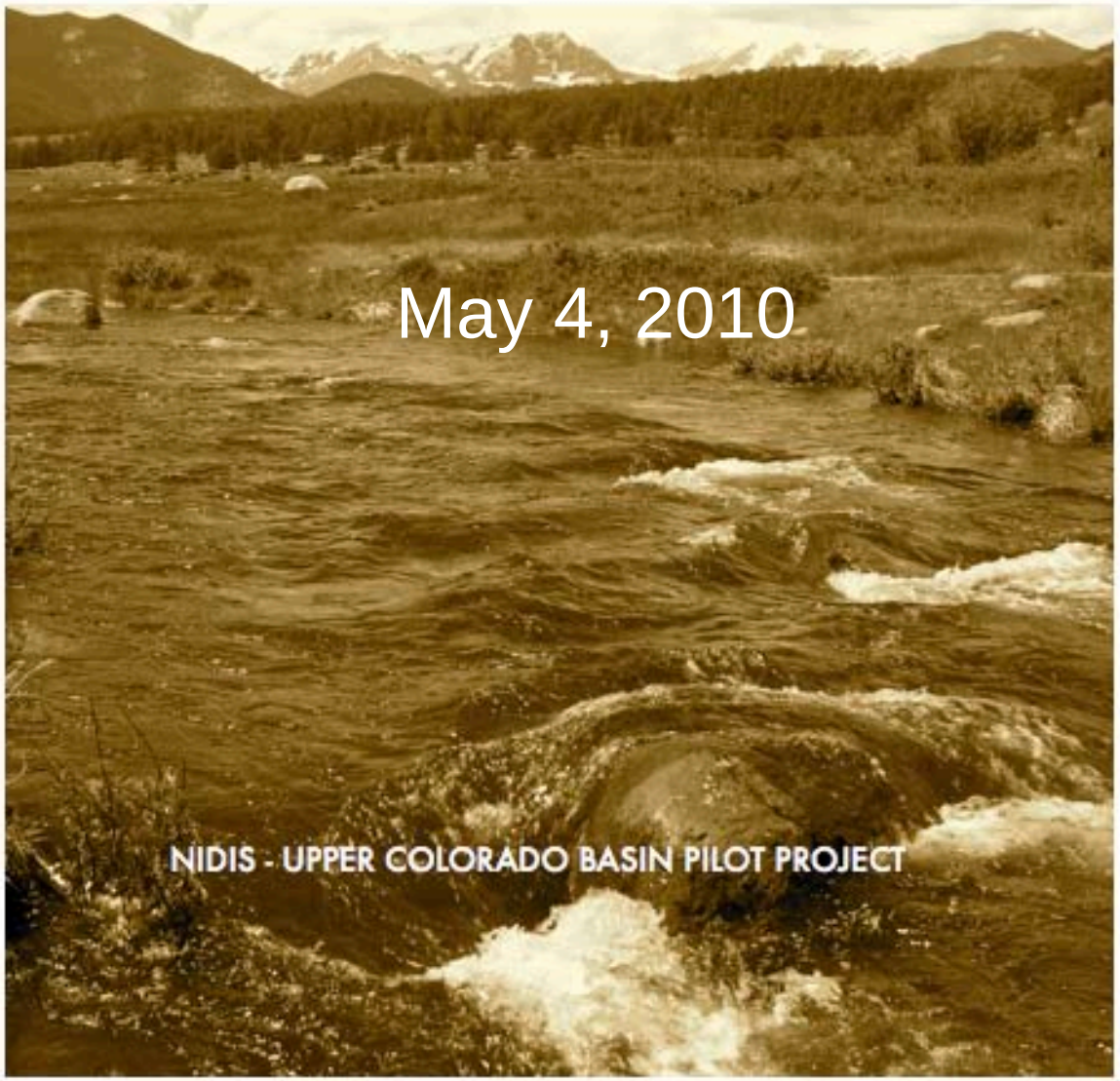
Spring 2010



Weekly Climate, Water & Drought Assessment

Today's Agenda

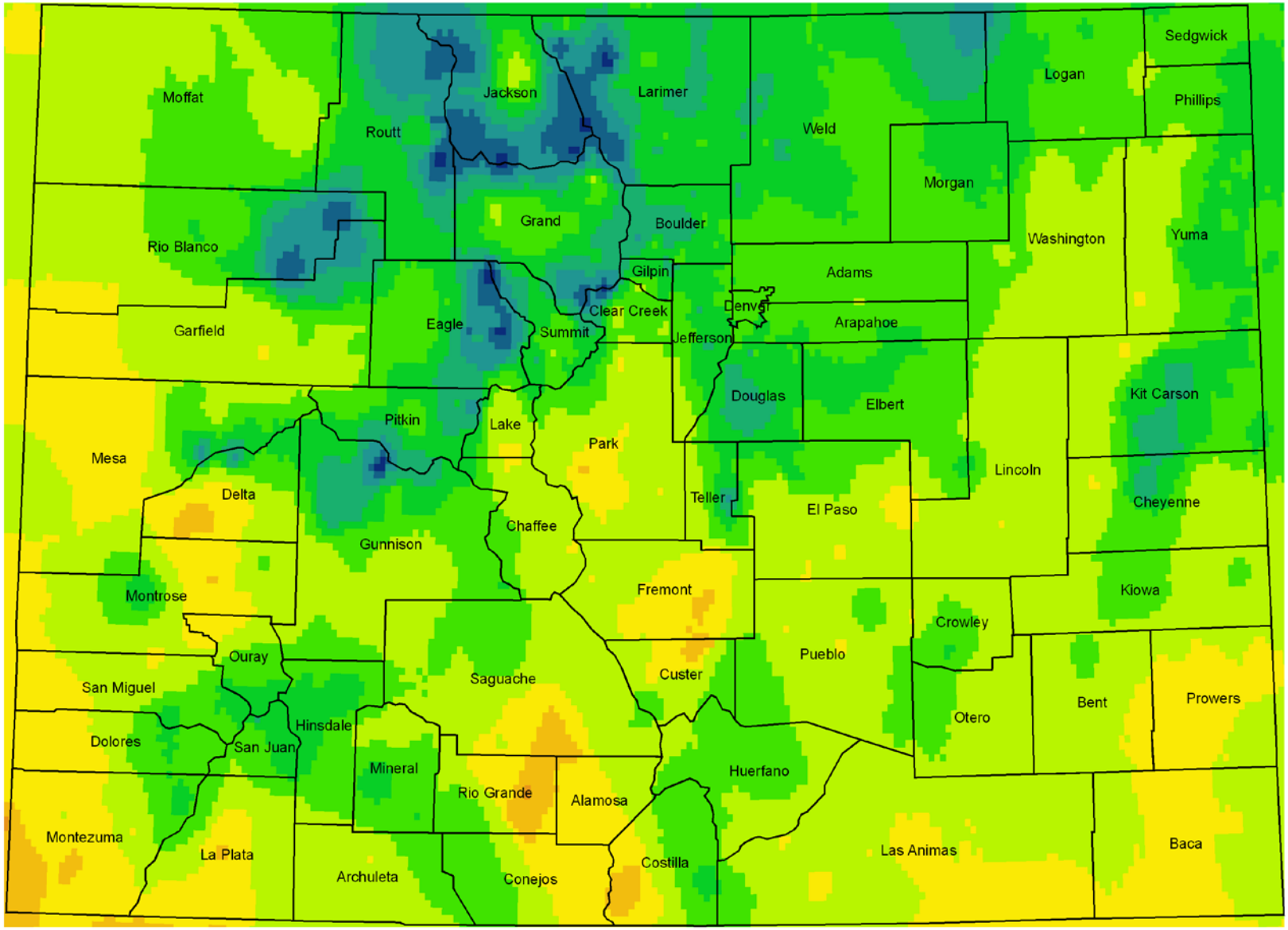
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

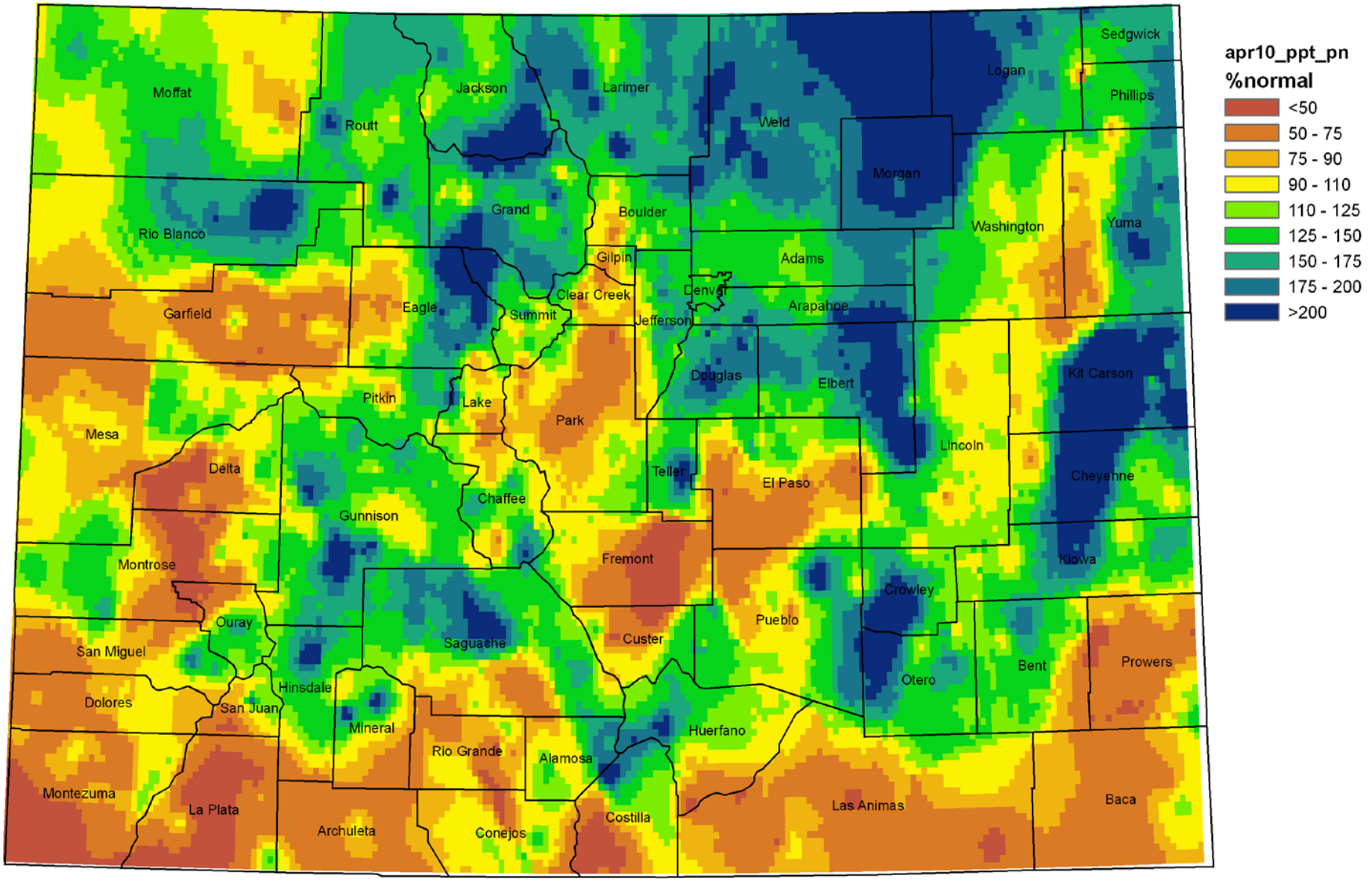
Precipitation/Snowpack Update

Colorado Precipitation (in) April 2010



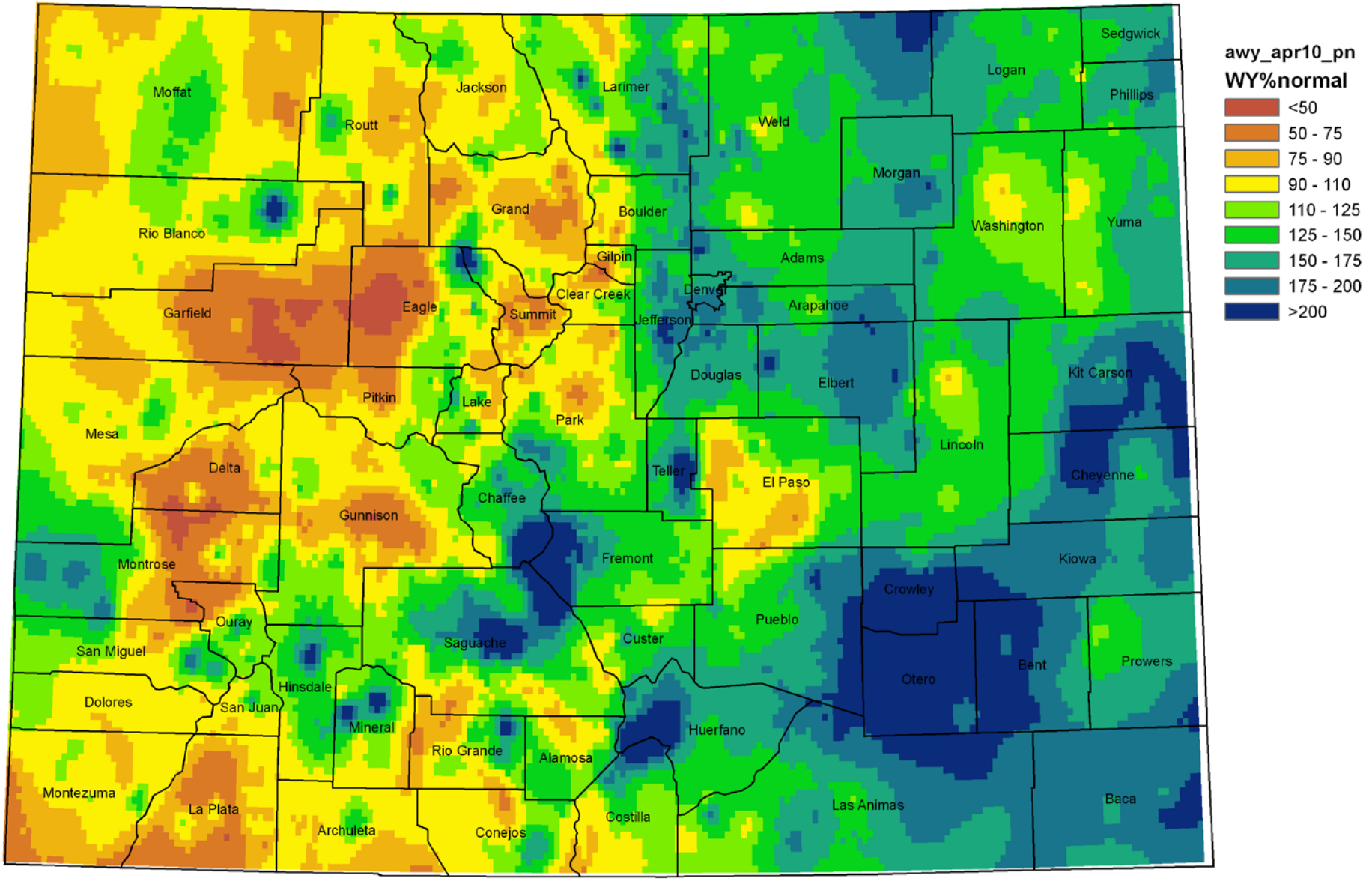
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

April 2010 Precipitation as Percent of Normal



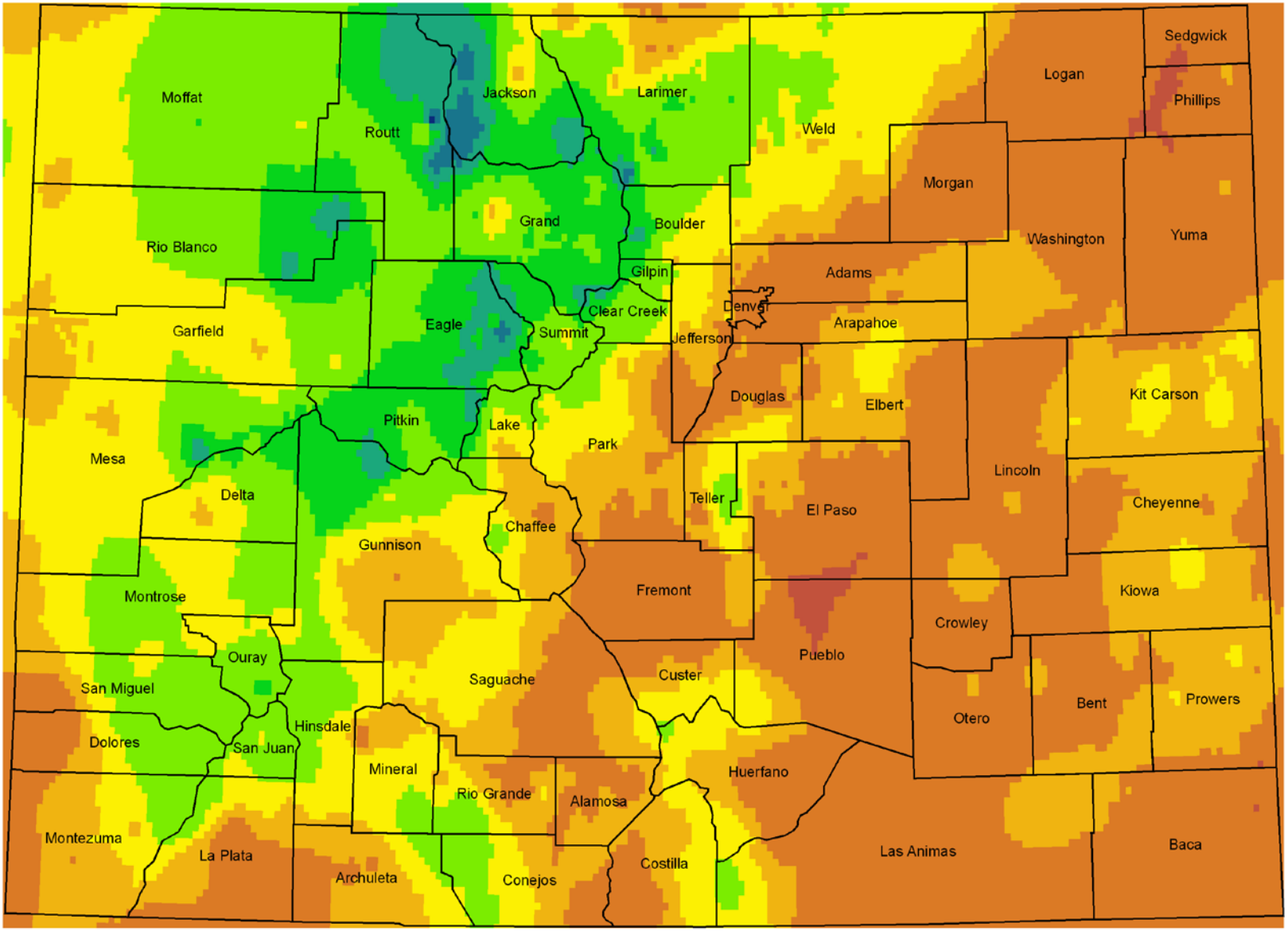
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Water Year 2010 Precipitation as Percent of Normal (Oct 09 - Apr 10)



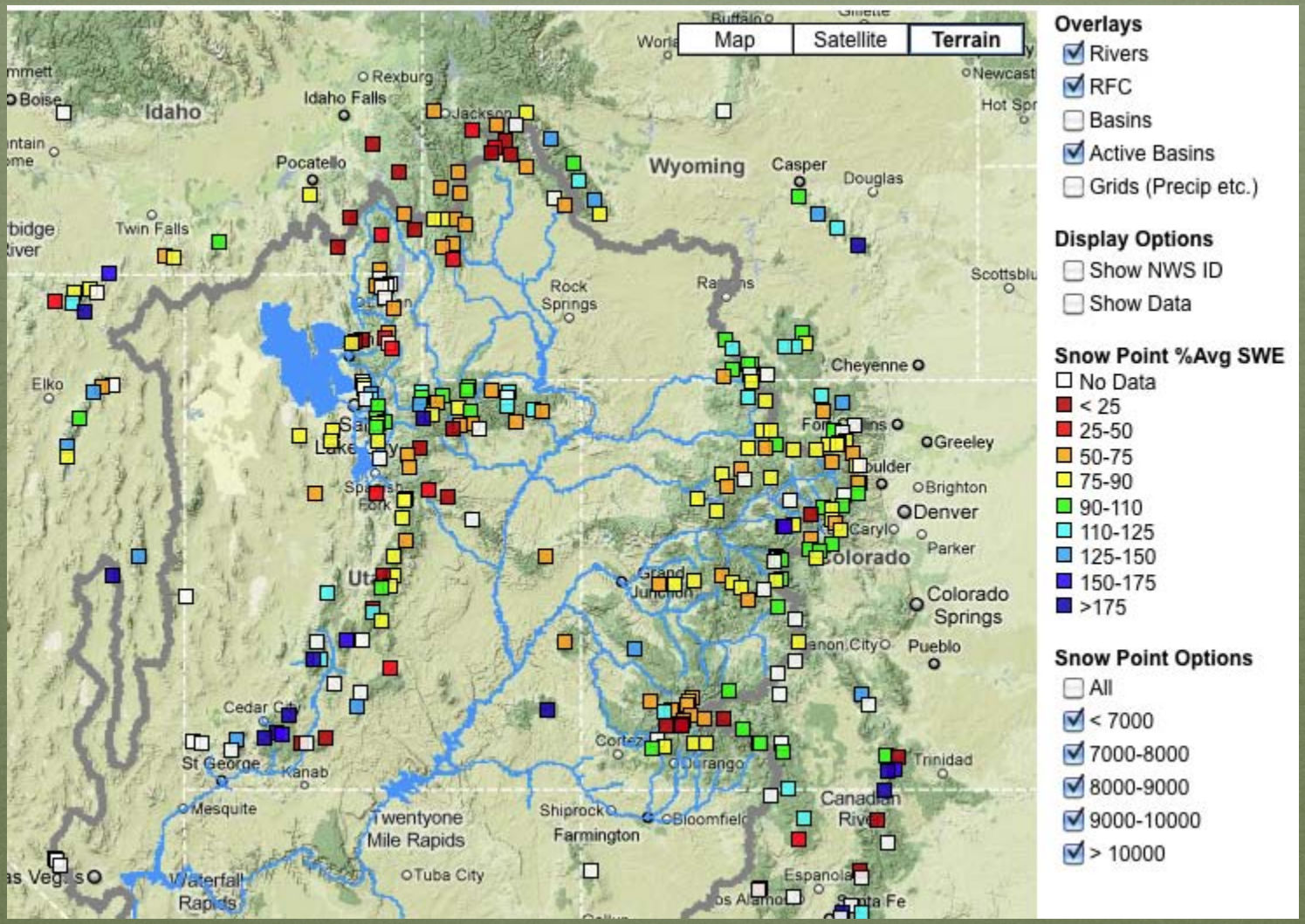
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado 7 Day Precipitation (in) 26 April - 2 May 2010



