Drought Update

January 18, 2005 WATF Meeting

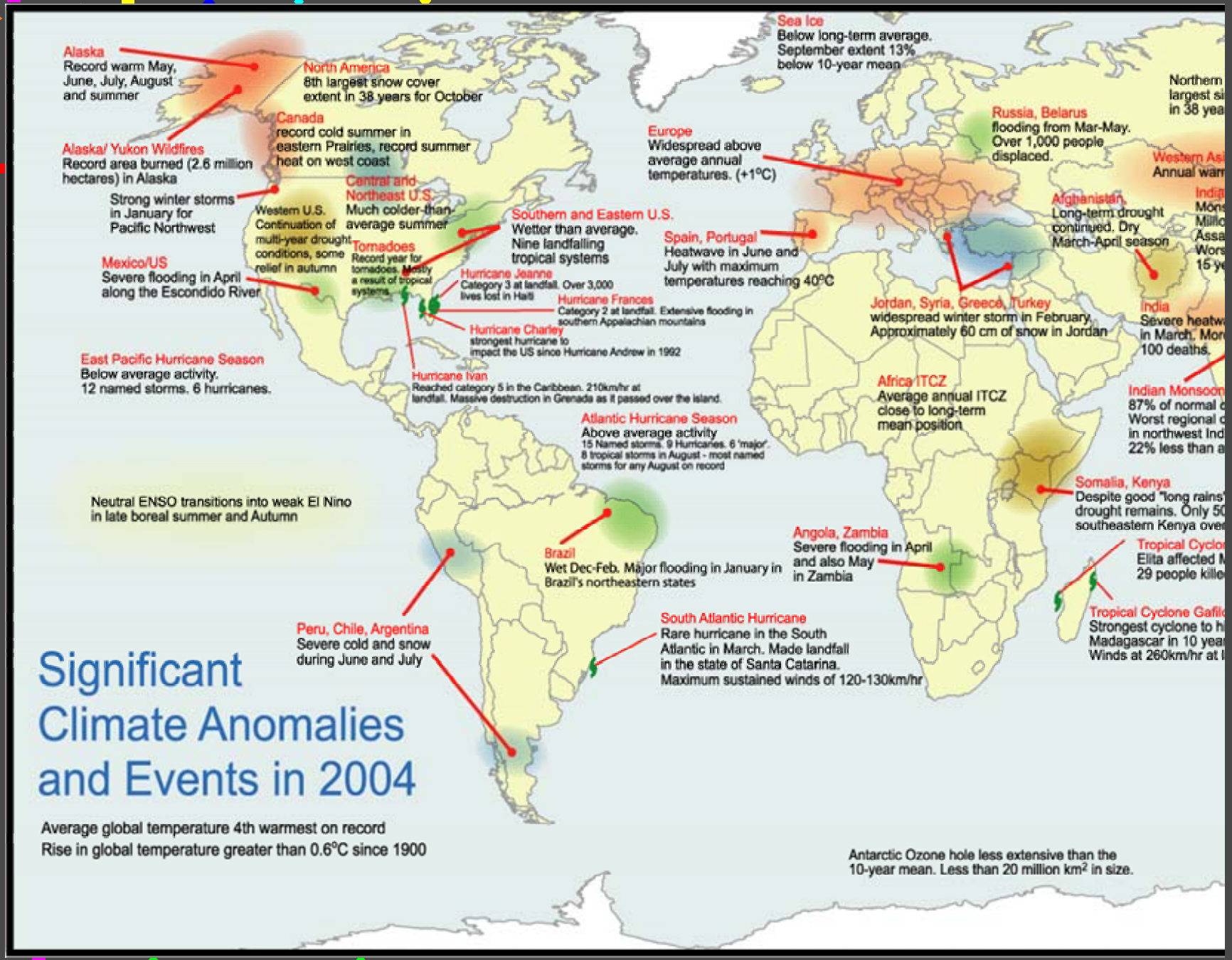
Nolan J. Doesken
Colorado Climate Center

presented at the Water Availability Task Force meeting, NWS, Boulder, January 18, 2005

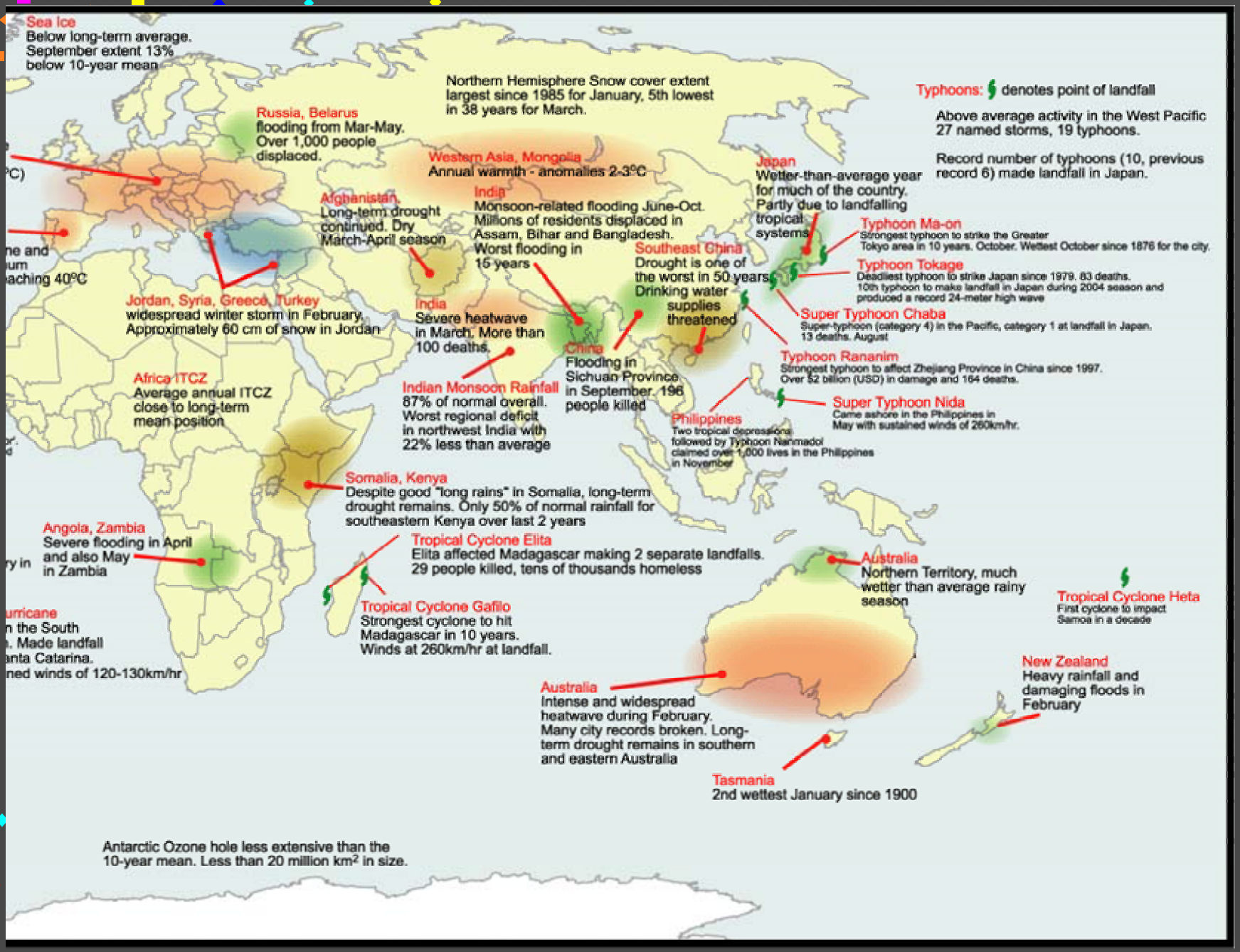
Prepared by Odie Bliss

Colorado State University
Knowledge to Go Places

http://ccc.atmos.colostate.edu



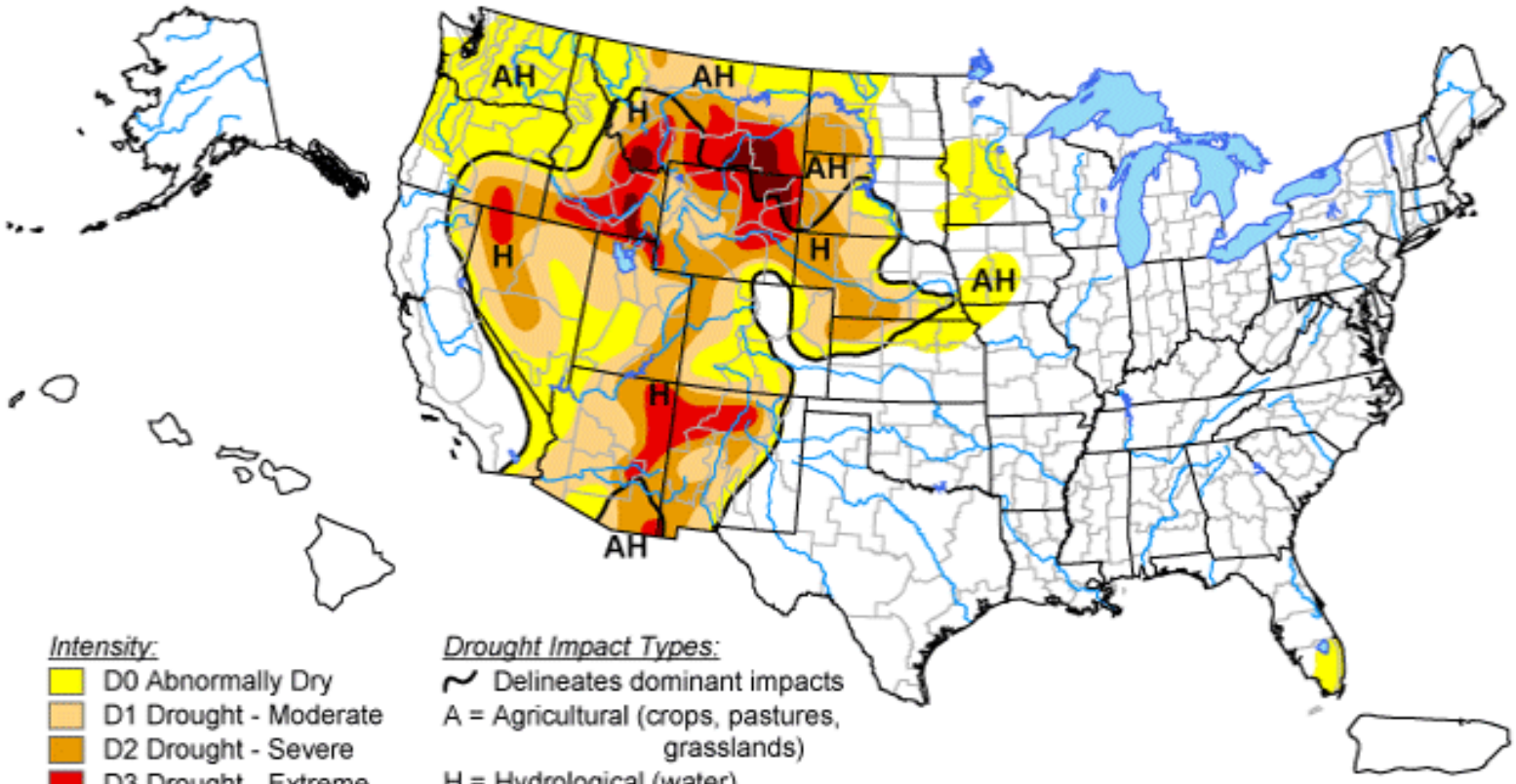
http://www.ncdc.noaa.gov/oa/climate/research/2004/ann/ann04.html



http://www.ncdc.noaa.gov/oa/climate/research/2004/ann/ann04.html

U.S. Drought Monitor

January 11, 2005
Valid 7 a.m. EST



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

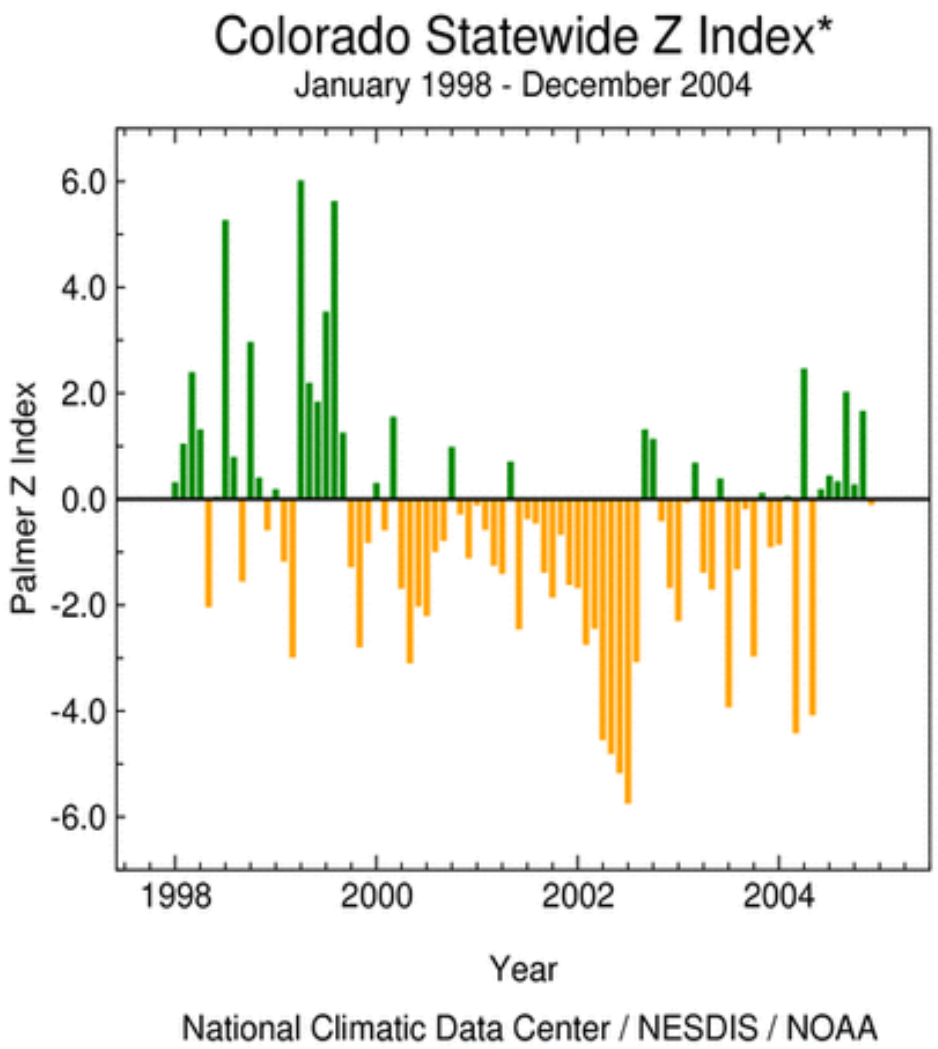
Drought Impact Types:
- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)
- (No type = Both impacts)

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

USDA National Drought Mitigation Center

Released Thursday, January 13, 2005
Author: Mark Svoboda, NDMC

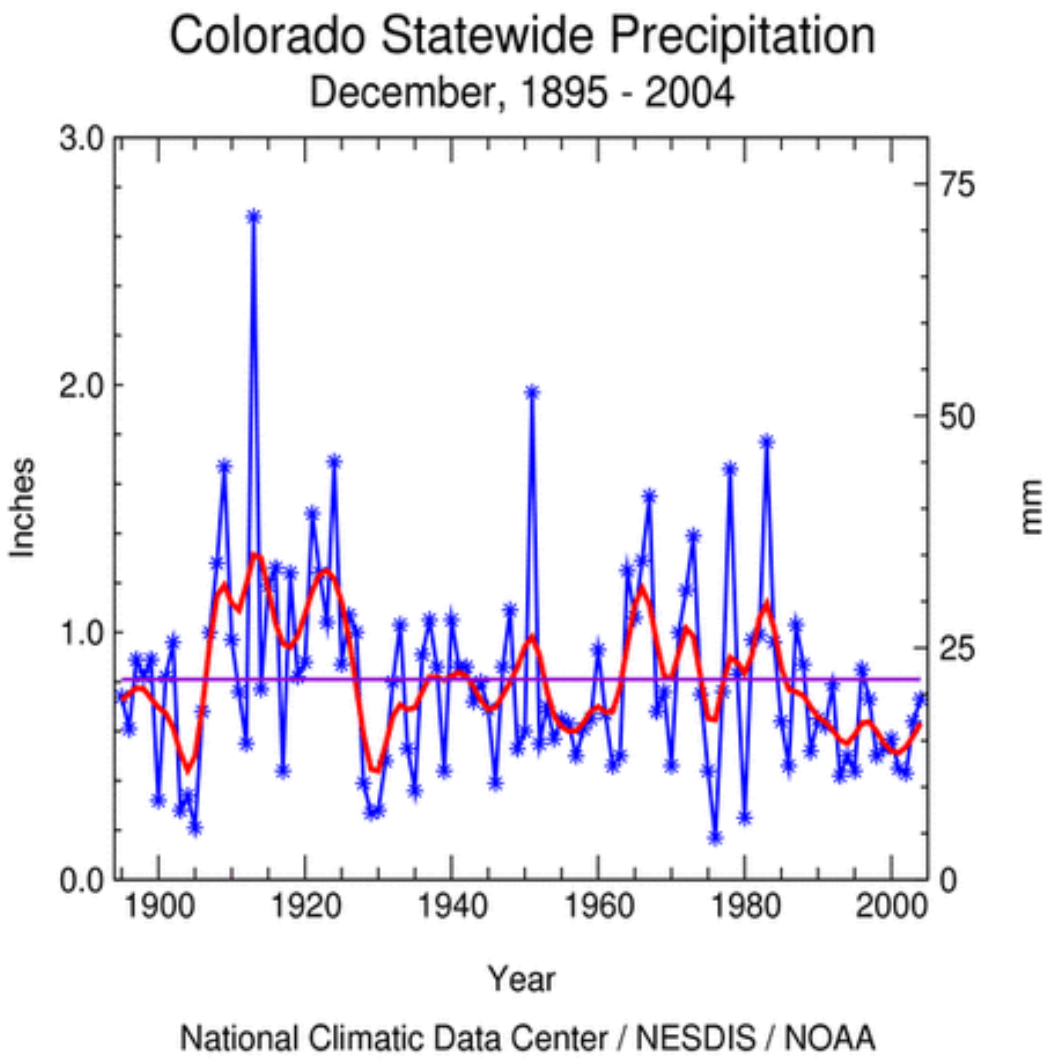
http://drought.unl.edu/dm



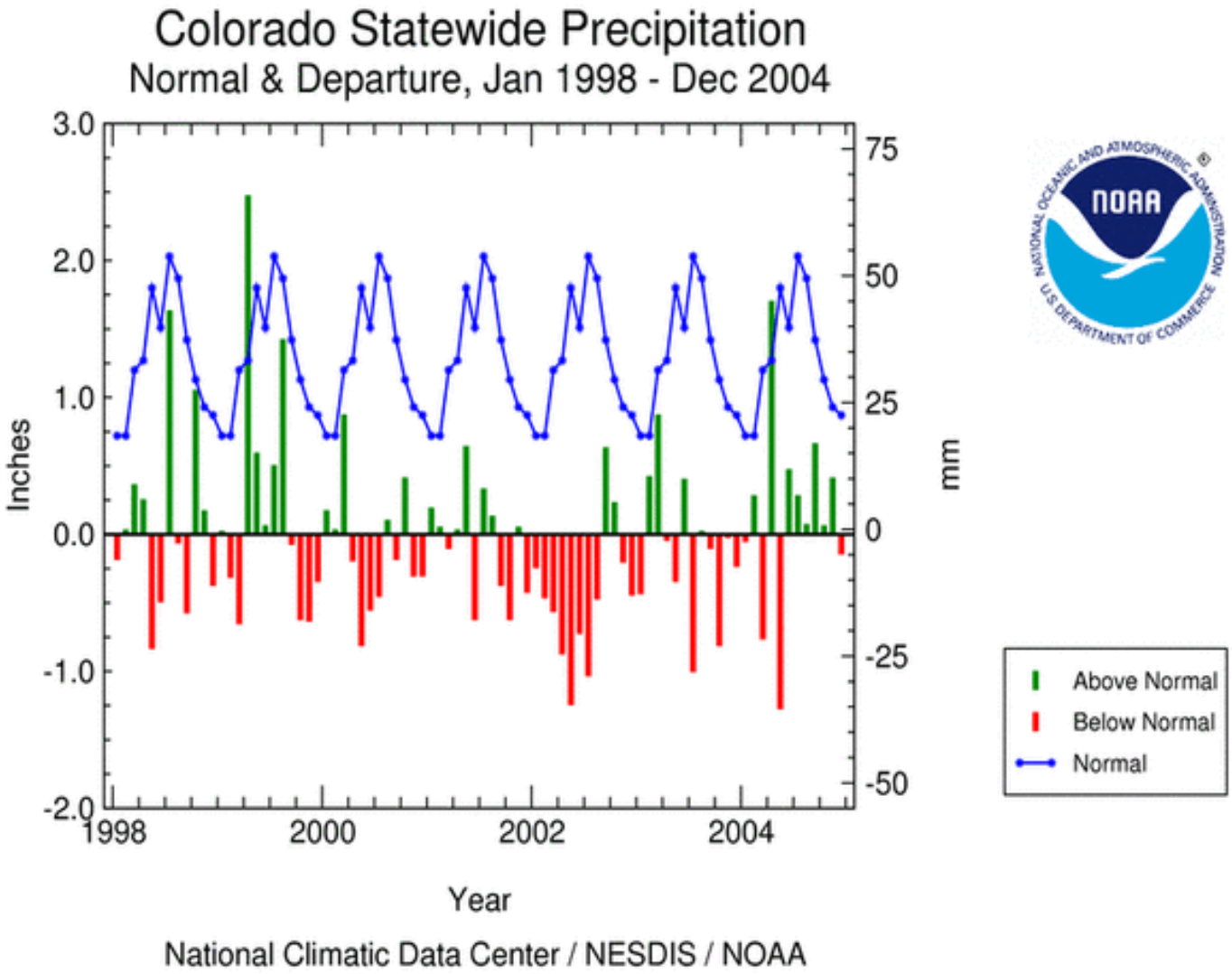
*Palmer Z Index
Short-Term Drought

Dry Spell
Wet Spell

http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/st005dv00pcp.html



http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/st005dv00pcp.html



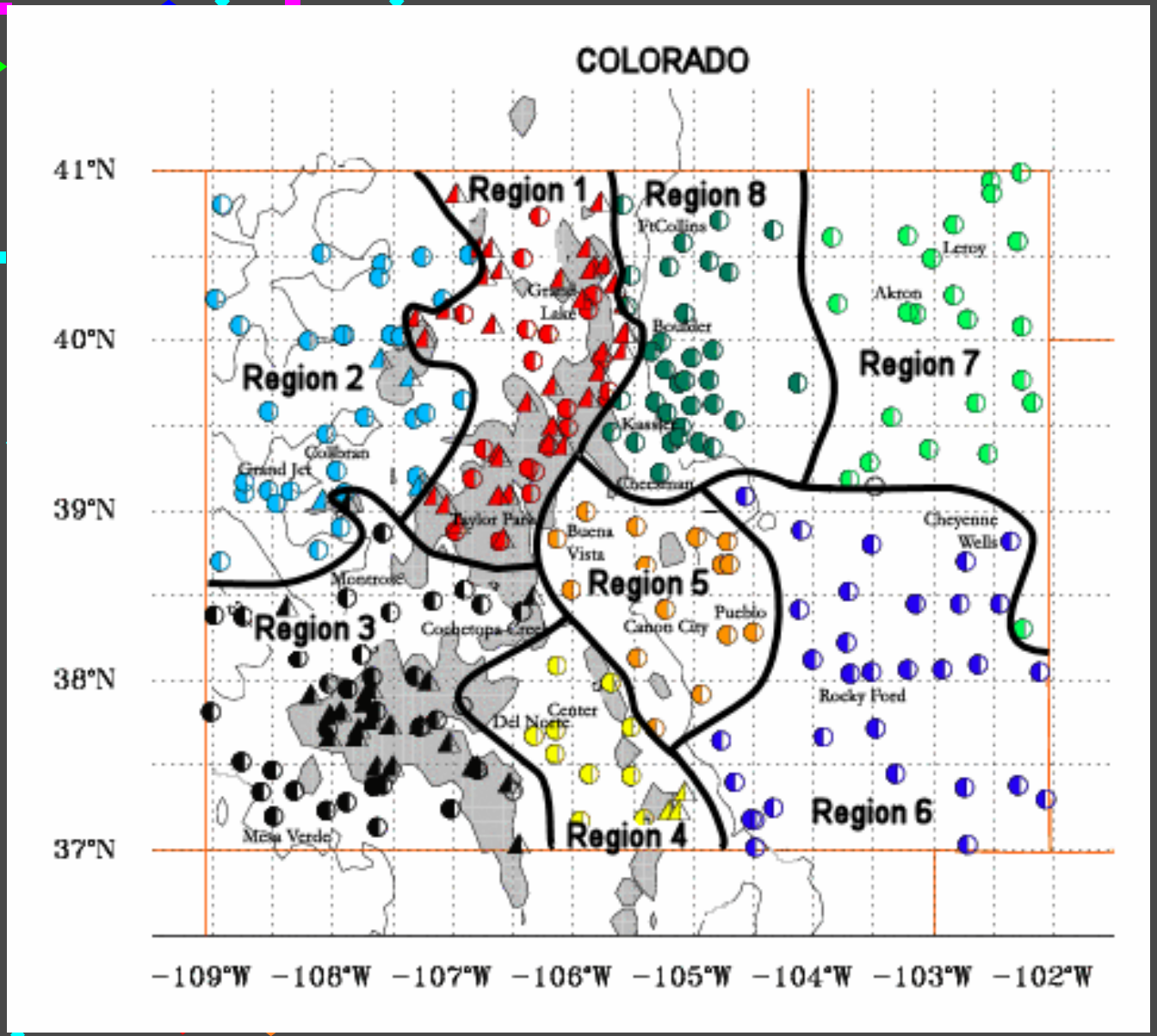
http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/st005dv00pcp.html

