

Drought Update – And CoCo RaHS

Nolan Doesken
Colorado Climate Center
Colorado State University
Arkansas River Basin Water Forum
March 4, 2004, Pueblo, CO

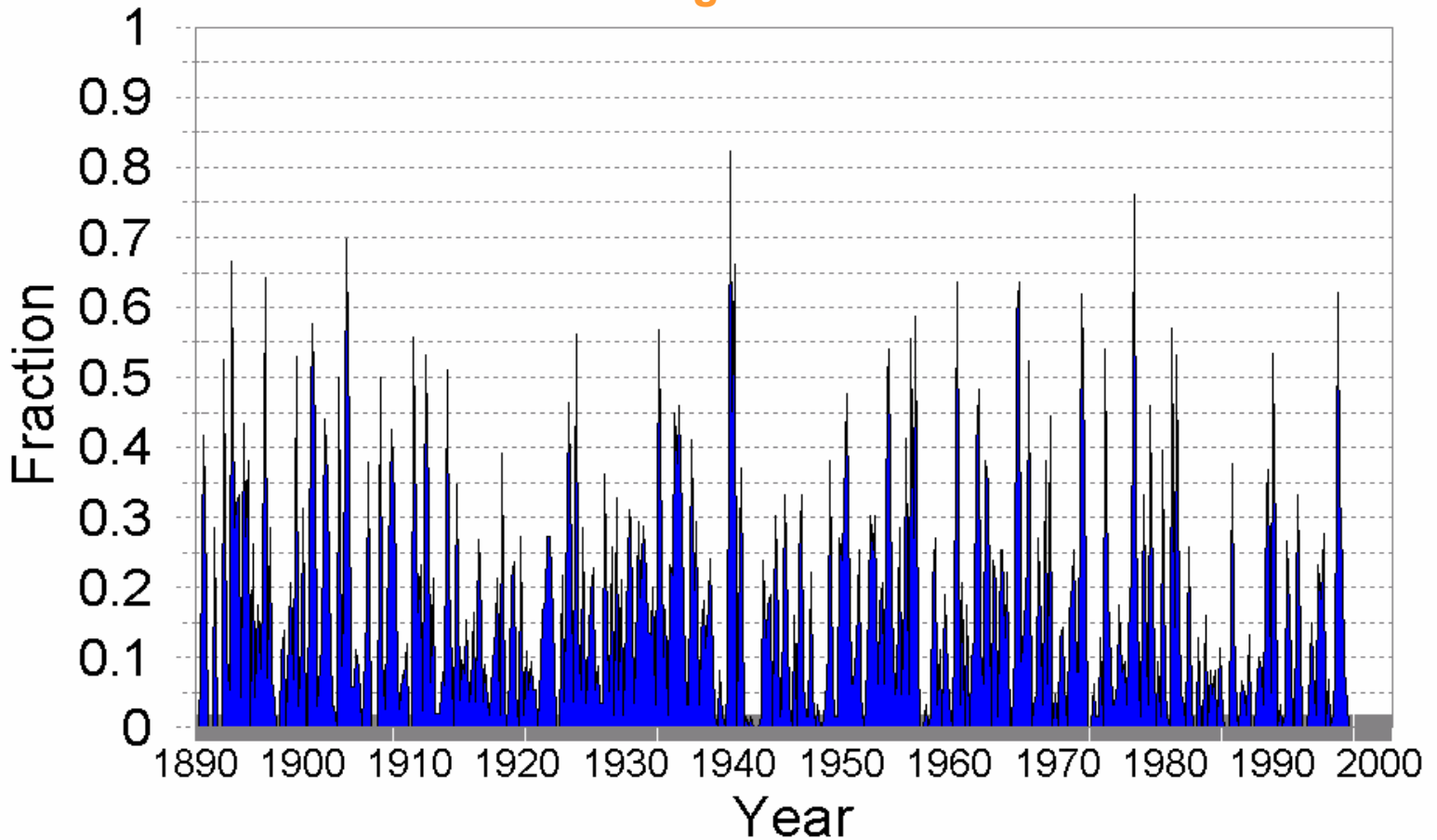


Prepared by Odie Bliss

3-Month SPI

Fraction of Colorado in Drought Based on 3-month SPI

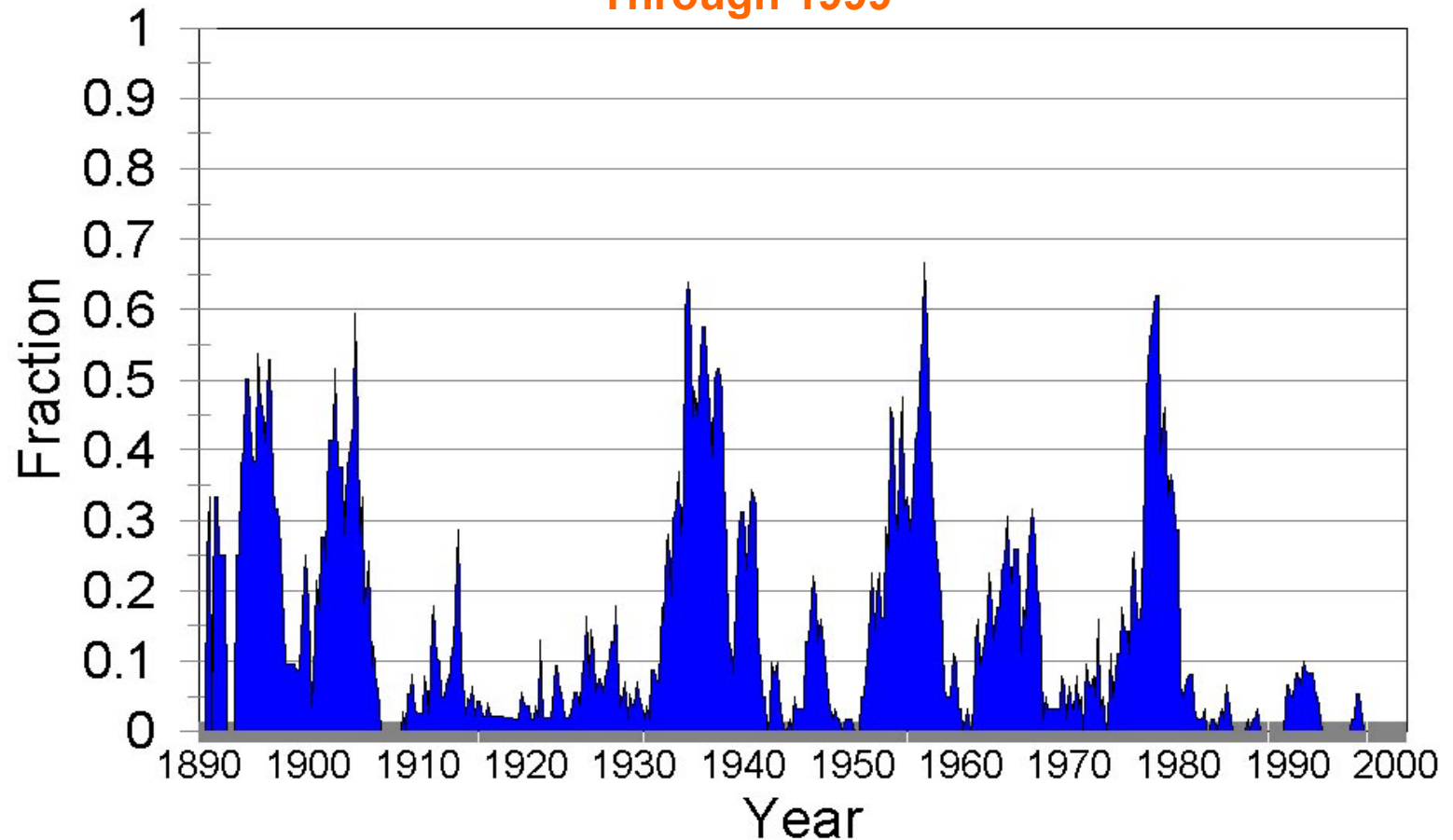
Through 1999



48-Month SPI

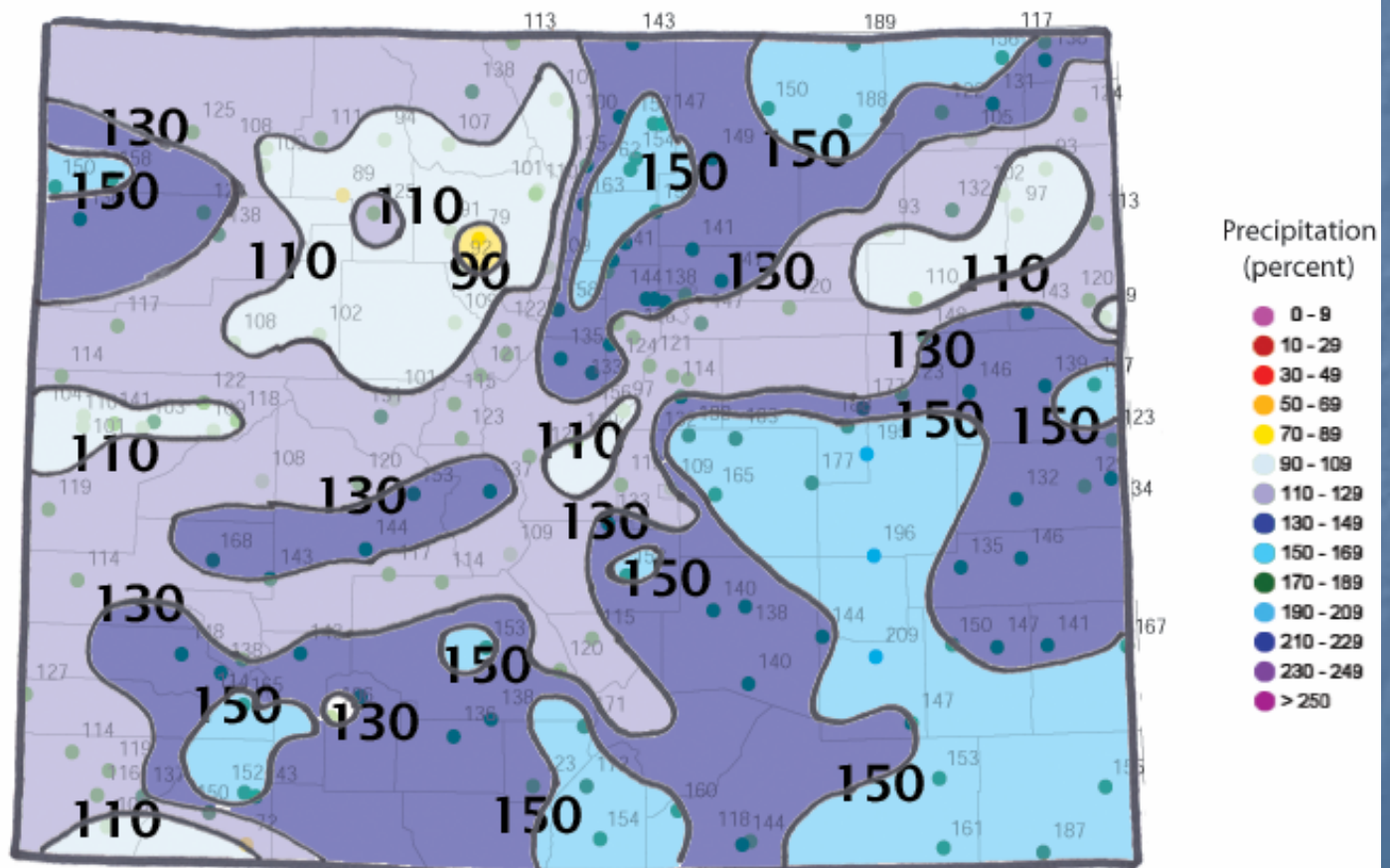
Fraction of Colorado in Drought Based on 48-month SPI

