NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

February 26, 2013

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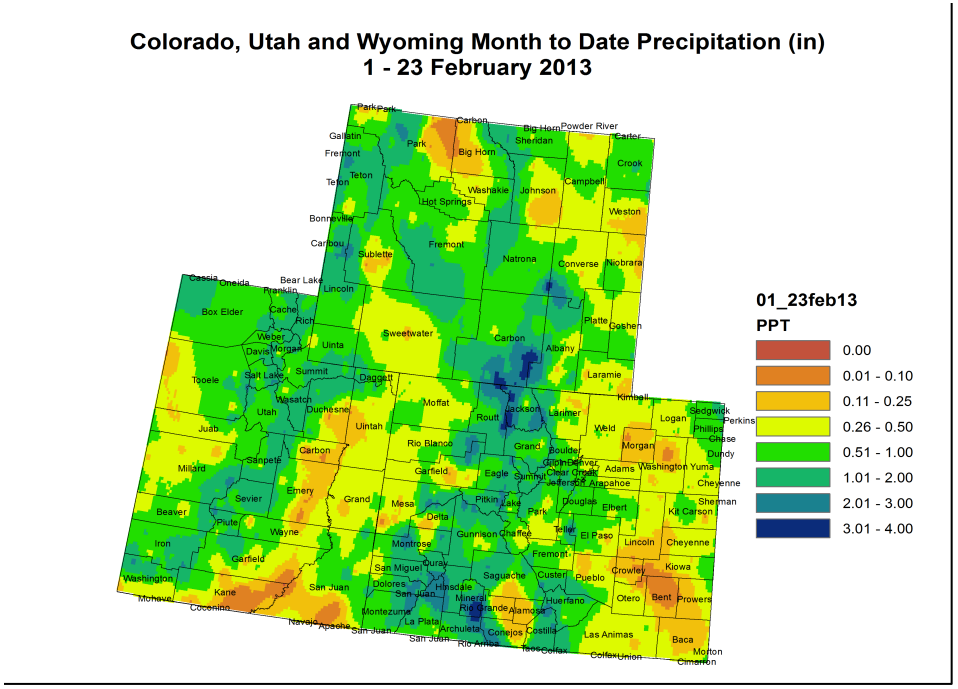


Fig. 1: February month-to-date precipitation in inches.

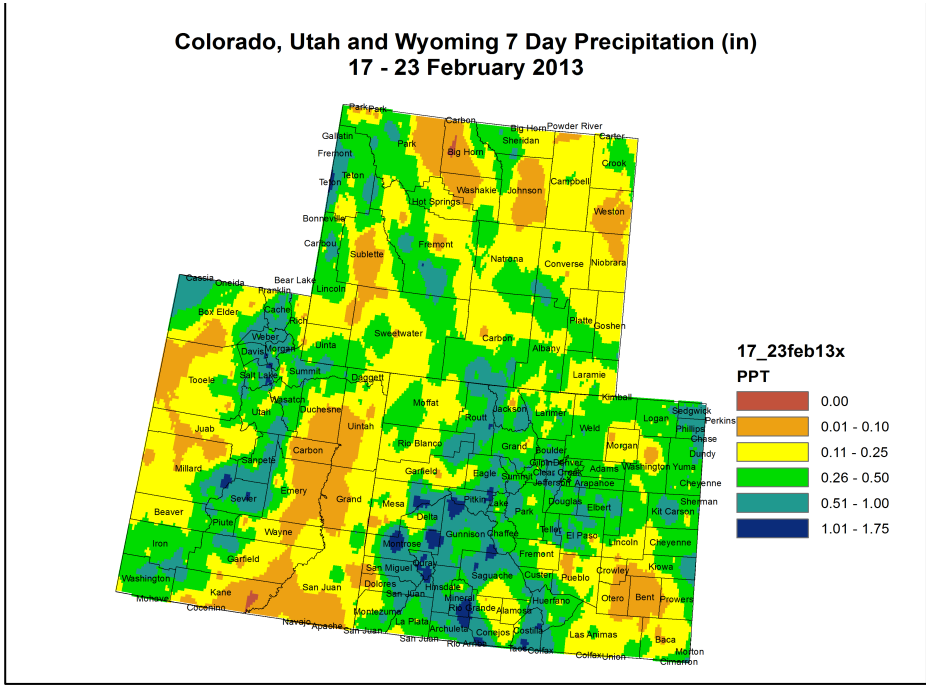


Fig. 2: February 17 – 23 precipitation in inches.

