

## June 1, 2017 Water Supply Forecast Discussion

The [Colorado Basin River Forecast Center \(CBRFC\)](#) geographical forecast area includes the Upper Colorado River Basin, Lower Colorado River Basin, and Eastern Great Basin.

### Water Supply Forecast Summary:

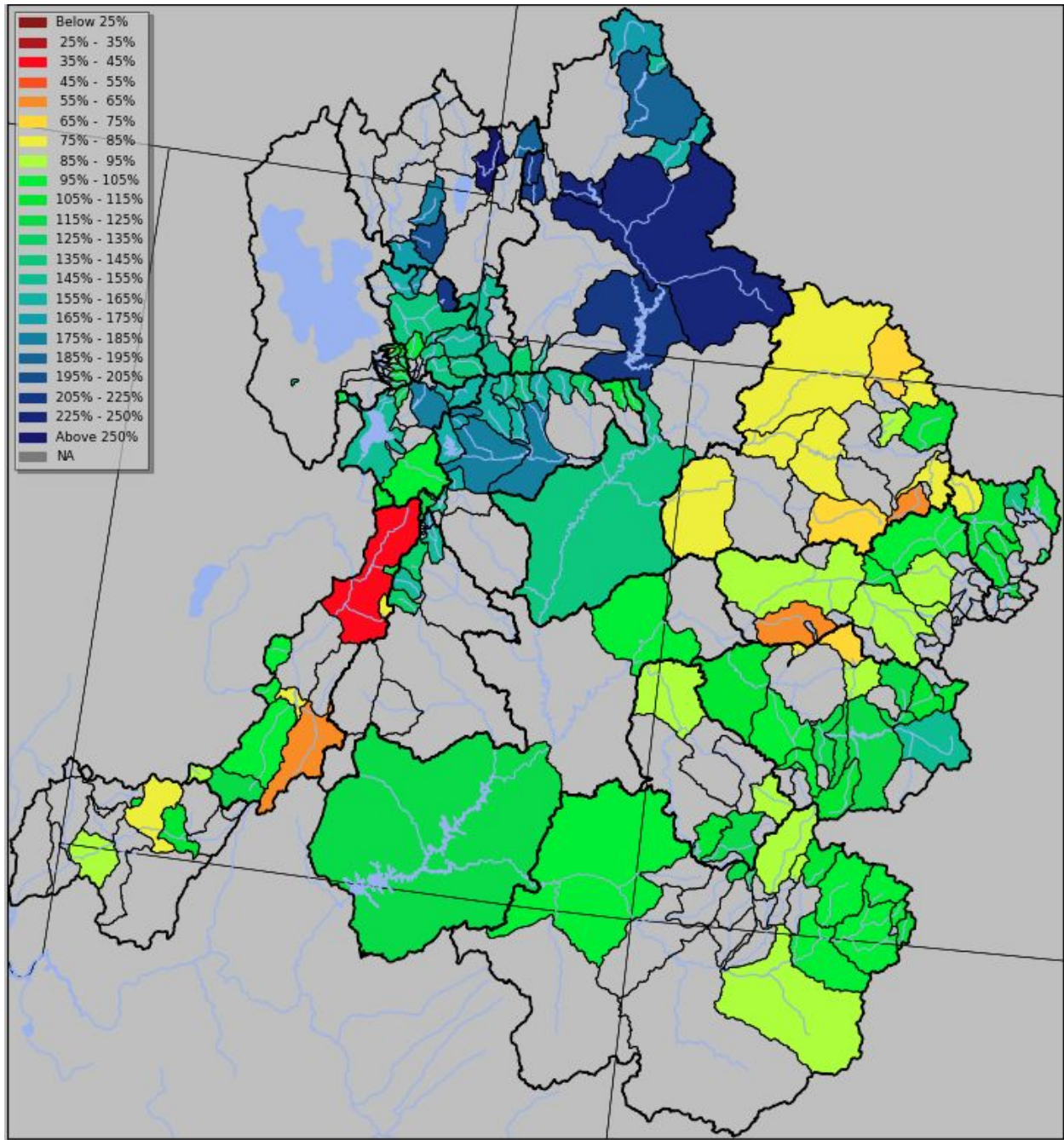
Snowmelt runoff was well underway by the first of June across the Colorado River and Great Basins. Seasonal April-July water supply forecast volumes were reduced in some areas due to dry conditions in May. These reductions were most prominent over the Great Basin and Green River Basins of Utah, Idaho, and Wyoming. Some decreases also occurred in lower elevation basins of the San Juan, Gunnison, Yampa, and along the Colorado mainstem as much of the lower and middle elevation snow in these areas melted during warm conditions the first part of May.

