Spring 2010

Weekly Climate, Water & Drought Assessment

Today's Agenda

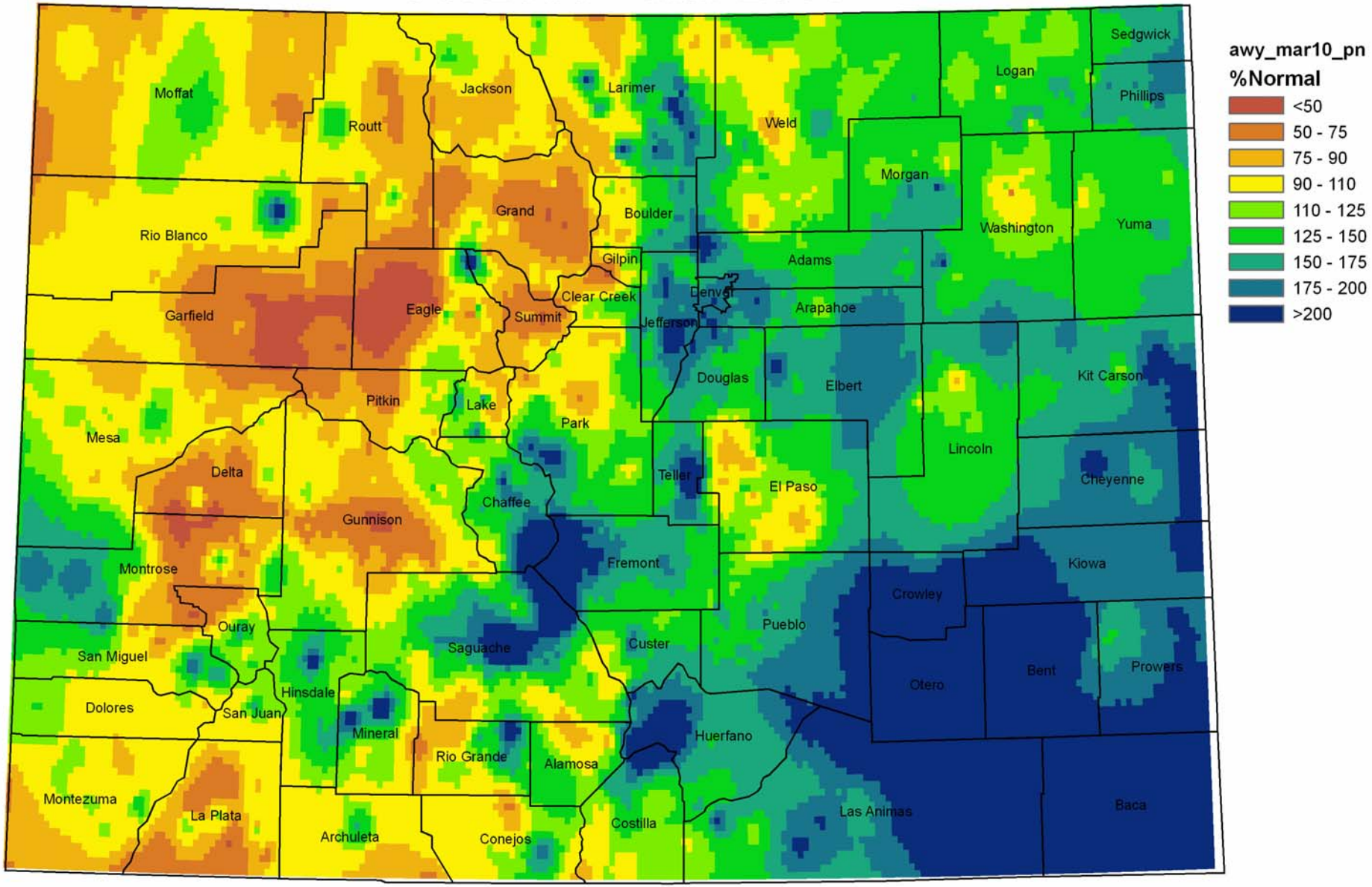
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

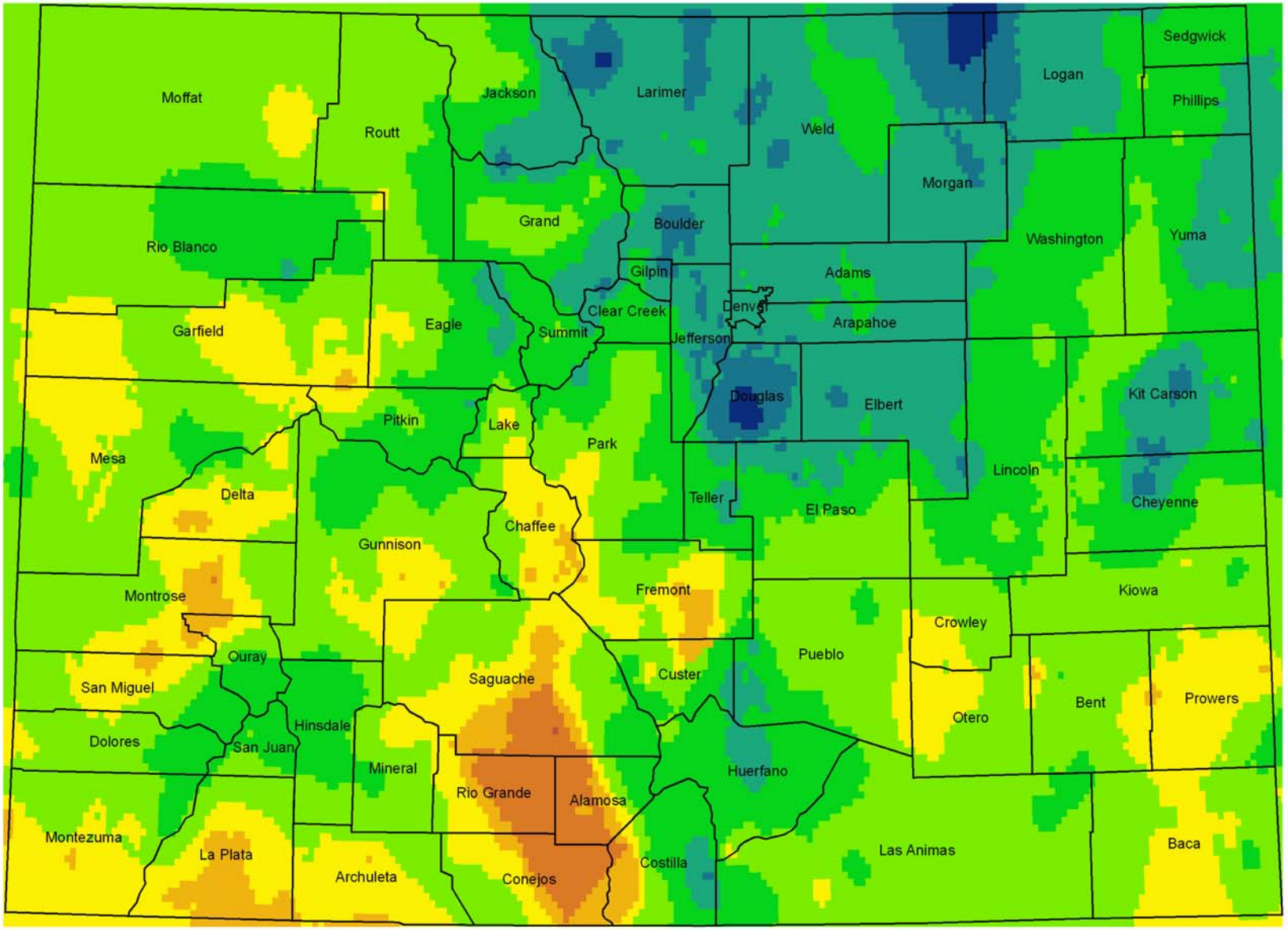
Precipitation/Snowpack Update

Water Year 2010 Precipitation as Percentage of Normal
Oct 2009 - Mar 2010



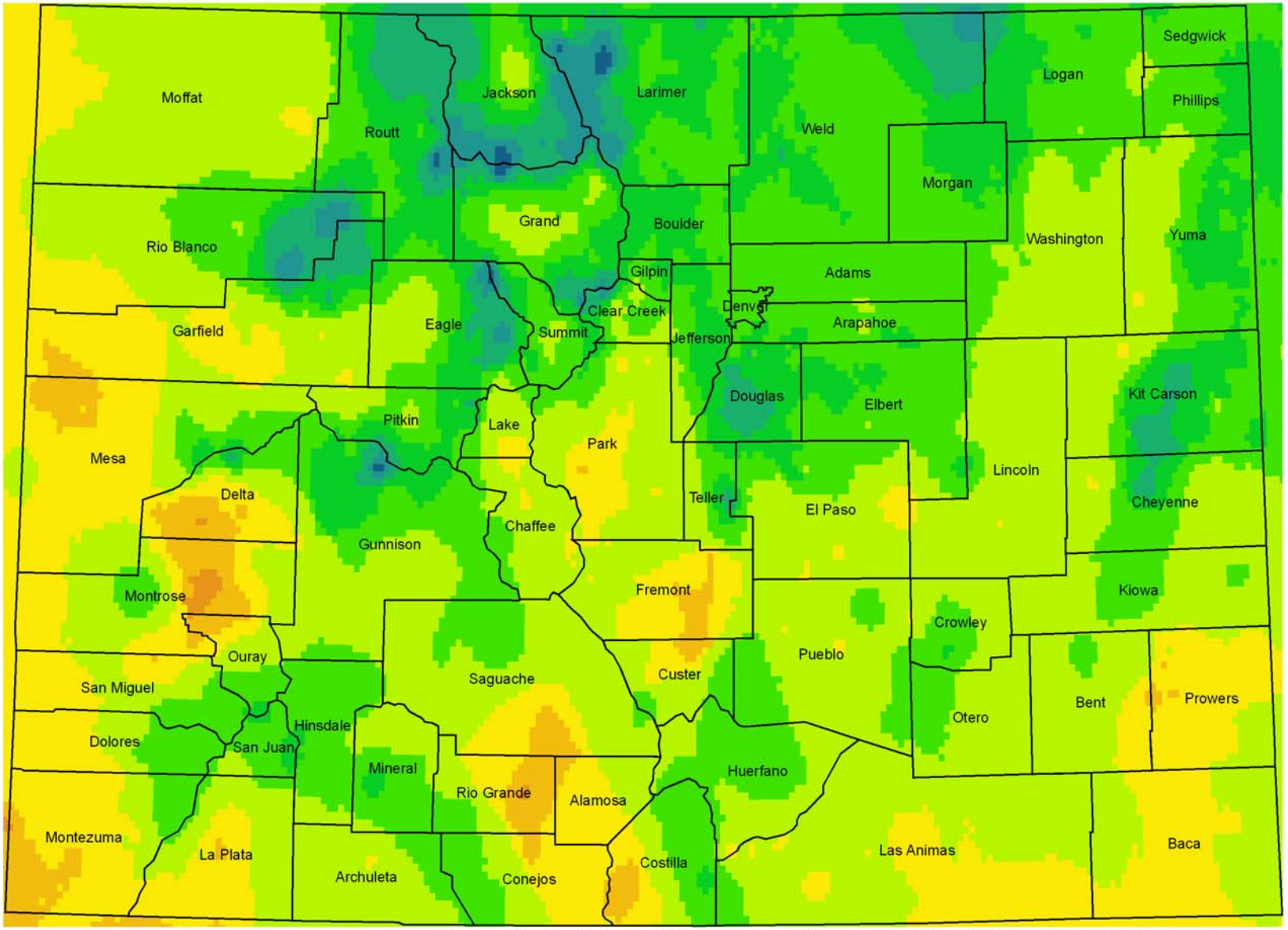
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado 7 Day Precipitation (in) 19 - 25 April 2010



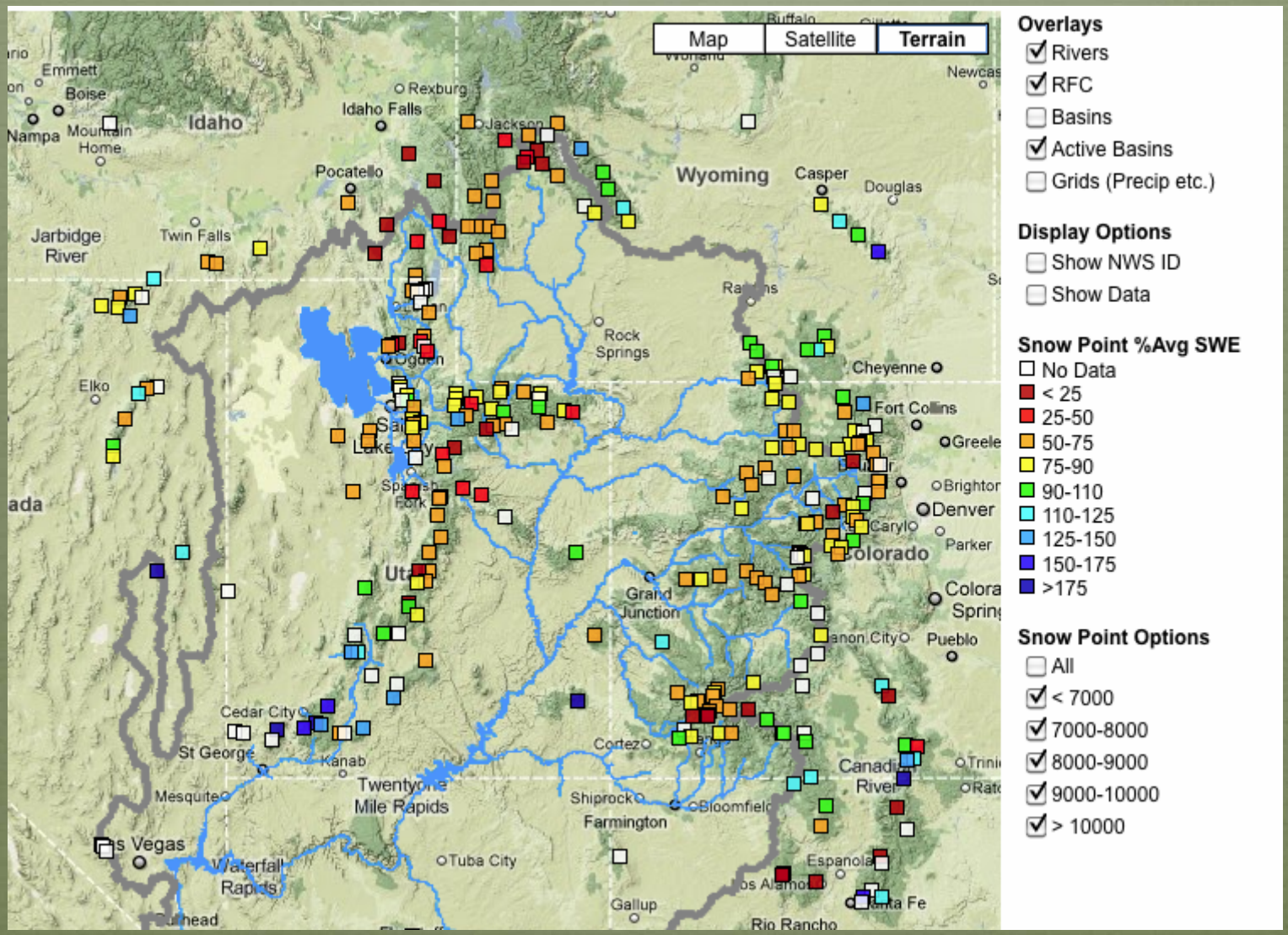
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado Month to Date Precipitation (in)
1 - 25 April 2010



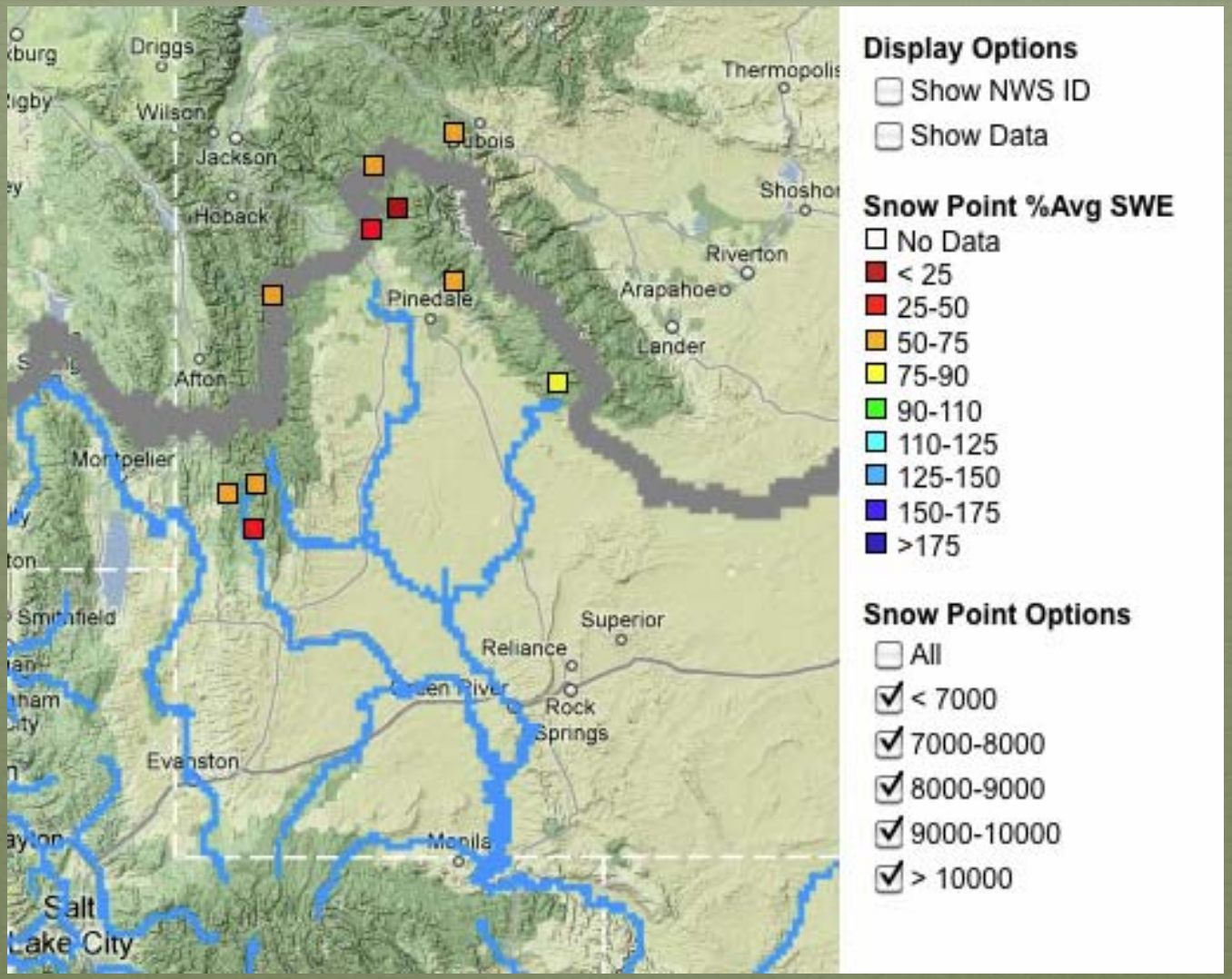
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Upper Colorado River Basin

