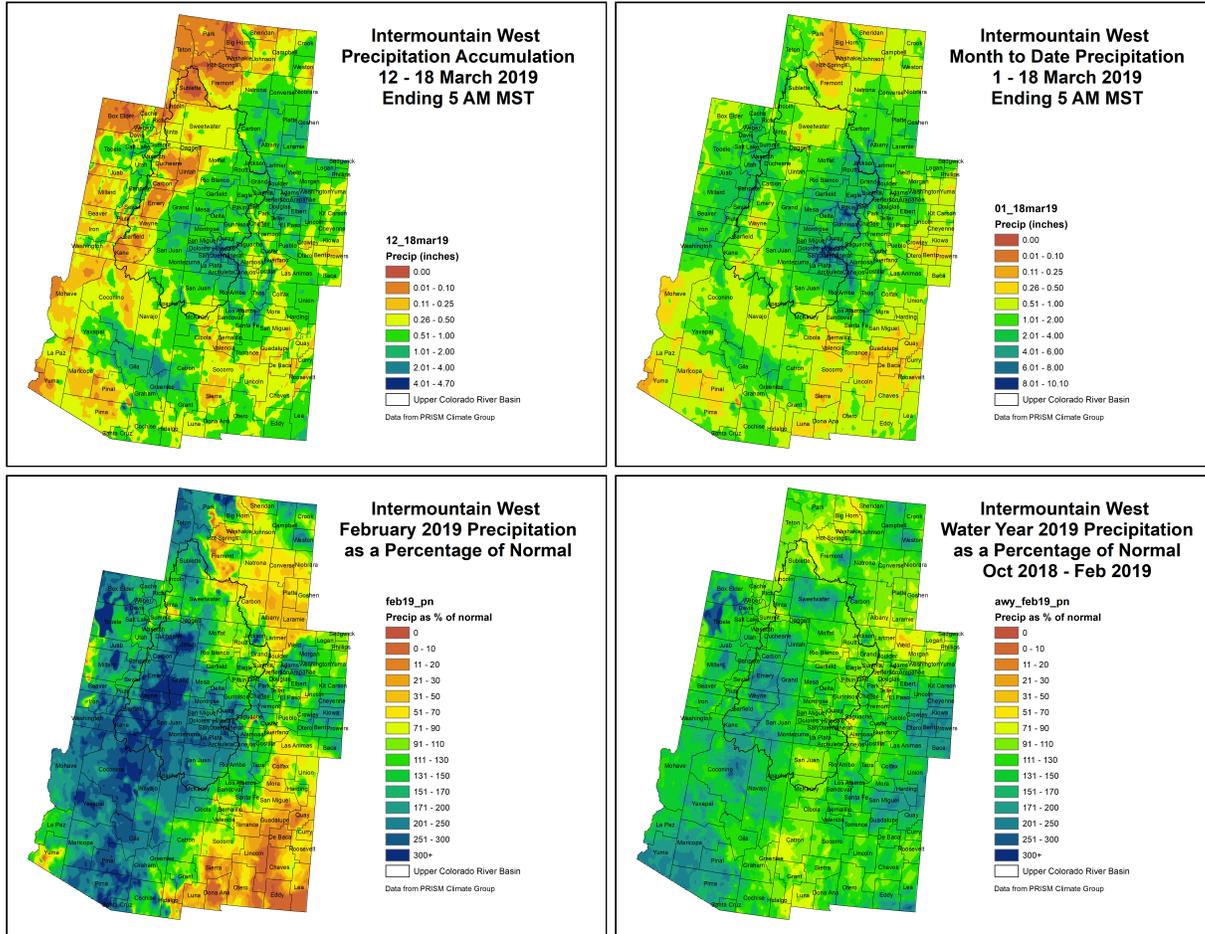


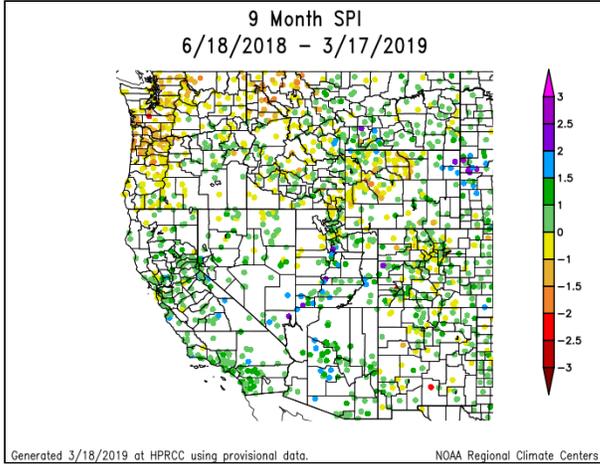
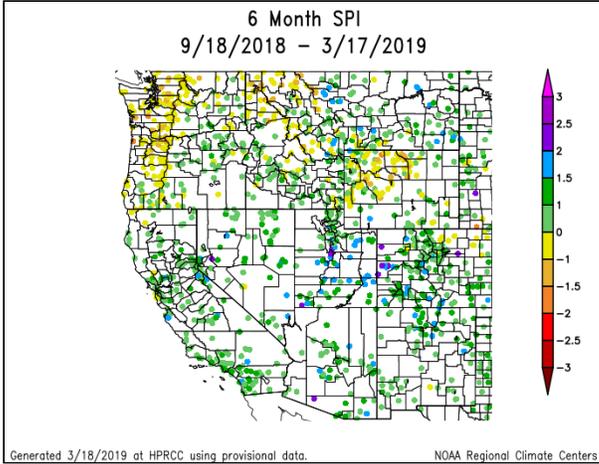
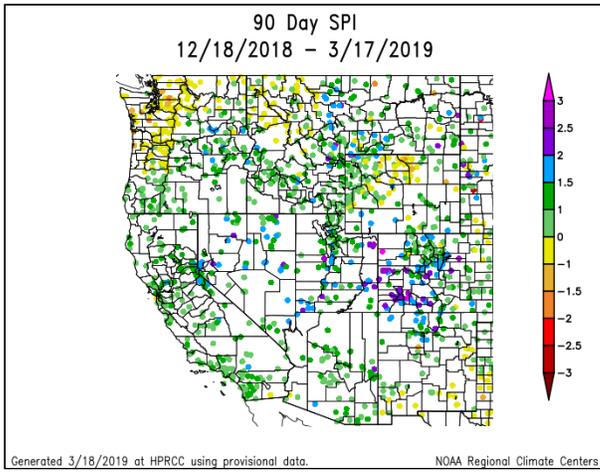
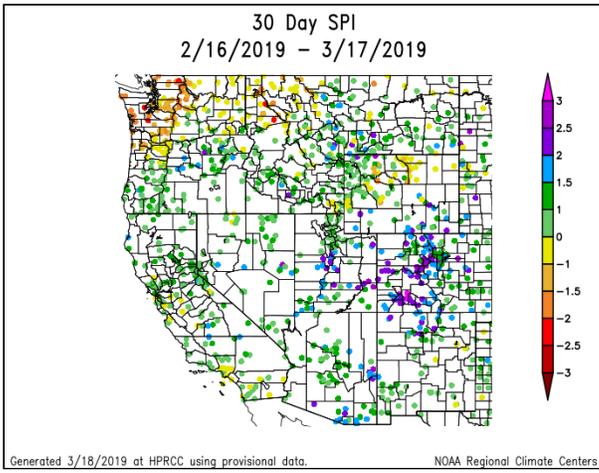
# NIDIS Intermountain West Drought Early Warning System March 19, 2019

