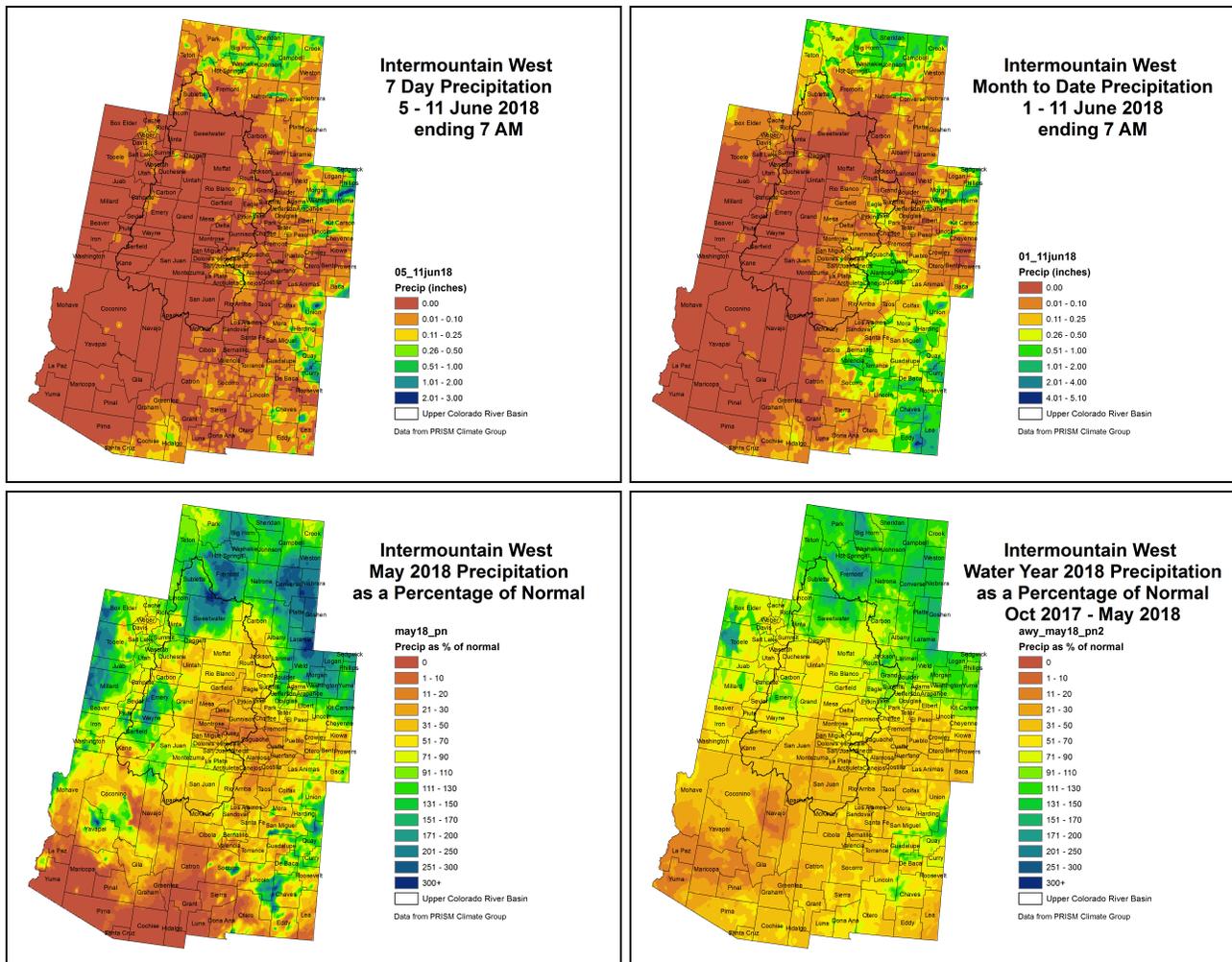


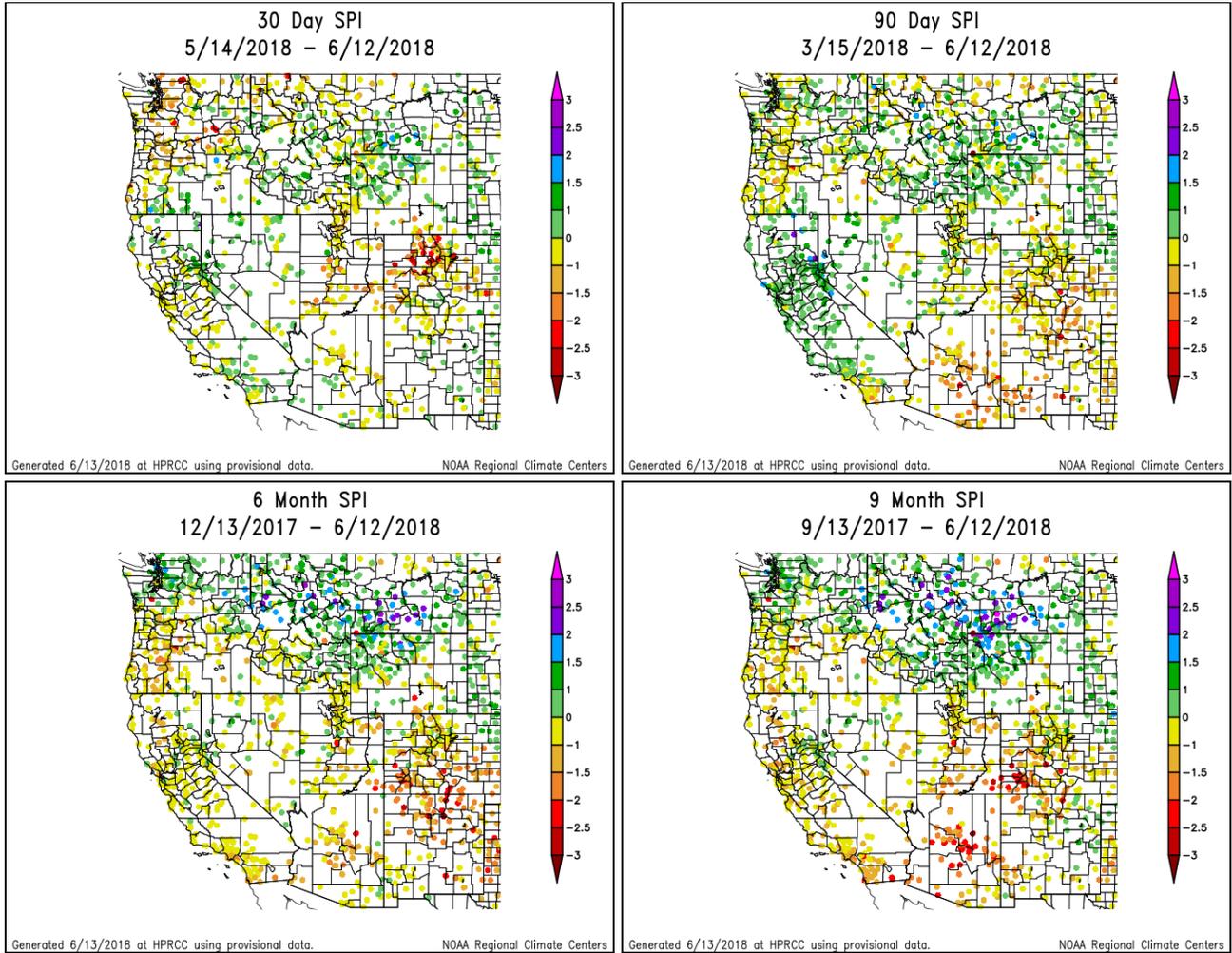
# NIDIS Intermountain West Drought Early Warning System June 12, 2018