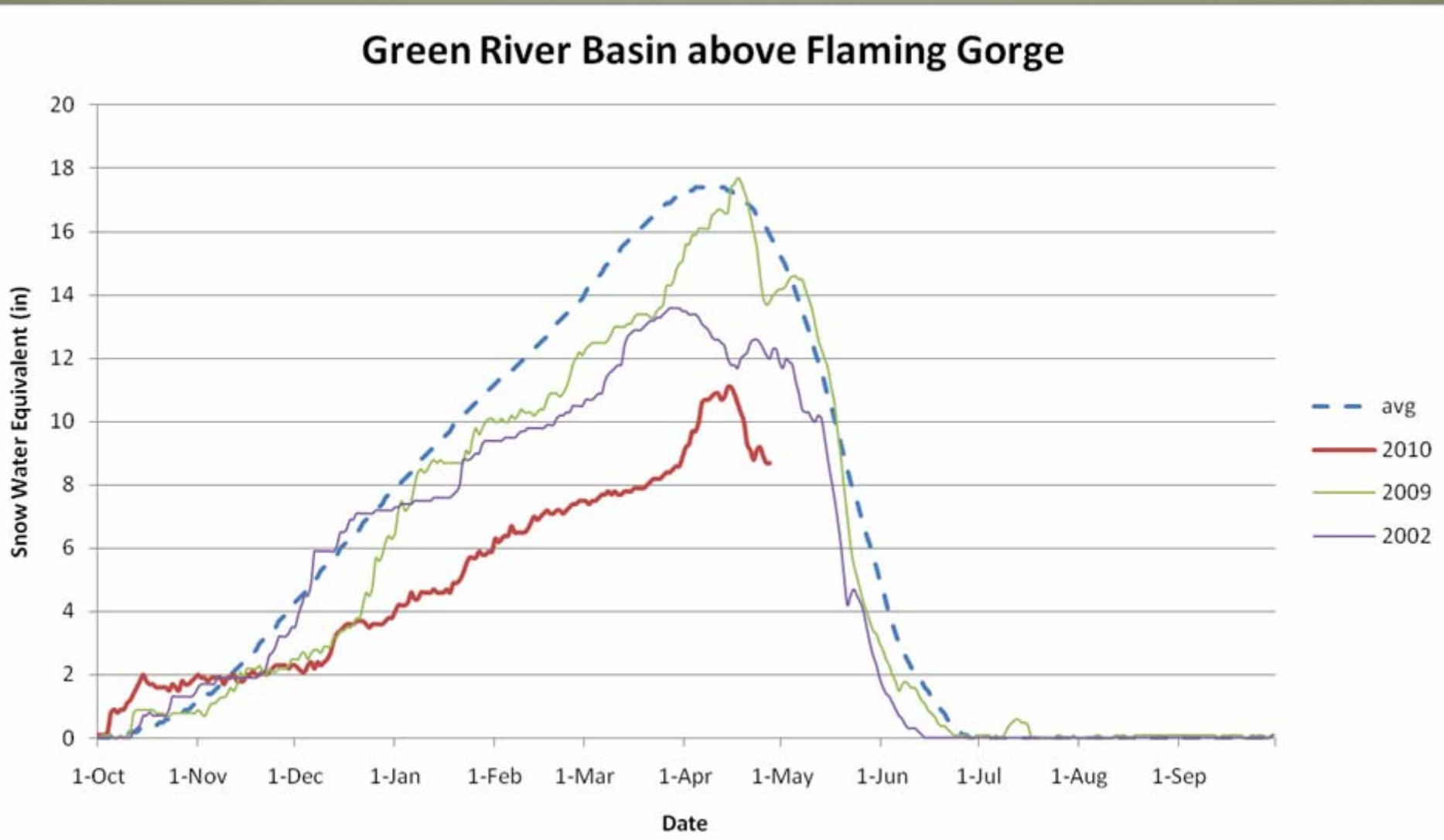


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

Green River Basin above Flaming Gorge

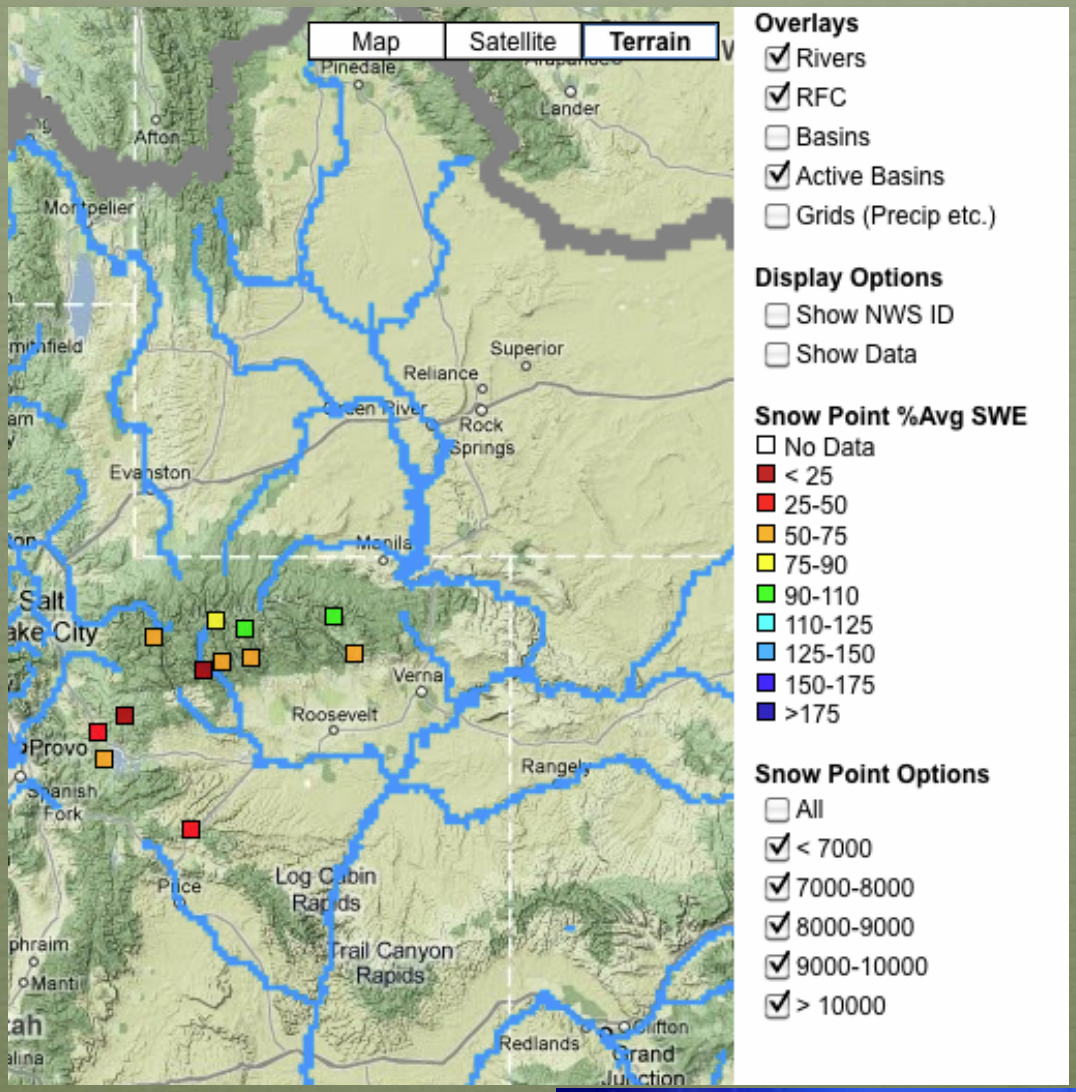


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



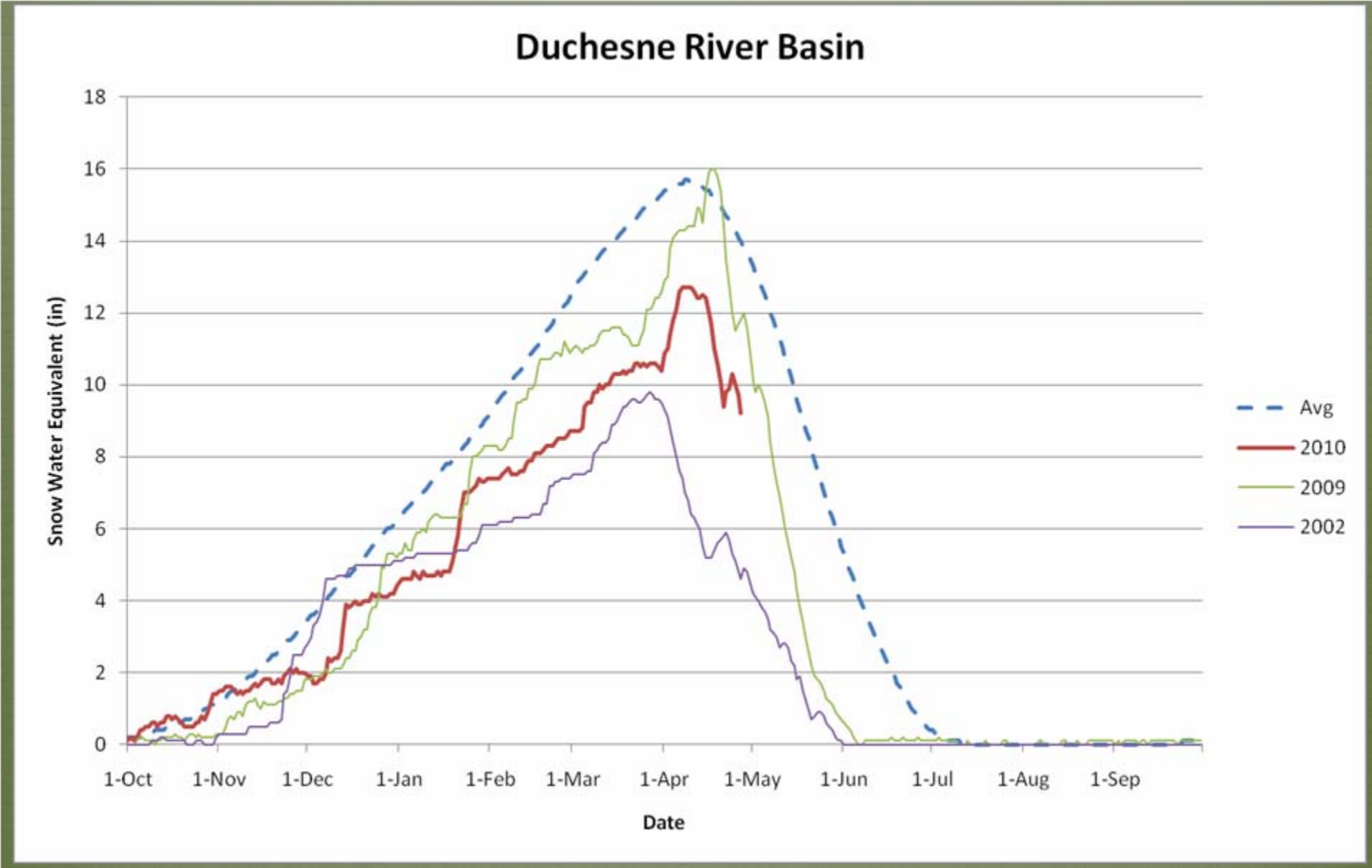
Basin Snowpack: 55%

Duchesne River Basin



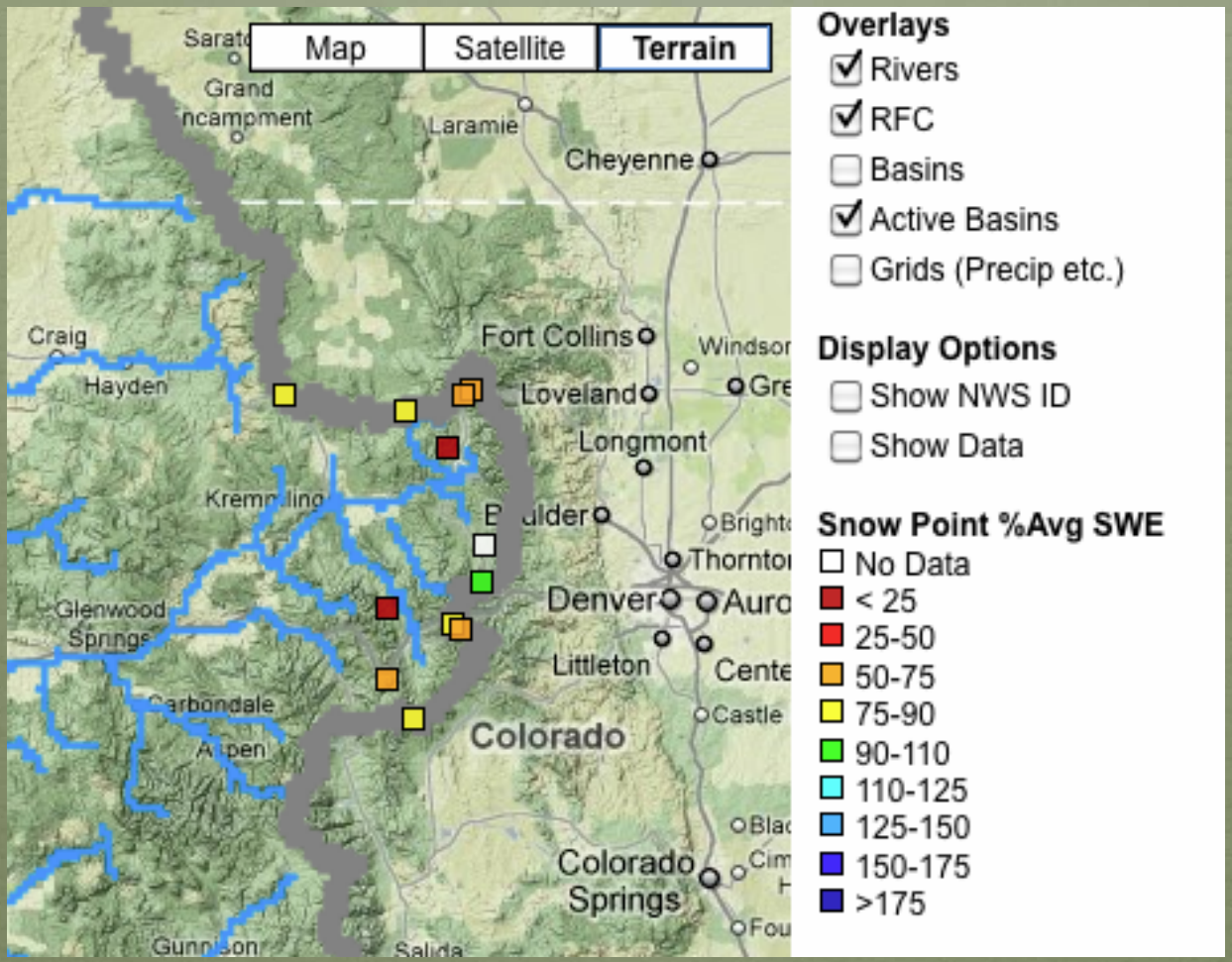
NATIONAL WEATHER SERVICE

Colorado Basin River Forecast Center

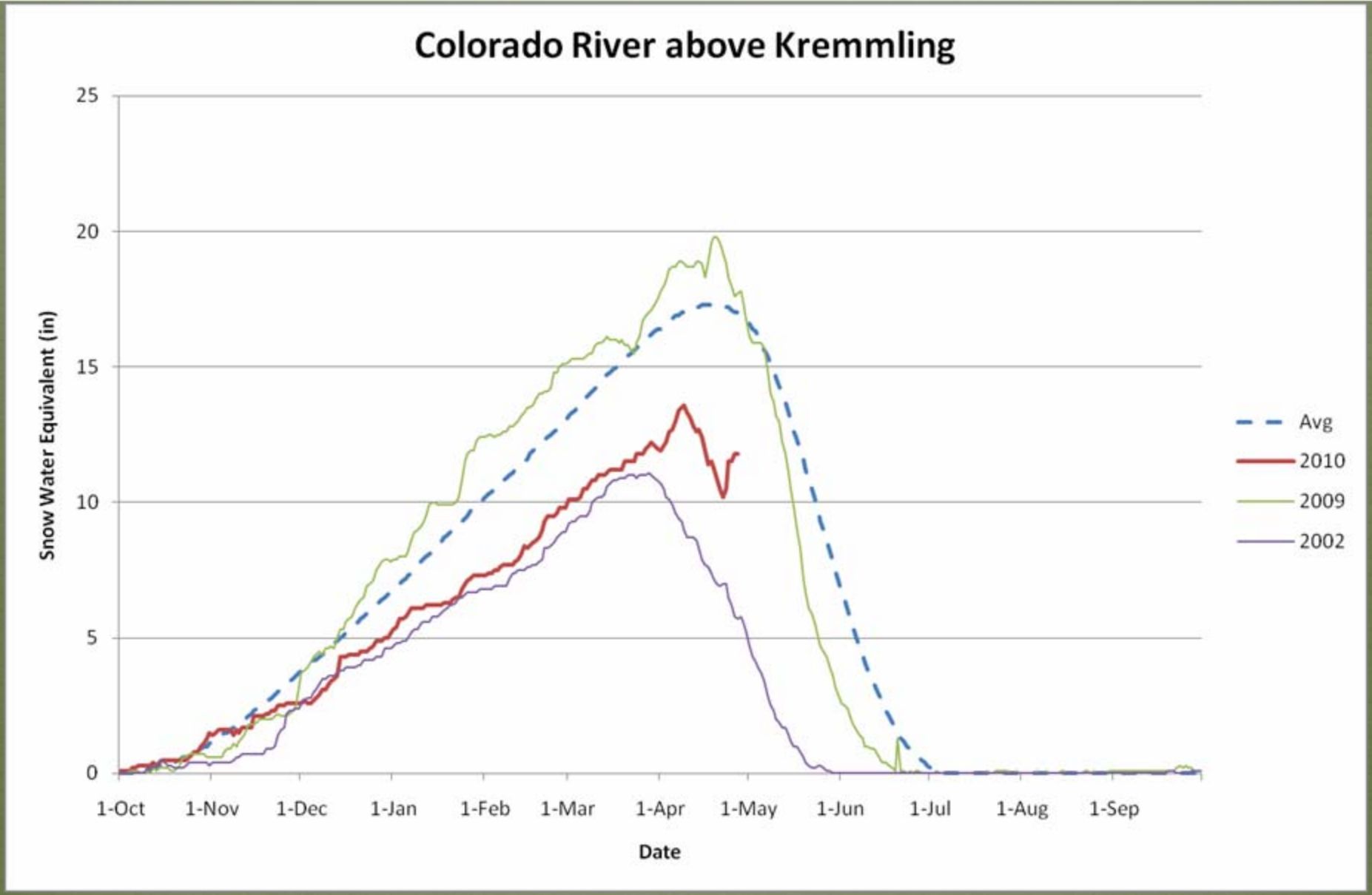


Basin snowpack: 66%

Upper Colorado above Kremmling

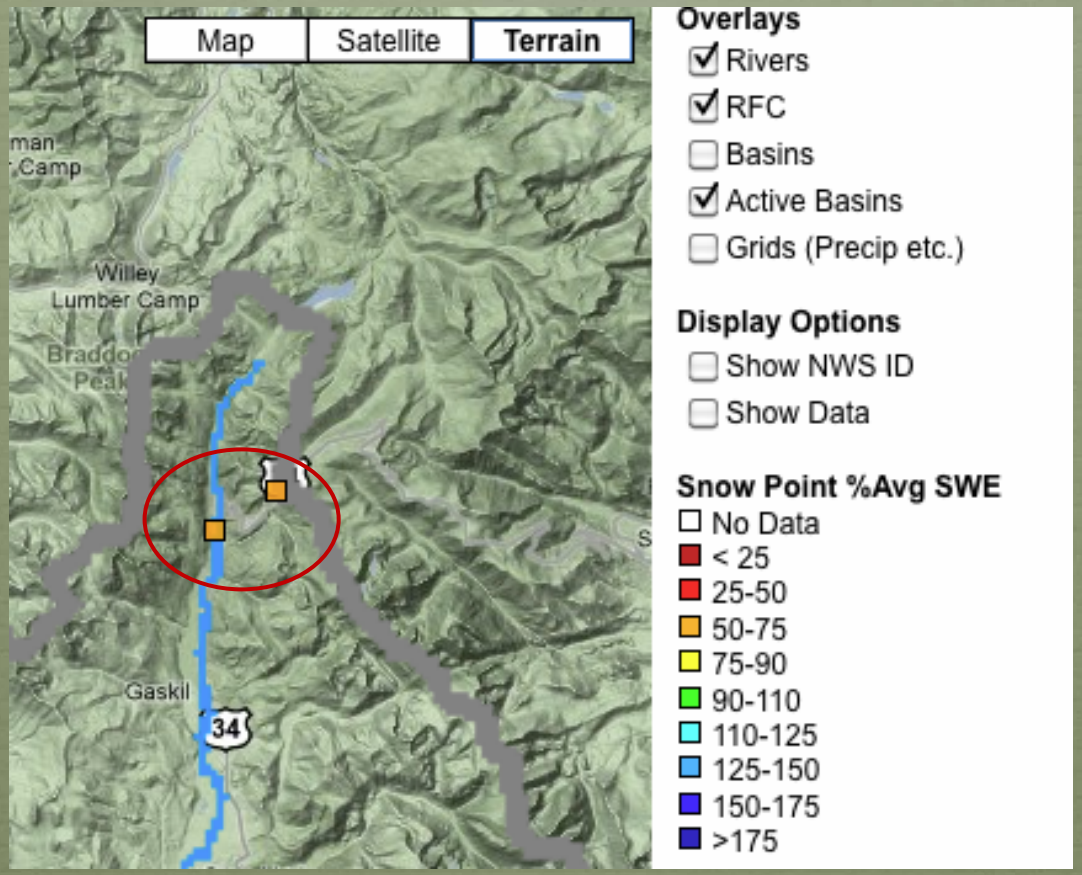


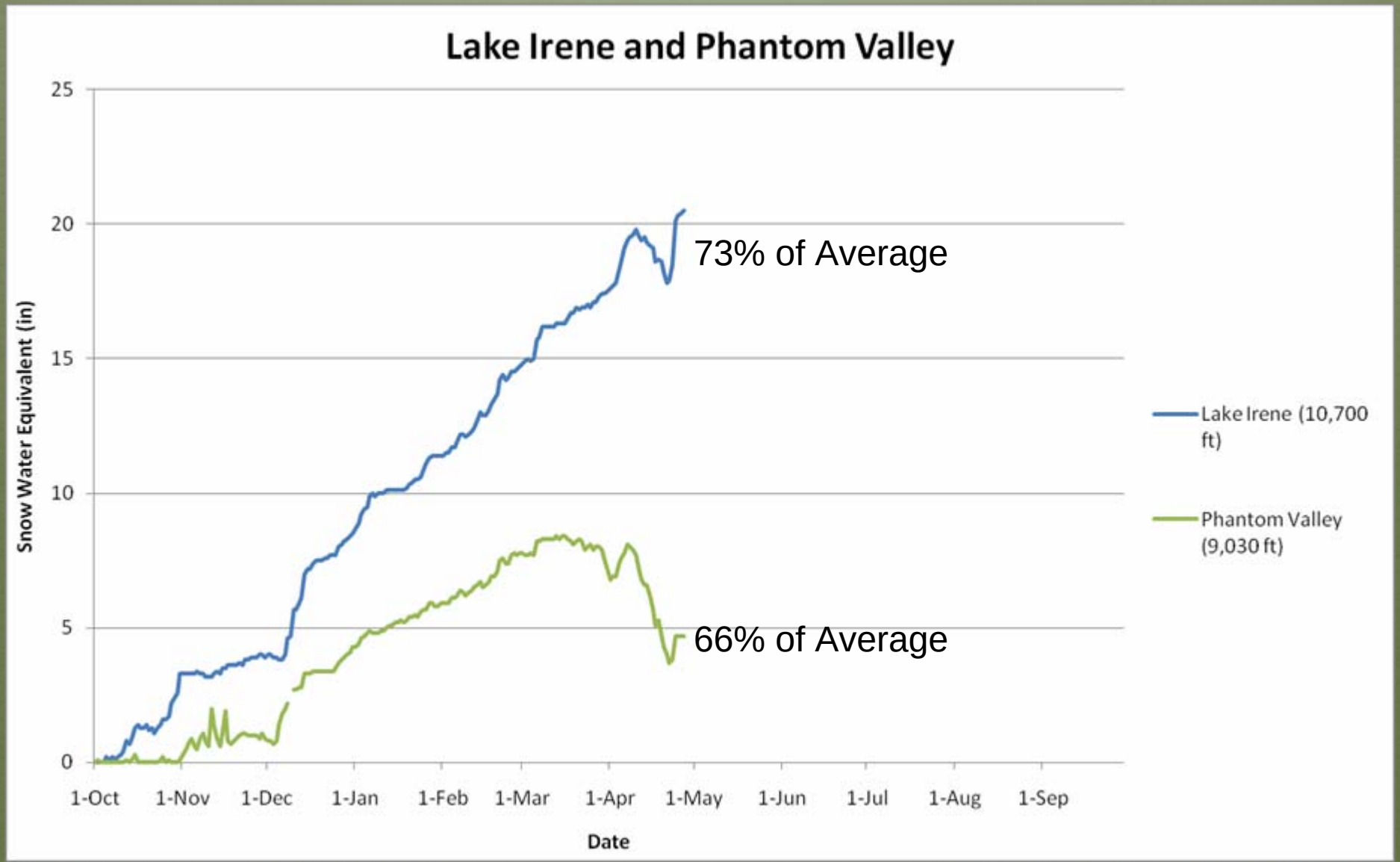
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



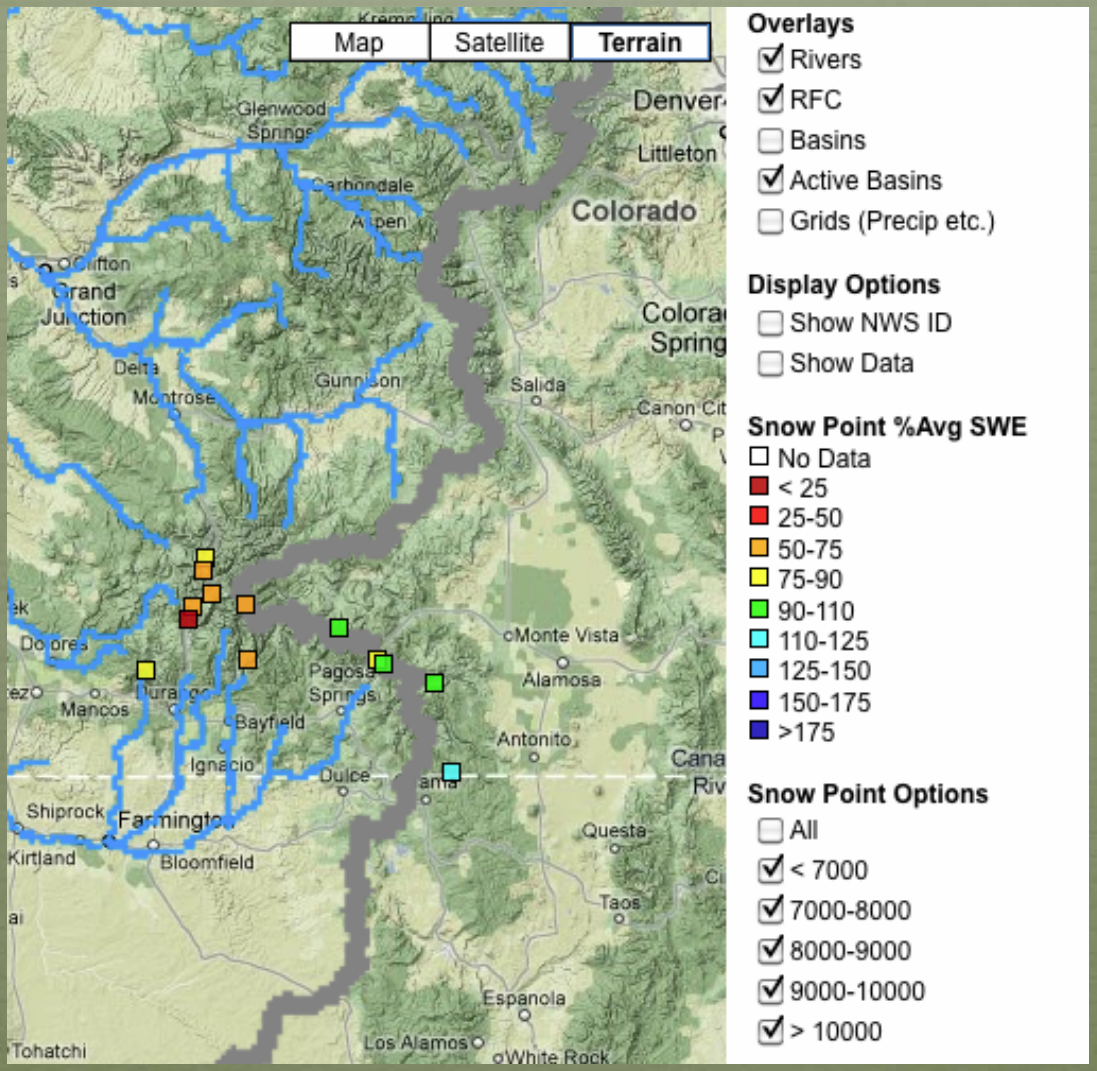
Basin Snowpack: 73%

Lake Irene and Phantom Valley

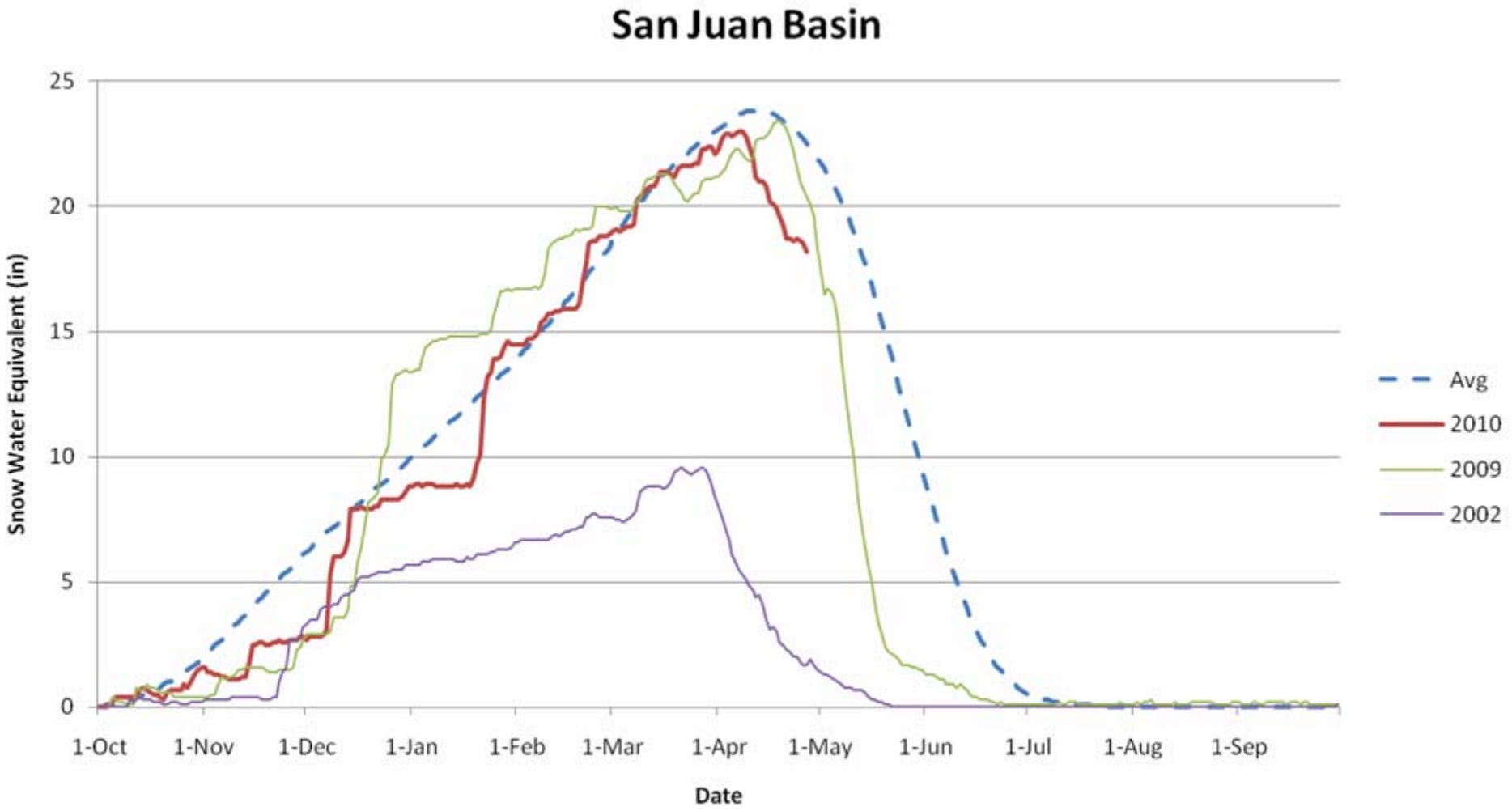



Lake Irene and Phantom Valley
Snow Water Equivalent (in)
25
20
15
10
5
0
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
73% of Average
66% of Average
Lake Irene (10,700 ft)
Phantom Valley (9,030 ft)

San Juan Basin



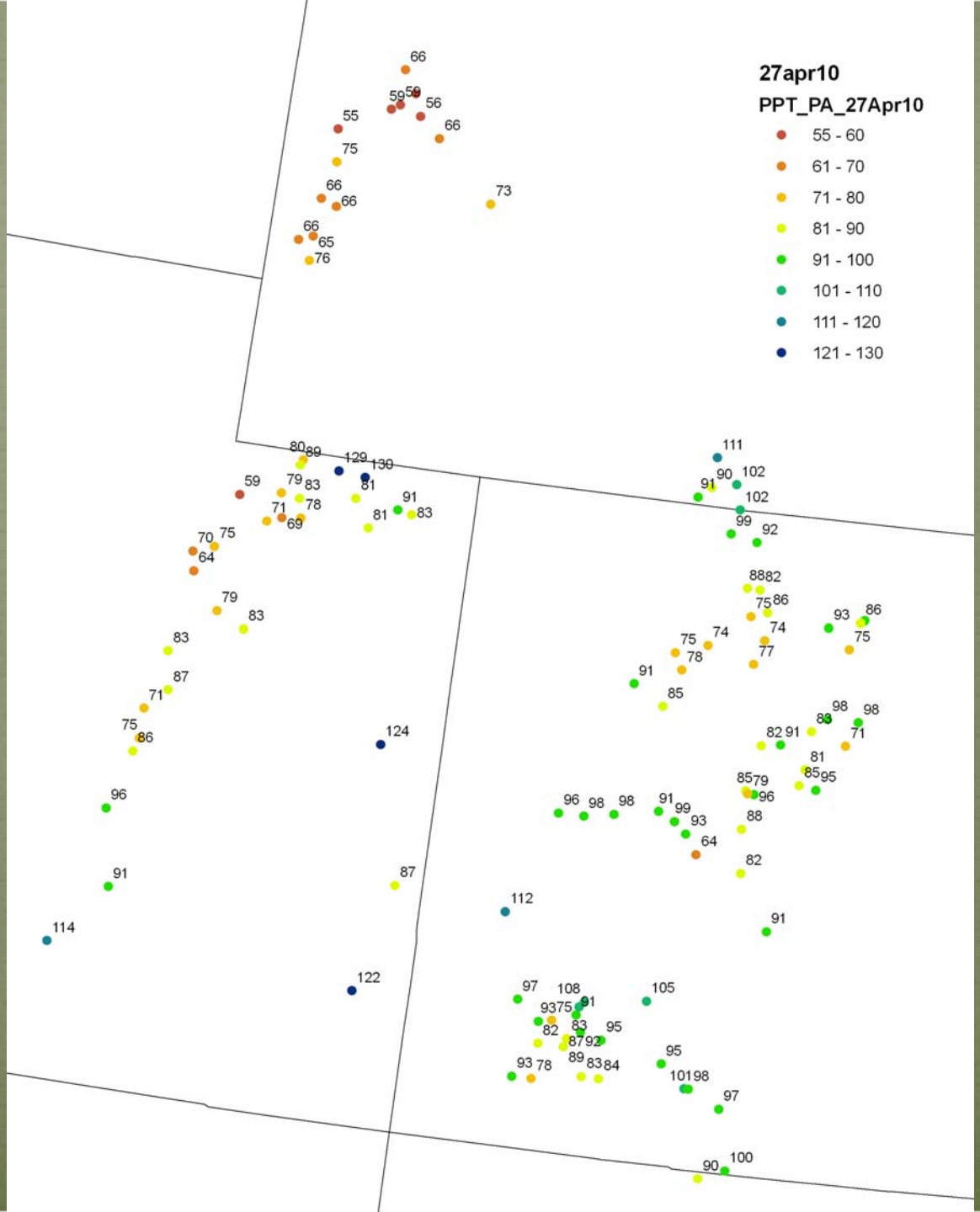
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