Little to no change or minor increases occurred in areas where precipitation was above average for May and these included some headwater areas of the Yampa, Colorado River mainstem, Gunnison, and San Juan River Basins. Forecasts at this time of year are comprised of April-May observed volumes combined with anticipated runoff for the June-July period. Therefore some forecast adjustments may be due to those observed volumes coming in greater or lesser than anticipated.

Total April-July volume forecasts as of June 1st were below average in only a handful of areas including the Yampa and White River Basins and some lower elevation basins in the San Juan, Gunnison, and Colorado River Mainstem. Record or near record volumes were still expected in the Green River Basin of Wyoming with volumes in excess of 150 percent of average from the Duchesne River Basin through the northern Great Basin of Utah, Idaho, and Wyoming. Runoff volumes in excess of 120 percent of average were expected in the headwaters of the Gunnison River Basin, with near to above average runoff expected in the San Juan River Basin and Colorado River mainstem headwaters.

April-July unregulated inflow forecasts for some of the major reservoirs as of June 1st in the Upper Colorado River Basin include Fontenelle Reservoir 1.68 MAF (232% of average), Flaming Gorge 2.18 MAF (222% of average), Blue Mesa Reservoir 840 KAF (124% of average), McPhee Reservoir 325 KAF (110% of average), and Navajo Reservoir 710 KAF (97% of average). Lake Powell inflow is forecast at 8.30 MAF (116% of average).

Seasonal Water Supply Forecasts:



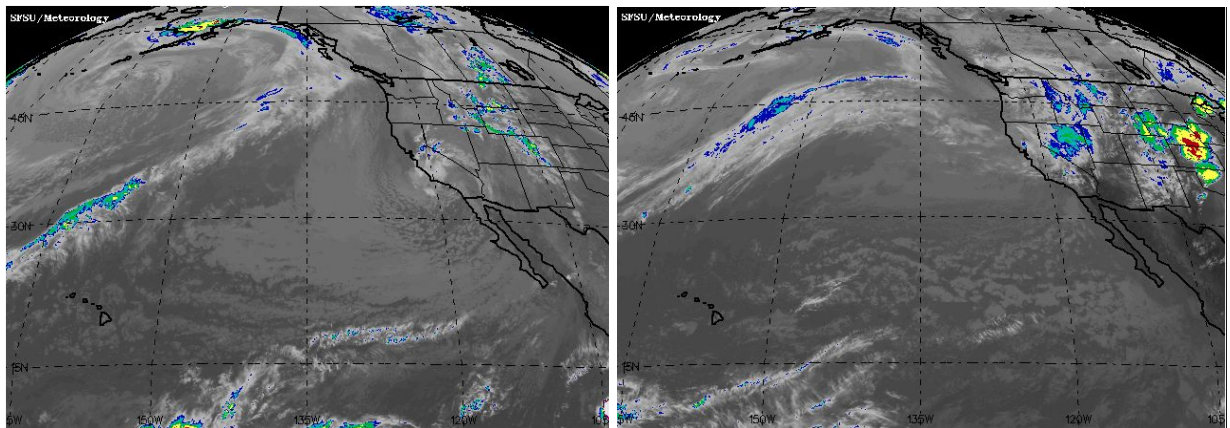
Upper Colorado, Great, Virgin River Basins: 2017 April-July forecast volumes as a percent of 1981-2010 average (50% exceedance probability forecast)

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

## Water Supply Discussion

### Weather Synopsis:

May was defined by a couple of significant weather events. In early May a large closed low pressure system developed along the southern California coast. This system acted to bring windy and very warm conditions to much of the CBRFC forecast area before it moved inland. Temperatures reached nearly 20 degrees above normal and this resulted in snow melt at all elevation levels with a significant reduction in snowpack below about 10,000 feet. During the 3rd week of May a storm system more typical of late February moved through the area bringing temperatures nearly 20 degrees below normal. Snow fell even at lower elevations down to about 5,000 feet. The snowmelt stopped for a period and streamflows declined before rebounding at the very end of the month due to significant warming.

