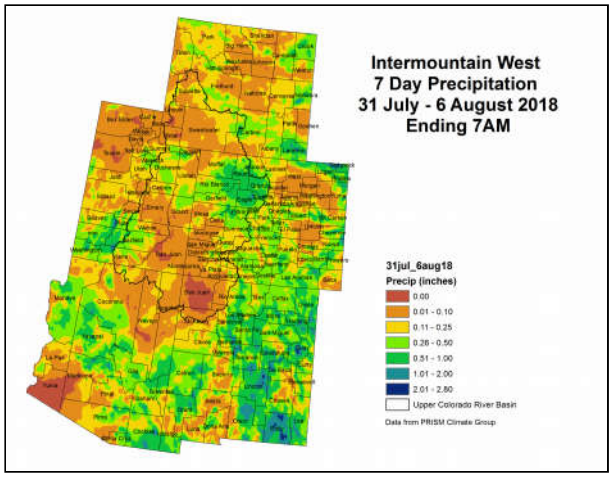
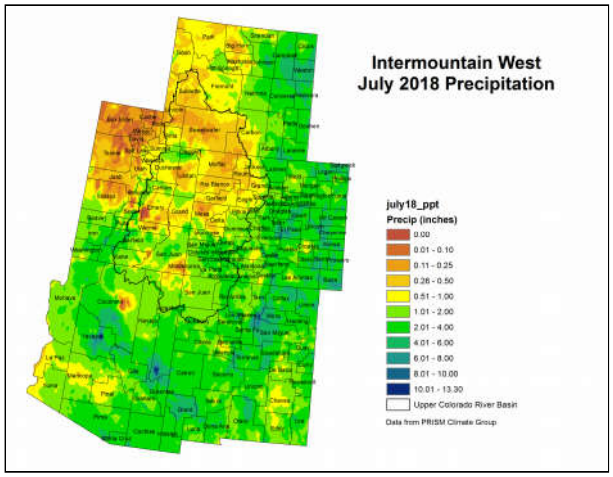
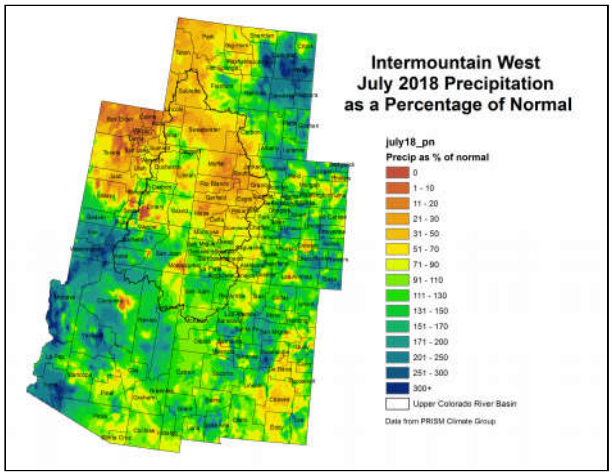
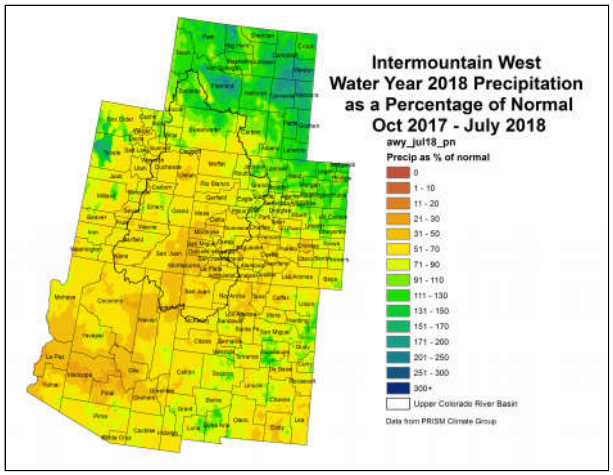
NIDIS Intermountain West
Drought Early Warning System
August 7, 2018

