NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 22, 2011

Precipitation and Snowpack

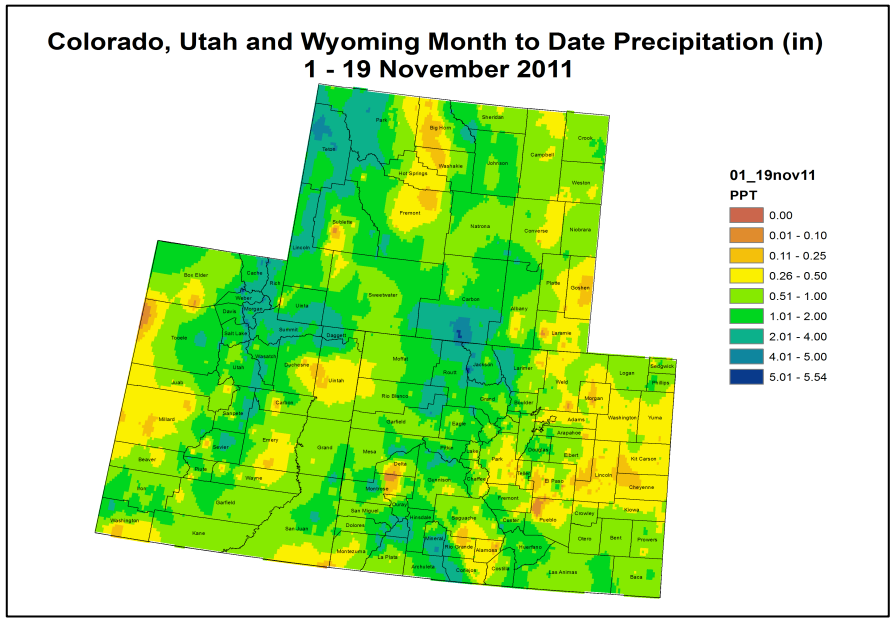


Fig. 1: November month-to-date precipitation in inches.

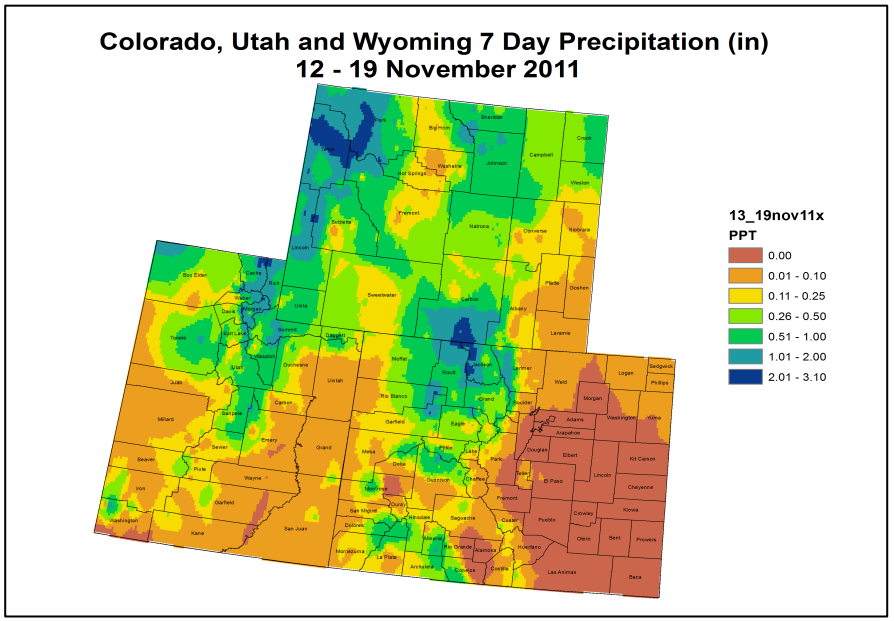


Fig. 2: November 13 – 19 precipitation in inches.

