

April 6, 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

Early April water supply volume forecasts are below to much below normal throughout the Colorado River Basin and Great Basin. The water supply outlook is most favorable along the Continental Divide within Colorado with conditions generally declining from east to west across the region. Upper Colorado River Basin water supply forecasts range between 25-80% of the 1981-2010 historical April-July average. Great Basin water supply forecasts are 10-75% of average. Lower Colorado River Basin April-May water supply runoff volume forecasts are 0-35% of the historical median. Water supply forecast ranges (percent of normal) by basin are listed below.

Basin	Water Supply Forecast Range
Upper Green	50-75%
Duchesne	25-55%
Yampa/White	45-65%
Upper Colorado Mainstem	35-80%
Gunnison	40-70%
Dolores	40-50%
San Juan	35-75%
Bear	25-70%
Weber	25-50%
Six Creeks	30-60%
Provo/Utah Lake	25-55%
Virgin	20-35%
Sevier	10-75%
Little Colorado	0-10%
Upper Gila	10-30%
Salt	5-15%
Verde	35%

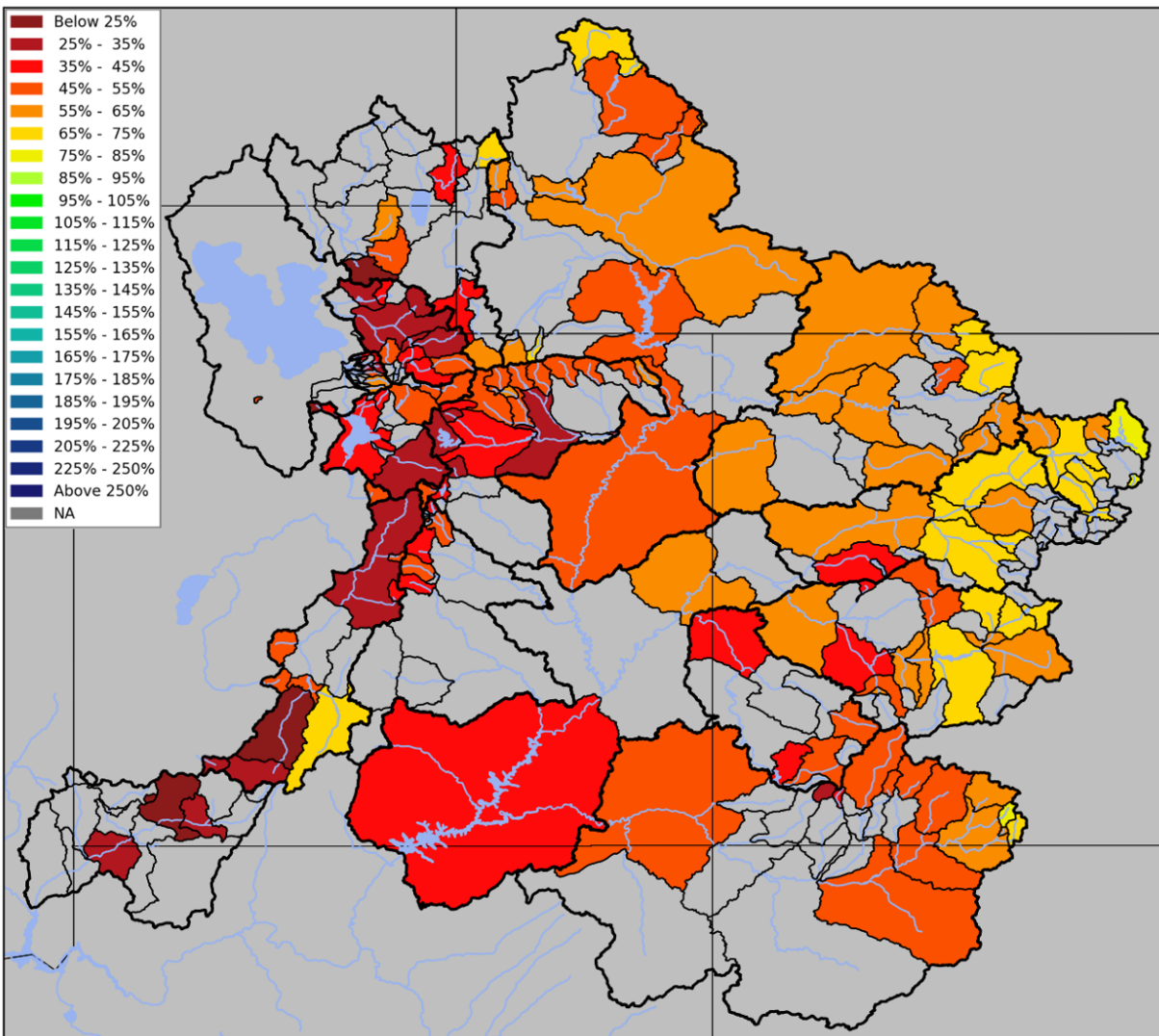
March precipitation generally favored eastern Utah, western Colorado, and central Arizona (near to above normal). Precipitation elsewhere across the region was below to much below normal. March temperatures were generally near to below normal, with the coolest anomalies across the Lower Basin. The lack of prolonged stretches of above normal temperatures helped preserve snow through March. A strong ridge of high pressure during the first five days of April brought very warm (10 to 20 degrees above normal) temperatures and dry conditions to much of the region with several record high temperatures being set.

