Spring 2010

Weekly Climate, Water & Drought Assessment

Today's Agenda

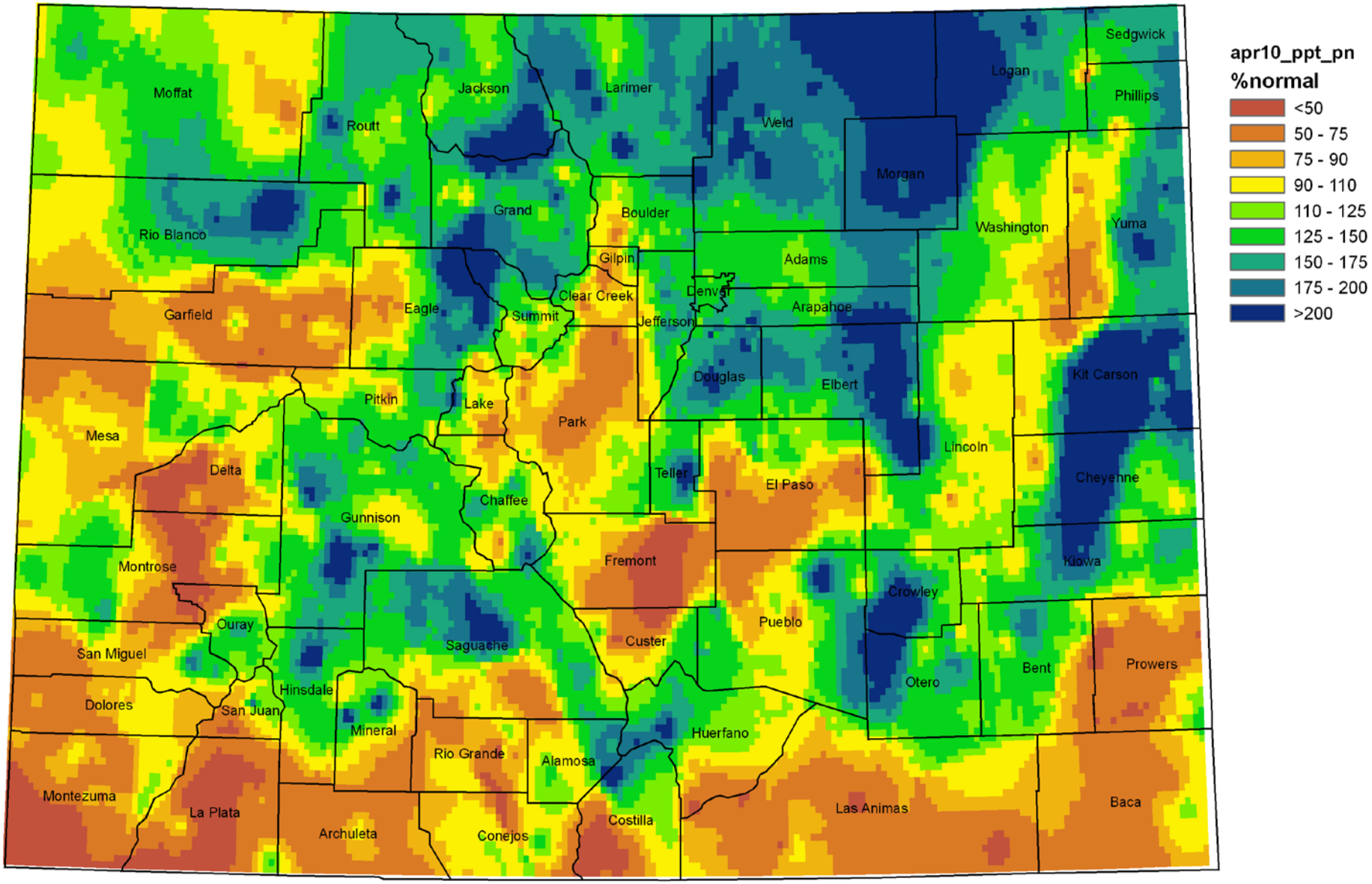
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

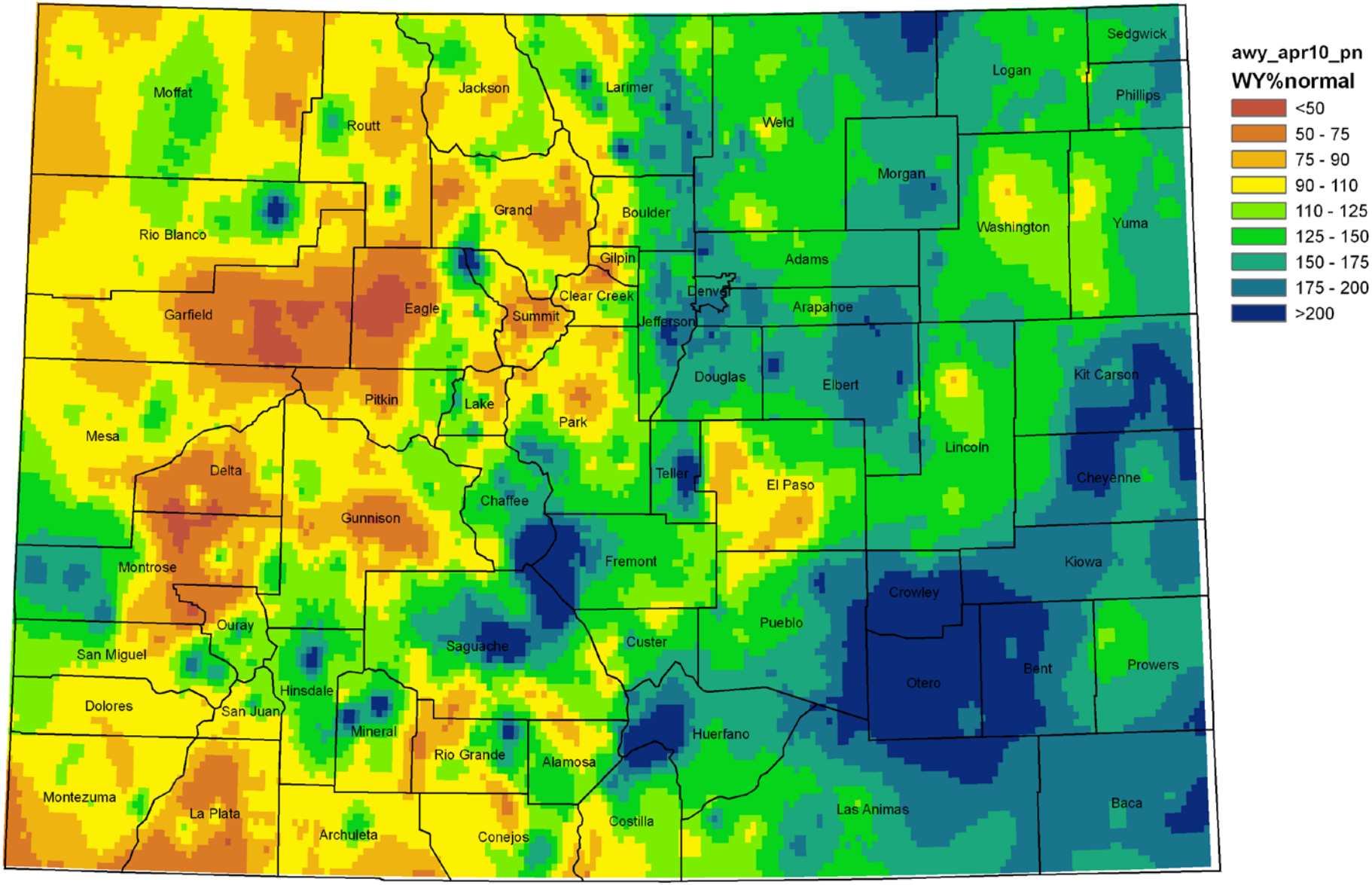
Precipitation/Snowpack Update

April 2010 Precipitation as Percent of Normal



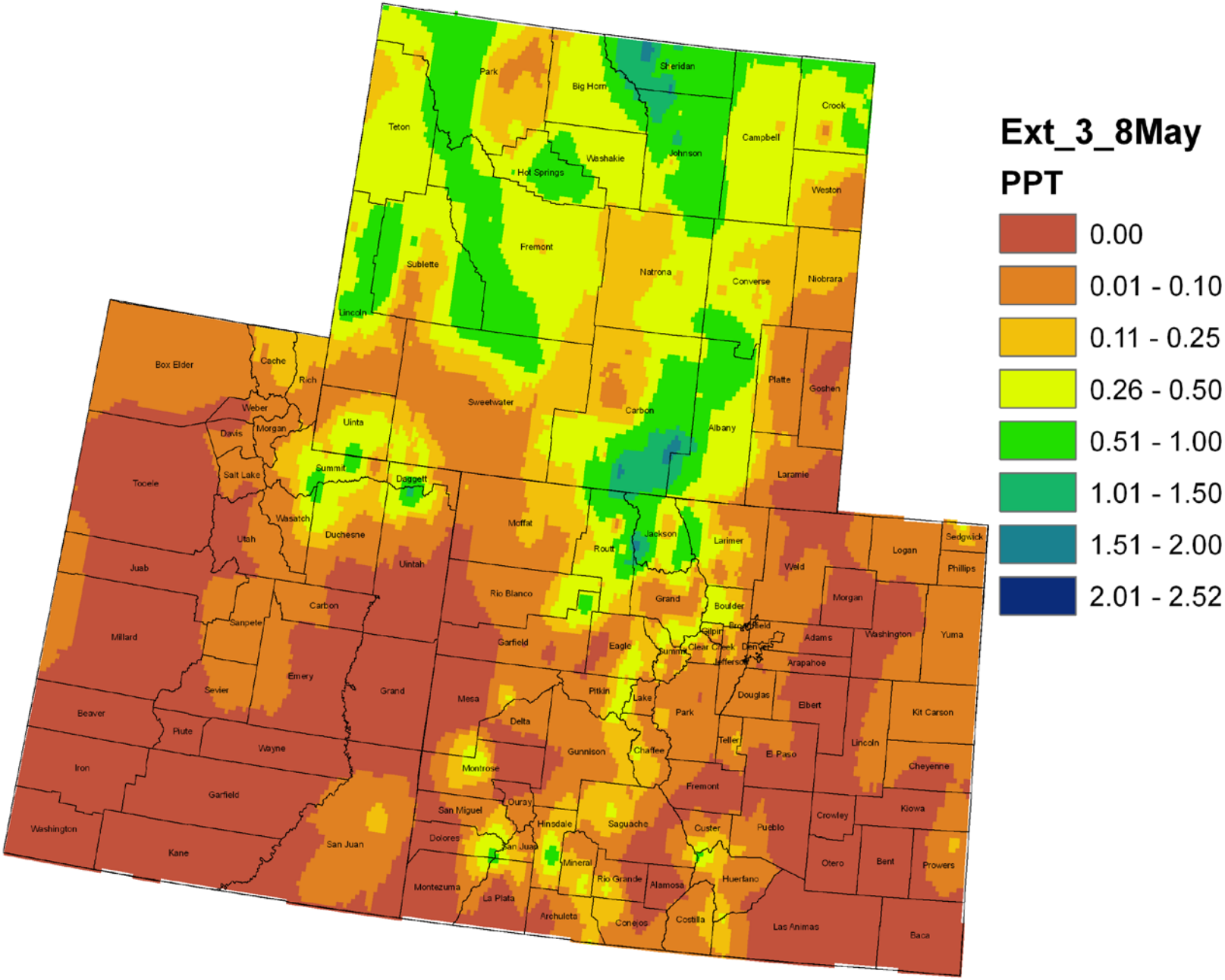
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

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

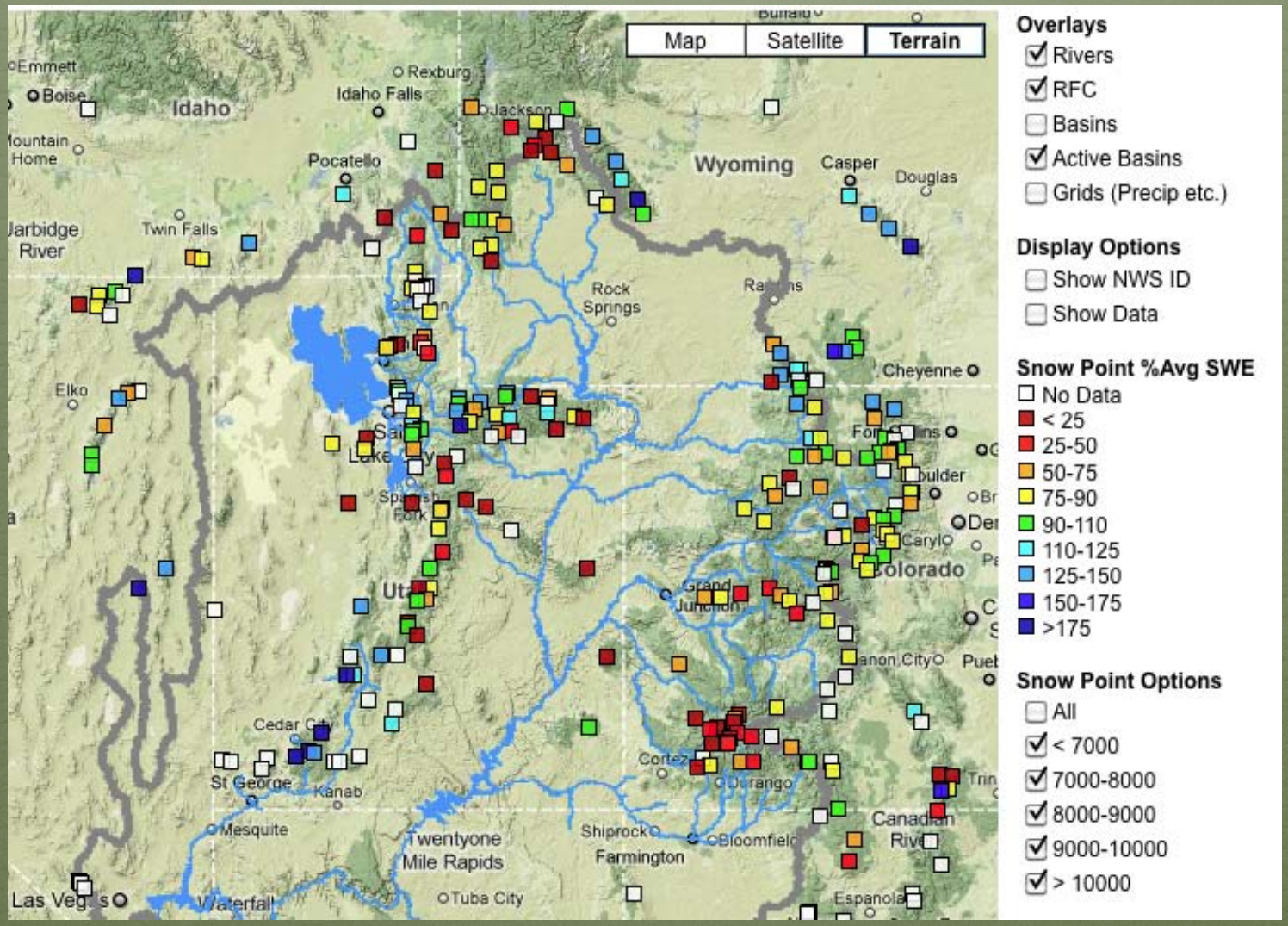


Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado, Wyoming and Utah 6-Day Precipitation 3 - 8 May 2010

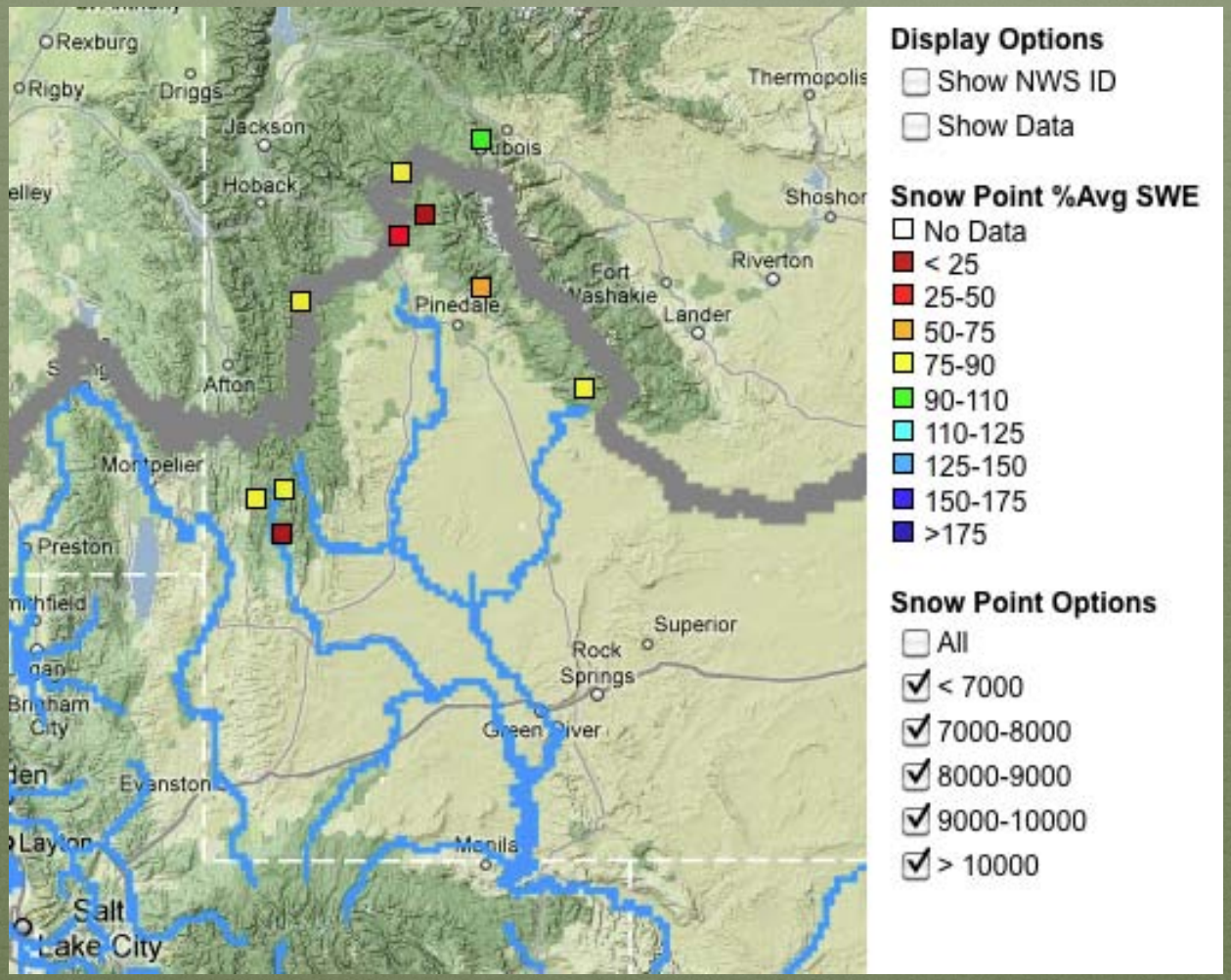


Upper Colorado River Basin

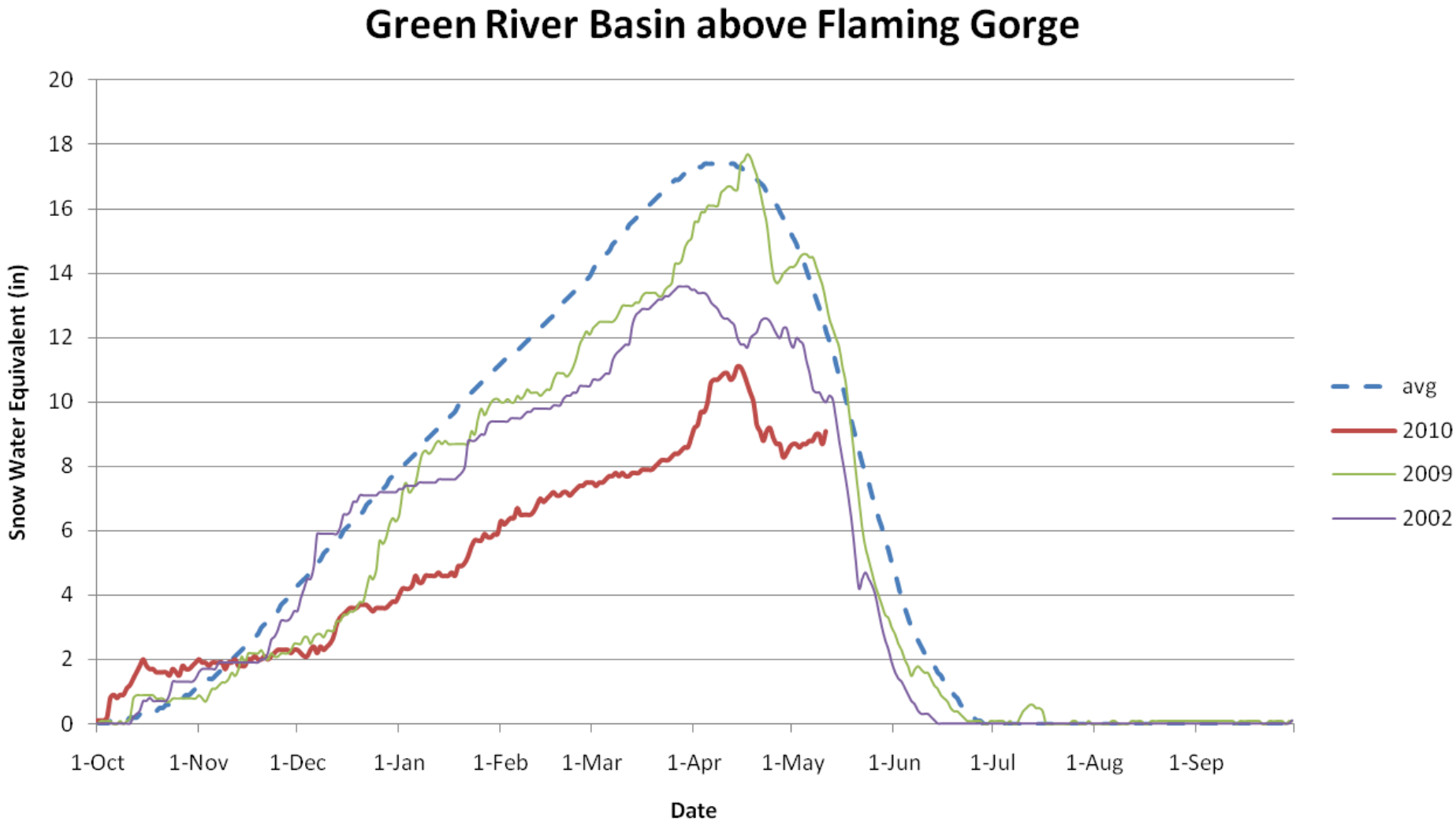


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

Green River Basin above Flaming Gorge



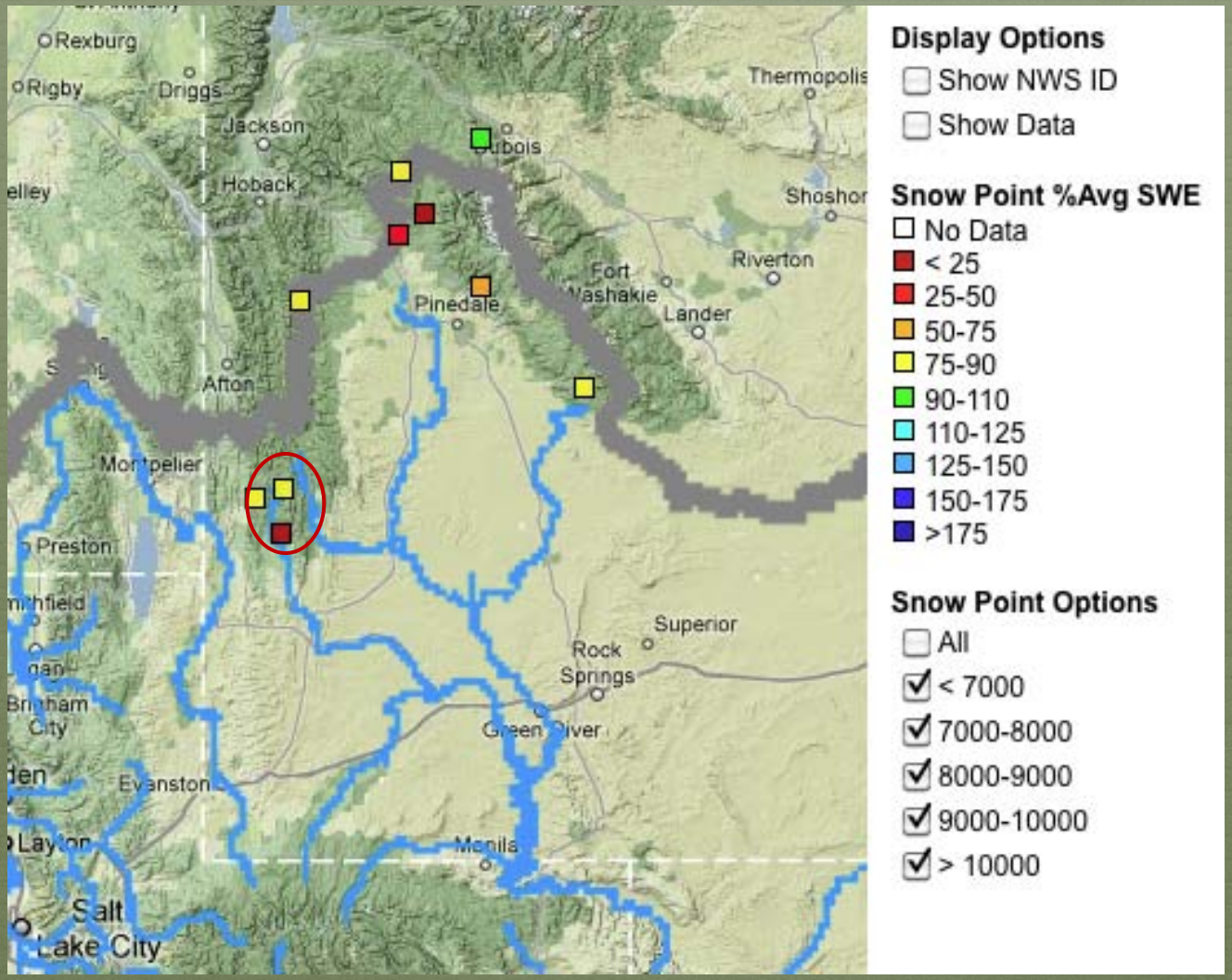
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



