May 1, 2022 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

April weather was generally cooler/wetter than average across far northern basins and warmer/drier than average in the rest of the basins. April's unsettled weather across northern basins led to additional snow accumulation in higher elevations and reduced snowmelt rates due to cooler and cloudier weather. Elsewhere, below average April precipitation and more snowmelt occurred due to warmer and sunnier weather and led to declines in percent of normal SWE values during the month. May 1 snow water equivalent (SWE) conditions generally range between 45-90% of normal across the Upper Colorado River Basin and 45-80% of normal across the Great Basin.

Water supply forecasts during April generally remained steady in the Upper Green, White/Yampa, and Bear/Weber basins. The water supply outlook declined in most other basins due to warmer and drier than average April weather. Upper Colorado River Basin water supply forecasts generally range between 45-95% of the 1991-2020 historical April-July average. Great Basin water supply forecasts are 25-85% of average.

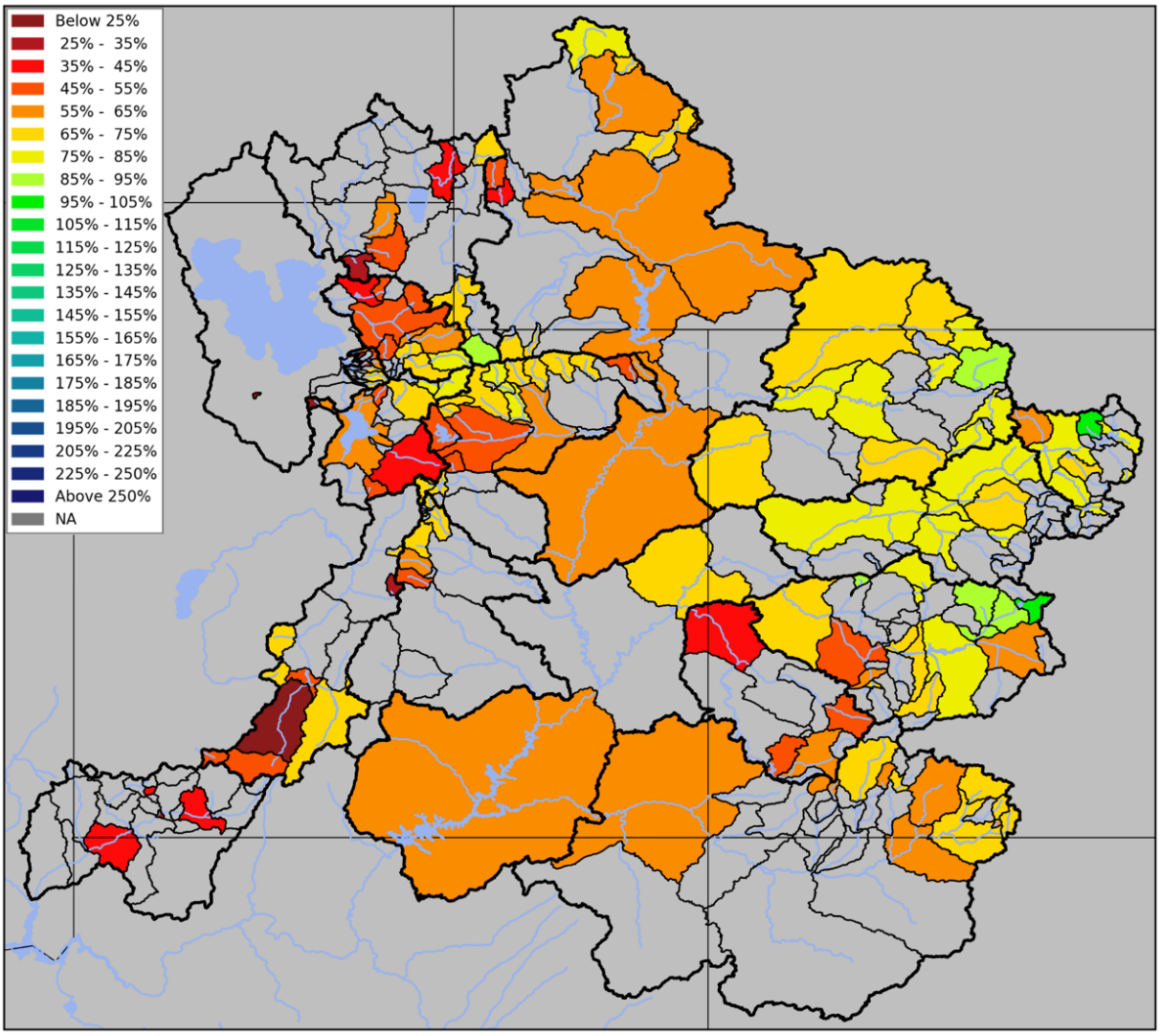
May 1 water supply forecast ranges (percent of normal) by basin:

Basin	Apr-Jul Water Supply Forecast Range
Upper Green	45-80%
Duchesne	50-85%
Yampa/White	65-95%
Upper Colorado Mainstem	55-95%
Gunnison	50-95%
Dolores	45-60%
San Juan	55-70%
Bear	35-85%
Weber	35-75%
Six Creeks	35-70%
Provo/Utah Lake	45-85%
Sevier	25-70%

April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle 475 KAF (65% average), Flaming Gorge 550 KAF (57%), Green Mountain 220 KAF (79%), Blue Mesa 490 KAF (77%), McPhee 136 KAF (53%), and Navajo 380 KAF (60%). The Lake Powell inflow forecast is 3.8 MAF (59% of average), which is a five percent decrease from April.

