NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

June 19, 2012

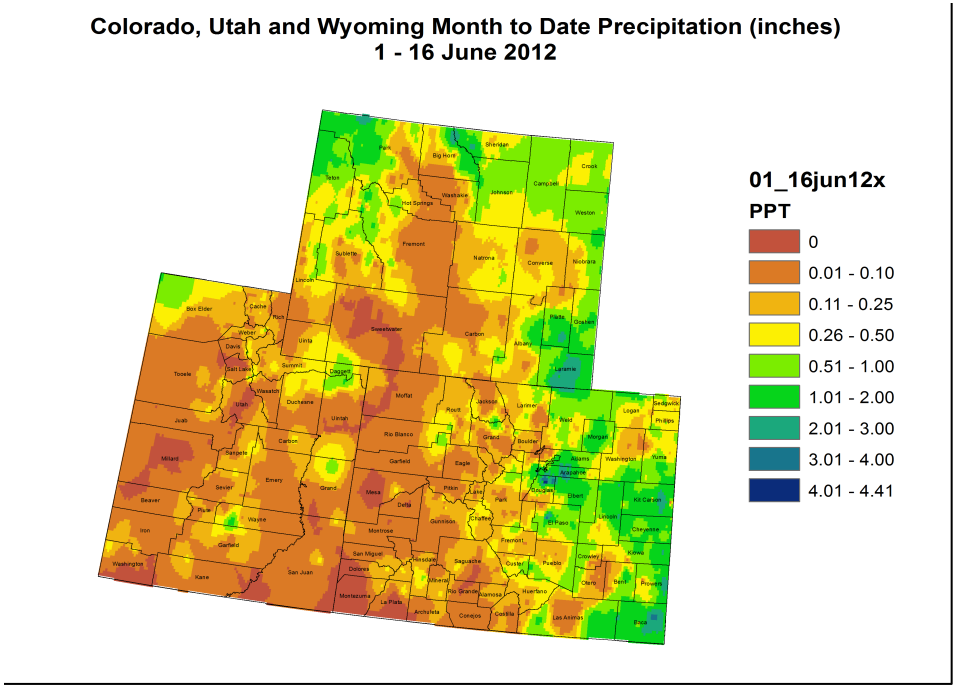


Fig. 1: June month-to-date precipitation in inches.

