

January 1, 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.

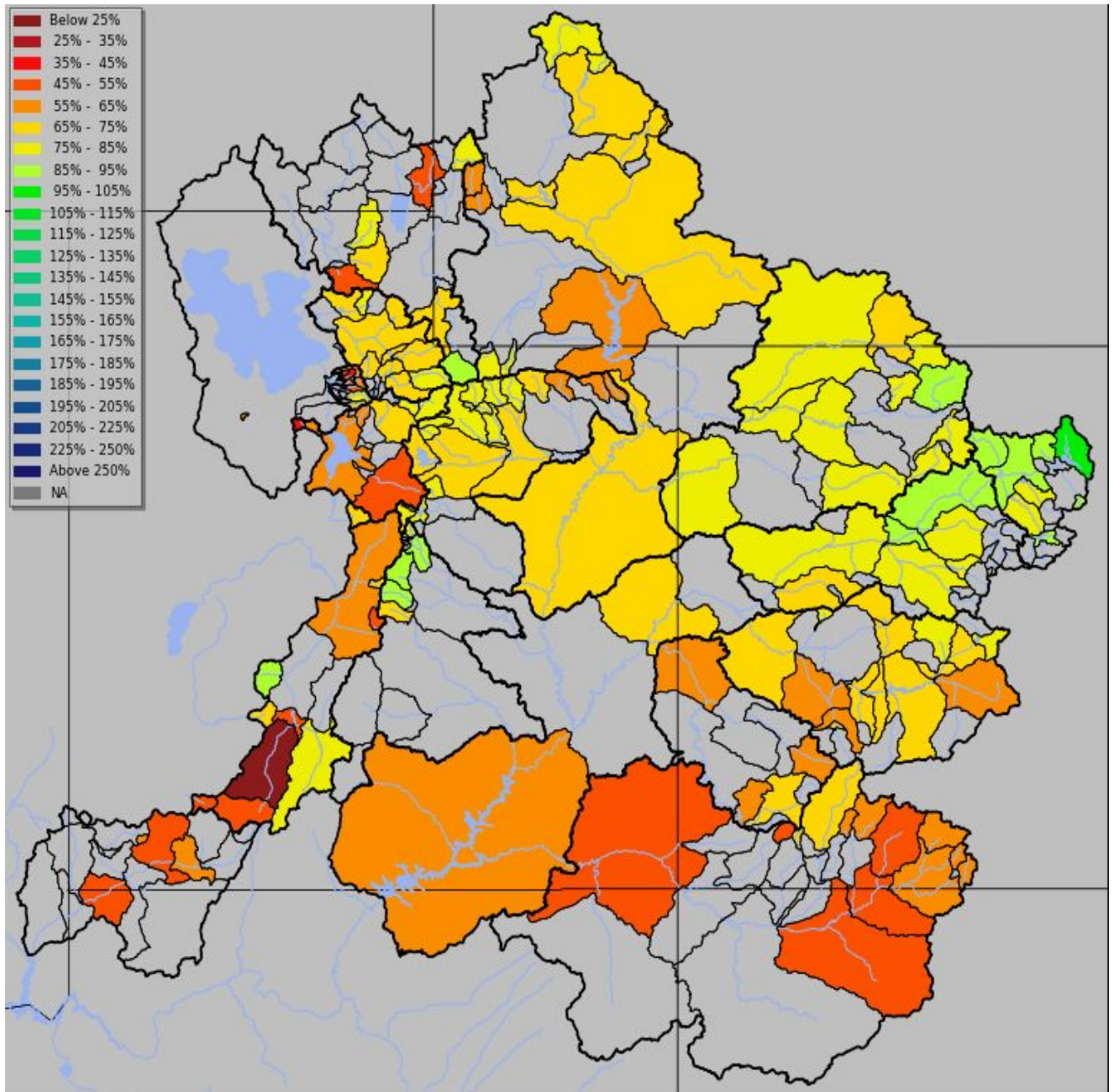
Water Supply Forecast Summary:

April-July water supply volume forecasts are below average throughout the Upper Colorado River Basin and Great Basin as of early January. Snowpack conditions are much better in most areas compared to this time last year yet remain below normal in several areas, particularly in the San Juan and Dolores River Basins, the eastern Duchesne River Basin, and Green River Basin headwaters in Wyoming. Near or above normal snowpack conditions exist in the headwaters of the Colorado River Mainstem and the western part of the Duchesne River Basin. In these areas runoff volumes are forecast to be closer to average. Hydrologic models also indicate below average soil moisture conditions widespread throughout the Colorado River and Great Basins entering the winter season. The dry soils are also having a negative impact on water supply forecasts particularly in areas where snowpack conditions are also poor.

