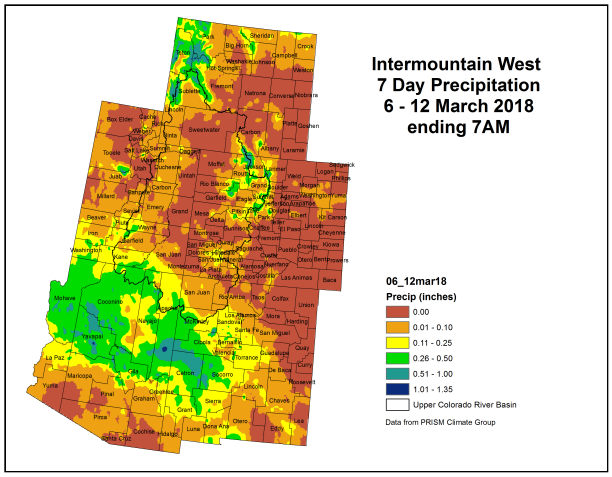
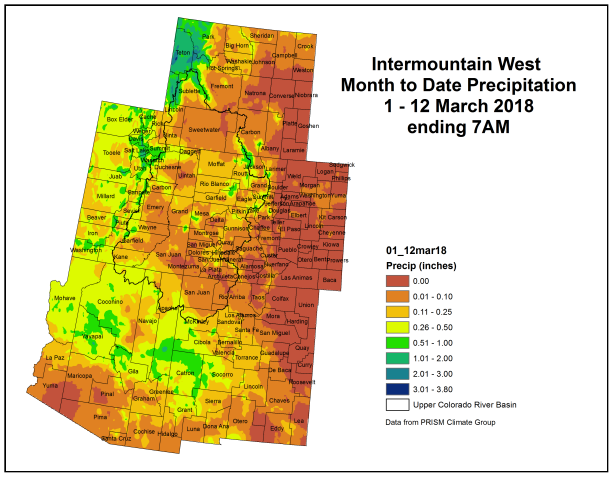
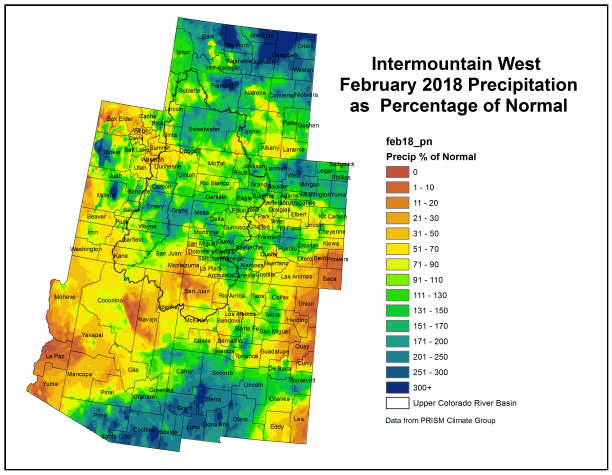
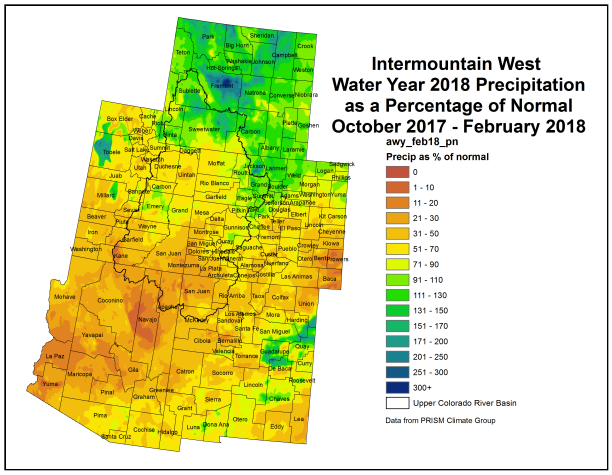
NIDIS Intermountain West
Drought Early Warning System
March 13, 2018

