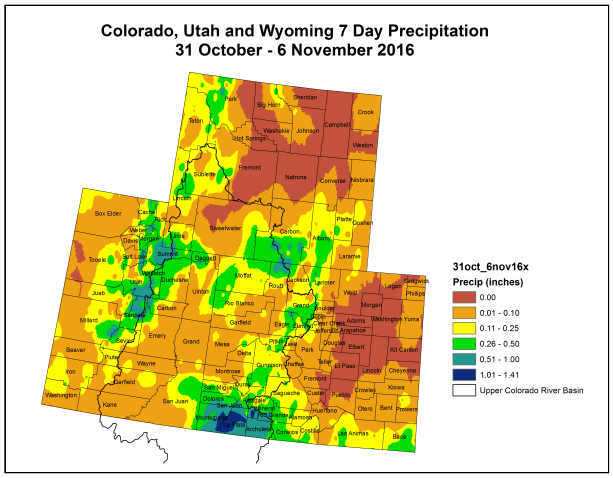
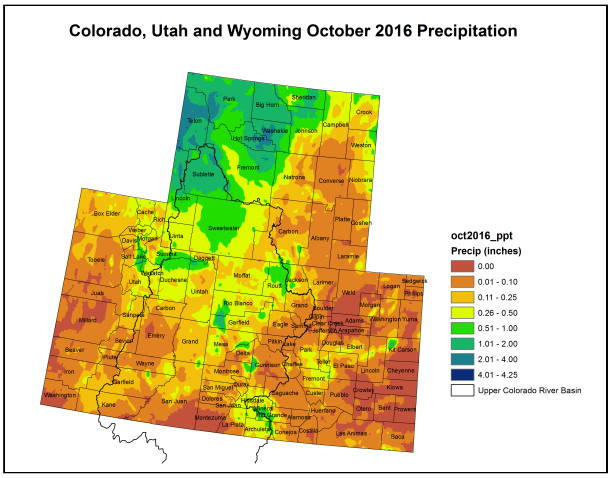
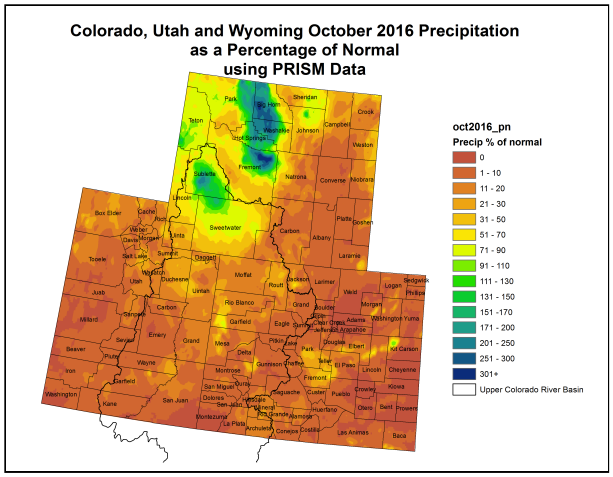
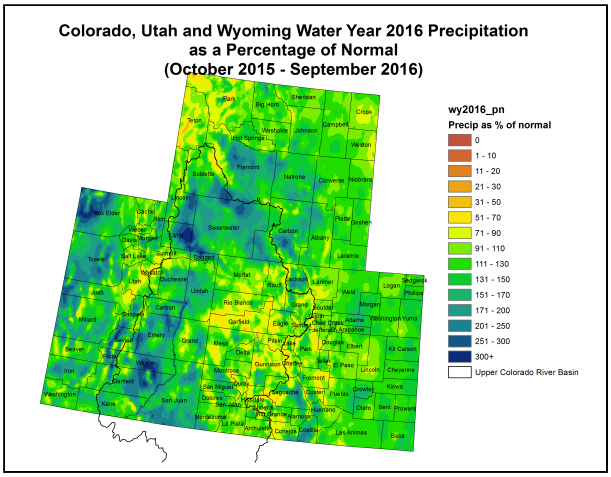
NIDIS Upper Colorado River
Regional Drought Early Warning System
November 8, 2016