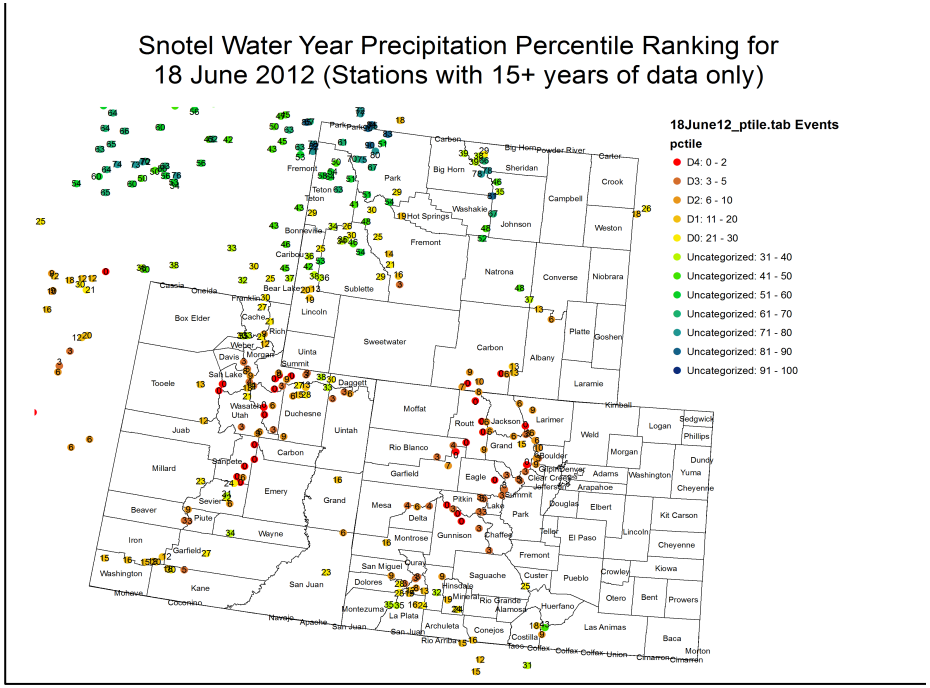


Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

Precipitation

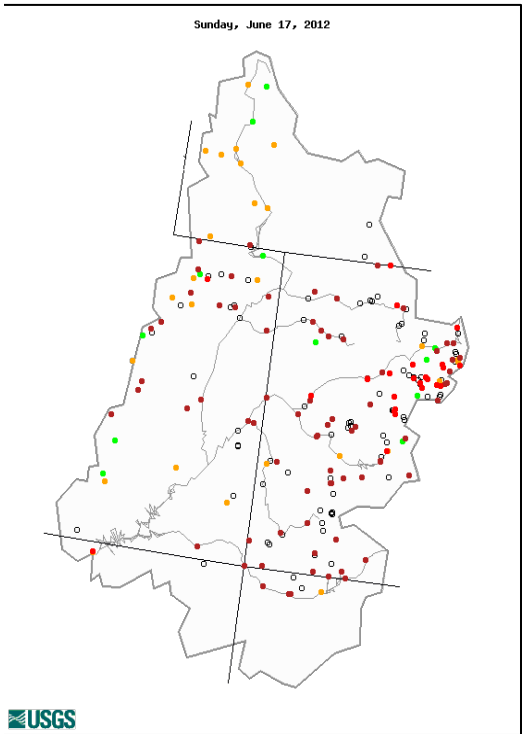
For the month of June so far, most of the Upper Colorado River Basin (UCRB) has received less than a tenth of an inch, with some spotty totals of up to a half an inch being reported (Fig. 1). Some areas around the Four Corners have received no precipitation for the month, and most of the west slope of Colorado received no moisture last week. Most of eastern CO has received between 0.25 to 2 inches since the beginning of the month, while the central mountains around the headwaters of the Arkansas and the San Luis Valley have seen less than .25 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 5th percentile or below (Fig. 2). The northern mountains of CO are also dry, with most precipitation percentiles in the 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 June 17th, 9% 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 72% percent of the gages in the basin are recording much below normal or low streamflows. The gages on the Upper Green River are showing near normal and below normal flows. Most gages on the Yampa, Colorado, Gunnison, Dolores and San Juan rivers are currently recording flows below the 10th percentile. Low flows are mainly concentrated in headwater regions on the east side of the basin.

Flows on all three key gages in the UCRB saw large decreases last week (Fig. 4). Flows on the Colorado River at the CO-UT state line, the Green River at Green River, UT and the San Juan River near Bluff, UT reported at the 3rd, 2nd, and 3rd percentiles, respectively. Though the San Juan River saw a larger seasonal peak, this was mainly due to releases from upstream Navajo Reservoir. Flows at all three key gages are much below normal for this time of year.



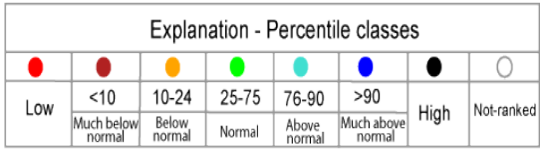


Fig. 3: 7-day average discharge compared to historical discharge for June 17th.

