March 17, 2021 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 March has featured some dramatic swings in the weather across the region that is typical of spring. The first week of the month was largely dry with above normal temperatures as a ridge dominated the weather pattern. The second week of March featured a cutoff low pressure system that strengthened as it moved from Arizona into Colorado and brought widespread precipitation to much of the forecast area. Precipitation during the first half of March was mainly near to above normal across the majority of Utah/Colorado and Arizona. The northern Wasatch Range and Wyoming largely missed out on the storm systems during the first half of March, with well below normal precipitation.

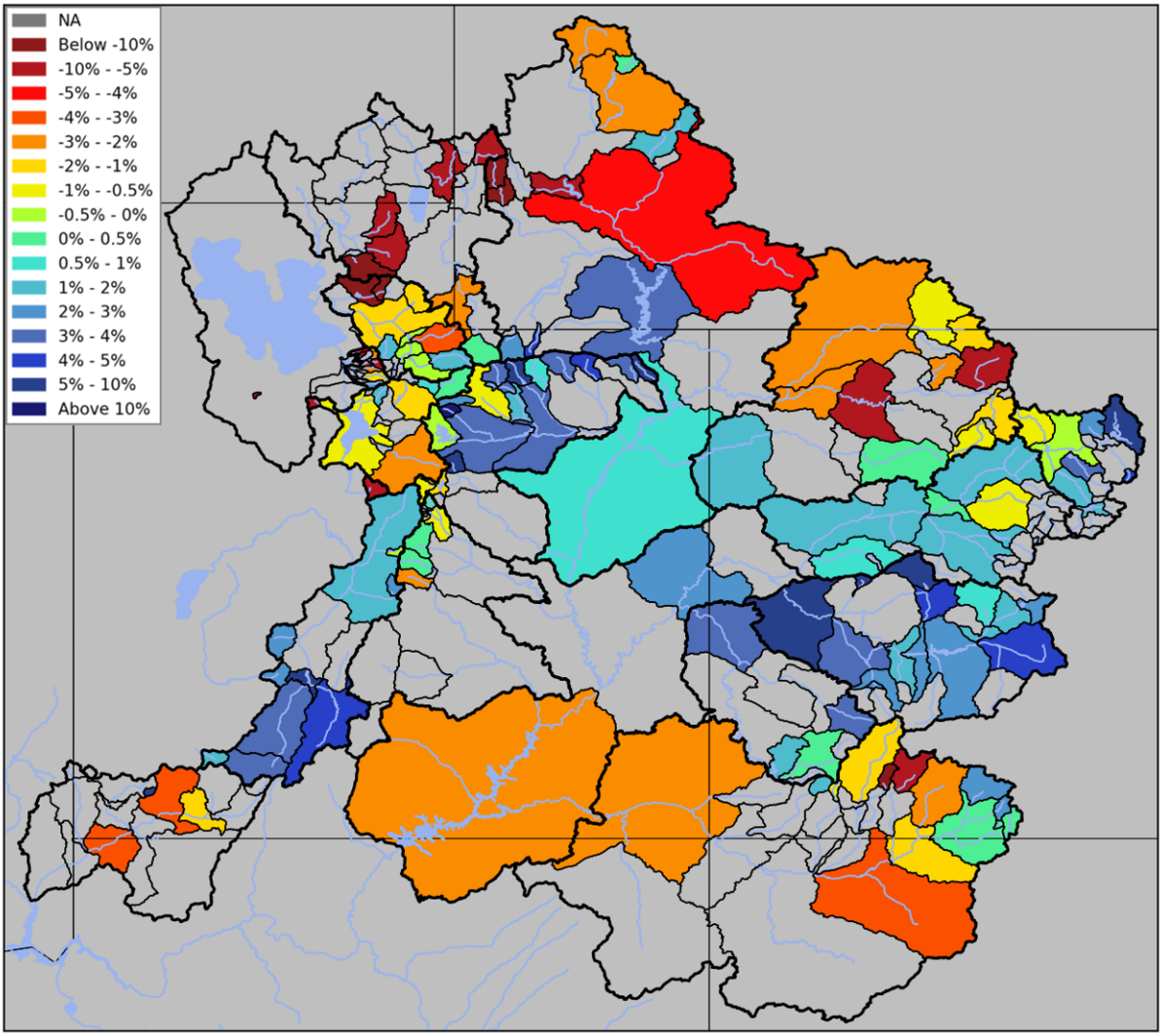
Mid-March SWE conditions generally range between 65-95% of normal across the Upper Colorado River Basin and 70-85% of normal across the Great Basin. Lower Colorado River Basin SWE conditions are more variable and range between 5-85% of normal.

