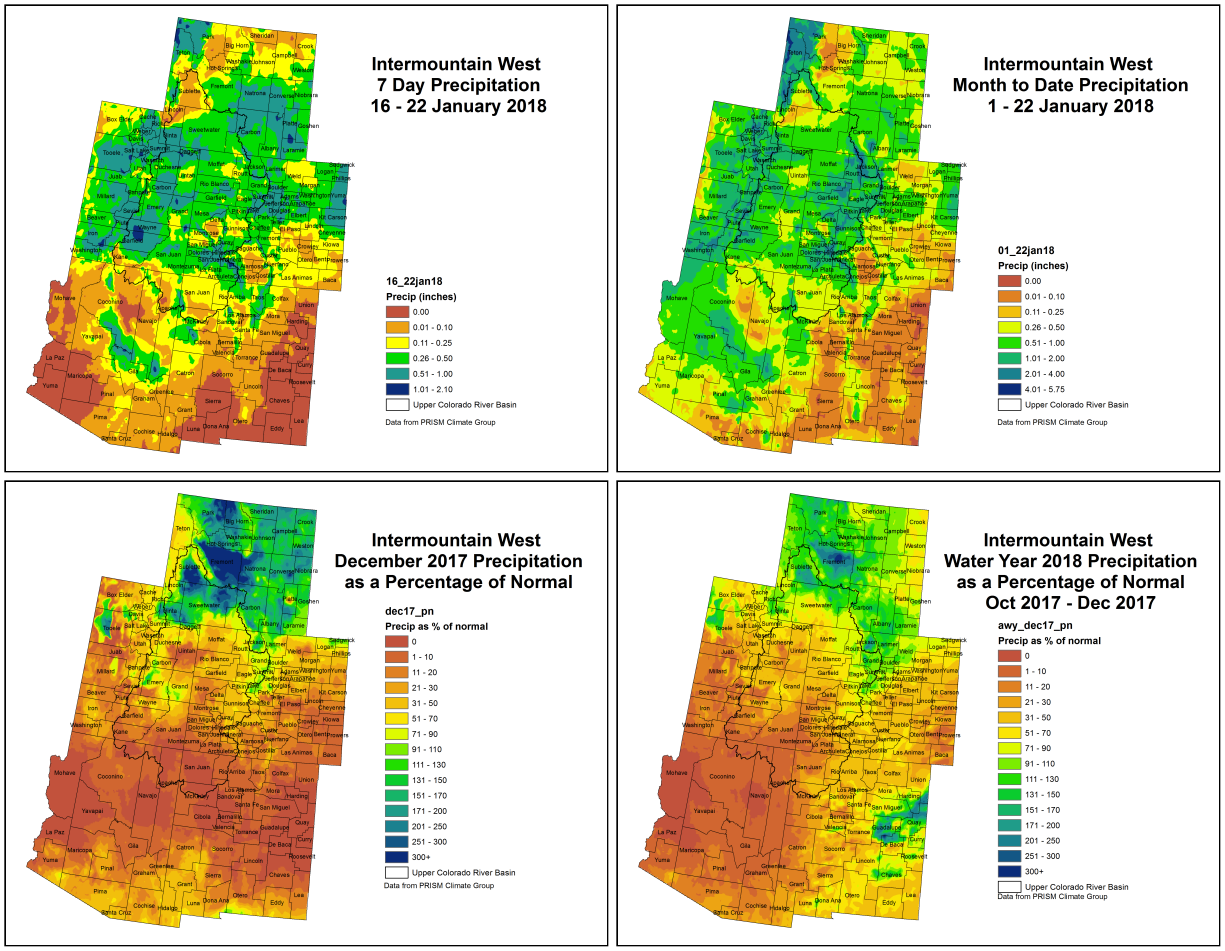
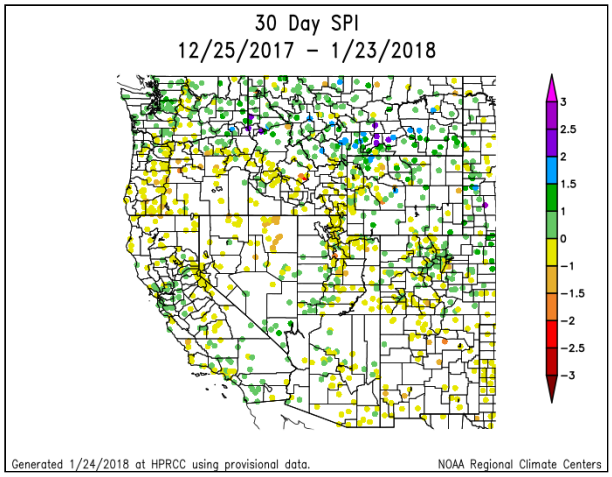
NIDIS Intermountain West
Drought Early Warning System
January 23, 2018

