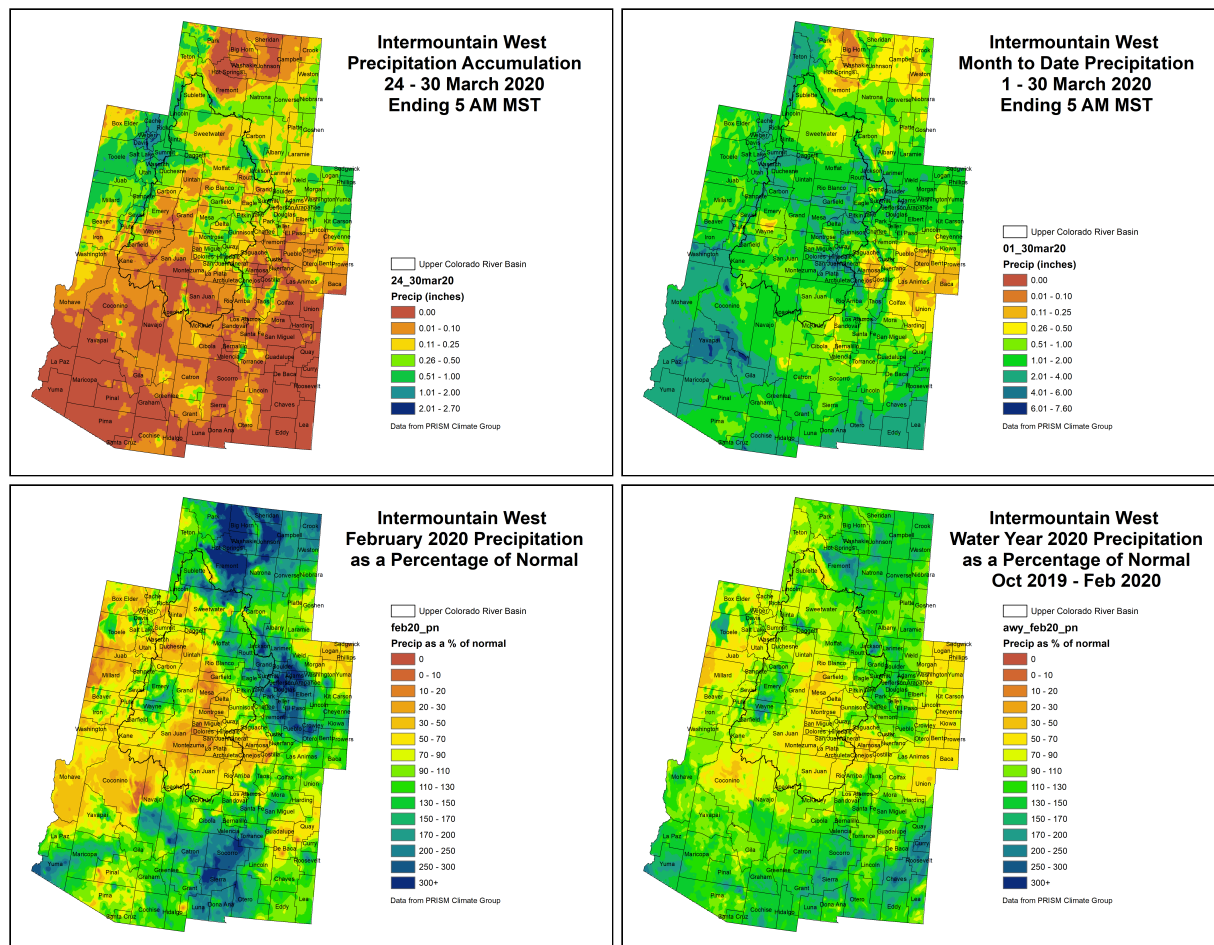


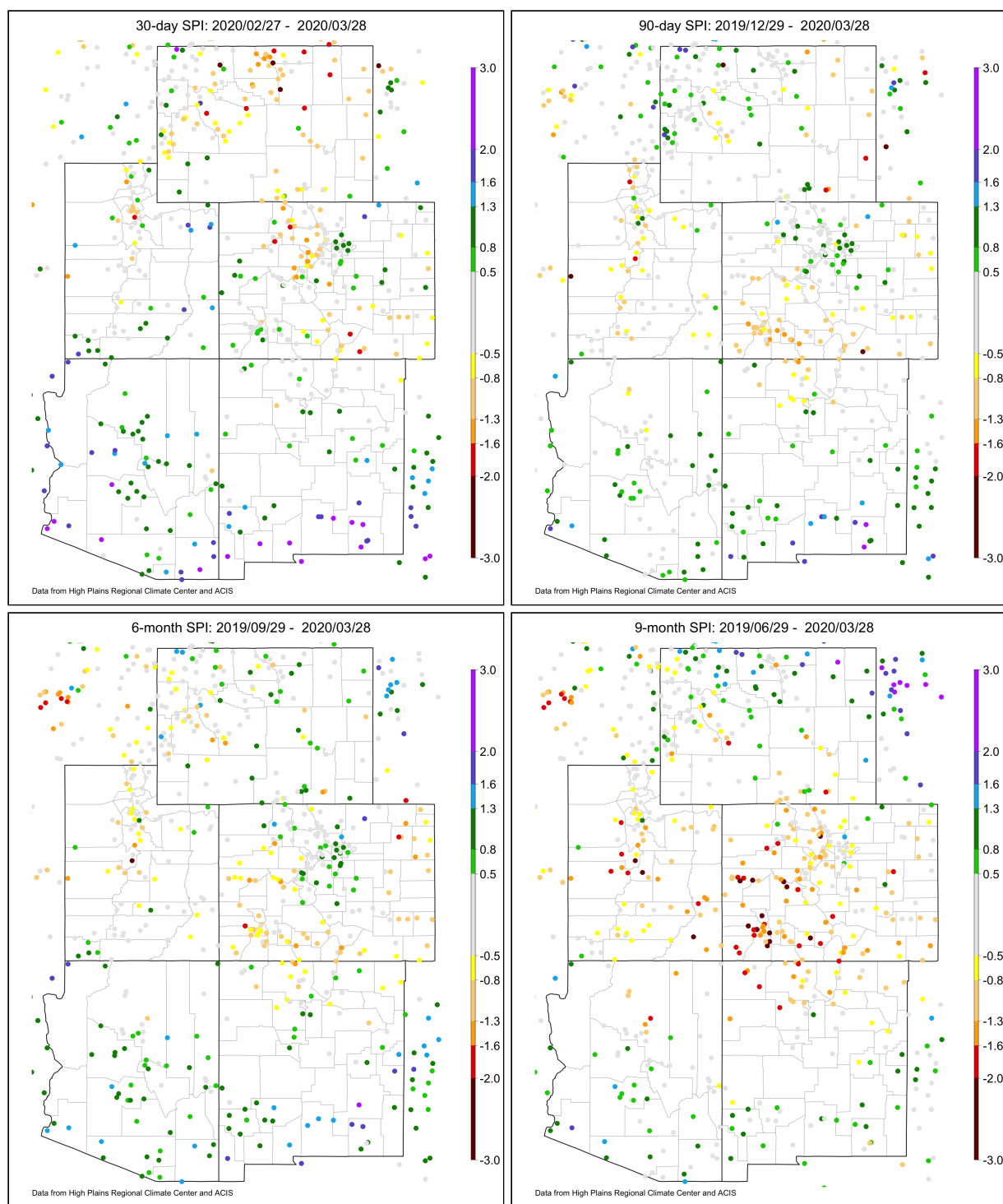
NIDIS Intermountain West Drought Early Warning System March 31, 2020