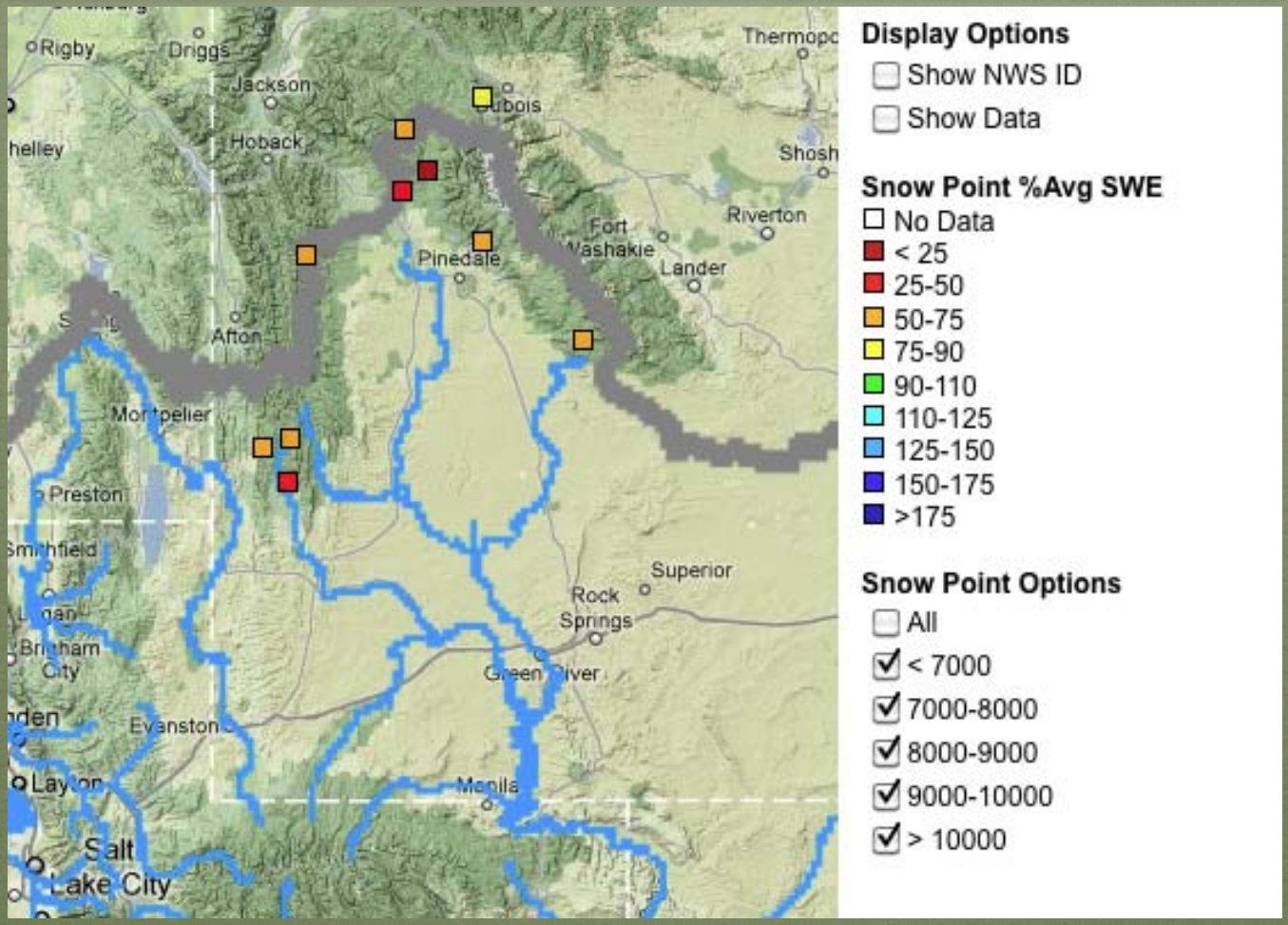
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Upper Colorado River Basin

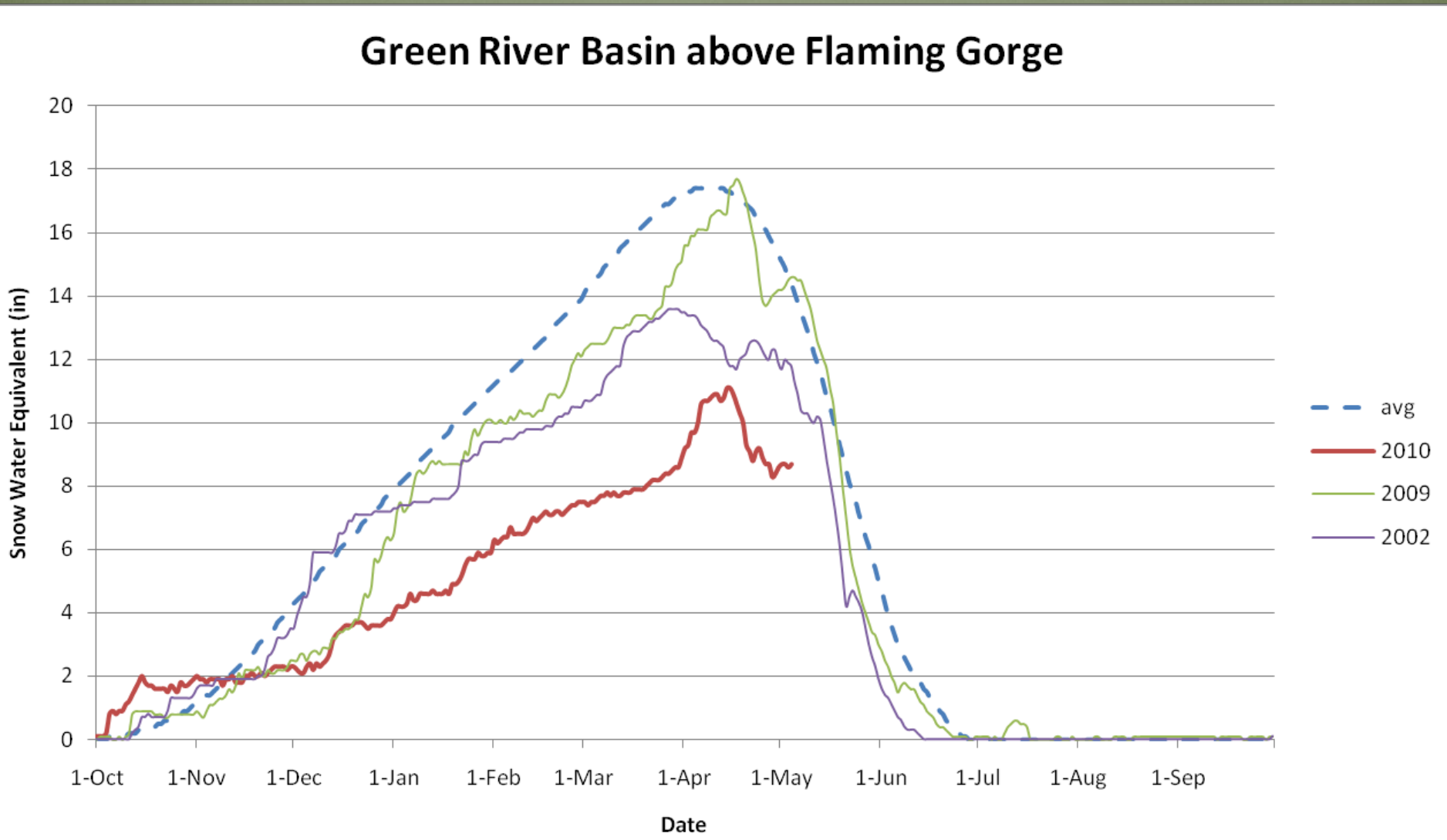


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

Green River Basin above Flaming Gorge



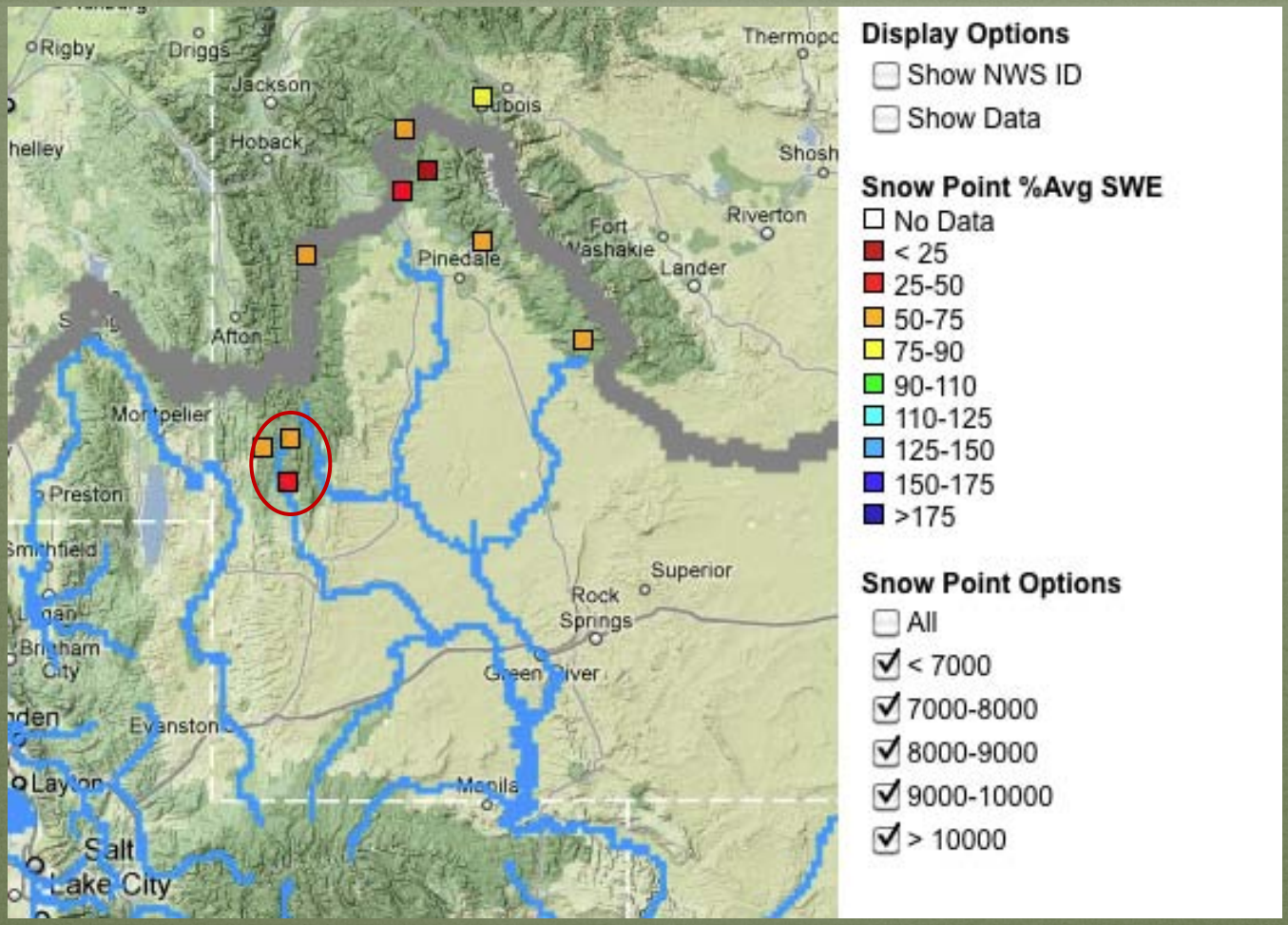
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



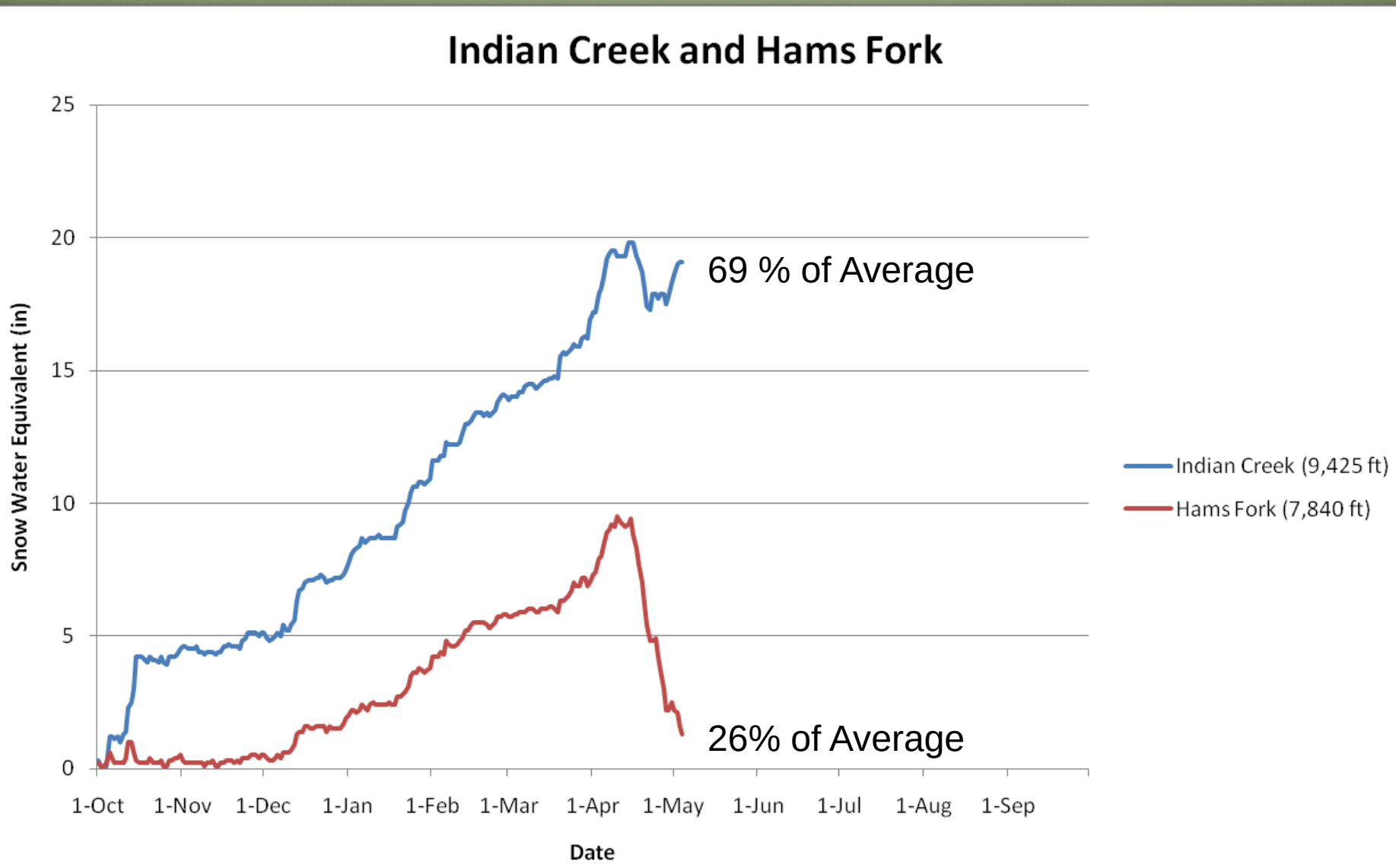
Basin Snowpack: 61%

Peak snowpack: 64% of average peak

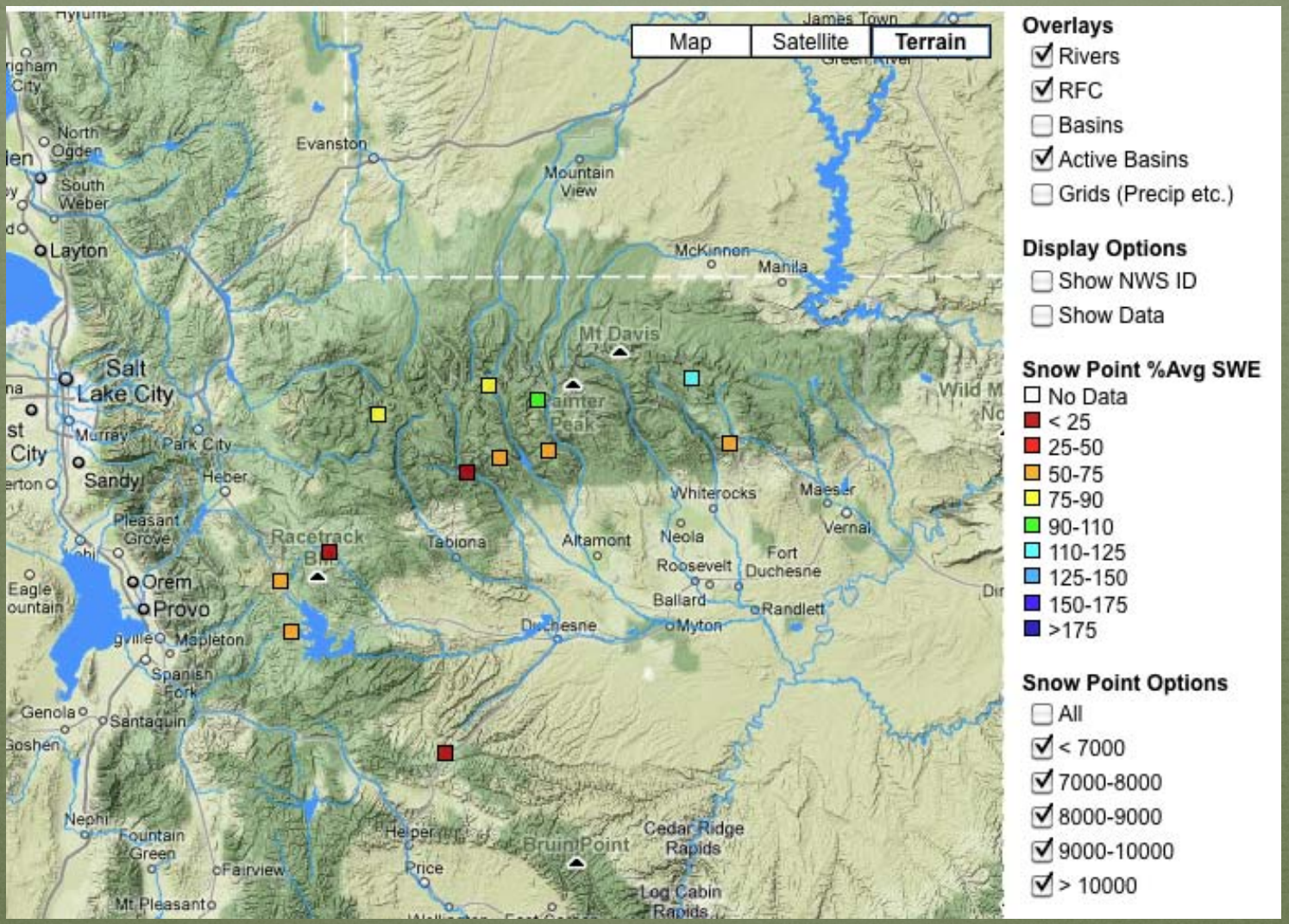
Indian Creek and Hams Fork



NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

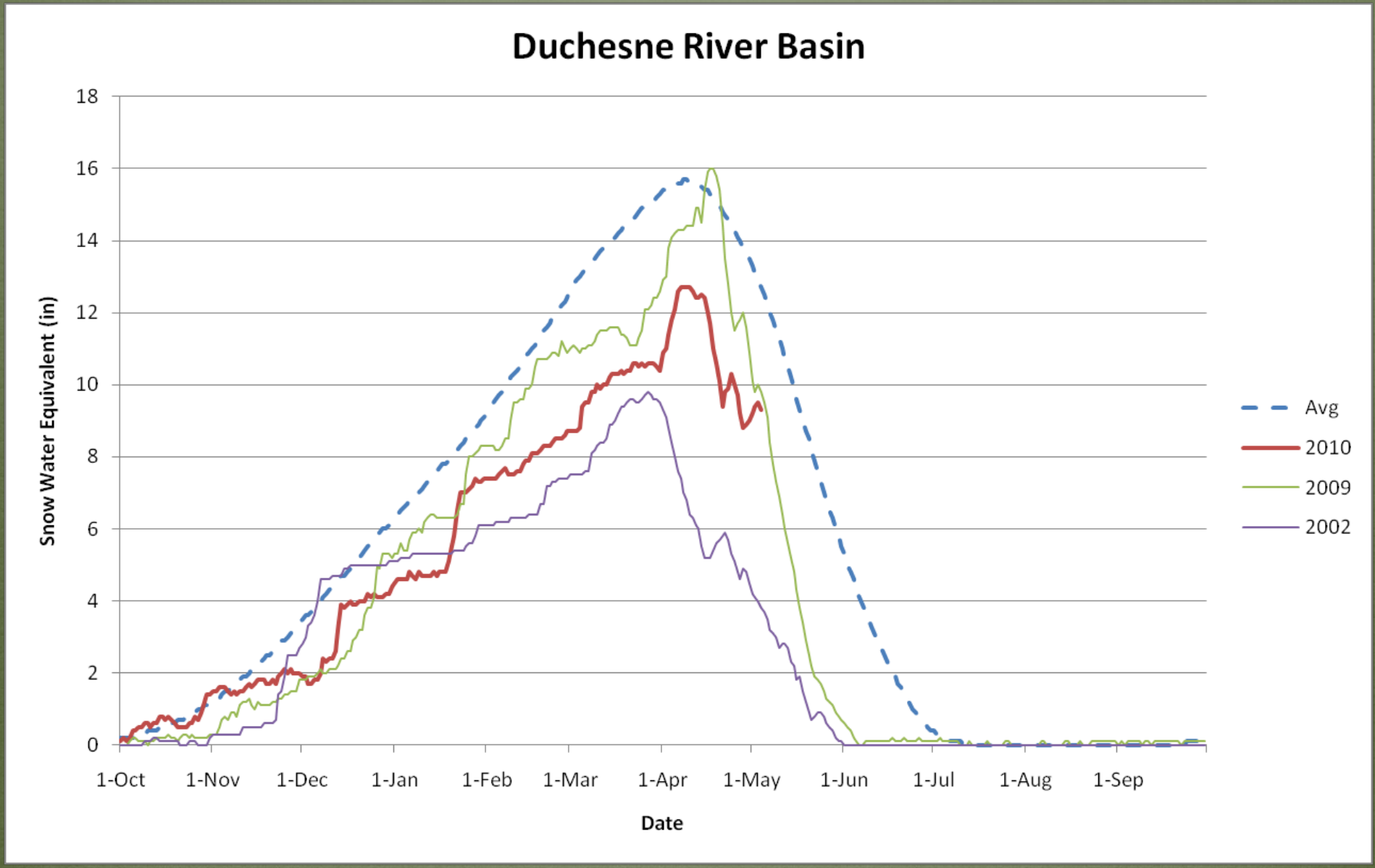

Indian Creek and Hams Fork
Snow Water Equivalent (in)
25
20
15
10
5
0
69 % of Average
26% of Average
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
Indian Creek (9,425 ft)
Hams Fork (7,840 ft)

