April 16, 2019 Water Supply Forecast Discussion

The Colorado Basin River Forecast Center (CBRFC) geographic forecast area includes the Upper Colorado River Basin, Lower Colorado River Basin, and Eastern Great Basin.

Water Supply Forecast Summary:

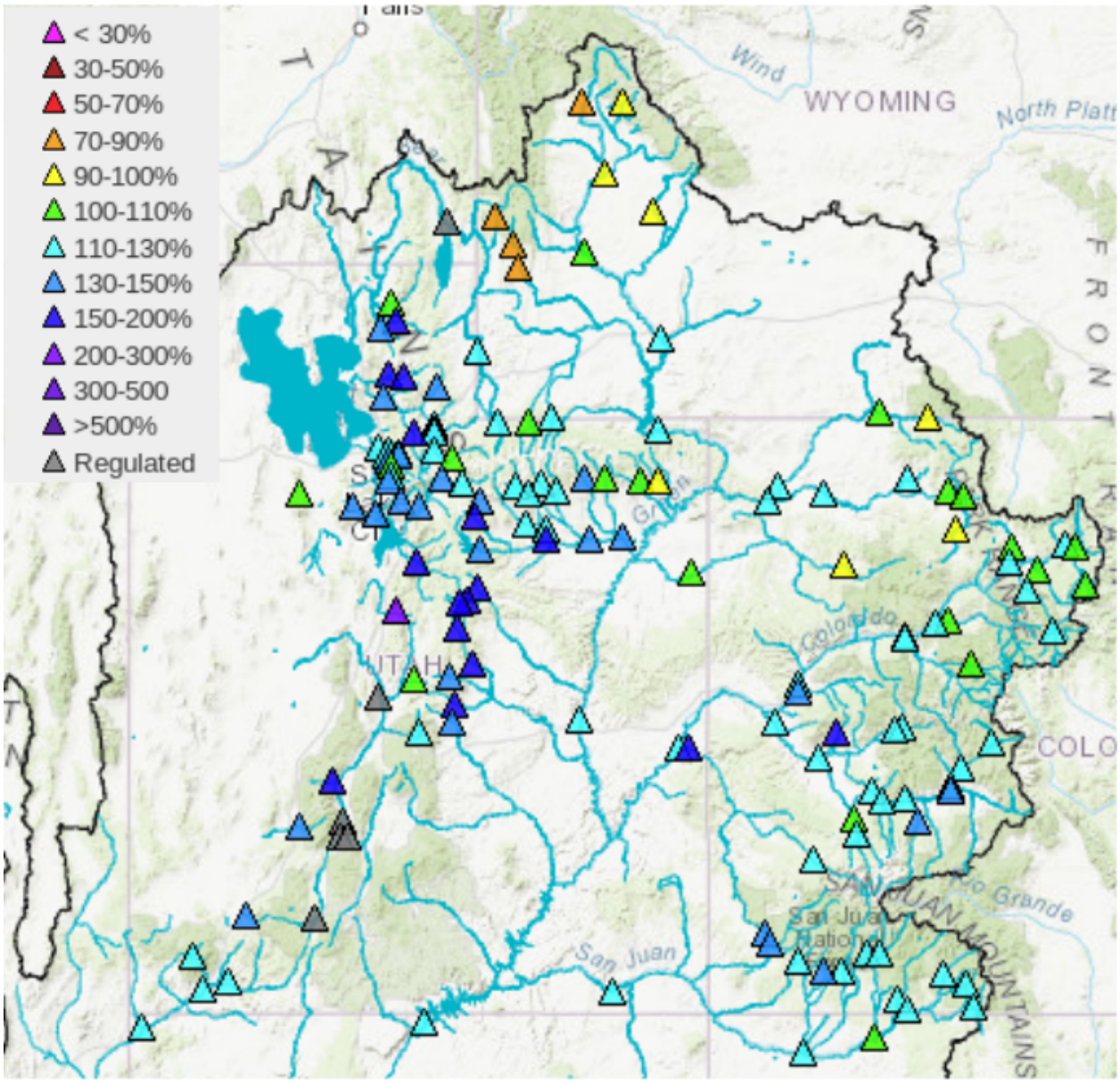
The first half of April has been somewhat active over the northern half of the CBRFC forecast area. In general basins farther north have benefited most compared to southern basins. Additionally, the active weather pattern has not allowed extended periods of warming to accelerate snowmelt.

