Winter 2011

February 22, 2011

Weekly Climate, Water & Drought Assessment

Today's Agenda

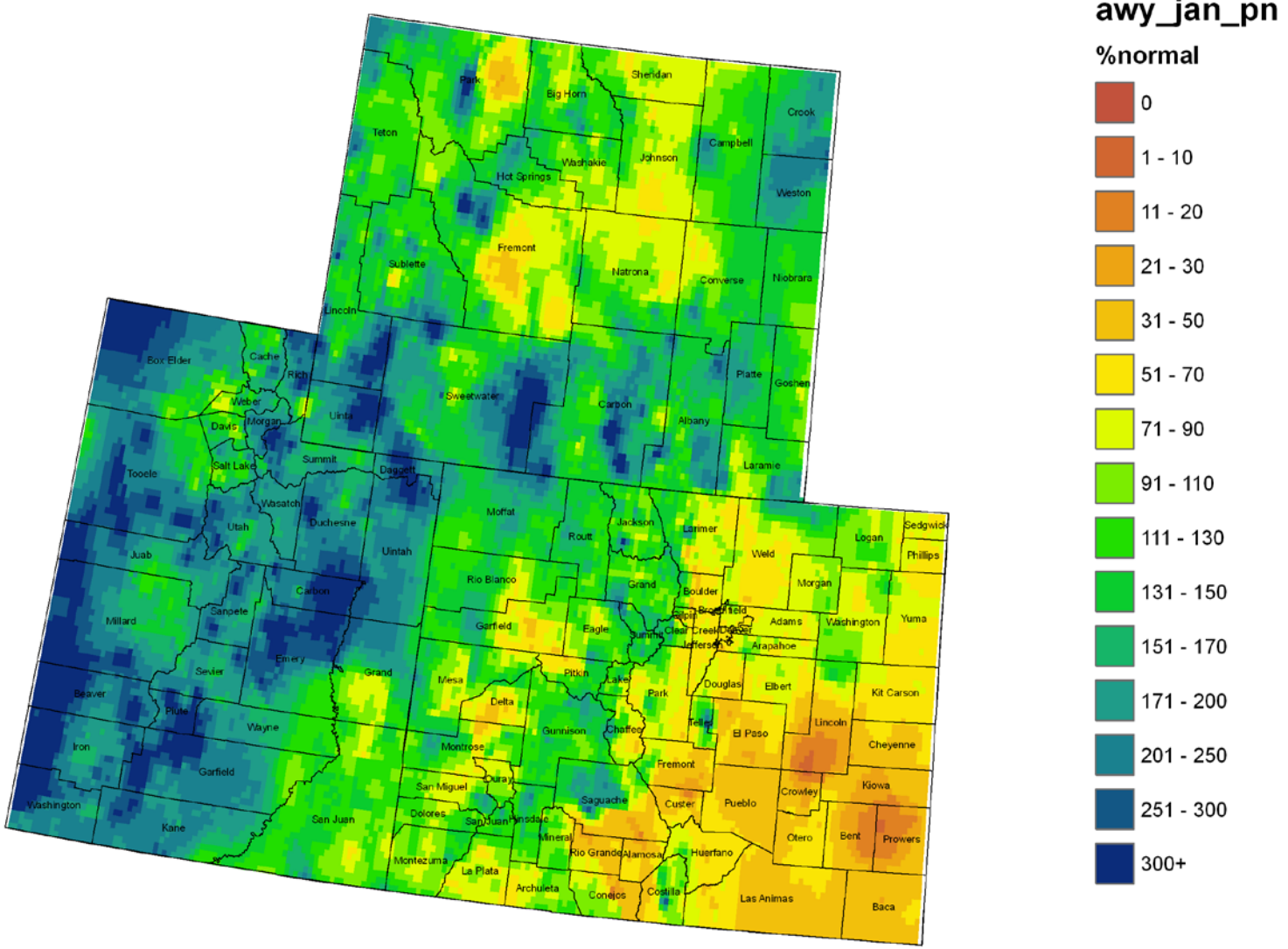
-Assessment of current water conditions

- Precipitation Forecast

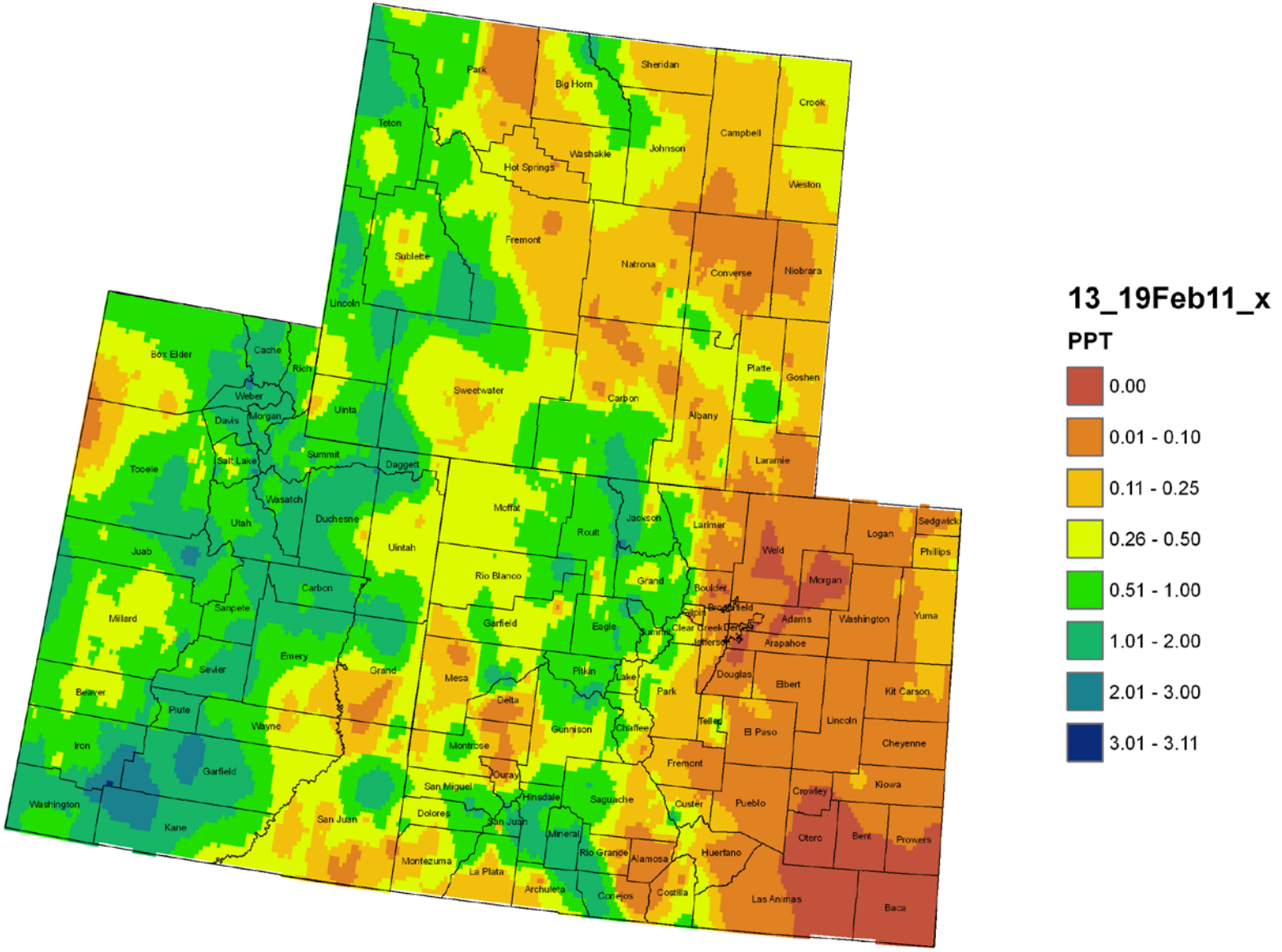
- Recommendations for Drought Monitor

Precipitation/Snowpack Update

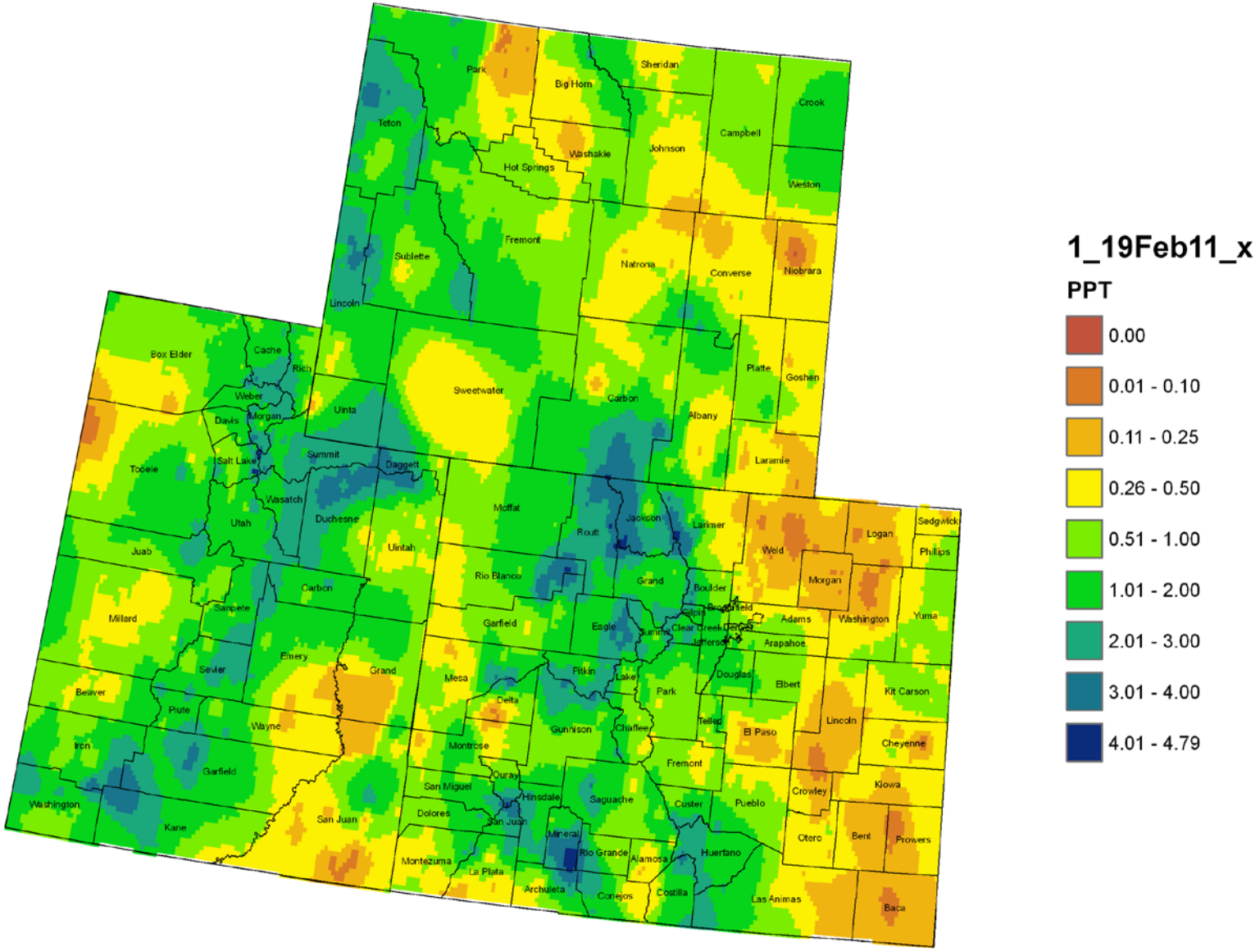
Colorado, Wyoming and Utah Water Year 2011 Precipitation as Percentage of Average Oct 10 - Jan 11



