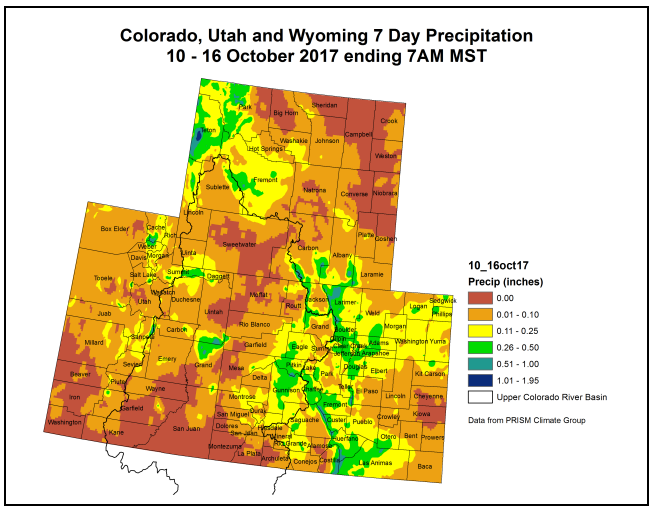
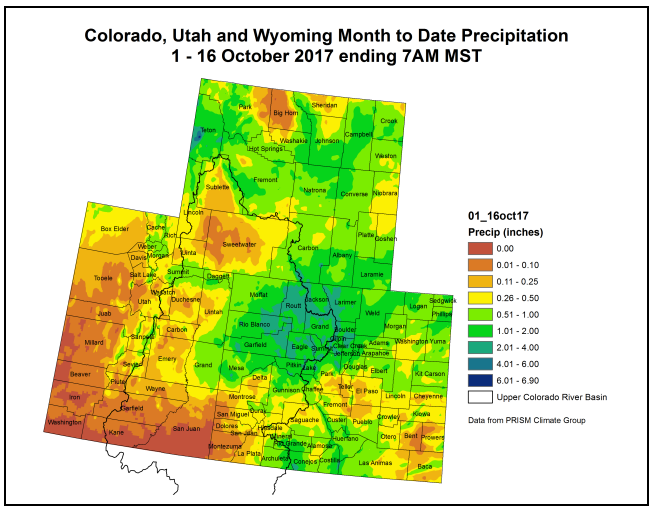
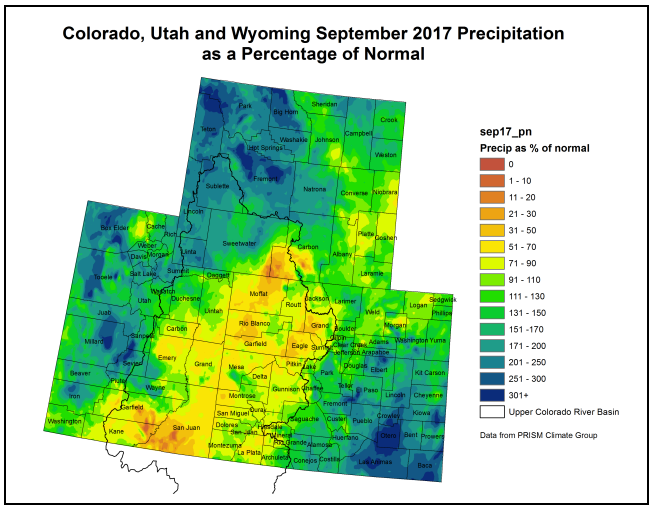
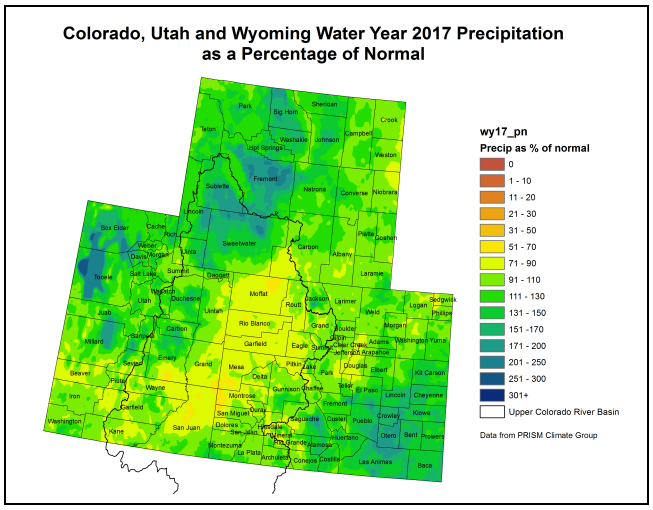
NIDIS Intermountain West
Drought Early Warning System
October 17, 2017

