NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

February 5th, 2013

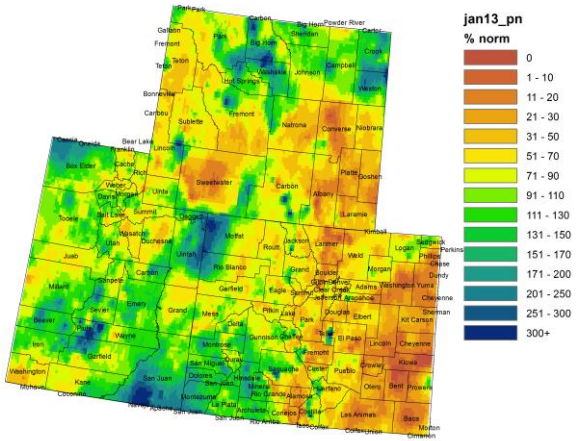


Fig. 1: January 2013 precipitation as percentage of normal.

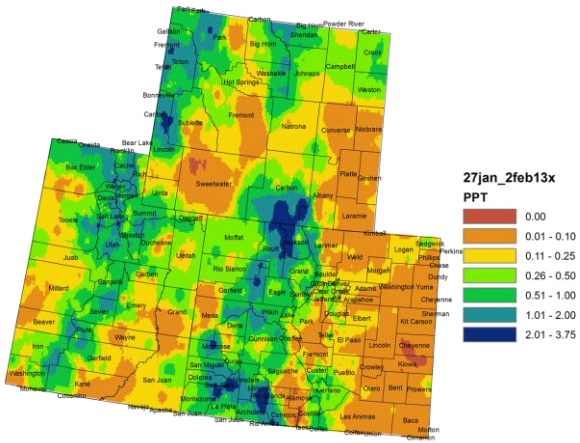


Fig. 2: 7 day precipitation with data ending 3 Feb 2013.

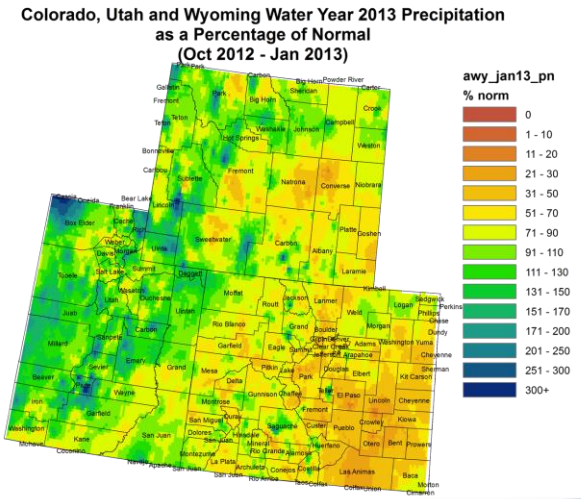


Fig. 3: Water year (Oct12 – Jan13) precipitation as percentage of normal.

Precipitation

The month of January brought above normal precipitation for the four corners and San Juan mountains as well as central and NE Utah and NW Colorado (Fig. 1). NW Colorado and NE Utah saw over 150% of normal while the San Juan and parts of the Gunnison basin received over 100% of normal, with San Juan county, Utah reporting over 150% of normal. The northern and central mountains in CO as well as east of the Continental Divide saw below normal precipitation.

Fig. 2 shows the recent 7 day precipitation which brought over 3” of precipitation to Routt and Jackson counties in CO. The precipitation in the San Juan mountains over this period fell in January and is described in Fig .1. Precipitation over the 7 day period was widespread west of the divide with most areas picking up more than 0.50” with the exception of some valley locations. East of the divide in CO remained dry. SE Utah and SW Wyoming were also dry over the recent 7 day period.

Fig. 3 shows the water year precipitation percentage of normal through the end of January. Much of Colorado remains below normal on this time frame, in particular the Arkansas and Republican basins which are 50% of normal or worse. The Green and Duschesne River basins are reporting in the normal or above categories for the water year.

