Summer 2010

Weekly Climate, Water & Drought Assessment

Today's Agenda

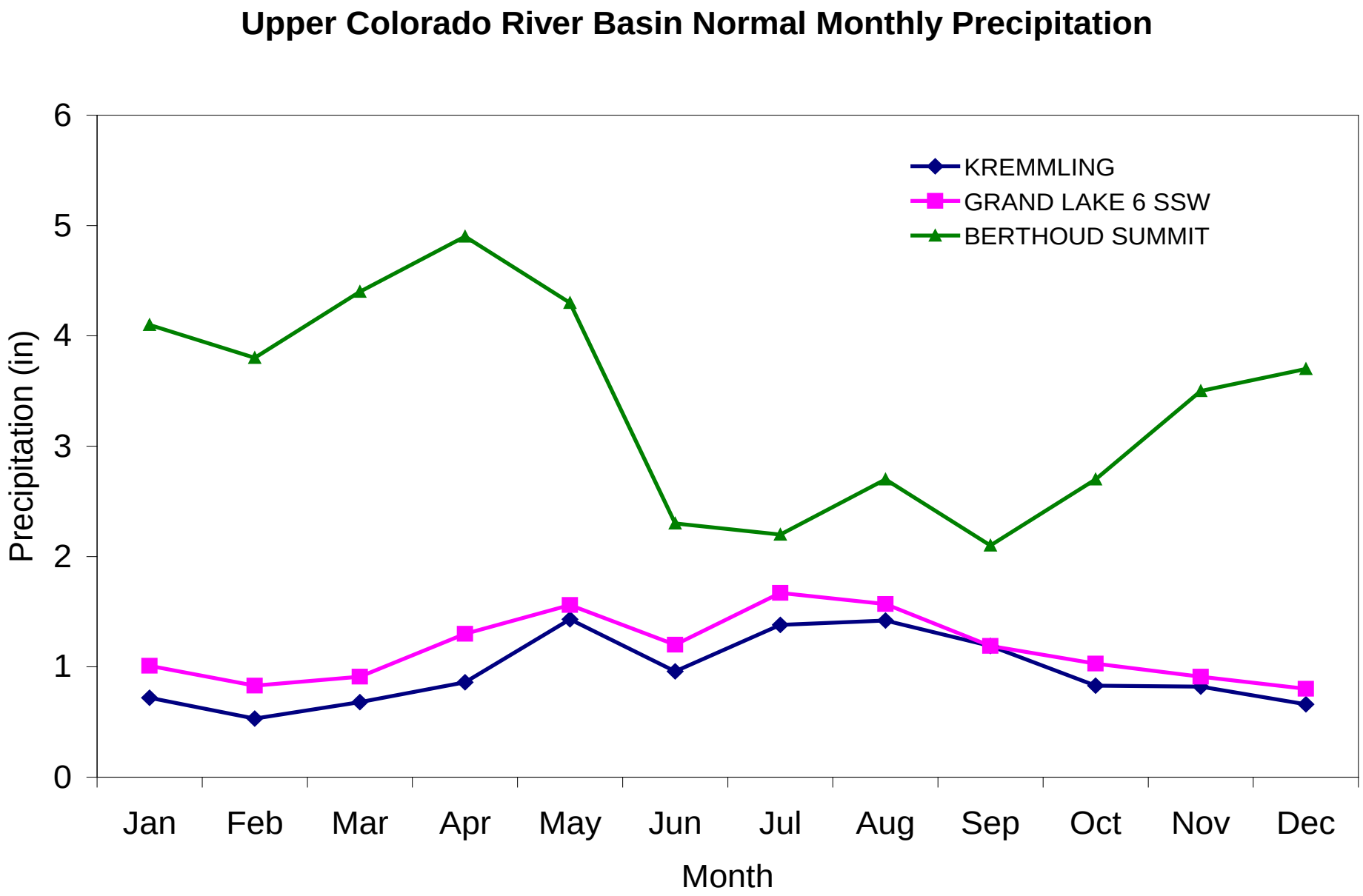
-Assessment of current water conditions

- Precipitation Forecast

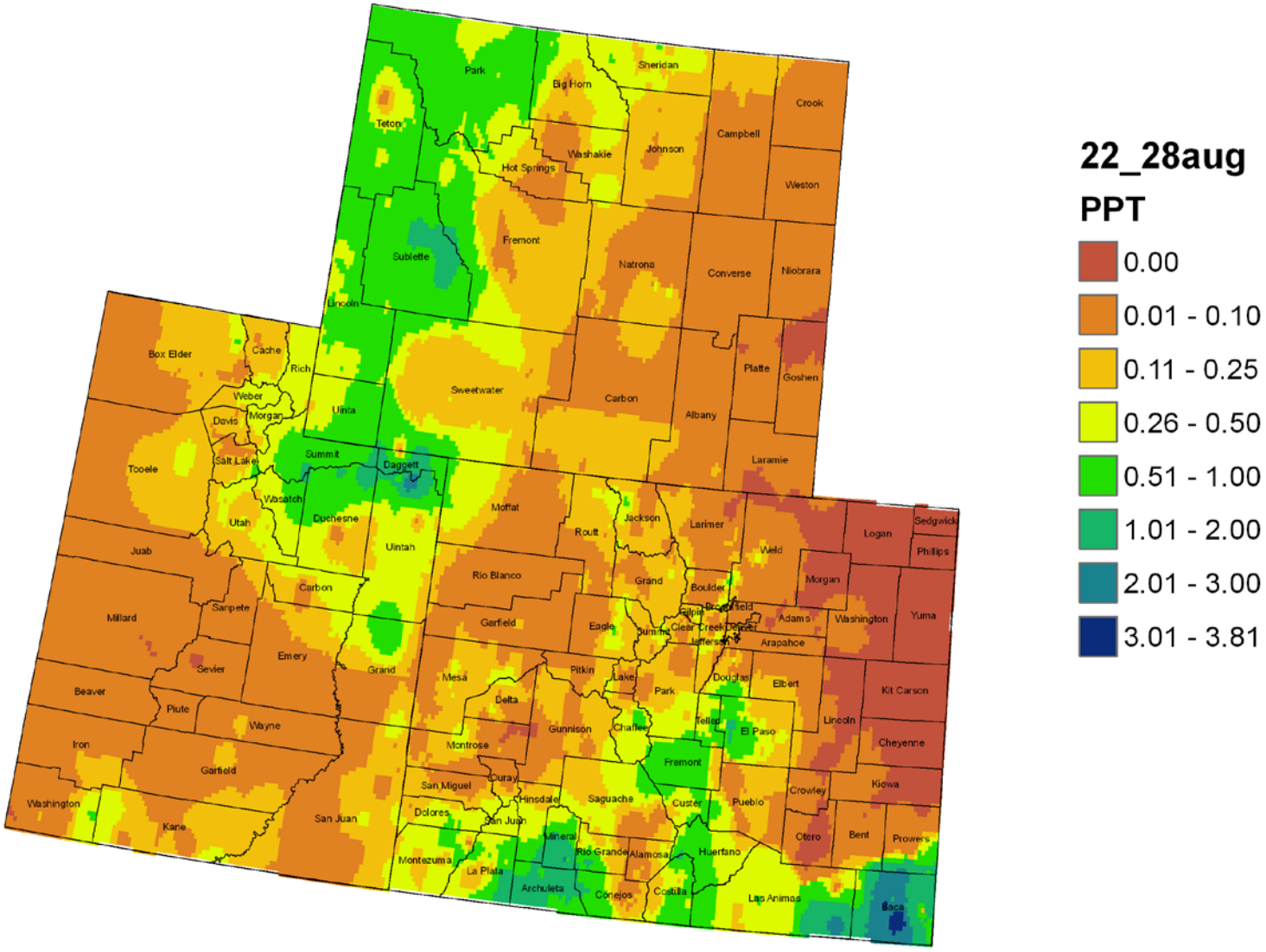
- Recommendations for Drought Monitor

Precipitation/Snowpack Update

Upper Colorado Normal Precipitation



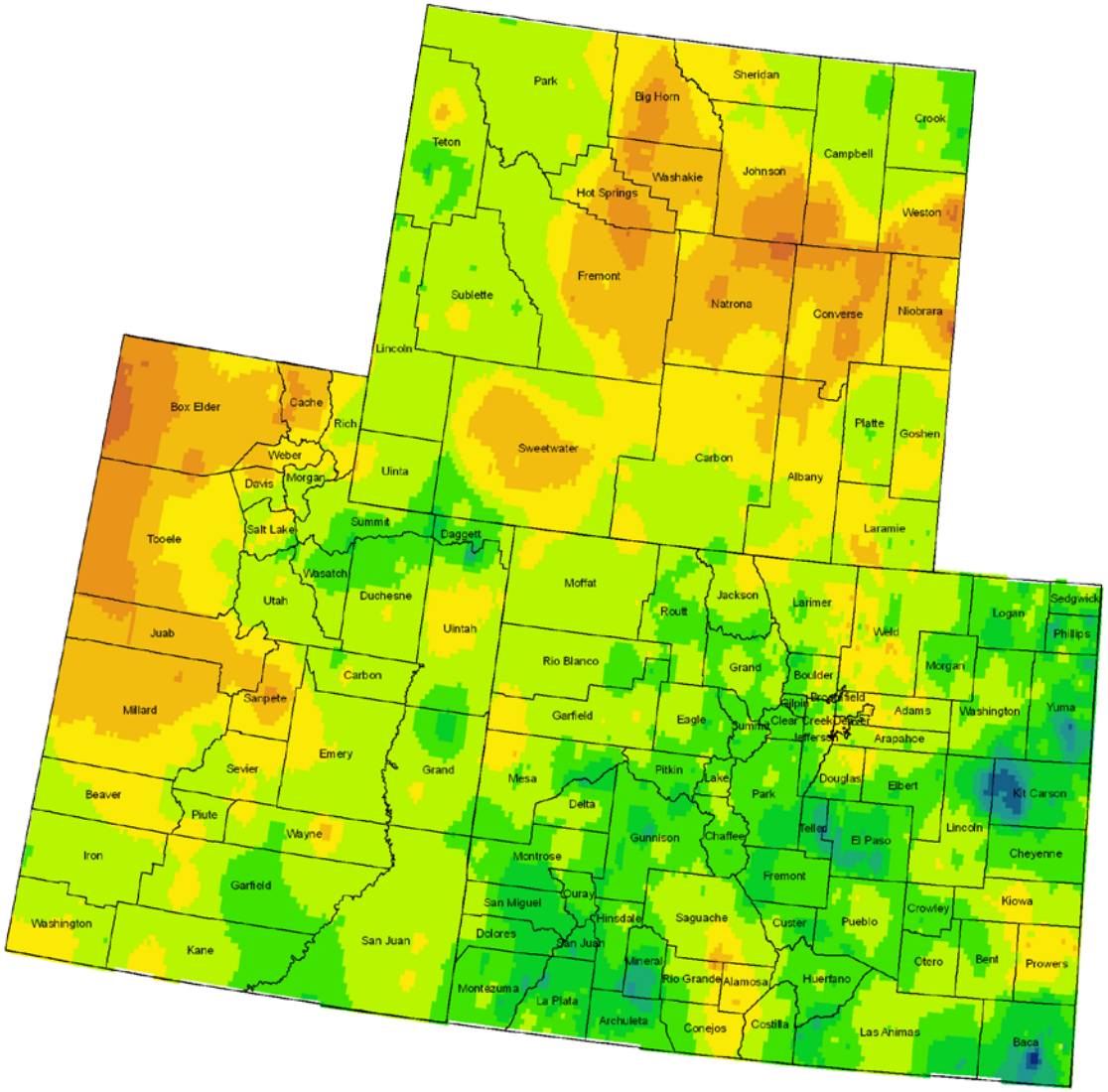
Colorado, Utah and Wyoming 7 Day Precipitation
22 - 28 August 2010



22_28aug
PPT

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 3.81

Colorado, Utah and Wyoming Month To Date Precipitation (in)
1 - 28 August 2010

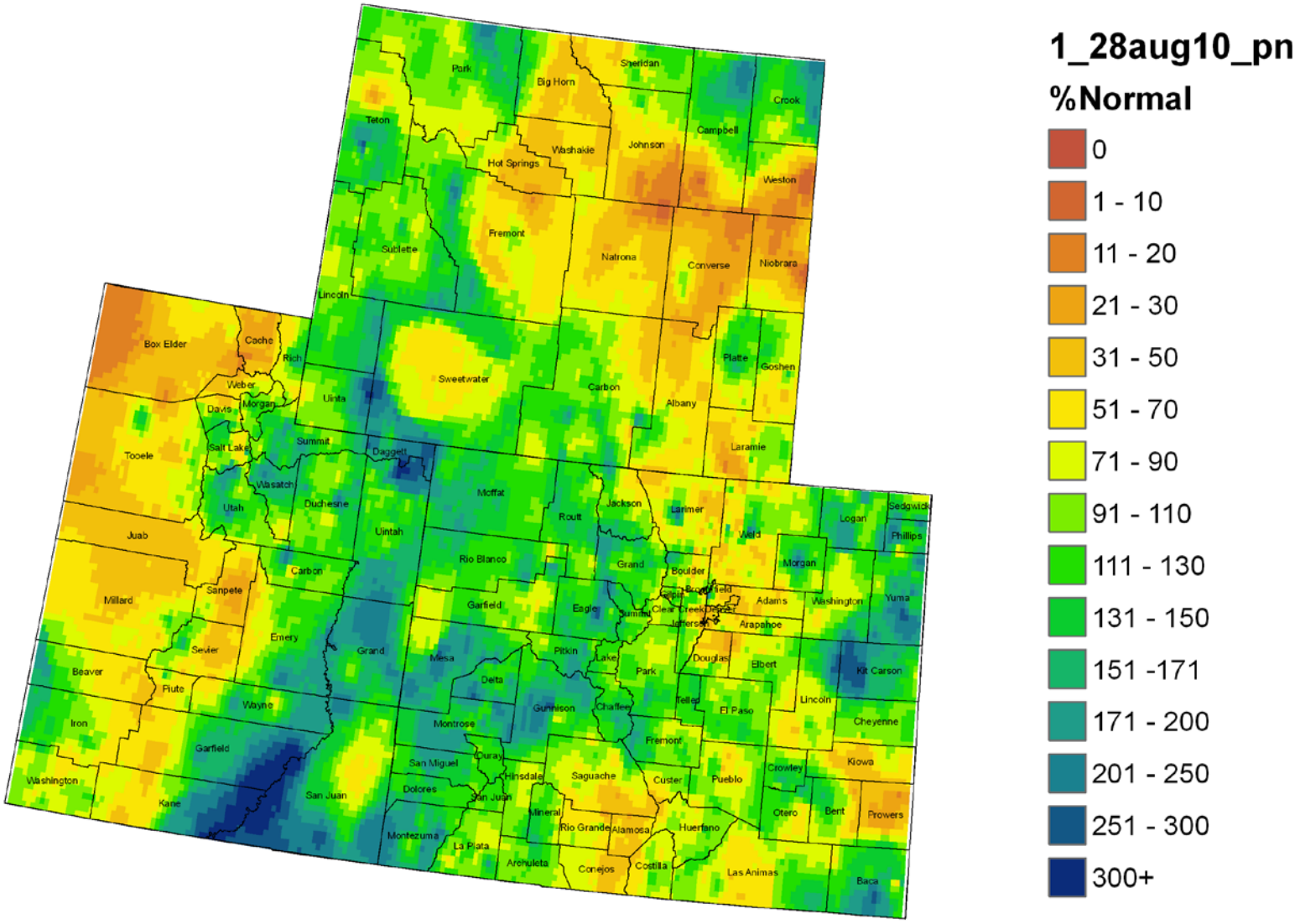


1_28aug10

1_28AugPPT

- 0.00
- 0.01 - 0.10
- 0.10 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01 - 7.00
- 7.01 - 7.56

