NIDIS Weekly Climate, Water and Drought Assessment Summary Upper Colorado River Basin March 23, 2011

Precipitation and Snowpack

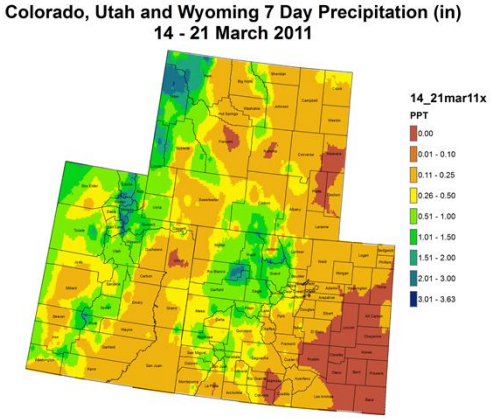

Figure 1: 7 Day Precipitation (in) 14-21 March 2011.

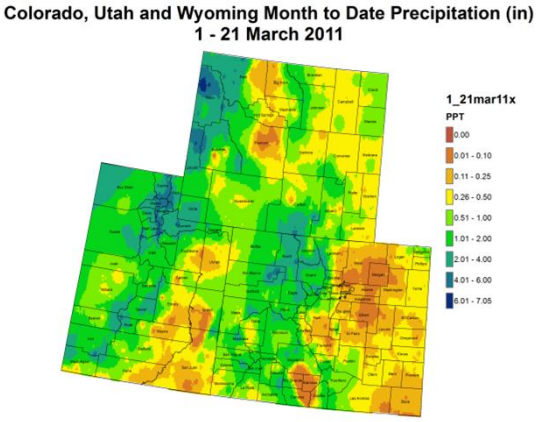

Figure 2: Month to Date Precipitation (in)
1 – 21 March 2011.

Over the past week (Figure 1), the Wasatch mountains in Utah received the most precipitation which ranged from 0.50 – 3.63”. The northern and central mountains of Colorado also received beneficial moisture in the range of 0.50 – 3.00”. The eastern plains of Colorado, lower Green River basin, western valleys of Colorado and the four corners area received little to no moisture in the range of 0 – 0.25”.

Figure 2 shows March to date precipitation. Overall, mountainous areas of northern Colorado and Utah have received the bulk of the moisture, as has been the case for much of the winter season. The Wastach and Uinta’s in Utah received between 2.00 – 6.00” while the northern mountains in Colorado received 1.00 – 6.00”. The San Juan’s in Colorado did not fair as well, and reported precipitation around 0.5 – 2.00”. Again, the eastern plains of Colorado, the four corners and eastern Utah received only 0 – 0.50” for the month to date.

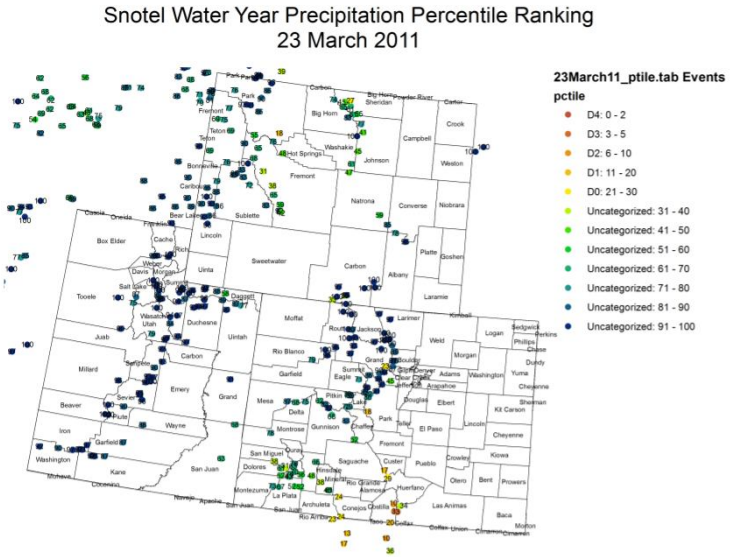

Figure 3: SNOTEL Water Year Precipitation Percentile Ranking.

