February 1, 2020 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.

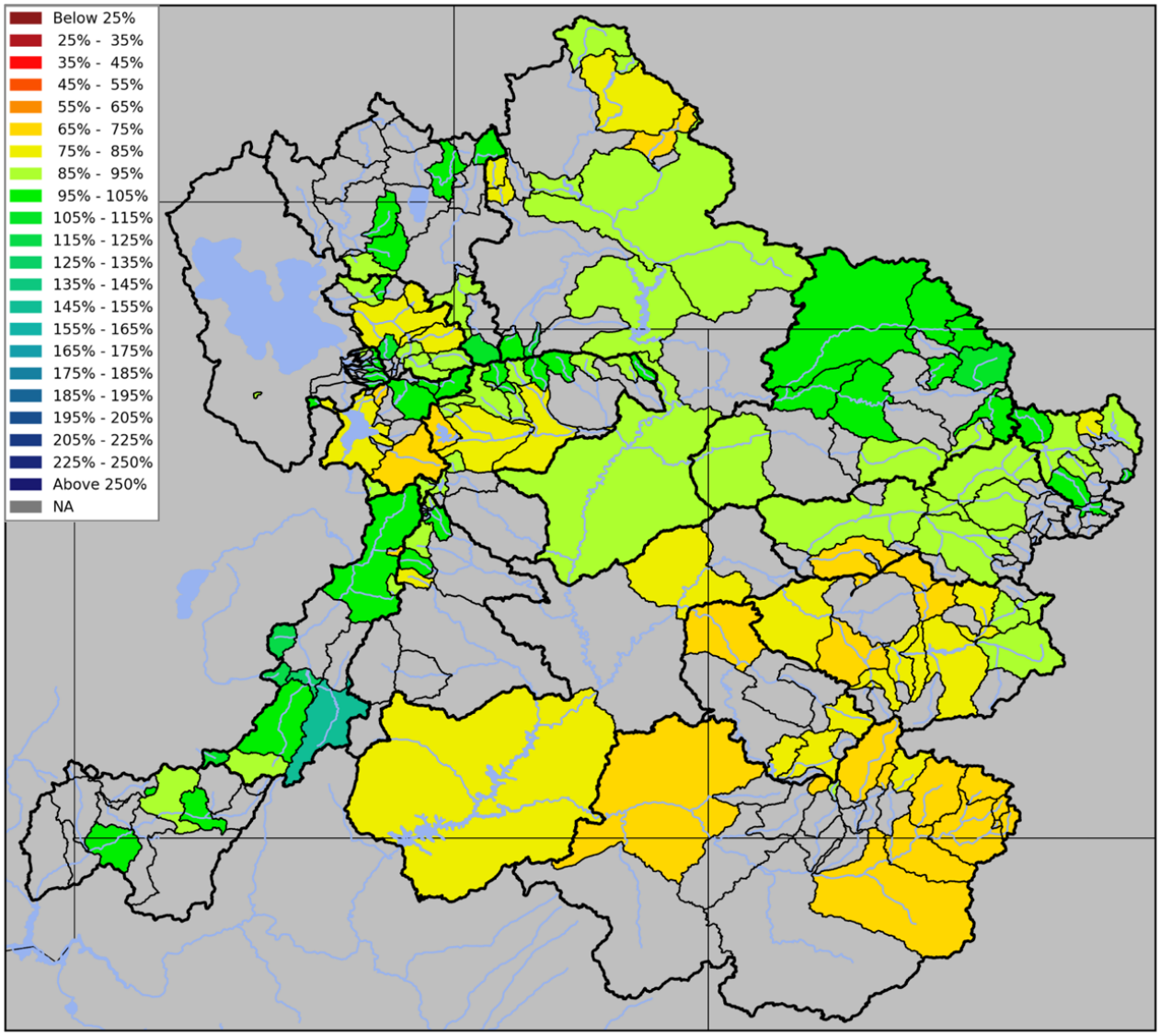
Water Supply Forecast Summary

April-July water supply volume forecasts are generally near to below average throughout the Upper Colorado River Basin and Great Basin as of early February. Water supply volume forecasts have increased as much as 15% since early January in northern Utah (Bear, Weber, Six Creeks basins), southwest Wyoming (Upper Green River Basin), and the Yampa River Basin in northwest Colorado. The improved water supply outlook is due to above average precipitation in January and anticipated active weather through mid February. January precipitation in the Duchesne, White, and Upper Colorado River headwaters was near normal and water supply forecasts did not change significantly during the past month. Water supply volume forecasts in the Gunnison, Dolores, and San Juan basins declined during the past month due to below average January precipitation. Below average soil moisture conditions entering the winter season continue to negatively impact water supply forecasts in southwest Colorado.

