

# Colorado River Basin Water Supply Briefing

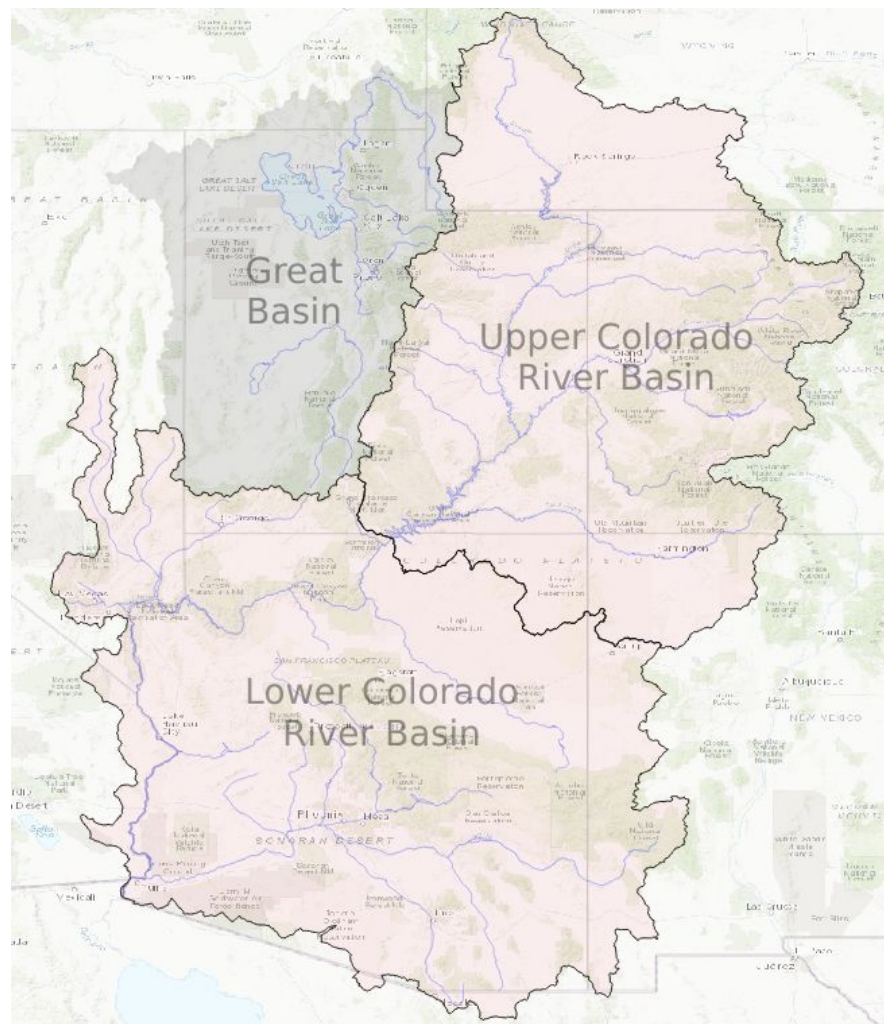
April 7, 2020

Ashley Nielson - Hydrologist  
Colorado Basin River Forecast Center

**Phone: 1-877-929-0660**

**Passcode: 1706374**

**Please mute your phone until the question period**



# Today's Presentation

March & Water Year Precipitation Review

Early April SWE Conditions

April Water Supply Forecasts

Historical April Forecast Error

Upcoming Weather

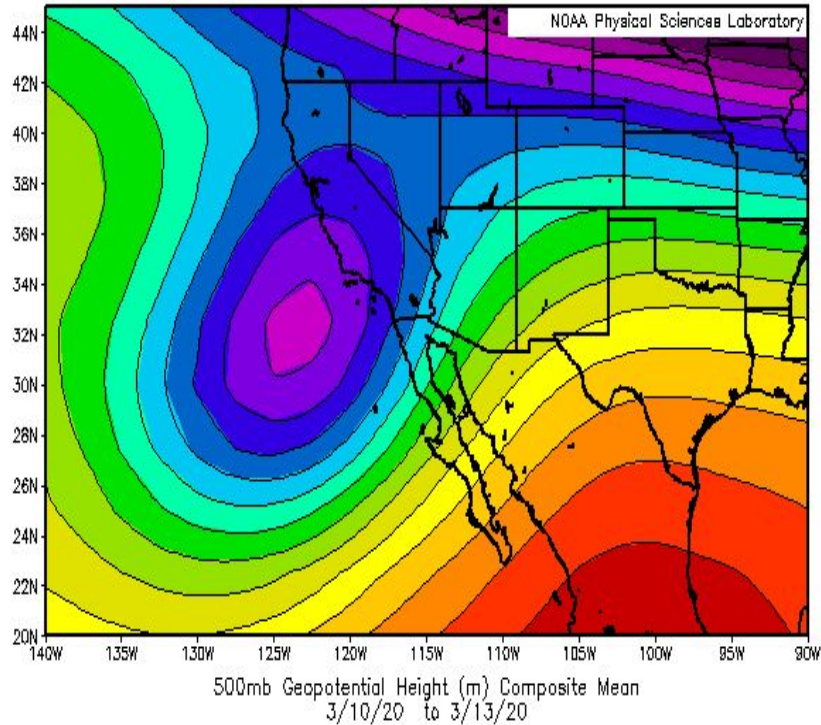
Contacts & Questions

**Phone: 1-877-929-0660**

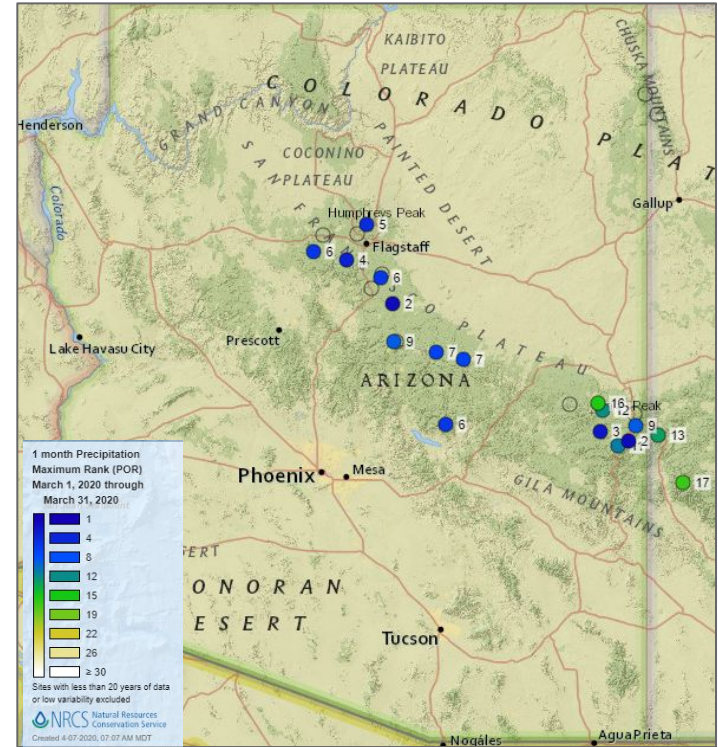
**Passcode: 1706374**

**Please mute your phone until the question period**

# Very Wet March for Arizona



Slow moving cutoff low pressure system produced multiple days of heavy precip over AZ on March 10-13.

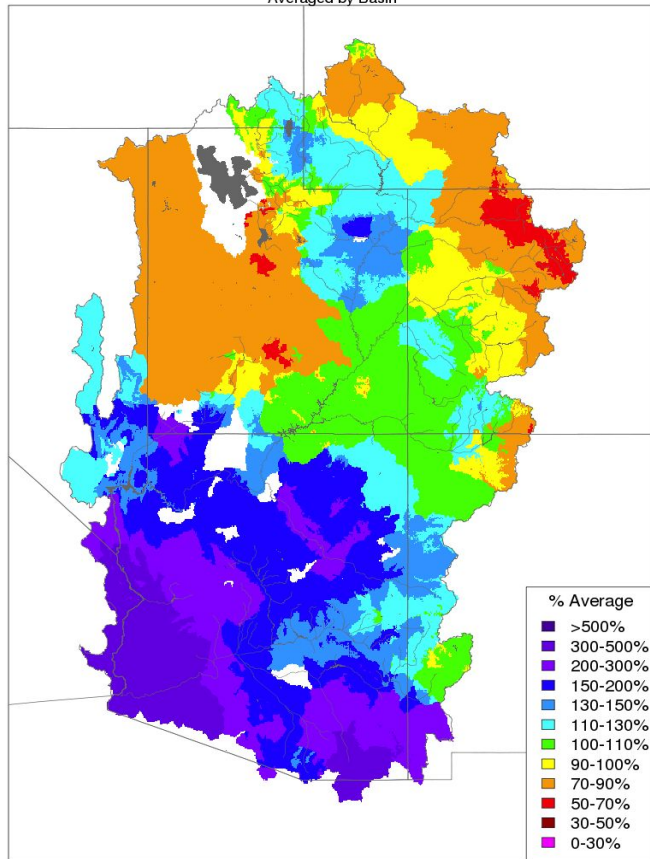


Many of the SNOTELS had precipitation in the top 5-10 of the historical record for the month of March.

