NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

April 12, 2011

Precipitation and Snowpack

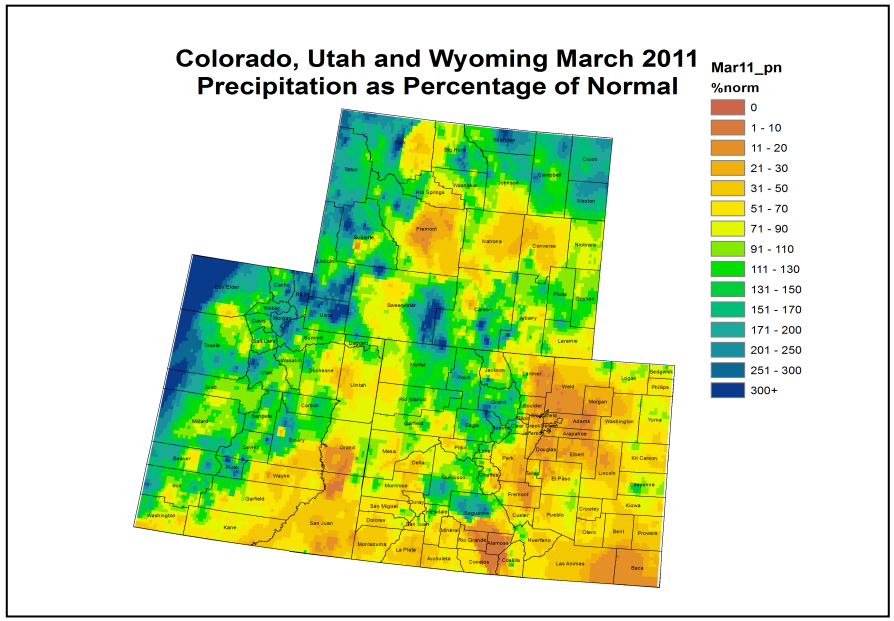


Fig. 1: March precipitation as a percent of average.

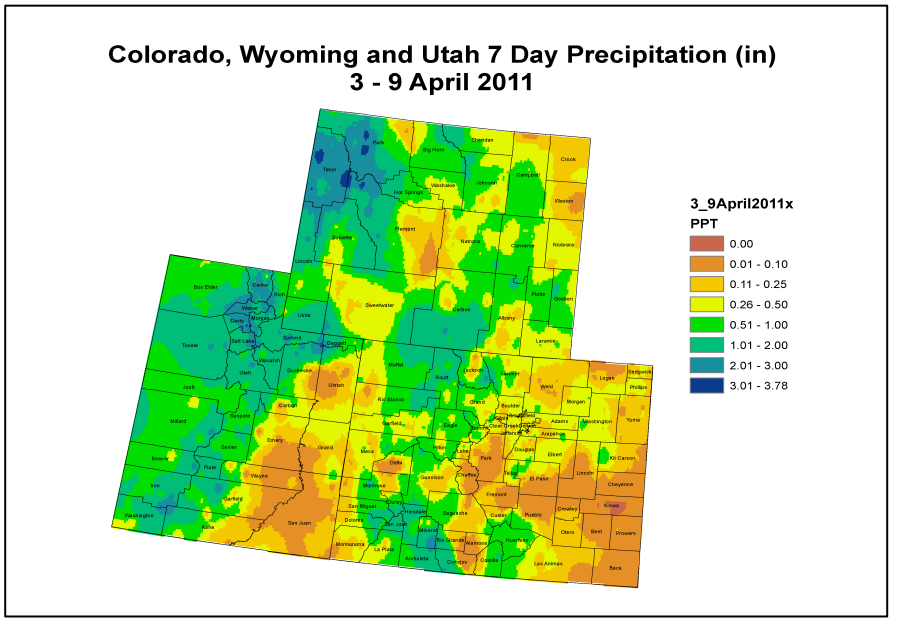


Fig. 2: April 3 – 9 precipitation in inches.

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 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 about an inch or more of precipitation (Fig. 2). The valleys and low elevations of eastern UT, around the Sangre de Cristos in southern CO, and also southeastern CO remained fairly dry over the past week. Some beneficial moisture fell in northeastern CO and along the northern Front Range with some areas receiving up to half an inch.