Duchesne River Basin



NATIONAL WEATHER SERVICE

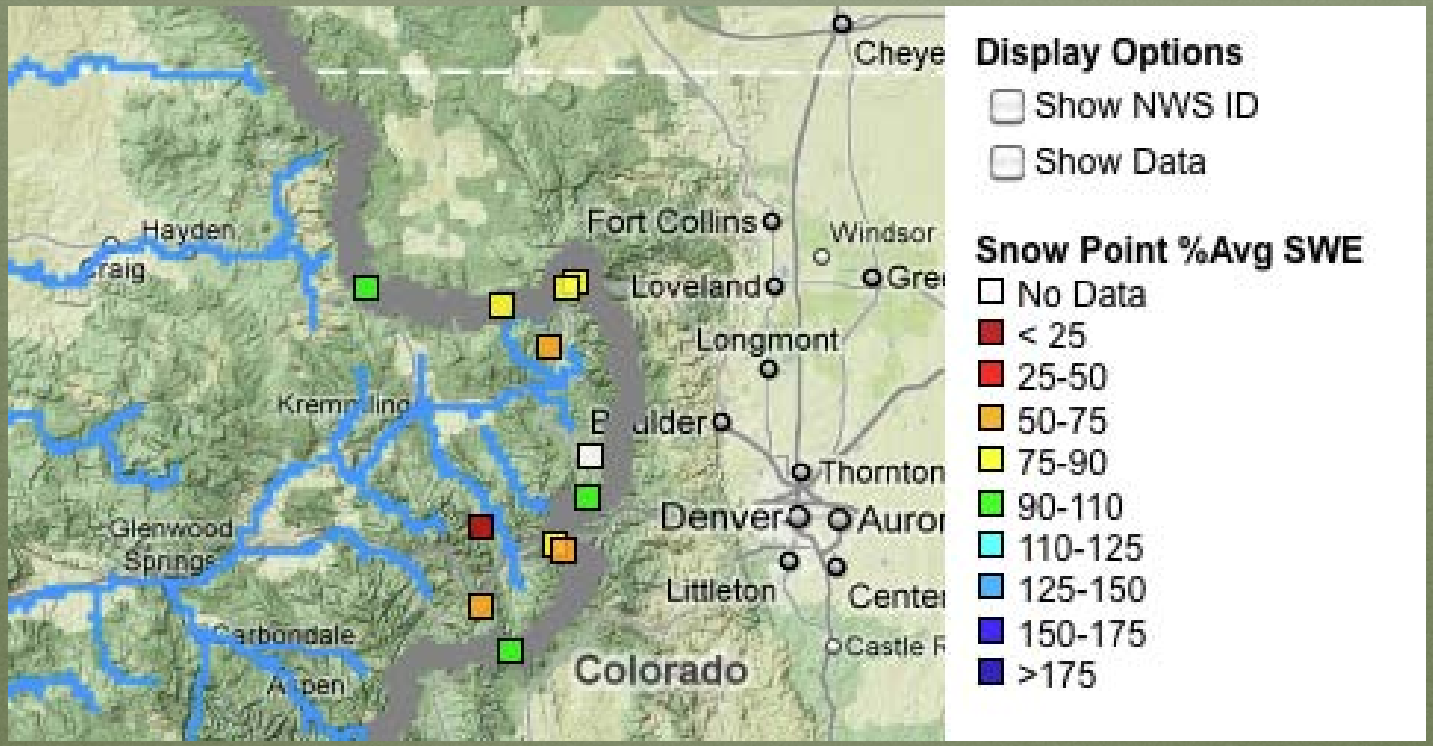
Colorado Basin River Forecast Center



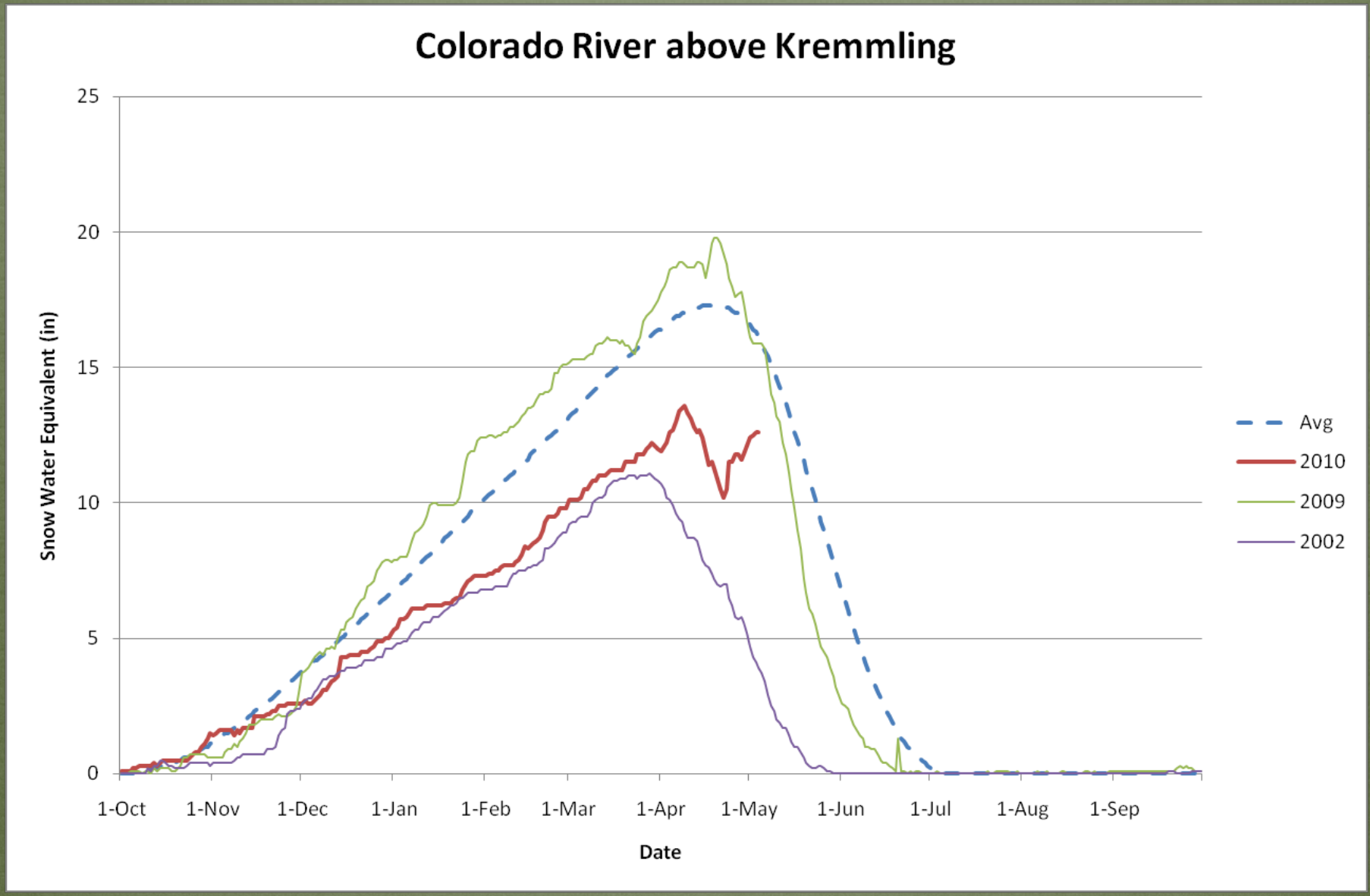
Basin snowpack: 73%

Peak snowpack: 81% of average peak

Upper Colorado above Kremmling



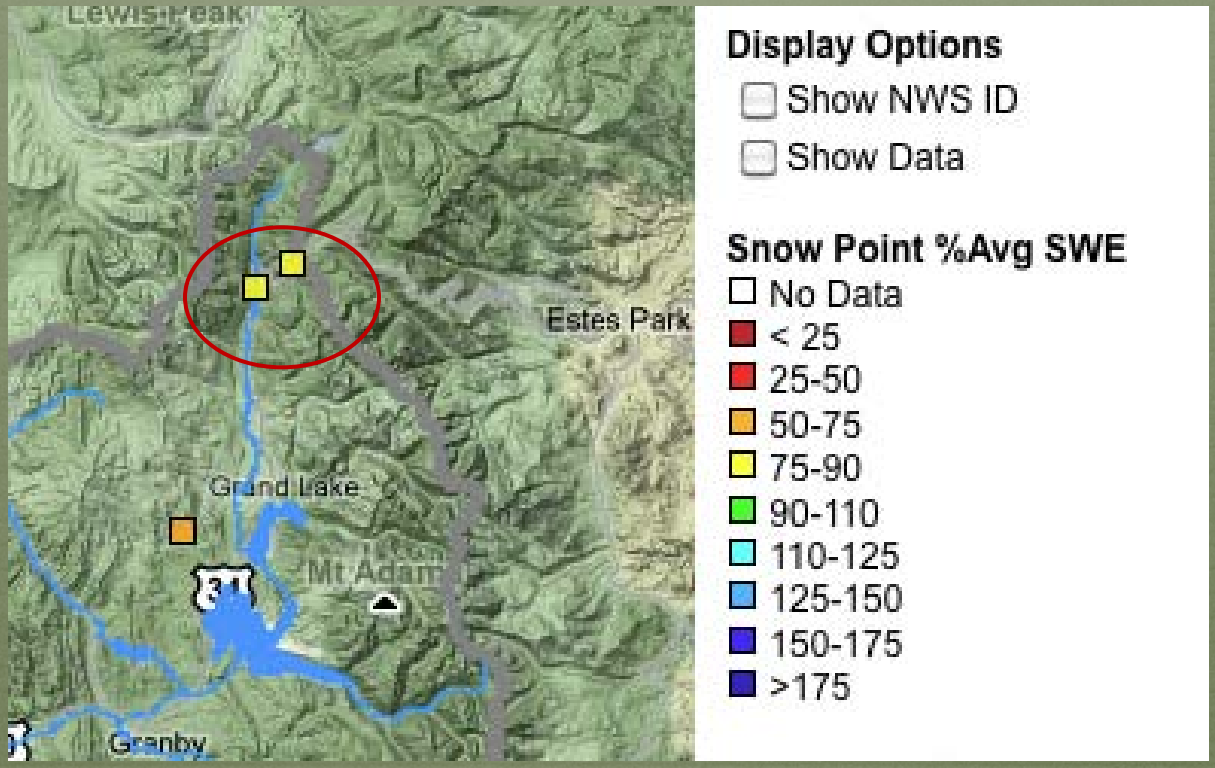
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

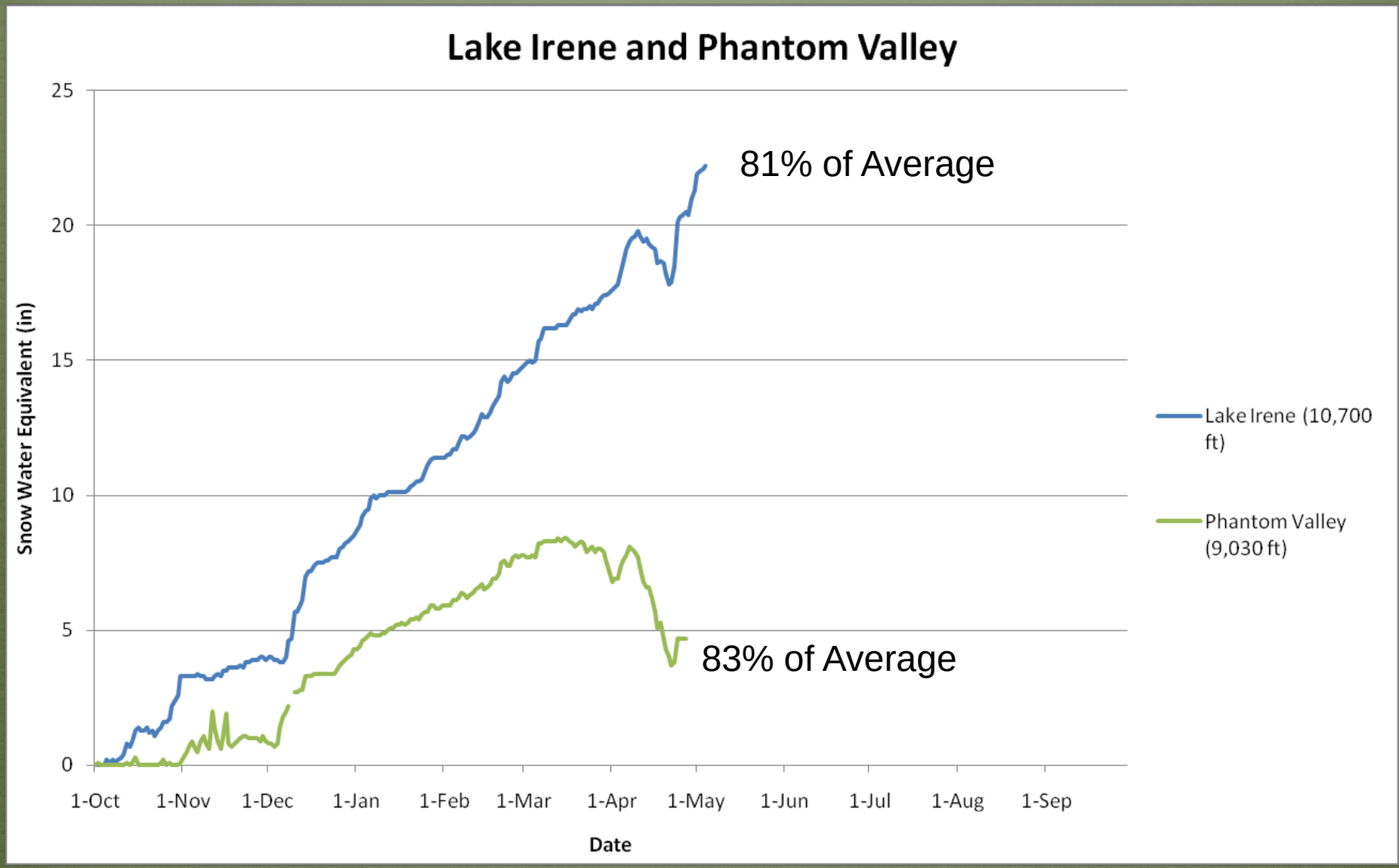


Basin Snowpack: 82%

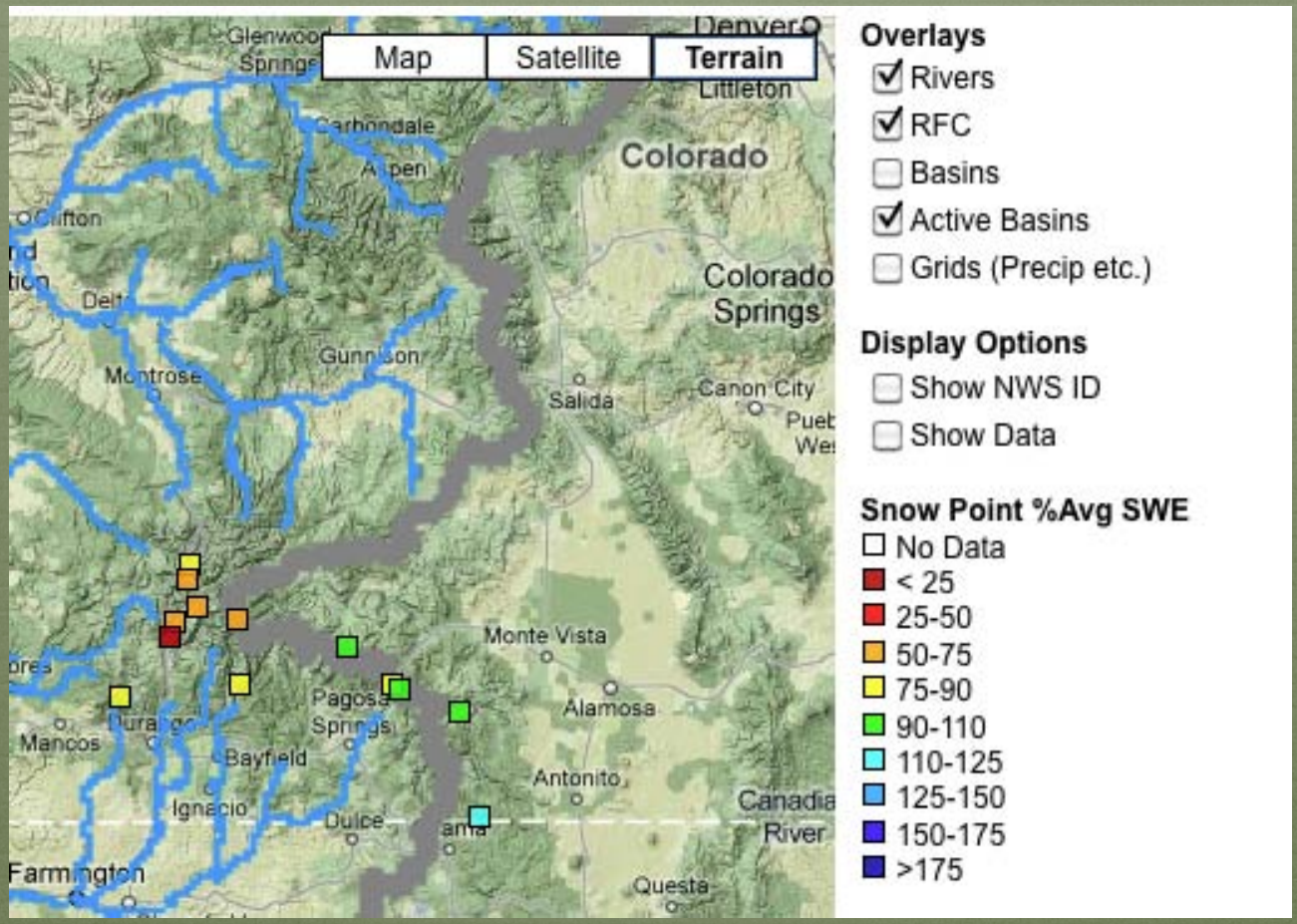
Peak snowpack: 79% of average peak

Lake Irene and Phantom Valley

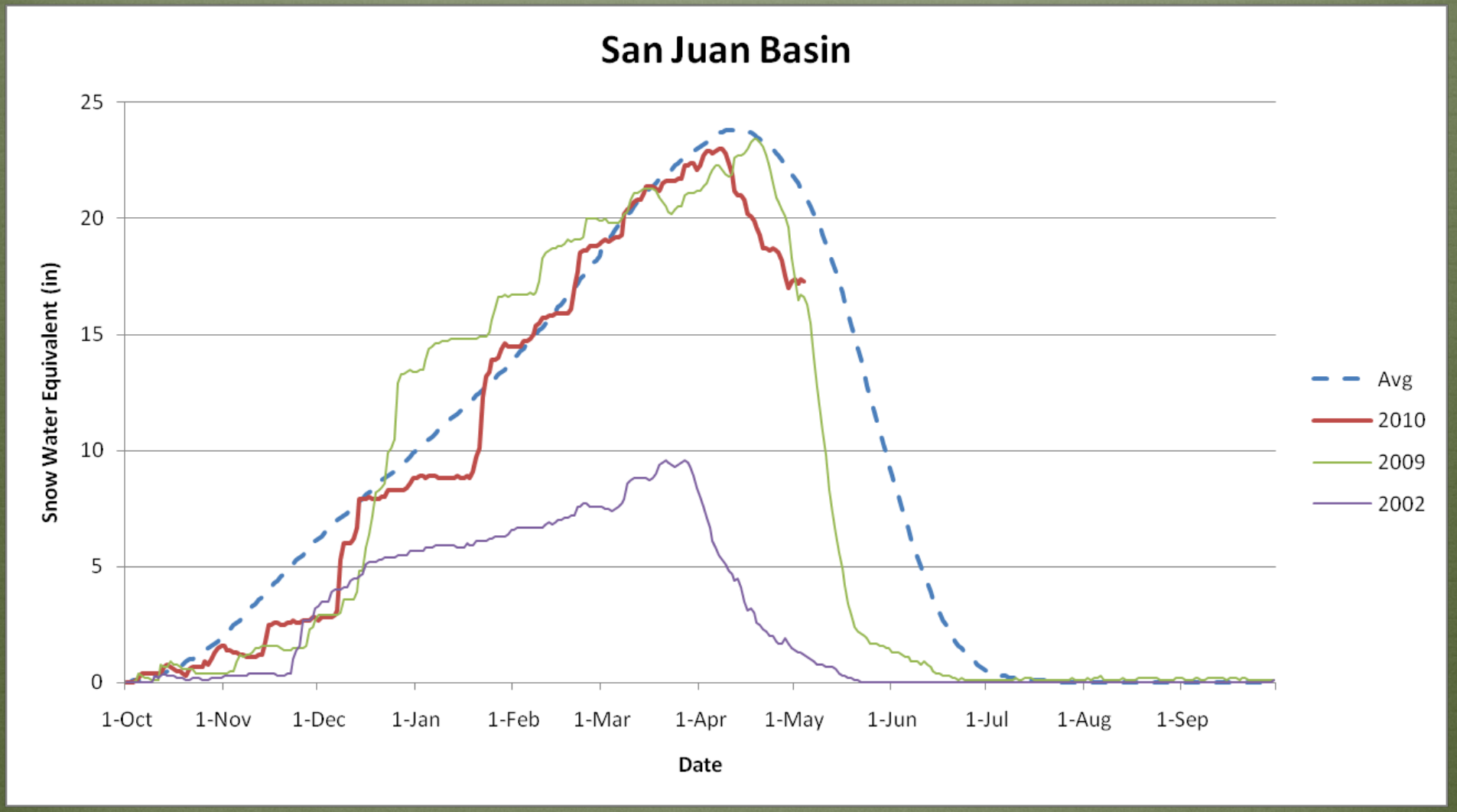



Lake Irene and Phantom Valley
Snow Water Equivalent (in)
25
20
15
10
5
0
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
81% of Average
83% of Average
Lake Irene (10,700 ft)
Phantom Valley (9,030 ft)

San Juan Basin



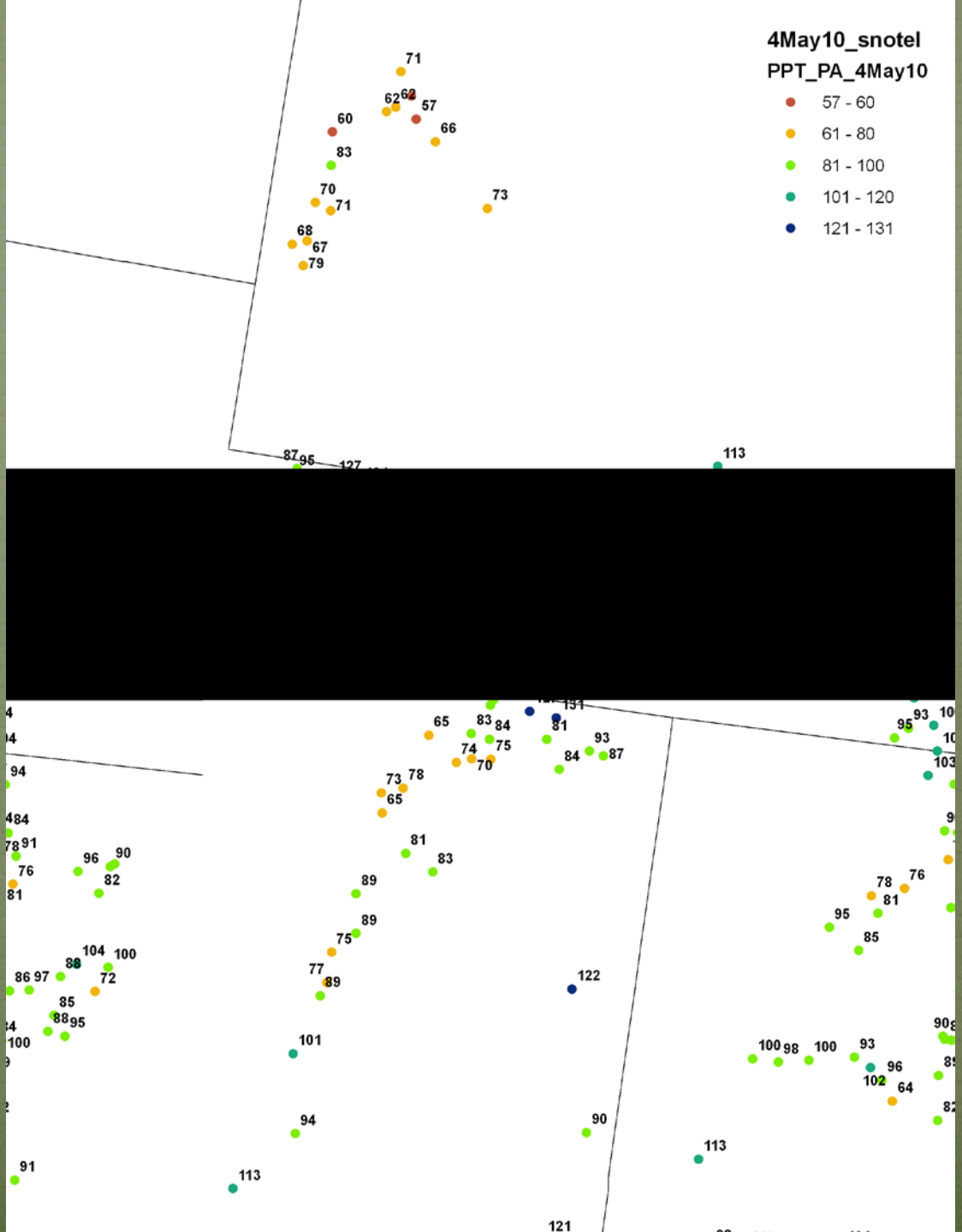
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



