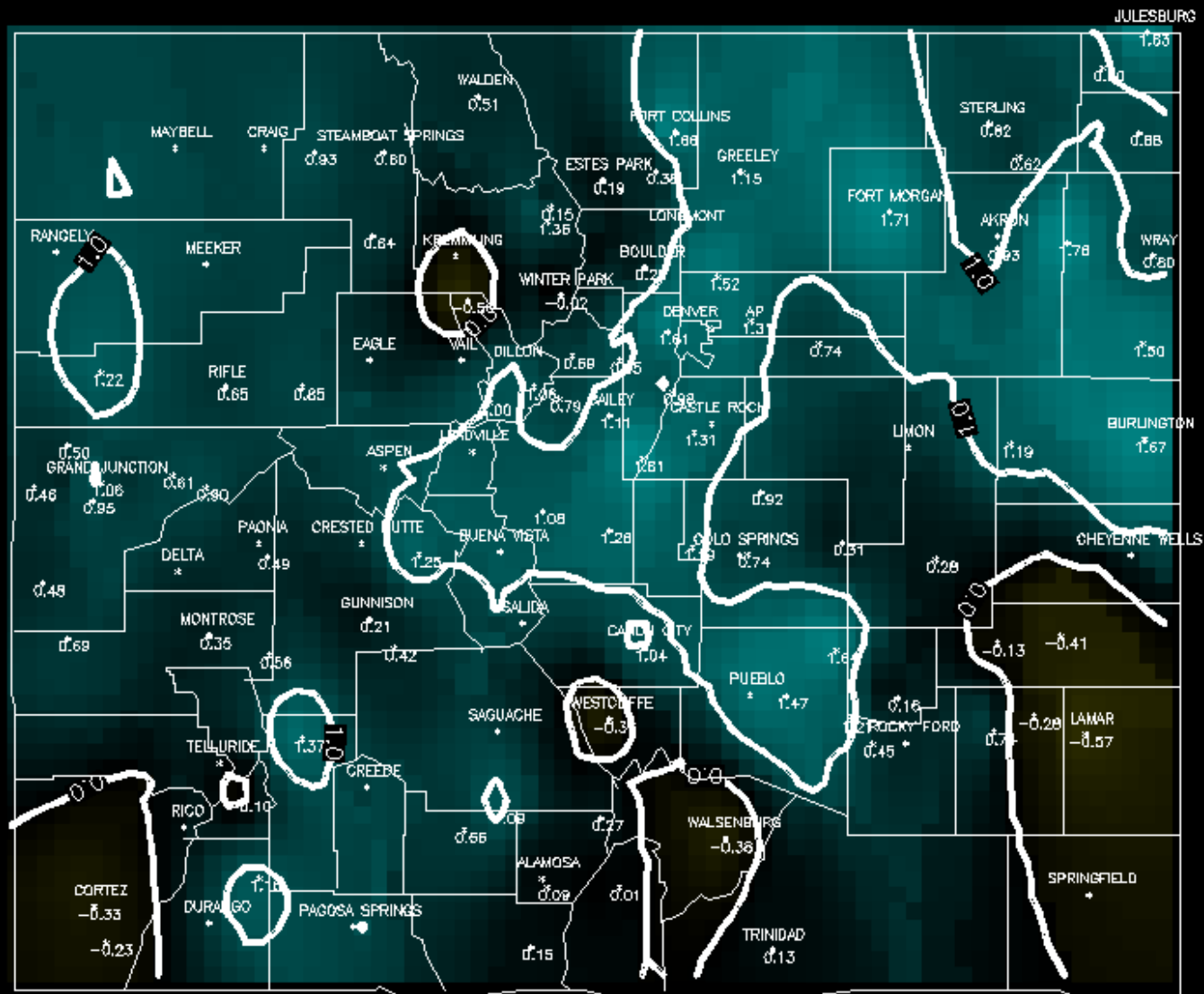
# Modified Palmer Drought Index -- Preliminary July 2009



