NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

July 10, 2012

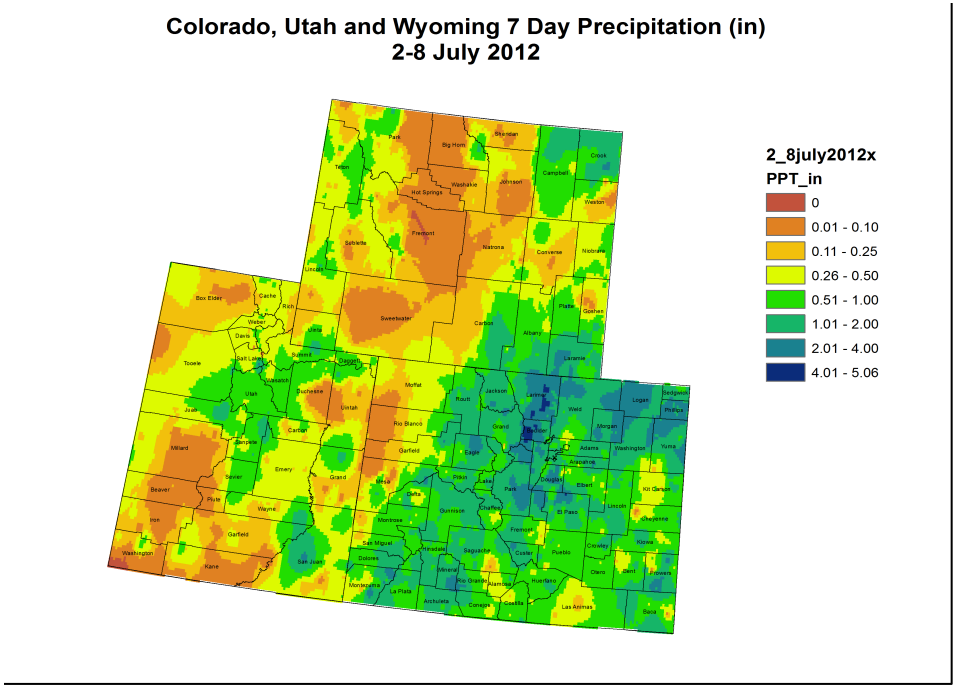


Fig. 1: July 2 – 8 precipitation in inches.

