NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

January 8, 2013

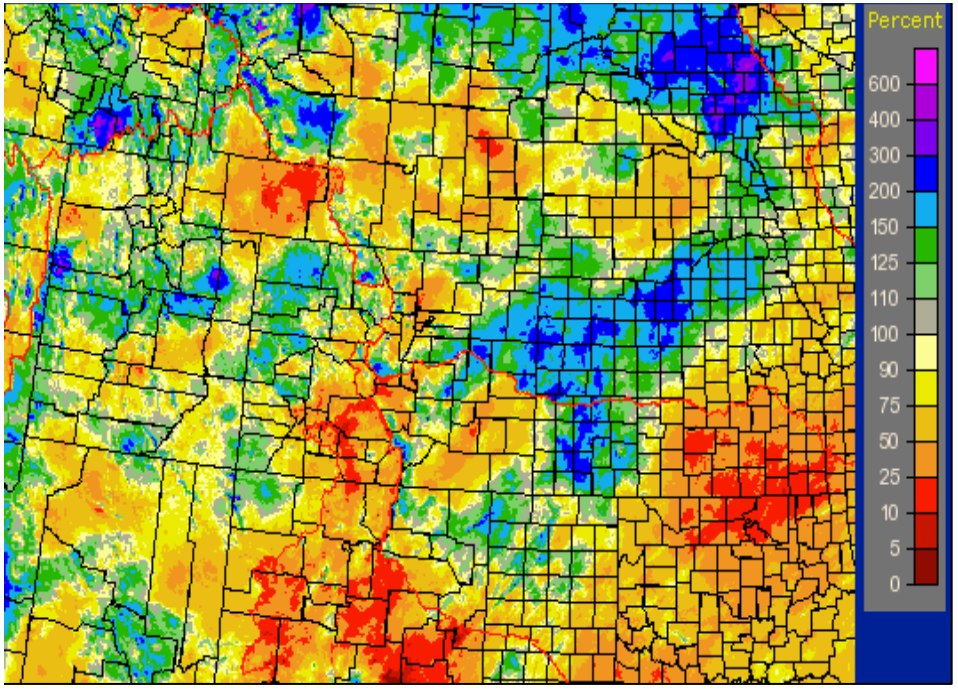


Fig. 1: December precipitation as a percent of average.

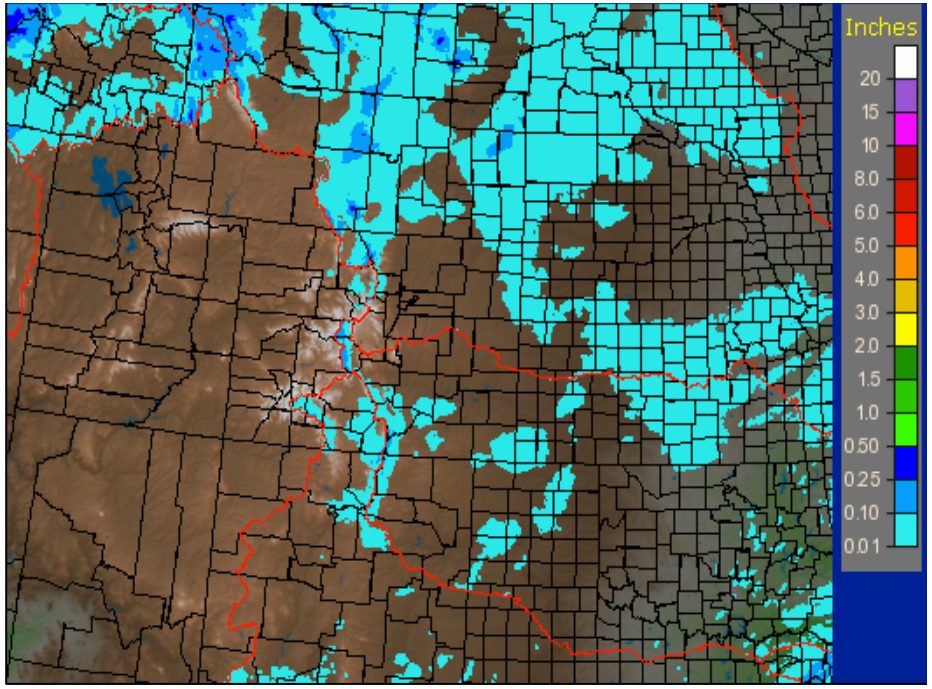


Fig. 2: January 1 – 7 precipitation in inches.

