NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

October 2, 2012

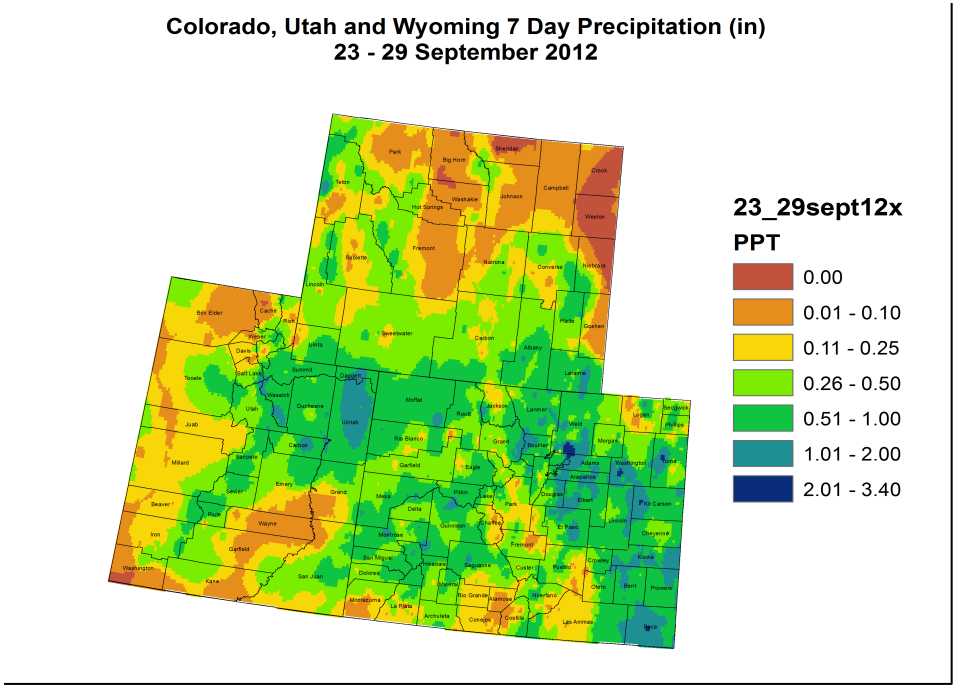


Fig. 1: September 23 – 29 precipitation in inches.

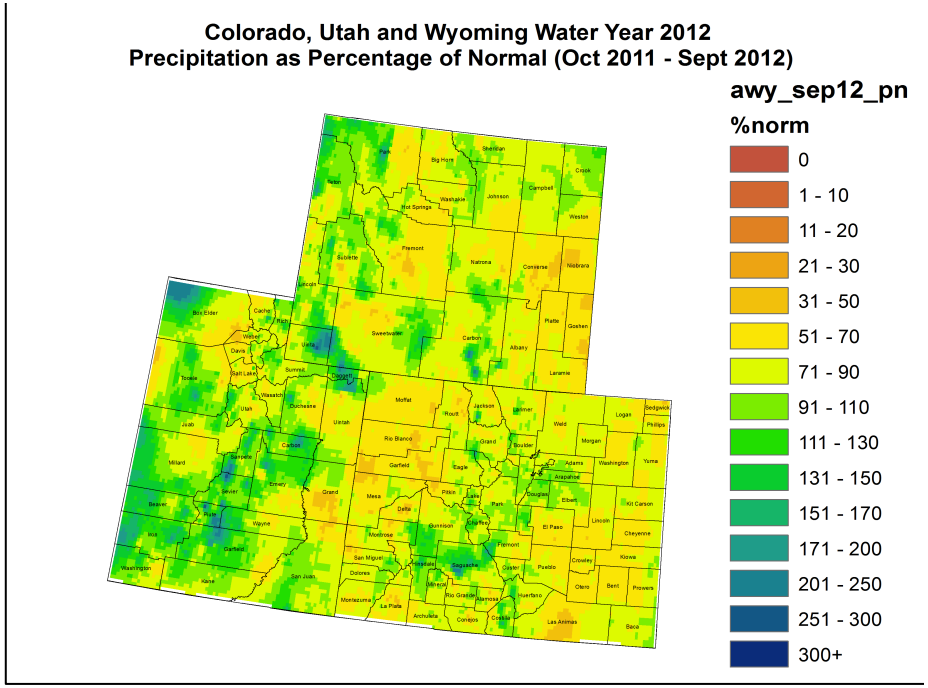


Fig. 2: Water Year 2012 precipitation as a percent of average.

