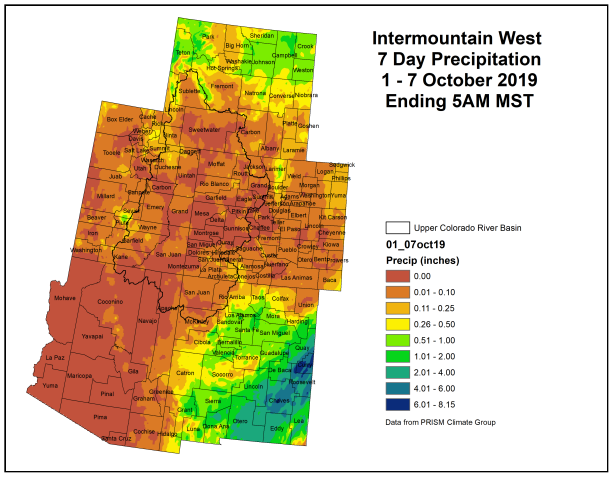
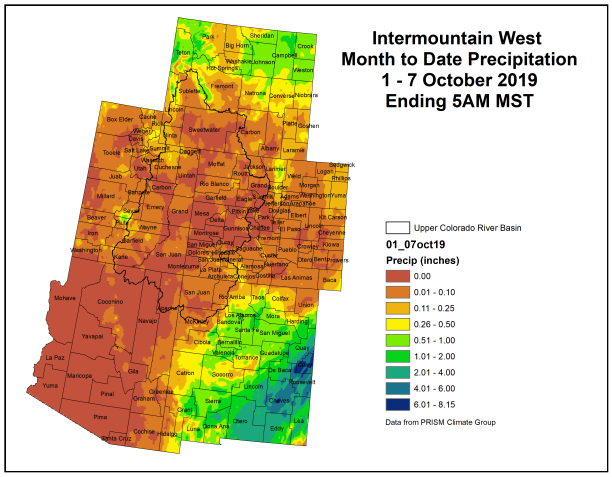
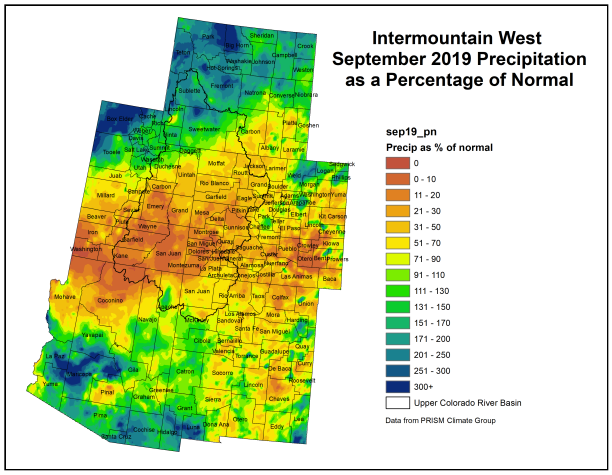
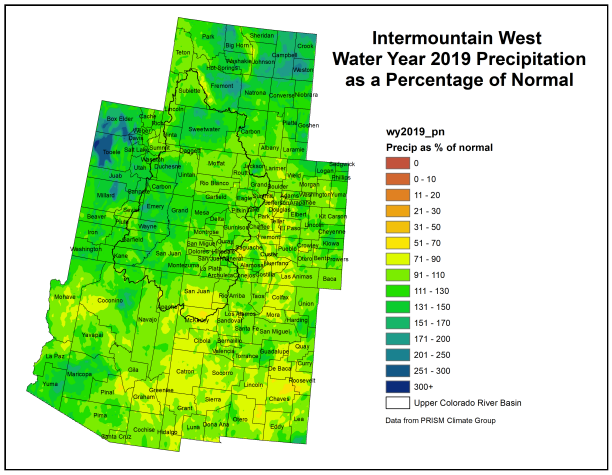
NIDIS Intermountain West
Drought Early Warning System
October 8, 2019

