February 15, 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:

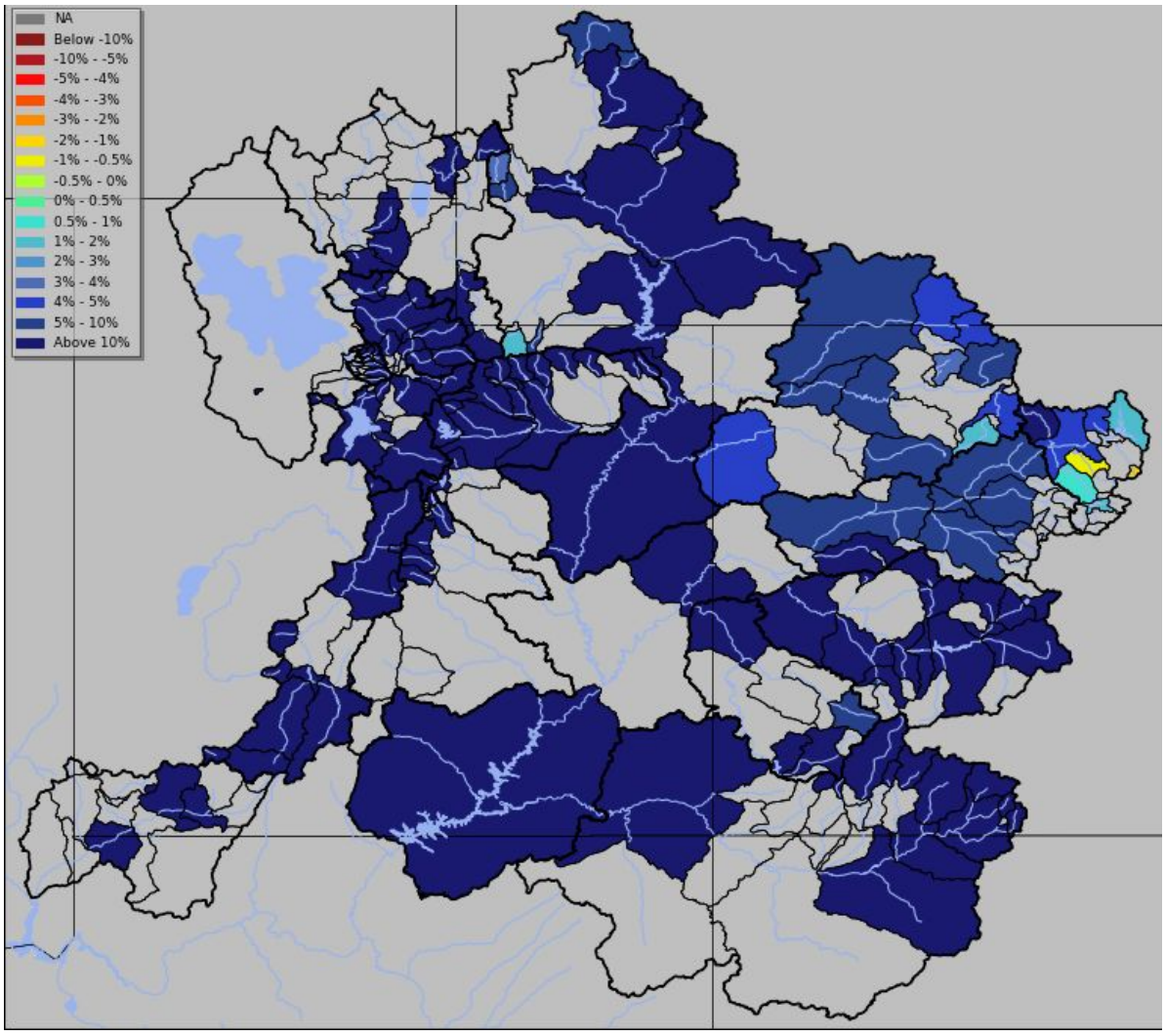
Hydrologic models have indicated an increase in April-July runoff volume forecast guidance since February 1st throughout the Great and Upper Colorado River Basins. The most significant increases took place in the Duchesne River Basin, San Juan River Basin, Dolores River Basin and parts of the Bear, Weber, and Provo River Basins. Only in a few headwater areas of the Colorado River and Yampa River Basin did forecast guidance remain unchanged from early February.

Significant increases in runoff volume guidance also occurred in the Lower Colorado River Basin that included the Virgin River Basin in southwest Utah and parts of the Verde, Salt, and western sections of the Little Colorado River Basin in Arizona. Little change occurred in the eastern headwaters of the Little Colorado River Basin and Gila River Basin.

