Weather and Climate Impacts on Water Supply

Nolan Doesken
Colorado Climate Center
Atmospheric Science Department
Colorado State University
http://ccc.atmos.colostate.edu

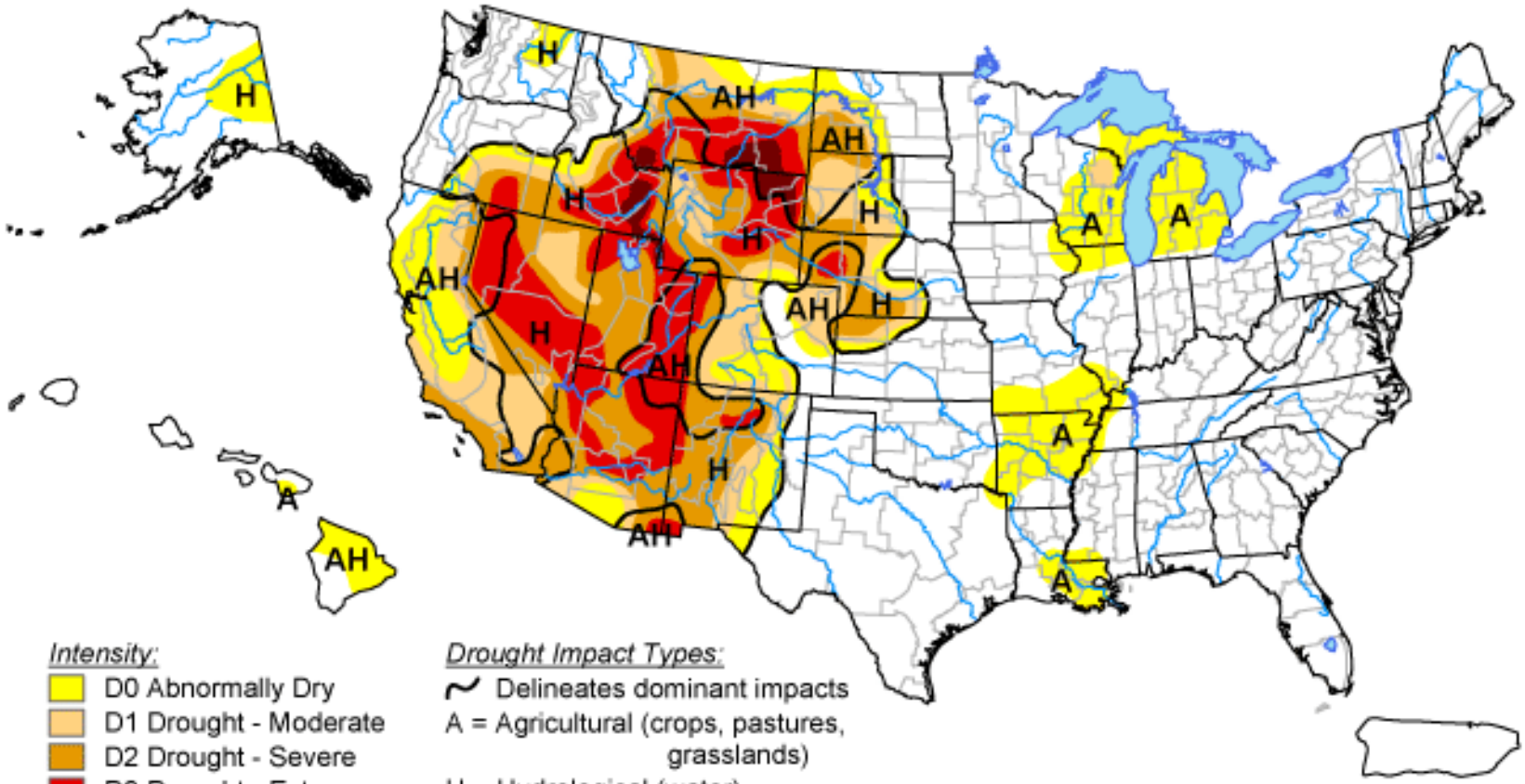
Presented at the South Platte Forum,
Longmont, CO, October 26, 2005

Prepared by Odie Bliss

Colorado State University
Knowledge to Go Places

U.S. Drought Monitor

September 28, 2004
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)
- (No type = Both impacts)

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

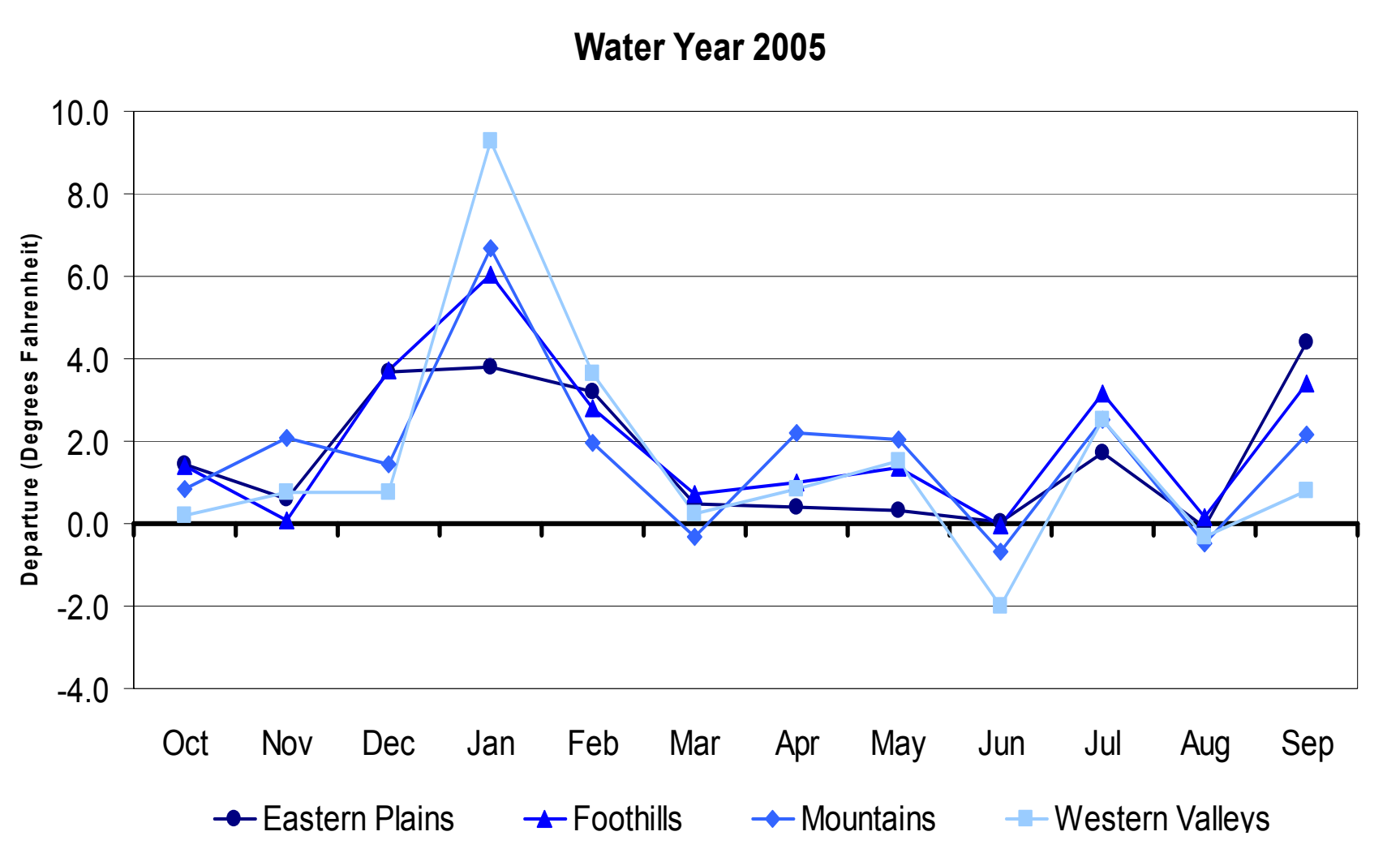
http://drought.unl.edu/dm

USDA National Drought Mitigation Center

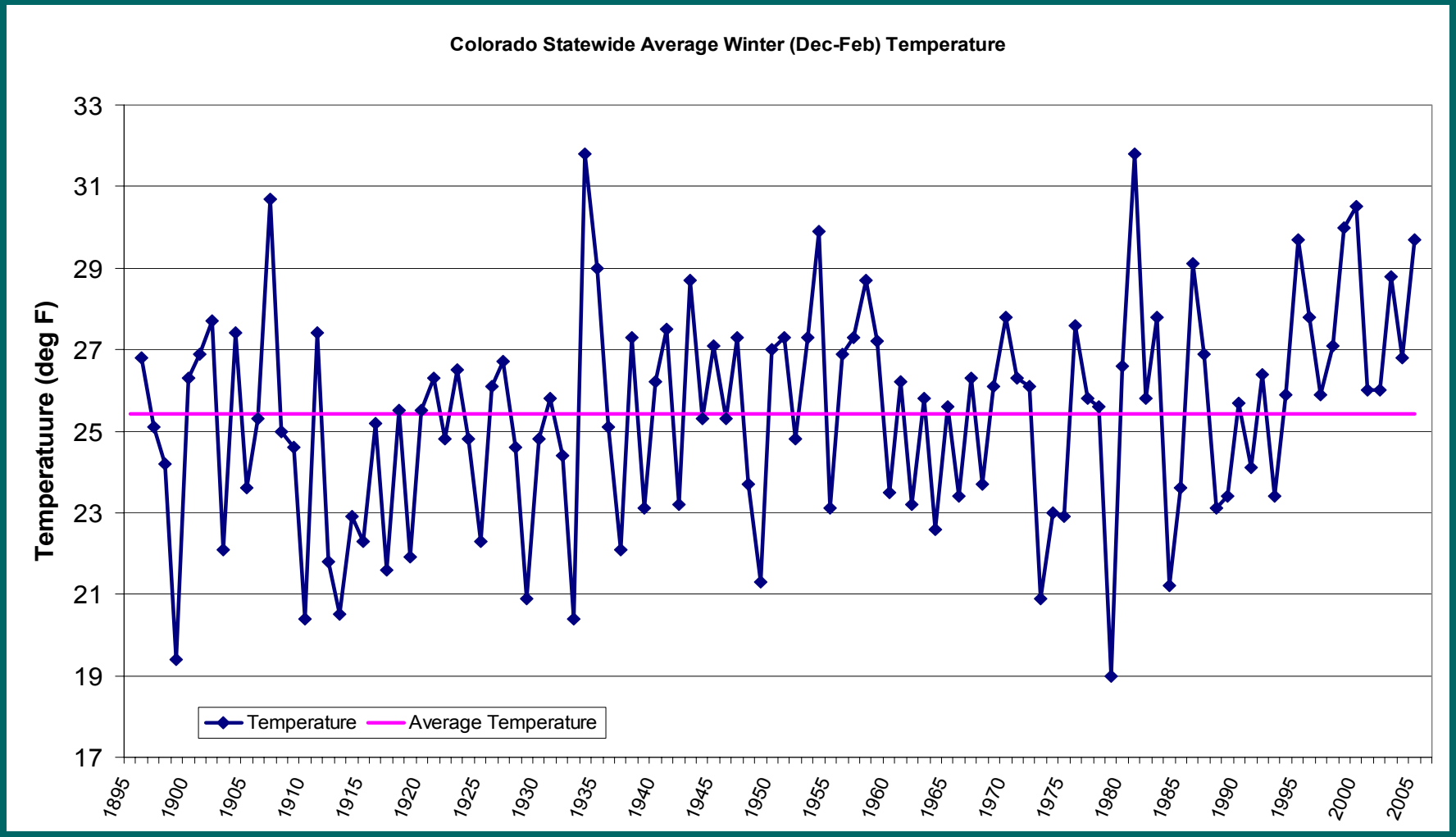
Released Thursday, September 30, 2004

Author: Brad Rippey, U.S. Department of Agriculture

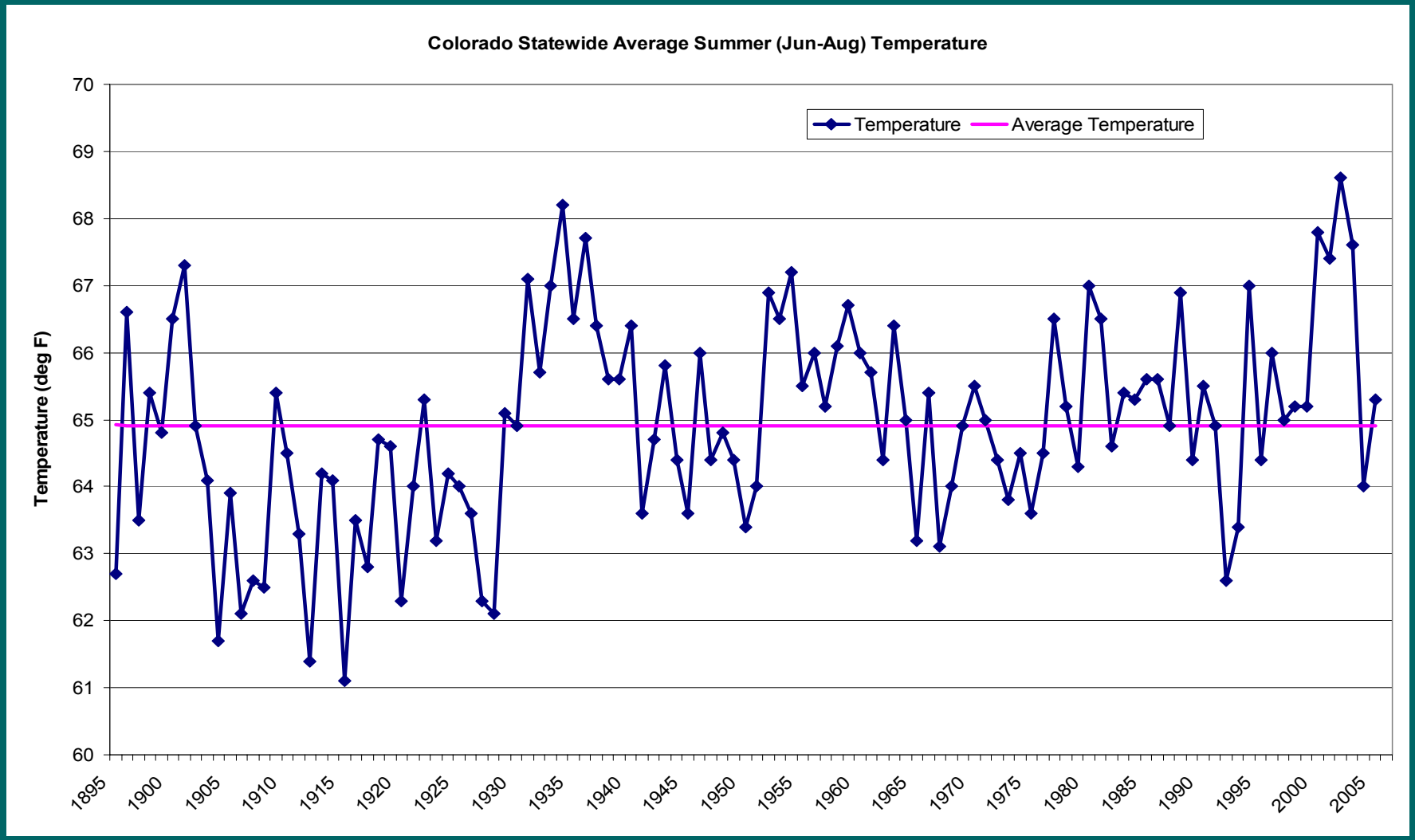
Water Year 2005 temperature departures from 1971-2000 average