Water supply forecast guidance has trended higher since the first of April in the Green River Basin of Wyoming, the Bear and Weber river basins of northern Utah, and the Sevier River Basin of central Utah where precipitation amounts have been much above average this month. Precipitation has been closer to normal, with little change in model guidance, in the White/Yampa, Duchesne, Six Creeks, Provo, and Virgin river basins. Below average precipitation and some decreases in model guidance have occurred in the Upper Colorado mainstem, Gunnison, Dolores, and San Juan basins.

Above average April-July runoff volumes are expected across the majority of the Upper Colorado and Eastern Great basins. The exceptions are the Green River Basin of Wyoming and the Bear River Basin where volumes are expected to be closer to average.

April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 740 KAF (102% average), a 15 percent of average increase from April 1st, Flaming Gorge 1.0 MAF (102% of average) a 17 percent of average increase, Blue Mesa Reservoir 860 KAF (127% of average) a 10 percent of average decrease, McPhee Reservoir 425 KAF (144% of average) a 2 percent of average decrease, and Navajo Reservoir 875 KAF (119% of average) a 6 percent of average decrease. The Lake Powell inflow forecast is 9.20 MAF (128% of average), which is the same as the April 1st forecast.

Seasonal Water Supply Forecasts:



April-July runoff volume guidance as of April 15, 2019.
(percent of 1981-2010 average)

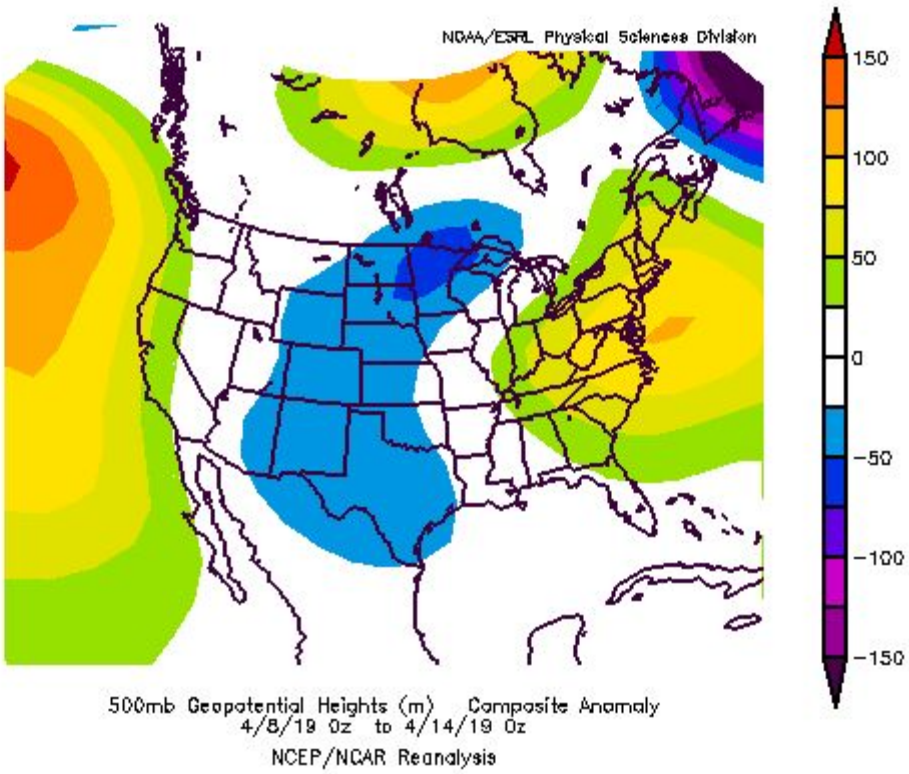
For specific site water supply forecasts, refer to: https://www.cbrfc.noaa.gov/rmap/wsup/wsuplist.php

Water Supply Discussion

Weather Synopsis:

The first half of April has been a tale of two weeks across the Colorado River Basin. The first week of April featured a mean ridge across much of the Western U.S. that brought above normal temperatures and below normal precipitation. The pattern changed to anomalous troughing for the second week (see image below). Storm systems

moving through this trough targeted the northern half of Utah into southwest Wyoming, producing substantial precipitation amounts in these areas. Colorado saw more modest precipitation from these systems. The anomalous trough cooled temperatures to below normal during the second week, which acted to halt snowmelt across much of the mountain areas.