Colorado, Utah and Wyoming Month To Date Precipitation
1 - 28 August 2010 as Percentage of Normal

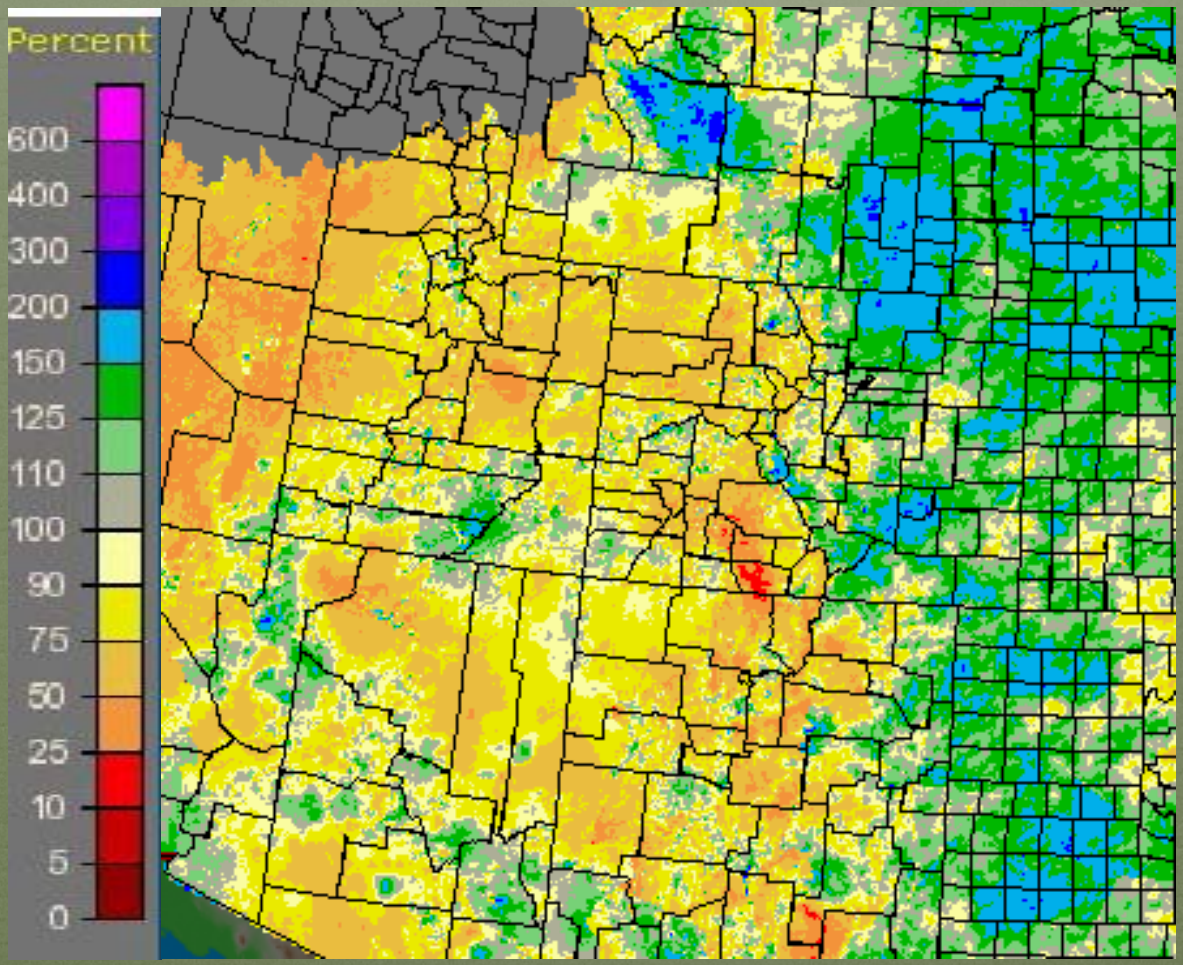


1_28aug10_pn

%Normal

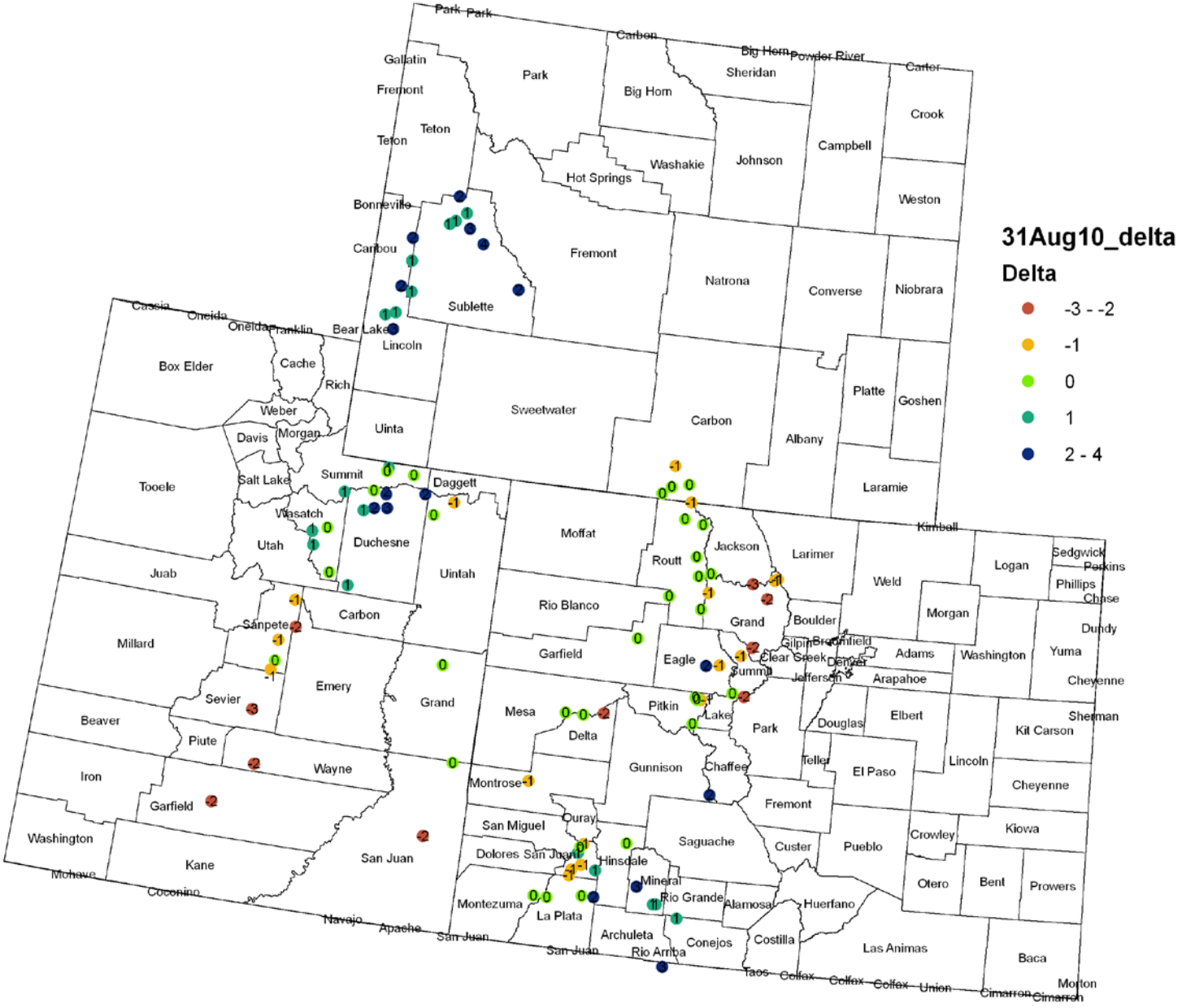
- 0
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 -171
- 171 - 200
- 201 - 250
- 251 - 300
- 300+

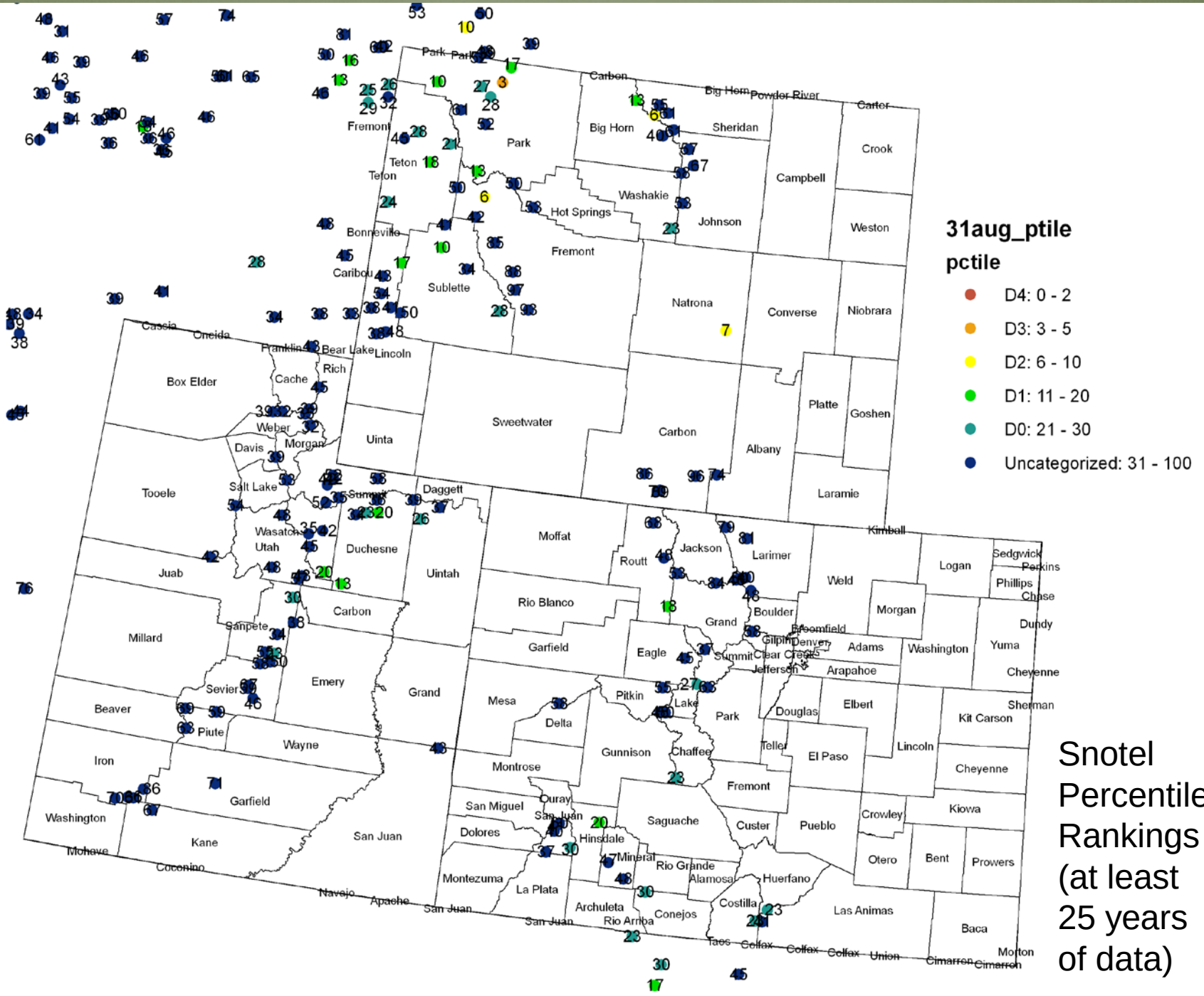
Water Year (Oct 1 – Current) Precipitation as Percentage of Average



http://water.weather.gov/precip/index.php

1 Week Change in Snotel WYTD Precipitation % Average



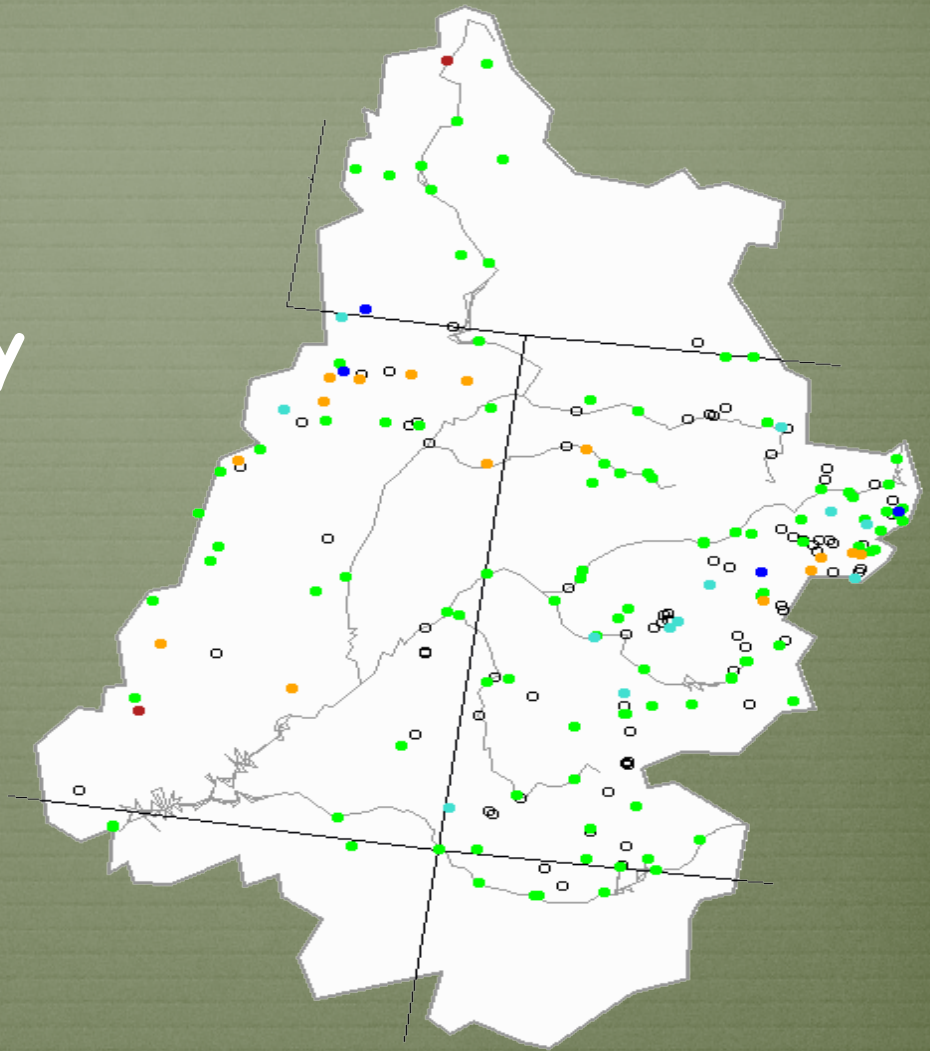

31aug_ptile
pctile
D4: 0 - 2
D3: 3 - 5
D2: 6 - 10
D1: 11 - 20
D0: 21 - 30
Uncategorized: 31 - 100
Snotel Percentile Rankings (at least 25 years of data)

