Spring 2011

Weekly Climate, Water & Drought Assessment

Today's Agenda

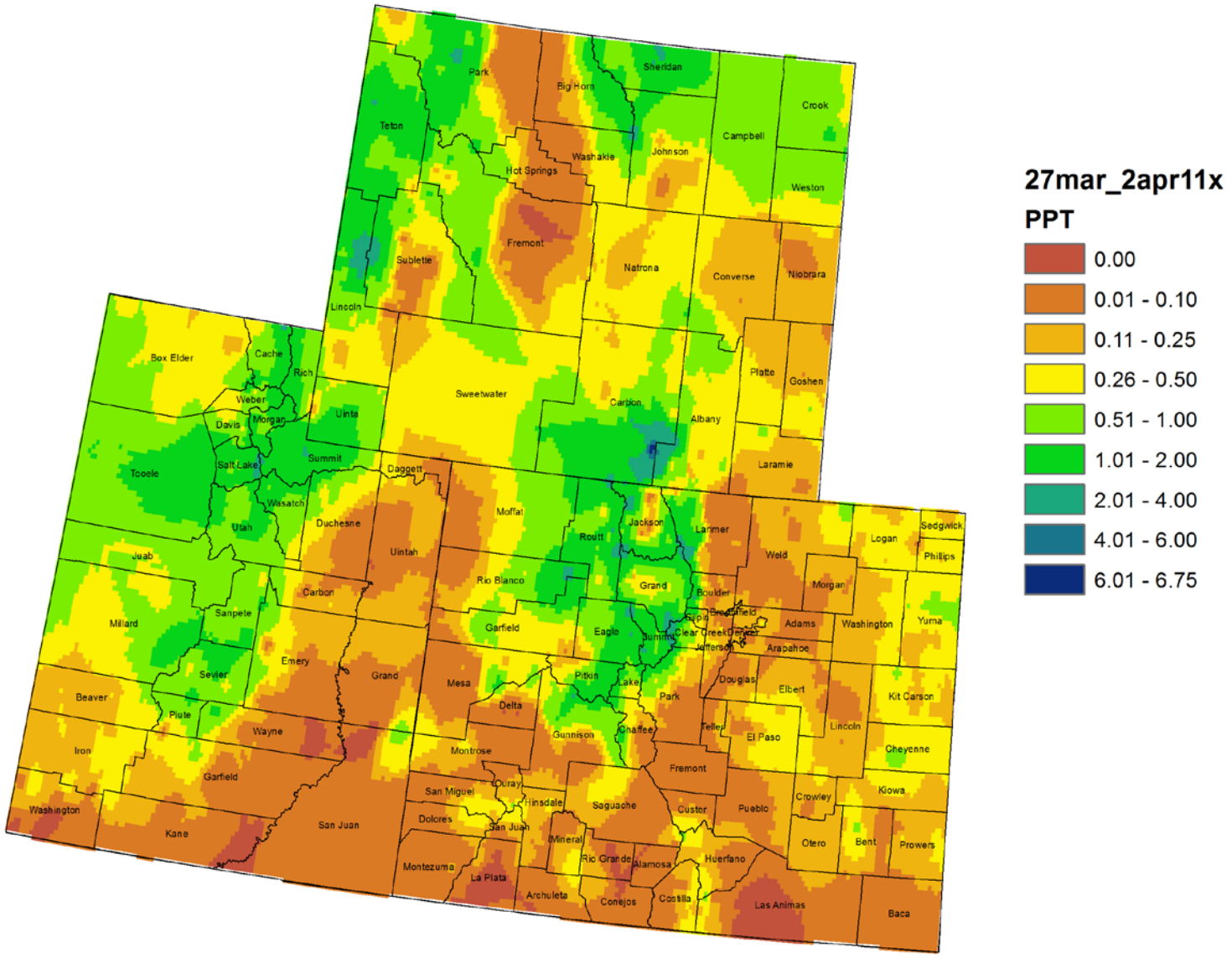
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

Precipitation/Snowpack Update

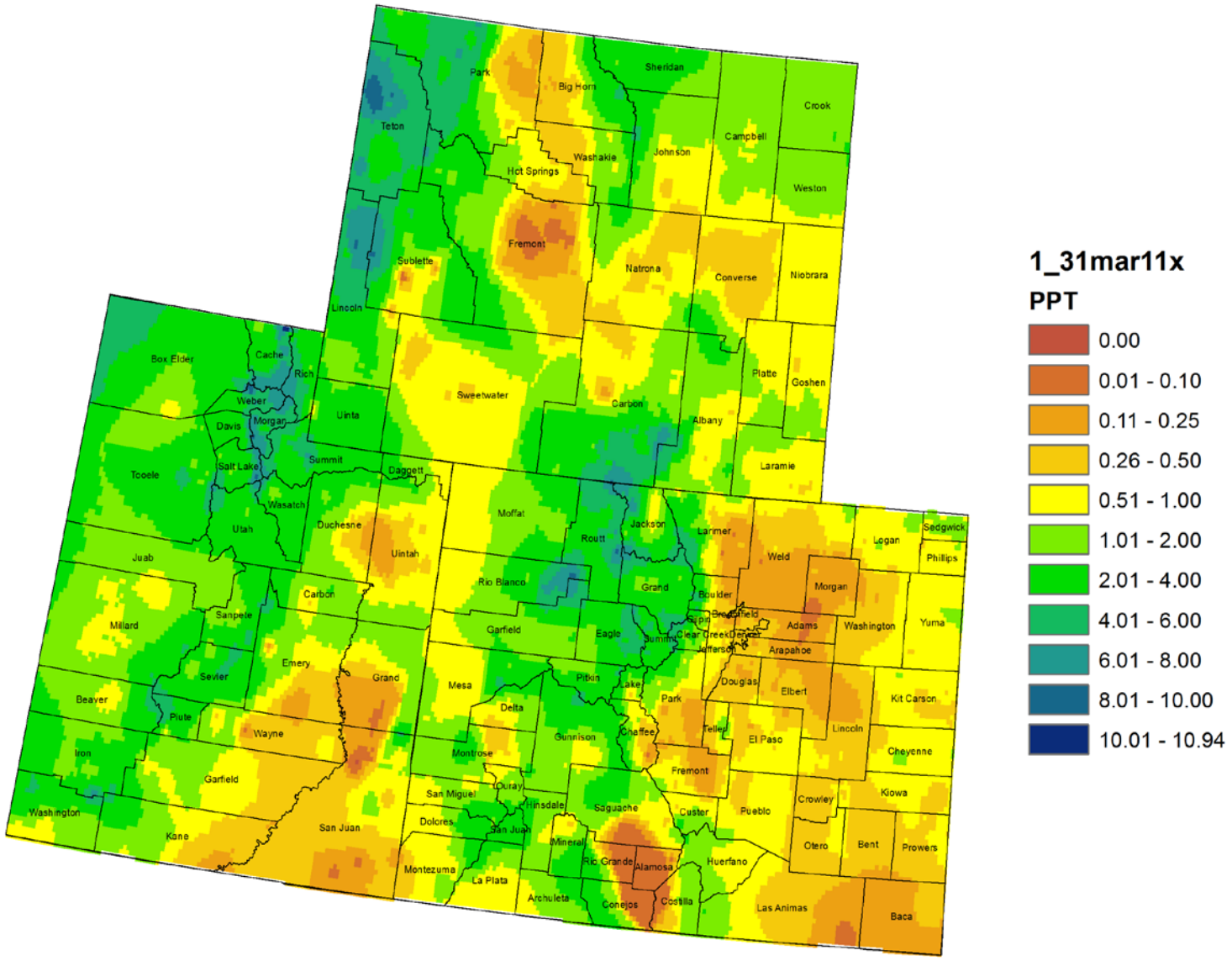
Colorado, Utah and Wyoming 7 Day Precipitation (in)
27 March - 2 April 2011



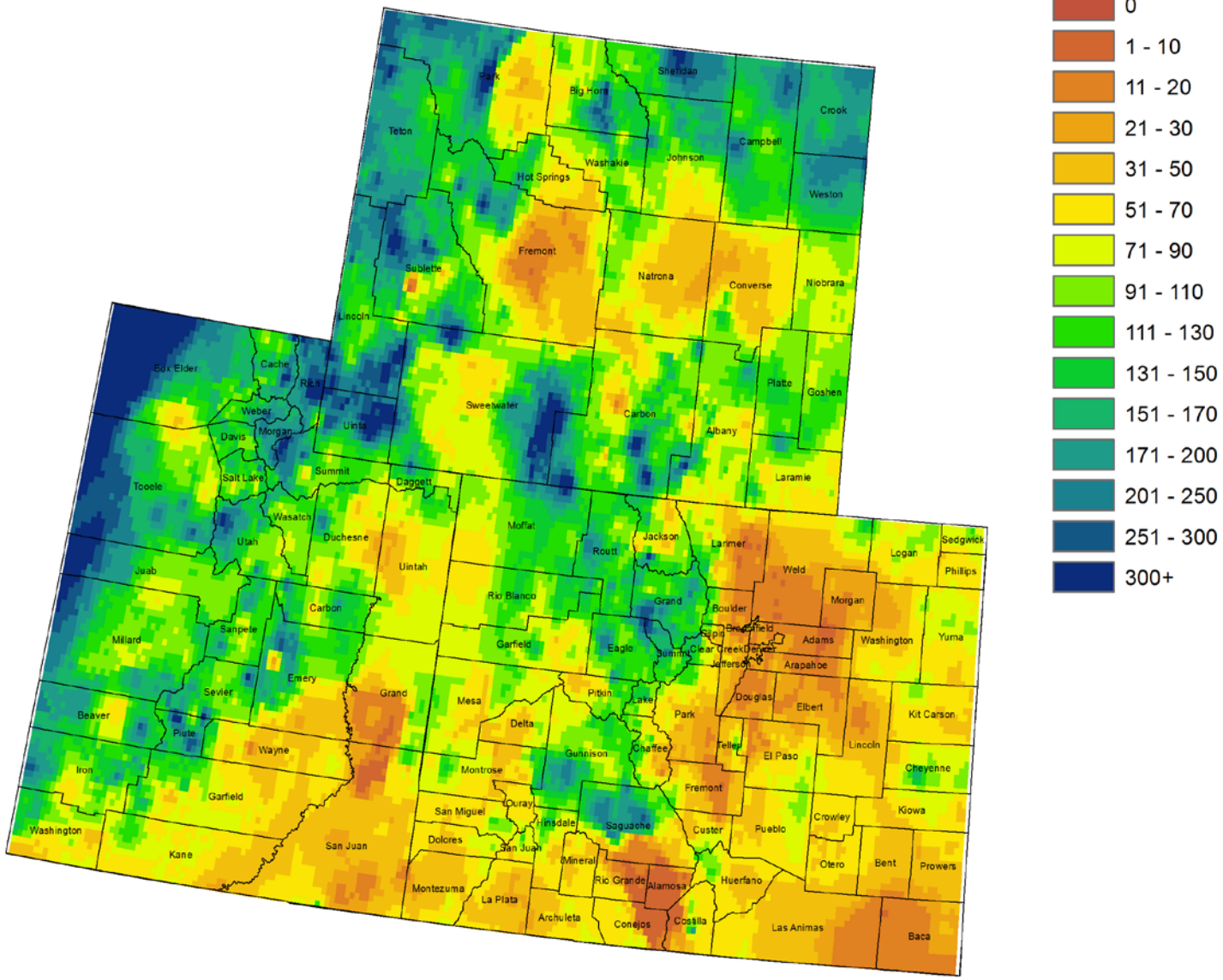
27mar_2apr11x
PPT

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 6.00
- 6.01 - 6.75

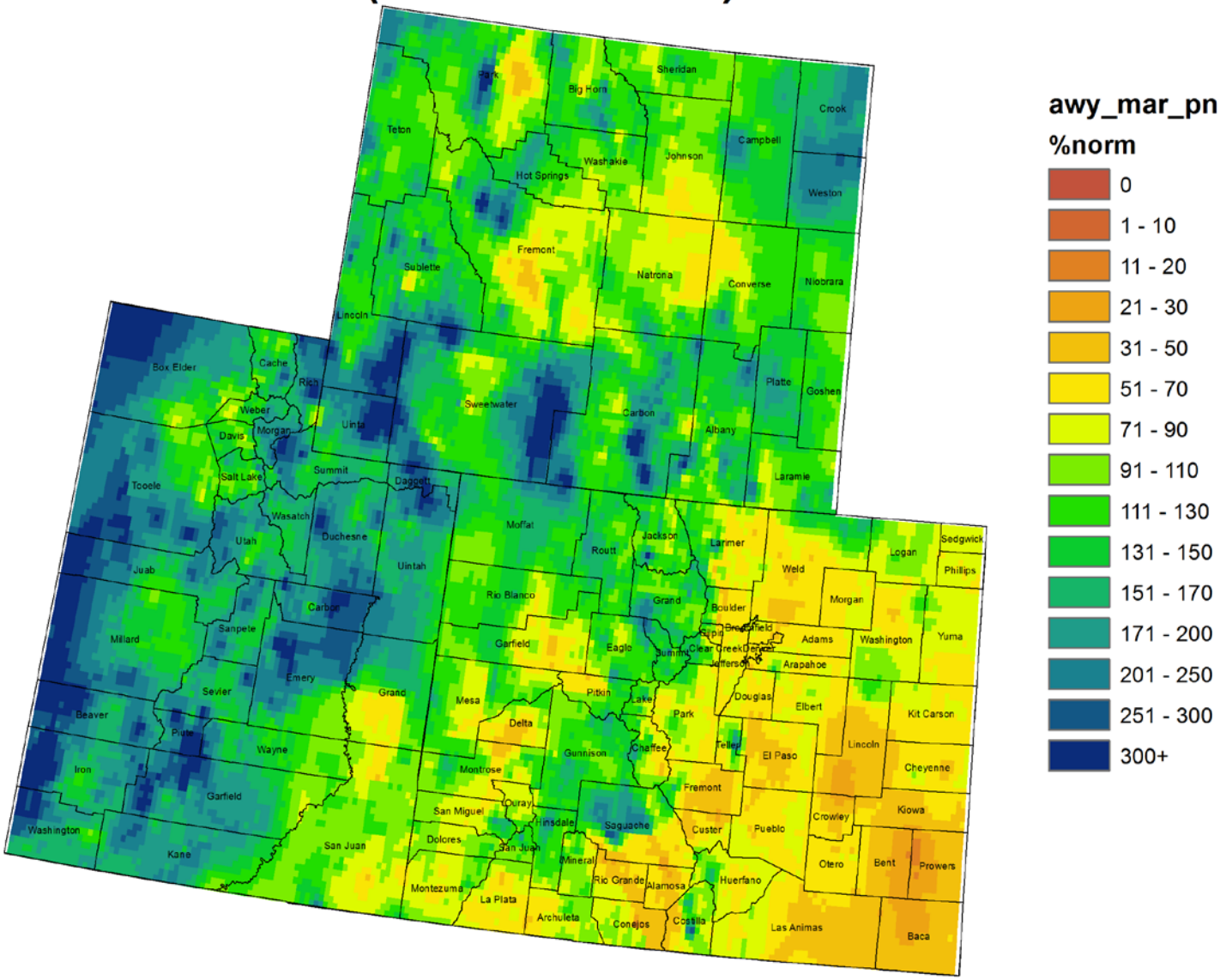
Colorado, Utah and Wyoming March 2011 Precipitation (in)