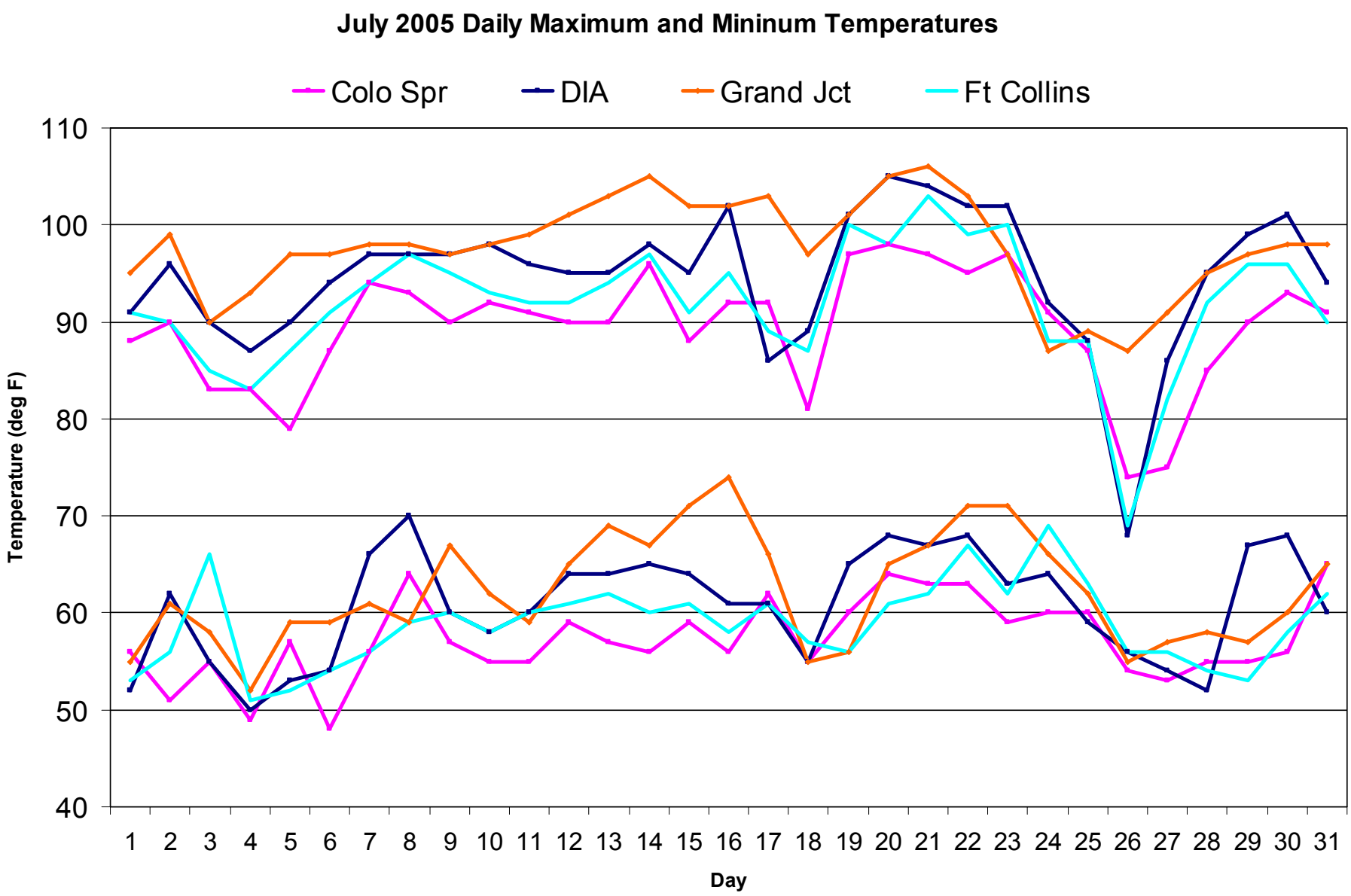
Colorado Statewide Winter Temperature Average



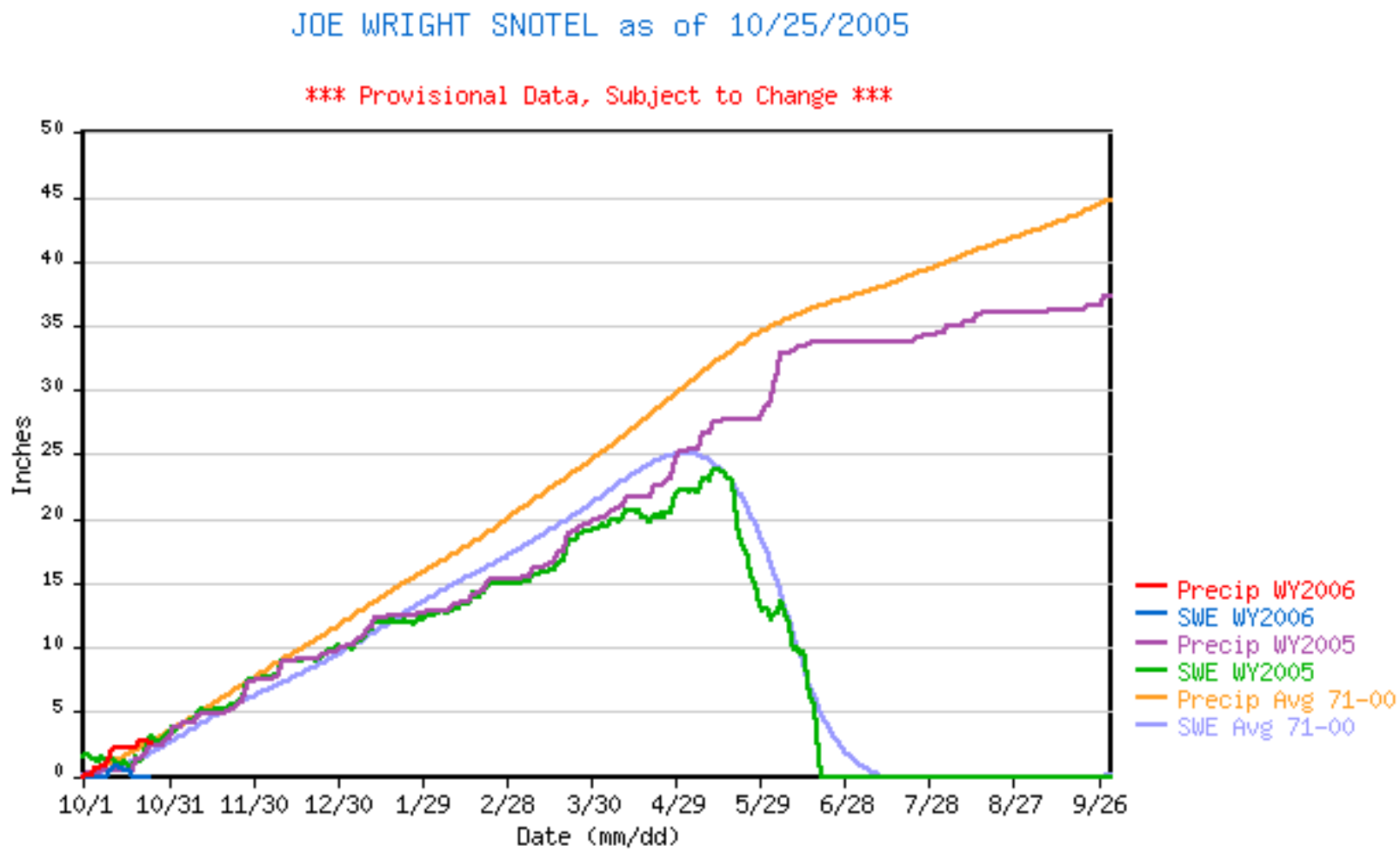
Colorado Statewide Summer Temperature Average



