

# Colorado River Basin Water Supply Briefing

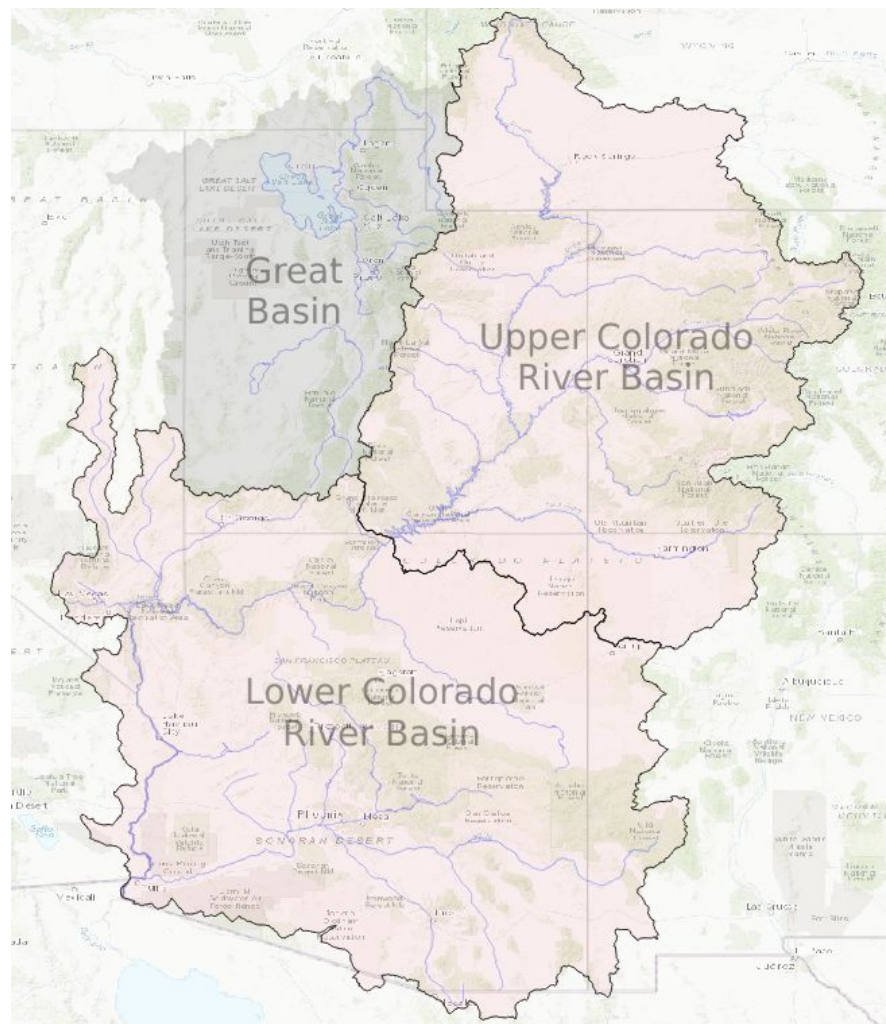
May 7, 2020

Brenda Alcorn - Hydrologist  
Colorado Basin River Forecast Center

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

**Passcode: 1706374**

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



# Today's Presentation

April & Water Year Precipitation Review

Early May SWE Conditions

May Water Supply Forecasts

Historical May Forecast Error

Peak Flows

Upcoming Weather

Contacts & Questions

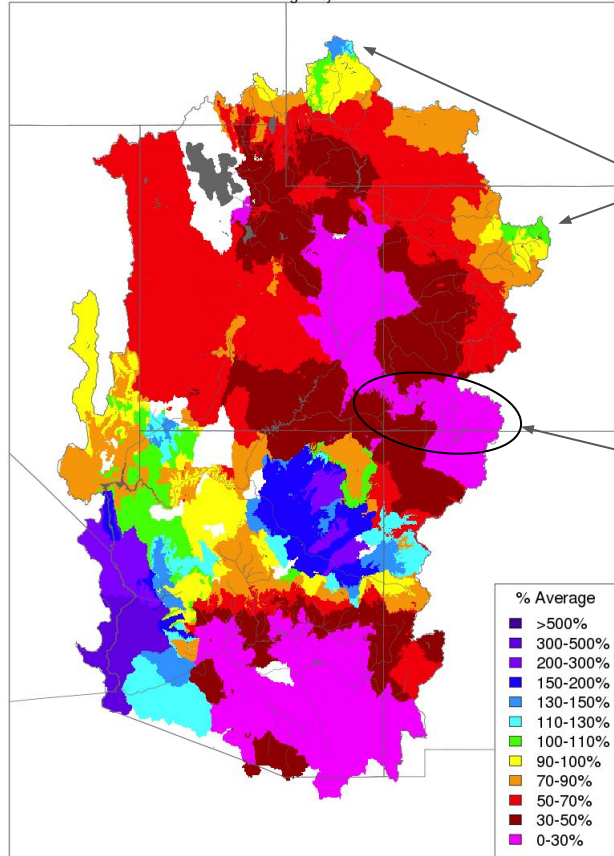
**Phone: 1-877-929-0660**

**Passcode: 1706374**

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# April Precipitation Summary

Monthly Precipitation - April 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)

*The April weather pattern featured general ridging and northwest flow, leading to a mostly dry month.*

A few storm systems clipped the very northern portion of the Upper Green and the Colorado mainstem headwaters, bringing near to above average precipitation.

The rest of the Upper Colorado River Basin received below to much below normal precipitation.

Several SNOTEL sites in the San Juan and Dolores river basins had record or near record low precipitation amounts.

## April 2020 Precip Summary

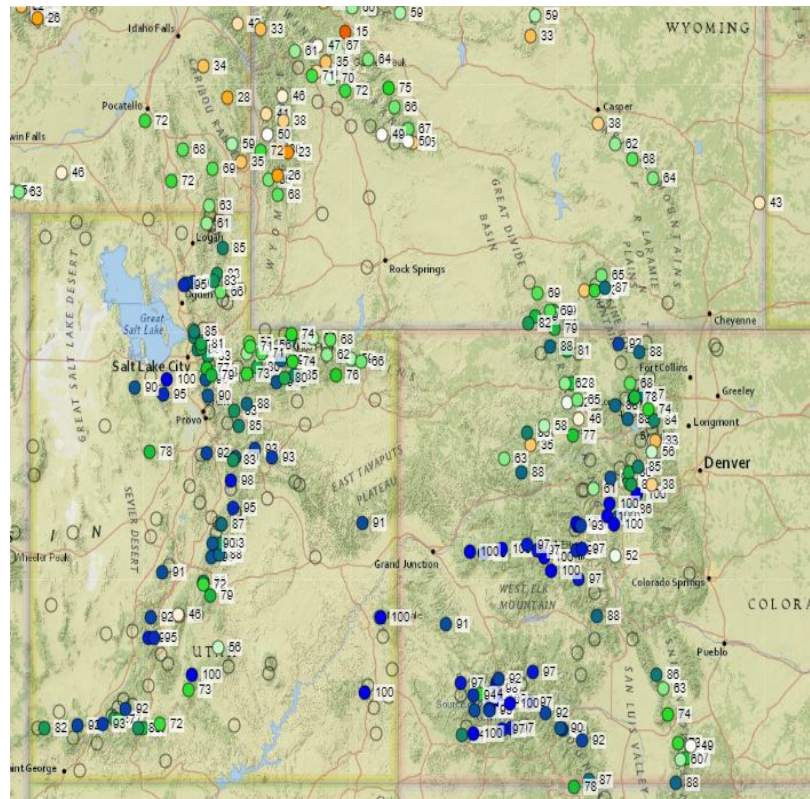
<u>Basin</u>	<u>Precip (% Avg)</u>
Upper Green	80%
Duchesne	45%
Price/San Rafael	65%
Yampa/White	75%
Upper CO Mainstem	75%
Gunnison	50%
Dolores	30%
San Juan	10%
Lake Powell	60%
Virgin	60%
Salt/Verde	60%
Little Colorado	75%
Upper Gila	40%