Precipitation



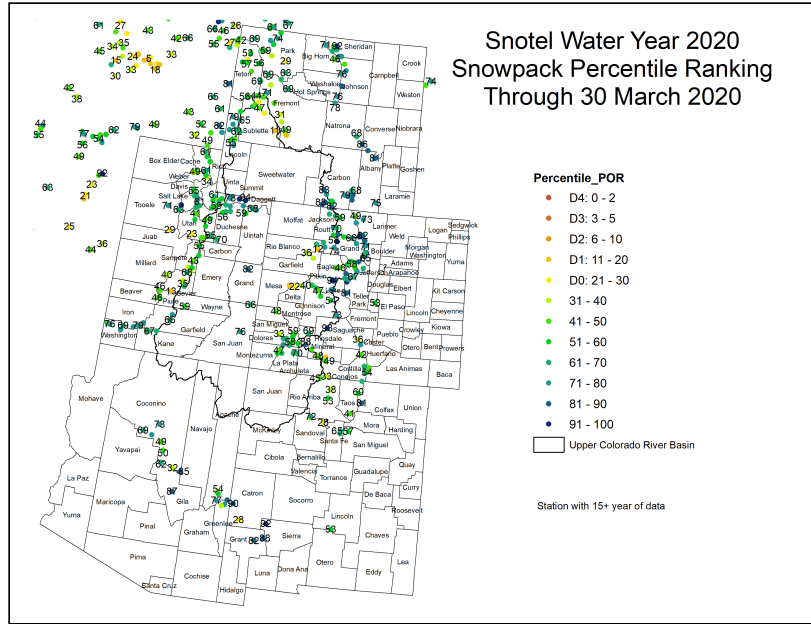
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index

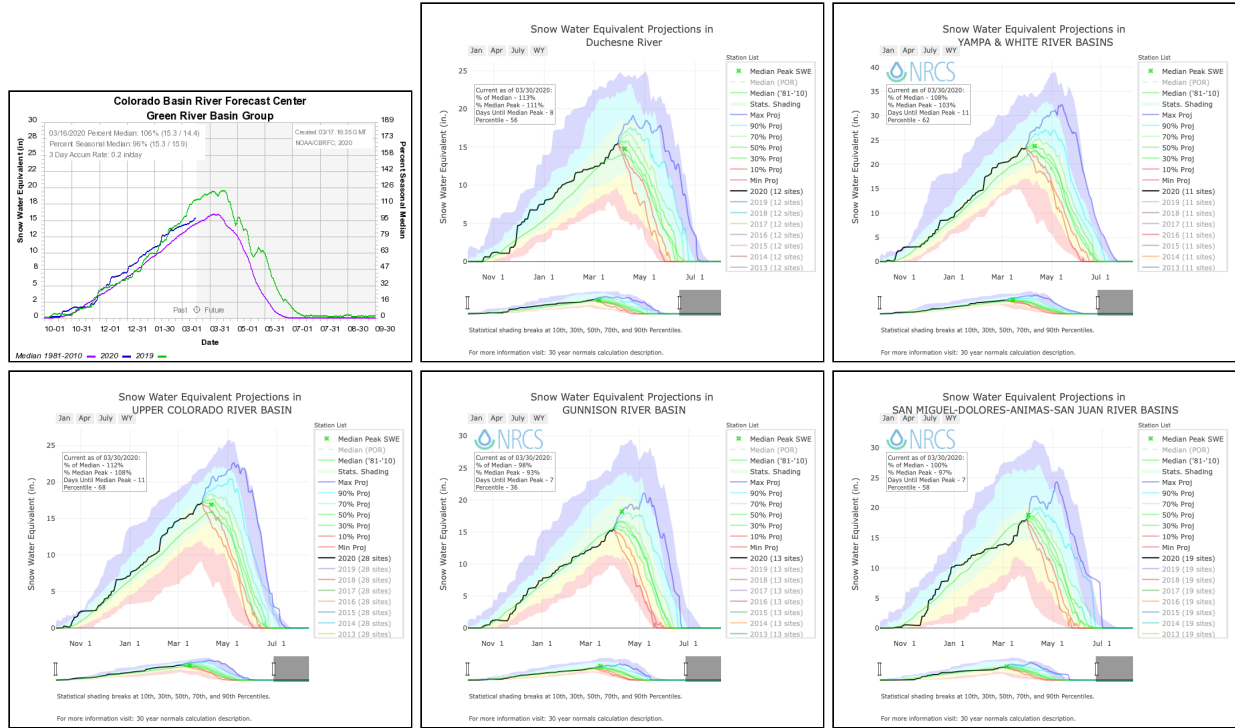


Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. Colors match the different drought categories with the U.S. Drought Monitor. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term conditions. SPI data provided by High Plains Regional Climate Center.