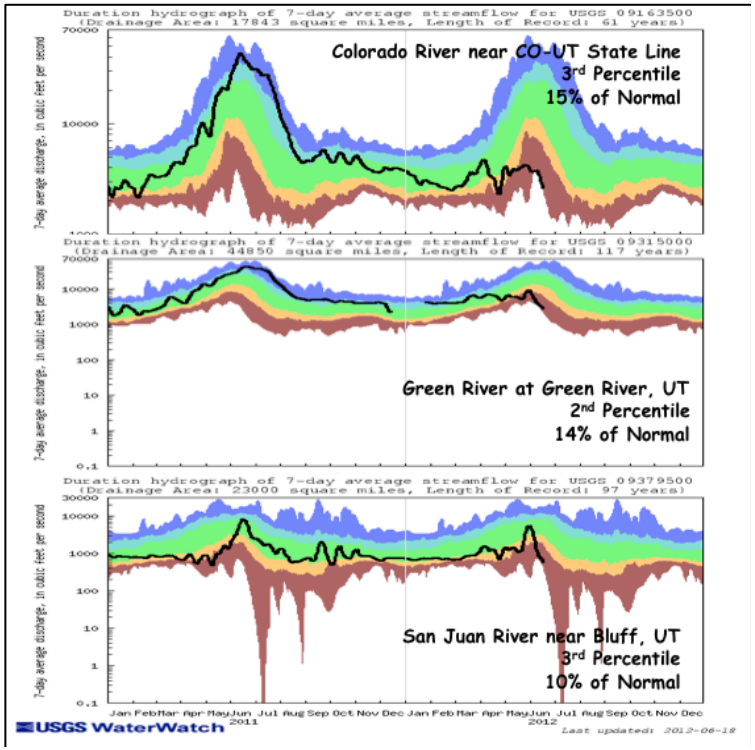


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Much of the UCRB experienced above average temperatures for the week, with western CO seeing temperatures 1 to 3 degrees above average. Parts of eastern UT and southwest WY saw temperatures closer to average or slightly below average. The rest of CO also experienced warmer than average temperatures last week. Satellite vegetation conditions show the driest vegetation over western CO and eastern UT, extending down to the Four Corners region (Fig. 5). Very dry vegetation is also showing up over southern WY and northeast CO. Reference ET rates throughout the basin are very high, with CoAgMet stations in western CO reporting some of their highest ET rates (Fig. 6). Daily reference ET rates are ranging from between .25 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.

Blue Mesa, Flaming Gorge, Lake Powell, McPhee, Navajo, and Dillon have all seen volume decreases since the beginning of the month. Flaming Gorge is currently above its June average volume, while the rest of the reservoirs are slightly below their June averages. Lake Powell is currently at 74% of average and 64% of capacity (compared to 65% of capacity one year ago). Daily inflows into the major reservoirs in the basin are much below average for this time of year.

Precipitation Forecast

Continued warm and dry weather is in store for the UCRB, as a strong high pressure ridge remains almost stationary over Colorado through the work week. Northern portions of the basin may experience some gusty winds associated with the passage of a dry cold front on Wednesday, while light southerly winds will prevail for the remainder of the basin. By the weekend most forecast models are consistent in developing a monsoon type pattern as the persistent southerly flow begins to tap into sub-tropical moisture located over Mexico. Southern zones will feel the impact of this pattern as the plume rides northward over eastern UT during the weekend, with activity eventually shifting eastward over western CO sometime early next week. Expect the initial storms to be high based and gusty, with an increased chance for measurable precipitation on Monday as better moisture is advected northward over the basin. Precipitation amounts for this period will depend on whether actual moisture transport is as strong as models are forecasting.