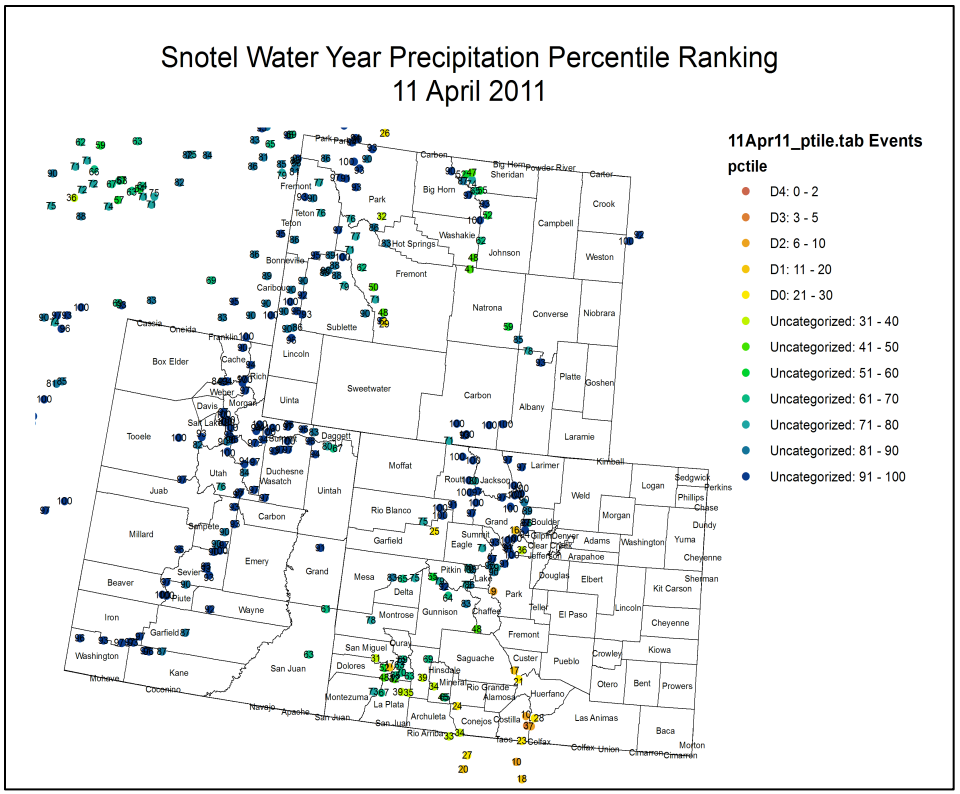


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

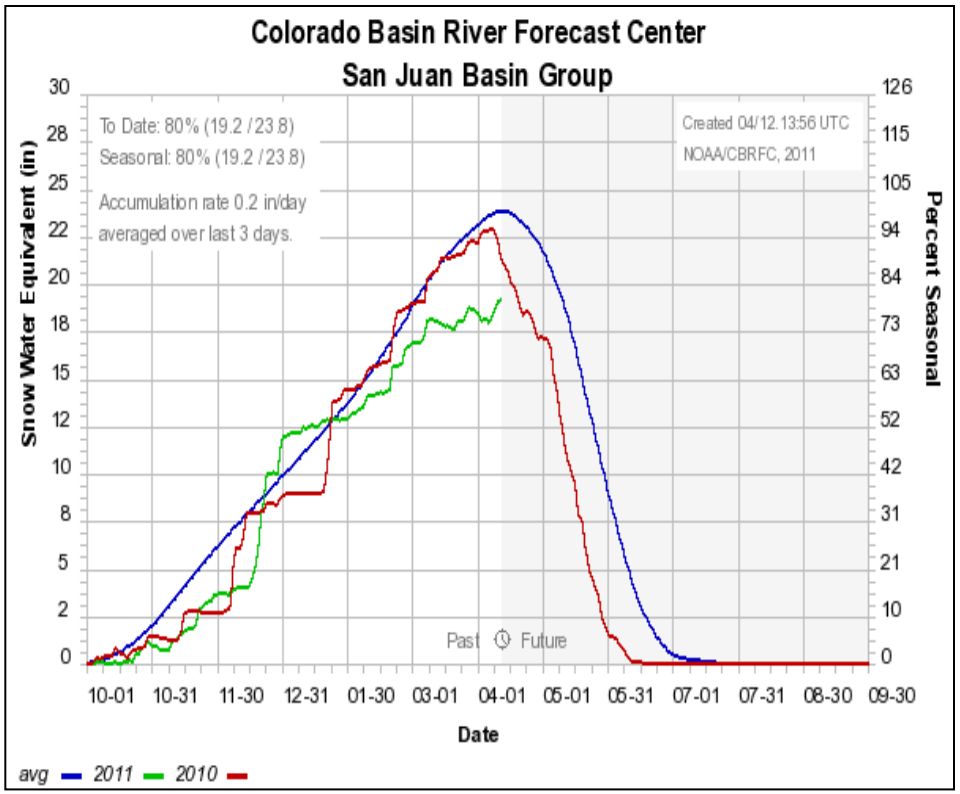


Fig. 4: San Juan Basin averaged accumulation of snow water equivalent, WYTD.