Precipitation



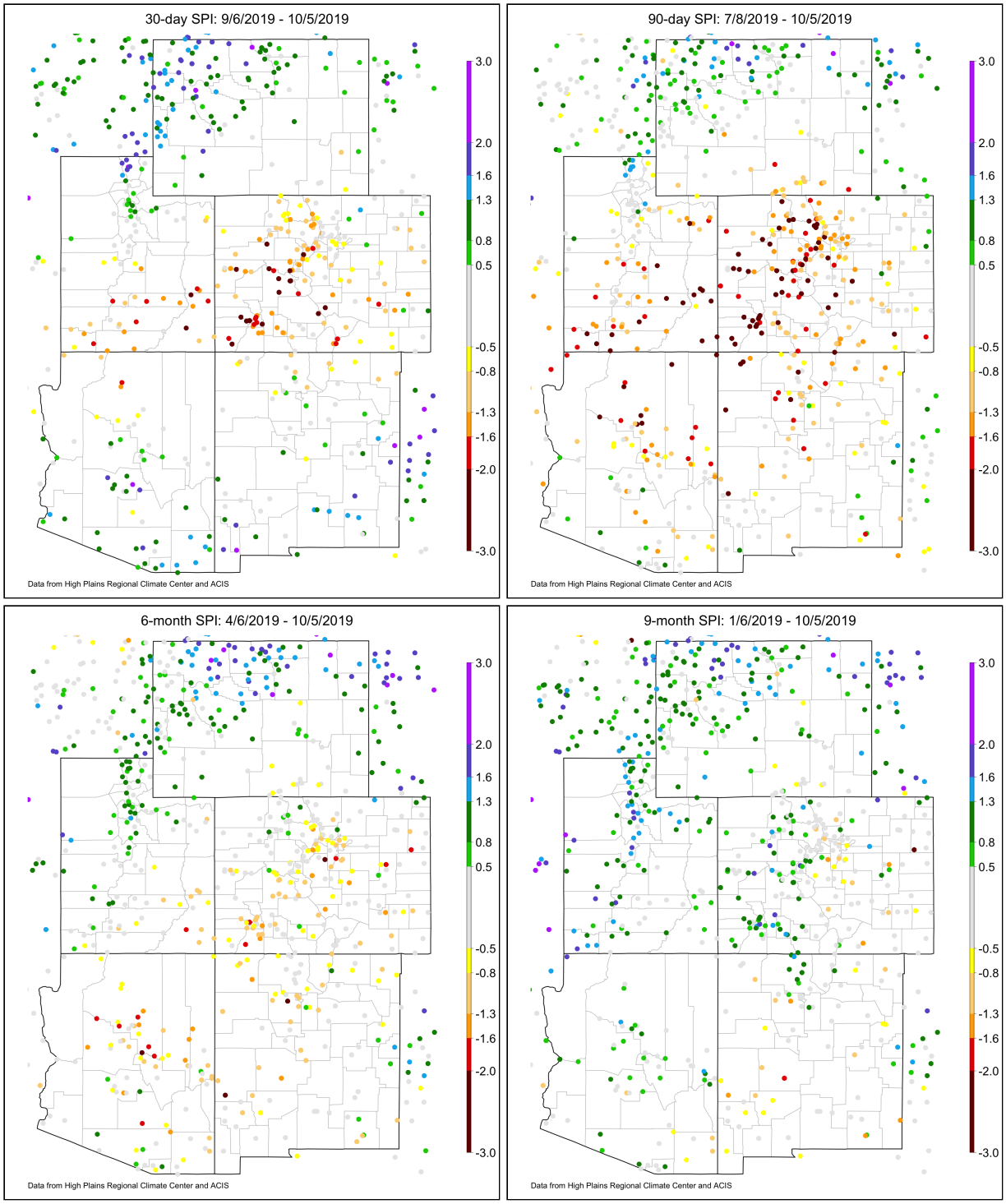






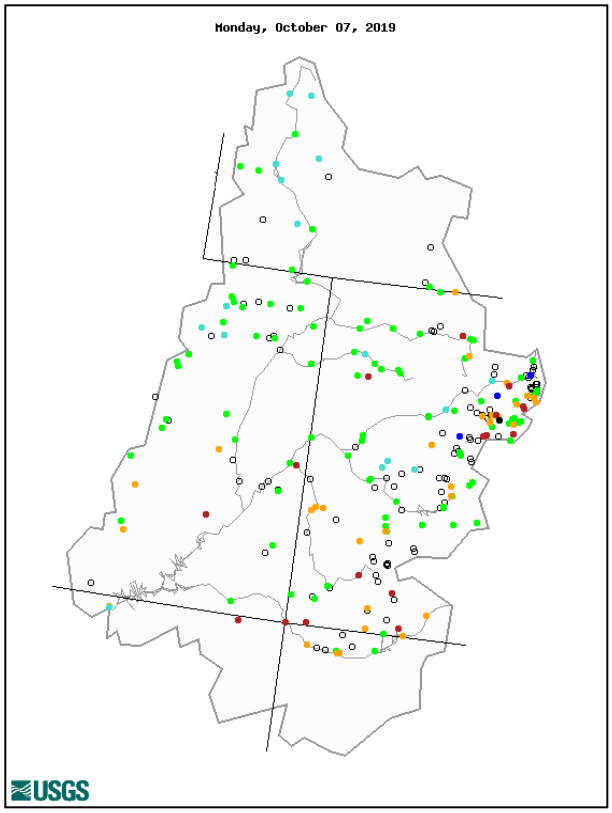
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index

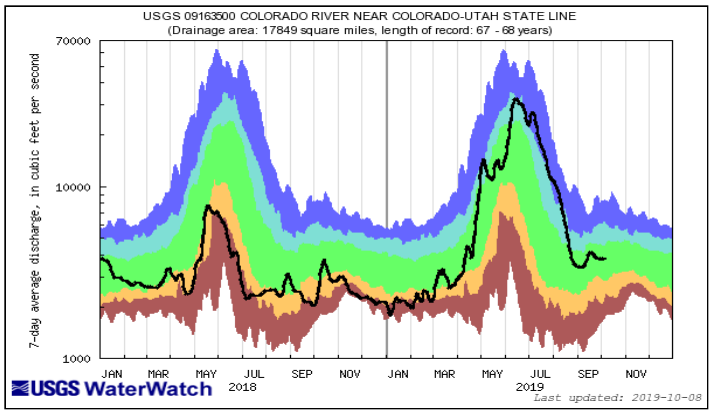


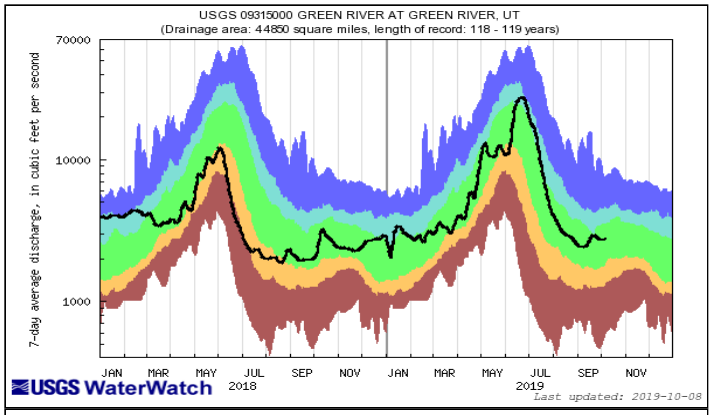
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. Colors match the different drought categories with the U.S. Drought Monitor. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term conditions. SPI data provided by High Plains Regional Climate Center.