Streamflow Update

Michael Lewis USGS

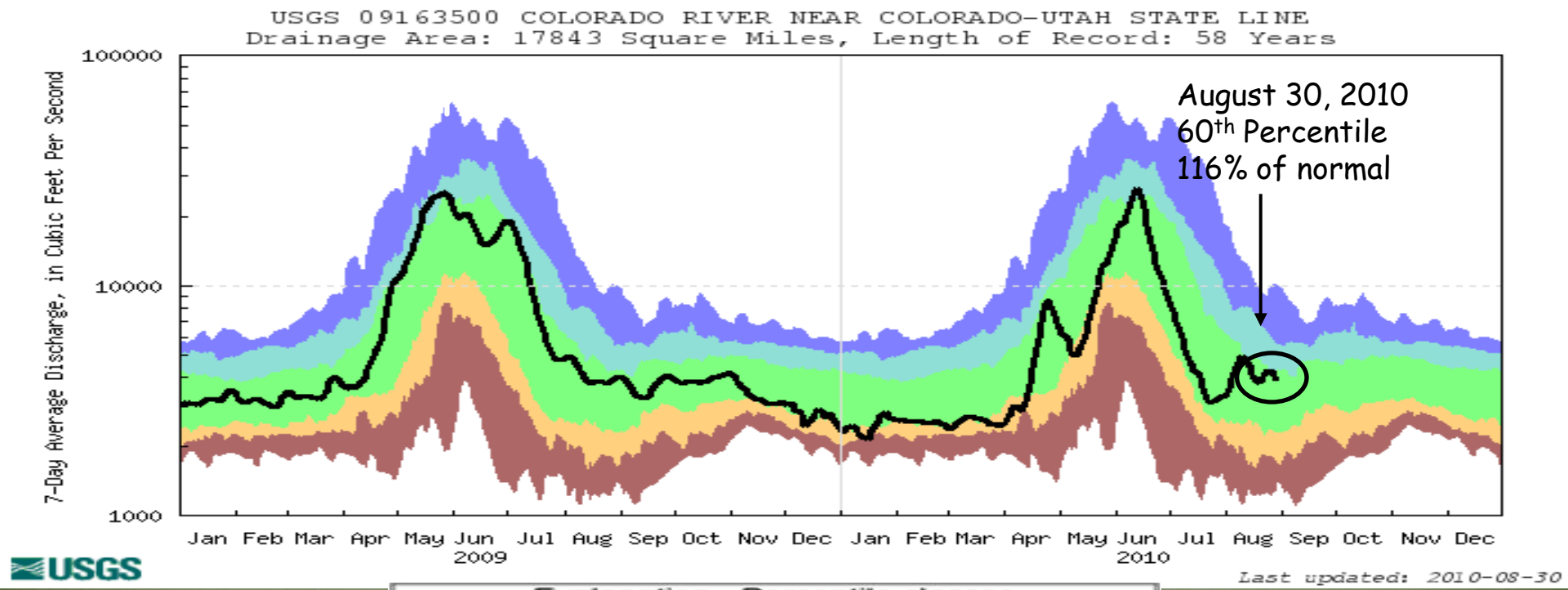
Sunday, August 29, 2010

7-day average discharge compared to historical discharge for the day of the year (August 29)

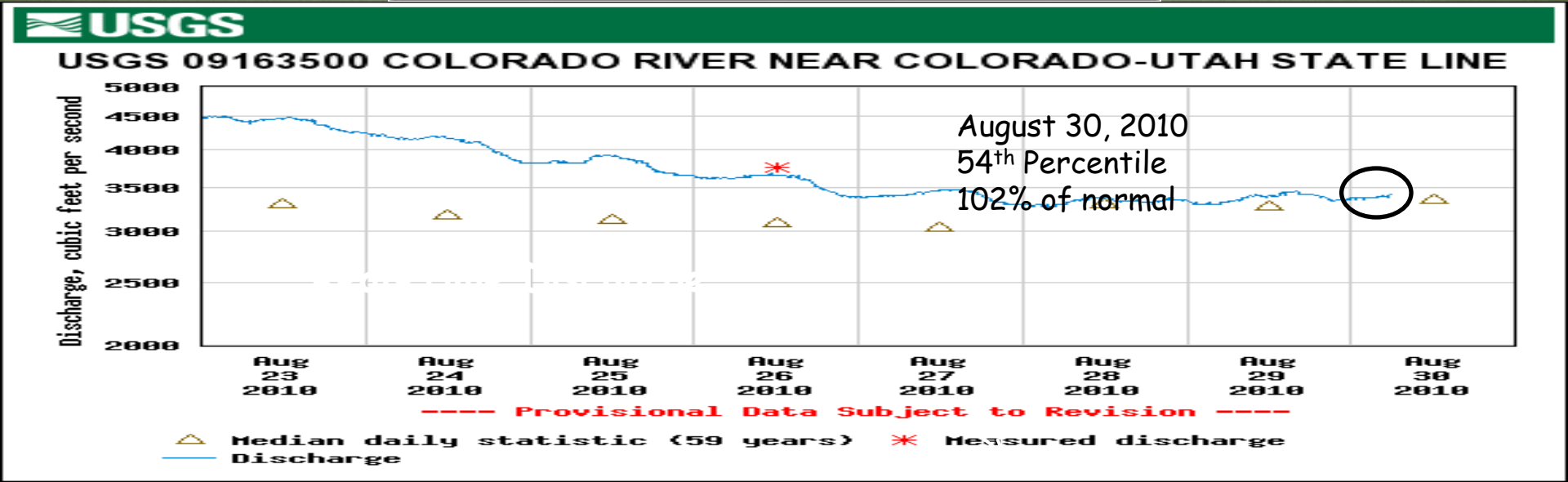


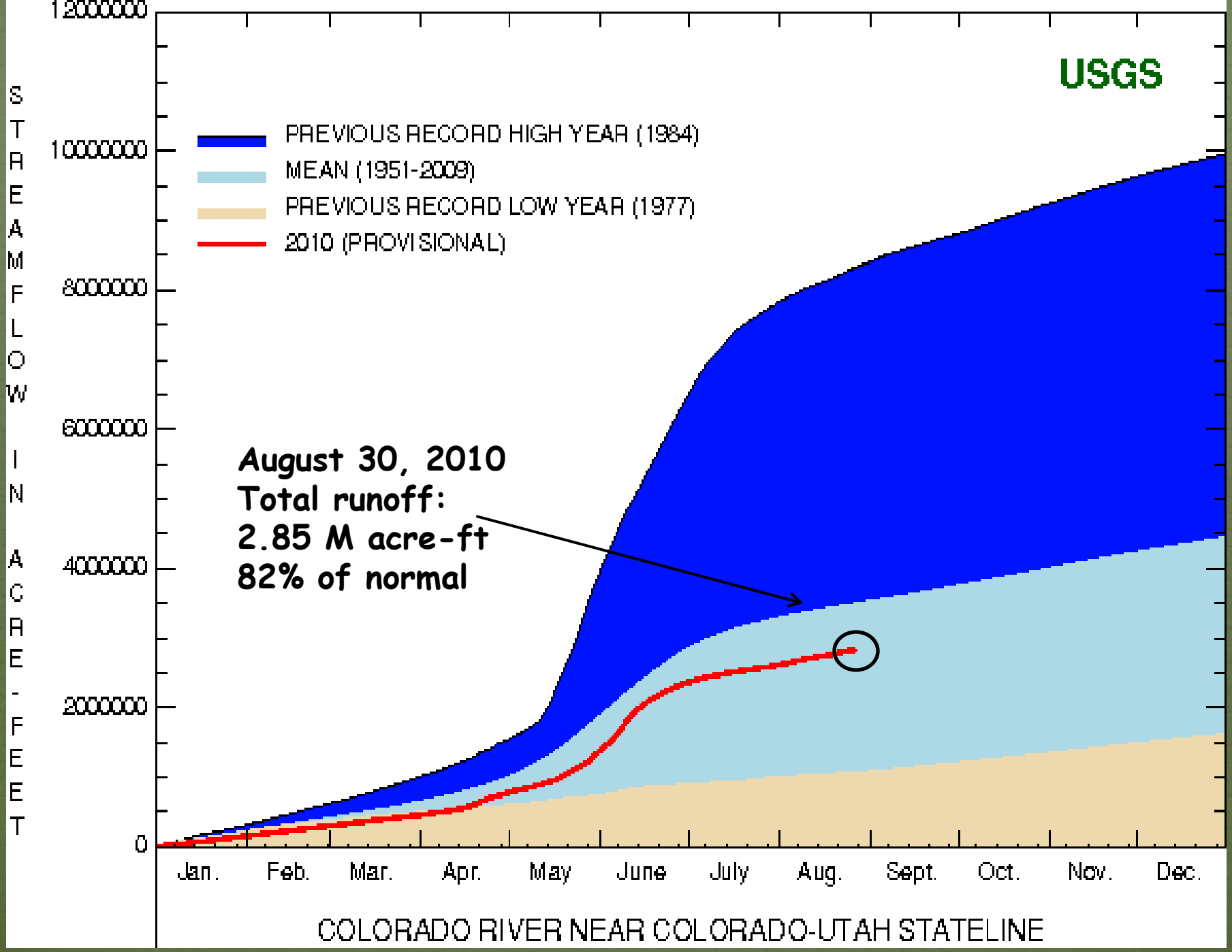
USGS

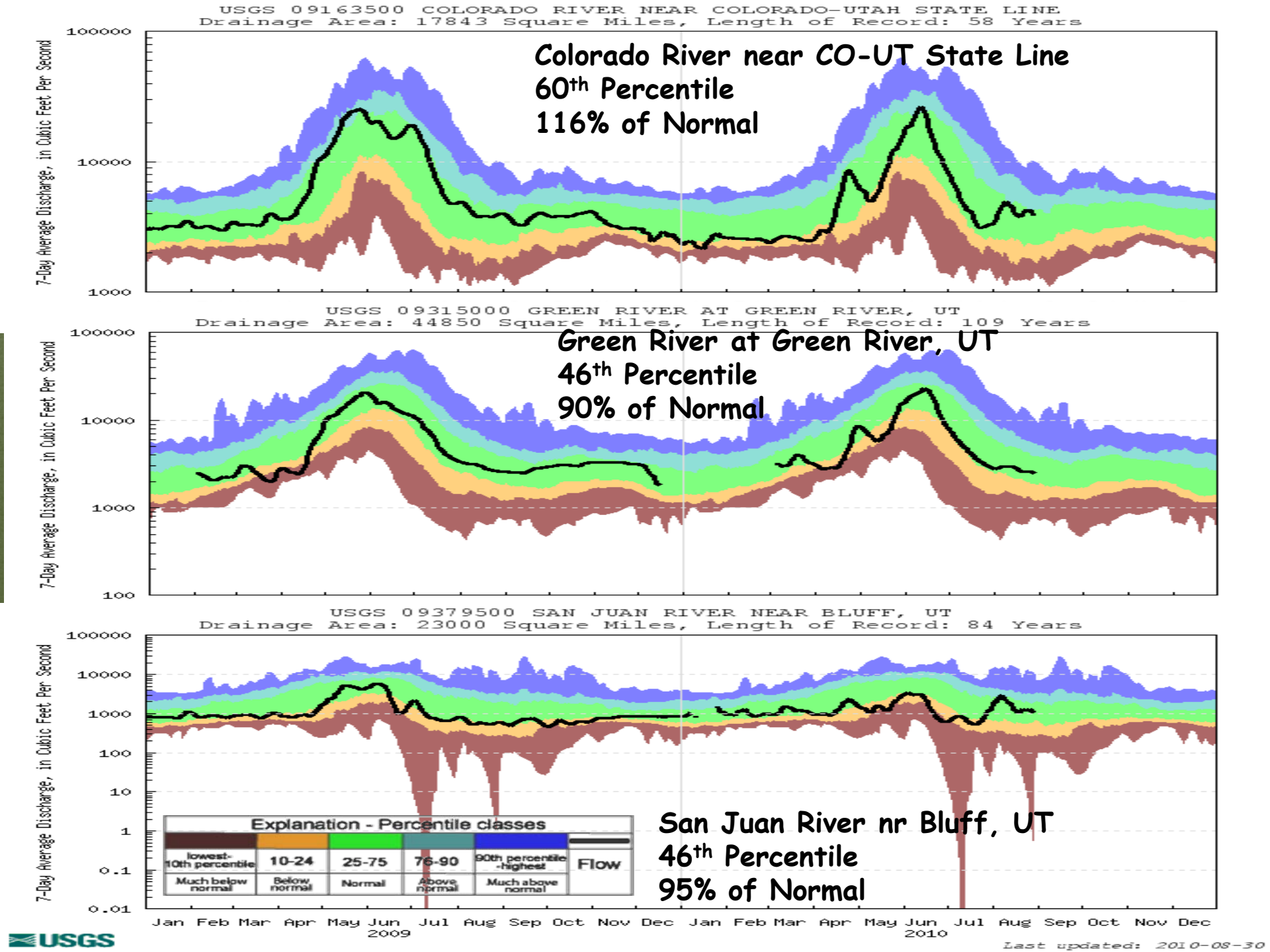
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		



