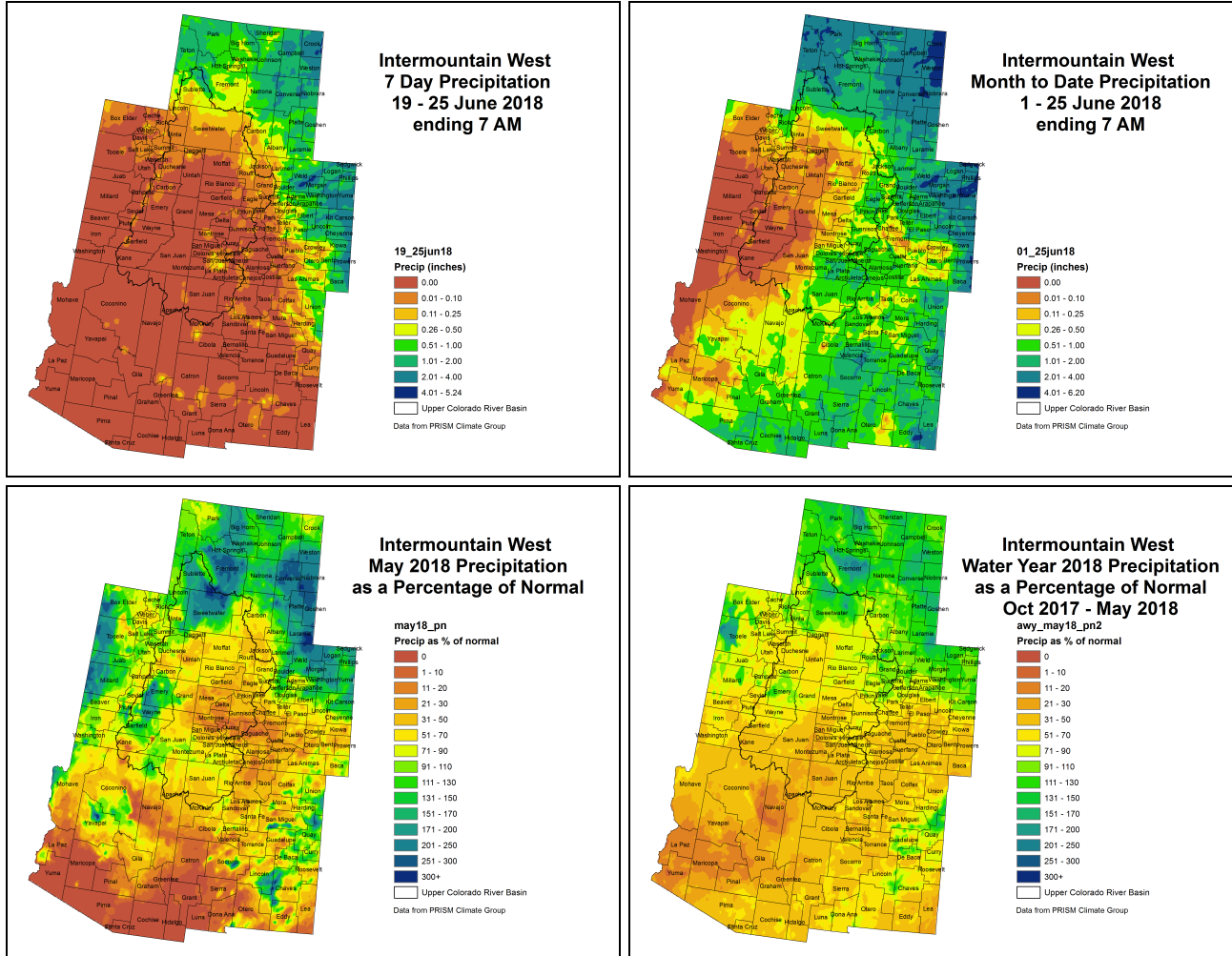


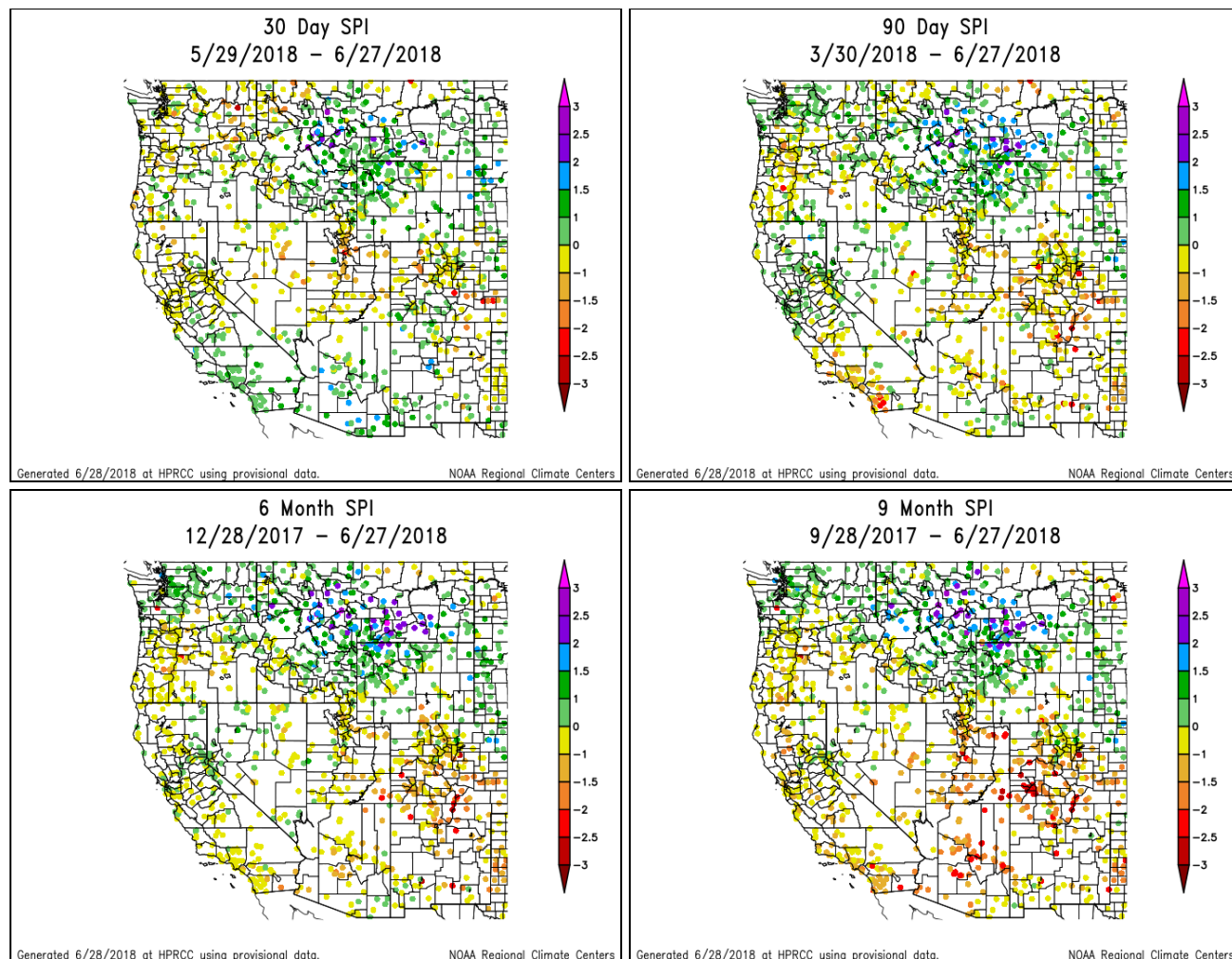
# NIDIS Intermountain West Drought Early Warning System June 26, 2018