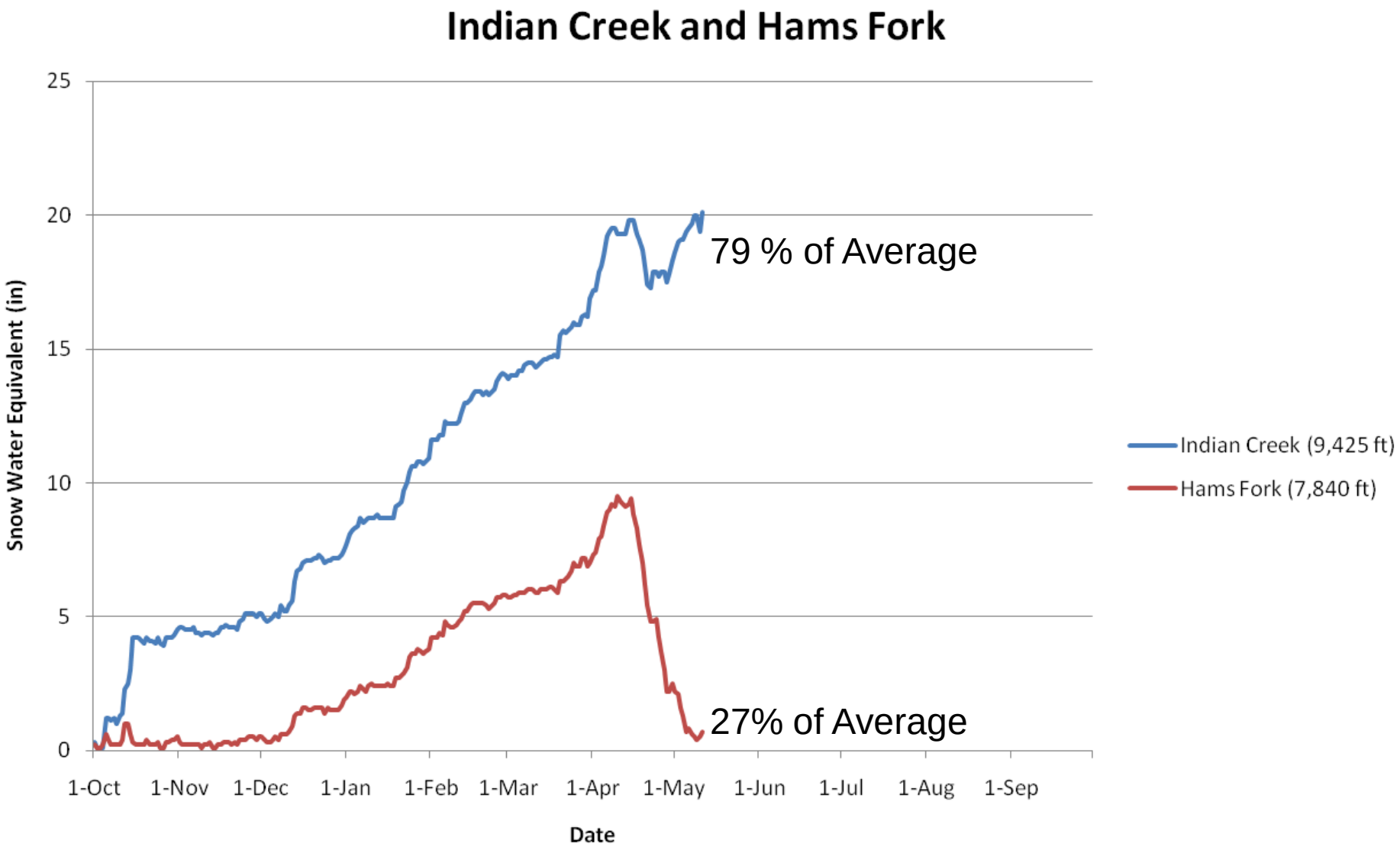
Basin Snowpack: 74%

Peak snowpack: 64% of average peak

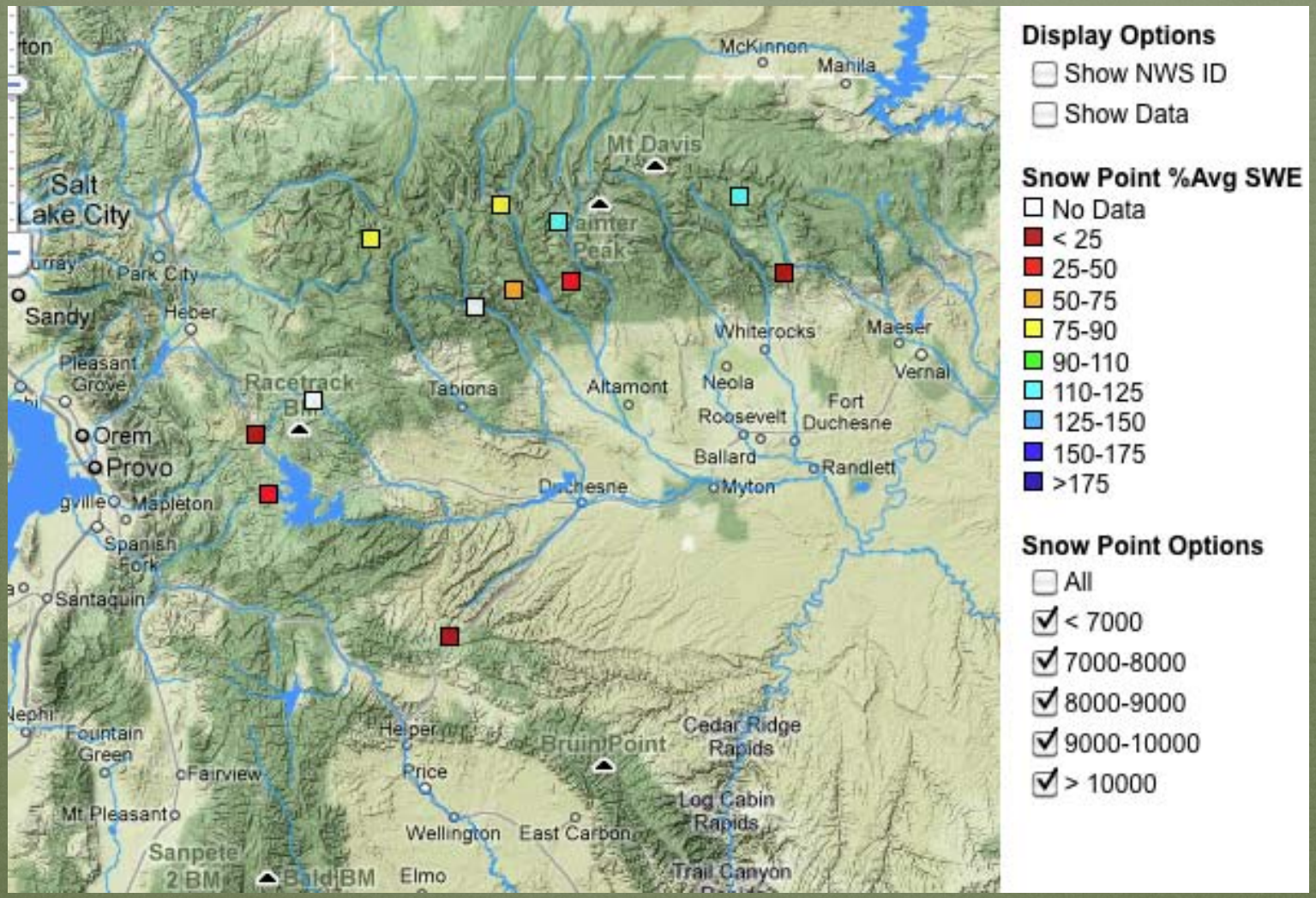
Indian Creek and Hams Fork



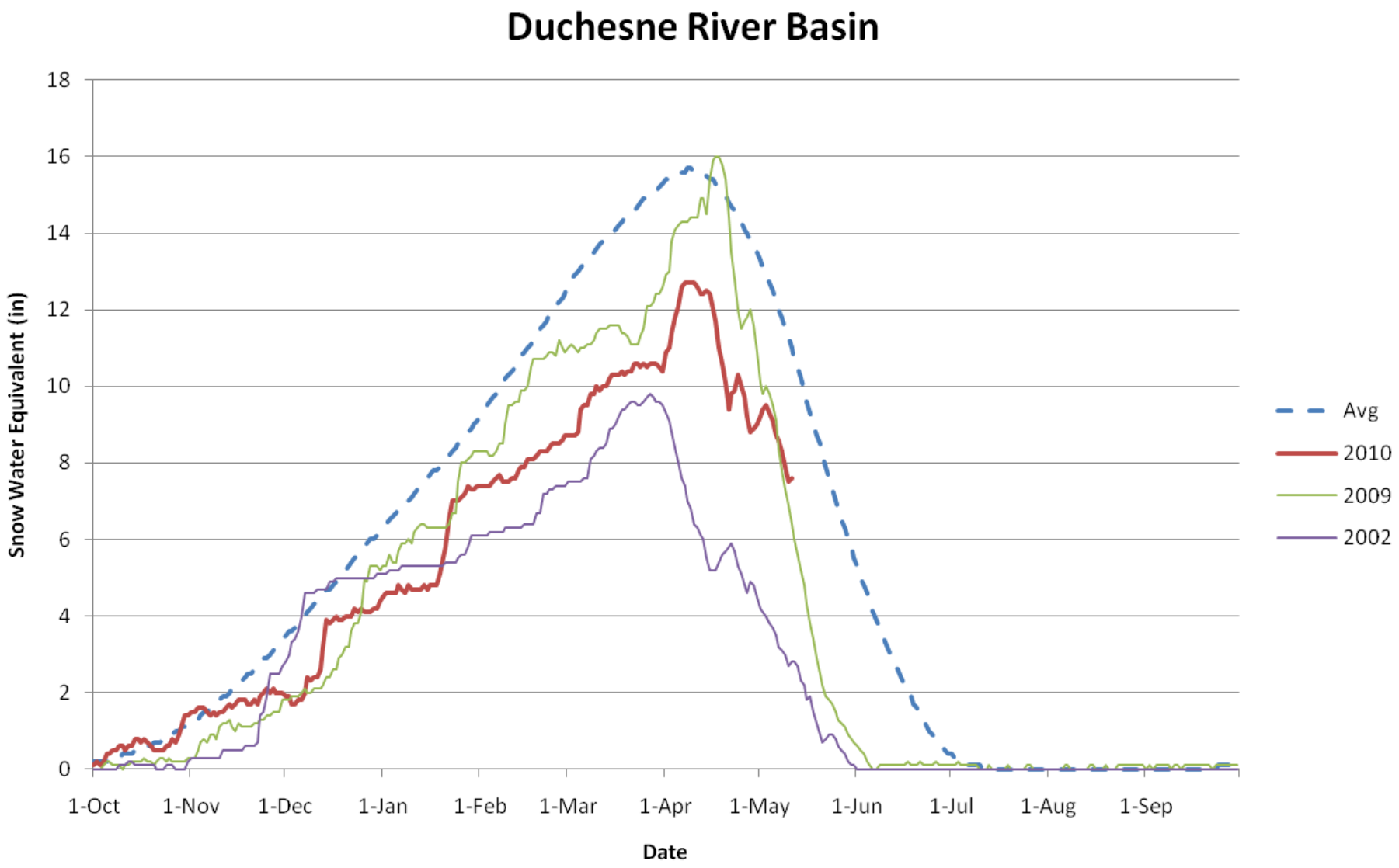
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center


Indian Creek and Hams Fork
Snow Water Equivalent (in)
25
20
15
10
5
0
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
79 % of Average
27% of Average
Indian Creek (9,425 ft)
Hams Fork (7,840 ft)

Duchesne River Basin



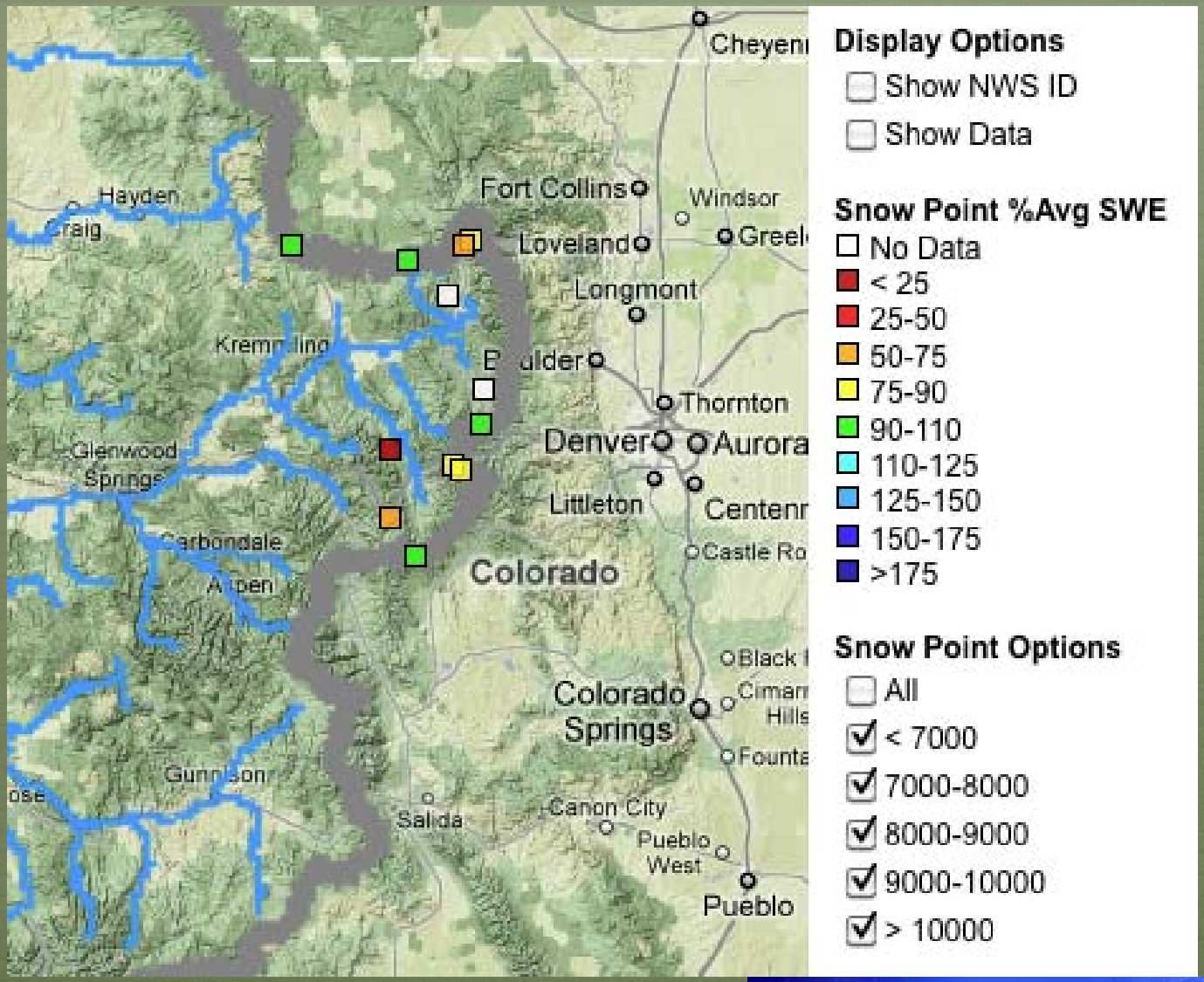
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



Basin snowpack: 69%

Peak snowpack: 81% of average peak

Upper Colorado above Kremmling



NATIONAL WEATHER SERVICE
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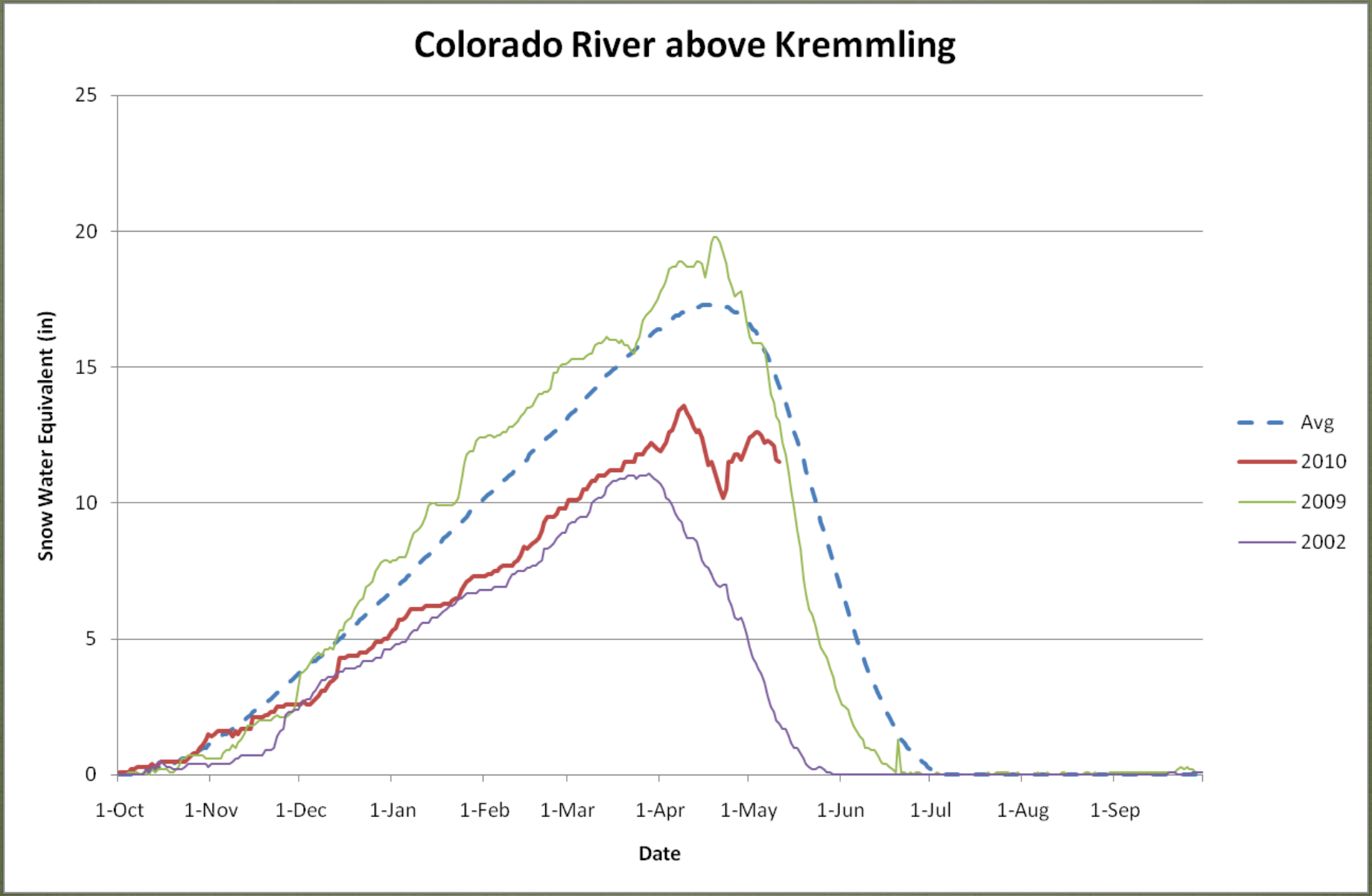
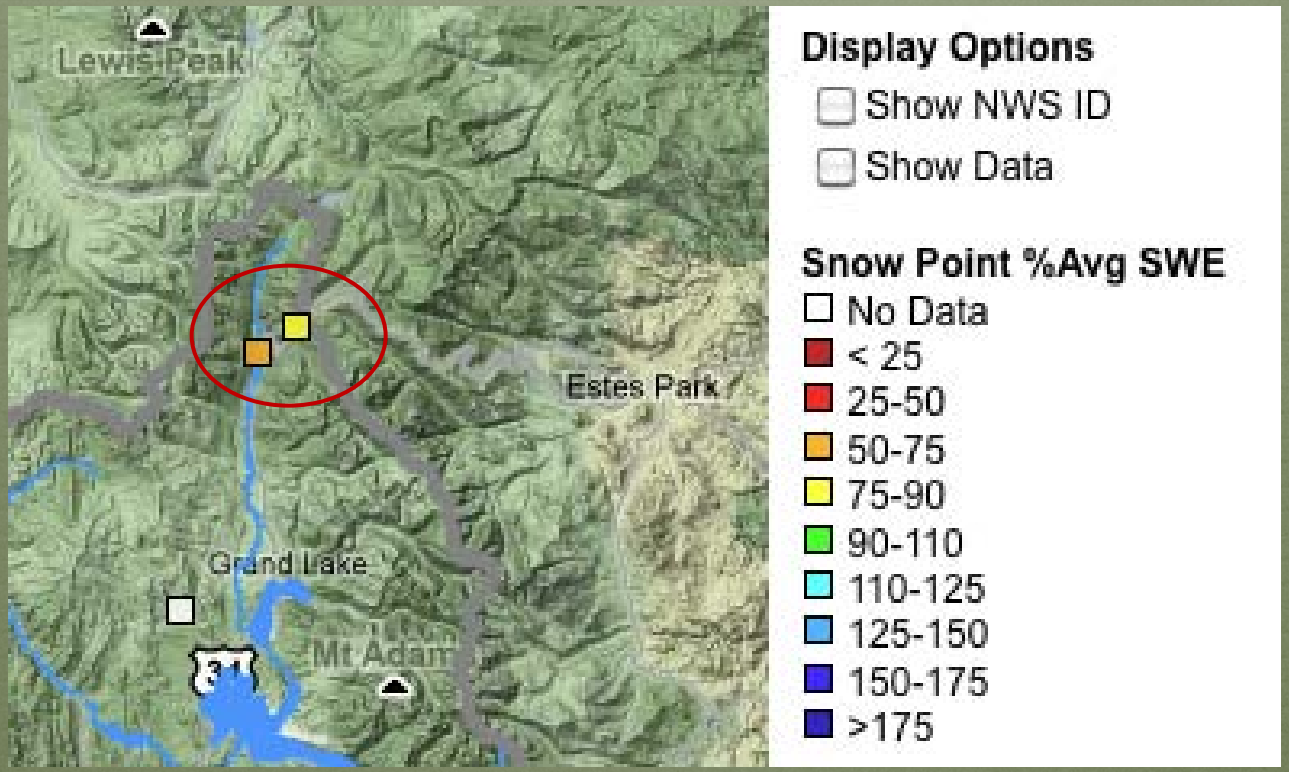