Through 1999



1999 Water Year Precipitation

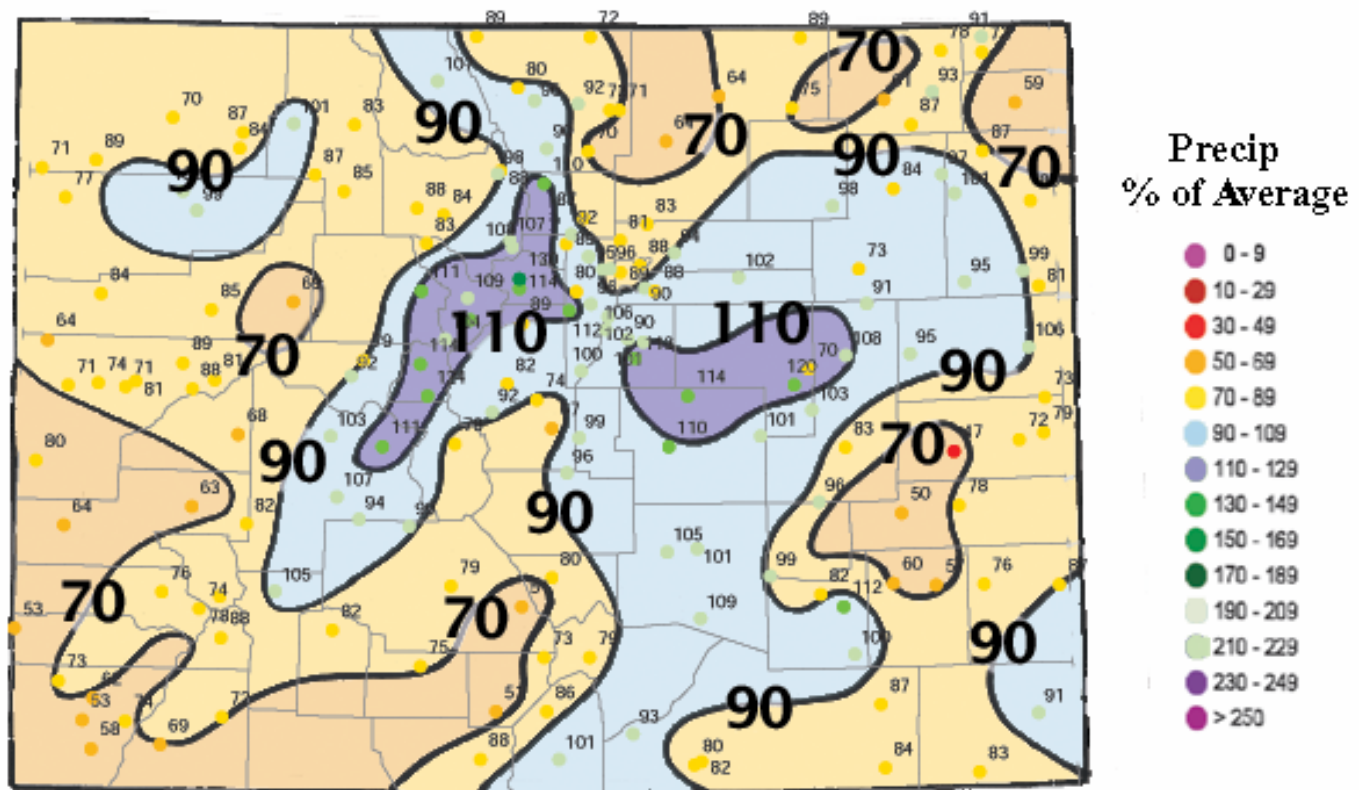
Water Year 1999
(Oct. 1998-Sept. 1999)
Precipitation Percent of Average for 1961-1990 Averages



2000 Water Year Precipitation

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

Precipitation Percent of Average for 1961-1990 Averages

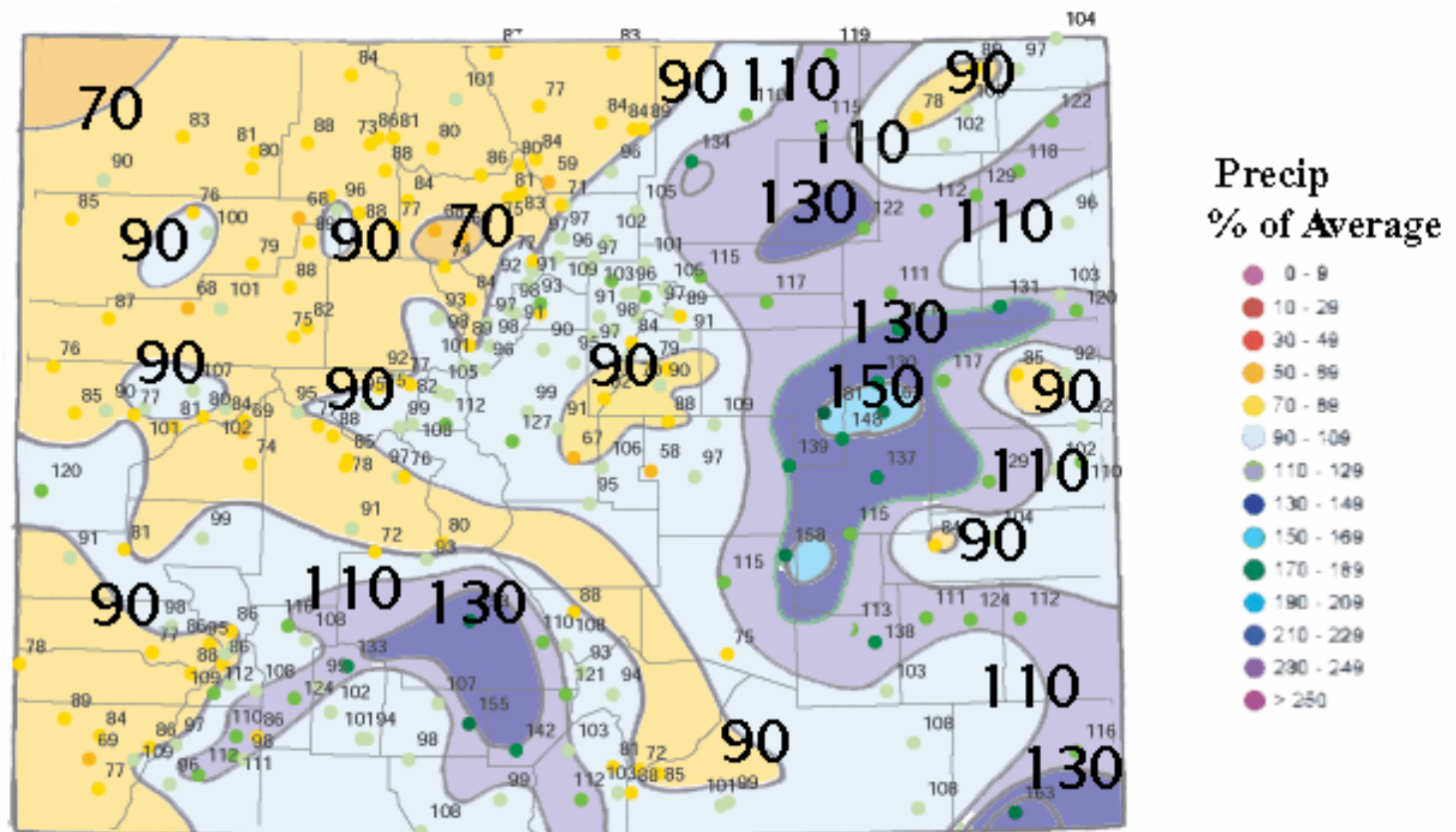


2001 Water Year Precipitation

Water Year 2001

(Oct. 2000 - Sept. 2001)

