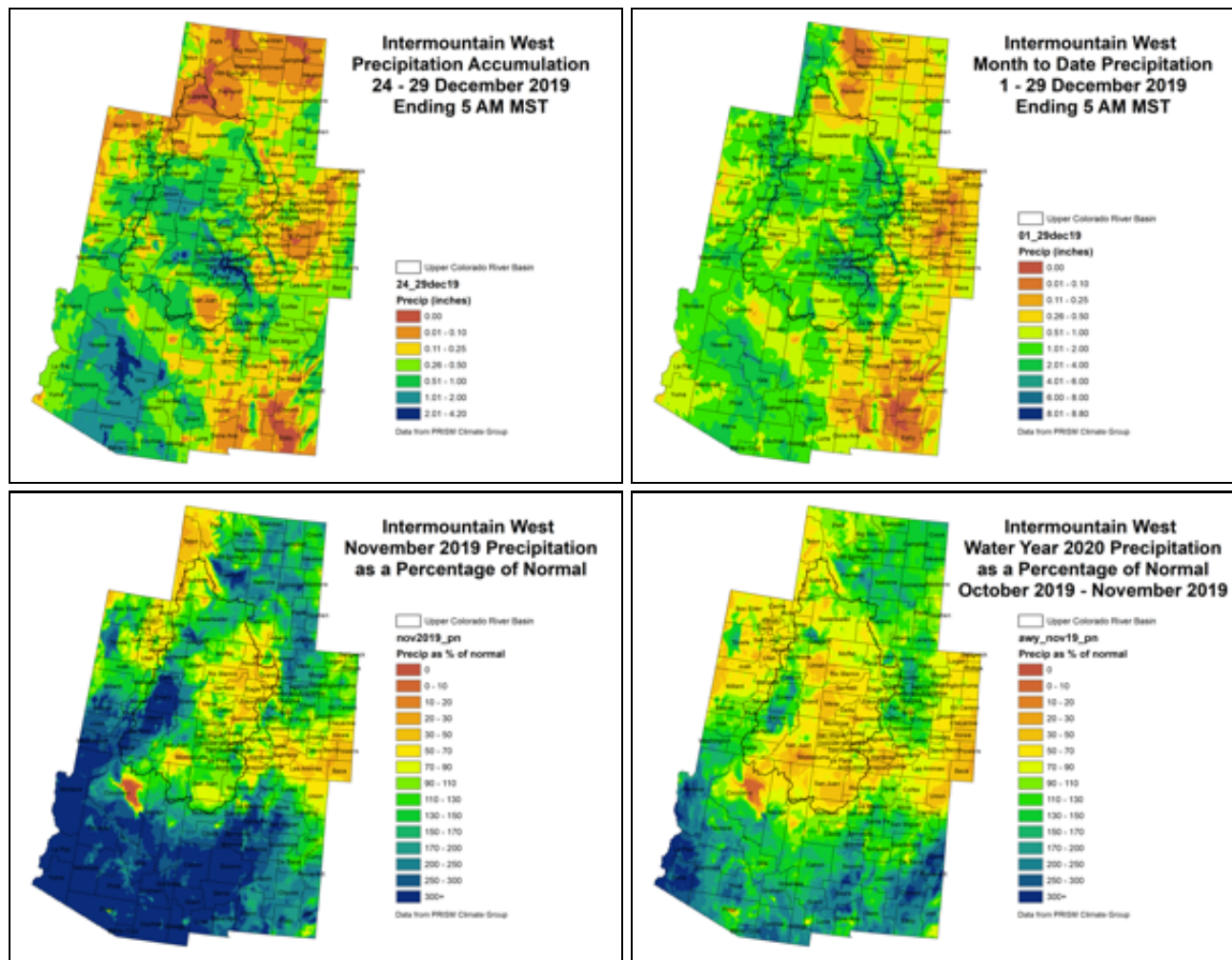


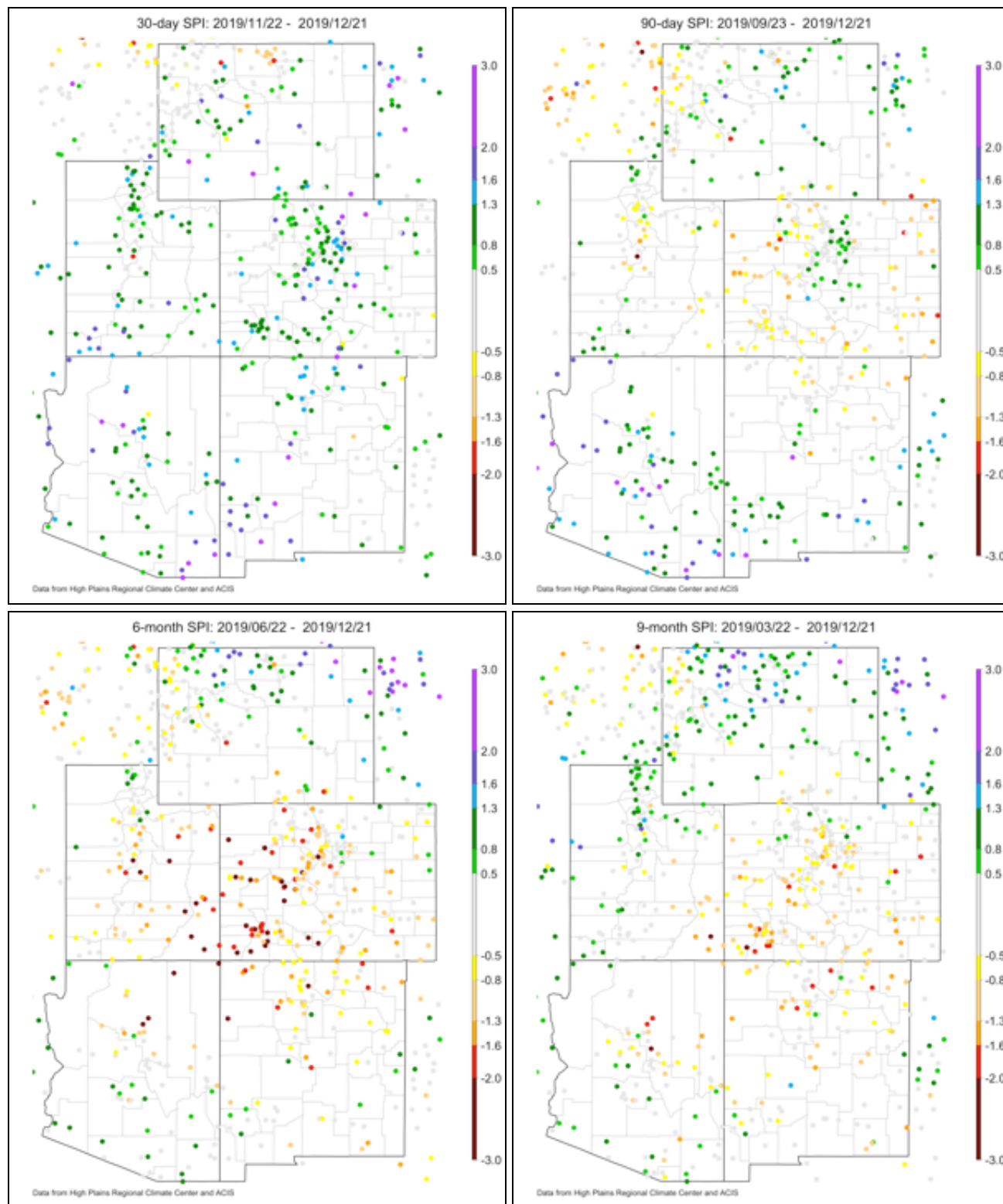
NIDIS Intermountain West Drought Early Warning System December 23, 2019