Precipitation



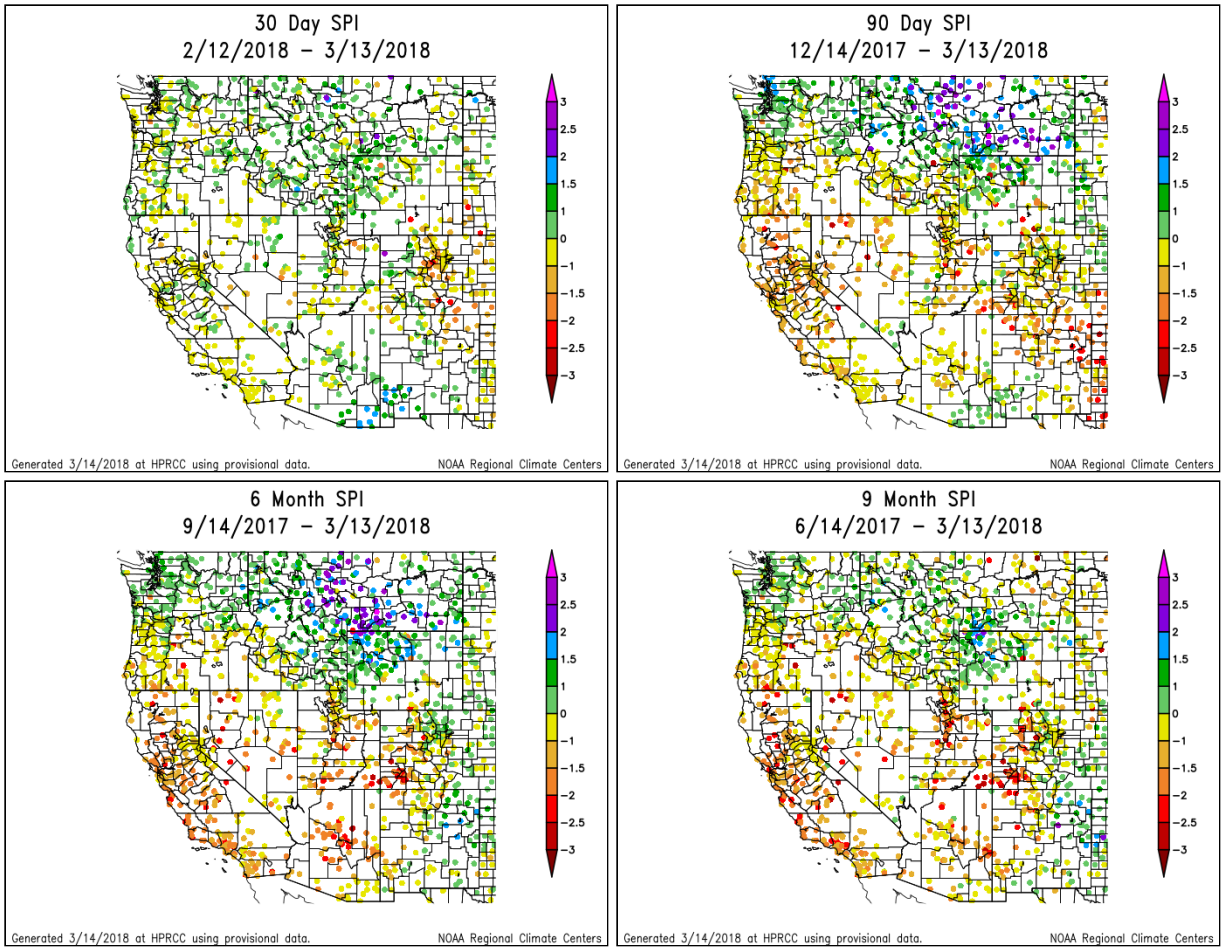






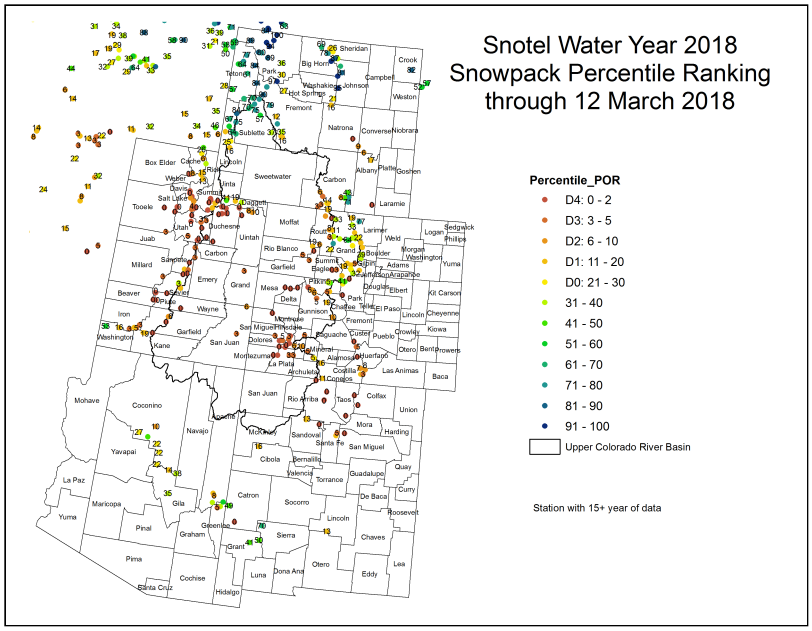
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

Standardized Precipitation Index



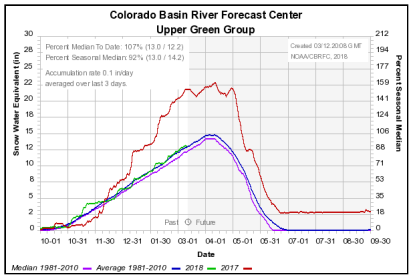
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

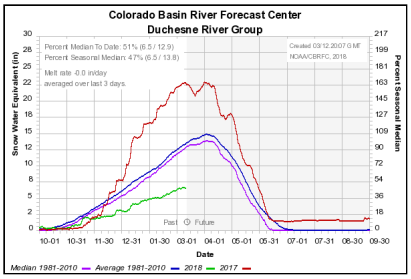
Snotel and Snowpack

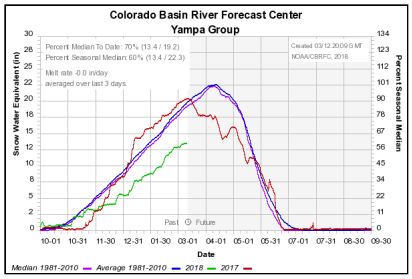


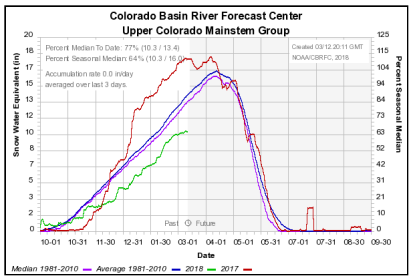
The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches

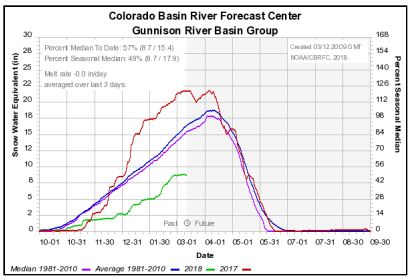
(green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).

