NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 7, 2012

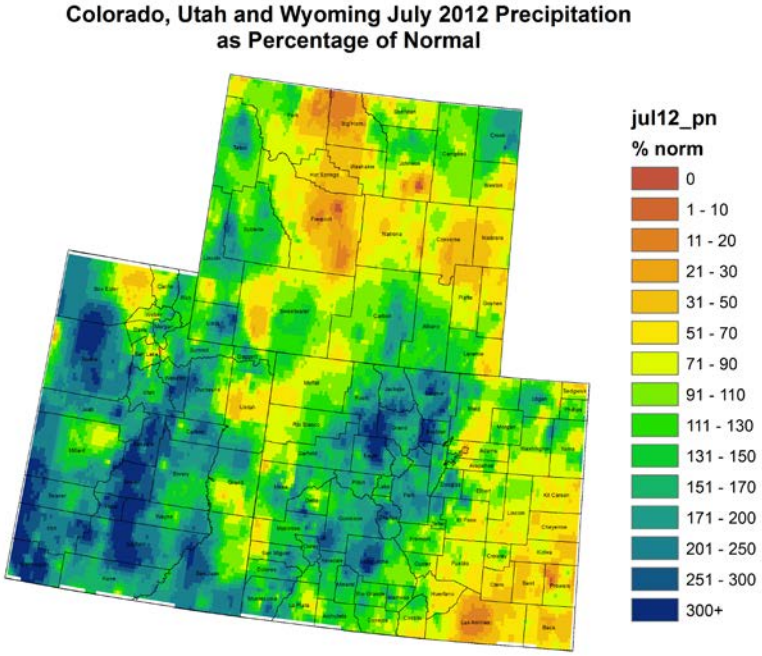


Fig. 1: July precipitation as percent of average.

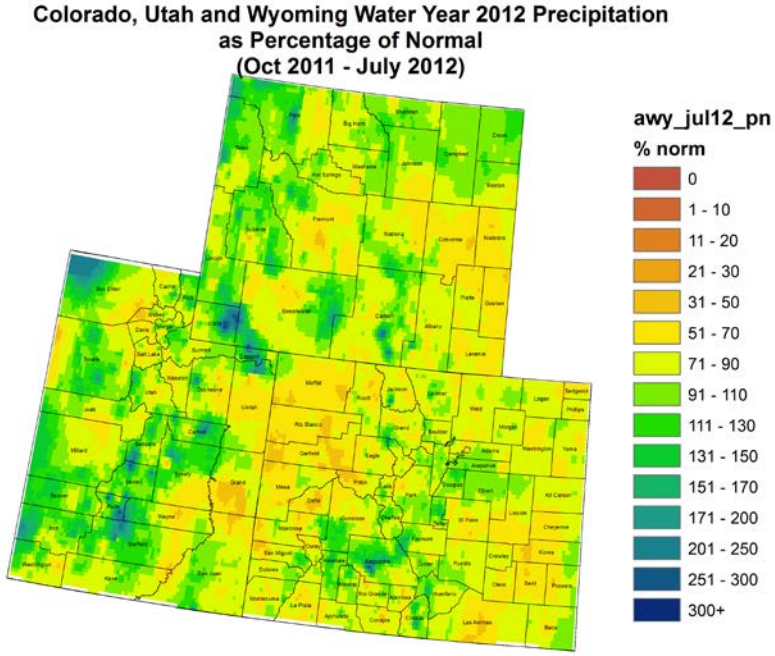


Fig. 2: Water Year 2012 Precipitation as percent of average through July.