## Precipitation



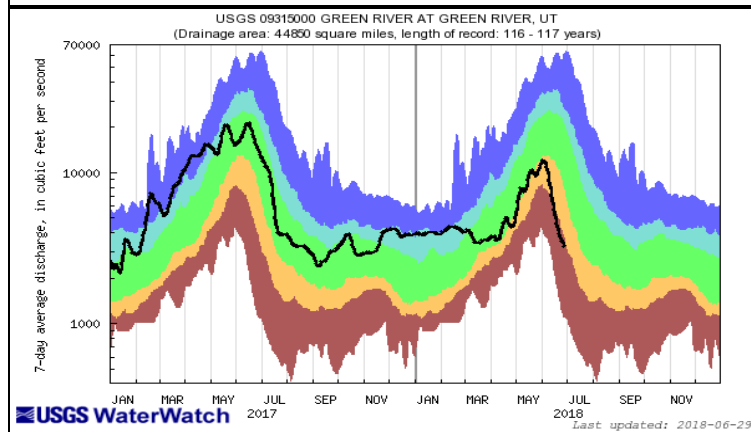
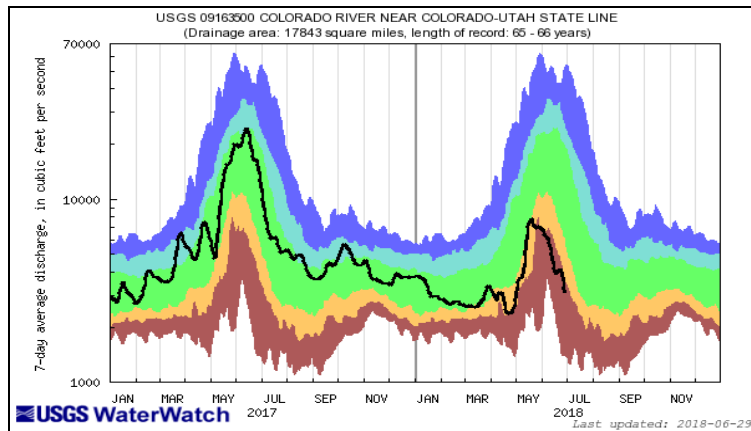
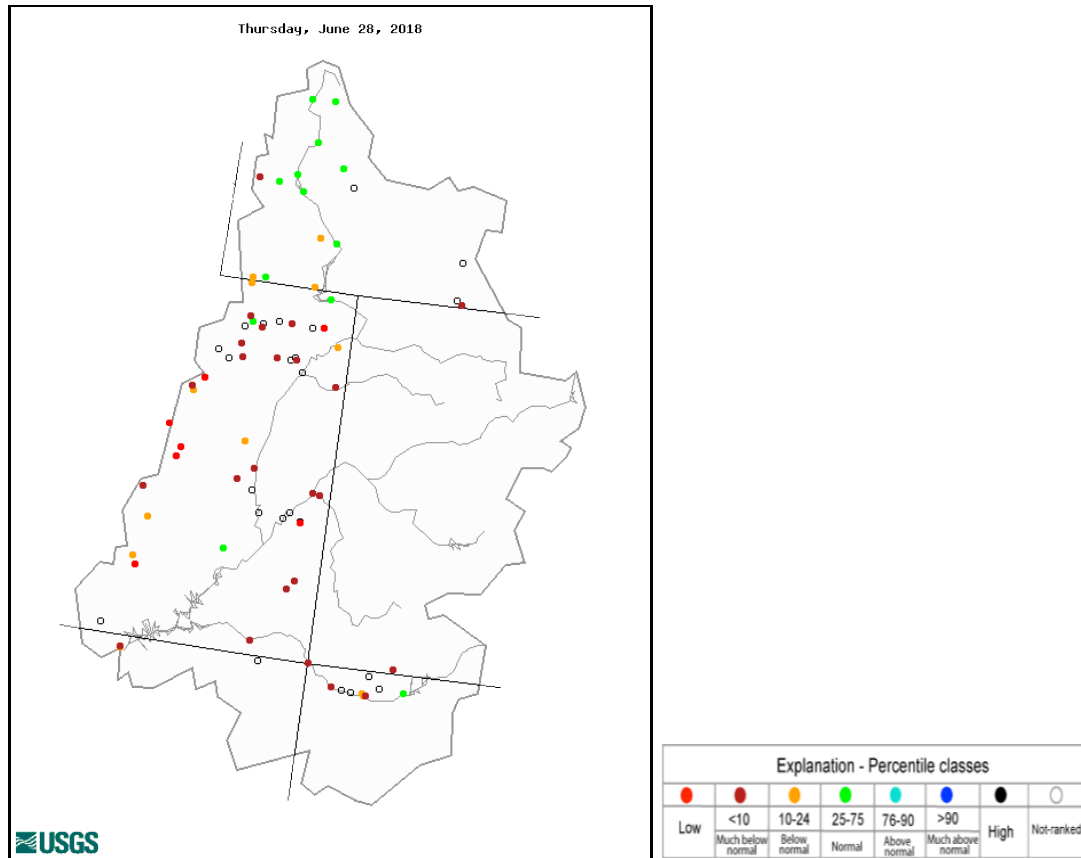
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

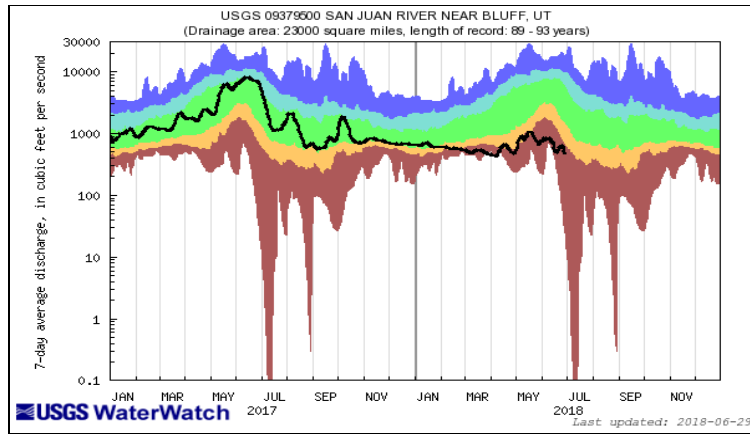
## Standardized Precipitation Index



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.