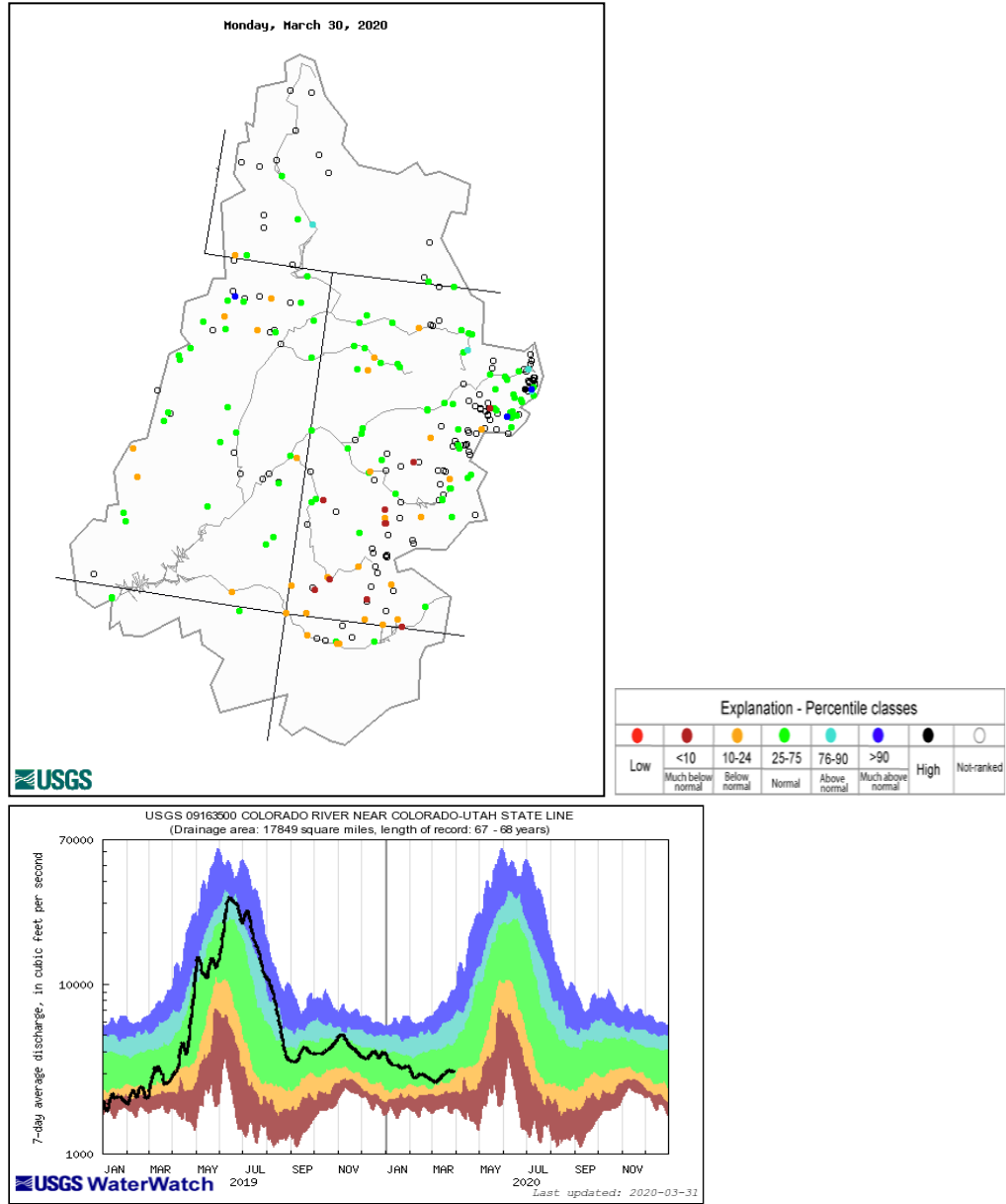
Snotel and Snowpack

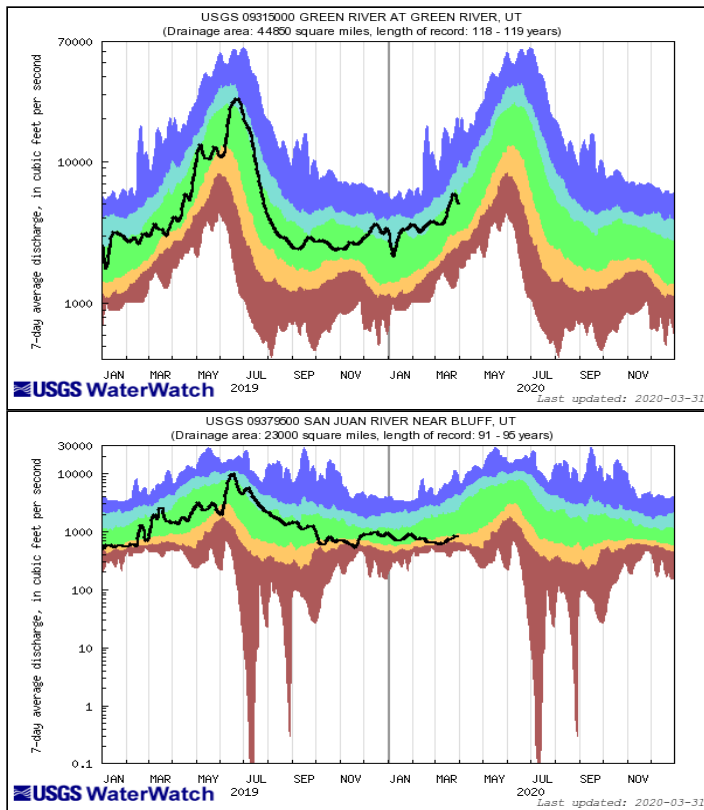


The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).