## Precipitation



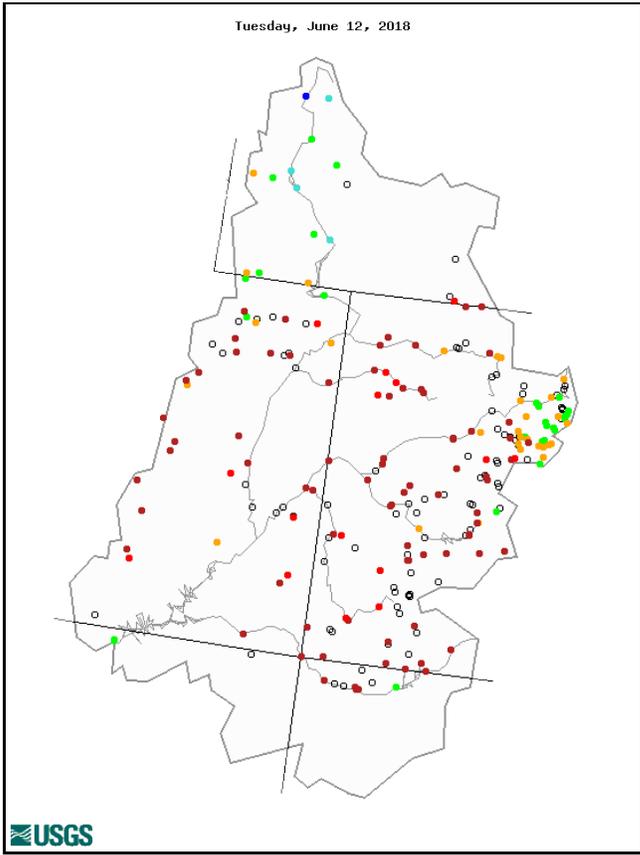
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

## Standardized Precipitation Index



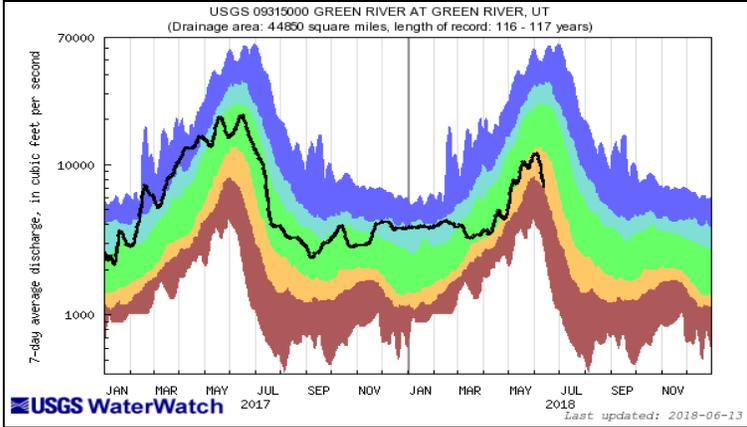
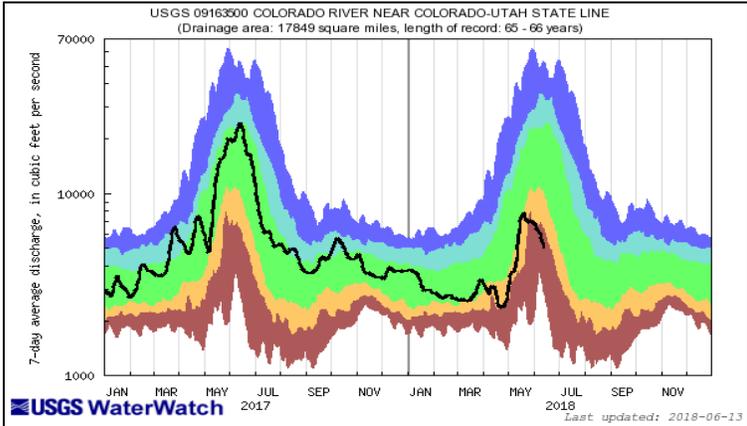
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