Precipitation

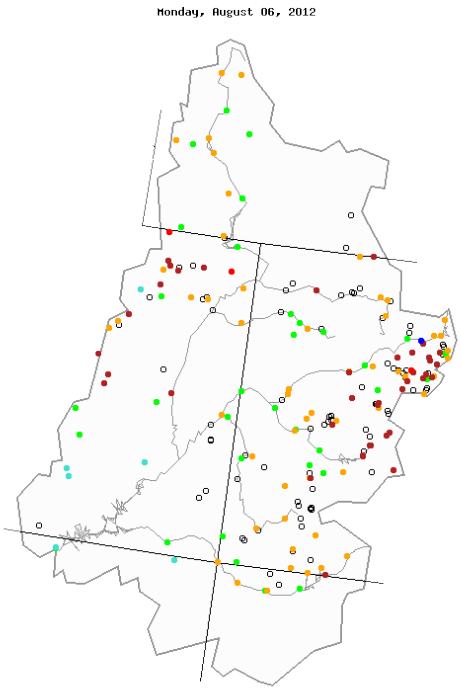
For the month of July , widespread precipitation fell over most of the Upper Colorado River Basin (UCRB, Fig. 1). Most areas received near to above normal precipitation for the month, with parts of the central mountains in CO receiving more than 300% of normal for the month. Parts of eastern UT, northwestern Colorado and southwest Wyoming have been a bit drier, receiving below normal precipitation for July. East of the basin, much of the plains of CO receiving much below normal precipitation for July, ranging between 30% - 70% of normal. Northeastern CO and the Front Range were much better with precipitation near to above normal for July. Parts of Larimer and Boulder counties receive more than 300% of normal for the month.

Even with the beneficial precipitation in July, water year precipitation through July is still below normal for much of the UCRB and eastern CO (Fig. 2). There are a few isolated areas in the San Juan Mountains in southwest CO, central CO and east-central Utah that are near average for the Water year.

Streamflow

As of August 6th, about 33% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 32% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. Much below normal flows are concentrated in the middle Green River basin and around the Colorado River headwaters region. Near normal flows are concentrated around the Upper Green River and the Lower San Juan. Just above Lake Powell is showing above normal flows. The remainder of the basin is mostly in the below normal flows range.

There were only minor changes in flows at three key gages in the UCRB last week (Fig. 4). Flows on the Colorado River near the CO-UT state line are in the near normal range at the 29th percentile. Flows on the Green River at Green River, UT are still in the much below normal range at the 8th percentile. Flows on the San Juan River near Bluff, UT are near normal at the 35th percentile.



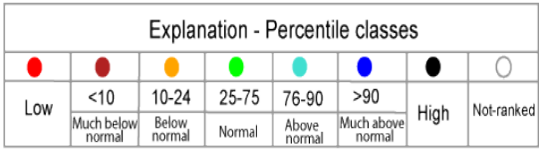


Fig. 3: 7-day average discharge compared to historical discharge for August 6th.

