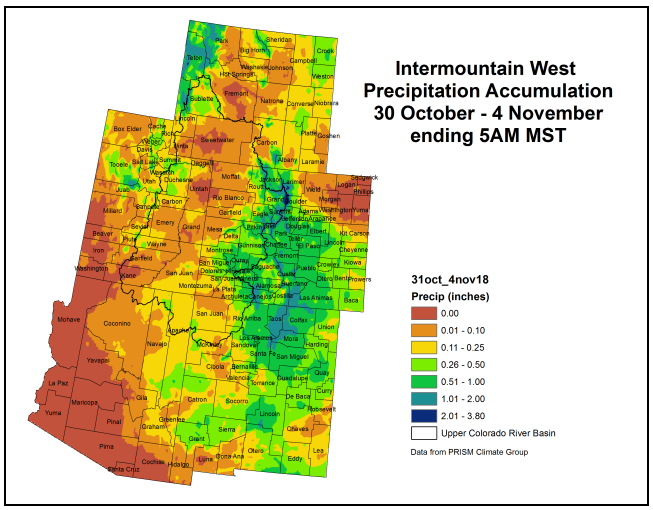
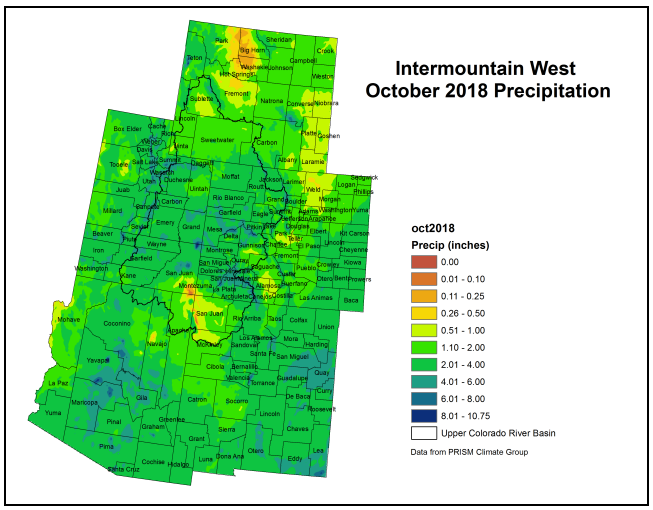
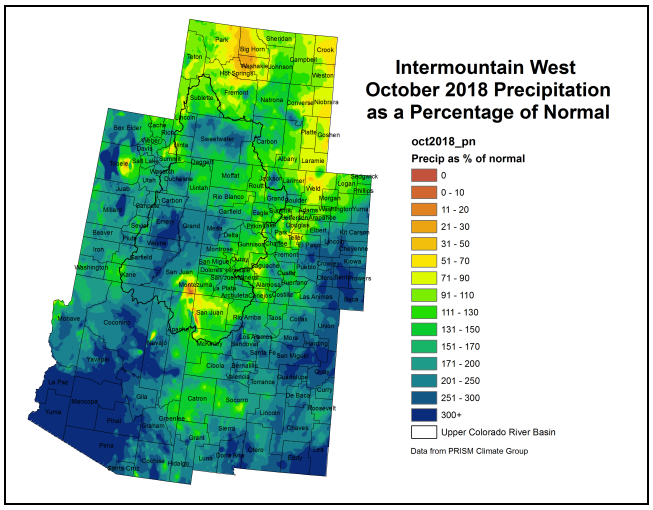
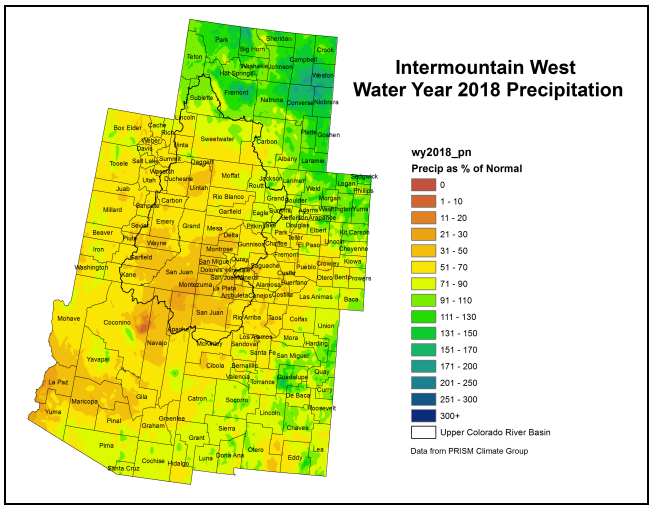
NIDIS Intermountain West
Drought Early Warning System
November 6, 2018