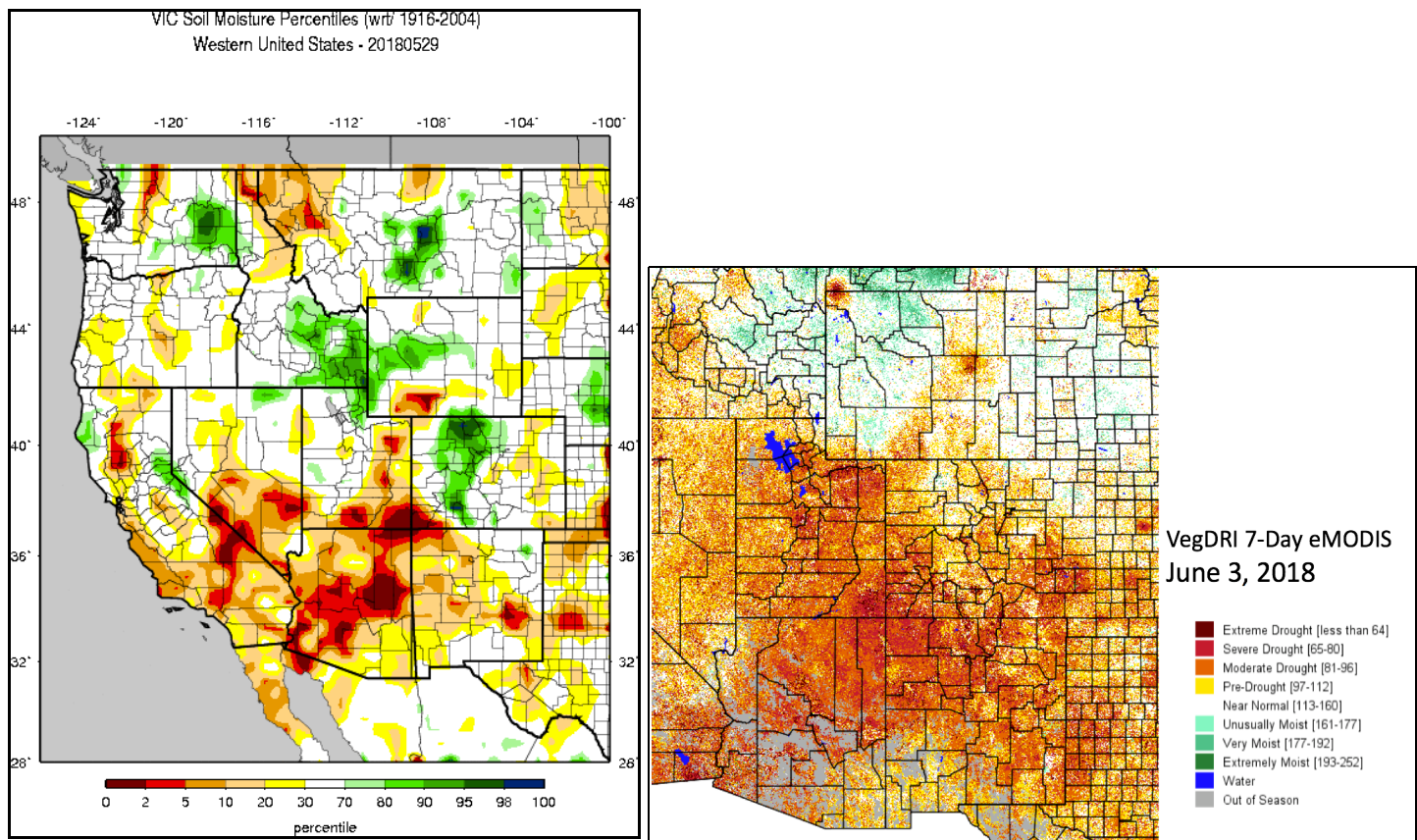
## Streamflow





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

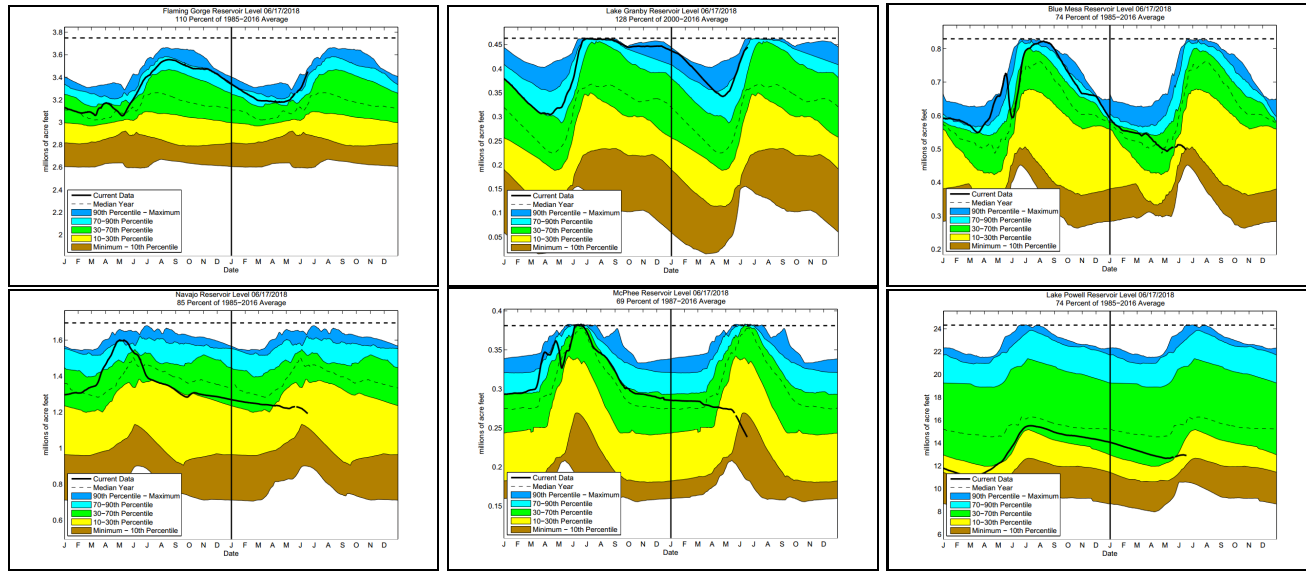


The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

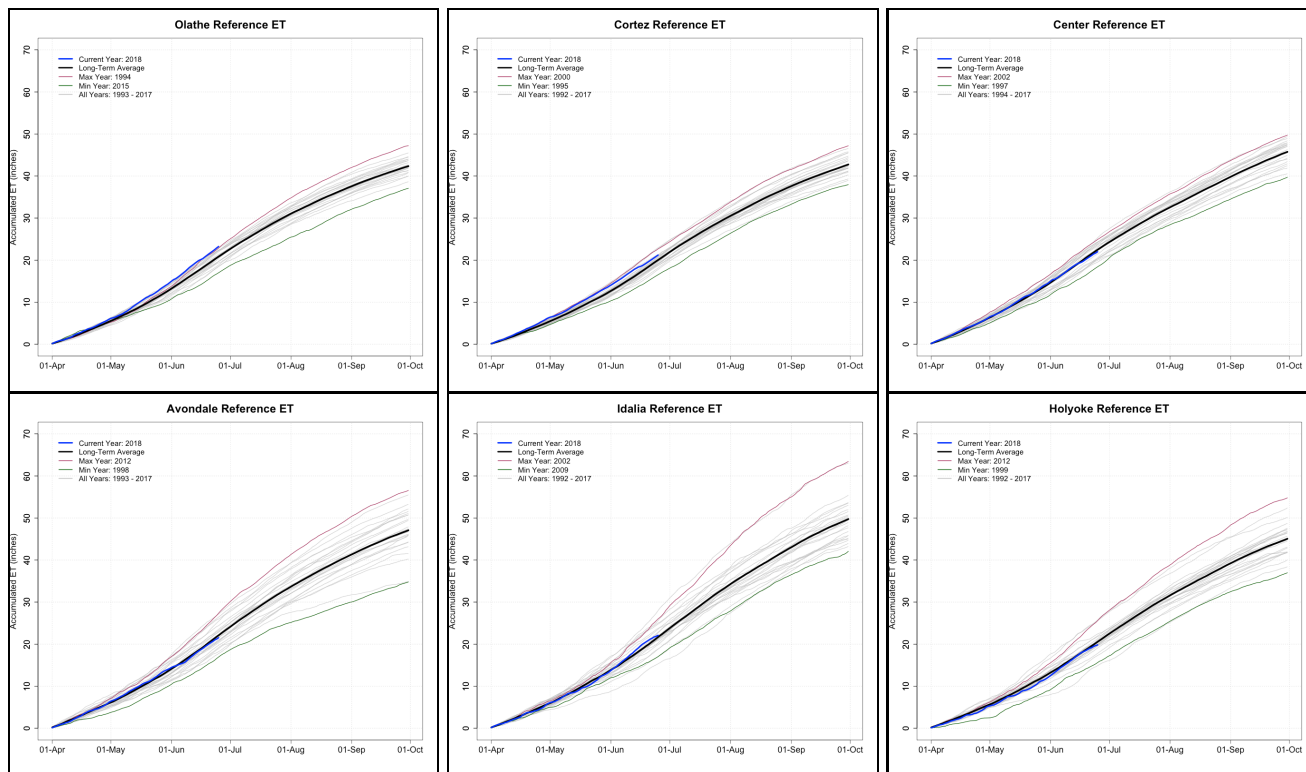
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

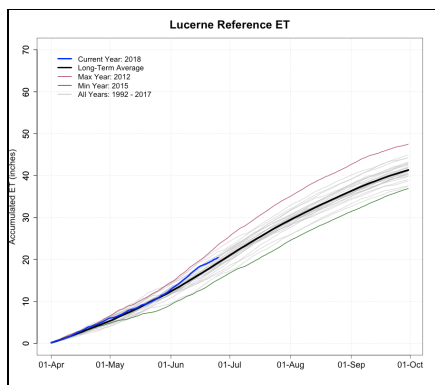


levels observed over the past 30 years. The data are obtained from the Bureau of Reclamation. Some of the reservoir percentiles don't line up at the new year due to differences in reservoir levels at the beginning of 1985 and the end of 2014. Dead storage has been subtracted. Note: Lake Granby data are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