## Precipitation



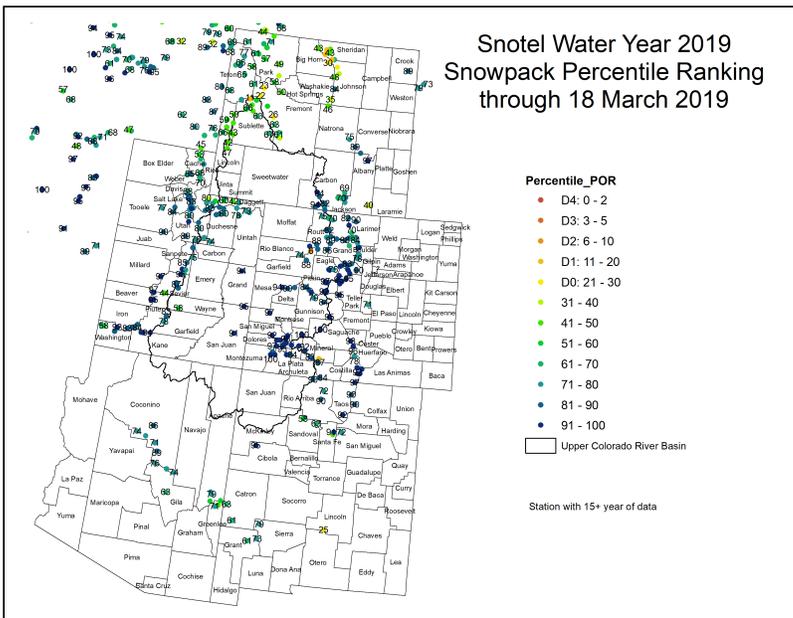
The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average;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

## Standardized Precipitation Index



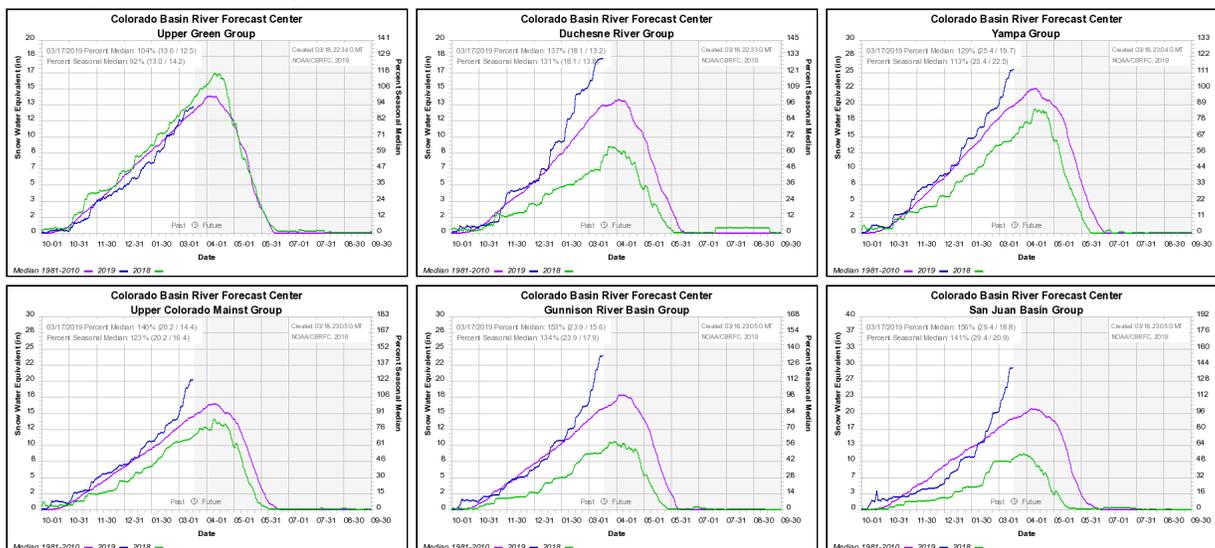
Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions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