500mb Height Anomaly for the second week of April. The negative values (cool colors) show an anomalous trough across the Intermountain West that promoted below normal temperatures over this period.

Precipitation:

April precipitation has varied widely over the CBRFC forecast area. April precipitation-to-date has favored central / northern Utah and southwest Wyoming. Precipitation in these areas, which include the Great Basin, Sevier Basin, and the Green River Basin, was generally 120-200% of average for the first half of April.

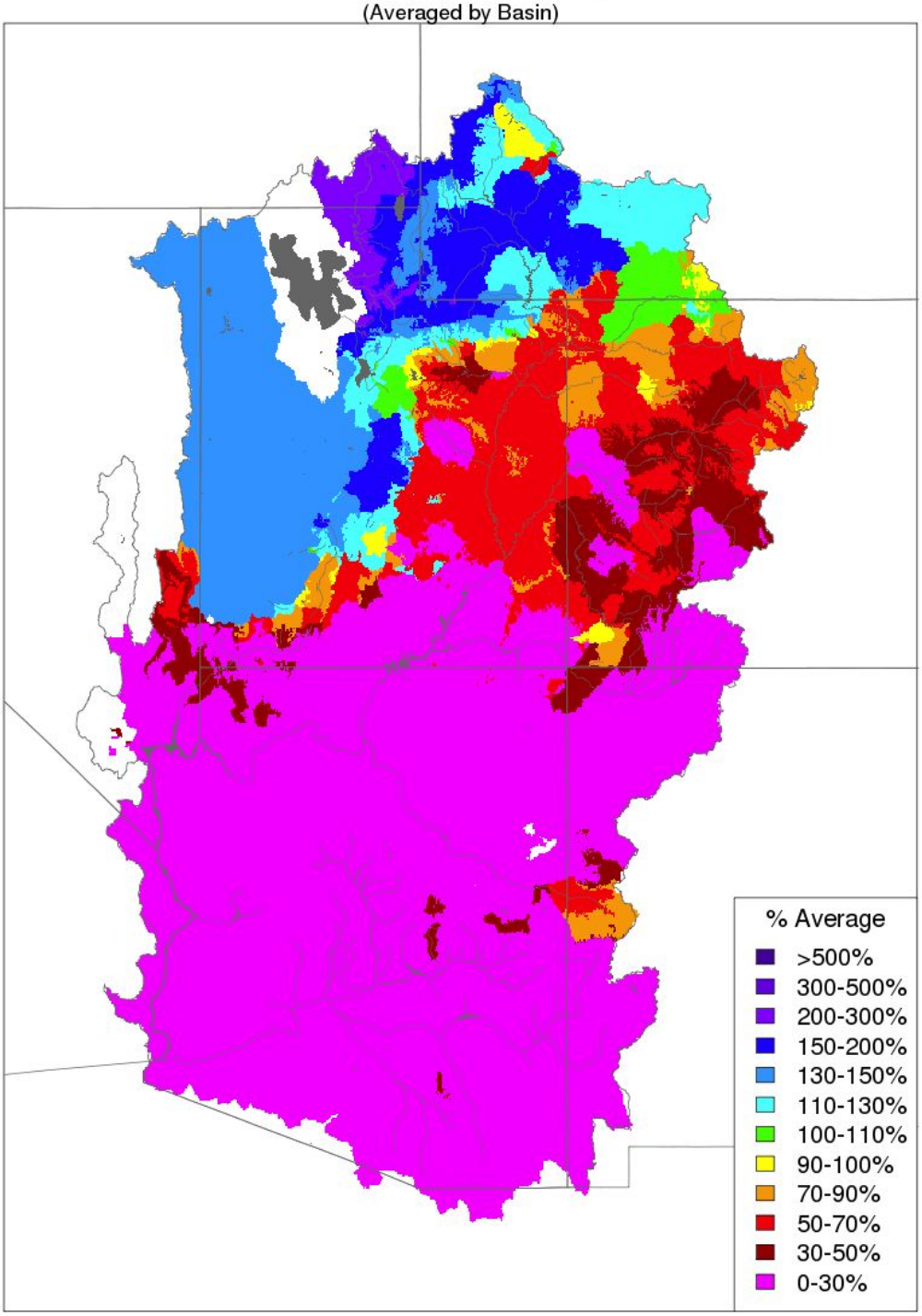
April precipitation in eastern Utah and western Colorado has generally been below average during the first two weeks. The White, Yampa, and Upper Colorado mainstem headwater basins received near to slightly below average precipitation. Southwest Colorado river basins received much below (30-70%) average precipitation during the first half of April.