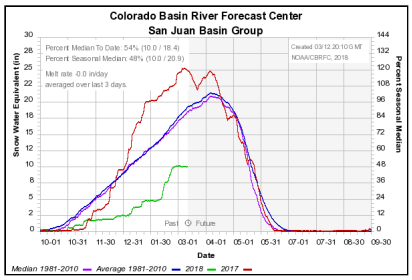




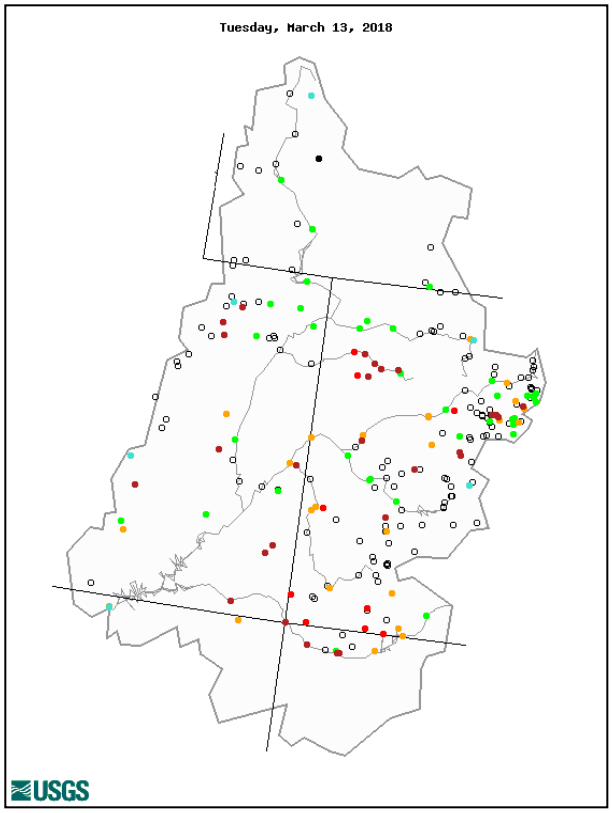




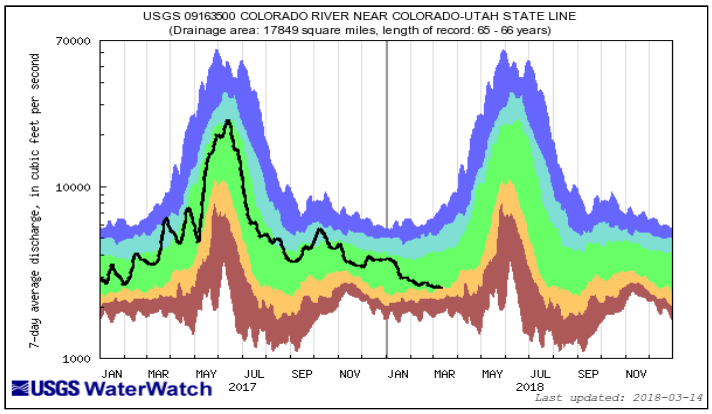


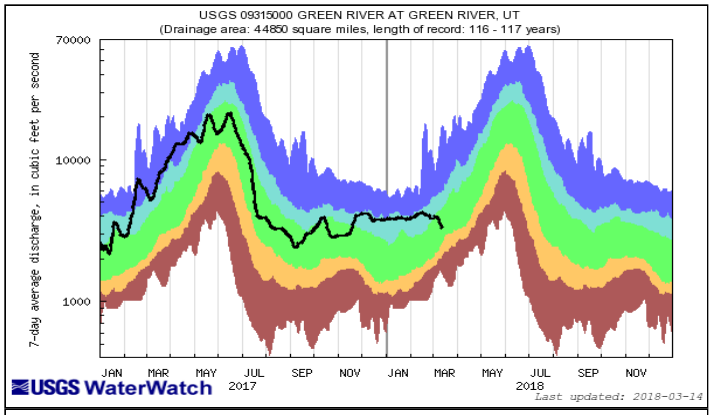


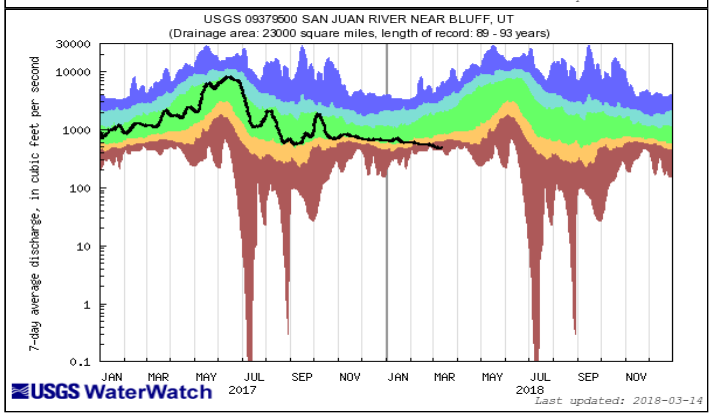
Streamflow



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

