Watching Colorado Weather

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Colorado Climate Center
Colorado State University

Presented at Arkansas River Basin Water Forum
April 7, 2005, Trinidad, Colorado

Prepared by Odie Bliss

How do we monitor the climate of Colorado?

Rangeland pasture near Trinidad, Colo., photo by Gary Kramer, NRCS.

National Weather Service

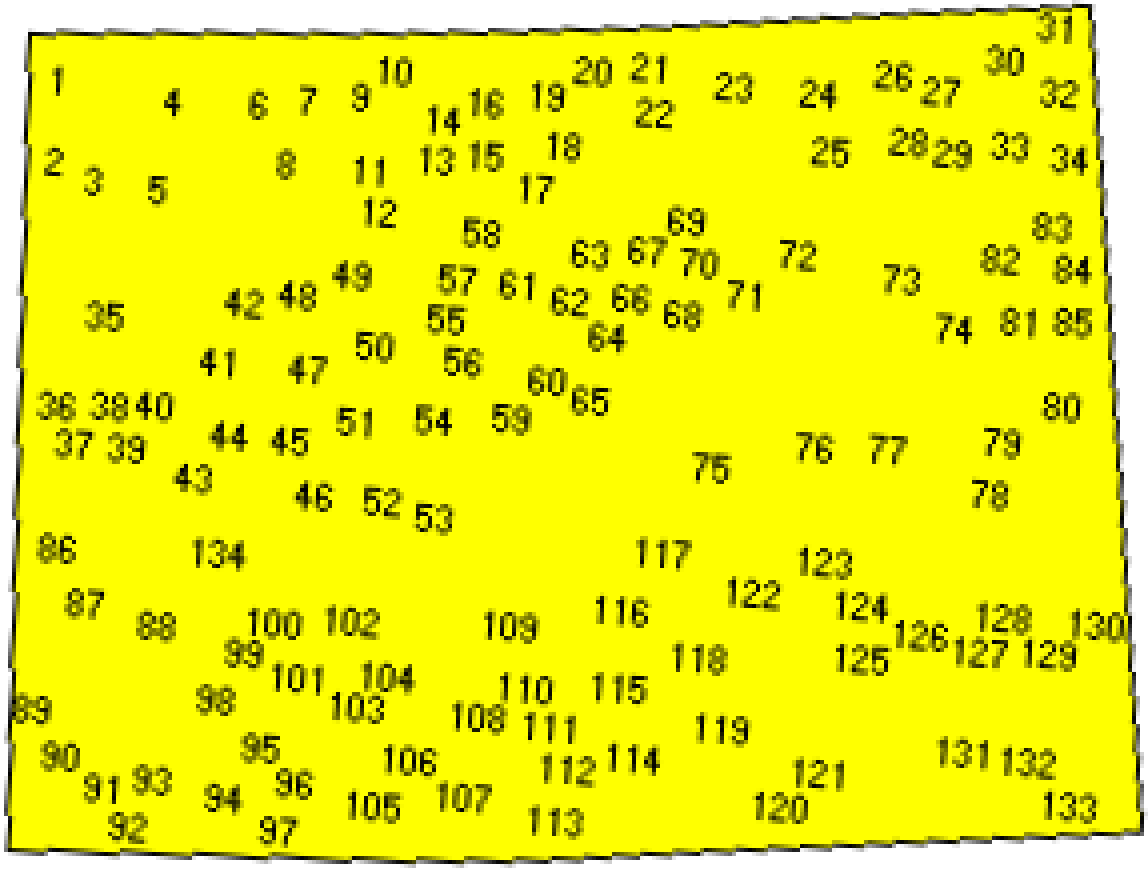
- Pueblo NWS Forecast Office

NWS Weather Station

Holly NWS Cooperative weather station

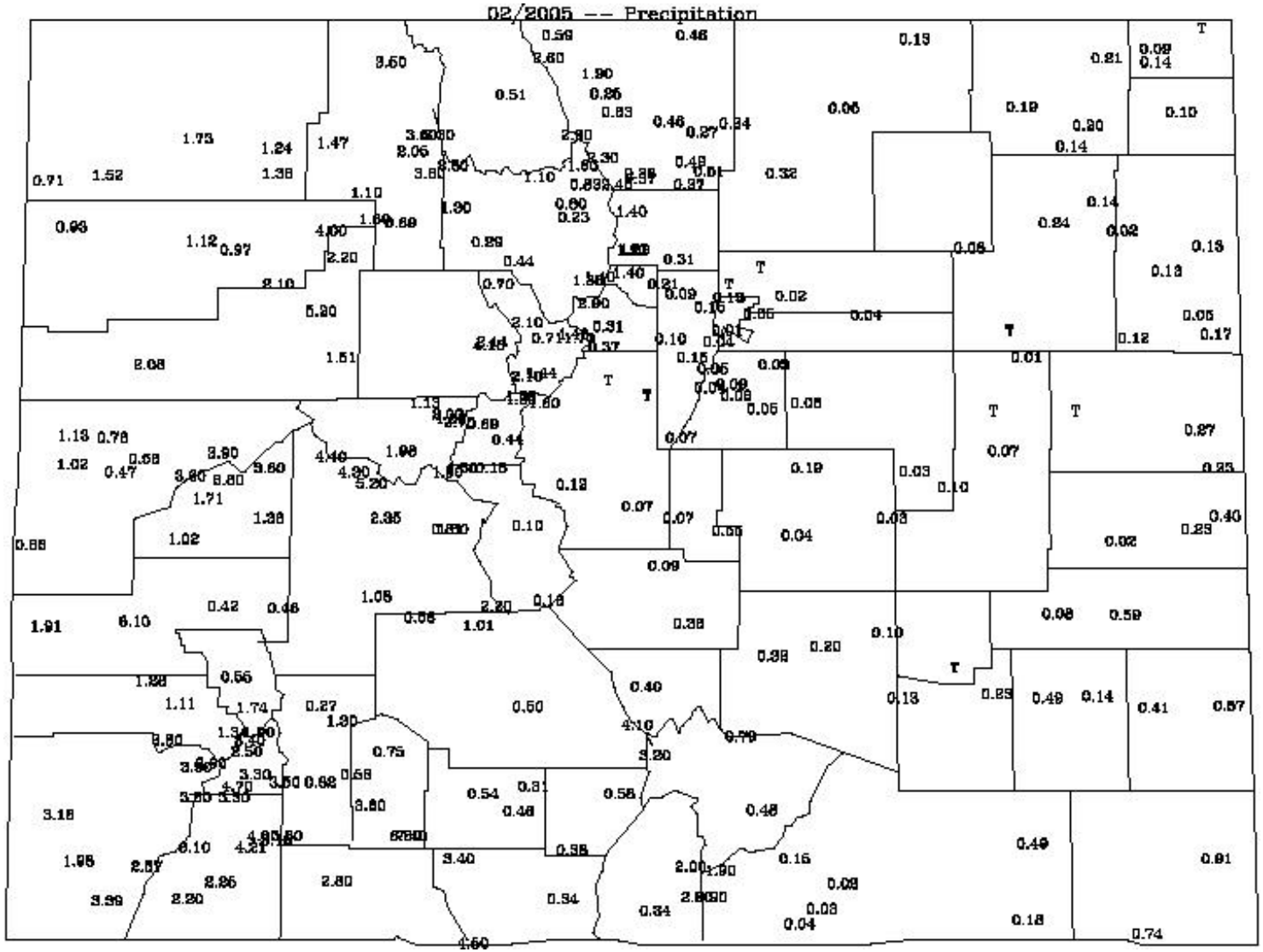
Rocky Ford NWS Coop weather station

National Weather Service Cooperative Program

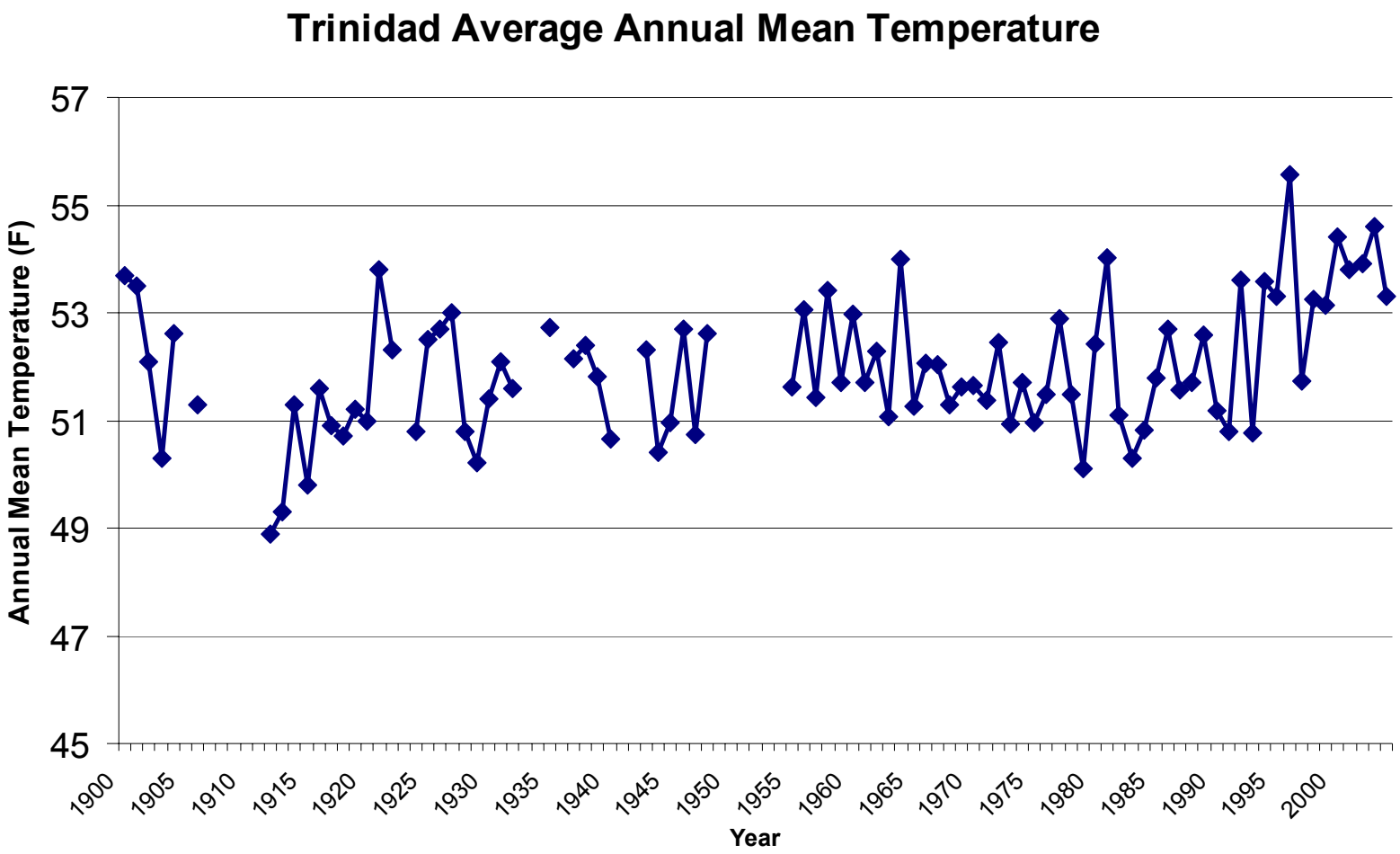


