

Assessment of 2004 Water Year

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Colorado Climate Center***

*(presented to Colorado Organic Conference and
Trade Show, Brighton, CO, March 2, 2004)*

Prepared by Odie Bliss

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



Precipitation Anomalies

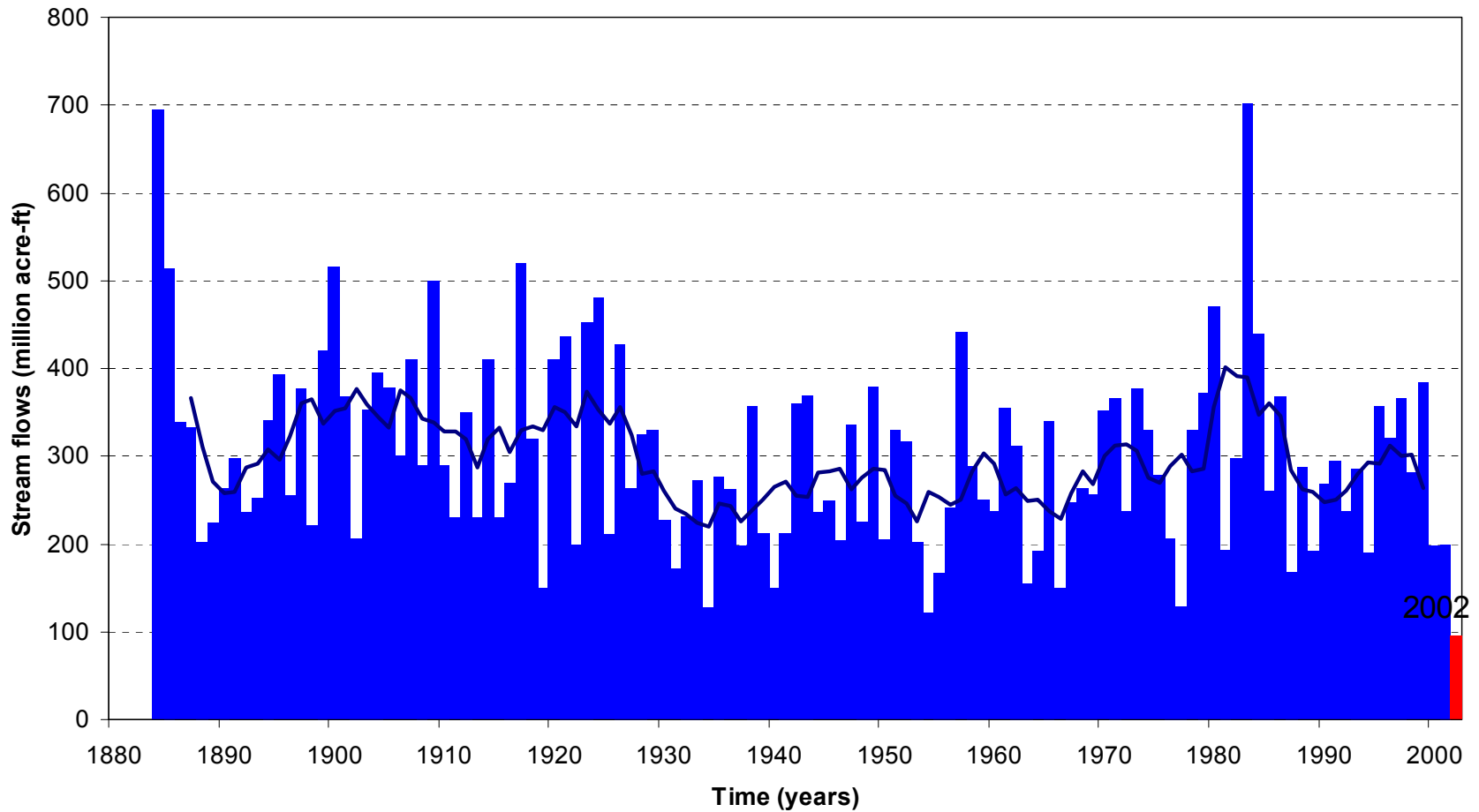
“Drought 2002 in Colorado” PAGEOPH article

Table 1. Precipitation Accumulation Analysis for 12-month (Sep. 2001-Aug. 2002), 13 month (Sep. 2001-Sep. 2002) and 2002 Water Year (Oct. 2001-Sep. 2002) Compared to Period-of-Record (POR) and 1941-2002 Period. In parentheses are the magnitudes of the standard deviations below the average for the time period, based on the available data for each station.

Climatic Stations	Region	Period of Record (POR)	Sep 2001 – Aug 2002 (12 months)			Sep 2001 – Sep 2002 (13 months)			2002 Water Year (Oct 2001 – Sep 2002)		
			POR Rank	1941-2002 Rank (SD)	mm	POR Rank	1941-2002 Rank (SD)	mm	POR Rank	1941-2002 Rank (SD)	mm
Grand Lake 1NW	1	1940-2002	1	1 (1.87)	319	2	2 (1.42)	407	1	1 (1.71)	327
Taylor Park	1	1941-2002	1	1 (2.02)	265	2	2 (1.65)	324	3	3 (1.51)	303
Grand Junction WSO	2	1892-2002	8	5 (1.39)	141	31	20 (0.63)	205	43	27 (0.34)	201
Meeker	2	1891-2002	7	5 (1.78)	263	8	6 (1.64)	303	7	7 (1.58)	276
Montrose No. 2	3	1896-2002	3	3 (1.54)	148	15	8 (1.02)	203	29	1 (0.80)	193
Mesa Verde NP	3	1923-2002	1	1 (2.30)	189	1	1 (1.97)	250	3	3 (1.79)	246
Del Norte 2E	4	1920-2002	1	1 (2.55)	81	3	3 (1.96)	132	3	3 (1.80)	119
Center 4 SSW	4	1891-2002	1	1 (2.69)	62	1	1 (2.20)	97	4	4 (1.92)	94
Colorado Springs WSO	5	1892-2002	1	1 (2.13)	165	1	1 (2.01)	198	2	1 (1.97)	172
Pueblo WSO	5	1891-2002	1	1 (2.65)	96	1	1 (2.64)	113	1	1 (2.56)	101
Rocky Ford 2SE	6	1892-2002	1	1 (2.33)	92	1	1 (2.36)	108	1	1 (2.31)	238
Cheyenne Wells	6	1897-2002	4	2 (1.67)	235	10	5 (1.39)	291	9	5 (1.48)	252
Akron 4E	7	1905-2002	1	1 (2.02)	239	1	1 (1.83)	277	1	1 (1.88)	95
Leroy 7WSW	7	1891-2002	4	2 (1.91)	269	4	2 (1.82)	294	4	2 (2.05)	243
Kassler	8	1899-2002	8	4 (1.49)	319	9	5 (1.44)	351	6	4 (1.48)	309
Fort Collins	8	1890-2002	3	2 (1.96)	200	3	2 (1.84)	237	5	4 (1.66)	214
Stations Ranked Driest			9	9		6	6		4	6	

Poudre River Streamflow

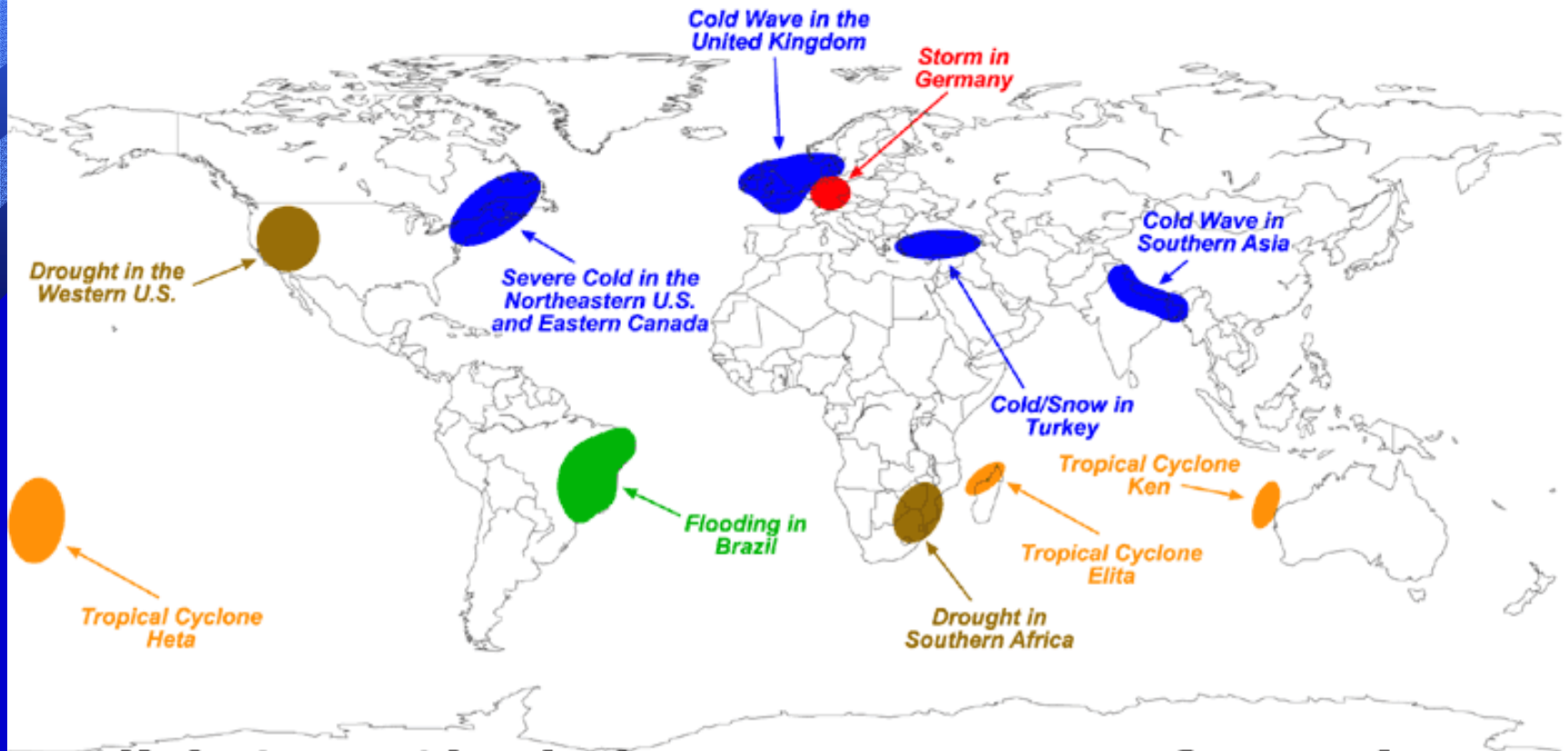
Poudre River Historic Streamflow





Selected Global Significant Events

January 2004

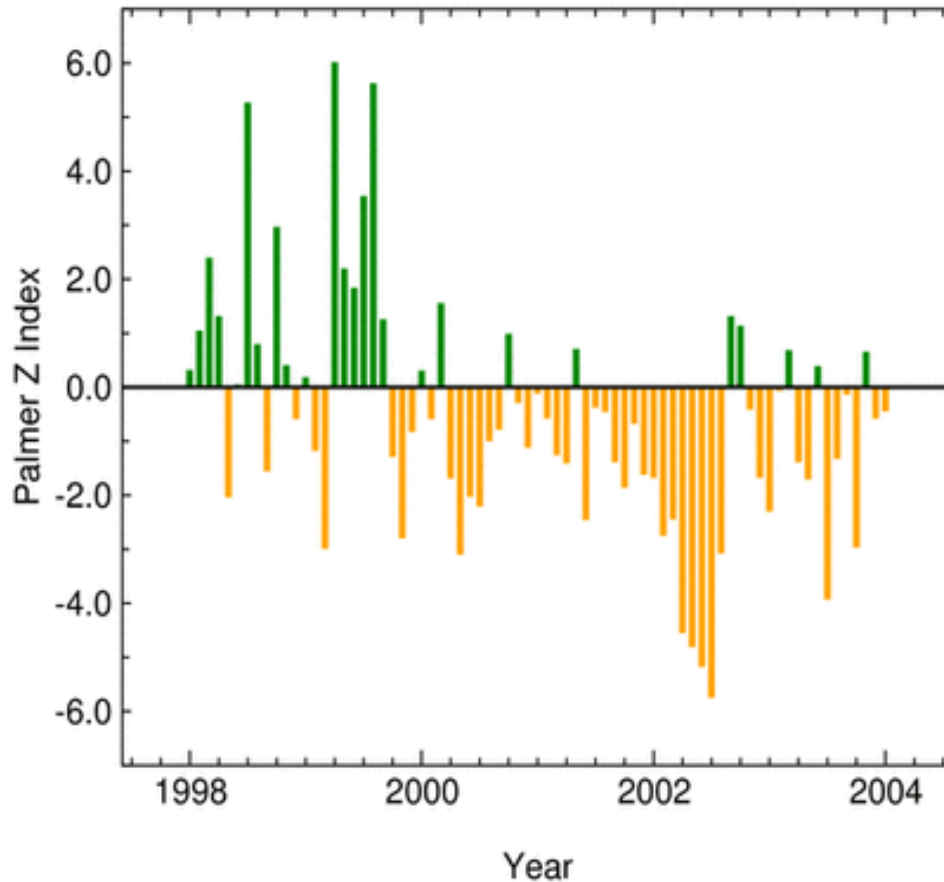


Click On A Shaded Area For More Information



Colorado Statewide Z Index*

January 1998 - January 2004

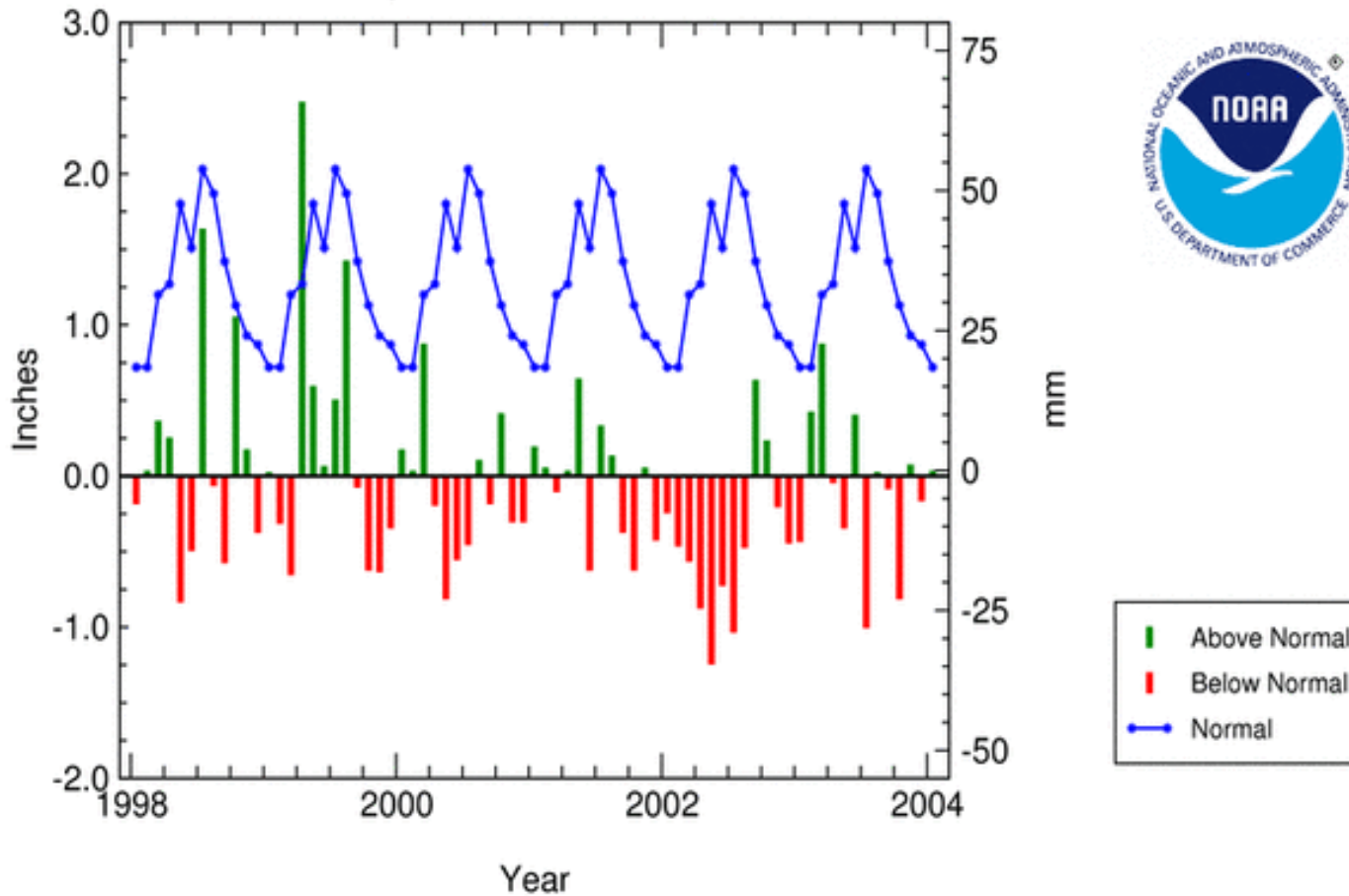


*Palmer Z Index
Short-Term Drought



National Climatic Data Center / NESDIS / NOAA

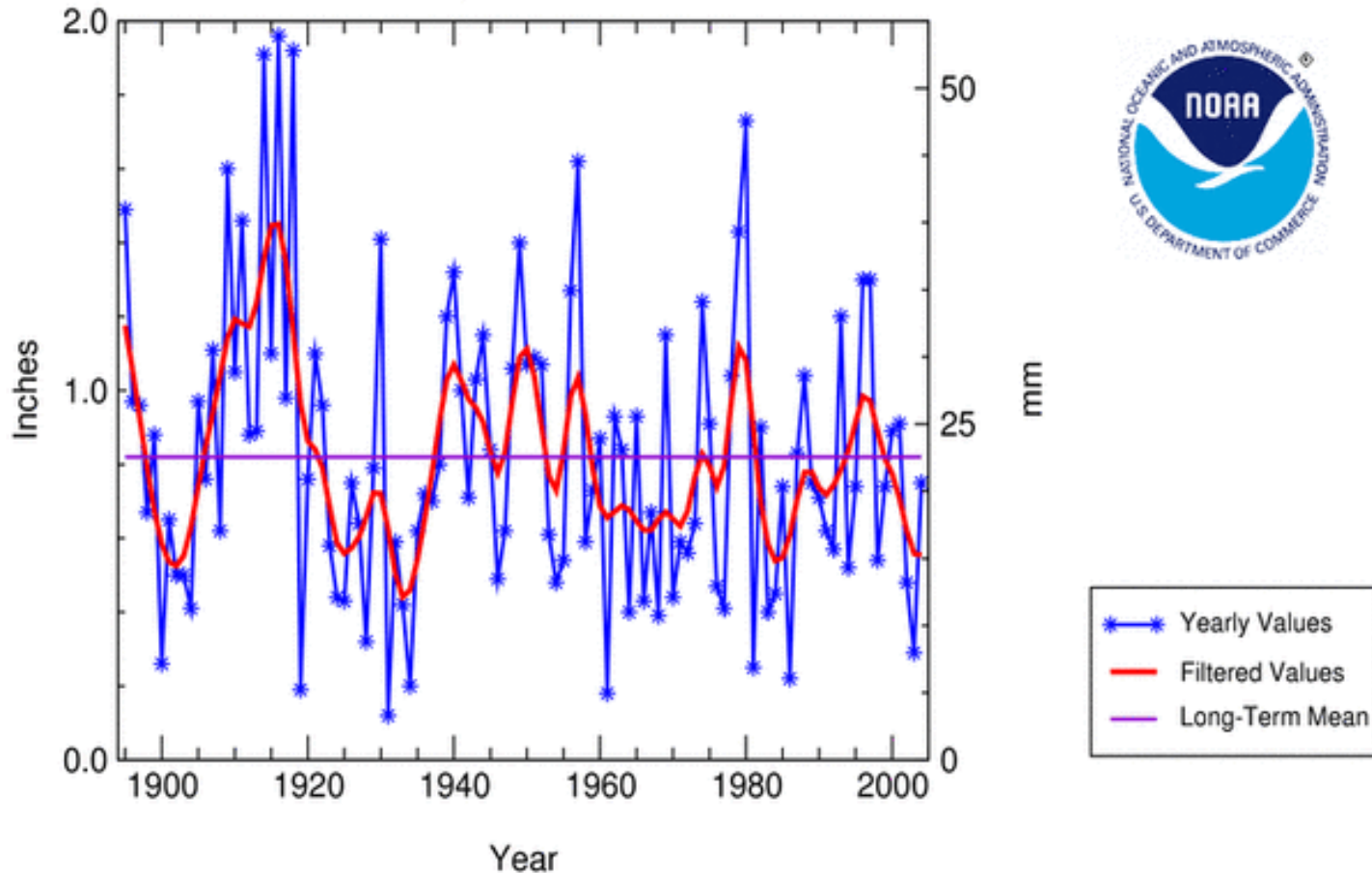
Colorado Statewide Precipitation Normal & Departure, Jan 1998 - Jan 2004