Precipitation



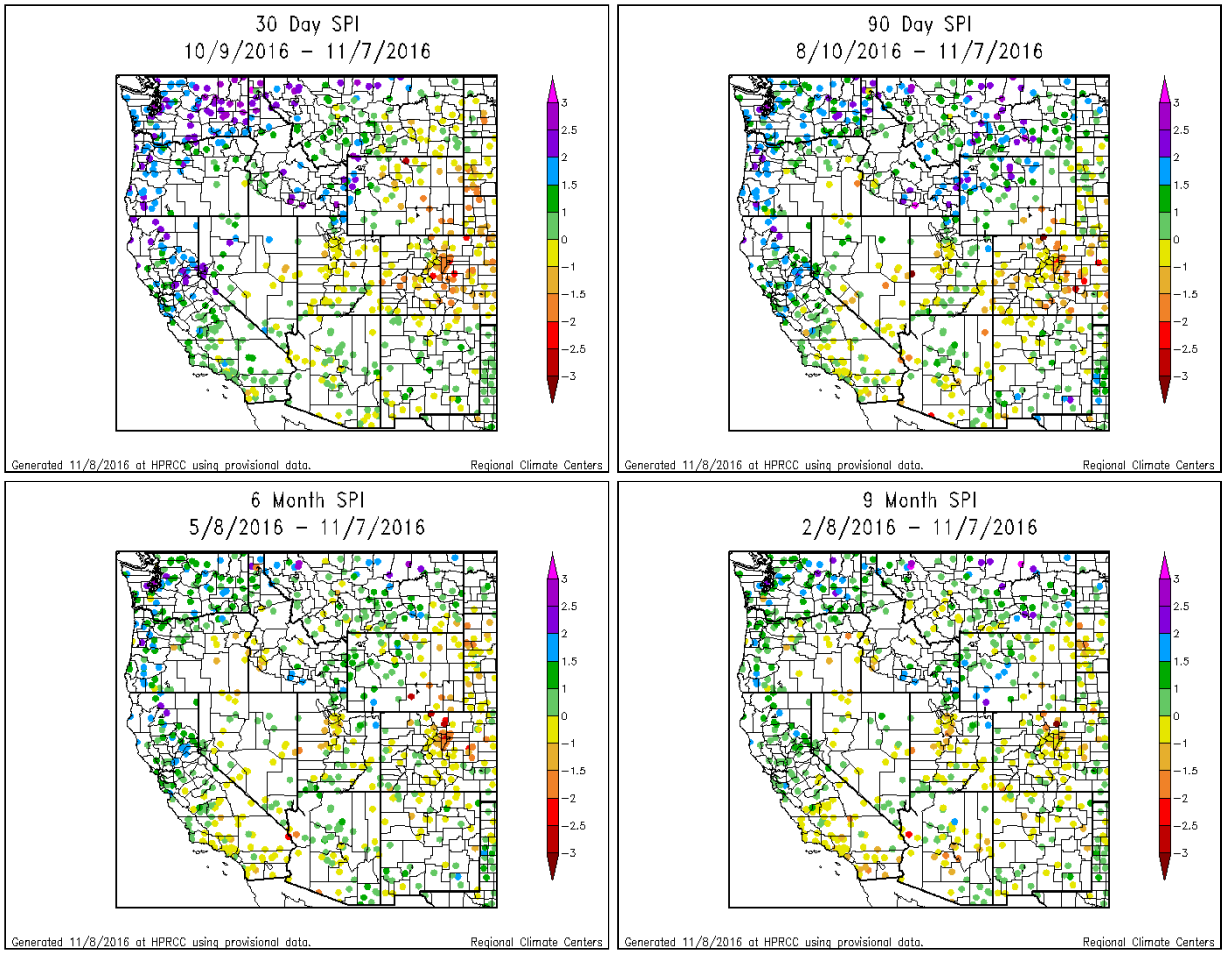






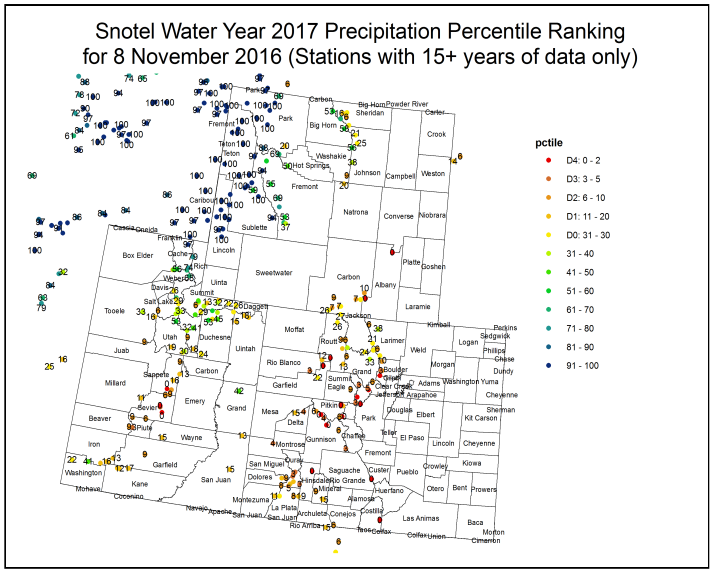
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

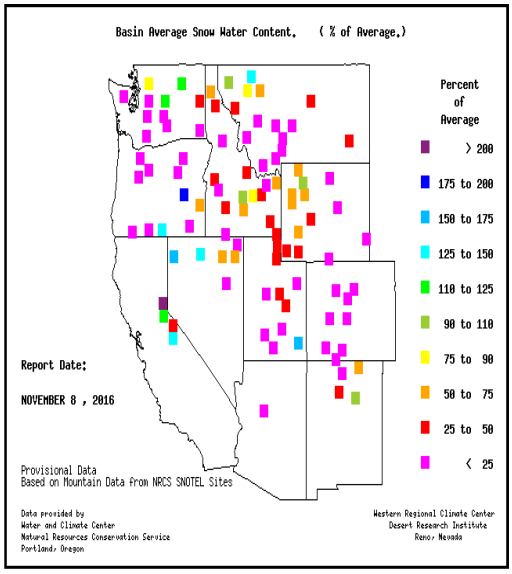
Standardized Precipitation Index



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.