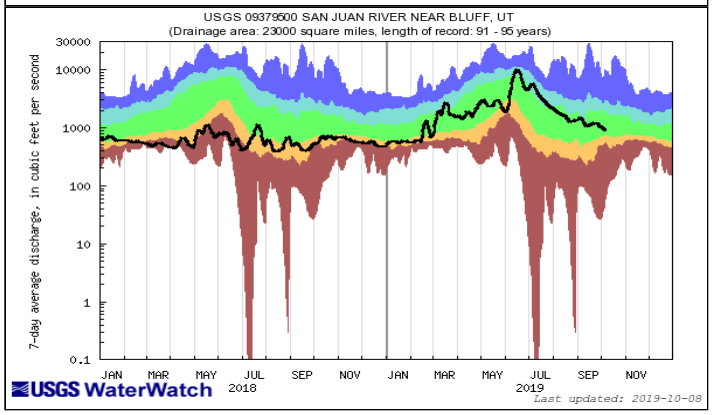
Streamflow



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

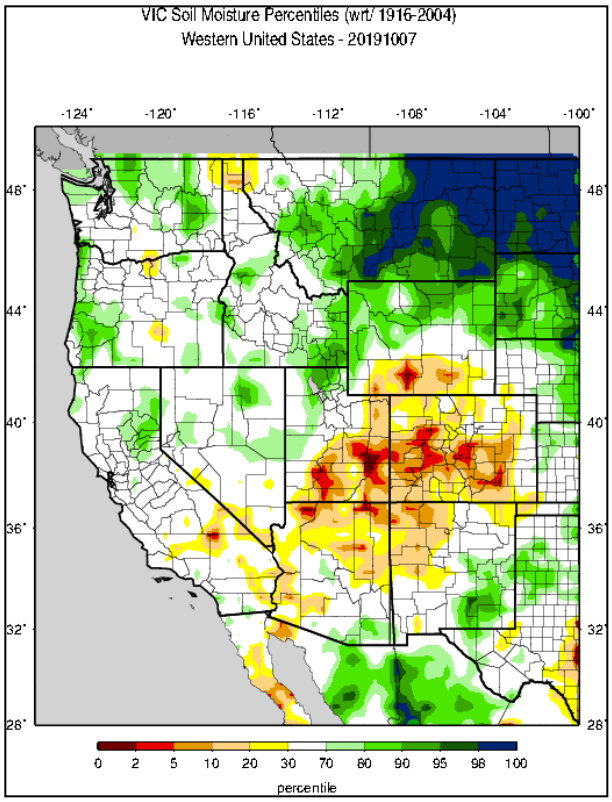


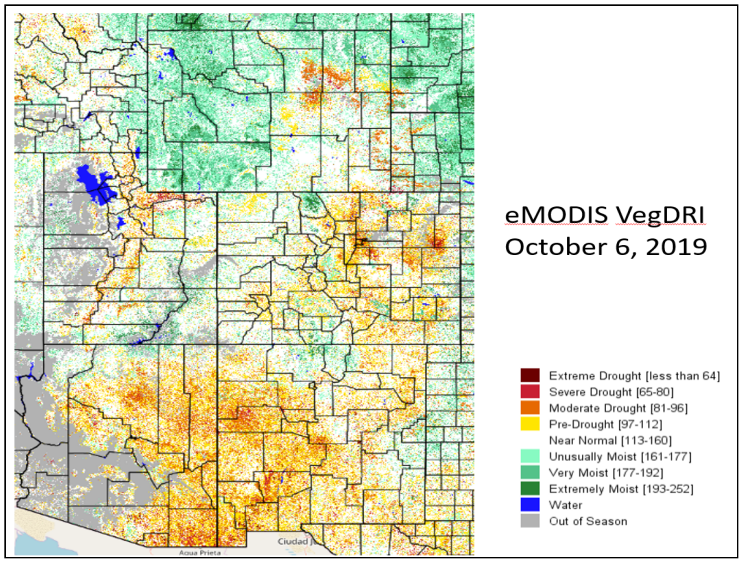




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

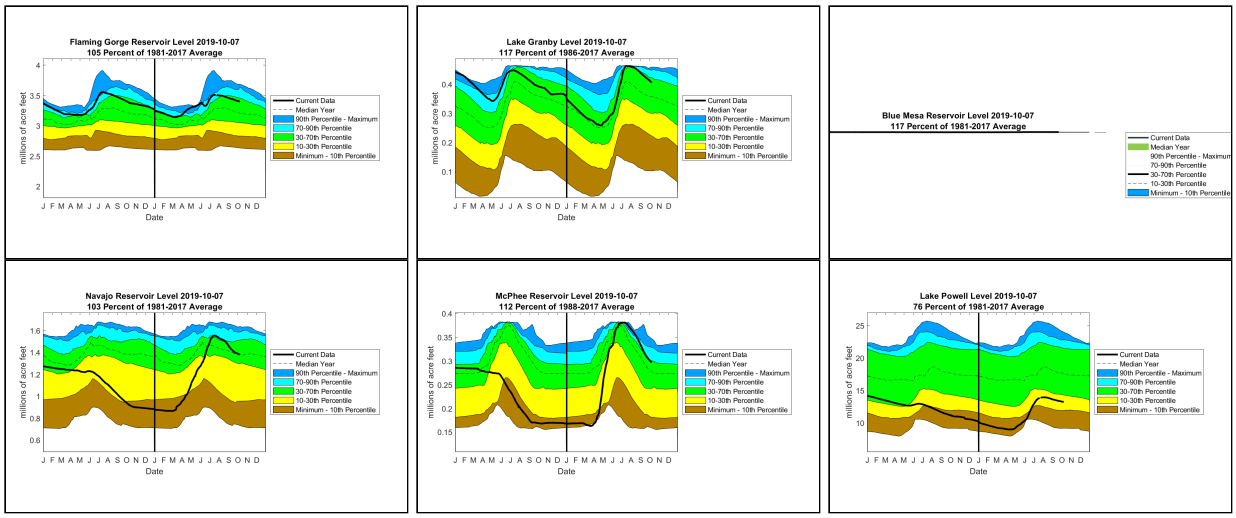
Surface Water



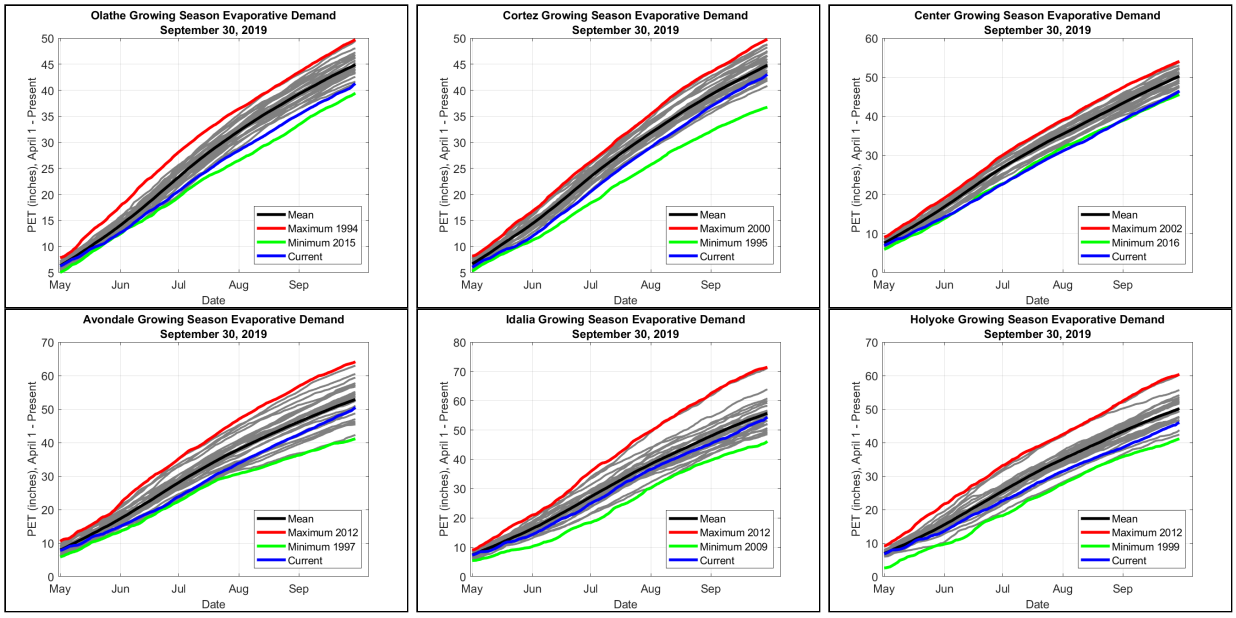


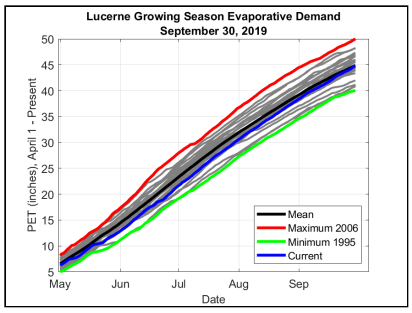
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

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.