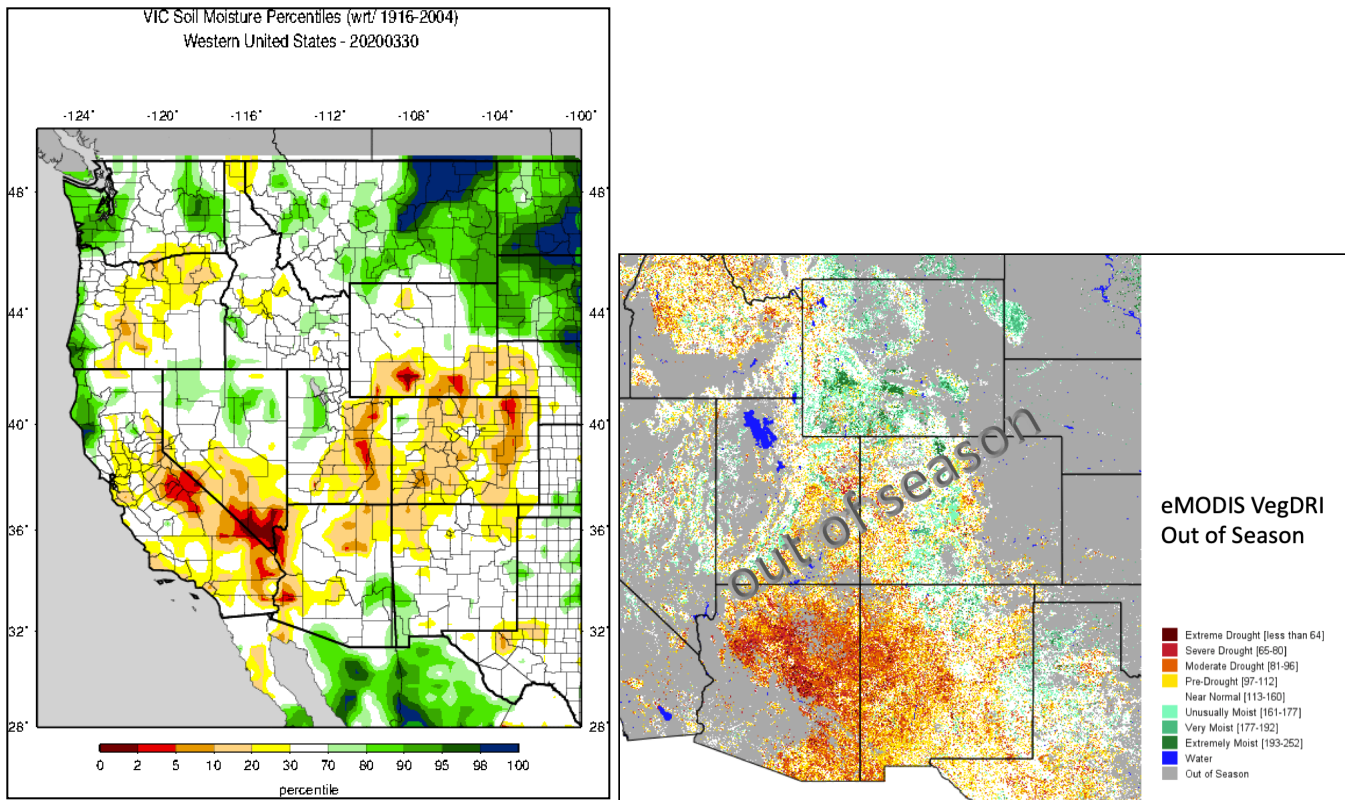
Streamflow





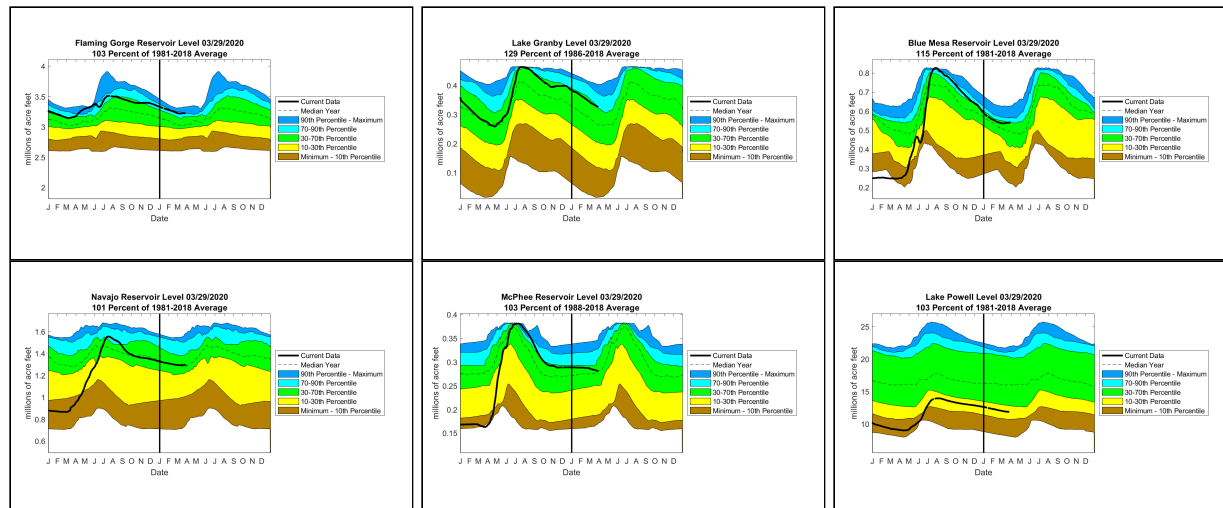
The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