Precipitation



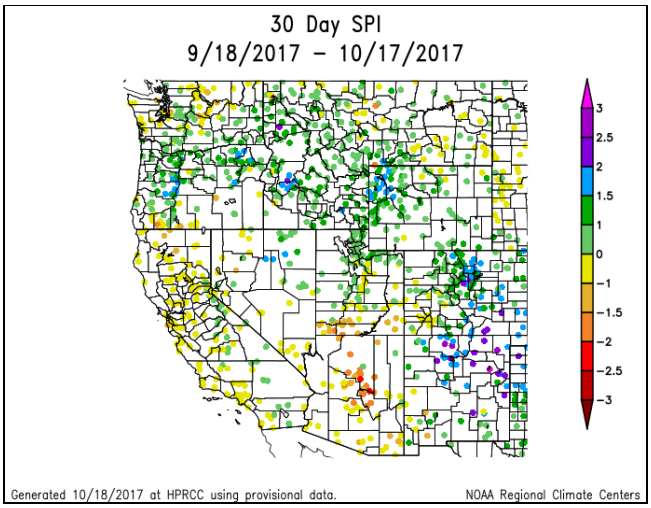


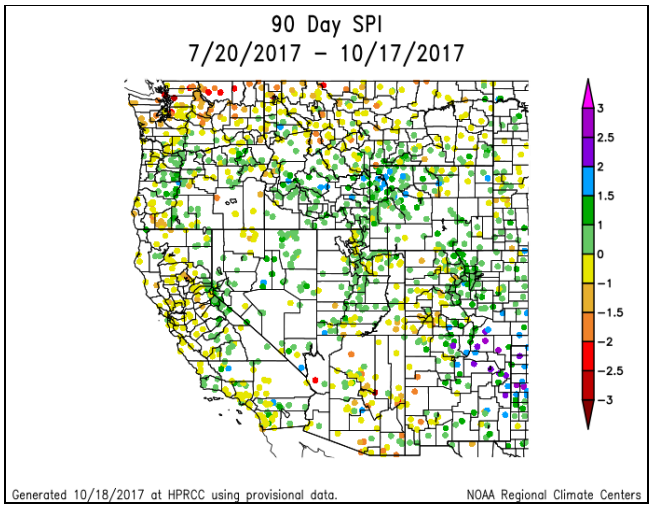


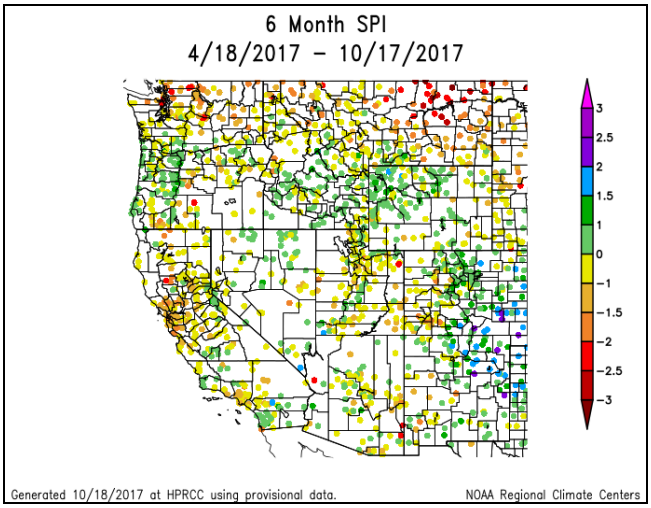


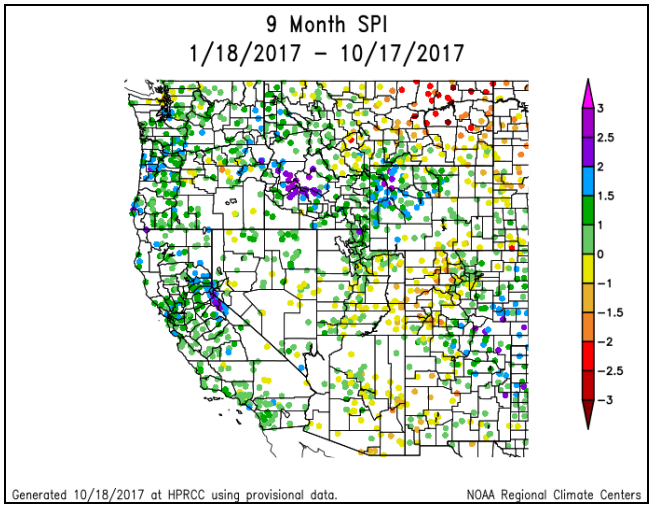
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index



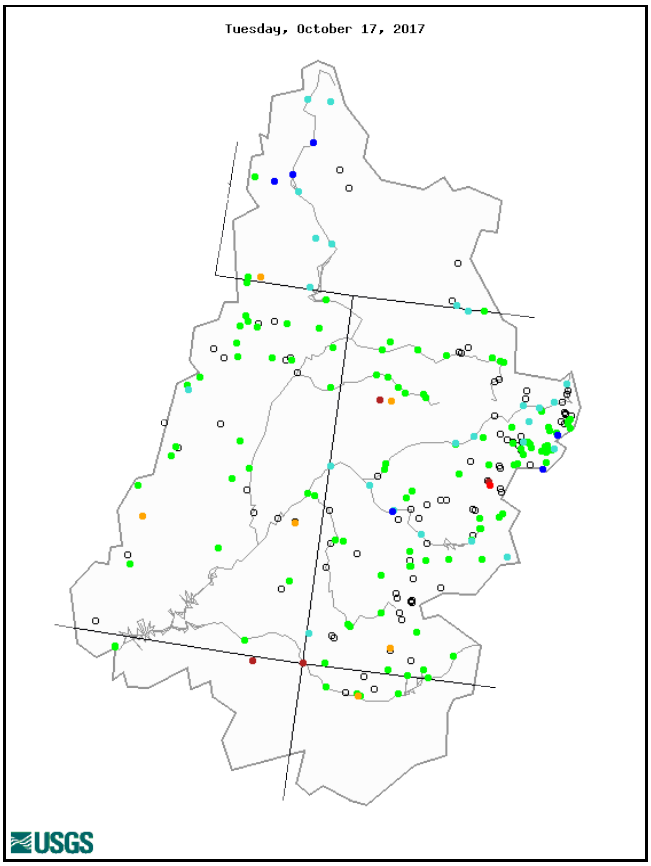


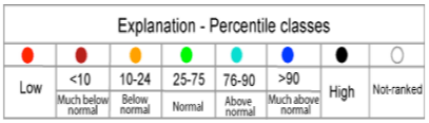


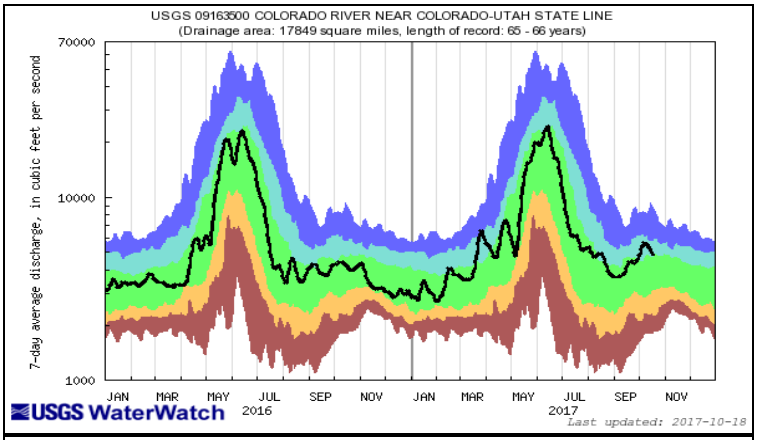


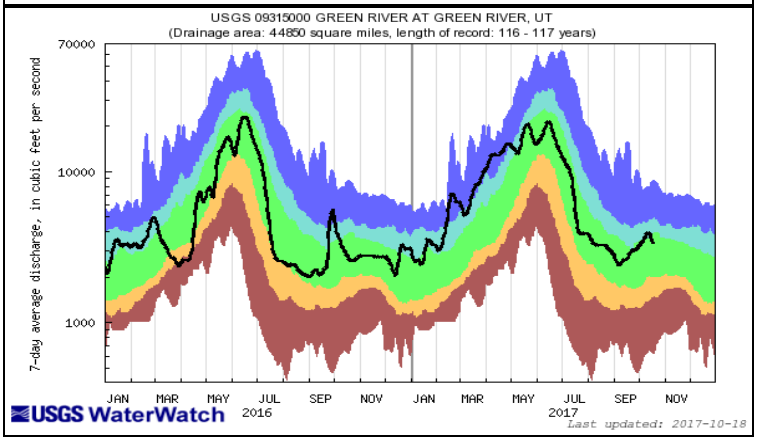
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