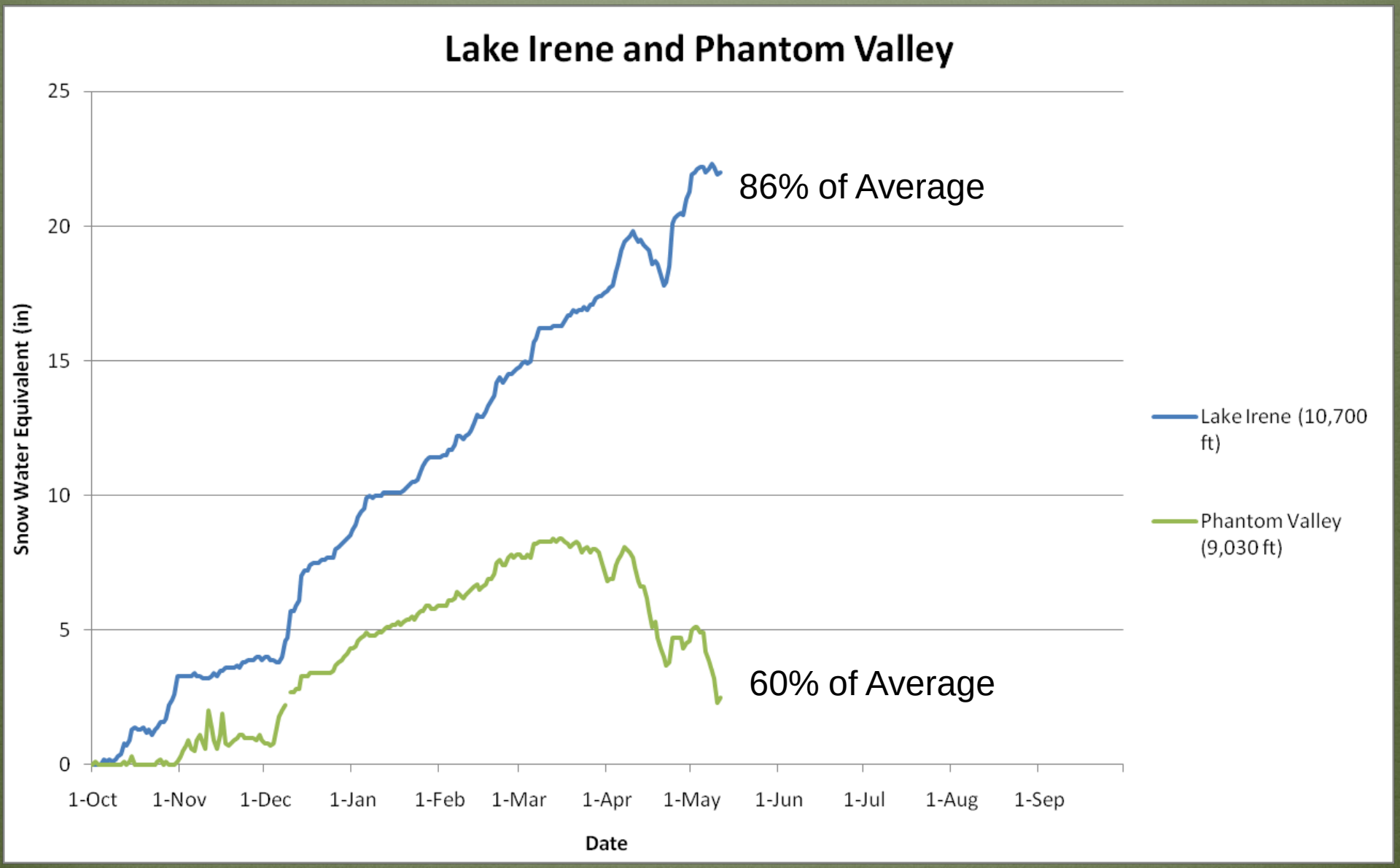
Basin Snowpack: 82%

Peak snowpack: 79% of average peak

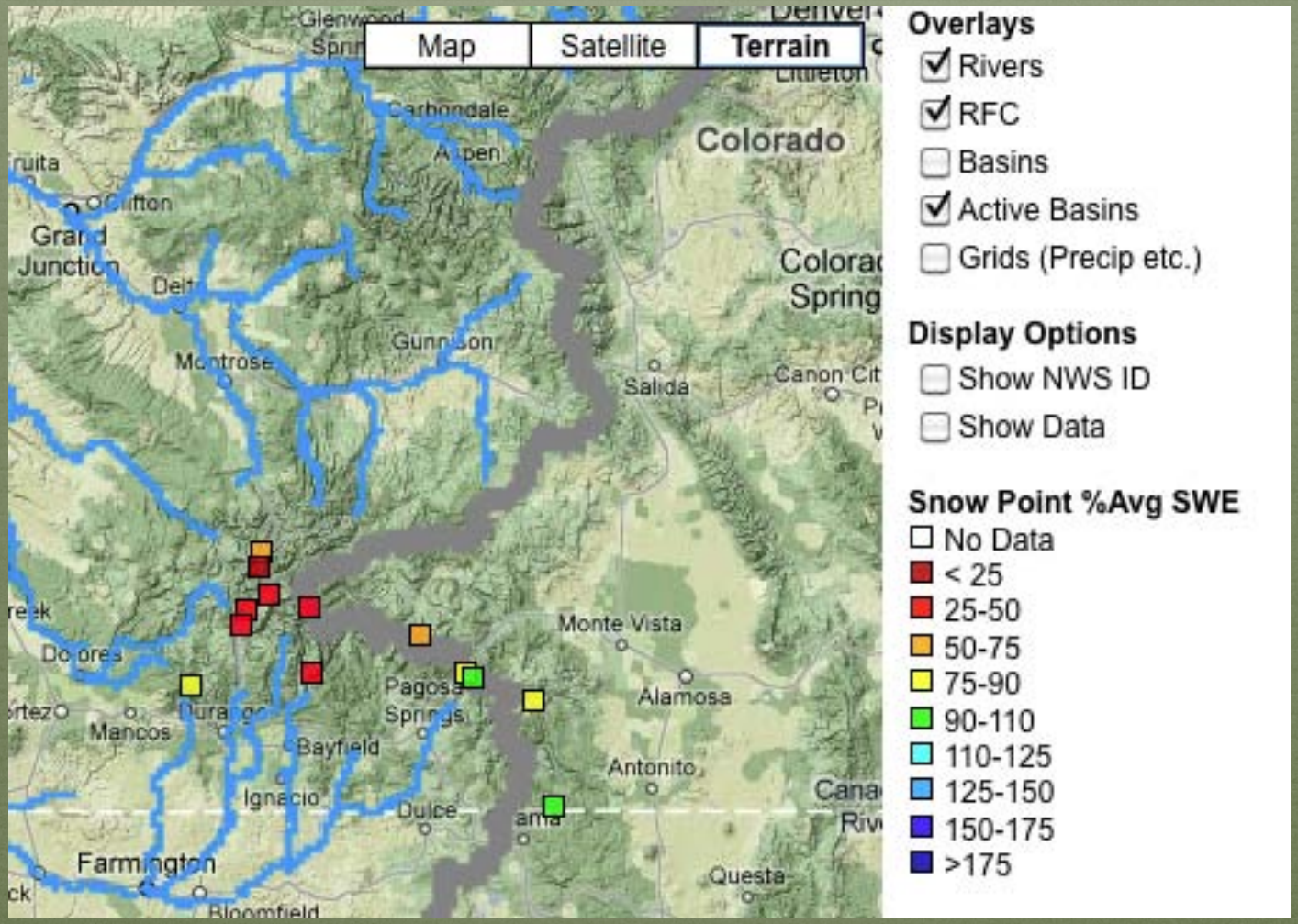
Lake Irene and Phantom Valley



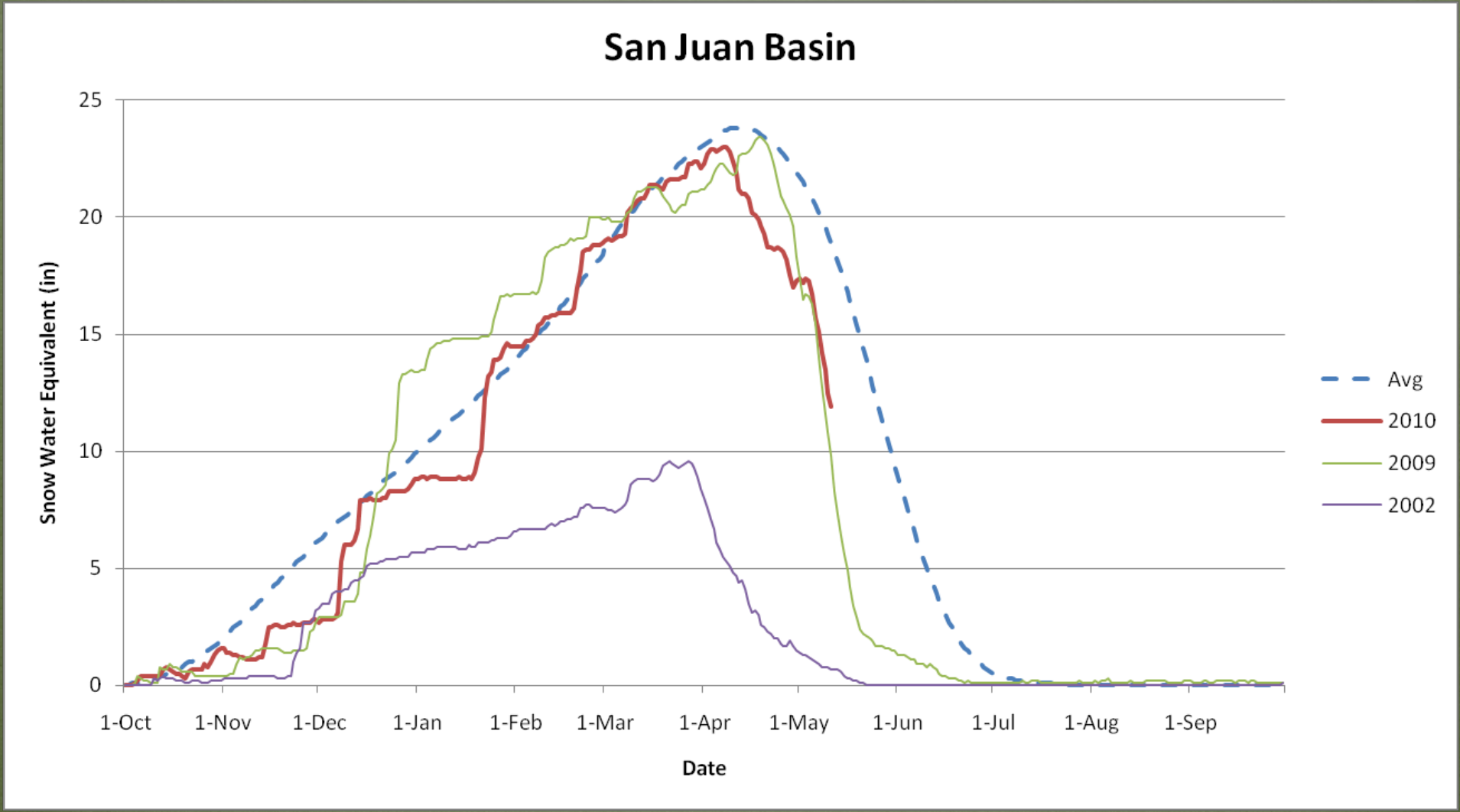
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center


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
86% of Average
60% of Average
Lake Irene (10,700 ft)
Phantom Valley (9,030 ft)

San Juan Basin



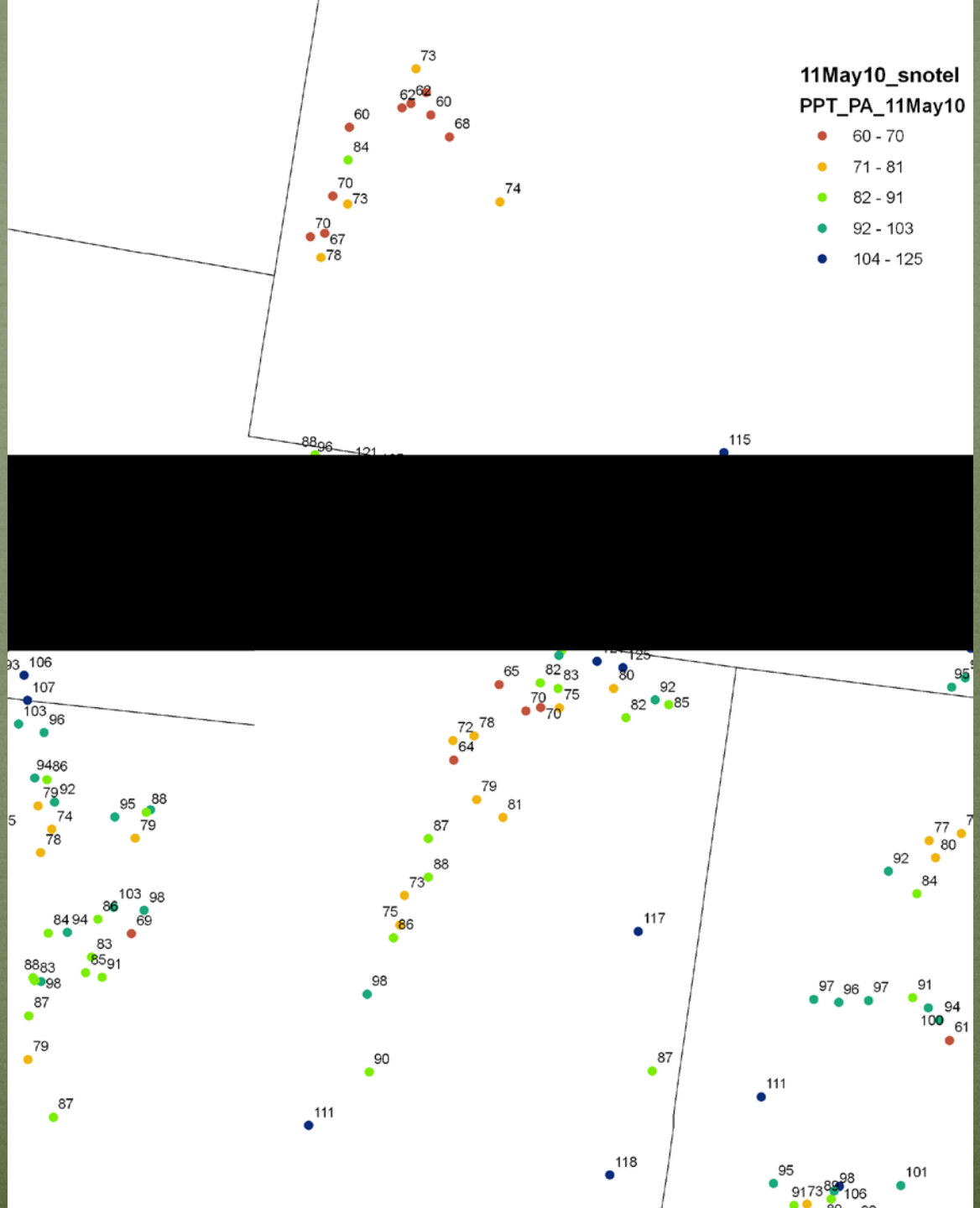
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



