NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

January 24, 2012

Precipitation and Snowpack

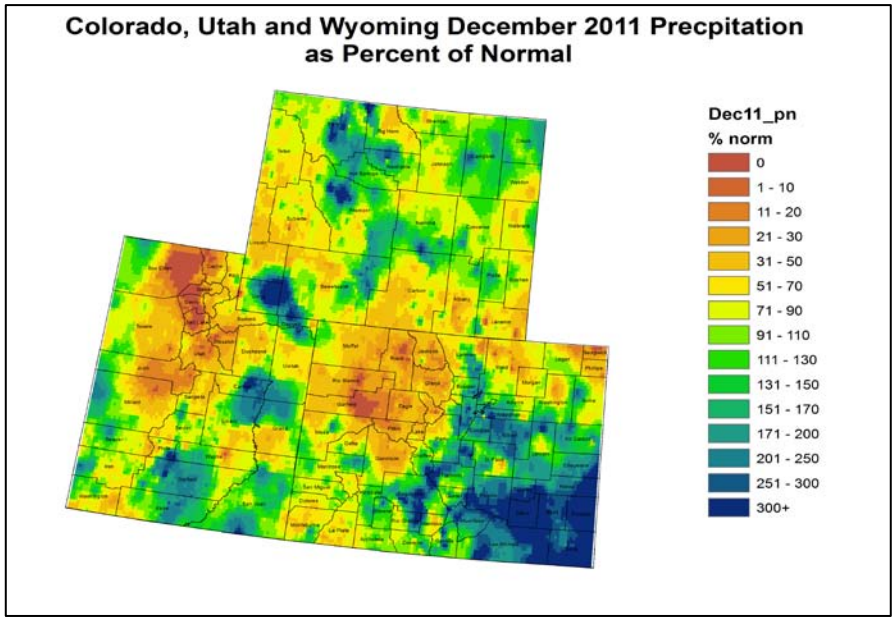


Fig. 1: Water Year precipitation as a percent of average.

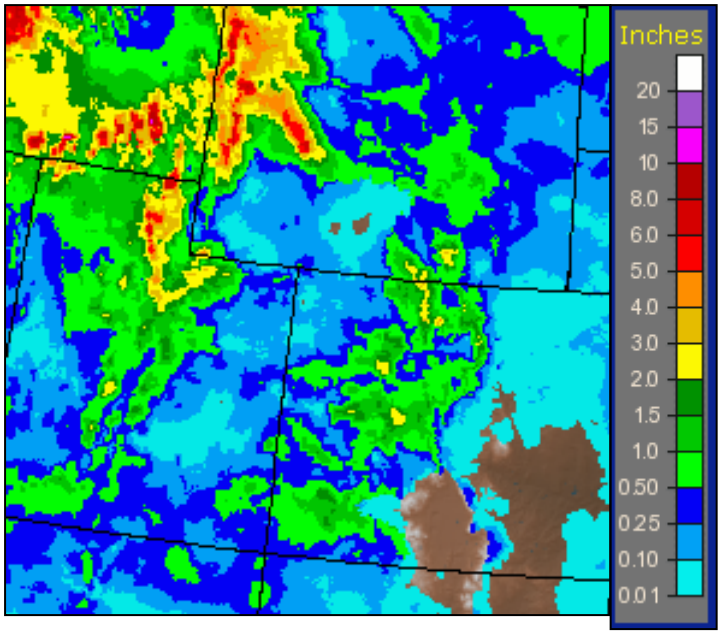


Fig. 2: precipitation in inches.

For the month of December, precipitation favored the southern and western portions of the Upper Colorado River Basin (UCRB, Fig. 1). The San Juan mountains and the Four Corners region received around 100% of its average December precipitation. Areas in eastern Utah and southwest Wyoming received over 150% of average precipitation for the month. Northwest Colorado was much drier in December, with most areas receiving less than 50% of average. The drought-stricken southeast CO saw significant improvement, with most of the region receiving over 200% of average precipitation for the month.

Last week saw beneficial moisture fall across much of the UCRB, again concentrated over the higher elevations of the basin(Fig. 2). Accumulations in the Upper Green River basin and in the Wasatch mountains ranged from one to two inches with isolated areas in excess of three inches. The northern and central Rockies of CO and the San Juan mountains have ranged between a half inch to one inch, with isolated two inch accumulations. The valleys have been drier, receiving around a tenth of an inch over the past week, while the Four Corners saw a quarter to half inch. The Denver Metro area and CO plains have mostly seen less than a tenth of an inch.