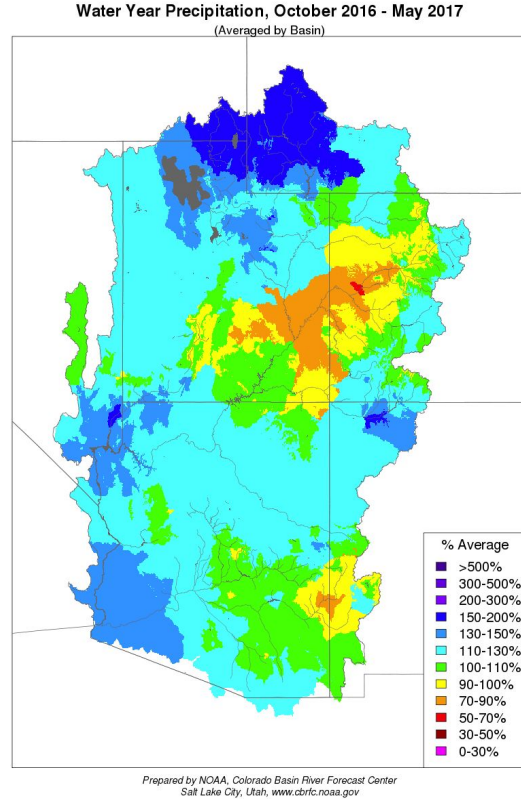
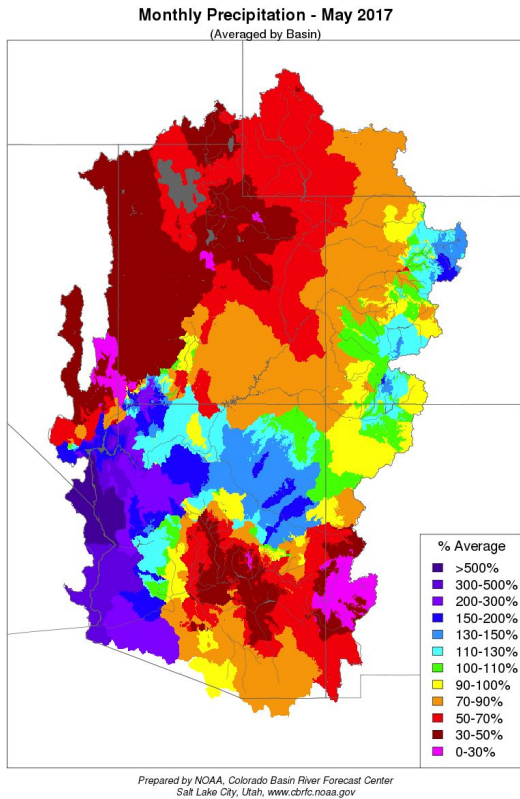


Left Image: A storm system on May 7th along the California coast progressed slowly inland. Ahead of it a strong southwest flow developed and brought very warm temperatures to the area. Right Image: A very cold storm system was poised to move into the area on May 17th. This brought very cold temperatures and additional snow to mountain locations. (images courtesy SFSU Meteorology)

### Precipitation and Temperature:

Near or above average precipitation occurred along the higher elevations of the San Juan Basin northward into the Colorado River mainstem headwaters. Above average precipitation was also observed over a good part of western Arizona primarily due to the closed low pressure system that moved through there early in the month. The above average precipitation in the higher elevations of Colorado was due to the colder storm system that moved through during the second half of May. Over the Duchesne River Basin, Green River Basin of Wyoming, and Great Basin conditions were much drier. Although additional snow was received with the mid May storm system the remainder of the month was generally dry.