Colorado Cooperative Weather Stations

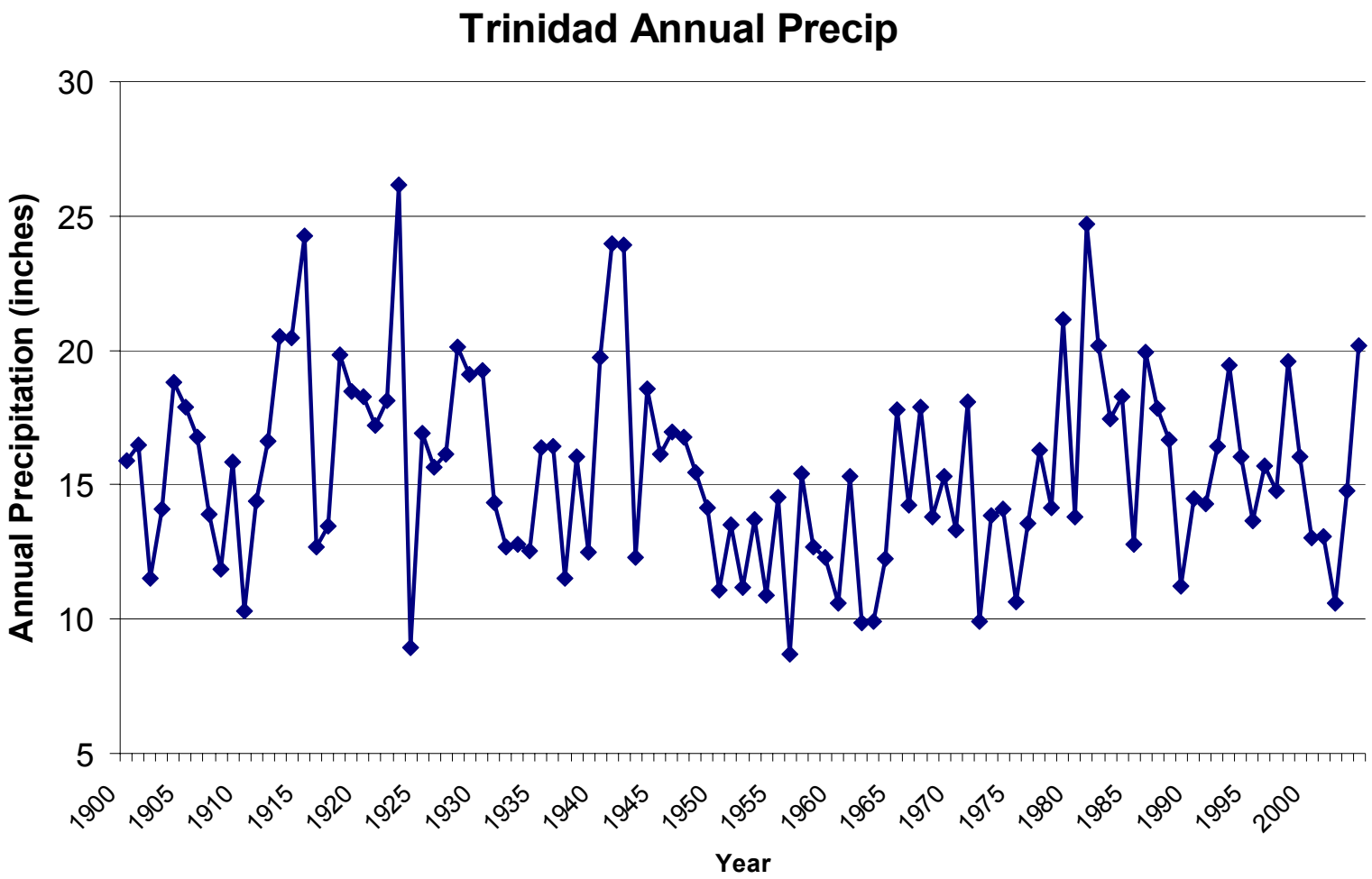
February 2005 Precipitation Totals



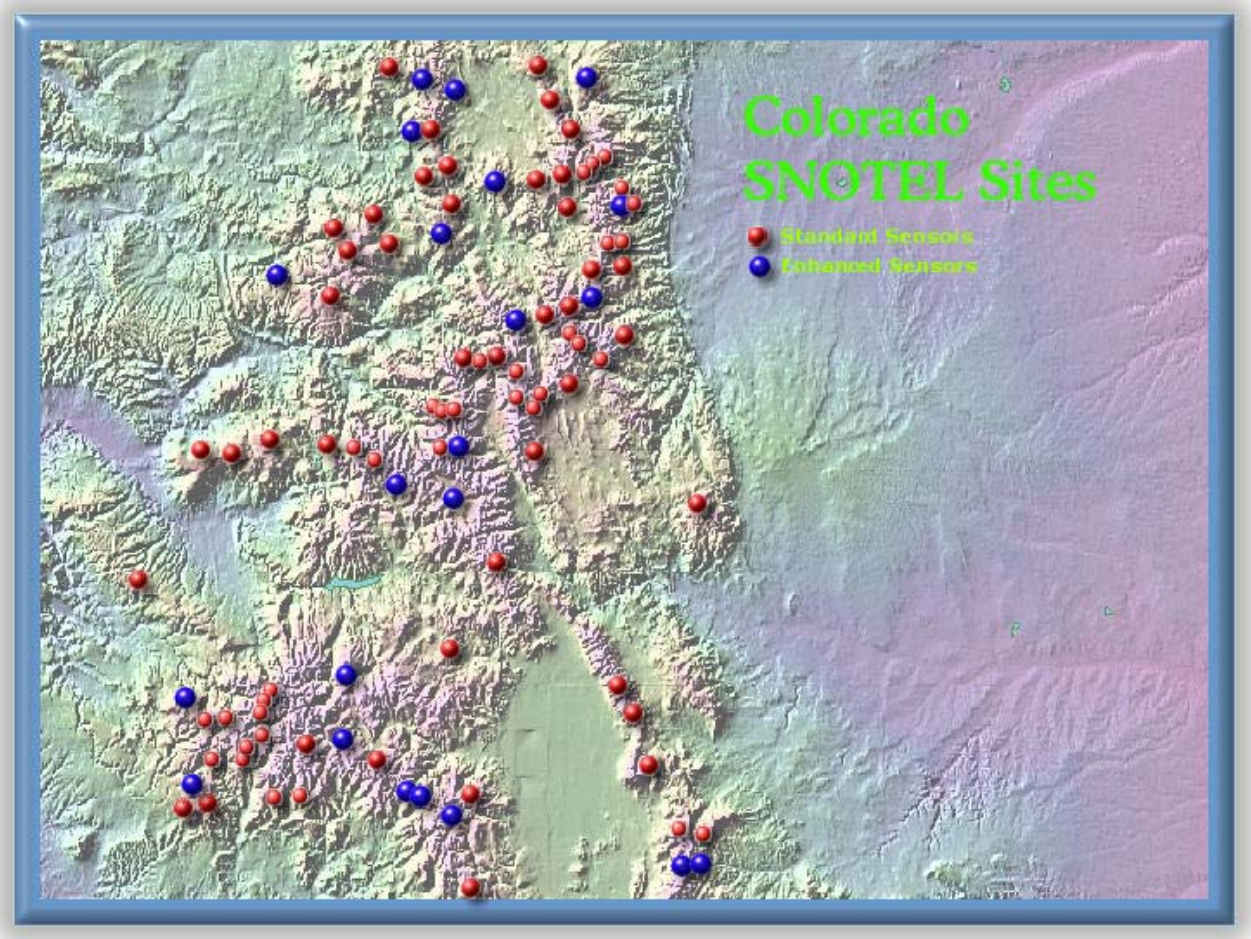
Trinidad Average Temperatures



Trinidad Annual Precipitation Totals



USDA, Natural Resources Conservation Service, NRCS

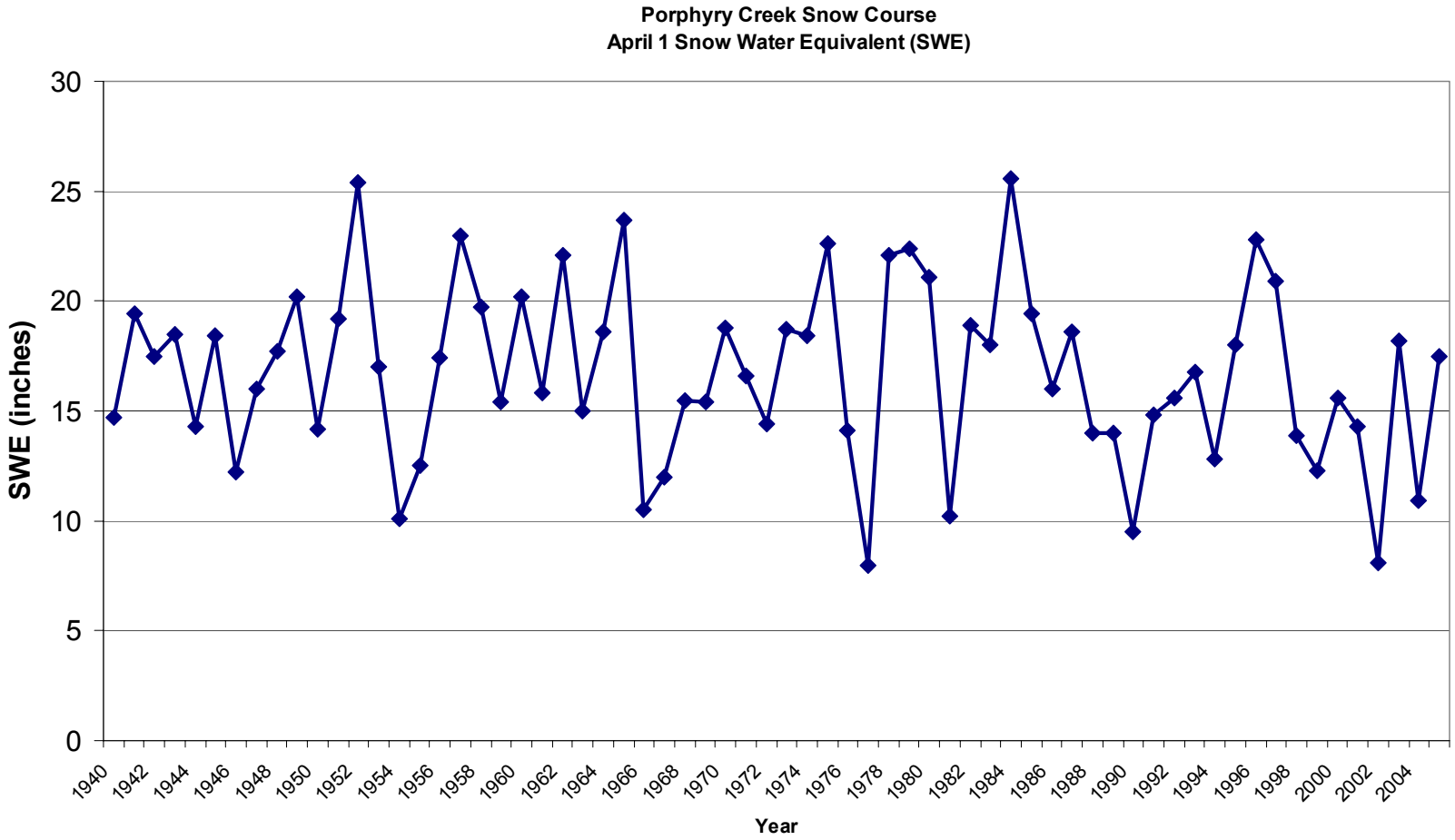


NRCS Manual Snow Readings

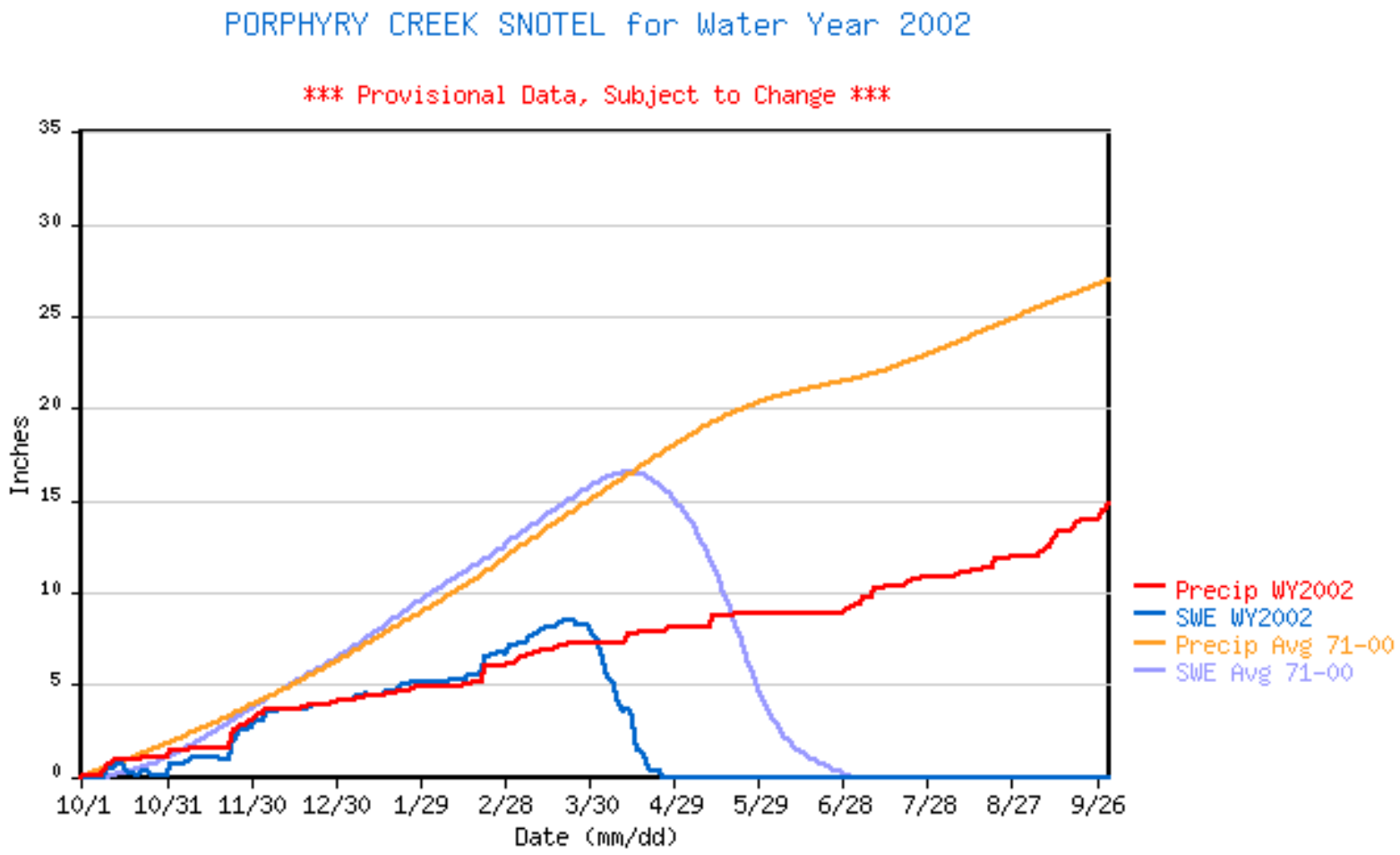
NRCS Typical Snotel Site

Fremont Pass

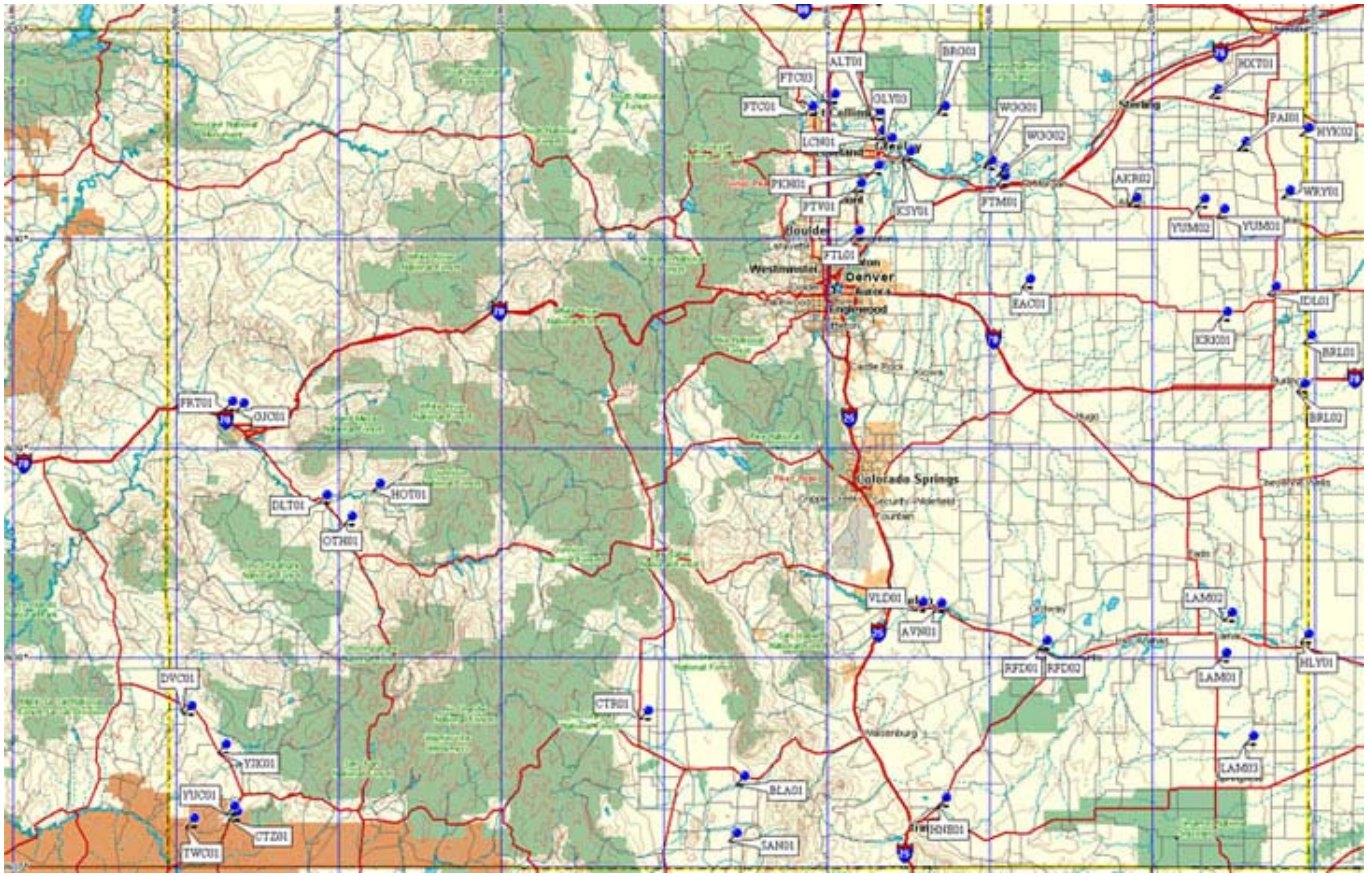
Porphyry Creek April 1 SWE



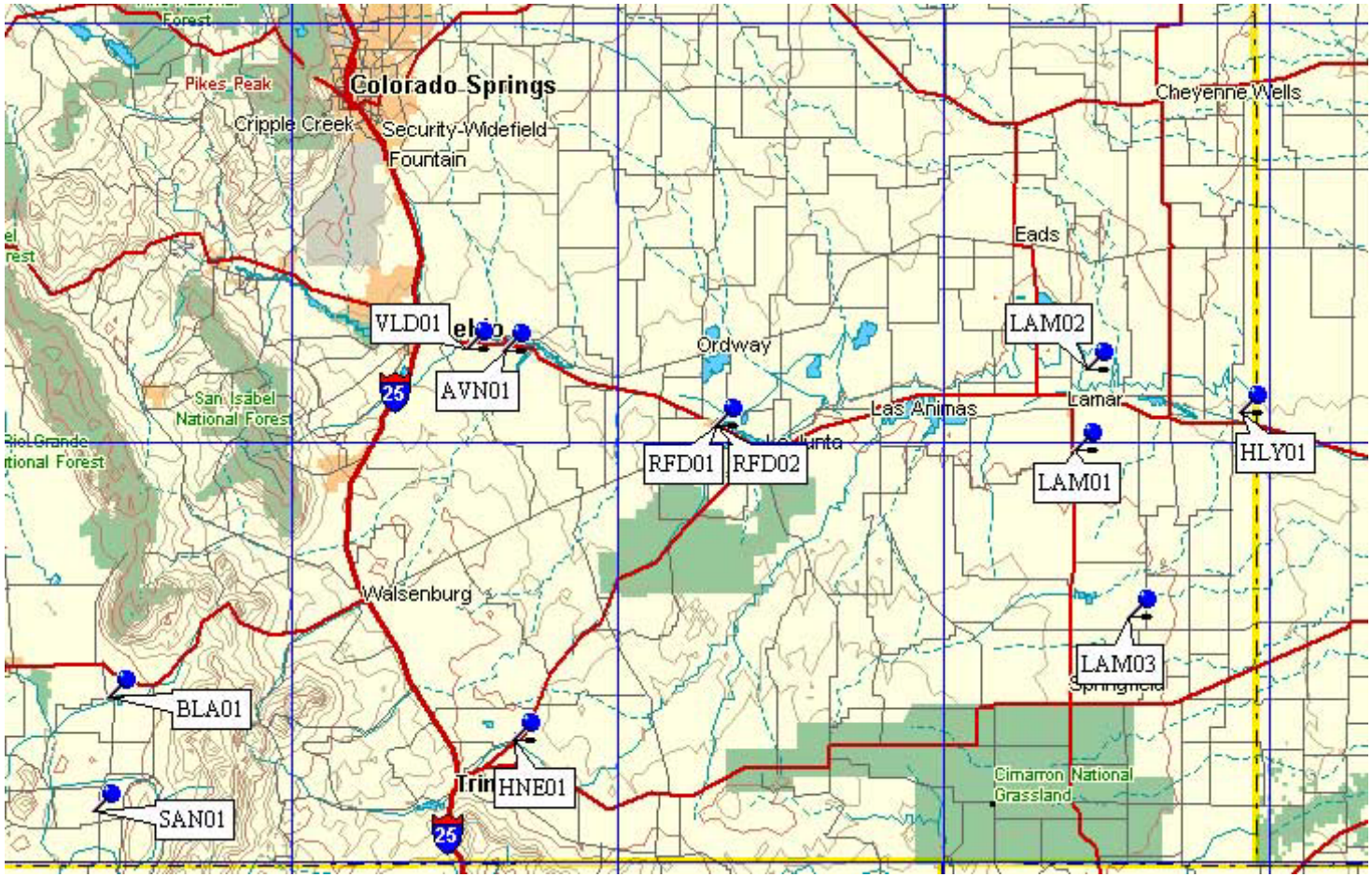
2002 Water Year



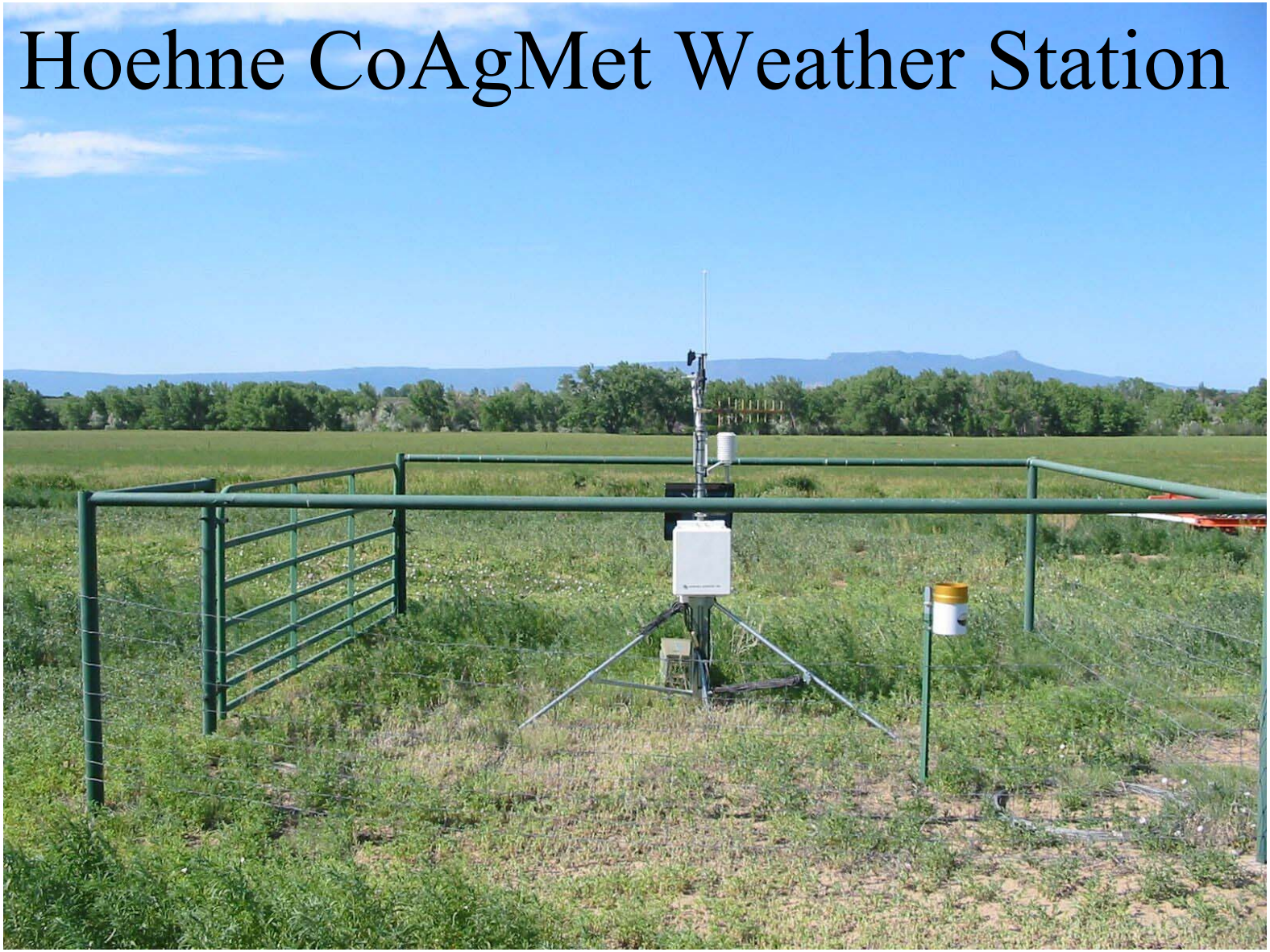
Colorado Agricultural Meteorological Network (CoAgMet)