Precipitation

Since the beginning of February, much of the higher elevations of the Upper Colorado River Basin (UCRB) have received beneficial moisture (Fig. 1). The San Juan mountains in southwest Colorado and the northern CO mountains have received between 1 and 4 inches of precipitation, month-to-date. Most of the remaining higher elevations in the basin have received between .5 and 2 inches of moisture, while the lower elevations have received less than half an inch in many spots. Most of eastern CO has received less than half an inch since the beginning of the month.

Last week, the mountains of southwest CO and in central UT received over .5 inches in many spots (Fig. 2). The lower elevations of the UCRB mostly received less than .25 inches for the week, with most of the higher elevation locations receiving more than .25 inches. East of the basin, beneficial moisture has fallen across the Front Range and northeast CO last week. Fig. 2 shows accumulations through Saturday, with northeast CO seeing between .25 and 1 inch and southeast CO seeing less than .25 inches. Sunday added even more moisture in those areas.

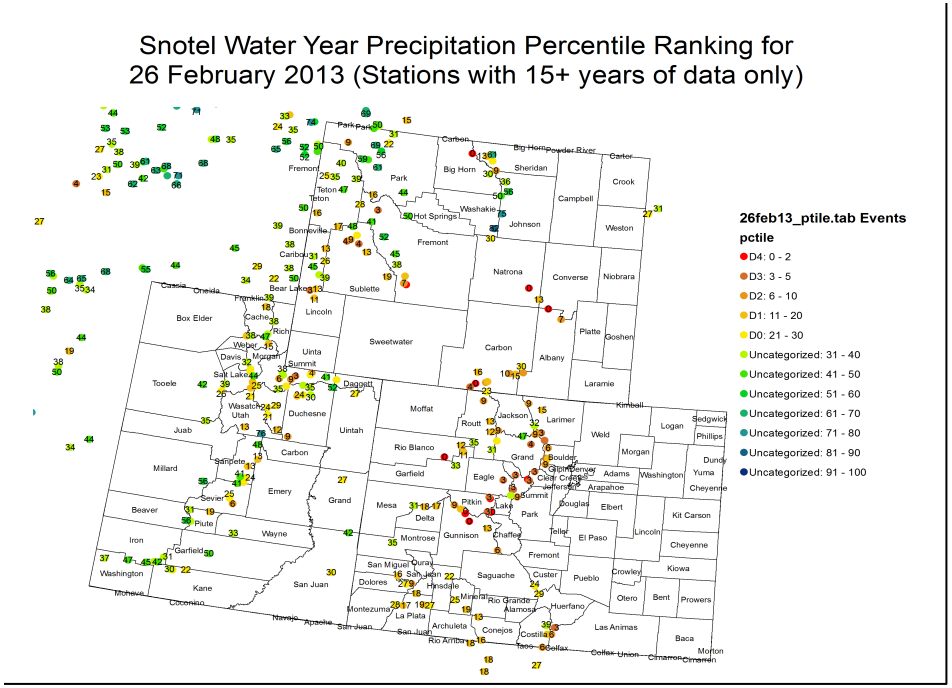


Fig. 3: WYTD SNOTEL precipitation percentiles (50th percentile is median, 30th percentile is D0 drought category) as of February 26th.

