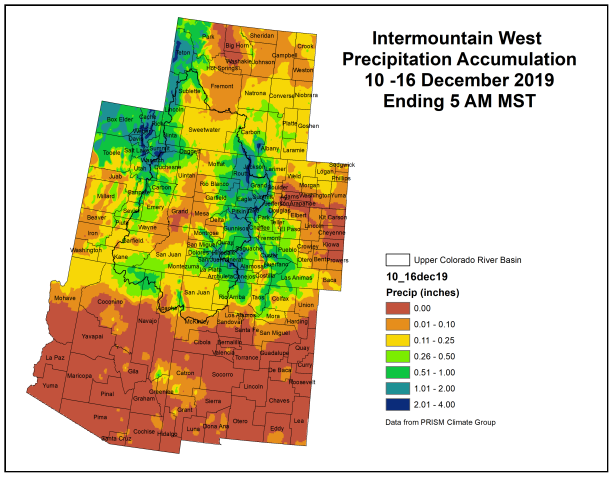
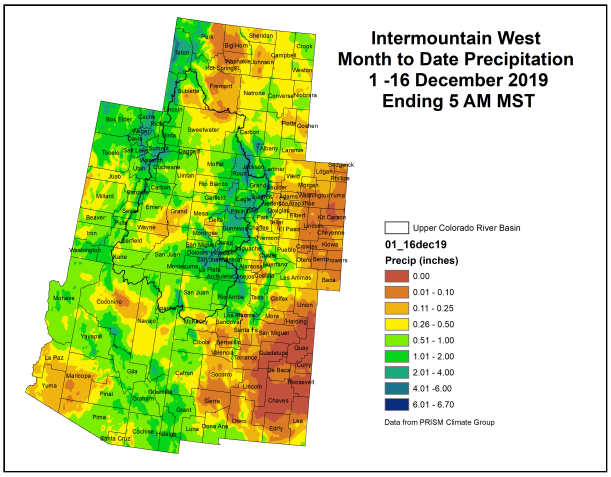
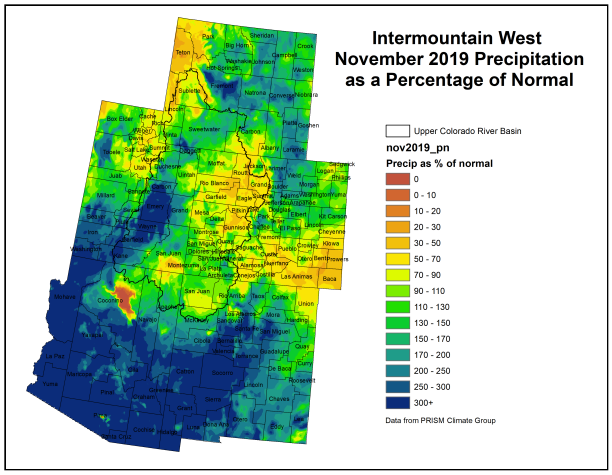
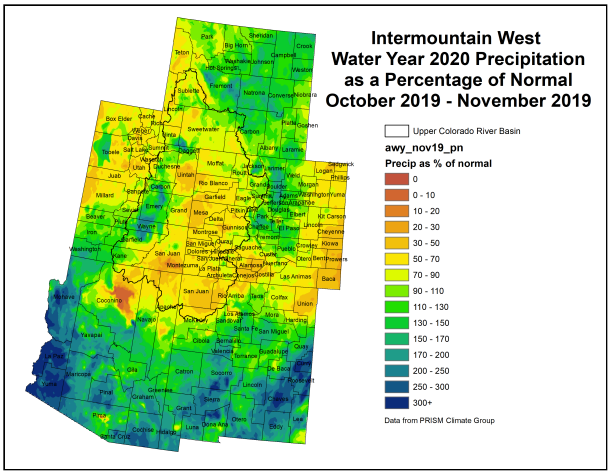
**NIDIS Intermountain West**
**Drought Early Warning System**
**December 17, 2019**

