

**Autumn
2012**



Weekly Climate, Water & Drought Assessment

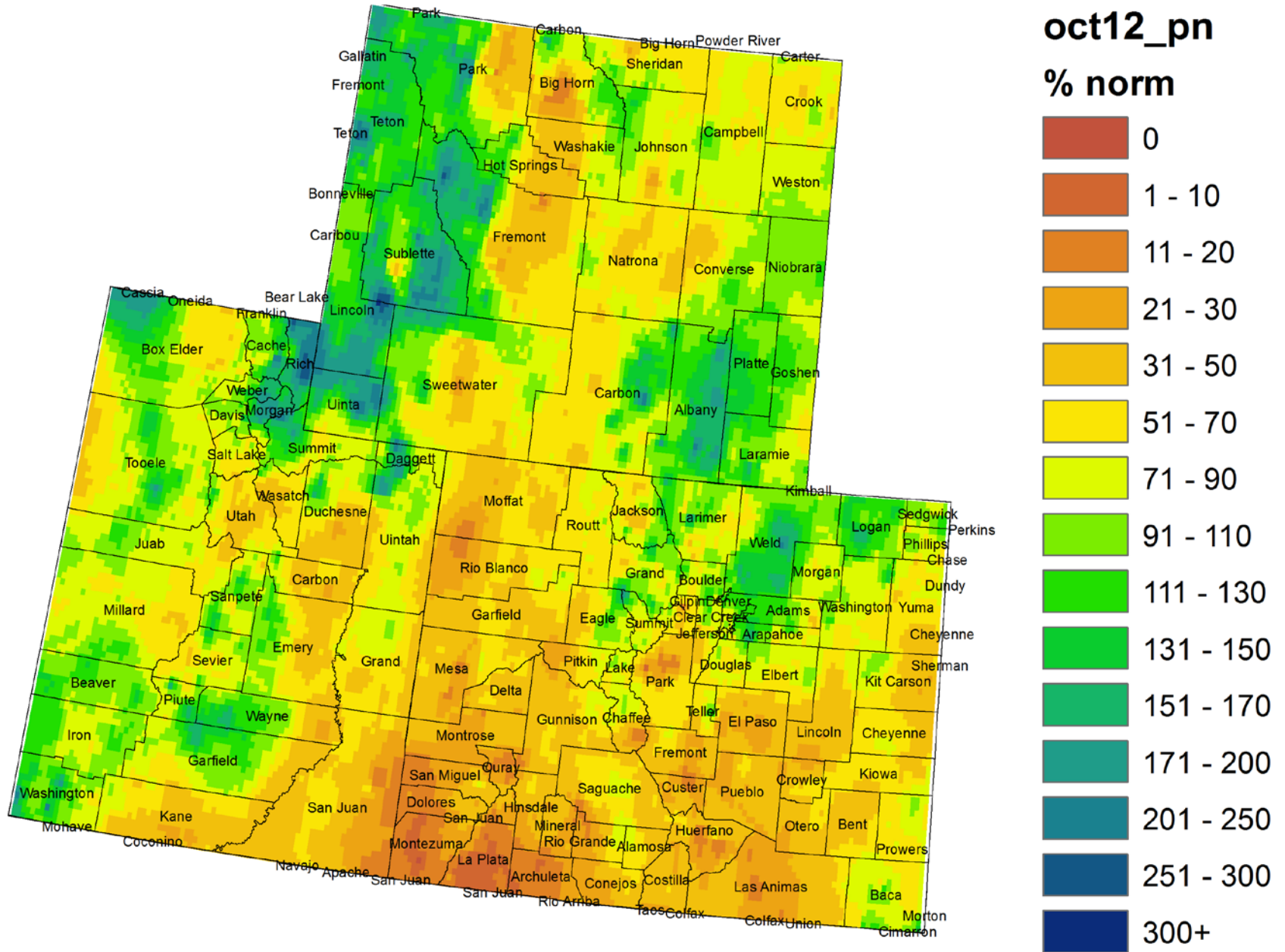
Today's Agenda

- Assessment of current water conditions
- Precipitation Forecast
- Recommendations for Drought Monitor

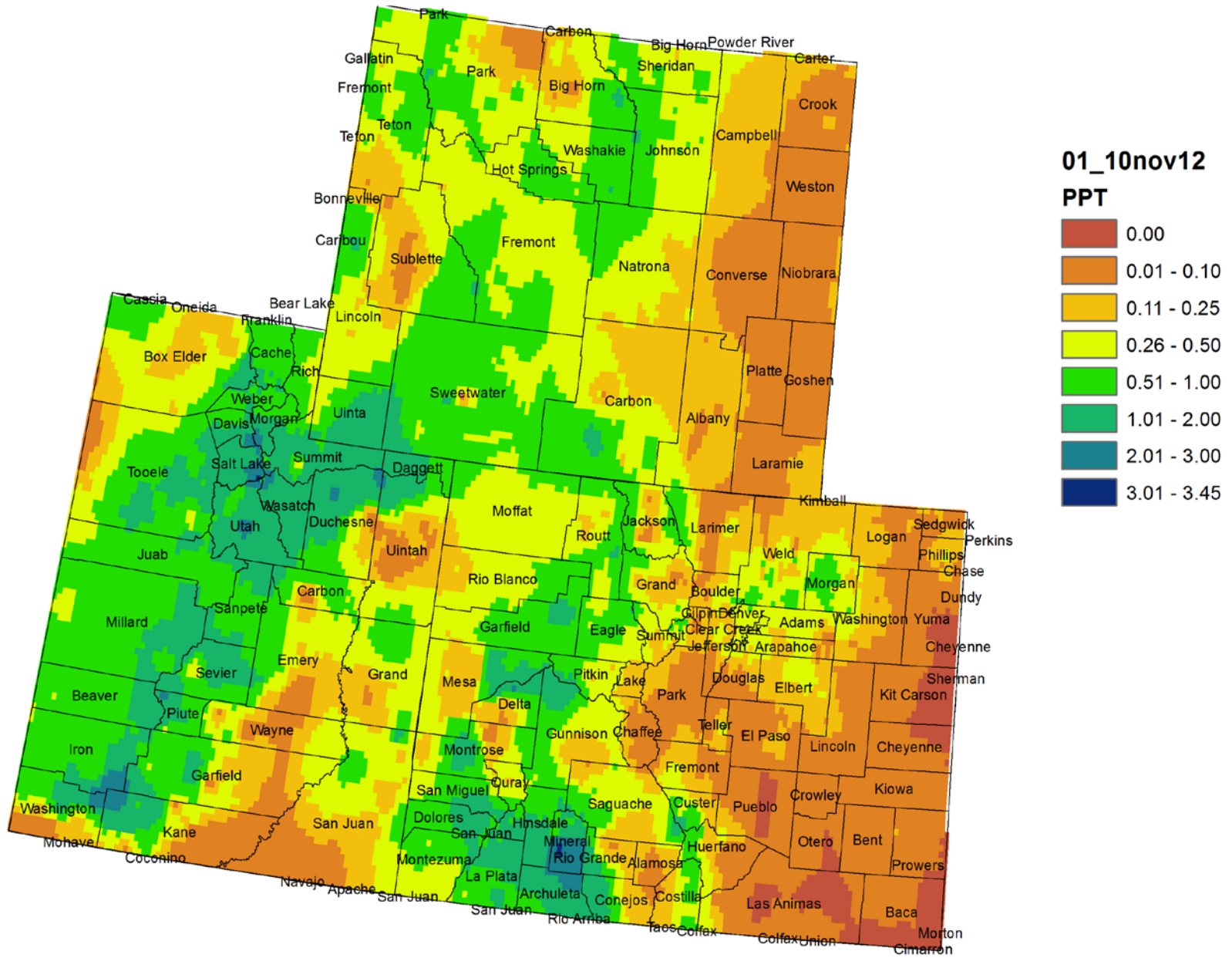
Precipitation/Snowpack Update



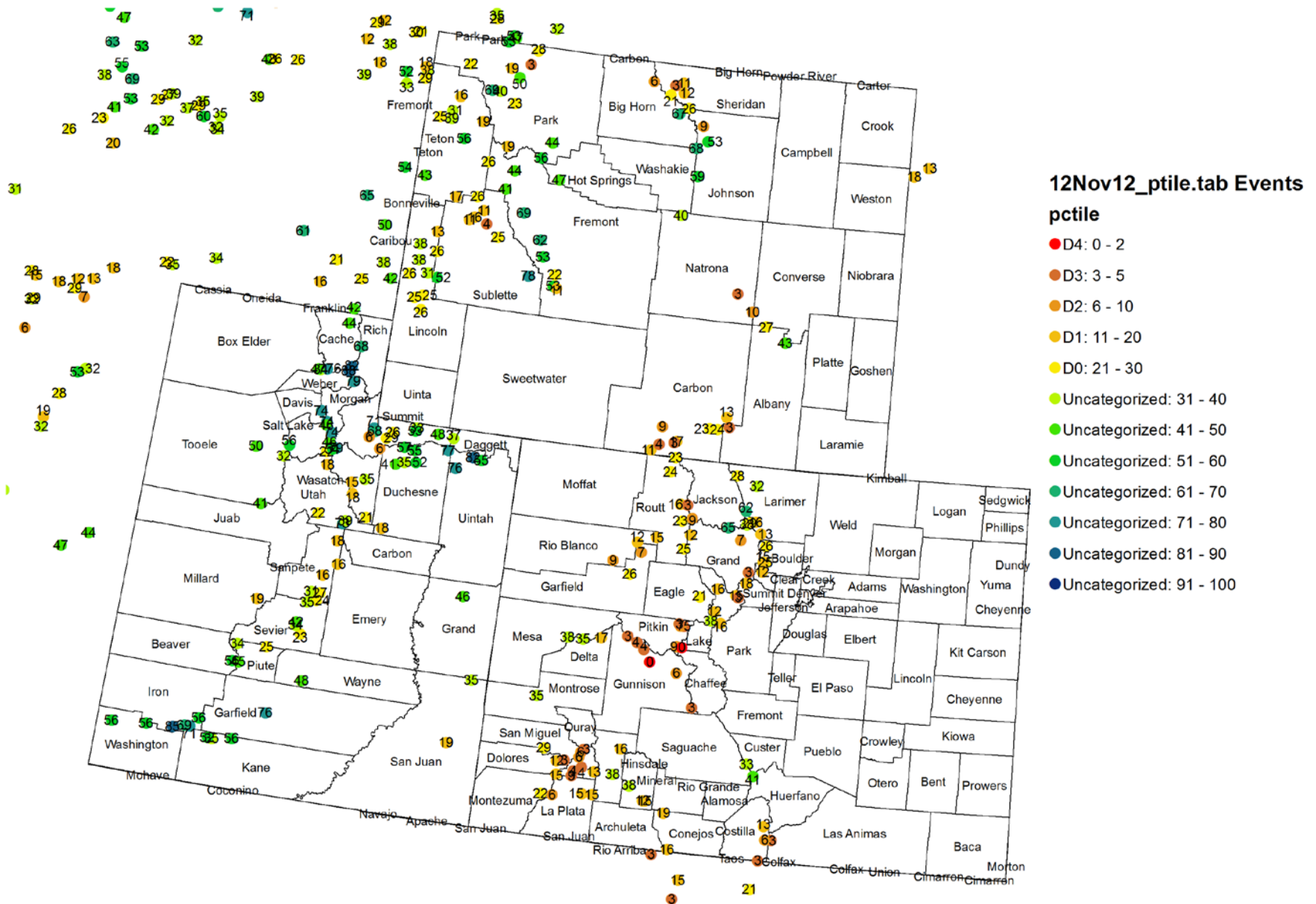
Colorado, Utah and Wyoming October 2012 Precipitation as Percentage of Normal



Colorado, Utah and Wyoming Month to Date Precipitation (in) 1 - 10 November 2012

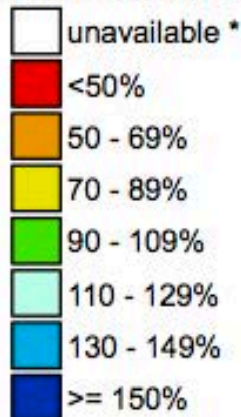


Snotel Water Year Precipitation Percentile Ranking for 12 November 2012 (Stations with 15+ years of data only)