Basin Snowpack: 63%

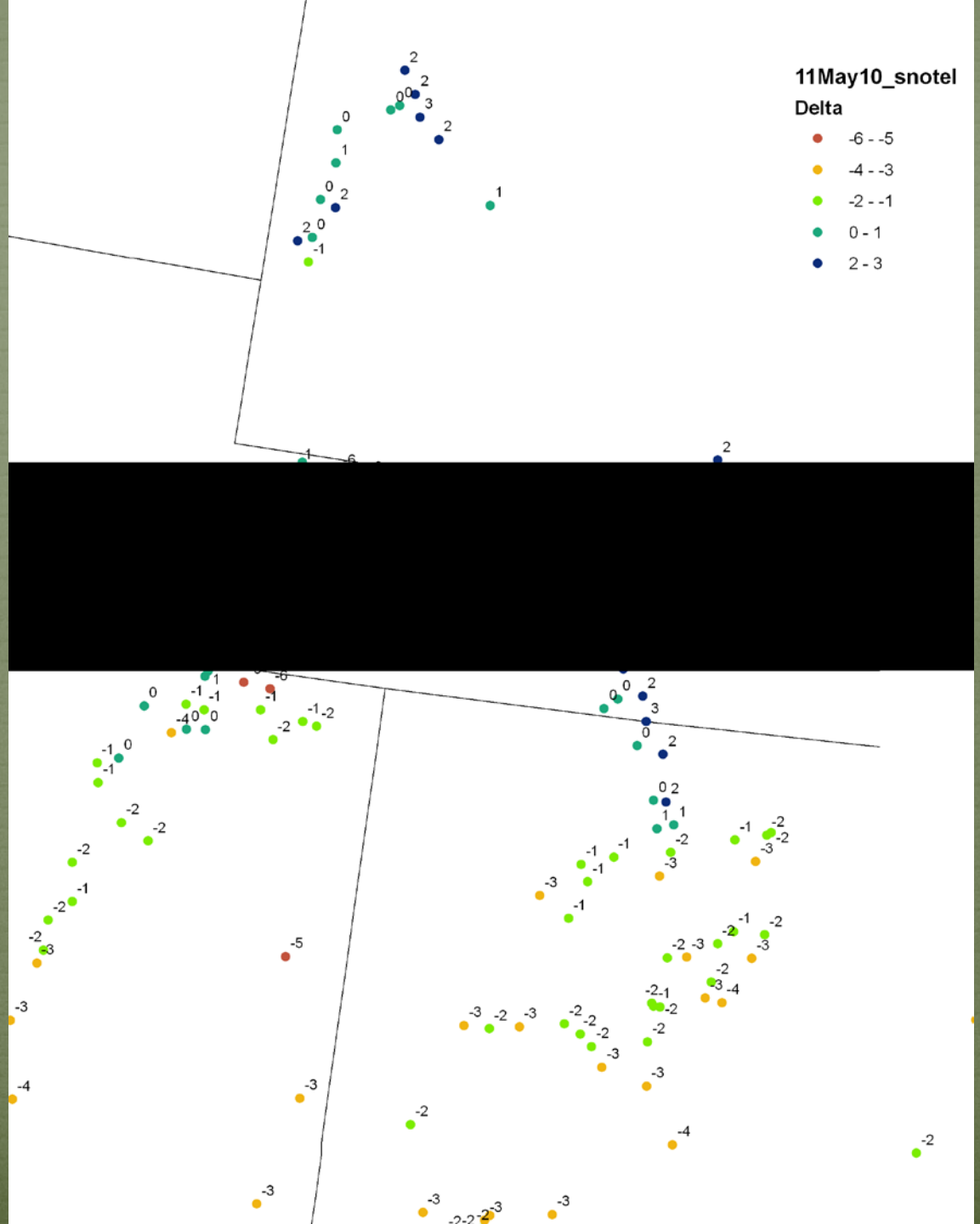
Peak snowpack: 97% of average peak

Snotel WYTD Precipitation as Percentage of Average

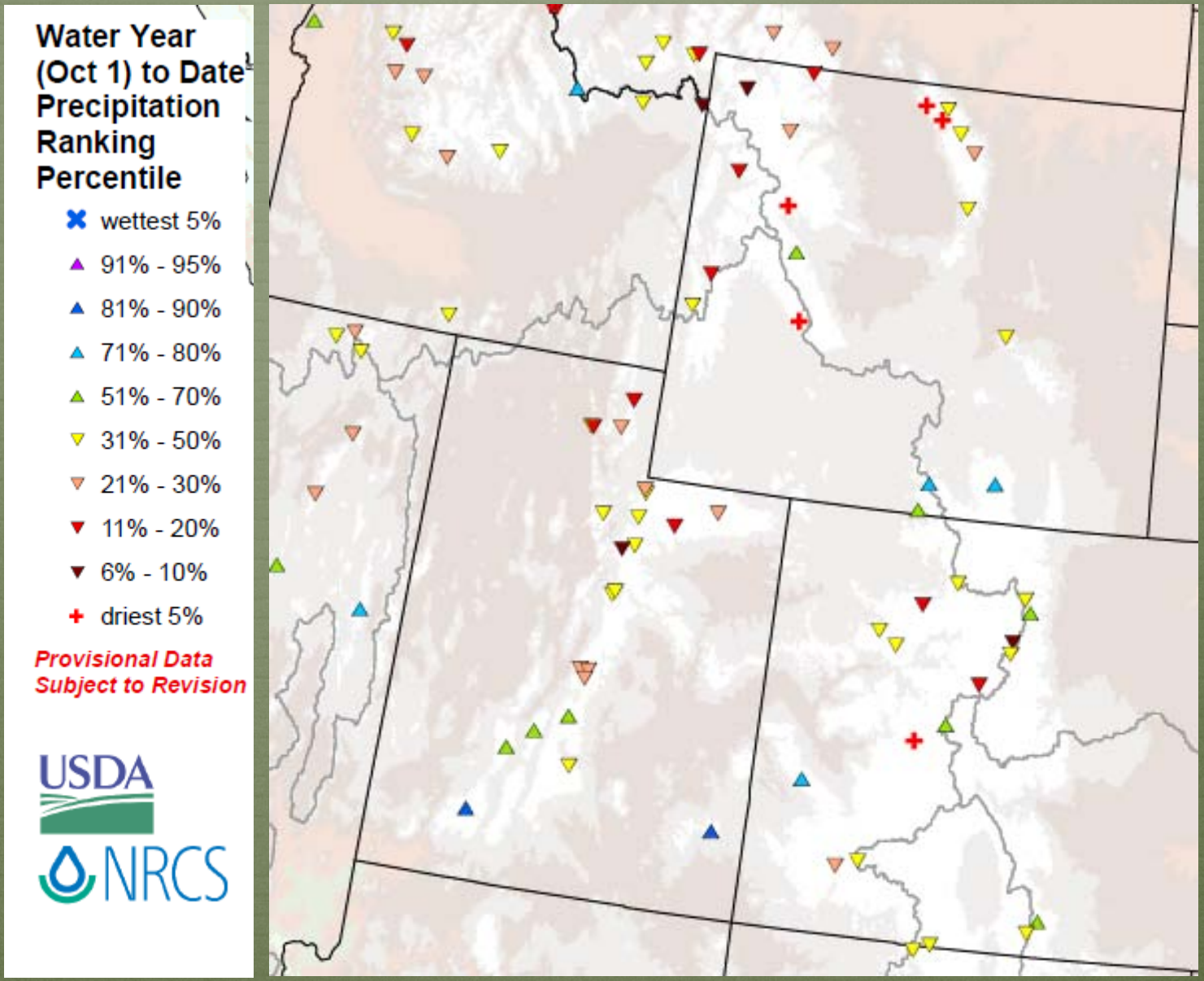


Upper Colorado 86% of Average Overall

1 Week Change in Snotel WYTD Precipitation Percent of Average



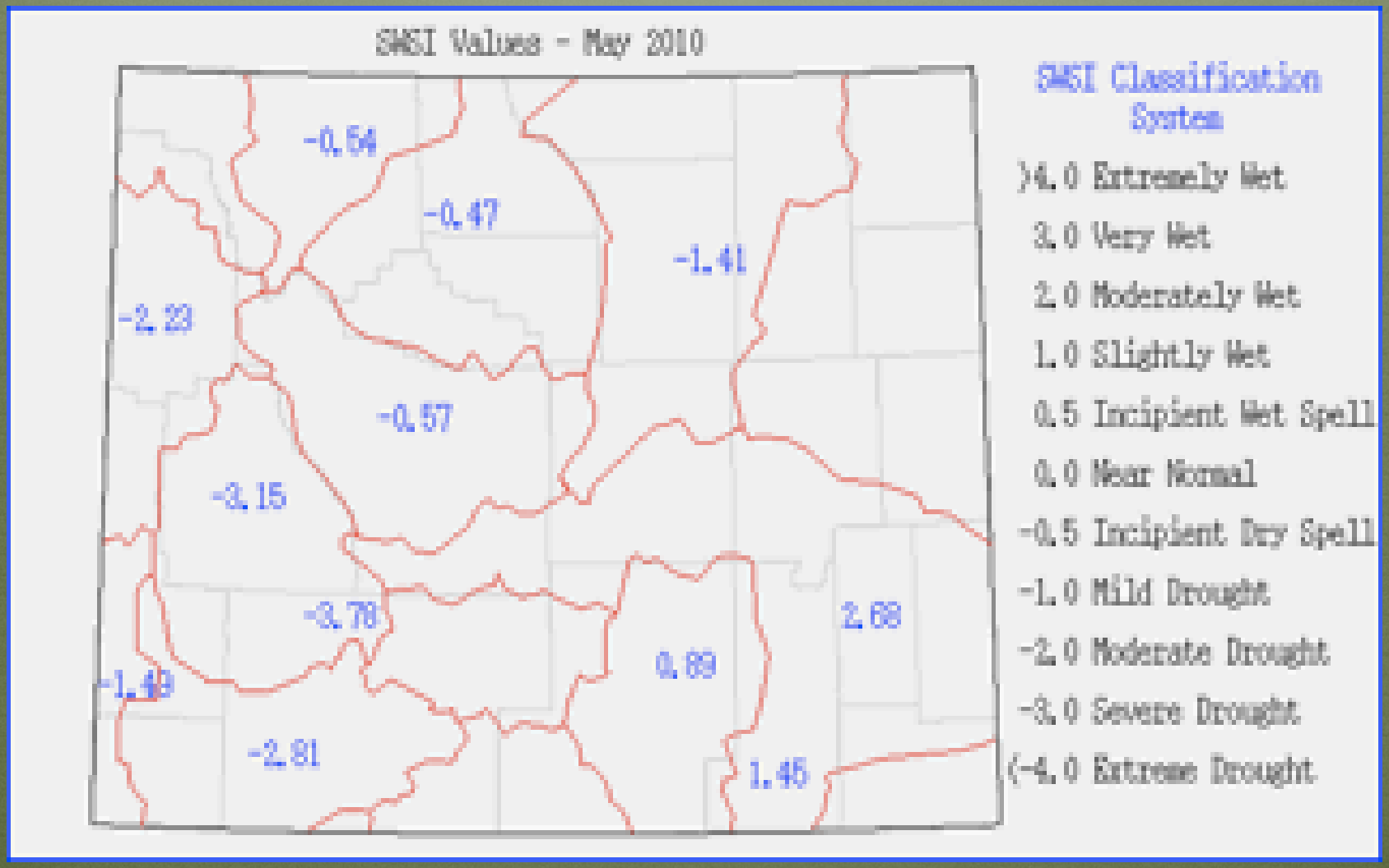
Western Snotel Percentiles 11 May 2010



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

Wyoming Update

Wyoming SWSI

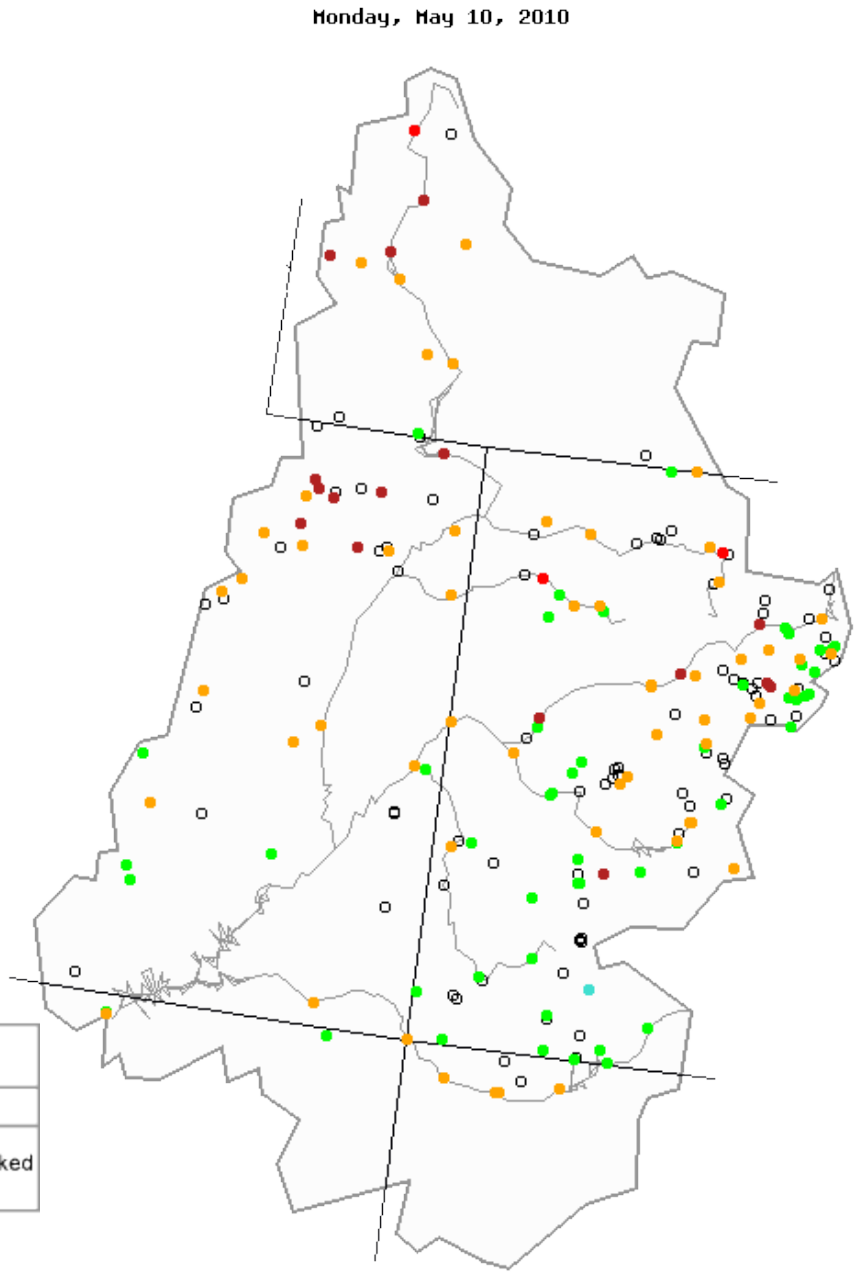


Streamflow Update

Michael E. Lewis – USGS

Kevin Werner - CBRFC

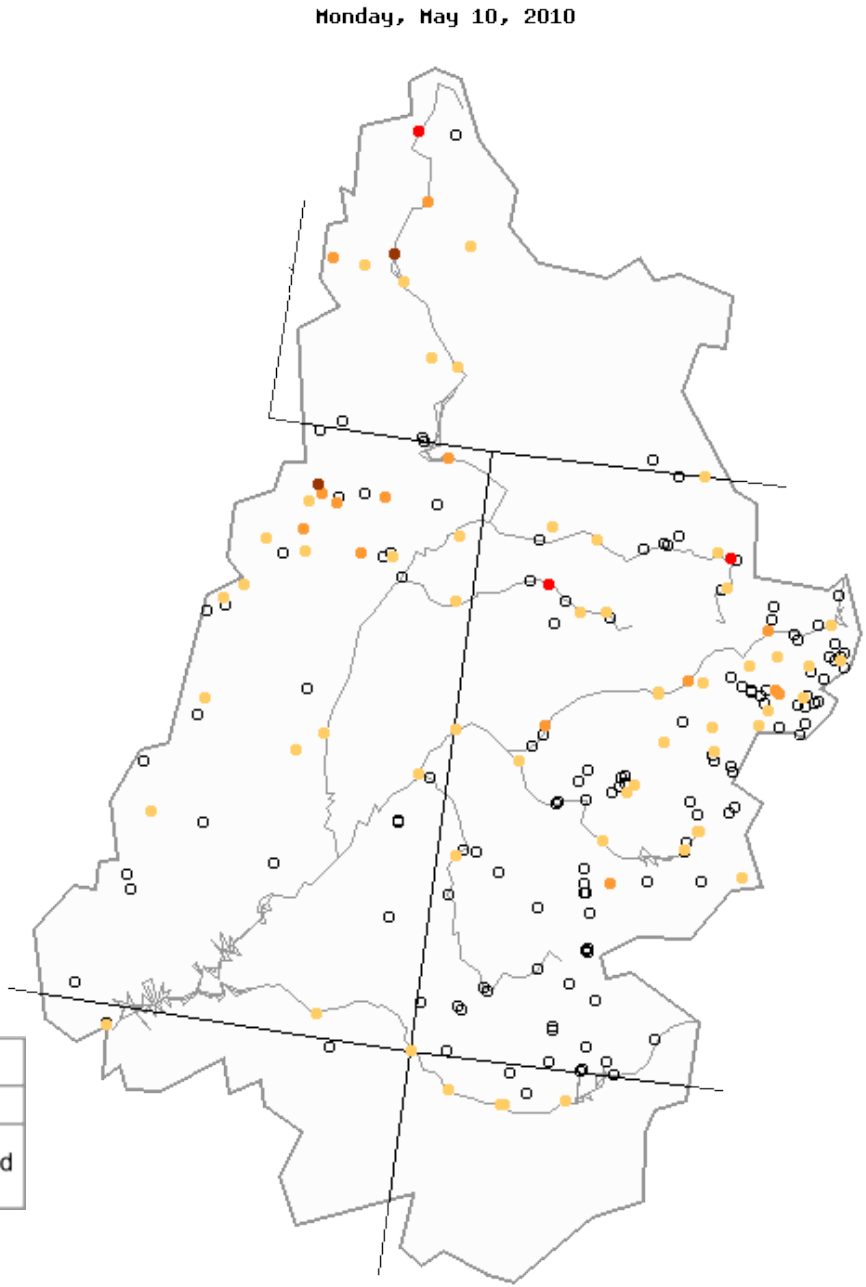
7-day average streamflow compared to historical streamflow for the day of the year (Upper Colorado)



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		

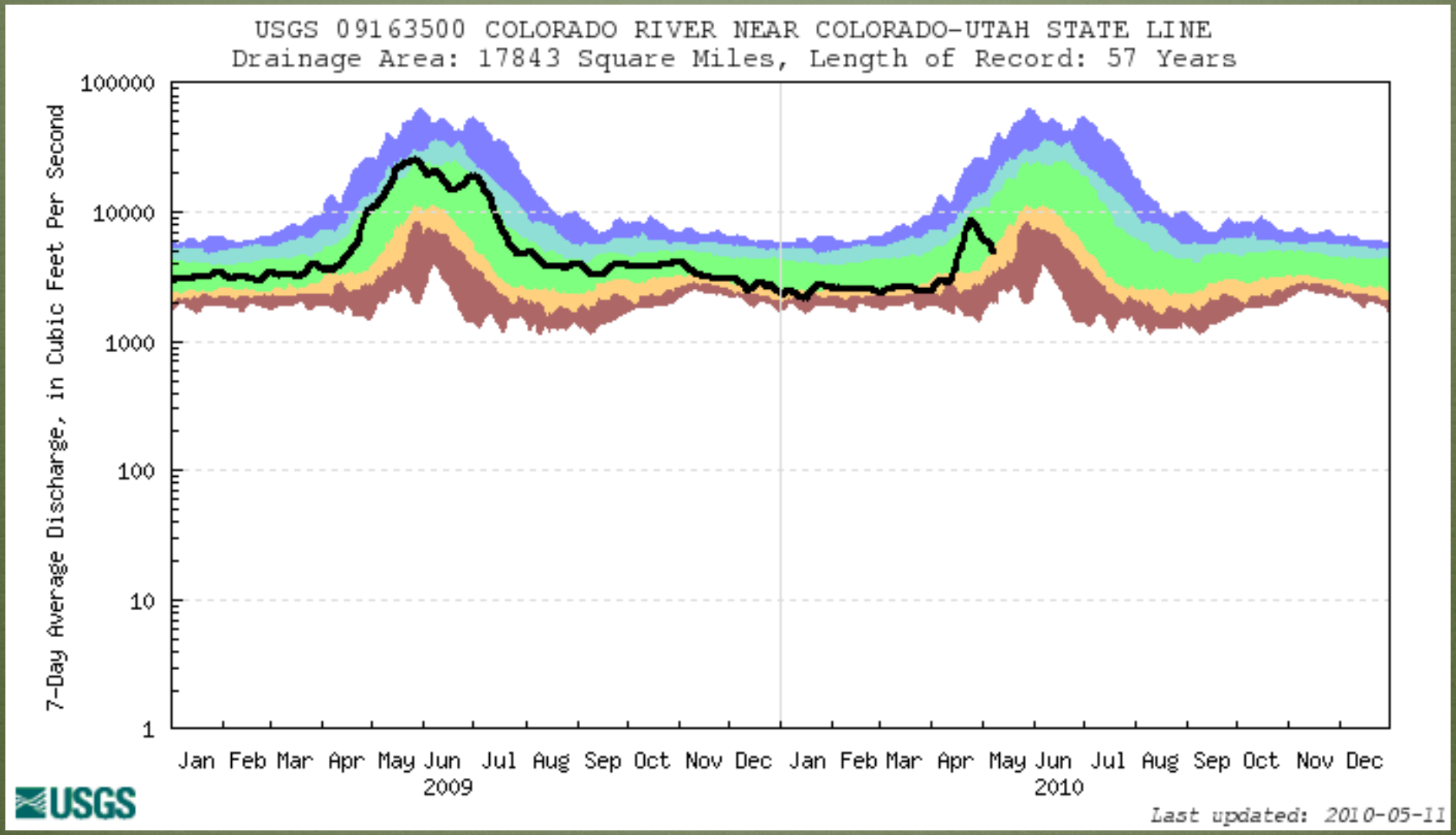
USGS

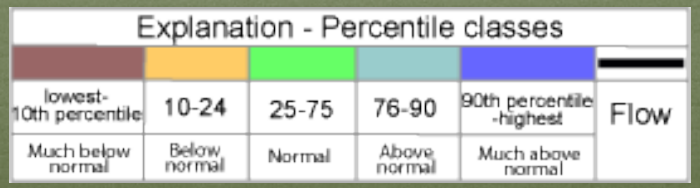
Below normal 7-day average streamflow compared to historical streamflow for the day of the year (Upper Colorado)

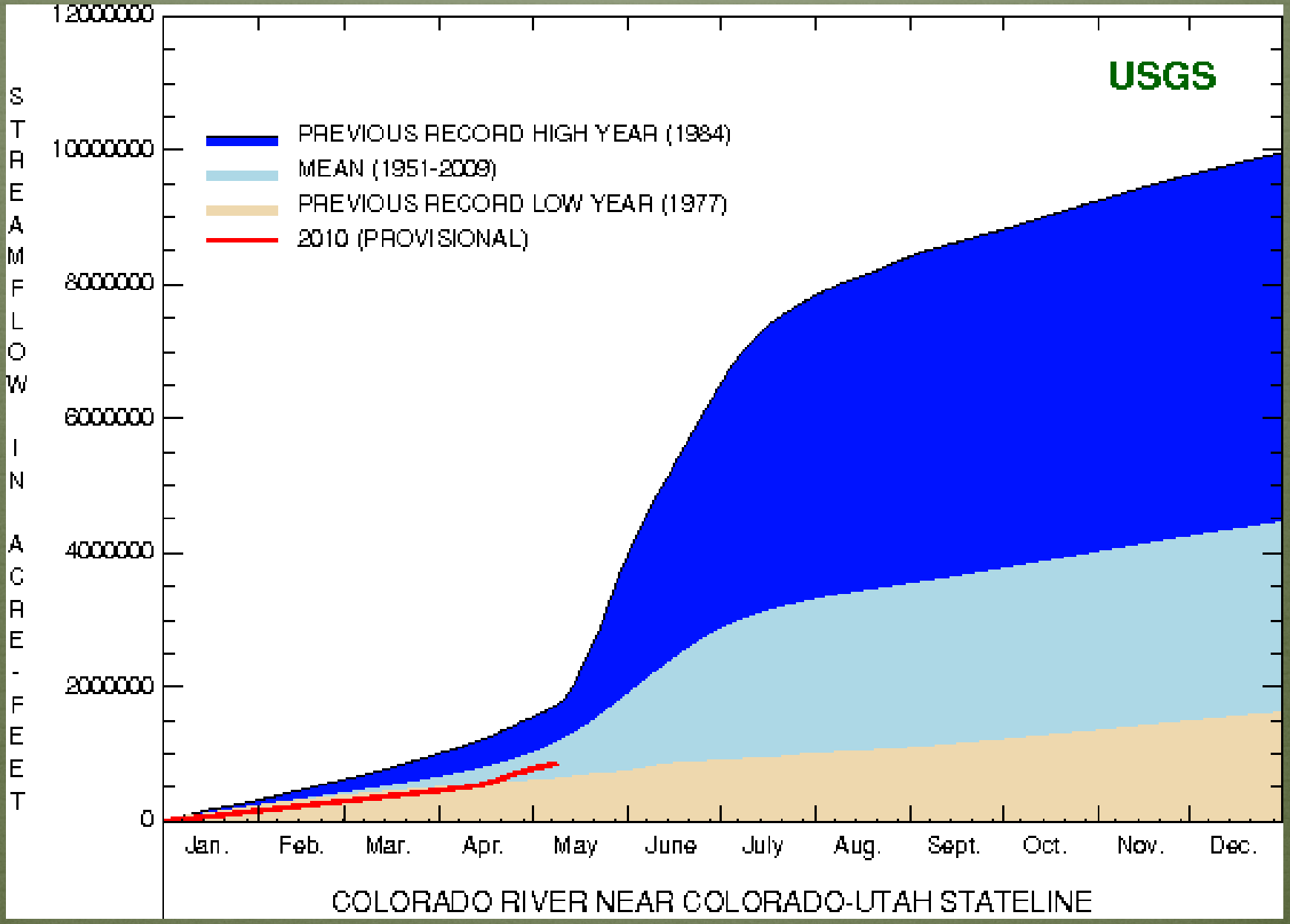


Explanation - Percentile classes				
New low	<=5	6-9	10-24	Not ranked
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

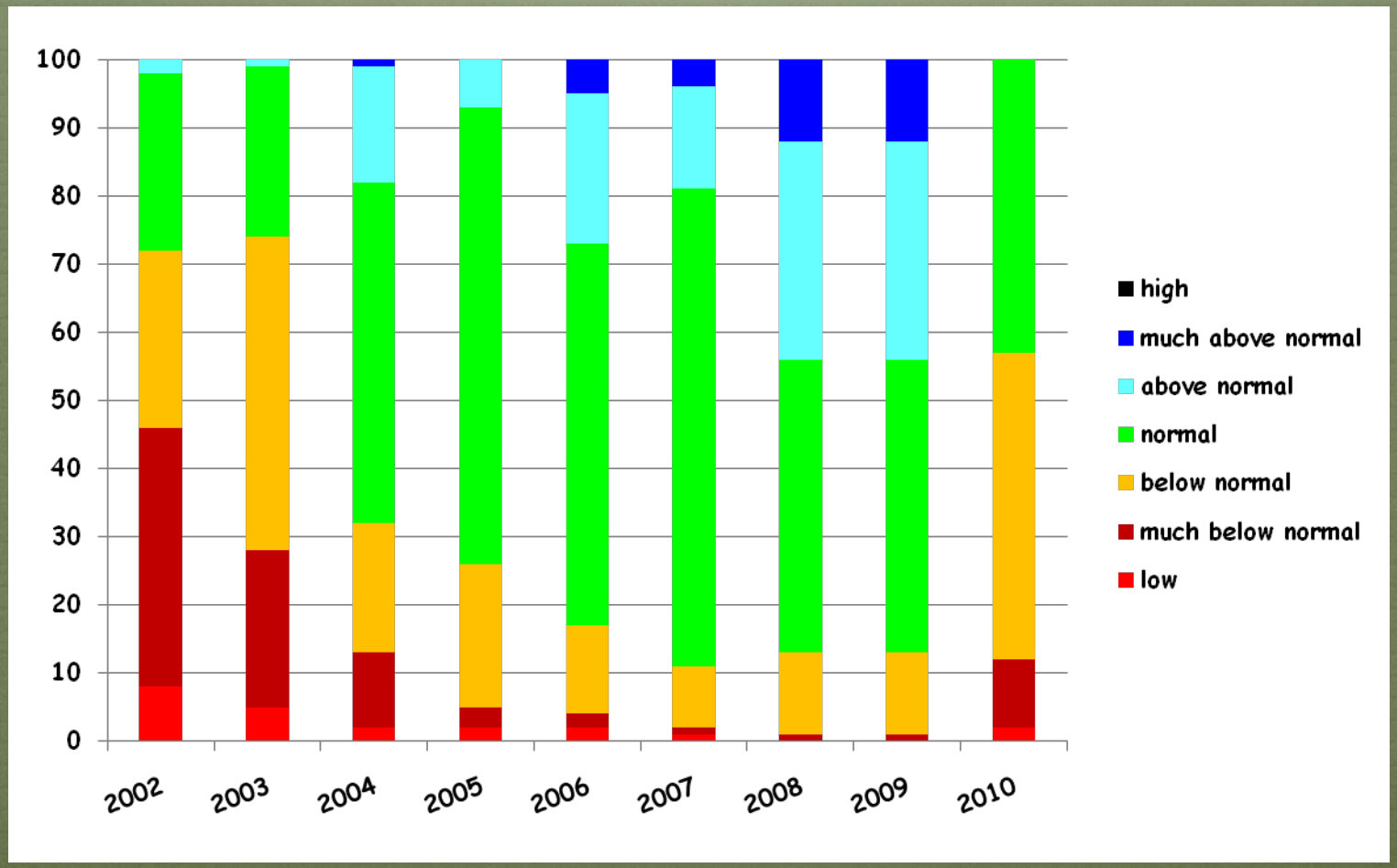
USGS


USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE
Drainage Area: 17843 Square Miles, Length of Record: 57 Years
7-Day Average Discharge, in Cubic Feet Per Second
100000
10000
1000
100
10
1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
2009
2010
USGS
Last updated: 2010-05-11


Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal


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

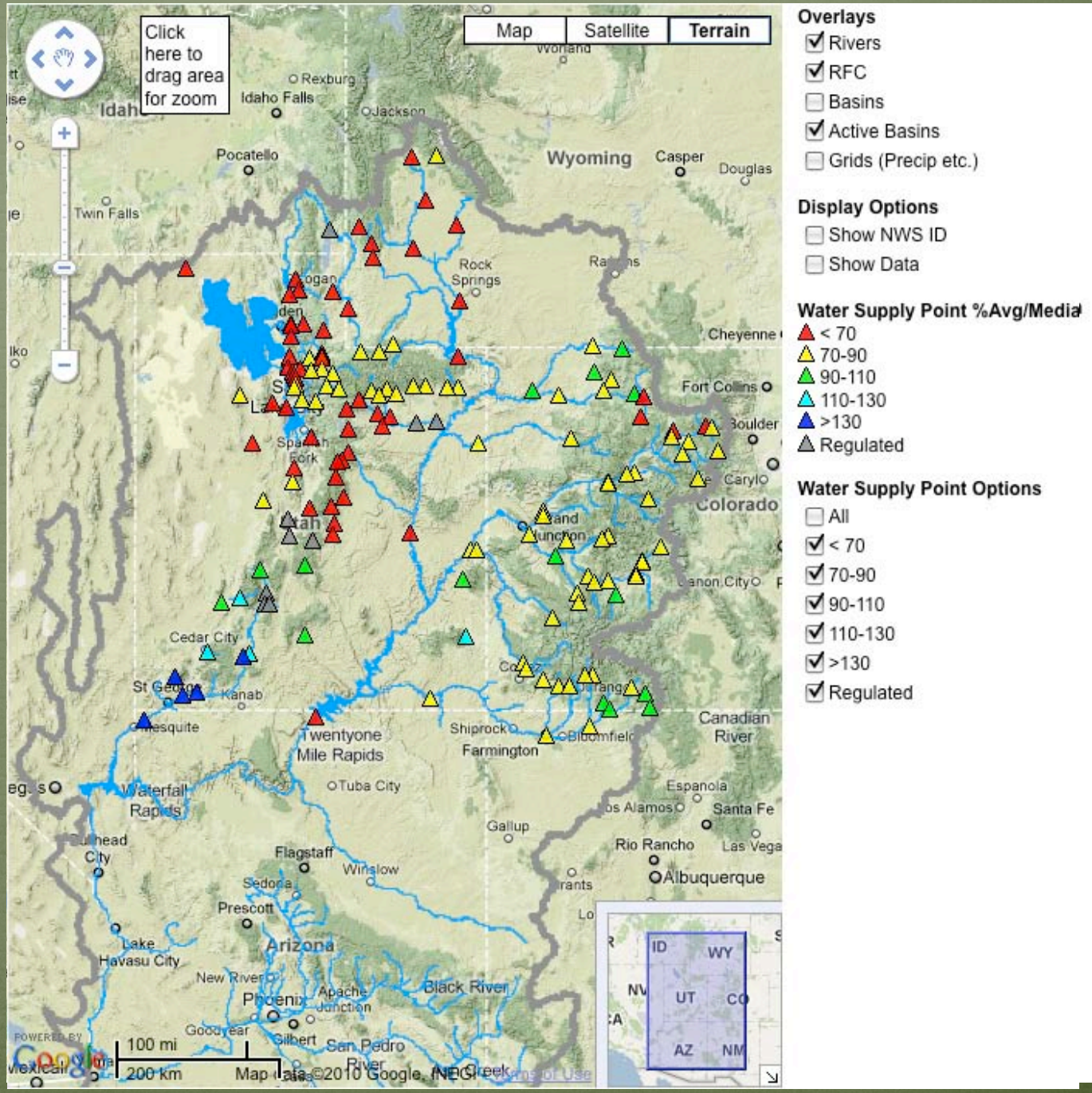
May 9
Percentage of Streamgages per Percentile Class
7-day Average Streamflow



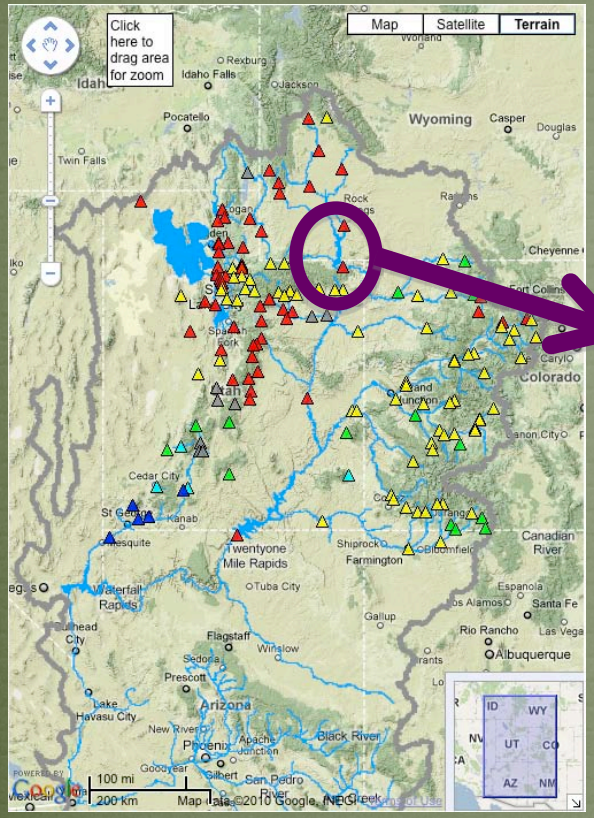
May 1, 2010
Water Supply
Forecasts

Highlights:

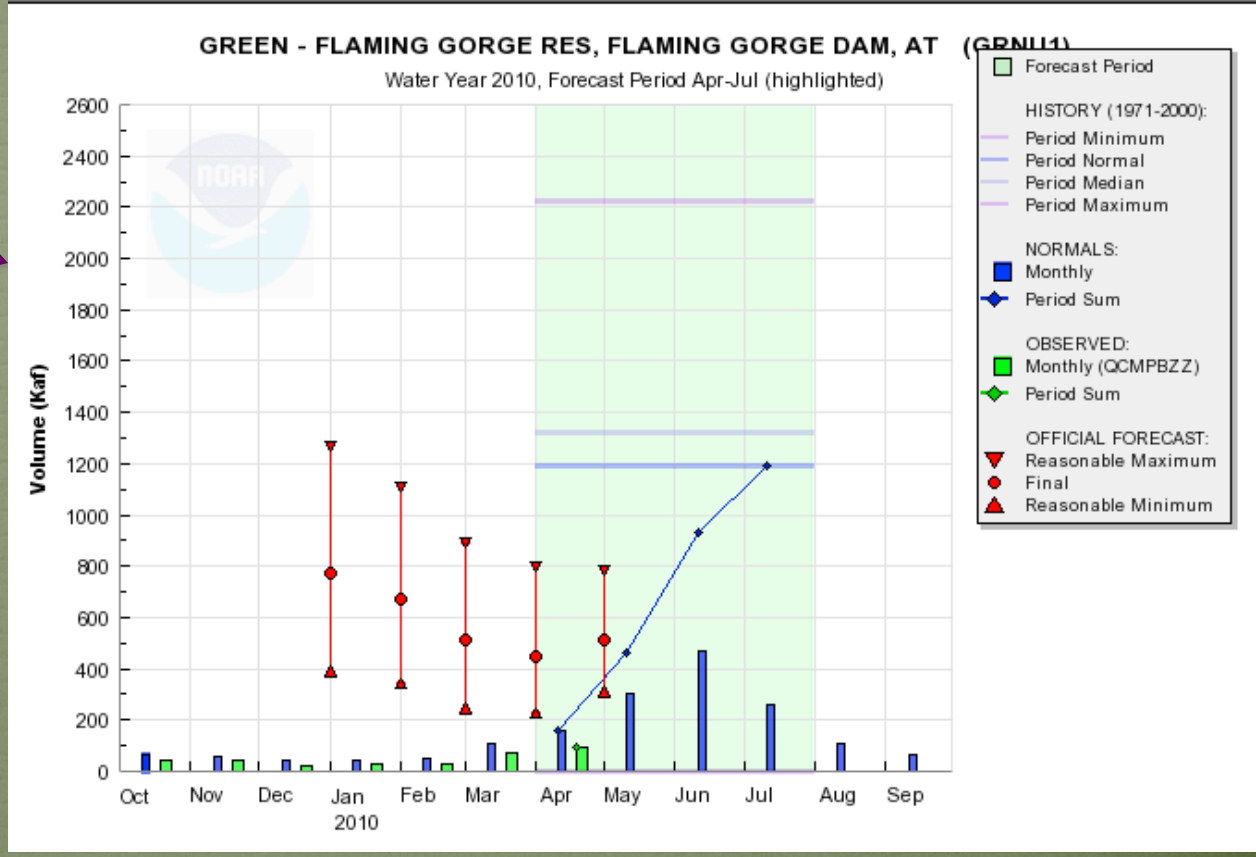
- Some improvement particularly in northern Great Basin, parts of Green and upper Colorado
- Improvements on the order of 5-10% from April storm activity
- Gunnison, San Juan, and southern Great Basin essentially unchanged from April