Colorado, Utah and Wyoming 7 Day Precipitation (in)
13 - 19 February 2011



Colorado, Utah and Wyoming Month To Date Precipitation (in)
1 - 19 February 2011

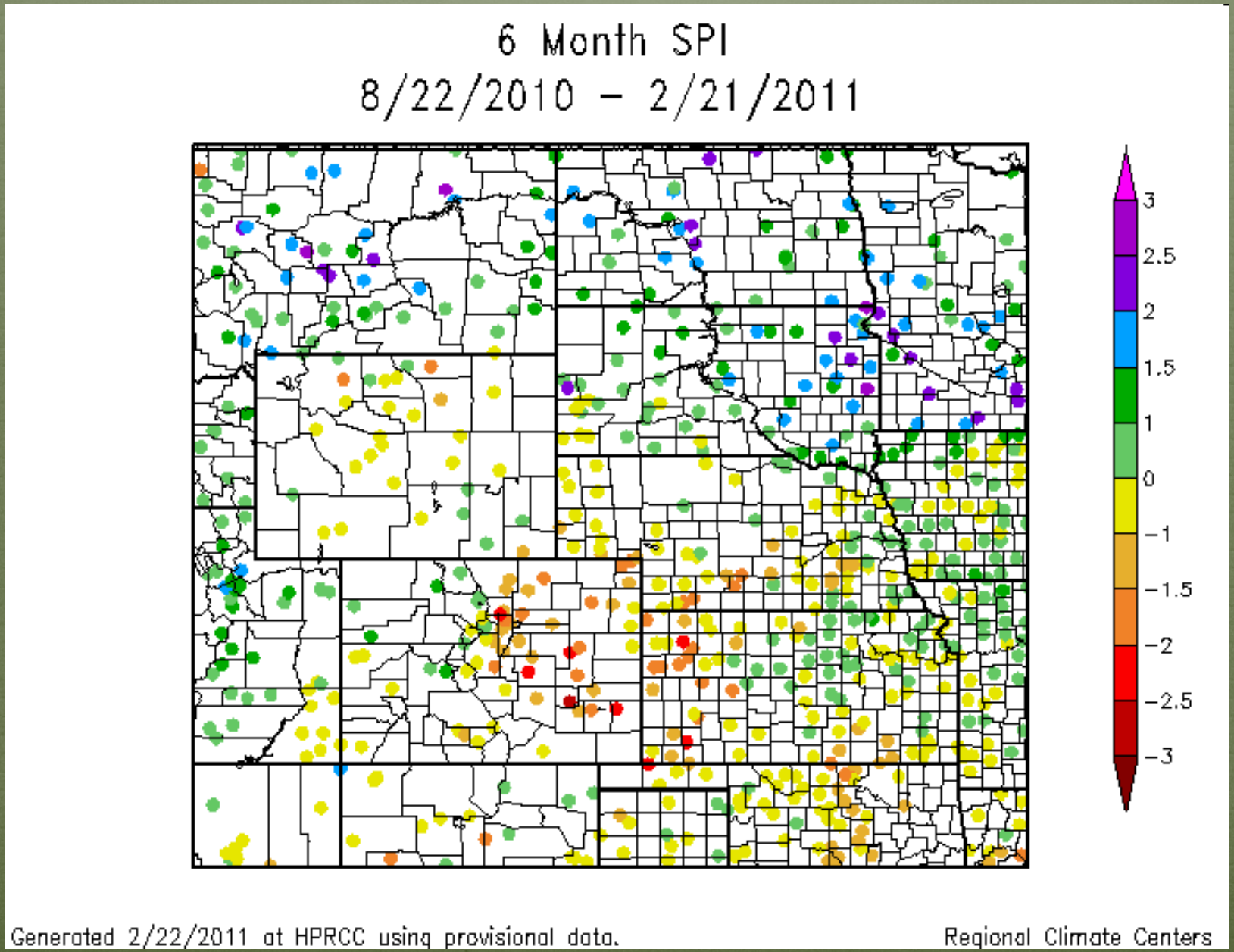


1_19Feb11_x

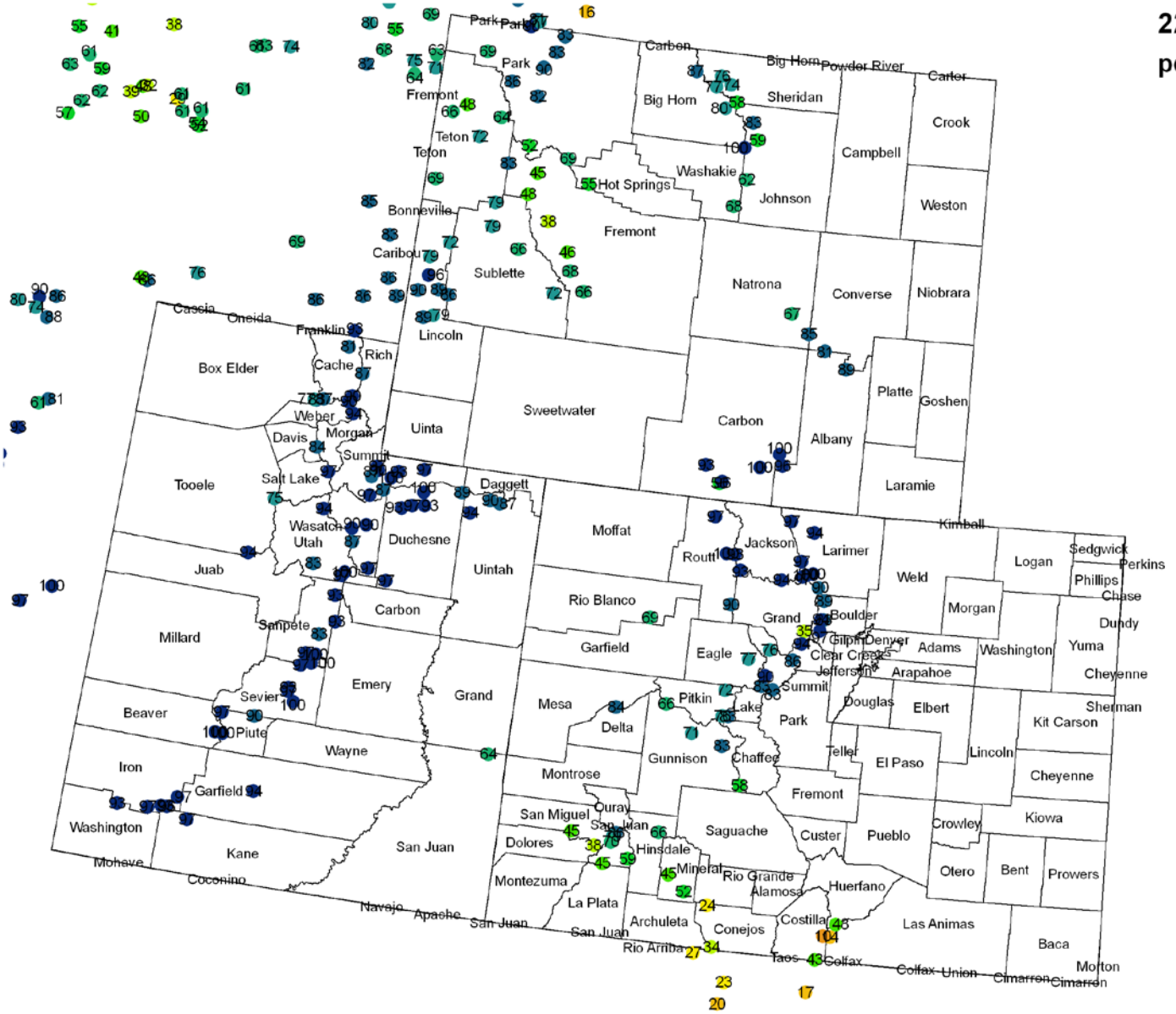
PPT

- 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 - 4.00
- 4.01 - 4.79

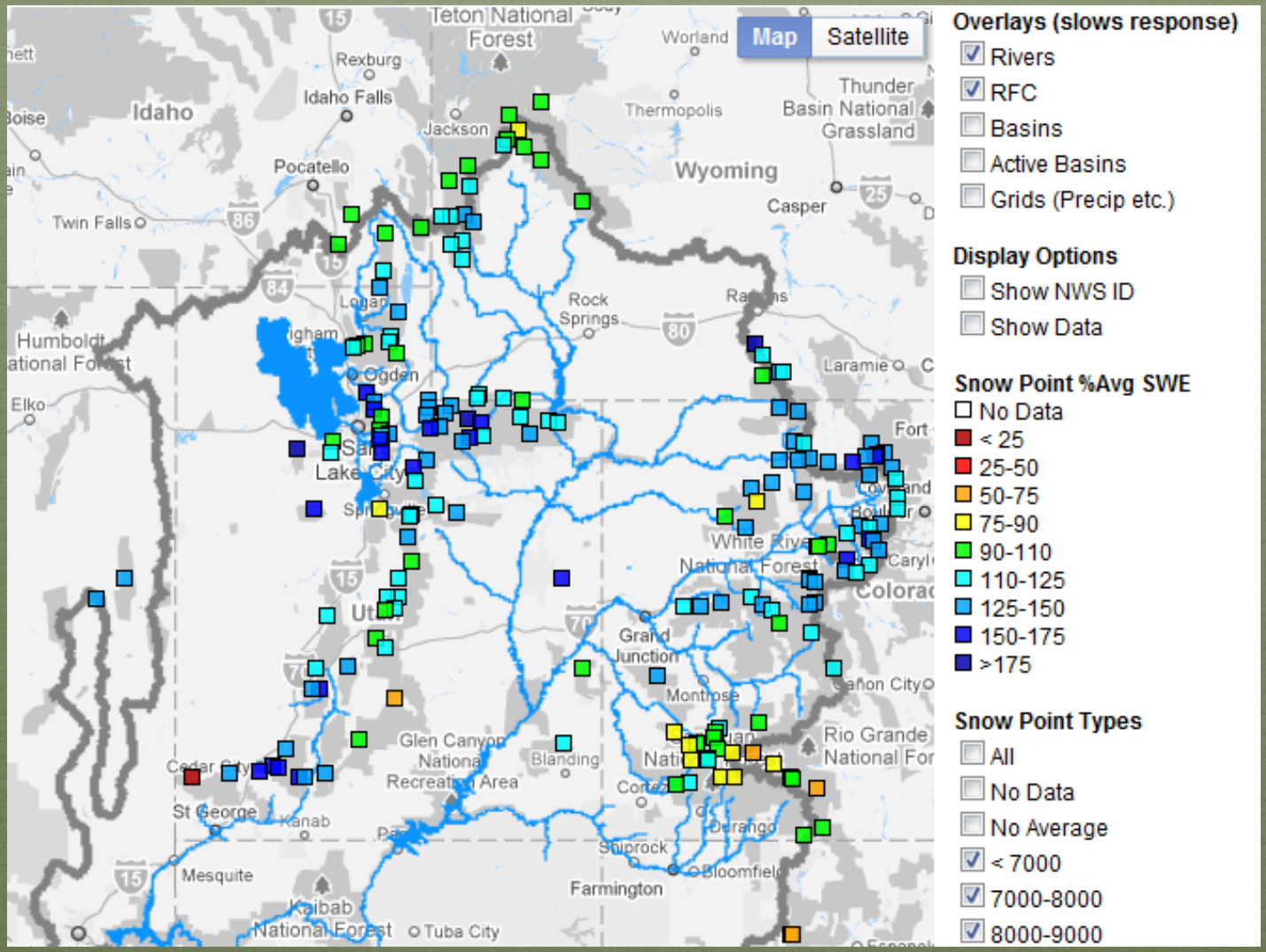
6 Month SPI


6 Month SPI
8/22/2010 – 2/21/2011
3
2.5
2
1.5
1
0
−1
−1.5
−2
−2.5
−3
Generated 2/22/2011 at HPRCC using provisional data.
Regional Climate Centers