# A Tale of Two Spring Seasons - 2019 vs. 2020

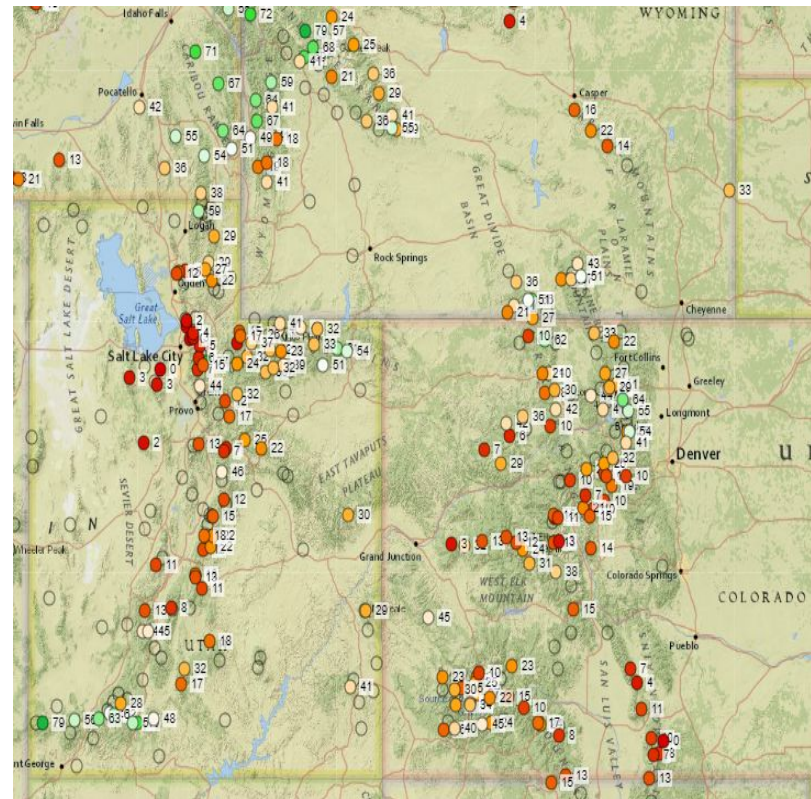
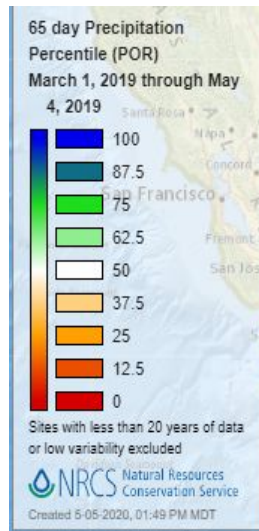
2019

March - April SNOTEL Precipitation Rankings

2020



Near record wettest March in San Juan, Dolores, and Gunnison river basins.

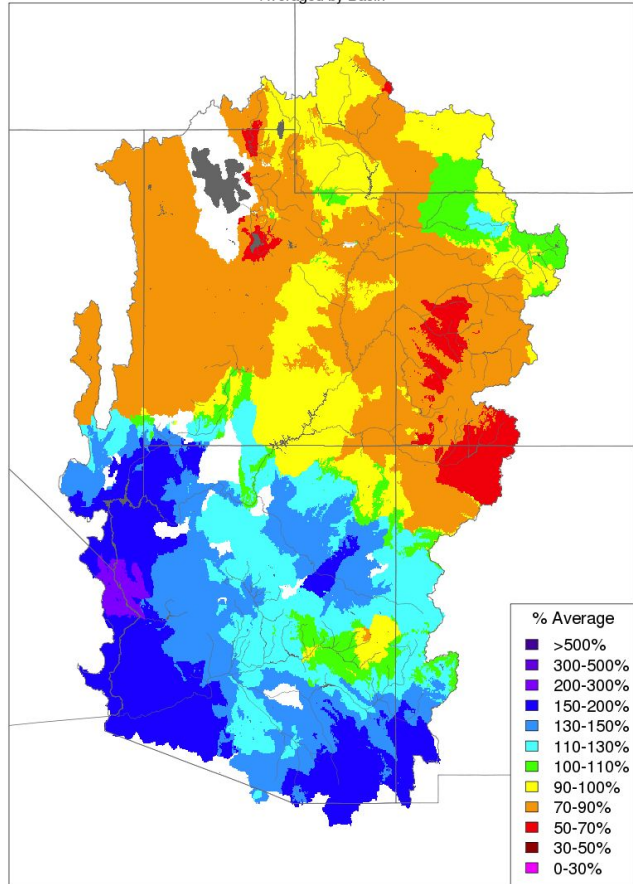


Near record driest April in San Juan and Dolores river basins.

# Water Year Precipitation Summary

Water Year Precipitation, October 2019 - April 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)

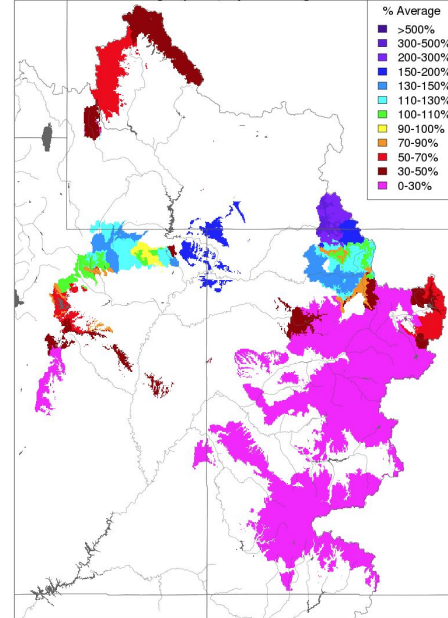
## Water Year 2020 Oct-Apr Precip Summary

<u>Basin</u>	<u>Precip (% Avg)</u>
Upper Green	90%
Duchesne	85%
Price/San Rafael	90%
Yampa/White	95%
Upper CO Mainstem	90%
Gunnison	80%
Dolores	75%
San Juan	70%
Lake Powell	85%
Virgin	105%
Salt/Verde	110%
Little Colorado	115%
Upper Gila	115%

Duchesne and Yampa basins received some precipitation the first few days of the month, but has remained dry elsewhere.

Month to Date Precipitation - May 06 2020

Averaged by Basin, Major Contributing Areas

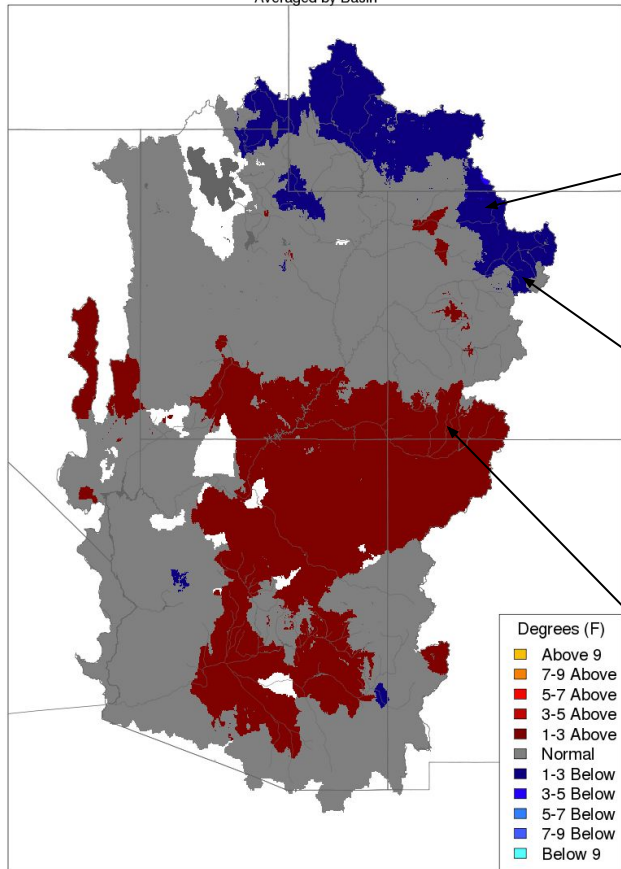


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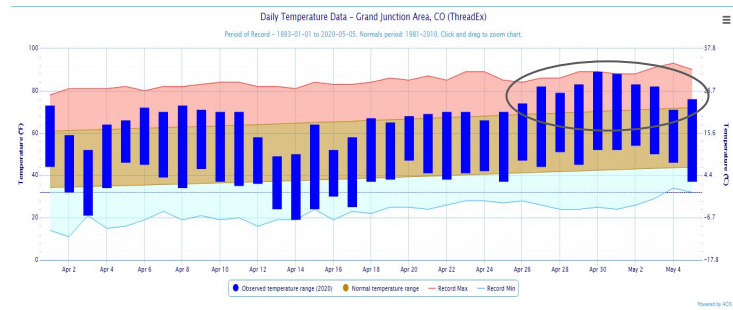
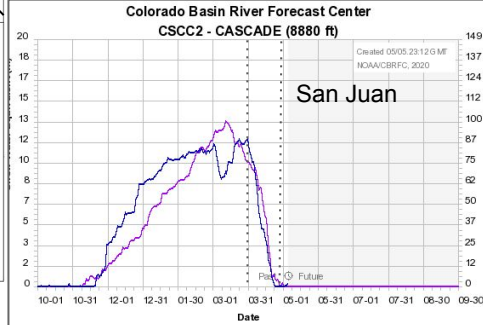
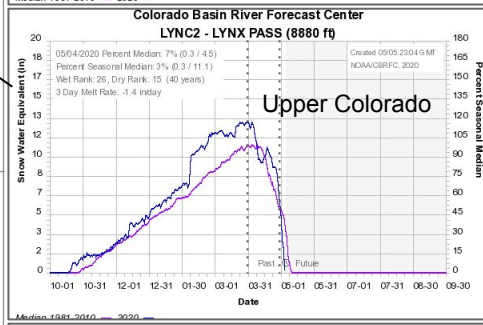
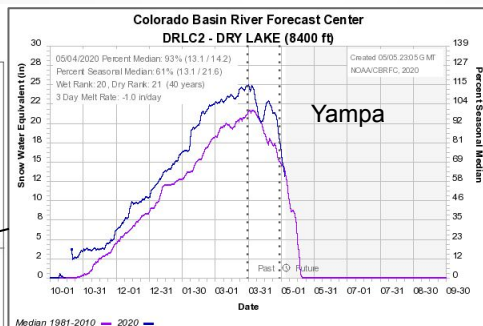
# April Temperature Summary