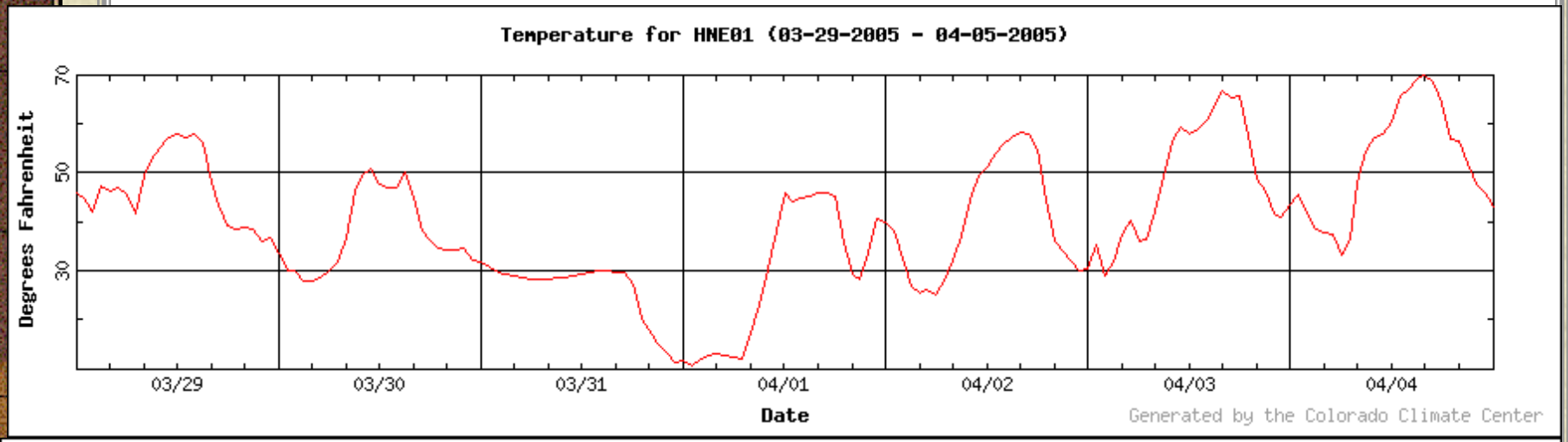
CoAgMet Southeast Colorado

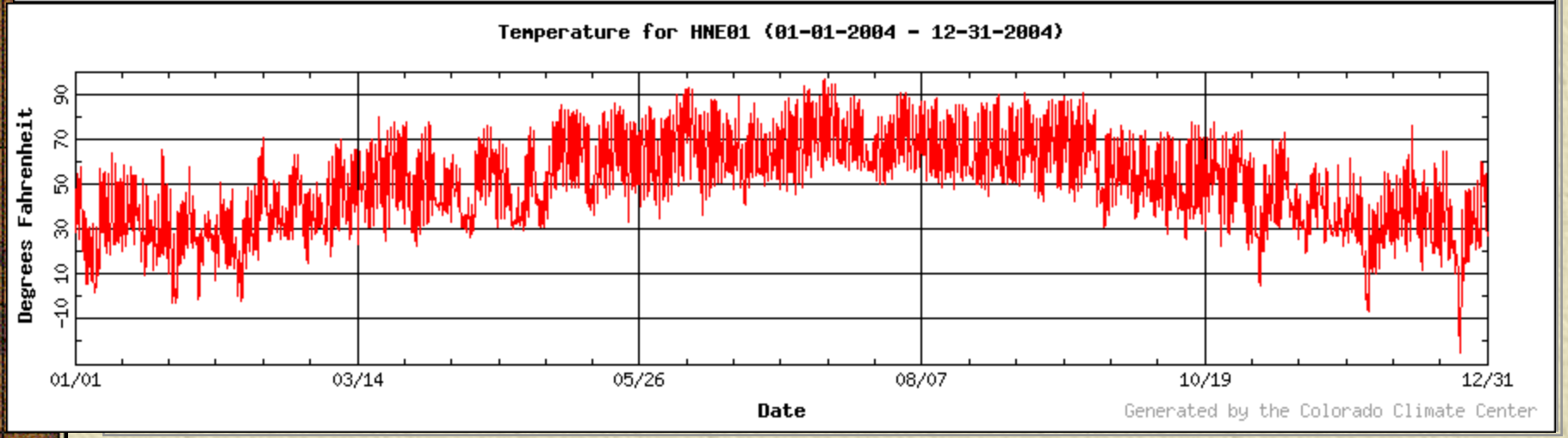


Hoehne CoAgMet Weather Station

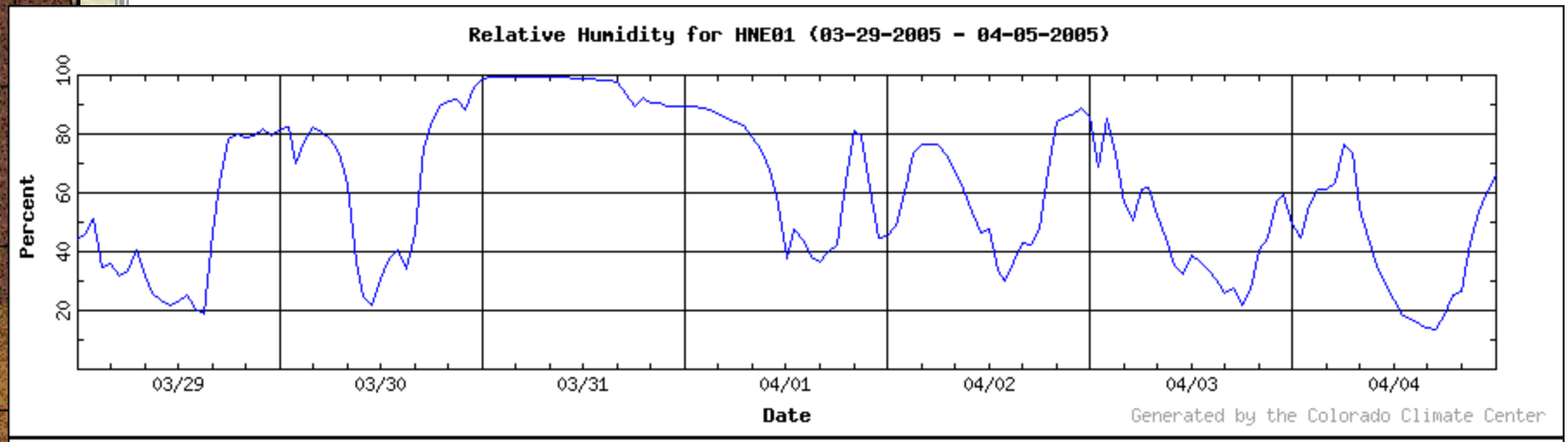


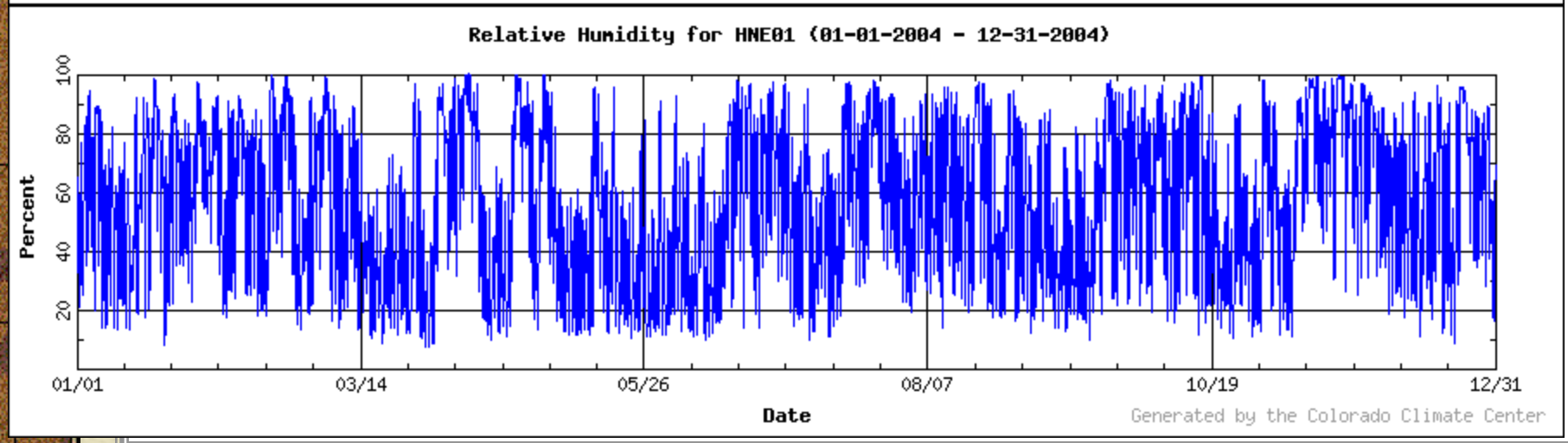
Hoehne Daily Temperatures



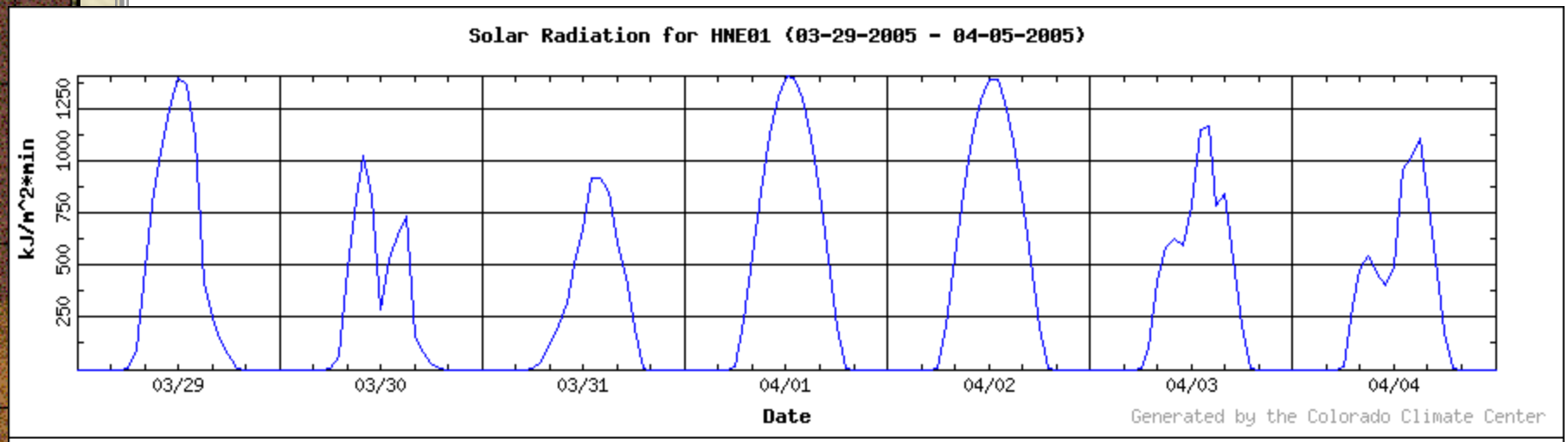


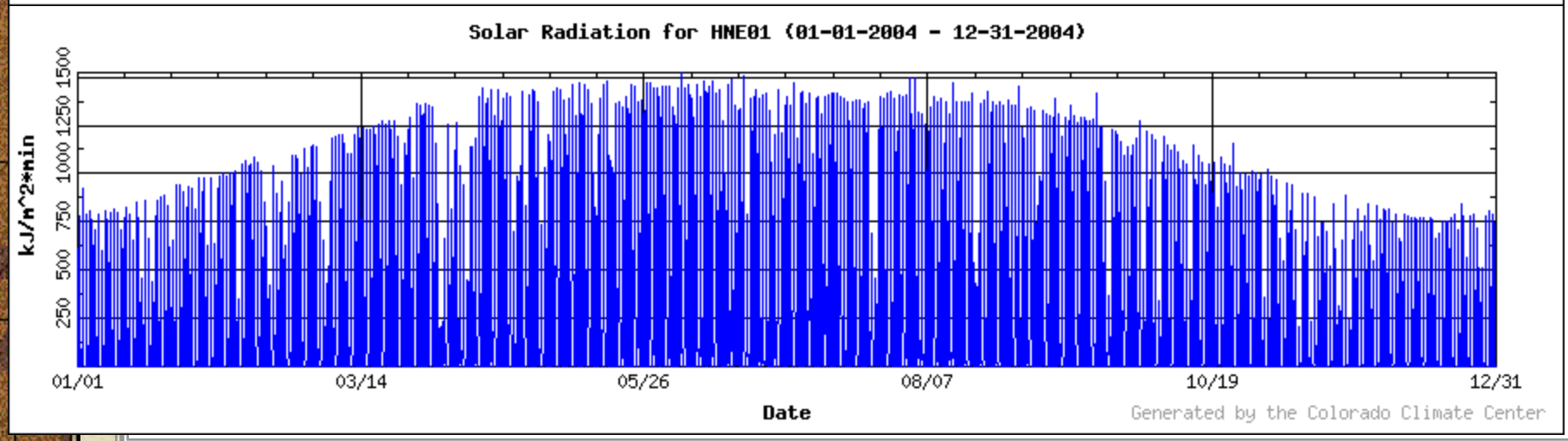
Hoehne Relative Humidity



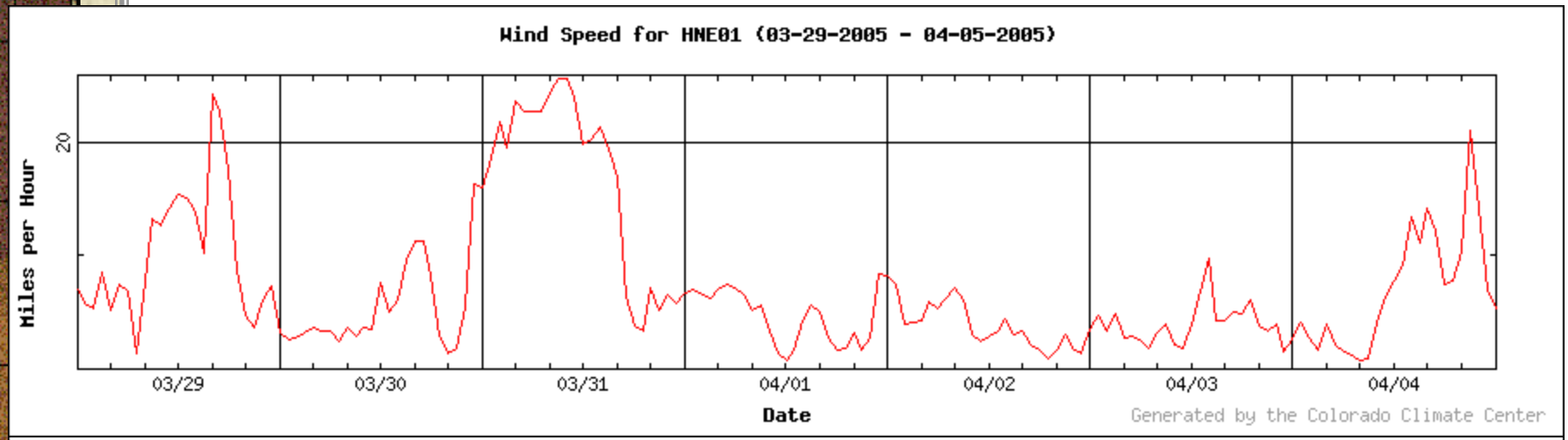


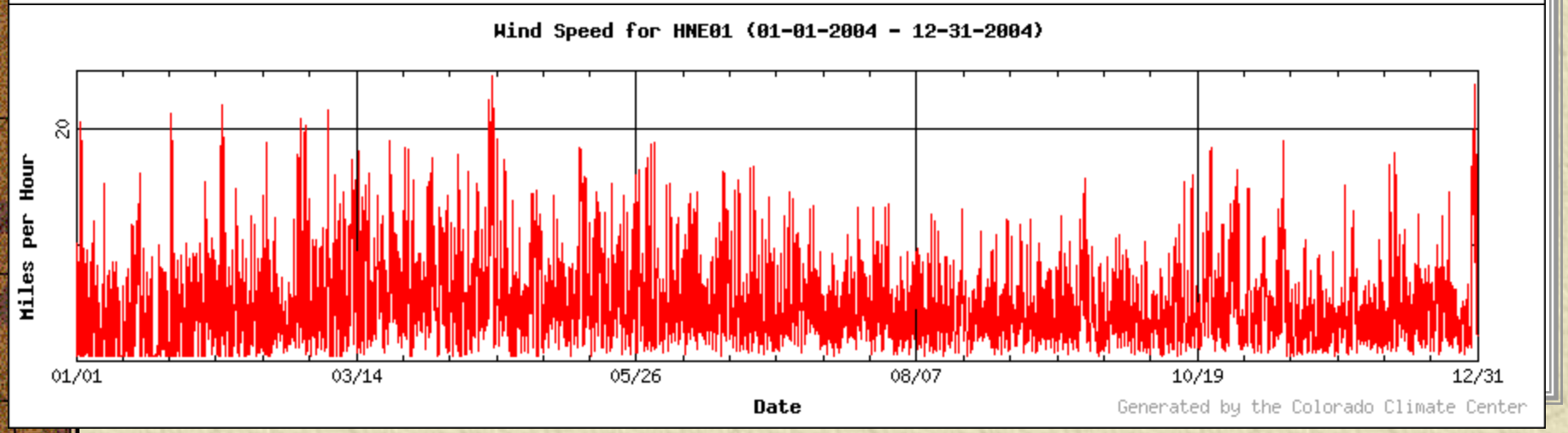
Hoehne Solar Radiation



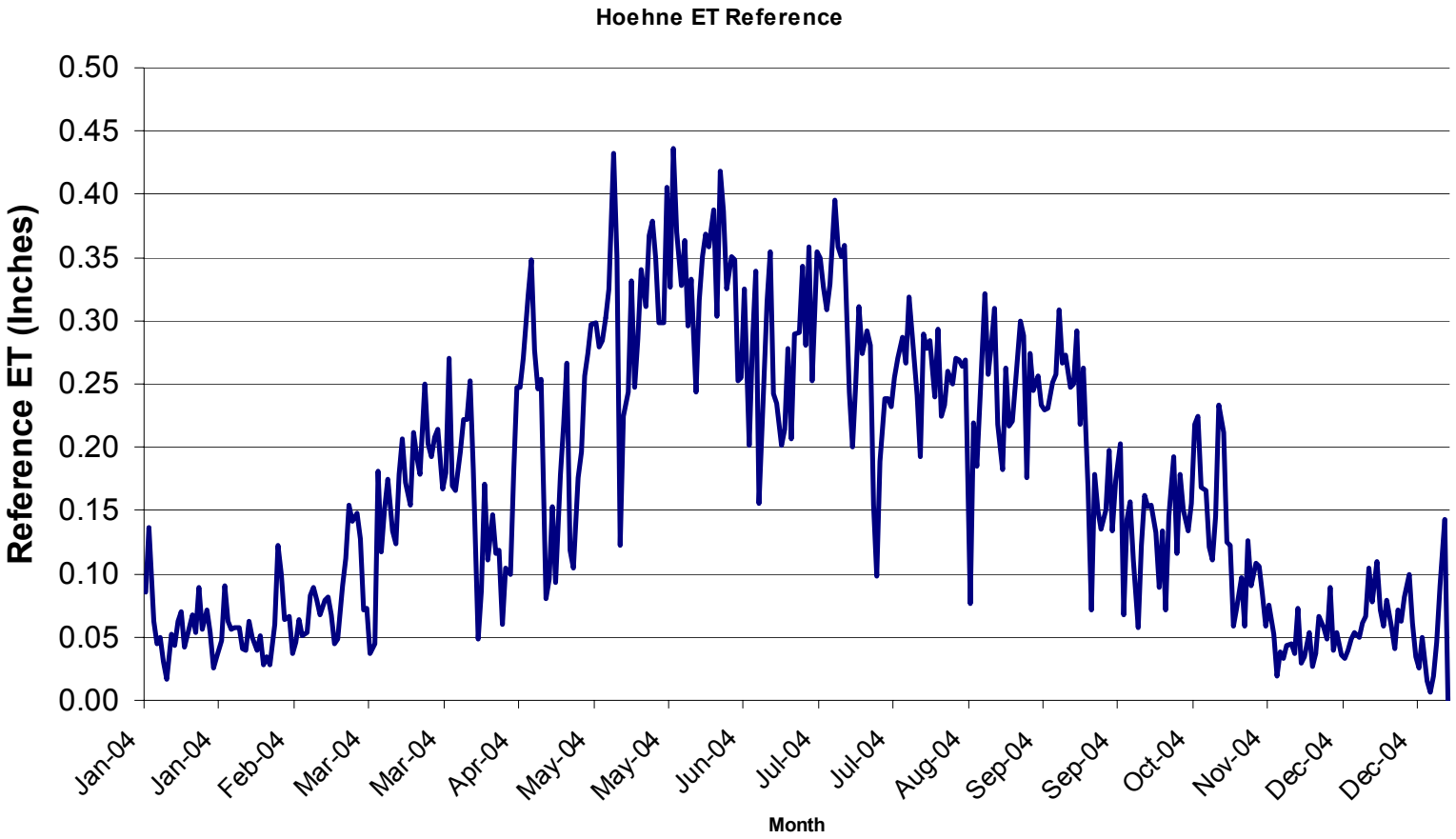


Hoehne Wind Speed