Snotel Water Year Precipitation Percentile Ranking
22 February 2011

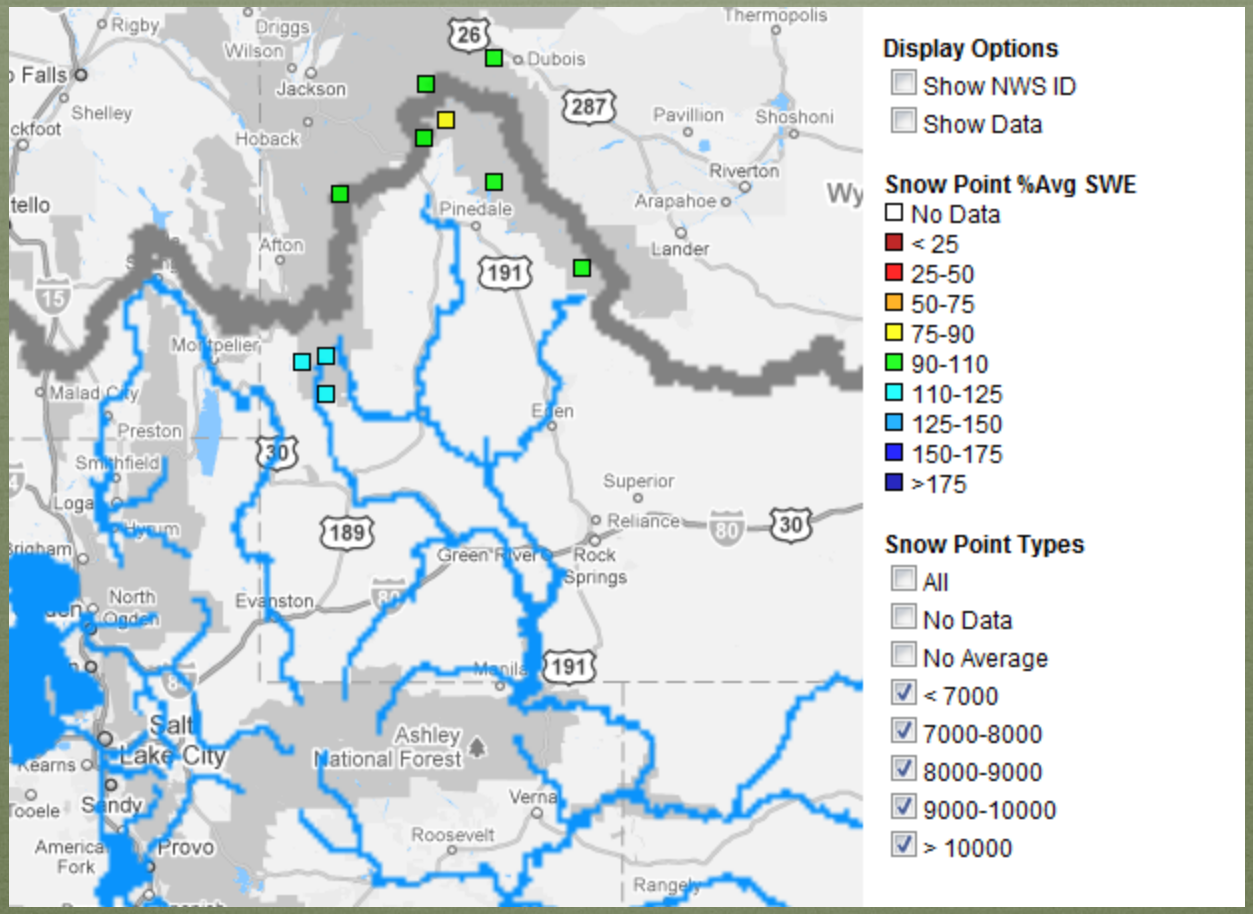


Upper Colorado River Basin Snow

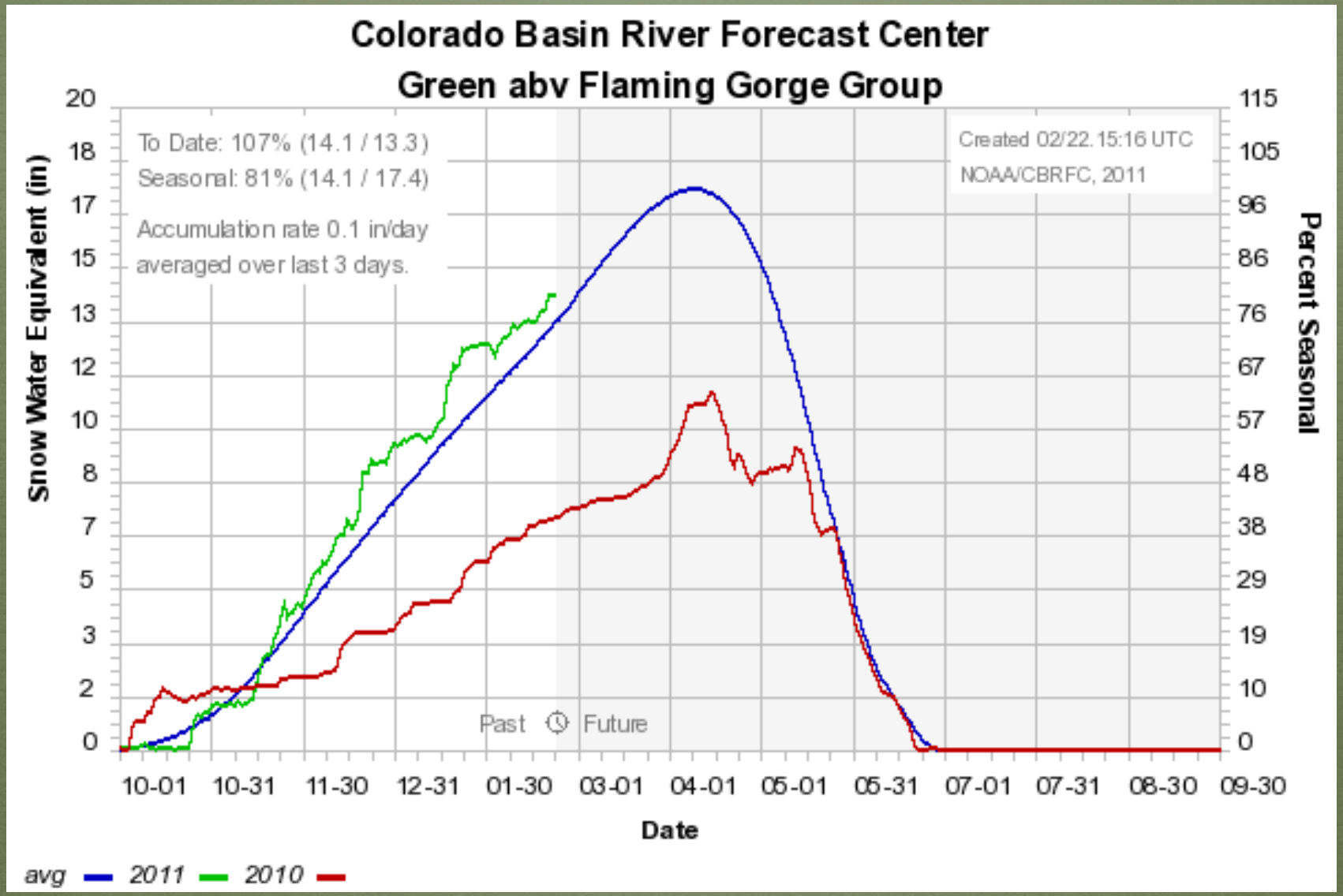


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

Green River Basin above Flaming Gorge

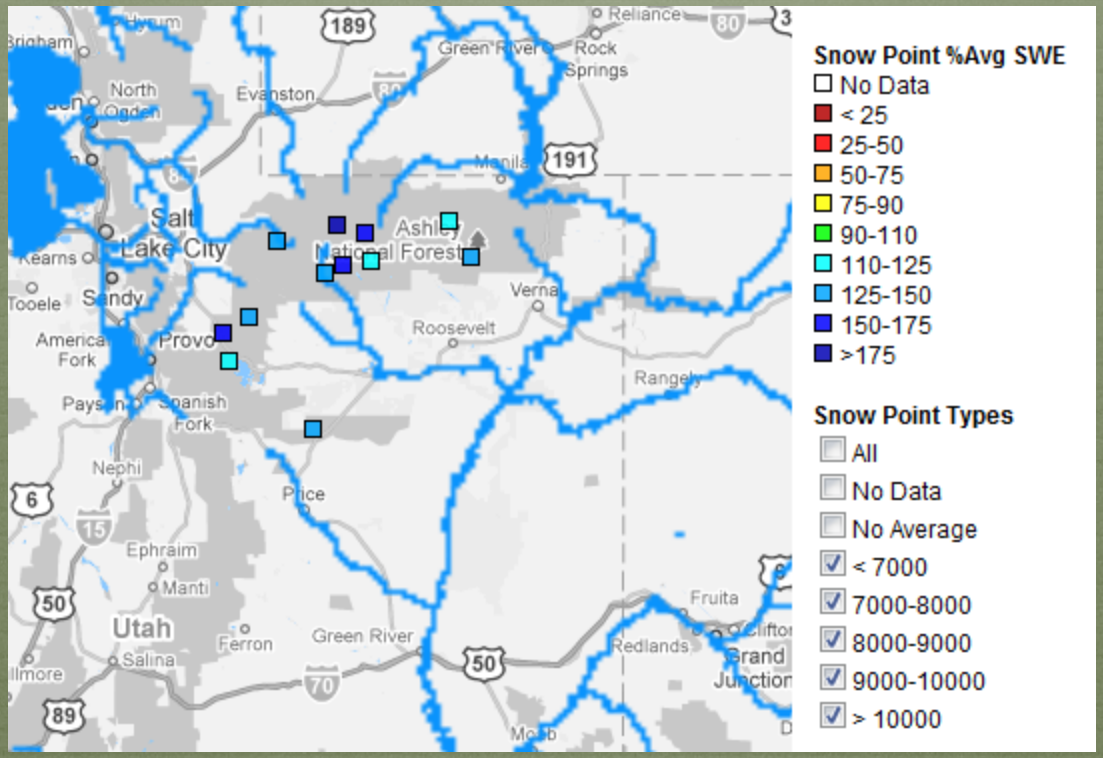


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

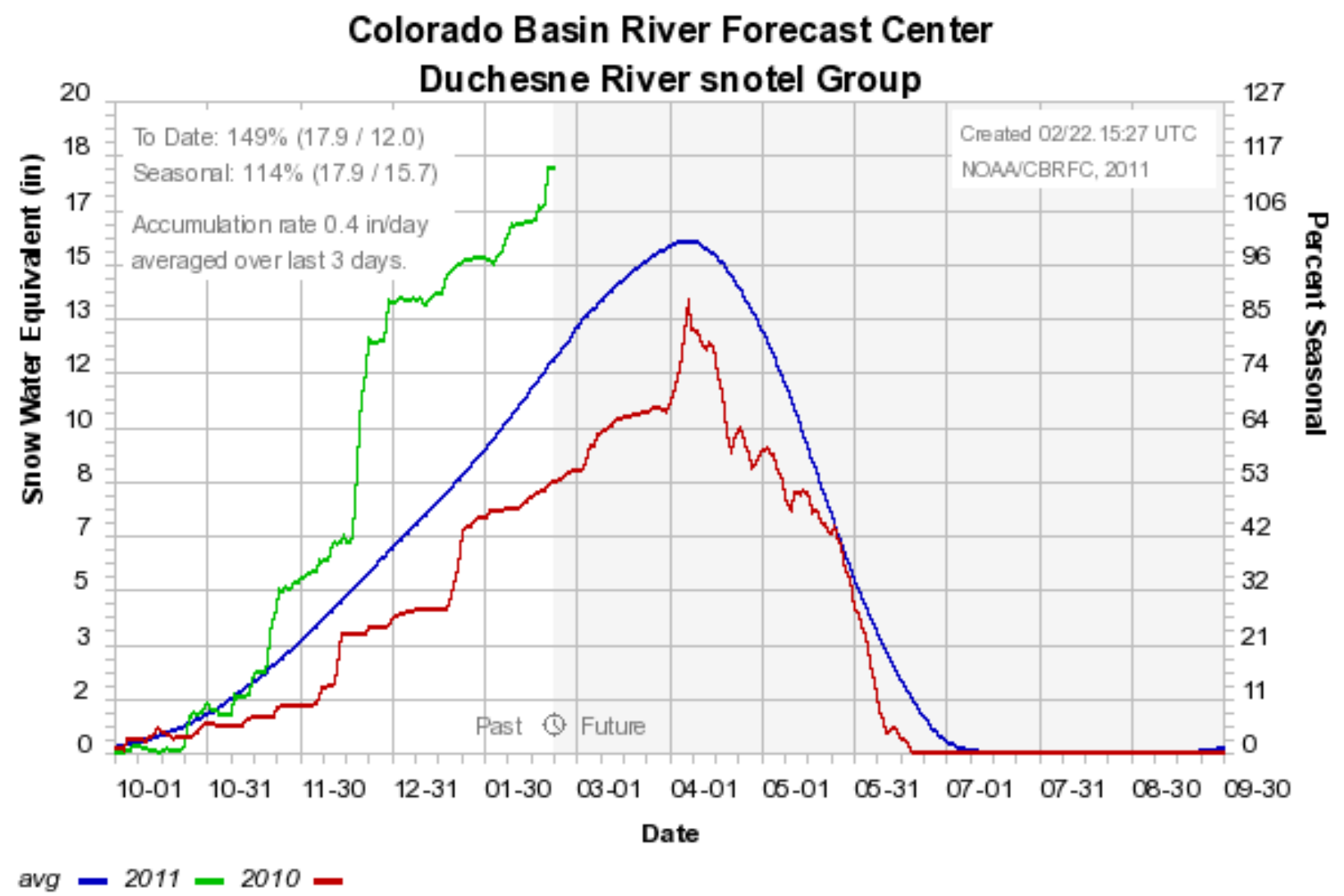


Snowpack % of average to date: 107%
Percent of average peak: 81%

Duchesne River Basin

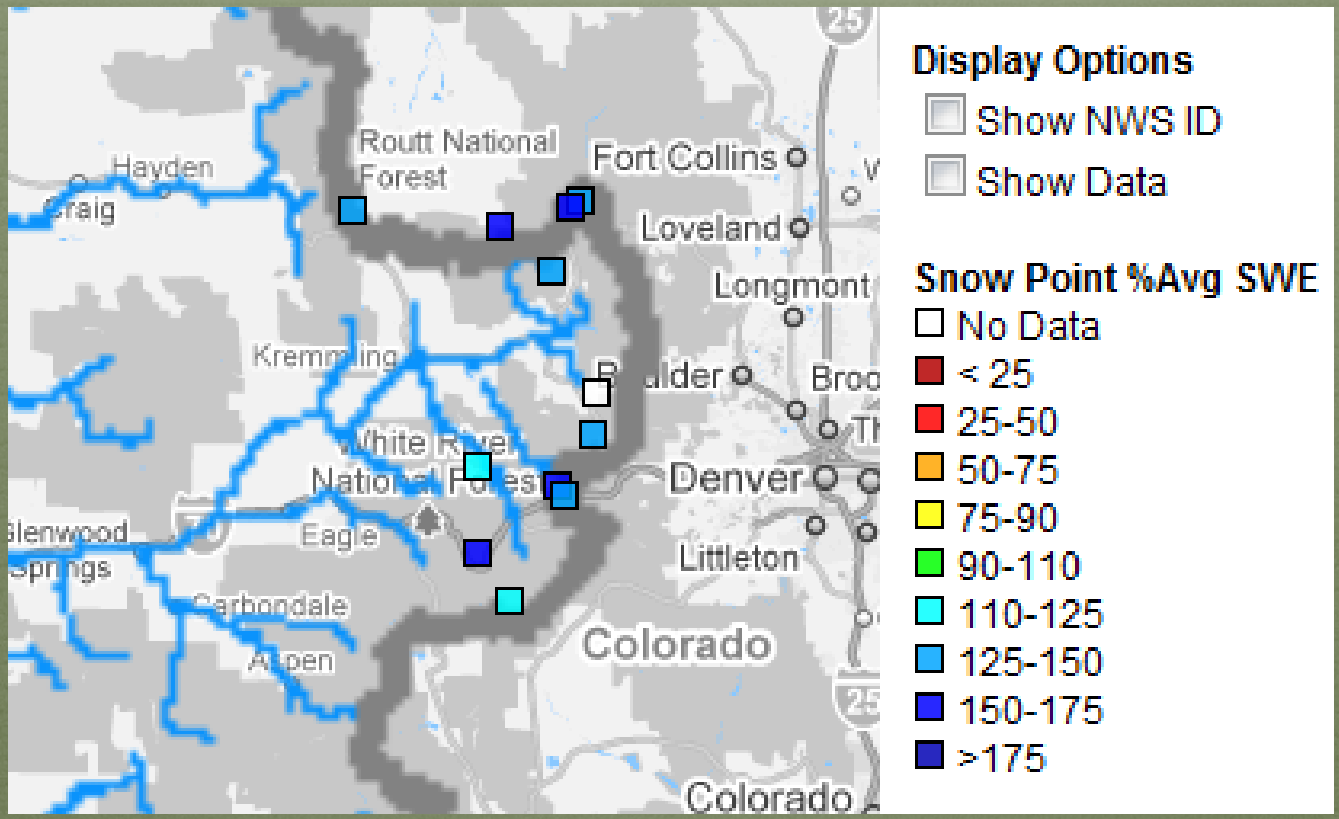


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

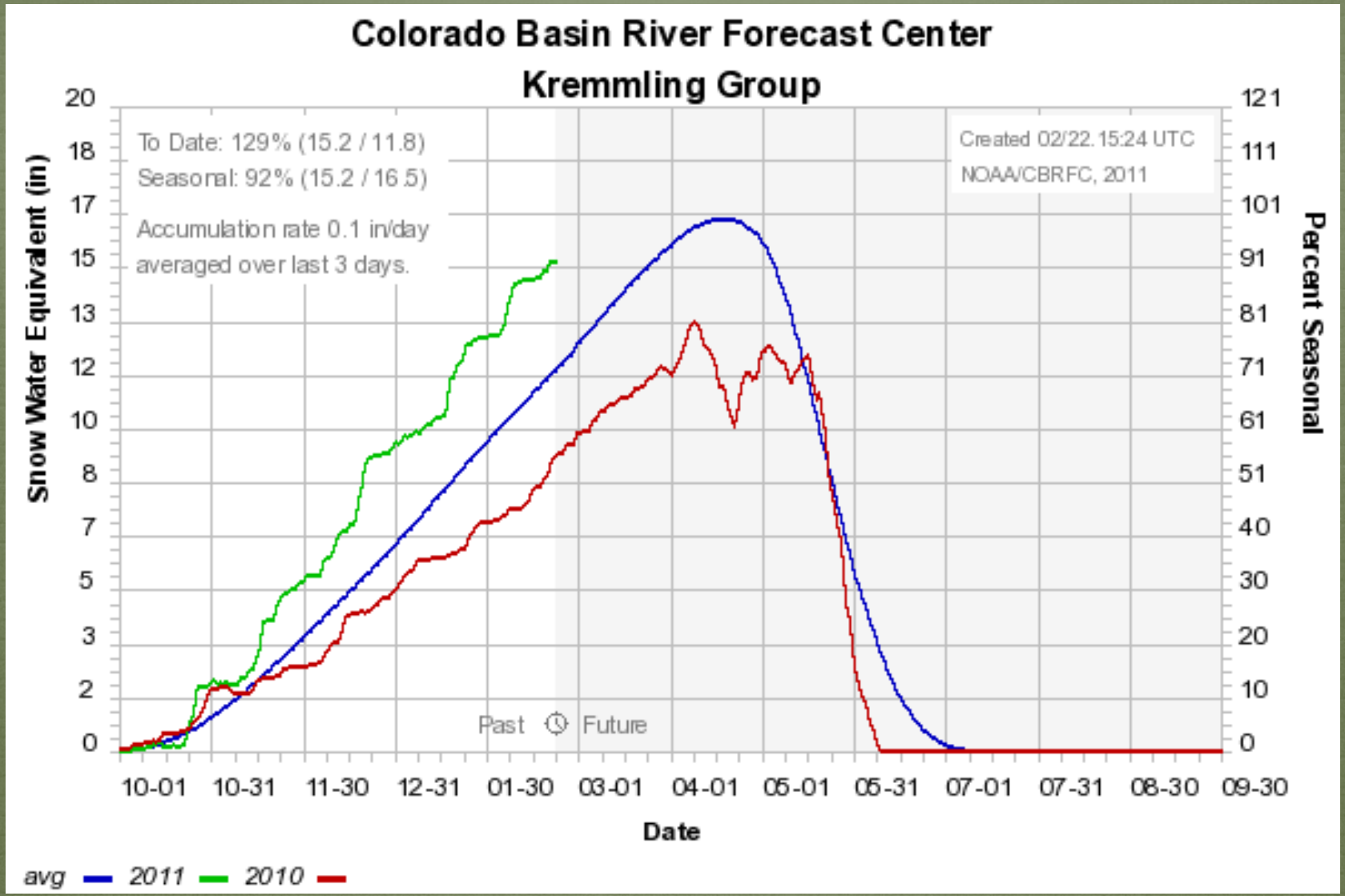