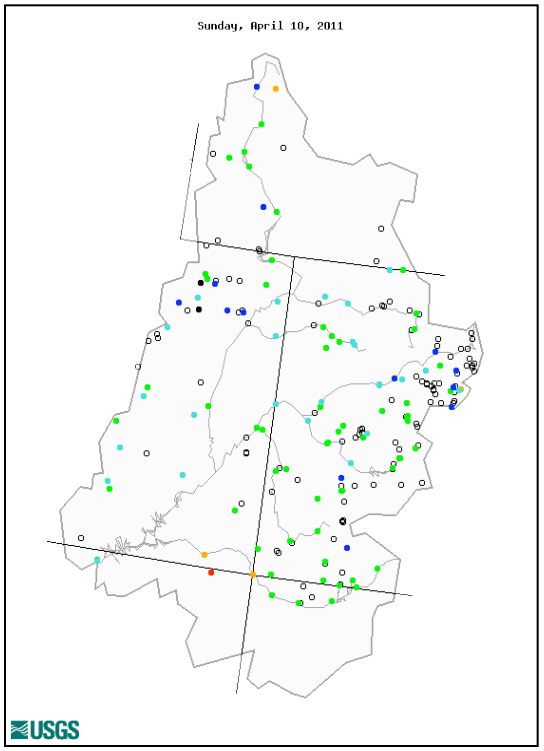
The majority of the SNOTEL sites in the UCRB are showing high percentile rankings for water-year-to-date (WYTD) precipitation (Fig. 3). The Rio Grande and San Juan basins in southern CO are the driest, showing percentile rankings below 50%. Many of the sites in the Rio Grande basin are showing percentiles 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 was 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 80% of its average peak snowpack(Fig. 4), with slight improvements seen after some additional accumulation this past week.

Streamflow

As of April 10th, about 95% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). There are about 103 gages in the basin currently reporting, and the full network of gages should be operational in the next couple of weeks. A cluster of gages recording high flows is evident in northeastern UT--likely due to reservoir releases and not early snowmelt. At this point, flooding could possibly be a concern in the near future as the snowmelt season begins.

The gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT are both currently recording above normal discharge at the 82nd and 64th percentiles, respectively (Fig. 6). The San Juan River near Bluff, UT is currently recording below normal flows (less than the 24th percentile). The San Juan basin has seen a slight recovery in streamflows over the past week, with only three gages in the region currently recording below normal flows.



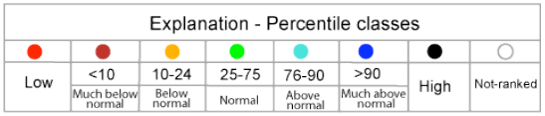


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for April 10th in the UCRB.

