NIDIS Intermountain West Drought Early Warning System November 19, 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.

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 of reference evapotranspiration (ET) from CoAgMET sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a <u>map of</u> <u>locations</u> for the above ET sites.



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 <u>US Drought Monitor's Percentile Ranking</u>

<u>Scheme</u>. 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.

Front Range Municipal Water Providers

Water demands are pretty normal for this time of year, dropping to winter rates. Storage is a bit lower than last year, so there is mild concern about the next spring season and if they'll fill or not. Thornton has had watering restrictions since September.

CSU Extension

Winter wheat planting appears to have gone well, no preventive planting reported this year. If the crop was tilled, the wheat got in earlier. Corn harvest is slowly coming along. 15-30 days behind schedule in northeast CO, because it finally reached a reasonable moisture level in the fields. Hay prices have come down a little, but are still very high. Reports that there is no hay to be found around Pagosa Springs.

Colorado Parks and Wildlife

It's been a bad year for fish kills and fish rescues. They're working on proactive planning - creating a critical watch list for aquatic resources. Some reservoir releases helped last summer, but want to come up with solutions earlier for next drought.

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: November 19, 2018

This week the Intermountain West continued its water year 2019 trend of cooler than average temperatures. This is a welcome departure from what we saw in WY 2018 where temperatures were scarcely below average. In fact, last November was the warmest November on record in Colorado; this one has a much different feel.

Precipitation across the Intermountain West was nothing to write home about

this week. There was some light to moderate snow showers in much of Wyoming, northern Colorado, and the higher elevations of Colorado and Utah. New Mexico and Arizona stayed mostly dry.

Early season snowpack is off to a disappointing start in Utah. SNOTELs in the Wasatch and Uintah Ranges are by and large below the 25th percentile. Colorado, unlike much of the west, is in pretty good shape for snowpack to start the season. Snowpack totals in the Upper Arkansas Basin, Sangre de Cristos, Summit County, and eastern Front Range are largely above the 80th percentile. These gains have not gone unnoticed, but are still small relative to long term deficits.

We recommend a conservative approach to snowpack-based improvements until this season has had a little more time to take shape. Having said that, Colorado reservoirs are not designed with large multi-seasonal carryover in mind. One great snowpack season could cure the ills of even Colorado's largest, most maligned reservoir (Blue Mesa, 43% of normal storage); even an average year would help. Where snowpack is still looking good by the new year, it'll be time to consider improvements even if long-term deficits still exist.

Recommendations:

UCRB: Status quo. It was on the cooler side, and it's November. Drought wasn't exacerbated, but precipitation totals were not enough to justify improvements.

Eastern CO: It is recommended that D0 be removed, basically from Boulder, CO in particular. Boulder is a foot of snow above average to start the snow season, and is not showing any long term deficits. For the rest of the Urban Corridor the cooler and even relatively wet conditions are not yet enough to justify parting with the "abnormally dry" classification.