NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 16, 2011

Precipitation and Snowpack

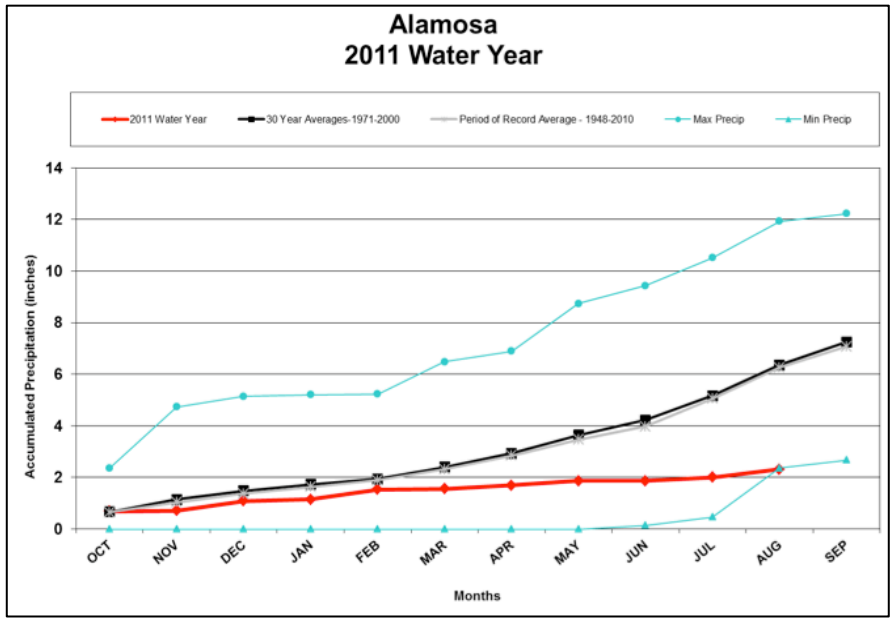


Fig. 1: Water-year-to-date accumulated precipitation at Alamosa, CO.

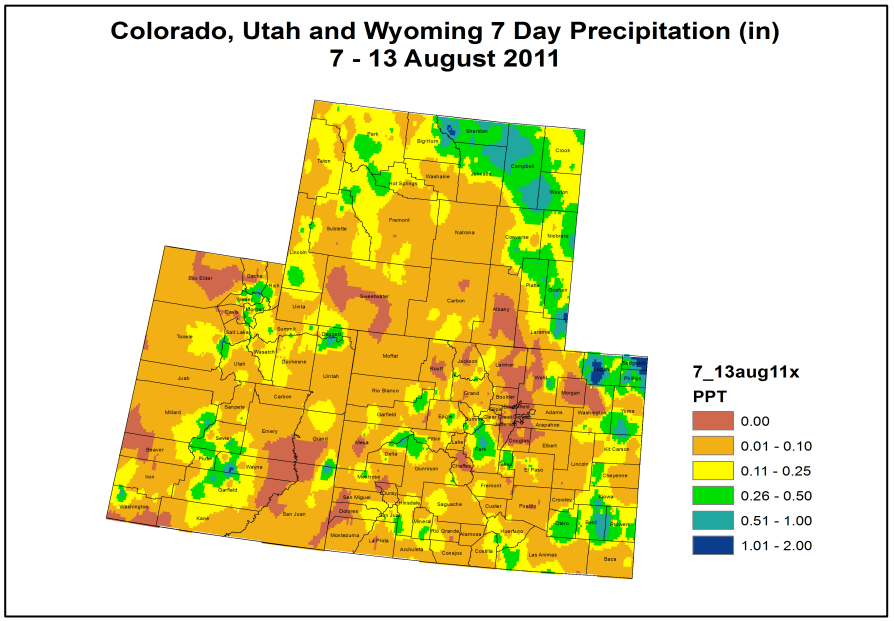


Fig. 2: August 7 – 13 precipitation in inches.