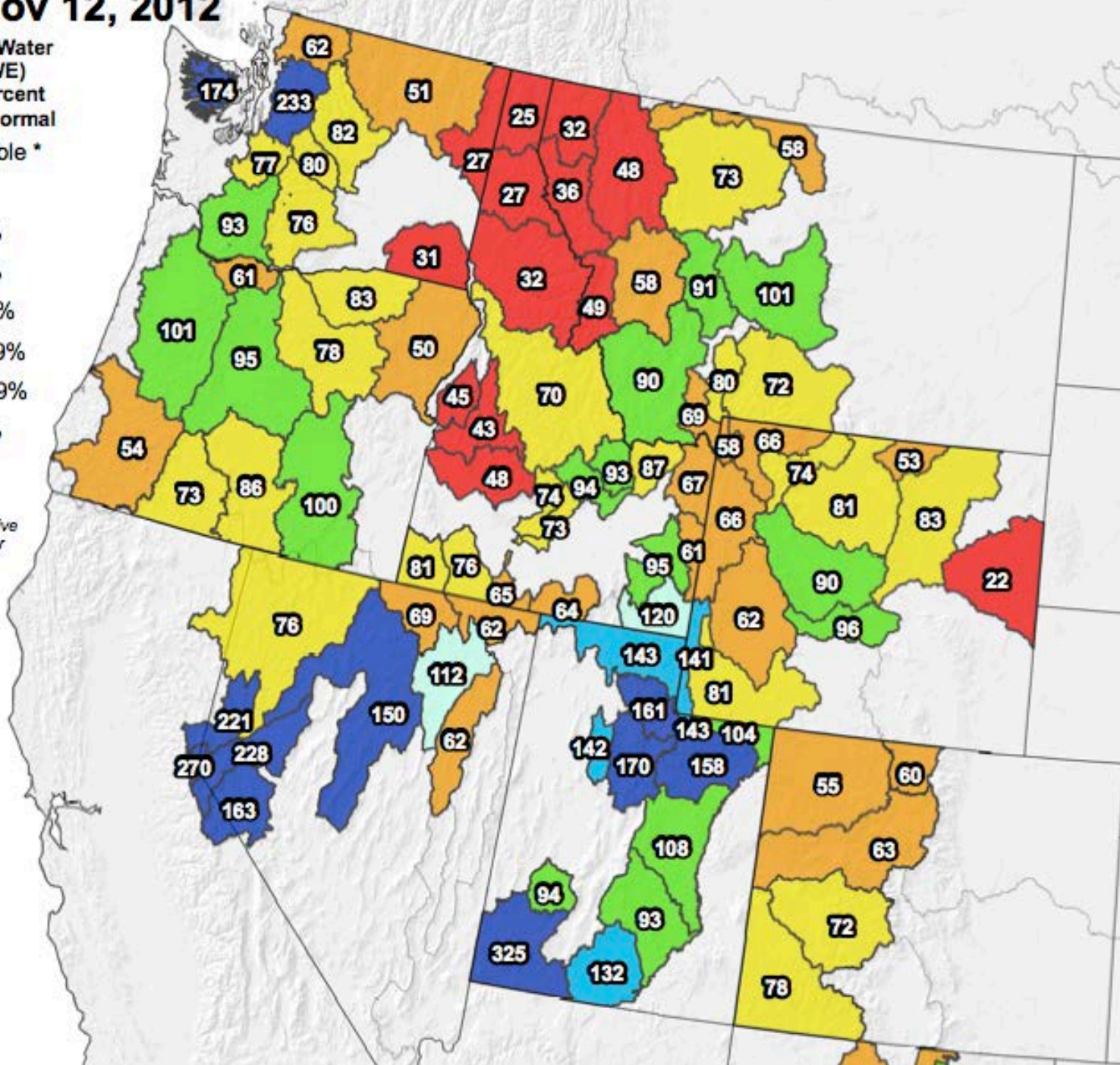


Nov 12, 2012

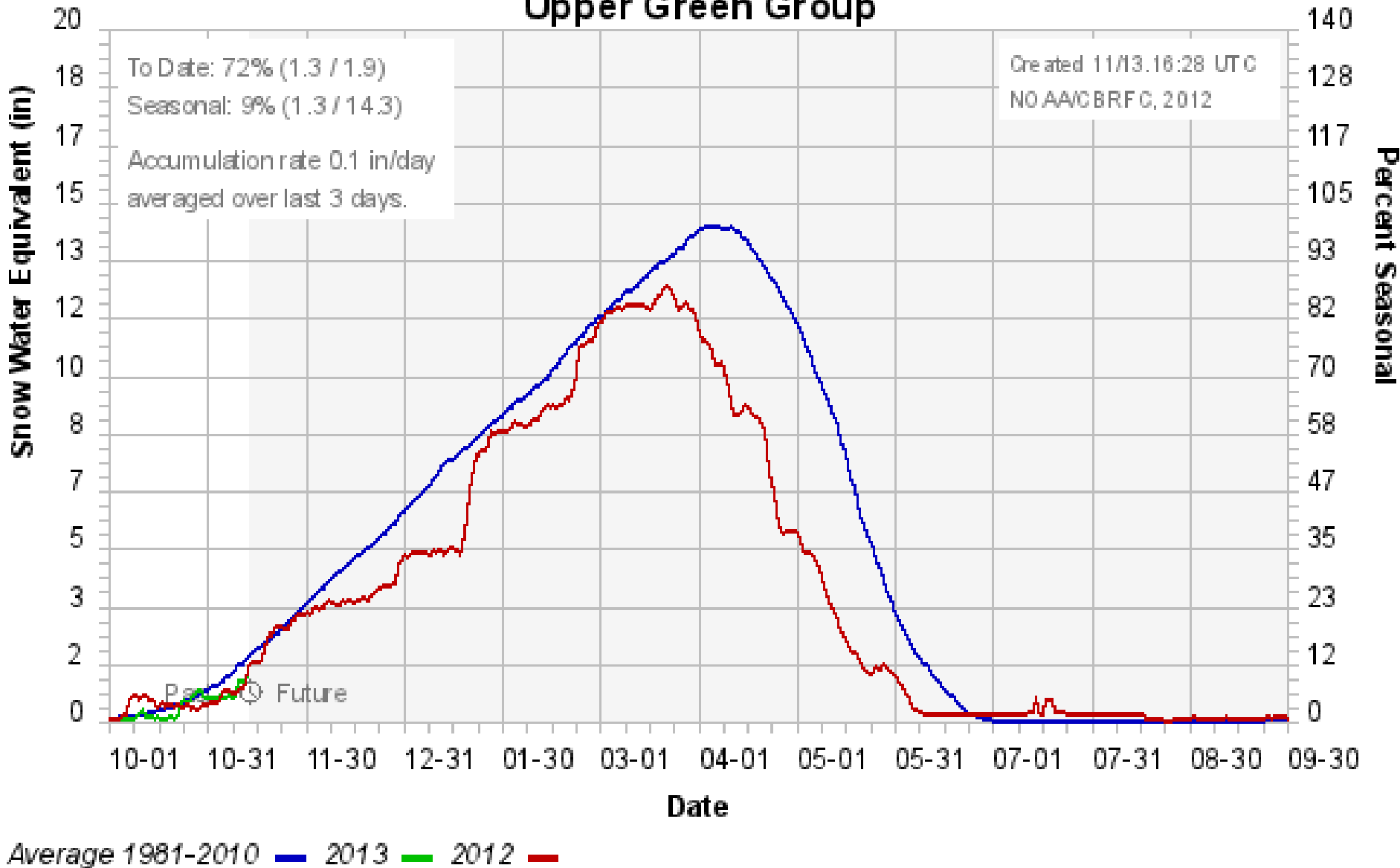
Current Snow Water Equivalent (SWE)
Basin-wide Percent
of 1971-2000 Normal



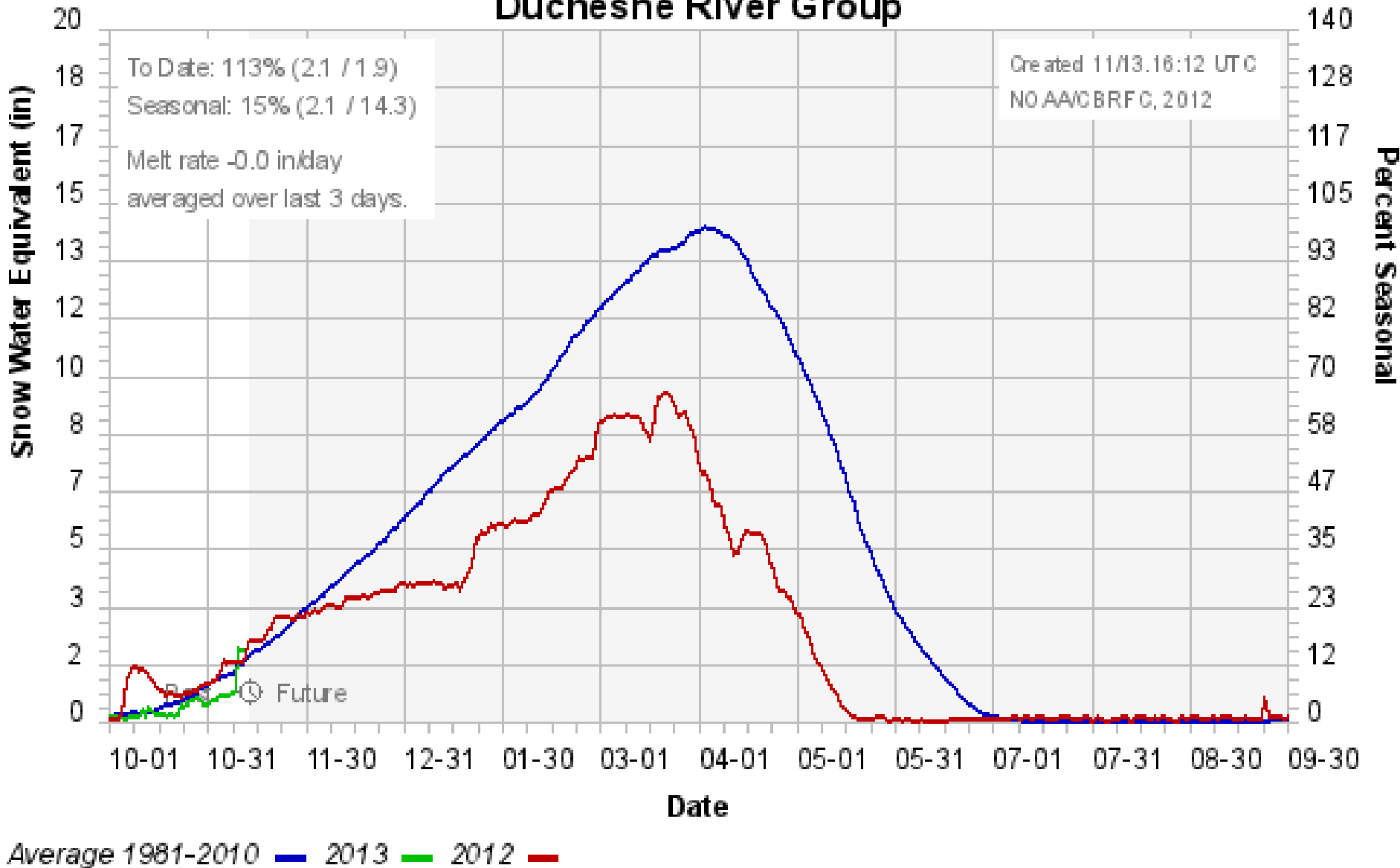
* Data unavailable at time of posting or measurement is not representative at this time of year



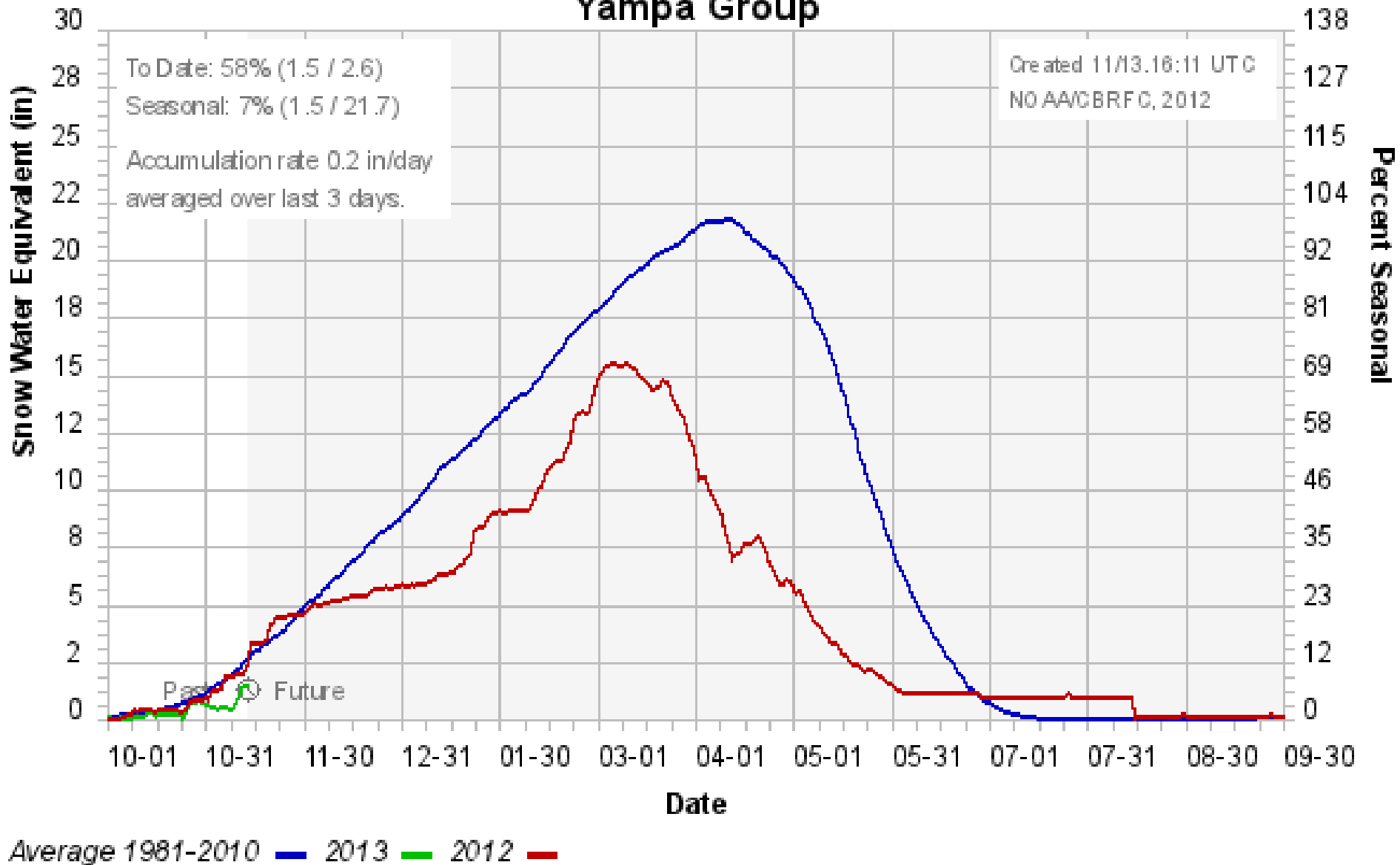
Colorado Basin River Forecast Center Upper Green Group