Precipitation

For the month of December, the Upper Colorado River Basin (UCRB) received around a half inch to inch of moisture in the lower elevations and more in the higher elevations (Fig. 1). Areas of the northern and central Colorado mountains, the higher elevations in western Wyoming, and along the Wasatch and Uintah ranges in Utah received between 2 and 6 inches of precipitation last month. This is about average for this time of year, but has been a welcome relief for areas that were much drier than average during October and November. East of the basin, the rest of CO received between .25 and 1.0 inches last month.

Last week, little to no precipitation fell over the UCRB. Isolated areas in the higher elevations along the fringes of the basin received between .01 and .10 inches for the week, while the rest of the basin saw no precipitation. East of the basin, central and eastern WY and parts of northeast CO received between .01 and .10 inches of moisture for the week. The Sangre de Cristos and Wet Mountains in southern CO also received between .01 and .10 inches of precipitation last week, while much of the rest of eastern and southern CO was dry.

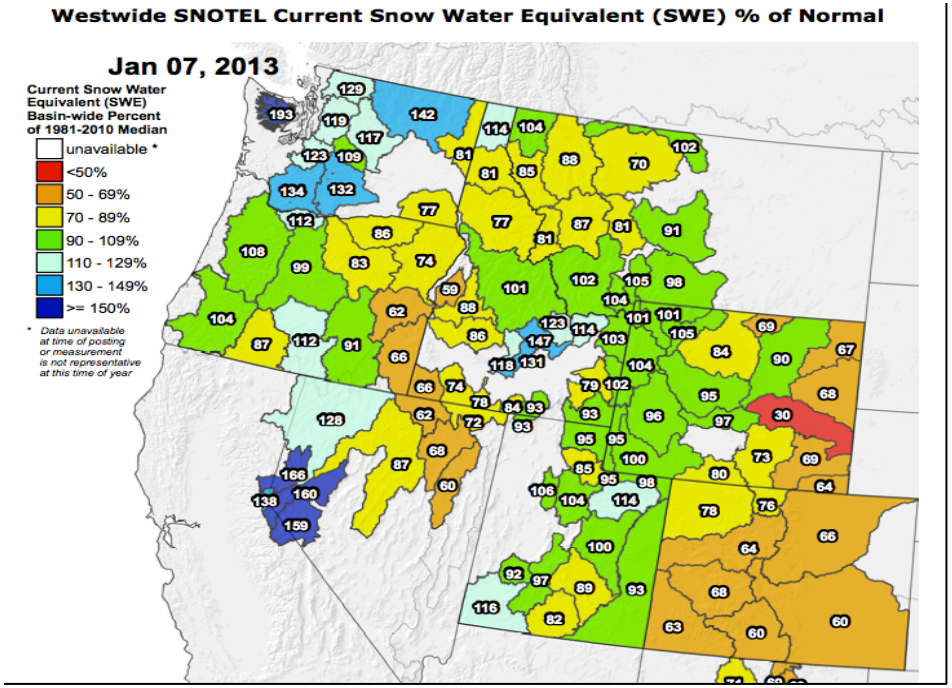


Fig. 3: Basin-averaged snow water equivalent as a percent of average, as of January 7th.