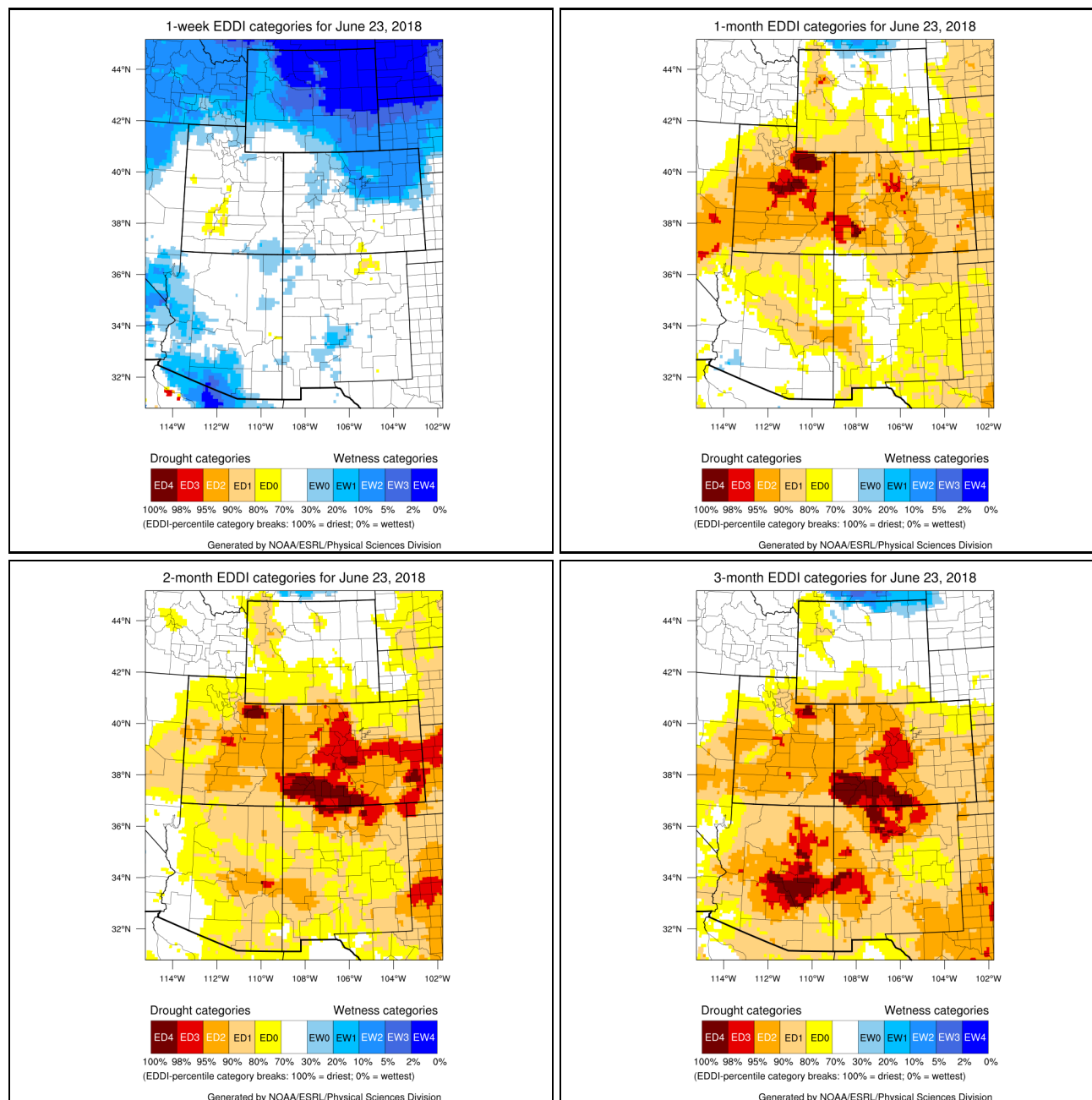


## Evaporative Demand





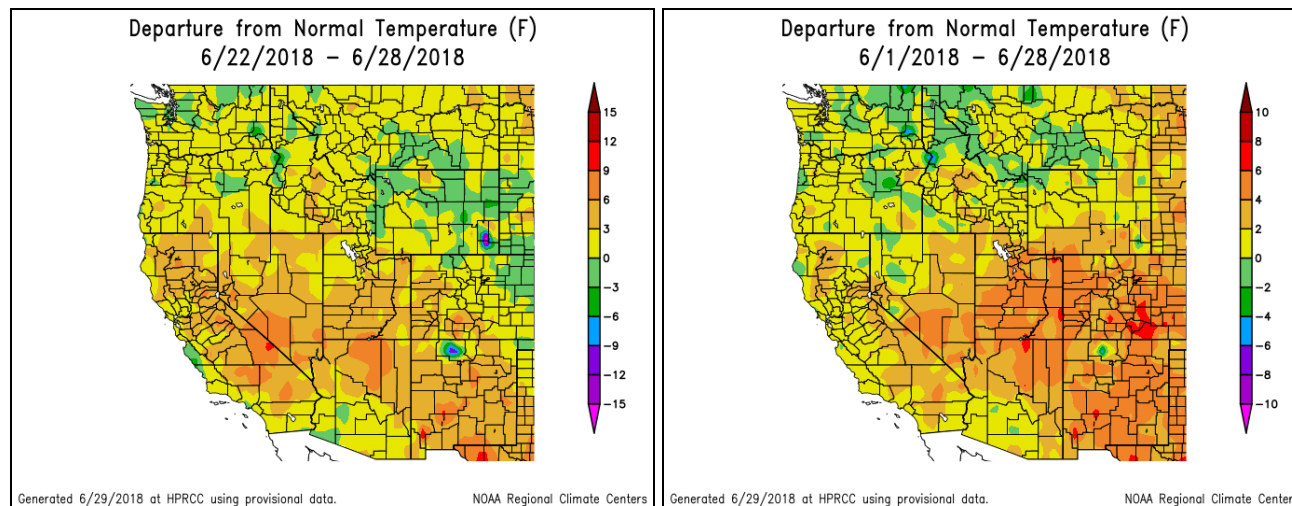
The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of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



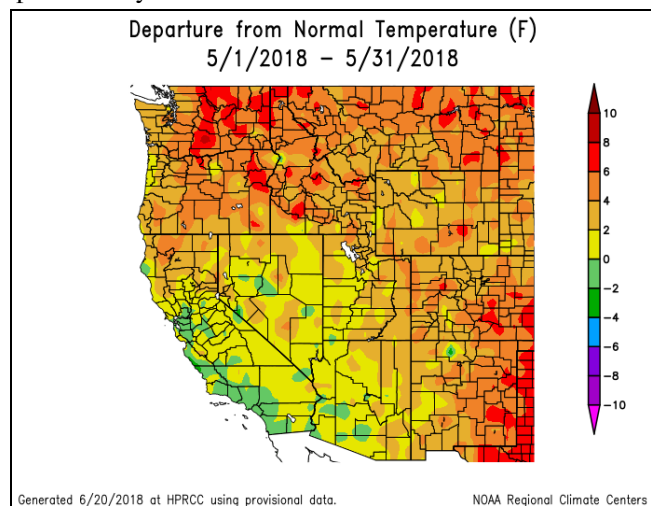
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration

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.