# 3-month SPI

Colorado

7/2009 3 mon. SPI



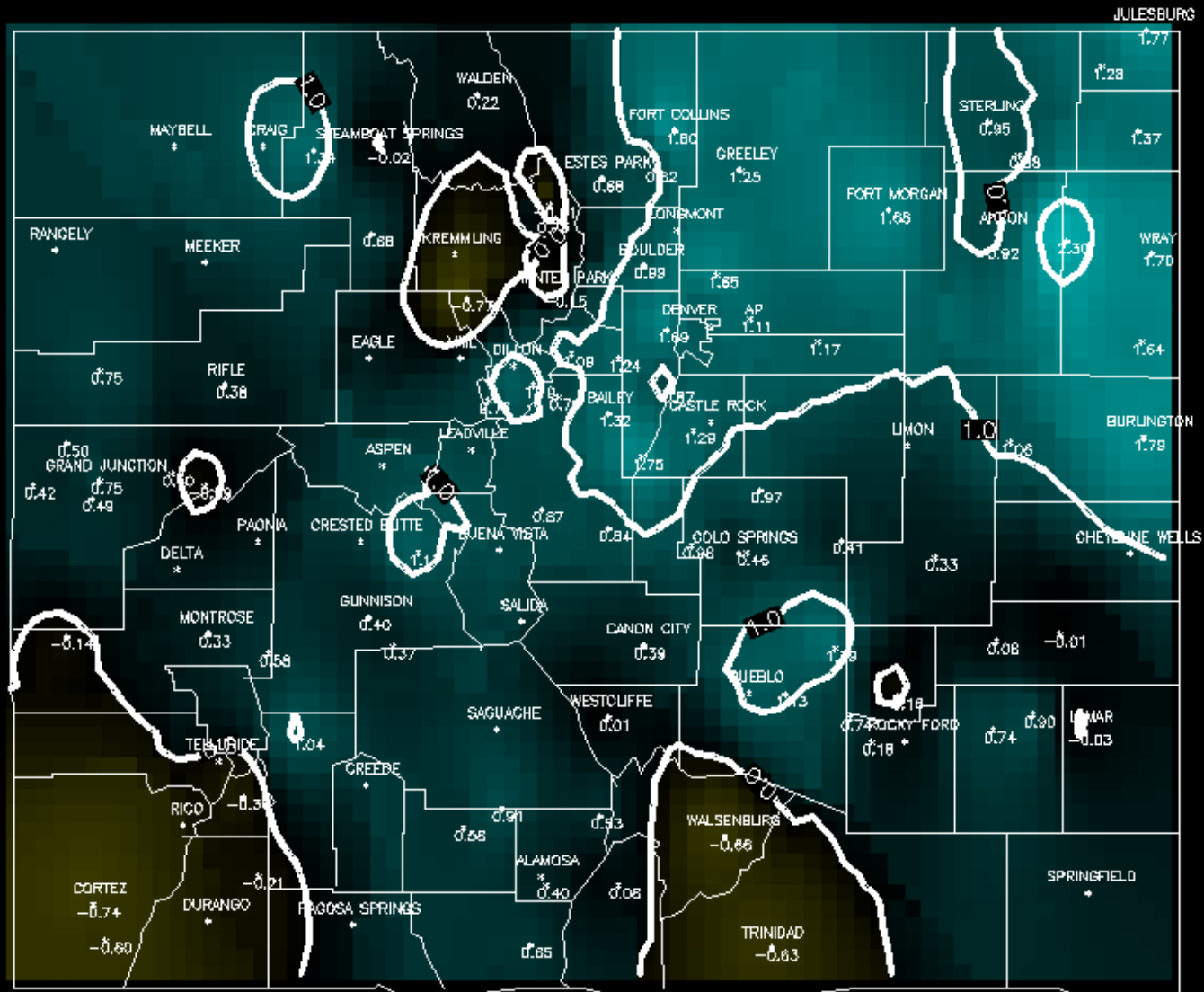
100% < 2.0  
76% < 1.0  
11% < 0.0  
0% < -1.0  
0% < -2.0  
0% < -3.0