Web Reference: www.cbrfc.noaa.gov/gmap/gmapm.php?wcon=checked



May 01 2010 Forecast: 515 kaf (43% of normal)
Range: 310-785 kaf (26 - 66% of normal)



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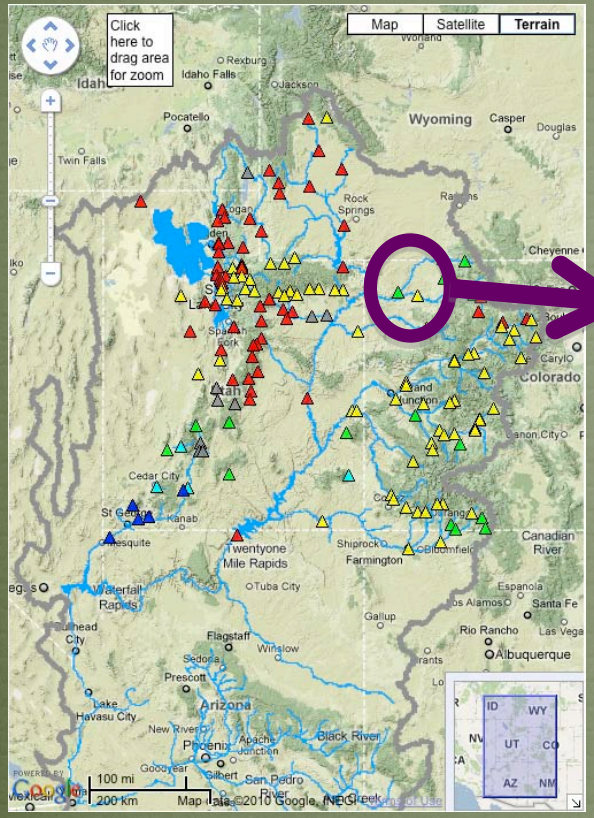

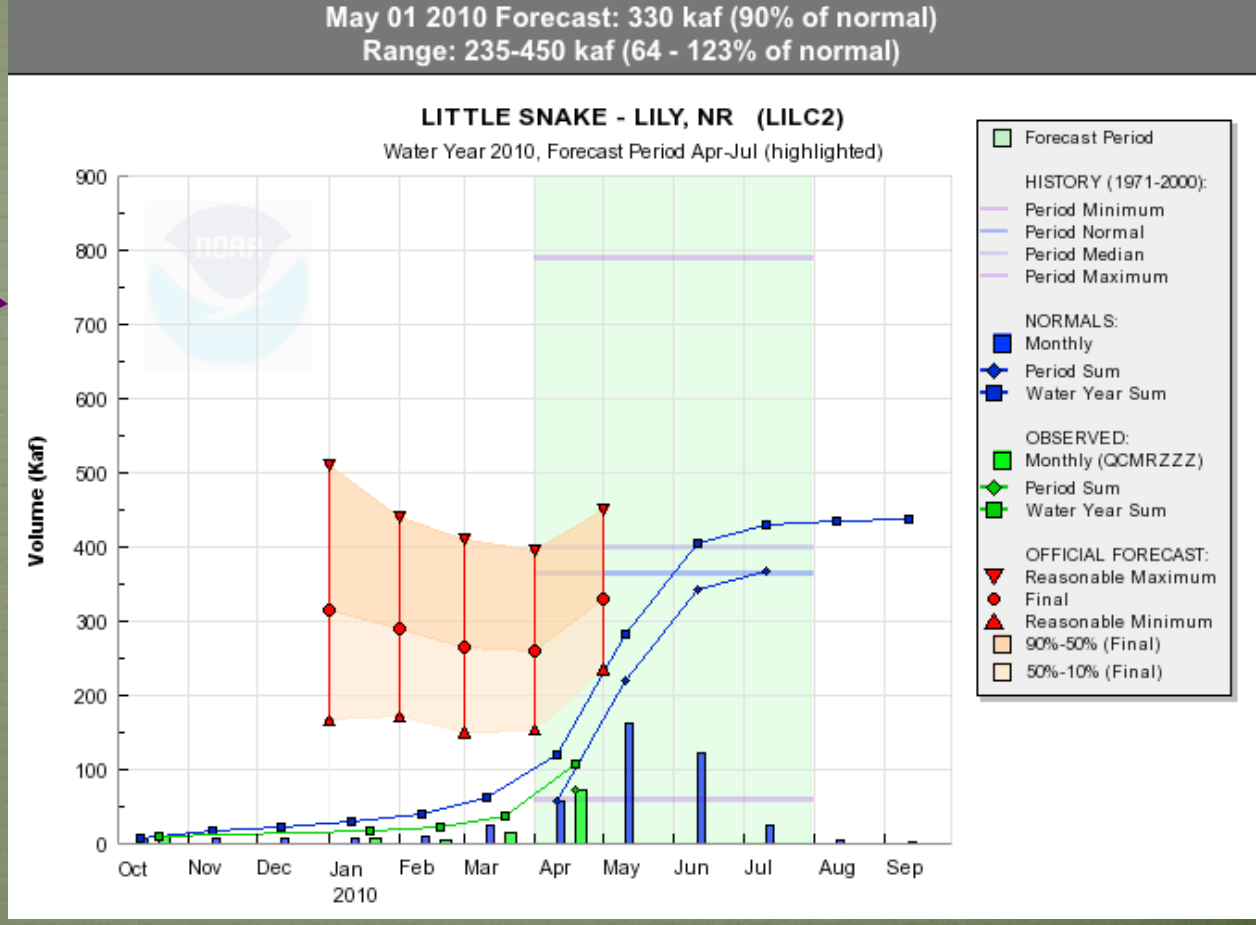

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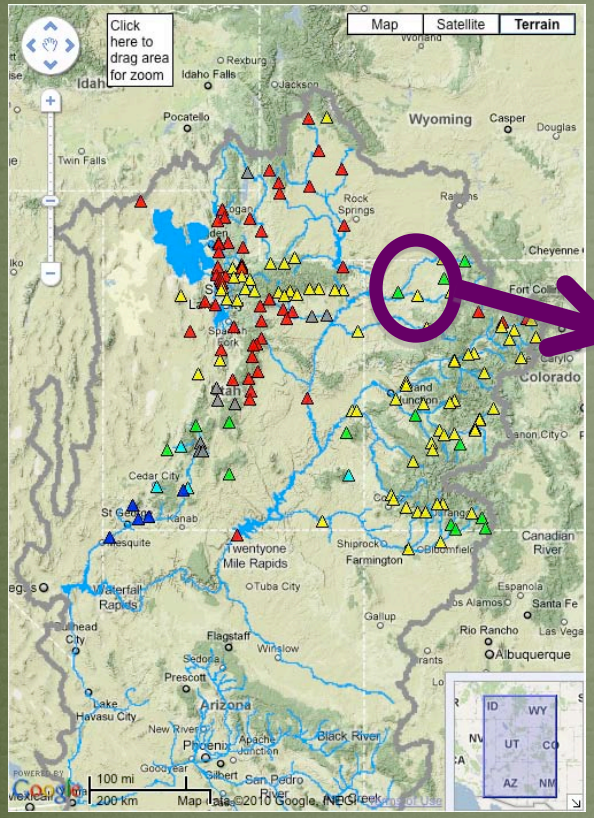

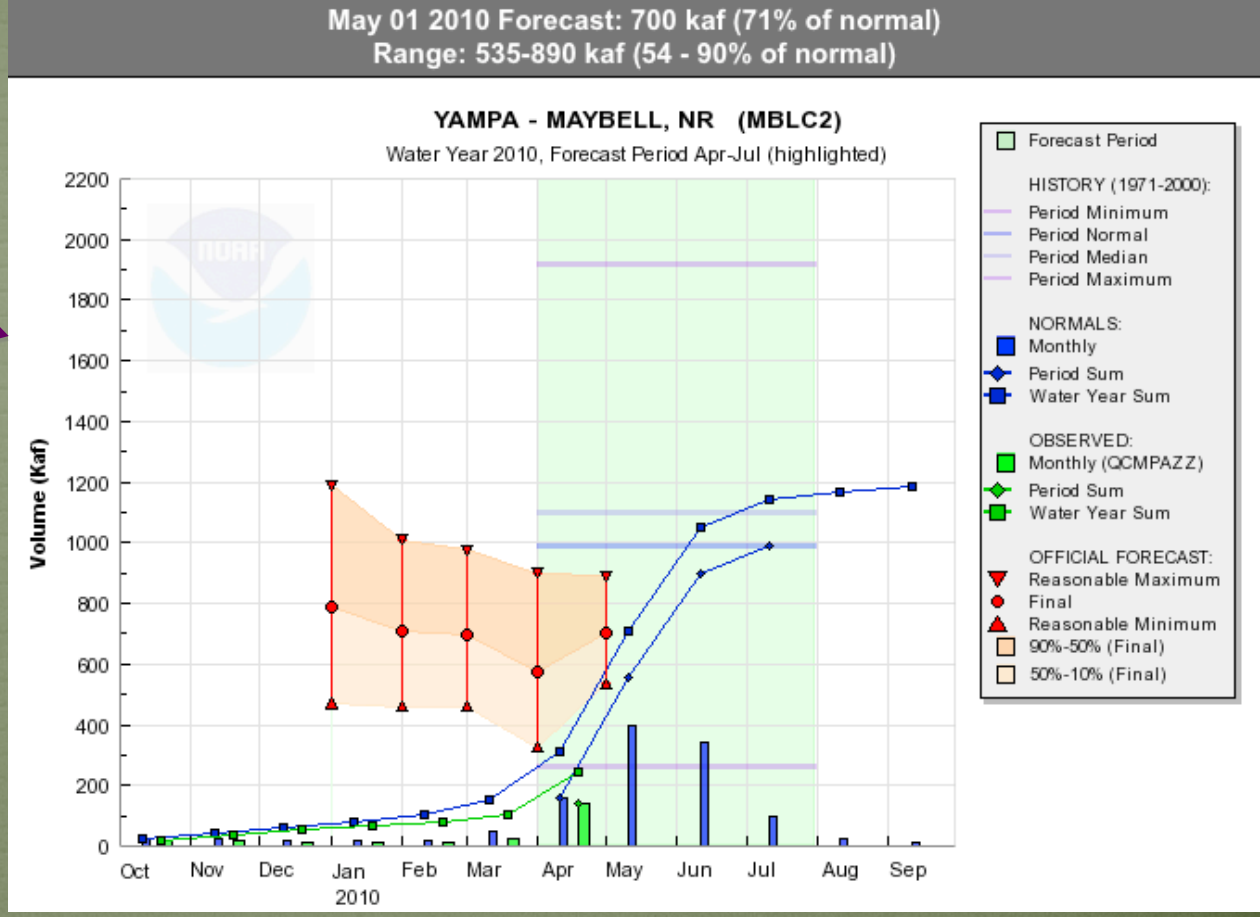

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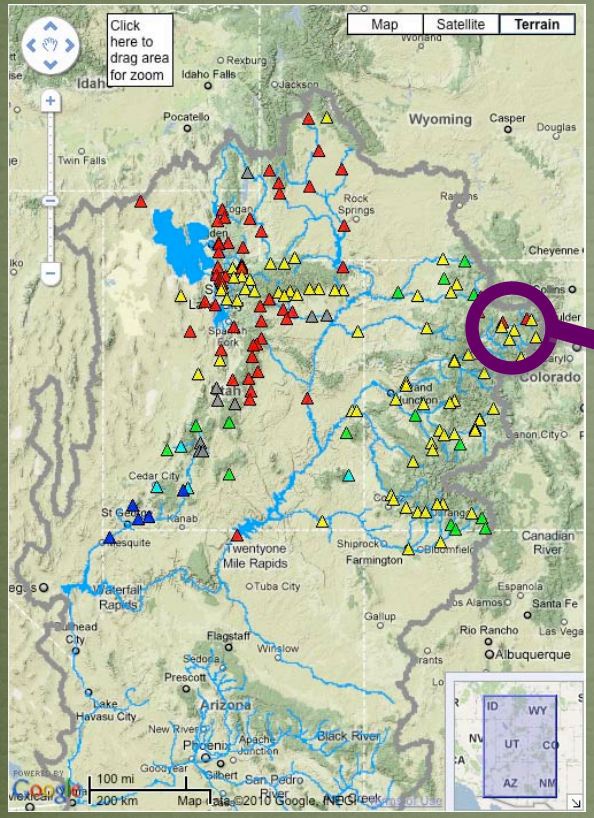

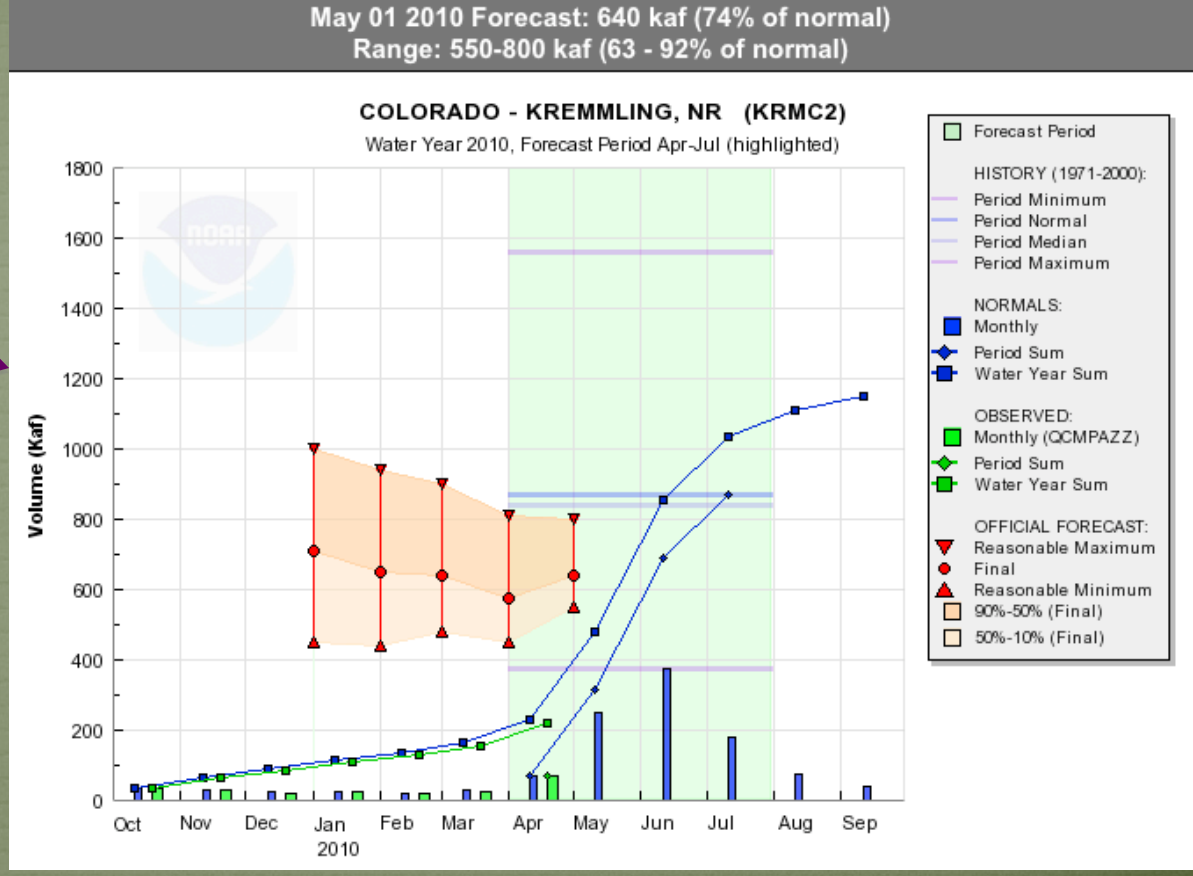

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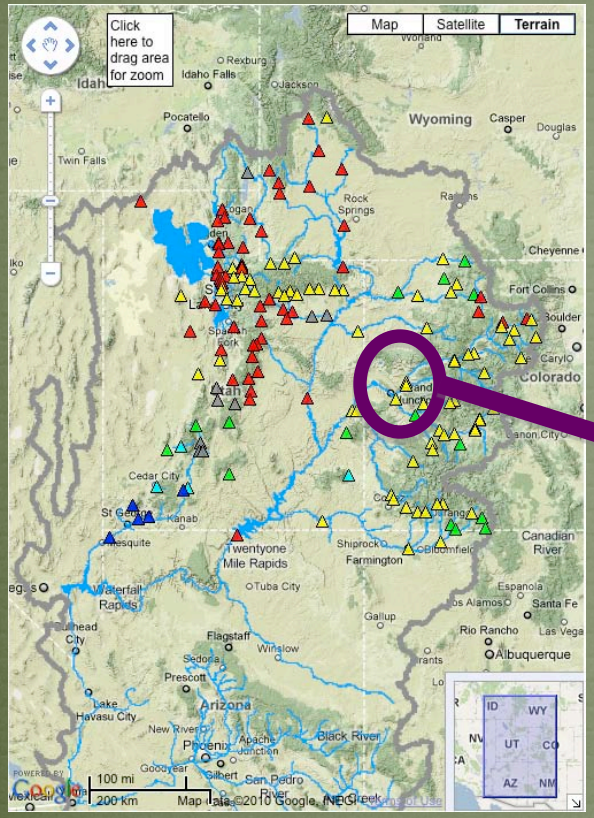

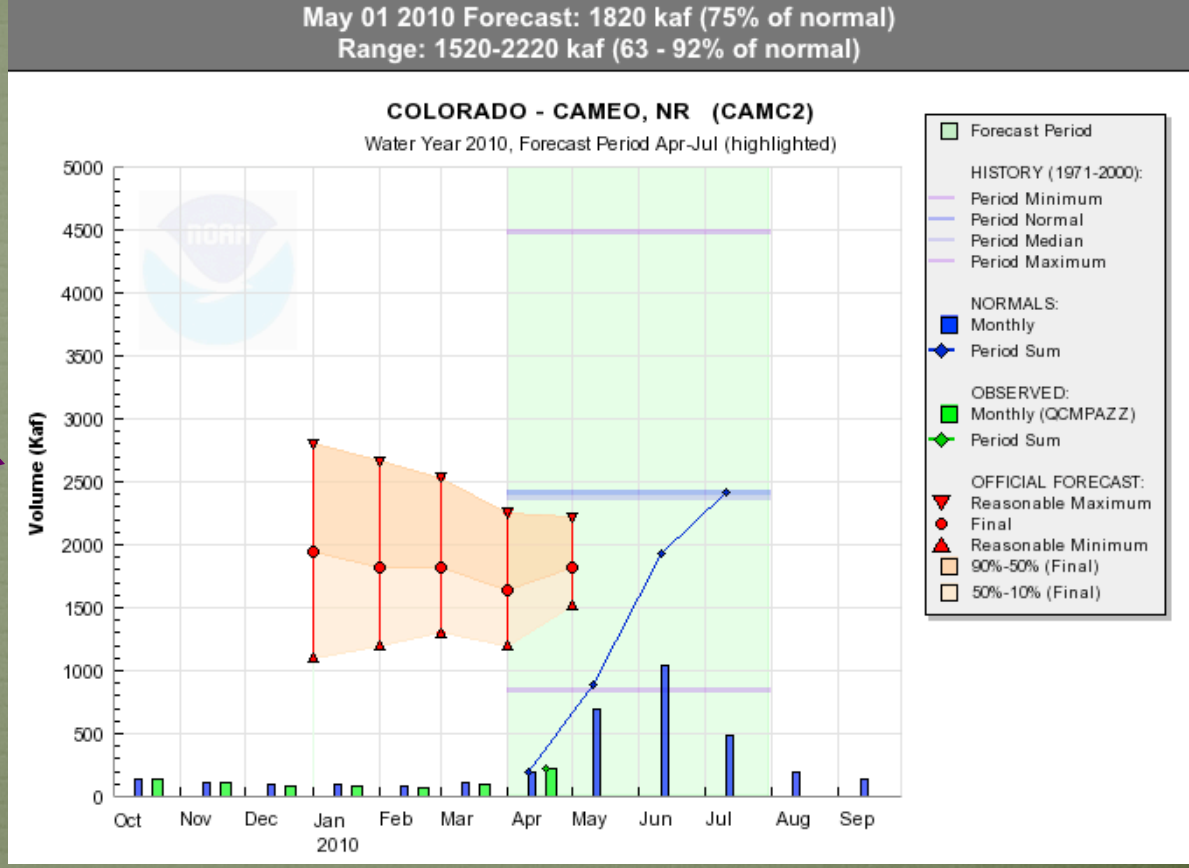

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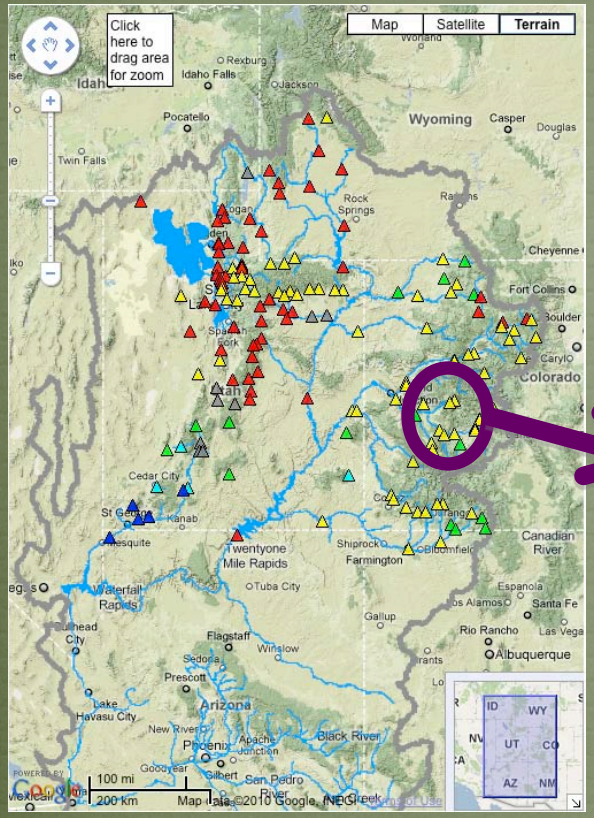

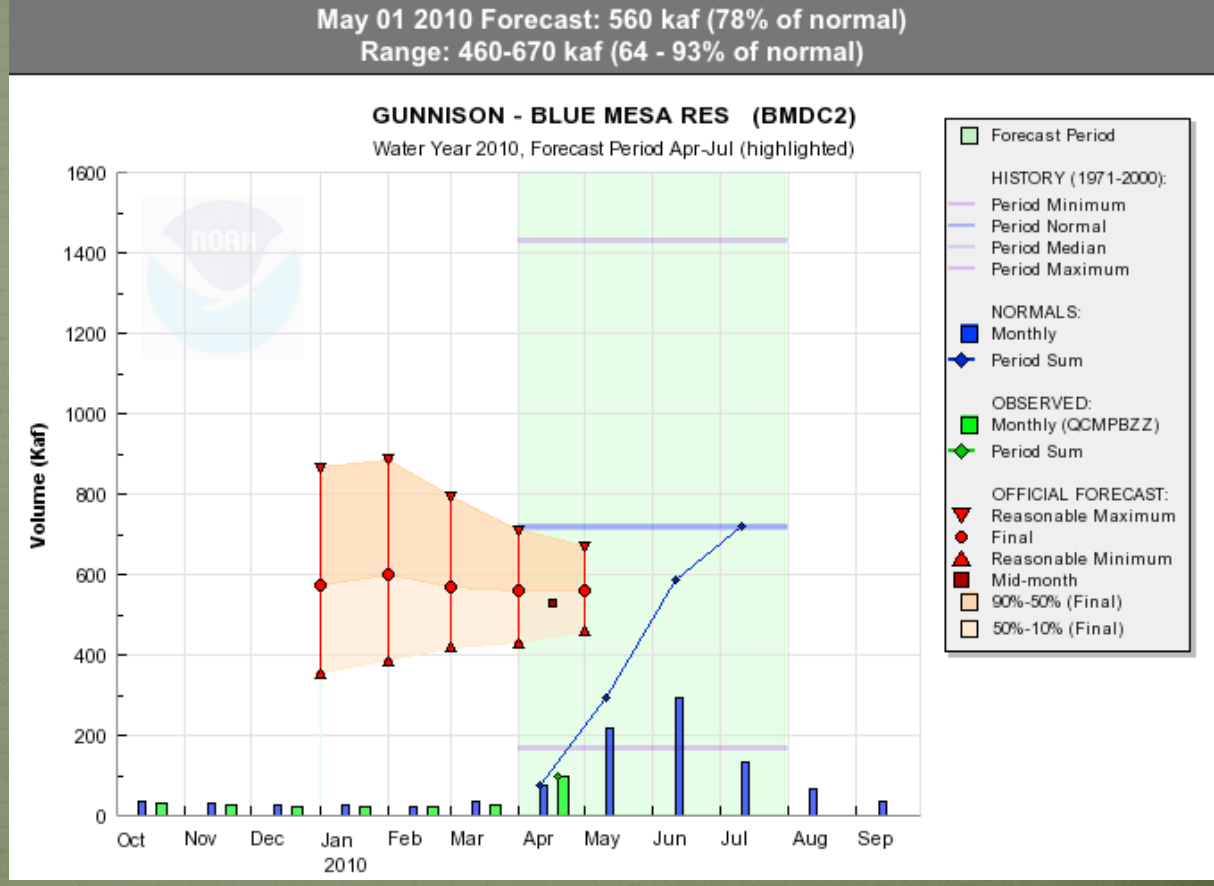

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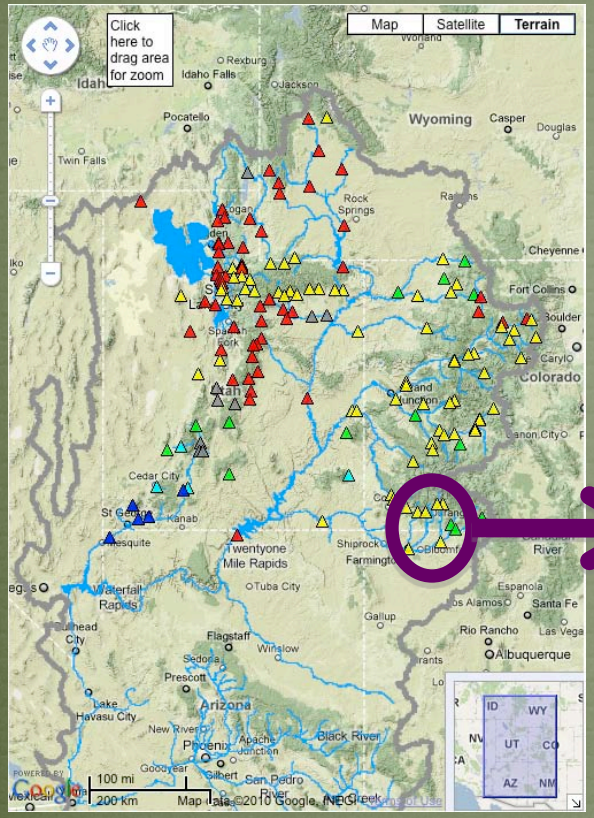