## Snotel and Snowpack



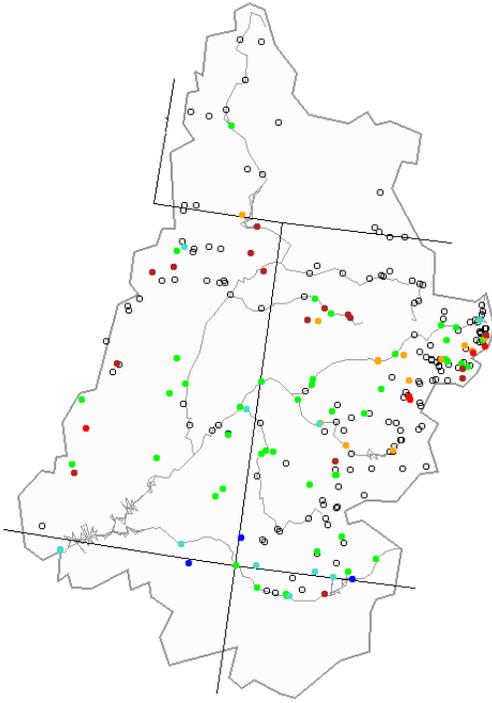
The above image shows SNOTEL snowpack percentiles for each SNOTEL site in the Intermountain West. The images below show accumulated snow water equivalent in inches

(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).



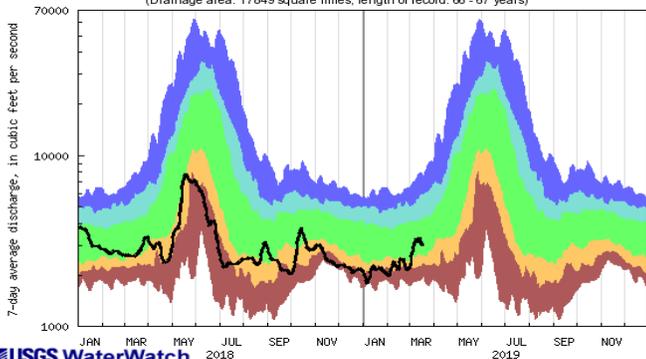
# Streamflow

Monday, March 18, 2019

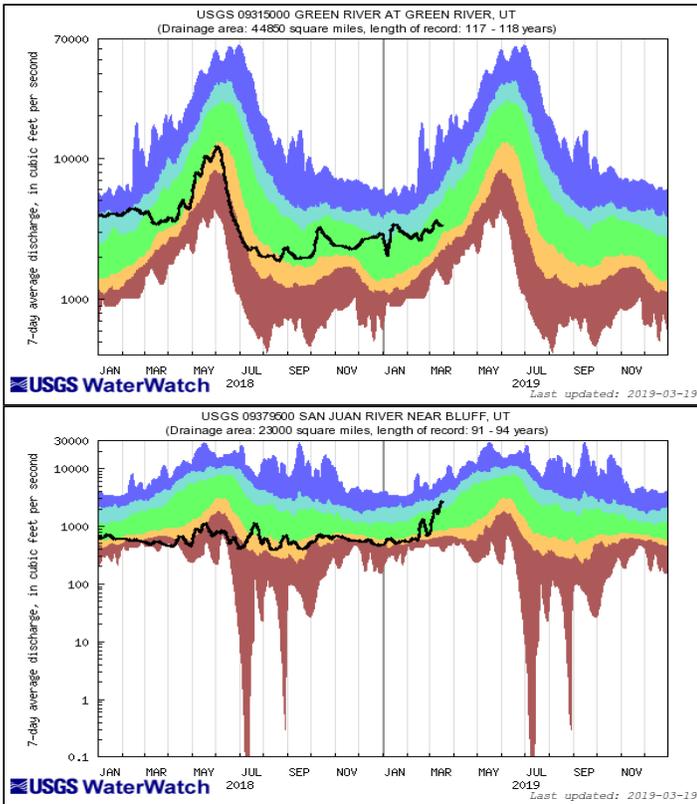


Explanation - Percentile classes							
<span style="color: red;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: cyan;">●</span>	<span style="color: blue;">●</span>	<span style="color: black;">●</span>	<span style="color: black;">○</span>	
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE  
(Drainage area: 17849 square miles, length of record: 66 - 67 years)