In November so far, generous amounts of precipitation have fallen throughout the Upper Colorado River Basin (UCRB, Fig. 1). The higher elevations across the Upper and Lower Green River basins and in the northern mountains of Colorado have received over 1 inch month-to-date, with some areas seeing between 2 and 4 inches. Parts of Utah just south of the Duchesne River, regions around the Four Corners, and much of the northeast plains of CO have have received between a quarter inch and half inch of precipitation month-to-date. The drought stricken southeast CO has received over a half inch to an inch of beneficial moisture since the beginning of the month.

Last week, most of the lower elevations in the UCRB received less than a tenth of an inch of moisture (Fig. 2). The higher elevations continued to receive more precipitation though, with accumulations between a quarter inch and 2 inches. The Front Range and plains of Colorado received little to no precipitation for the week. The San Luis Valley also received little to no precipitation last week.

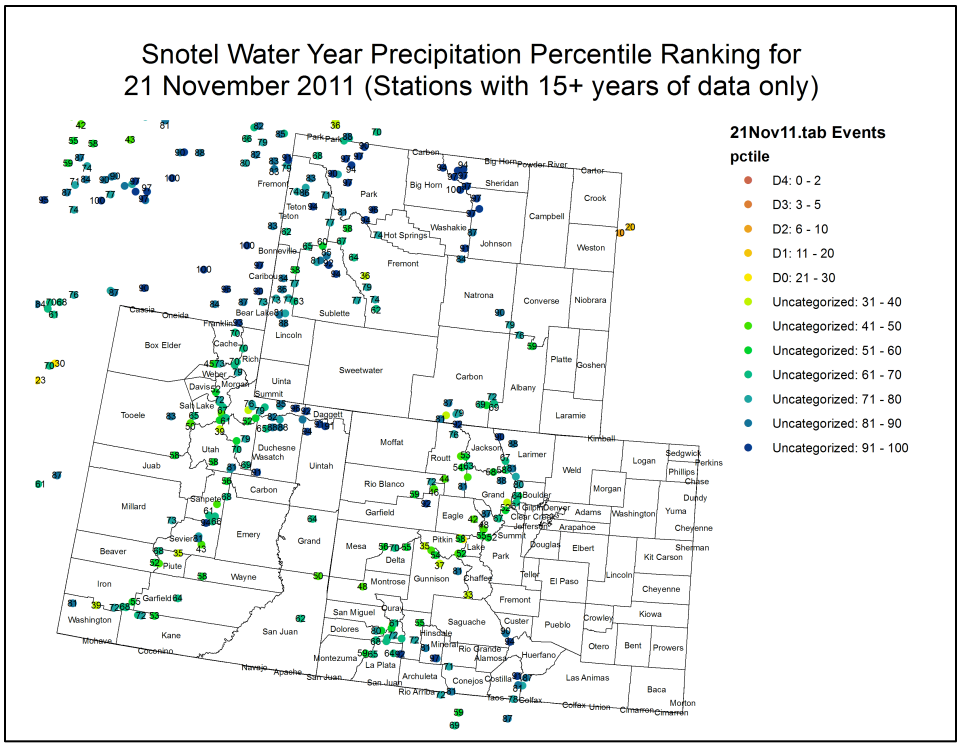


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor's D0 category).