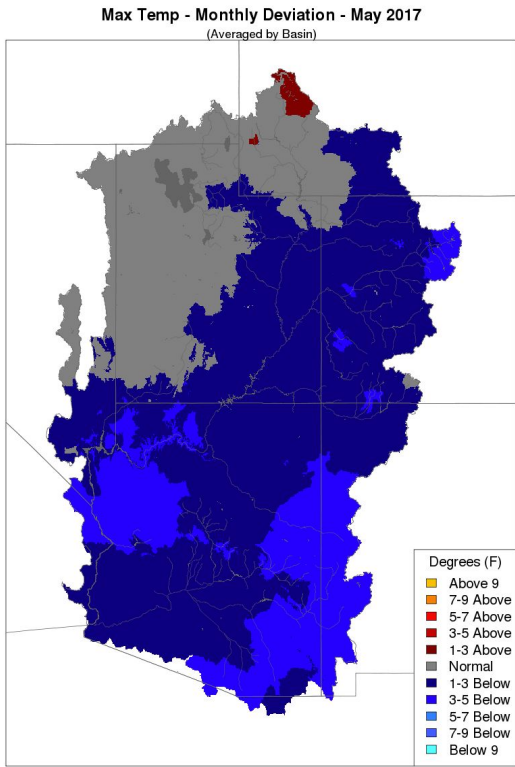
Water year precipitation was above average in all of the runoff producing areas in the Upper Colorado River Basin and Great Basin. The impacts from the very wet winter months can be seen in the Green River Basin of Wyoming extending into the Great Basin of Wyoming, Idaho, and Utah. Only lower elevations along the Colorado River mainstem were below average however these lower elevation areas do not contribute significantly to the overall April-July runoff volumes.



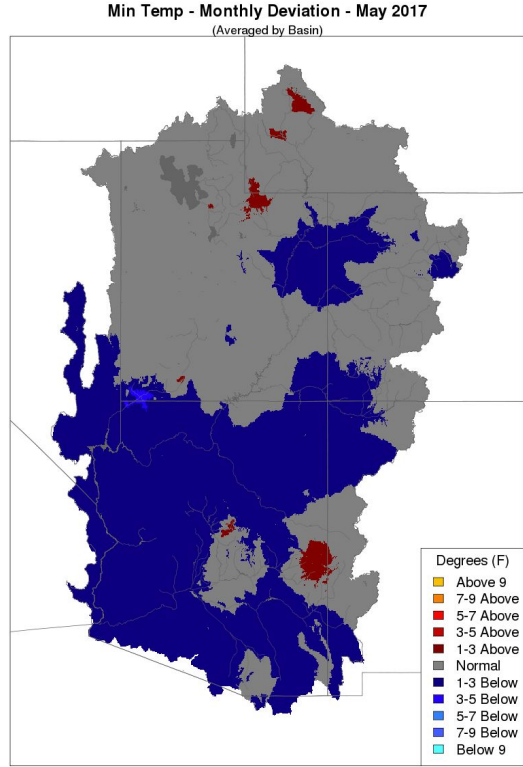
Images: May 2017 and water year (Oct 2016-May 2017) precipitation graphics  
(Averaged by basins defined in the CBRFC hydrologic model)

Temperatures took some wild swings during May with much above normal temperatures observed during the first 10 days of the month followed by much below temperatures during the 3rd week of the month. Overall monthly mean maximum temperatures were a little cooler than average over much of western Colorado extending into the Duchesne river basin with near average temperatures throughout the Great Basin. Minimum monthly mean temperatures were near average over much of the upper Colorado River Basin and Great Basin. Of more significance however were the two extended periods with extreme temperature deviations during early May and the 3rd week of May that impacted the snowmelt and resulting streamflow during those times.





*Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)*



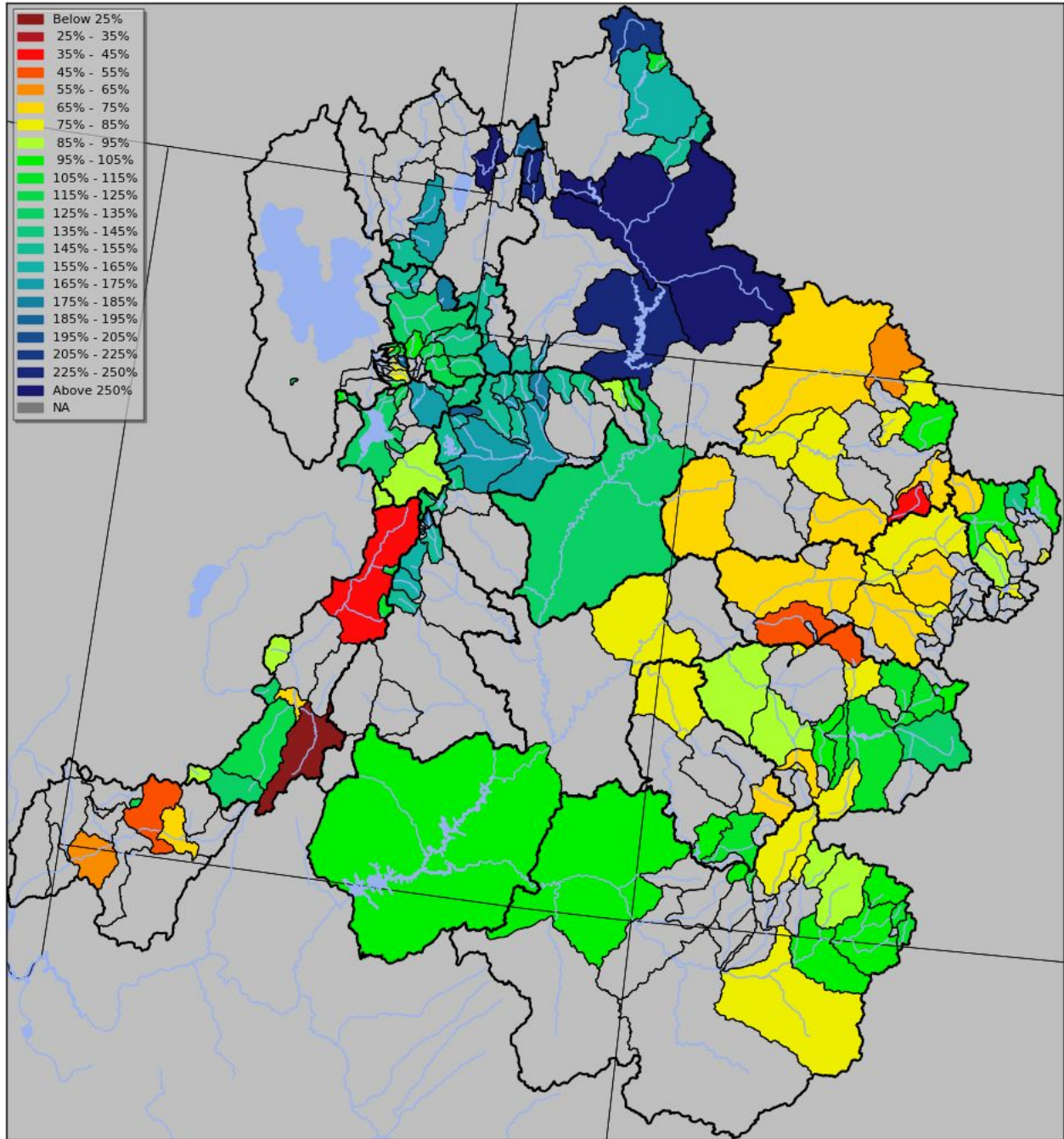
*Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)*

Image: Monthly maximum and minimum temperature departure from average for May 2017.  
(Averaged by basins defined in the CBRFC hydrologic model)

**Observed Flow:**

March and April unregulated streamflow volumes were generally much above average across the Upper Colorado River Basin and the Eastern Great Basin, with many near record volumes in each month. This trend continued in those areas that have been highlighted all season as having the greatest snowpack. Specifically, the Upper Green River Basin in Wyoming, the Bear River Basin, and the Duchesne River Basin all had sites with May volumes in the top 5 on record. Several sites in these areas have set new records for the March through May unregulated volumes.