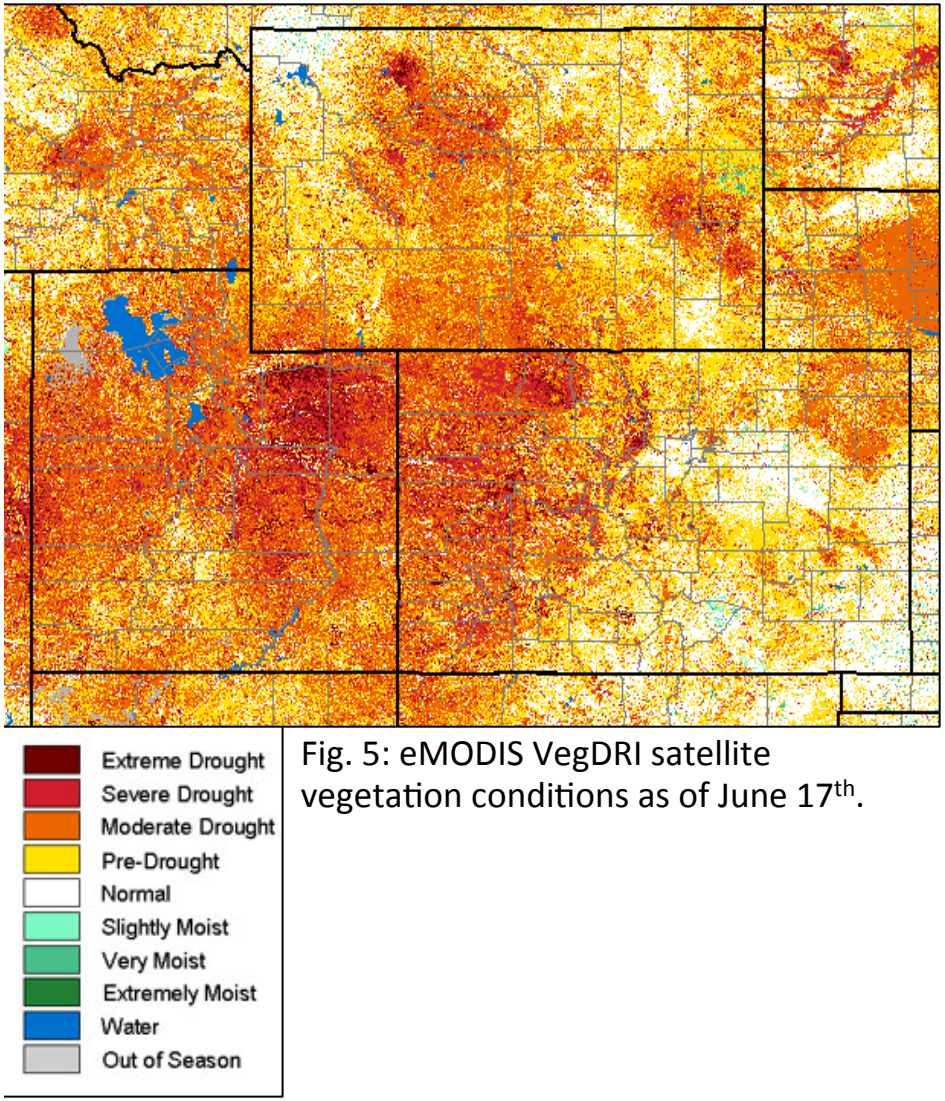


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of June 17th.

