NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 20, 2011

Precipitation and Snowpack

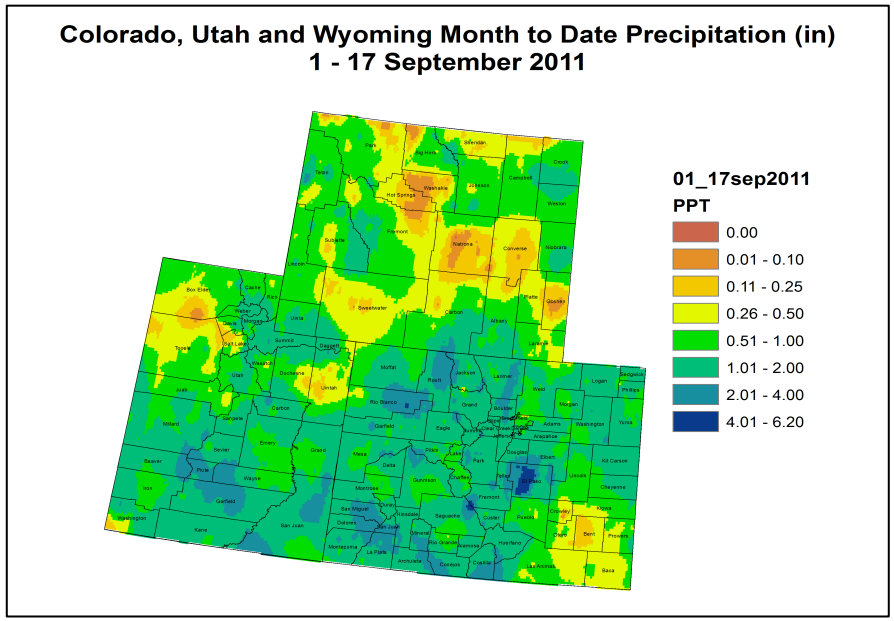


Fig. 1: September month-to-date precipitation in inches.

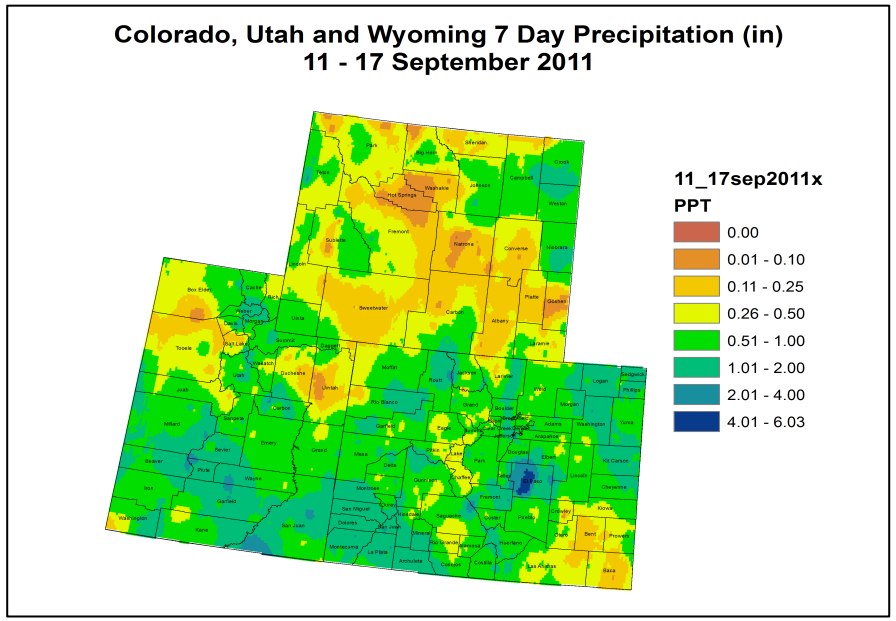


Fig. 2: September 11 – 17 precipitation in inches.