National Climatic Data Center / NESDIS / NOAA

Colorado Statewide Precipitation

January, 1895 - 2004



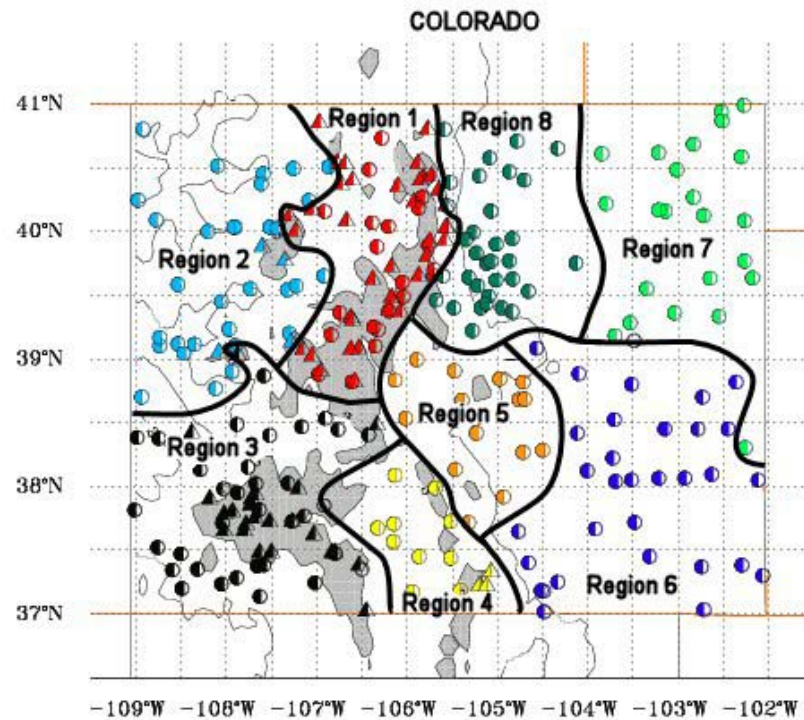
National Climatic Data Center / NESDIS / NOAA

Period of record 1895-2003

Statewide Precipitation Ranks for Colorado , 2003-2004

Period	Rank
Jan	<u>54th driest</u>
Dec-Jan	<u>45th driest</u>
Nov-Jan	<u>49th wettest</u> (<u>60th driest</u>)
Oct-Jan	<u>21st driest</u>
Sep-Jan	<u>29th driest</u>
Aug-Jan	<u>31st driest</u>
Jul-Jan	<u>11th driest</u>
Jun-Jan	<u>29th driest</u>
May-Jan	<u>23rd driest</u>
Apr-Jan	<u>23rd driest</u>
Mar-Jan	<u>36th driest</u>
Feb-Jan	<u>41st driest</u>

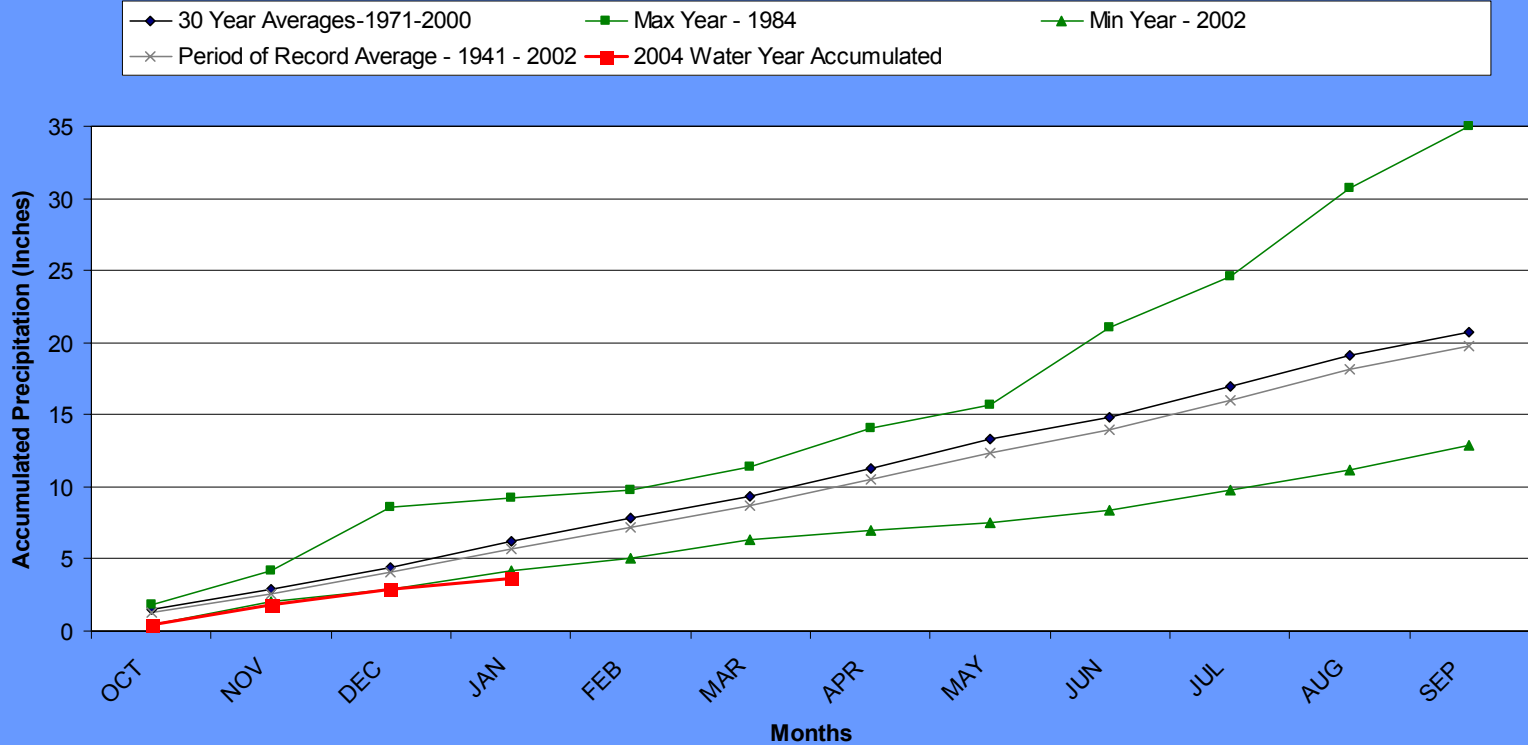
Climate divisions defined by Dr. Klaus Wolter of NOAA's Climate Diagnostic Center in Boulder, CO



COOP	SNOTEL	IND		COOP	SNOTEL	IND	
●	▲	IND 1		●	▲	IND 6	
●	▲	IND 2		●	▲	IND 7	
●	▲	IND 3		●	▲	IND 8	
●	▲	IND 4					
●	▲	IND 5					
○	△	Stations not assigned to an index					

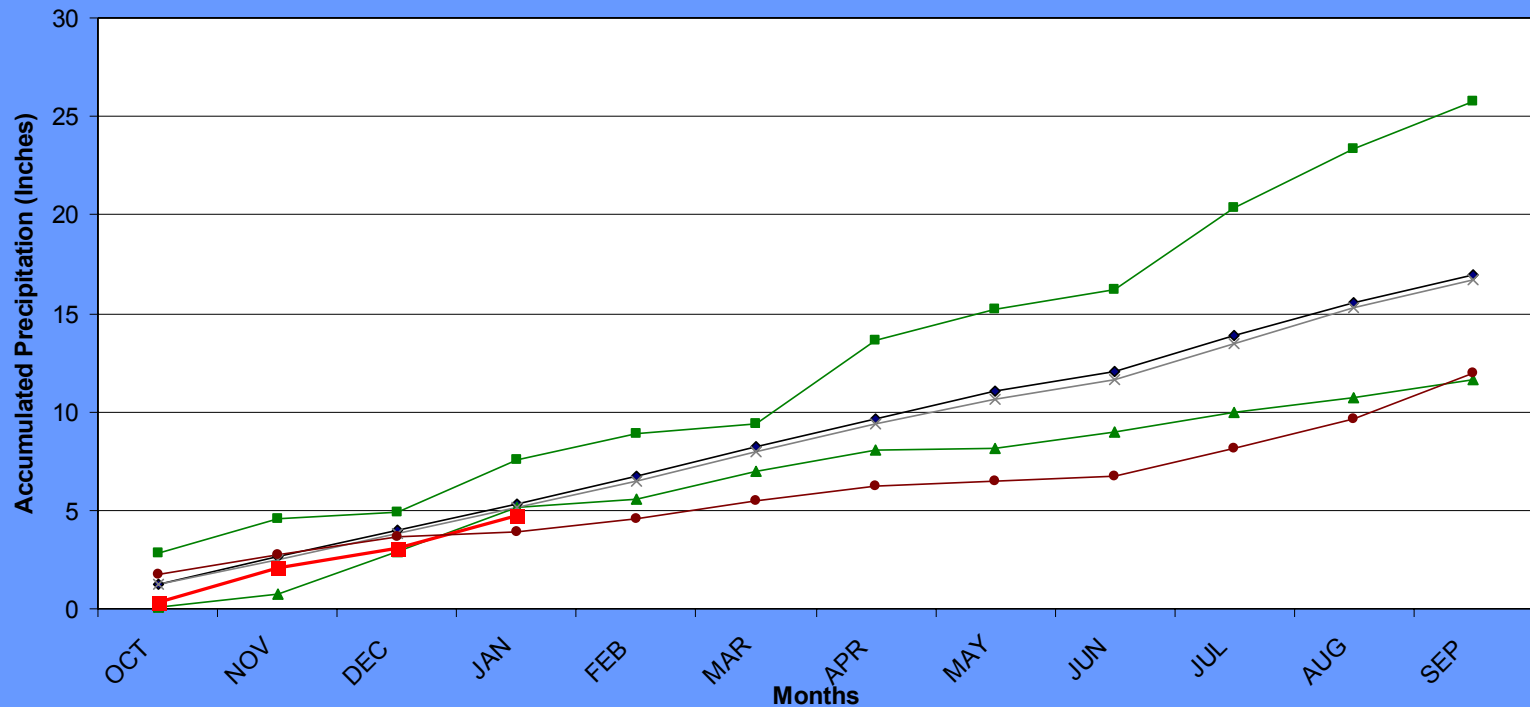
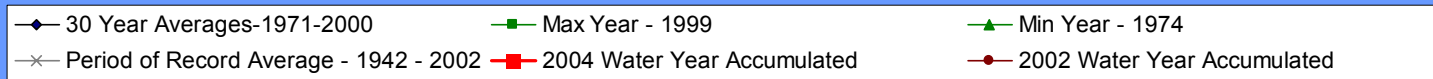
Division 1- Grand Lake 1NW

Grand Lake 1 NW 2004 Water Year (through Oct '03 - Jan '04)



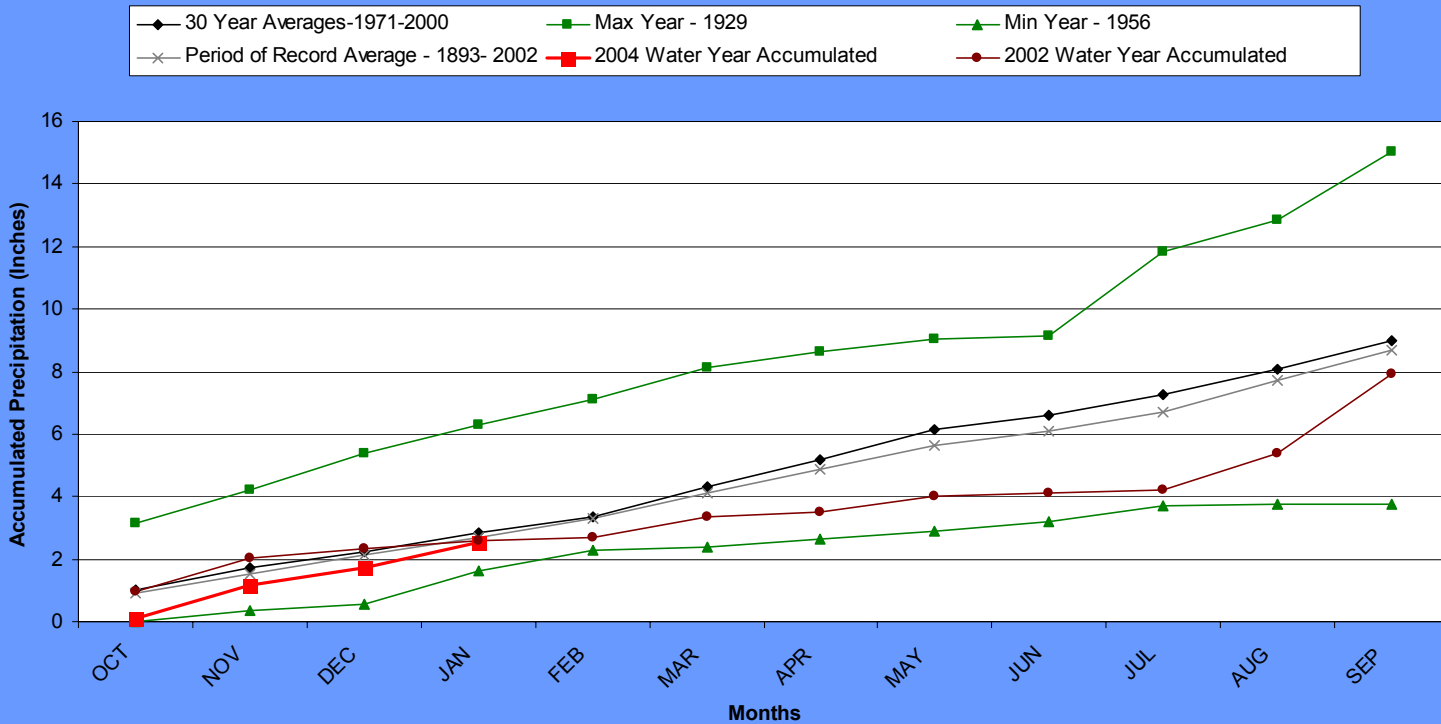
Division 1- Taylor Park

Taylor Park 2004 Water Year (through Oct '03 - Jan '04)



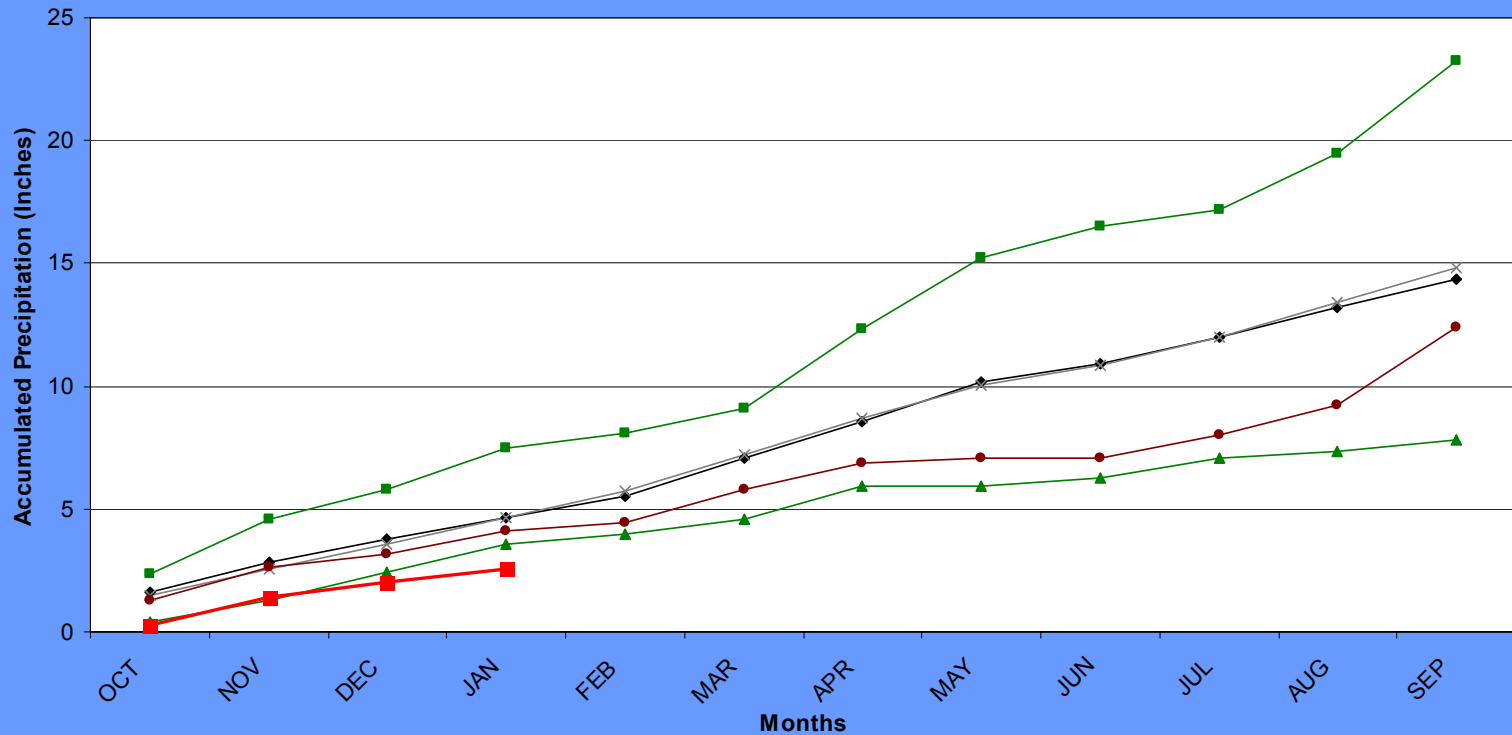
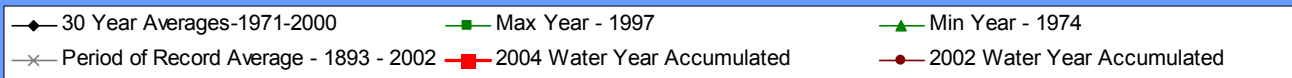
Division 2 – Grand Junction

Grand Junction WSFO
2004 Water Year
(through Oct '03 - Jan '04)



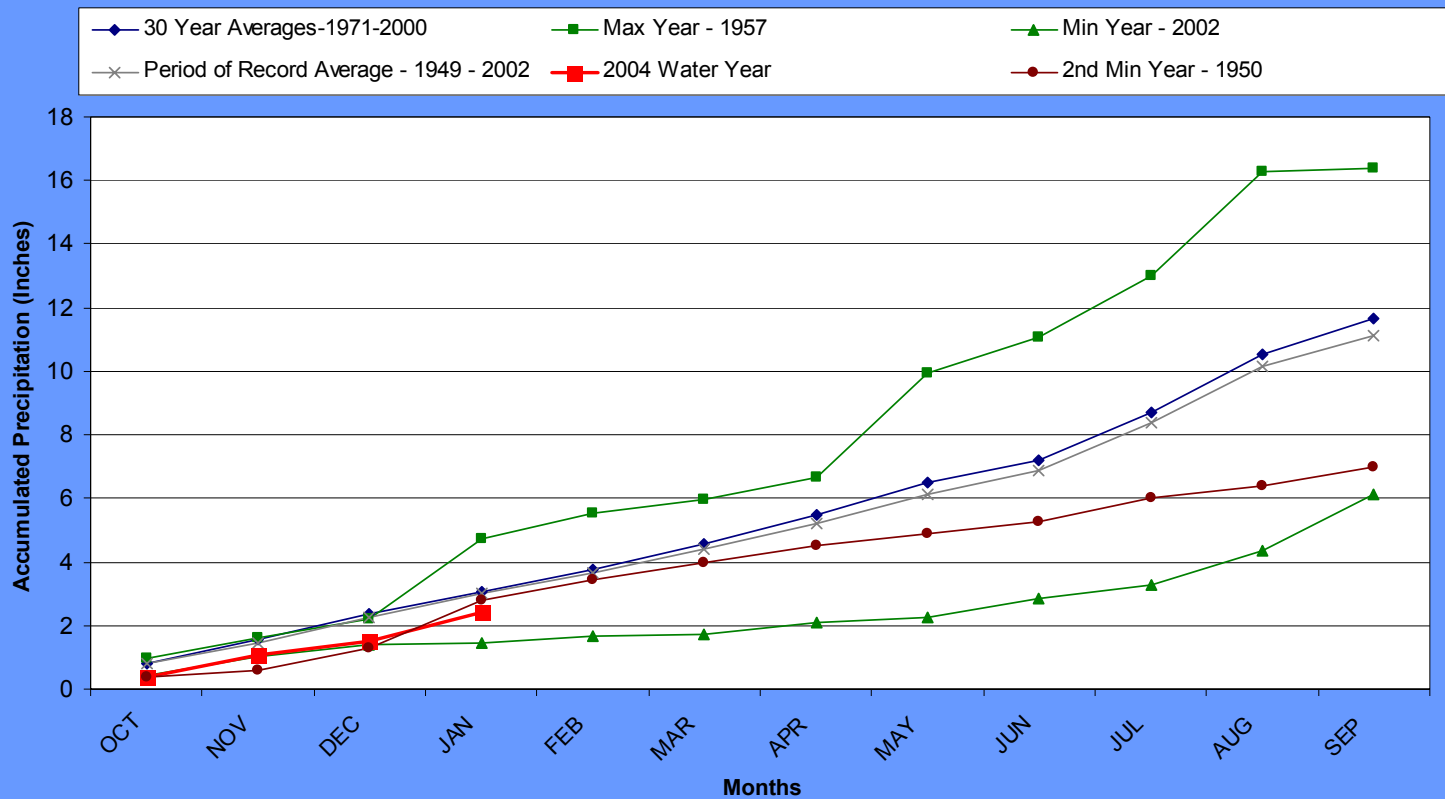
Division 2 – Collbran

Collbran 2SW 2004 Water Year (through Oct '03 - Jan '04)