A series of weather disturbances will move through the western U.S. into next week. Weather conditions will be quite variable with warm, windy conditions ahead of the cold fronts and cooler weather behind the cold fronts. Unfortunately, significant precipitation is not expected in the 7-day forecast period. Light precipitation is expected across the northern portion of the area late this weekend into early next week, with 5-day precipitation totals generally at or below a quarter of an inch.

Seasonal Water Supply Forecasts



Upper Colorado, Great, Virgin River Basins
May 2022 April-July forecast volumes as a percent of the 1991-2020 average
(50% exceedance probability forecast)

For specific site water supply forecasts click here

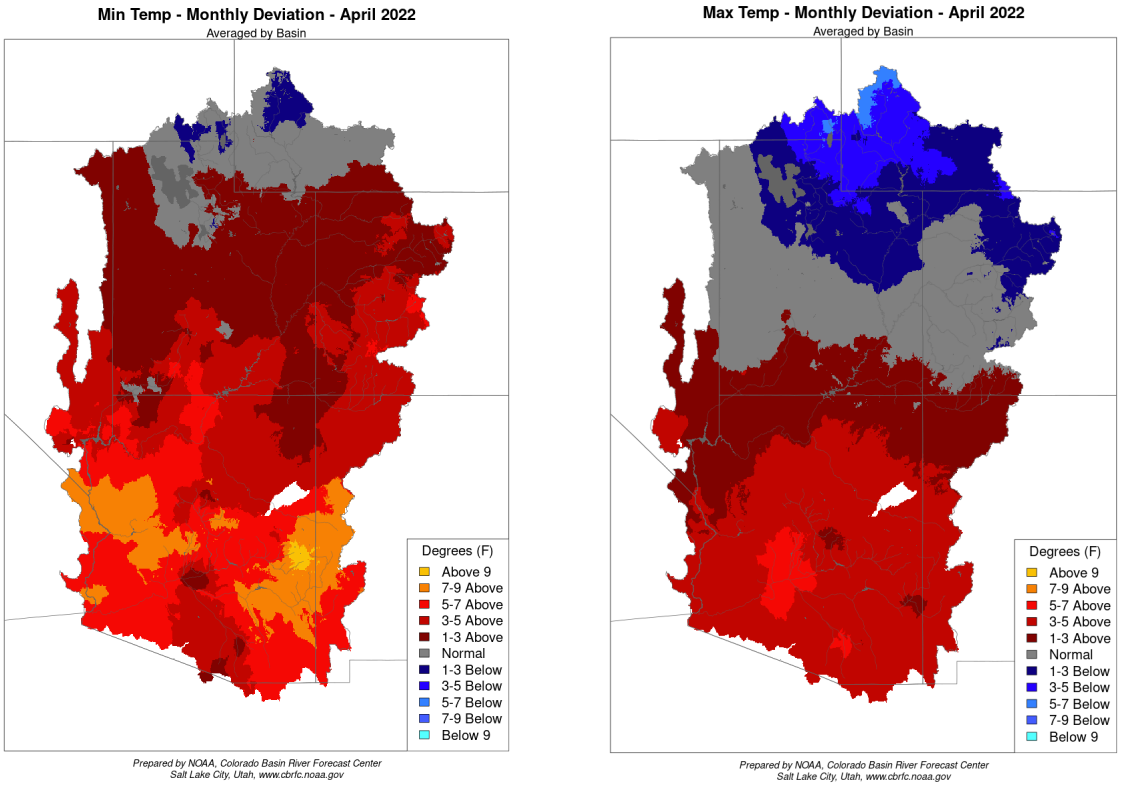
Water Supply Discussion

April Weather/Precipitation

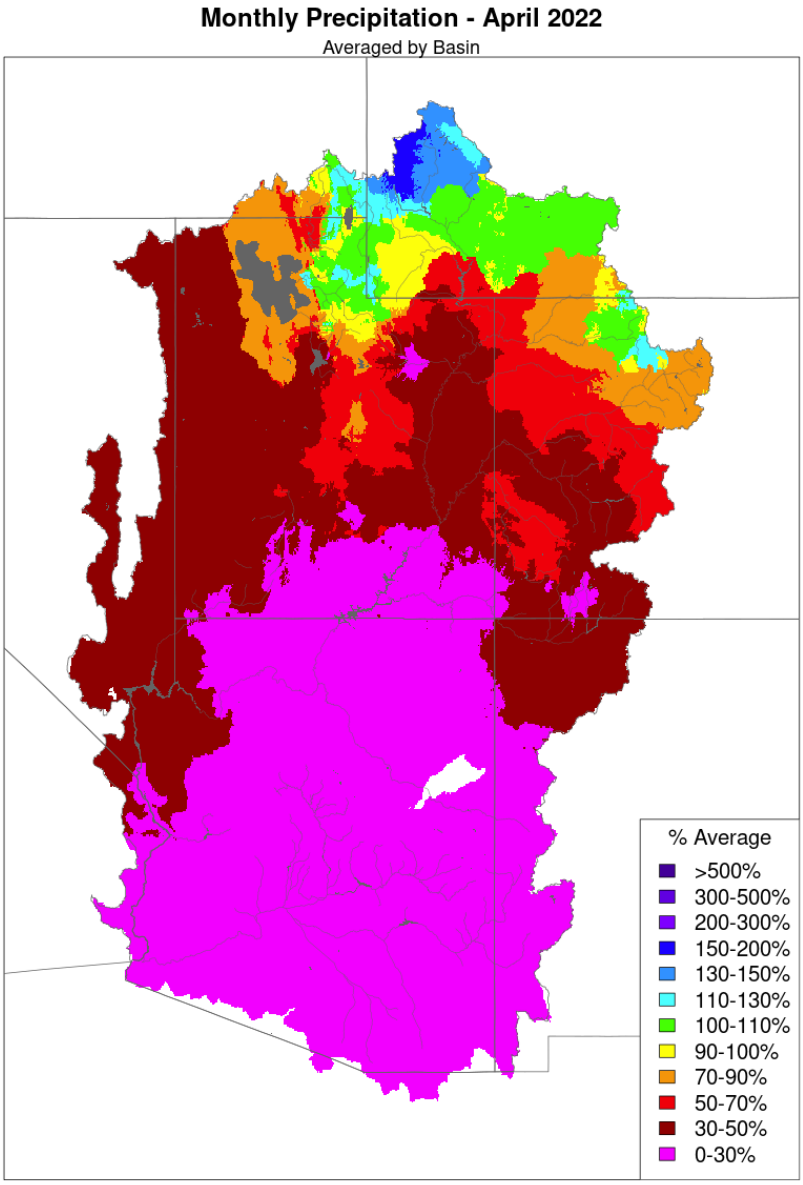
April weather was cooler/wetter than normal across far northern basins and warmer/drier than normal in the rest of the basins. April temperatures were generally near normal across the northern part of the region and above normal across southern basins. April 18-22 was an active period of snowmelt across most of the Upper Colorado River and Great Basins with temperatures around 5-15 degrees above normal during this period.

April precipitation was below normal across the majority of the Colorado River Basin, with monthly precipitation amounts generally decreasing from north to south. April precipitation was most favorable across headwaters of the Upper Green River Basin in southwest Wyoming, where most SNOTEL stations received 125-175% of normal monthly precipitation. Across western Colorado April precipitation was near normal across the headwaters of the White and Yampa basins, slightly below normal across the headwaters of the Colorado River mainstem, and well below normal across southwest Colorado (Gunnison/Dolores/San Juan basins).

April precipitation across the Great Basin was most favorable across northern, high elevation areas.The Bear and Weber basins near the Utah-Idaho-Wyoming border as well as the Six Creek and Provo River drainages in north-central Utah received near normal precipitation during April. The southern half of Utah (Sevier/Virgin basins) extending south into Arizona (Lower Colorado River Basin) received well below normal precipitation during April.