Precipitation



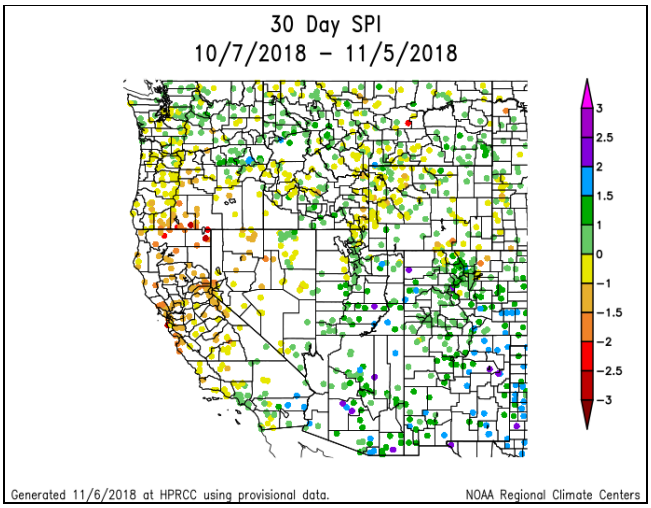


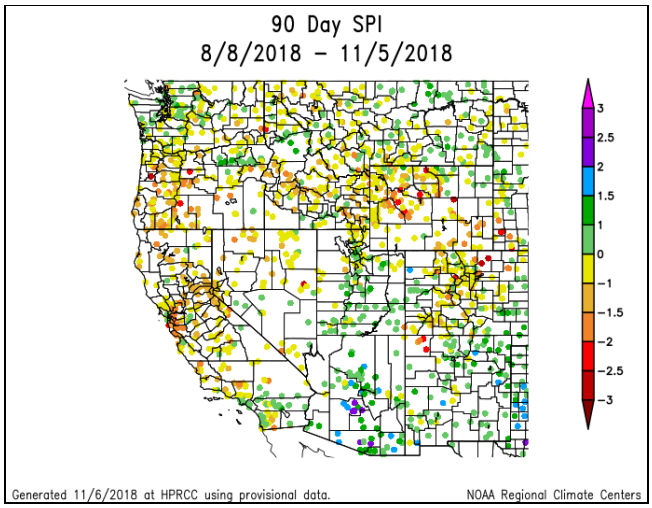


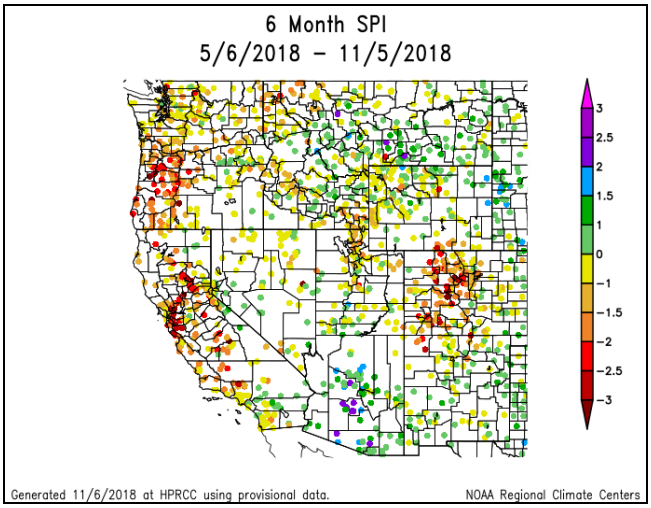


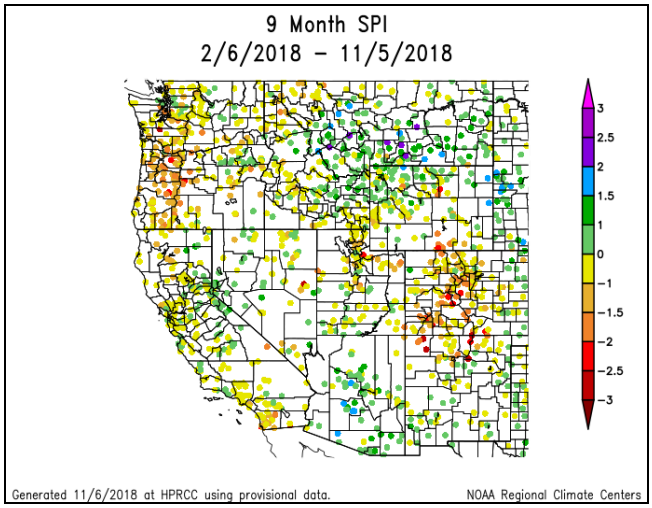
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index



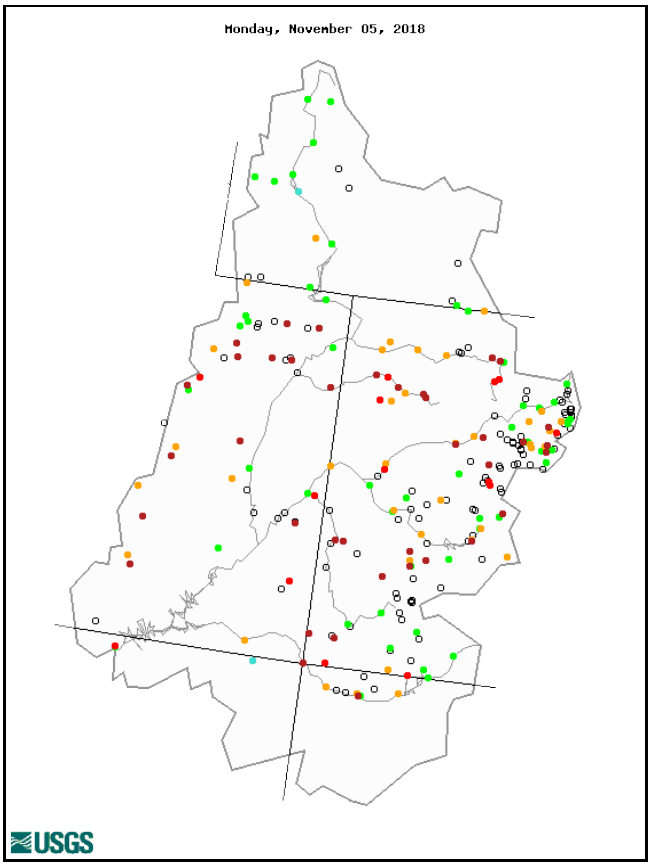


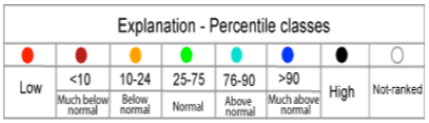


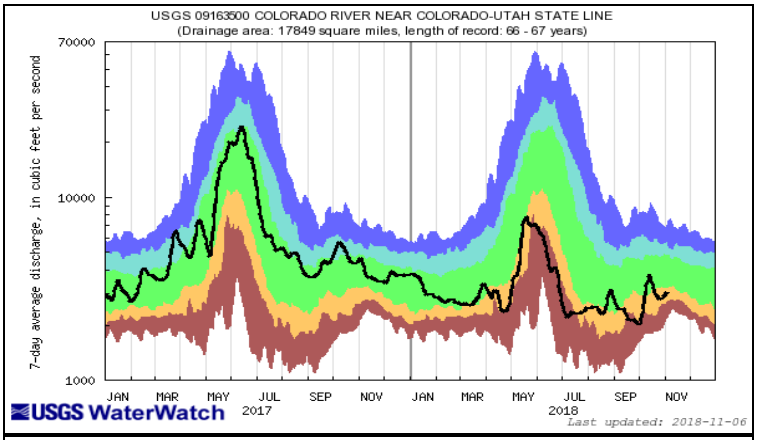


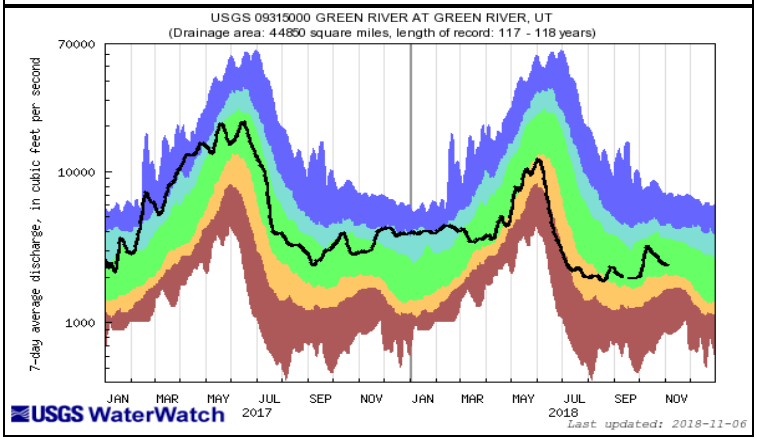
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