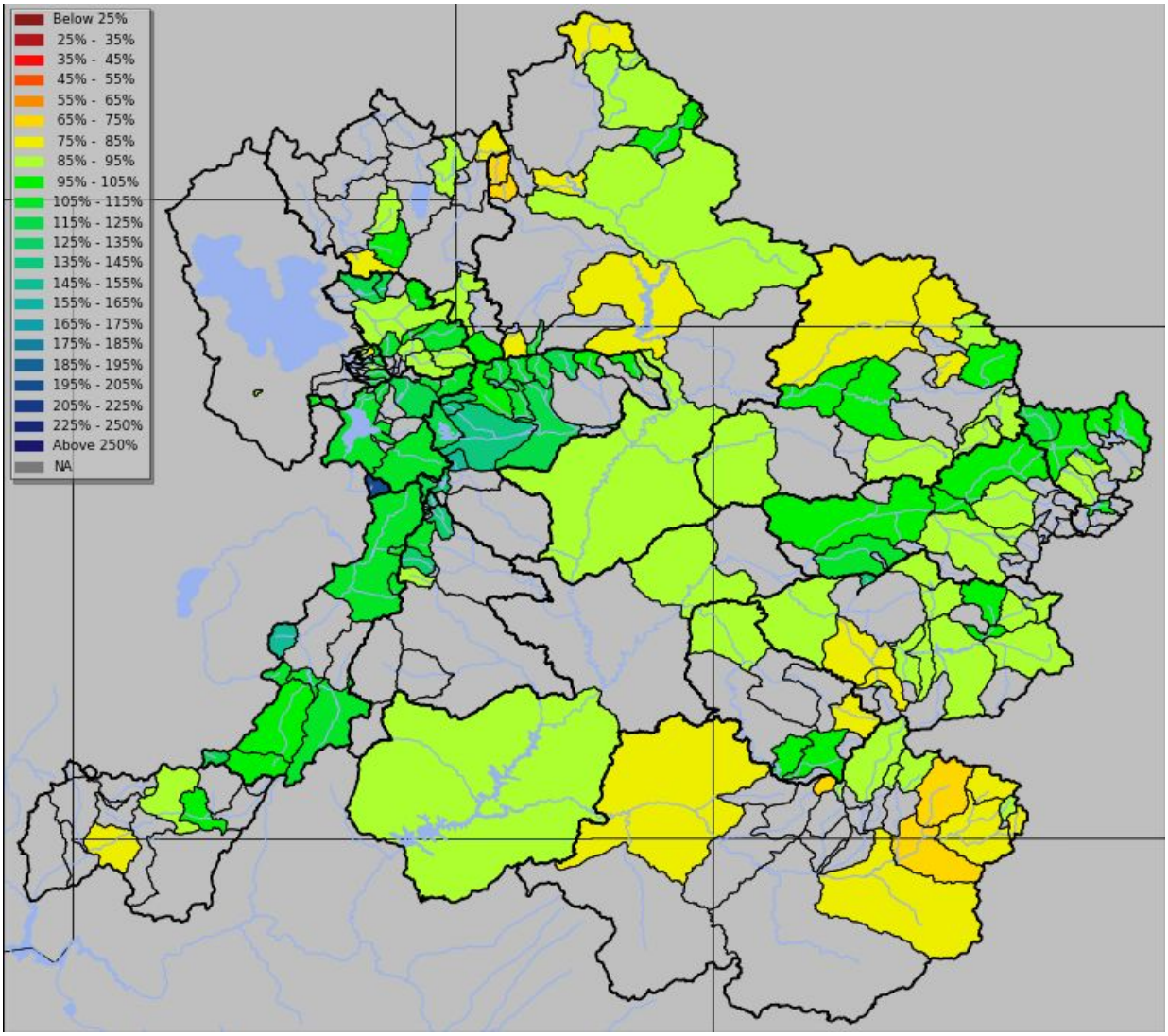
The improvement in forecast guidance was due to above average precipitation and increased snowpack in these areas during the first half of February.

April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 550 KAF (76% average) a 7 percent of average increase over February 1st, Flaming Gorge 700 KAF (71% of average) a 7 percent of average increase, Blue Mesa Reservoir 620 KAF (92% of average) a 9 percent of average increase, McPhee Reservoir 275 KAF (93% of average) a 15 percent of average increase, and Navajo Reservoir 525 KAF (71% of average) a 12 percent of average increase. The Lake Powell inflow forecast is 6.00 MAF (84% of average) a 10 percent of average increase.