# Precipitation



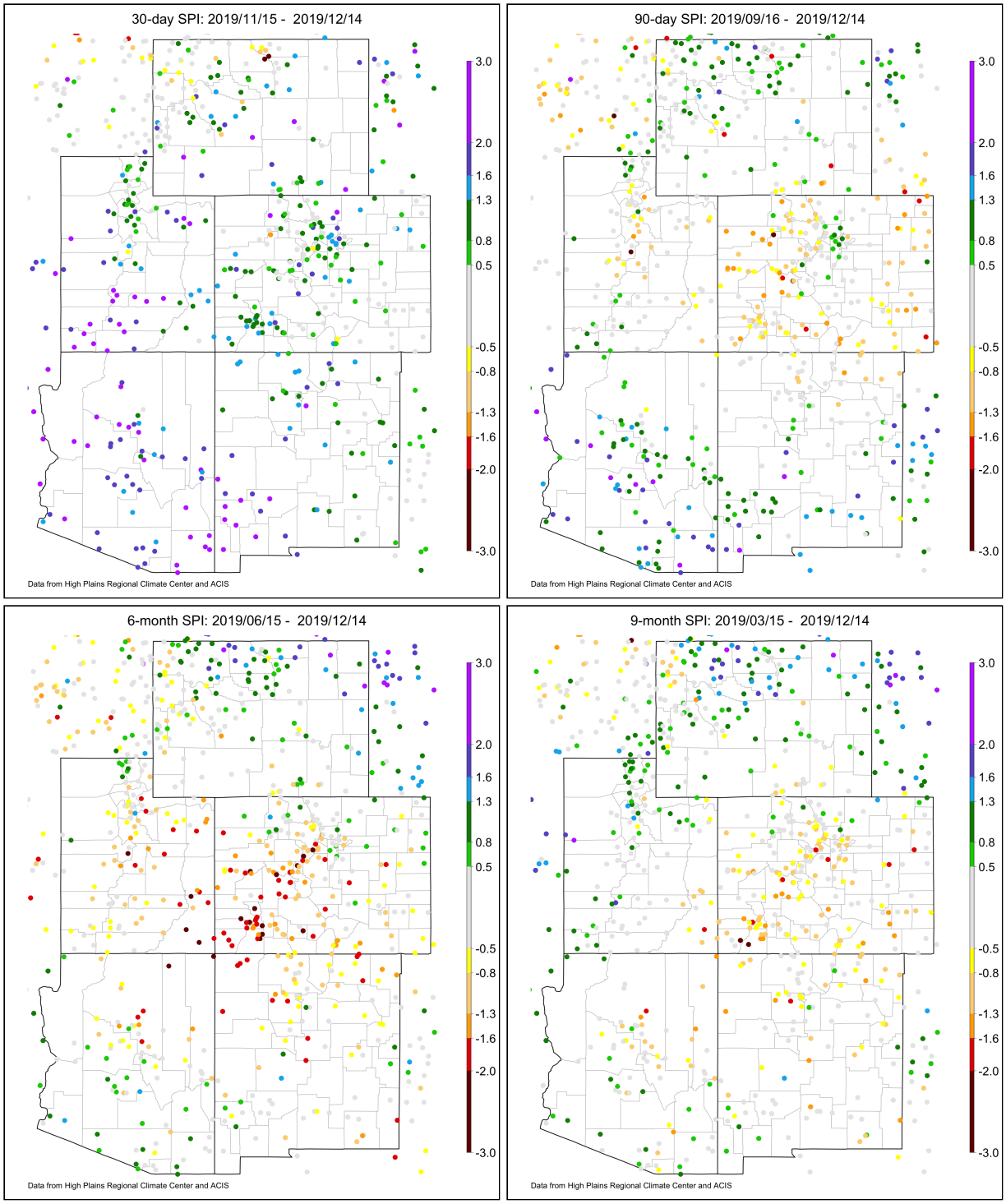



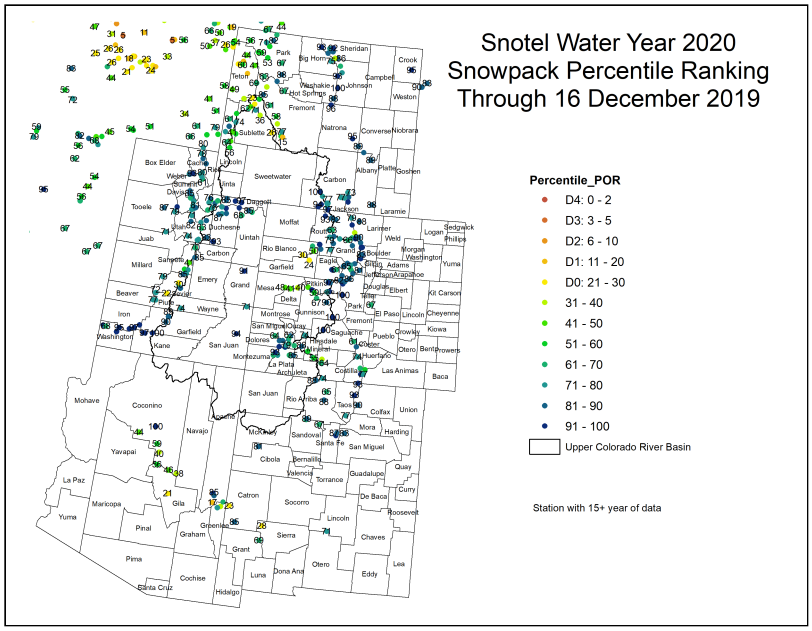

The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

# Standardized Precipitation Index

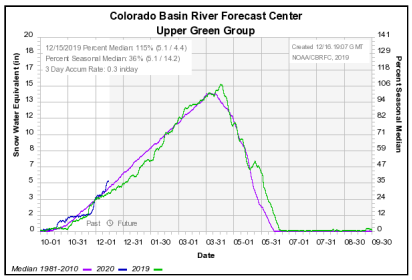


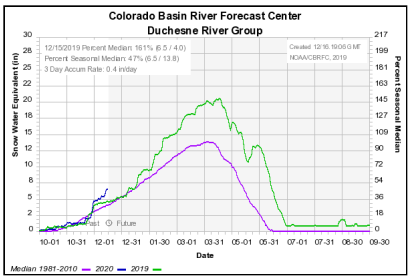

Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. Colors match the different drought categories with the U.S. Drought Monitor. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term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

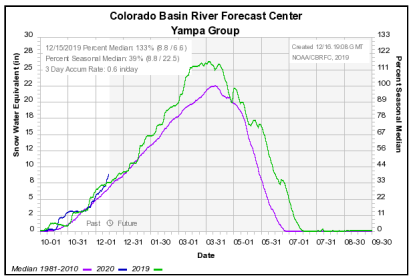
# Snotel and Snowpack

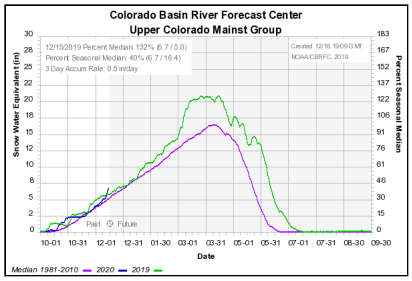


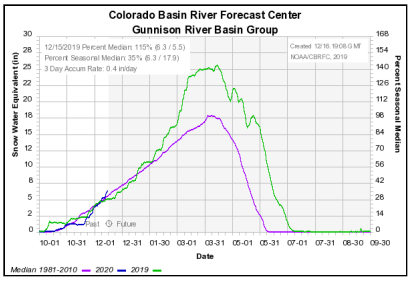

The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado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