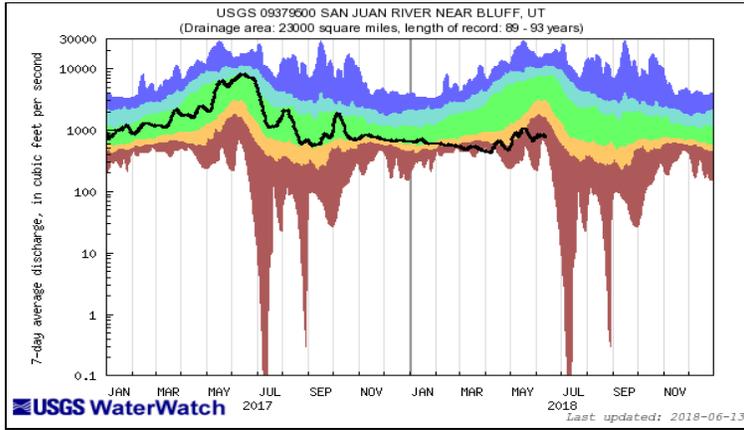
## Streamflow



Explanation - Percentile classes

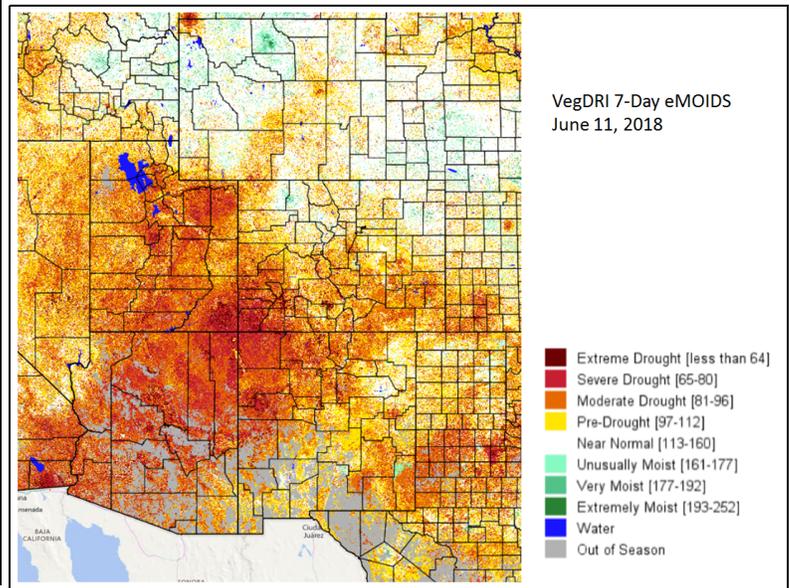
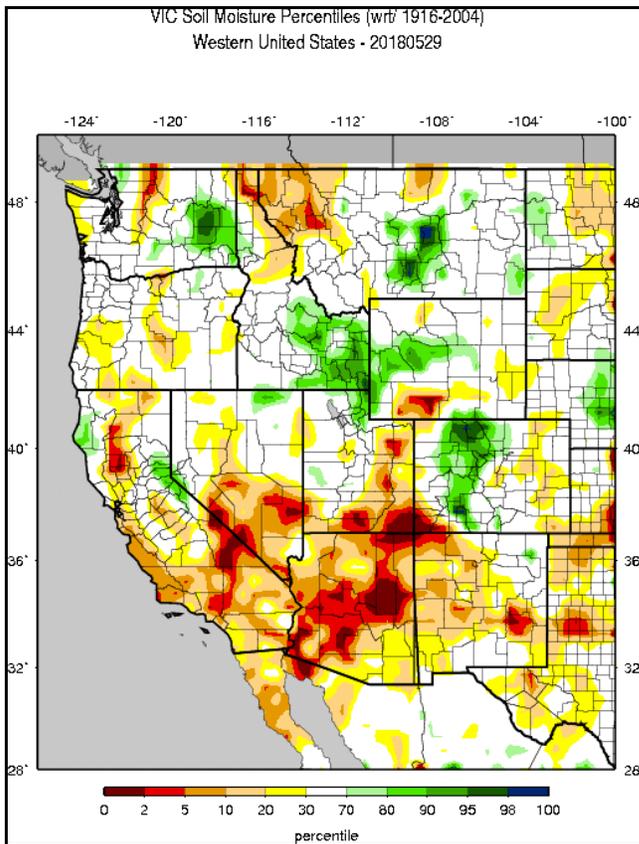
<span style="color: red;">●</span>	<span style="color: red;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: cyan;">●</span>	<span style="color: blue;">●</span>	<span style="color: black;">●</span>	<span style="color: black;">○</span>
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		





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.

