NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 13, 2012

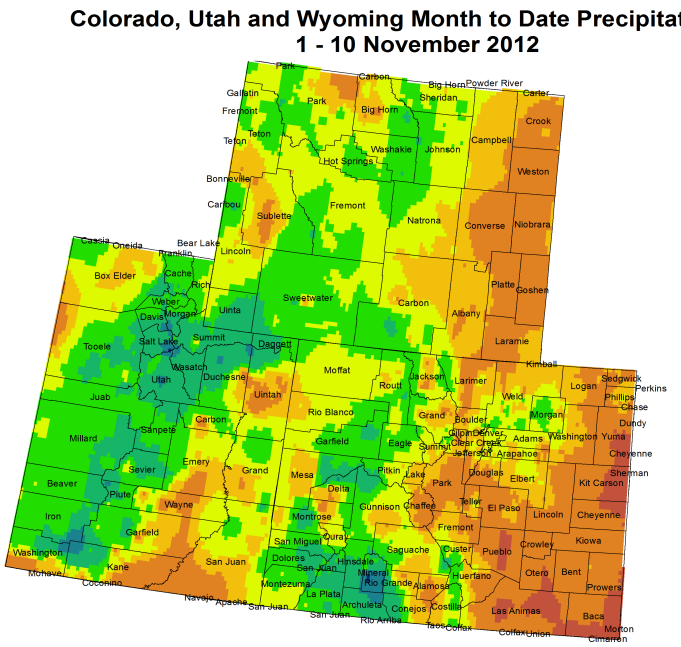


Fig. 1: November 1 – 10 precipitation in inches.

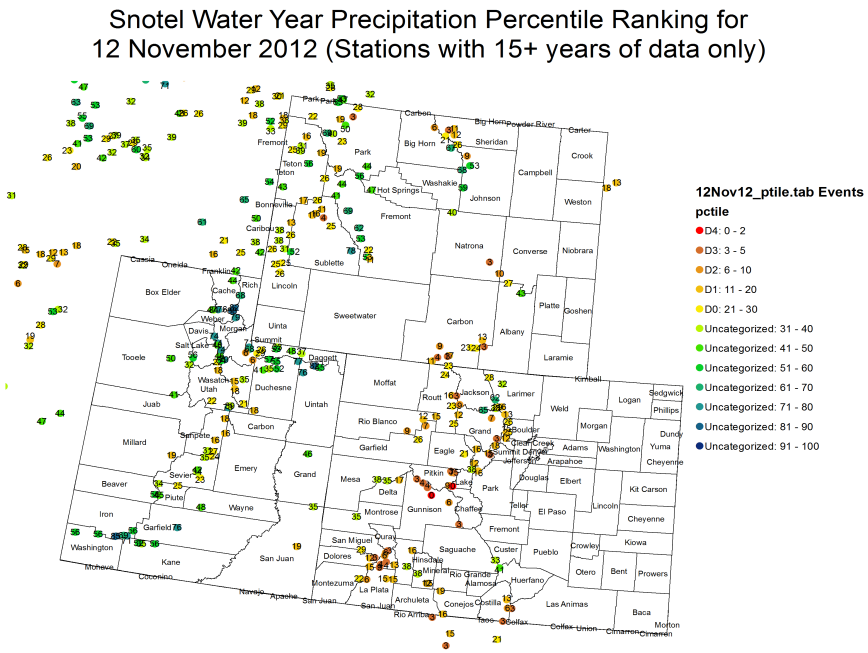


Fig. 2: SNOTEL water-year-to-date (WYTD) precipitation percentiles (50th is median, 30th is upper range of D0) as of November 12th.