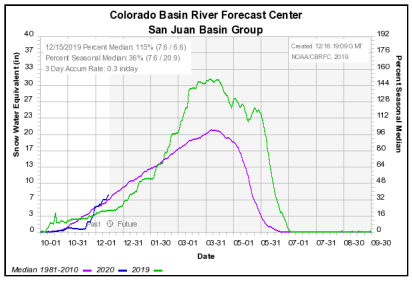


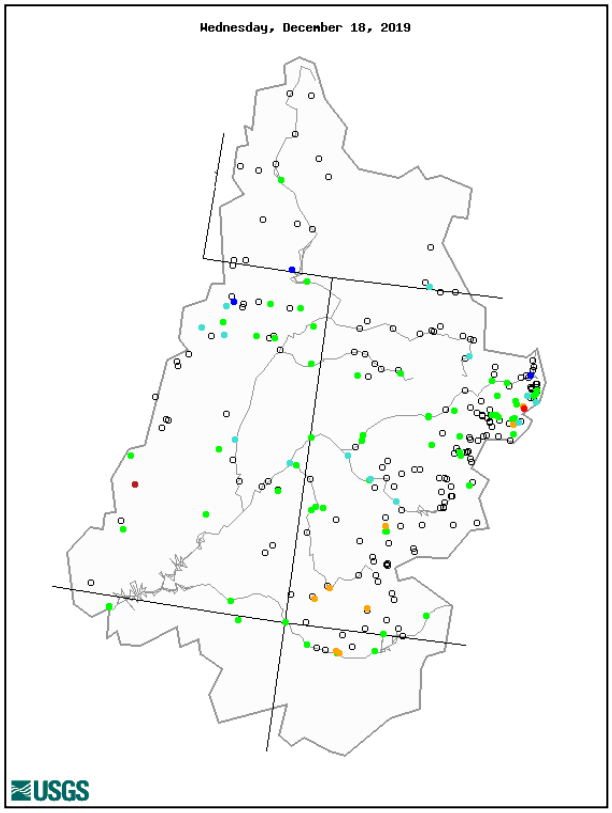



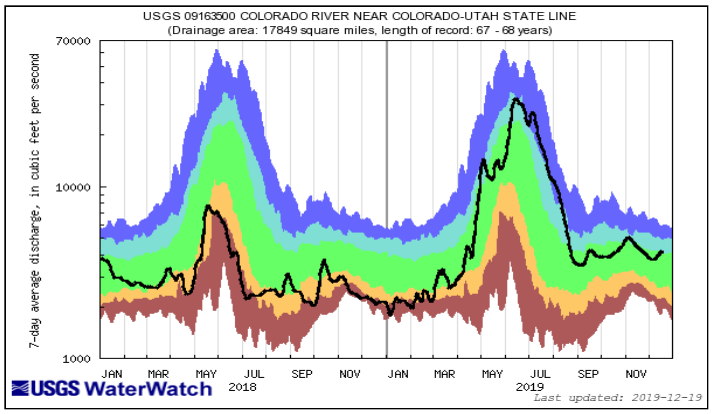



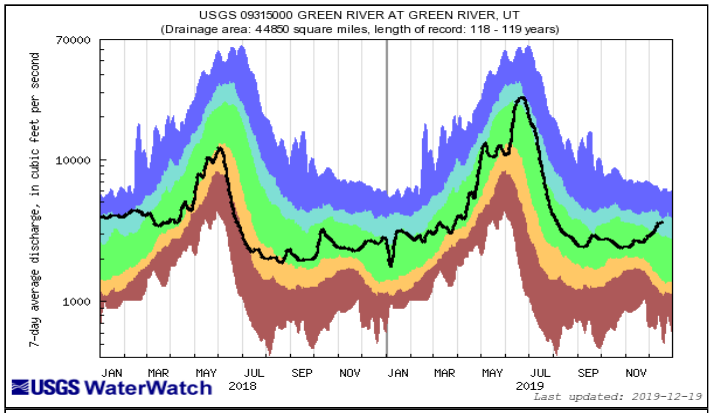



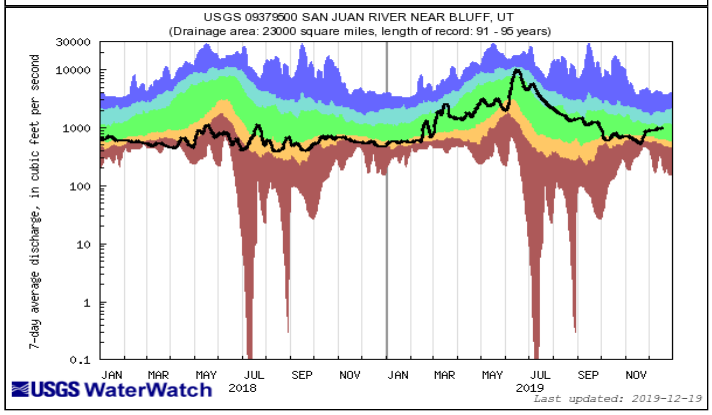

# Streamflow




| 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 | | |

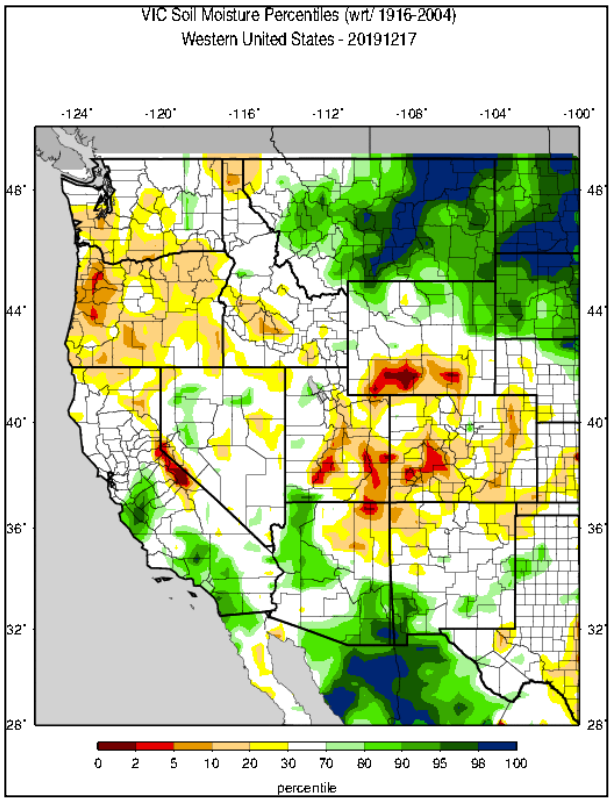


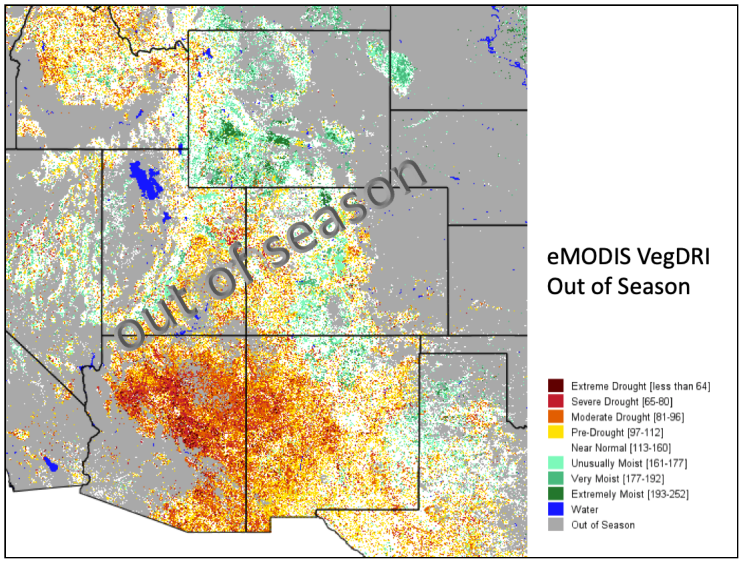



The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