Basin Snowpack: 82%

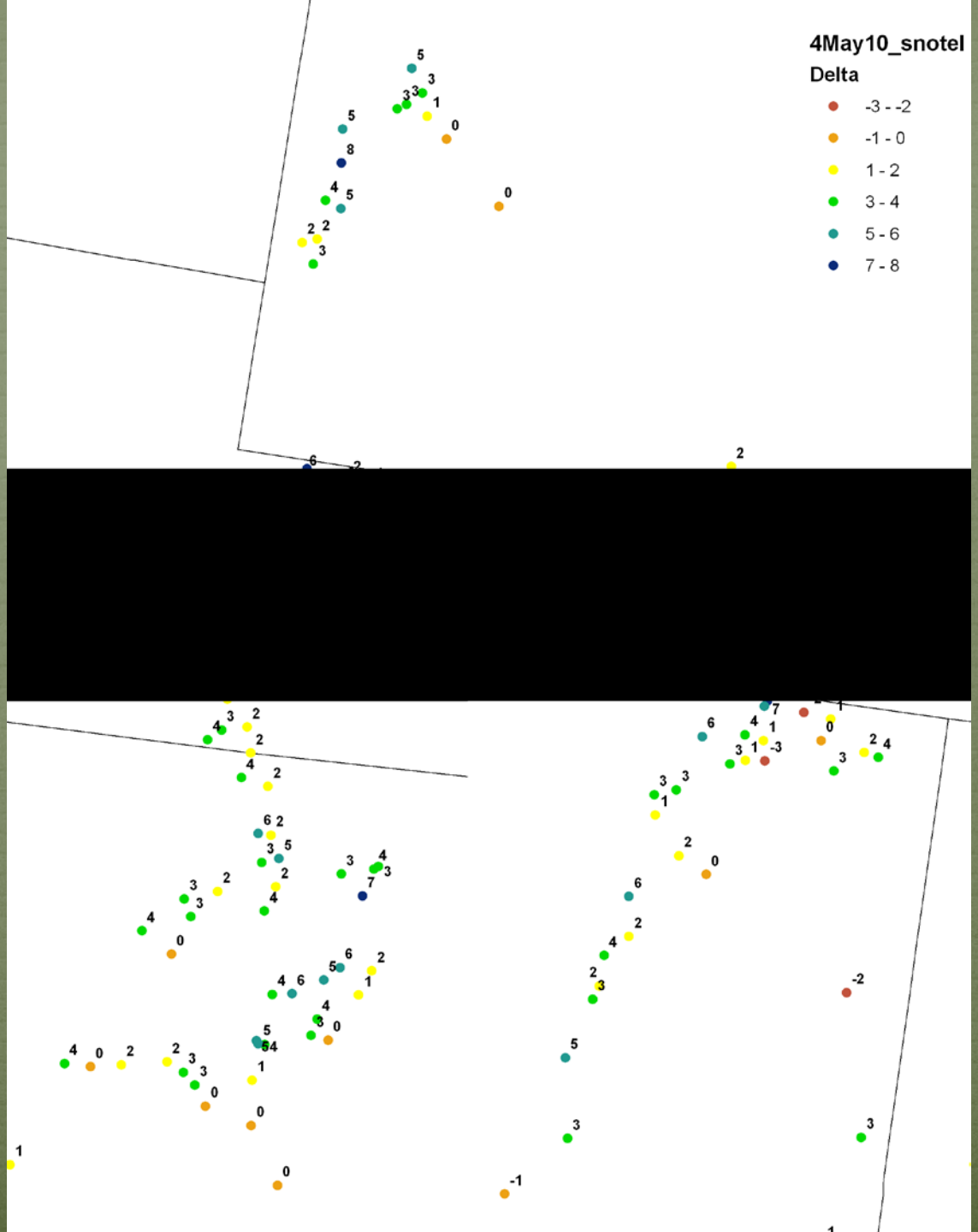
Peak snowpack: 97% of average peak

Snotel WYTD Precipitation as Percentage of Average

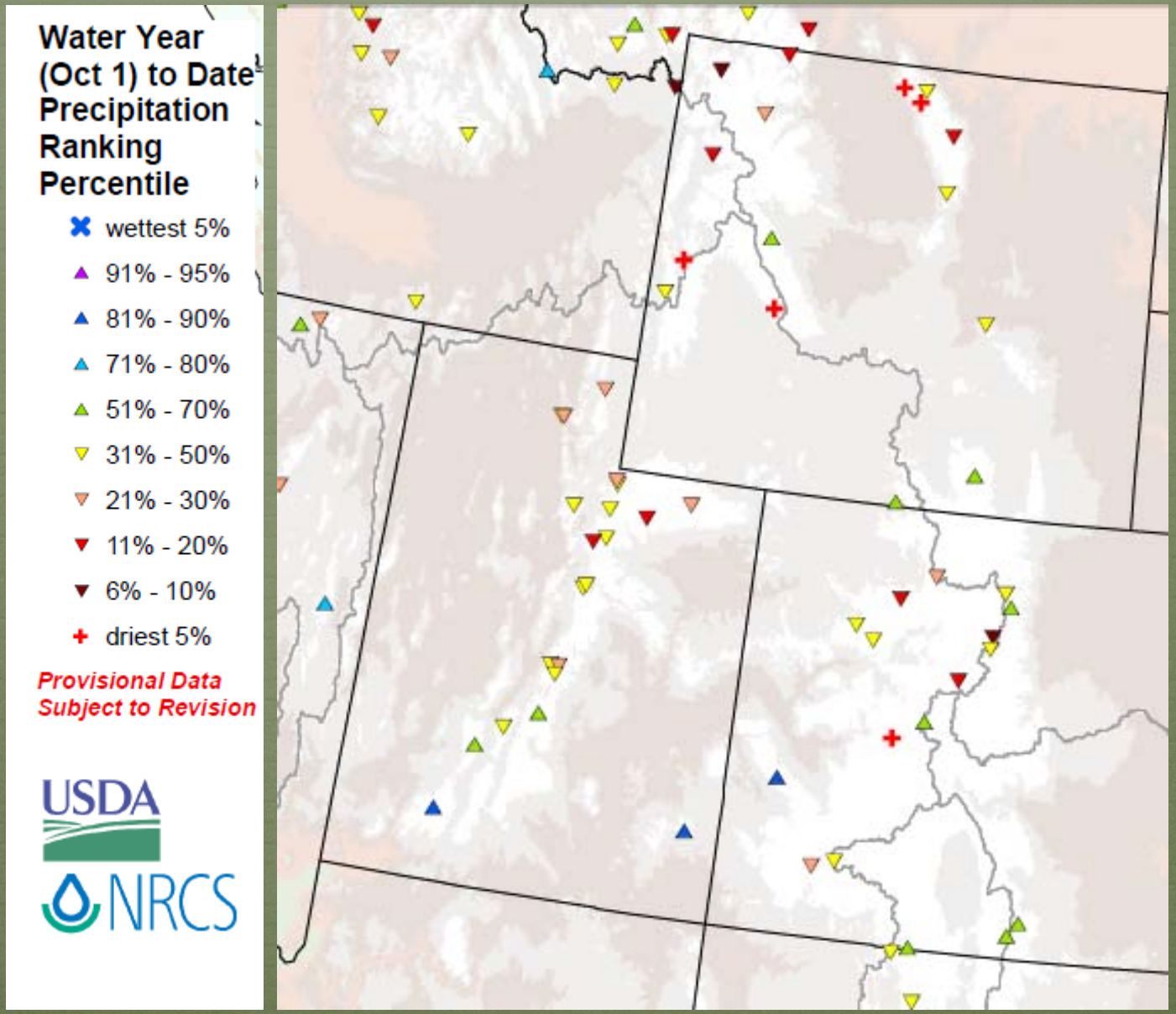


Upper Colorado 87% of Average Overall

1 Week Change in Snotel WYTD Precipitation Percent of Average



Western Snotel Percentiles 4 May 2010



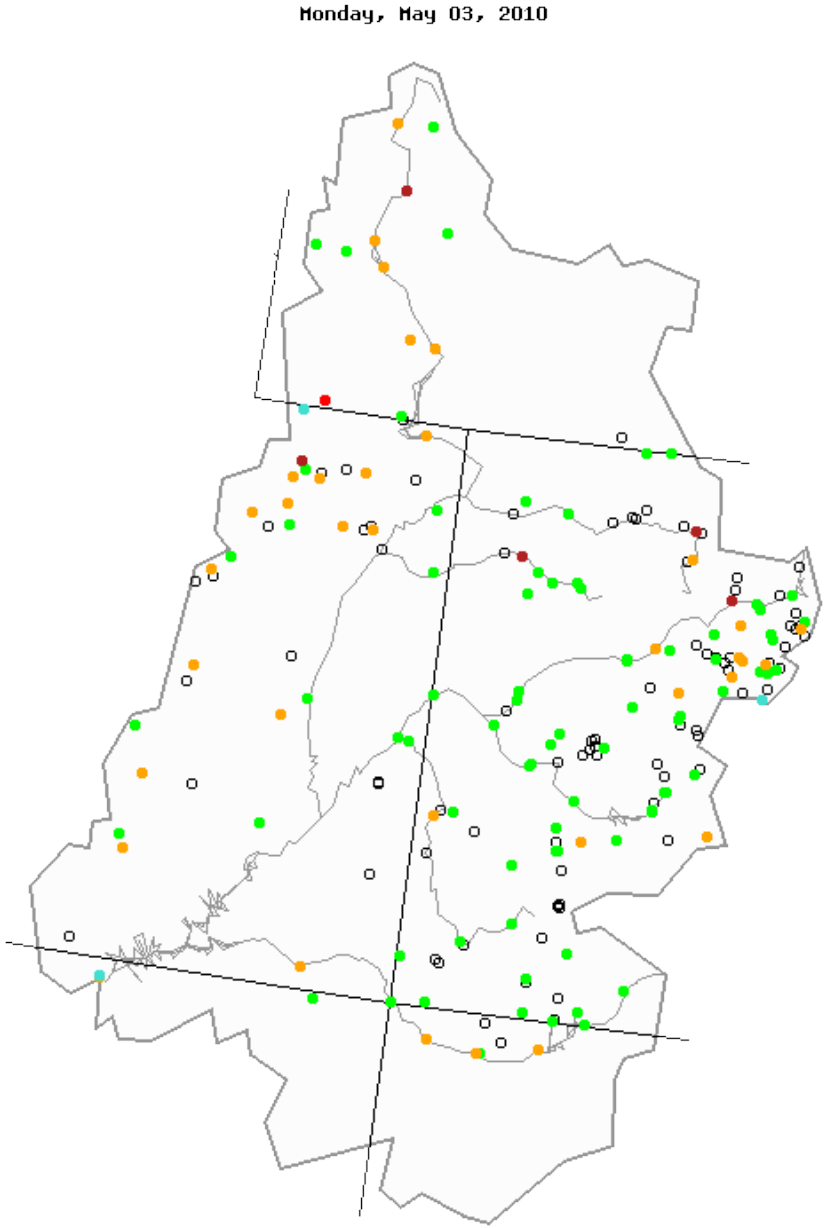
http://www.wcc.nrcs.usda.gov/gis/precip.html

Streamflow Update

Michael E. Lewis - USGS

Upper Colorado Basin

7-day average streamflow (all gages) compared to historical streamflow for the day of the year

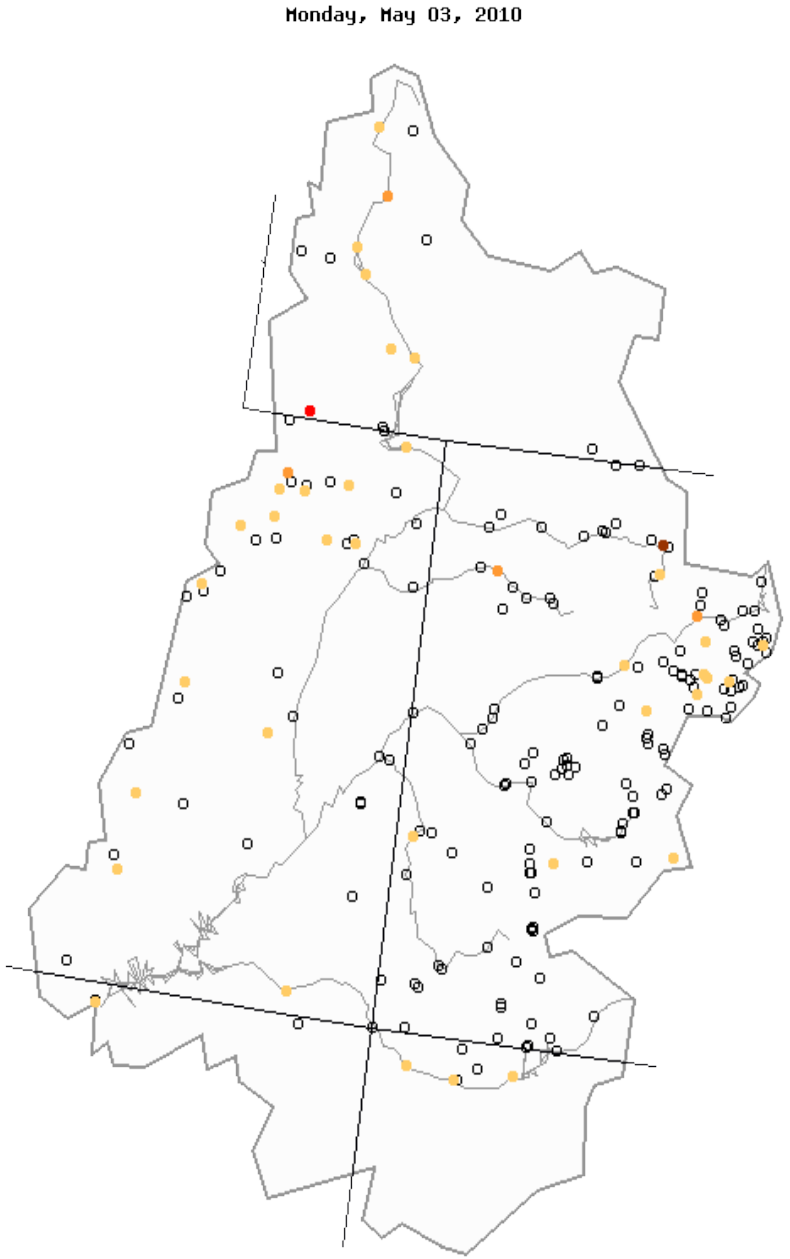


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

Upper Colorado Basin

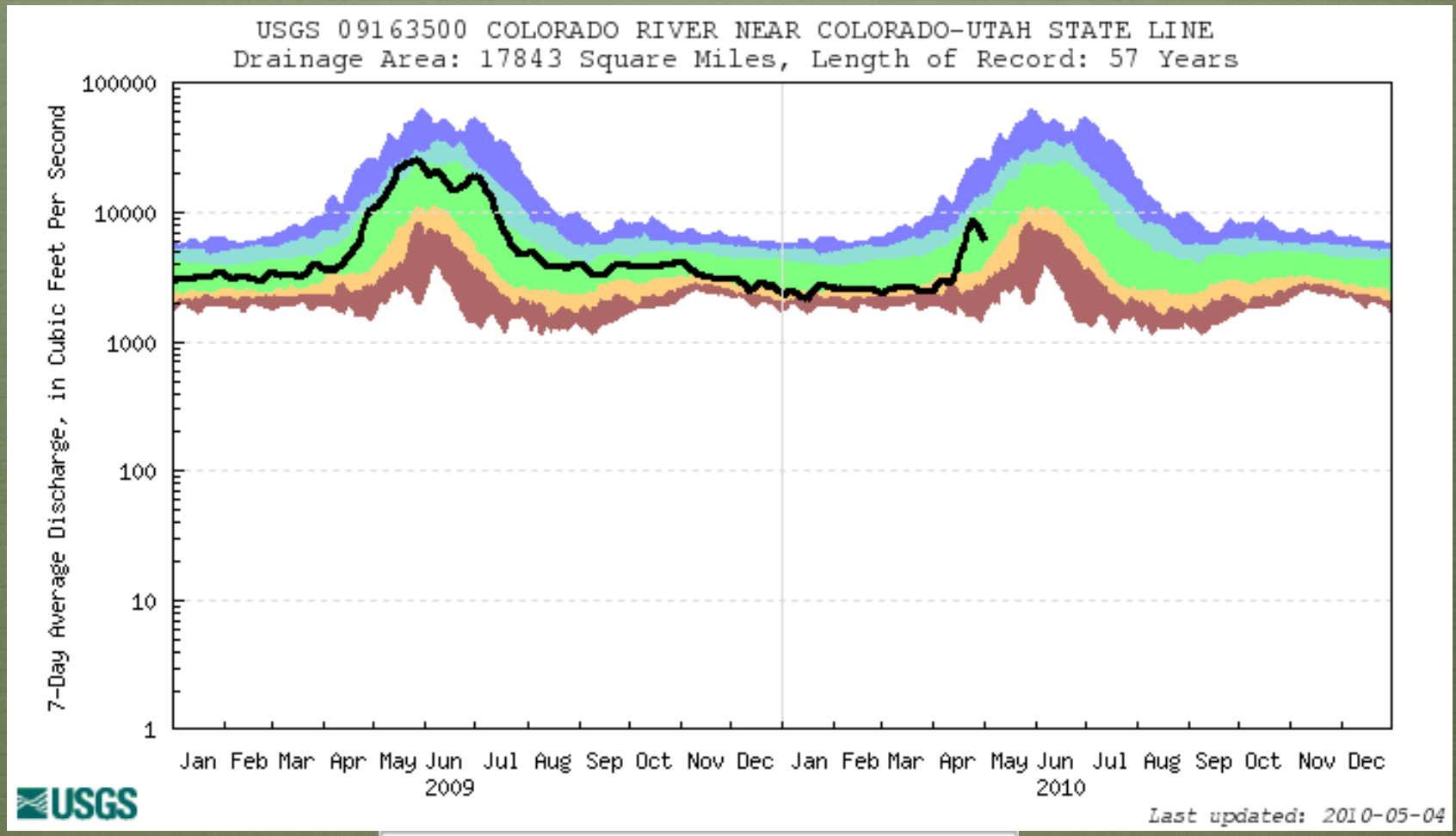
Below normal 7-day average streamflow compared to historical conditions for the day of the year

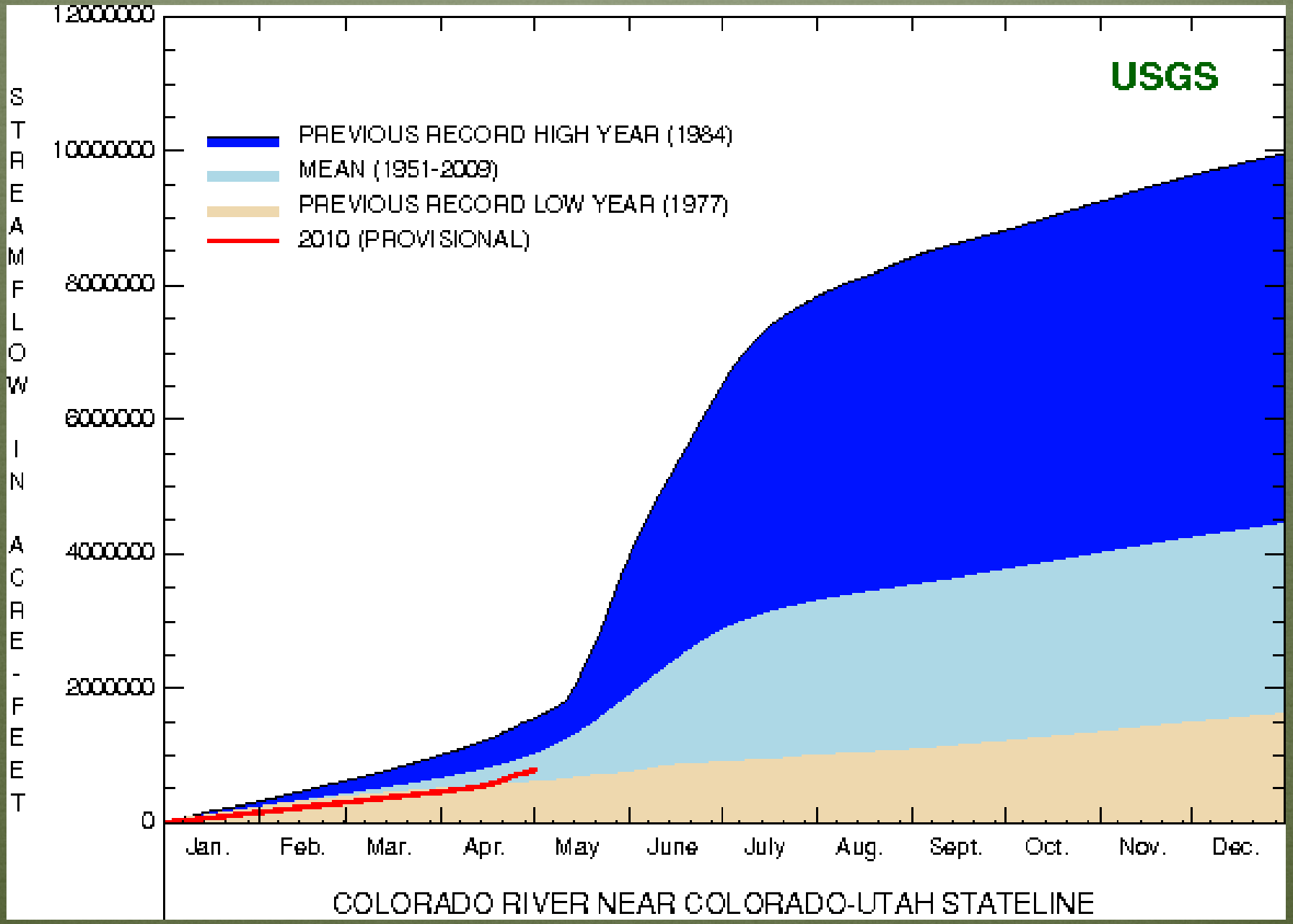


Explanation - Percentile classes				
New low	<=5	6-9	10-24	Not ranked
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