# March Precipitation Summary

Monthly Precipitation - March 2020

Averaged by Basin



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

March weather pattern was favorable for the Uintas.

The March weather pattern did not favor the Yampa/White and Upper CO Mainstem.

The Dolores and San Juan River basins had near normal precipitation for the first time since December.

The Lower Colorado River and the Virgin River Basins benefited the most from the March weather pattern. The entire area had much above average March precipitation.

\*Most AZ SNOTELS in the 85-95th percentile for monthly precip.

## March 2020 Precip Summary

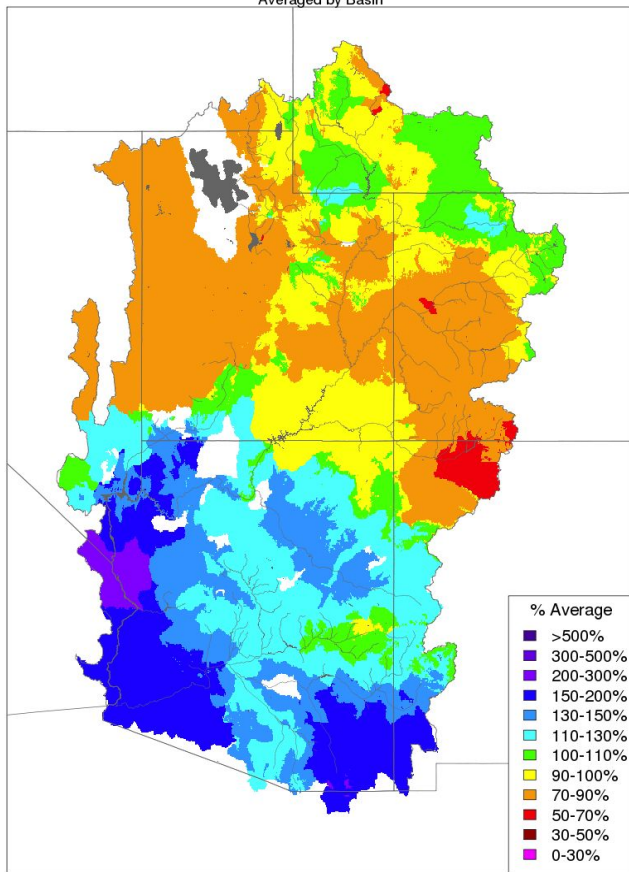
<u>Basin</u>	<u>Precip (% Avg)</u>
Upper Green	95%
Duchesne	115%
Price/San Rafael	90%
Yampa/White	75%
Upper CO Mainstem	75%
Gunnison	95%
Dolores	105%
San Juan	100%
Animas	120%
Lake Powell	90%
Virgin	135%
Verde	170%
Salt	140%
Little Colorado	150%
Upper Gila	120%



# Water Year Precipitation Summary

Water Year Precipitation, October 2019 - March 2020

Averaged by Basin



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

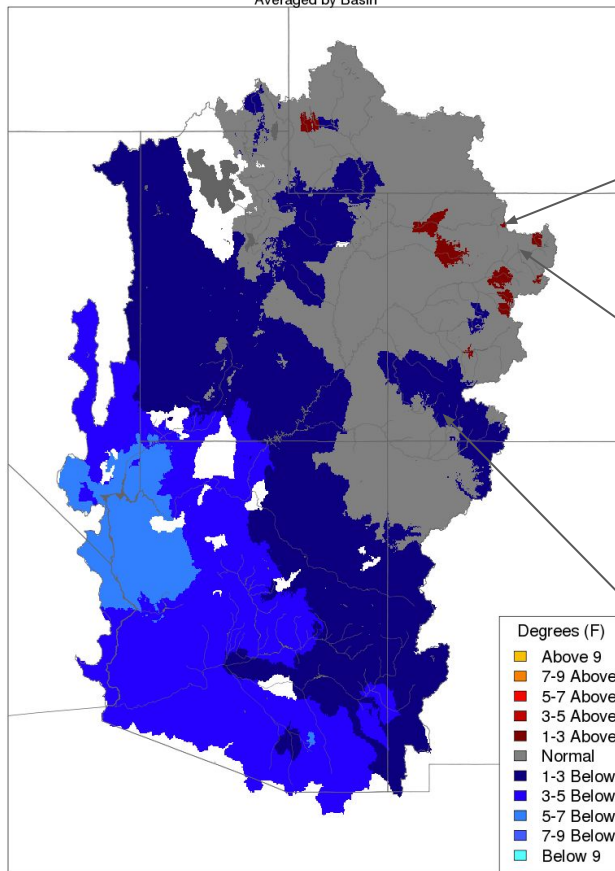
## Water Year 2020 Oct-Mar Precip Summary

<u>Basin</u>	<u>Precip (% Avg)</u>
Upper Green	90%
Duchesne	95%
Price/San Rafael	90%
Yampa/White	105%
Upper CO Mainstem	95%
Gunnison	85%
Dolores	80%
San Juan	80%
Lake Powell	90%
Virgin	110%
Verde	120%
Salt	105%
Little Colorado	115%
Upper Gila	120%

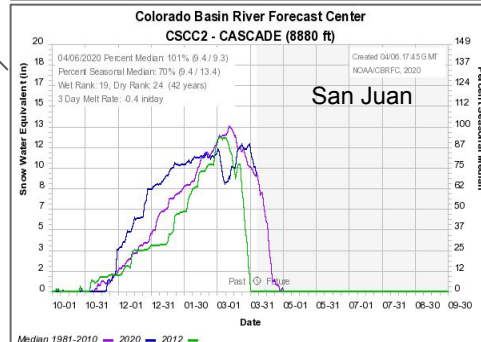
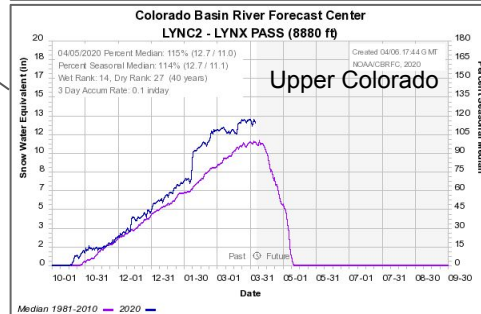
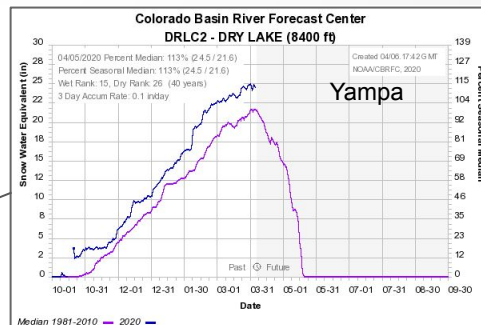
# March Temperature Summary

Max Temp - Monthly Deviation - March 2020

Averaged by Basin



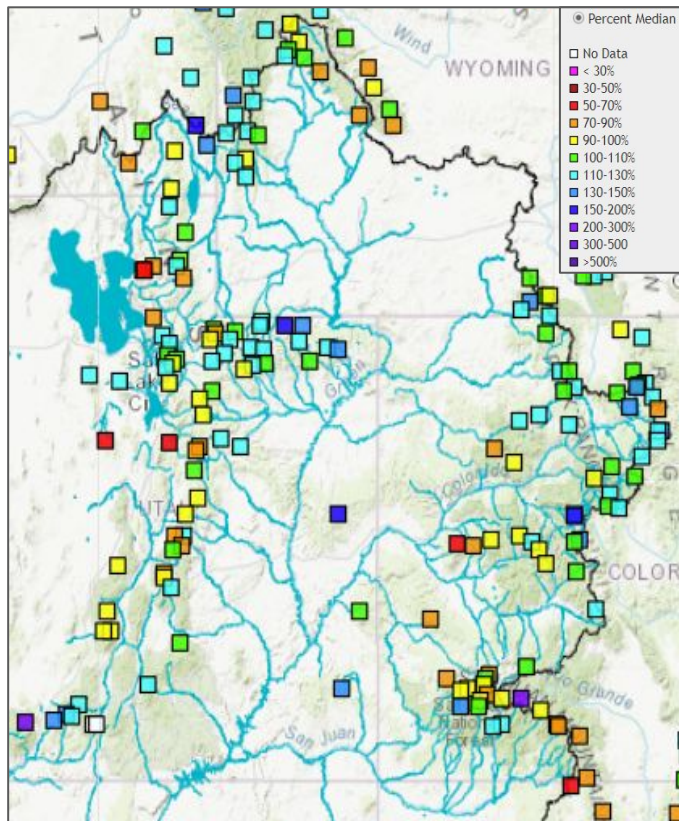
Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)



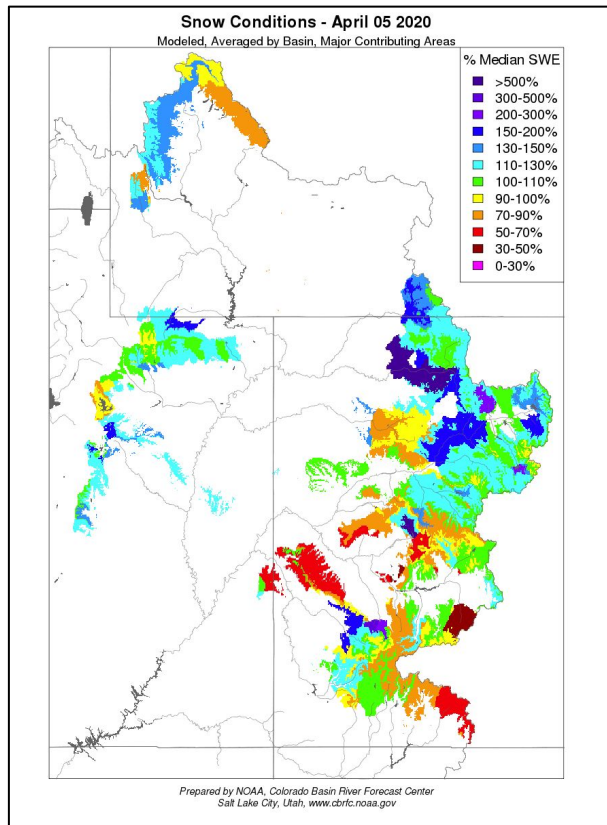
Near normal to below  
normal temperatures in  
March resulted in minimal  
snow melt below ~9000 ft.

