

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

January 29, 2013

Colorado, Utah and Wyoming 7 Day Precipitation (in)
20 - 26 January 2013

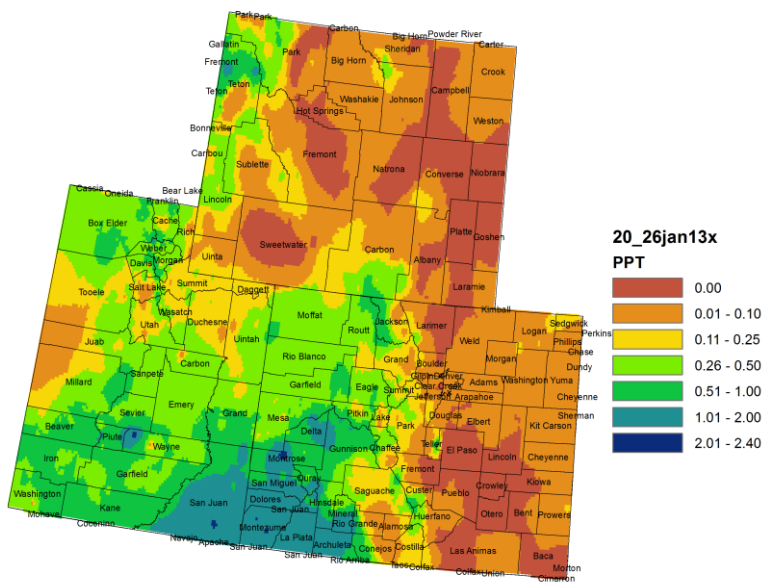


Fig. 1: 7-day precipitation across the region.

Precipitation

Much needed precipitation has finally entered the region over the past week (Figure 1). Data through 1/26/13 (which includes reports from 1/27/13) shows widespread moisture falling over SW and Western Colorado as well as SE Utah. The SW portion of Colorado picked up 1.00-2.00" with isolated areas receiving up to 2.40" in Montrose and Montezuma in CO. San Juan county in UT also received 1-2" over the past week. Lesser amounts in the range of 0.25"-1.00" fell in the Northern and Central mountains of CO and central Utah. The Wasatch and Uintah ranges were also drier, only receiving around 0.11- 0.25" for the week. Areas farther NW in Utah received up to 0.50". The Green river basin in WY and the eastern plains of CO remained dry over the past week generally receiving less than 0.25".

Precipitation continued into 1/29/13 mainly in Colorado (much less in Utah and Wyoming) as shown in Figure 2 from the CoCoRaHS network. This shows northern Jefferson, Denver and western Adams counties picking up near 0.30" of liquid equivalent while other areas of the plains and western slope received less than 0.20".