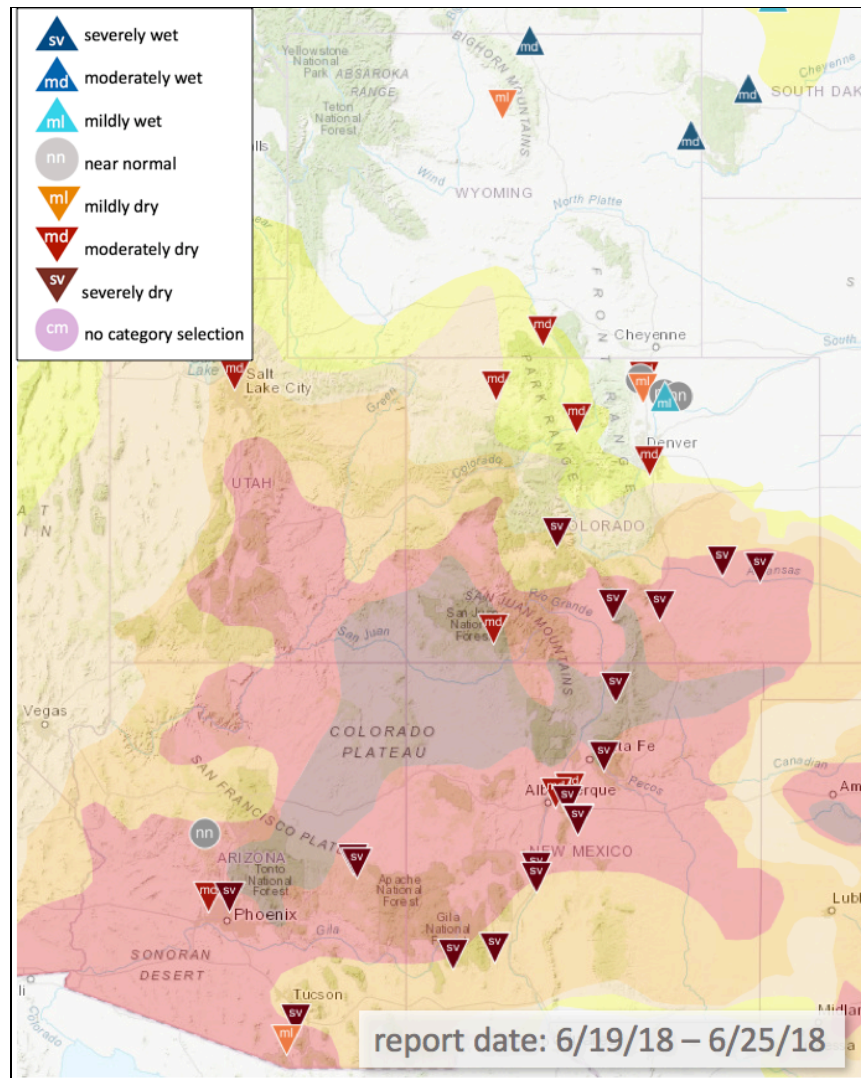
## Temperature



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.

## Southeast CO

Producer in Agate: 4-5 miles north of Highway 86 looks good. Then there's a wall and it's just bad all the way down to the south.

An organic producer had to apply for a waiver to graze on non-native grasslands because otherwise the cattle have nothing to feed on.

Notice of losses above average, even though it's normally early to get these.

Nothing to harvest or poor harvests expected. Selling of herds. Postponing planting of feed because no moisture to plant. Precipitation that has fallen is spotty and variable. When it does rain, hail has been an issue. Farmers showing signs of depression.

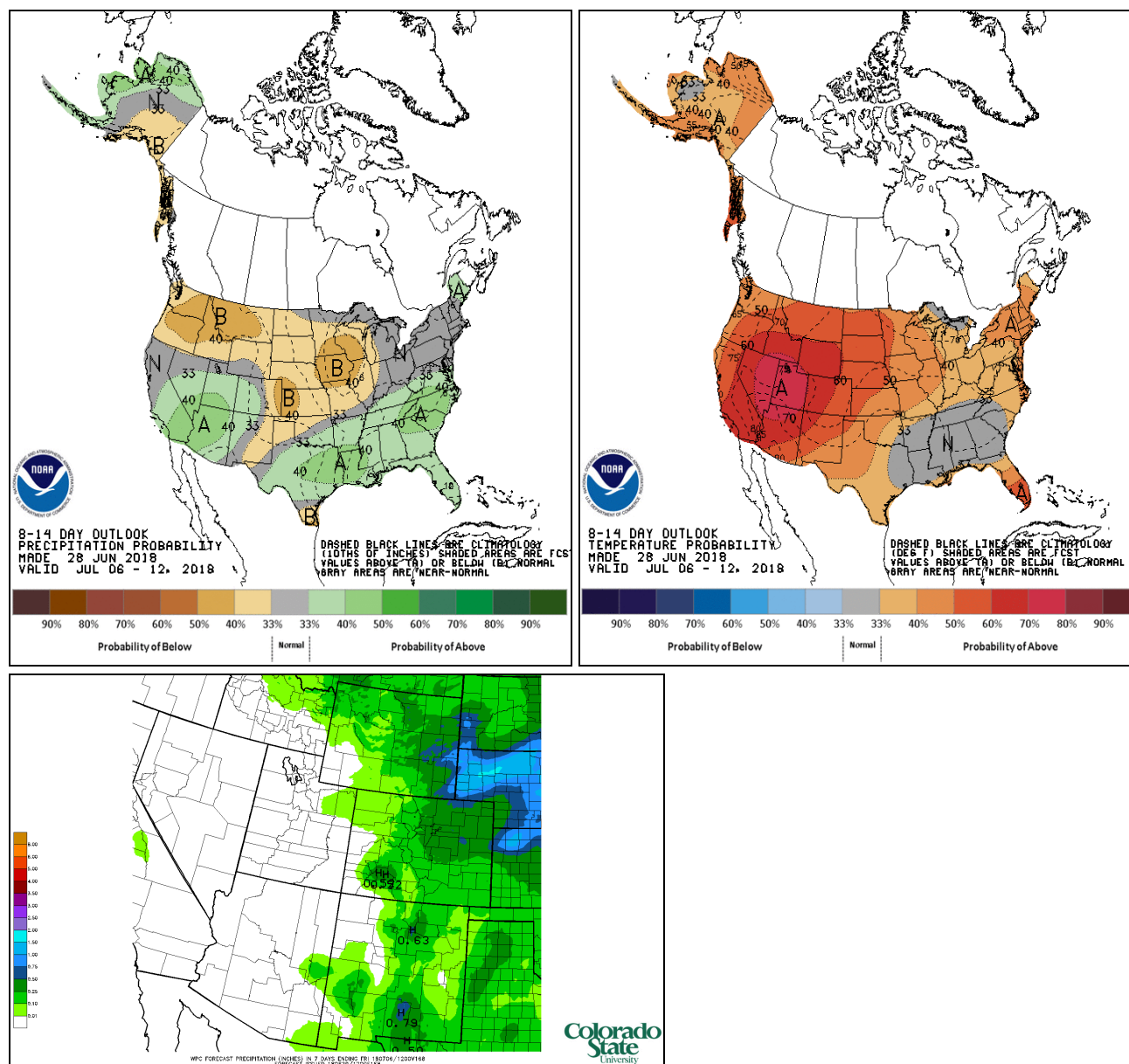
## Southern CO

Moisture from Tropical Storm Bud was very spotty. Rangeland conditions are very poor. Accepting LFP applications.

## Central UT

Permittees are allowed to graze on mountains early because there is no feed at lower elevations. Typically don't do this until July. Suffering with hot winds. Producers can't irrigate and there's no runoff. Wells are drying out or can't pump enough water out.