The majority of the Upper Colorado River Basin has seen modest (0-5%) increases in April-July water supply volume guidance since early March while Great Basin volume guidance has mostly decreased (0-5%). Below normal spring runoff continues to be likely across the region due to poor antecedent soil moisture conditions and below normal seasonal (October-March) precipitation. Mid-March spring runoff volume guidance generally ranges from 40-80% of normal across the Upper Colorado River Basin and 25-60% of normal across the Great Basin. Lower Colorado River Basin January-May water supply volume guidance generally ranges between 0-40% of normal.

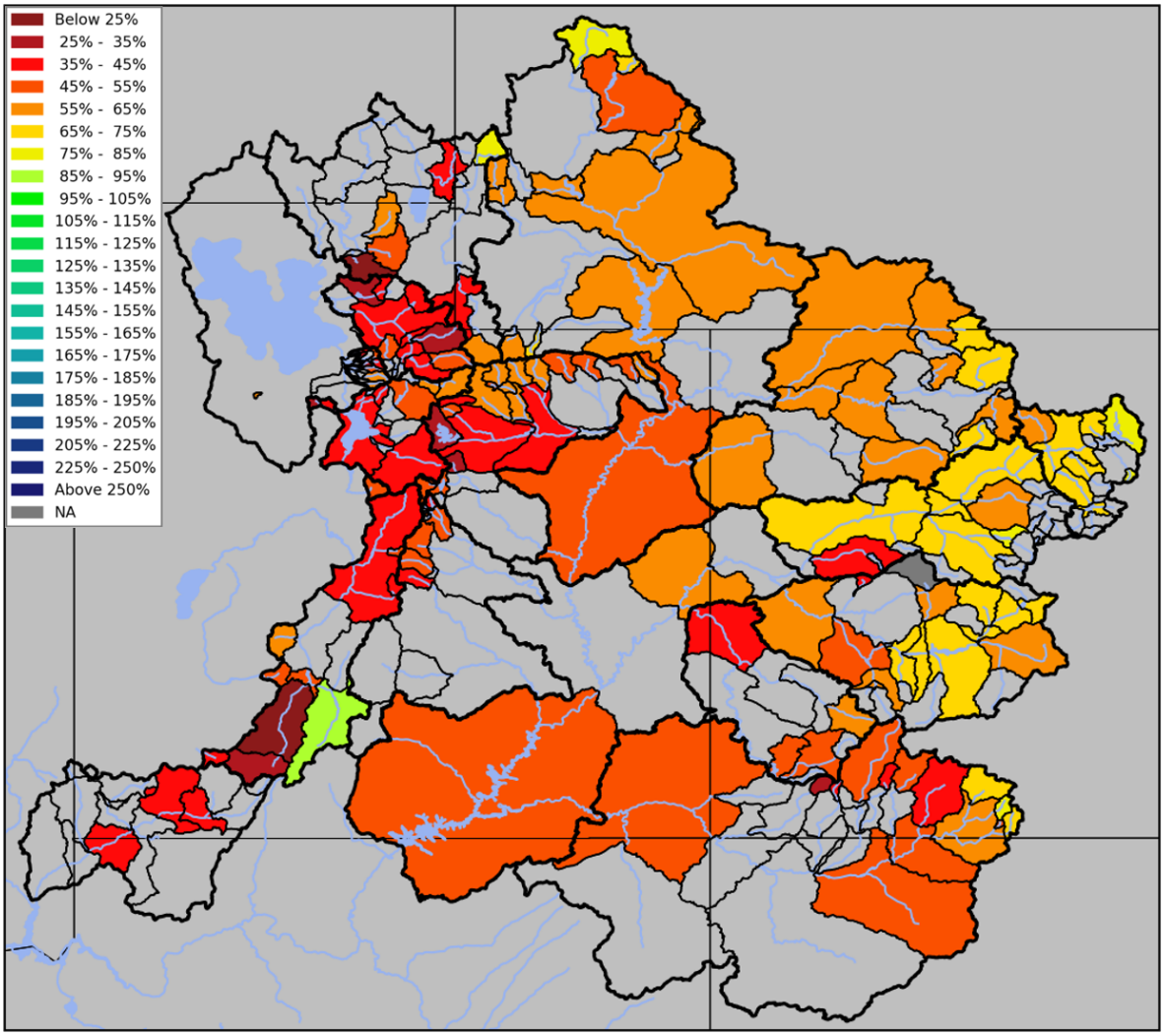
April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 480 KAF (66% average), Flaming Gorge 555 KAF (57%), Blue Mesa Reservoir 460 KAF (68%), McPhee Reservoir 132 KAF (45%), and Navajo Reservoir 415 KAF (56%). The Lake Powell inflow forecast is 3.4 MAF (47% of average) and did not change from the early March forecast.