Drier conditions have been observed in the Lower Colorado River Basin. Arizona and western New Mexico received less than 30% of average April precipitation through the first half of the month.

The image below shows CBRFC hydrologic model basin percent of average precipitation during April 1-16, 2019.

Month to Date Precipitation - April 16 2019

(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

April 1-16, 2019 percent of average precipitation.

Snowpack:

In general, snowpack conditions in the Upper Colorado and Great Basin are above to much above normal (median). The seasonal median peak has been exceeded at most SNOTEL sites in Utah and Colorado. Several SNOTEL sites in western Colorado and central Utah are reporting snow water equivalent (SWE) values in the top 3 of record as of April 15th, and most of these sites have at least 25 years of record.

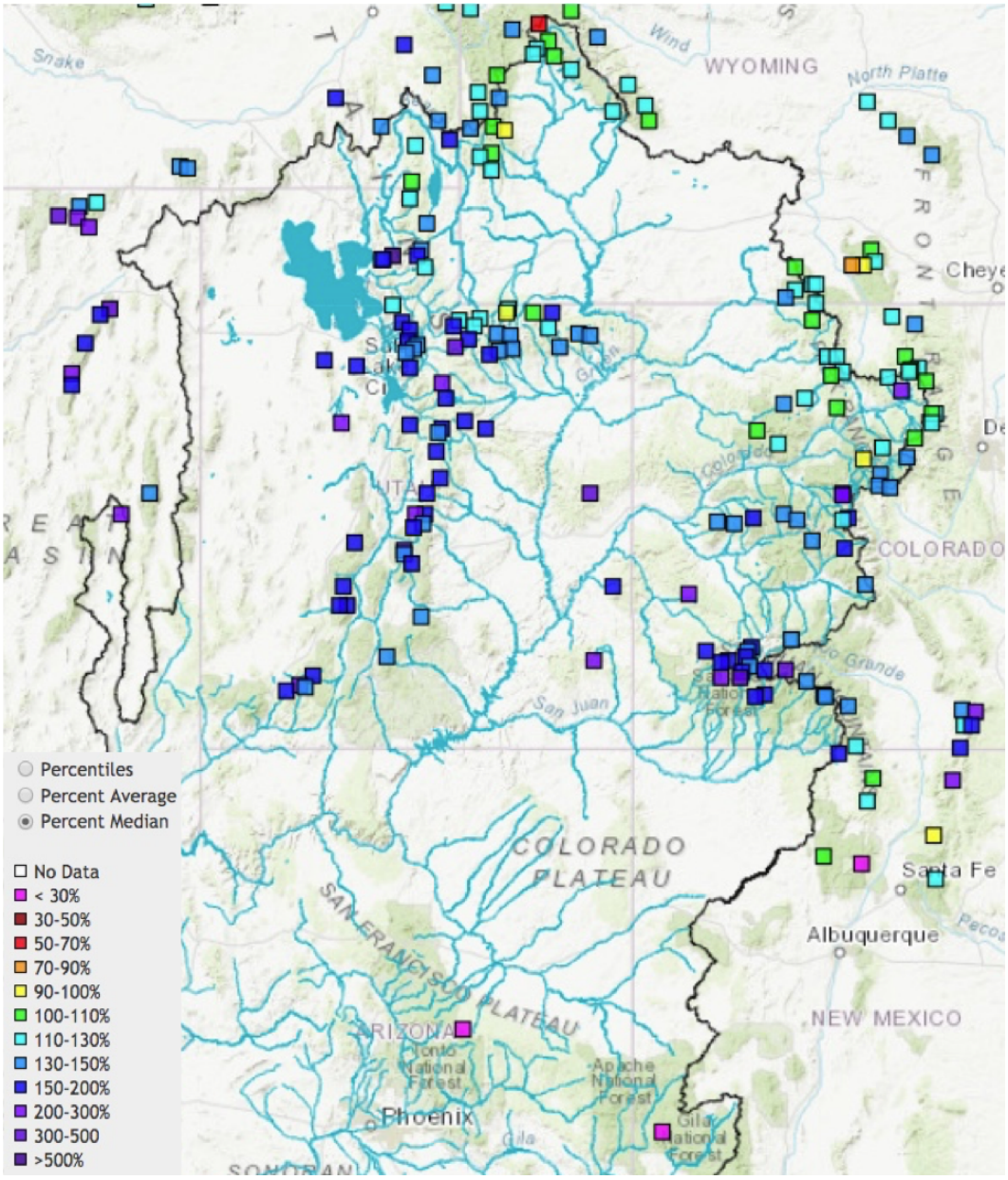
Upper Colorado River Basin areas with the highest percent of median SWE include the San Rafael (170%), Price (165%), and Duchesne (155%) basins in Utah and the Dolores (180%), San Juan (160%), and Gunnison (150%) basins in southwest Colorado.