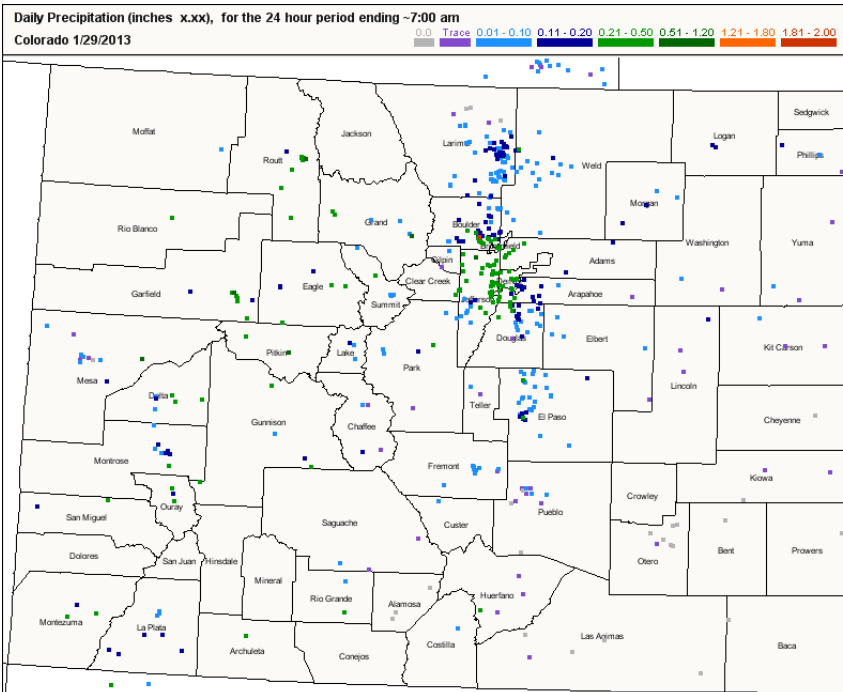


Fig. 2: CoCoRaHS data for precipitation falling 1/28-1/29 2013.

Snotel Water Year Precipitation Percentile Ranking for 28 January 2013 (Stations with 15+ years of data only)

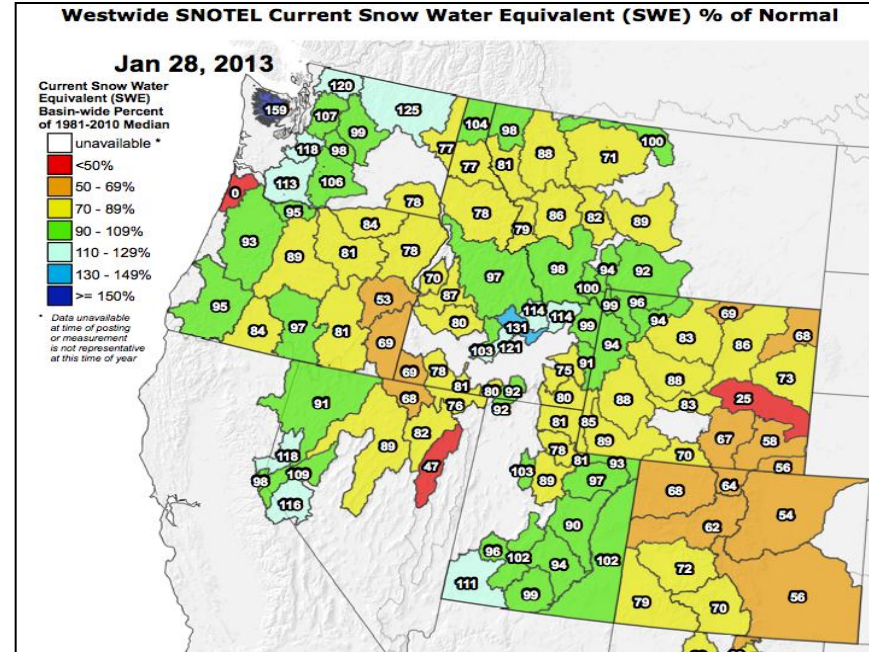
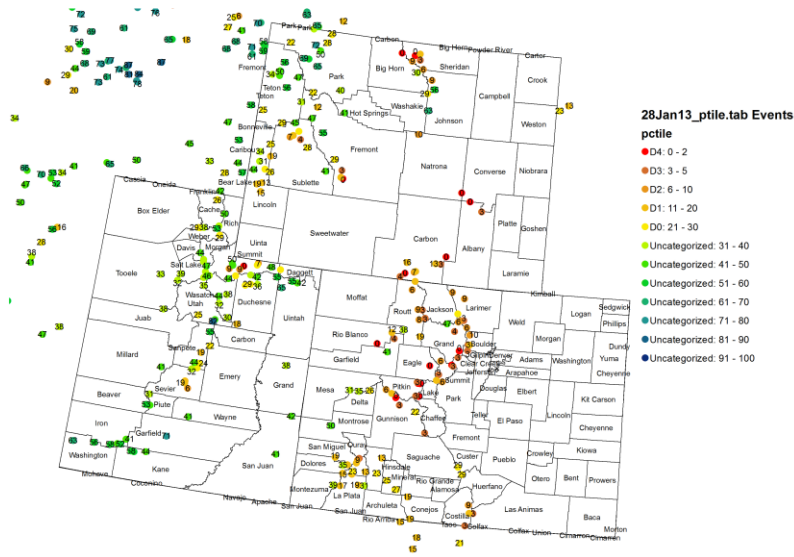


Fig. 3: WYTD SNOTEL precipitation percentiles (50th percentile is median, 30th percentile is D0 drought category) as of January 28^h.