Seasonal Water Supply Forecasts:



Trend in the April-July runoff volume forecast guidance from February 1 to February 15, 2019.
(Change in April-July percent of average)



April-July runoff volume guidance as of February 15, 2019.
(percent of 1981-2010 average)

For specific site water supply forecasts, refer to: https://www.cbrfc.noaa.gov/rmap/wsup/wsuplist.php

Water Supply Discussion

Weather Synopsis:

An active weather pattern developed around February 3rd and continued into the middle of the month. Most areas received above average precipitation. Some areas received significant amounts due to storms with a subtropical moisture source. These storms systems had a fairly persistent southerly flow component. This enhanced

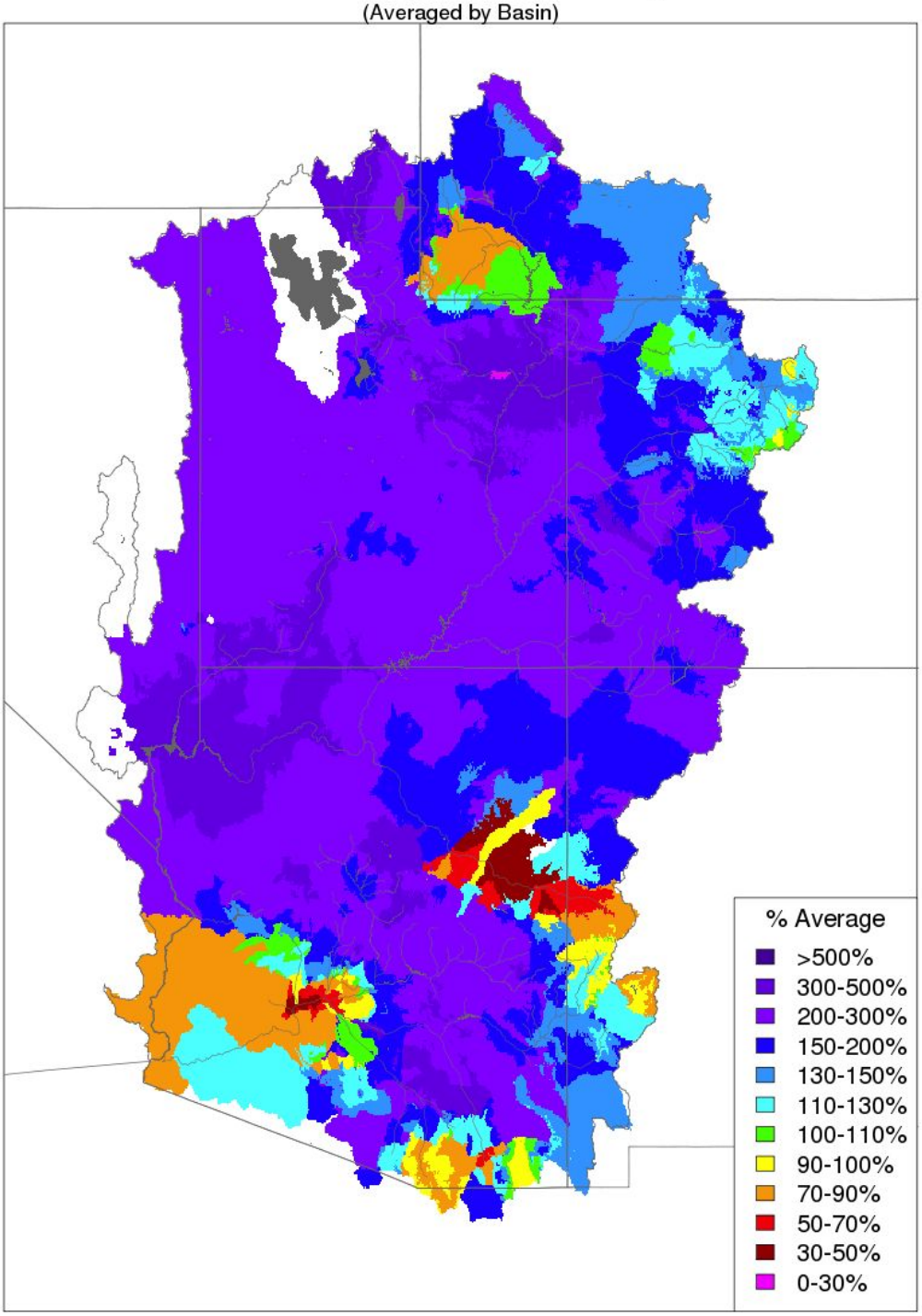
precipitation in areas where this resulted in an upslope situation. This included parts of the Virgin River Basin in southwest Utah, much of the Duchesne River Basin, San Juan River Basin, Dolores River Basin, and parts of the Weber, Bear, and Provo River Basins.