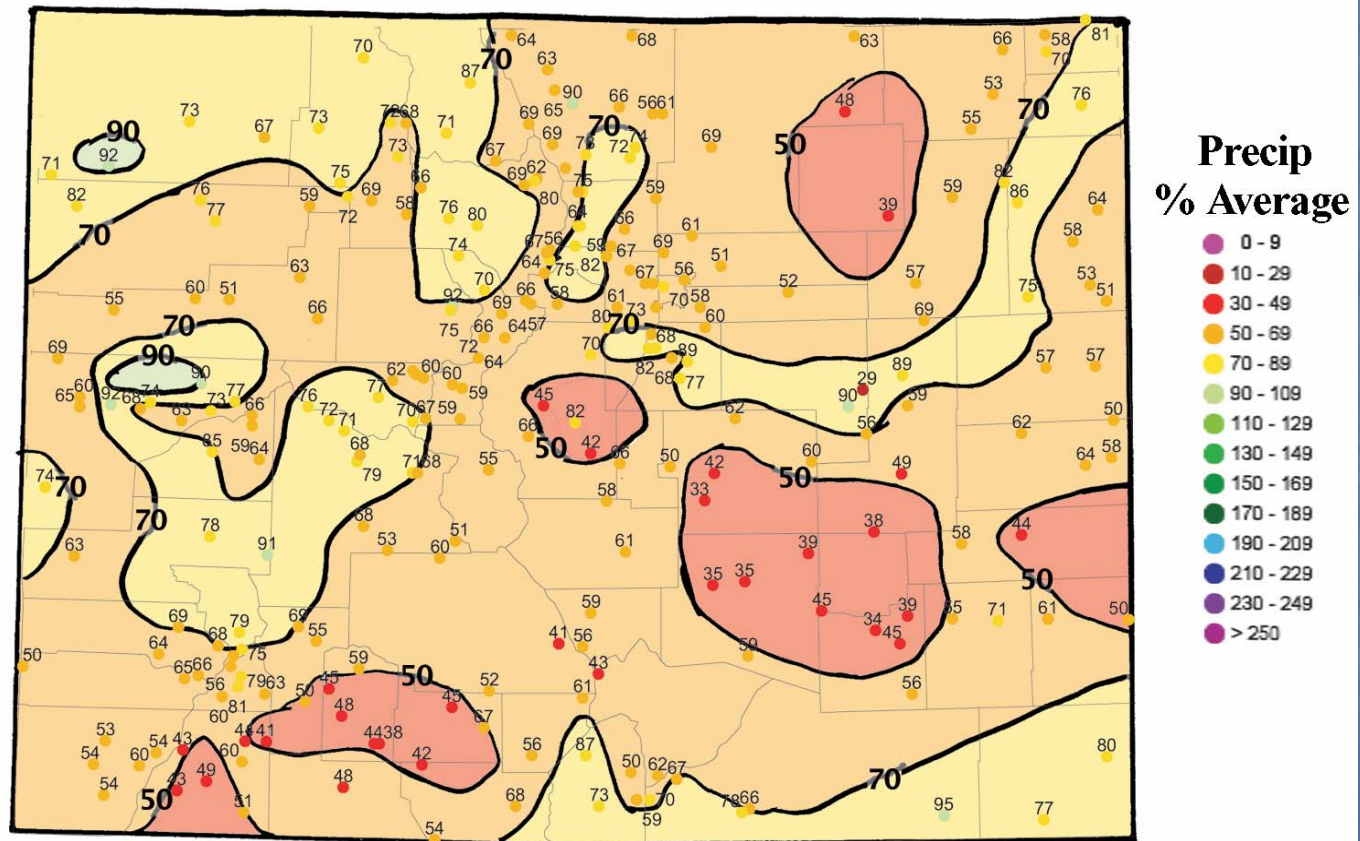
Precipitation Percent of Average for 1961-1990 Averages



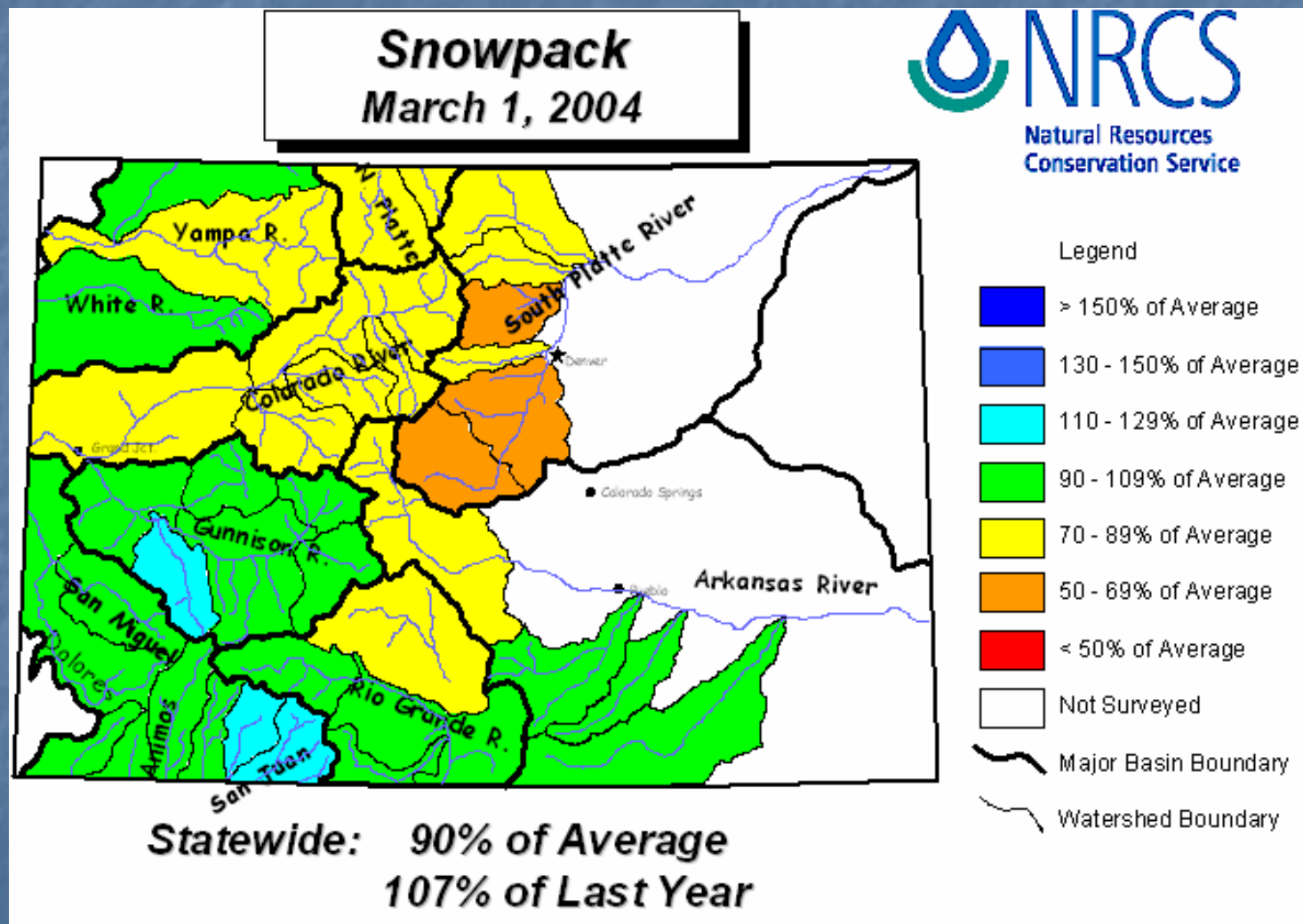
2002 Water Year Precipitation

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

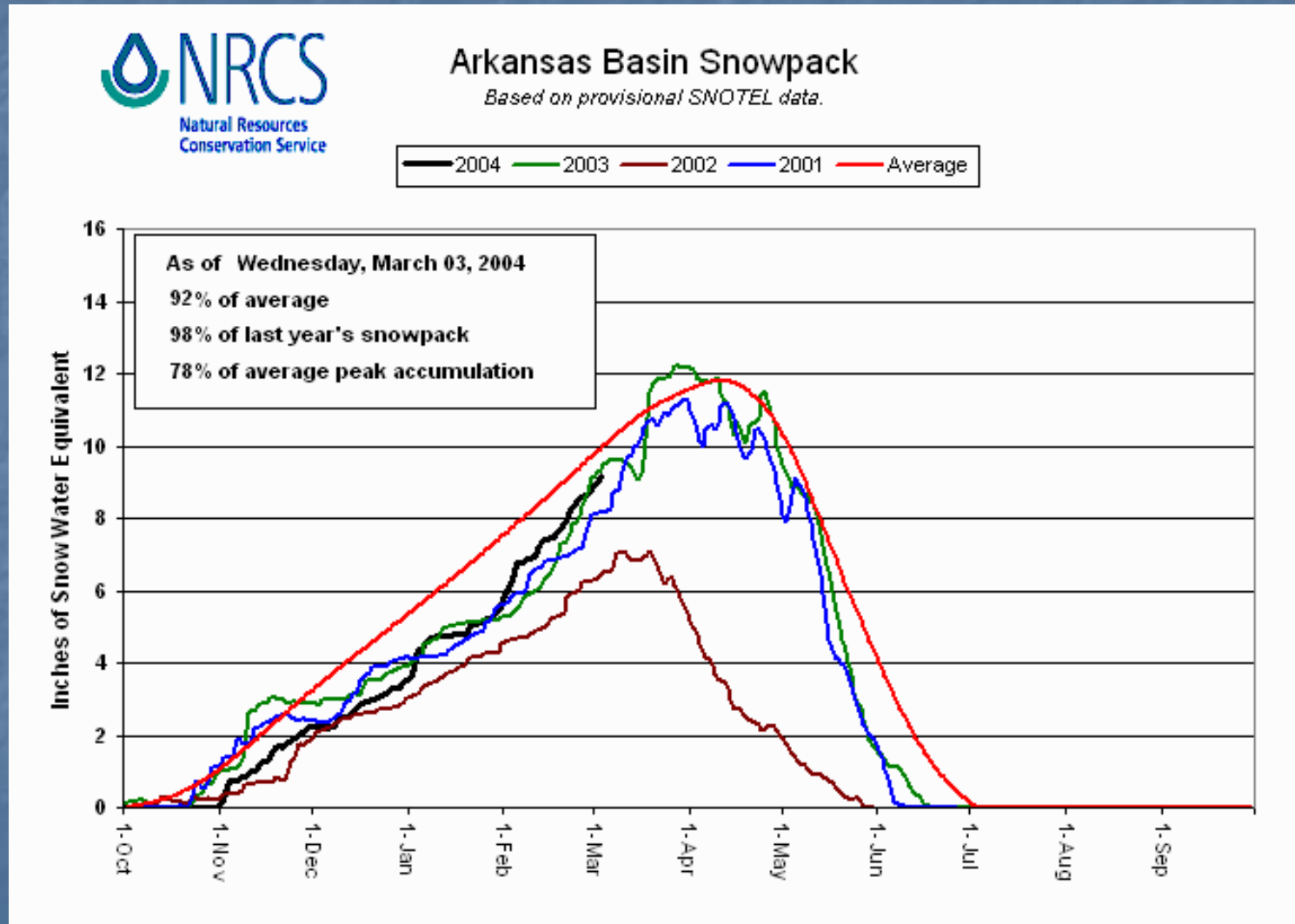
Precipitation Percent of Average for 1961-1990 Averages



