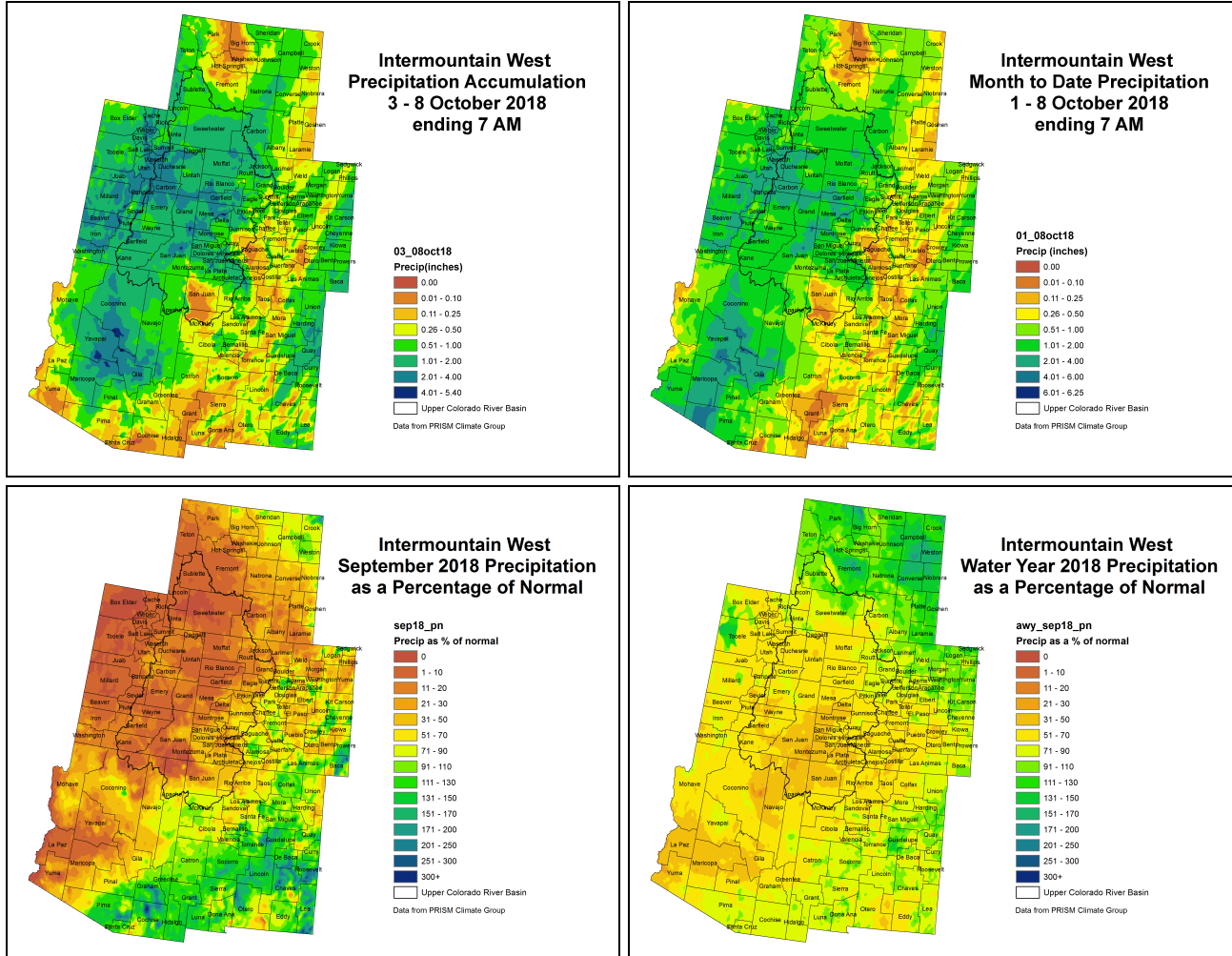


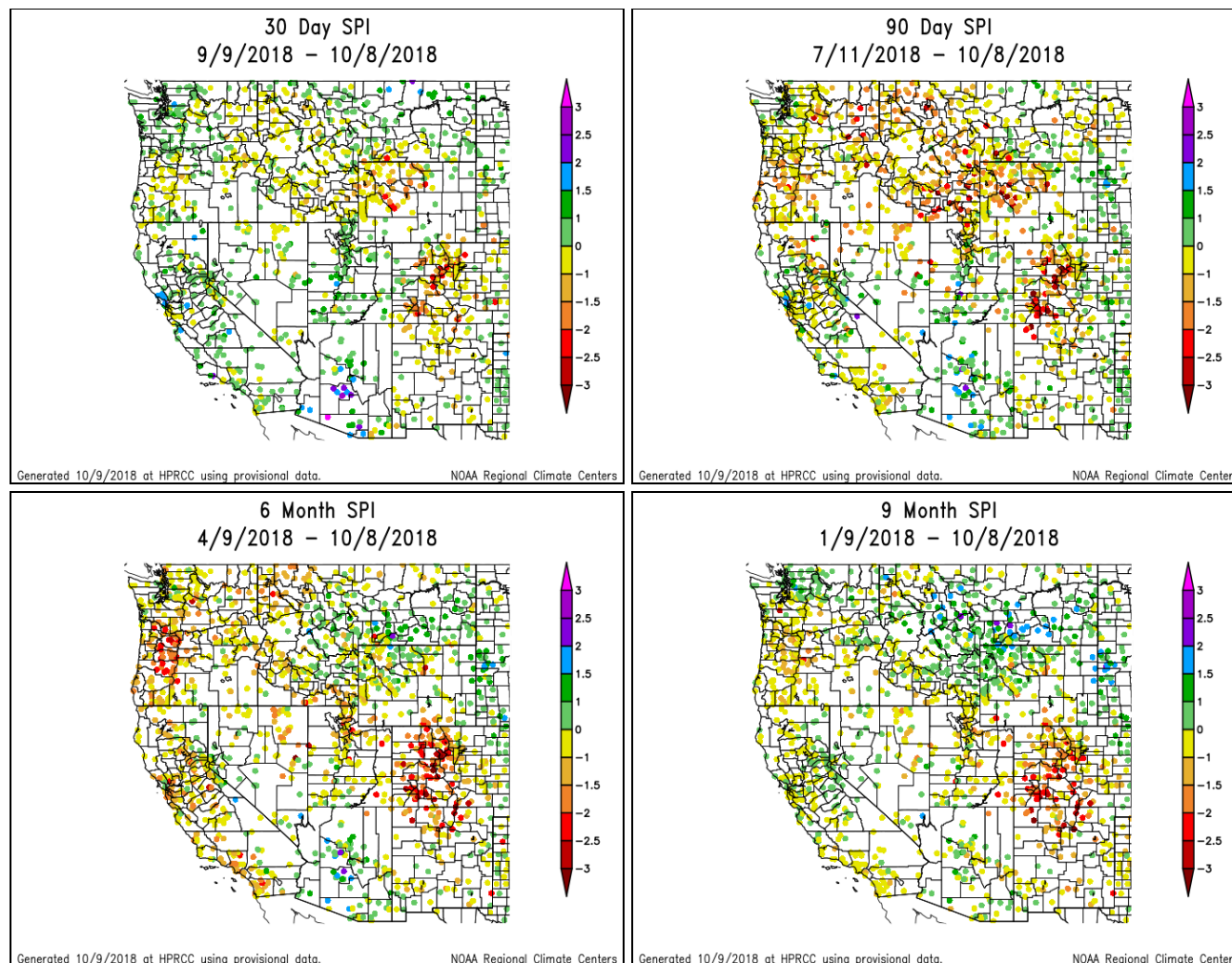
NIDIS Intermountain West Drought Early Warning System October 9, 2018