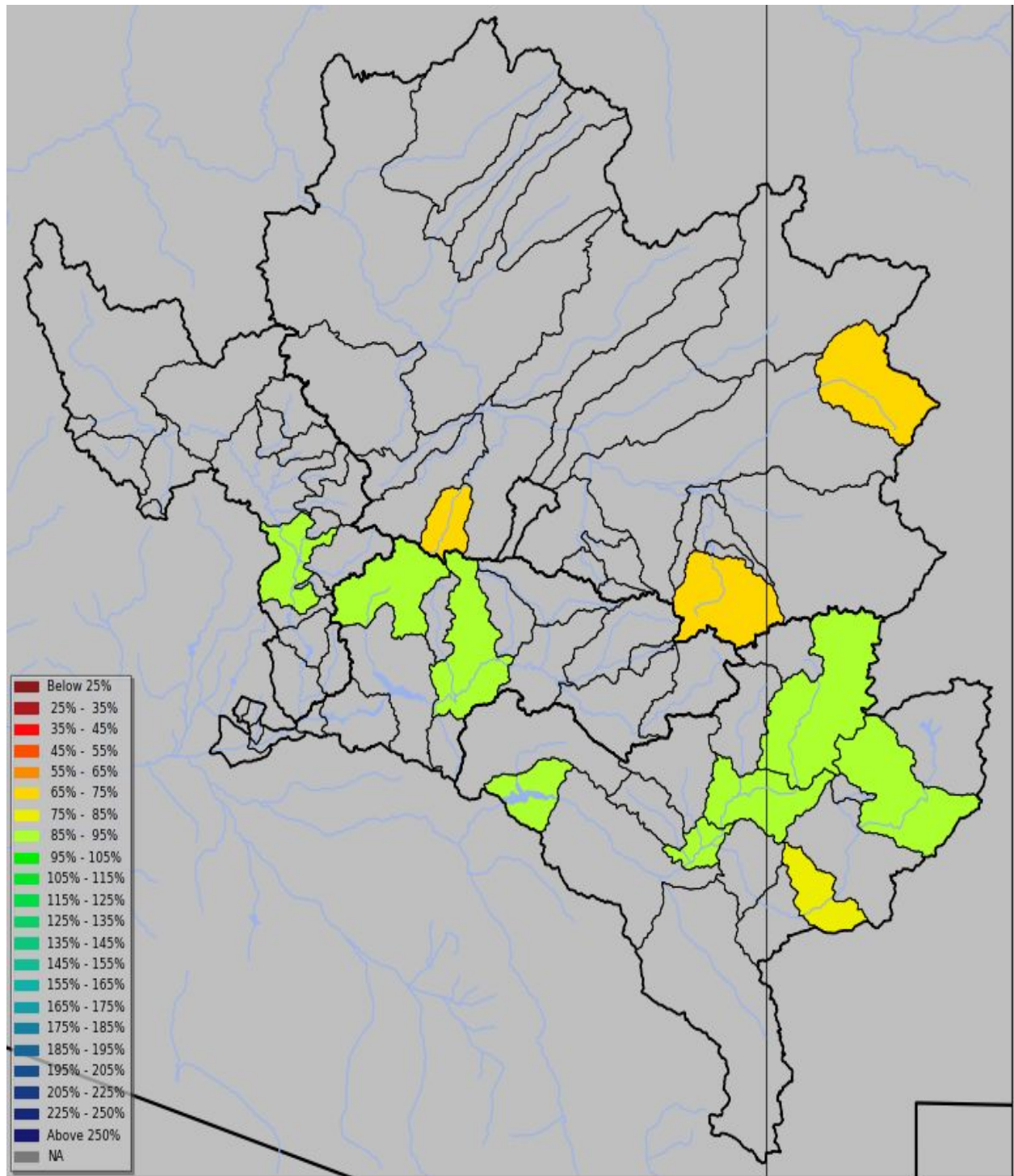
April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 500 KAF (69% average), Flaming Gorge 630 KAF (64% of average), Blue Mesa Reservoir 500 KAF (74% of average), McPhee Reservoir 190 KAF (64% of average), and Navajo Reservoir 370 KAF (50% of average). The Lake Powell inflow forecast is 4.55 MAF (64% of average).

In the Lower Colorado River Basin of Arizona and New Mexico soil moisture conditions are much below average following below average precipitation in November and December. Snow conditions are more variable and are generally below normal at higher elevations. Typically this would result in quite low January-May runoff volume projections, however El Niño conditions are expected to develop through the winter months. This correlates with better chances for above average precipitation in these areas and has resulted in slightly higher forecasts. January-May runoff volumes in the Lower Colorado River Basin of Arizona and New Mexico are expected to range from near 75 to 95 percent of the historical 1981-2010 median.