Statewide Precipitation Ranks for Colorado , 2004

Period	Rank
Dec	51st driest
Nov-Dec	25th wettest (86th driest)
Oct-Dec	35th wettest (76th driest)
Sep-Dec	22nd wettest (89th driest)
Aug-Dec	23rd wettest (88th driest)
Jul-Dec	27th wettest (84th driest)
Jun-Dec	16th wettest (95th driest)
May-Dec	49th wettest (62nd driest)
Apr-Dec	19th wettest (92nd driest)
Mar-Dec	37th wettest (74th driest)
Feb-Dec	31st wettest (80th driest)
Jan-Dec	32nd wettest (78th driest)

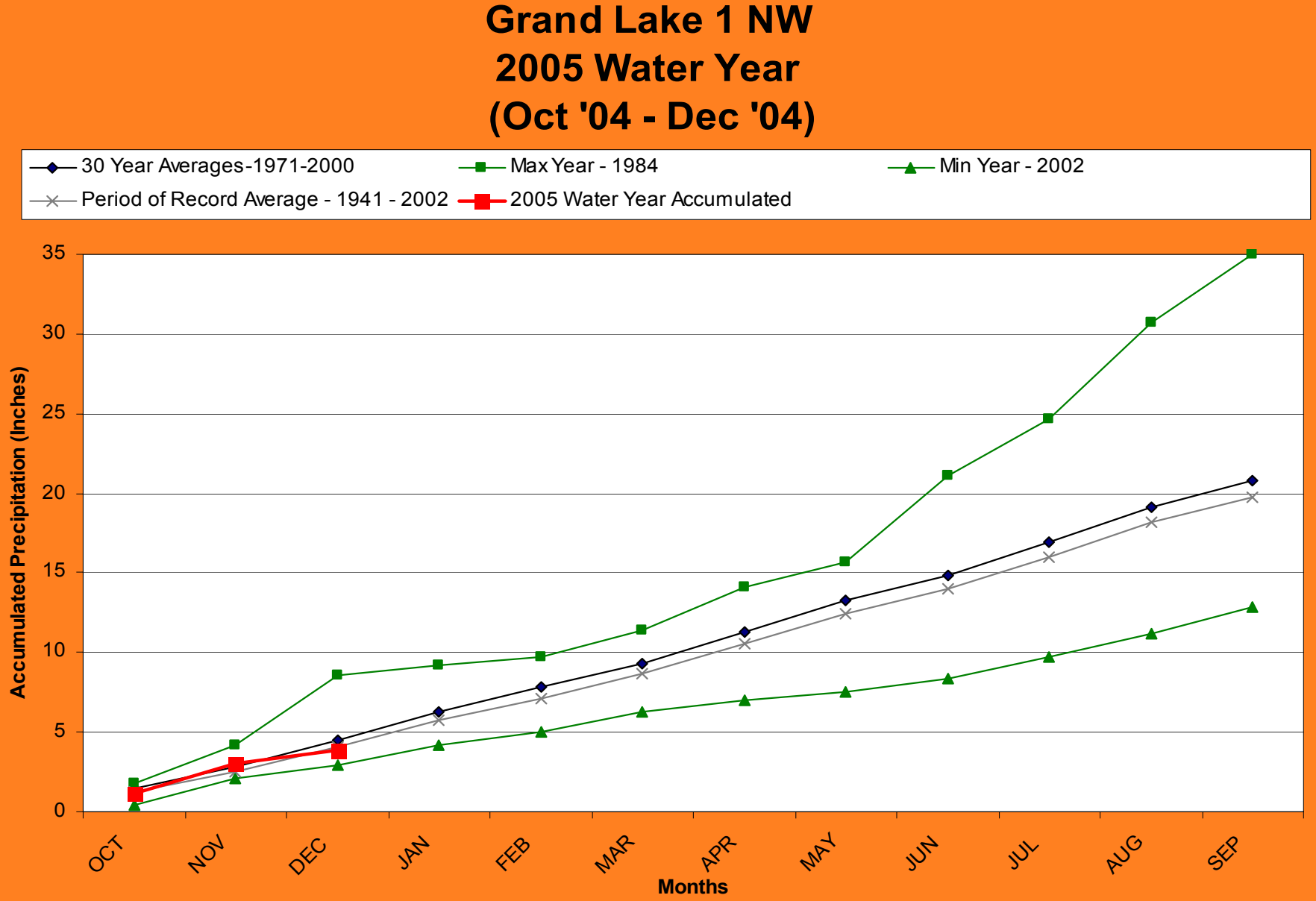
Colorado Precipitation Ranking 1895-2004

