

# Colorado River Basin Water Supply Briefing

May 6, 2022

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Colorado Basin River Forecast Center



# Today's Presentation

April Weather Review

Soil Moisture Conditions & April Flows

Snow Conditions

2022 Water Supply Forecasts

**Webinar recording & slides will be  
made available on CBRFC webpage**

May Forecast Error

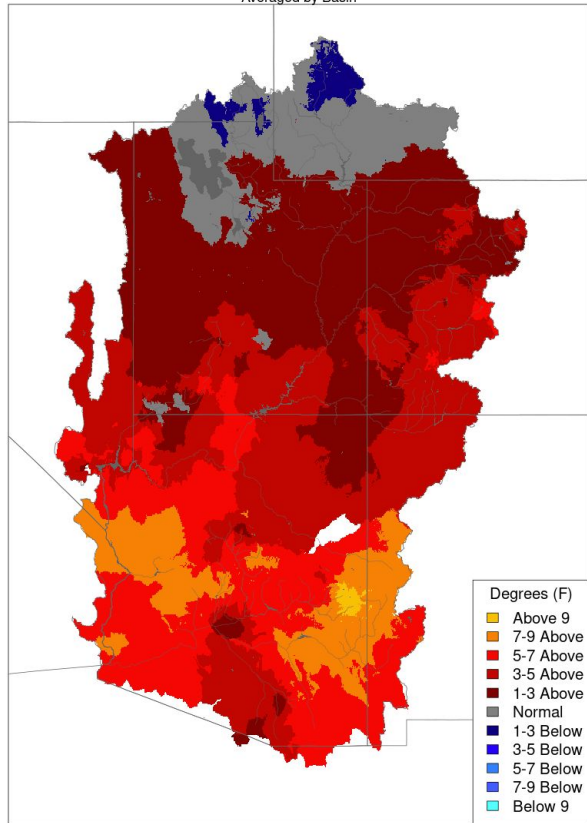
Recent/Upcoming Weather

Contacts & Questions

# April Temperature Summary

Min Temp - Monthly Deviation - April 2022

Averaged by Basin



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

## Northern Basins

~near normal April temperatures  
-less snowmelt

## Southern Basins

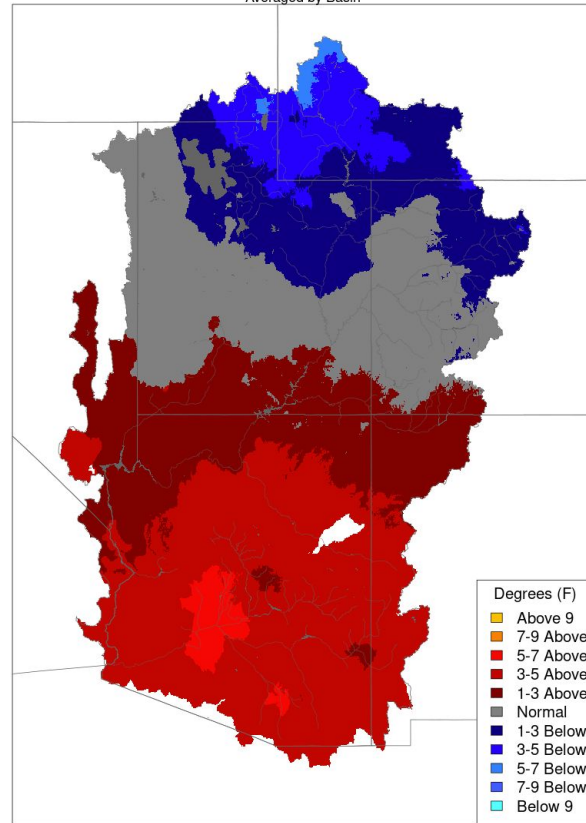
-above normal April temperatures  
-more snowmelt

## April 18-22

-active period of snowmelt  
-temps 5-15 degrees above normal

Max Temp - Monthly Deviation - April 2022

Averaged by Basin

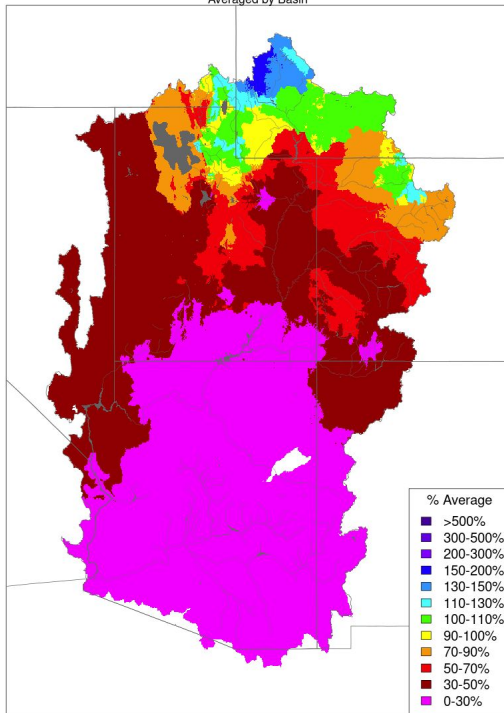


Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbafc.noaa.gov](http://www.cbafc.noaa.gov)