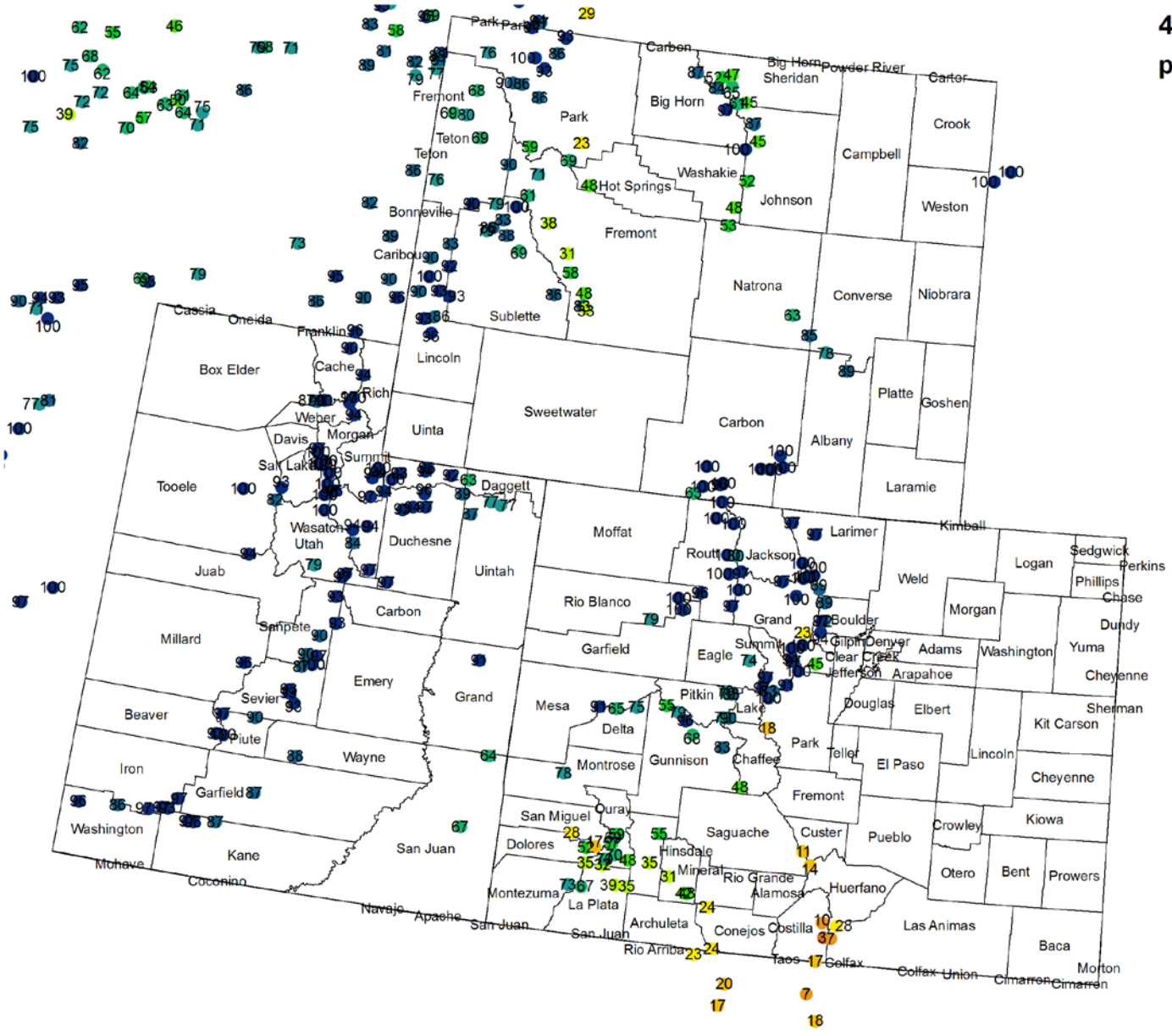
Colorado, Utah and Wyoming March 2011 Precipitation as Percentage of Normal



Colorado, Utah and Wyoming Water Year 2011 as Percentage of Normal (Oct 10 - Mar 11)



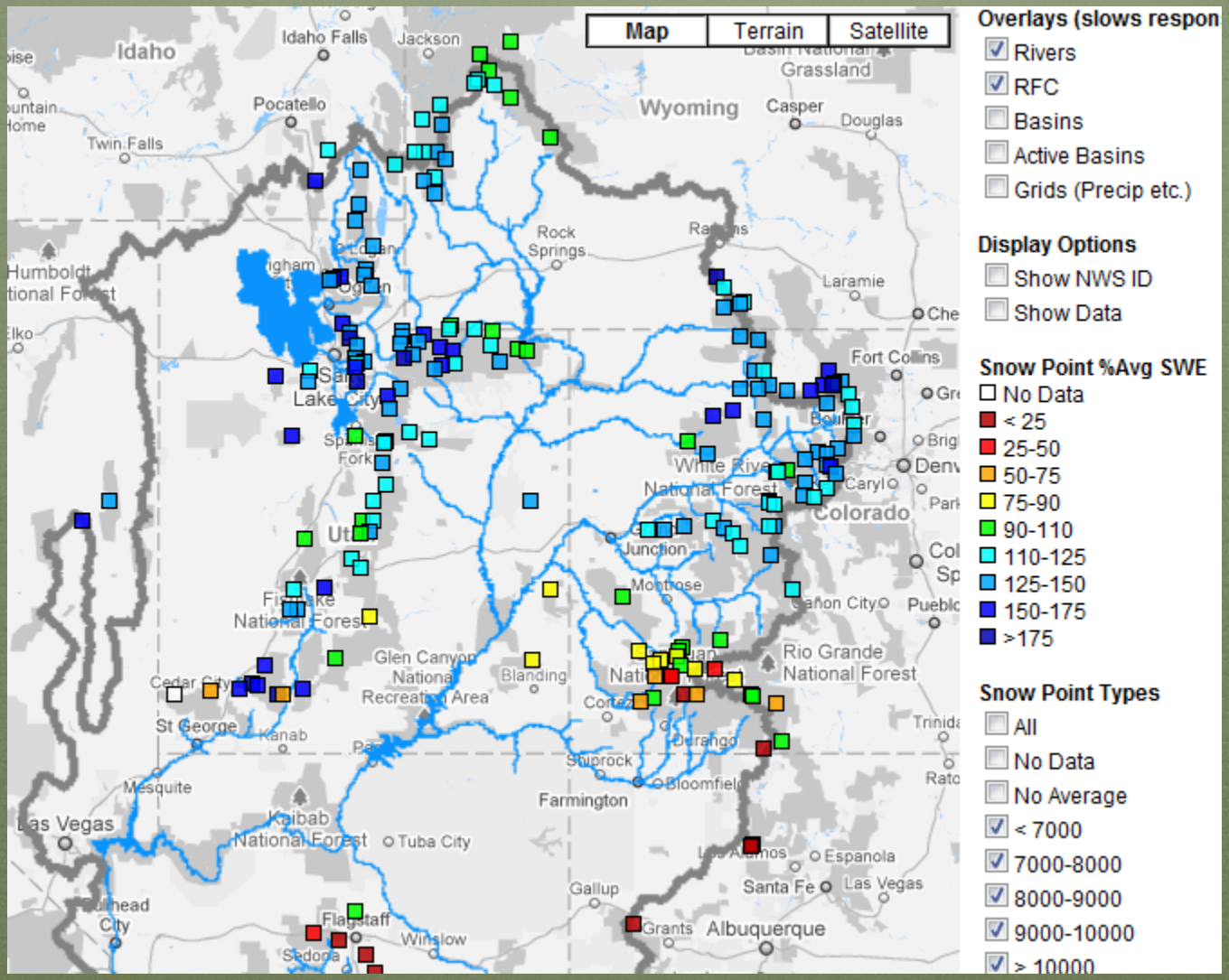
Snotel Water Year Precipitation Percentile Ranking
4 April 2011



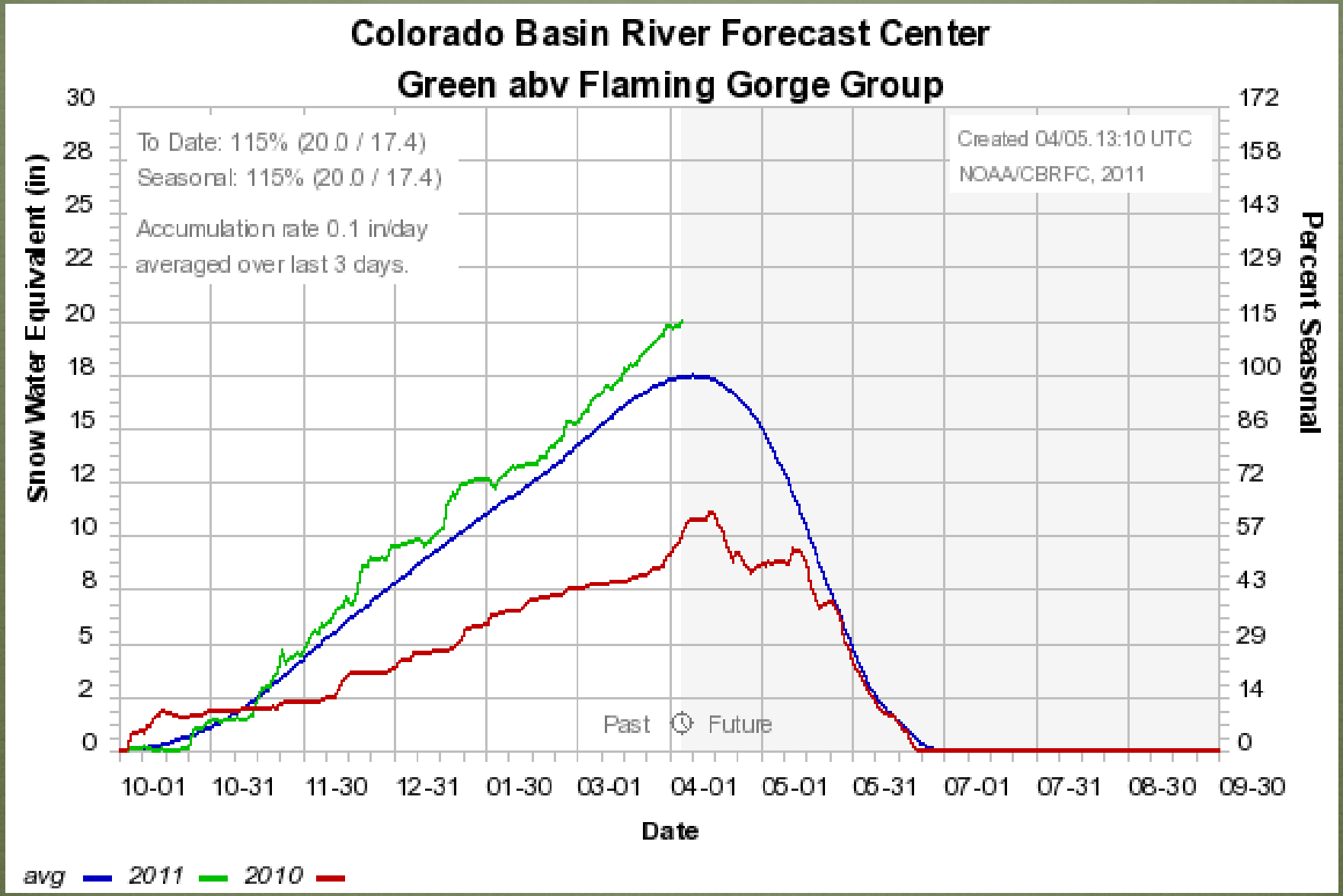
4Apr11_ptile.tab Events
pctile

- D4: 0 - 2
- D3: 3 - 5
- D2: 6 - 10
- D1: 11 - 20
- D0: 21 - 30
- Uncategorized: 31 - 40
- Uncategorized: 41 - 50
- Uncategorized: 51 - 60
- Uncategorized: 61 - 70
- Uncategorized: 71 - 80
- Uncategorized: 81 - 90
- Uncategorized: 91 - 100