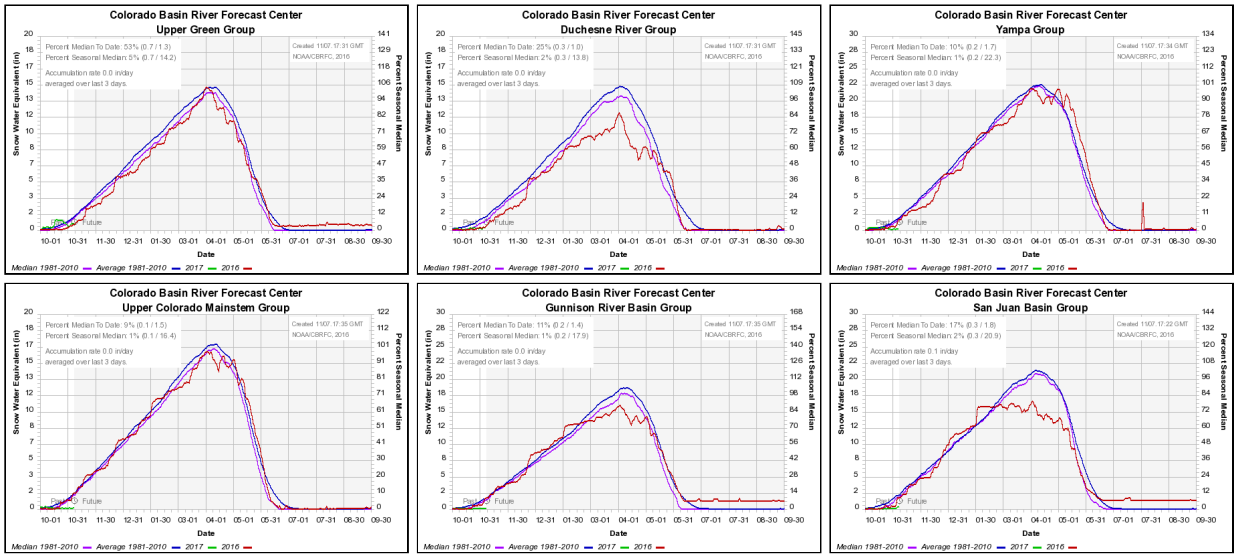
Snotel and Snowpack



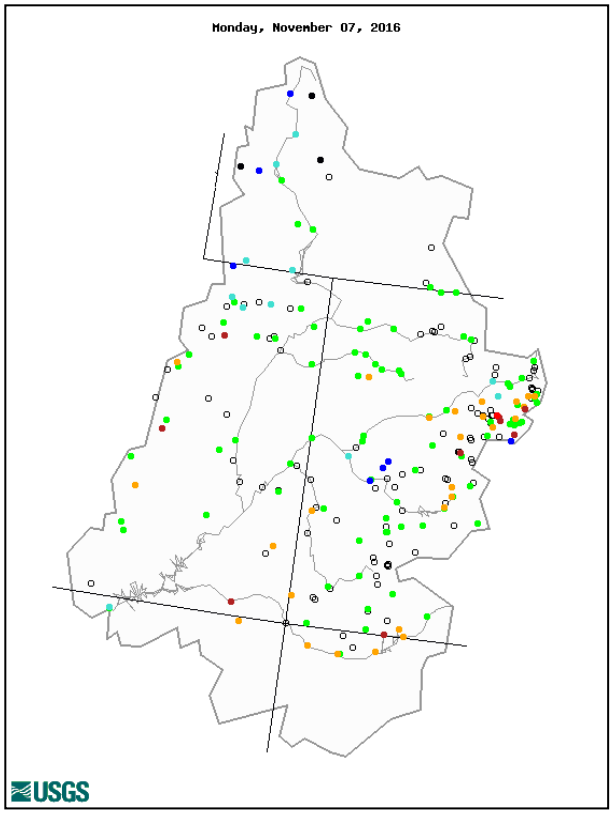


The top left image shows the Natural Resources Conservation Service's SNOTEL water-year-to-date precipitation percentile rankings. The top right image shows sub-basin averaged snow water equivalent accumulations as a percent of average. The images below show accumulated

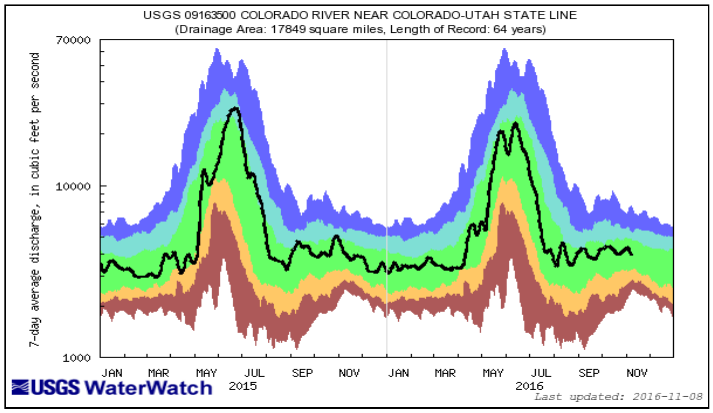
snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).