Precipitation



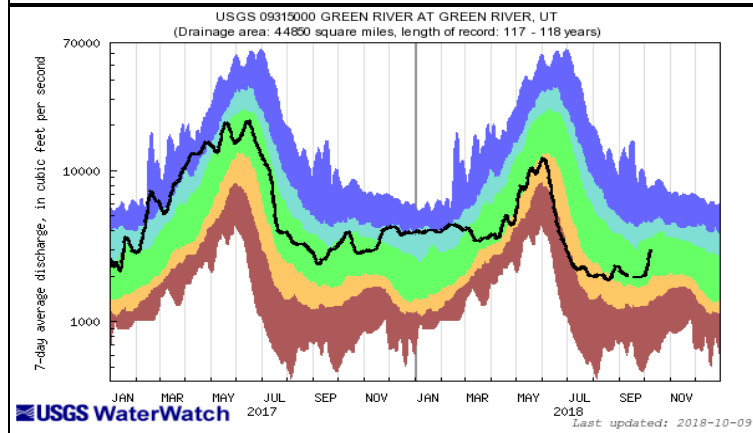
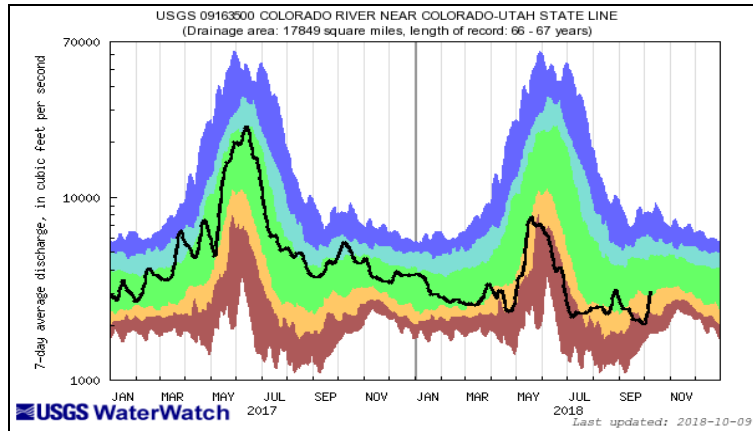
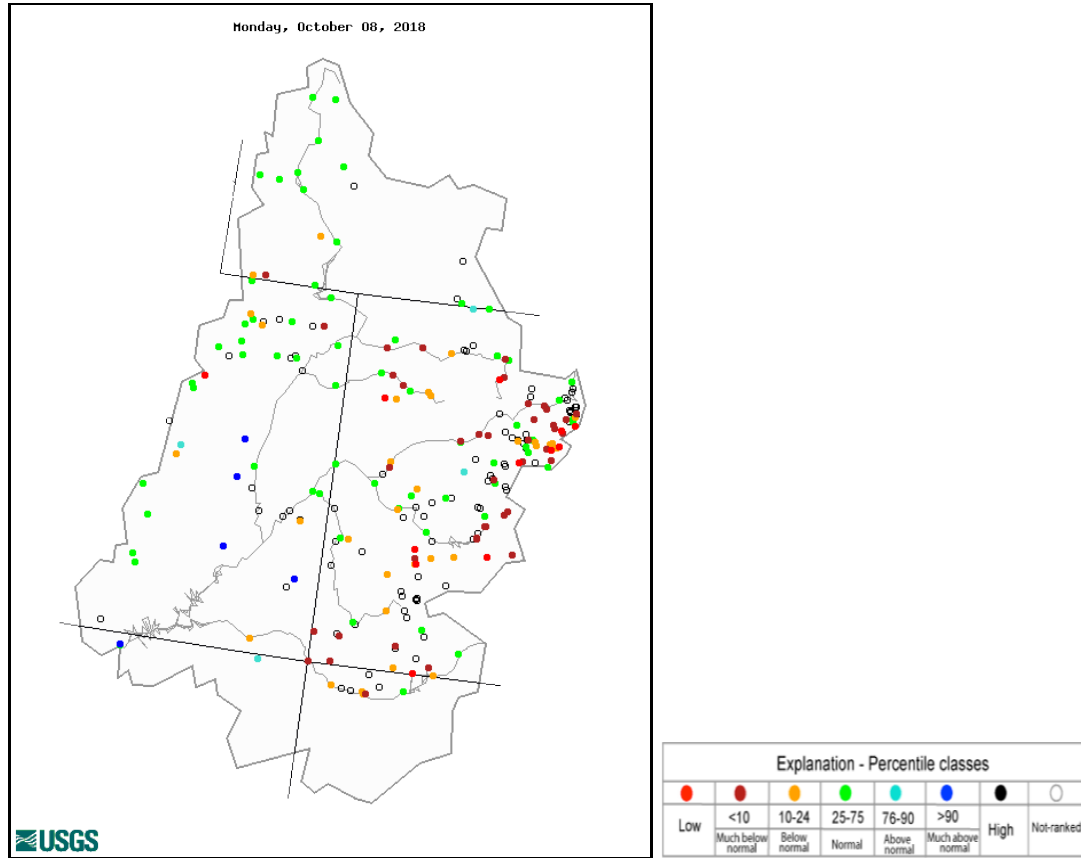
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