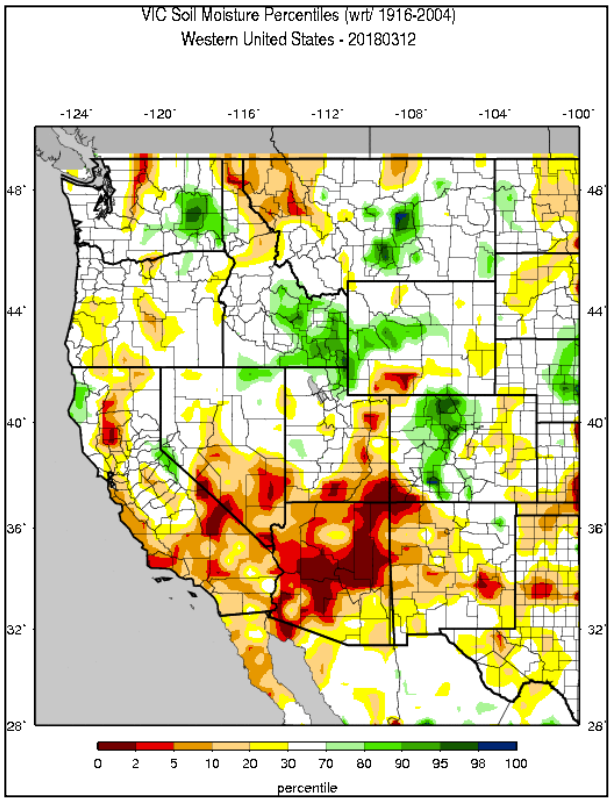


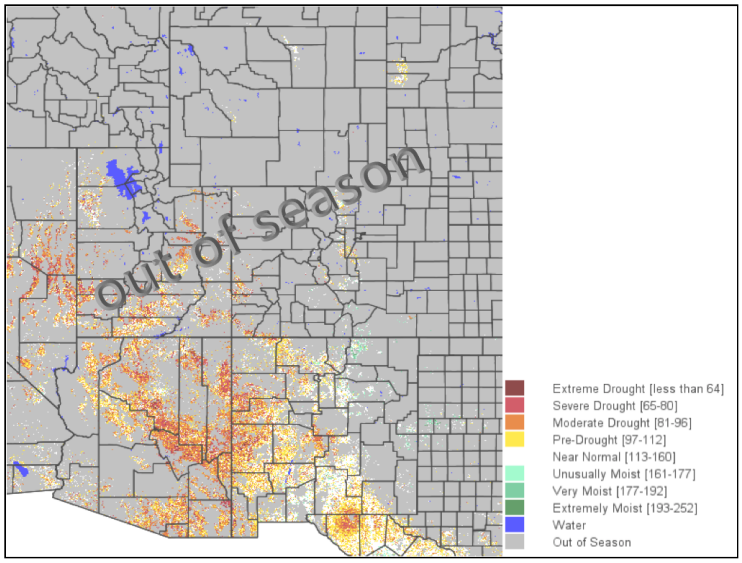




The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

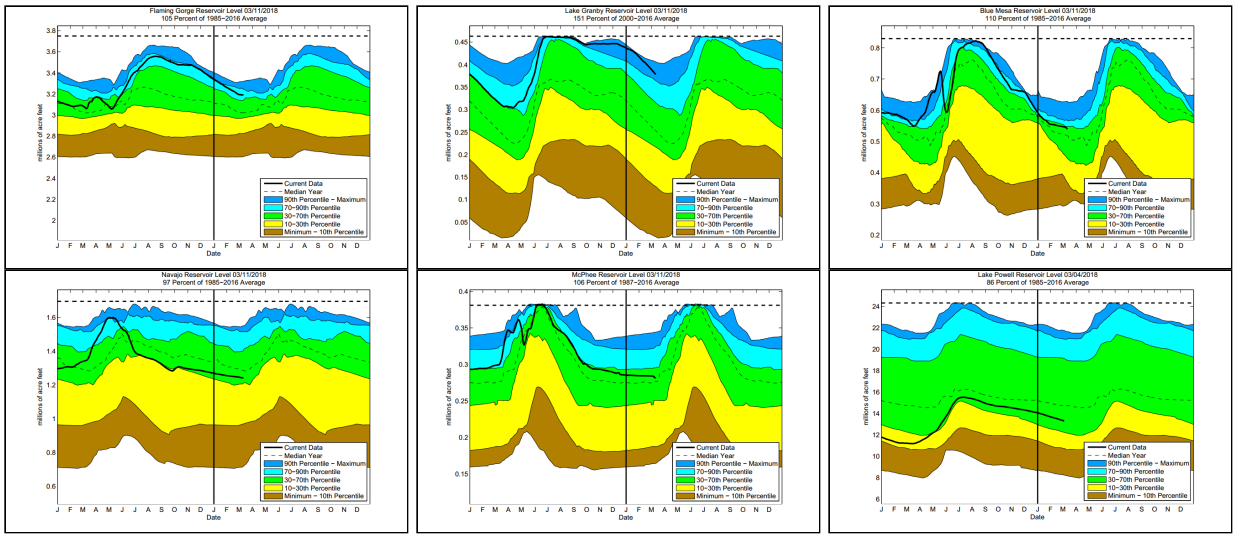
Surface Water



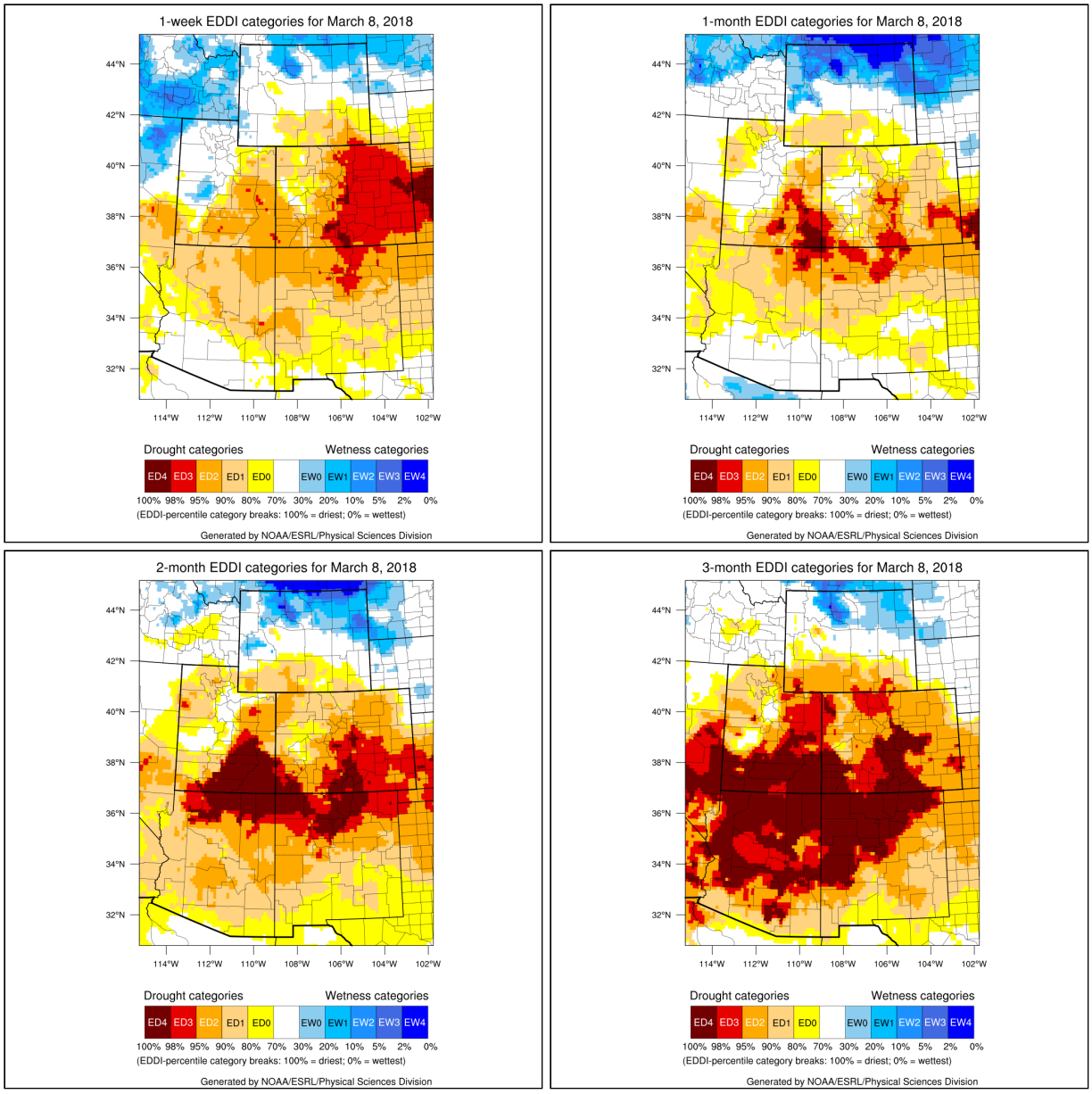


The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