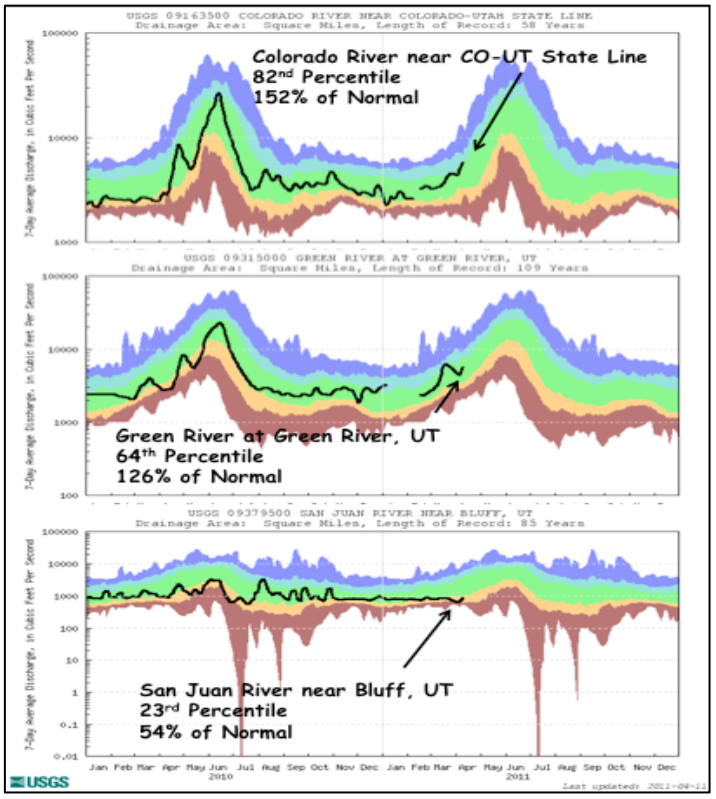


Fig. 6: USGS 7-day average discharge over time at the CO-UT state line (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, temperatures around the UCRB were near average to slightly below average with temperatures as much as 6 degrees below average in central UT. The Front Range and eastern plains experienced above average temperatures for the week. Soil moisture conditions remain poor for eastern CO, the Upper Rio Grande and in the Four Corners region (Fig. 7). Though conditions in these regions have been warm and windy, little moisture has been available and evapotranspiration (ET) rates are very low. Low ET rates have also been 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. Many of the reservoirs are below last year's levels, but are still in fairly good condition at the start of the snowmelt season. Flaming Gorge, McPhee, and Navajo Reservoirs have all begun to see storage increases for the first half of April. 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 continue to see a progressive flow with a number of systems passing through, but moisture will be limited to the north (Fig. 8). On Wednesday and Thursday, a system will bring precipitation to the northern portion of the UCRB. A weaker system will follow over the weekend, bringing minor amounts of precipitation to the north. A much stronger system will move into the region on Monday and Tuesday, with possibly an inch of available moisture for much of the northern region of the UCRB. The northern plains of Colorado could also see some minor accumulations. The Four Corners region and southern plains will likely stay fairly dry over the next week. Due to the unsettled pattern and persistent trough passages, temperatures in the UCRB could remain below average, delaying the start of snowmelt.

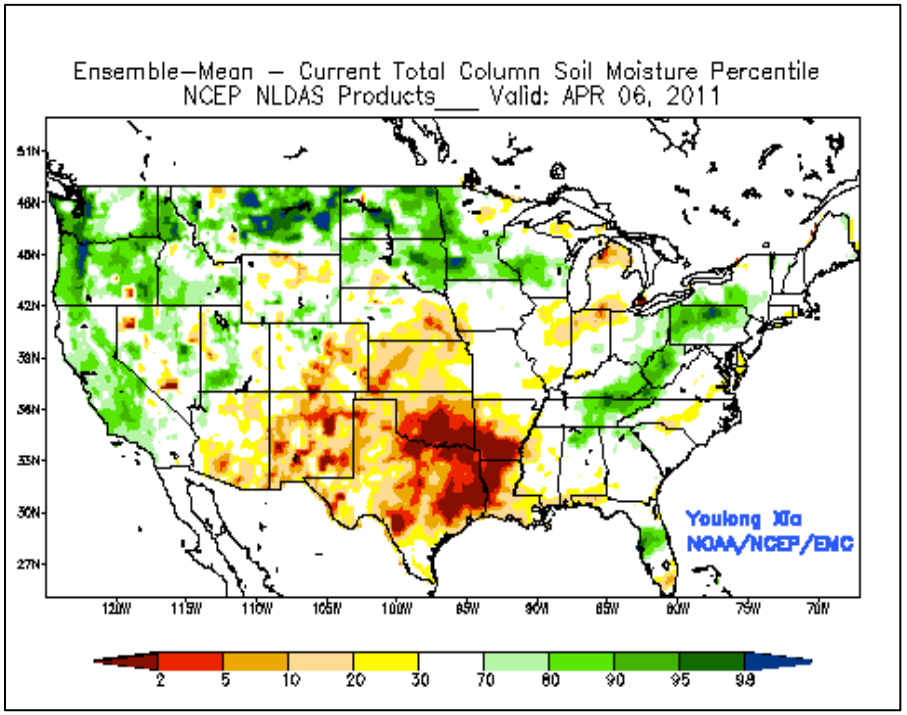


Fig. 7: NLDAS Ensemble Mean Evapotranspiration percentiles as of April 6th.