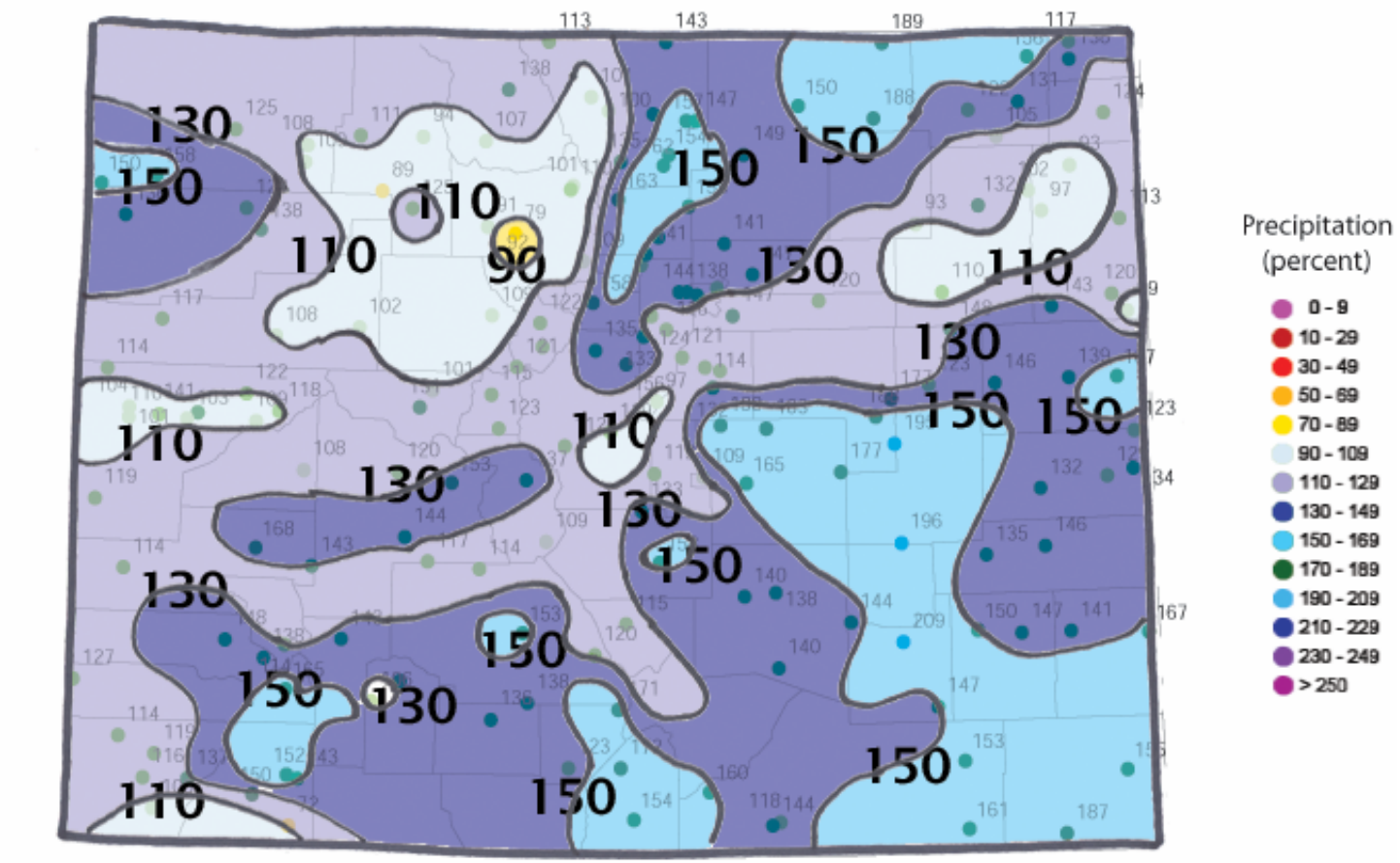
Hoehne ET Reference



What's our current situation?

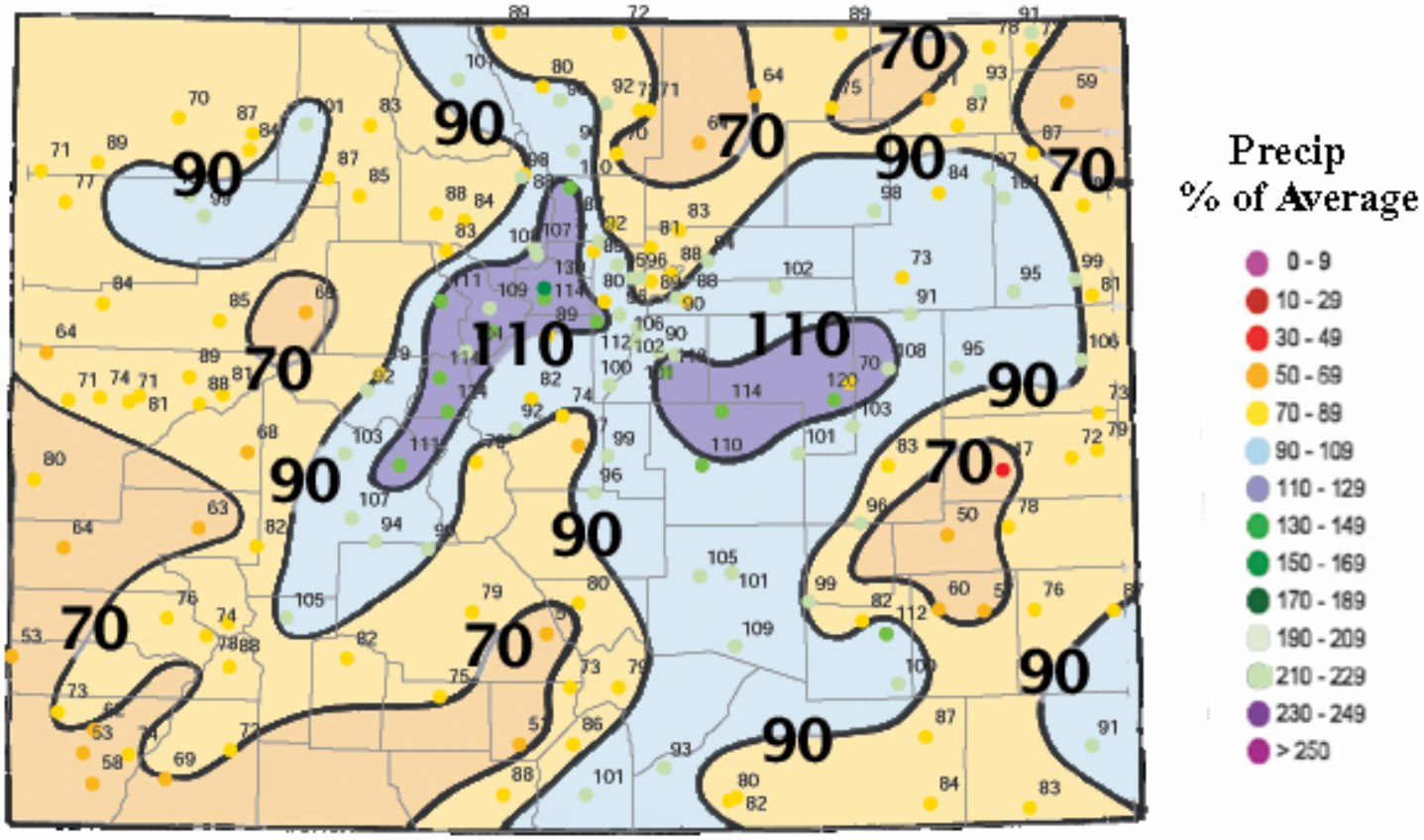
Photos courtesy of NRCS

1999 Water Year Precipitation



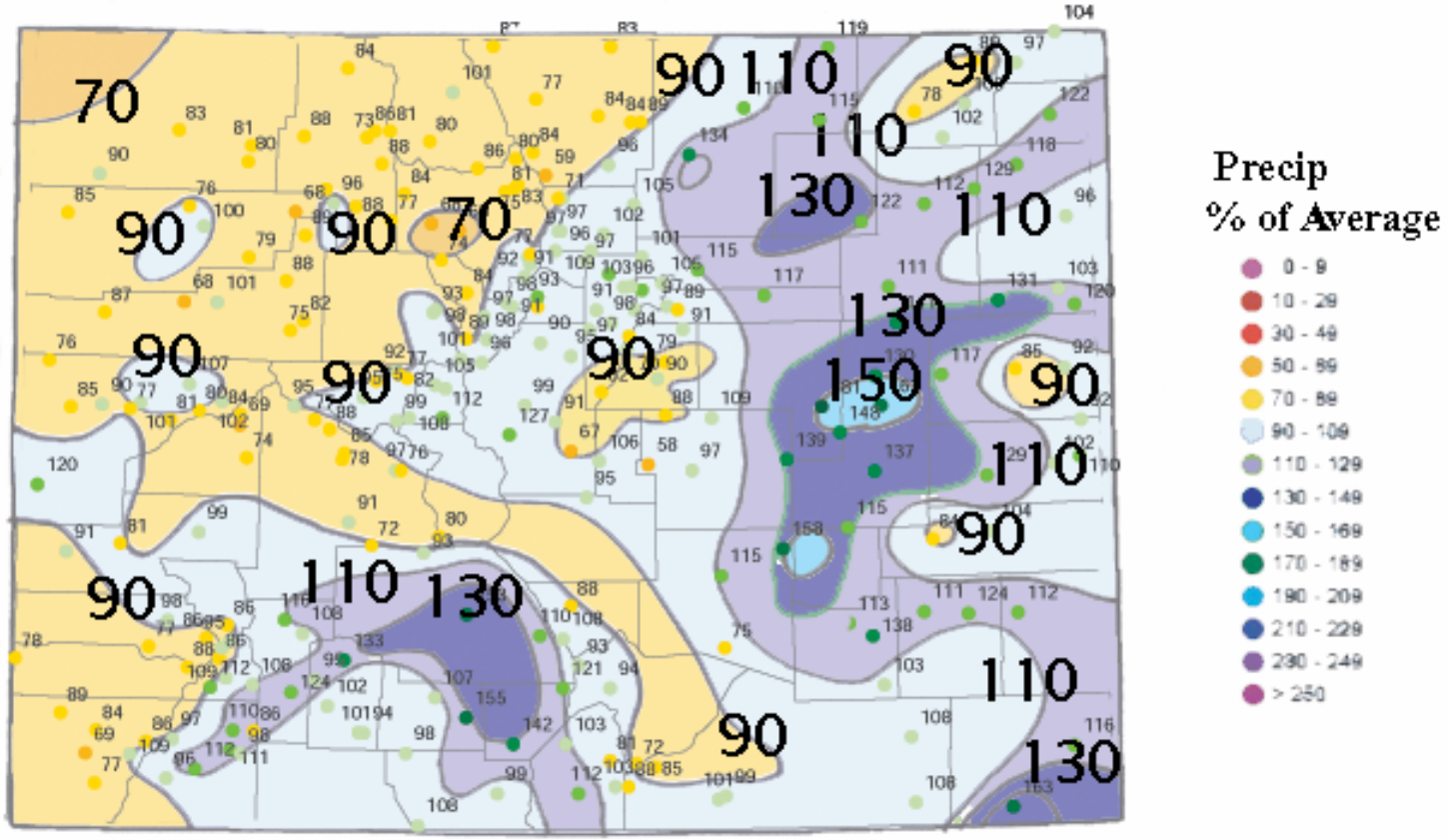
2000 Water Year Precipitation

Water Year 2000
(Oct. 1999 - Sept. 2000)
Precipitation Percent of Average for 1961-1990 Averages



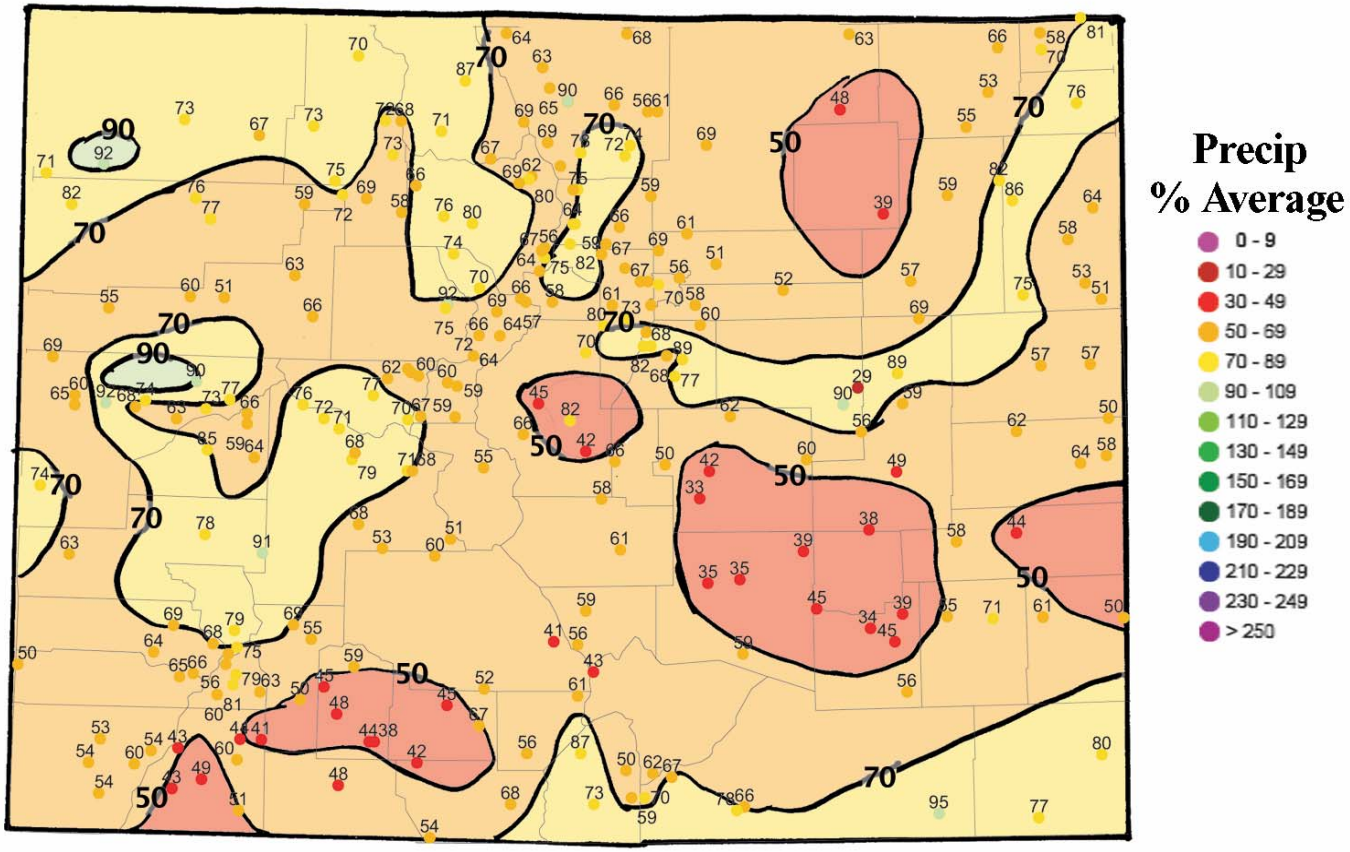
2001 Water Year Precipitation

Water Year 2001
(Oct. 2000 - Sept. 2001)
Precipitation Percent of Average for 1961-1990 Averages