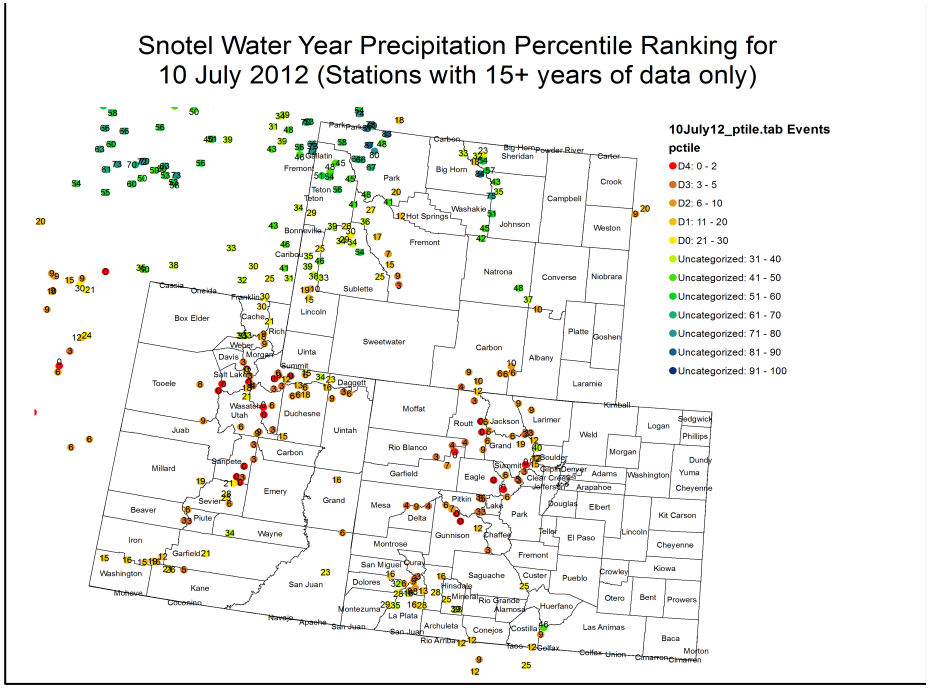


Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

Precipitation

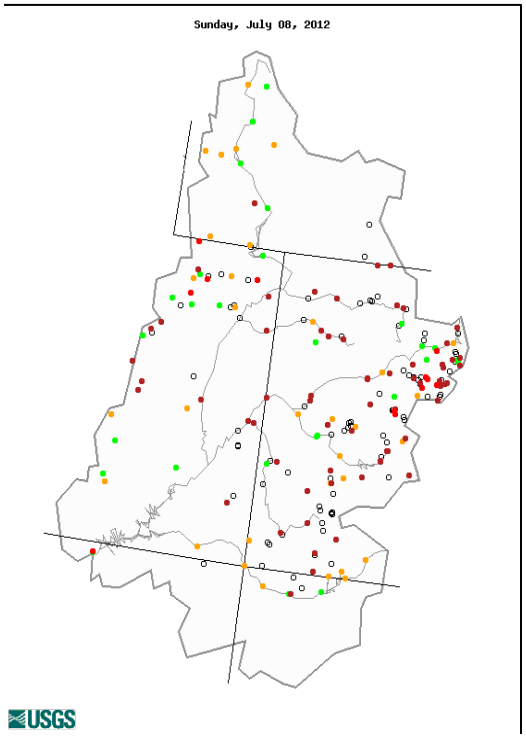
Last week, widespread precipitation fell throughout much of the Upper Colorado River Basin (UCRB, Fig. 1). The west side of the basin, around the Wasatch range and the Uintahs, received between .50 and 1 inch of precipitation. The northern and central Rockies, and the San Juan mountains all received between a half an inch to 2 inches of moisture for the week. Much of southwest Wyoming, and northwest Colorado were a little drier, receiving less than .25 inches. Most of eastern CO also received beneficial moisture for the week with northeast CO seeing over an inch in most areas and southeast CO receiving between .25 to 2 inches.

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 30th percentile, and percentiles in the San Juan basin are in the teens and 20s.

Streamflow

As of July 8th, about 20% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) 7-day average streamflows (Fig. 3). There are no gages in the UCRB recording above normal flows, while about 56% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows (improved from 65% last week). Much below normal flows are mainly on the Yampa, White, Colorado, and Dolores rivers with improvements observed on the San Juan River. Low flows are mainly concentrated in headwater regions on the east side of the basin.

Flows on the three key gages in the UCRB saw slight increases last week (Fig. 4). Flows on the Colorado River at the CO-UT state line and the Green River at Green River, UT are much below normal for this time of year, at the 7th and 2nd percentiles, respectively. Lower streamflows on the Green River are primarily due to lower flows from the Yampa River. Flows the San Juan River near Bluff, UT are below normal at the 13th percentile, up from the 8th percentile last week.



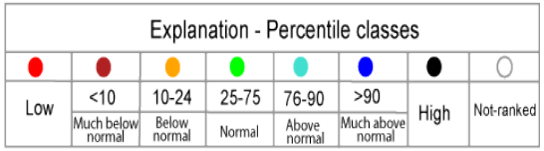


Fig. 3: 7-day average discharge compared to historical discharge for July 8th.