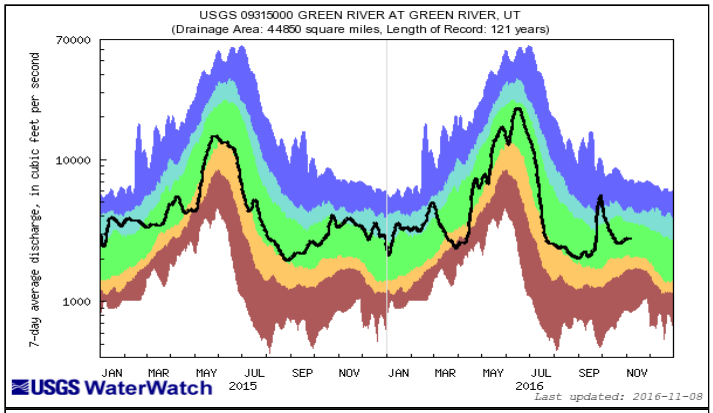


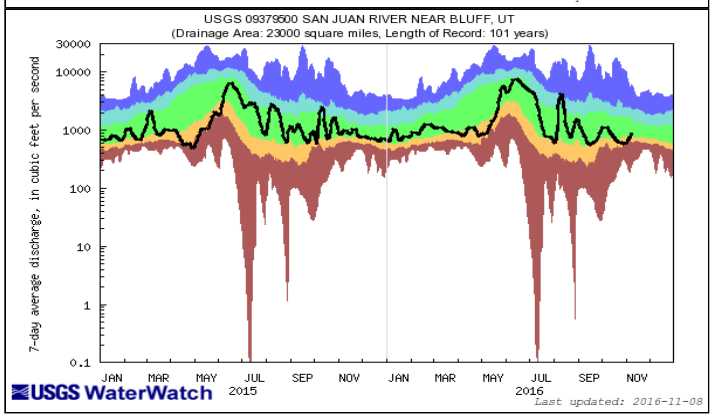
Streamflow



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

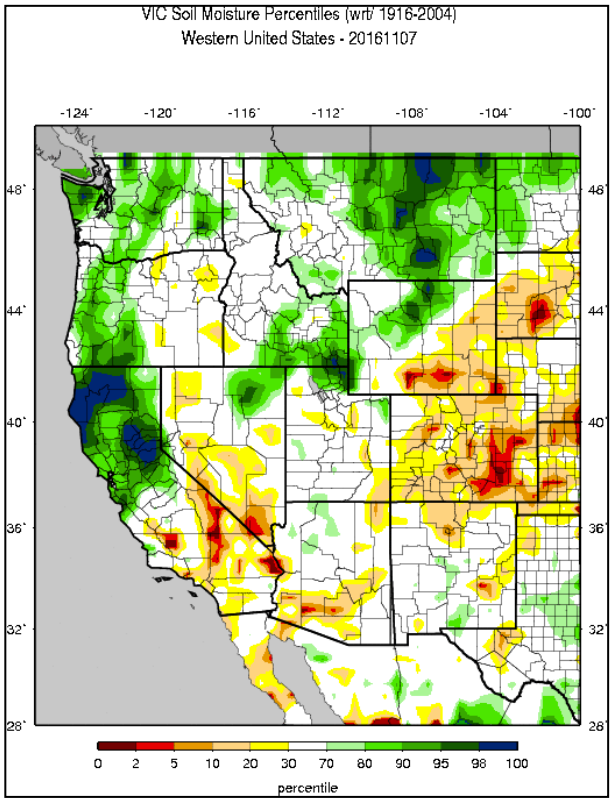


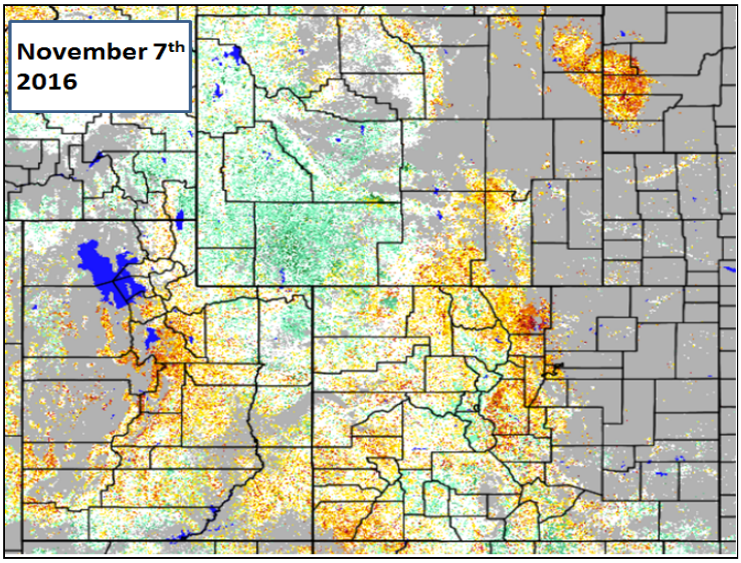




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

Surface Water

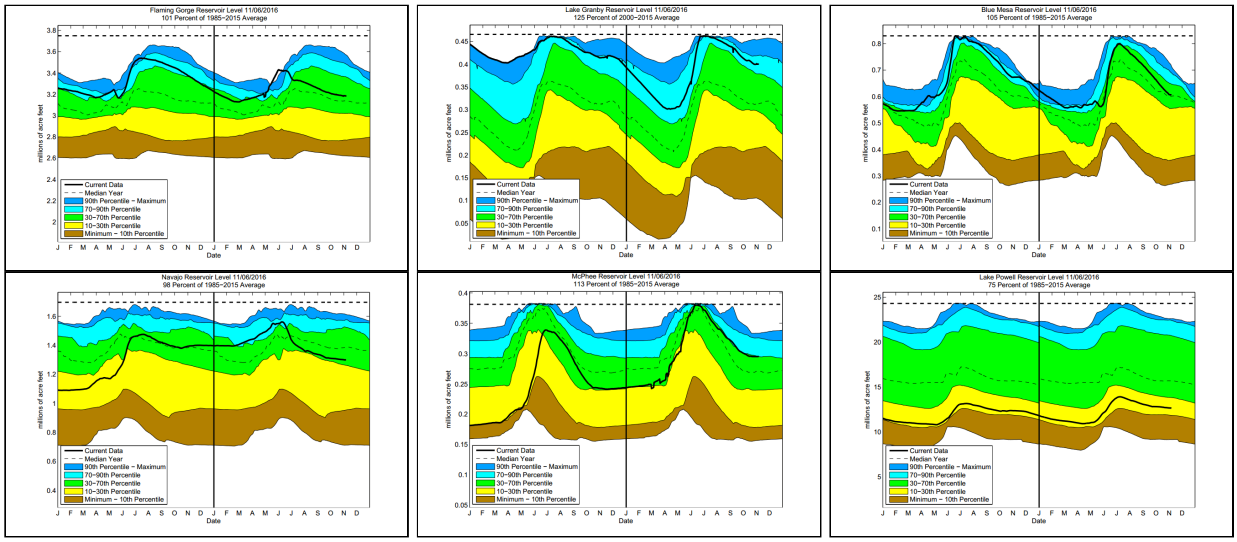