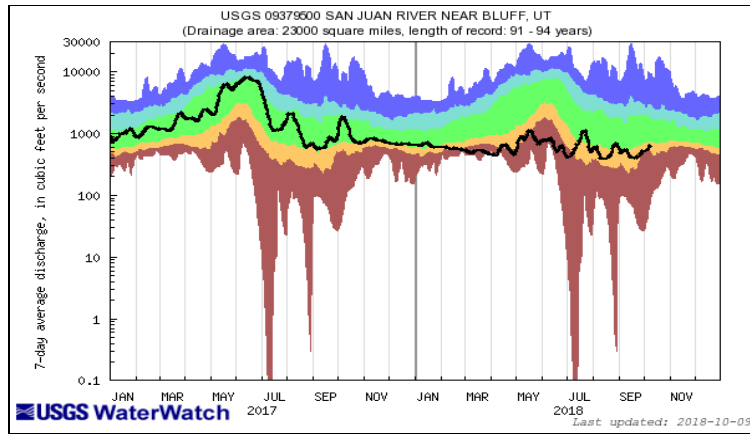
Standardized Precipitation Index



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.

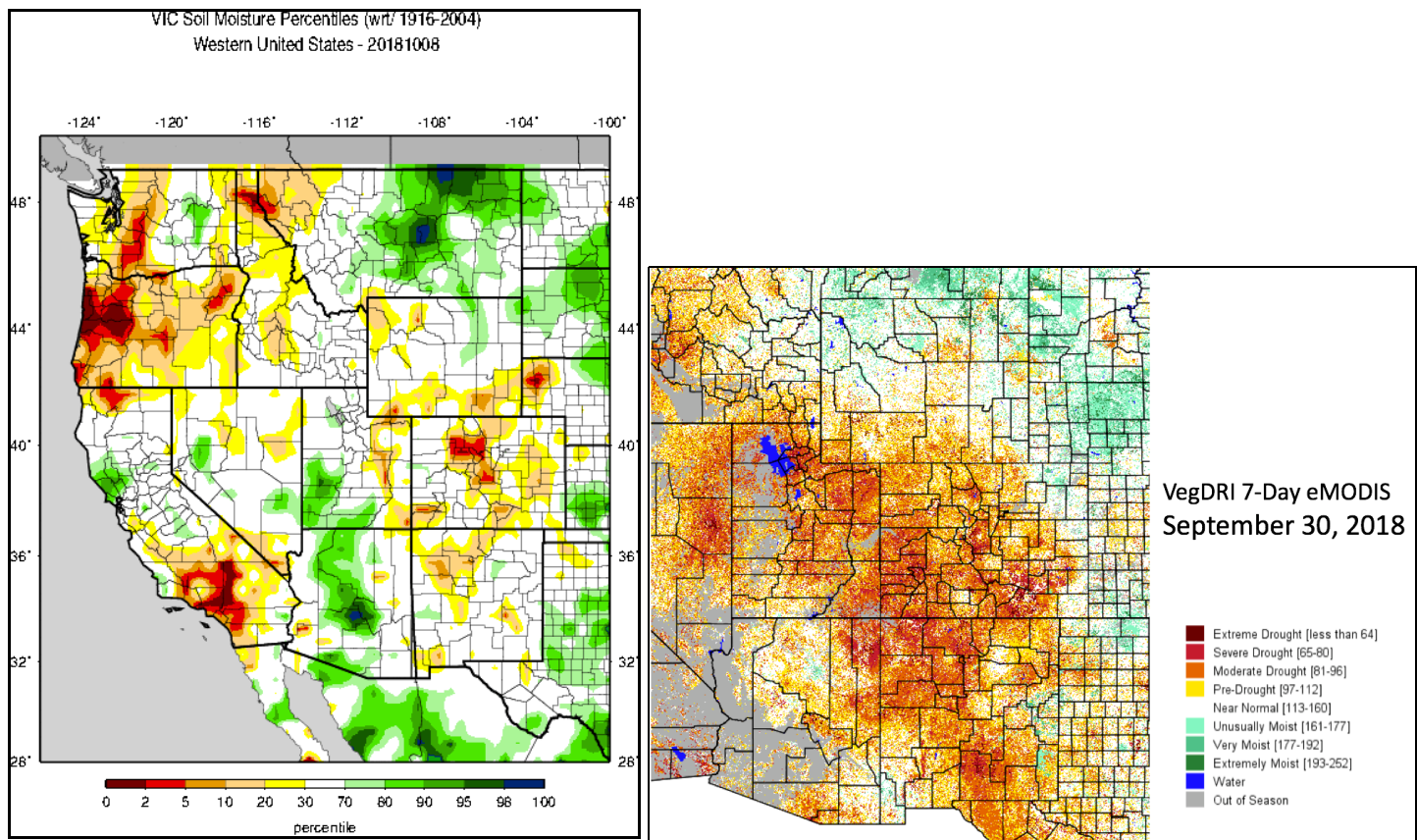
Streamflow





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.