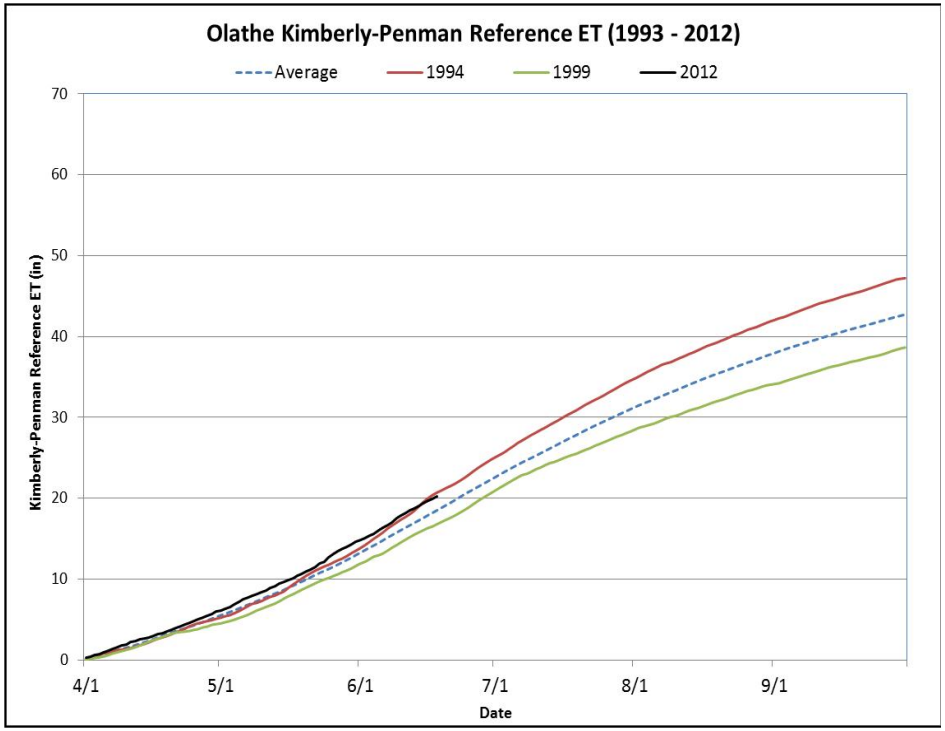
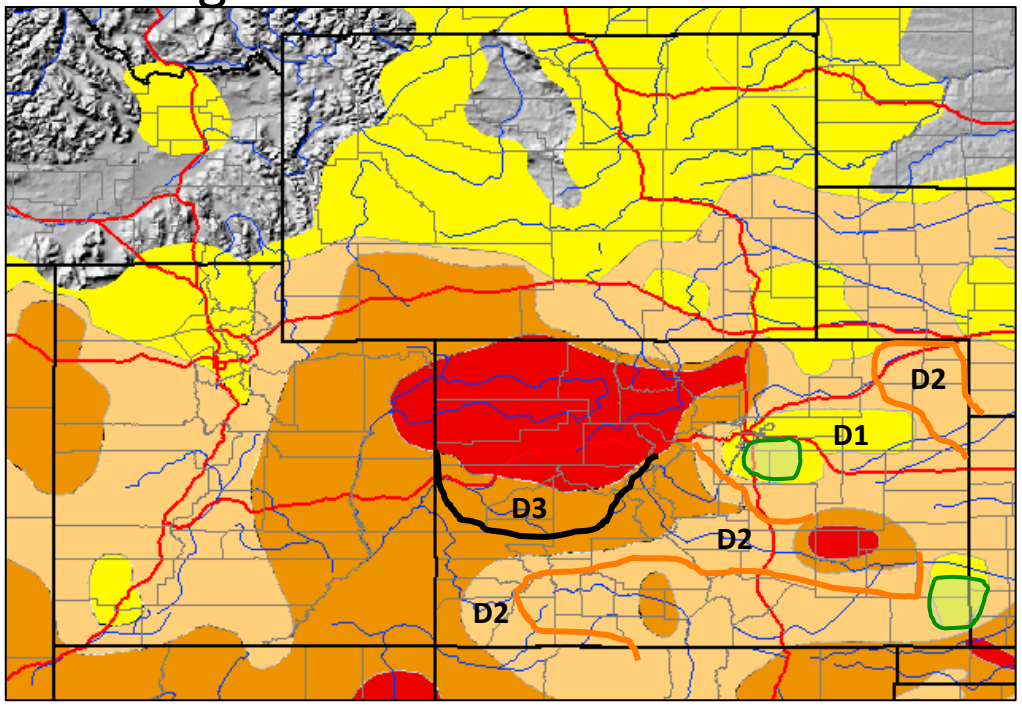
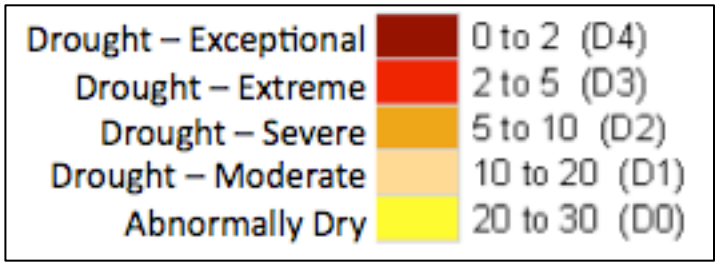


Fig. 6: Accumulated reference ET (black line) at Olathe, in western CO, compared to the max year (red) and min year (green) and average (dashed line).

Drought and Water Discussion





Drought categories and
their associated percentiles

Fig. 7: June 12th release of U.S. Drought Monitor for the UCRB.