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.

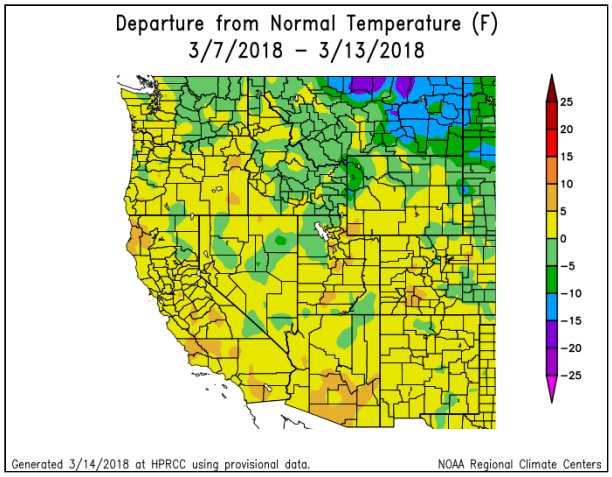


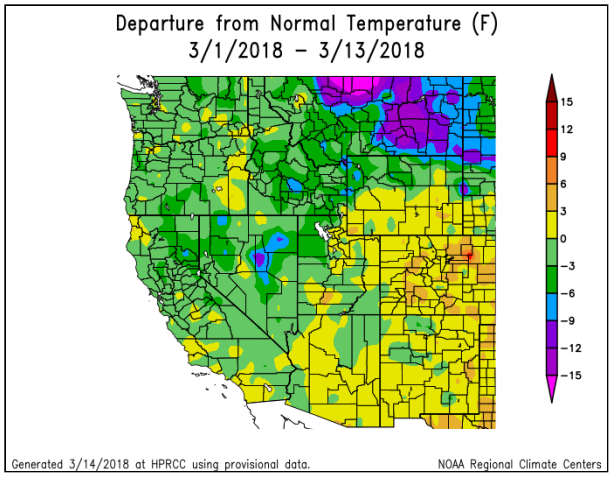
Evaporative Demand



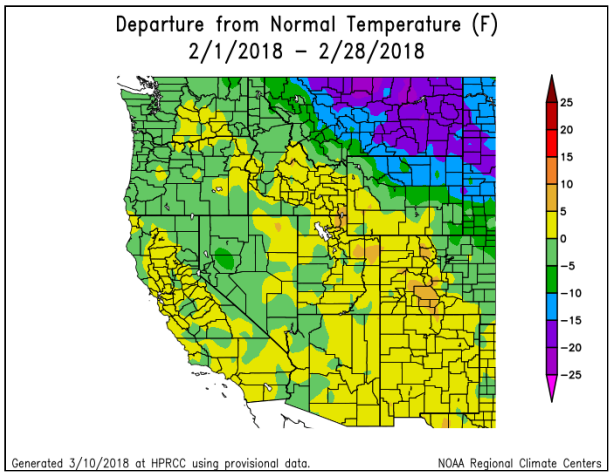
The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