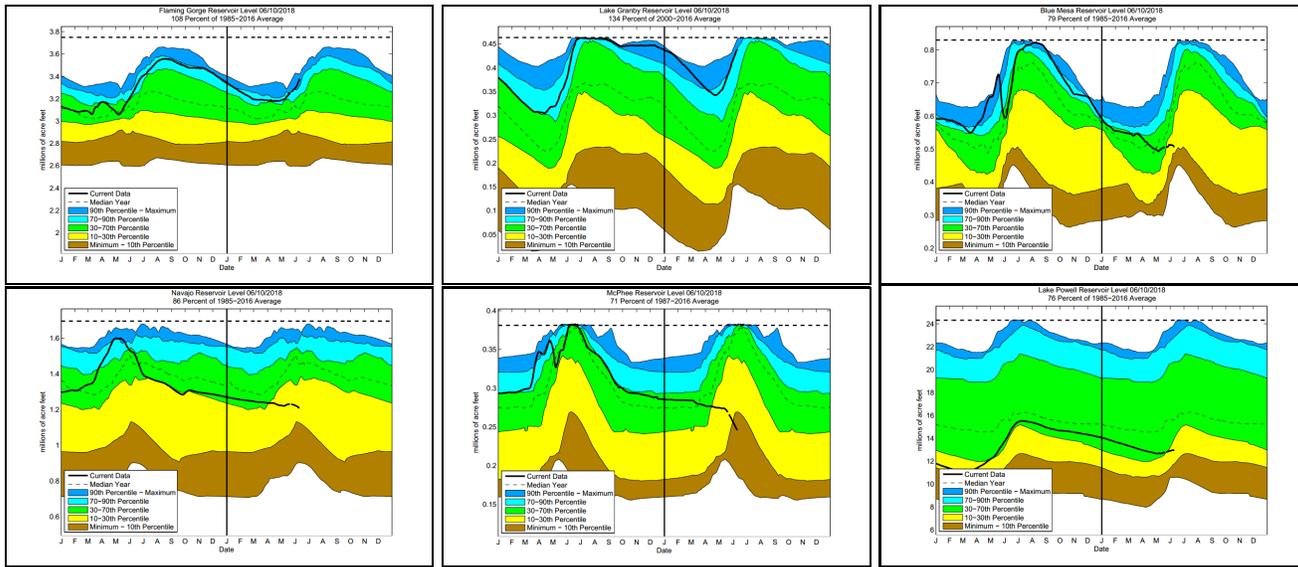
## Surface Water



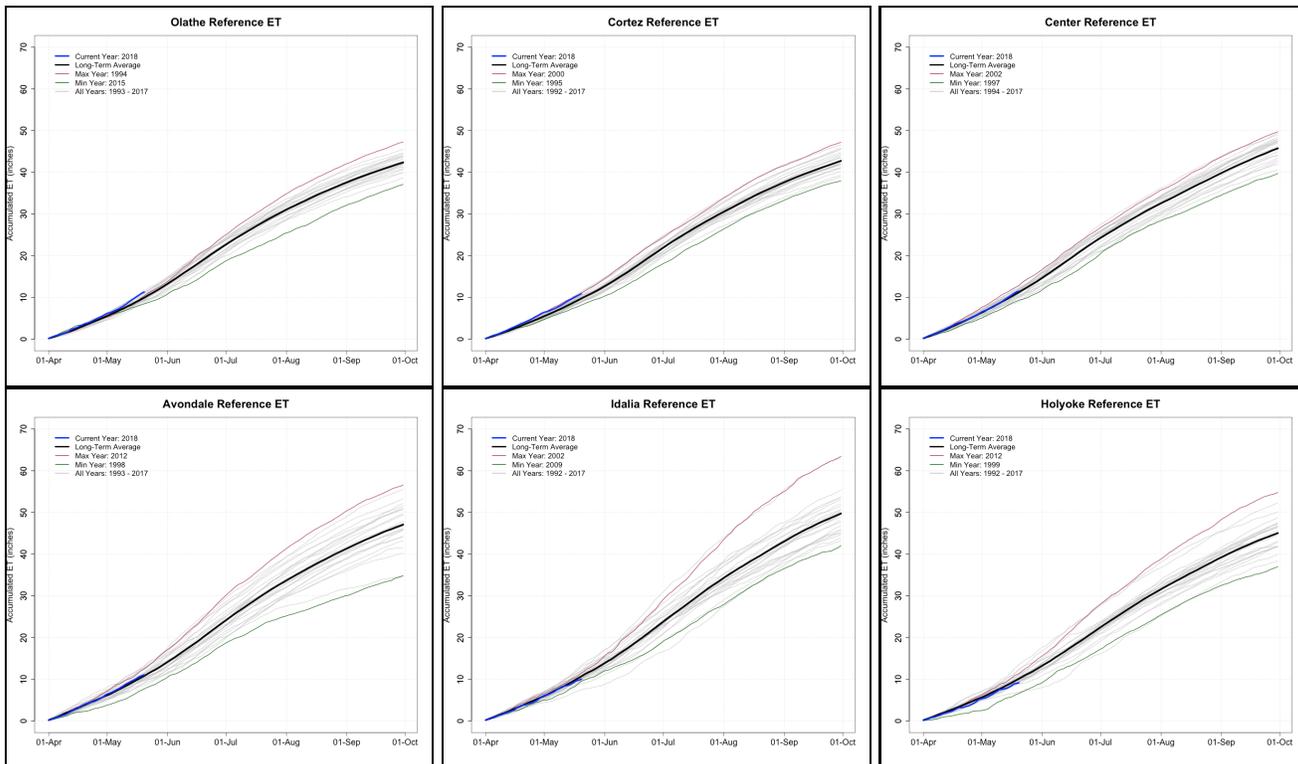
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

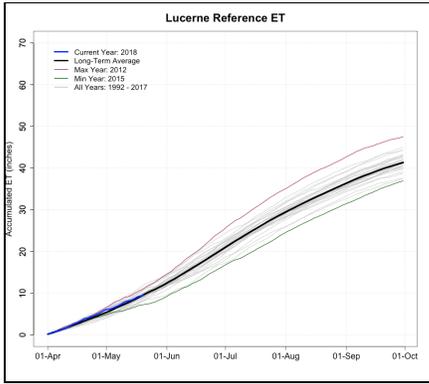
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

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.

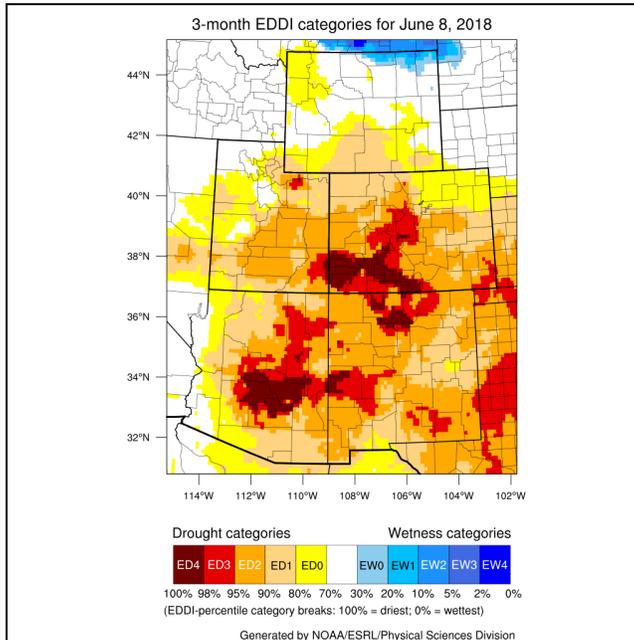
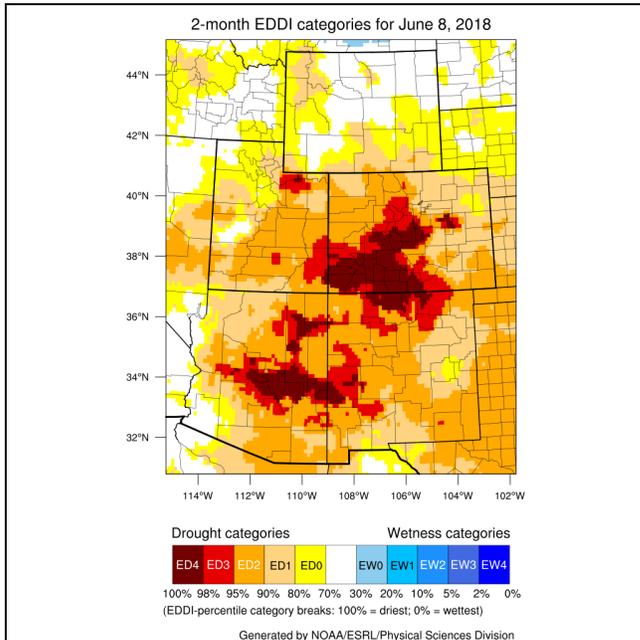
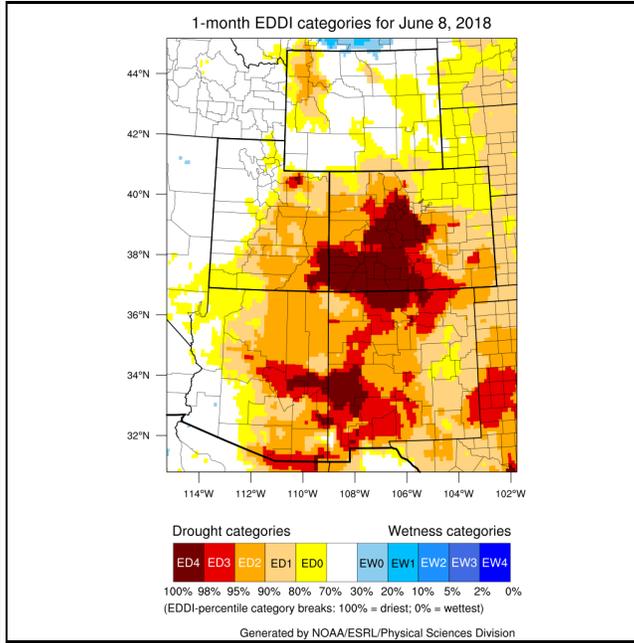
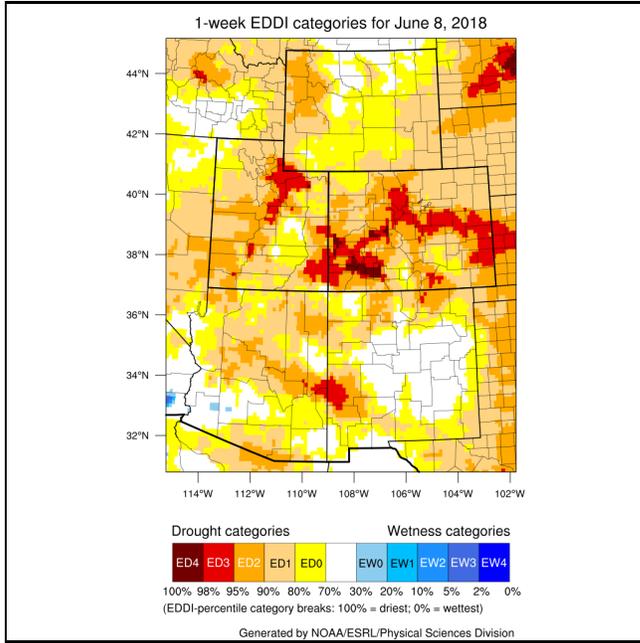