# Early April Snow Conditions

NRCS SNOTEL (Observed): April 5th



CBRFC (Model)



April 5<sup>th</sup> SWE Summary  
based on SNOTEL sites

<u>Basin</u>	<u>SWE (% Median)</u>
Upper Green	110%
Duchesne	110%
Price/San Rafael	100%
Yampa/White	105%
Upper CO Mainstem	110%
Gunnison	95%
Dolores	100%
San Juan	95%
Virgin	140%
Lake Powell	100%

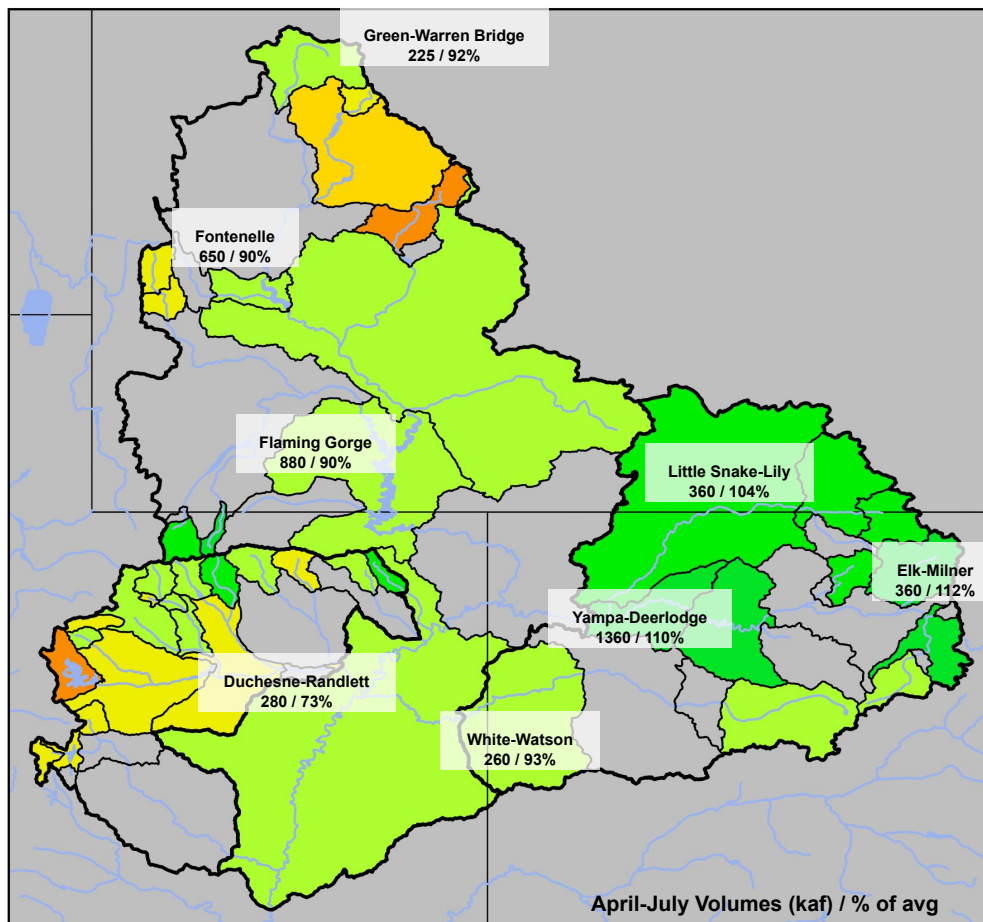
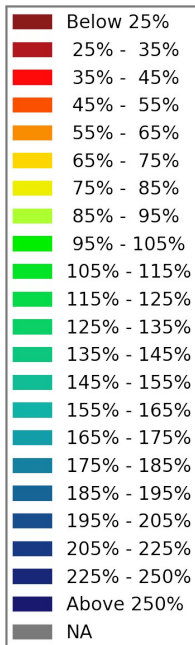
%median SWE compared to Mar 1:

-increased in the Virgin, Dolores, San Juan, and Duchesne basins

-decreased in the Yampa and Upper Colorado Mainstem basins

# April 1<sup>st</sup> Water Supply Forecasts: Green, Yampa, White, Duchesne

1981 - 2010 %avg



## April 1<sup>st</sup> Forecasts

Volume (kaf) / % of 1981-2010 avg

### Forecast Ranges & (1-month Trend)

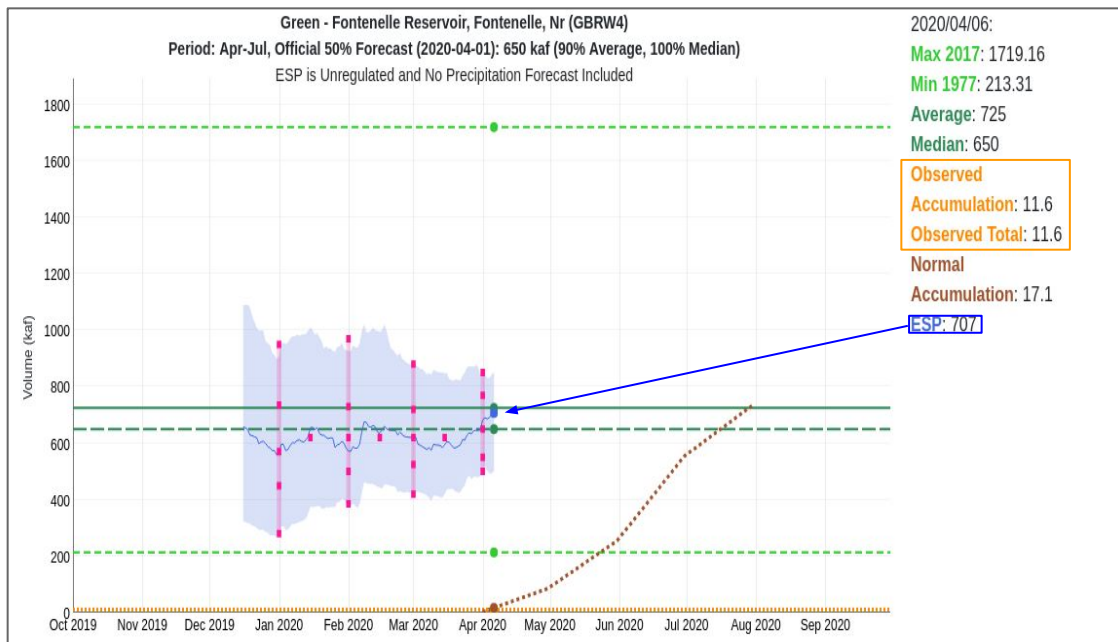
**Upper Green:** 60 - 110% avg  
(+/- 5%)

**Yampa/White:** 90 - 110% avg  
(0 - 10% decrease)

**Duchesne:** 65 - 100% avg  
(0 - 10% increase)



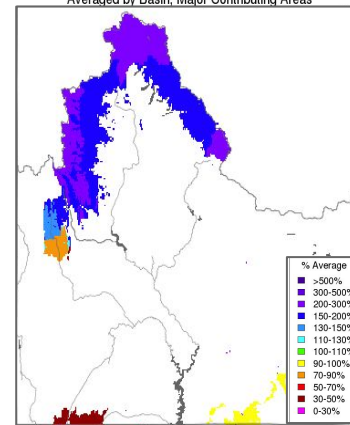
# Upper Green Water Supply Forecast & Snow Conditions



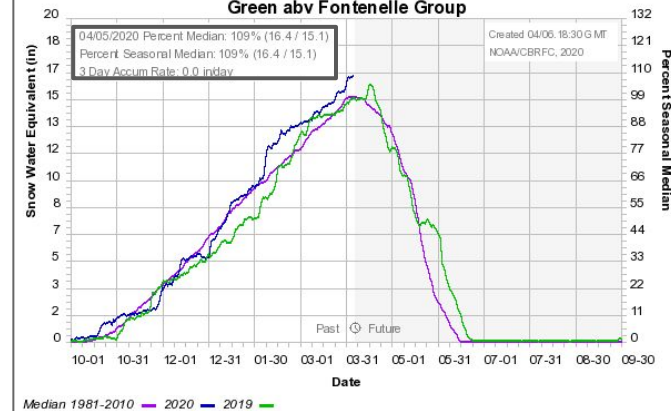
Model guidance has increased in the Upper Green since the 4/1 forecast due to a wet start to the month.