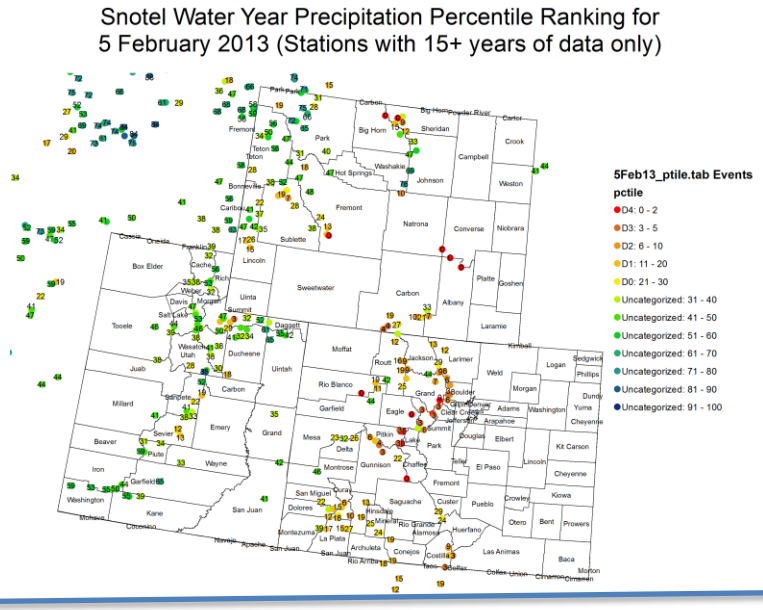


Fig. 4: WYTD SNOTEL precipitation percentiles (50th percentile is median, 30th percentile is D0 drought category) as of February 5th.

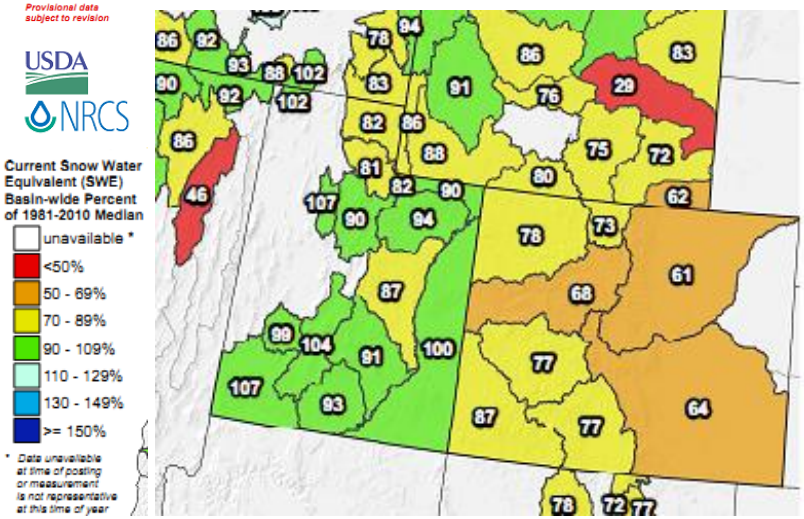


Fig. 5: Basin-averagd snow water equivalent as a percent of normal (median), as of January 29th.