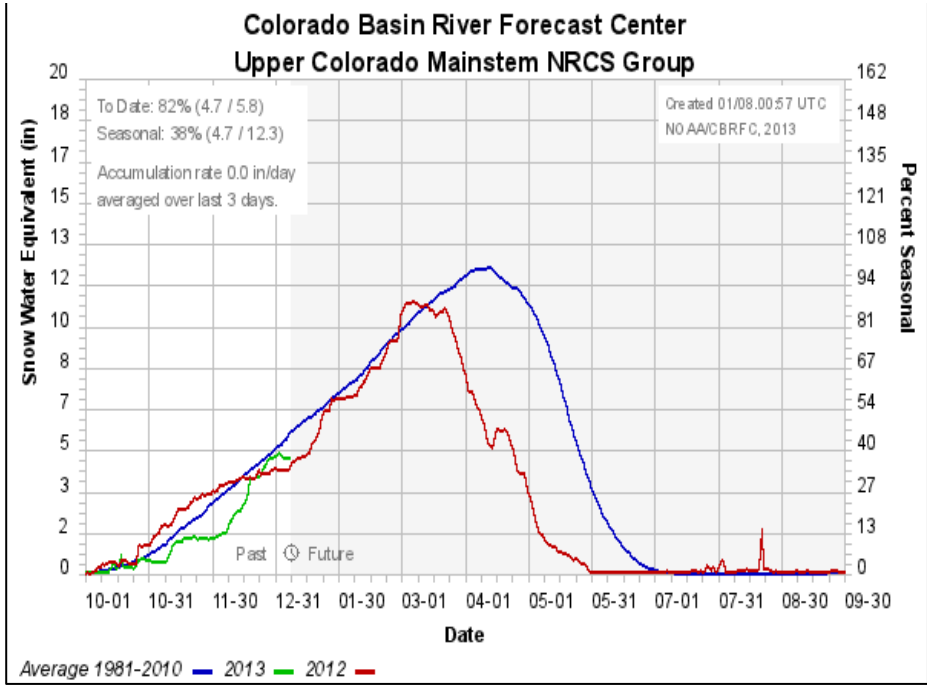


Fig. 4: Basin-averaged snow water equivalent for the Colorado Headwaters compared to last year (red) and average (blue).

Snowpack

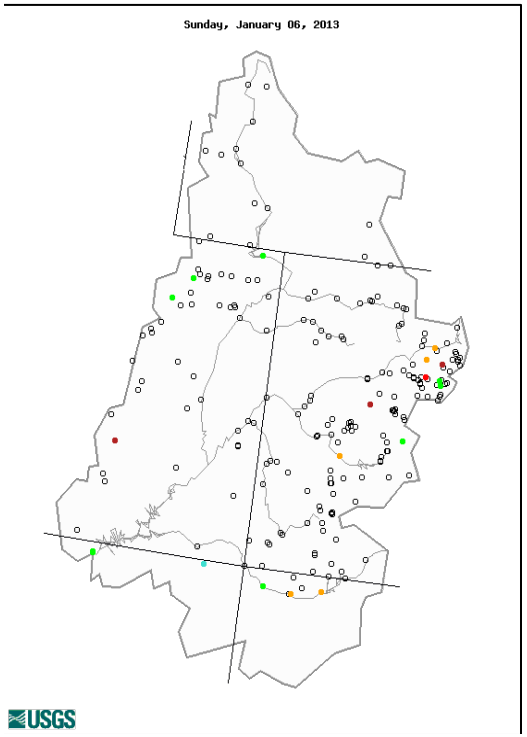
Accumulated snowpack is currently less than normal on the east side of the UCRB and near to above normal on the west side of the basin (Fig. 3). Sub-basins in western CO are all between 65% and 75% of normal snowpack. Northeast UT and southwest WY basins are around 100% of normal snowpack (with a few sub-basins in UT greater than 110% of normal). Snowpack in western CO saw large improvements in December, with all sub-basins improving by 30% to 40%, but in the beginning of January, snowpack has dropped by 10% of average in many of the sub-basins.

The Colorado headwaters region is one of the sub-basins to show large improvement last month (Fig. 4). Early in the water year, very little snow was accumulating in that region, leading to a deficit of over an inch by the beginning of December. The month of December saw large snow accumulations, reducing the seasonal deficit. For the beginning of January, there has been a slight drop-off in snowpack.

Streamflow

As of January 6th, about 52% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 5). About 21% percent of the gages in the basin are recording much below normal streamflows, and only one gage 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 one month ago to only 19 gages now. This is a very low number of reporting gages due to the combination of lower flows this season and colder temperatures the past couple of weeks.