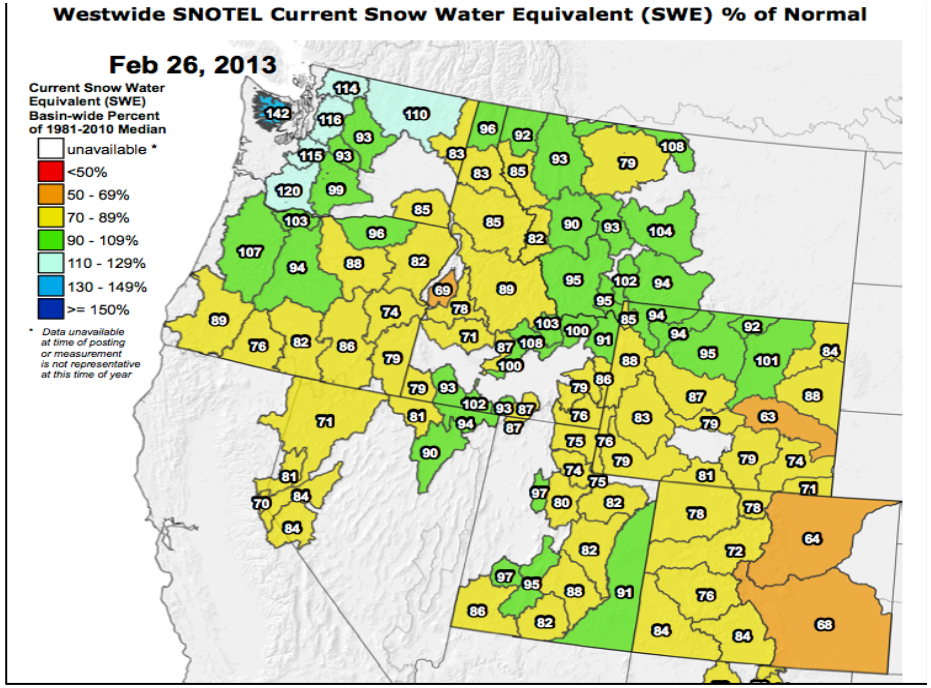


Fig. 4: Basin-averagd snow water equivalent as a percent of normal (median), as of February 26th.

Snowpack

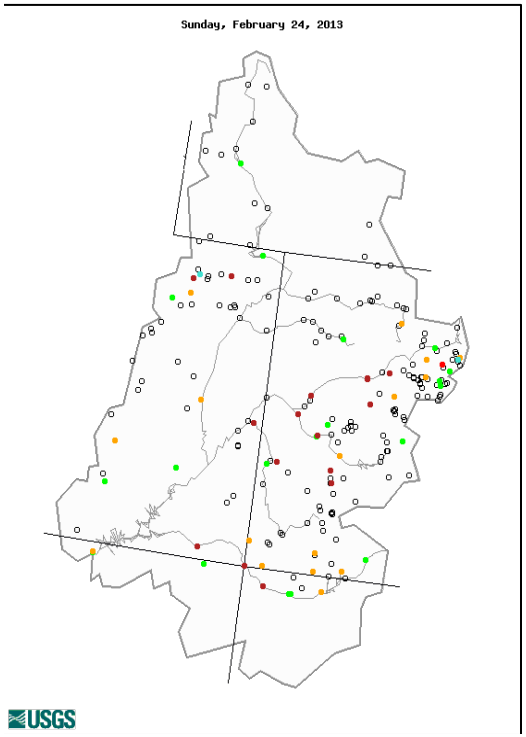
Water-year-to-date SNOTEL precipitation percentiles in the UCRB are below the median throughout the entire basin (Fig. 3). Along the Wasatch and Uintah ranges in UT and up to the Upper Green in WY, most percentiles range from the 20s to 40s, with a few that are now recording below the 10th percentile. The northern and central CO mountains are below the 20th percentile at most locations, with several sites recording below the 5th percentile. Percentile rankings in southwest CO in the San Juan mountains are mostly in the teens to 20s.

Accumulated snowpack is currently less than normal across the entire UCRB (Fig. 4). Sub-basins in western CO range between 72% - 84% of normal snowpack. The northeast UT and southwest WY basins, which had been closer to normal for most of the water year, are now a little lower, ranging from 75% of normal to 91% of normal for the season.

Streamflow

As of February 24th, about 39% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 5). About 32% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, an increase from 20% two weeks ago. Many of the gages throughout the basin are under frozen conditions. However, the number of reporting stations (not ice-affected) has increased from a low of 19 near the beginning of the calendar year, to 54 gages.

Two of the three key gages across the basin are still ice affected and not reporting (Fig. 6). Flows on the Colorado River near the CO-UT state line have been ice affected since late December. Flows on the Green River at Green River, UT have been under frozen conditions since the beginning of the year, but just started recording in the below normal range, at the 23rd percentile. The San Juan River near Bluff, UT has come out of frozen conditions and is reporting much below normal flows at the 5th percentile.