Early April snow water equivalent (SWE) conditions are mostly below to much below normal (median) throughout the CBRFC forecast area. SWE values at the majority of SNOTEL stations across the region have decreased (melted) between 1-4 inches during the past week as a result of the very warm start to April. Upper Colorado River Basin SWE conditions generally range between 55-85% of the 1981-2010 historical median. Snow across the Lower Colorado River Basin has mostly melted out with most SNOTEL stations across Arizona reporting less than an inch of SWE. Great Basin snow conditions remain below normal and generally range between 60-75% of normal.

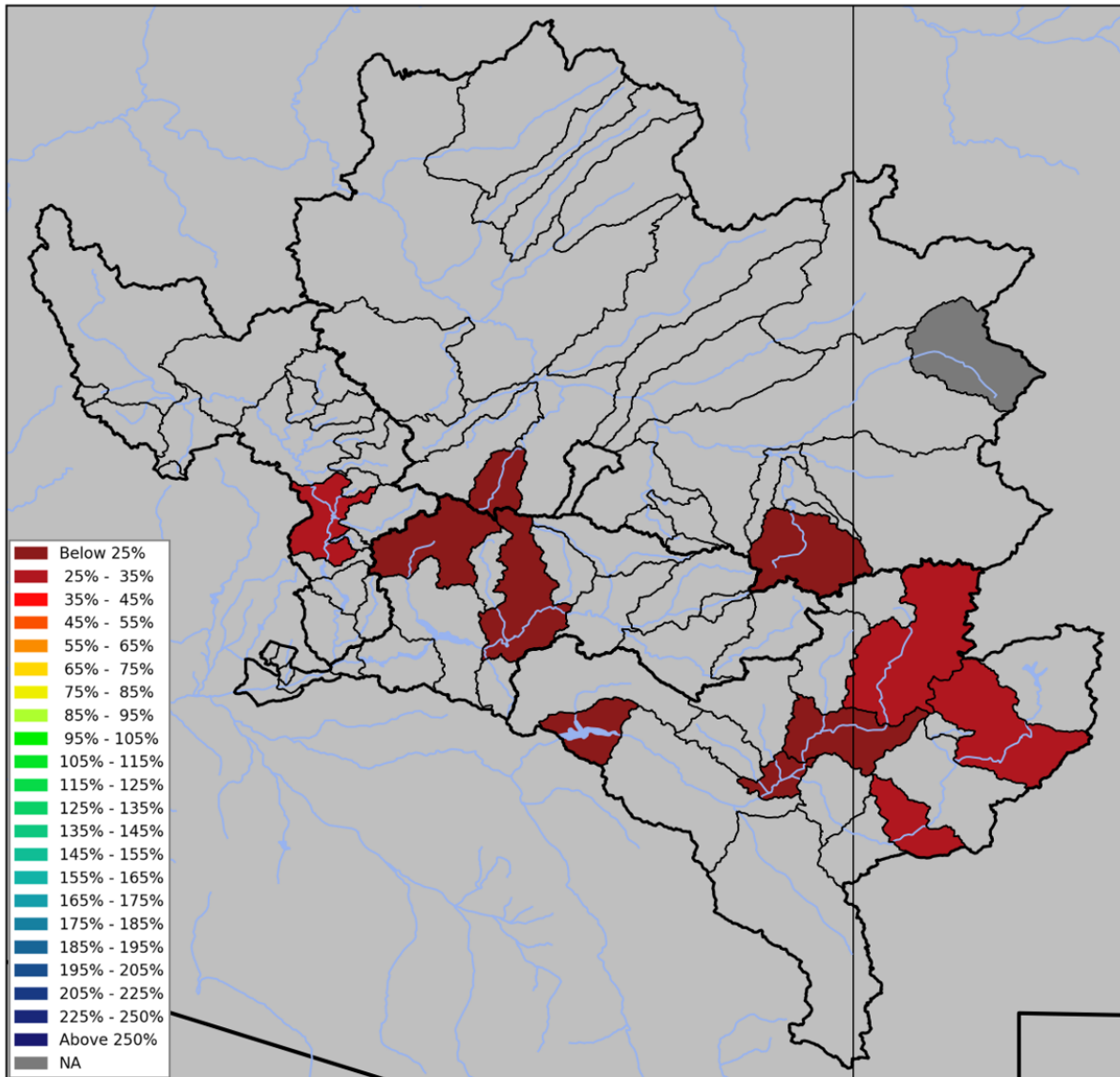
CBRFC hydrologic model soil moisture entering the spring runoff season was generally in the bottom five across the Upper Colorado over the 1981-2020 40-year period. Much below normal soil moisture conditions continue to have a negative impact on the water supply outlook across the region.

April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle 430 KAF (59% of average), Flaming Gorge 530 KAF (54%), Green Mountain 180 KAF (65%), Blue Mesa 440 KAF (65%), McPhee 130 KAF (44%), and Navajo 395 KAF (54%). The Lake Powell inflow forecast is 3.2 MAF (45% of average), a 2% decrease from March.

Seasonal Water Supply Forecasts



Upper Colorado, Great, Virgin River Basins: Apr 2021 April-July forecast volumes as a percent of 1981-2010 average (50% exceedance probability forecast).