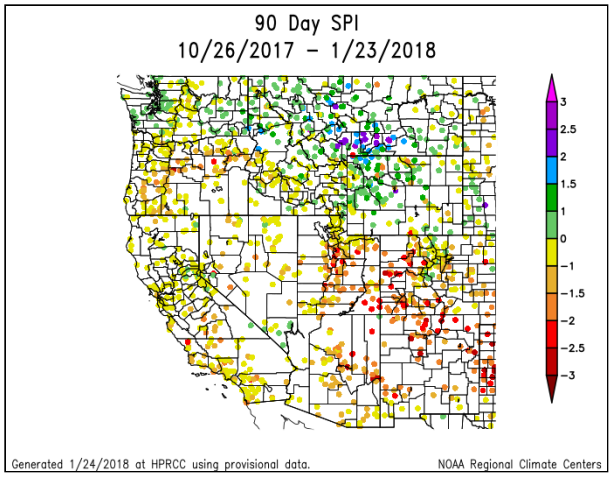
Precipitation

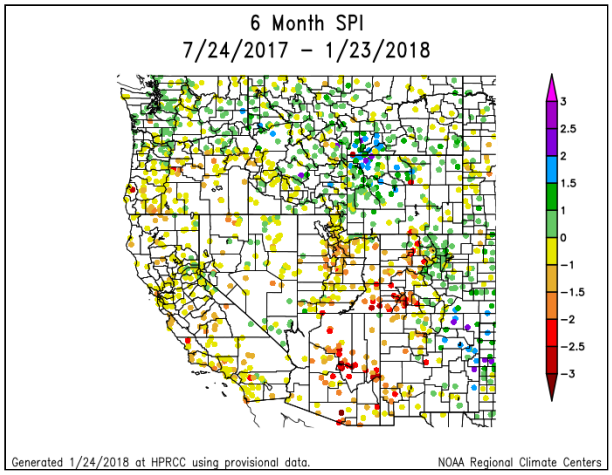


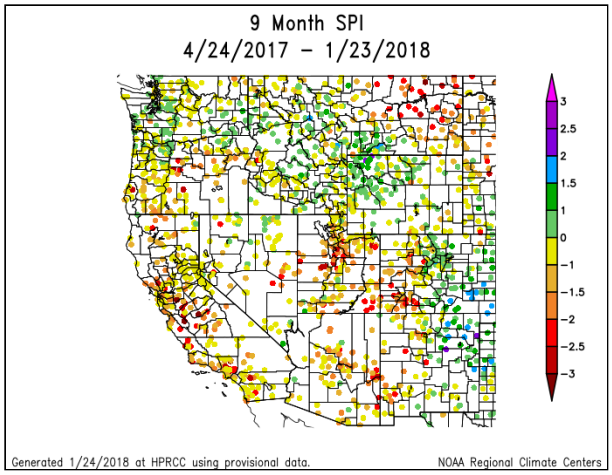
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average; water-year-to-date precipitation as a percent of average.

Standardized Precipitation Index



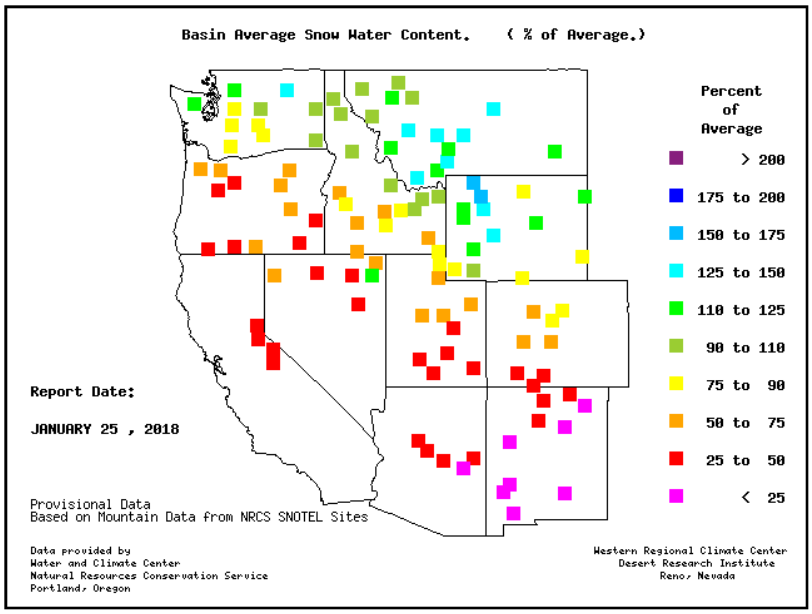






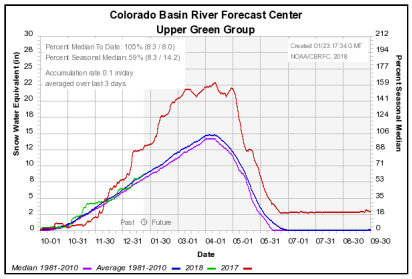
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term conditions. SPI data provided by High Plains Regional Climate Center.

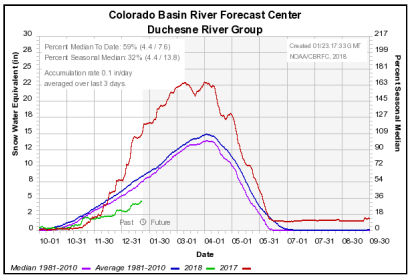
Snotel and Snowpack

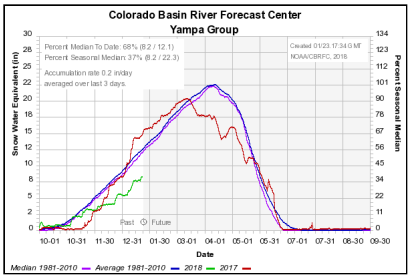


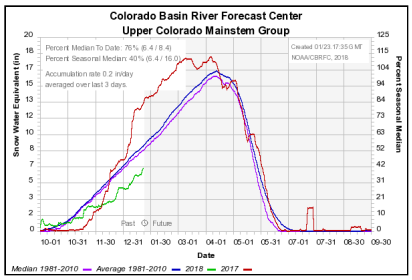
The above image shows sub-basin averaged snow water equivalent accumulations as a percent of average. The images below show accumulated snow water equivalent in inches (green) compared

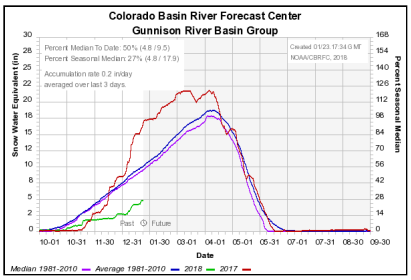
to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).