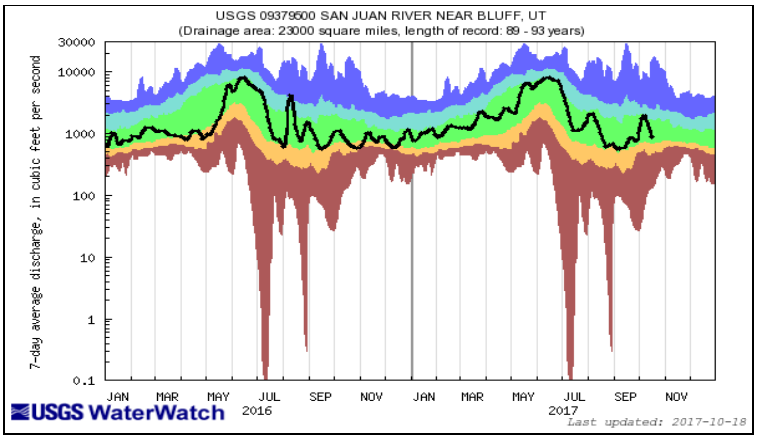
Streamflow


Tuesday, October 17, 2017
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

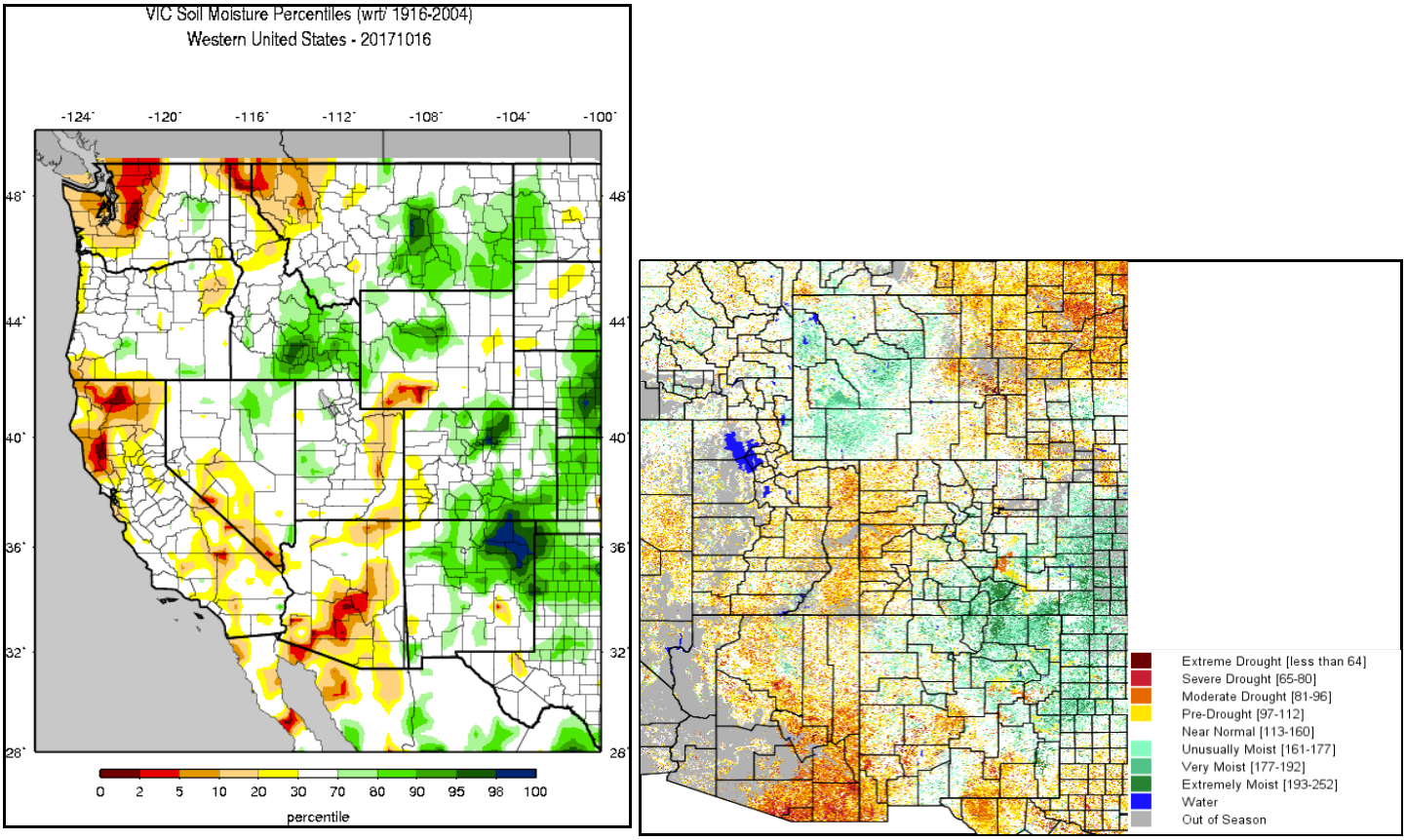

USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE
(Drainage area: 17849 square miles, length of record: 65 - 66 years)
7-day average discharge, in cubic feet per second
70000
10000
1000
JAN MAR MAY JUL SEP NOV JAN MAR MAY JUL SEP NOV
2016
2017
USGS WaterWatch
Last updated: 2017-10-18


USGS 09315000 GREEN RIVER AT GREEN RIVER, UT
(Drainage area: 44850 square miles, length of record: 116 - 117 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
2016
2017
USGS WaterWatch
Last updated: 2017-10-18



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.