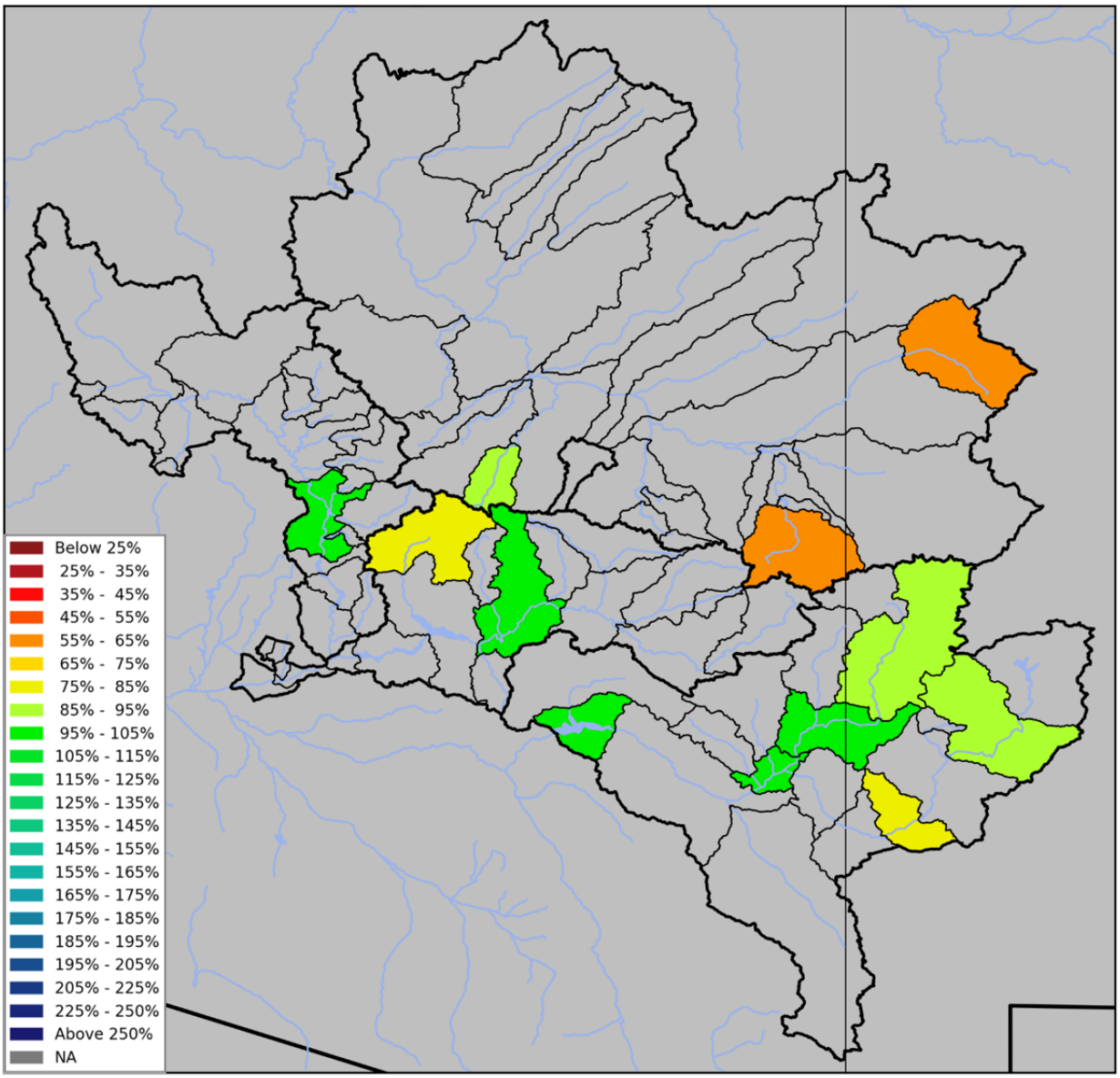
April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 620 KAF (86% average), Flaming Gorge 870 KAF (89% of average), Blue Mesa Reservoir 560 KAF (83% of average), McPhee Reservoir 235 KAF (80% of average), and Navajo Reservoir 500 KAF (68% of average). The Lake Powell inflow forecast is 5.70 MAF (80% of average), a two percent decrease from January.