Precipitation



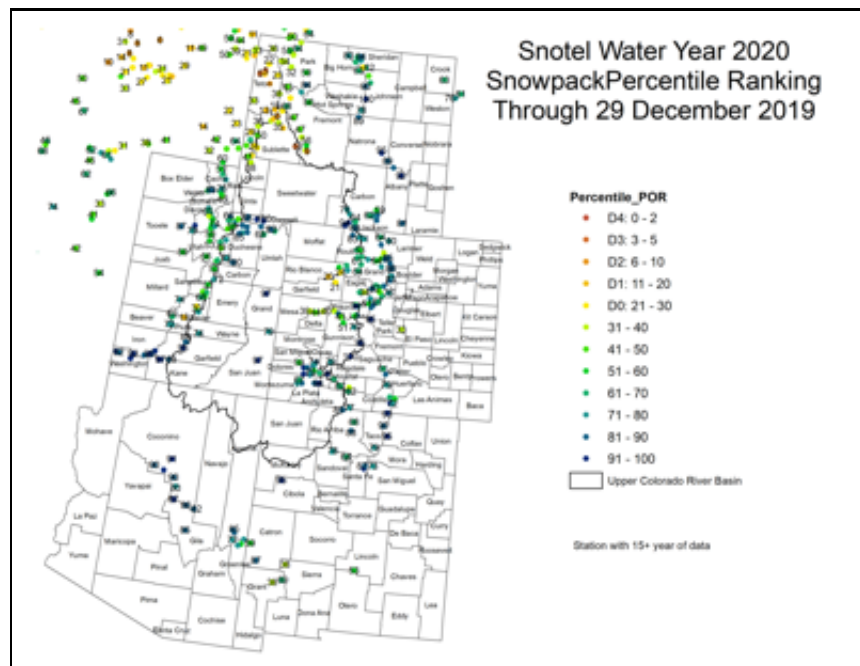
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index

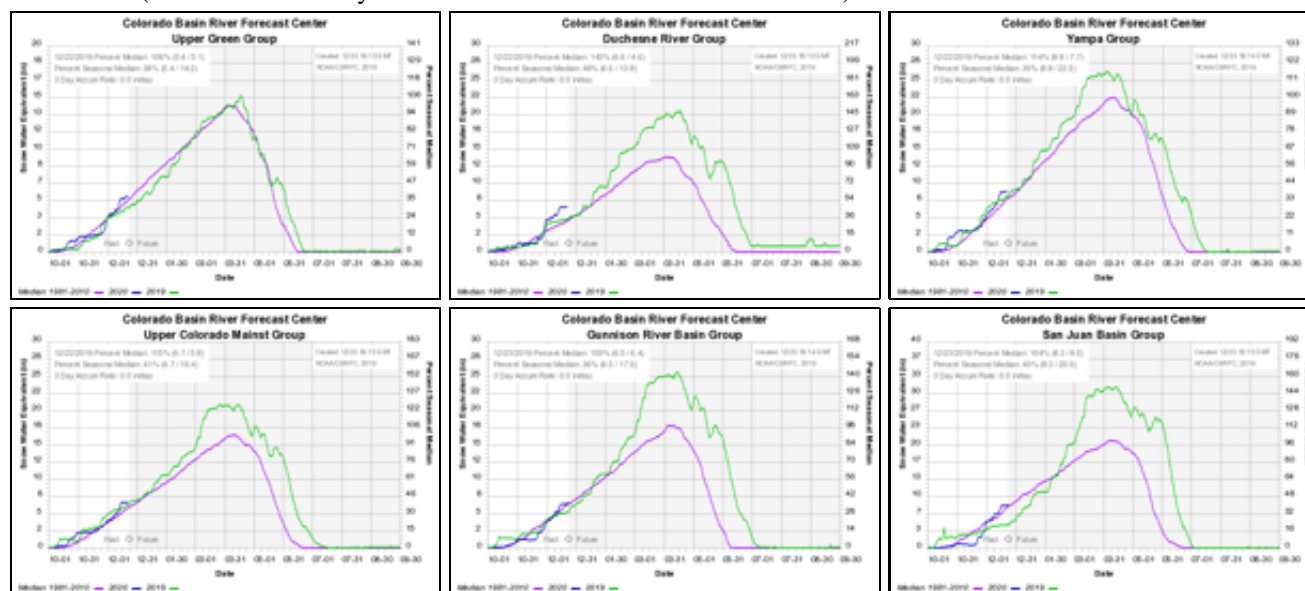


Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. Colors match the different drought categories with the U.S. Drought Monitor. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term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