Snowpack % of average to date: 149%
Percent of average peak: 114%

Upper Colorado above Kremmling

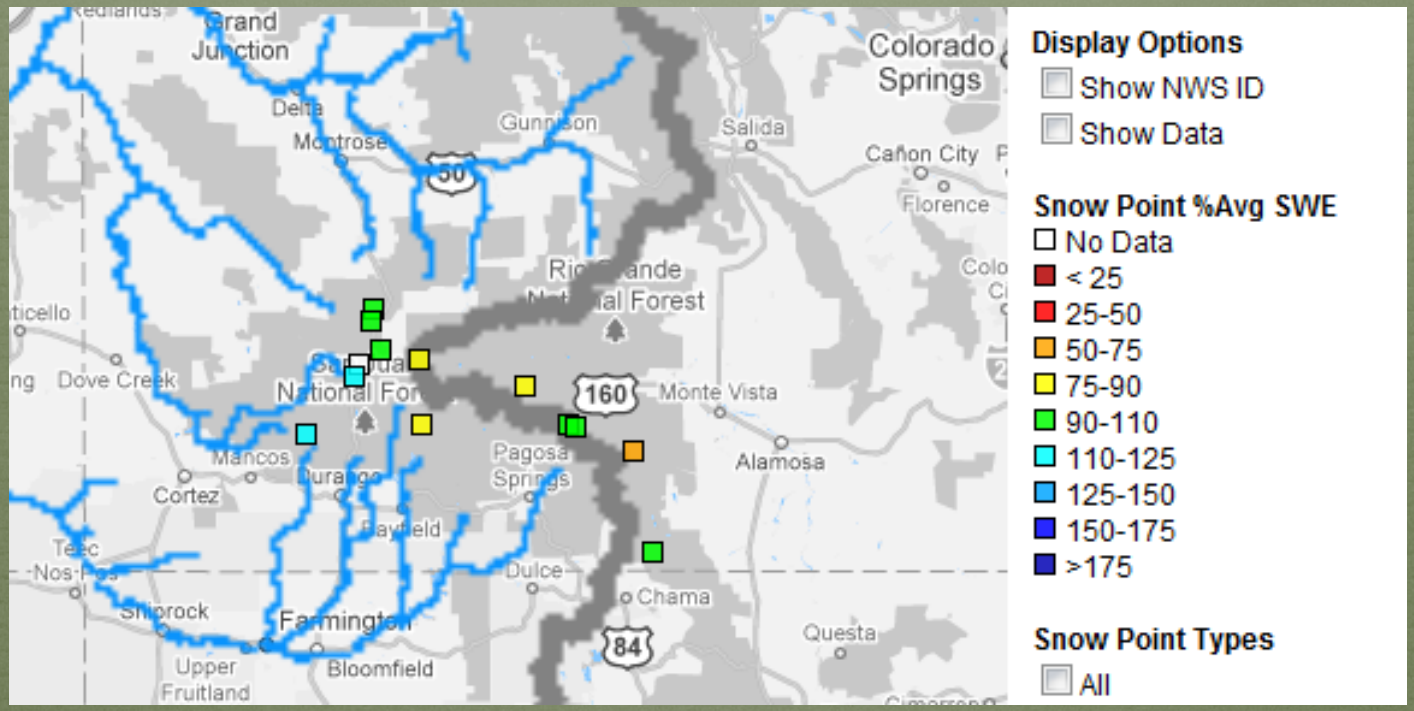


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

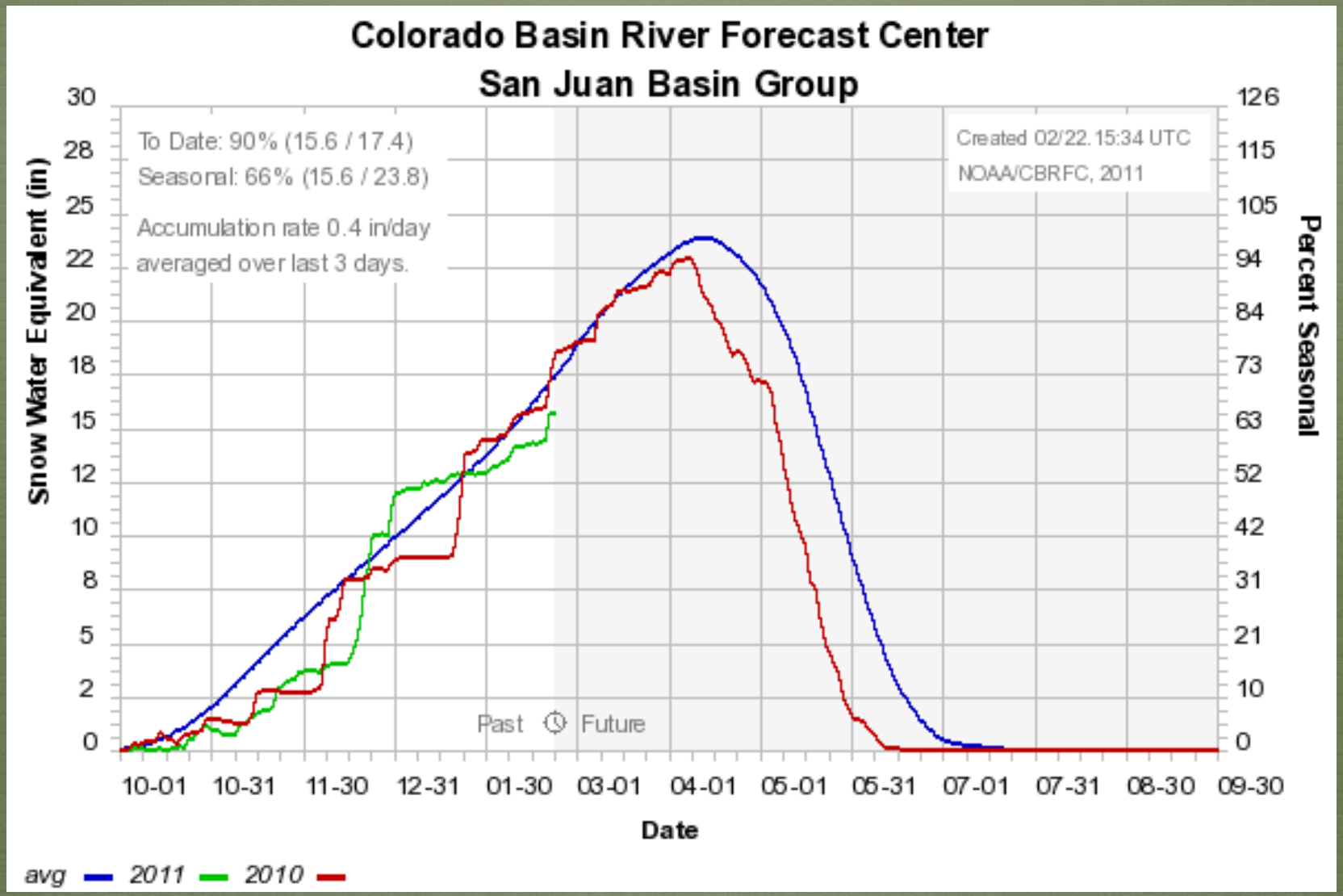


Snowpack % of average to date: 129%
Percent of average peak: 92%

San Juan Basin



NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

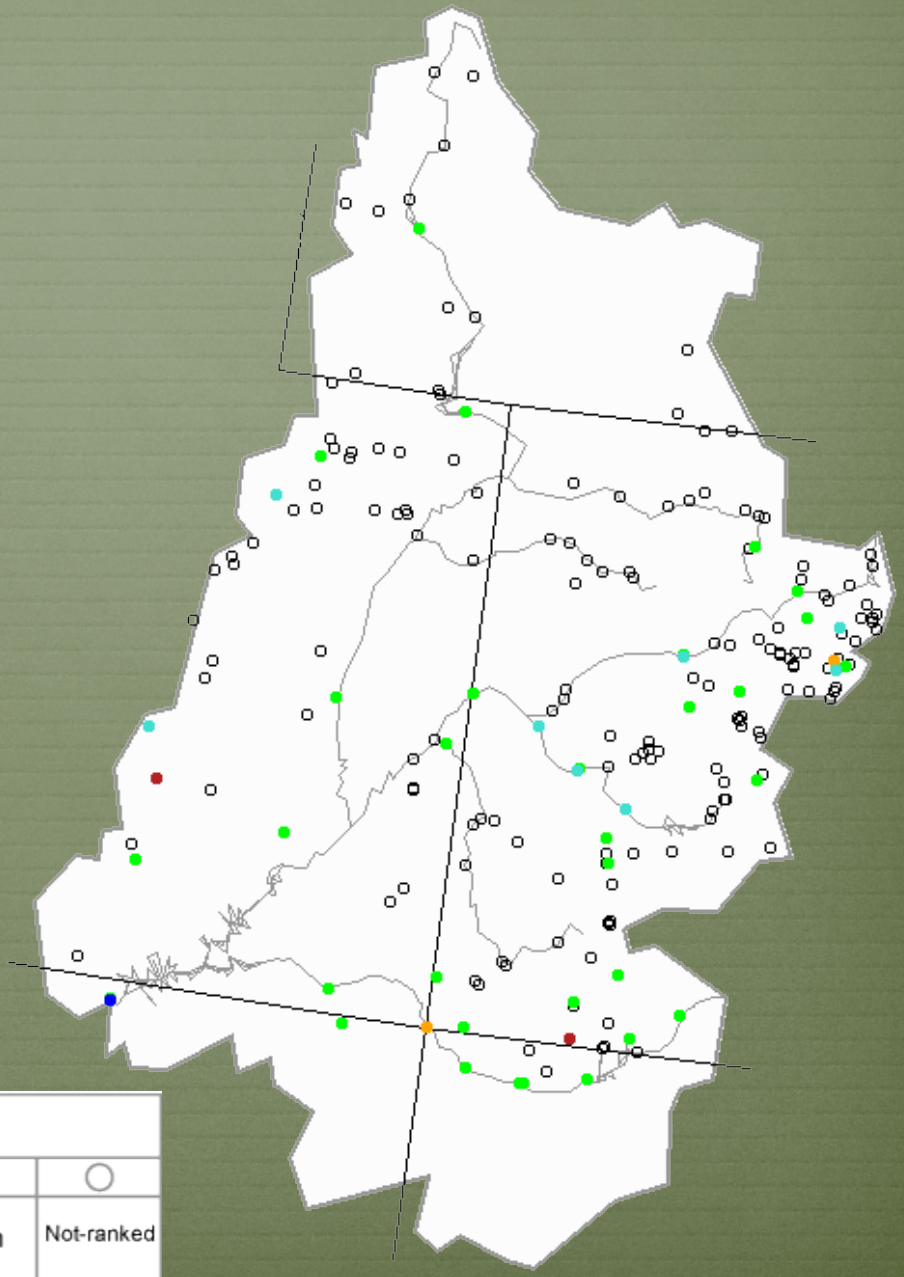


Snowpack % of average to date: 90%
Percent of average peak: 66%

Streamflow Update

Monday, February 21, 2011

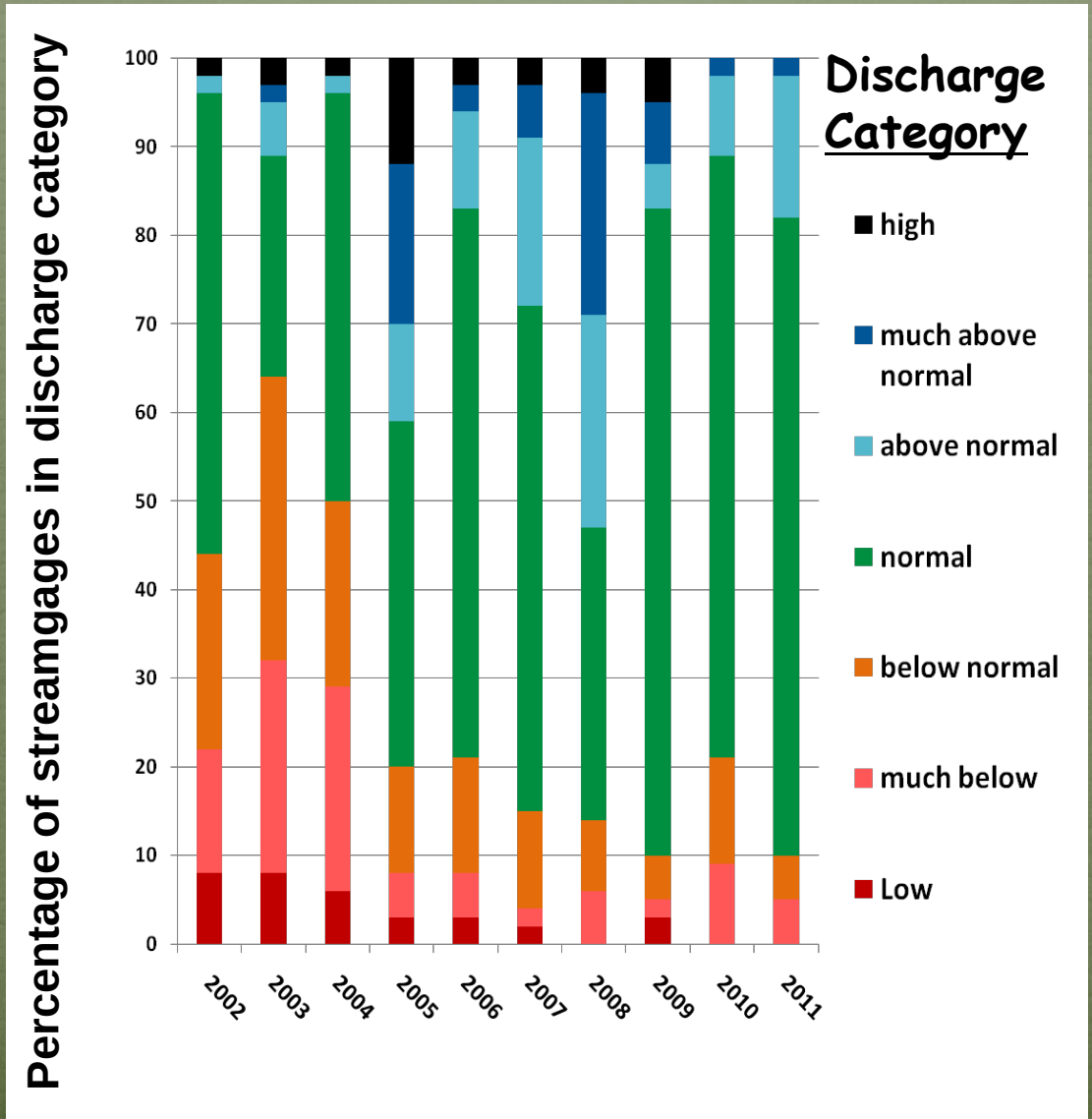
7-day average discharge compared to historical discharge for the day of the year (February 21th)