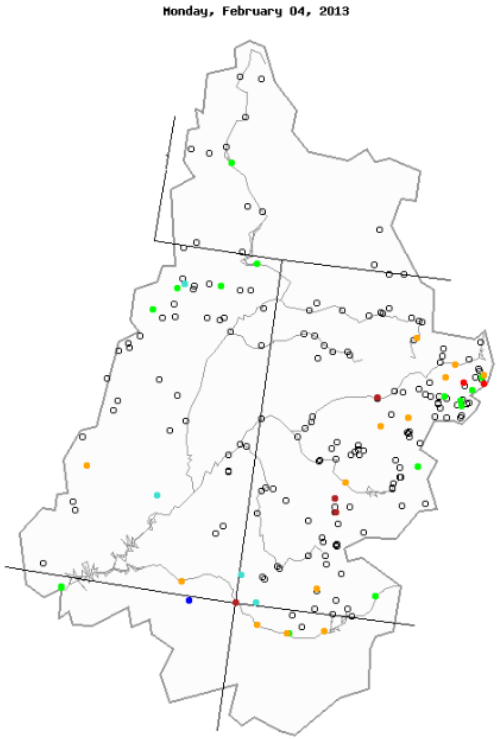
Snowpack

Water-year-to-date SNOTEL precipitation percentiles in the UCRB are highly variable depending on location (Fig. 4). Along the Wasatch and Uintah ranges in UT, percentiles are in the normal range, 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 sites in Grand, Summit, Eagle, Pitkin, Lake and Gunnison counties reporting below the 5th percentile. Percentile rankings in southwest CO in the San Juan mountains have recovered somewhat, now reporting in the teens and 20s. The Sangre de Cristo range in SE Colorado is also reporting below the 10th percentile at several sites in Costilla county.

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. 5). Sub-basins in western CO are all between 68% and 87% of normal snowpack with the Colorado basin reporting the lowest. The South Platte and Arkansas basins in CO are in the 61-64 % of normal range.

Streamflow

As of February 5th, about 12% of the gages in the UCRB are reporting below the 25th percentile (Fig 6). The lowest flows are being recorded on headwater streams in the Colorado basin and Uncompahgre basin. Below normal flows (10th-24th percentile) are also being recorded on the San Juan river. The gages reporting in Utah and Wyoming are mainly in the normal category. Figure 7 shows streamflow conditions for Colorado in order to highlight conditions on the eastern Plains. Flows on the Arkansas and Republican rivers are mainly in the below to much below normal range with a few sites setting record low flows. The South Platte tributaries are quite variable with a few sites (Cache La Poudre and Big Thompson) recording much below normal.



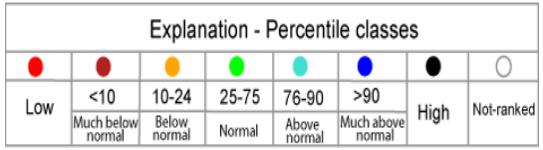


Fig. 6 (left): 7-day average discharge compared to historical discharge for February 5th for the UCRB.

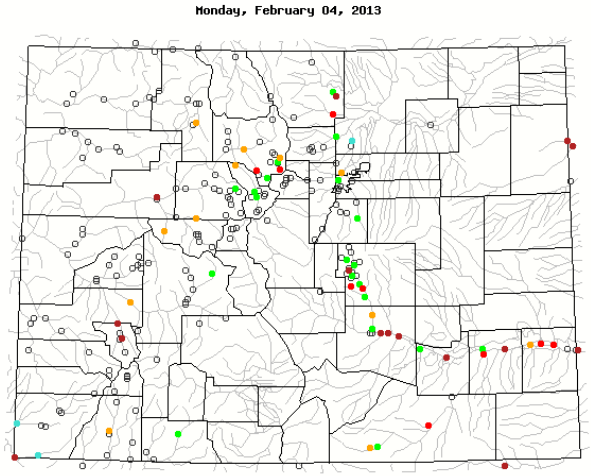


Fig. 7 (right): 7-day average discharge compared to historical discharge for Feb. 5th for Colorado.

USGS

USGS

Water Supply and Demand

For the past week, figure 8 shows temperatures in the western part of the UCRB have been below normal, with NE Utah reporting much below normal temperatures in the range of 4-10 degrees below normal. The Green River basin in SW Wyoming saw above normal temperatures while the eastern plains in Colorado saw normal to slightly above normal temperatures.

The 6 month standardized precipitation index (Fig. 9) is indicating abnormally dry conditions in eastern Utah and western Colorado with valley locations reporting slightly drier conditions with SPI's in the -1 to -1.5 range. Areas along the divide in Colorado in Grand, Summit, Clear Creek, Gilpin, Jefferson and Northern Park counties are reporting SPI's less than -1.5. The eastern plains of Colorado continue to see low SPI values. The Arkansas, South Platte and Republican basins are also mainly reporting below -1.5 with several locations below -2. (-2 SPI is equivalent to D4).