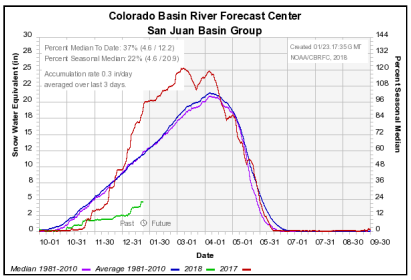




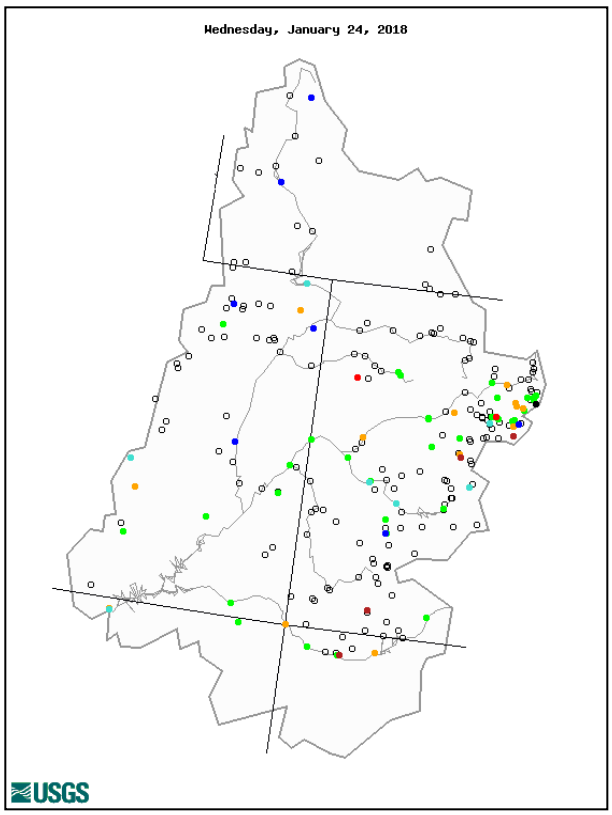




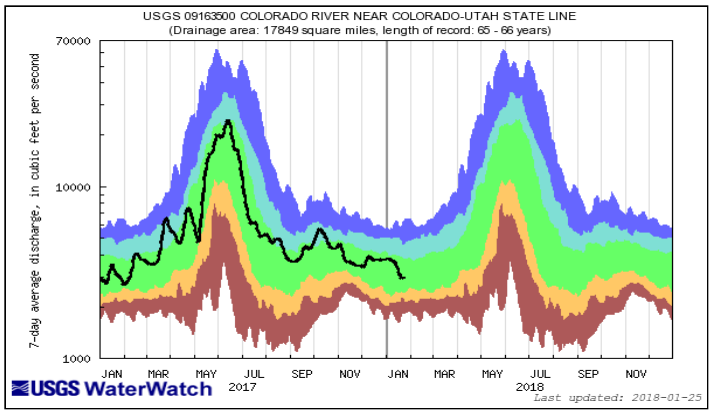


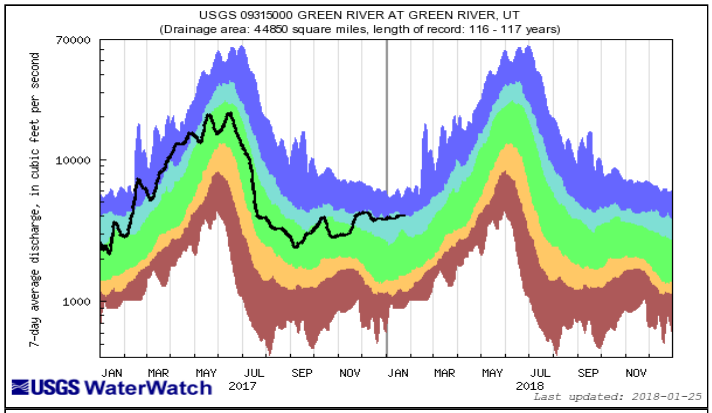


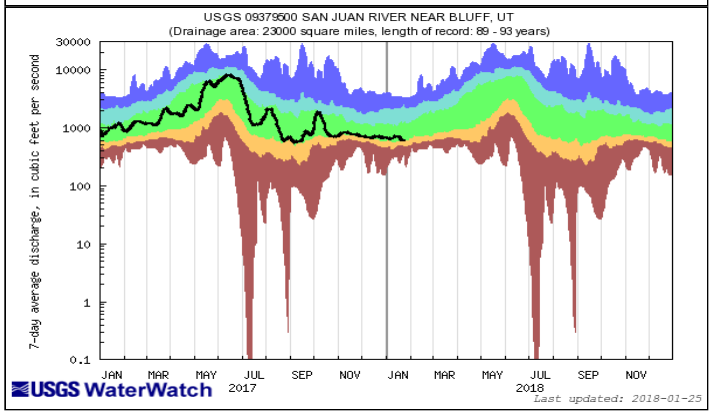
Streamflow



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

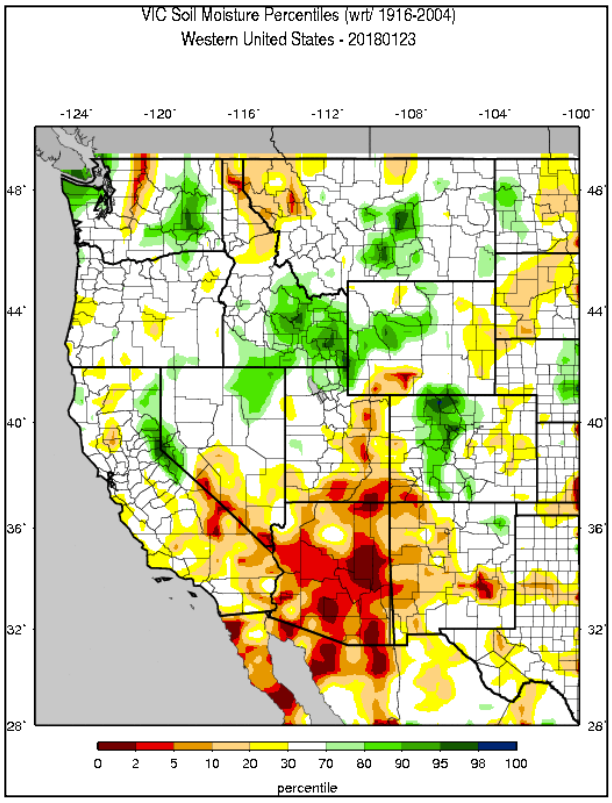


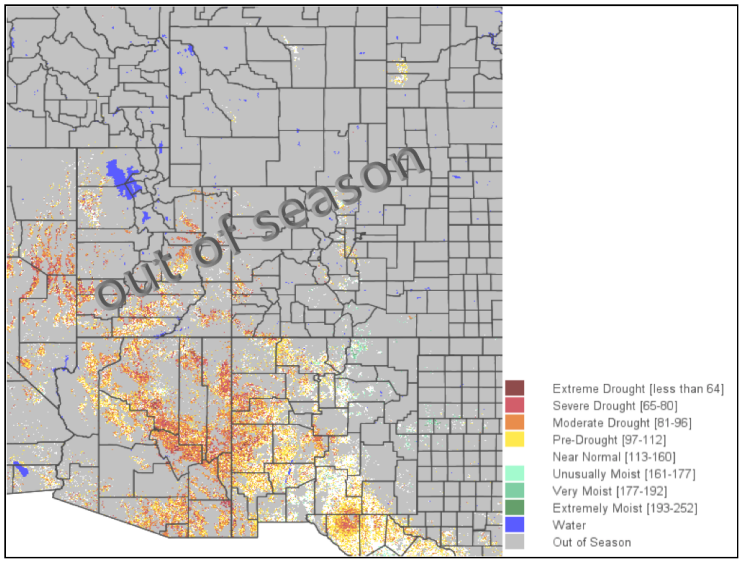




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff, UT. All streamflow data provided by United States Geological Survey.