After a cooler stretch over the past week, there will be a brief warmup over the next few days as a transitory ridge builds across the Intermountain West. A cooldown and widespread precipitation is expected this weekend (March 20-21) across northern Utah/Colorado and Wyoming with 0.50-1.25 inches of precipitation forecasted over the mountains. Lighter amounts are forecasted over the southern half of Utah/Colorado and the Lower Basin.

Seasonal Water Supply Forecasts



Trend in the April-July runoff volume guidance from March 1 to March 16, 2021
(Change in April-July percent of average)



April-July runoff volume guidance as of March 16, 2021
(percent of 1981-2010 average)

For specific site water supply forecasts click here.

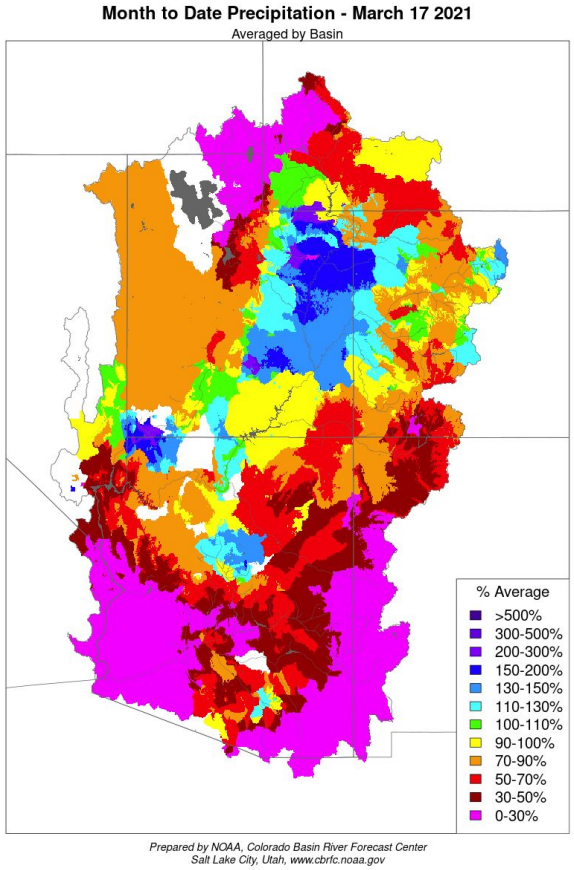
Water Supply Discussion

Weather Synopsis

The first half of March has featured some dramatic swings in the weather across the region that is typical of spring. The first week of the month was largely dry with above normal temperatures as a ridge dominated the pattern. However, the second week of March featured a cutoff low pressure system that strengthened as it moved from Arizona into Colorado. This strong storm brought widespread precipitation to much of the area on March 13-15, with exceptionally high amounts over the Upper Colorado headwaters and the northern slopes of the Uinta range in Utah. In fact, some of the SNOTELs in these two areas received 3-5 inches of precipitation. The northern Wasatch Range and Wyoming largely missed out on the storm systems during the first half of March, with well below normal precipitation.

Precipitation

Precipitation during the first half of March was mainly near to above normal across the majority Utah/Colorado and Arizona. The biggest winners were the Upper Colorado headwaters and northern slopes of the Uintas, where month-to-date precipitation is mostly above the 90th percentile. The cutoff low pressure system largely missed northern Utah and Idaho/Wyoming (outside of the aforementioned areas) resulting in below normal precipitation. The good news is that the weather pattern looks to become more favorable for bringing precipitation to the north over the next 7-10 days.