Precipitation:

With a very active storm pattern across the Western U.S. through the first half of February, precipitation has been well above average over much of the Colorado and Great Salt Lake River Basins. Nearly all the mountain areas of the Upper Colorado and Great Salt Lake Basins have month-to-date precipitation of 150-300% of average, except over the Upper Colorado mainstem areas where precipitation is closer to average. The storms have also impacted the Lower Colorado basins will equally high precipitation totals. In fact, most SNOTEL sites in the Virgin River Basin received their entire February average precipitation in the first week of February! A storm system with an associated strong atmospheric river (deep subtropical moisture) targeted most of the Arizona basins on February 14. Rainfall totals of 2-4 inches were observed in the orographically favored mountains/foothills of the Verde and Salt River Basins. Overall, this will go down as one of the wetter starts to February across Arizona, Utah, and southwest Colorado, with many areas above the 90th percentile for month-to-date precipitation.

Month to Date Precipitation - February 15 2019

(Averaged by Basin)

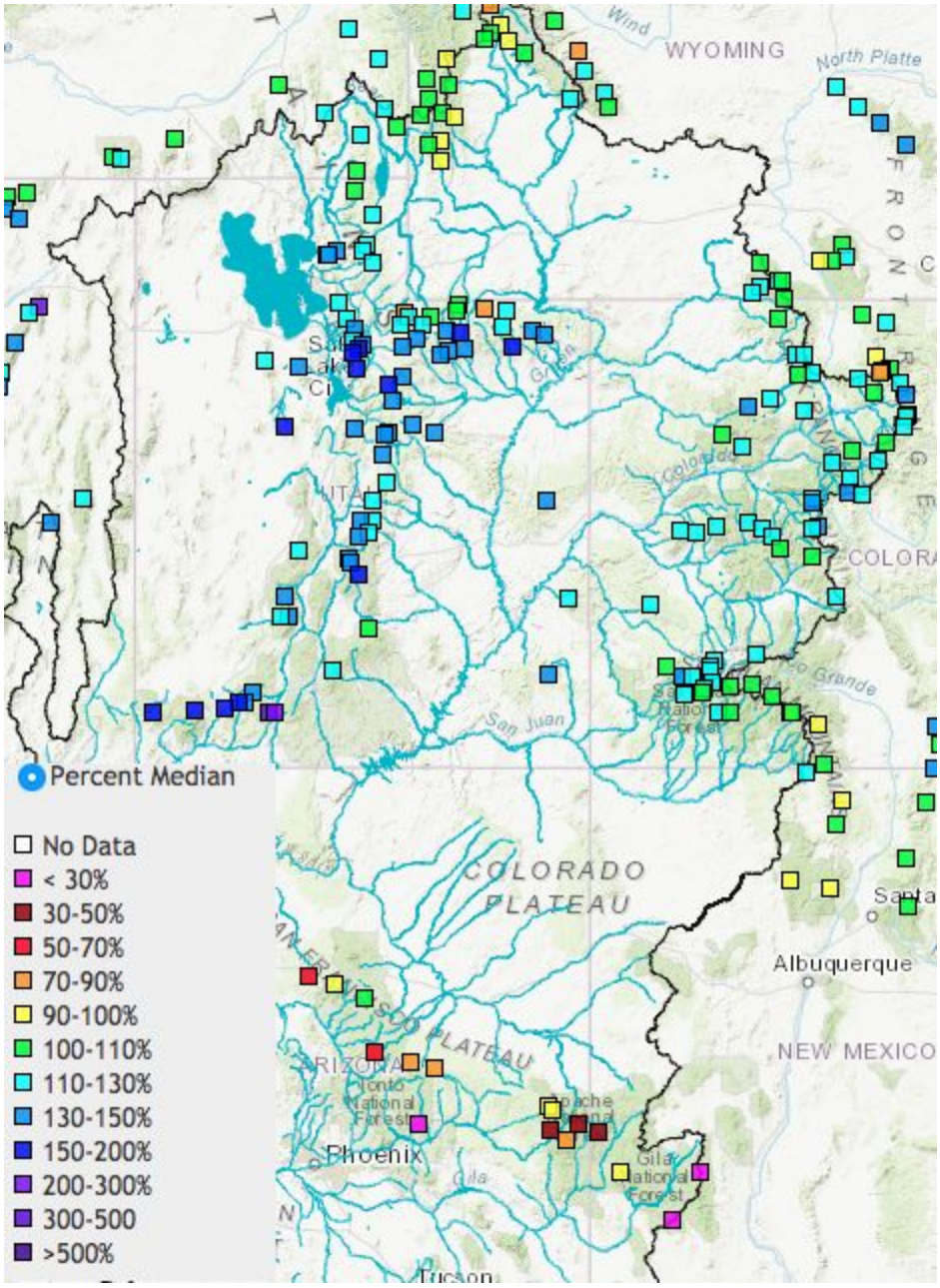


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

February 1-15, 2019 percent of average precipitation.