Seasonal Water Supply Forecasts:



Upper Colorado, Great, Virgin River Basins: 2019 April-July forecast volumes as a percent of 1981-2010 average
(50% exceedance probability forecast)



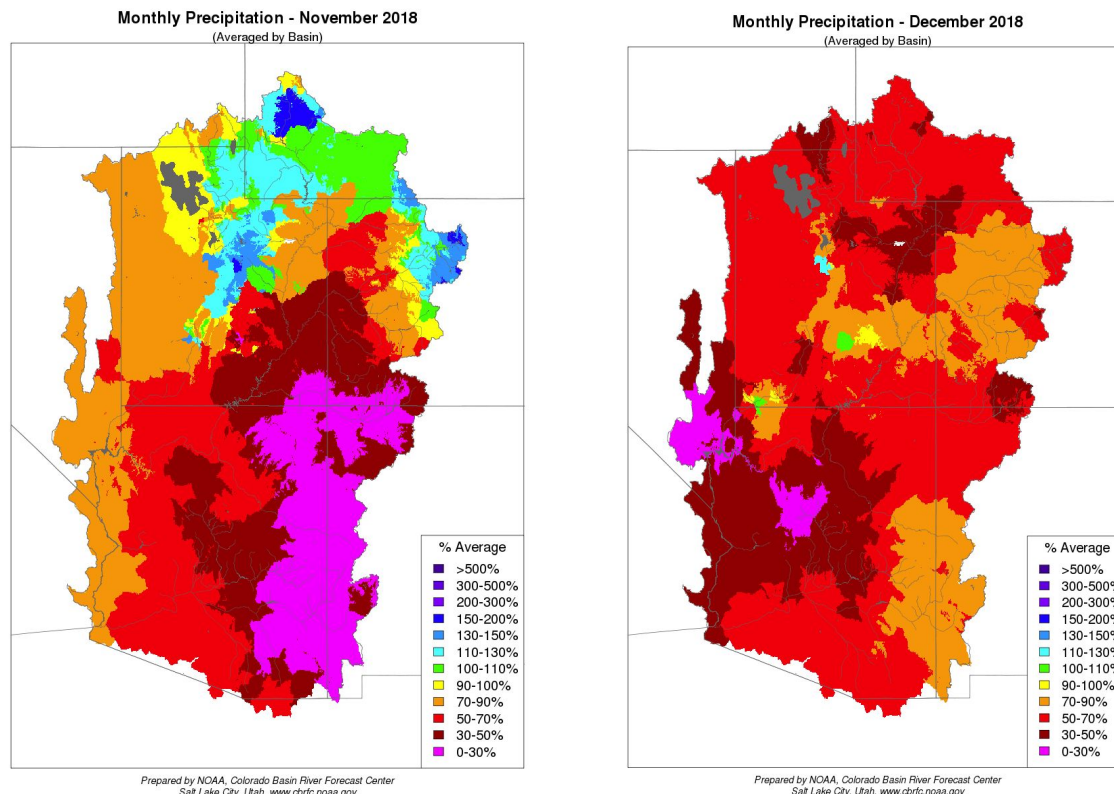
Lower Colorado Basin (AZ/NM): 2019 January-May forecast volumes as a percent of 1981-2010 median
(50% exceedance probability forecast)

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

Water Supply Discussion

November/December Precipitation:

An active storm pattern existed over northern Utah and Colorado during the month of November producing above normal precipitation. The headwaters of the Colorado River Mainstem was the wettest during November (receiving 130-150 percent of normal precipitation), and by December 1st, this area was well above normal for snowpack. A storm system moved across the Upper Colorado region in early December (2nd thru the 3rd), producing widespread snow. The rest of December was quite dry across much of the Western U.S. as a ridge of high pressure dominated the weather pattern. Overall, December finished below normal for precipitation with most higher elevation areas receiving less than 70 percent of average precipitation. A similar story played out across the Lower Colorado River Basin of Arizona and New Mexico. After a very wet October over the Lower Colorado Basin due to the remnants of tropical systems Rosa and Sergio, much of Arizona and New Mexico received less than 70 percent of normal precipitation during both November and December.



November 2018 and December 2018 Percent of Normal Precipitation
(Averaged by basins defined in the CBRFC hydrologic model)

Snowpack:

The SNOTEL map image below indicates near or above normal (median) snowpack conditions are limited to the Colorado River headwater areas, Yampa River Basin, western Duchesne River Basin, and tributaries of the Green River Basin in central Utah. Most other areas in the Upper Colorado River and Great Basins are below normal as of early January. The lowest snowpack with respect to the historical median exists in the eastern Duchesne River Basin,

Virgin River Basin of southwest Utah, and in the Dolores and San Juan Basins of southwest Colorado.