# Evaporative Demand





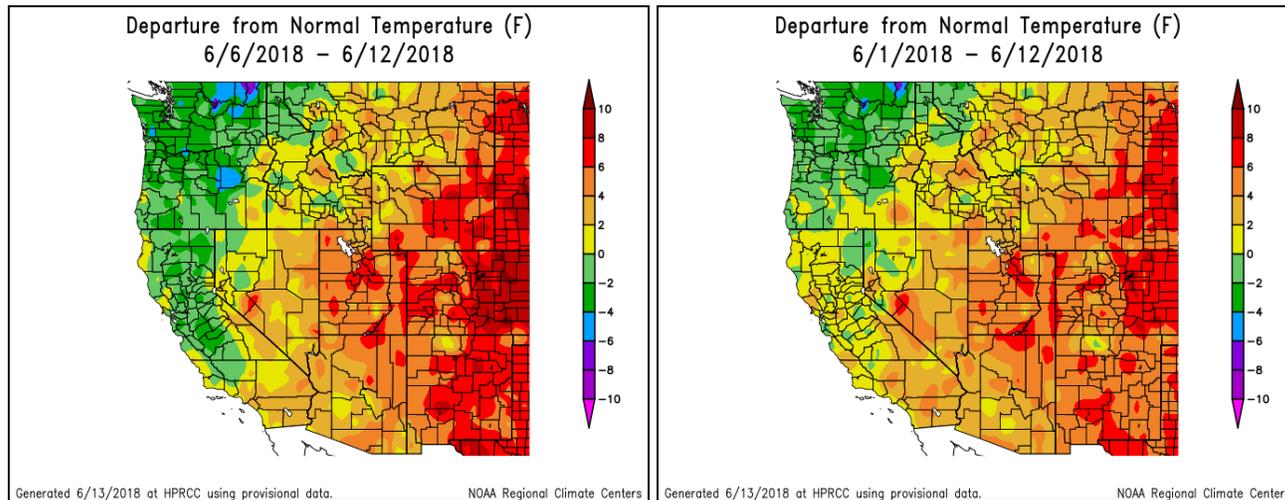
The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of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



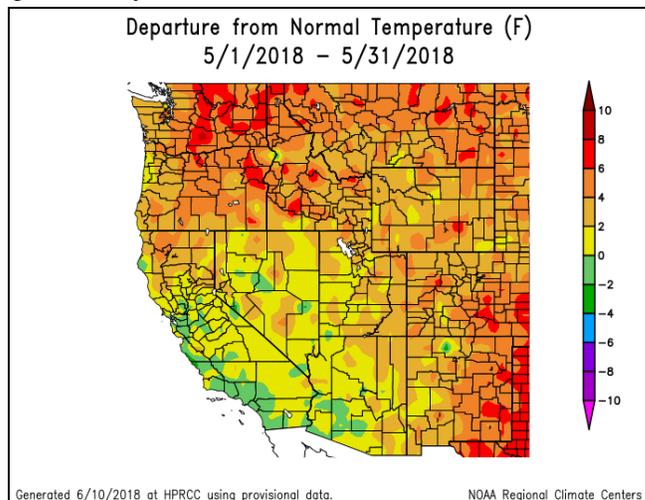
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration

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.