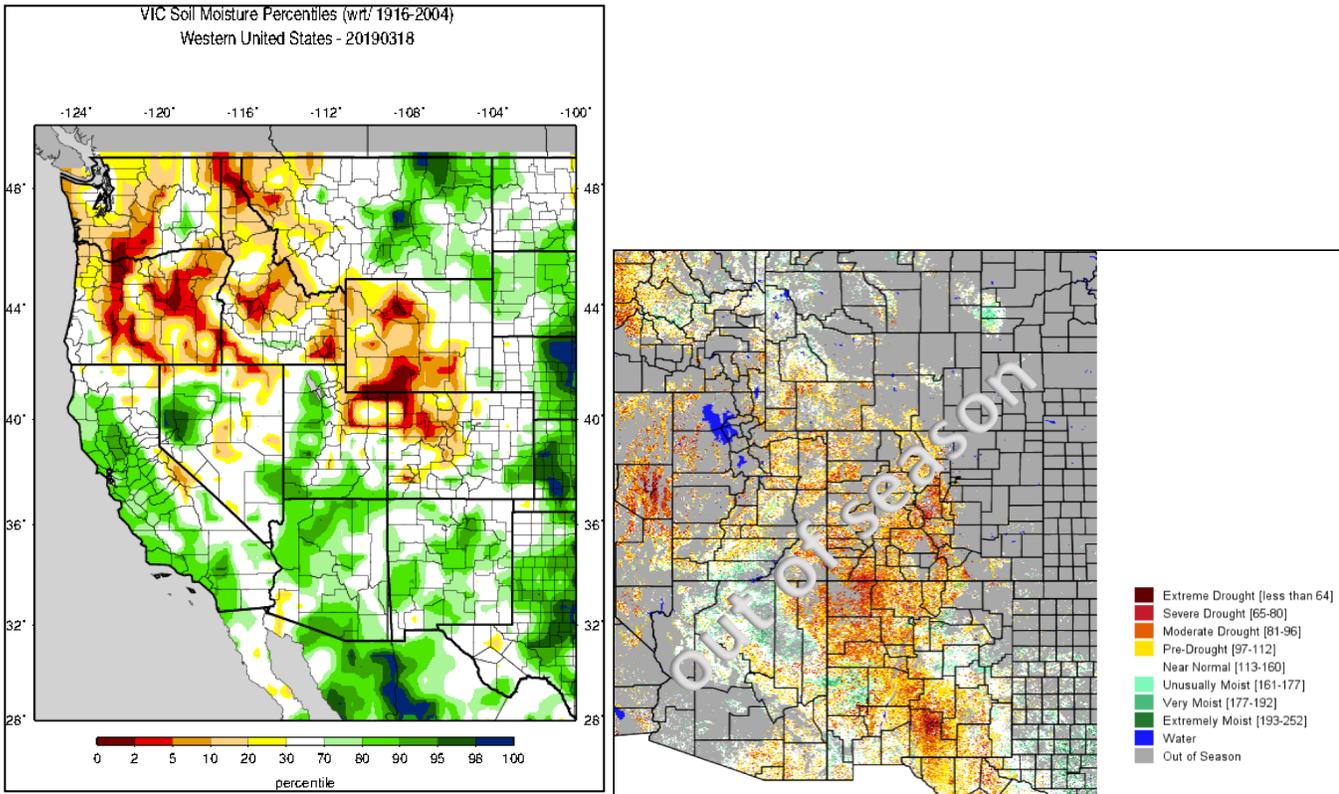


Last updated: 2019-03-19



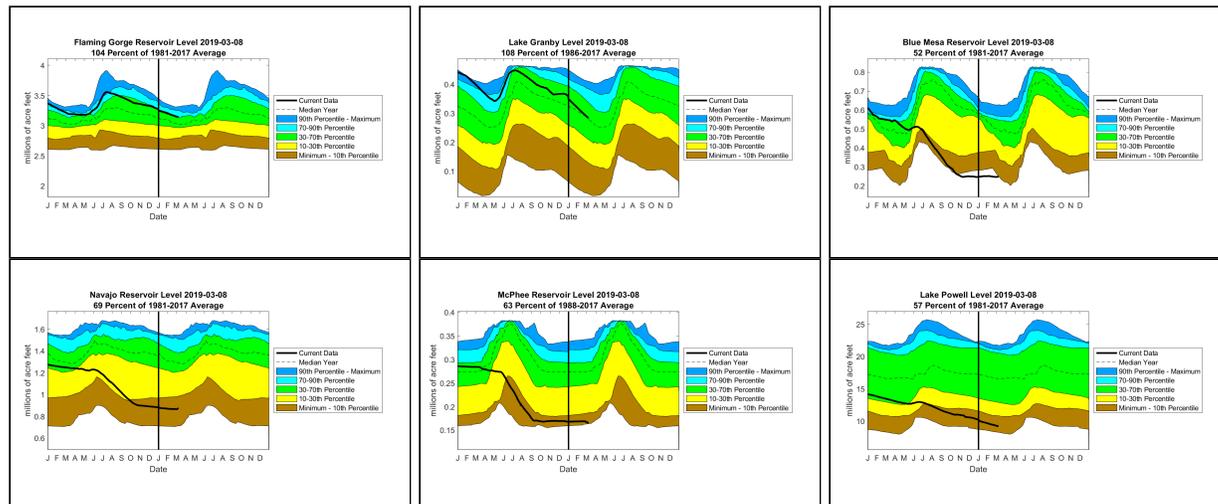
The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

# Surface Water

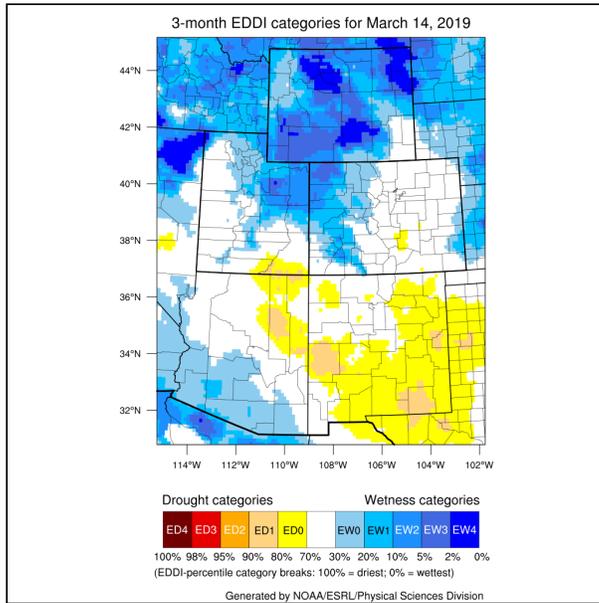
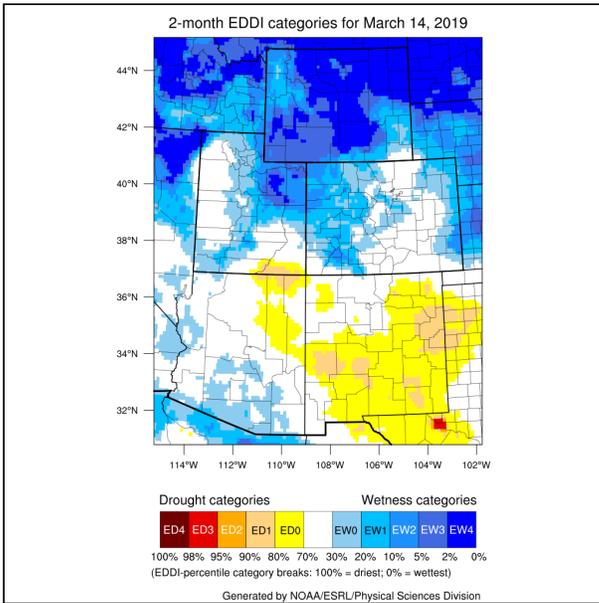
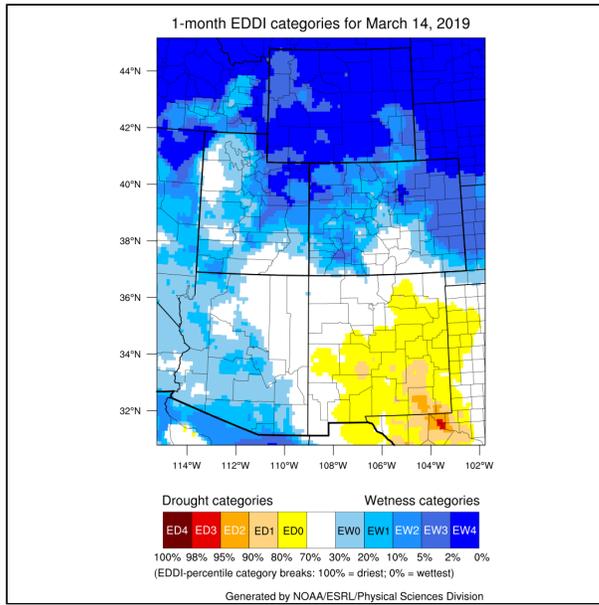
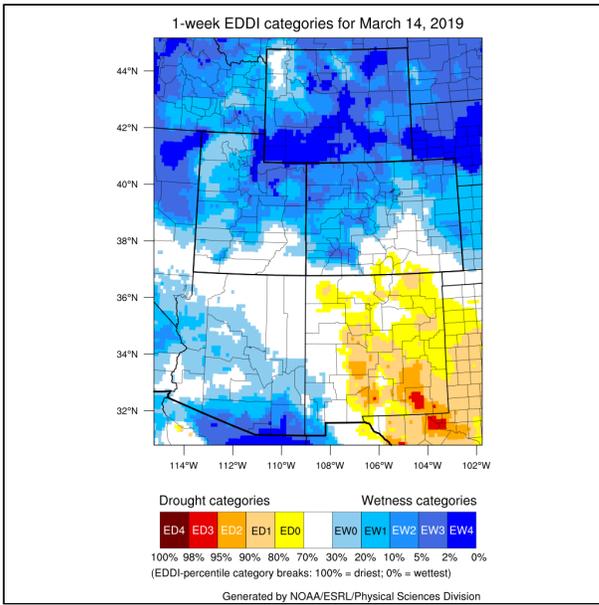