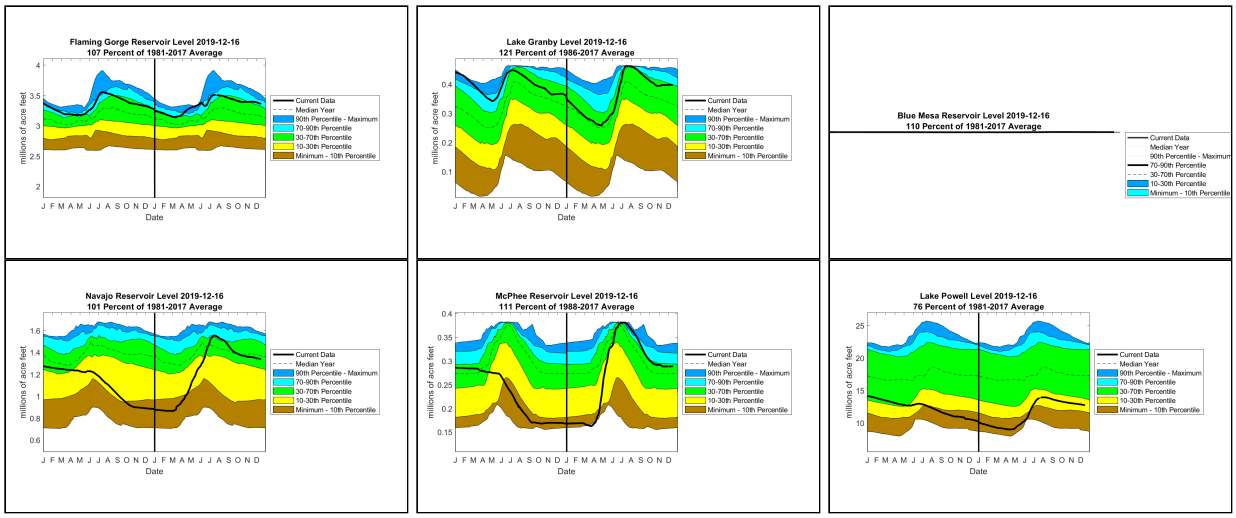
# Surface Water



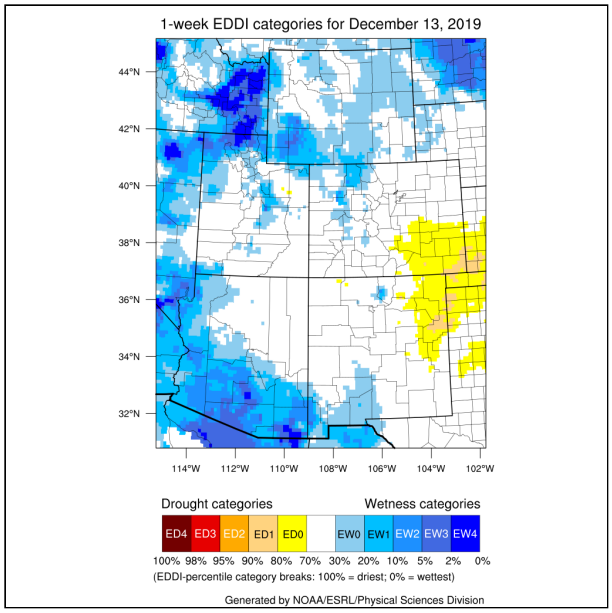



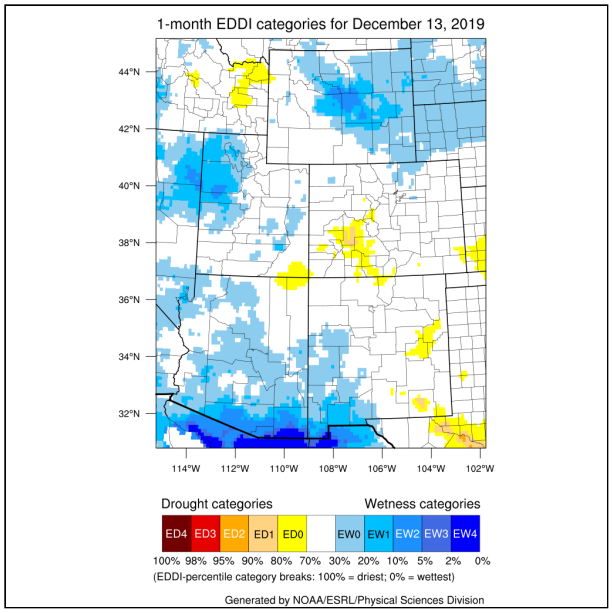

The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

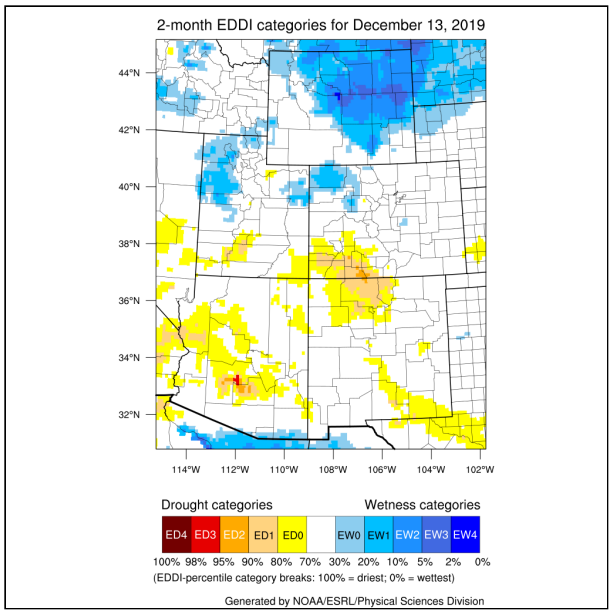
The graphs shown below are plots of reservoir volumes over the past full year and current year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past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