## Month to Date Precipitation - April 06 2020

Averaged by Basin, Major Contributing Areas



## Colorado Basin River Forecast Center Green abv Fontenelle Group

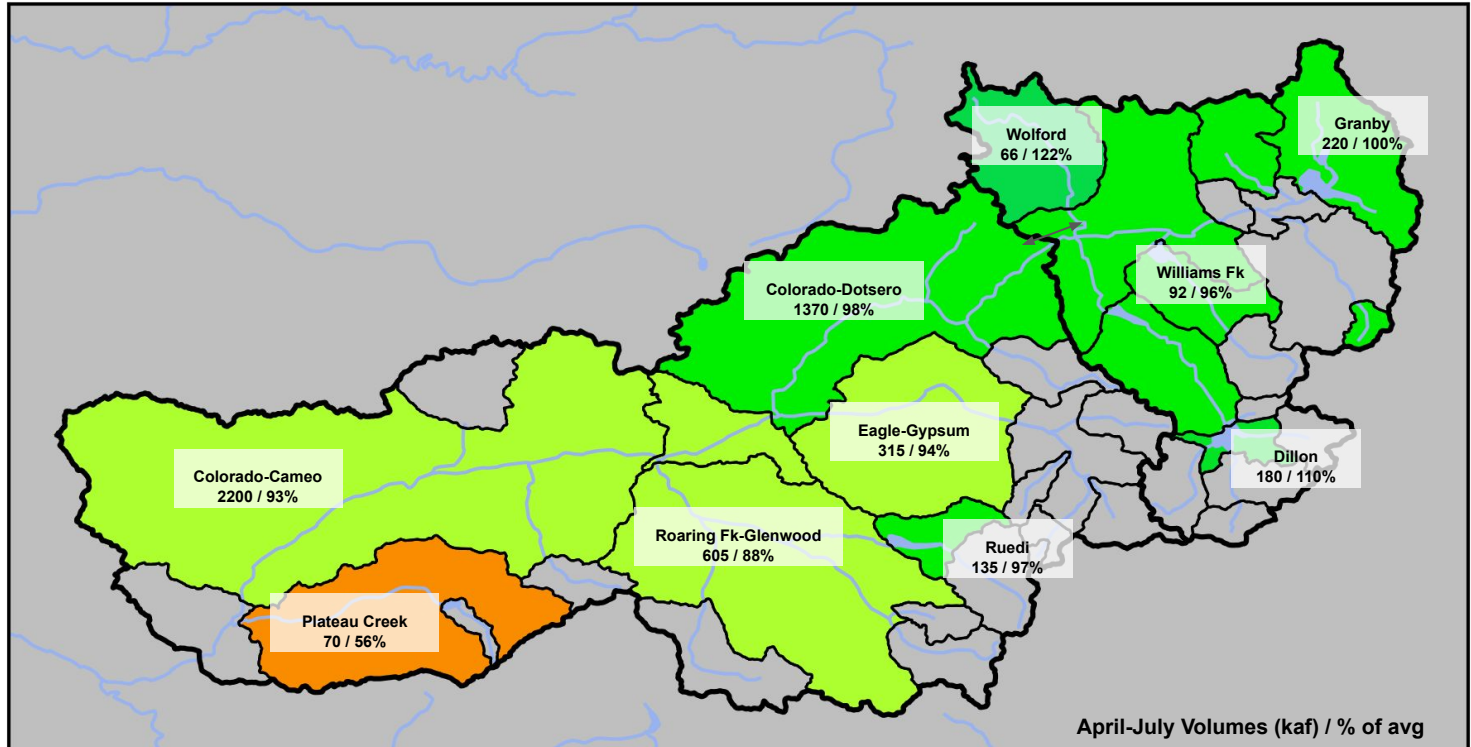
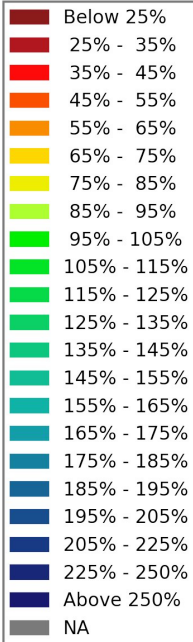


# April 1<sup>st</sup> Water Supply Forecasts: Upper Colorado River Mainstem

## Forecast Ranges & (1-month Trend):

Granby to Kremmling: 95 - 120% avg (5 - 10% decrease)  
Kremmling to Cameo: 85 - 100% avg (0 - 5% decrease)

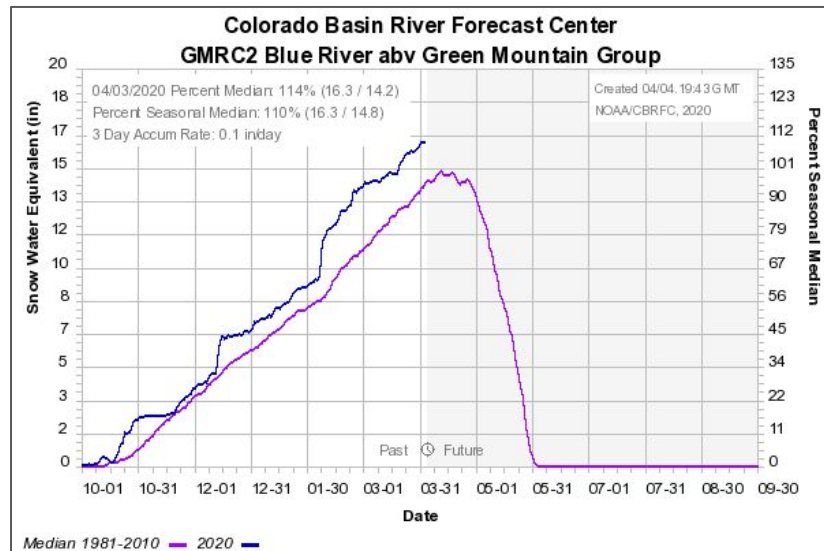
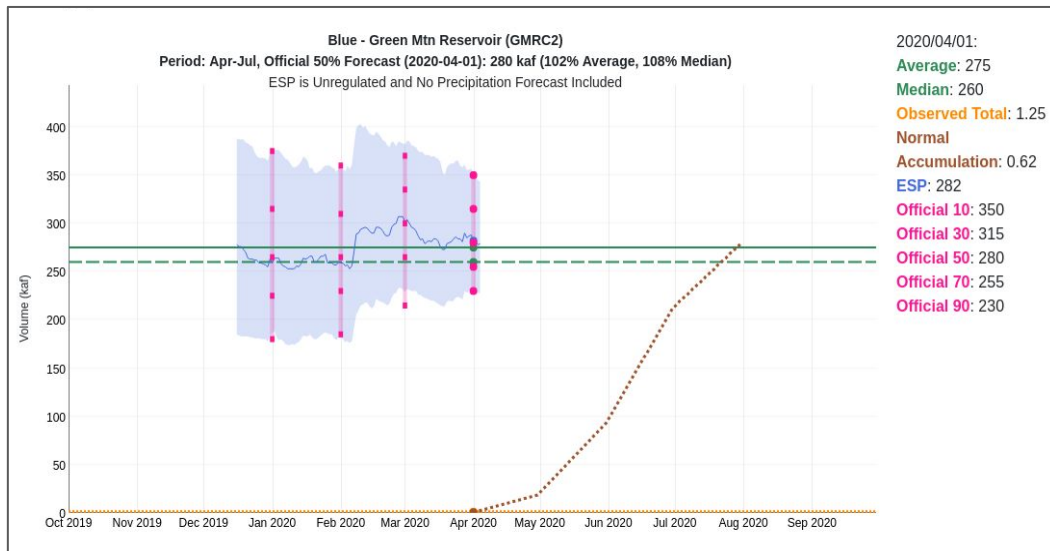
1981 - 2010 %avg



# Upper Colorado Mainstem: Green Mountain Reservoir ESP Guidance & SWE Conditions

Seasonal (April-July) runoff into Green Mountain Reservoir is forecast to be near average (102%).