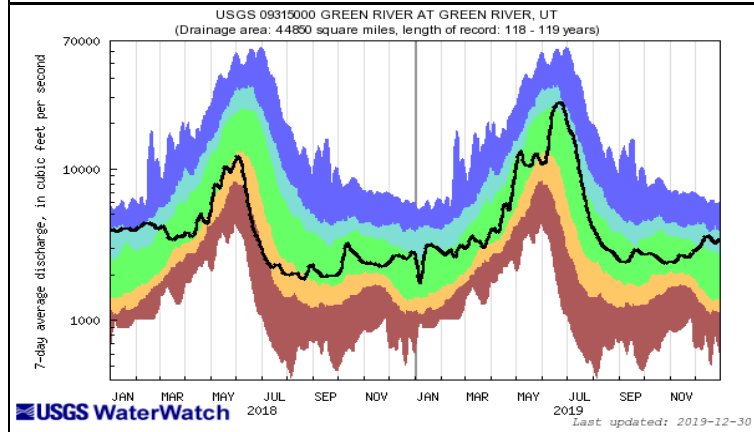
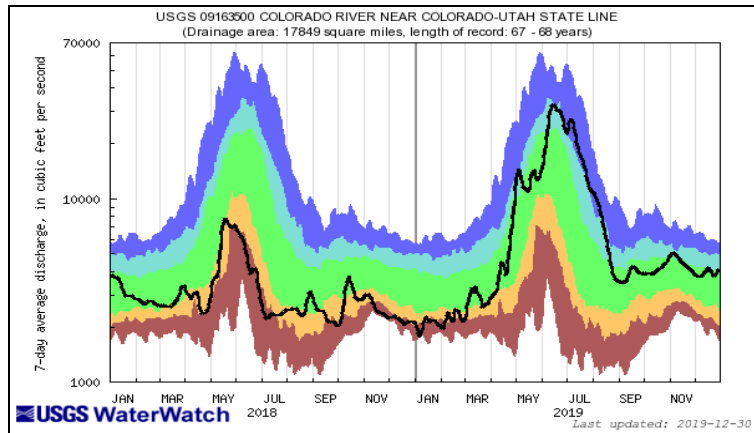
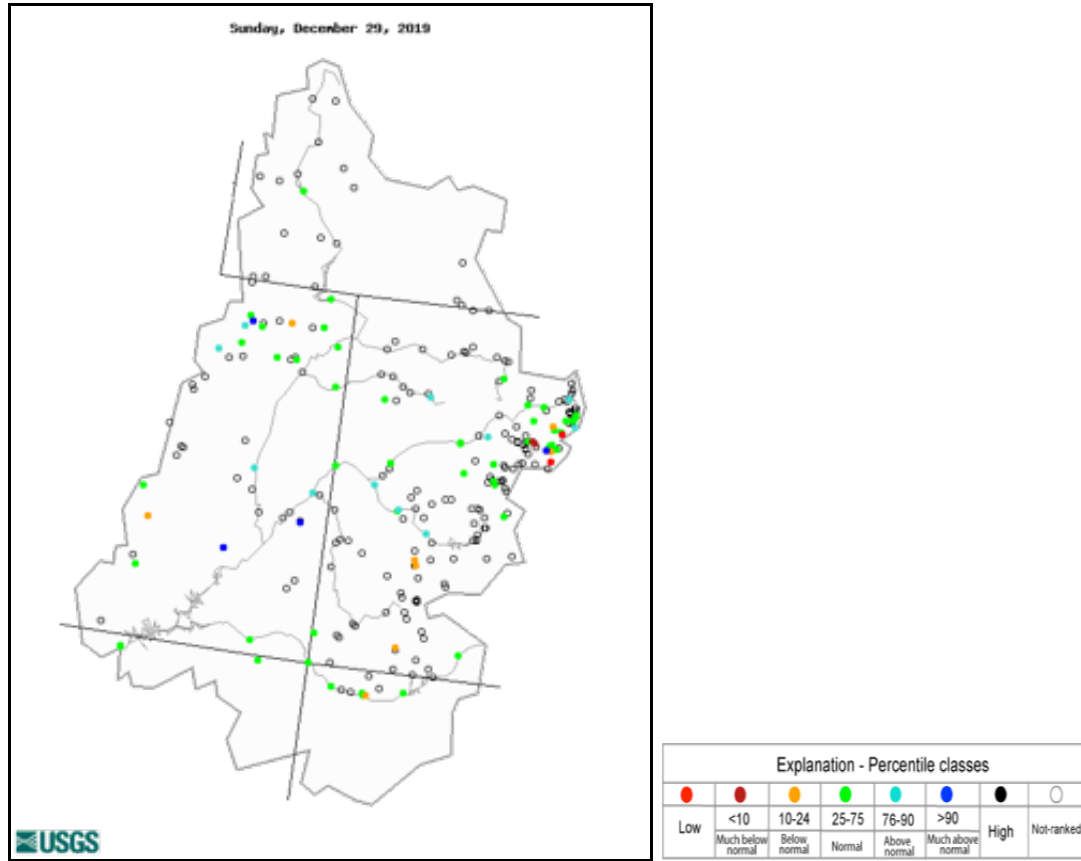
Snotel and Snowpack

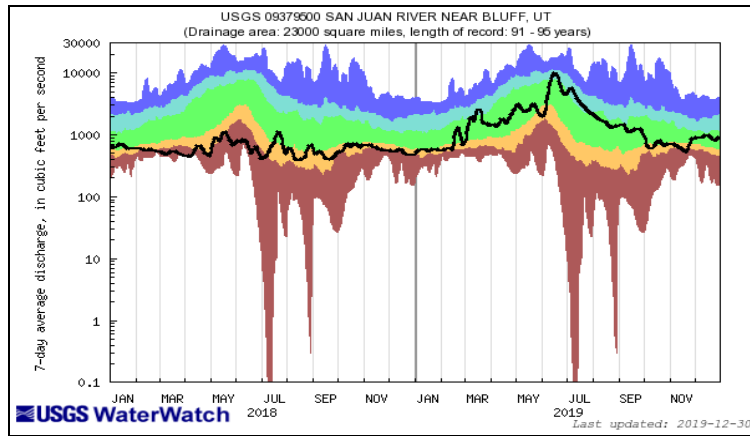


The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado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