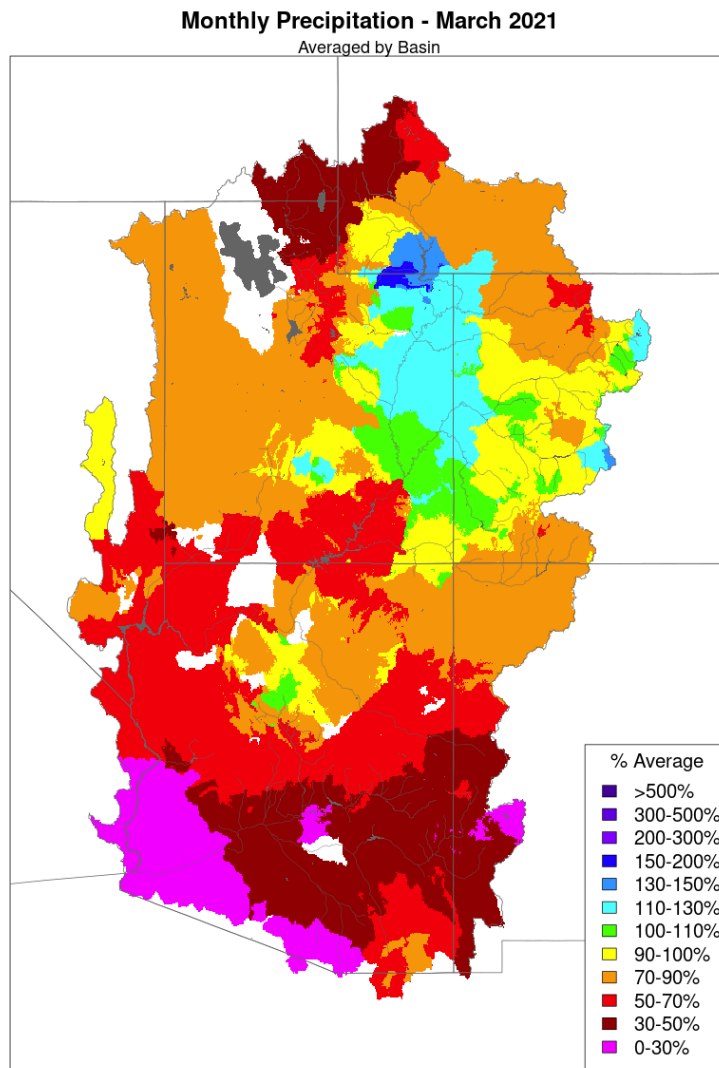
Lower Colorado Basin (AZ/NM): April 2021 April-May forecast volumes as a percent of 1981-2010 median.
(50% exceedance probability forecast).

For specific site water supply forecasts click [here](#)

Water Supply Discussion

March Weather

Monthly precipitation for March was a mixed bag, with some areas below to much below average and some areas near to above average. The Upper Colorado headwaters and northern slopes of the Uinta Mountains saw well above normal precipitation, largely due to the strong cutoff low pressure system that moved across Colorado on March 13-15. The driest areas (as a percent of normal) were across far northern Utah (Weber/Bear basins) and over the Wyoming Range. In fact, several of the SNOTELs in this region were below the 5th percentile for March precipitation. A few weak cutoff lows moved across northern Arizona and southern Colorado over the last two weeks, bringing cooler temperatures and widespread precipitation to the Verde and San Juan basins. Monthly temperatures were generally near to below normal, with the coolest anomalies across the Lower Basin. The lack of prolonged stretches of above normal temperatures helped preserve snow through the month.