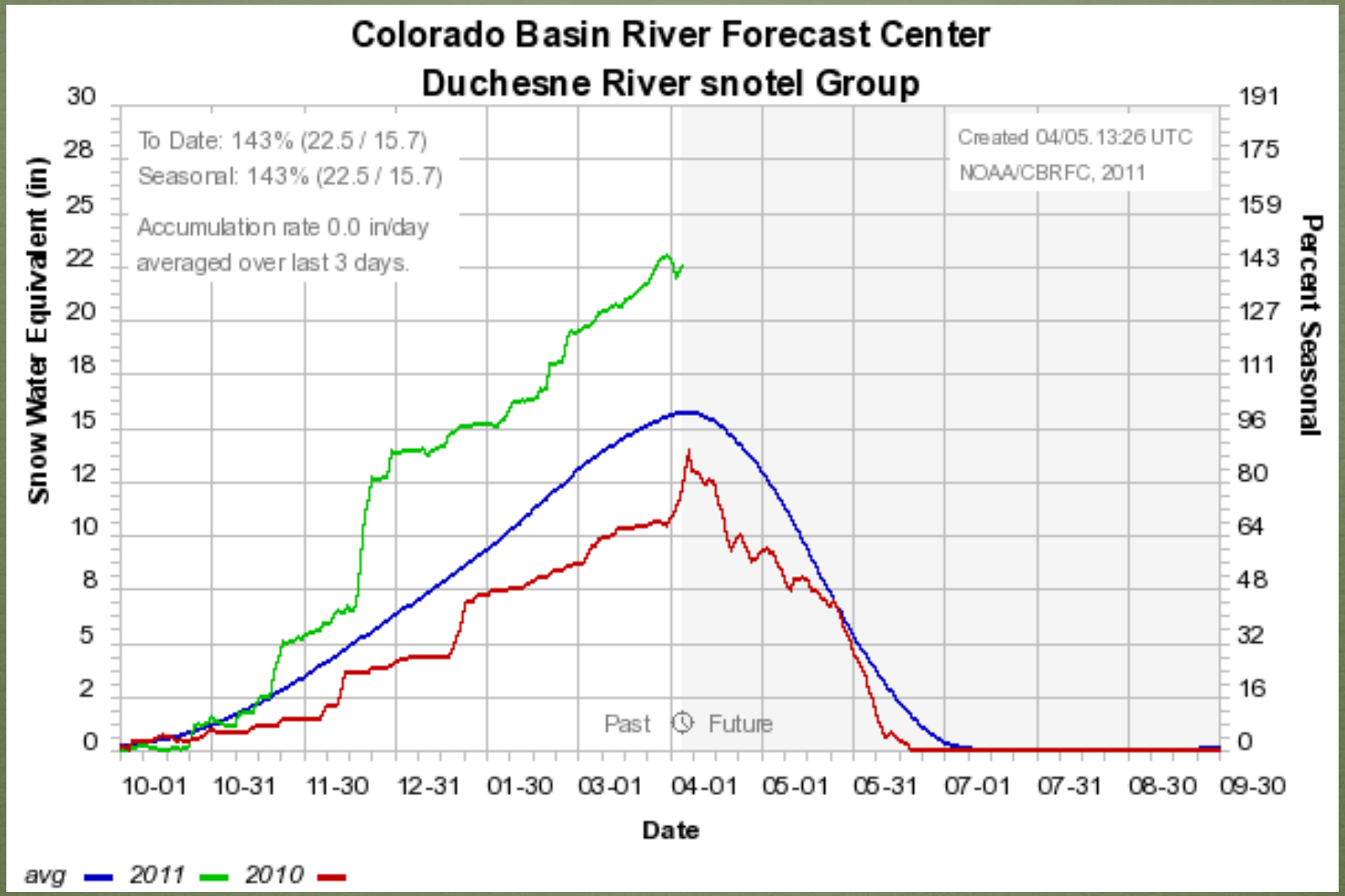
Upper Colorado River Basin Snow



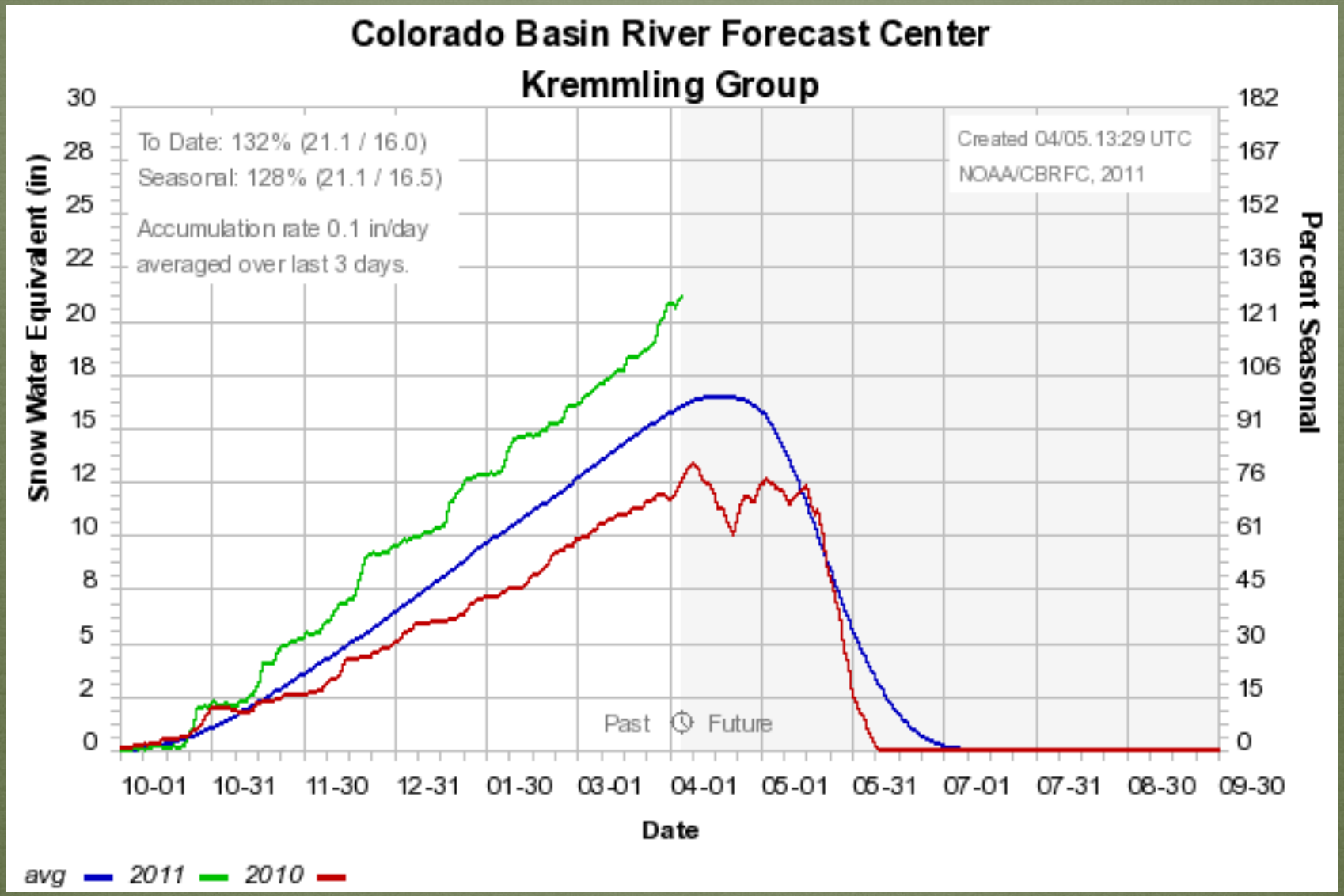
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



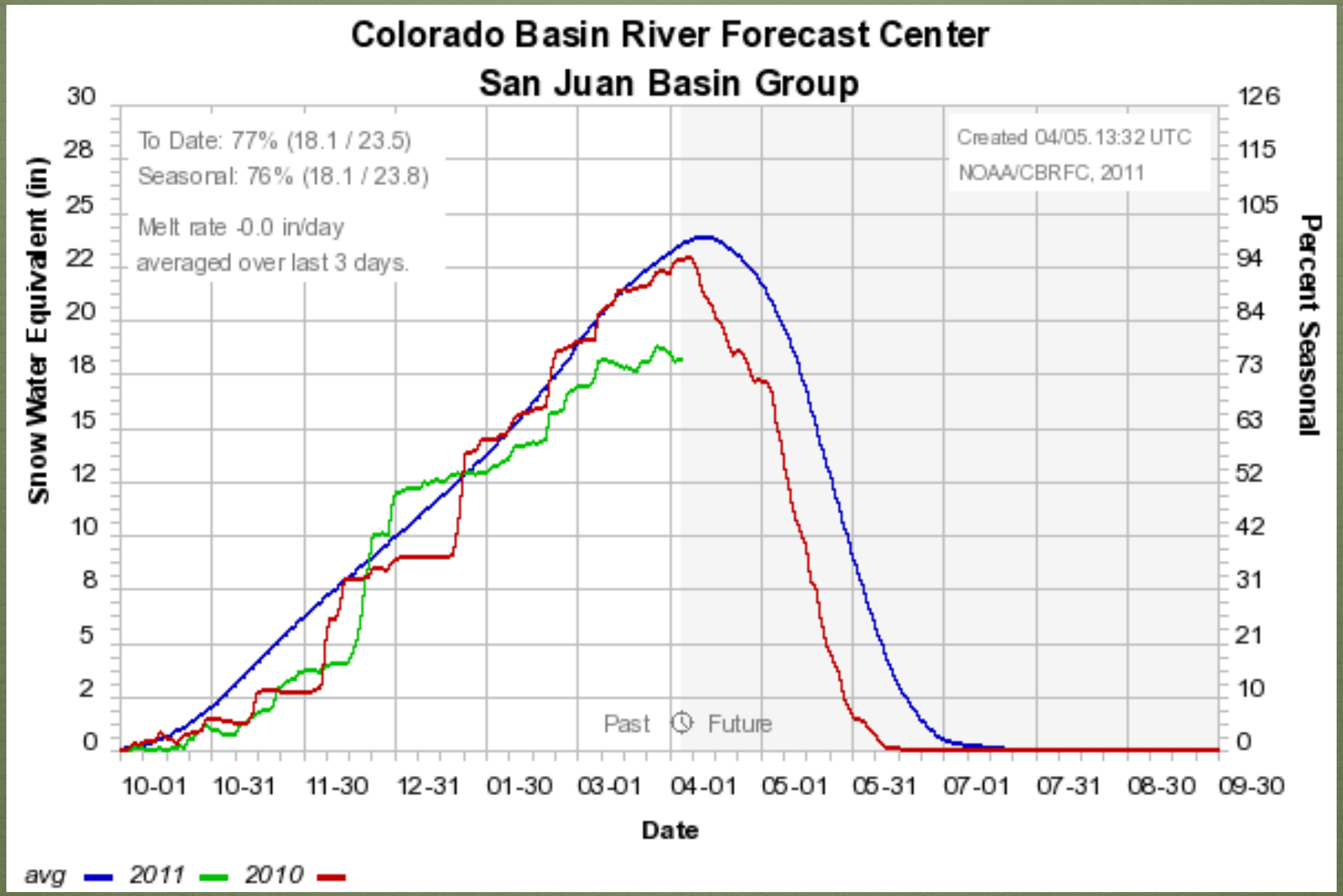
Snowpack % of average to date: 113%
Percent of average peak: 110%



Snowpack % of average to date: 143%
Percent of average peak: 143%



Snowpack % of average to date: 132%
Percent of average peak: 128%

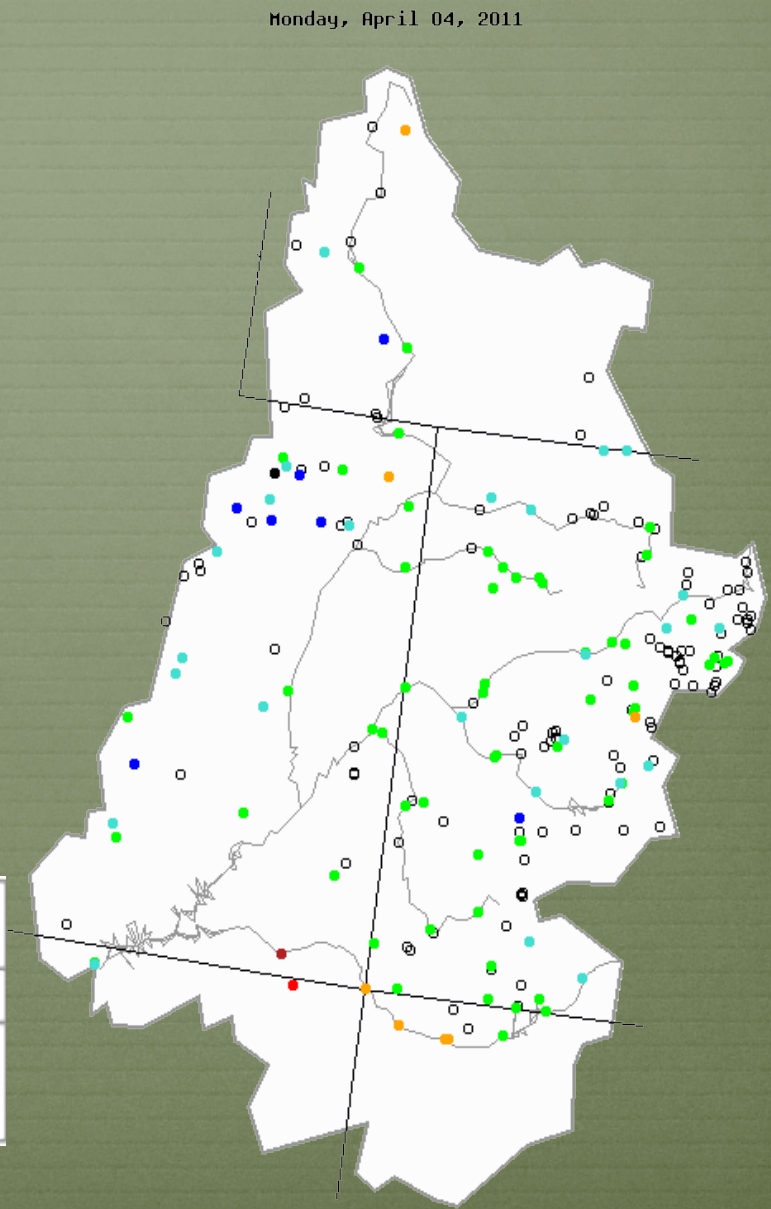


Snowpack % of average to date: 77%
Percent of average peak: 76%

Streamflow Update

Michael Lewis USGS

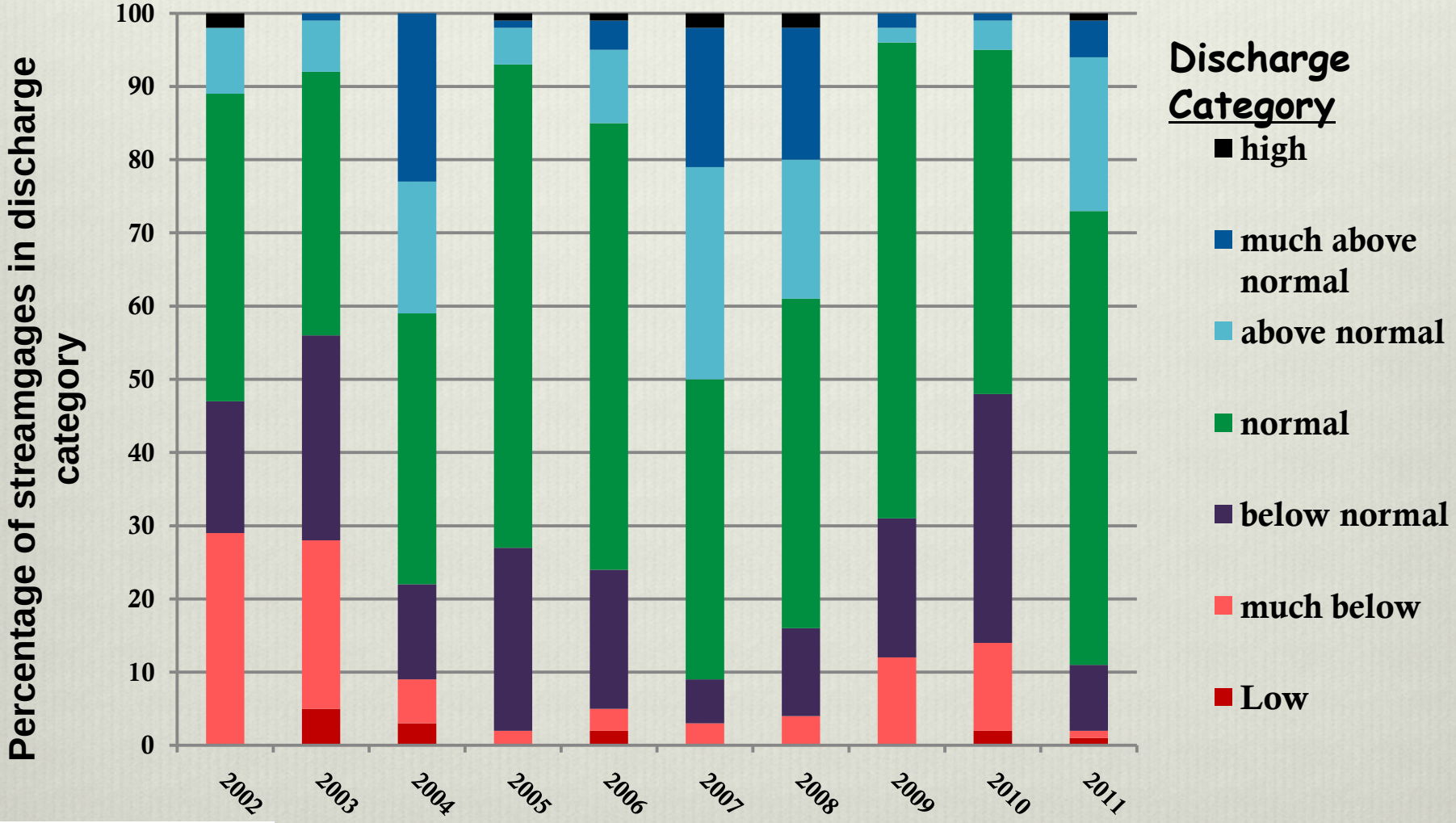
7-day average discharge compared to historical discharge for the day of the year (April 4)