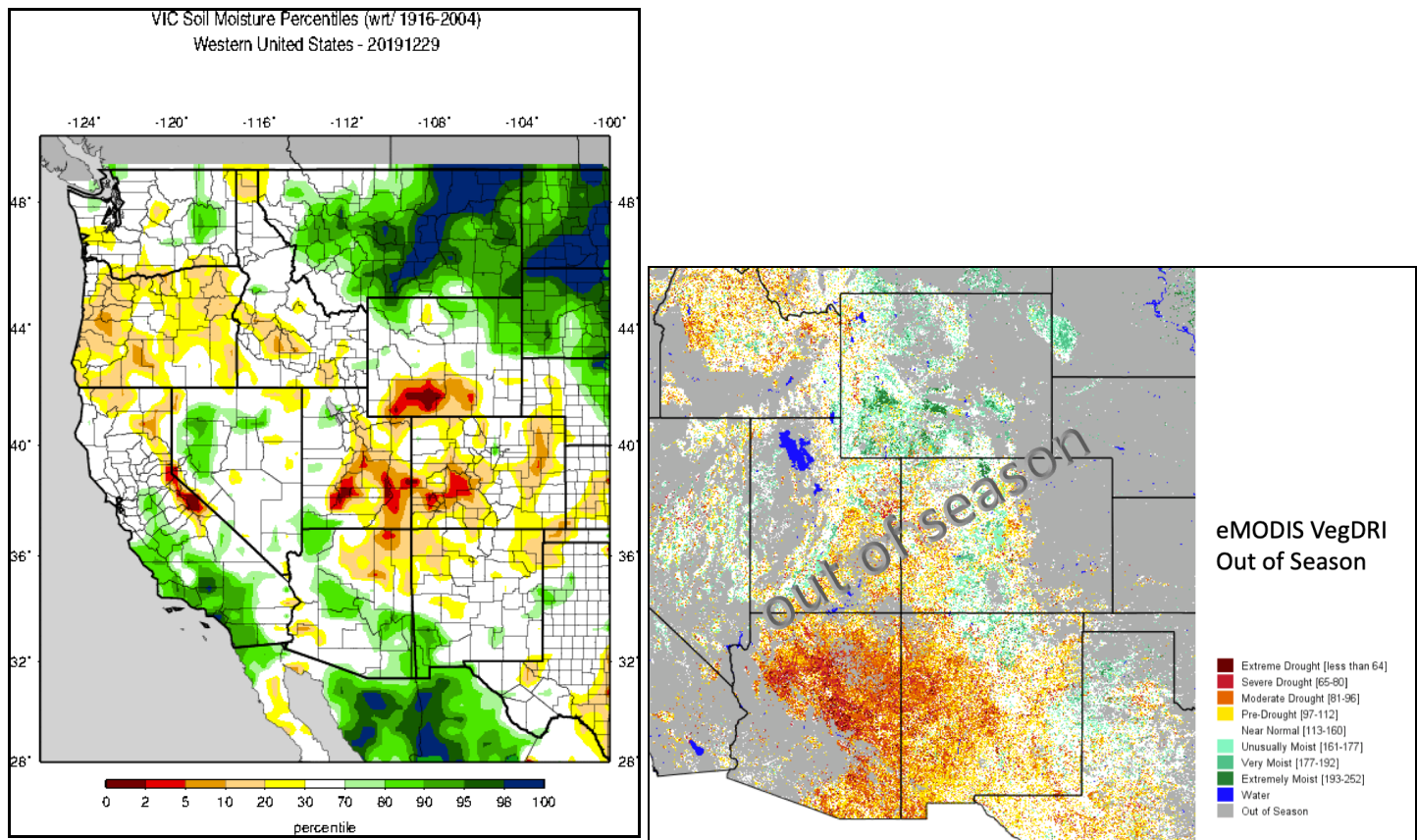
Streamflow





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.

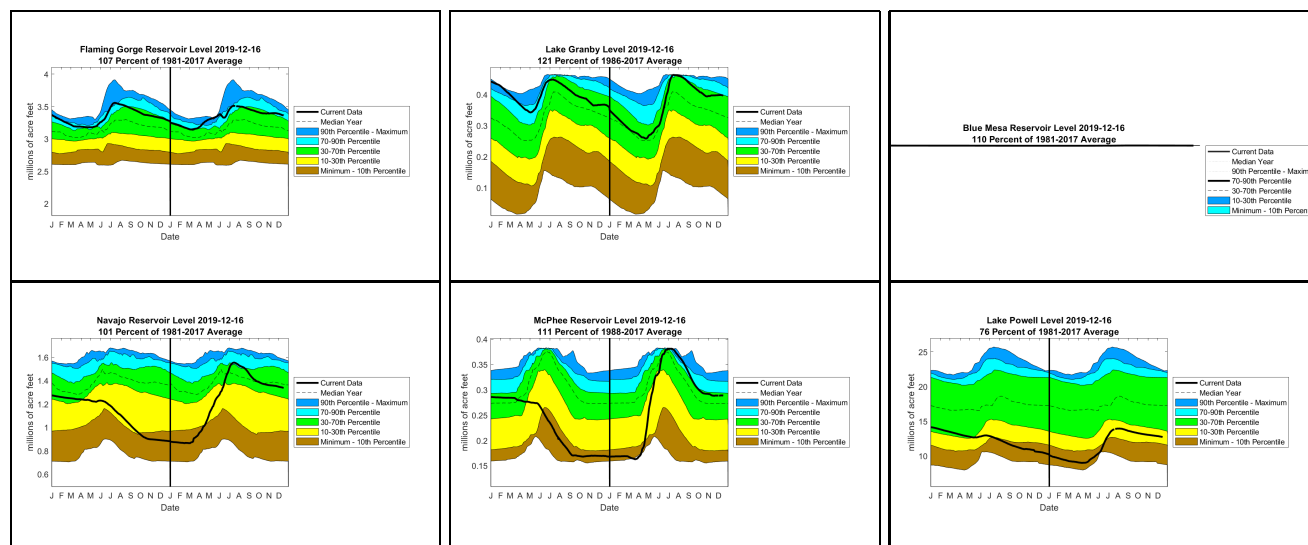
Surface Water



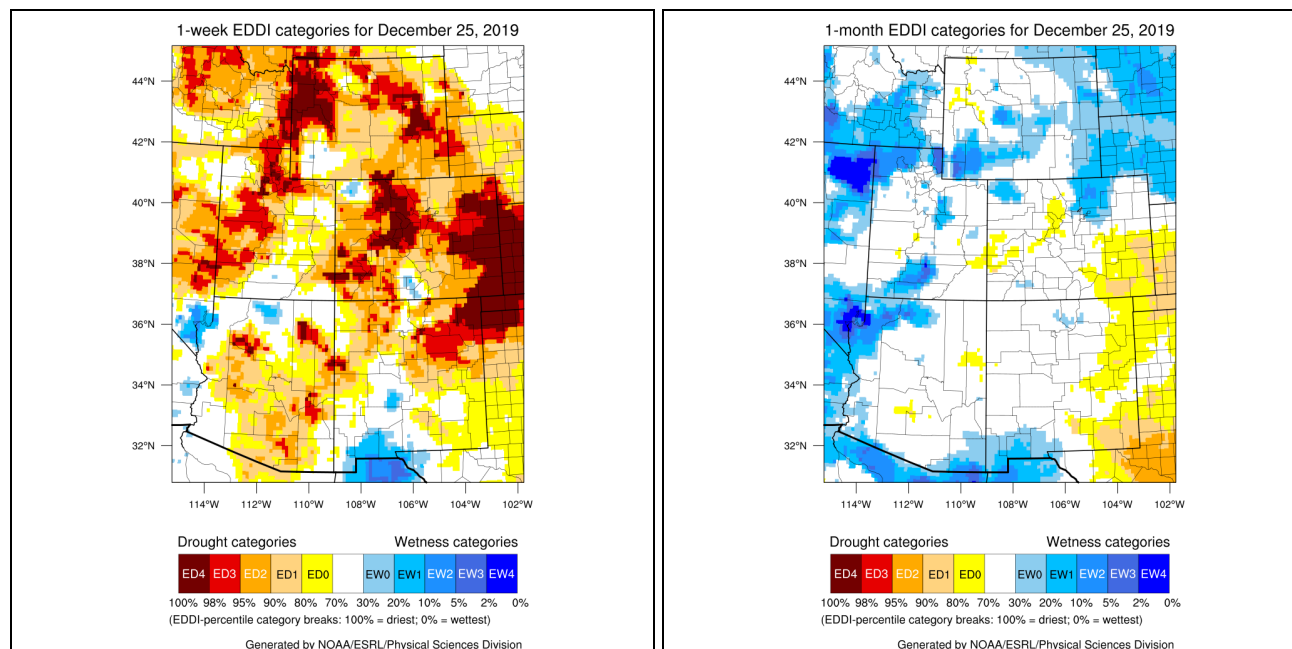
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