Fig. 4: Basin-averagd snow water equivalent as a percent of normal (median), as of January 29th.

Snowpack

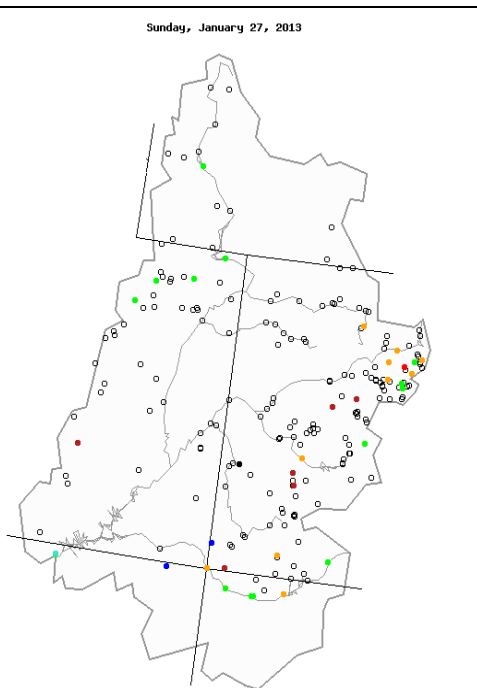
Water-year-to-date SNOTEL precipitation percentiles in the UCRB are highly variable depending on location (Fig. 3). Along the Wasatch and Uintah ranges in UT, percentiles are in the 30s and 40s, with slightly lower percentiles in the Upper Green River basin in southwest WY. Higher percentiles in the 50s and 60s are being reported in Uintah county, UT. The northern and central CO mountains are showing precipitation below the 20th percentile at most locations, with even more sites now recording below the 5th percentile. Percentile rankings in southwest CO in the San Juan mountains have recovered somewhat, now reporting in the teens and 20s.

Basin snow water equivalent is currently less than normal on the east side of the UCRB and near normal on the west side of the basin (Fig. 4). Sub-basins in western CO are all between 62% and 79% of normal snowpack. The northern sub-basins have seen slight decreases since last week while more southern sub-basins (San Juan, Gunnison and Rio Grande) have seen much welcomed increases in percent of normal since last week.

Streamflow

As of January 27th, about 52% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 5). About 20% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and four gages recorded above normal flows. Many of the gages throughout the basin are under frozen conditions, and the number of reporting sites has decreased from 72 gages just over two months ago to 35 gages now. This, however, is an increase from only 21 reporting gages last week.