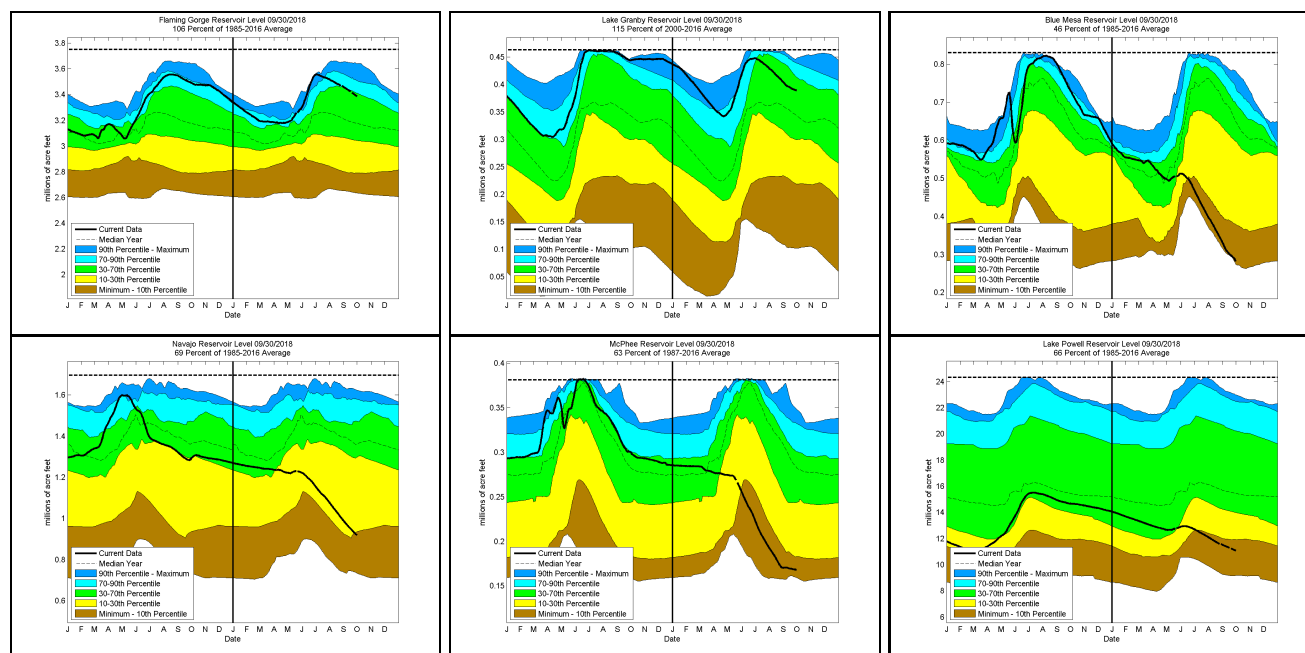
Surface Water



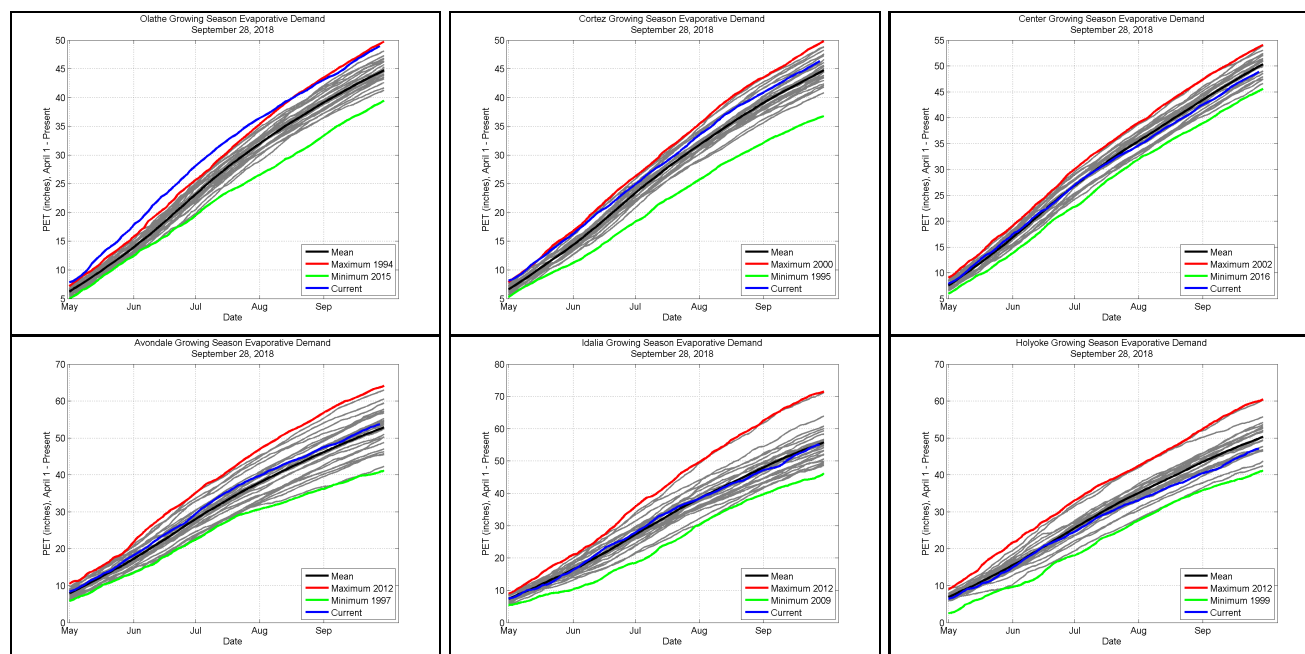
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

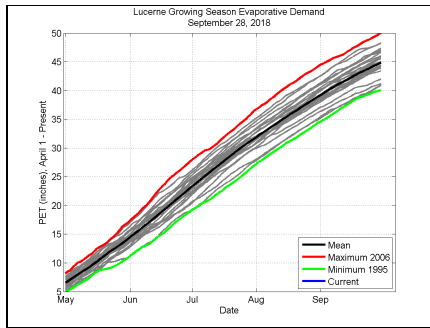
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

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.