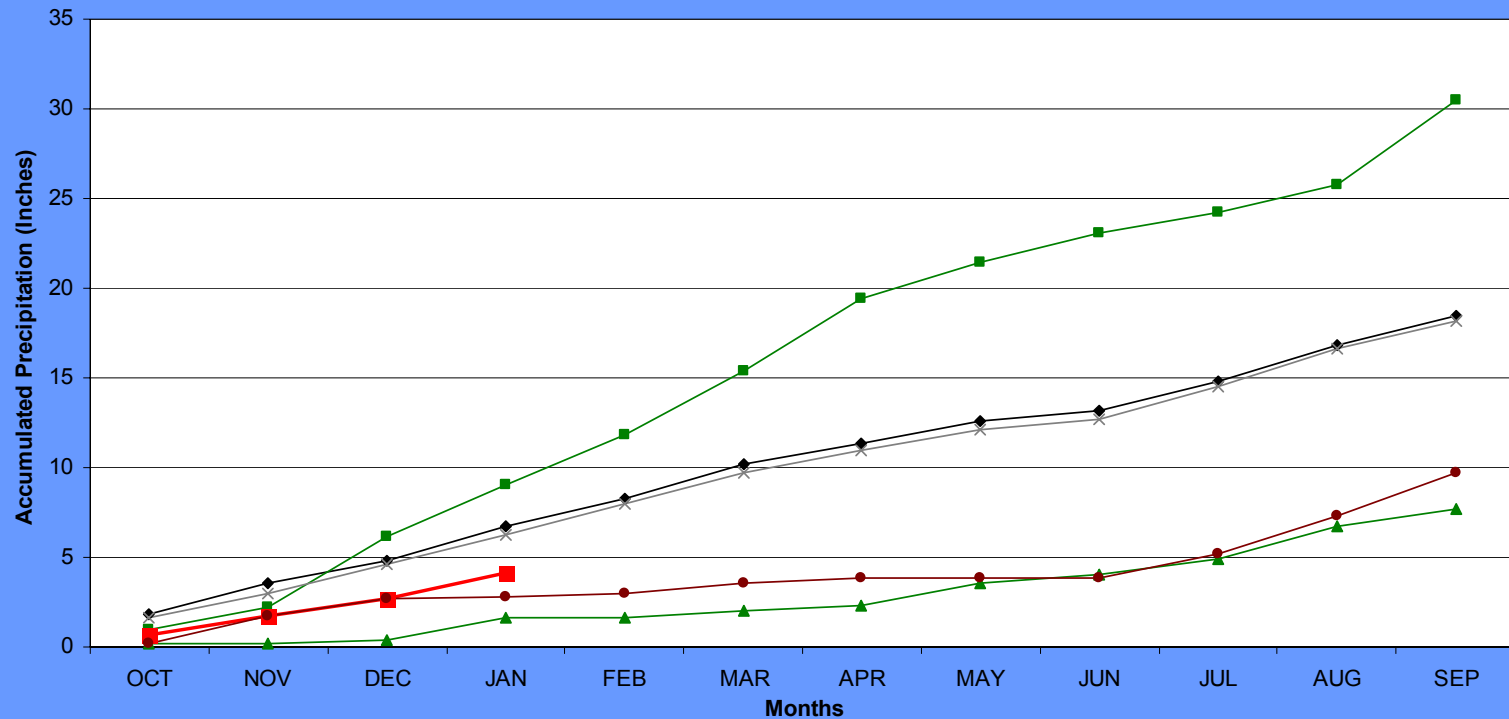
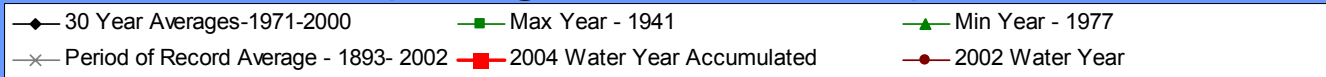
Division 3 – Cochetopa Creek

Cochetopa Creek 2004 Water Year (through Oct '03 - Jan '04)



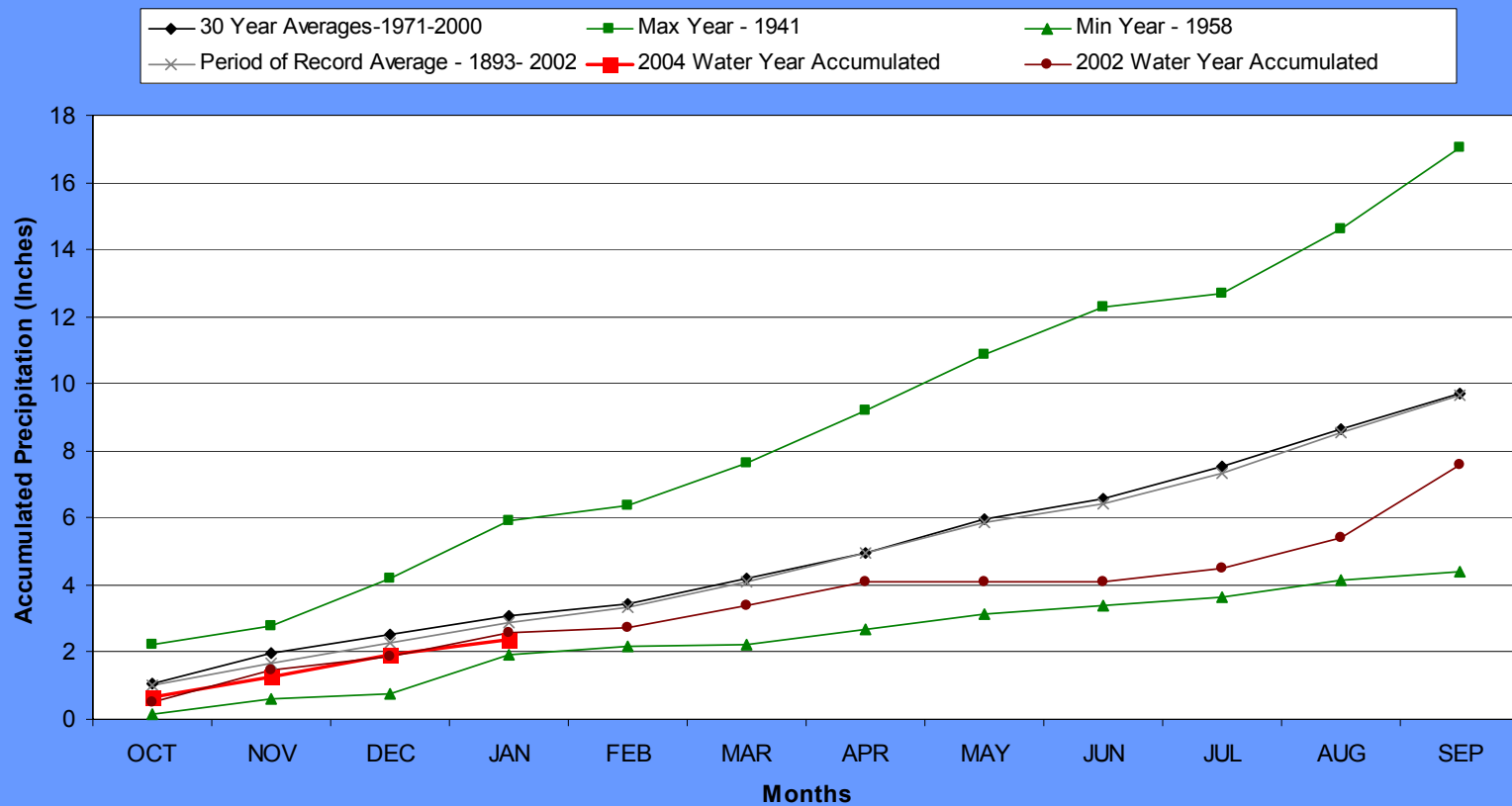
Division 3 – Mesa Verde

Mesa Verde NP 2004 Water Year (through Oct '03 - Jan '04)



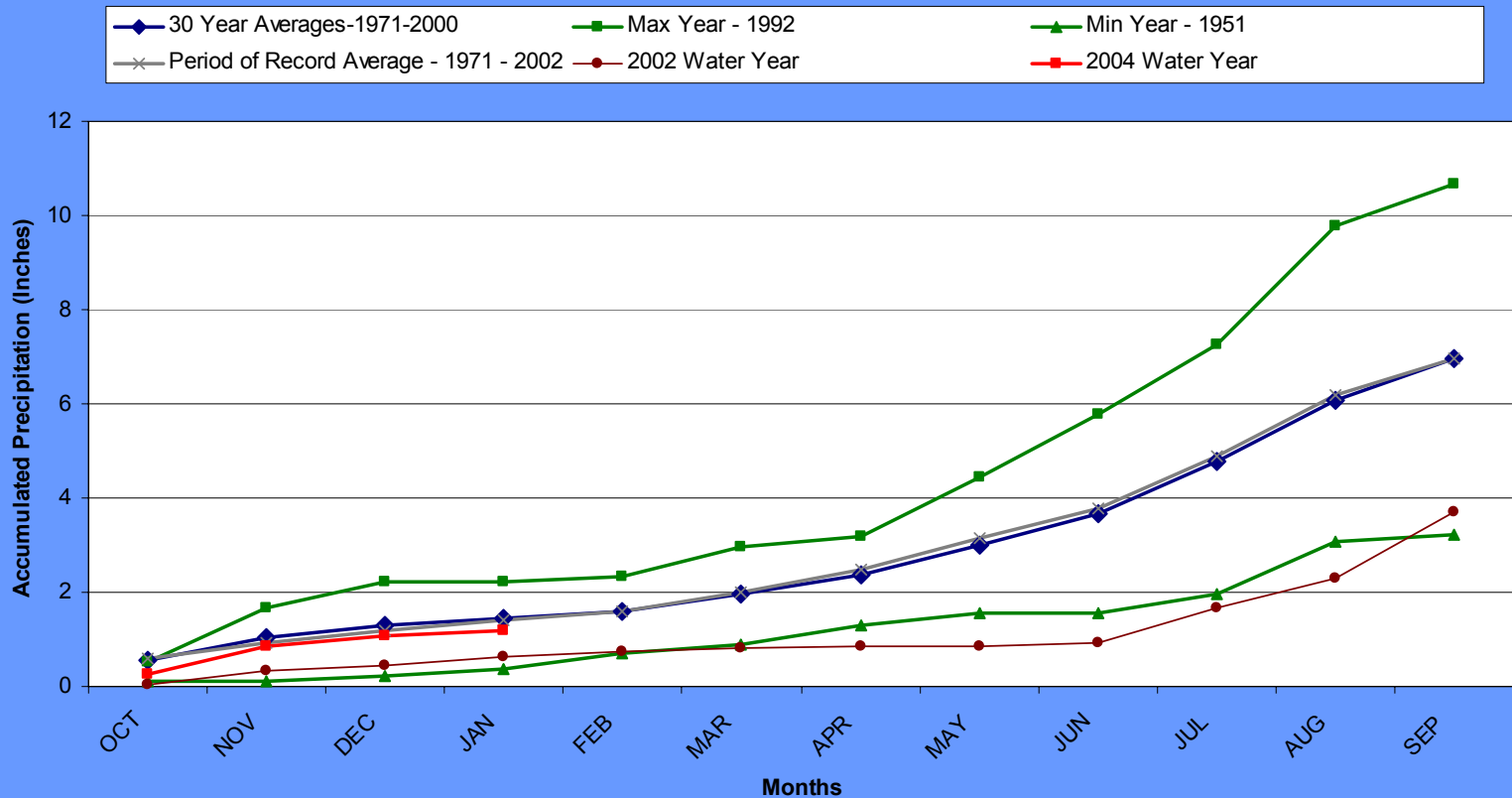
Division 3 - Montrose

Montrose #2 2004 Water Year (through Oct '03 - Jan '04)



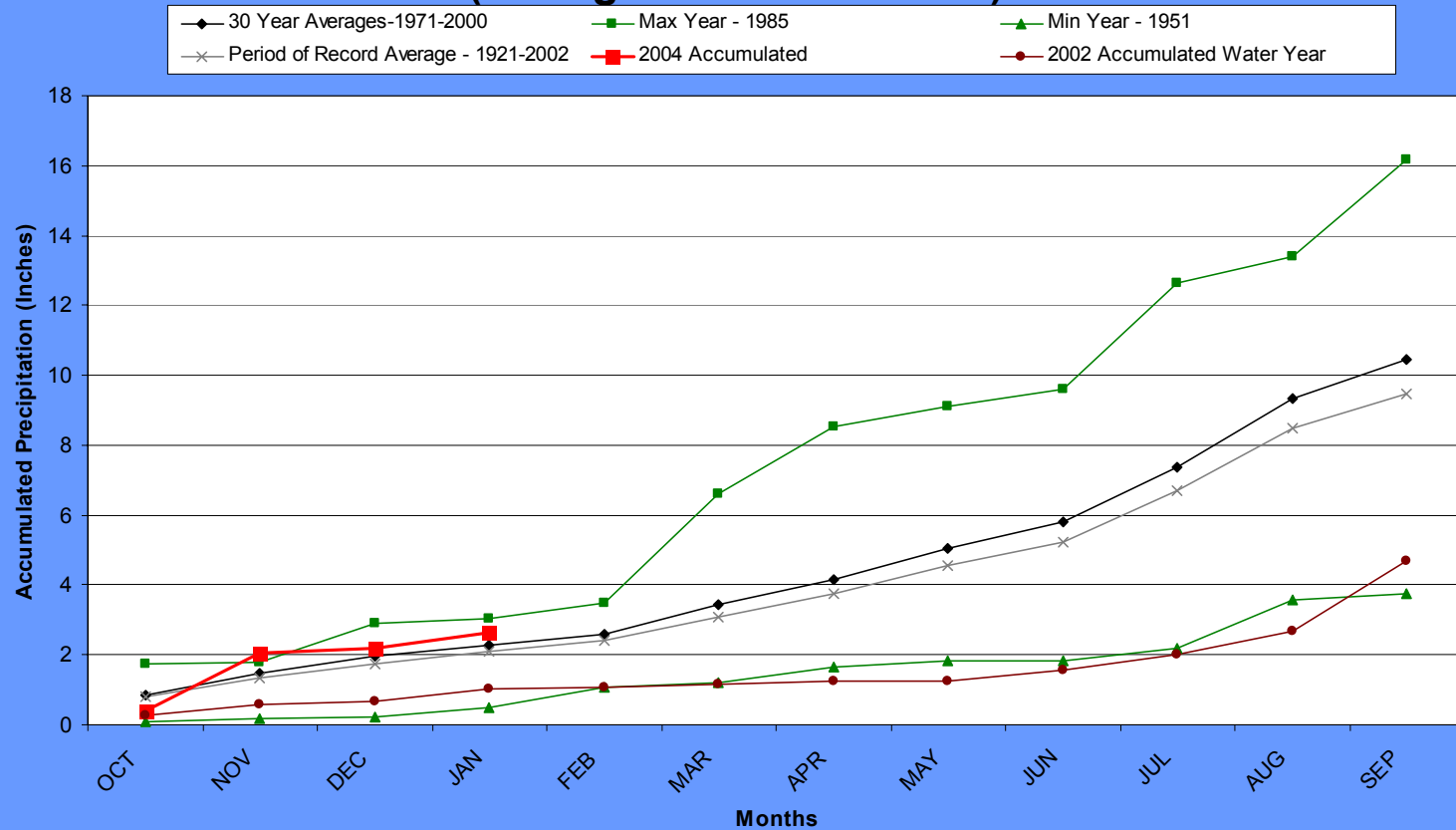
Division 4 - Center

Center 4SSW 2004 Water Year (through Oct '03 - Jan '04)



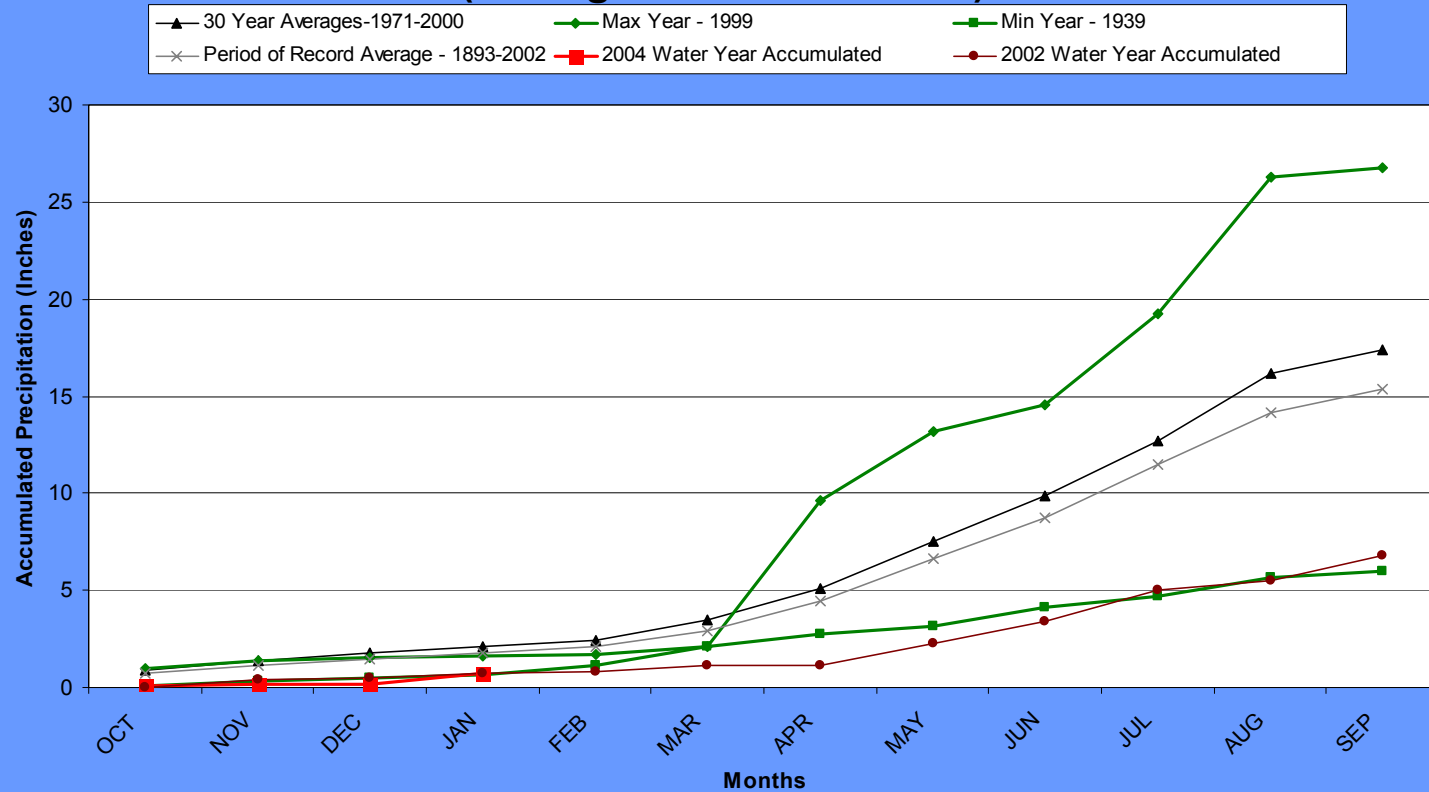
Division 4 – Del Norte

Del Norte 2004 Water Year (through Oct '03 - Jan '04)



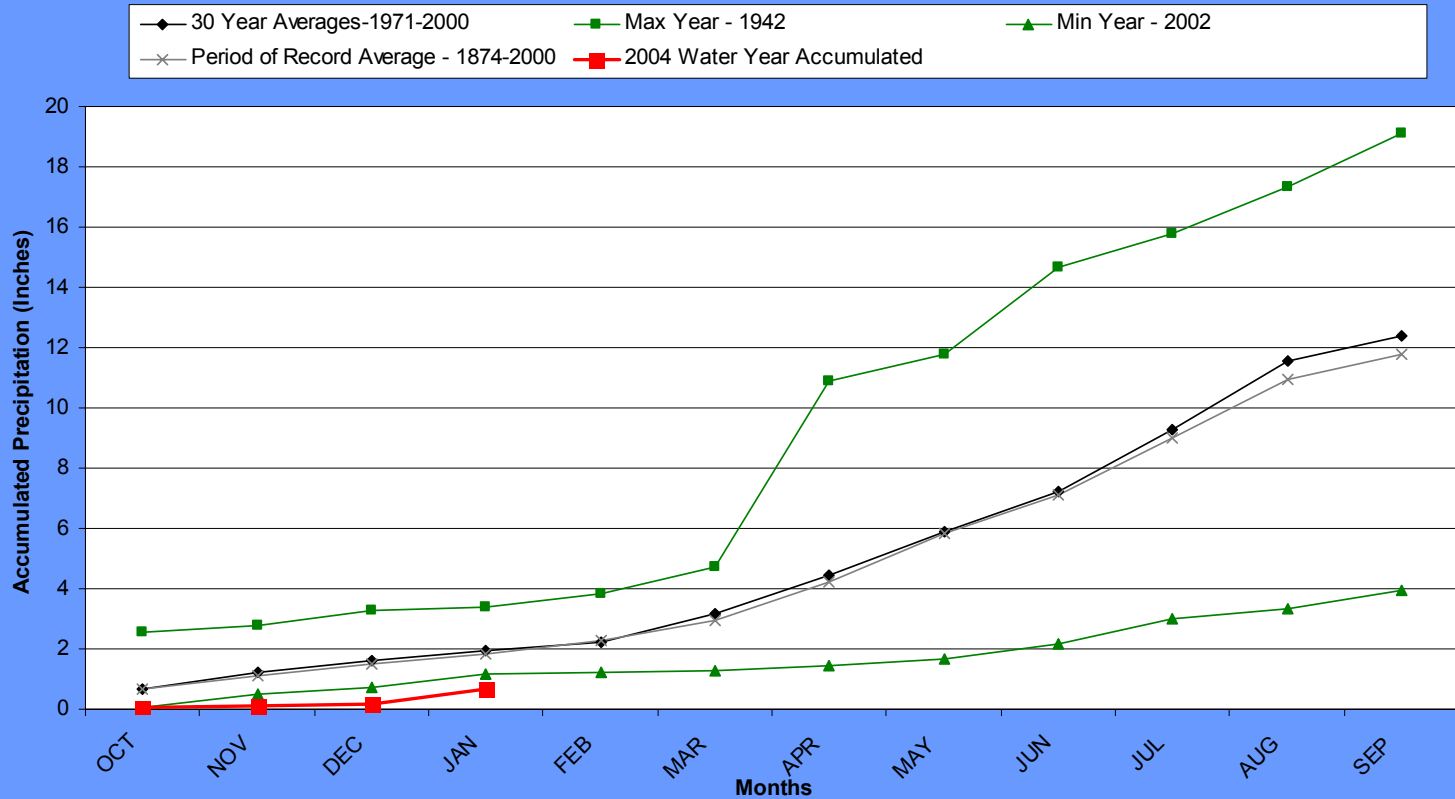
Division 5 – Colorado Springs

Colorado Springs
2004 Water Year
(through Oct '03 - Jan '04)