Produced by:  
Colorado Climate Center  
Fort Collins, CO

# 6-month SPI

Colorado

7/2009 6 mon. SPI



100% < 2.0  
77% < 1.0  
13% < 0.0  
0% < -1.0  
0% < -2.0  
0% < -3.0

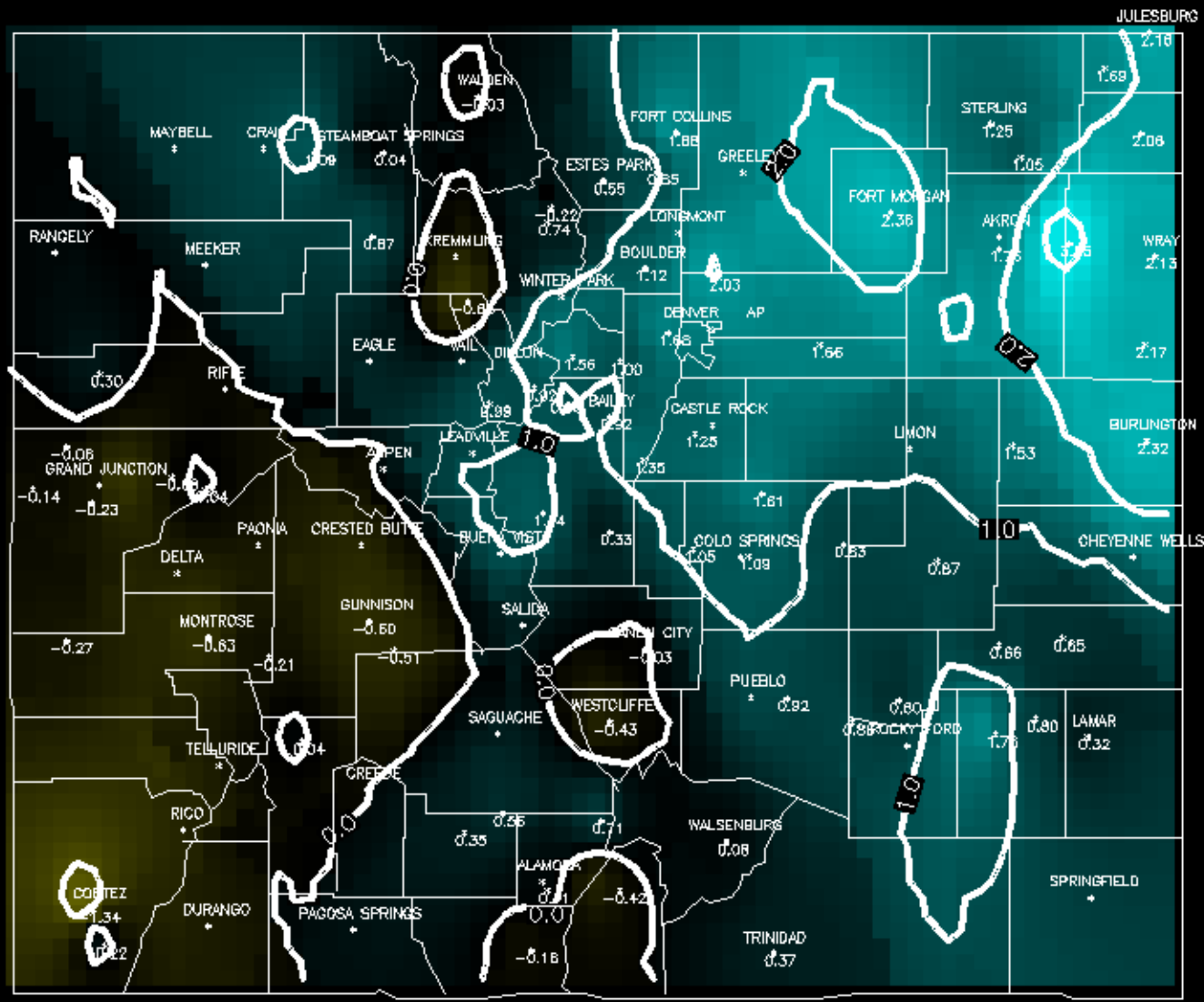
Produced by:  
Colorado Climate Center  
Fort Collins, CO