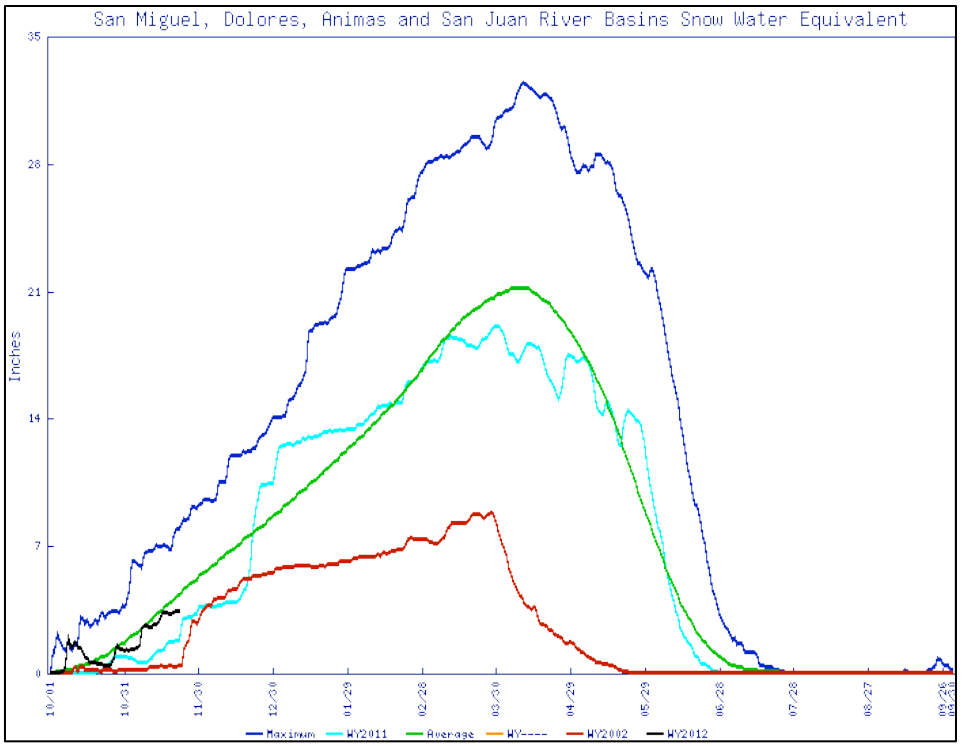


Fig. 4: San Juan WYTD snow water equivalent accumulation (black line) compared to average (green) and last year (teal).

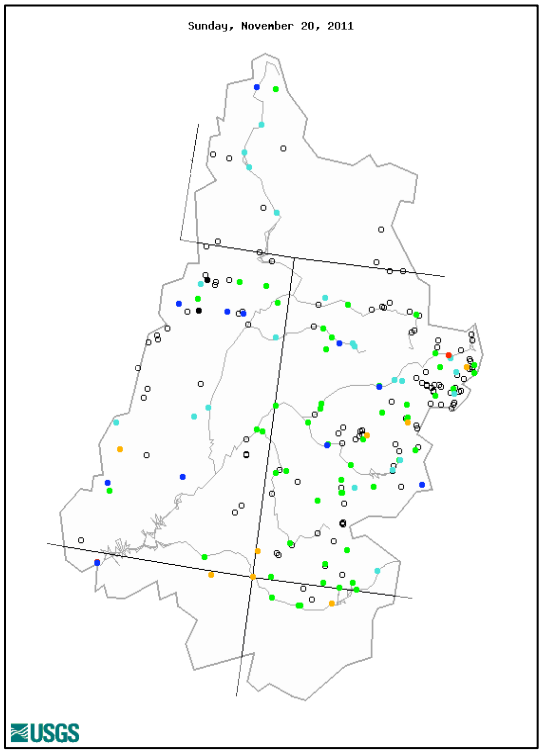
Water-year-to-date (WYTD), SNOTEL precipitation percentiles are in the near to above average range throughout most of the UCRB (Fig. 3). SNOTEL sites in the Upper Green River basin and in the northern and central mountains of CO range from around the 50th to the 80th percentiles. The southern mountains of CO and the mountains in northeast UT have already seen excellent precipitation accumulations WYTD, with many sites currently near or above the 90th percentile.

Around the San Juan River basin (in the Four Corners region), snow water equivalent has been tracking near average since the beginning of the water year (Fig. 4). Several early snow events quickly melted down, but since the end of October, snowpack has been steadily accumulating in the basin. Though current snowpack is just slightly below average, the current accumulations are well above the minimum year and also above last year's accumulations.

Streamflow

As of November 20th, 89% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). About 13% of the gages in the basin are recording much above normal flows, while 10% of the gages in the basin are recording below normal flows. Most of the gages recording below normal flows are located in the southern part of the basin (in the San Juan basin). Higher flows are currently being observed in the Upper and Lower Green River basins in WY and UT.