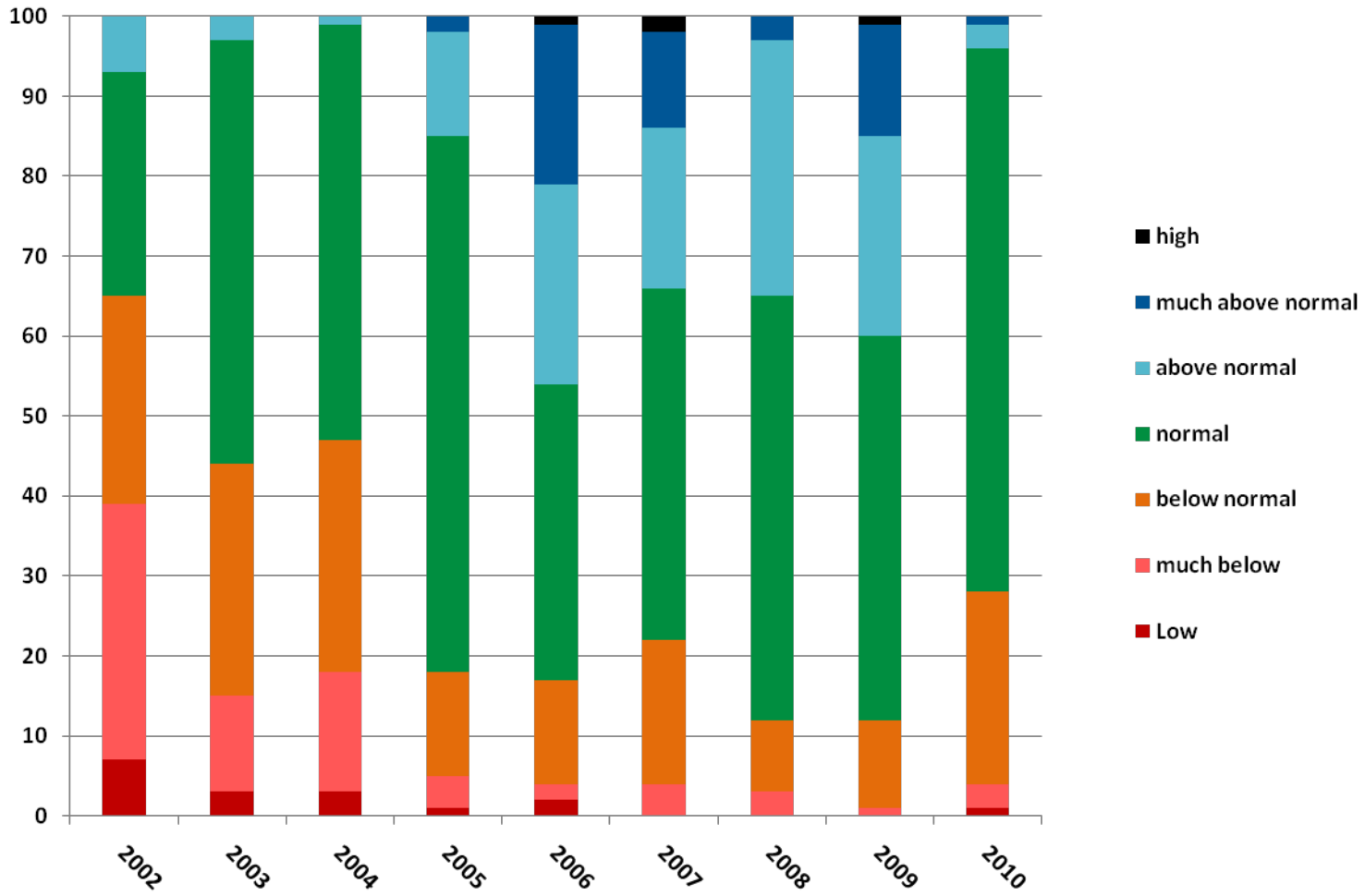
USGS

Time series plot of real-time streamflow compared to historical streamflow for the day of the year

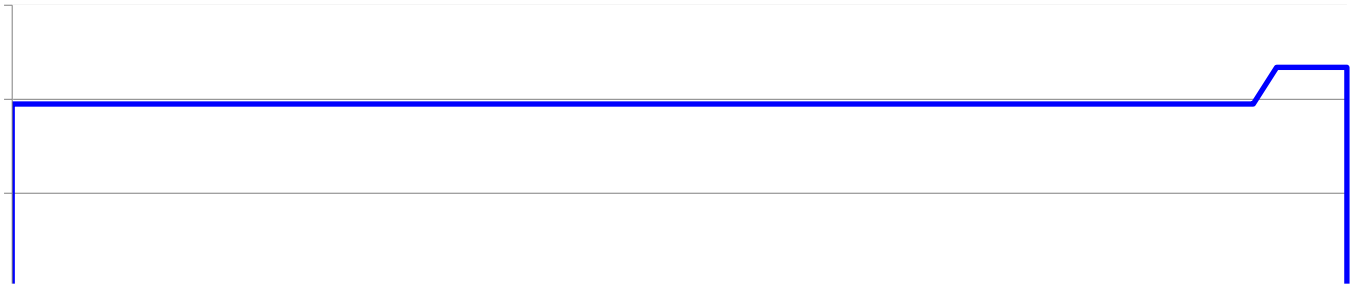



USGS
PREVIOUS RECORD HIGH YEAR (1984)
MEAN (1951-2009)
PREVIOUS RECORD LOW YEAR (1977)
2010 (PROVISIONAL)
STREAMFLOW IN ACRE-FEET
12000000
10000000
8000000
6000000
4000000
2000000
0
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
COLORADO RIVER NEAR COLORADO-UTAH STATELINE

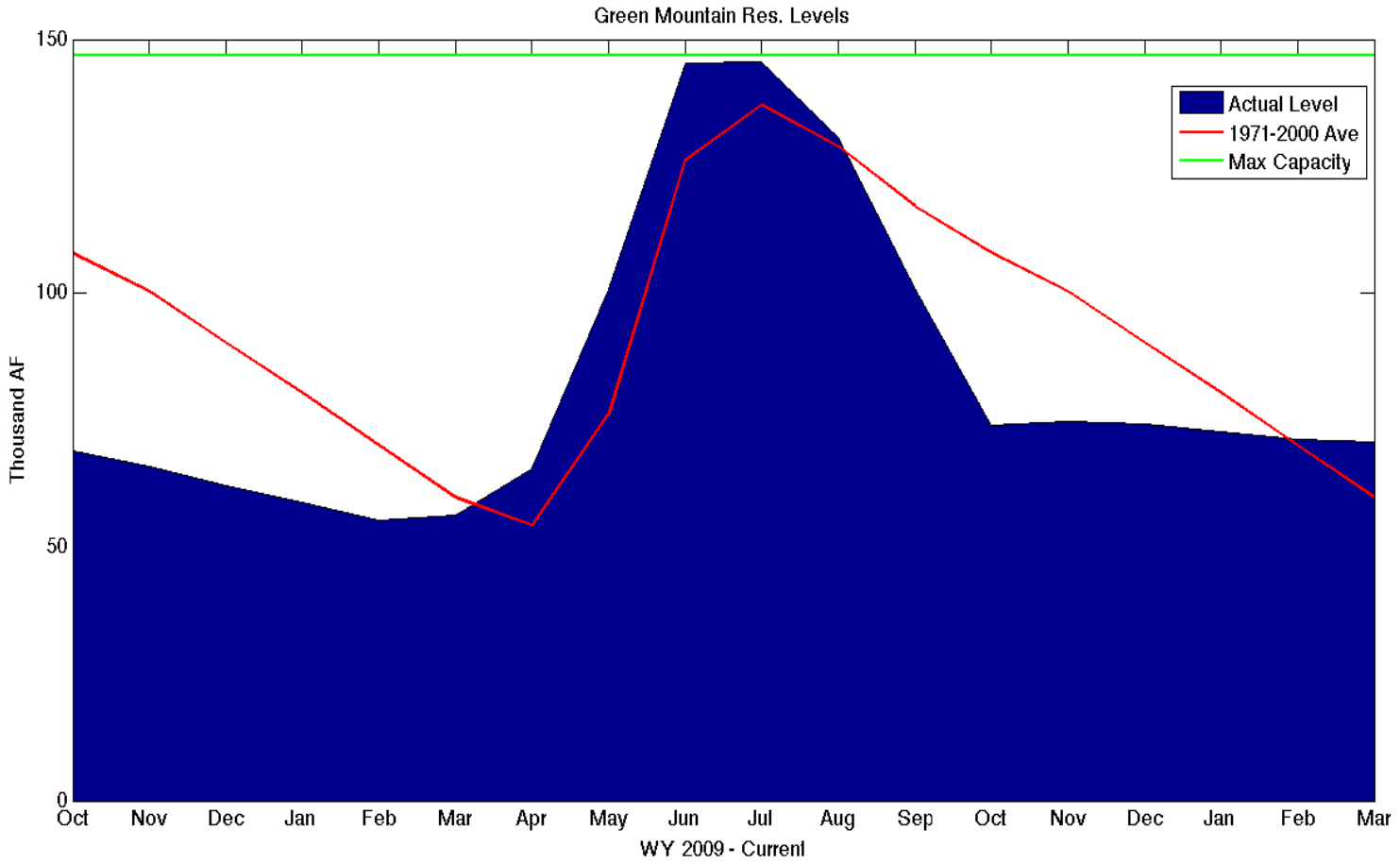
May 2
Percentage of Streamgages per Percentile Class
7-day Average Streamflow