http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/st005dv00pcp.html

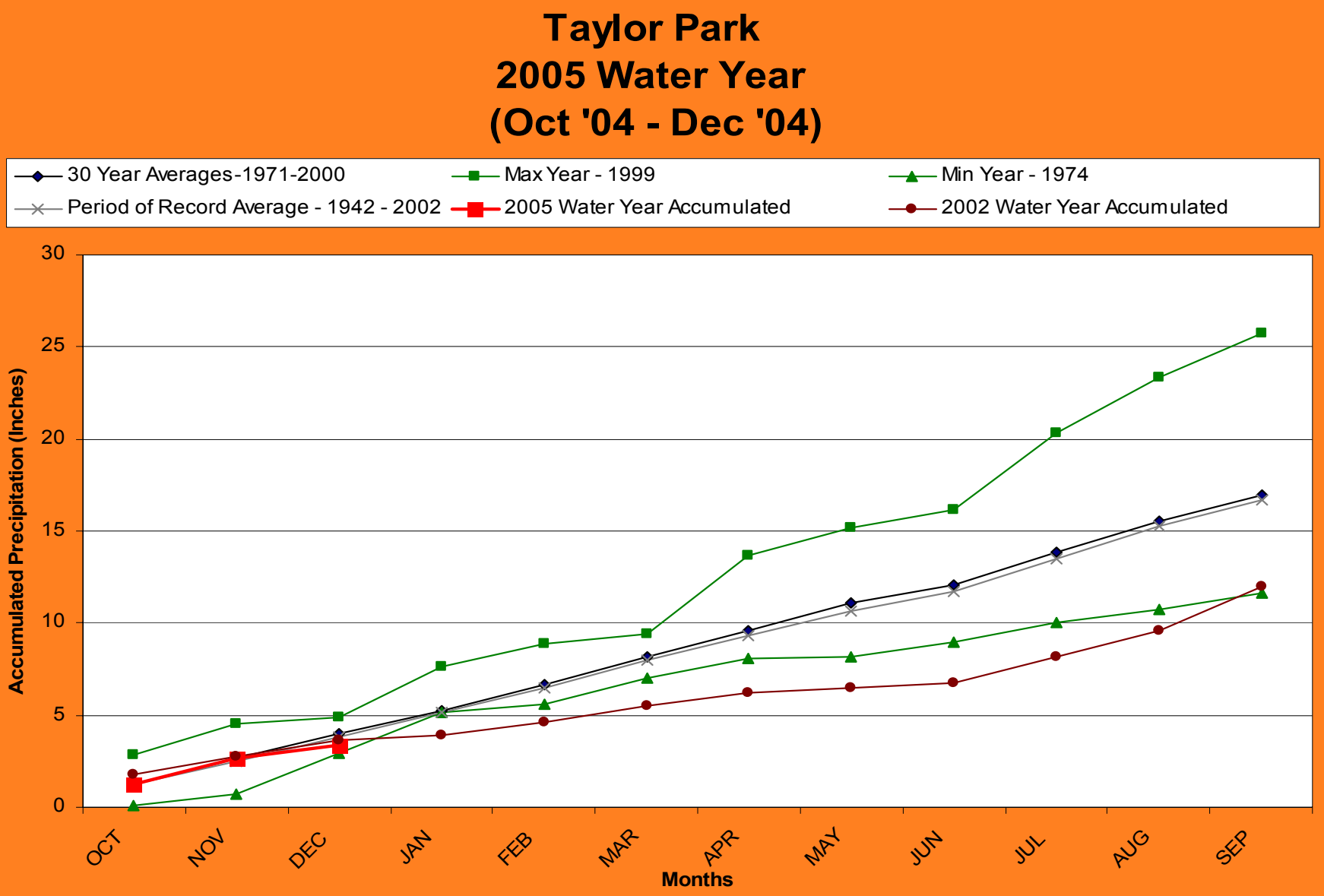


Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO

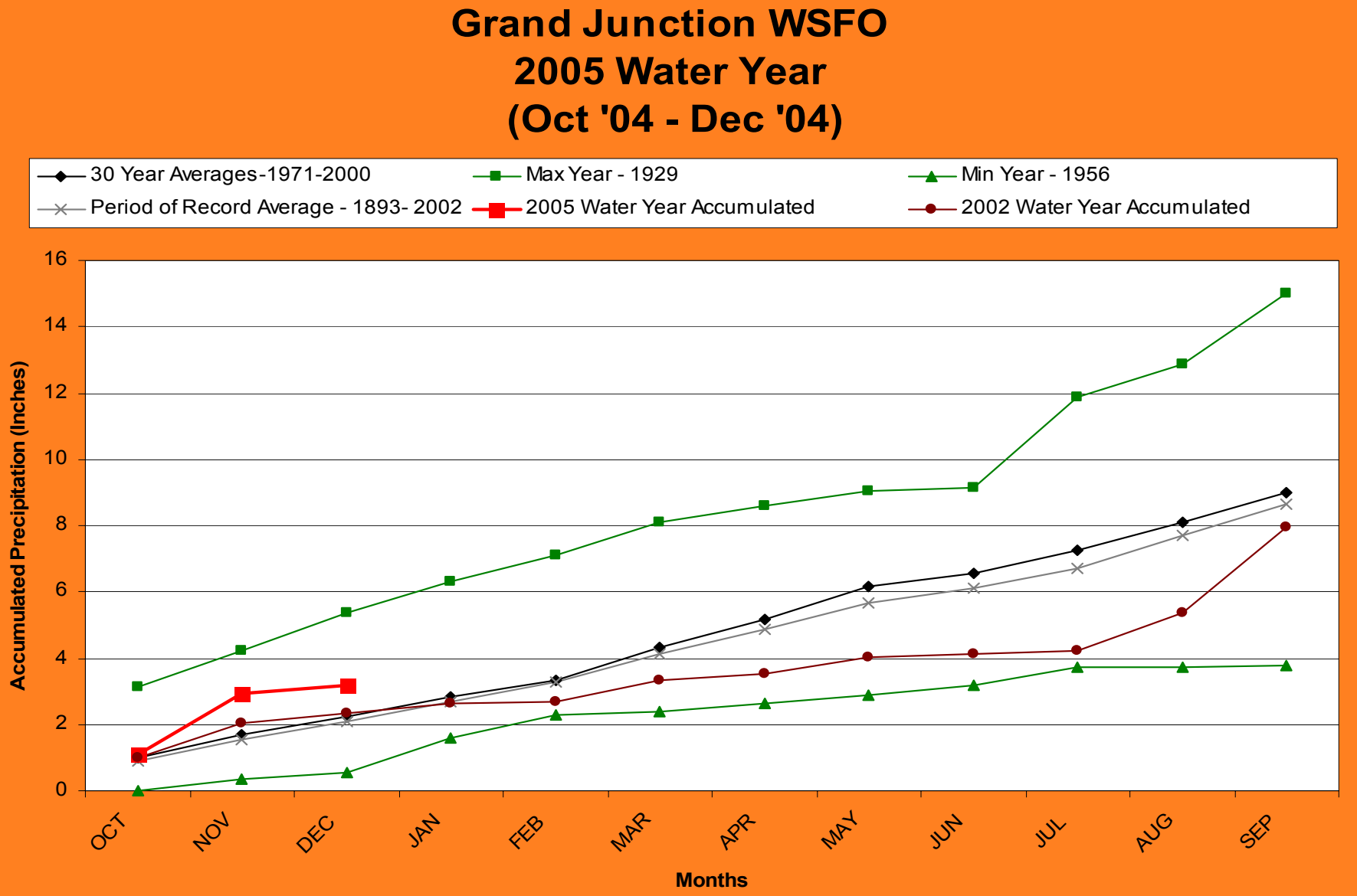
Division 1- Grand Lake 1NW



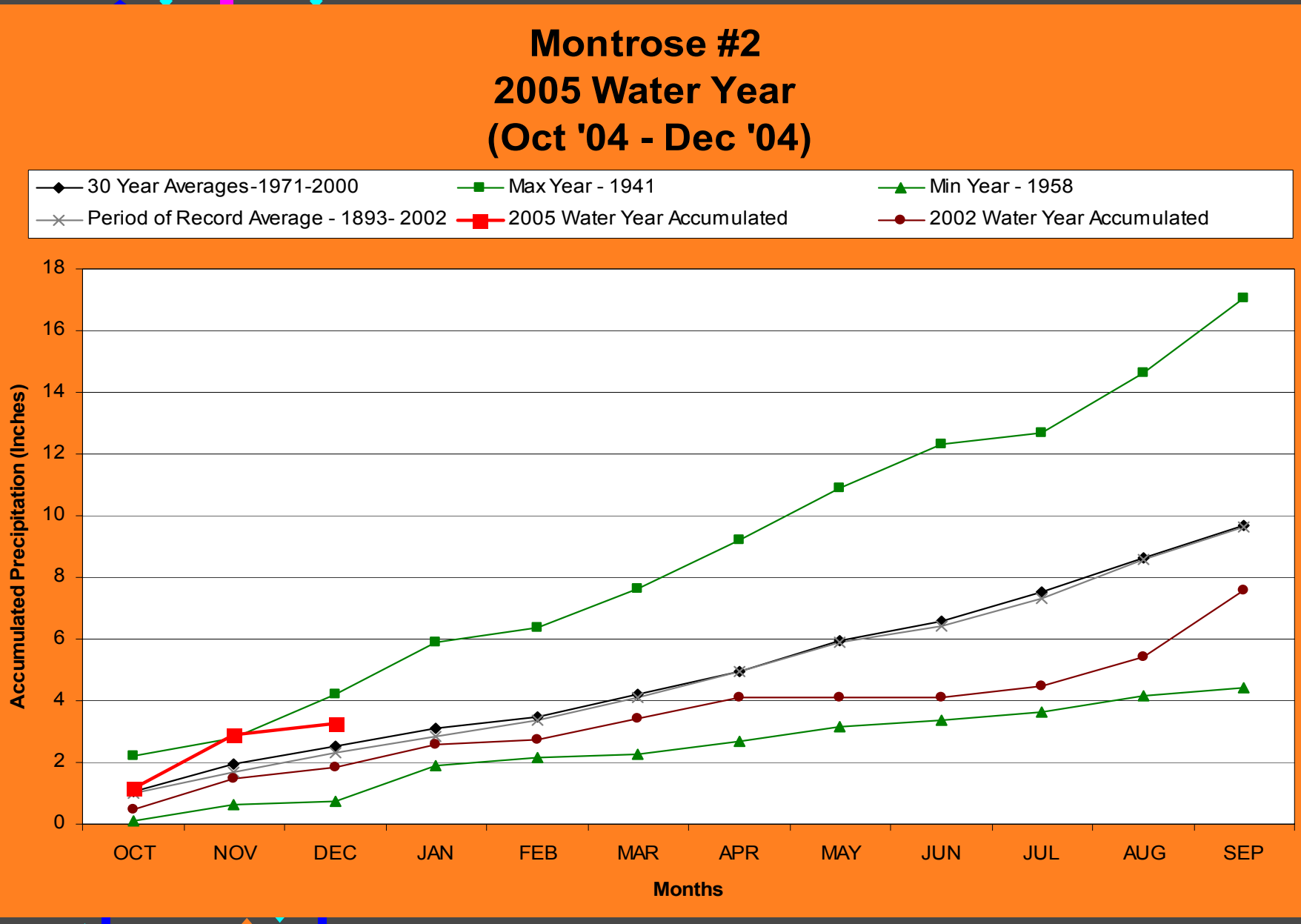
Division 1- Taylor Park



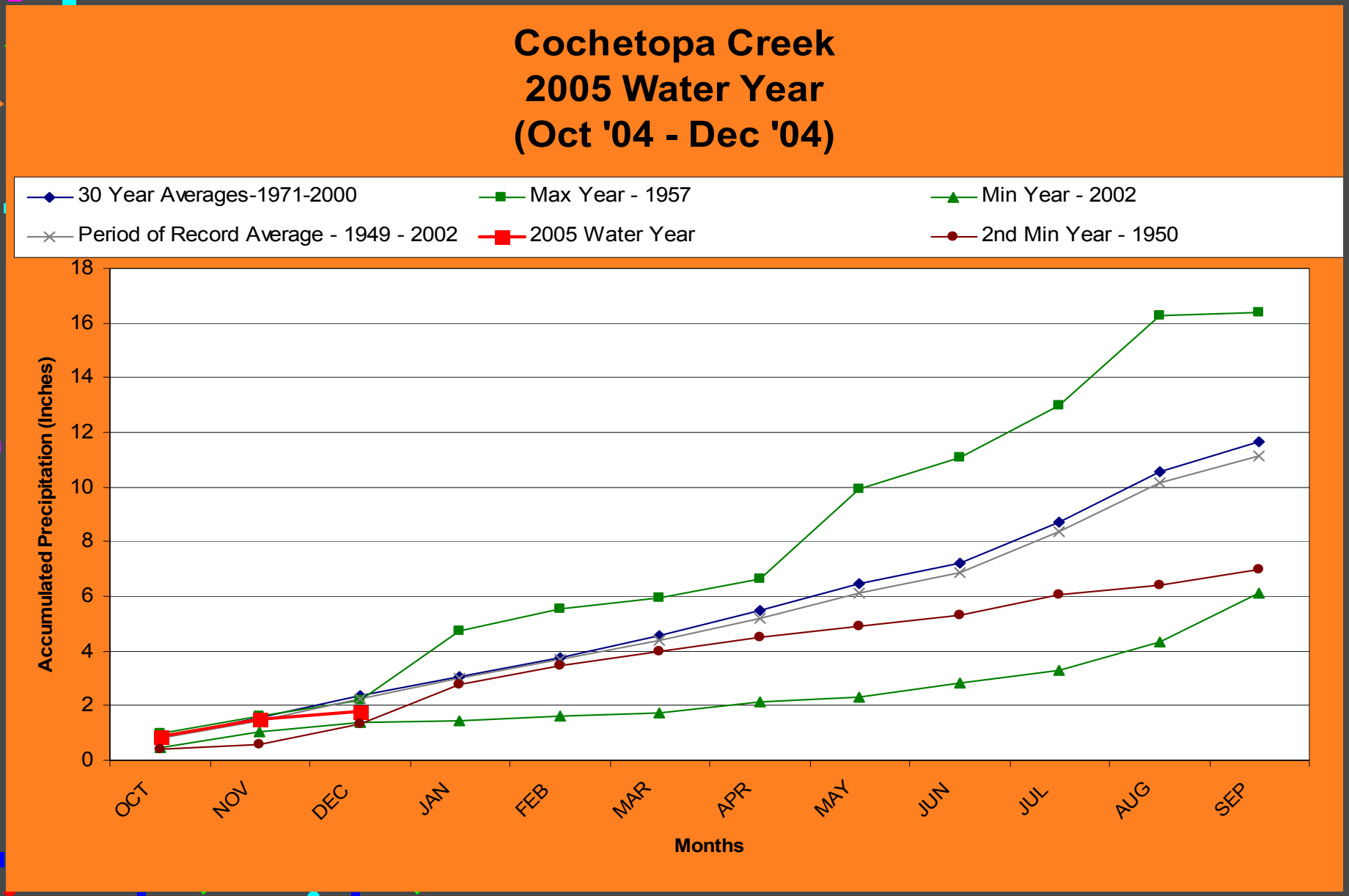
Division 2 – Grand Junction



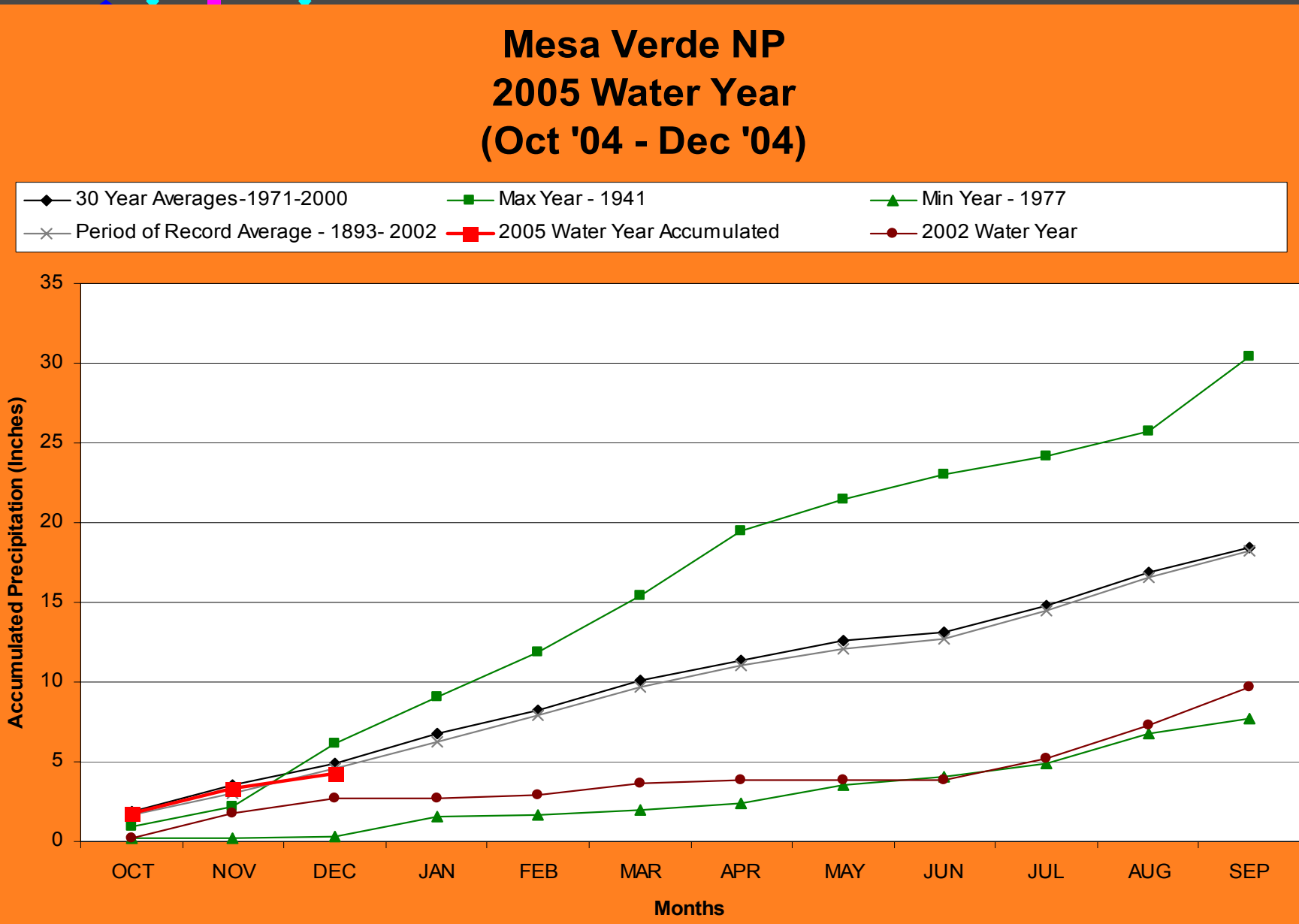
Division 3 - Montrose



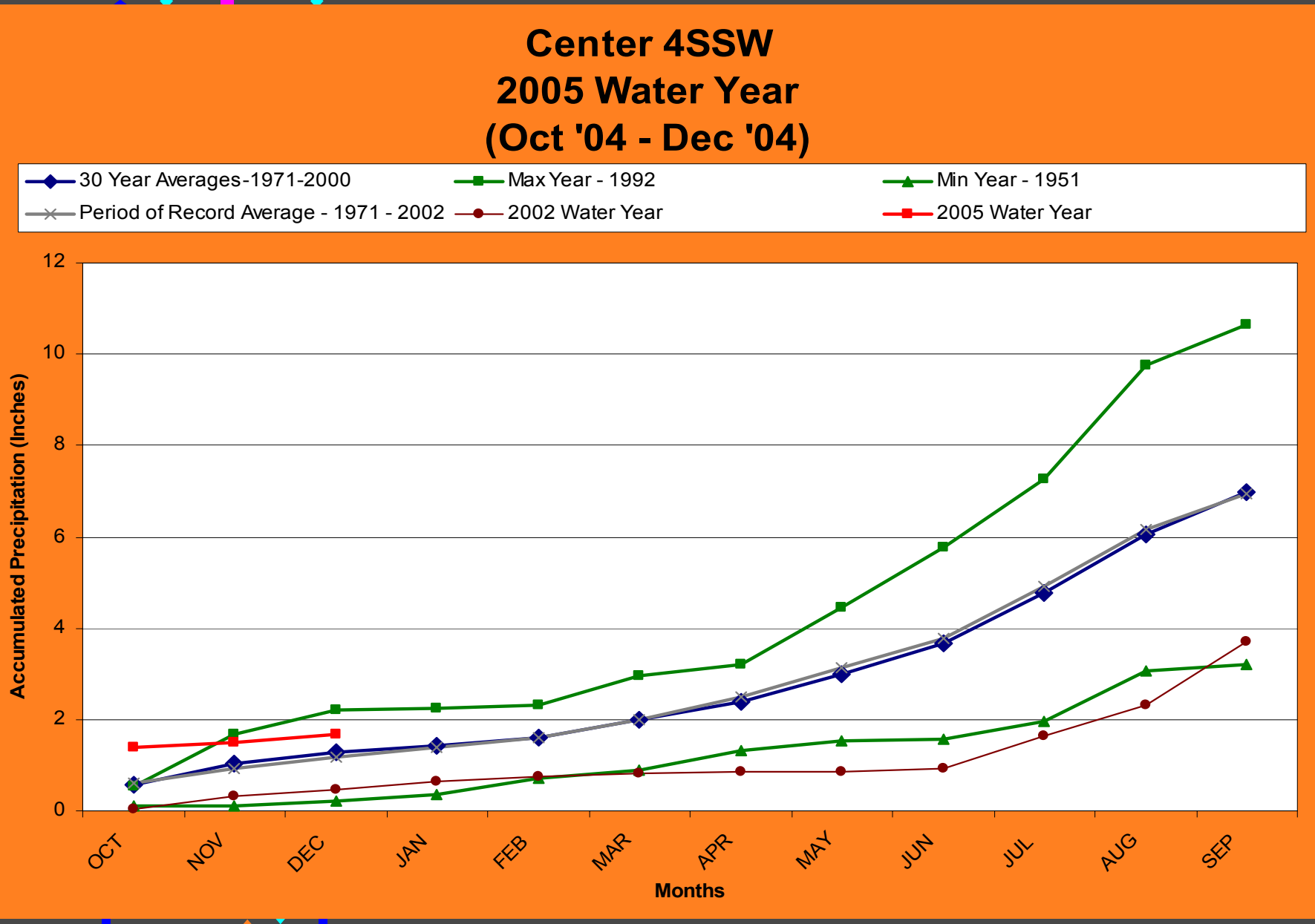
Division 3 – Cochetopa Creek



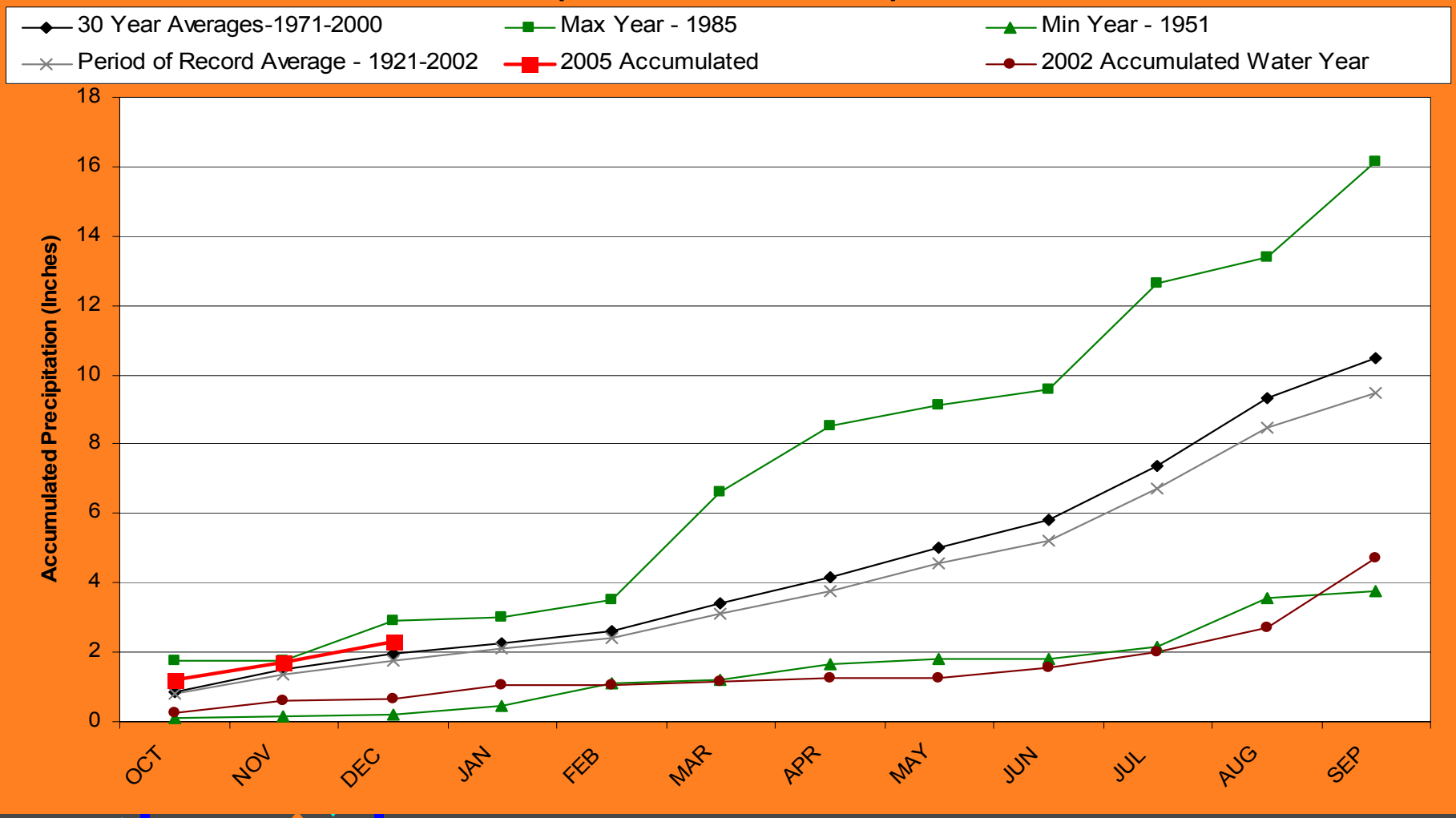
Division 3 -- Mesa Verde