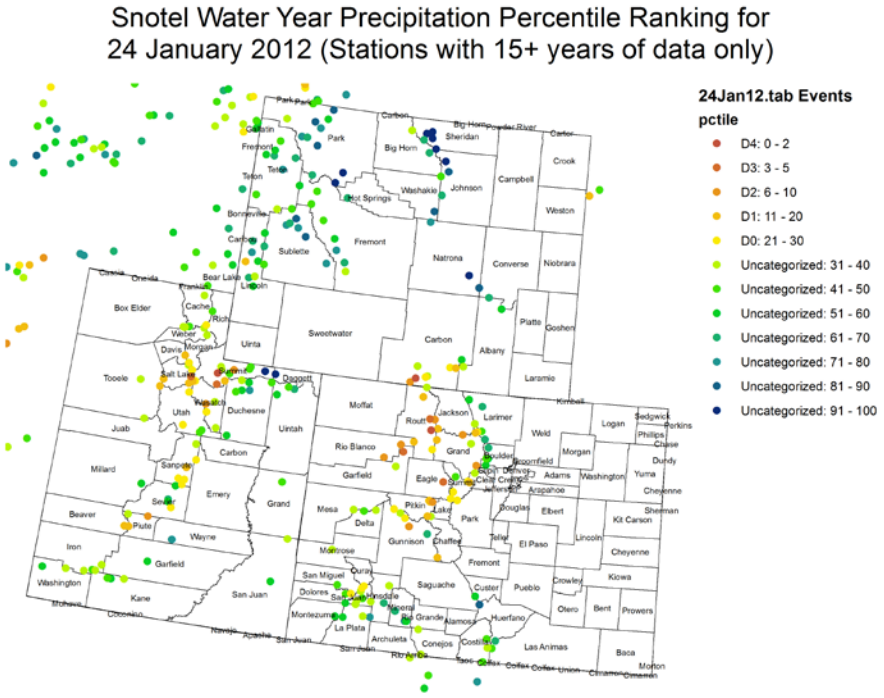


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

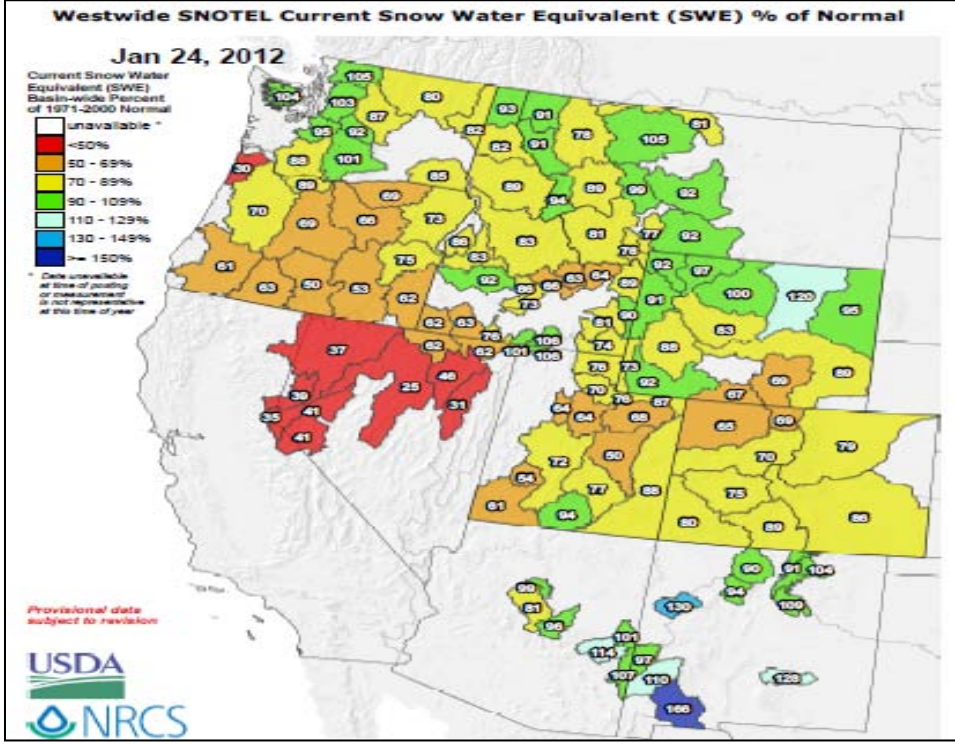


Fig. 4: Basin snow water equivalent (SWE) as a percent of average.