Surface Water

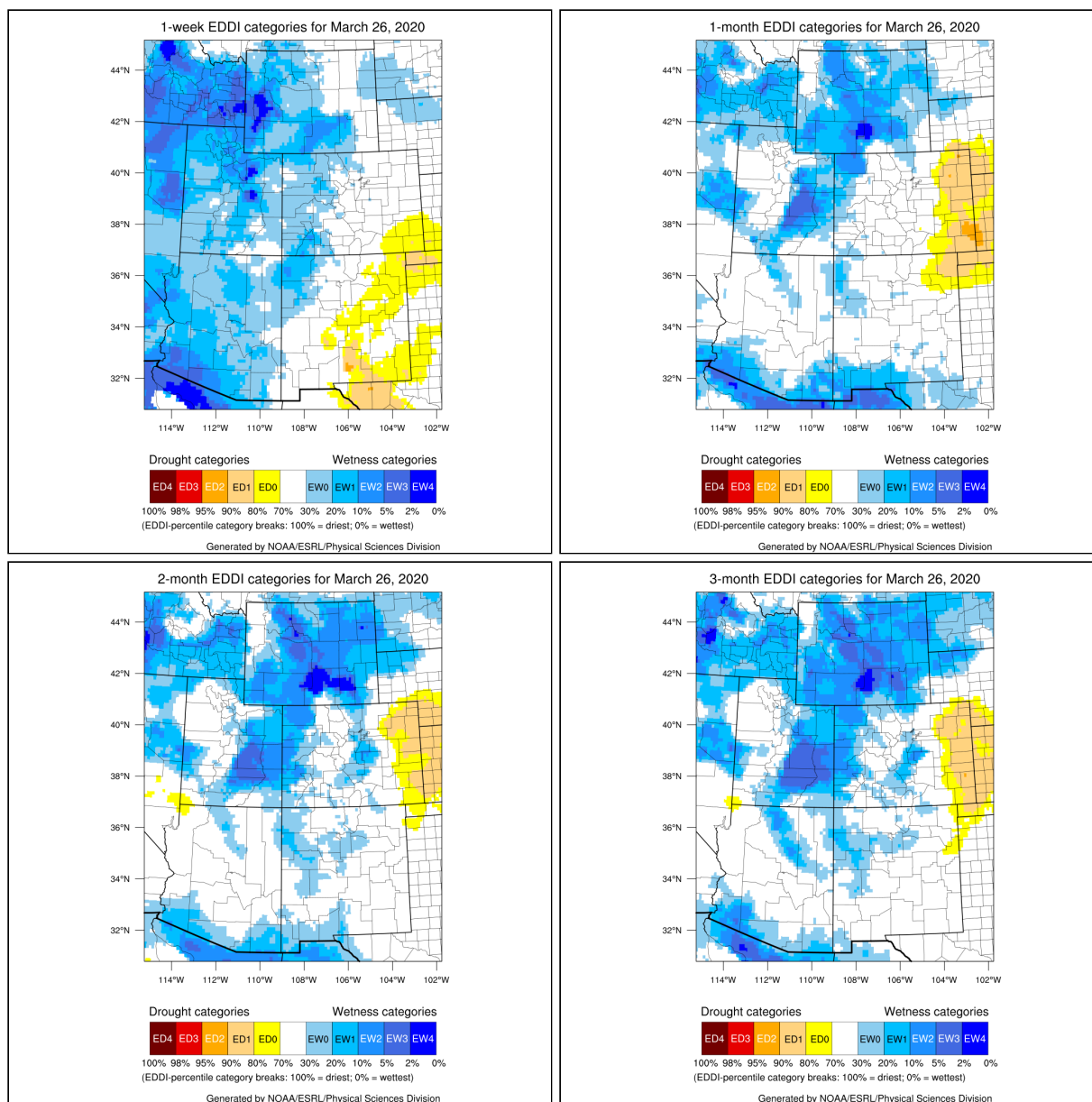


The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

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.

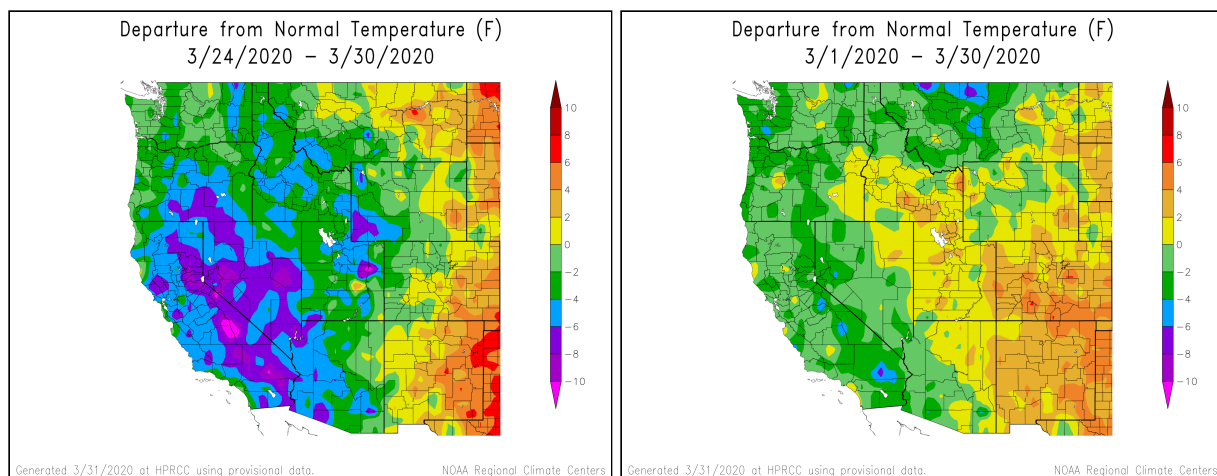


Evaporative Demand

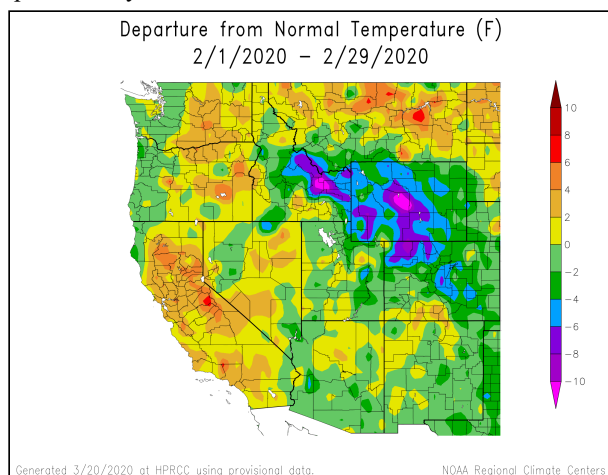


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

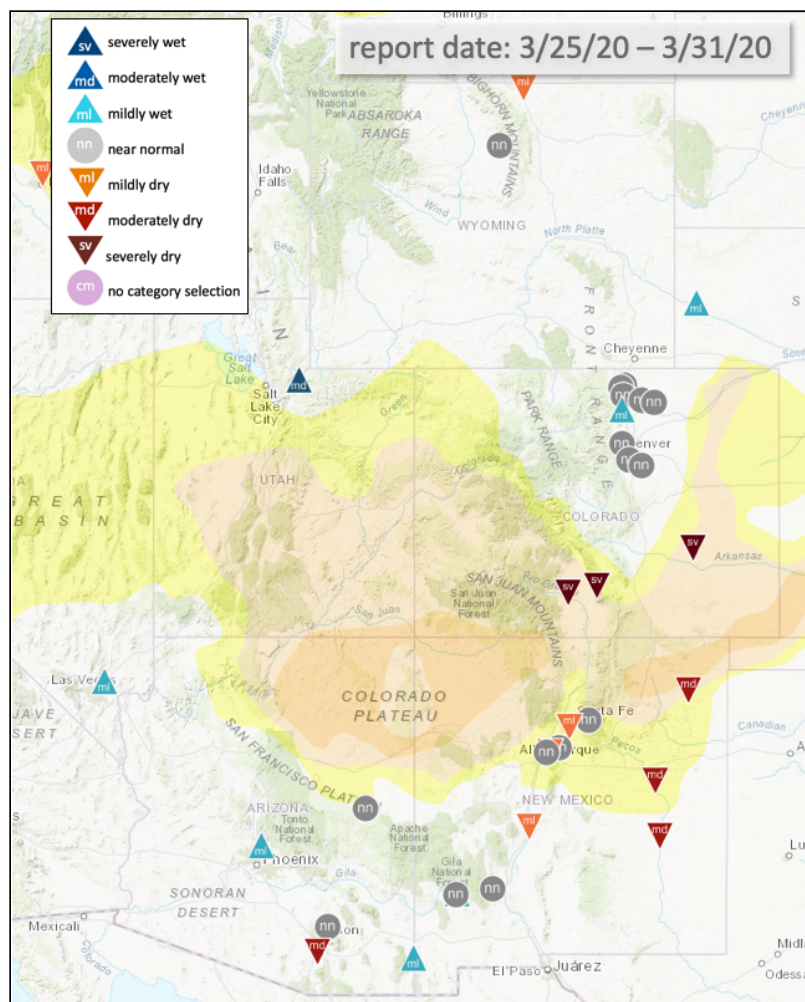
Temperature



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.