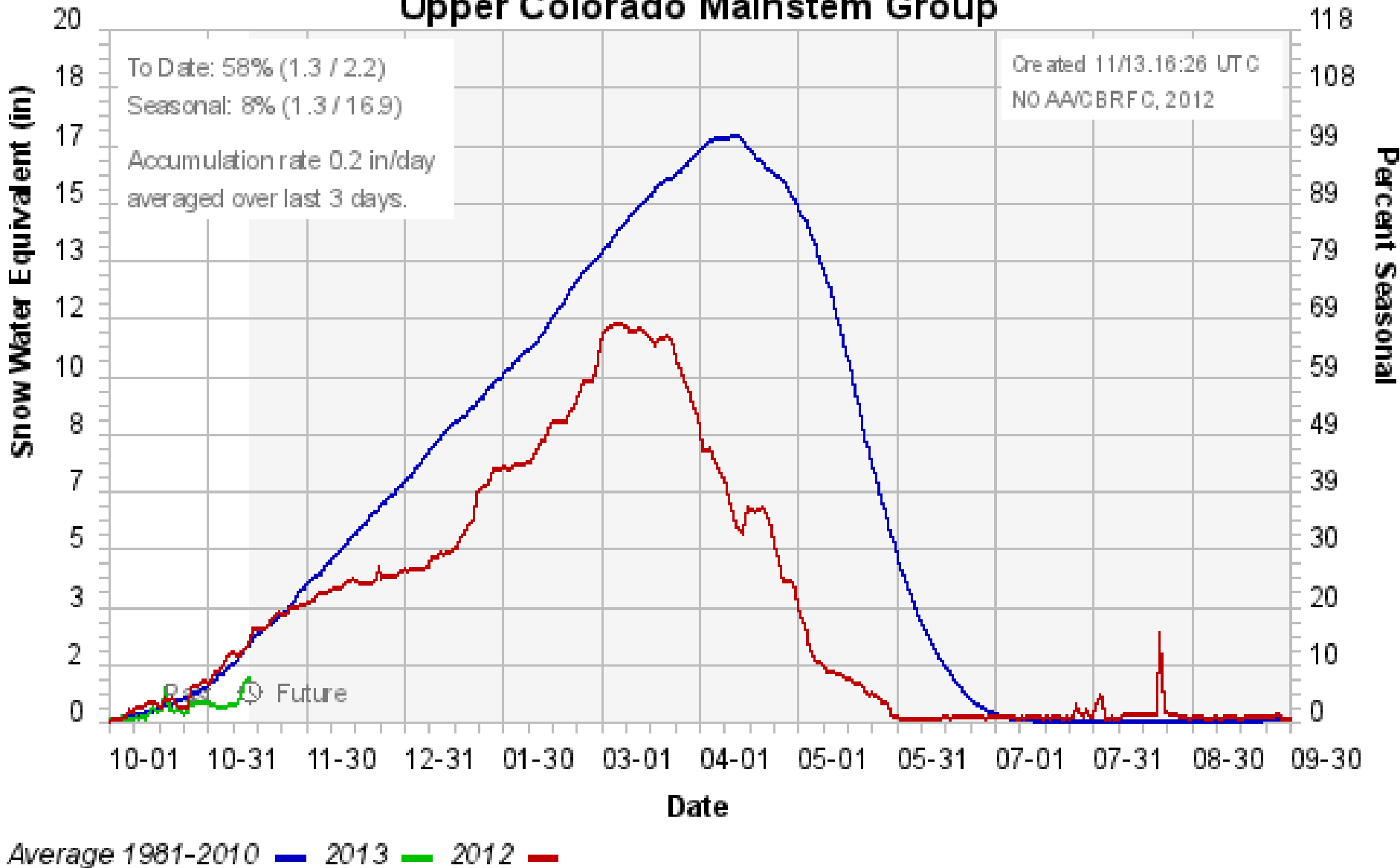
Colorado Basin River Forecast Center Duchesne River Group



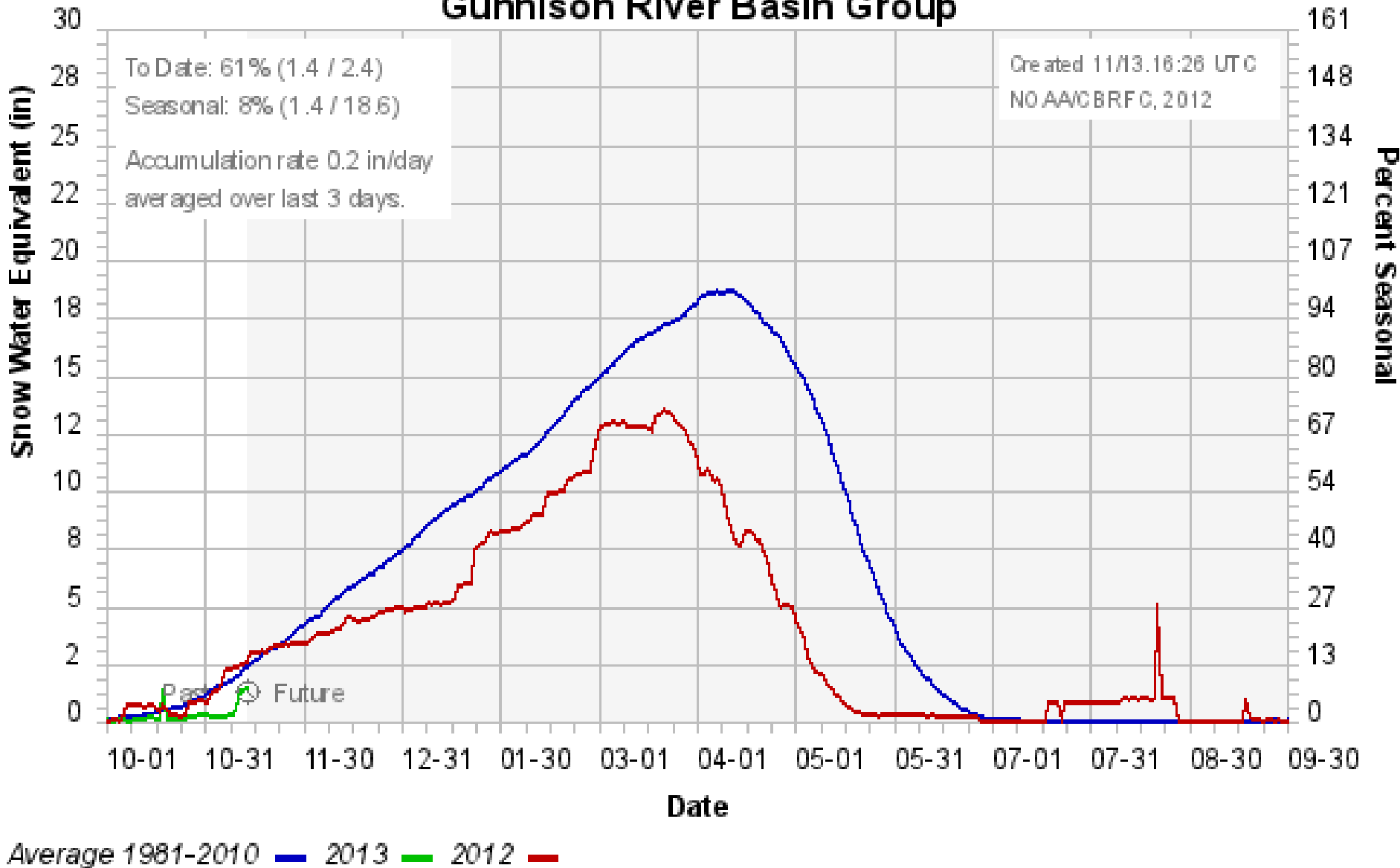
Colorado Basin River Forecast Center Yampa Group



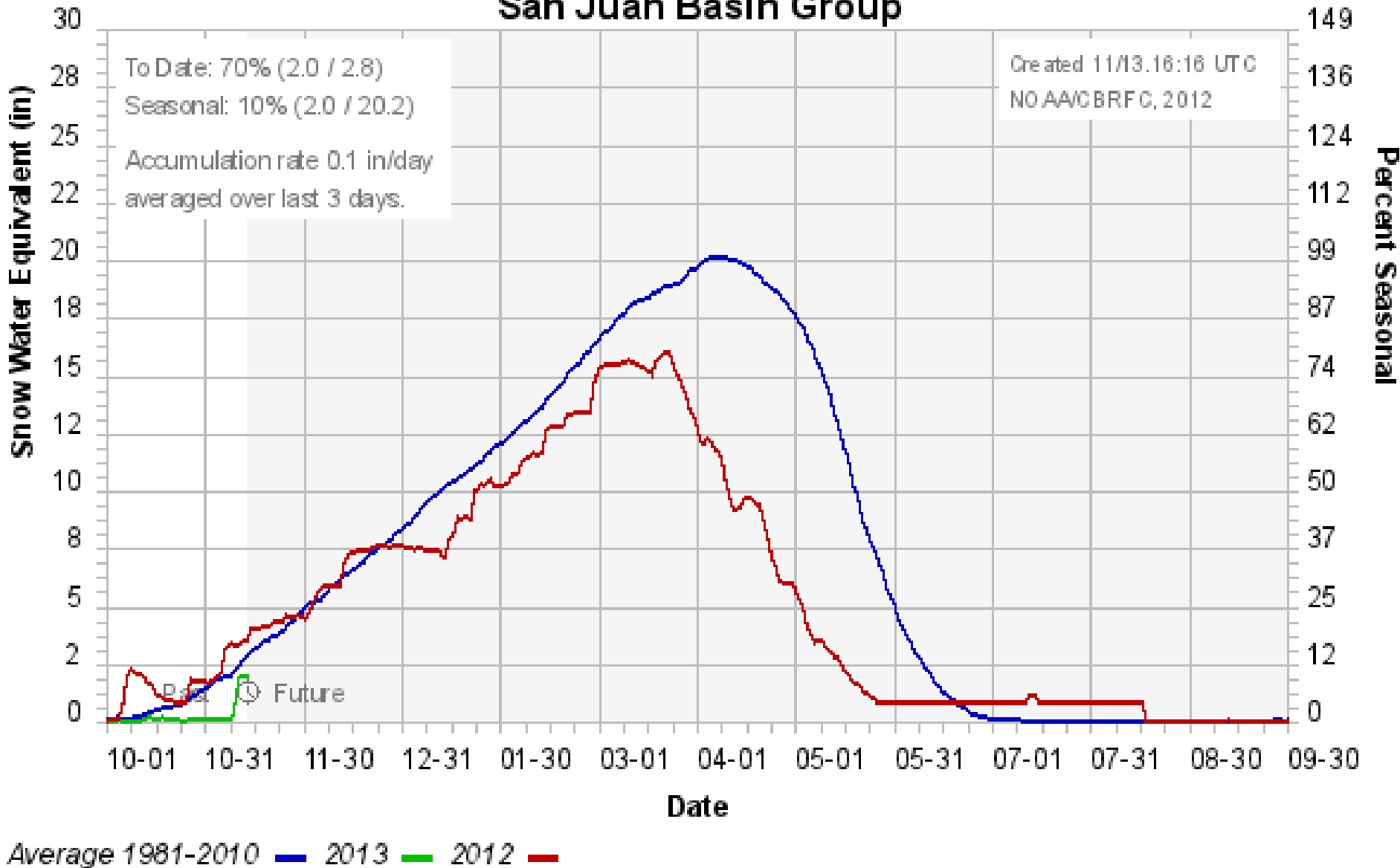
Colorado Basin River Forecast Center Upper Colorado Mainstem Group



