

# Colorado Weather and Climate Update

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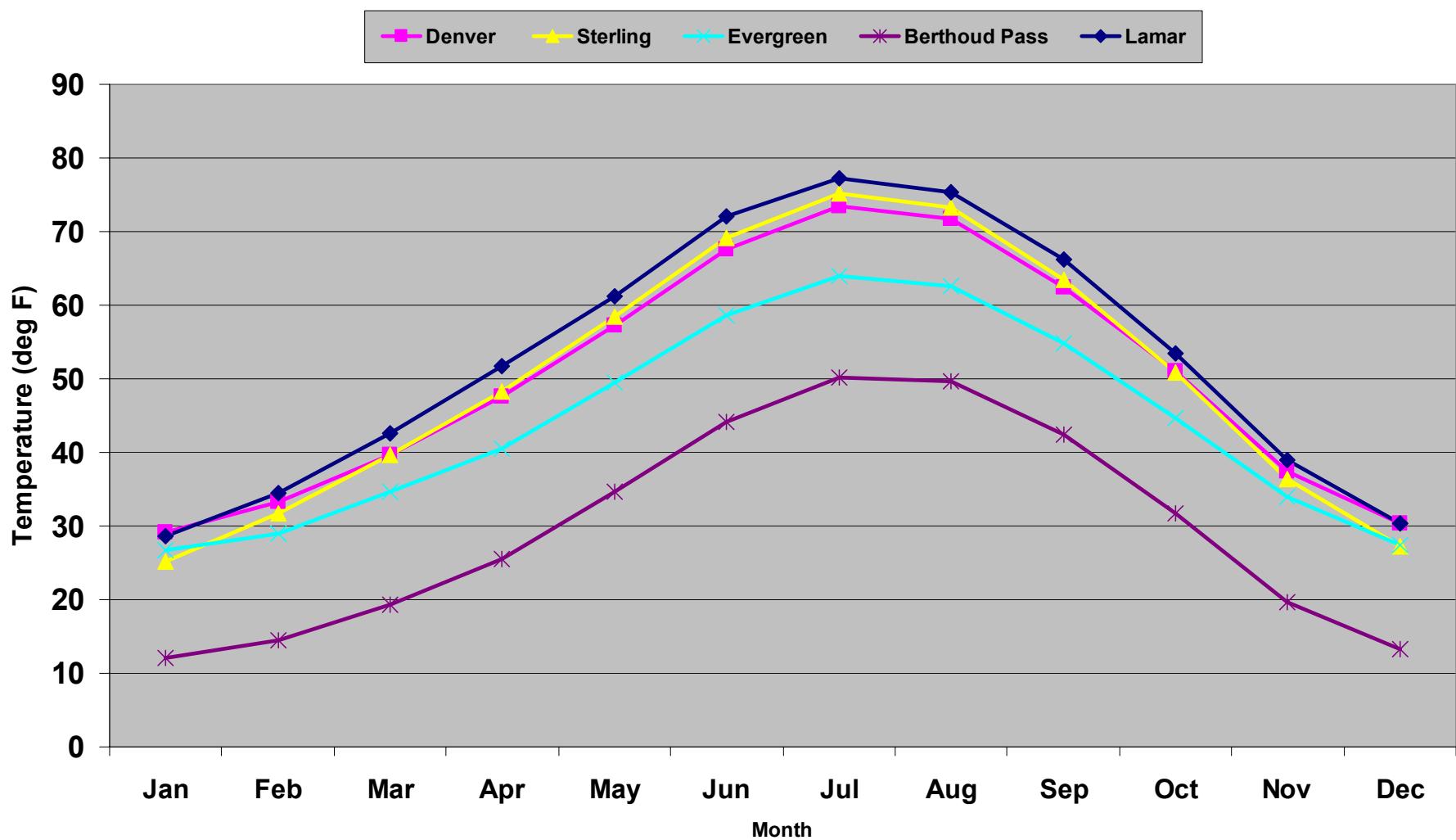
Presented to Colorado Livestock Association, Greeley, CO, Tuesday,  
February 13, 2007

# Colorado's Climate – What We Expect

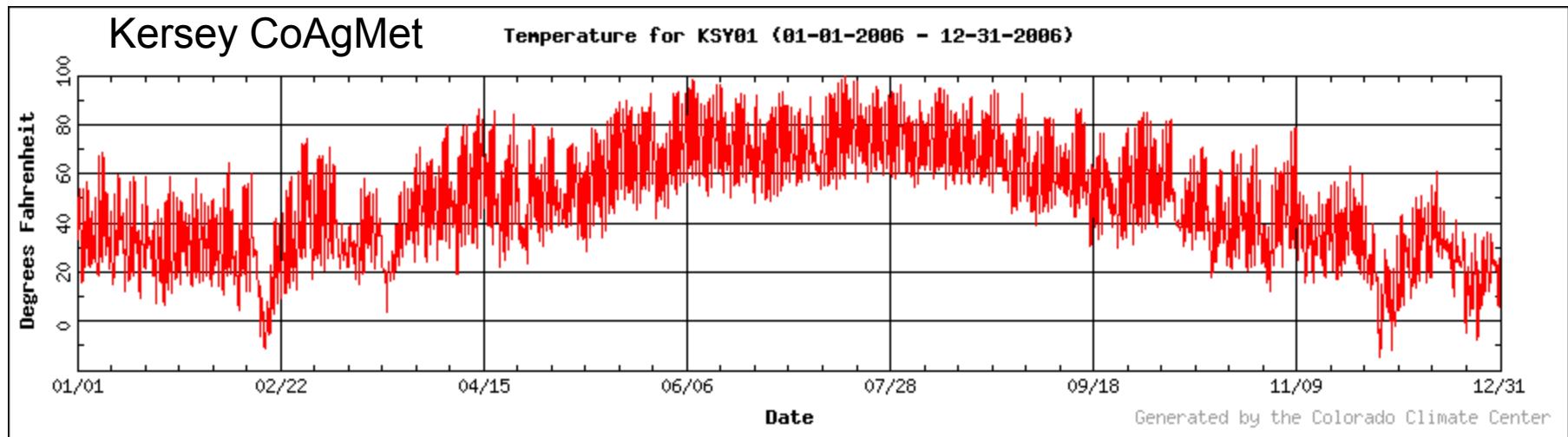


# Average Monthly Temperatures

Average Monthly Temperatures (1971-2000) for Selected Stations

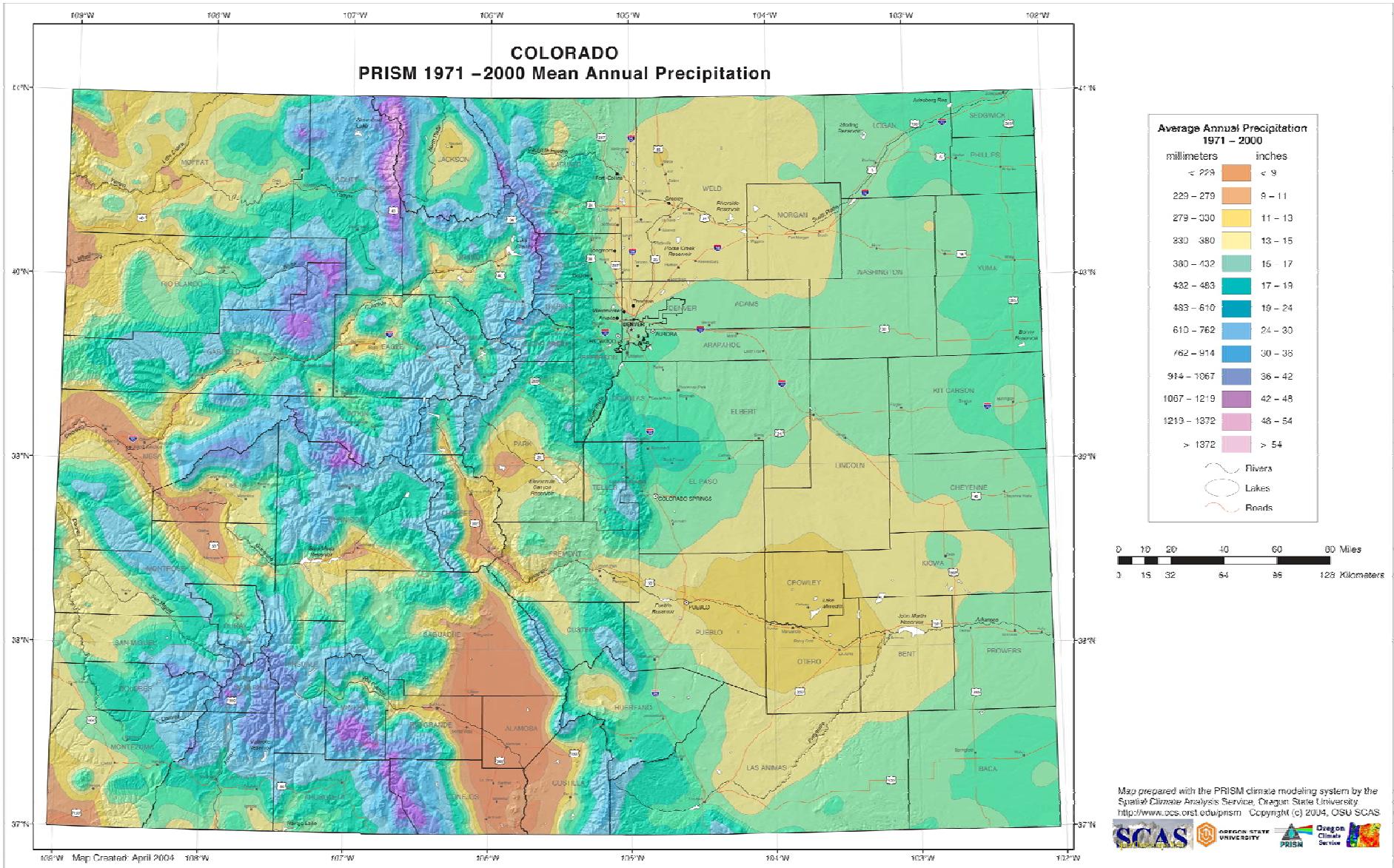


# CoAgMet Annual Temperatures



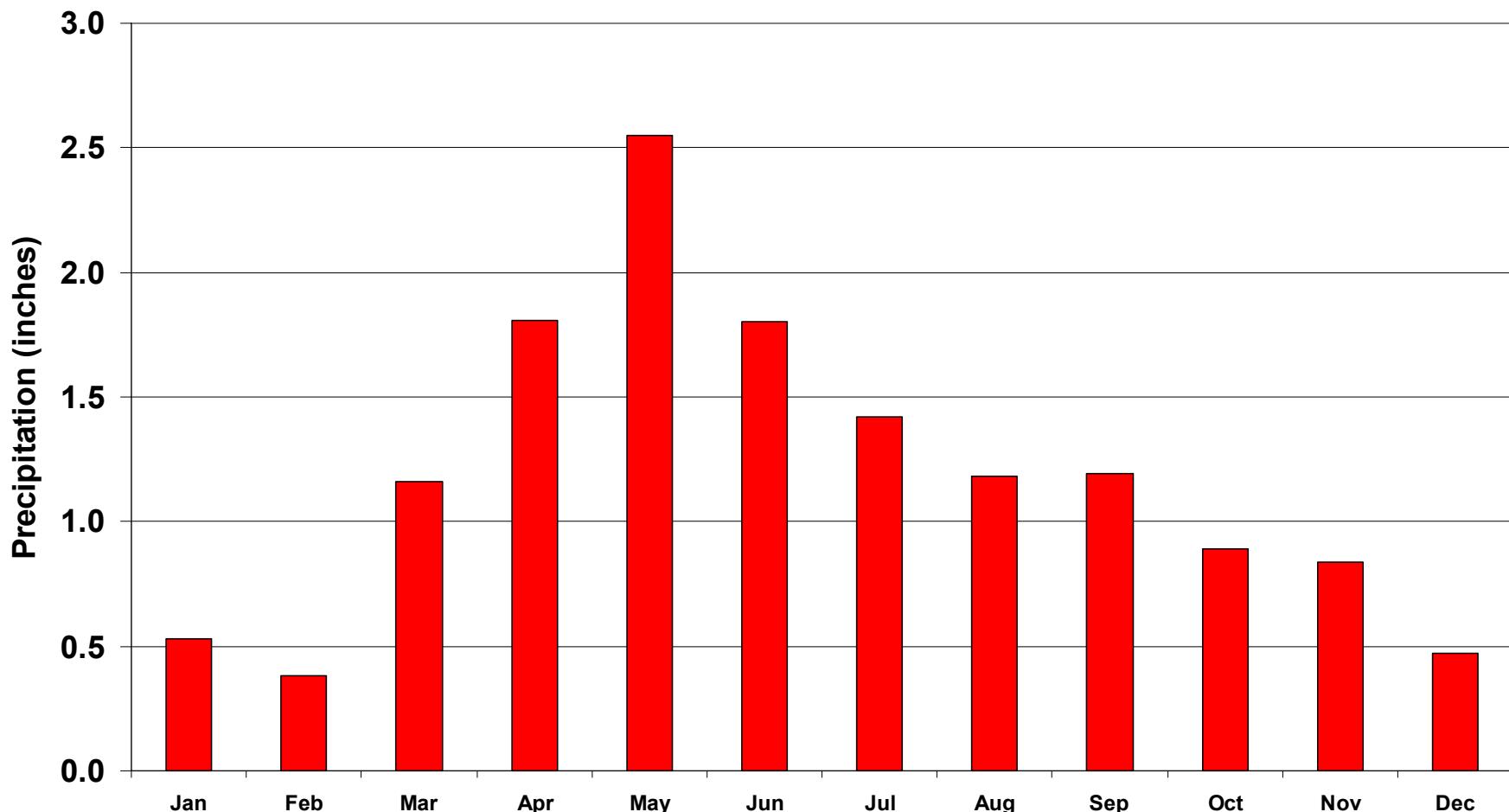
- Actual temperatures, predictable annual cycle, but large daily variations

# Colorado Average Annual Precipitation



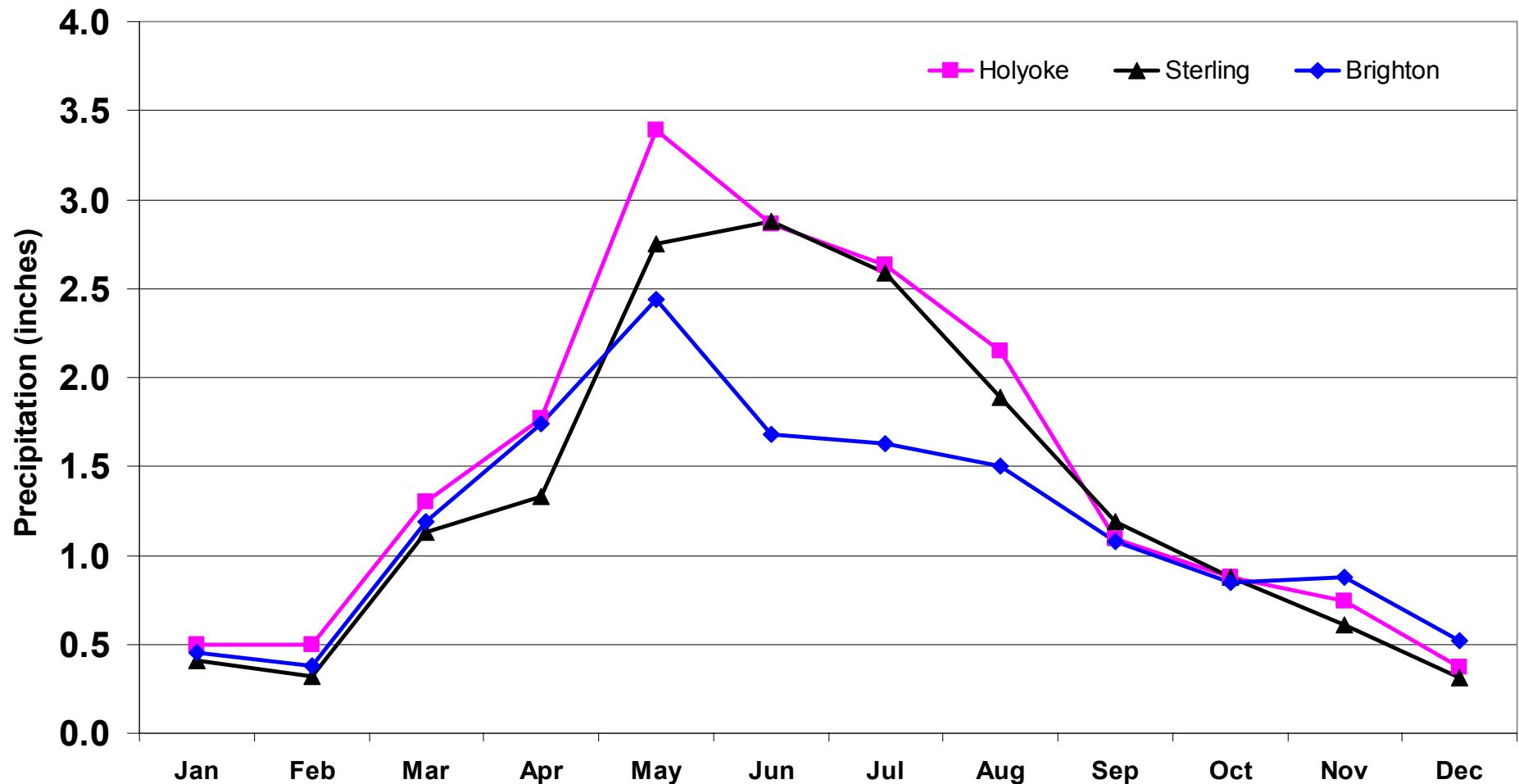
# Monthly Average 30-year Precipitation for Greeley, CO

Monthly Precipitation Averages for Selected Sites  
(1971-2000 averages)



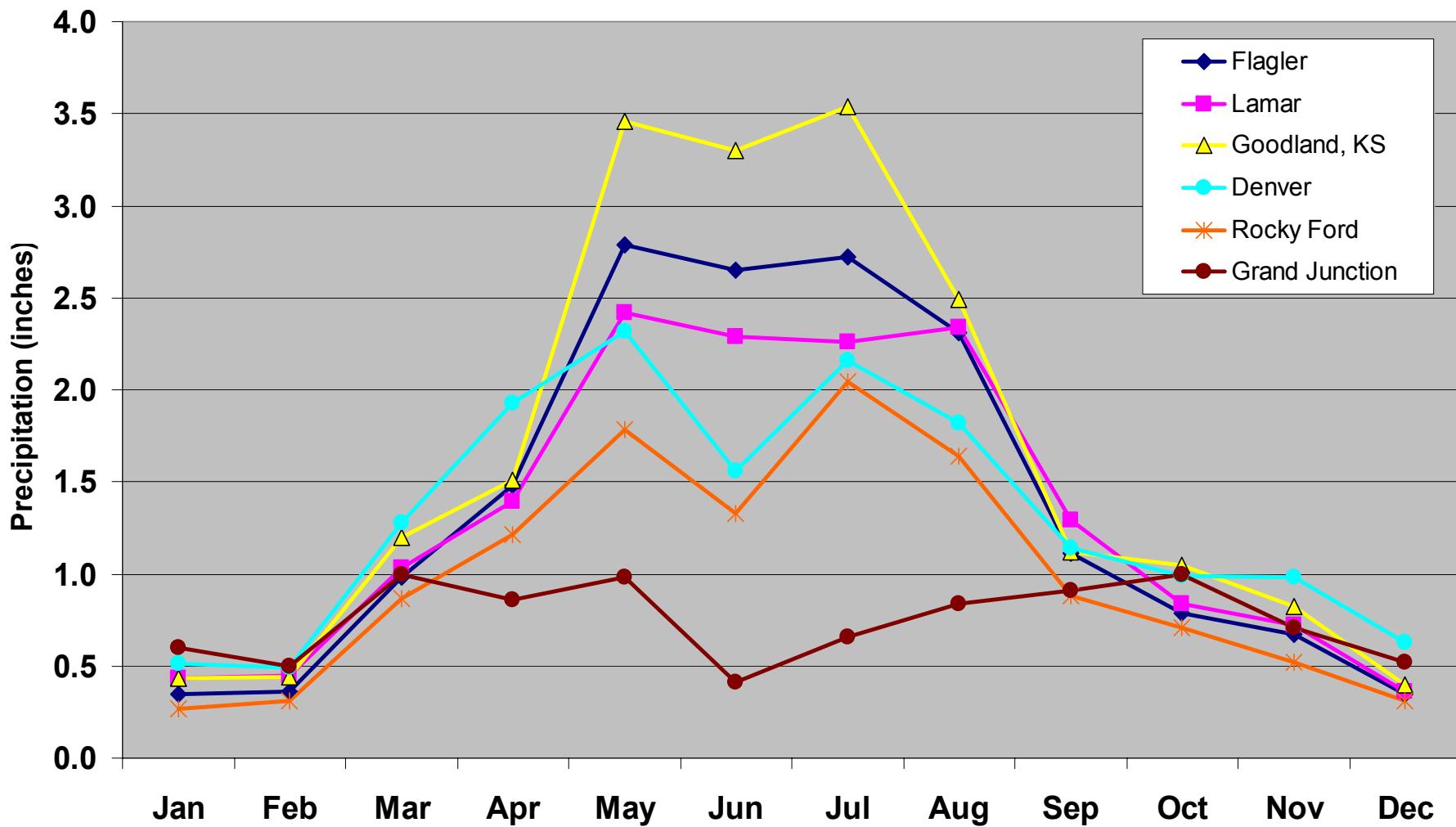
# Monthly Average 30-year Precipitation for Brighton, Sterling and Holyoke, CO