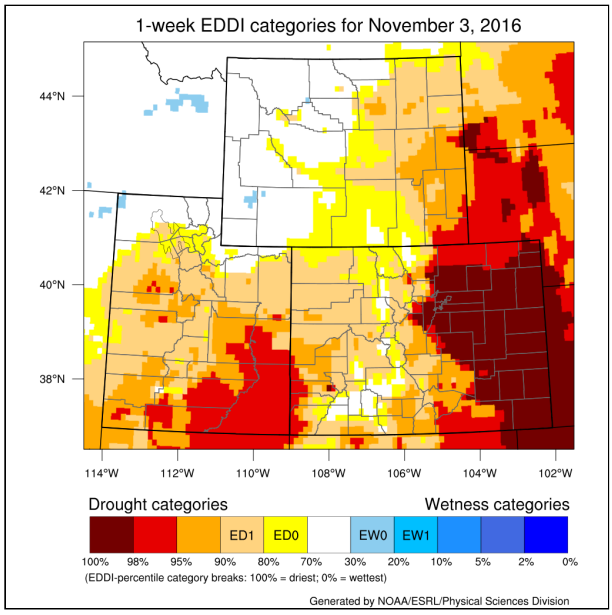
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right

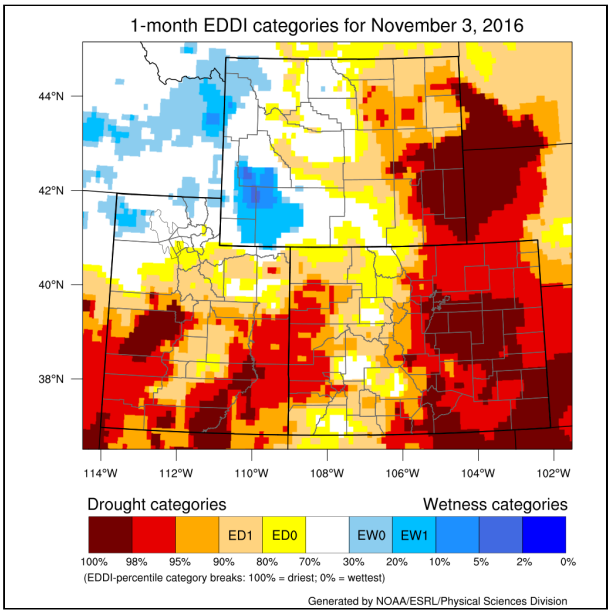
image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

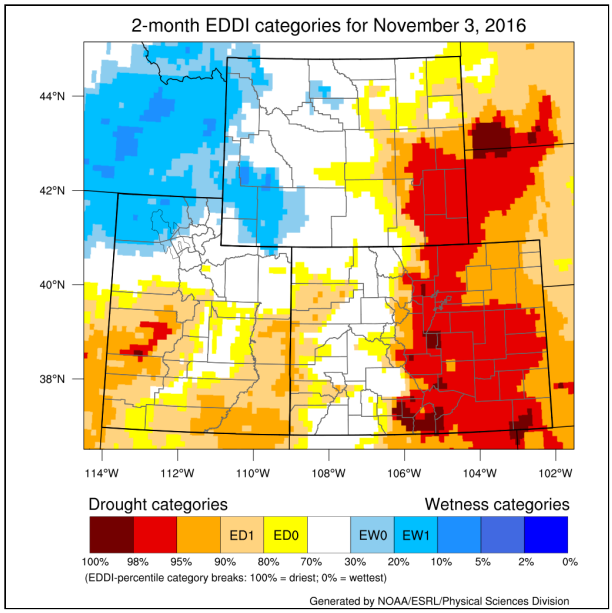
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past 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.