Elsewhere, as can be seen in the map below, most of the rest of the Eastern Great Basin had above average May volumes, while western Colorado volumes ranged from below to slightly above average for the month of May. The large variation in May runoff across the area was due to a combination of the weather pattern (it stayed cooler for a longer period during May in western Colorado) and snowpack distribution (not as much snow left to melt in May, especially in lower elevations, in western Colorado).

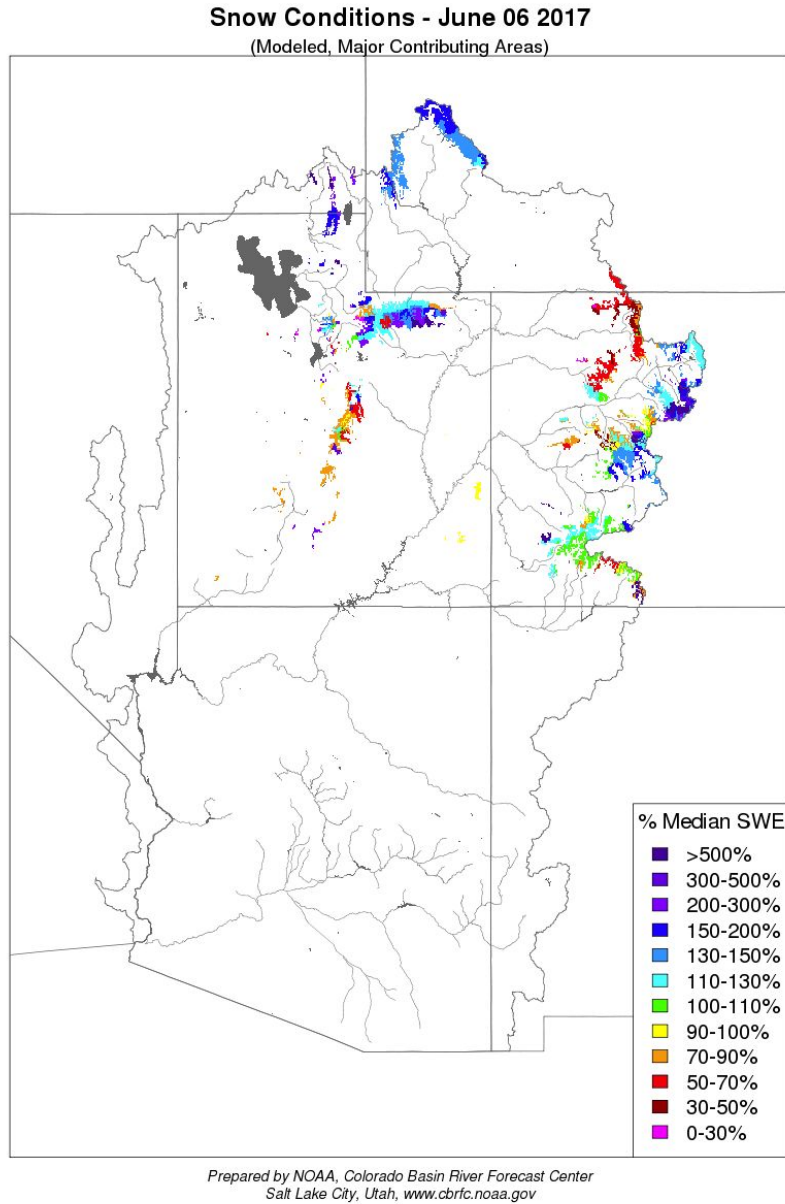


Upper Colorado, Great, Virgin River Basins: 2017 May unregulated volumes as a percent of 1981-2010 average

**Snowpack:**

In the spring once the normal time of peak snowpack has passed, the percent median snow water equivalent can be misleading and vary significantly from day to day depending on the rate of snowmelt and the magnitude of the median value. It's not uncommon to see snowpack fall below the median value, then rise above it due to a slower melt, then when melt resumes it once again falls below. Given that information a significant snowpack remains in the higher elevations of the Green River Basin of Wyoming and Duchesne River Basin of Utah, and part of the northern Great basin of Utah and Idaho. Above median snowpack also exists in headwaters of the Colorado River mainstem

and Gunnison River Basin as of early June however these areas are likely to experience greater variation as the snowpack is lesser in magnitude than the aforementioned areas. Snowpack that remains as of June 6th is limited to highest elevations, generally above 10,000 feet in elevation.