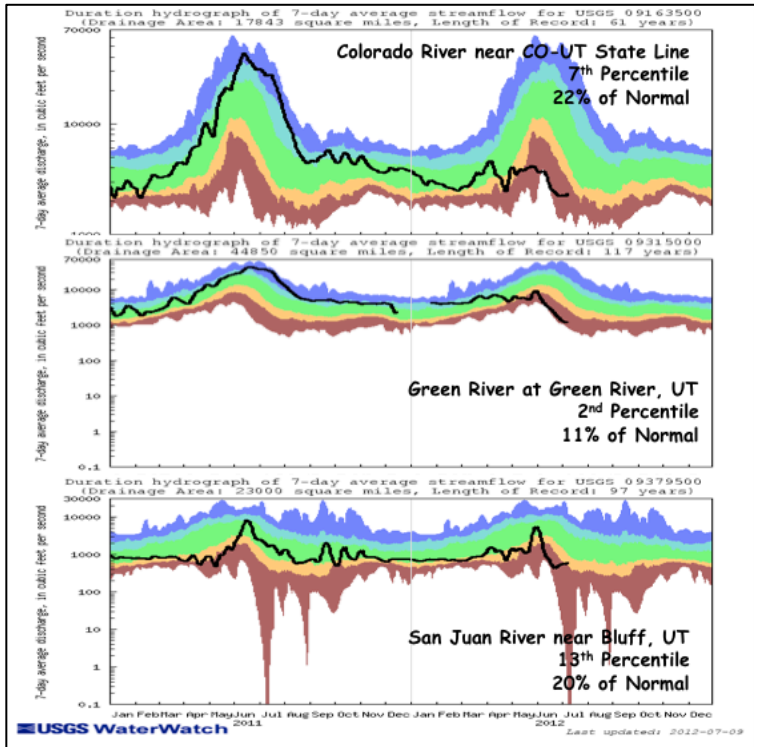


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, the west side of the UCRB was slightly warmer than average while the east side of the UCRB saw temperatures 3 to 6 degrees above average. The rest of CO experienced temperatures 3 to 9 degrees above average last week. 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 valley in southeast CO. Reference ET rates throughout the basin are very high, with CoAgMet stations in western CO reporting some of their highest ET rates on record (Fig. 6). Daily reference ET rates are ranging from between .30 to .50 inches, meaning that smaller amounts of precipitation will provide only minimal relief to crops and soils, and the majority of precipitation can quickly evaporate back into the atmosphere.

For the month of July so far, Flaming Gorge has remained steady while the other major reservoirs continued to see volume decreases. Volume decreases are normal for this time of year, due to the high demand for irrigation. All of the major reservoirs are below their July storage averages, with Blue Mesa at 66% of average, Green Mountain at 71% of average, and Lake Powell currently at 73% of average.

Precipitation Forecast

The sub-tropical high pressure ridge has gradually rebuilt westward over the last few days and is now centered over UT. This pattern will suppress the flow of monsoonal moisture to the south of the basin and dry out the atmosphere. Meanwhile, extreme southern portions of the basin will remain under the influence of this moisture plume with showers and thunderstorms anticipated through the work week. Expect areas in the San Juans and Four Corners region to pick up the most precipitation during this time. By Friday the high pressure ridge is forecast to begin moving eastward allowing sub-tropical moisture to again creep northward and increase storm coverage over the entire UCRB. Liquid accumulations through Sunday will range from a few tenths of an inch over northwestern areas to near 1.00 inch over the southern mountains. The monsoonal pattern is expected to continue into early next week with forecast models disagreeing on the exact position and strength of the moisture plume. Expect some parts of the UCRB to have a chance of convection during this time with the best chances over the southern portion of the basin.