In the Lower Colorado River Basin of Arizona and New Mexico, January precipitation was much below average. As a result, January-May runoff forecasts decreased in the Verde, Salt, and Little Colorado basins. The Upper Gila remained the same or decreased slightly. January-May volume forecasts are now near to slightly below the 1981-2010 historical median across much of the Lower Basin. The Virgin River Basin in southwest Utah also received below average precipitation in January. Although April-July runoff forecasts are still near average over much of the Virgin Basin, there was a slight decrease from January 1st.

Seasonal Water Supply Forecasts



Upper Colorado, Great, Virgin River Basins: February 2020 April-July forecast volumes as a percent of 1981-2010 average.



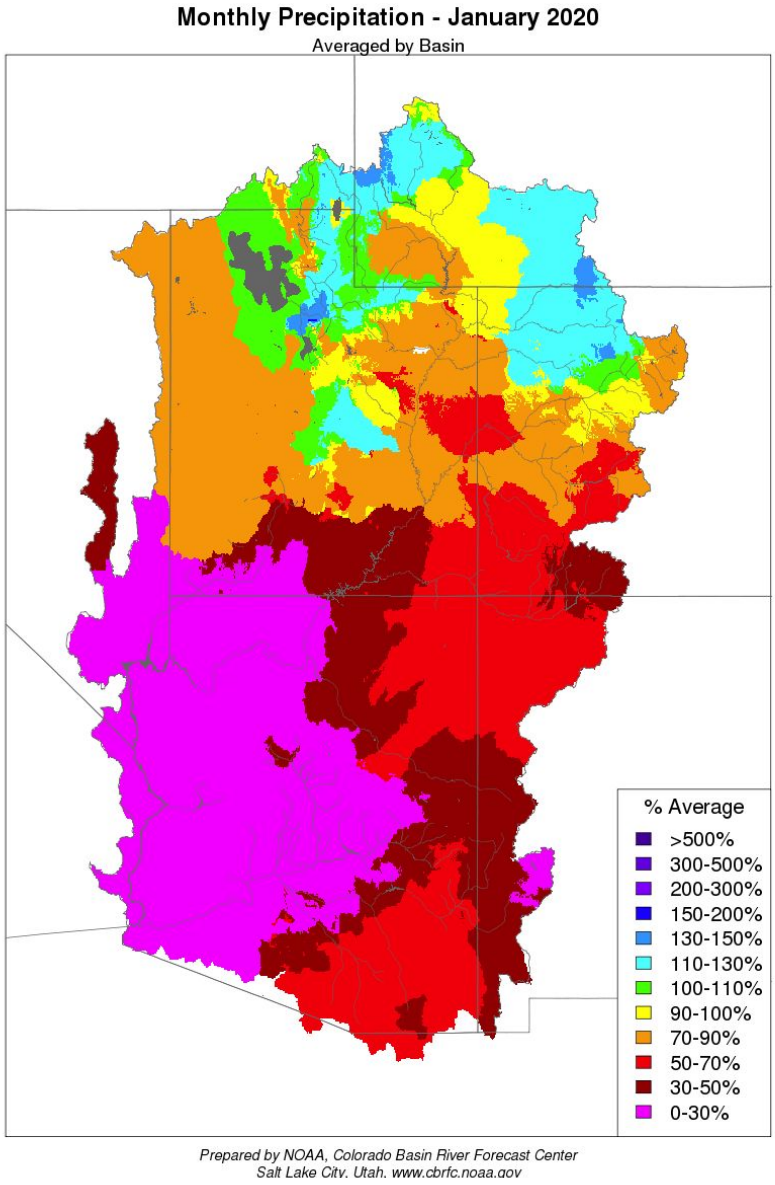
Lower Colorado Basin (AZ/NM): February 2020 January-May forecast volumes as a percent of 1981-2010 median.

For specific site water supply forecasts click here

Water Supply Discussion

January Precipitation

The mean weather pattern during the month of January featured a ridge along the West Coast, with storm systems clipping northern portions of Utah/Colorado and Wyoming. The storm systems brought slightly below average temperatures and above average precipitation to the Great Basin, Upper Green headwaters, and Yampa River Basins. Unfortunately, the pattern was not conducive to bringing storm systems to southern Utah/Colorado and the Lower Basin, which resulted in well below normal precipitation totals for the month in those areas. Eastern Arizona basins (Upper Salt and Gila) did benefit from subtropical moisture associated with a couple minor storm systems that occurred during the last half of the month.