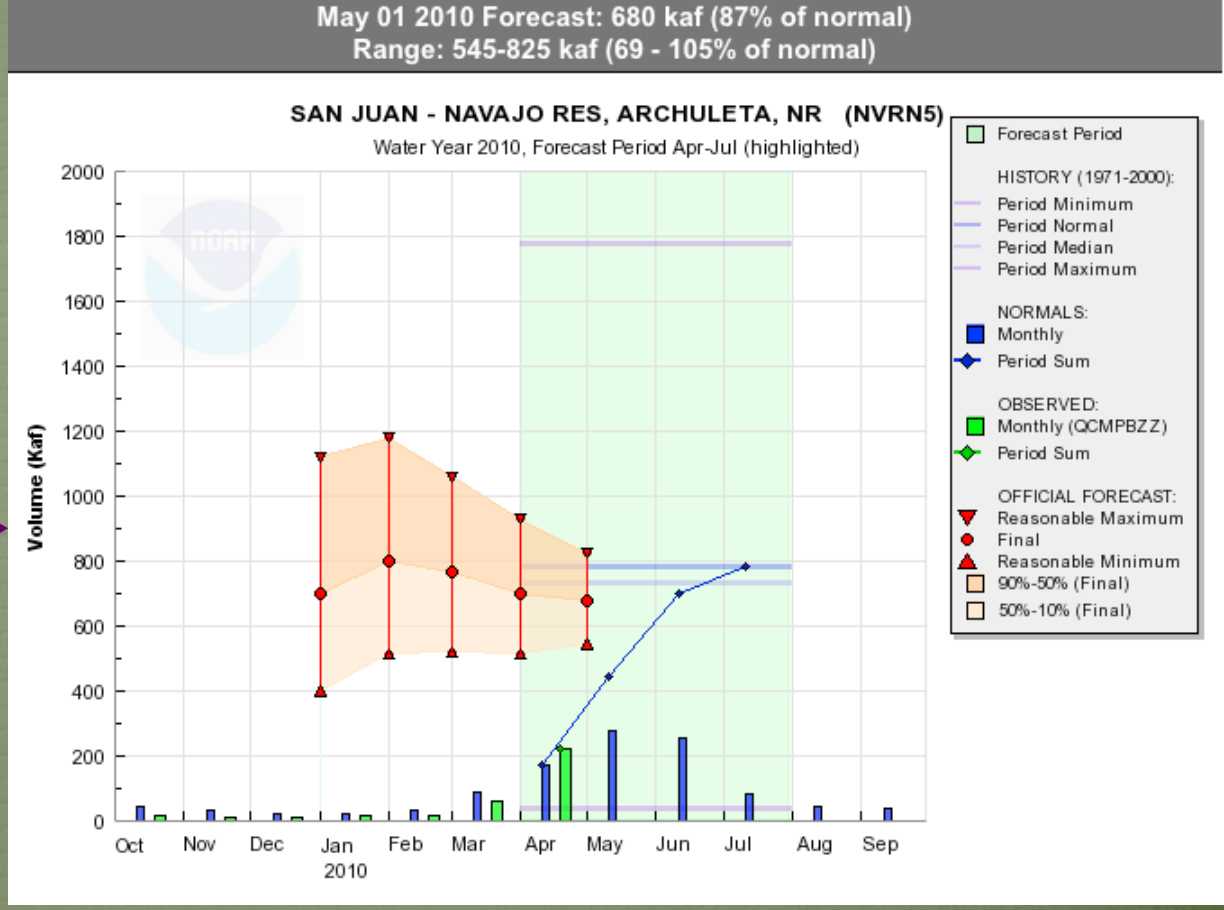

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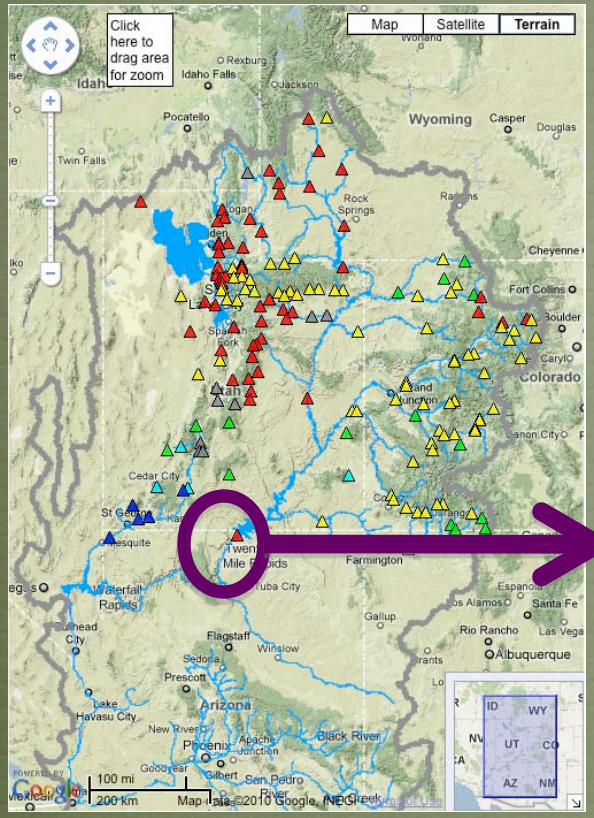

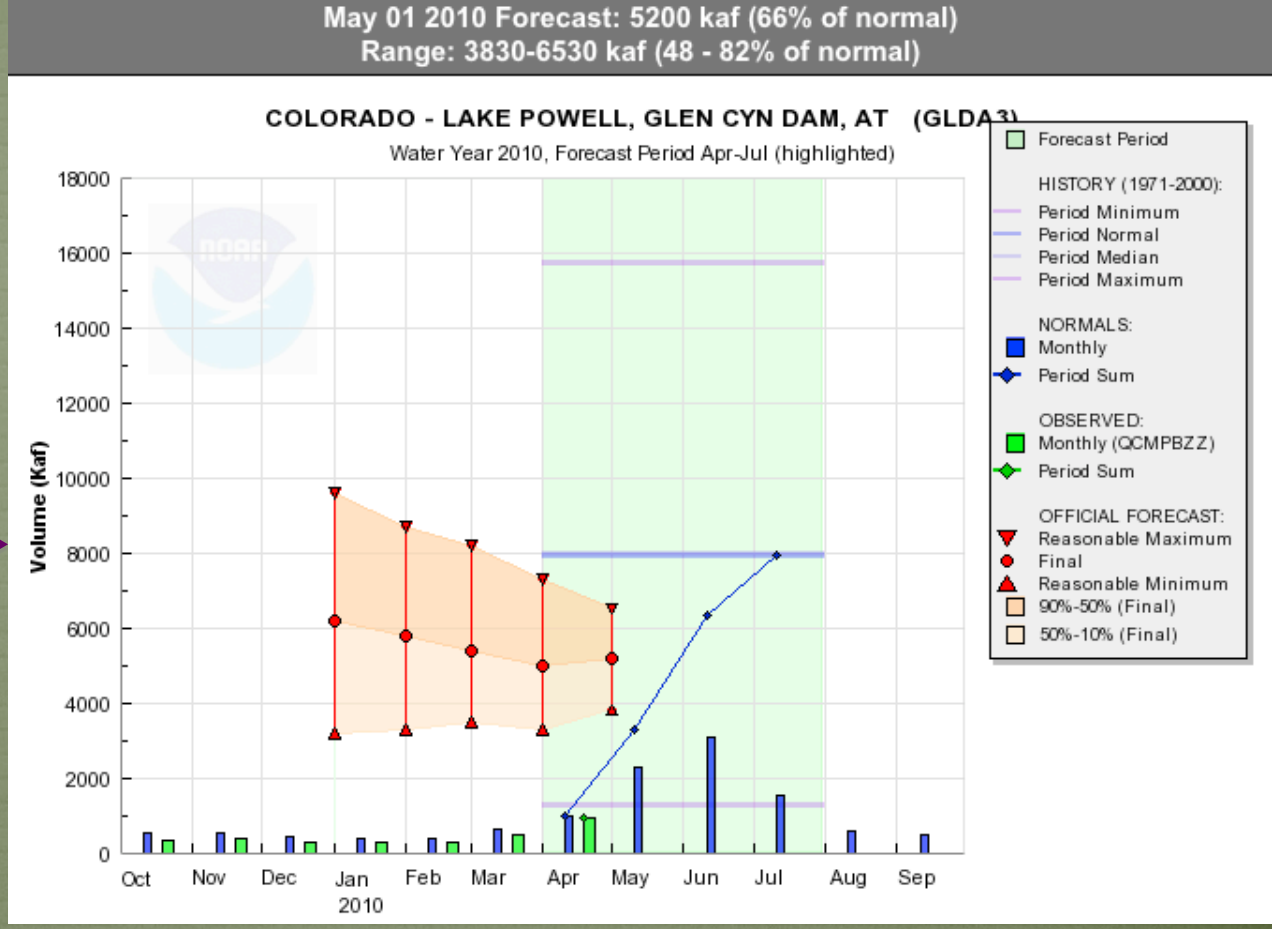

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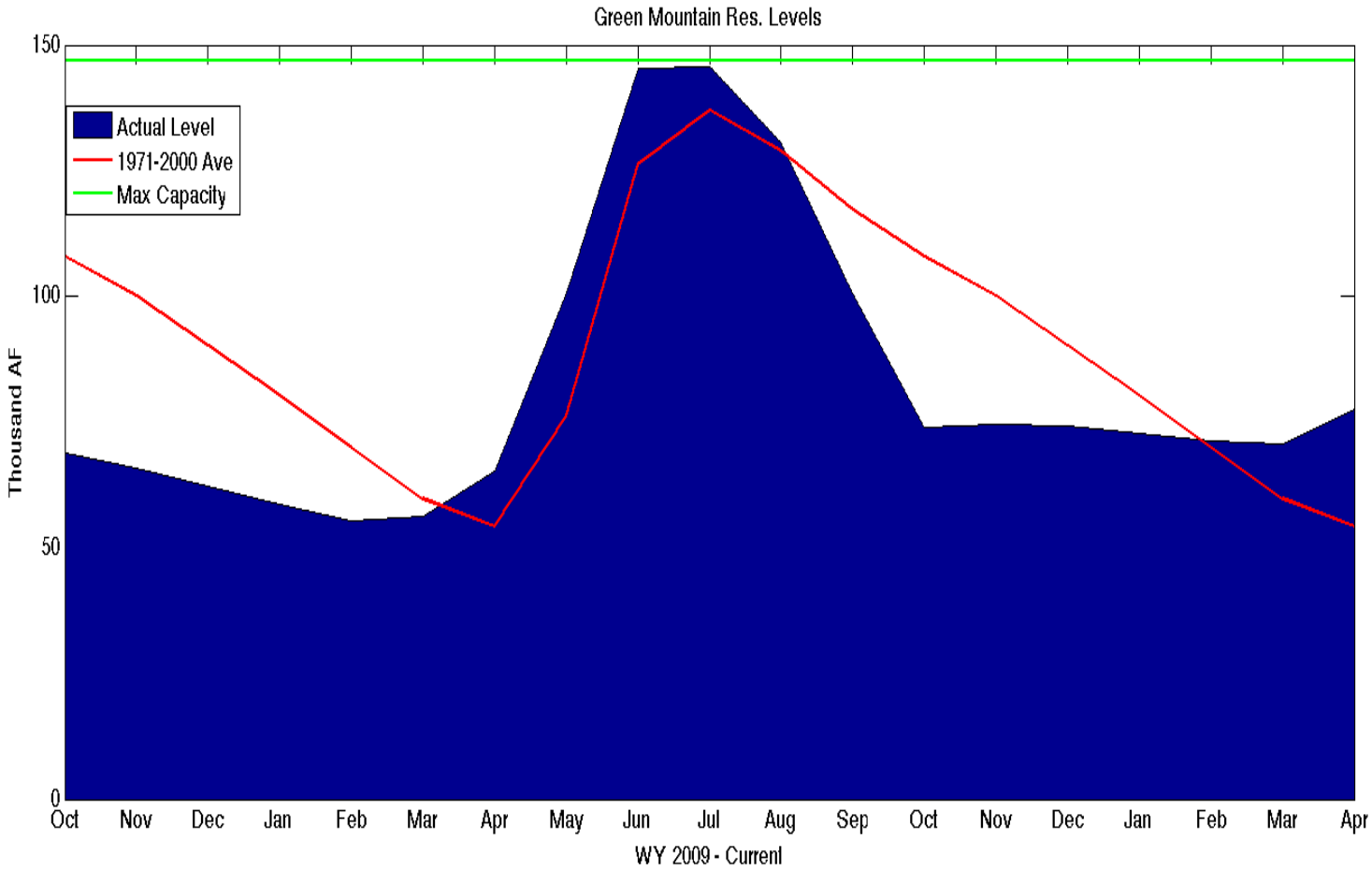
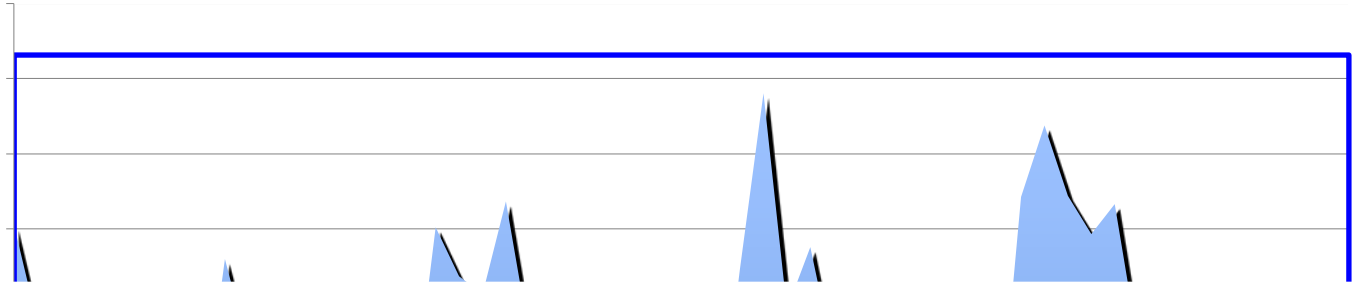
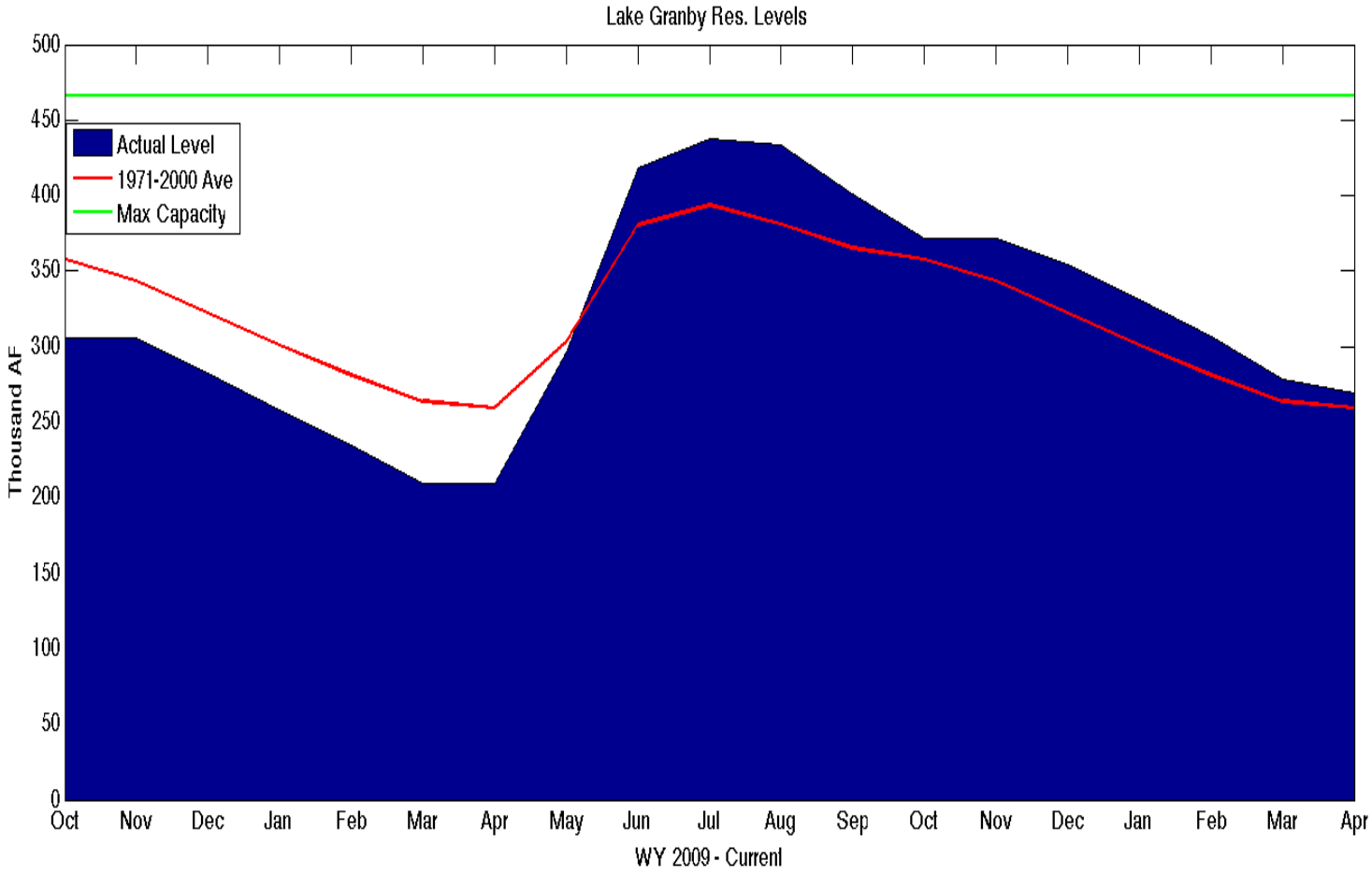
Reservoir Update