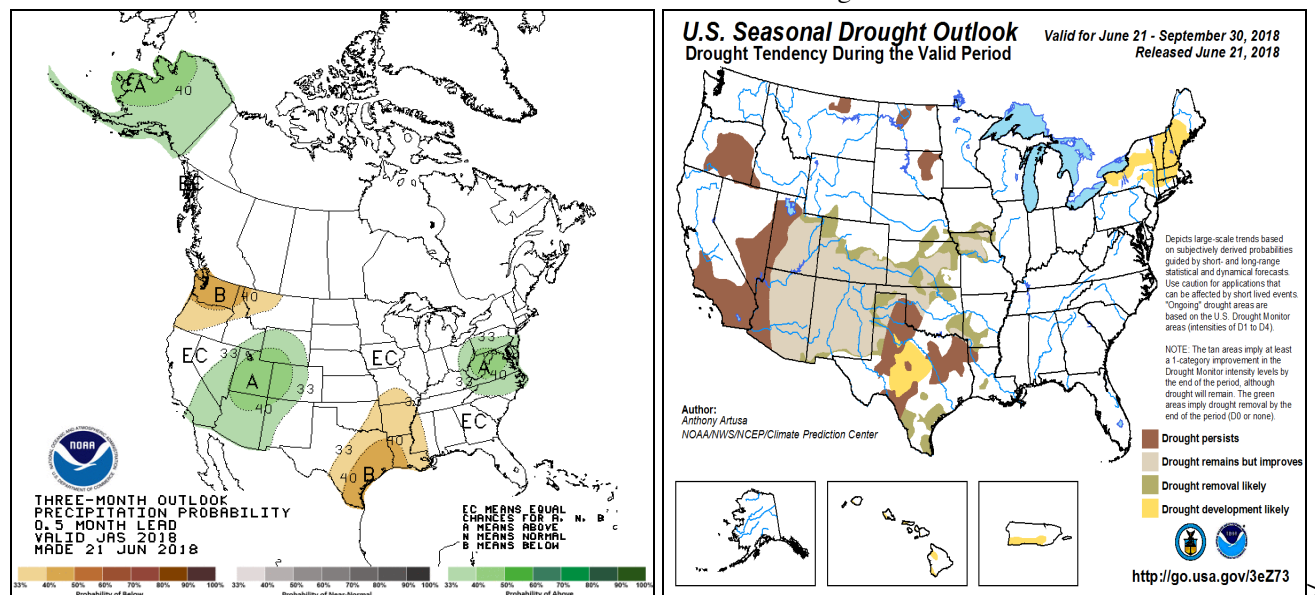
## Outlook



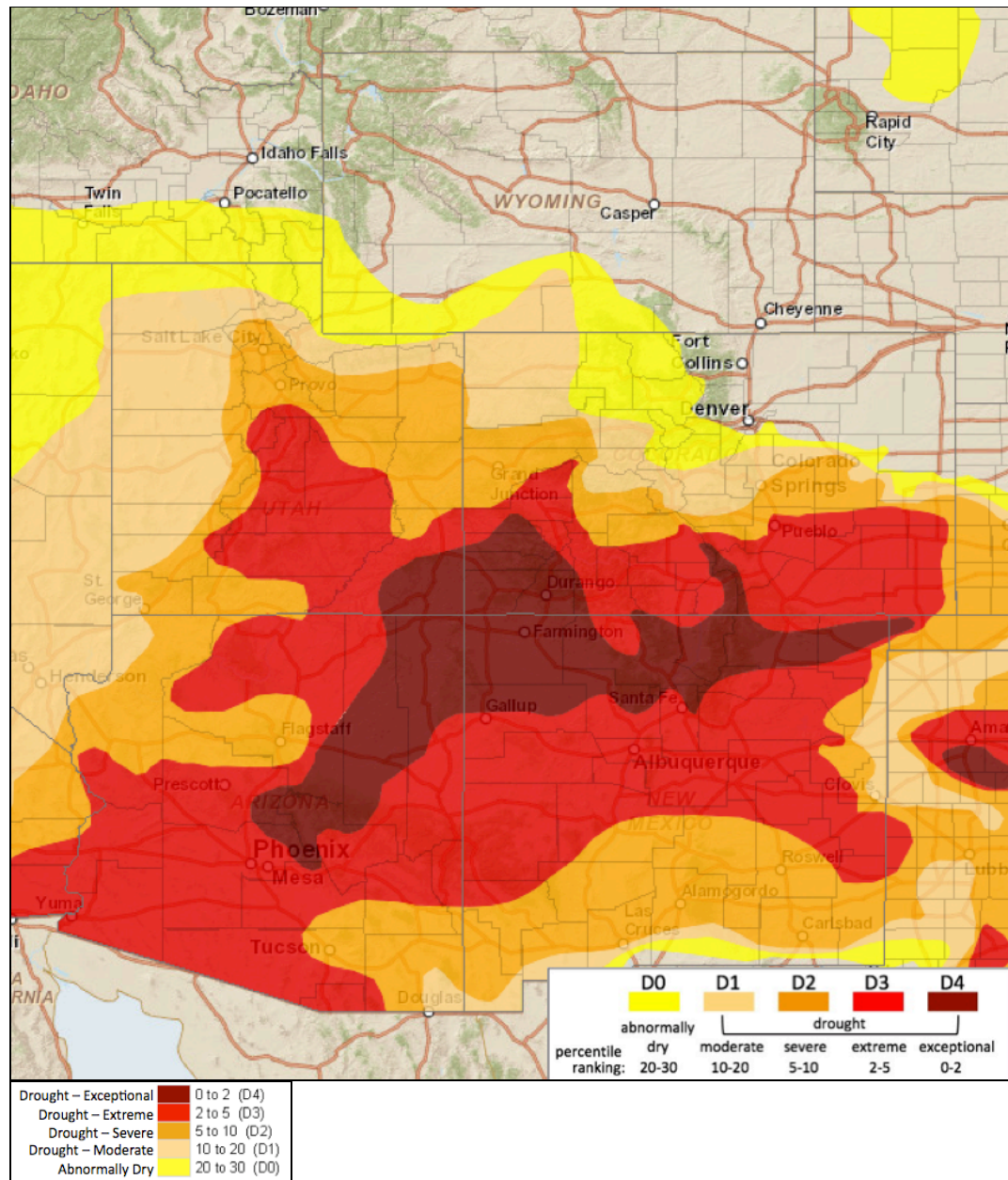
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month