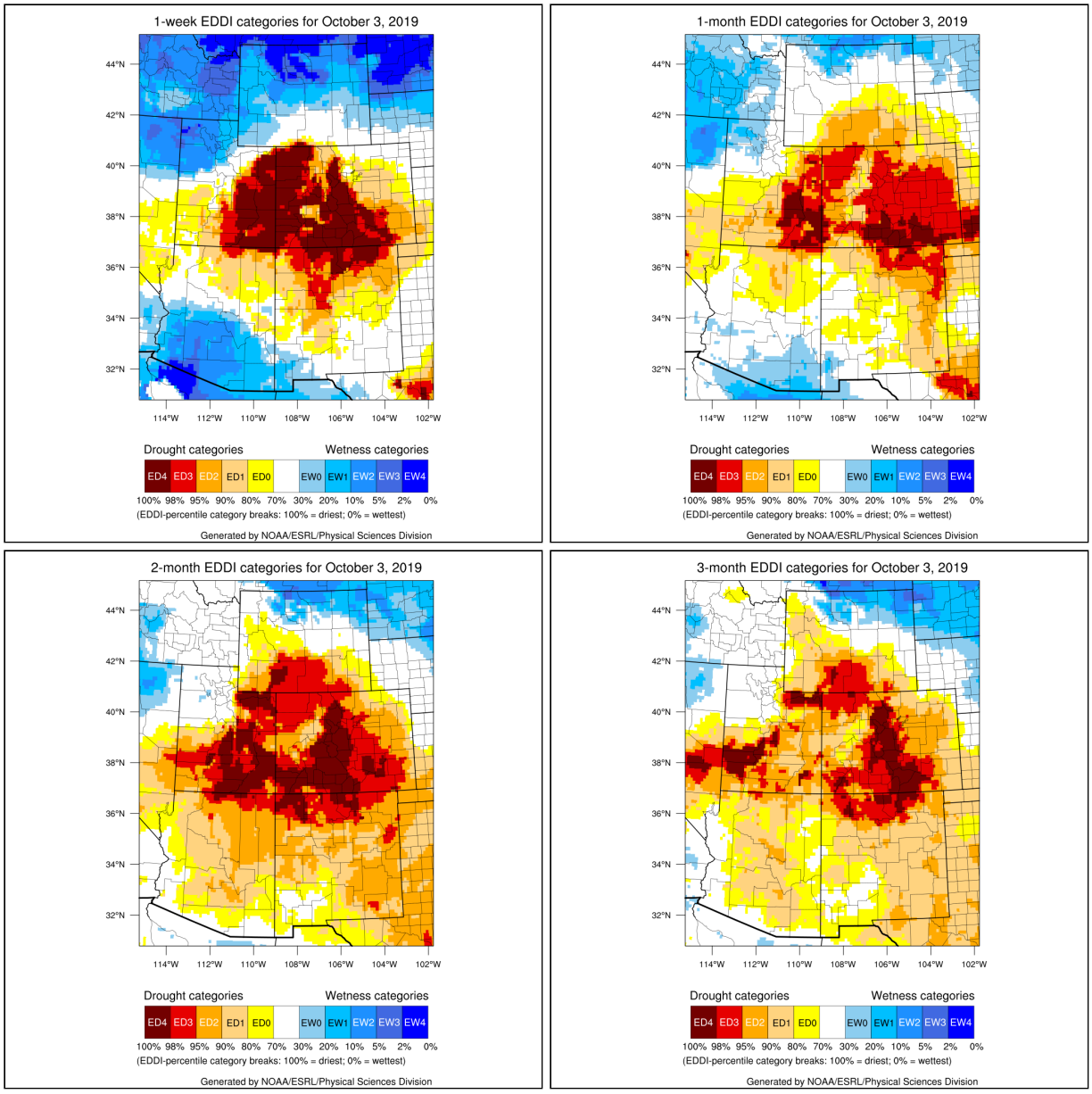


Evaporative Demand



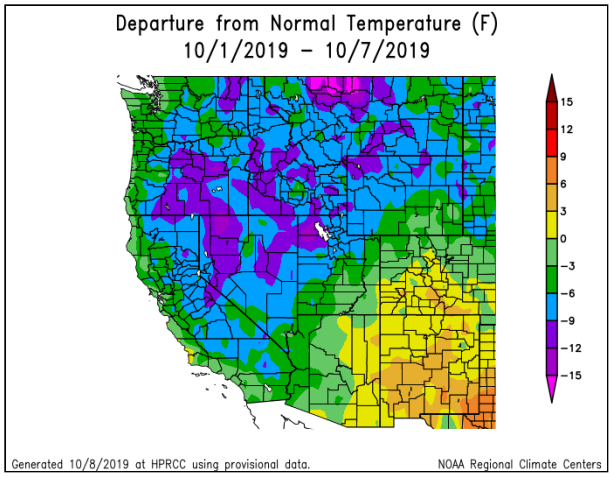


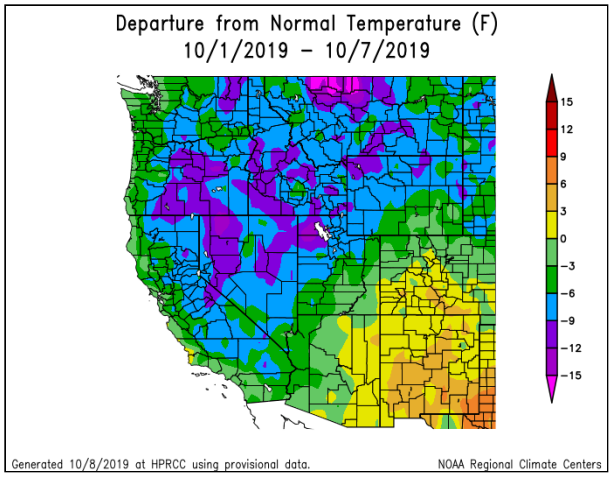
The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a map of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