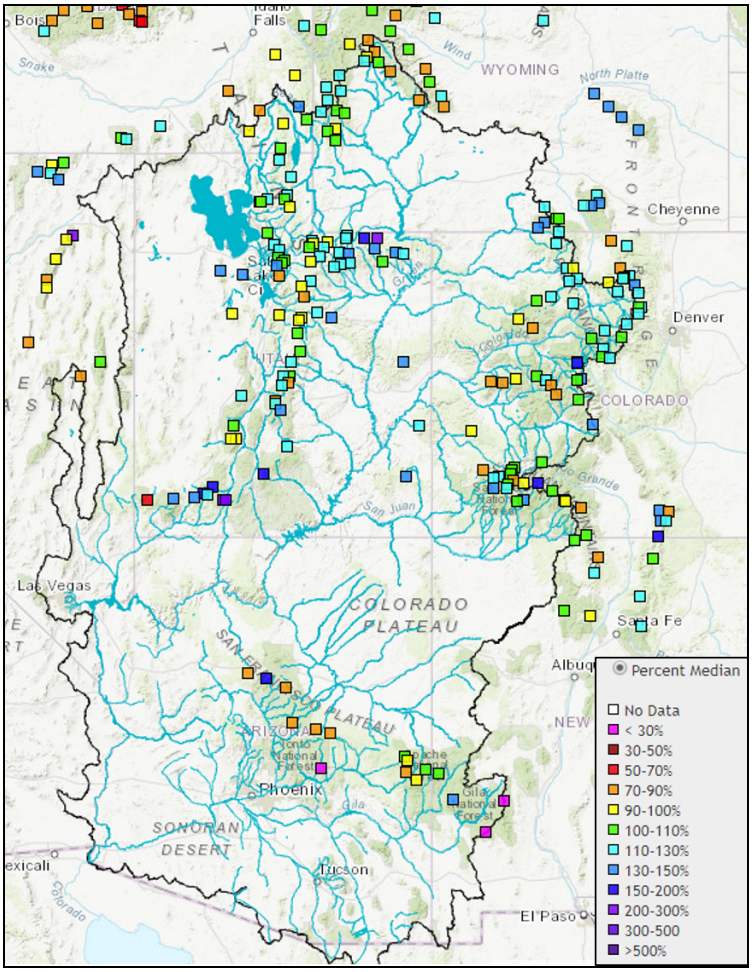


January 2020 percent of normal precipitation.
(Averaged by basins defined in the CBRFC hydrologic model)