## Max Temp - Monthly Deviation - April 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)

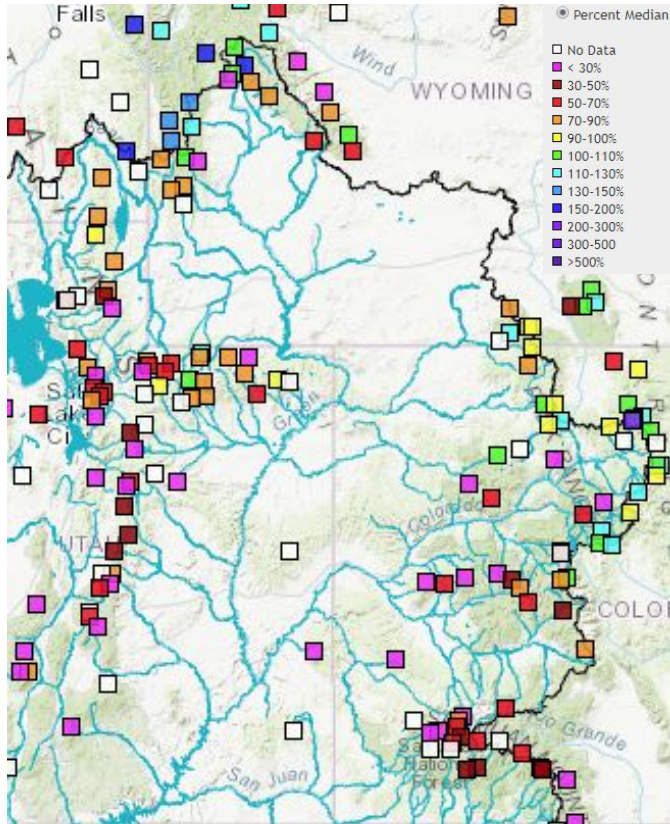


Overall near to below normal temperatures much of the month before period of much above normal near the end of the month.

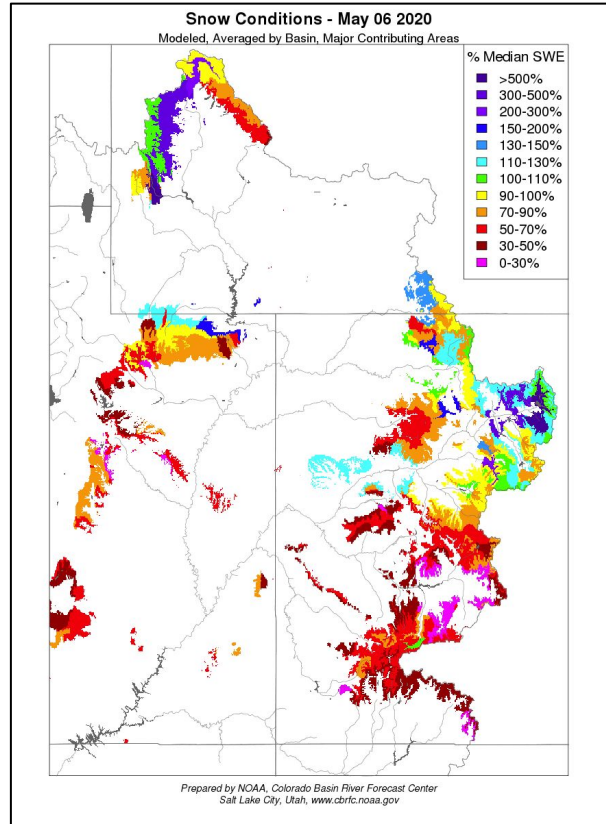
Snowmelt accelerated over last week of April with very warm temps (10-20 degrees above normal).

# Early May Snow Conditions

NRCS SNOTEL (Observed): May 6th



CBRFC (Model)



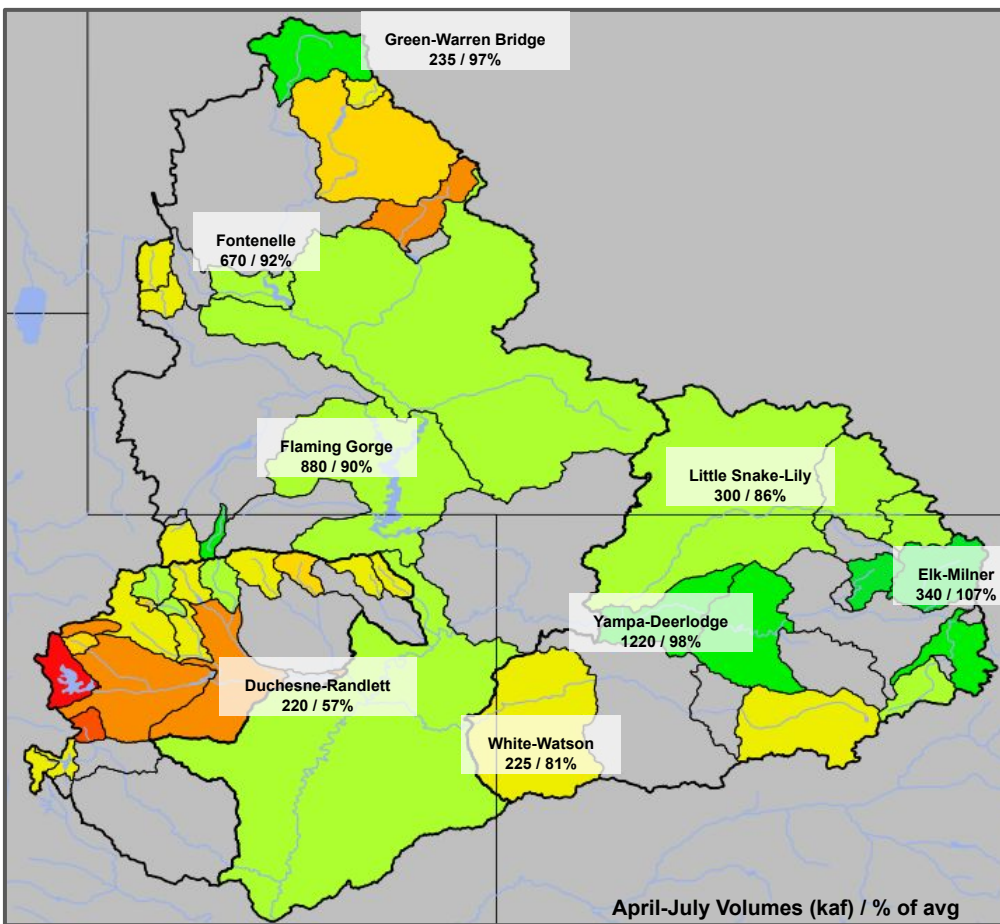
May 1<sup>st</sup> SWE Summary  
based on SNOTEL sites

<u>Basin</u>	<u>SWE (% Median)</u>
Upper Green	100%
Duchesne	90%
Price/San Rafael	65%
Yampa/White	95%
Upper CO Mainstem	105%
Gunnison	80%
Dolores	65%
San Juan	70%
Virgin	110%
Lake Powell	85%

%median SWE compared to Apr 1:  
- decreased area wide due to  
below normal April precipitation and  
accelerated snowmelt late in month

*Note: after the normal time of peak SWE,  
the % median can vary greatly from day to  
day and site to site depending on the rate of  
melt, new accumulation, and the magnitude  
of the median value.*

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



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

Volume (kaf) / % of 1981-2010 avg

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

**Upper Green:** 60 - 100% avg  
(+/- 5 -10%)

**Yampa/White:** 80 - 110% avg  
(0 - 15% decrease)

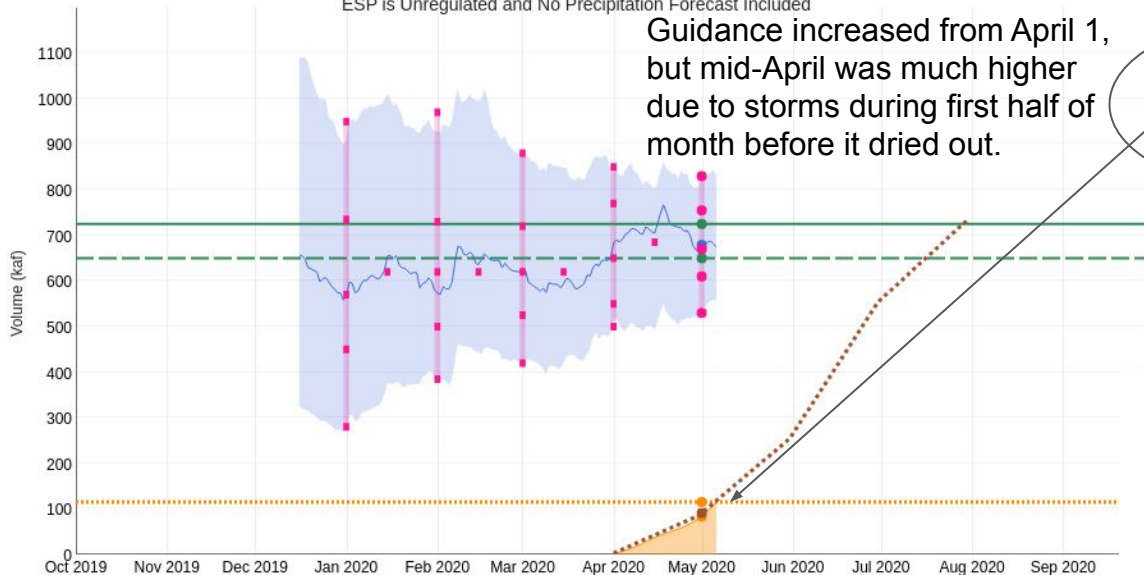
**Duchesne:** 65 - 100% avg  
(5 - 20% decrease)

# Upper Green Water Supply Forecast & Snow Conditions:

Green - Fontenelle Reservoir, Fontenelle, Nr (GBRW4)  
Period: Apr-Jul, Official 50% Forecast (2020-05-01): 670 kaf (92% Average, 103% Median)

ESP is Unregulated and No Precipitation Forecast Included

Guidance increased from April 1, but mid-April was much higher due to storms during first half of month before it dried out.