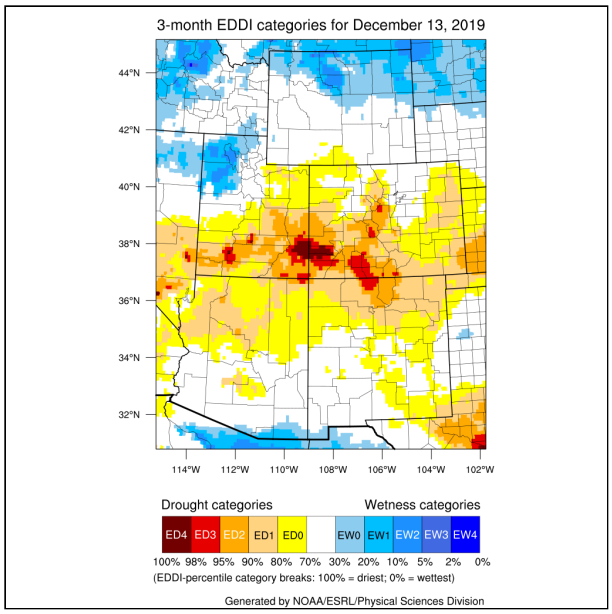



# Evaporative Demand



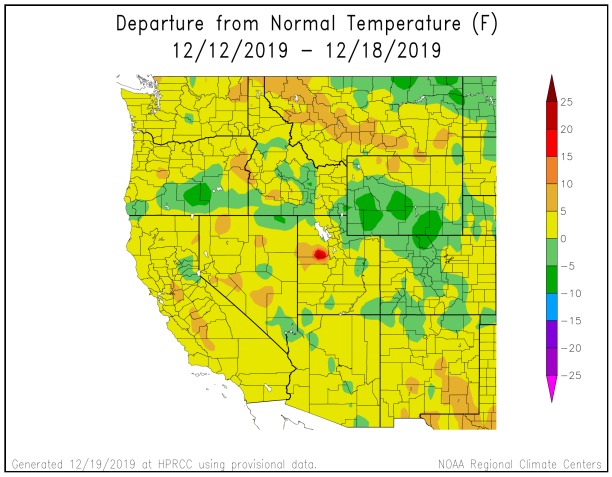



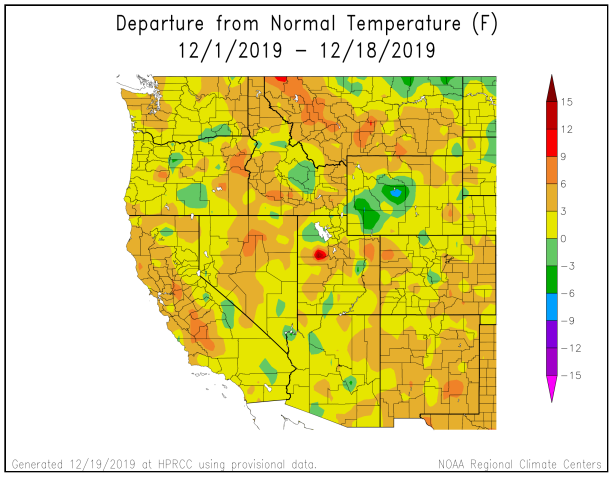



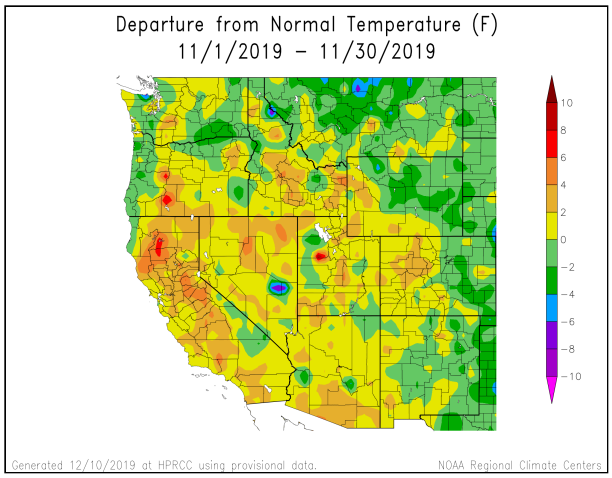

The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

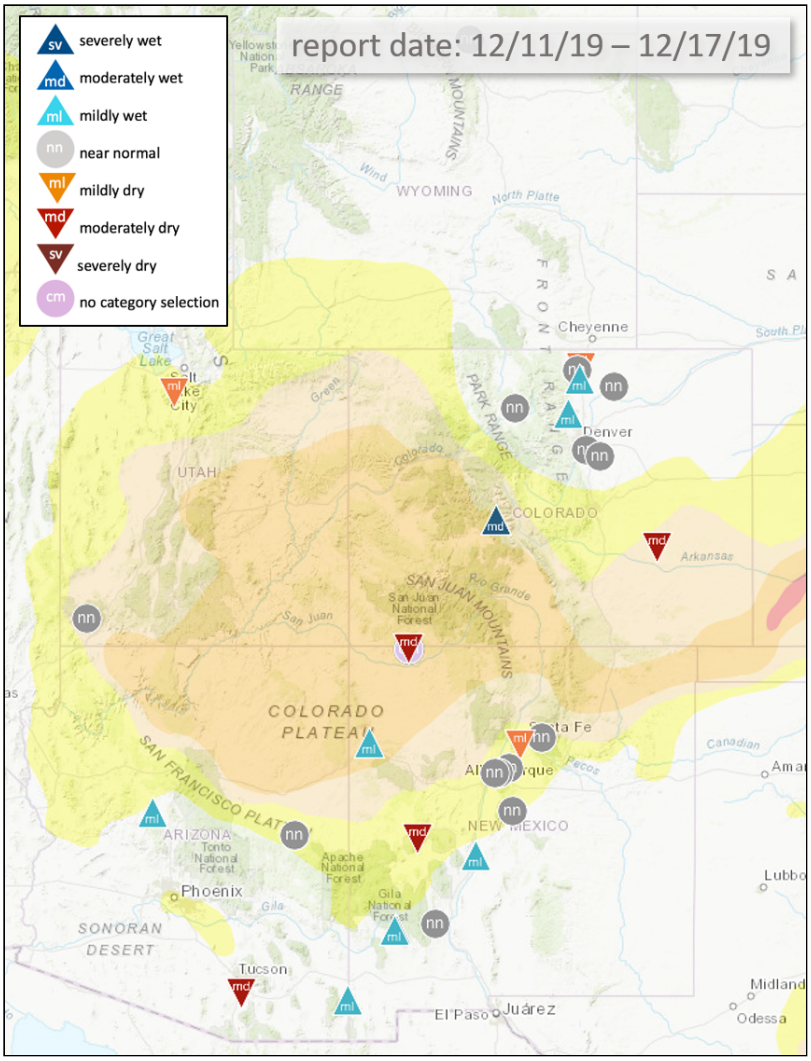



All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.