Snowpack conditions in the Lower Colorado River Basin are more variable and tend to fluctuate more frequently over time as normal values in early January are typically on the low side. A couple of SNOTEL sites in the Gila and White River Basins are above normal for this time of year, however in general most SNOTEL sites are reporting below normal conditions.

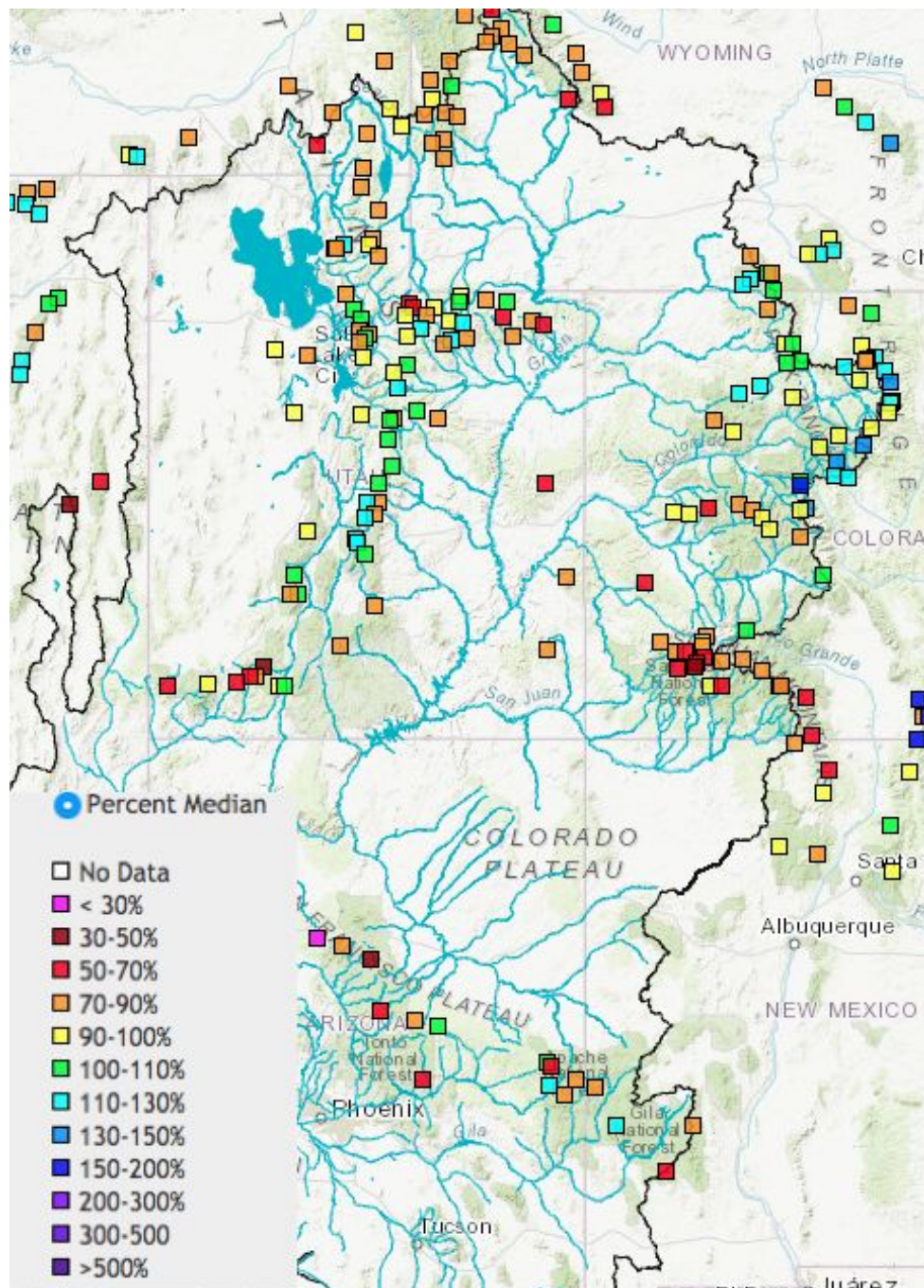


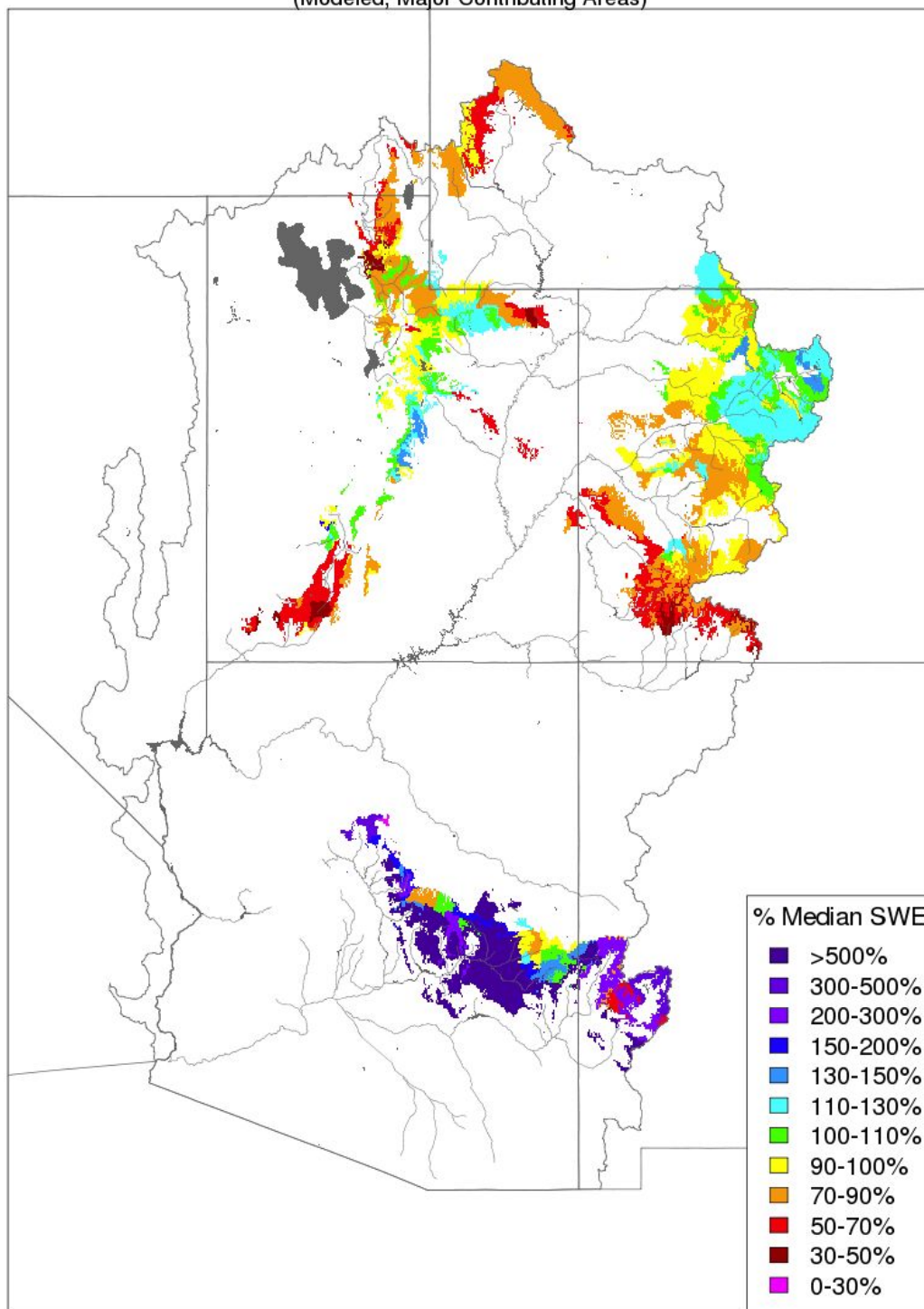
Image: Percent Median Snow Conditions as of January 4th 2019

The image below is the representation of snow in the CBRFC hydrologic model. In the Lower Colorado River Basin of Arizona and New Mexico model snow conditions are indicating much above normal (median) conditions, however this is a result of the historical medians for this time of year being so low (generally less than an inch of snow water equivalent). Exercise caution when viewing these images in areas where normal snow conditions are typically low as conditions can fluctuate largely from day to day and even a small amount of snow may have a large impact.

Throughout the Upper Colorado River Basin and Great Basin model snow conditions correlate very closely to what SNOTEL sites indicate.

Snow Conditions - January 03 2019

(Modeled, Major Contributing Areas)



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

Modeled Snow: Snow representation from the CBRFC hydrologic model January 3rd, 2019

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

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

Soil Moisture:

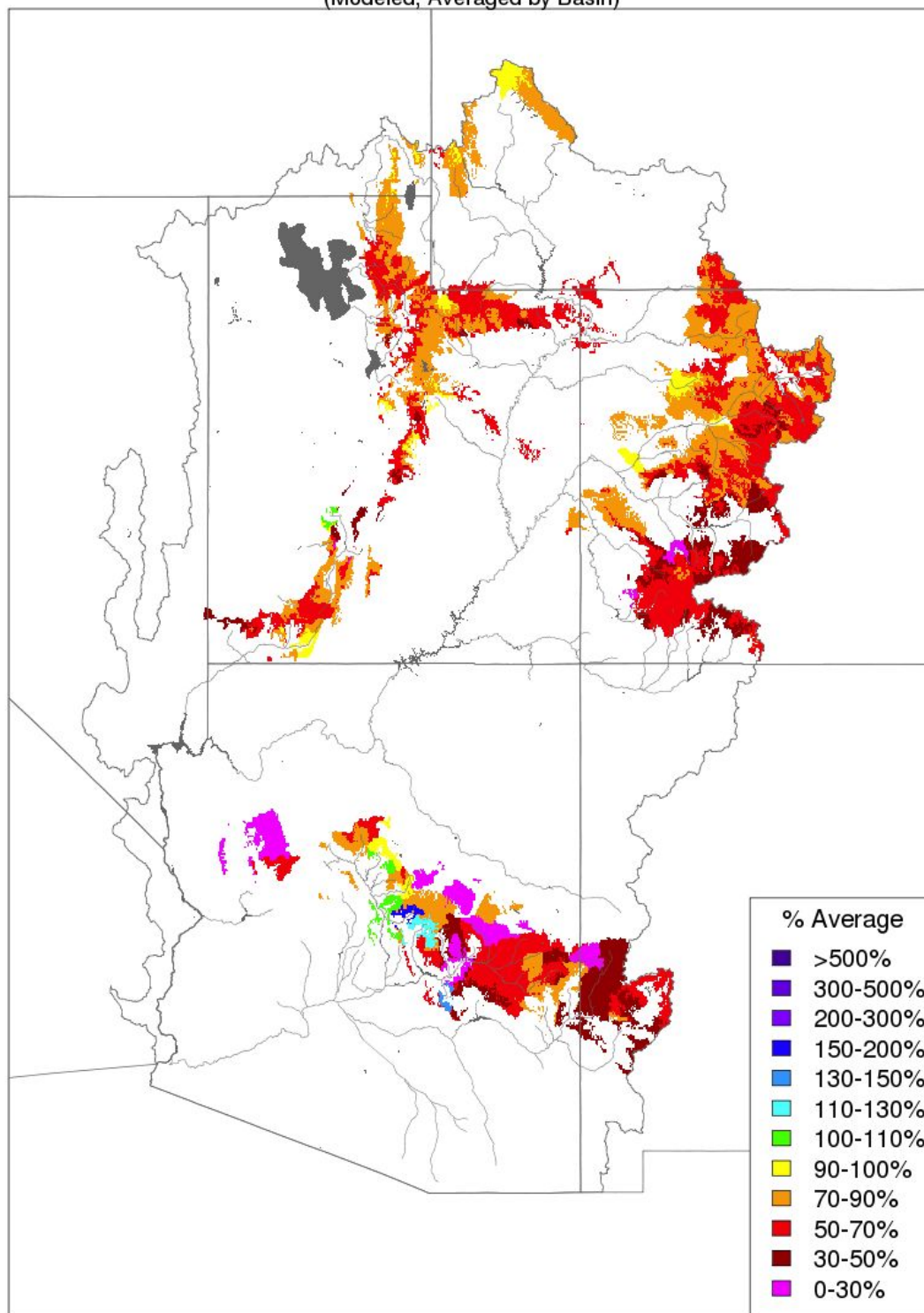
Soil moisture conditions in the higher elevation headwater areas are important entering the winter, prior to snowfall, as it can influence the efficiency of the snowmelt runoff the following spring. The effects are most pronounced when soil moisture conditions and snowpack conditions are both much above or much below average. In areas where the soil moisture was below average entering the winter and the current snowpack is also much below median, spring runoff may be further reduced.

Modeled soil moisture conditions as of November 15th were below average over most of the Upper Colorado River Basin and Great Basin. In the Upper Colorado River Mainstem River Basin, soil moisture conditions were below average in headwater basins along the Continental Divide, and closer to average downstream. Soil moisture conditions in the Gunnison, Dolores, and San Juan basins were much below average.

In the map below areas in cool colors (e.g. blue and purple) are above the historical model soil moisture average while those in the warm colors (e.g. red and orange) indicate below average conditions. Only the higher elevations which contribute the most to runoff are displayed.