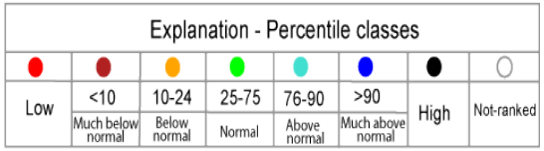


Fig. 5: 7-day average discharge compared to historical discharge for February 24th.

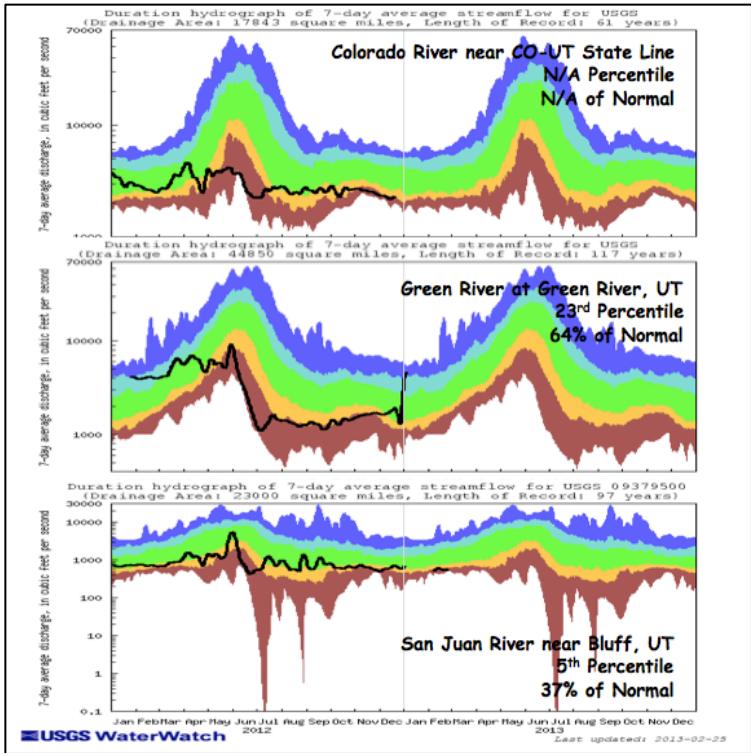


Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, most of the UCRB saw temperatures 3 to 12 degrees below average, with closer to average temperatures in southwest WY and the coldest temperatures in northeast UT. East of the basin, the rest of CO also experienced cooler than average temperatures, ranging from 3 to 9 degrees below average. The VIC soil moisture model continues to show dry soils through most of WY with near normal soil moisture in far southwest WY (Fig. 7). Soil dryness is below the 20th percentile in northeast UT and most of western CO. Soil moisture in the Four Corners is below normal, but shows near normal conditions when SWE is included (Fig. 7). Dry soils below the 10th percentile show up over most of southern and eastern CO.

Most of the major reservoirs in the UCRB have seen slight decreases in volume for the month of February. Blue Mesa has stayed near steady for most of the calendar year though it usually decreases this time of year. McPhee normally sees increases this time of year but is still decreasing. Lake Granby has seen much larger than normal volume decreases for this month. Flaming Gorge is the only major reservoir near its February average. The rest of the major reservoirs range between 54% (Lake Granby) and 79% (Dillon) of average for the month of February.

Precipitation Forecast

The UCRB is currently being effected by a fast moving disturbance that will bring light to moderate accumulations over much of the basin. Another fast moving, yet weak trough is expected to follow closely on Wednesday and keep snow falling over the high mountain areas. Precipitation will favor areas of northern and western CO where liquid accumulations will be in the 0.25 to 0.50 range through Thursday, with lesser amounts of 0.10 to 0.25 in the valley locations and mountains of northern UT (Fig. 8). The pattern shifts to a much warmer and drier one as a strong ridge of high pressure builds over the west coast of North America for the weekend. Temperatures will gradually climb above average on Saturday underneath clear skies and dry conditions. Confidence in the forecast decreases sharply during the late weekend as forecast models struggle to handle the next Pacific trough approaching the area on late day Sunday. Expect a return of unsettled conditions sometime early next week, with the potential for more robust precipitation amounts should this system manage to tap into a decent moisture source.