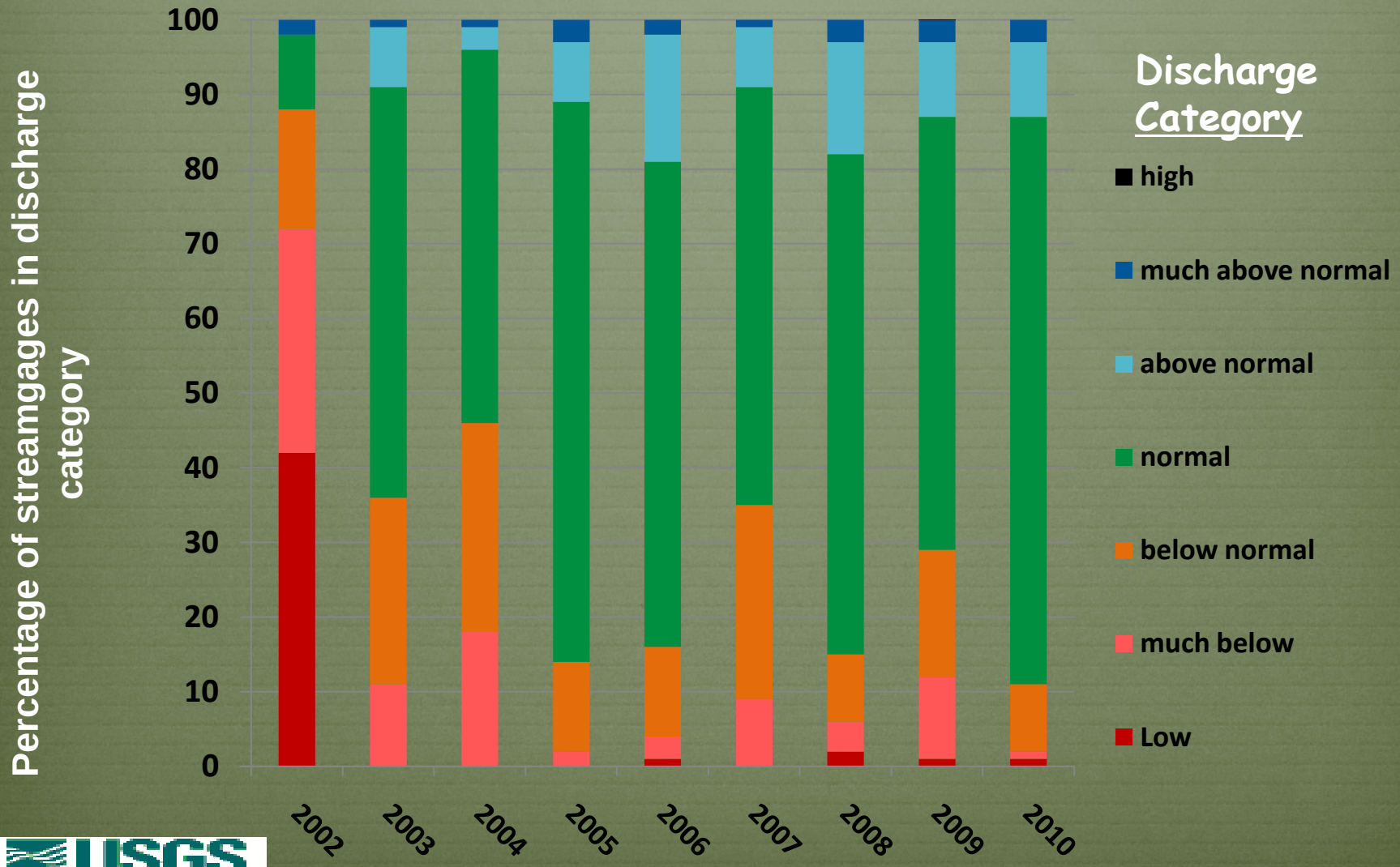
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile -highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	




USGS
PREVIOUS RECORD HIGH YEAR (1984)
MEAN (1951-2009)
PREVIOUS RECORD LOW YEAR (1977)
2010 (PROVISIONAL)
August 30, 2010
Total runoff:
2.85 M acre-ft
82% of normal
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

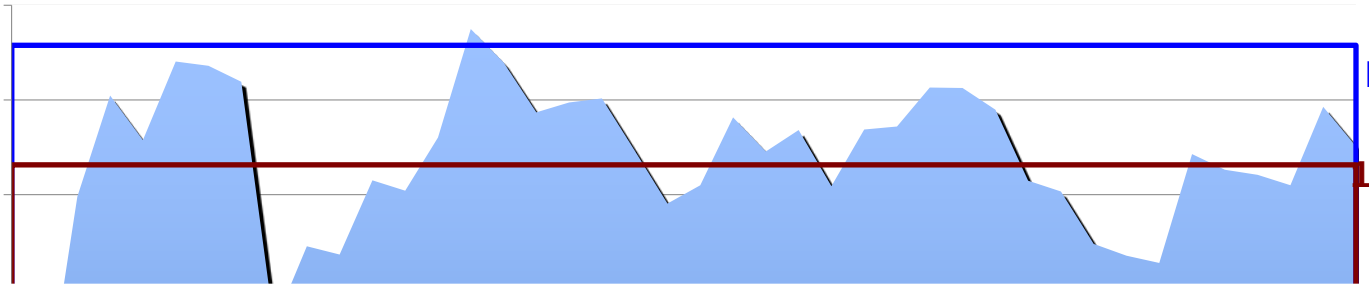

USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE
Drainage Area: 17843 Square Miles, Length of Record: 58 Years
7-Day Average Discharge, in Cubic Feet Per Second
100000
10000
1000
Colorado River near CO-UT State Line
60th Percentile
116% of Normal
USGS 09315000 GREEN RIVER AT GREEN RIVER, UT
Drainage Area: 44850 Square Miles, Length of Record: 109 Years
7-Day Average Discharge, in Cubic Feet Per Second
100000
10000
1000
100
Green River at Green River, UT
46th Percentile
90% of Normal
USGS 09379500 SAN JUAN RIVER NEAR BLUFF, UT
Drainage Area: 23000 Square Miles, Length of Record: 84 Years
7-Day Average Discharge, in Cubic Feet Per Second
100000
10000
1000
100
10
1
0.1
0.01
Explanation - Percentile classes
lowest-10th percentile
Much below normal
10-24
Below normal
25-75
Normal
76-90
Above normal
90th percentile -highest
Much above normal
Flow
San Juan River nr Bluff, UT
46th Percentile
95% of Normal
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: 2010-08-30

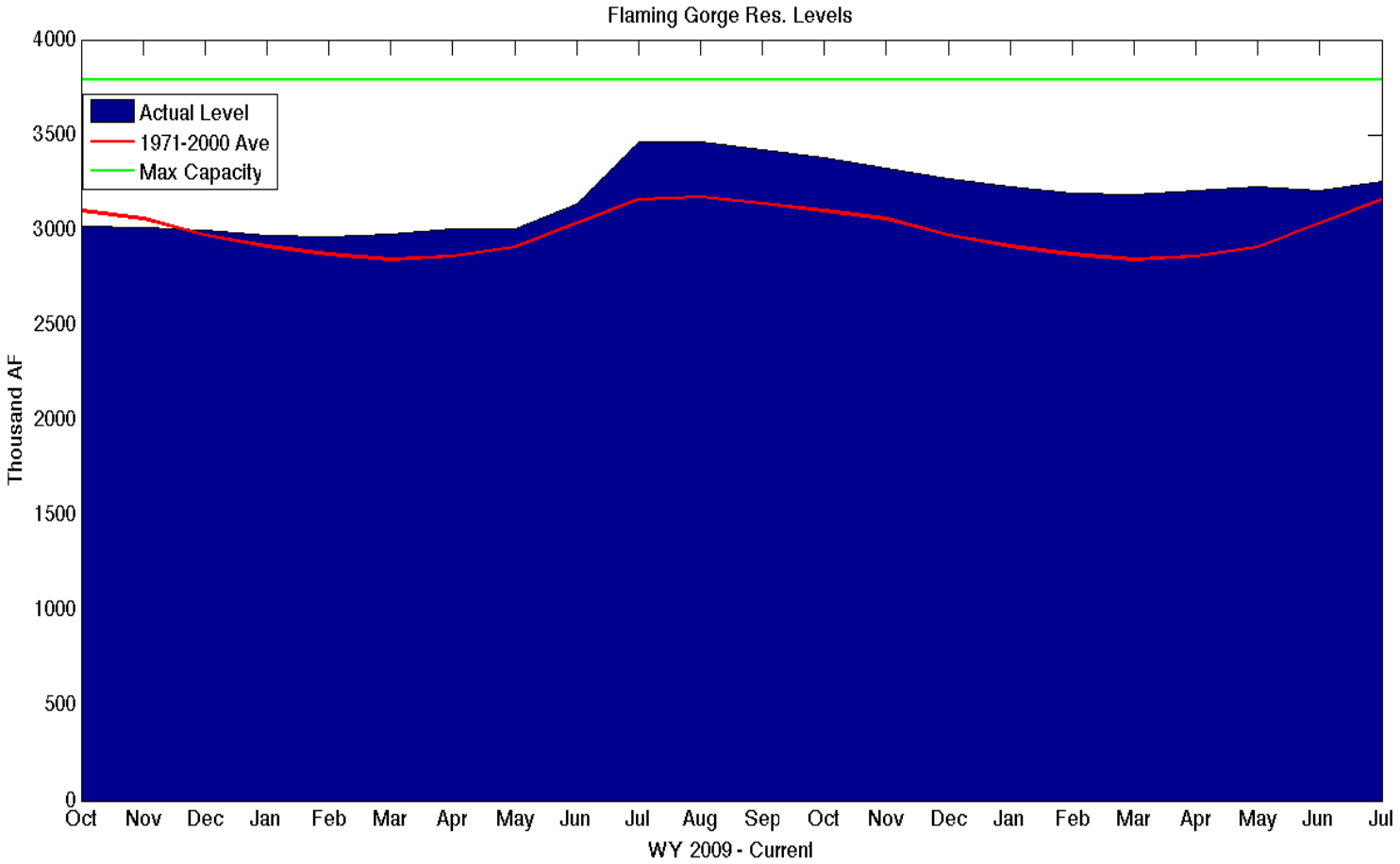
-Upper Colorado River Basin- Comparison of 7-day Average Discharge For August 28, 2002-2010

