

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 13, 2011

Precipitation and Snowpack

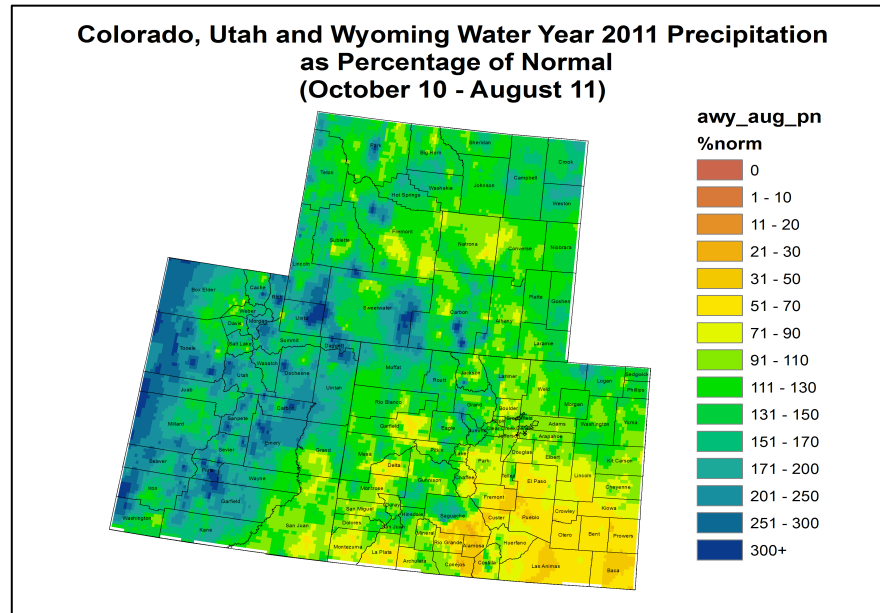


Fig. 1: Water-year-to-date precipitation as percent of average.

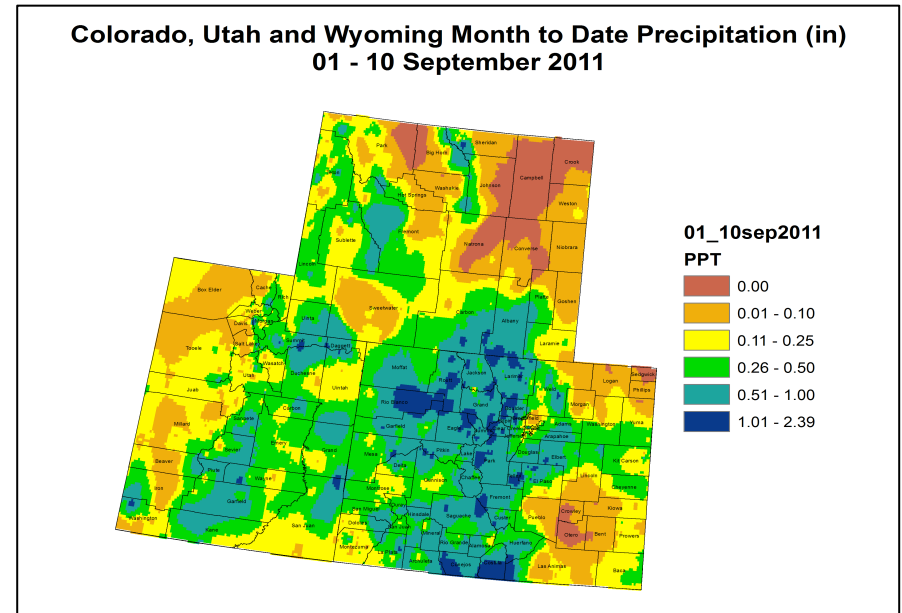


Fig. 2: September month-to-date precipitation in inches.