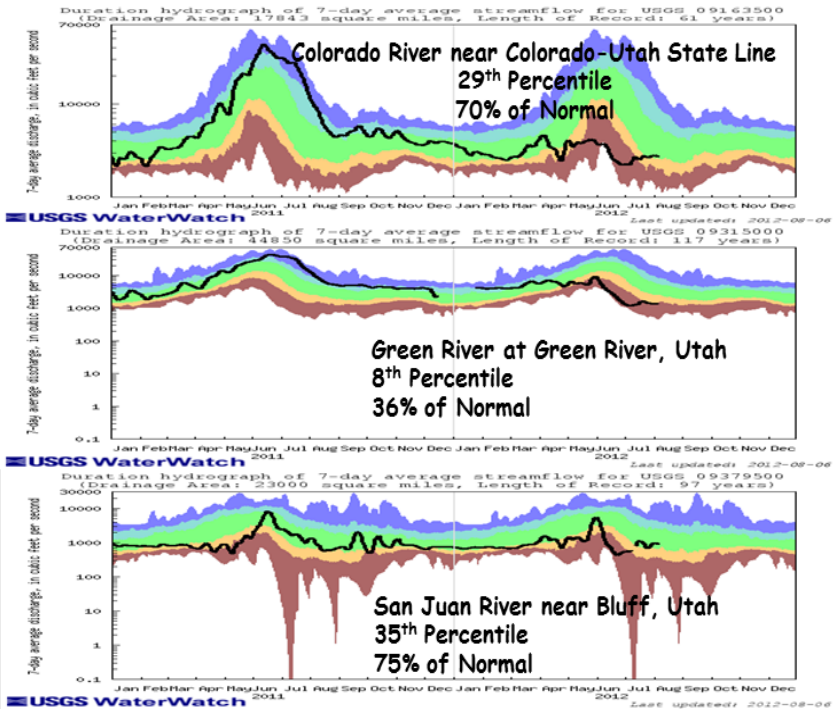


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, temperatures across the UCRB were near average to slightly above average. East of the basin, the rest of CO experienced temperatures 2 to 4 degrees above average for the week with isolated areas of 4 to 8 degrees above average. Satellite vegetation conditions show the driest vegetation over northwest CO and northeast UT, with dry conditions extending into southern WY and into the Four Corners region (Fig. 5). Very dry vegetation is also showing up over northeast CO and along the Arkansas River valley in southeast CO. Reference ET rates throughout the basin are more seasonal than before. East of the basin, reference ET rates are very high, with some of the highest seasonal accumulations observed at many sites (Fig. 6).

For the month of July, all of the reservoirs saw volume decreases with McPhee, Blue Mesa and Green Mountain seeing the largest decreases. Volume decreases are normal for this time of year, though all reservoirs are seeing larger decreases than what is normal for this time of year. All of the major reservoirs are below their August storage averages, with Blue Mesa at 62% of average, Green Mountain at 68% of average, and Lake Powell currently at 72% of average.

Precipitation Forecast

A ridge of high pressure building over the four corners will produce light northwesterly flow over the UCRB and help usher in a drier and more stable air mass for much of the work week. Lingering moisture trapped underneath this ridge will provide fuel for isolated afternoon thunderstorms, with most of this activity confined to the southern parts of the basin. The San Juans and central CO mountains will have the best chance of receiving wetting rainfall during the week, where isolated areas of 0.5 inches of precipitation will be possible by Friday. Elsewhere precipitation accumulations will generally remain below 0.1 inches through the end of the week. By the weekend forecast models differ on the placement of the sub-tropical high pressure and thus the amount of monsoonal moisture transported over the basin. Most models are currently trending toward a drier solution; however, the chance remains for a return to a more robust monsoonal pattern which would lead to an uptick in convection across southern and western parts of the basin. Meanwhile, several upper level disturbances will be driven across the northern edge of the UCRB as a more active jet stream develops moving into the weekend. This energy will help keep a slight chance of showers and thunderstorms in the forecast for northern portions of the basin as well, with most accumulations remaining below 0.1 inches of precipitation through Sunday.

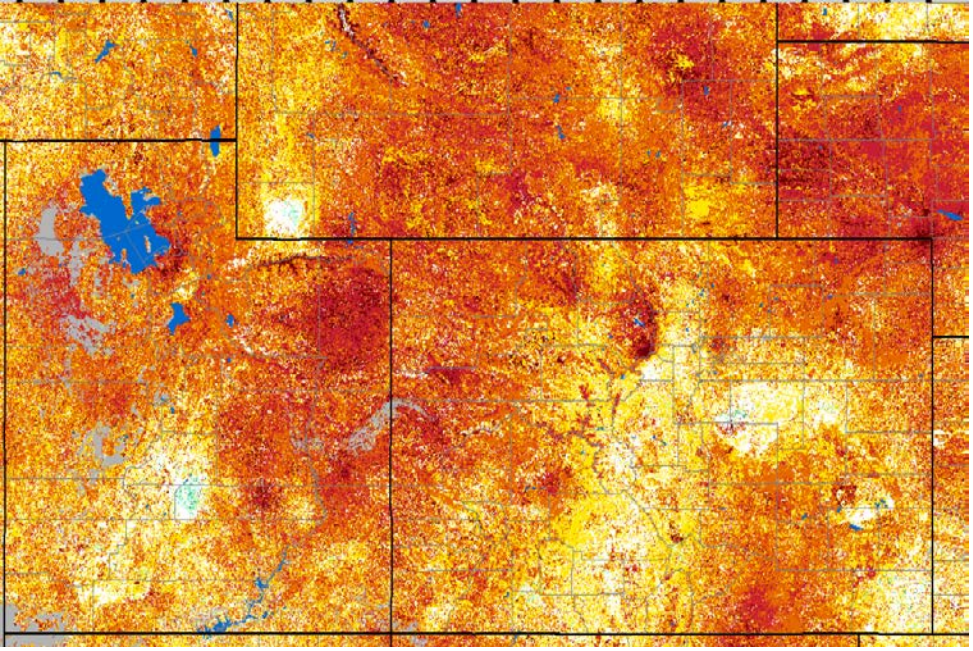


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of August 5th.