Monthly Precipitation Averages for Selected Sites  
(1971-2000 averages)



# Precipitation Averages for Selected Sites

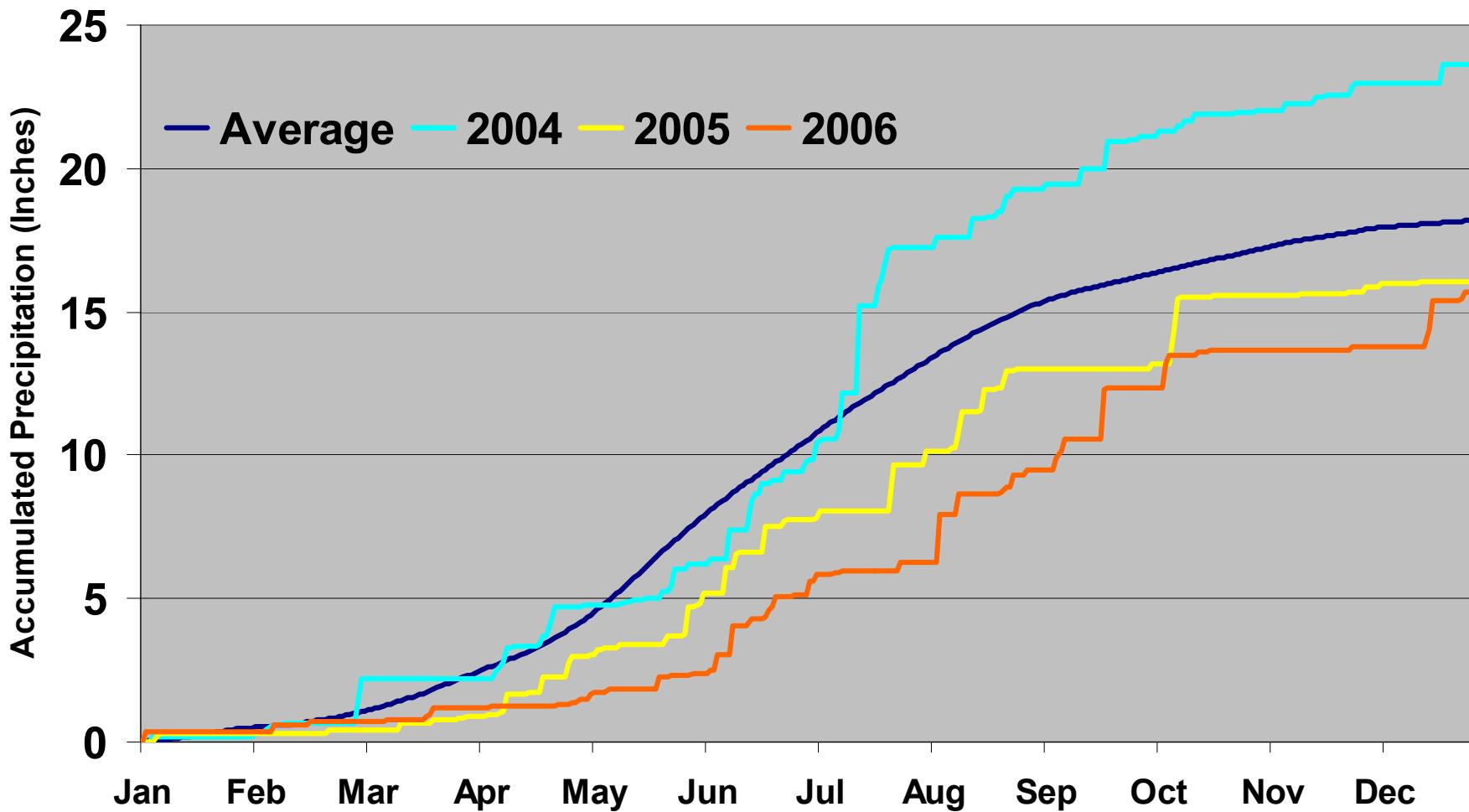
Comparison Monthly Precipitation for Selected Sites  
(1971-2000 averages)



# Holyoke 2004, 2005 & 2006 daily accumulated precipitation compared to daily average

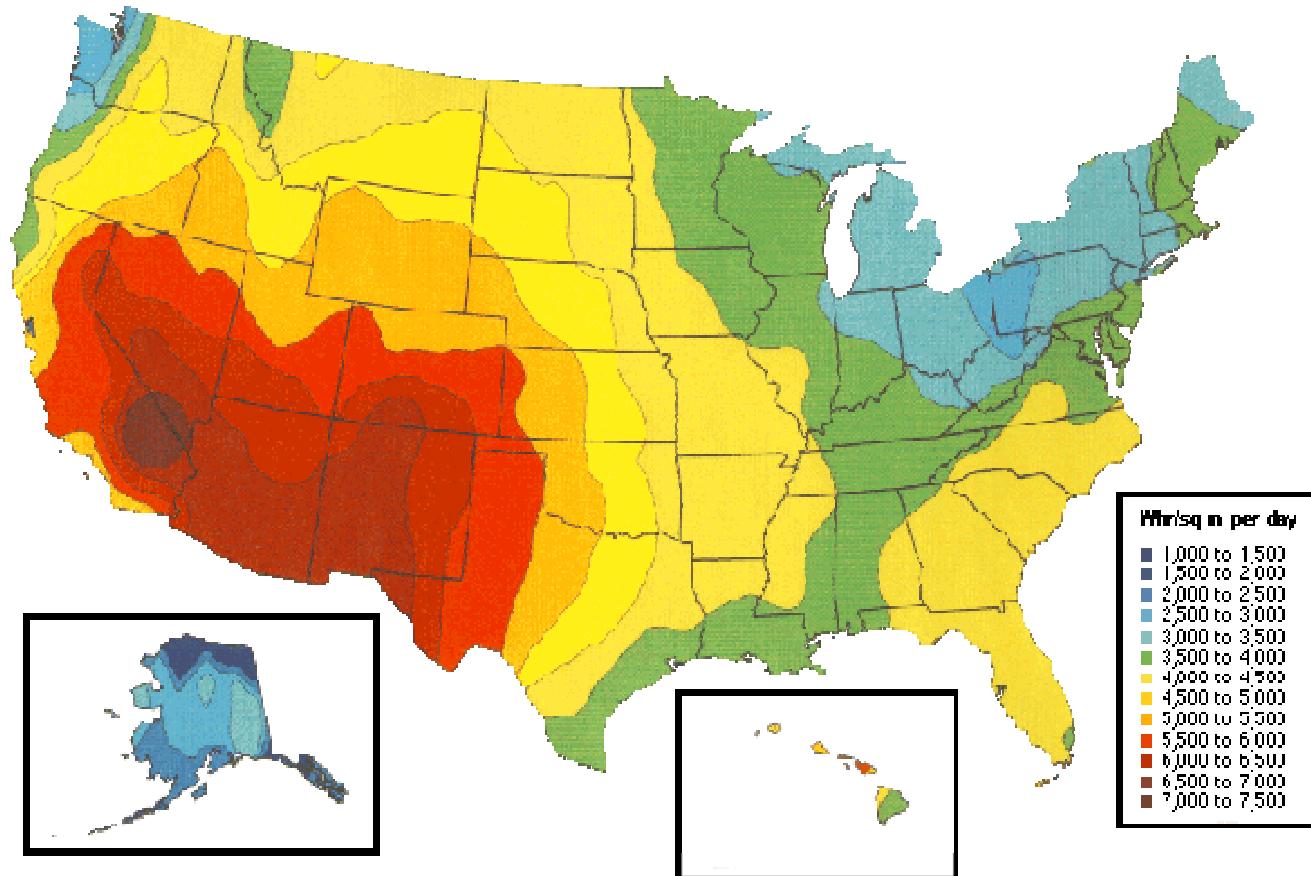
## Holyoke

Daily Accumulated Precipitation  
for 2004, 2005 & 2006 and 30-year average



# Lots of Sunshine!

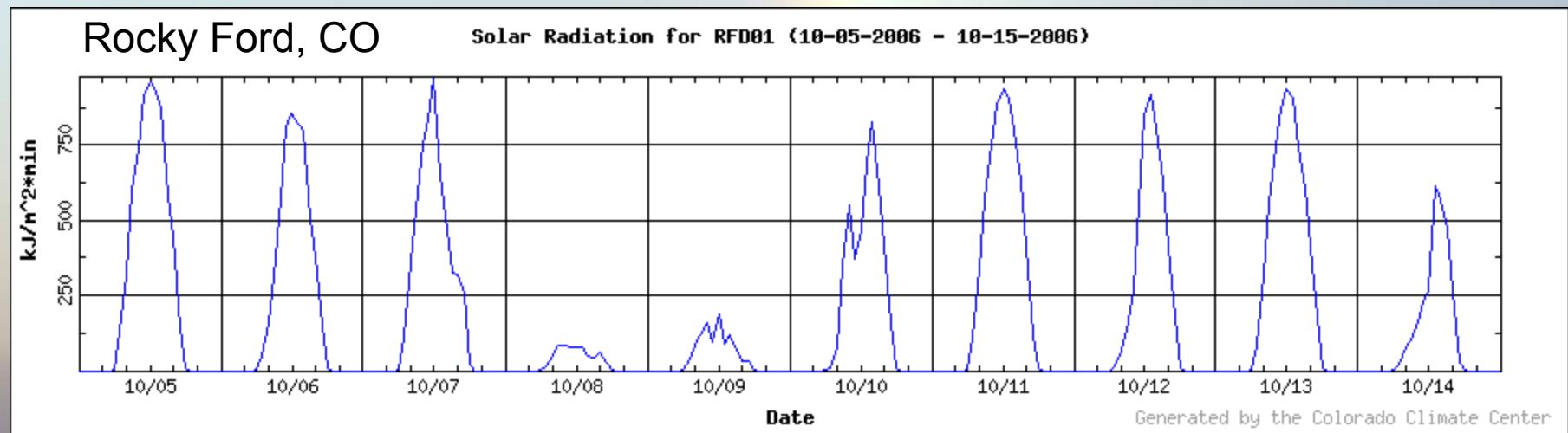
Average daily solar radiation, 1961-1990



Energy from the sun on a surface directly facing the sun.

<http://www.thefarm.org/charities/i4at/surv/solmap.htm>

# CoAgMet Solar Radiation



# Recent Climate –



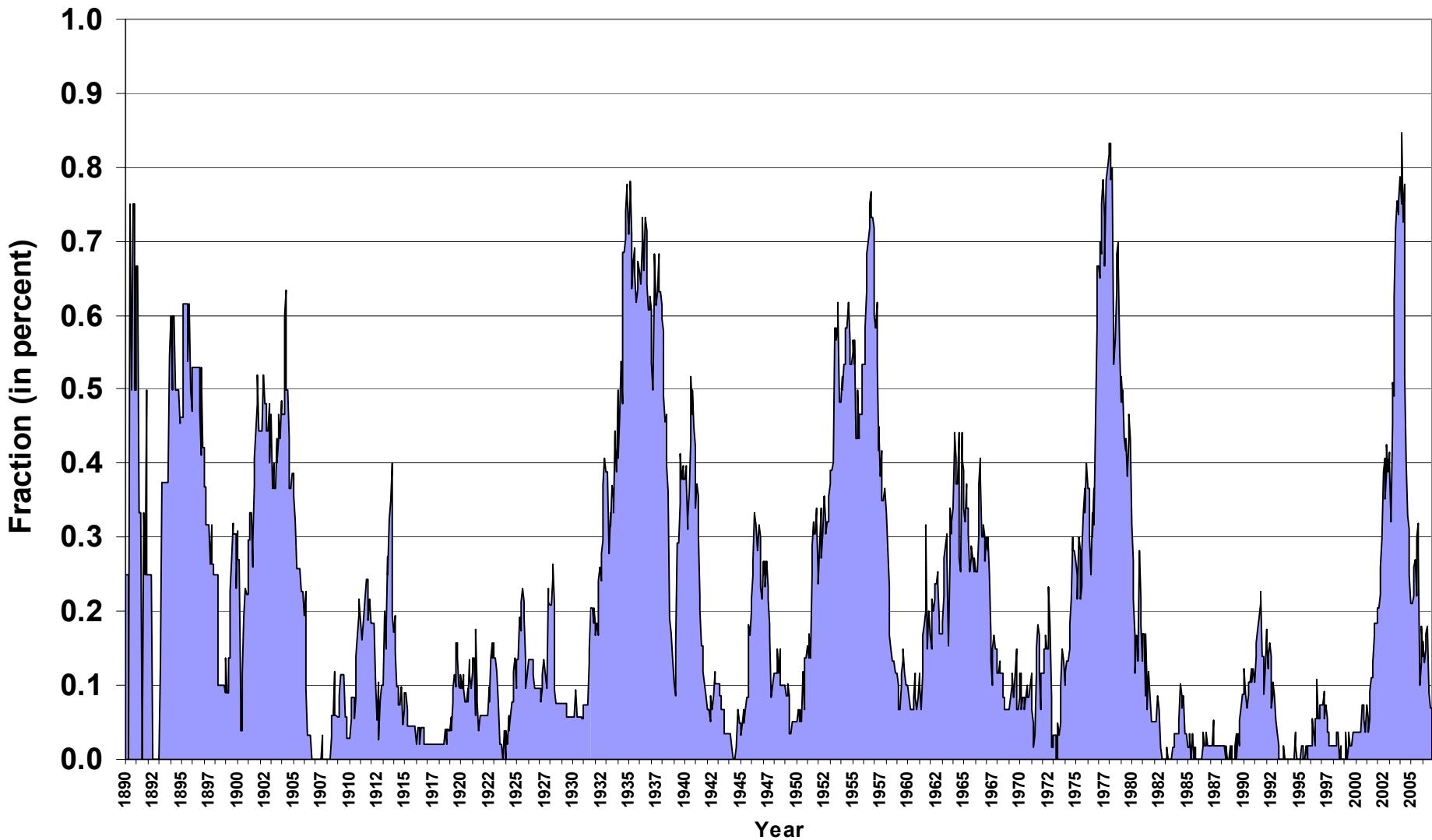
**Ups and  
Downs**

# 48-Month SPI

## Fraction of Colorado in Drought

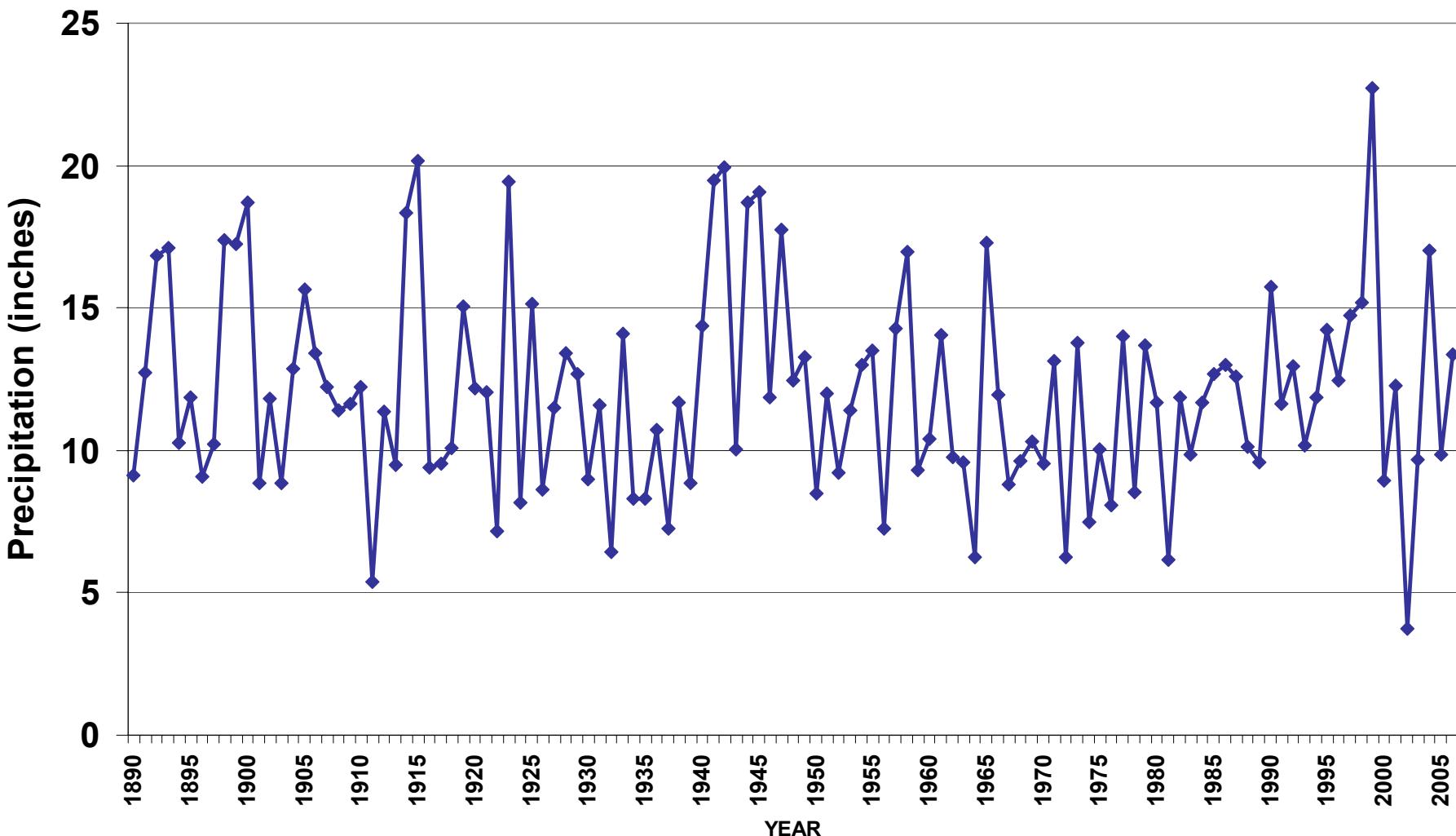
### Based on 48 month SPI

(1890 - Nov 2006)



