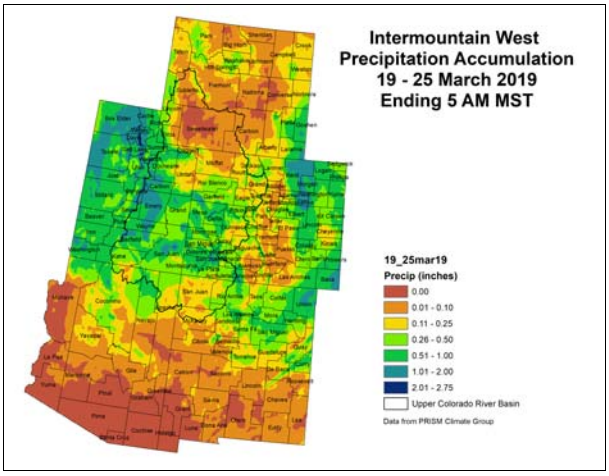
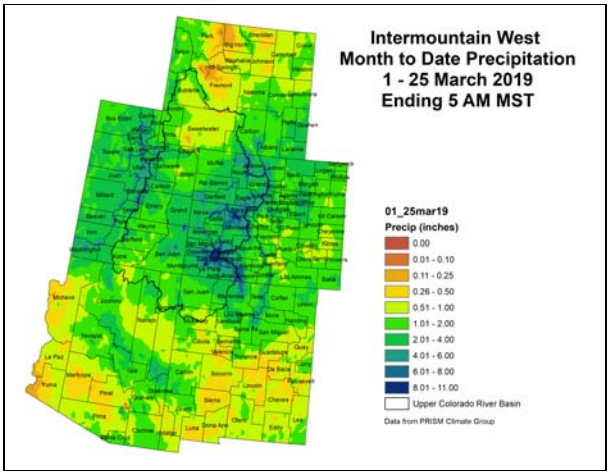
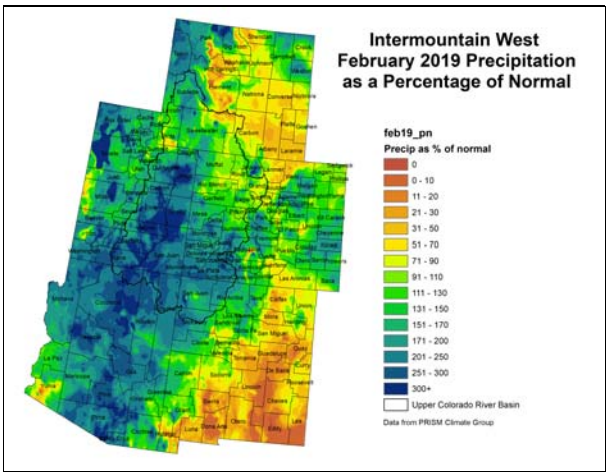
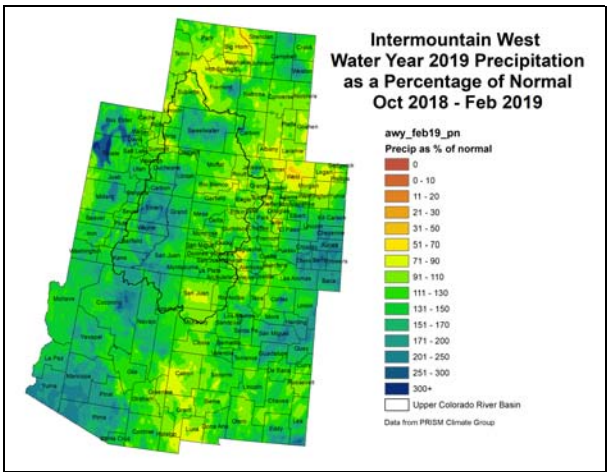
NIDIS Intermountain West
Drought Early Warning System
March 26, 2019