Precipitation

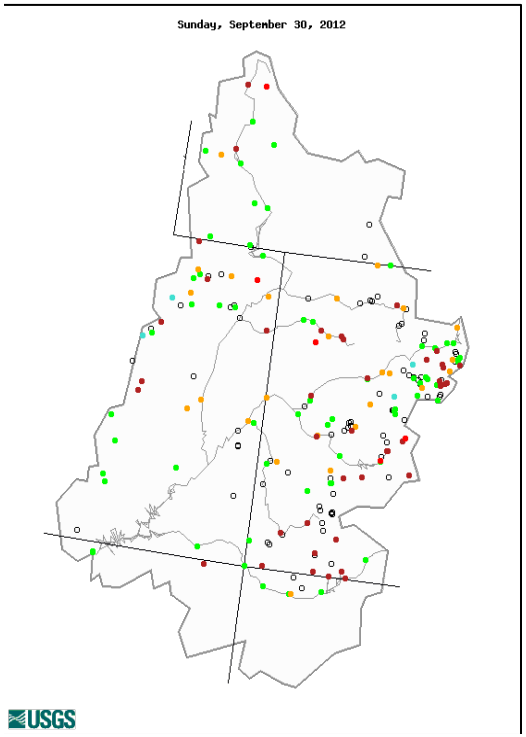
Last week, much of the Upper Colorado River Basin (UCRB) received between .25 and 2 inches of precipitation (Fig. 1). Parts of the Upper Green, the lower Colorado River valley and around the Four Corners were slightly drier, receiving between .01 and .25 inches for the week. Most of the rest of Colorado also benefited from precipitation last week with many parts of the Front Range and eastern plains receiving between .5 to 2 inches of moisture. The San Luis Valley in southern CO received less than .25 inches.

For Water Year 2012 most of the UCRB was drier than average (Fig. 2). Some parts in central Utah and southwest Wyoming saw above average precipitation for the water year. The San Juan mountains in CO received near average precipitation. Northwest CO was the driest part of the basin, with most areas receiving between 30% and 70% of average water year precipitation. East of the basin, most of eastern CO saw between 70% and 90% of average water year precipitation, with parts of the Front Range, Saguache County, and the Sangre de Cristos receiving near average precipitation for the water year.

Streamflow

As of September 30th, about 48% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 35% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows (an decrease from 48% one week ago). Only 3% of the gages are recording above normal flows. As flows return to a normal baseflow, the rivers are expected to run lower, and small changes could mean larger changes in percentiles rankings. Accumulated volumes for this time of year is a better indicator of how runoff has been affected by dry conditions.

The three key gages across the basin showed minimal variability over the past week (Fig. 4). The Colorado River near the CO-UT state line and the Green River at Green River, UT are both recording flows in the below normal range, at the 19th and 12th percentiles, respectively. The San Juan River near Bluff, UT is recording streamflows in the near normal range, at the 34th percentile.



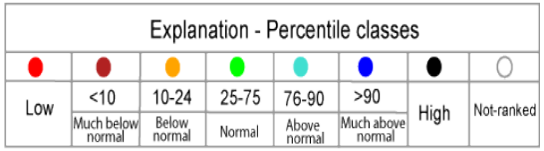


Fig. 3: 7-day average discharge compared to historical discharge for September 30th.