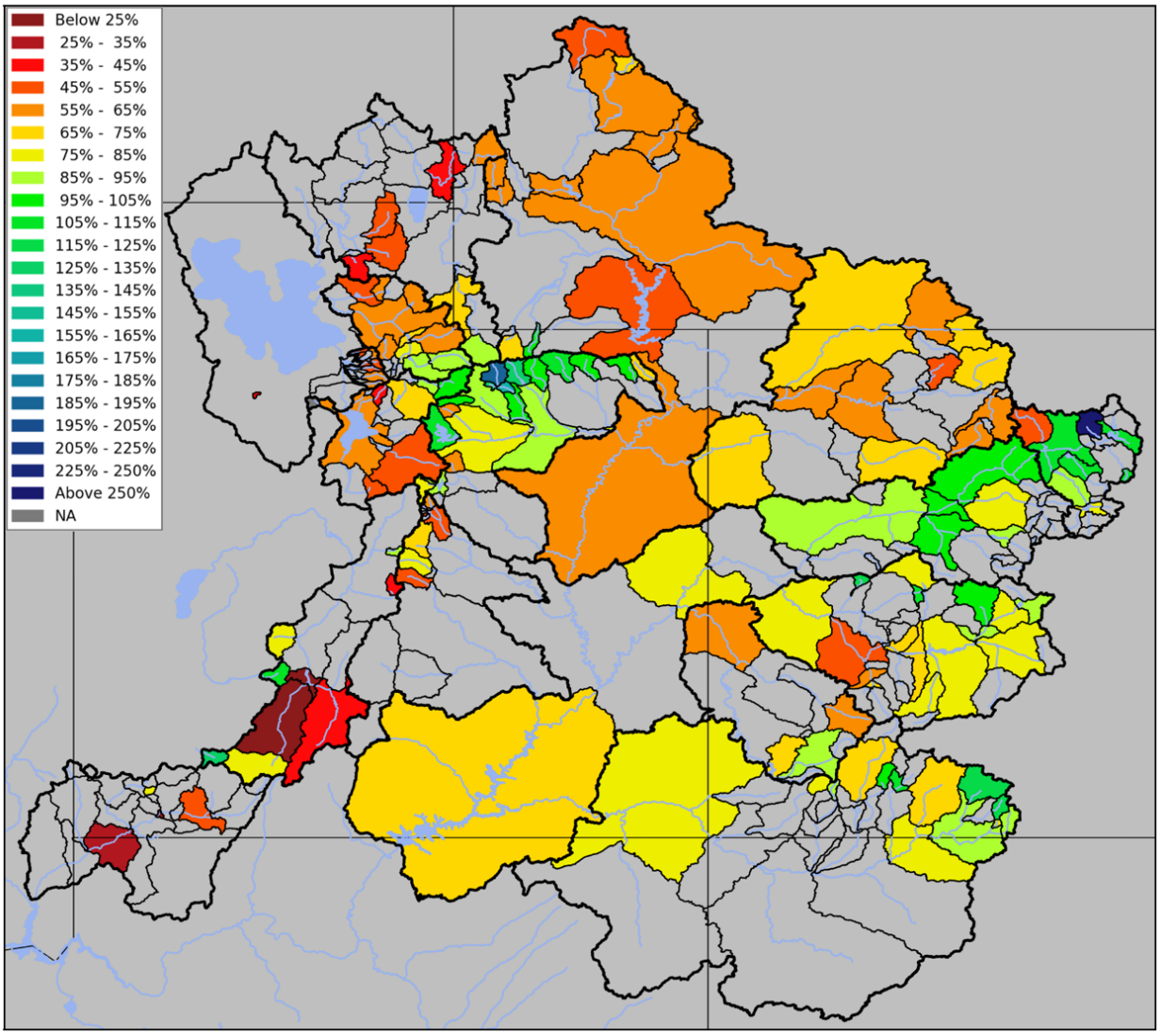
April minimum temperature (left) and maximum temperature (right) departure from the 1991-2020 average.



April 2022 percent of normal precipitation.
(Averaged by basins defined in the CBRFC hydrologic model)

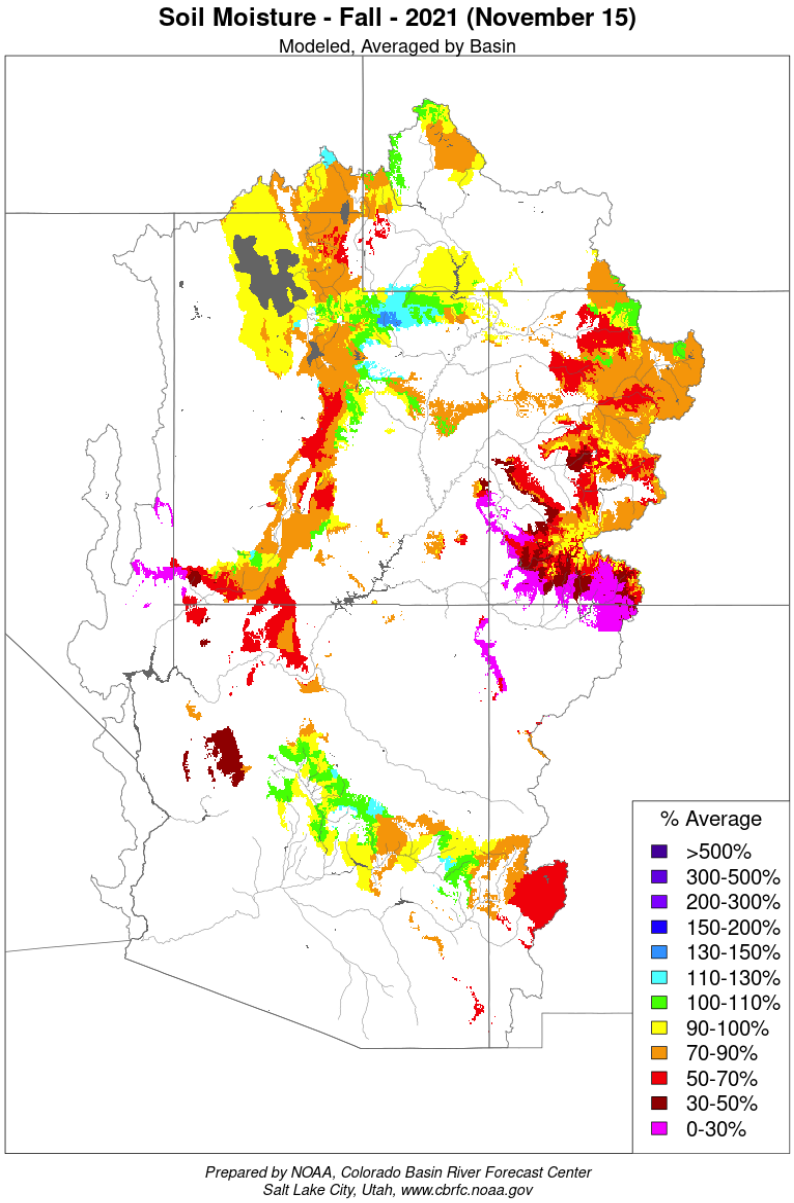
April Observed Streamflow/Antecedent Soil Moisture Conditions