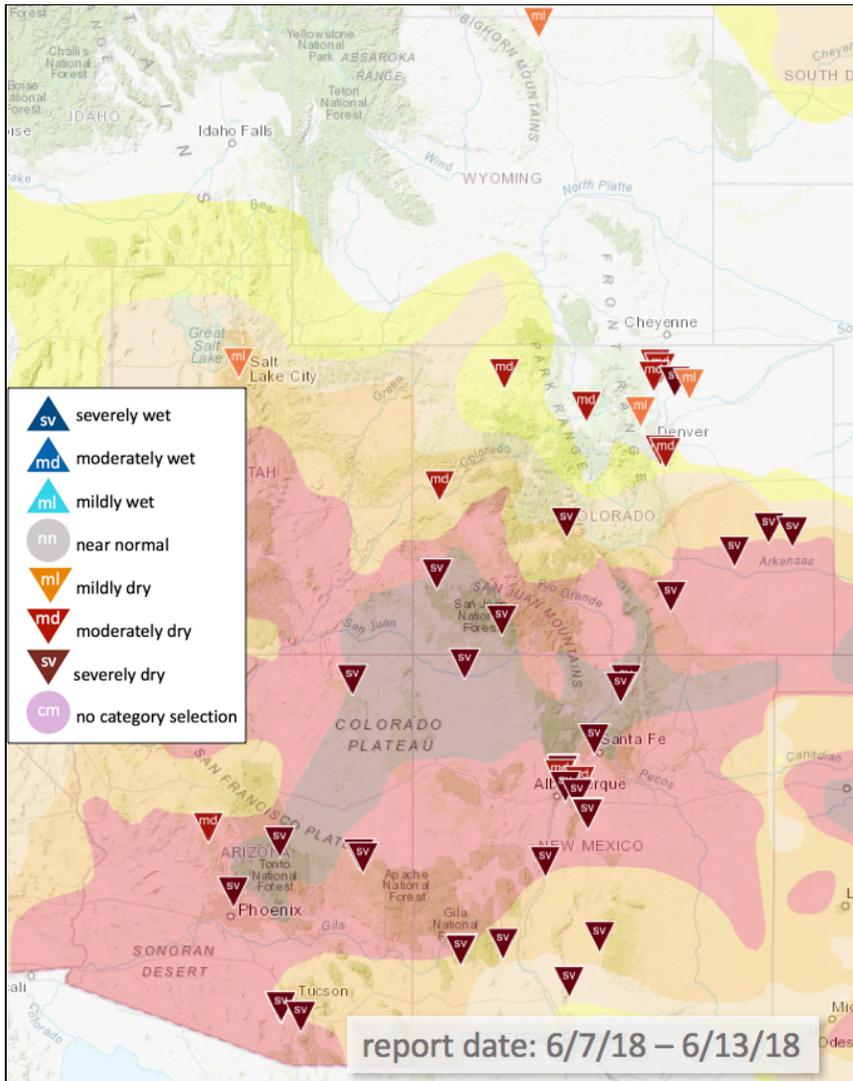
# Temperature



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.

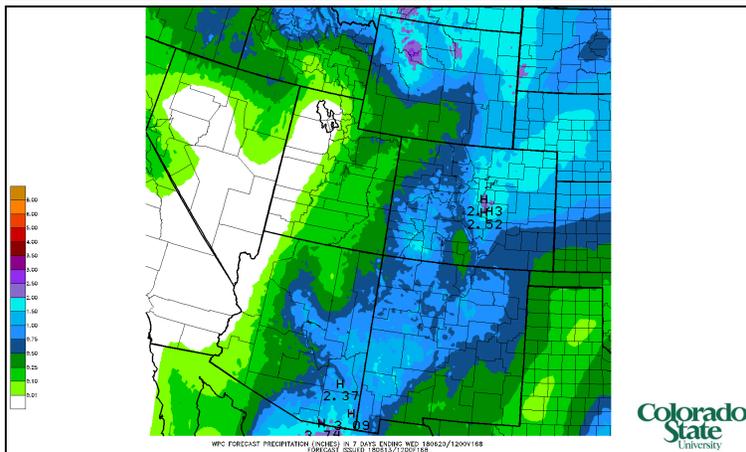
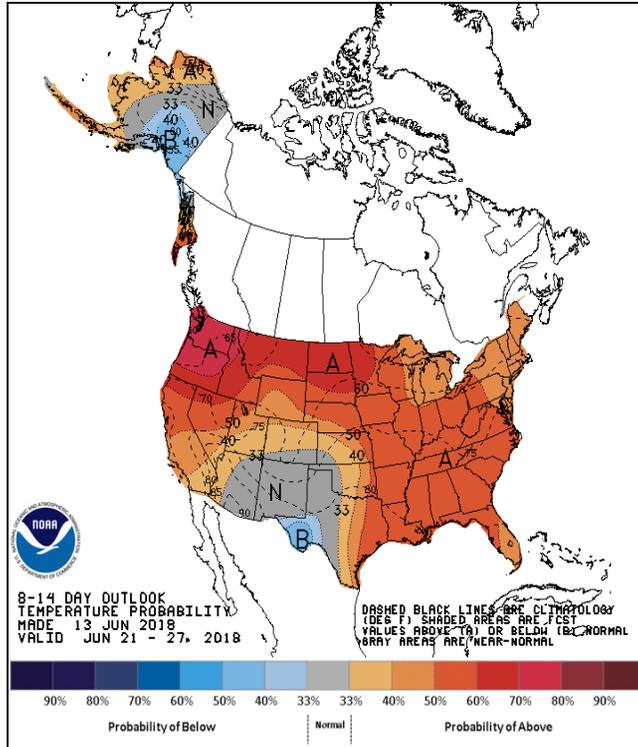
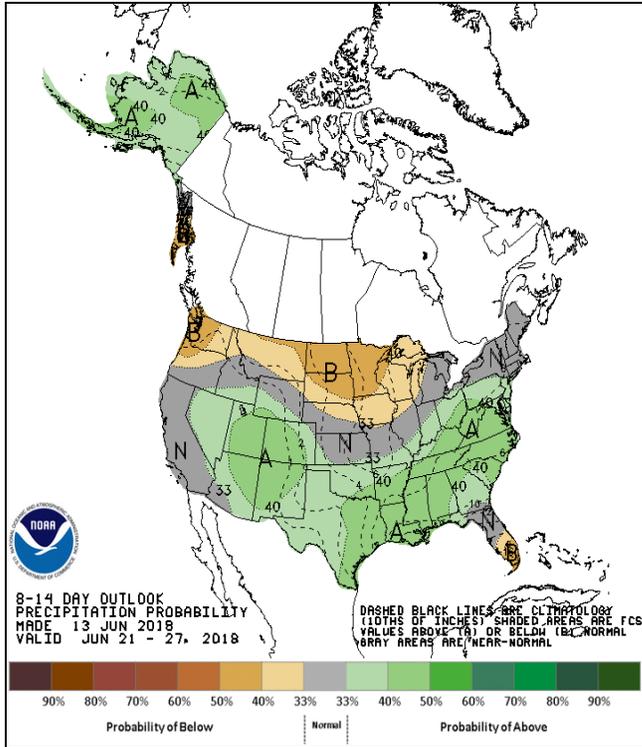
### Southeast CO

Very hot temperatures and windy conditions have been horrible on the land. I-70 near Highway 86, the grasses are showing a bluish-gray tint. The winter wheat harvest is expected to occur a couple of weeks early and will be less than average. There is no grazing available, so large numbers of cattle are being sold. Crop losses are large, and prevented planting is occurring on many fields. There are no wet ponds. June 1 was a critical date for ranchers to see some moisture to keep cattle, but that didn't happen. Precipitation can help green things up a little, but will not reduce impacts that are being experienced right now.