Precipitation



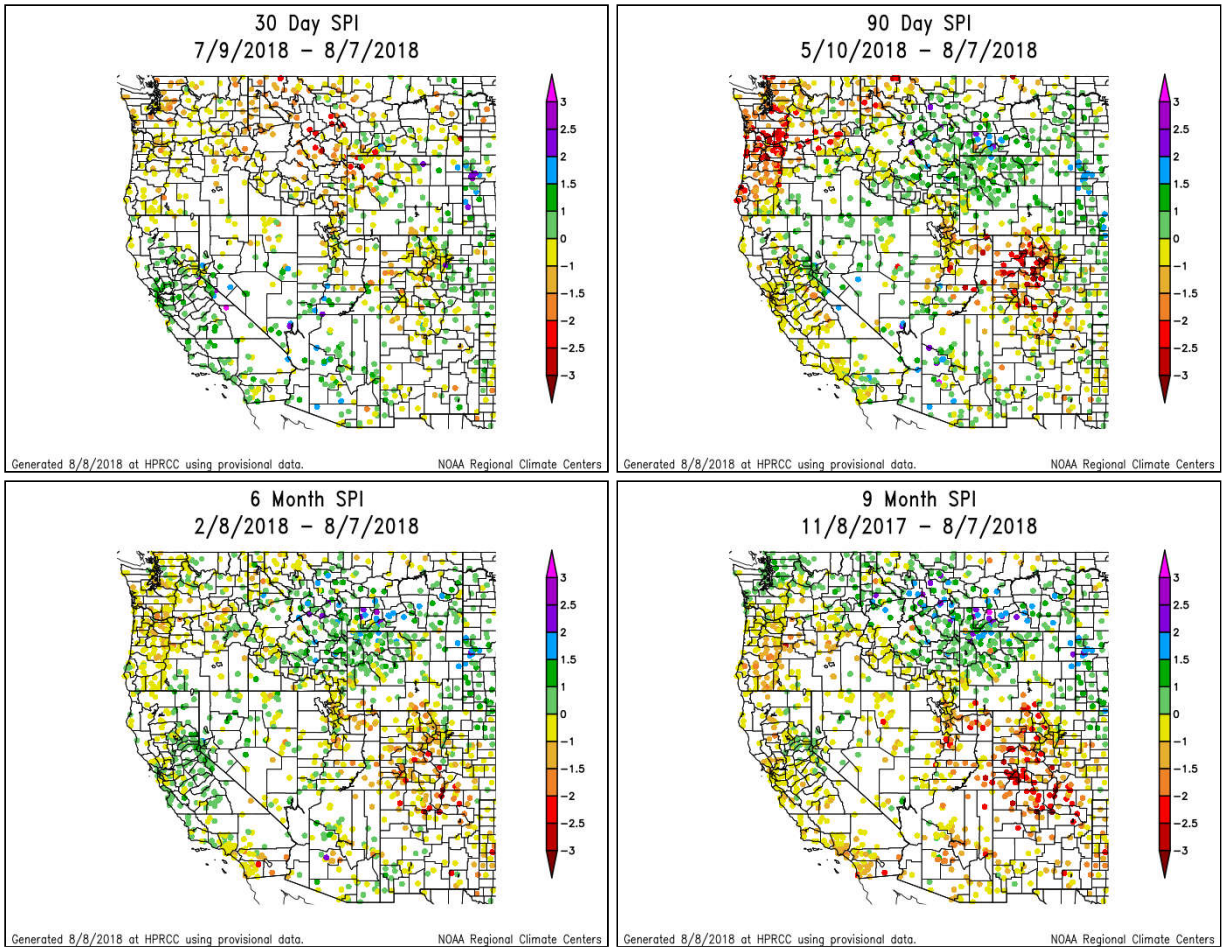






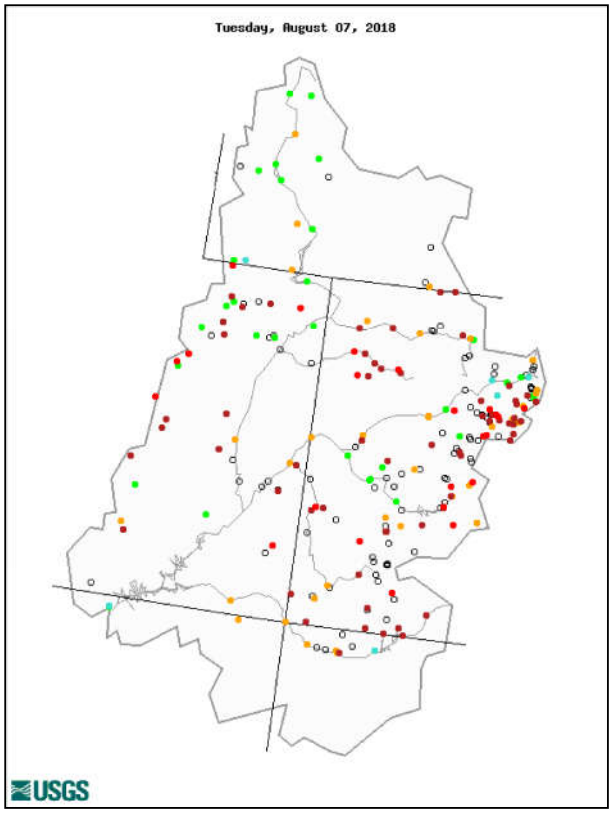
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index

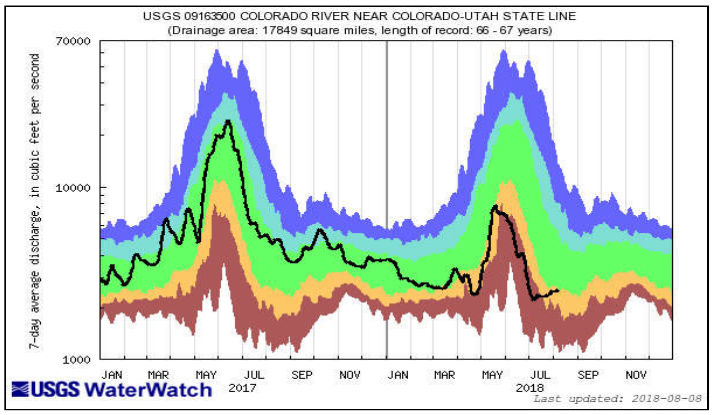


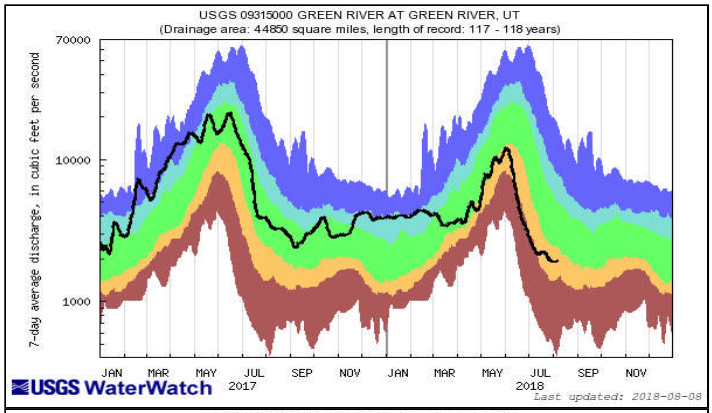
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