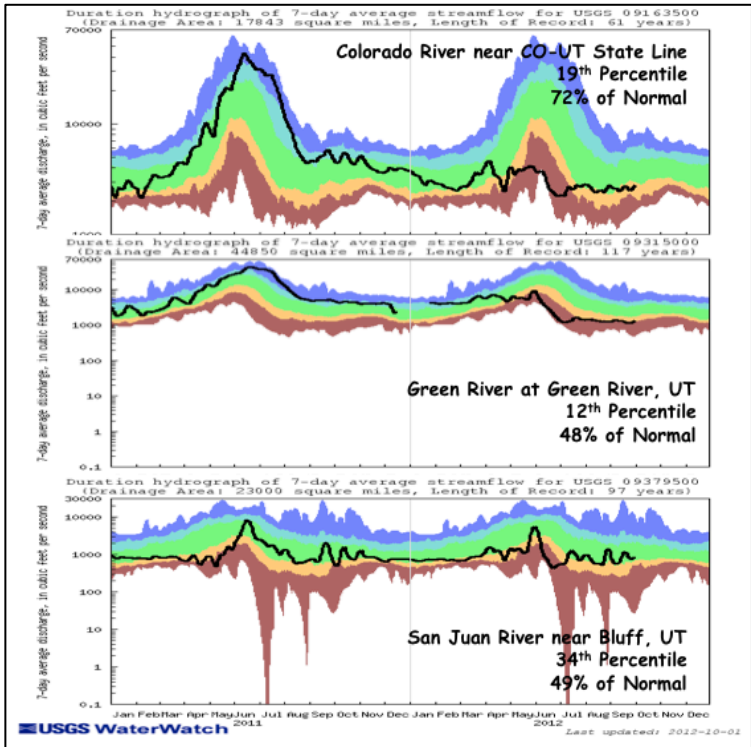


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Most of the UCRB and the rest of CO experienced warmer than average temperatures for the month of September. In most areas, temperatures were 1 to 4 degrees above average last month. Satellite vegetation conditions show very dry vegetation through much of the northern part of the UCRB and throughout eastern CO (Fig. 5). Improved vegetation conditions show up in the central and southern mountains of CO and also in southern UT. For the growing season, reference evapotranspiration (ET) rates were higher than average across the western slope (meaning more available water was being lost to the atmosphere than normal, largely due to the anomalously warm spring and summer). East of the basin, stations in southeast and northeast CO reported near record or record high reference ET accumulations for the growing season.

For the month of September, all the major reservoirs in the UCRB saw a volume decrease, which is normal during this time of year. Navajo and Granby reservoirs decreased more than what is normal for this time of year, while Green Mountain decreased less than average. At the end of the month, many of the reservoirs were between 70% and 85% of average. Blue Mesa and Green Mountain are the lowest, at 53% and 60% of average respectively, and Flaming Gorge is the highest, at 97% of average.

Precipitation Forecast

The UCRB will be underneath a weakening ridge of high pressure as a broad trough begins to carve itself out over the northern plains. As this trough develops it will send a cold front south over the area throughout the day on Wednesday. While a sharp reduction in temperatures can be expected throughout the region, this feature will be moisture starved and should only result in a few light snow showers over the Continental Divide in CO and WY. Pieces of energy will continue to rotate around the northern plains trough throughout the week, but should remain too far east to affect all except the extreme eastern portions of the basin with a few light snow showers (Fig. 6). Attention then turns to an area of low pressure poised off the west coast which is forecast to move inland over the southwestern U.S. through the weekend. Expect to see precipitation chances on the rise over far southwestern portions of the basin early next week, with the potential for more widespread activity should the low continue to track eastward over the rest of the UCRB.