Colorado Basin Snowpack as Percent of Average as of 3/1/04



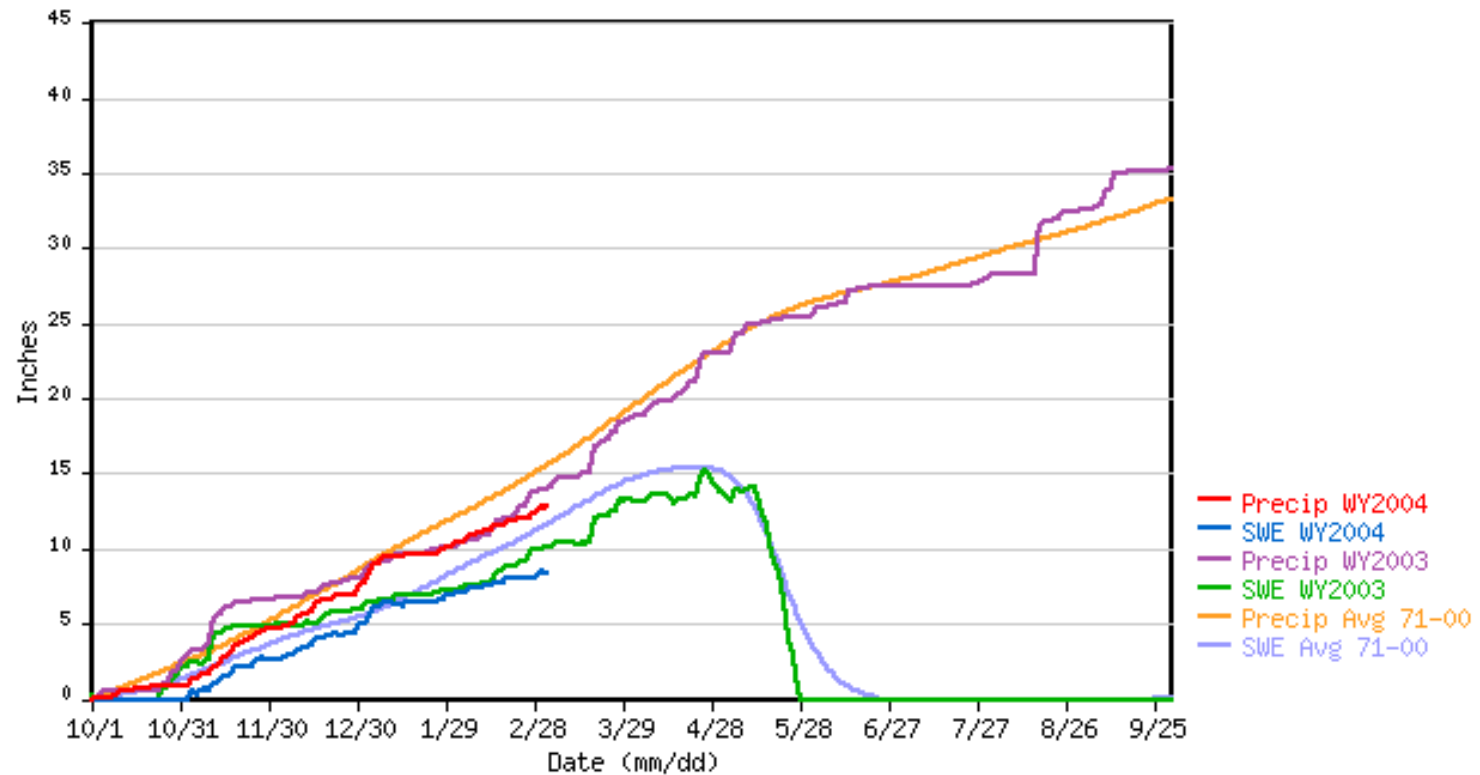
Arkansas Basin Snowpack History



Ivanhoe SNOTEL

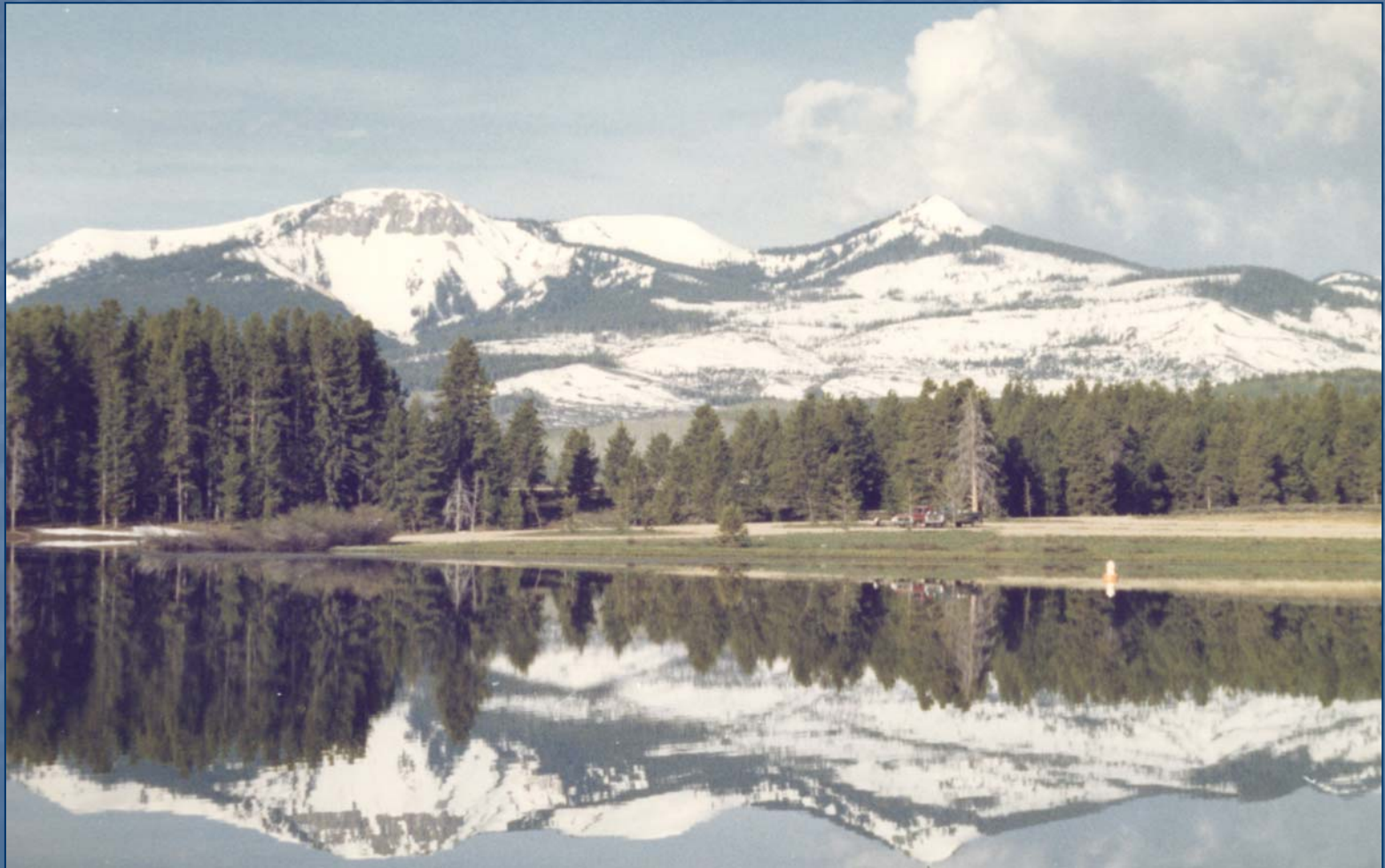
06K10S -IVANHOE SNOTEL as of 03/03/2004

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



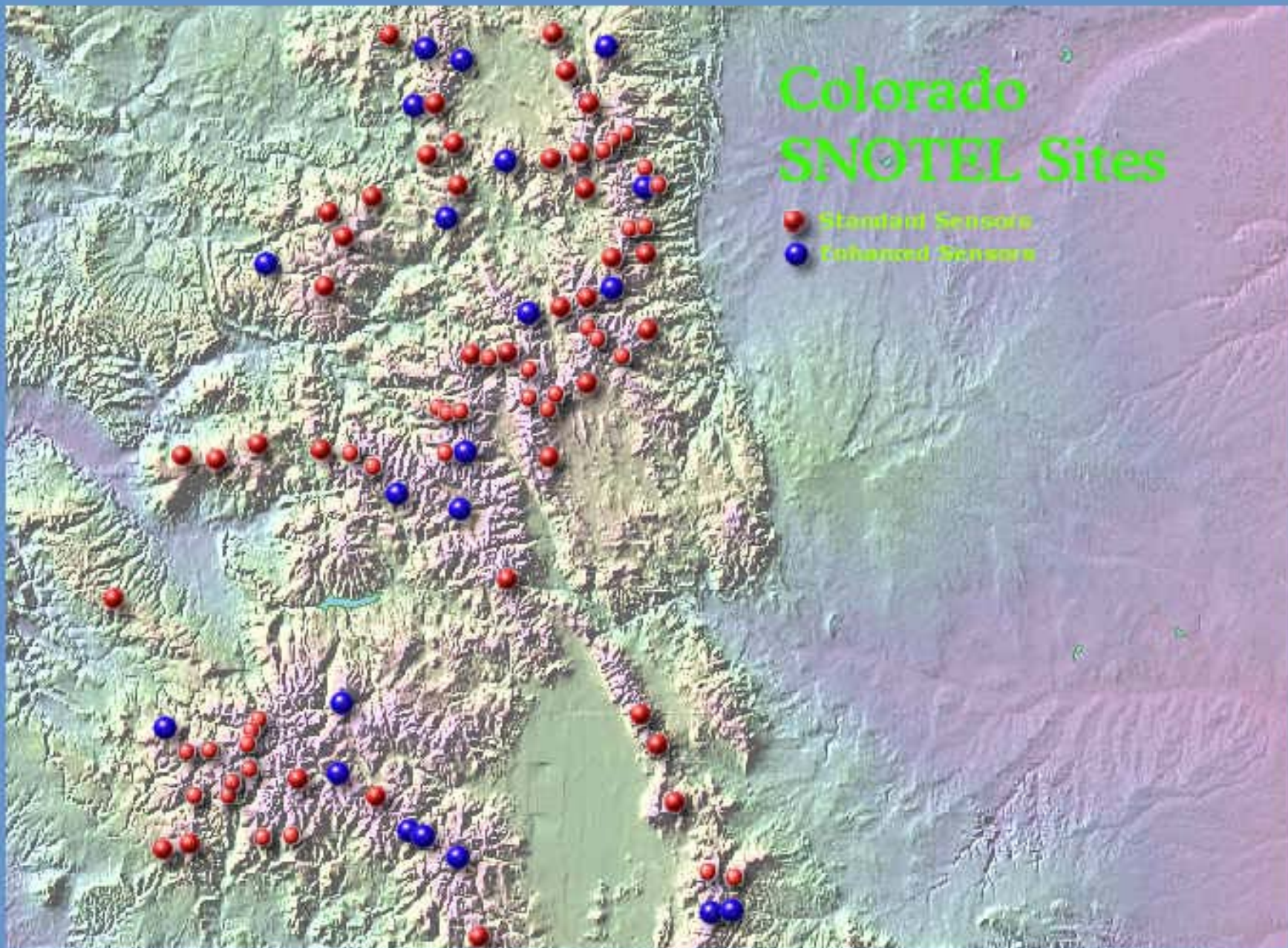
<http://www.wcc.nrcs.usda.gov/cgi-bin/site-wygraph-multi.pl?state=CO>

Does snowpack really tell us how much water we'll have?



Colorado SNOTEL Sites

- Standard Sensors
- Enhanced Sensors



What Comes Next?

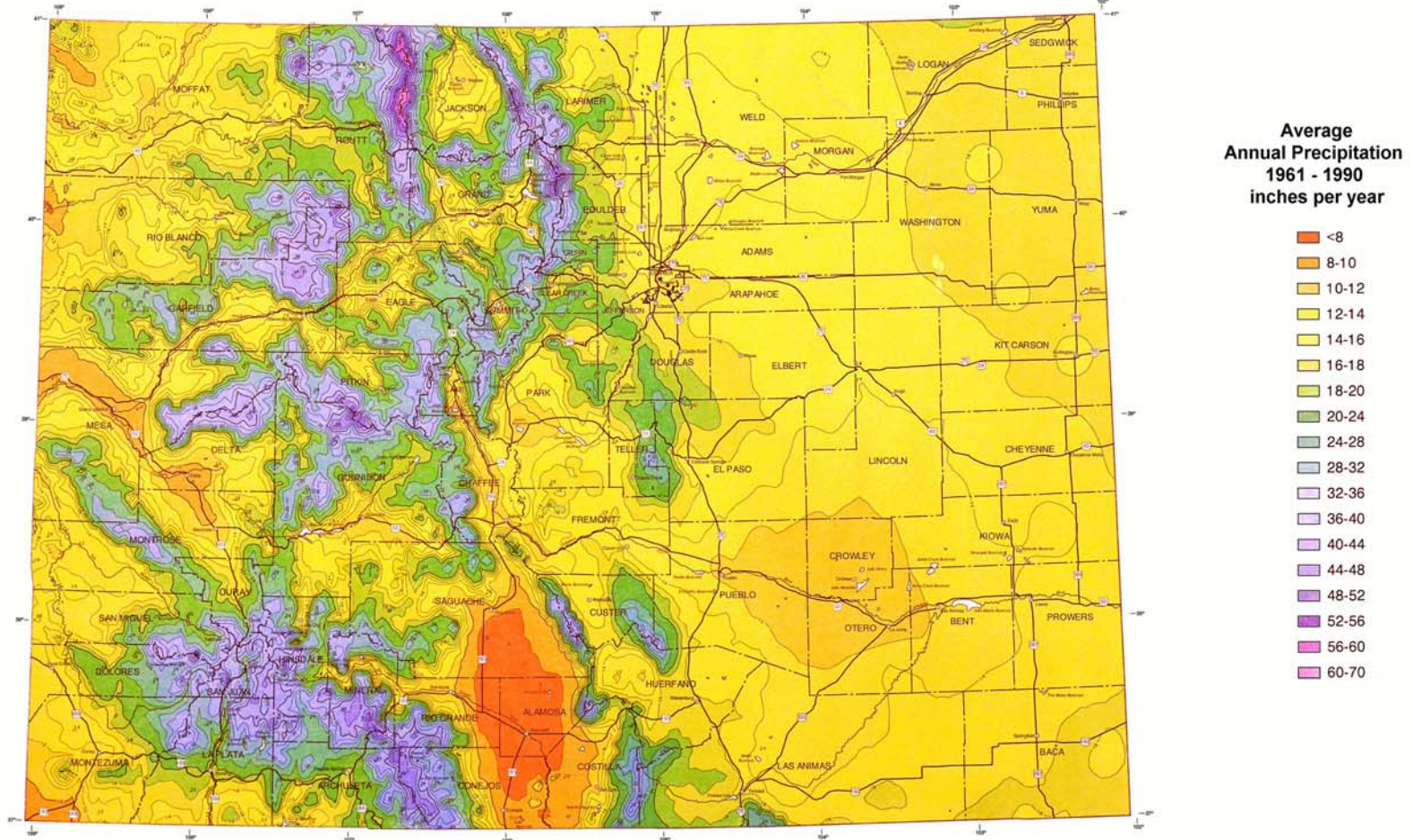


Colorado Average Precipitation

U.S. DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

COLORADO ANNUAL PRECIPITATION



Made in cooperation with Oregon State University

Date Sources: NOAA Cooperative Station Records (1961-1990), climate observations, NRCS 38077E, Station records, and experimental data provided by regional and state climatologists and designated reviewers