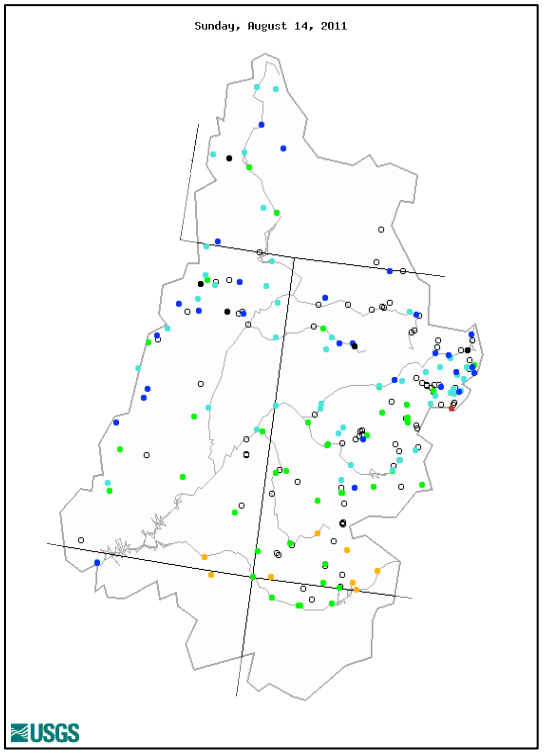
Water-year-to-date (WYTD), most of the Upper Colorado River Basin (UCRB) received near or above average precipitation. The Upper and Lower Green River basins have received over 200% of their average WYTD precipitation in many spots. The southern portion of the UCRB has been drier, seeing around 70 to 100% of average. Fig. 1 shows that accumulated precipitation to-date for Alamosa in the San Luis Valley has been much below normal since April. At the end of August, Alamosa normally receives just over 6 inches, but this WYTD, they have only received just over 2 inches and could be seeing their driest water year on record.

For the month of August so far, precipitation has favored Colorado east of the UCRB—much of the plains and Front Range have received between 0.5 to 3.5 inches of rain in the last two weeks. Last week, thunderstorms were spotty throughout the UCRB and eastern plains of CO (Fig. 2). Isolated areas in southeast and northeast CO received around a quarter inch to nearly 2 inches of precipitation for the week, while most of the Front Range was dry. Most of the UCRB and San Luis Valley received less than a quarter inch for the week.

Streamflow and Water Supply

As of August 14th, about 92% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows with 60% of the gages recording flows above the 75th percentile (Fig. 3). 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 84th and 89th percentiles, respectively (Fig. 4). Streamflow on the San Juan River near Bluff, UT is at the 25th percentile.

After large storage volume increases throughout the UCRB for the month of July, all of the major reservoirs' storage volumes are now decreasing, with Flaming Gorge, Lake Granby, and Lake Dillon seeing only minor decreases. All of the major reservoirs above Lake Powell are currently above their average August levels. This April – July period was the 3rd wettest with regard to inflows into Lake Powell since operations at Glen Canyon Dam began in 1963. Powell's current level is the highest August level it's been since 2001.



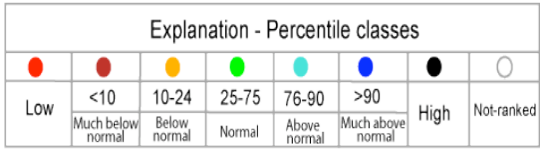


Fig. 3: 7-day average discharge compared to historical discharge for August 14th.

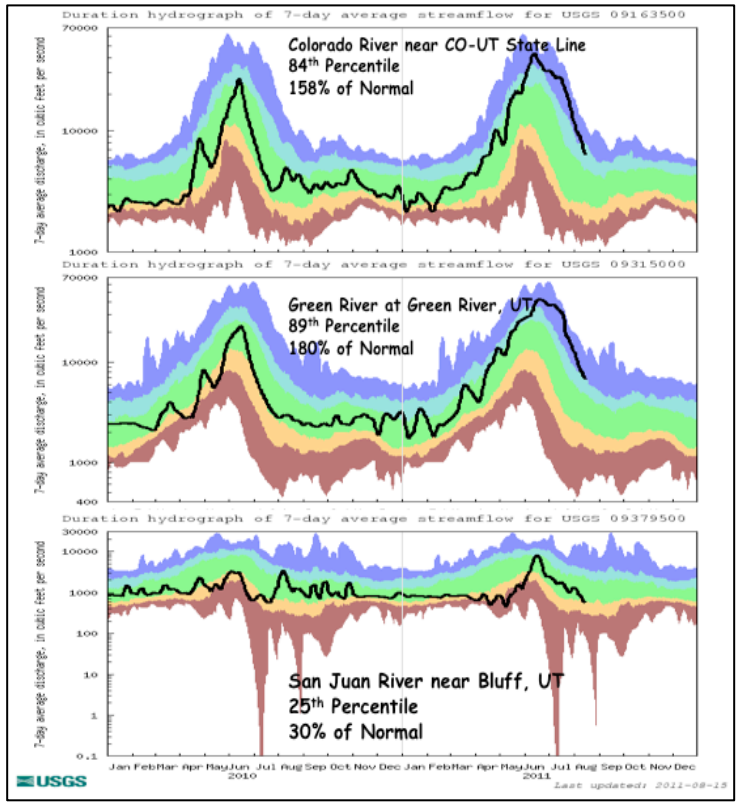


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Demand

Last week, the northern portion of the UCRB experienced near average temperatures while the Four Corners area continued to see above average temperatures. The Front Range and southeast CO were also warmer than average for the week. The warmer temperatures have contributed to higher reference evapotranspiration (refET) in drought stricken areas. In the Four Corners, refET is currently just above average, on track with the drier years. In the San Luis Valley refET is currently tracking above the highest refET year, during the drought of 2002—so precipitation falling there could be quickly lost to the atmosphere again. Very high refET rates are also seen in the Arkansas River basin, though improvements have been seen over the past couple of weeks (Fig. 5).