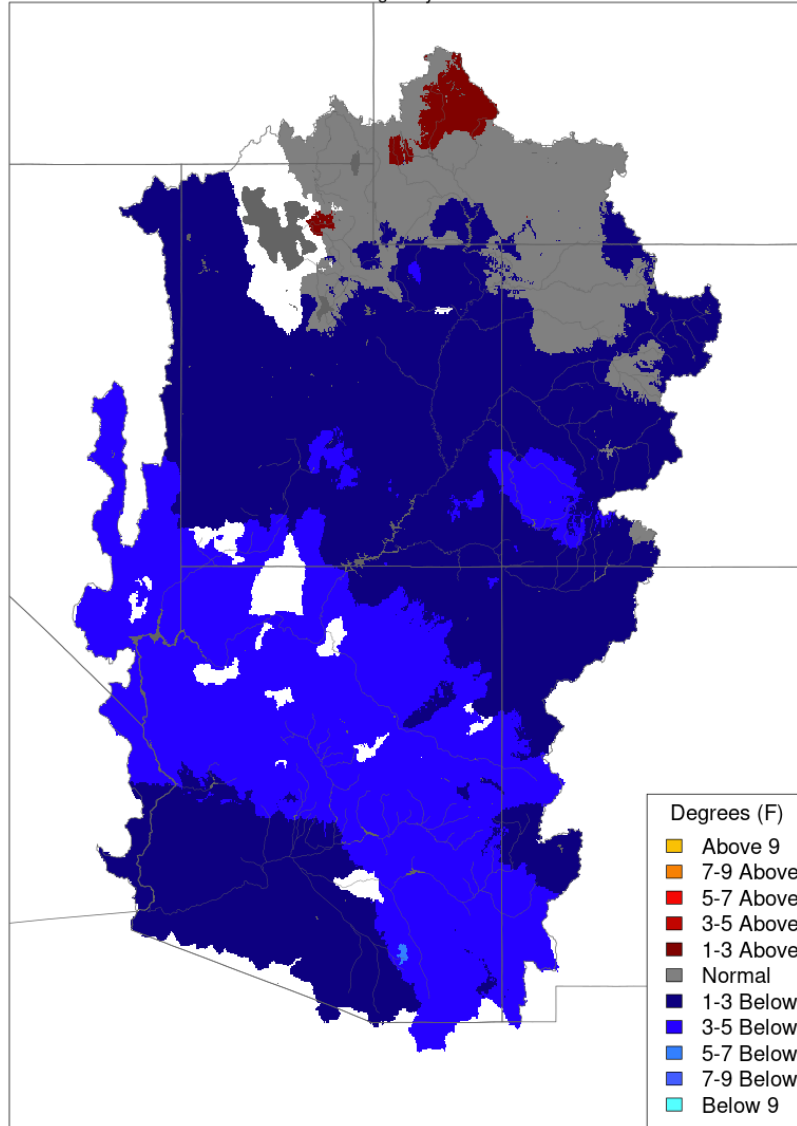


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

March 2021 percent of normal precipitation.
(Averaged by basins defined in the CBRFC hydrologic model)

Max Temp - Monthly Deviation - March 2021

Averaged by Basin

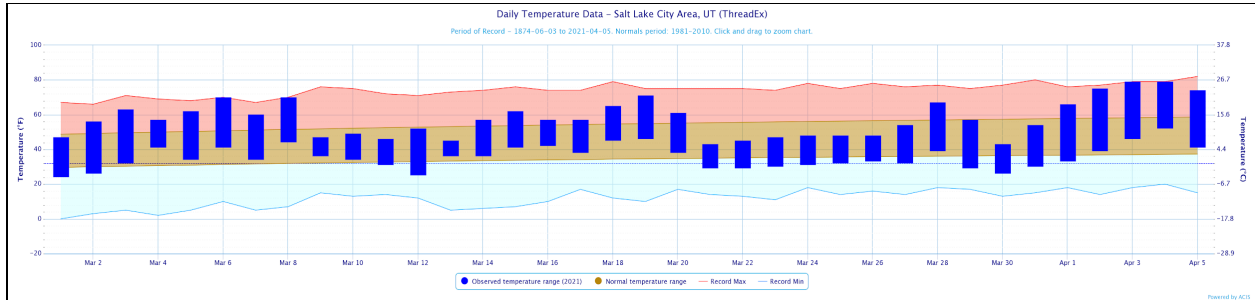


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

March 2021 temperature anomaly
(Averaged by basins defined in the CBRFC hydrologic model)

Warm/Dry Start to April

A strong ridge of high pressure during the first five days of April brought very warm (10 to 20 degrees above normal) temperatures and dry conditions to much of the region. In fact, several record high temperatures were set across the area. As an example, Salt Lake City and Grand Junction have seen the second and third warmest start to April (April 1-5) on record, respectively. With the ridge in place, little to no precipitation occurred through the first five days of April. While a storm system will bring modest precipitation amounts to the north today along with a temporary cooldown, weather models do not indicate a prolonged cooler/wetter pattern in the next 7 to 10 days.



Temperatures at Salt Lake City through the spring so far (March 1 - April 5), showing the rather cool end to March, followed by near record highs to start April.