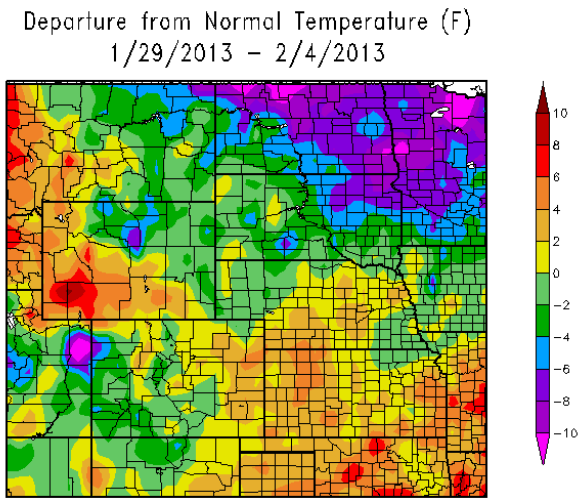
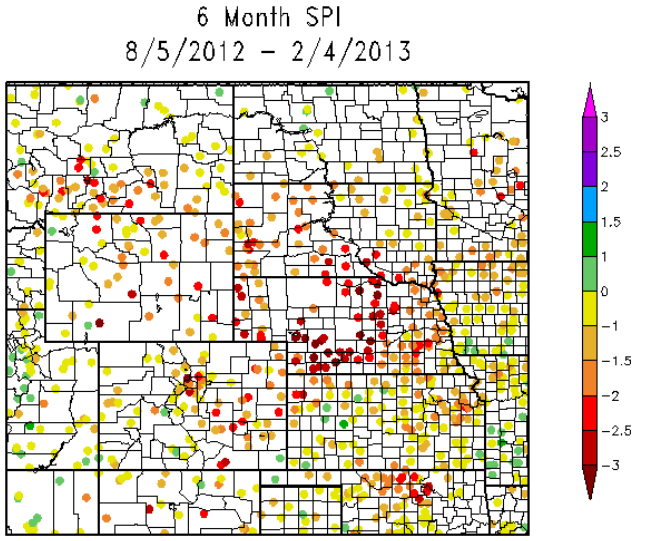


Figure 8 (left): 7 day temperature departure from normal.

Figure 9 (right): 6 month standardized precipitation index.



Precipitation Forecast

The UCRB is currently underneath dry northwest flow aloft ahead of a weak upper level disturbance now coming onshore. This feature is anticipated to traverse the area throughout the day on Wednesday, however limited moisture will limit precipitation to scattered snow showers over the central mountains of CO. Wednesday's disturbance quickly exits the area and attention then turns to the next Pacific trough set to arrive this weekend. Forecast models have been consistent in forming a strong area of low pressure over the Great Basin, but are still in disagreement on the exact location and timing of the feature. Either way, moisture is expected to remain somewhat limited west of the Continental Divide with this storm. Poor moisture combined with the lack of strong westerly winds with this storm will result in only moderate amounts of 0.25 to 0.5 inches of liquid accumulation through Sunday, with some totals exceeding 0.75 inches over the highest terrain. Light snow may persist over the basin through the weekend as the system slowly moves onto the plains, where the presence of Gulf moisture will lead to the potential of a significant winter storm along the Front Range. Figure 10 shows the 7 day quantitative precipitation forecast.