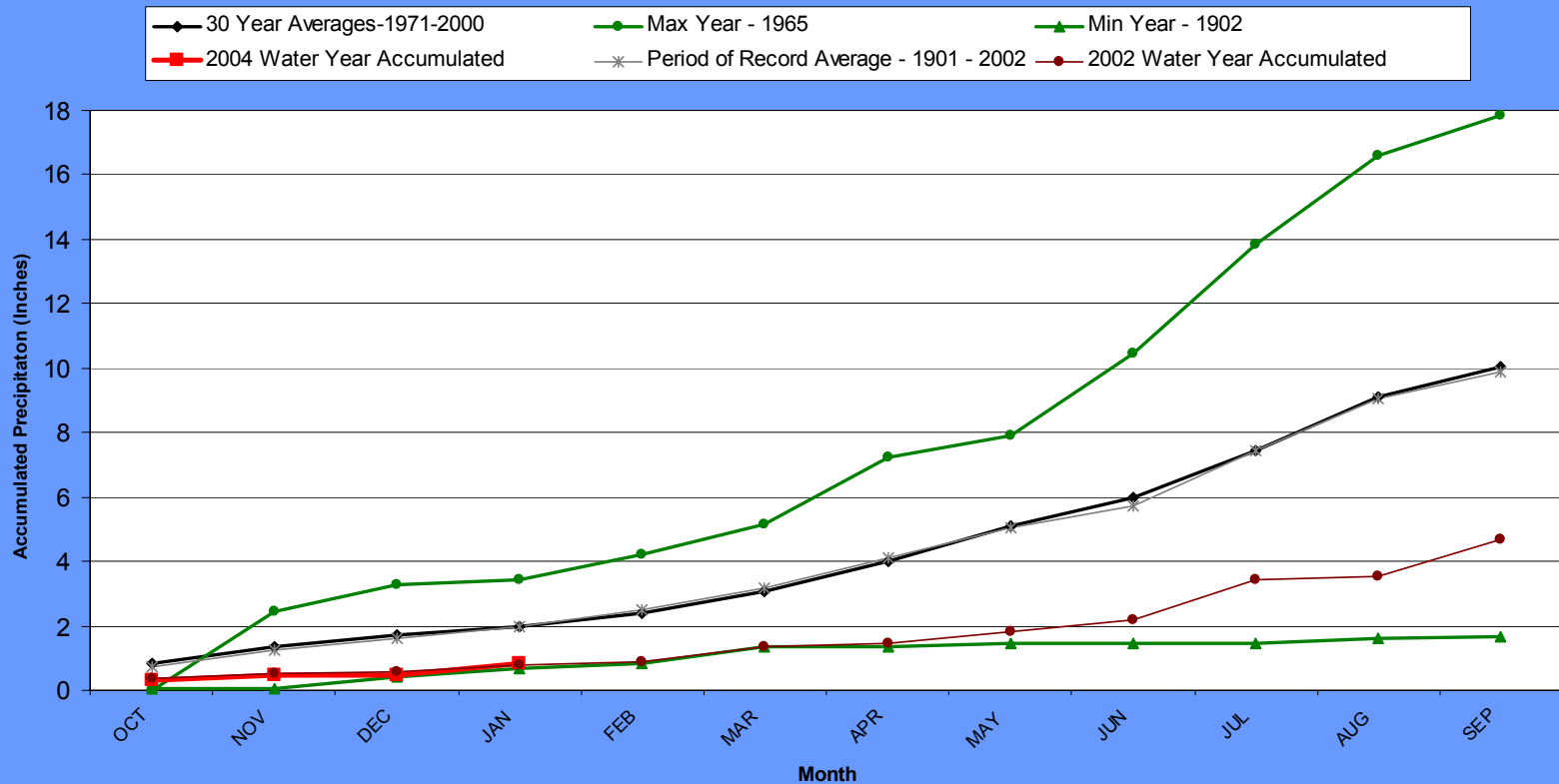
Division 5 - Pueblo

Pueblo WSO 2004 Water Year (through Oct '03 - Jan '04)



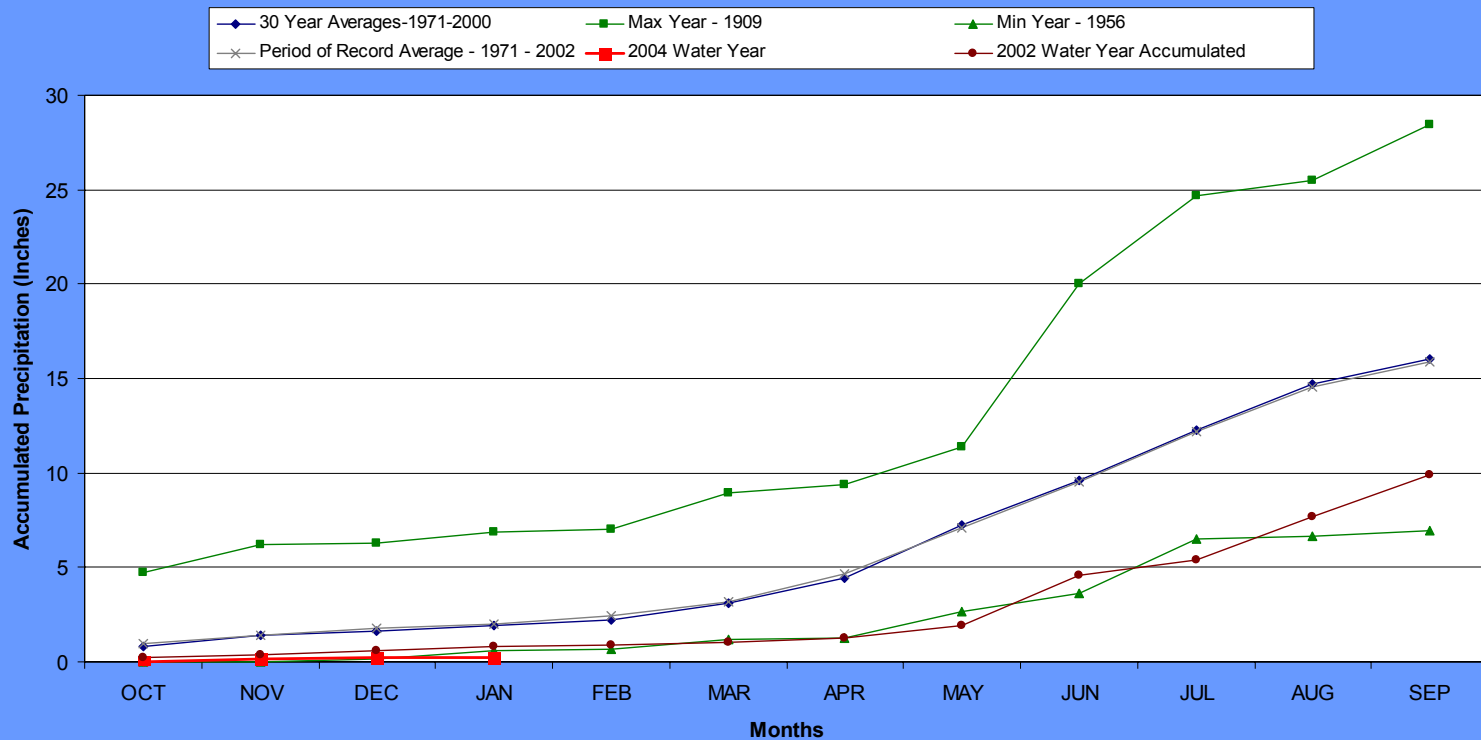
Division 5 – Buena Vista

Buena Vista 2004 Water Year through Oct '03 - Jan '04



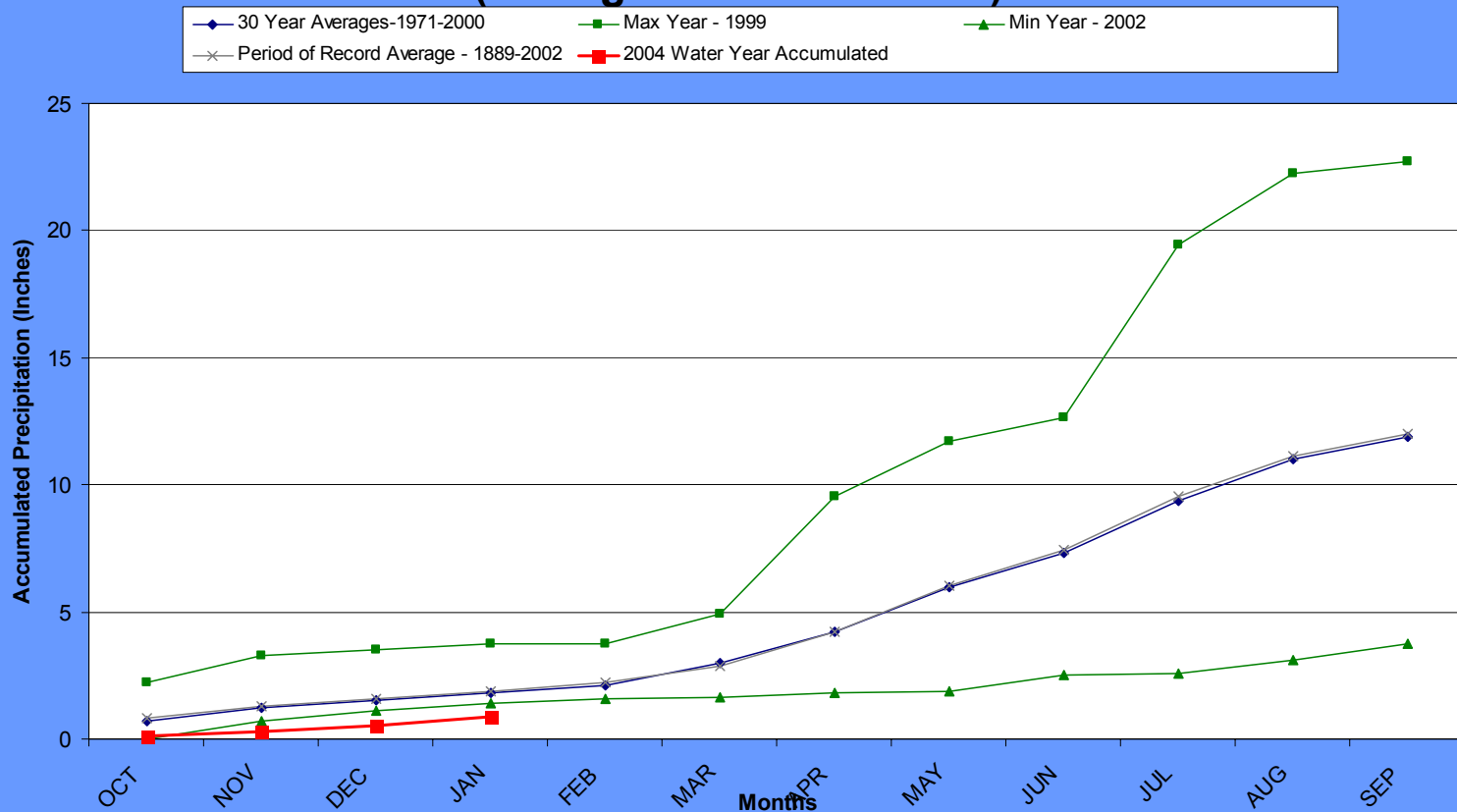
Division 6 – Cheyenne Wells

Cheyenne Wells 2004 Water Year (through Oct '03 - Jan '04)



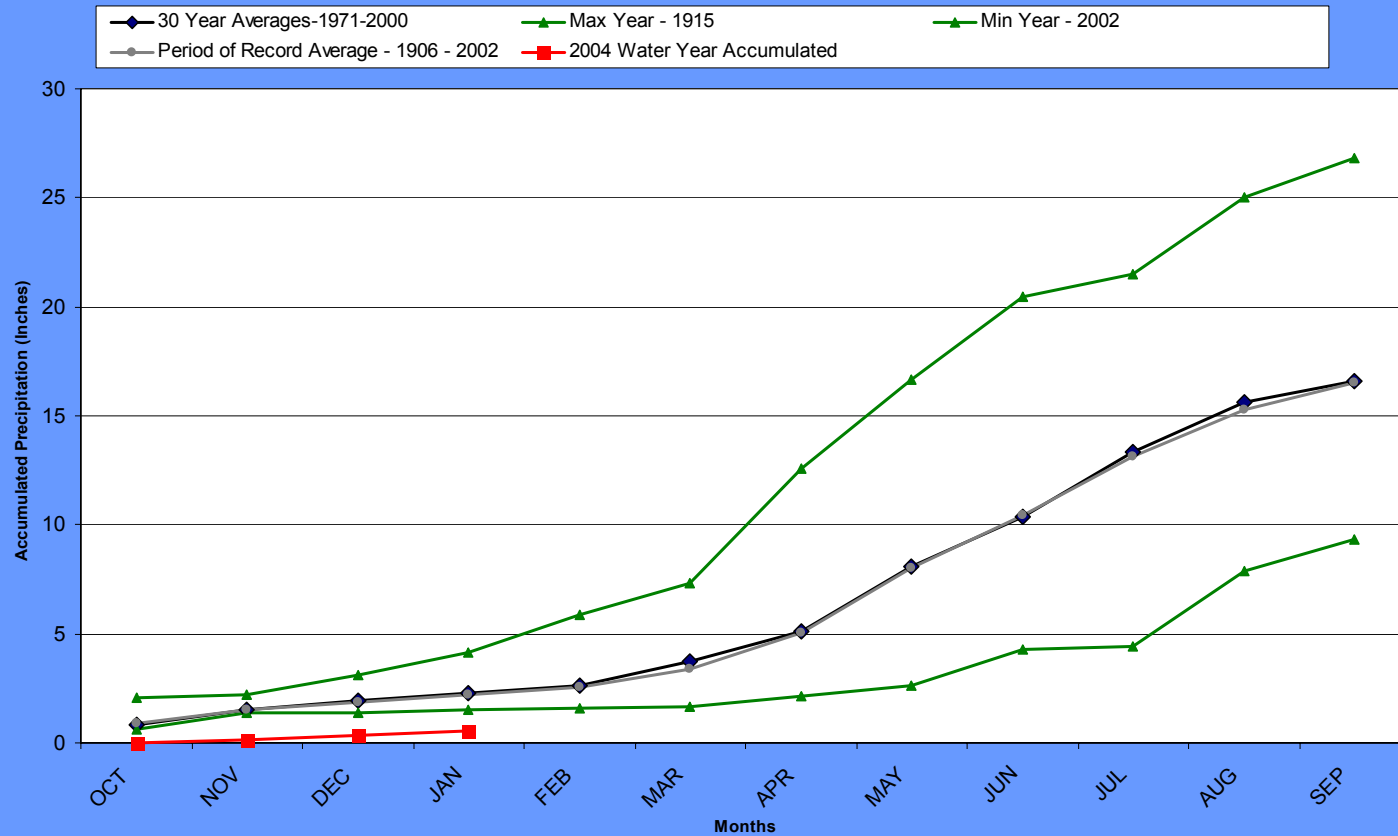
Division 6 – Rocky Ford

Rocky Ford
2004 Water Year
(through Oct '03 - Jan '04)



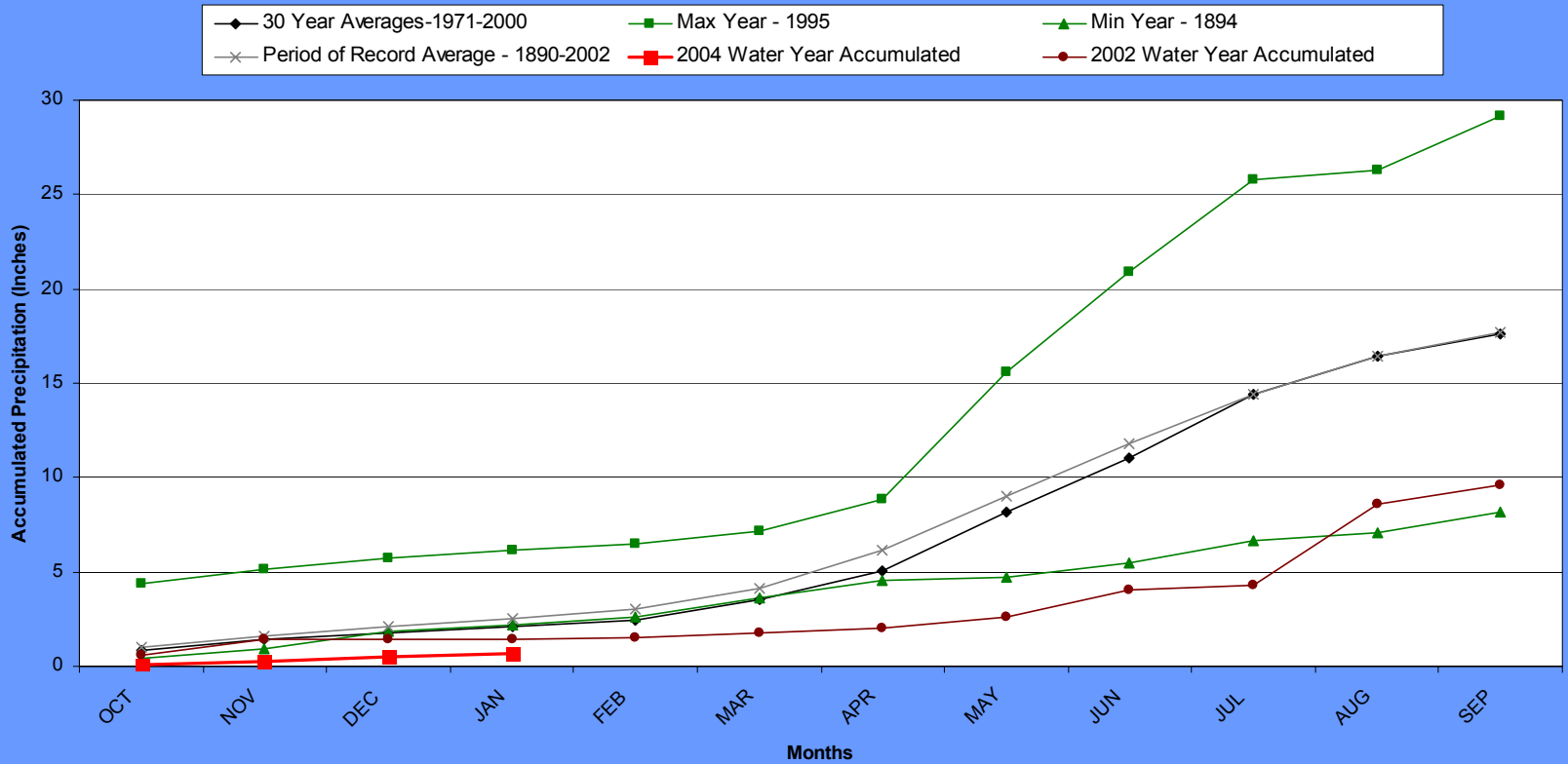
Division 7 – Akron

Akron 4E 2004 Water Year (through Oct '03 - Jan '04)



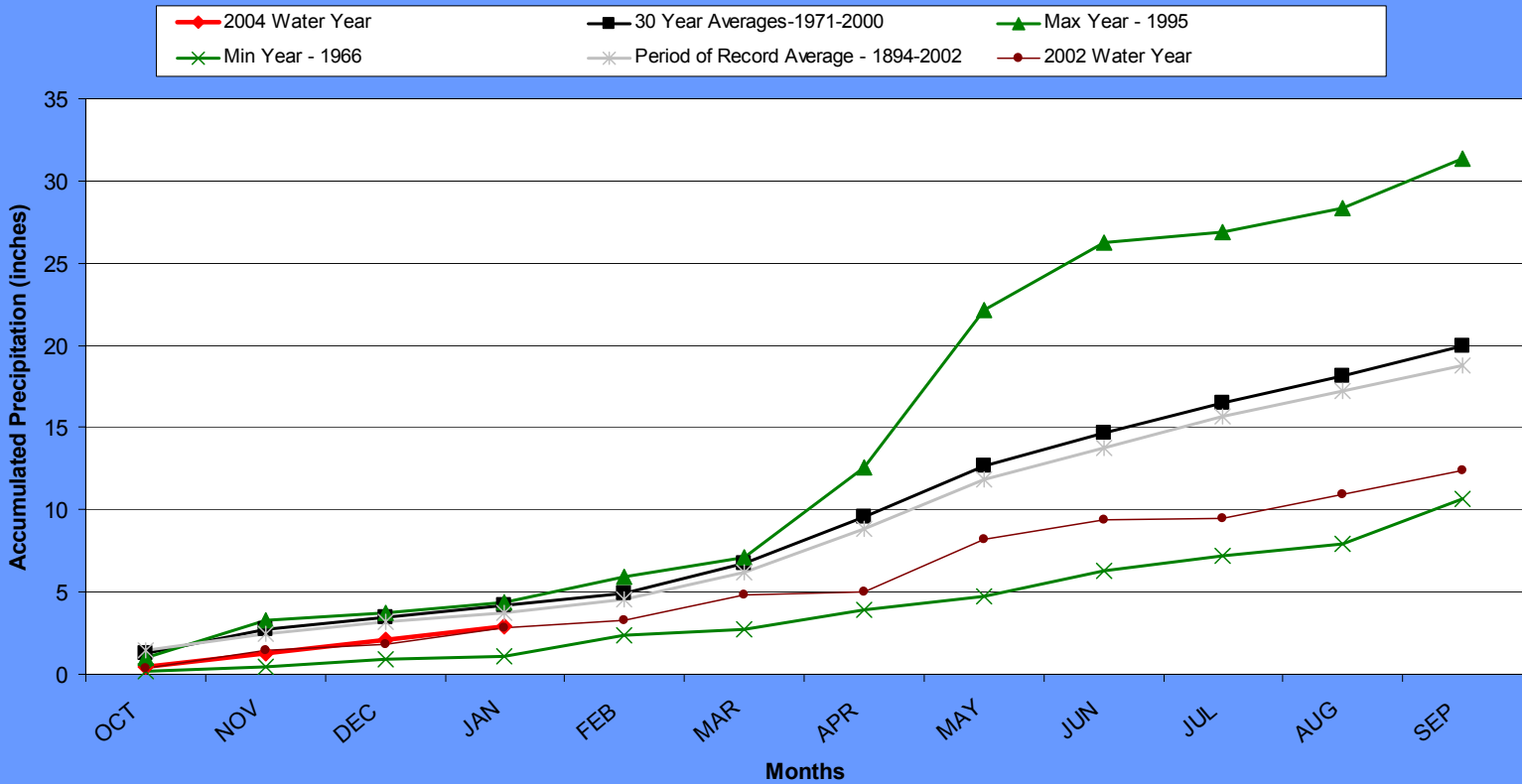
Division 7 - Leroy

Leroy 5SW 2004 Water Year (through Oct '03 - Jan '04)