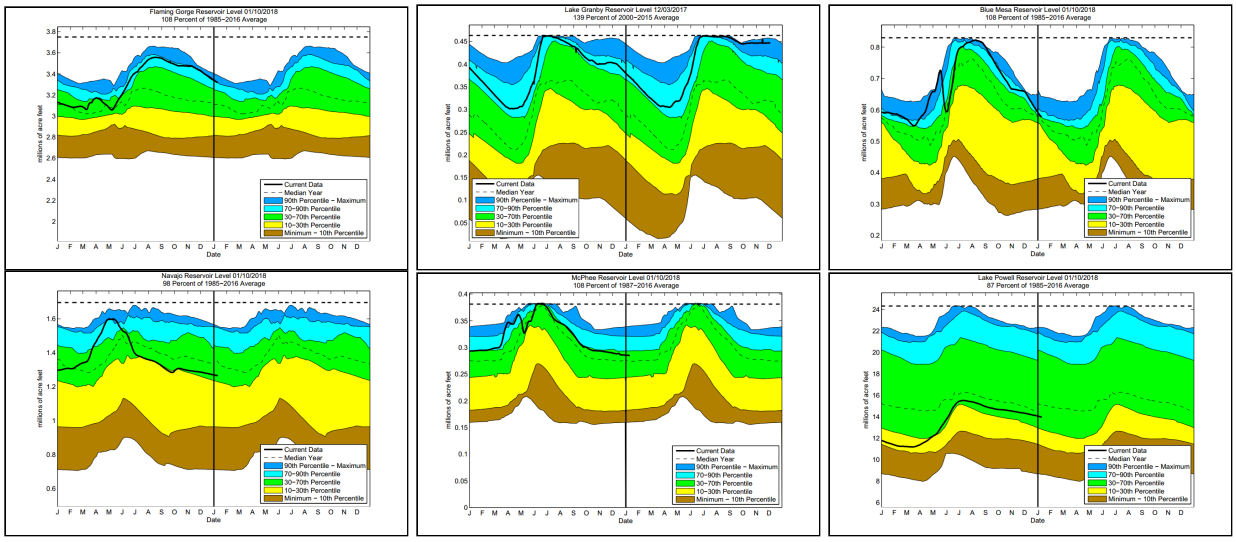
Surface Water



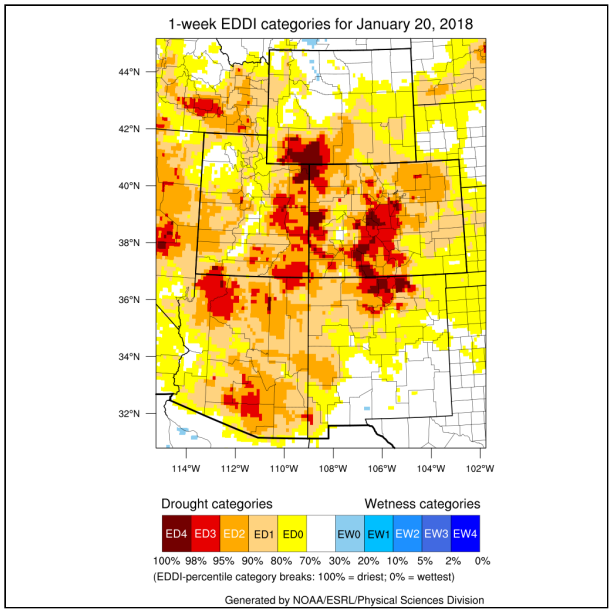


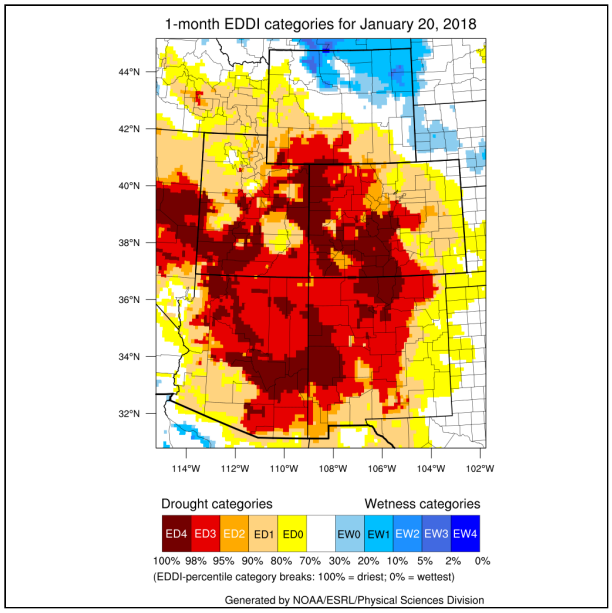
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

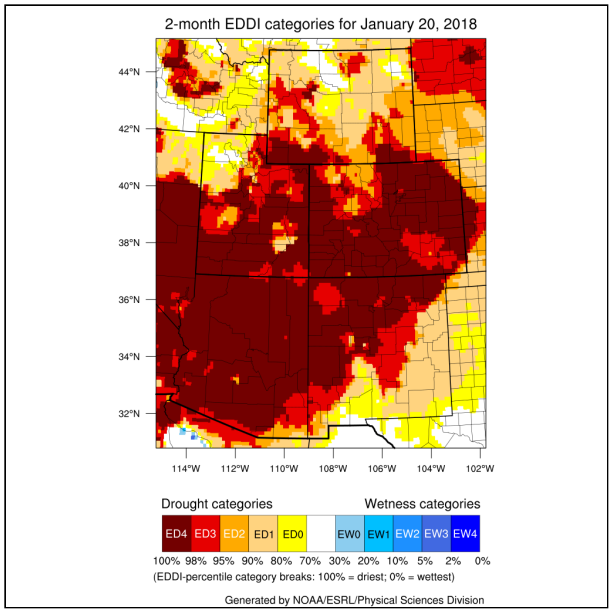
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past 30 years. The data are obtained from the Bureau of Reclamation. Some of the reservoir percentiles don't line up at the new year due to differences in reservoir levels at the beginning of 1985 and the end of 2014. Dead storage has been subtracted. Note: Lake Granby data are obtained from the Colorado Division of Water Resources, and only goes back to the year 2000.