Huerfano/Las Animas Counties, CO

Dry and windy. Decent precip event recently near I-25, but it didn't really go east of there. Things are trying to green up right now, but without some precip, it will likely green up then quickly turn brown. Snowpack in the higher elevations looks decent. People are starting to plow, farm, and getting ready to plant. Trinidad Reservoir is possibly opening up to irrigators around the 15th of April, which is earlier than normal.

Bent County, CO

A lot of wind and high temperatures. Not much moisture at all in the ground. Concerns about blowing out winter wheat. Worried that it didn't get enough height on it, stalled.

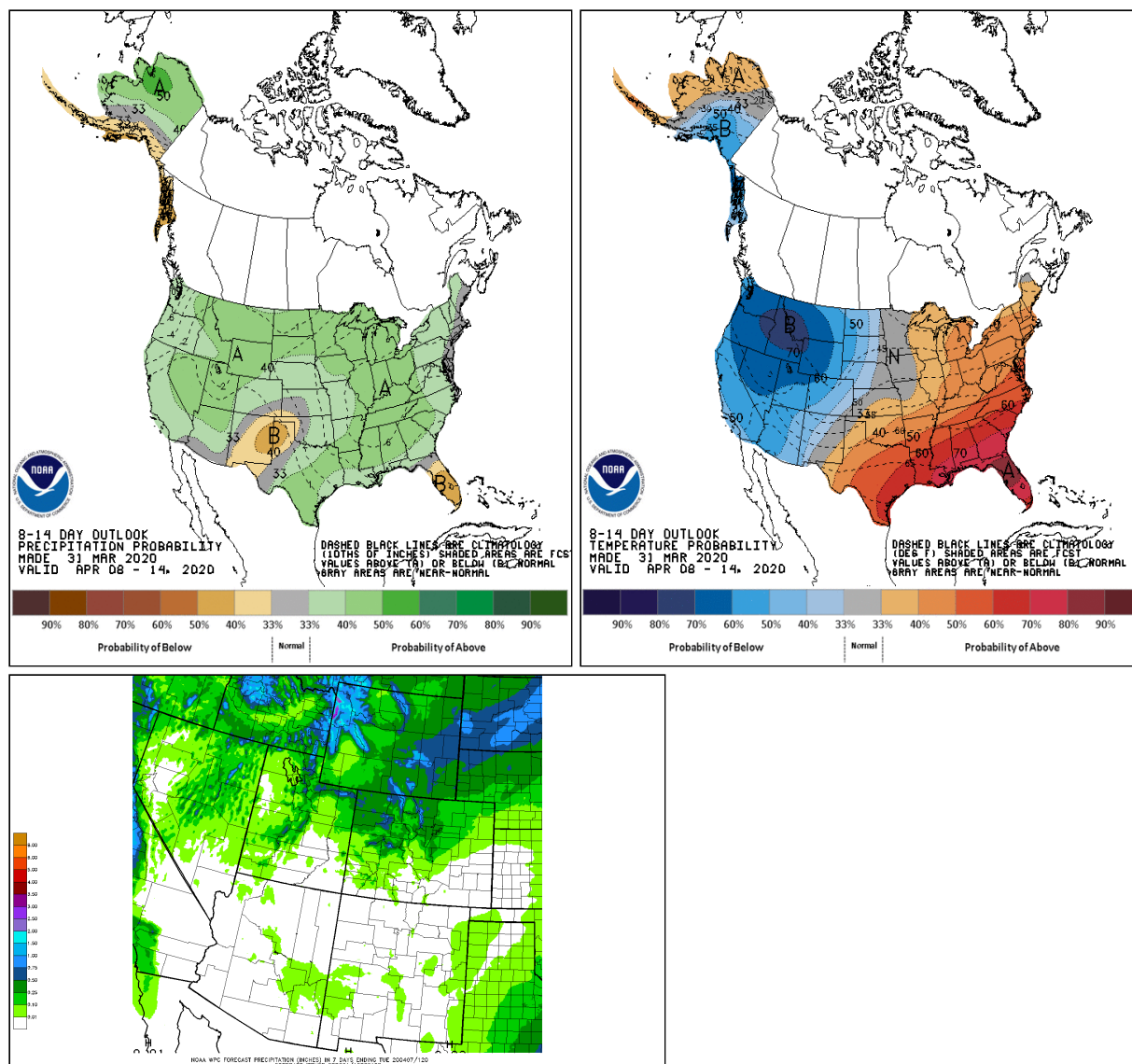
Otero/Crowley Counties, CO

Little precipitation and 3 days of extreme winds over the past couple of weeks, including lots of dust. Soil moisture is practically nonexistent, heightened concerns by ranchers of feed availability. Alfalfa and feed stocks are moving fast. Moisture in the next couple of weeks is imperative to start the grass growing season. Delays could result in reductions of grass production.

