NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 11, 2012

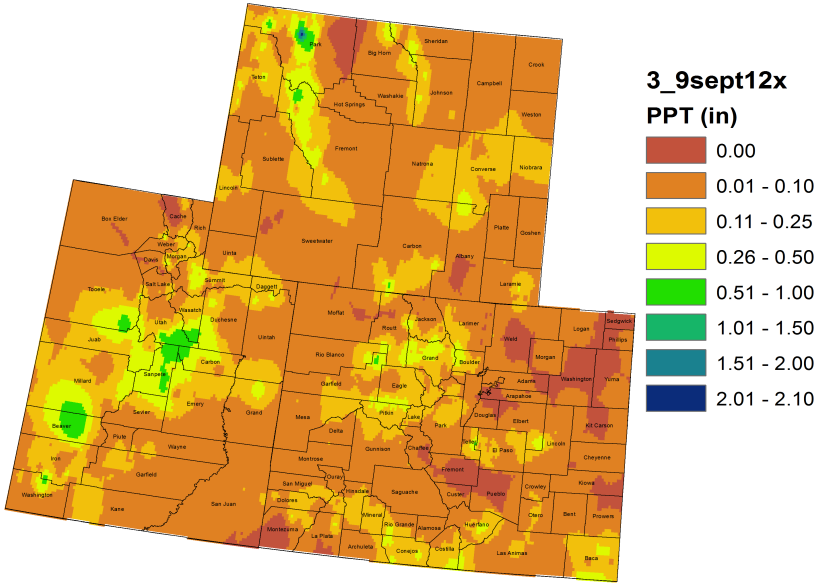


Fig. 1: September 3 – 9 precipitation in inches.

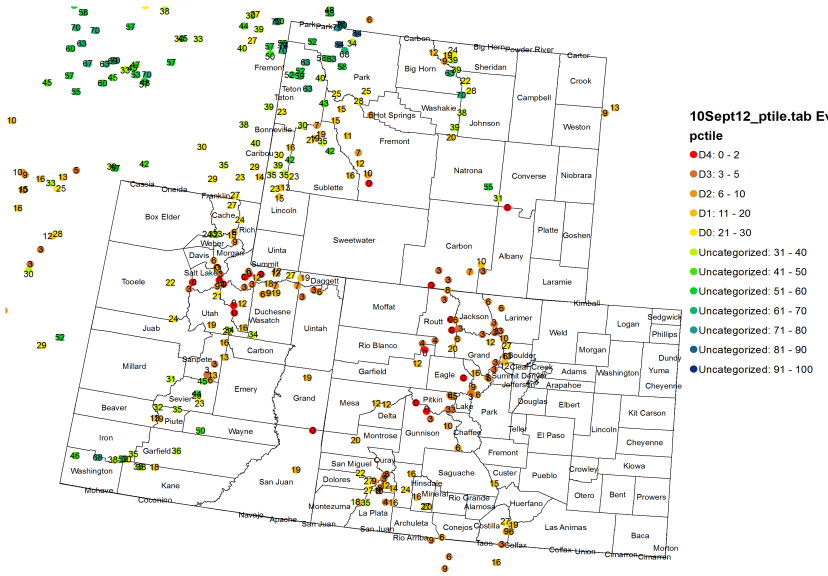


Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

Precipitation

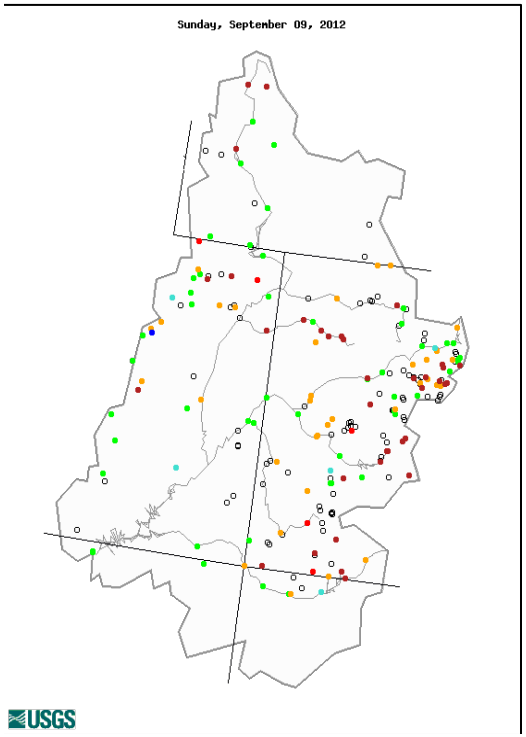
For the month of August, precipitation was concentrated around the central mountains of Colorado and in southeast Utah in the Upper Colorado River Basin (UCRB) while the eastern plains of CO and Wyoming were much drier than average. Last week, most of the UCRB received less than .10 inches of moisture with isolated areas in the northern CO mountains and the Wasatch mountains in UT receiving between .10 and 1.0 inches of precipitation (Fig. 1). The southern part of the San Luis Valley received more than .10 inches for the week, but the rest of eastern CO received less than .10 inches with some areas in northeast CO receiving no precipitation.