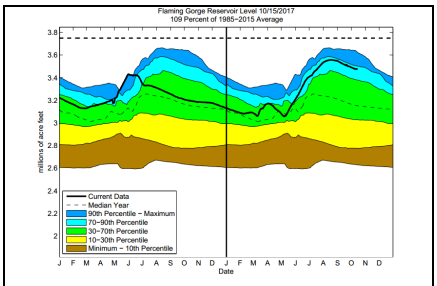
Surface Water

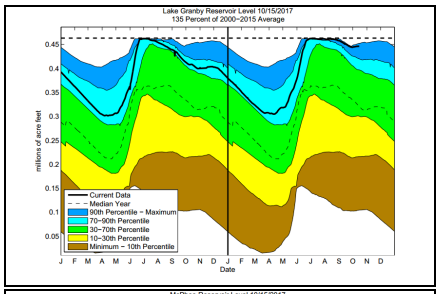


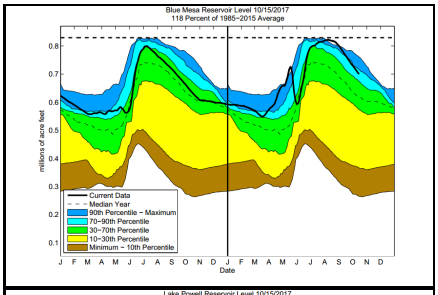
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

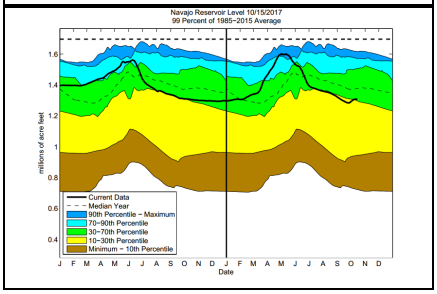
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

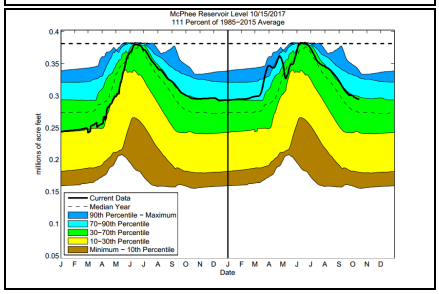
levels observed over the past 30 years. The data are obtained from the Bureau of Reclamation. Some of the reservoir percentiles don't line up at the new year due to differences in reservoir levels at the beginning of 1985 and the end of 2014. Dead storage has been subtracted. Note: Lake Granby data are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