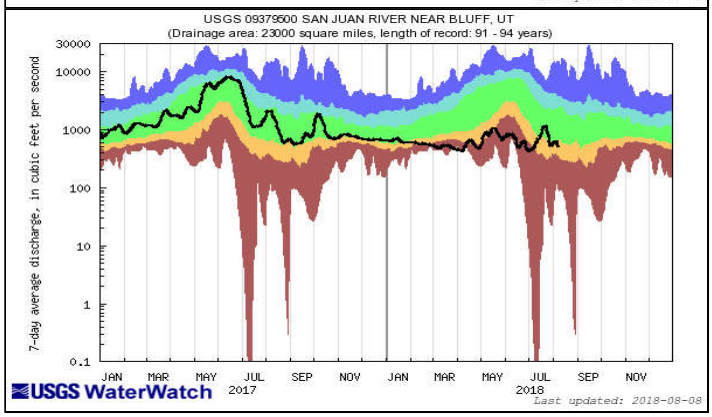
Streamflow



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

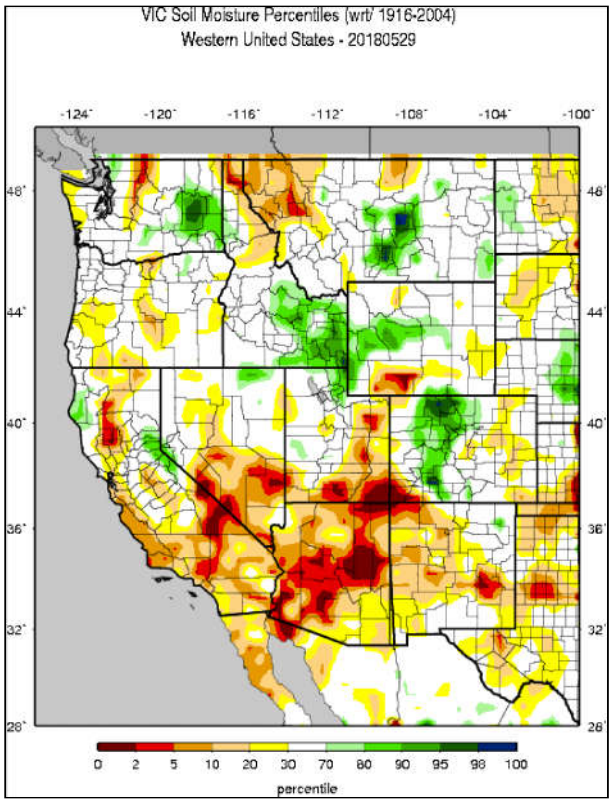


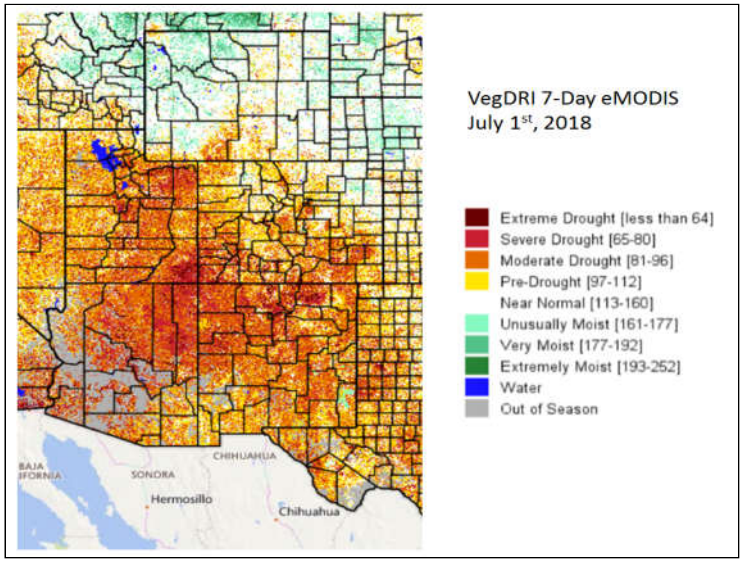




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

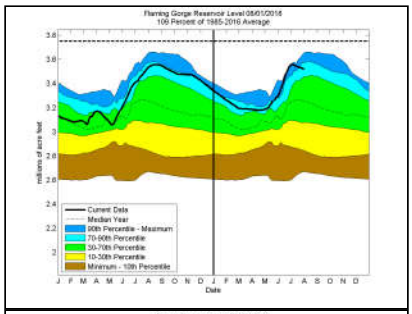
Surface Water

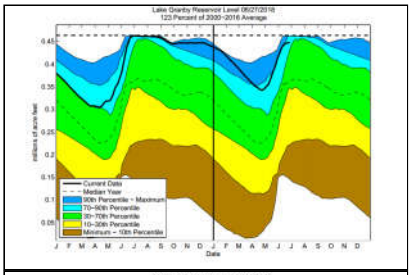


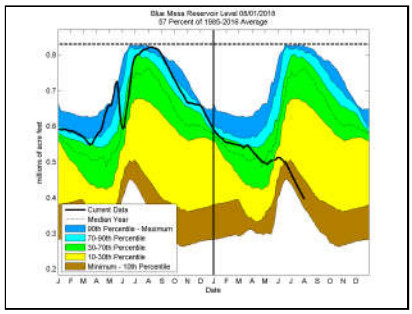


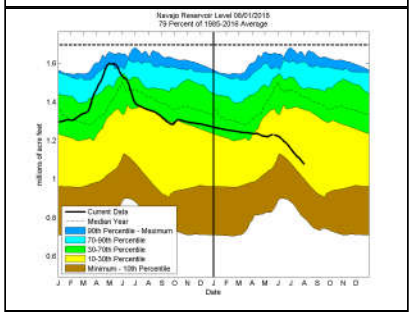
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

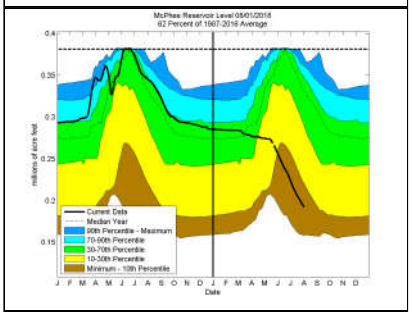
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past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