Colorado Basin River Forecast Center Gunnison River Basin Group

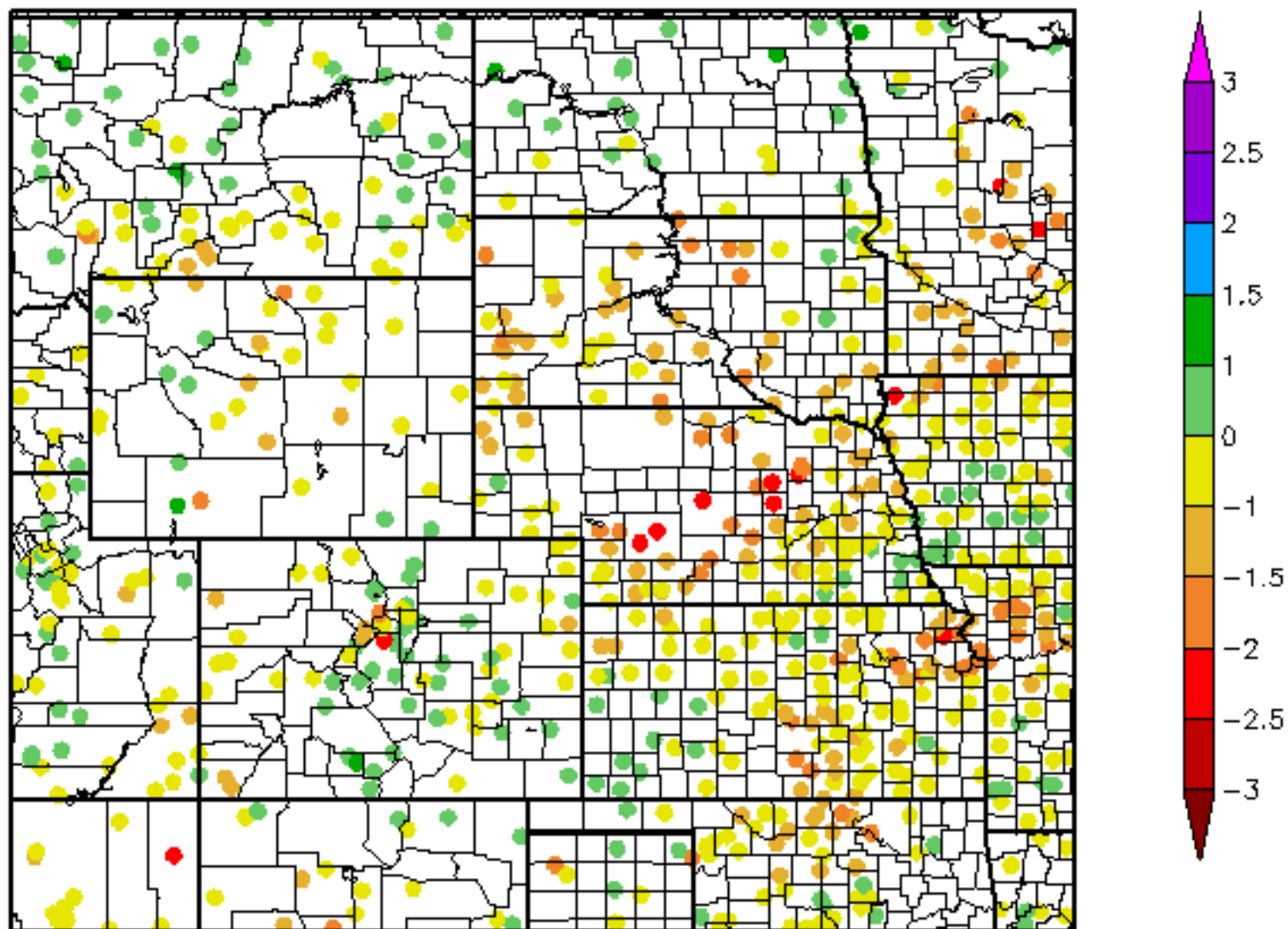


Colorado Basin River Forecast Center San Juan Basin Group



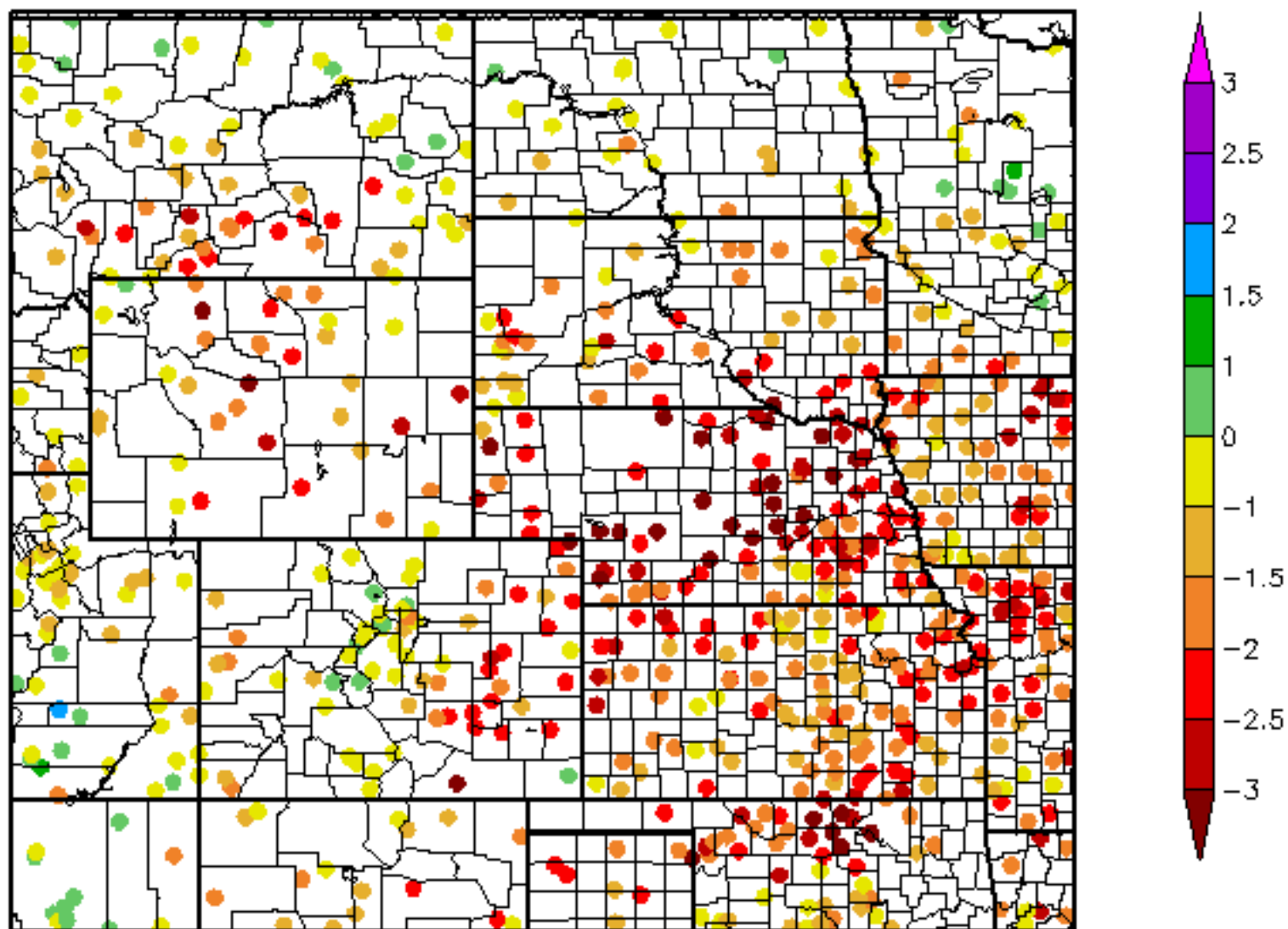
60 Day SPI

9/13/2012 - 11/11/2012



6 Month SPI

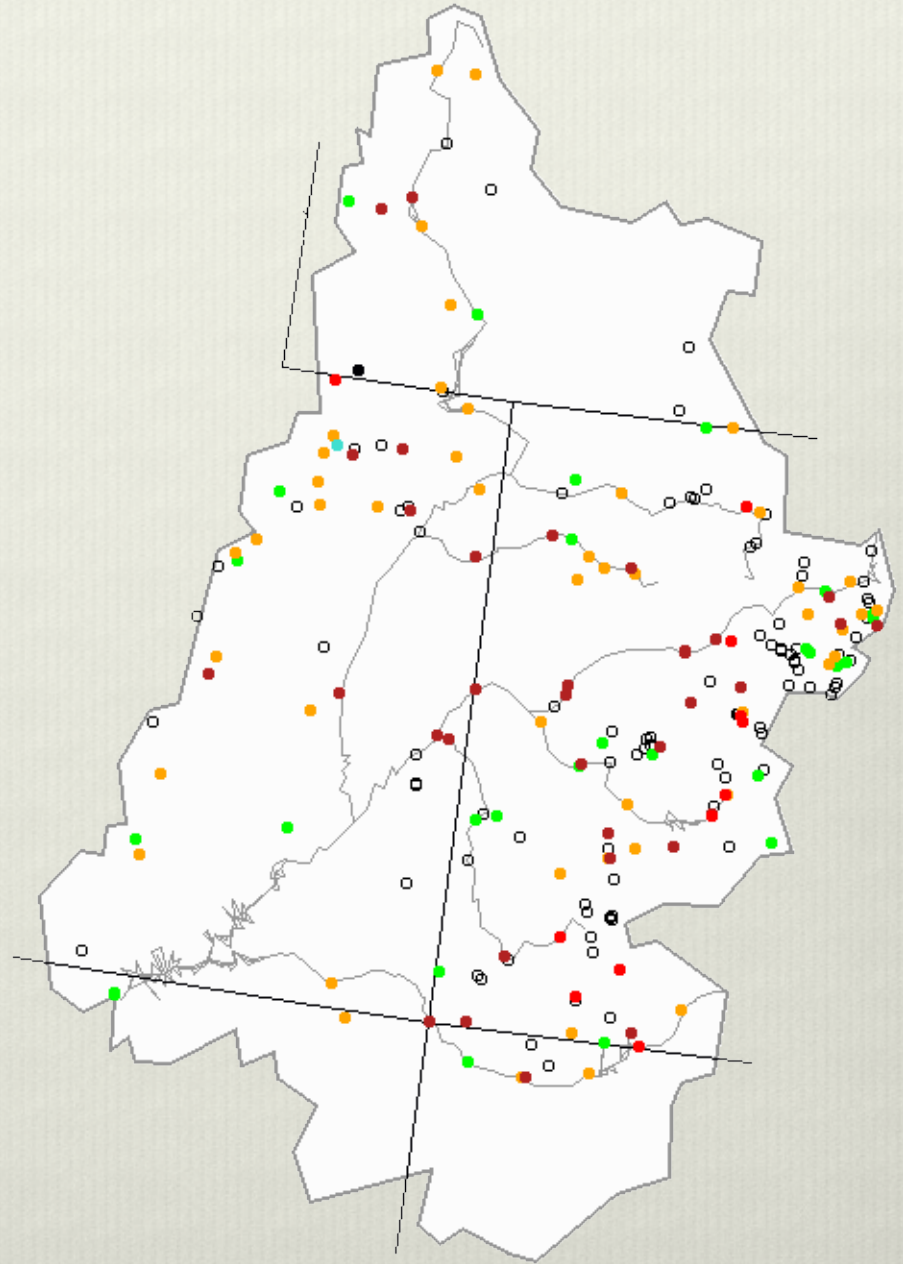
5/12/2012 - 11/11/2012



Streamflow Update



7-day average discharge compared to historical discharge for the day of the year (November 11th)

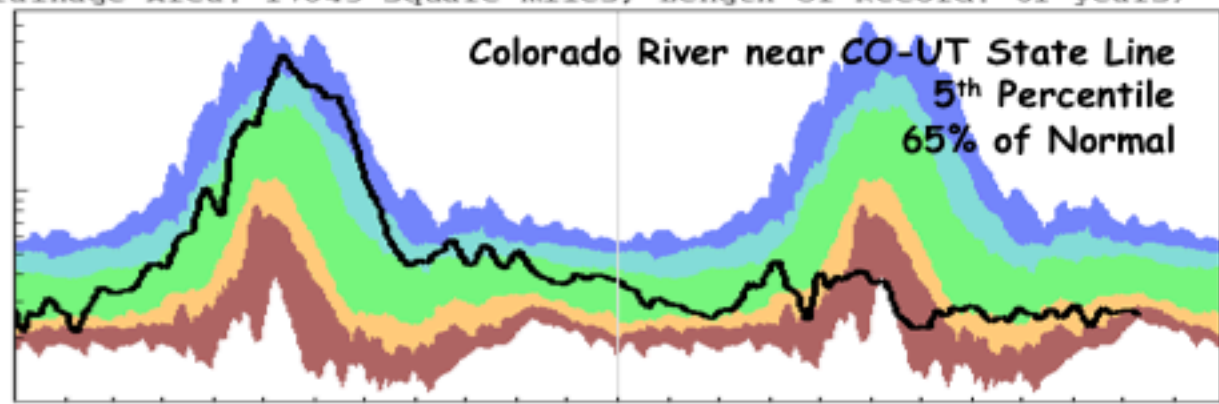


Explanation - Percentile classes

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

Duration hydrograph of 7-day average streamflow for USGS 09163500
 (Drainage Area: 17843 square miles, Length of Record: 61 years)

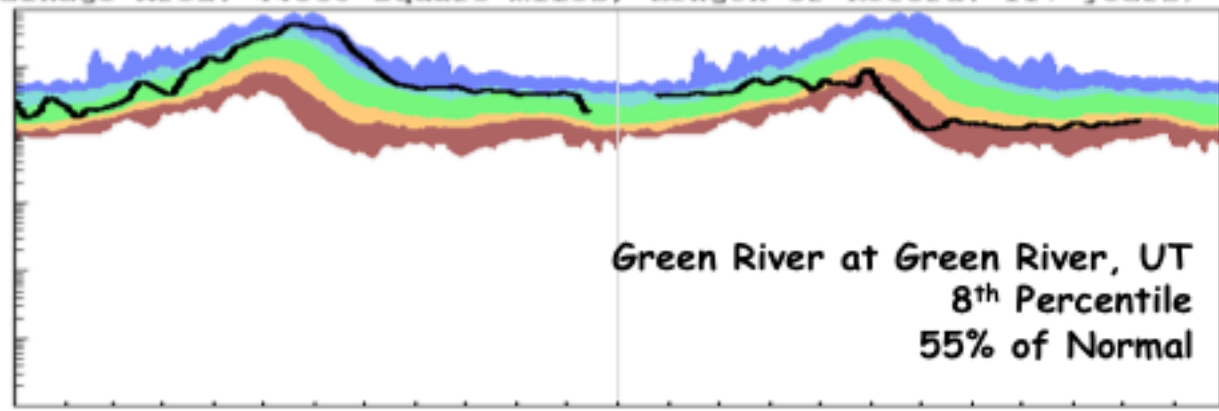
7-day average discharge, in cubic feet per second



Colorado River near CO-UT State Line
5th Percentile
65% of Normal

Duration hydrograph of 7-day average streamflow for USGS 09315000
 (Drainage Area: 44850 square miles, Length of Record: 117 years)

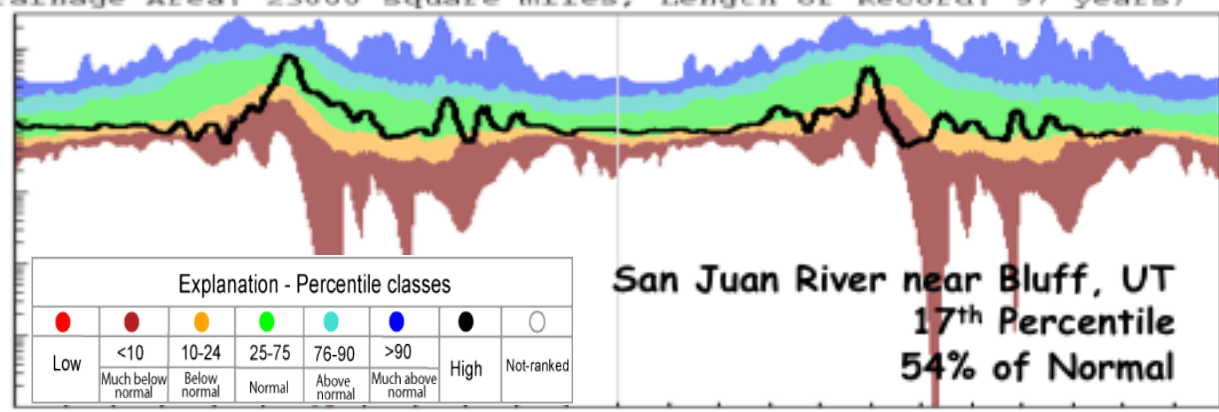
7-day average discharge, in cubic feet per second



Green River at Green River, UT
8th Percentile
55% of Normal

Duration hydrograph of 7-day average streamflow for USGS 09379500
 (Drainage Area: 23000 square miles, Length of Record: 97 years)