 Digital Elevation Model: The PRISM DEM is derived from a 15 arc second Defense Mapping Agency (DMA) Digital Terrain Elevation Dataset (DTED) obtained from the ERDC Data Center.

Estimation Technology: Gridded estimates were derived from station point values using the PRISM model developed at Oregon State University. The modeled grid was approximately 60 km (36.6 miles) long and was resampled to 3.0 km using a Spline Interpolation. Climate Dataset: April 1988. Albers Equal Area Projection, WGS 84, NAD 83.

USDA-NRCS National Cartography & Geographic Center, Fort Worth, TX, 1998

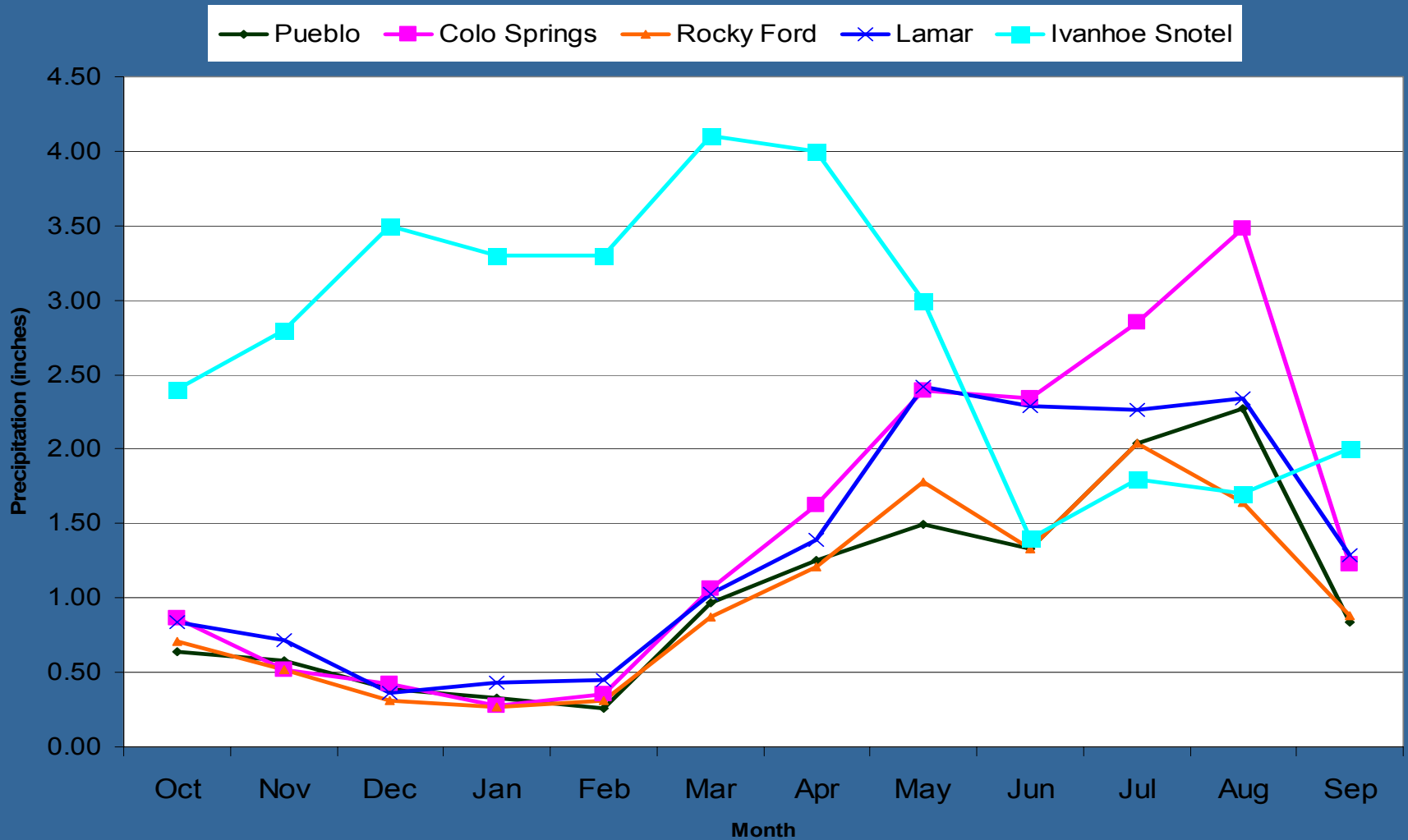


SCALE 1:1,185,000

SOURCE NOTE: Users are cautioned that contours may not exactly match station-observed precipitation, especially in regions with significant precipitation gradients and/or steep topography. April 1998, 10/98/98