Precipitation



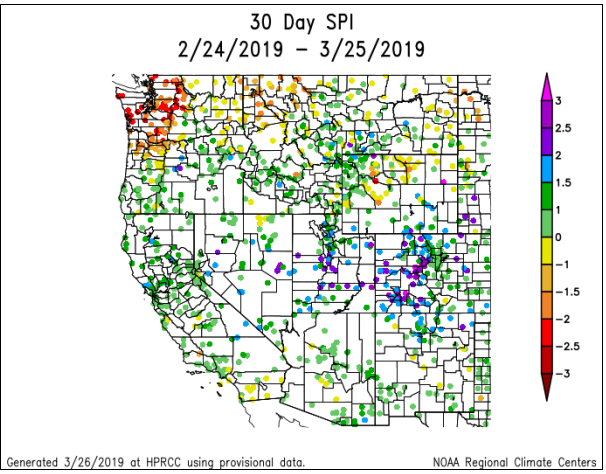


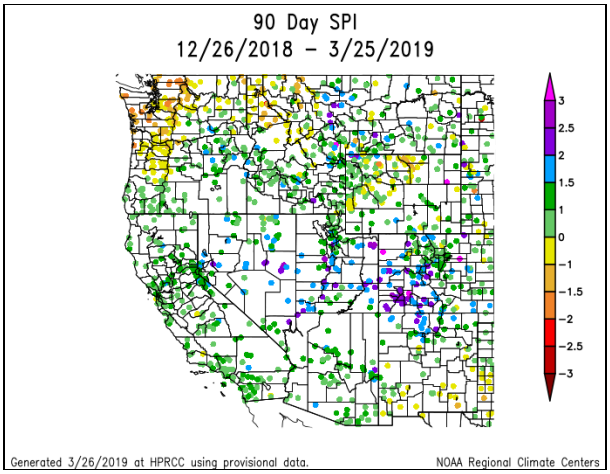


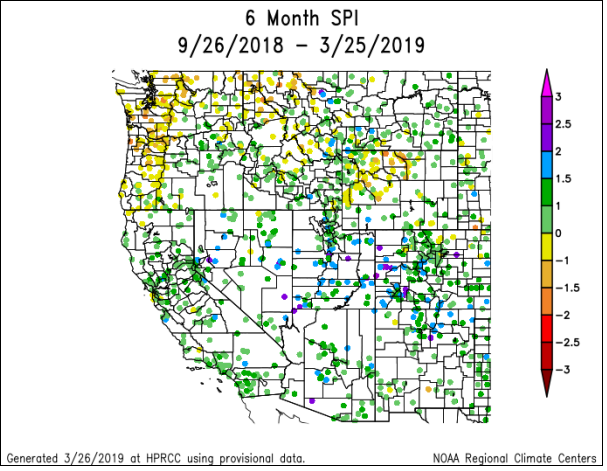


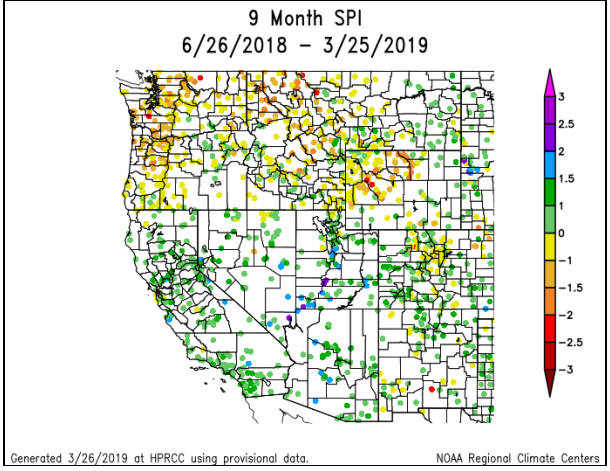
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index



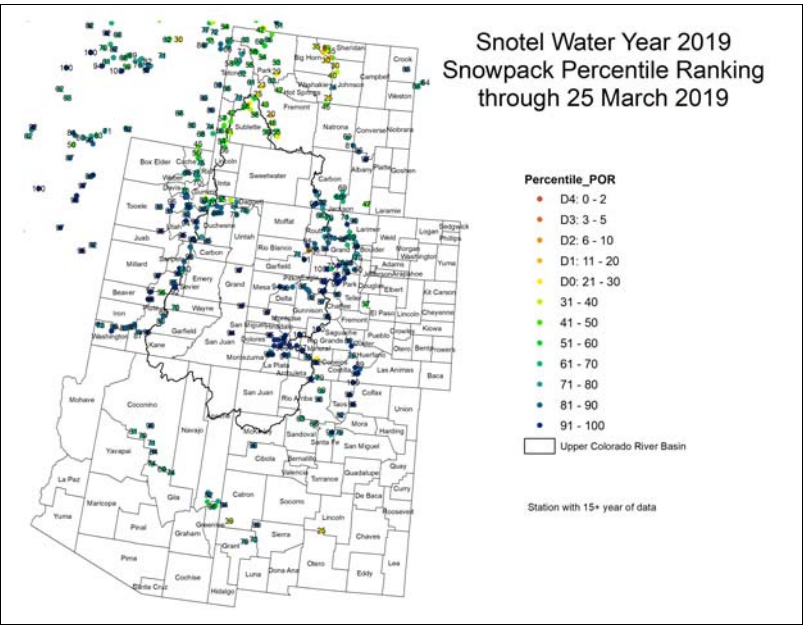




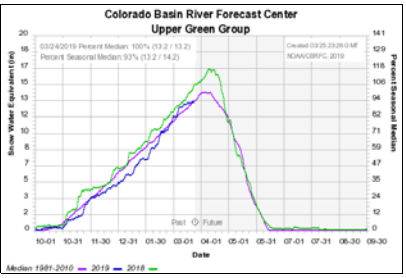


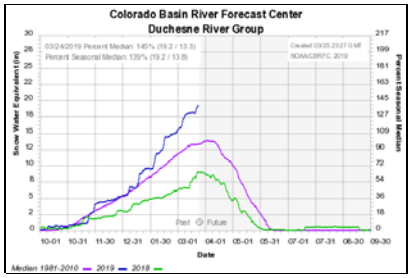
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

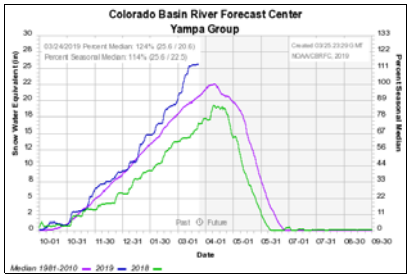
Snotel and Snowpack

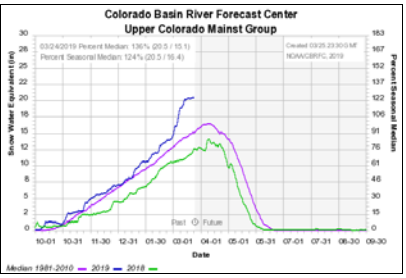


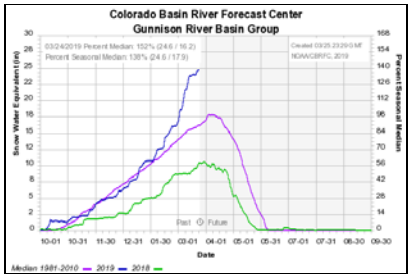
The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado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