7-day average discharge, in cubic feet per second

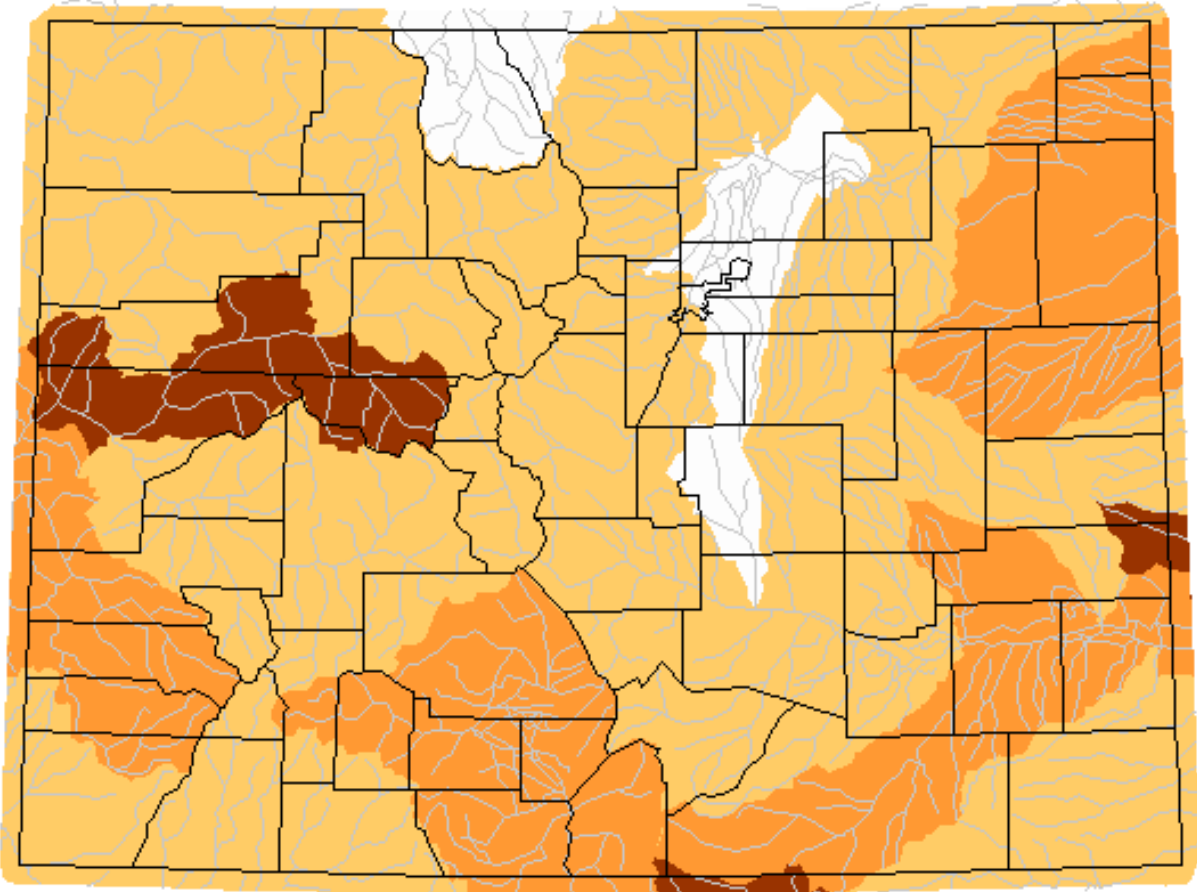


San Juan River near Bluff, UT
17th Percentile
54% of Normal

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		

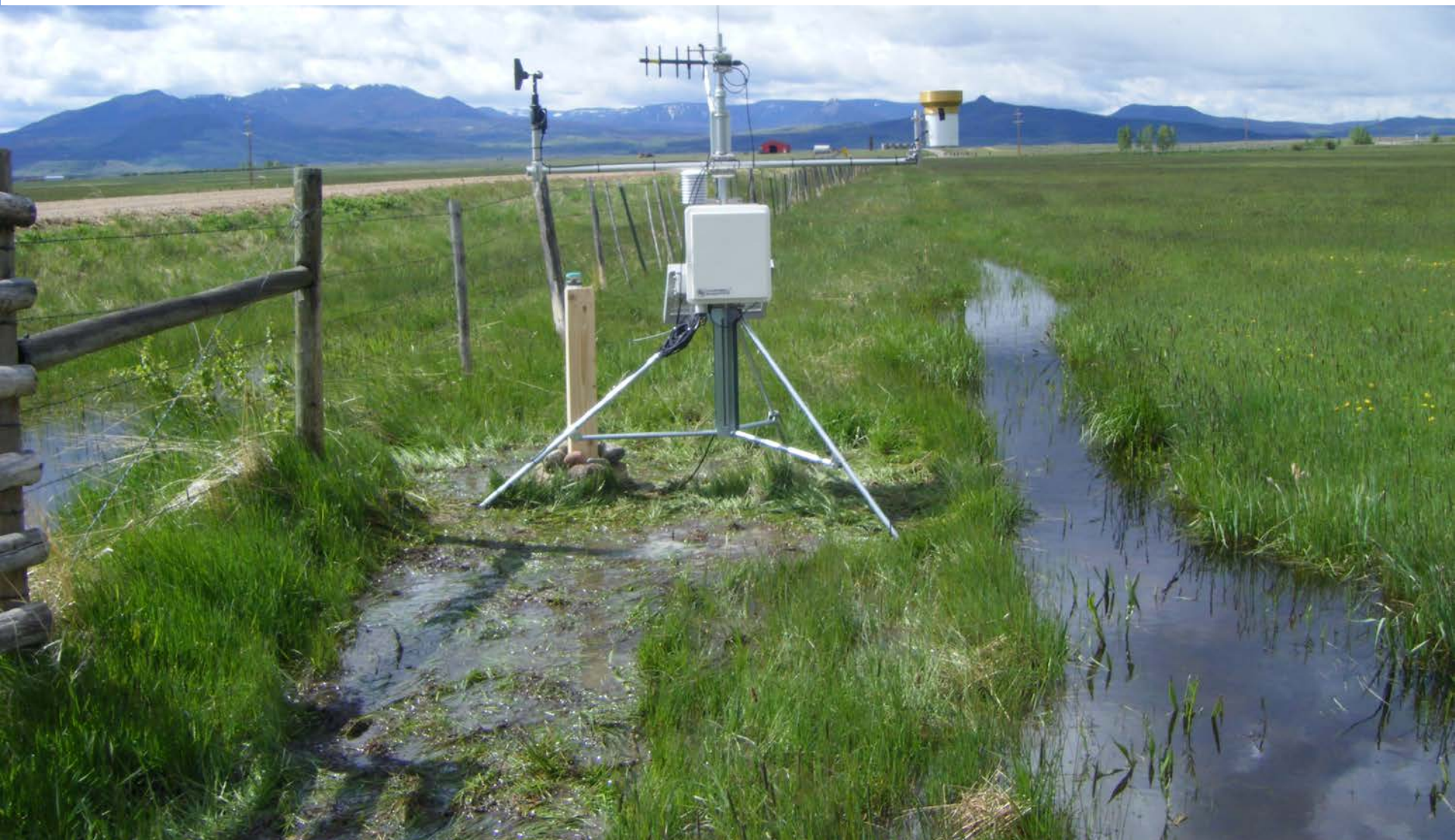
7-day average streamflow compared to historical streamflow

Sunday, November 11, 2012

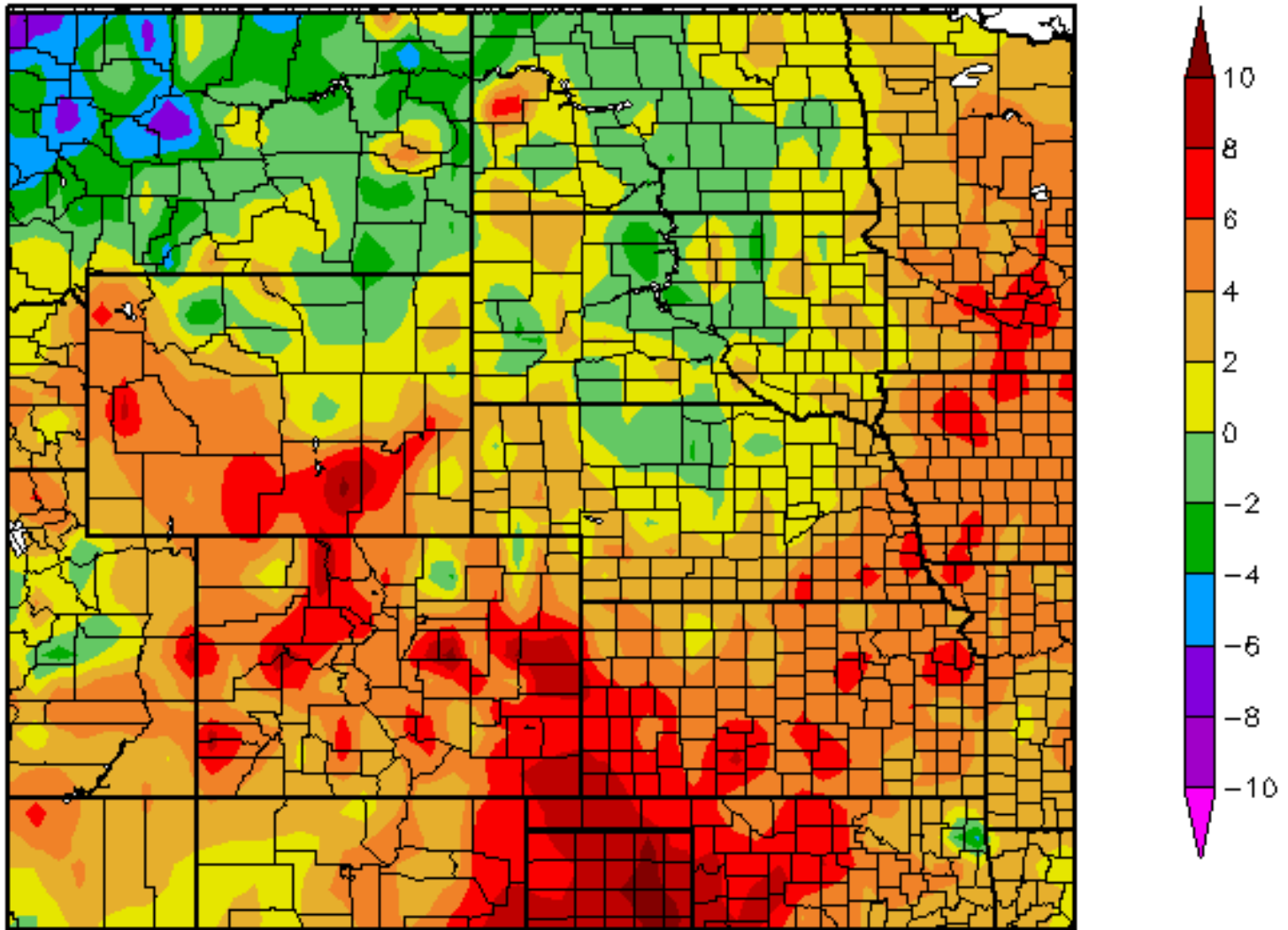


Explanation - Percentile classes			
Low	≤ 5	6-9	10-24
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal

Water Demand

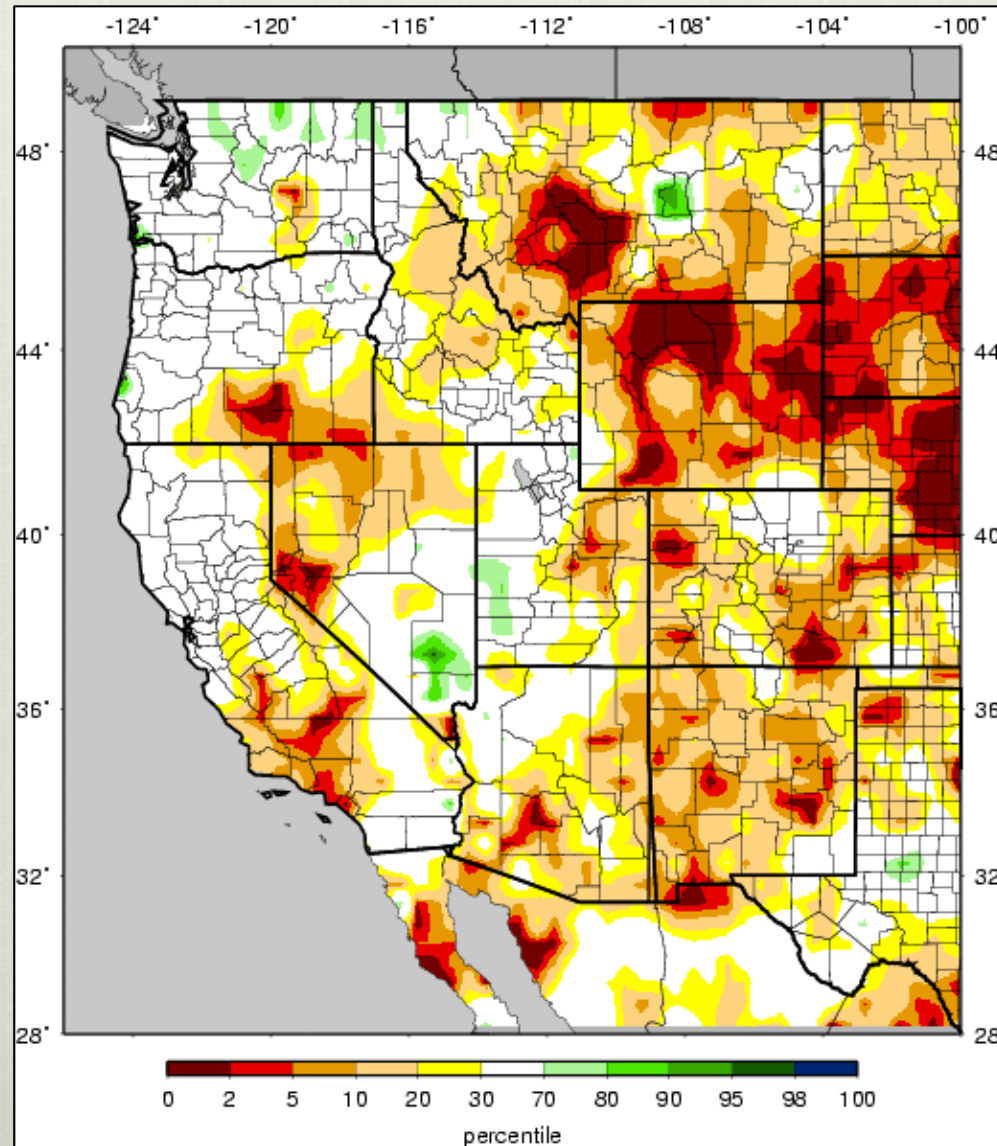


Temperature Departure from Normal 11/05/2012 – 11/11/2012



VIC Soil Moisture

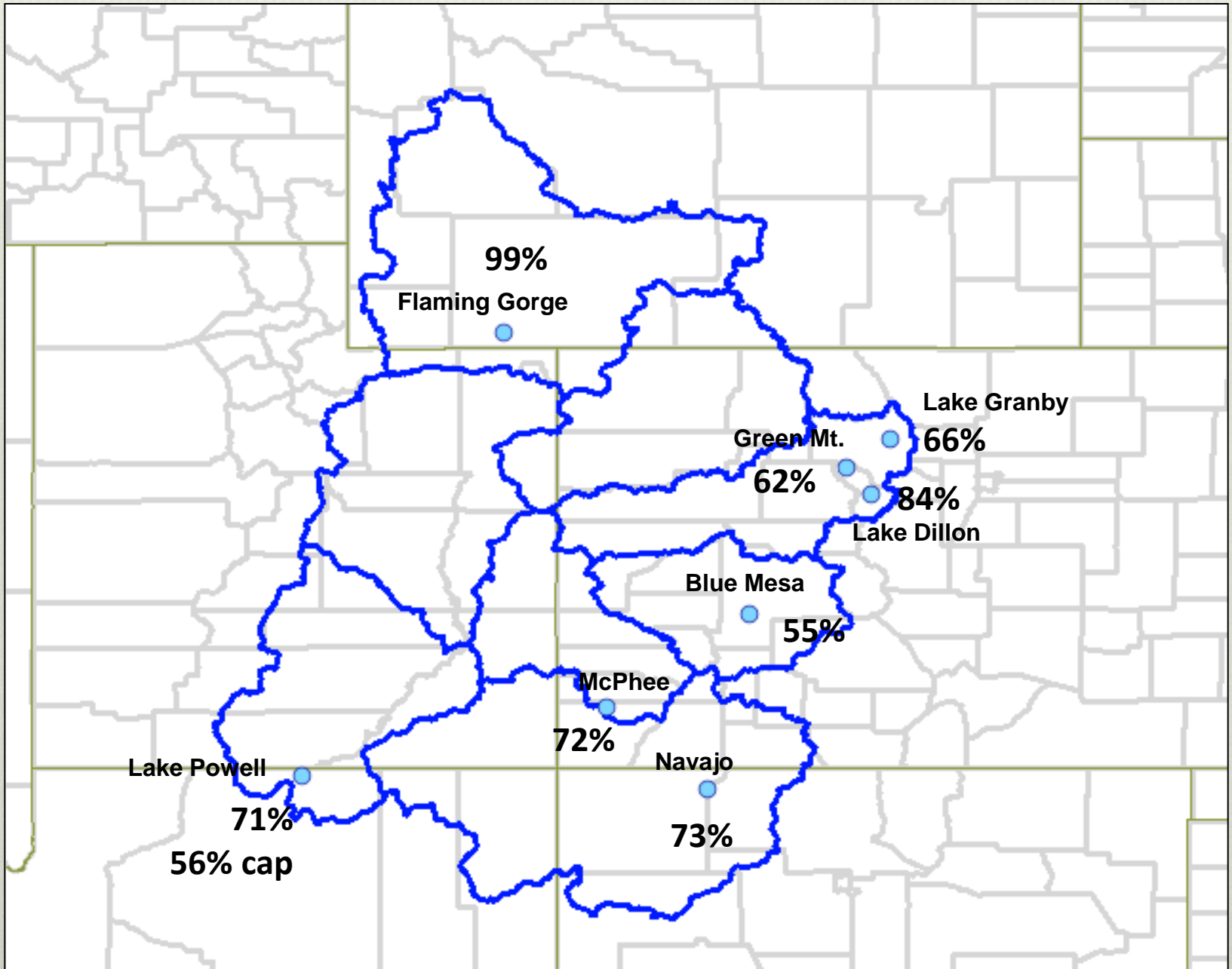
11 November 2012



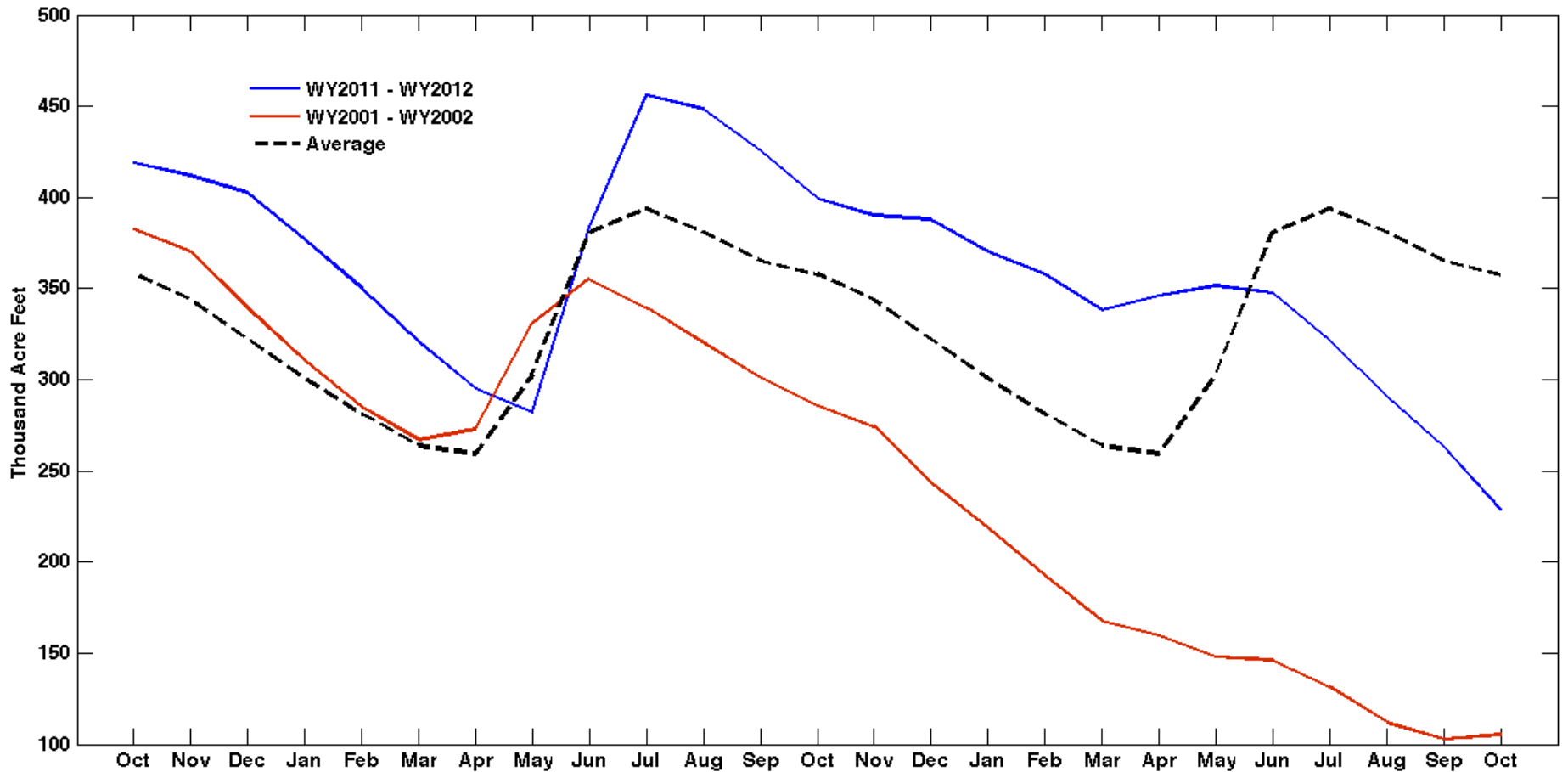
Reservoir Update



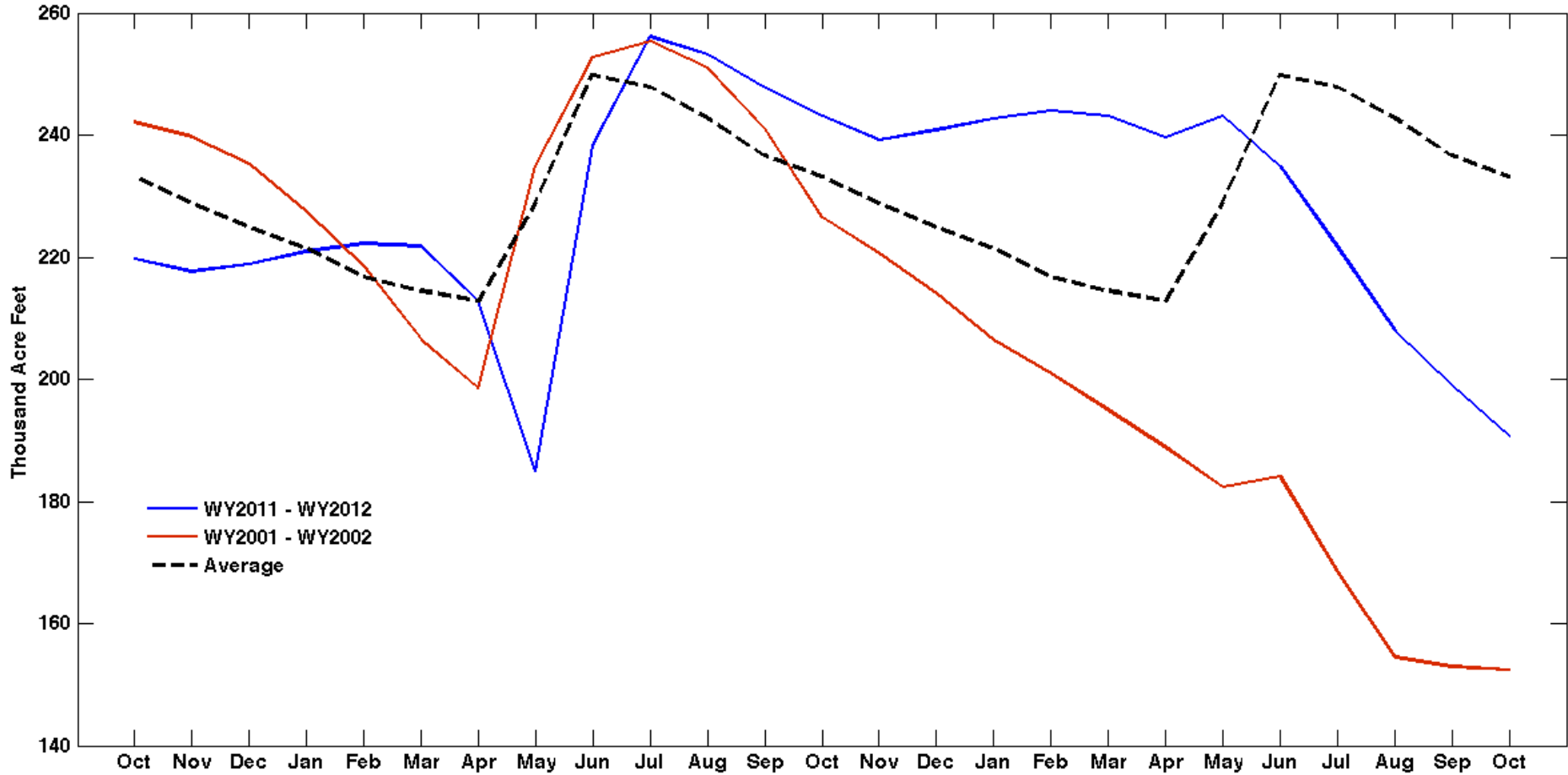
November Average Reservoir Storage Volume