The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

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.

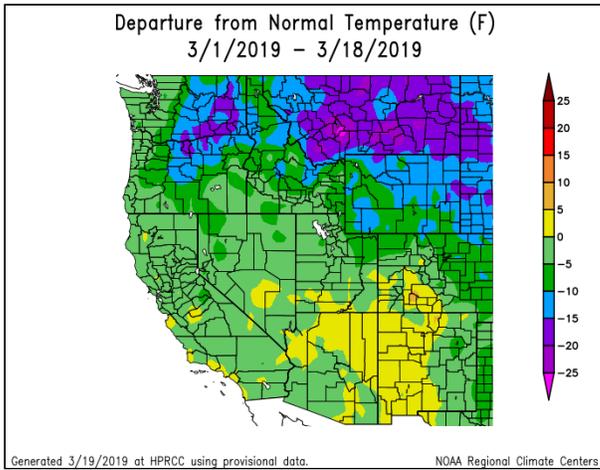
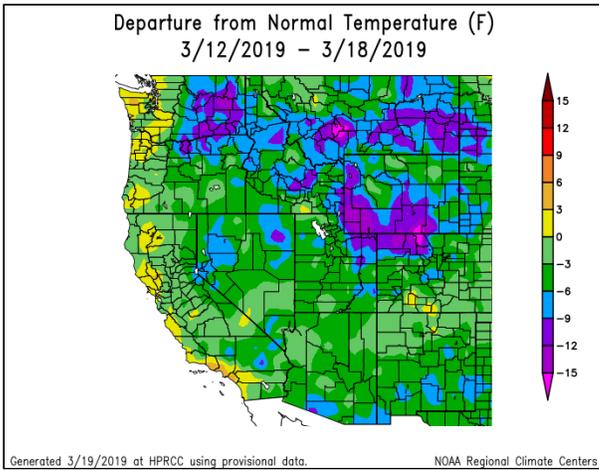


## Evaporative Demand

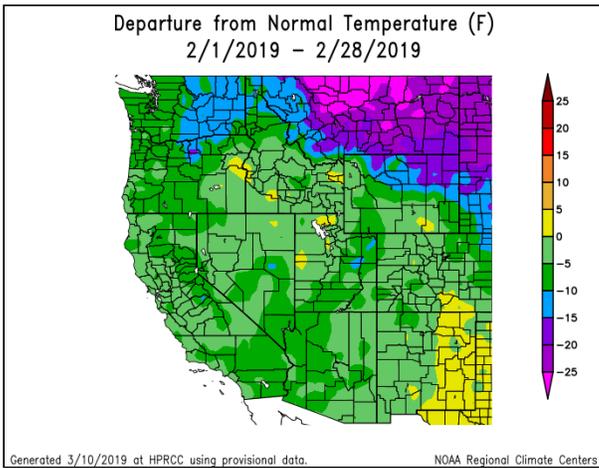


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are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