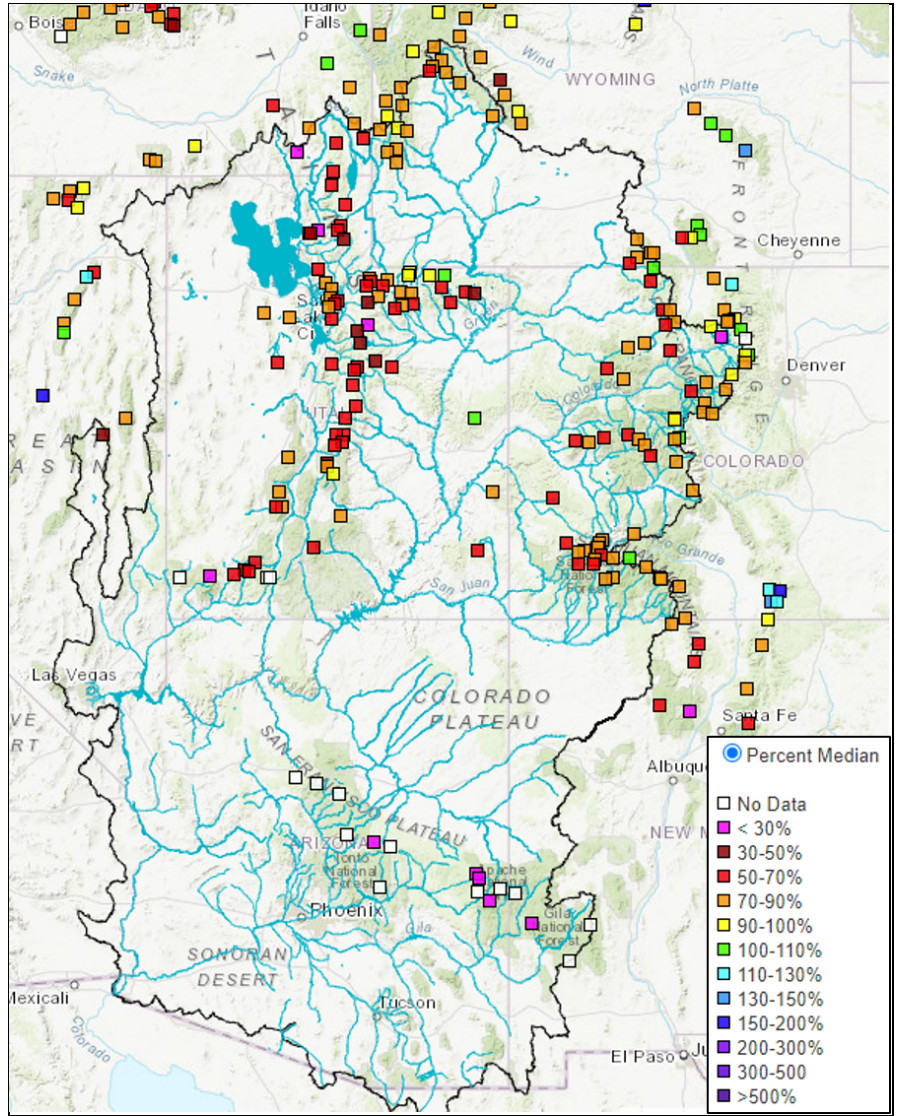
Snowpack

Early April snow water equivalent (SWE) conditions are mostly below to much below normal (median) throughout the CBRFC forecast area. SWE values at the majority of SNOTEL stations across the region have decreased (melted) between 1-4 inches during the past week as a result of the very warm start to April. Early April snowmelt magnitude was generally largest at elevations below 9,500 feet across central/southwest Utah and southwest Colorado. Less snowmelt occurred in Wyoming and at higher elevations along the Continental Divide.

Upper Colorado River Basin SWE conditions generally range between 55-85% of the 1981-2010 historical median: Upper Green and San Juan basins (85%); White/Yampa and Upper Colorado River headwaters (80%); Gunnison (75%); Dolores (70%); Duchesne (65%); Virgin (55%). Snow across the Lower Colorado River Basin has mostly melted out and the majority of SNOTEL stations across Arizona are reporting less than an inch of SWE.

Great Basin snow conditions remain below normal and generally range between 60-75% of normal. SWE at many SNOTEL stations across the Great Basin remain in the bottom (driest) ten on record, with many stations having a 30 to 40 year period of record.

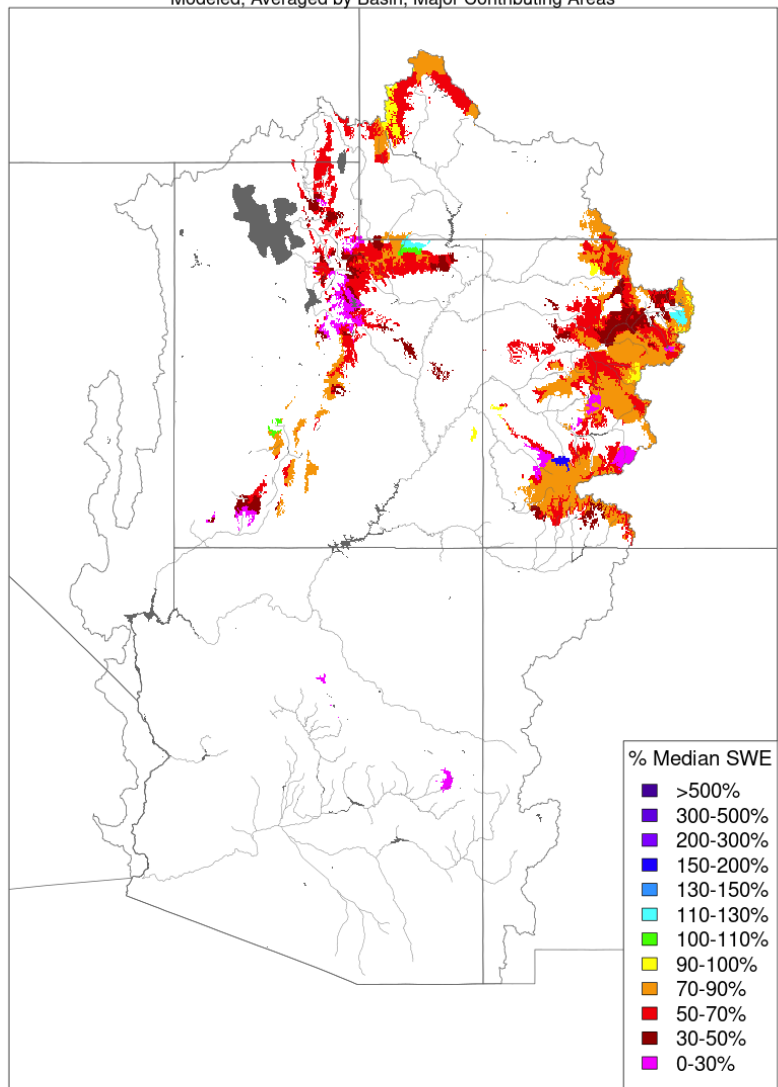
The images below show the observed snow conditions and CBRFC hydrologic model snow conditions. Model snow conditions closely correlate to SNOTEL conditions throughout the Colorado River and Great Basins.