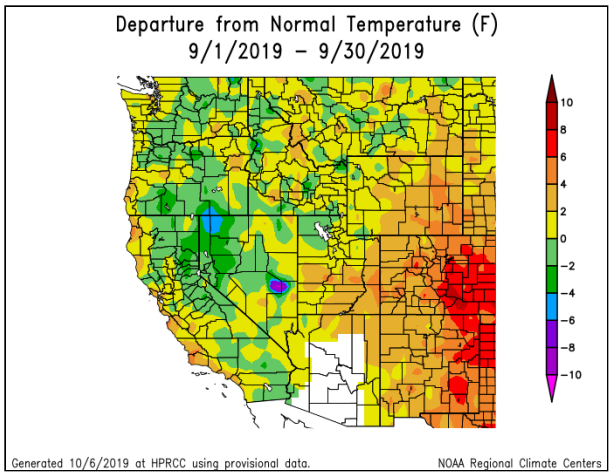
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

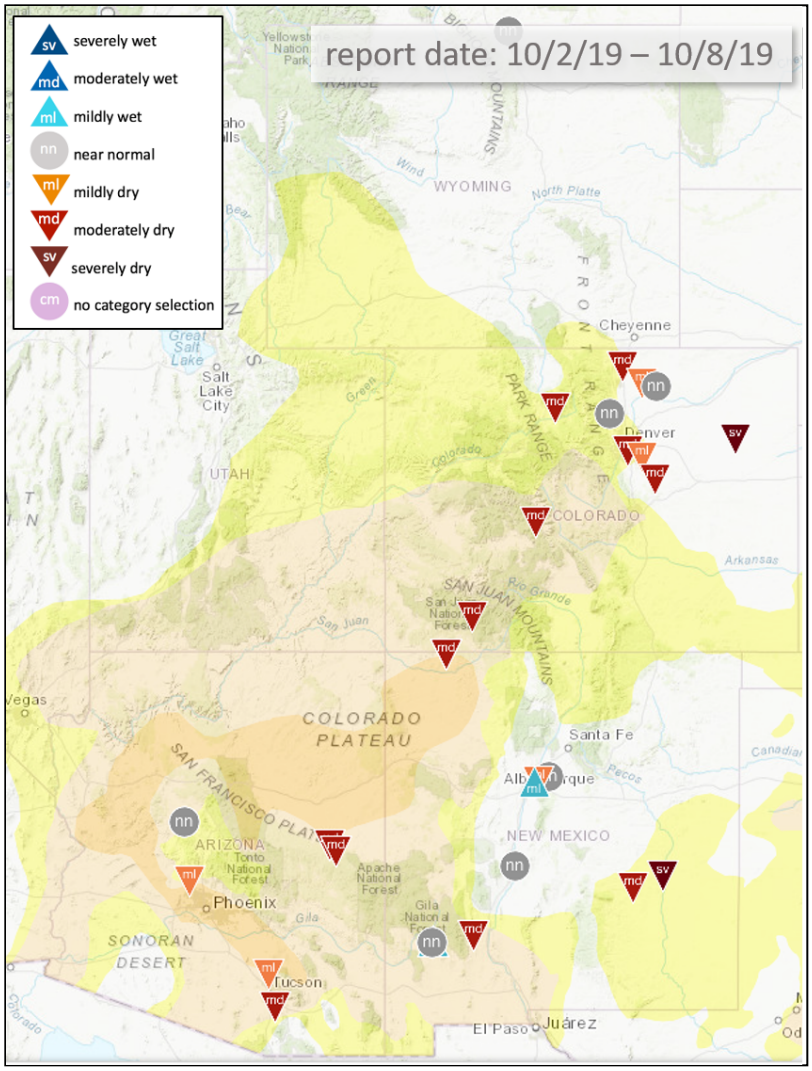




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



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.