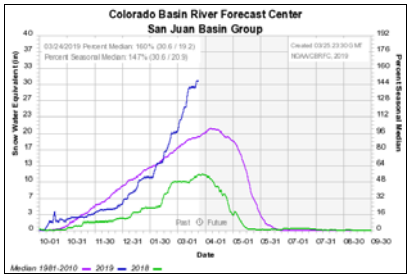




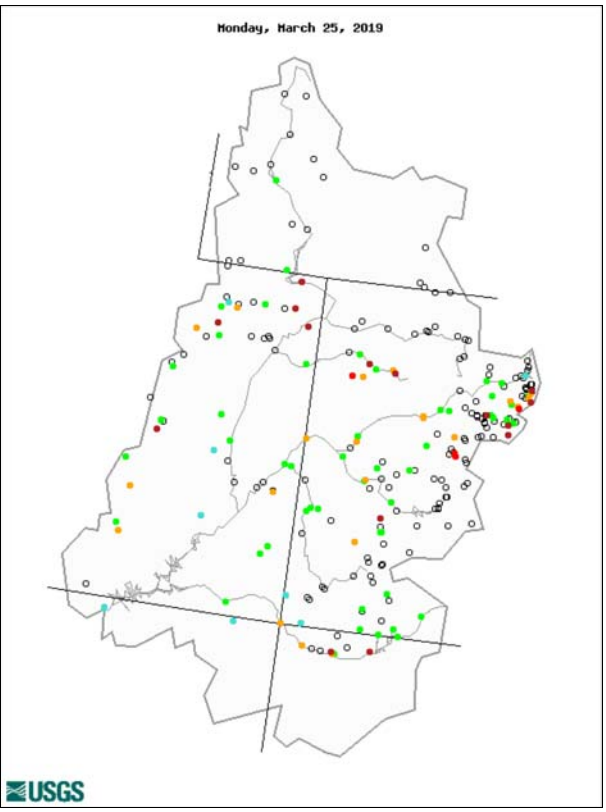




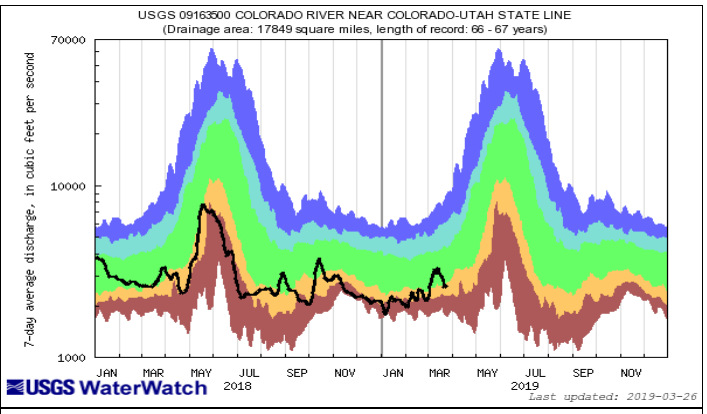


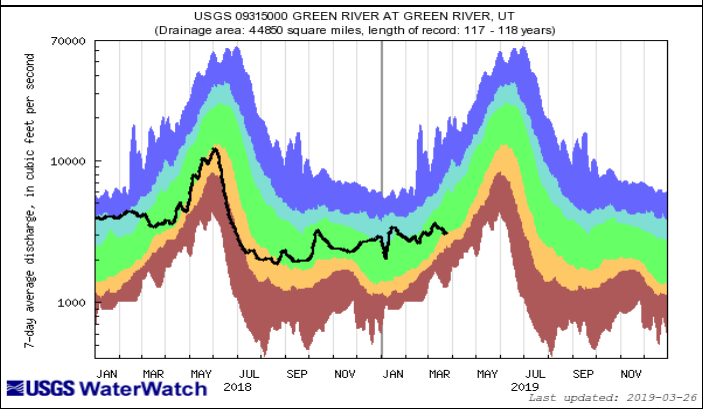


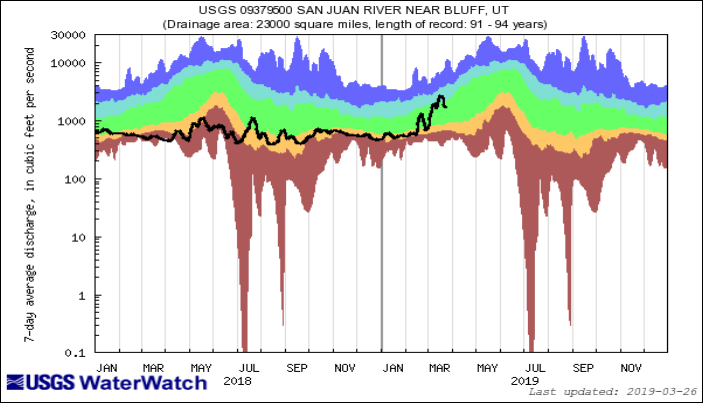
Streamflow



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

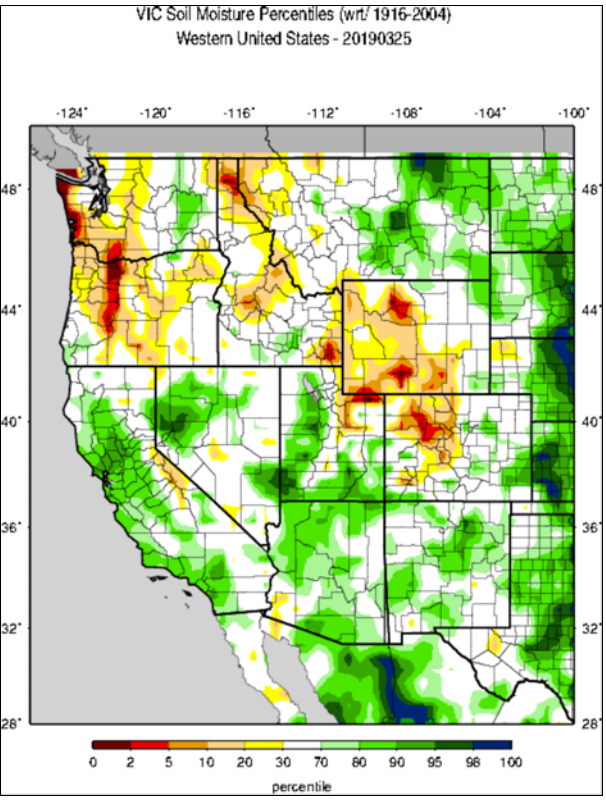


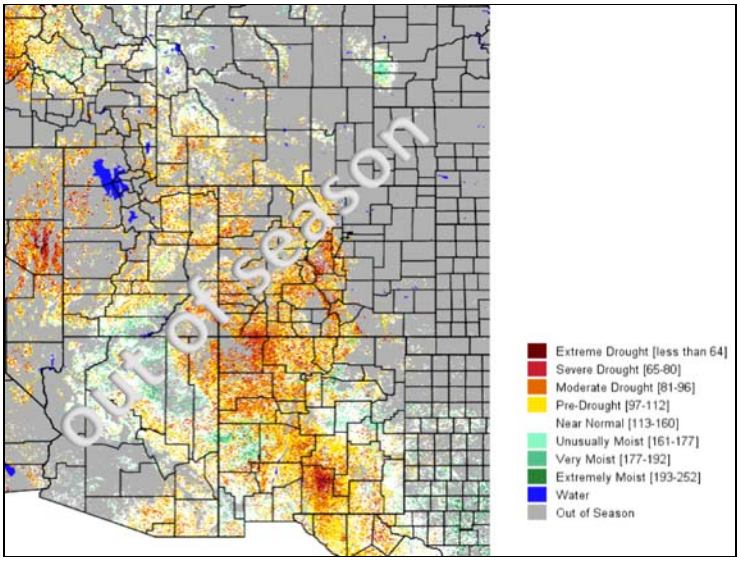




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

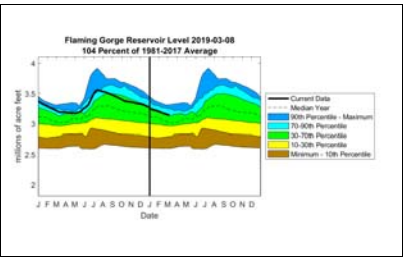
Surface Water

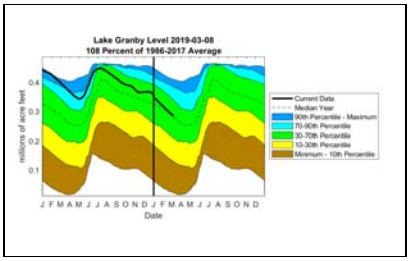


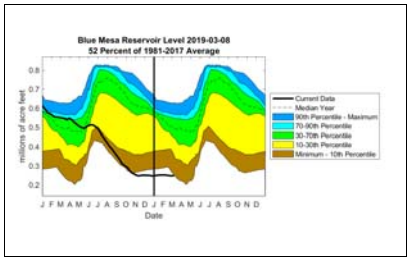


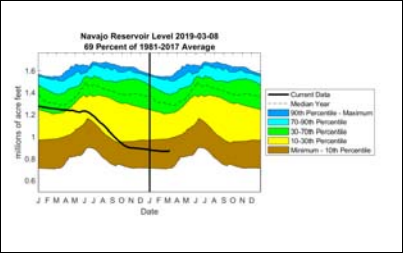
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

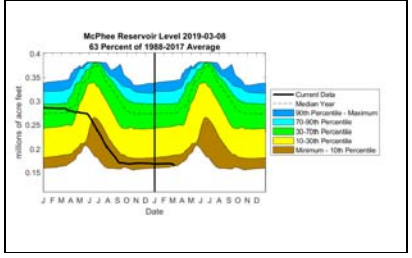
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past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