Water-year-to-date (WYTD), SNOTEL precipitation remains slightly below average for the southern part of the UCRB and much below average for the central portions of the basin (Fig. 3). The lowest percentiles are still being observed around the Yampa basin and in the Colorado River headwaters in CO, with several sites remaining below the 10th percentile. Many sites around the Green River headwaters in WY, the Wasatch and Uinta mountains of UT, and in the upper Gunnison basin in CO benefited from the recent precipitation. The San Juan basin in southern CO continues to record higher precipitation percentiles (many sites around or above the 50th percentiles), and reports indicate that recent snowfall has bolstered amounts in that area. Despite the recent precipitation, snowpack conditions around the UCRB remain below normal (Fig. 4). Most sub-basins saw some improvement from last week, with areas in WY and northern UT seeing the most dramatic changes. The San Juan basin in southwest CO continues to fair well, now at 80% of average SWE.

Streamflow

As of January 22nd, 87% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). About 29% of the gages in the basin are recording above normal flows, while 14% of the gages in the basin are recording below normal flows. The number of reporting gages in the basin has decreased from over 100 in mid-November to 44, as many of the rivers continue to freeze over. There are currently 6 gages recording below normal flows with most those located near the Colorado River Headwaters region or in the San Juan basin.

Key gages on the Colorado River at the CO-UT state line and the San Juan River near Bluff, UT are all currently recording flows in the normal range at the 53rd and 37th percentiles, respectively (Fig. 6). The gage on the Green River at Green River, UT had been recording above normal flows, but as of last month has become "ice affected" and is not currently recording streamflow.

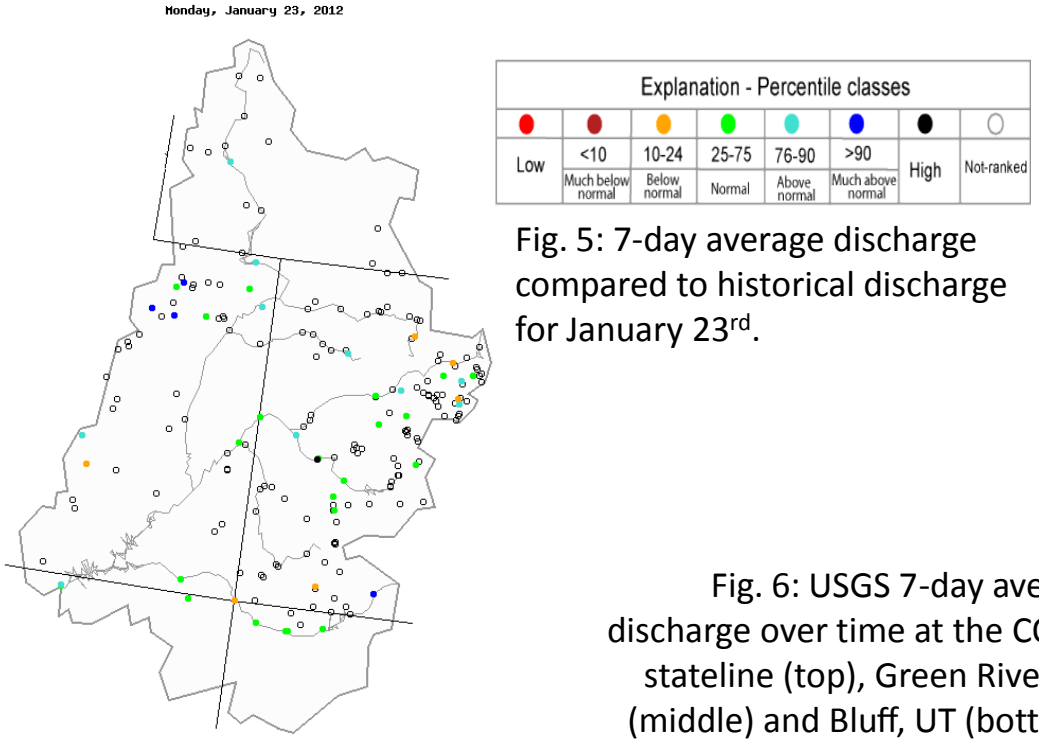


Fig. 5: 7-day average discharge compared to historical discharge for January 23rd.