April 6, 2021 observed SNOTEL SWE conditions (percent of historical median).

Snow Conditions - April 06 2021

Modeled, Averaged by Basin, Major Contributing Areas



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

April 6, 2021 CBRFC hydrologic model snow conditions (percent of median).

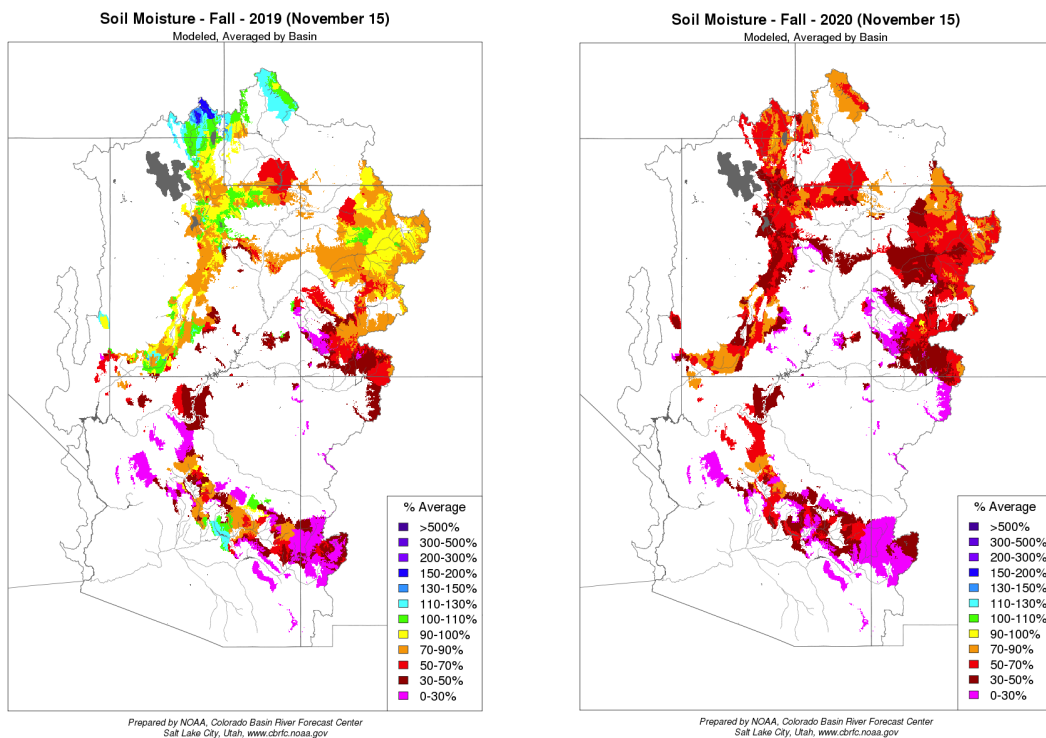
For updated SNOTEL information refer to click [here](#)

For CBRFC hydrologic model snow click [here](#)

Soil Moisture

CBRFC hydrologic model soil moisture states are adjusted in the fall after the irrigation season and prior to the winter snowpack accumulation to accurately reflect observed baseflow conditions. CBRFC model fall soil moisture conditions impact early season water supply forecasts and potentially the efficiency of spring runoff. Above average fall soil moisture conditions have a positive impact on early season water supply forecasts while below average conditions have a negative impact. The impacts are most pronounced when soil moisture conditions and snowpack conditions are both much above or much below average.

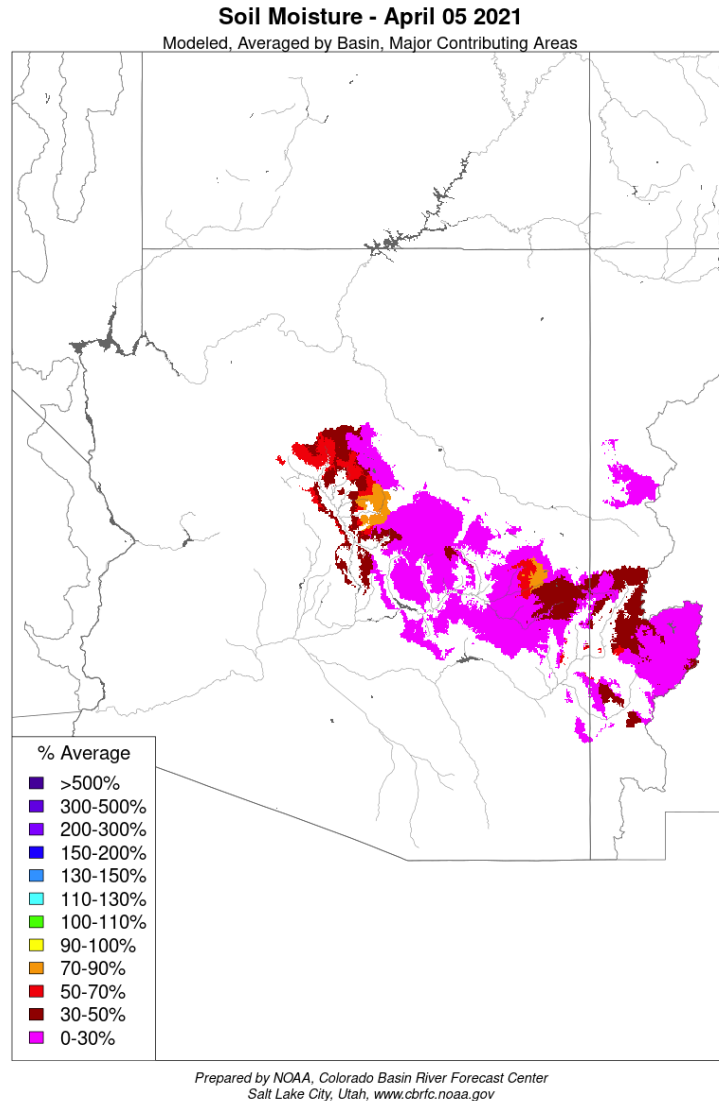
Modeled soil moisture conditions as of November 15th were below average across the entire Upper Colorado River Basin and Great Basin. Hydrologic model soil moisture conditions entering the winter are worse compared to a year ago due to record low April-October precipitation across the region and a below average runoff last spring. Modeled soil moisture is generally in the bottom five of the 1981-2020 40-year period across the Upper Colorado. San Juan and Dolores basins soil moisture conditions fall in the bottom three with some areas being record dry. Two consecutive years of poor monsoon seasons have exacerbated the dry conditions in southwest Colorado. It is not often that such widespread poor soil moisture conditions exist across the region. Similar, but not as poor conditions, existed in the fall of 2002, 2012, and 2018.