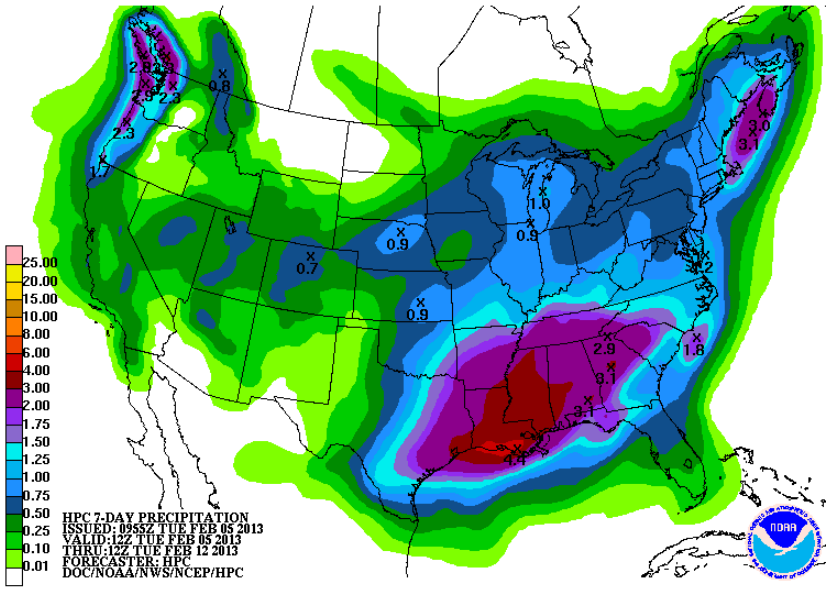
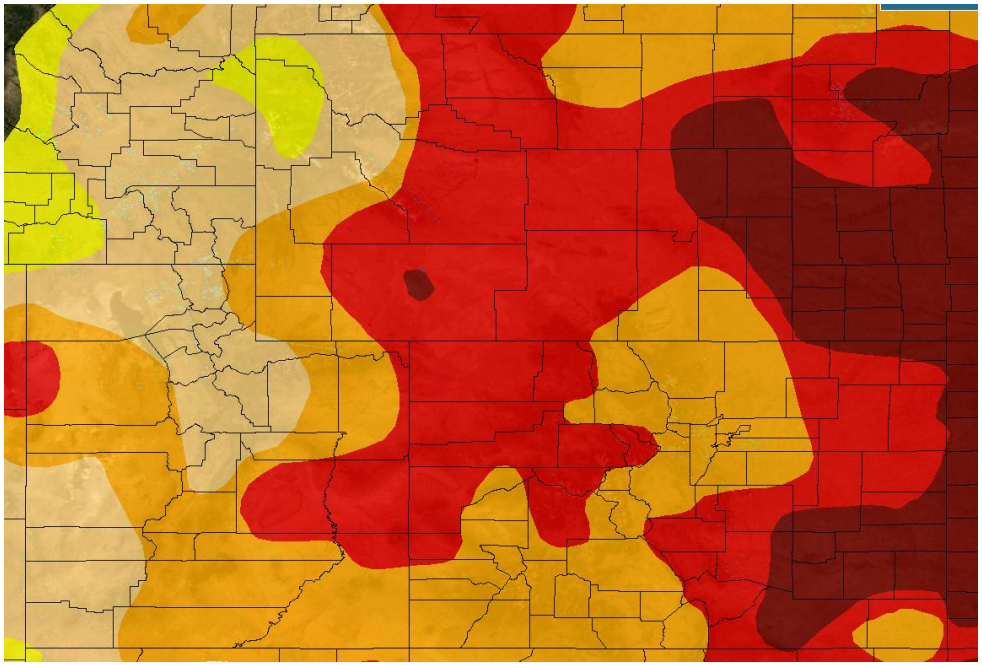


Figure 10: 7 day quantitative precipitation forecast

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

Figure 11: Current U.S. Drought Monitor released January 29th.

UCRB: Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 11). 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: Expansion of the D4 to more closely match longer term SPI indicators is recommended. The 6 and 12 month SPI's on the plains are reporting -2 and below. The streamflows in the Arkansas river and Republican rivers are below the 5th percentile at many locations. Water supplies for the summer irrigation in these basins are likely to be limited due to below normal snowpack that has only a 10% chance of recovering to normal (based on SnoTel non-exceedence projections in Fig 13).