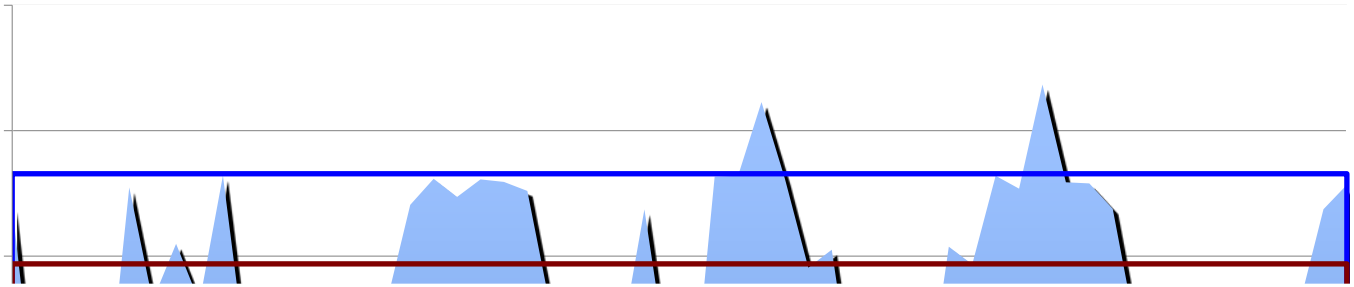


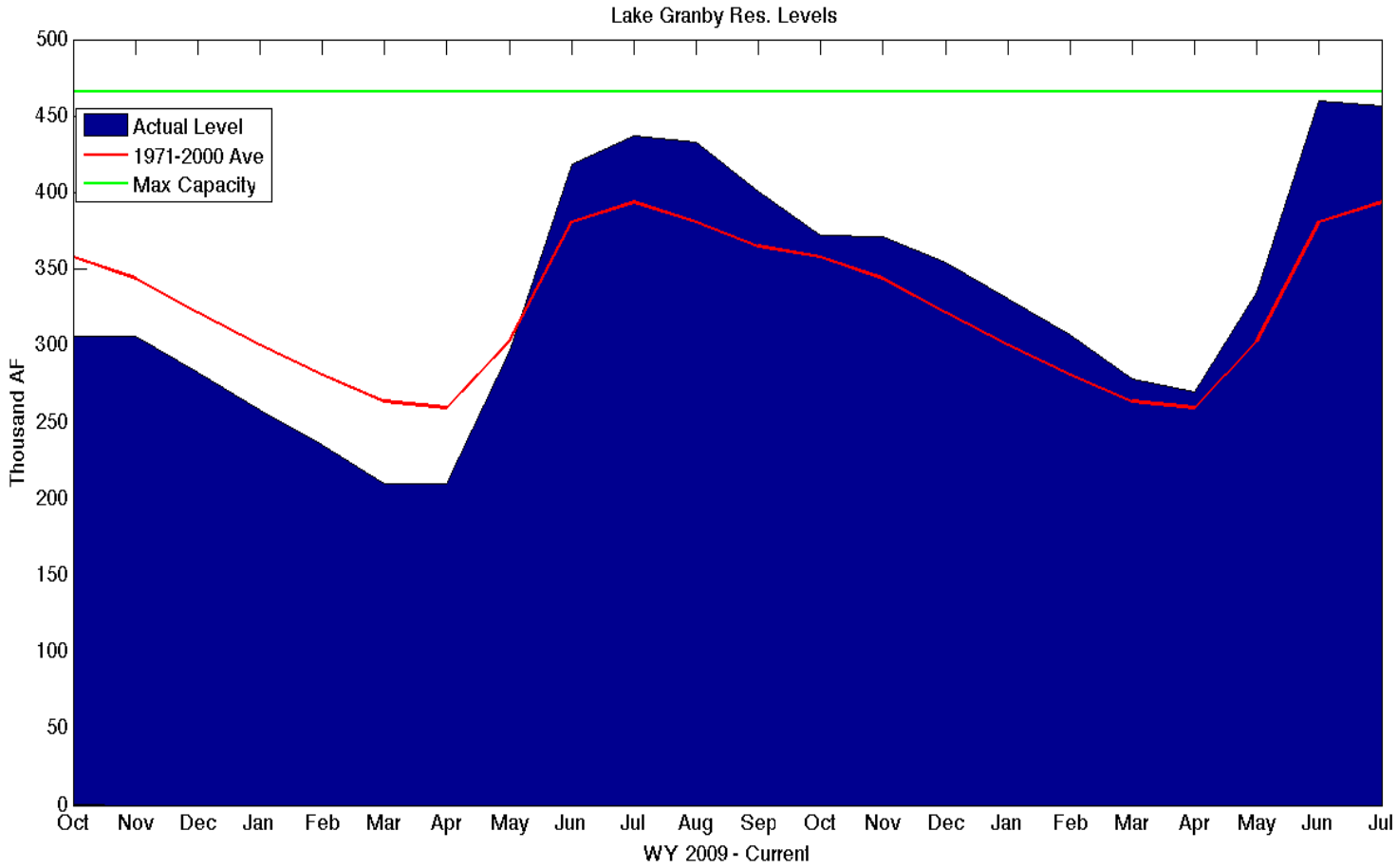
USGS

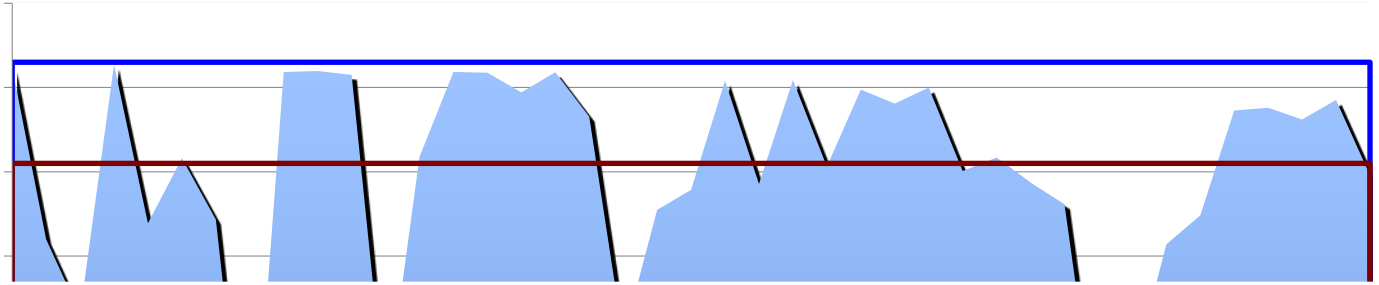
Reservoir Update

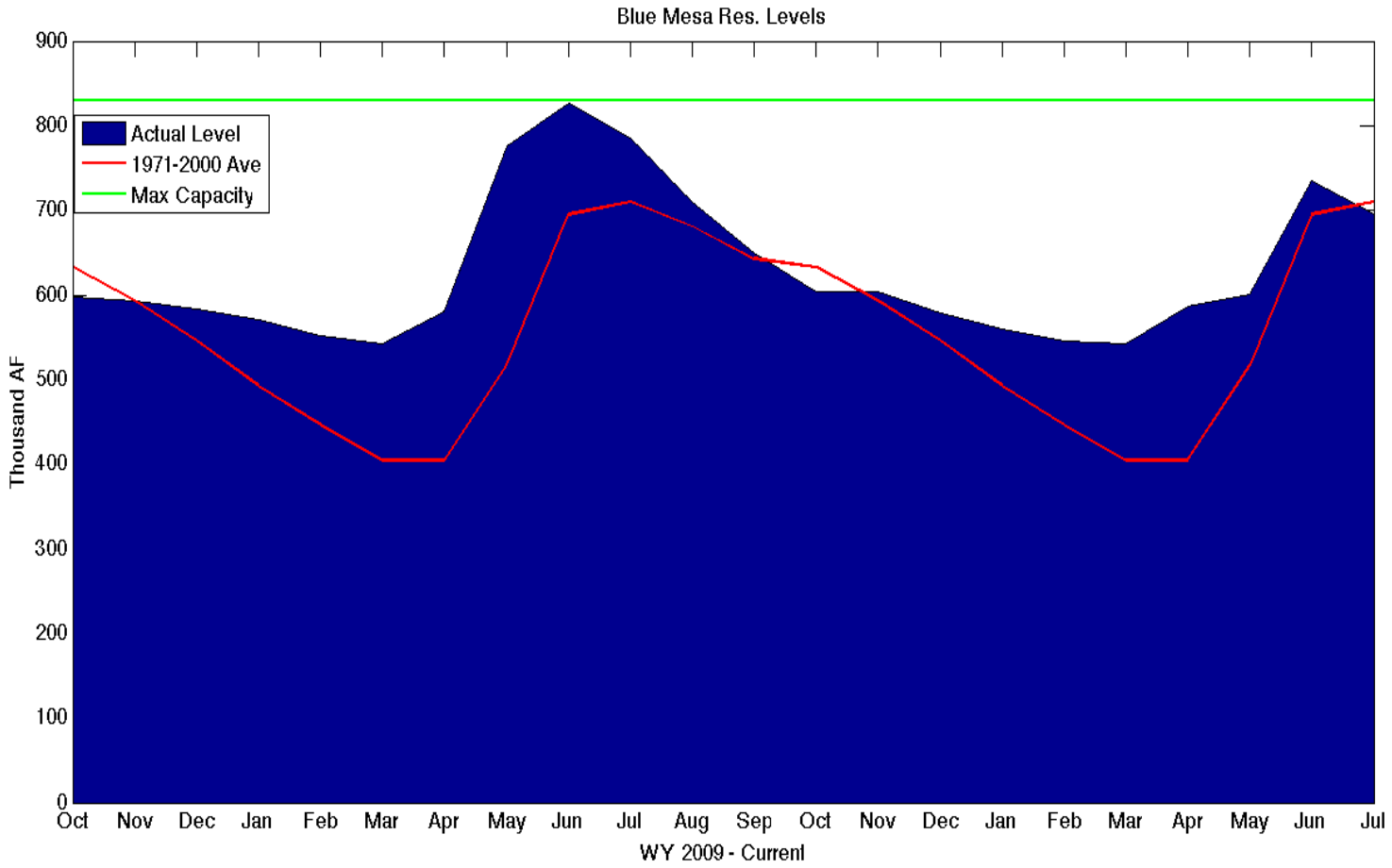

Max Capacity
1971-2000 Average

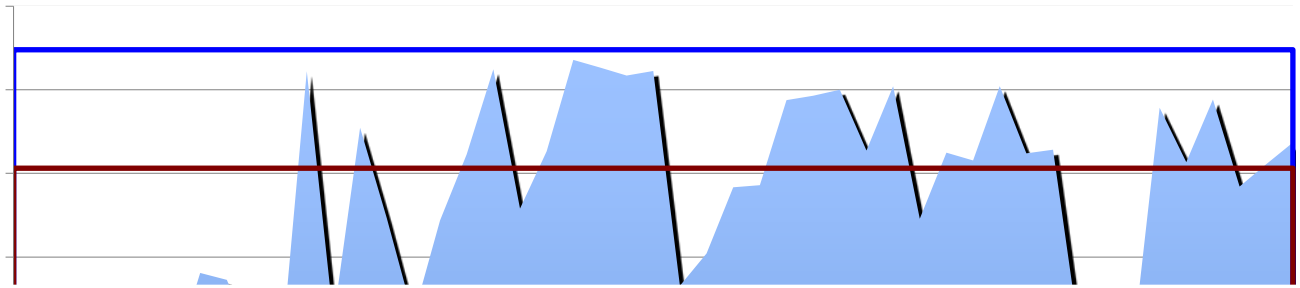

Flaming Gorge Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
4000
3500
3000
2500
2000
1500
1000
500
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
WY 2009 - Current


Max Capacity
1971-2000 Average

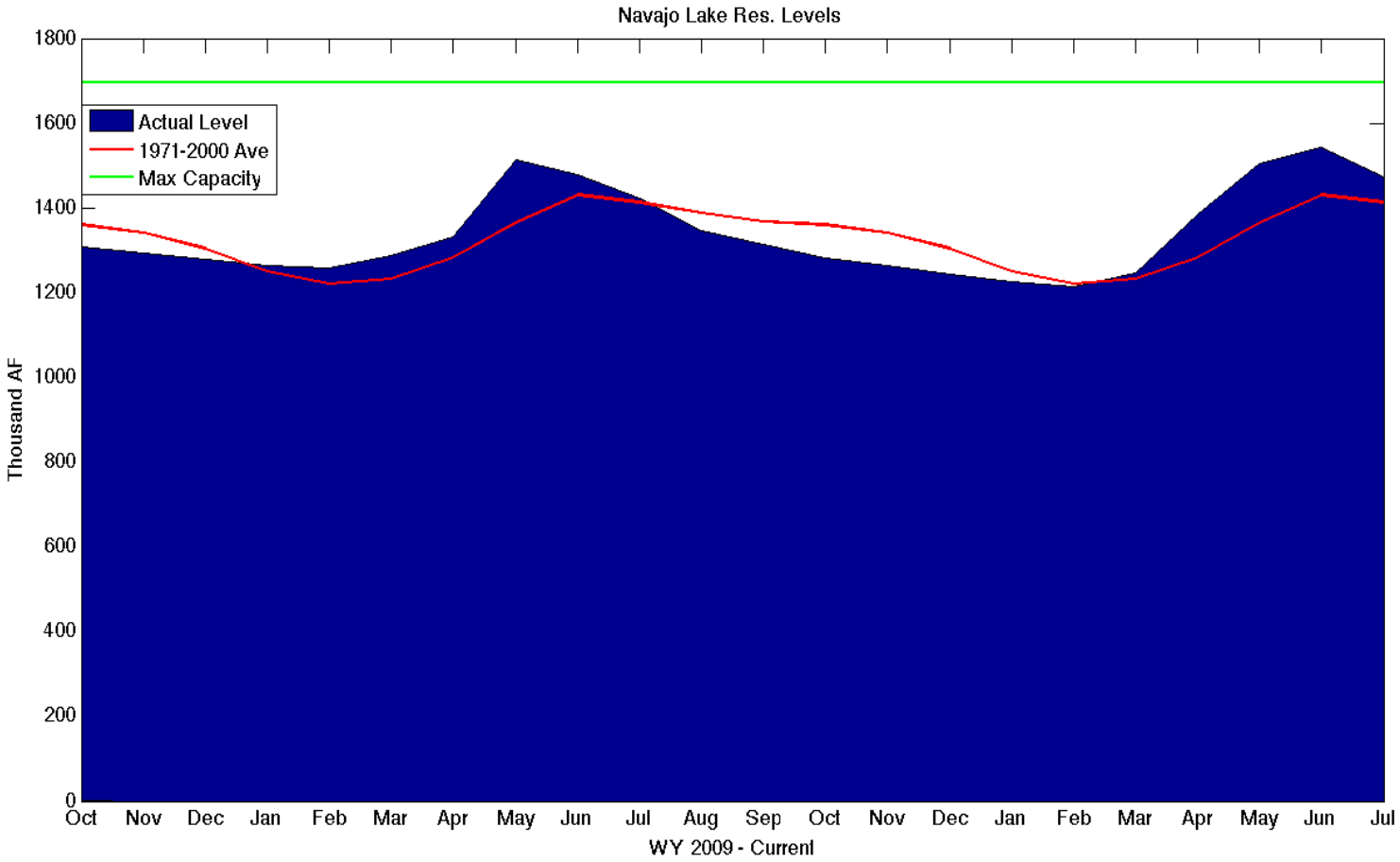

Lake Granby Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
500
450
400
350
300
250
200
150
100
50
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
WY 2009 - Current

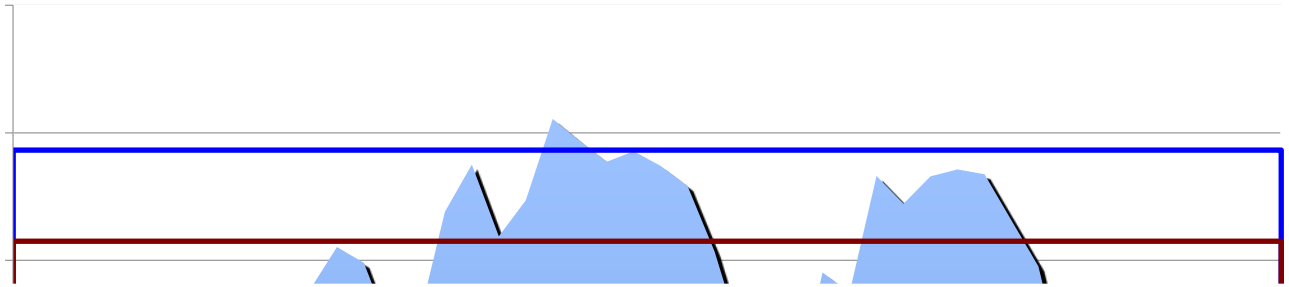

Max Capacity
1971-2000 Average

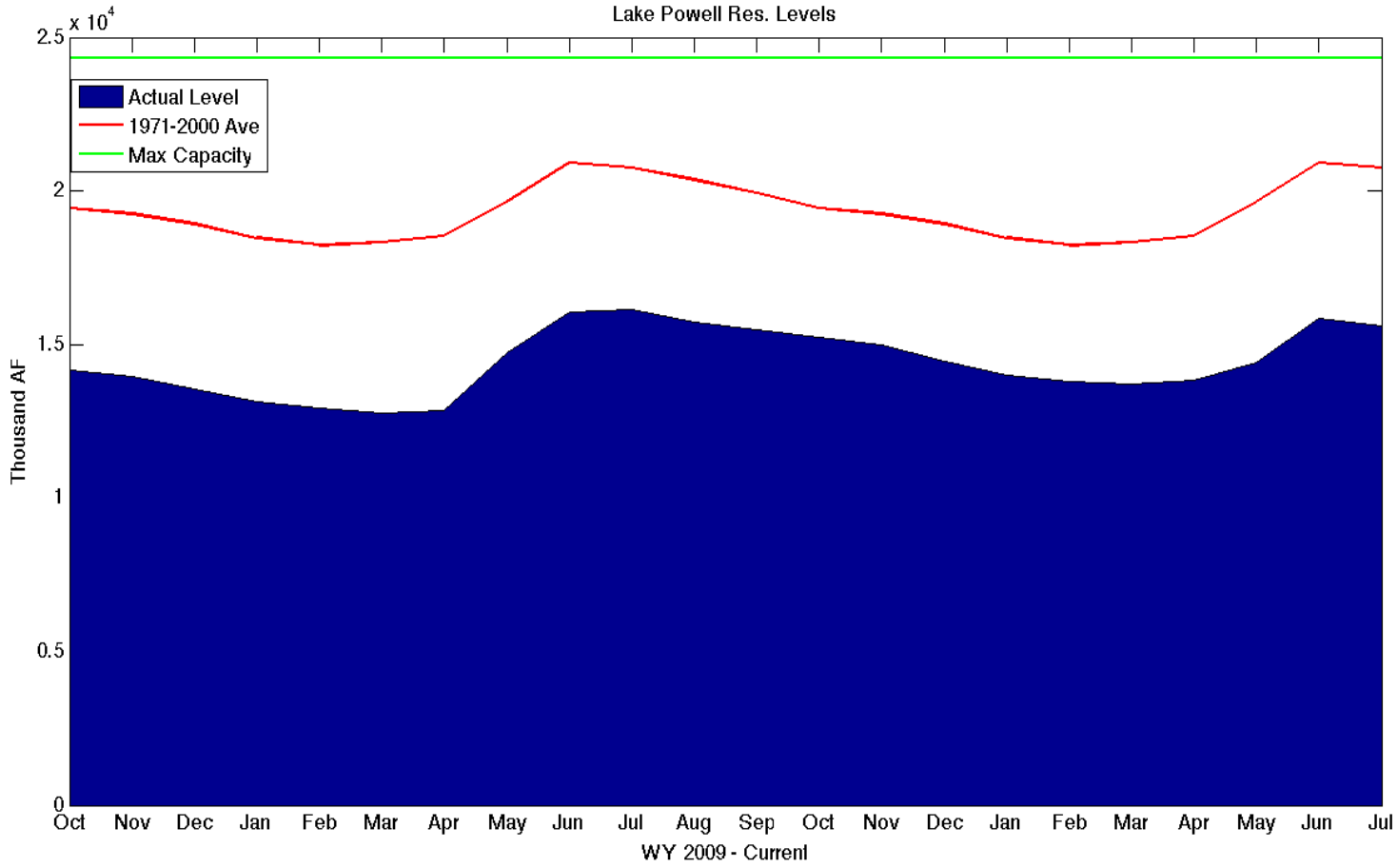

Blue Mesa Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
900
800
700
600
500
400
300
200
100
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
WY 2009 - Current