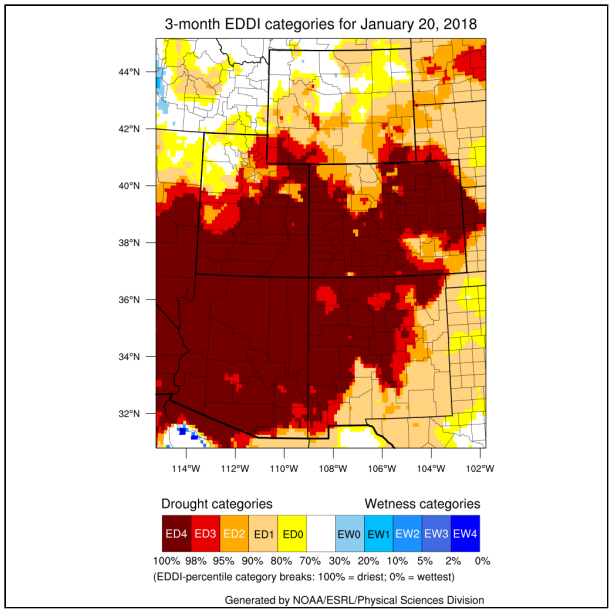


Evaporative Demand



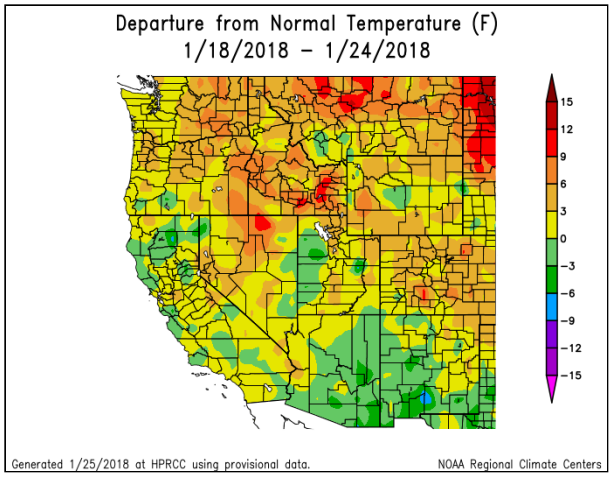


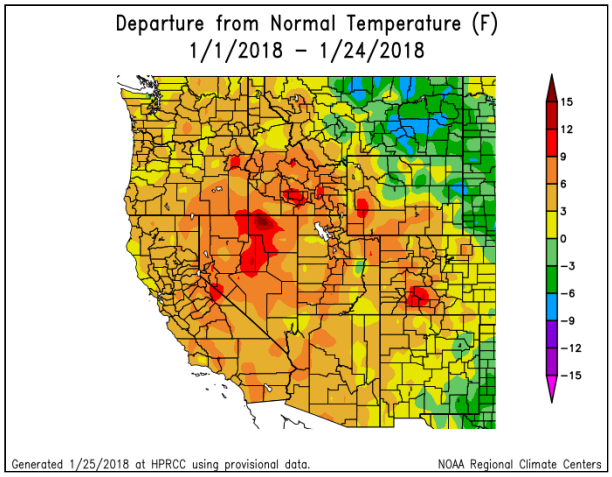




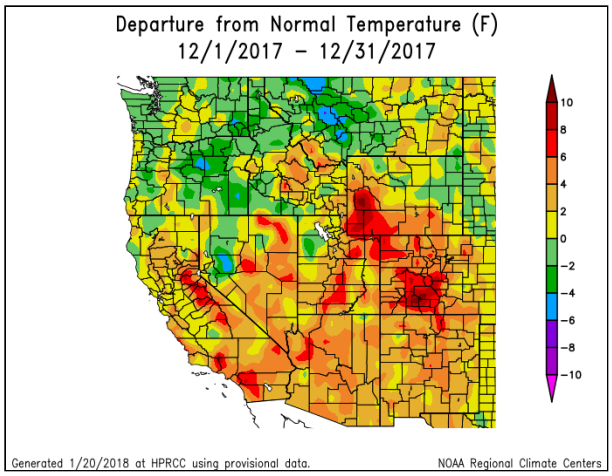
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are in line with the US Drought Monitor's Percentile Ranking Scheme. Data used to generate these maps come from the North American Land Data Assimilation System Phase-2 (NLDAS-2) project, which assimilates observations of temperature, wind speed, radiation, and vapor pressure deficit. The date indicates the last day of the period of record, and the week number indicates the window size for the period of record.