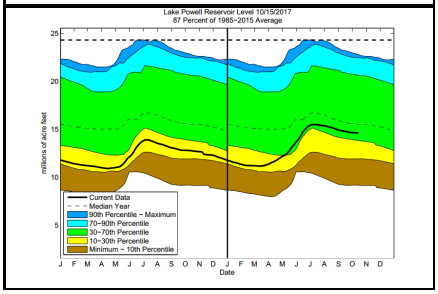




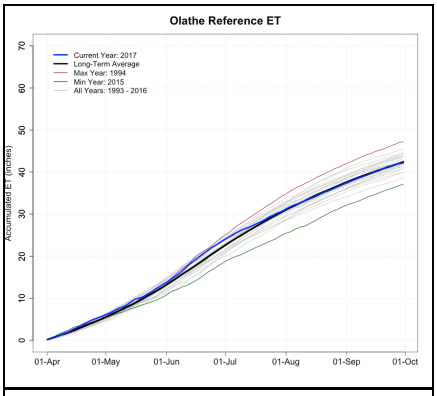


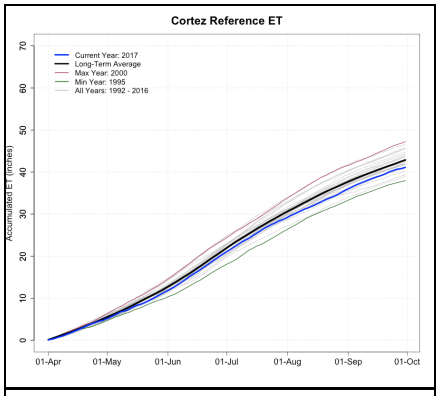


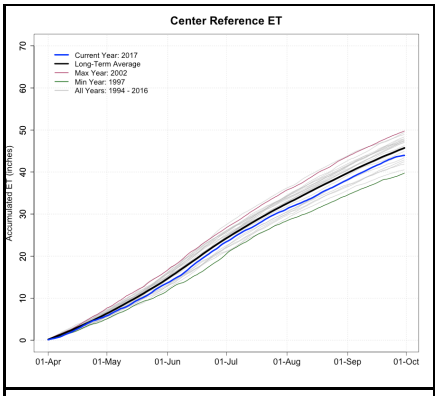


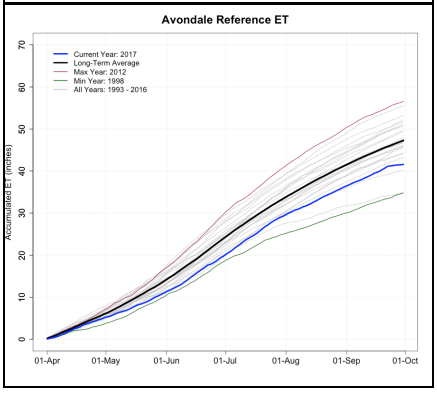


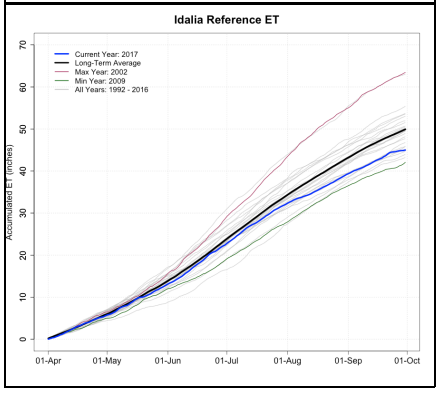
Evaporative Demand

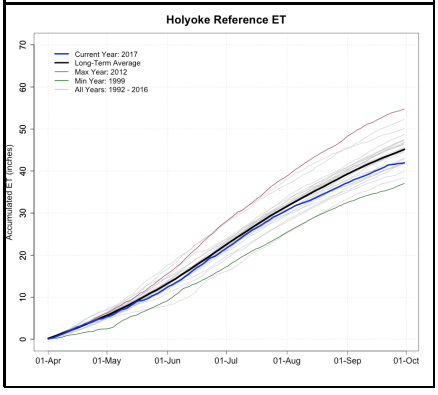


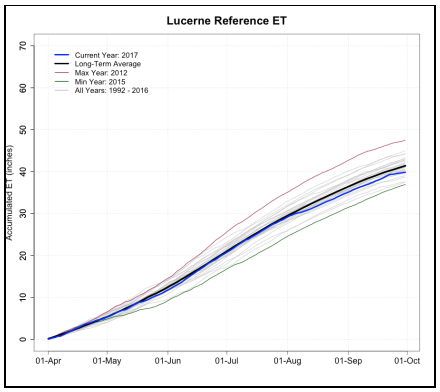




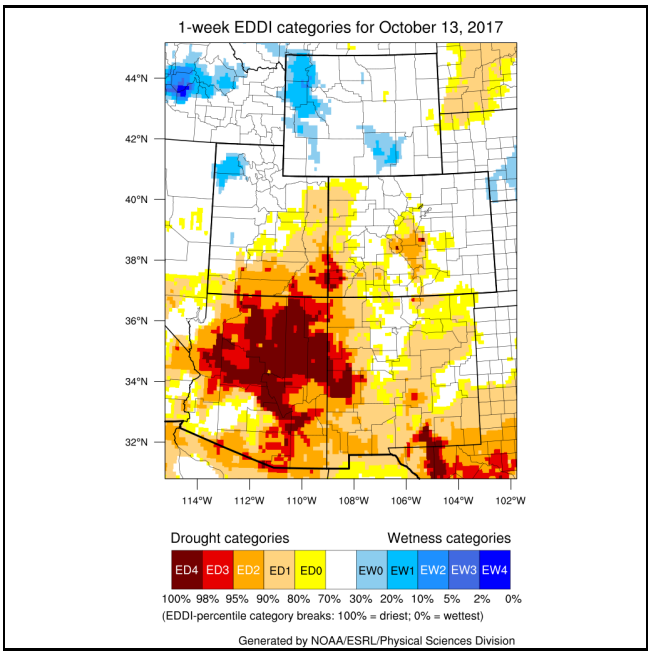


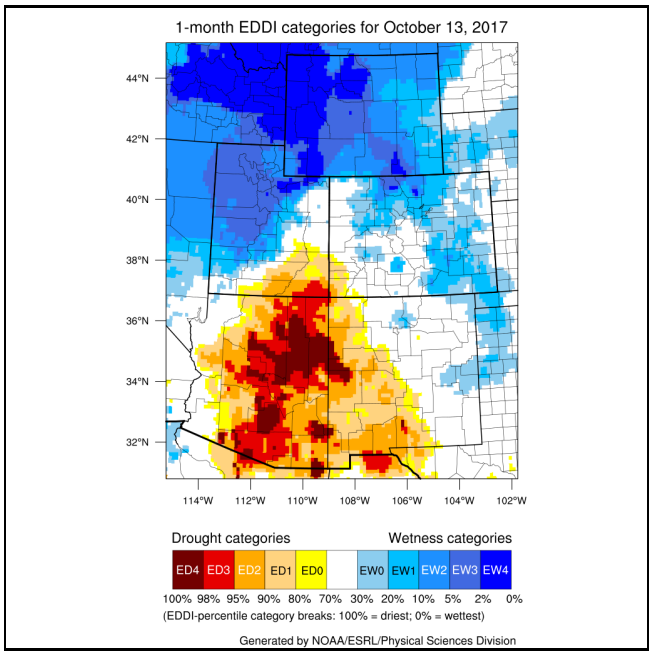


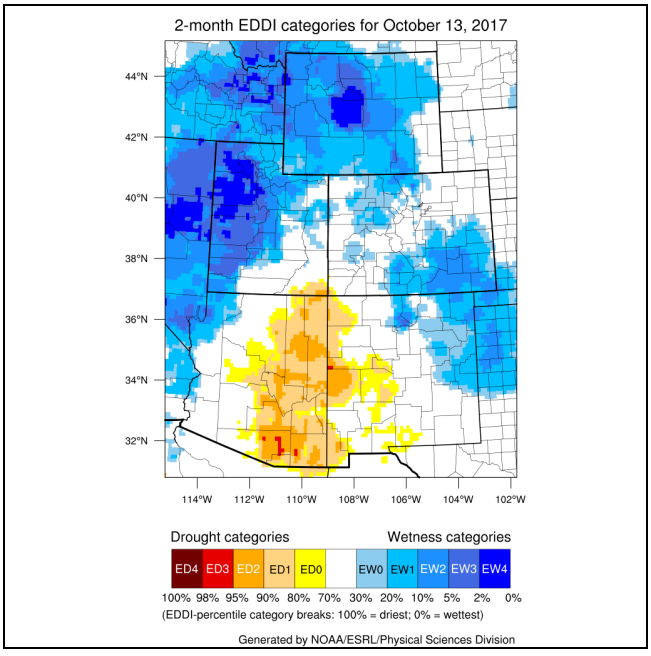


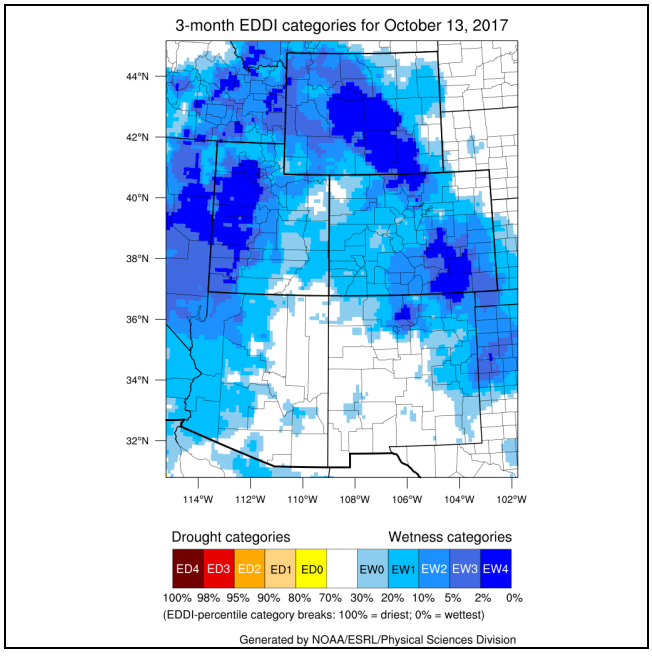


The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a map of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