Snowpack

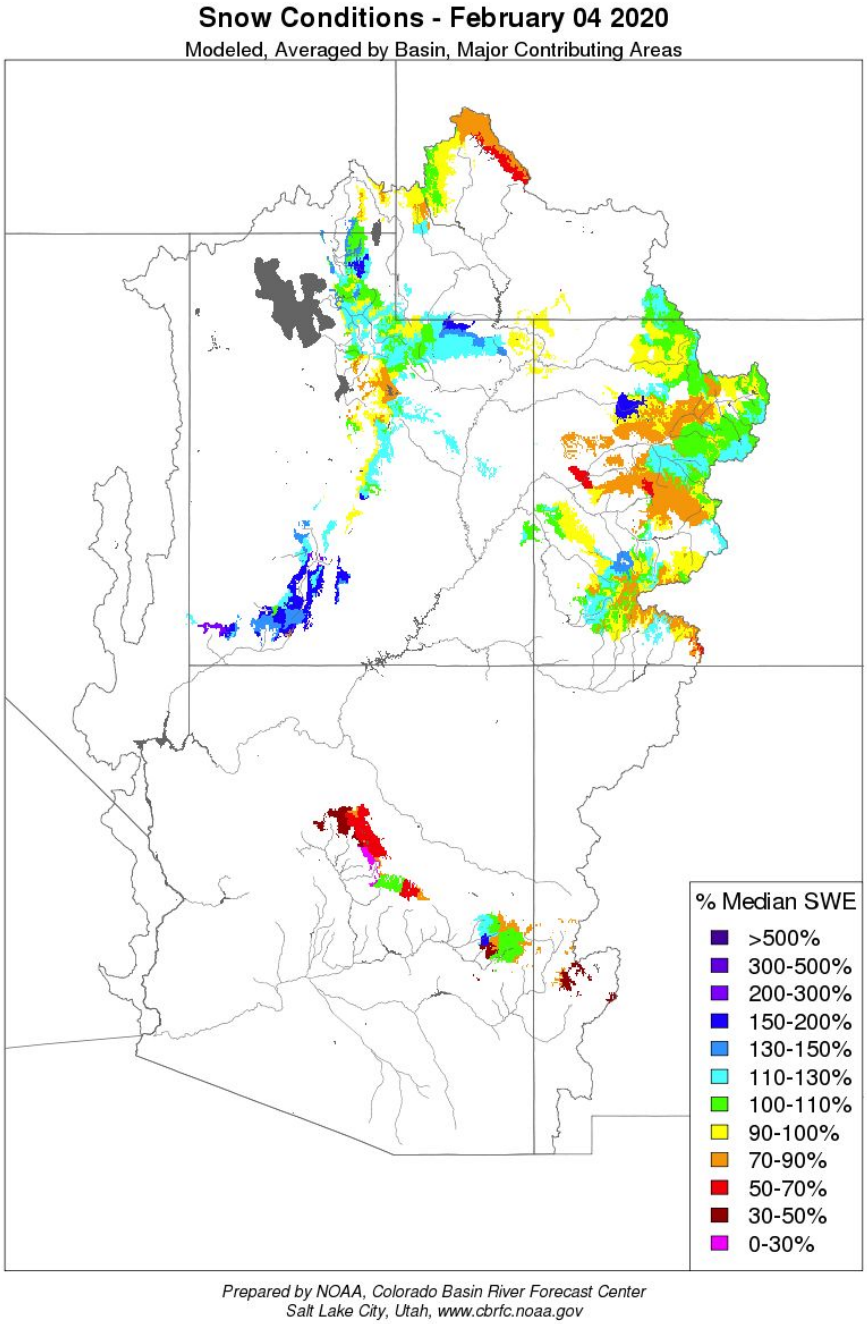
Observed snow water equivalent (SWE) conditions as of early February are generally near to above normal (median) throughout the CBRFC forecast area. Upper Colorado River Basin SWE conditions as a percent of the 1981-2010 median improved the most during January in the Upper Green River Basin, where snow conditions are now near normal. Although well below average January precipitation resulted in a decline in Gunnison, Dolores, and San Juan basin snow conditions, southwest Colorado SWE conditions remain near normal as of early February. Snow conditions as a percent of the historical median continue to be near to above normal in the Duchesne, White, Yampa, and Upper Colorado headwater basins. SWE conditions in southwest Utah remain well above (125-150%) normal in the Virgin River Basin and near normal in the Sevier basin. Across the Great Basin, snowpack conditions are mostly near to above normal as of early February, with the Bear River Basin SWE benefiting the most from January's weather pattern.

SWE conditions in the Lower Colorado River Basin declined during January due to a combination of snowmelt and much below average precipitation. However, snowpack conditions remain near normal in the Verde, Salt, and Little Colorado basins. Snow conditions as of early February are least favorable in the Upper Gila basin, where SWE is around 70% of the historical median. It's worth noting that SWE conditions in the Lower Colorado River Basin are more variable and tend to fluctuate more frequently over time. Early February observed (SNOTEL) conditions as a percent of the 1981-2010 historical median is shown in the image below.



Observed (SNOTEL) percent median SWE conditions as of February 4, 2020.

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



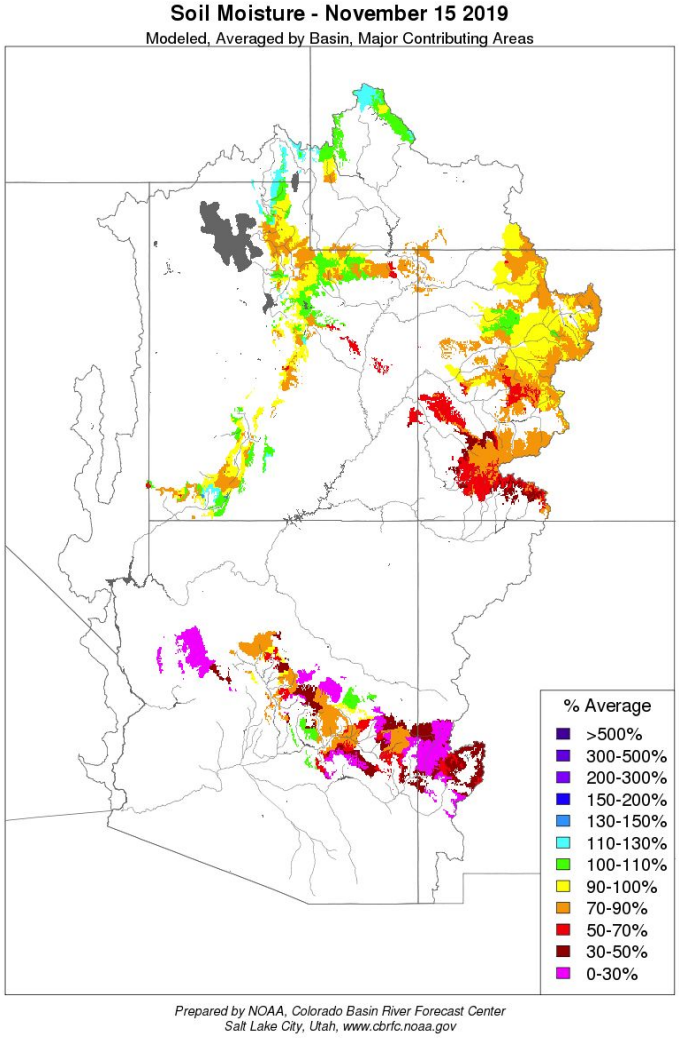
CBRFC hydrologic model snow conditions in significant runoff areas as of February 4, 2020.