Comparison of November 2019 (left) and November 2020 (right) CBRFC hydrologic model soil moisture conditions entering the winter season.

Soil moisture conditions tend to fluctuate more in the Lower Colorado River Basin of Arizona and New Mexico in the winter due to the frequency of rain events and possibility of melting snow. Soil conditions in the fall are less informative than they are in the northern basins that remain under snowpack throughout the winter season.

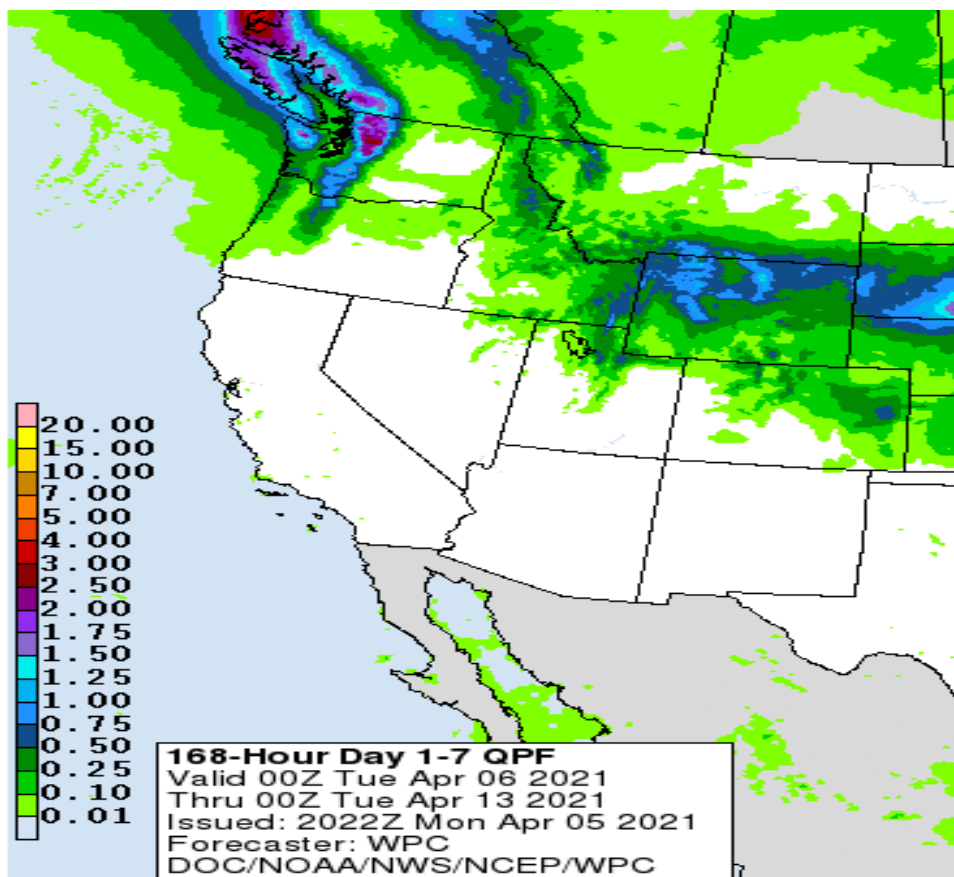
After yet another dry month, soil moisture conditions remain poor across the Lower Colorado River Basin. The image below shows the current below to much below average model soil moisture conditions. This generally means that a portion of any runoff that occurs from rainfall or snowmelt will be absorbed into the soil before contributing to streamflow.



Lower Colorado River Basin (AZ/NM) model soil moisture as of April 5, 2021.