Snow conditions in the Upper Colorado Mainstem basin range from 115% of median in the headwaters to 150% of median in the Roaring Fork basin. Snowpack conditions in the White, Yampa, and Upper Green River Basins range from 110% to 125% of median.

Snow conditions as a percent of median in the Great Basin generally range from 130% to 150% in the Bear and Weber river basins and 160% to 170% in the Provo / Spanish Fork basins. SWE conditions in southwest Utah are also much above median and range from 165% to 190% in the Sevier basin to around 200% in the Virgin basin.

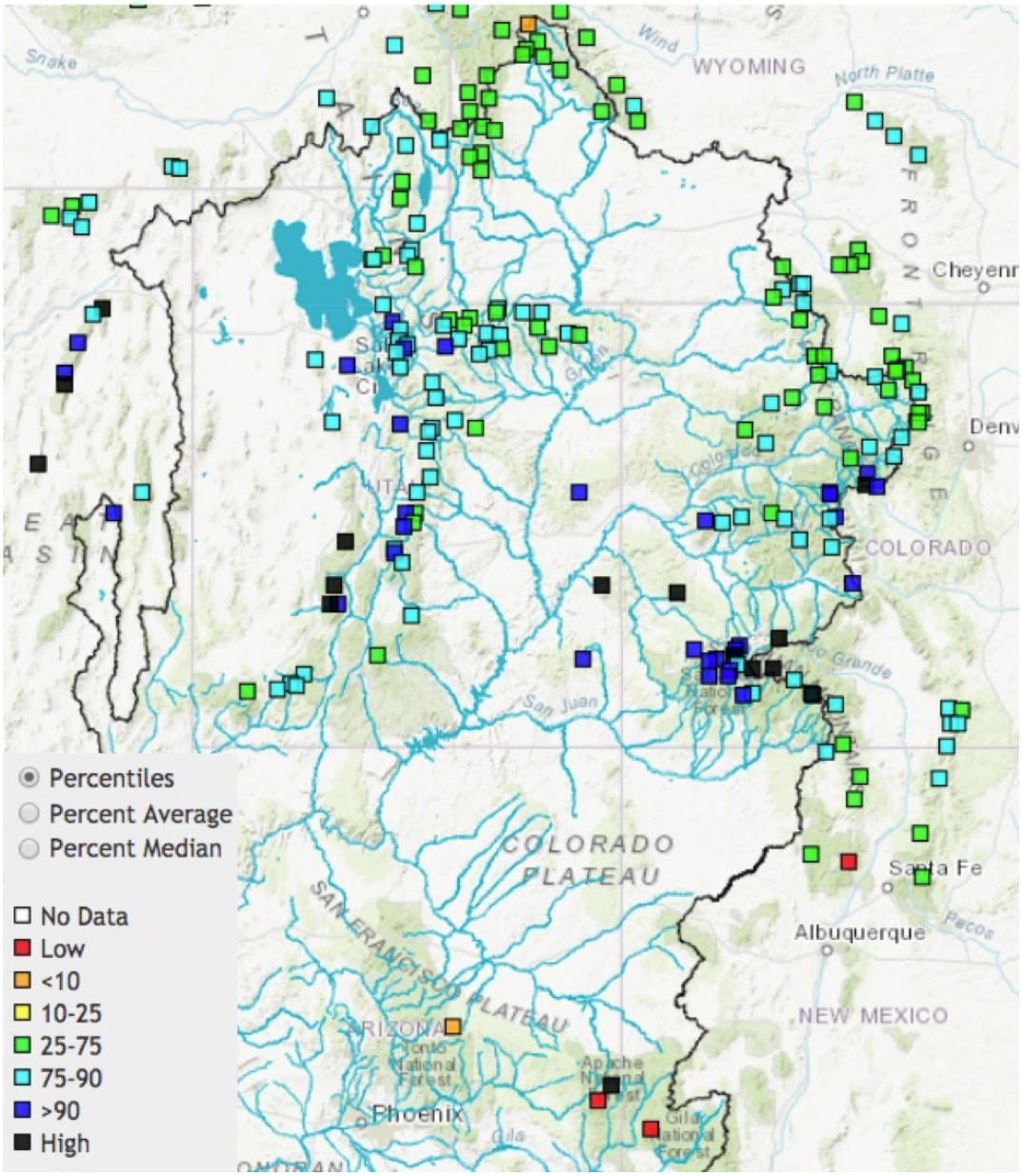
The maps below show the SNOTEL sites as a percent of normal (historical median) and also as a historical ranking for their period of record. The CBRFC hydrologic model snow is also displayed.