March 1-17, 2021 percent of average precipitation

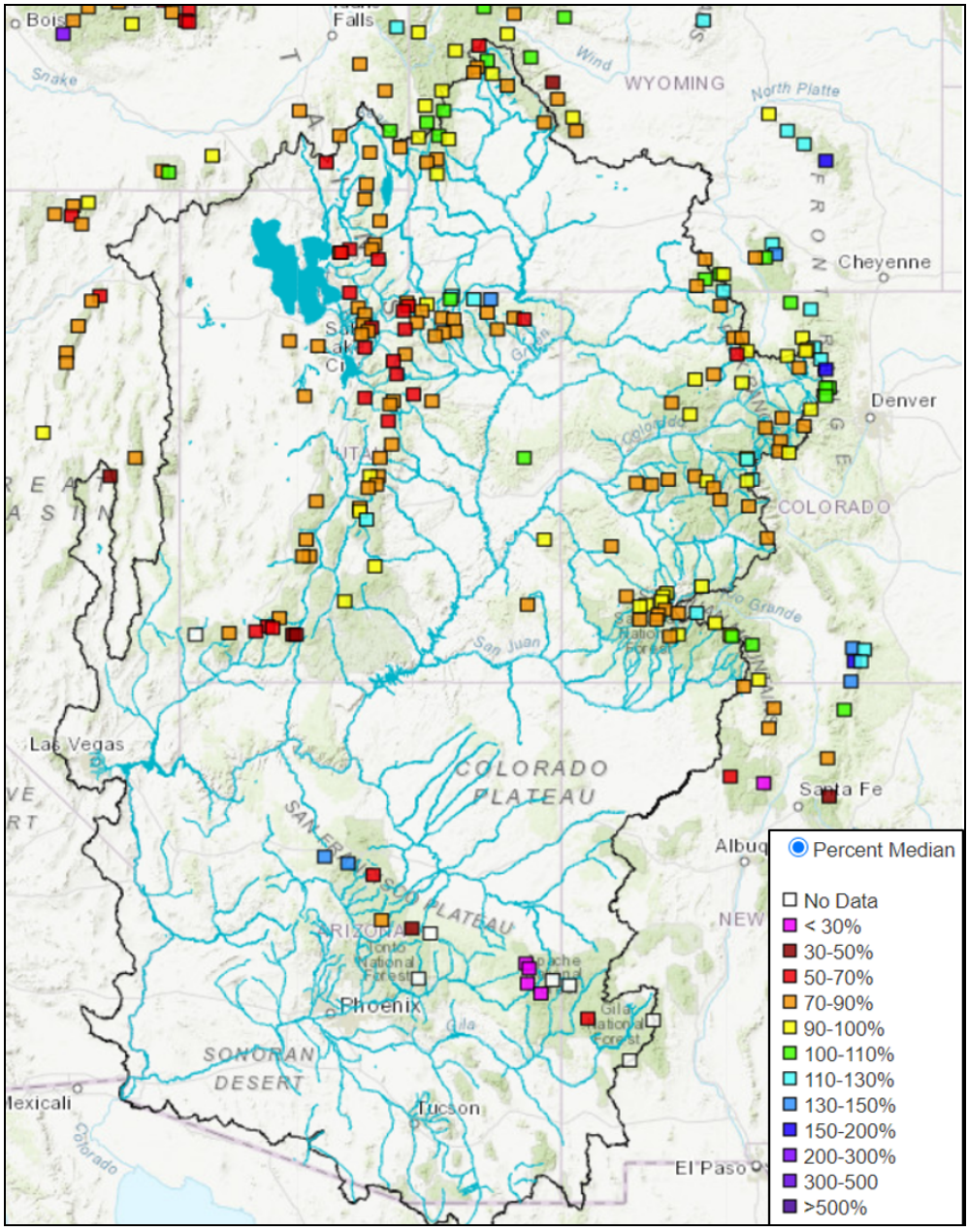
Snowpack

Since the beginning of March, snow water equivalent (SWE) conditions as a percent of normal have generally improved slightly across the Upper Colorado River Basin and remained the same or slightly worsened across the Great Basin. Lower Colorado River Basin SWE conditions during the first half of March have been variable and generally follow the March-to-date precipitation trend.

Mid-March SWE conditions (image below) across the Upper Colorado River Basin range from 65-95% of normal. Snow conditions continue to remain most favorable in the Upper Green River Basin (95% of normal) even while