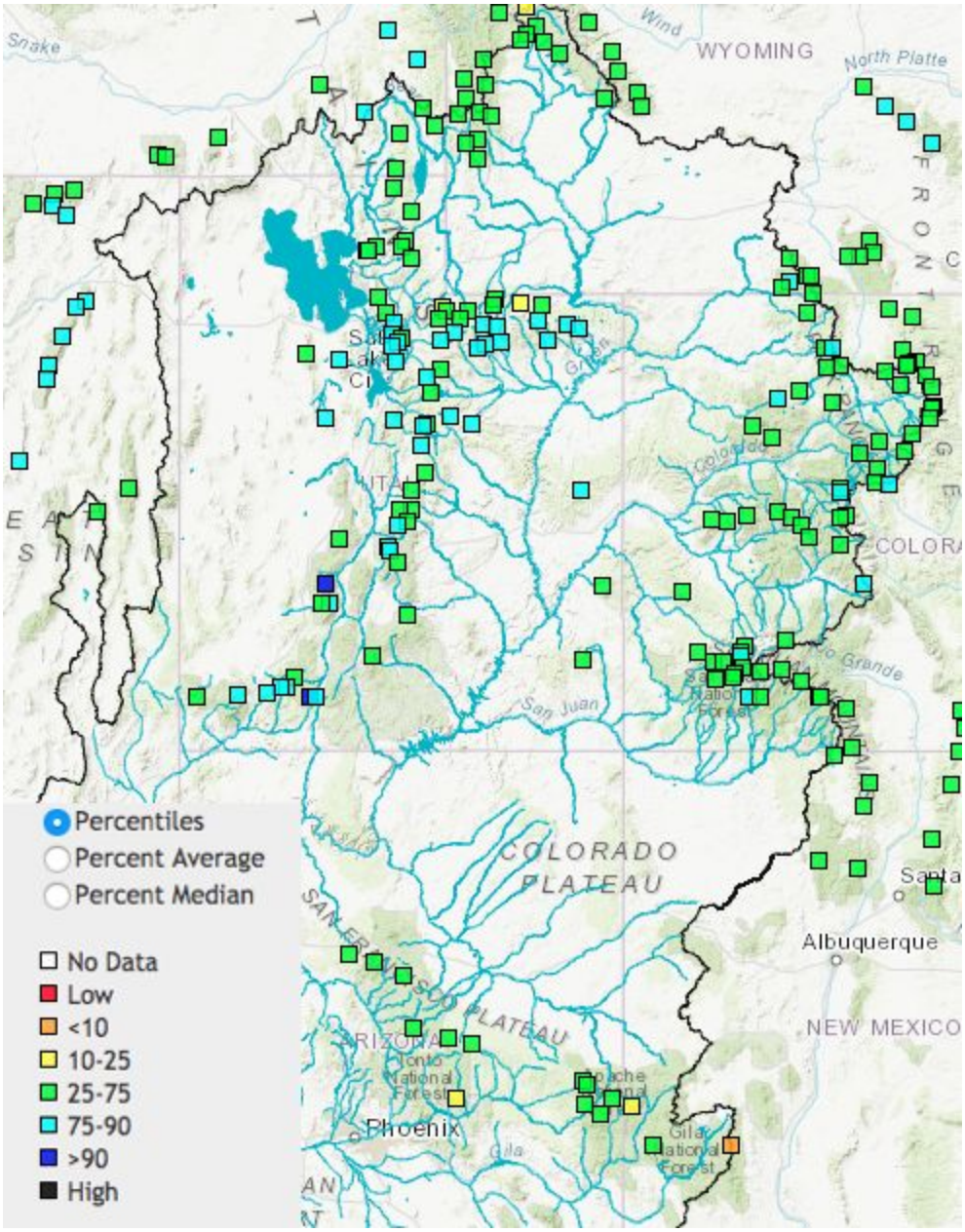
Snowpack:

Snow conditions have improved across the majority of the Colorado Basin River Center forecast area since the beginning of February. Many SNOTEL sites in Utah now have snow water equivalent values greater than 130 percent of normal (median) at this time, while most sites in southwest Colorado are now indicating near to above normal snowpack after being below normal on February 1st. Conditions also improved to near normal in the Green River headwaters of Wyoming and the Bear River Basin in Idaho. Little change occurred in the Yampa/White and upper Colorado mainstem headwaters.