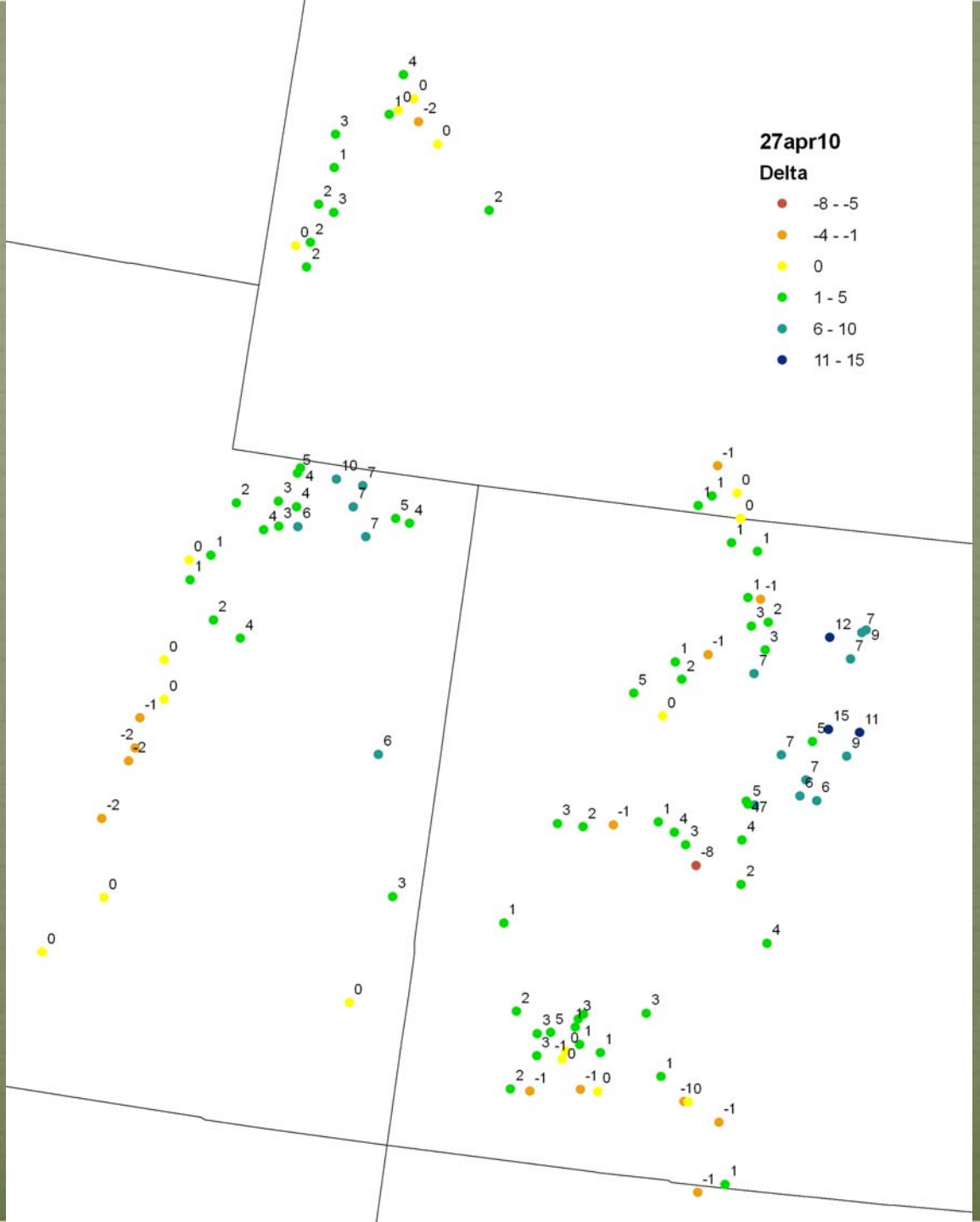
Basin Snowpack: 81%

Snotel WYTD Precipitation as Percentage of Average

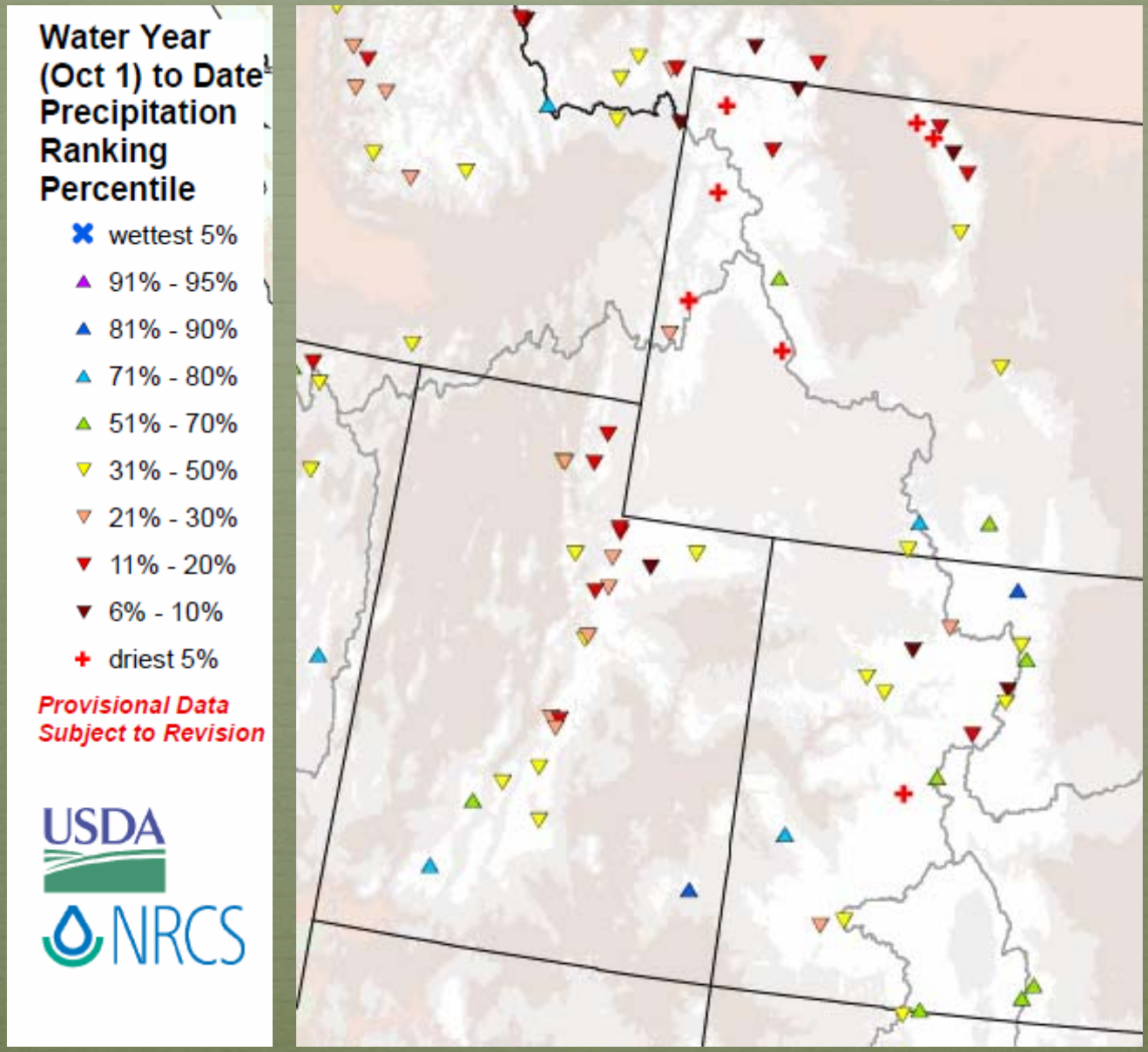
Upper Colorado 84% of Average Overall



1 Week Change in Snotel WYTD Precipitation Percent of Average



Western Snotel Percentiles 20 Apr 2010



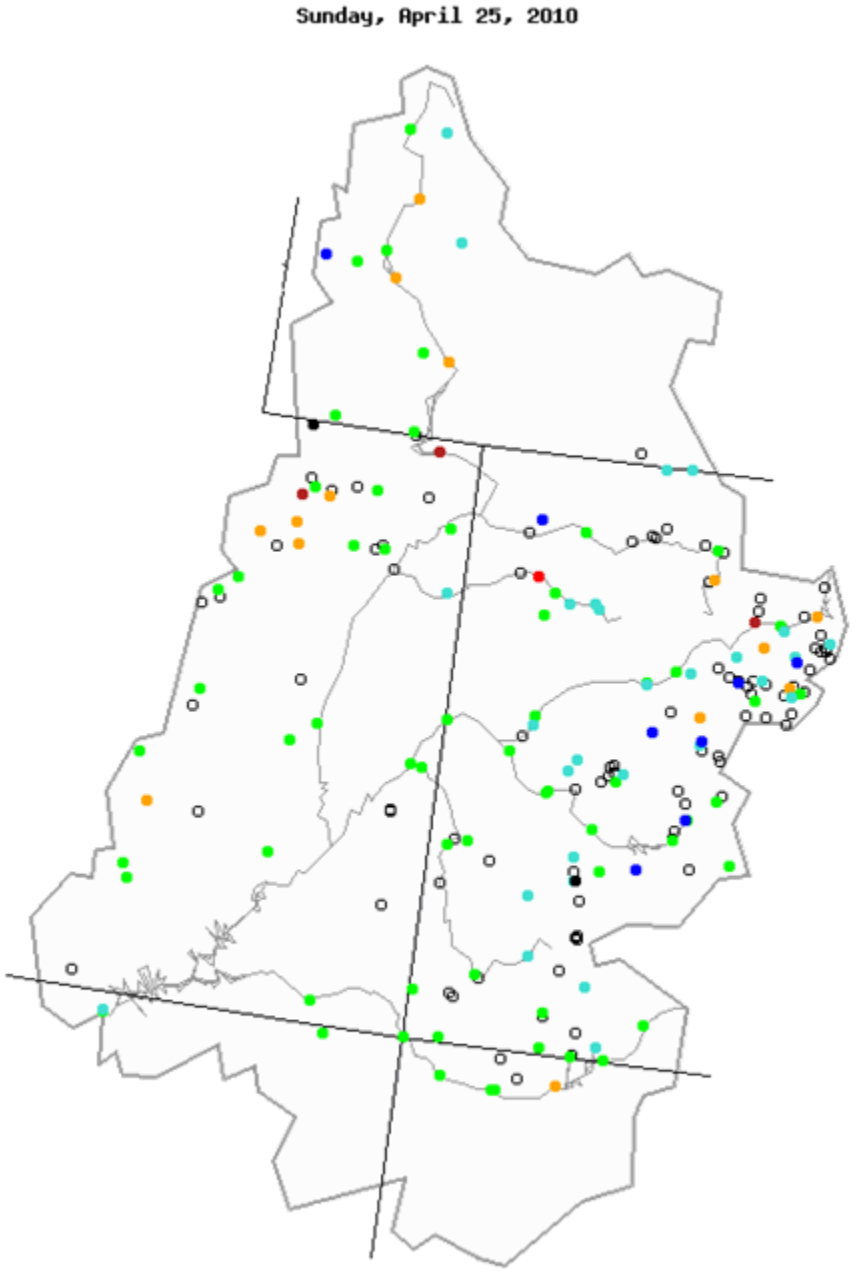
http://www.wcc.nrcs.usda.gov/gis/precip.html

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

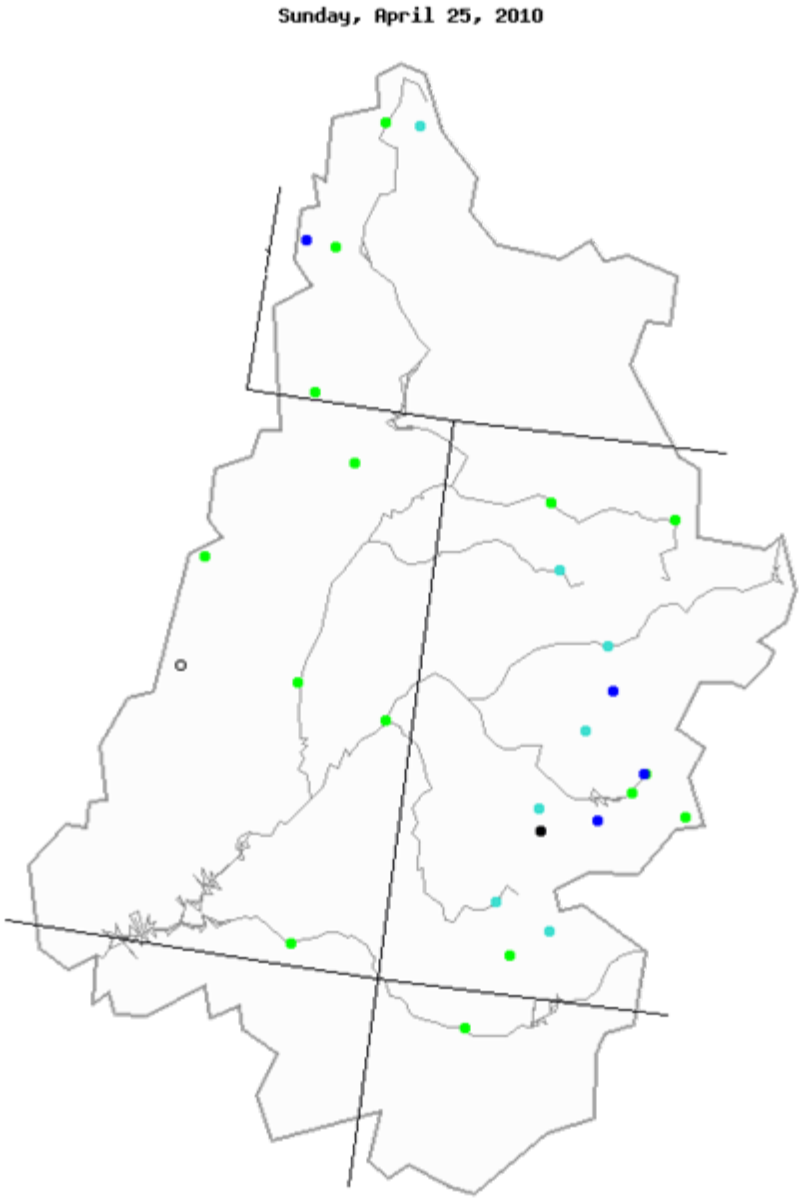


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

Upper Colorado Basin

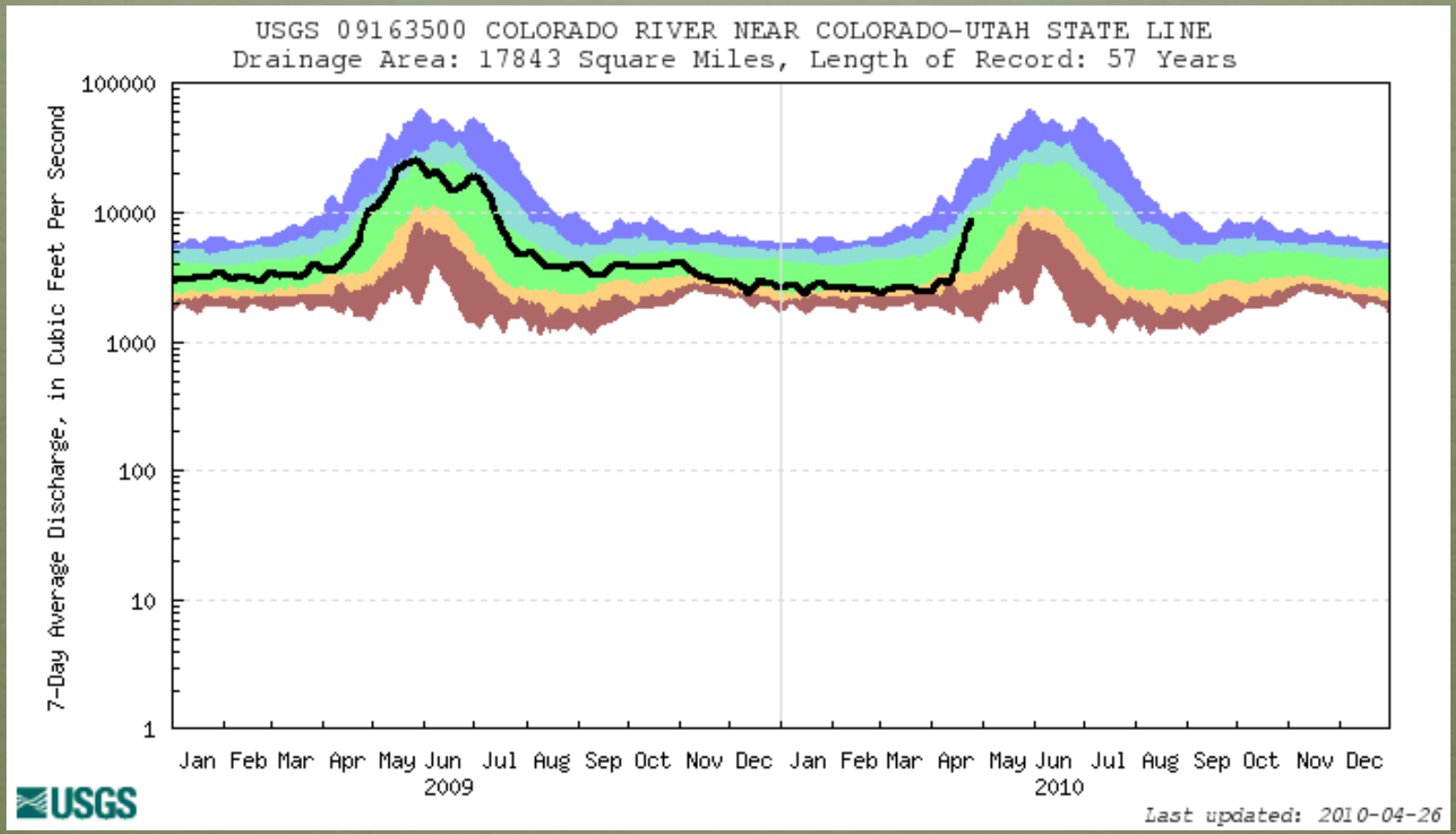
7-day average streamflow (HCDN gages only) compared to historical streamflow for the day of the year

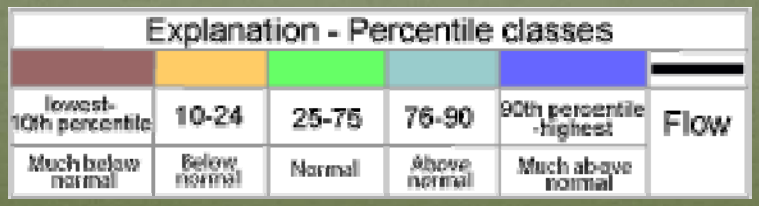


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

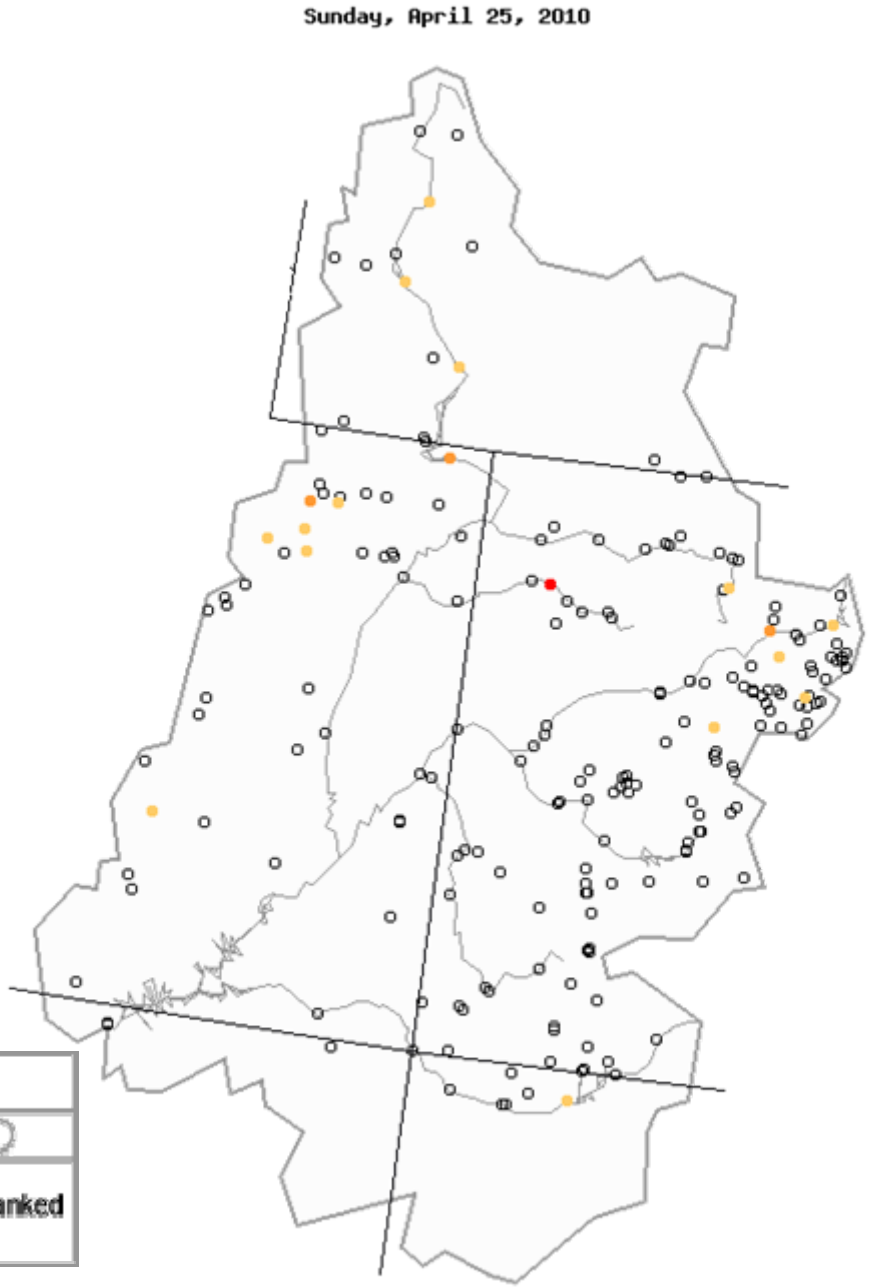
Time series plot of real-time streamflow compared to historical streamflow for the day of the year





Upper Colorado Basin

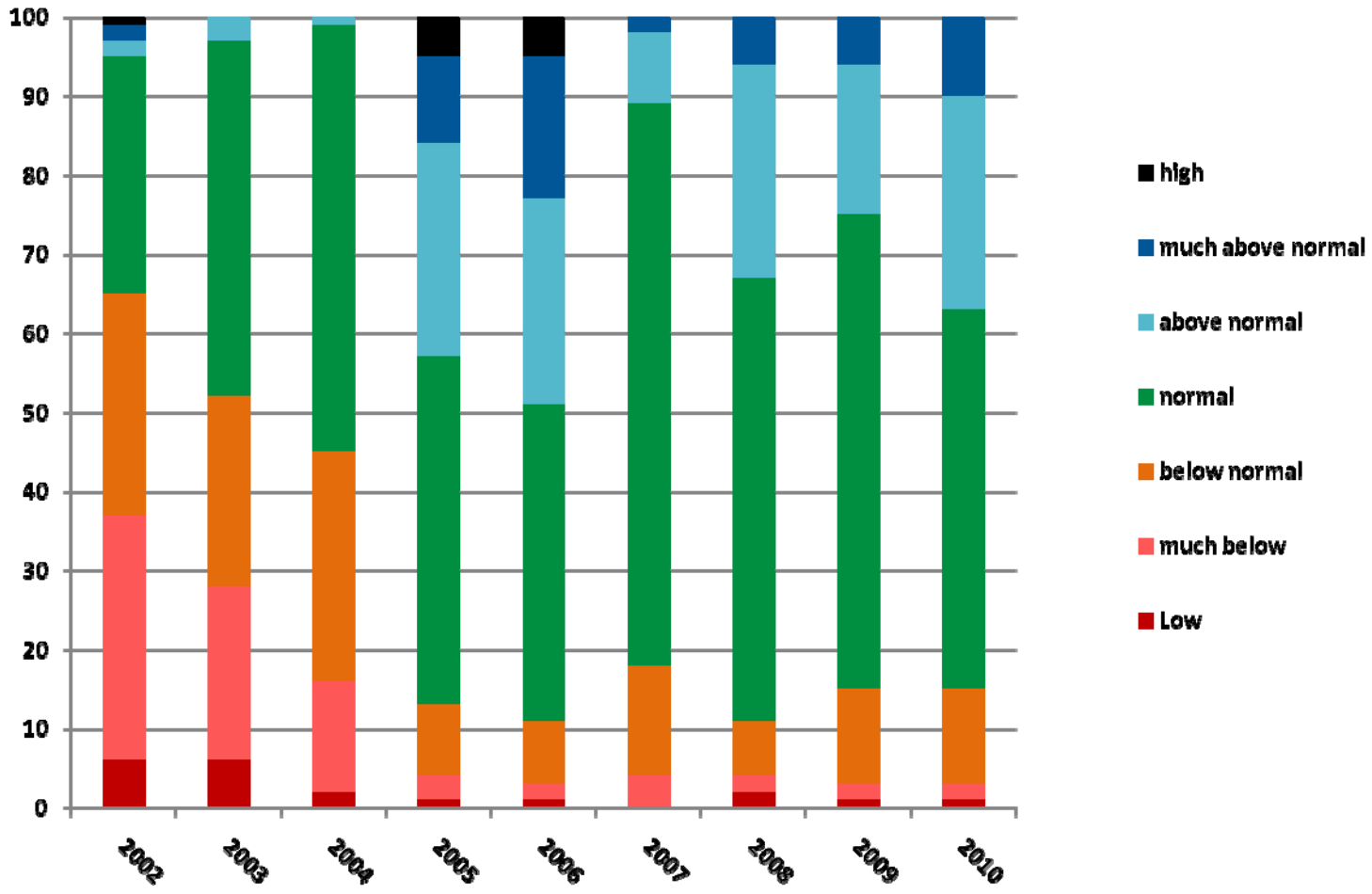
Below normal 7-day average streamflow compared to historical conditions for the day of the year