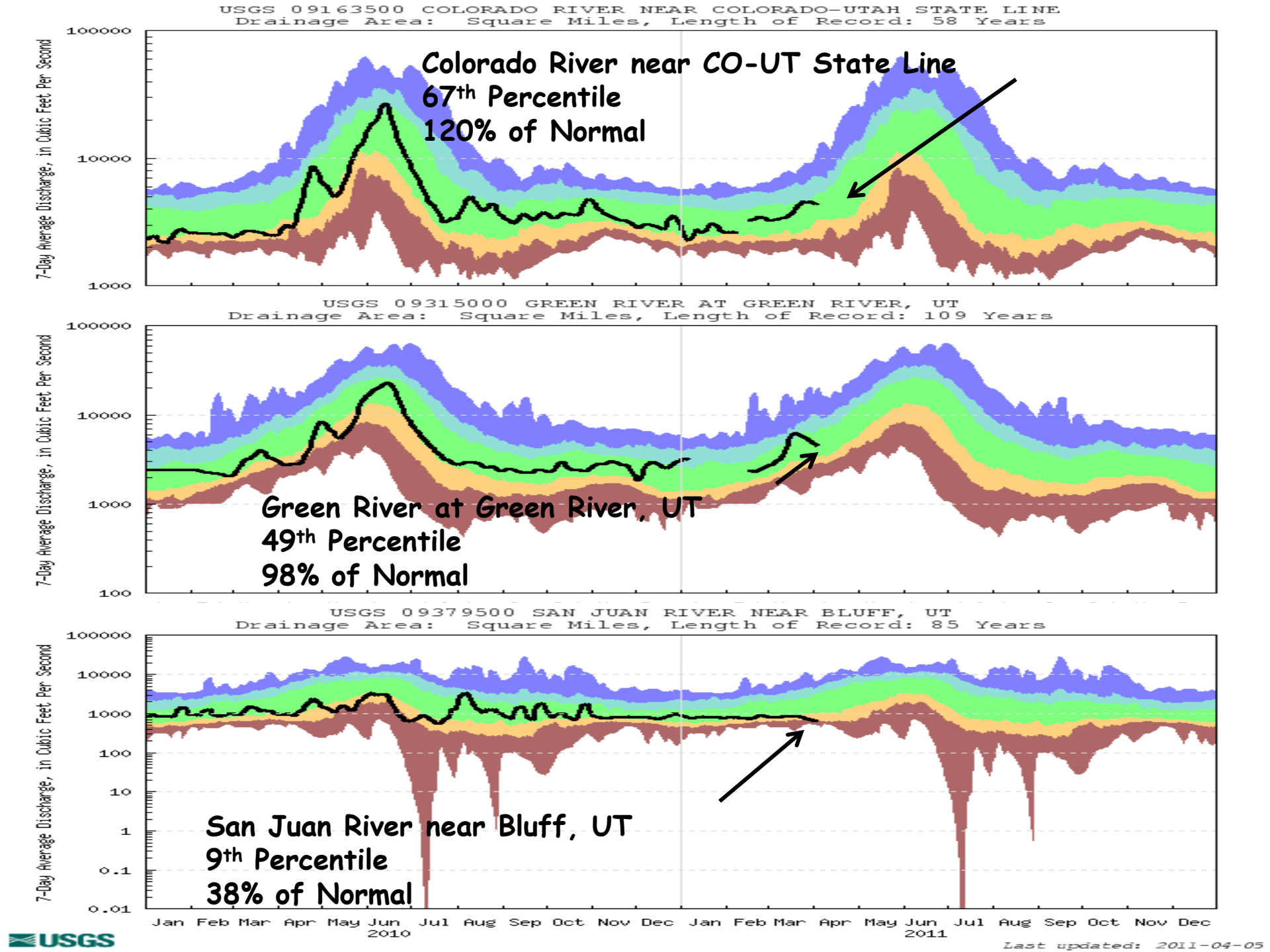
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

-Upper Colorado River Basin- Comparison of 7-day Average Discharge For April 4, 2002-2011