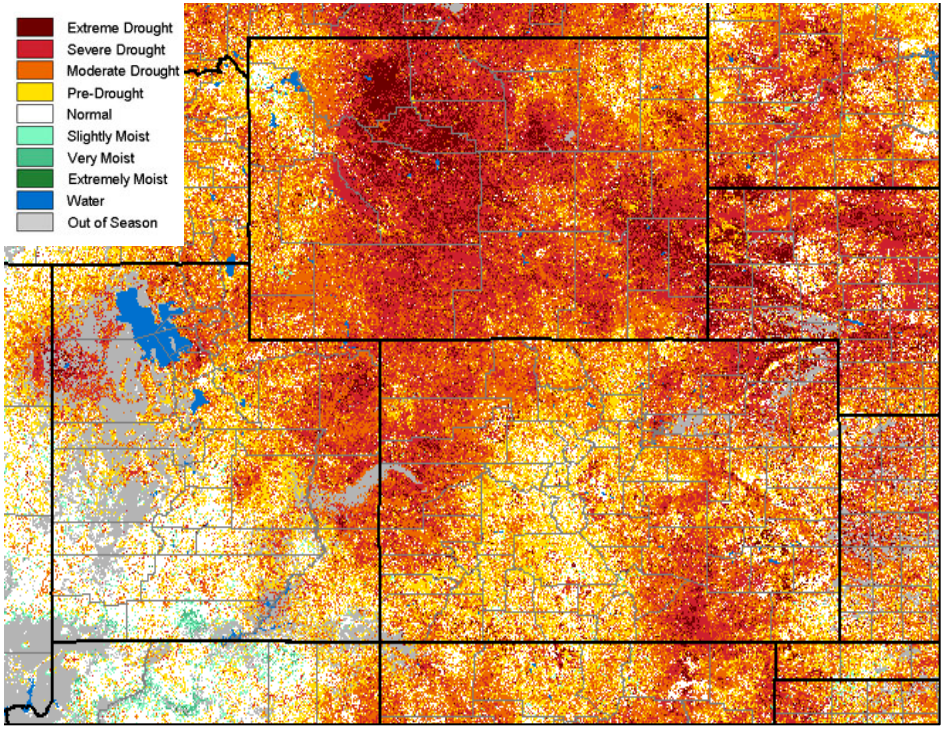


Fig. 5: eMODIS VegDRI showing satellite vegetation conditions as of September 30th.