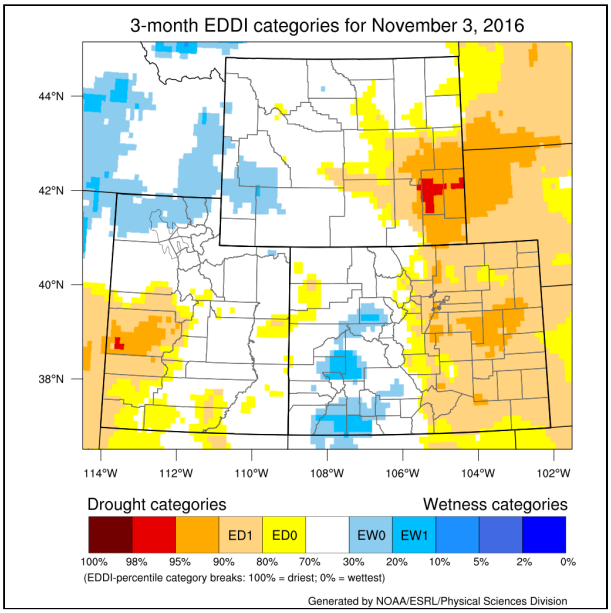


Evaporative Demand



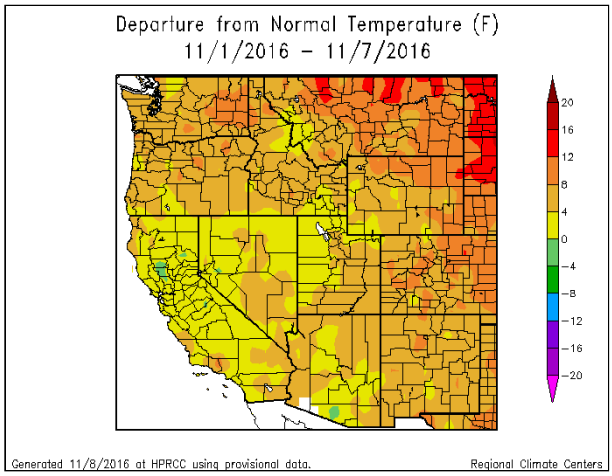


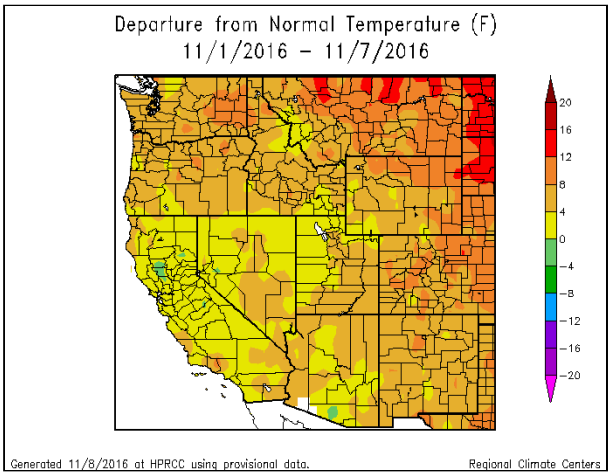




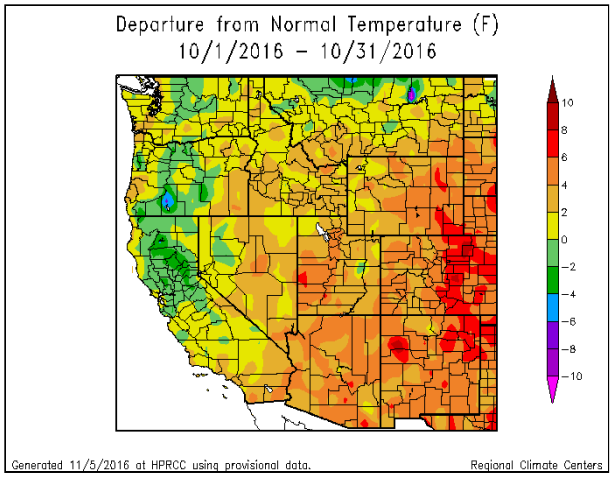
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are 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