March precipitation-to-date has been below average across southwest Wyoming. SWE conditions are 90% of normal across the White/Yampa, Upper Colorado mainstem headwaters, and San Juan River Basins. SWE conditions are 80-85% of normal across the Gunnison and Dolores basins, 75% of normal in the Duchesne basin, and around 65% of normal in the Virgin basin.

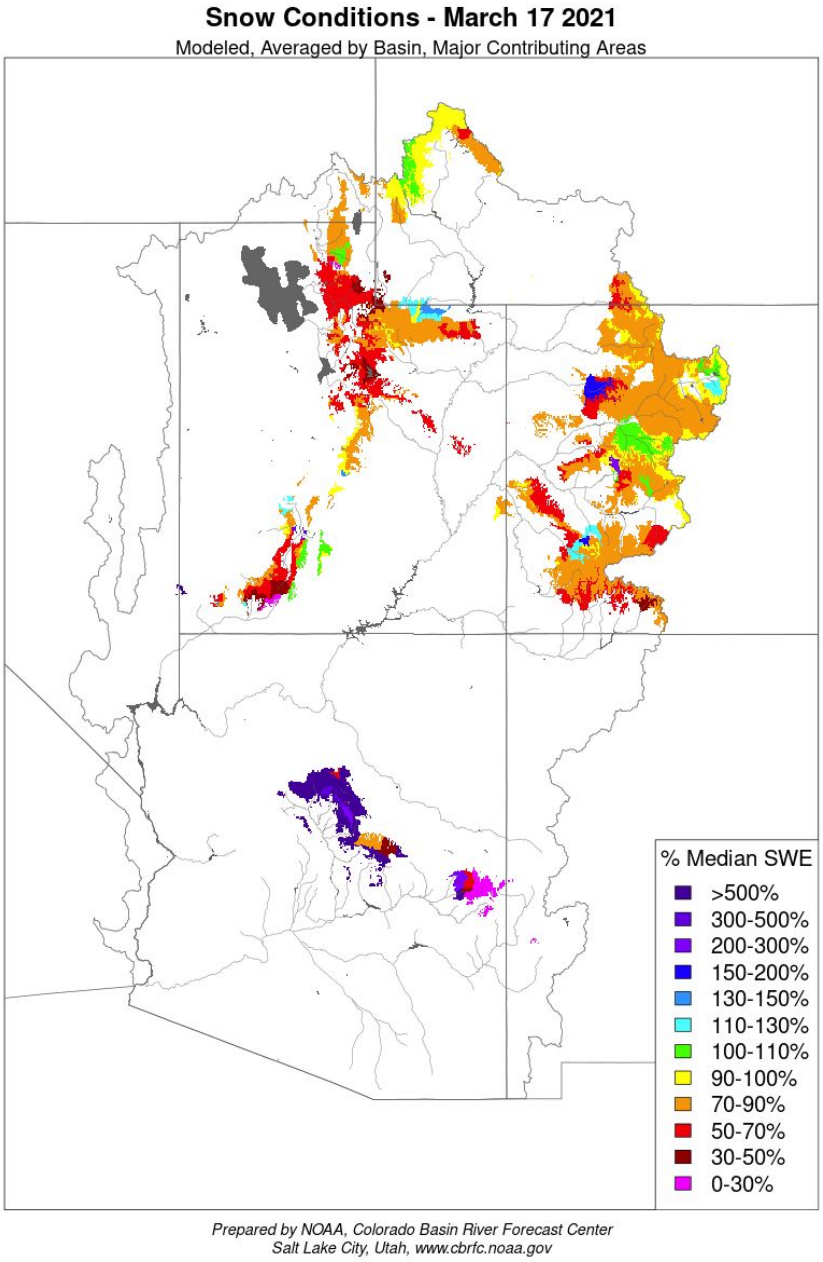
Mid-March SWE conditions across the Great Basin generally range between 70-85% of normal and are most favorable in the Six Creeks River Basin (around 85% of normal). SWE conditions are 80% of normal in the Bear River Basin, and around 70% of normal across the Weber, Provo-Utah Lake, and Sevier basins.