Temperature

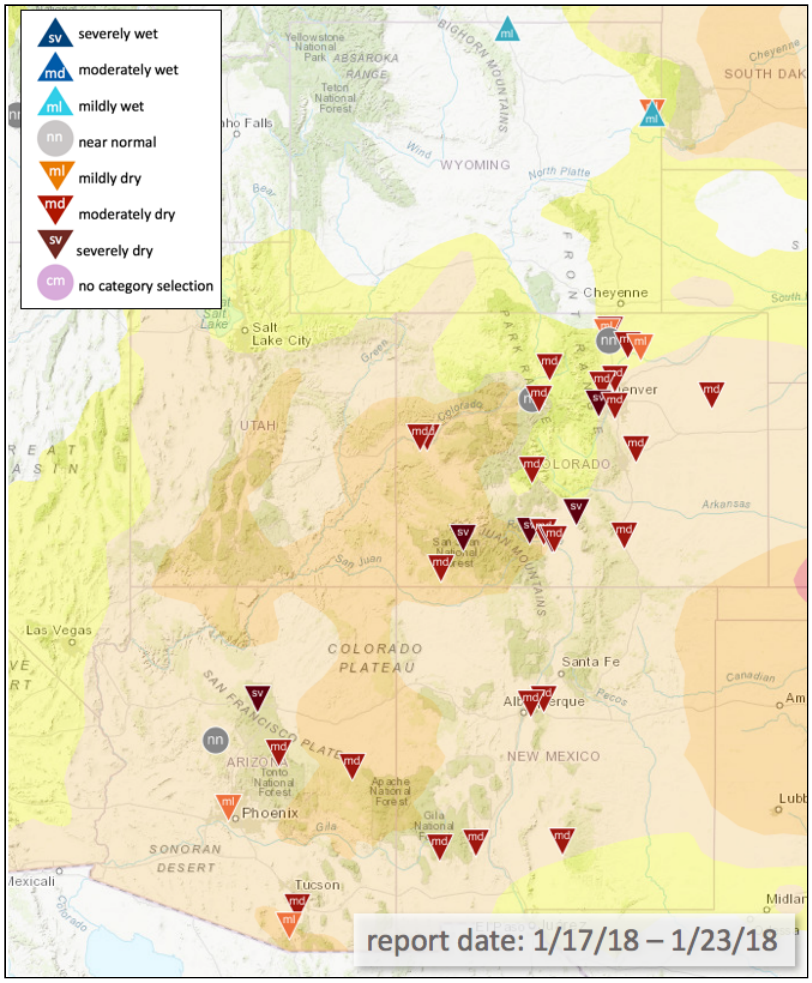




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



Condition Monitoring and Impacts

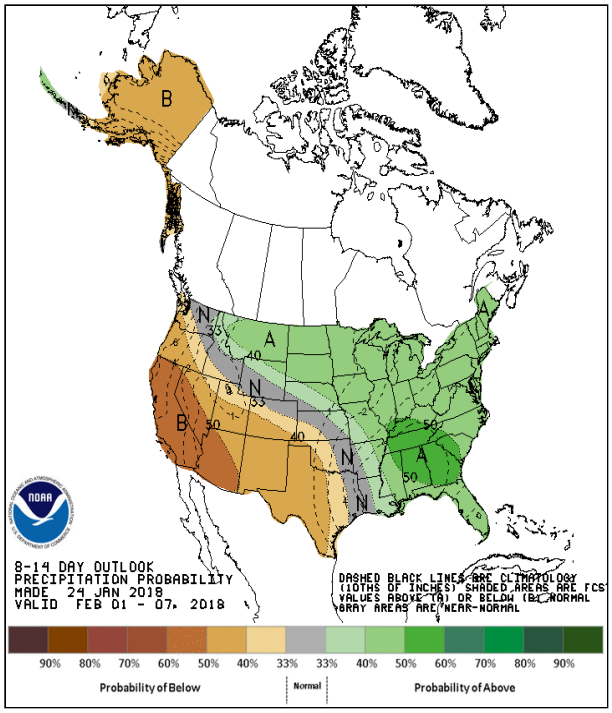


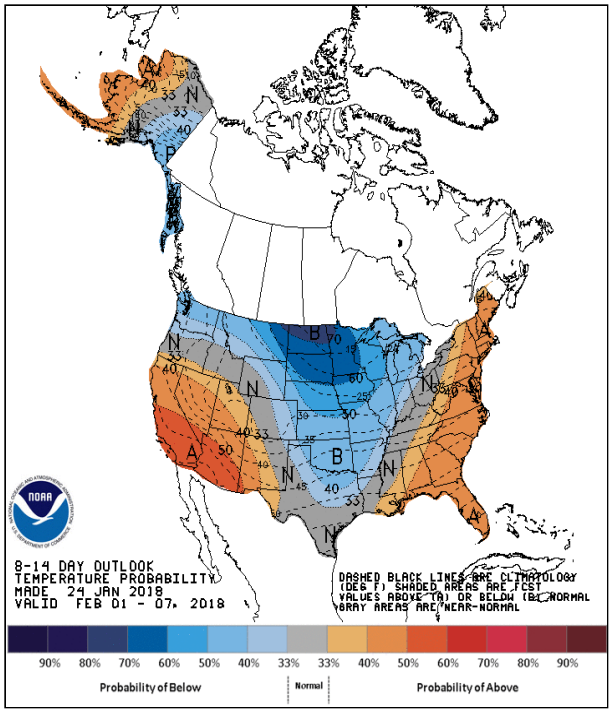
Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

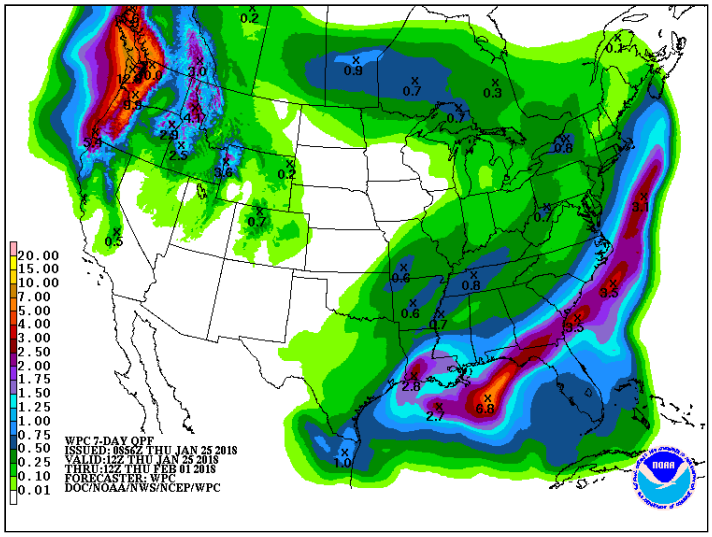
Colorado Water Supply

Water providers are currently reporting that storage is in good condition. Some municipalities are seeing demand that is slightly higher than average, but that could be more due to population increases than climate conditions. Storage will carry them through the summer, but they are more concerned if the next winter is dry. One provider stated they are "concerned and cautious" right now. - Water Availability Task Force meeting, Jan 18.