# Rocky Ford Water Year Precipitation

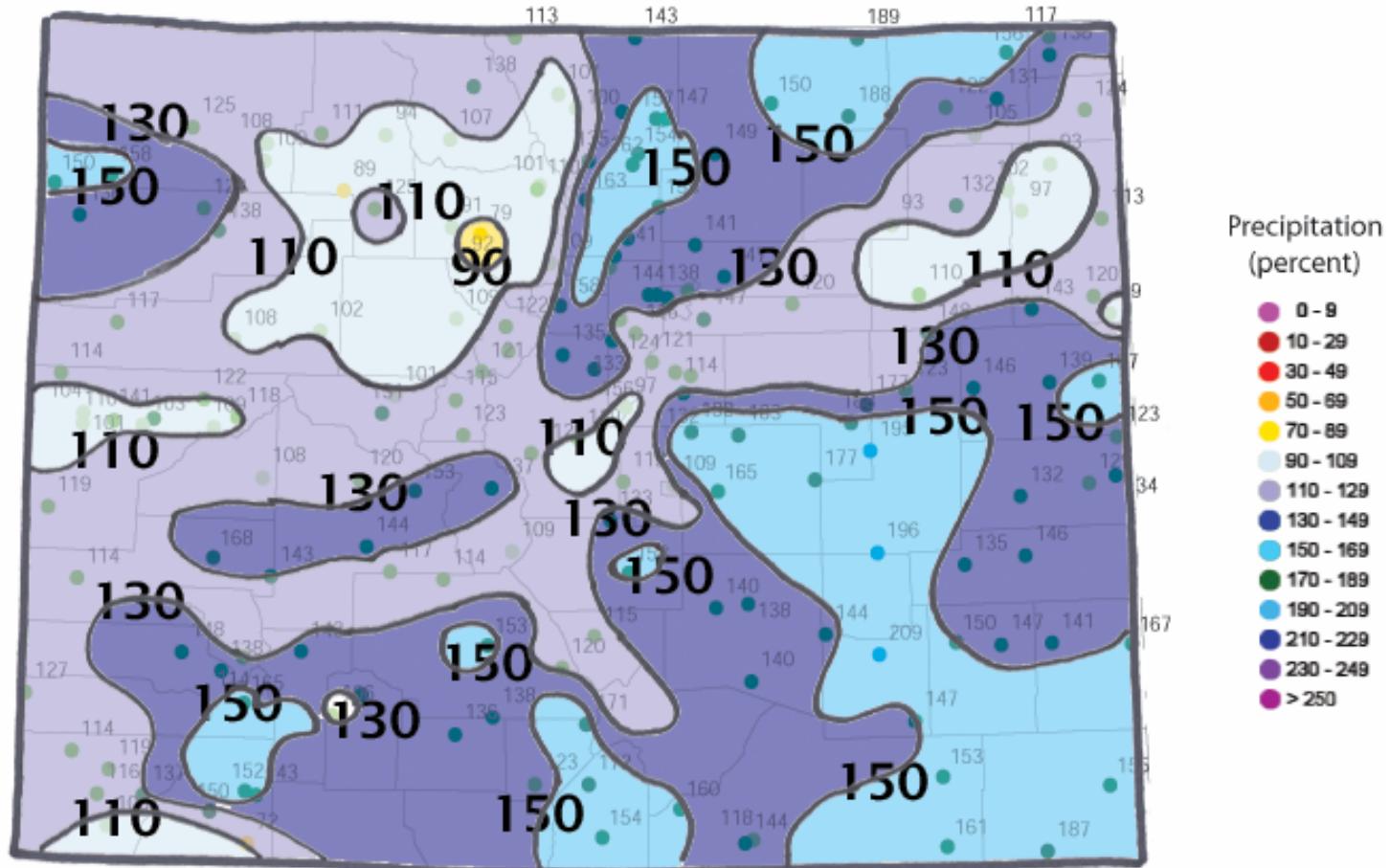
Water Year (Oct-Sep) Precipitation Comparison  
for Rocky Ford through 2006



# 1999 Water Year Precipitation

Water Year 1999  
(Oct. 1998-Sept. 1999)

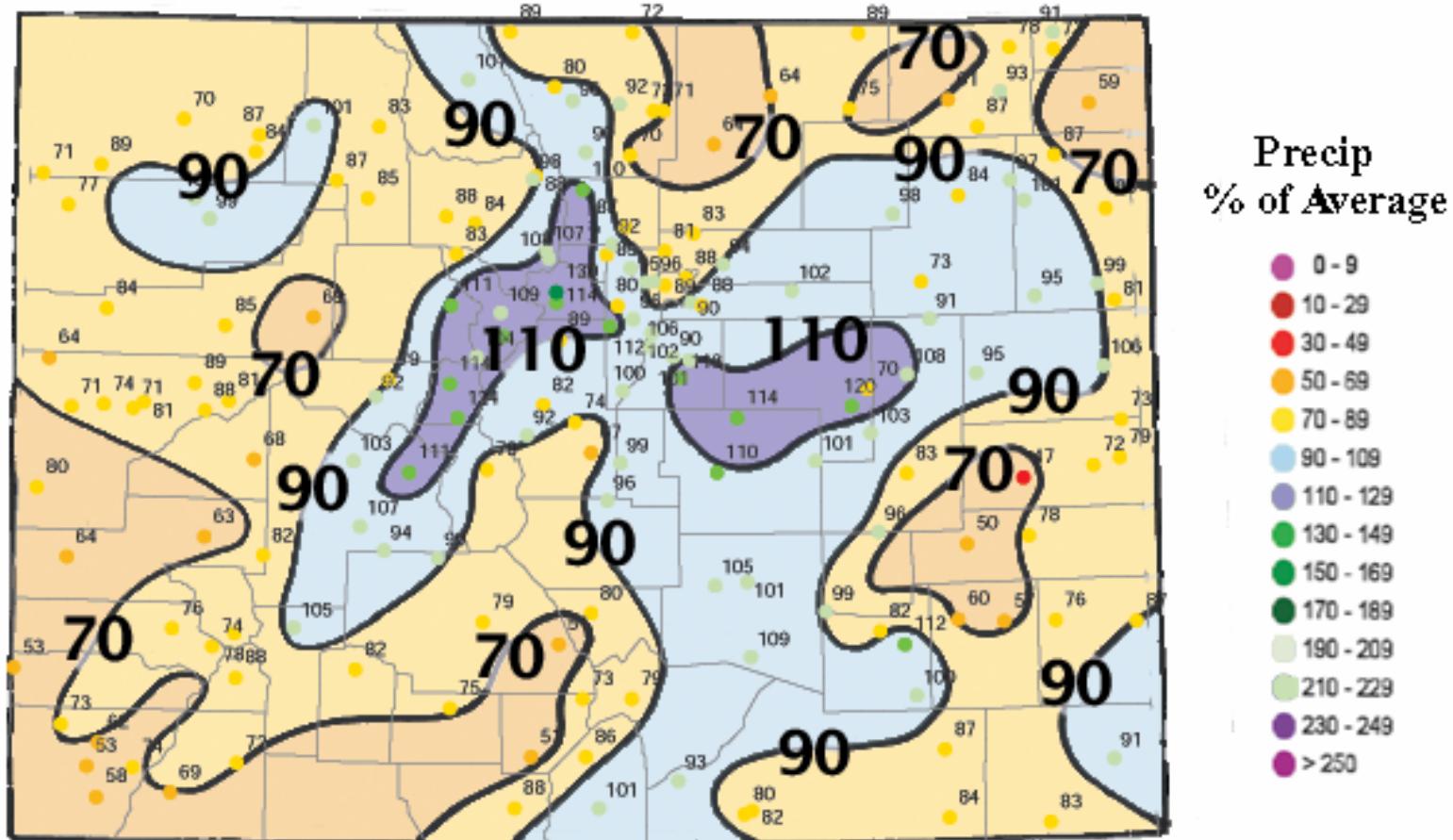
Precipitation Percent of Average for 1961-1990 Averages



# 2000 Water Year Precipitation

Water Year 2000  
(Oct. 1999 - Sept. 2000)

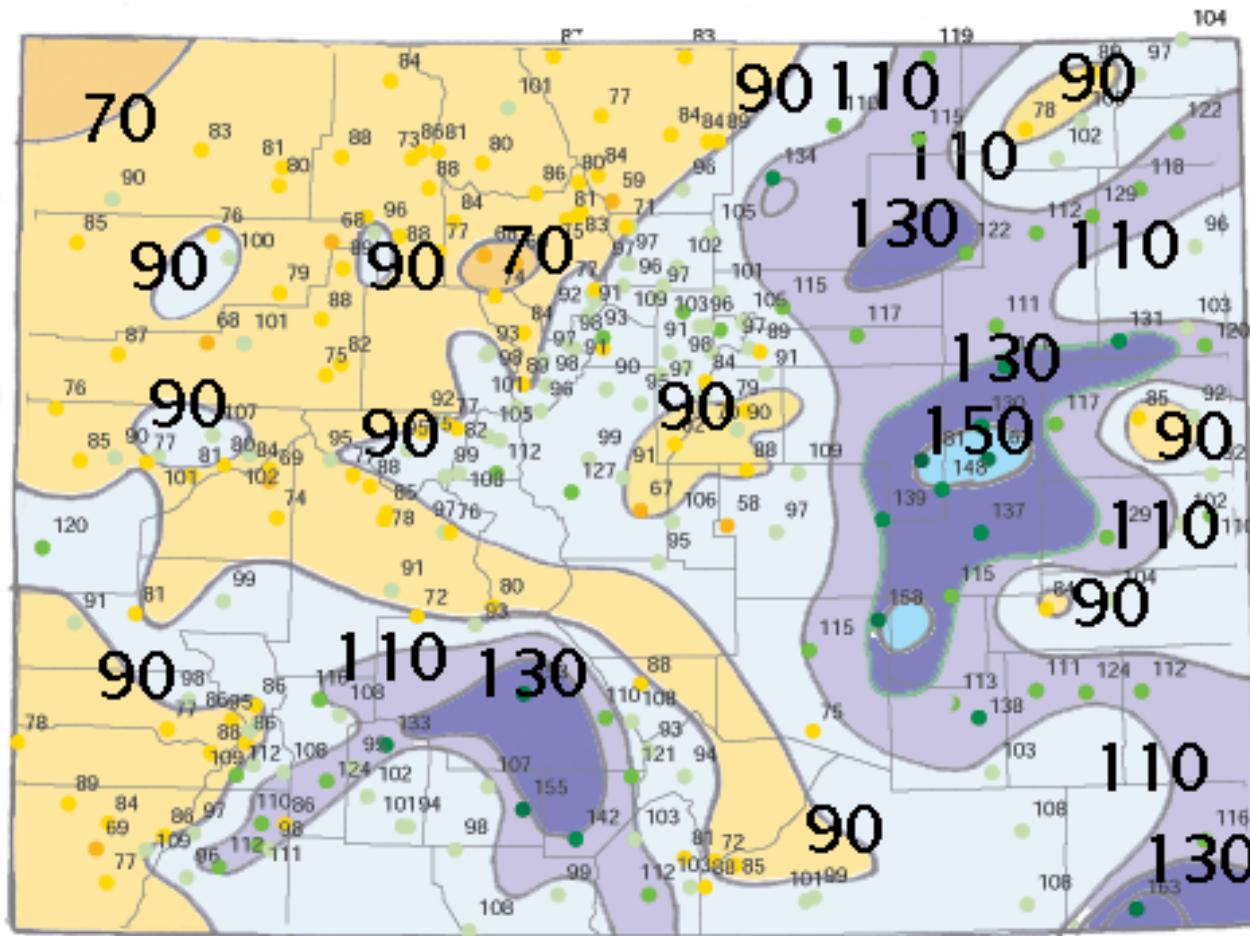
Precipitation Percent of Average for 1961-1990 Averages



# 2001 Water Year Precipitation

Water Year 2001  
(Oct. 2000 - Sept. 2001)

Precipitation Percent of Average for 1961-1990 Averages



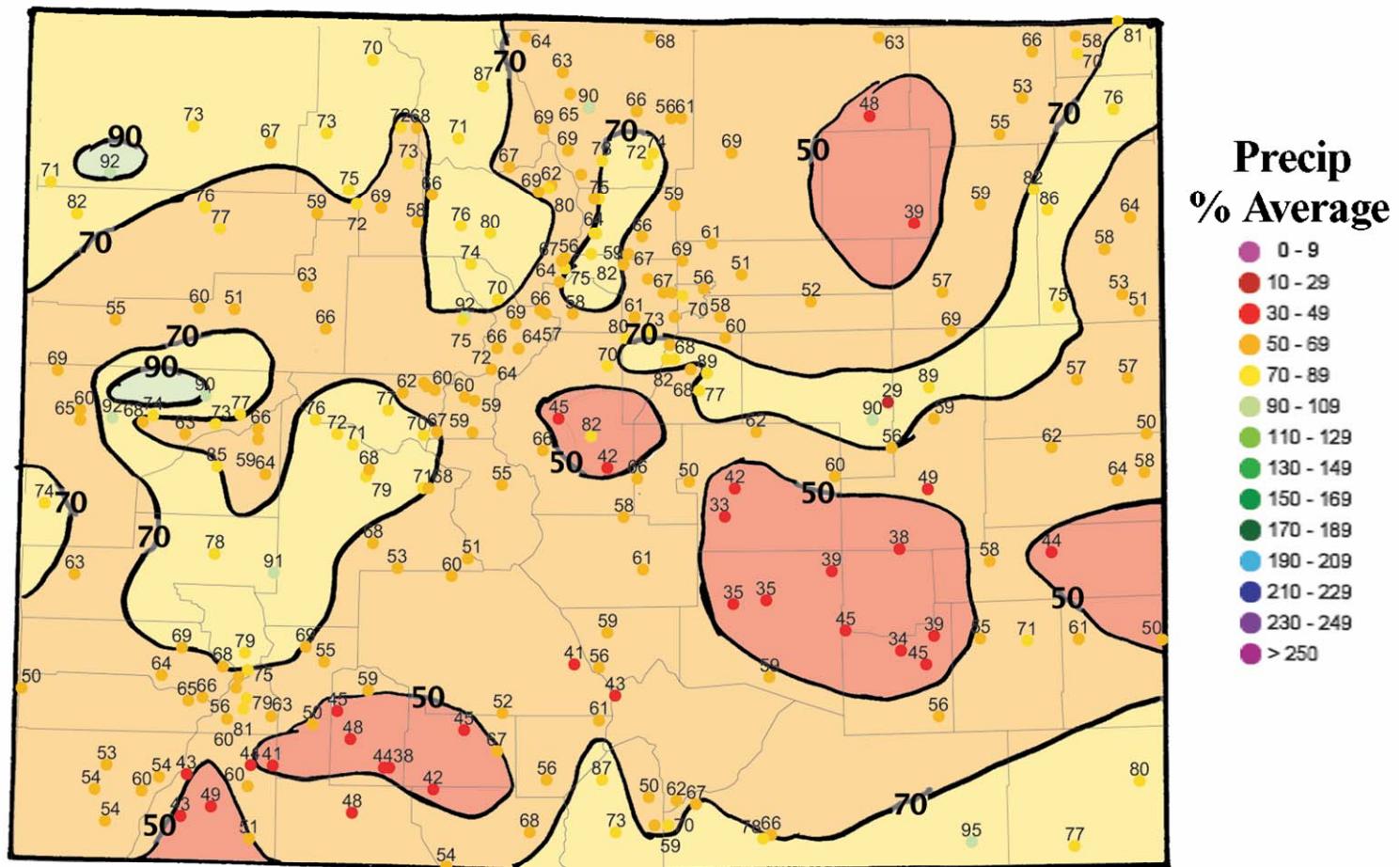
Precip  
% of Average

- 0 - 9
- 10 - 29
- 30 - 49
- 50 - 89
- 70 - 89
- 90 - 109
- 110 - 129
- 130 - 149
- 150 - 169
- 170 - 189
- 190 - 209
- 210 - 229
- 230 - 249
- > 250

# 2002 Water Year Precipitation

Water Year 2002  
(Oct. 2001 - Sept. 2002)

Precipitation Percent of Average for 1961-1990 Averages

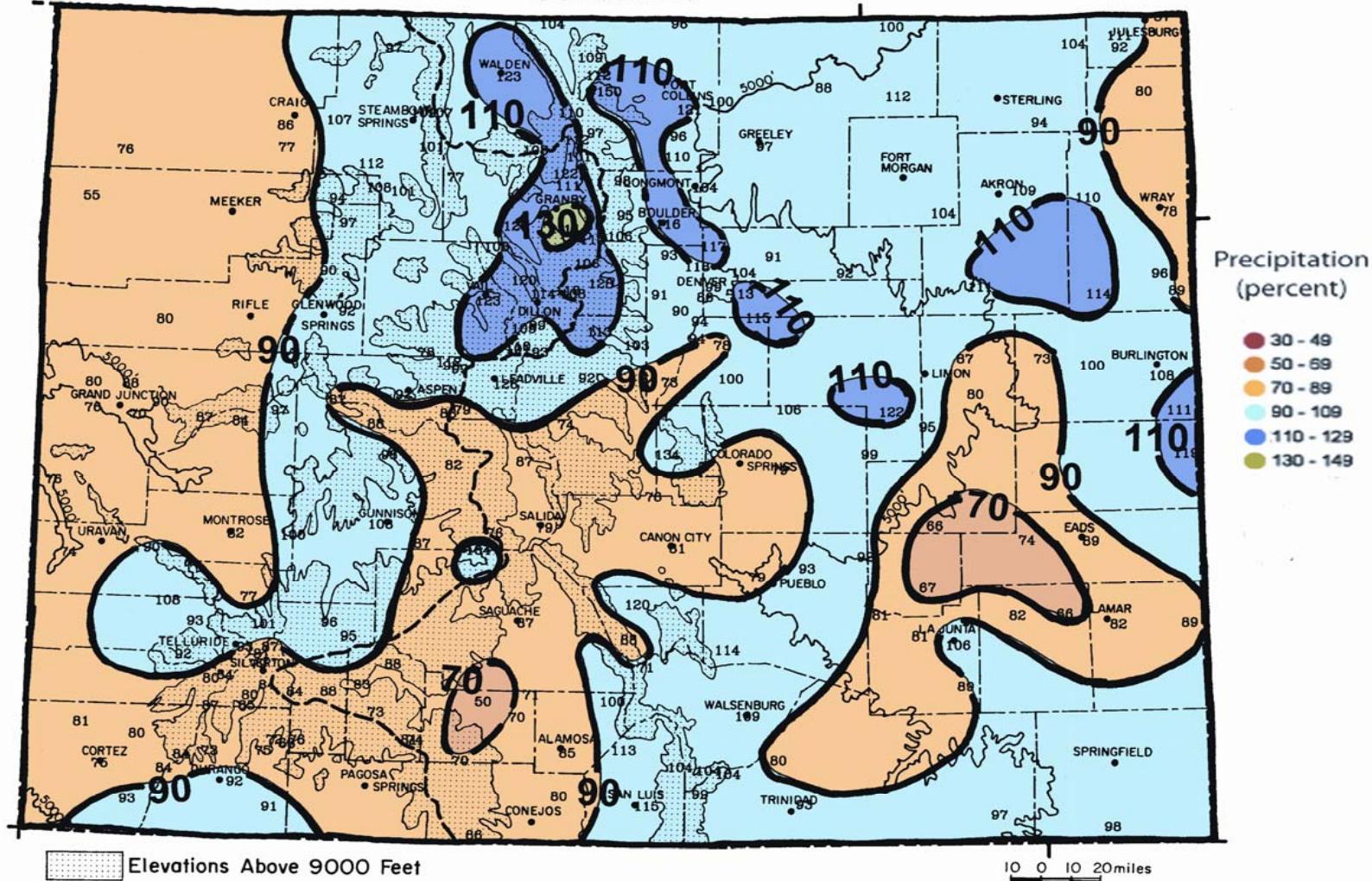


# 2003 Water Year Precipitation

## Water Year 2003

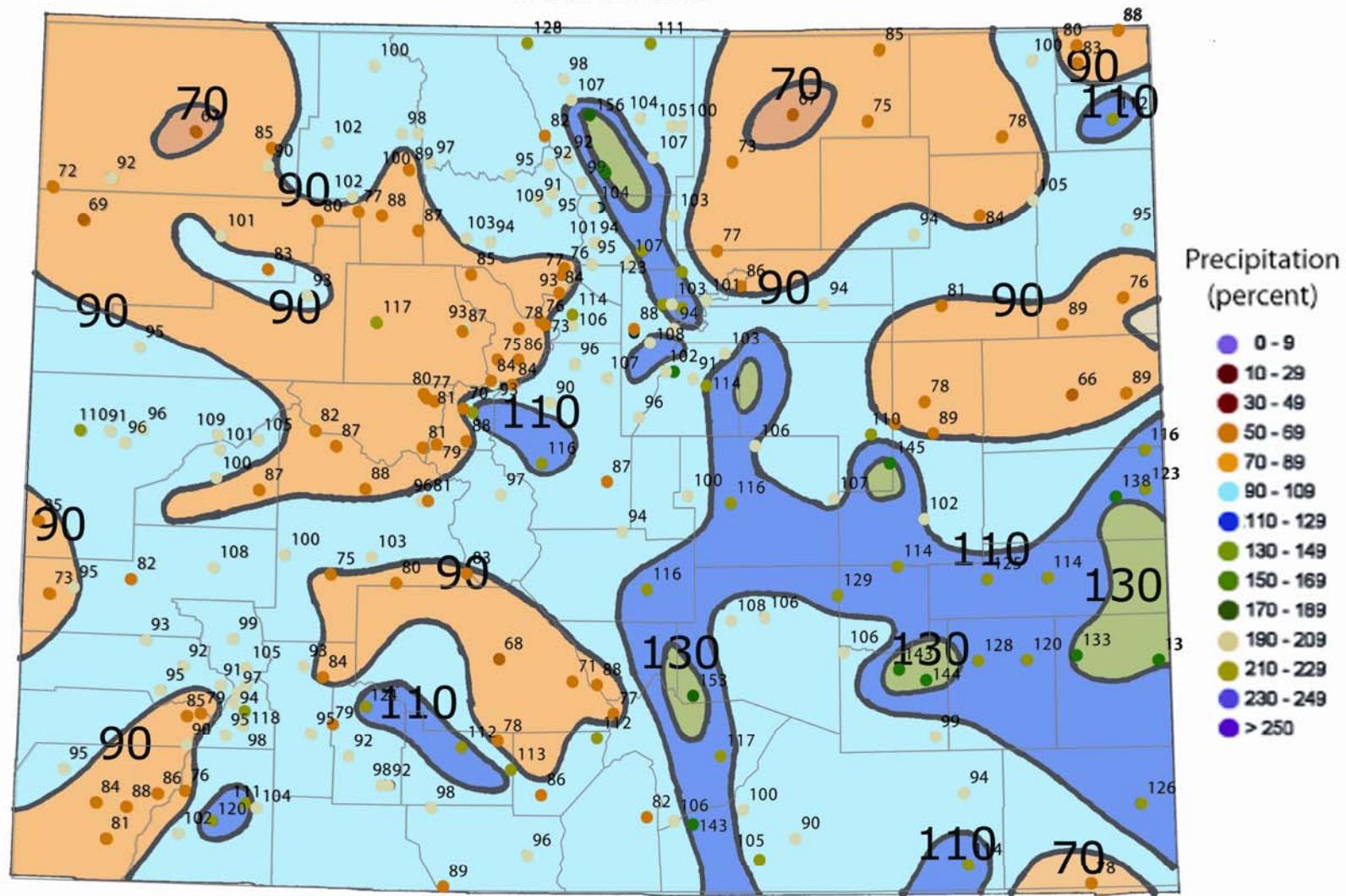
October 2002 - September 2003 precipitation  
as a percent of the 1971-2000 average.