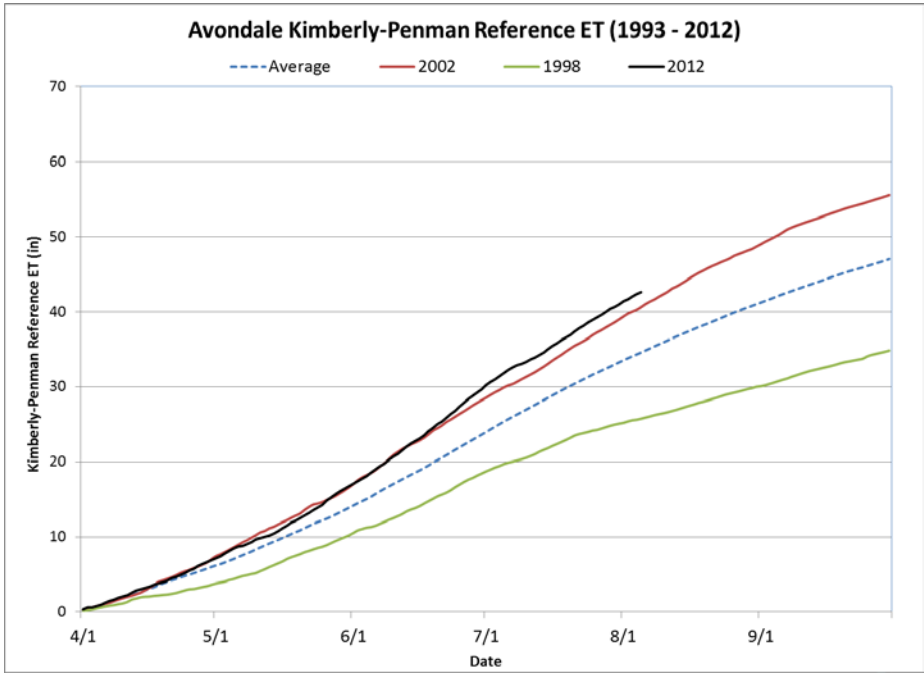


Fig. 6: Accumulated reference ET (black line) at Avondale, CO in the Arkansas River Valley, compared to the max year (red), min year (green), and average (dashed line).

Seasonal Outlook by Klaus Wolter

April's forecast for July-September 2012 was optimistic from AZ into CO, pessimistic for eastern UT and southern NM. The May forecast remained guardedly optimistic for most of Colorado. *Operational skill has been best over UT, northwest and eastern Colorado, as well as from southwest to northeast NM. There has been little skill from AZ into southwest Colorado, as well as over southeast NM.* Update in July 3rd (Fig. 7) was slightly dry in NW CO, undecided in Front Range, 'EC' in eastern plains, and tilting towards a wet monsoon over southern CO. *Observed pattern so far is consistent with thrust of monsoon from AZ into NC Colorado.*