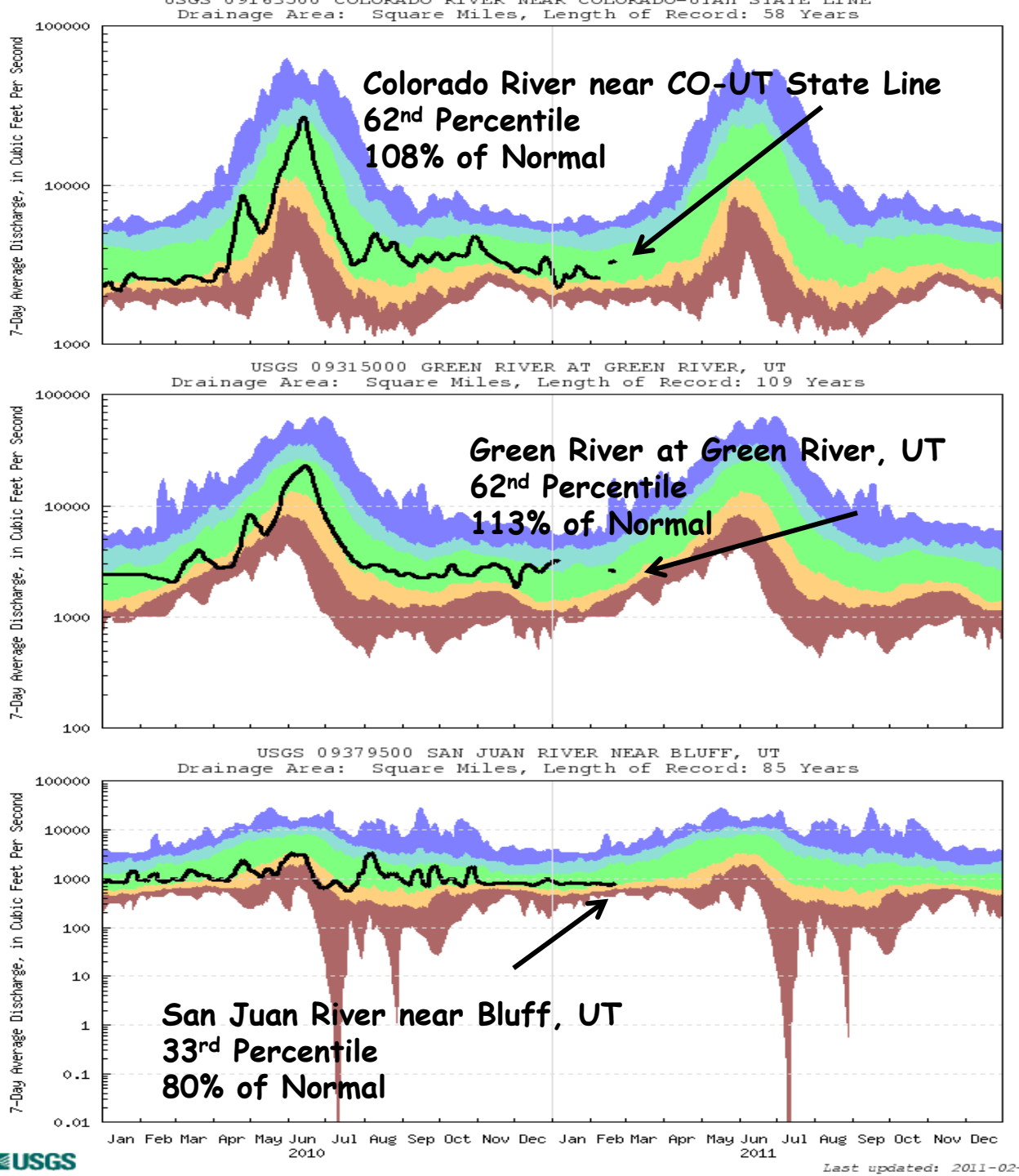
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

Upper Colorado River Basin- Comparison of 7-day Average Discharge February 20, 2002-2011



USGS

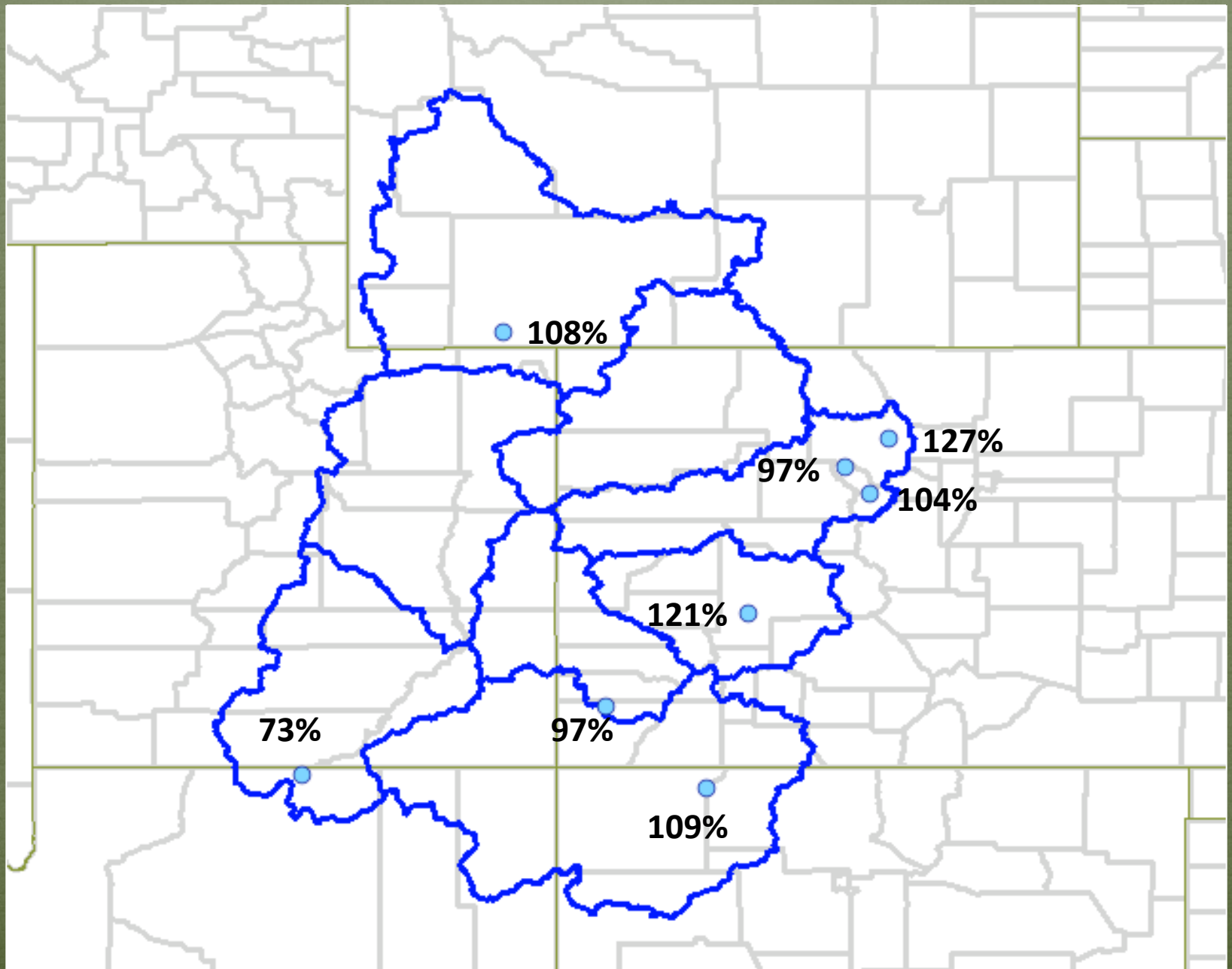


USGS

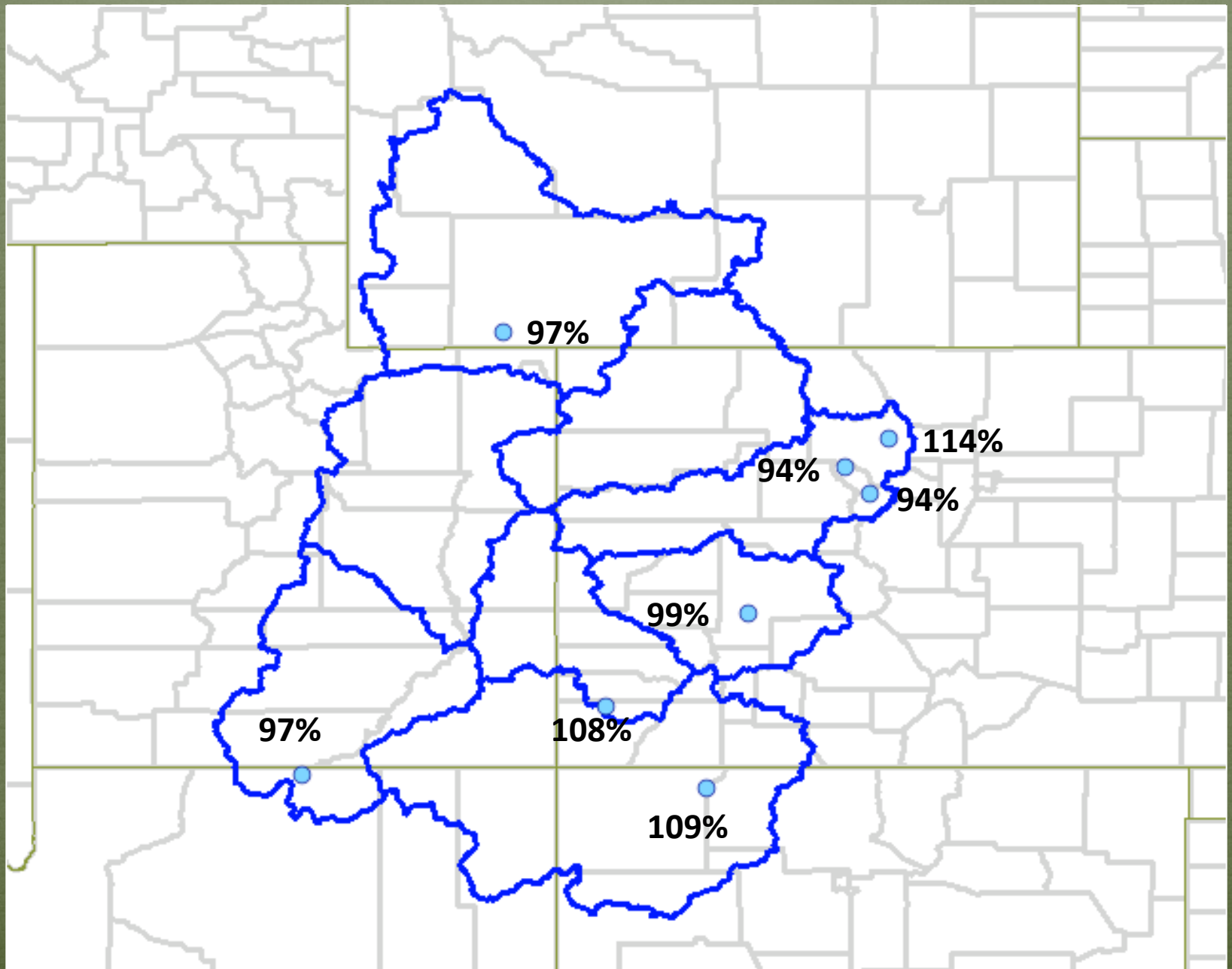
Last updated: 2011-02-22

Reservoir Update

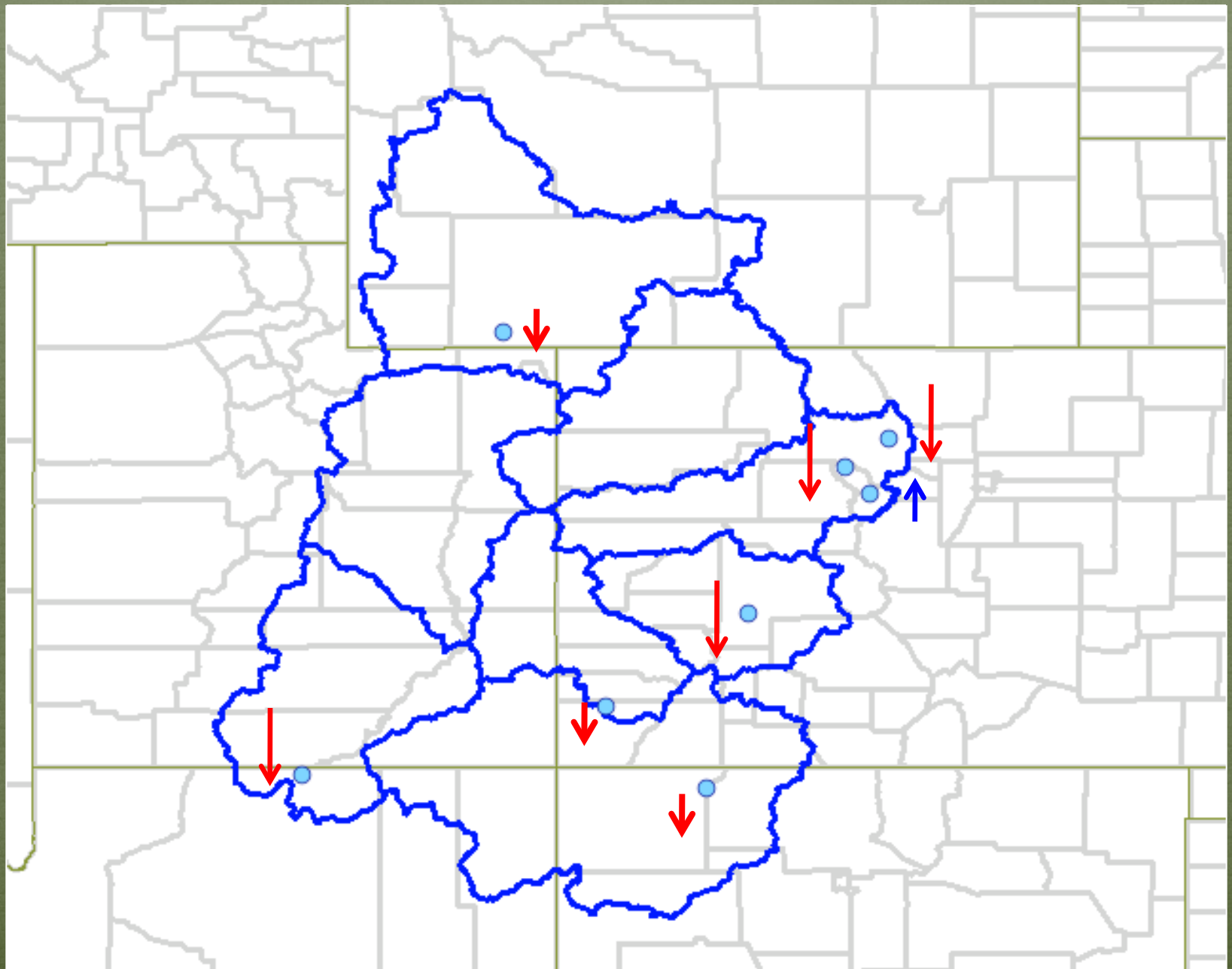
Reservoir Level Percents of Average – 2/20/2011