# 12-month SPI

Colorado

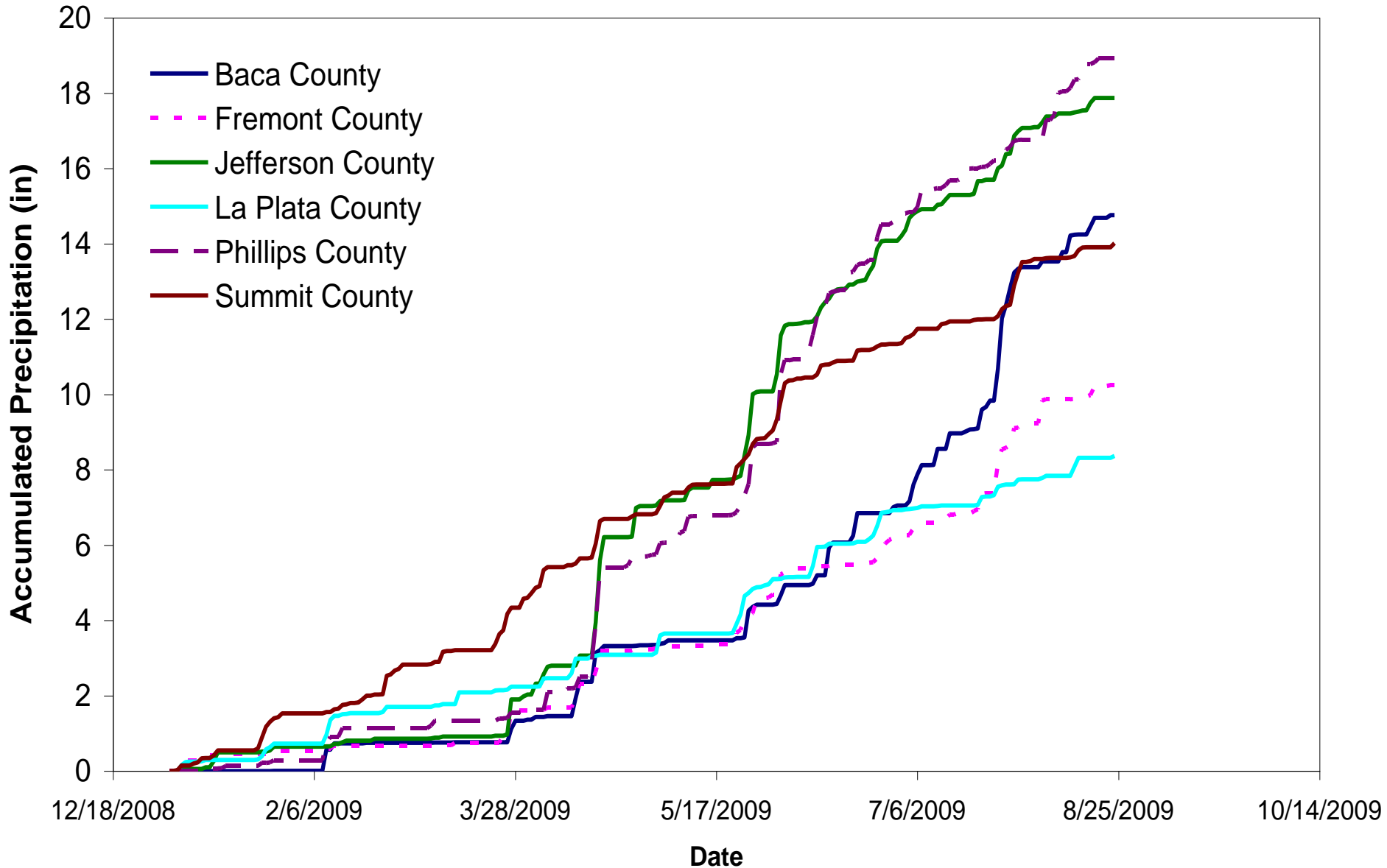
7/2009 12 mon. SPI



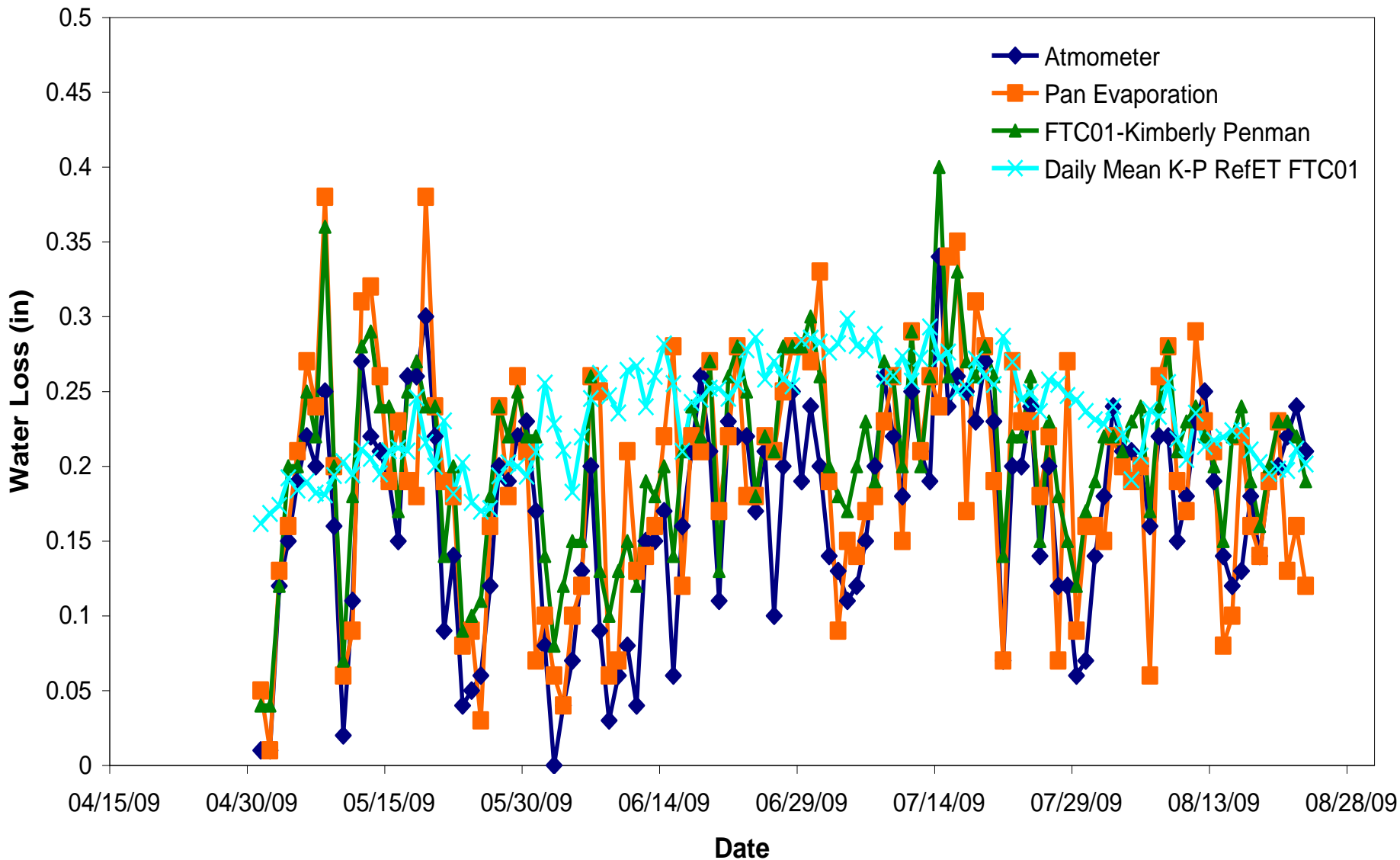
93 % < 2.0  
70 % < 1.0  
24 % < 0.0  
0 % < -1.0  
0 % < -2.0  
0 % < -3.0