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 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 8th, about 46% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 6% of the gages in the UCRB are recording above normal flows, while about 32% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. The Yampa-White Basin is still recording in the moderate hydrologic drought category (below the 10th percentile), and the Upper San Juan River and the Colorado Headwaters are mainly in the below normal category for streamflow. The Green River and the Colorado River above Lake Powell are in the near normal range.

Flows on three key gages around the basin have seen very little change in the last week (Fig. 4). The Colorado River near the CO-UT state line and the San Juan River near Bluff, UT are in the low end of the near normal range, reporting at the 29th and 31st percentiles, respectively. Flows on the Green River at Green River, UT are still at the low end of the below normal range, at the 11th percentile.



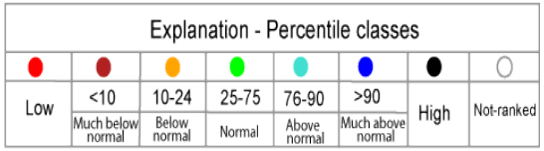


Fig. 3: 7-day average discharge compared to historical discharge for September 9th.

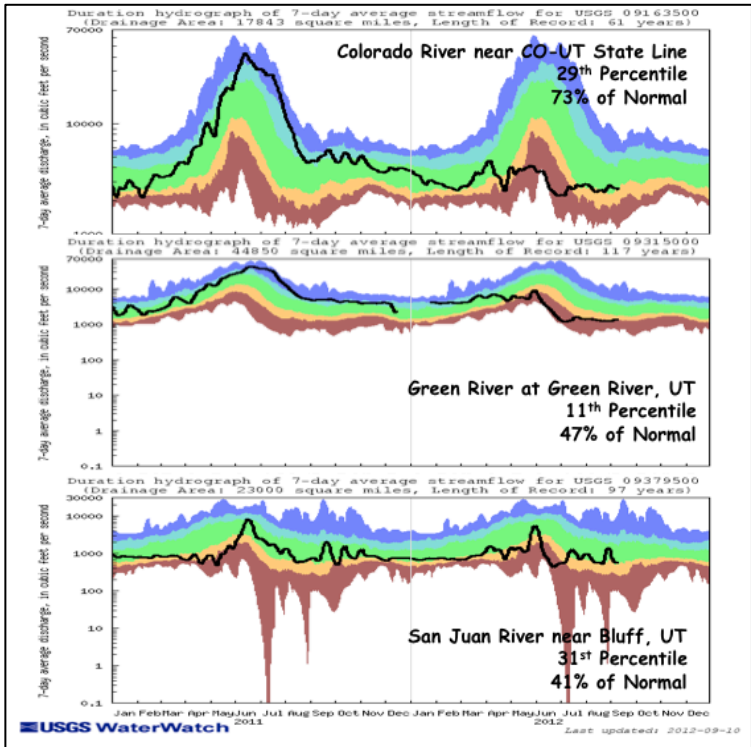


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Most of the UCRB experienced warmer than average temperatures since the beginning of the month, with closer to average temperatures over the northern part of the basin. Eastern CO has experienced temperatures 2 to 6 degrees above average for September so far. Satellite vegetation conditions and VIC modeled soil moisture show very dry conditions throughout much of the UCRB and in eastern CO. Reference ET rates are still higher than average across the basin though not above the record. 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 (Fig. 5).

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. All of the reservoirs are below their September averages, with most between 70% and 90% of average. Green Mountain is at 62% of average, Blue Mesa is at 58% of average, and Lake Powell is at 71% of average and 58% of capacity.

Precipitation Forecast

A more fall like weather pattern will set up over the UCRB as a Pacific Northwest trough approaches the area today. Sub-tropical moisture ahead of this trough will begin to interact with the upper level energy and provide fuel for a fairly widespread precipitation event over the upcoming week. Expect showers and even a few embedded thunderstorms to become more numerous Tuesday night, beginning over the Four Corners region and spreading northeastward to cover most of the Colorado mountains through Wednesday morning. By Thursday morning expect widespread liquid accumulations of 0.75 inches over much of southwestern and central CO, with a few isolated locations exceeding 1.25 inches of liquid (Fig. 6). Snow levels will drop to around 11,000 feet early Thursday morning with light snow accumulations possible over most of the higher peaks. Areas further to the northwest will not fair quite as well in terms of meaningful rainfall, with locations in northeastern UT and southern WY too far away from the moisture plume to receive much more than 0.10 inches of precipitation. After a brief period of ridging on Friday a series of weak disturbances are expected to begin dropping out of Canada late this weekend, and will lead to a chance of showers along the the Continental Divide moving into early next week.