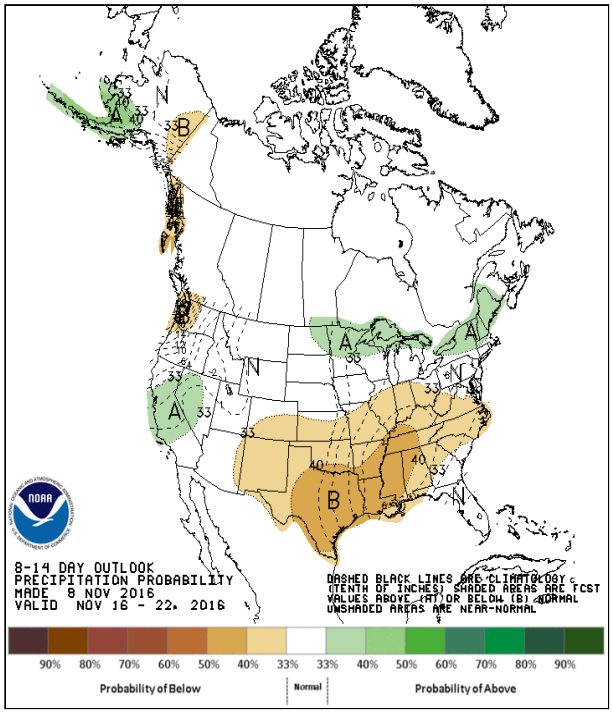


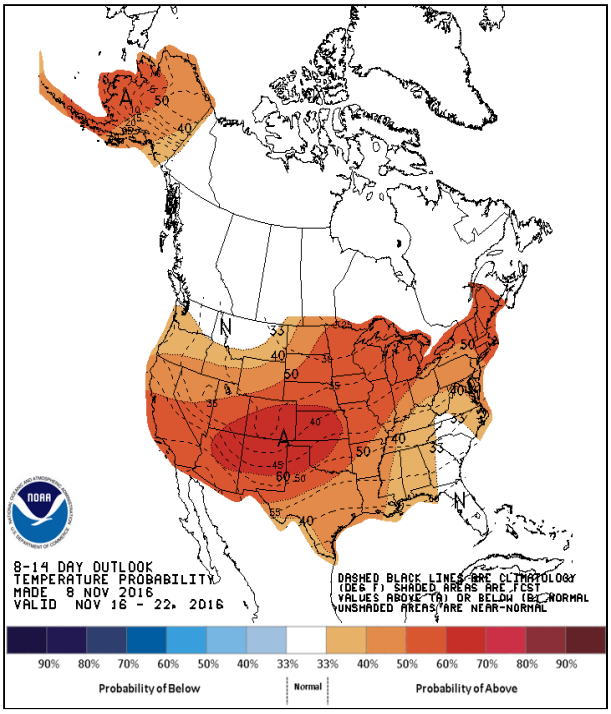


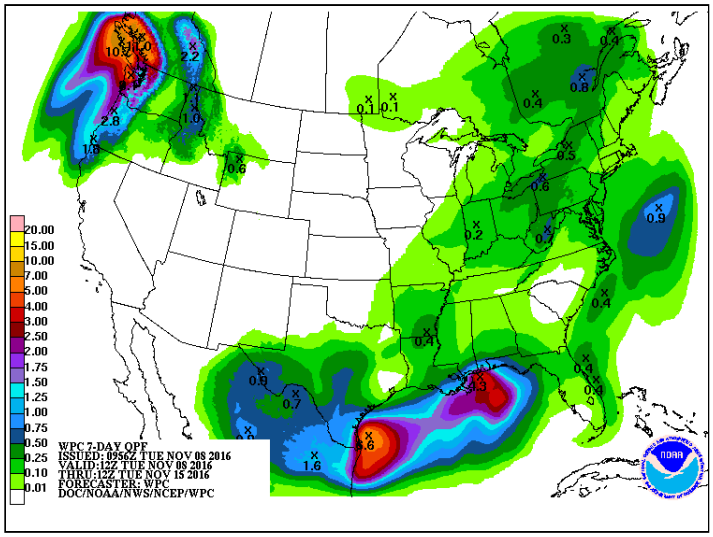
All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



Outlook

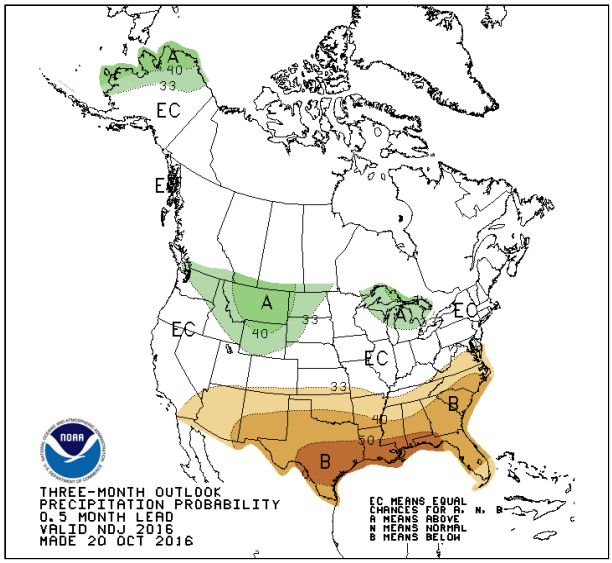


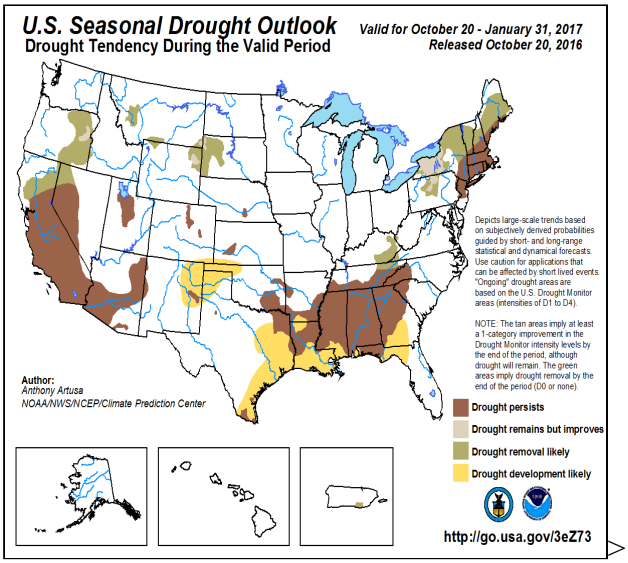




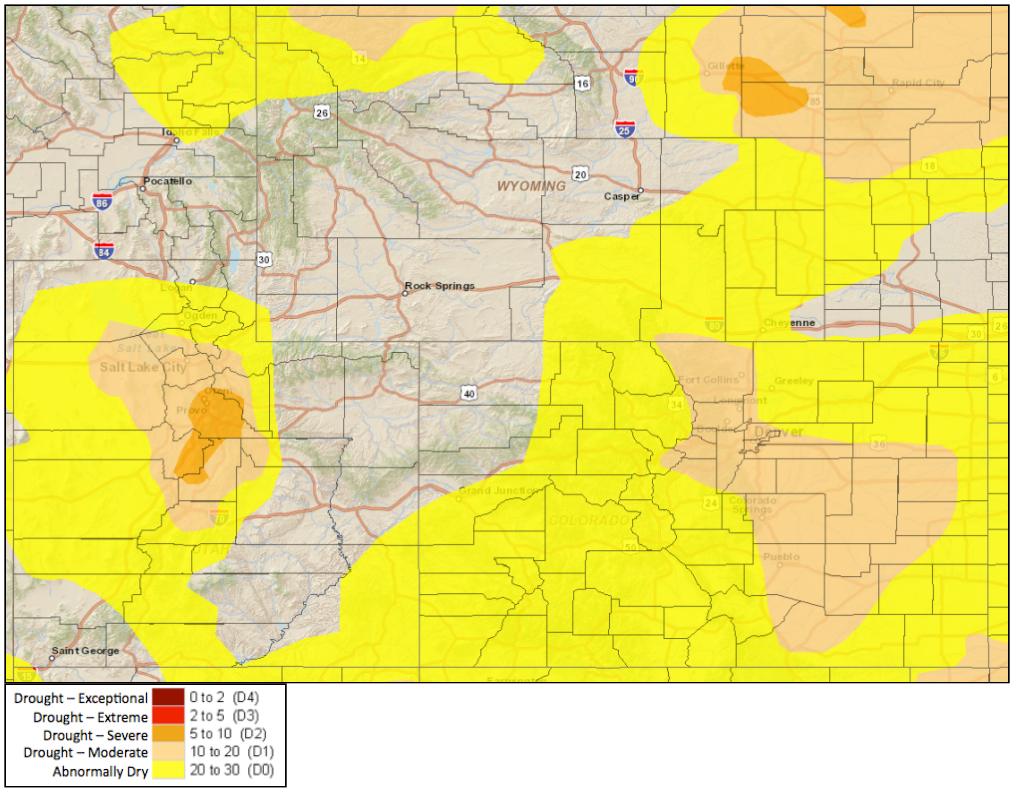
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month