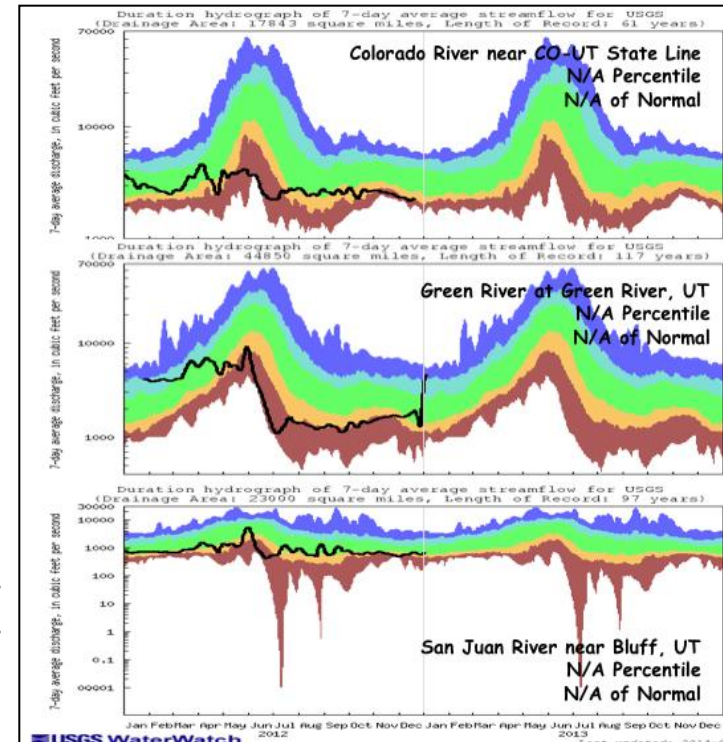
The three key gages across the basin are all currently ice affected (Fig. 6). Flows on the Colorado River near the CO-UT state line have been ice affected since late December. Though flows on the Green River at Green River, UT had increased to near normal conditions at the end of the year, it is now under frozen conditions, which also happened this time last year. The San Juan River near Bluff, UT became ice affected after experiencing below normal conditions for the previous few weeks.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Fig. 5: 7-day average discharge compared to historical discharge for January 27th.

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

Since the beginning of January, the UCRB has experienced cooler than average temperatures, ranging between 3 and 15 degrees below average. East of the basin, eastern CO has seen near average temperatures averaged over the month. 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 eastern UT and much of western CO. Drier soils (less than the 10th percentile) are now showing up over southwest CO, but are less pronounced when SWE is included (Fig. 7). Dry soils also show up in southeast CO and far eastern CO with near normal soil moisture in north-central CO and around the Rio Grande Basin in southern CO.

For the month of December, most of the major reservoirs in the UCRB saw minor volume decreases, though Blue Mesa Reservoir saw a very slight increase since the beginning of the month. Volume decreases are normal for this time of year, and most of the reservoirs decreased less than what is normal. Lake Granby has seen larger volume decreases so far for this month. Flaming Gorge volume is near its January average while the rest of the reservoirs are between 65% and 80% of average for January.

Precipitation Forecast

The UCRB will be on the back side of a slowly departing low pressure trough with strong northwesterly flow setting up for the middle of the work week. The brisk flow aloft will combine with ample Pacific moisture to provide several days light but persistent snowfall over the northern mountains of the basin. With the absence of any large scale storm system, expect much of this snowfall to be confined to the highest regions and favored northwest slopes while valley locations will only see light snow showers. Liquid accumulations will generally remain below 0.25 inches with the exception of the central and northern CO mountains, where liquid accumulations of 0.50 - 1 inch with isolated higher amounts will be possible by Thursday morning (Fig. 8). Expect to see a pattern shift towards warmer and drier conditions moving into the weekend as a high pressure ridge begins to establish itself over the western US, and is anticipated to last into the beginning of next week.