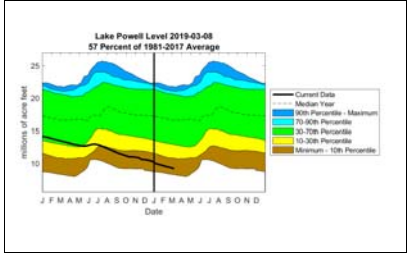




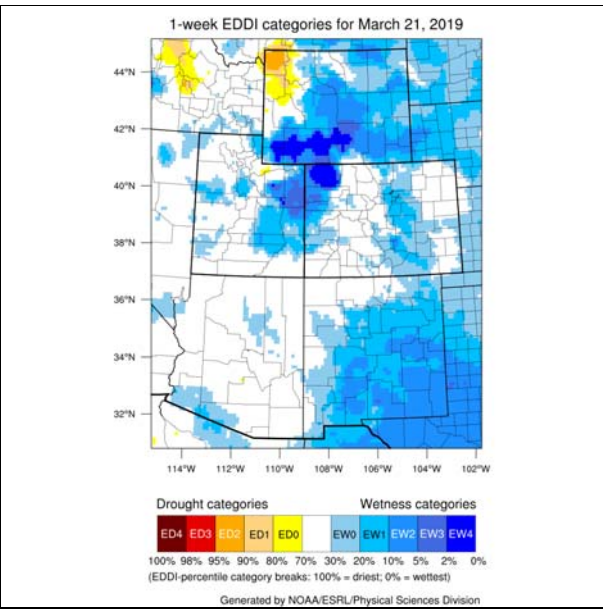


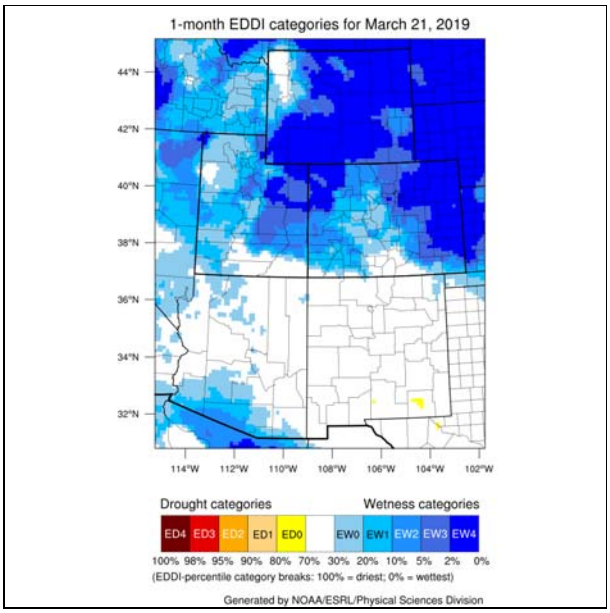


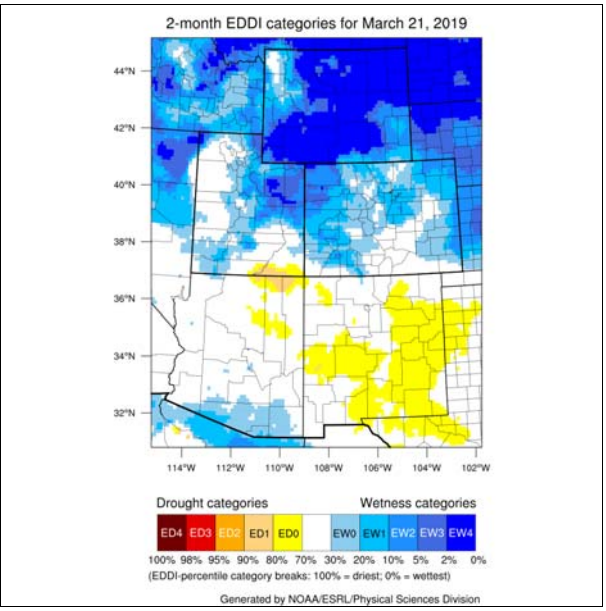


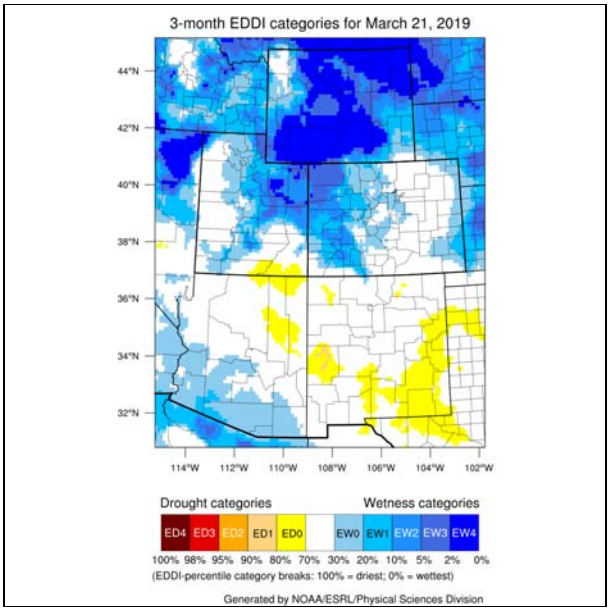


Evaporative Demand



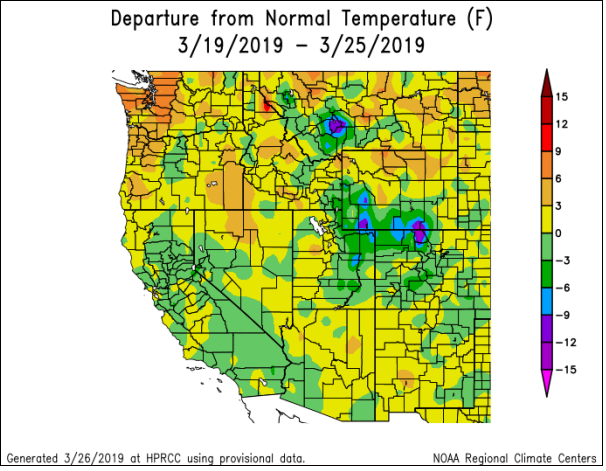


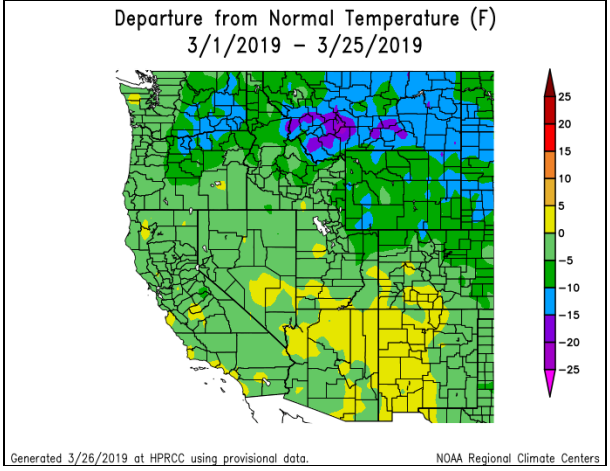




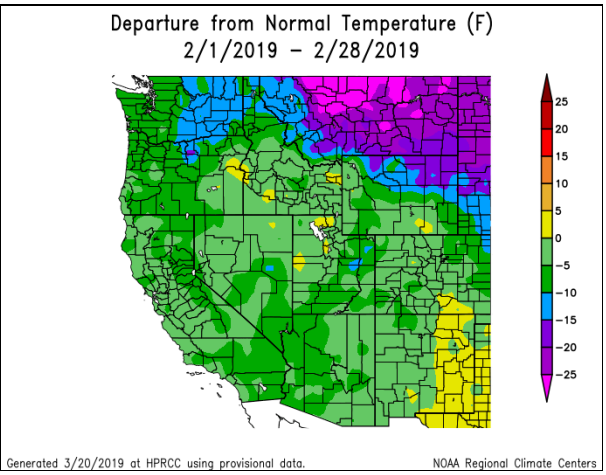
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