# Precipitation Summary

Monthly Precipitation - April 2022

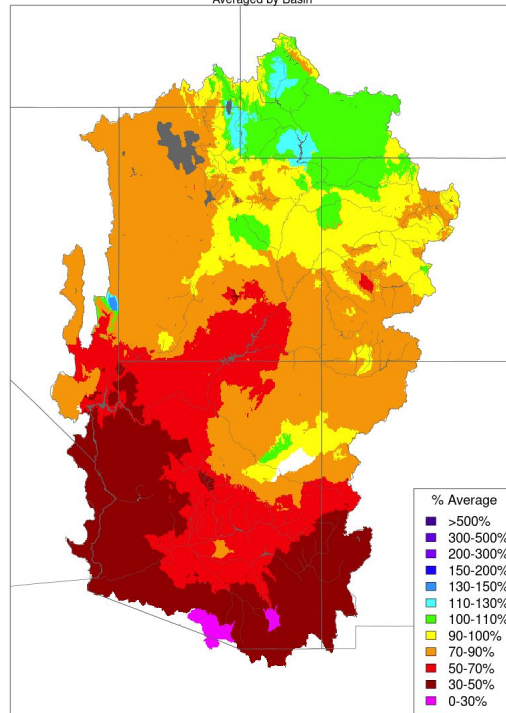
Averaged by Basin



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

Water Year Precipitation, October 2021 - April 2022

Averaged by Basin



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

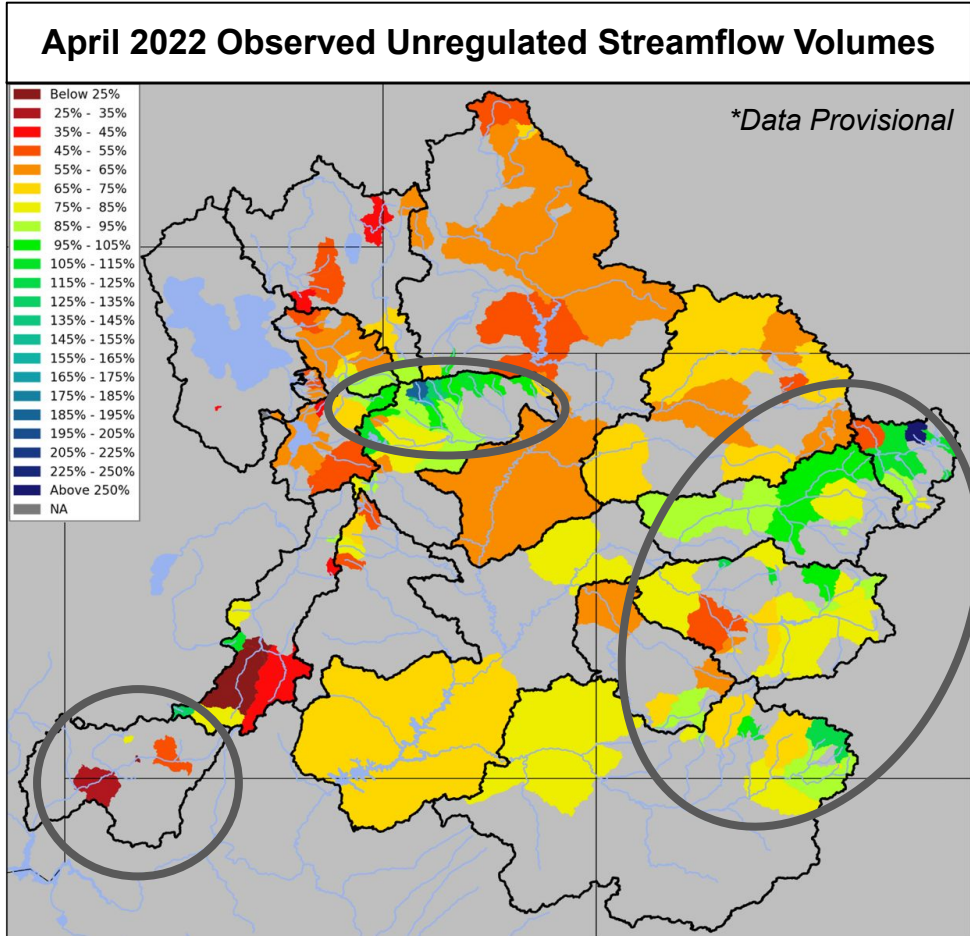
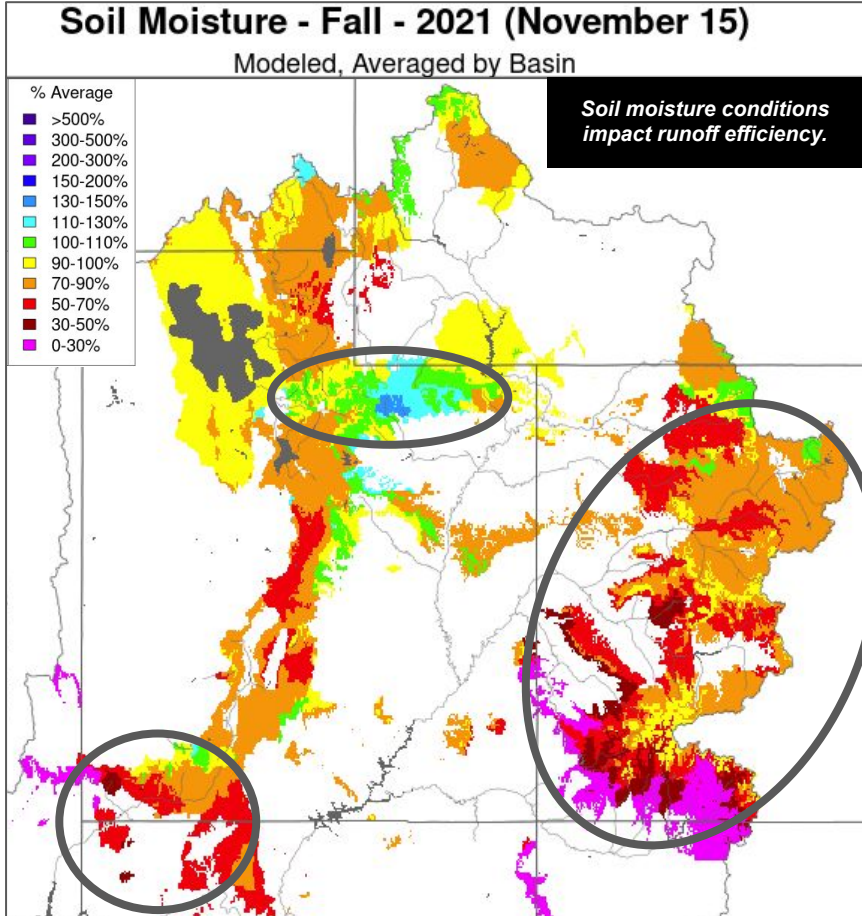