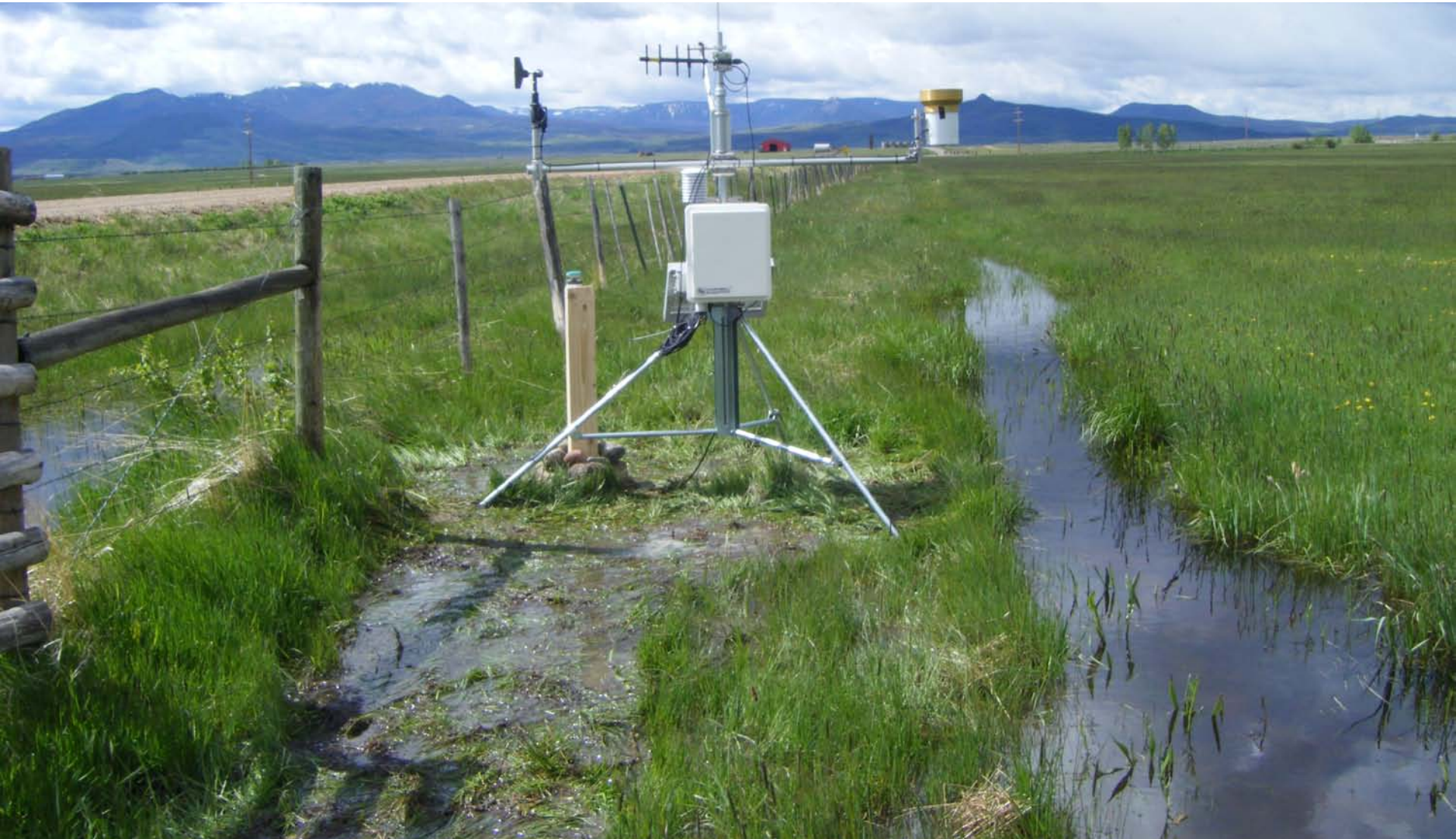
Reservoir Level Percents of Last Year – 2/20/2011



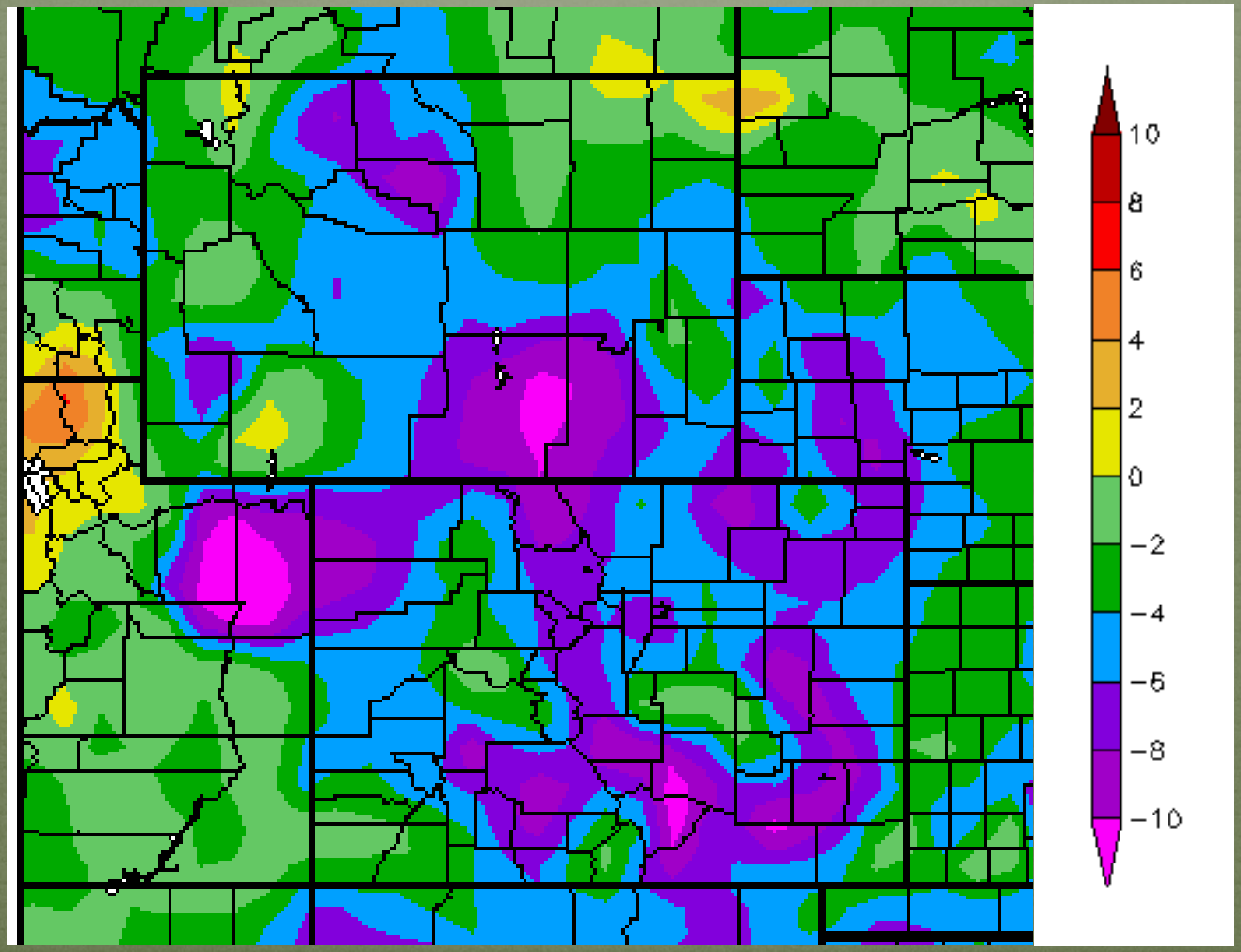
Reservoir Level Changes Month-to-Date – 2/20/2011