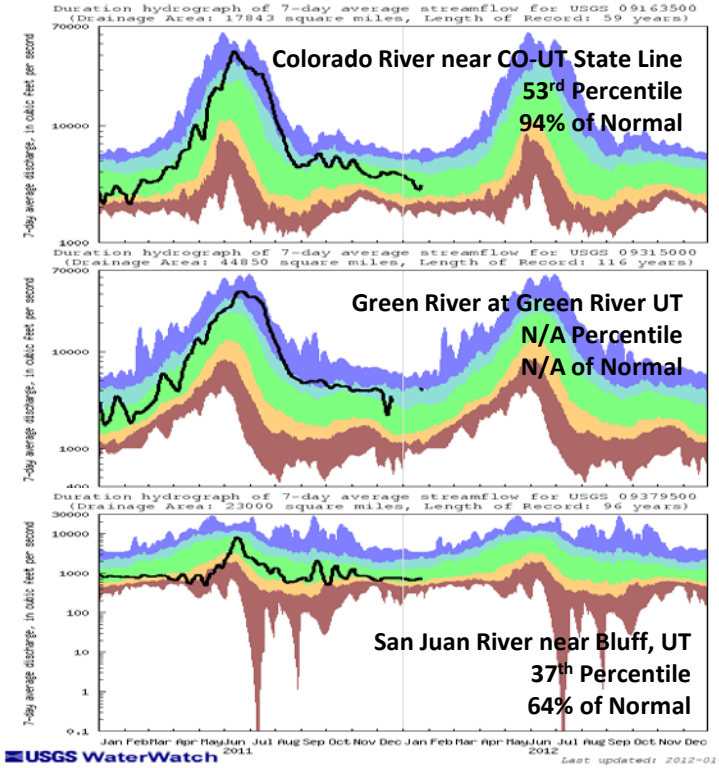


Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Most of the UCRB and surrounding areas experienced warmer than average temperatures last week, including the Colorado mountains along the Continental Divide. The VIC model continues to show dry soil moisture conditions in southeast CO and in UT around the Colorado River valley (Fig. 7). After recent snow accumulations around the Colorado River headwaters, soil conditions continue to improve in that area according to the VIC model. Near normal soil moisture conditions are being observed in the Four Corners and San Juan mountains region, and in the northern part of the UCRB.

All of the major reservoirs above Lake Powell are above their January averages. Blue Mesa, Granby, and Green Mountain have seen larger decreases so far for the month of January, though all the reservoirs are seeing storage decreases that are normal for this time of year. Lake Dillon has seen a slight increase in levels since the beginning of the year. Lake Powell is currently at 65% of capacity and 85% of average.

Precipitation Forecast

Clearing skies and dry conditions will cover most of the UCRB following the passage of Tuesday's storm system, with upper level flow gradually shifting to the northwest through Wednesday evening. This will allow for some moisture to begin working into northern reaches of the basin, and will result in some light snow showers forming over favored high terrain. A stronger surge of moisture arrives on Thursday ushered in by a quick moving disturbance moving in from the northwest. Northern ranges will again benefit the most from this pattern, with liquid accumulations will approach 0.75 inches into southern WY through Saturday. Elsewhere expect accumulations to remain lighter, with the mountains of northern CO and UT maxing out around 0.50 inches of liquid accumulation by the weekend. Northwest flow will persist through this weekend with several weak, fast moving disturbances expected to brush the northern portions of the UCRB. These features are only anticipated to generate light accumulations, while the central and southern parts of the basin remain mostly dry moving into next week.