Soil Moisture - November 15 2018

(Modeled, Averaged by Basin)

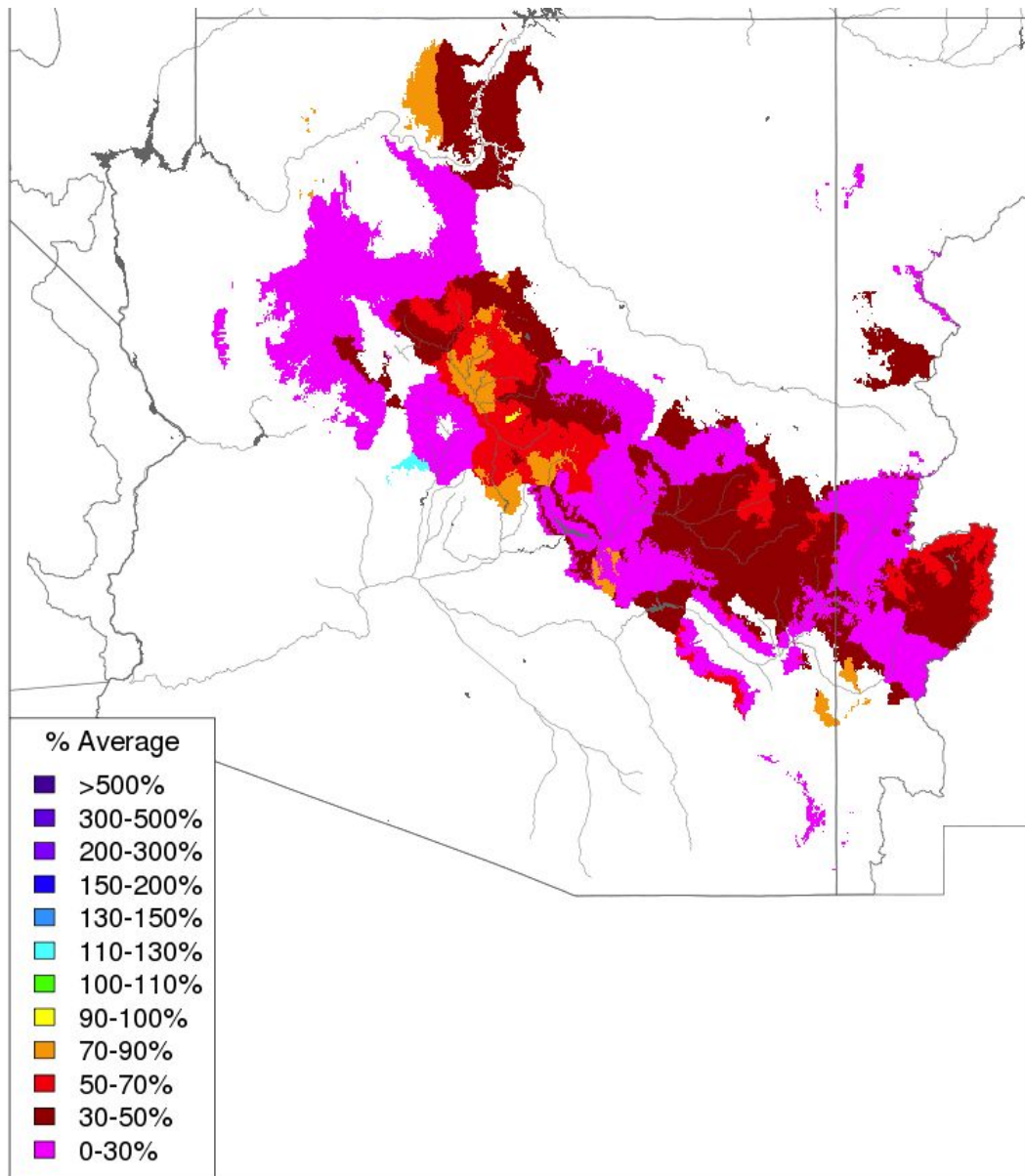


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Image: Modeled soil moisture from the CBRFC hydrologic model 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.

Winter soil moisture conditions have continued to deteriorate in the Lower Colorado River Basin as shown in the image below, which indicates modeled soil moisture conditions below to much below average over the entire area. This generally means that it will take a few rain events before any significant runoff is generated and that much of any snow melt that occurs will be absorbed into the soil instead of contributing to increased streamflow.