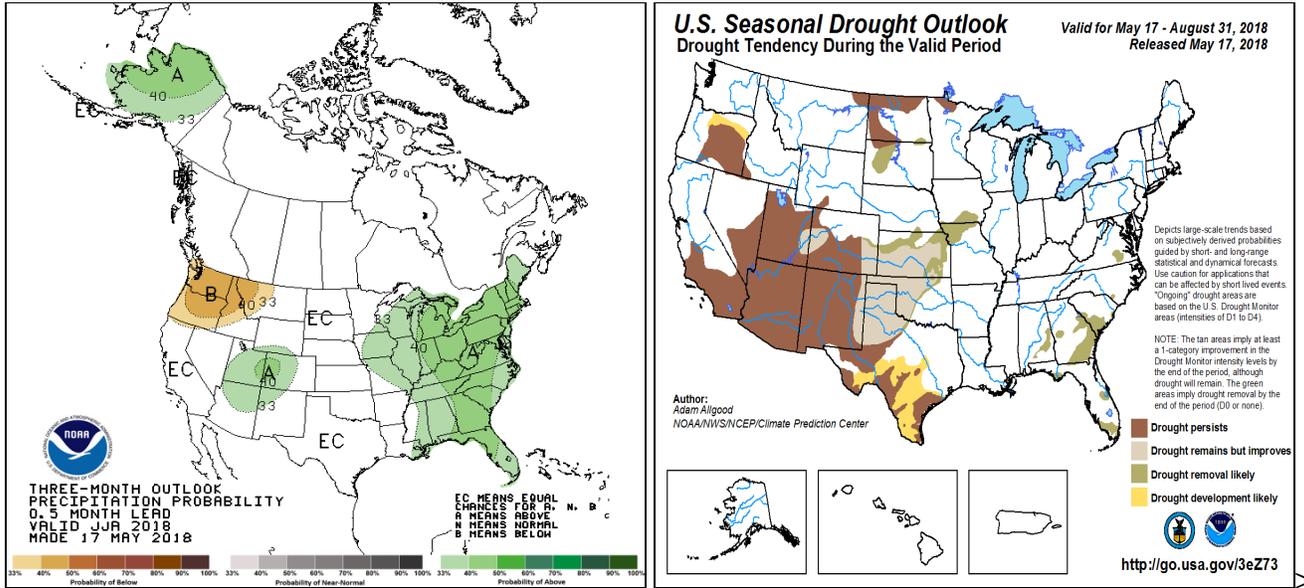
### Southwest CO

San Juan National Forest has announced large-scale closures due to fires and drought. Right now, it is unclear what the impacts of that closure will be on the region.