Precipitation

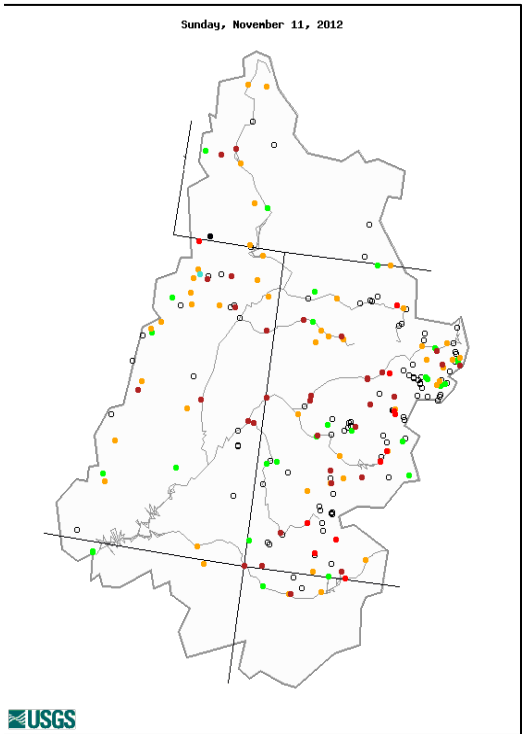
For the month of October, most of the Upper Colorado River Basin (UCRB) received below average precipitation. Some isolated areas in the northern CO mountains received near average precipitation, and northern Utah and western Wyoming received near to above average precipitation. East of the UCRB, northeast CO received near average precipitation, while southeast CO and the San Luis Valley received below average precipitation last month. Since the beginning of November, northeast UT and the San Juans in southwest CO received beneficial moisture, with accumulations ranging between .50 and 2 inches (Fig. 1). The lower elevations in the basin have received less than .50 inches, and most areas in eastern CO received less than .25 inches since the beginning of the moth.

Water-year-to-date (WYTD), many of the SNOTEL sites in western CO below the 30th percentile, with the lowest percentiles around the Gunnison basin (Fig. 2). Many of the SNOTEL sites in the Uintahs and northeast UT are above the 50th percentile, and percentiles in the Upper Green range between the teens and 30s. Accumulated snowpack is slightly below average for WY and CO and near to above average for eastern UT.

Streamflow

As of November 11th, about 25% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 3). About 37% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and only one gage recorded above normal flows. Much below normal flows are found scattered throughout the basin, and low flows are concentrated around headwaters regions in western CO (particularly around the Gunnison and Roaring Fork rivers). It is important to note that with baseflows dominating during this time of year, small changes in flows can lead to large percentile changes.

Flows on two of the three key gages across the basin are in the much below normal range (Fig. 4). Flows on the Colorado River near the CO-UT state line and the Green River at Green River, UT have stayed fairly consisent over the past week and are at the 5th and 8th percentiles, respectively. Flows on the San Juan River near Bluff, UT have stayed nearly steady for the past few weeks and are currently at the 17th percentile.



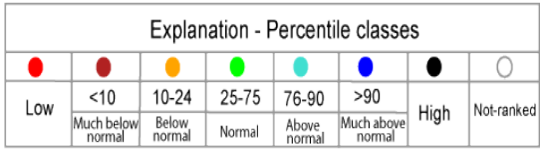


Fig. 3: 7-day average discharge compared to historical discharge for November 11th.