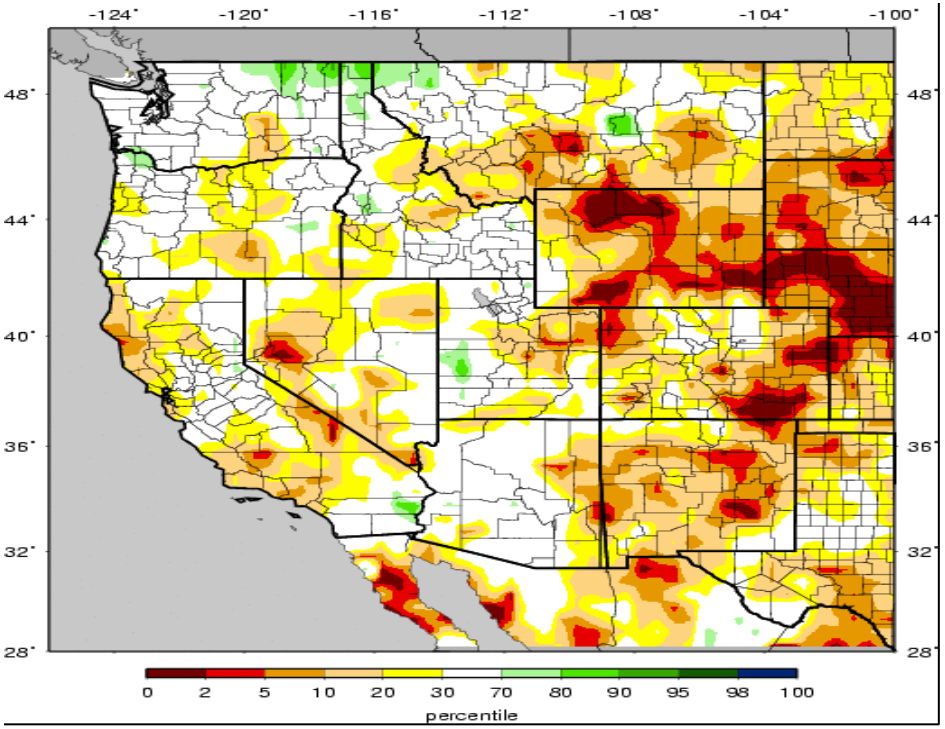
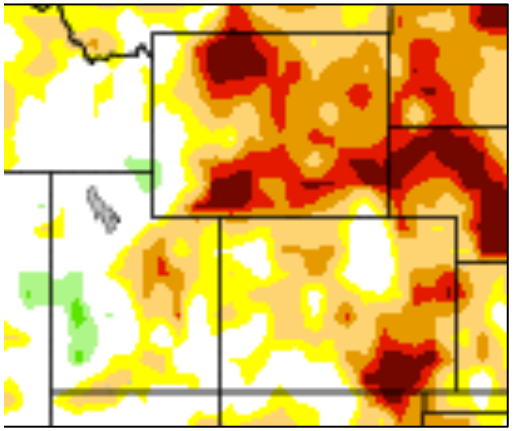


Fig. 7: VIC modeled soil moisture percentiles for the western U.S. as of February 24th. The map below combines soil moisture and SWE.



