NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 25, 2012

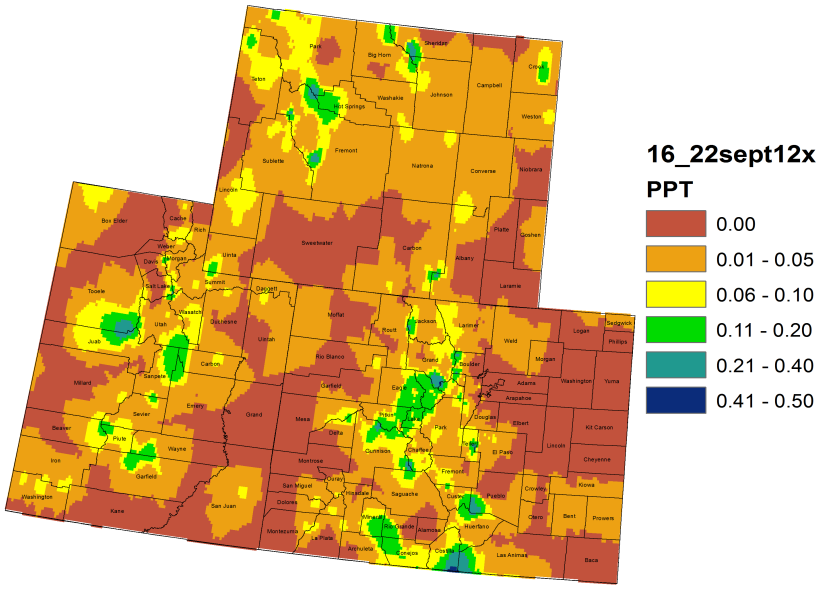


Fig. 1: September 16 – 22 precipitation in inches.