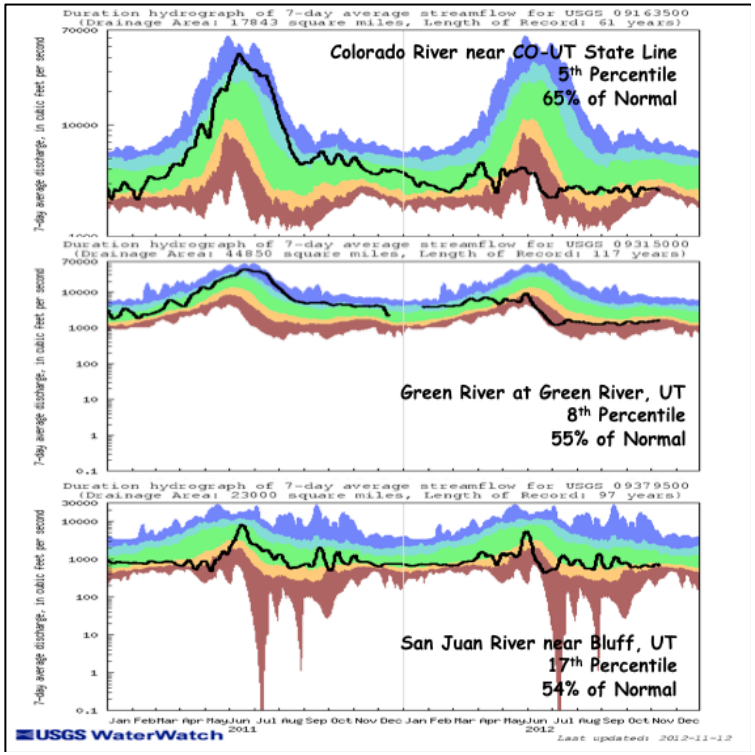


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week most of the UCRB experienced temperatures that were 2 to 8 degrees warmer than average. East of the basin, most of eastern CO also saw warmer than average temperatures. Southeast CO was between 6 and 10 degrees warmer than average for the week. The VIC soil moisture model shows extremely dry soils through most of WY, with soil dryness below the 20th percentile in northeast UT and northwest CO (Fig. 5). Slight improvements in soil moisture have shown up over northern UT and western WY after a decent start to the water year. Deteriorating soil moisture conditions are showing up over southwest CO. Dry soils also show up in southeast CO with near normal soil moisture in north-central CO and in the San Luis Valley in southern CO.

For the month of October, all the major reservoirs in the UCRB saw a decrease in storage volumes, which is normal for this time of year. Lake Granby, Navajo, Dillon, and McPhee reservoirs saw larger decreases than normal while Lake Powell and Flaming Gorge saw smaller decreases than what is normal for this time of year. Most of the reservoirs in the basin are between 60% and 85% of their November averages. Blue Mesa is the lowest, at 55% of its average November storage volume, and Flaming Gorge is the highest, at 99% of average. All of the reservoirs have seen only very minor decreases since the beginning of November.

Precipitation Forecast

The UCRB will remain underneath brisk westerly flow aloft for much of the upcoming work week. Several minor disturbances are expected to traverse the area on this flow, but these features will have little effect on sensible weather for all but the highest elevations. Expect a slight chance of light snow showers to persist across the high ridges of northern CO and southwestern WY as a result of these weak disturbances, with no appreciable accumulation anticipated (Fig. 6). Elsewhere, expect to see a mix of clouds and sun with no precipitation and near average temperatures. The next Pacific trough approaches the west coast over the weekend, however, disagreement among forecast models leads to a low confidence in the long term forecast. Expect a slight uptick in snow shower coverage over the mountains of western WY moving into next week, with the possibility for more widespread precipitation for the basin should this next system materialize.