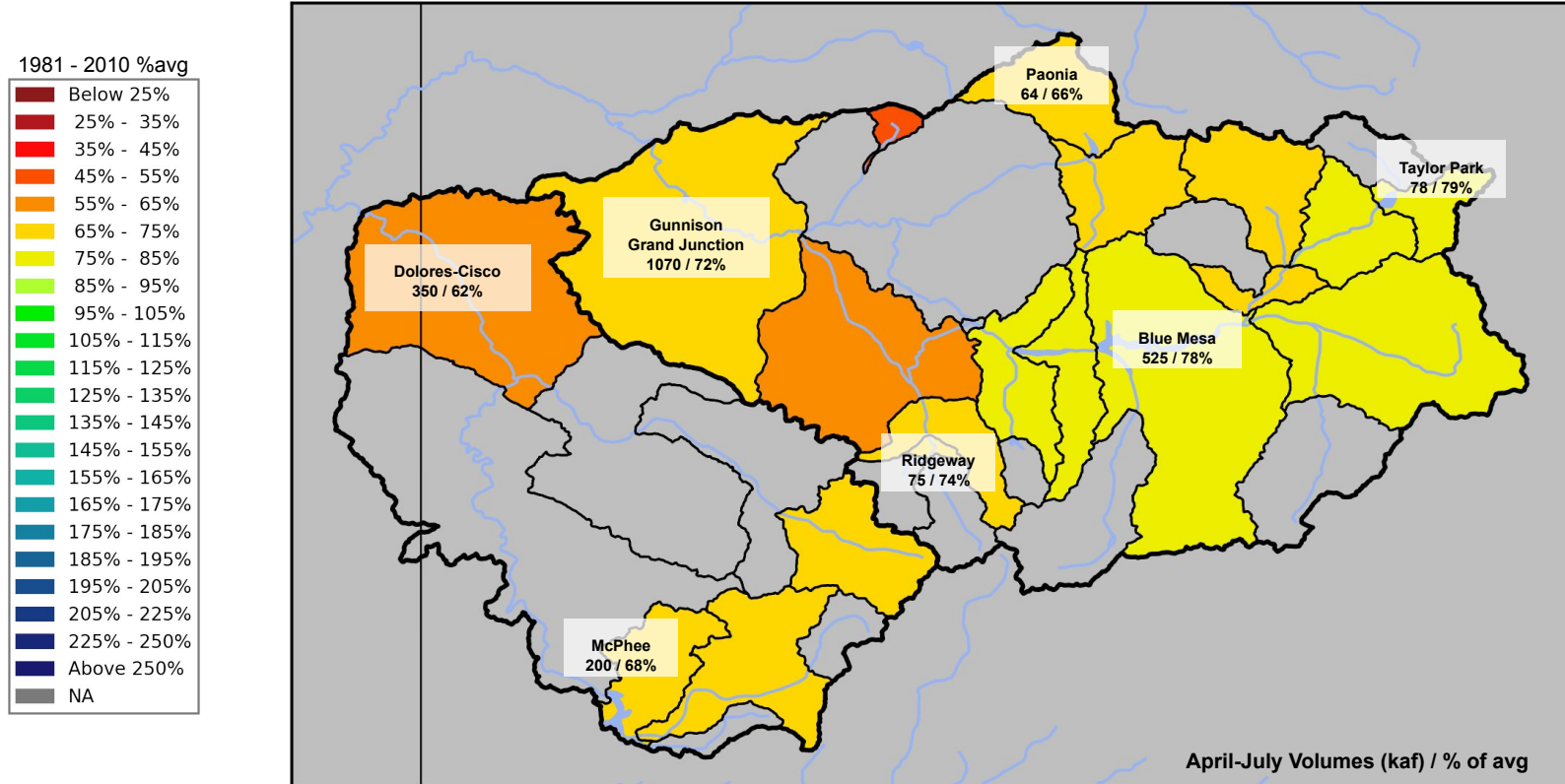
Early April snow above Green Mountain Reservoir is slightly above median (114%) and has exceeded its normal seasonal peak.



# April 1<sup>st</sup> Water Supply Forecasts: Gunnison, Dolores

## Forecast Ranges & (1-month Trend):

Gunnison: 55 - 80% avg (+/- 5%)  
Dolores: 60 - 70% avg (0 - 5% increase)

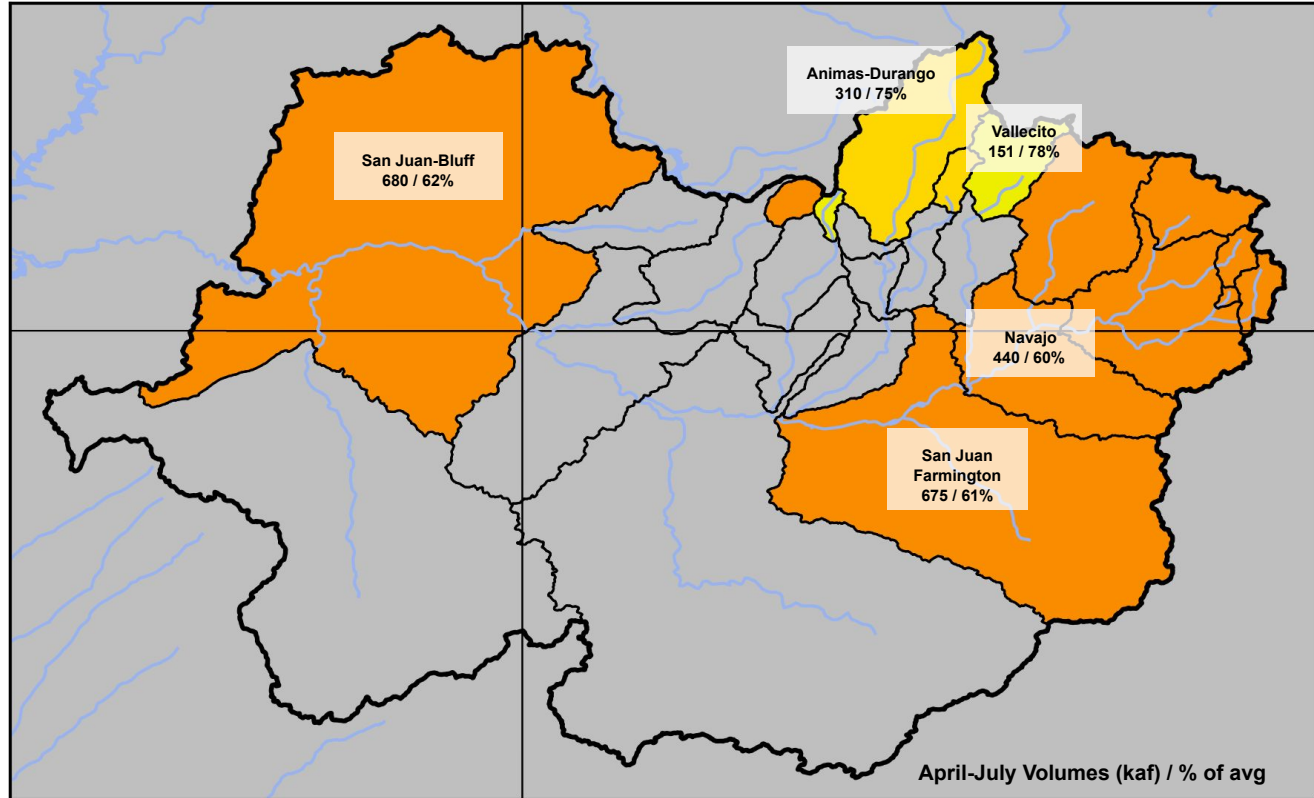
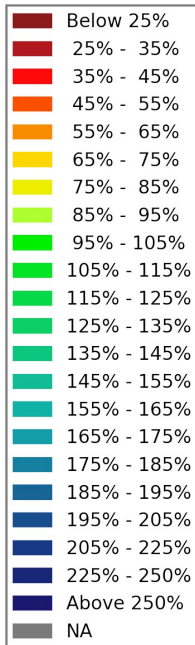




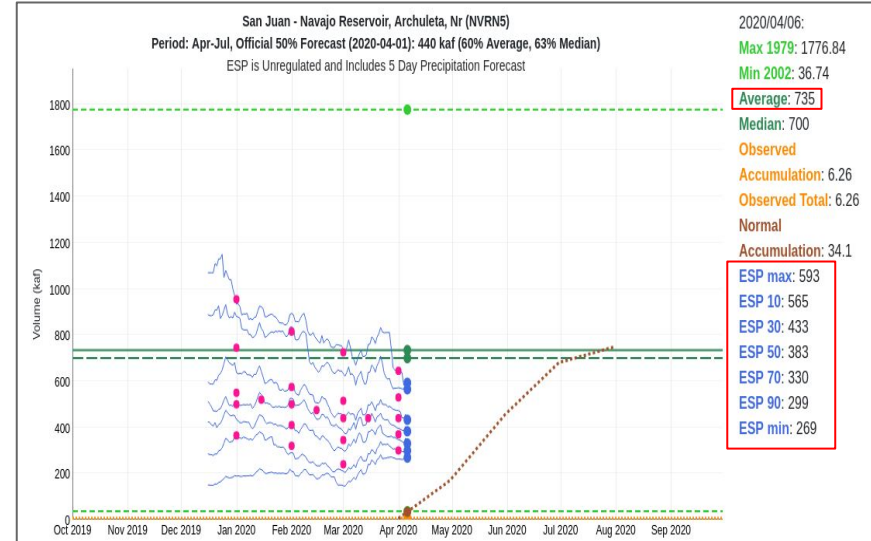
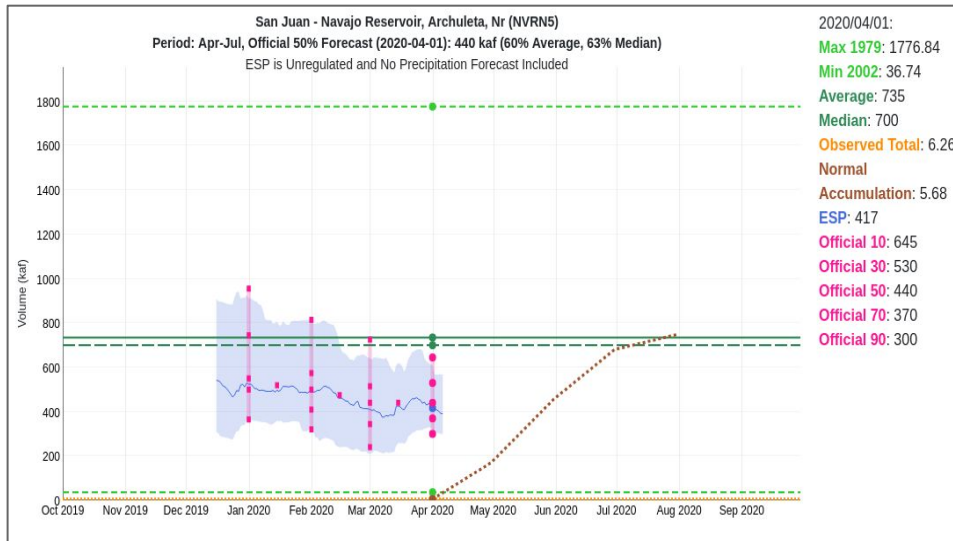
# April 1<sup>st</sup> Water Supply Forecasts: San Juan