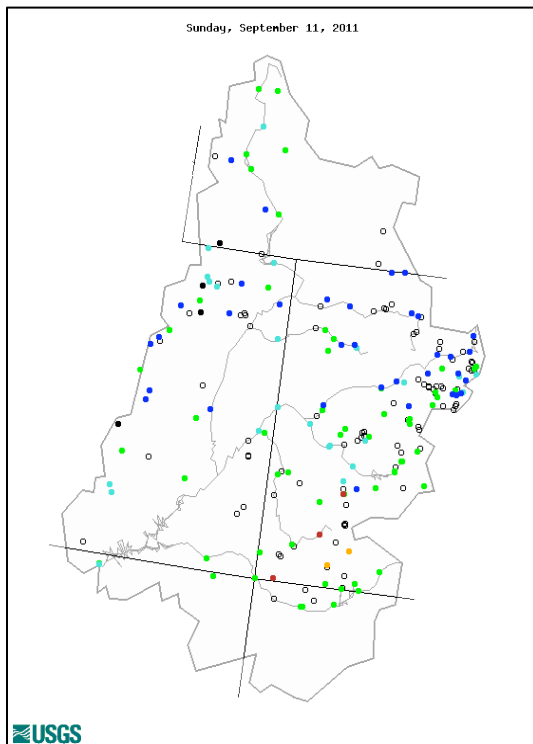
Water-year-to-date (WYTD), most of the Upper Colorado River Basin (UCRB) has received near or above average precipitation (Fig. 1). The Upper and Lower Green River basins have received over 150% of their average WYTD precipitation in many spots. The southern portion of the UCRB has been drier, seeing around 70 to 100% of average, and a few of the lower elevations in the central part of the UCRB have dried slightly. Northeast CO has received near average precipitation for the water year, while southeast CO and the San Luis Valley have received less than 50% of average in some areas.

Since the beginning of the month, most of the UCRB has received around a quarter inch to over an inch of precipitation (Fig. 2). Parts of southwest WY and the Four Corners area have been a little drier, receiving less than a quarter inch. East of the basin, parts of northeast CO currently in D0 have received over a quarter inch of moisture, but far northeast CO and a lot of southeast CO were drier, seeing less than a tenth of an inch. The San Luis Valley has received half an inch month-to-date, a much needed improvement in that area.

Streamflow and Water Supply

As of September 11th, about 96% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3), with 50% of the gages recording flows above the 75th percentile and only 5 gages recording below normal flows. Key gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT have above normal 7-day average streamflow at the 83rd and 92nd percentiles, respectively (Fig. 4). Streamflow on the San Juan River near Bluff, UT is at the 38th percentile.

All the major reservoirs' storage volumes in the UCRB have continued decreasing in September, with Flaming Gorge, Lakes Granby, Dillon, and Powell seeing only minor decreases. All of the major reservoirs above Lake Powell are currently near or above their average September levels. Only Navajo Reservoir is below last year's levels. Lake Powell's volume is currently 89% of average and 73% of capacity, compared to 63% of capacity last year at this time.