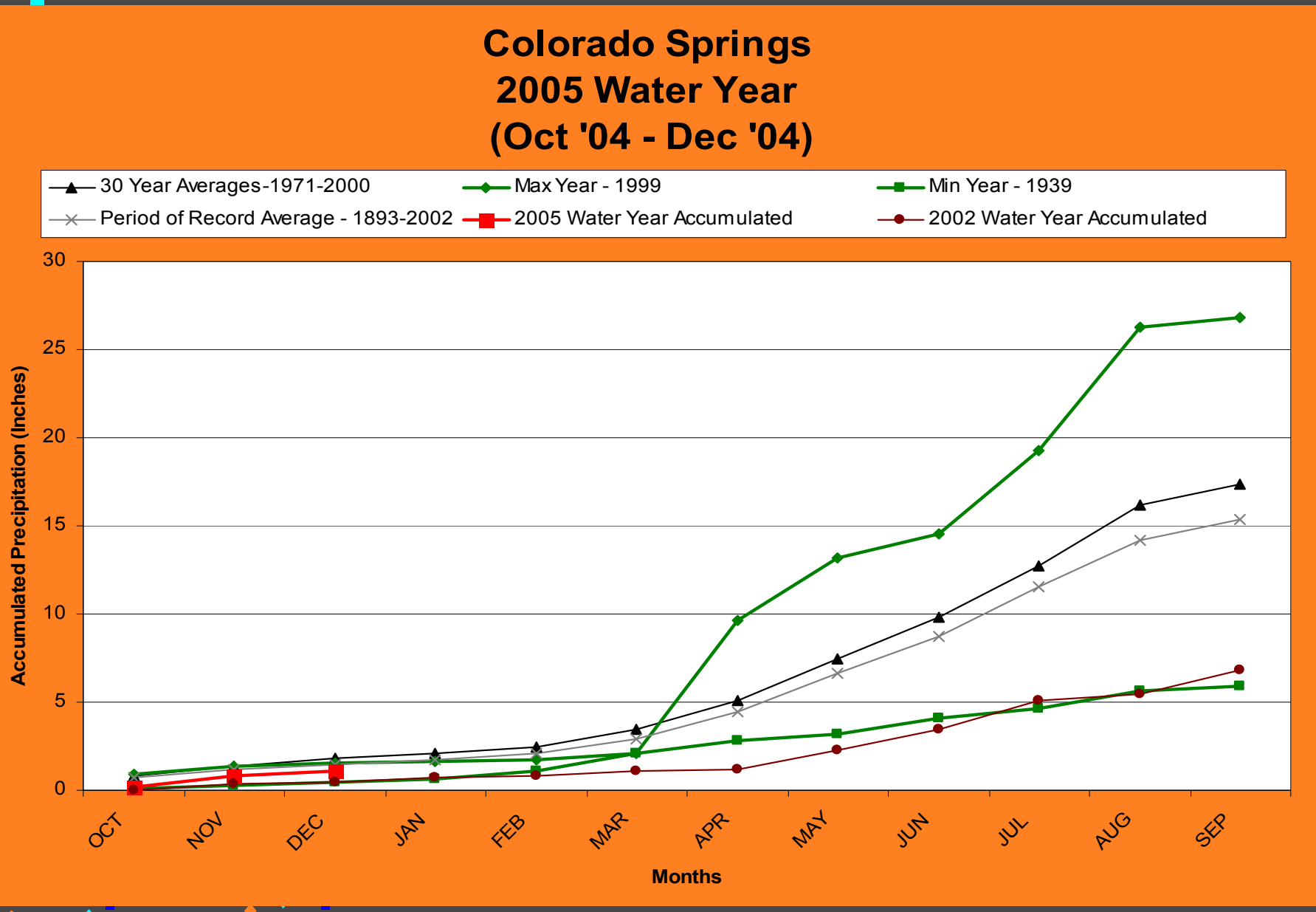
Division 4 - Center



Division 4 – Del Norte

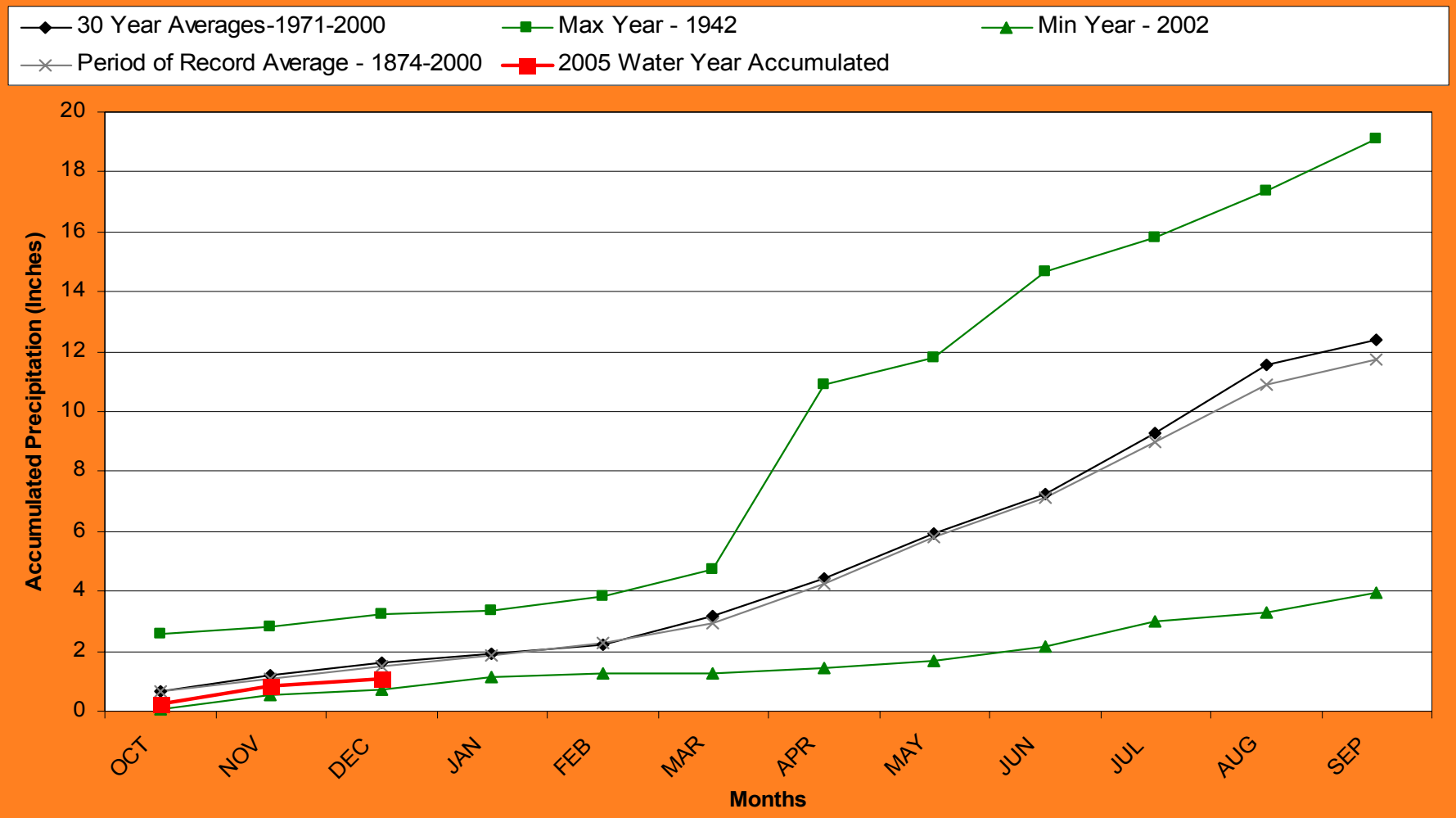


Division 5 – Colorado Springs

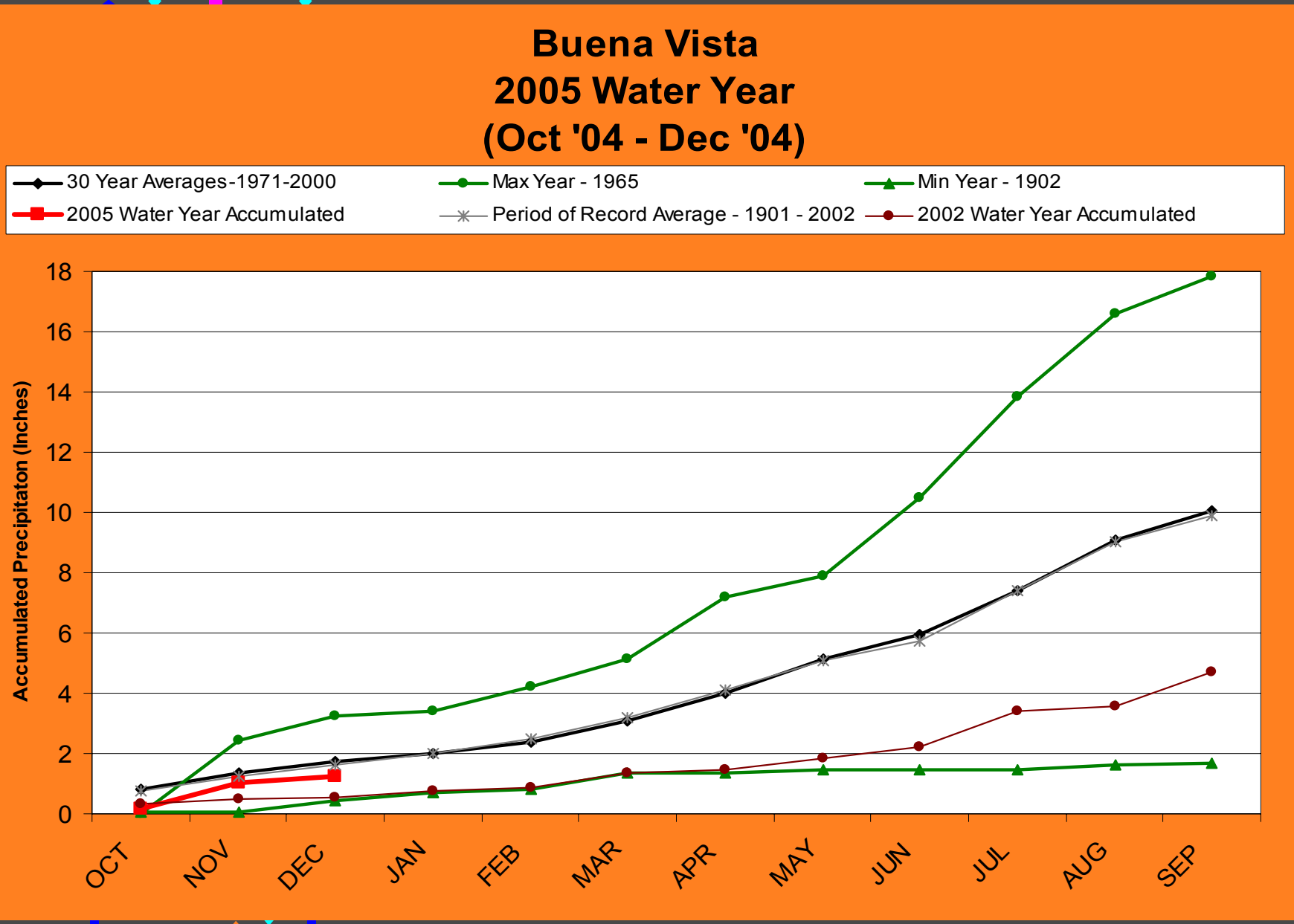


Division 5 - Pueblo

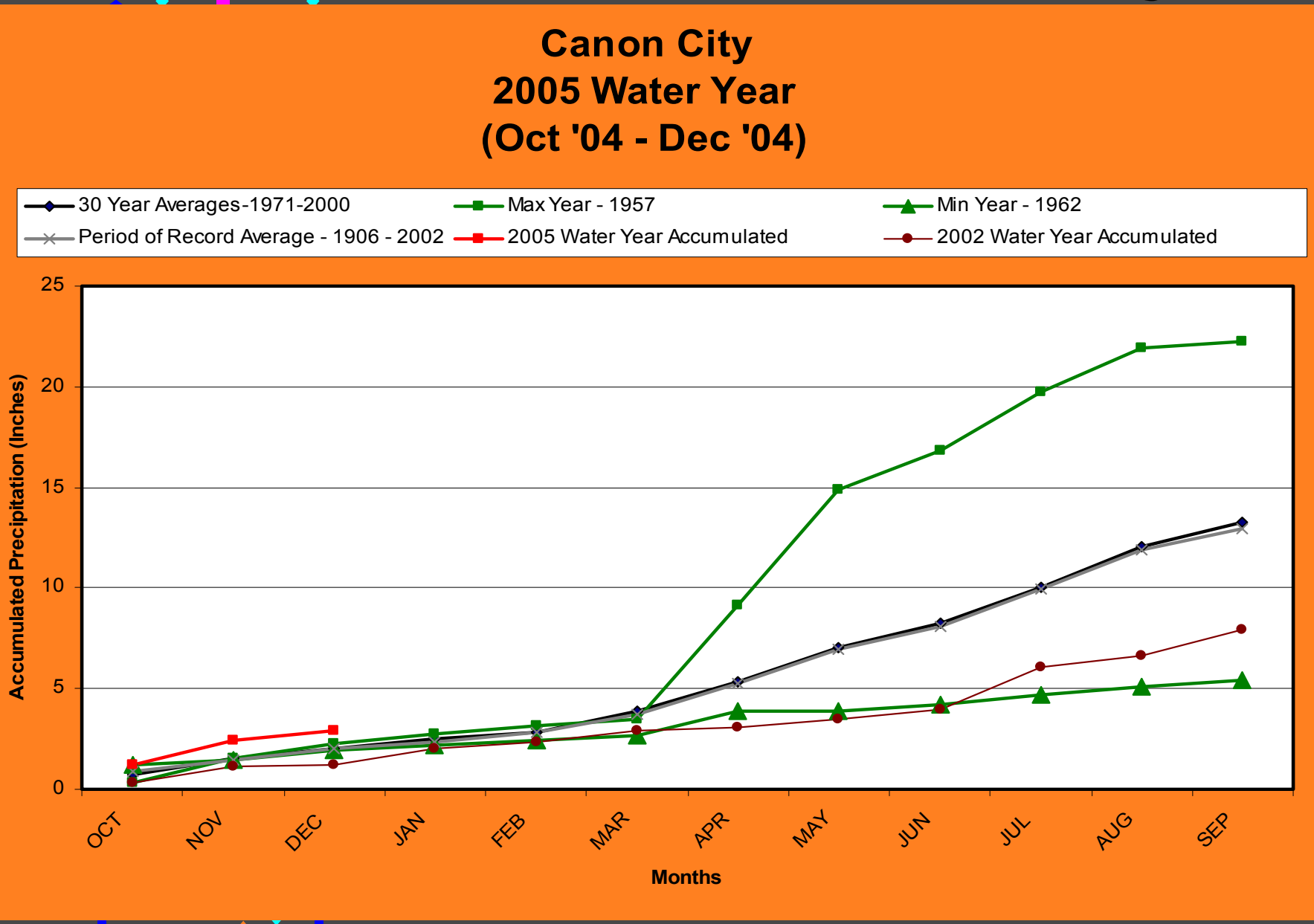
Pueblo WSO
2005 Water Year
(Oct '04 - Dec '04)



Division 5 – Buena Vista

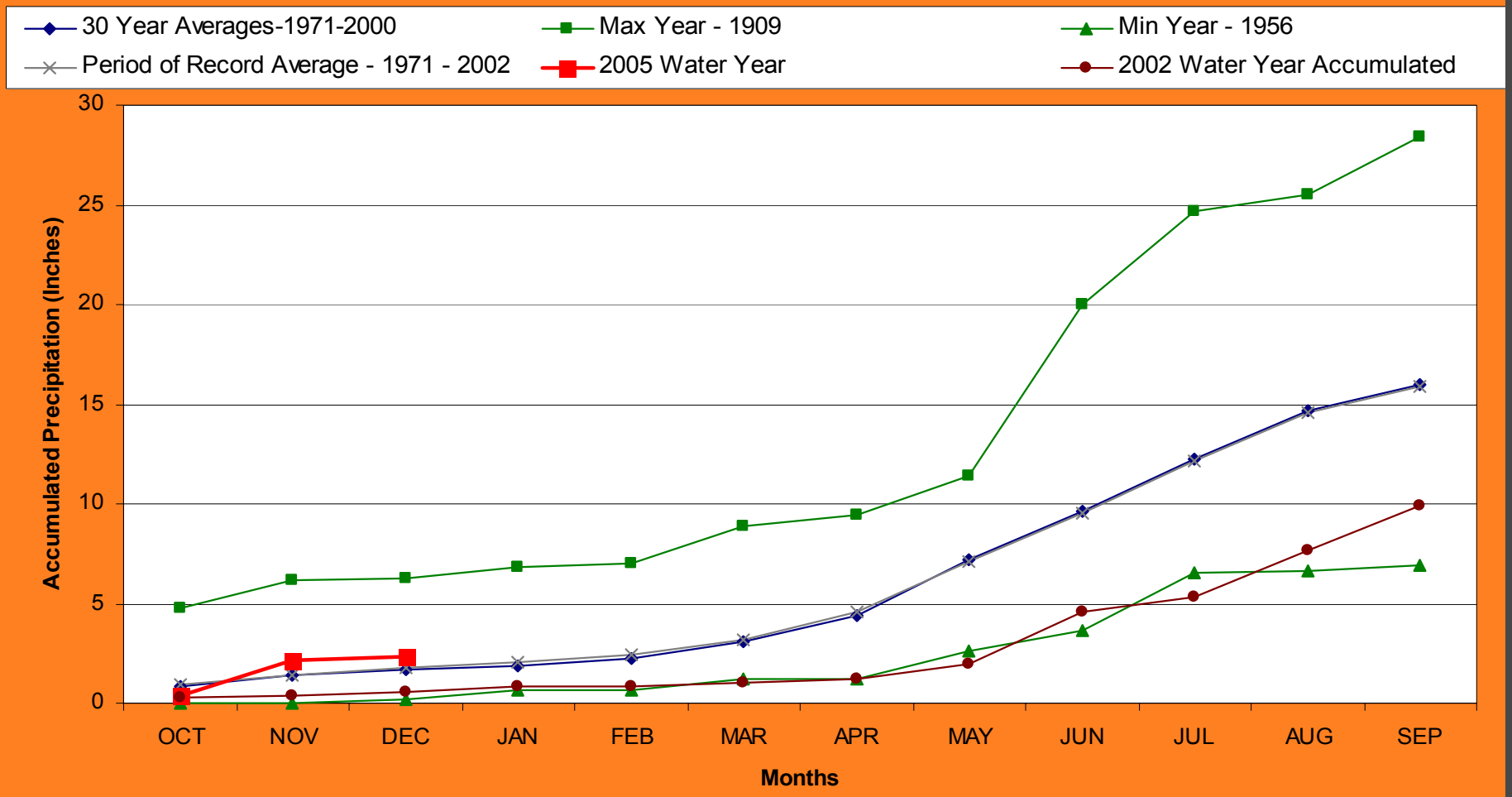


Division 5 – Canon City

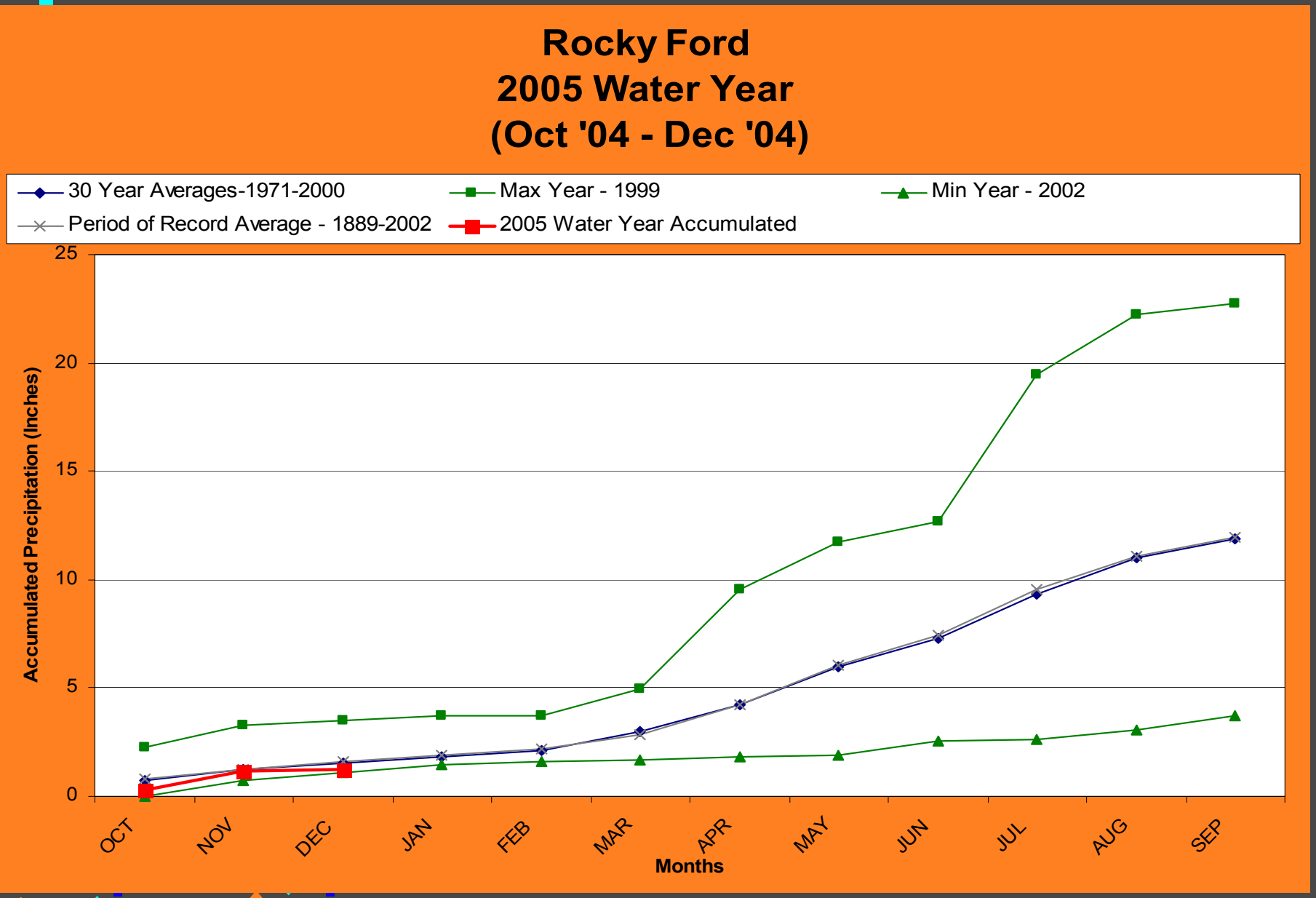


Division 6 – Cheyenne Wells

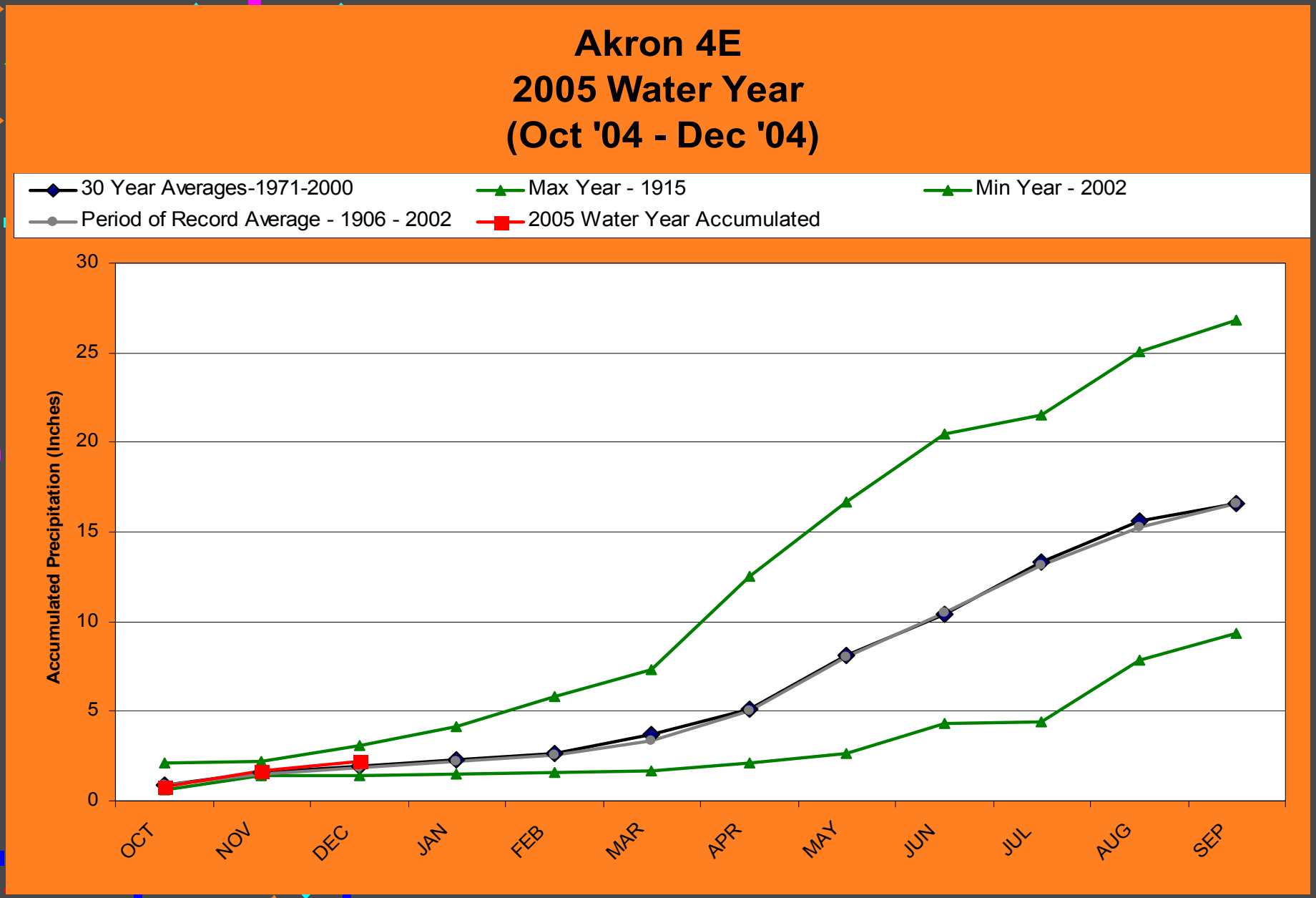
Cheyenne Wells
2005 Water Year
(Oct '04 - Dec '04)