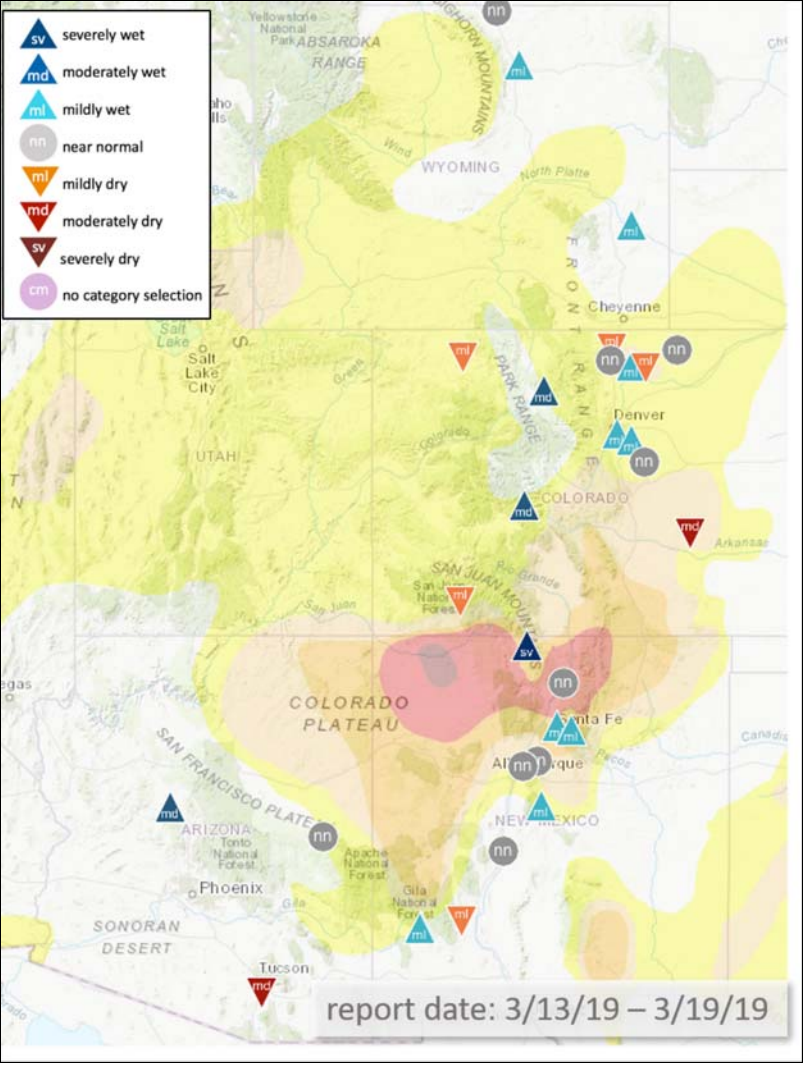




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.