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

USGS

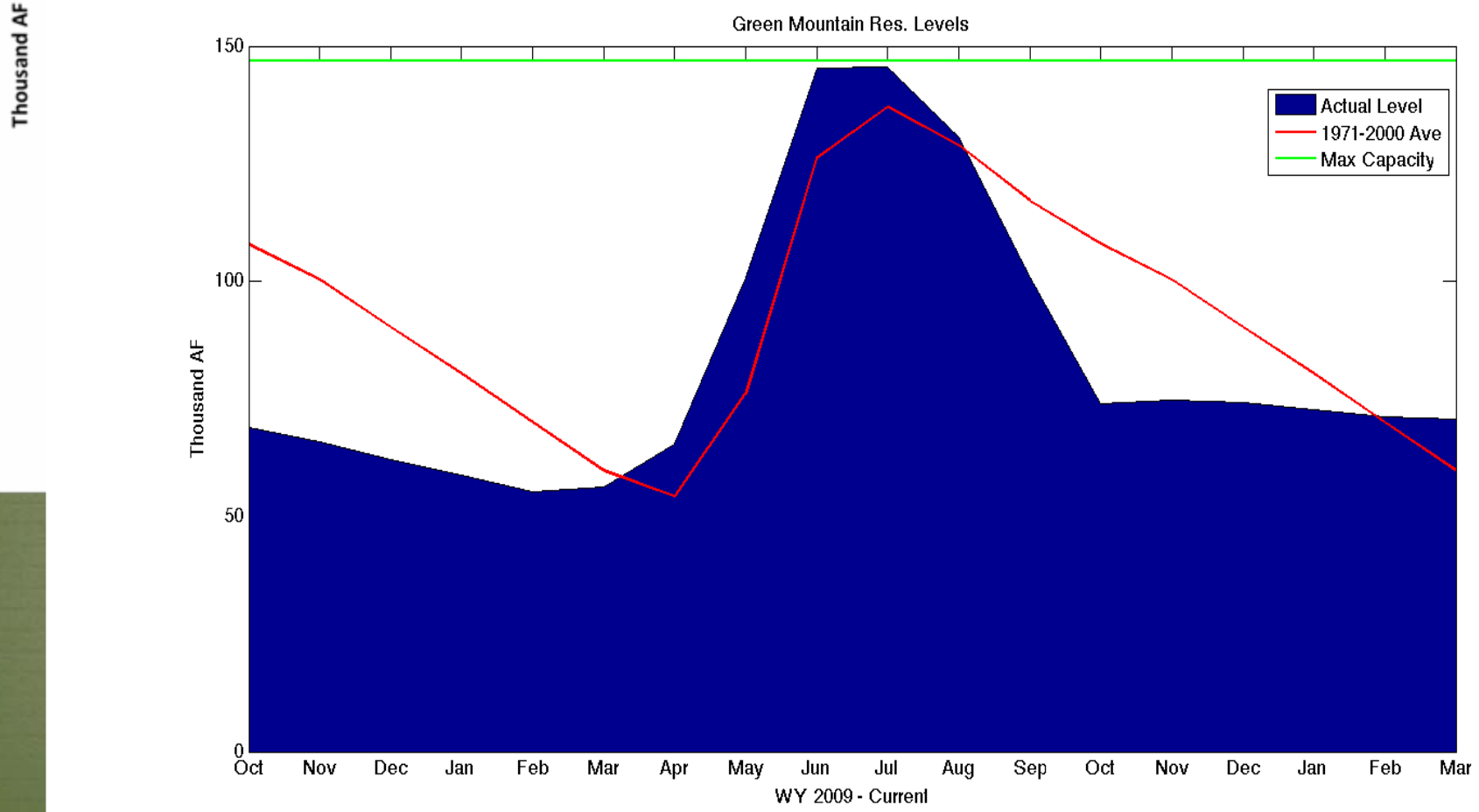
April 24
Percentage of Streamgages per Percentile Class
7-day Average Streamflow