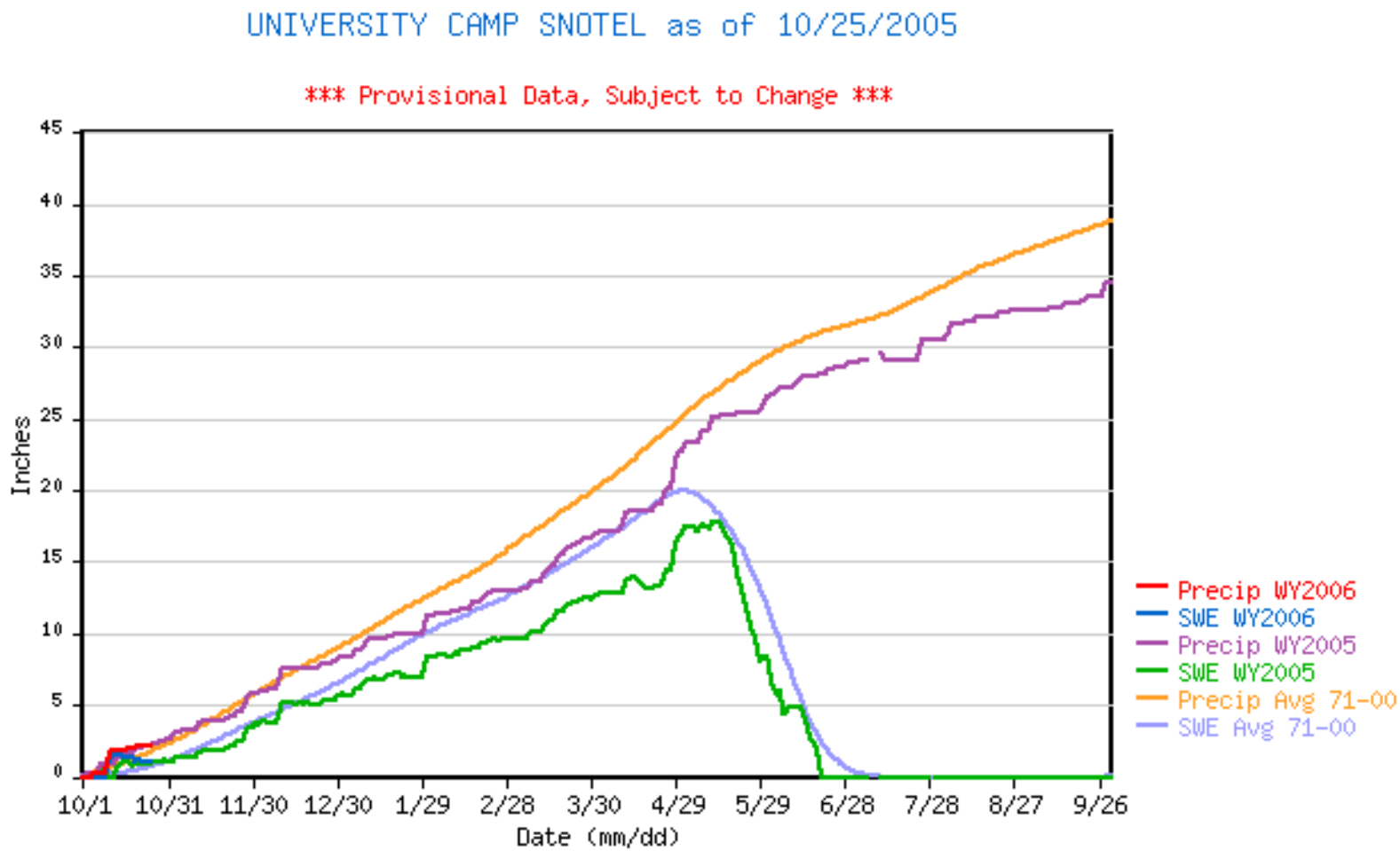
July 2005 Daily Temperatures



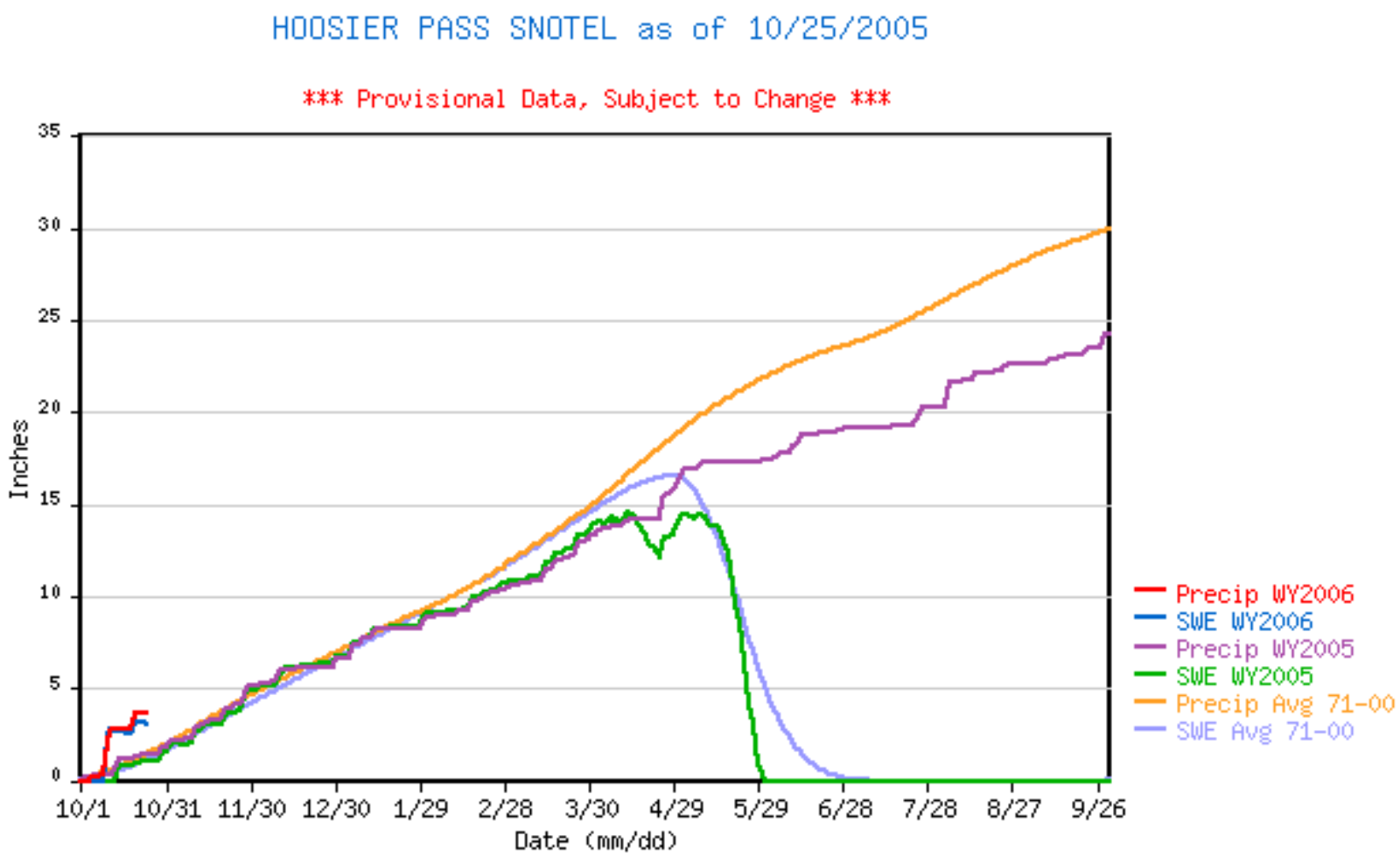
Joe Wright Snotel



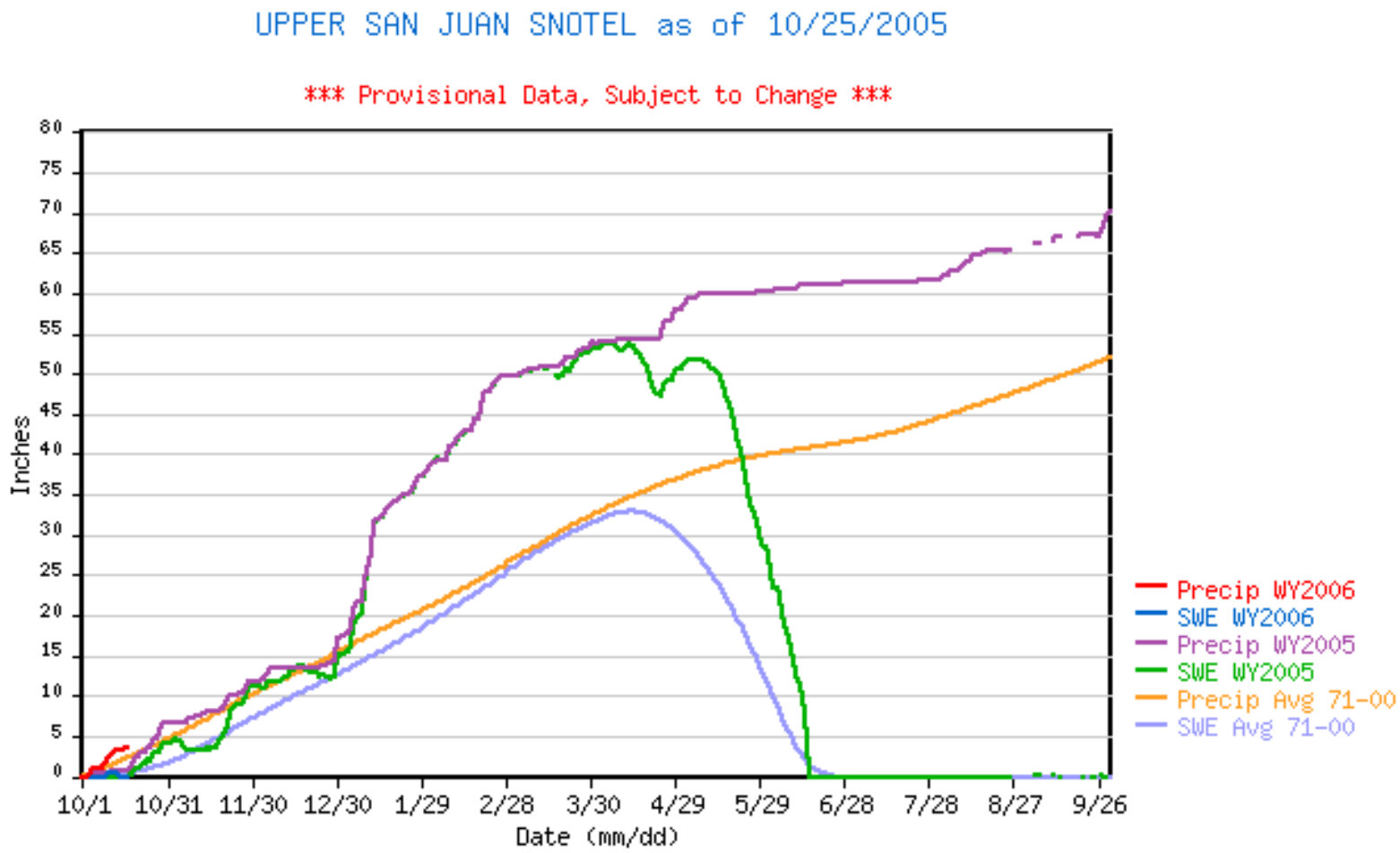
University Camp Snotel



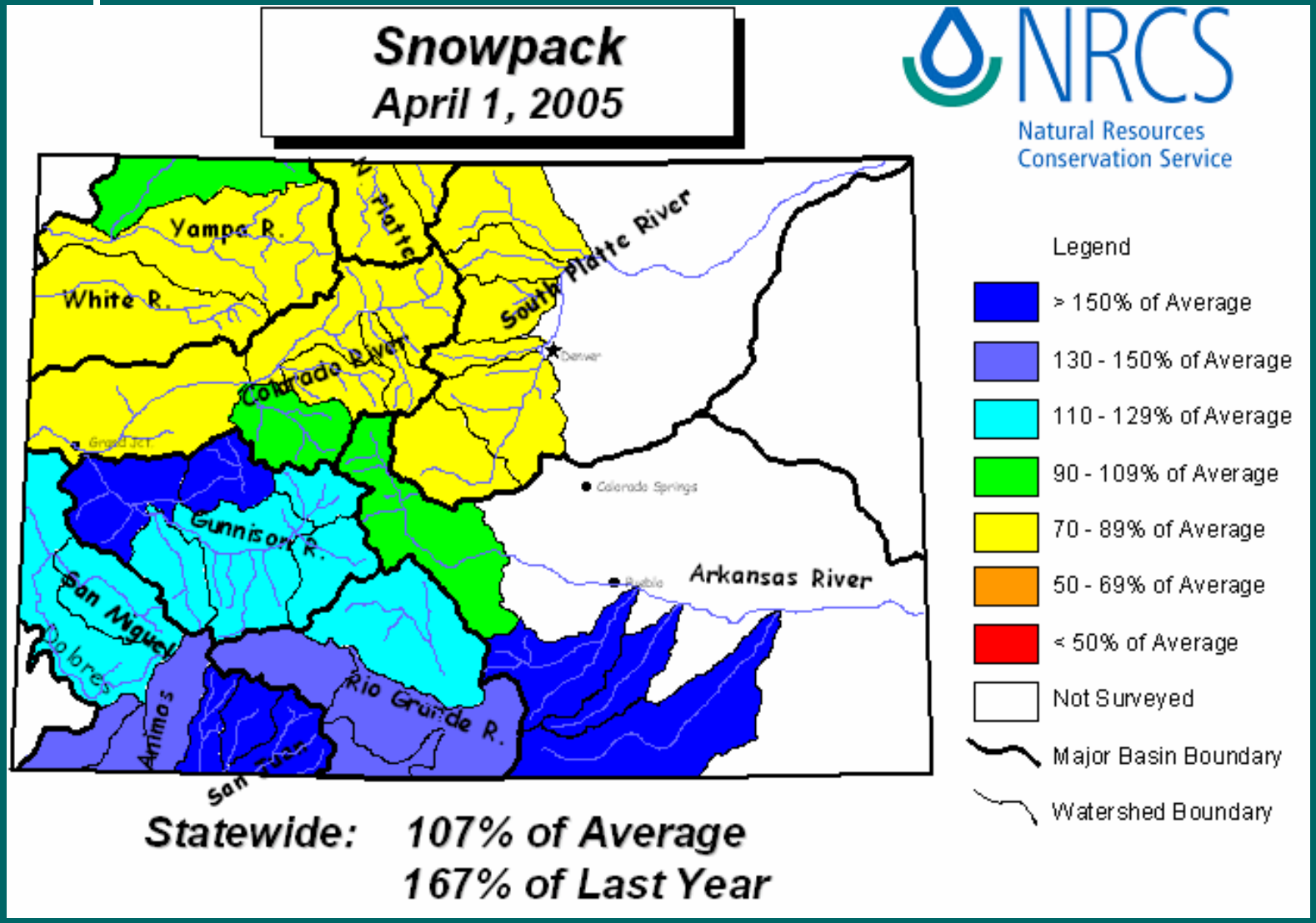
Hoosier Pass Snotel



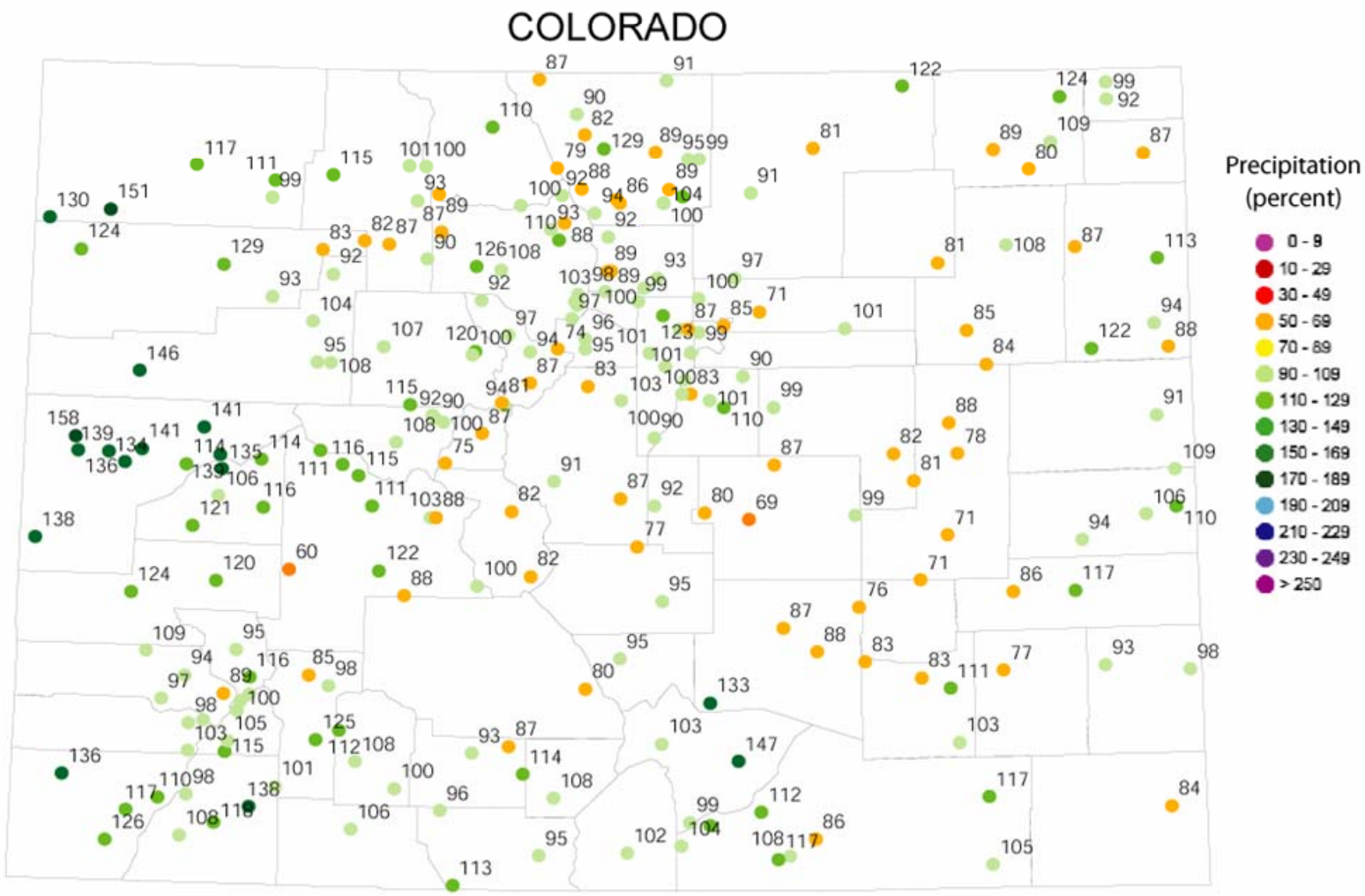