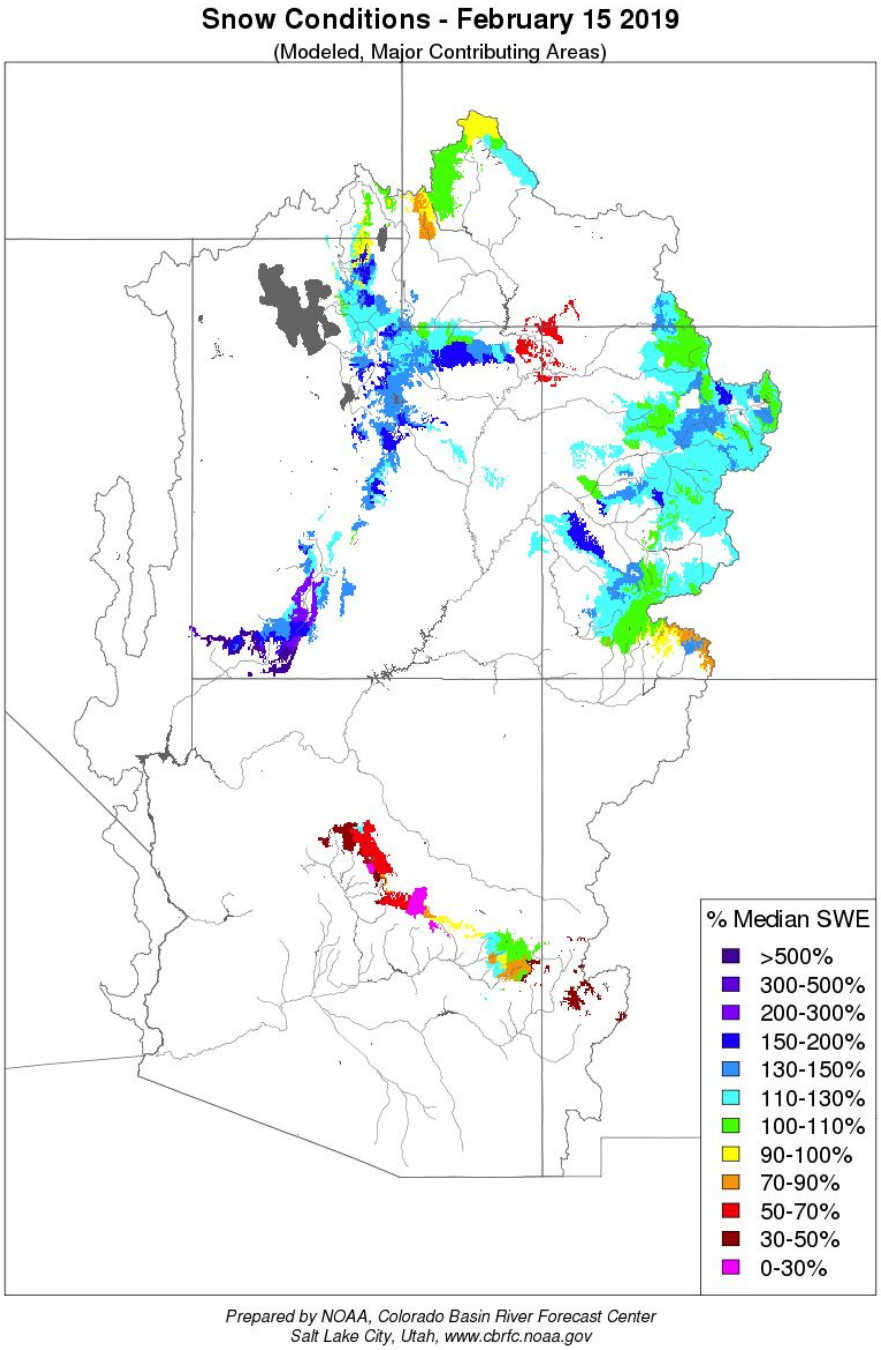
Percent median snow conditions as of February 15, 2019.

The snow percentile image displayed below indicates where the current snow measurement ranks in the historical record (typically 35-41 years) for each site. A couple of sites in southwest Utah are depicted with dark blue boxes. These sites are in the top 10 percent of historical record and each of these sites are at the 3rd highest level for this time of year. Many other sites in the Virgin River Basin are in the top 5 of their historical record.