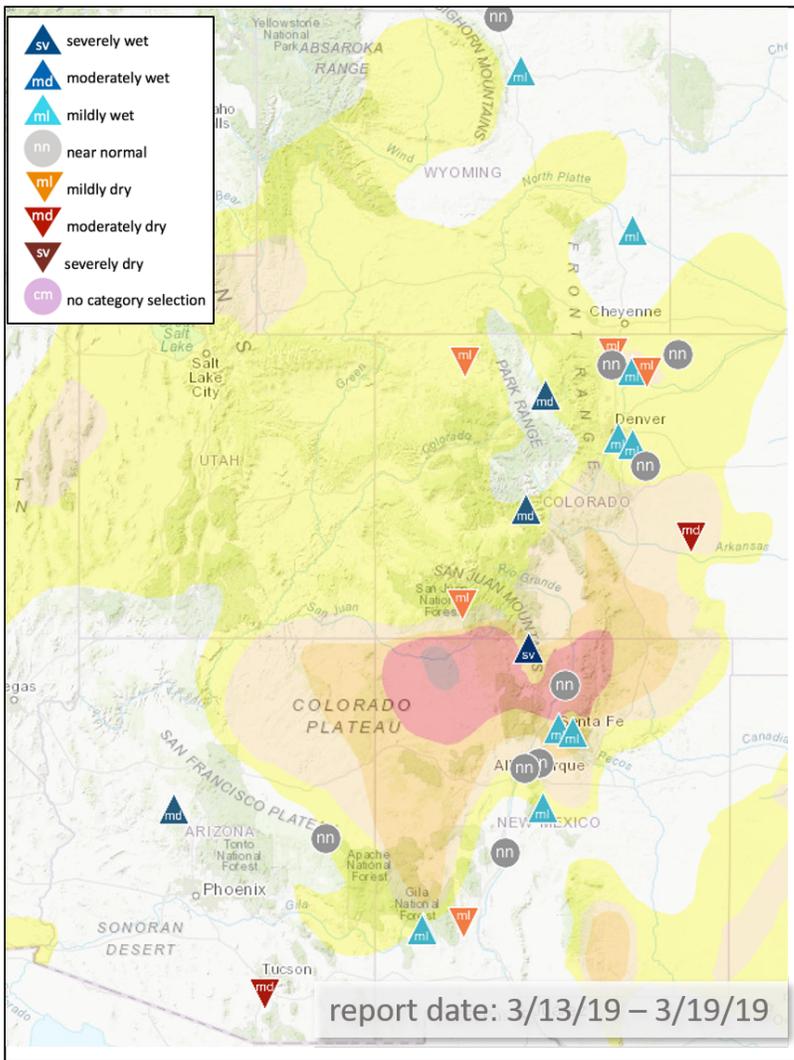
## Temperature



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.

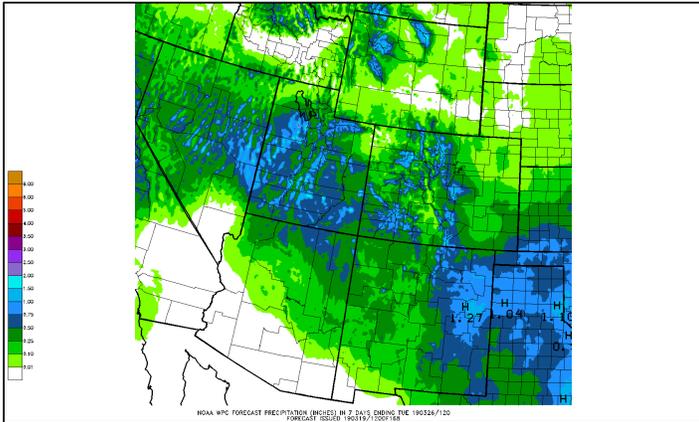
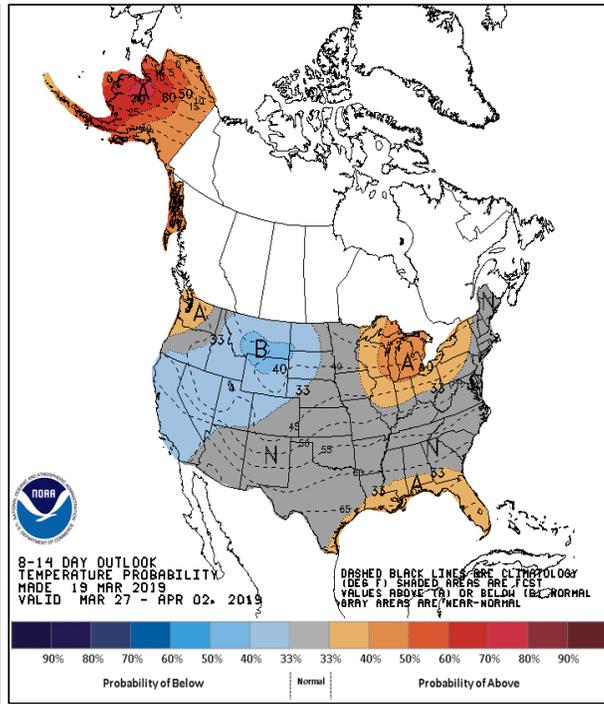
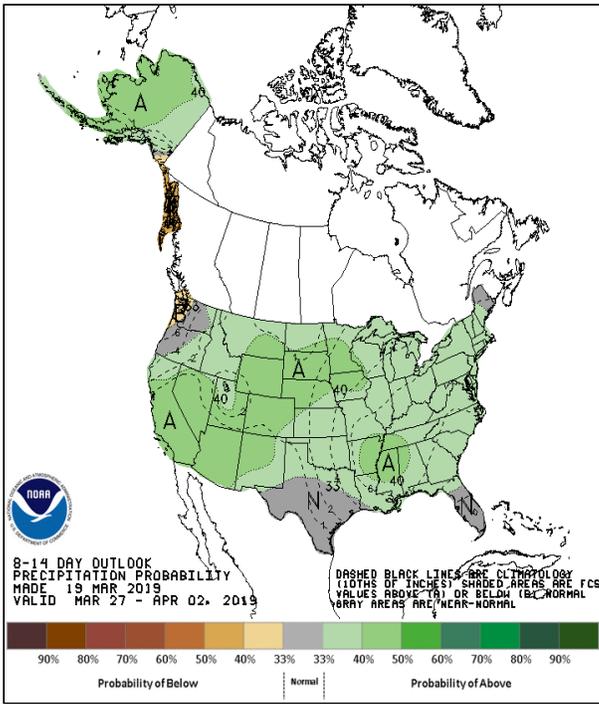