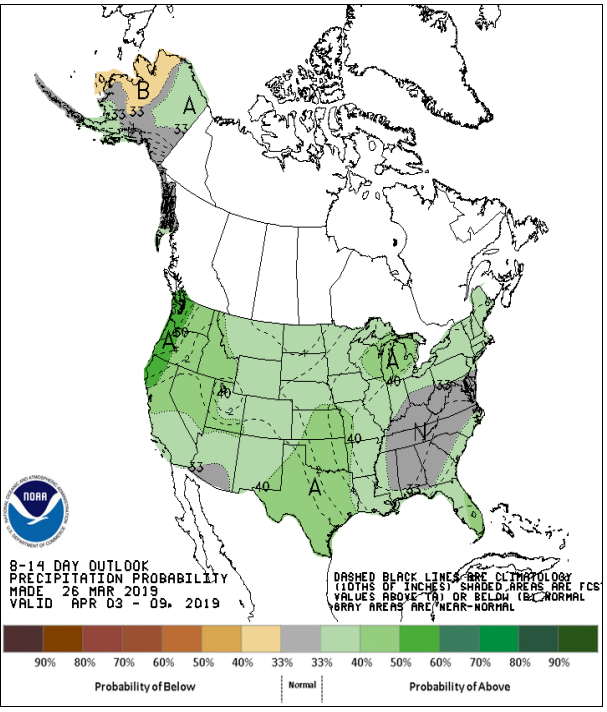


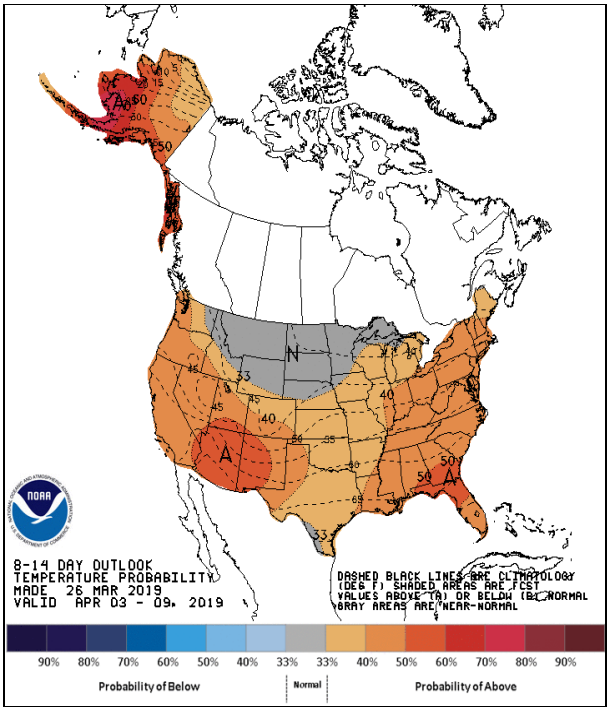
Condition Monitoring and Impacts

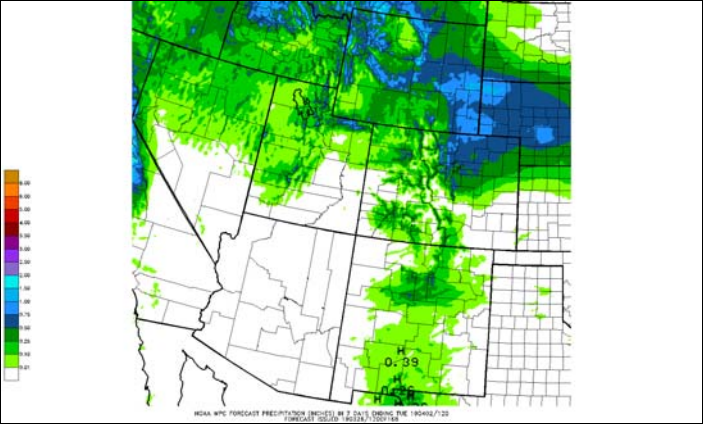


Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

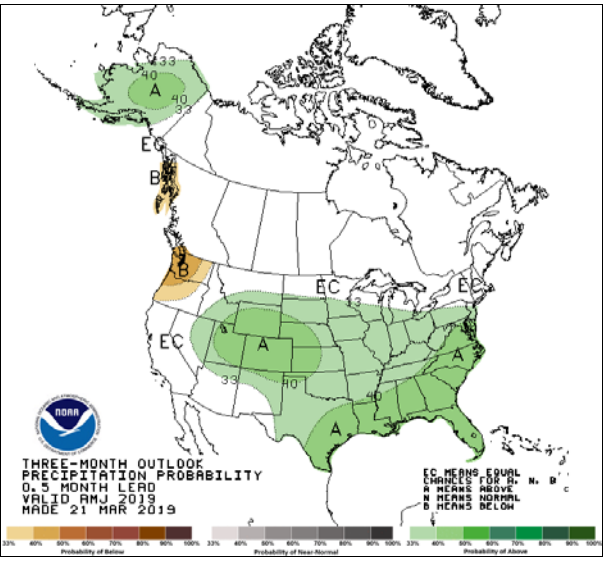
Outlook

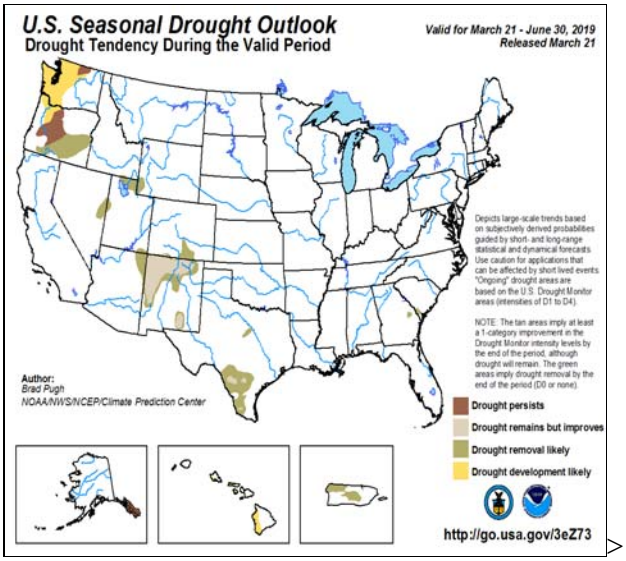




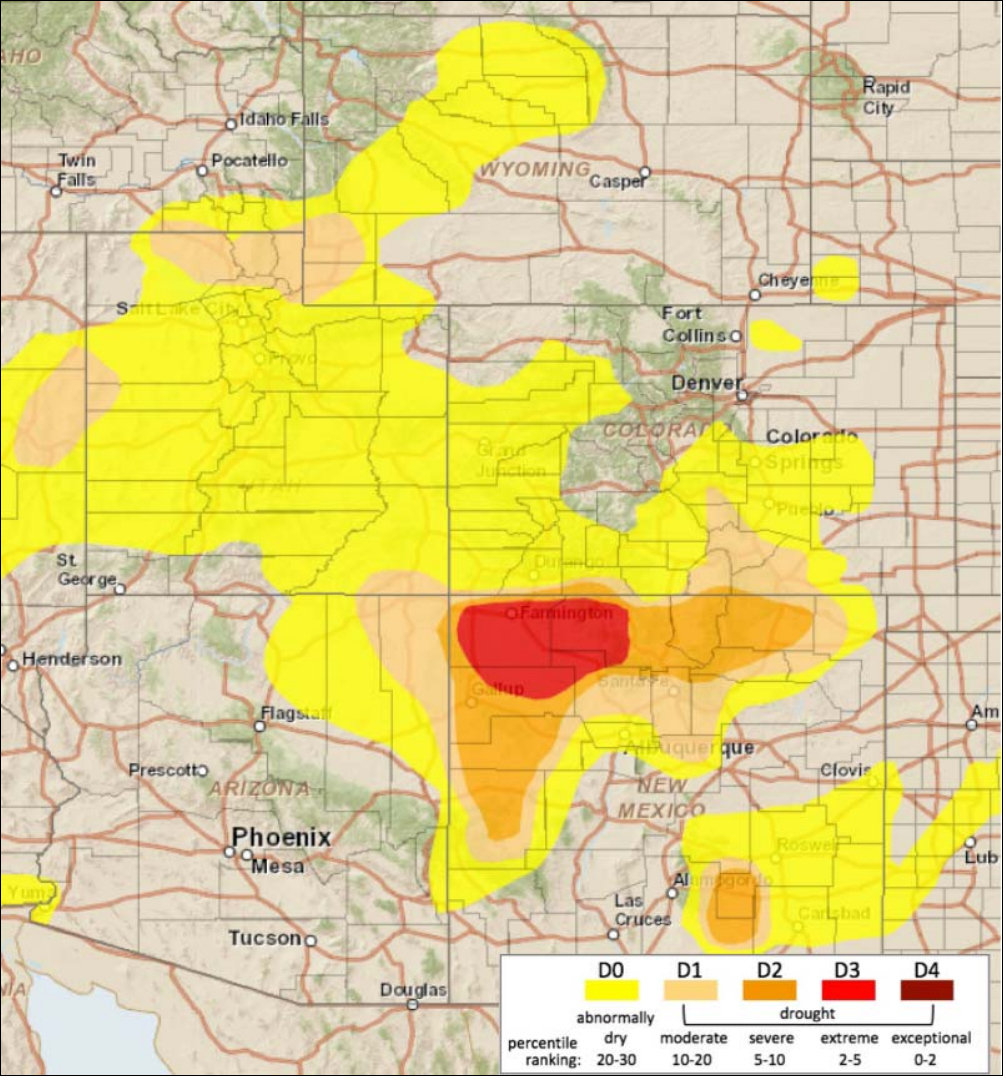


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

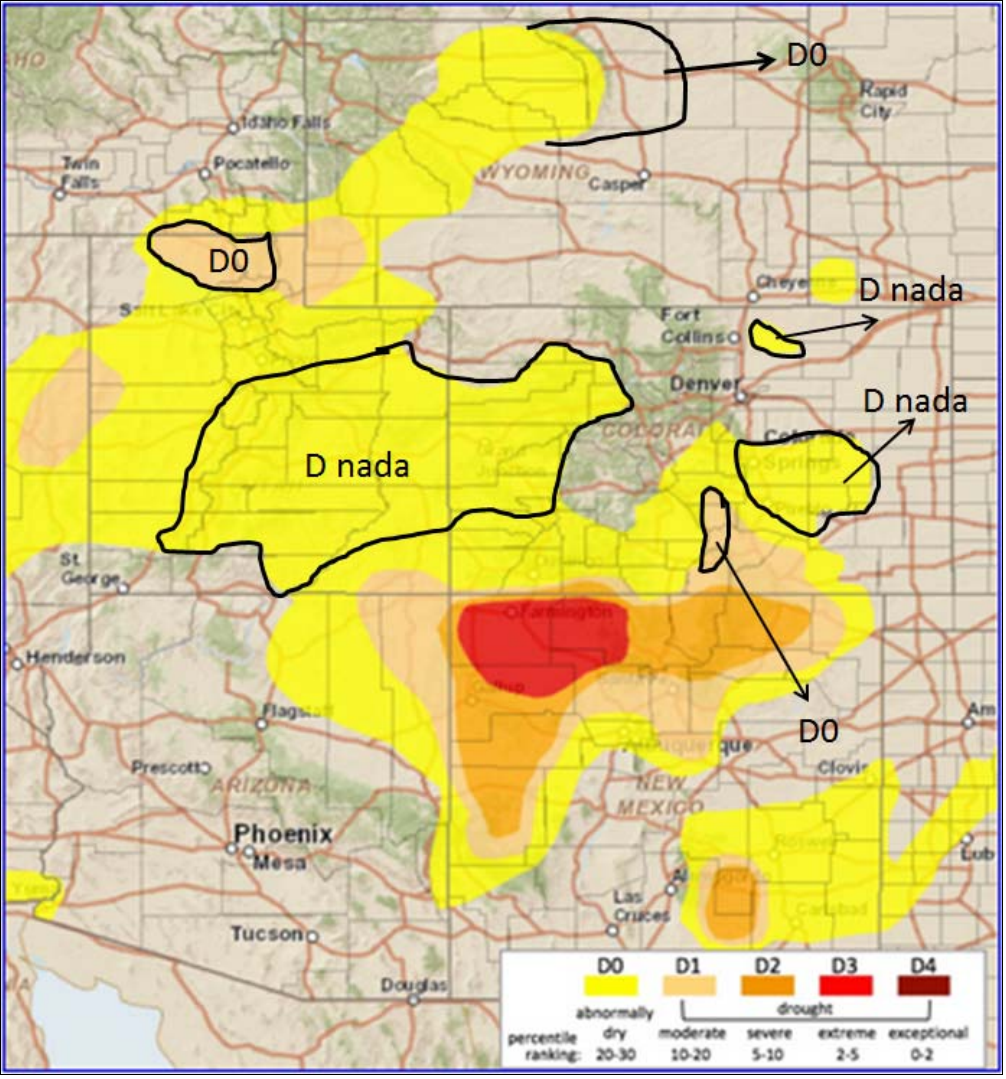




Summary and Recommendations



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 26, 2019

Over the last week much of the UCRB and eastern Colorado saw near normal temperatures. However, northern Wyoming experienced temperatures 3-9 degrees above average and a bullseye of cooler temperatures, 6-12 degrees, can be seen over Larimer County CO. Month-to-date temperatures have been cooler than average for much of the region with an exception of AZ and NM where it has been a slightly warmer than average month so far. Soil moisture hasn't responded to snowpack yet, but we expect improvement in northwest Colorado once the soil thaws. NWS has a Hydrologic Outlook for western CO and eastern UT that states "Rises on mid to lower elevation rivers and creeks possible through Friday... Temperatures will begin to increase over the next few days and cause snow to melt at mid elevations. Overnight temperatures will also moderate in many locations and remain above freezing the next few nights…."