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 for a couple weeks now. 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.



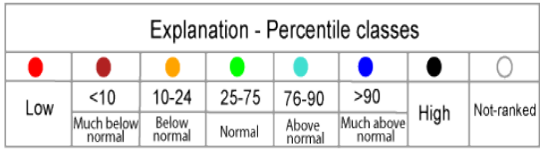


Fig. 5: 7-day average discharge compared to historical discharge for January 6th.

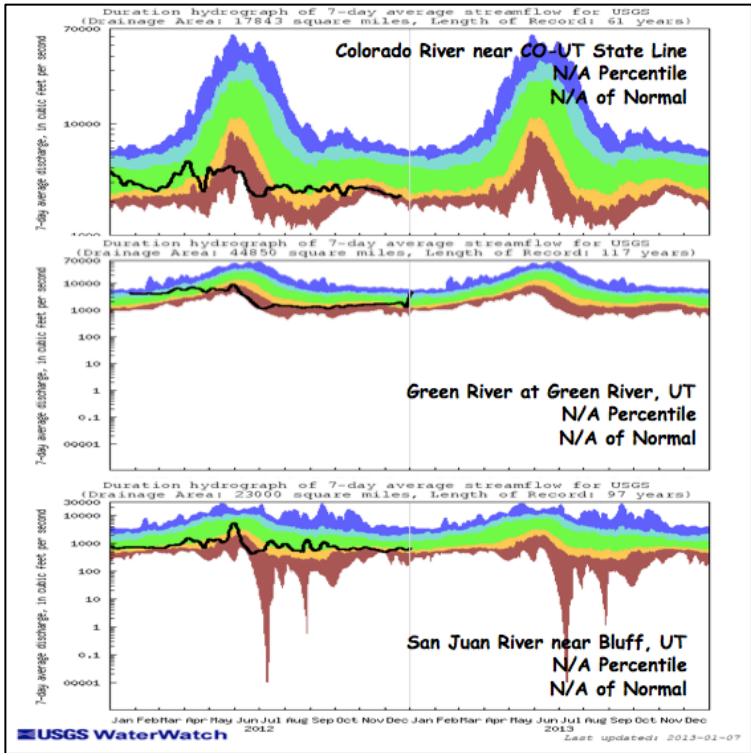


Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, the UCRB continued to experience cooler than average temperatures, ranging between 10 and 20 degrees below average. East of the basin, eastern CO also saw much cooler temperatures, ranging between 5 and 10 degrees cooler than average for most of the state. The VIC soil moisture model shows dry soils through most of WY with near normal soil moisture in far southwest WY. Soil dryness is below the 20th percentile in eastern UT and much of western CO (Fig. 7). An increase in snowpack has led to an improvement when combining soil moisture with SWE in the VIC model (Fig. 7). Dry soils also show up in southeast CO and far eastern CO with near normal soil moisture in north-central CO and in the San Juan mountains in southwest 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. 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

Dry and mild conditions are expected to prevail over the region through Thursday. A strong system, combined with an Arctic cold front are expected to move into the area later this week, bringing much colder conditions throughout the region and snow to the UCRB (Fig. 8). Drier conditions could return after the passage of this system, so expect cold and dry conditions into next week.