### COLORADO



# 2004 Water Year Precipitation

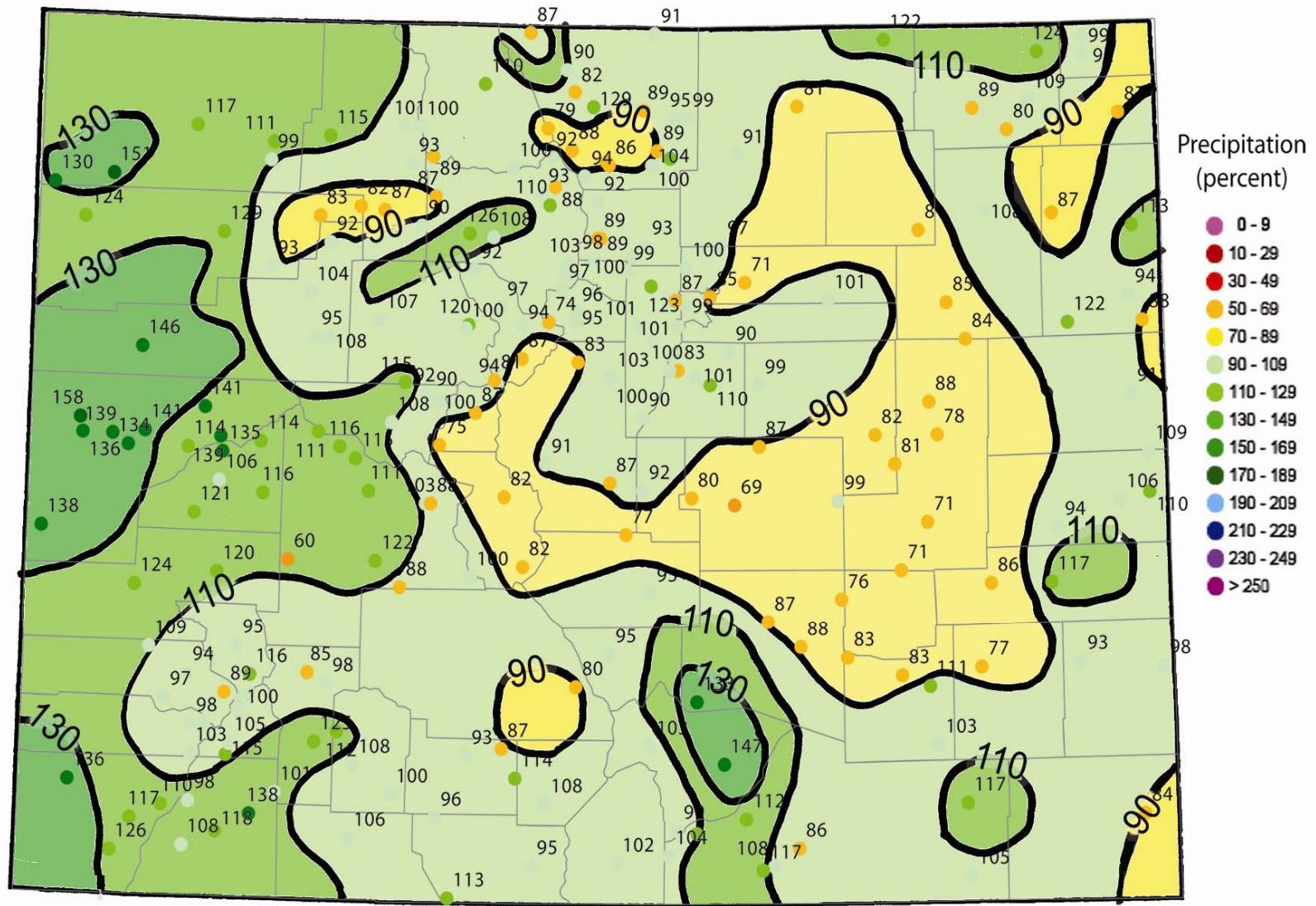
## COLORADO



Water Year 2004 (October 2003 through September 2004) precipitation as a percent of the 1971-2000 average.

# 2005 Water Year Precipitation

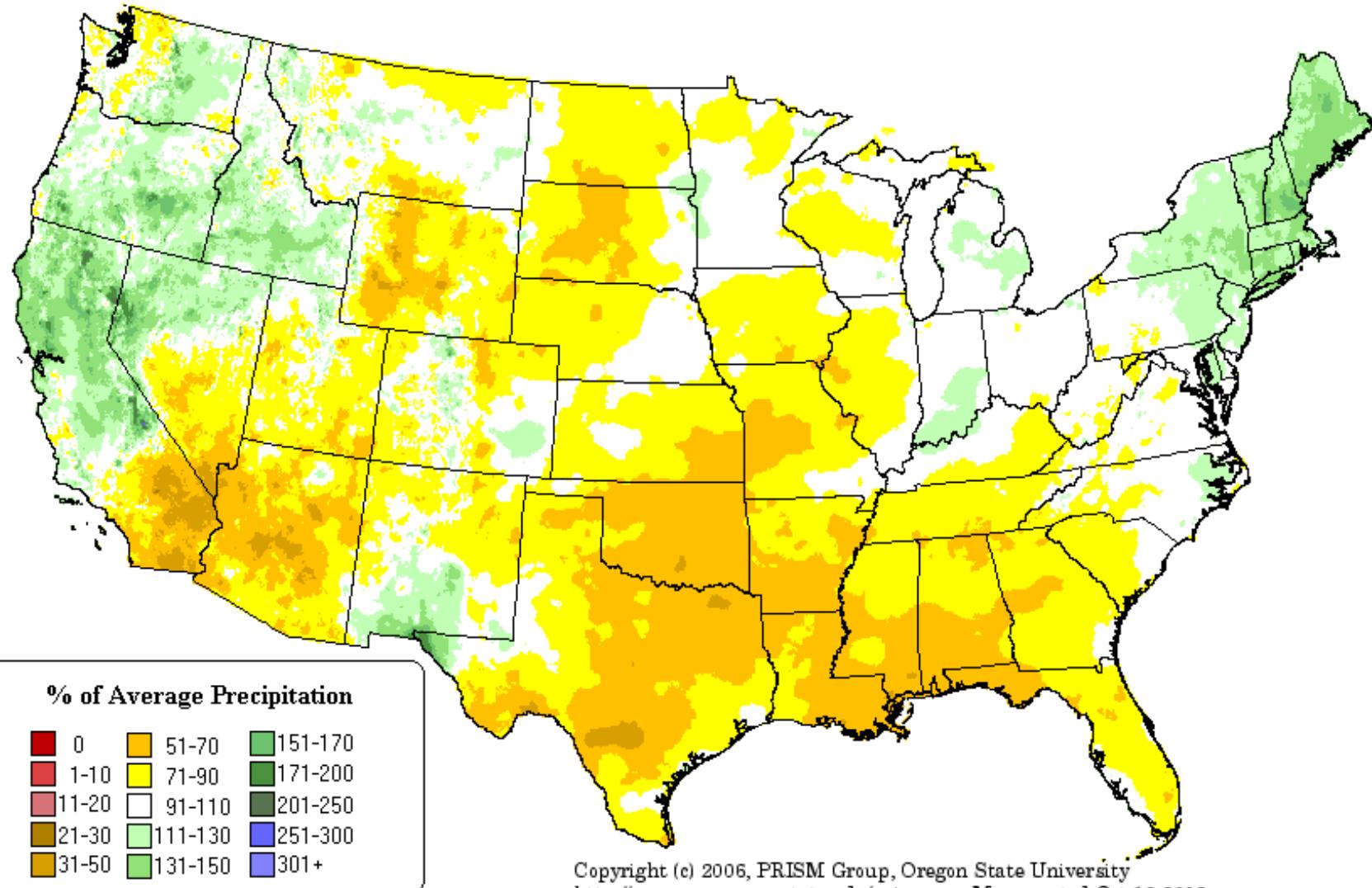
COLORADO



Water Year 2005 (Oct 04 - Sep 05) precipitation as a percent of the 1971-2000 average.

# Water Year 2006 precipitation as a percent of average (Prism)

**12-month Percent of Average Precipitation: Sep 2006**  
Provisional Data

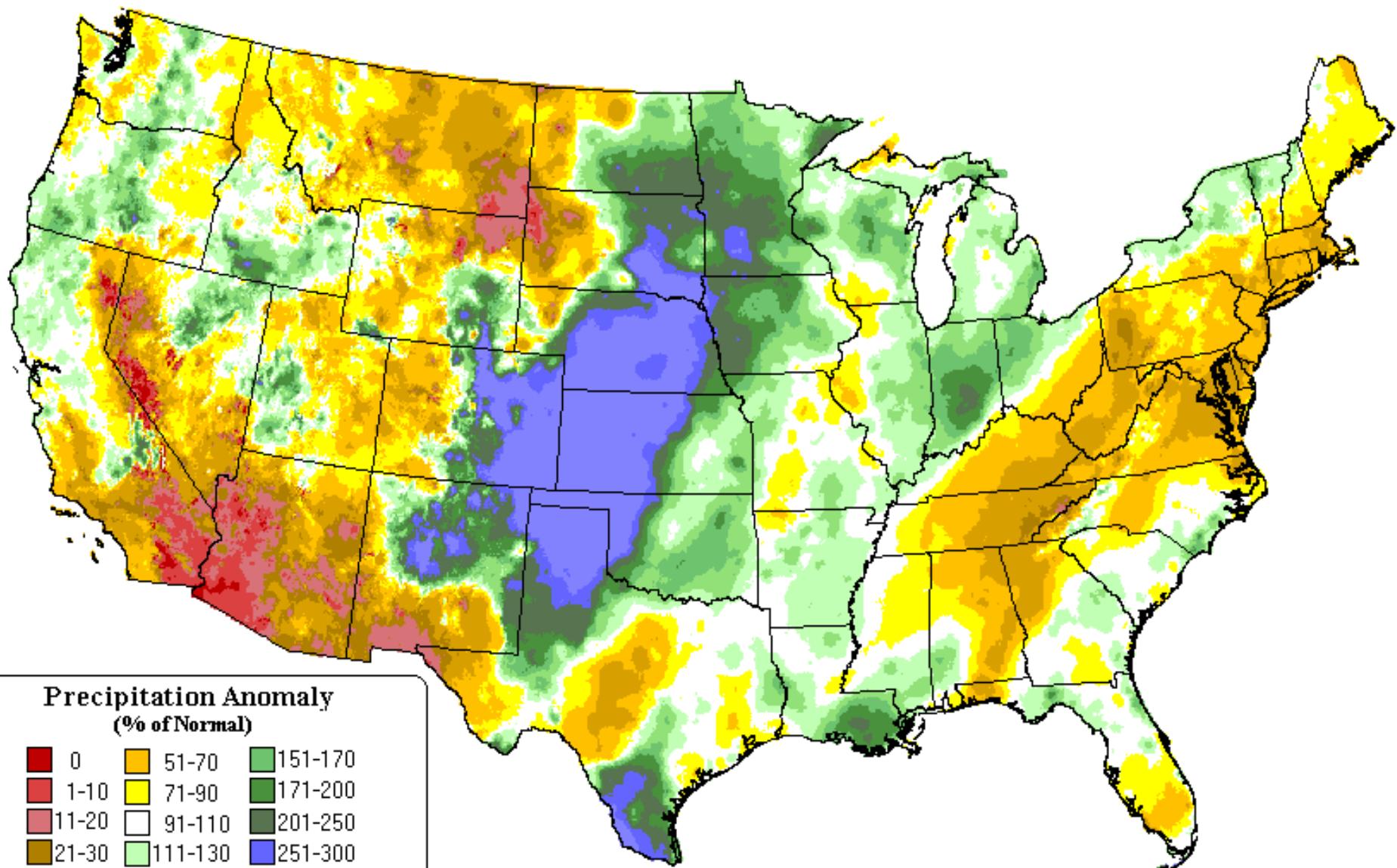


# NOW!



# Precipitation Anomaly: Dec 2006

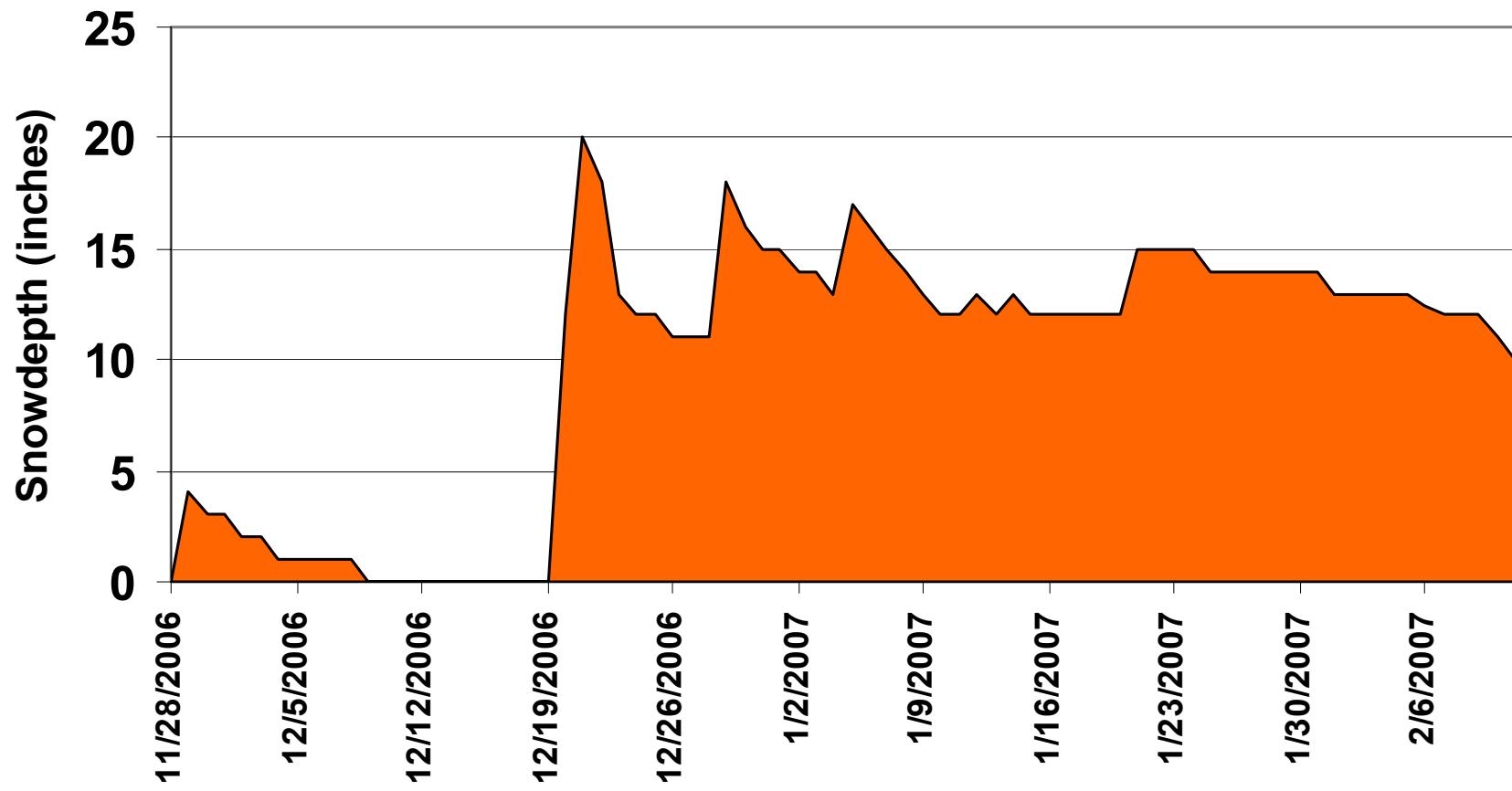
Provisional Data



Copyright (c) 2007, PRISM Group, Oregon State University  
<http://www.oes.oregonstate.edu/prism> – Map created Jan 08 2007

# Greeley Daily Total Snowdepth

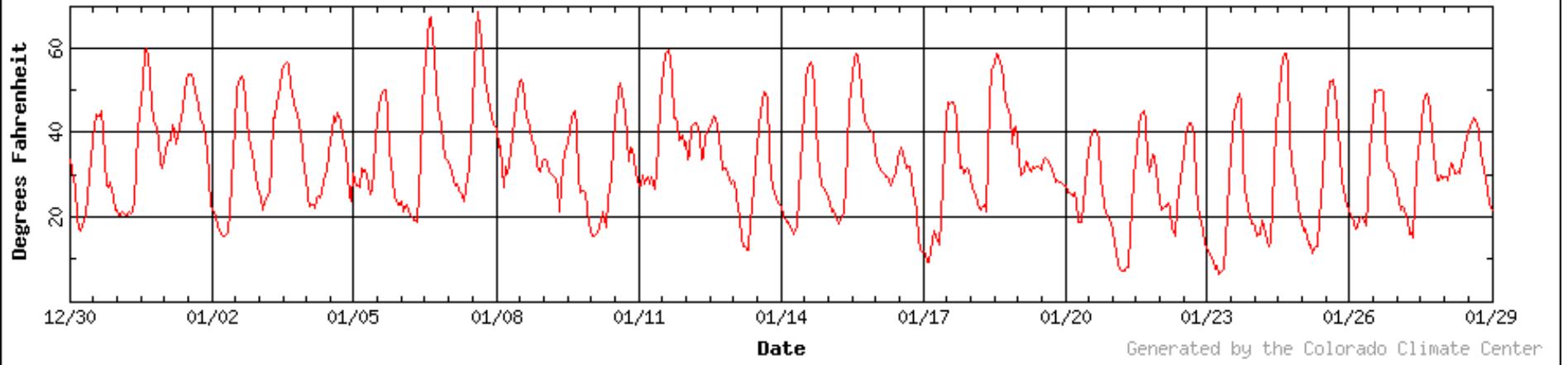
**Greeley Snowdepth**  
from November 28, 2006 - February 11, 2007