Modeled Snow: Snow representation from the CBRFC hydrologic model June 6th 2017

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

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



### Final weather outlook and early summer water supply impacts:

June is typically one of the drier months across the CBRFC forecast area as we transition to a summer pattern that is usually dominated more by scattered convection and thunderstorms and less by large low pressure systems that move in from the Pacific Ocean.

Impacts to water supply volumes from this point forward tend to be tied to the temperatures and melt pattern along with any error in hydrologic models that are usually related to proper representation of remaining snowpack. The strength of the U.S. southwest monsoon and frequency of associated showers and thundershowers can also have an impact on final observed volumes. While in most years the contribution to the April-July volumes are minimal compared to the snowpack contribution, there have been exceptions.

Greatest impacts from the monsoon tend to occur from the Duchesne River Basin into southwest Colorado and the San Juan Basin from July onward.

In the short term above normal temperatures are expected to continue an accelerated snowmelt for the next few days. As the snowpack dwindles further many streams will enter their slow seasonal recession within the next week. Beyond that a much cooler system is expected to move into the area with temperatures 10-15 below average through the 3rd week of June.

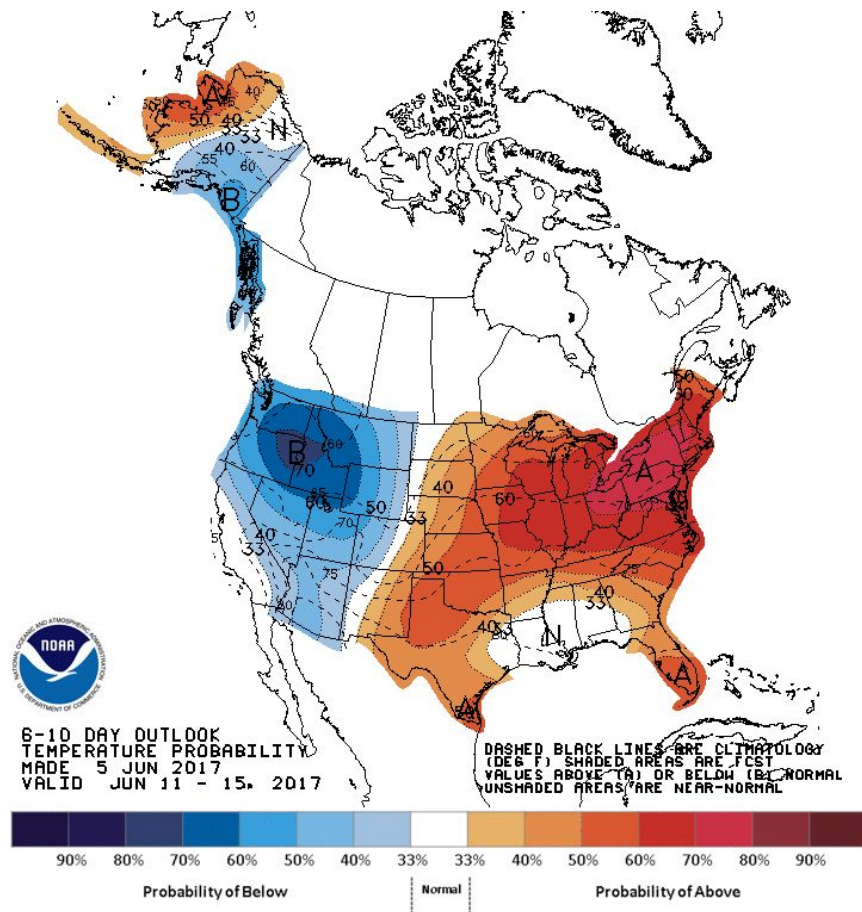


Image: NWS Climate Prediction Center temperature outlook June 11-15th

**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](#)