Monthly Average Precipitation

Average Monthly Precipitation (1971-2000 Averages) for Selected Stations



Positive Indicators

- Late winter snows
- Cool spring
- Multi-day precipitation
- Wet Snow
- Low intensity rainfall
- Light winds
- High humidity
- Abundant cloud cover

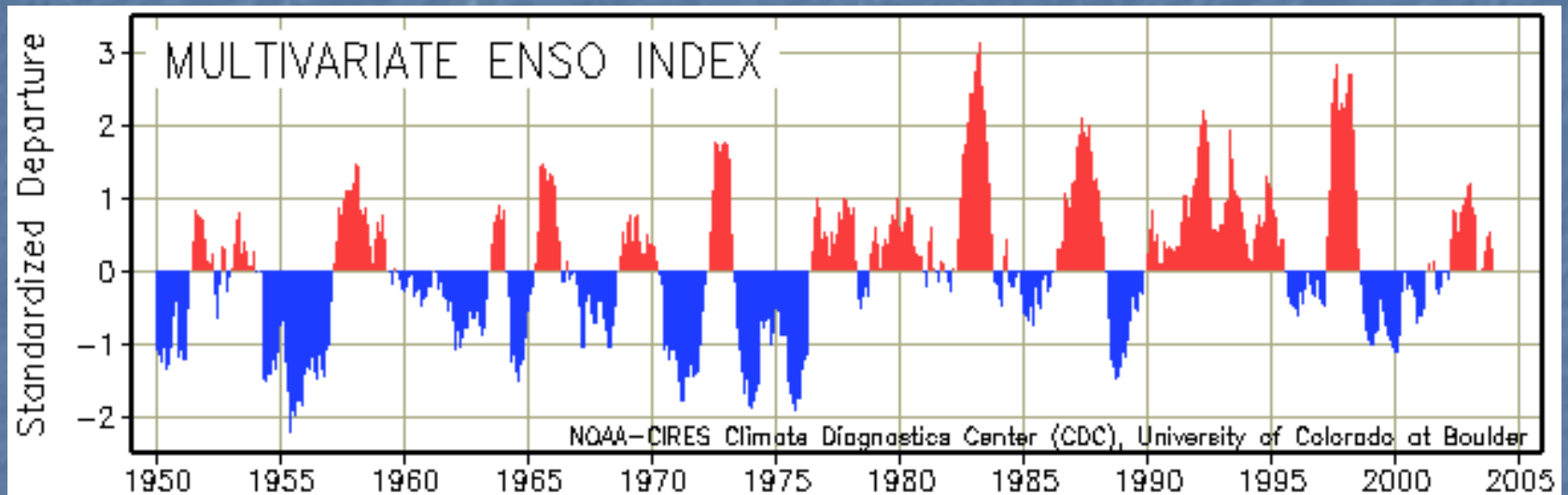


Negative Indicators



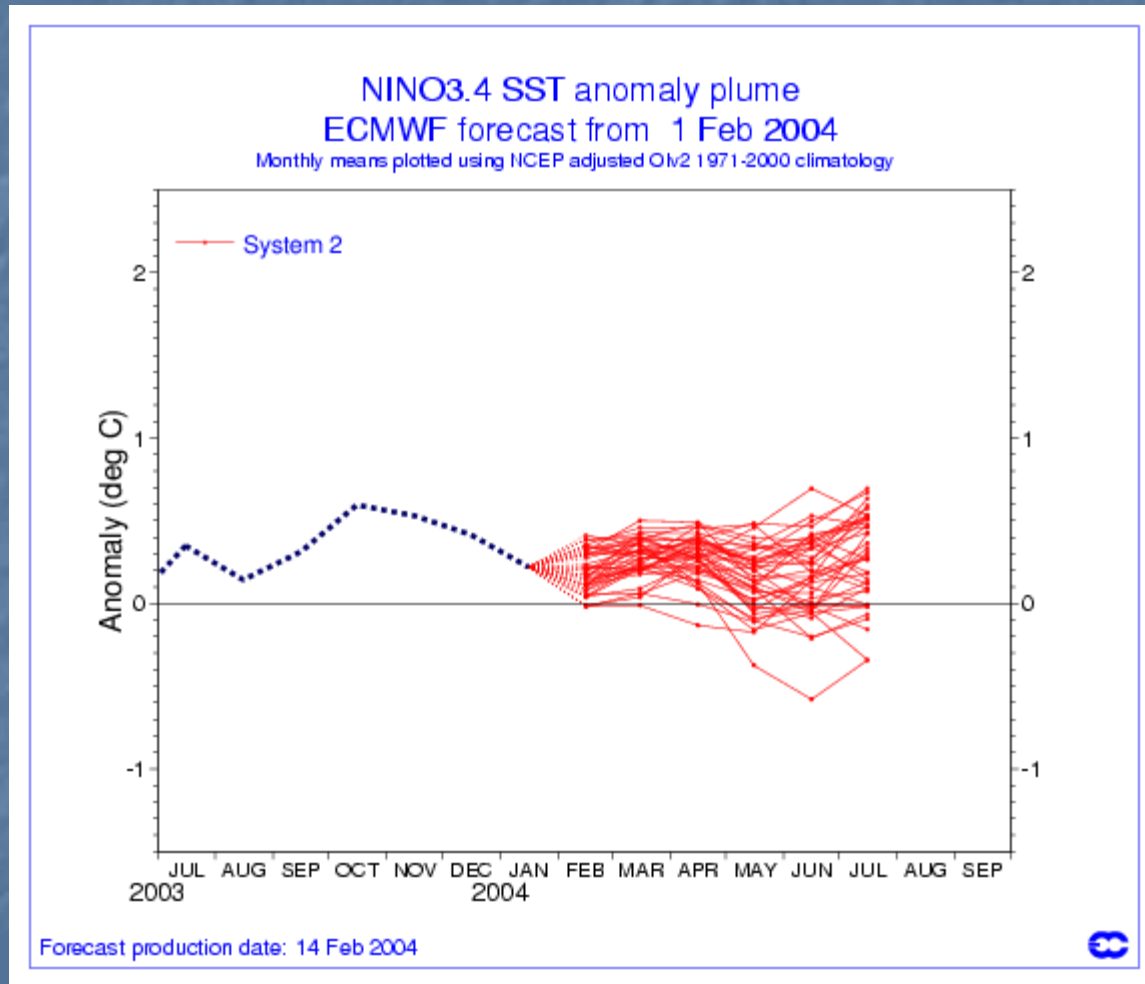
- Little late winter snow
- Missed opportunities
- Warm spring
- Brief, sporadic precipitation
- High intensity rainfall
- Frequent, strong winds
- Low humidity
- Abundant sunshine

Multivariate ENSO Index (MEI)