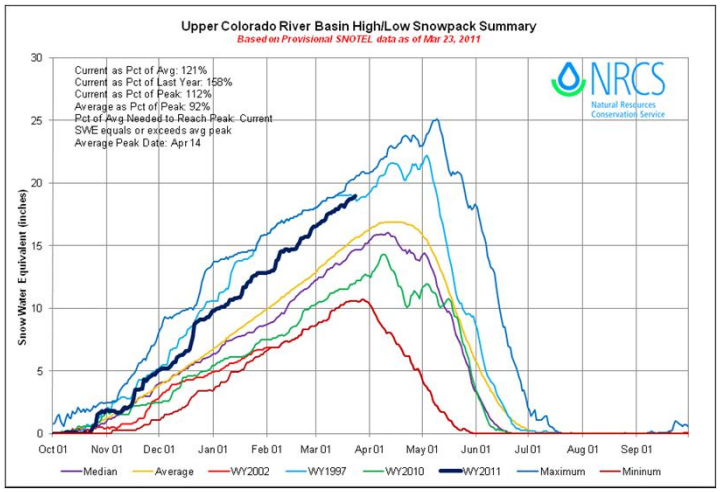

Figure 4: Upper Colorado Mainstem Group Snow Water Equivalent Plot (Green = 2011, Red – 2010, Blue = Average)

SNOTEL water year precipitation percentile rankings (Figure 3) are reporting in the normal range over the majority of the UCRB. The Sangre de Cristo mountains and Rio Grande SNOTEL stations are reporting the lowest percentiles, falling into D0 – D1 categories.

Figure 4 shows the snow water equivalent (SWE) evolution plot for the Upper Colorado River Basin in Colorado. This group of stations is showing SWE to date of 121% of average and 112% of the average peak SWE for the season, which normally occurs around April 15th.

Streamflow

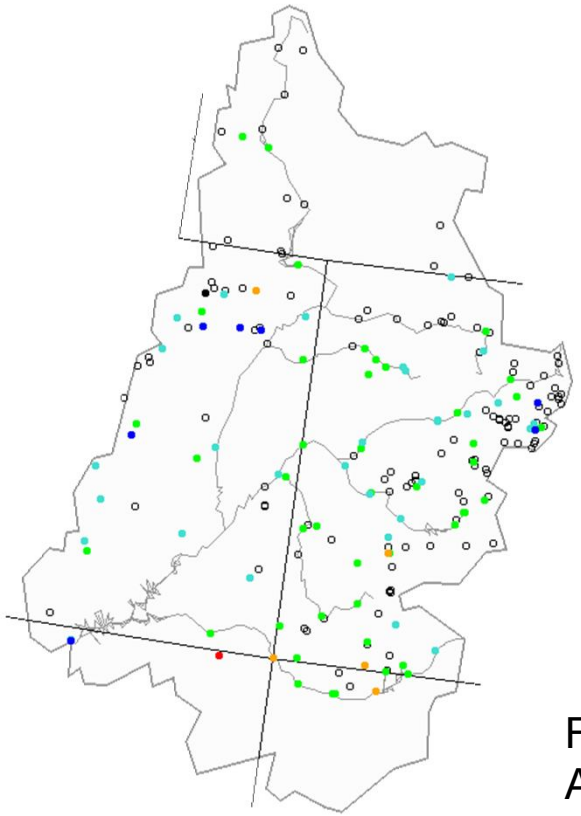

Figure 5: 7-day average discharge compared to historical discharge for March 20th.