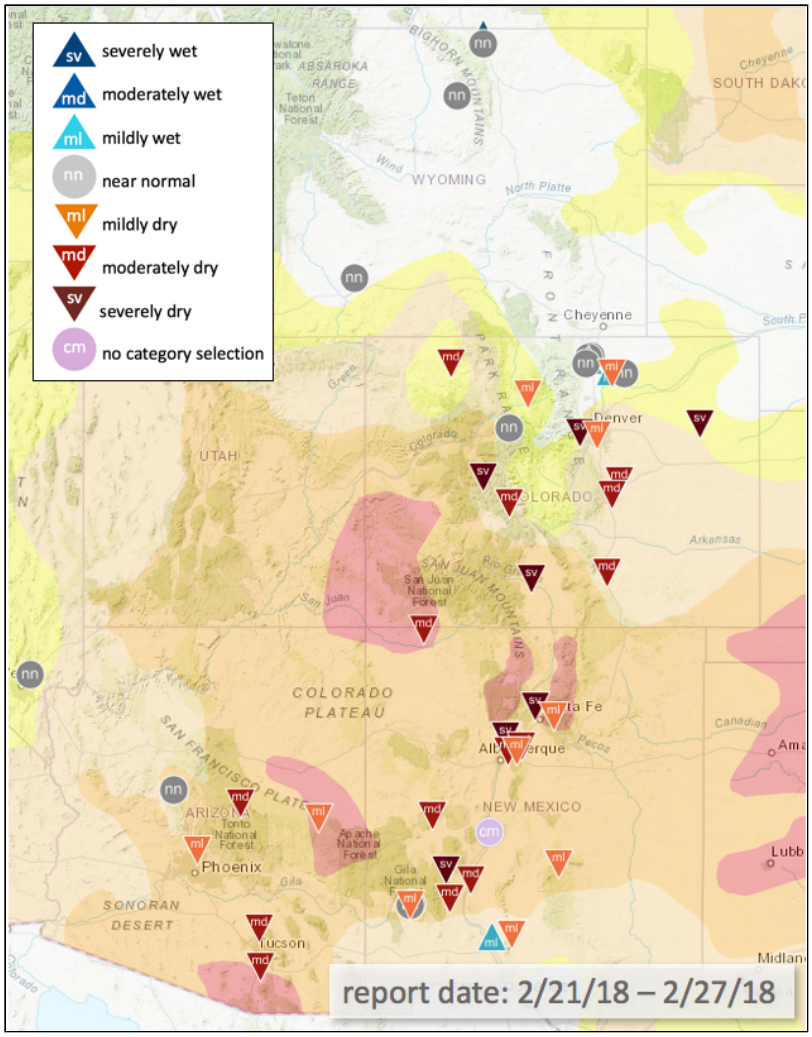




All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



Condition Monitoring and Impacts

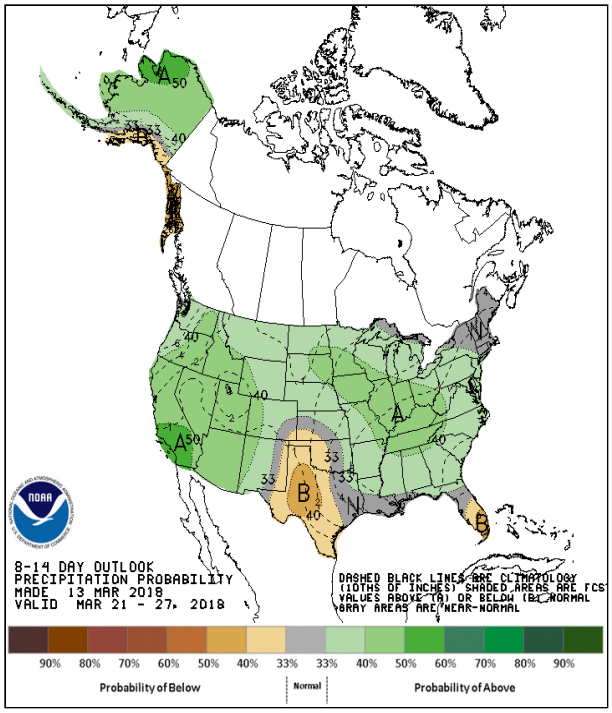


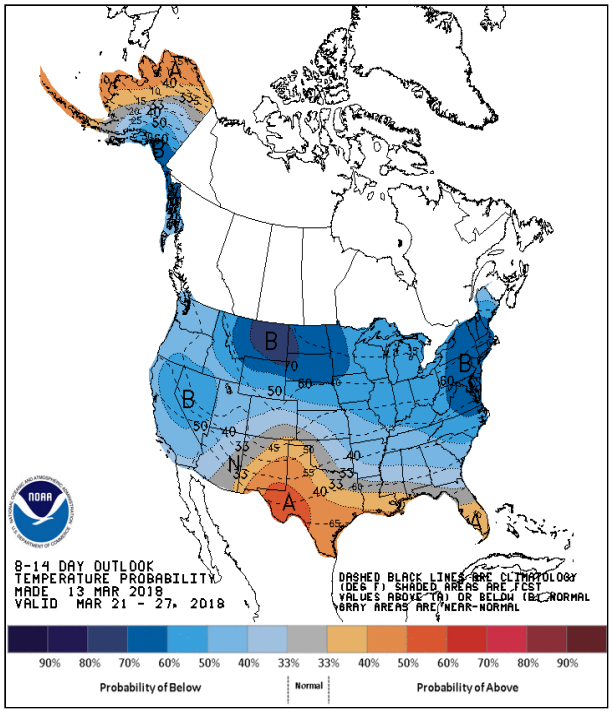
Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

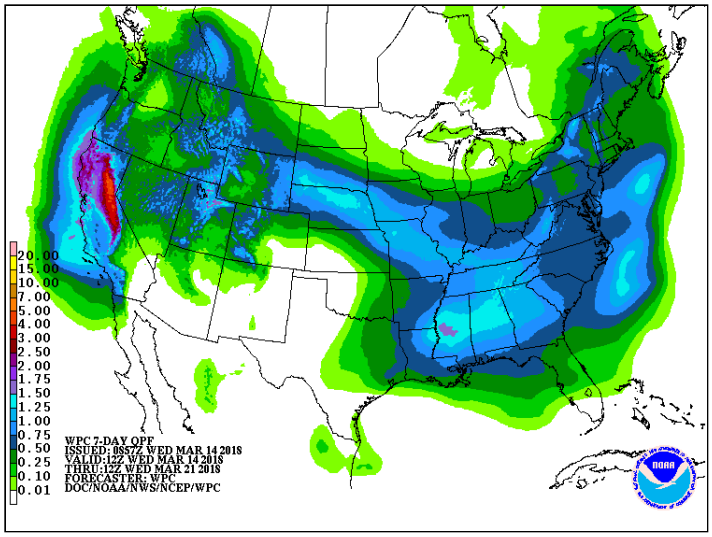
Baca County

The southeast corner of Baca County was the wettest area of the county after taking soil probe samples through the county. Fires are popping up. The fire that started in Union County, NM came into southwest Baca and burned about 10,000 acres in the county. Windy conditions continue and temperatures are expected to rise significantly this week with little precipitation. The warming temperatures mean the grass and winter wheat will start to come out of dormancy, which will zap what moisture is left in the soils pretty quickly.