Water Demand

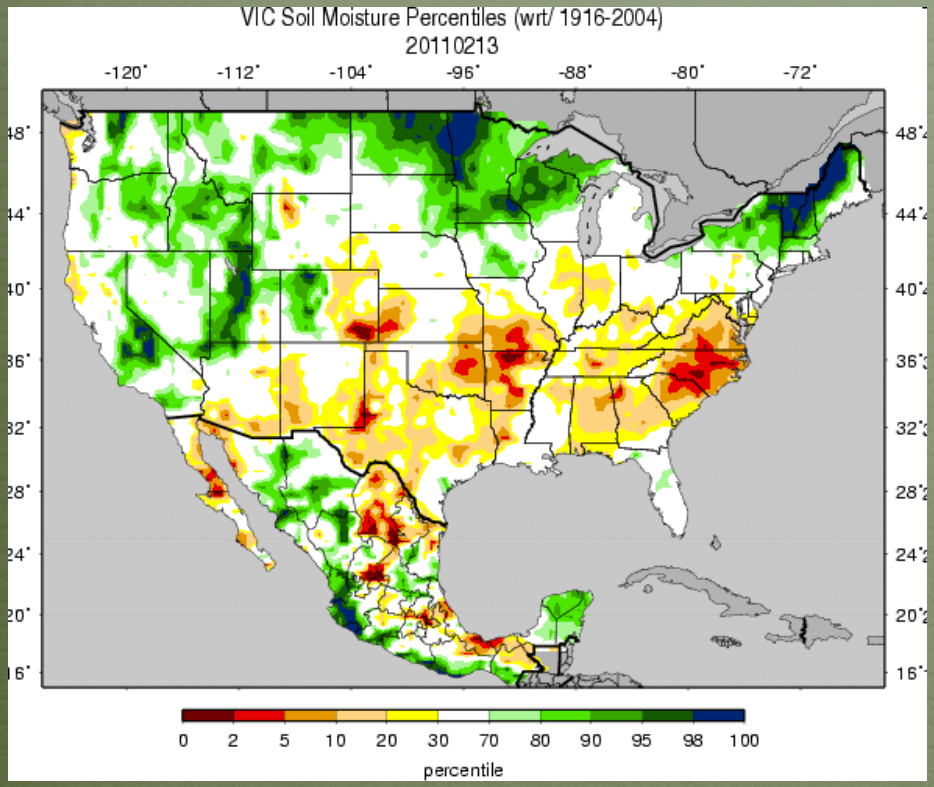


Temperature Departure from Normal
02/01/2011 – 02/21/2011

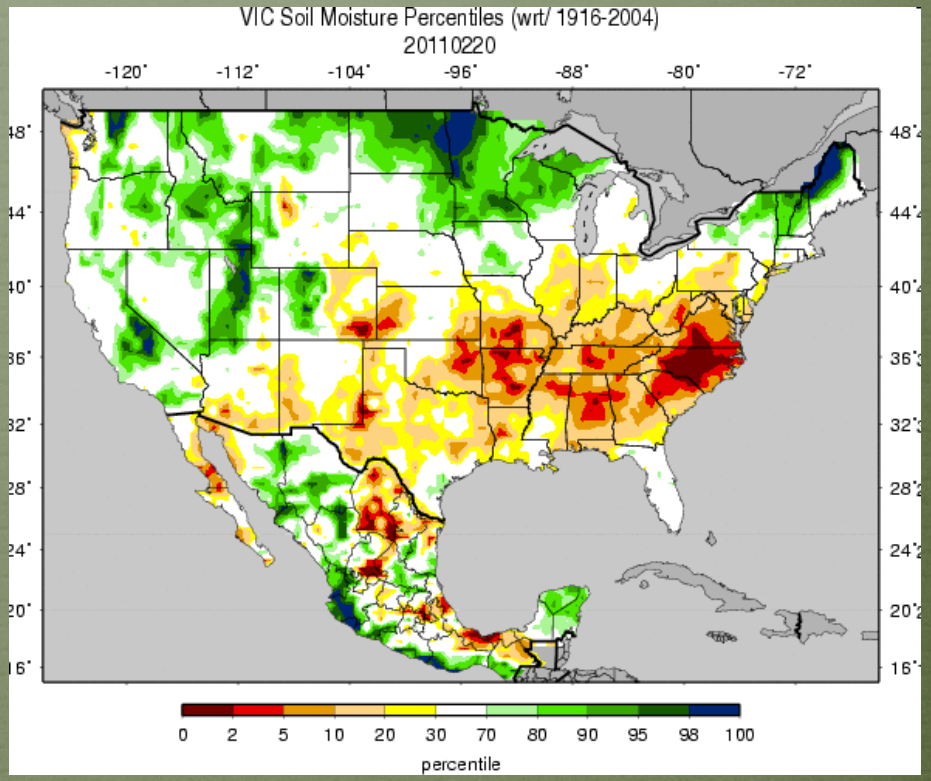


High Plains Regional Climate Center

Soil Moisture Change from Feb 13th, 2011



13 February 2011

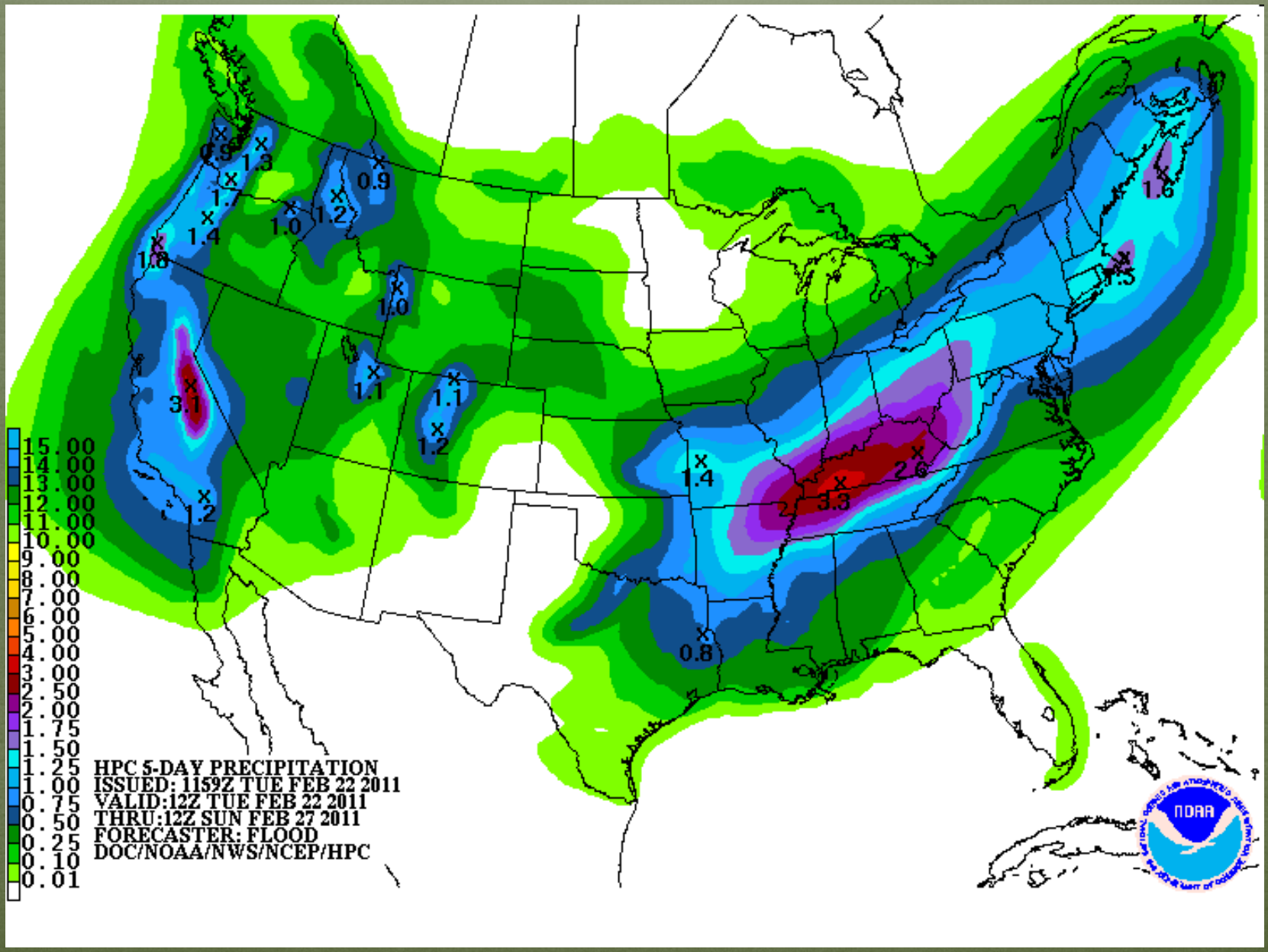


20 February 2011

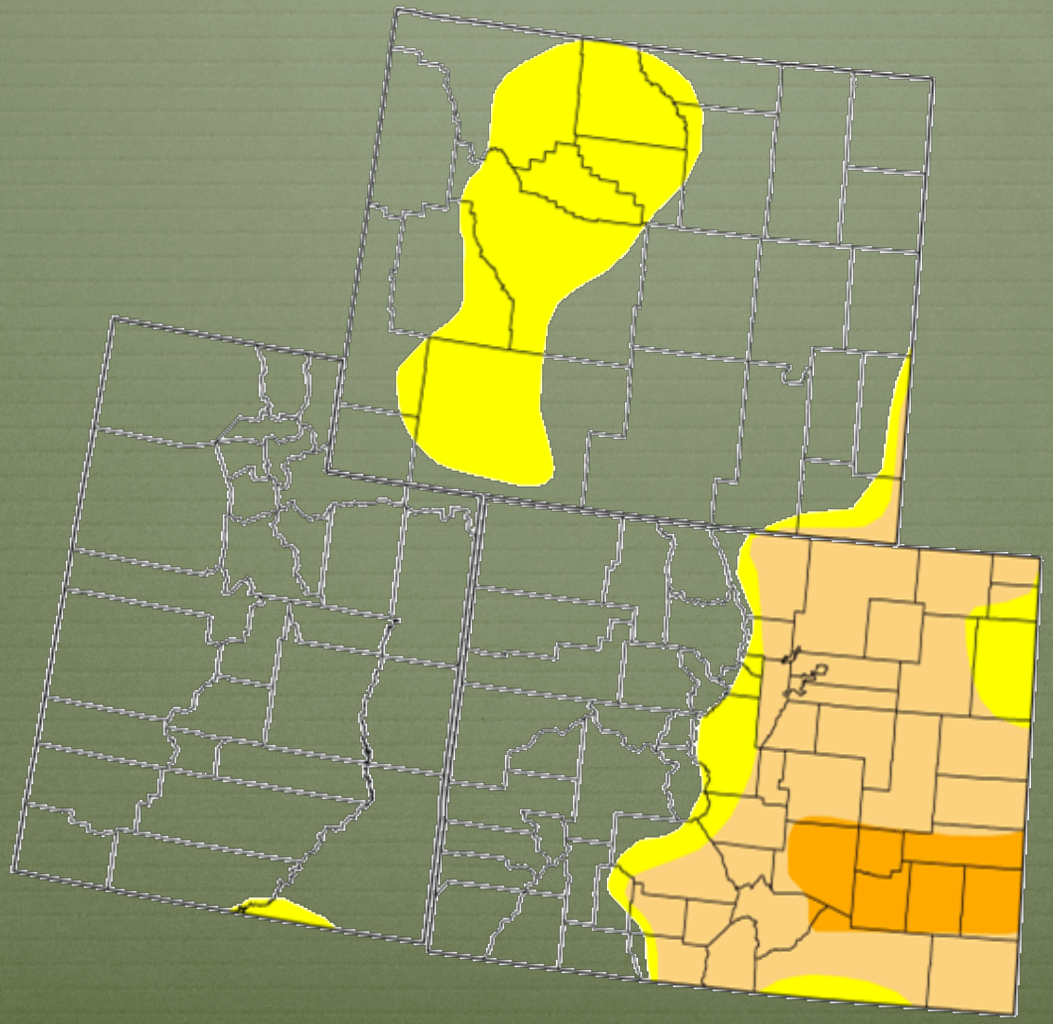
University of Washington

Precipitation Forecast

5 Day QPF 22-27 Feb 2011



Recommendations



INFO

For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

February 22, 2011

Precipitation and Snowpack

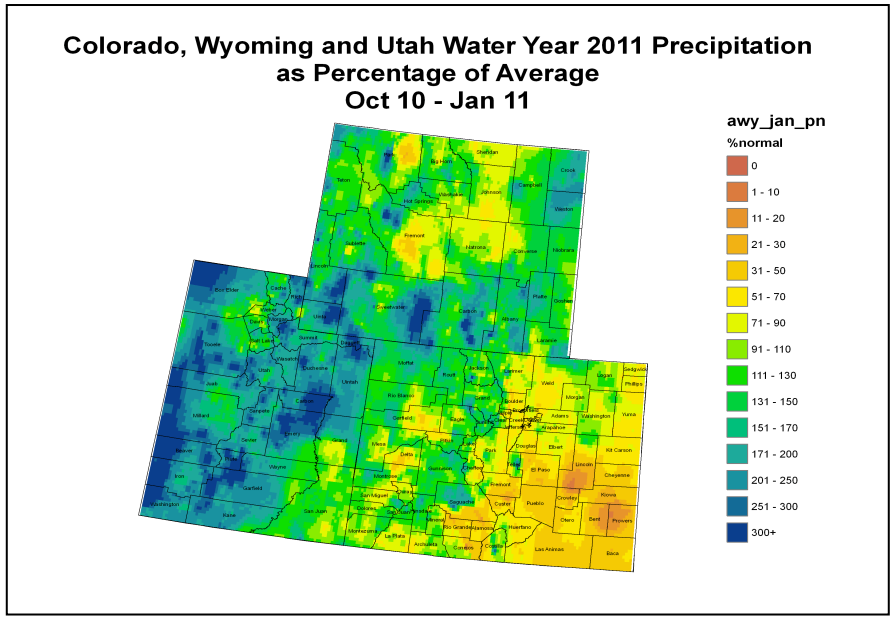


Fig. 1: Water-year-to-date precipitation as percent of average.

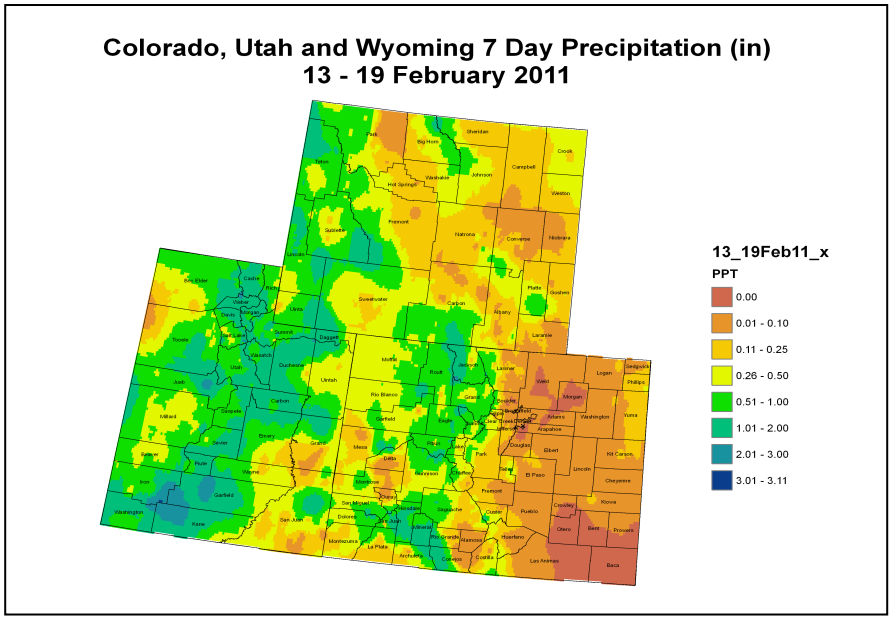


Fig. 2: February 13 – 19 precipitation in inches.

For the current water year, most of the Upper Colorado River Basin (UCRB) has seen good amounts of moisture (Fig. 1). Many areas of Utah have received over 200% of average precipitation. Much of southern Wyoming and the northern and central mountains of Colorado have also received above average precipitation. The eastern plains of Colorado have been fairly dry for most of the water year with parts of Lincoln, Bent, and Prowers counties receiving less than 50% of their average WYTD precipitation. The western valleys of Colorado and the San Luis valley to the south have also received below average moisture for the water year so far.

Last week, much of the Upper and Lower Green River basins received over an inch of moisture, with areas of the Wasatch and Uinta ranges in Utah receiving around 2 inches (Fig. 2). The northern and central mountains of Colorado received around a half an inch to an inch of precipitation. The San Juan basin in southern Colorado received some much needed moisture, while the eastern plains remained mostly dry.

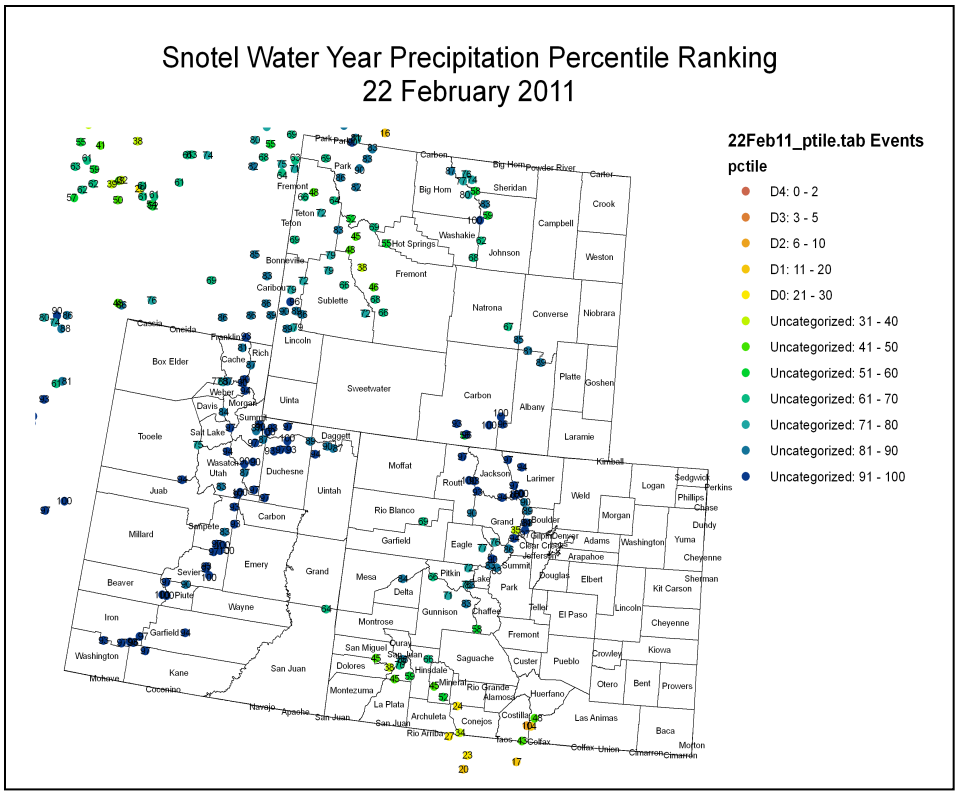


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

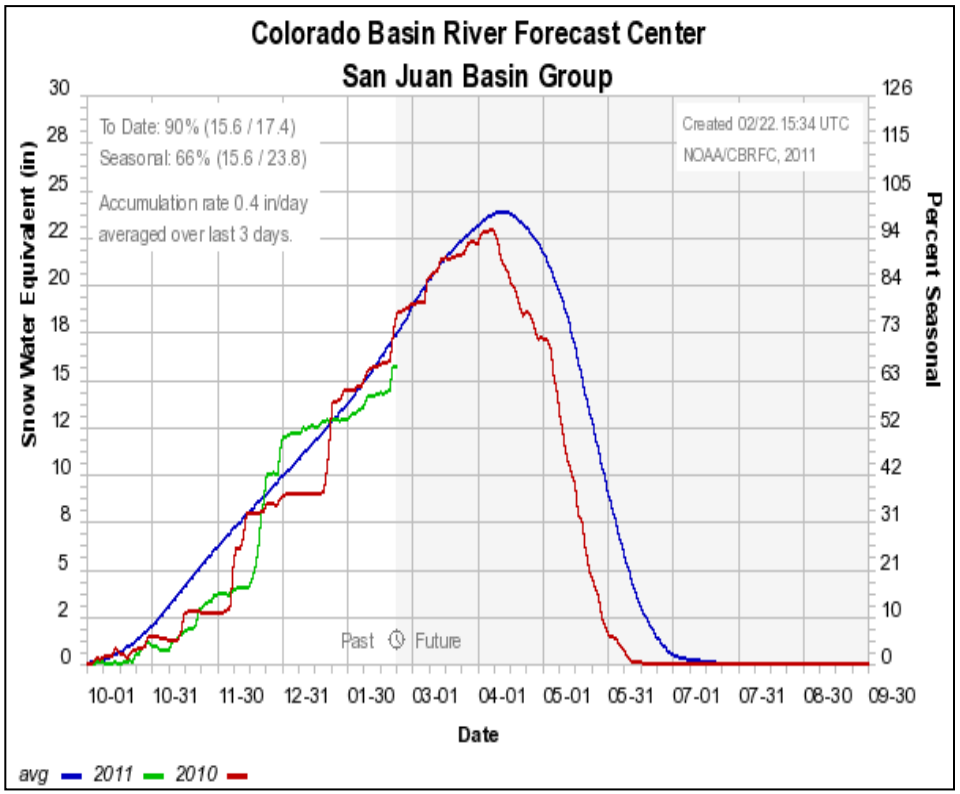


Fig. 4: San Juan basin averaged accumulations of snow water equivalent, WYTD.