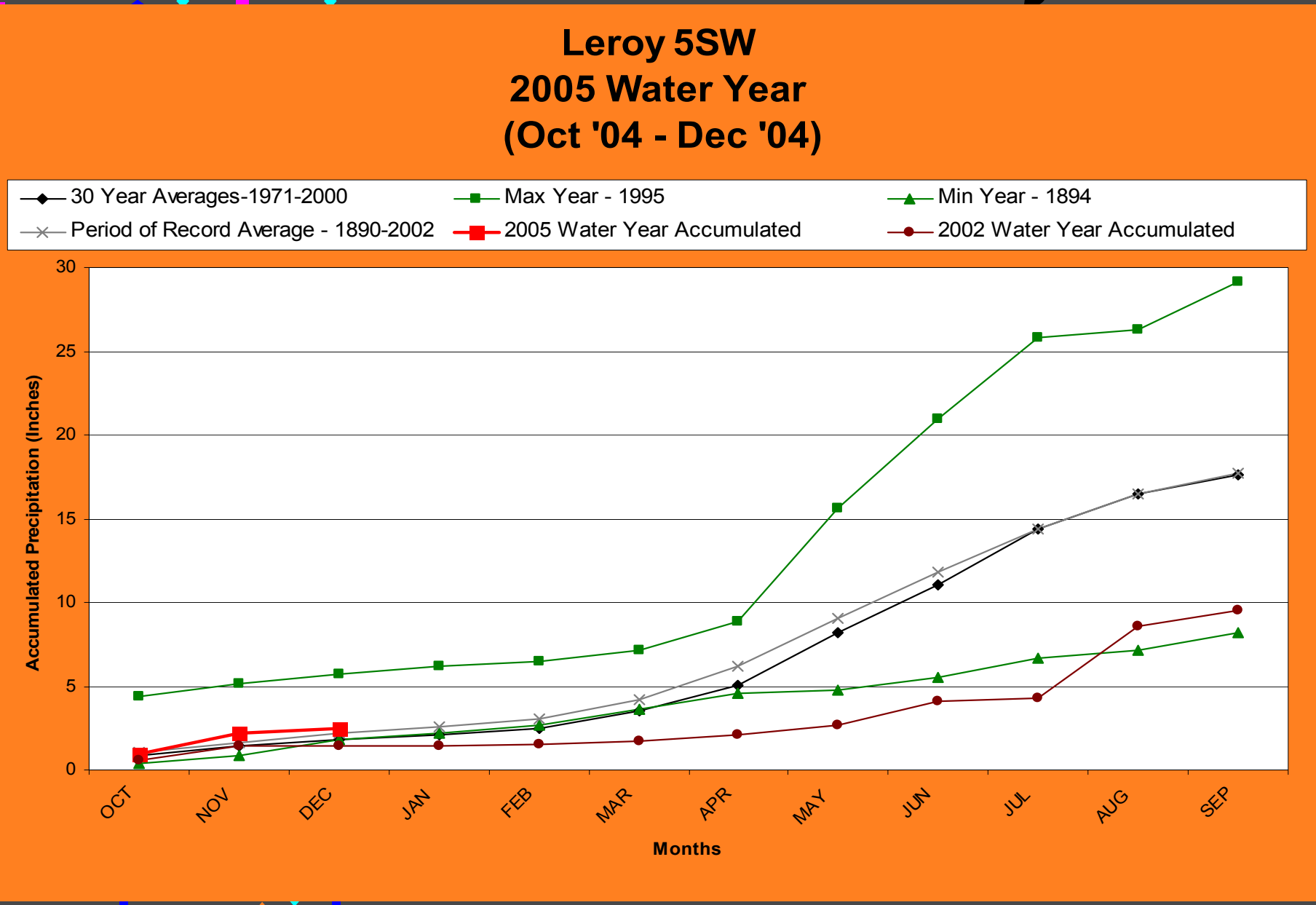
Division 6 – Rocky Ford



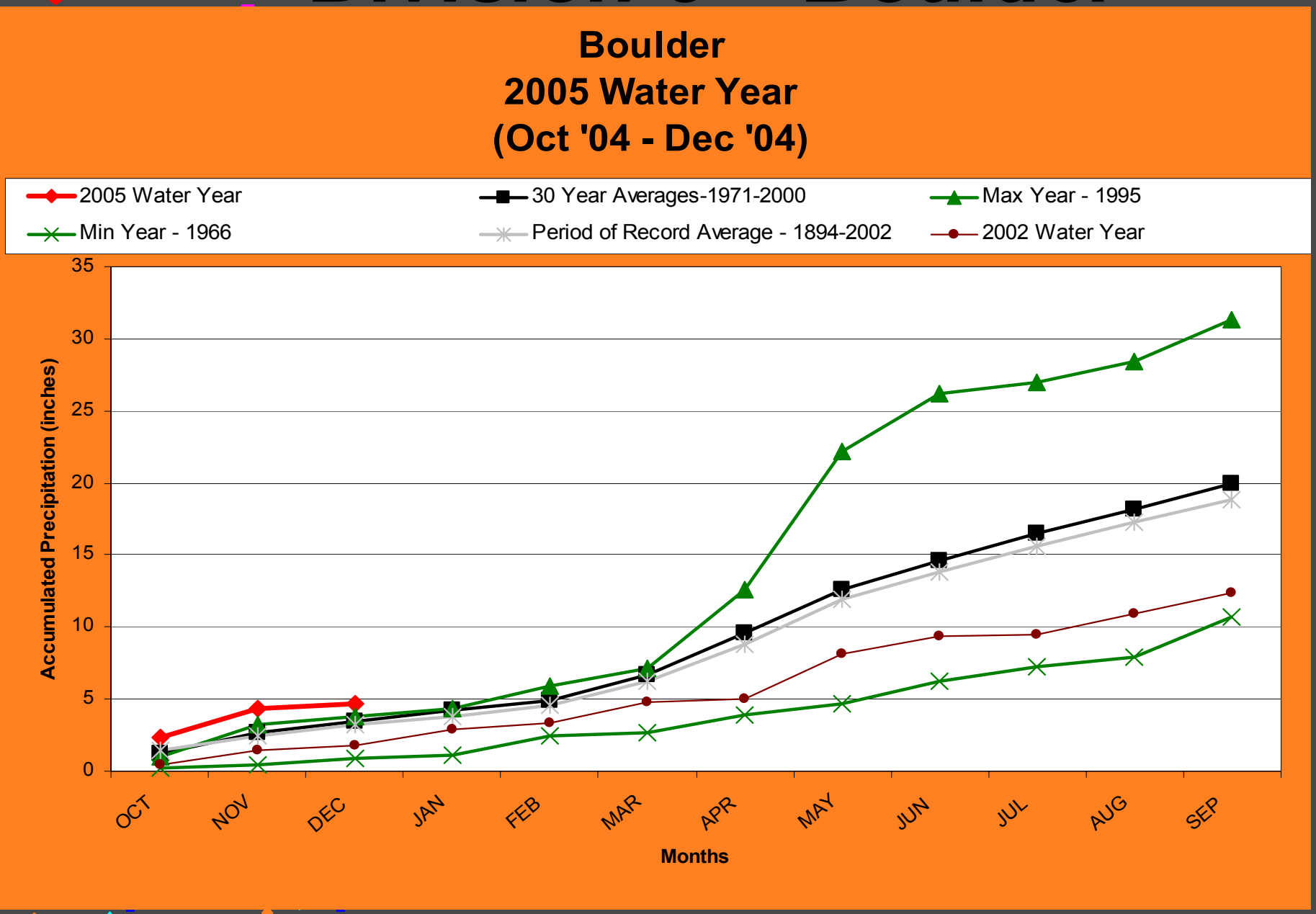
Division 7 – Akron



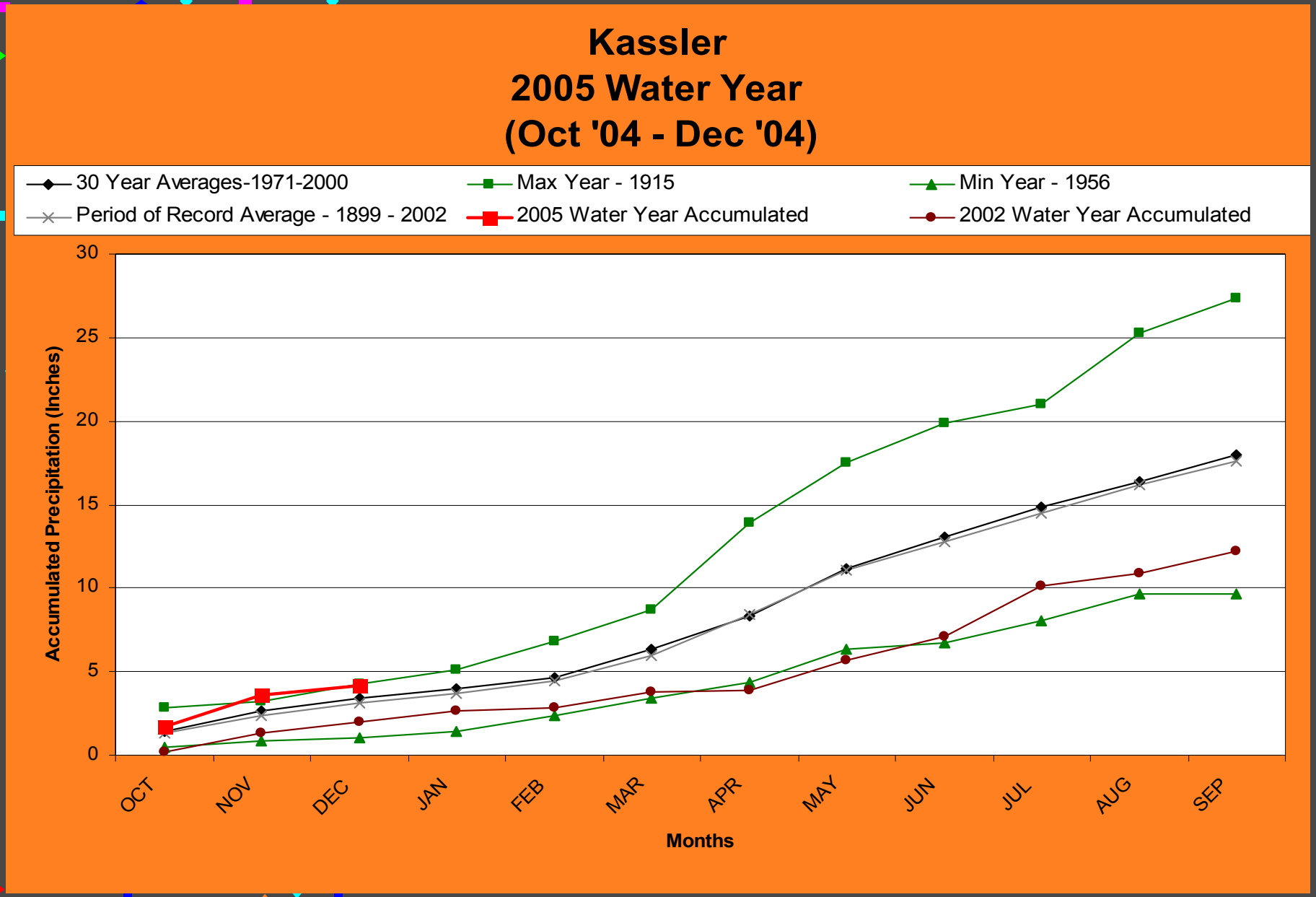
Division 7 - Leroy



Division 8 – Boulder

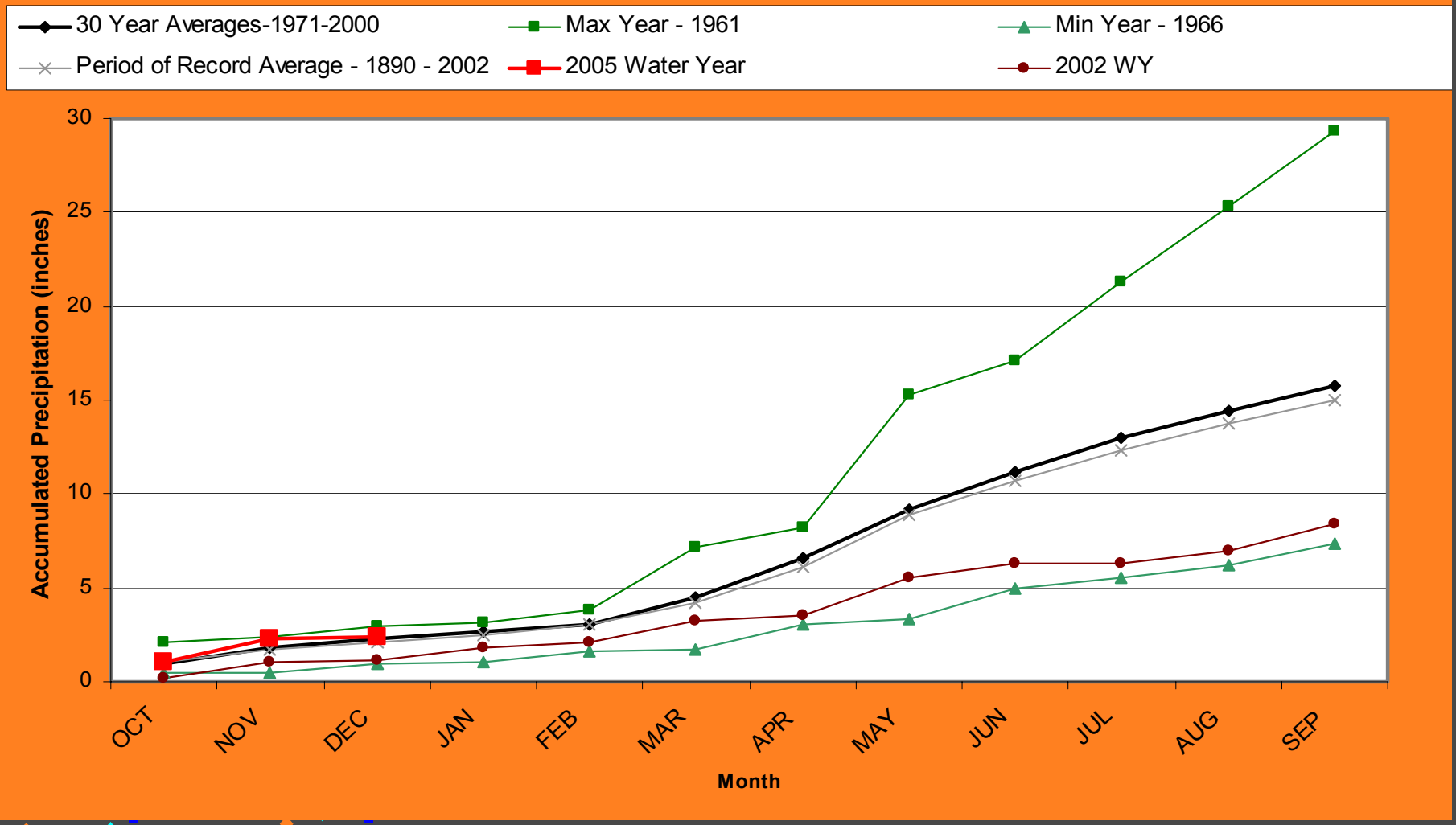


Division 8 – Kassler

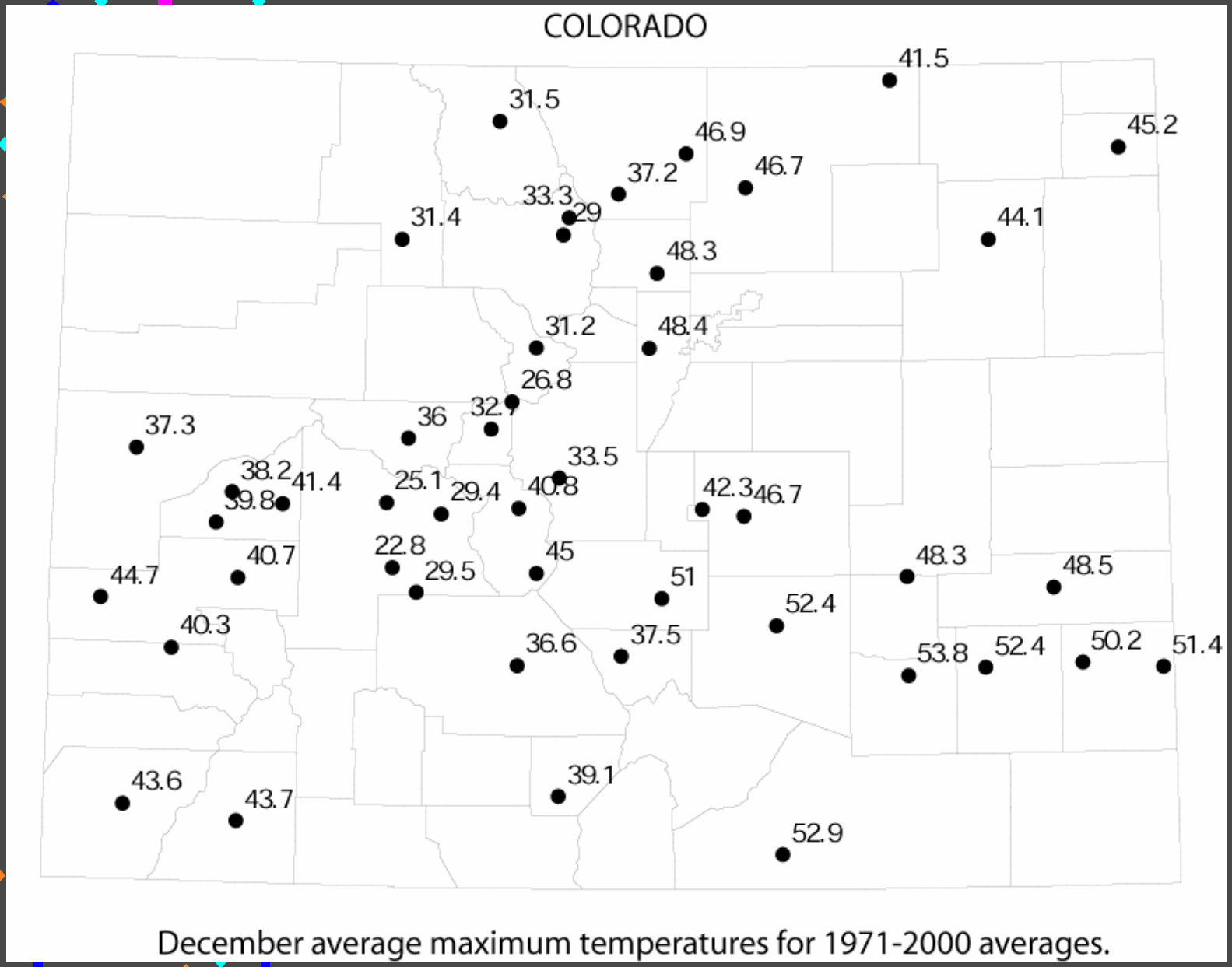


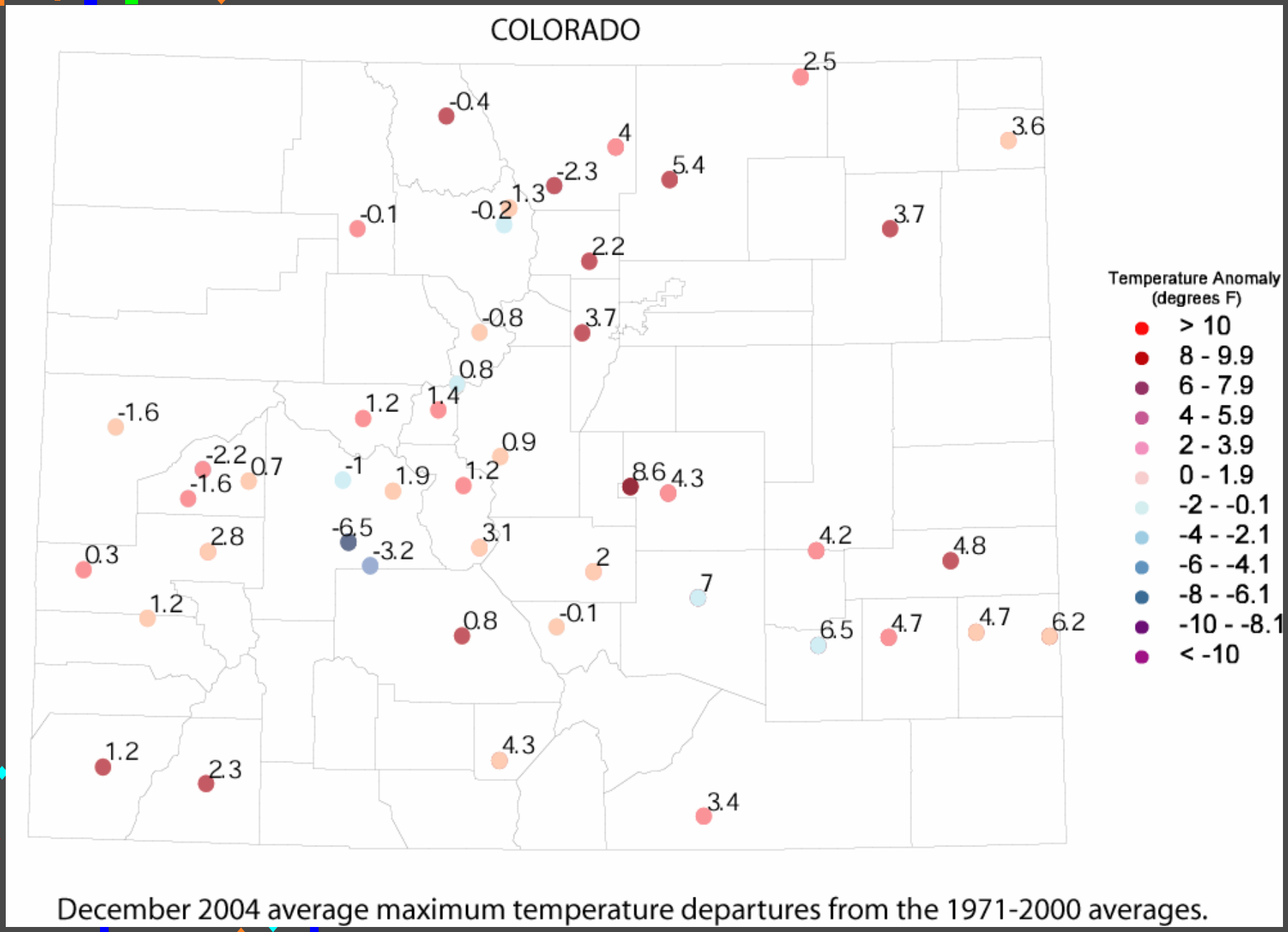
Division 8 – Fort Collins

Fort Collins
2005 Water Year
(Oct '04 - Dec '04)



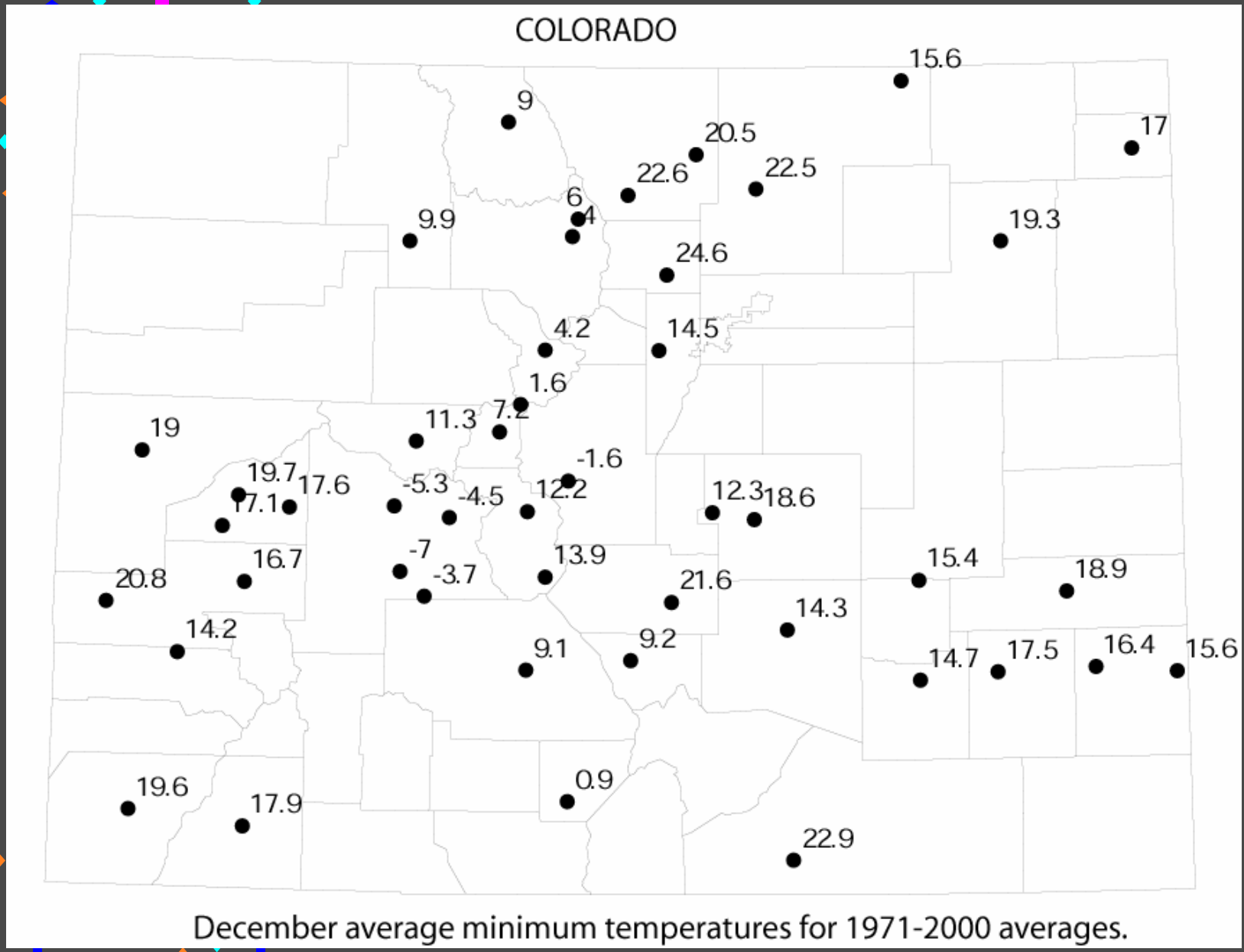
30-Year Average December Maximum Temperatures

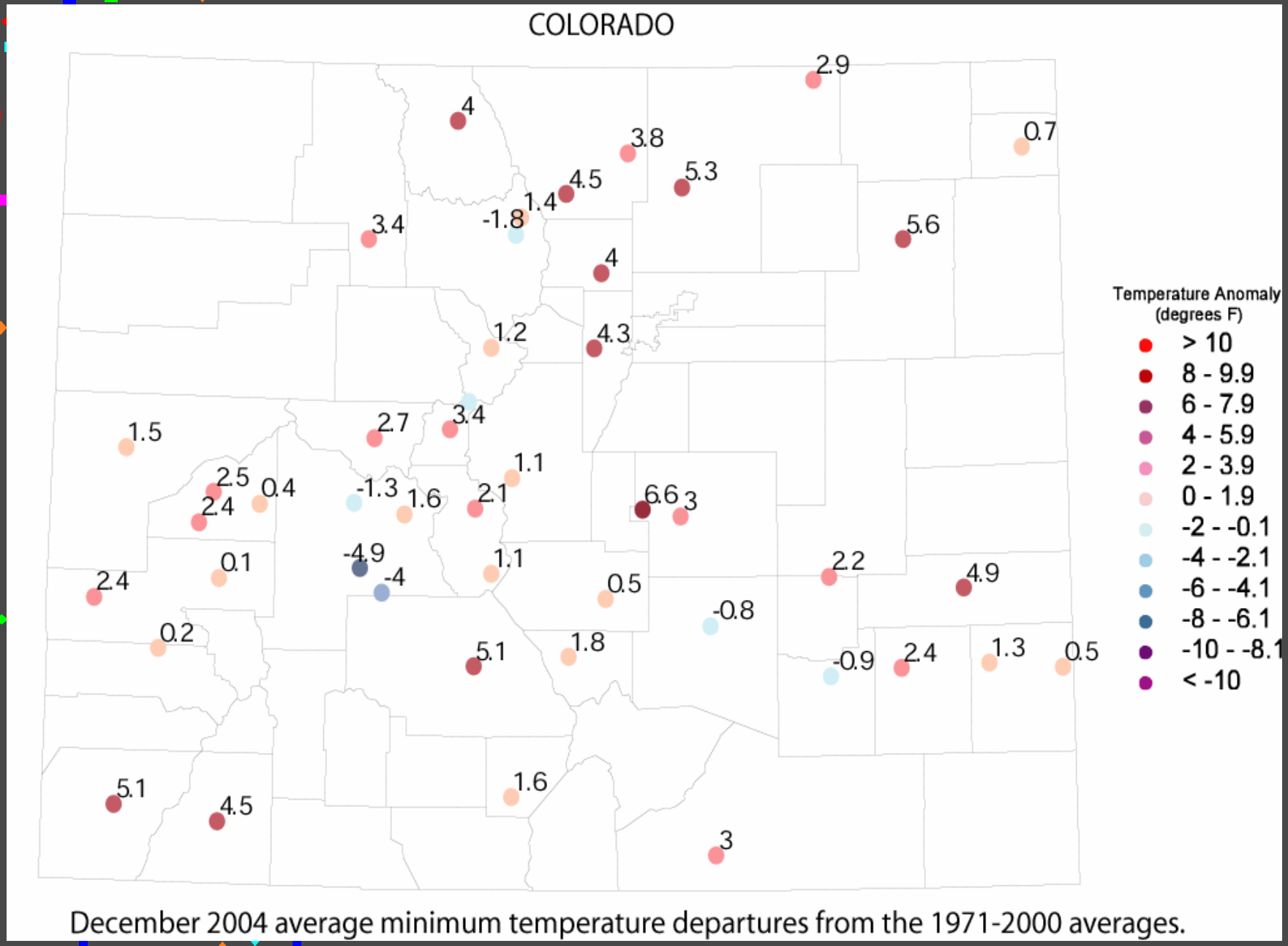




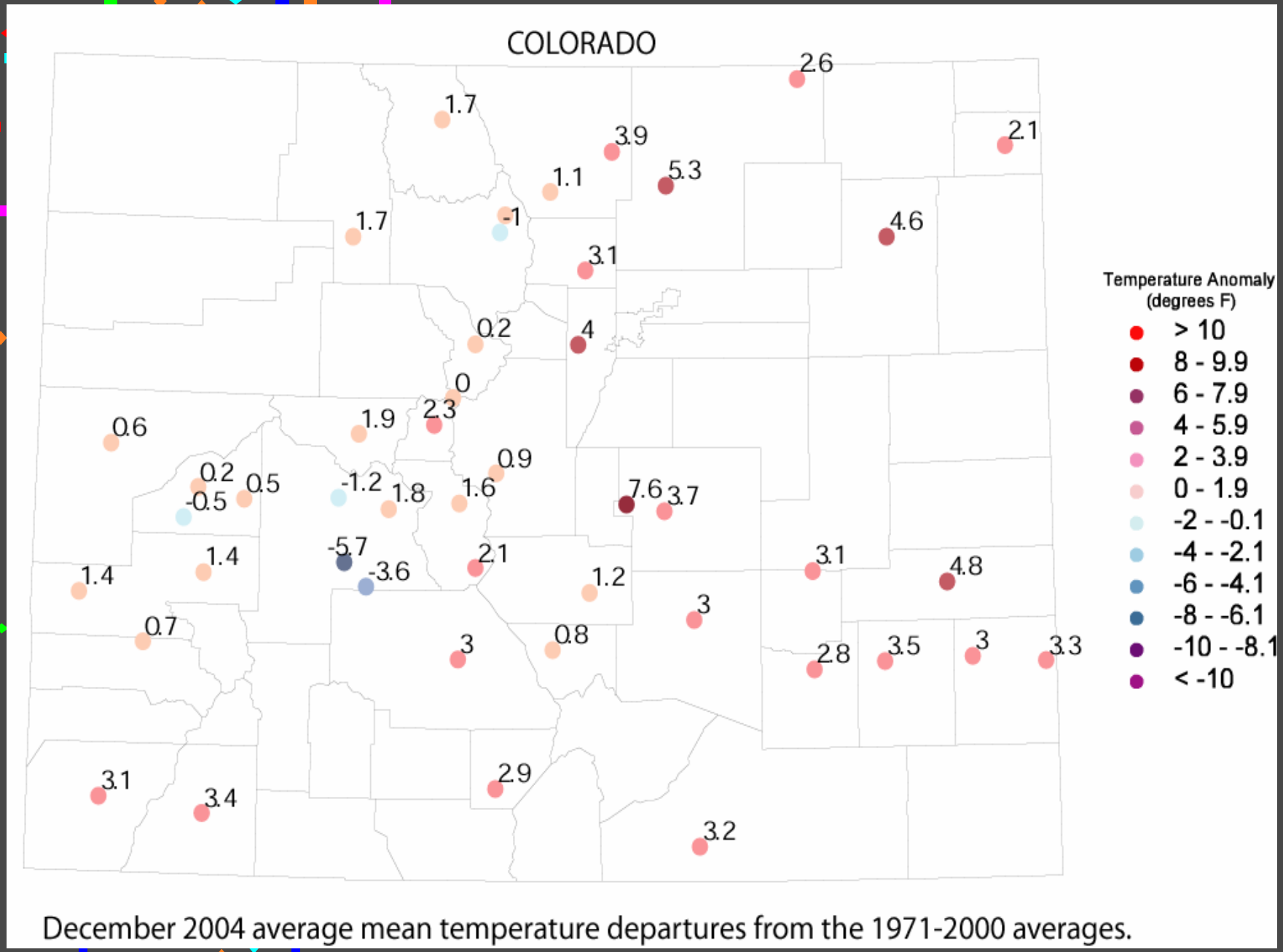
December 2004 average maximum temperature departures from the 1971-2000 averages.