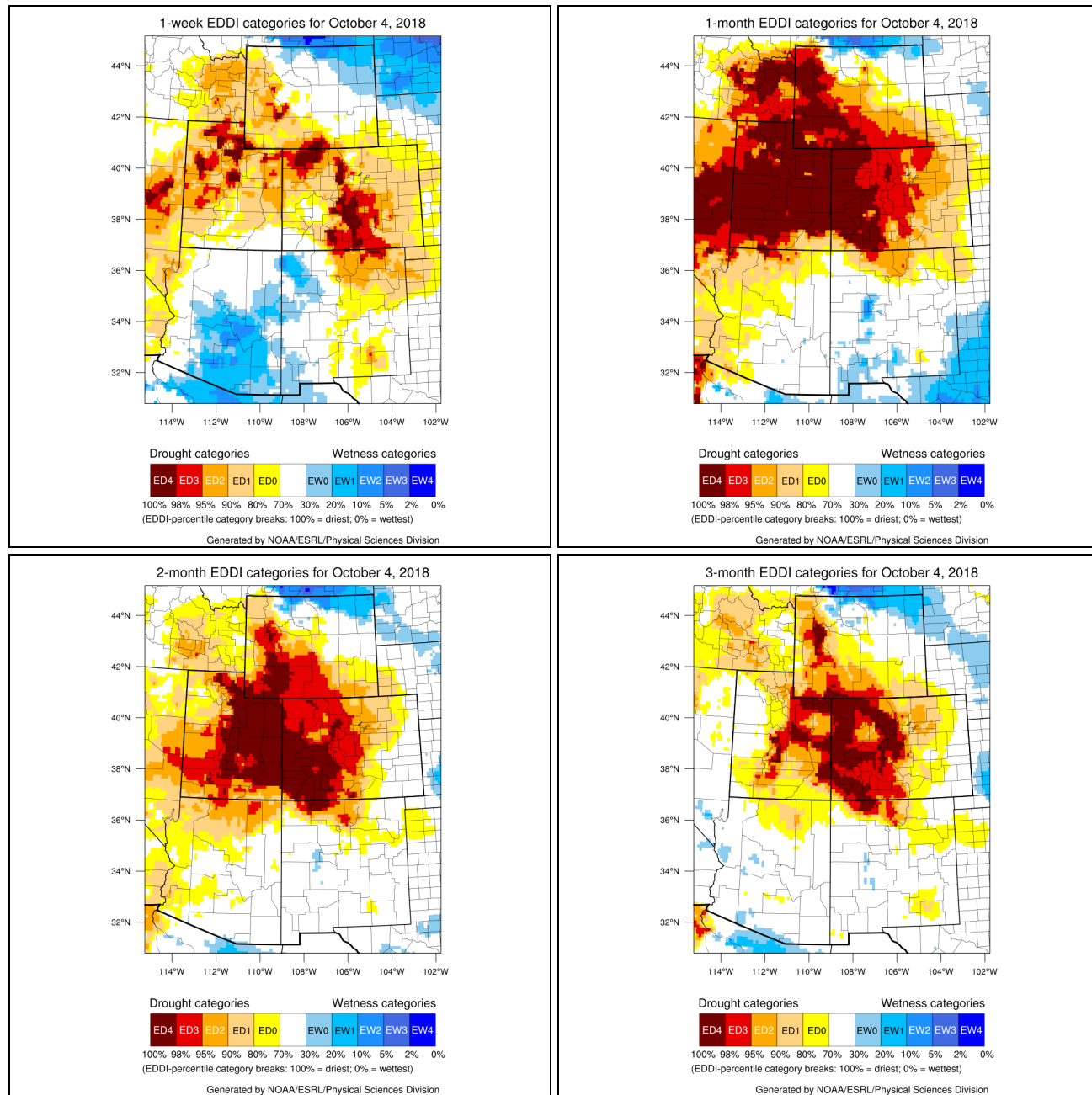


Evaporative Demand





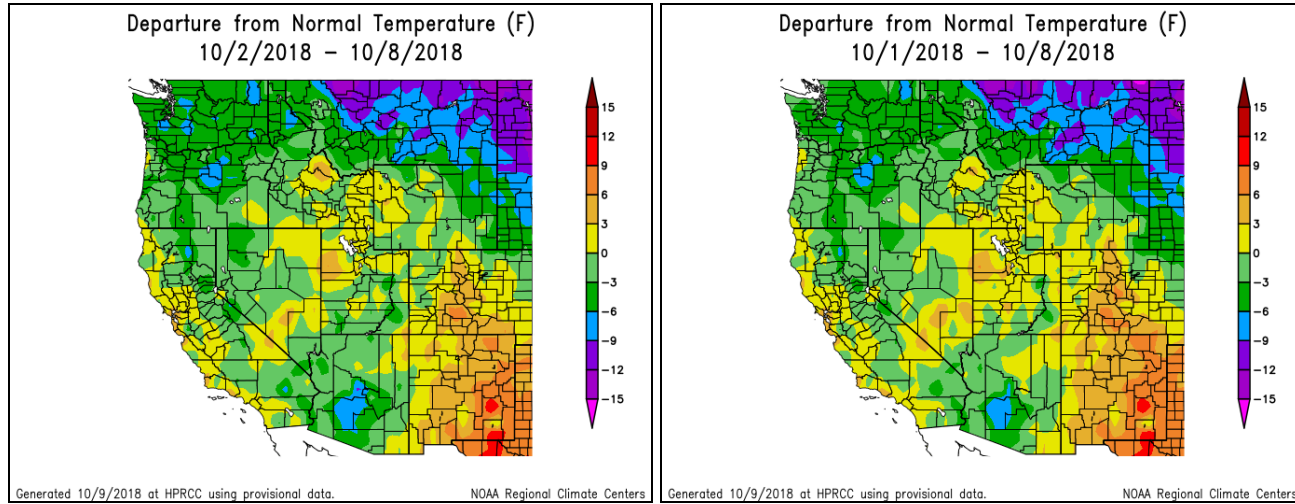
The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of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



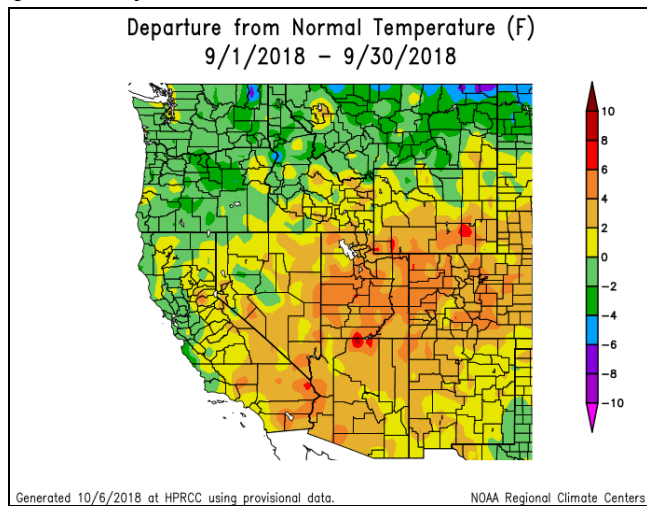
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