Utah and Colorado saw most of the precipitation over the last week. There was widespread precipitation over Utah with most areas seeing over half and inch and some regions experiencing over 2.00". Weld/Morgan counties in CO also experienced decent precipitation with some areas seeing up to 2.00". Most of Arizona, New Mexico and Wyoming received little to no precipitation. Month-to-date still shows AZ, NM, and WY on the drier side. However, UT and CO have been seeing above average precipitation this March. Many higher elevations in Utah have received over two inches, higher elevations is CO seeing over five inches and the CO plains received 2.00-5.00" thus far.

With above average precipitation in UT and CO snowpack looks excellent. Yampa, Duchesne, Colorado, Gunnison, and San Juan have far surpassed their normal peak

snowpack and are still accumulating. Gunnison and San Juan basins have more than doubled what their peak from last year. Snowpack is showing near average for most of WY. Streamflow has been improving slowly as we see increasing percentage of gauges in near normal flow as more and more gauges come out of ice. With warmer temperatures and snowmelt we can expect a bigger bump in flows soon.

The 7-day outlook shows the four corners region and AZ remaining dry with above average temperatures for the rest of the week. However, there is a good system pushing into the region Thursday into Friday that will bring scatter precipitation over UT and NM and decent precipitation with lower temperatures for northeast CO and southeast WY. Looking at the 8-14 day forecast most of the IMW is expecting above average precipitation while AZ and NM can expect warmer than average temperatures.

Recommendations:

Eastern Colorado: It is recommended to remove the area on D0 over Weld county. This area received 0.26-2.00” of precip over the last week while temperatures were below average. It is also recommened to trim back D0 over Lincoln/El Paso counties. This is supported by 30-120 day SPIs, which have improved over the last week.

Wyoming: It is recommended to stretch D0 over Big Horn/ Washakie to the east where SPIs have continued to worsen. This area experienced little to no precipitation and above average temperatures over the last week.

UCRB: We are in agreement with the US draft on the trimming along the Colorado/New Mexico border. However, it is recommended to improve to D0 over the western portion of the Arkansas basin. It is also recommended to trim the D1 over northern Utah, remove the D0 over the eastern portion of the state, and remove a good chunk of D0 over central Utah through western Colorado. This area continues to see decent precipitation, increased snowpack, cooler temperatures, and improved SPI values week after week.