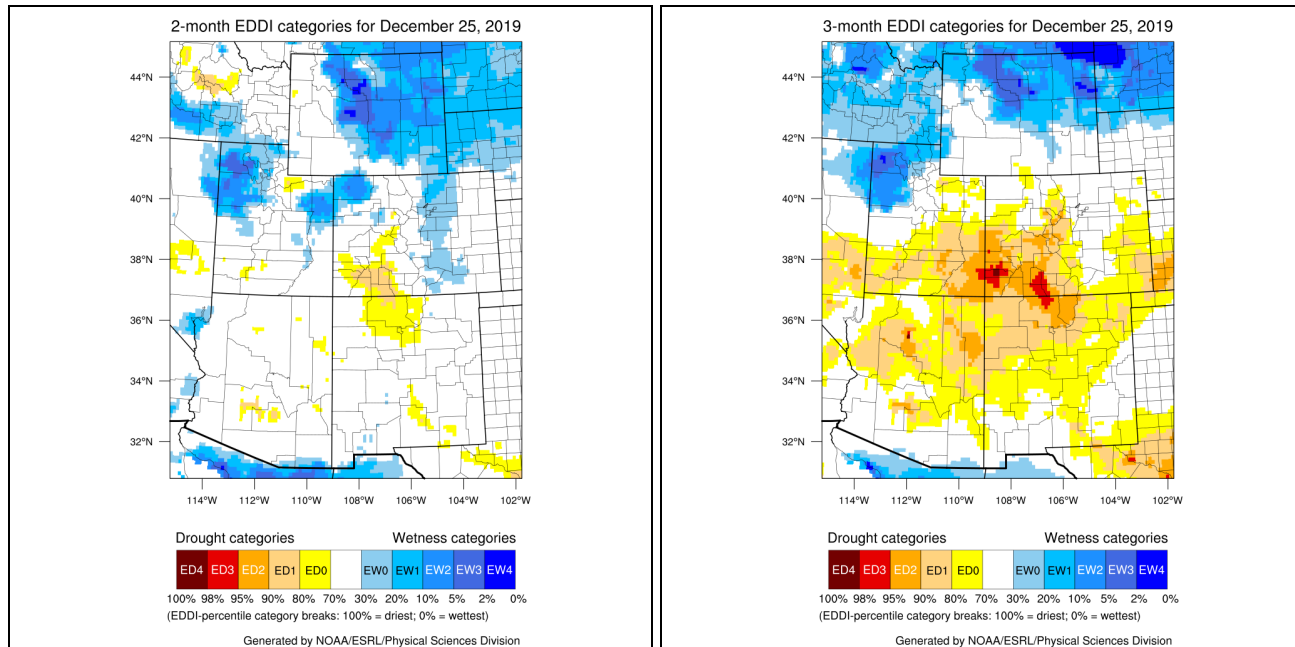
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir

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.