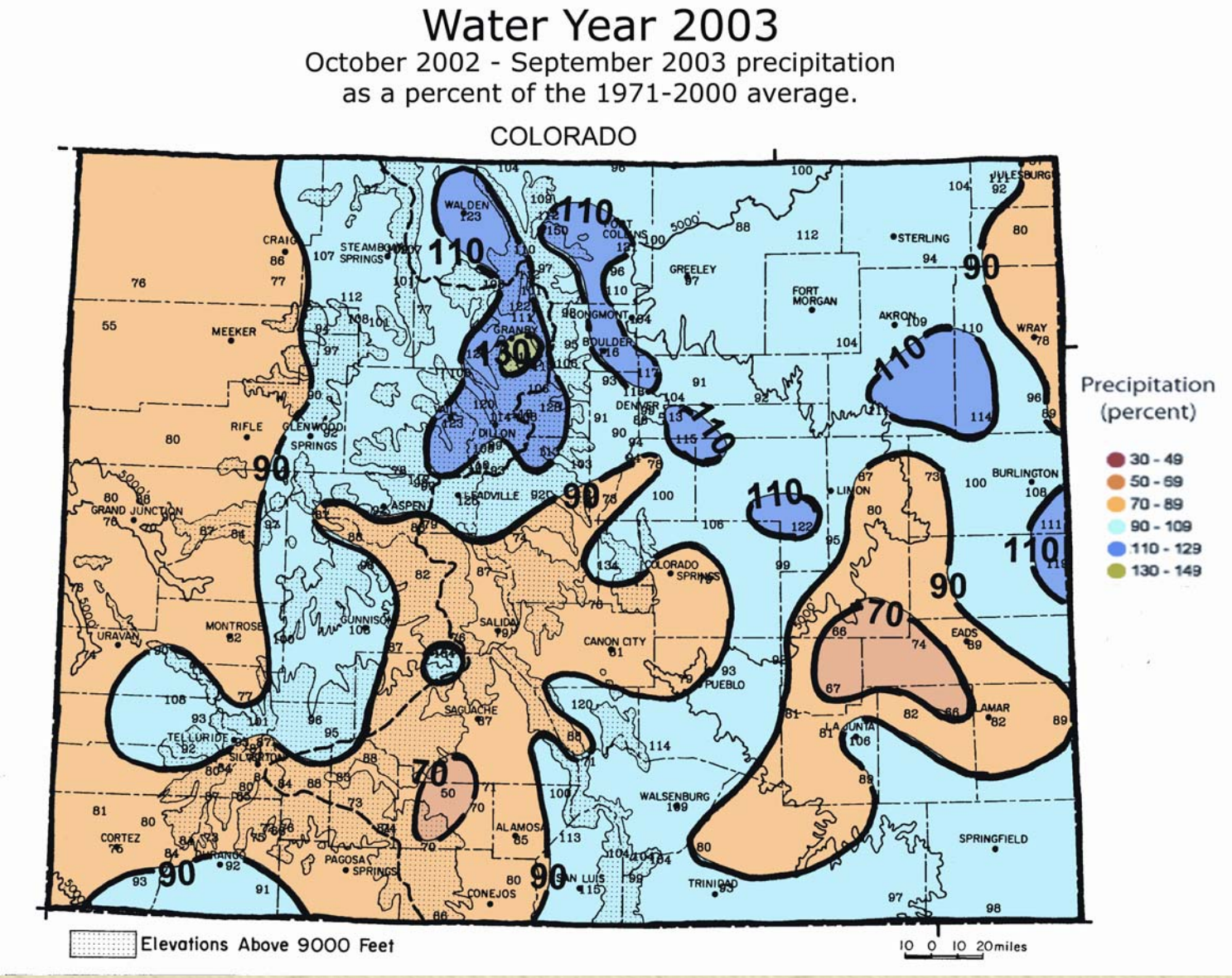


2002 Water Year Precipitation

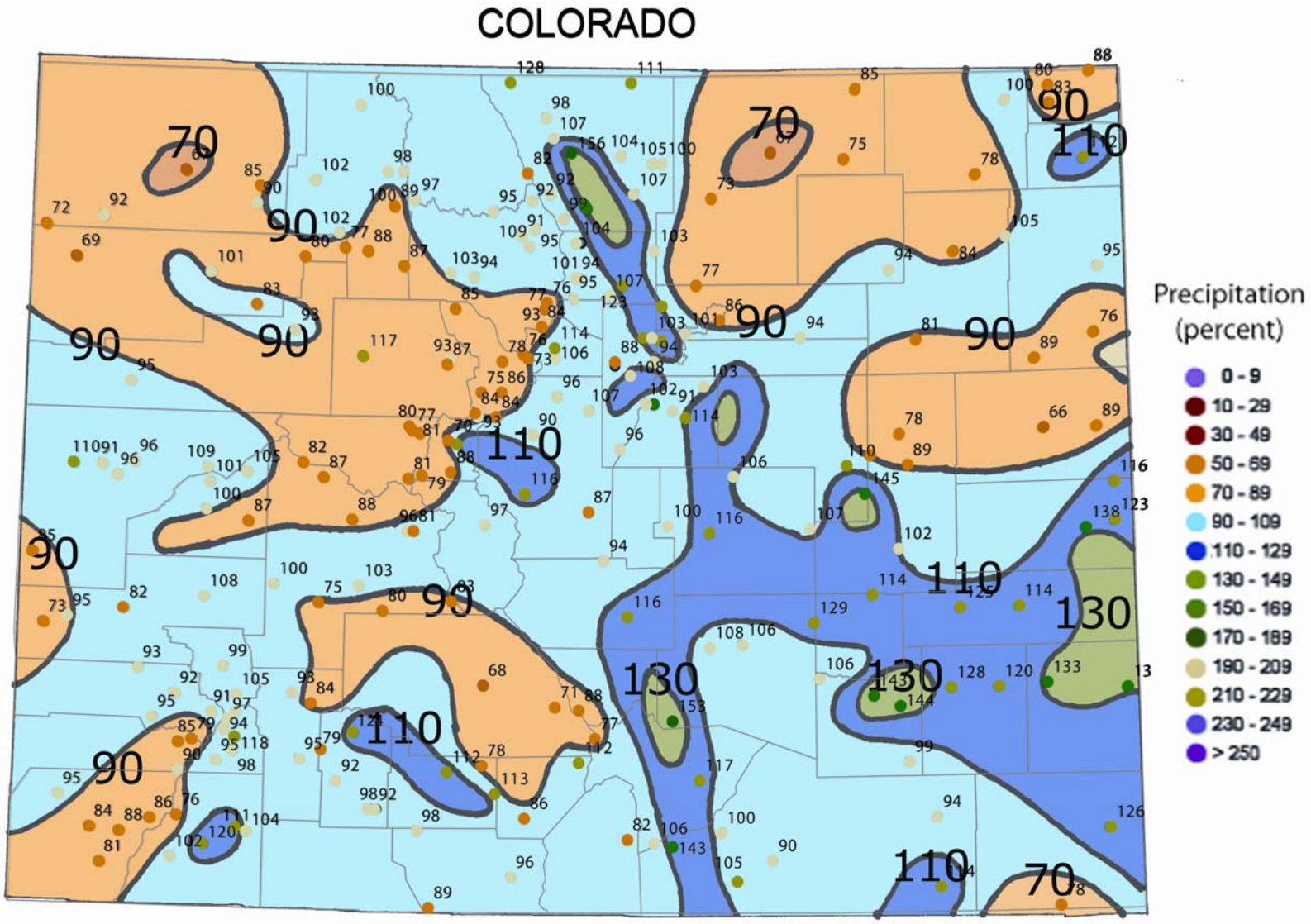
Water Year 2002
(Oct. 2001 - Sept. 2002)
Precipitation Percent of Average for 1961-1990 Averages



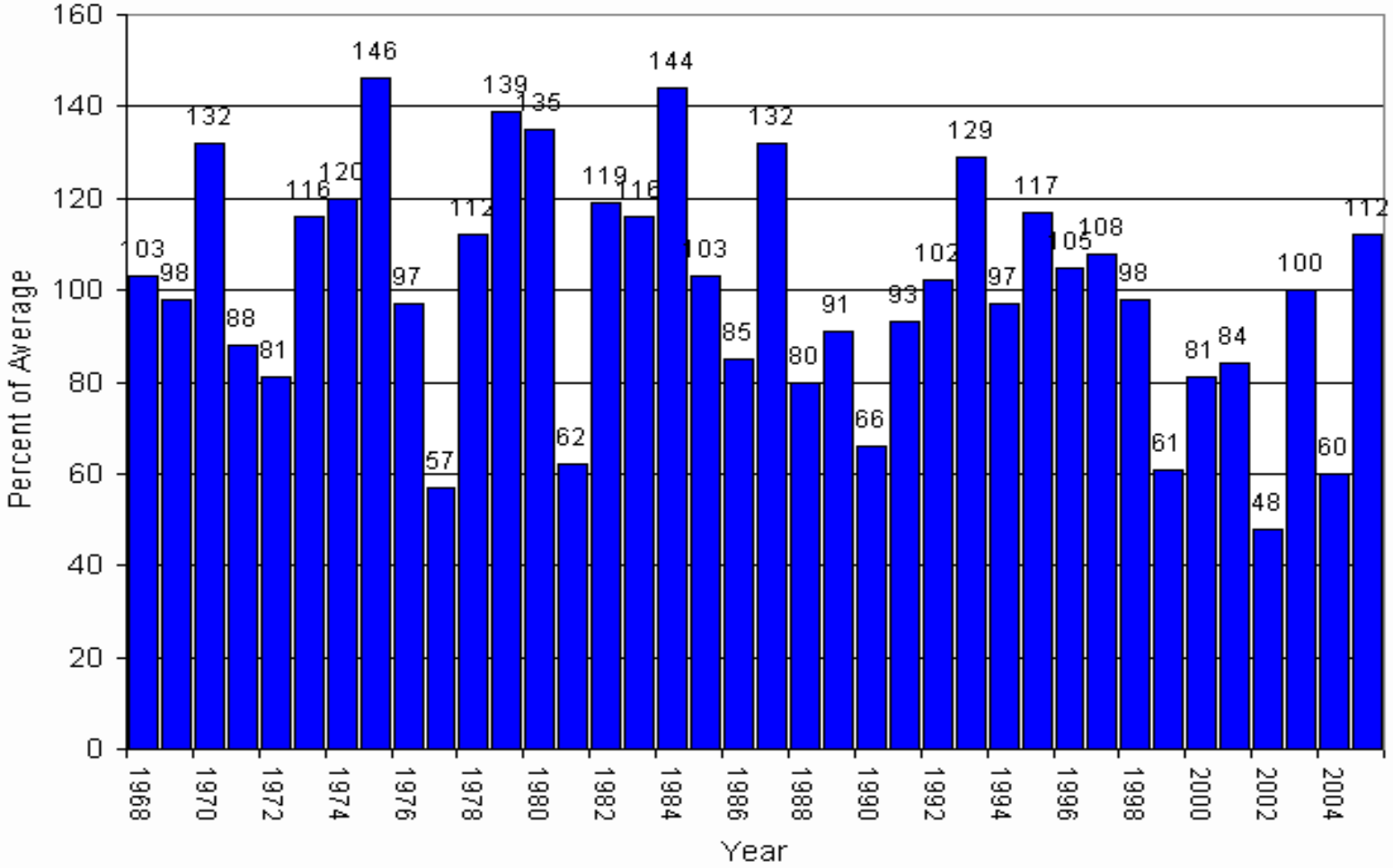
2003 Water Year Precipitation



2004 Water Year Precipitation

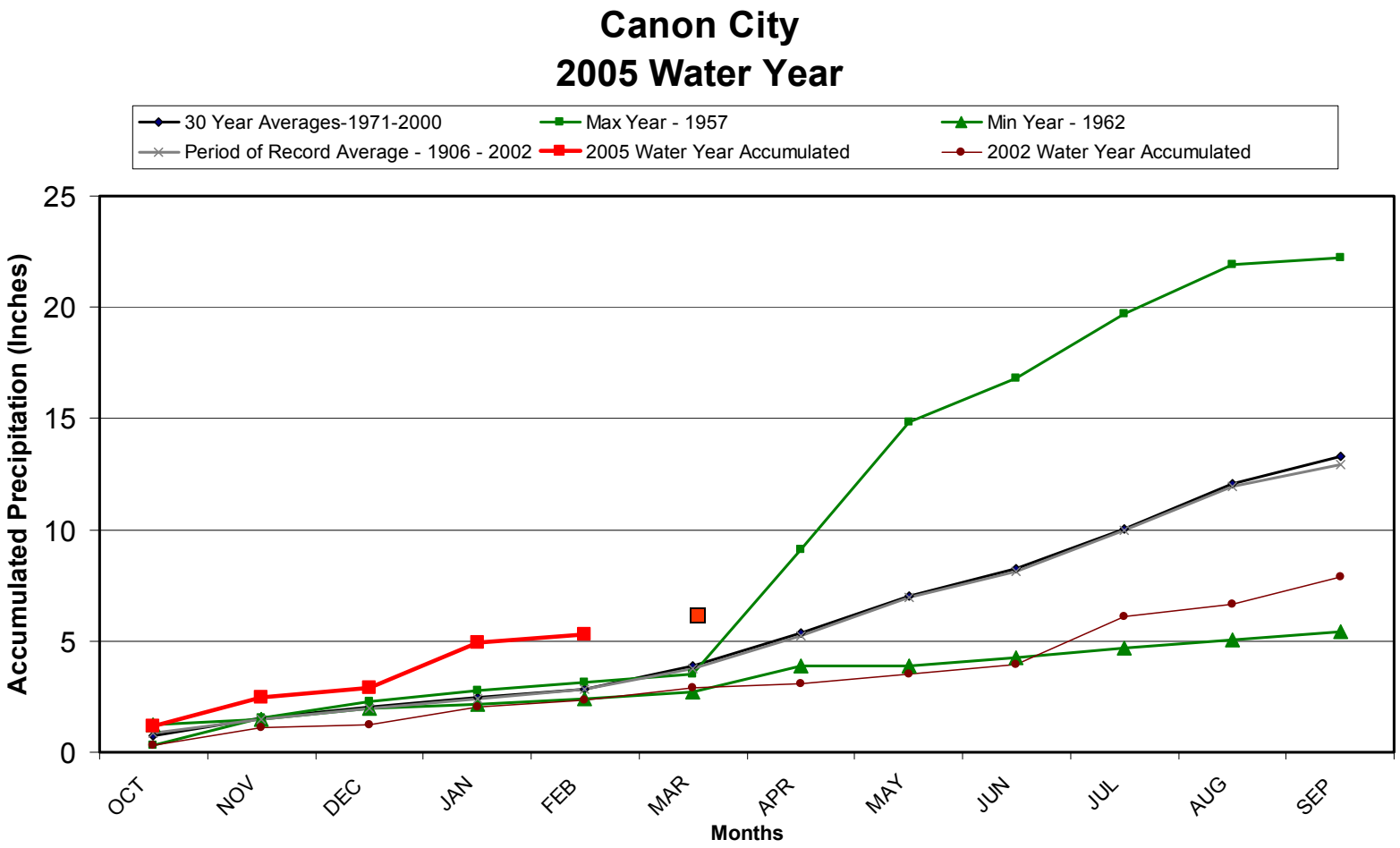


Arkansas Basin April 1 Snowpack

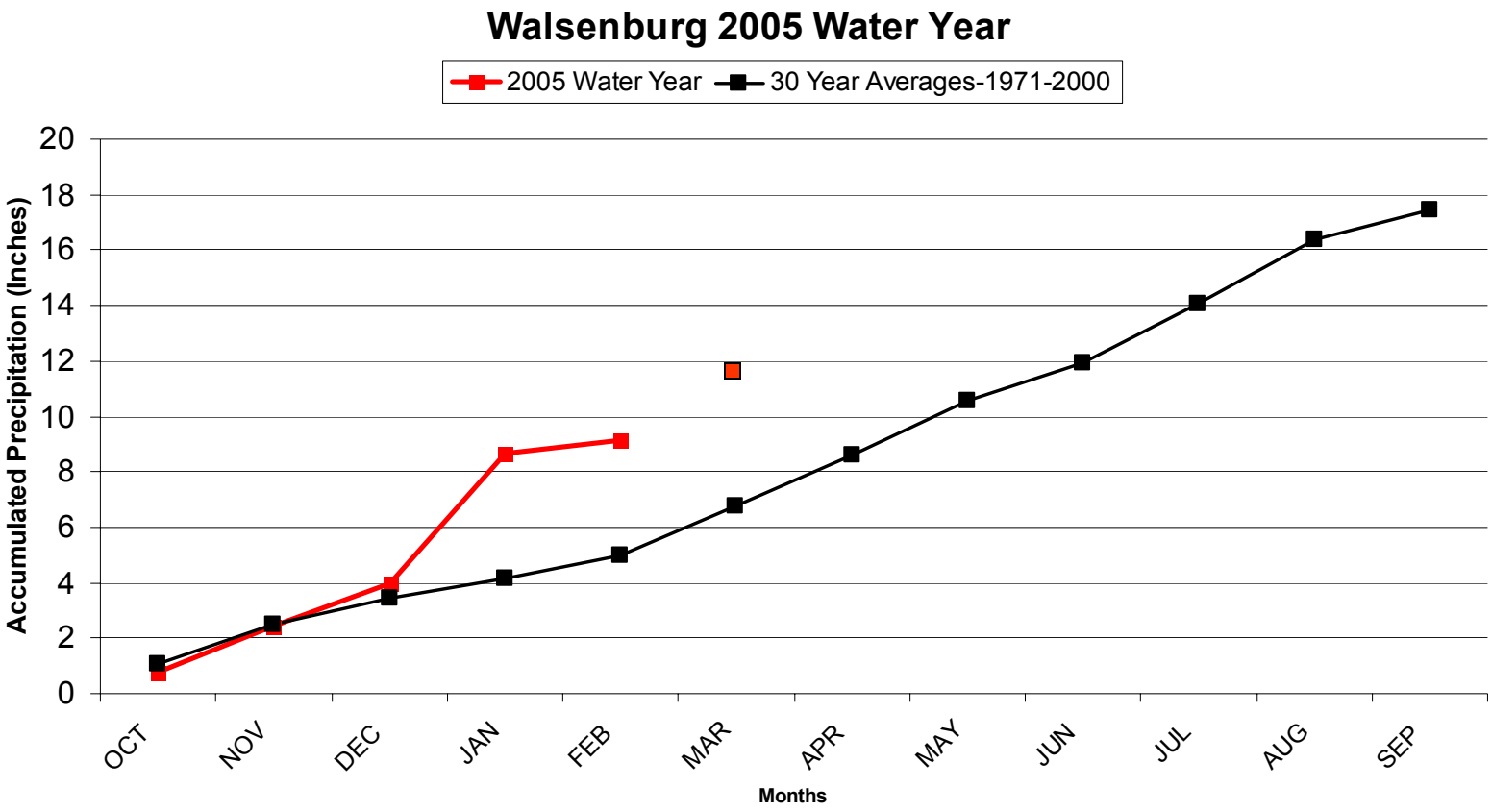


How are we doing this year?