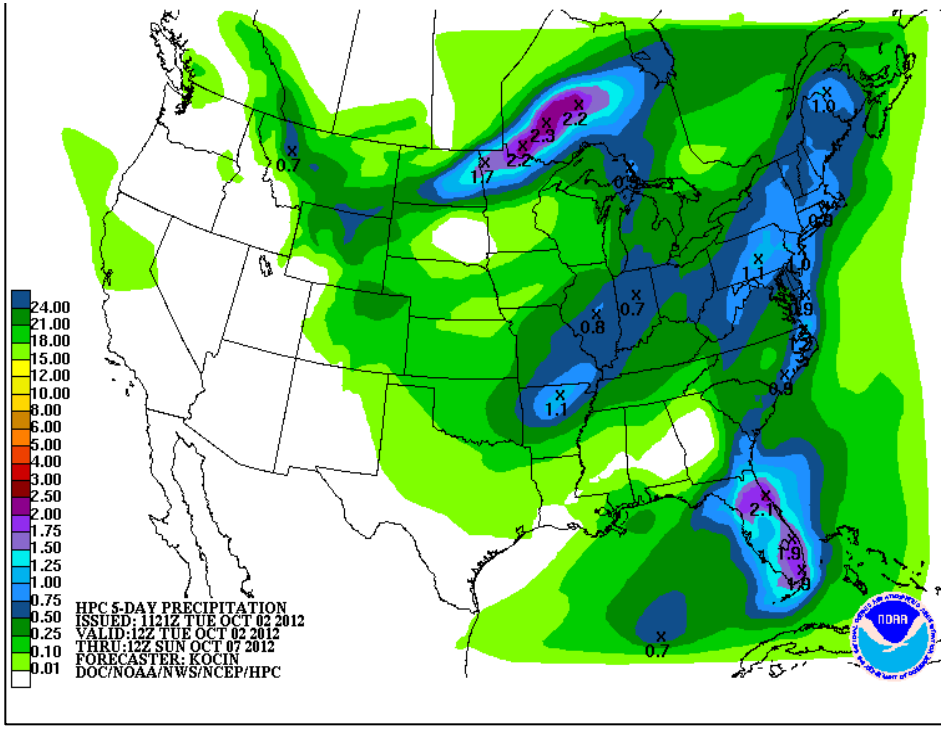
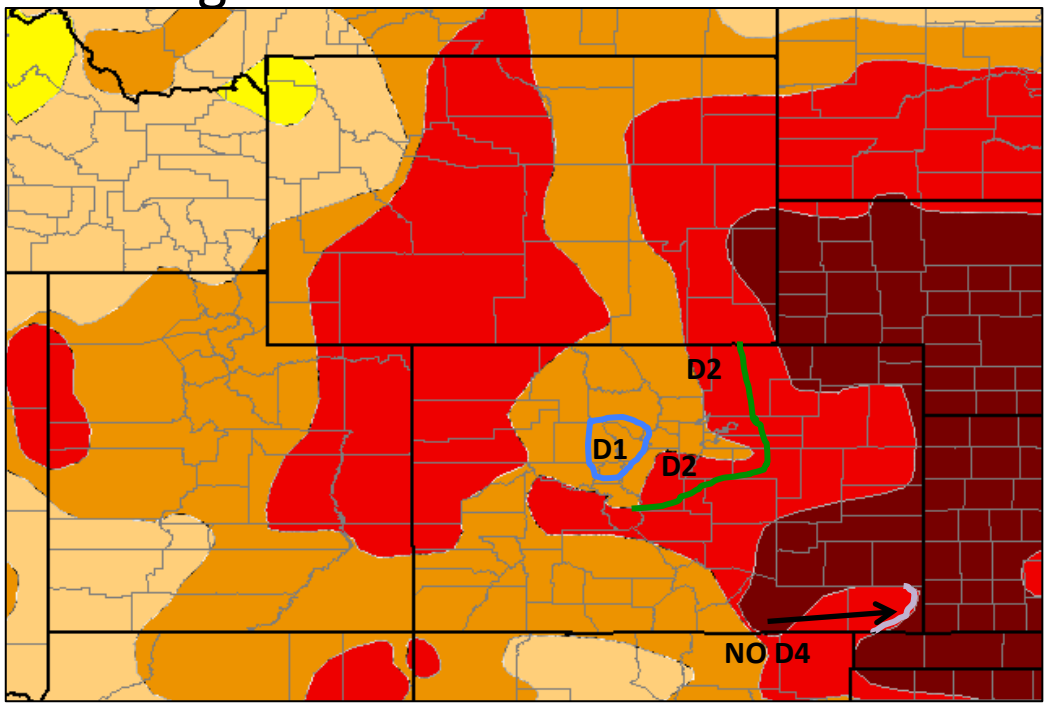
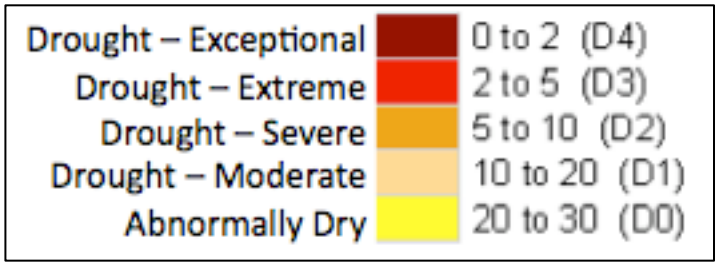


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion





Drought categories and
their associated percentiles

Fig. 7: September 25th release of U.S. Drought Monitor for the UCRB.

UCRB: An elimination of D2 in the eastern part of the UCRB is recommended (Fig. 7, blue shape). After poor snowpack in the winter, the region has rebounded and received near average precipitation for the water year. Standardized precipitation indices (SPIs) in the area are positive on short timescales and at worst, between 0 and -1 on the longer timescales. VegDRI shows improved vegetation conditions over the region.

Eastern CO: A trimming of the D3 along the Front Range and extending eastward is recommended (Fig. 7, green line). Most of these areas received between half an inch and 2 inches of precipitation last week. SPIs in the area are positive on the shorter timescales and between 0 and -1.5 on the longer timescales, giving better justification for D2 instead of D3 in the region. Also recommended is a complete removal of D4 from Baca County. This county has fared better than many other counties in eastern CO and D4 has never really been justified. We defer to the USDM author on how to resolve this delineation across the border into KS and OK. Further improvements will likely be recommended for Baca County in the near future.