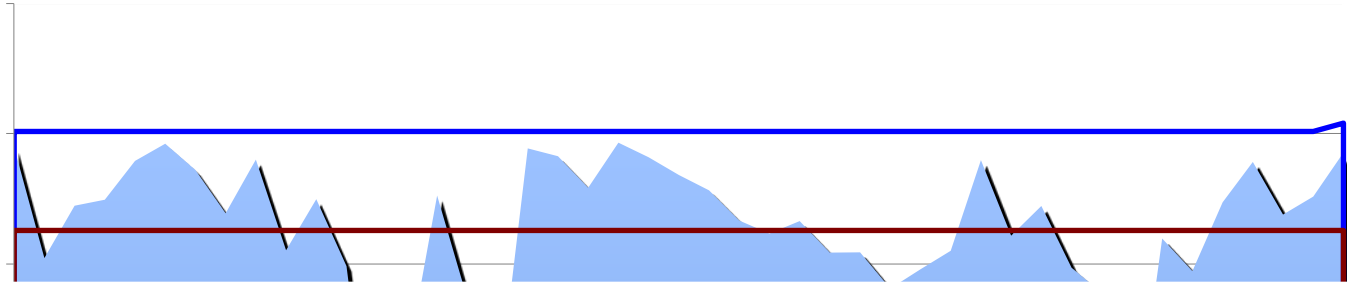
Max Capacity

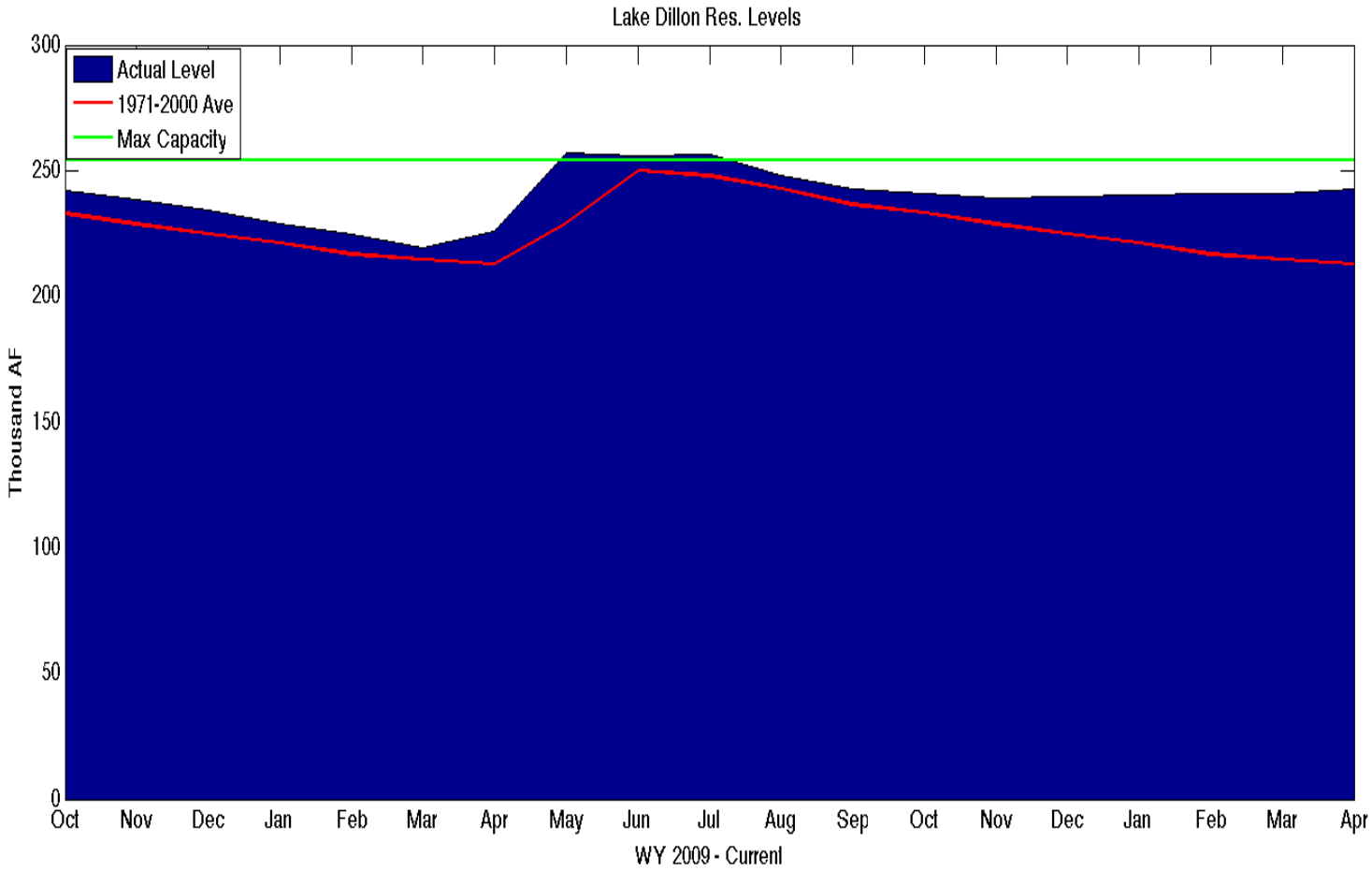


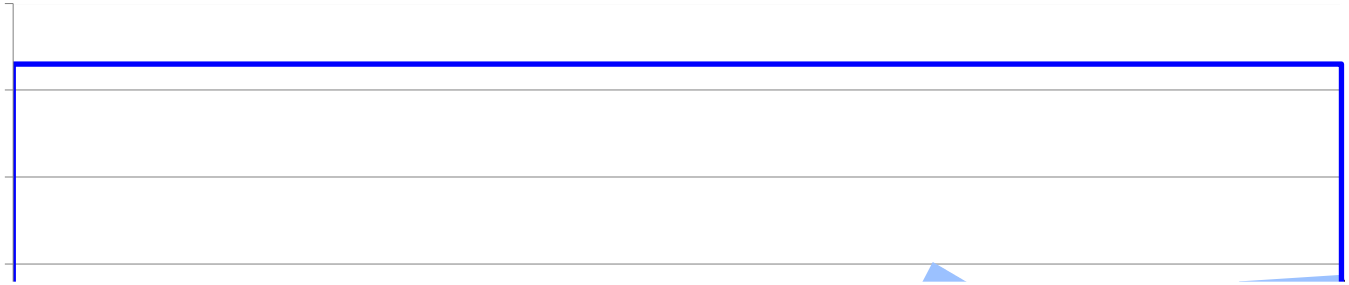


Max Capacity



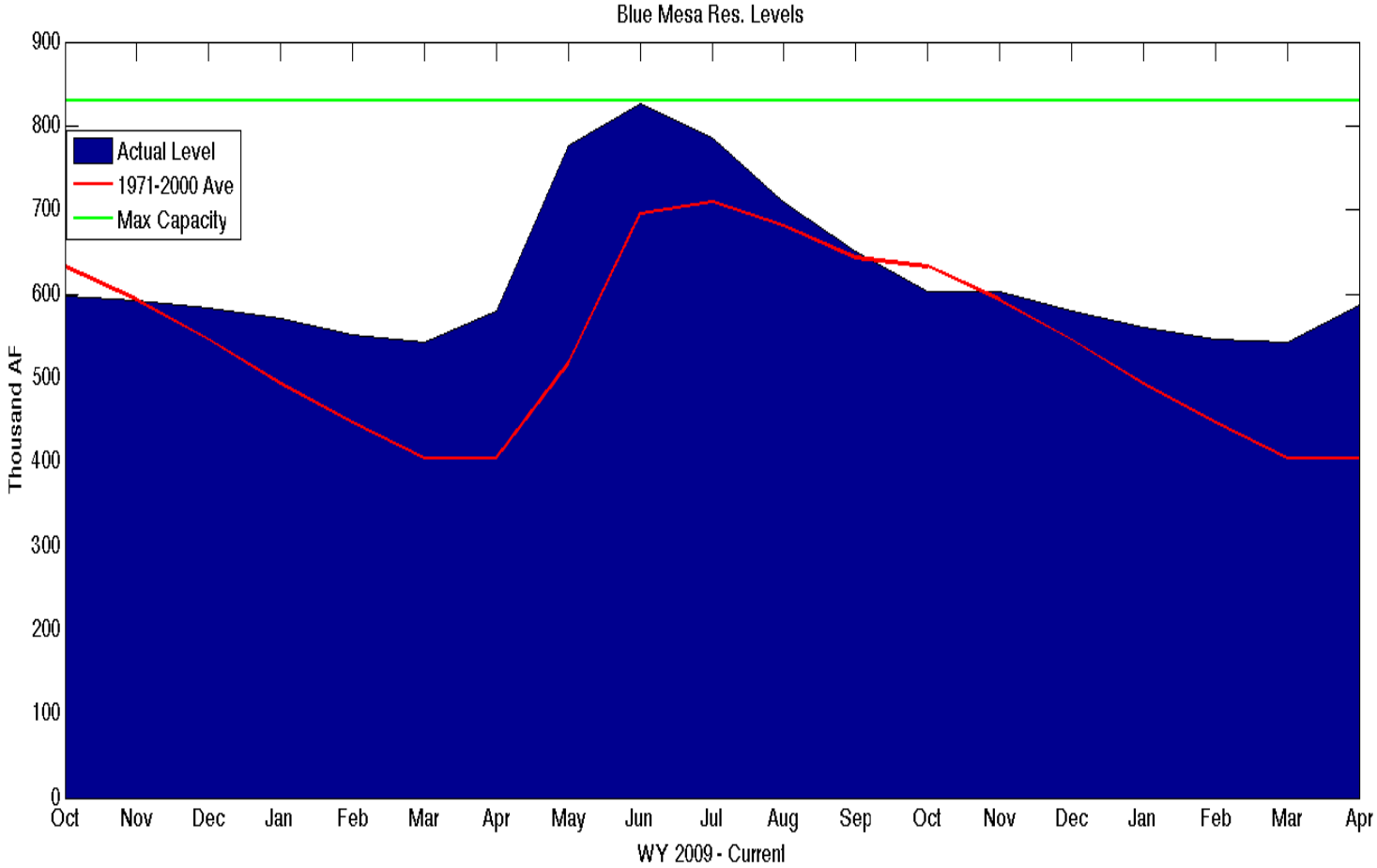

Max Capacity
1971-2000 Average

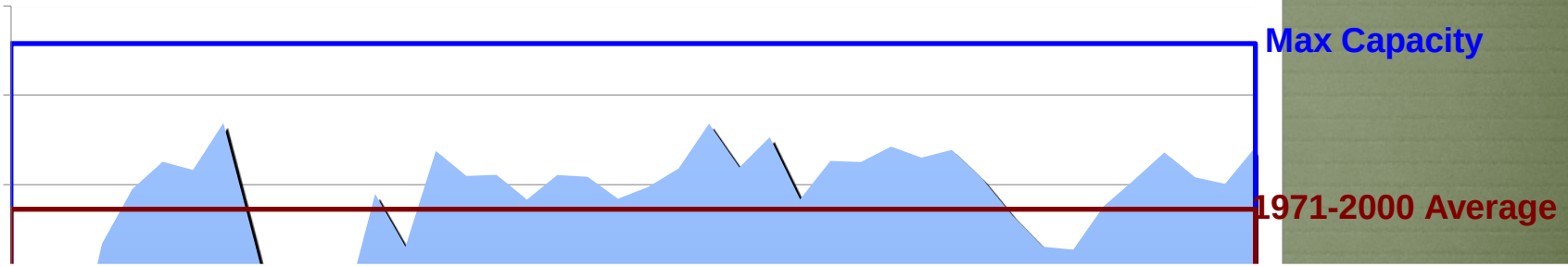

Lake Dillon Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
300
250
200
150
100
50
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
WY 2009 - Current

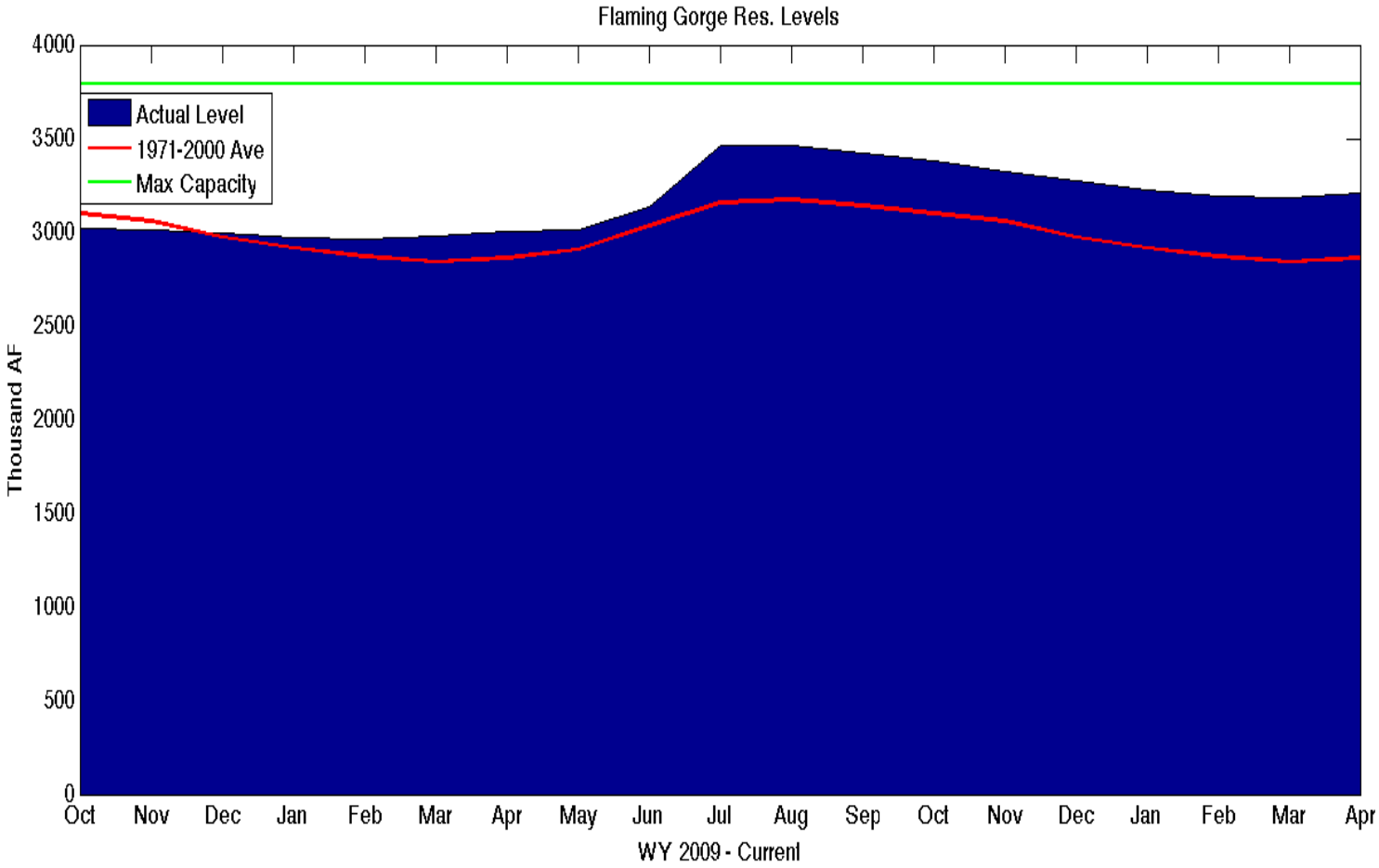


Max Capacity

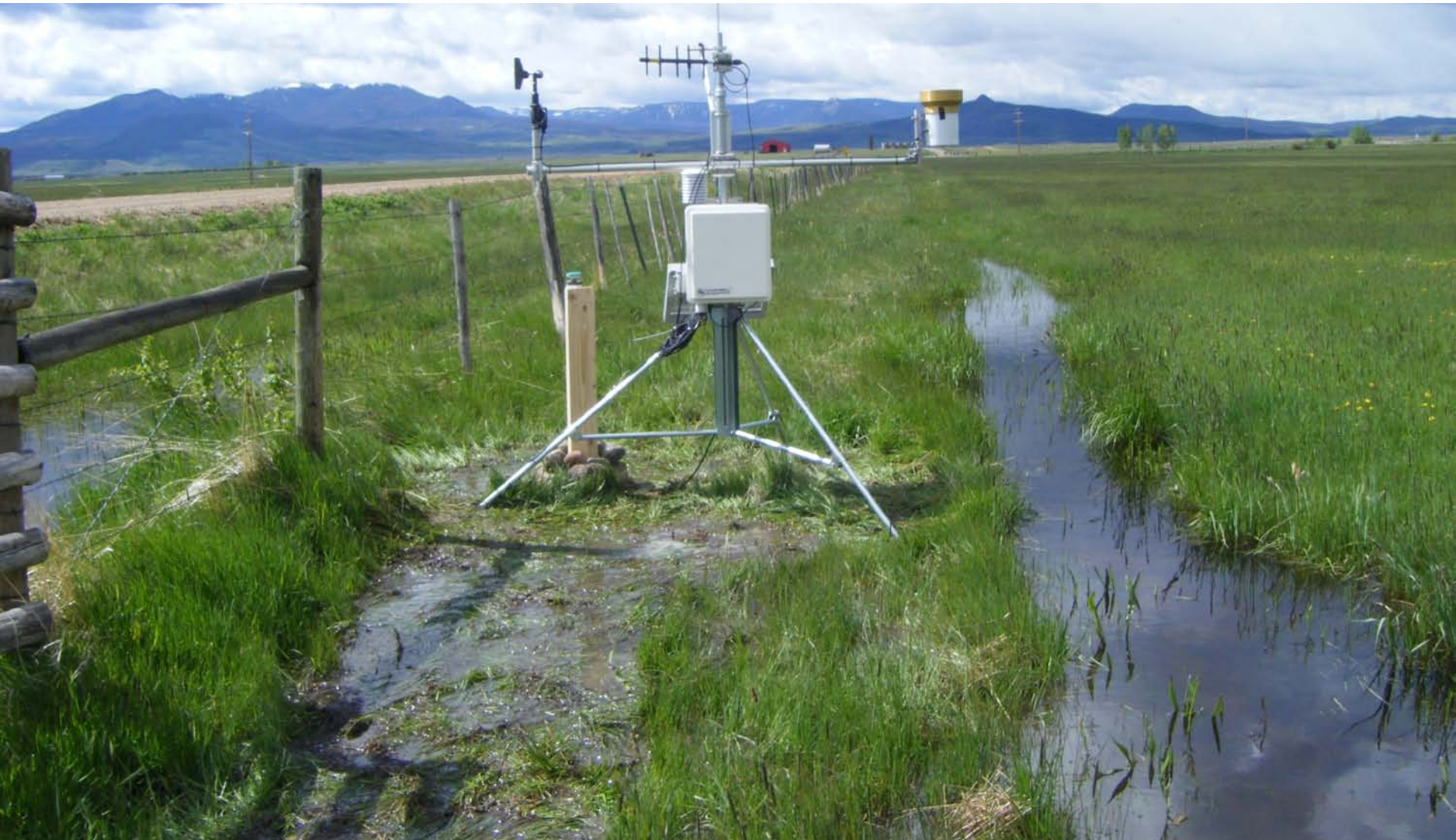
Thousand AF



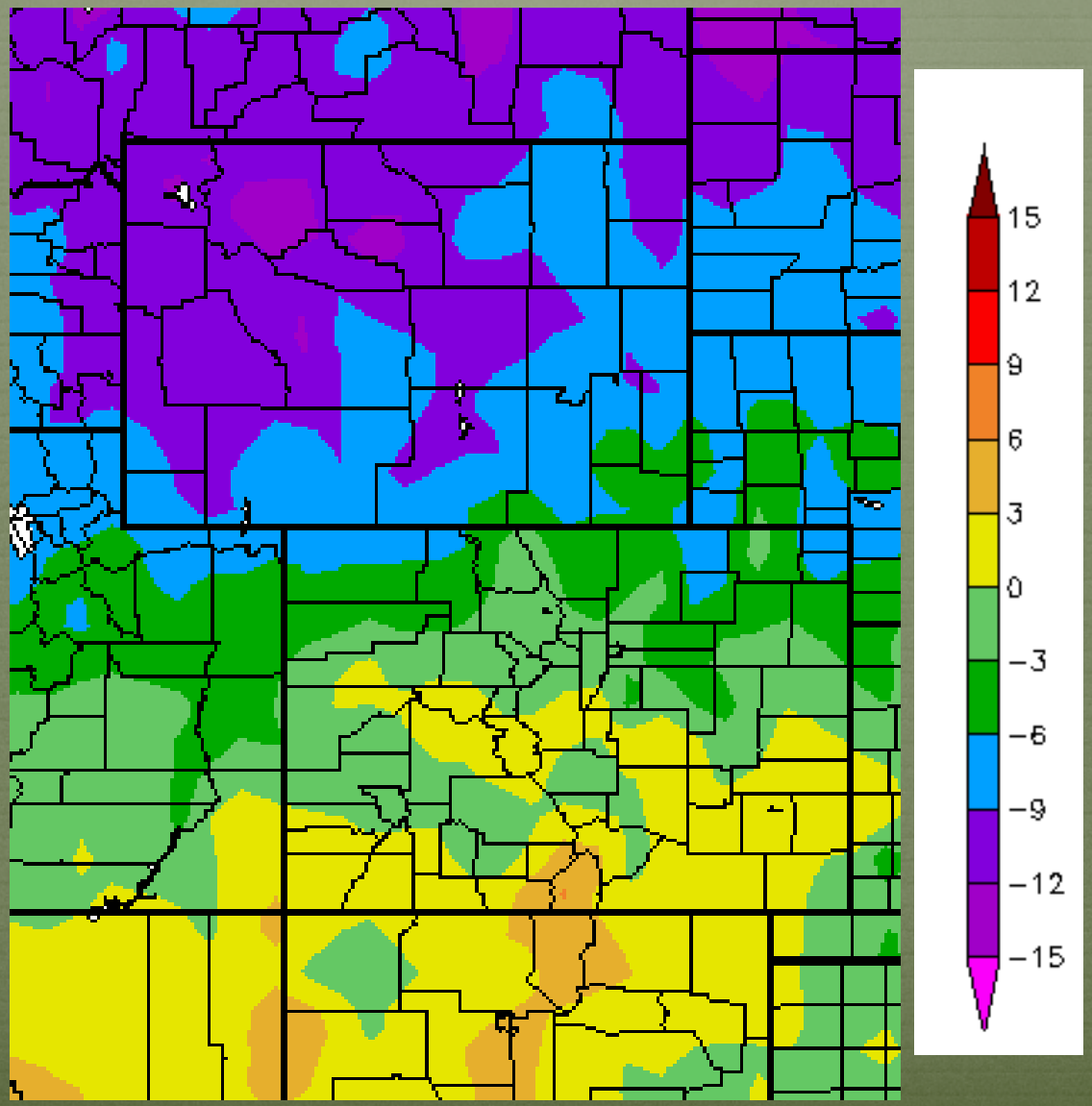

Max Capacity
1971-2000 Average

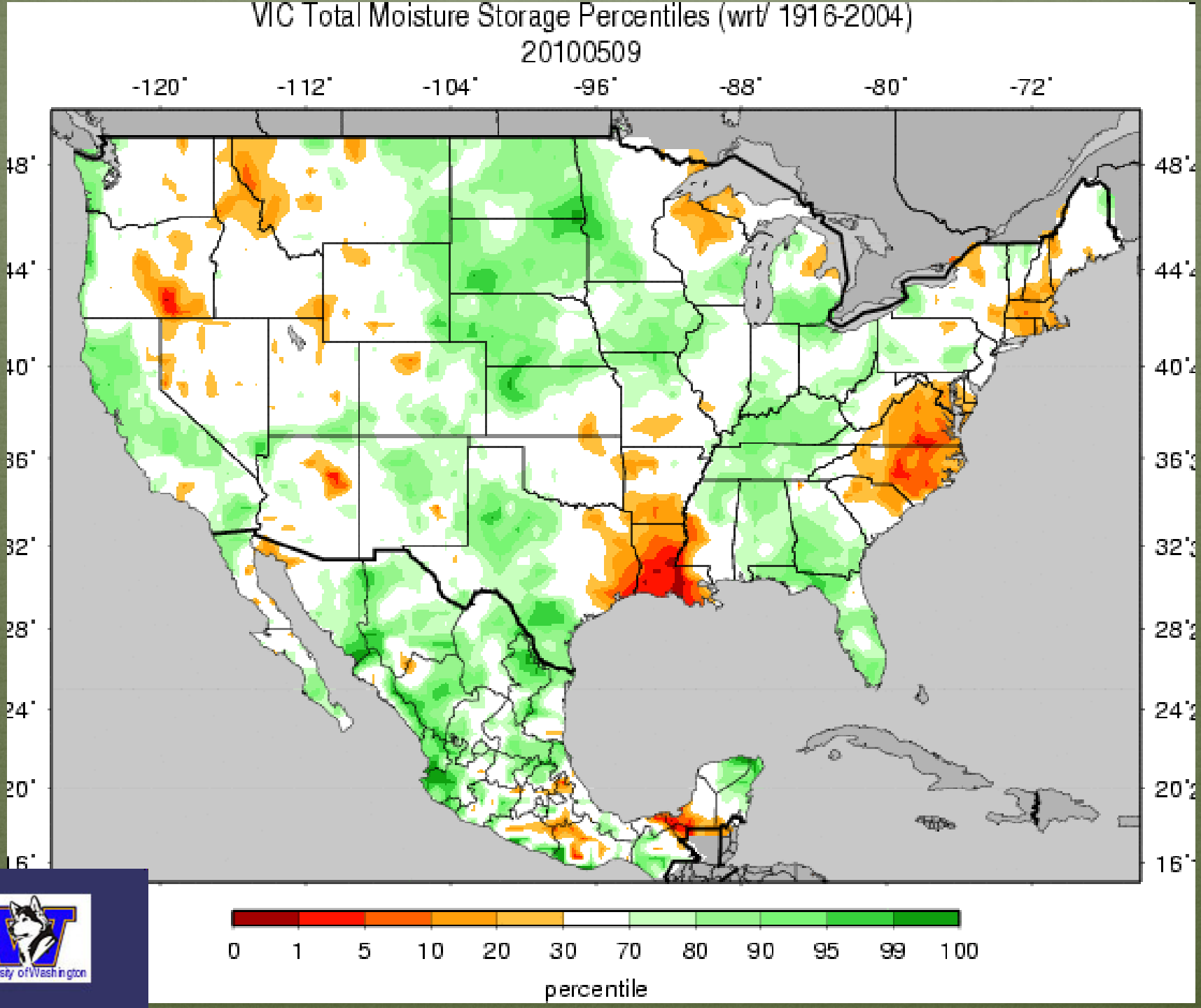

Flaming Gorge Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
4000
3500
3000
2500
2000
1500
1000
500
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
WY 2009 - Current

Water Demand



Temperature Departure from Normal
5/4/2010 – 5/10/2010





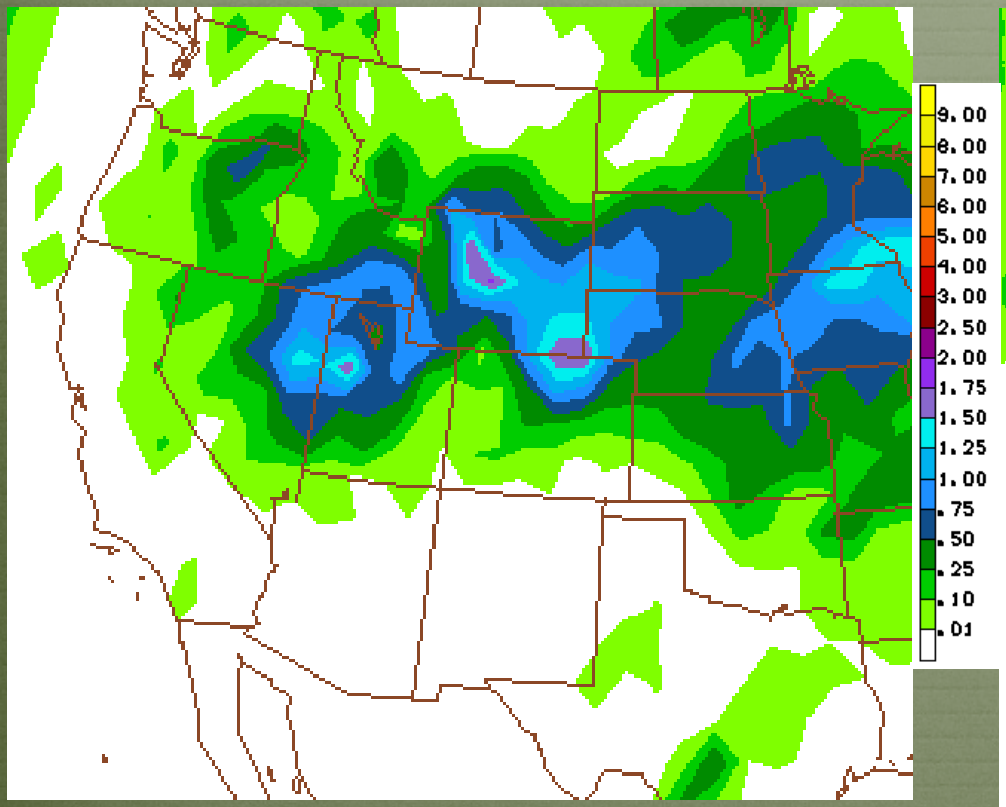
University of Washington

Precipitation Forecast

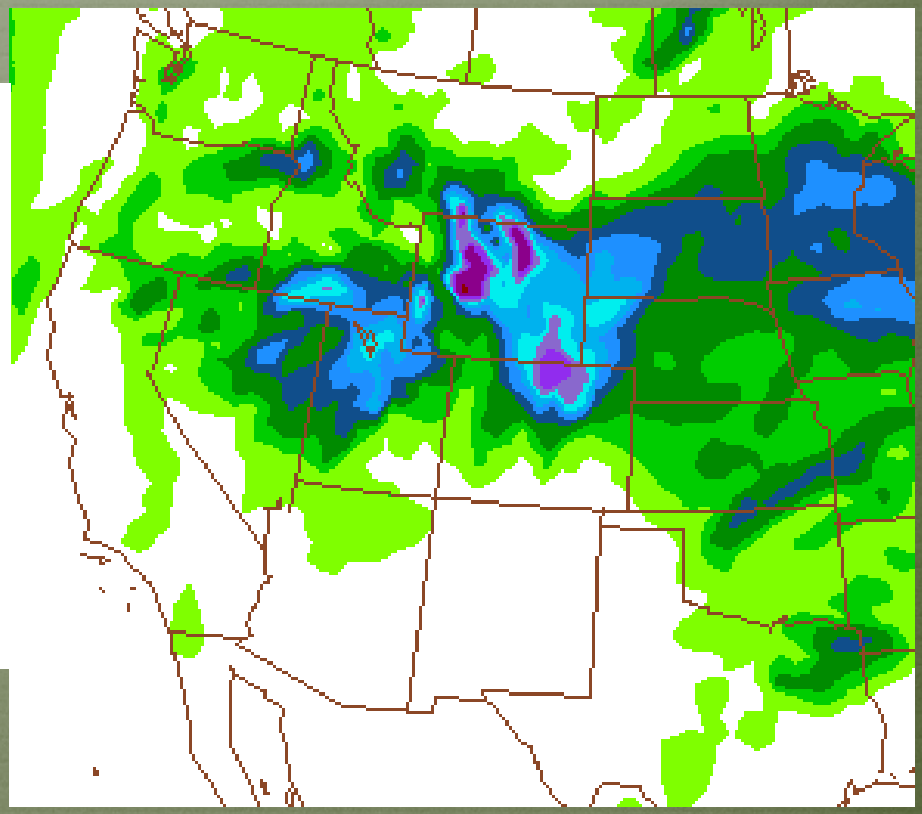
Joe Ramey Grand Junction Weather Forecast Office