Observed unregulated streamflow volumes during April were variable across the Upper Colorado and Great Basins with flows as a percent of average generally increasing from north to south. Northern basins generally saw less snowmelt runoff during April due to cooler and cloudier weather and southern basins experienced more snowmelt runoff as a result of warmer and sunnier weather. Notable areas with near to above average April flows include the southern slope of the Uinta Mountains in northeast Utah, lower elevation basins along the mainstem of the Colorado River, and some higher elevation basins in the Gunnison and San Juan basins across southwest Colorado. The East Troublesome Fire (October 2020) has continued to have a noticeable impact within the Willow Creek drainage (dark blue basin within Upper Colorado headwaters in below image), where runoff timing has been earlier than normal and runoff efficiency has been higher than normal.



Upper Colorado, Great, Virgin River Basins
April 2022 observed unregulated volumes as a percent of the 1991-2020 average.

The timing and magnitude of spring runoff is impacted by a number of factors including snowpack conditions, spring weather, antecedent soil moisture conditions, and dust-on-snow conditions. Despite southwest Utah (Virgin basin) and southwest Colorado (Gunnison/Dolores/San Juan basins) seeing April weather conditions that were favorable to generating snowmelt runoff, observed April flows were below average across a number of basins in these areas, which is not unexpected given that antecedent soil moisture conditions (image below) were below normal heading into the runoff season. Conversely, antecedent soil moisture conditions were above normal (higher runoff efficiency) across much of the Duchesne River Basin (Uinta Mountains/northeast Utah) and observed April flows were more consistently near to above average.



Fall 2021 CBRFC hydrologic model (antecedent) soil moisture conditions.

Snowpack

May 1 snow water equivalent (SWE) conditions are generally below the 1991-2020 normal (median) across the region and are summarized in the below table. April's unsettled weather across far northern basins led to additional snow accumulation in higher elevations and reduced snowmelt rates due to cooler and cloudier weather. Elsewhere, below average April precipitation and more continuous snowmelt occurred due to warmer and sunnier weather and led to declines in percent of normal SWE values during the month.

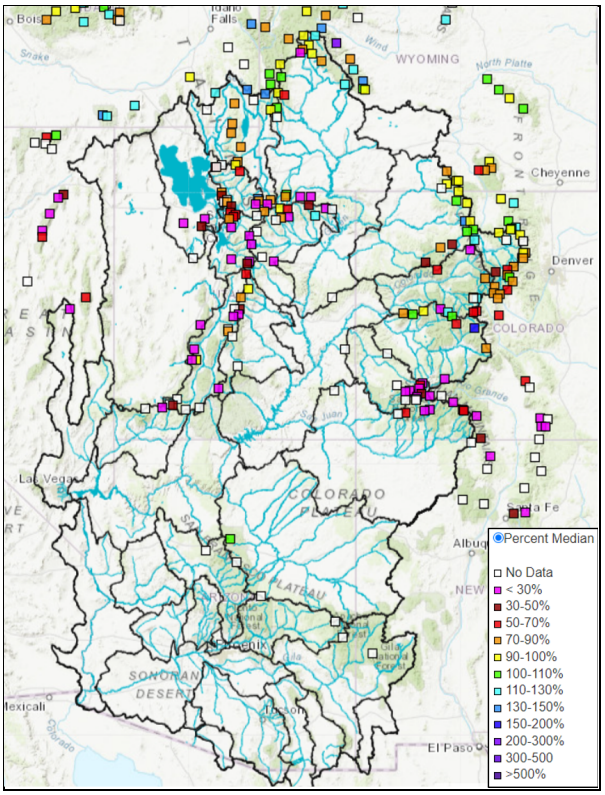
Upper Colorado River Basin May 1 SWE conditions range from 45-90% of normal. During April SWE conditions as a percent of normal increased in the Upper Green, remained relatively steady across northwest Colorado (White/Yampa/Upper Colorado headwaters), and declined across southwest Colorado (Gunnison/Dolores/San Juan basins) and northeast Utah (Duchesne basin).

Great Basin May 1 SWE conditions range from 45-85% of normal, with conditions generally decreasing from north to south and faring the best across the Bear River Basin near the Utah-Wyoming-Idaho border. Snow continued to accumulate across higher elevations of the northern Great Basin (Bear/Weber basins). SWE as a percent of normal declined during April across the southern Great Basin (Provo/Sevier basins) due to below normal precipitation and snowmelt during the month.