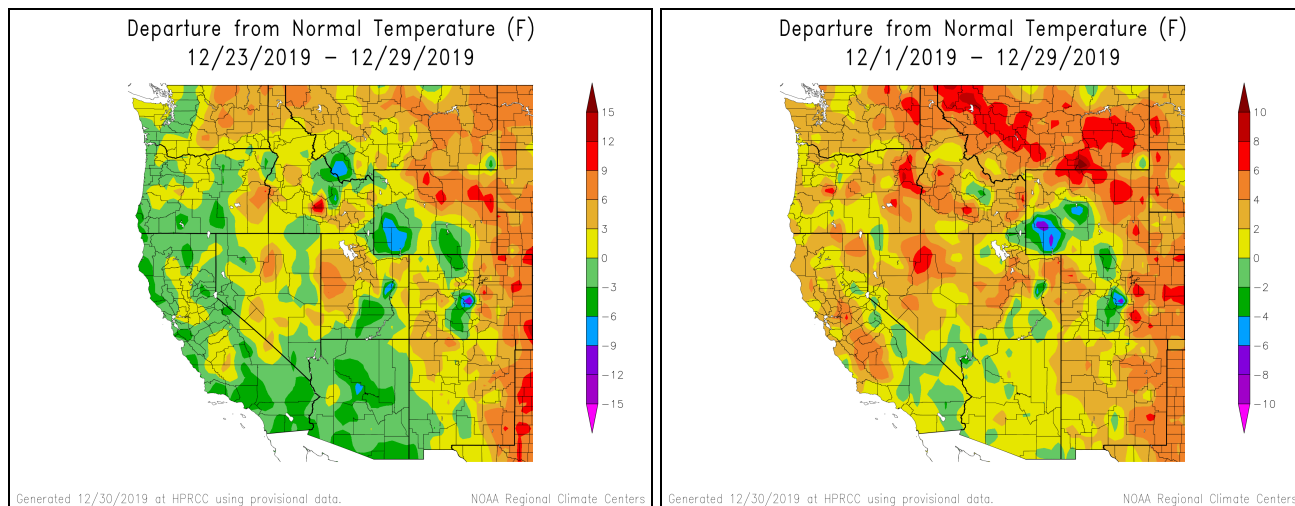
Evaporative Demand



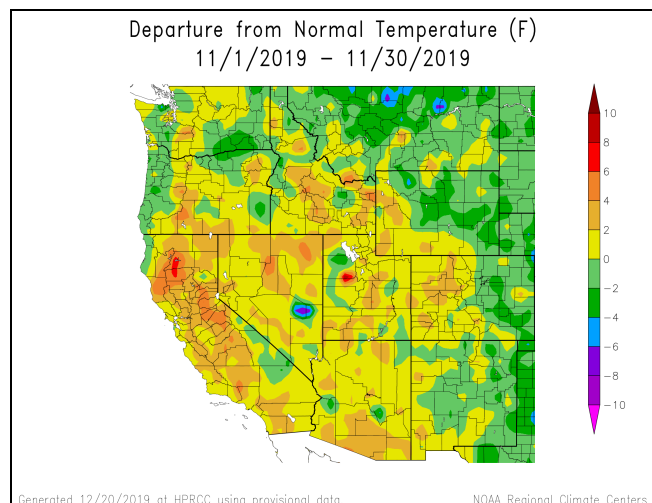


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

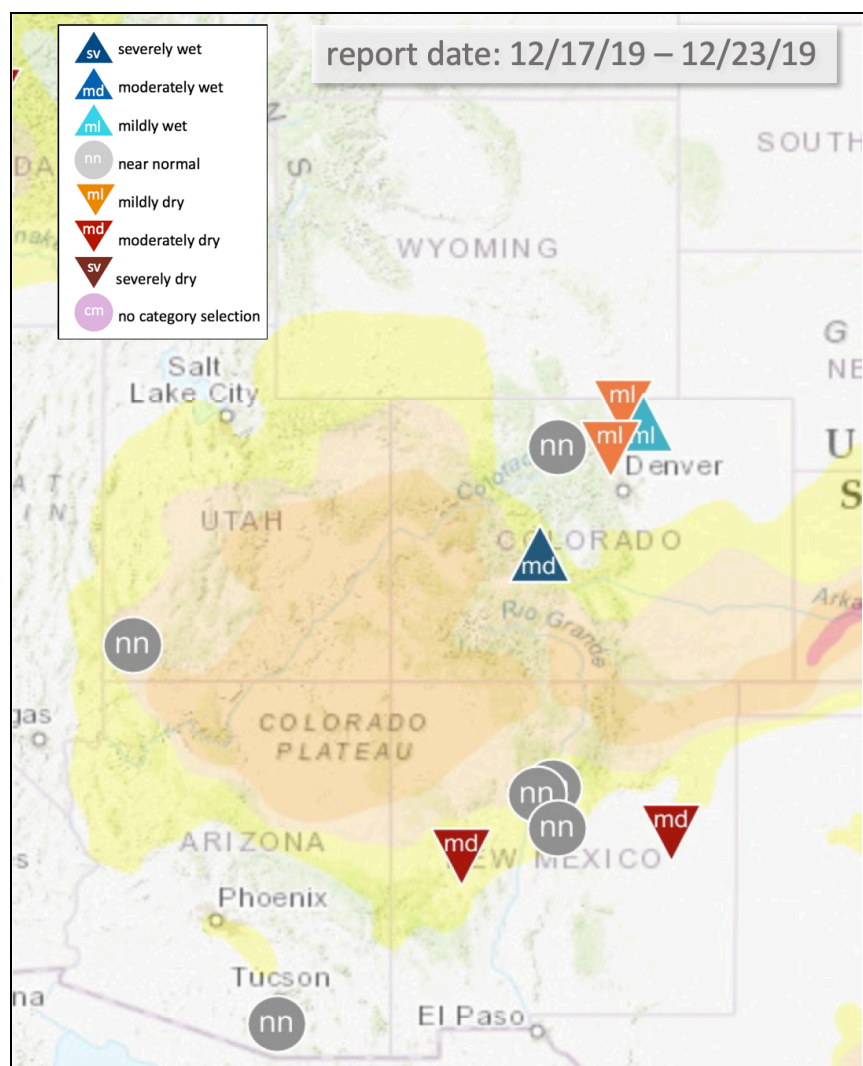
Temperature



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.