## Condition Monitoring and Impacts

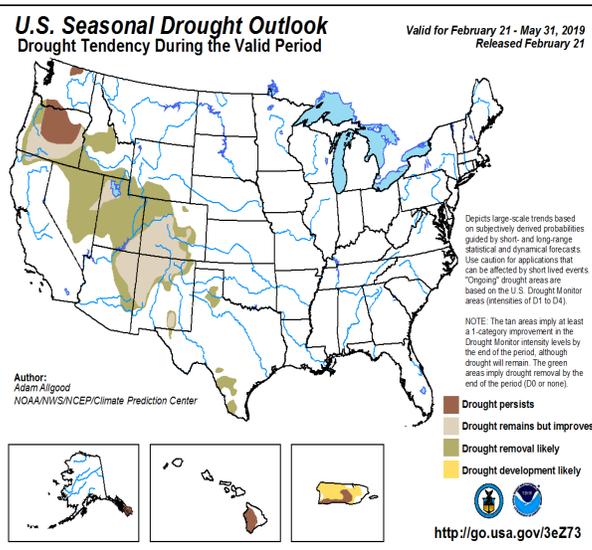
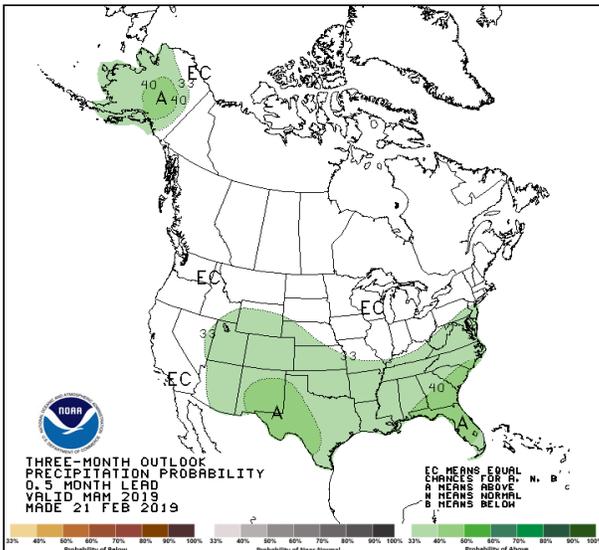


Map of current condition monitoring reports submitted to CoCoRaHS in the last week overlaid on the current U.S. Drought Monitor depiction. Specific impacts reports from local experts listed below.