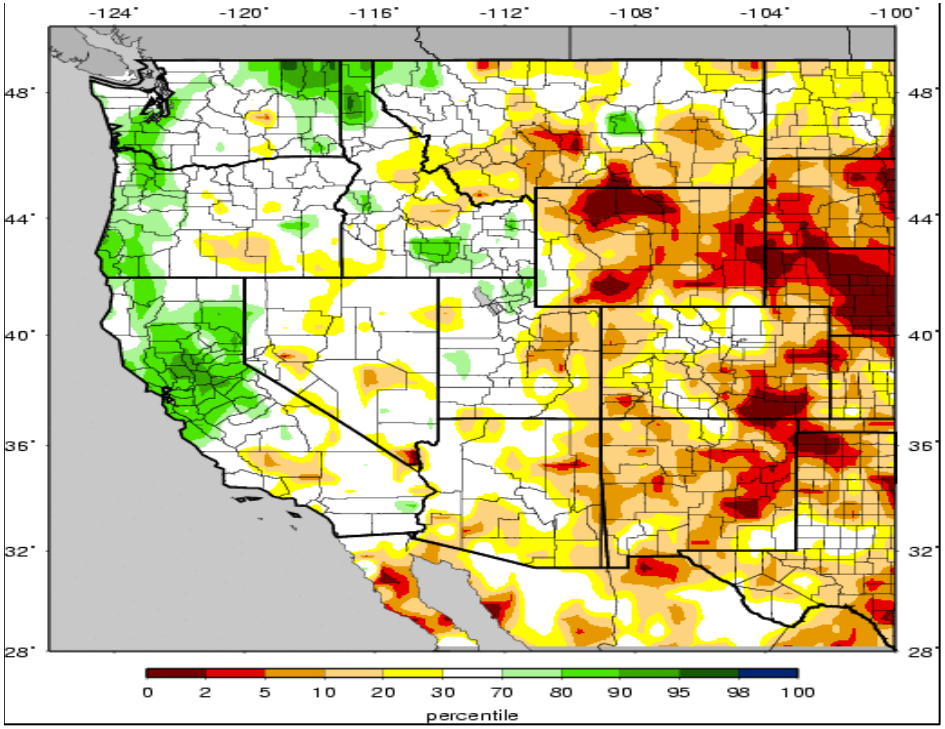
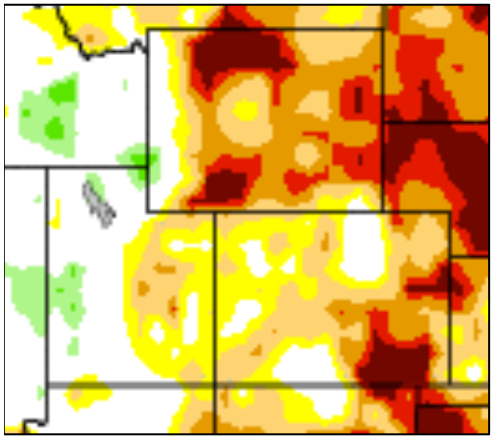


Fig. 7: VIC modeled soil moisture percentiles for the western U.S. as of January 6th. The map below combines soil moisture and SWE.