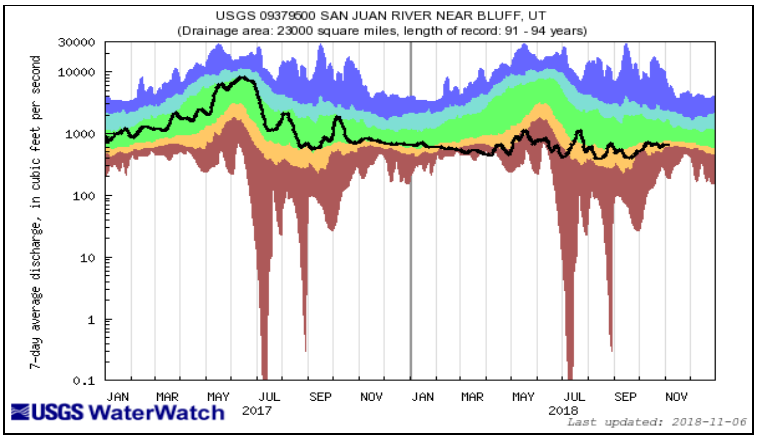
Streamflow


Monday, November 05, 2018
USGS


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

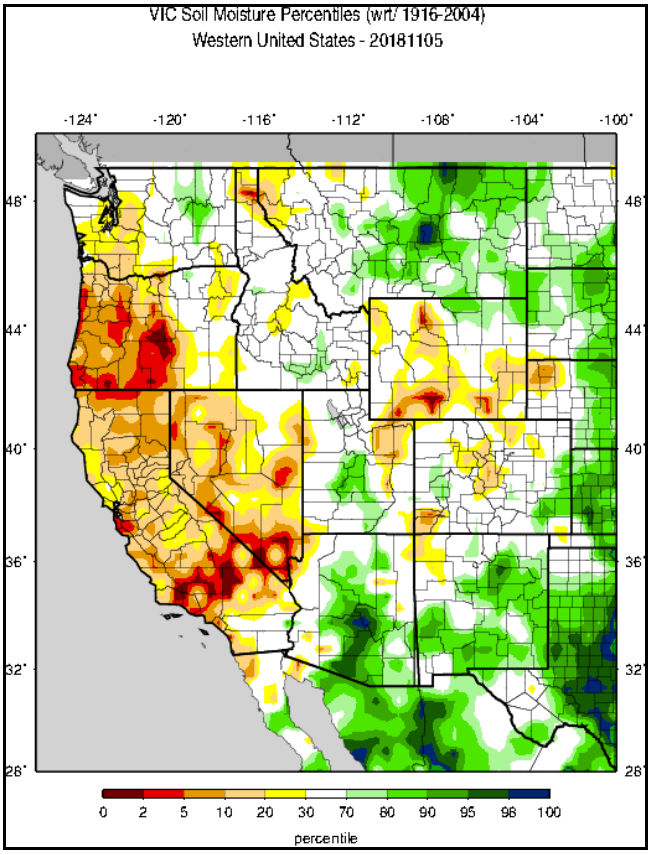

USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE
(Drainage area: 17849 square miles, length of record: 66 - 67 years)
7-day average discharge, in cubic feet per second
70000
10000
1000
JAN MAR MAY JUL SEP NOV JAN MAR MAY JUL SEP NOV
2017
2018
USGS WaterWatch
Last updated: 2018-11-06

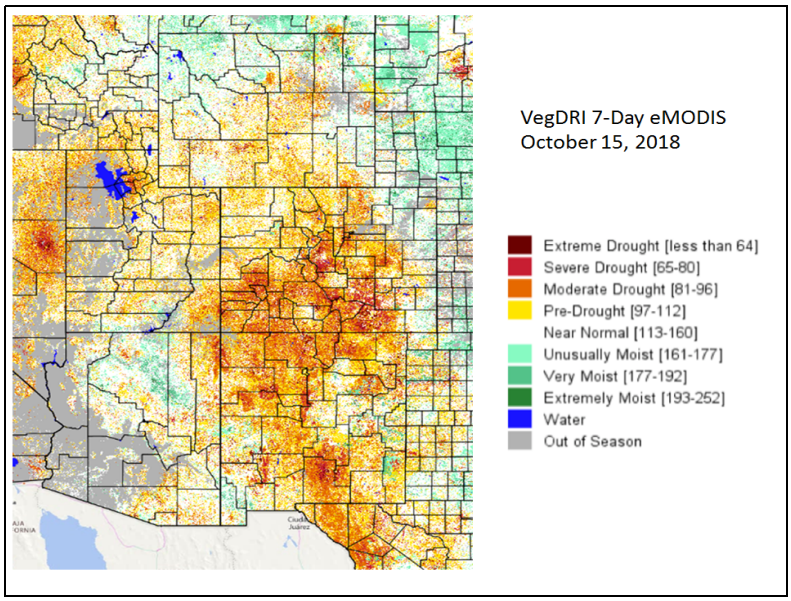

USGS 09315000 GREEN RIVER AT GREEN RIVER, UT
(Drainage area: 44850 square miles, length of record: 117 - 118 years)
7-day average discharge, in cubic feet per second
70000
10000
1000
JAN MAR MAY JUL SEP NOV JAN MAR MAY JUL SEP NOV
2017
2018
USGS WaterWatch
Last updated: 2018-11-06



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

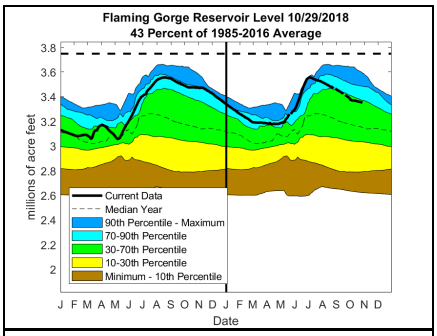


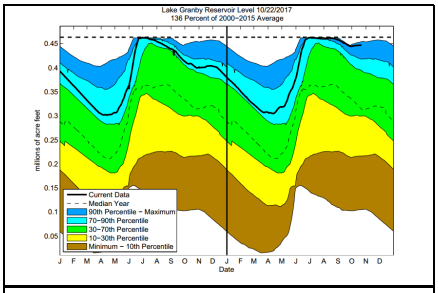


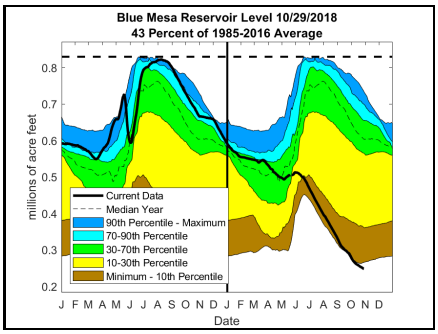
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

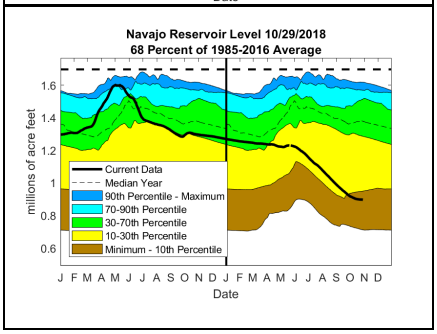
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

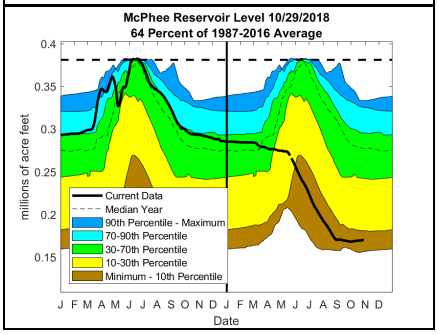
levels observed over the past 30 years. The data are obtained from the Bureau of Reclamation. Some of the reservoir percentiles don't line up at the new year due to differences in reservoir levels at the beginning of 1985 and the end of 2014. Dead storage has been subtracted. Note: Lake Granby data are obtained from the Colorado Division of Water Resources, and only goes back to the year 2000.