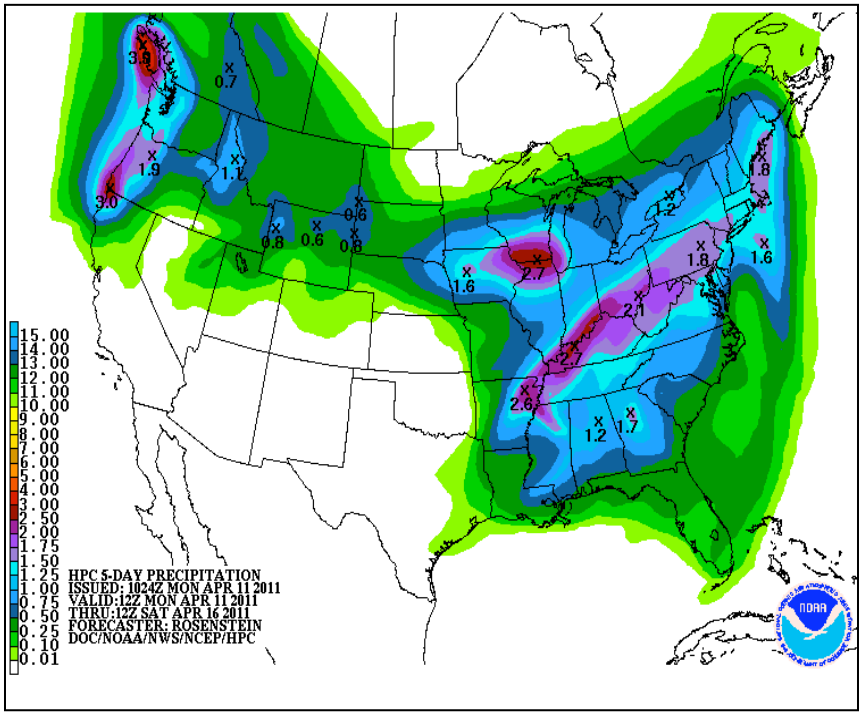


Fig. 8: Hydrologic Prediction Center's (HPC) 5-day precipitation totals ending April 16th.

Drought and Water Discussion

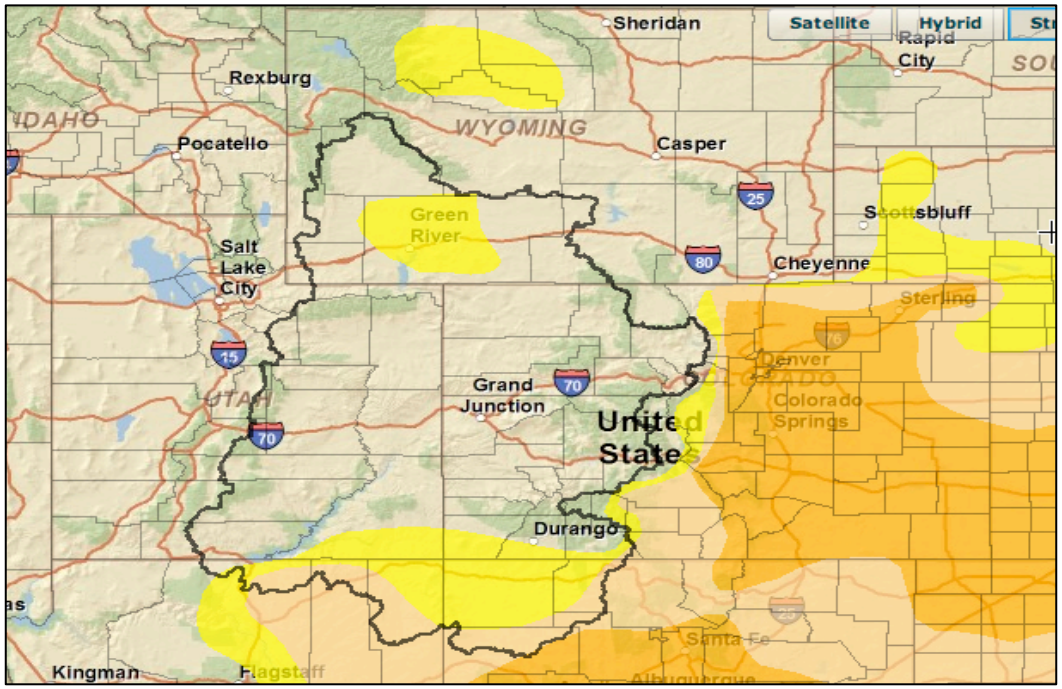


Fig. 10: April 5th release of U.S. Drought Monitor for the UCRB

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

Status quo is being recommended for the UCRB on the current U.S. Drought Monitor (USDM) map (Fig. 10). The Four Corners region will continue to be closely monitored as dryness is expected to persist over that area. Experts on the conference call have also discussed the possibility of introducing D3 over the eastern plains of Colorado in the near future. Many have noted particularly dry conditions similar to the extreme dryness experienced during the spring and summer of 2002, and short-term impacts have been noted (i.e. fires). However, longer term impacts have yet to become apparent and demand is likely to be met by ample streamflow and snowpack in the higher elevations. Therefore status quo is recommended at the current time, though conditions will be closely monitored for further deterioration.