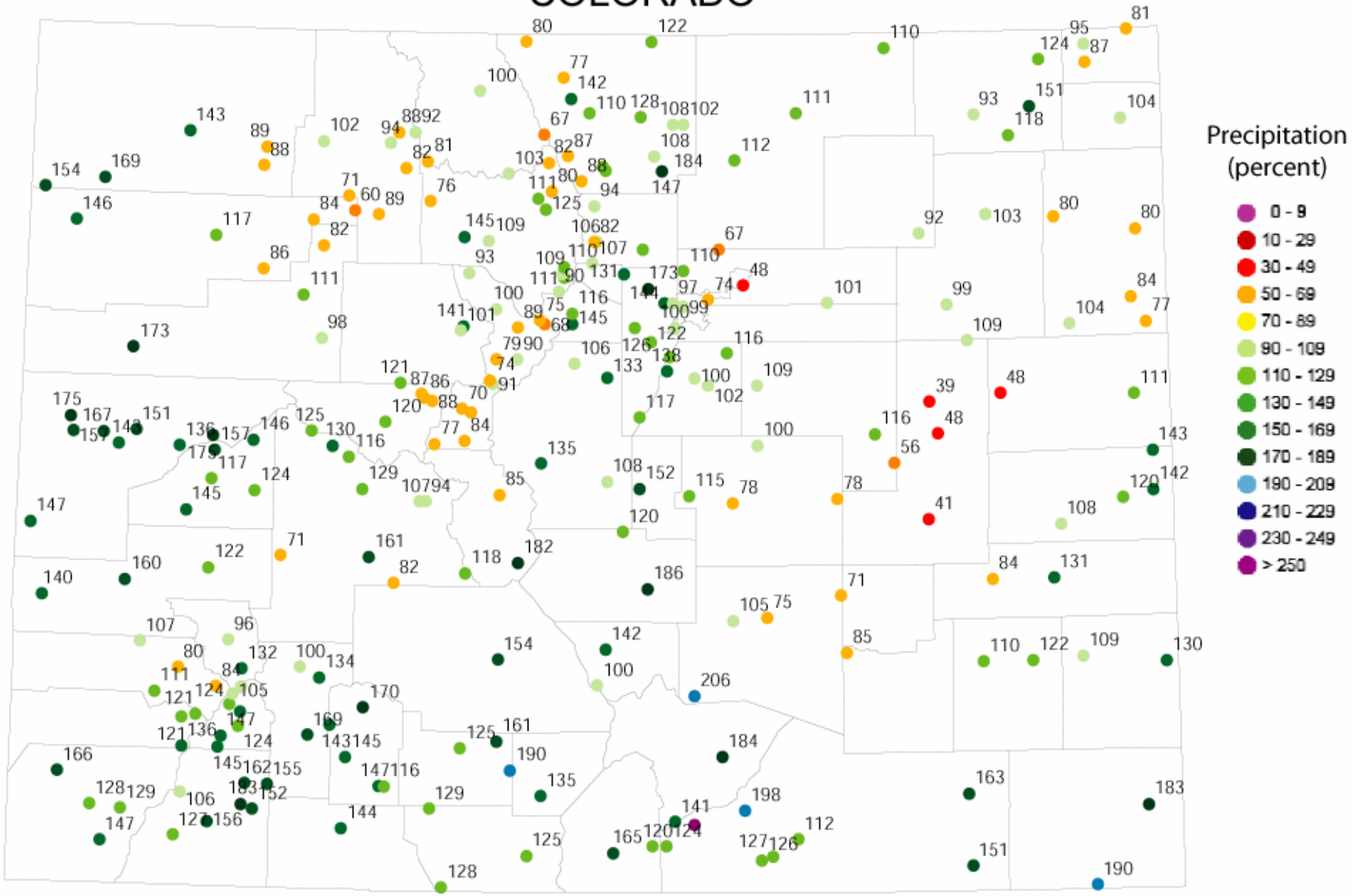
Canon City


Canon City
2005 Water Year
30 Year Averages-1971-2000
Max Year - 1957
Min Year - 1962
Period of Record Average - 1906 - 2002
2005 Water Year Accumulated
2002 Water Year Accumulated
Accumulated Precipitation (Inches)
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Months

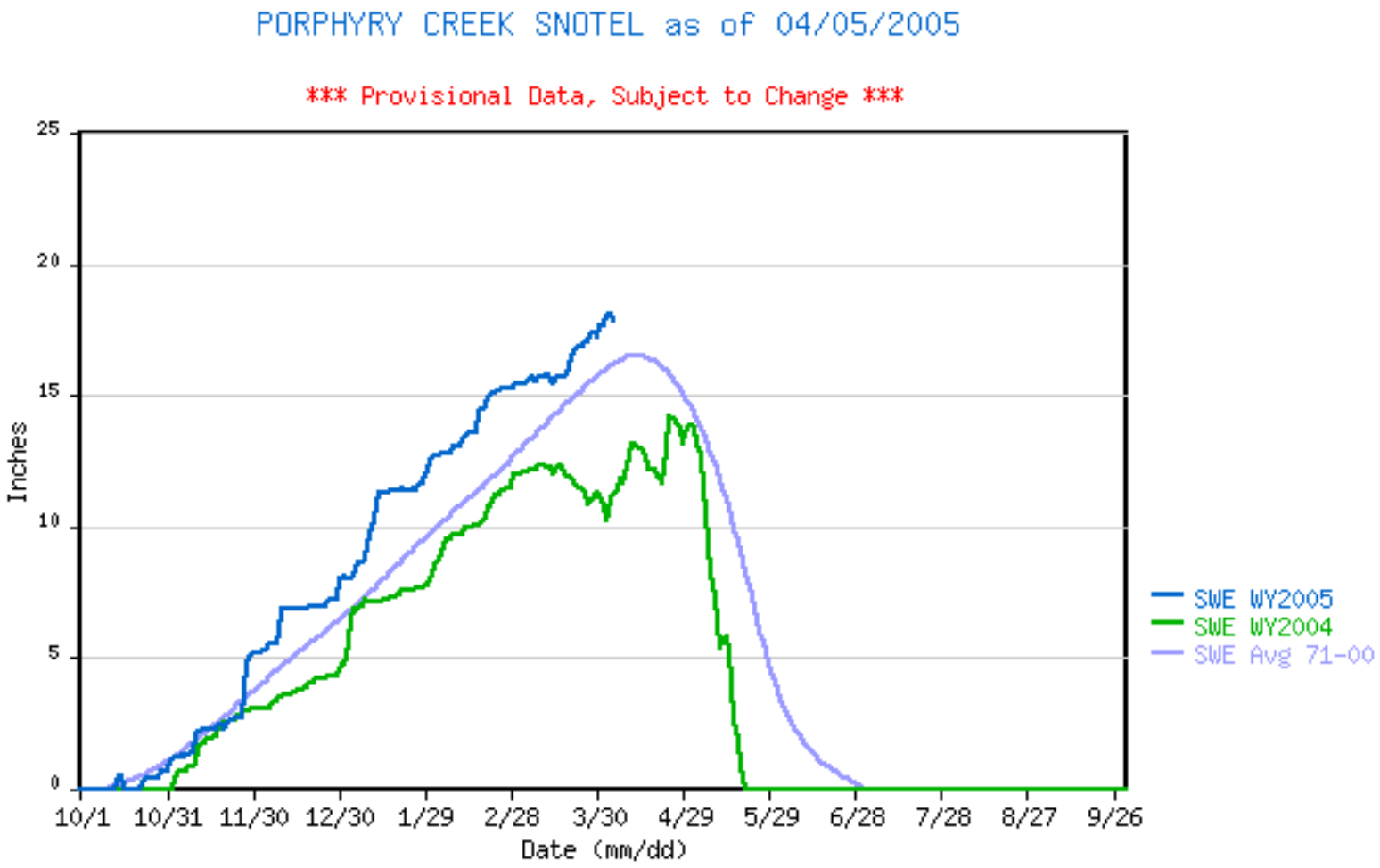
Walsenburg


Walsenburg 2005 Water Year
2005 Water Year
30 Year Averages-1971-2000
Accumulated Precipitation (Inches)
0
2
4
6
8
10
12
14
16
18
20
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Months

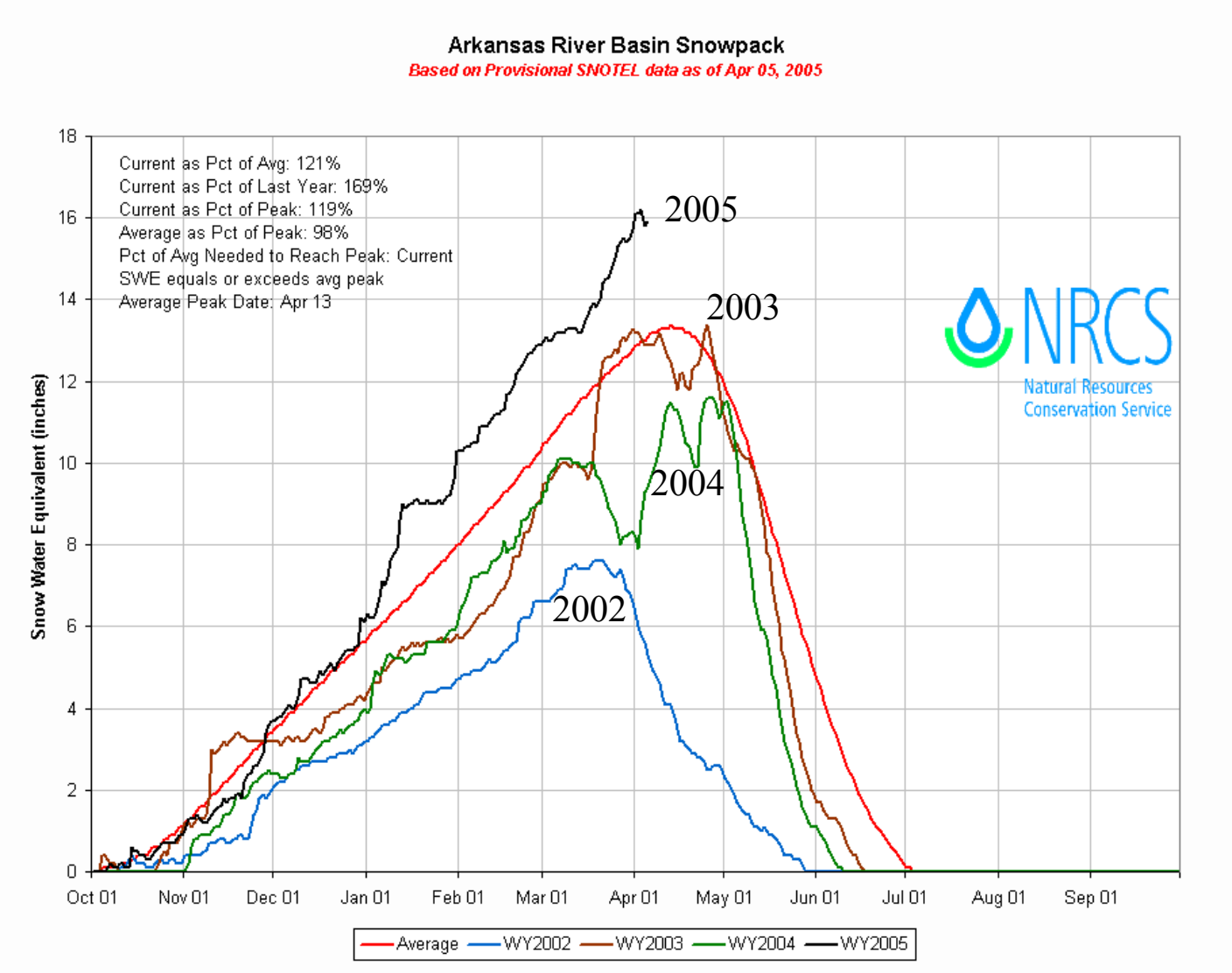
COLORADO



Water Year 2005 (October 2004 through February 2005) precipitation as a percent of the 1971-2000 average.

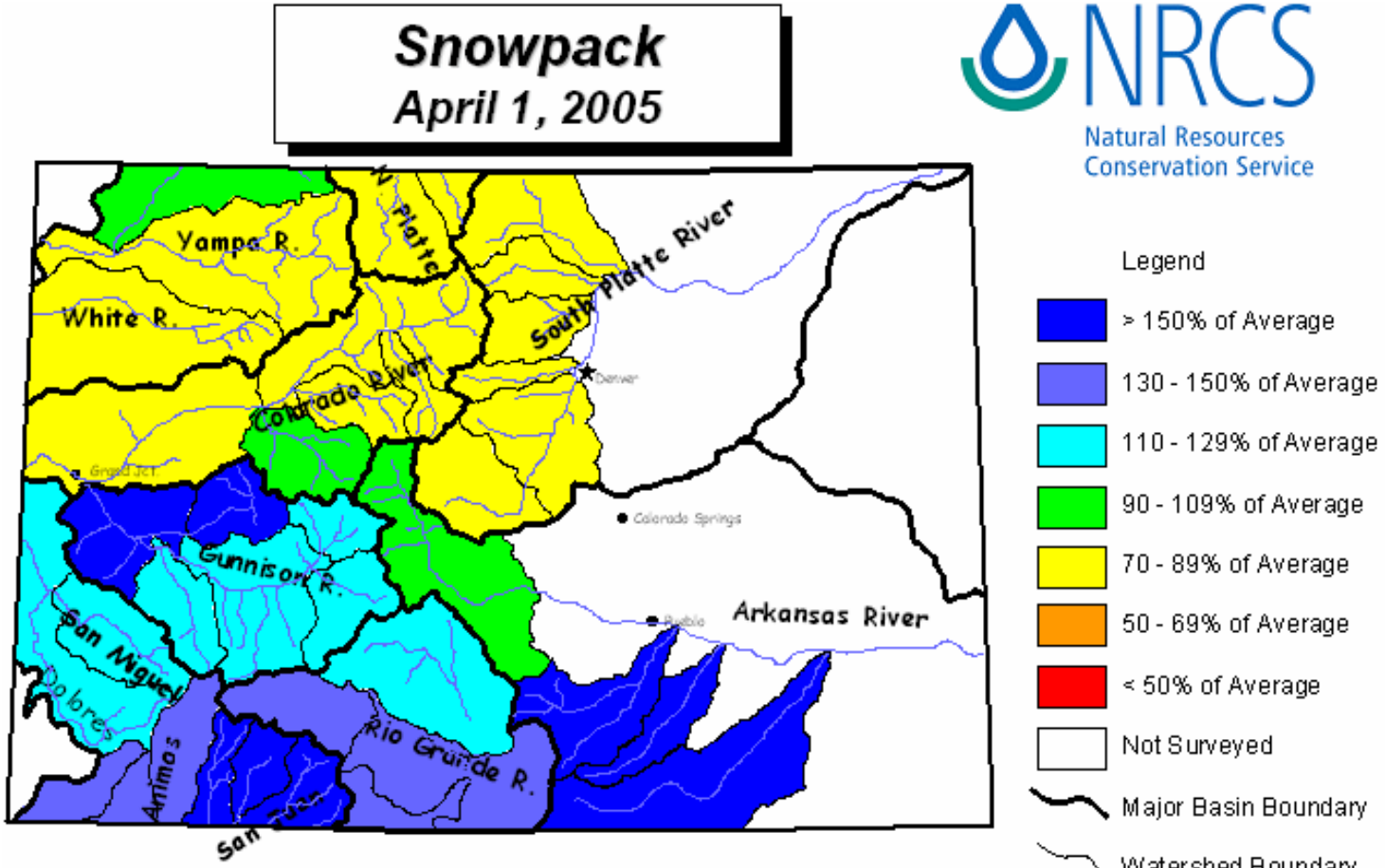

PORPHYRY CREEK SNOTEL as of 04/05/2005
*** Provisional Data, Subject to Change ***
Inches
25
20
15
10
5
0
10/1
10/31
11/30
12/30
1/29
2/28
3/30
4/29
5/29
6/28
7/28
8/27
9/26
Date (mm/dd)
SWE WY2005
SWE WY2004
SWE Avg 71-00

Arkansas Basin Snowpack



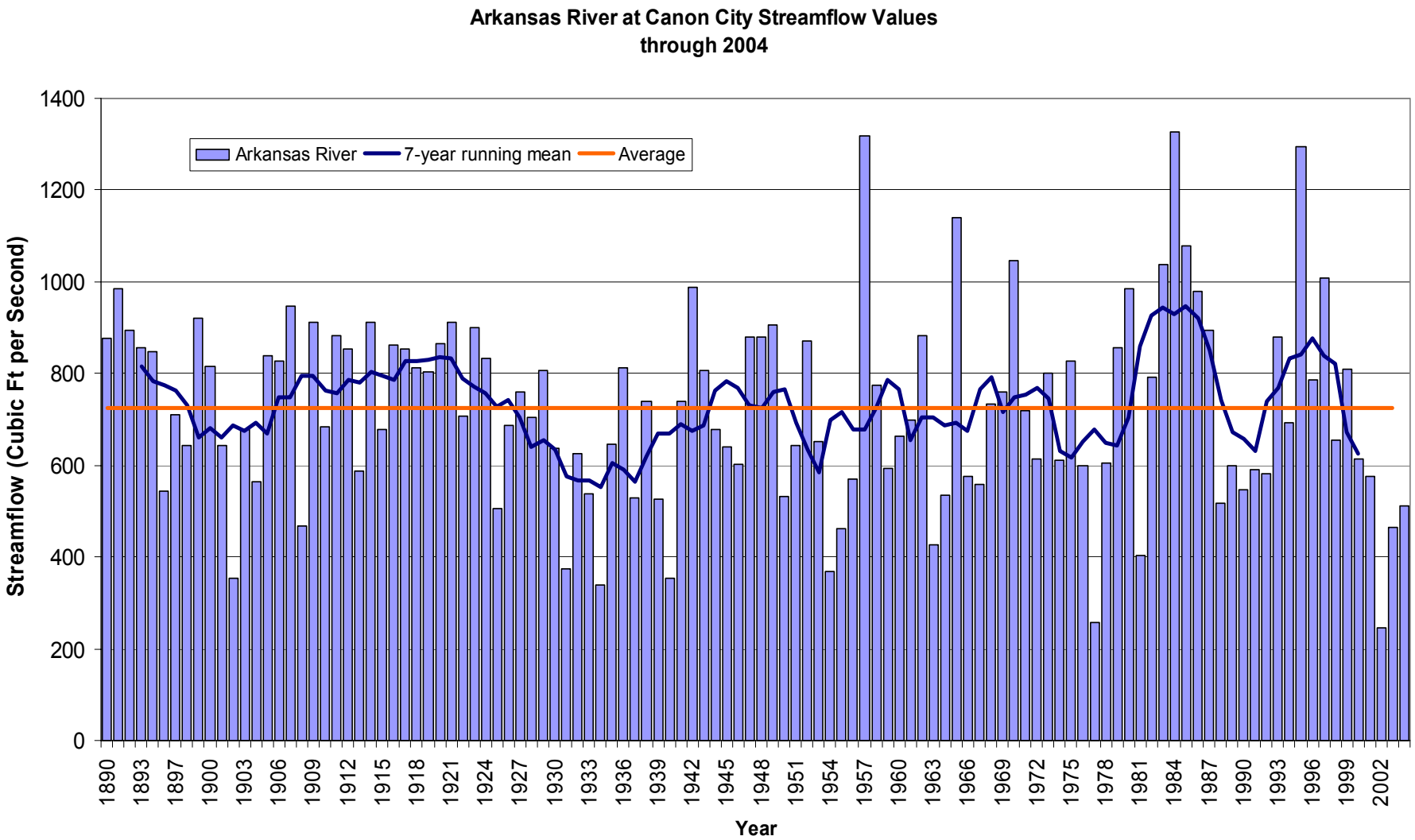
http://www.co.nrcs.usda.gov/snow/data/basins.html