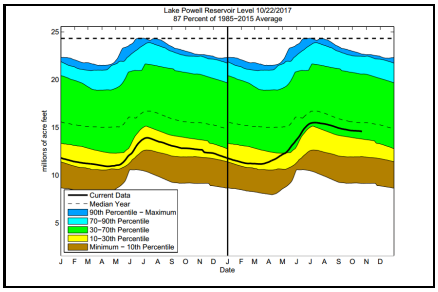




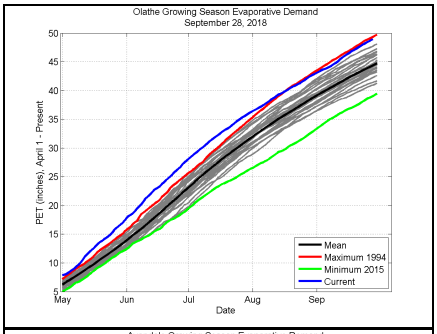


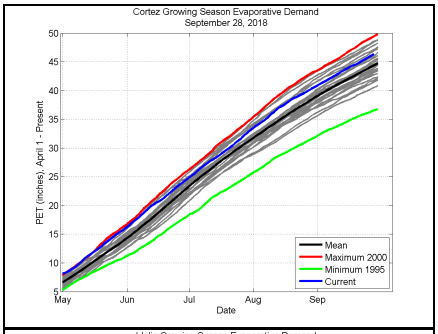


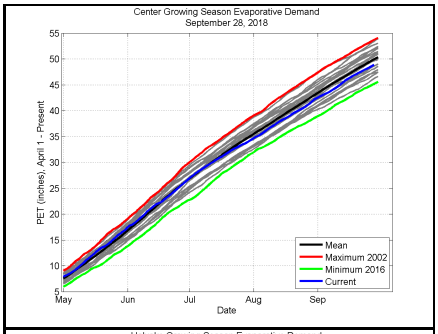


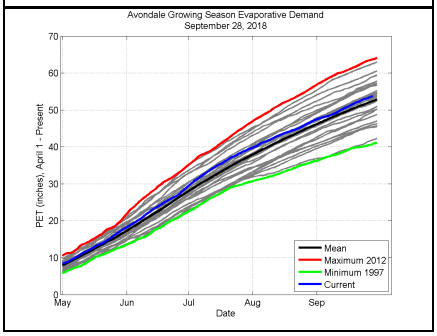


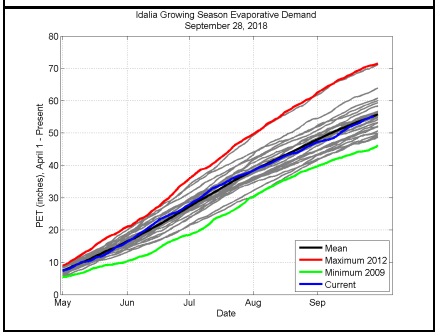
Evaporative Demand

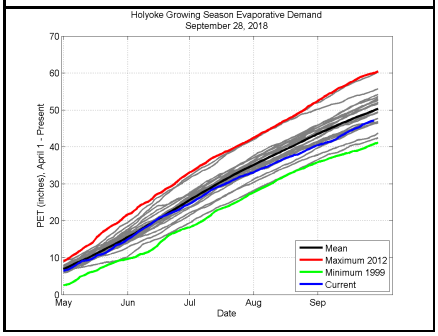


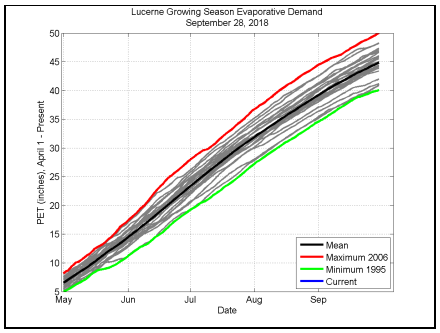




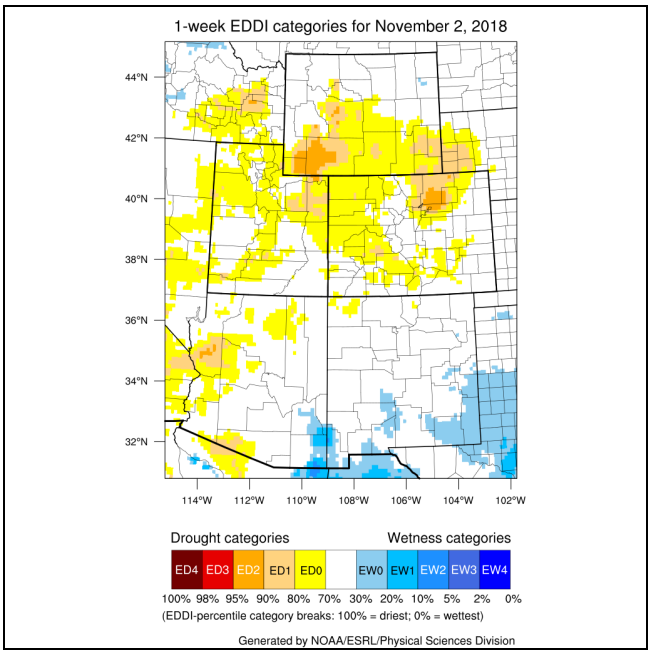


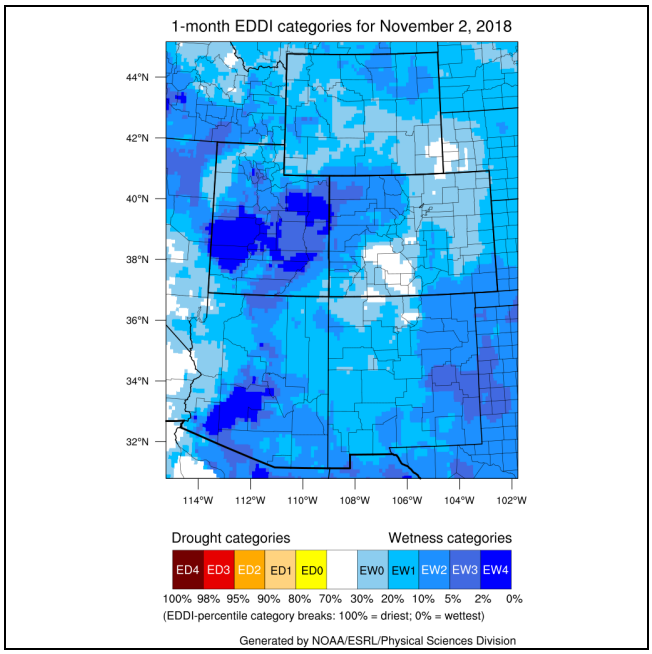


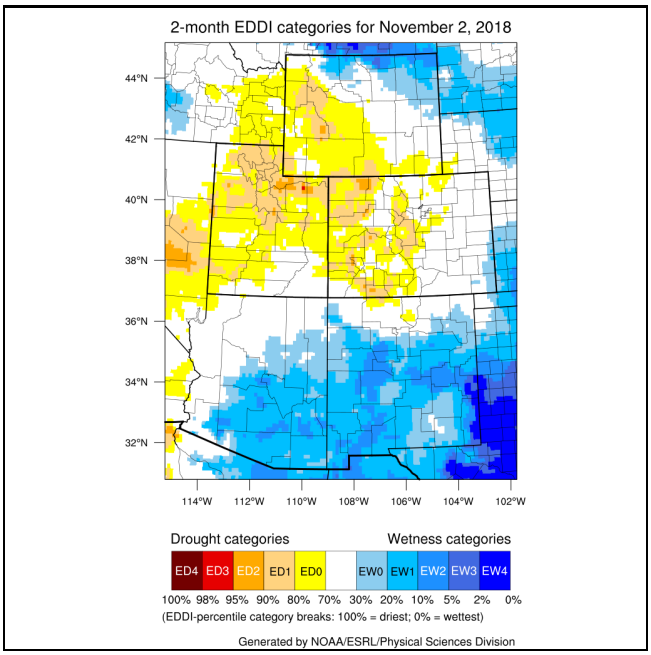


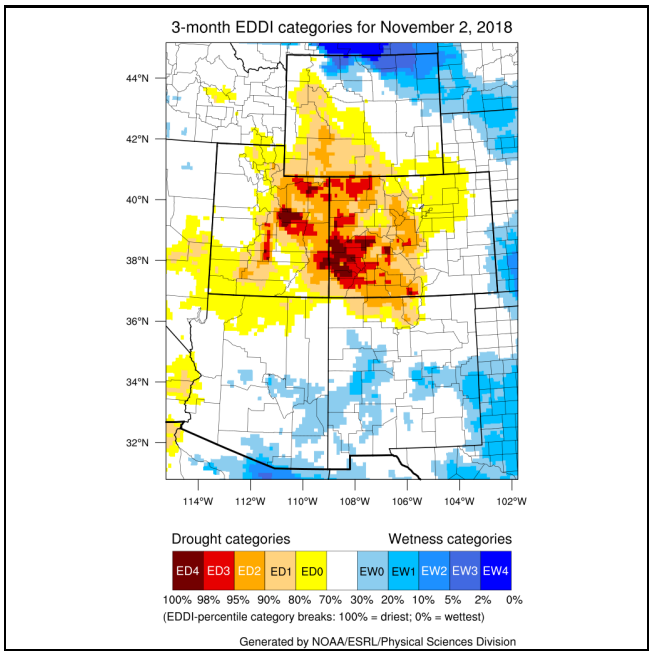