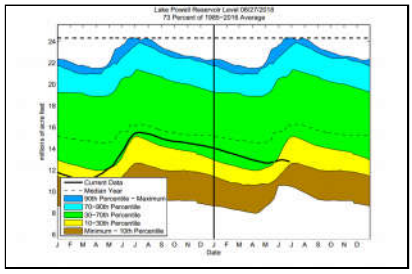




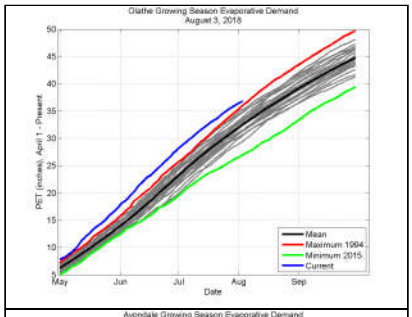


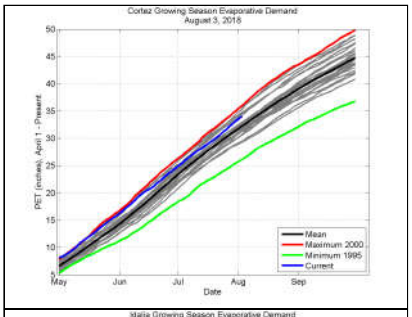


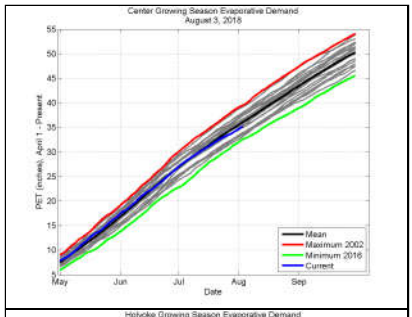


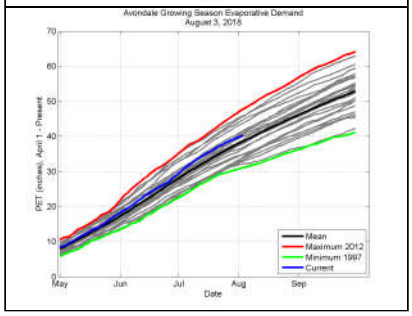


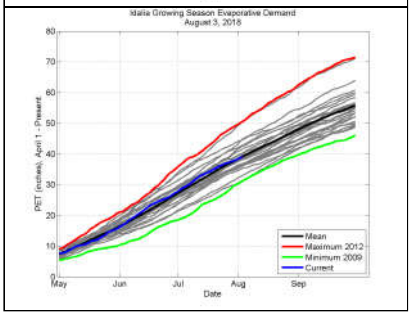
Evaporative Demand

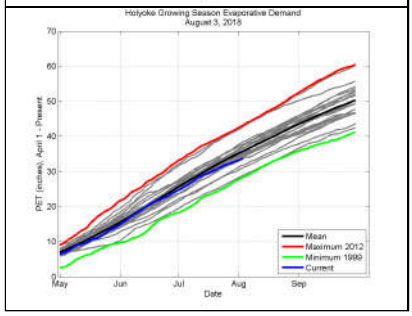


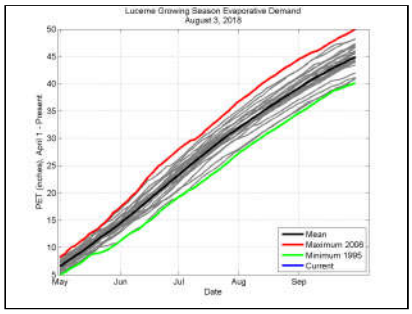




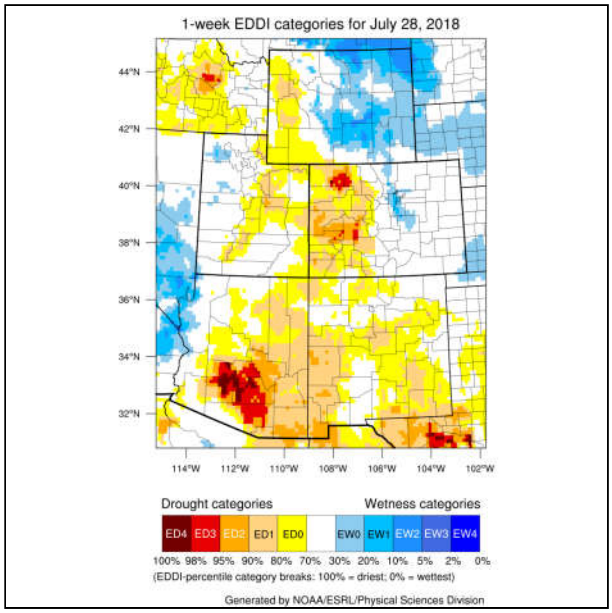


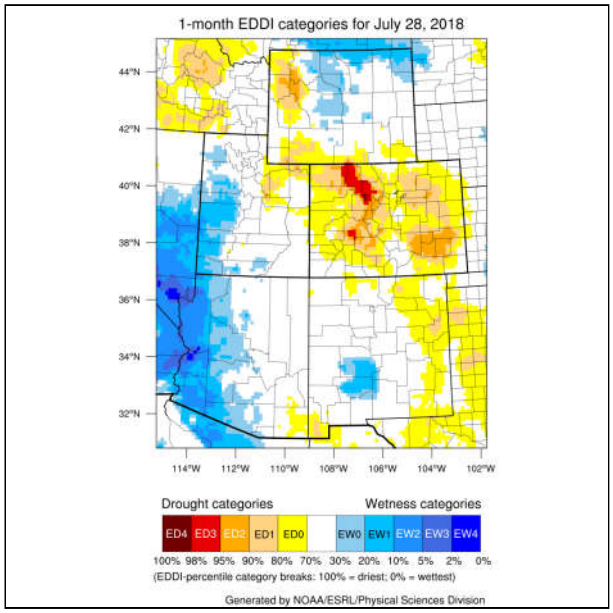


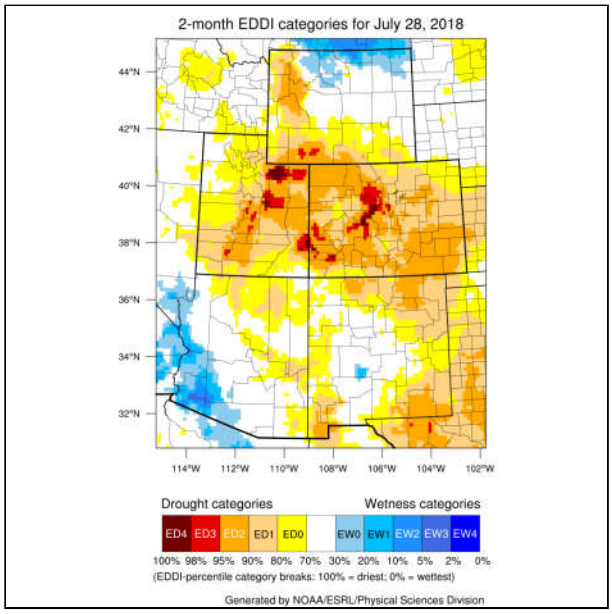


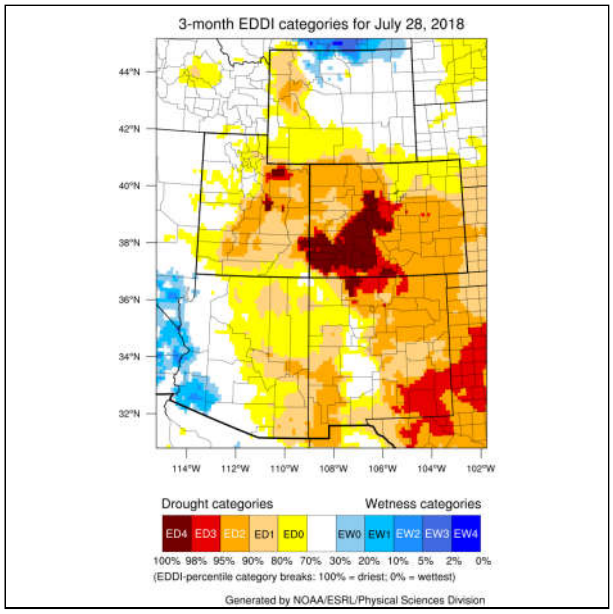


The above images are of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a map of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