2020/05/01:

Average: 725

Median: 650

Observed

Accumulation: 83.3

Observed Total: 115

Normal

Accumulation: 90.9

ESP: 679

Official 10: 830

Official 30: 755

Official 50: 670

Official 70: 610

Official 90: 530

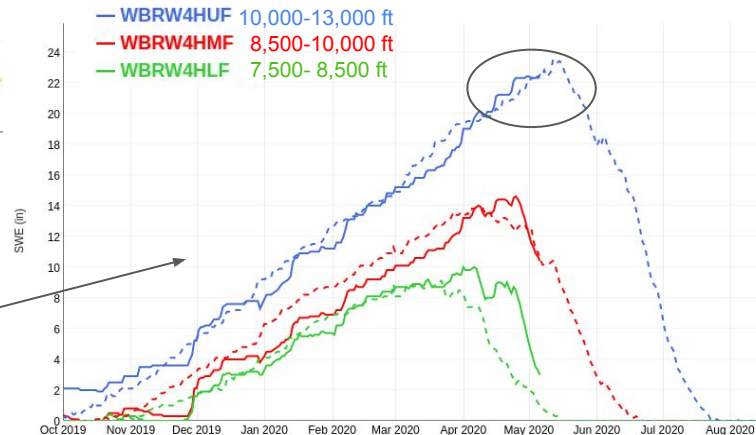
Observed data is now part of the April-July forecast total.

If not available daily model guidance will be plotted in purple.

Model snow plot indicates near normal conditions in the upper and mid-elevation bands.

Would like to see additional snow accumulation in highest elevations through mid-May.

Green - Daniel, Nr, Warren Bridge, At (WBRW4)

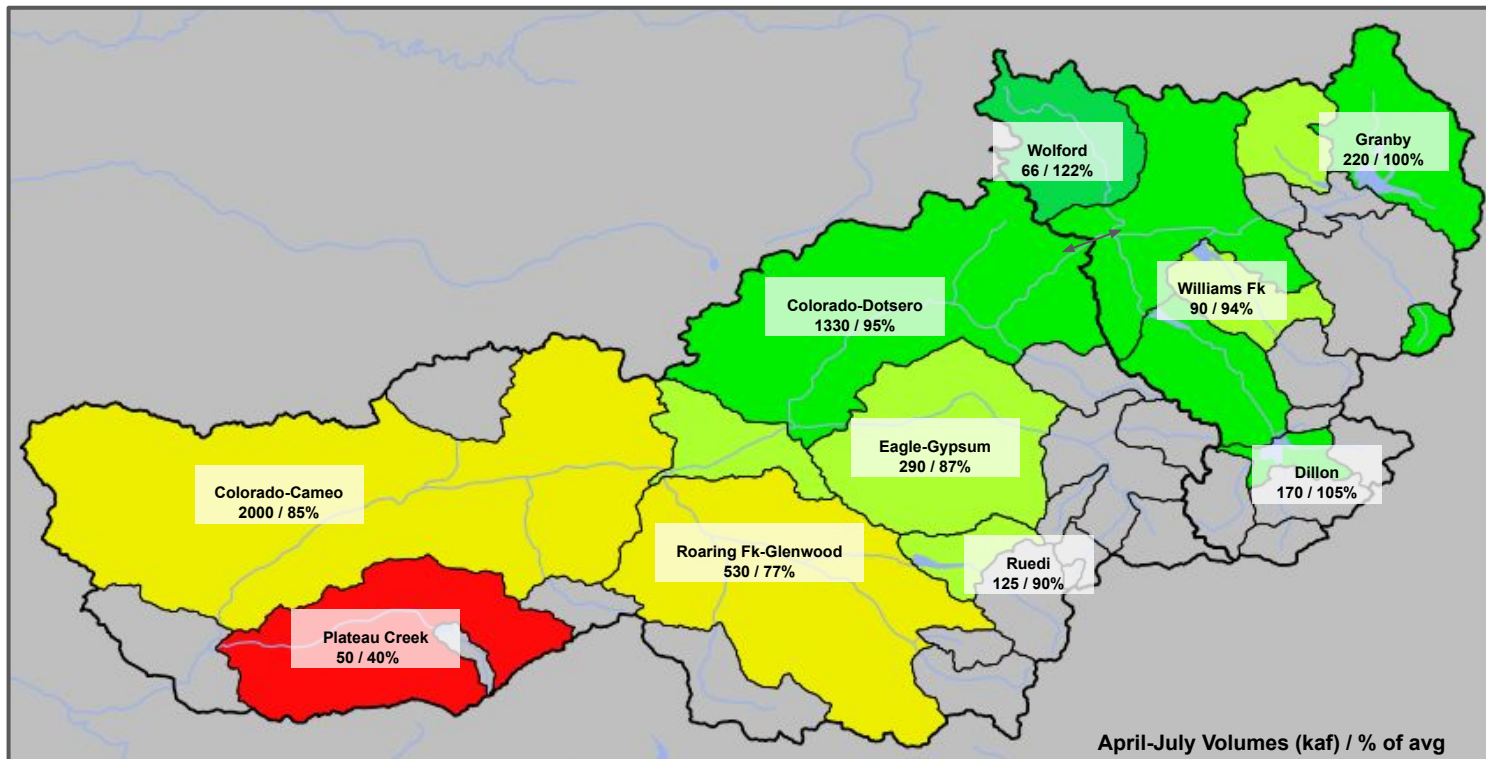
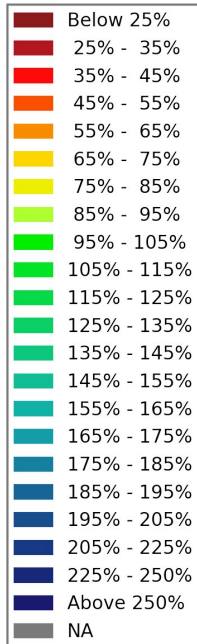


# May 1<sup>st</sup> Water Supply Forecasts: Upper Colorado River Mainstem

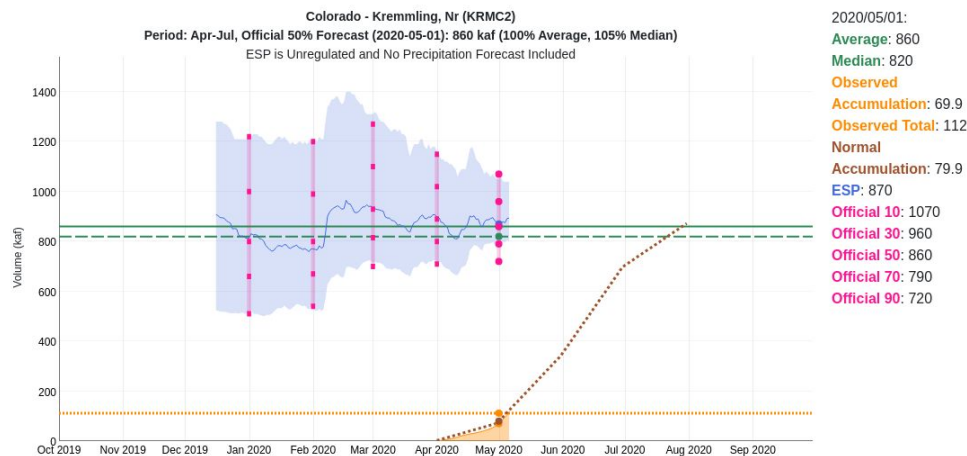
## Forecast Ranges & (1-month Trend):

Granby to Kremmling: 95 - 120% avg (0 - 5% decrease)  
Kremmling to Cameo: 40 - 95% avg (5 - 15% decrease)