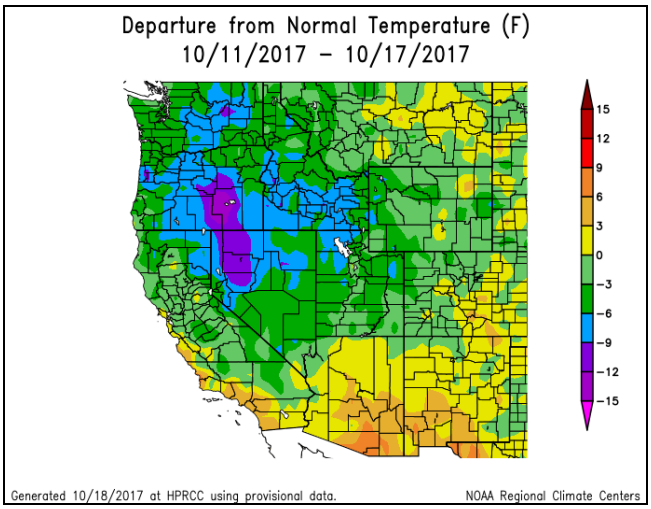


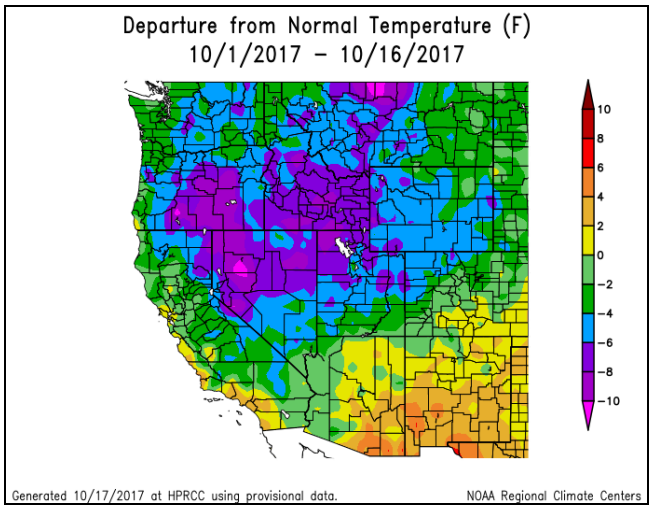


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration

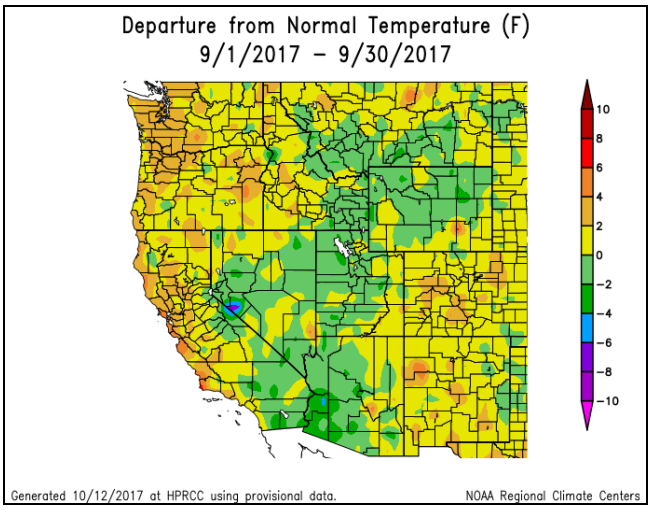
accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are in line with the US Drought Monitor's Percentile Ranking Scheme. Data used to generate these maps come from the North American Land Data Assimilation System Phase-2 (NLDAS-2) project, 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

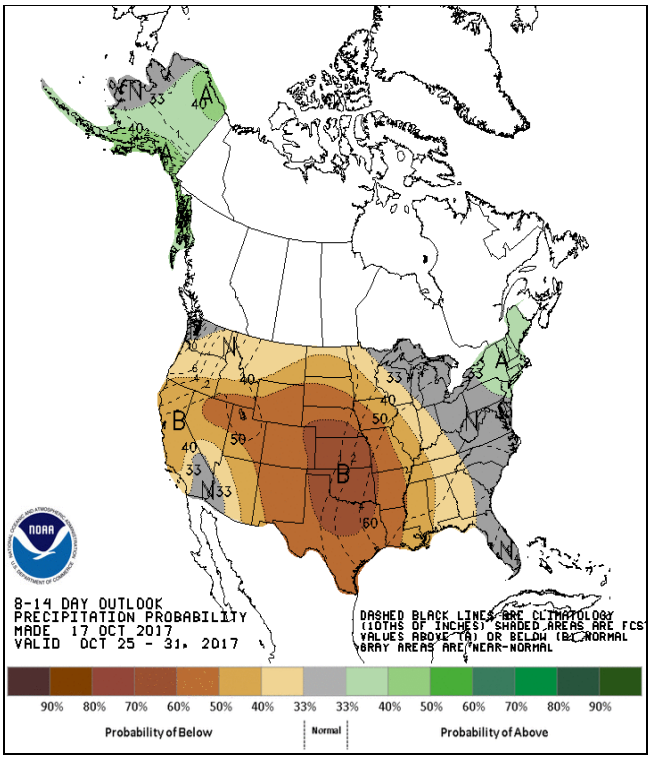


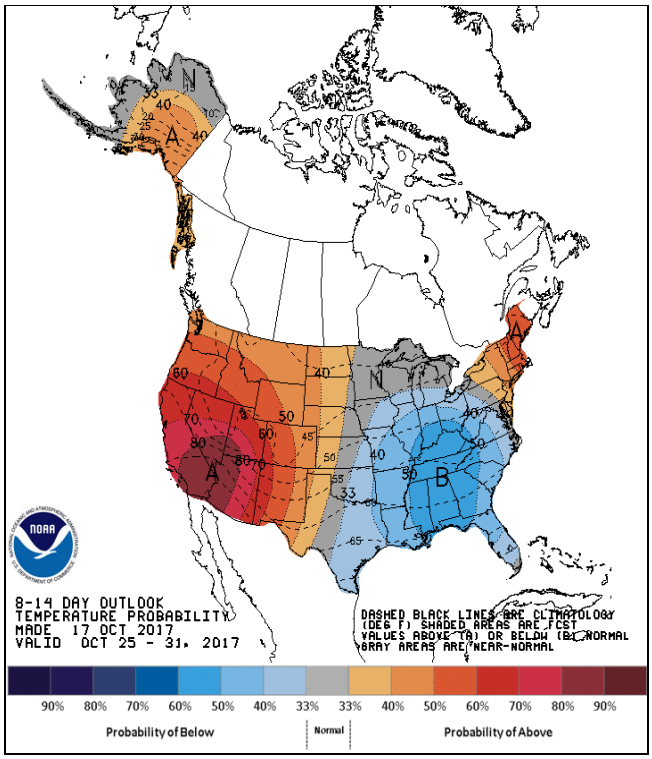


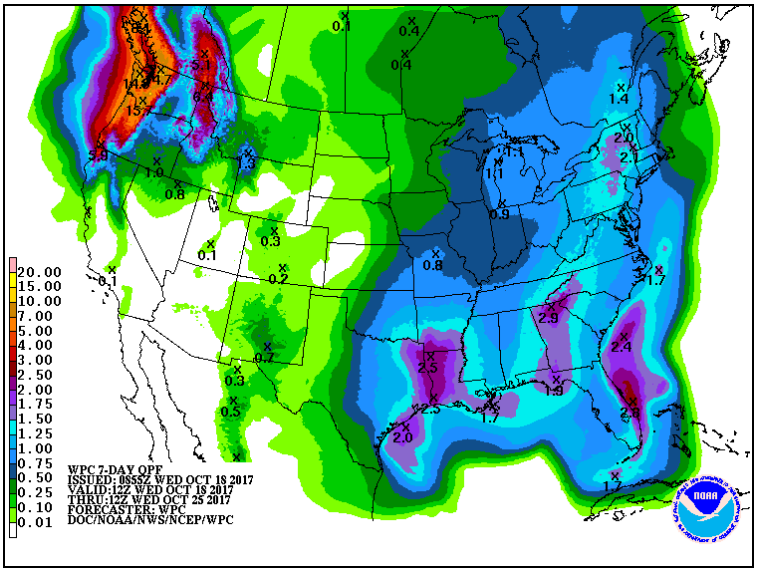
All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