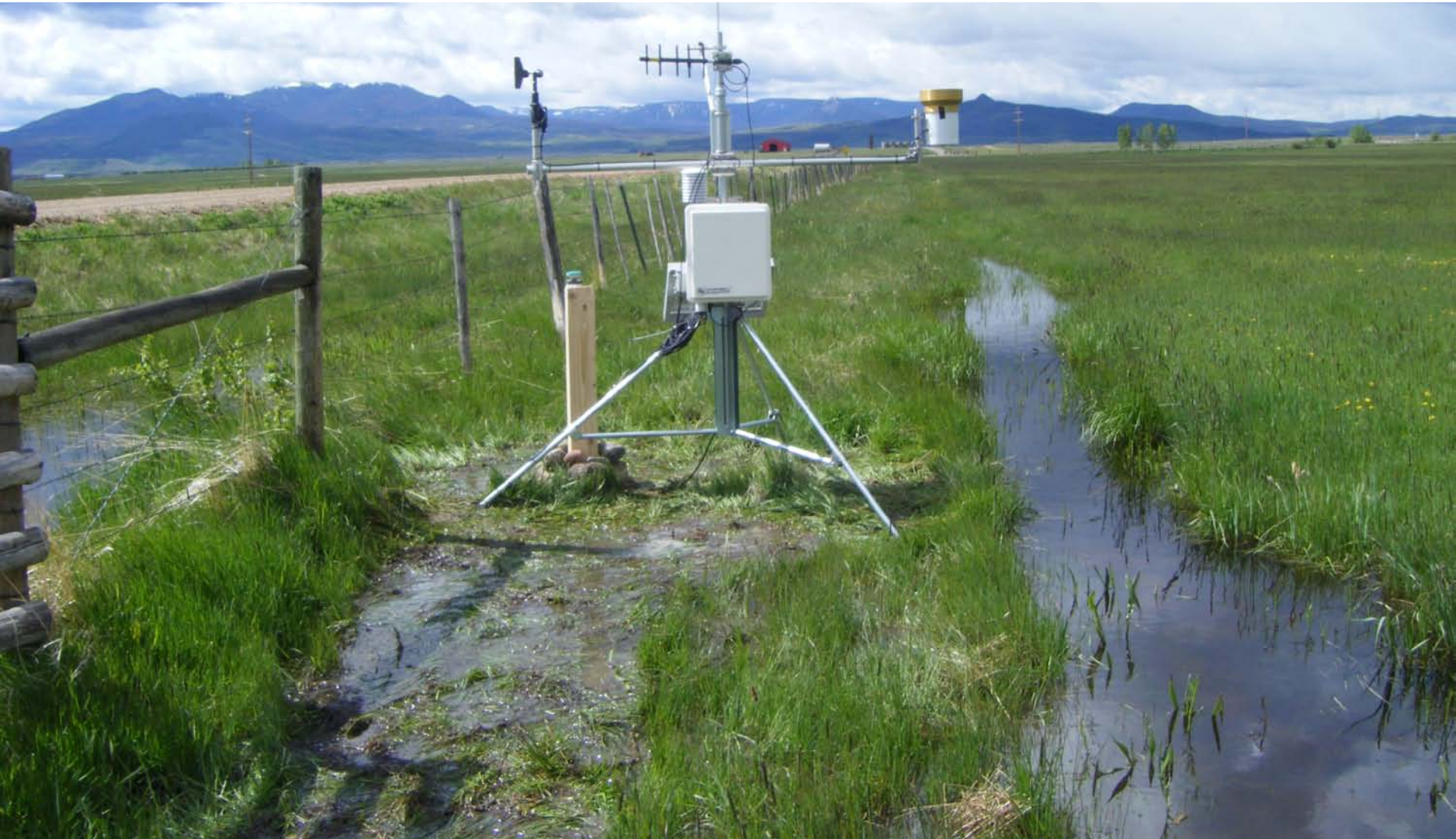
USGS



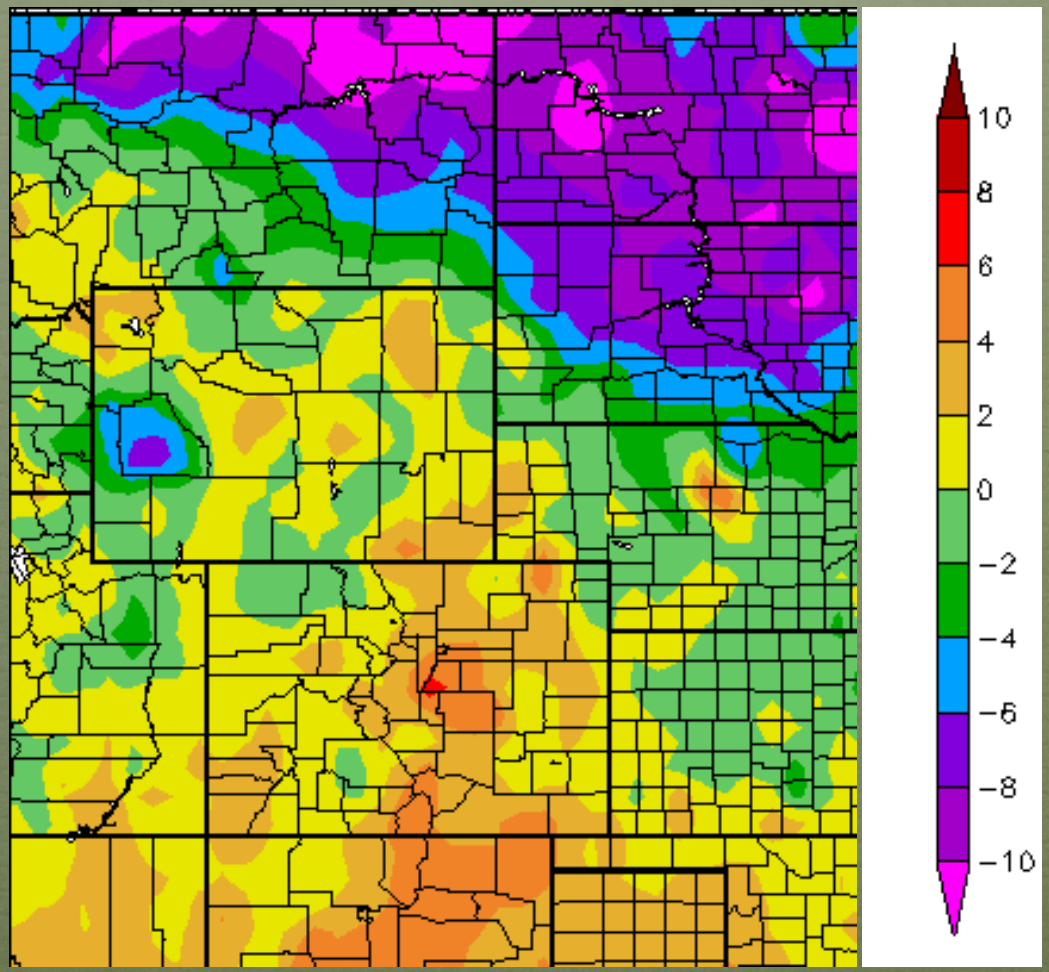
USGS

Last updated: 2011-04-05

Water Demand

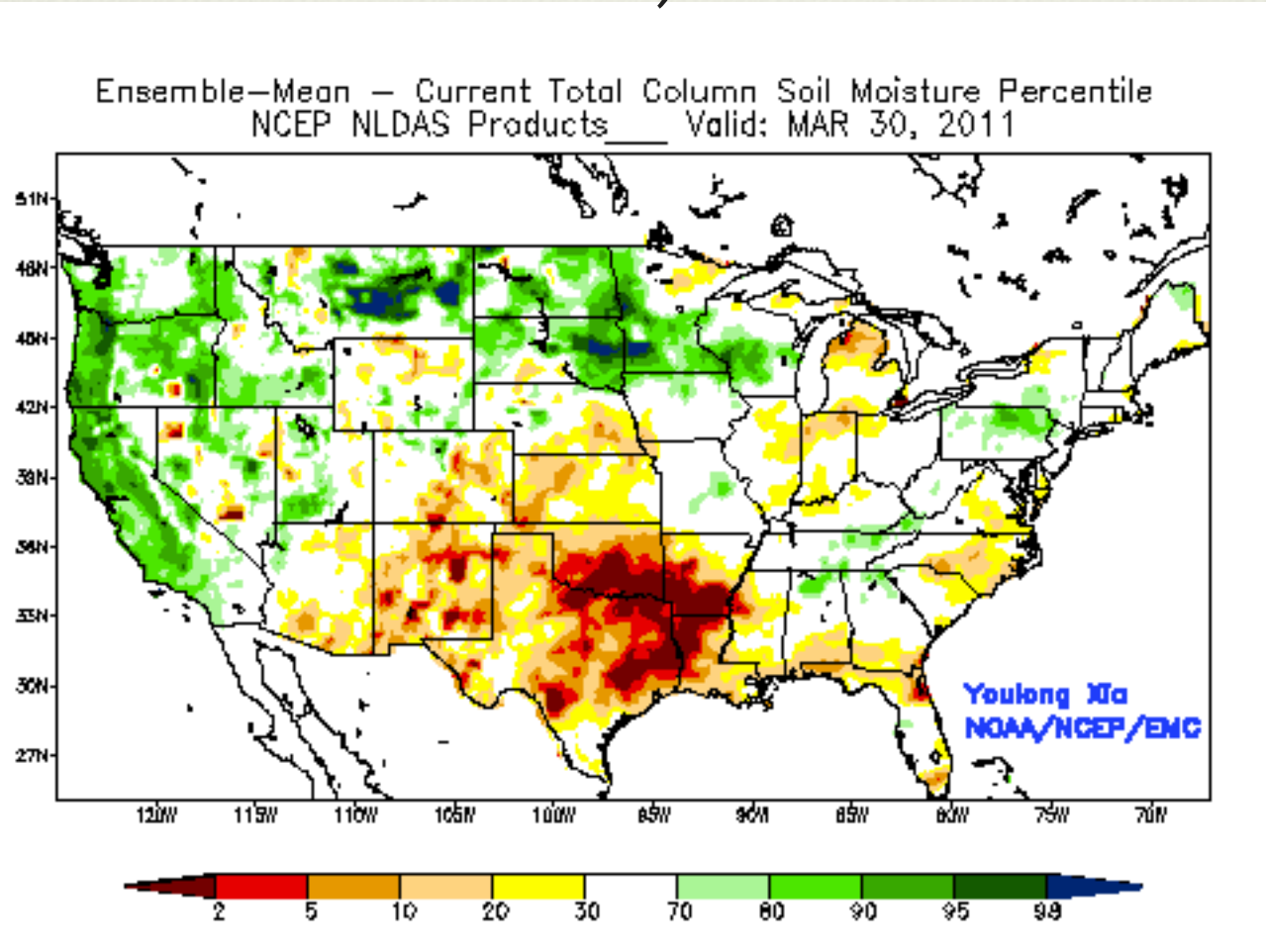


Temperature Departure from Normal
03/01/2011 – 03/31/2011

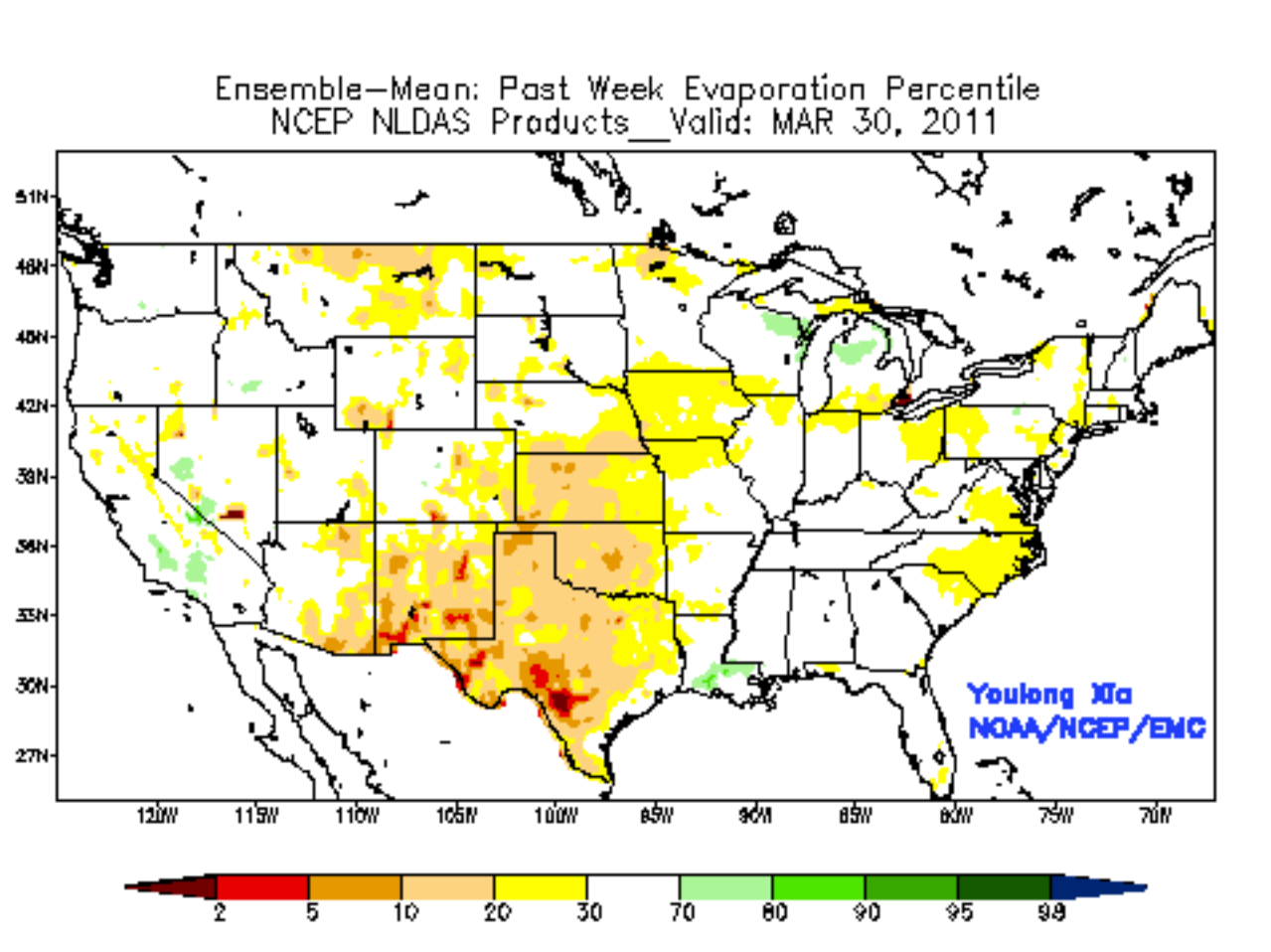


High Plains Regional Climate Center

NLDAS Ensemble Total Column Soil Moisture for 30 March, 2011

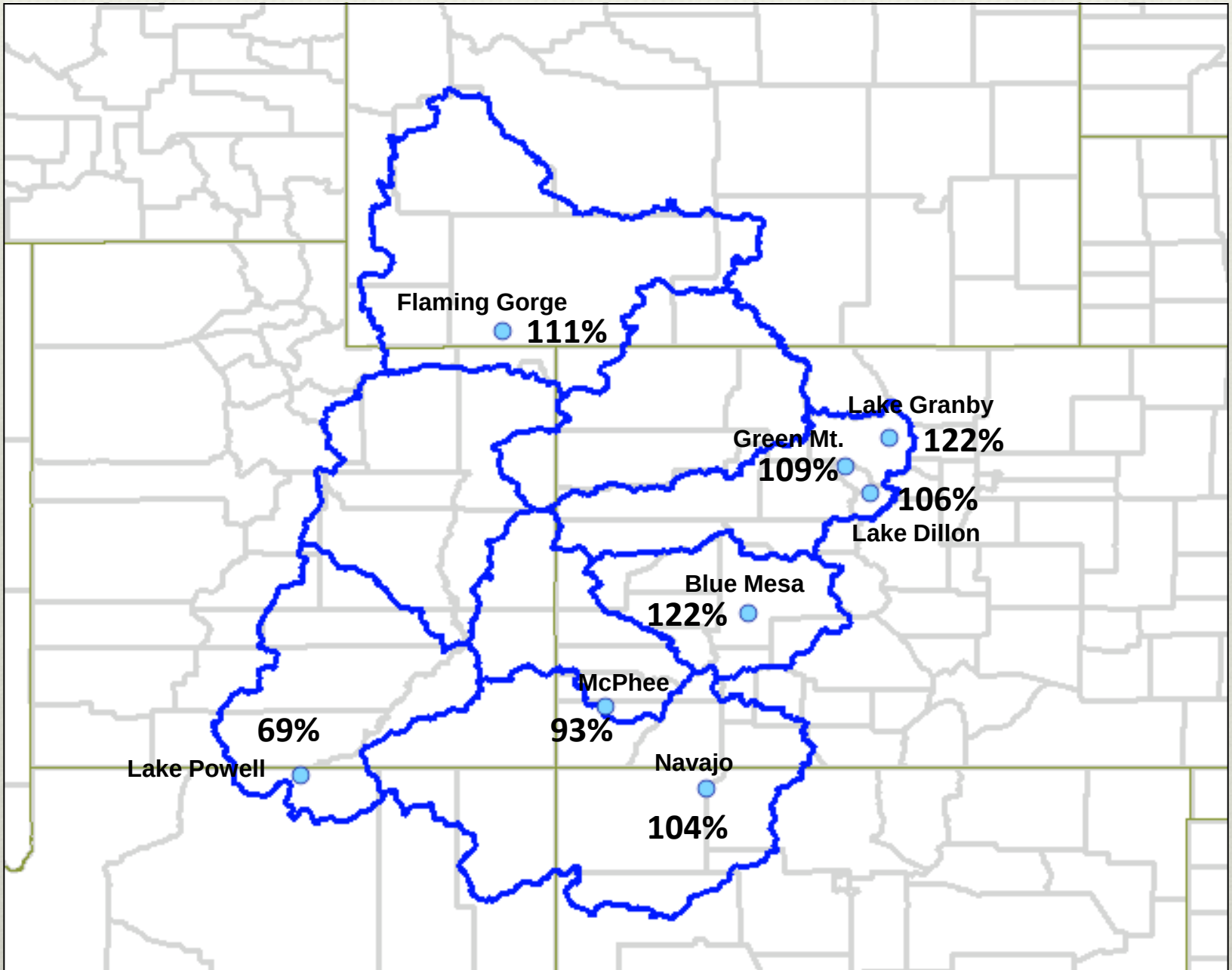


NLDAS Ensemble Evaporation Percentiles for Week Ending 30 March, 2011

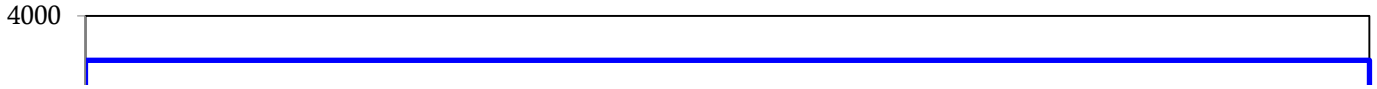


Reservoir Update

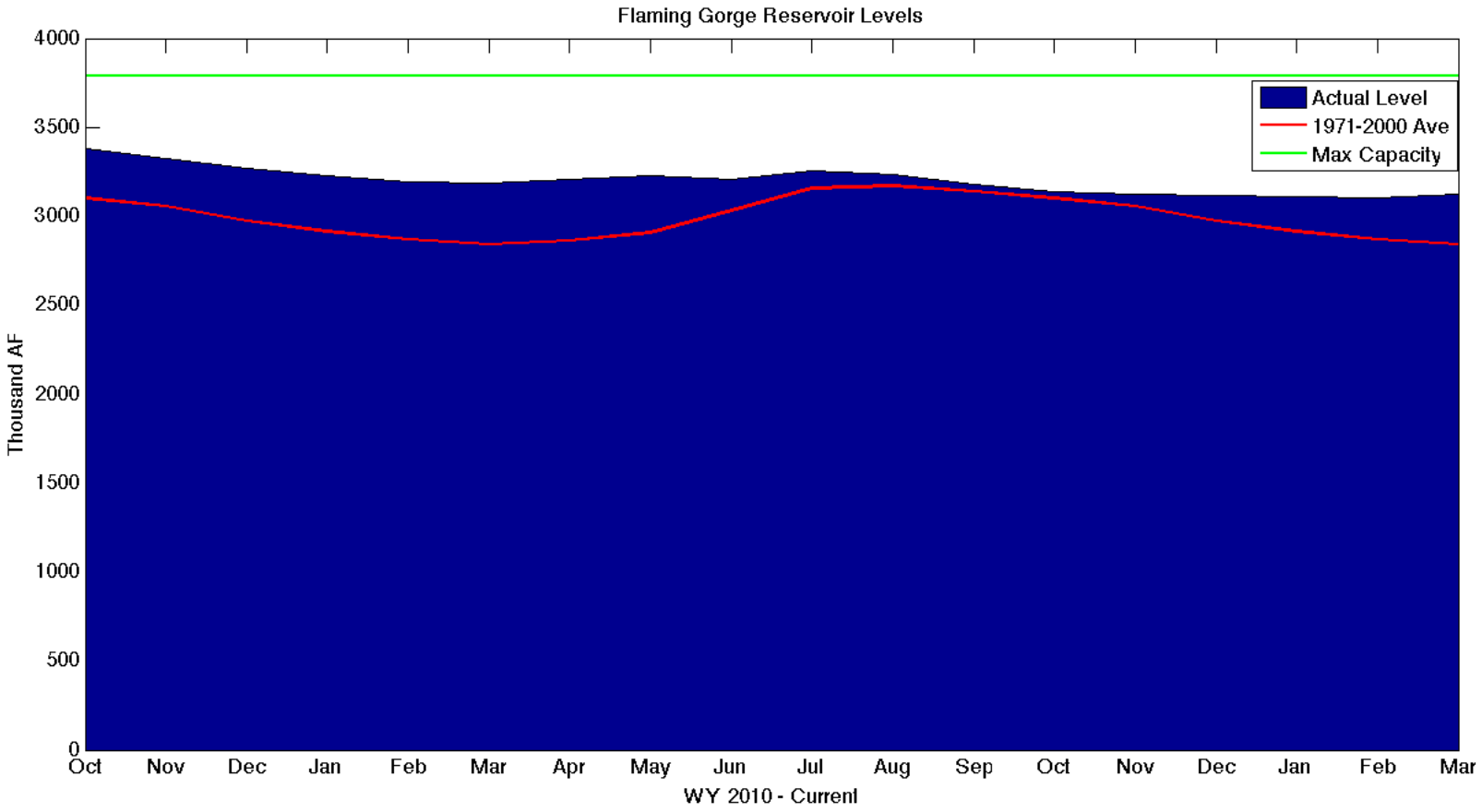
Reservoir Level Percents of Average – 4/3/2011