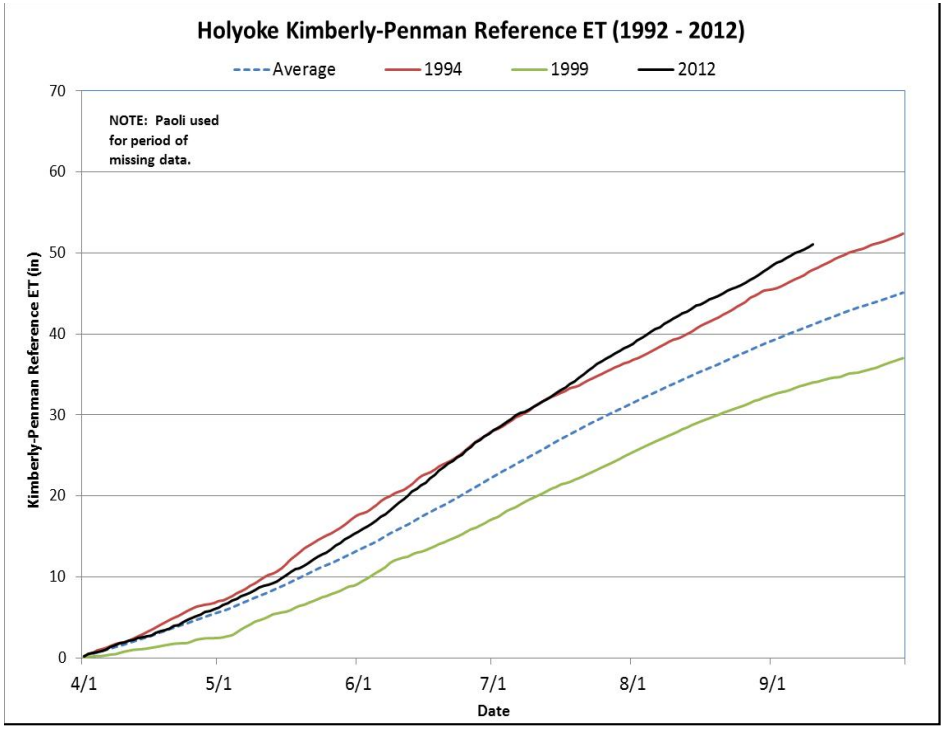


Fig. 5: Accumulated reference ET (black line) at Holyoke in northeast CO, compared to the max year (red), min year (green), and average (dashed line).

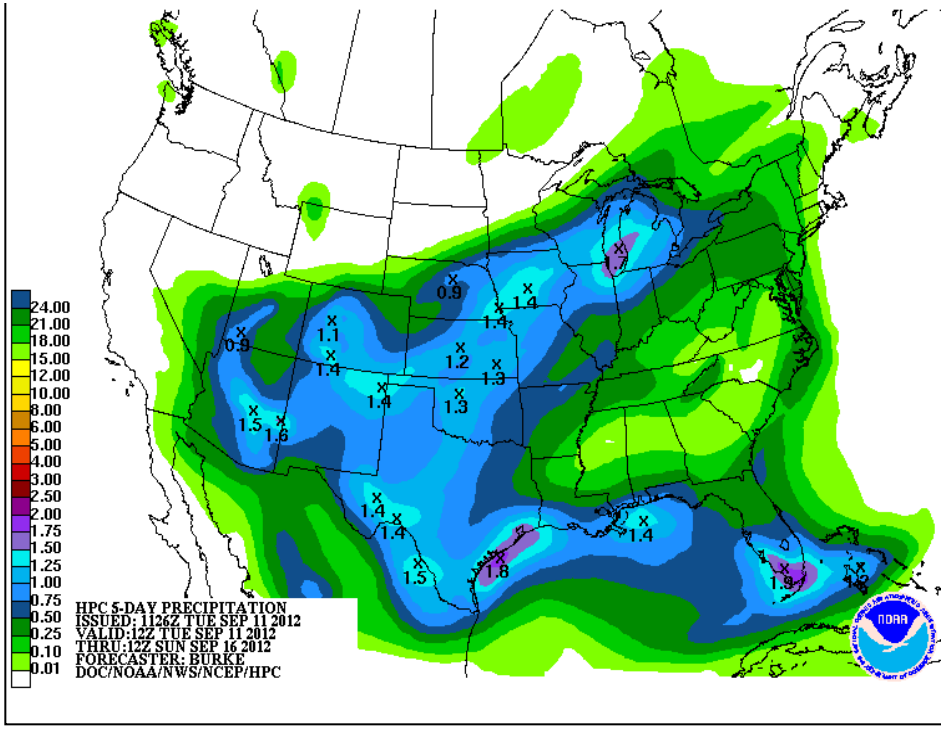


Fig. 6: HPC's quantitative precipitation forecast through 12UTC Sunday.