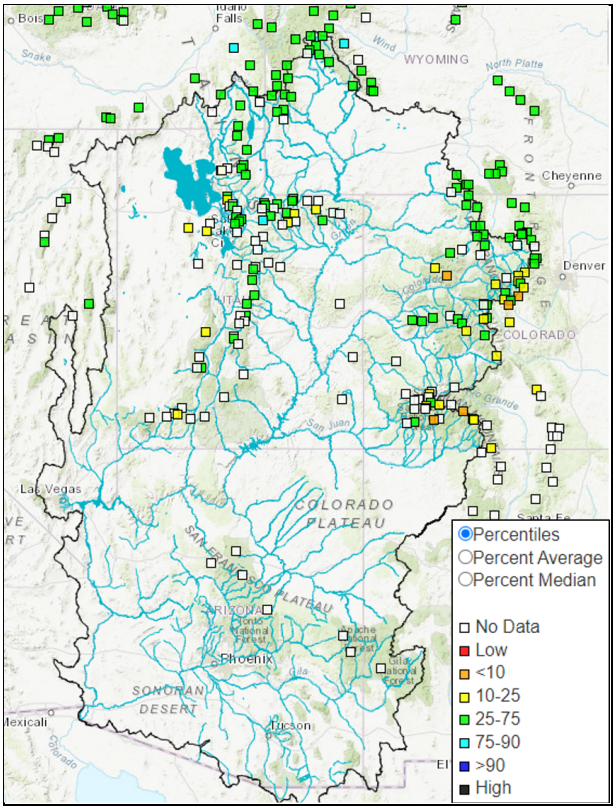
April 1 - May 1 basin SWE summary (NRCS SNOTEL):

Basin	Apr1 %Median SWE	May1 %Median SWE
Upper Green	75	84
Duchesne	89	65
White/Yampa	84	87
UC Headwaters	89	88
Roaring Fork	106	91
Gunnison	103	75
Dolores	89	44
San Juan	103	46
Bear	68	87
Weber	66	71
Provo/UT Lake	71	61
Sevier	87	46

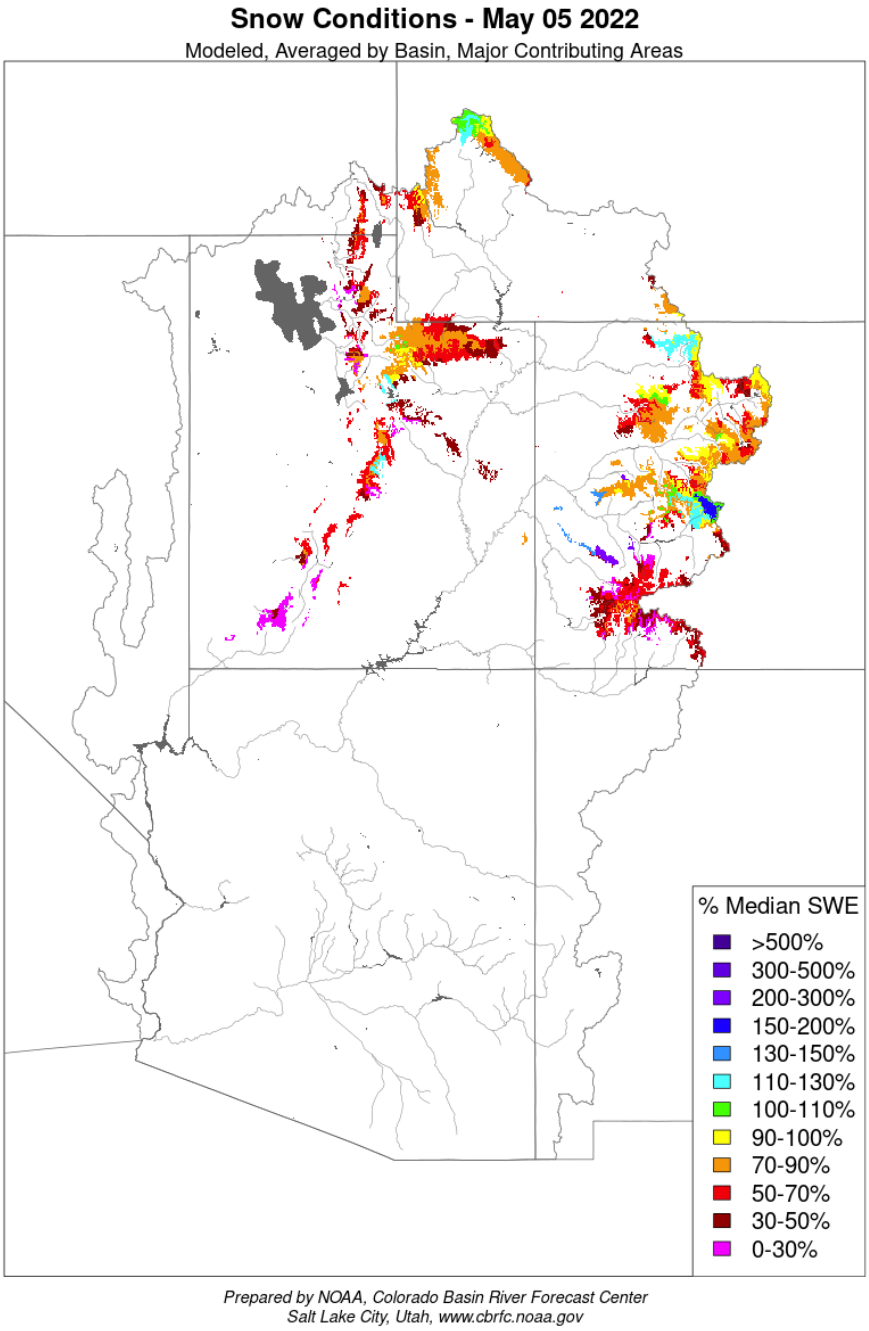
The images below show observed (SNOTEL) snow conditions and CBRFC hydrologic model snow conditions. It's important to note that in the spring after the normal time of peak snowpack has passed, percent median SWE can be misleading and vary significantly from day to day, as well as site to site, depending on the rate of snowmelt, new snow accumulation, and the magnitude of the median value. A map of SNOTEL SWE percentiles is also provided below for reference.