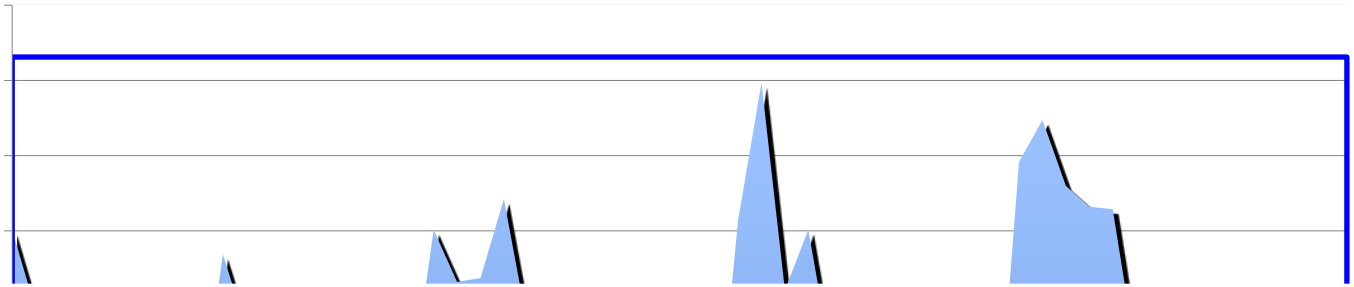


Reservoir Update

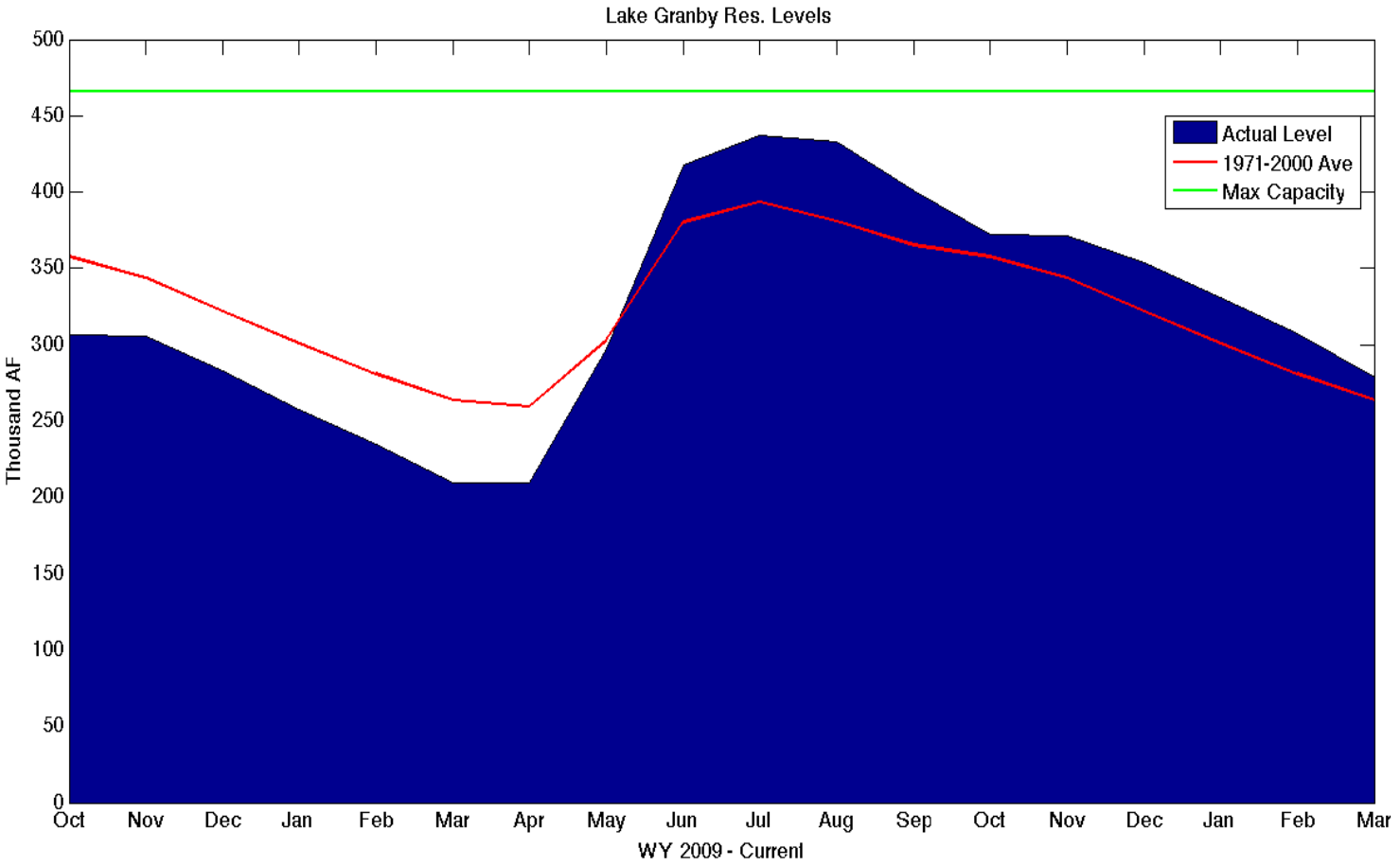


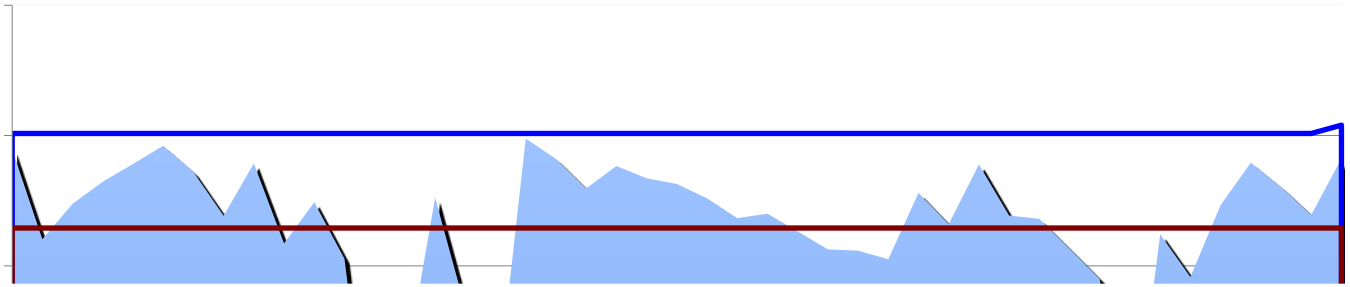
Max Capacity





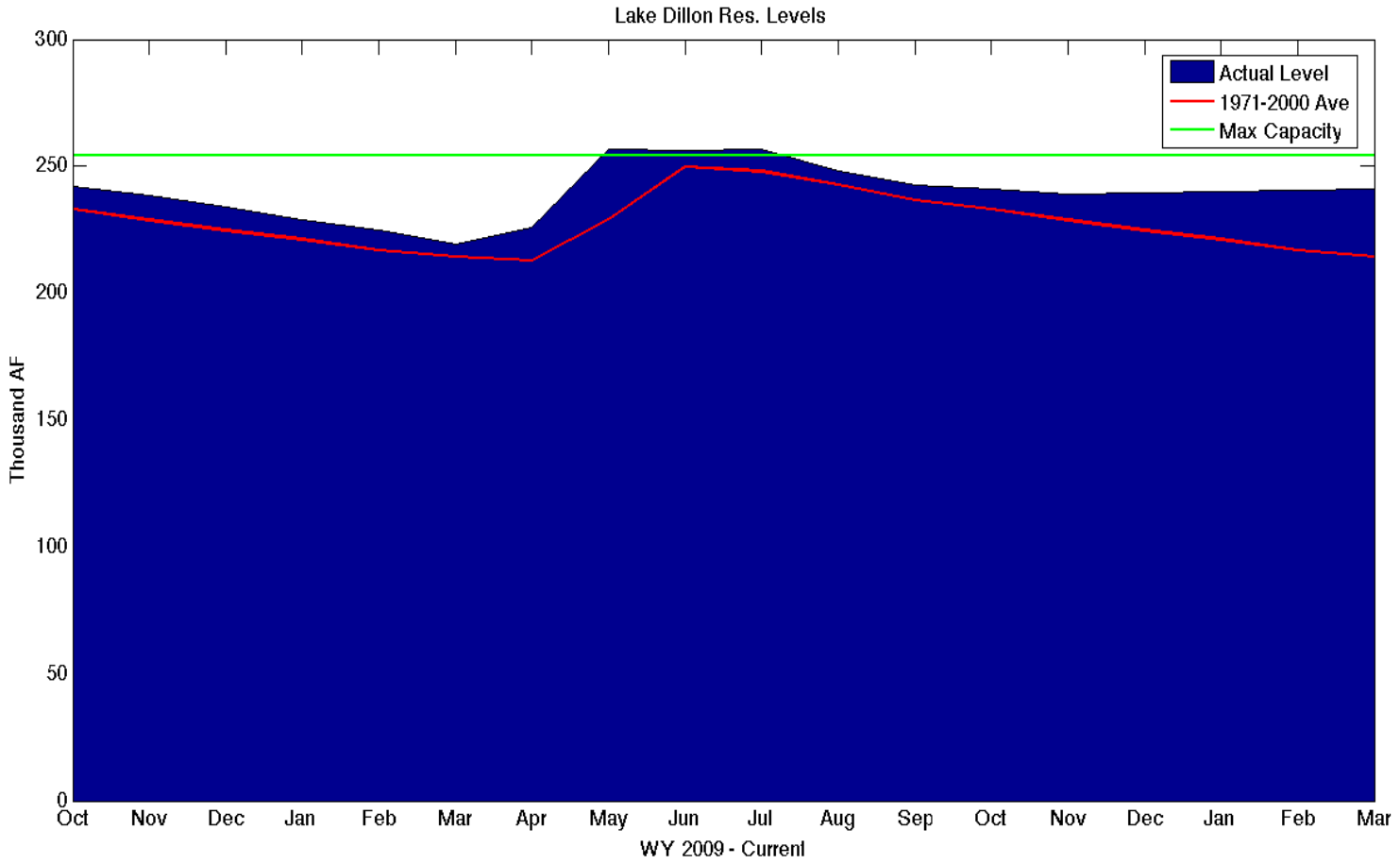
Max Capacity

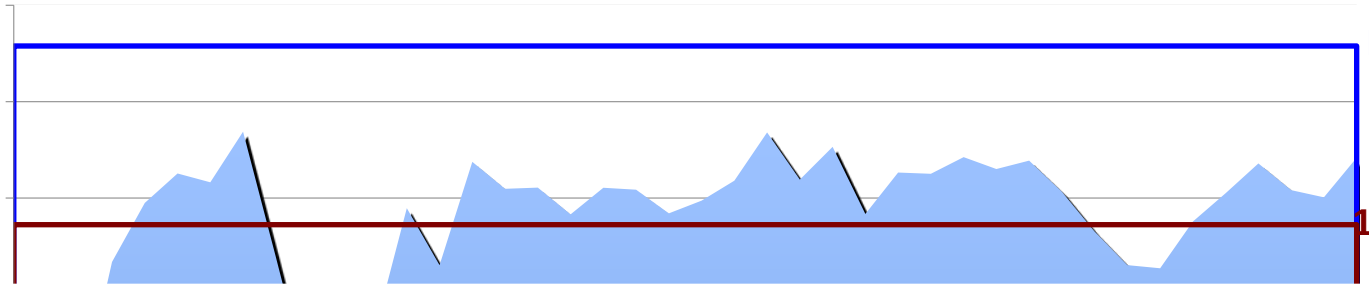


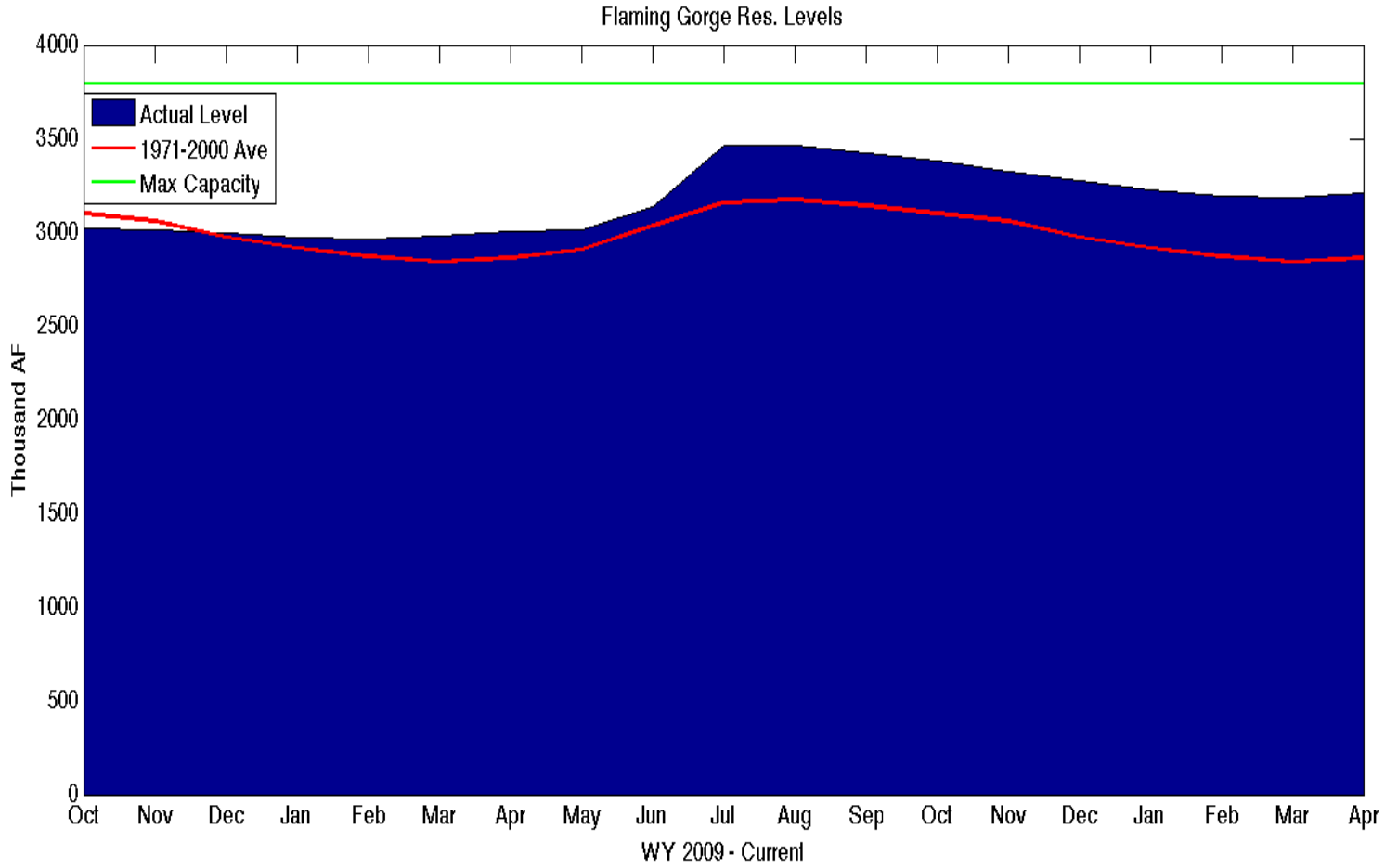


Max Capacity

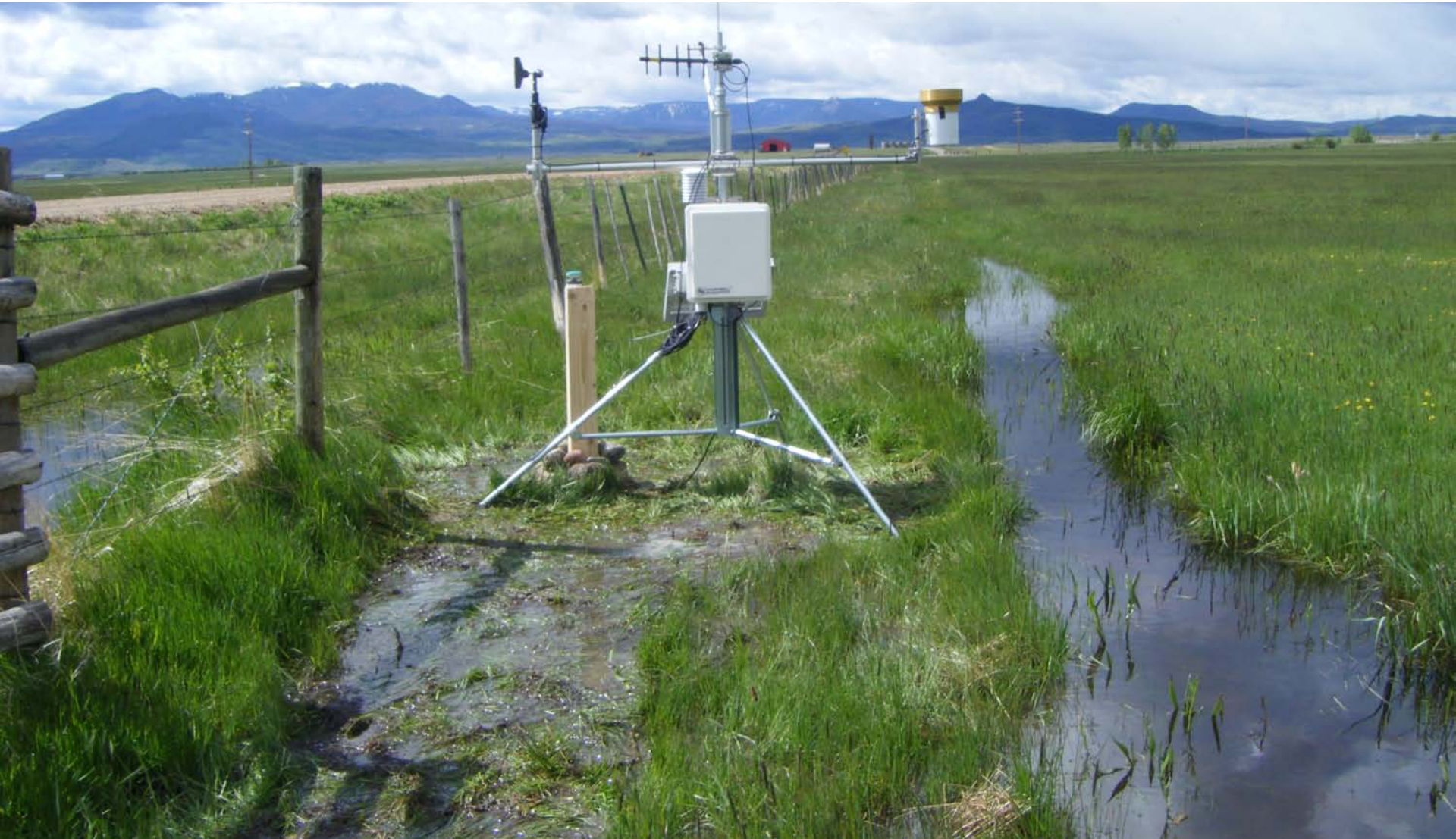
1971-2000 Average



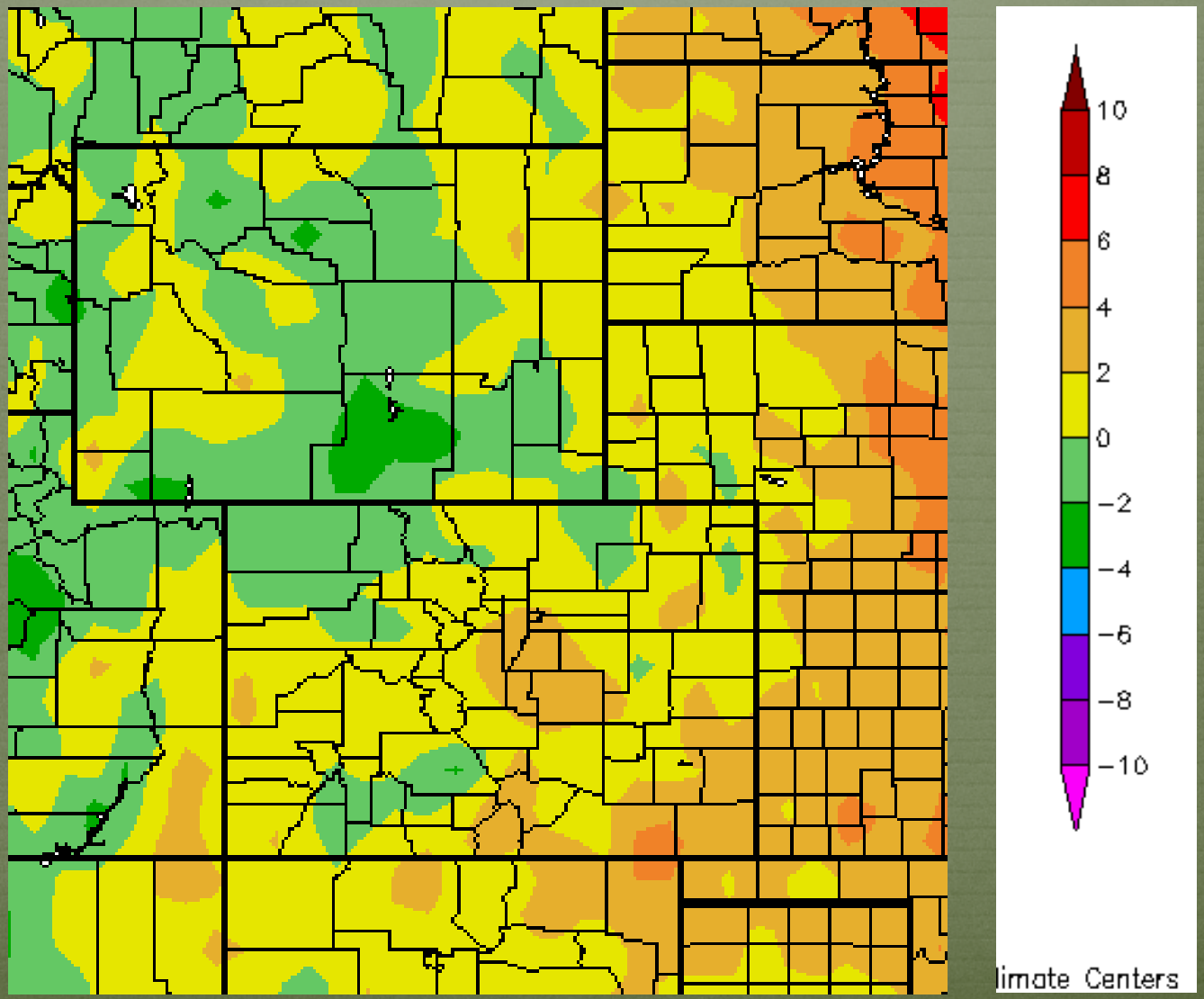

Max Capacity
1971-2000 Average


Flaming Gorge Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
4000
3500
3000
2500
2000
1500
1000
500
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
WY 2009 - Current

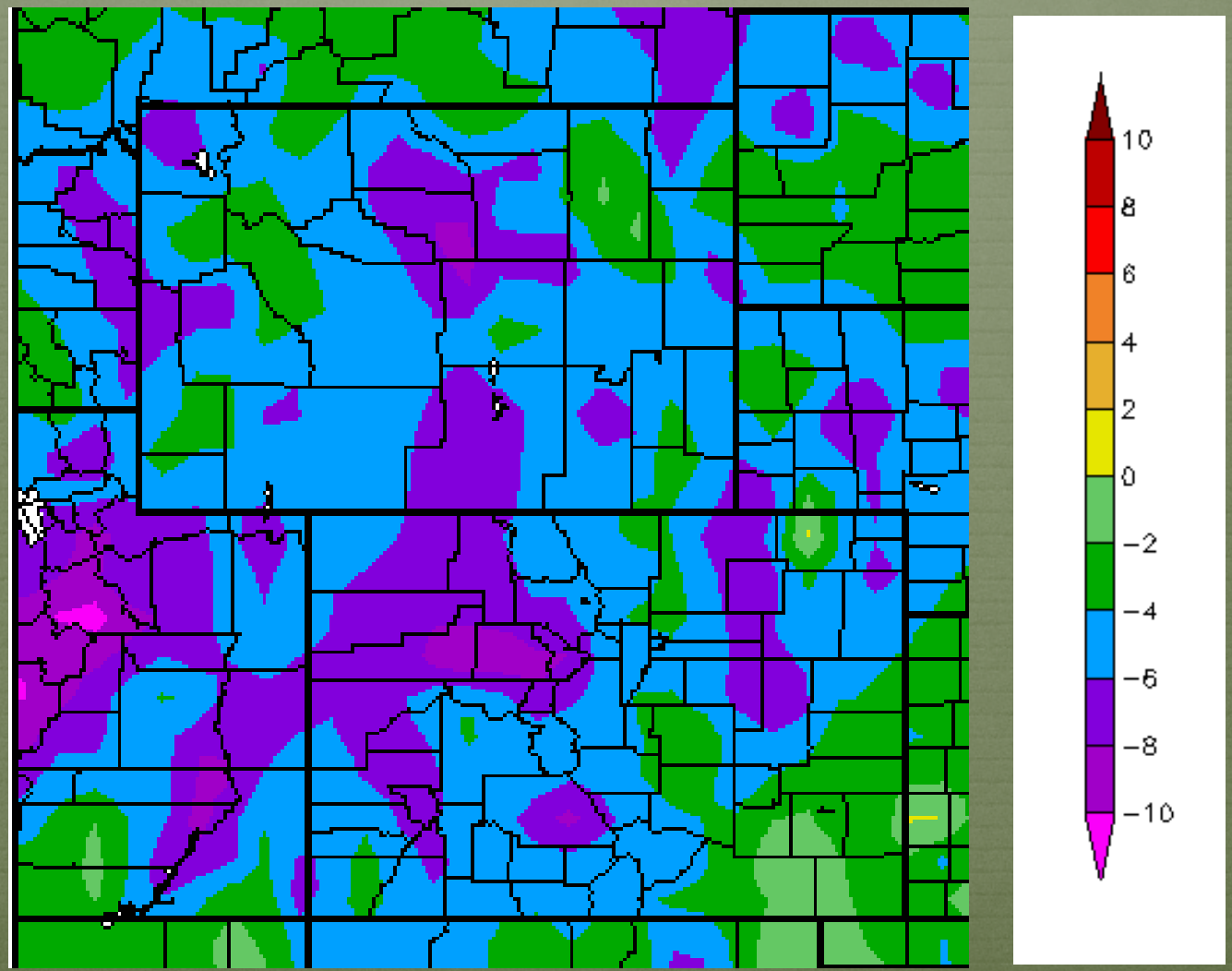
Water Demand

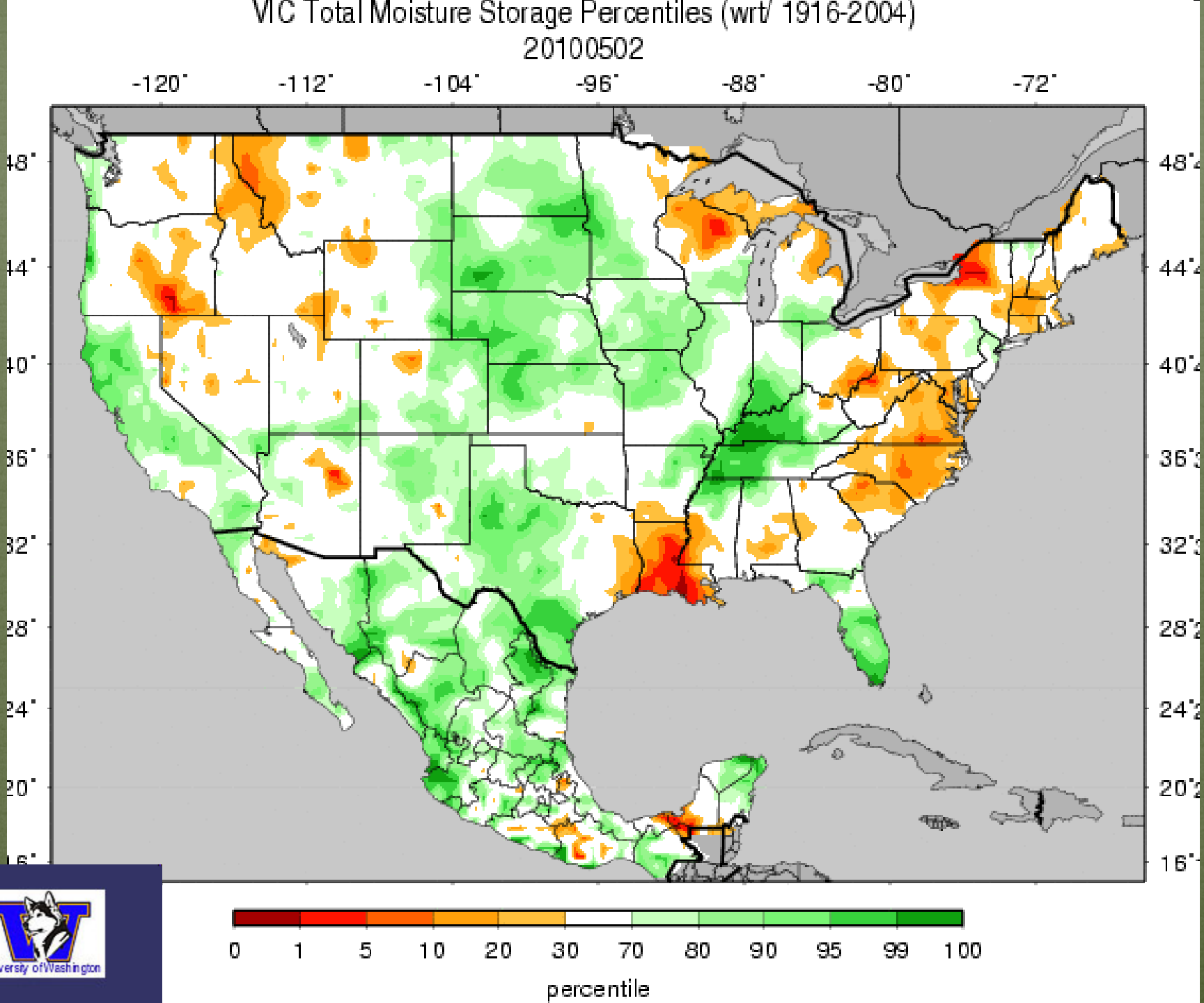


April Temperature Departure from Normal
4/1/2010 – 4/30/2010



Temperature Departure from Normal
4/27/2010 – 5/03/2010

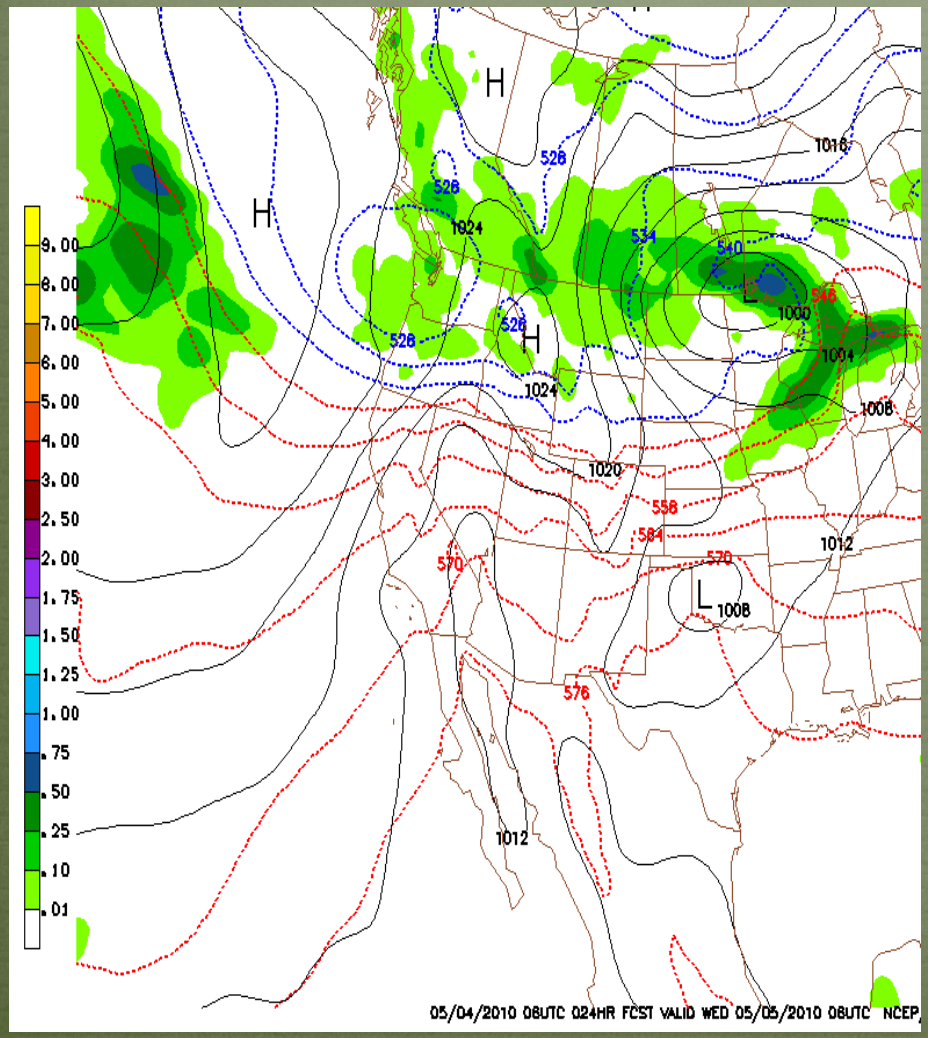



VIC Total Moisture Storage Percentiles (wrt/ 1916-2004)
20100502
-120°
-112°
-104°
-96°
-88°
-80°
-72°
48°
44°
40°
36°
32°
28°
24°
20°
16°
0
1
5
10
20
30
70
80
90
95
99
100
percentile