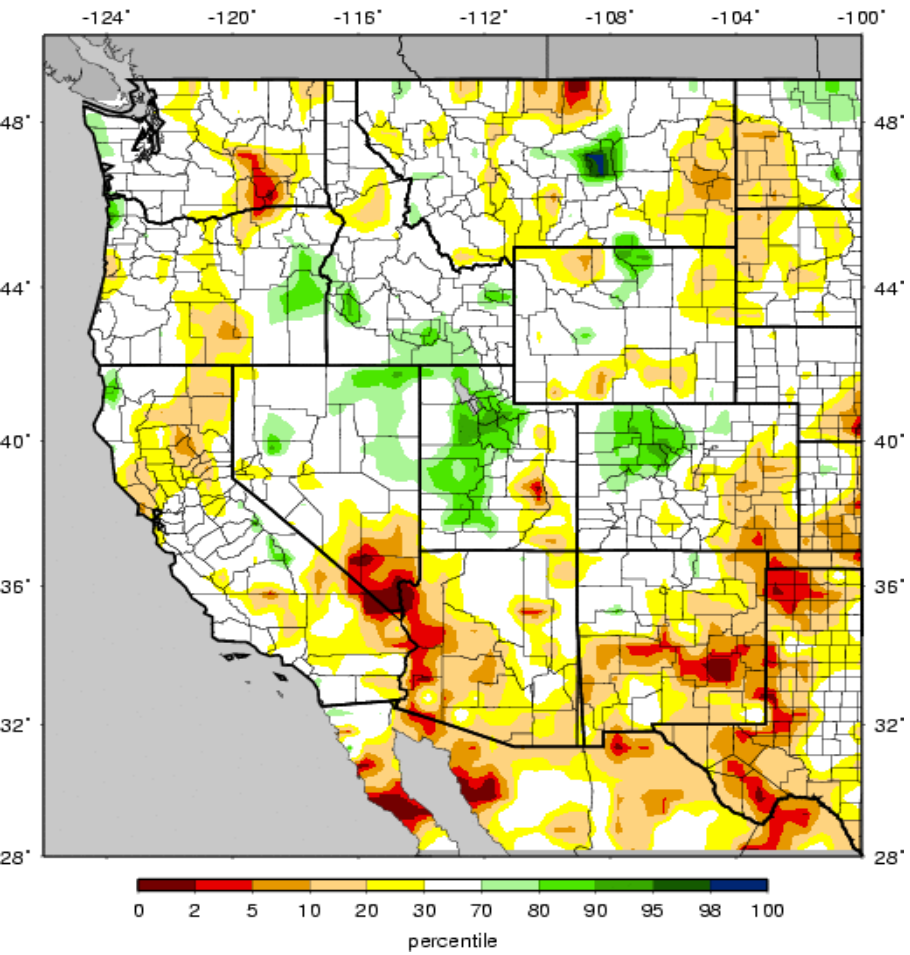


Fig. 7: VIC soil moisture percentiles as of January 22nd.