Max Capacity
1971-2000 Average

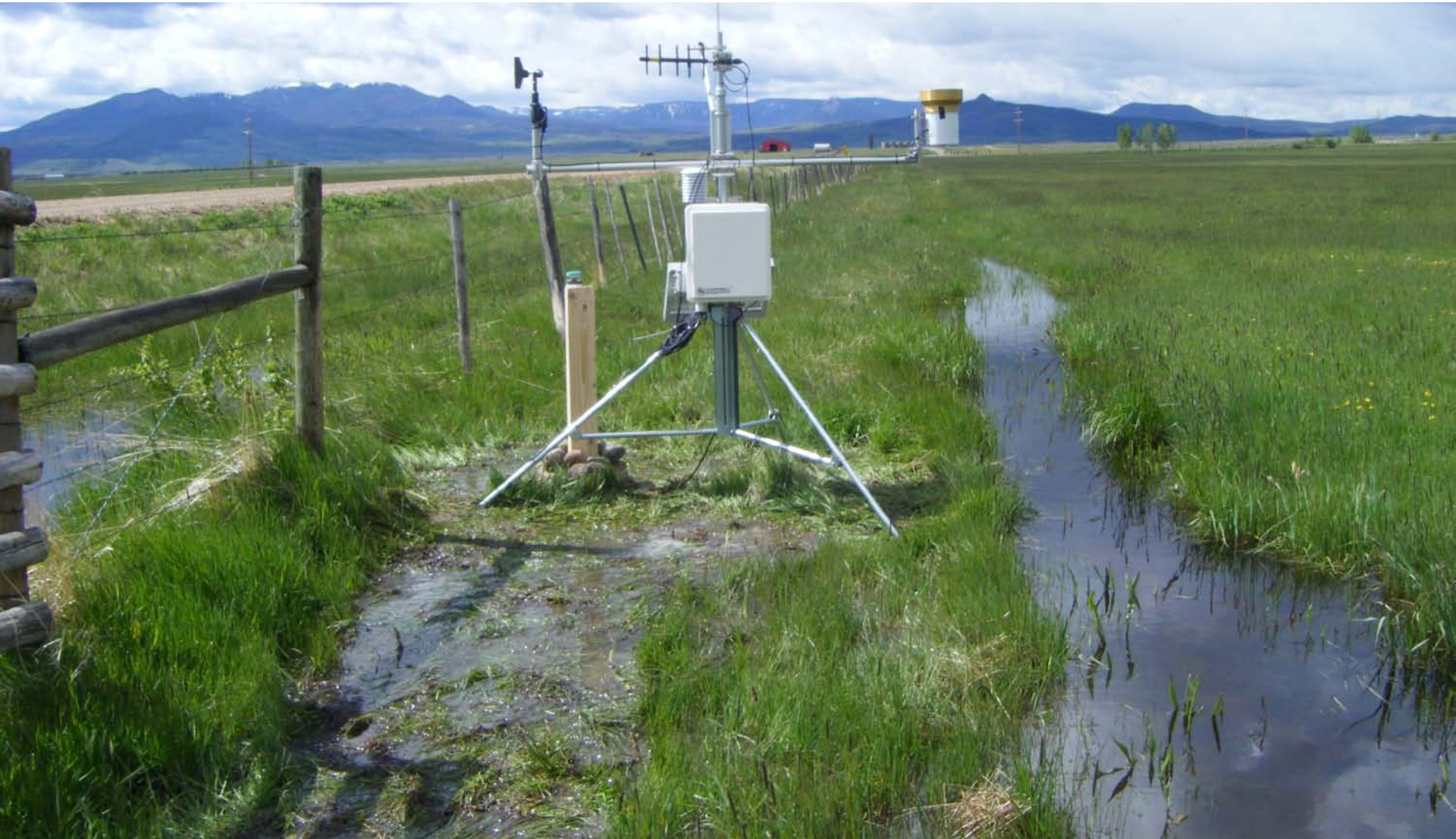
Acre Feet


Navajo Lake Res. Levels
Actual Level
1971-2000 Ave
Max Capacity
Thousand AF
1800
1600
1400
1200
1000
800
600
400
200
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
WY 2009 - Current

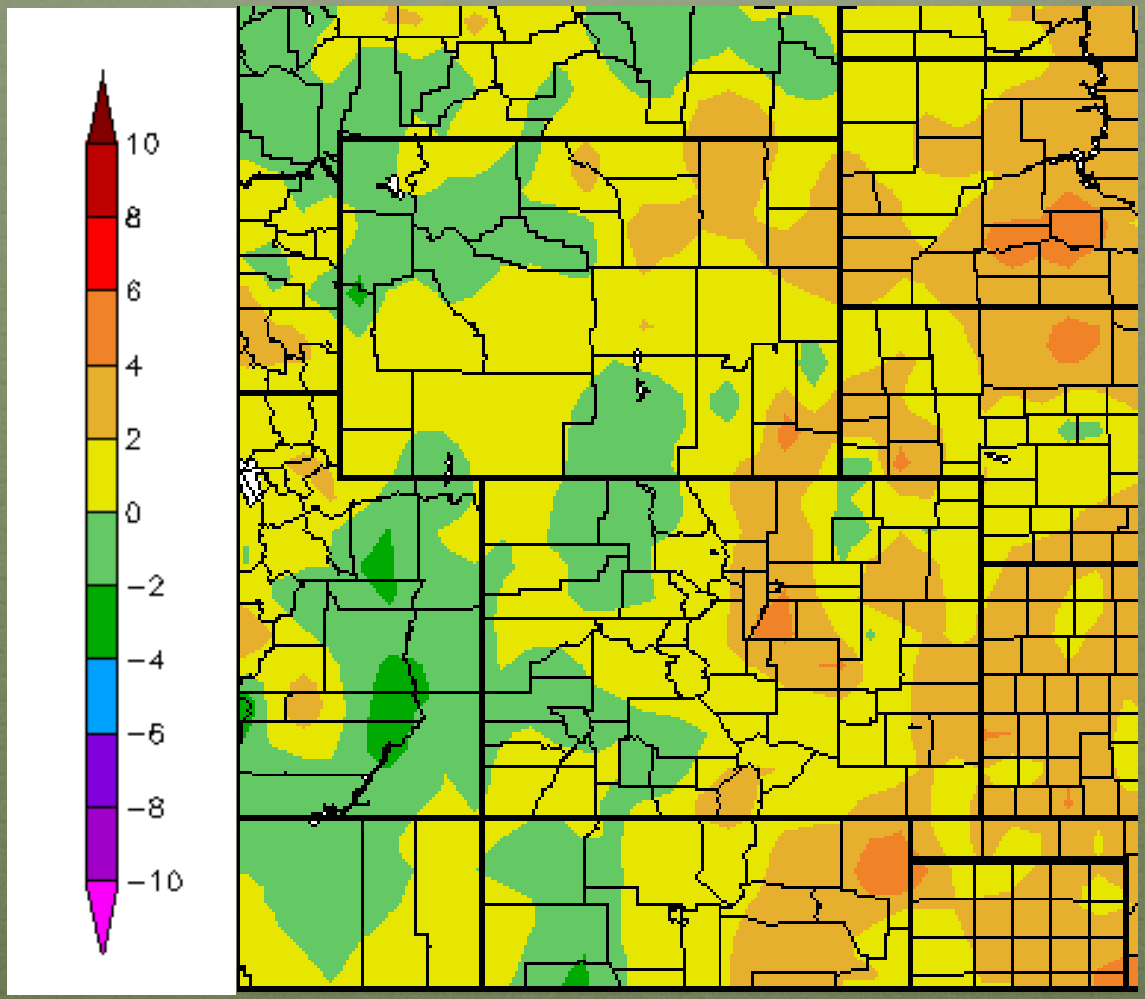

Max Capacity
1971-2000 Average


Lake Powell Res. Levels
x 10^4
2.5
2
1.5
1
0.5
0
Thousand AF
Actual Level
1971-2000 Ave
Max Capacity
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
WY 2009 - Current