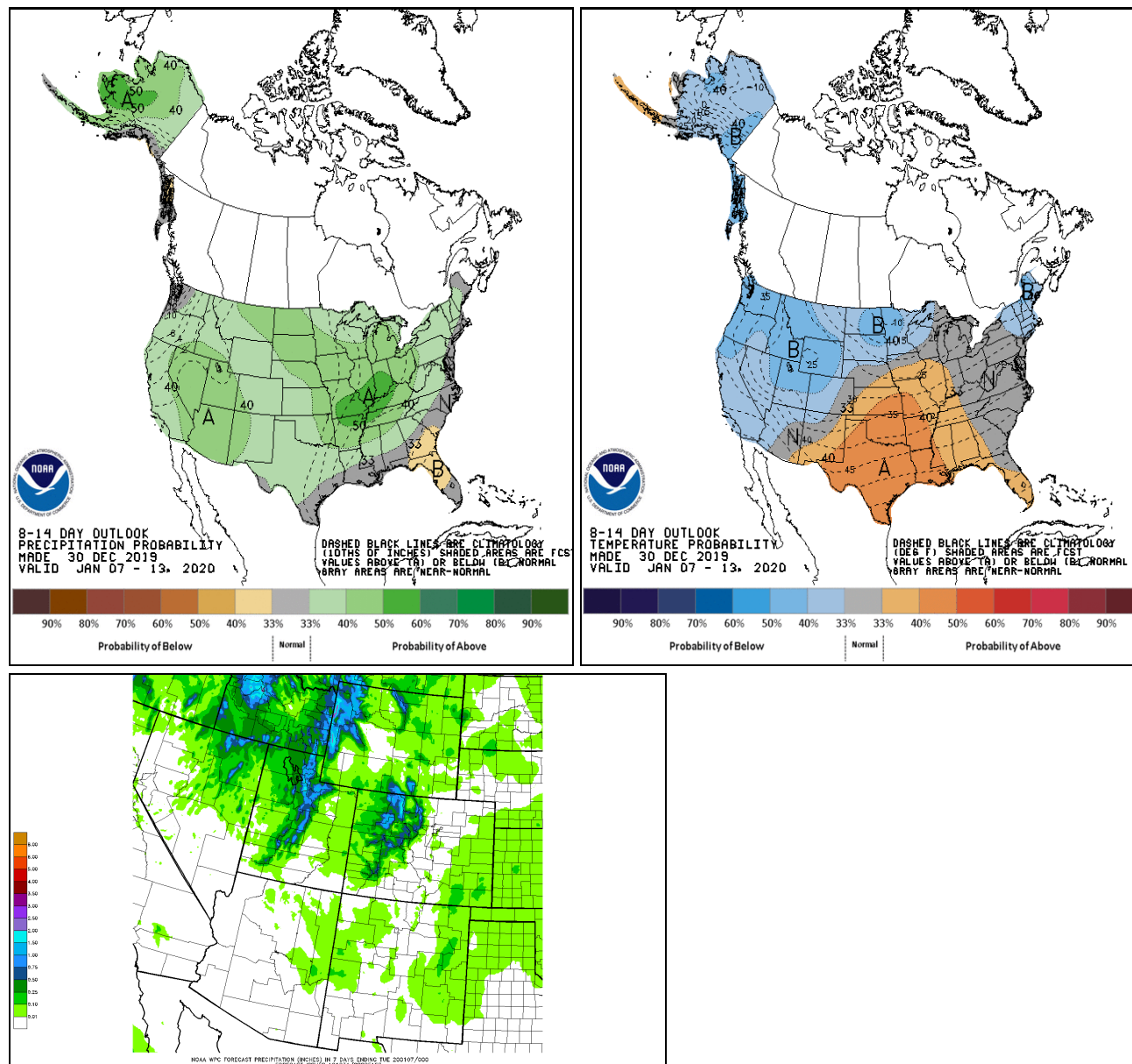


Condition Monitoring and Impacts

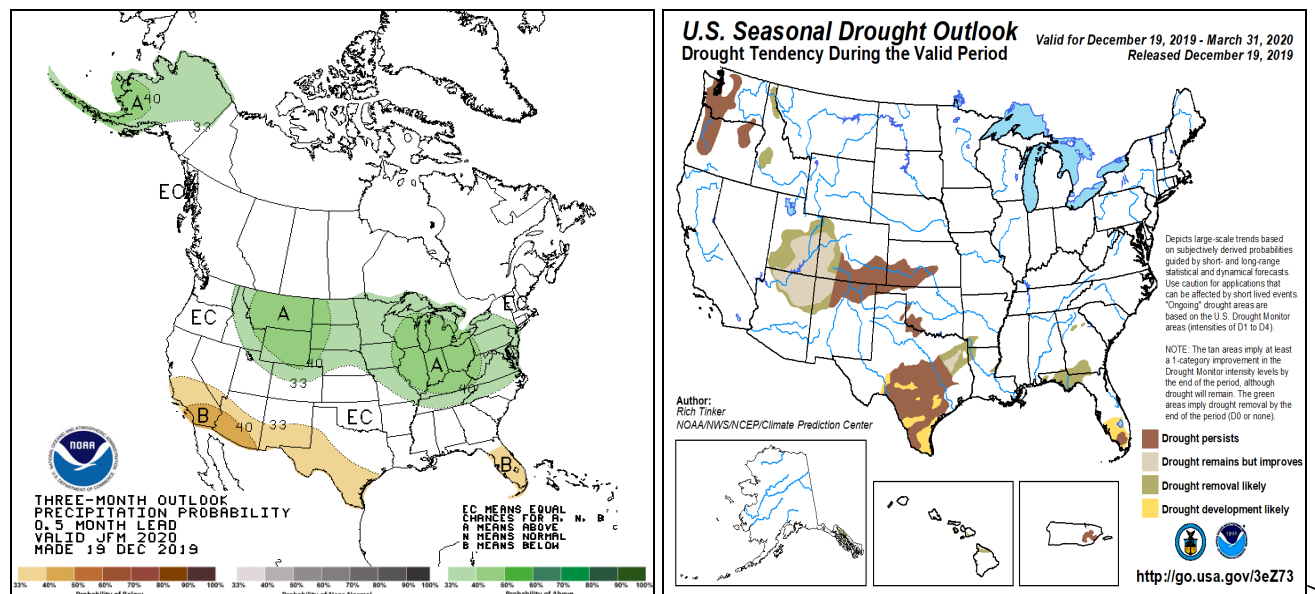


Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

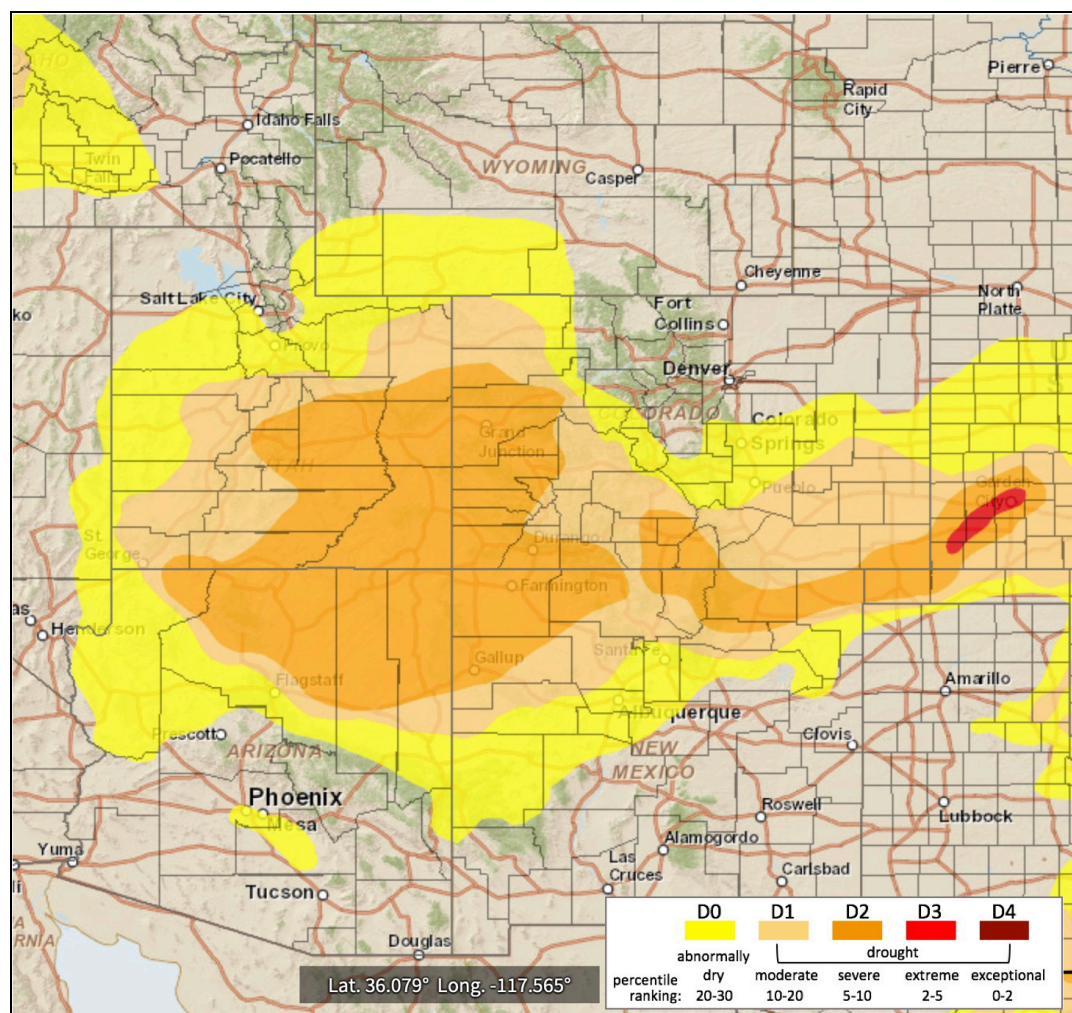
Outlook



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.