1981 - 2010 %avg



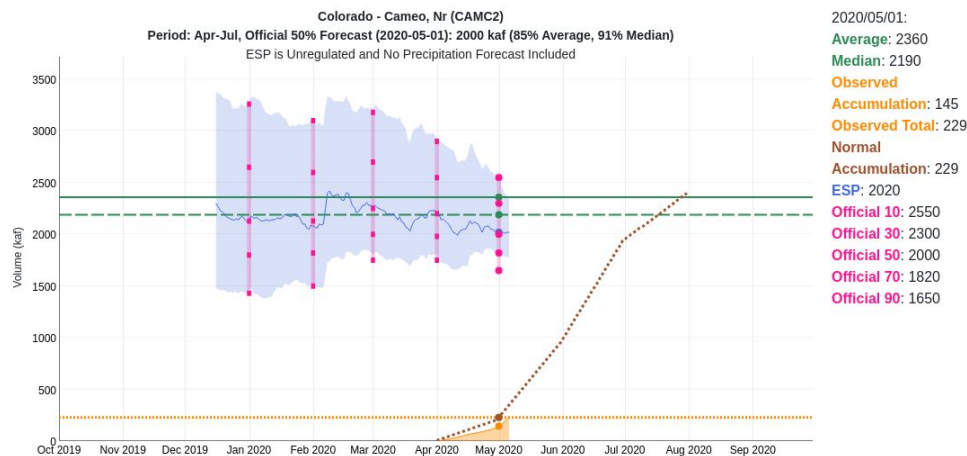
# Upper Colorado Mainstem: Kremmling vs. Cameo:



Near average April precipitation above Kremmling

April-July runoff volume guidance similar / small decreases during the past month

Near average water supply volumes expected



Below to much below average April precipitation below Kremmling

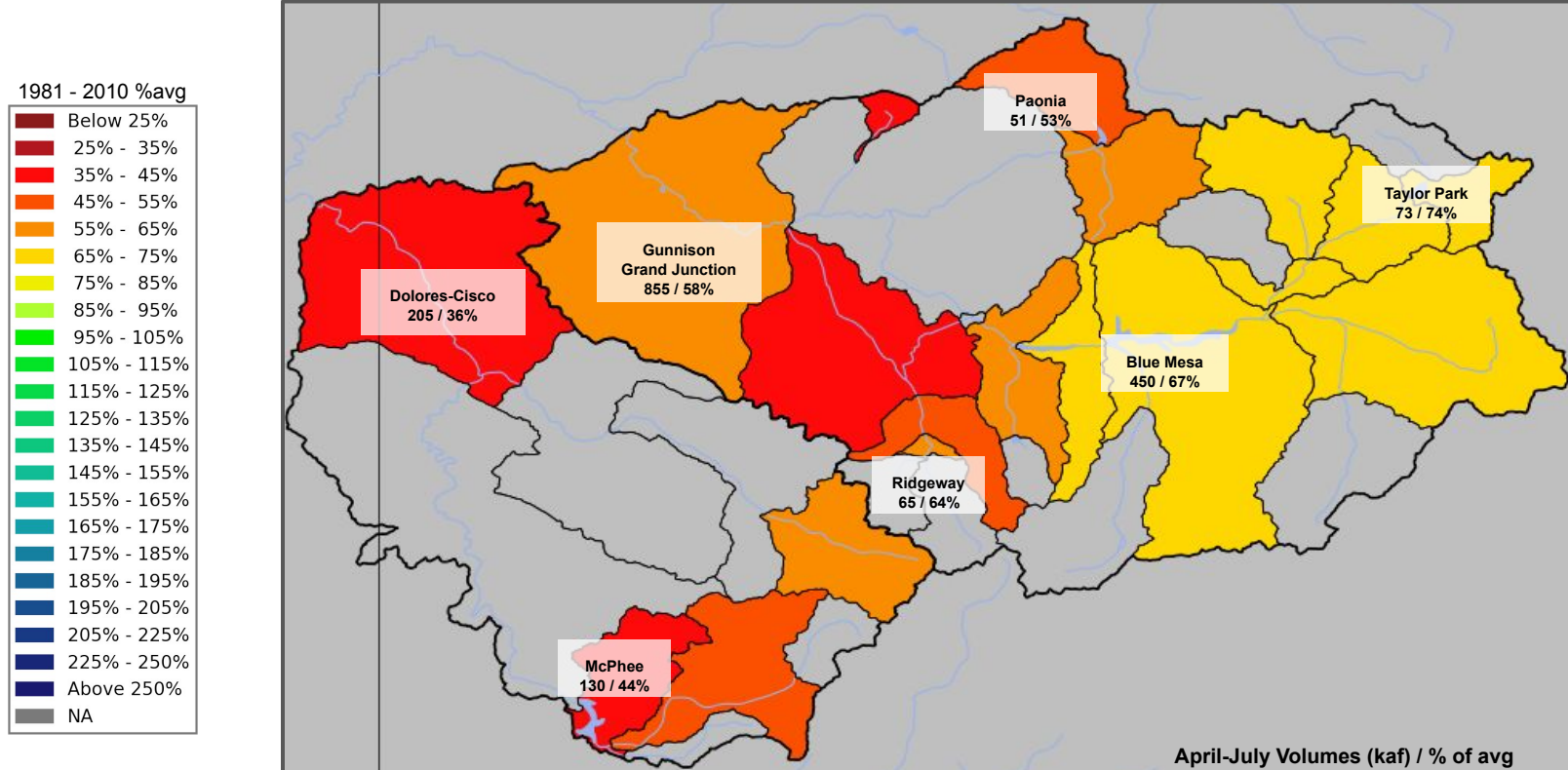
Larger decreases in April-July runoff volume guidance during the past month

Near to below average water supply volumes expected

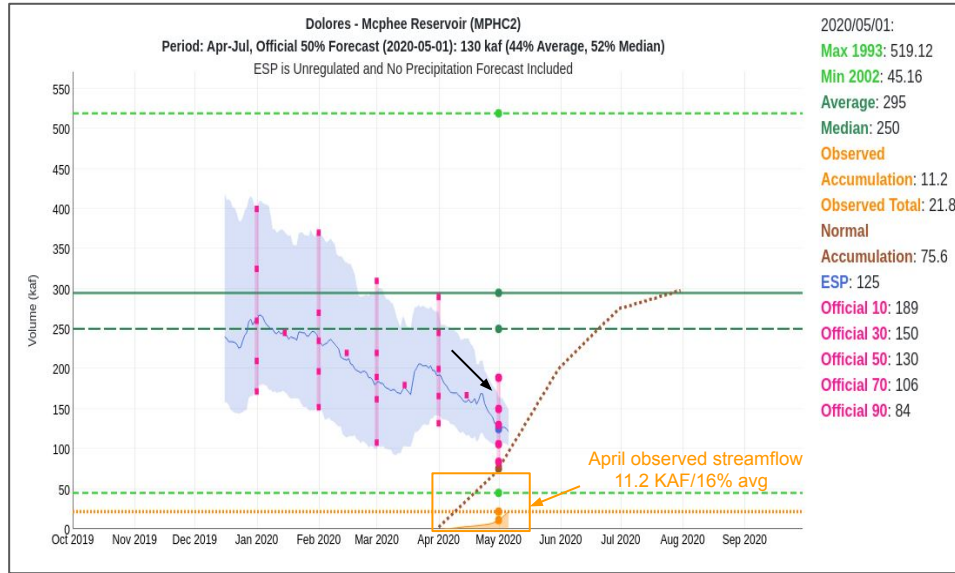
# May 1<sup>st</sup> Water Supply Forecasts: Gunnison, Dolores

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

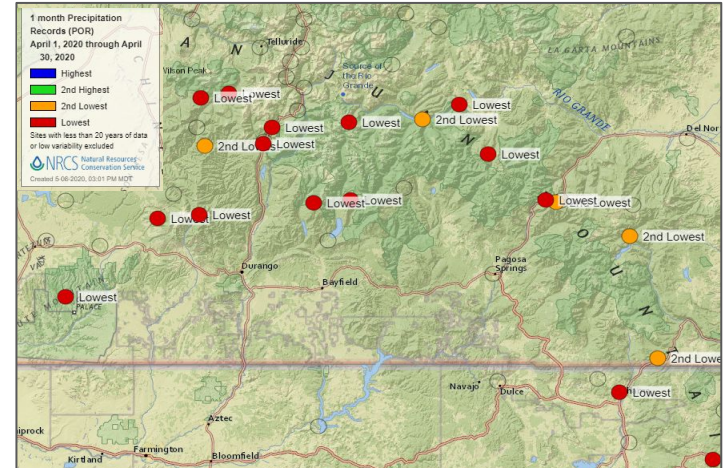
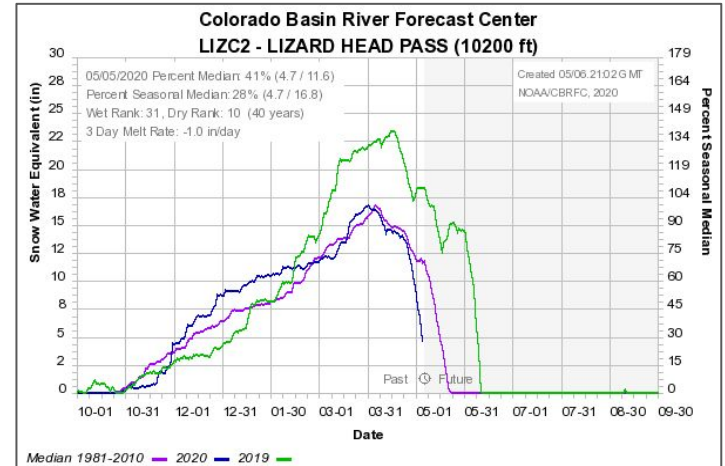
Gunnison: 40 - 75% avg (5 - 15% decrease)  
Dolores: 35 - 55% avg (20 - 25% decrease)