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		

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

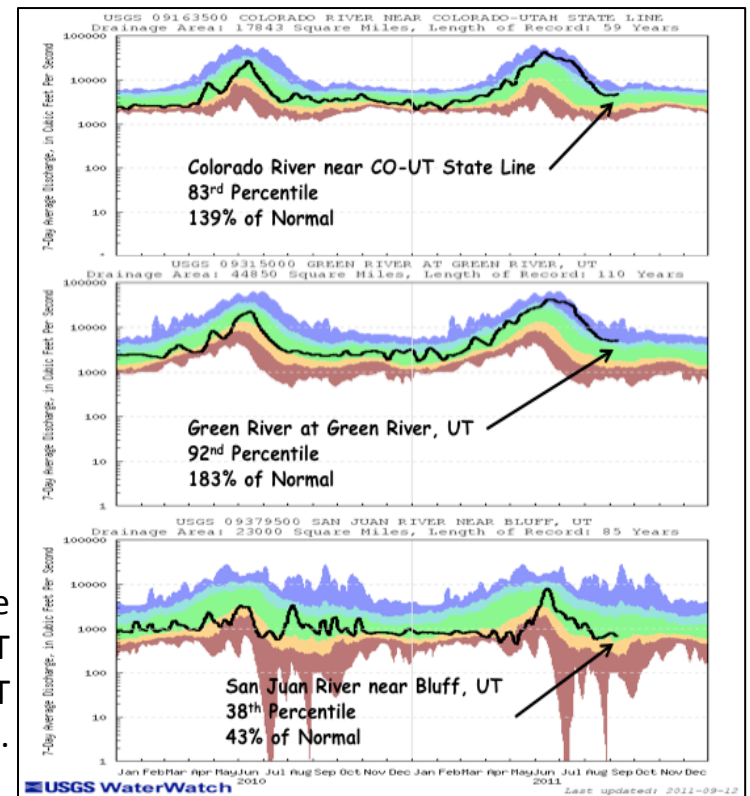


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Demand

Last week, warmer than average temperatures were seen around the Four Corners and in southwest WY. The rest of the UCRB was near average while cooler than average temperatures were experienced east of the UCRB in CO and WY. This much needed cool down helps ease water demands and lowers reference evapotranspiration (refET). Though high refET rates have dominated in southeast CO and the San Luis Valley for most of the summer, conditions have improved slightly at Center CO, and Avondale, CO has shown a lot of improvement in the last month (Fig. 5).

The VIC model continues to show improved soil moisture conditions for the San Luis Valley. Poor soil moisture conditions are prevalent throughout much of southeast and northeast CO. Southern WY, eastern UT, and the Four Corners region are showing slightly dry soils, while the Colorado Headwaters region is showing wet soils. Satellite imagery of vegetation conditions show very dry vegetation in the Four Corners region, the San Luis Valley, and southeast CO (Fig. 6). Vegetation conditions are moist for the northern portion of the UCRB and slightly drier than average for northeast CO.

Precipitation Forecast

The UCRB will experience one more warm day before a more fall like pattern moves in for the latter part of the week, bringing an increasing chance of showers to southwestern parts of the area by Wednesday morning. There's some disagreement between the models on total amounts, but the current forecast favors the southern half of the UCRB for the best chance of rain. Amounts could possibly approach 1.00" of liquid over the southwest and south central CO mountains by Thursday, with the northwestern portions in WY and UT receiving between 0.10" to 0.50", and the possibility of 3-6" of accumulating snowfall above 11,000 ft. Meanwhile, a strong push of upslope winds over southeast CO will combine with the remains of the upper level disturbance to bring a good chance of precipitation (possible totals over 1.00" by the end of Thursday) to those drought stricken areas. A weak trough will bring a slight chance of showers on Saturday, with a better chance by late Sunday and into Monday into the northern portion of the UCRB. This second trough is expected to be much colder and stronger, with good potential for accumulating snowfall over southwest WY.