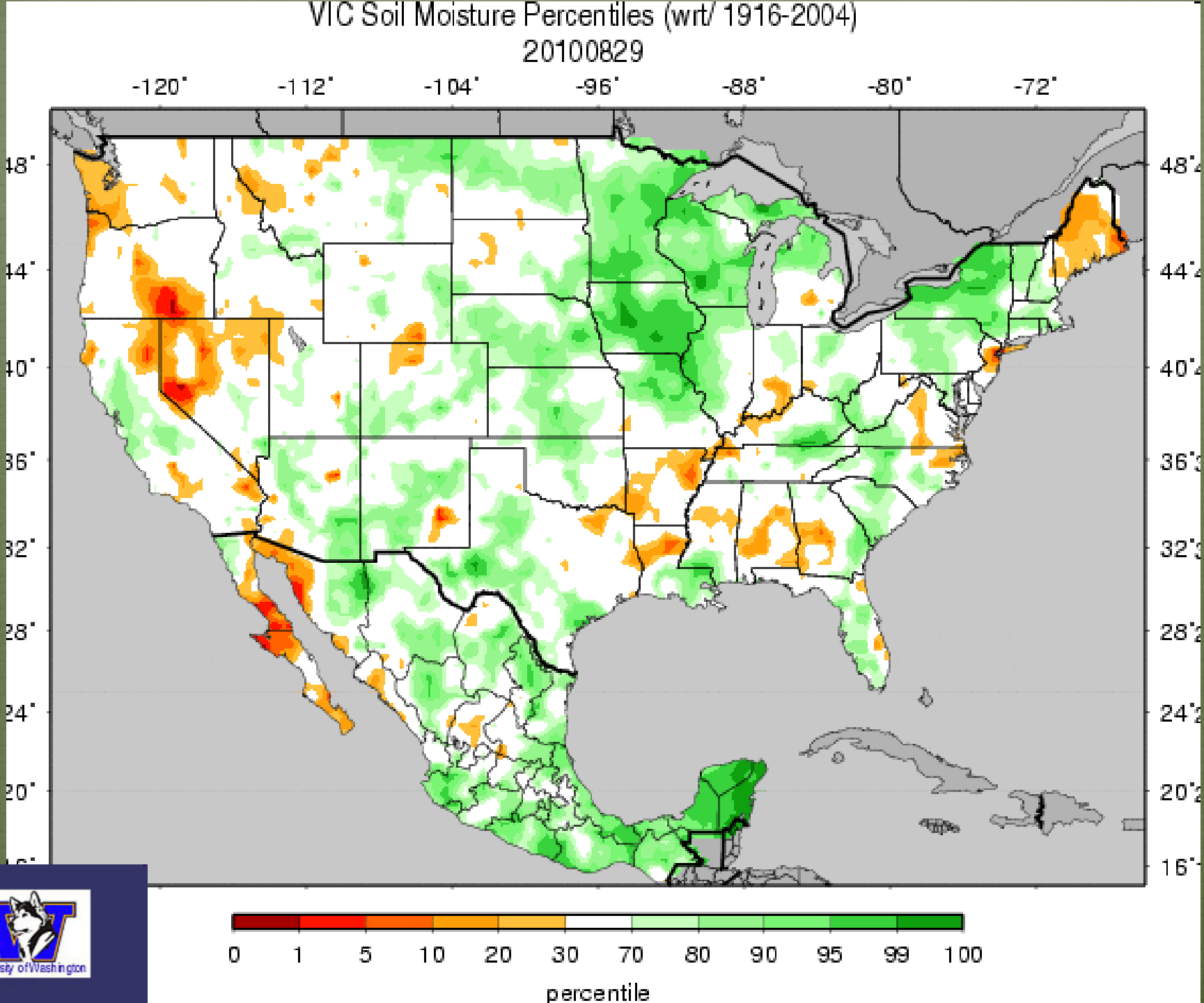
Water Demand



Temperature Departure from Normal
8/1/2010 – 8/30/2010



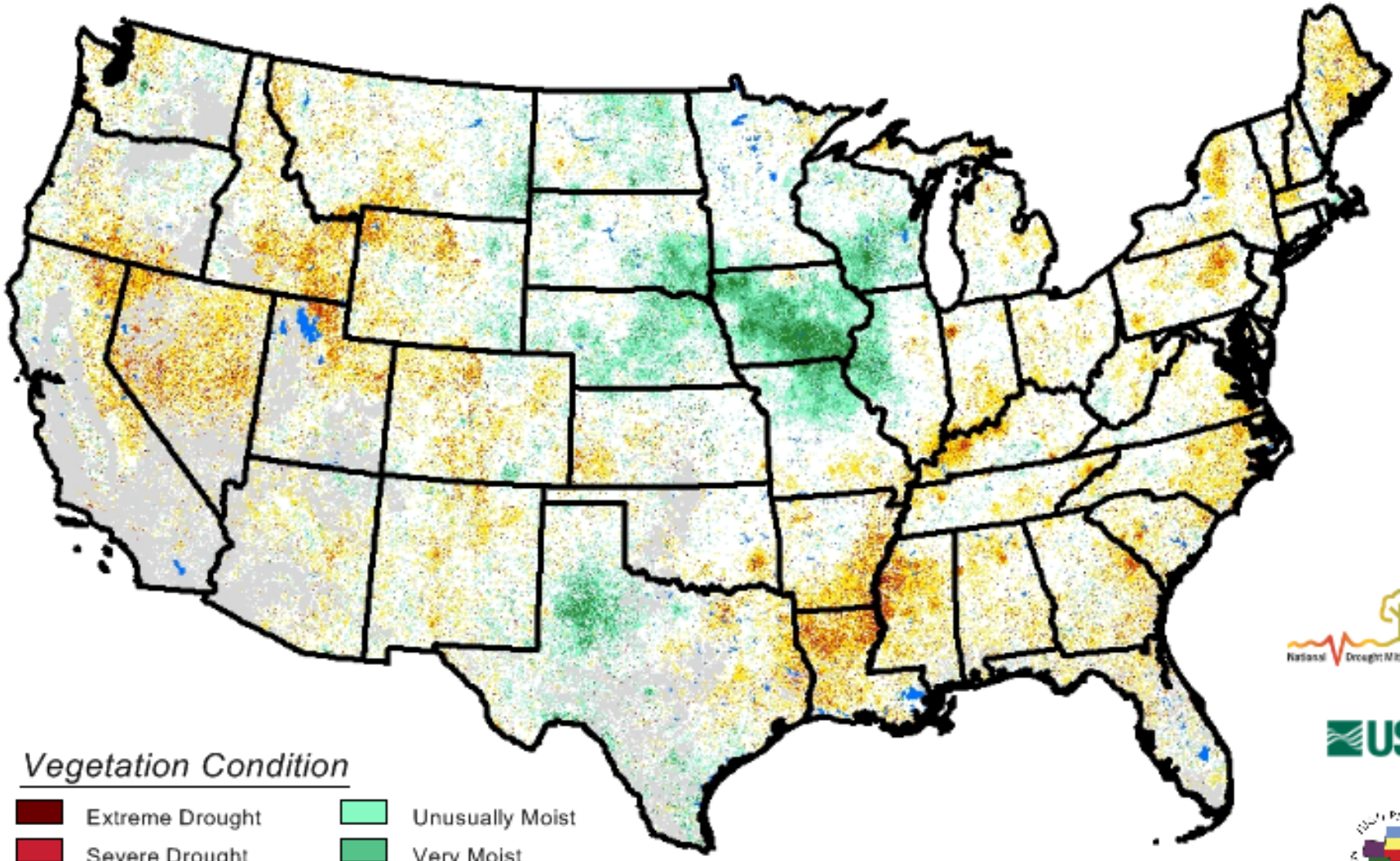
High Plains Regional Climate Center



University of Washington

Vegetation Drought Response Index
Complete

August 23, 2010



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water

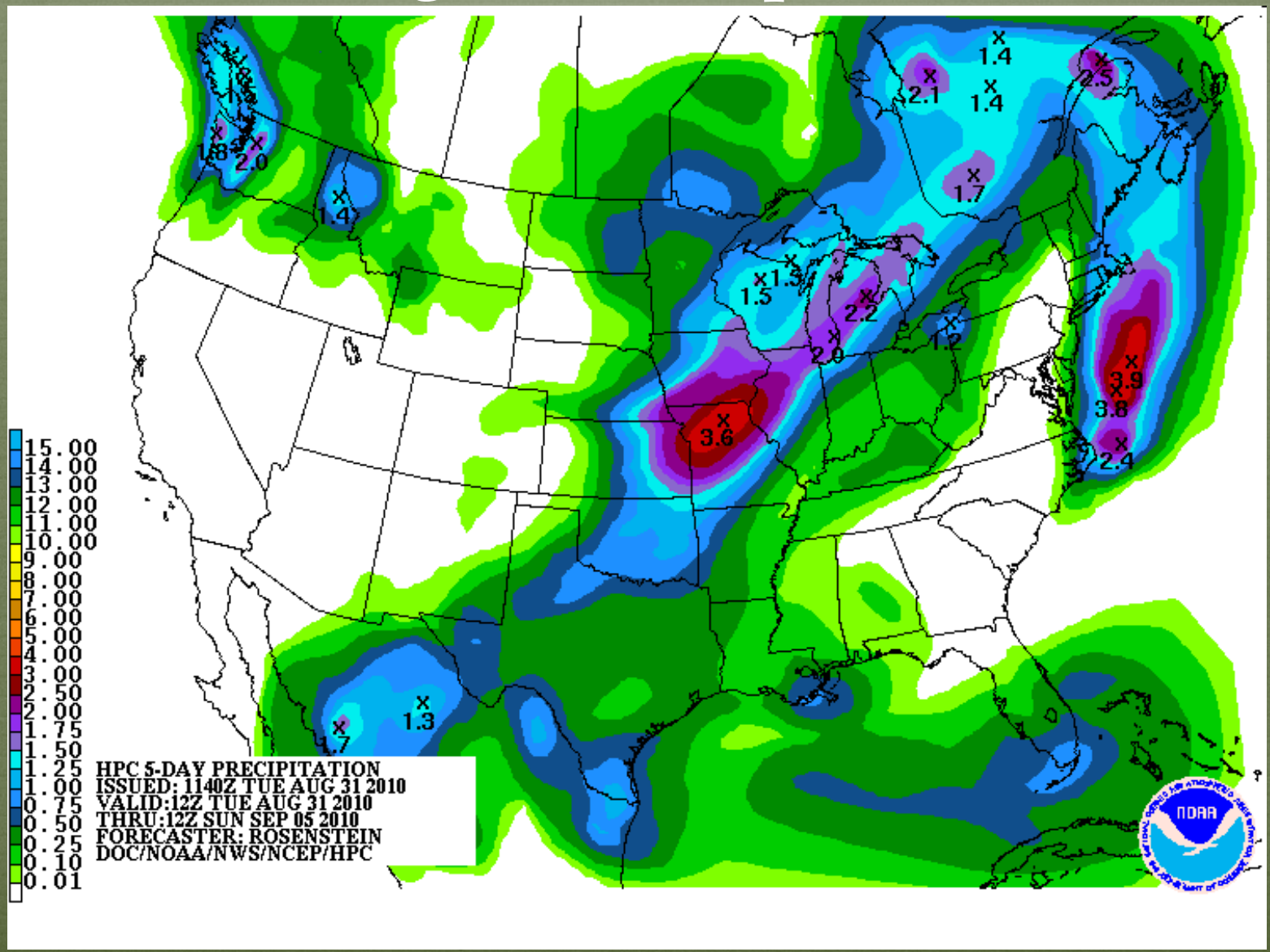
National Drought Mitigation Center

USGS

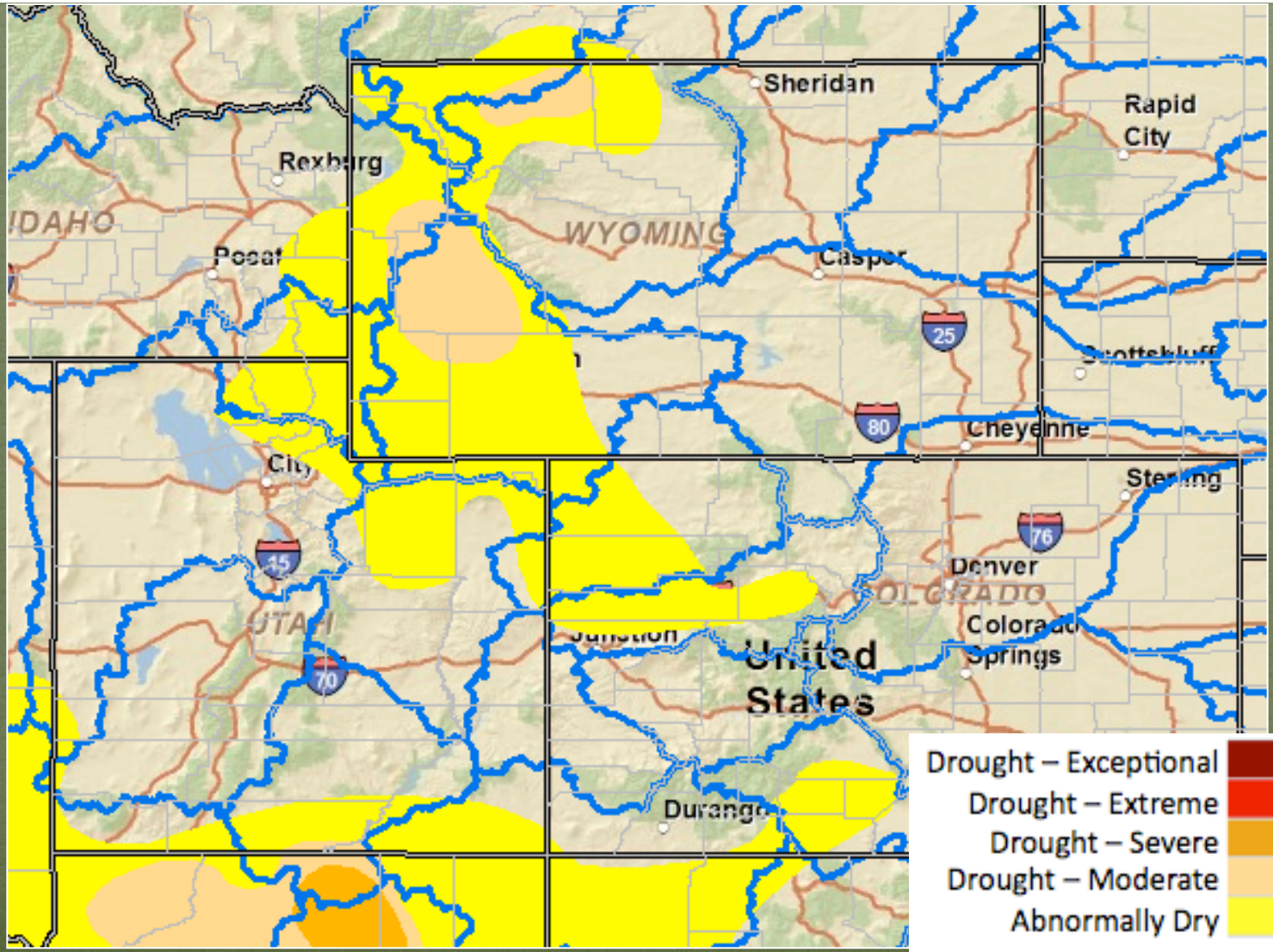
RMA

Precipitation Forecast

5 Day Outlook
31August – 5 September



Recommendations



INFO

For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 31, 2010

Precipitation and Snowpack

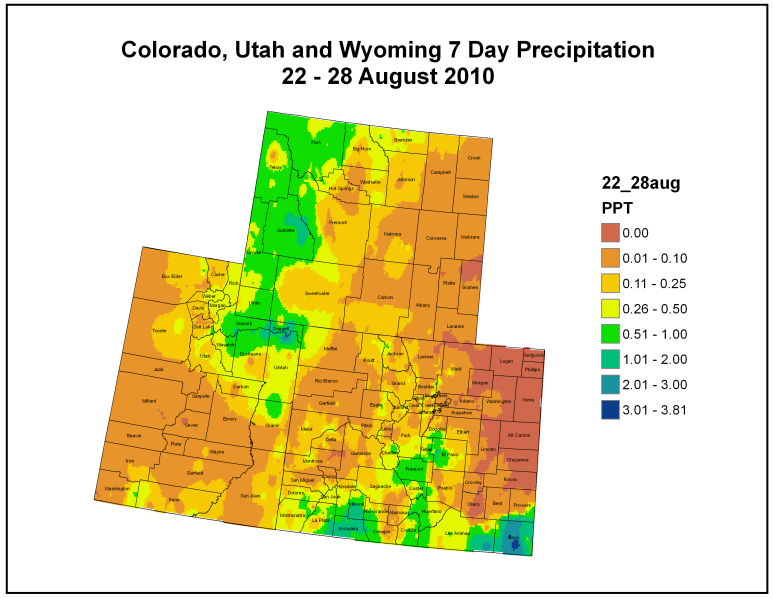


Fig. 1: August 22 – 28 precipitation in inches

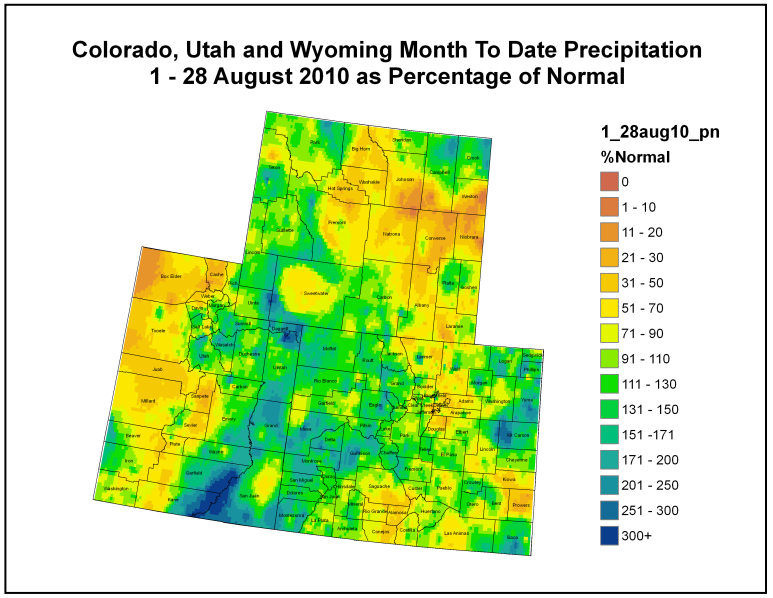


Fig. 2: August month-to-date precip as percent of average

Over the past week, the northern portion of the Upper Colorado River Basin (UCRB) received the most moisture, with some areas in northeastern Utah receiving over an inch of precipitation (Fig. 1). Archuleta County, CO in the San Juan basin also experienced between one and two inches of precipitation last week. Most of the rest of the basin saw only minor amounts of rain, while the eastern plains (which depends on western slope water supplies) received little to no moisture.