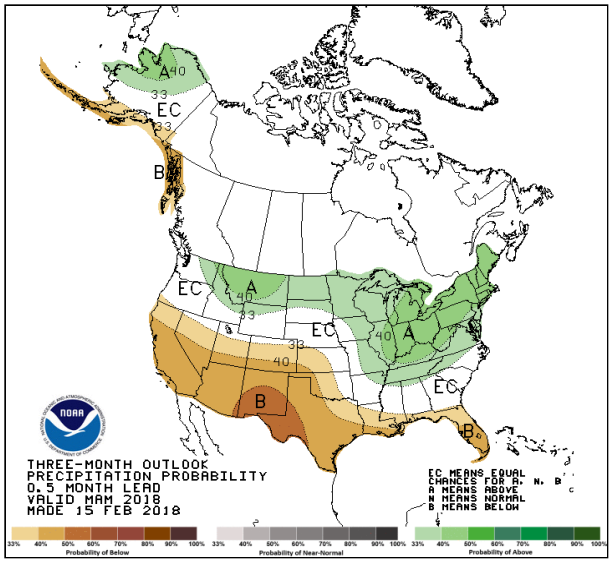
Outlook

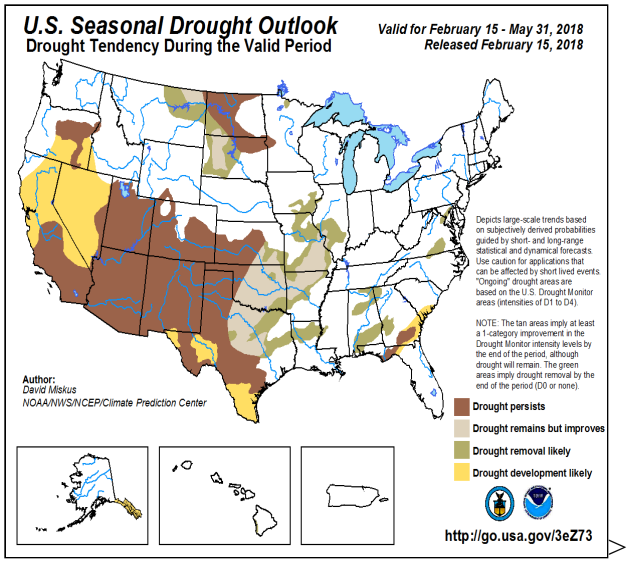




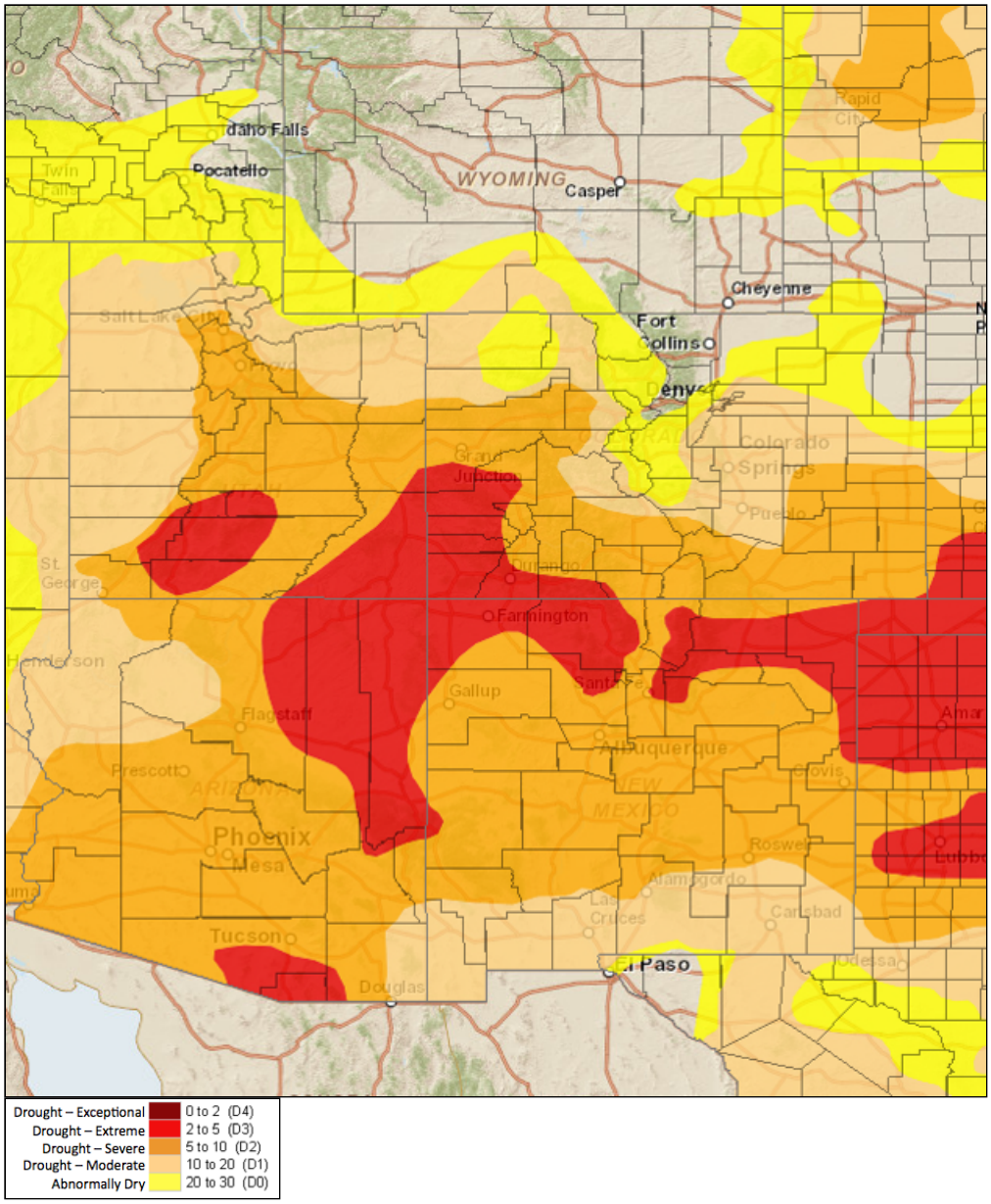


The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate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