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

Soil Moisture

CBRFC hydrologic model soil moisture parameters 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.

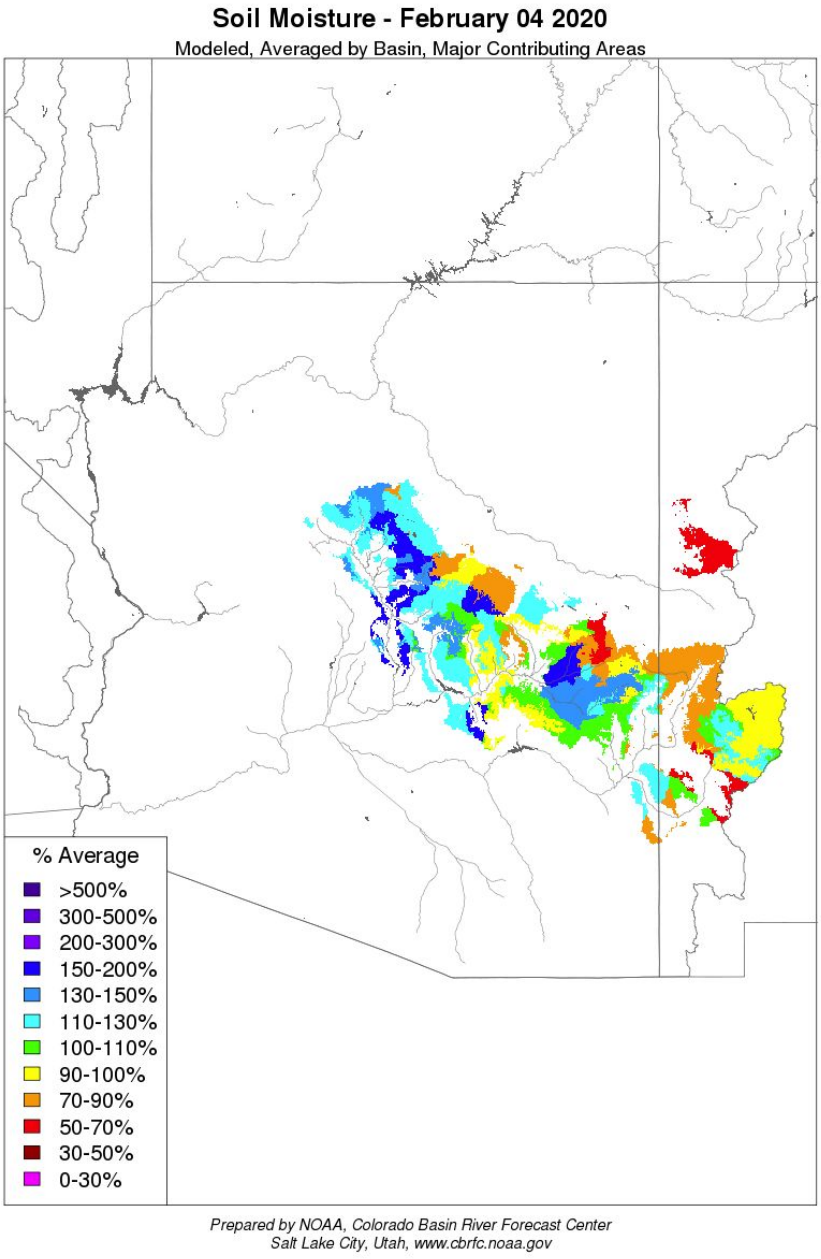
Modeled soil moisture conditions as of November 15, 2019 were variable across the Upper Colorado River Basin and Great Basin, with conditions generally declining from north to south. In the Great Basin, soil moisture conditions were near average. Within the Upper Colorado River Basin, the Upper Green and Duchesne basins entered the winter with the most favorable soil moisture conditions, while the White, Yampa, and Colorado River mainstem basins entered the winter with below average soil moisture conditions. The Gunnison, Dolores, and San Juan basins in southwest Colorado entered the winter season with much below average soil moisture conditions, primarily due to the poor 2019 monsoon season.