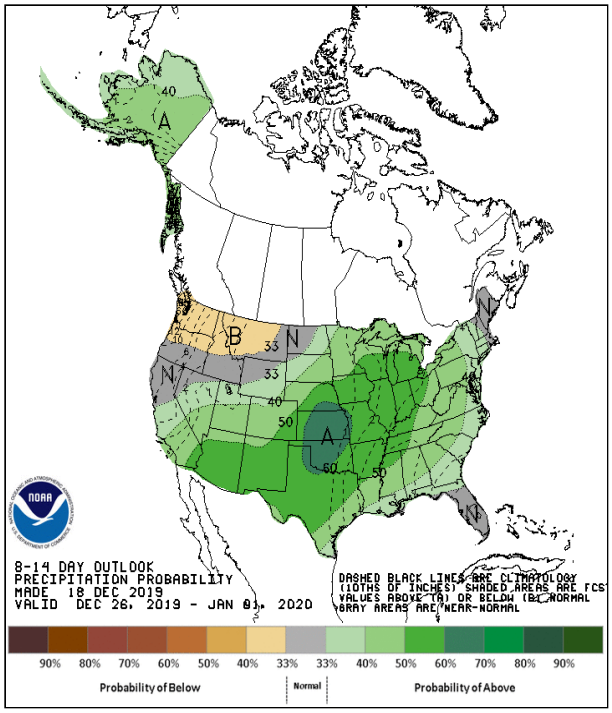


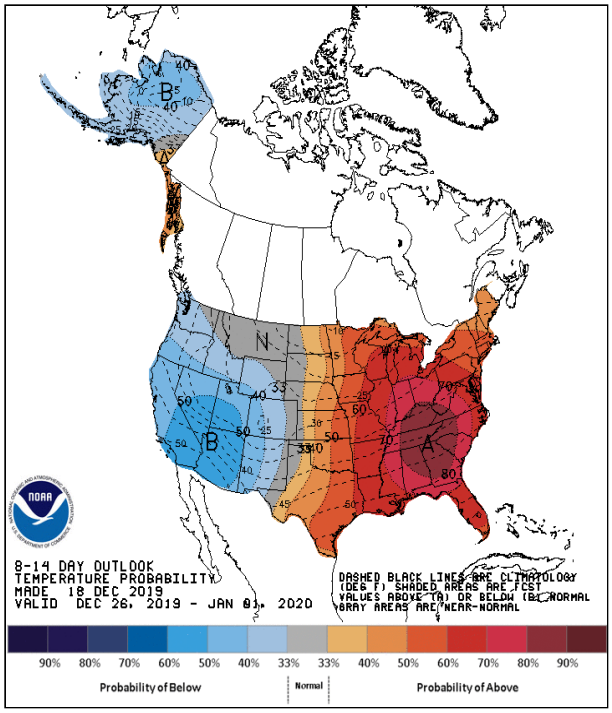

# Condition Monitoring and Impacts

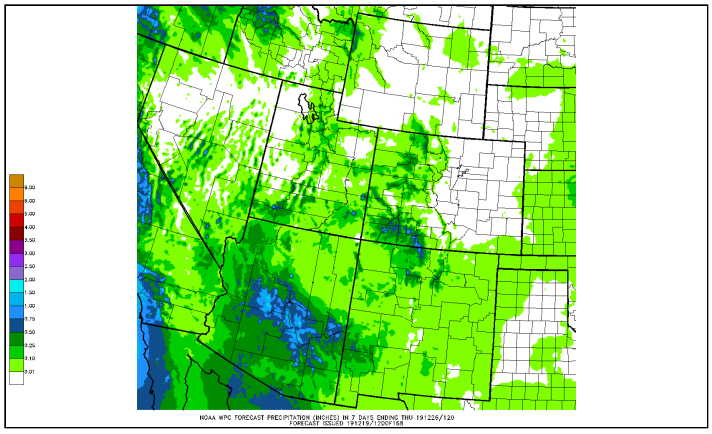



Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

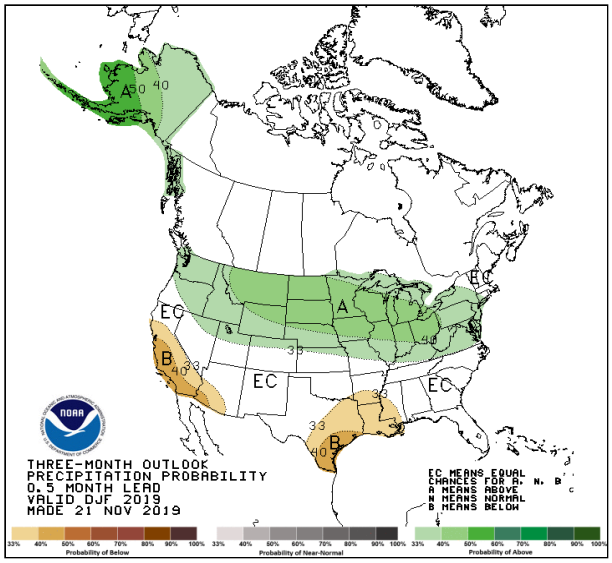
# Outlook

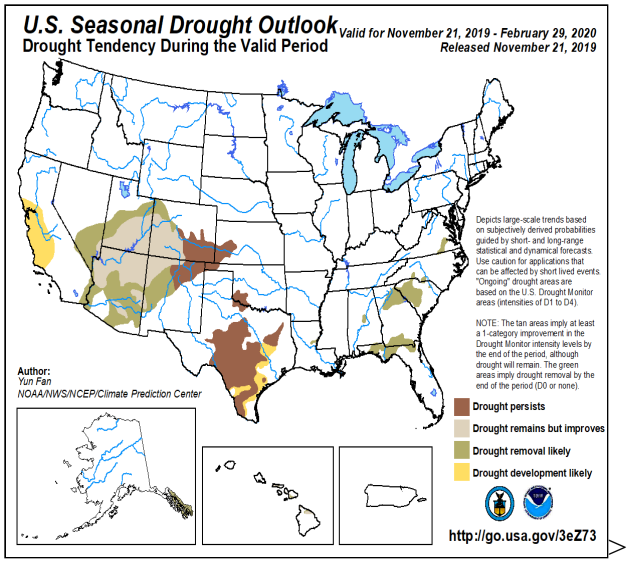


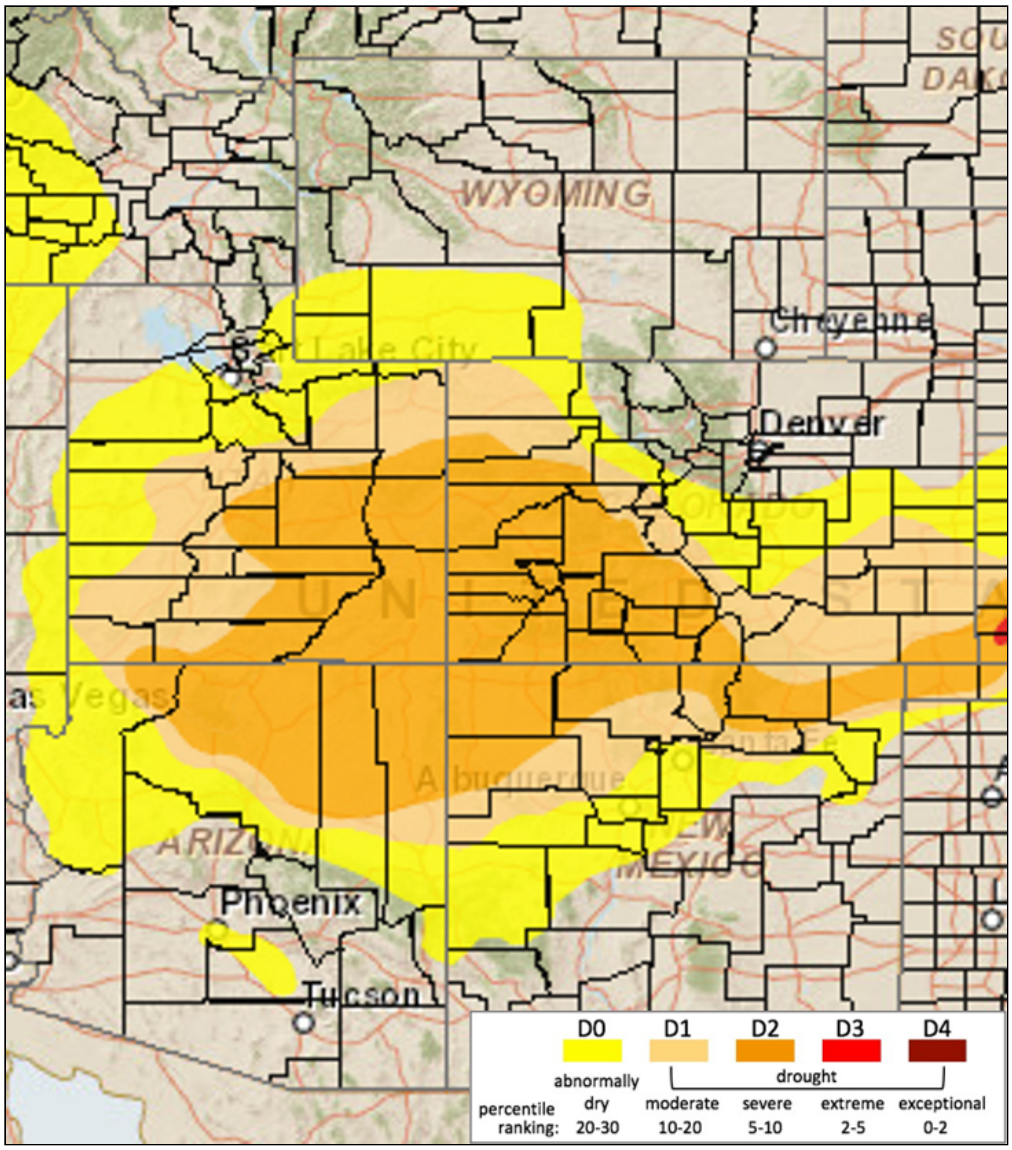




The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

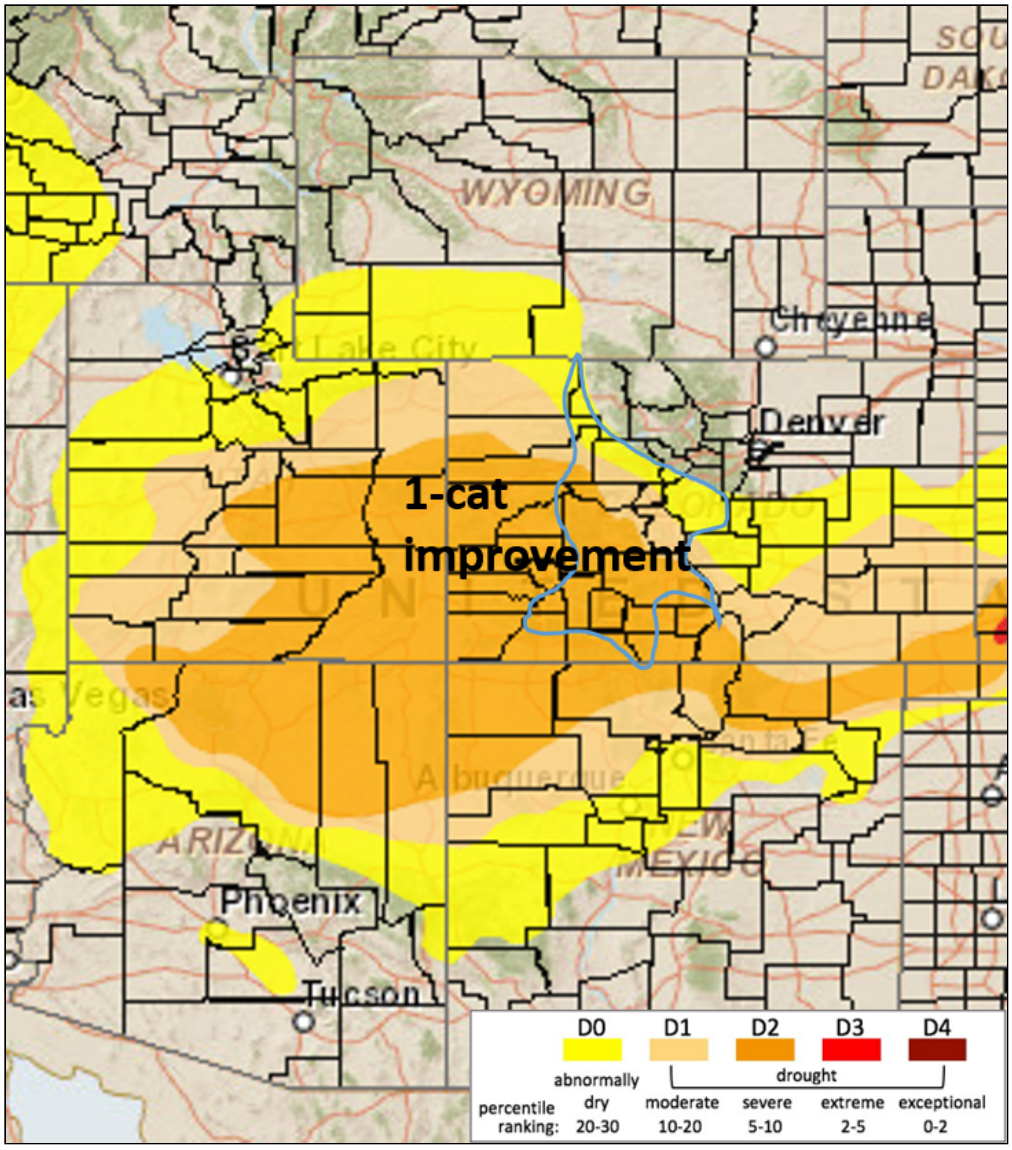


# Summary and Recommendations




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 17, 2019**

Last week the Intermountain West saw a nice weekend snowstorm in the mountains of Colorado with snowfall totals of 1 foot up to 3 feet in areas. Precipitation totals ranged from 1 to 4 inches. The other area in the IMW region that saw precipitation was north-central Utah and western Wyoming, with totals in the 1-4" range as well. The rest of the region mainly saw less than 0.25", with much of Arizona, New Mexico and eastern Colorado seeing less than 0.1".