The image below shows the SNOTEL sites as a percent of their historical median as of April 15, 2019. Sites in dark blue currently exceed 150 percent of median (or normal) for this time of year while sites in purple are at 200 percent or more of normal.



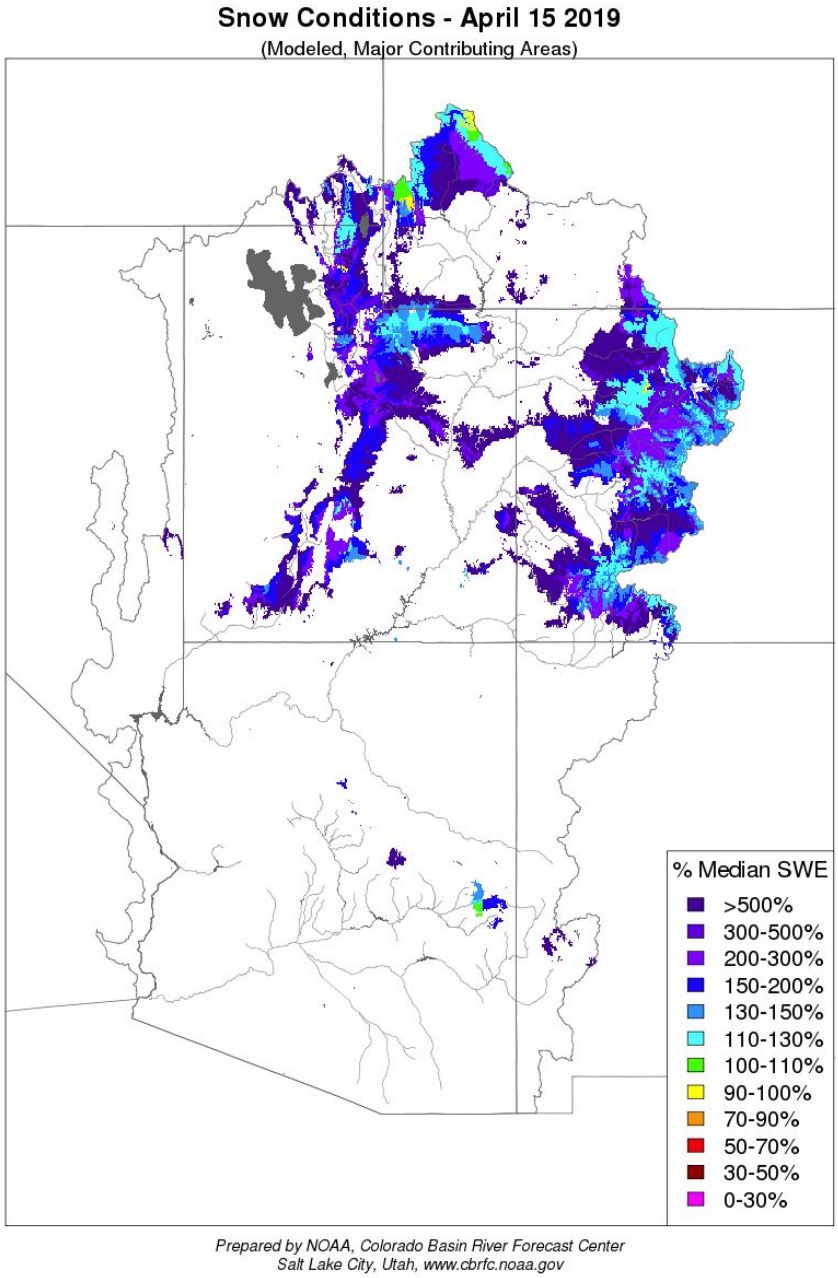
Percent median snow conditions as of April 15, 2019.