Colorado April 1 Snowpack



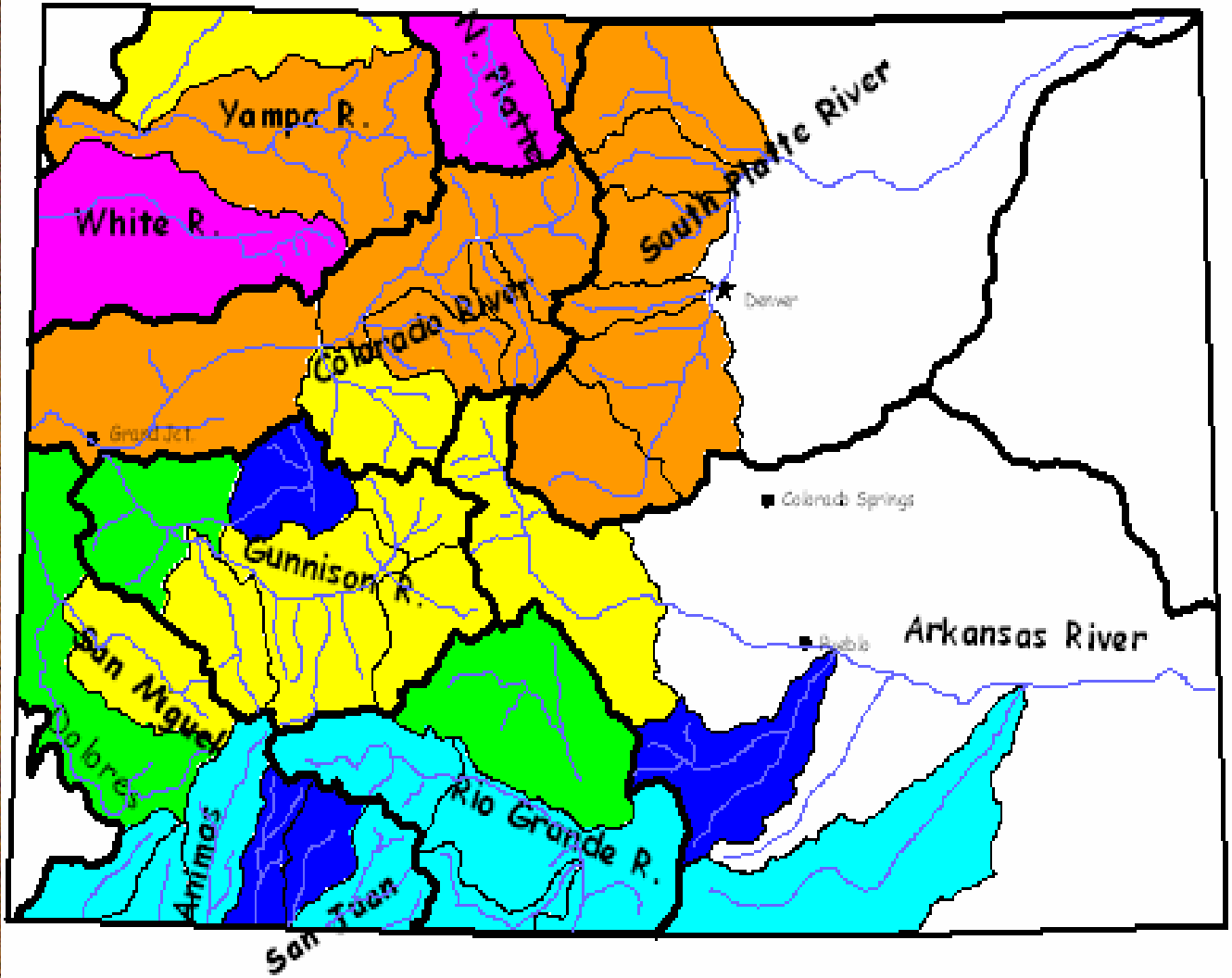
http://www.co.nrcs.usda.gov/snow/data/getsnomap.html

Arkansas River at Canon City Streamflow History



Streamflow Forecasts
April 1, 2005

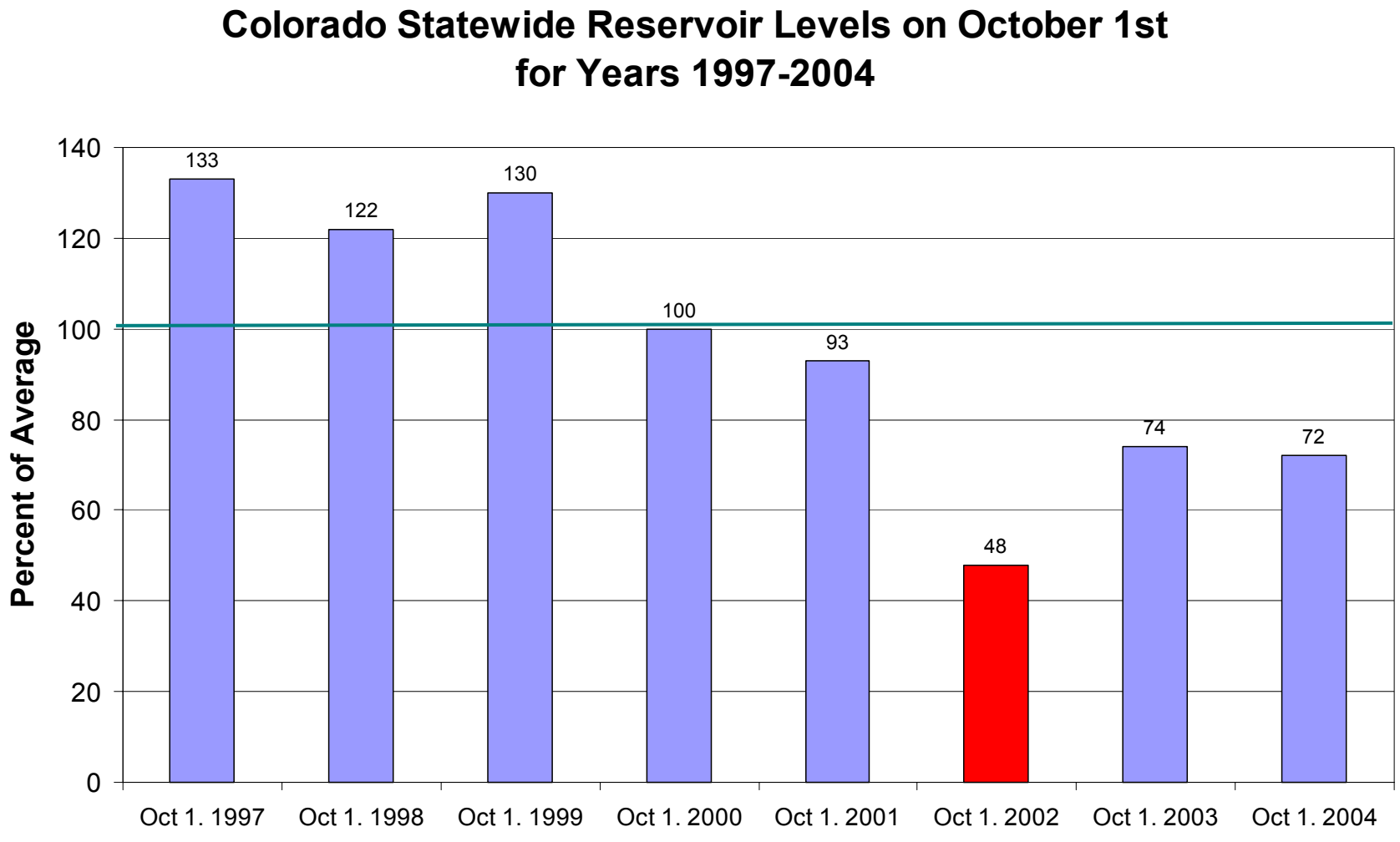
NRCS
Natural Resources Conservation Service



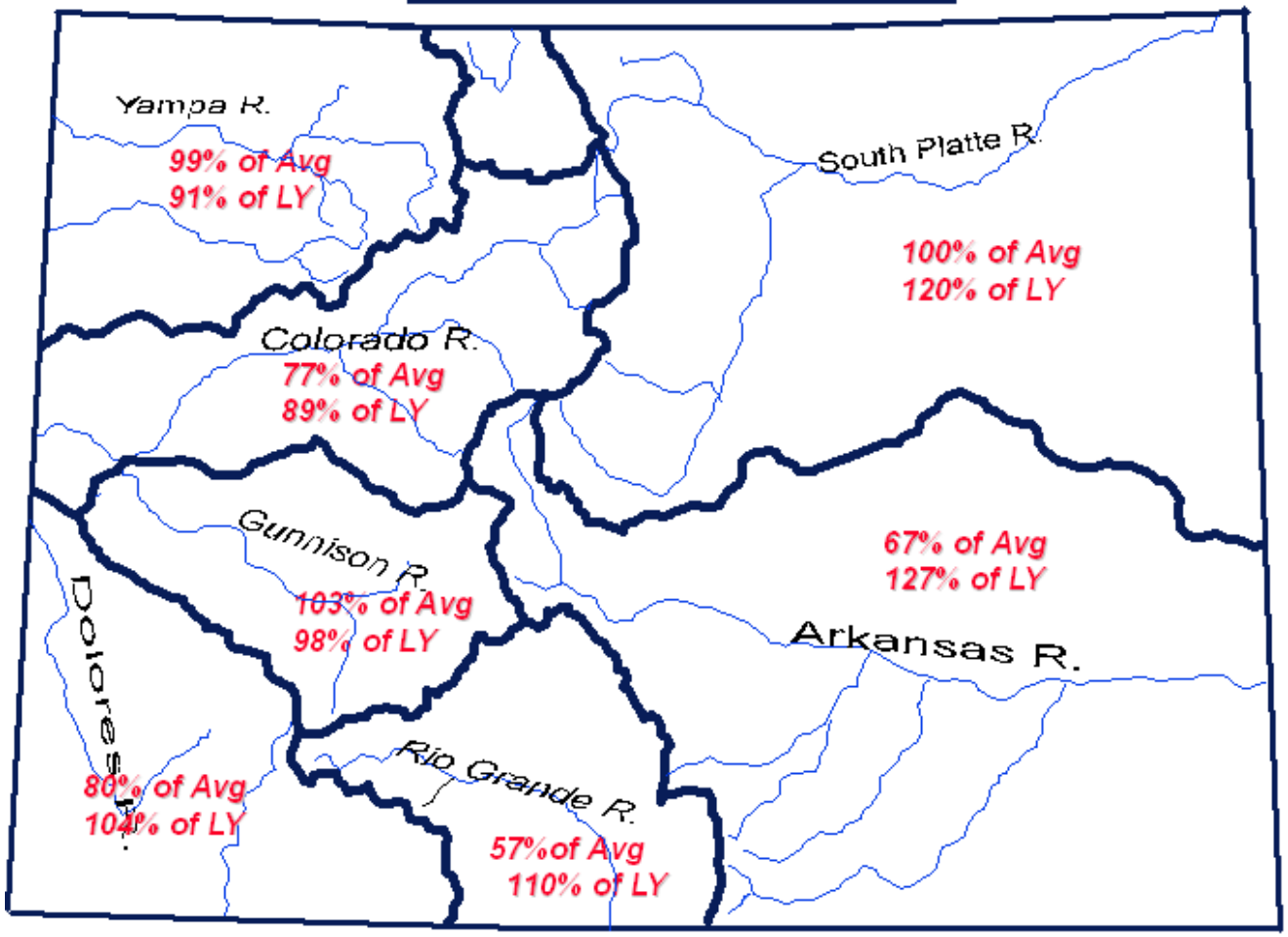
Legend

- > 150% of Average
- 130 - 150% of Average
- 110 - 129% of Average
- 90 - 109% of Average
- 70 - 89% of Average
- 50 - 69% of Average
- < 50% of Average
- Not Forecast
- Major Basin Boundary
- Watershed Boundary

Reservoir Levels



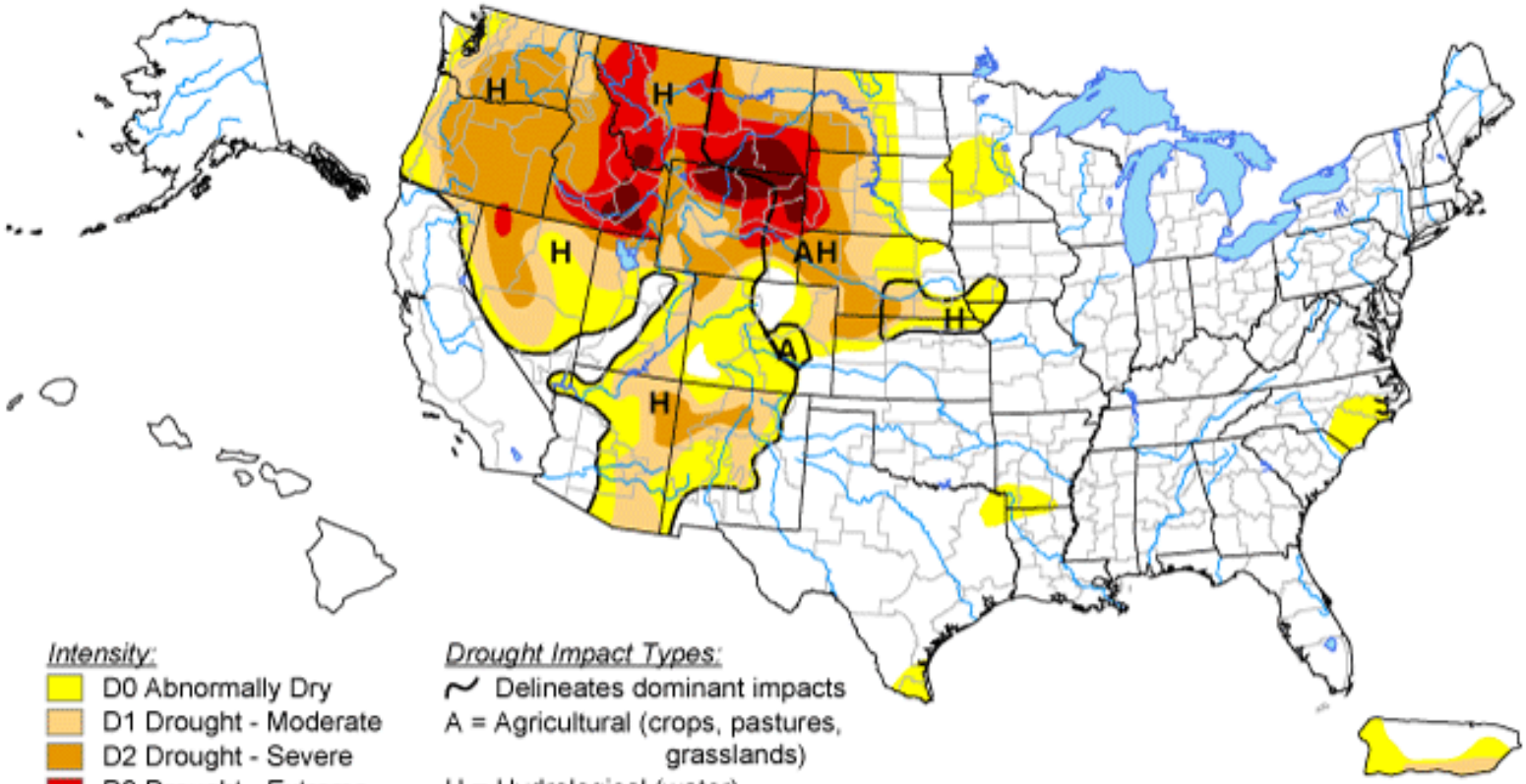
Reservoir Storage
April 1, 2005



Statewide: 87% of Average
106% of Last Year

U.S. Drought Monitor

March 29, 2005
Valid 7 a.m. EST



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)
- (No type = Both impacts)

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

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, March 31, 2005
Author: Douglas Le Comte, CPC/NOAA

There's one more piece to the puzzle

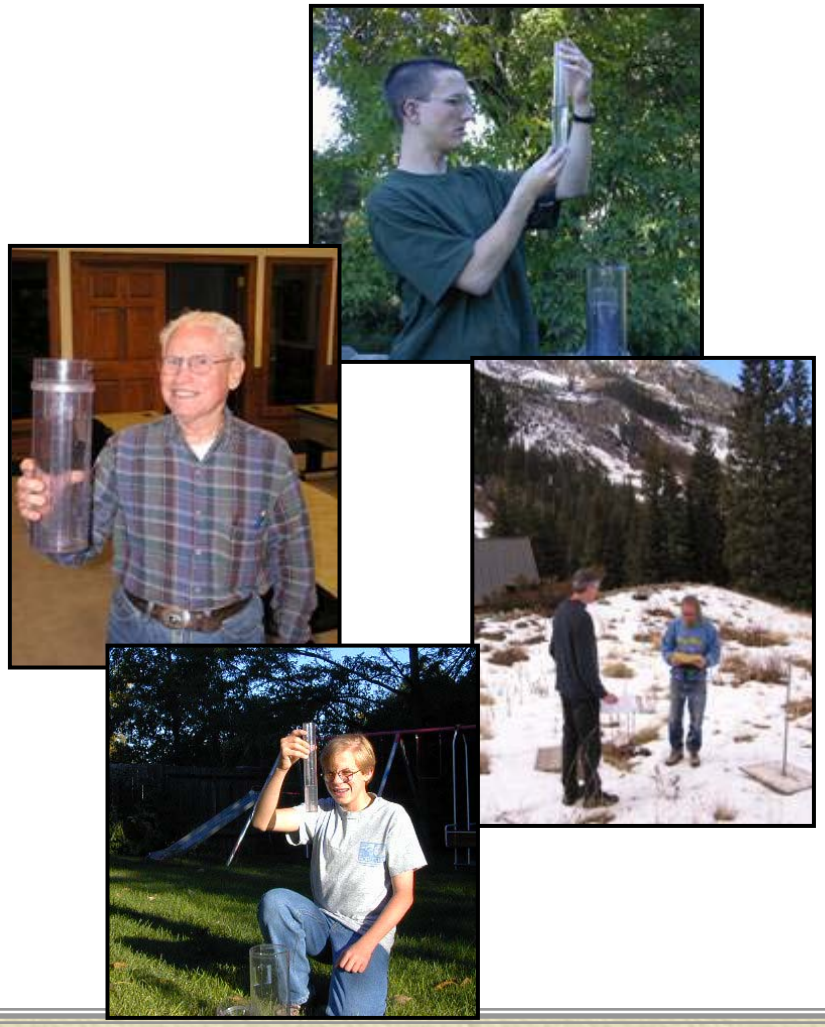
CoCoRaHS

Community Collaborative Rain, Hail & Snow Network

NSF

What is CoCoRaHS?

CoCoRaHS is a unique, non-profit community based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow).