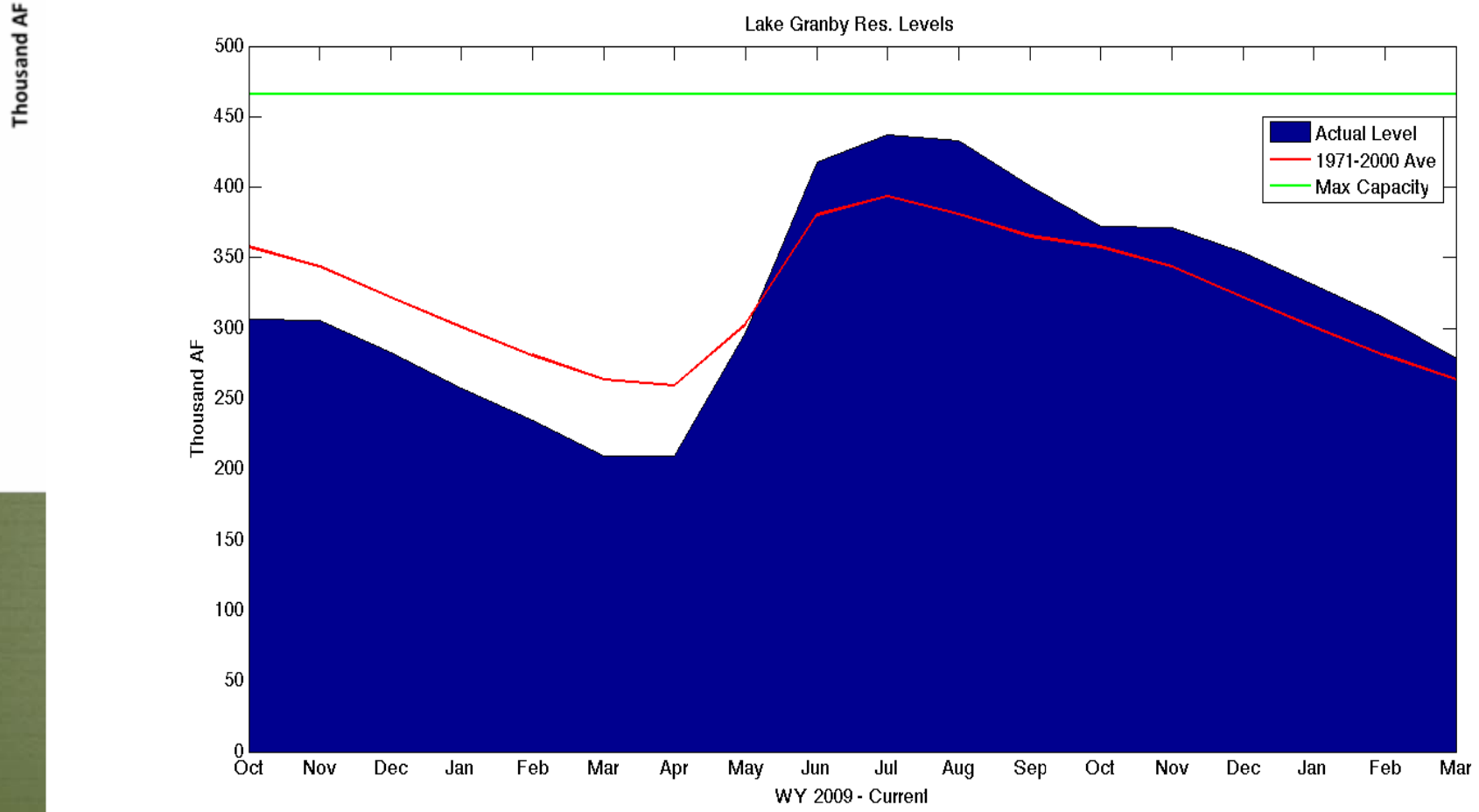
Reservoir Update

Green Mountain March Reservoir Storage

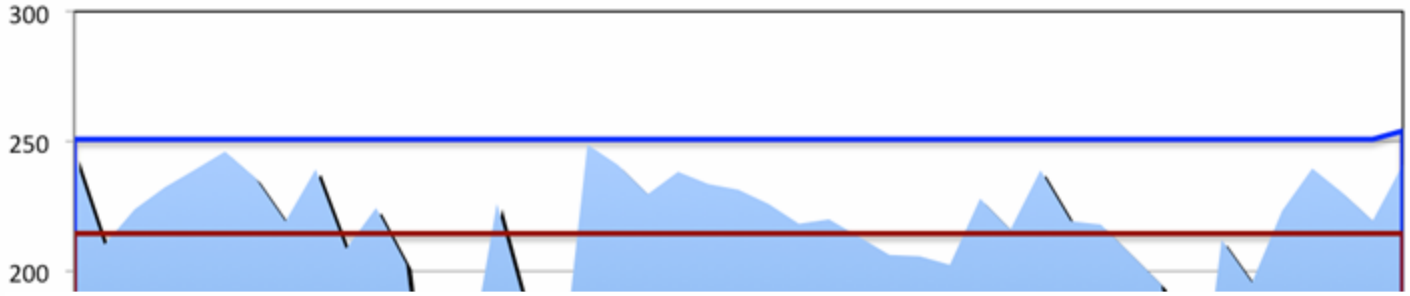
Max Capacity



Max Capacity



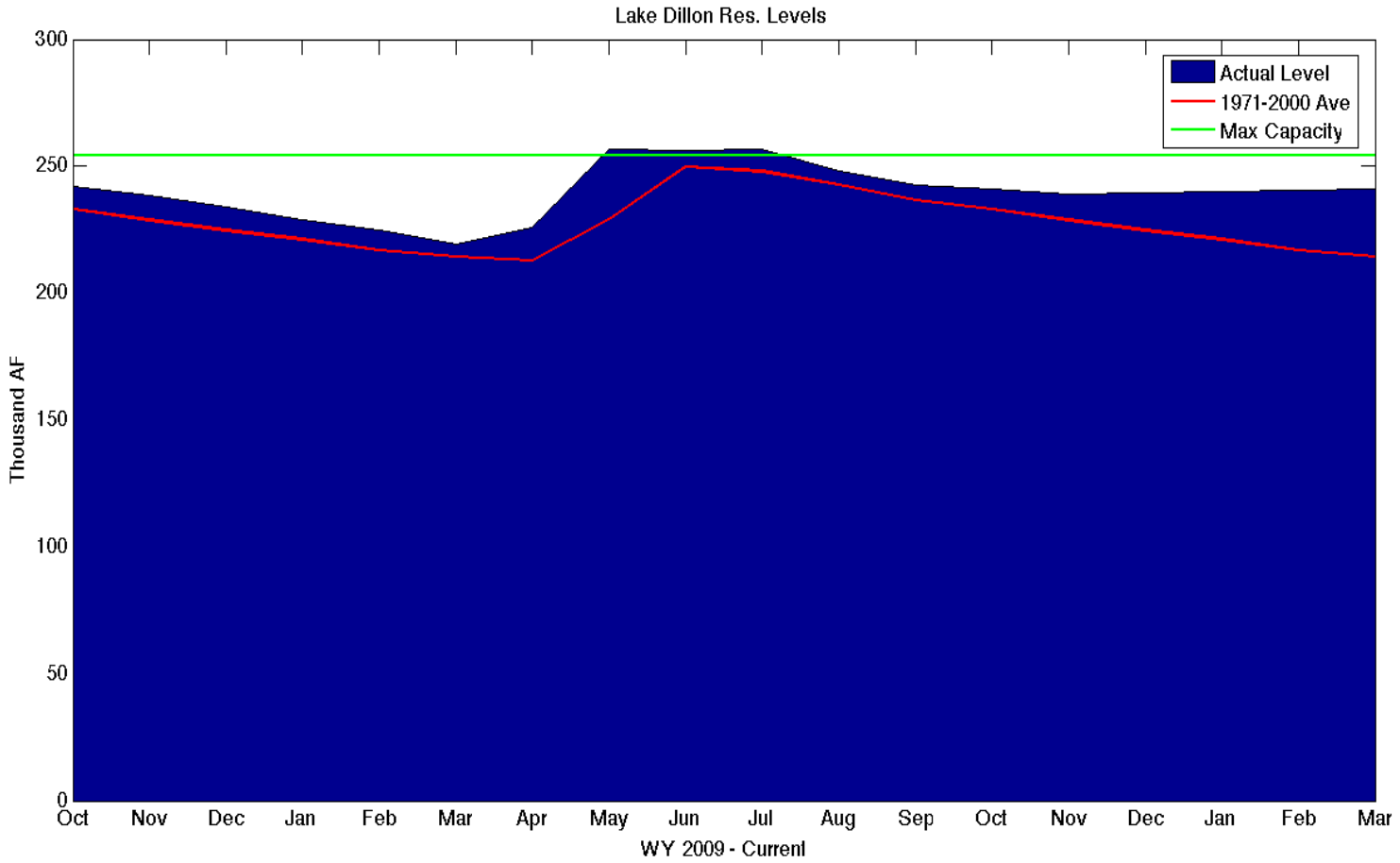
Lake Dillon March Reservoir Storage



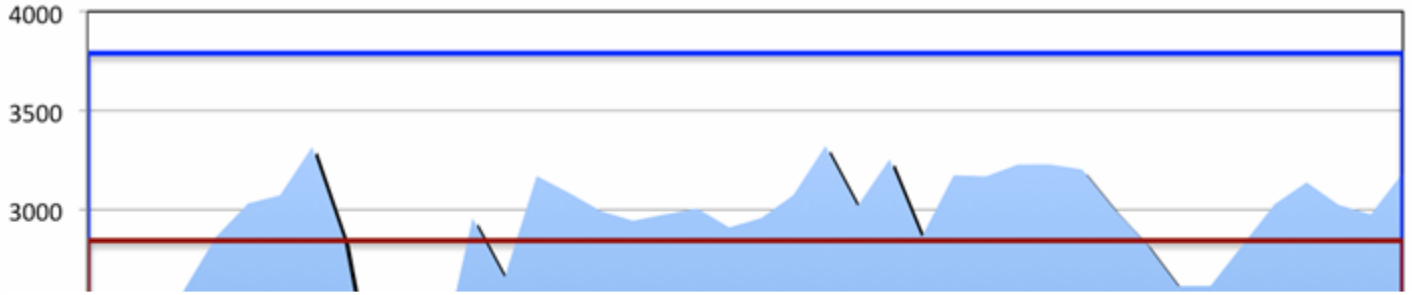
Max Capacity

1971-2000 Average

Thousand AF



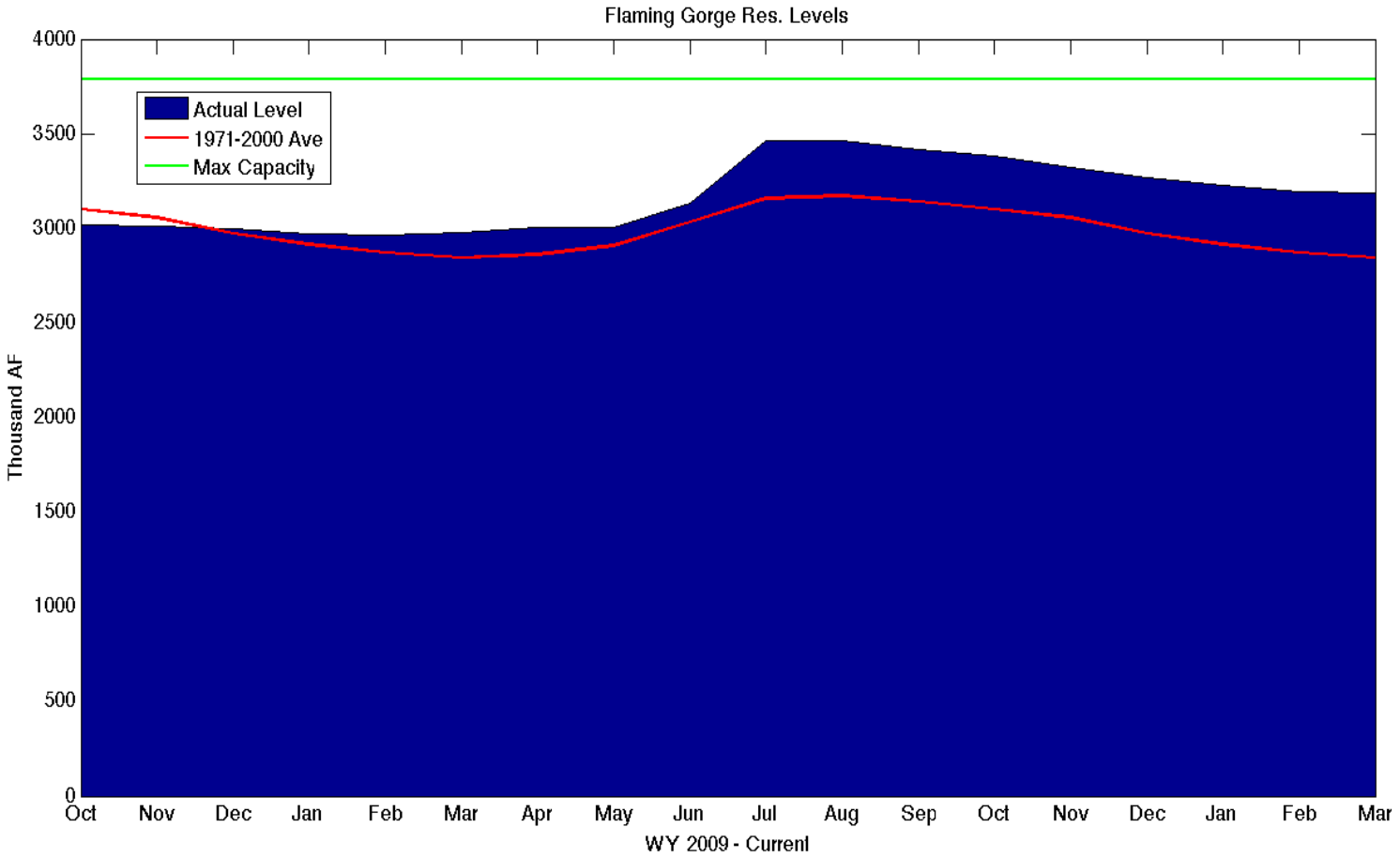
Flaming Gorge March Reservoir Storage



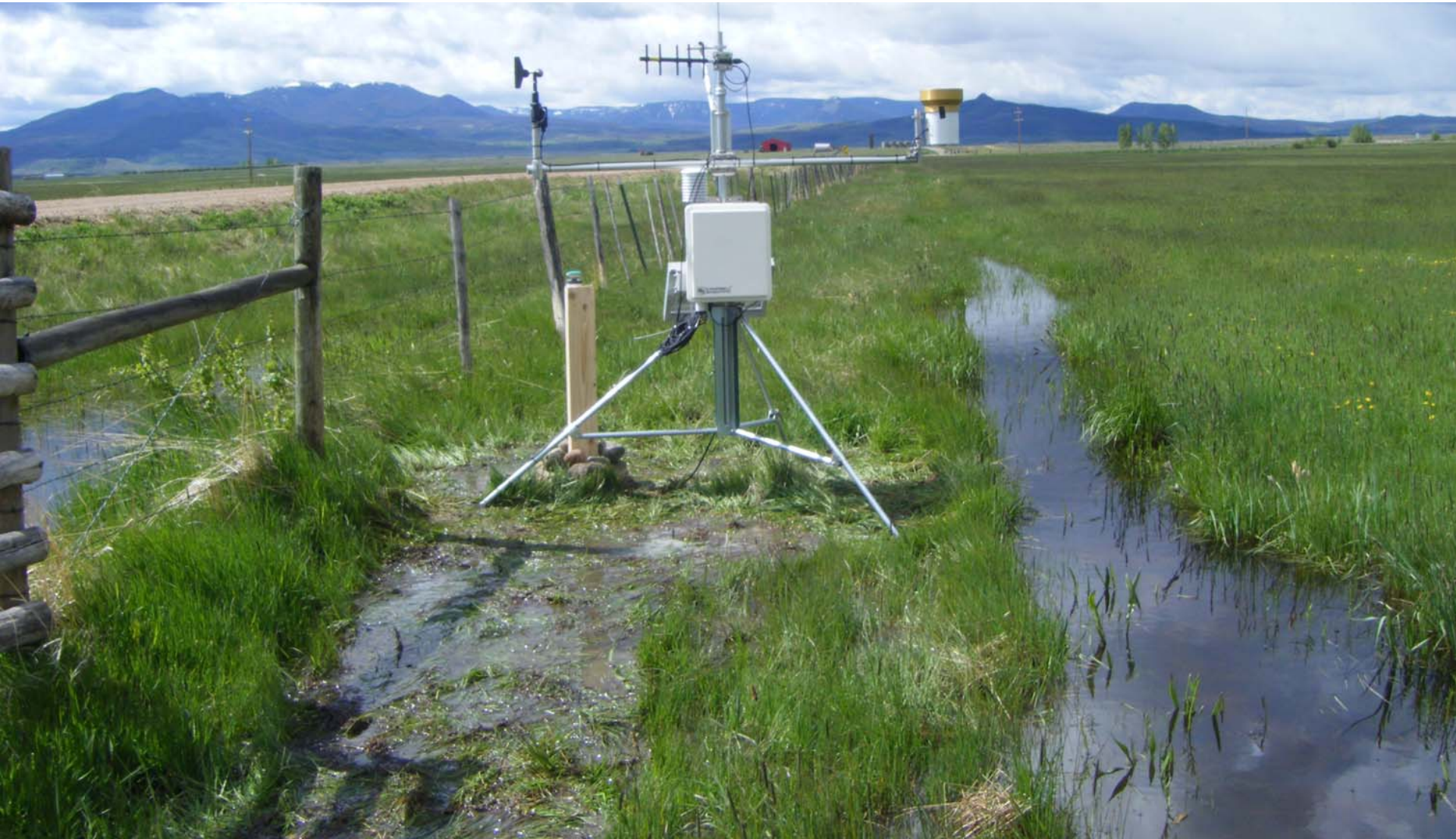
Max Capacity

1971-2000 Average

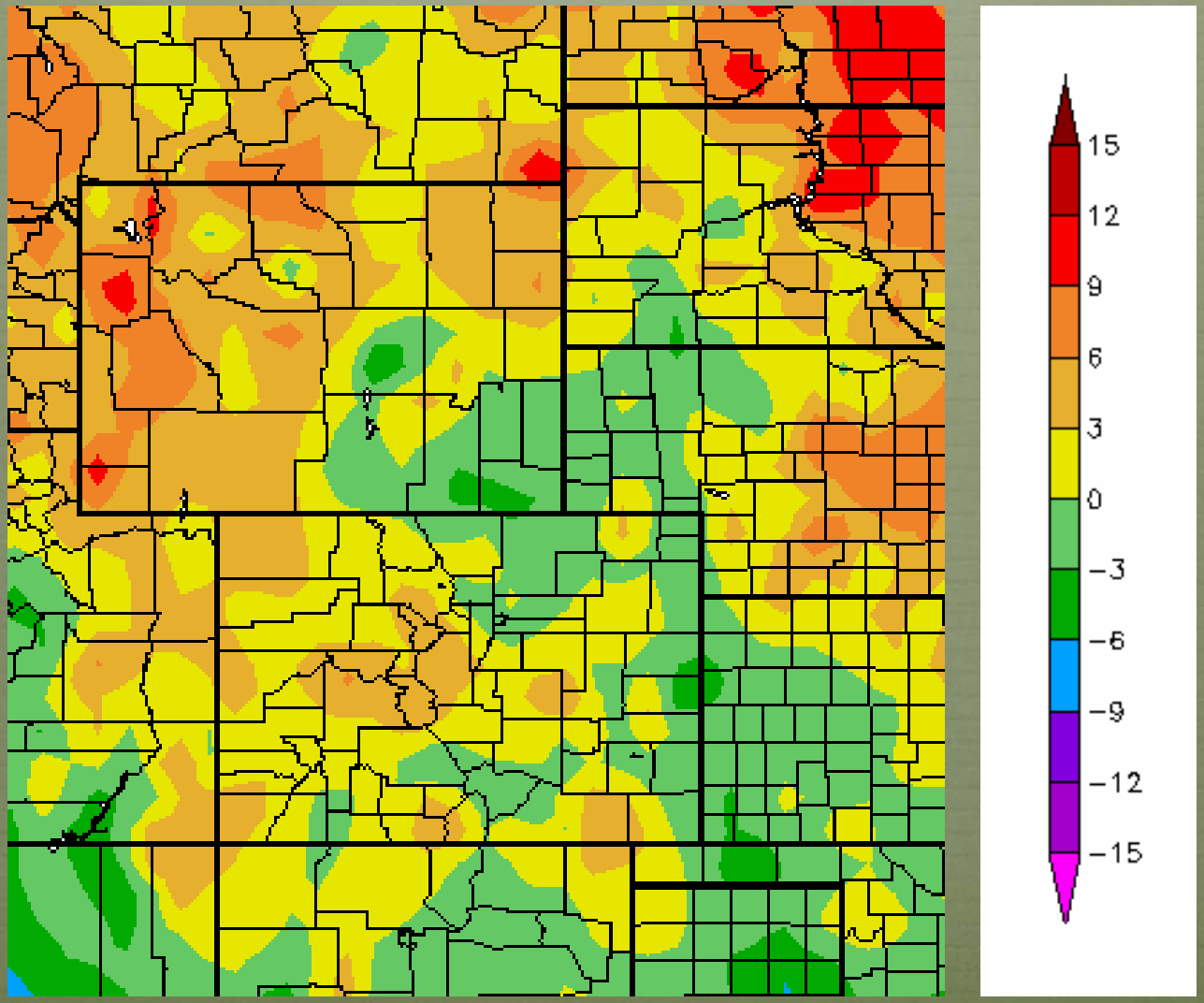
Thousand AF

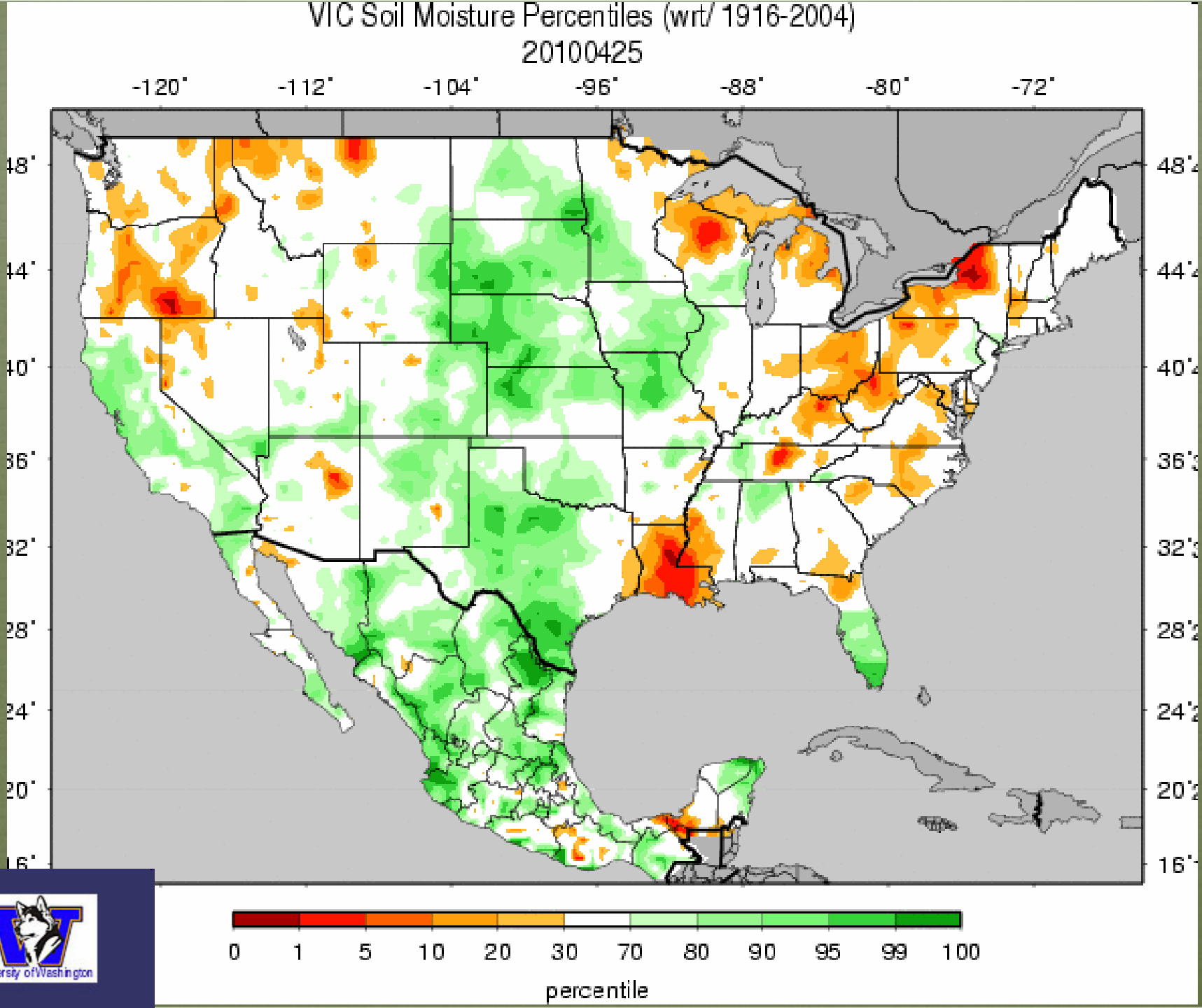


Water Demand



Temperature Departure from Normal
4/20/2010 – 4/26/2010



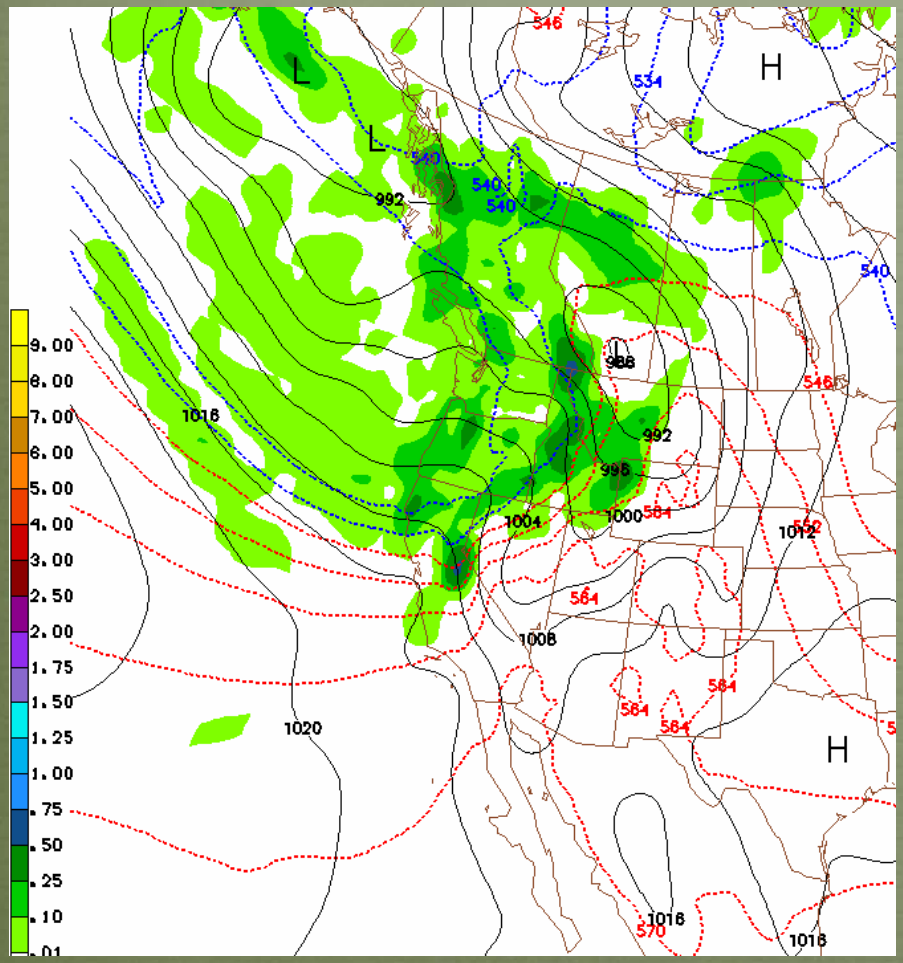


University of Washington

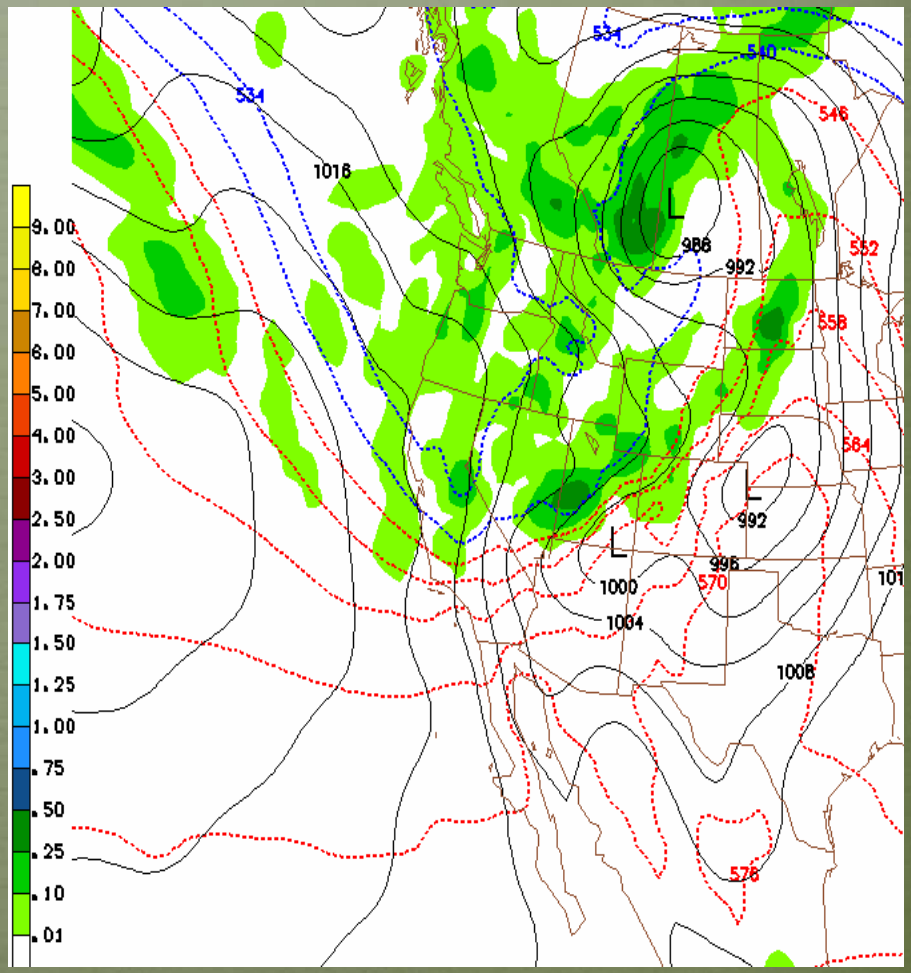
Precipitation Forecast

Jim Daniels Grand Junction Weather Forecast Office

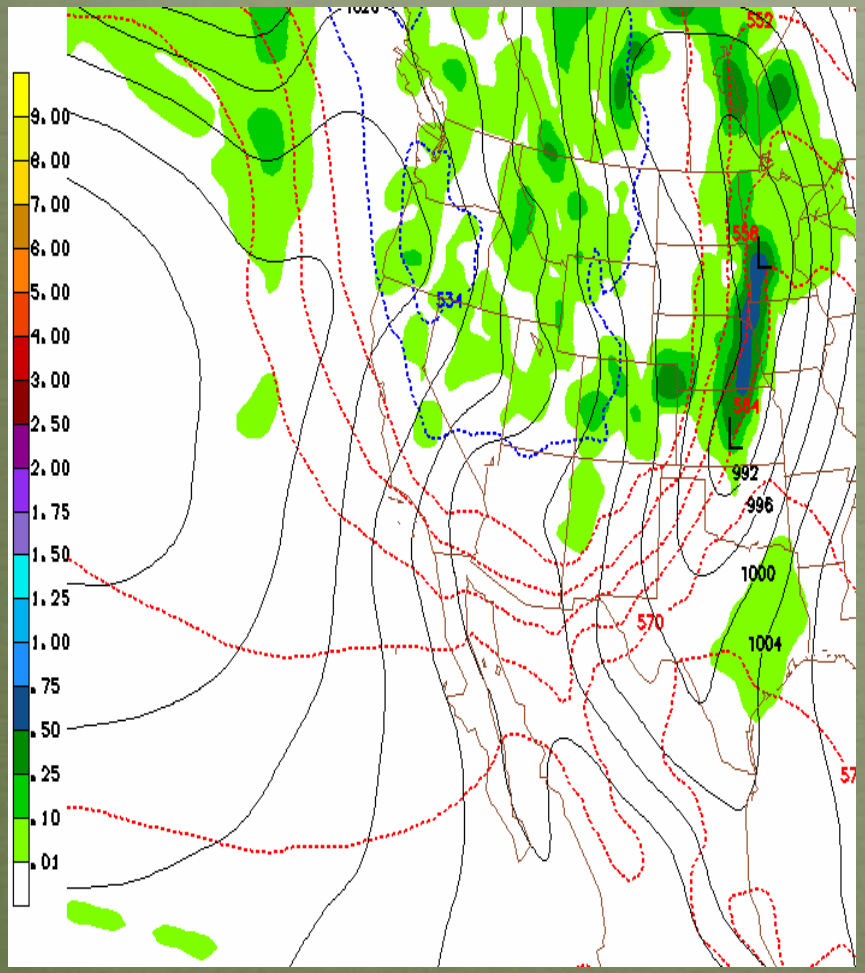
06Z GFS 24 HR 06Z Wed



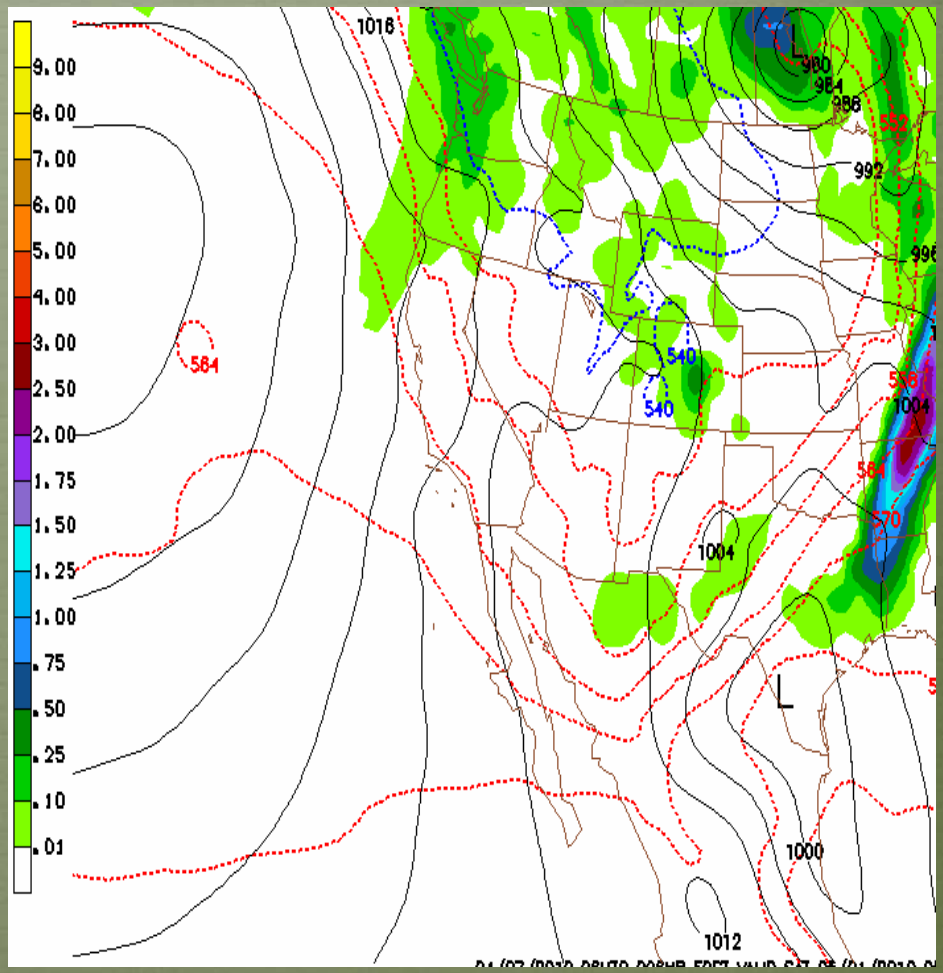
06Z GFS 48 HR 06Z Thu



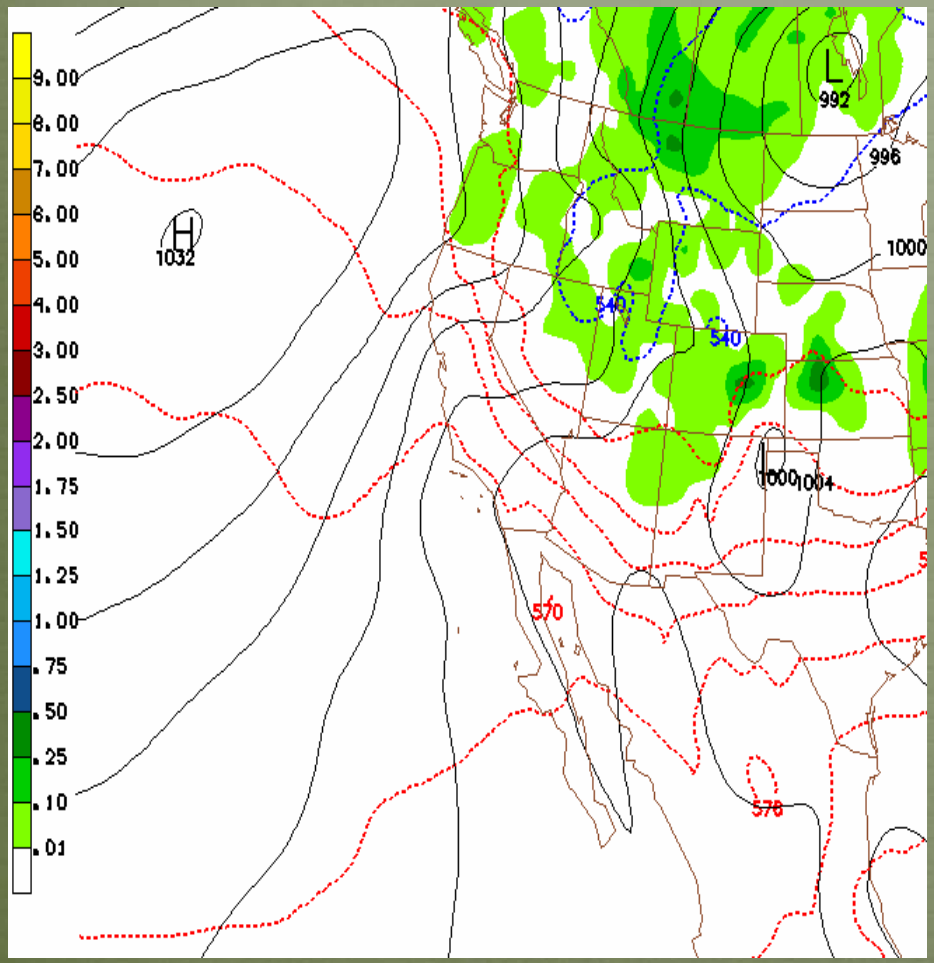
06Z GFS 72 HR 06Z Fri



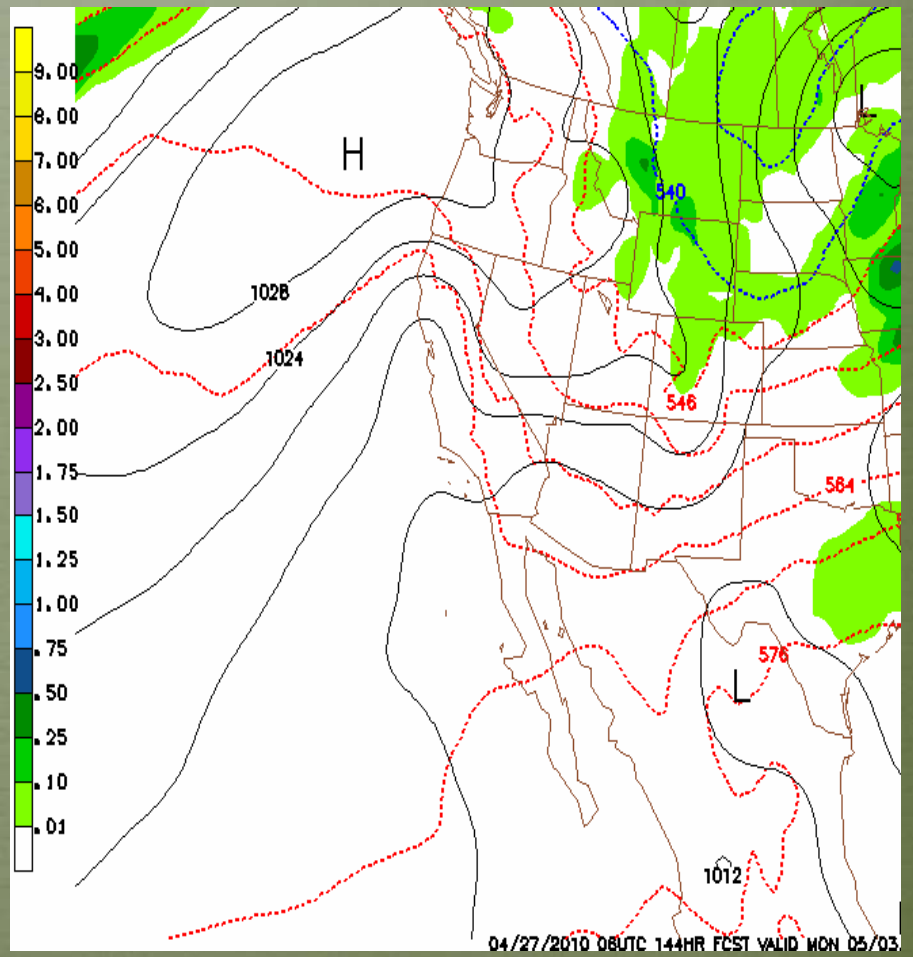
06Z GFS 96 HR 06Z Sat



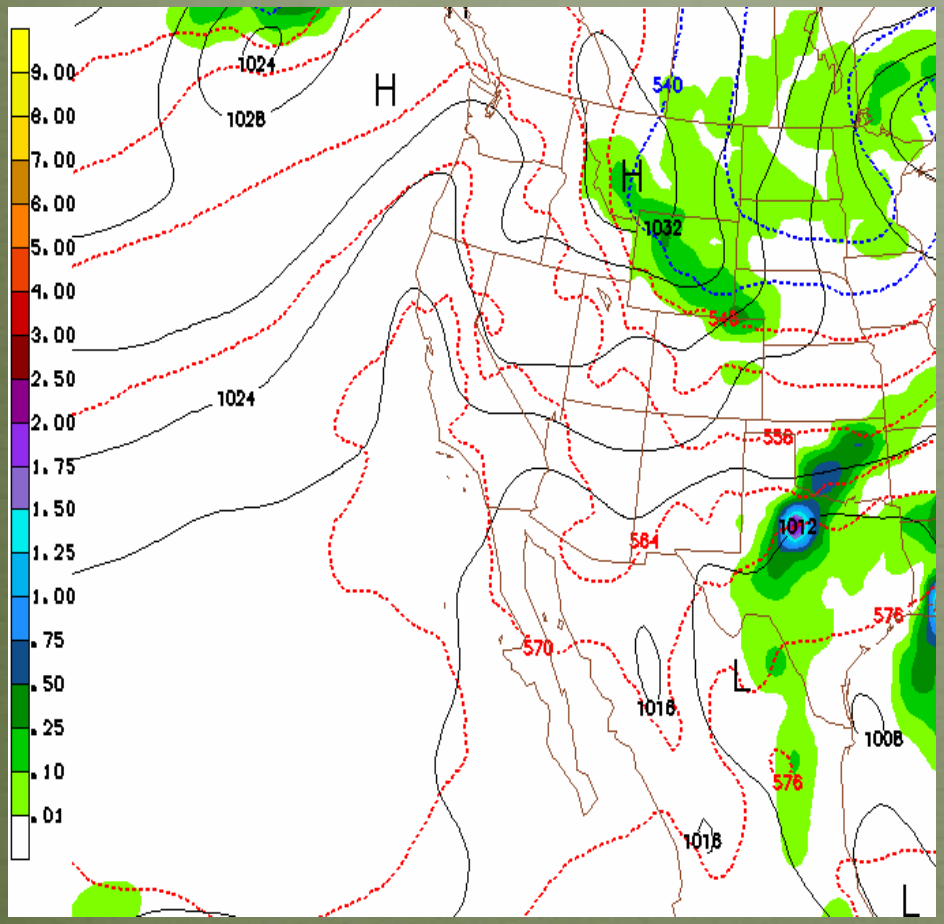
06Z GFS 120 HR 06Z Sun



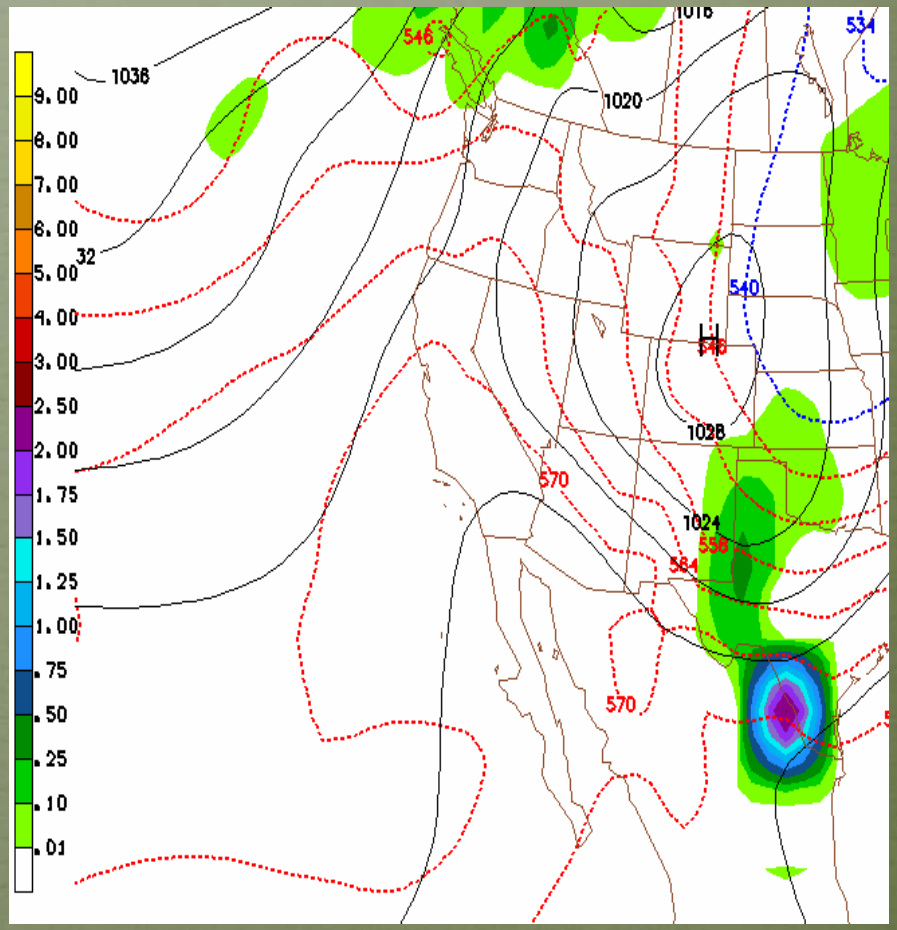
06Z GFS 144 HR 06Z Mon