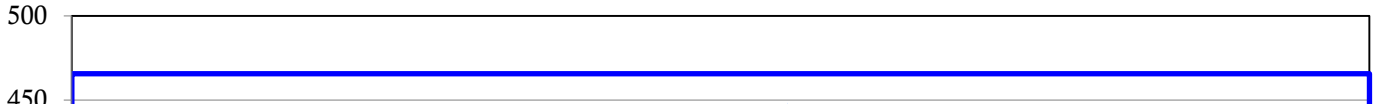
Flaming Gorge March Reservoir Storage



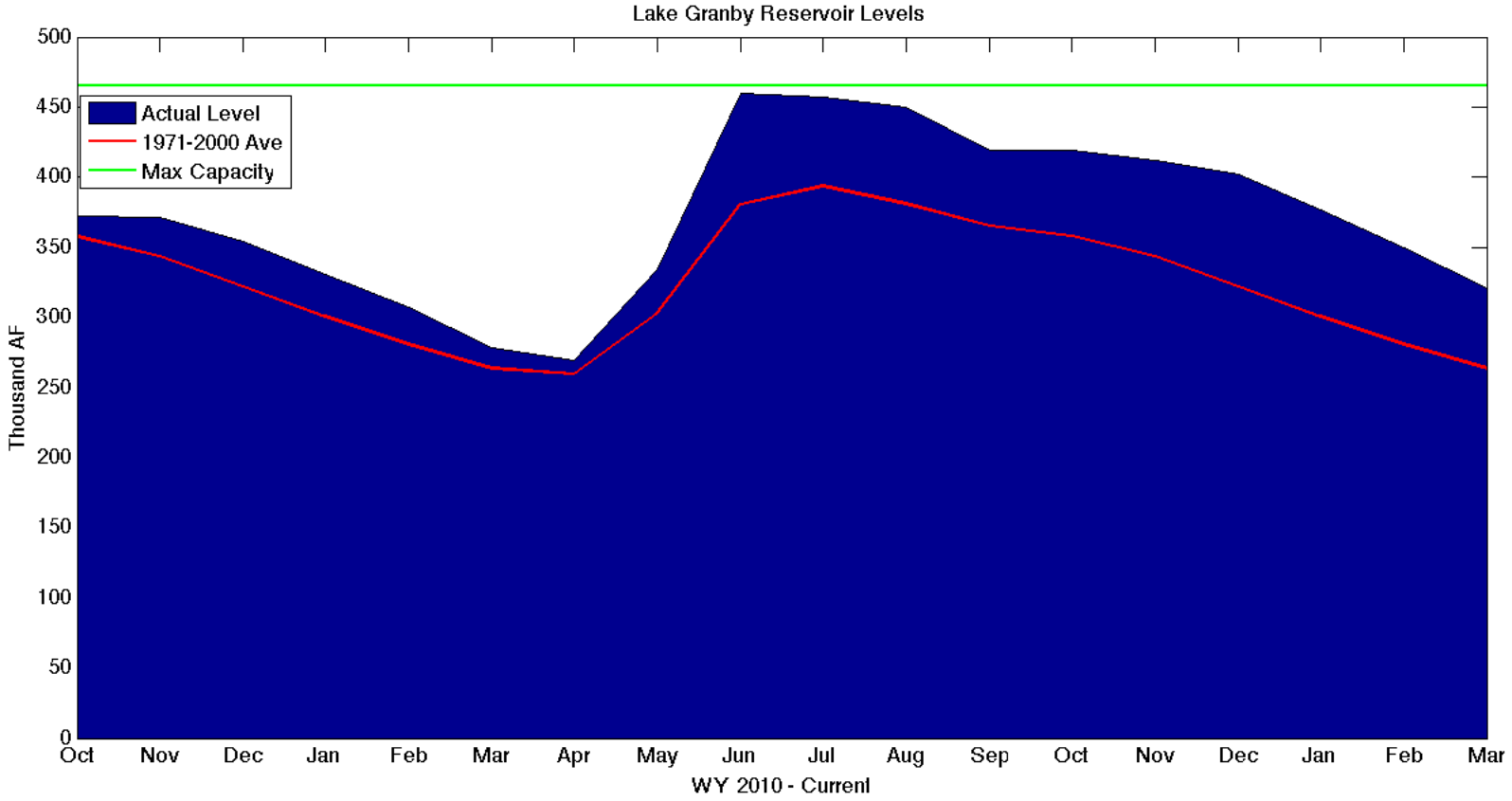
Max Capacity



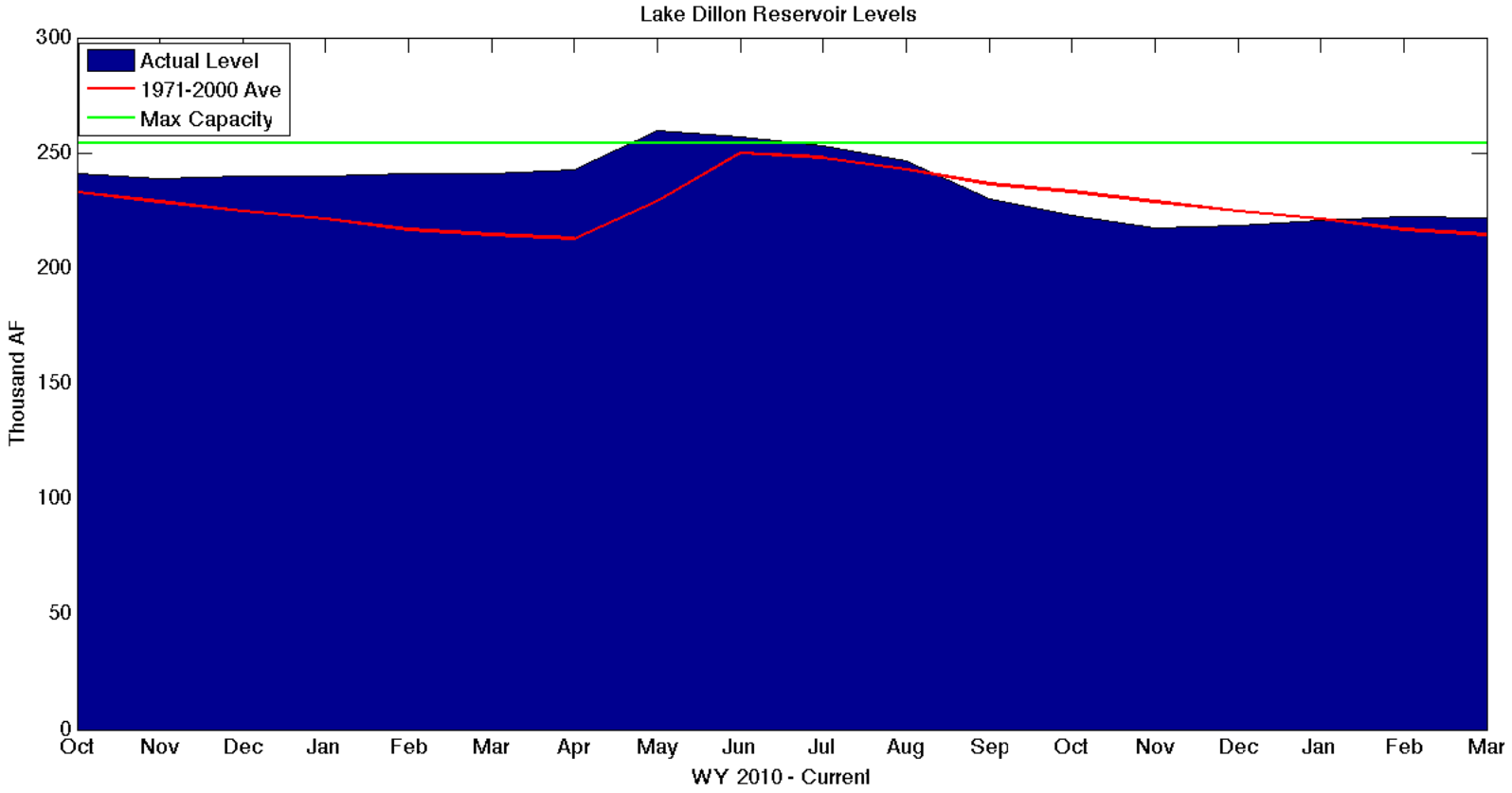
Lake Granby March Reservoir Storage



Max Capacity



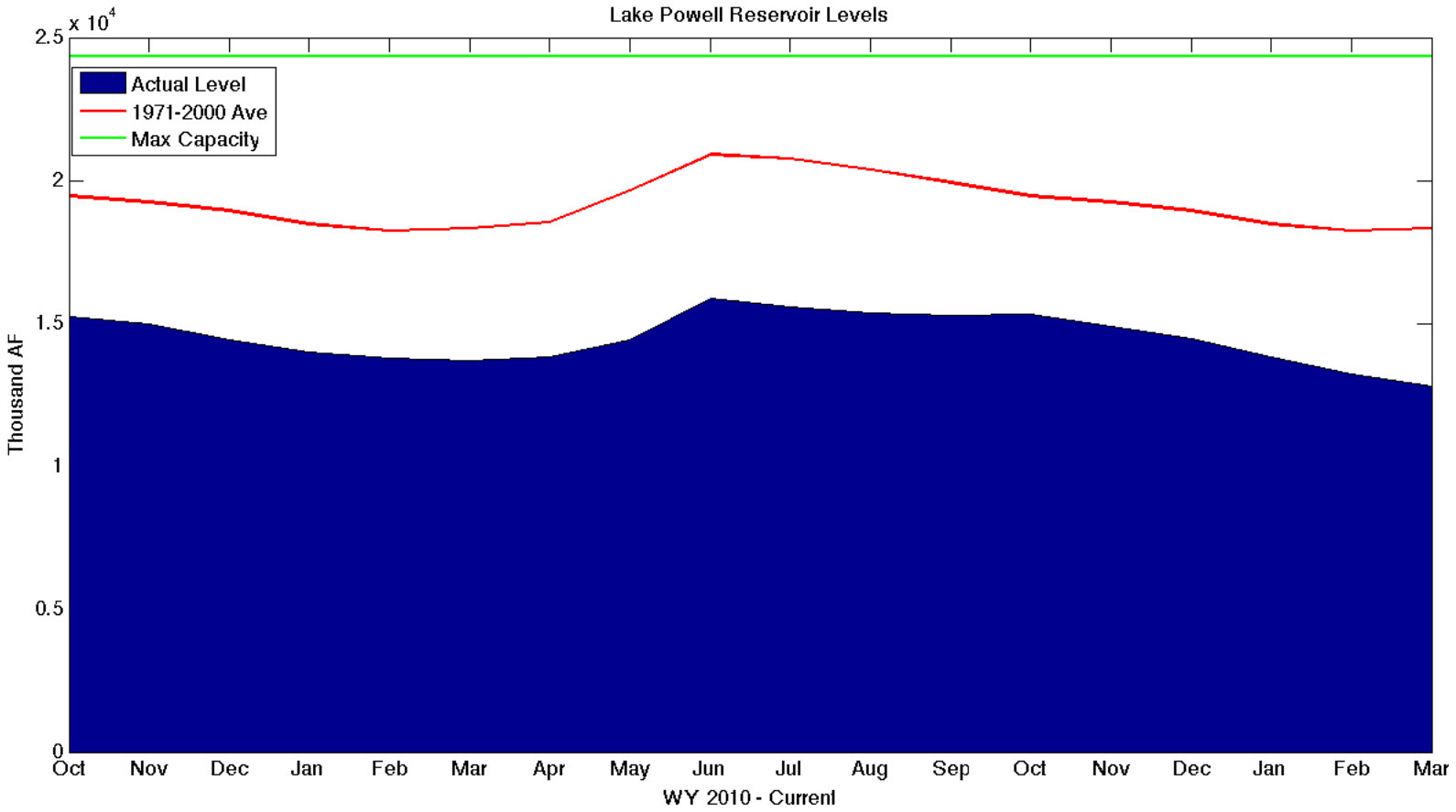
Lake Dillon March Reservoir Storage



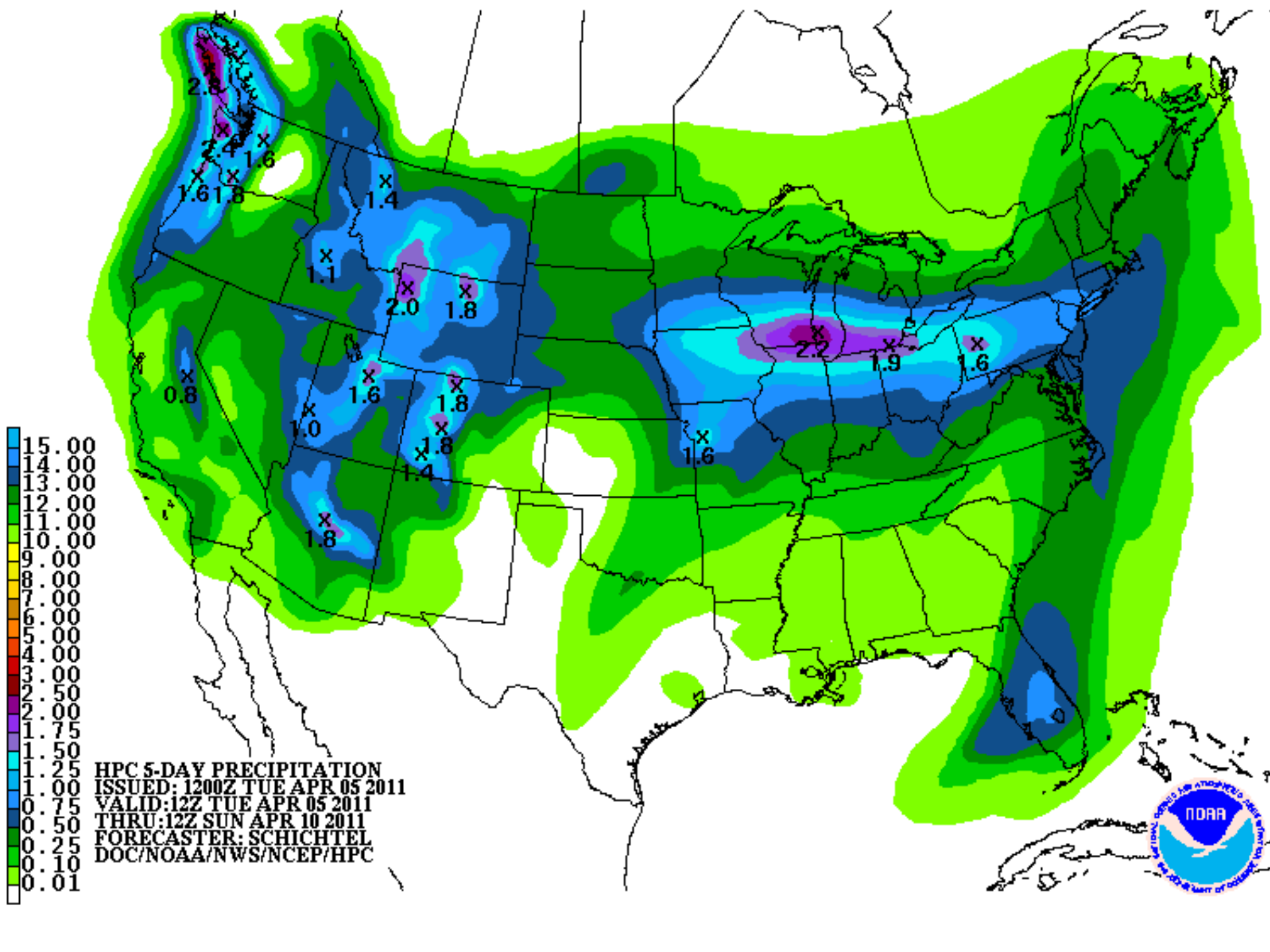
Lake Powell March Reservoir Storage

25000000

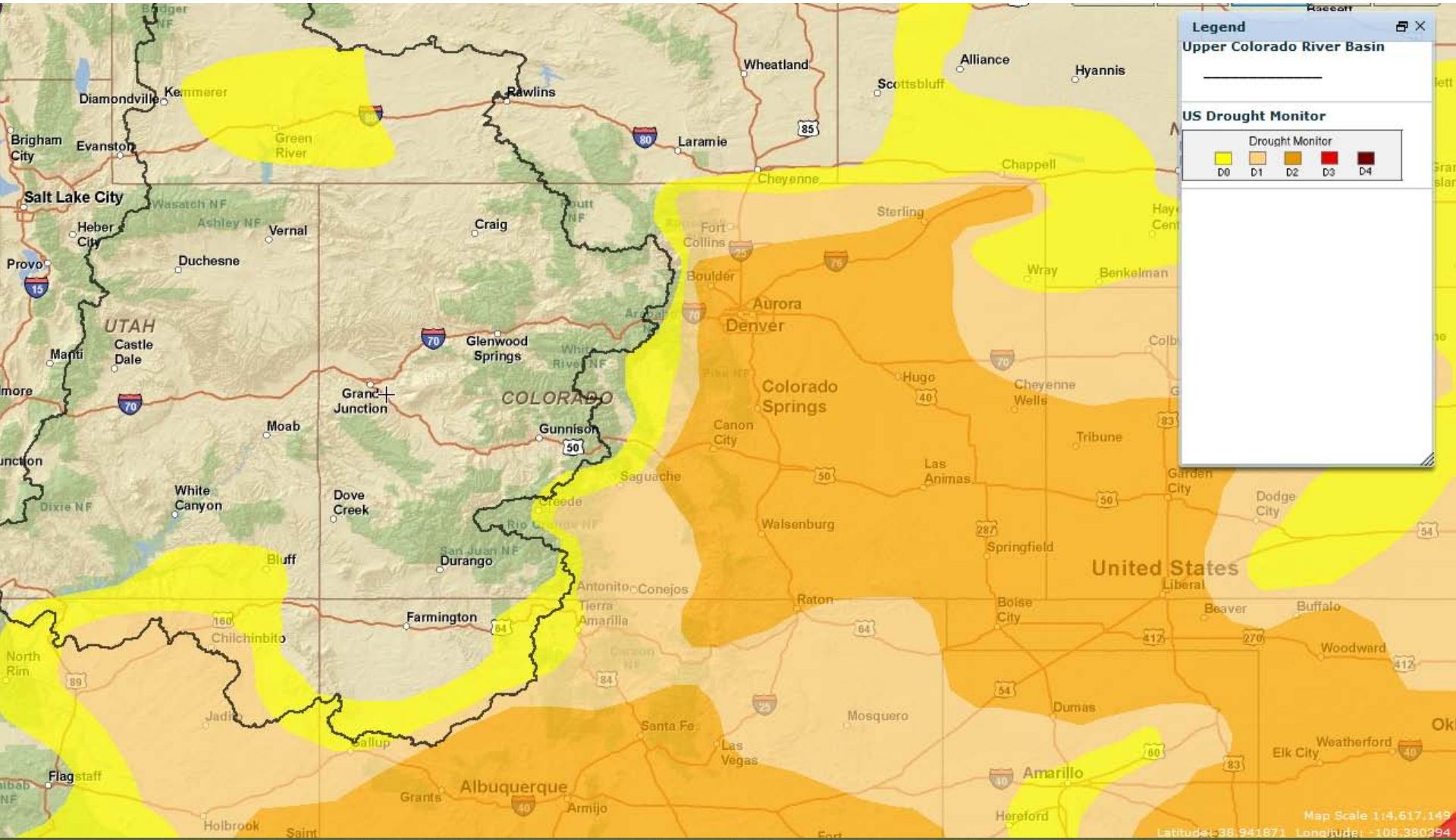
Max Capacity



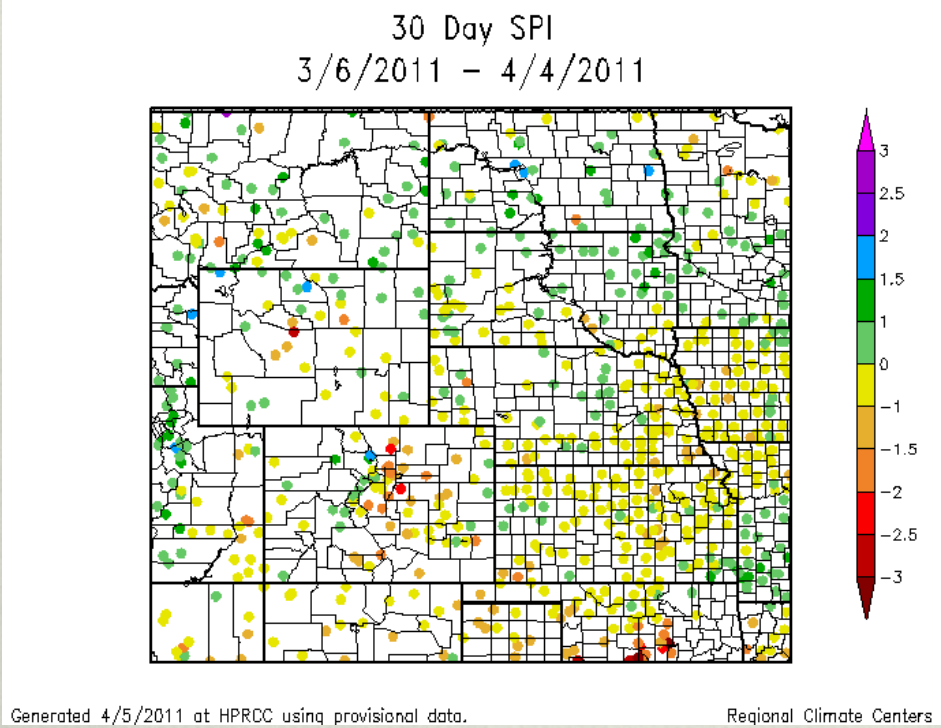
Precipitation Forecast

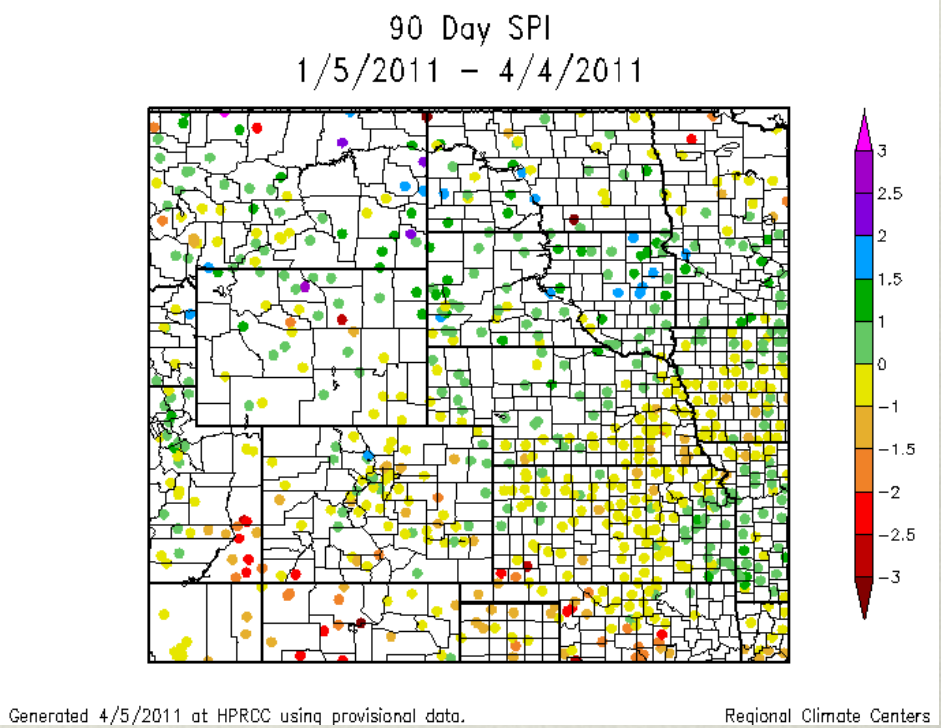

15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.50
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.10
0.01
HPC 5-DAY PRECIPITATION
ISSUED: 1200Z TUE APR 05 2011
VALID:12Z TUE APR 05 2011
THRU:12Z SUN APR 10 2011
FORECASTER: SCHICHTEL
DOC/NOAA/NWS/NCEP/HPC
2.8
2.4
1.6
1.6
1.8
1.4
1.1
2.0
1.8
0.8
1.6
1.8
1.0
1.8
1.4
1.8
1.6
2.2
1.9
1.6
NOAA

Recommendations



SPI


30 Day SPI
3/6/2011 – 4/4/2011
3
2.5
2
1.5
1
0
−1
−1.5
−2
−2.5
−3
Generated 4/5/2011 at HPRCC using provisional data.
Regional Climate Centers


90 Day SPI
1/5/2011 – 4/4/2011
3
2.5
2
1.5
1
0
−1
−1.5
−2
−2.5
−3
Generated 4/5/2011 at HPRCC using provisional data.
Regional Climate Centers

INFO

For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

April 5, 2011

Precipitation and Snowpack

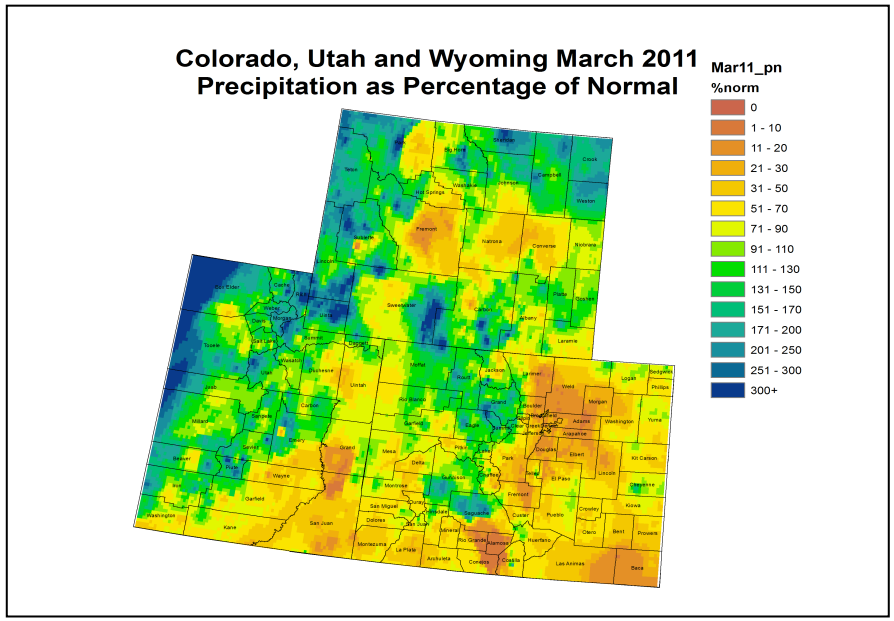