**Forecast Range & (1-month Trend):**  
60 - 80% of average (0 - 5% increase)

1981 - 2010 %avg



# San Juan River Basin: Navajo Reservoir ESP Guidance

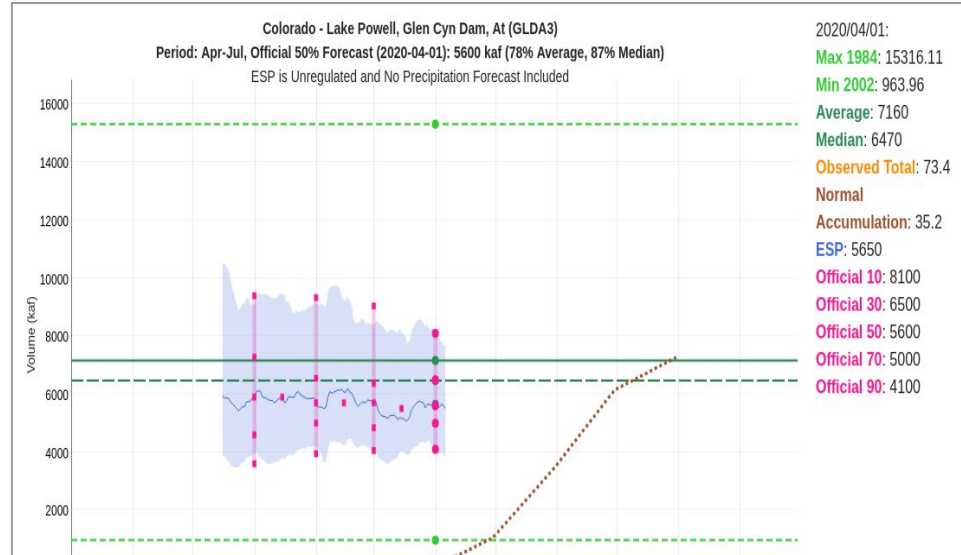
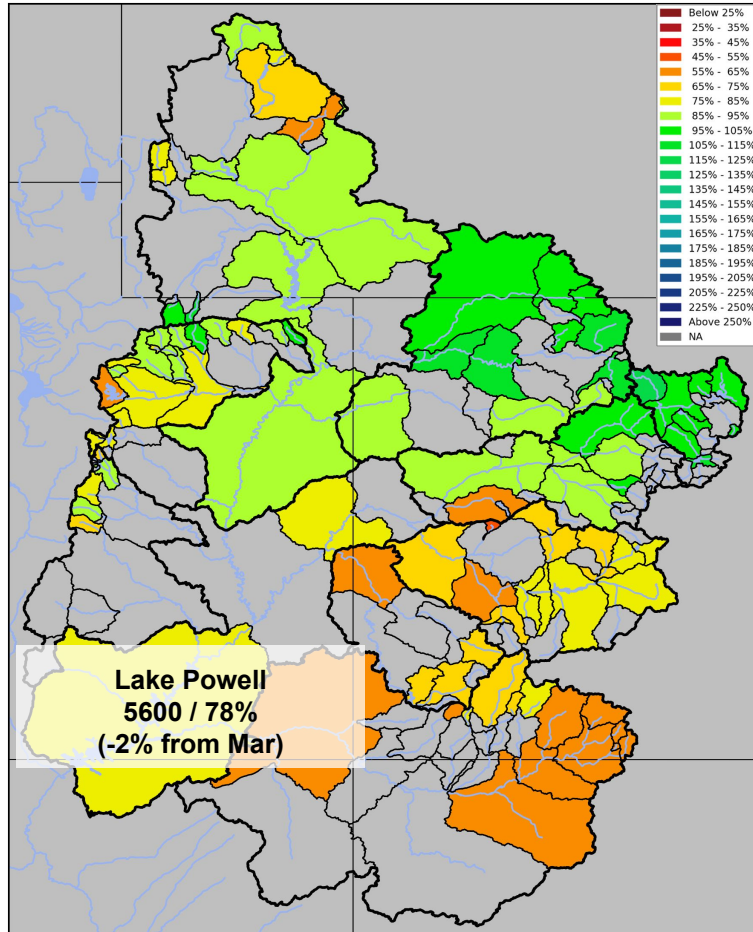


Seasonal (April-July) runoff forecast did not change from March to April and is expected to be below average (60%). March precipitation above Navajo was near average (90%) and seasonal precipitation is still below average (70%)

Basin wide snowpack is near normal (~90%) but snow above ~11,000 ft is below normal from a dry October.

Current model guidance is currently indicating no chance of average runoff into Navajo reservoir. Max scenario is 593 KAF.

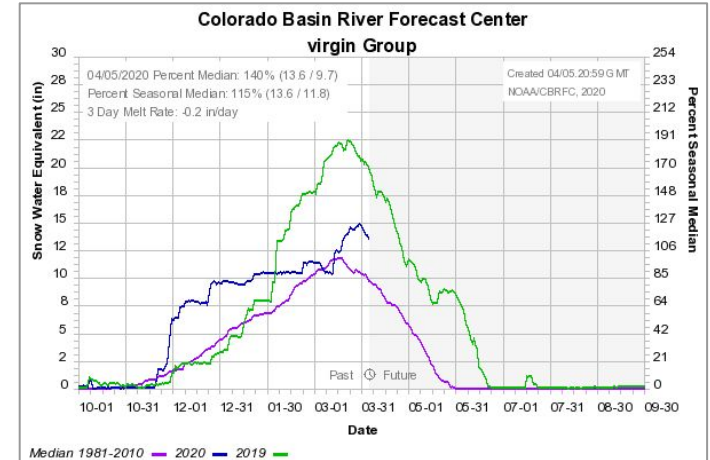
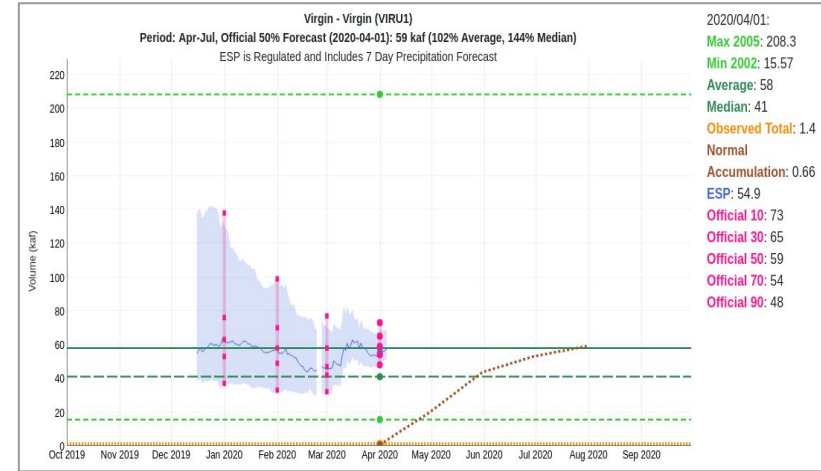
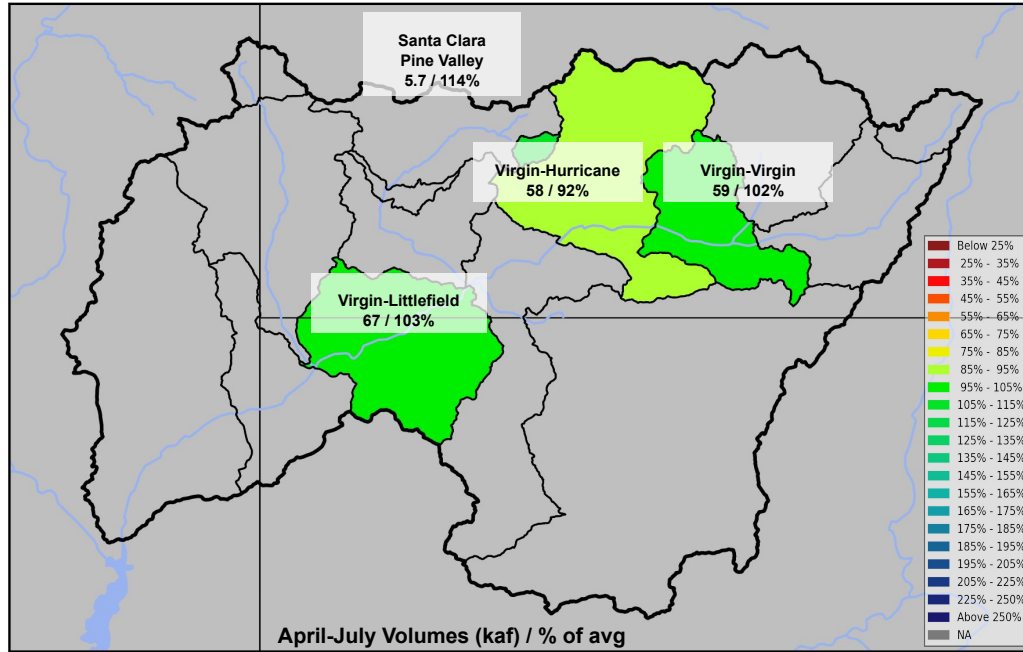
# April 1<sup>st</sup> Water Supply Forecasts: Upper Colorado (Lake Powell)



Lake Powell summarizes the hydrologic conditions throughout the Upper Colorado River Basin.