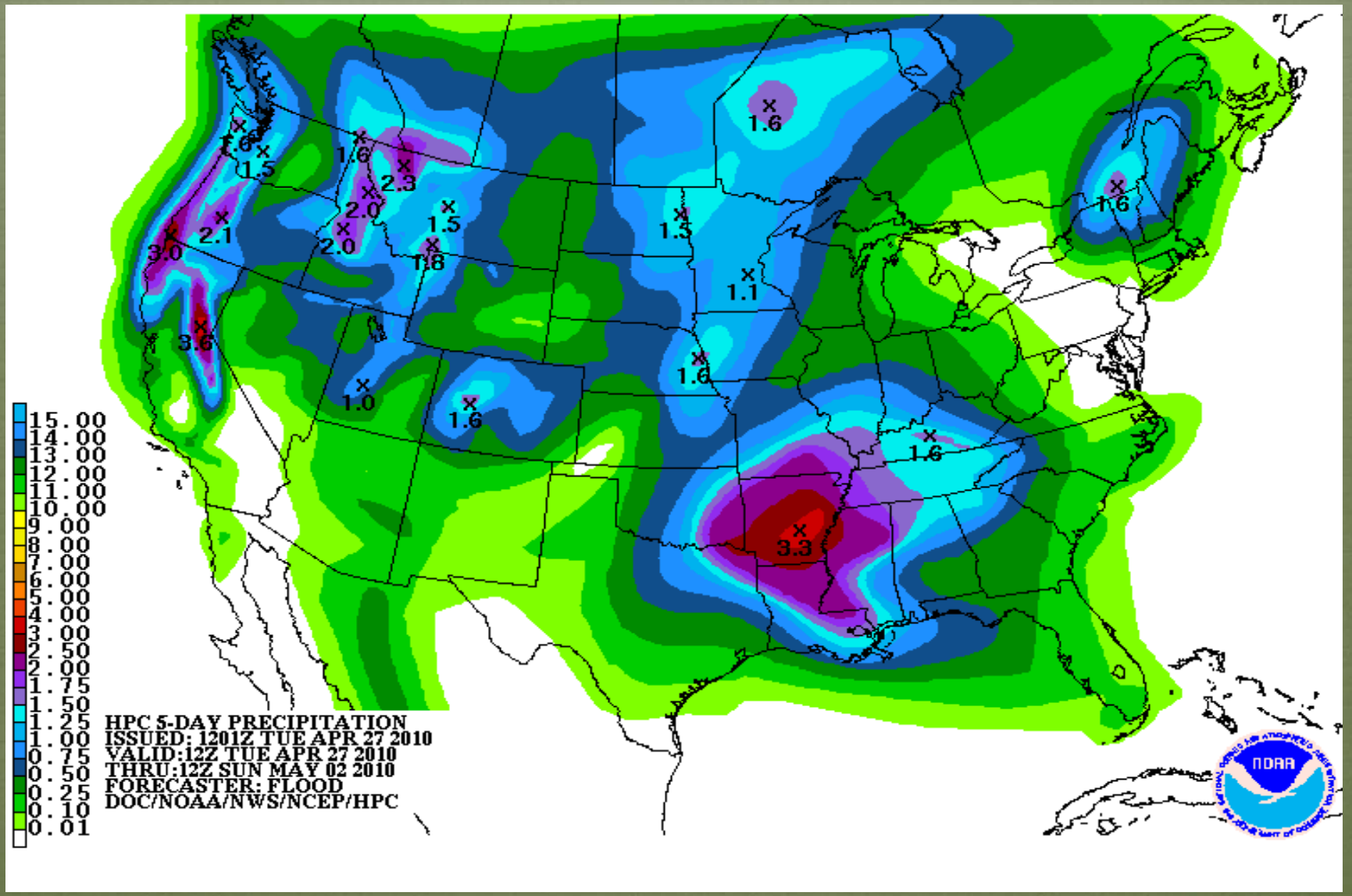
06Z GFS 168 HR 06Z Tue



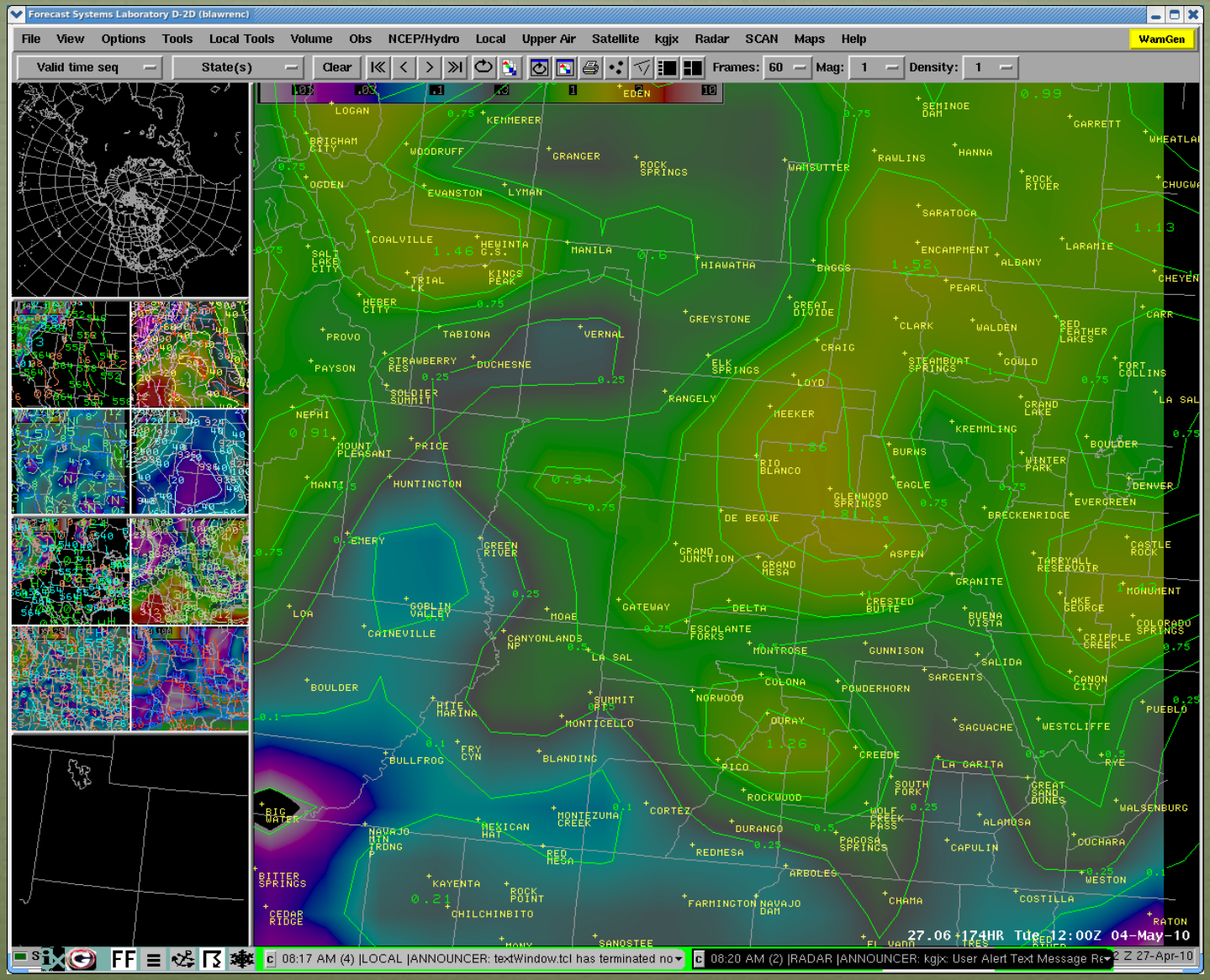
06Z GFS 192 HR 06Z Wed



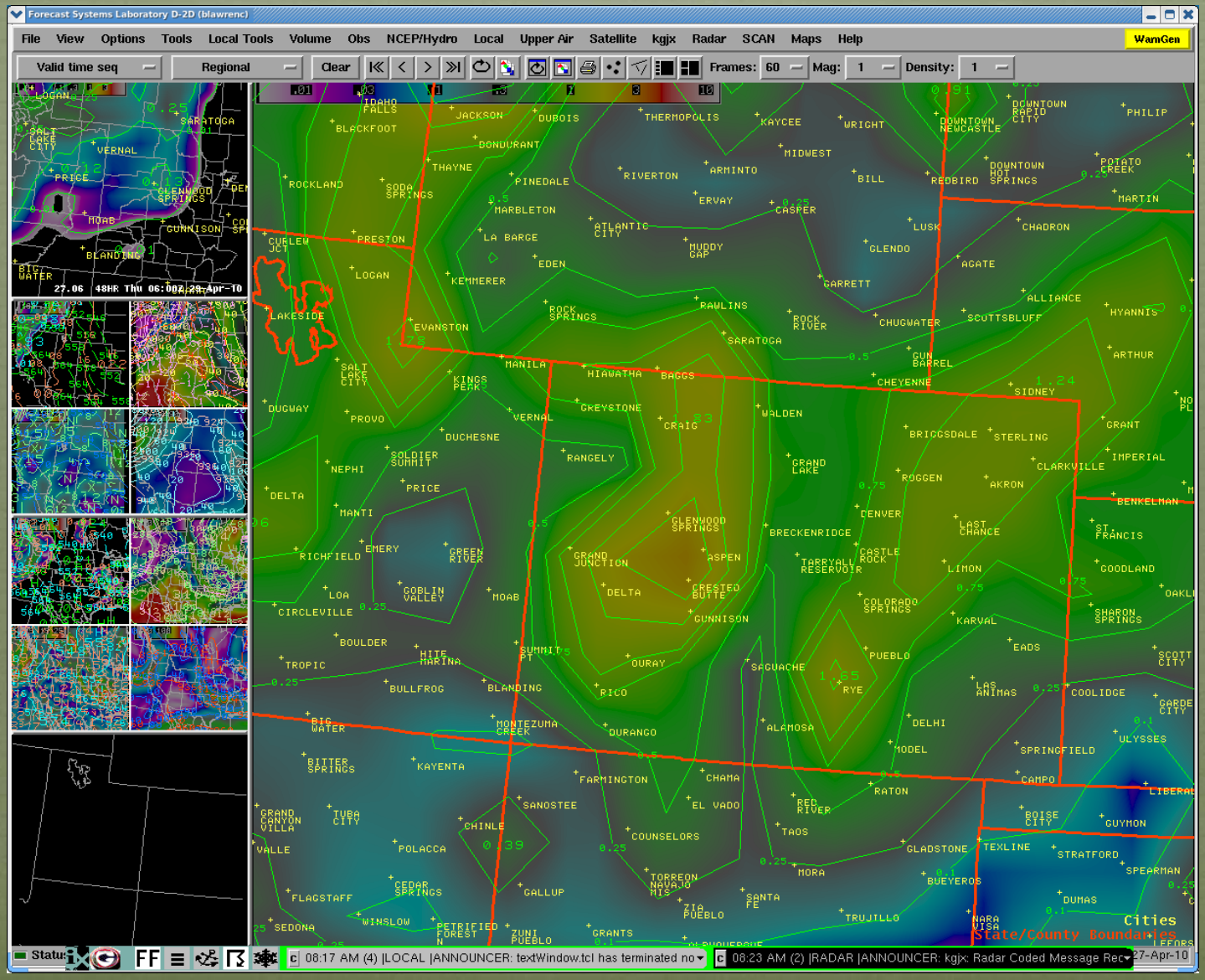
HPC 5 Day Precip Through 12Z Sun



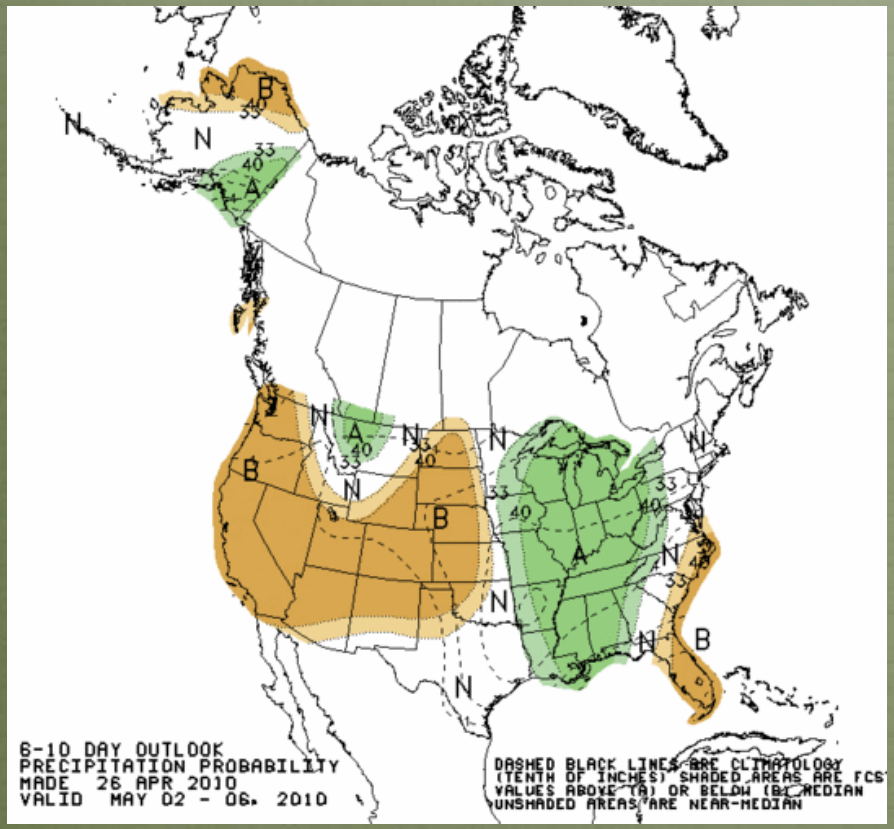
GFS Precip Through 12Z Tue, 5/4

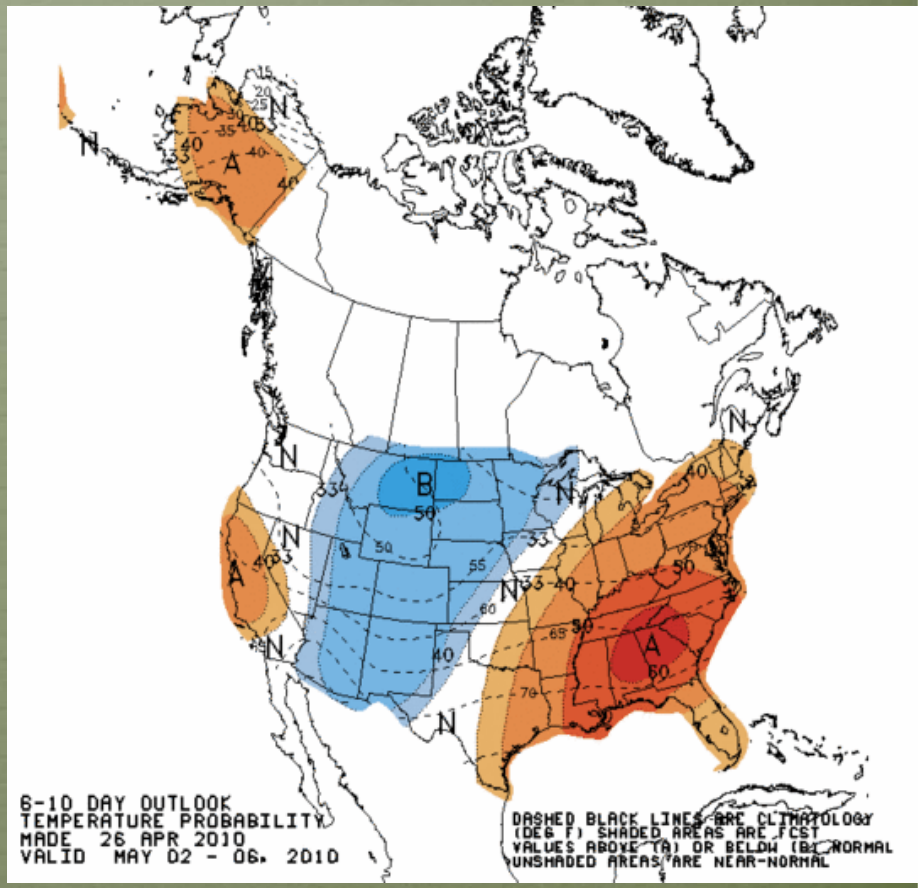


ECMWF Precip Through 12Z Tue, 5/4

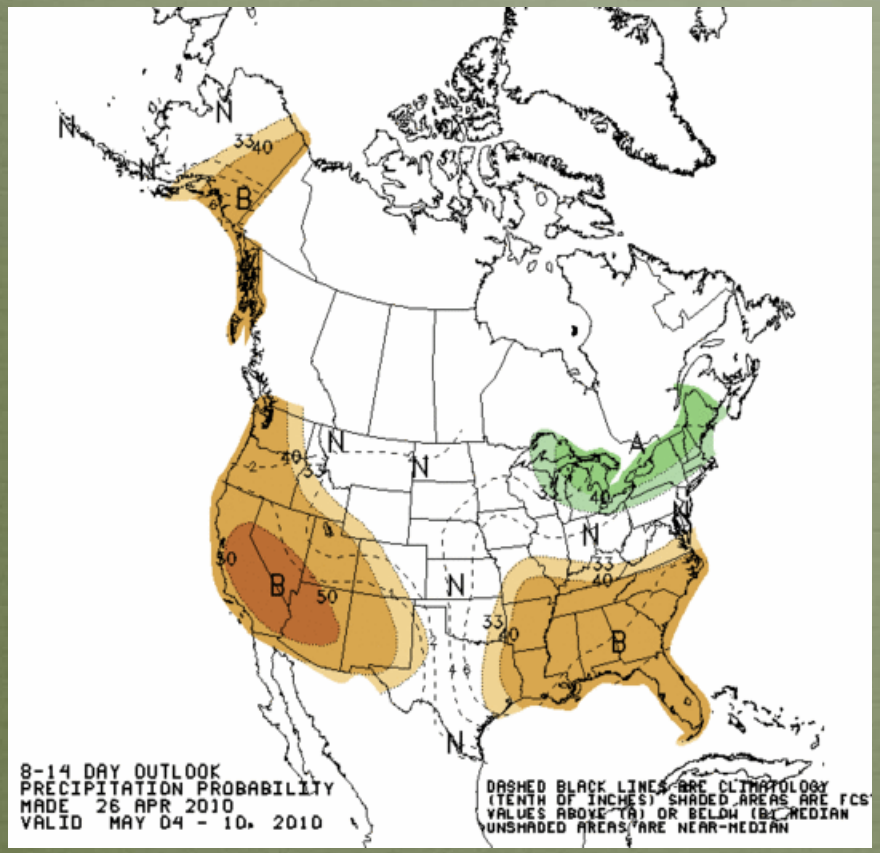


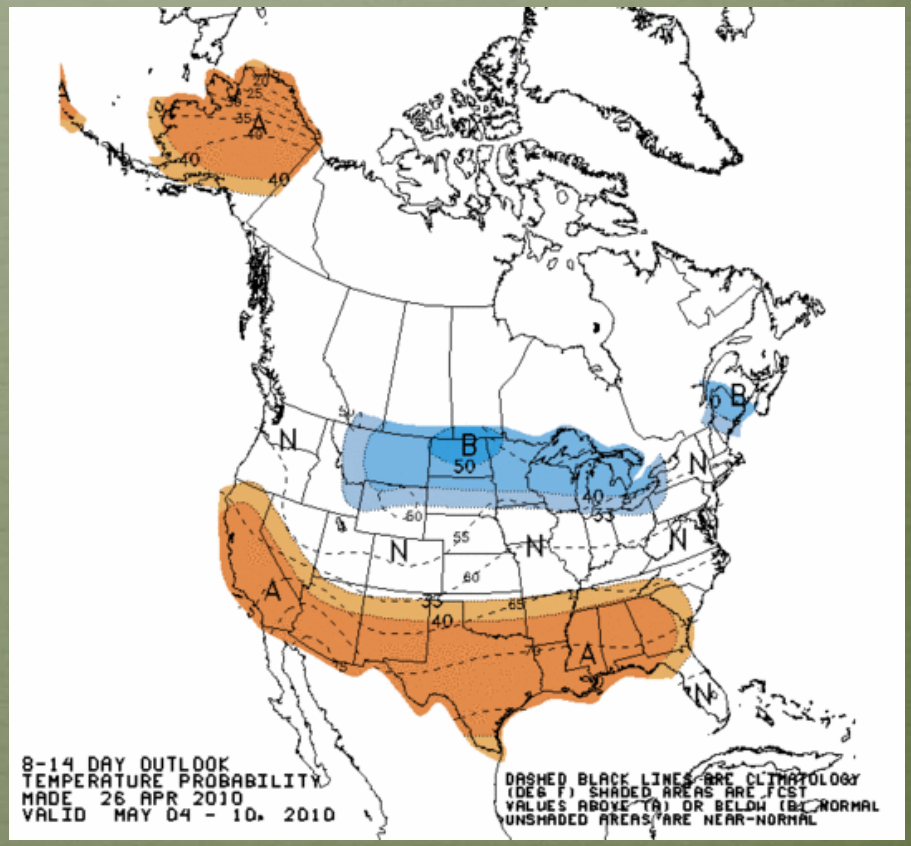
CPC 6-10 Day Outlook



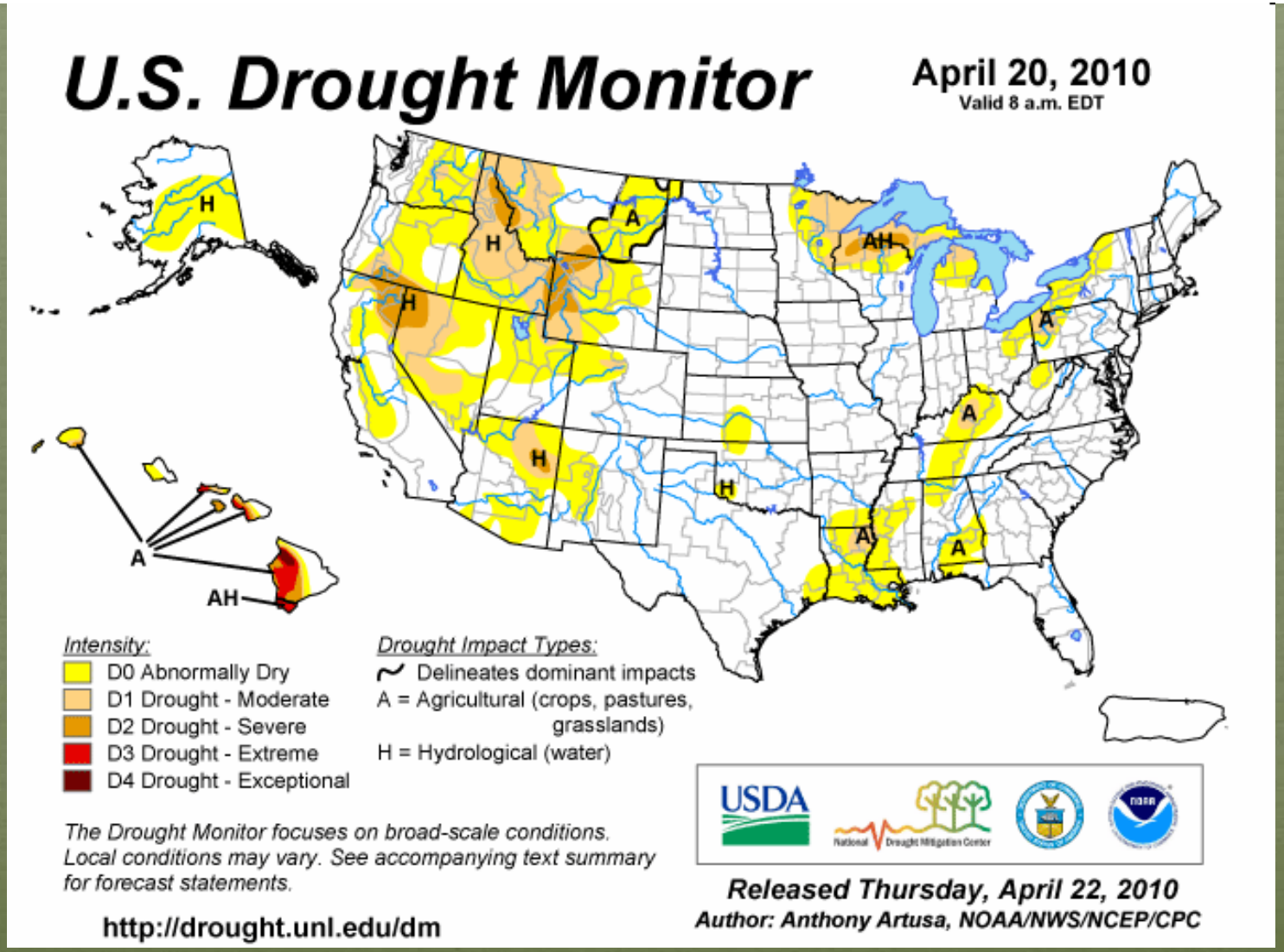


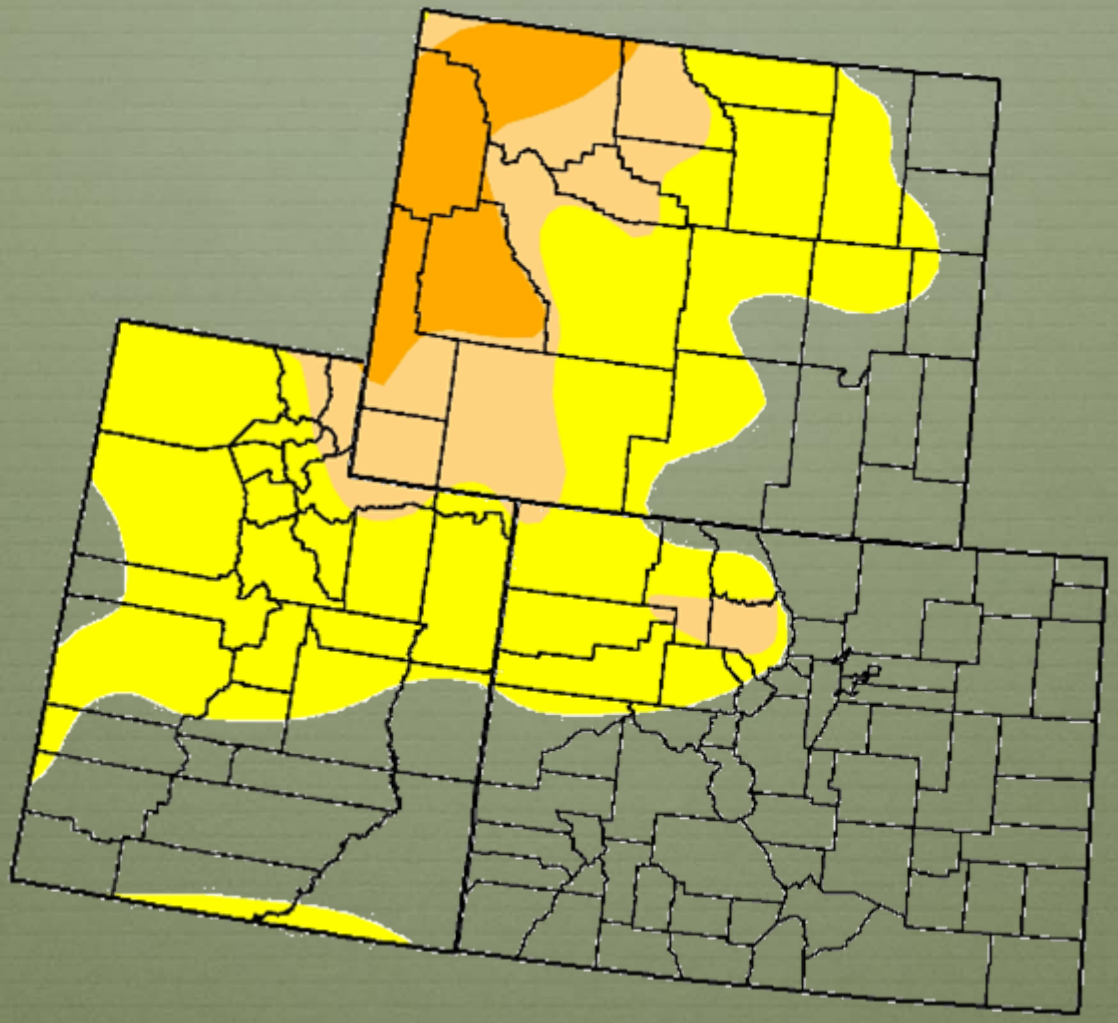
CPC 8-14 Day Outlook





Recommendations





INFO

For more information

Summary

Another significant storm system brought beneficial moisture to much of the Upper Colorado River basin and adjacent areas this past week -- especially Wednesday evening through Saturday morning. The heaviest precipitation fell east of the Continental Divide in Colorado with widespread 1.50 - 3.00" storm totals and locally more south of Denver. But the headwaters of the Colorado River also received 1.0 - 2.5" totals for the week with generally lesser amounts at lower elevations and in Wyoming and Utah. Mountain snow melt was proceeding full tilt last week, but with colder, cloudy and wet weather the