Lower Colorado River Basin SWE conditions tend to be more variable and generally range between 5-85% of the historical median as of mid-March. Snow conditions in the Verde River Basins have improved significantly since the beginning of the month and are slightly below normal (85%). Mid-March SWE conditions are 65% of normal in the Upper Gila River Basin and 25% of normal across the Little Colorado River Basin. Salt River Basin SWE conditions are very poor (around 5% of normal).



SNOTEL percent median snow conditions as of March 17, 2021

The image below is the representation of mid-March CBRFC model snow conditions in areas that provide the greatest contribution to April-July runoff. Model snow conditions closely correlate to SNOTEL conditions throughout the Colorado River and Great Basins.

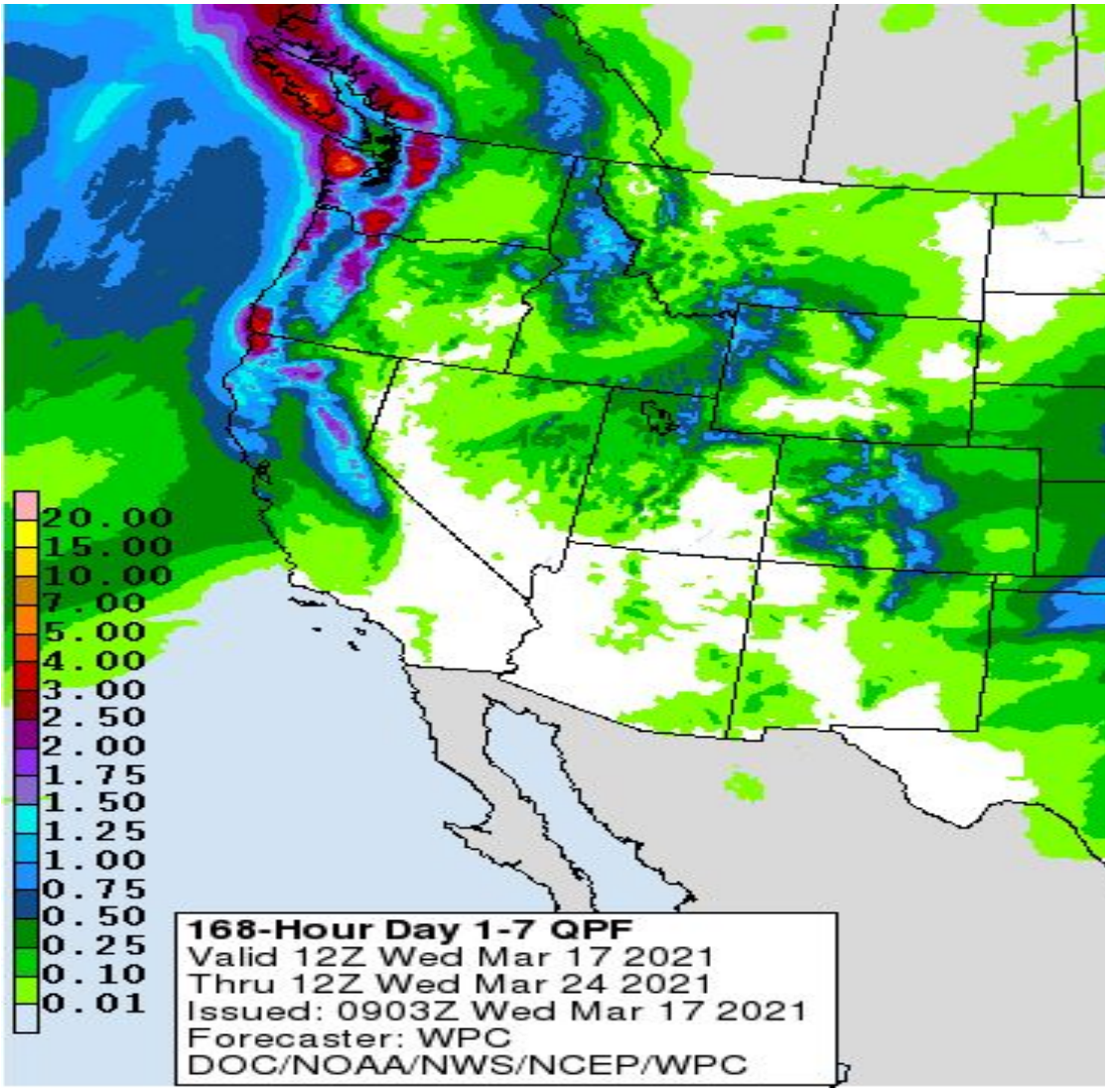


Snow representation from the CBRFC hydrologic model March 17, 2021

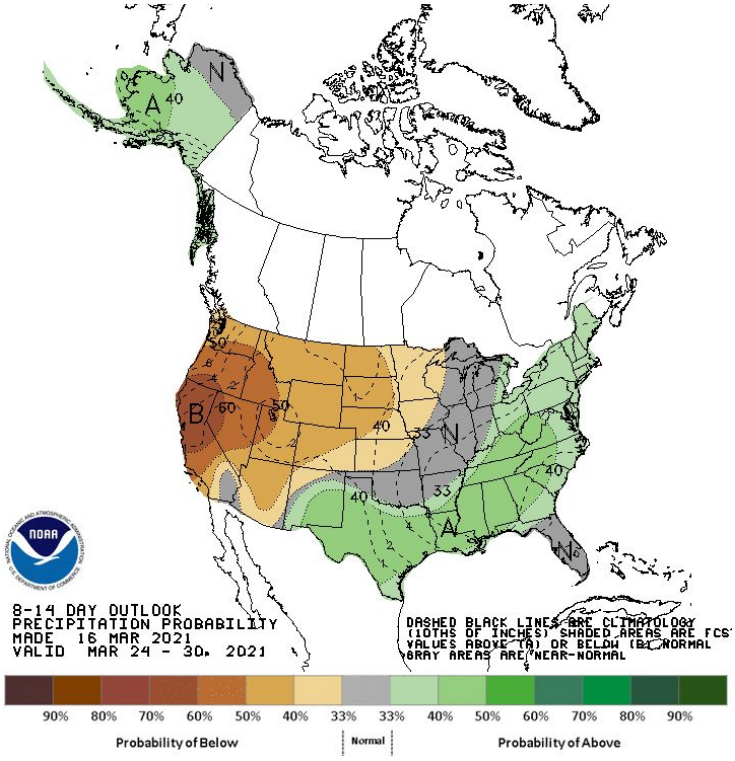
For updated SNOTEL information refer to click here.
For CBRFC hydrologic model snow click here.