Upper San Juan Snotel



April 1 Snowpack

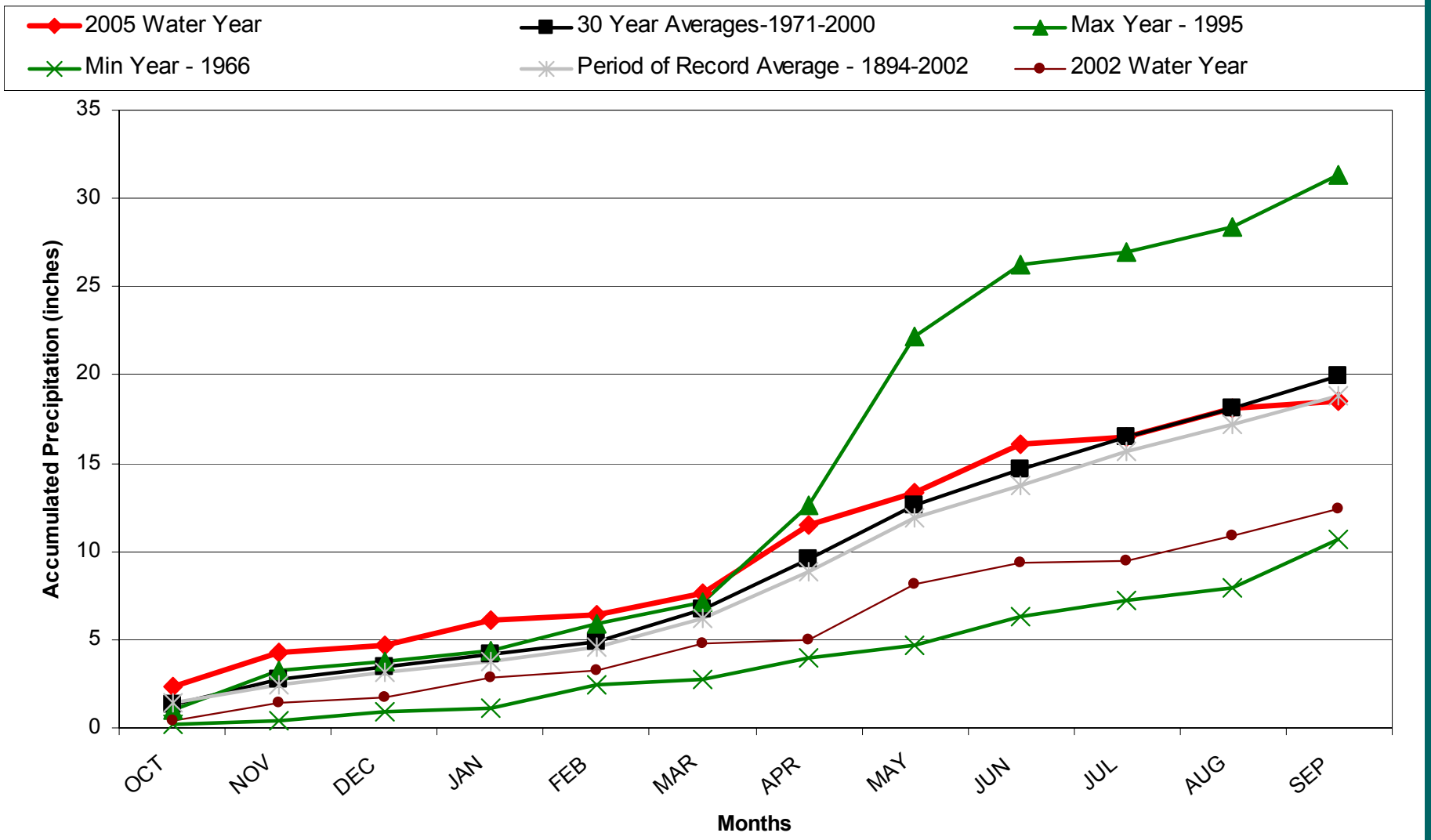


Water Year 2005 precipitation as a percent of the 1971-2000 average

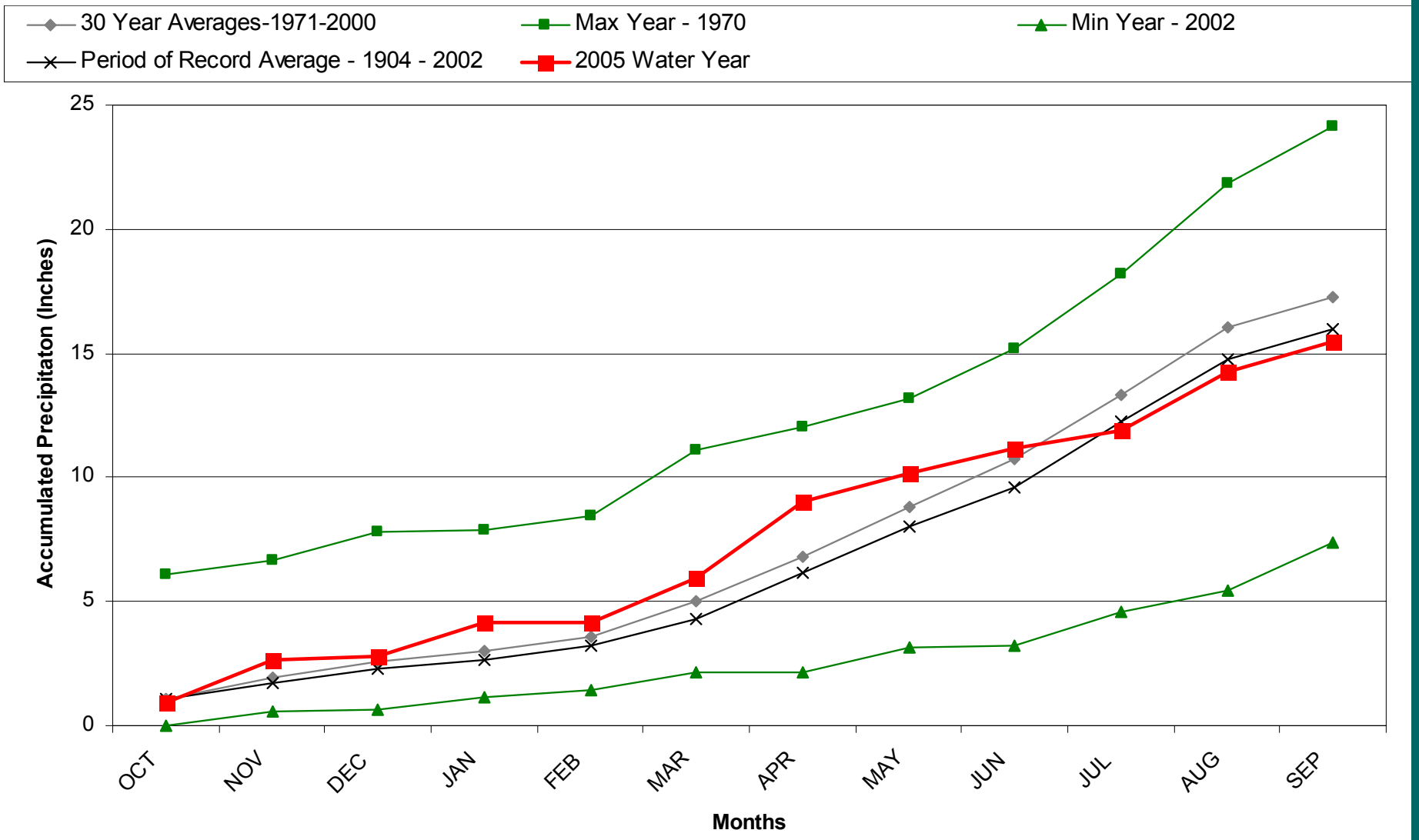


Water Year 2005 (October 2004 through September 2005) precipitation as a percent of the 1971-2000 average.