The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a map of locations for the above ET sites.





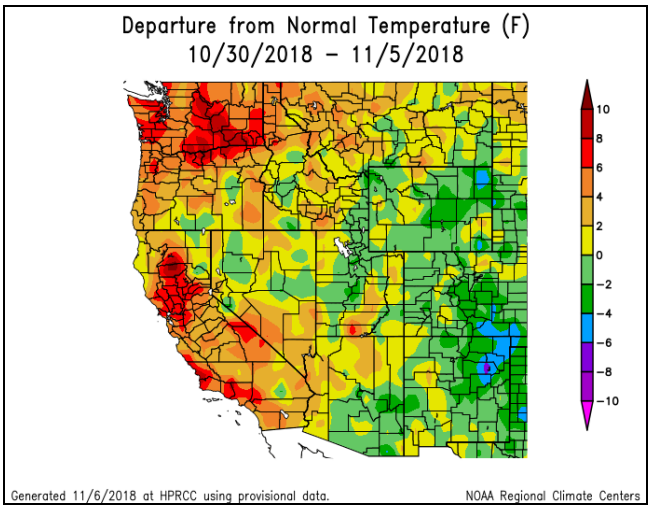


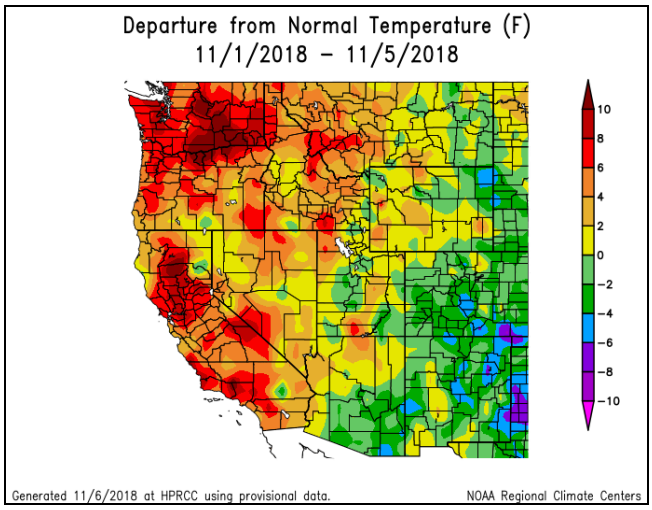


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

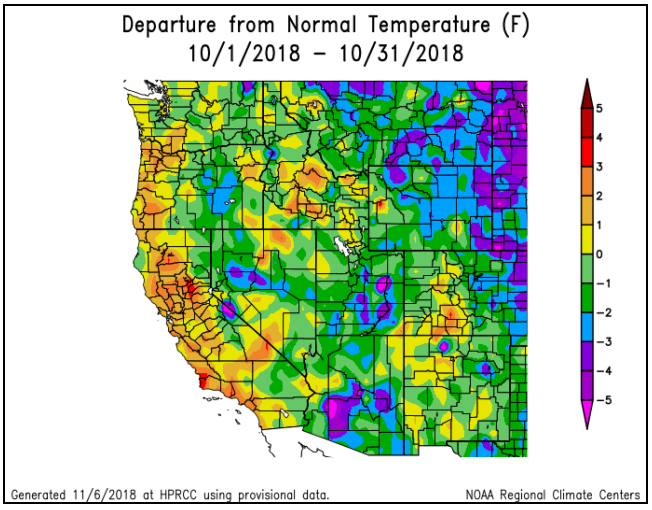
Scheme. Data used to generate these maps come from the North American Land Data Assimilation System Phase-2 (NLDAS-2) project, which assimilates observations of temperature, wind speed, radiation, and vapor pressure deficit. The date indicates the last day of the period of record, and the week number indicates the window size for the period of record.