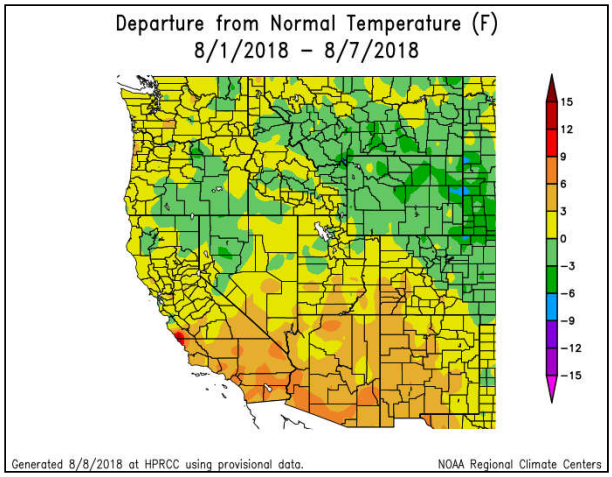


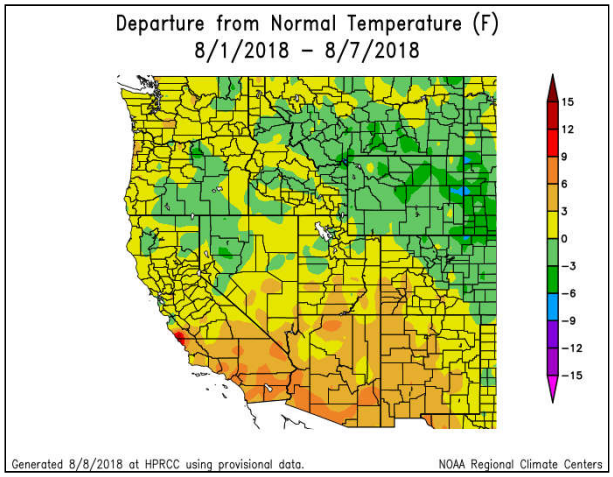




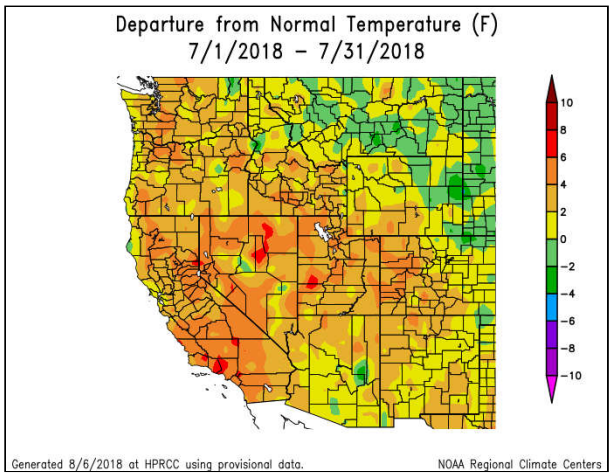
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

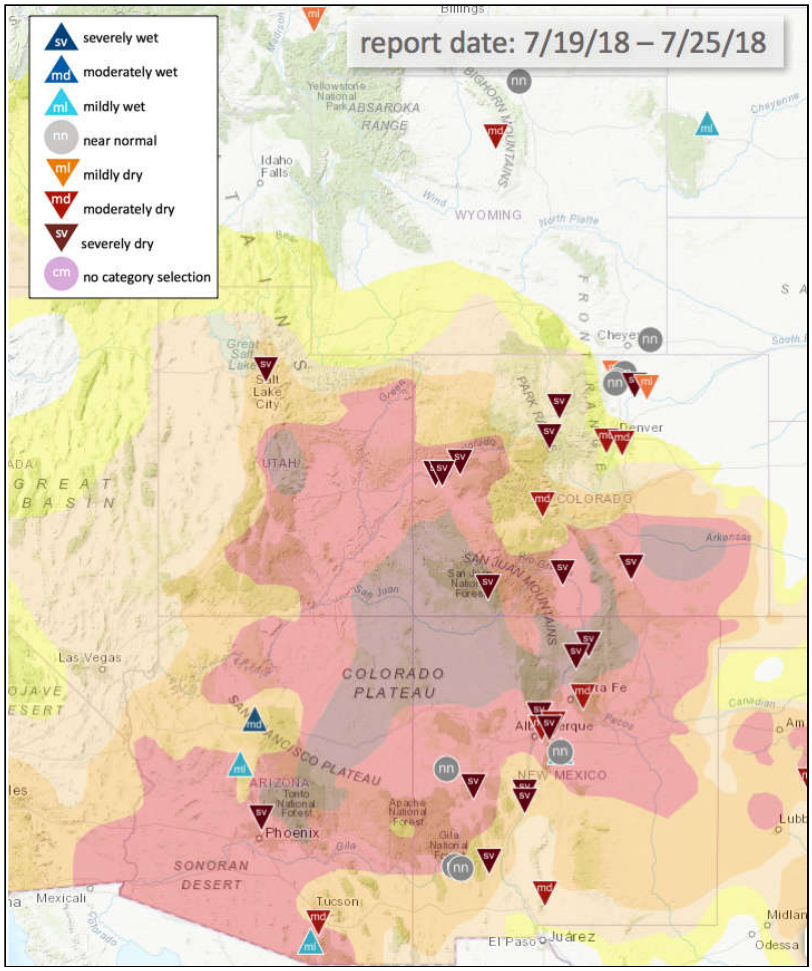




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



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.