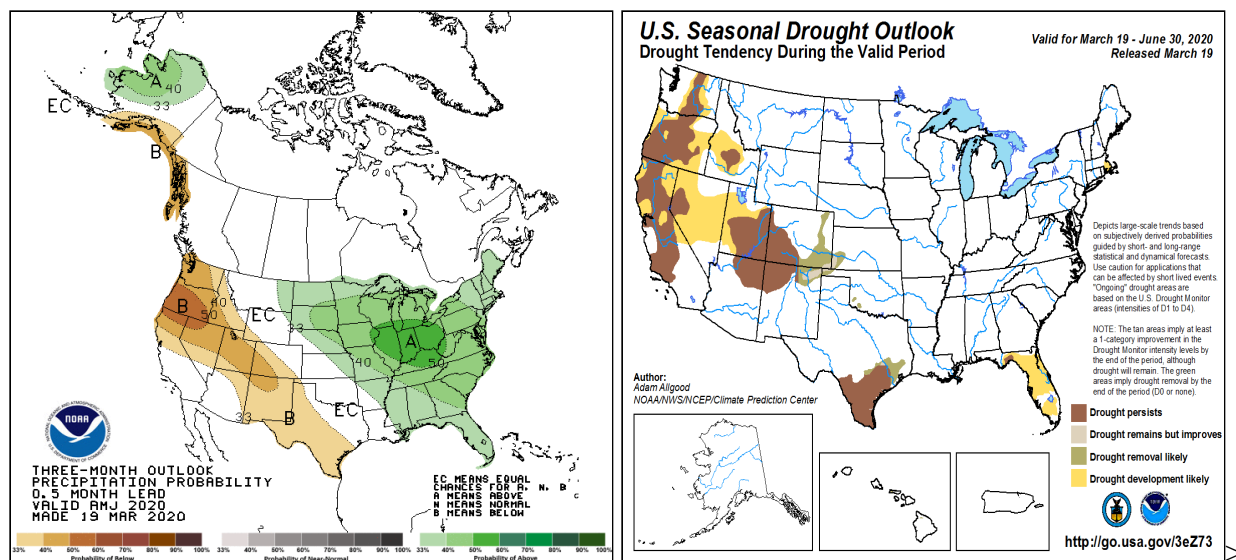
Kiowa County, CO

Prevalent winds and very little precip. Conditions less than favorable for winter wheat. East of Sheridan Lake the wheat does not look good, but does look greener than west of the lake. Wheat is being chiseled. Buying hay to keep feeding cows because the winter grass is gone.