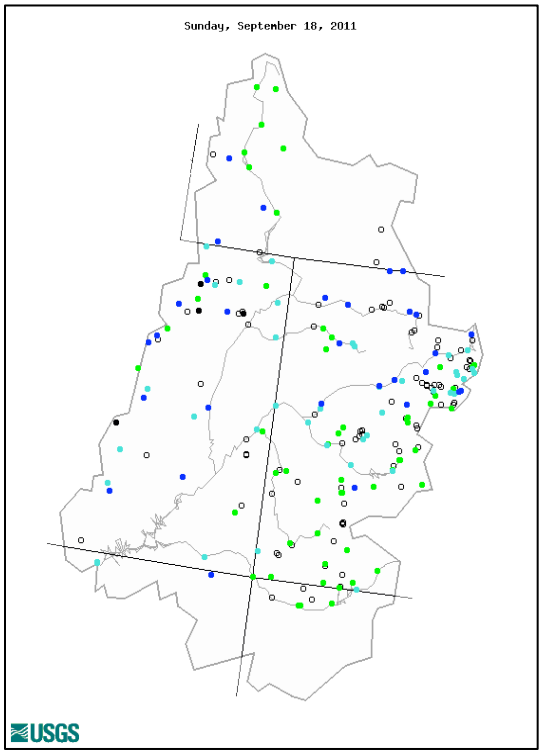
For the month of September so far, most of the Upper Colorado River Basin (UCRB) has received over half an inch of rain (Fig. 1). Parts of Sweetwater County, Wyoming and the Duchesne River basin in Utah have been drier, seeing between a quarter inch and half inch for the month. Some parts of western Colorado and southeast UT have received over 2 inches of moisture, month-to-date. Far southeast CO has remained relatively dry for the month, but northeast CO, the Front Range, and the San Luis Valley have all received over half an inch to over 2 inches of precipitation for the month.

Last week, precipitation favored the Four Corners region and northeast CO, both areas receiving around half an inch to 2 inches of moisture (Fig. 2). El Paso County, CO received heavy precipitation during the week, with accumulations totaling more than 4 inches at some stations. Portions of the Upper and Lower Green River basins and southeast CO were relatively drier for the week, with some spots receiving less than a quarter inch of precipitation.

Streamflow and Water Supply

As of September 18th, 100% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3), with 56% of the gages recording flows above the 75th percentile and no gages recording below normal flows. Key gages on the Colorado River near the CO-UT state line, the Green River at Green River, UT and the San Juan River near Bluff, UT all have above normal 7-day average streamflows (Fig. 4). After a strong surge in flows, the San Juan River gage's streamflow percentile doubled from last week (38th percentile to the 76th percentile).

All the major reservoirs' storage volumes in the UCRB have continued decreasing in September, with Flaming Gorge and Lake 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.



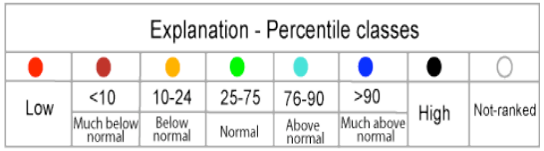


Fig. 3: 7-day average discharge compared to historical discharge for September 18th.

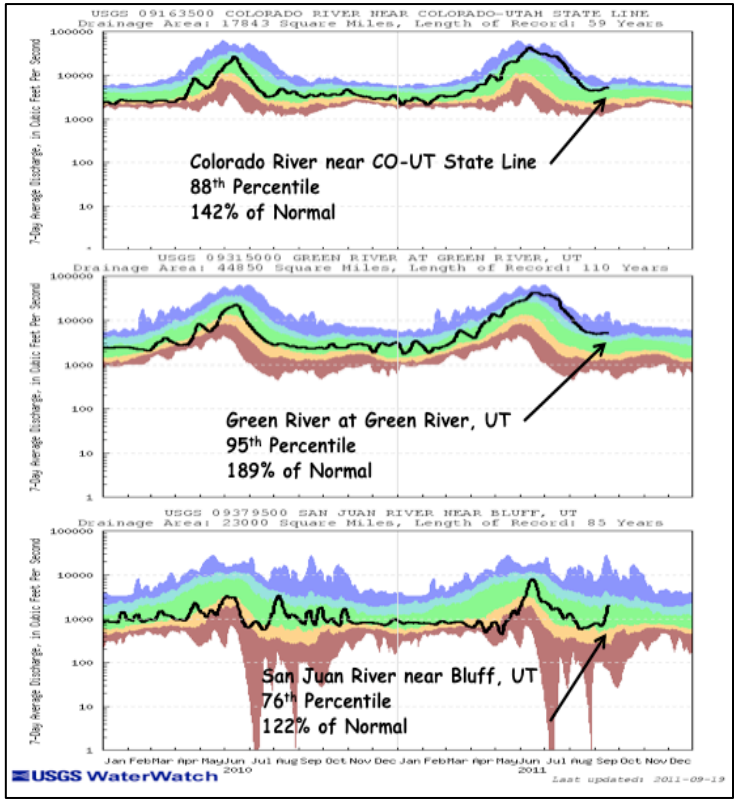


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Demand

Last week, cooler than average temperatures were seen throughout most of the UCRB (with the exception of slightly warmer temperatures in the Upper Green River basin) and east of the basin as well. This much needed cool down combined with ample precipitation has helped to ease water demands and lower 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 in both areas, and for the first time since May, refET rates in the San Luis Valley have come down below the record high year of 2002 (Fig. 5).