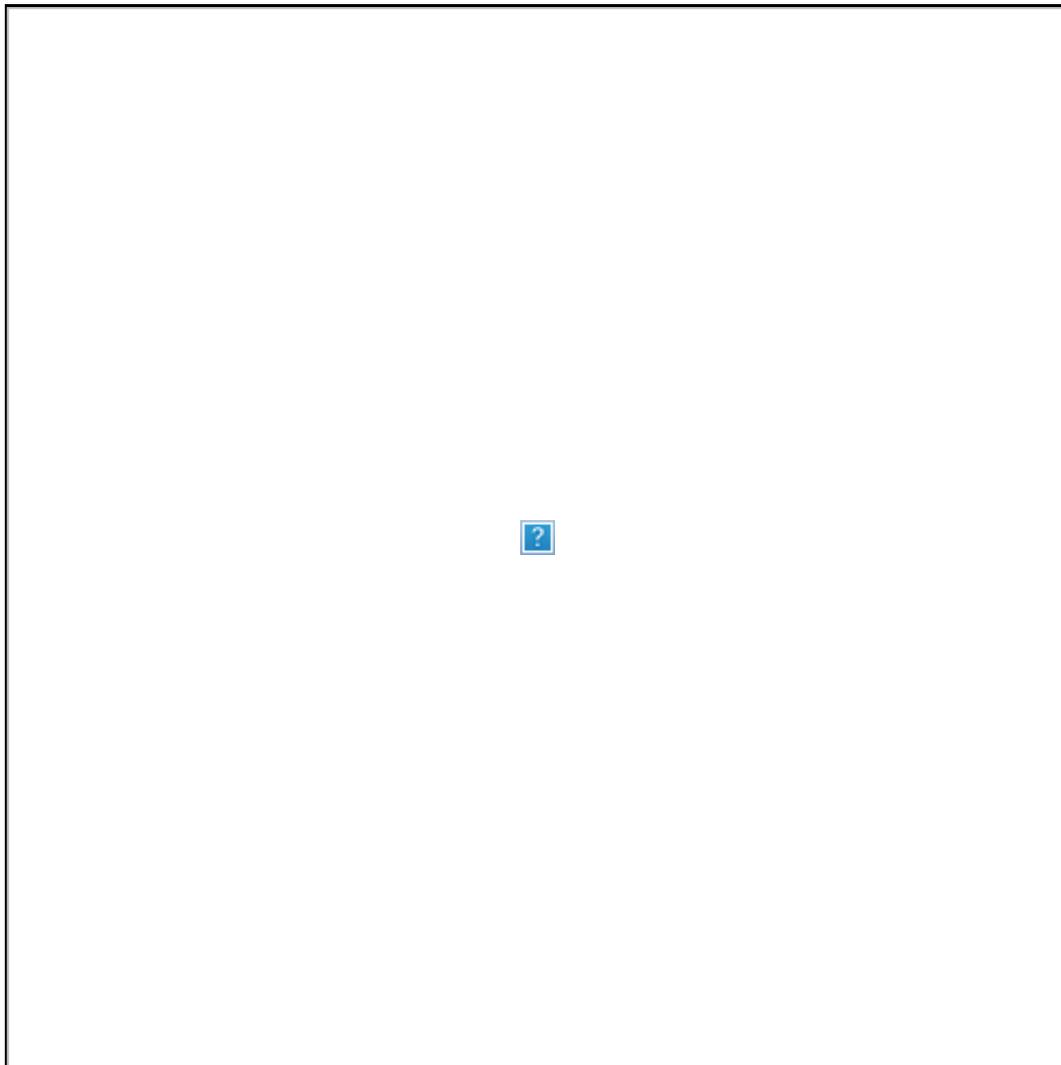
# Outlook

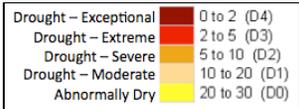


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

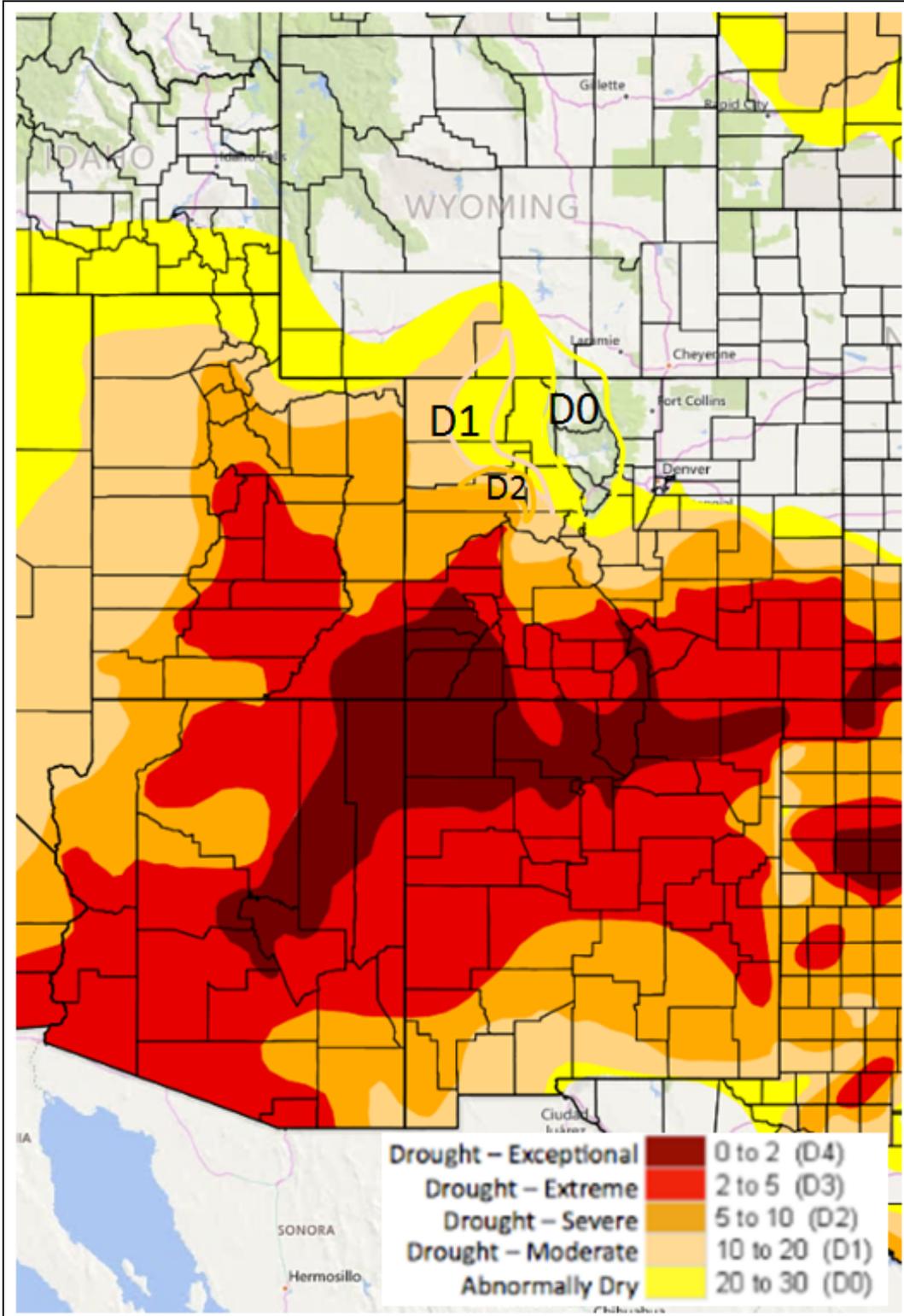


# Summary and Recommendations





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 12, 2018**

The Intermountain West has faced a scorcher of a week with no widespread precipitation. Some isolated thunderstorms did bring localized heavy rainfall to parts of eastern Colorado and eastern New Mexico last Wednesday and Thursday. Most locations stayed hot and dry. Temperatures for the months of June to date are above normal all across the board, especially east of the Continental Divide. This is similar to what we saw in the last half of May. Temperature anomalies for eastern Colorado are between +6 and +10 F for the month of June thus far. Cumulative evaporative demand totals from the Evaporative Demand Drought Index going back to the month of March are above average across nearly the entire IMW as well. Northern Wyoming has seen mostly seasonal reference ET numbers. Parts of Central Arizona, the Four Corners, and the San Luis Valley in Colorado are experiencing their highest spring reference ET going back to the late 70s.

Barring some very unusual weather patterns, 2018 will not be remembered as a water supply victory for the IMW. It is peak streamflow season, and flows coming off of the Gunnison, White, Dolores, San Juan, and Duchesne are all much below normal. Lake Powell, which climbed from around the 10th percentile back to near normal storage conditions last runoff season, is now tracking near the 20th percentile. With much below normal streamflows feeding into Powell, it will continue to decline relative to seasonal averages. McPhee Reservoir never ran a surplus at any point in the runoff season of 2018. The San Juan River near Bluff, UT is challenging its record low cumulative streamflow year of 2002. This site has a climatology of 92 years.

Remotely sensed vegetative health conditions are near normal or unusually moist for much of western and northern Wyoming. Other than that, we're seeing a lot of vegetation that is more stressed than normal. NDVI measurements support extreme and exceptional drought over much of Arizona, western New Mexico, southwest Colorado, and southeast Wyoming. East of the Continental Divide, conditions are largely categorized as pre-drought or moderate drought via satellite.

Some alleviation may be on the horizon for the Four Corners area. Widespread accumulations greater than at least 0.25" are expected across Colorado, Utah, Arizona, and New Mexico as a cutoff low moves over the region this weekend. As has been the case much of this year, the part of the IMW most favored for precipitation will again be northern Wyoming. Still, cooler temperatures, and at least some precipitation should be enjoyed by all. This storm doesn't look to be a drought buster, however it may be enough for

some improvements in southern Arizona and parts of eastern Colorado.

## Recommendations

UCRB: Our former Assistant State Climatologist recommended D3 for more of the Western Slopes (Garfield and Mesa Counties) this afternoon. I may be in agreement, but need more time to look at the data tomorrow. Let's discuss this.

It is recommended that D2 be added to northeast Garfield County. This area is showing SNOTEL water year to date precipitation that is the second or third lowest on record.

It is recommended that D1 be expanded eastward in eastern Moffat, Rio Blanco, and Garfield Counties in Colorado, and in southwest Carbon County in Wyoming. 28-day average streamflows are below the 25th percentile in this area, in some cases below the 10th percentile. This is especially consequential as streamflows peak this time of year climatologically, and has been driven by lower than average snowpack with a very fast, early melt out.

It is recommended that D0 be added to southeast Carbon County and southwest Laramie County in Wyoming, and to Jackson, Grand, and Summit County in Colorado. These counties are showing SPIs from -1 to -2.5 on the 30-day timescale, which is acting to open up some longer term deficits.

Eastern CO: Status quo for now. We don't typically like to make high resolution bubbles, but southeast Baca County looks like it could be better than D3 and southwest looks like it could maybe be worse based on recent precipitation contributions. Recent thunderstorms have been spotty but strong. We're waiting on some updated ground reports from the area.