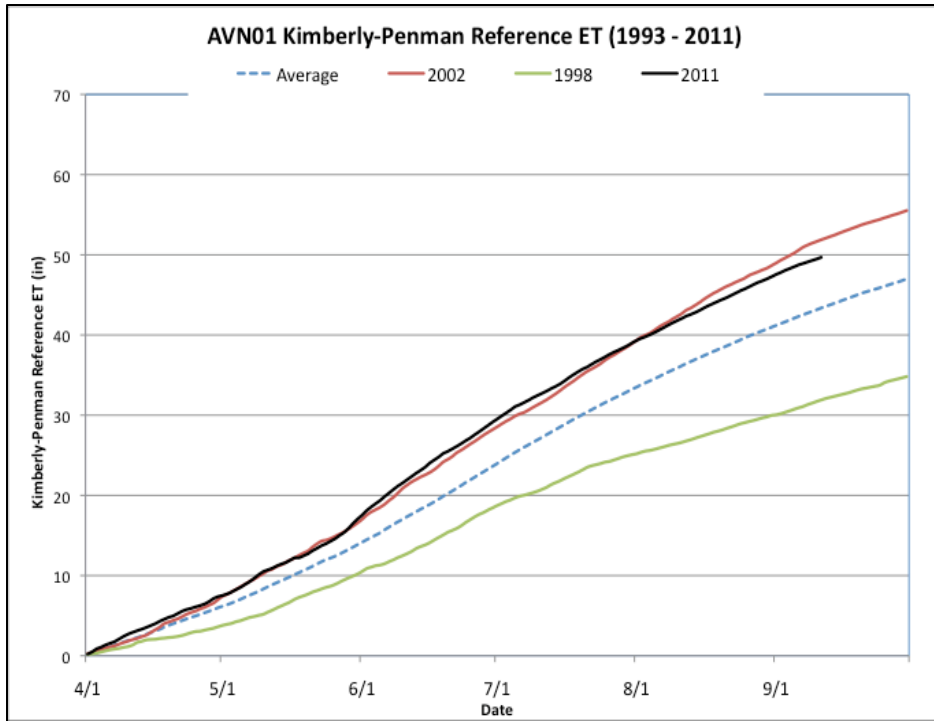


Fig. 5: Reference evapotranspiration since April 1st at Avondale, CO in the Arkansas basin.

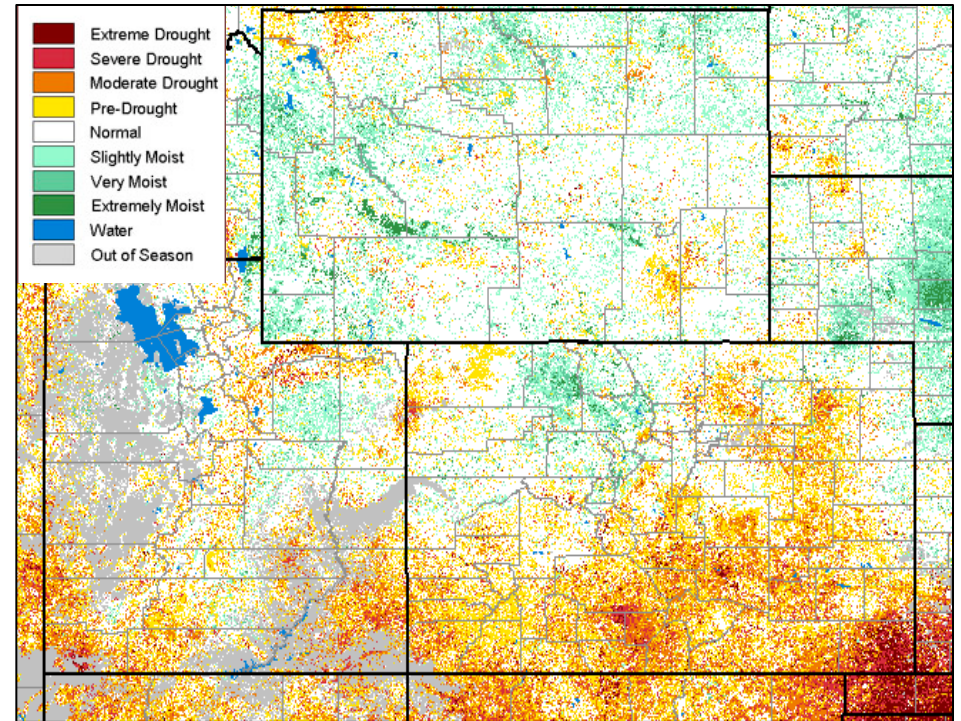


Fig. 6: September 11th VegDRI map, based on satellite-derived observations of vegetation.