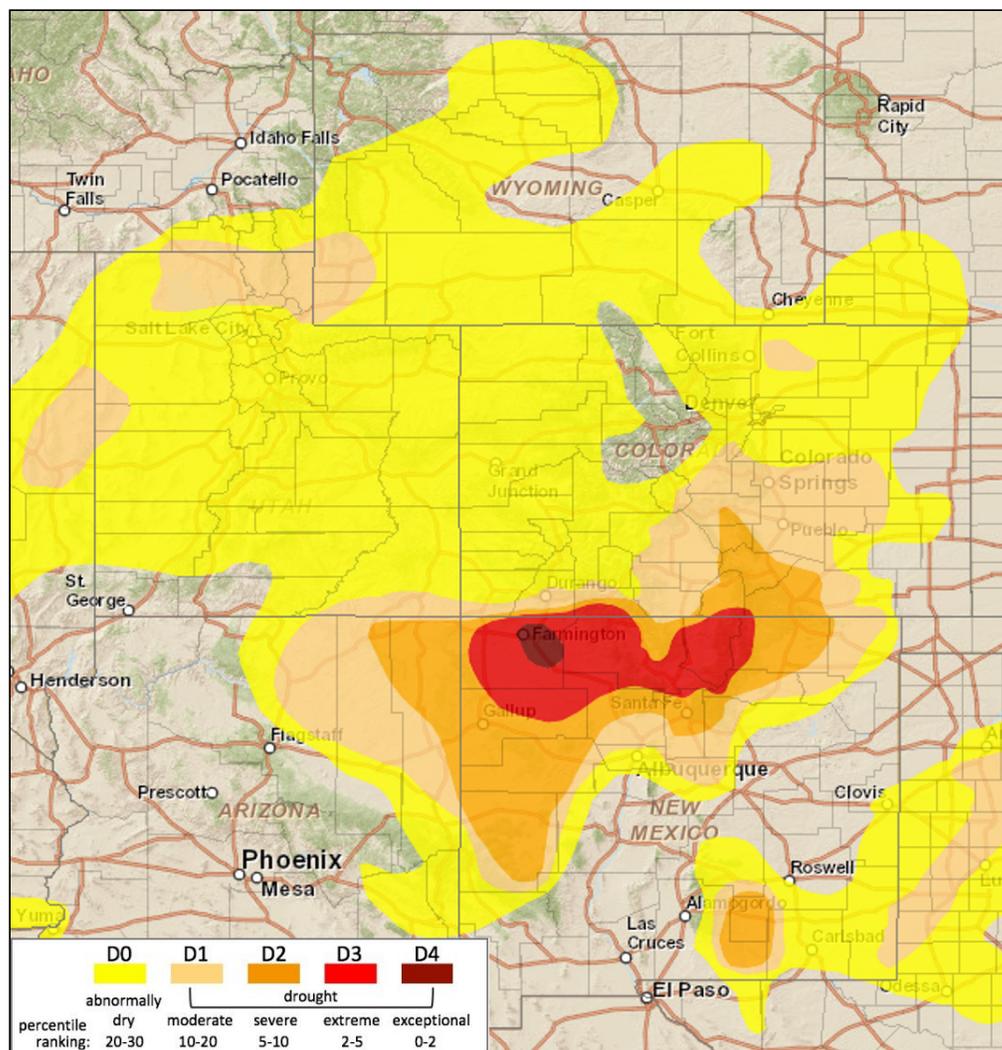
## Outlook



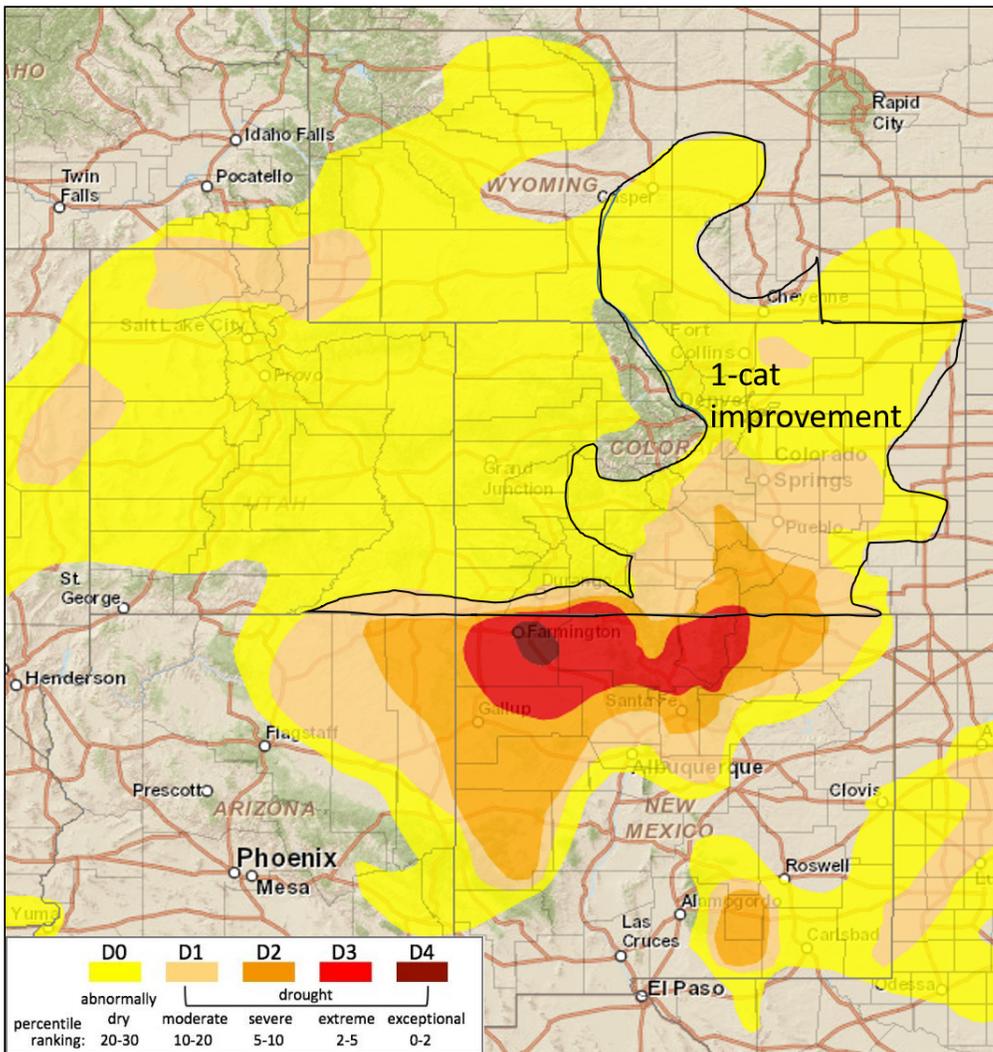
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for seven days. The bottom left image shows the 3-month precipitation outlook from Climate 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 19, 2019

The term of the week was "bomb cyclone" with the storm affecting much of the Intermountain West region, especially Colorado and northern New Mexico with wind, rain, and snow. Western Colorado saw at least 0.50 - 1.00" of liquid precipitation last week. The best totals once again in the San Juan Mountains with 2.00 - 4.00". Utah was mostly dry seeing less than 0.25" through most of the state with the exception of southeastern Utah and in the Wasatch Range. Arizona and New Mexico saw at least 0.25" up to 2.00". Eastern Colorado saw the brunt of the bomb cyclone, seeing liquid precipitation totals in the 0.50" to 2.00" and a lot of wind and blowing snow. The precipitation winner of the event was in Adams, Arapahoe, and Elbert counties with precipitation amounts above 2.00".

With the amazing active patten since February, mountain snowpack through the Intermountain West is great, with all basins seeing above normal snowpack to date. All of the major basins in the UCRB and Colorado have surpassed their normal peak SWE, with the exception of the Upper Green Basin in Wyoming, which is above normal to date and just 8% away from reaching normal peak SWE. Now that snowpack is starting to settle, avalanche danger is starting to drop a bit, from historic levels, but is still very high. Most SNOTEL sites are in the 90th percentile or better through southern Colorado and much of Utah.

Reservoirs, streamflow and soil moisture are still low, however we expect to see improving conditions once the snowmelt starts up.

The 7-day outlook shows another shot of precipitation for much of the IMW region and the 8-14 day outlook is showing chances for above normal precipitation.

**Recommendations:**

**UCRB:** A 1-category improvement is being recommended for parts of the UCRB in southern Utah and southwestern Colorado. The D1 along the UT/AZ border and D1-D3 along the CO/NM border should be improved to 1-category. We are also recommending D0 improvement to Dnada in Gunnison and western Saguache County. Continued precipitation since February has snowpack in excellent conditions. While conditions are great in the UCRB, the 2018 drought has had a long lasting impact on the area and we will most likely hold on to the remaining D0 for at least a few more weeks and even into the snowmelt season.

**New Mexico:** The NM drought group is recommending removal of the D4 and beginning the process of trimming D3 in the northwestern portion of the state. They are also recommending removal of D3 in the north-central part of the state with improvements in west-central NM.

**Eastern Colorado:** Continuing the 1-category improvement from the West Slope, we are recommending a 1-category improvement through almost all of eastern Colorado and into southeastern Wyoming. This weeks storm, coupled with recent precipitation in March and the end of February is driving this improvement. There are few signs of the current drought depiction on all time-scales.