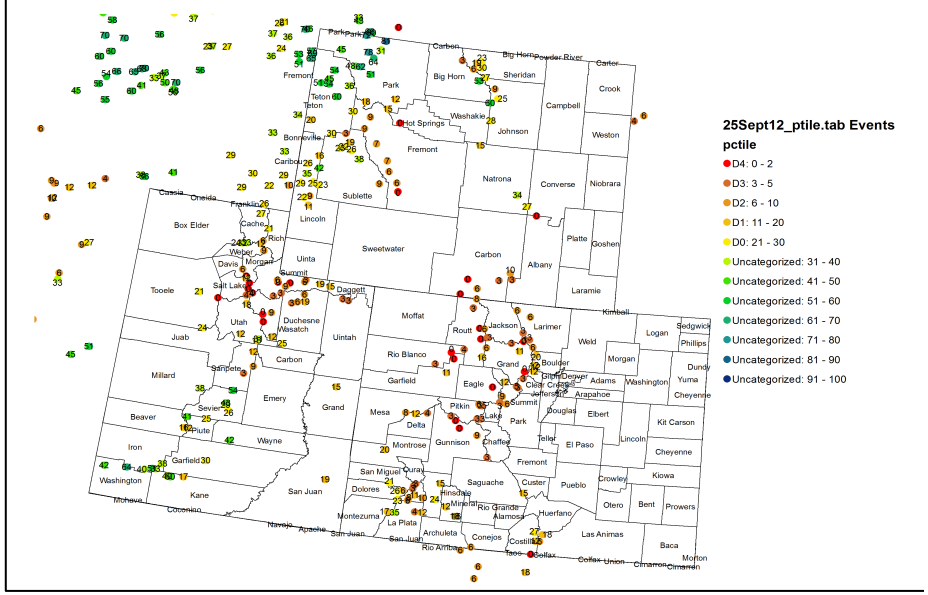


Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

Precipitation

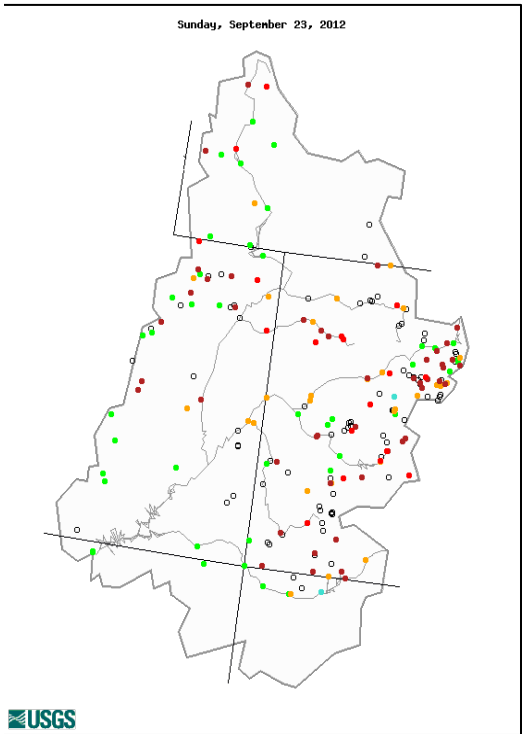
Since the beginning of the month, most of the Upper Colorado River Basin (UCRB) has received between .25 inches to 2 inches of precipitation. Lower elevations in southwest Wyoming and some spotty locations in the middle part of the UCRB have received less than .25 inches, while the Wasatch Range in Utah and the San Juans in Colorado fared the best, receiving between .5 and 2 inches. Last week, spotty amounts between .05 and .20 inches fell in central UT and the central mountains of CO (Fig. 1). Most of the rest of the UCRB received less than .05 inches for the week. The rest of CO was also relatively dry, with large regions seeing no precipitation last week.

Water-year-to-date (WYTD), SNOTEL precipitation percentiles are low for the Yampa and Gunnison basins in CO, and the Wasatch range in UT, with many sites reporting in the lowest (driest) 10th percentile or below (Fig. 2). The northern mountains of CO are also dry, with most sites reporting precipitation percentiles in the teens and single digits. SNOTEL percentiles in the Upper Green basin in WY are around the 20th to 30th percentiles, and percentiles in the San Juan basin are in the teens and 20s.

Streamflow

As of September 23rd, about 31% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 48% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows (an increase from 31% one week ago). 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 all saw decreases in flows from last week (Fig. 4). The Colorado River near the CO-UT state line fell from the 22nd to the 15th percentile. The Green River at Green River, UT fell from the below normal range back to the much below normal range, at the 7th percentile. The San Juan River near Bluff, UT is still in the normal range, but flows decreased from the 53rd percentile last week to the 39th percentile this week.



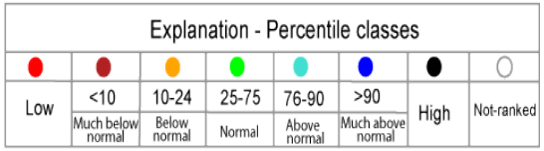


Fig. 3: 7-day average discharge compared to historical discharge for September 23rd.

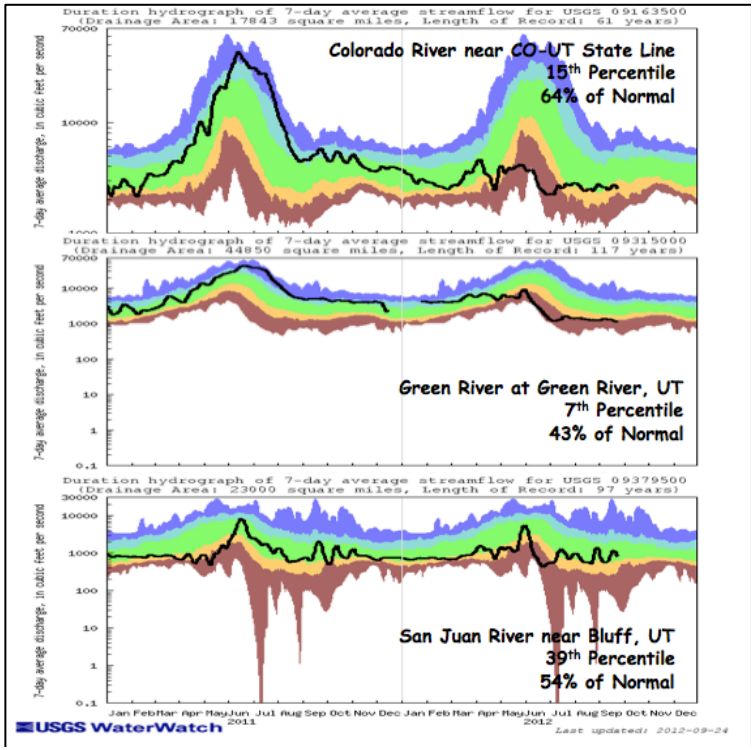


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Most of the UCRB experienced close to average temperatures for the week with temperatures 3 to 6 degrees warmer than average temperatures to the north. Much of the rest of CO also experienced near average temperatues with slightly cooler than average temperatures along the eastern border. 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. Reference ET rates are still higher than average across the basin though not above the record (with daily rates between .10 and .20 inches). East of the basin, most of the reference ET sites are recording a record high year, with daily ET rates between .20 to .30 inches.