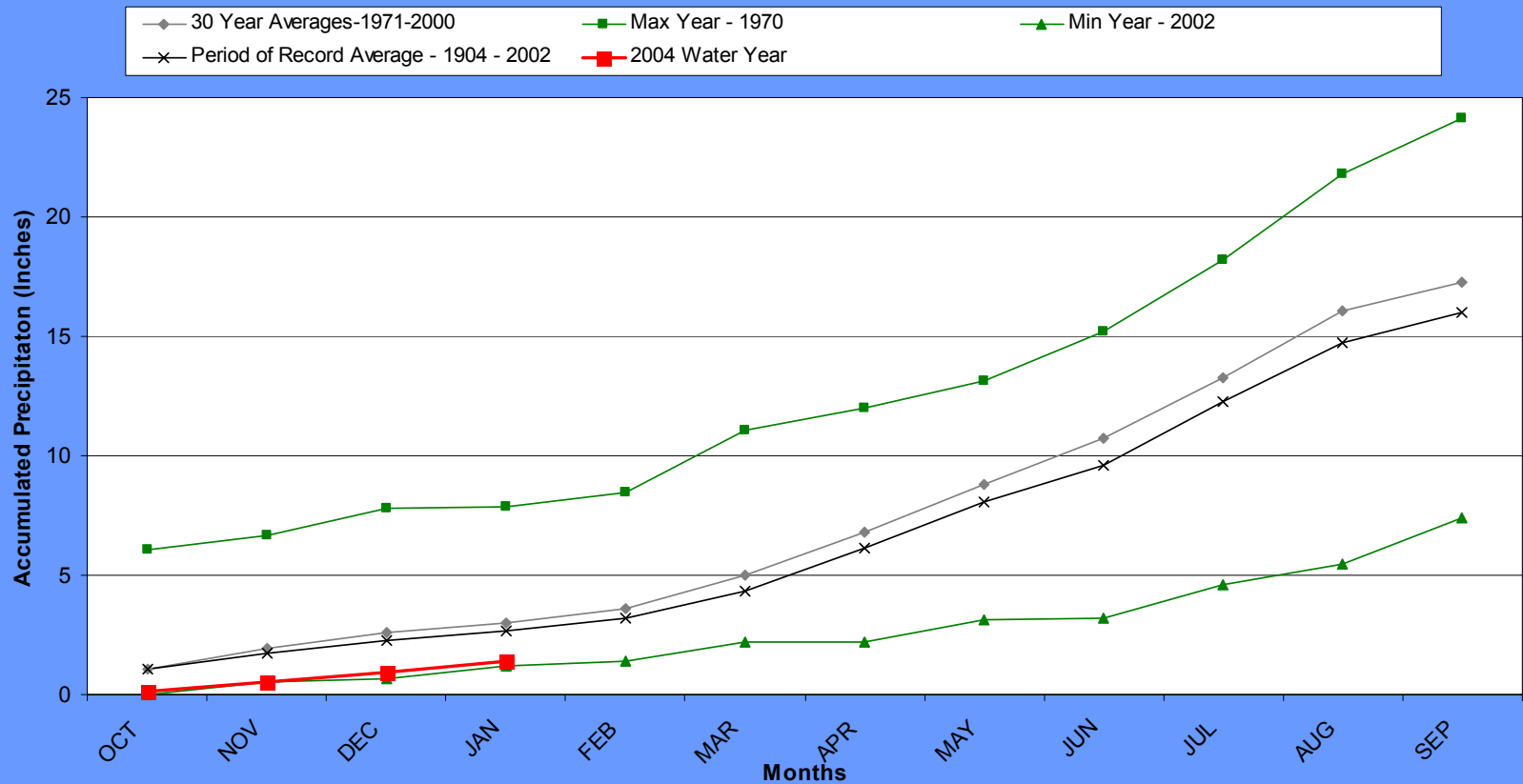
Division 8 – Boulder

Boulder 2004 Water Year through Oct '03 - Jan '04



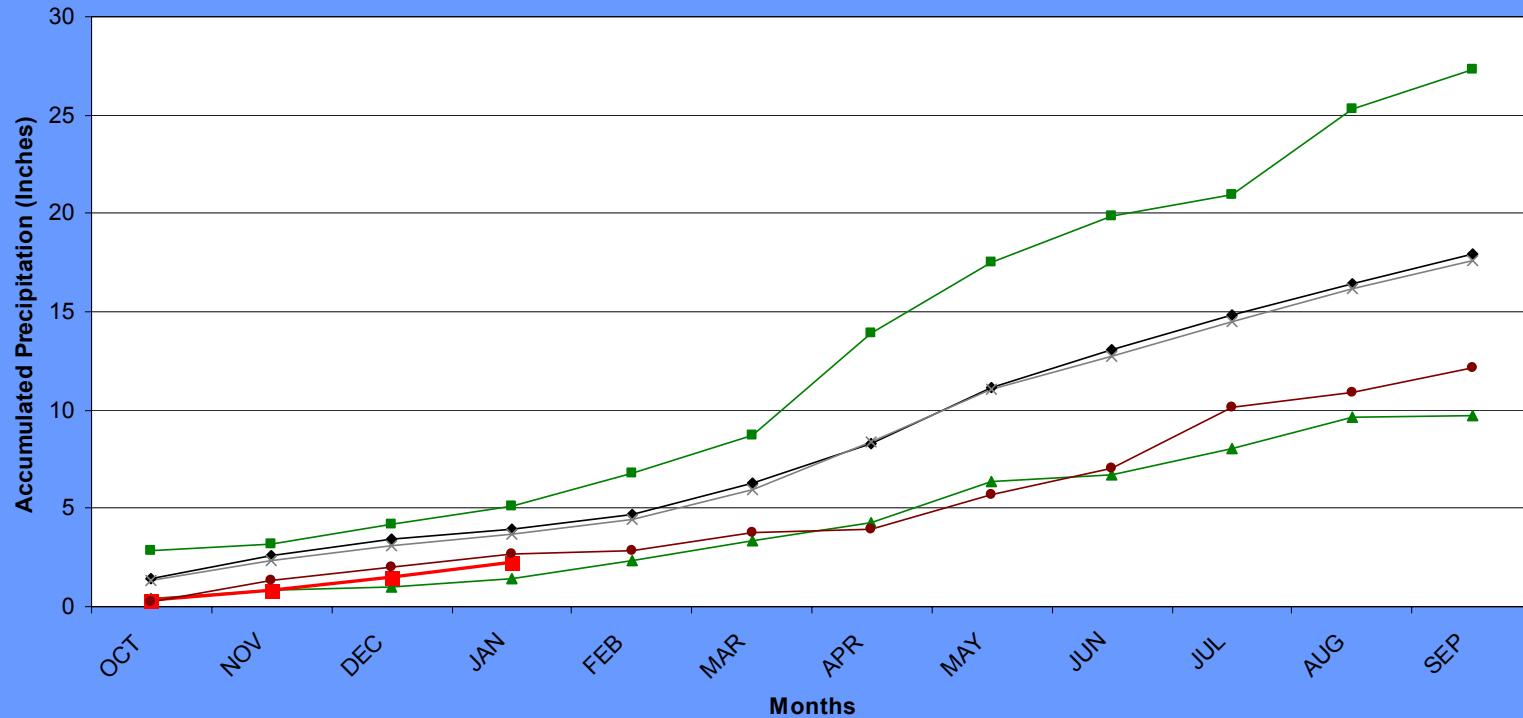
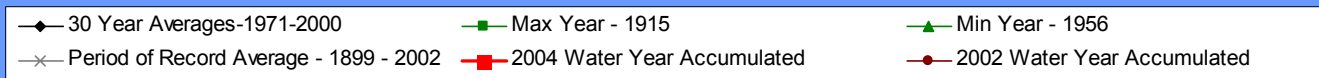
Division 8 – Cheesman

Cheesman 2004 Water Year (through Oct '03 - Jan '04)



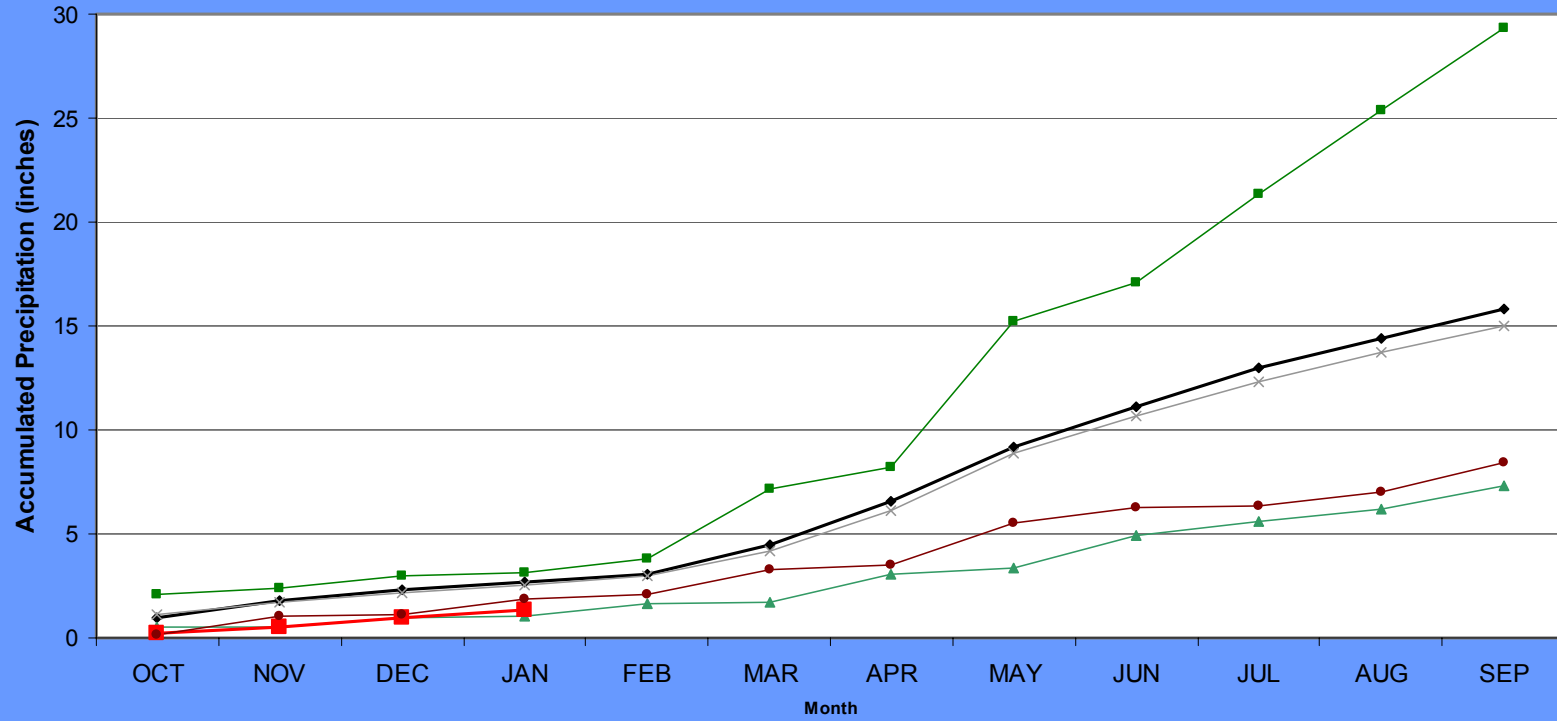
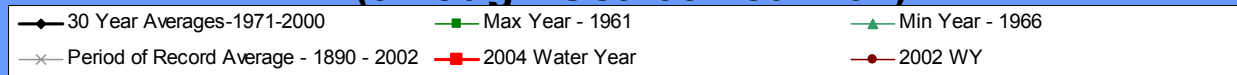
Division 8 – Kassler

Kassler 2004 Water Year (through Oct '03 - Jan '04)

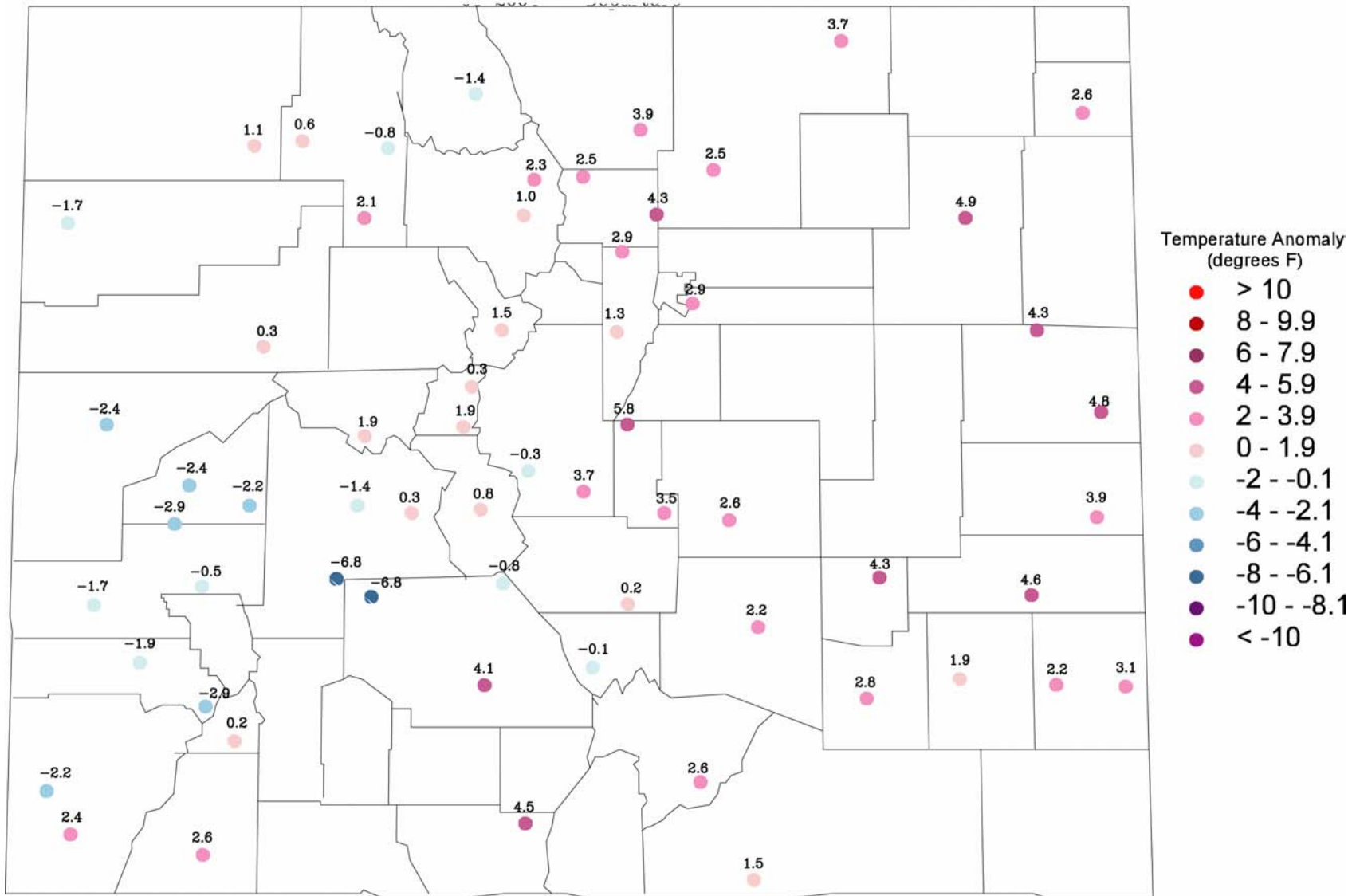


Division 8 – Fort Collins

Fort Collins 2004 Water Year (through Oct '03 - Jan '04)

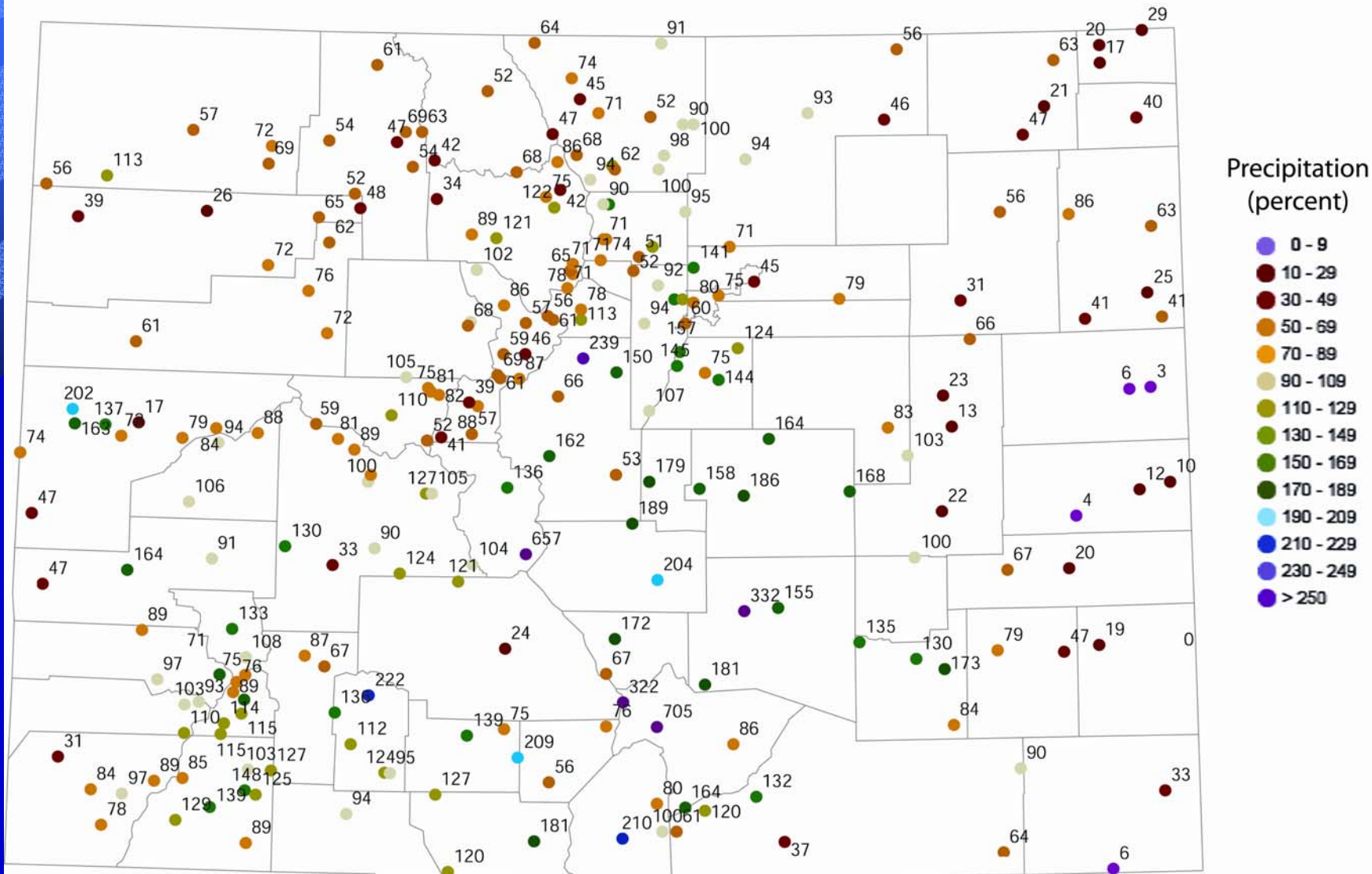


COLORADO



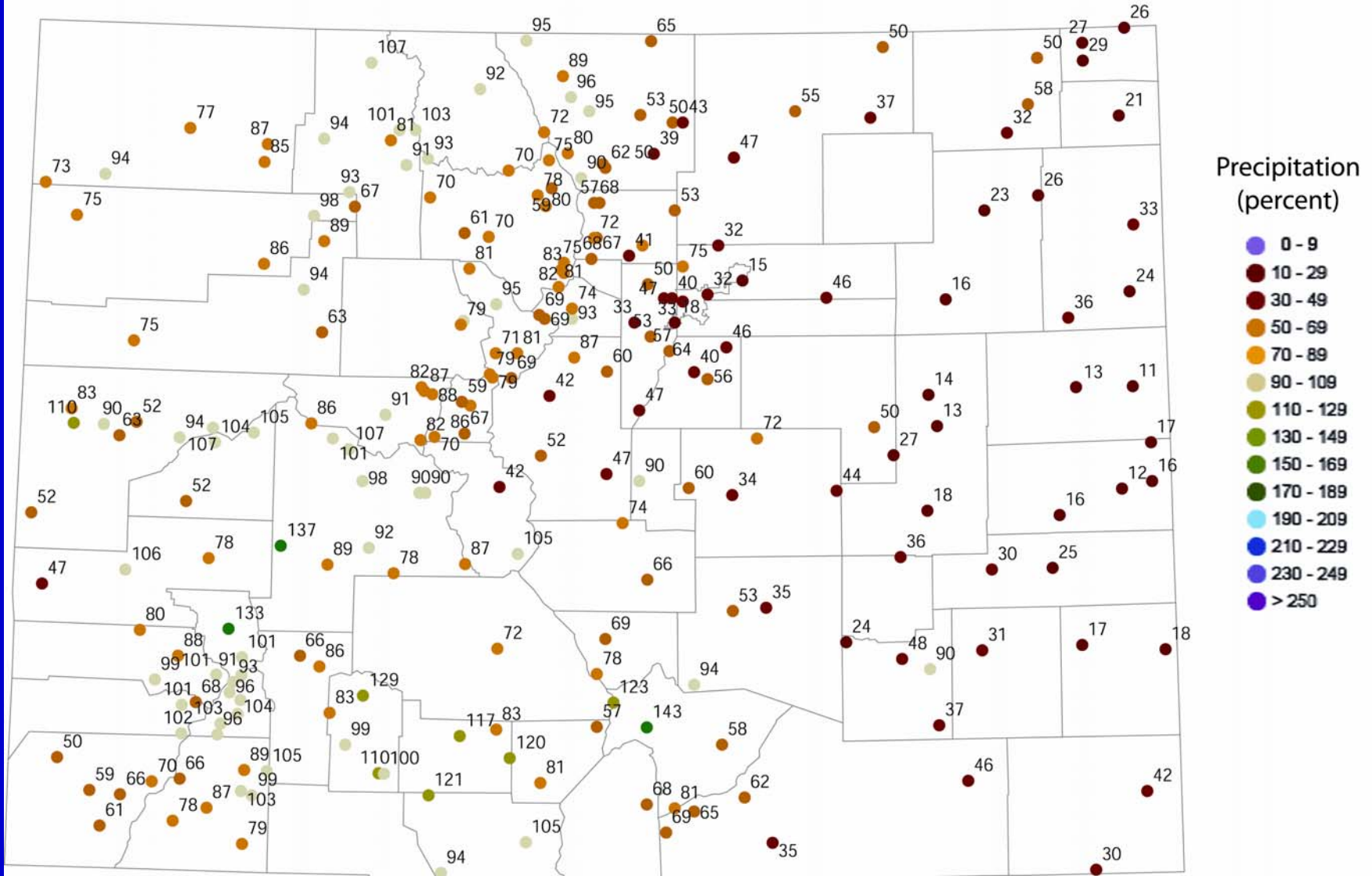
January 2004 temperature departures from the 1971-2000 averages.