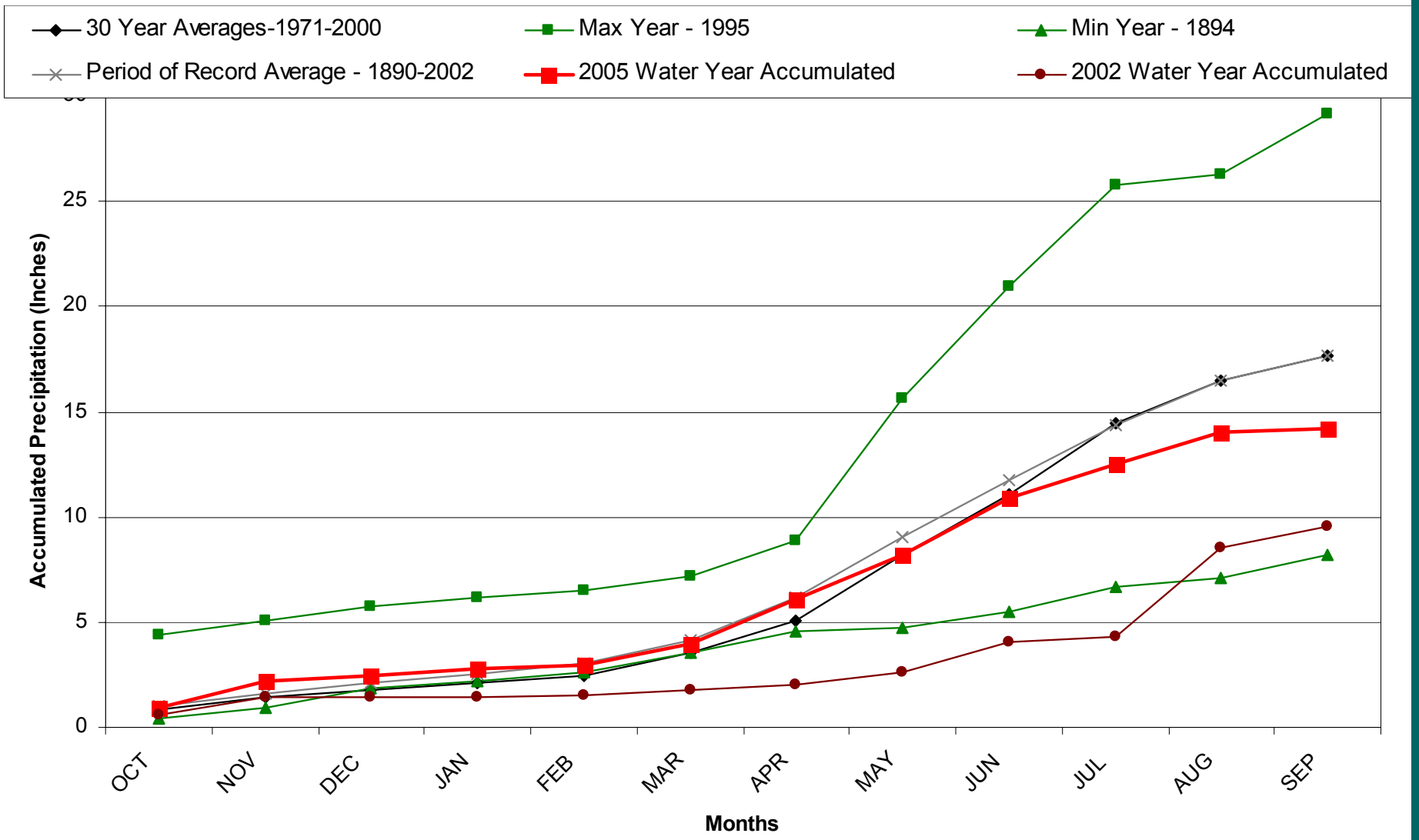
Boulder
2005 Water Year



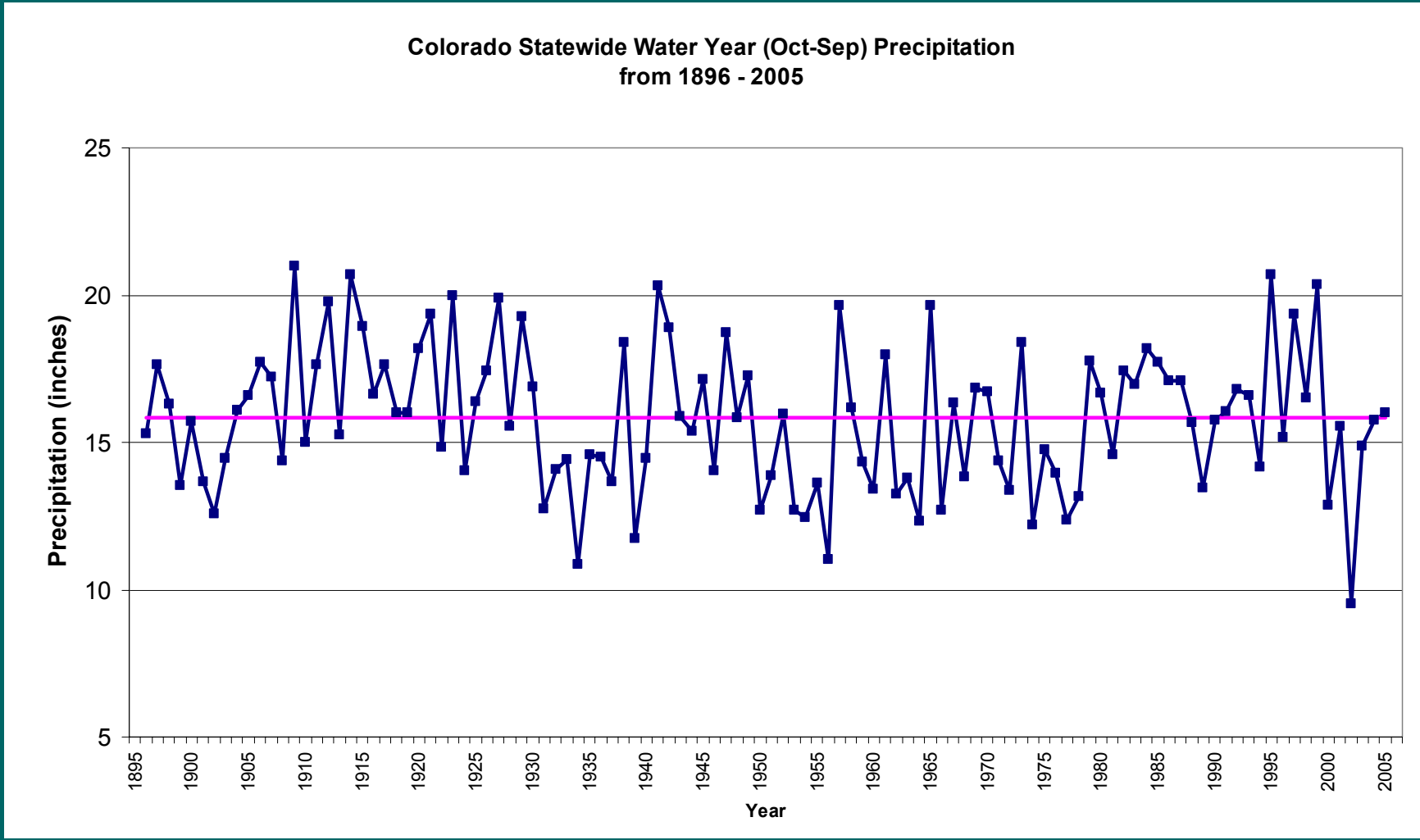
Cheesman
2005 Water Year



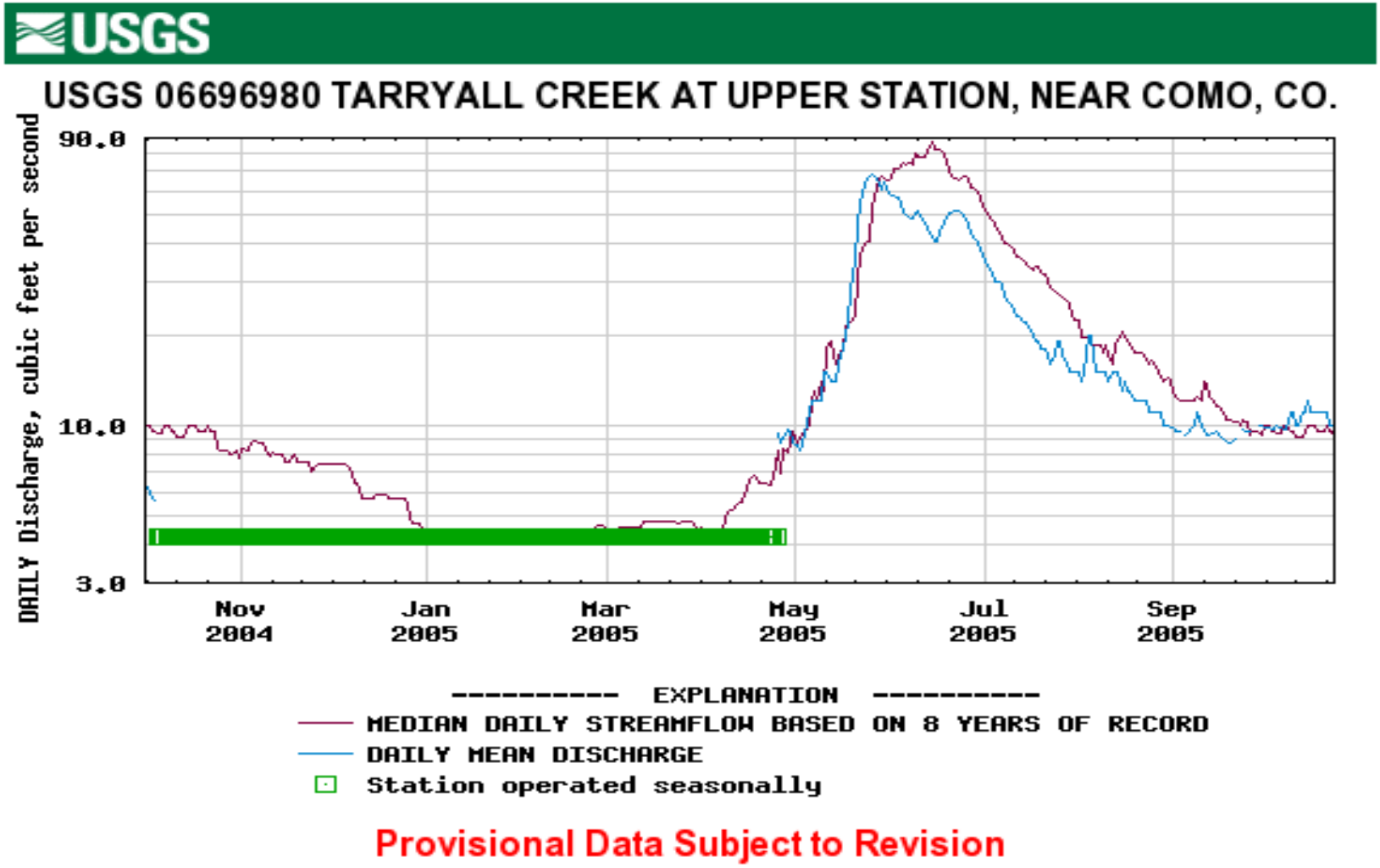
Leroy 5SW
2005 Water Year



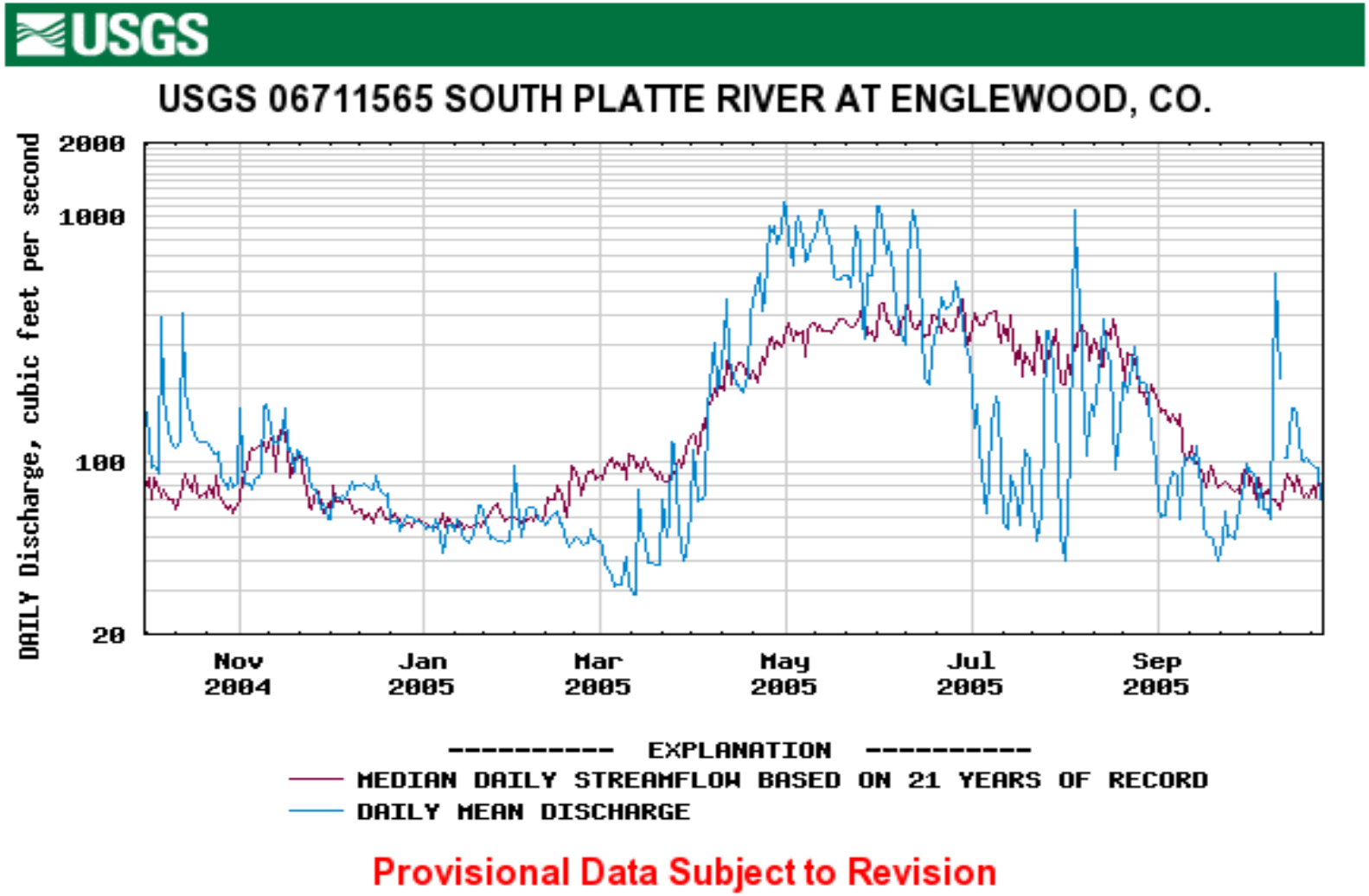
Colorado Statewide Water Year Precipitation Totals