Produced by:  
Colorado Climate Center  
Fort Collins, CO

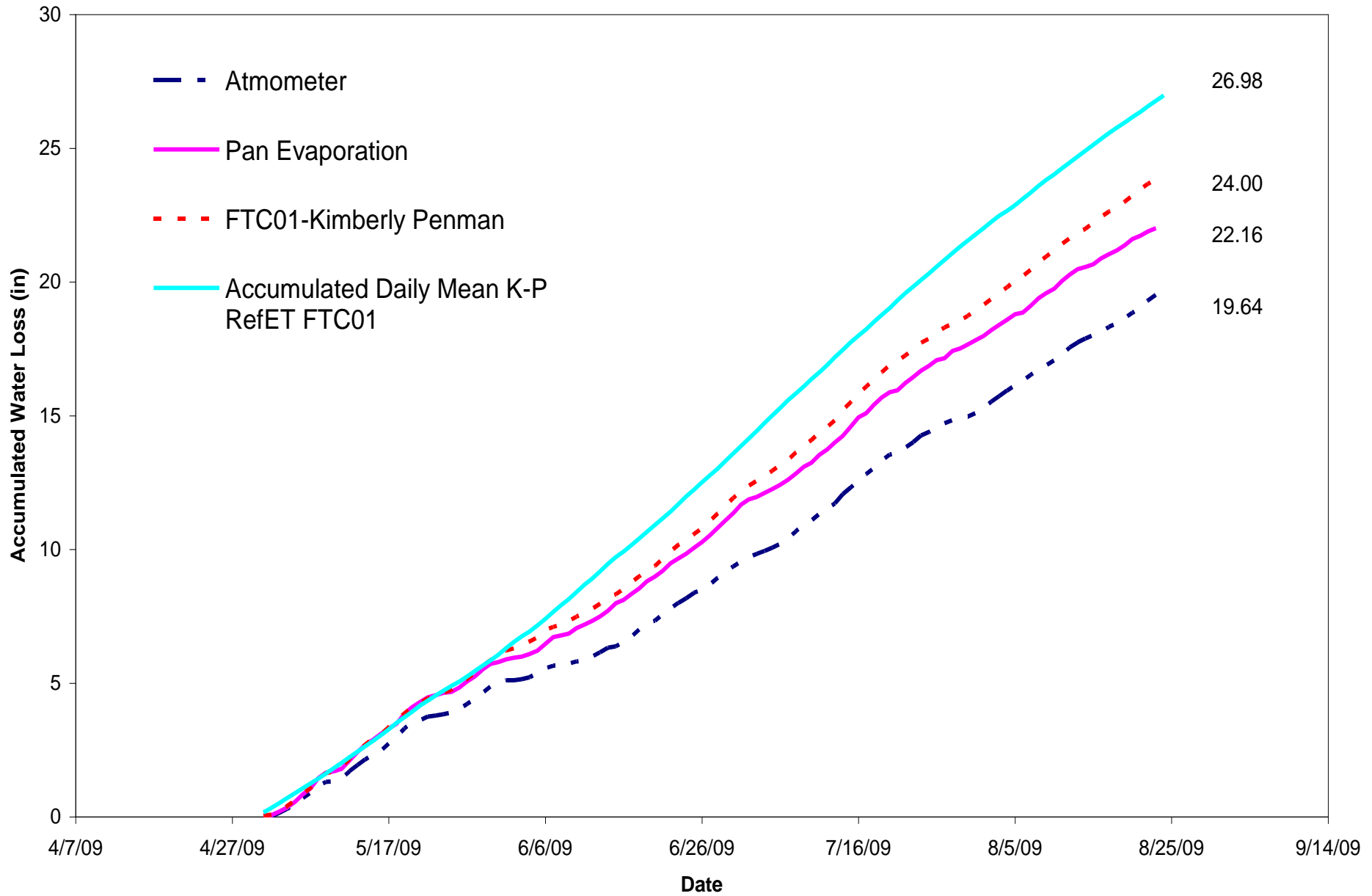
# CoCoRaHS Accumulated Daily Precipitation for Selected Counties (Jan 1 - August 24, 2009)