COLORADO



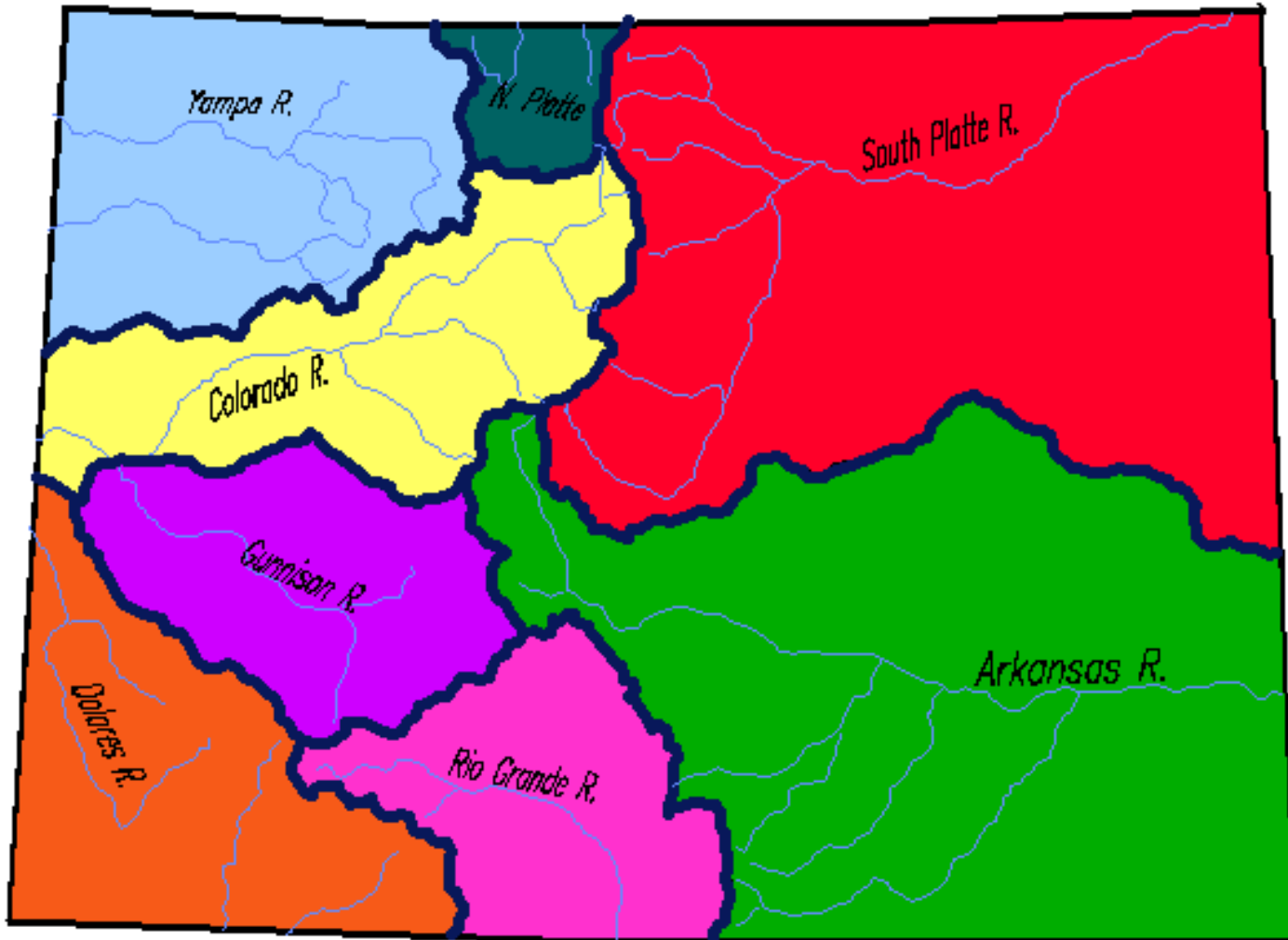
January 2004 precipitation as a percent of the 1971-2000 average.

COLORADO



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

Colorado SNOTEL Basins

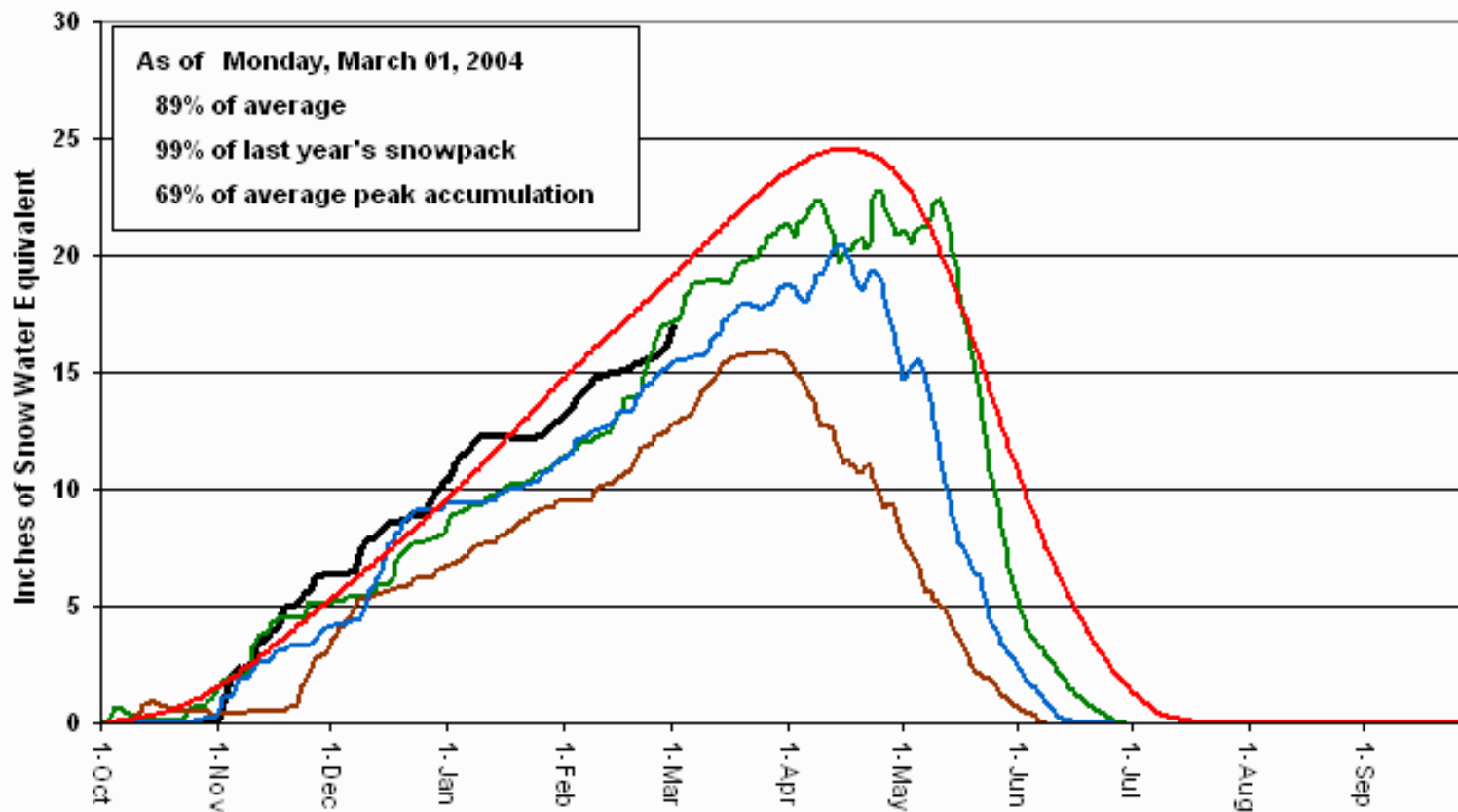


<http://www.co.nrcs.usda.gov/snow/data/basins.html>



Yampa & White Basin Snowpack

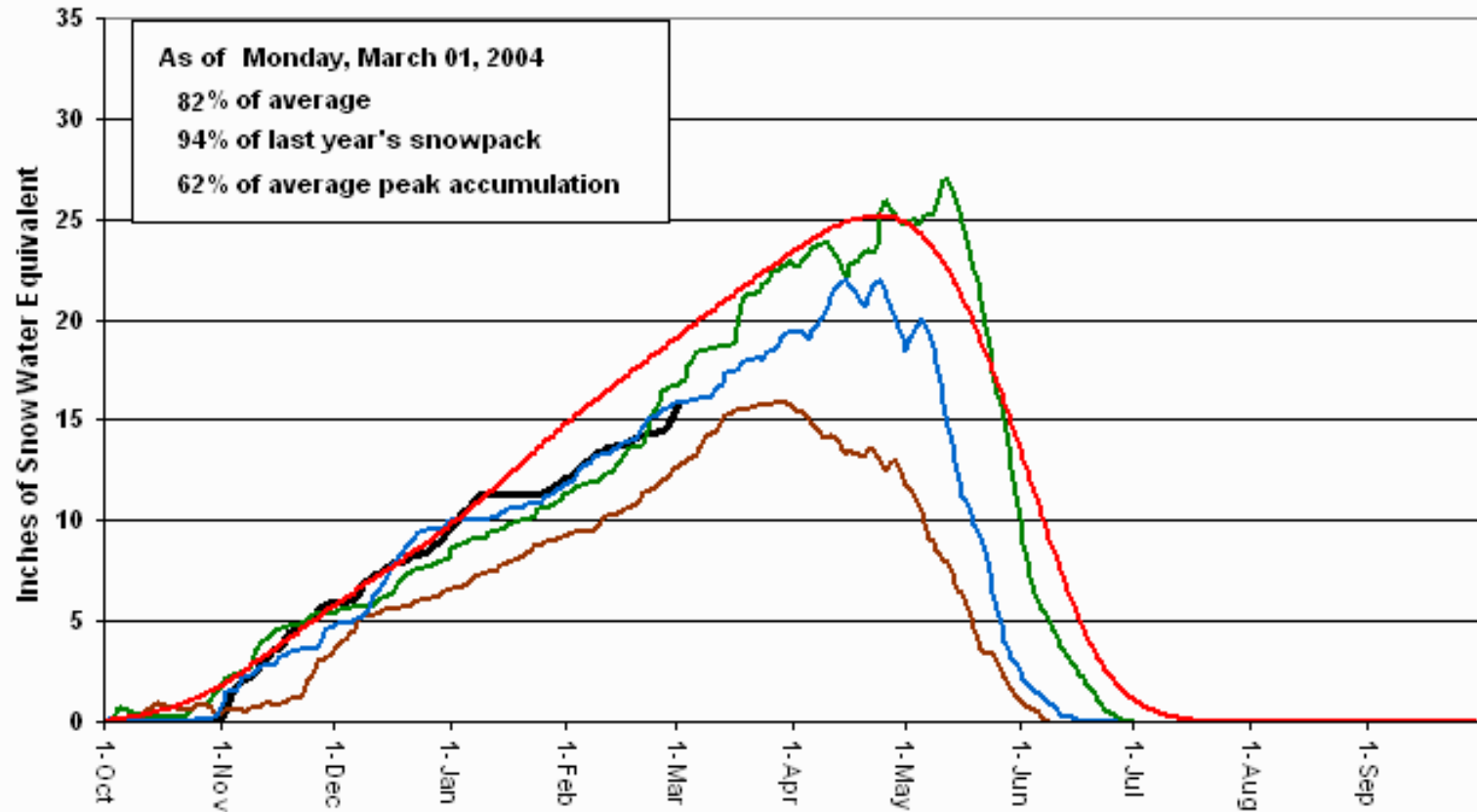
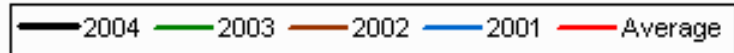
Based on provisional SNOTEL data.





North Platte Basin Snowpack

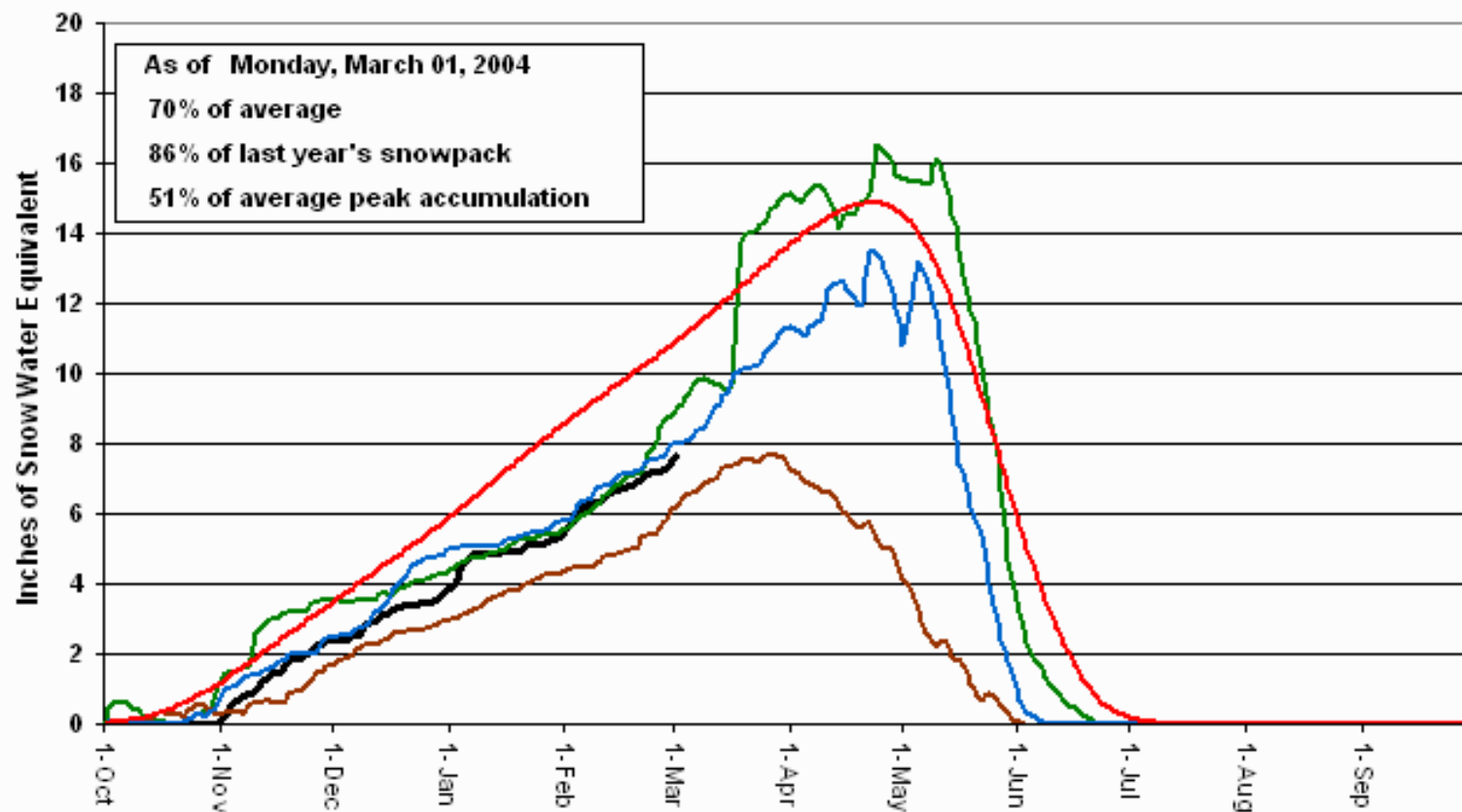
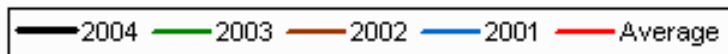
Based on provisional SNOTEL data.





South Platte Basin Snowpack

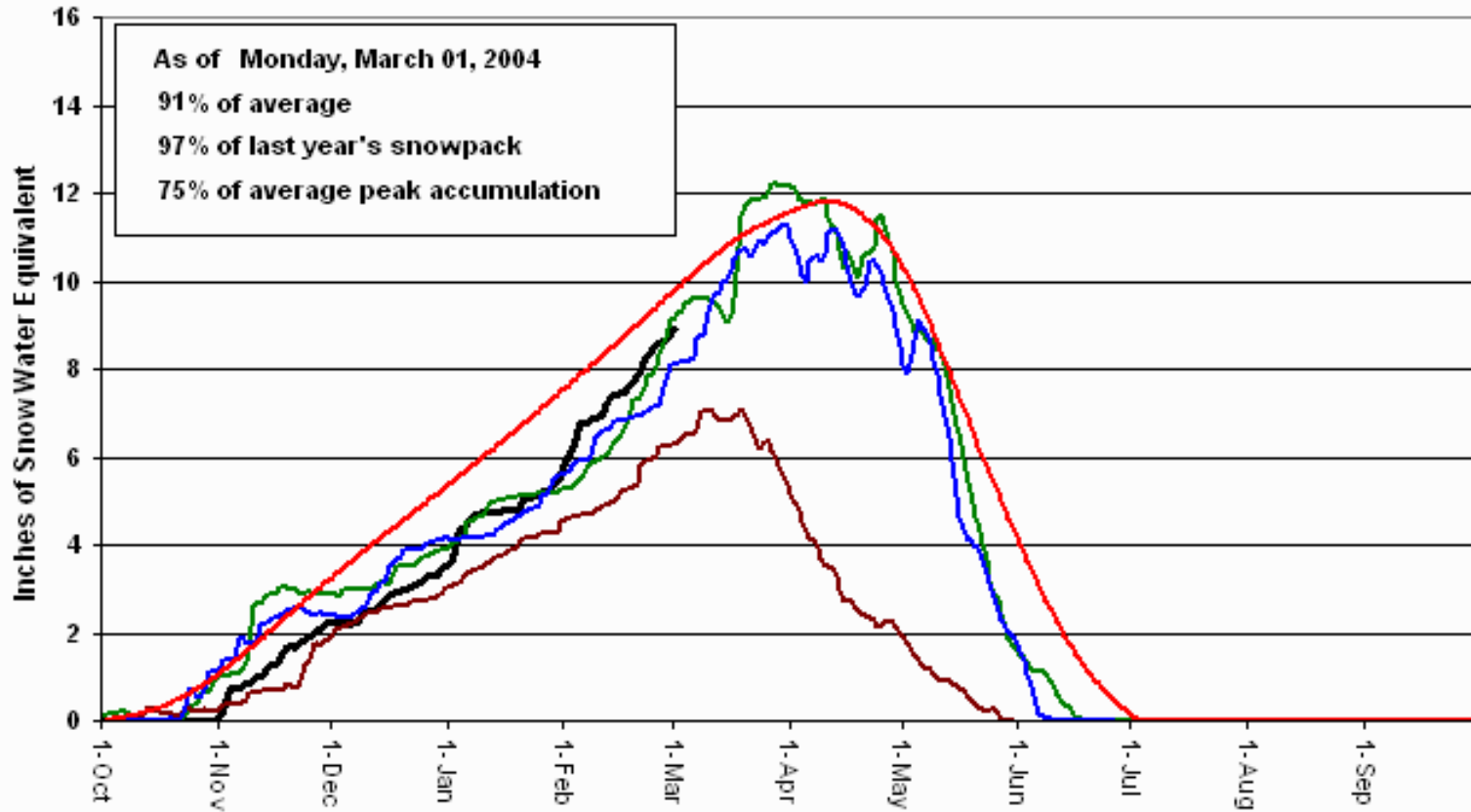
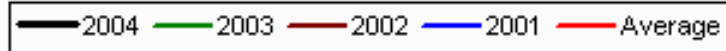
Based on provisional SNOTEL data.