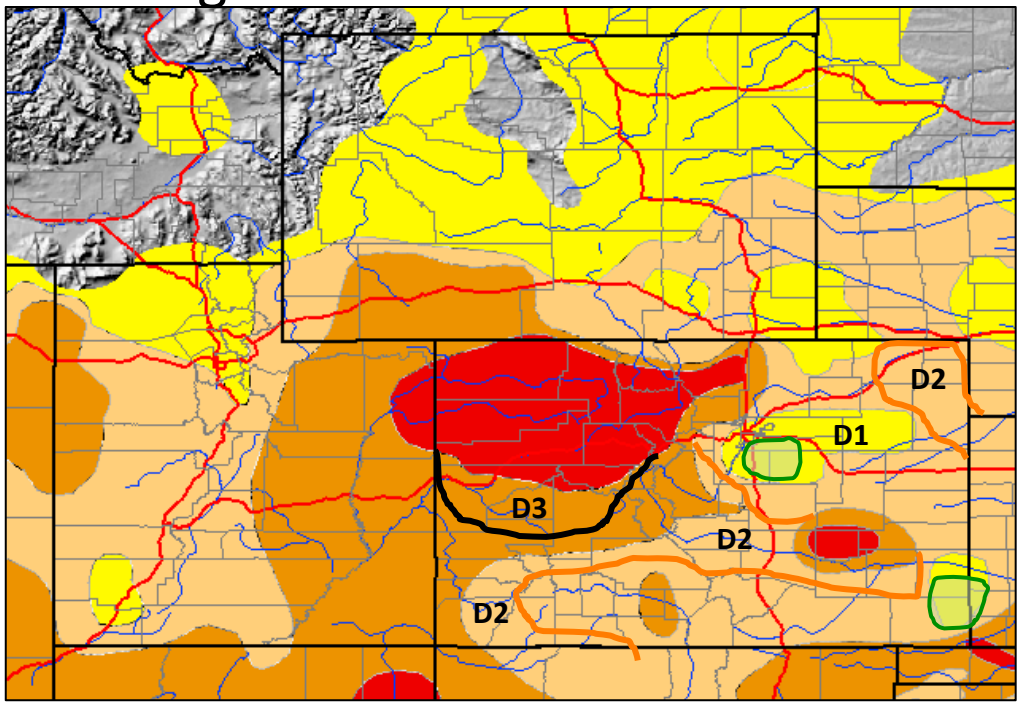
UCRB:

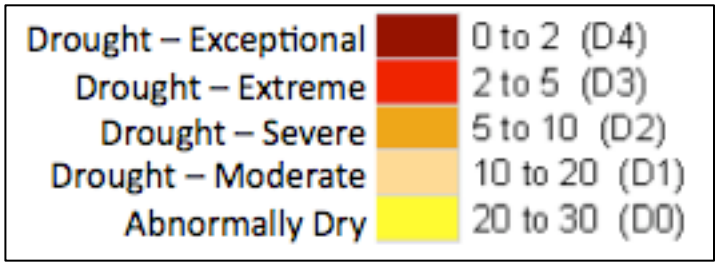
D2 – Widespread expansion of D2 is recommended to cover more of the Four Corners region, but leaving out much of the San Juan mountains and the Rio Grande headwaters region (Fig. 7, orange line). The line is drawn to include the lower SNOTEL precipitation percentiles and standardized precipitation indices (SPIs) that are less than -1.5 on the 120-day timescale.

D3 – It is recommended that D3 be expanded to cover more of the Gunnison River basin and extending into the Uncompahgres (Fig. 7, black line). This D3 will better represent the much below normal streamflows and the low SPIs on short and long timescales. Based on SPIs, VegDRI, and on-the-ground reports of extreme dryness in the lower elevations, D3 could cross into eastern UT into Grand County. However, since this is normally their dry season, status quo for UT is currently recommended.

D4 – no D4 this week, though northwest CO will be closely monitored for possible future degradations.

Drought and Water Discussion





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Eastern CO:

D0 – Only the two small spots of D0 (Fig. 7, green shapes) should remain for Colorado, where higher springtime moisture and recent storms have benefited those areas.

D1—D1 is recommended for the rest of Washington County and through eastern Arapahoe and Adams counties where conditions are very dry and the areas have not benefited much from precipitation. Also, in Prowers County, the D1 should extend south across the Arkansas River.

D2 – Widespread expansion of D2 is recommended to cover much of the Arkansas basin, including all of Fremont and Custer counties and eastward, covering Pueblo County and the remainder of Otero and Bent counties (Fig. 7, orange line). Crops are in poor condition and flows on the Arkansas are much below normal. The D2 introduced by the USDM author in Yuma County can be extended to cover northeast Washington, eastern Logan, and most of Phillips and Sedgewick counties. Additionally, the small amount of D2 and D3 in southern Baca County should be removed, as Baca County is in much better condition.