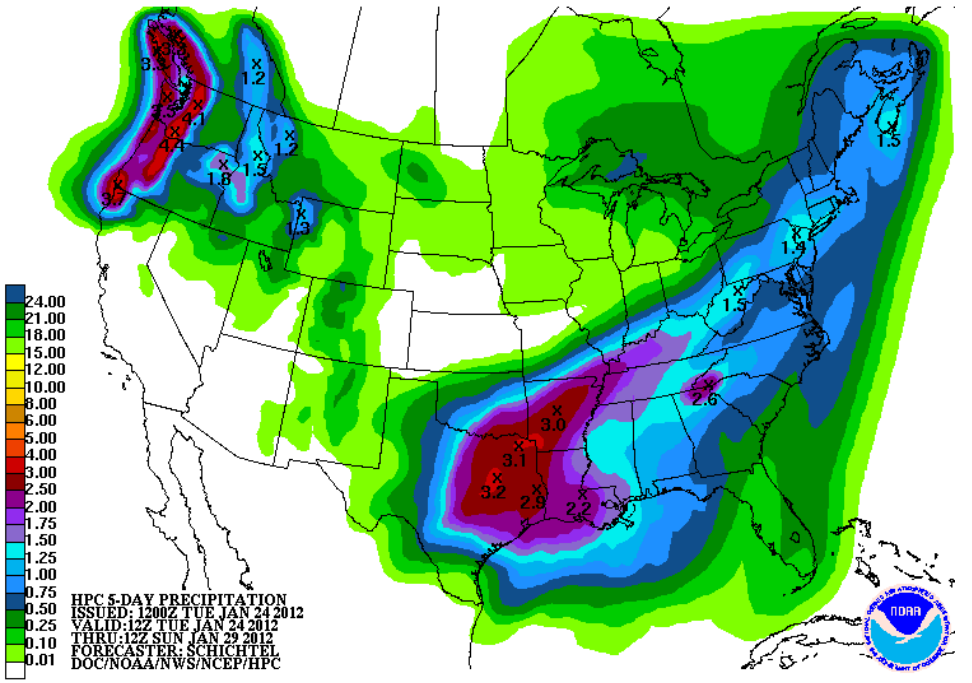
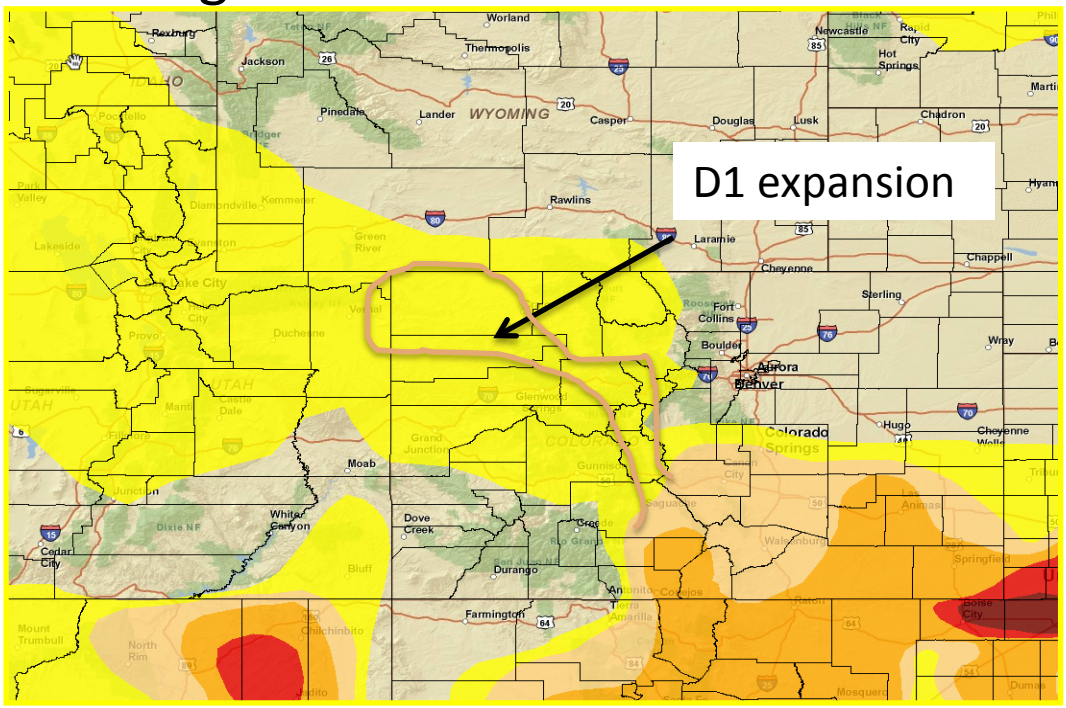
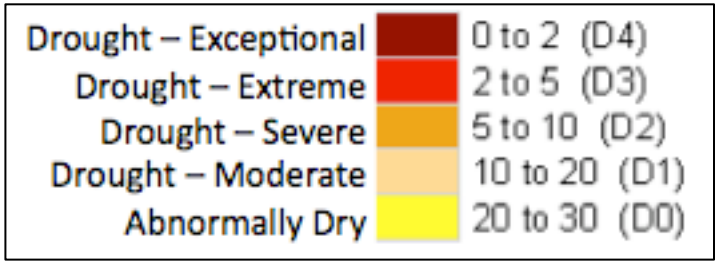


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 12Z Sunday, January 24th.

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 9: January 17th release of U.S. Drought Monitor for the UCRB

Despite recent precipitation, significant deficits still remain across much of the CO mountains. It is recommended that D1 be introduced into northwestern CO and along the Continental Divide, where SPI values are very dry (-1 or greater) on the 30, 60 and 120 day timescales and Snotel SWE observations remain low.

While the Four Corners region did receive some precipitation over the last week, negative SPI values on all timescales in that area still warrant the persistence of D0. In southeast CO, SPIs are positive throughout many of the counties on shorter time scales and only begin to show negative values on the 6-month time scale. Given the lack of recent precipitation and no reports of impacts, status quo is recommended for the southeastern CO plains.