Snow Percentile Image: Historical SNOTEL ranking as of February 15, 2019

The image below is the representation of snow in the CBRFC hydrologic model. The snow represented in the model closely mirrors the SNOTEL image. The lower values in Arizona aren't due to a lack of precipitation. Recent storms of a subtropical nature have also been warm enough to melt snow that had previously accumulated.



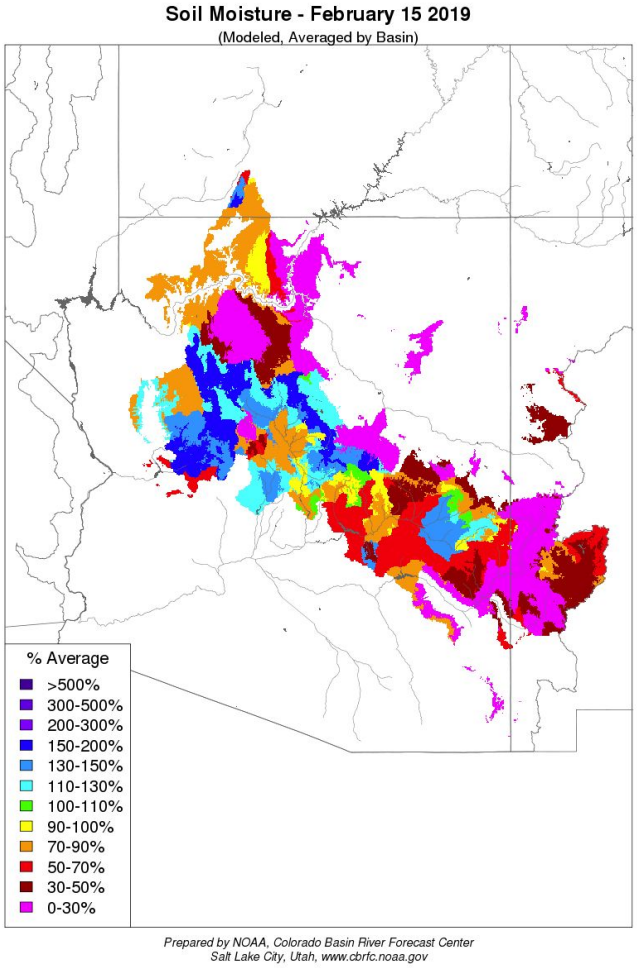
Snow representation from the CBRFC hydrologic model February 15, 2019.

For updated SNOTEL information refer to: https://www.cbrfc.noaa.gov/lmap/lmap.php?interface=snow

For CBRFC hydrologic model snow, refer to:
https://www.cbrfc.noaa.gov/rmap/grid800/index.php?type=monthly&area=cbrfc&year=2017&month=1&day=&hour=&type=snow

Soil Moisture:

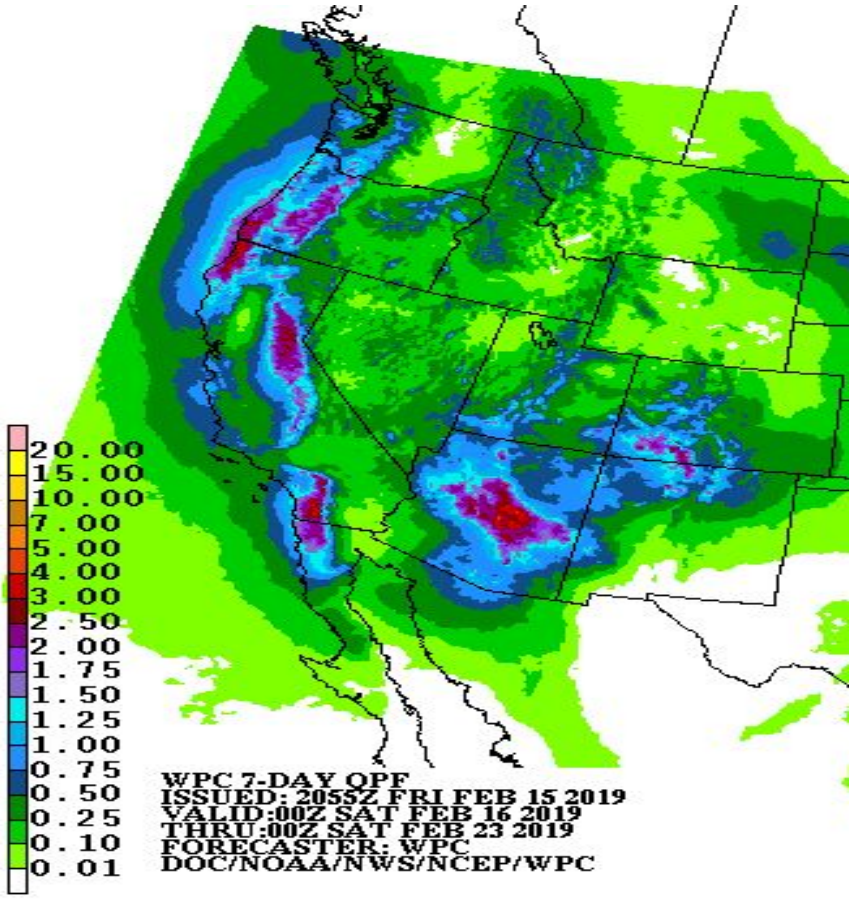
Due to heavy precipitation in the Lower Colorado River Basin of Arizona soil moisture conditions are now above average in several areas. This is true particularly in the Verde, parts of the Salt, and Bill Williams River Basins. These areas are likely to experience efficient runoff due to additional rainfall and / or snowmelt that may occur over the next several weeks.