SNOTEL percent median observed SWE - May 5, 2022.



SNOTEL observed SWE percentiles - May 5, 2022.



CBRFC hydrologic model percent median SWE - May 5, 2022.

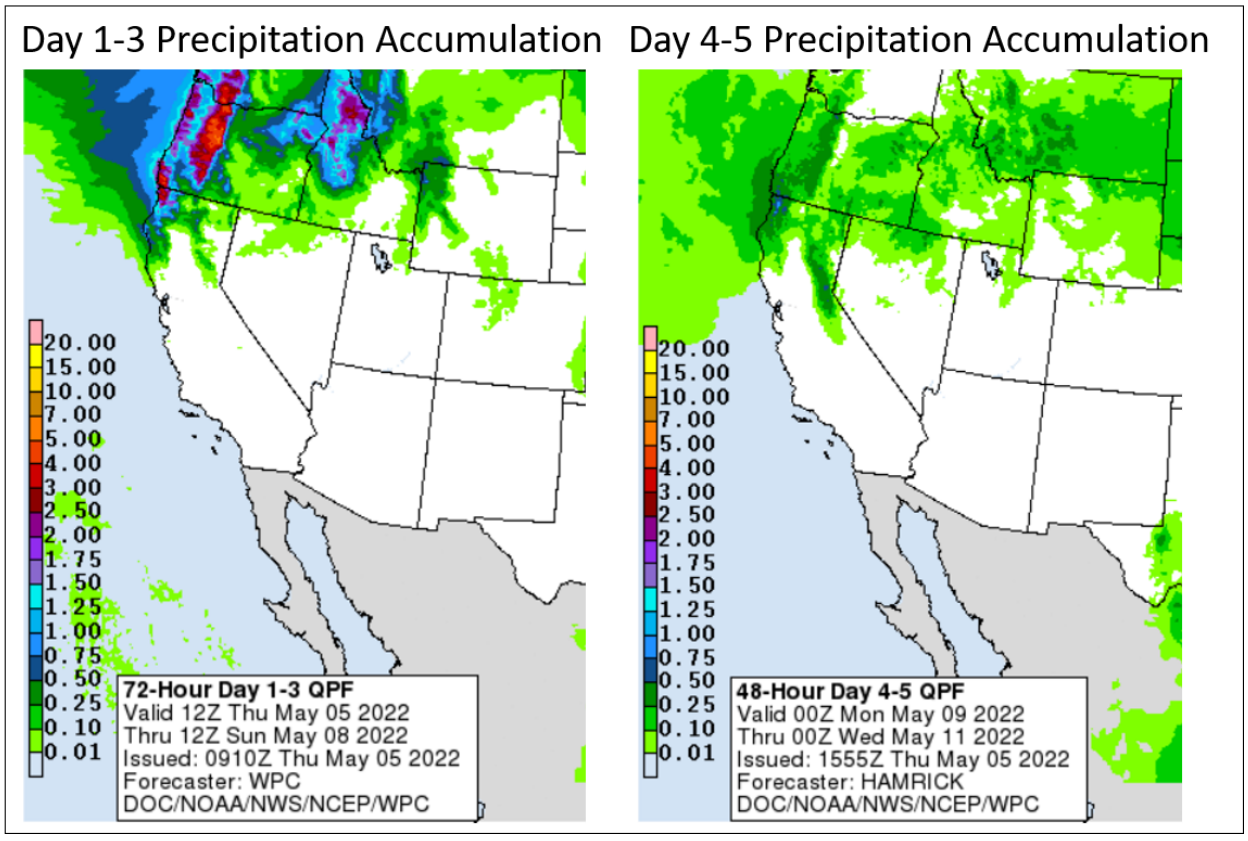
For updated SNOTEL information refer to click here
For CBRFC hydrologic model snow click here