# Evapotranspiration/Pan Evaporation Comparison Fort Collins, CO

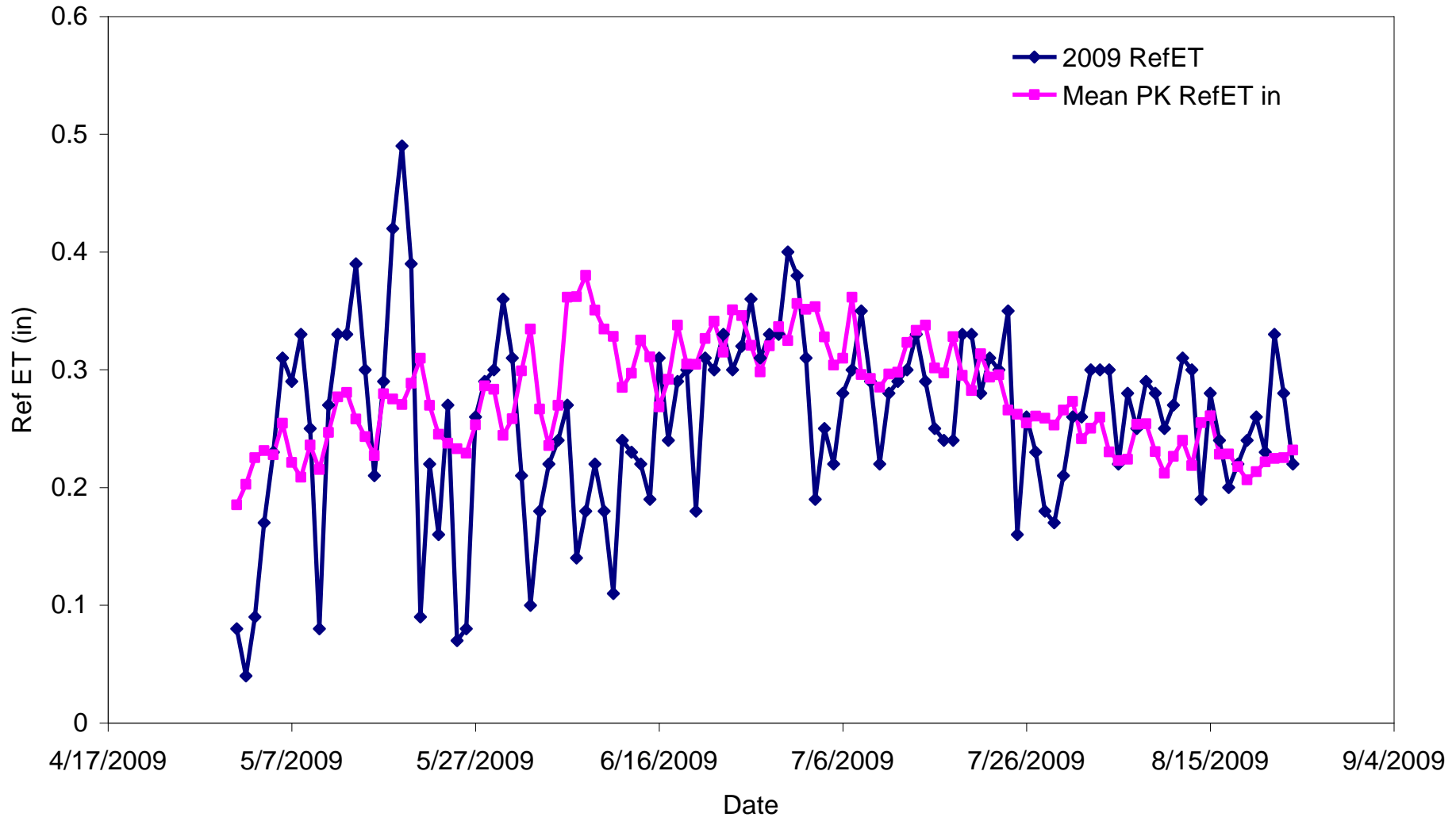


# Accumulated Water Loss Comparison



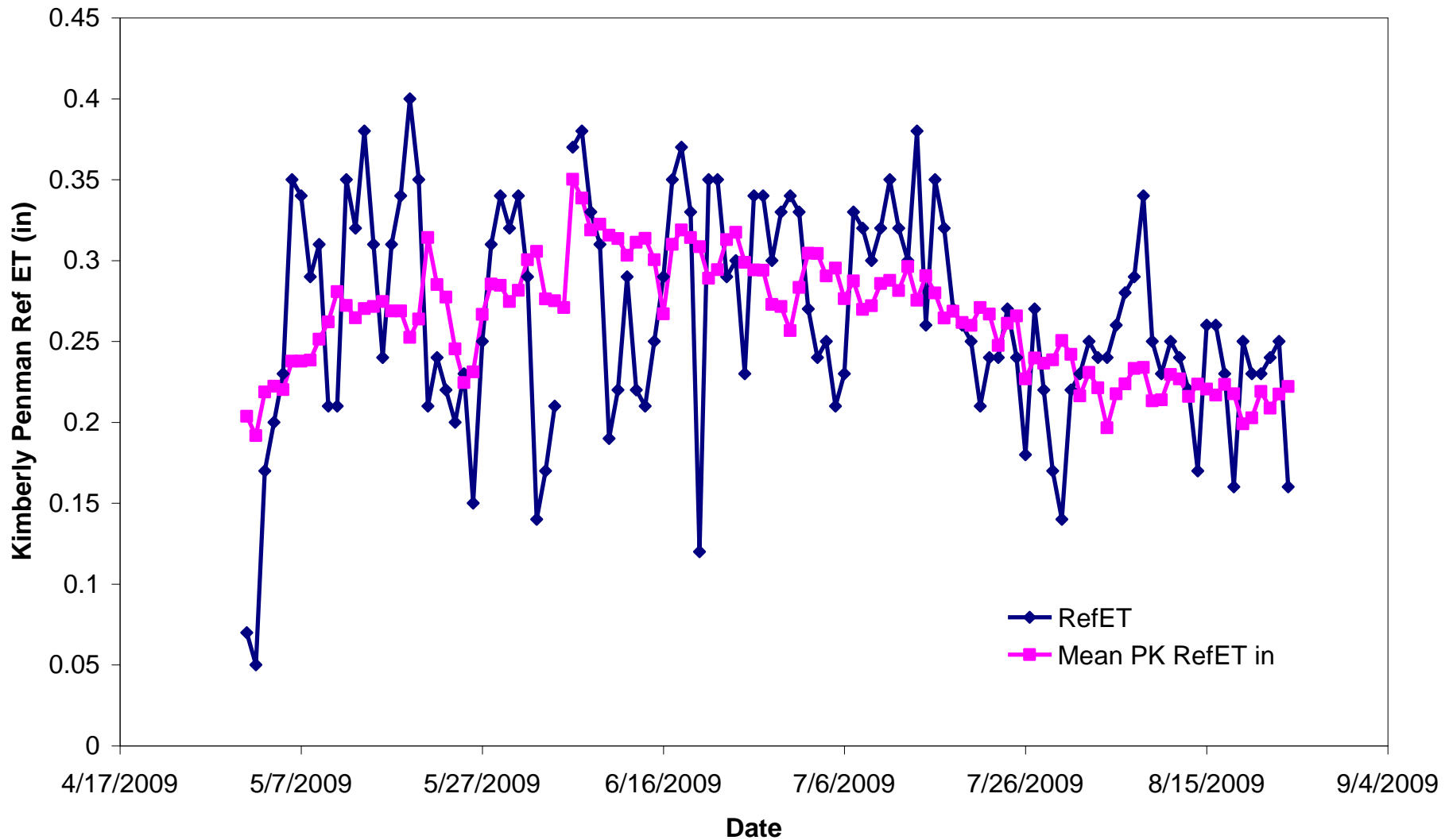
# Coagmet: YUM02 RefET

Yuma #2 (YUM02) 2009 and Mean (n=12) Kimberly Penman Reference ET