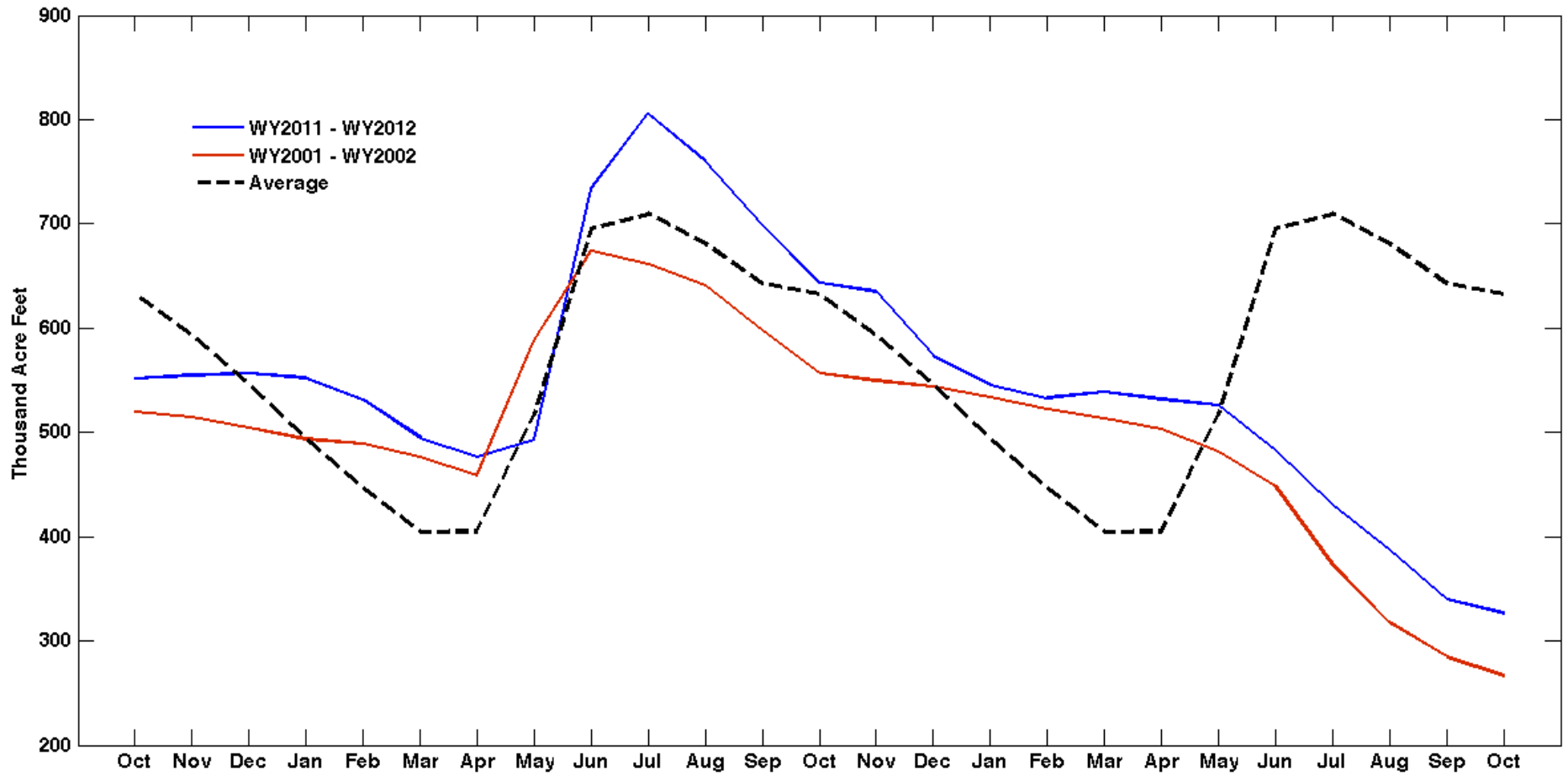
Lake Granby Volumes



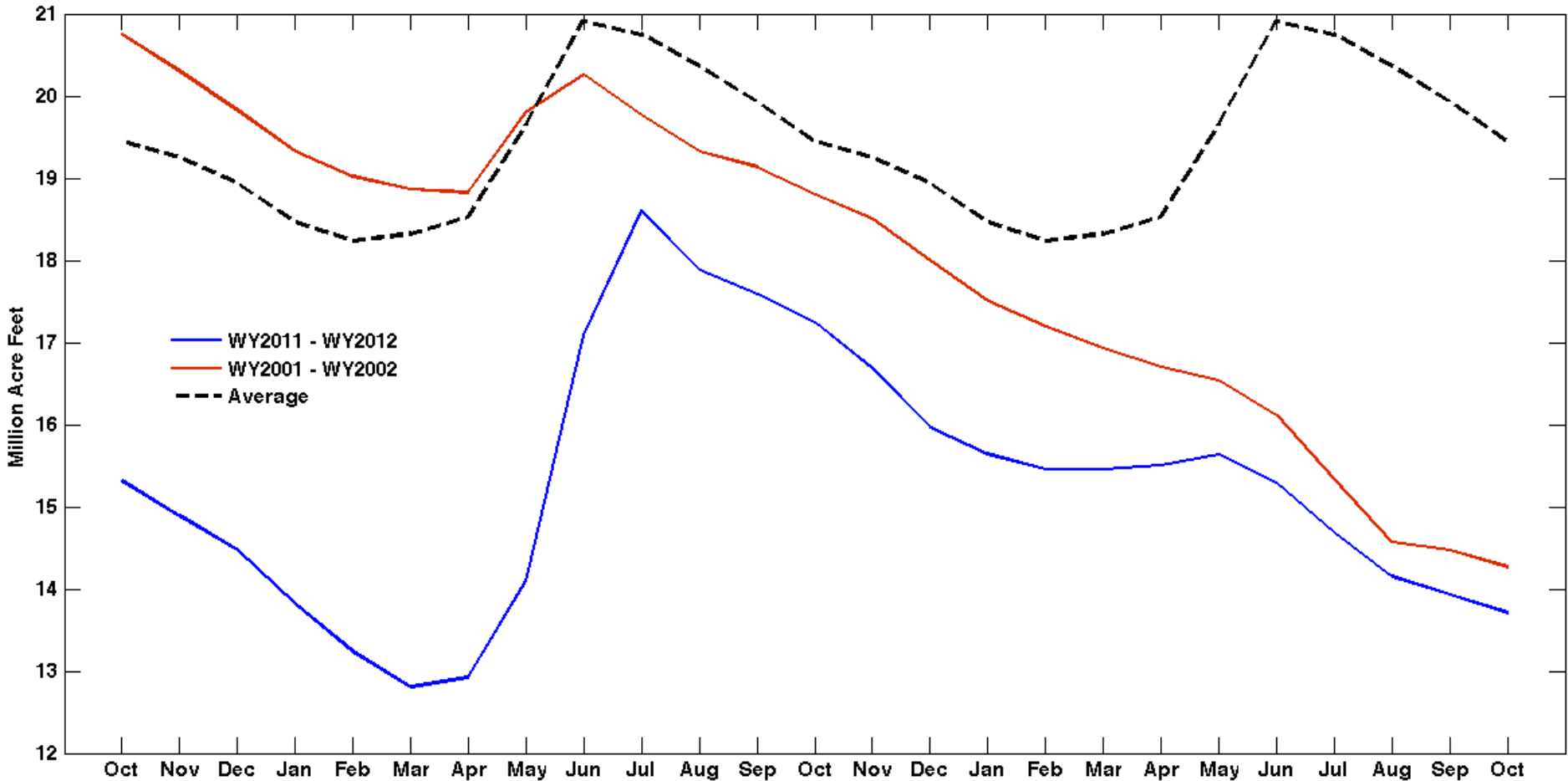
Dillon Reservoir Volumes



Blue Mesa Volumes

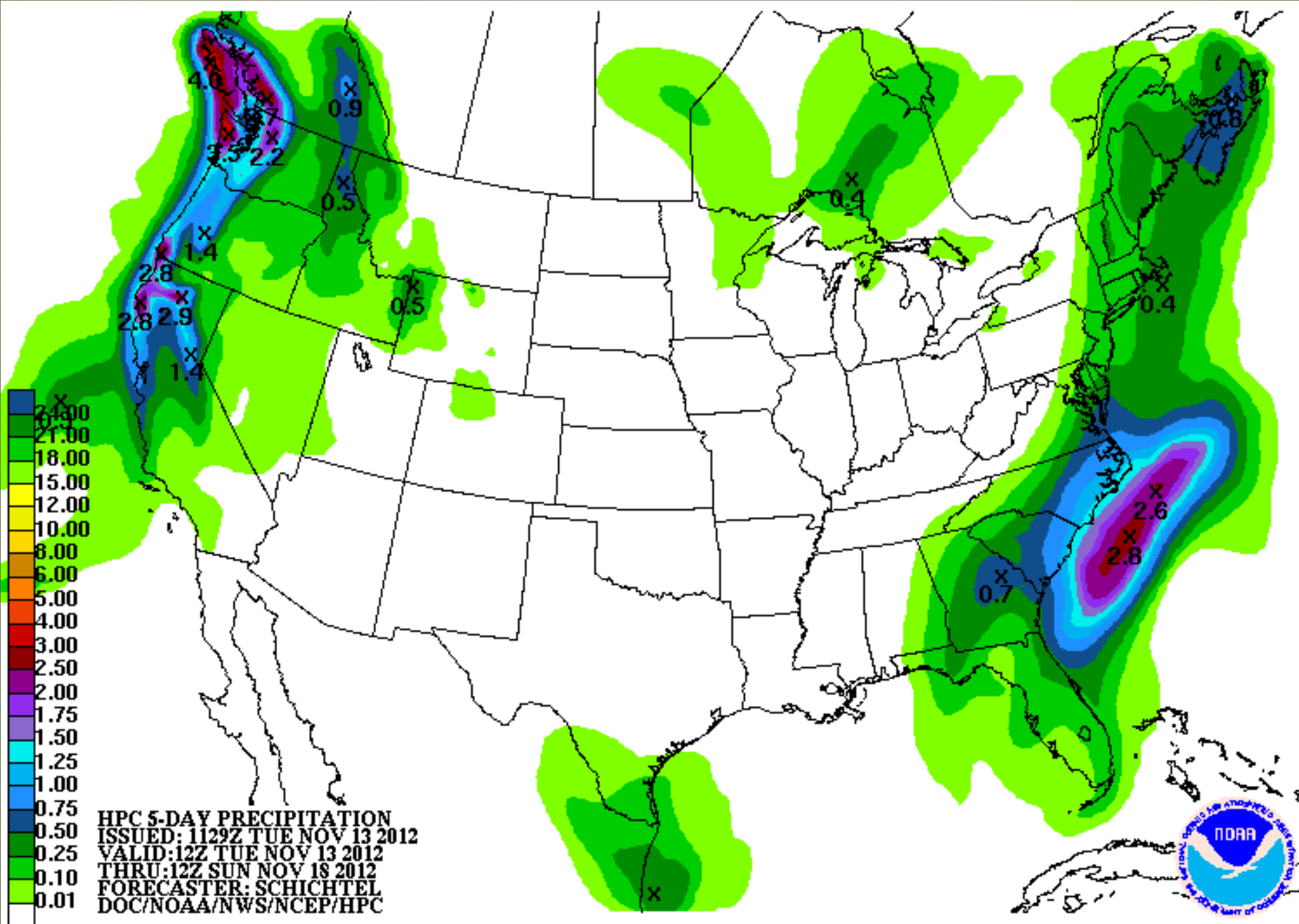


Lake Powell Volumes

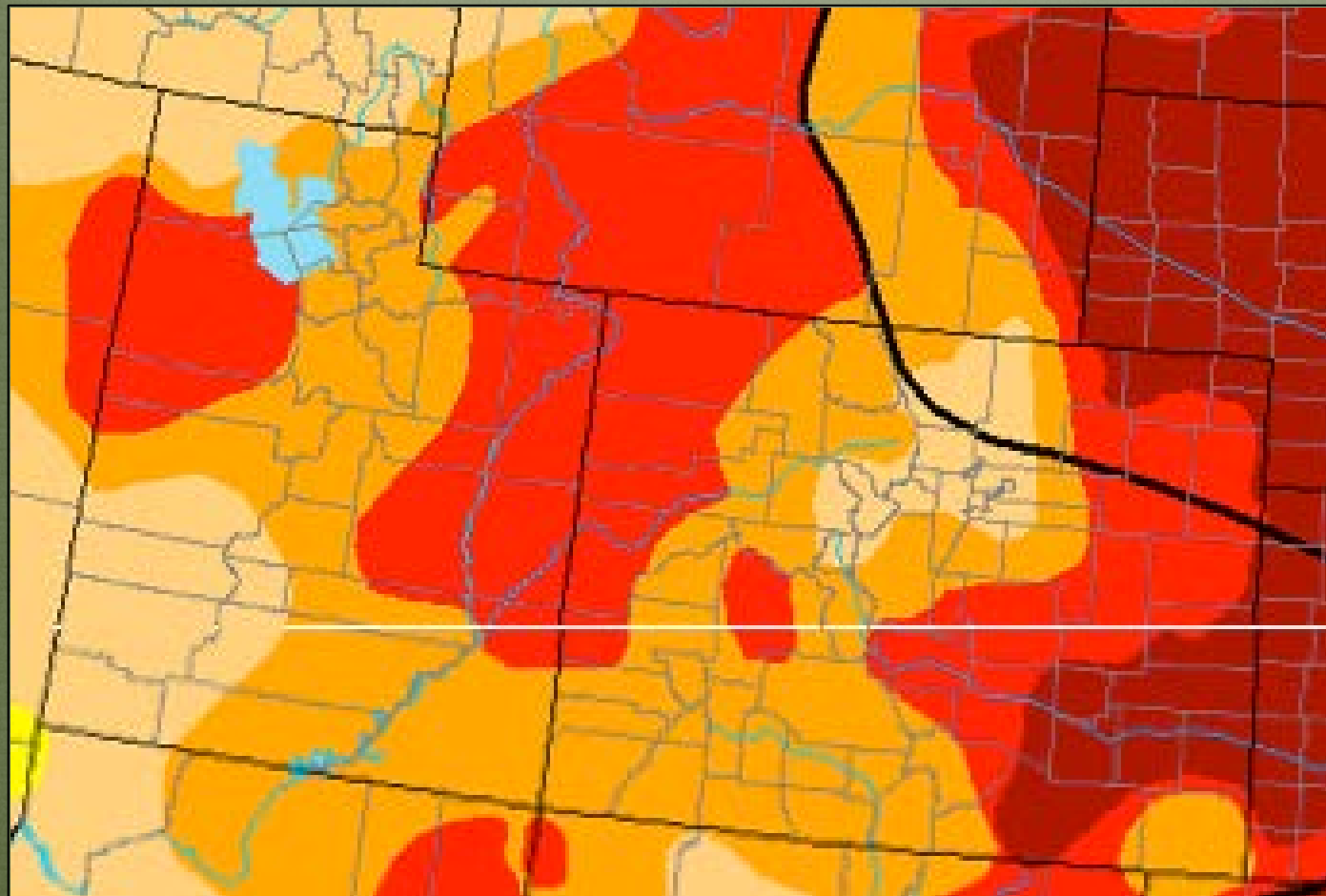


Precipitation Forecast





Recommendations



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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NIDIS - UPPER COLORADO BASIN PILOT PROJECT

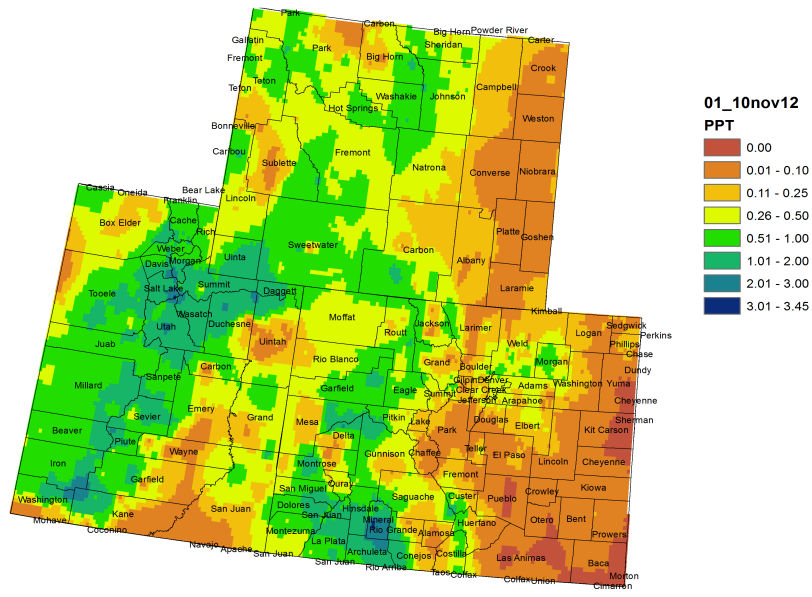
F o r m o r e i n f o r m a t i o n

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 13, 2012

Colorado, Utah and Wyoming Month to Date Precipitation (in)
1 - 10 November 2012



Snotel Water Year Precipitation Percentile Ranking for
12 November 2012 (Stations with 15+ years of data only)

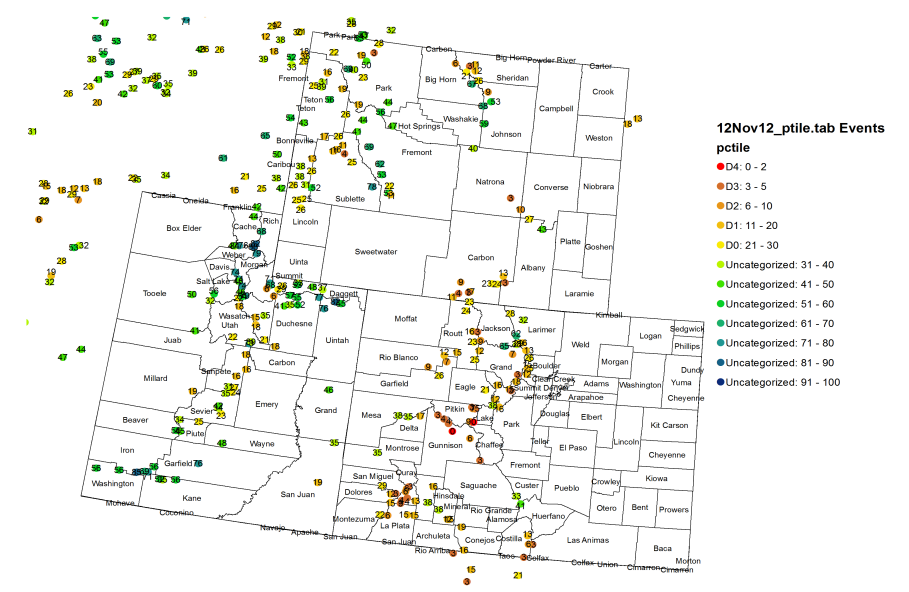


Fig. 1: November 1 – 10 precipitation in inches.

Fig. 2: SNOTEL water-year-to-date (WYTD) precipitation percentiles (50th is median, 30th is upper range of D0) as of November 12th.