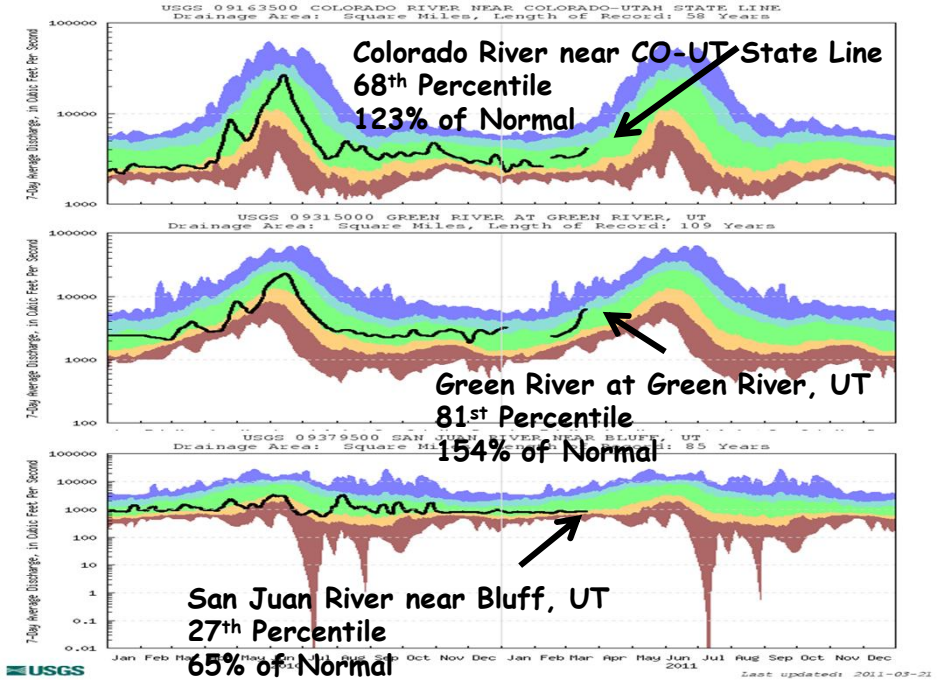

Figure 6: USGS 7-day average discharge time series at Bluff, UT. Note Colorado and Green Rivers are ice affected.

Figure 5 shows the 7-day average streamflow for the UCRB. Approximately 95% of the 86 gages reporting are in the normal to above normal range (>25th percentile).

Figure 6 shows the discharge at the three gages in the basin. The Colorado River at the CO-UT state line is reporting 123% of average (68th percentile) and the Green River at Green River, UT is 154% of average (81st percentile). The flow at these gages is up due to low elevation snowmelt and reservoir releases. The San Juan River near Bluff, UT is notably low, reporting 65% of normal (27th percentile).

Water Supply and Demand

Temperatures:

For March (Figure 7), much of the UCRB has seen above average temperatures in the range of 0 – 6 degrees above normal, with a warmer patch near Denver reporting 6-9 degrees above normal. The Green river basin in Wyoming and the NE corner of Utah saw below average temperatures in the range of 0-6 degrees below normal.

Figure 8 shows the VIC soil moisture model. The SE corner of Colorado is still showing very dry soil conditions, while other areas of the eastern plains have shown slight improvements. The four corners area is still showing dry conditions, however the Rio Grande basin has seen soil moisture deteriorate over the past week. Soil moisture across the rest of the region is in the normal range.

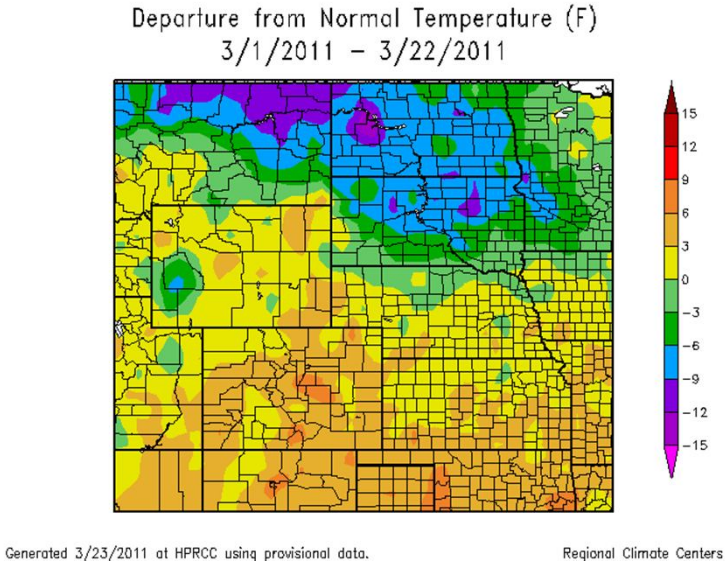

Figure 7: Temperature departure from normal 2/1 – 2/7.