30-Year Average December Minimum Temperatures



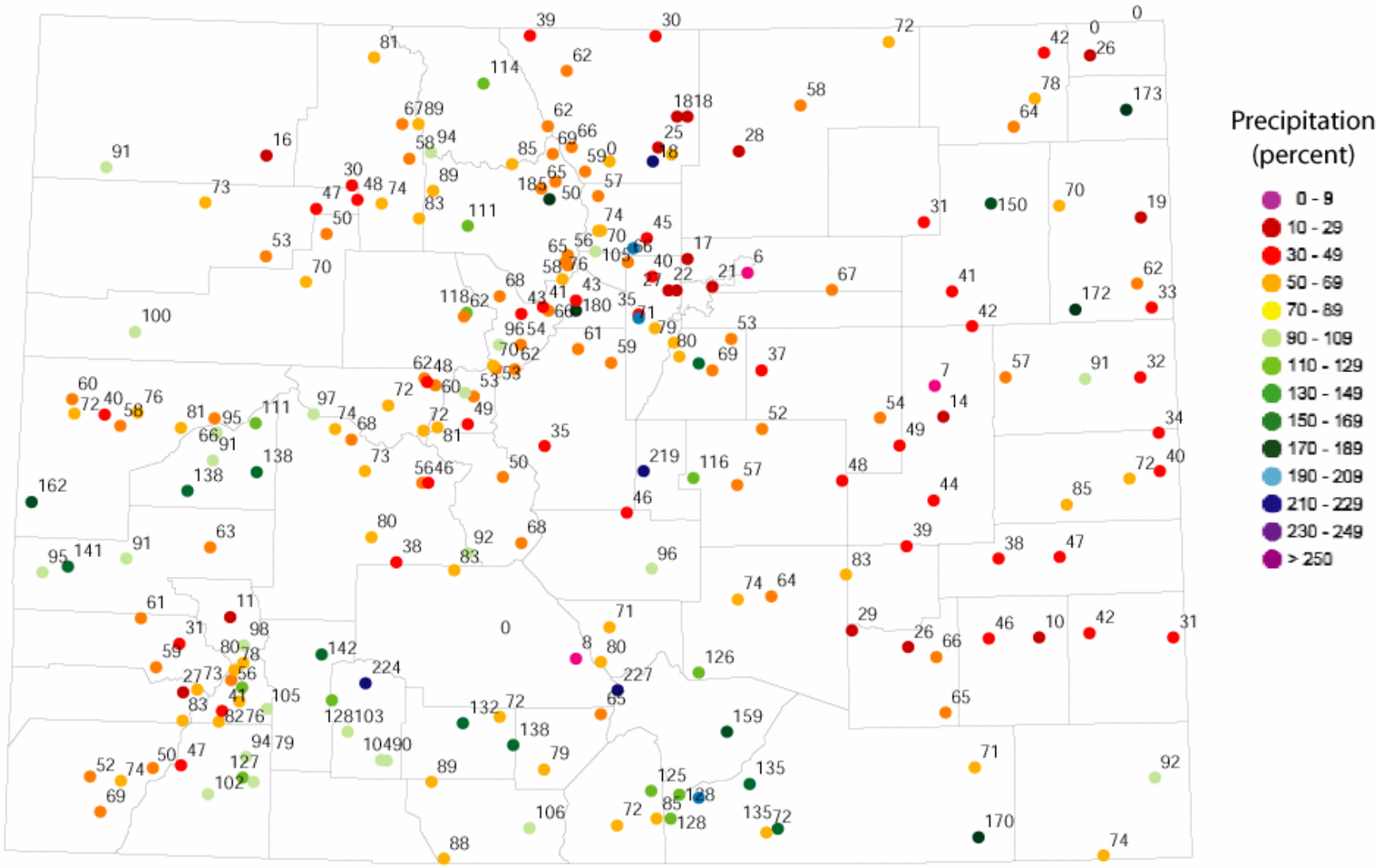


December 2004 average minimum temperature departures from the 1971-2000 averages.

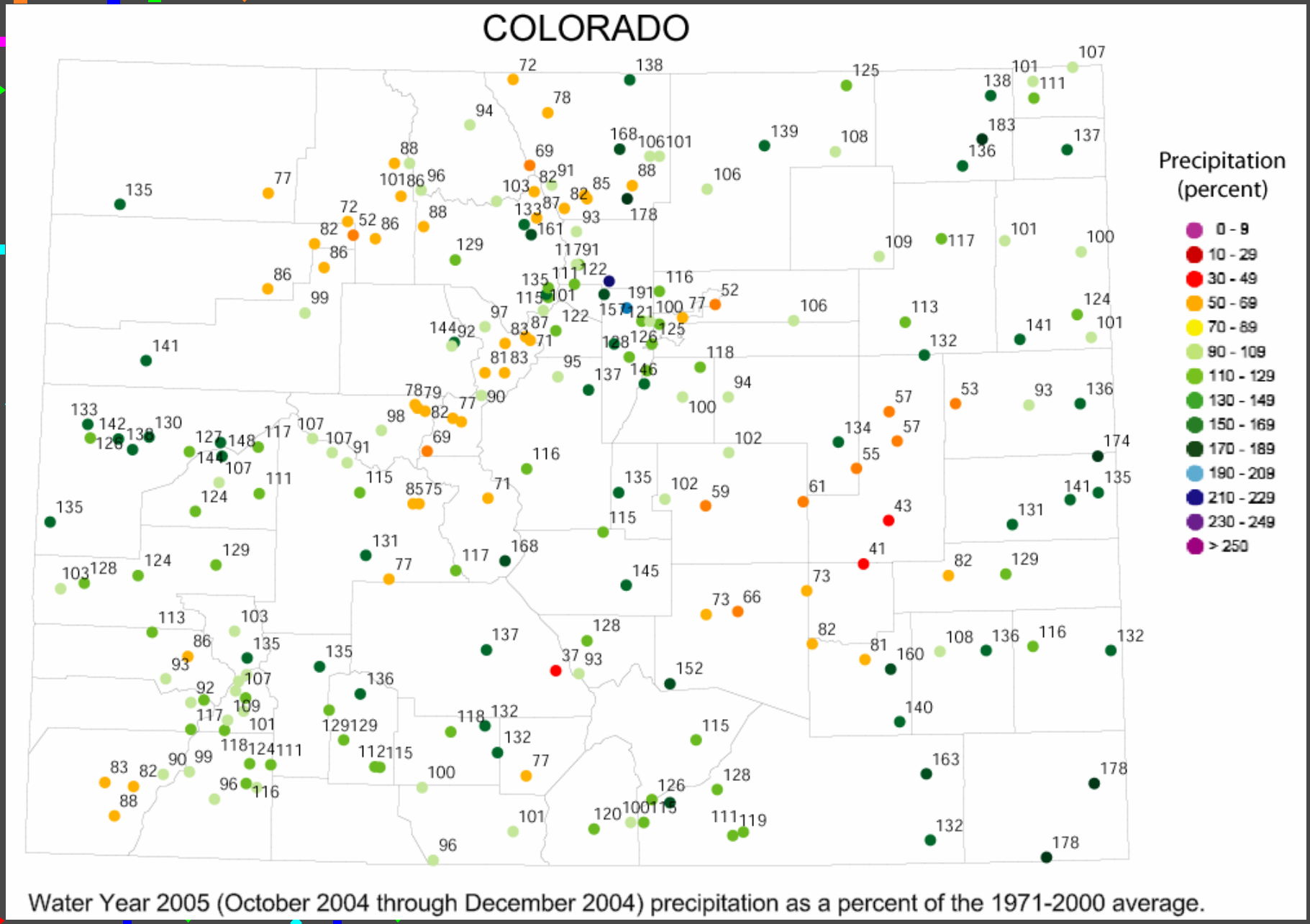


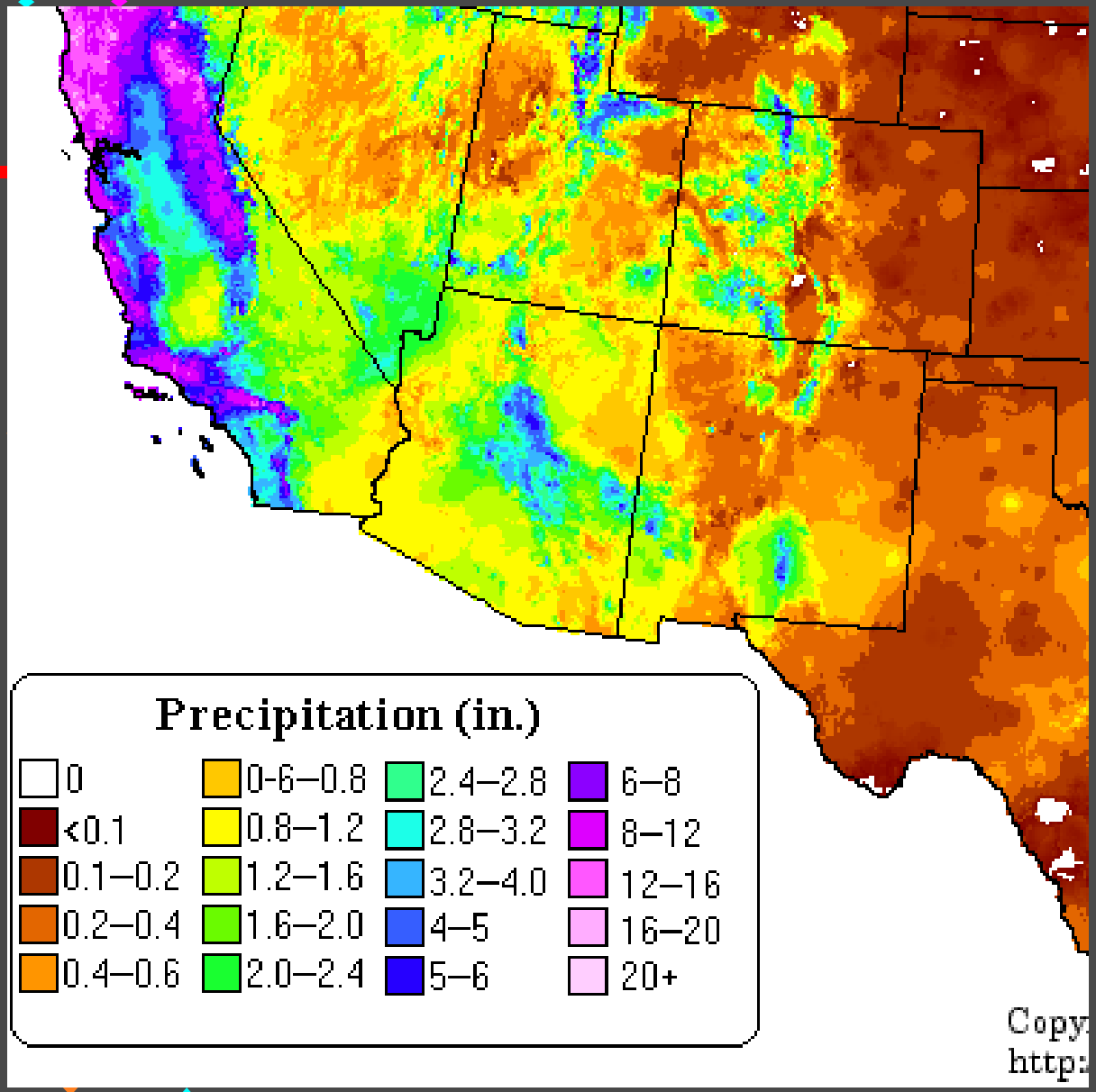
December 2004 average mean temperature departures from the 1971-2000 averages.

COLORADO



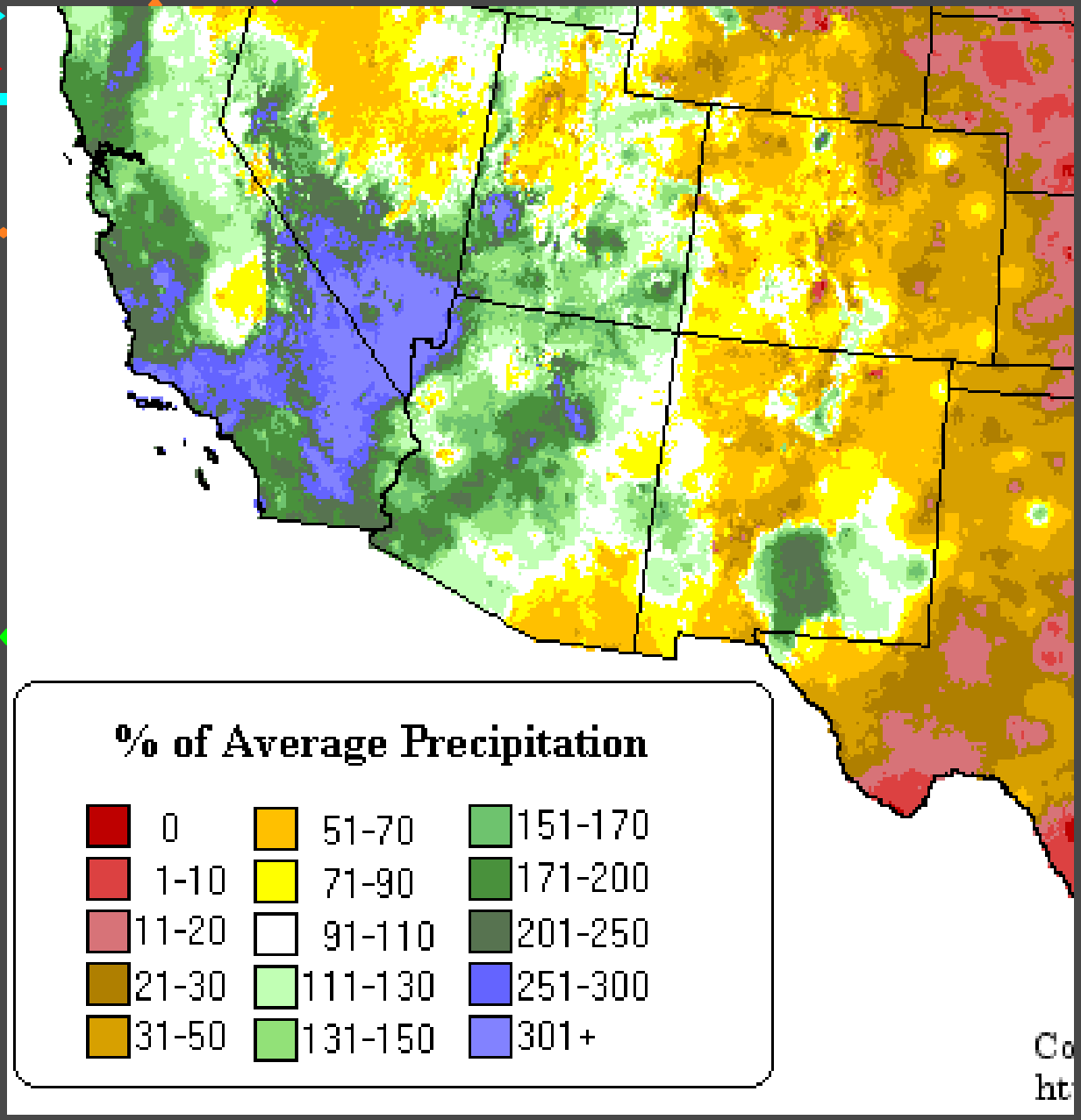
December 2004 precipitation as a percent of the 1971-2000 average.


COLORADO
Precipitation (percent)
0 - 9
10 - 29
30 - 49
50 - 69
70 - 89
90 - 109
110 - 129
130 - 149
150 - 169
170 - 189
190 - 209
210 - 229
230 - 249
> 250
Water Year 2005 (October 2004 through December 2004) precipitation as a percent of the 1971-2000 average.



Precipitation: December 2004

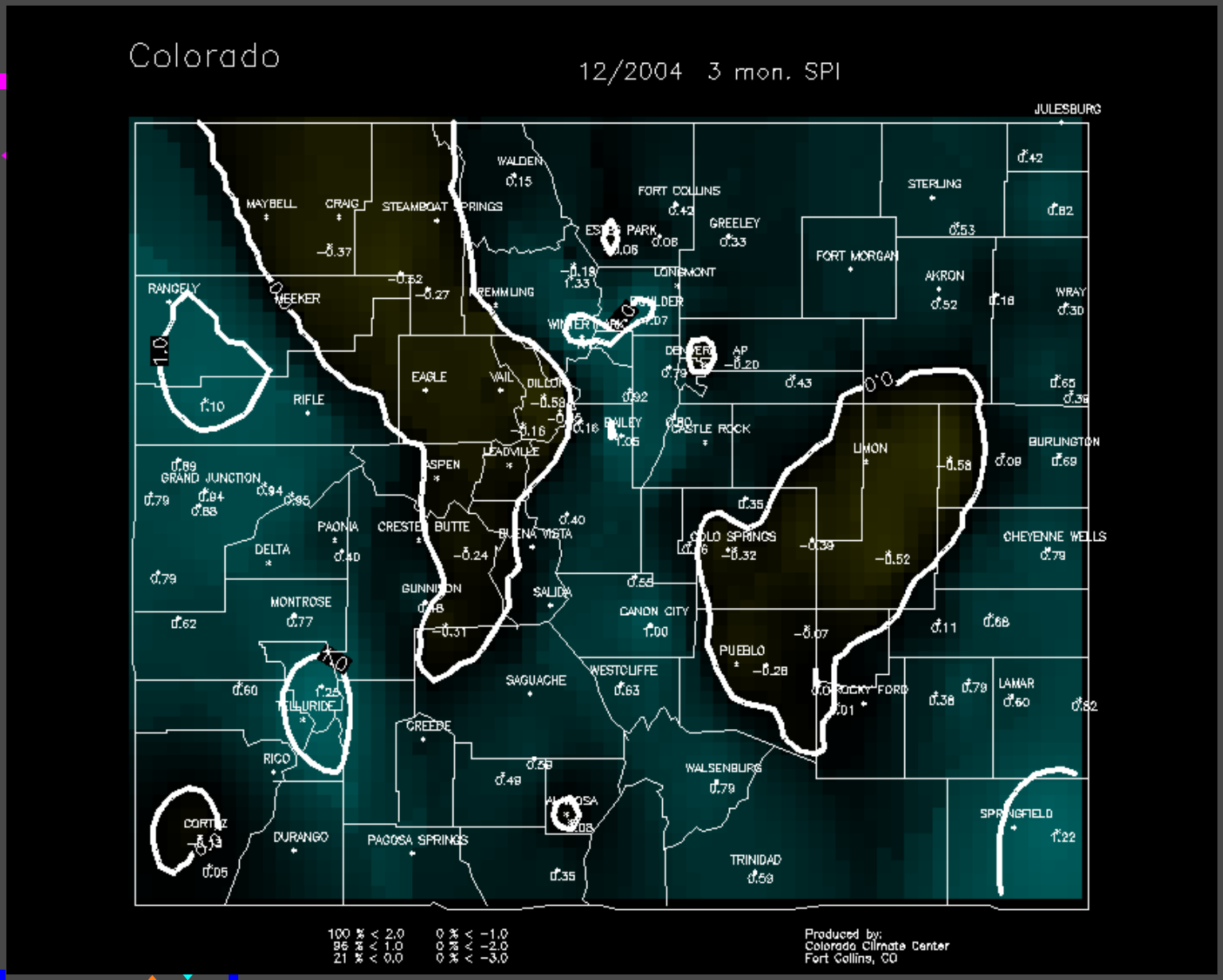
Courtesy of Oregon Climate Service, http://www.ocs.orst.edu/prism