Temperature

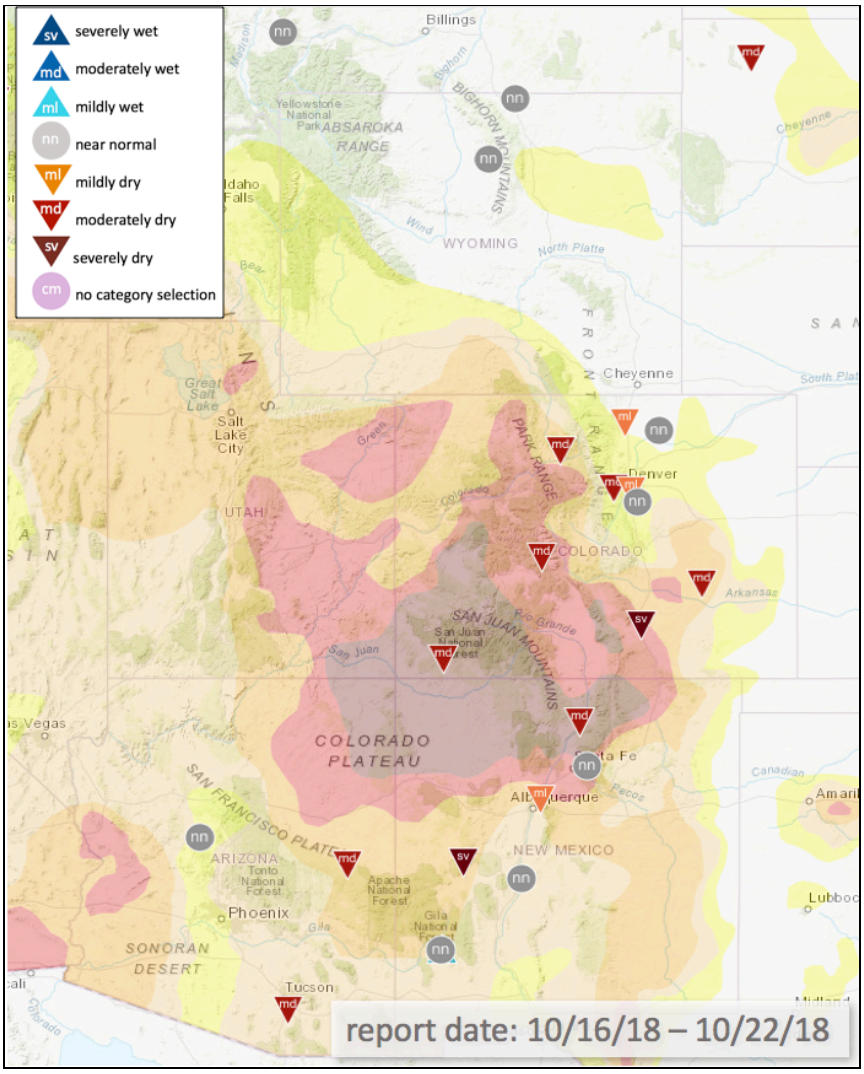




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



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.

USGS:

Updated rankings from the three key indicator gages of cumulative discharge for WY2018 are

- Colorado River near CO-UT State Line ranked 8th lowest in 67-year record
- Green River at Green River, UT ranked 25th lowest in 115-year record
- San Juan River near Bluff, UT ranked 1st lowest in 92-year record

Kiowa County, CO FSA

Things are looking pretty good. Producers are actually looking for some dry days to help with harvesting grain sorghum and sunflowers, plus a few late harvesters of corn. One area of concern is around the Kiowa/Prowers County border, where an isolated location is particularly dry and no grass growing.

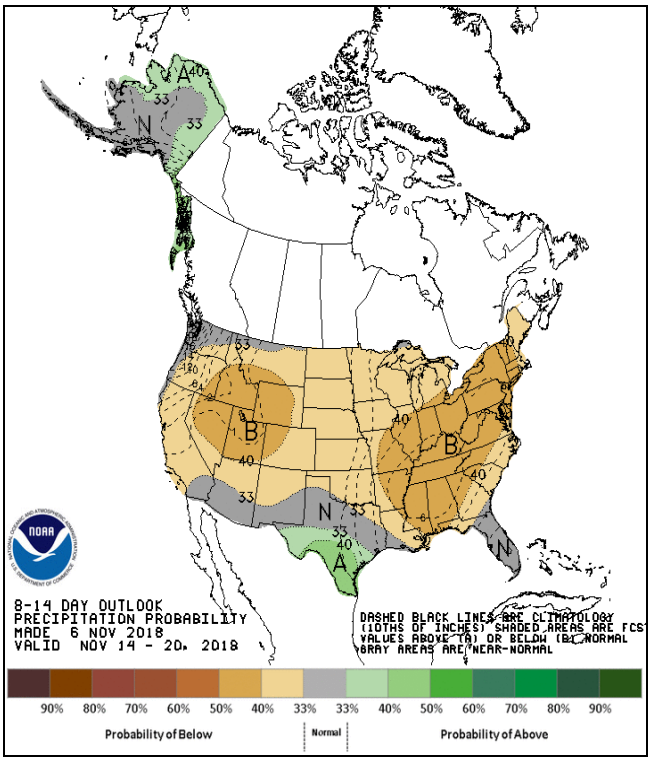
Crowley/Otero Counties, CO FSA

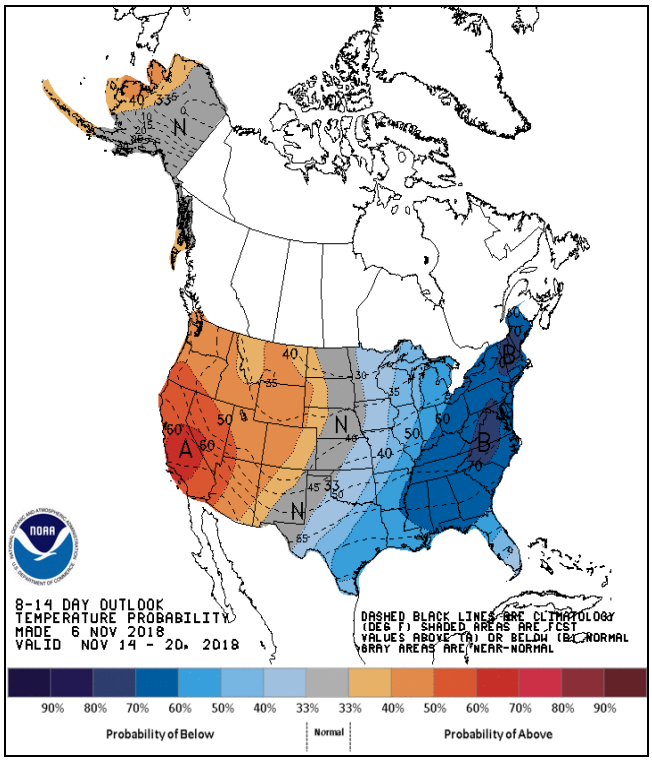
Everyone is happy with the start of the new water year. But the FSA office is starting to really see impacts from the last season. 30-40% losses in corn yields. Alfalfa fared better because the first cutting is the most important. 20-30% of normal production. Producers are paying close attention to the reservoir and snowpack maps this season, as a near-normal to decent snowpack year generally results in a near-normal to decent growing season and yield.