# Kersey CoAgMet Temperature

Dec 05 – Jan 2006

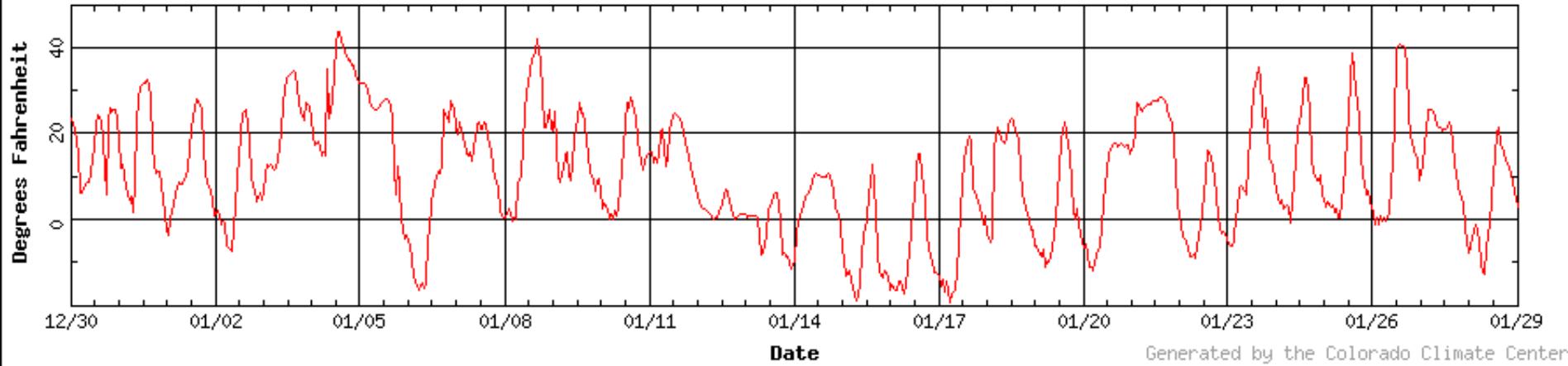
Temperature for KSY01 (12-30-2005 – 01-29-2006)



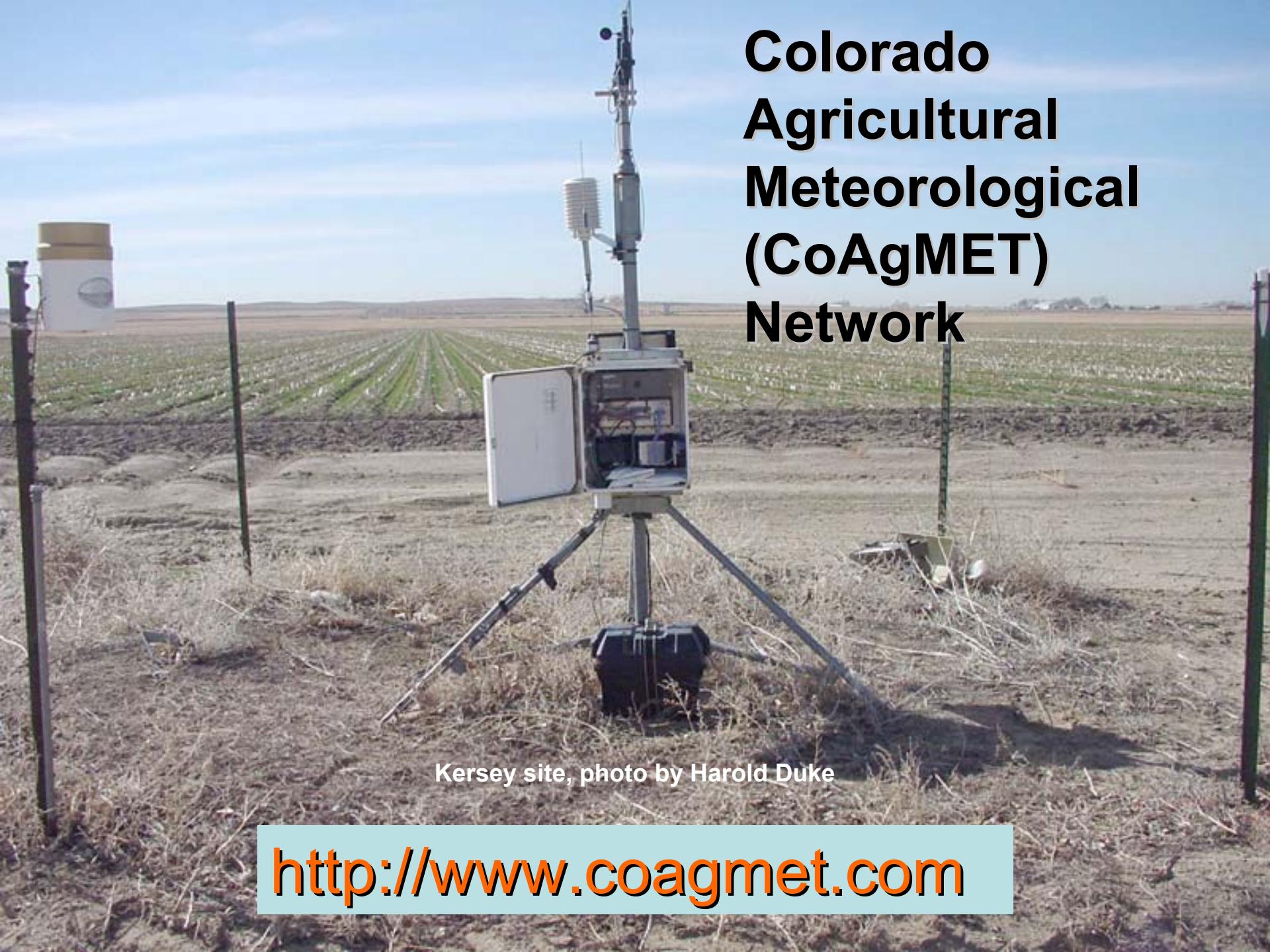
Generated by the Colorado Climate Center

Dec 06 – Jan 2007

Temperature for KSY01 (12-30-2006 – 01-29-2007)



Generated by the Colorado Climate Center

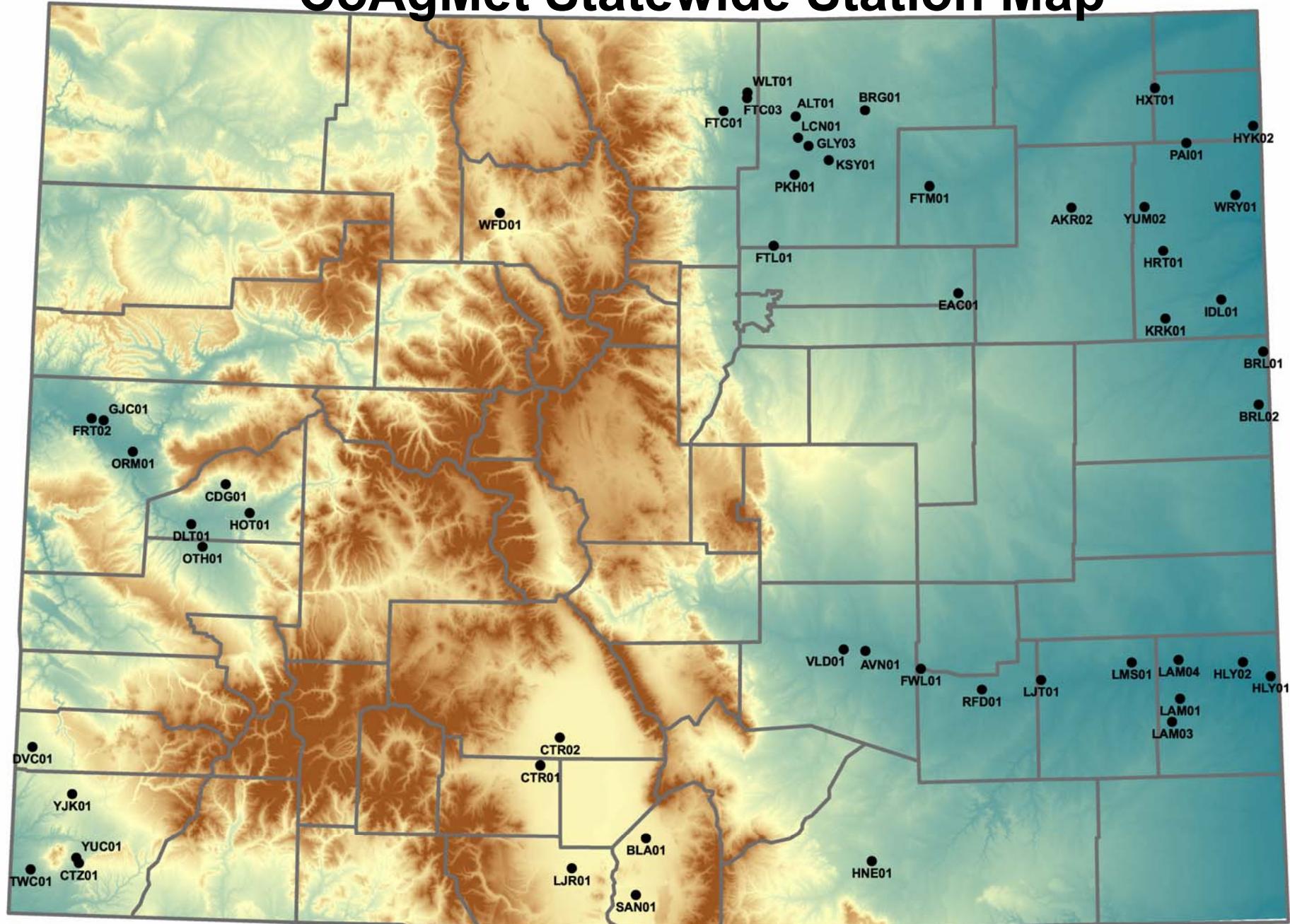


**Colorado  
Agricultural  
Meteorological  
(CoAgMET)  
Network**

Kersey site, photo by Harold Duke

<http://www.coagmet.com>

# CoAgMet Statewide Station Map



# Water Year 2006 Snowpack Accumulation and Meltout

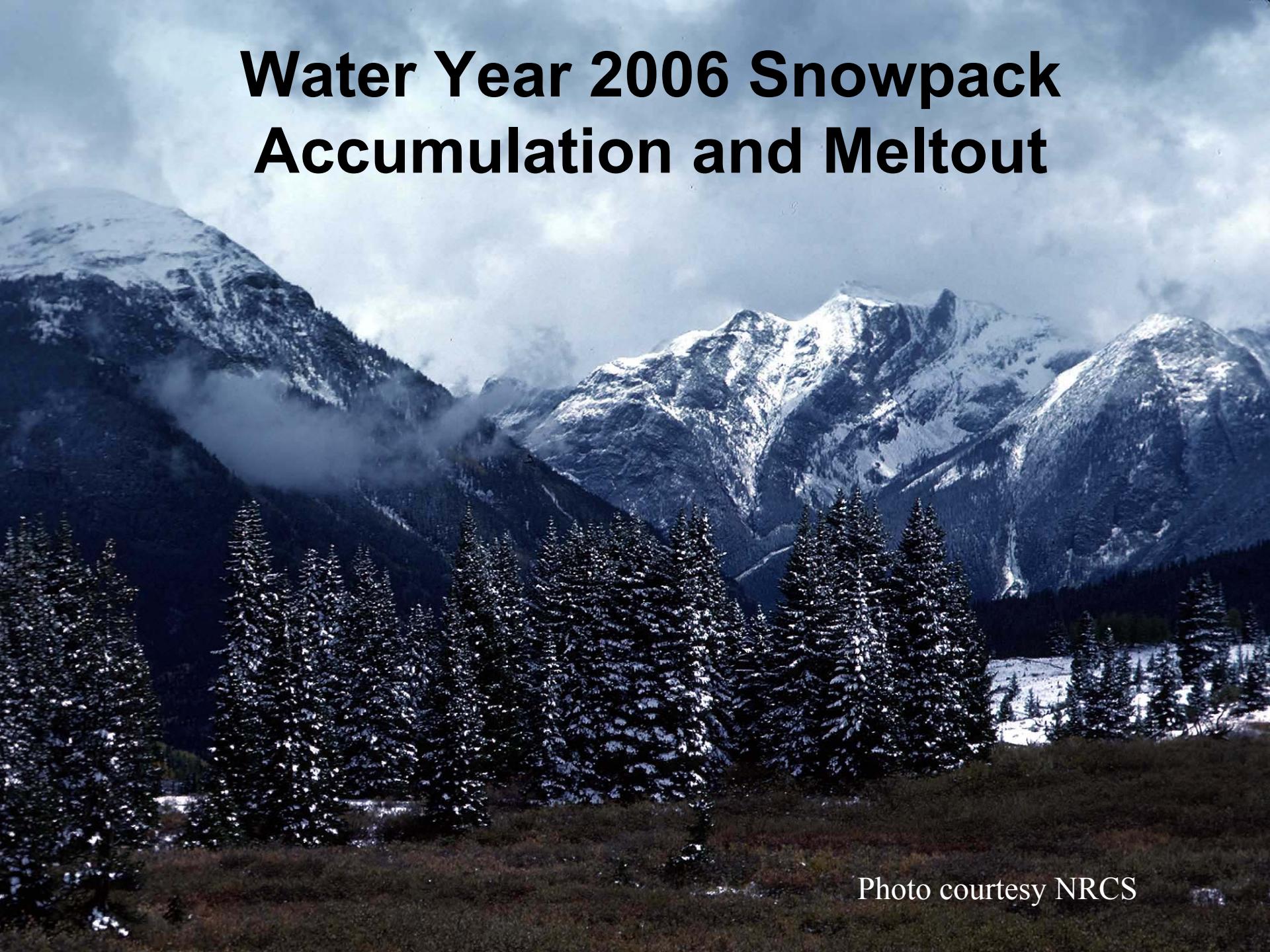
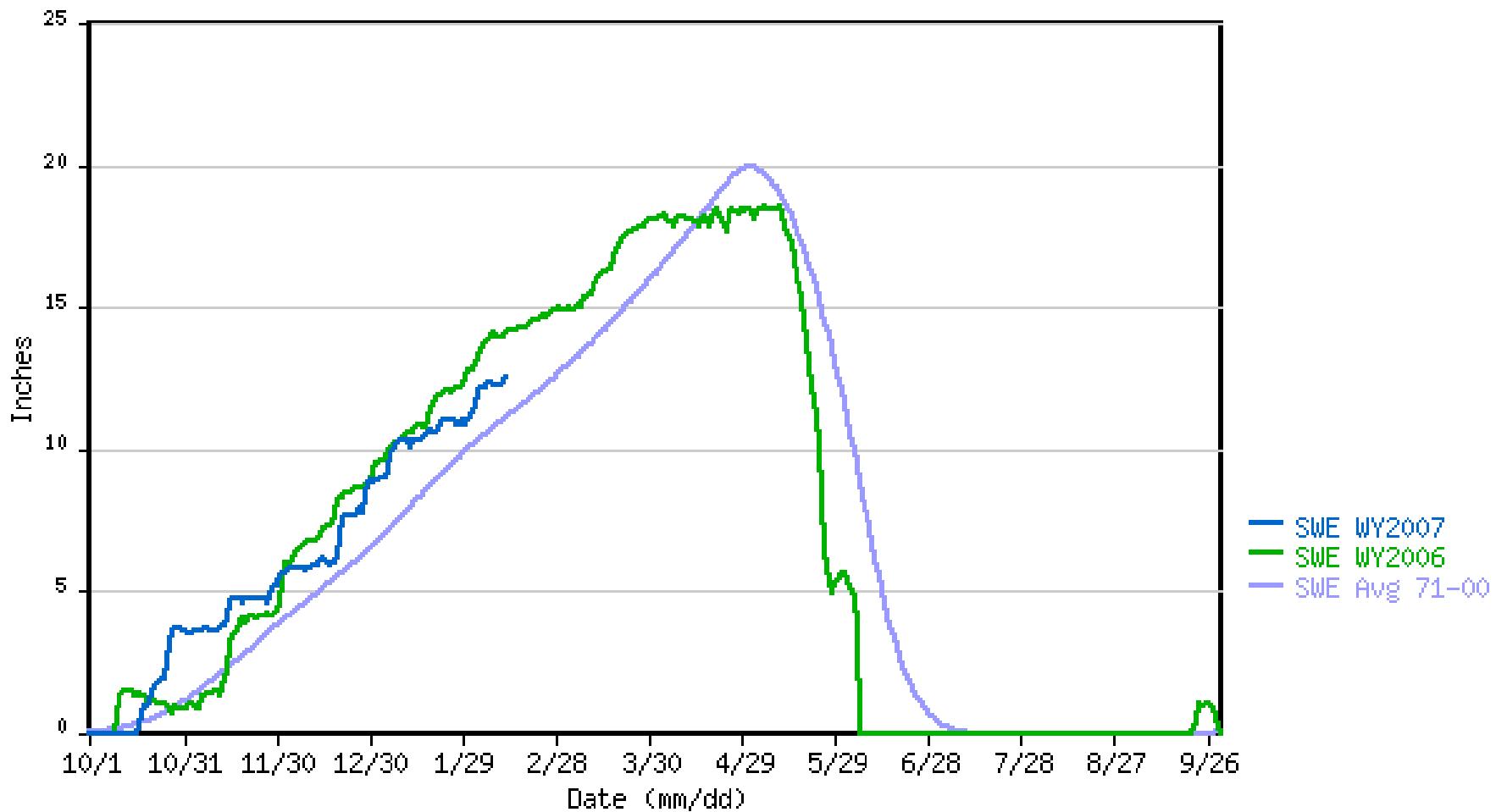
A wide-angle photograph of a mountain range. In the foreground, dark green evergreen trees are heavily laden with snow. Behind them, the rugged peaks of the mountains rise, their slopes partially covered in snow and partially exposed as dark grey rock. The sky above is filled with heavy, grey clouds.

Photo courtesy NRCS

# University Camp Snotel

UNIVERSITY CAMP SNOTEL as of 02/12/2007

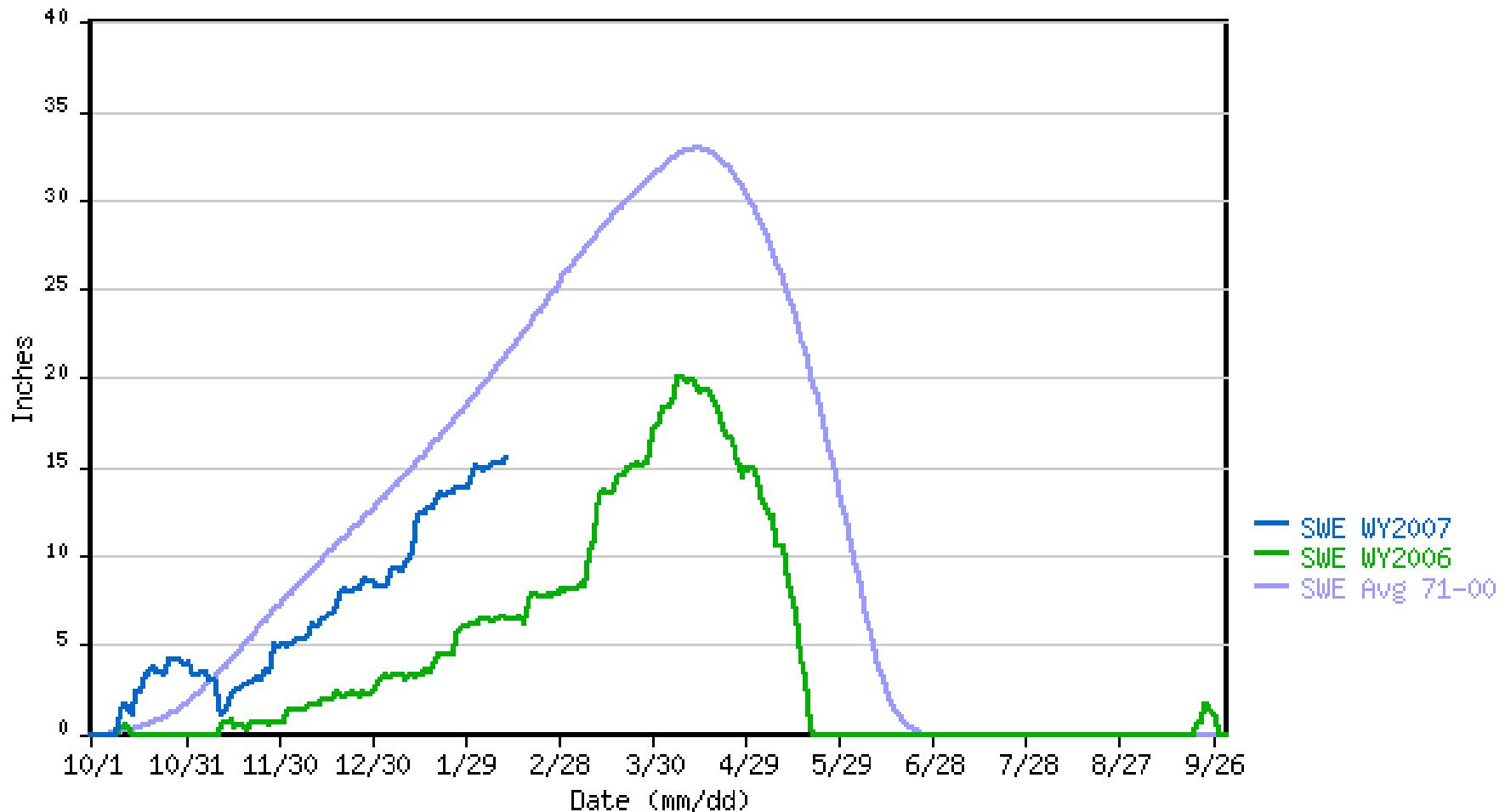
\*\*\* Provisional Data, Subject to Change \*\*\*