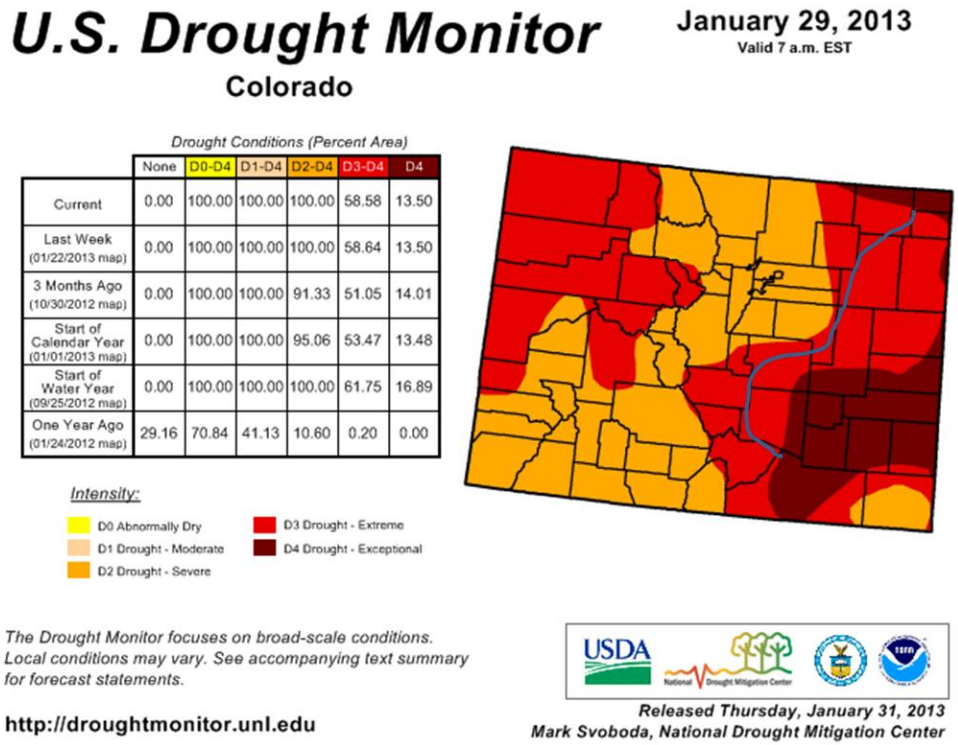


Figure 12: Suggestion expansion of D4 in eastern Colorado.

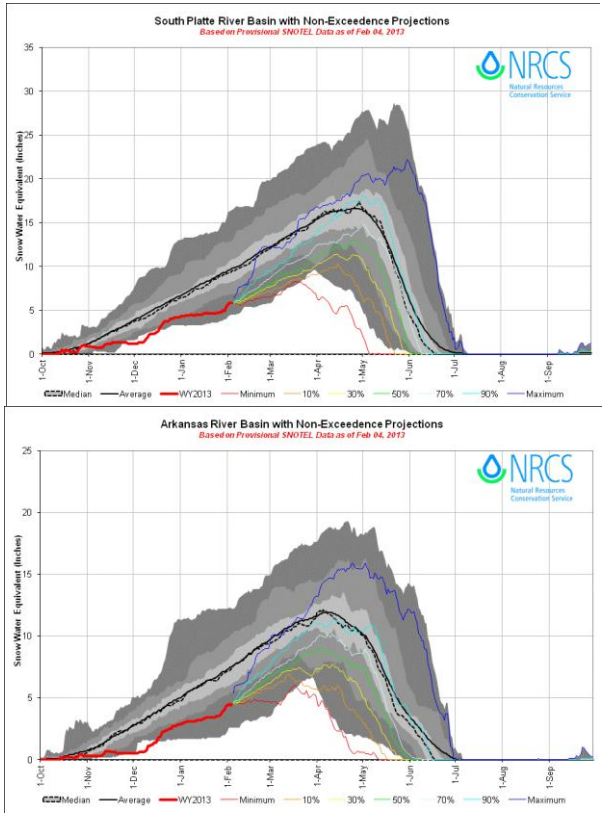


Figure 13: South Platte (above) and Arkansas (below) snow water equivalent non exceedence projections.