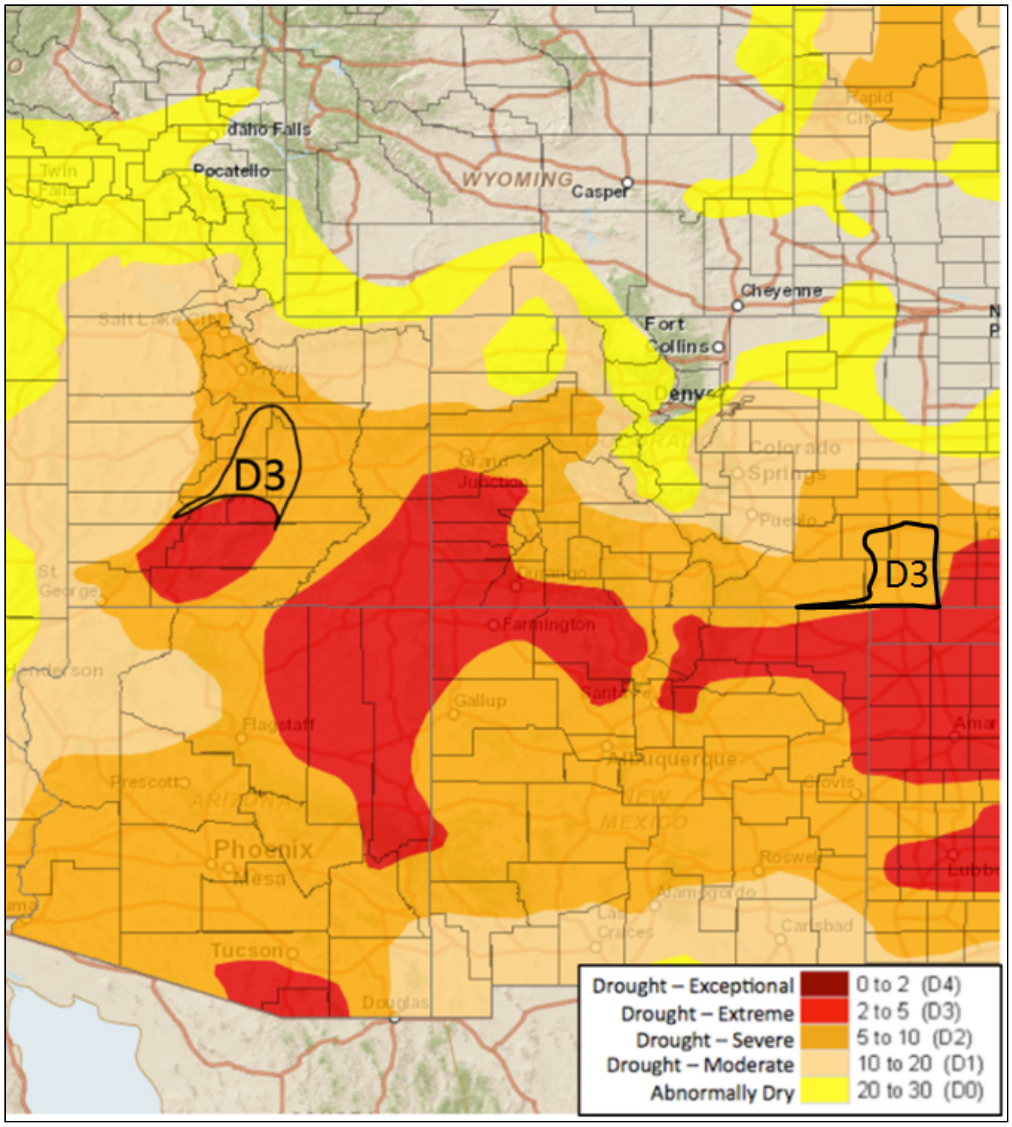




Summary and Recommendations



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 13, 2018

March has started off dry for much of the Intermountain West region. Most of the Upper Colorado River Basin has received less than 0.25 inches this month. Eastern Colorado, extending into eastern Wyoming and eastern New Mexico, has mainly seen no precipitation, with up to 0.10" along the divide. The dryness is troublesome in March since precipitation amounts are expected to start increasing this time of year and winter wheat will start coming out of dormancy, zapping what little moisture is left in the soil.

SPIs show the continued lack of precipitation. In the Four Corners and much of eastern Utah, SPIs are between -1 and -2.5 for the 90 day. Much of western Colorado shows up in the 0 to -1.5 range for the 90 day. Eastern Colorado is a bit of a mix, with extreme northeastern CO is on the wet end of the scale, towards the Divide SPIs dry out to the 0 to -1.5 range and southeastern Colorado is mainly between -1 and -2.5. The longer term SPIs for much of the UCRB shows much more dryness through the area, with the Four Corners and western Colorado worsening. Eastern Colorado improves, with more SPIs in the normal range. Southeastern Colorado is even in the +1 to -1 range. It should be noted, these better SPIs in the southeast are a result of precipitation in early October. It has been very dry since.

As expected with lack of precipitation this winter, snowpack numbers are terrible in Colorado, Utah, Arizona and New Mexico. Northern Colorado snowpack ranges from 82% in the South Platte, to 78% of the median in the Yampa and Colorado Mainstem. Southern Colorado ranges from 59% in the Arkansas Basin, to 49% in the San Juan basin. The majority of basins in Utah are below 55% of normal, decreasing in the south and eastern portions of the state. Wyoming has the best snowpack of the IMW region, with many basins above 100%, lower amounts in the southern part of the state.

Saving this year from being a terrible year is the water supply. Most of the major reservoirs in the UCRB are near or above normal, bringing enough water for the growing season.

Temperatures for this month have been above normal for most of Colorado and New Mexico and near to slightly below normal for the rest of the IMW region.

Recommendations

UCRB: It is recommended D3 be expanded in central Utah into western Emery County and eastern Sanpete and Sevier counties. SPIs in western Emery on the 90 day are below -1.5, mixed with precipitation and snowpack percentiles at the SNOTEL stations below the 5th percentile should justify this degradation. We also suggest the drought monitor take a look and extending D2 and D3 west of the UCRB in Utah where SNOTEL percentiles are just as low.

We are OK with how the rest of the UCRB looks this week.

Eastern Colorado: D3 is recommended in Baca, Prowers and Bent counties, catching a bit of Las Animas County to smooth the transition. FSA has confirmed that conditions in these counties are bad enough to introduce D3. Soil moisture is not doing well, and once the grasses and winter wheat come out of dormancy, which will be soon giving the warm temperatures, what little soil moisture is left will be quickly zapped. Several producers have said they might have a week left on their wheat before it dries up and fails. The D3 line is drawn based on Water Year to Date precipitation (less than 30% of normal) and 120-day SPI (below -2 SPI).