CBRFC hydrologic model soil moisture entering the winter season (percent of 1981-2010 average).

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.

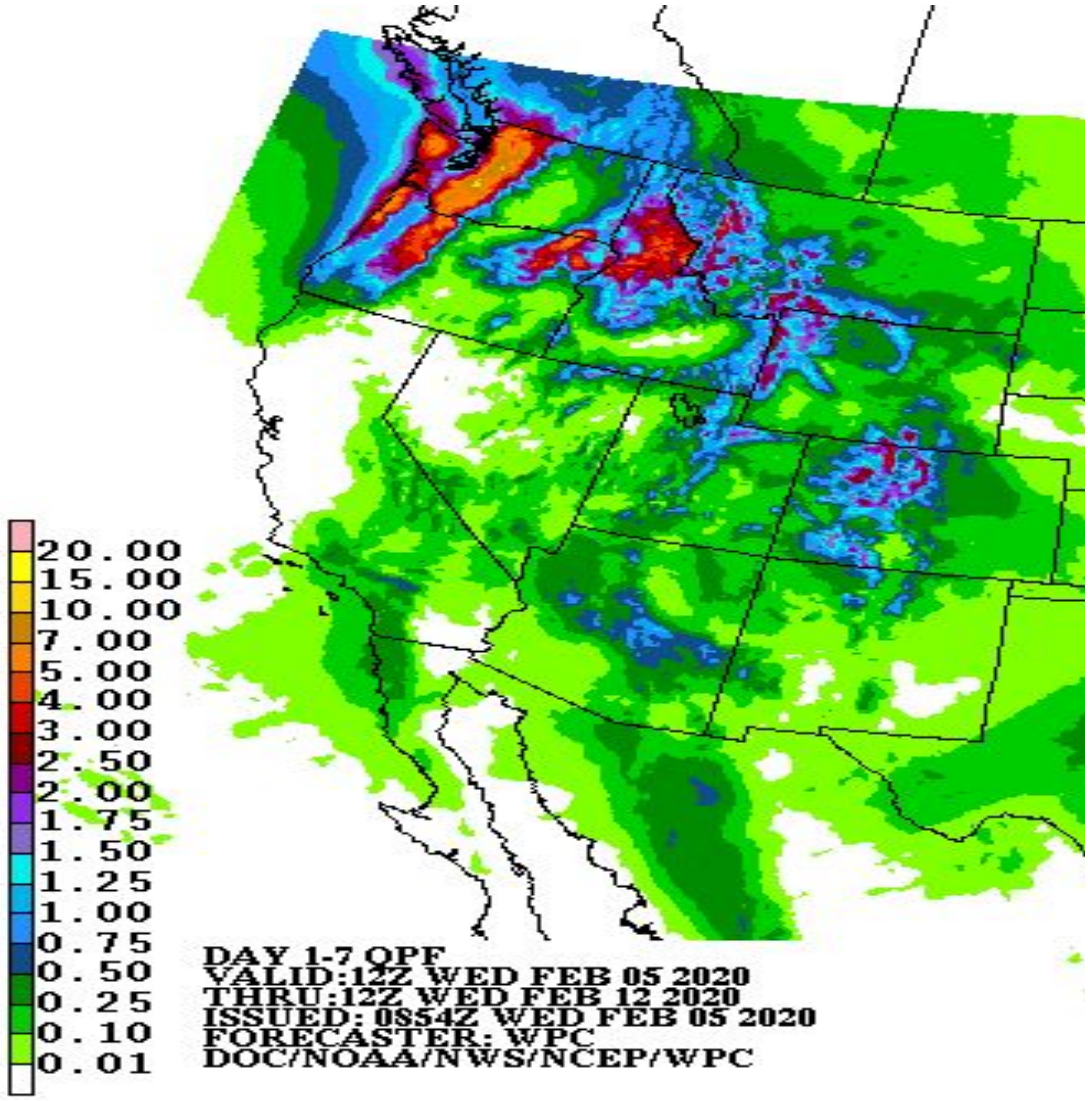
After the unfavorable 2019 monsoon season, winter soil moisture conditions improved significantly throughout the Lower Colorado River Basin in December due to above average precipitation. Well below normal January precipitation has resulted in a decline in Lower Colorado River Basin soil moisture conditions, although many basins remain above average as of early February. A summary of Lower Colorado River Basin model soil moisture conditions as of early February is shown in the image below.