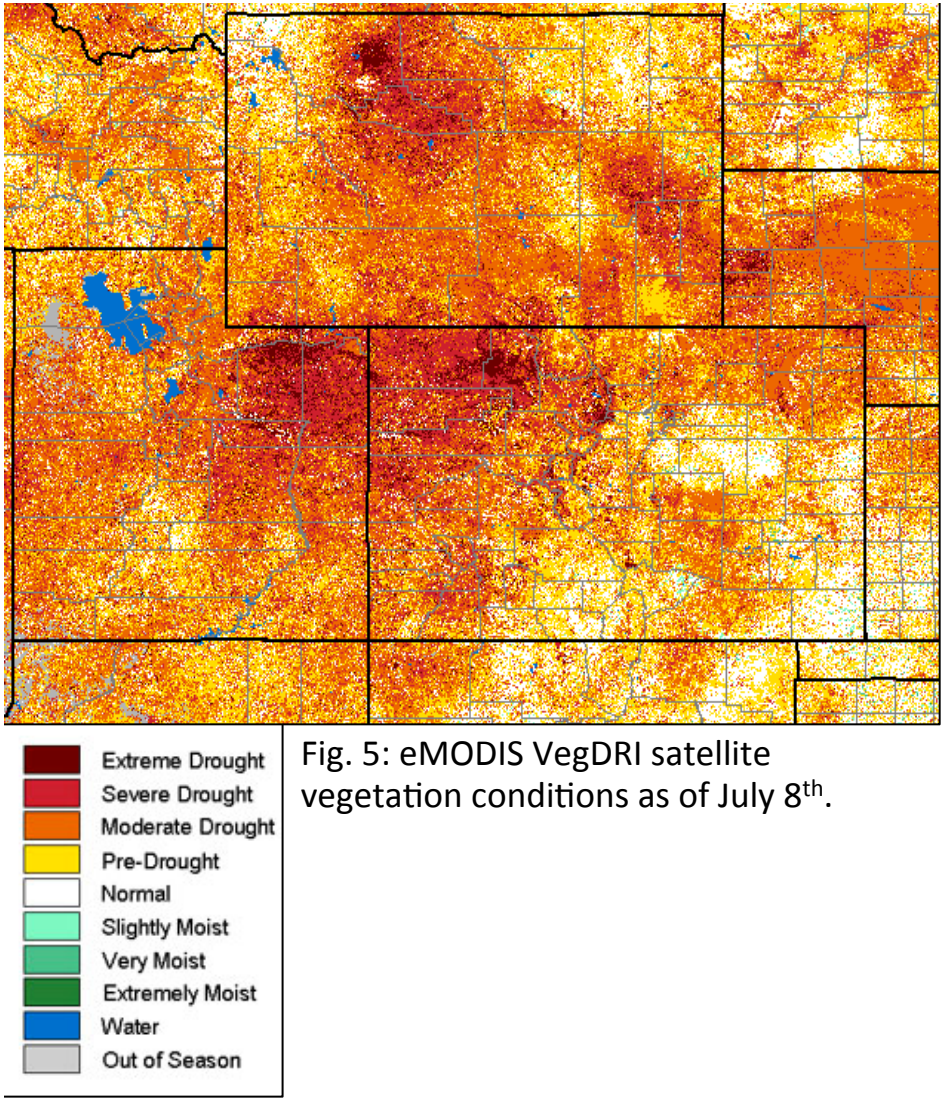


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of July 8th.