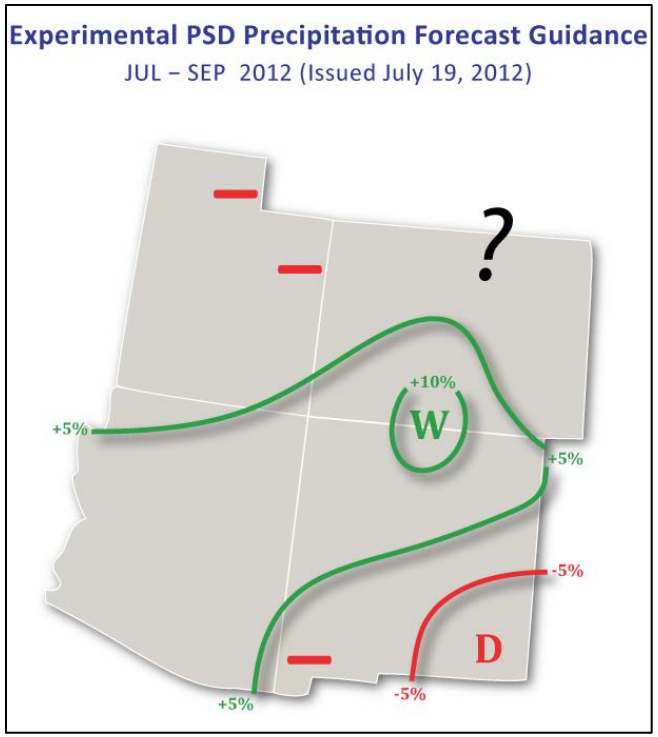
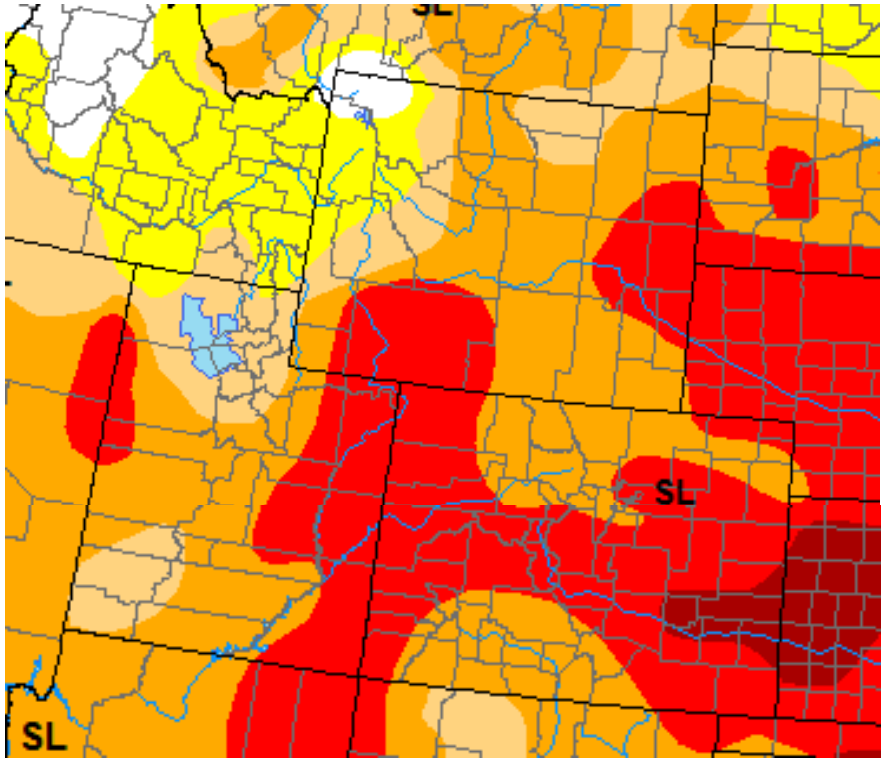


Fig. 7: Precipitation outlook for July – September by Klaus Wolter.

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. 8: August 6th draft of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the basin for the current U.S. Drought Monitor (USDM). There was discussion for more improvements in Grand, Eagle Counties and southern Routt County, spilling over into western Boulder County and southwest Larimer County from the above normal rain in July. However, the longer term dryness and poor hydrologic conditions, specifically low reservoir storage, it is suggested to hold off any improvements.

Eastern CO: This weeks USDM Author has connected the D4 in southeast CO with the D4 in central Kansas in the current USDM draft (Fig. 8). With continued high ET rates, low precipitation amounts, and major crop loss, there was agreement with this connection. Status quo is suggested for the rest of eastern CO.