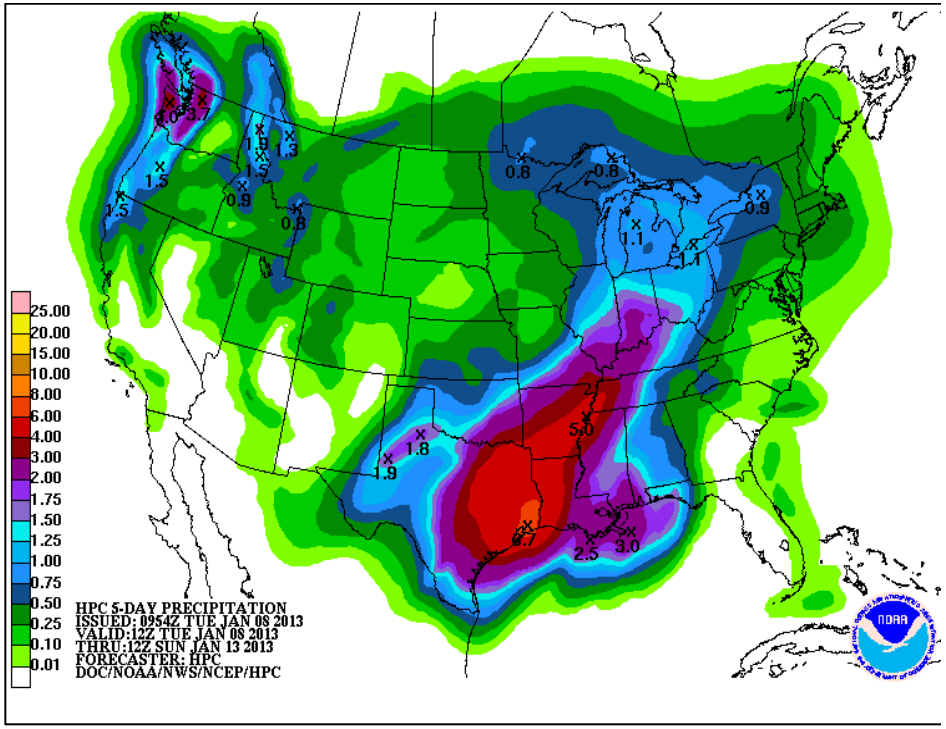
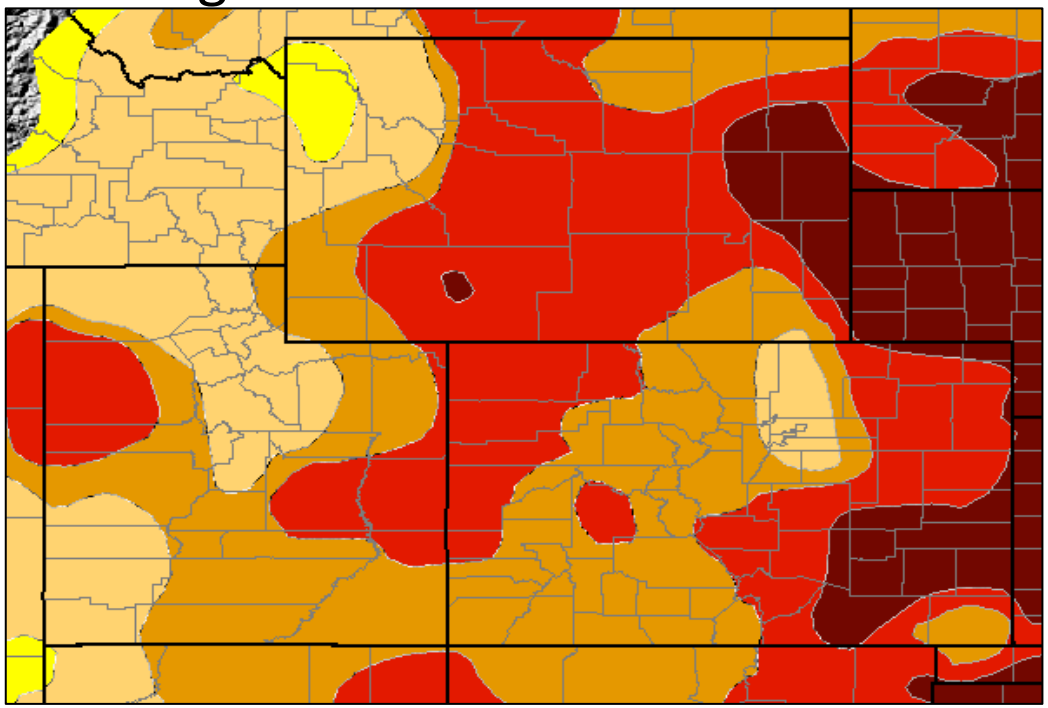
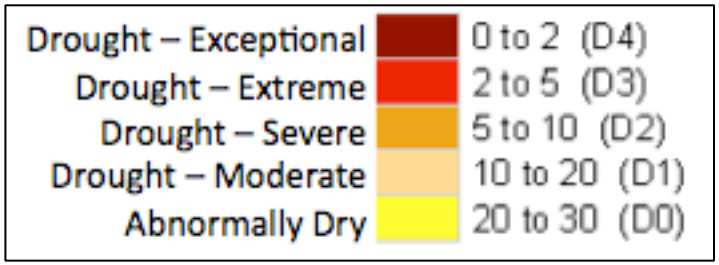


Fig. 8: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion





Drought categories and
their associated percentiles

Fig. 9: January 1st 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). Following a much improved December, the basin saw drier conditions for the first week of January with a slight dip in SWE percents of average, thus improvements should not be made at this time.

Eastern CO: Status quo is recommended for the rest of CO in the current depiction of the USDM map.