Impacts in Central and East-central Utah:

Very little precipitation, mostly just wind south of Provo. Most producers are having to haul water and hay to keep livestock fed. There is some feed still on the rangeland, but the water isn't there to keep it going. Producers are planning to haul hay rather than sell off livestock.

Impacts from southwest Colorado:

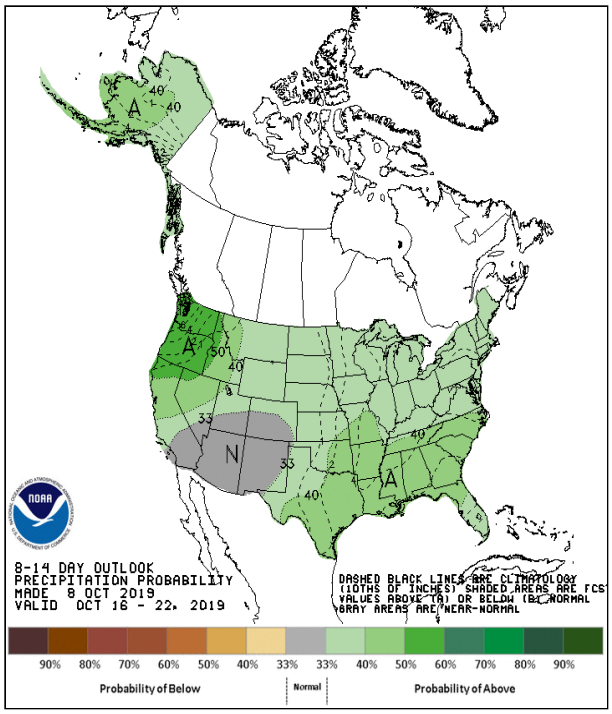
At the CSU Yellow Jacket Research Farm 0.30" of rain were received a few weeks ago and the dryland fall planting still didn't germinate. It feels like we went from wet/cool spring to hot/dry all summer. When watering alfalfa planted in August it seemed to dry out very quickly. A farmer in Mancos said he only had 0.30: since June. Irrigation water made it an OK year, but they observed how quickly the fields dried out after it turned hot this summer.

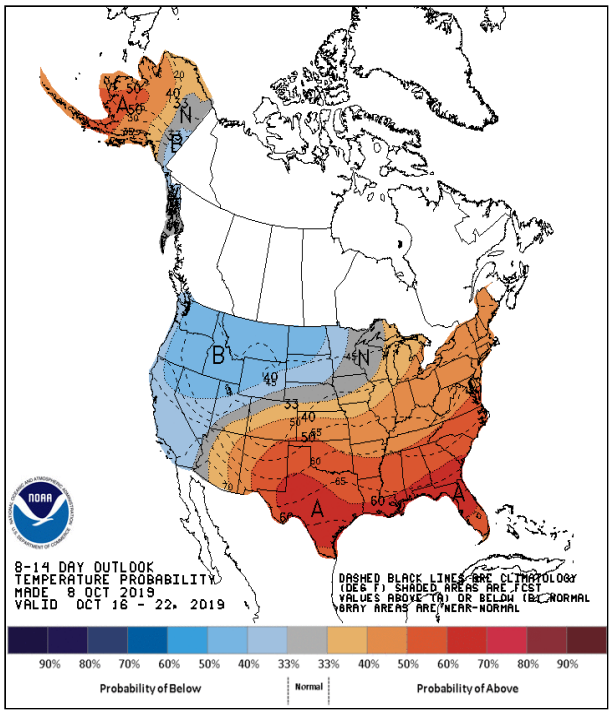
Eastern CO:

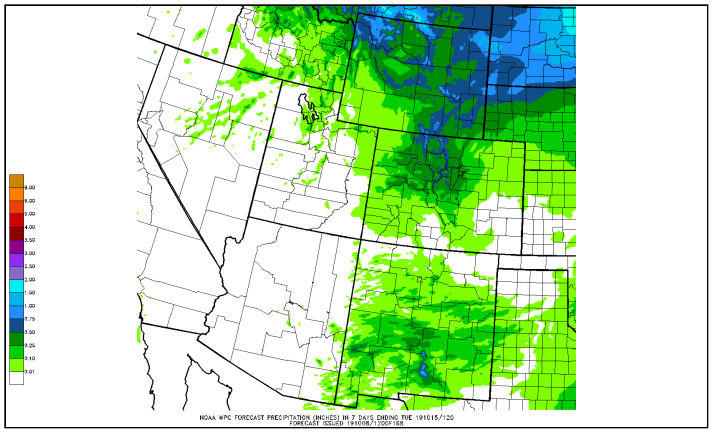
Seems like no precipitation has fallen since the beginning of August and heat has just hung around. Just had to drill winter wheat, earlier planted wheat has come up with what remained of the soil moisture. The later planted

winter wheat hasn't come up yet and may not unless a good shot of precipitation comes before winter. The other concern is pasture grasses. Hoping for a good winter so they come back strong.
Dryland corn has been harvested and had an OK year. Spring crops hung in well through the summer and yields were near or above average this year.