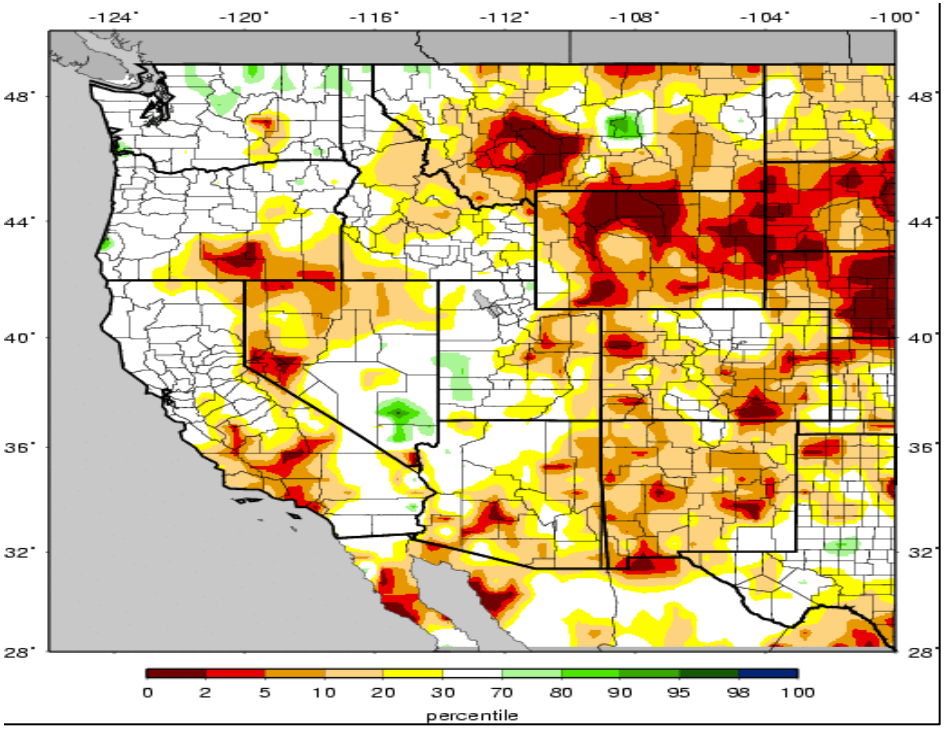


Fig. 5: VIC modeled soil moisture percentiles for the western U.S. as of November 11th.