Upcoming Weather

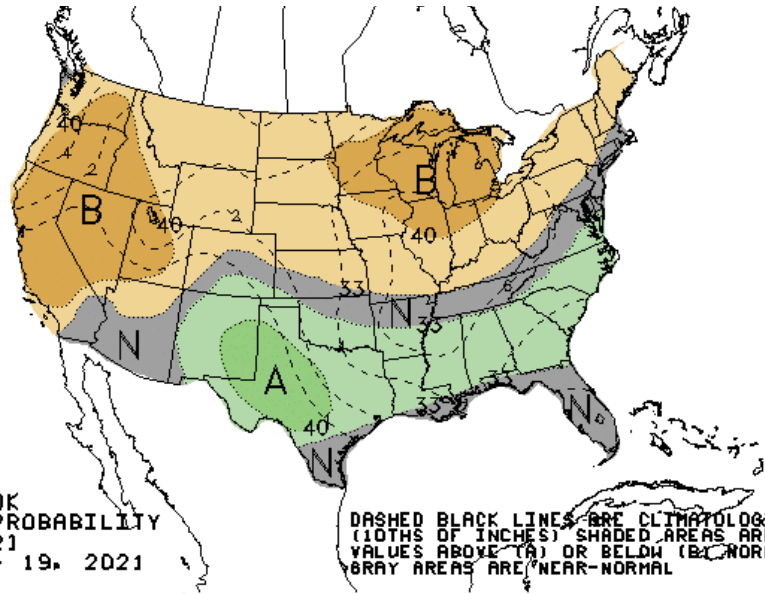
A storm system is forecasted to move across the north today, bringing widespread precipitation and cooler temperatures to far northern Utah/Colorado into Idaho and Wyoming. Precipitation amounts will mostly be modest, with the highest values (0.5-1.0 inches) over eastern Idaho and the Upper Green. This system is expected to bring little if any precipitation to southern Utah/Colorado and the Lower Basin. The rest of the week will feature rather tranquil weather with seasonal temperatures across the north and above normal (5-10 degrees) over the south. A few weak troughs will move across Wyoming and Montana, with light precipitation amounts possible over the Upper Green. Overall, it is a rather dry start to the month of April, with water supply guidance expected to decrease through mid-April at most locations. The 8 to 14 day (April 13-19) Climate Prediction Center (CPC) outlook favors slightly elevated odds for above normal temperatures and below normal precipitation over much of the Colorado River and Great Basins.



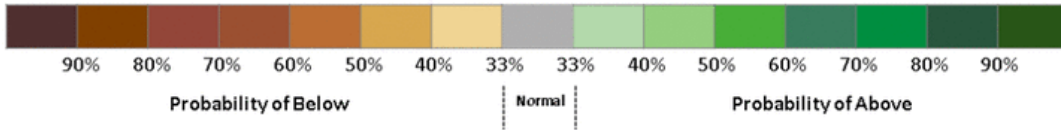
NWS Weather Prediction Center precipitation forecast for April 6-12, 2021.



8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 5 APR 2021
VALID APR 13 - 19, 2021



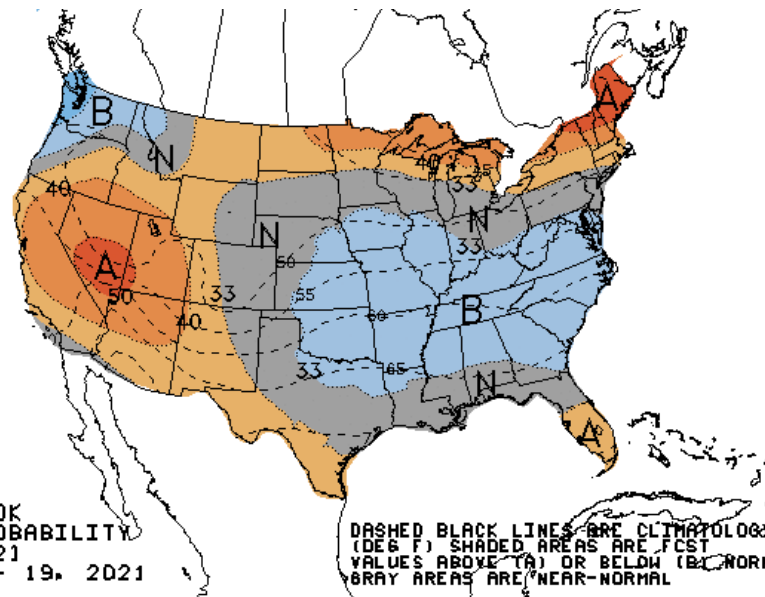
DASHED BLACK LINES ARE CLIMATOLOGY
(TENTHS OF INCHES) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL



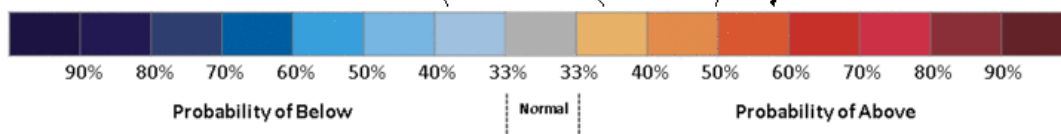
NWS Climate Prediction Center precipitation probability forecast for Apr 13-19, 2021.



8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 5 APR 2021
VALID APR 13 - 19, 2021



DASHED BLACK LINES ARE CLIMATOLOGY
(DEG F) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL



NWS Climate Prediction Center temperature probability forecast for Apr 13-19, 2021.

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](#)

End Of Month Reservoir Content Tables

[Green River Basin](#)

[Upper Colorado River Basin](#)

[San Juan River Basin](#)

[Great Salt Lake Basin](#)

[Sevier Basin](#)