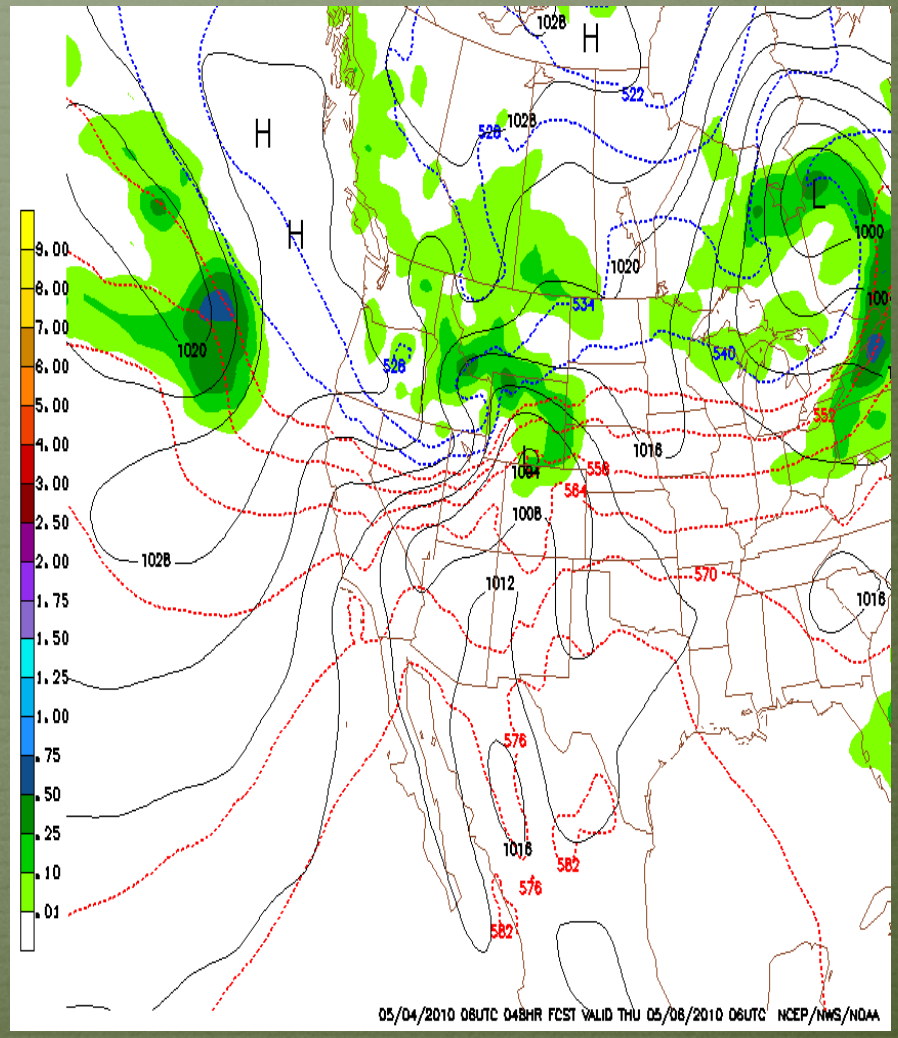
Precipitation Forecast

Joe Ramey Grand Junction Weather Forecast Office

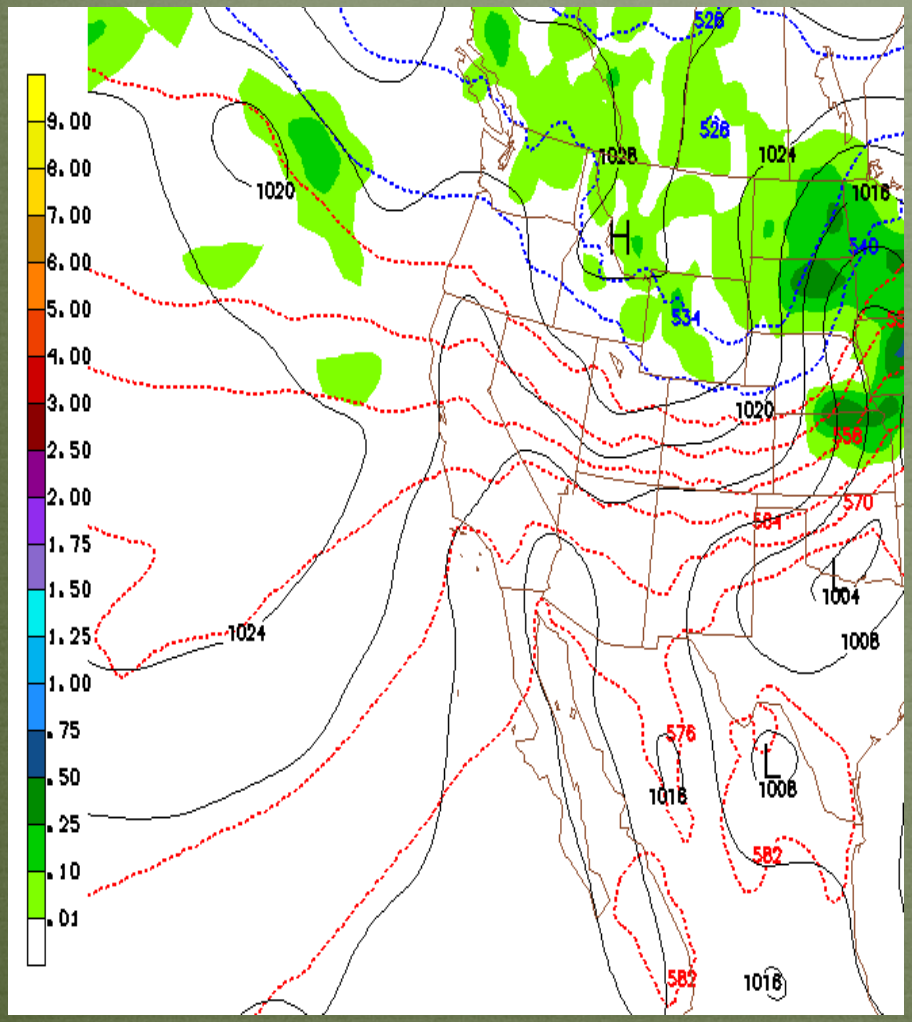
06Z GFS 24 HR 06Z Wed



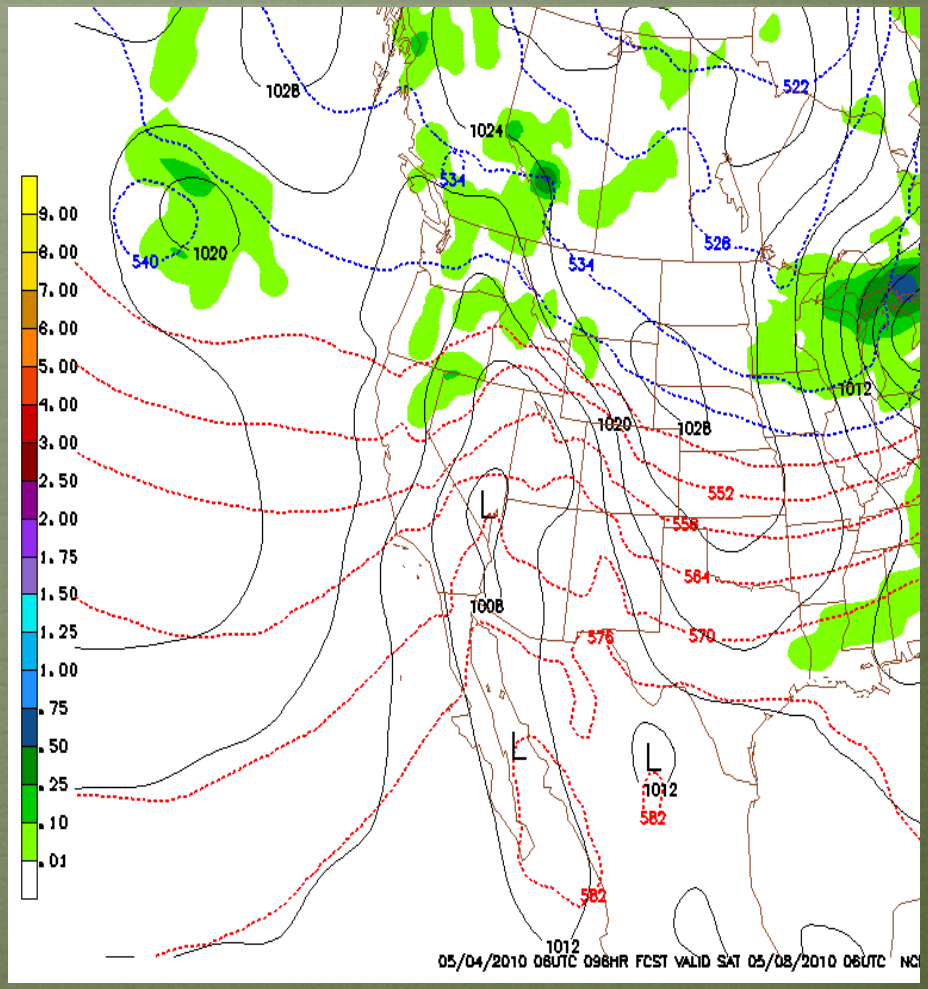
06Z GFS 48 HR 06Z Thu



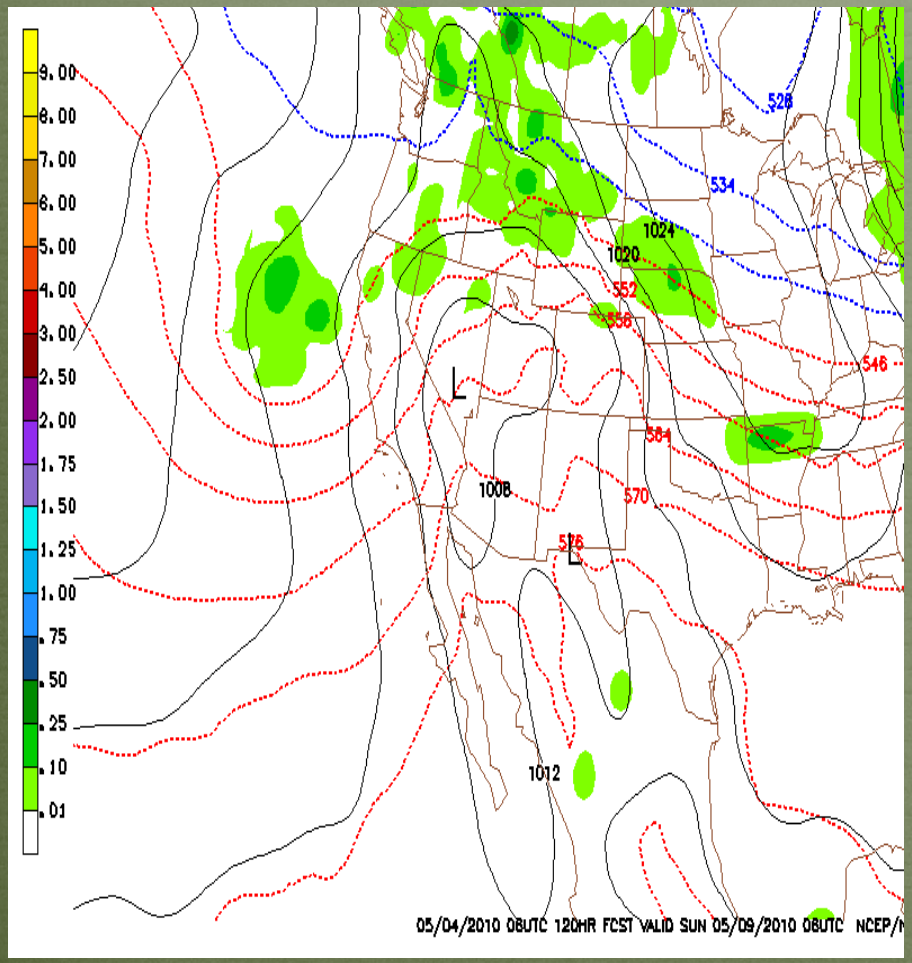
06Z GFS 72 HR 06Z Fri



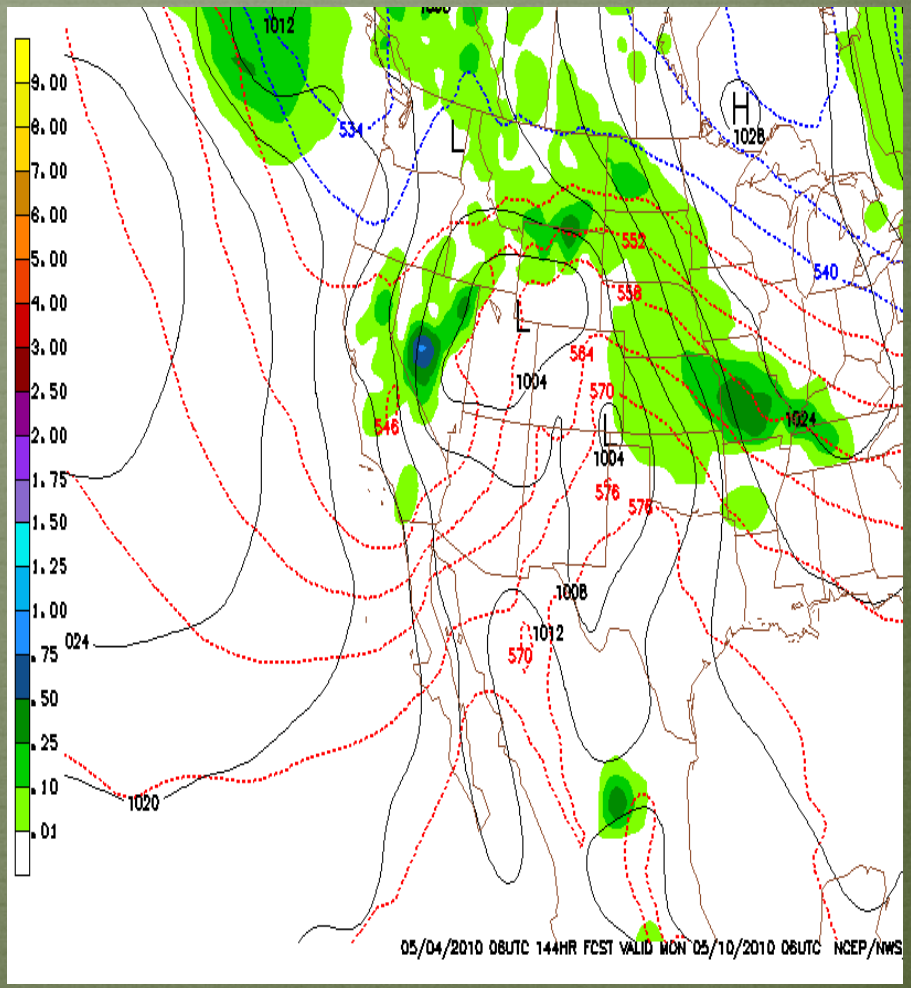
06Z GFS 96 HR 06Z Sat



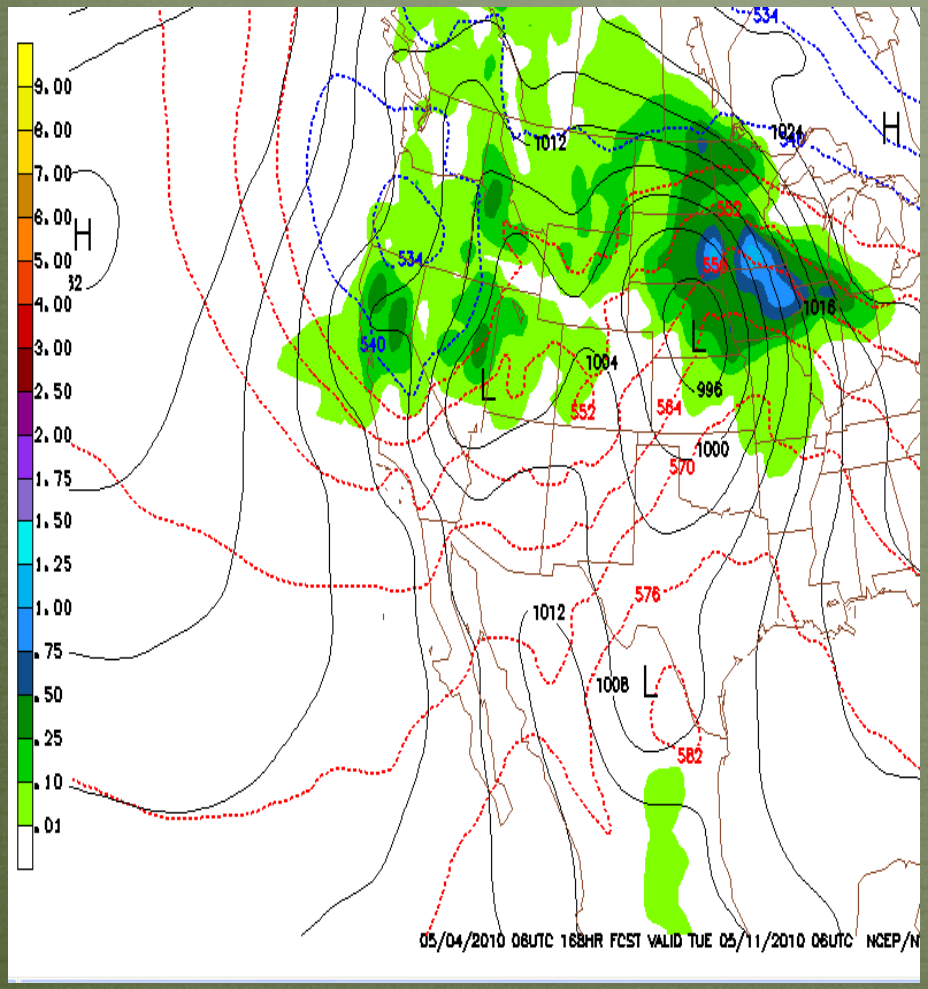
06Z GFS 120 HR 06Z Sun



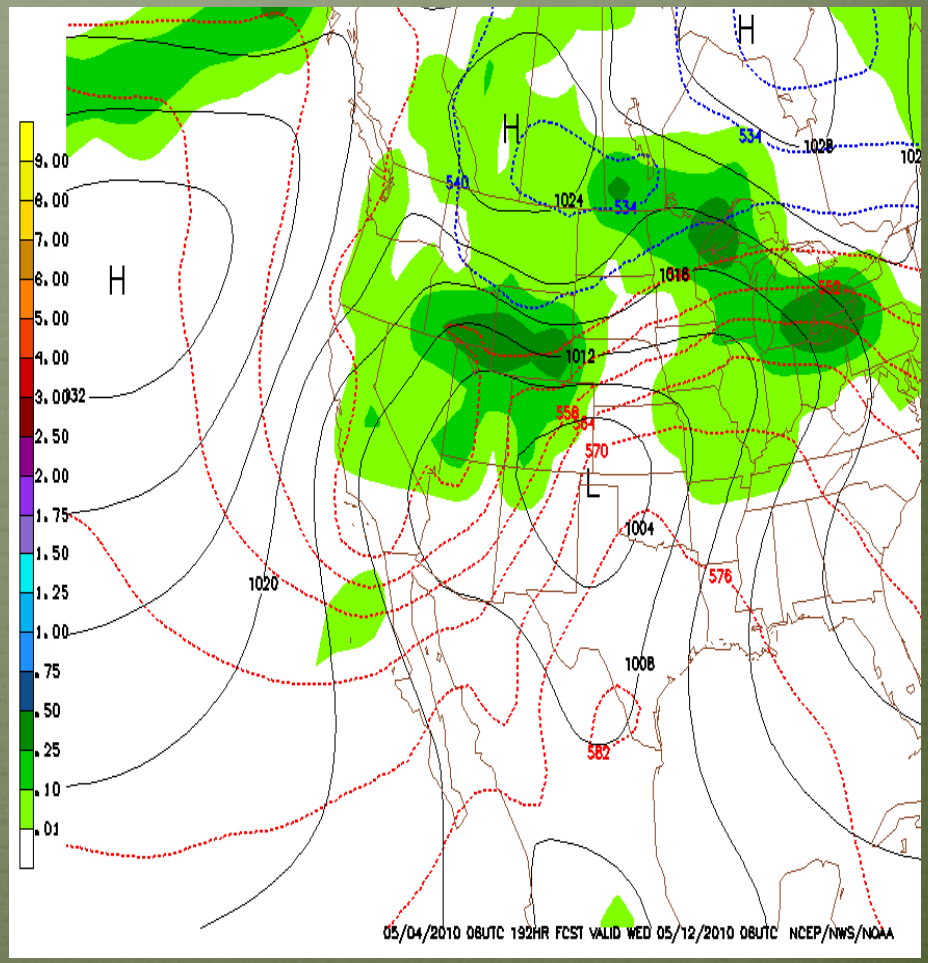
06Z GFS 144 HR 06Z Mon



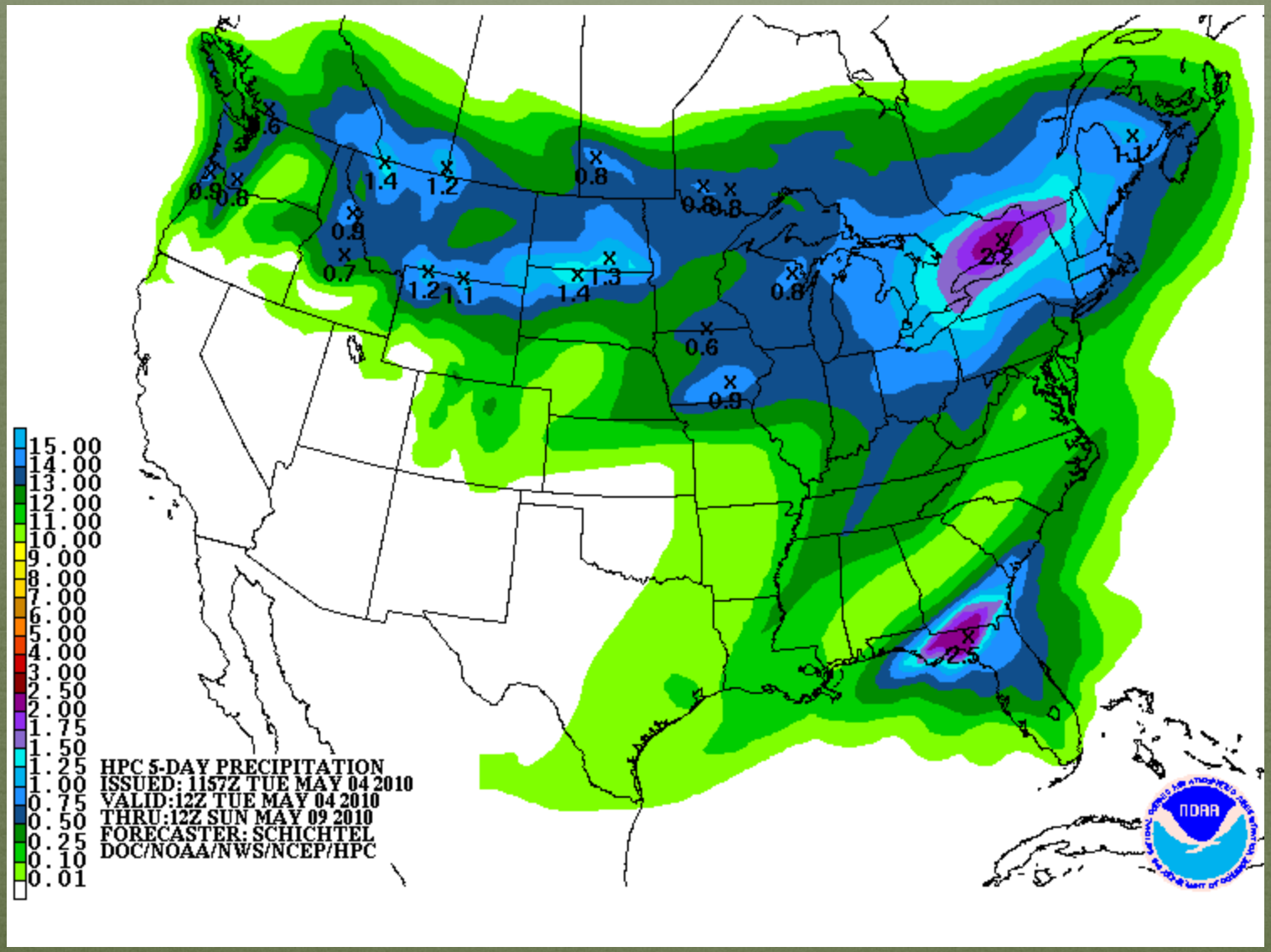
06Z GFS 168 HR 06Z Tue



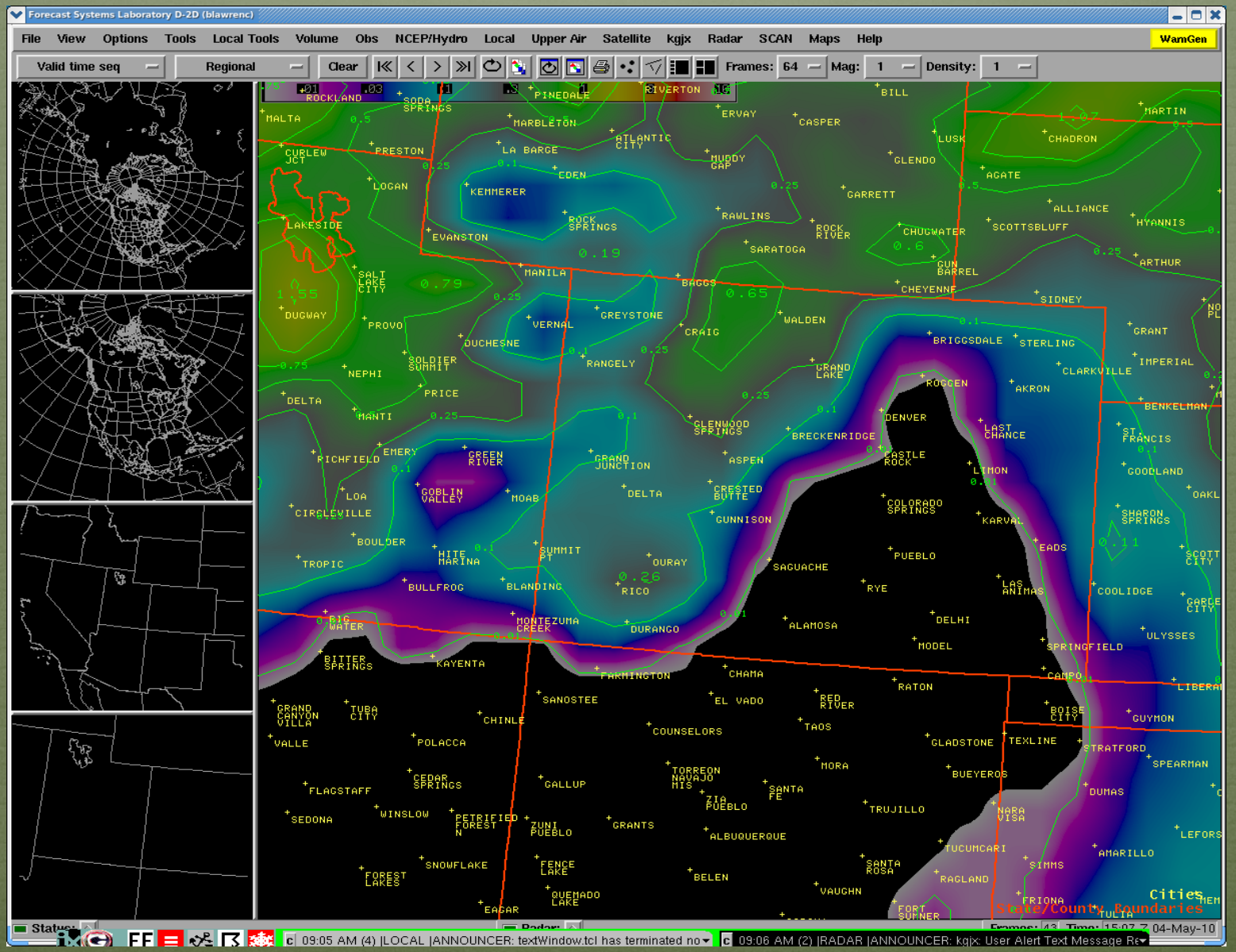
06Z GFS 192 HR 06Z Wed



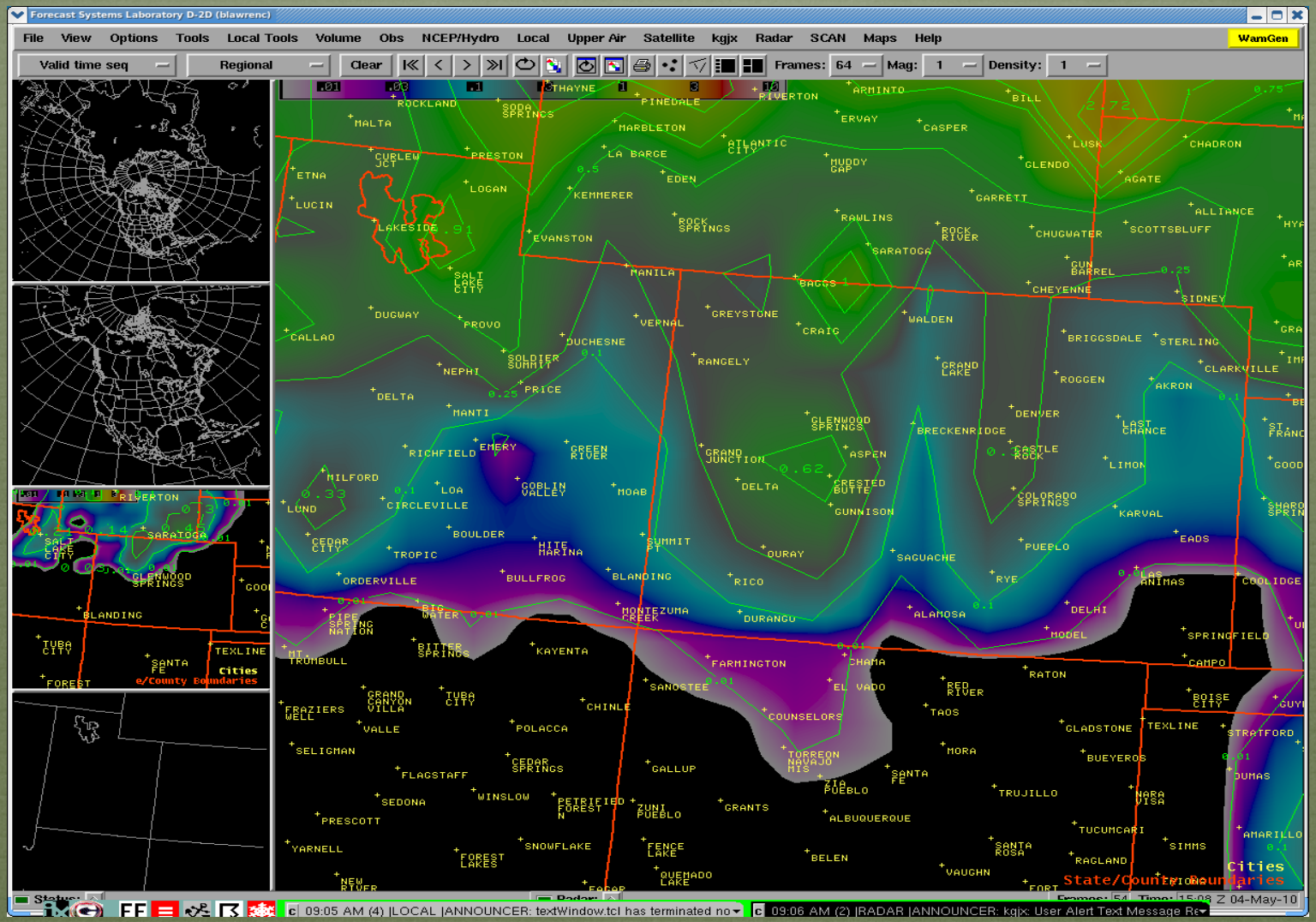
HPC 5 Day Precip Through12Z Sun



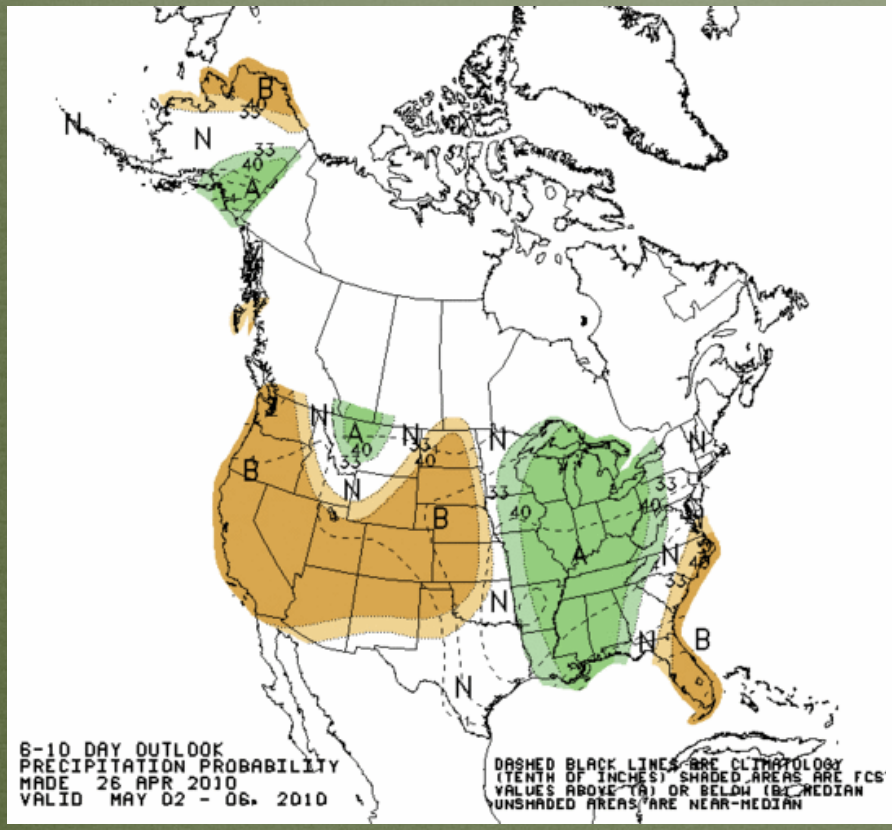
GFS Precip Through 12Z Tue, 5/4

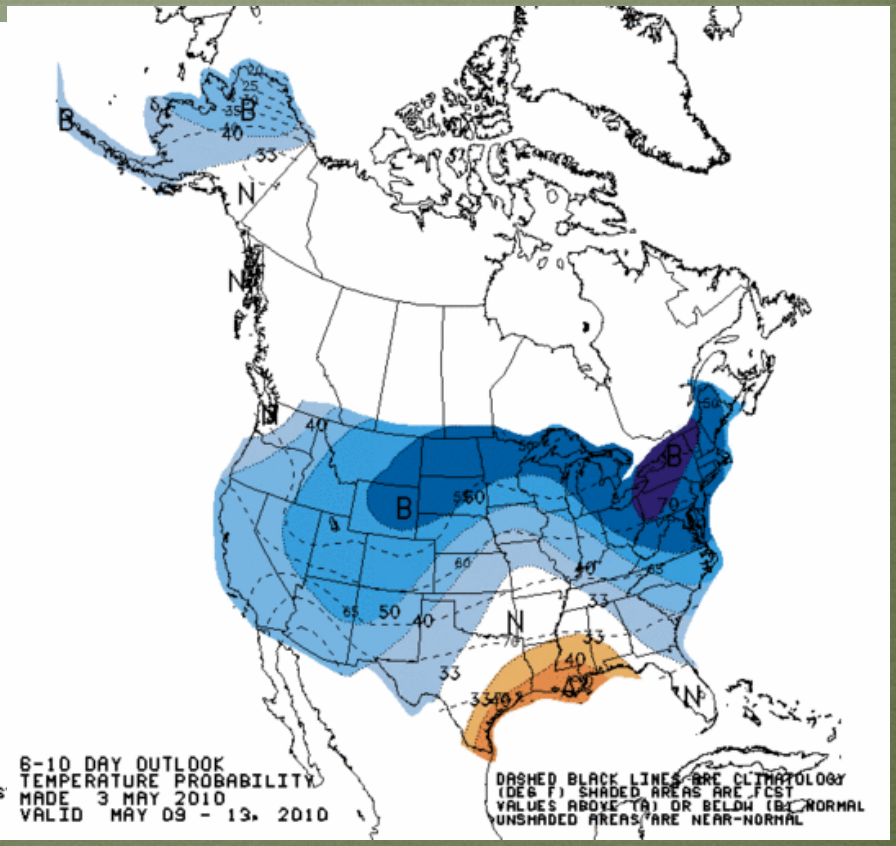


ECMWF Precip Through 12Z Tue, 5/4

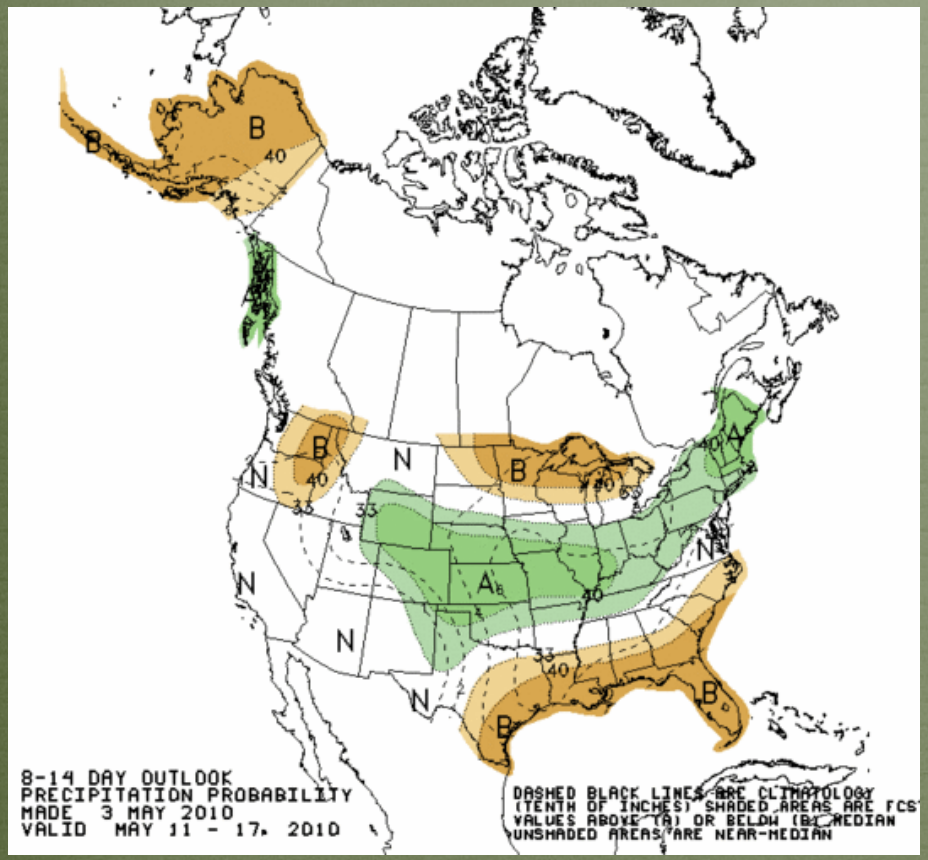


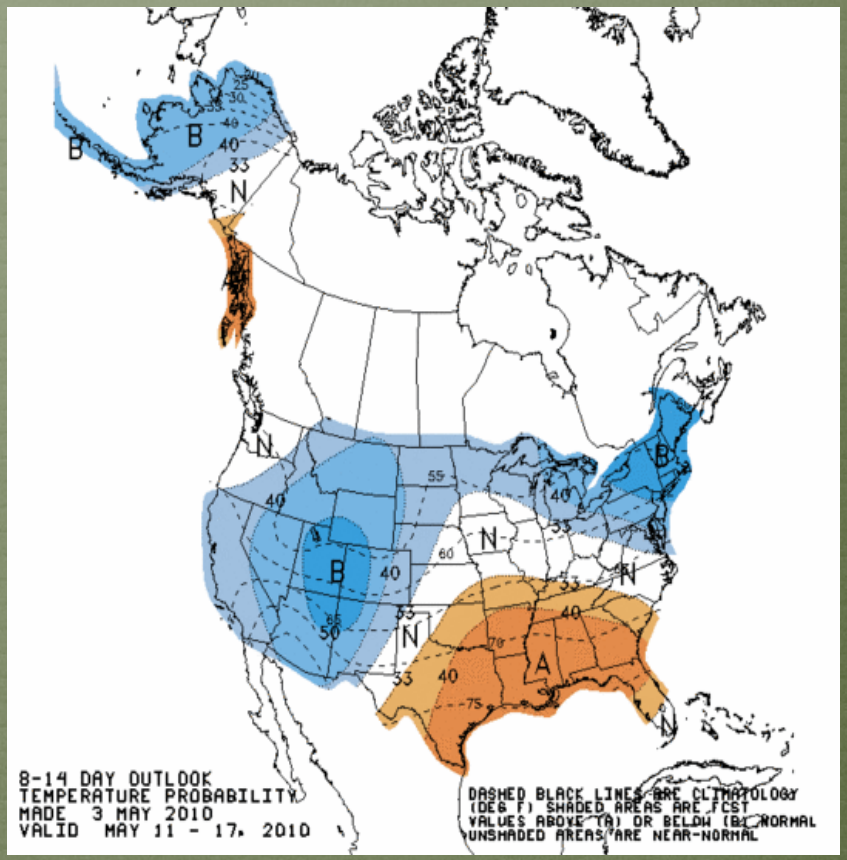
CPC 6-10 Day Outlook



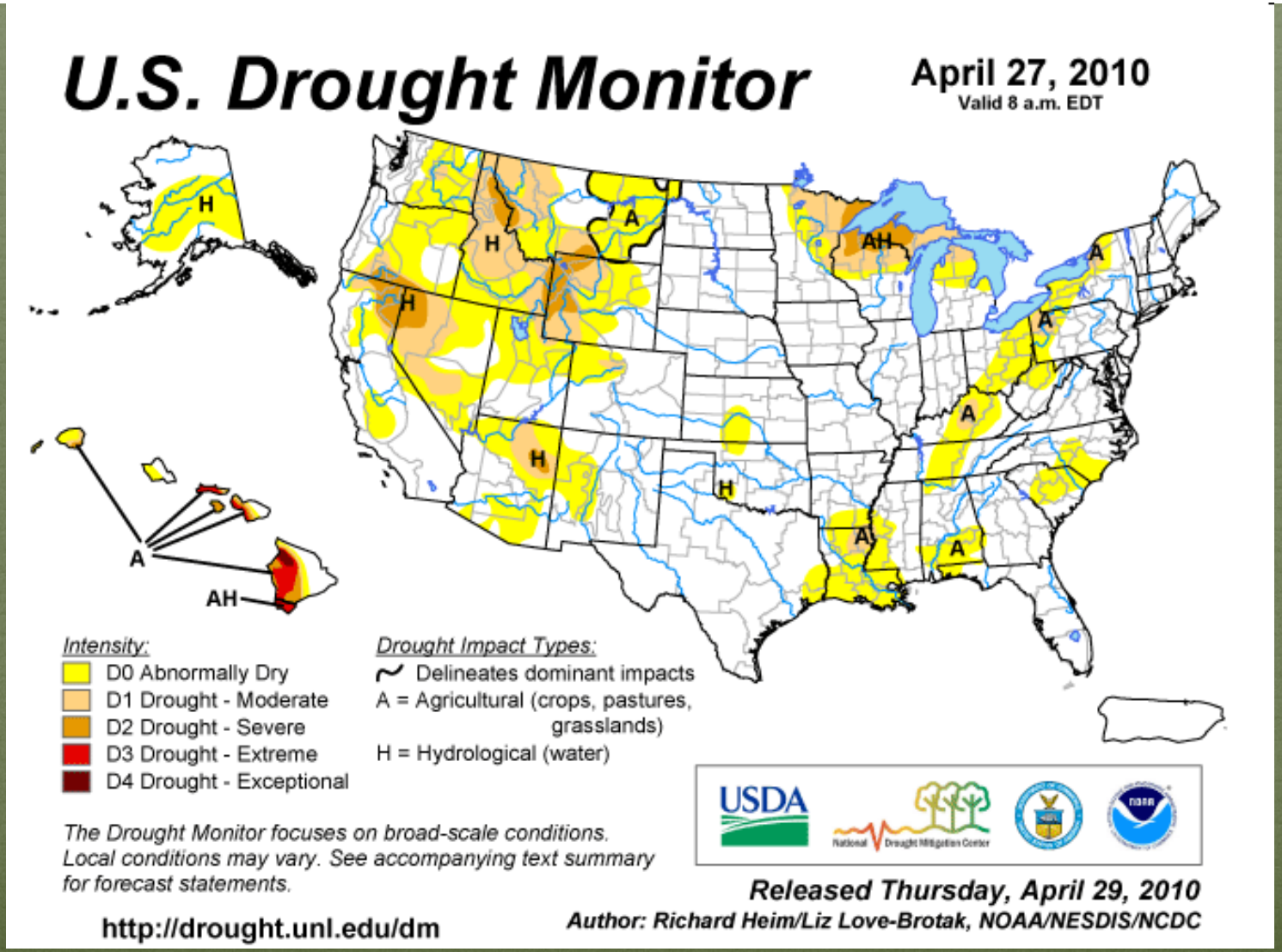


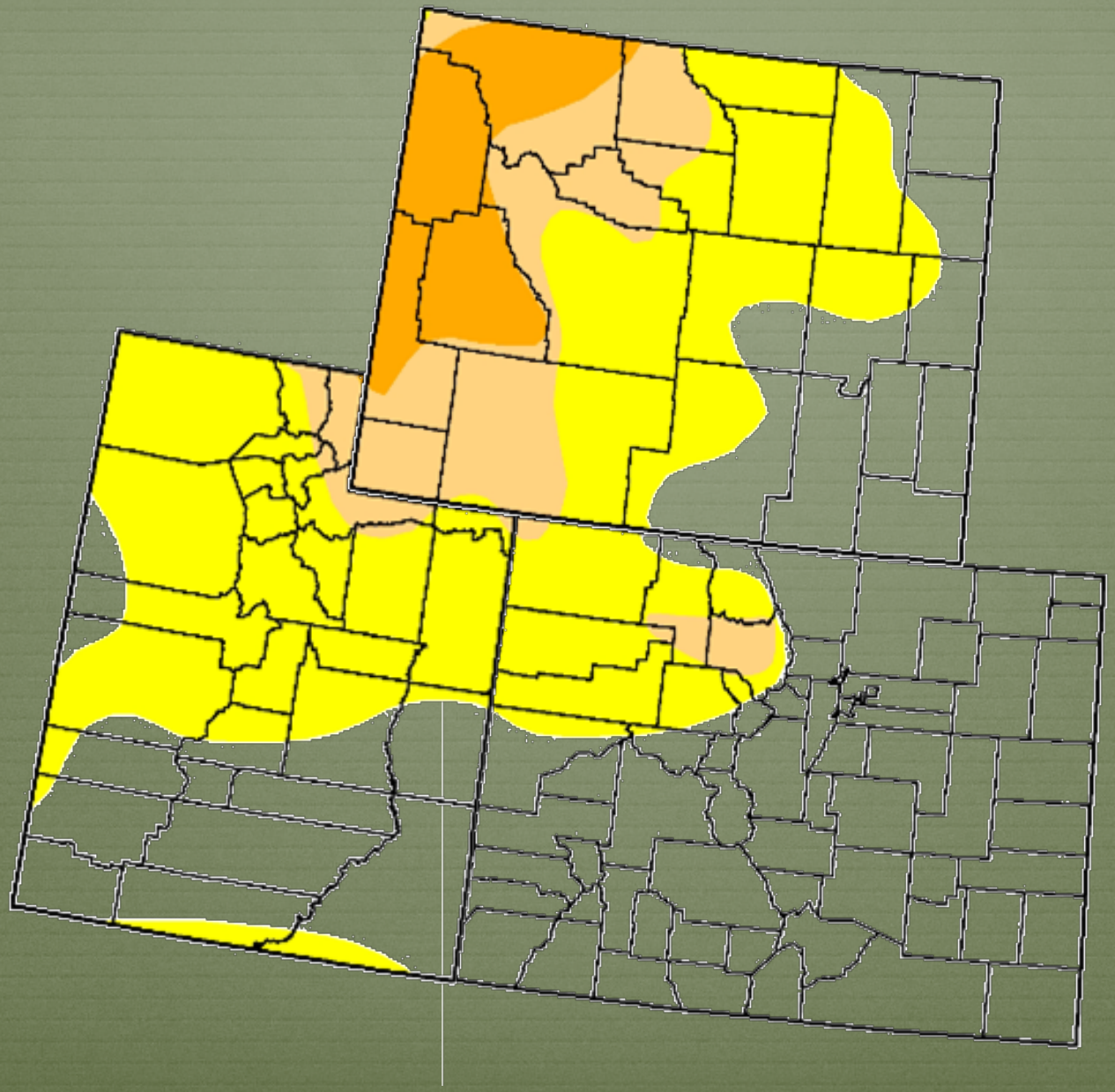
CPC 8-14 Day Outlook





Recommendations





INFO

For more information

Summary

More significant moisture fell over the northern mountains last week, mainly on Wednesday and Thursday, with some areas of Jackson and Routt counties seeing over 2 inches of precipitation. For the month of April, most of the drought affected regions of Colorado saw above normal precipitation, which has significantly improved the water-year-to-date percent of normals. Southwestern Colorado was the driest region of the state for the month of April, though the San Juan basin water-year-to-date percentages are still in good condition, thanks to a wet early winter. The storms last week brought cooler temperatures, which has slowed mountain snow melt. Snowpack percentages have remained well below 100% for Wyoming, with