The VIC model shows improved soil moisture conditions for the San Luis Valley, the Four Corners and also for northeast CO. Poor soil moisture conditions are still prevalent throughout much of southeast CO. Southern WY and parts of eastern UT are showing slightly dry soils, while the Wasatch mountains in UT and the northern mountains of CO are 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

A benign weather pattern is in store for the majority of the UCRB through the weekend and continuing into next week as a strong ridge of high pressure becomes established over the Rocky Mountains today. Precipitation chances will remain low across most of the western and northern parts of the basin with slightly above average high temperatures and cool overnight lows. On Wednesday a weak trough will brush by the plains of eastern CO, which could result in a few very light showers developing along the Continental Divide and the far eastern portion of the basin . By Thursday this minor disturbance will quickly move east and weather over the UCRB will be dominated by the high pressure ridge over the western US. This dry pattern will persist throughout the weekend and will likely continue into early next week with little change in day-to-day conditions.

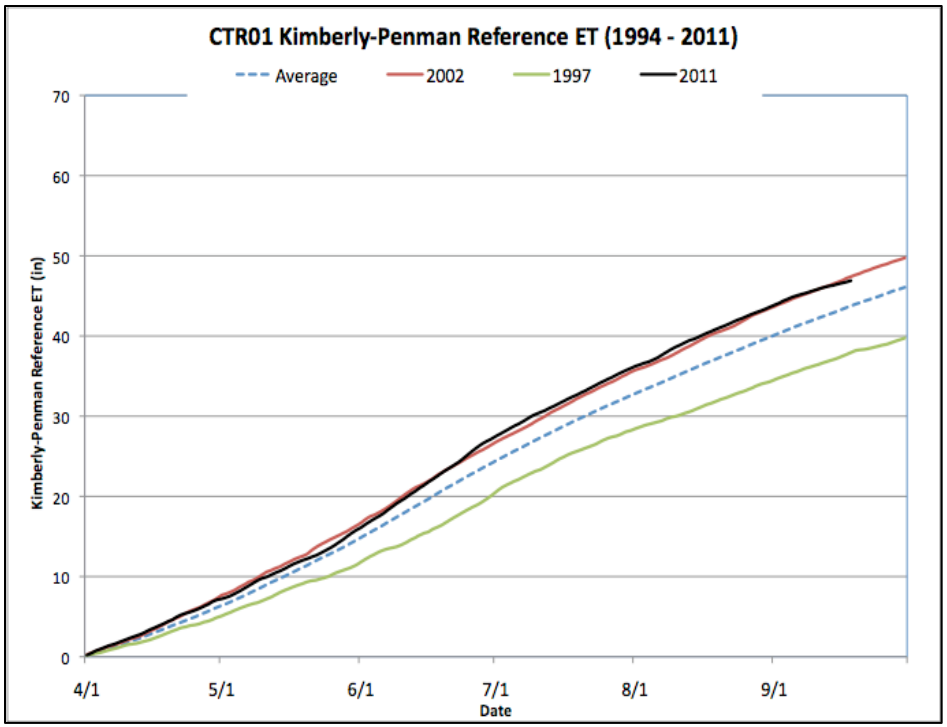


Fig. 5: Reference evapotranspiration since April 1st at Center, CO in the San Luis Valley.