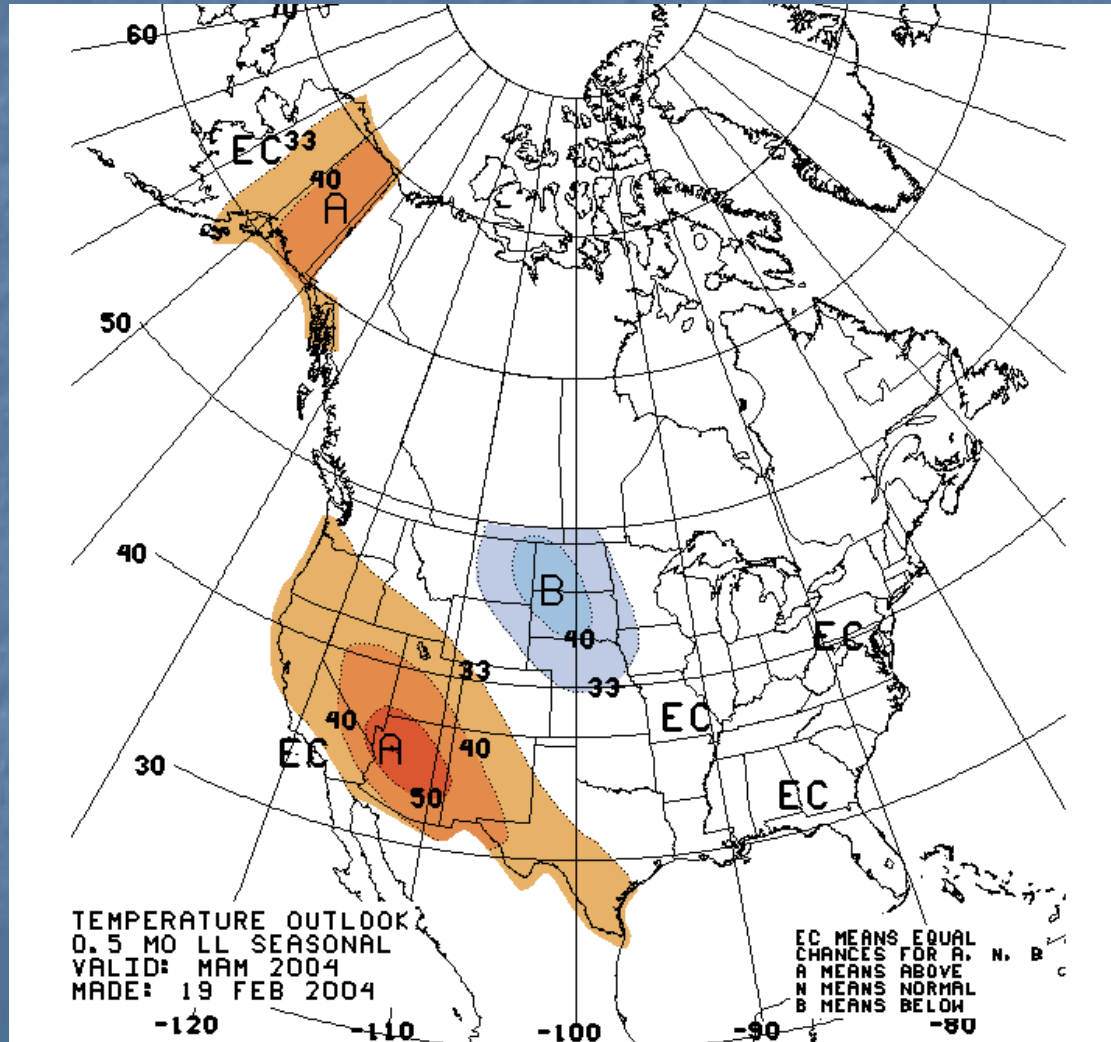
<http://www.cdc.noaa.gov/~kew/MEI/>

El Nino Prediction



<http://www.cdc.noaa.gov/~kew/SWcasts/>

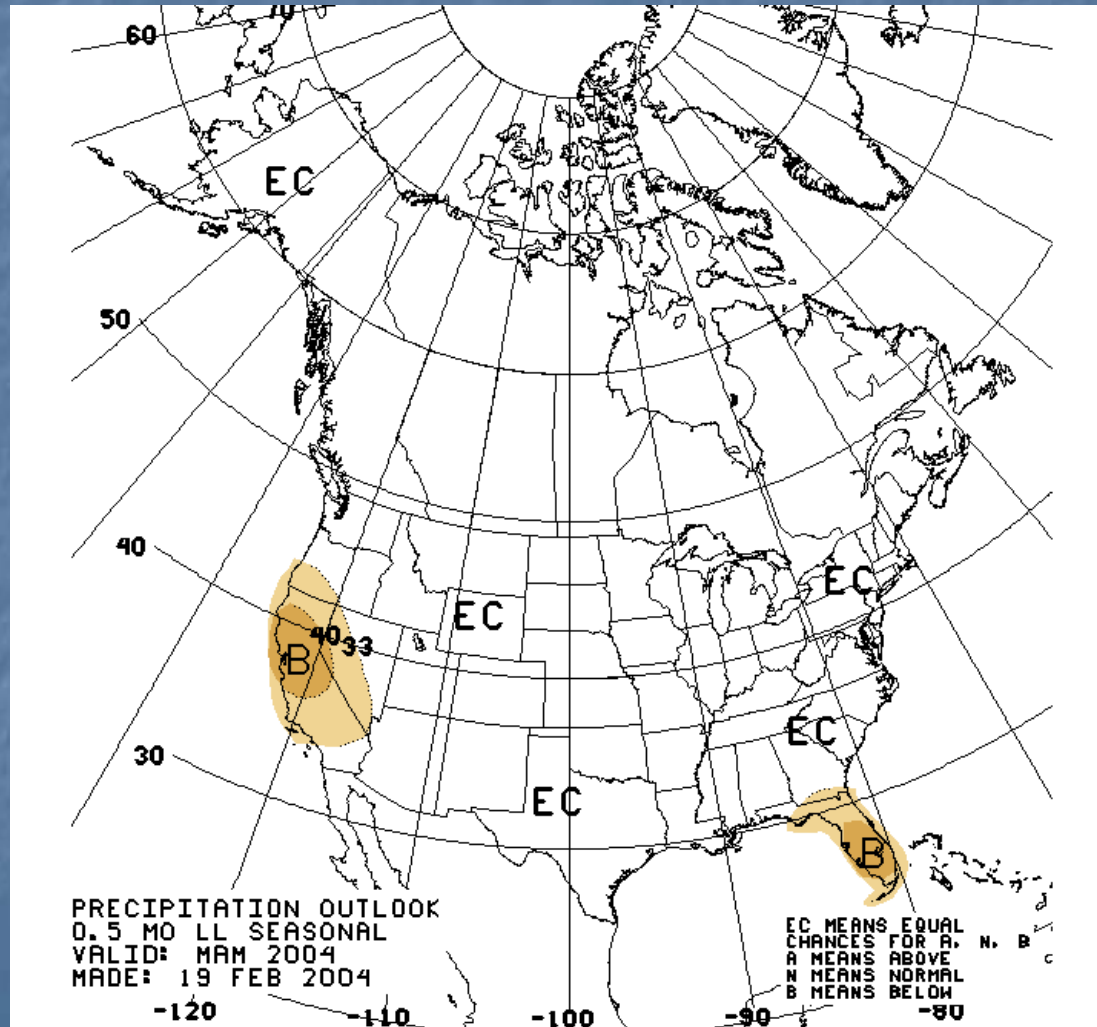
Temperature March – May 2004



From the Colorado Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

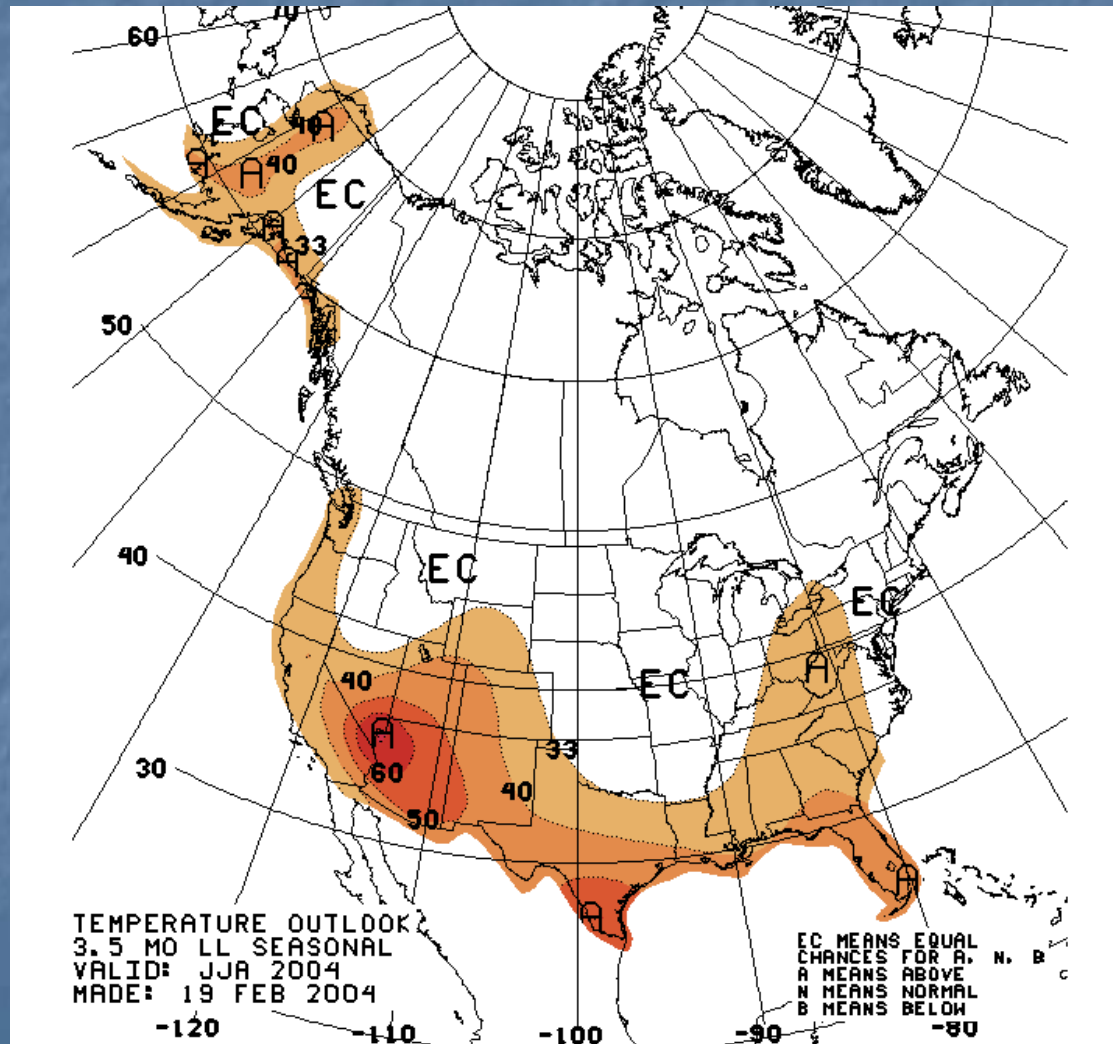
Precipitation March – May 2004



From the Colorado Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

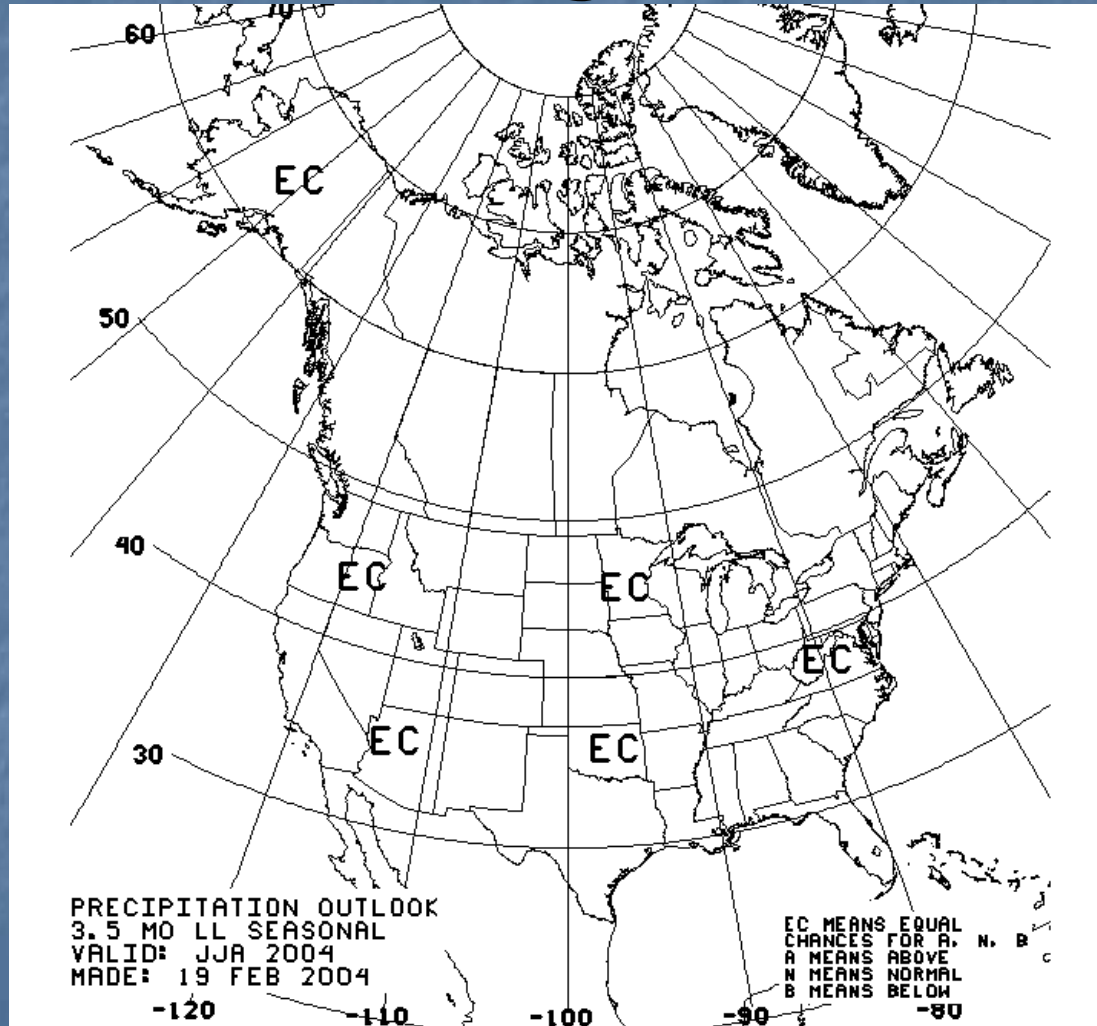
Temperature June – August 2004



From the Colorado Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Precipitation June – August 2004



From the Colorado Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

If we can't always predict months in advance, at least we can measure.



CoCo RaHS

Community Collaborative Rain and Hail Study

YOU CAN HELP!



<http://www.cocorahs.org>

Sponsored in part by National Science Foundation

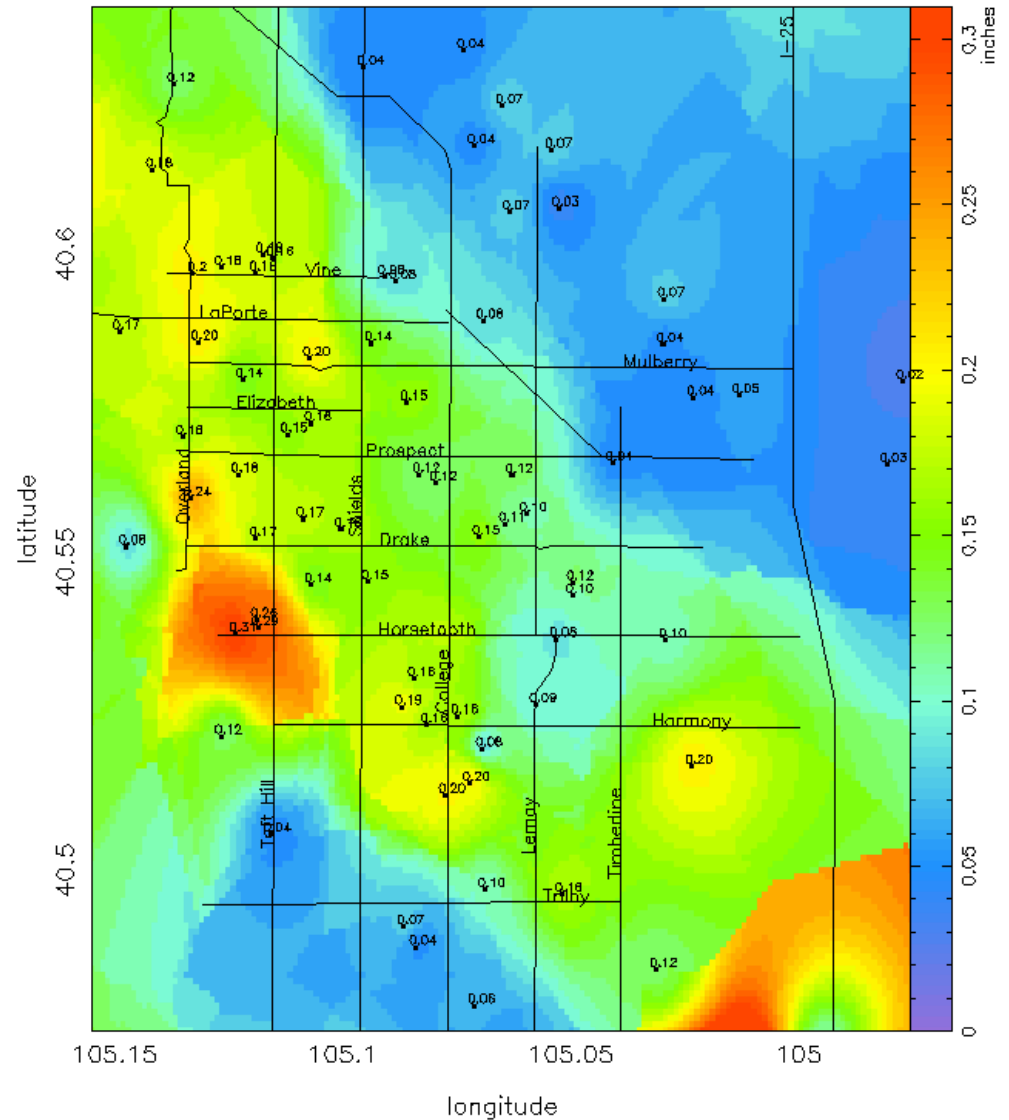
What is CoCoRaHS?

- Volunteers of all ages measuring and reporting rain, hail and snow



- Fort Collins
CoCo RaHS
Precipitation
contour map,
8/15/2001

Fort Collins Precipitation Map
For the 24 hour period ending ~7:00 am on 08/15/2001



COLORADO

How many volunteers do we need?

Grand Junction

Denver

Limon

ueblo

- Our goal is at least one per square mile over urbanized areas.
- As many as we can find in rural areas.