# Dolores River Basin: McPhee Reservoir



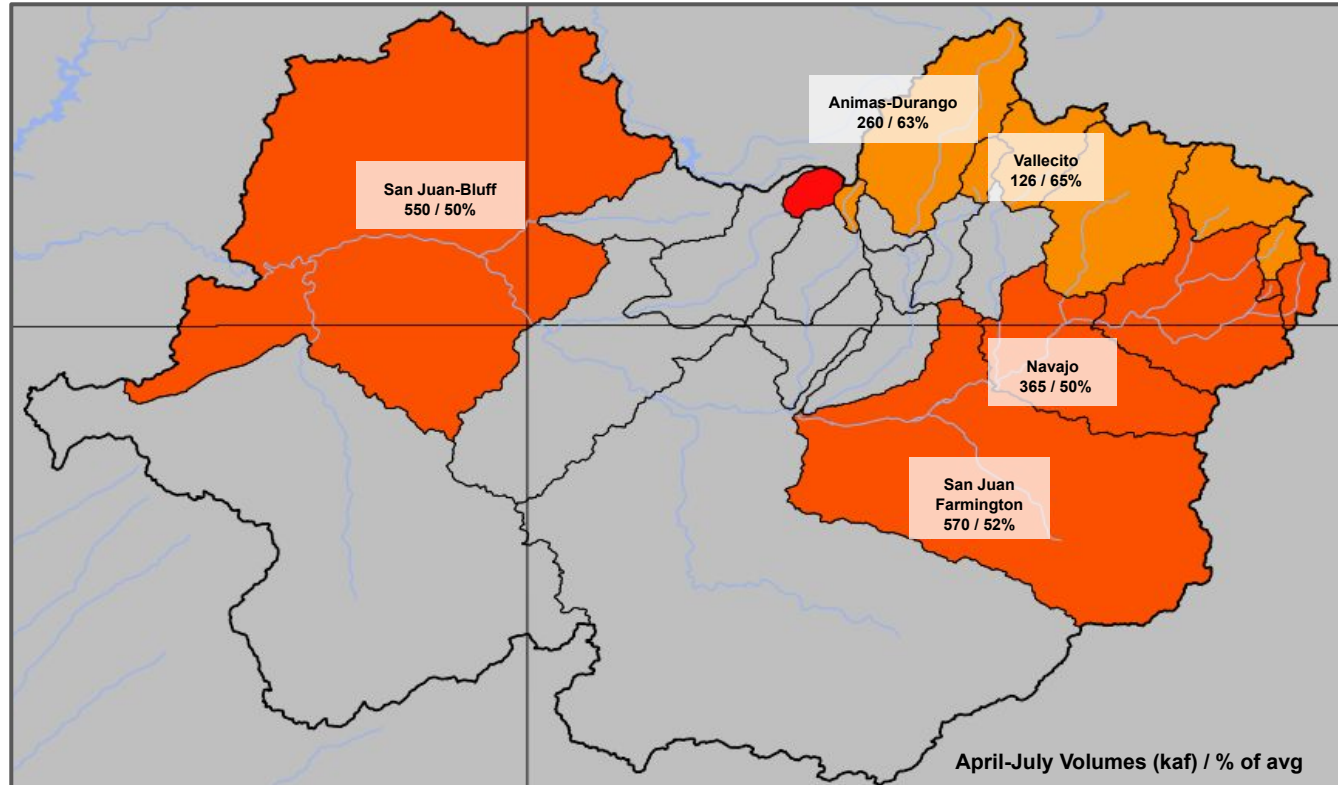
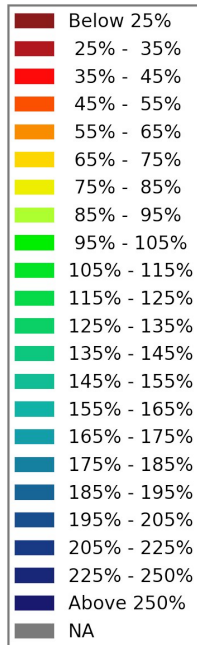
An extremely dry April resulted in significant snowmelt, record low streamflow, and a large decrease in the forecast from April to May.



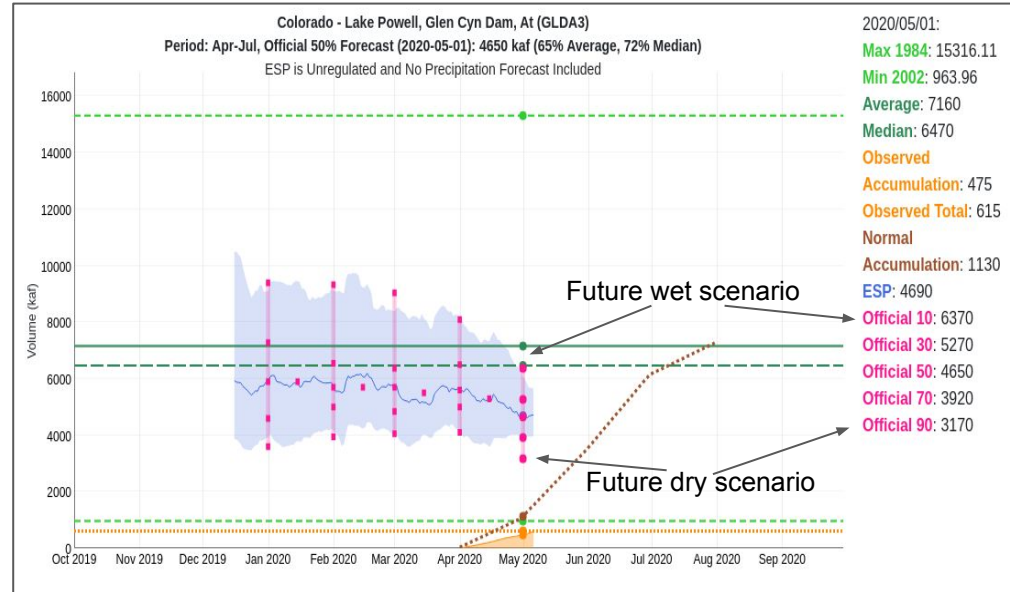
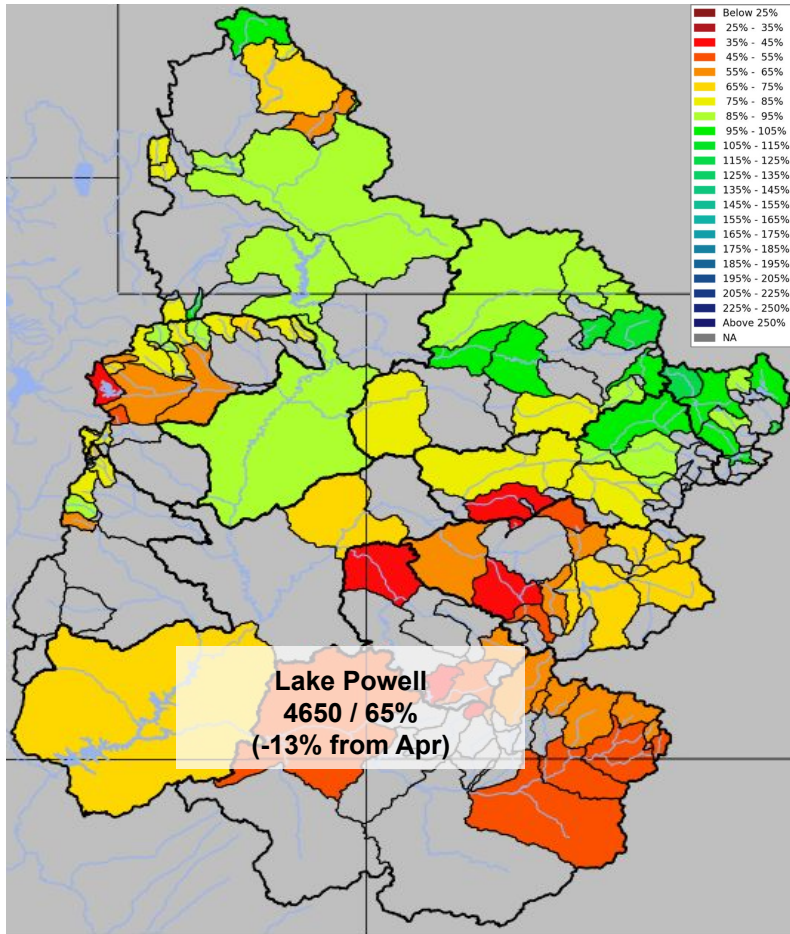
# May 1<sup>st</sup> Water Supply Forecasts: San Juan