The snow percentile image displayed below indicates where the current snow measurement ranks in the historical record (typically 33-41 years) for each site. Sites in black are the highest on record for this date. Most sites in dark blue are in the top 3 of historical record.



Snow Percentile Image: Historical SNOTEL ranking as of April 15, 2019.

The image below is the representation of snow in the CBRFC hydrologic model, which closely mirrors the observed SNOTEL conditions.

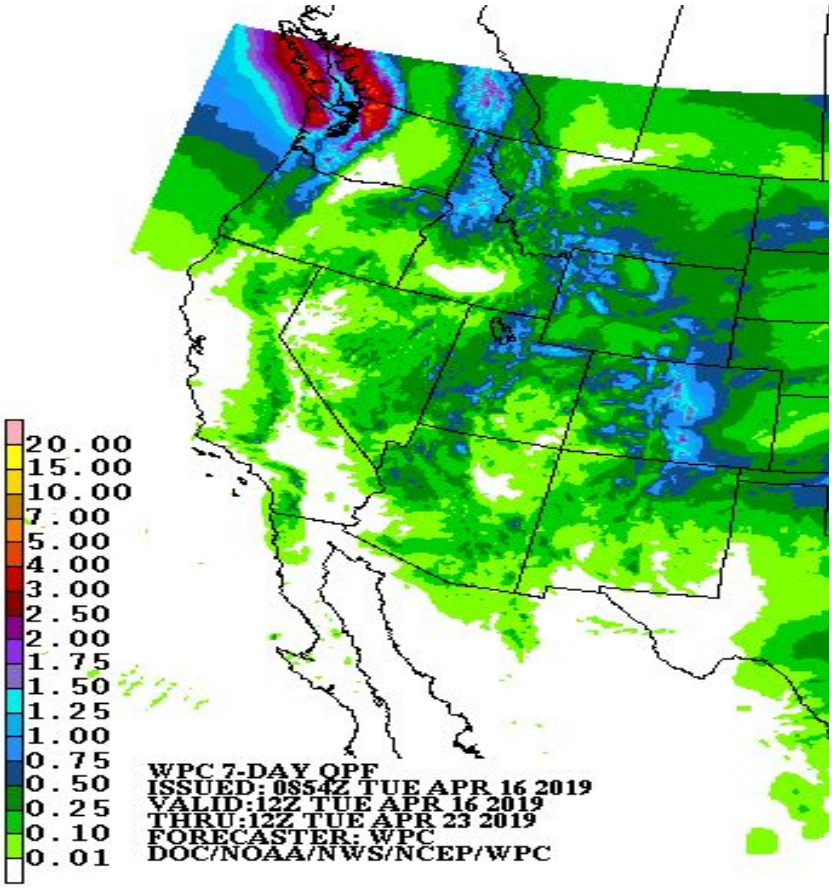


Snow representation from the CBRFC hydrologic model April 15, 2019.