Soil moisture conditions remain poor for the San Luis Valley and southeast CO. Soil moisture is above average for much of northern UT and the northern mountains of CO while soils have begun to dry out in northeast CO. Satellite imagery of vegetation conditions show very dry vegetation with little growth in the San Luis Valley and southeast CO (Fig. 6). Vegetations conditions are moist for the northern portion of the UCRB, slightly dry in the Four Corners area, and are near average, but getting drier, for northeast CO.

Precipitation Forecast

A weak upper level disturbance will move across the UCRB early Tuesday and spark isolated showers and thunderstorms over higher elevations. Moisture will be on the decline, so the threat of heavy rain will remain low throughout the day. This drying trend will continue throughout Wednesday and the rest of the week. By this weekend monsoonal moisture will again try to work northward, but it does not appear as though it will make it very far. Scattered thunderstorms will be most numerous in the southern areas of the basin around the Four Corners area and in the San Juan mountains. This activity will be on the decrease by early next week as a Pacific trough sweeps through and supresses monsoonal moisture back to the south.

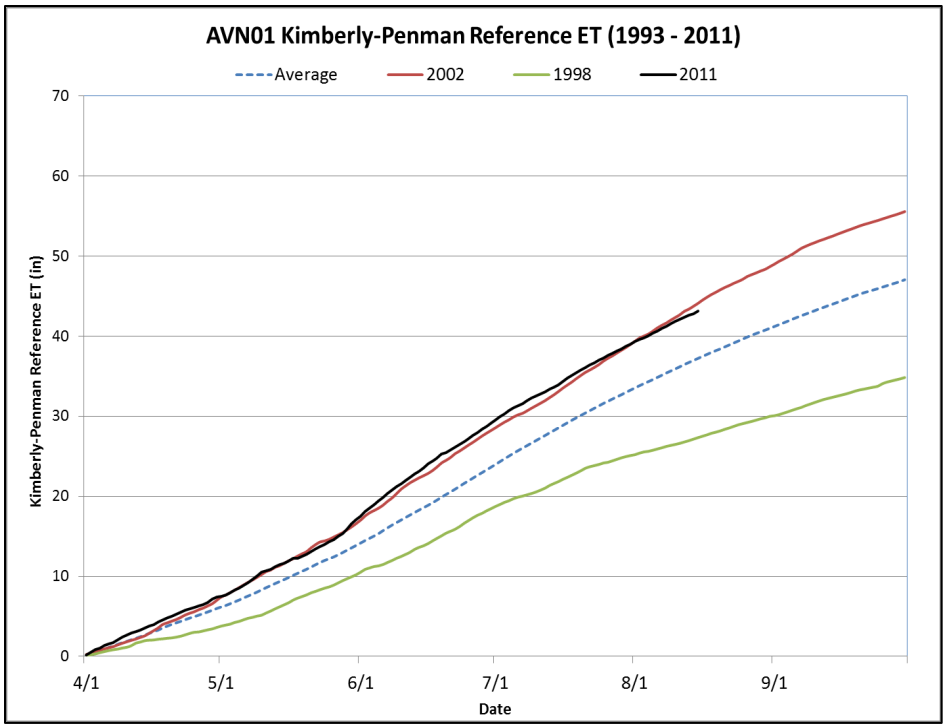


Fig. 5: Reference evapotranspiration since April 1st at Avondale, CO in the Arkansas River basin.