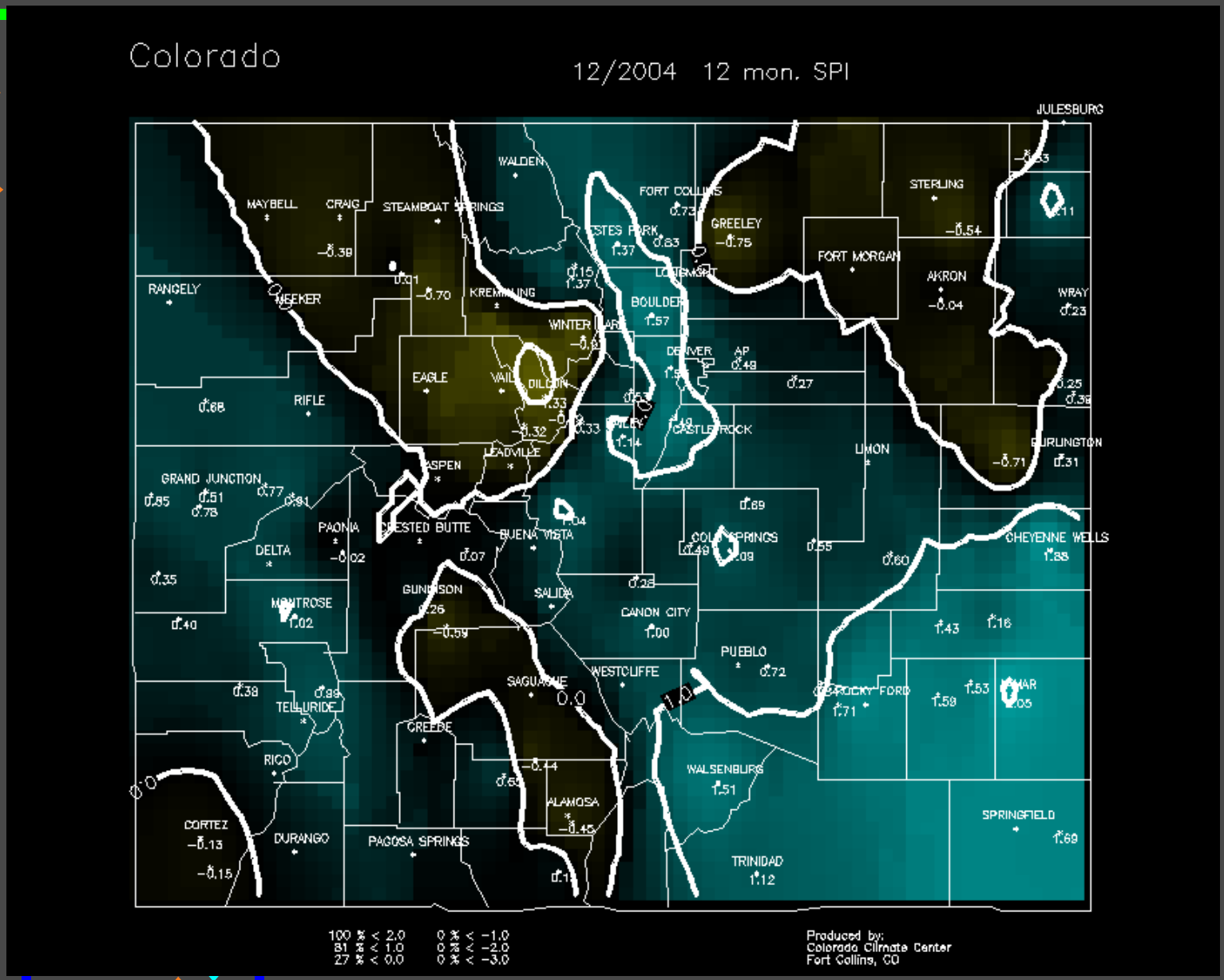
1-month Percent of Average Precipitation – December 2004

Courtesy of Oregon Climate Service, http://www.ocs.orst.edu/prism

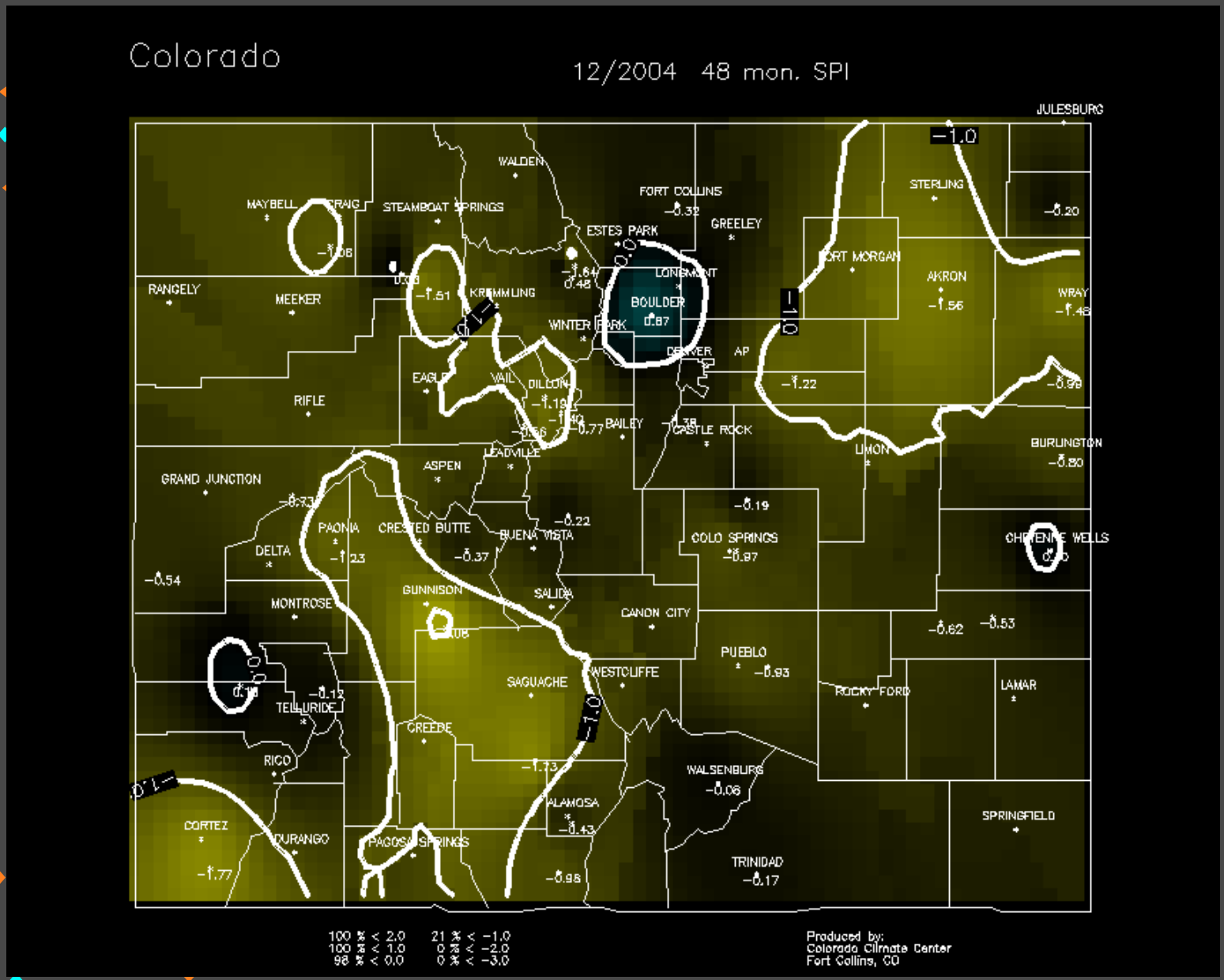
3 Month SPI


Colorado
12/2004 3 mon. SPI
JULESBURG
WALDEN
MAYBELL
CRAIG
STEAMBOAT SPRINGS
FORT COLLINS
GREELEY
STERLING
FORT MORGAN
AKRON
WRAY
ESTES PARK
LONGMONT
BOULDER
REMMLING
RANGELY
MEEKER
DENVER AP
EAGLE
VAIL
DILLON
RIFLE
BAILEY
CASTLE ROCK
LIMON
BURLINGTON
LEADVILLE
ASPEN
GRAND JUNCTION
PAONIA
CRESTED BUTTE
BUENA VISTA
COLO SPRINGS
CHEYENNE WELLS
DELTA
GUNNISON
SALIDA
MONTROSE
CANON CITY
PUEBLO
WESTCLIFFE
SAGUACHE
ROCKY FORD
LAMAR
TELLURIDE
CREEDE
RICO
WALSENBURG
SPRINGFIELD
CORTEZ
DURANGO
PAGOSA SPRINGS
TRINIDAD
100 % < 2.0
96 % < 1.0
21 % < 0.0
0 % < -1.0
0 % < -2.0
0 % < -3.0
Produced by:
Colorado Climate Center
Fort Collins, CO

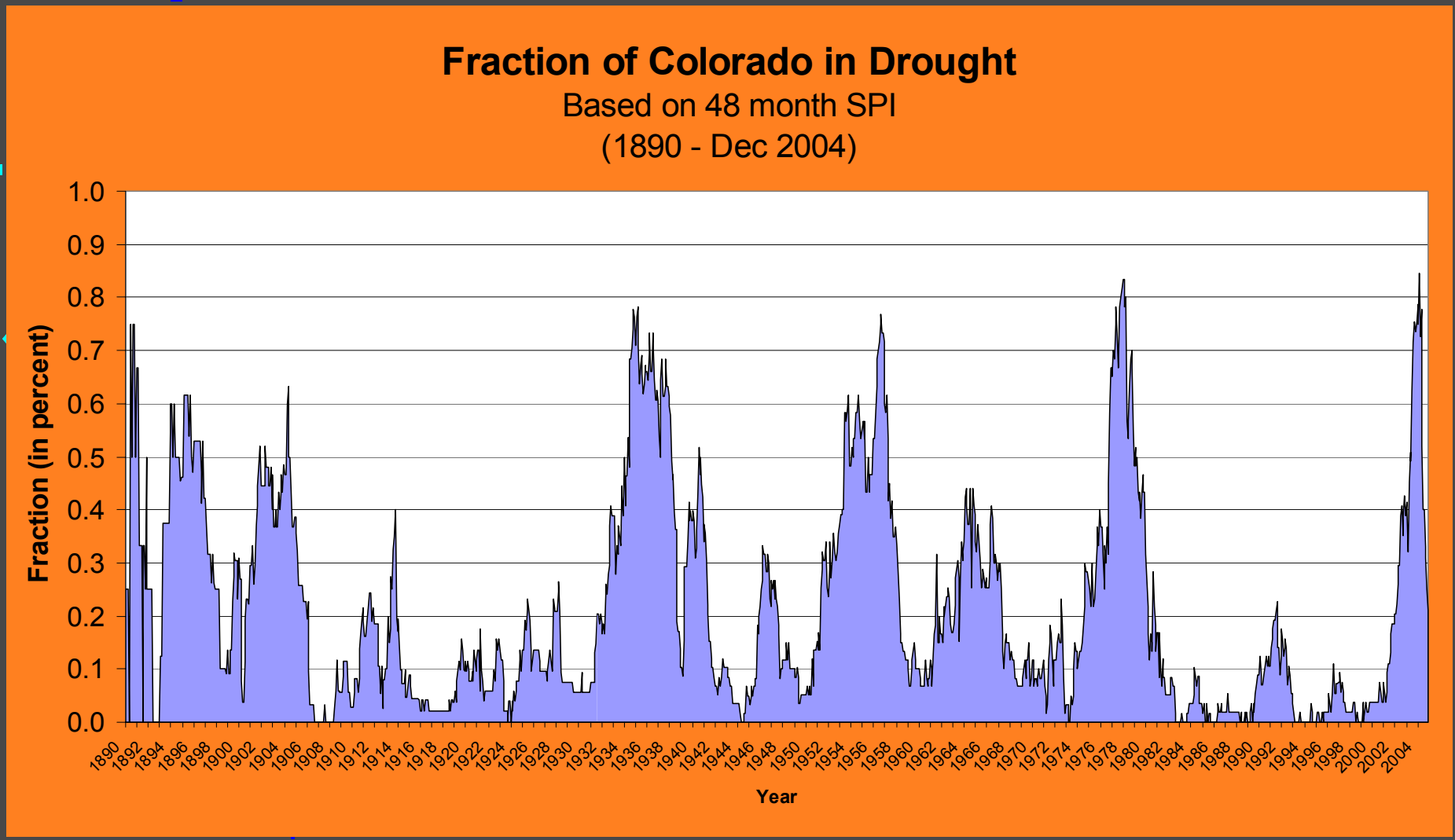
12 Month SPI


Colorado
12/2004 12 mon. SPI
JULESBURG
WALDEN
MAYBELL
CRAIG
STEAMBOAT SPRINGS
FORT COLLINS
STERLING
GREELEY
ESTES PARK
FORT MORGAN
AKRON
WRAY
RANGELY
MEEKER
KREMMLING
BOULDER
WINTER PARK
DENVER AP
EAGLE
VAIL
DILLON
RIFLE
CASTLE ROCK
LIMON
BURLINGTON
LEADVILLE
ASPEN
GRAND JUNCTION
PAONIA
CRESTED BUTTE
BUENA VISTA
DELTA
COLO SPRINGS
CHEYENNE WELLS
GUNNISON
SALIDA
MONTROSE
CANON CITY
PUEBLO
WESTCLIFFE
SAGUACHE
ROCKY FORD
TELLURIDE
CREEDE
RICO
WALSENBURG
ALAMOSA
SPRINGFIELD
CORTEZ
DURANGO
PAGOSA SPRINGS
TRINIDAD
100 % < 2.0
81 % < 1.0
27 % < 0.0
0 % < -1.0
0 % < -2.0
0 % < -3.0
Produced by:
Colorado Climate Center
Fort Collins, CO

48 Month SPI

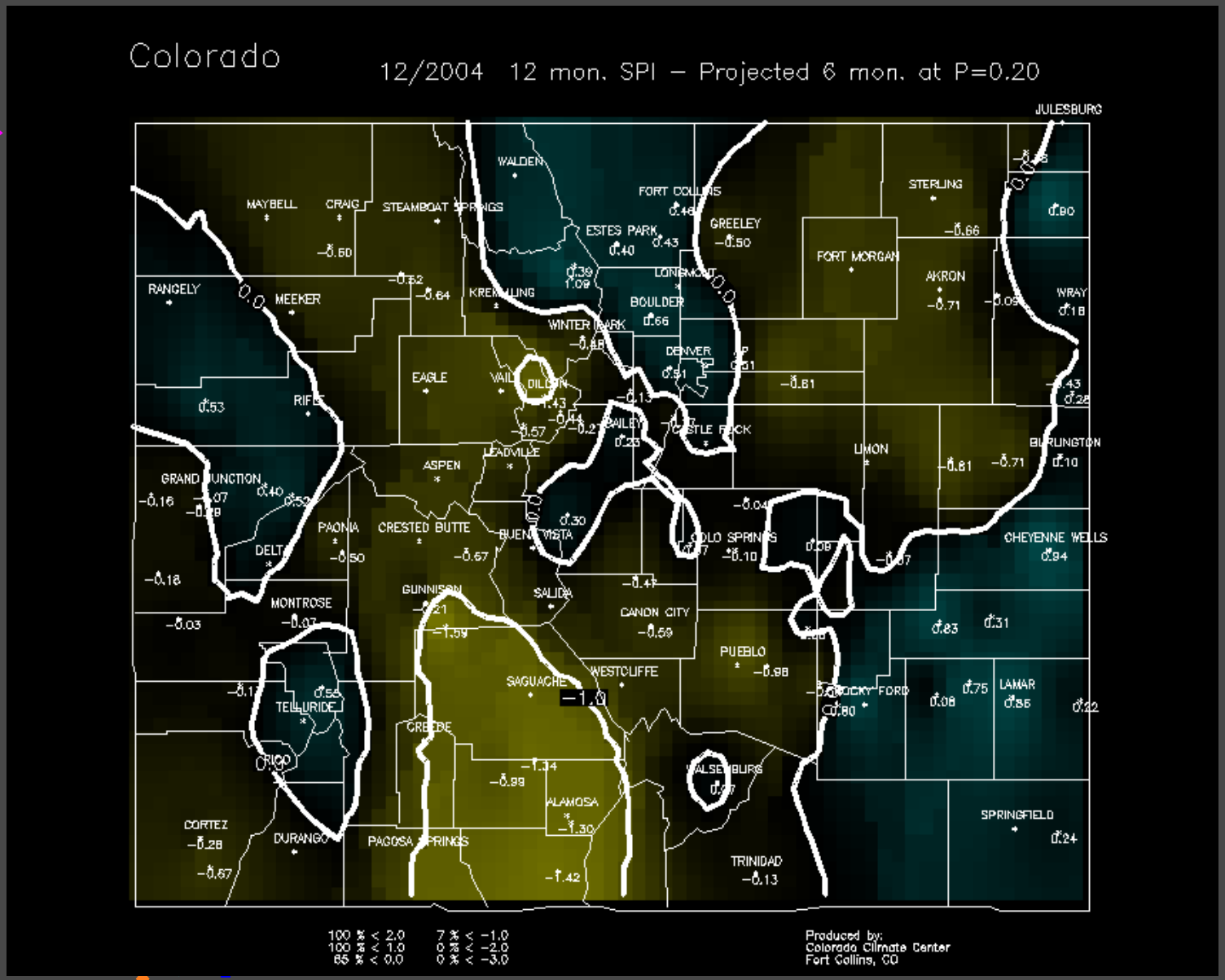

Colorado
12/2004 48 mon. SPI
JULESBURG
STERLING
FORT COLLINS
GREELEY
WALDEN
MAYBELL
CRAIG
STEAMBOAT SPRINGS
ESTES PARK
LONGMONT
BOULDER
FORT MORGAN
AKRON
WRAY
RANGELY
MEEKER
KREMMLING
WINTER PARK
DENVER AP
EAGLE
VAIL
DILLON
RIFLE
BAILEY
CASTLE ROCK
LIMON
BURLINGTON
LEADVILLE
ASPEN
GRAND JUNCTION
PAONIA
CRESTED BUTTE
BUENA VISTA
COLO SPRINGS
DELTA
MONTROSE
GUNNISON
SALIDA
CANON CITY
PUEBLO
WESTCLIFFE
SAGUACHE
ROCKY FORD
LAMAR
TELLURIDE
CREEDE
RICO
WALSENBURG
ALAMOSA
SPRINGFIELD
CORTEZ
DURANGO
PAGOSA SPRINGS
TRINIDAD
100 % < 2.0
100 % < 1.0
98 % < 0.0
21 % < -1.0
0 % < -2.0
0 % < -3.0
Produced by:
Colorado Climate Center
Fort Collins, CO

Fraction of Colorado in Drought

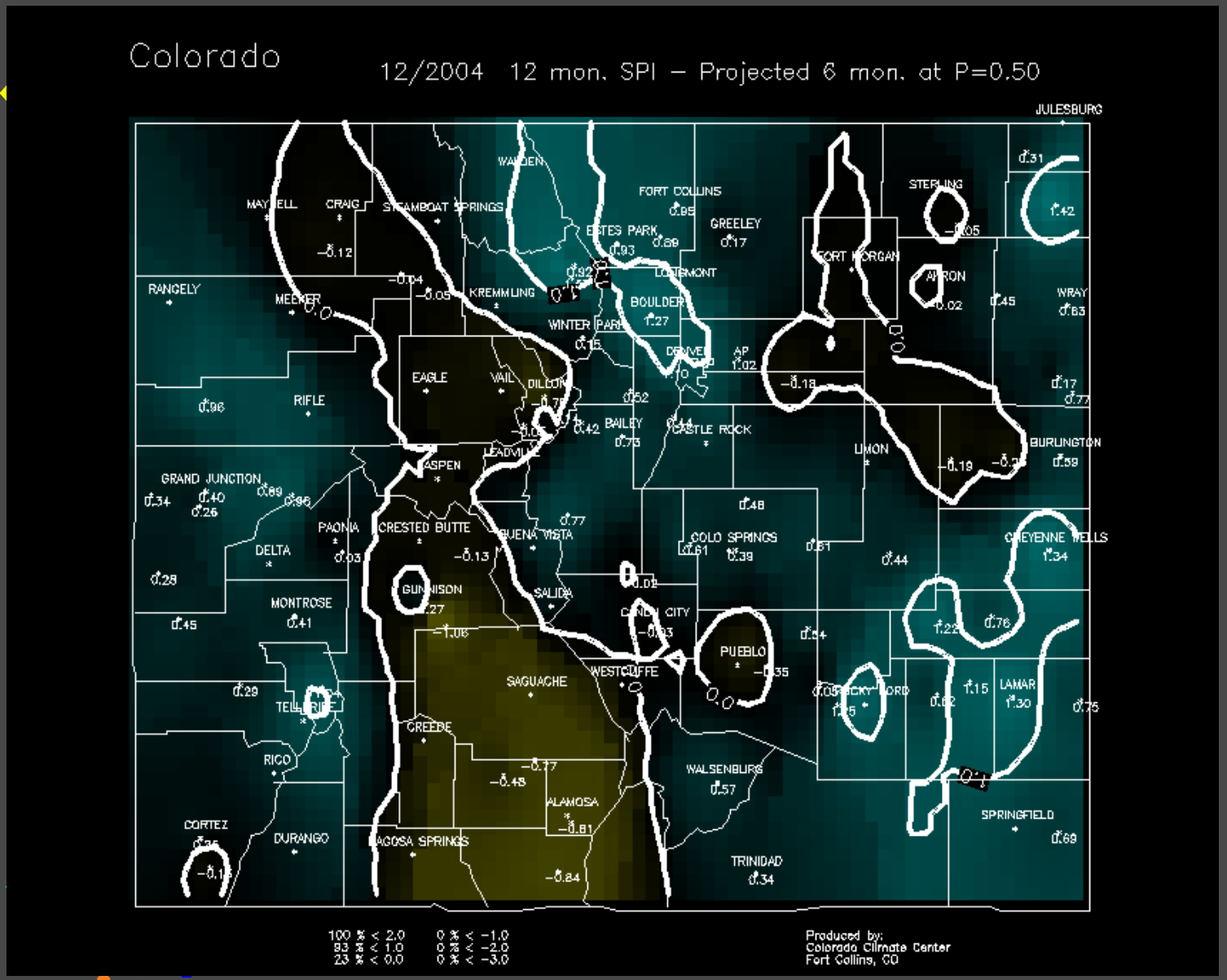


Calibration period is 1961-2000. Data values produced by John Kleist.