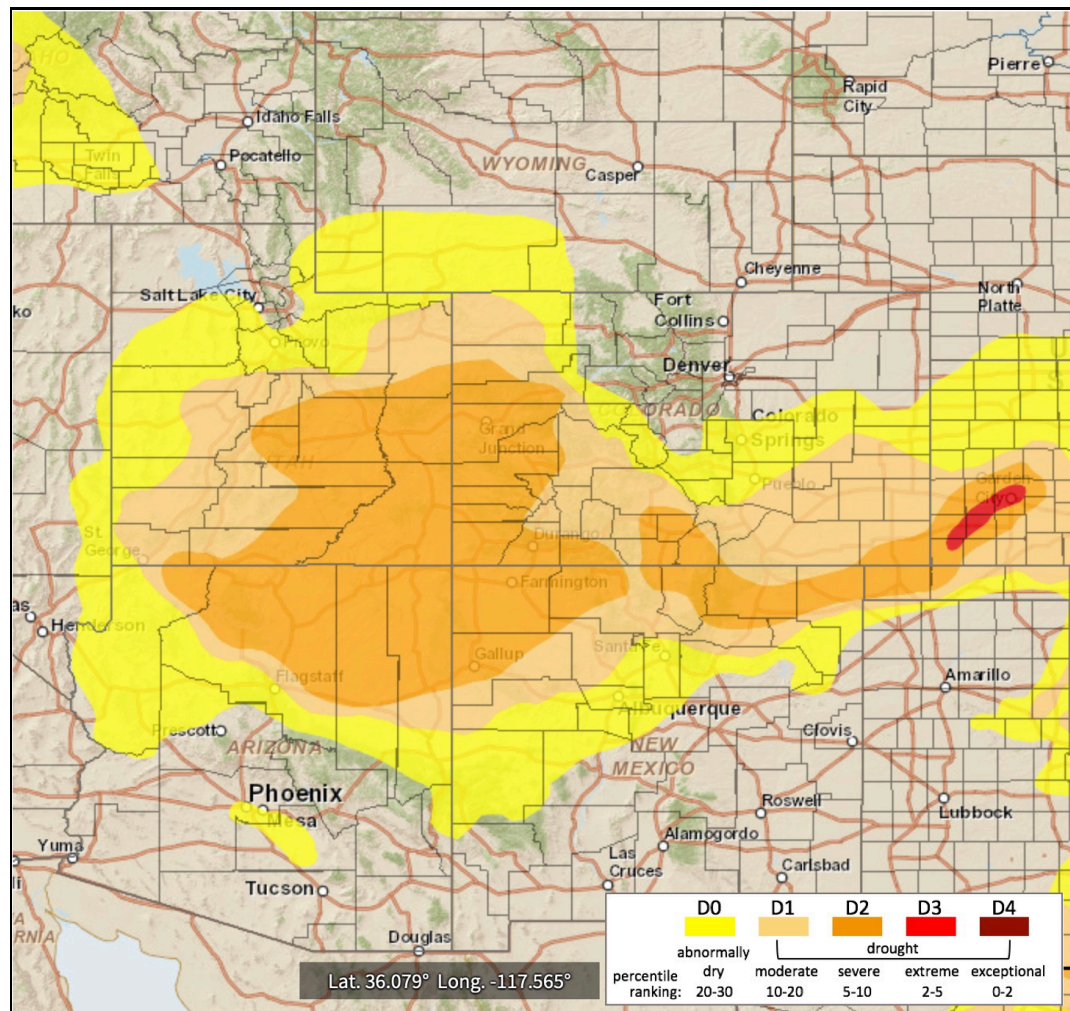


Summary and Recommendations



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: December 23, 2019

The last week over the Intermountain West has been a fairly quiet one, with almost no precipitation falling throughout the region. Temperatures across the Upper Colorado River Basin were near to slightly cooler than average. Month-to-date, the higher elevations of the IMW have received between 1 and 3 inches of precipitation, with the lower elevations mostly getting less than half an inch. This is a pretty normal pattern for this time of year, although most areas are a bit drier than average for the month. Despite that, 30 and 60 day SPIs look pretty good for the entire region, with some drier 60-day SPIs creeping into northwest Wyoming.

SNOTEL snowpack for the Intermountain West is off to a good start, with basin-wide averages ranging from near average in western WY to almost 200% of average in southern Utah. Individual SNOTEL sites in western WY are struggling a bit, but Utah and Colorado snowpack are in good condition.

Following this quiet week, there is good news on the horizon, with decent precipitation amounts forecasted over the next 7 days, especially focused in some drier spots. The southern half of Arizona is forecasted to get between 1 and 3 inches over the next week. Eastern New Mexico and into southeast CO

are also expected to get over 1 inch of moisture. Most of the higher elevations should be able to get in on some of the activity as well. Unfortunately, Wyoming looks to miss out on the bigger accumulations.

Warm temperatures will dominate the region through Christmas, with cooler than average temperatures coming after the holiday. Climate Prediction Center shows a higher possibility of cooler than average temperatures continuing into the new year.

Recommendations:

UCRB: Status quo is recommended. Improvements were made over southwest CO last week thanks to recent snow accumulations. Most of the basin is still in D1 and D2. Following this week of no precipitation, along with most SPIs out to 120 days and 6 months still showing -1.5 or worse through most of Utah, western Colorado, and the Four Corners, keeping the current drought categories there is justified.

Eastern Colorado: Status quo is recommended for the rest of Colorado. Areas currently in drought in southeast CO show okay short-term SPIs. This is an area to keep a close eye on in the next week. With 7-day QPF showing a possible inch of accumulation, improvements may be warranted. For now, we'll hold off on changes and see what comes of it.

Western Wyoming: This is another area to start watching closely. While 30-day SPIs look okay, 60-day SPIs are showing up negative and snowpack in the higher elevations is struggling a bit. With not too much precip forecasted over the area in the next week, some D0 expansion may be warranted. Given that this is a short-term developing situation, status quo is recommended for this week.