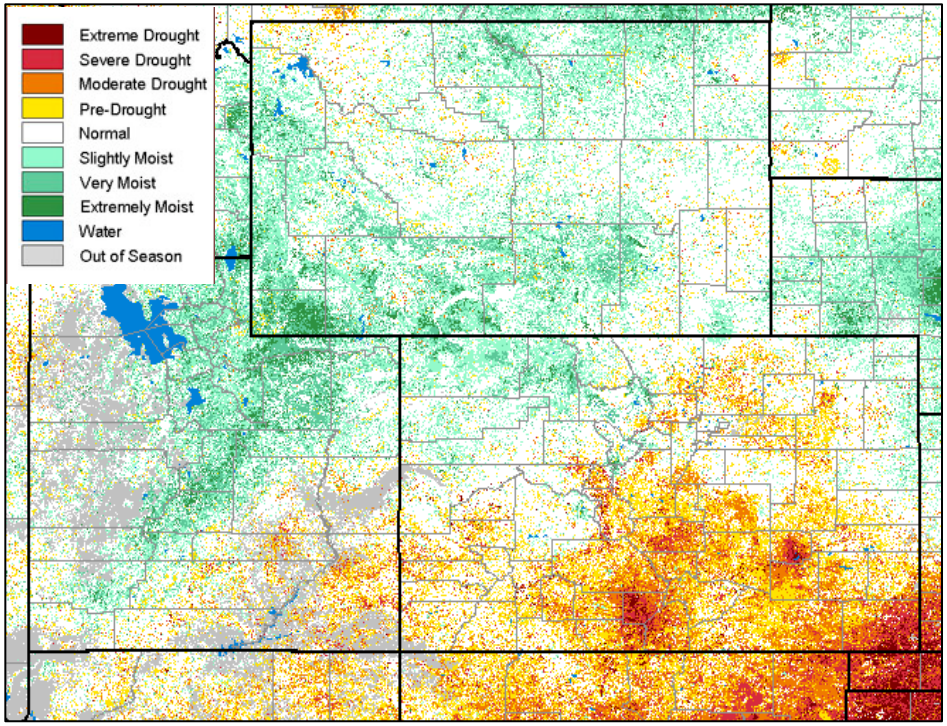
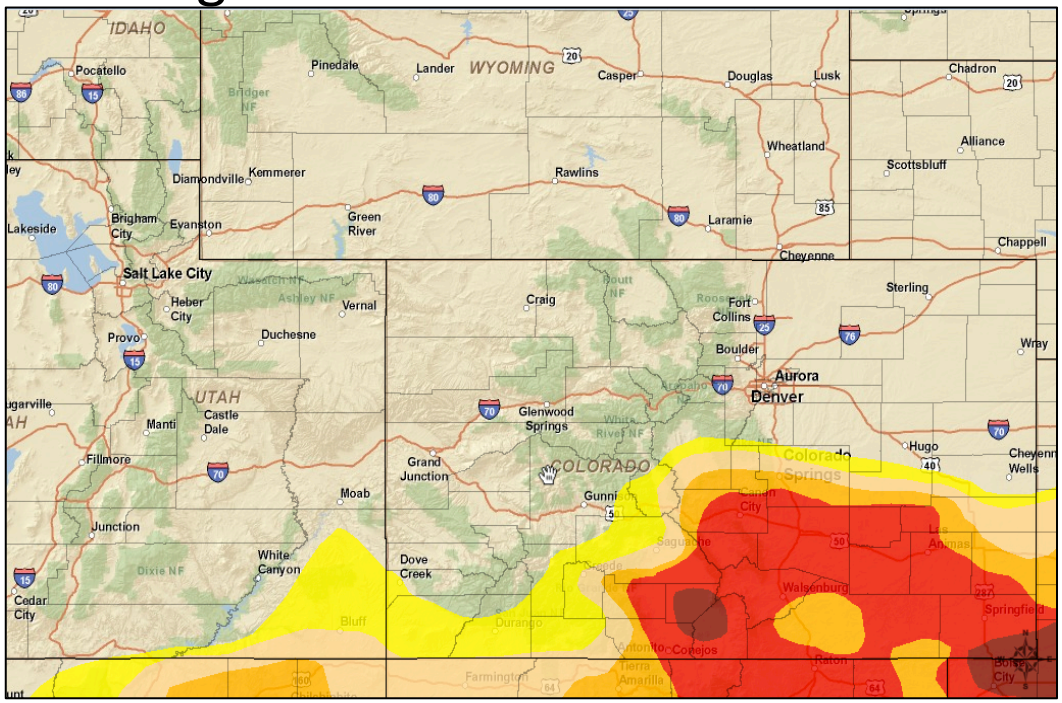


Fig. 6: August 14th VegDRI map, based on satellite-derived observations of vegetation.

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: August 9th release of U.S. Drought Monitor for the UCRB

No changes are recommended in the UCRB for the current U.S. Drought Monitor (USDM) map (Fig. 7). Very little changes have been seen around the Four Corners area, so the D0/D1 there is still justified.

Status quo is also recommended for southeast CO. Though precipitation maps show some accumulations around far southeast CO, some of these observations seem questionable and the region still remains very dry.

One area to watch in the coming weeks ahead is northeast CO—around Morgan, Washington, and Yuma counties. Some slight precipitation deficits are showing up in the area with SPIs less than -1 on the 60 day and water year time periods. VegDRI and the VIC soil moisture product are also showing some dry vegetation and soils in the region. Status quo is recommended at this time, but an introduction of D0 could be warranted in the near future.