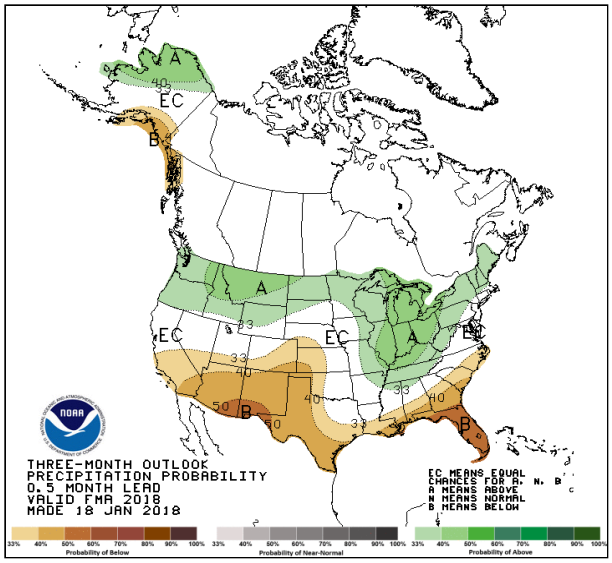
Outlook

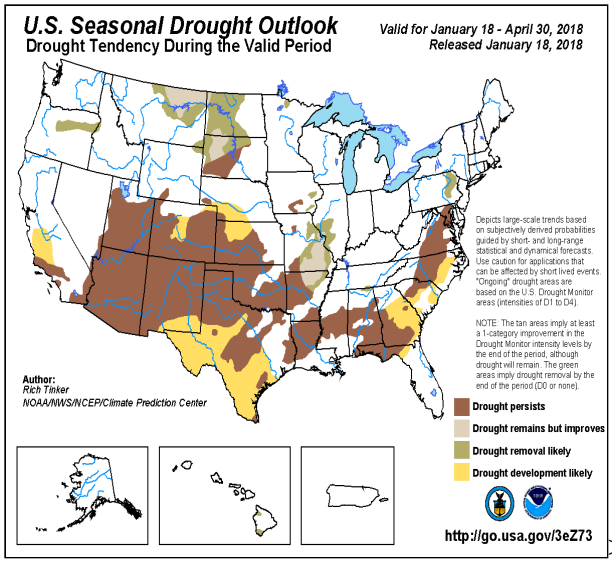




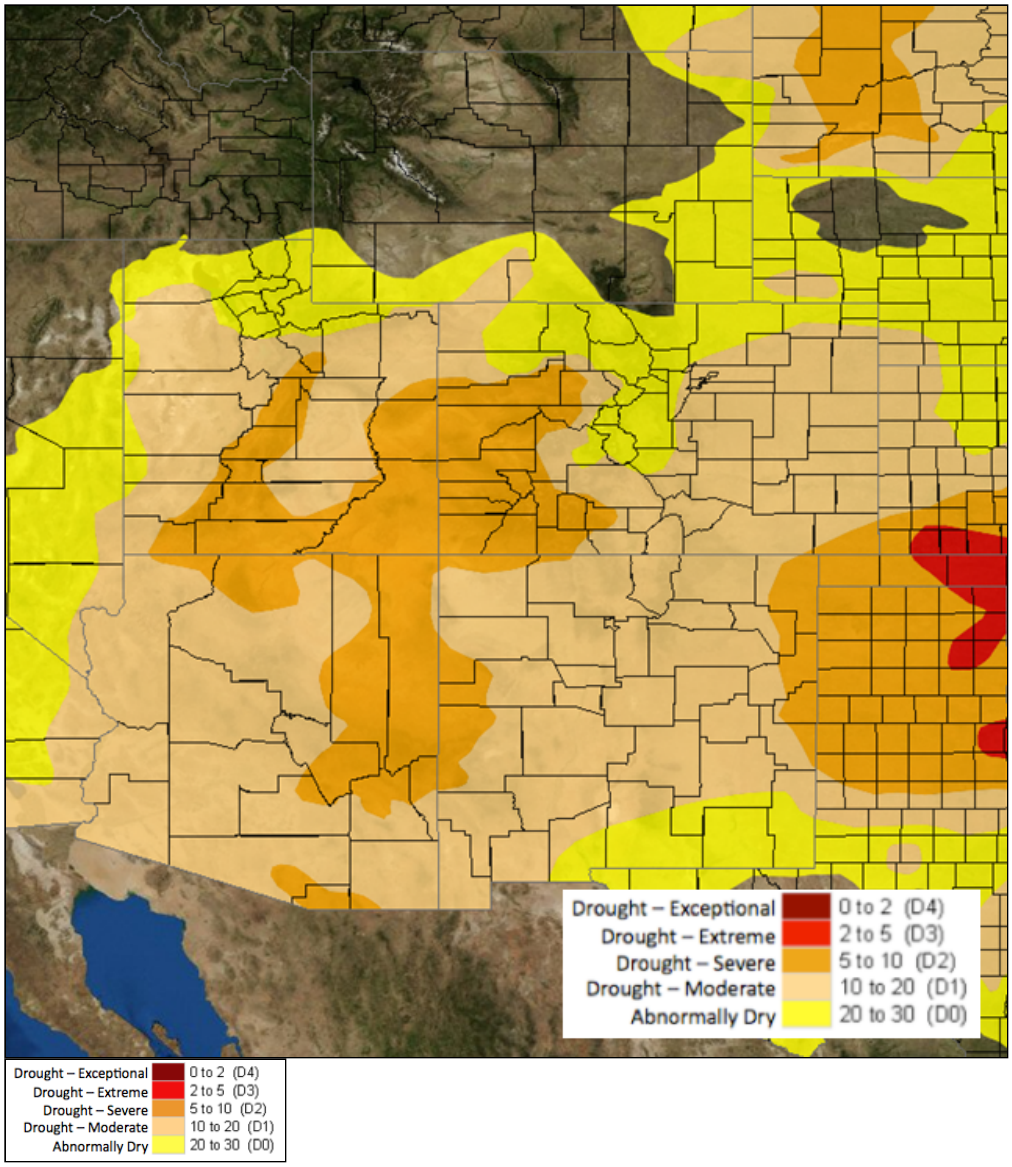


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate Prediction Center, and the bottom right image shows the Climate Prediction Center's most recent release of the U.S. Seasonal Drought Outlook.