Key gages on the Colorado River near the CO-UT state line and the San Juan River near Bluff, UT are currently recording near normal flows at the 52nd and 34th percentiles, respectively (Fig. 6). The Green River gage at Green River, UT is reporting above normal flows at the 83rd percentile.



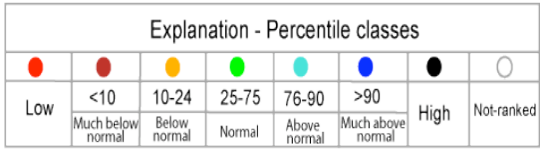


Fig. 5: 7-day average discharge compared to historical discharge for November 20th.

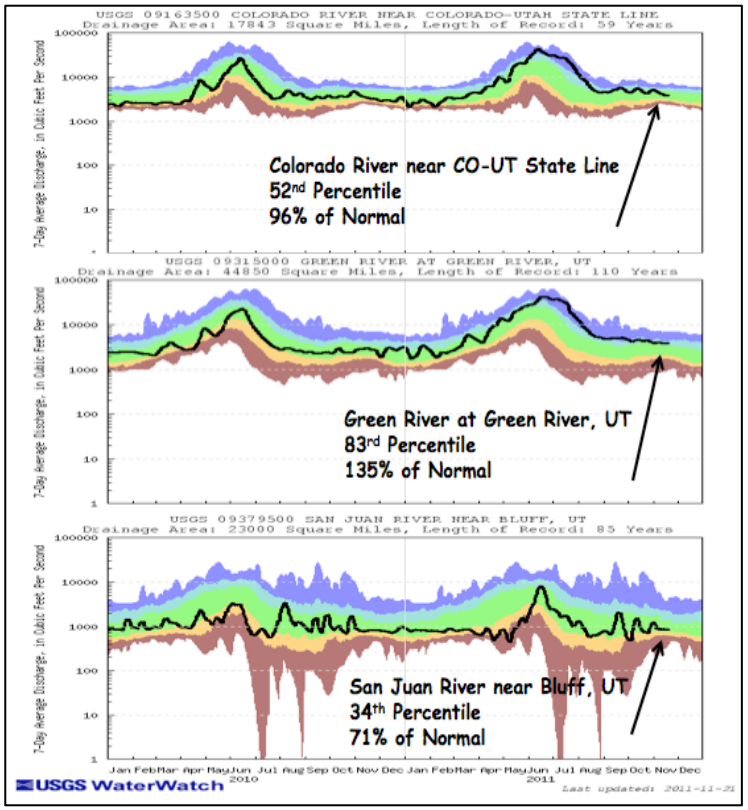


Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, near average temperatures were seen across much of the UCRB, with some isolated spots of warmer than average temperatures. Slightly warmer than average temperatures were observed along the Front Range with eastern CO experiencing near to warmer than average temperatures. The VIC model continues to show dry soil moisture conditions in southeast CO though conditions continue to improve (Fig. 7). Dry soil conditions are showing up in UT around the Colorado River valley. Soil moisture conditions have improved in Sweetwater County, WY and are now near normal. Wet soils can be seen in the northern CO mountains and eastward.

All of the major reservoirs above Lake Powell are near or above their November averages. Most reservoirs have only seen minor drops in storage volumes for the month, with the exception of Lake Granby and Green Mountain which have seen relatively larger decreases. Aside from Lake Granby and Navajo, all of the reservoirs are higher than they were last year at this time. Lake Powell is currently at 89% of average and 70% of capacity, compared to 62% of capacity one year ago.

Precipitation Forecast

As the most recent disturbance exits the region, dry and warm conditions associated with a high pressure system will prevail over the UCRB from now to Thanksgiving. The next disturbance to bring moisture to the basin will arrive on Friday and quickly pass through. Precipitation will mostly be in the form of snow showers for the higher elevations in the northern part of the basin, though accumulations are expected to be light (Fig. 8). This weekend will see the return of dry and warm conditions across the UCRB. Dry conditions will prevail east of the Continental Divide, with eastern CO and the Front Range expected to see little or no precipitation for the week.