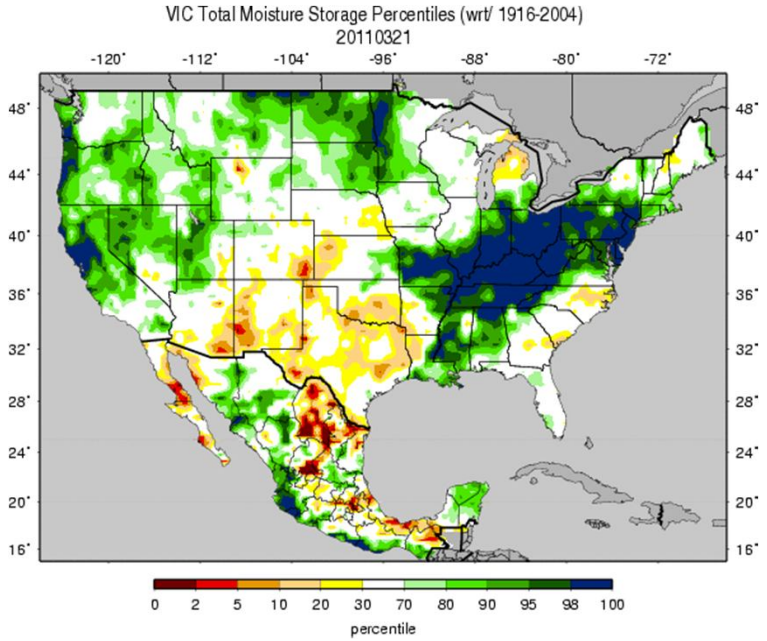

Figure 8: VIC soil moisture model for 21 March 2011.

Precipitation Forecast

Figure 9 shows the 5 day QPF. Trough for Thursday brings mainly mountain and limited western valleys precipitation.

Another Pacific trough opens up and ejects over northern Utah and west central Colorado Friday into Saturday. Focus for precipitation should remain over the central and northern mountains with less intensity and accumulation over the southern mountains. Expect windy and drier conditions between storms.

A stronger trough enters the western part region late Saturday and early Sunday. The trough and associated cold front move over the eastern part of the state Sunday then exits later Monday. This system should bring more wide spread precipitation with better chances along the Front Range than the other systems.

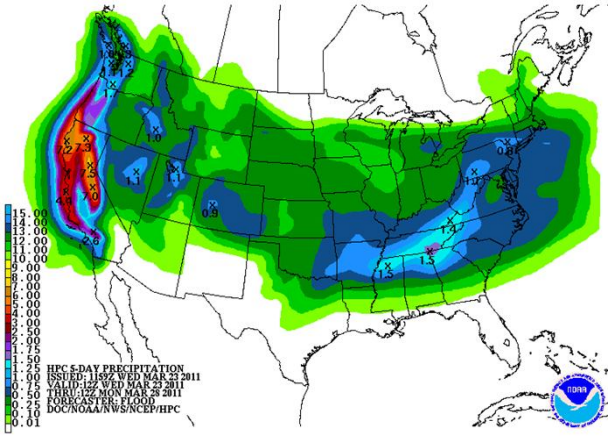

Figure 9: 5 day Quantitative Precipitation Forecast.

Recommendations

Minor adjustments were made to the USDM on the eastern plains of Colorado to mesh with changes in Oklahoma and Kansas. With dry weather persisting over the eastern Plains of Colorado, the drought monitor author has targeted the eastern plains of Colorado for close evaluation on next week's Drought Monitor. Our normal webinar will resume next Tuesday, March 29th at 10 AM MDT.

http://ccc.atmos.colostate.edu/drought_webinar_registration.php