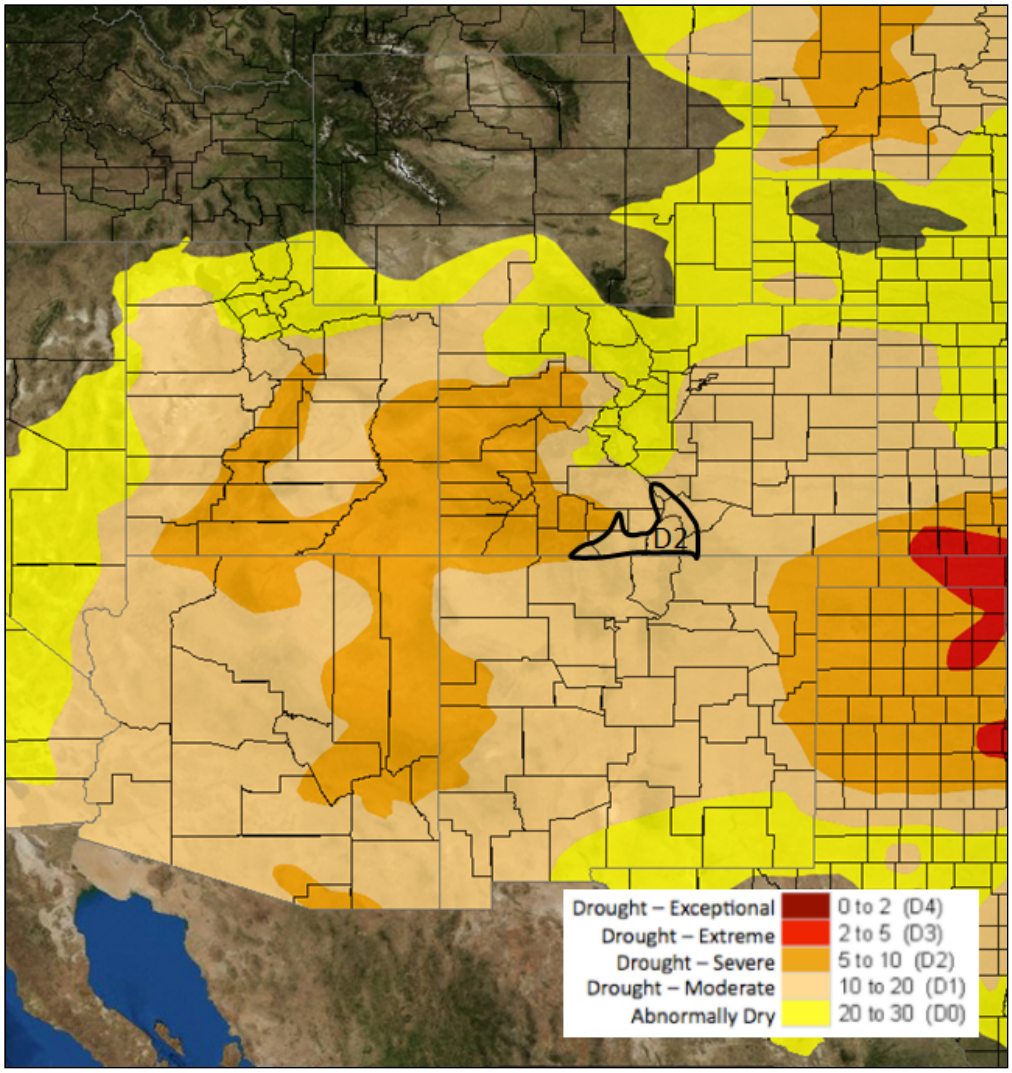


Summary and Recommendations



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)

Above is the most recent release of the U.S. Drought Monitor map for the UCRB region. Below shows the proposed changes for this week, with supporting text.



Summary: January 23, 2018

The past week has been a reprieve from further drought development for much of the Intermountain West, but not a drought breaker. The Upper Colorado River Basin especially had a nice, widespread dose of 0.25-1.00" of precipitation. This was the first one in a long time, however, and does not appear to have improved conditions enough in the basin to warrant stripping any of the D2. When this storm crossed the Continental Divide, it brought blizzard conditions to the plains of Colorado, temporarily closing Interstate 70. This storm brought 0.50-1.00" of moisture to Kit Carson, Yuma, Phillips, and Sedgewick Counties, in some cases doubling average January precipitation over the course of 24 hours. The moisture from this storm was helpful, but once again, deficits over the last several months are still large enough to justify leaving D1 in place across the eastern plains.

Low seasonal snowpack continues to be the biggest issue of concern for the Intermountain West. The Tetons, Bighorns, and Wind River Range in Wyoming are all reporting above average snowpack, thankfully, but the numbers quickly worsen as one travels south. This is a La Nina-like pattern. Numbers in the Four Corners Region, and further south in Arizona and New Mexico are quite concerning. Snowpack in the San Juans and La Sals is about 40% of average for this time of year. The last two weeks snowfall accumulations have been near seasonal averages, but have seemed impressive because prior weeks were so dry.

In many places, like southwest and west Colorado, current reservoir storage should be sufficient for seeing us through one summer following a poor snowpack year. The overall lower than average snowpack in the Colorado River Basin is concerning as Like Mead continues to hold near record low storage.

Current forecast model guidance suggests that the next two weeks are unlikely to yield major improvements to snowpack and precipitation drought. There is a greater than average chance of above average precipitation east of the Continental Divide 8-14 days from now, but not in the Colorado River Basin.

Recommendations

UCRB: It is recommended that D2 be added to Conejos, Costilla, eastern Alamosa, and southeast Saguache Counties. This recommendation is based primarily on very poor snowpack in the Sangre De Cristos, and should align nicely with what is being provided by the New Mexico group. With snowpack being well below average in the San Juans and Sangre De Cristos at this point in the season, runoff-based drought impacts are essentially imminent for the San Luis Valley. Because the valley had a wetter than average summer, we are choosing to hold off on D2 for areas like Alamosa, and Saguache, but we're open to further discussion.

We are starting to entertain conversation of D3 for the high elevations of the San Juan Mountain Range. Wolf Creek Pass has accrued a 10" deficit in precipitation since the start of November. This is not yet an official recommendation for any D3.

Eastern Colorado: It is recommended that D2 be added to the lee side of the Sangre De Cristo Mountain Range in western Custer, Huerfano, and Las Animas Counties. Most SNOTEL sites in this area are showing the lowest snowpack accumulation on record for this point in the cold season.