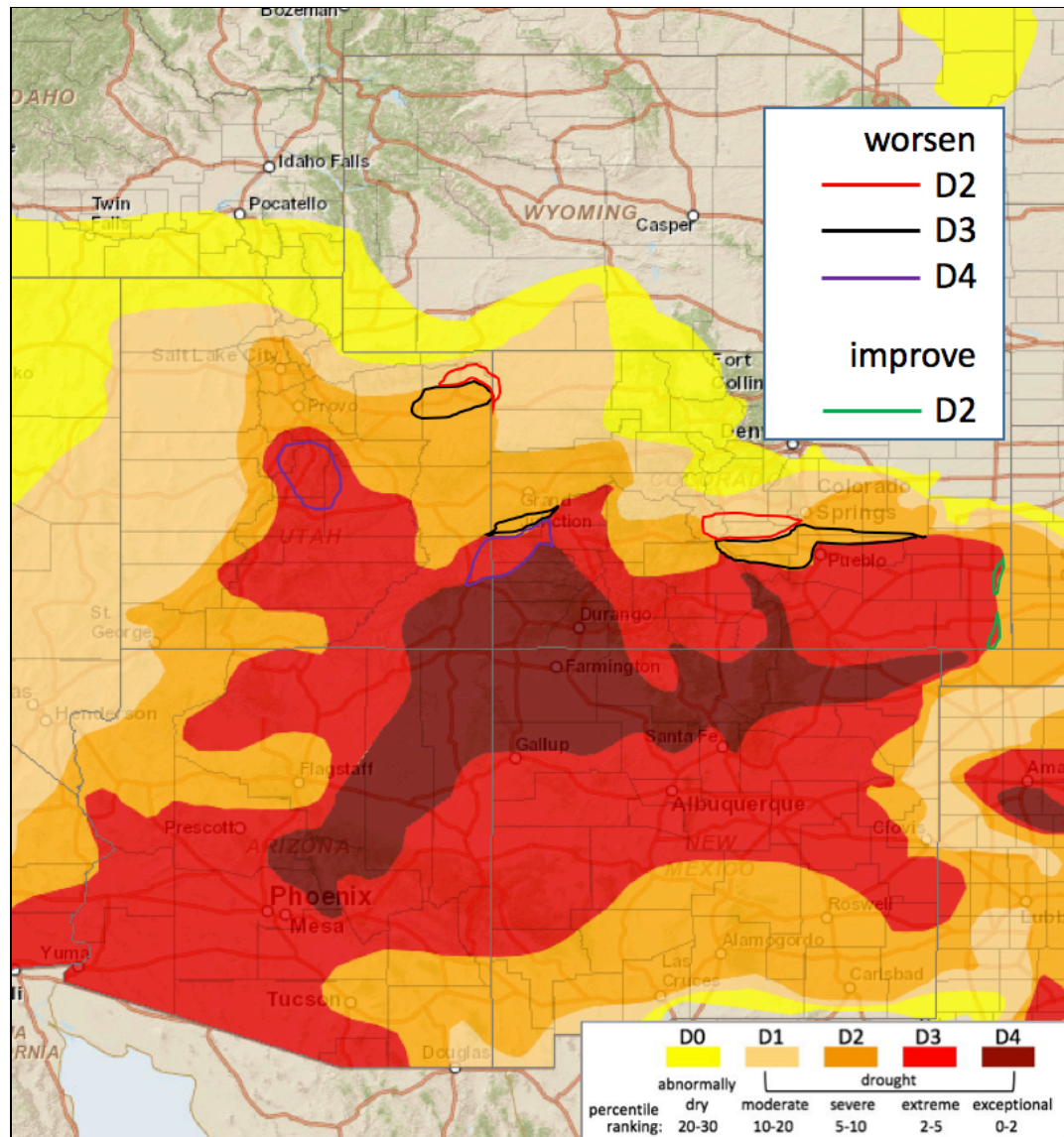
precipitation outlook from Climate Prediction Center, and the bottom right image shows the Climate Prediction Center's most recent release of the U.S. Seasonal Drought Outlook.



## 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: June 26, 2018

Last week, temperatures moderated a bit closer to average, but most of the Intermountain West was dry. With the exception of some decent accumulations throughout Wyoming and eastern Colorado, most of the region received no precipitation. This is not atypical for this time of year, prior to the onset of monsoon season.

Over the last 30 days, wet SPIs (standardized precipitation index) show areas where Tropical Storm Bud tracked in Arizona, New Mexico, and southwest CO. And the continuing active trough pattern has persisted and brought more moisture to WY and northeast CO. Dry SPIs are popping up along the Arkansas valley of southeast CO, in western CO, and throughout the central Utah mountains. And despite last week's temperatures, the month of June is shaping up to be much warmer than normal for the entire IMW.

Very low streamflows point to a concerning situation in the Upper Colorado River Basin. These low flows highlight the long-term deficits that have been

occurring and the significance of the lack of snowpack over the winter season. The cumulative flow at key sites show that the normal bump in accumulations on the rivers that occur during the spring snowmelt time period were not there. Flows are now quickly declining and are likely to reach base flow early (i.e. before the end of the water year). This has translated to very little inflow into the region's reservoirs, which could have long-lasting impacts, beyond the time when the drought ends.

Impacts reports from the area commonly refer to precipitation events being spotty, with accumulations that are too small to make any improvements in conditions on the ground. There are also widespread reports of liquidating cattle because there is nothing to feed them (native grasslands are dry and ponds are drying up as well).

## Recommendations

**UCRB:** Some degradations are recommended in western CO, eastern UT, and central UT (see map). Areas recommended for a 1-category deterioration are showing December-May (6-month) SPIs below -1.5, month-to-date precipitation less than 25% of average, and no precipitation in the last week. Accumulated reference ET in western CO (see Olathe CoAgMET station) is currently at a record high for this growing season. 7-day and 28-day averaged streamflows in all areas recommended for degradation are below the 10th percentile (with several gages reporting record low flows).

**Eastern CO:** Some degradations along the Arkansas valley are recommended (see map). Similar justification to the UCRB recommendations, the boundaries follow low 6-month SPIs and low % of average month-to-date precipitation. This area shows more variable streamflows and evaporative losses. But the reported impacts from producers in the area (early and below average harvest, crop losses, dry ponds, prevent planting, livestock liquidation) support deteriorations.

In far southeast CO - eastern Prowers and eastern Baca counties - some minor trimming of D3 is recommended (see green shapes on change map).

Heavy precipitation last week, extending west from Kansas, brought over 2 inches of precipitation to these areas. Year-to-date precipitation is now close to normal along the CO-KS border. While some westward trimming of D3 is recommended, Lamar in Prowers County and Campo in Baca County should stay in D3 (and no changes should be made in eastern Kiowa County). We defer to the U.S. Drought Monitor author on how to depict conditions at the eastern borders of Prowers and Kiowa and if improvements to the D2 need to be made to align with Kansas improvements.