Drought and Water Discussion

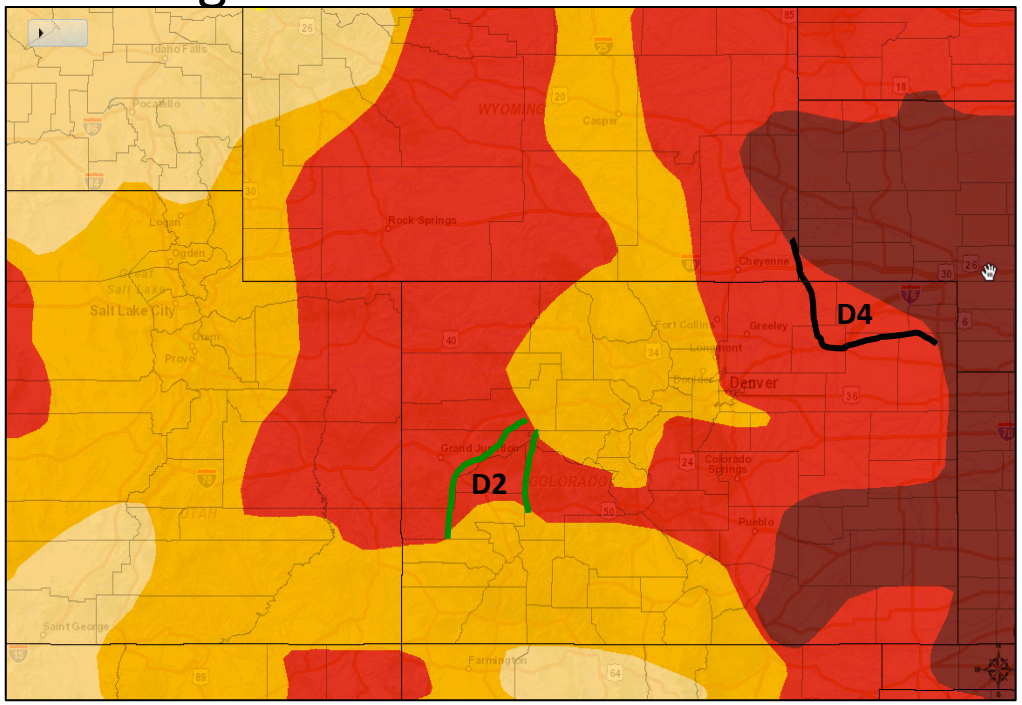
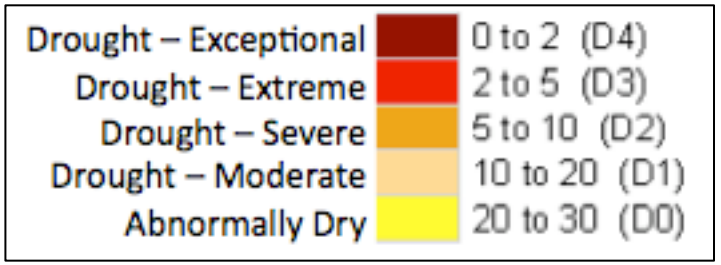


Fig. 7: September 4th release of U.S. Drought Monitor for the UCRB.



Drought categories and
their associated percentiles

UCRB: During the webinar, the USDM author recommended the westward expansion of D3 in northeast UT based on poor snowpack last season and continued precipitation deficits (with standardized precipitation indices [SPIs] in the area less than -1.5 on the 6 month timescale). Based on recent precipitation and improved SPIs on the short timescales, an improvement from D3 to D2 is recommended around Delta County, CO (Fig. 7, solid green line).

Eastern CO: An expansion of D4 in northeast CO is recommended, to cover parts of Logan, Washington, Morgan, and eastern Weld counties where satellite depiction of vegetation conditions are extremely poor, reports are coming in that wheat crops may not be planted at all, and reference ET is at record high rates (Fig. 7, solid black line). This could alter the D4 depiction for the far southwestern county of NE and southeast WY, so we defer to the USDM author on the appropriateness in those states.