Fig. 1: March precipitation as a percent of average.

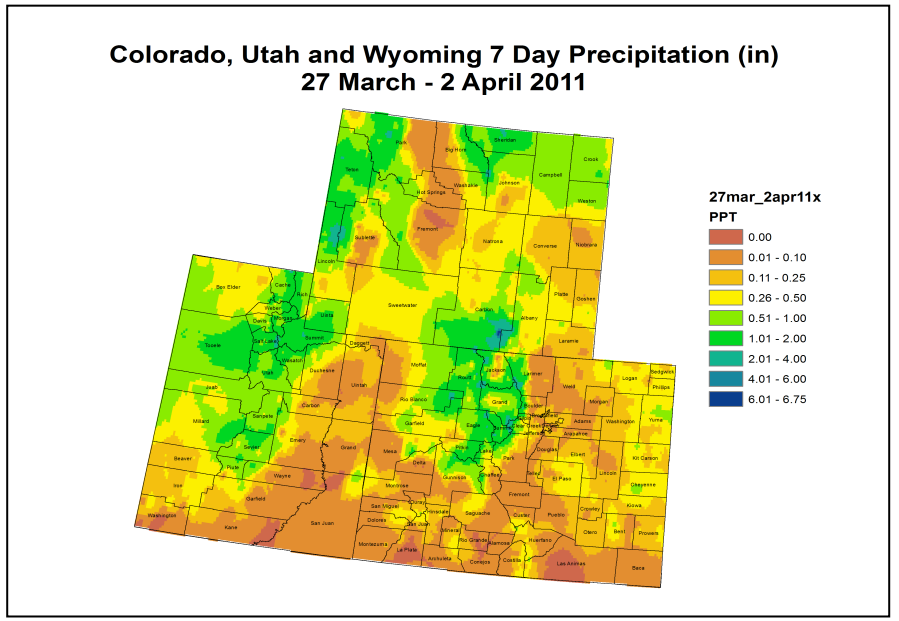


Fig. 2: March 27 – April 2 precipitation in inches.

During March, the higher elevations of Colorado, northeastern Utah, and southwestern Wyoming saw above average moisture, with some areas receiving over 150% of their average precipitation for the month (Fig. 1). The valleys of western Colorado and eastern Utah and some parts of the Upper Green basin in Wyoming were slightly drier, receiving between 50% and 100% of average precipitation. The Four Corners area, the eastern plains of Colorado, and the Upper Rio Grande in southern Colorado were very dry for the month, receiving less than 50% of average moisture.

Last week, the highest amounts of precipitation continued to favor the higher elevations of the Upper Colorado River Basin (UCRB), with many areas seeing over an inch of precipitation (Fig. 2). The valleys around the Four Corners region and around the Sangre de Cristos in southern CO remained fairly dry over the past week. Some beneficial moisture fell in far eastern CO, but most of the plains and Front Range remained dry, seeing less than a tenth of an inch of precipitation for the week.

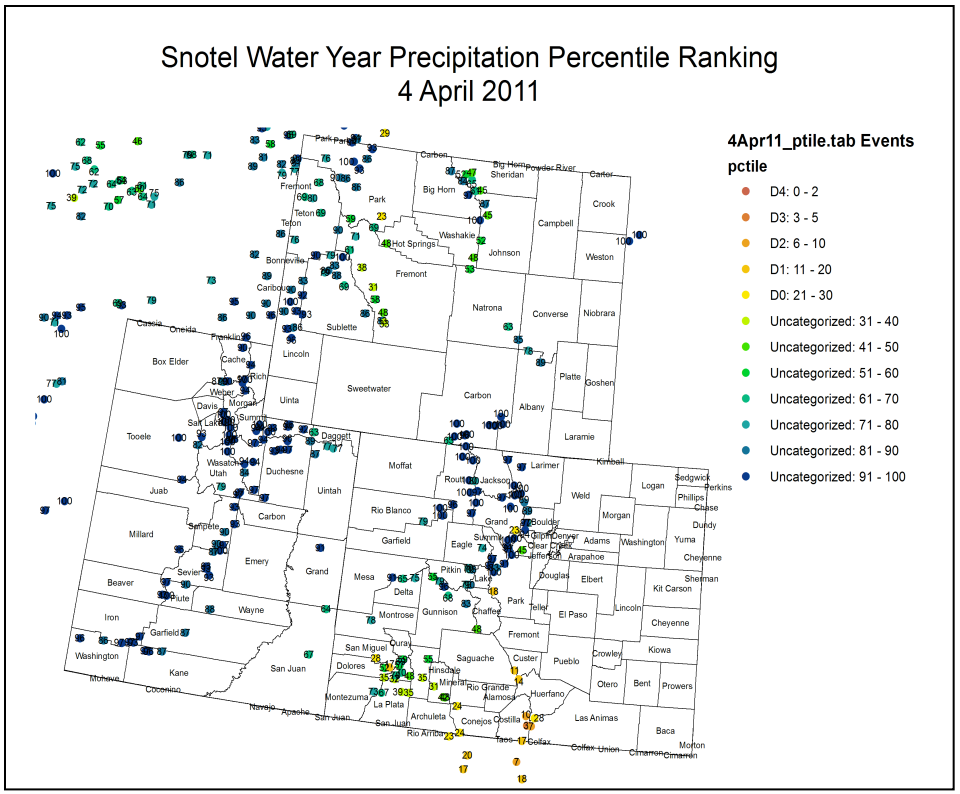


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

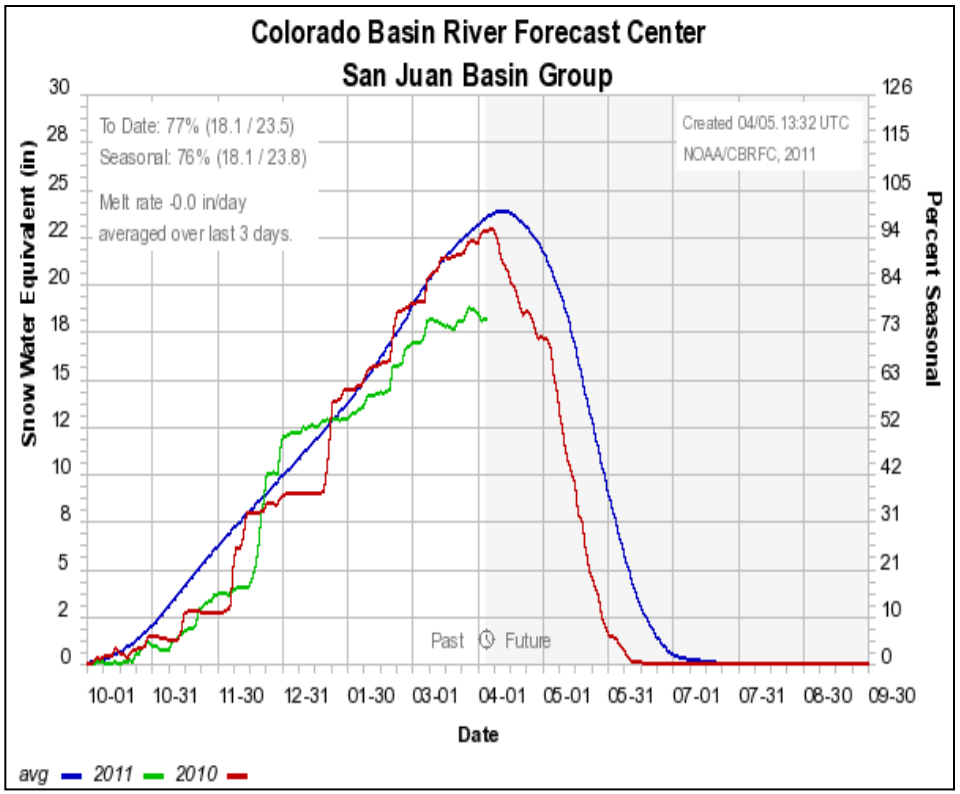


Fig. 4: San Juan Basin averaged accumulation of snow water equivalent, WYTD.