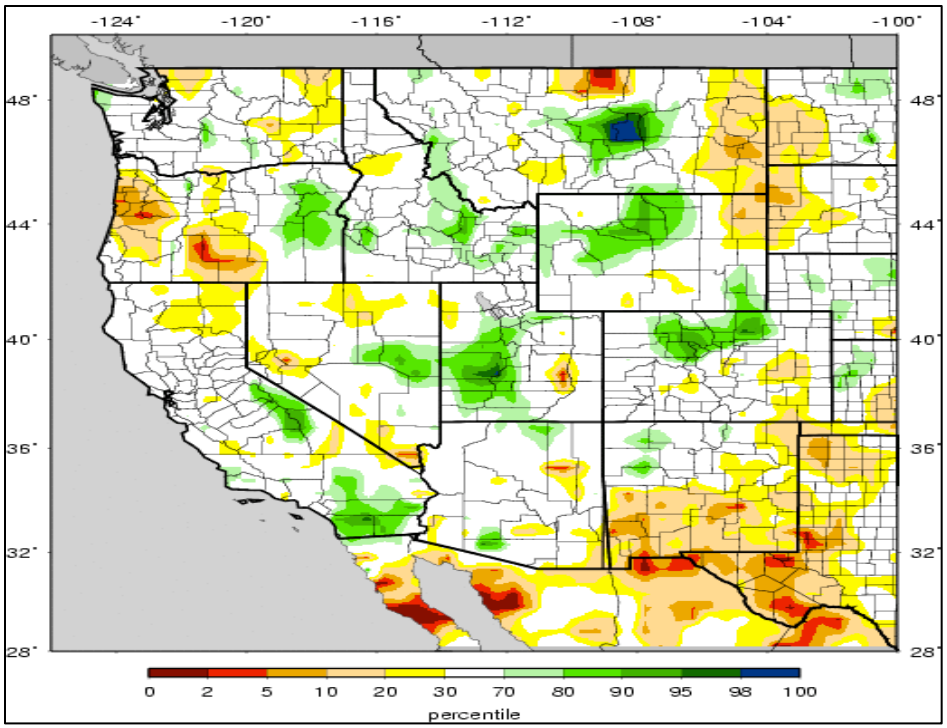


Fig. 7: VIC soil moisture percentiles as of November 20th.