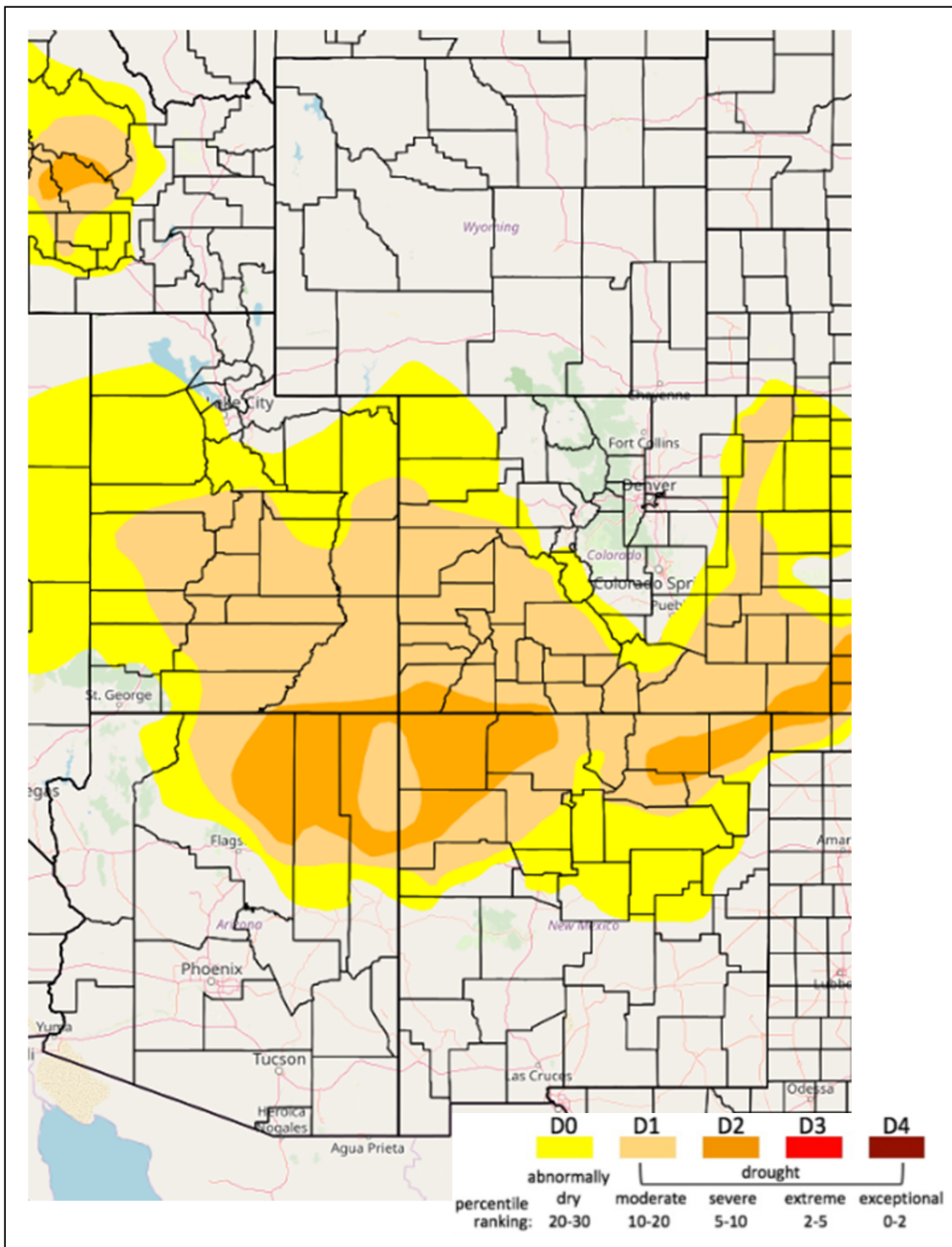
Outlook



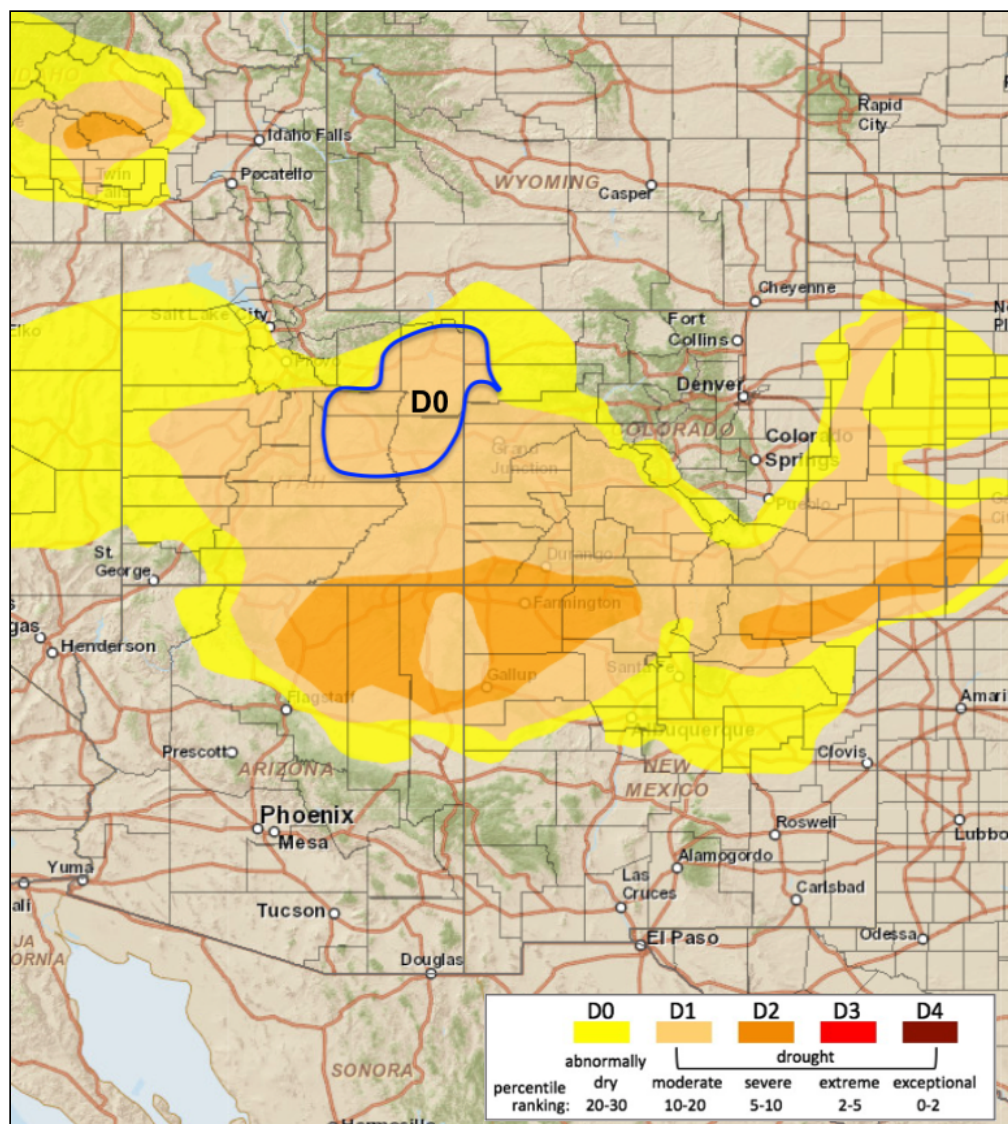
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate 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: March 31, 2020

Even as the engine of human civilization sputters and the gears grind, the natural world motors on. As we advance our calendars into the month of April, days are getting longer at a rapid rate, and temperatures are warming. Snowpack is hitting its peak in the high country, and agricultural lands in the valleys are greening up. Thus, there are a lot of moving parts to this week's summary.

A weather system tracked across the IMW from west-to-east last Wednesday through Friday. This brought generous moisture to northern Utah, with the hardest hit areas receiving over an inch of precipitation. Totals were more modest across the northern Rockies, the valleys, and the eastern plains. However, northeast Colorado did see anywhere from 0.25"-1.00". This was a welcome boon to eastern Sedgewick, Phillips, Yuma, and Kit Carson Counties. Temperatures for the week varied from cooler than normal in the western half of the Intermountain West (IMW), to warmer than normal in the eastern portion. Eastern Colorado and New Mexico were 4-8 degrees above average for the week. This warmth continues a trend in place for much of the month of March. Monthly temperature anomalies were 4-6 degrees above average in SE CO with lots of wind.

By and large, snowpack is in the normal range across the IMW, mostly 90-130 percent of normal. Following a remarkably snowy 2019, and an equally remarkably dry 2018, it doesn't feel quite normal to see normal numbers around peak season. Even the San Juans, which struggled throughout much of the second half of winter, made up ground in the last several weeks, and are now near the normal peak.

Streams and reservoirs are preparing for to receive their annual bounty in the form of snowmelt. While some melting has undoubtedly occurred at lower elevations, cooler than normal temperatures over the western half of the IMW mean we haven't seen much snow come off the SNOTEL sites just yet. Streamflows in the San Juans are low, largely due to a hit to base flow during last year's failed monsoon. However, some of these anomalies can be attributed to the fact that snow simply has not begun to melt in the high county. In warm years, it has by this point.

Field reports in eastern Colorado warn of the need for moisture soon. Winter wheat is struggling to green up for some due to lack of moisture, and forage production stands to take a hit. Recent warm and windy weather has exacerbated the situation. The outlook, while favorable other places, is not particularly promising where moisture is needed most. Another storm is expected to impact the IMW mid-week this week, but precipitation will mostly fall north of central Utah and central Colorado. The southeast plains are likely to be in the wind belt. The 8-14 day outlook is promising with increased chances of above normal moisture for the majority of the IMW.

Recommendations:

UCRB: The Colorado Climate Center is in agreement with improvements reported in USDM draft #1 to eastern Utah. The Uintah Mountain Range in northeast Wyoming received another 0.50-1.00" of precipitation over the last week, and is above average peak snowpack levels for the water year. Given current water year-to-date precipitation percentiles, the Climate Center recommends these improvements go further into Colorado, covering eastern Moffat County as well.

Eastern Colorado: Reported agricultural impacts from southeast Colorado are concerning at this point. Troubles started back in October, when fields were dry, and winter wheat had to be drilled into the ground. These impacts could have been counteracted with a wet winter, but SPIs and SPEIs for southeast Colorado are near normal over the winter months. March conditions have been poor, with generally warm and dry weather and a number of red flag warnings. This has led to dust events, and in some cases, wheat flying off fields. Forage production will likely take a hit if the rains do not return soon. That said, the area is just now transitioning into the wet season.

Since station data do not support D2 yet, we are going to wait one or two more weeks before calling for expanded D2.

We recommend a degradation from D0 to D1 for northern Huerfano County, and eastern Saguache County. This area is showing D1-level 90-day SPIs, and has been subject to regular red flag warnings as dry, windy conditions persist. Need for irrigation is projected to ramp up much earlier than normal near Walsenburg.

We recommend expansion of D0 in western Pueblo County, and eastern Custer County. Short and long-term SPIs here are a mix of near normal, and much drier than normal.