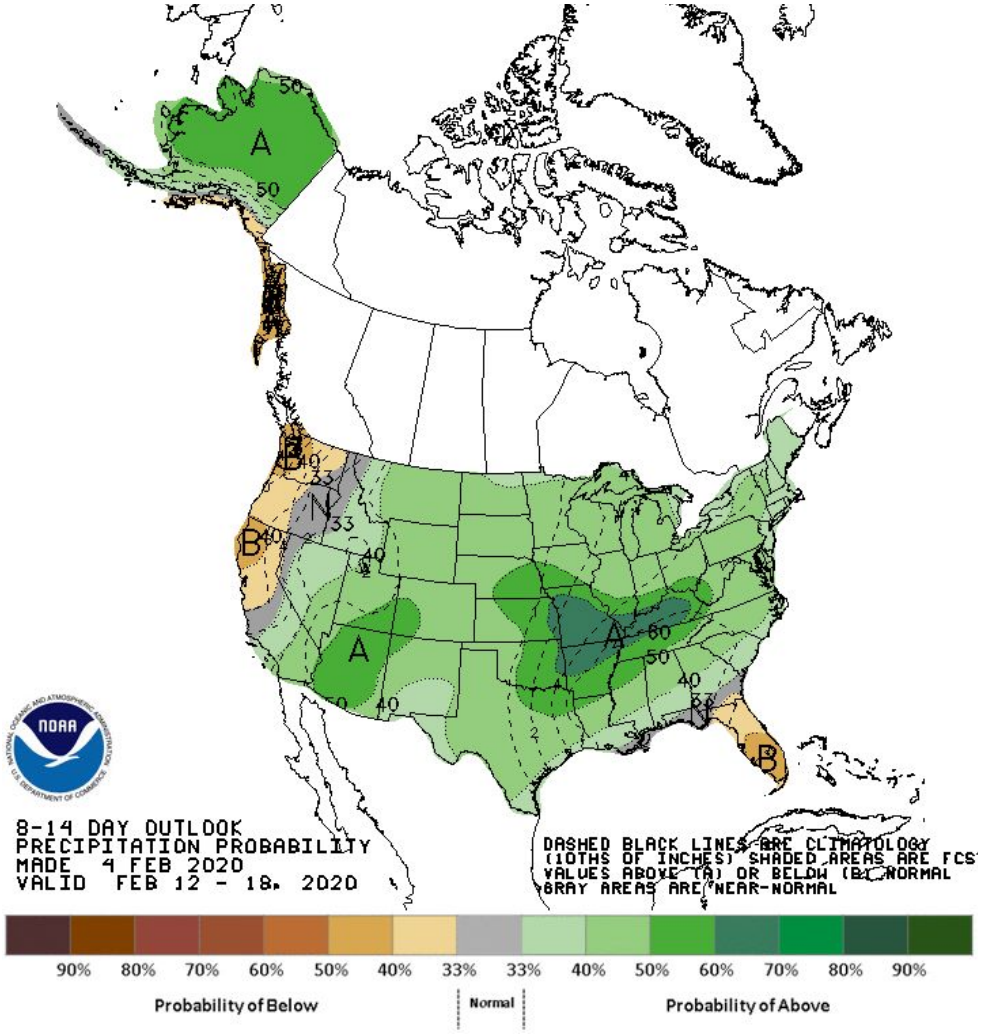
Lower Colorado River Basin (AZ/NM) model soil moisture as of February 4, 2020.

Upcoming Weather

The weather pattern during the first week of February is similar to January. A persistent jet stream will combine with plentiful moisture streaming in from the Pacific to produce large precipitation amounts through Friday across the mountainous areas of northern Utah/Colorado and Wyoming. In fact, some mountain locations in the Upper Green headwaters and Yampa Basin are forecasted to receive over 50% of their monthly precipitation in the next few days. There is a general drying trend during the weekend before a weaker storm system impacts mainly Arizona and southwest Colorado by early next week, bringing some much needed precipitation after a dry January. Weather models are in fairly good agreement that a deep mean trough will exist over the Intermountain West from February 12-16, for a continuation of below normal temperatures and general unsettled conditions.



NWS Weather Prediction Center precipitation forecast for Feb 5-12, 2020.



NWS Climate Prediction Center precipitation probability forecast for Feb 12-18, 2020.

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