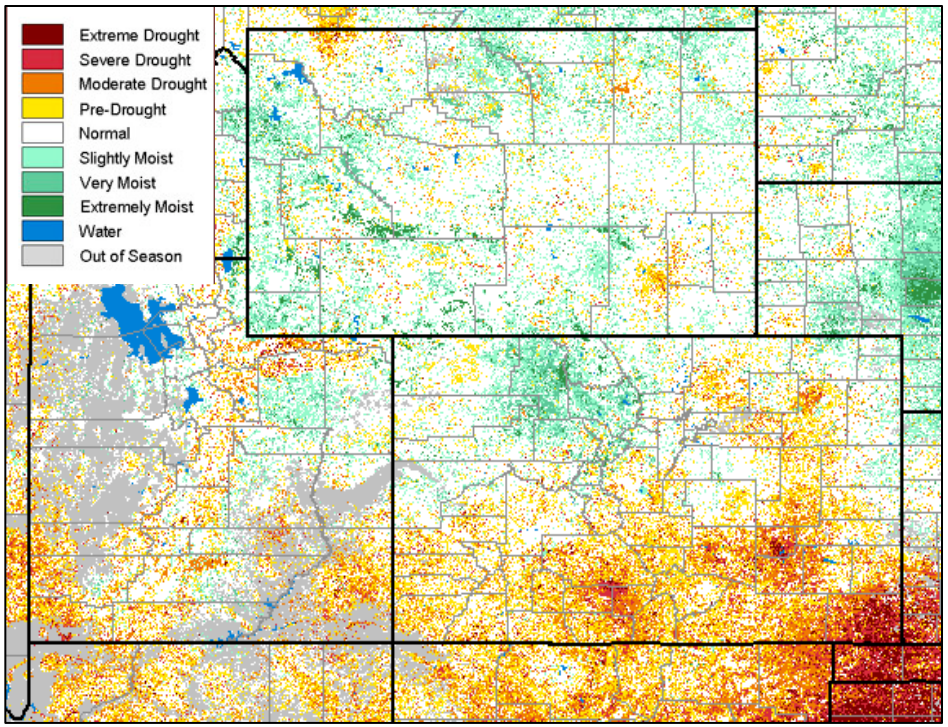
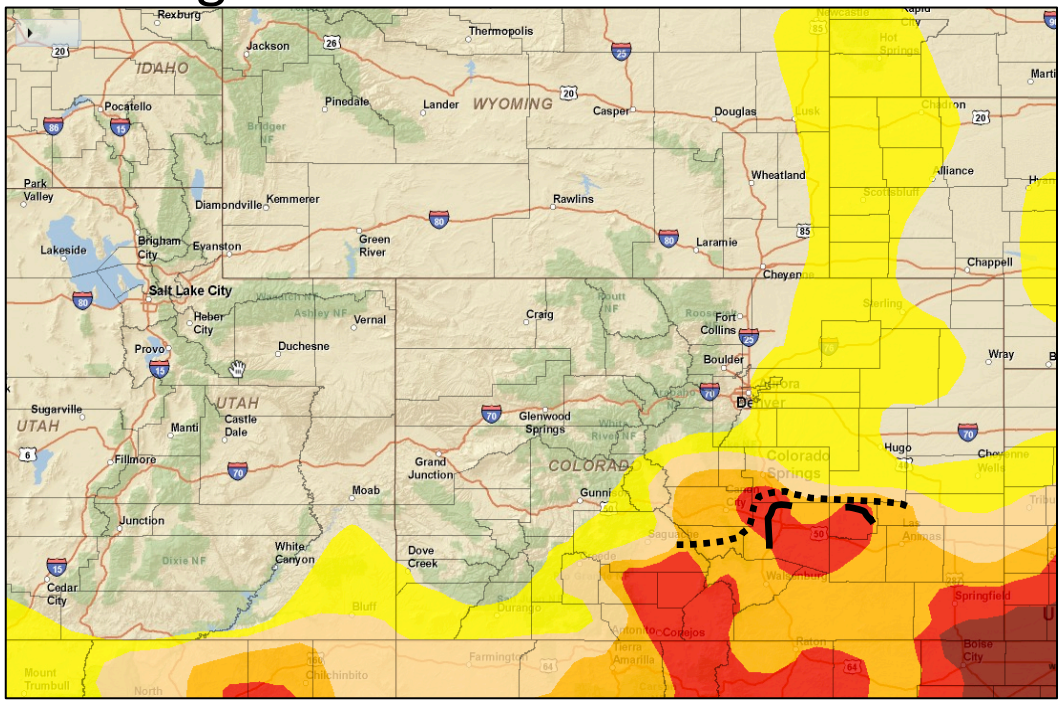
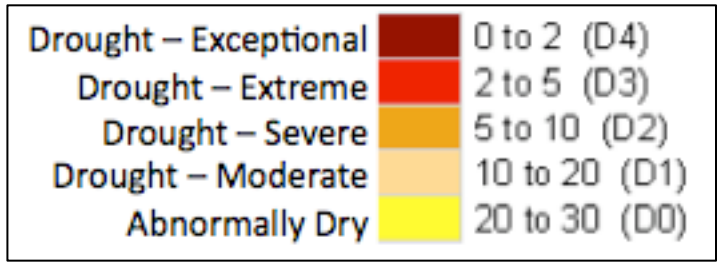


Fig. 6: September 18th VegDRI map, based on satellite-derived observations of vegetation.

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 7: September 13th 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). Due to heavy rains throughout much of last week, improvements are now warranted for some of the Arkansas basin. It is recommended that D3 be removed from El Paso and Fremont counties, and also out of western Pueblo County (Fig. 7, solid black line). VegDRI and VIC soil show improved vegetation and soils west of the Colorado Springs-Pueblo line. Local experts have also reported no drought issues in Park County. Therefore it is recommended to scale back D2 out of Park, Teller, and Fremont counties (Fig. 7, dashed line). Improvements are also being reported in southern Lincoln County, so it is recommended to remove D2 from the southern extreme of the county (and slightly adjust the D3 in northern Crowley to maintain the D0 – D3 gradient there). Beneficial rains continued to fall in the San Luis Valley last week, however it is currently recommended to keep the D3 there. D4 is also still warranted for southeast Baca County where dry conditions continue to prevail. The current USDM author has also removed the D0 from northeast CO as a result of the 1 to 2 inch rains that fell there in the last week.