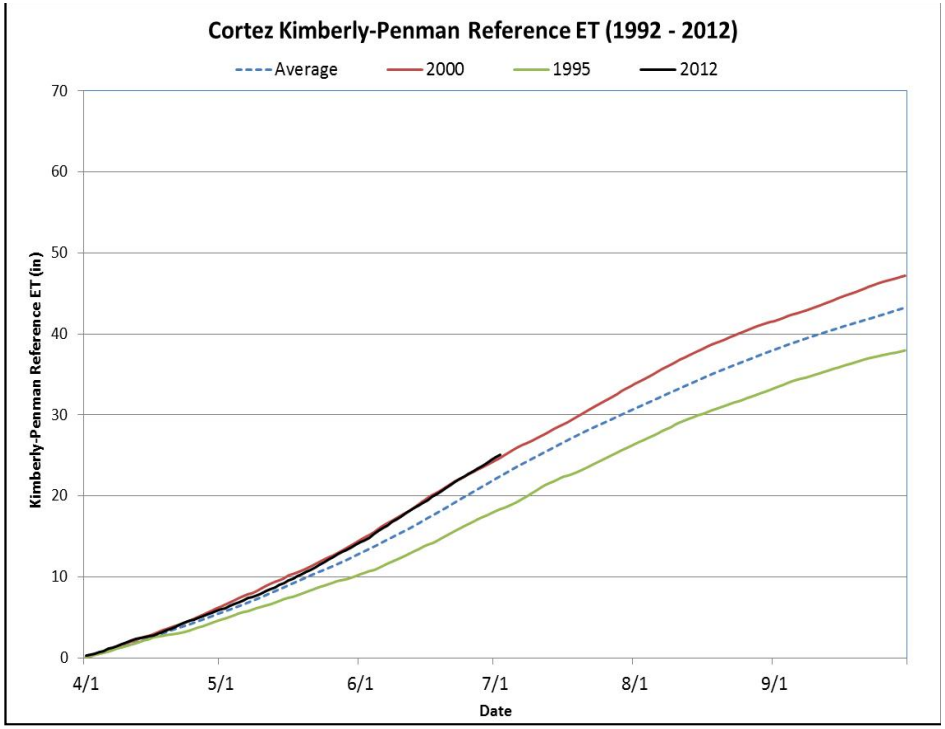
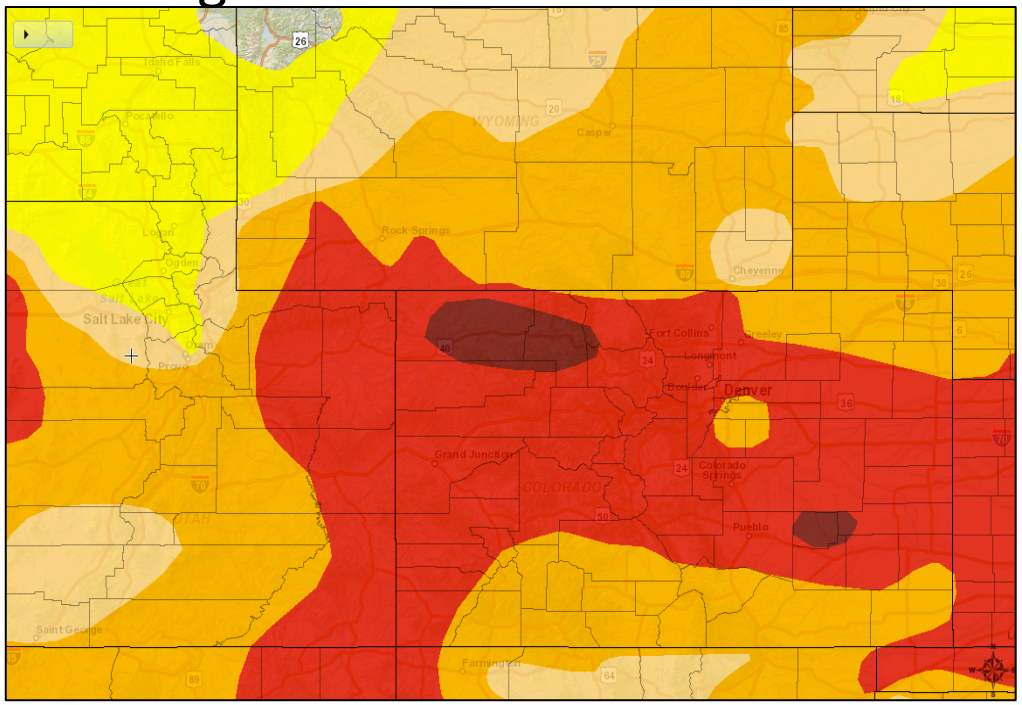


Fig. 6: Accumulated reference ET (black line) at Cortez, CO near the Four Corners, compared to the max year (red), min year (green), and average (dashed line).

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: July 3rd release of U.S. Drought Monitor for the UCRB.

Beneficial rains fell throughout much of the UCRB and throughout the rest of CO last week, helping with dry conditions. However, this is just one week compared to several months of extremely dry conditions over the region. With high demands, very warm temperatures, continued impacts (particularly with crops), and continued low standardized precipitation indices (SPIs) on longer time scales, large scale improvements are yet to be observed. At this time, it is recommended to hold off on any changes, and wait to see if further beneficial moisture will help any areas. Status quo is recommended for the UCRB and the rest of Colorado for the U.S. Drought Monitor (USDM) map this week (Fig. 7).

There are those who feel that D3 was never really justified in the Uintahs in UT and that D4 was not justified in the Yampa basin in CO—there is still not conensus among the group about this. Though all agree to status quo, the continued feeling for some is that those areas are being depicted as worse than they actually are. Others feel that it is accurate, so we again leave those areas to the final decision of the USDM author.