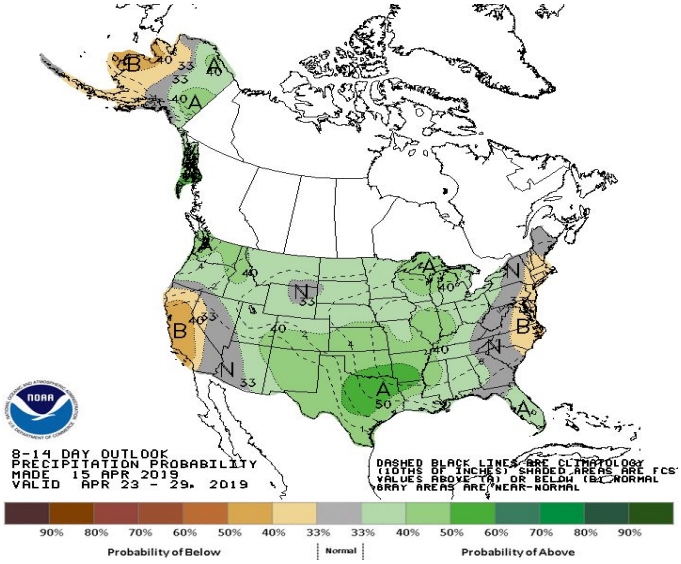
For updated SNOTEL information refer to: https://www.cbrfc.noaa.gov/lmap/lmap.php?interface=snow
For CBRFC hydrologic model snow, refer to: https://www.cbrfc.noaa.gov/rmap/grid800/index.php?&type=snow

Upcoming Weather:

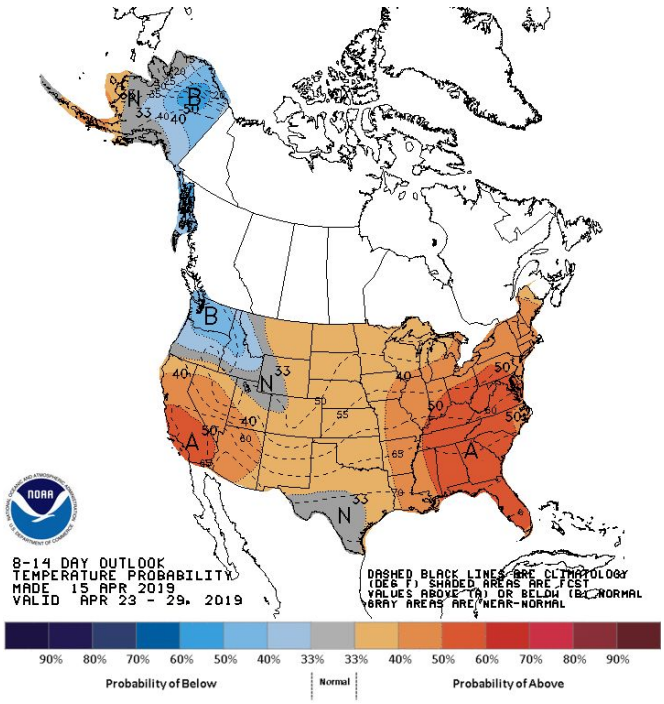
The weather pattern will continue to be progressive over the next week with quick moving troughs being replaced by transitory ridges. One storm system will move across Utah/Colorado on April 16-17, with the greatest precipitation amounts across Utah. A warmup is in store for Thursday through Saturday (April 18-20) across the Colorado River Basin as a ridge builds over the Intermountain West. Temperatures are forecasted to be generally 10-15 degrees above normal over the Upper Colorado and Great Basins. A weak trough will progress across the region on Sunday, causing showery conditions and only modest precipitation amounts. While the pattern for next week is more uncertain, the models suggest weak anomalous ridging that would promote slightly above normal temperatures. There is little indication that a prolonged trough and cold/wet period will impact the Upper Colorado, at least over the next week and a half. The generally above normal temperatures (5-10 degrees above normal) over the next 10 days will cause snowmelt to resume, particularly across the low-to-mid elevation zones.



NWS Weather Prediction Center precipitation forecast for April 16-23, 2019.



NWS Climate Prediction Center precipitation probability forecast for April 23-29, 2019.



NWS Climate Prediction Center temperature probability forecast for April 23-29, 2019.

For our online publication that contains basin conditions, summary graphics, and end of month reservoir content tables, refer to: https://www.cbrfc.noaa.gov/wsup/pub2/map/html/cpub.php