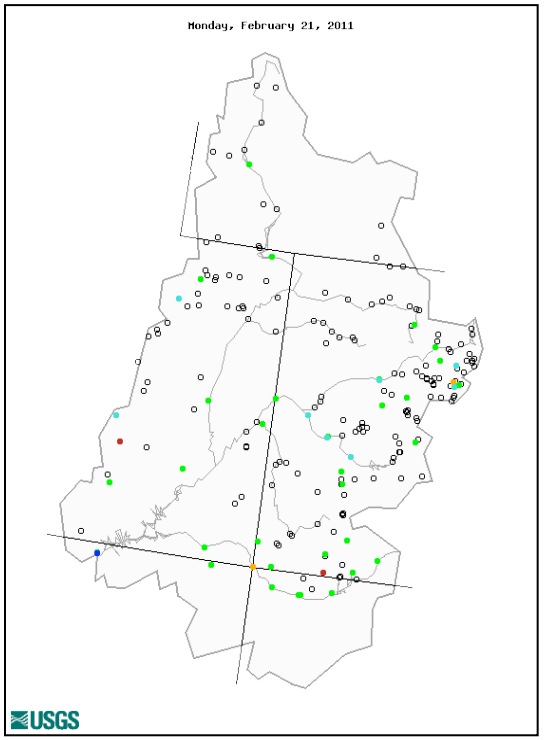
The majority of the SNOTEL sites in the UCRB are showing high percentile rankings for WYTD precipitation (Fig. 3). The Rio Grande and San Juan basins in southern CO are the driest, showing percentile rankings below 50%. Some of the sites in the Rio Grande basin are showing percentiles below 30% (meaning that 70% of the years have been wetter).

Snowpack around most of the UCRB is above average for this time of year. The Duchesne River basin in Utah is currently recording 149% of average snowpack and has already reached its average seasonal peak snowpack for the year. The San Juan basin is currently at 90% of average snowpack and at 66% of its seasonal peak (Fig. 4). This is slightly below last year's snowpack accumulations to date.

Streamflow

As of February 20th, about 90% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). The majority of the gages in the basin are currently frozen, but most of the remaining gages are in good condition with only 2 gages recording much below normal flows.

At key gages around the basin, normal flows are being recorded. Both the Colorado River at the CO-UT state line and the Green River at Green River, UT are recording above average flows. The San Juan River near Bluff, UT is currently showing normal flows, though it is at the 33rd percentile and very close to dropping to below normal flows.



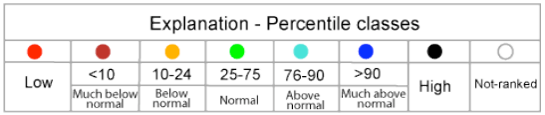


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for February 21st in the UCRB.

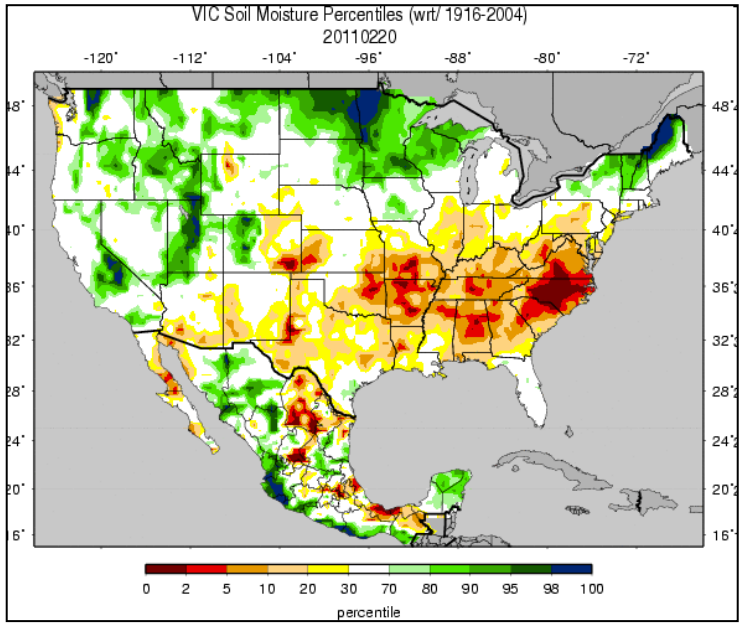


Fig. 6: VIC soil moisture percentiles as of February 20th.

Water Supply and Demand

For the month of February, temperatures have been below average for most of the UCRB and the eastern plains of Colorado. Temperature departures have ranged from 2°F below average to more than 10°F below average for the month in southern WY and northeast UT. Soils in the UCRB are in good condition, with dry soils still showing up in eastern Colorado (Fig. 6). The driest soils are located in southeastern Colorado.

For the month of February, most of the reservoirs have seen their levels drop, with the exception of Lake Dillon, which saw a slight increase in its levels. Lake Powell volume has decreased by over 400,000 acre feet since the beginning of the month, with inflows into the lake slightly below what had been projected. Lake Granby has also seen a larger decrease in volume, likely to prevent spilling from occurring this summer as its levels are currently very high. Most of the reservoirs are near or above average levels for this time of year (Fig. 7). Lake Granby is currently at 127% of average and Blue Mesa is at 121% of average. Lake Powell is currently at 73% of average, but it is expected for levels to start rising again as snowmelt starts in March and April.

Precipitation Forecast

Several storms could bring moisture to the mountains of the UCRB this week, while the eastern plains will likely stay relatively dry. A Pacific trough will move into the region on Wednesday and will bring southwest flow into the mountain areas. Later in the week, the flow will shift to more zonal and shift the precipitation to the northern mountains. This could also bring light precipitation to the northeastern plains. Another storm arrives during the weekend, centering over the four-corners region and bringing more southwesterly flow into the mountains. A low amplitude ridge will set up over the region next week, and a drying trend will persist.

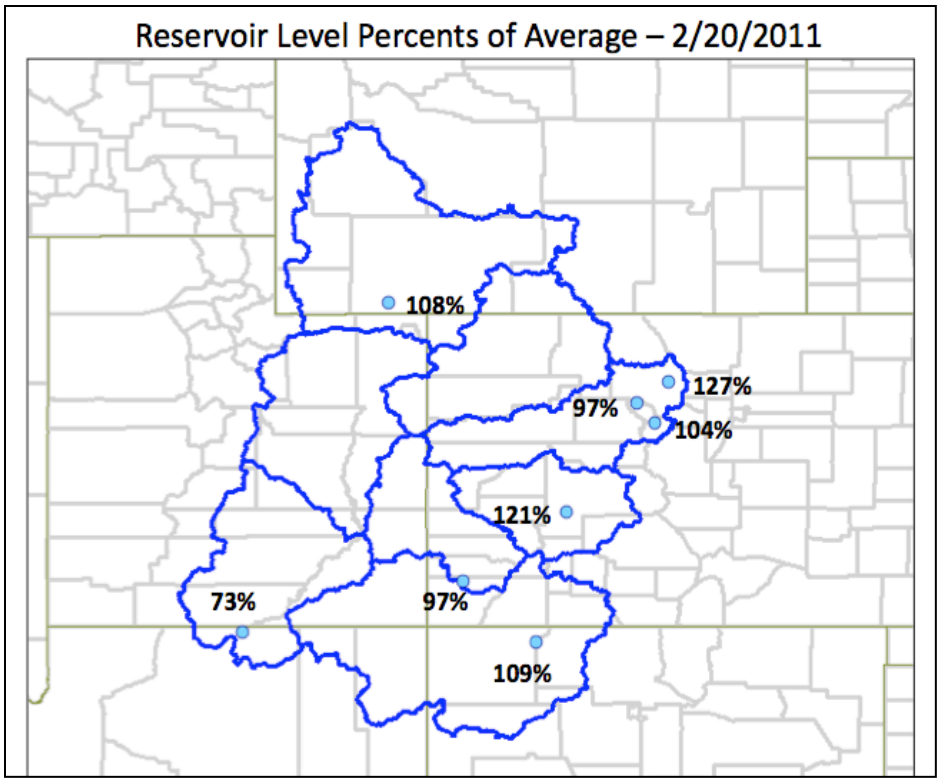


Fig. 7: Reservoirs levels as a percent of average for February 20th. Starting from top (clockwise): Flaming Gorge, Lake Granby, Green Mountain, Lake Dillon, Blue Mesa, McPhee, Navajo, and Lake Powell.

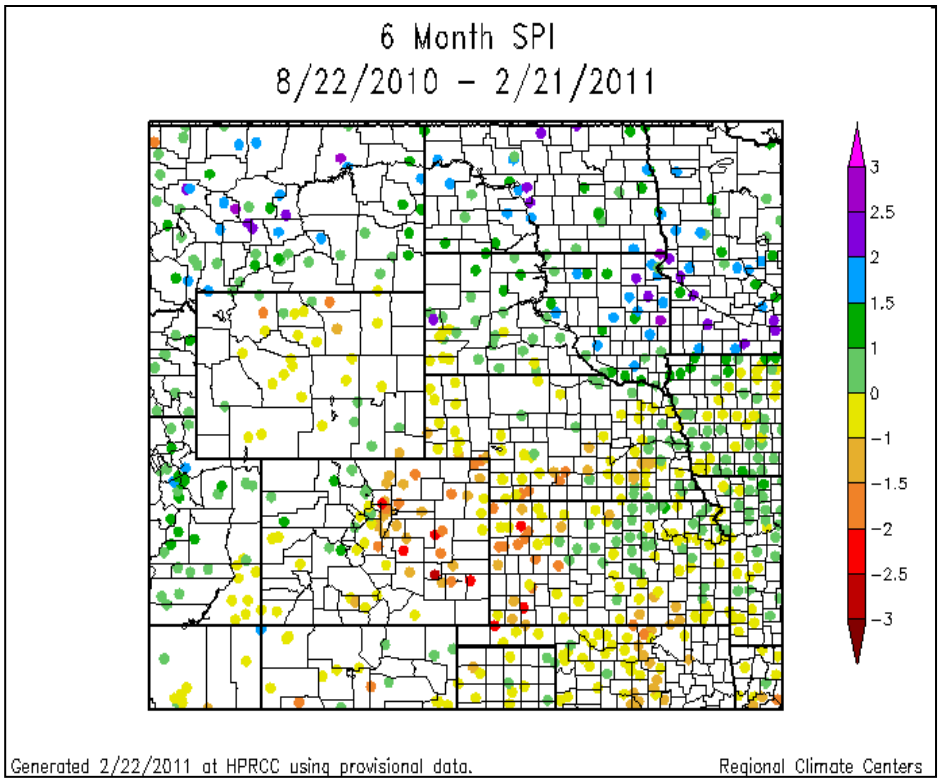
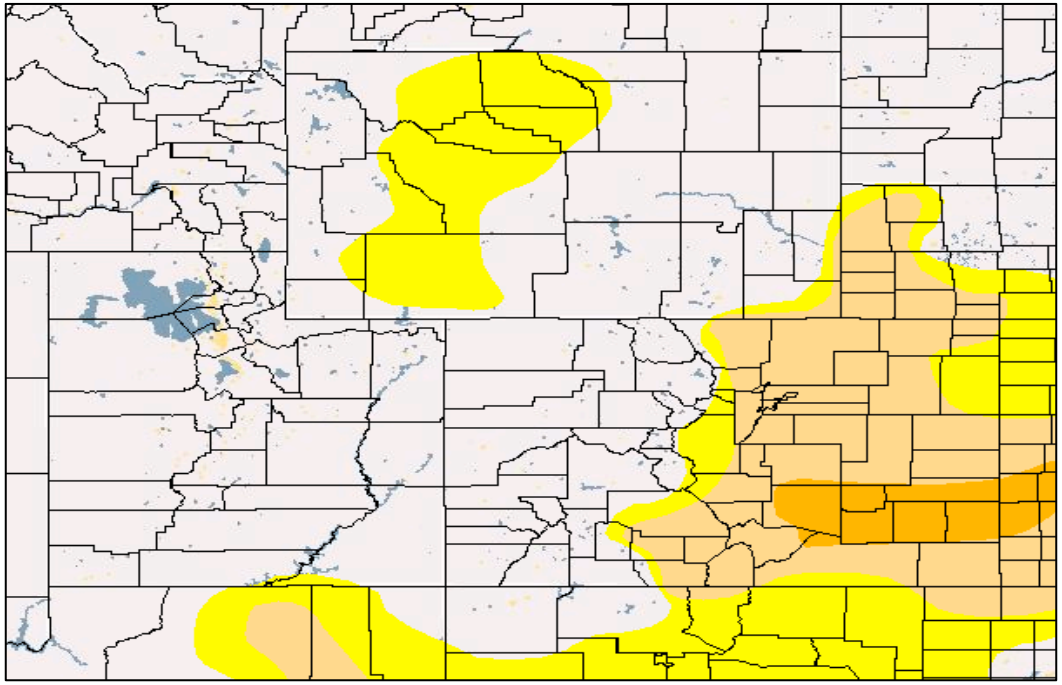
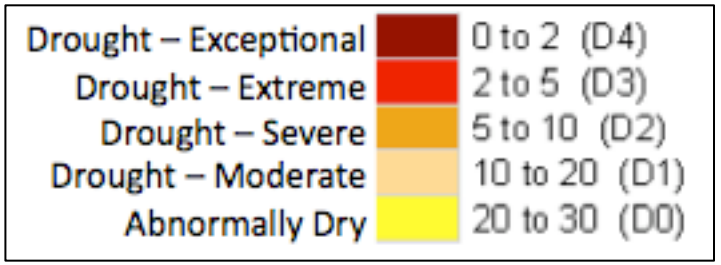


Fig. 8: 6 month SPI as of February 21st.

Drought and Water Discussion





Drought categories and
their associated percentiles

Fig. 9: February 15th release of U.S. Drought Monitor for the UCRB

Six month SPIs show the driest conditions over the eastern plains of Colorado (Fig. 8). Values in eastern Colorado mainly range from -1 to -3. Slightly negative SPI values can also be seen around the Four Corners region. According to the SPI map, conditions are good across northwest CO and northeast UT.

Grass fires have already been reported over many different areas in eastern Colorado recently. With a lack of moisture in the short term forecast, conditions will continue to deteriorate, and a degradation of drought categories will have to be considered in the near future.

For this week, status quo is recommended for the current U.S. Drought Monitor map (Fig. 9).