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.

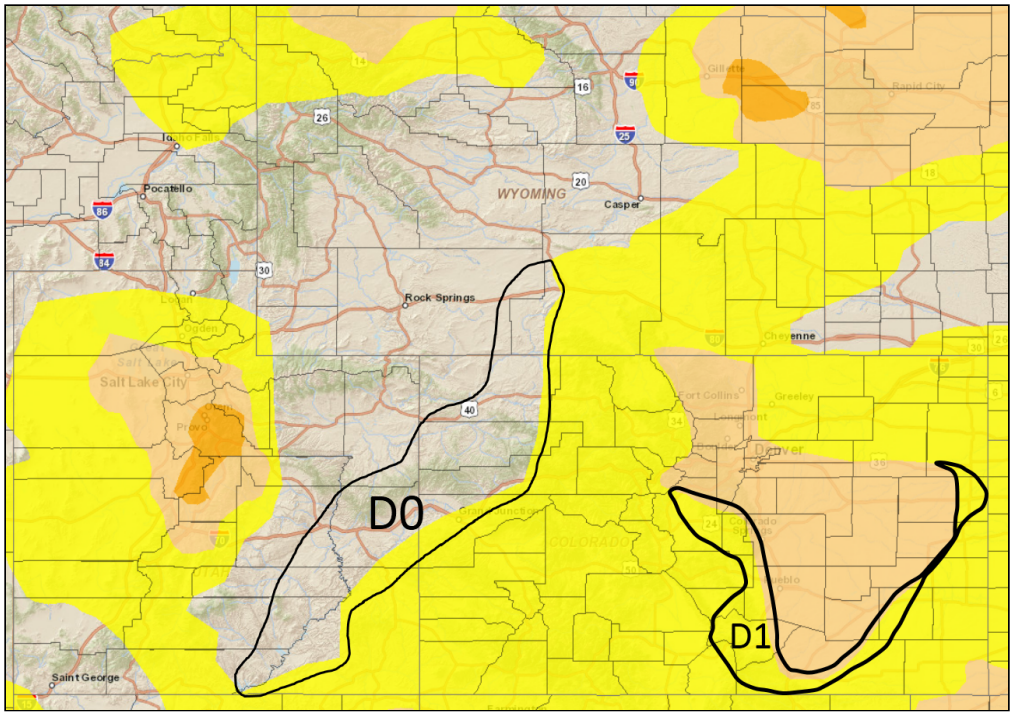




Summary and Recommendations



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: November 8, 2016

The Upper Colorado River Basin saw a mix of precipitation amounts. Southwest Colorado saw the best with between 0.25 - 1.00 inches through much of the area. La Plata County saw the best precipitation amounts of over 1.00 inches. The higher elevations of the Duchesne River Basin in northeast Utah saw between 0.25 and 0.50 inches. Parts of the Yampa/White Rivers in northwestern Colorado also saw up to 0.50 inches. The rest of the basin received less than 0.10 inches. Temperatures in the basin over the last week were once again warmer than normal, mainly in the 4 to 8 degree range.

The UCRB has seen very little snowfall to start the snow season due to warm temperatures and lack of precipitation. Most sub-basins have less than 40% of normal snowpack. Western Colorado only has 6% to 20% of normal snowpack as of November 8.

Eastern Colorado also saw a warm dry week, with less than 0.10 inches through the area. The system that brought precipitation to southwestern Colorado and northern New Mexico spilled into the San Luis Valley and parts of Las Animas and Baca counties. This area saw up to 0.50 inches. Temperatures were mainly 8 to 12 degrees above normal in northeastern Colorado and 4 to 8 inches above normal in southern Colorado.

SPIs in eastern Colorado are all in the negatives (dry) for 30 and 90 day SPIs with the exception of northeastern Bent County in the 0 to +1 range for 90-days.

Recommendations

UCRB: Expansion of D0 in Moffat, Rio Blanco, Garfield and Mesa counties in Colorado and Grand, and eastern portions of Wayne, Garfield and Kane counties in Utah is recommended. Looking at 30 and 90 day SPIs most of this area is just as poor as the surrounding areas already in D0.

Eastern Colorado: Expansion of D1 west is being recommended in eastern Park, Teller, Fremont, Custer, all of Huerfano and western Las Animas counties. Most 30 and 90 day SPIs in this area are just as poor as other SPIs covered by D1. Modeled soil moisture is also getting worse, less than the 20th percentile. Expansion east of the eastern edge of D1 is also recommended. SPIs are mostly below -1 and soil moisture is mostly below the 10th percentile in the area to be expanded.