Last month, all the major reservoirs in the UCRB saw storage volume decreases, which is expected during the demand season, though most of the reservoirs experienced larger decreases than what is normal for this time of year. For the month of September so far, McPhee, Granby, and Blue Mesa have shown larger percentage decreases while Flaming Gorge and Powell have only decreased slightly. All of the reservoirs are below their September averages, with most between 70% and 90% of average.

Precipitation Forecast

The UCRB will be under the influence of a weakening upper level low through the middle of the week. This low pressure system will continue to weaken and result in light, but widespread precipitation over much of the forecast area. Expect to see the heaviest amounts located over the mountains of western CO and northeast UT where liquid accumulations of 0.50 inches will be possible through Friday (Fig. 6). Elsewhere expect to see liquid accumulations remain below 0.25 inches, with some of this falling as snow above 10,000 feet. By this weekend the remnants of the upper low will be pushed east of the area by a series of weak disturbances moving out of Canada. This will usher in a drier airmass for the weekend with only a slight chance of an isolated shower over the Continental Divide where moisture from the east will impinge on the basin. Dry northerly flow will continue moving into early next week keeping precipitation chances low and temperatures near average.

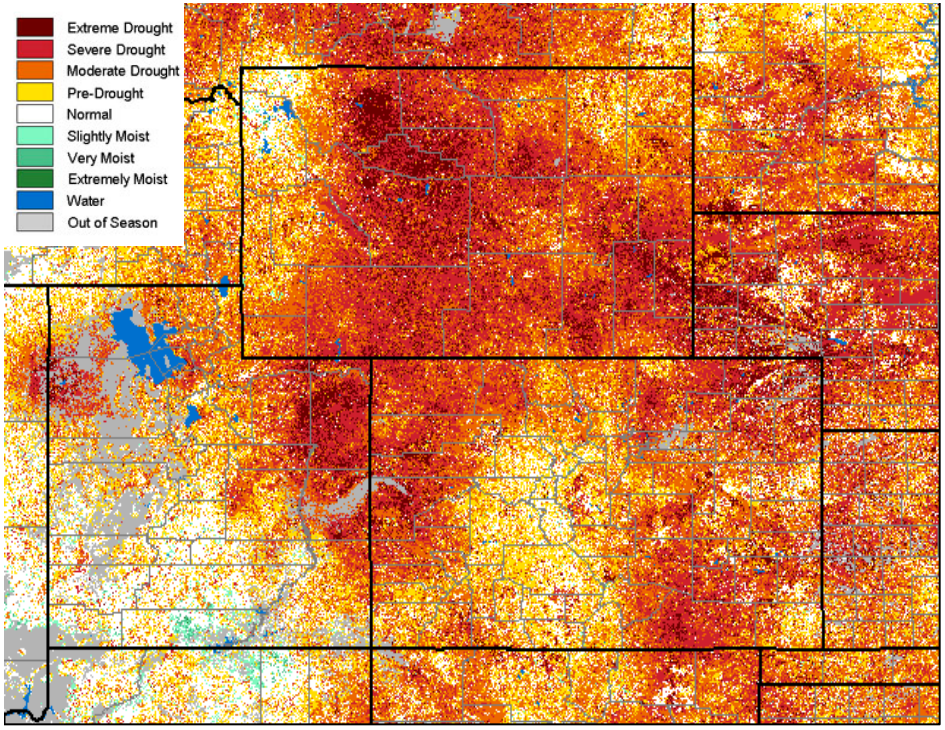


Fig. 5: eMODIS VegDRI showing satellite vegetation conditions as of September 23rd.