a mixed bag of percentages throughout Utah and Colorado. However, all of the tri-state area saw increases in precipitation percent of averages from last week, anywhere from 1% to 8%, with very few stations reporting a decrease. Cooler temperatures have also slowed runoff, so now 28% of the stream gages are reporting below normal (the 25-75 percentile range) conditions (compared to 17% last week). The below average temperatures, coupled with decent soil moisture on the plains, will minimize the demand for early growing season irrigation water.

The recent pattern for the region has consisted of trough passages around the middle of the week, following mild and breezy conditions early in the week, and bringing cool and wet conditions to the area near the end of the week. The past few weeks, these lows have passed to the south. The next couple of weeks could see a shift in that pattern (and the models are in fairly good agreement in the short term), moving the lows across the north. This shift will mean more light and scattered showers (with limited hydrological input) along with continued cool temperatures.

Based on recent snowpack conditions, Wyoming has recommended status quo for their state. No UT state representatives were on the call, so details about the conditions there will be discussed separately. Conditions in the Colorado River basin in Colorado have continued to improve. Residents are now seeing more snow on the ground than they have been seeing for most of the winter, and there has been little dependence on storage. However, because conditions have been very dry for most of the water year, many are hesitant to improve the drought conditions depicted in that region too soon. There is also still some remaining concern based on very low streamflow forecasts for the entire UCRB. So, status quo has been recommended for Colorado.