# Upper San Juan Snotel

UPPER SAN JUAN SNOTEL as of 02/12/2007

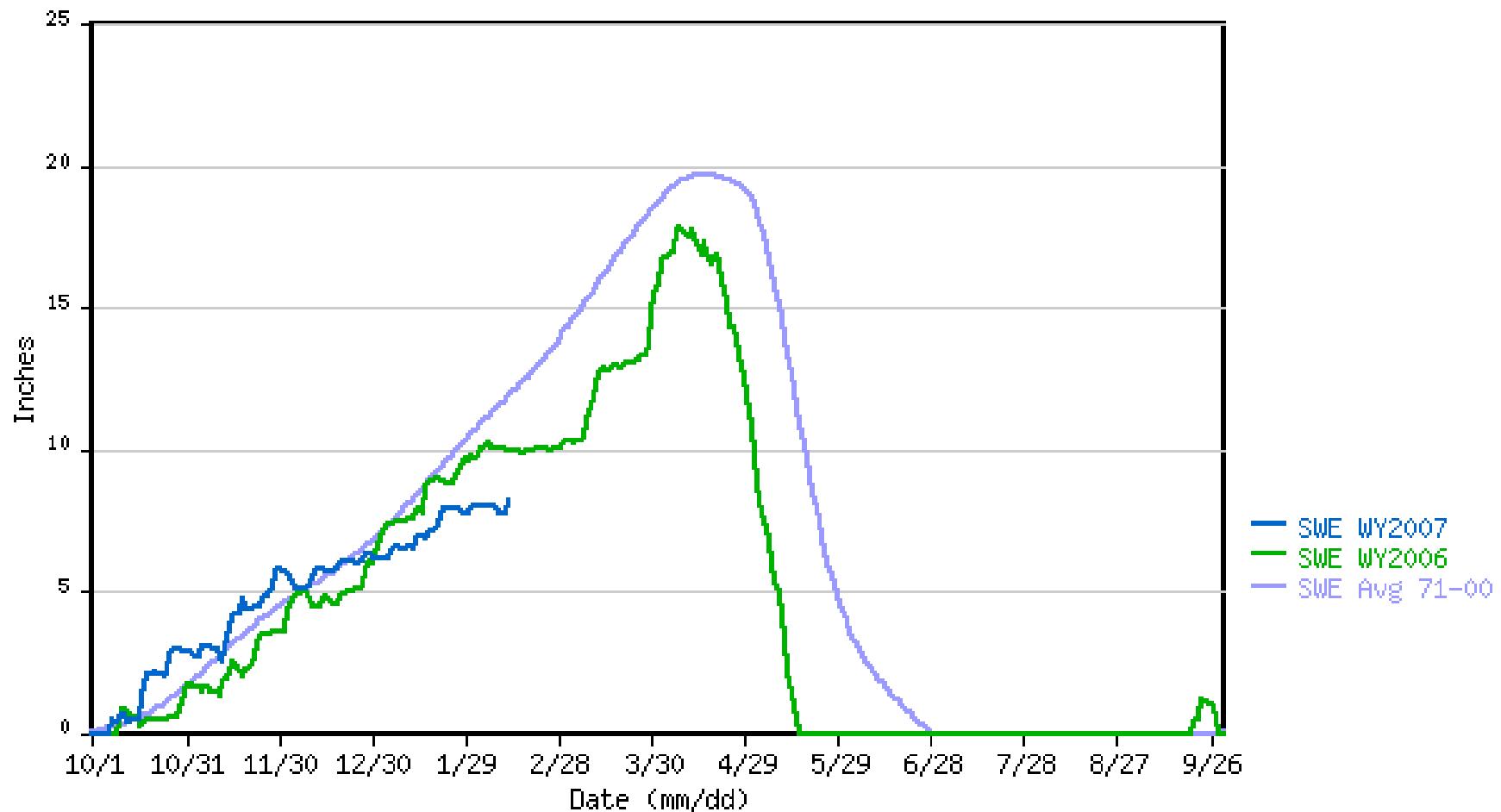
\*\*\* Provisional Data, Subject to Change \*\*\*



# Mesa Lakes Snotel

MESA LAKES SNOTEL as of 02/12/2007

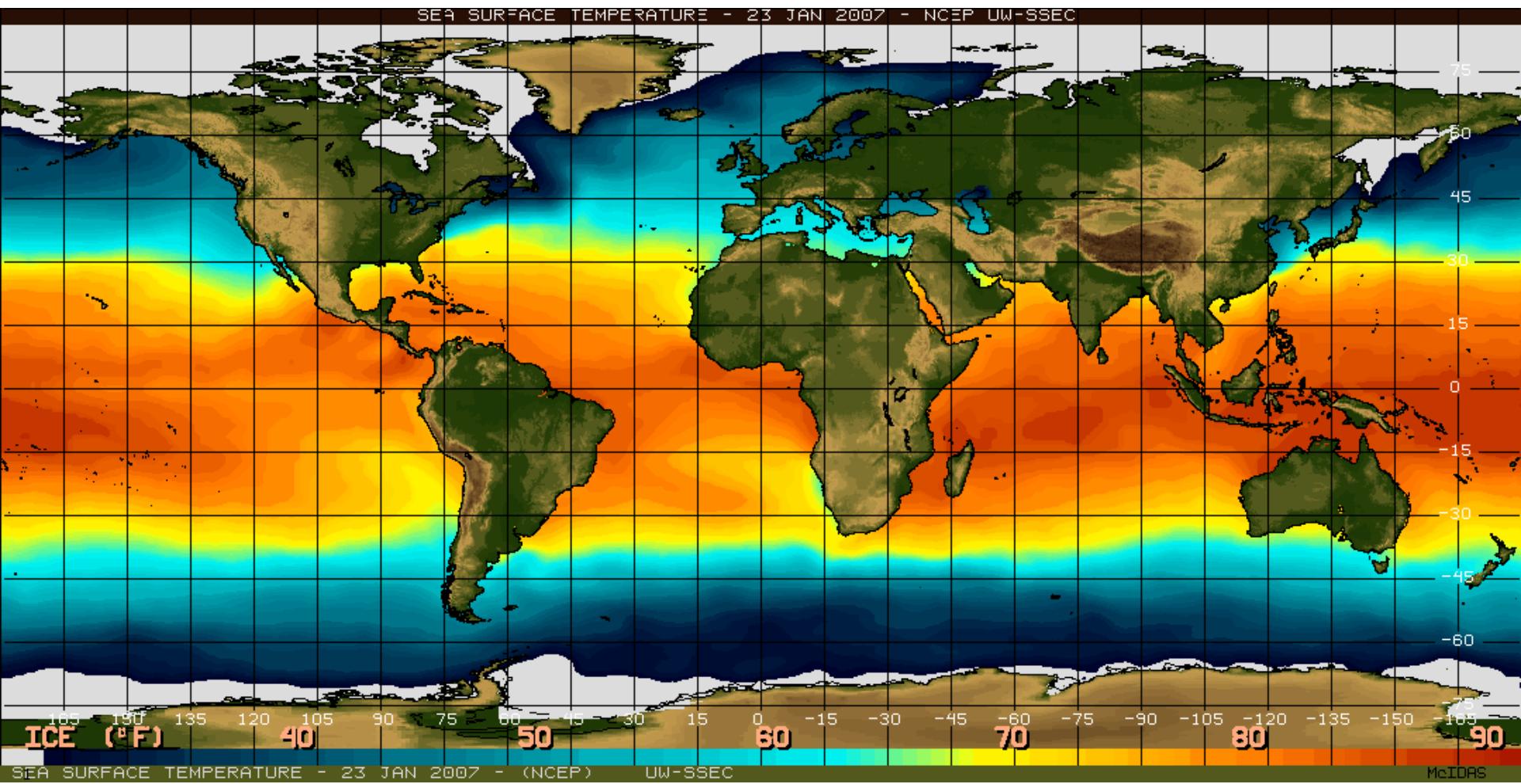
\*\*\* Provisional Data, Subject to Change \*\*\*



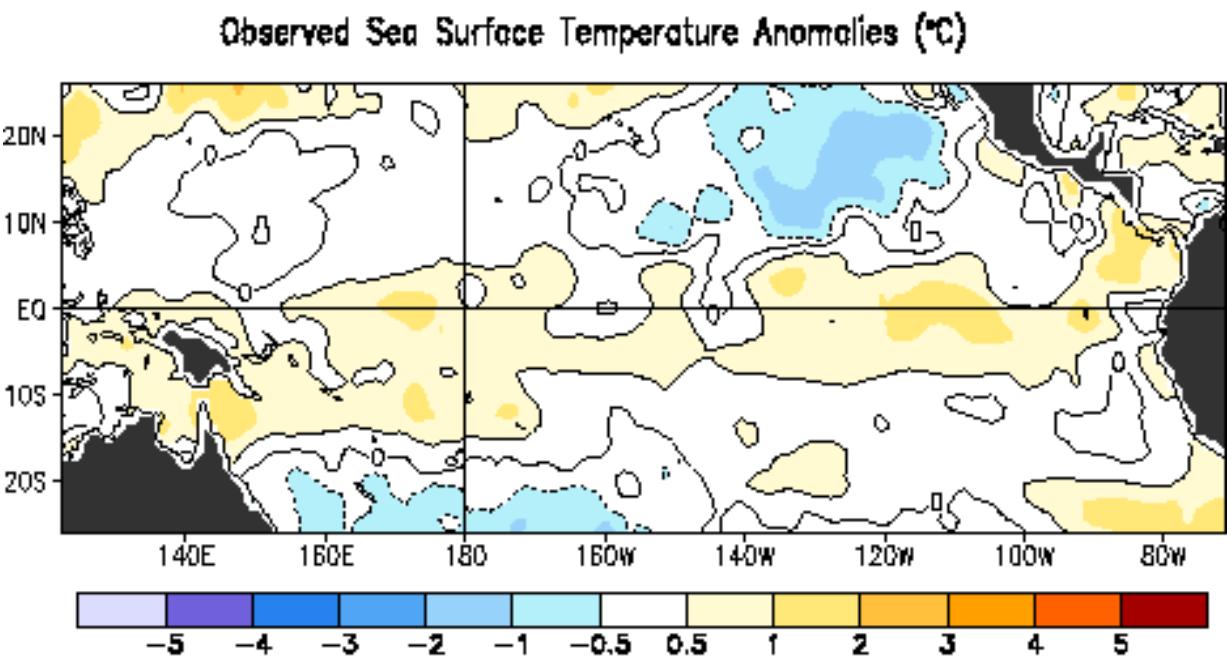
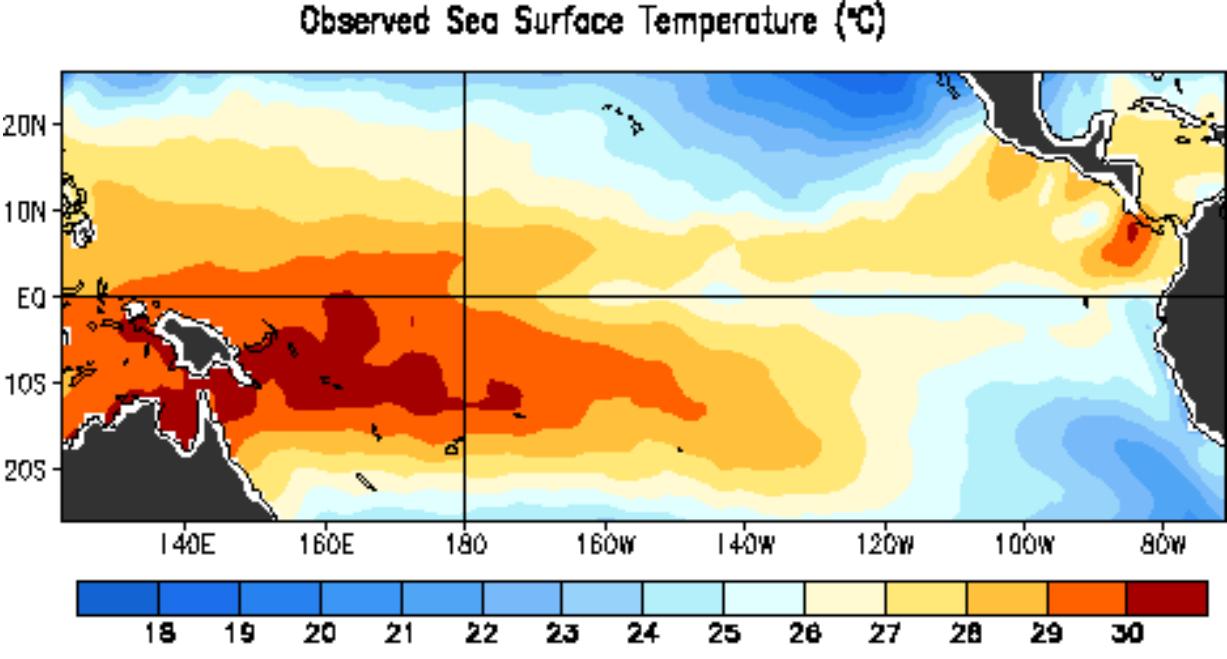
# What Comes Next?

A wide-angle photograph of a sunset over a calm lake. The sky is filled with large, billowing clouds that are illuminated from below by the setting sun, creating a vibrant palette of orange, yellow, and red. The colors are reflected perfectly in the dark, still water of the lake. In the distance, a range of mountains is visible as dark silhouettes against the bright sky. The overall atmosphere is serene and contemplative.

# Sea Surface Temperature (SST)

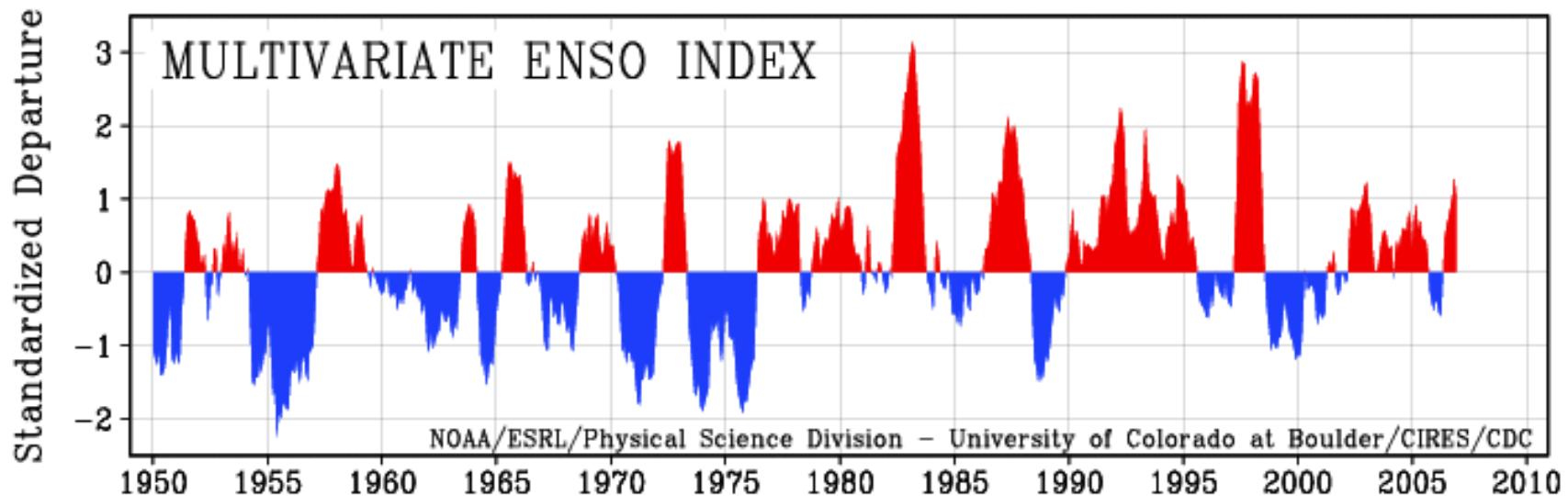
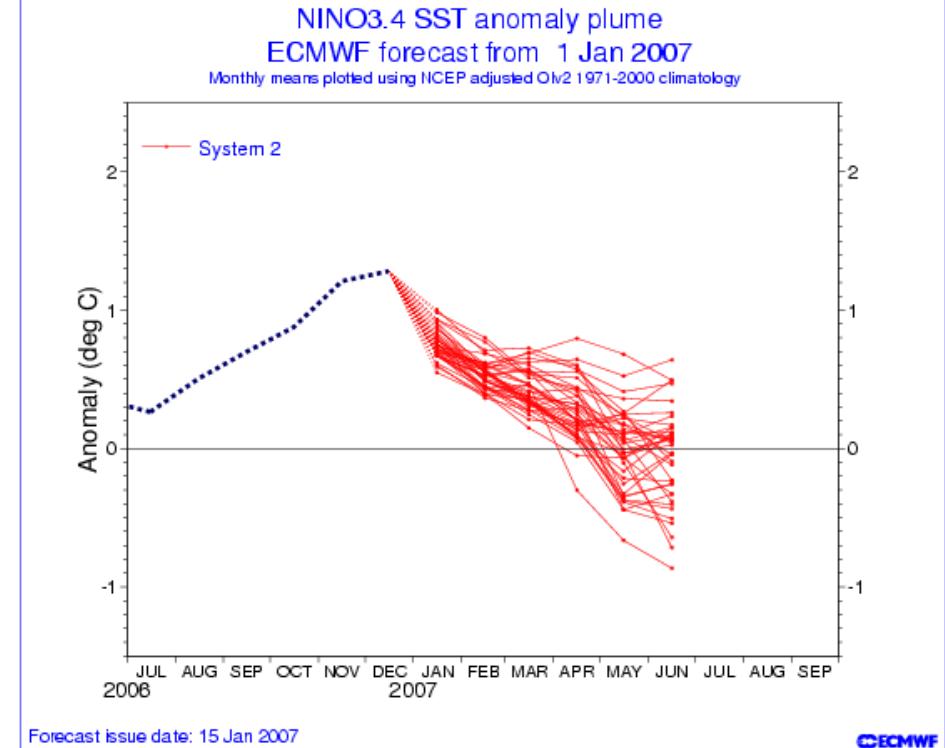