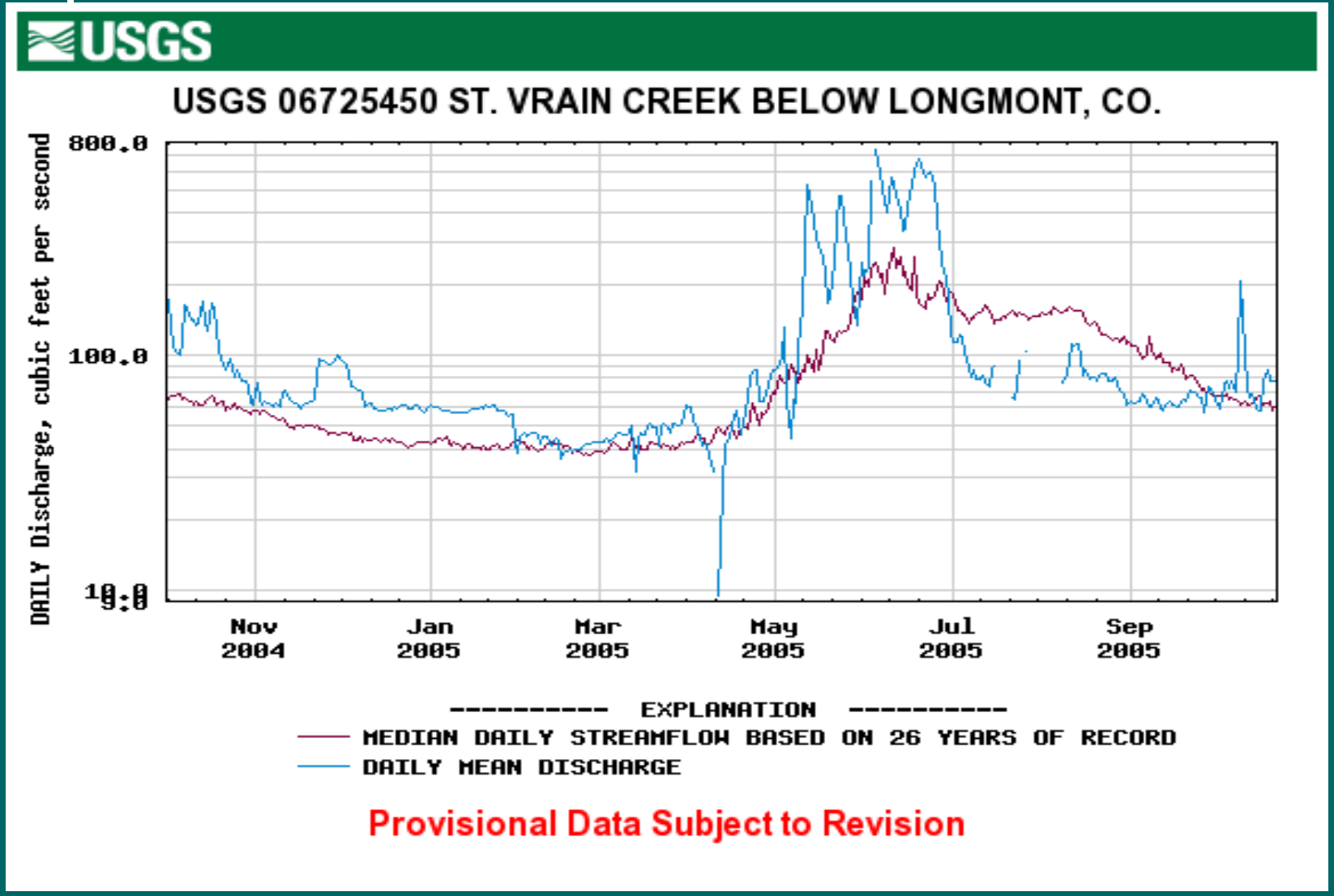
South Platte Headquarters



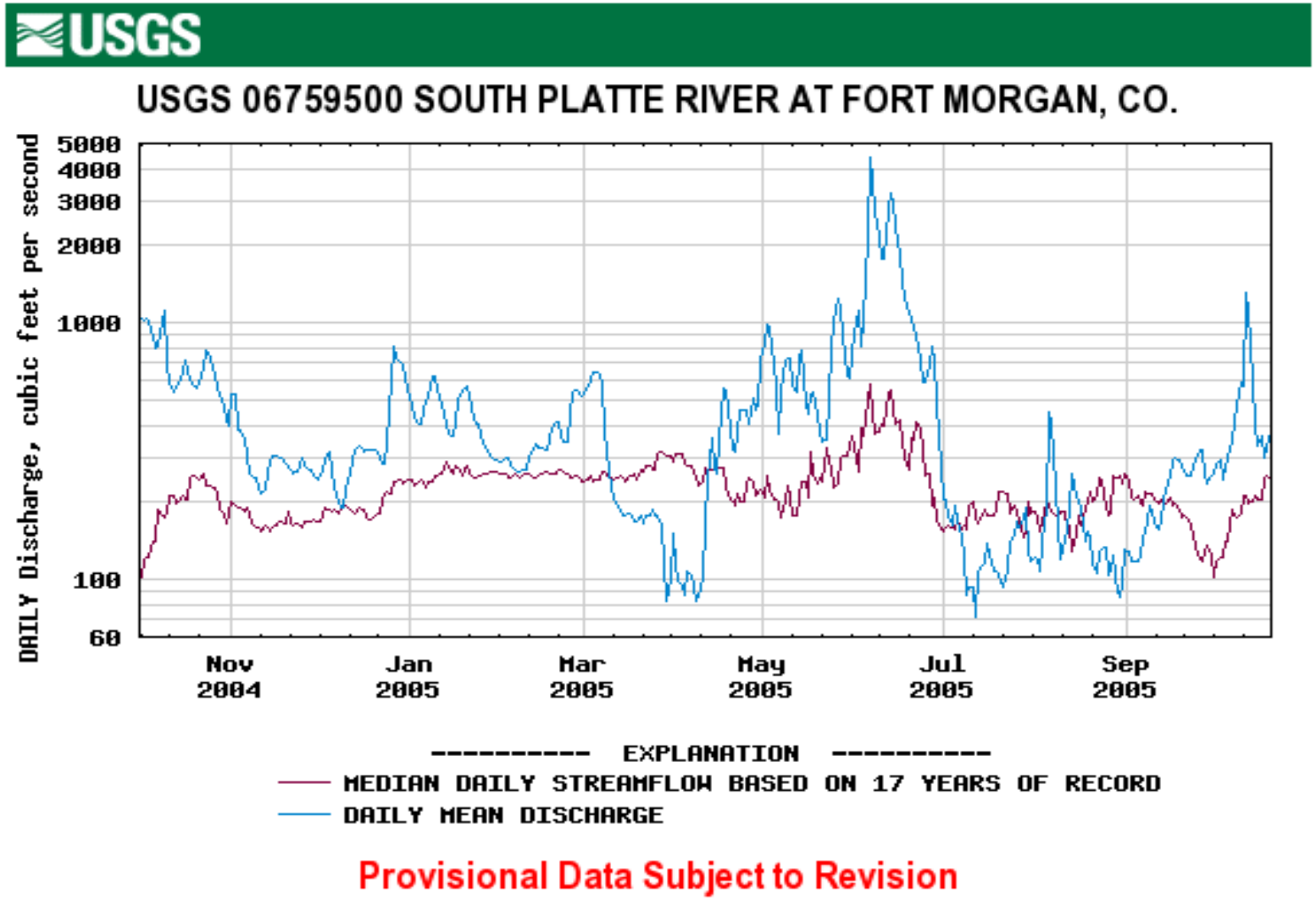
South Platte River at Englewood



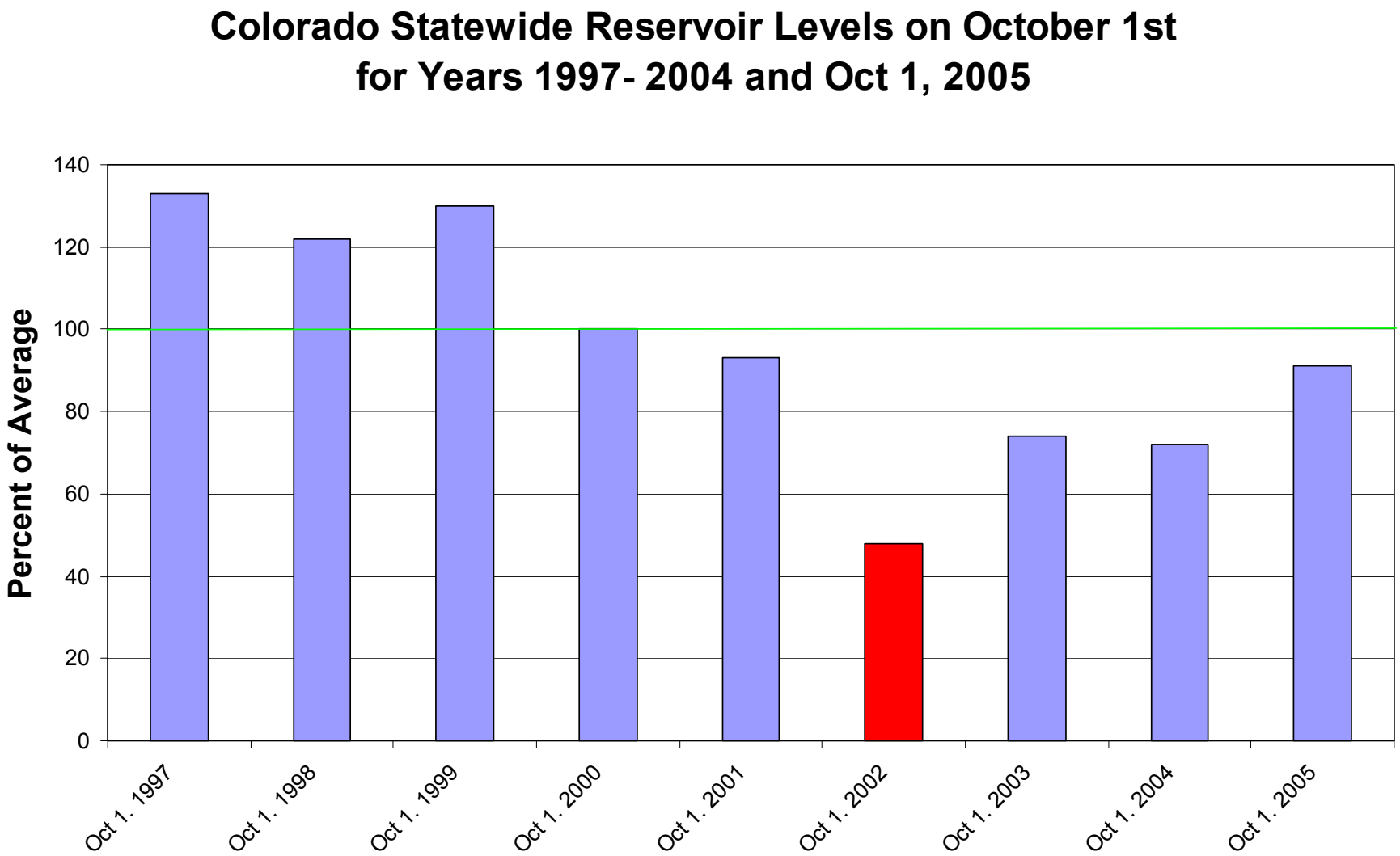
St. Vrain Creek below Longmont



South Platte River at Fort Morgan



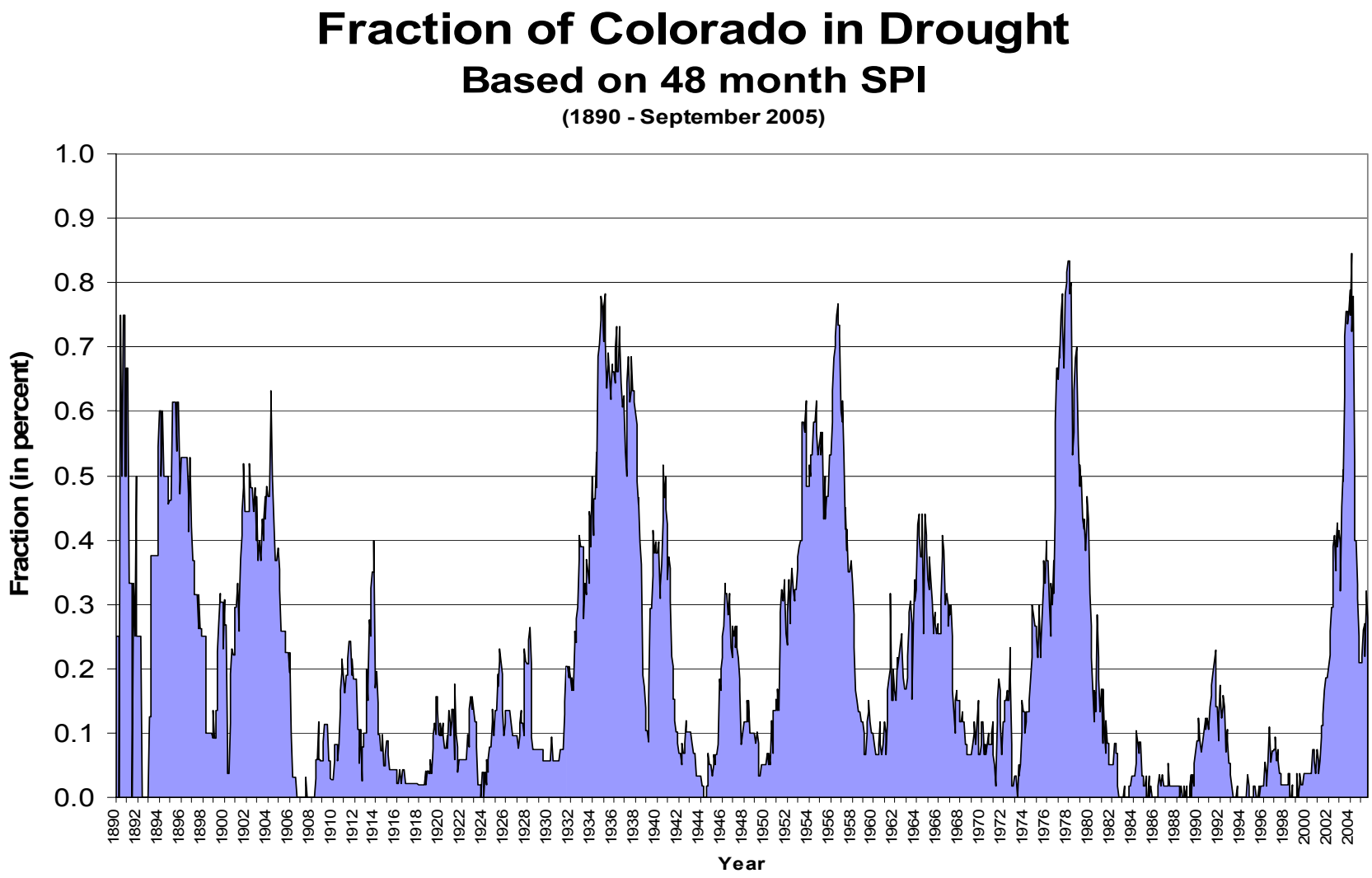
Reservoir Storage Levels



Summary

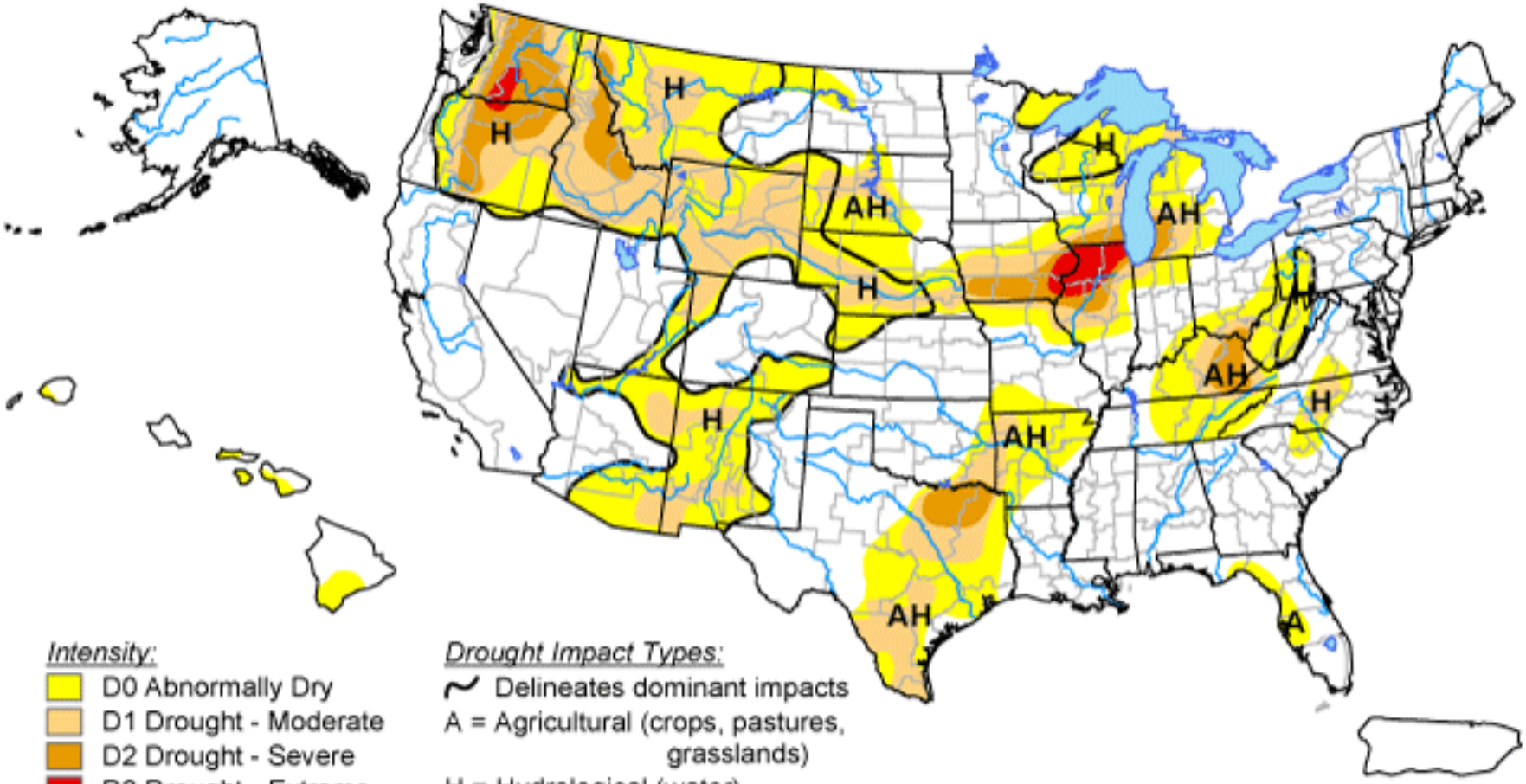
- Snow blitz across southern Rockies.
- Near-average snowpack in the South Platte basin.
- Mild winter (12th in a row).
- Beneficial April and early June precipitation.
- A hot and dry July.
- Below average growing season precipitation.
- A saving Denver-metro rain August 3-5th.
- Overall – Above average temperature, near to slightly below average precipitation.
- October 2005 – Great moisture on the Plains!

48-Month SPI


Fraction of Colorado in Drought
Based on 48 month SPI
(1890 - September 2005)
Fraction (in percent)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
1890
1892
1894
1896
1898
1900
1902
1904
1906
1908
1910
1912
1914
1916
1918
1920
1922
1924
1926
1928
1930
1932
1934
1936
1938
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
Year

U.S. Drought Monitor

October 18, 2005
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)
(No type = Both impacts)

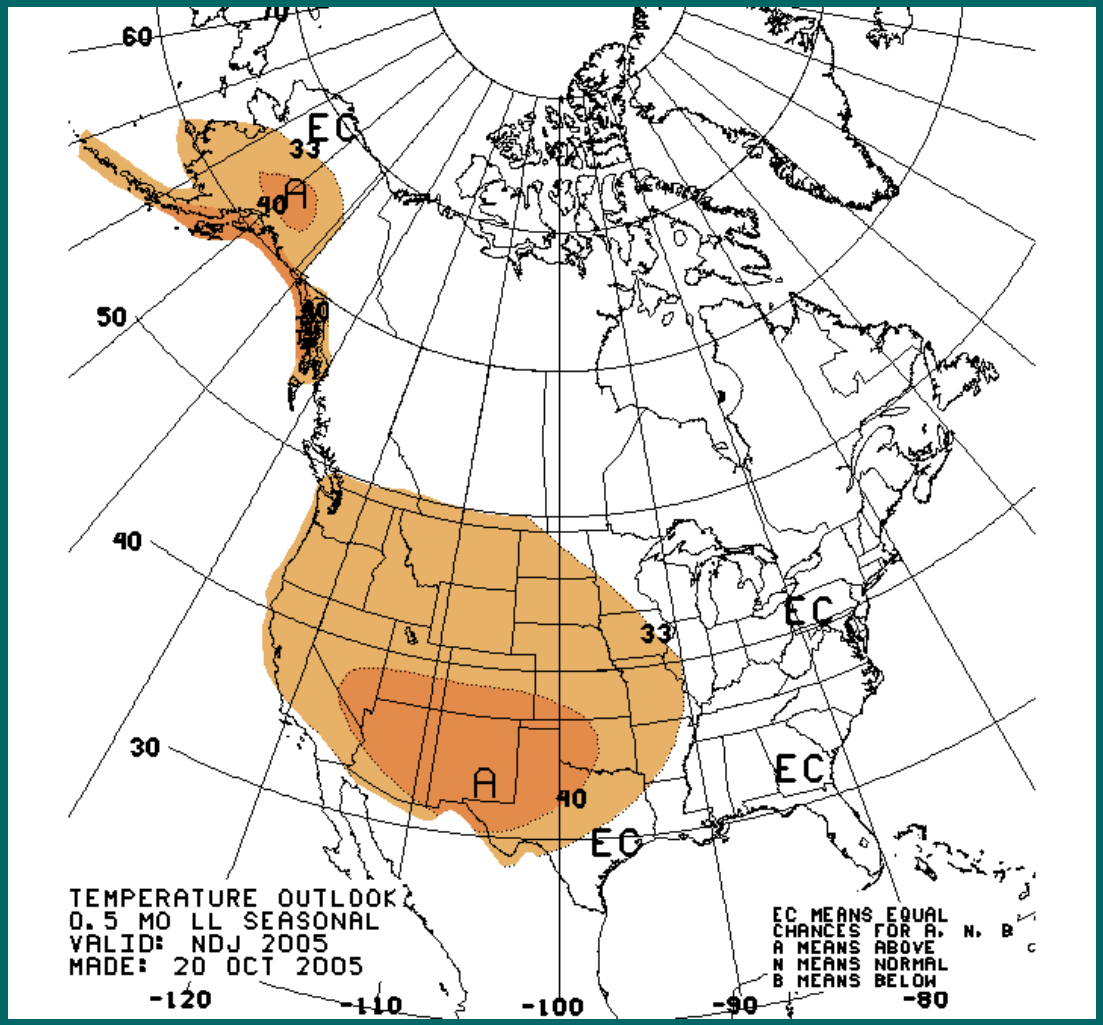
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, October 20, 2005