Highway 285 Observations

Driving south on 285 on Sunday, I observed that South Park seemed extremely dry. Grasses were yellow in most spots with some brown patches scattered throughout. Grounds looked very dry and dusty. Crossing over the pass into the Arkansas Valley, conditions improved. This area is likely climatologically wetter and greener. But the native grasses appeared taller as well, possibly benefiting from rains that were missing South Park. Most of Chaffee County didn't look too bad. Crossing over the pass into Saguache County and descending down into the San Luis Valley, conditions appeared dry, but noticeably better than what I'd observed in South Park. Indeed, many areas of the San Luis Valley are extremely dry, but I did see many herds grazing (i.e., there is still pasture for them to graze on) and irrigated alfalfa fields seemed in decent condition. Driving back north through the area on Tuesday afternoon, there was little change in the San Luis Valley. However, South Park grasses had seemed to perk up a little bit from decent storms passing over both Monday and Tuesday. In Chaffee County, near Nathrop, a woman described the ditch outside her shop looking like a running river during the thunderstorm that had recently passed. But with my visit only 30 minutes later, it was mostly dry again. - Becky Bolinger

Notes from Southwest Drought Tour

* Hay currently costing about $220 a ton when it's normally around $100.
* One rancher's herd is typically around 750 cattle. He's sold 200 already and will likely sell off 200 more. Last time he culled the herd to this level, it took him almost 10 years to fully recover. Because he has a special genetic breed that can survive the conditions and climate, he can't just go buy more cattle from Texas or somewhere else.
* Irrigated crops are struggling as well. We visited a crop, with a more senior water right, that got irrigated once at the beginning of the season.
* Wells are doing okay since the previous year was better. But creeks are dry. Downstream exchanges can't happen, even if there is a water right and water upstream is available.
* One instance, there is a creek that crosses into New Mexico. The Compact says that 50% of the flow measured at one spot must cross the state line. Problem is, the creek dries up before the state line. So, how to deliver the water and meet the compact is a challenge.

* Lots of comparisons to the 2002 drought. I think most here think this is the worst they've ever seen.
* While visiting the burn scar, a plume of smoke started rising. Apparently, the area is at a high risk for reburn. Speculation was that a smoldering tree stump could have reignited with a gust of wind or lightning from scattered storms over the last couple of days could have caused it.
* A guy brought samples of what the runoff looks like downstream from the burn scar after a thunderstorm. One sample shows the sludge that comes down the river. He also talked about watching the water over some of the worst burn areas. Water would bead up and roll down the hill, looking like a ball bearing. Not infiltrating the soils at all.
* Drought and fire have impacted the tourism/rec industry as well. A guy working for the Durango-Silverton Railroad talked. Because of the fire, they had to close for 40 days, which cost them an estimated 40,000 visitors and about $6 million in revenue. A woman who works for the ski resorts also spoke of the struggles they're facing. They had low numbers in the winter because of lack of snow. Then, when they were hoping to ramp up their summer recreation activities, they had to close down because of the fires.

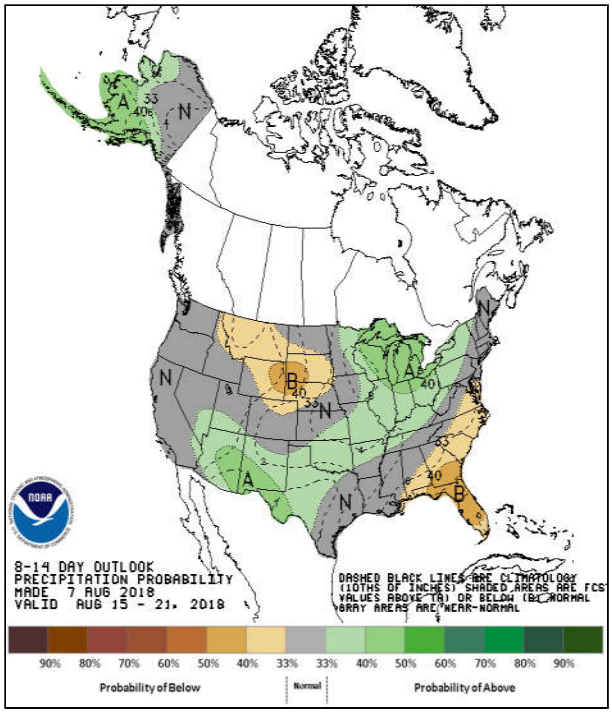
Kiowa County, FSA Report

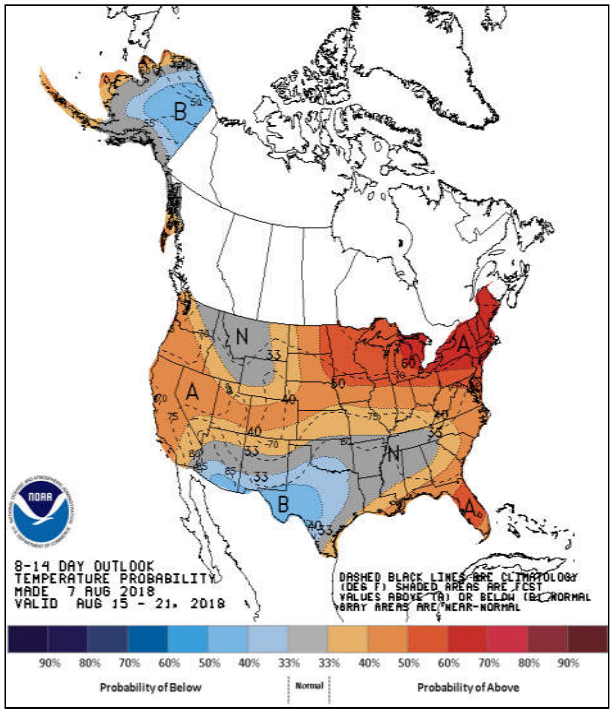
The central part of the county has received some beneficial moisture this past week. A producer just north of Galatea has registered 7 inches in a little over a week.

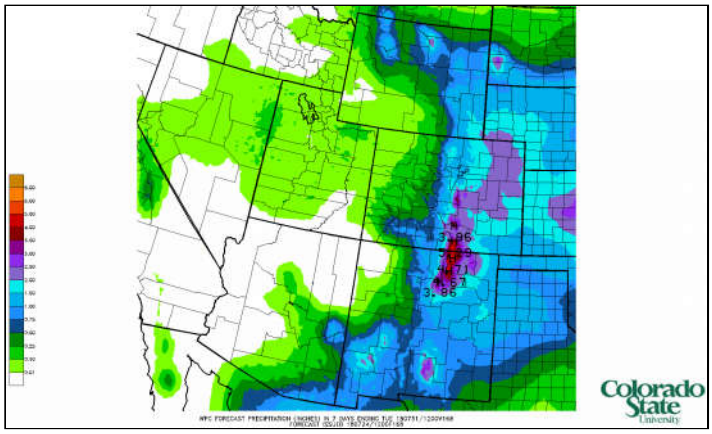
The far western portion of the county hasn't received nearly as much. The Arlington area where you have the D4 received only 2-7 tenths in the past two weeks. It is still very dry over there. The eastern portion of the county has areas that are dry and haven't been getting the rains.