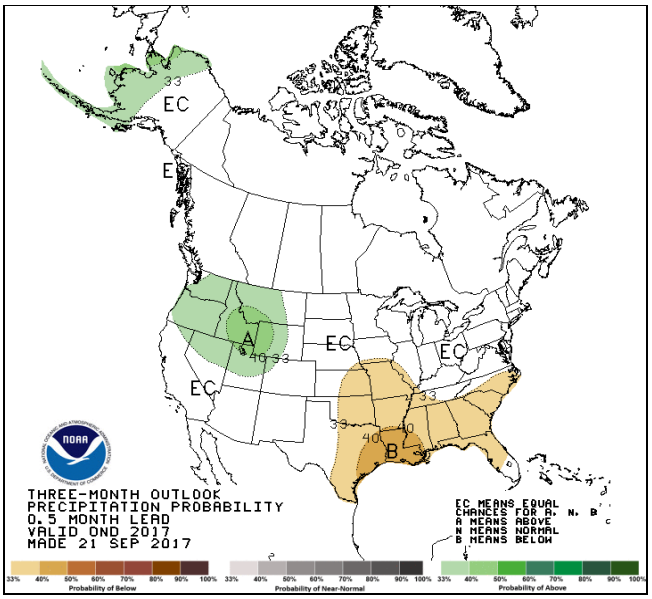
Outlook

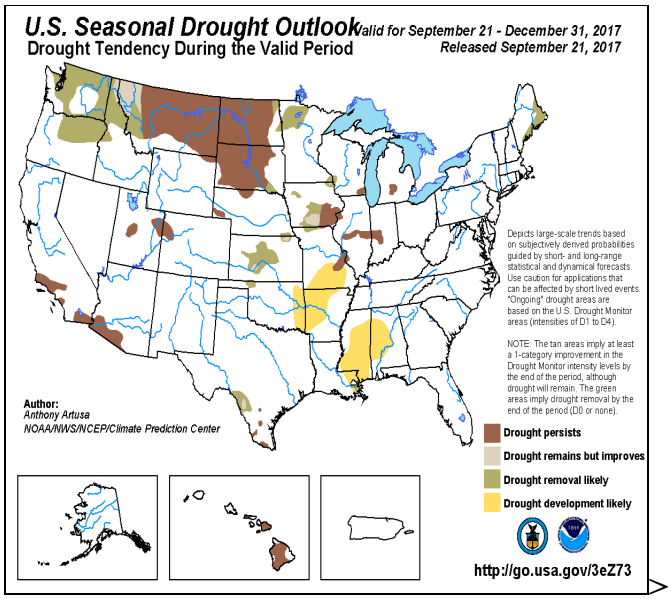




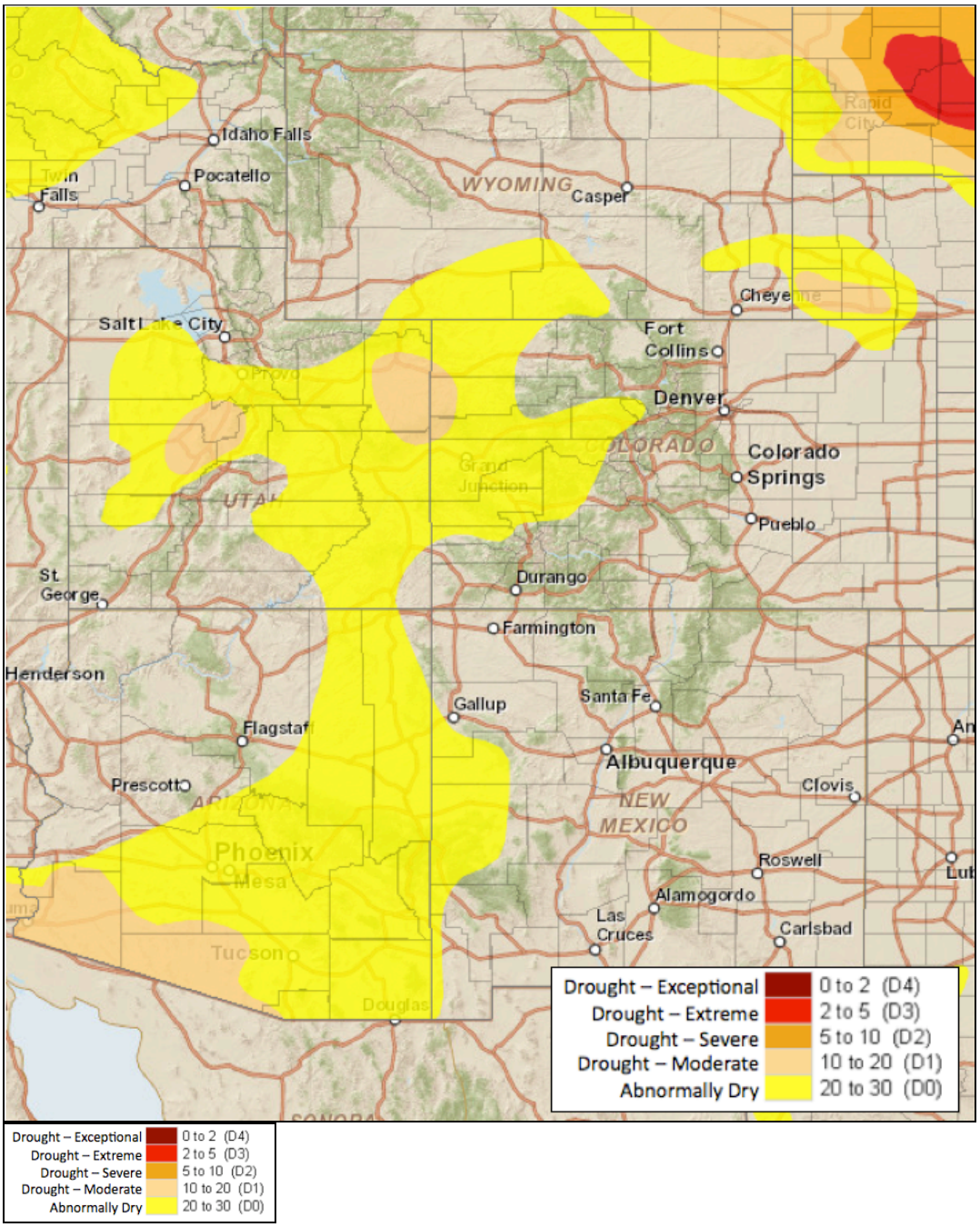


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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