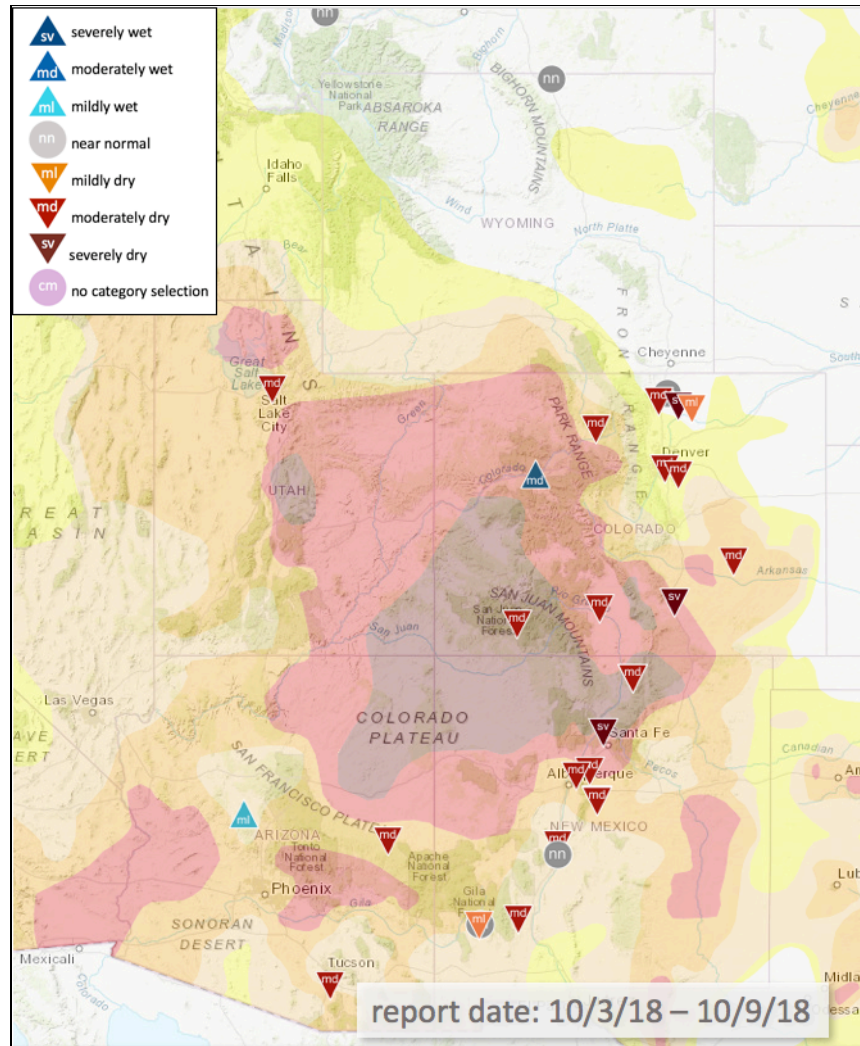
Temperature



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.

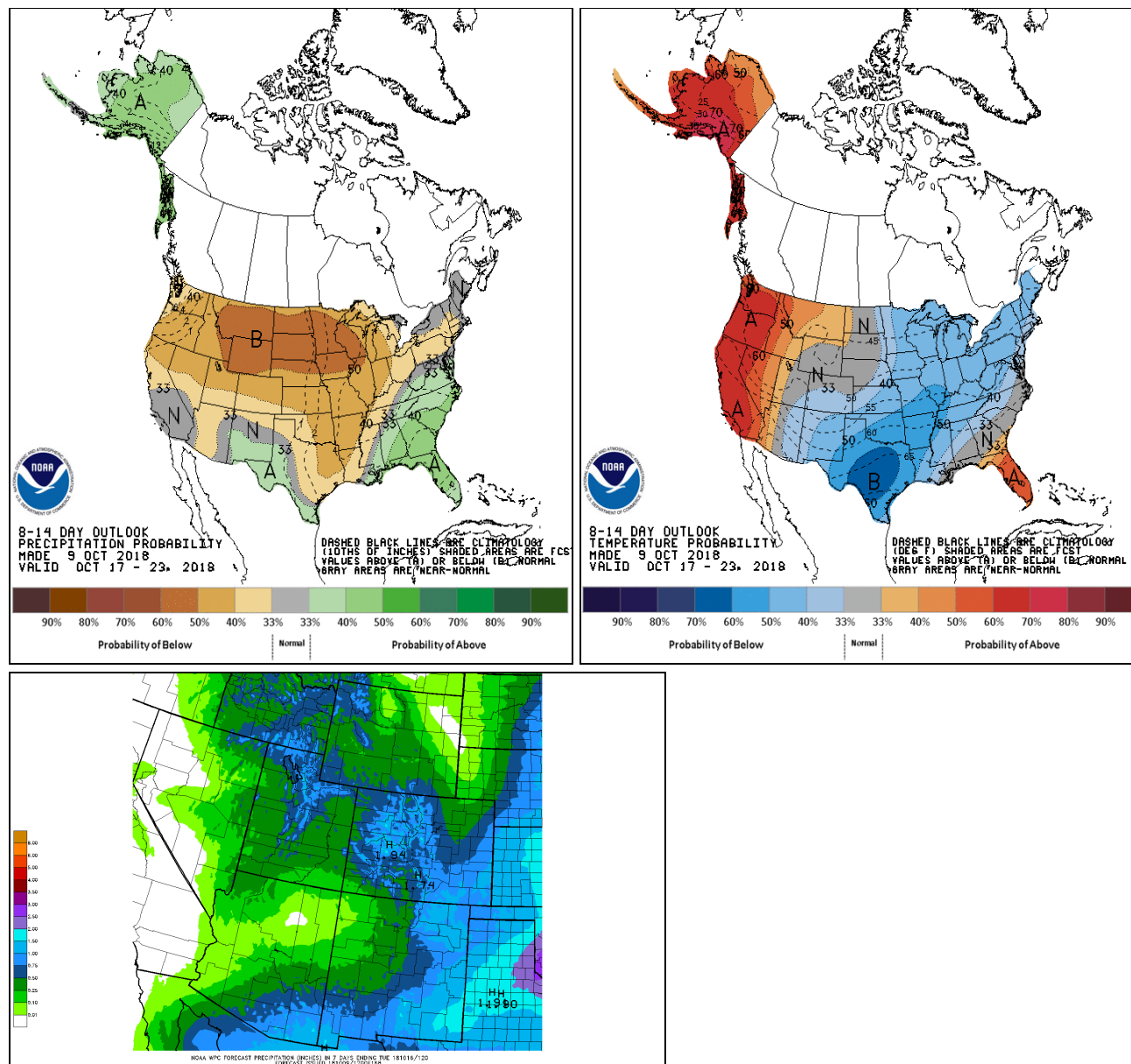
Garfield County, CO

The rain received in the last week was nice and steady. It soaked into the soil rather than just running off. Much needed! Additionally, both Garfield and Pitkin Counties removed all fire restrictions as of today (Oct. 9). They were previously still both in Stage 1 Restrictions.