The precipitation through the mountains has been great on the short-term timescale, 30 to 60 days, with above average precipitation. On the longer timescales, 90-day and beyond is still very dry through western Colorado into much of Utah. It will take much more above average precipitation to recover.

The storm was very beneficial in the snowpack. We are now seeing above average snowpack in most of the IMW region, including in New Mexico and Arizona.

Despite the snow last week and the snow this month, temperatures over most of the region are above average for the month. Central Wyoming is the only area

showing some widespread below average temperatures this month, with much of Colorado only seeing 0-3 degrees above average.

The precipitation outlook for the next week is looking pretty dry for much of the region. It looks like there is going to be a system to come through Arizona and southern Utah, but dry for the rest of the IMW. The 8-14 day outlook is showing good chances for above average precipitation the 24th - 30th, so some areas may have a white Christmas. Temperatures are leaning to be above normal during that same week.

**Recommendations:**

**UCRB:** With the second week of beneficial snow in the mountains of Colorado, a 1-category improvement is being suggested, improve much of the D2 to D1. This improvement is being limited to areas that received at least 0.50" of precipitation last week. SPIs in this area are positive, meaning above normal precipitation, for the 30-day timescale. 90-day and beyond SPIs return to dry conditions. With the continued long-term dryness, D1 is a nice average for this area.

Status quo for Utah. Little to no precipitation fell in the dry areas and the precipitation that fell in Utah fell in drought free areas.

**Eastern Colorado:** Status quo. Northeast Colorado has been relatively dry to start December, however with a wet November and the drier time of year in general, no degradations are needed. The picture for southeastern Colorado looks good for current conditions.