Arkansas Basin Snowpack

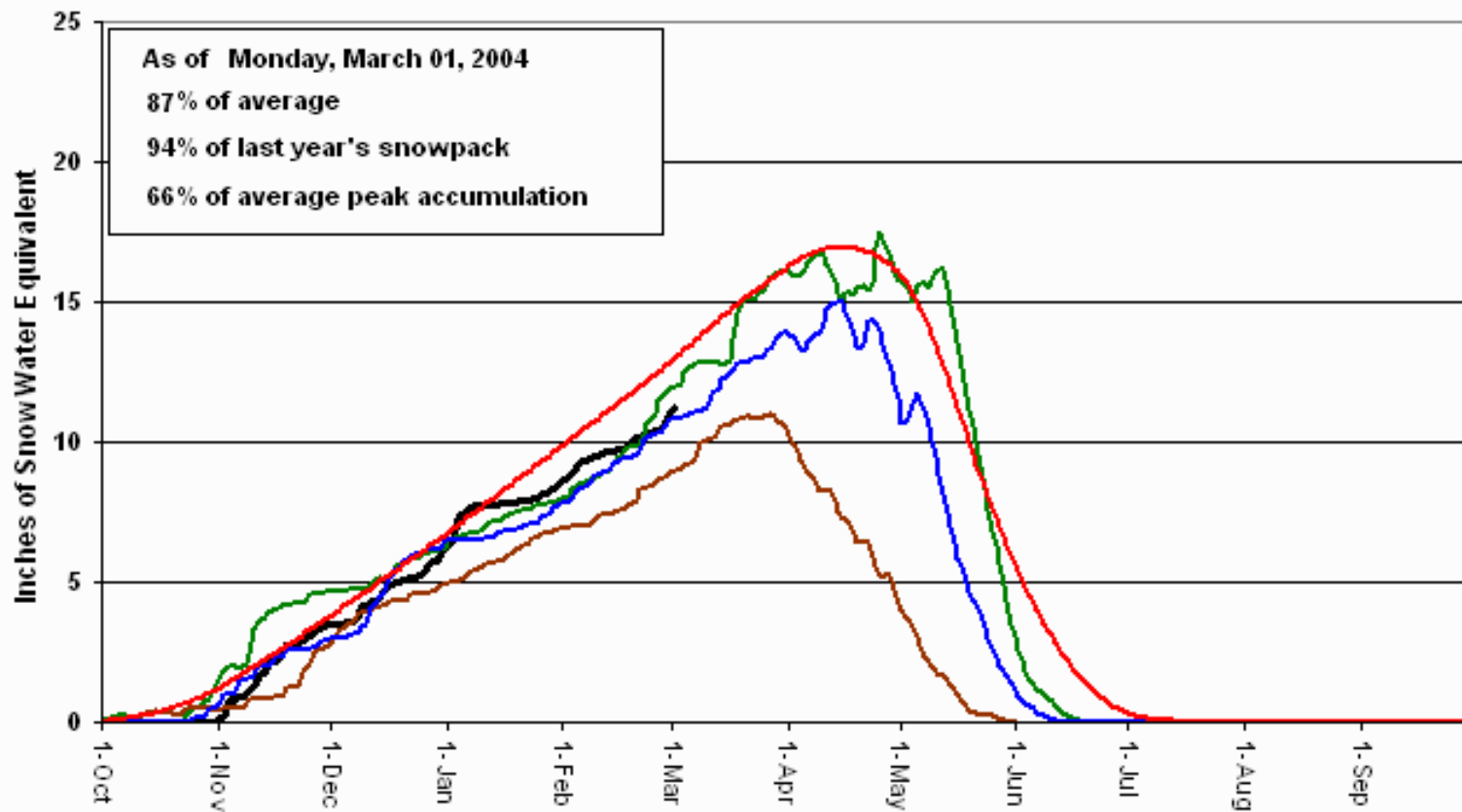
Based on provisional SNOTEL data.





Colorado Basin Snowpack

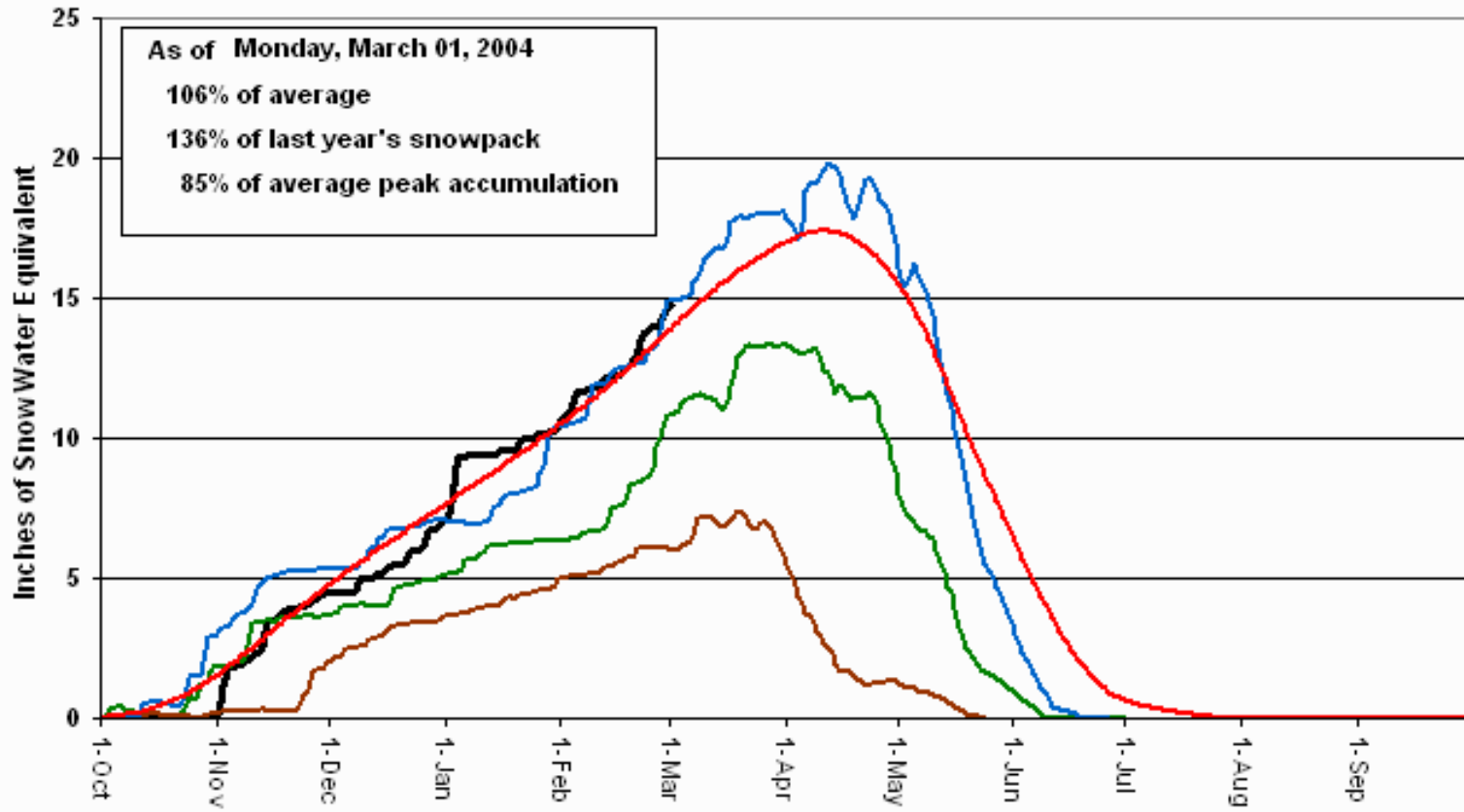
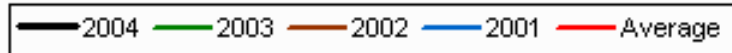
Based on provisional SNOTEL data.





Rio Grande Basin Snowpack

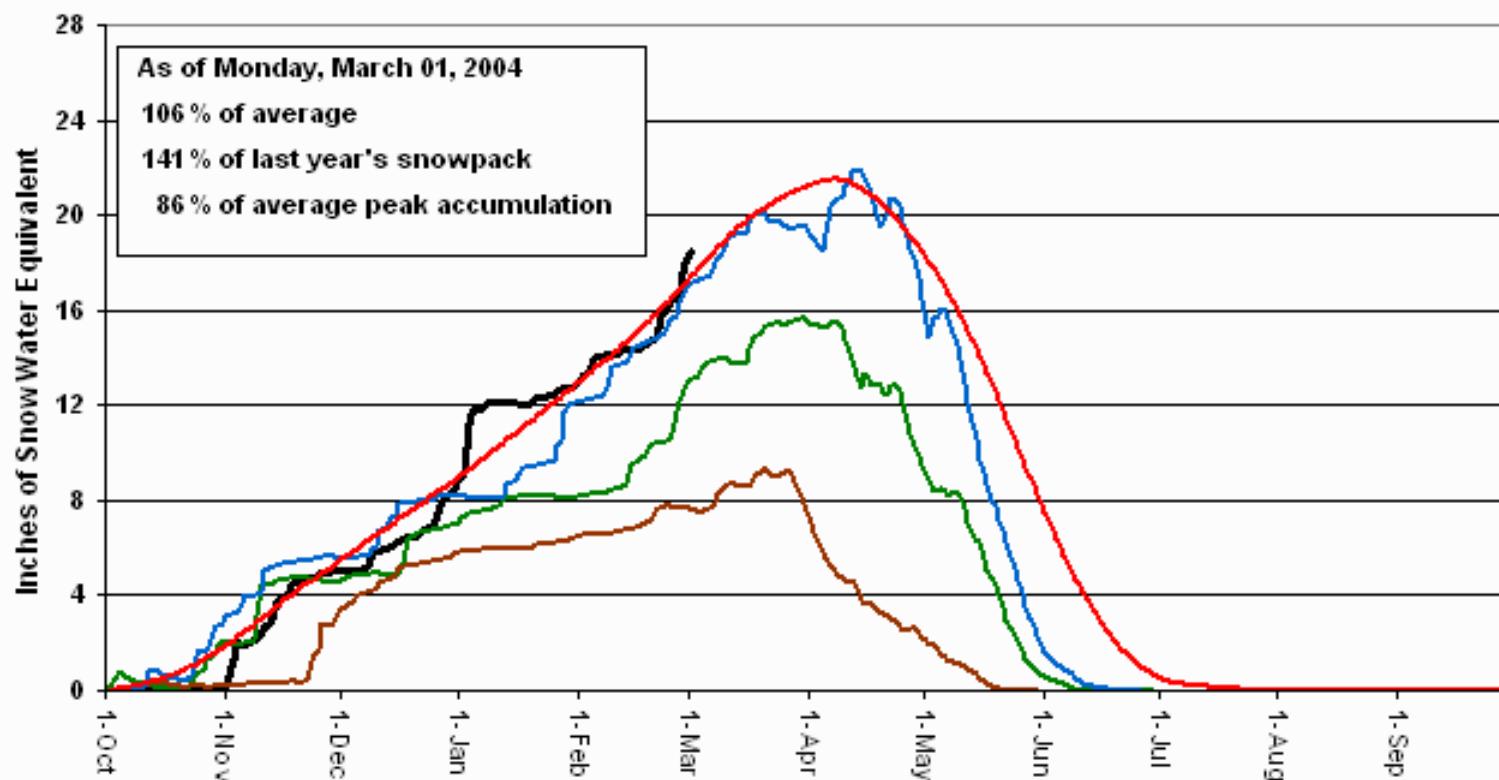
Based on provisional SNOTEL data.





San Juan, Animas, Dolores, & San Miguel Basin Snowpack

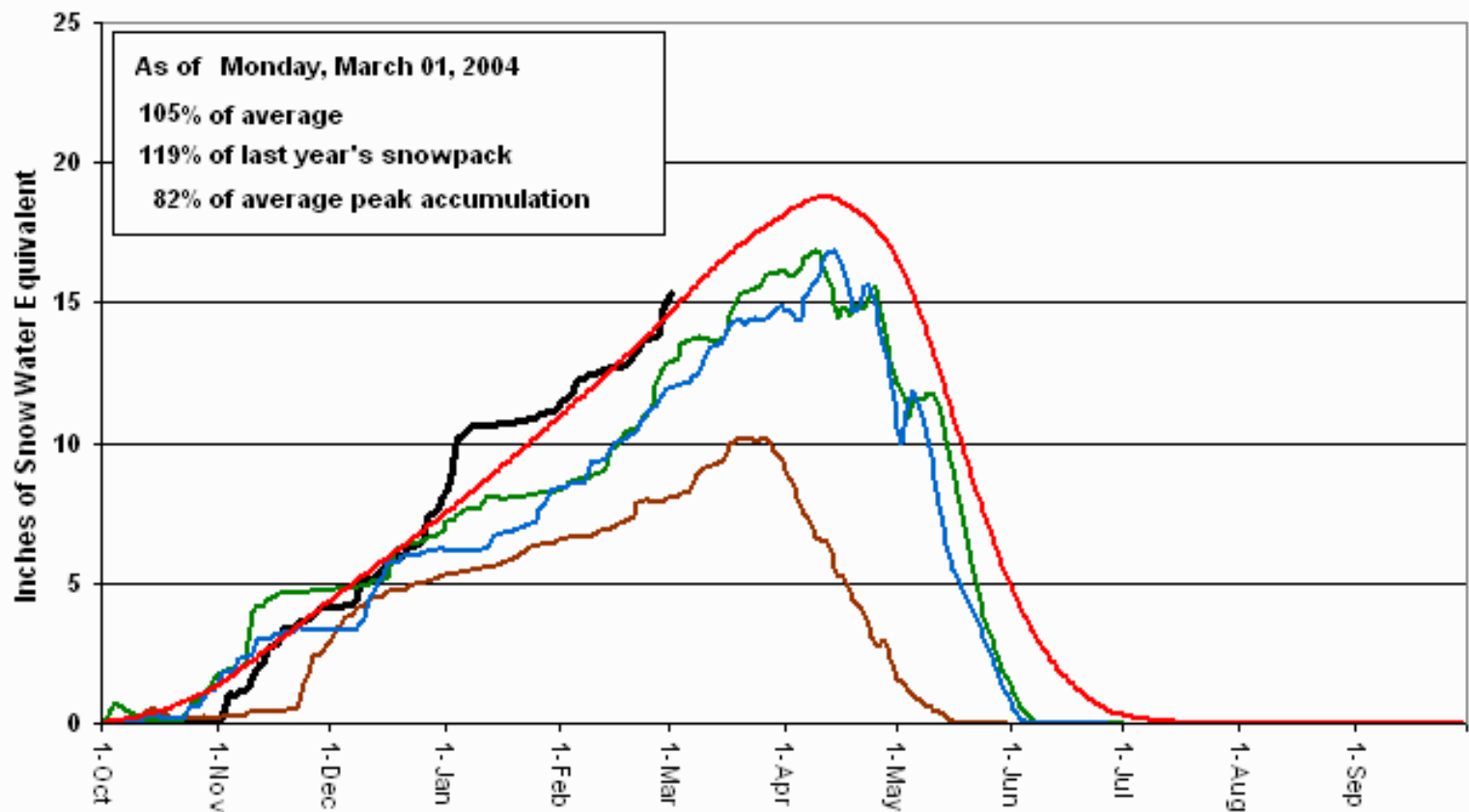
Based on provisional SNOTEL data.





Gunnison Basin Snowpack

Based on provisional SNOTEL data.



Definition of Standardized Precipitation Index (SPI)

- Deviation from average in terms of standard deviation. For example, an SPI of -2.0 corresponds to an event that occurs less than 5% of the time.

<u>SPI Value</u>	<u>Drought Category</u>
0 to -0.99	Mild Drought
-1.00 to -1.49	Moderate Drought
-1.50 to -1.99	Severe Drought
≤ -2.00	Extreme Drought

3 Month SPI

Colorado

1/2004 3 mon. SPI



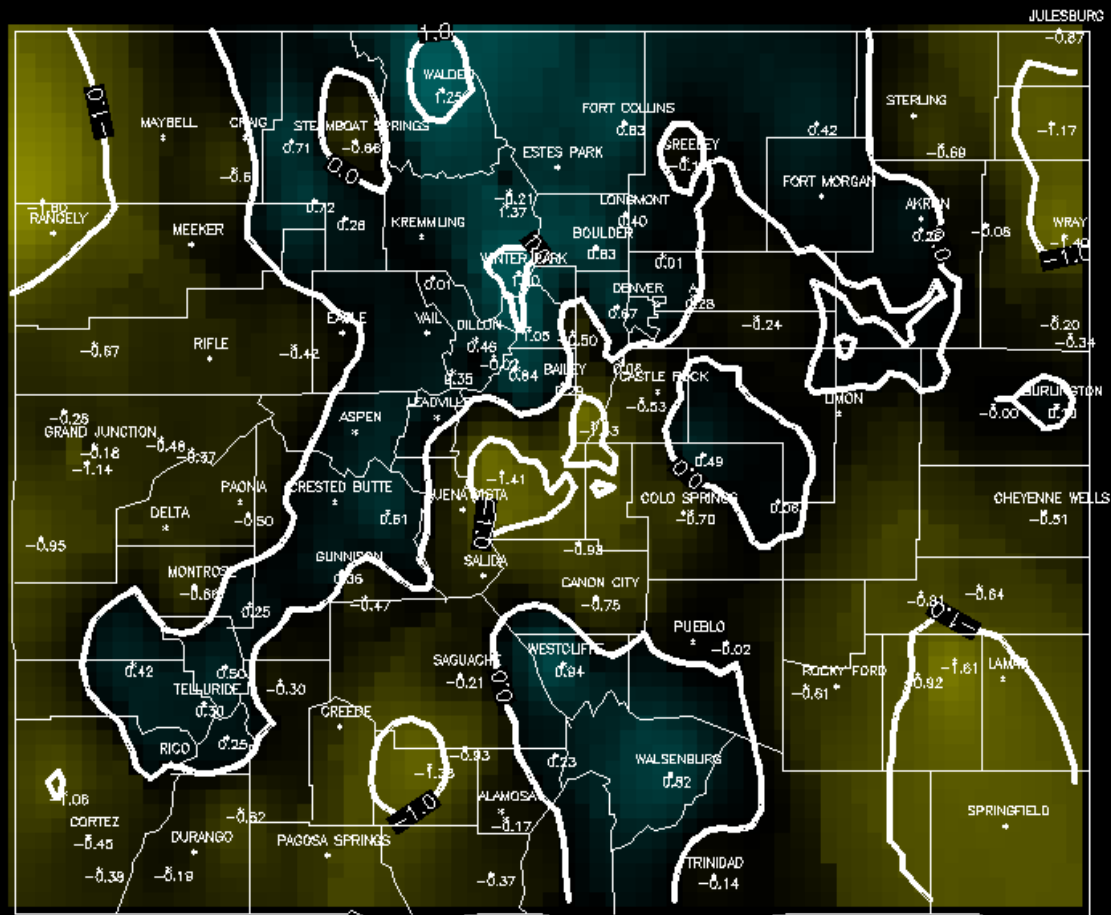
100
75
50
25
0
-25
-50
-75

Produced by:
Colorado Climate Center
Fort Collins, CO

12 Month SPI

Colorado

1/2004 12 mon. SPI



100% < 2.0
99% < 1.0
86% < 0.0

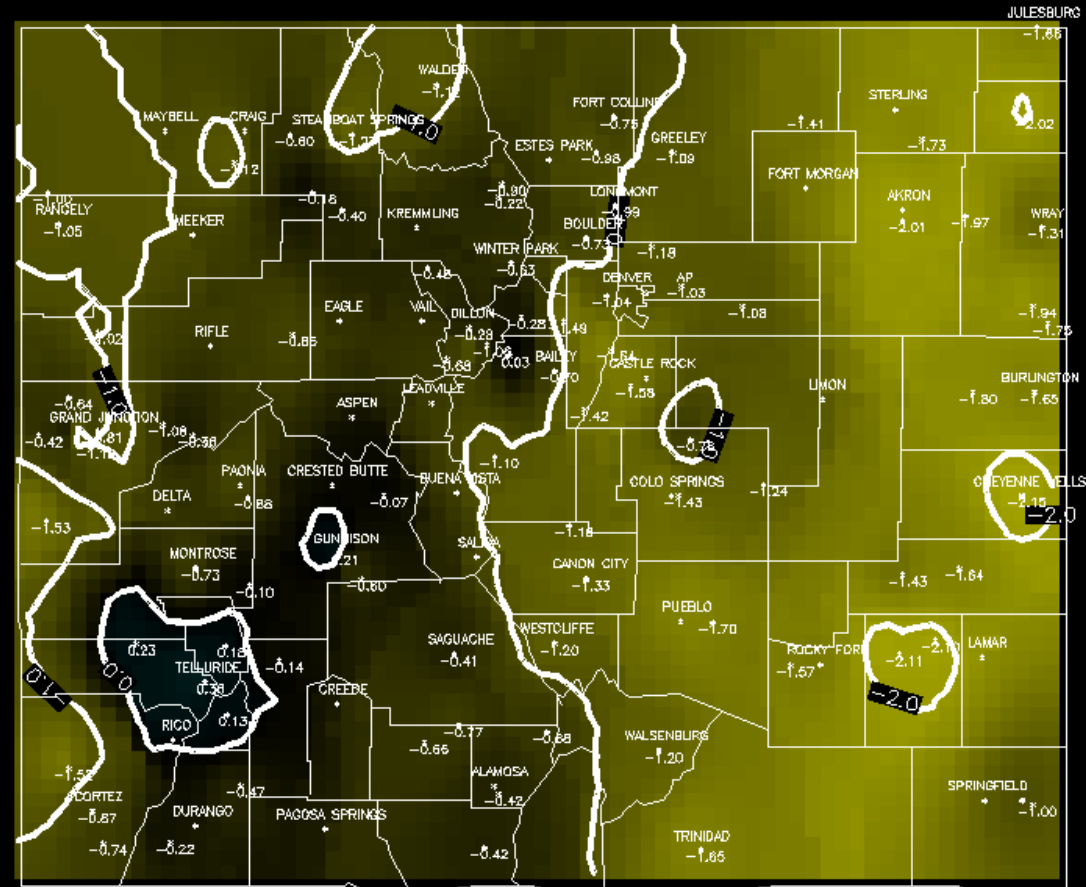
10% < -1.0
0% < -2.0
0% < -3.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 12 mon. SPI – Projected 6 mon. at P=0.20