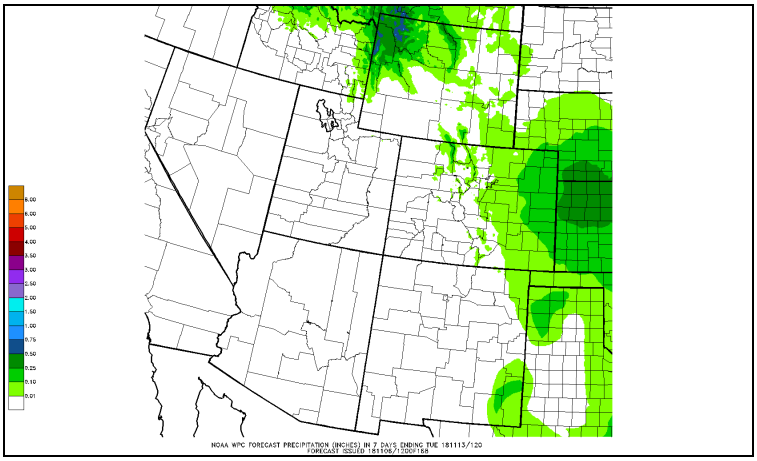
Navajo Nation

Precipitation in October was highly variable in the Chuska Mountains, anywhere from less than half an inch to over 3 inches.