Upcoming Weather

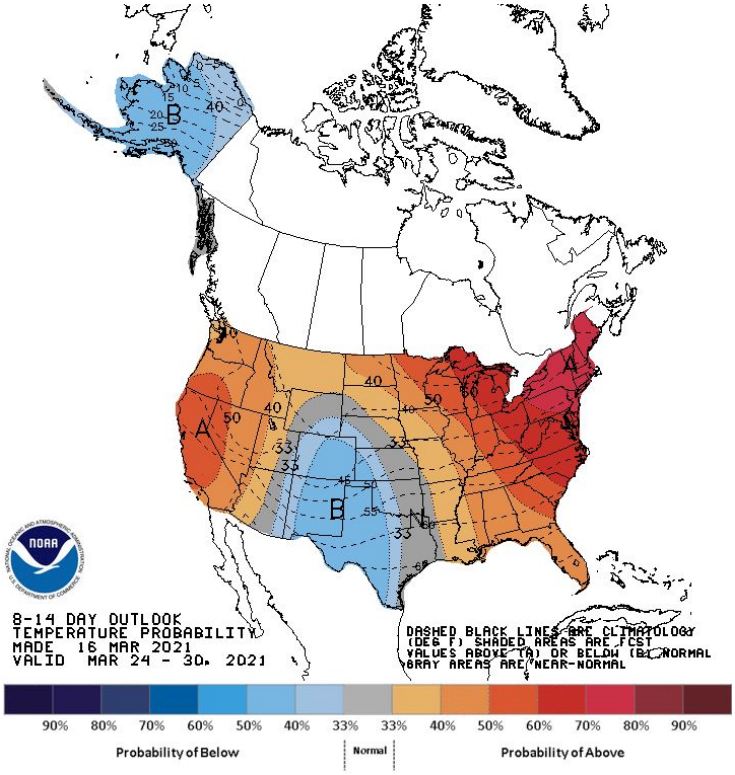
After a cooler stretch over the past week, there will be a brief warmup over the next few days as a transitory ridge builds across the Intermountain West. The next trough will move across the north on Saturday, bringing a cooldown and widespread precipitation to northern Utah/Colorado and Wyoming. Forecasted precipitation amounts are 0.50-1.25 inches over the mountains. Lighter amounts are forecasted over the southern half of Utah/Colorado and the Lower Basin. There is increased weather model disagreement on the track of the next trough (and associated precipitation amounts) that digs southward across the region by early next week (March 23-24). However, this trough will bring a reinforcing shot of cold air to the area and keep temperatures below normal through at least the middle part of next week. The Climate Prediction Center indicates elevated odds for below normal precipitation in the 8-14 day outlook (last week of March) along with moderating temperatures as there is general model agreement of a ridge building across the Western U.S.



Weather Prediction Center precipitation forecast for March 17 - 24, 2021



NWS Climate Prediction Center precipitation probability forecast for Mar 24 - 30, 2021



NWS Climate Prediction Center temperature probability forecast for Mar 24 - 30, 2021

For CBRFC's beginning of the month online publication that contains basin conditions, summary graphics, and end of month reservoir content tables, refer to the following links.

End Of Month Reservoir Content Tables

- Green River Basin
- Upper Colorado River Basin
- San Juan River Basin
- Great Salt Lake Basin
- Sevier Basin

Basin Conditions and Summary Graphics

- Green River Basin
- Upper Colorado River Basin
- San Juan River Basin
- Great Salt Lake Basin
- Sevier River Basin
- Virgin River Basin