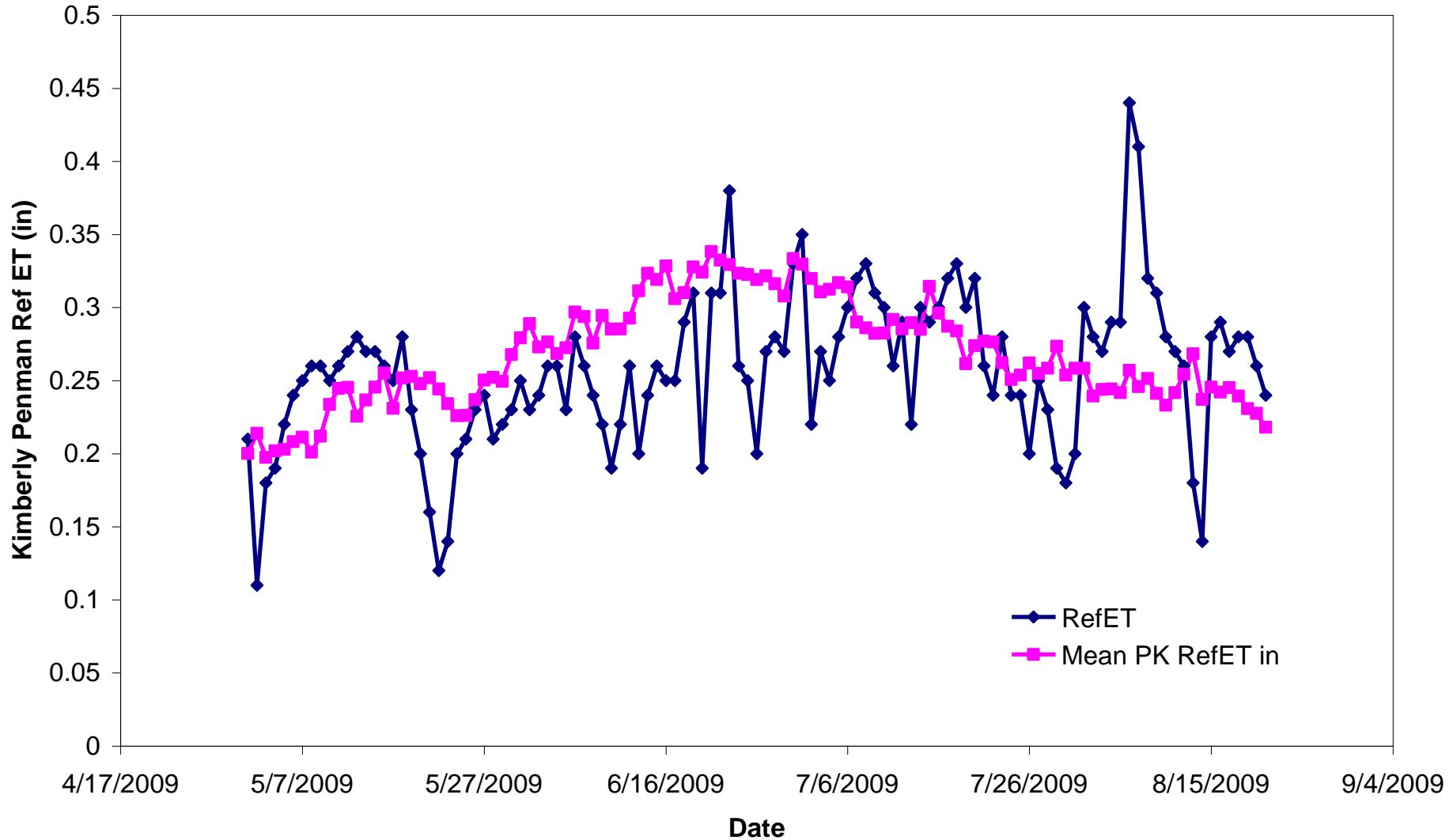
# Coagmet: VLD01 RefET

Vineland (VLD01) 2009 and Mean (n=15) Kimberly Penman Reference ET



# Coagmet: CTZ01 RefET

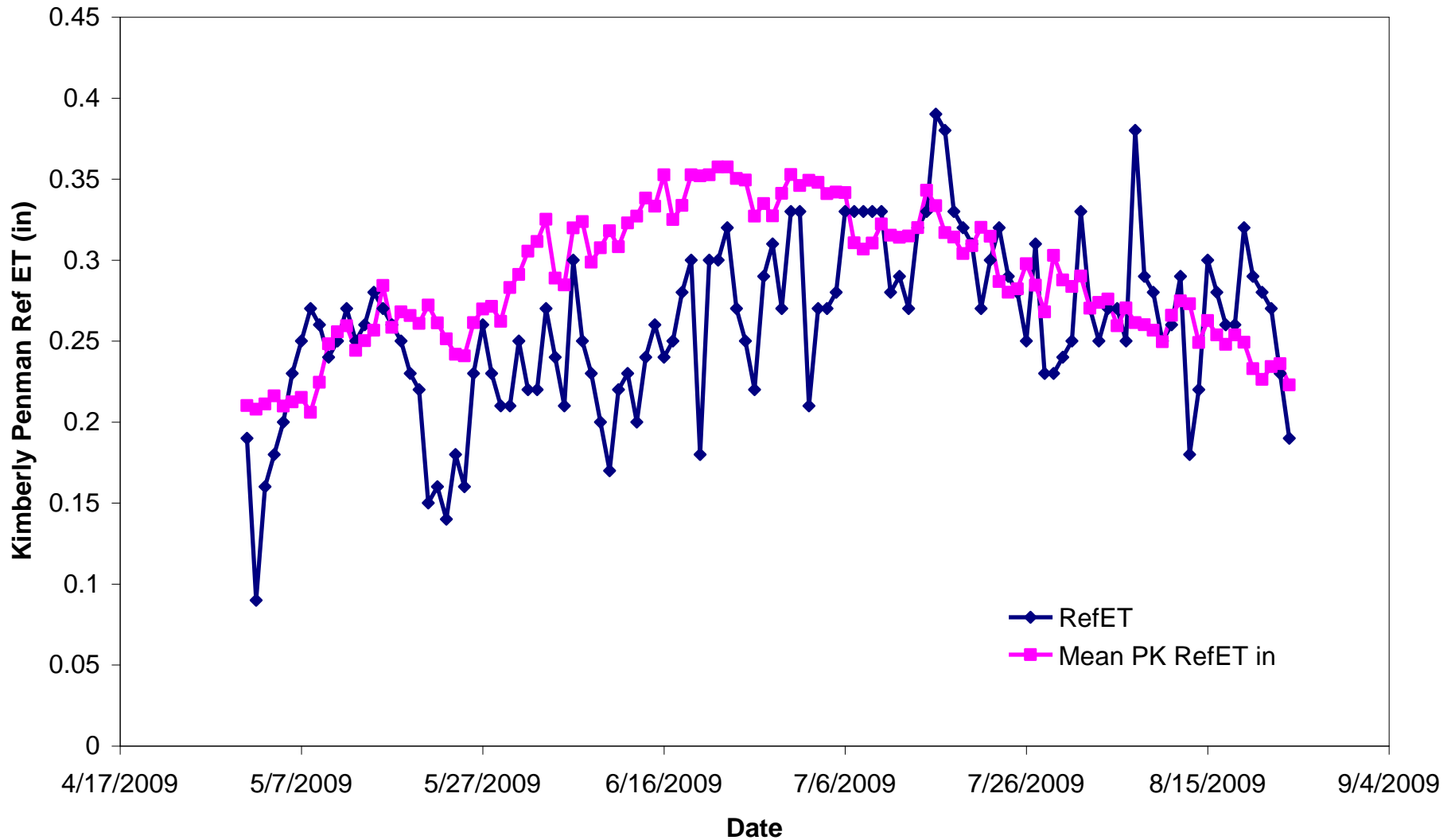
**Cortez (CTZ01) 2009 and Mean (n=16) Kimberly Penman Reference ET**





# Coagmet: YJK01 RefET

Yellow Jacket (YJK01) 2009 and Mean (n=16) Kimberly Penman Reference ET



# Colorado Climate Center

Data and Power Point Presentations  
available for downloading

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

- then click on “Presentations”

Colorado  
State  
University

*Knowledge to Go Places*