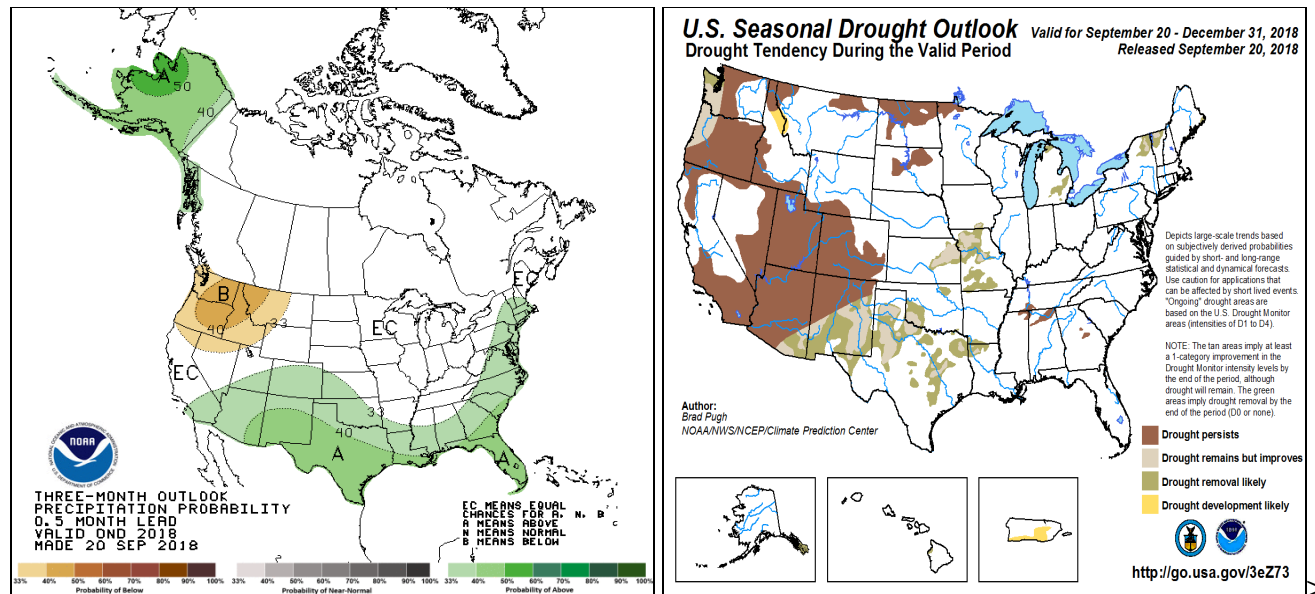
Emery County, UT

The last week's rain totals will alleviate some of the fears of water shortages. While it remains to be seen how much the storms recharged springs that supply the Muddy Creek, it's been an amazing storm!