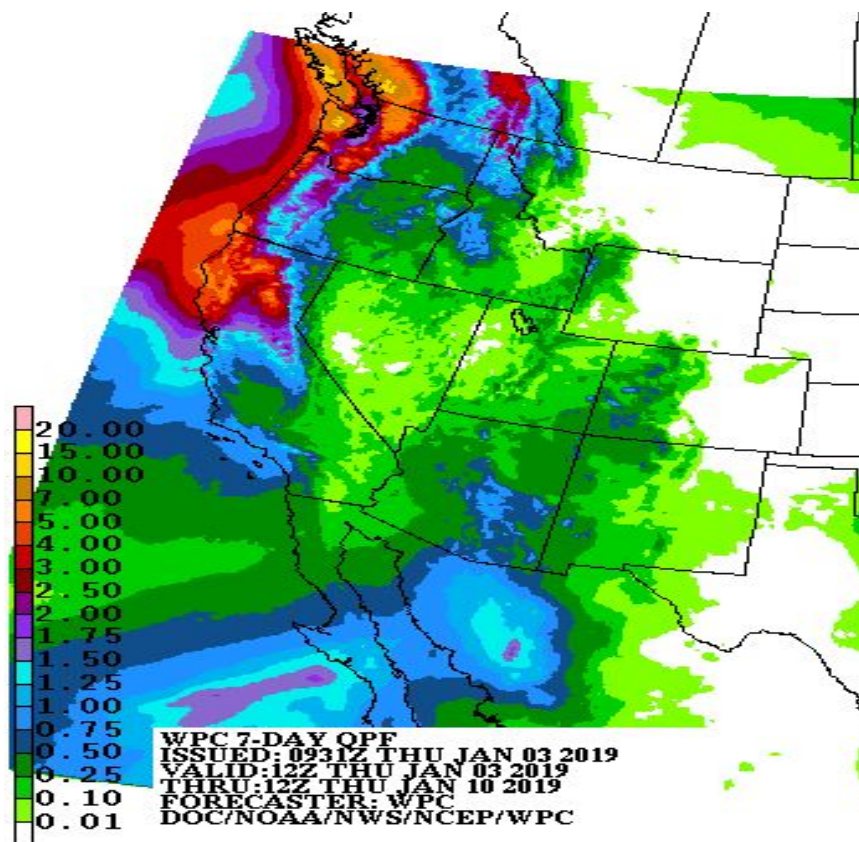


*Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov*

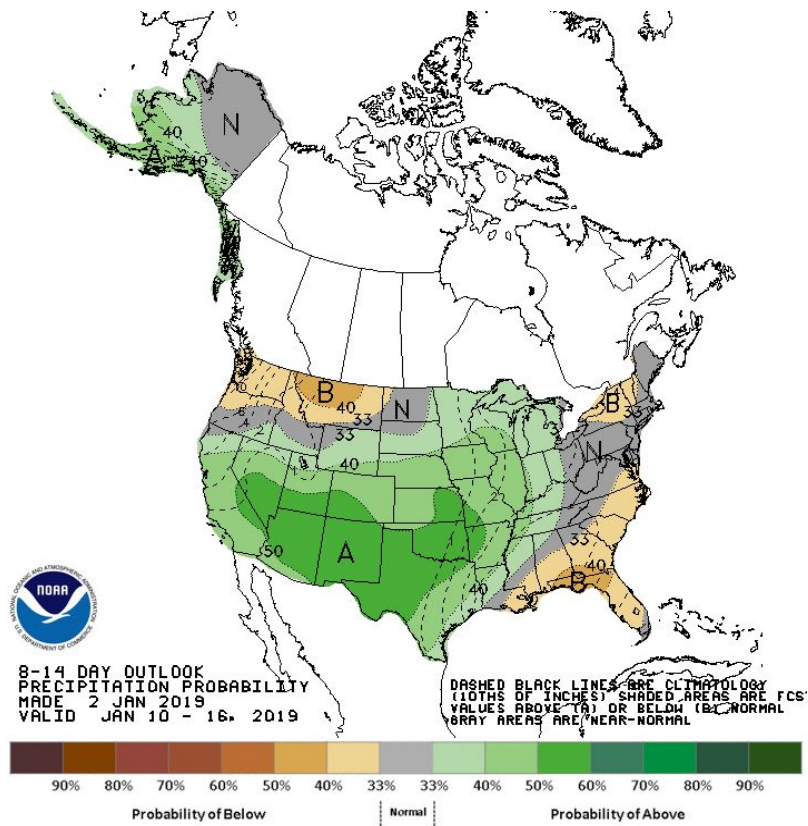
Image: Lower Colorado River Basin (AZ/NM) model soil moisture as of January 3rd, 2019

Upcoming Weather:

After a rather dry first few days of January across much of the Colorado River Basin, a storm system is expected to move across the Western U.S. this weekend (Jan 5-6) bringing widespread precipitation to much of the region. This system has plentiful subtropical moisture, thus a few mountain locations across Arizona and southwest Colorado can expect to receive 1-2 inches of precipitation. Generally lesser amounts are expected over northern Utah and Wyoming. A transitory ridge will move over the Western U.S. early next week. Thereafter, more uncertainty exists in the weather pattern for the second half of next week. Another rather progressive weather system may impact portions of the Colorado River Basin, bringing a round of precipitation. Thus, the forecasted weather pattern over the first half of January supports near normal precipitation across much of Utah/Colorado, with the best chance of above normal precipitation over the lower Colorado Basin.



NWS Weather Prediction Center precipitation forecast for Jan 3 - 10, 2019.



NWS Climate Prediction Center precipitation probability forecast for Jan 10-18, 2019.

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](#)