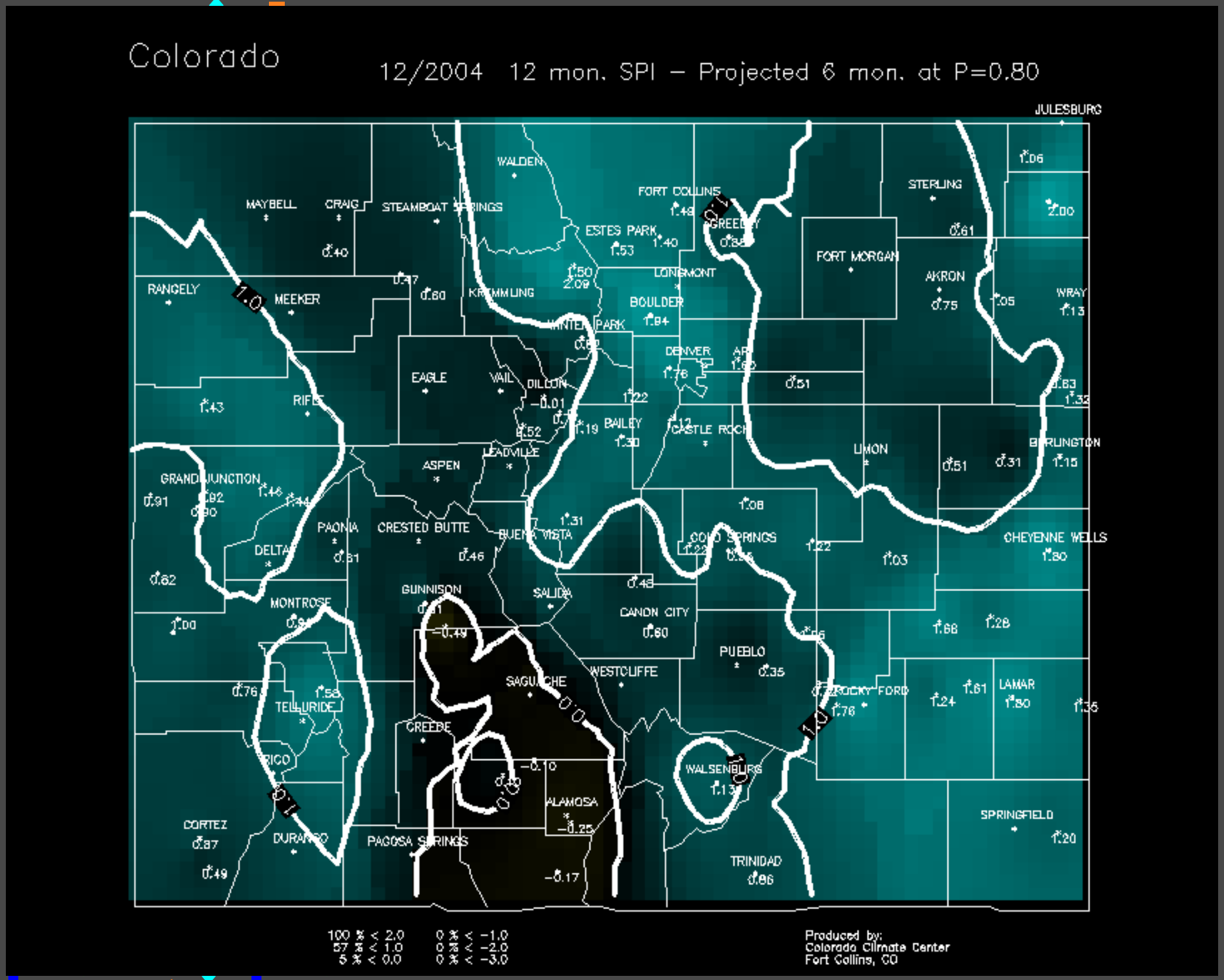
Projected Conditions at 0.2 Probability Level
12 Month SPI at 6 months



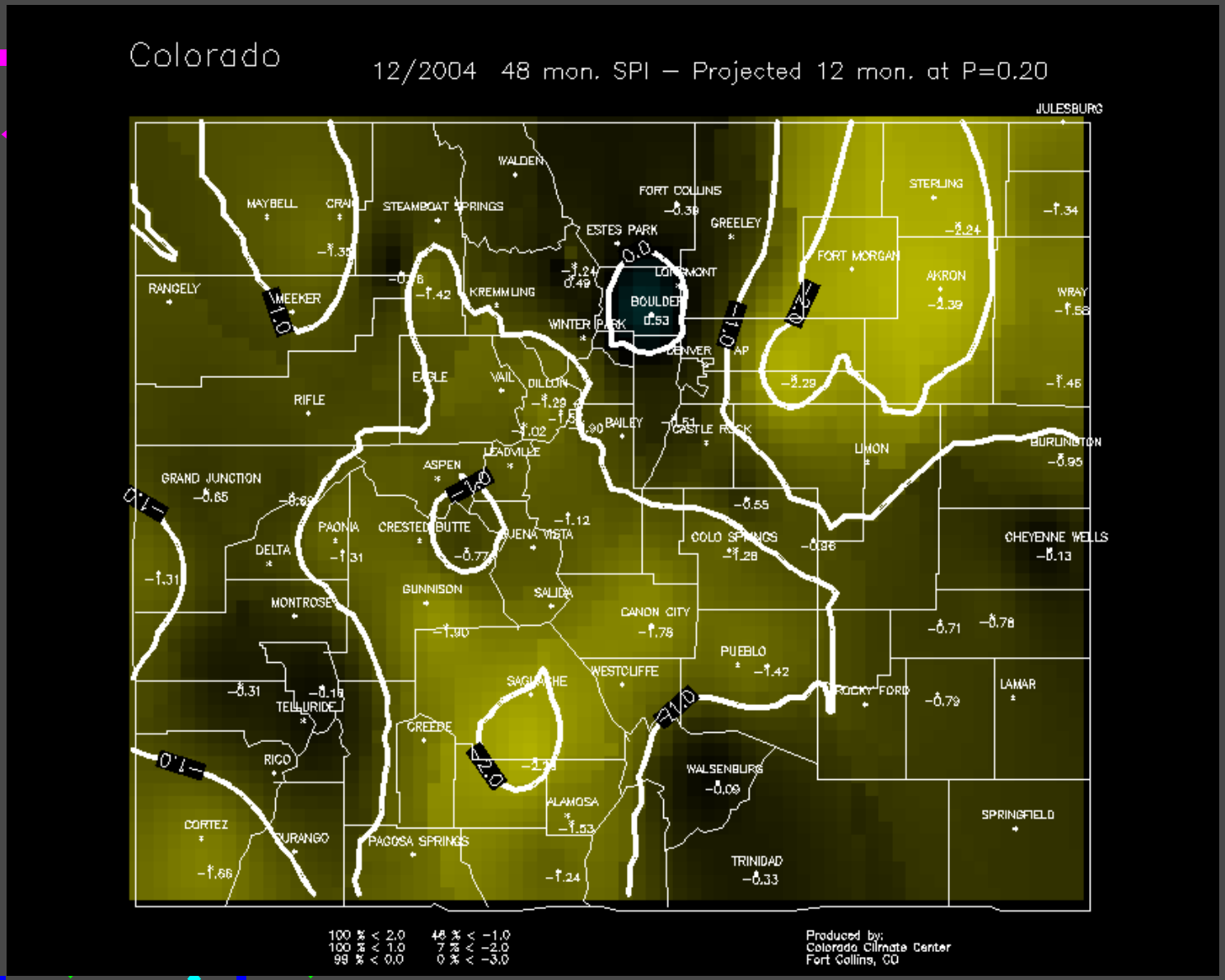
Projected Conditions at 0.5 Probability Level
12 Month SPI at 6 months



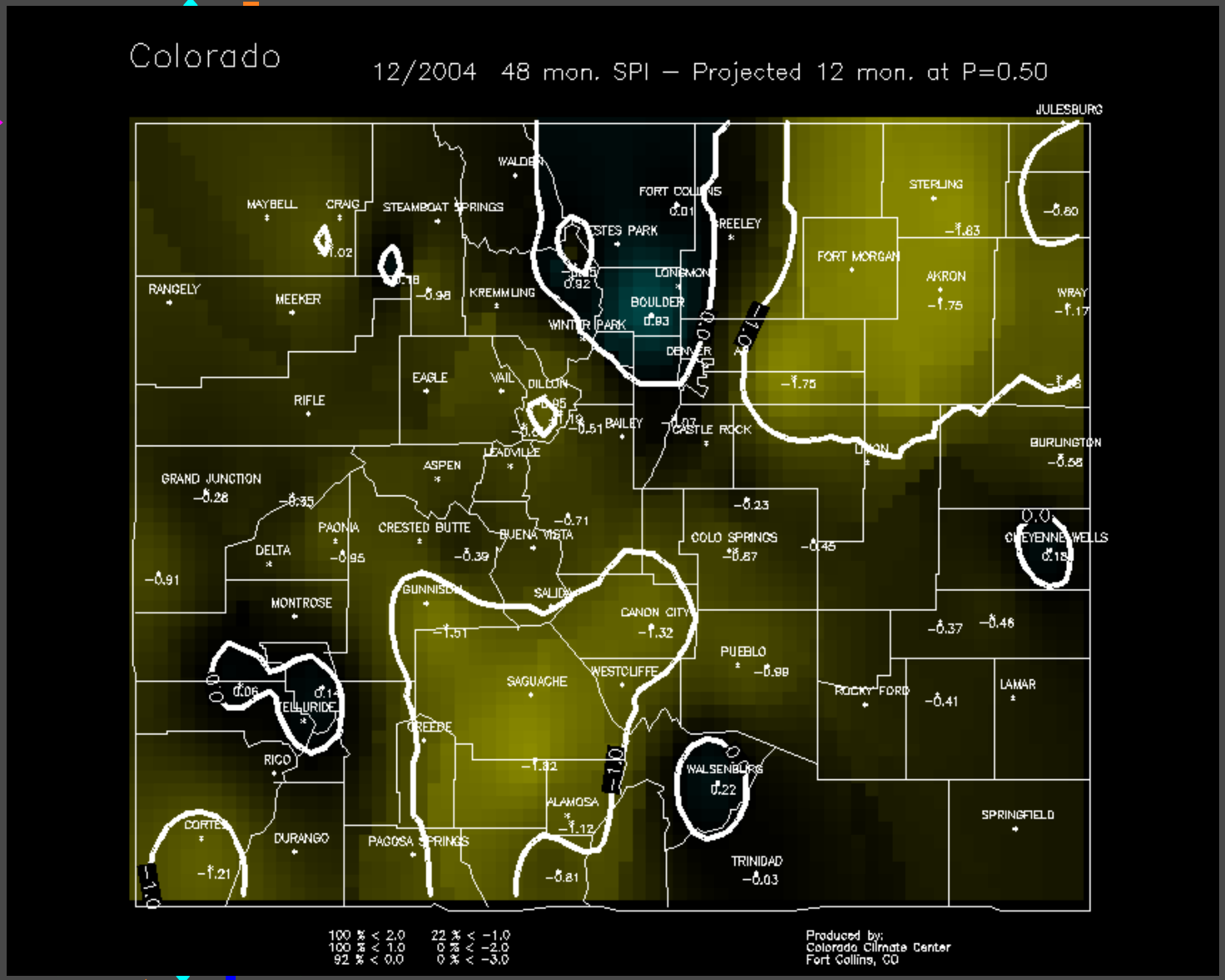
Projected Conditions at 0.8 Probability Level
12 Month SPI at 6 months



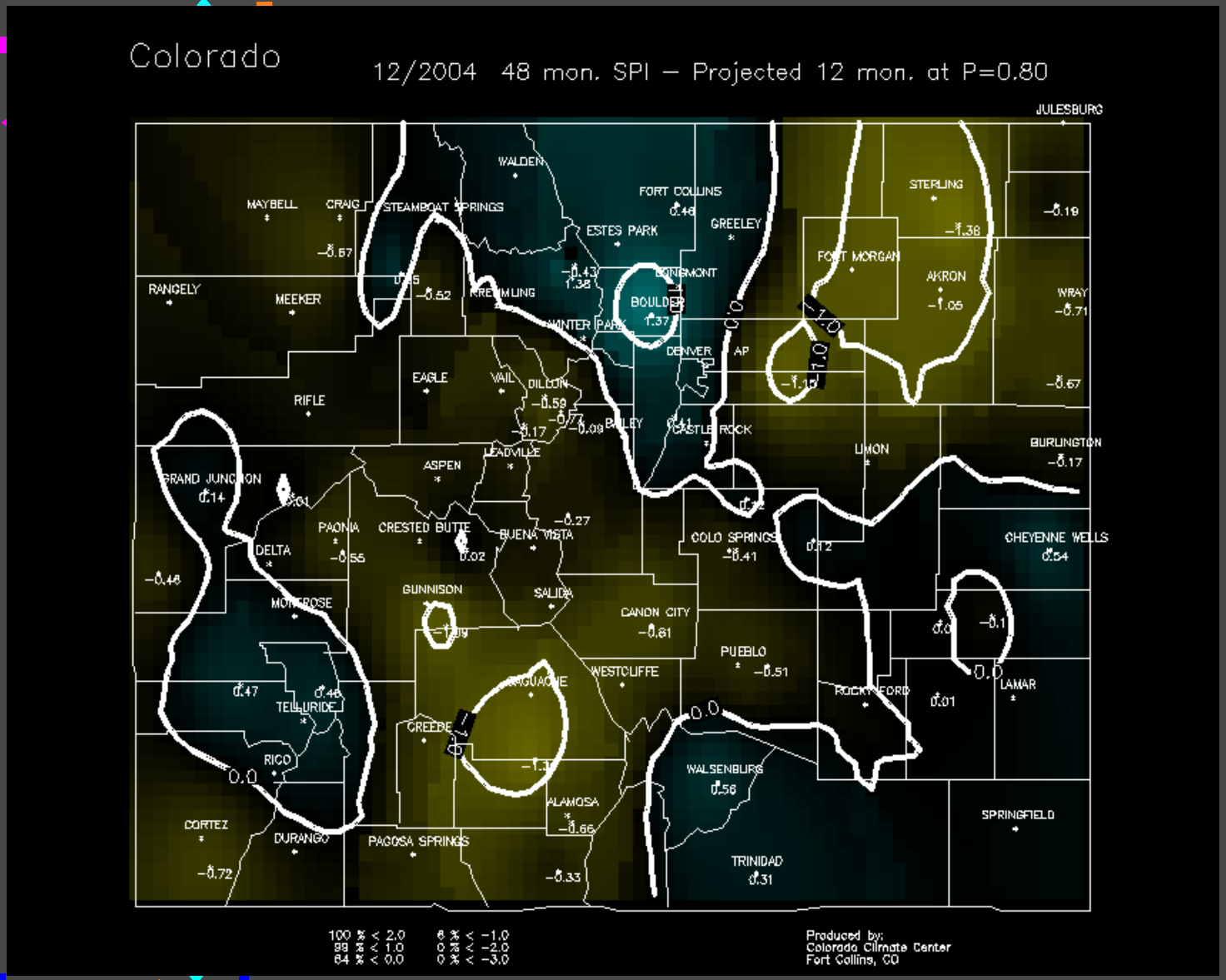
Projected Conditions at 0.2 Probability Level
48 Month SPI at 12 months



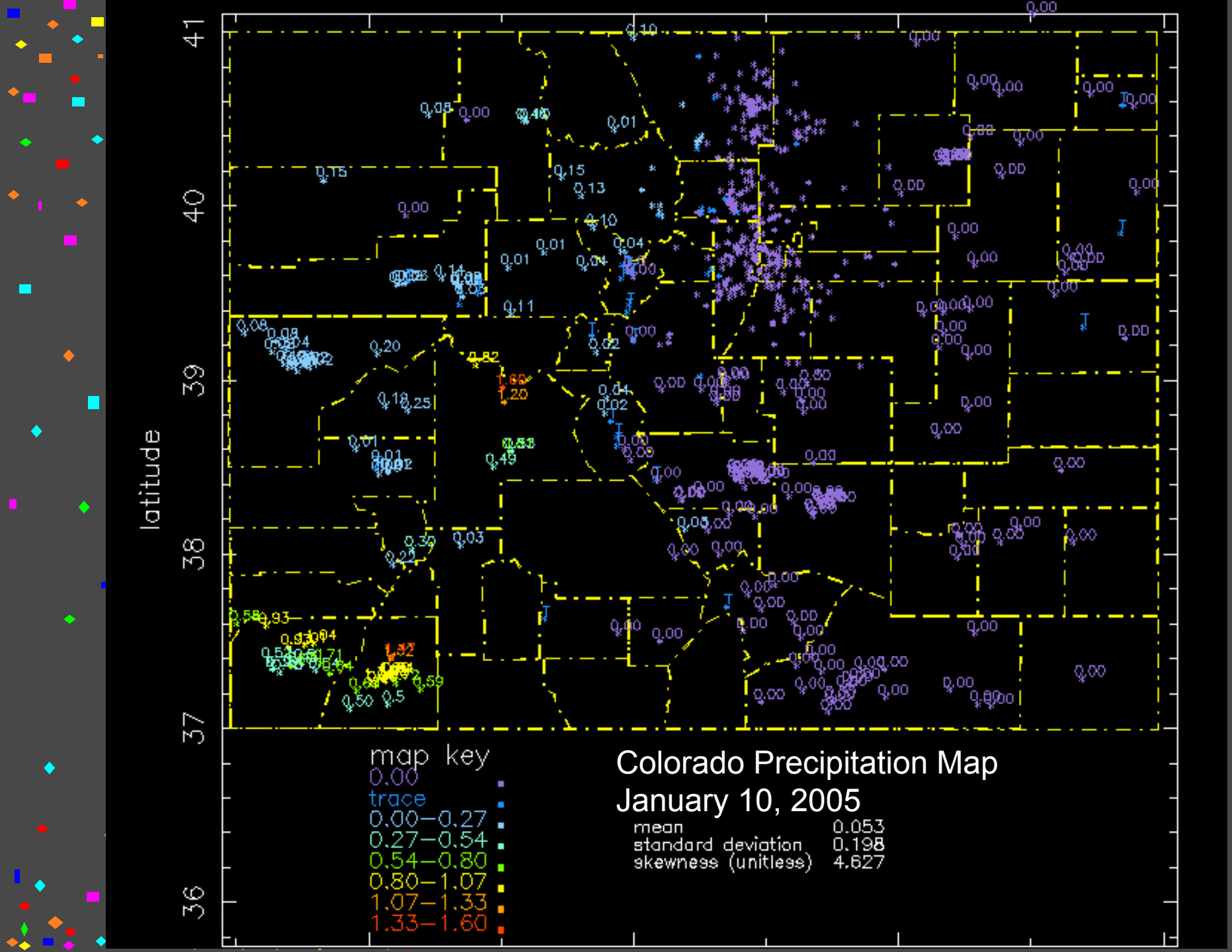
Projected Conditions at 0.5 Probability Level
48 Month SPI at 12 months

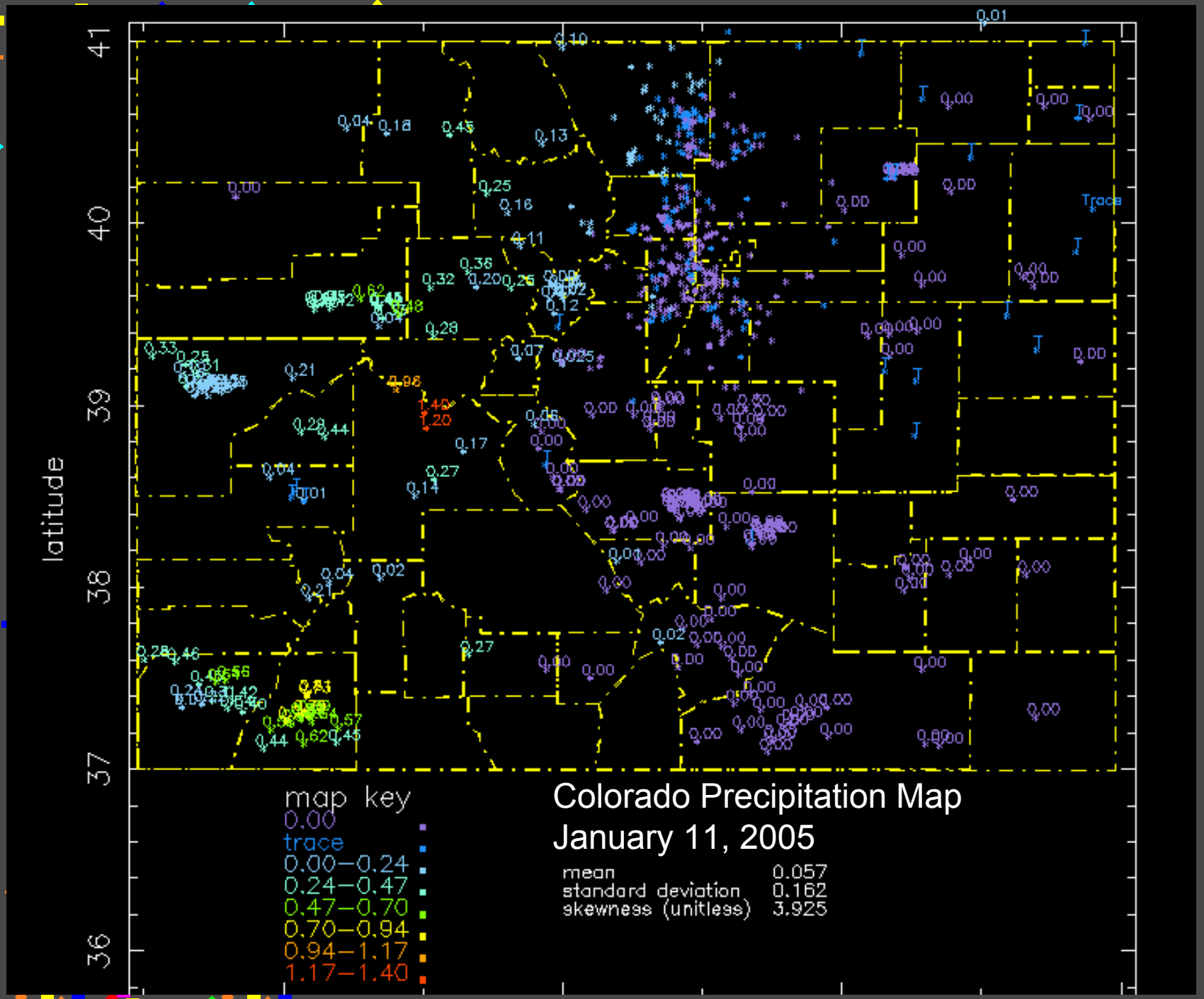


Projected Conditions at 0.8 Probability Level
48 Month SPI at 12 months



How About CoCoRaHS?


latitude
41
40
39
38
37
36
map key
0.00
trace
0.00–0.27
0.27–0.54
0.54–0.80
0.80–1.07
1.07–1.33
1.33–1.60
Colorado Precipitation Map
January 10, 2005
mean 0.053
standard deviation 0.198
skewness (unitless) 4.627


latitude
41
40
39
38
37
36
map key
0.00
trace
0.00–0.24
0.24–0.47
0.47–0.70
0.70–0.94
0.94–1.17
1.17–1.40
Colorado Precipitation Map
January 11, 2005
mean 0.057
standard deviation 0.162
skewness (unitless) 3.925

For more information visit the CoCo RaHS Web site

www.cocorahs.org

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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"*