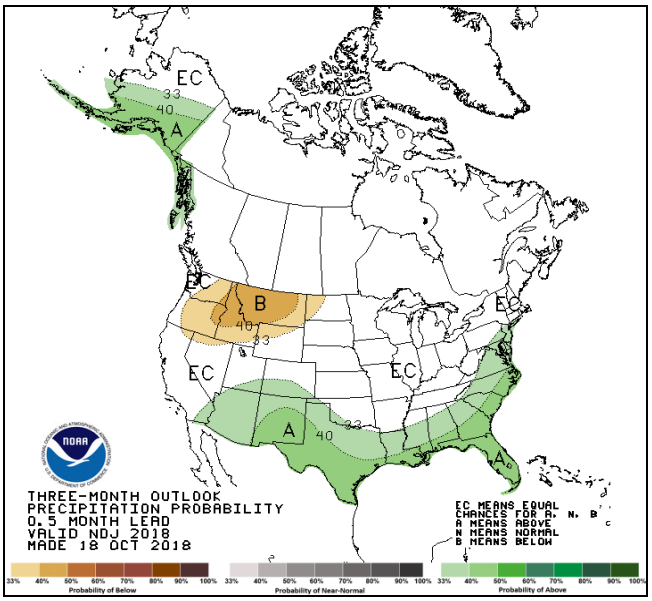
Outlook

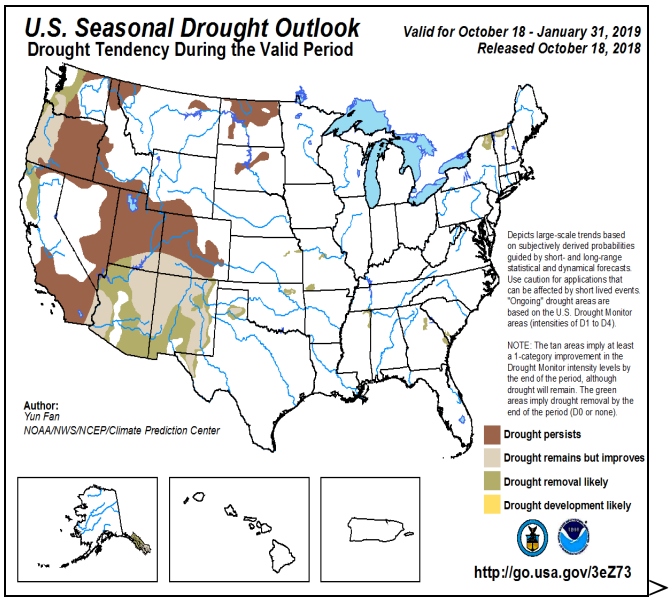




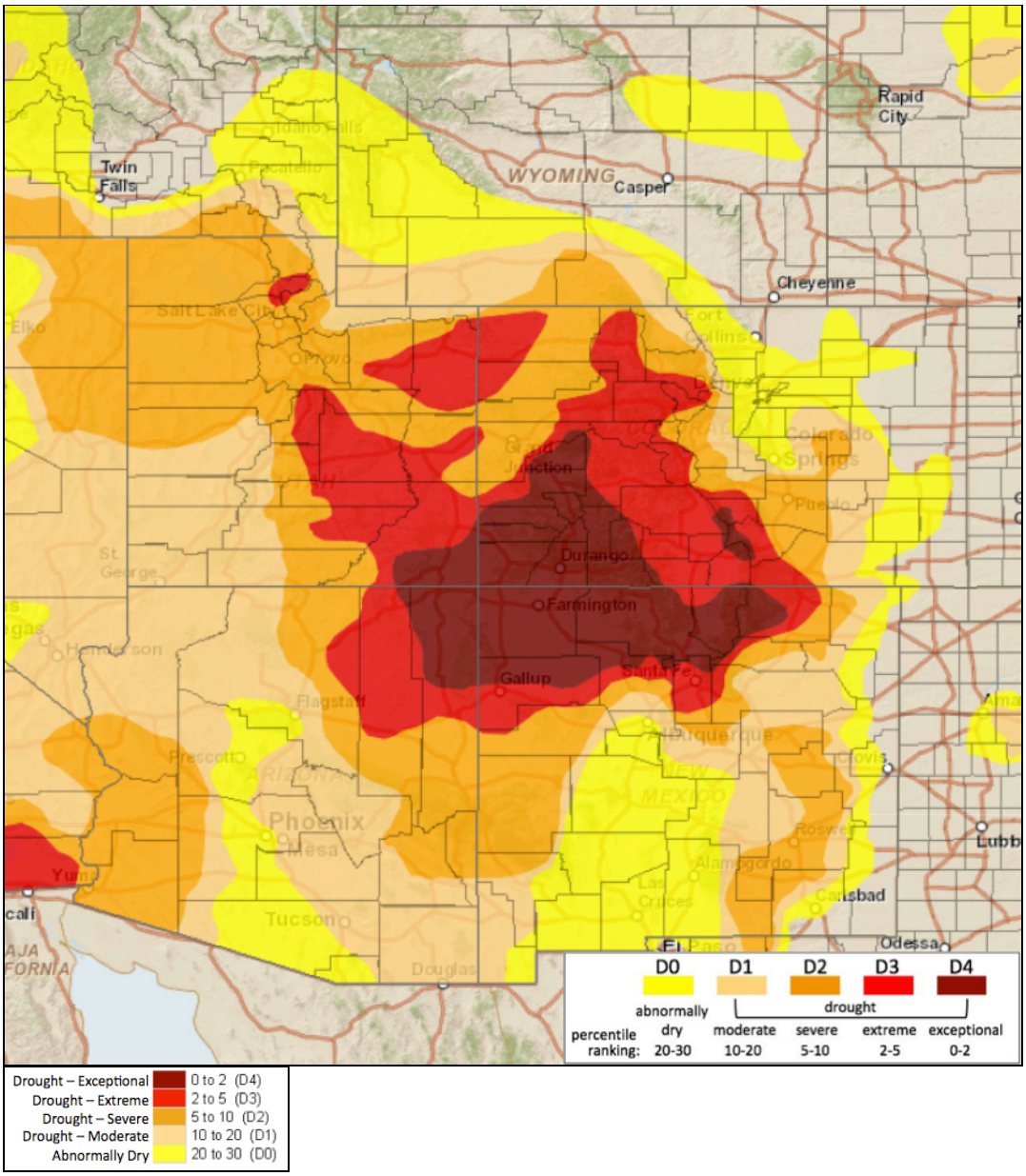


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

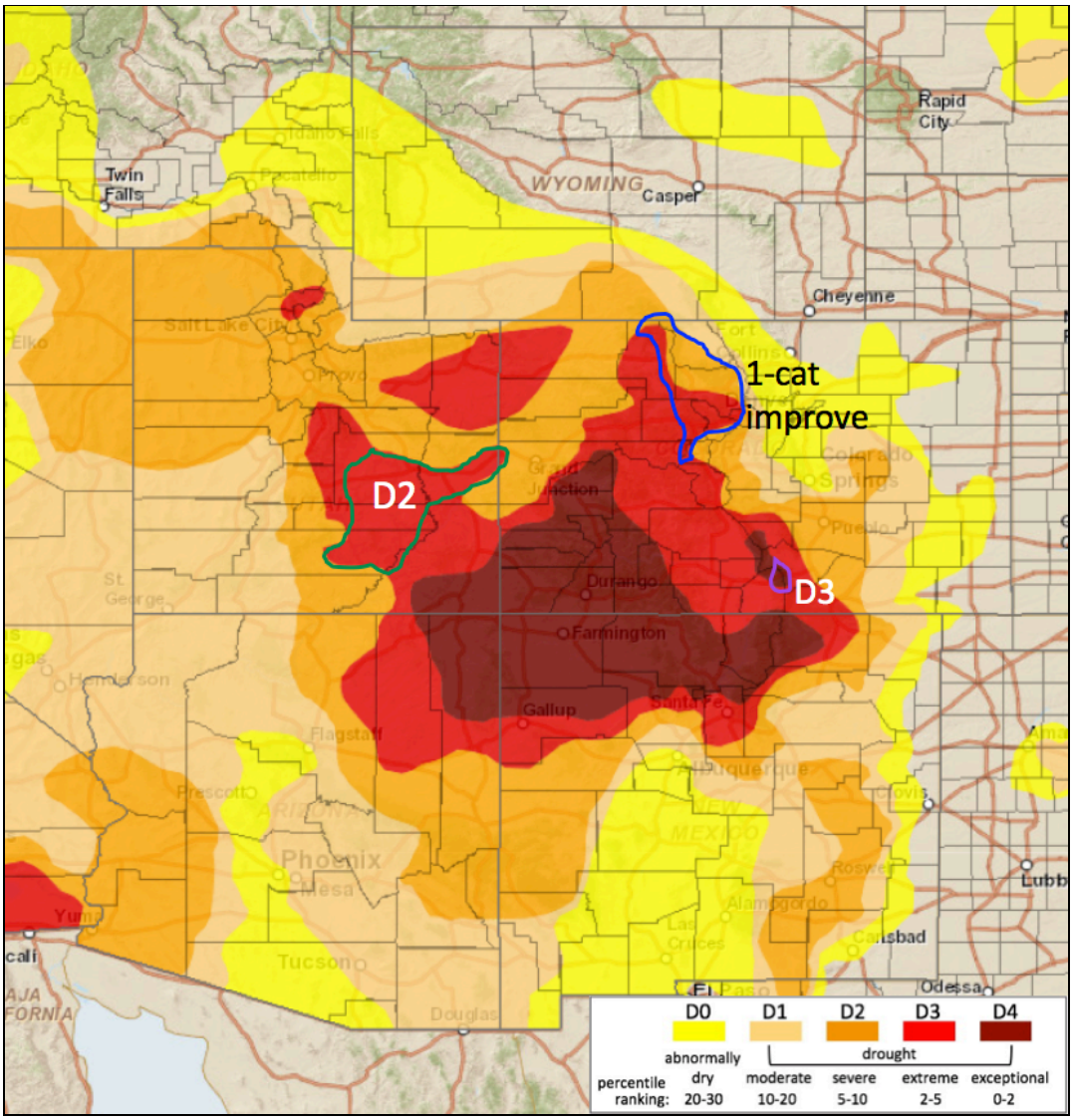




Summary and Recommendations



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 6, 2018

Most of the Intermountain West saw a cooler and wetter than average October. The wet pattern has been a welcome shift from the predominantly dry pattern that plagued most of the region in Water Year 2018. And the cooler than average month is quite notable, as it is the first time this year for many locations in the IMW to experience a cooler than average month. Both temperatures and precipitation have stalled the drought. Snowpack accumulations are greater than the 50th percentile for many SNOTEL sites across the IMW - basin-averaged snowpack is well above average for all of Colorado, with mixed results in Utah and Wyoming. If the current pattern continues, we begin to start talking about drought recovery and assessing drought from a long-term impacts and hydrologic standpoint (since the impacts and the hydrology have the longest "memory" of drought).

Thanks to October numbers, and a decent start to November, improvements in drought depiction will be recommended. But improvements may not be as widespread as some may expect. The snow is a welcome sight, and the

surface soils are responding nicely. But streamflows are largely still well-below average for this time of year, and reservoirs remain painfully low. These hydrologic variables may not see improvement until next Spring, so expect drought improvements to show up slowly and conservatively.

A mostly dry pattern is expected over the next couple of weeks, but with it some cooler than average temperatures over the next week. If the dry forecast pans out, there isn't likely to be much (if anything) in the way of improving drought depiction. We're still very early in the snowpack accumulating season, so expect those snowpack percentiles and percents of average to change quickly. Either way, we still have a long way to go! While we won't really have a clear idea how the snowpack season is unfolding until January, if the pattern shifts back to wet for the second half of November, that could mean two wetter than average months in a row - something that would really help towards improving the region's conditions and outlook.

Stay tuned!

Recommendations:

Eastern UT: An area of improvement from D3 to D2 is recommended over Emery and Grand counties in eastern UT (green outline). While this area did not receive any moisture in the past 7 days, October precipitation for the area was well over 200% of average. Many surrounding locations (mostly higher elevation) saw improvements throughout October, but this area remained unchanged. However, given the ultimate outcome of October, the improvement seems warranted.

Northern CO: A one-category improvement around the Continental Divide and northern mountains is recommended (blue outline). Some of the lower elevation valleys of North Park and Middle park received 200% of average precipitation for October. The highest elevations along the borders of Routt, Grand, and Summit counties also received an additional 2-3 inches of precipitation in the last 7 days. SNOTEL snowpack in the area is in very good condition, with many sites ranking in the top 90th percentile of WYTD accumulations.

Southeast CO: A slight reduction in the D4 along the Sangre de Cristo mountain range is recommended (purple outline). This represents a small area that saw decent precipitation in the last 7 days and is showing up a little better on several different SPI timescales compared to the northern part of the D4 area.