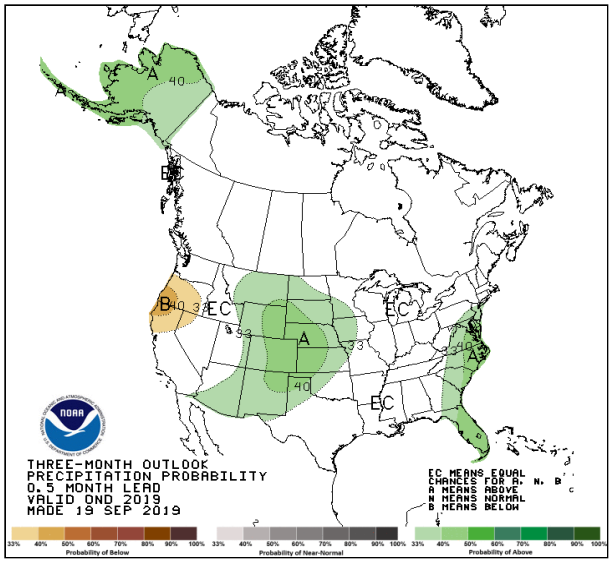
Outlook

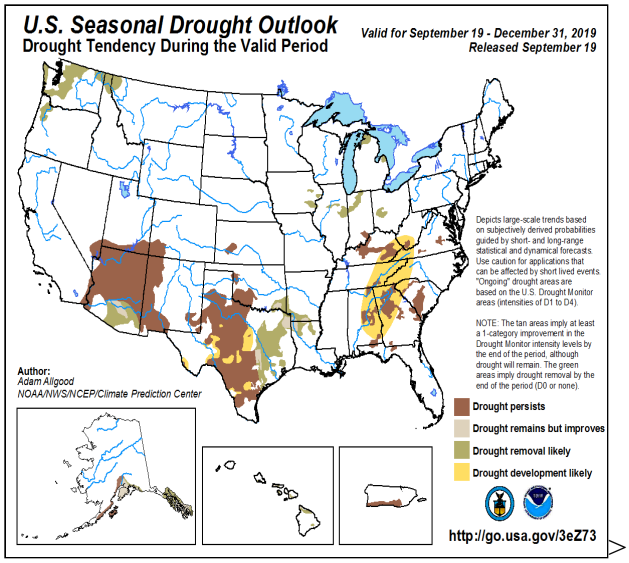




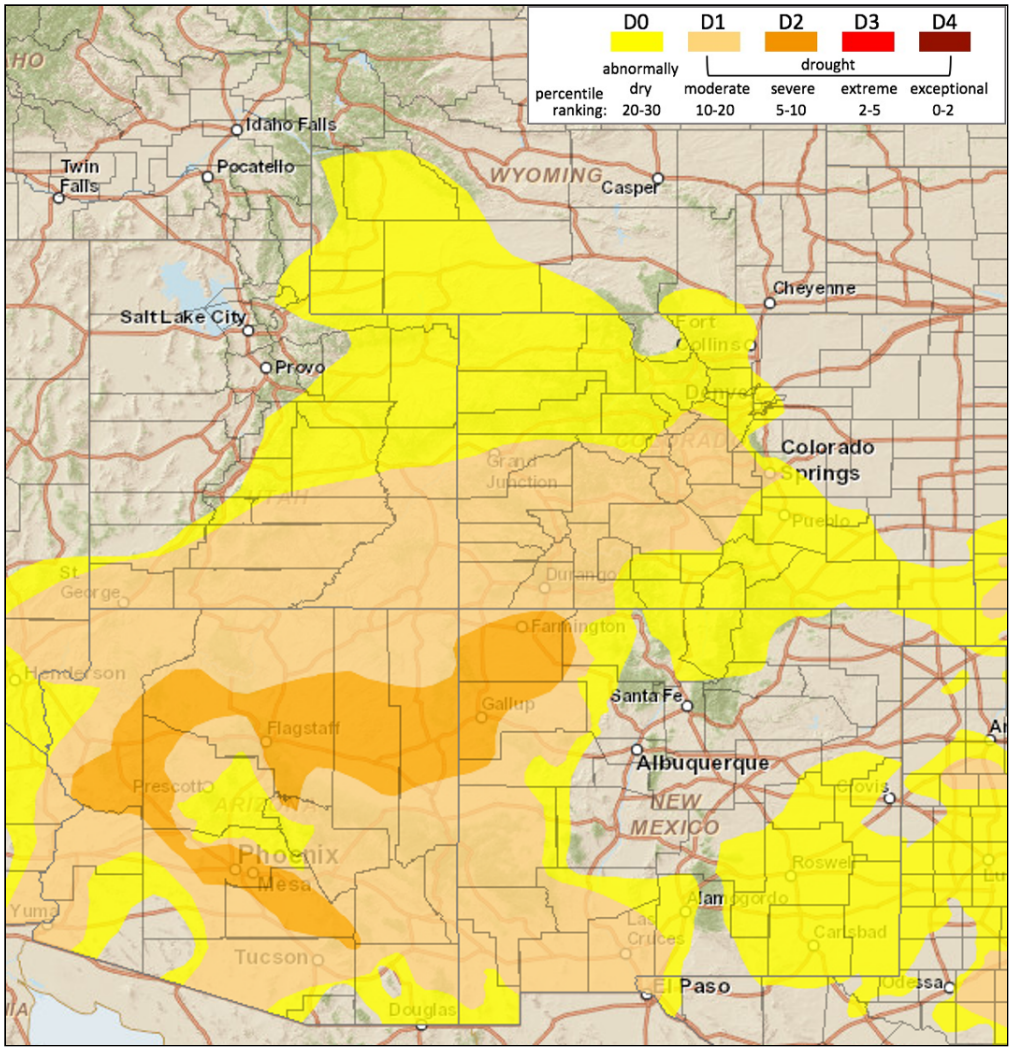


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

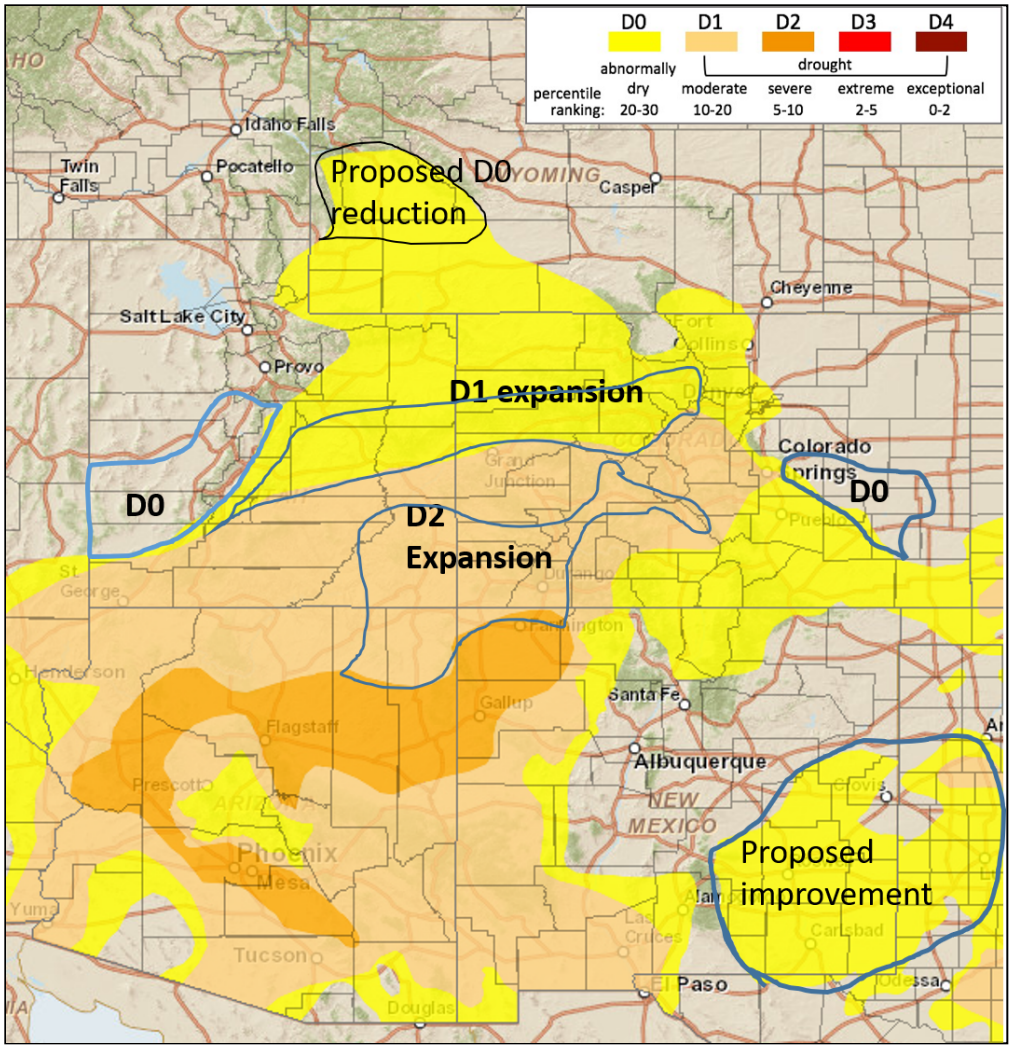




Summary and Recommendations



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: October 8, 2019

Last week for the Intermountain West region was dry with the exception of northern Wyoming and much of New Mexico. Northern Wyoming saw up to 1" in most areas except for a dry spot in Big Horn and Park counties. New Mexico saw some widespread precipitation, with amounts ranging from 0.5" up to 6"+, mainly in the southeastern part of the state. Because of varying topography, there is a lot of variation with precipitation amounts, but overall the precipitation was widespread. Northwest New Mexico missed out on the precipitation along with the rest of the region, with precipitation amounts less than 0.10" through most of the region.

Despite the dryness, temperatures were near to below average for the northern and western part of the IMW region. Southern Colorado and all of New Mexico saw above average temperatures. This was a nice change from the past few months which saw much above normal temperatures with Colorado and New Mexico seeing the warmest September on record.

The warm dry weather has made an impact on ranching in much of southern Utah where water supplies are limited. Most of southwestern Colorado, having ample water supplies from a great runoff, haven't see as bad of impacts thanks much of the area being irrigated. That said, SPIs in the area out to 4 months are showing D3 and D4 levels. Even with the west spring, this brings expansion of drought conditions.

Warm and dry weather has also impacted eastern Colorado, zapping the moisture in the soil making planting winter wheat difficult. Folks in southeast Colorado are hoping for a nice shot of precipitation before winter arrives. These impacts thanks to the dryness will bring some additional D0 expansion.