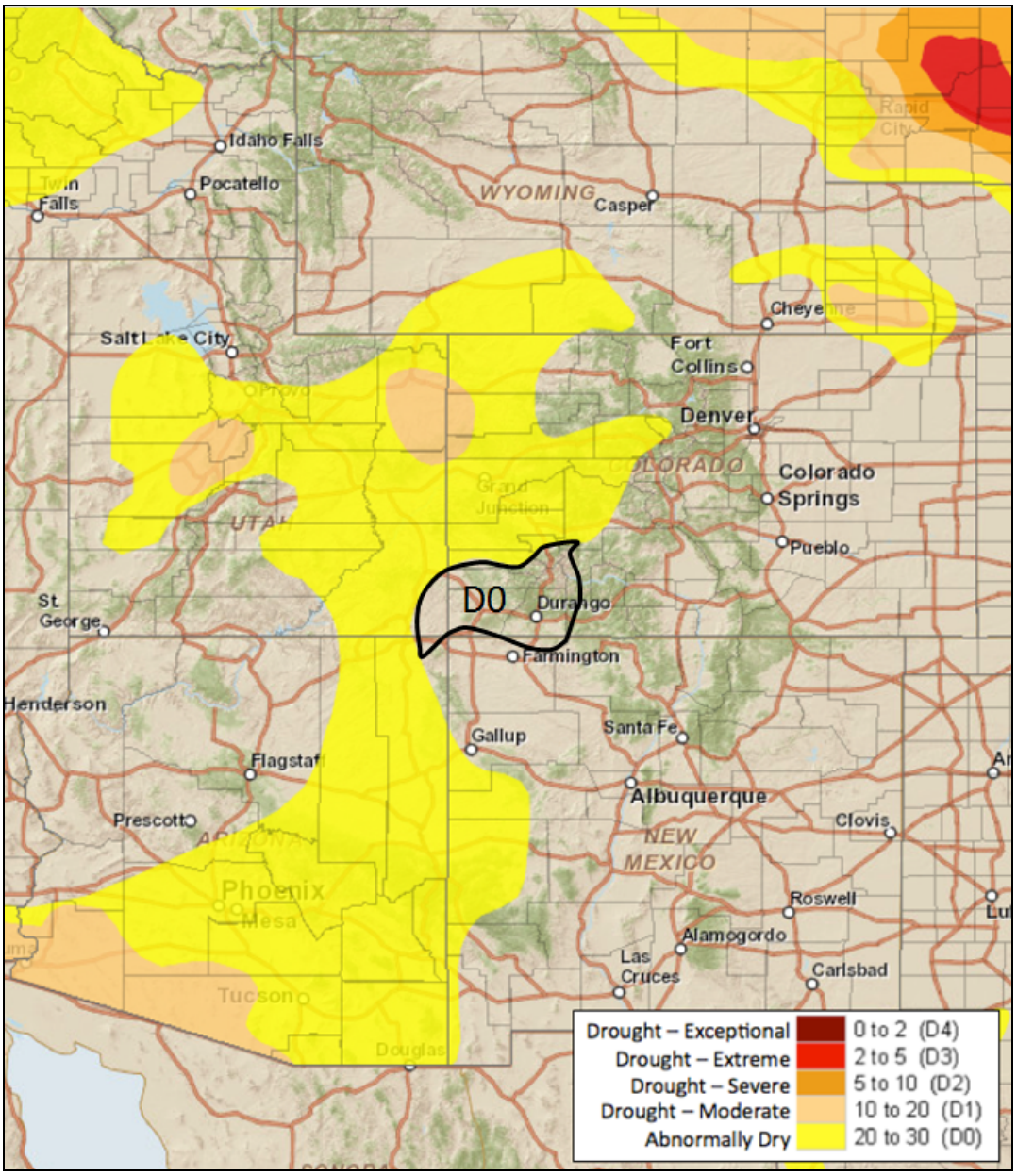


Summary and Recommendations



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: October 17, 2017

It was a dry but cool week for the Upper Colorado River Basin and eastern Colorado. The dry conditions mark a shift in the large scale weather pattern as the last several weeks have been both cooler and wetter than average for much of the Upper Colorado River Basin and eastern Colorado. The last big storm rolled through the region from October 8th to the morning of the 10th. This storm fell as snow in the mountains, which kick-started the snowpack season. Some of the lower elevations saw snowfall as well. Since then, a cool, high pressure airmass has dominated the region, and brought with it impressive swings in temperature between night and day. Westcliffe, CO saw a 55 degree temperature range between night and day on October 16th, which is a remarkable range in the absence of a cold frontal passage.

Despite the dry week, surface water conditions are still holding above average for much of the region thanks to late September and early October's moisture. Streamflows are mostly in the normal to above normal range across the Upper Colorado River Basin and eastern Colorado with a few scattered below normal measurements about the basin. Soil moisture as reported by the variable infiltration capacity model is mostly in the normal range with some below normal conditions along the Green River corridor in eastern Utah and some above normal soil moisture in central and eastern Colorado. USDA in-situ soil moisture is showing some wilting or below wilting levels in southeast Utah near and in the La Sal Mountain Range. Reservoir storage across the basin is decreasing as per usual this time of year. Major reservoirs such as Flaming Gorge, Blue Mesa, Lake Dillon, and Lake Granby are holding normal-to-above normal storage for mid-October.

The Upper Colorado River Basin and eastern Colorado is forecast to be drier and warmer than normal in the coming week with just a few small disturbances rolling through on Thursday night and Saturday. These small, fast-moving weather disturbances will bring moisture totals of mostly less than one tenth of an inch. Increased probabilities of below normal precipitation and above normal temperature are forecast for the last week of October.

Recommendations

UCRB: It is recommended that D0 be added to the San Juans and Four Corners in southwest Colorado. This area did not receive as much moisture as areas to the north, west, and east during late September and early October's wet spell. 60-120 day SPIs are below normal. Reservoir storage from McPhee is still above normal, and storage in Navajo is on the low end of the normal range. Agriculture in this area is primarily irrigated. These areas still have plenty of water. The need to depict drought is not urgent, but D0 appears a prudent move to make the USDM map consistent with nearby D0, and to mark for drought early warning purposes with warm and dry weather in the forecast.

Eastern Colorado: Status quo.