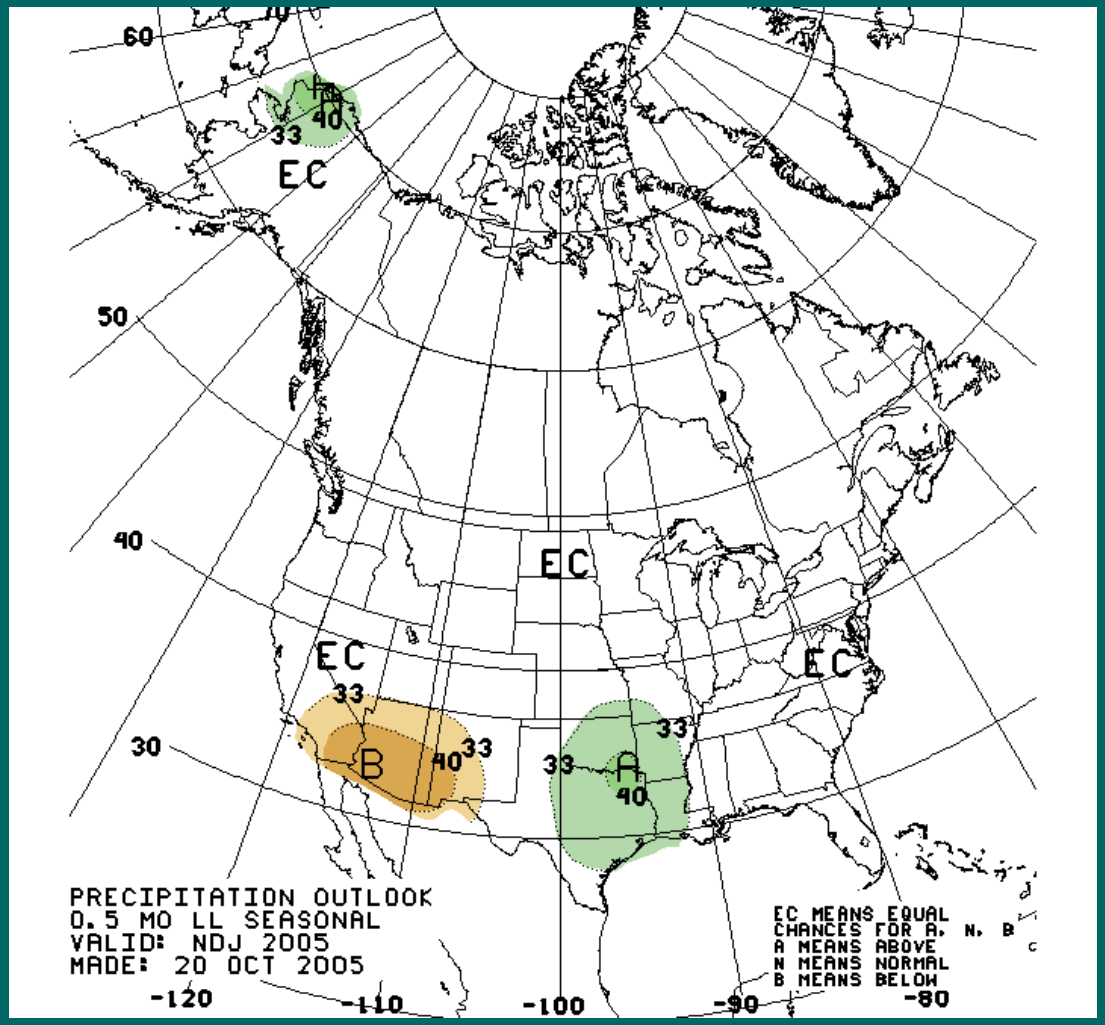
Author: David Miskus, JAWF/CPC/NOAA

Temperature Nov-Jan 2006



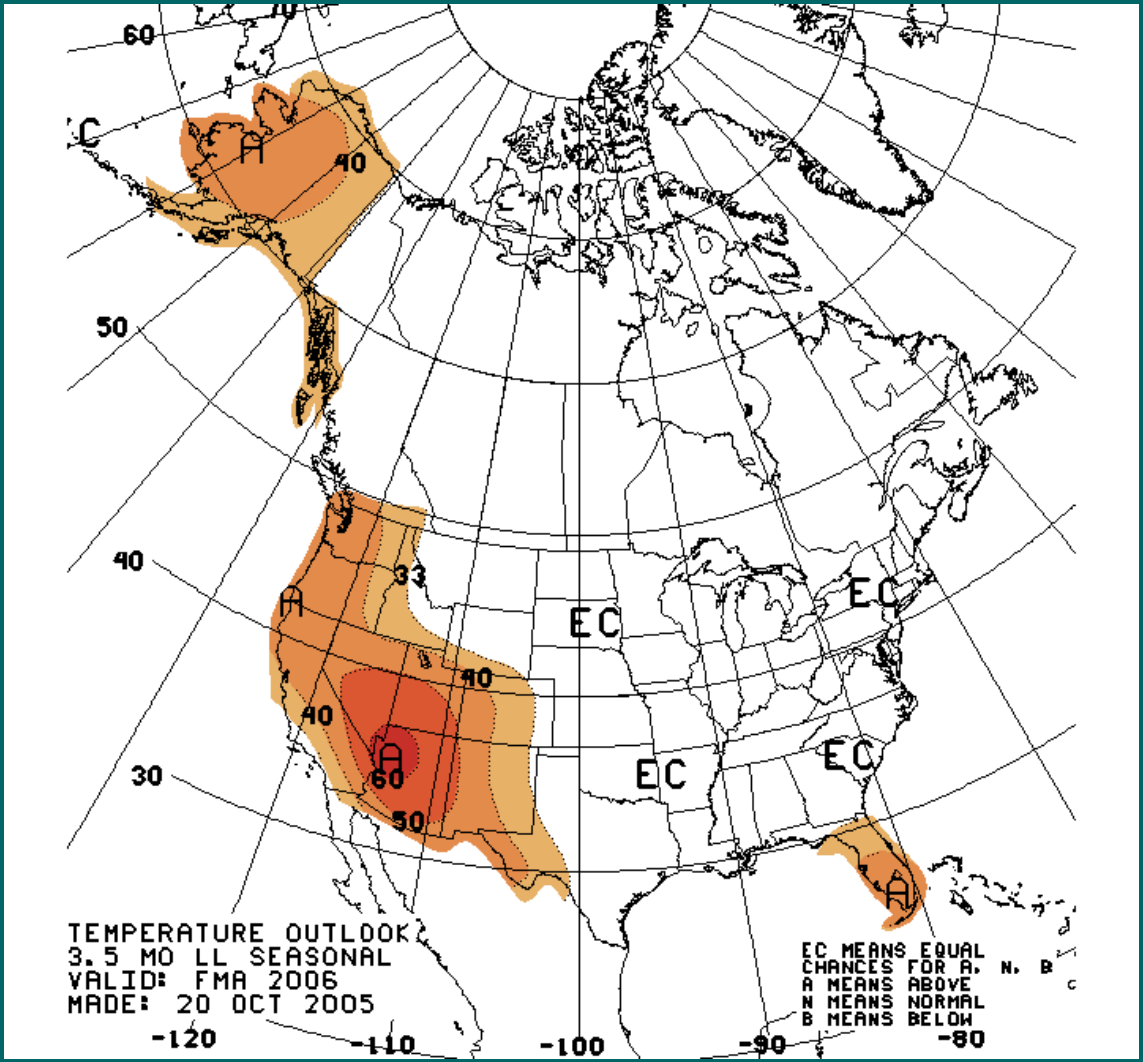
From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Precipitation Nov-Jan 2006



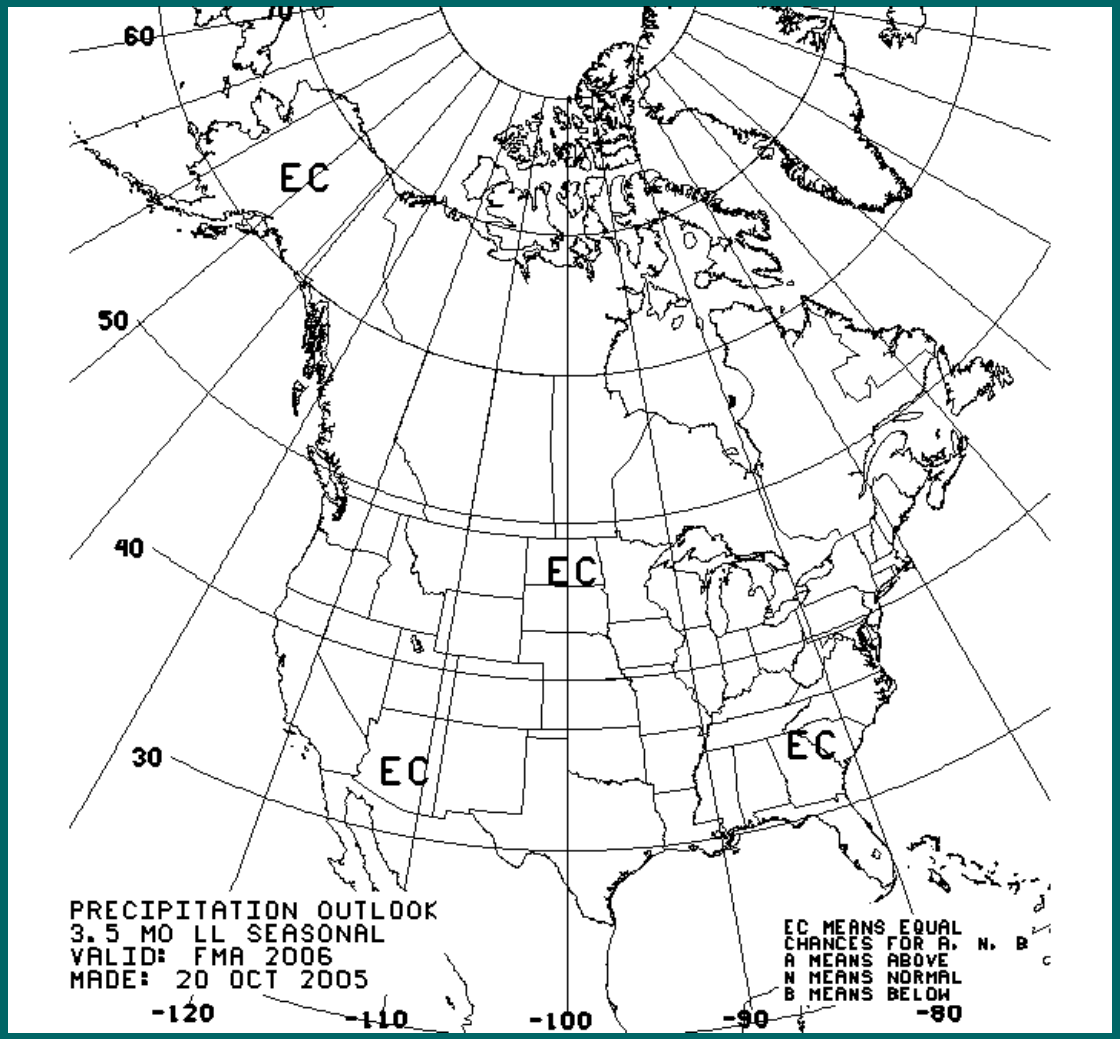
From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Temperature Feb-Apr 2006



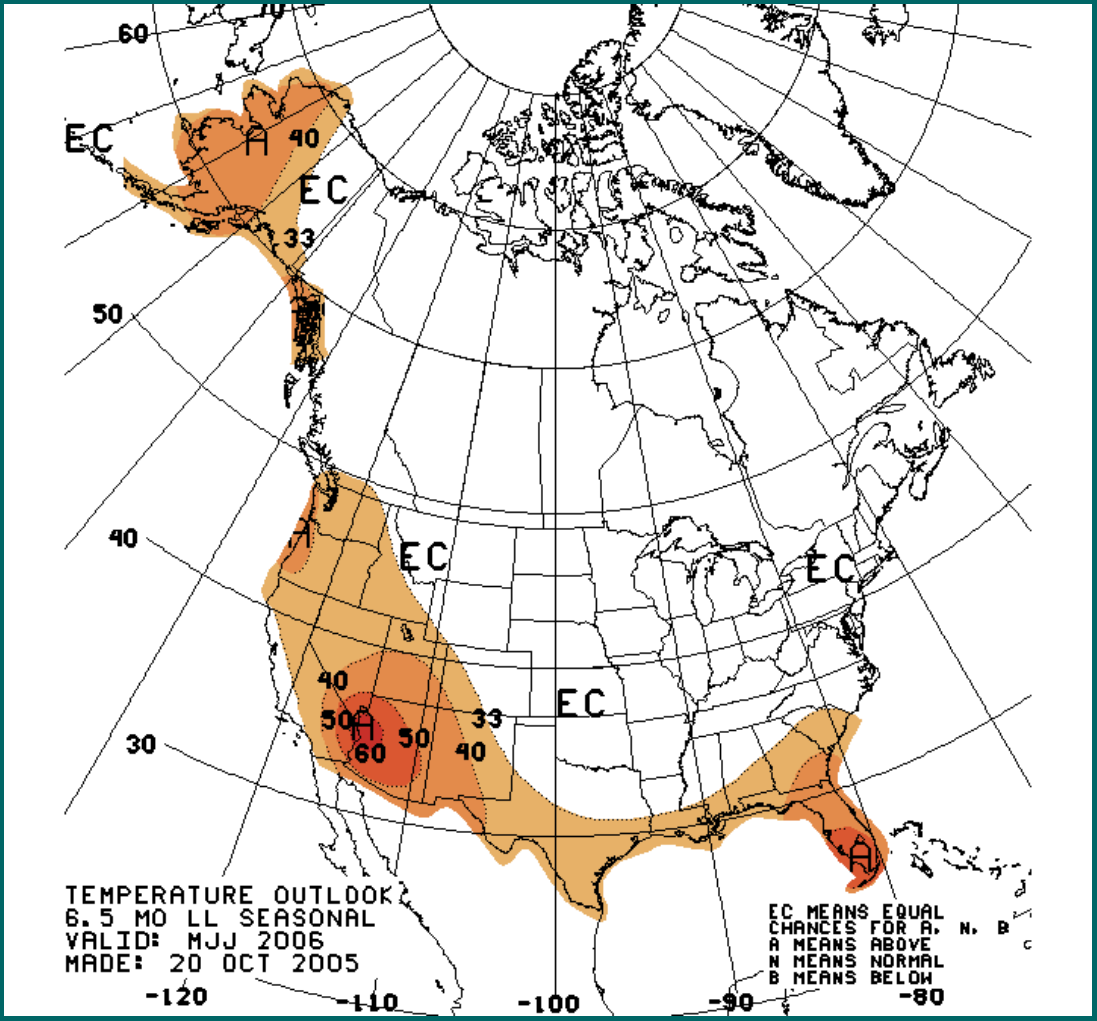
From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Precipitation Feb-Apr 2006



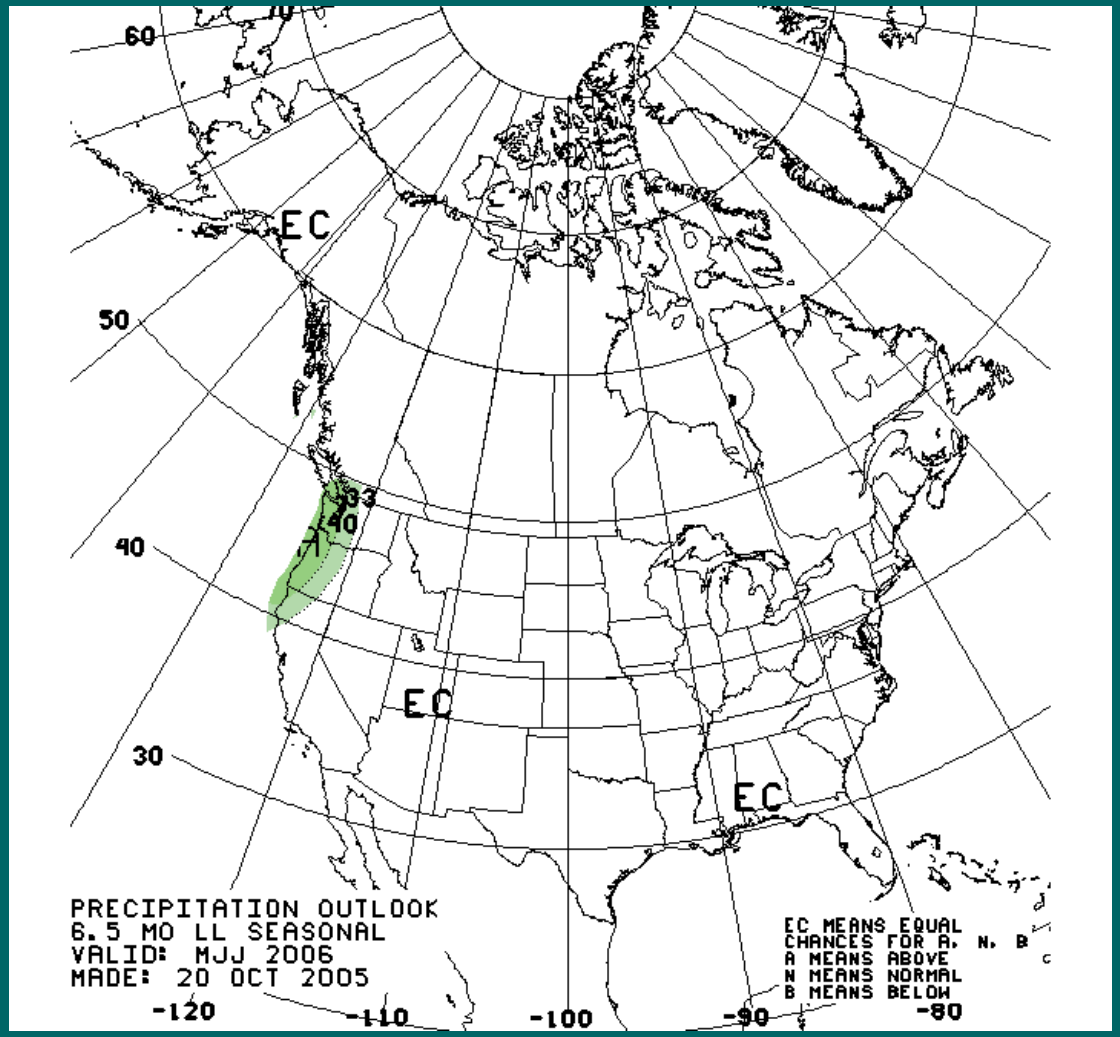
From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Temperature May-Jul 2006