It is very difficult to get a feeling as I live maybe .75 miles from the office. We have a NWS weather station in the back of the office. Sunday night at my house I got 7 tenths – here at the office 4 tenths. That is the story - spotty rains. It will absolutely dump buckets at one place and 1 mile from there – they get nothing.

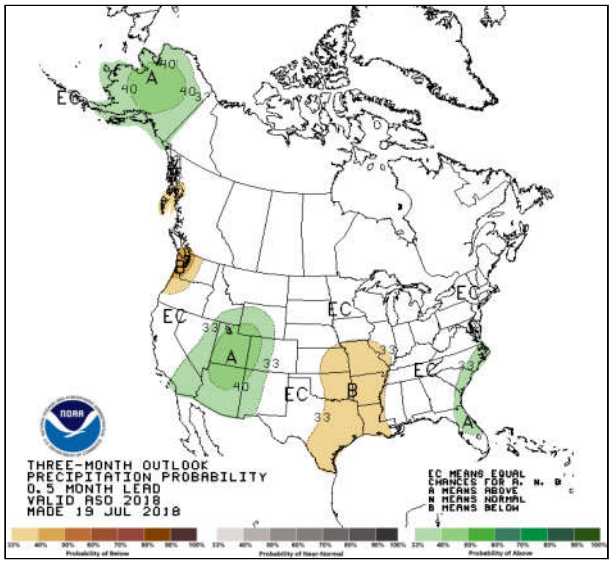
Outlook

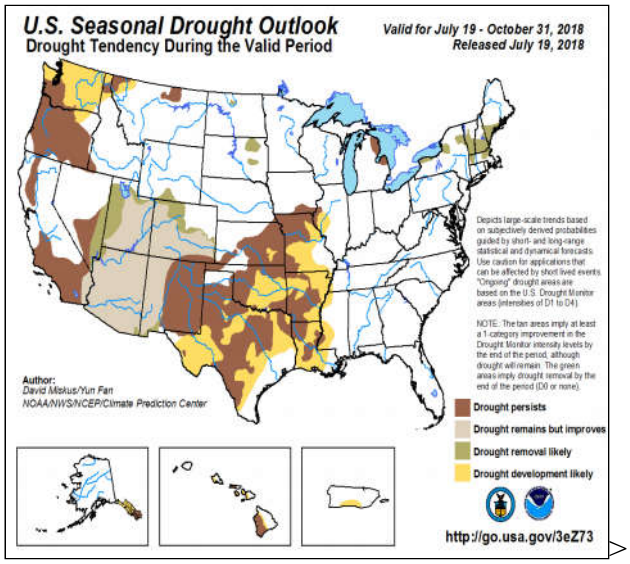




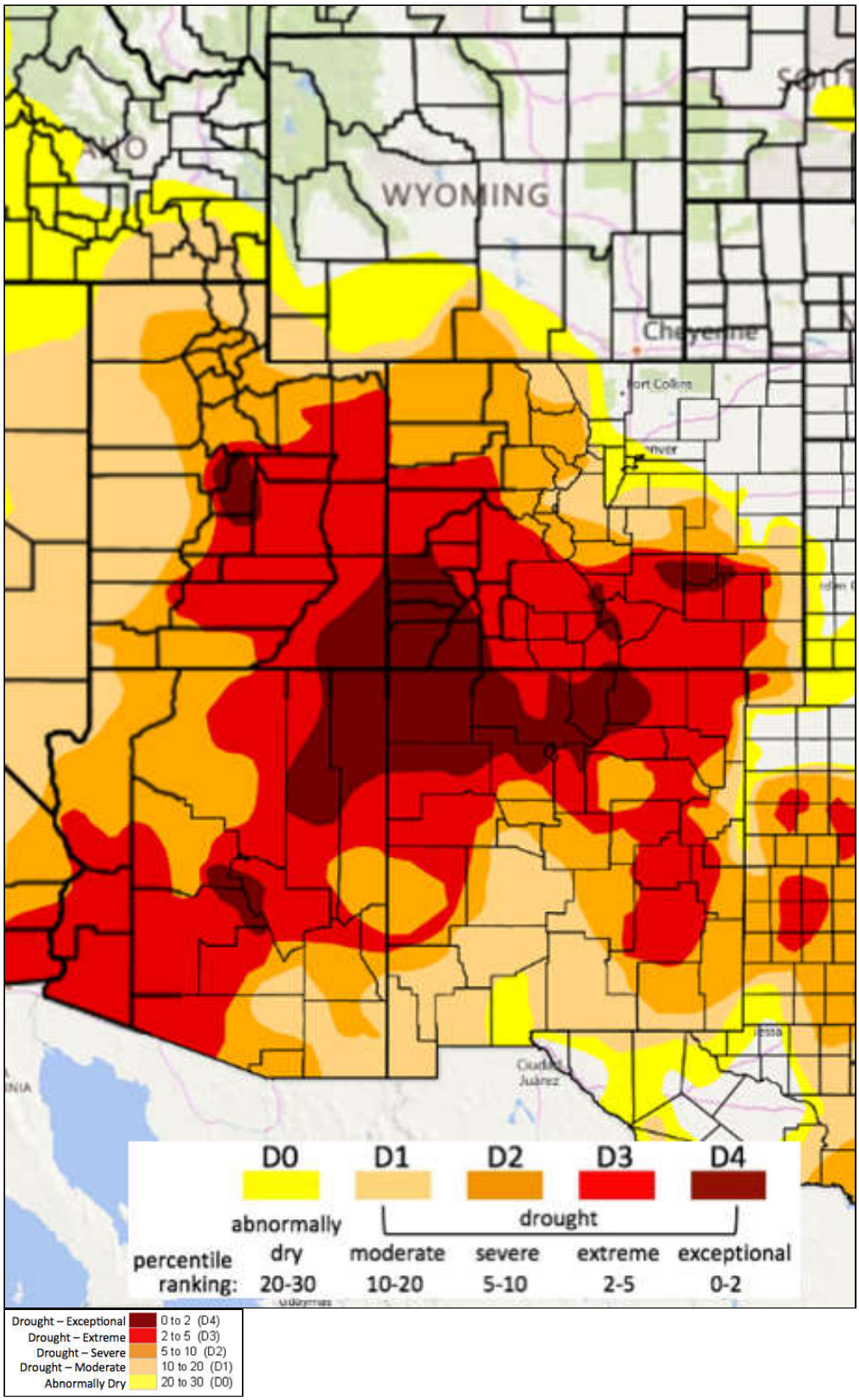


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

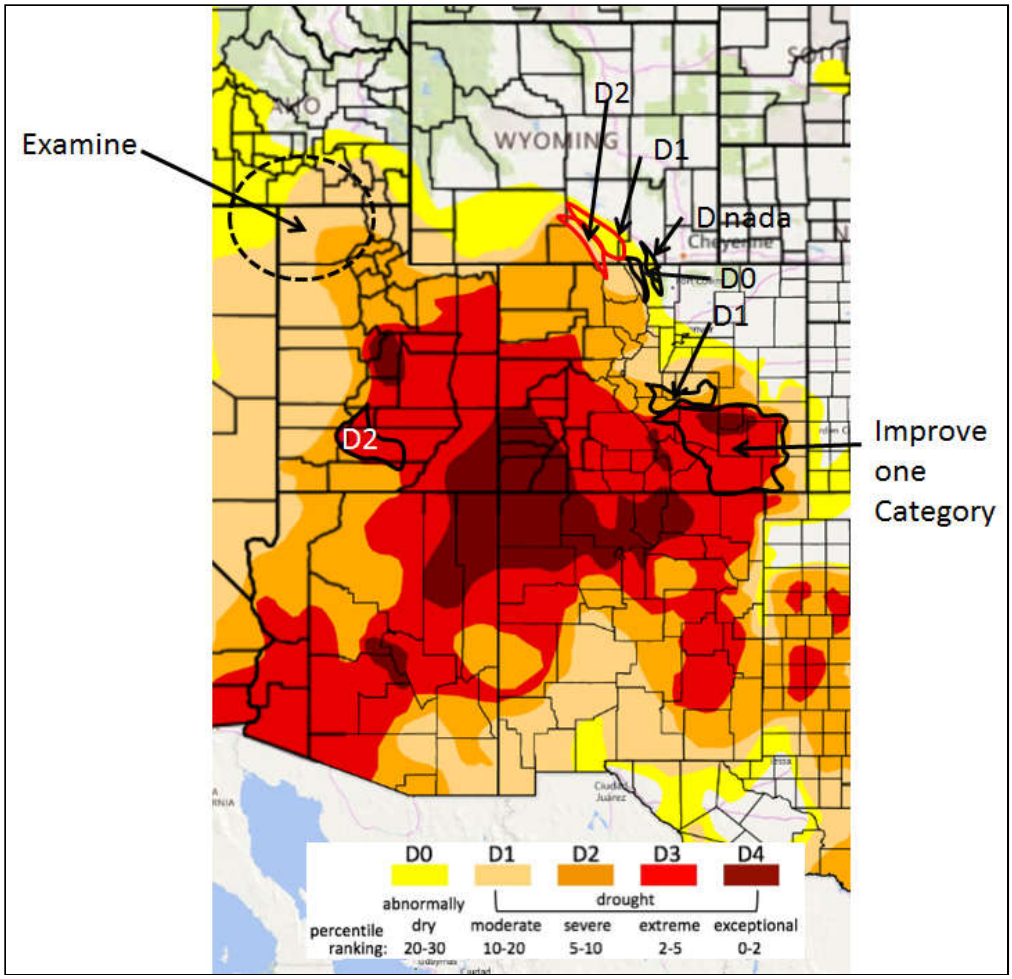




Summary and Recommendations



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: August 7, 2018

2018's song of ice and fire (TM?) continues for Colorado and the Upper Colorado River Basin. Smoke from the Mendocino Fire Complex in California has been common throughout the region, as well as smoke from our own fires. Over a dozen wildfires are currently burning on the west slopes of Colorado according to Inciweb. A handful more continue to burn in Arizona with several lingering in New Mexico and Utah.

Meanwhile, yesterday, large hail fell in southeast Colorado with some stones threatening to at least tie Colorado's state record for hailstone diameter (4.5"). Large areas of Pueblo and Las Animas County received over two inches of precipitation, with one gauge in northern Las Animas County recording over 8".

Temperatures over the last week were cooler for much of the Intermountain West than as of late. Areas east of the Continental Divide were generally below average. Locations west of the Continental Divide were still mostly above average, but closer to normal than many recent weeks.

2018 continues to be a rough year for surface water supplies in the Upper Colorado River Basin. The dry conditions have shifted more to the northwest since the conclusion of the snowpack season. Reservoir supplies have tanked in the southern UCRB. Lake Powell, McPhee Reservoir, and Blue Mesa Reservoir are now below 10th percentile storage for this time of year. Both McPhee and Blue Mesa reservoirs filled to capacity in 2017. 75% of stream gages in the Upper Colorado River Basin are reporting below the 25th percentile for this time of year, and 10% are reporting record low flows. The NASA SPoRT soil moisture model shows most of the basin with below normal soil moisture with some pockets of normal or above normal interspersed through the basin.