# April 1<sup>st</sup> Water Supply Forecasts: Virgin River Basin

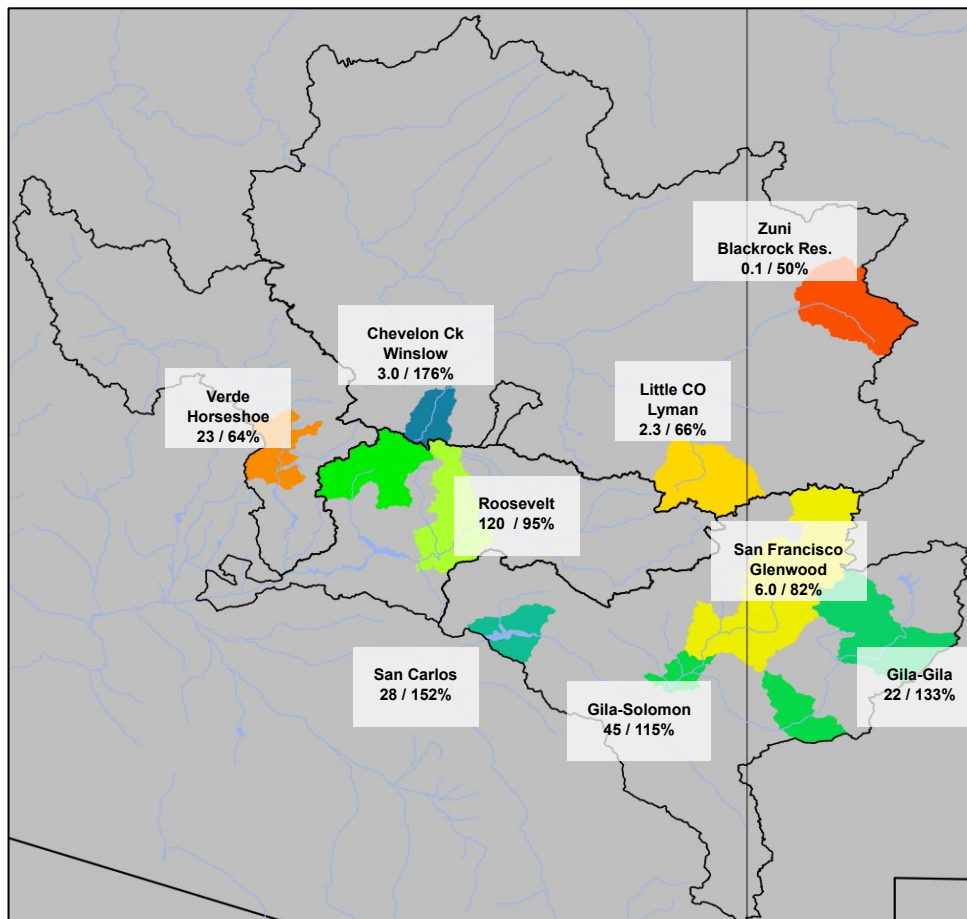
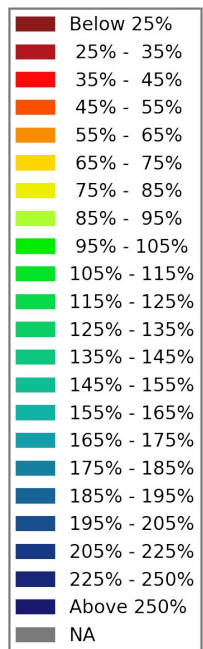
**Forecast Range & (1-month Trend):**  
90 - 115% avg (20 - 35% increase)





# April 1<sup>st</sup> Water Supply Forecasts: Lower Colorado River Basin

1981 - 2010 %median



April - May Forecast Period  
Volume (kaf) / % of 1981-2010 Median

## Forecast Ranges

**Little Colorado:** 50 - 175%

**Upper Gila:** 80 - 130%

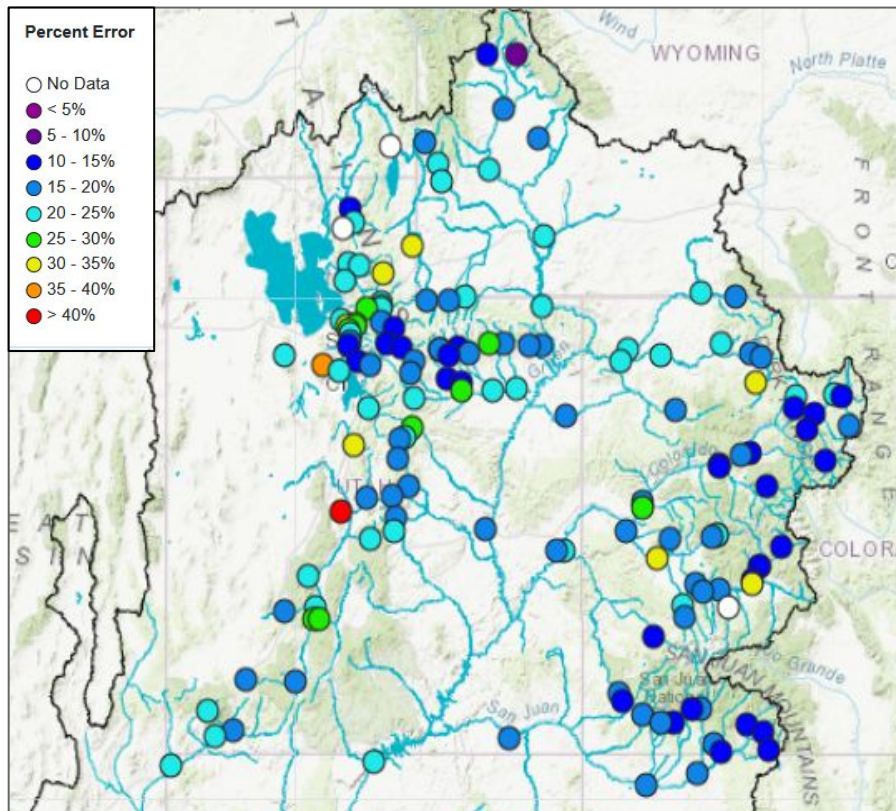
**Salt:** 95 - 100%

**Verde:** 65%

Jan-May forecasts increased in the Salt, Verde and Upper Gila due to increased observed runoff from March rain events.

# Historical (1981-2010) Forecast Verification

## April Forecast Error: April-July Volume



### Location

Green River - Warren Bridge  
Fontenelle Reservoir  
Yampa River - Deerlodge  
Blue River - Dillon Reservoir  
Colorado River - Cameo  
Blue Mesa Reservoir (Gunnison)  
McPhee Reservoir (Dolores)  
Navajo Reservoir (San Juan)  
Lake Powell

### Avg Apr Forecast Error

12%  
21%  
20%  
14%  
16%  
15%  
16%  
18%  
20%

Forecasts are better than just going with average  
Error tends to decrease each month into the spring