**Forecast Range & (1-month Trend):**  
45 - 65% of average (5 - 15% decrease)

1981 - 2010 %avg



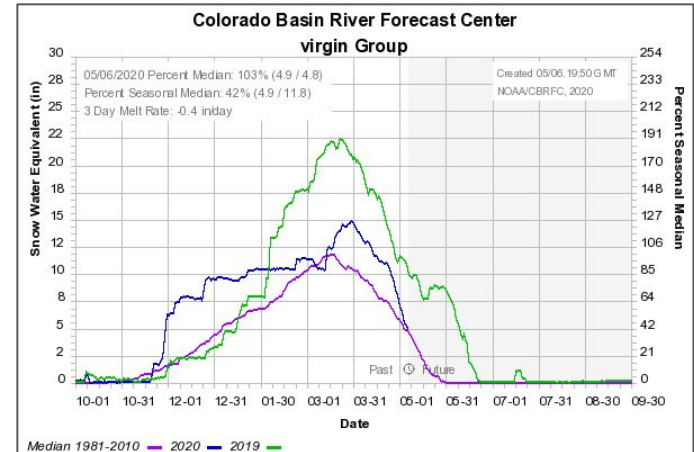
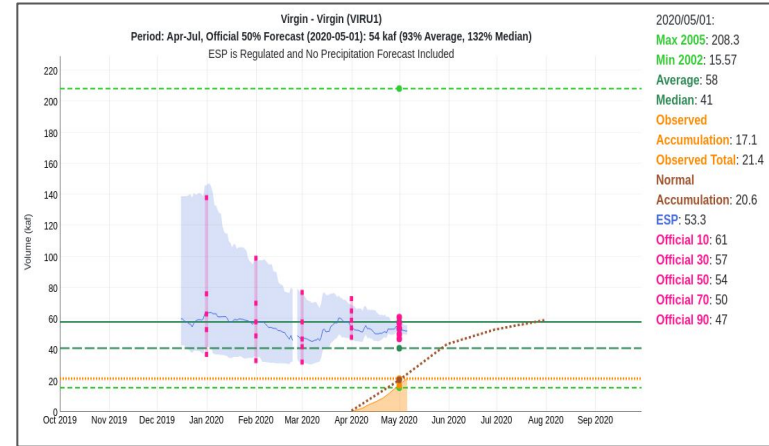
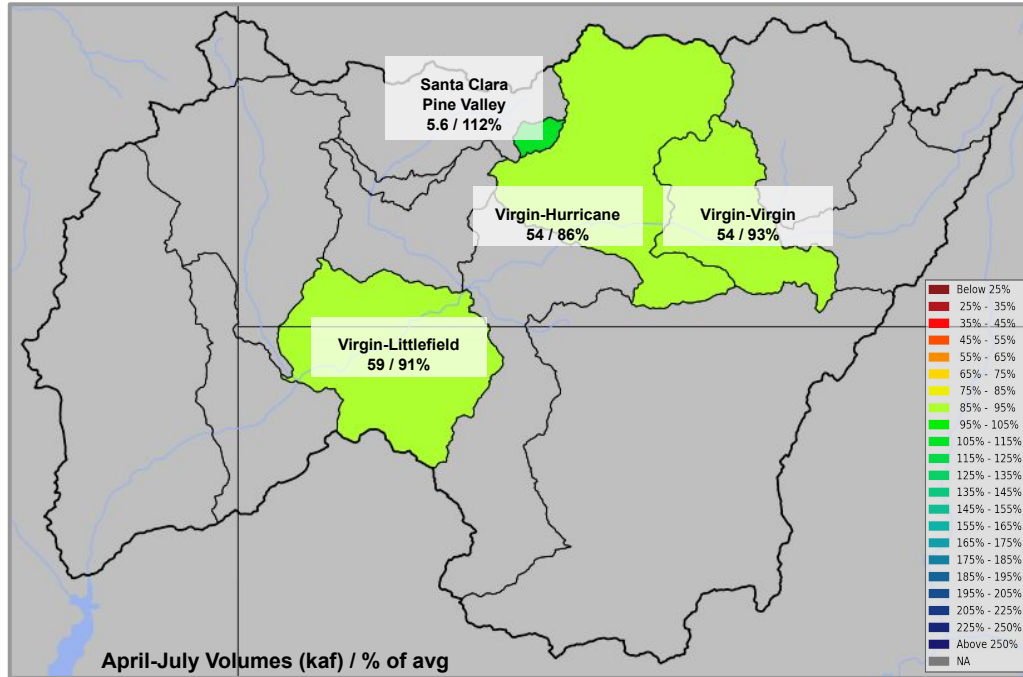
# May 1<sup>st</sup> Water Supply Forecasts: Upper Colorado (Lake Powell)



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

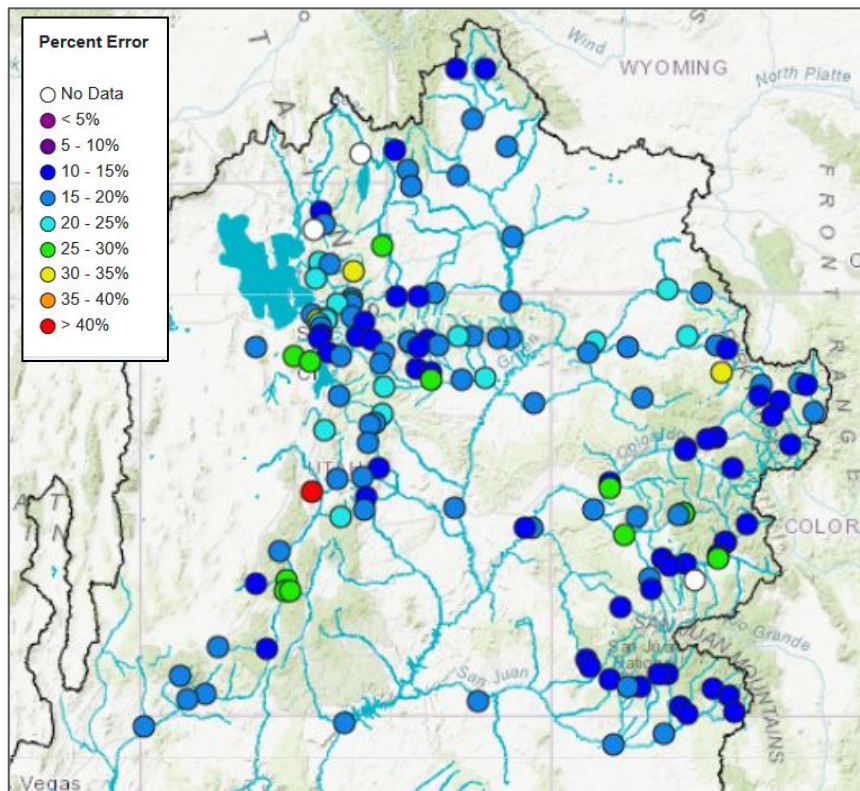
# May 1<sup>st</sup> Water Supply Forecasts: Virgin River Basin

**Forecast Range & (1-month Trend):**  
90 - 115% avg (0 - 10% decrease)



# Historical (1981-2010) Forecast Verification

## May Forecast Error: April-July Volume



### Location

Green River - Warren Bridge	12%
Fontenelle Reservoir	17%
Yampa River - Deerlodge	15%
Blue River - Dillon Reservoir	11%
Colorado River - Cameo	11%
Blue Mesa Reservoir (Gunnison)	11%
McPhee Reservoir (Dolores)	12%
Navajo Reservoir (San Juan)	15%
Lake Powell	18%

### Avg May Forecast Error

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

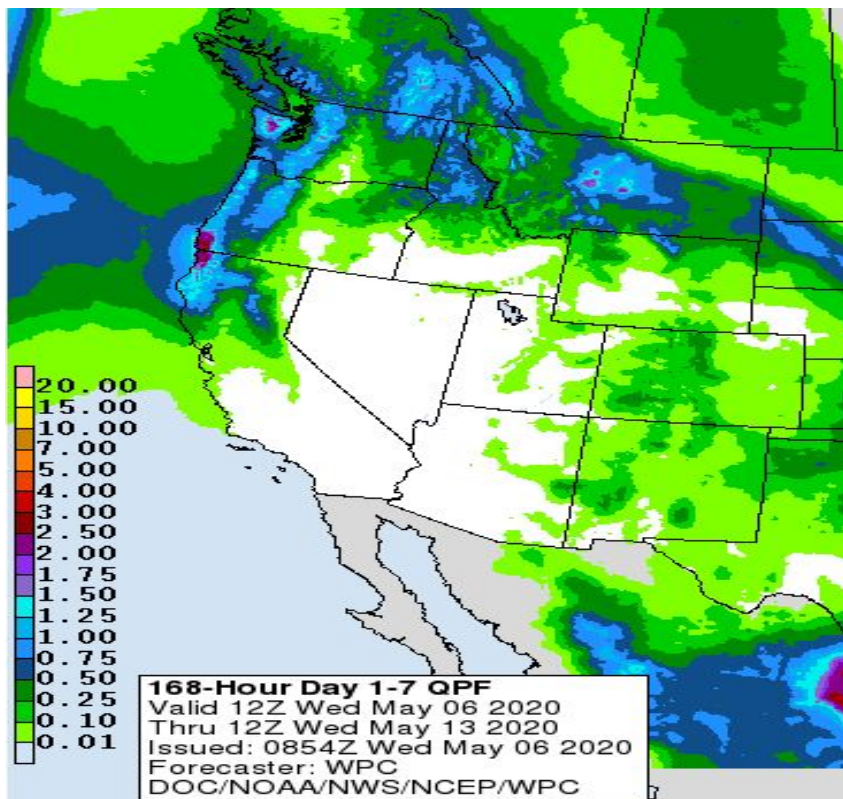
### Where Forecasts are Better:

- 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

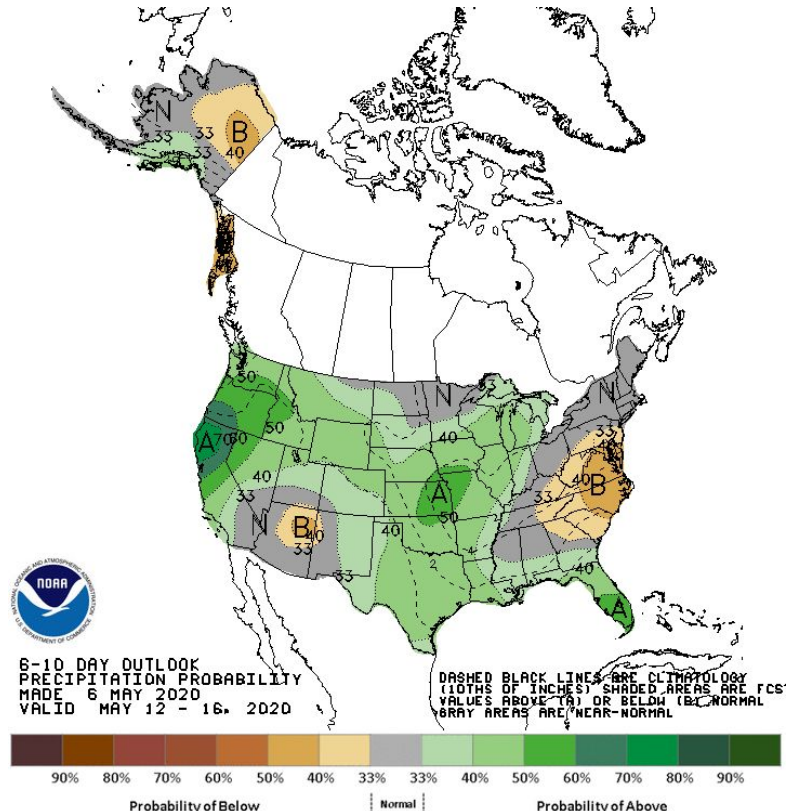
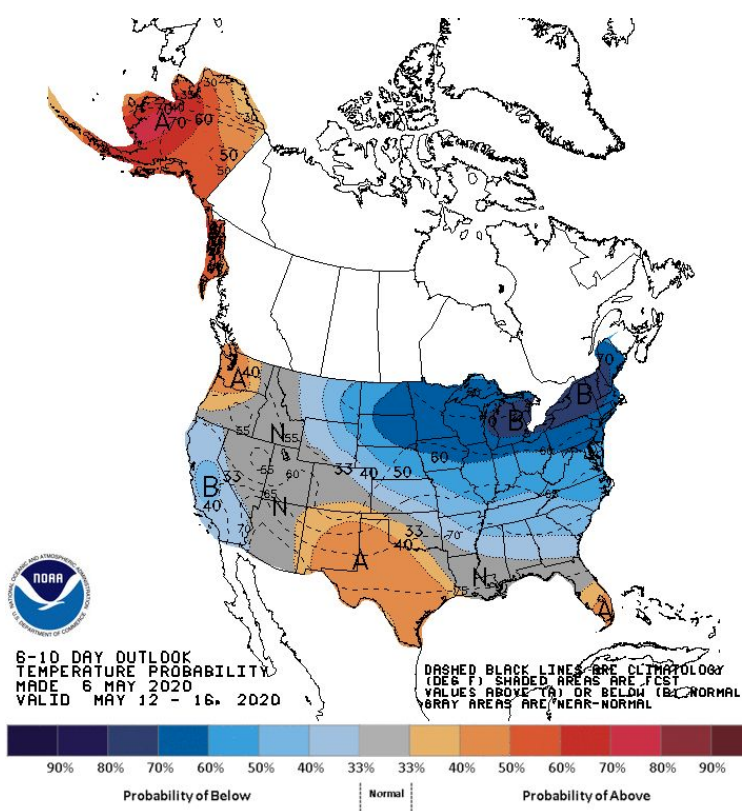
# Upcoming Weather: Continued Dry and Warm through Early Next Week



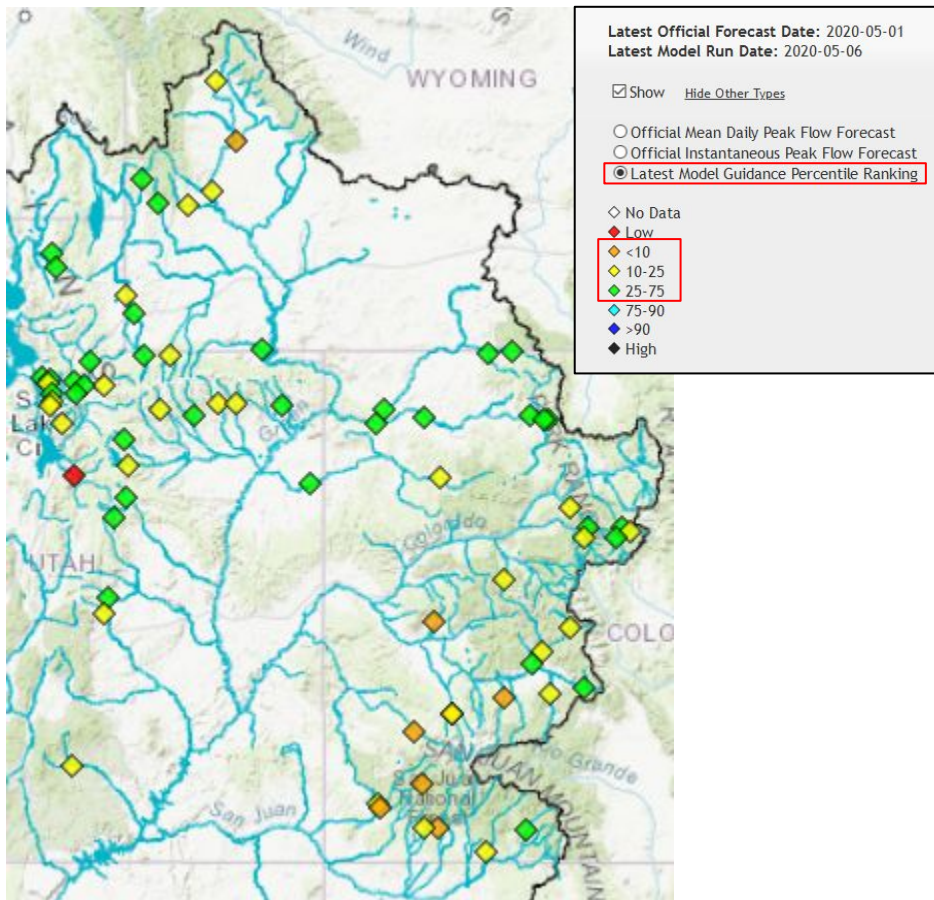
- Currently experiencing a slight cool down today/tomorrow (near normal).
- General ridging will dominate the weather pattern through early next week, leading to minimal precipitation. Scattered showers possible Monday, mainly over Colorado.
- Temperatures will be **5-10 degrees above normal** this weekend into the middle of next week.
- Skies will be mostly sunny through the weekend, leading to efficient snowmelt and runoff.

# Upcoming Weather: 6 to 10 day Outlook (May 12-16)

The models are in general agreement at showing a weak trough moving into the Intermountain West by the middle of next week. This would bring slightly cooler temperatures (back to normal) along with scattered showers, mainly across the north. A transition to *significantly* cooler/wetter weather does not appear likely at this time through the next two weeks.



# Peak Flows



- Snowmelt peak flows are generally expected to be near normal in the Yampa River Basin and Upper Colorado mainstem headwaters, and below to much below normal elsewhere.
- Some lower elevation drainages have likely already peaked for the season with the warm end of April temperatures.
- The last 'Official' peak flow forecasts for this year have been issued. As the time of peak nears, please watch the 10 day forecast hydrographs.
- The 'Latest Model Guidance Percentile Ranking' can give you an idea of possible future flow magnitudes compared to historical peak flows even after the peak has occurred.

# Summary

- April was extremely dry across much of the Colorado River Basin:
  - Near record low precipitation amounts in the San Juan and Dolores river basins.
  - Exceptions: parts of the Upper Green and Colorado mainstem headwaters were near normal.
- Early May snow conditions:
  - Near normal in the Upper Green, Yampa, and Colorado mainstem headwaters, as well as in the Virgin River Basin.
  - Below normal in the Gunnison, Dolores, and San Juan basins.
  - Temperatures 10-20 degrees above normal accelerated snowmelt during the last week of the month.
- Peak flows due to snowmelt are expected to be below to much below normal across much of the basin.
- Future weather is expected to remain dry and warm through early next week:
  - Snowmelt will continue to be efficient.
  - Weak trough by the middle of next week will cool temperatures and increase chances for precipitation across the north.
  - No indication of a drastic change from the course we have been on this dry spring.

# 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>
<del>Thursday</del>	<del>May 7<sup>th</sup></del>	<del>10 am</del>

## 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>
<del>Tuesday</del>	<del>Apr 7<sup>th</sup></del>	<del>11:30 am</del>
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)**

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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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CBRFC Webpage

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

CBRFC Operations

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801-524-4004

CBRFC Water Supply Presentations

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

Questions?