What does it take to be a volunteer?

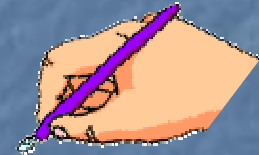
- Scientific curiosity.
- An interest in weather and an appreciation for water.
- Enough unobstructed space to install a rain gauge.
- Two minutes a day for a good cause.



Photograph by Gerry Pearson

How to sign up?

1. Come to the CoCo RaHS booth *TODAY!*
2. Attend tonight's Training Session.
3. Come to the CoCo RaHS Pueblo Kickoff
March 18, 2004, CSU-Pueblo
4. Sign up on the web.



For more information visit the
CoCo RaHS Web site

<http://www.cocorahs.org>

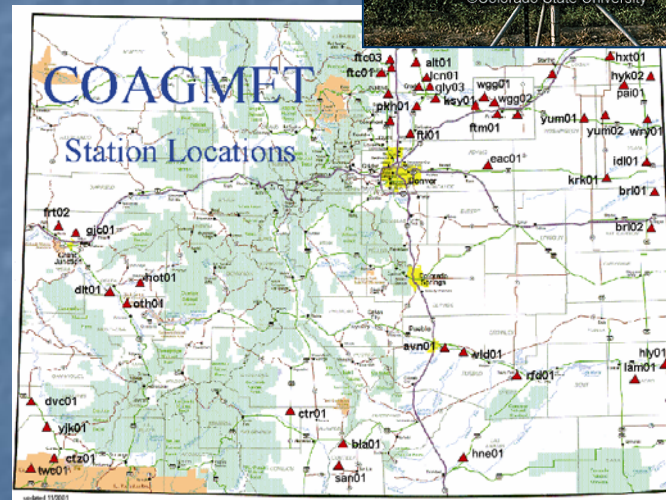


Support for this project provided by
Informal Science Education Program,
National Science Foundation
and
many local charter sponsors.

CoAgMet

Weather Data for Agriculture

- *Automated weather stations with daily and hourly readings of:*
 - *Temperature*
 - *Humidity*
 - *Wind*
 - *Precipitation*
 - *Solar energy*
 - *Evapotranspiration*



<http://www.coagmet.com>

Colorado Climate Magazine

- *Good bedtime reading about the climate of Colorado -- recent and historic*
- *\$15/year subscription pays printing and mailing costs*



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

Colorado Climate Center

Colorado State University

- *Data and Power Point Presentations available for downloading*
- <http://ccc.atmos.colostate.edu>
click on "Drought"
then click on "Presentations"