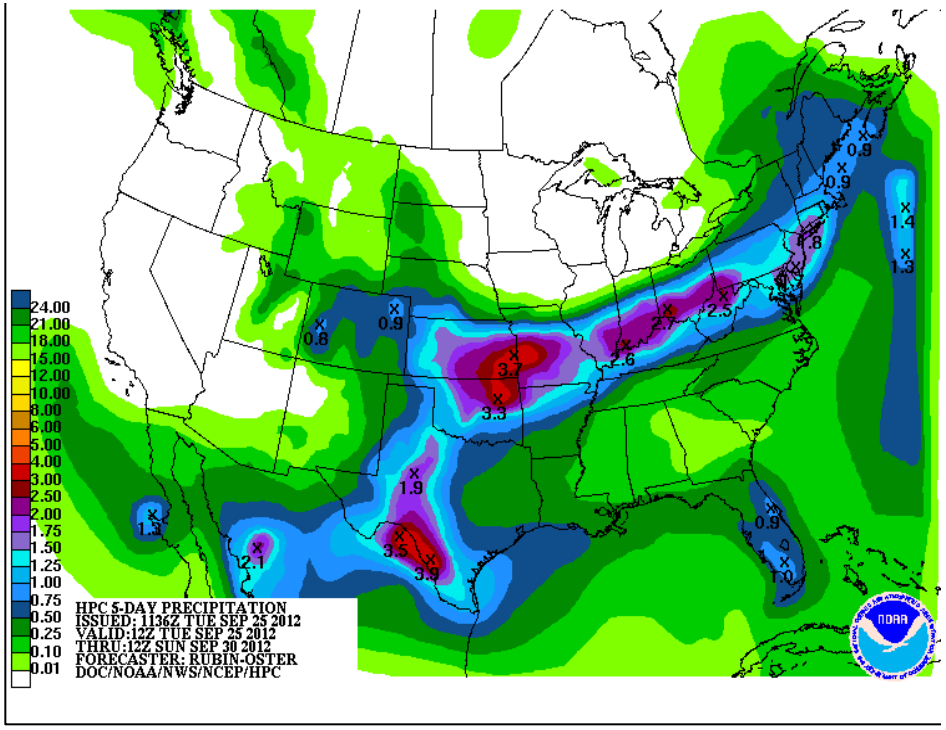
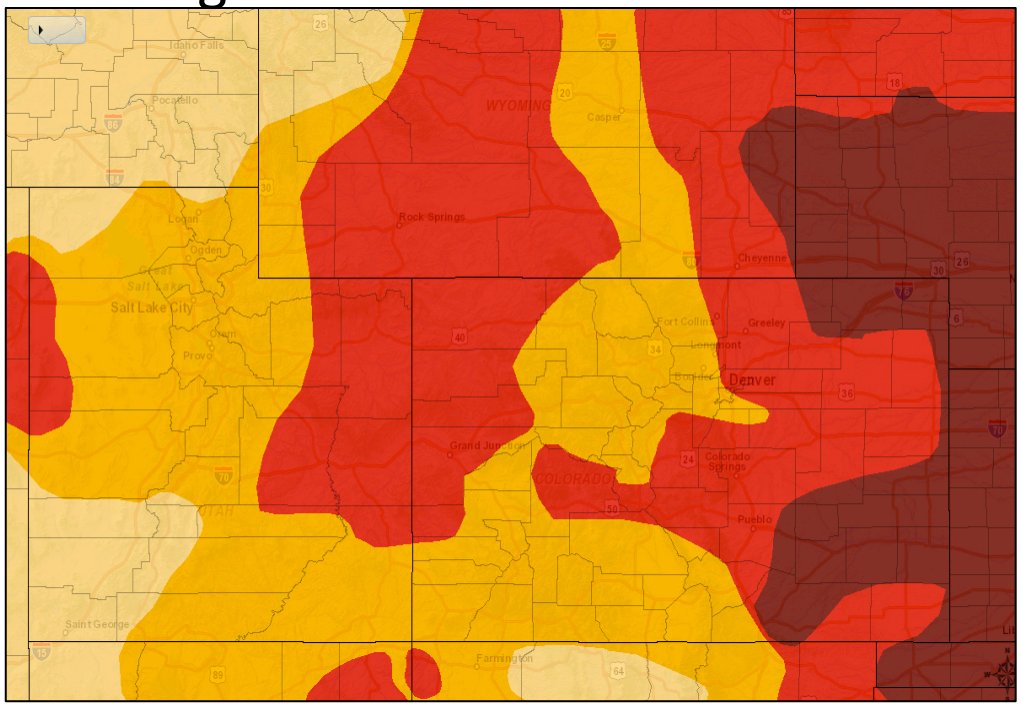


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion



Drought – Exceptional		0 to 2 (D4)
Drought – Extreme		2 to 5 (D3)
Drought – Severe		5 to 10 (D2)
Drought – Moderate		10 to 20 (D1)
Abnormally Dry		20 to 30 (D0)

Drought categories and
their associated percentiles

Fig. 7: September 18th release of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 7). Some beneficial rains did fall in the region, but with limited response to the vegetation, soils and runoff. Would recommend to wait for additional precipitation before making any large scale improvements in the region.

Eastern CO: Status quo is recommended for the rest of CO. Little to no precipitation fell through the region, so no improvements are warranted. Lincoln County, CO does show potential for possible deterioriation on longer time scales (standardized precipitation indices 90 days and longer), but it does not show justification for D4 at this time on the shorter time scales.