Looking forward, temperatures over the next two weeks are more likely than not to be higher than normal in the northern part of the Intermountain West, and lower than normal in the southern portion. Monsoonal moisture is forecast to continue dumping on New Mexico and southeast Arizona with some higher totals extending into the San Juans and Sangre de Cristos in Colorado. The best moisture appears likely to stay to the south through the 8-14 day period as well. This pattern is likely to lead to continued degradation in the northern reaches of the UCRB, but could lead to further drought amelioration in New Mexico and Arizona, perhaps even southern Colorado.

Recommendations

UCRB: It is recommended that D3 be upgraded to D2 in western Garfield County and Piute County in southern Utah. These areas have seen above average rainfall in July and early August, which has

been sufficient for improving long-term SPIs.

It is recommended that a closer look be taken at western Box Elder County, UT and eastern Elko County, NV. We had a phone call from a concerned rancher in the area. He is having a hard time keeping his cattle herd. The Goose Creek fire is substantial as well. Sage brush in the area is extremely dry. This area is a bit out of our comfort zone for making recommendations, and there is a dearth of long-term weather station data available through COOP or NRCS.

Eastern CO: A 1 category improvement is recommended in Otero, Bent, and Crowley Counties, eastern Prowers County, eastern Las Animas County, north and east Pueblo County, eastern Fremont County, southern Teller County, and southwest El Paso County. Following some strong thunderstorms over the past seven days, SPIs have come clearly out of the extreme and exceptional drought range for the water year to date.

It is recommended that D1 and D0 be scaled back in western Larimer County, CO, and south-central Albany County, WY. A wetter than average July has improved conditions in the region. Closely nearby, it is recommended that D1 and D2 be expanded in northern Jackson County, CO, and southern and central Carbon County, WY. Here July was hot and dry.