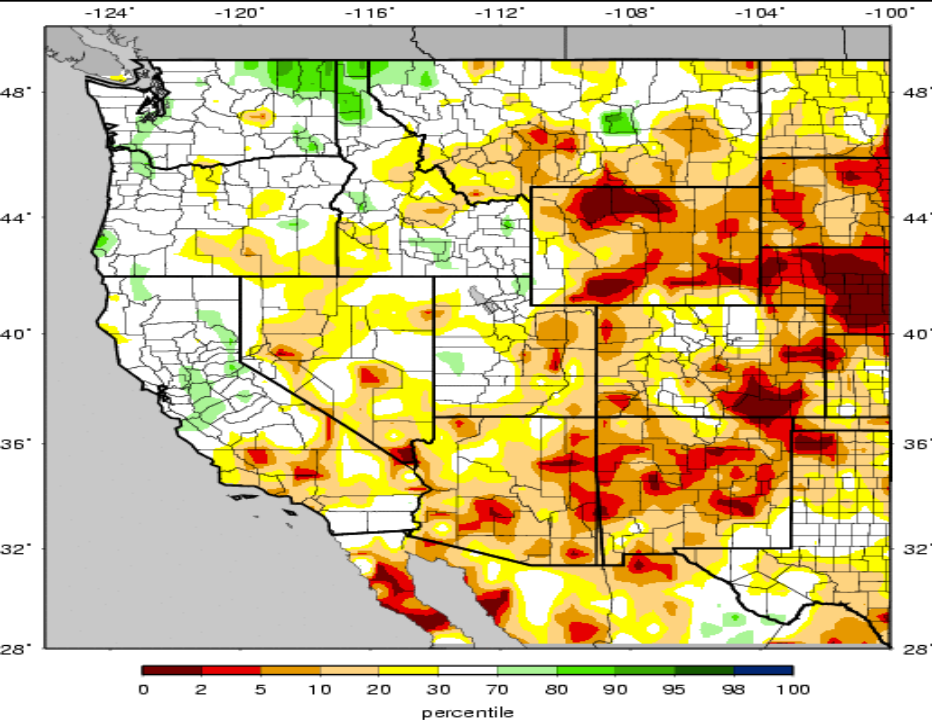


Fig. 7: VIC modeled soil moisture percentiles for the western U.S. as of January 27th. The map below combines soil moisture and SWE.

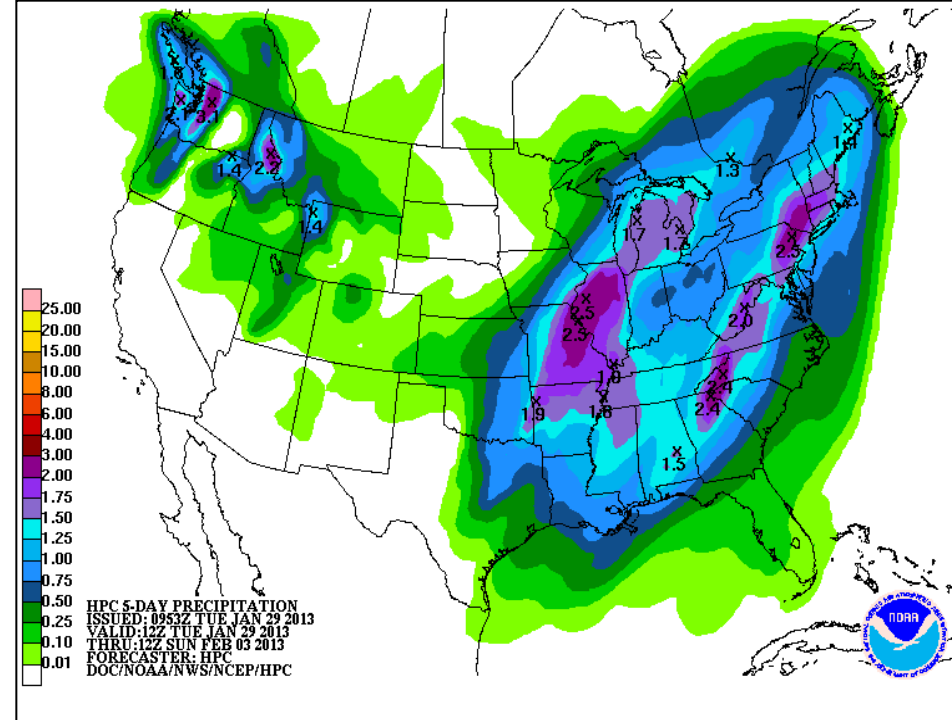
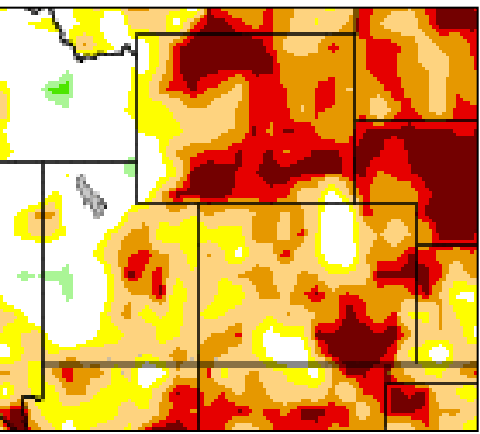