For the month of August, the majority of the UCRB has seen near average or above average amounts of precipitation (Fig. 2). The driest areas for the month have been in Sweetwater County, WY, San Juan County, UT, and Garfield County, CO—all of which are currently in D0 (abnormally dry conditions) on the U.S. Drought Monitor map.

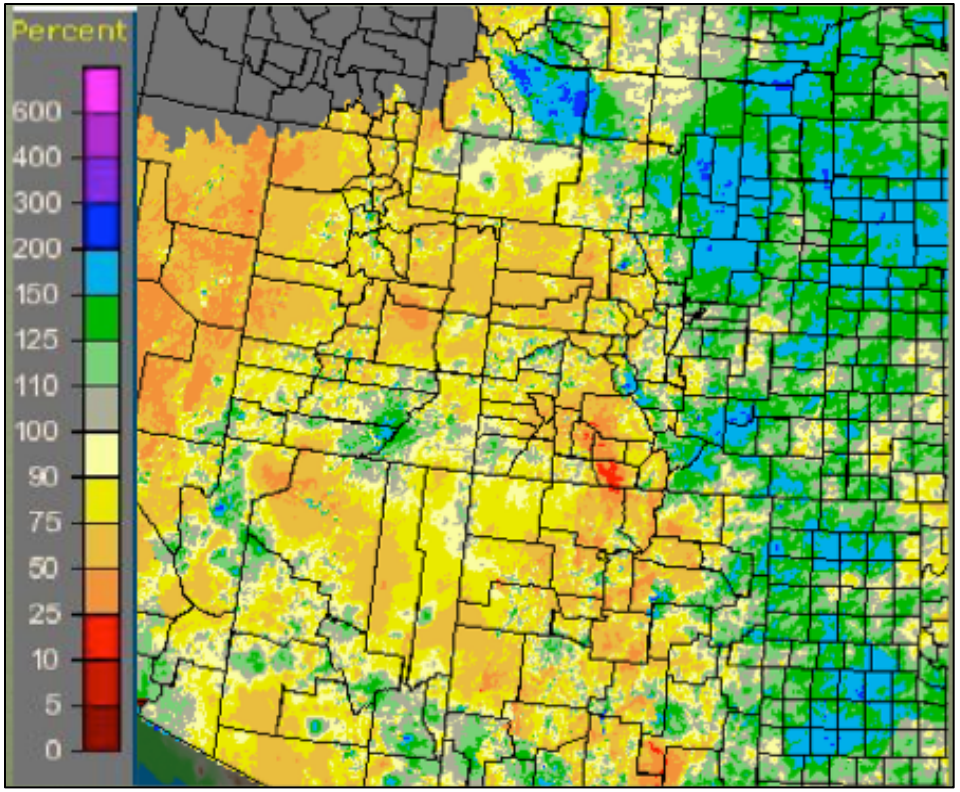


Fig. 3: NWS AHPS water-year-to-date precipitation percent of average as of August 31st.

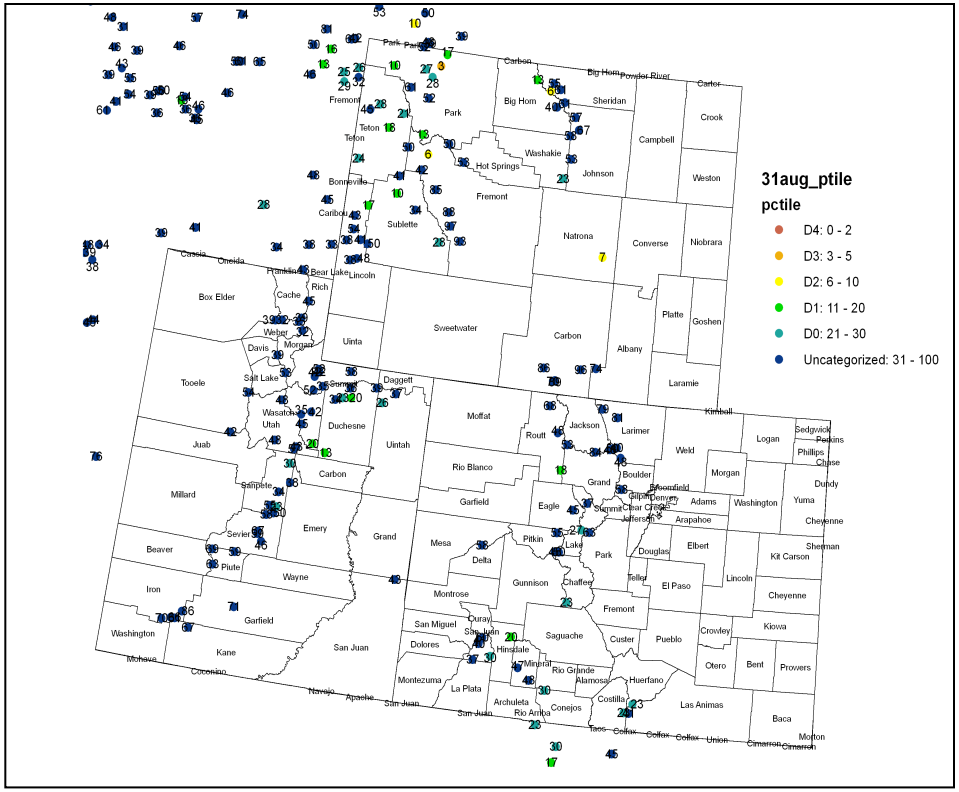


Fig. 4: Snotel WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

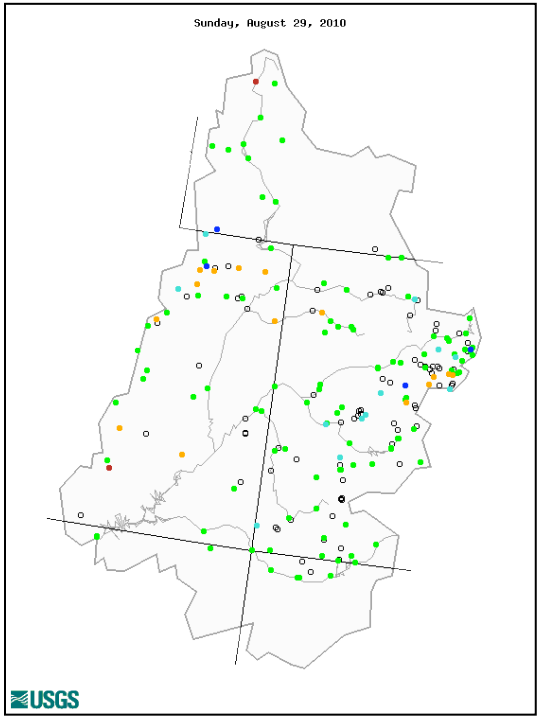
For the water year (beginning October 1, 2009), most of the UCRB has seen a deficit in precipitation (Fig. 3). Throughout the basin, precipitation for the water year currently ranges from 50% - 90%, with scattered areas receiving near average precipitation and east of the UCRB receiving above average precipitation.

Water-year-to-date (WYTD) percentiles for the Snotel sites in the UCRB show the lowest values corresponding with the locations of current abnormal dryness (D0 or below the 30th percentile) on the U.S. Drought Monitor map—in the Rio Grande basin to the south, the Upper and Lower Green River basins and near the Colorado headwaters region (Fig. 4). The remaining Snotel sites show percentiles high enough to not be considered for drought designations.

Streamflow

89% of the USGS streamgages in the UCRB are reporting normal (in the 25 – 75th percentile range) or above 7-day average flows as of August 29th (Fig. 5). The highest concentration of streamgages reporting below normal flows are found in the Lower Green River basin in Utah, with below normal flows also showing up in the Colorado River basin in Colorado.

Cumulative runoff on the Colorado River at the Colorado-Utah state line is still lagging (currently at 82% of normal) due to low discharge during the winter and most of spring, when accumulations are usually at their maximum (Fig. 6). However, when looking at current 7-day average flows across the basin, conditions are better than they've been when comparing to the last 8 years, mostly as a result of a strong monsoon season.



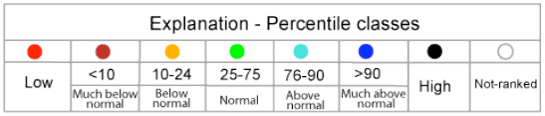


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for August 29th in the UCRB.

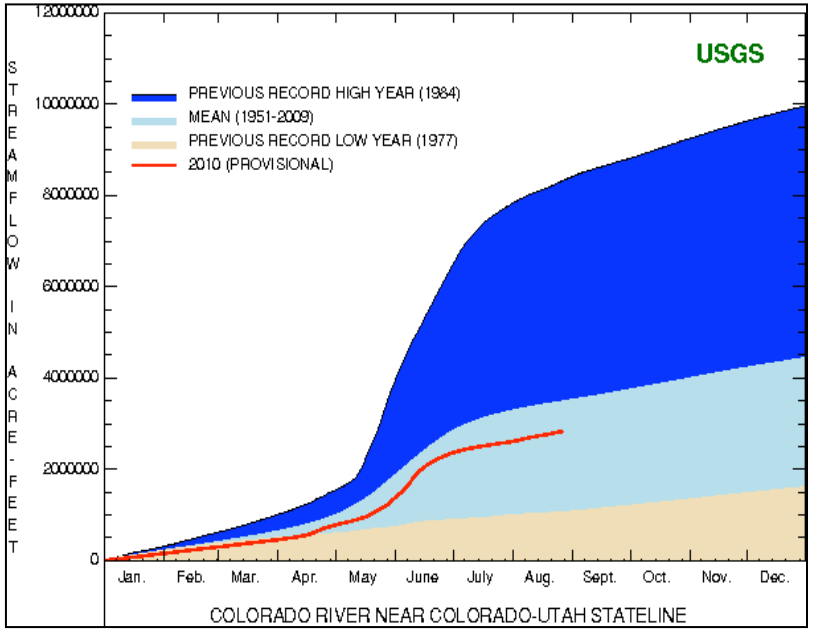


Fig. 6: USGS cumulative runoff for the 2010 calendar year on the Colorado River at the CO-UT state line as of August 30th.

Water Supply and Demand

Warmer than average temperatures prevailed over the eastern plains with near average temperatures in the UCRB for the month of August. Soil moisture remains in very good condition in the four-corners region and along the plains, with deteriorating soil conditions over the past week in northern Colorado around the North Platte and Yampa-White basins.

All of the major reservoirs in the UCRB continued to see decreases in lake levels for the last week of August. Both Lakes Granby and Dillon are still operating near capacity with only slight decreases in storage. Flaming Gorge, Blue Mesa, and Navajo Reservoirs all remain above average levels for this time of year. Lake Powell saw a decrease of 100 thousand acre feet over the past week, with releases dependent on demand for power generation. Levels at Lake Powell are currently around 75% of average and about 63% of maximum capacity.

Precipitation Forecast

Conditions across the UCRB could be dry for the next week, with only spotty showers in the forecast for the southern mountains and northeastern Colorado over the next few days showing up on the QPF fields from the Hydrologic Prediction Center (HPC). With the end of the monsoonal pattern and the absence of larger synoptic scale events passing through, the dryness could persist. This weekend, a trough is expected to develop in the west and bring chances for small amounts of precipitation to the southern and central mountains and possibly into eastern Utah. Next week, the UCRB will see a return to drier conditions.

Drought and Water Discussion

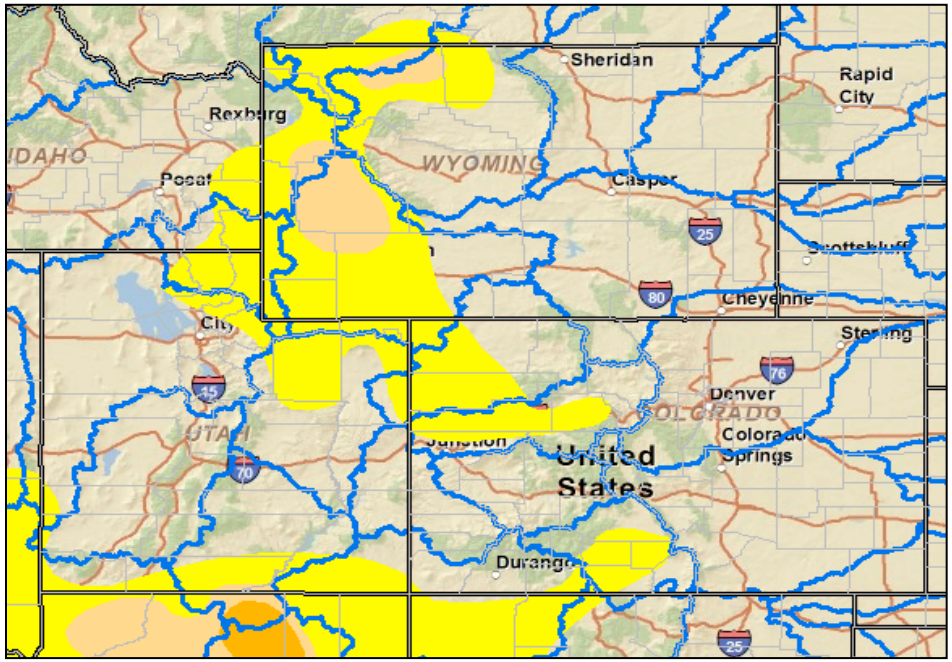
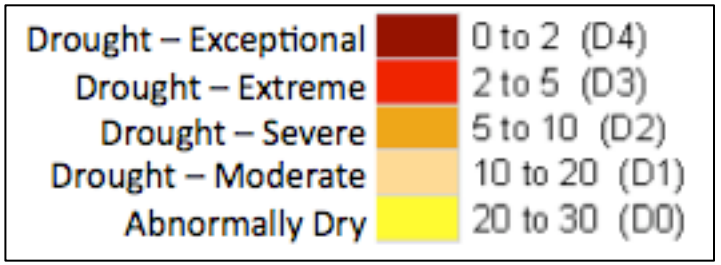


Fig. 7: August 17 release of U.S. Drought Monitor for the UCRB



Drought categories and
their associated percentiles

No local experts have given any suggestions for changes to the current U.S. Drought Monitor map (Fig. 7). The D0 currently seen in the UCRB is correlated with the locations of the Snotel sites with the lowest WYTD precipitation percentiles. None of the UCRB shows any short-term indicators of dryness according to the SPI, though most of the areas in D0 do show lower SPI values when evaluating longer-term (e.g. 12 – 24 month). The D0 areas in Wyoming and Utah are also correlated with lower streamflows, and drier conditions on the most recent VegDRI map match well with all of the D0 areas in the UCRB.

During the weekly webinar conference call on Tuesday morning (10 am MDT), status quo was recommended for the UCRB, without any objections.