100% < 2.0
100% < 1.0
98% < 0.0

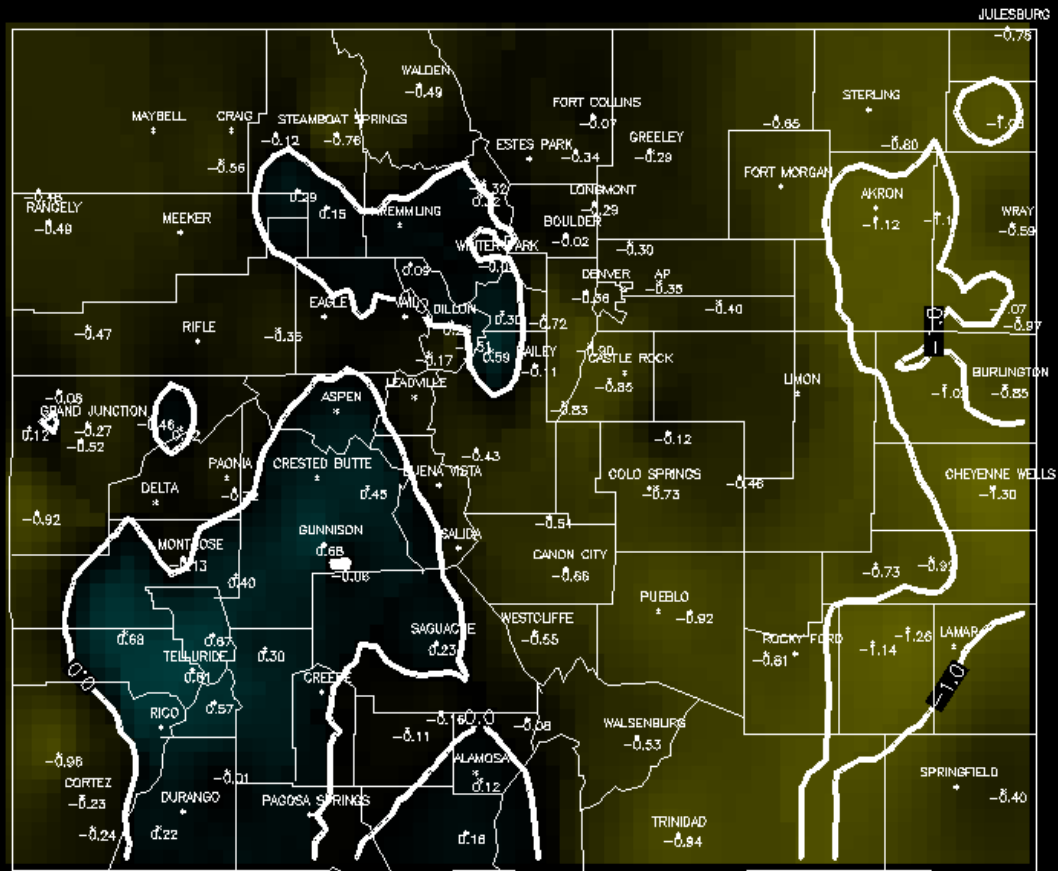
54% < -1.0
1% < -2.0
0% < -3.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 12 mon. SPI - Projected 6 mon. at P=0.50



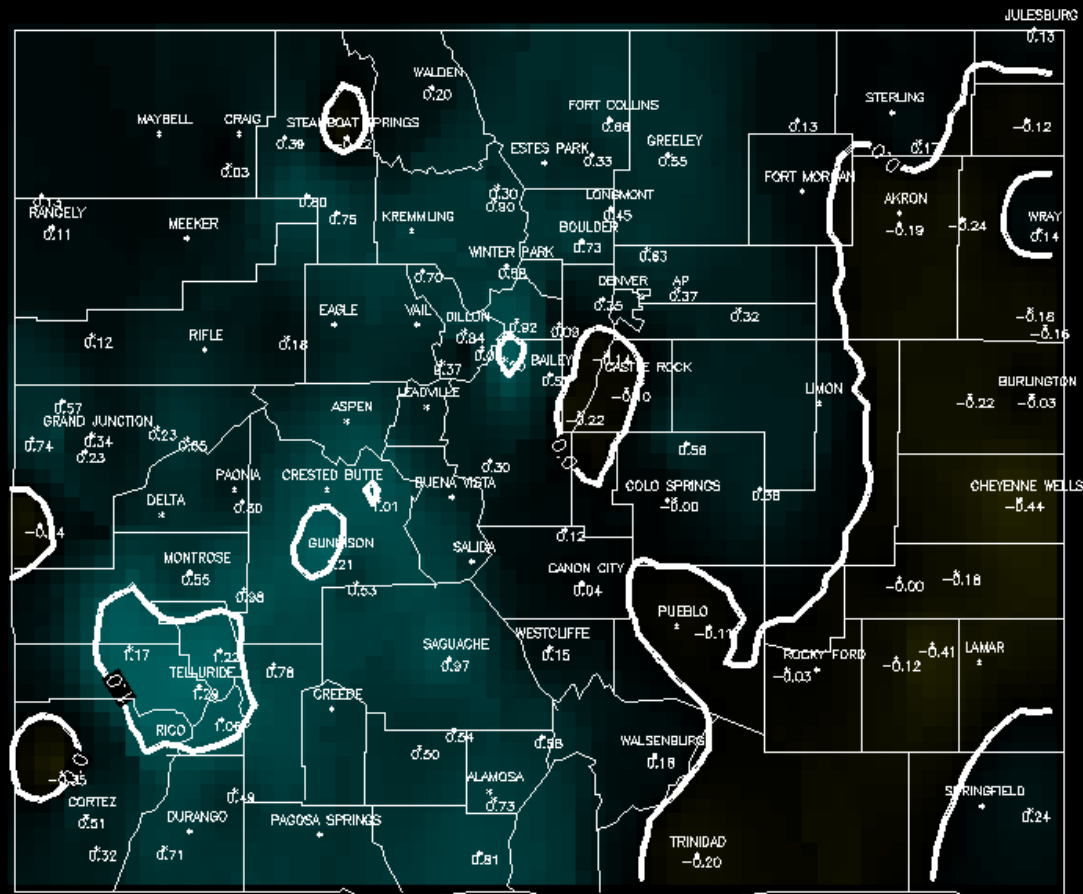
100% < SPI < 2.0
100% < SPI < 1.0
81% < SPI < 0.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 12 mon. SPI – Projected 6 mon. at P=0.80



100 % < 2.0
97 % < 1.0
23 % < 0.0

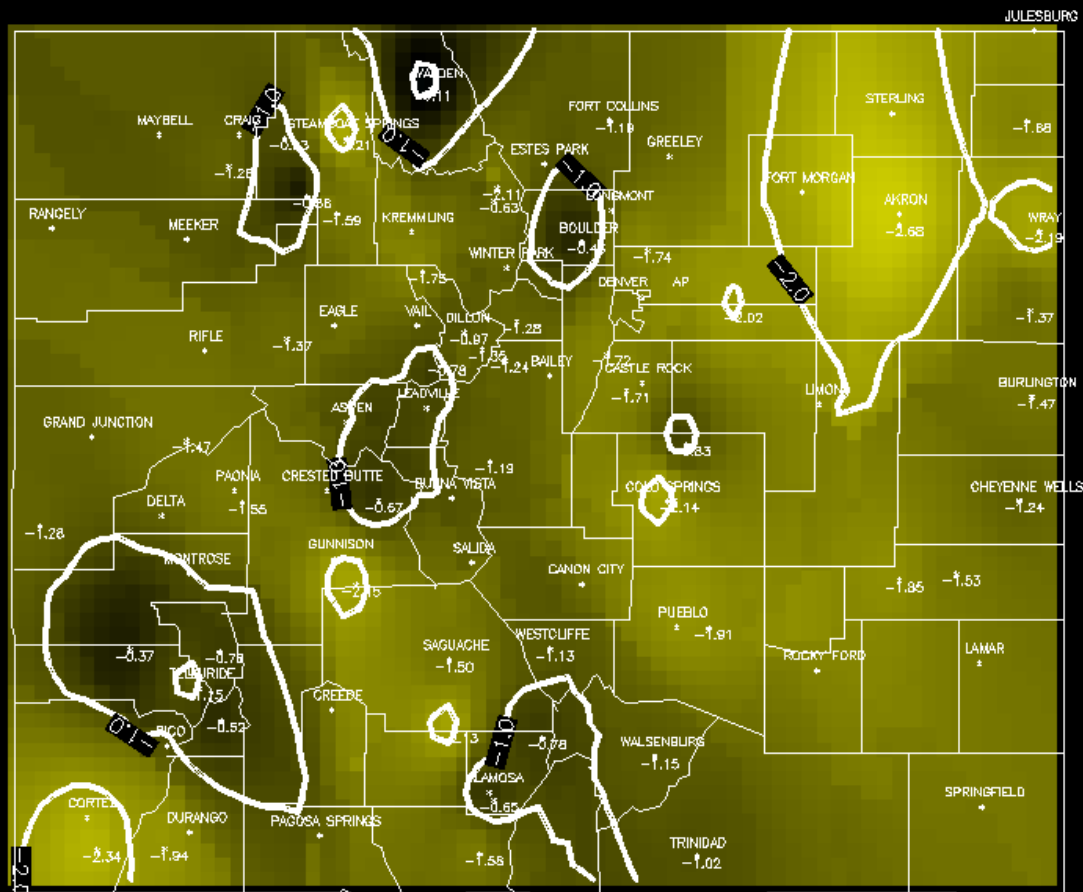
0 % < -1.0
0 % < -2.0
0 % < -3.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 48 mon. SPI – Projected 12 mon. at P=0.20



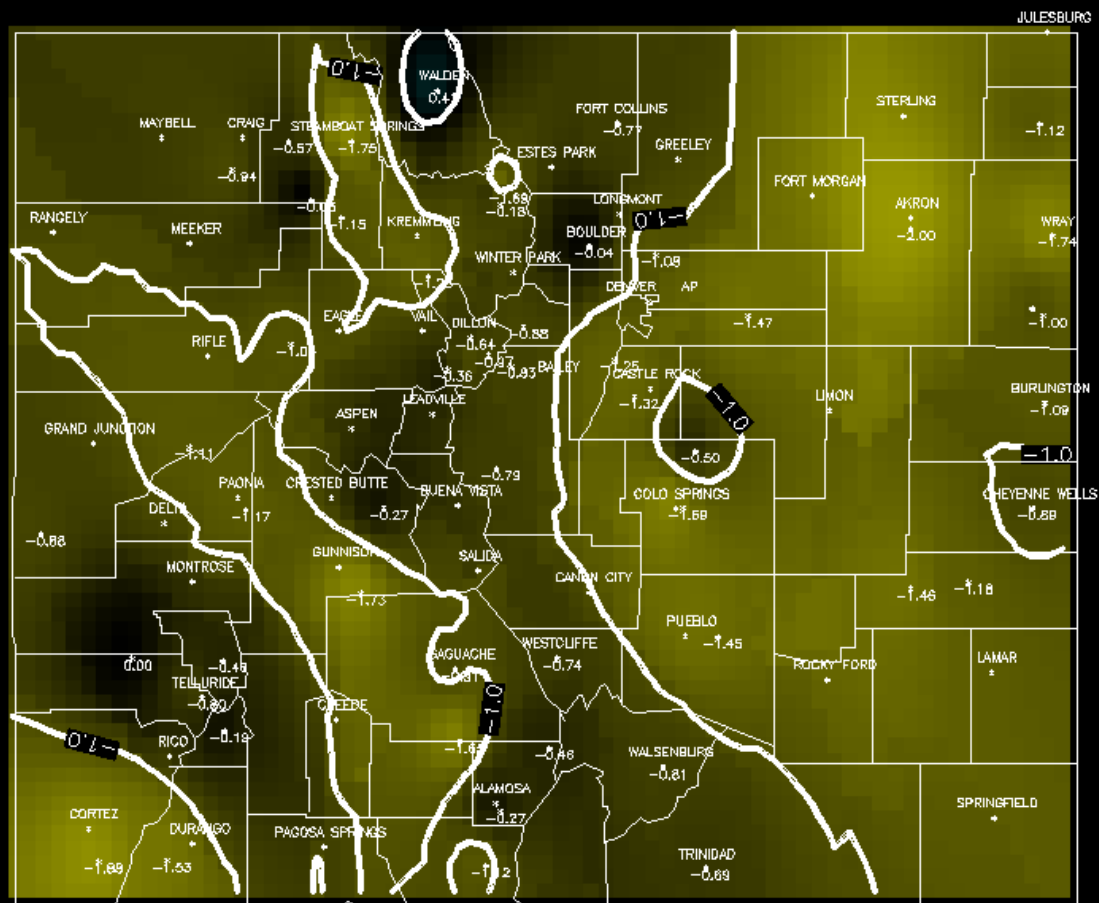
100	▲▲▲	2.0	68	▲	-1.0
100	▲▲	1.0	50	▲	-2.0
100	▲	0.0	0%	▲	-3.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 48 mon. SPI – Projected 12 mon. at P=0.50



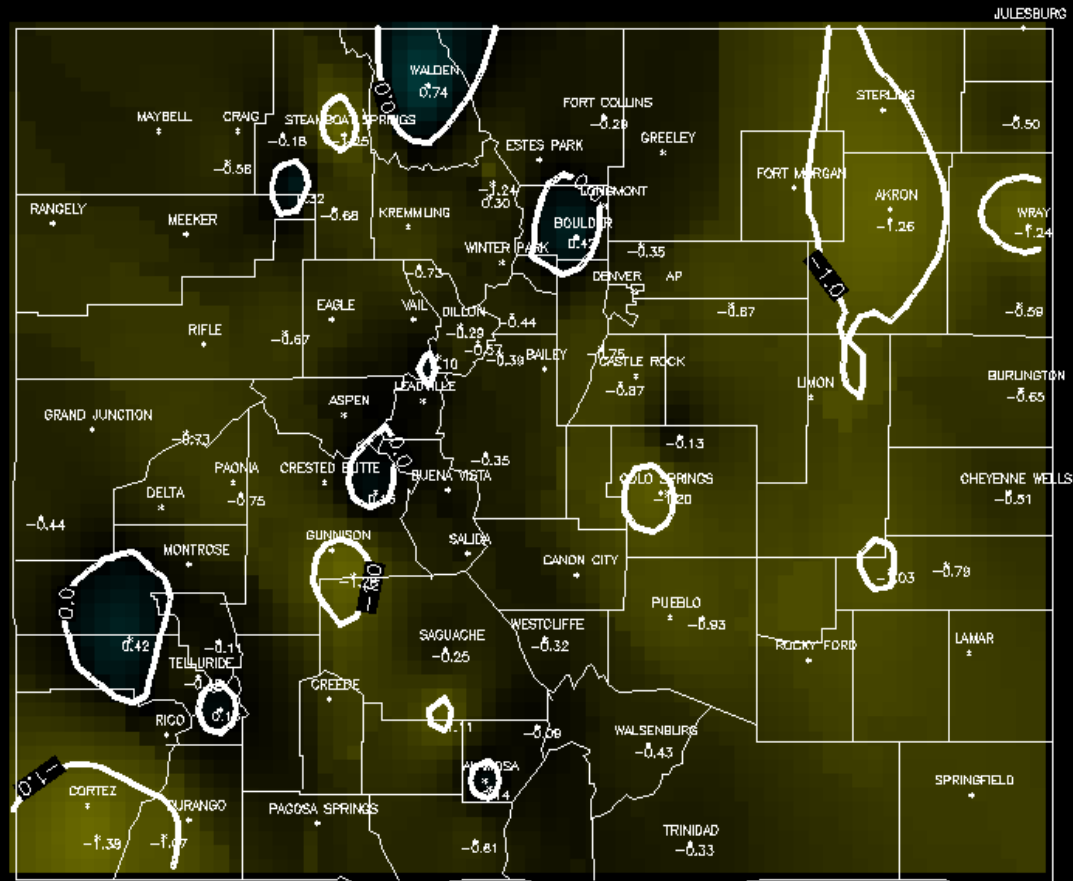
100 % <<< 2.0	52 % <<< -1.0
100 % <<< 1.0	0 % <<< -2.0
99 % <<< 0.0	0 % <<< -3.0

Produced by:
Colorado Climate Center
Fort Collins, CO

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

Colorado

1/2004 48 mon. SPI - Projected 12 mon. at P=0.80

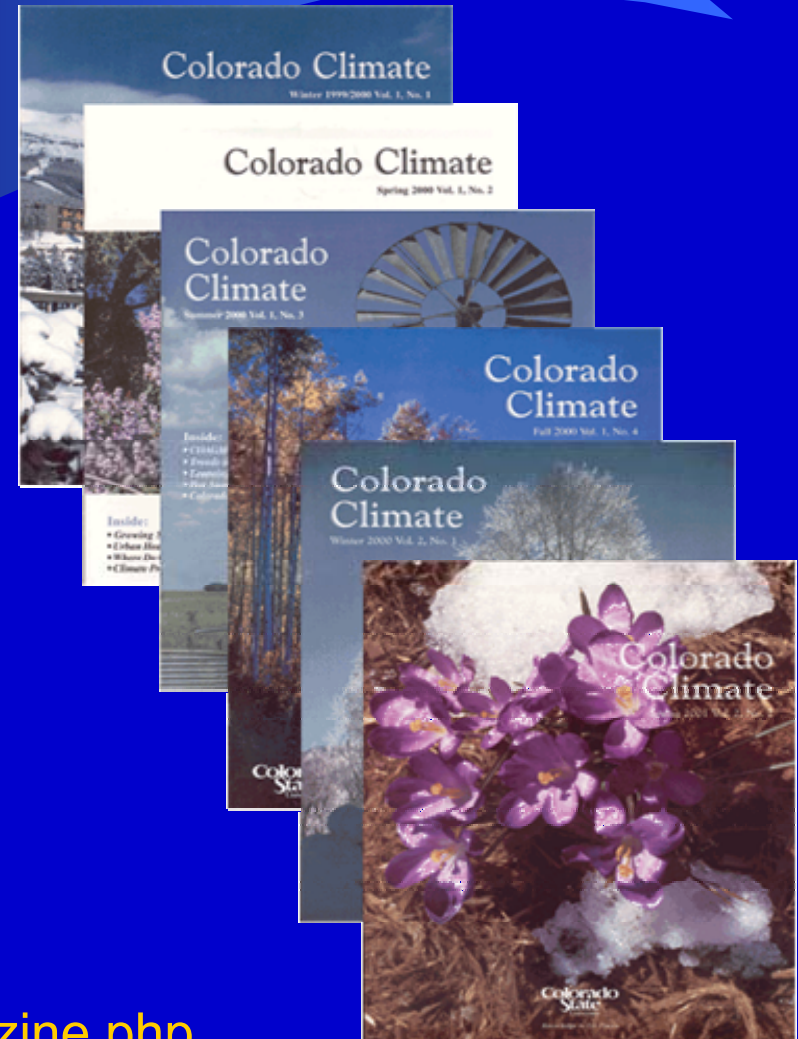


100 % < 2.0
100 % < 1.0
98 % < 0.0

Produced by:
Colorado Climate Center
Fort Collins, CO

Colorado Climate Magazine

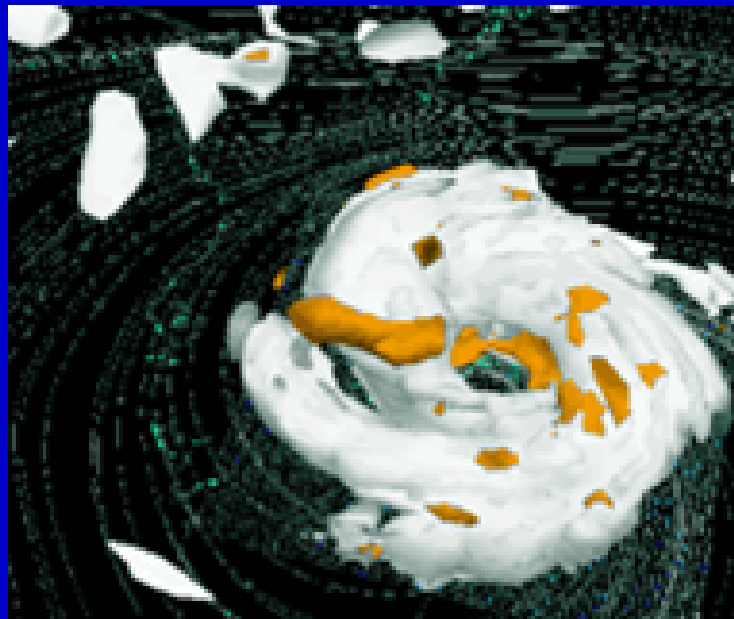
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or Fax: 970-491-3314



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

The Pielke Research Group

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[*http://blue.atmos.colostate.edu*](http://blue.atmos.colostate.edu)



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”*