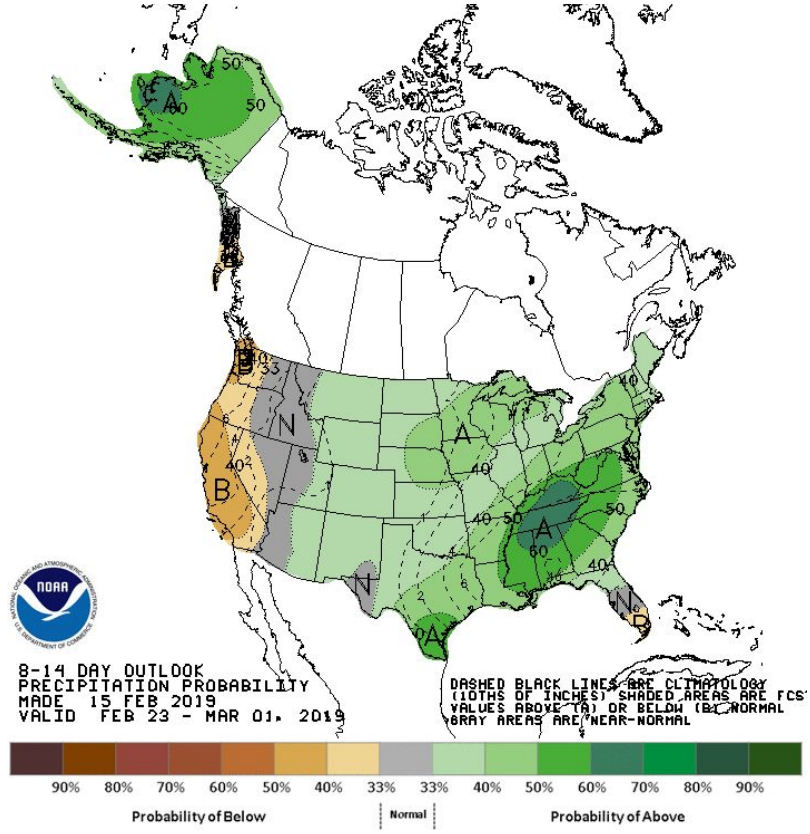
Soil moisture representation from the CBRFC hydrologic model February 15, 2019.

Upcoming Weather:

The weather models are in good agreement at showing a mean trough across the Western U.S. through the next week. This will continue a cold and somewhat unsettled pattern across most of the Intermountain West. A quick moving storm system will impact mainly the Upper Colorado and Great Salt Lake region on February 15-16. Only modest precip amounts are expected. Another storm system will target Arizona and southwest Colorado late this weekend into Monday (Feb 17-18), with yet another one potentially moving across the Lower Basin by the middle of next week. These systems will be colder and have somewhat less moisture than the storms that impacted the West through the first half of February. Thus, the pattern remains active over the next ten days, with the best chance for above normal precip across southern Utah/Colorado and Arizona. The weather pattern for the last week of February is more uncertain, with the Climate Prediction Center indicating generally equal chances for below and above normal precipitation.



NWS Weather Prediction Center precipitation forecast for Feb 15-22, 2019.



NWS Climate Prediction Center precipitation probability forecast for Feb 23-March 1, 2019.

For our online publication that contains basin conditions, summary graphics, and end of month reservoir content tables, refer to: https://www.cbrfc.noaa.gov/wsup/pub2/map/html/cpub.php