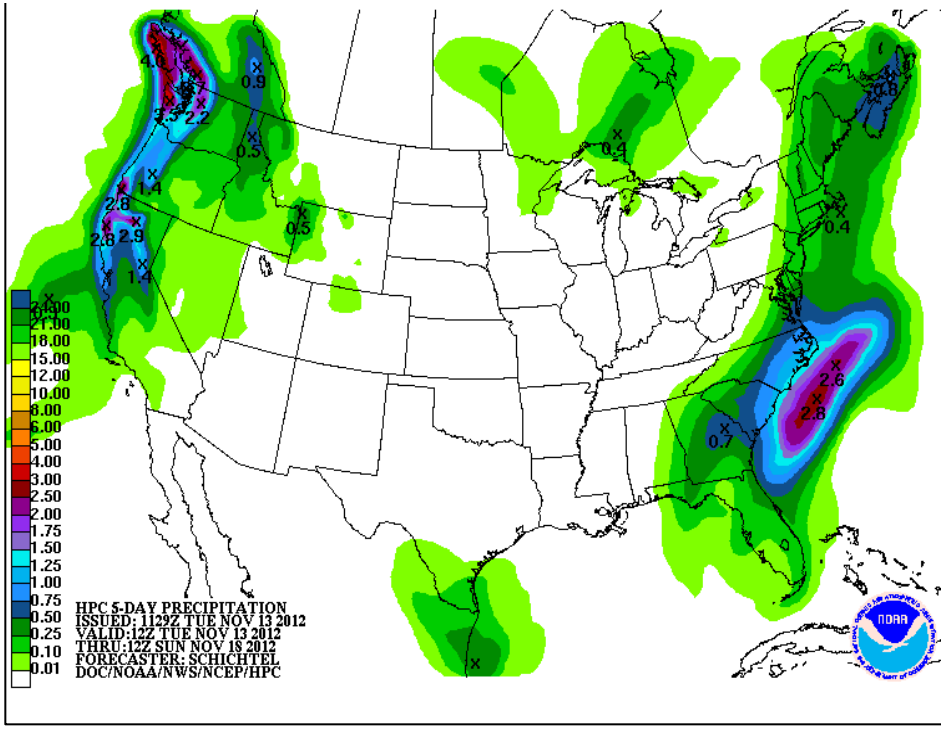
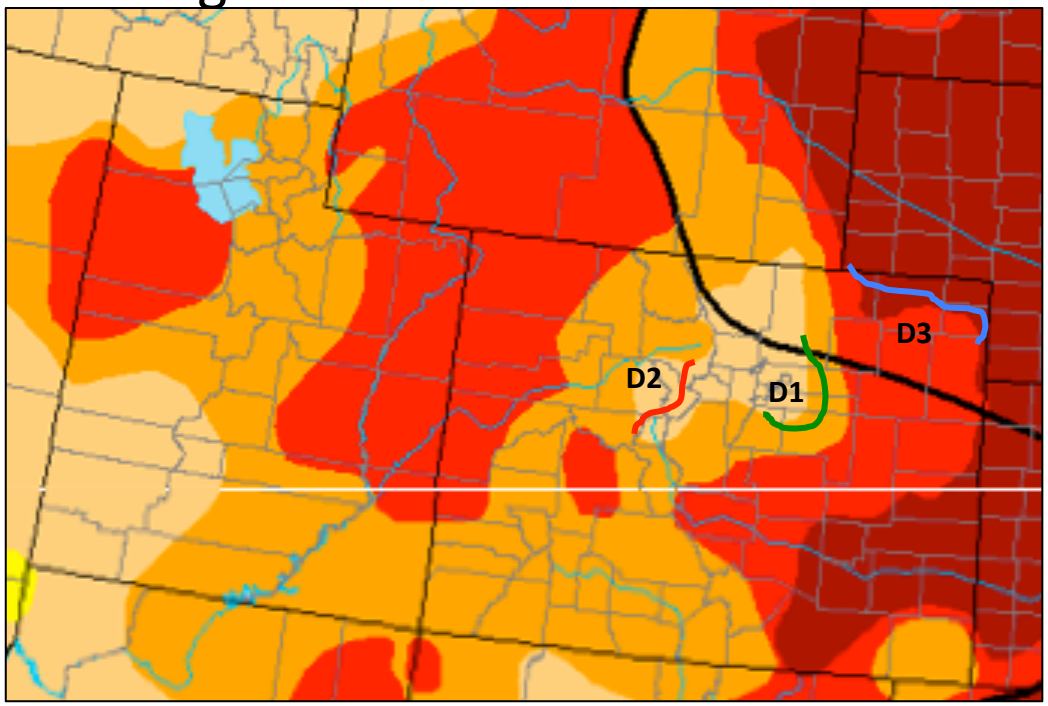
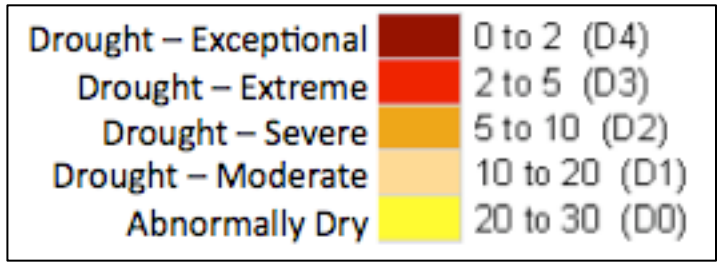


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 7: November 6th release of U.S. Drought Monitor for the UCRB.

UCRB: On the east side of the basin, an expansion of the D2 is recommended for eastern Eagle and Summit counties (Fig. 7, red line). This region has seen a poor start to the water year precipitation and snowpack and is experiencing low flows on the Eagle River, and the most recent storm did not provide relief. On the west side of the UCRB, the current U.S. Drought Monitor (USDM) author has indicated that slight improvements will be made to the D3 and D2 in northern UT. Status quo is recommended for the rest of the UCRB.

Eastern CO: In northeast CO, a trimming of the D4 is recommended (Fig. 7, blue line). The area received near average precipitation for October, most of the grass is now dormant so impacts are limited, and winter wheat (though below average) is still looking fair. A trimming of the D2 is also recommended to better match recent precipitation and improved soil moisture conditions (Fig. 7, green line). Status quo is recommended for the rest of northeast CO and for southeast CO.