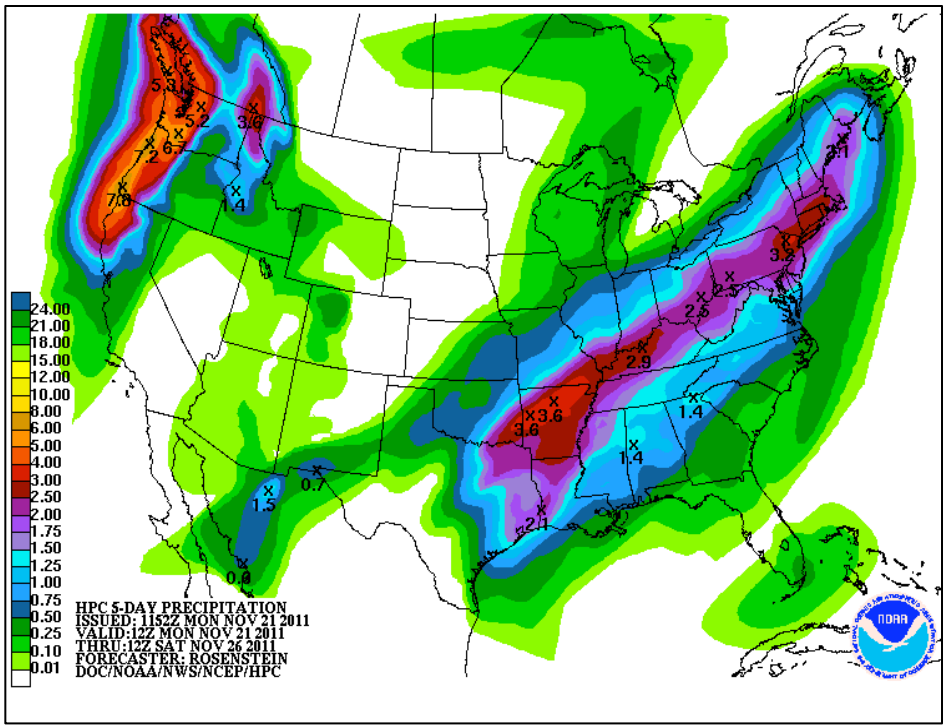
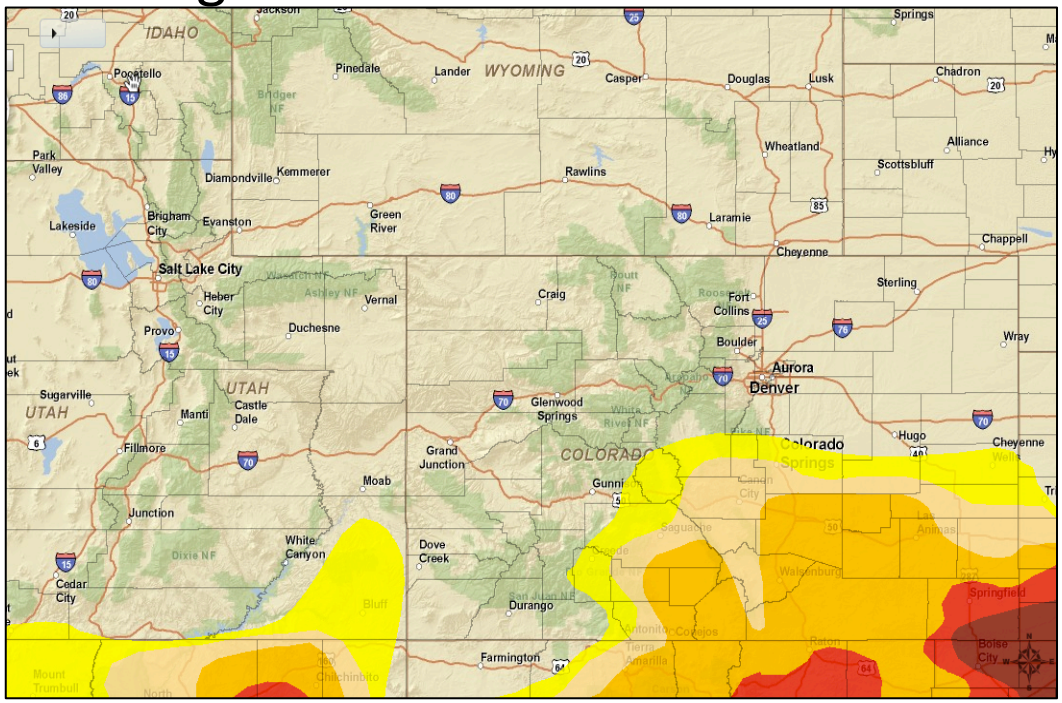
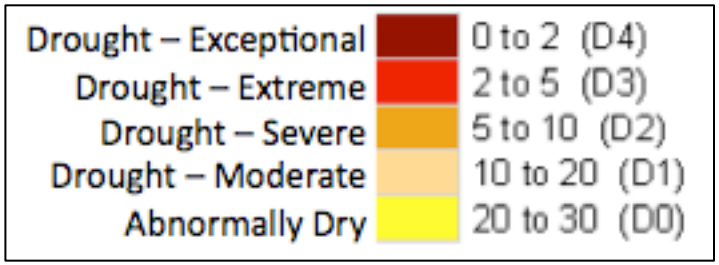


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 12Z Saturday.

Drought and Water Discussion





Drought categories and their associated percentiles

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

Status quo is recommended for the UCRB and across the rest of Colorado in the most current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). Areas currently experiencing D0 or greater received little to no precipitation last week, so no improvements are warranted. Dry periods during this time of year are normal for these regions. In addition, nearby snowpack is in good condition, soil moisture conditions continue to improve, and streamflows are virtually unchanged. Therefore, degradations are not needed at this time.