Fig. 8: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion

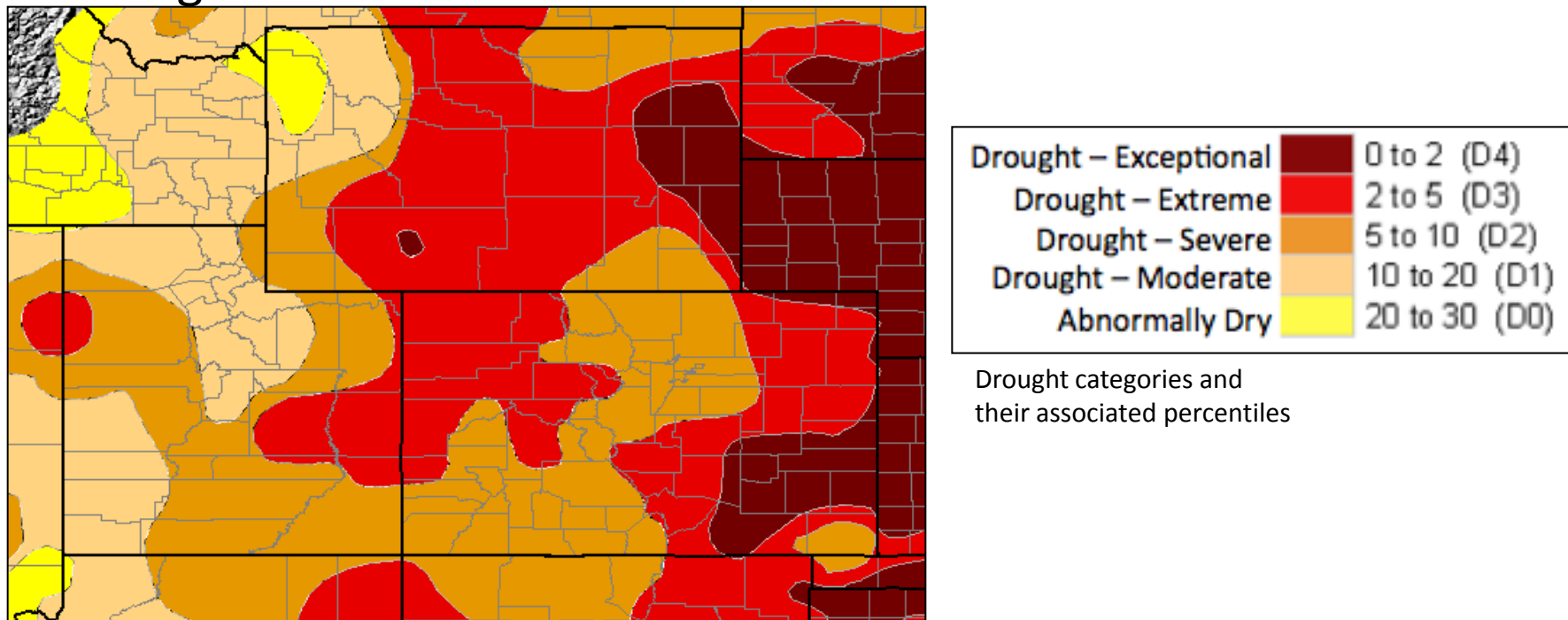


Fig. 9: January 22nd release of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). Though recent beneficial snowfall has accumulated in the higher elevations of southwest CO, benefits may only be short term. These areas are still running large precipitation deficits from last year which are not realized in water year statistics. It is recommended to hold off on any improvements in that region and re-examine how the area looks in the next couple weeks.

Eastern CO: Status quo is recommended for the rest of CO.