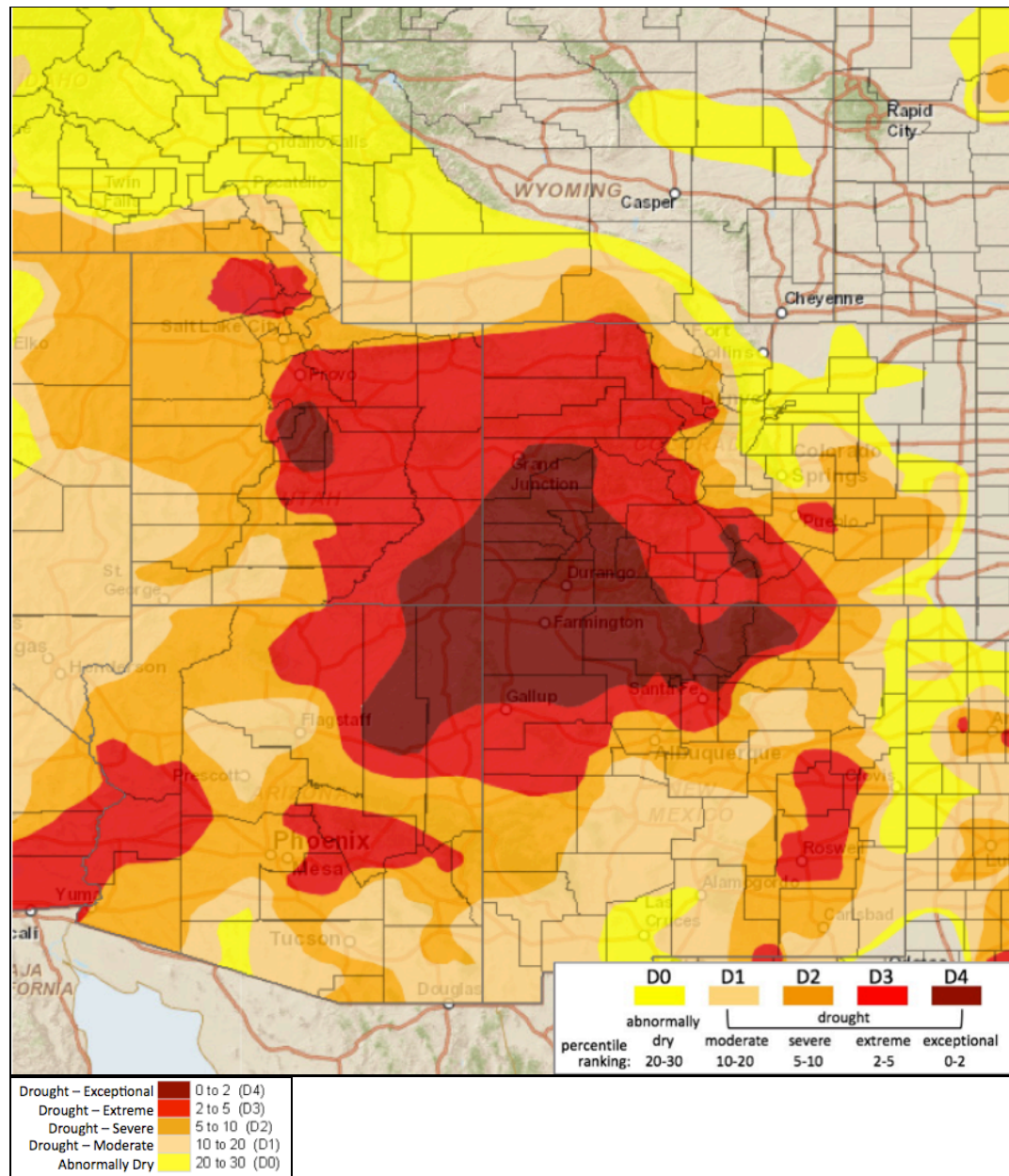
Outlook



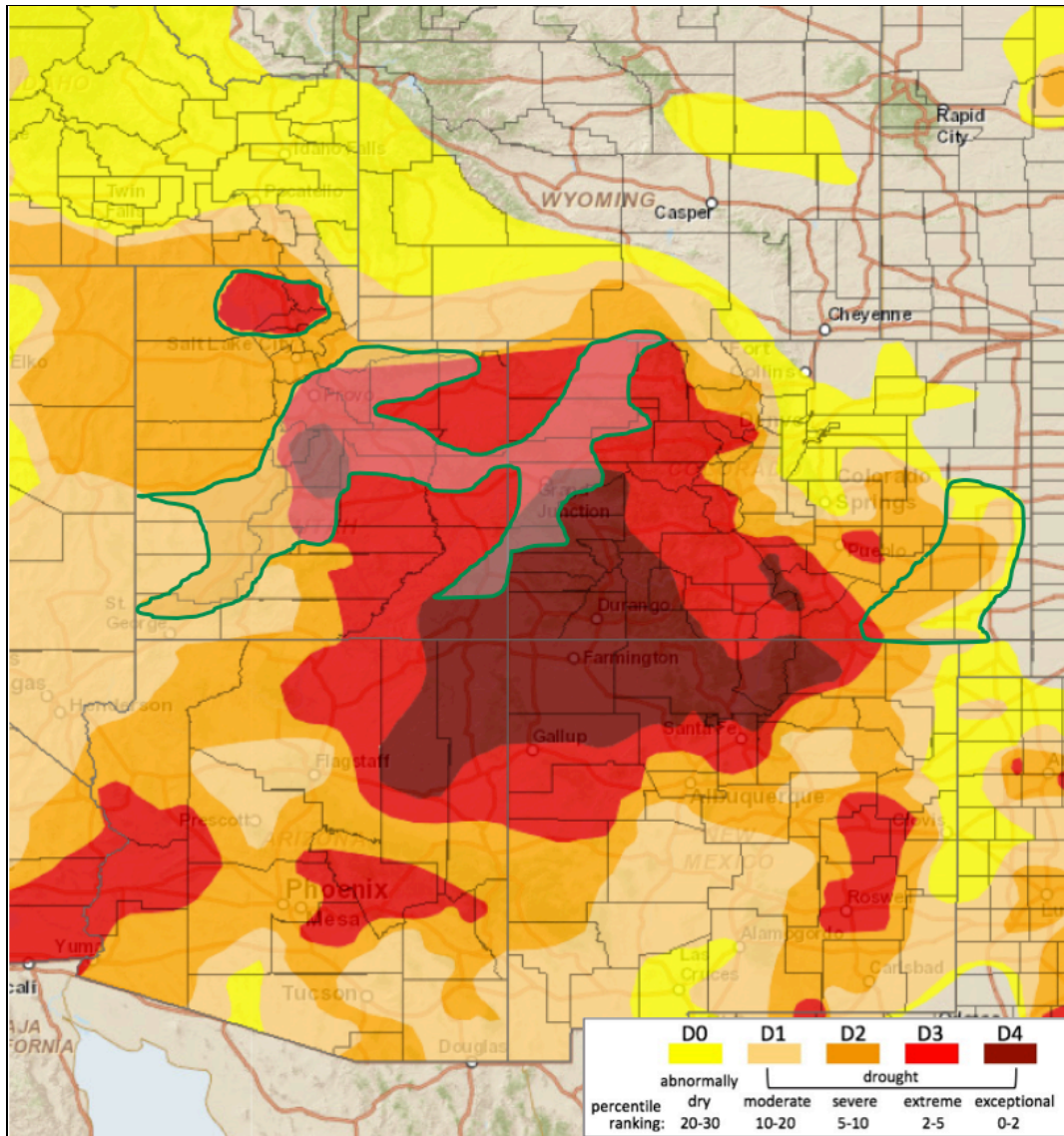
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate 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 9, 2018

Significant areas of the Intermountain West have welcomed a much needed pattern shift for the beginning of Water Year 2019. Widespread precipitation accumulations of 1-2 inches have been observed for most of the Upper Colorado River Basin with some areas receiving between 2 and 4 inches since October 1. For much of Utah and western CO, this equates to >400% of average moisture for this time of year.

The hydrologic response to this increased precipitation activity has been notable. The percent of streamgauges in the UCRB reporting record low 7-day average flows decreased from 30% one week ago to 8% as of October 8. VIC modeled soil moisture showed significant improvement in soil conditions over UT and western CO. SNOTEL snowpack accumulations are off to a running start throughout the CO and UT mountain ranges. Long-term deficits are still substantial, and larger water supplies remain at concerning levels, but the immediate relief is welcome and the short-term outlook is a bit more hopeful.

Parts of the eastern plains of Colorado and New Mexico also received between half an inch and 2 inches of precipitation for the past week, also well above the average for this time of year. The timing of this type of event for the high plains is critical in terms of winter wheat crops. Planted in late September/early October, many of the fields will likely benefit from this moisture, which will aid in the germination of the fields before the extreme cold of winter arrives.

The outlook for the next week is promising. Widespread accumulations of .5-1.5 inches are expected over the northern UT mountains, the CO mountains, and the southeast plains of CO and eastern plains of NM. The far southern portions of the IMW in NM and AZ can also expect some decent totals. In the two week outlook, a drier pattern looks to emerge.

Recommendations:

Upper Colorado River Basin: One-category improvements are recommended for parts of Utah and Colorado and are outlined in green. The large area that covers central UT, extending eastward and into western CO, represents the widespread location of 2-3 inch precipitation over the last week. While much of the UCRB received over 400% of normal precipitation for the week, the weekly accumulations have not erased some of the D3- to D4-level long-term deficits that are still evident. However, there was a good hydrologic response to the precipitation event, with good soil recharge and a noticeable bump in streamflows around the basin. Since long-term SPIs still show quite negative in many areas, it seemed prudent to limit improvements to areas with a large magnitude of accumulations. This would bring some of western UT up to D1, trim back some of the D3 in UT and northwest CO, remove the D4 in central UT, and slightly trim the D4 along the CO-UT border. It is also recommended to look at possible removal of the D3 area near Salt Lake City as well.

Eastern Colorado: Very well-timed precipitation fell along the eastern plains this past week. Many stations in southeast CO reported between 1 and 2 inches of moisture (generally more than the area receives in the entire month of October). This moisture will be critical for the germination of planted winter wheat. Therefore, a one-category improvement is recommended for southeast CO and is outlined in green.