Drought and Water Discussion

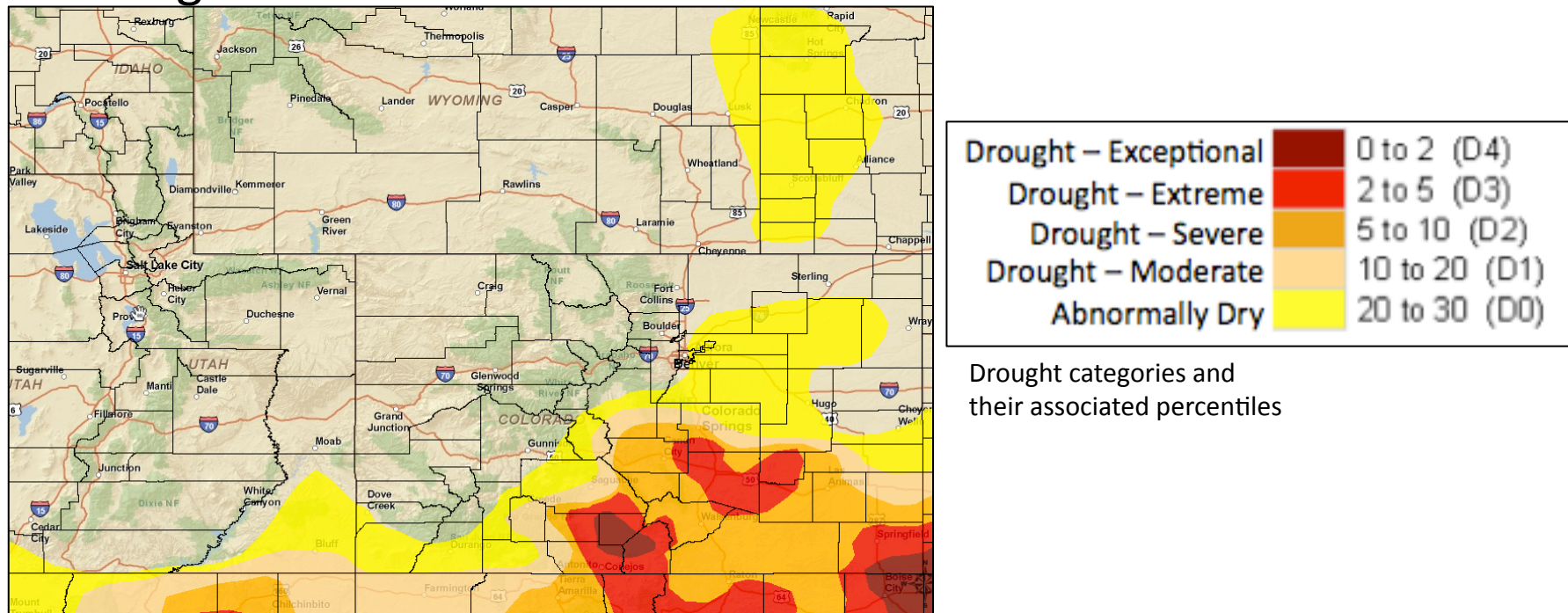


Fig. 7: September 6th release of U.S. Drought Monitor for the UCRB

Status quo is recommended this week for the current U.S. Drought Monitor (USDM) map over the UCRB (Fig. 7). The Four Corners region has continued to see abnormally dry conditions in the past few weeks—VegDRI and the VIC model show slightly dry conditions in soil moisture and vegetation; Standardized precipitation indices (SPIs) are still negative on several different time scales, but not negative enough yet to warrant further degradation. Also, it is now recommended that the D4 be removed from the San Luis Valley in southern CO. That area has received between half an inch and up to an inch or more of precipitation for the month of September so far. SPIs on all time scales have recovered somewhat and do not dip below -2.0. Both the VegDRI and VIC models have shown improvement in the area as well. Finally, the current USDM author has expanded the D0 in northeast CO to connect with the D0 in Wyoming and Nebraska. Aside from this change, status quo is recommended for the rest of northeast and southeast CO.