Streamflows in the UCRB are starting to show the dryness of late with an increasing number of streamgages showing below normal flows. The driest of the gages are showing up in the headwaters of the Colorado River. The Basin as a whole is still in good shape with the key gages seeing flows in the normal region.

Recommendations:

UCRB: A large expansion of D2 in the Four Corners region, expanding into Gunnison County across the Divide into Chaffee Fremont and Saguache counites, is being recommended. With the lack of Monsoon precipitation this year conditions have continued to dry out. SPIs in the proposed area are on the D3 and D4 range for the past 4 months. The expansion across the Divide is also driven by very dry SPIs and the Decker Fire near Salida, CO. It is recommended the D2 expansion stays south of Mesa and Montrose counties. While the dryness is there, the D2 impacts are not seen at this time.

D1 expansion farther north from Central Utah into central Colorado, all the way to Grand County. The continued dryness is showing up in the SPIs and the streamflow. Warm dry weather of late has brought Red Flag Warnings to the area this week.

Western Utah: Northward expansion of D0 is recommended over southwest UT, based on high evaporative demand and negative SPIs.

Eastern Colorado: Expansion of D0 is recommended across southeast CO. In eastern CO, agricultural impacts are widespread. Winter wheat planting is just about complete, but there is concern planting into very dry and dusty grounds and no precipitation falling afterward to help with germination. Wheat that was planted earlier has started to come up, however wheat planted later is struggling. EDDI shows D2-equivalent or worse on the 1 and 2-month timescales.