From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

Precipitation May-Jul 2006

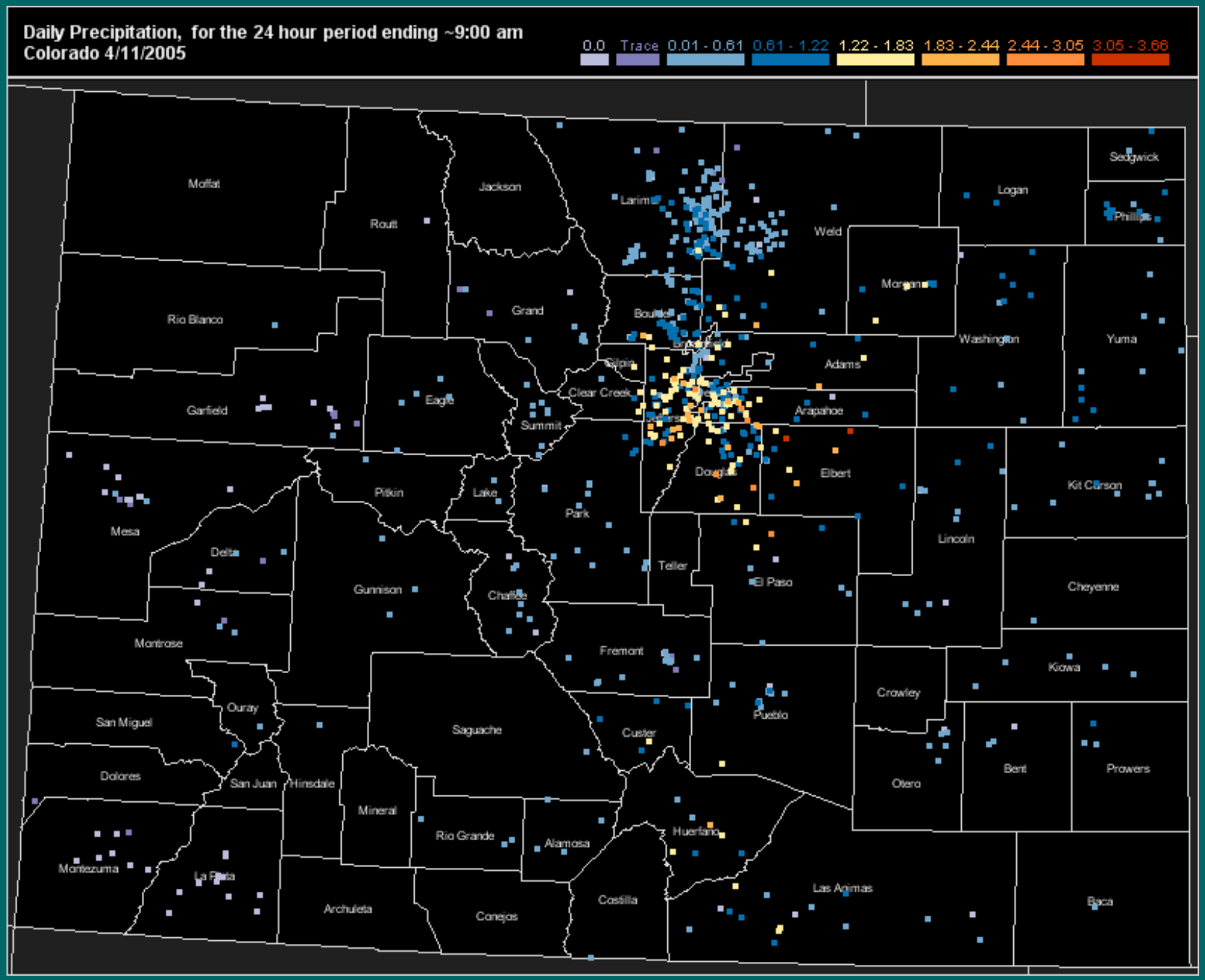


From the Colorado Prediction Center
http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.html

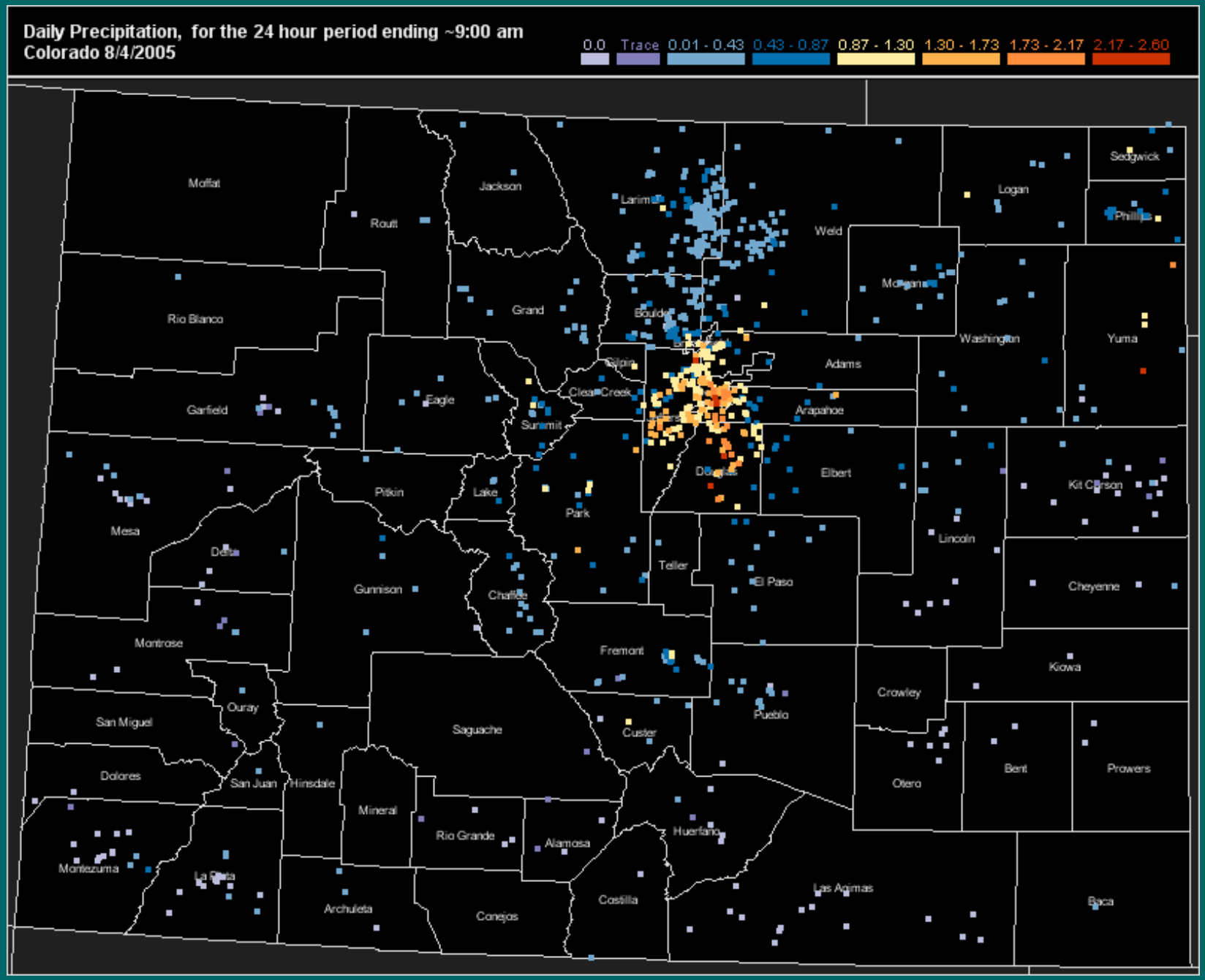
And How About CoCoRaHS?

CoCoRaHS

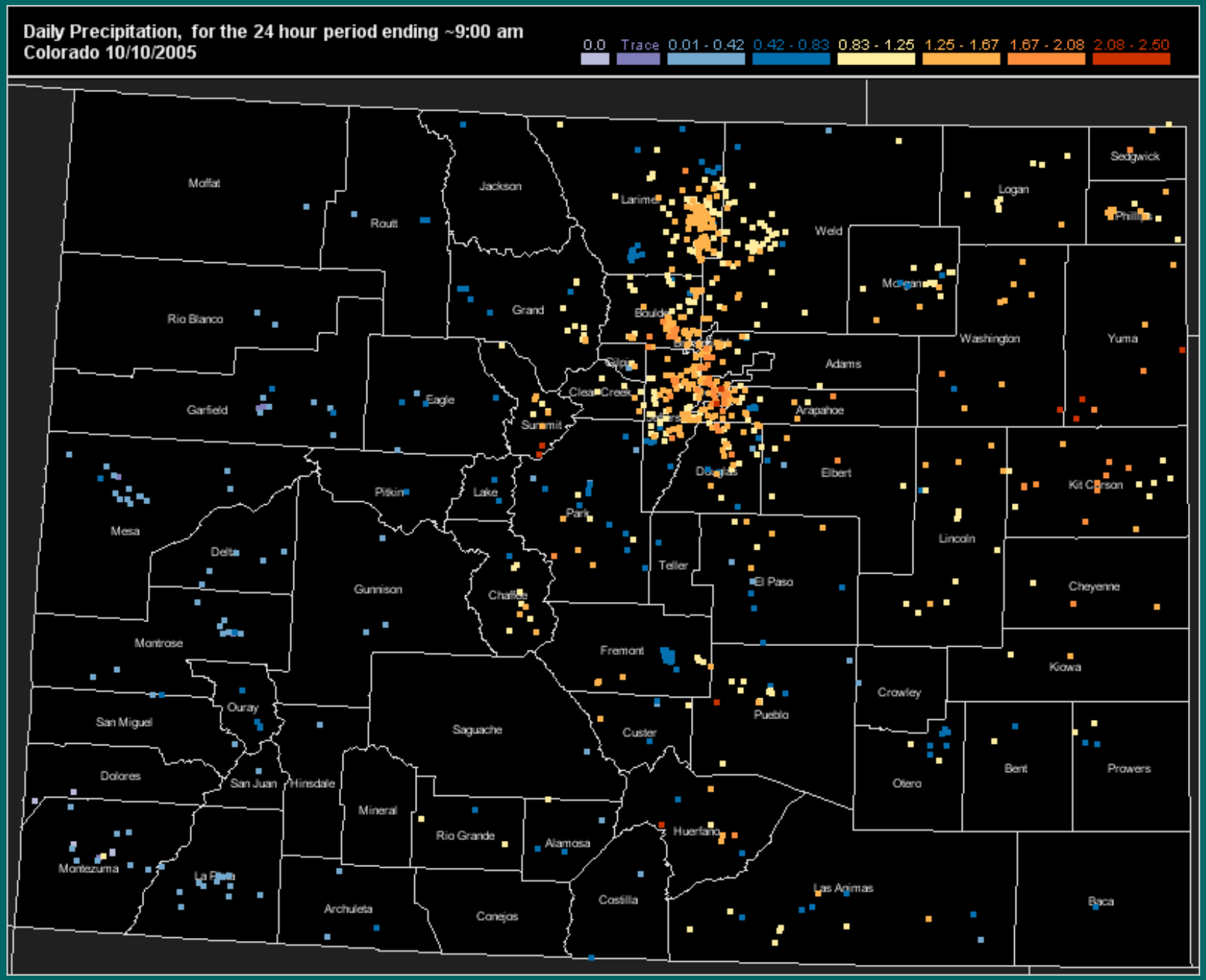
Community Collaborative Rain, Hail & Snow Network



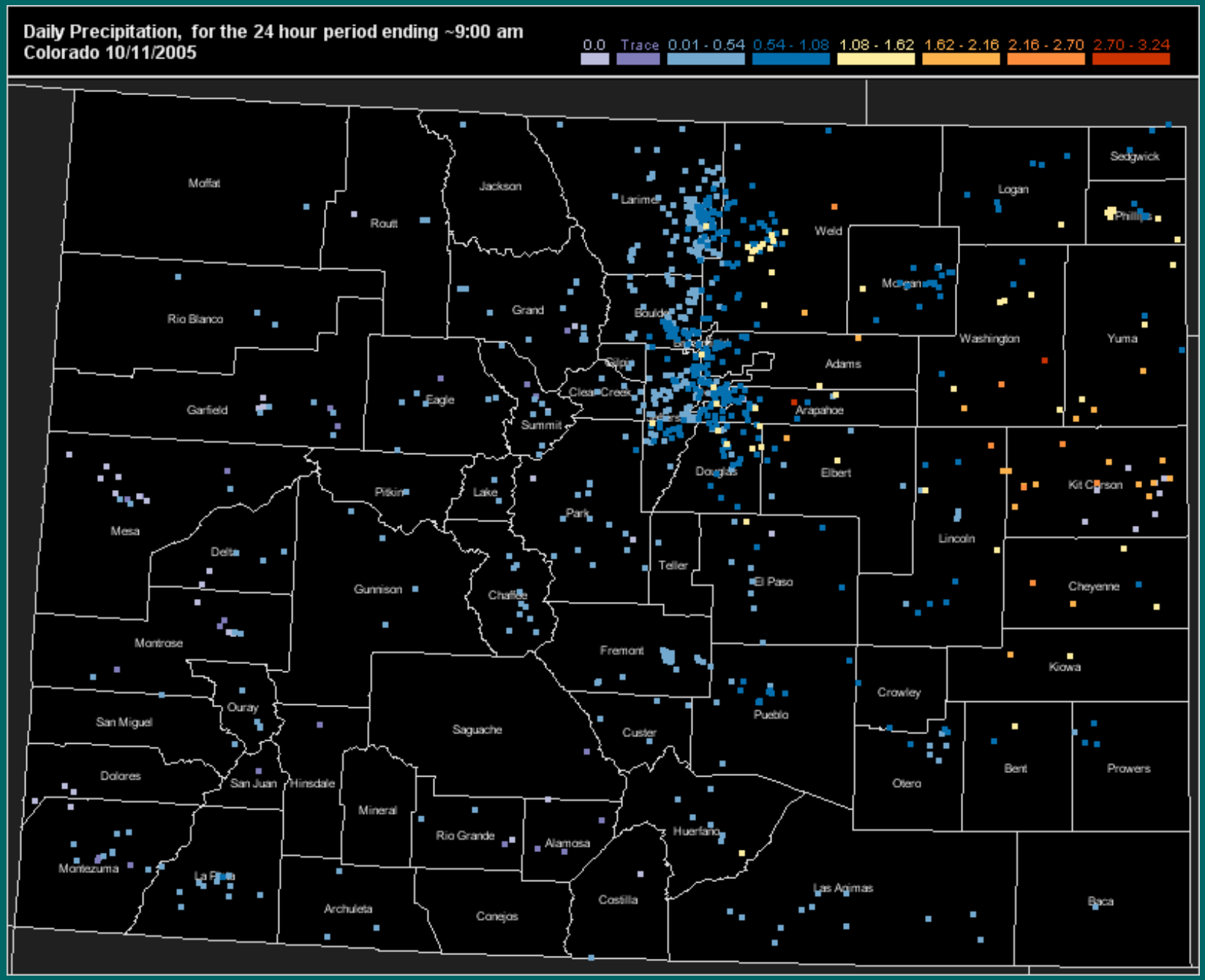
CoCoRaHS Colorado Statewide map for April 11, 2005



CoCoRaHS Colorado Statewide map for August 4, 2005



CoCoRaHS Colorado Statewide map for October 10, 2005



CoCoRaHS Colorado Statewide map for October 11, 2005

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”