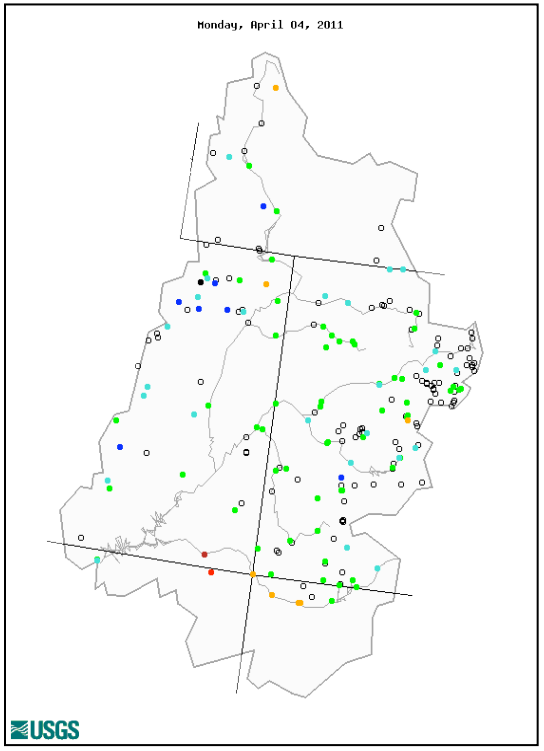
The majority of the SNOTEL sites in the UCRB are showing high percentile rankings for water-year-to-date (WYTD) precipitation (Fig. 3). The Rio Grande and San Juan basins in southern CO are the driest, showing percentile rankings below 50%. Many of the sites in the Rio Grande basin are showing percentiles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

Snowpack around most of the UCRB is in good condition—snowpack for the entire basin above Lake Powell is 115% of average as of March 24th. The Upper Green basin in WY, the Duchesne basin in UT and the Upper Colorado above Kremmling have all surpassed their average annual snowpack peaks. The San Juan basin in southwestern CO is currently at 77% of its average accumulated snowpack for this time of year (Fig. 4), with little chance for recovery this late in the season.

Streamflow

As of April 4th, about 89% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). There are about 101 gages in the basin currently reporting, which represents about 78% of the total basin network. A cluster of below normal streamflow gages is currently showing up in the Four Corners region, with much above normal flows in northeastern UT.

The gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT are both currently recording near or above normal discharge and are in the 67th and 49th percentiles, respectively (Fig. 6). The San Juan River near Bluff, UT is currently recording much below normal flows (less than the 10th percentile). With lower snowpack in the region, it is likely that this river will not recover from low accumulations since the beginning of the water year. This could have some impact on the UCRB as the San Juan contributes about 15% to the total runoff for the basin.



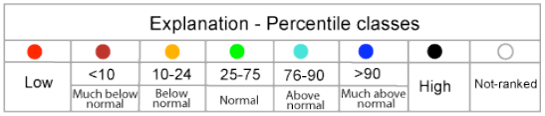


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for April 4th in the UCRB.

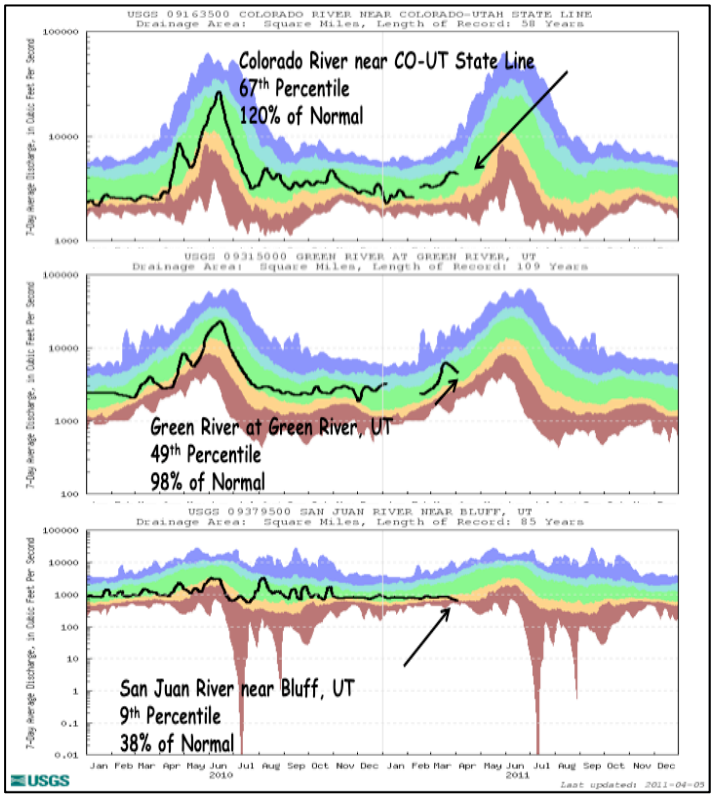


Fig. 6: USGS 7-day average discharge over time at the CO-UT state line (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

For the month of March, temperatures were near average for most of the basin, with warmer than average temperatures over the eastern plains and cooler than average temperatures in the Upper Green River basin in WY. Soil moisture conditions remain poor for eastern CO, the Upper Rio Grande and in the Four Corners region. Though conditions in these regions have been warm and windy, little moisture has been available and evapotranspiration (ET) rates are very low (Fig. 7). Low ET rates can also be seen in the Upper Green River basin.

Most of the major reservoirs in the UCRB are currently above their average levels for this time of year. McPhee Reservoir in the Dolores basin is currently below average, as this is the time of year that levels usually start rising. Many of the reservoirs are below last year's levels, but are still in fairly good condition at the start of the snowmelt season. Lake Powell is currently at 69% of average and 52% of capacity. Levels at Lake Powell are still declining, but the rate of decline has been moderated as inflows into the lake have been steadily increasing over the past month.

Precipitation Forecast

The region will remain in a moist, unsettled pattern over the next week with the flow favoring most of the UCRB and northeastern CO, but little relief for southeastern CO (Fig. 8). A cold front passes through the northern part of the UCRB tonight, bringing moisture to eastern UT and western CO. This front will bring colder conditions to the Front Range, but the moisture will not extend very far south. Another front, originating from the southwest, will move through the area late Wednesday and into Thursday. This system will initially bring moisture to the Four Corners region and follow a northeast track. Showers will diminish on the plains on Friday, and precipitation will mainly stay limited to areas west of the Continental Divide. Another front passes through the UCRB on Saturday, bringing much colder temperatures and snow for the mountains and valleys.

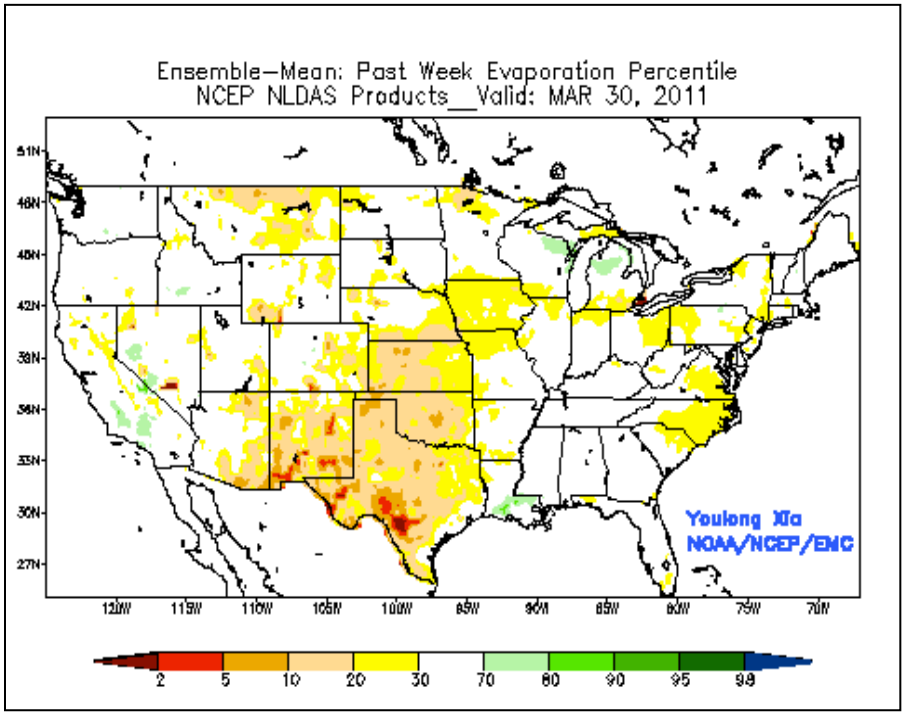


Fig. 7: NLDAS Ensemble Mean Evapotranspiration percentiles as of March 30th.

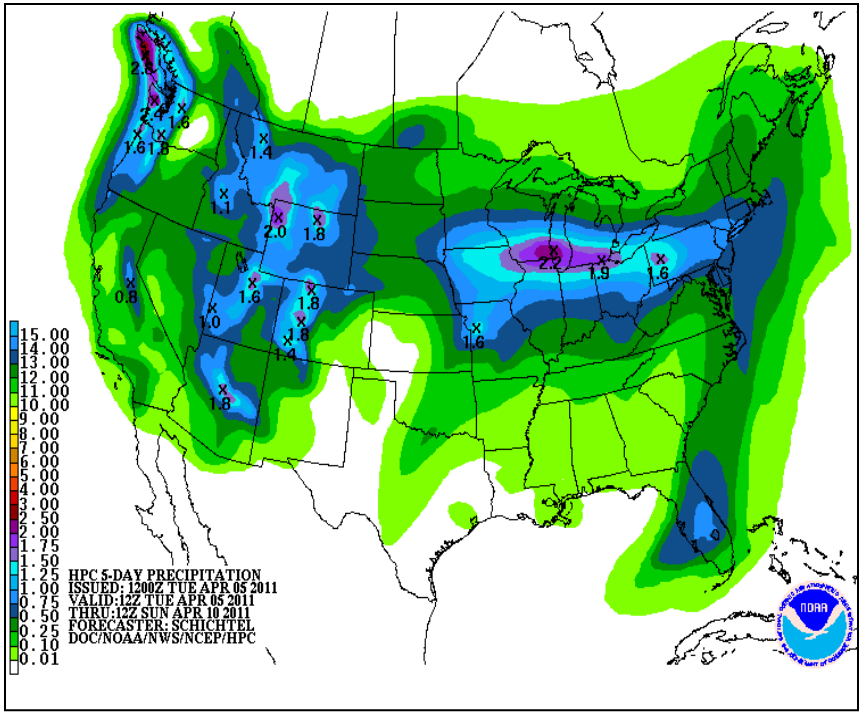


Fig. 8: Hydrologic Prediction Center's (HPC) 5-day precipitation totals ending April 10th.

Drought and Water Discussion

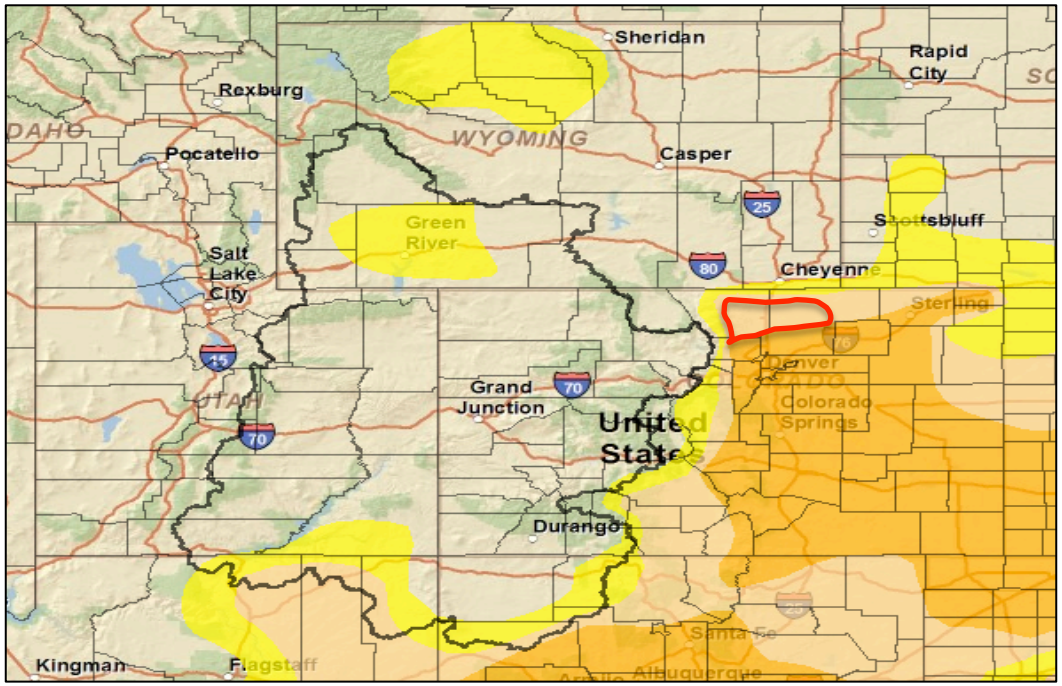


Fig. 10: March 29th release of U.S. Drought Monitor for the UCRB

Drought – Exceptional	0 to 2 (D4)
Drought – Extreme	2 to 5 (D3)
Drought – Severe	5 to 10 (D2)
Drought – Moderate	10 to 20 (D1)
Abnormally Dry	20 to 30 (D0)

Drought categories and their associated percentiles

A couple of changes are being proposed for the current U.S. Drought Monitor map (Fig. 10). The USDM author again mentioned changes to the Four Corners region. The proposed change is to extend the D0 in southern UT slightly north through more of San Juan County, UT and into eastern CO and northwestern NM. The D1 contour in AZ will be expanded northward to where the current D0 line is located in UT. Local experts on the webinar this morning were amenable to these changes.

Also proposed during the webinar this morning, was an expansion of the D2 line in northeastern Colorado (Fig. 10, red line). This expansion would cover large portions of Larimer and Weld counties that are currently in D1, but have been seeing very dry and windy conditions and several impacts from fires.