Precipitation

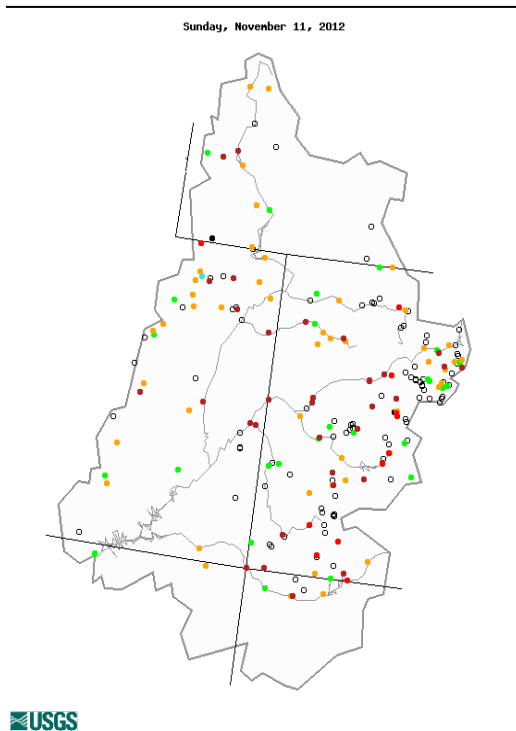
For the month of October, most of the Upper Colorado River Basin (UCRB) received below average precipitation. Some isolated areas in the northern CO mountains received near average precipitation, and northern Utah and western Wyoming received near to above average precipitation. East of the UCRB, northeast CO received near average precipitation, while southeast CO and the San Luis Valley received below average precipitation last month. Since the beginning of November, northeast UT and the San Juans in southwest CO received beneficial moisture, with accumulations ranging between .50 and 2 inches (Fig. 1). The lower elevations in the basin have received less than .50 inches, and most areas in eastern CO received less than .25 inches since the beginning of the month.

Water-year-to-date (WYTD), many of the SNOTEL sites in western CO below the 30th percentile, with the lowest percentiles around the Gunnison basin (Fig. 2). Many of the SNOTEL sites in the Uintahs and northeast UT are above the 50th percentile, and percentiles in the Upper Green range between the teens and 30s. Accumulated snowpack is slightly below average for WY and CO and near to above average for eastern UT.

Streamflow

As of November 11th, about 25% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 3). About 37% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and only one gage recorded above normal flows. Much below normal flows are found scattered throughout the basin, and low flows are concentrated around headwaters regions in western CO (particularly around the Gunnison and Roaring Fork rivers). It is important to note that with baseflows dominating during this time of year, small changes in flows can lead to large percentile changes.

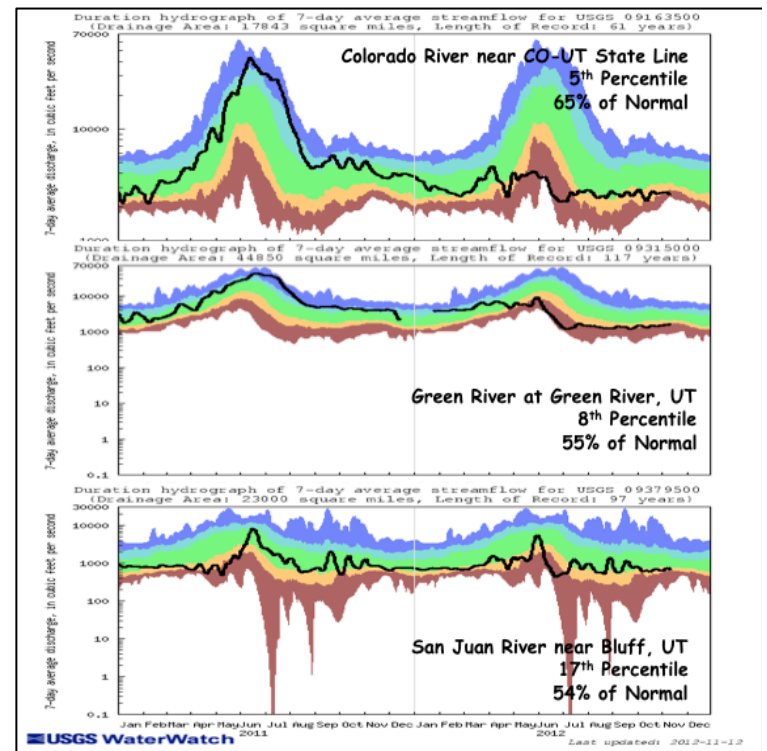
Flows on two of the three key gages across the basin are in the much below normal range (Fig. 4). Flows on the Colorado River near the CO-UT state line and the Green River at Green River, UT have stayed fairly consistent over the past week and are at the 5th and 8th percentiles, respectively. Flows on the San Juan River near Bluff, UT have stayed nearly steady for the past few weeks and are currently at the 17th percentile.



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		

Fig. 3: 7-day average discharge compared to historical discharge for November 11th.

Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Last week most of the UCRB experienced temperatures that were 2 to 8 degrees warmer than average. East of the basin, most of eastern CO also saw warmer than average temperatures. Southeast CO was between 6 and 10 degrees warmer than average for the week. The VIC soil moisture model shows extremely dry soils through most of WY, with soil dryness below the 20th percentile in northeast UT and northwest CO (Fig. 5). Slight improvements in soil moisture have shown up over northern UT and western WY after a decent start to the water year. Deteriorating soil moisture conditions are showing up over southwest CO. Dry soils also show up in southeast CO with near normal soil moisture in north-central CO and in the San Luis Valley in southern CO.

For the month of October, all the major reservoirs in the UCRB saw a decrease in storage volumes, which is normal for this time of year. Lake Granby, Navajo, Dillon, and McPhee reservoirs saw larger decreases than normal while Lake Powell and Flaming Gorge saw smaller decreases than what is normal for this time of year. Most of the reservoirs in the basin are between 60% and 85% of their November averages. Blue Mesa is the lowest, at 55% of its average November storage volume, and Flaming Gorge is the highest, at 99% of average. All of the reservoirs have seen only very minor decreases since the beginning of November.

Precipitation Forecast

The UCRB will remain underneath brisk westerly flow aloft for much of the upcoming work week. Several minor disturbances are expected to traverse the area on this flow, but these features will have little effect on sensible weather for all but the highest elevations. Expect a slight chance of light snow showers to persist across the high ridges of northern CO and southwestern WY as a result of these weak disturbances, with no appreciable accumulation anticipated (Fig. 6). Elsewhere, expect to see a mix of clouds and sun with no precipitation and near average temperatures. The next Pacific trough approaches the west coast over the weekend, however, disagreement among forecast models leads to a low confidence in the long term forecast. Expect a slight uptick in snow shower coverage over the mountains of western WY moving into next week, with the possibility for more widespread precipitation for the basin should this next system materialize.

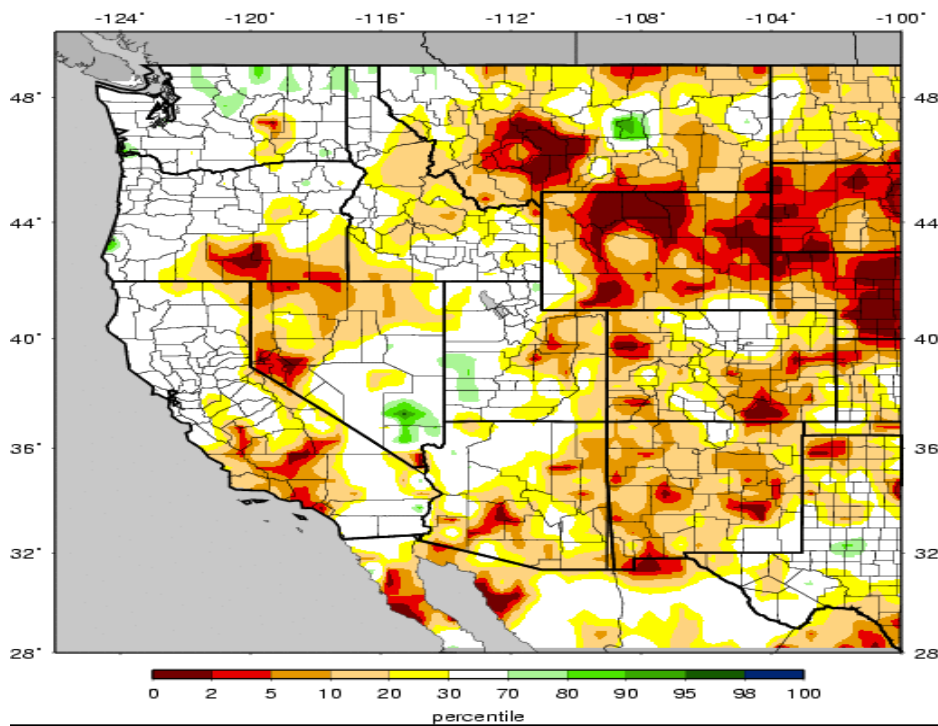


Fig. 5: VIC modeled soil moisture percentiles for the western U.S. as of November 11th.

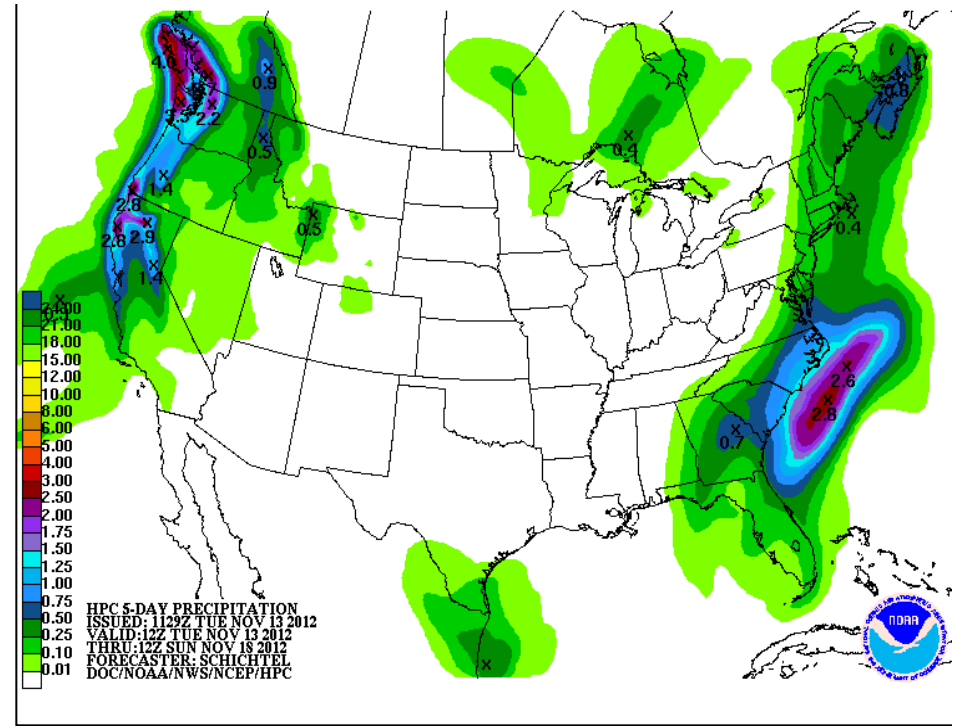


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion

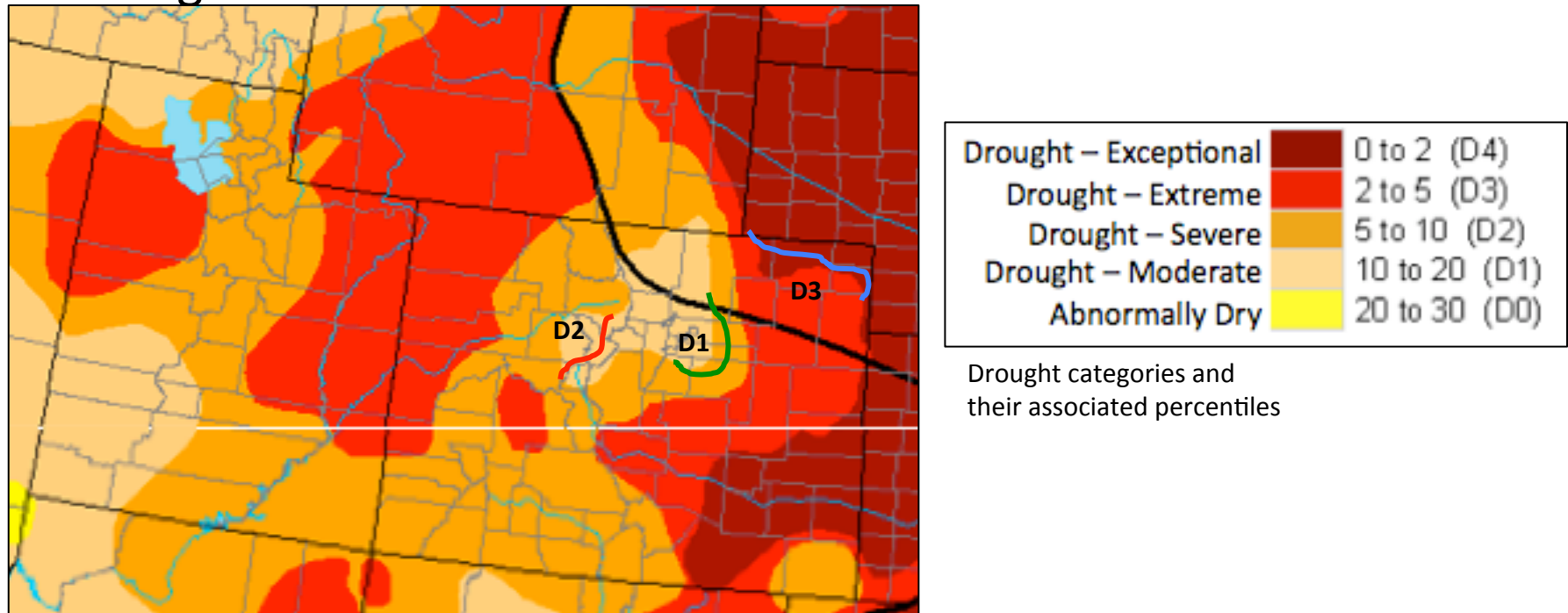


Fig. 7: November 6th release of U.S. Drought Monitor for the UCRB.

UCRB: On the east side of the basin, an expansion of the D2 is recommended for eastern Eagle and Summit counties (Fig. 7, red line). This region has seen a poor start to the water year precipitation and snowpack and is experiencing low flows on the Eagle River, and the most recent storm did not provide relief. On the west side of the UCRB, the current U.S. Drought Monitor (USDM) author has indicated that slight improvements will be made to the D3 and D2 in northern UT. Status quo is recommended for the rest of the UCRB.

Eastern CO: In northeast CO, a trimming of the D4 is recommended (Fig. 7, blue line). The area received near average precipitation for October, most of the grass is now dormant so impacts are limited, and winter wheat (though below average) is still looking fair. A trimming of the D2 is also recommended to better match recent precipitation and improved soil moisture conditions (Fig. 7, green line). Status quo is recommended for the rest of northeast CO and for southeast CO.