melt rates slowed substantially, and above 10,000 feet snowpack continued to build. The recent moisture boosted the water-year-to-date precipitation percent of averages anywhere from 2% to over 10% from last week in the tri-state area. The Green River remains by far the driest portion of the upper Colorado basin. Seven-day stream flow volumes exceeded the average for this time of year. Only 17% of the gages across the region recorded below normal flows (less than the 25th percentile). The percentage of gages with normal or above normal 7-day average streamflows are looking much less like the drought years of 2002-2003, and matching up more with recent previous years. Soil moisture conditions over the western mountains and into Wyoming, and also along the eastern plains, are much improved over the last week, and reservoir levels continue to rise. The recent moisture east of the mountains translates to relatively low demand for early growing season irrigation water and thus putting relative low stress on reservoir supplies which remain near or above average for this time of year.

Weather forecasts show another storm system moving in late Wednesday after a warm and windy day. This system will likely bring good amounts of precipitation to the area through Thursday, but is most likely to favor the northern and central mountains of Colorado. More scattered rain and snow showers along with below average temperatures could linger through Saturday. Next week looks to be drier as high pressure sets in, though there is some disagreement between the models. The GFS has set up a more northwesterly flow over the area, while the ECMWF does not show quite as amplified of a pattern and brings more westerly (and even some southwesterly) flow into the area, thus meaning warmer temperatures. Based on the recent skill of the ECMWF, it is more likely that we will see warmer temperatures next week.

No changes to the US Drought Monitor in Colorado are recommended.

Though there has been some improvement in water supplies in the Colorado and Yampa-White River basins, it is still not enough to make up for the deficit that has accrued since last summer. Therefore D0 over all of NW Colorado and D1 in the immediate headwaters of the mainstem Colorado River remains appropriate. No Wyoming or Utah representatives were on the call, so specific details on those states will be discussed separately. Conditions remain fairly close to long term averages in southern Colorado and Wyoming.