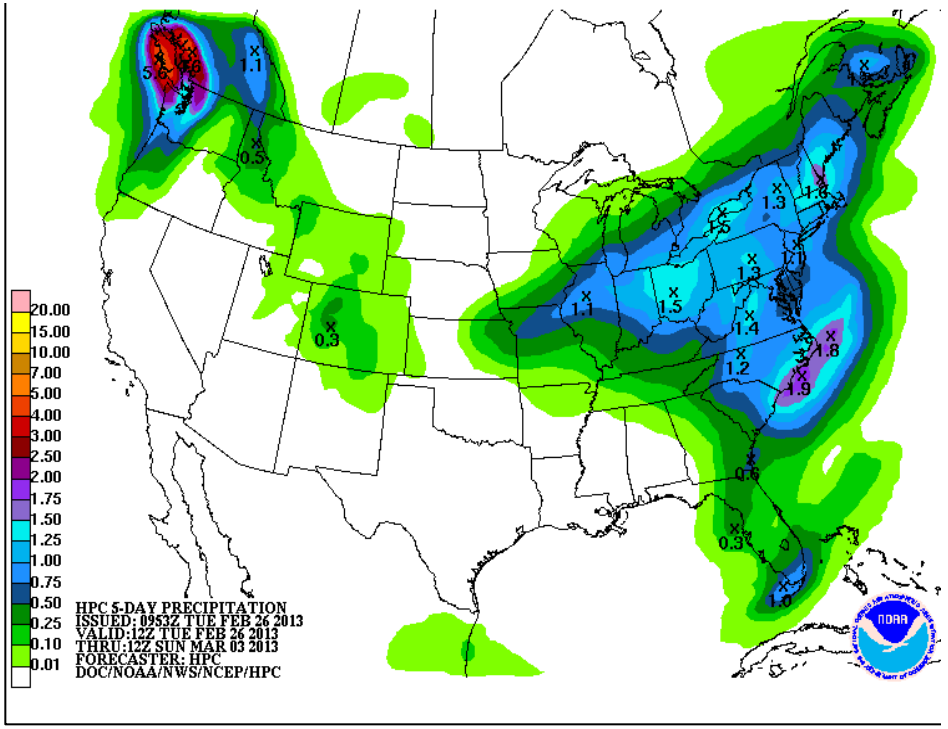
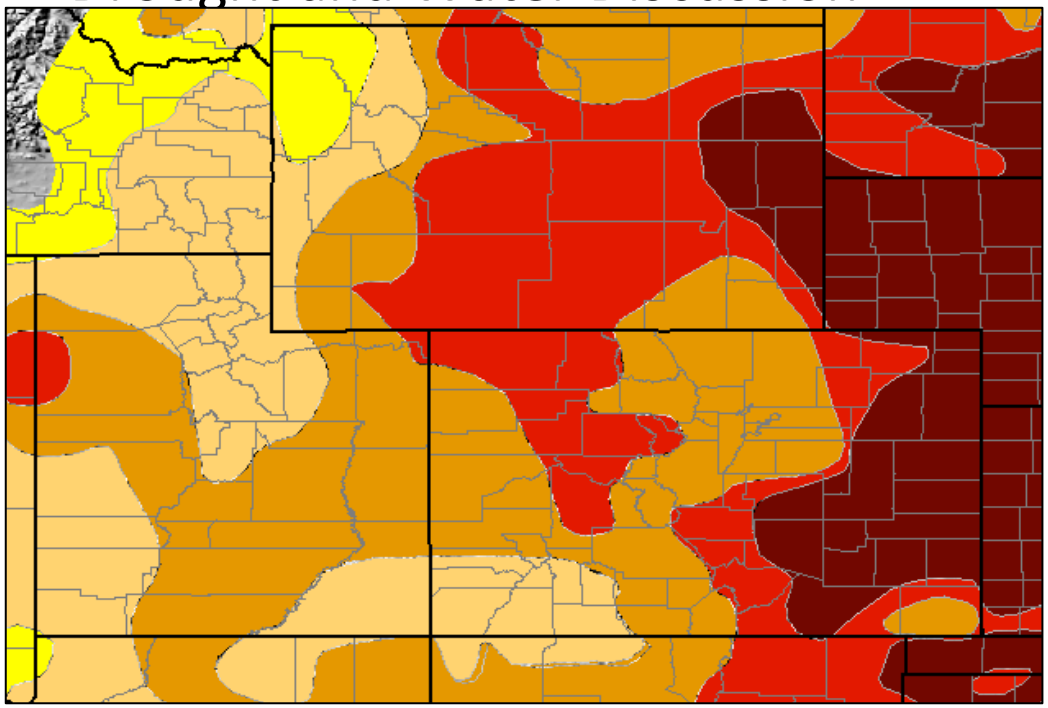


Fig. 8: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

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. 9: February 19th release of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). Snow has continued to fall in the higher elevations, enough to keep conditions from deteriorating but not enough to justify improvements at this time.

Eastern CO: Status quo is recommended for the rest of CO. The Front Range and northeast CO did receive a couple of beneficial snow storms this past week. But long-term standardized precipitation indices (SPIs) are still less than -2 throughout the region. Also, high winds and blowing snow could have reduced the benefits that this moisture could provide. These storms may be very beneficial short-term, but may not have as much benefit for the longer-term impacts of this drought, so no improvements are recommended at this time.