# Sea Surface Temperature (SST) Departure from Average

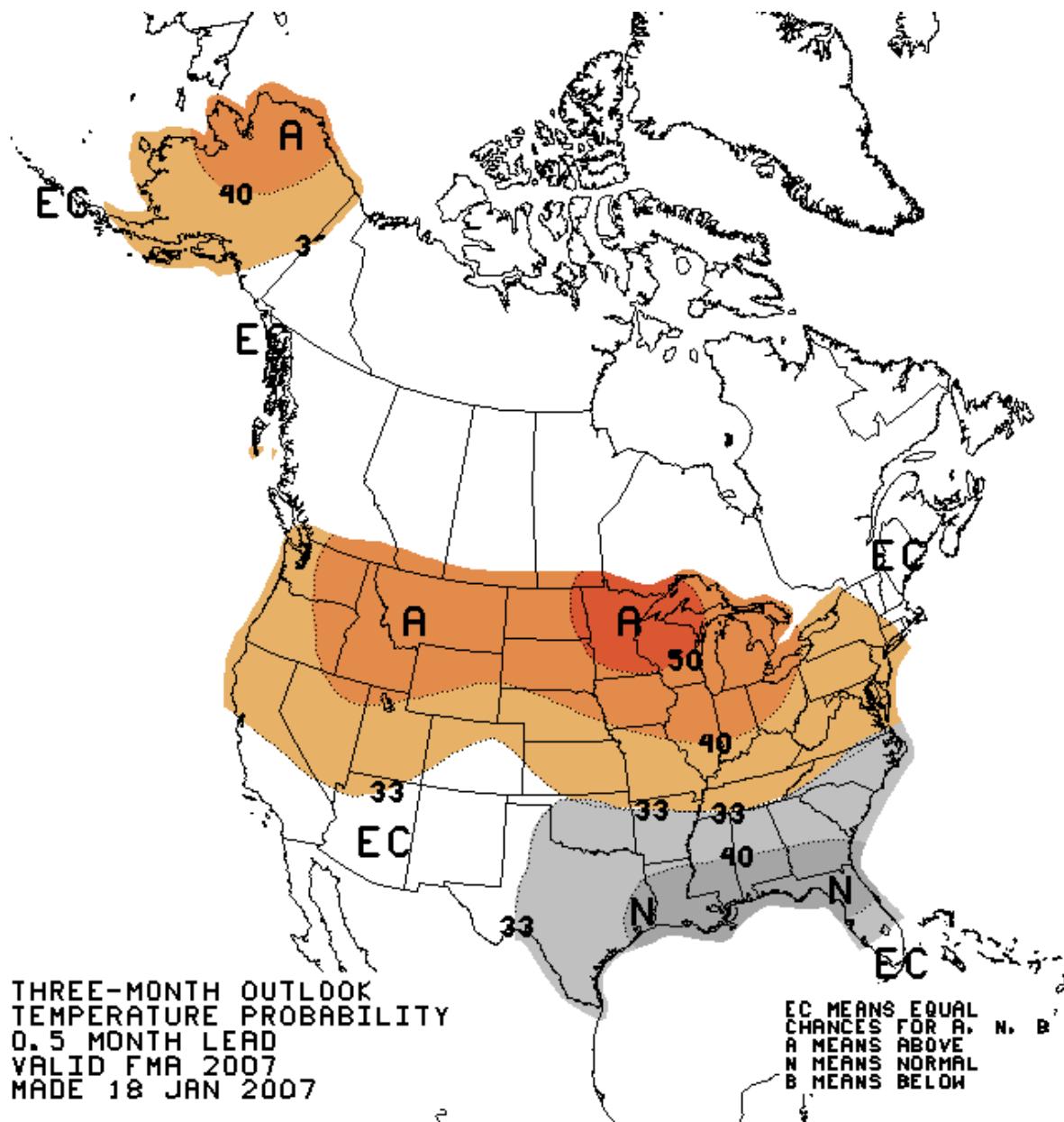


7-day Average Centered on 24 January 2007

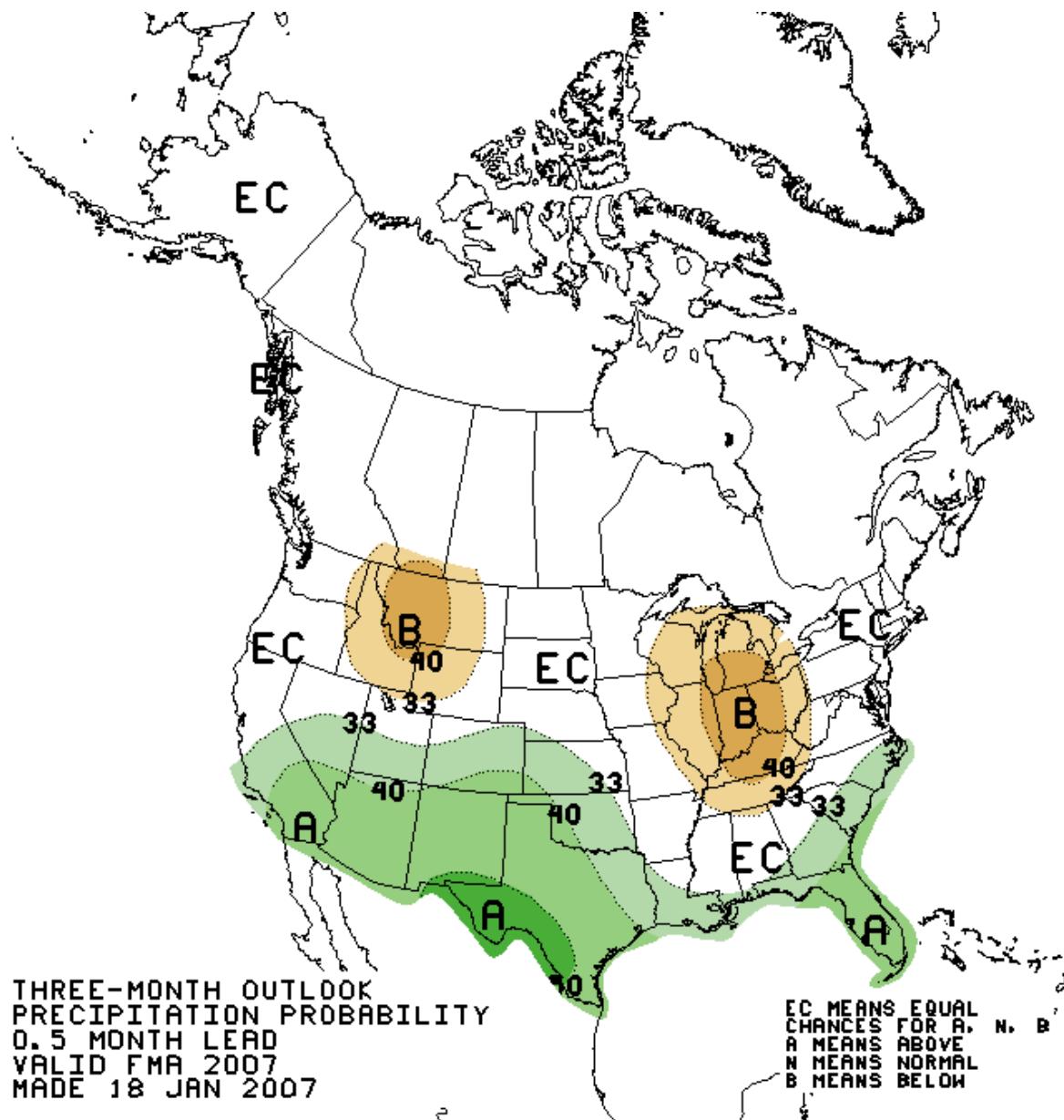
# El Nino Status and Projections



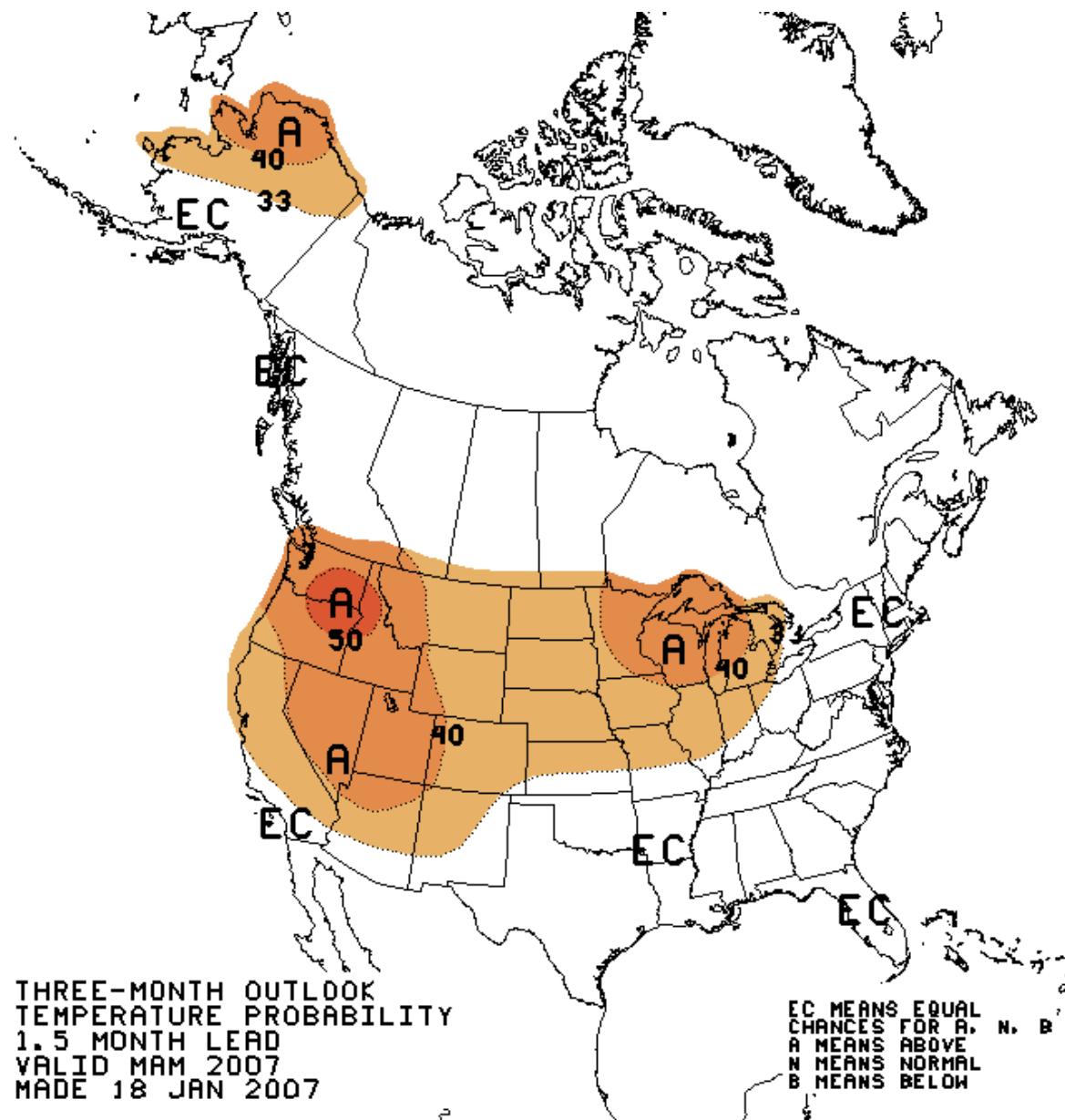
# Feb-Apr Temperature



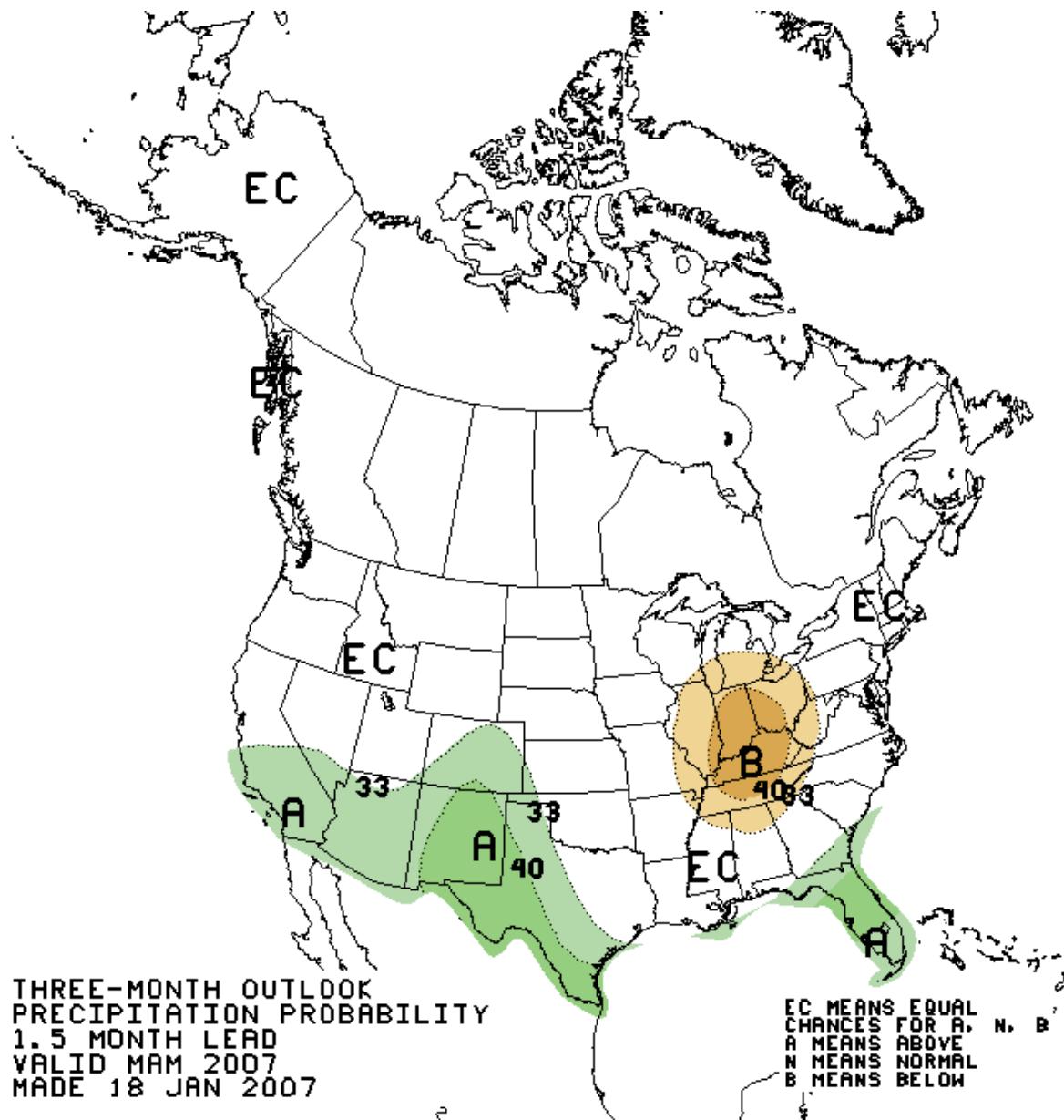
# Feb-Apr Precipitation



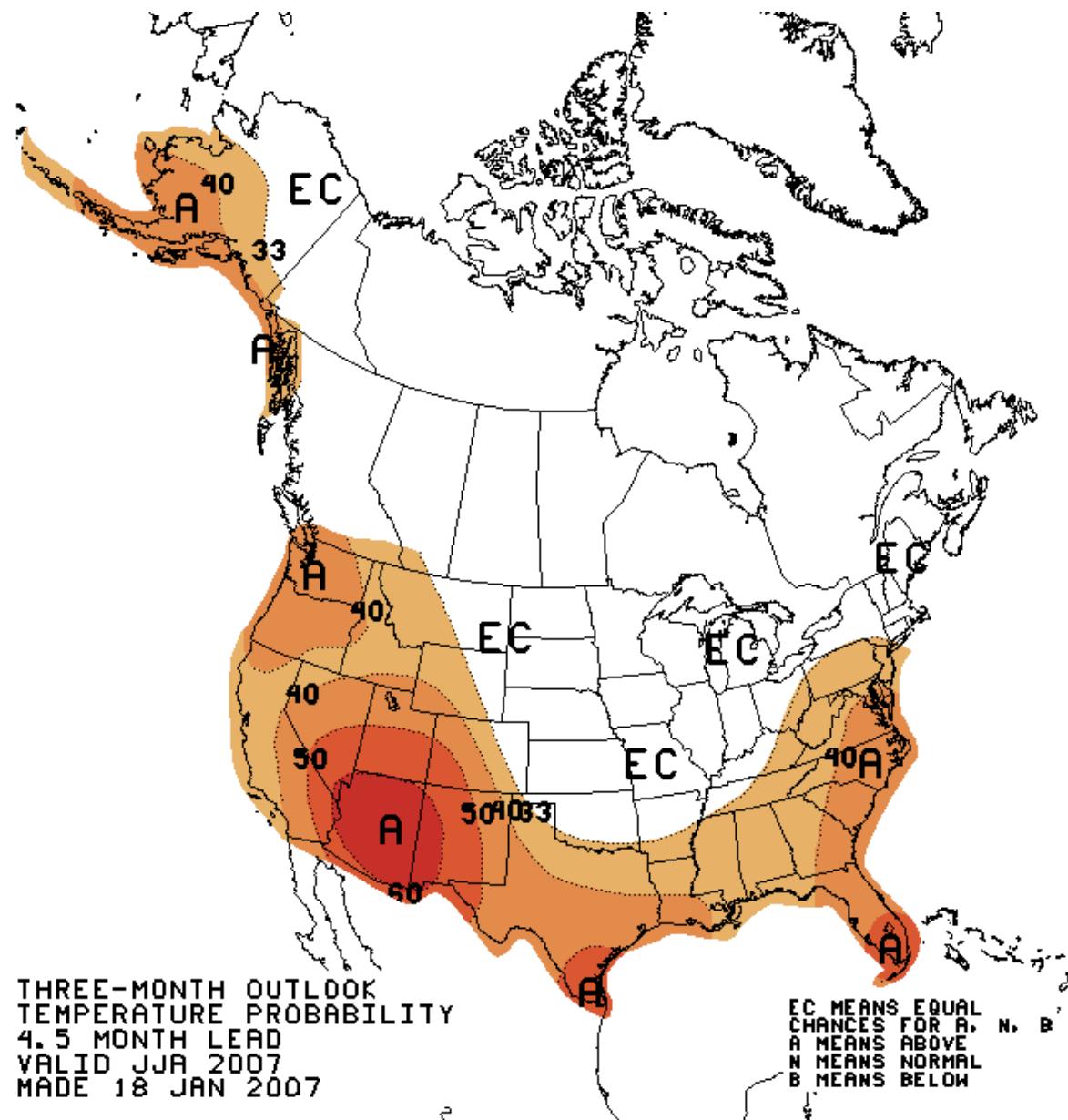
# Mar-May Temperature



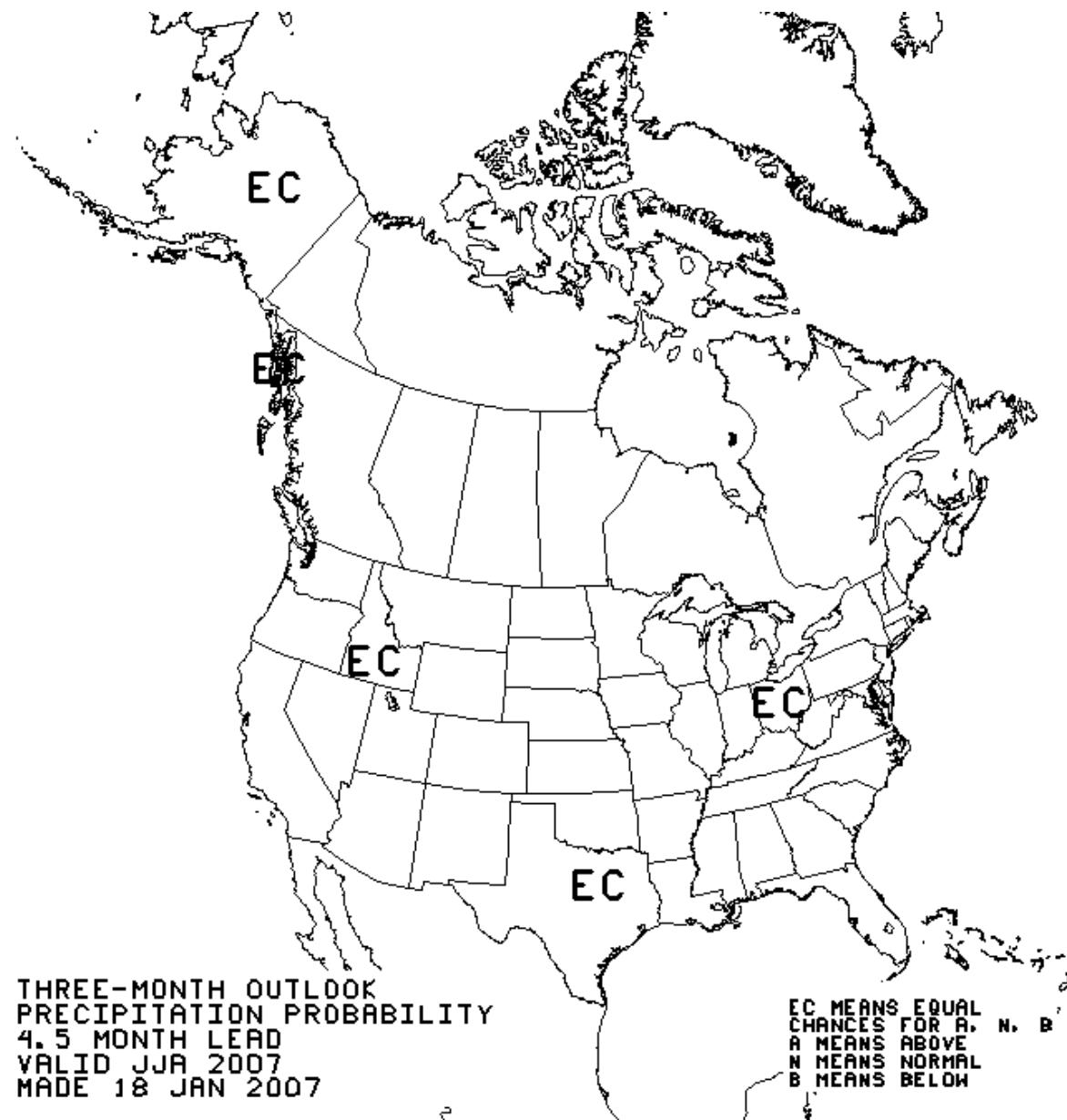
# Mar-May Precipitation



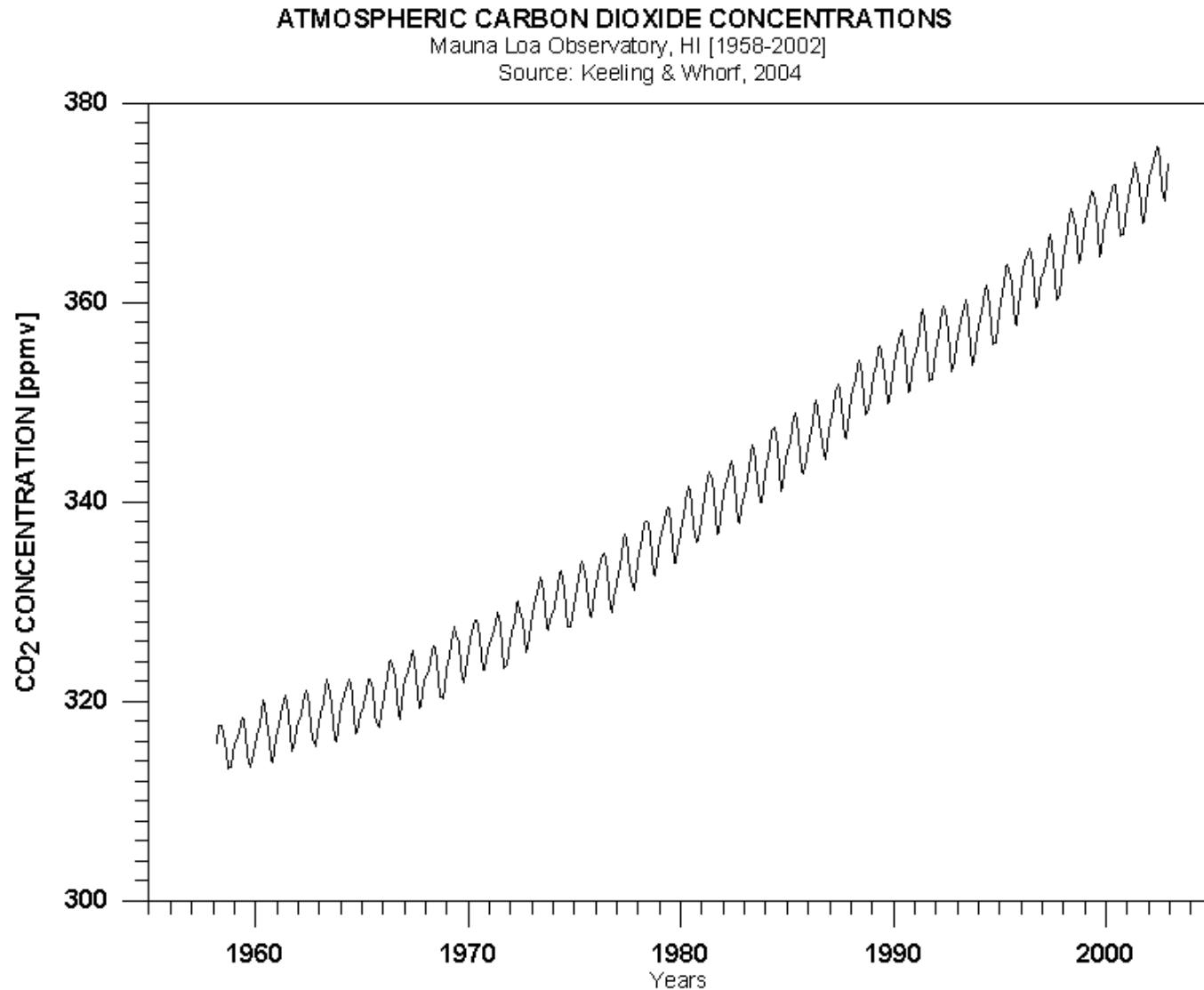
# Jun-Aug Temperatures



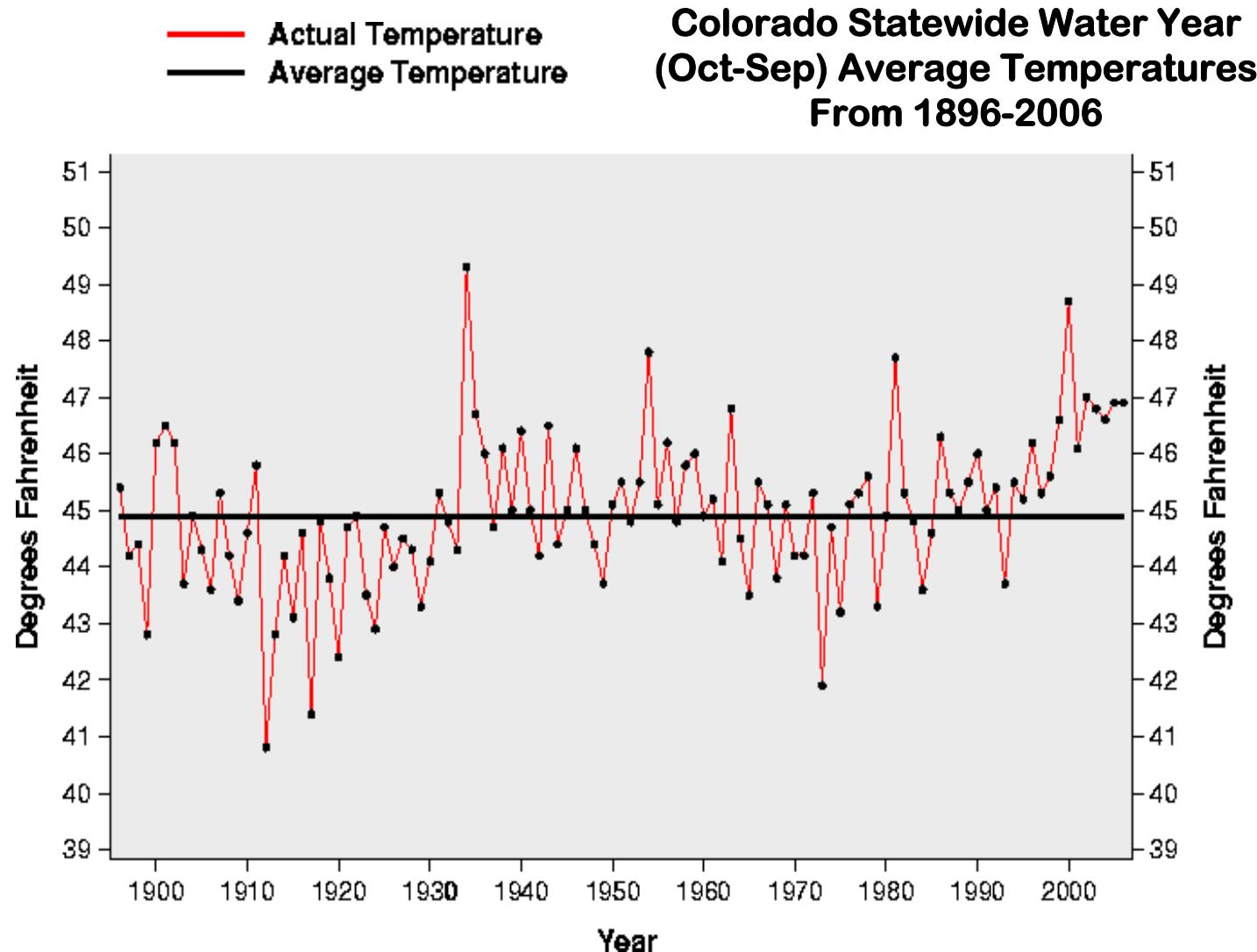
# Jun-Aug Precipitation



# Finally, some thoughts on Climate Change

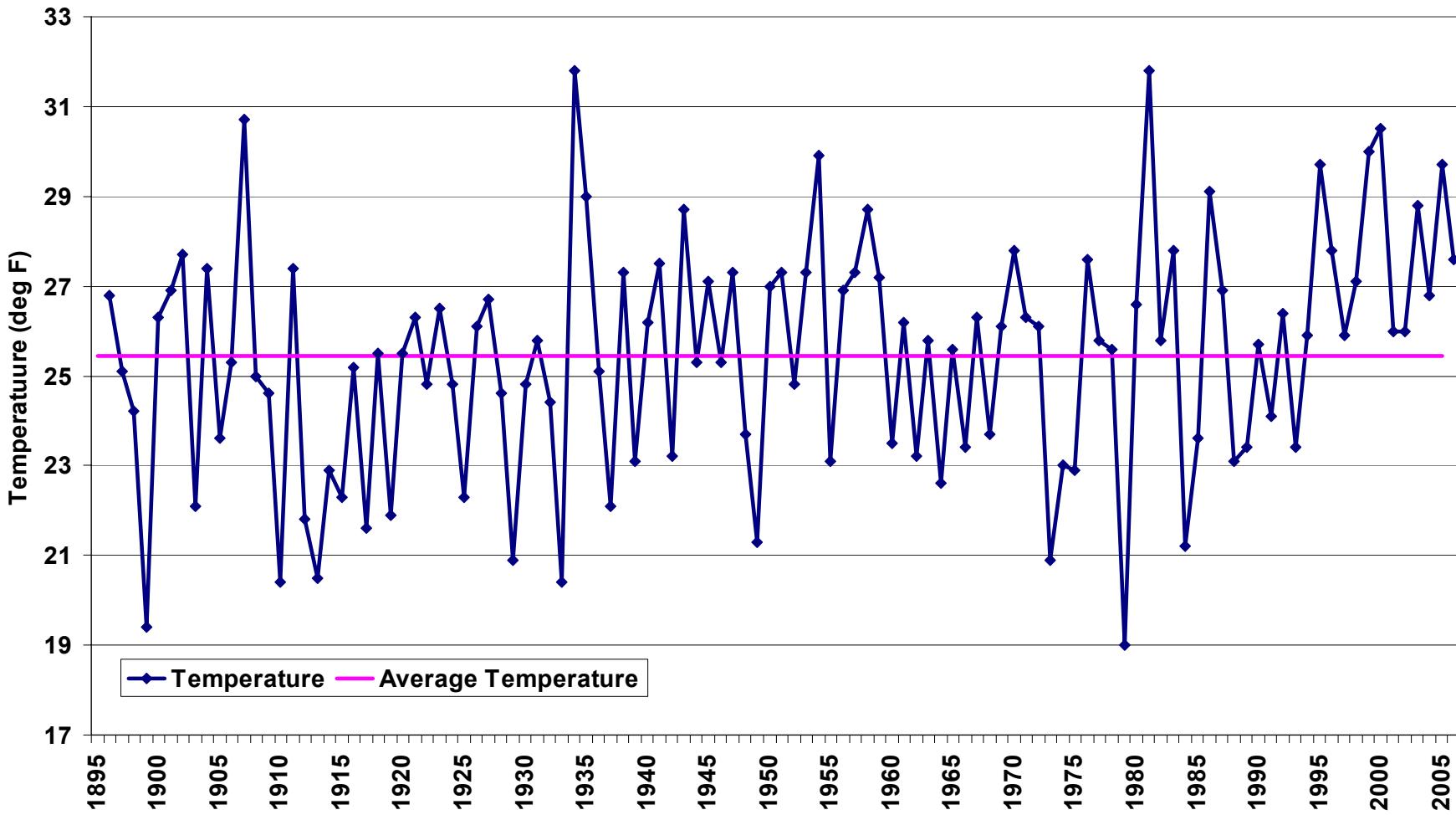


# Many questions remain, and no one knows for sure, but ....



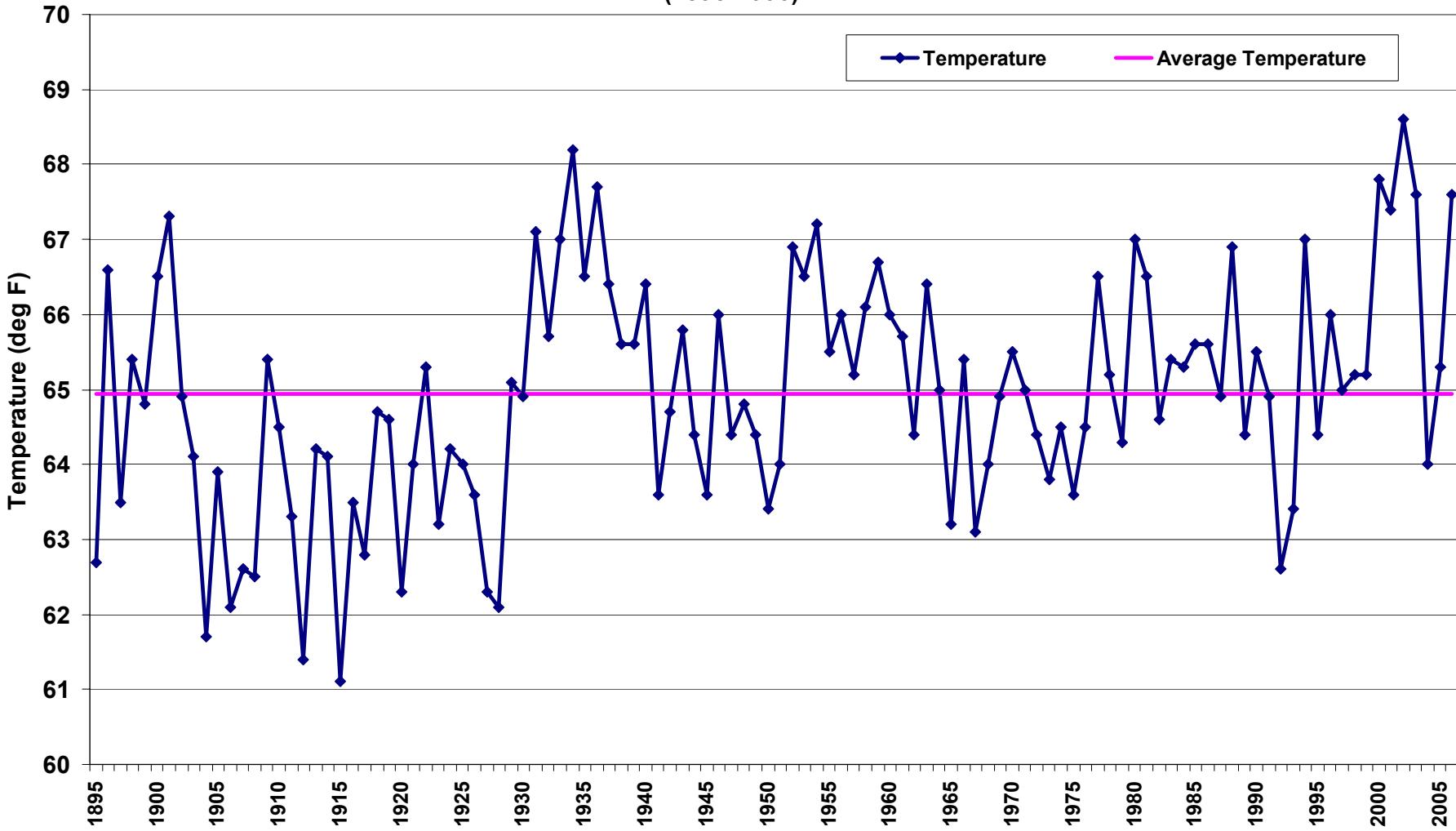
# Colorado Winter Statewide Temperatures

Colorado Statewide Average Winter (Dec-Feb) Temperature  
(1895-2006)



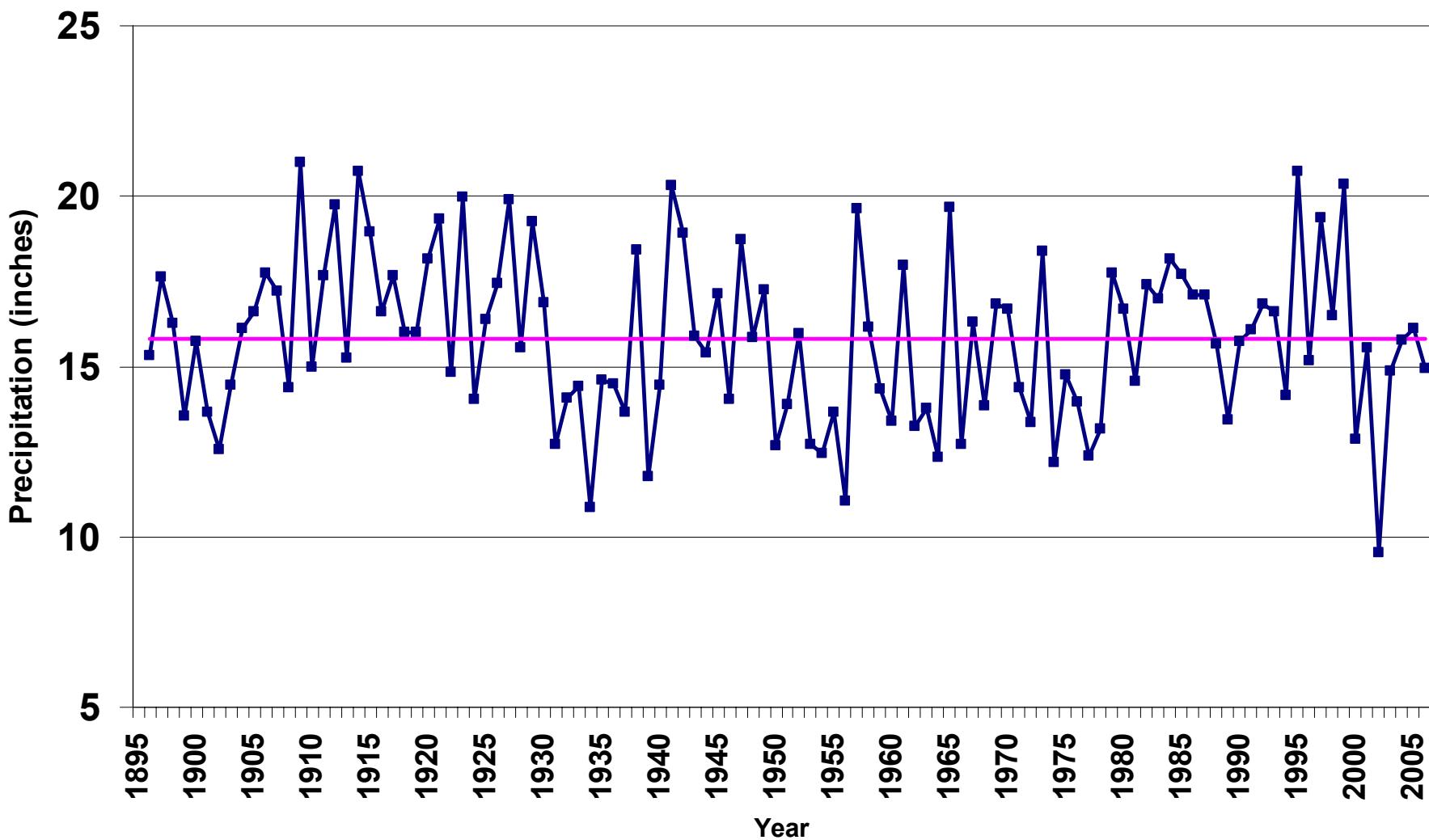
# Colorado Summer Statewide Temperatures

Colorado Statewide Average Summer (Jun-Aug) Temperature  
(1895-2006)



# Colorado Statewide Water Year (Oct-Sep) Precipitation

Colorado Statewide Water Year (Oct-Sep) Precipitation  
from 1896 - 2006



- Precipitation is highly variable, so detecting trends in precipitation will be difficult.
- If temperatures rise, evapotranspiration rates will also rise.
- More precipitation may be needed just to break even.
- This is a concern in a dry state like Colorado!

A photograph of a man wearing a dark cowboy hat and a plaid shirt, standing next to a brown horse. He is holding a clear plastic rain gauge with a white cap in his right hand. The horse is on the left, facing towards the center. In the background is a weathered wooden barn.

# So what should I do? Help measure the rain!

Photo by H. Reges

# Community Collaborative Rain, Hail and Snow (CoCoRaHS) Network



[www.cocorahs.org](http://www.cocorahs.org)

Photo by H. Reges

# For More Information, Visit the CoCoRaHS Web Site



<http://www.cocorahs.org>



Support for this project provided by  
NSF Informal Science Education Program,  
NOAA Environmental Literacy Program  
and  
*many* local charter sponsors.

# Colorado Climate Center

**Data and Power  
Point Presentations  
available for  
downloading**

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