Why CoCoRaHS?

five

five

5

Five Important Reasons

5

five

five

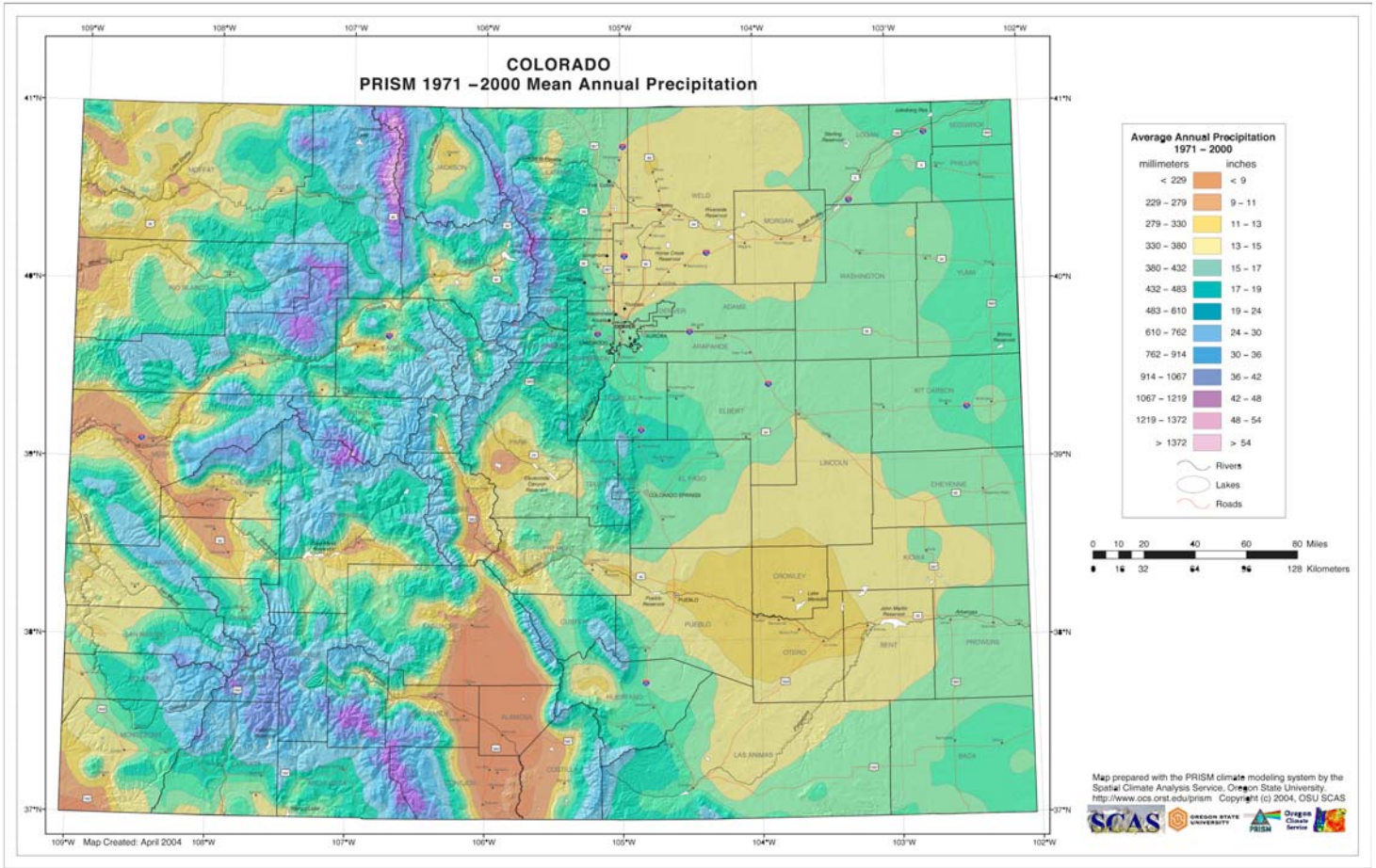
5

5

1) Precipitation is important and highly variable

Photo by M. Suedekum

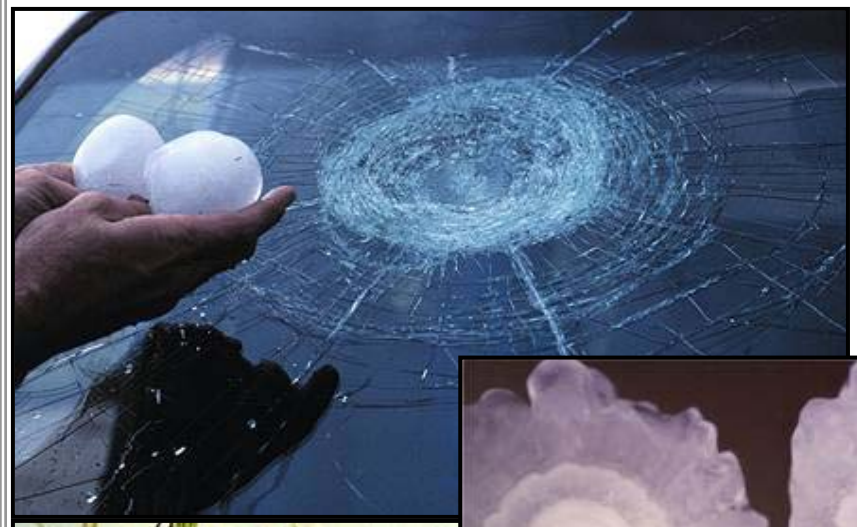
2) Data sources are few and rain gauges are far apart

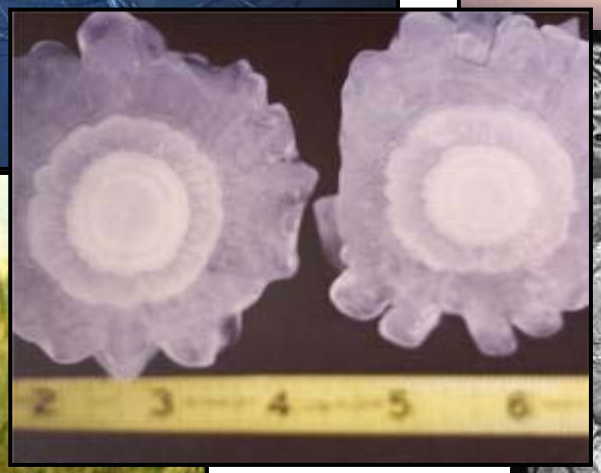


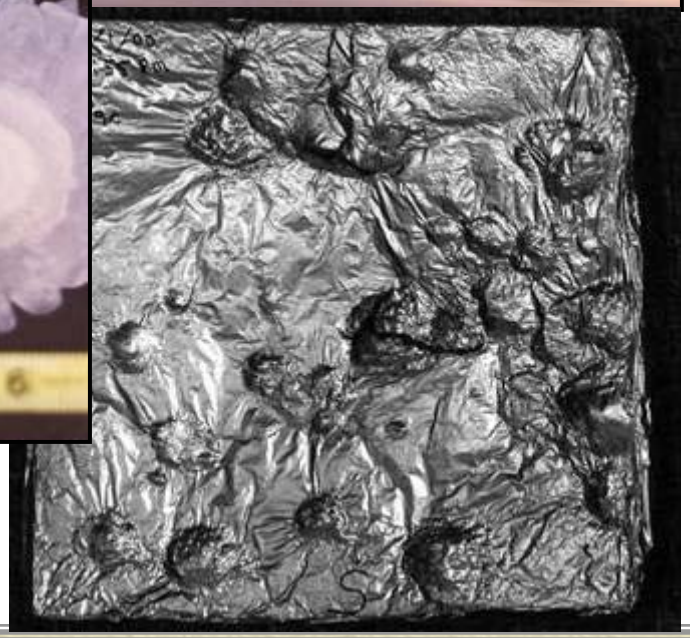
3) Measurements from many sources are not always accurate (especially snow)

Photo by Henry Reges

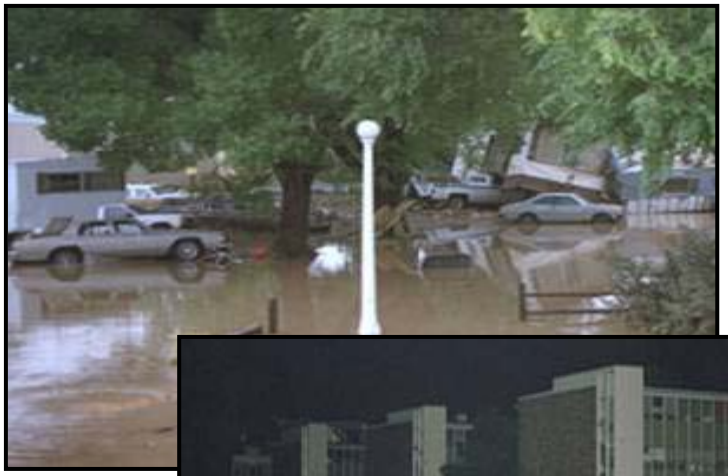
4) There is almost no quantitative data being collected about hail



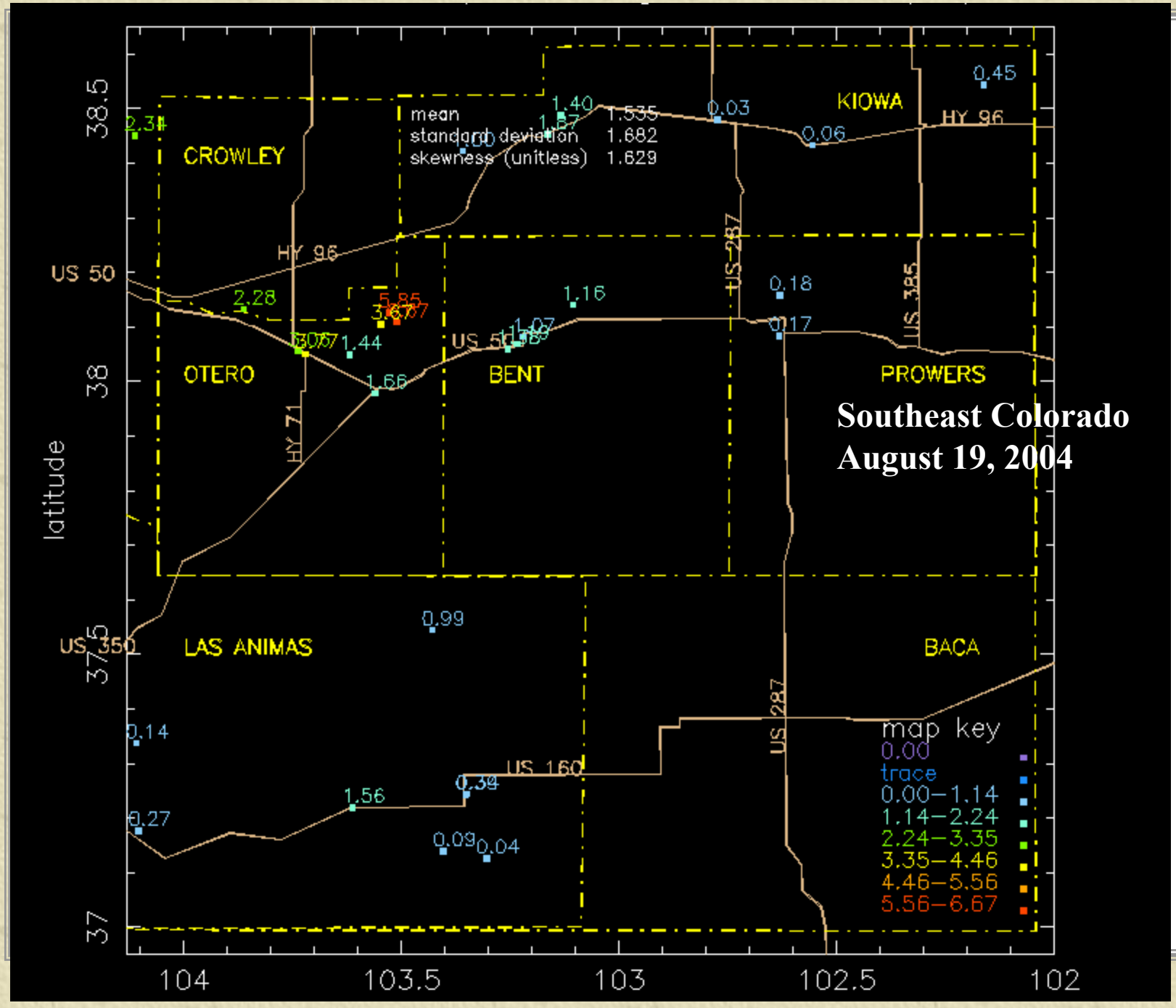




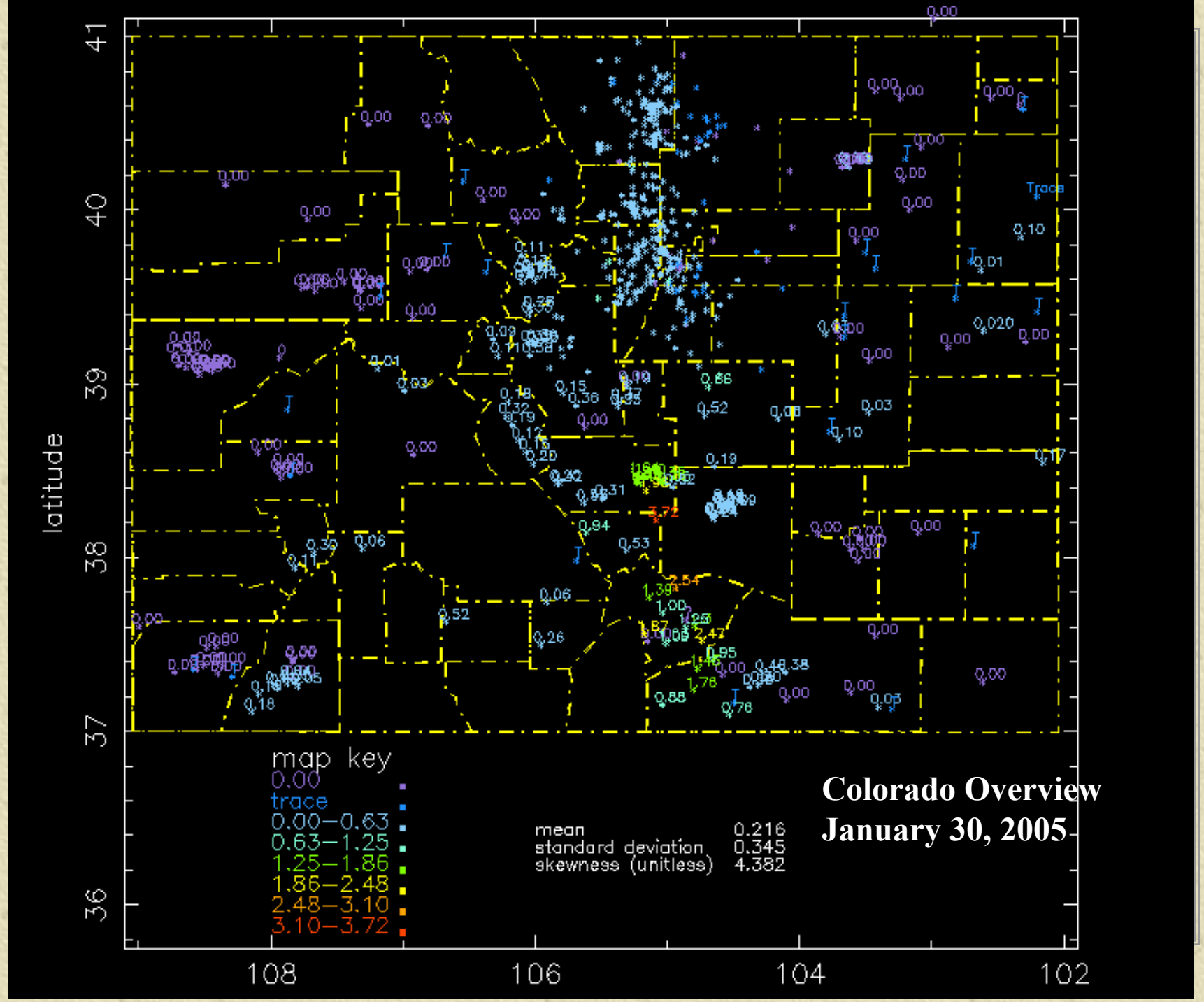
5) Storm reports can save lives



CoCo RaHS is you and me measuring rain and snow!



Southeast Colorado
August 19, 2004

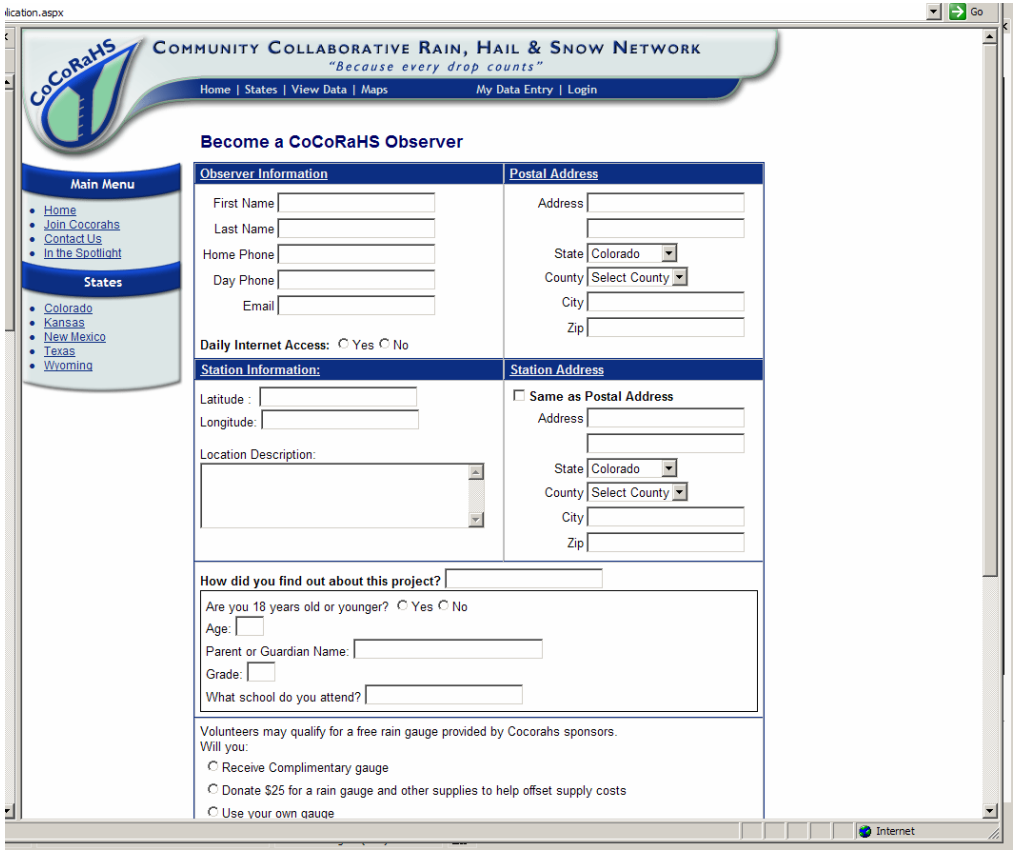

latitude
41
40
39
38
37
36
108
106
104
102
map key
0.00
trace
0.00–0.63
0.63–1.25
1.25–1.86
1.86–2.48
2.48–3.10
3.10–3.72
mean 0.216
standard deviation 0.345
skewness (unitless) 4.382
Colorado Overview
January 30, 2005

We need volunteers!

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

How to sign up?

- http://www.cocorahs.org
  - Click “Join Us”



For More Information, Visit the CoCoRaHS Web Site

http://www.cocorahs.org

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

Colorado Climate Center

Data and Power Point Presentations available for downloading

http://ccc.atmos.colostate.edu

- click on “Drought”
- then click on “Presentations”