Upcoming Weather

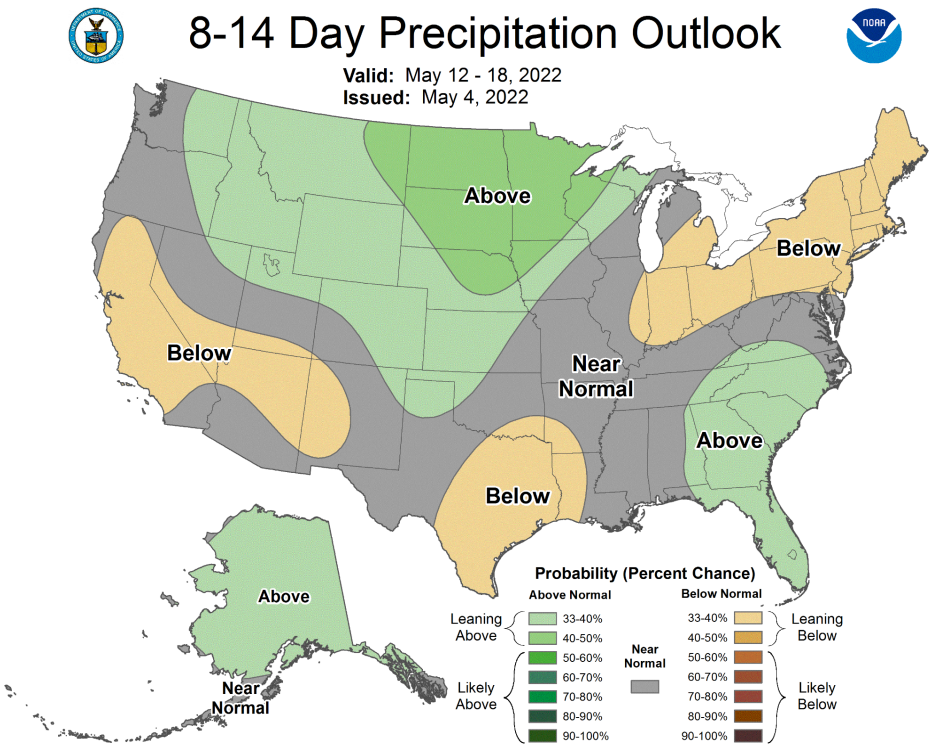
A series of weather disturbances will move through the western U.S. into next week sending a number of cold fronts through the area. As a result, weather conditions will be quite variable with warm, windy conditions ahead of the cold fronts and cooler weather behind the cold fronts. Unfortunately, significant precipitation is not expected in the 7-day period. High pressure will build across the area into Friday resulting in above normal temperatures across the area. The southern half of the area will see the largest temperature increase with high temperatures forecast to be five to ten degrees above normal. Gusty winds are expected across the southern half of the area Friday ahead of a cold front that will move through the area this weekend.

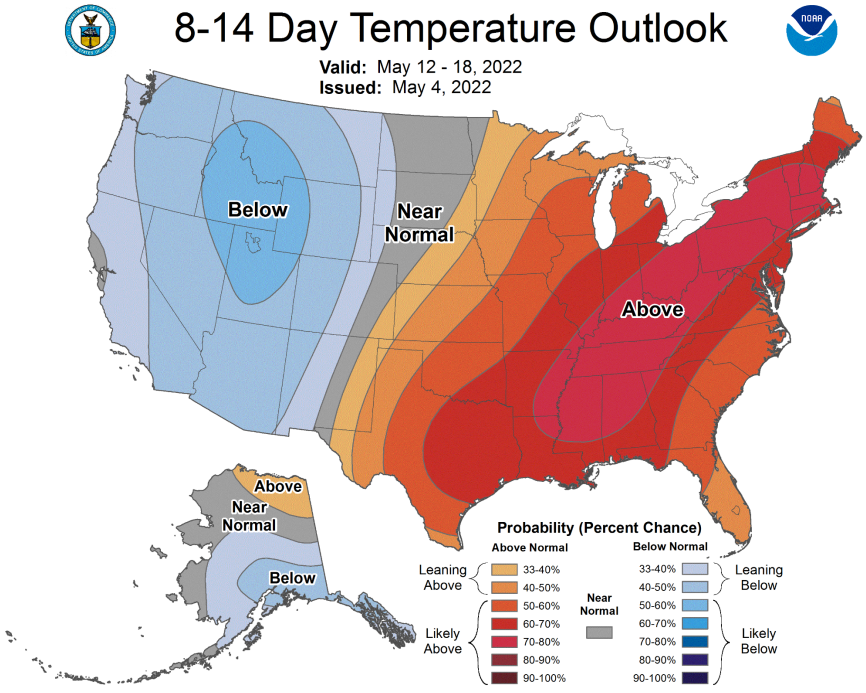
Temperatures will trend downward on Saturday and Sunday as a cold front moves through, with the most dramatic temperature drops across northern Utah. Light precipitation is expected across the northern portion of the area, with 5-day totals generally at or below a quarter of an inch.

Another storm will move through the western U.S. early next week bringing another round of cooler temperatures and light precipitation to the northern portion of the area. Unsettled weather is expected to continue through next week. However, there is disagreement among various weather models in regards to the track of the storms.



NWS Weather Prediction Center precipitation forecast for May 5-11, 2022.





NWS Climate Prediction Center precipitation and temperature probability forecasts for April 13-19, 2022.

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