GFS and NAM, 2 day precip forecasts

48 hr GFS, ending Wed midnight MST



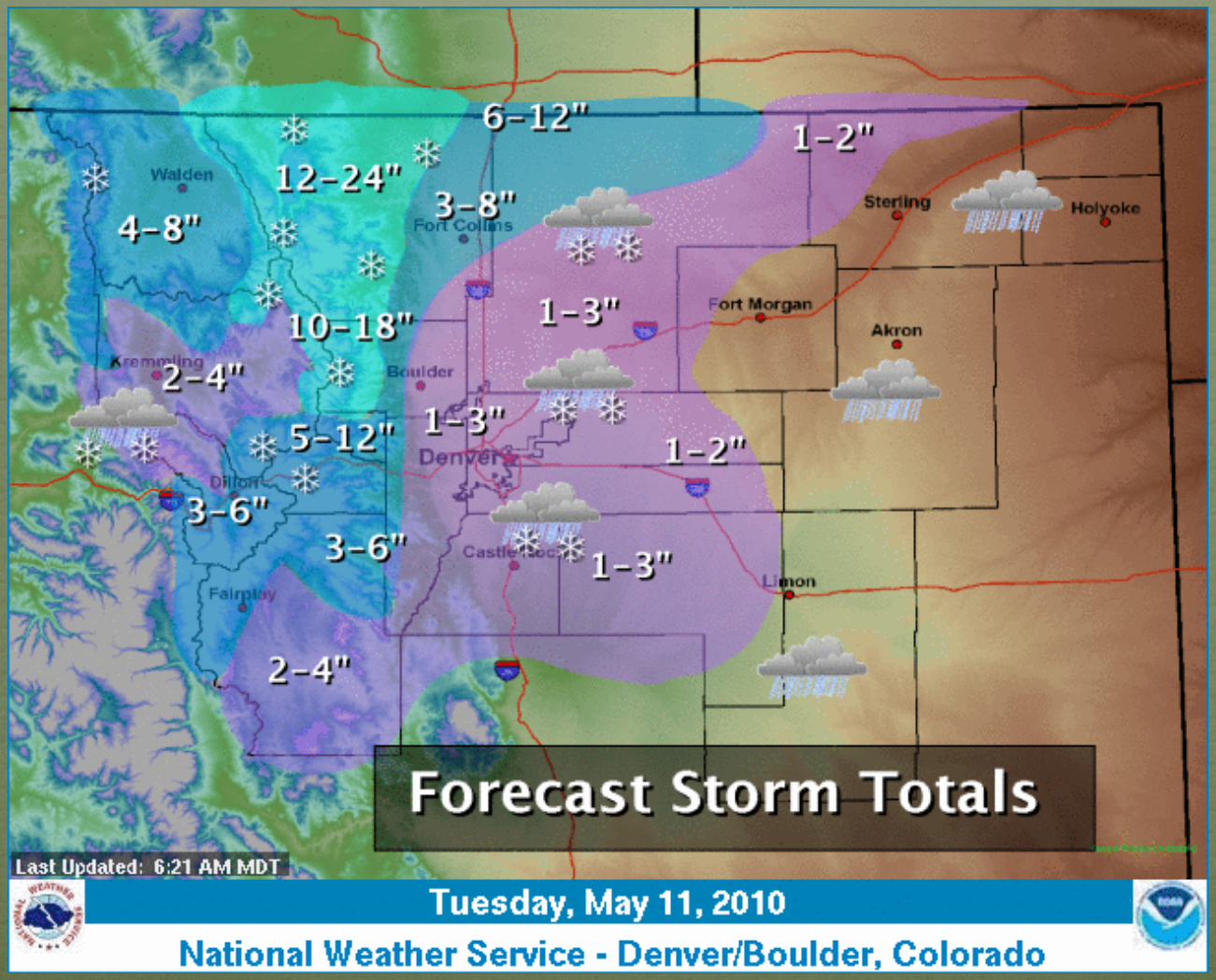
48hr NAM, ending Wed midnight MST



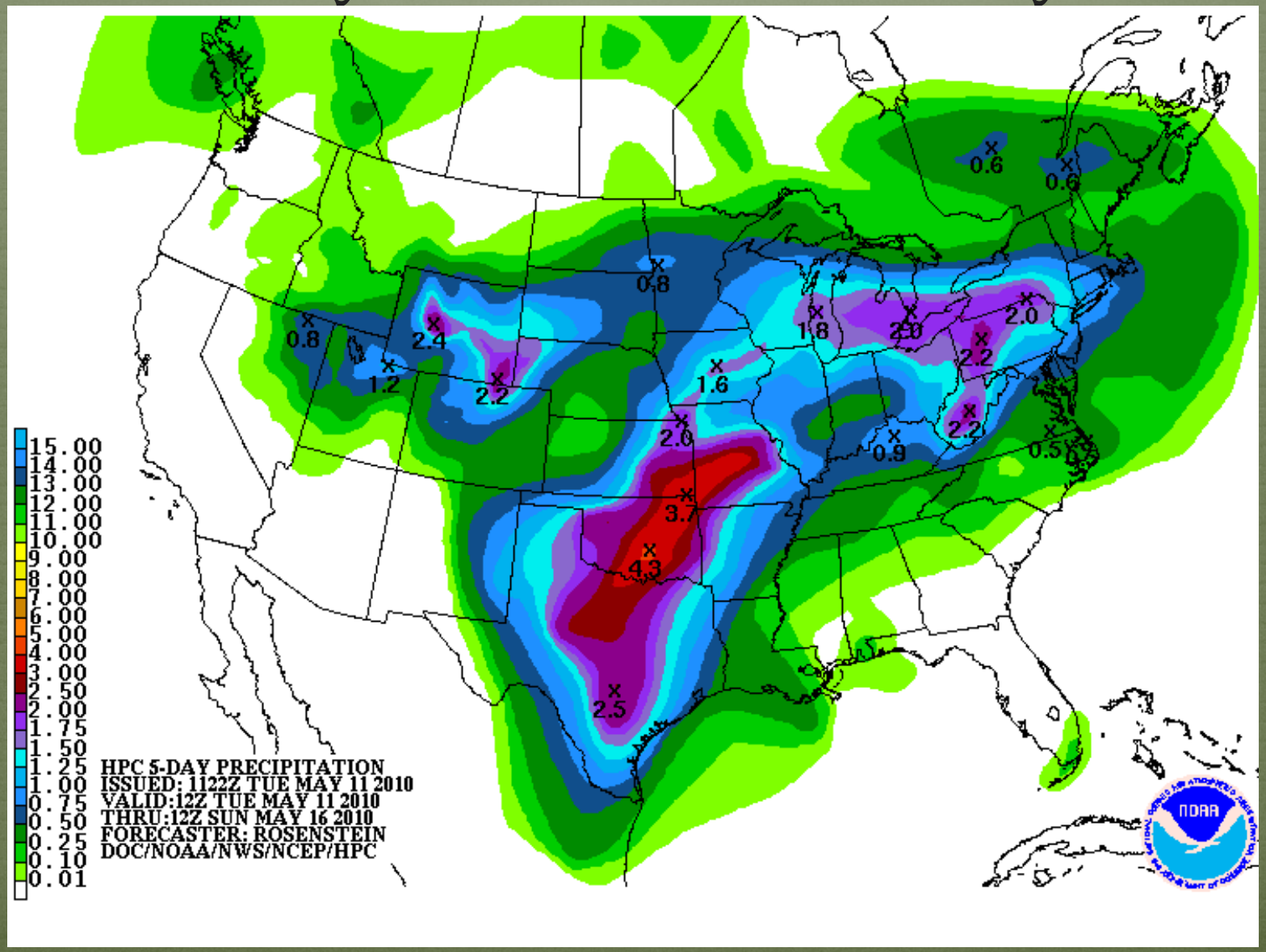
Winter Storm Warning:

N. Grand/S. Jackson/W. Larimer/W. Boulder Counties.

12-24 Inches Snow. 3pm Tues – Noon Wed.

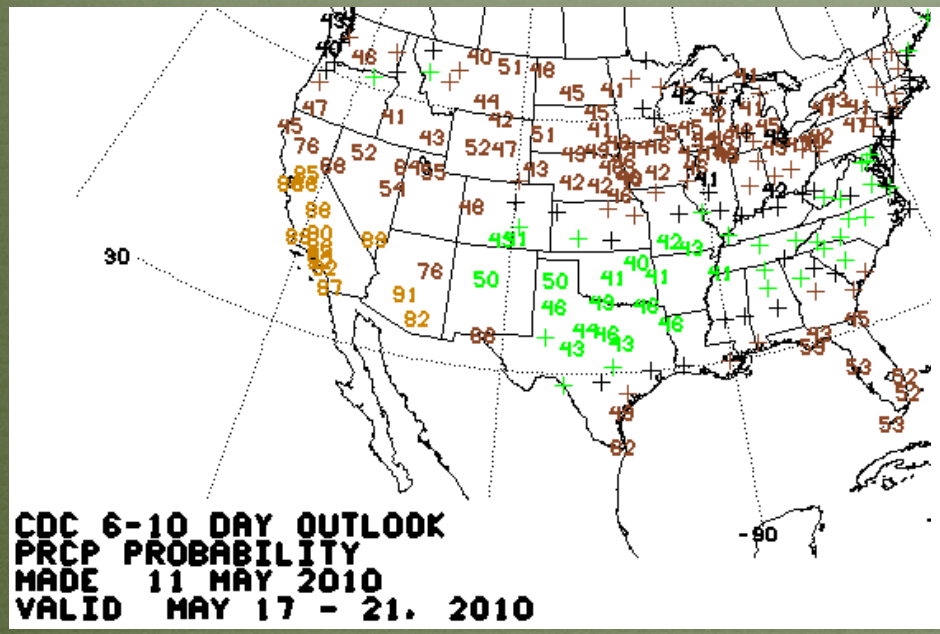


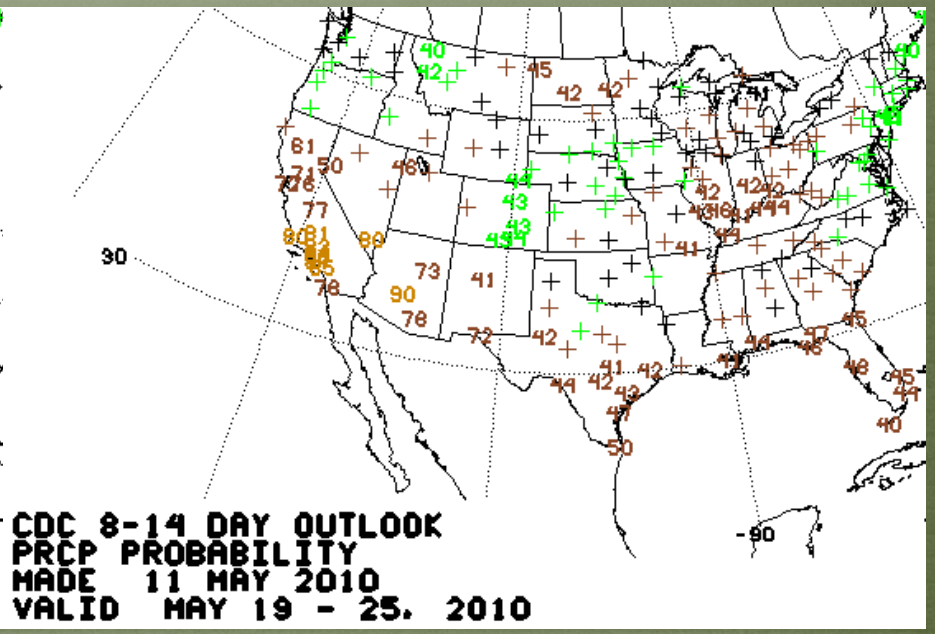
HPC 5-day forecast thru Sunday 6am



NOAA/ESRL "Reforecast" Precipitation Outlook

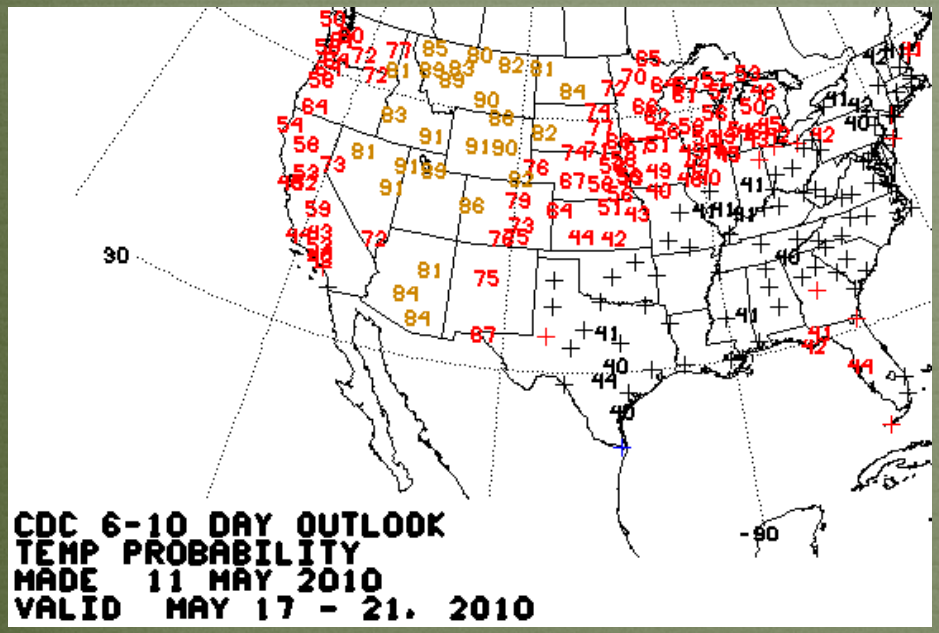
Green, Black, Brown = Probs of Upper, Middle, Lower Terciles, respectively

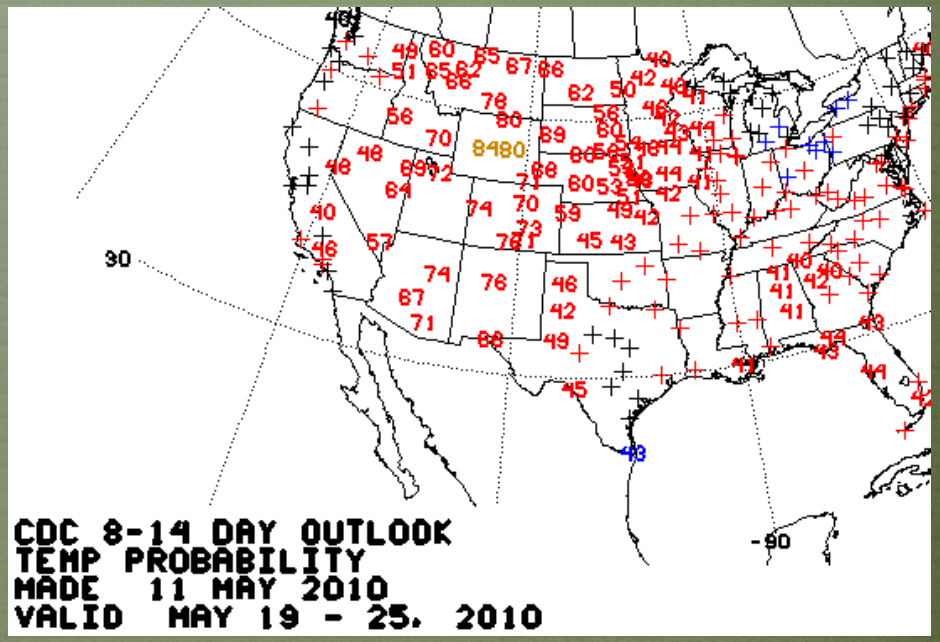




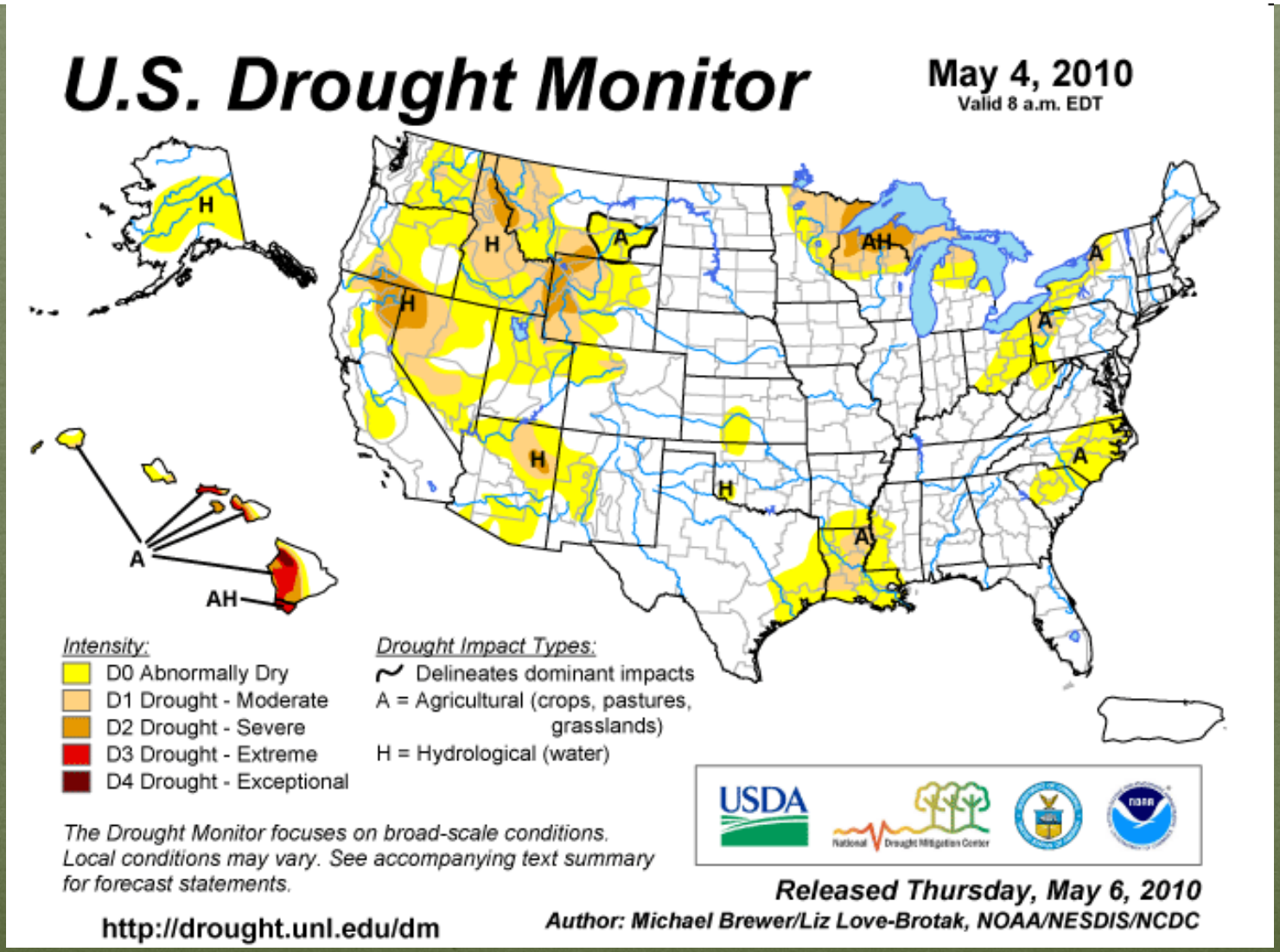
NOAA/ESRL “Reforecast” Temperature Outlook

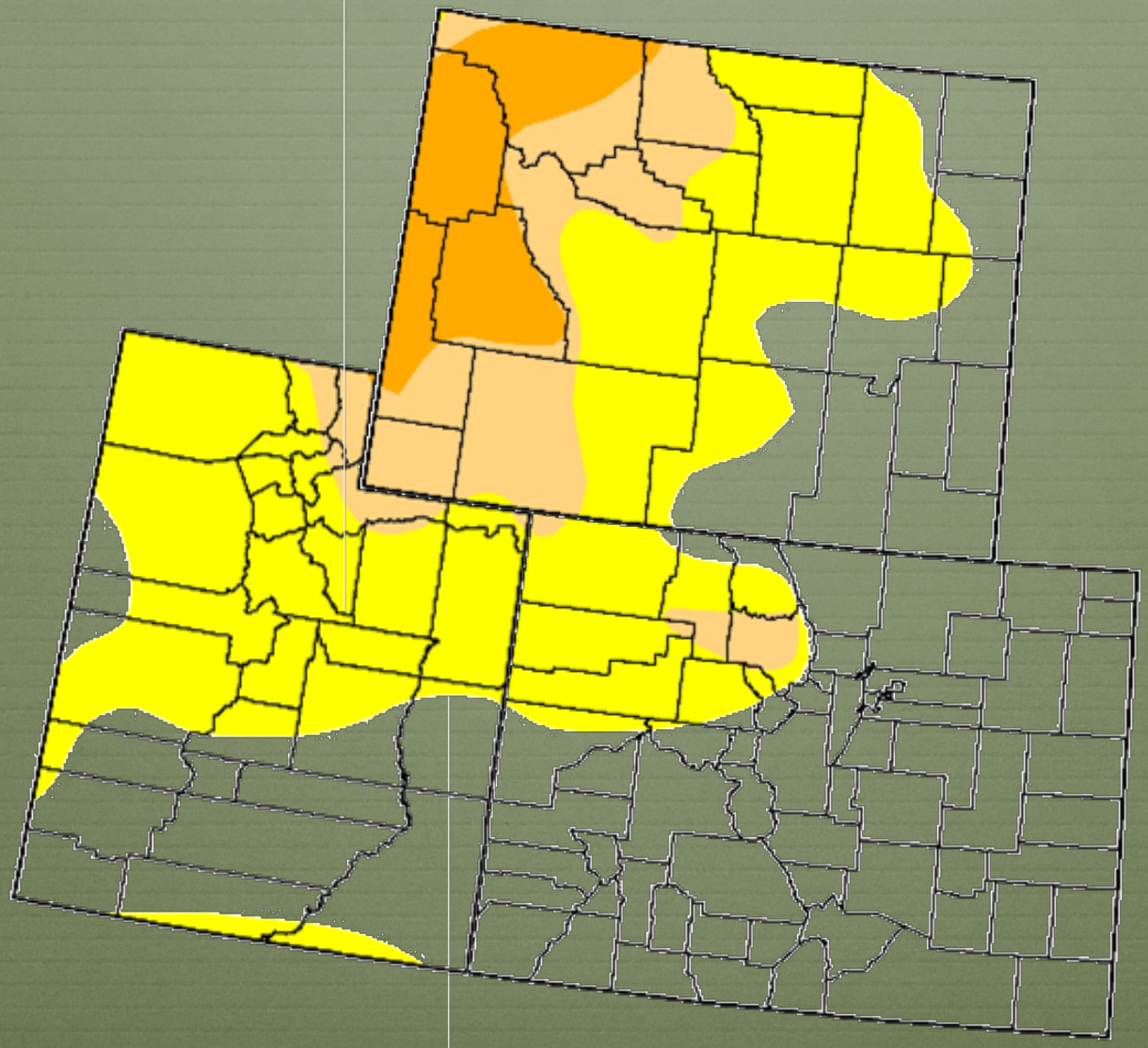
Red, Black, Blue =Probabilities of Upper, Middle, Lower Terciles, respectively





Recommendations





INFO

For more information

Summary

Some decent amounts of moisture fell last week over the drought affected regions in western Wyoming. The Utah-Wyoming and Wyoming-Colorado borders also saw precipitation amounts of around half an inch or more last week. Aside from southern Colorado, most of the region experienced much cooler than average temperatures, which helped to retard the mountain snowmelt that had begun at the high elevations. Most of the lower elevation snotel stations continue to see rapid melting. Snotel station improvements were limited to those areas that received decent precipitation last week. The remainder of the tri-state region's snotels saw a decrease in their water-year-to-date precipitation percent of average from last week, though the decreases were very small. Streamflow discharges have declined over the past week, and the percentage of stream gages reporting below normal conditions has more than doubled to 57%. The majority of the stations reporting normal conditions (in the 25-75% range) fall in the lower end of that range. However, streamflow forecasts have been improving, with much of the region seeing 5-10% improvements in streamflow forecasts and the Little Snake River Basin (in northwest Colorado) showing a 15-20% improvement. Reservoir levels throughout the region have risen since last month, and all look to be amply filled for the summRecent runs of the NAM and GFS are in excellent agreement about the approaching storm, which looks to favor much of Wyoming and northern Colorado. The particularly dry areas of Colorado will benefit from this storm, though the heaviest amounts look to be concentrated east of the Continental Divide as this is an upslope event. This system will move out of the area on Wednesday. Thursday and Friday, the area could see some remaining scattered showers. Starting this weekend and moving into next week, we will be looking at warmer and drier conditions throughout most of the region.

No Wyoming representatives were on the call, therefore any changes to the drought monitor map for their state will be discussed separately. Status quo has again been recommended for Colorado. No significant changes were seen this week, though we will be eyeing this upcoming storm's totals carefully in Grand, Jackson, and Routt counties in case adjustments need to be made to the D1 next week.