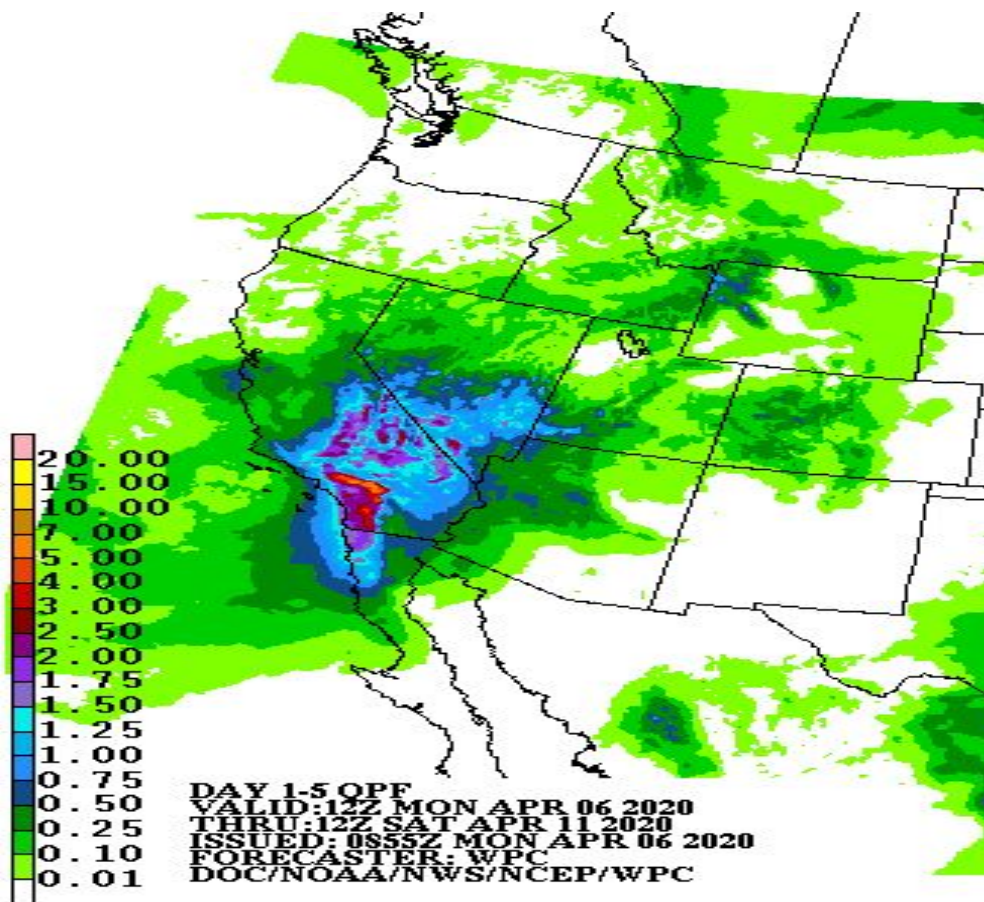
### Where Forecasts are Better:

- Headwaters
- Primarily snow melt basins
- Known diversions / demands

### Where Forecasts are Worse:

- Lower elevations (rain or early melt)
- Downstream of diversions / irrigation
- Little is known about diversions / demands

## Upcoming Weather: Precip Forecast Through Saturday

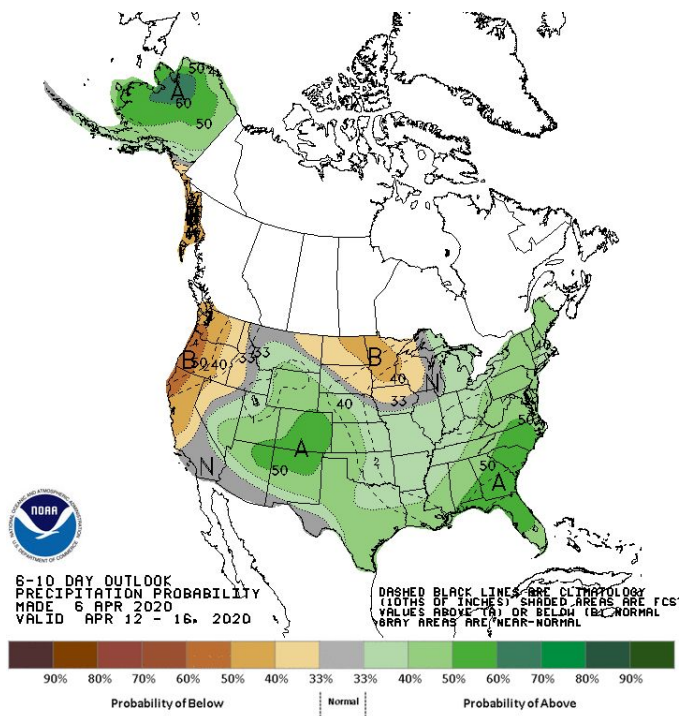


- A cutoff low currently off the southern California coast will move eastward across Arizona over the next few days and then weaken.
- Highest precip amounts (0.5-1.5 inches) are expected Wednesday-Thursday over the Lower Basin and southern half of Utah/Colorado. Uncertainty still remains on exact location of precipitation.
- Temperatures will be **5-10 degrees above normal** over much of the Upper Basin through Saturday.

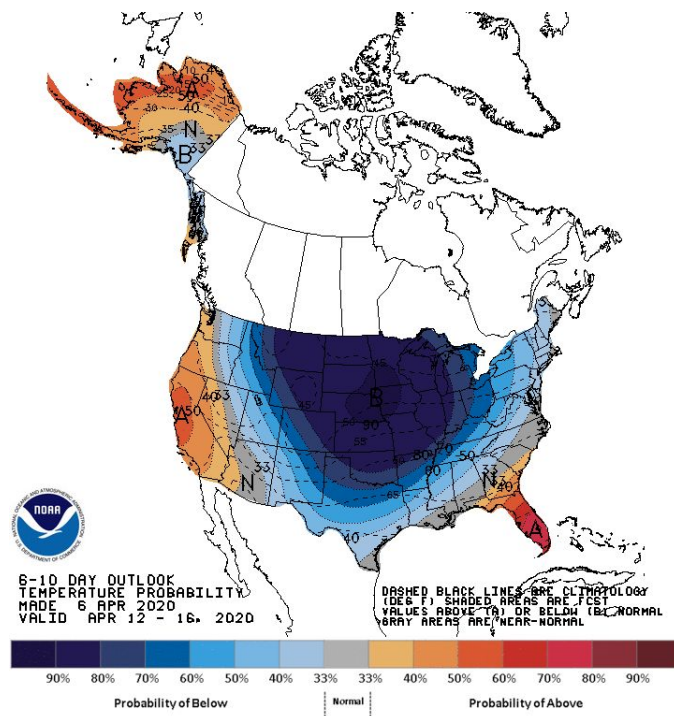
# Upcoming Weather: 6 to 10 Day Outlook (April 12-16)

The models are in general agreement showing a storm system dropping into the Intermountain West late this weekend into early next week. This would bring cooler temperatures and increase precipitation chances over the Upper Basin. While precipitation amounts are uncertain, this pattern tends to favor the Upper Green and northern half of Colorado (Yampa/Upper Colorado).

## Precipitation Outlook



## Temperature Outlook





## Summary

- The Lower Colorado River and Virgin River basins benefited the most from March storms. The Dolores, Duchesne and parts of the San Juan also received above normal precipitation.
  - Water supply forecasts increased in those areas over last month.
  - Biggest decreases in volume forecasts occurred in the Yampa and Upper Colorado mainstem.
- Early April snow conditions:
  - Variable across the Upper Colorado Basin, but near to slightly below normal overall.
    - Best conditions are in the Upper Colorado mainstem, Yampa, Duchesne and parts of the Upper Green with many individual SNOTEL sites >120% of median.
    - Conditions have improved in parts of in SW Colorado with some individual SNOTEL sites are now near median.
  - Virgin River Basin: Conditions have improved significantly and are now much above median ranging from ~130-150%.
- A typical Spring weather pattern is expected with periods of warming intermixed with wet/cool periods.
  - Snowmelt will occur during the warm period through this week.
  - A storm early next week will limit melt especially in the northern half of the basin.
  - Not expecting any significant changes to the forecasts through mid-month.

# 2020 Water Supply Briefing Schedule

*\*All Times Mountain Time (MT)*

## Colorado River Basin

<del>Wednesday</del>	<del>Jan 8<sup>th</sup></del>	<del>10 am</del>
<del>Friday</del>	<del>Feb 7<sup>th</sup></del>	<del>10 am</del>
<del>Friday</del>	<del>Mar 6<sup>th</sup></del>	<del>10 am</del>
<del>Tuesday</del>	<del>Apr 7<sup>th</sup></del>	<del>10 am</del>
Thursday	May 7 <sup>th</sup>	10 am

## Utah / Great Basin

<del>Wednesday</del>	<del>Jan 8<sup>th</sup></del>	<del>11:30 am</del>
<del>Friday</del>	<del>Feb 7<sup>th</sup></del>	<del>11:30 am</del>
<del>Friday</del>	<del>Mar 6<sup>th</sup></del>	<del>11:30 am</del>
Tuesday	Apr 7 <sup>th</sup>	11:30 am
Thursday	May 7 <sup>th</sup>	11:30 am

Additional briefings scheduled as needed

All registration information has been posted to the CBRFC web page.

# COVID-19 Operations at CBRFC

- Still staffed 7 days a week 6:30 am - 4:00 pm
- Minimal staff in the office each day
  - Others working from home, but not necessarily every day
- Water Supply forecasts may be delayed slightly
  - Please contact Operations if you don't hear back from your normal contact(s)
  - They can either answer your question or get a hold of someone who can

## Operational Hydrologist

- 801-524-4004
- [cbrfc.operations@noaa.gov](mailto:cbrfc.operations@noaa.gov)

# CBRFC Contacts

## **Basin Focal Points (Forecasters)**

Brenda Alcorn - Upper Green, White, Yampa, Duchesne

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Cody Moser – Upper Colorado Mainstem

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Ashley Nielson – San Juan, Gunnison, Dolores, Lake Powell

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Craig Peterson - Senior Hydro/Met

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CBRFC Webpage

<https://www.cbrfc.noaa.gov/>

CBRFC Operations

[cbrfc.operations@noaa.gov](mailto:cbrfc.operations@noaa.gov)

801-524-4004

CBRFC Water Supply Presentations

<https://www.cbrfc.noaa.gov/present/present.php>

Questions?