## Water Year 2022 Oct-Apr Precip Summary

<u>Basin</u>	<u>Precip (% Avg)</u>
Upper Green	95%
Duchesne	90%
Price/San Rafael	100%
Yampa/White	100%
Upper CO Mainstem	90%
Gunnison	90%
Dolores	85%
San Juan	80%
Lake Powell	90%
Virgin	85%
Verde	65%
Salt	60%
Little Colorado	70%
Upper Gila	40%

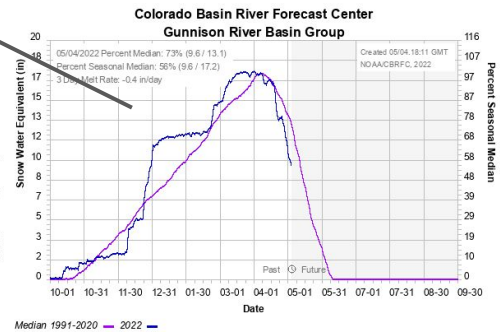
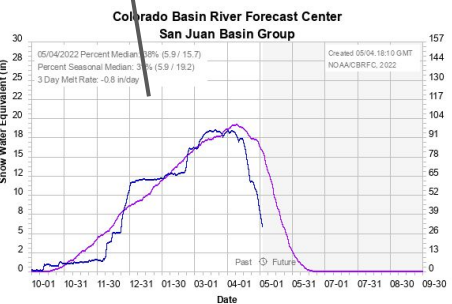
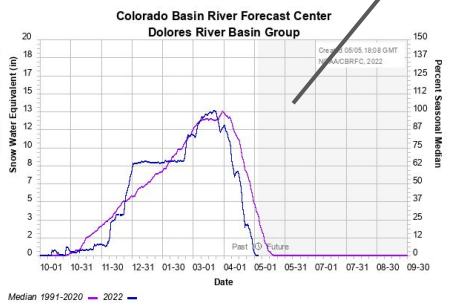
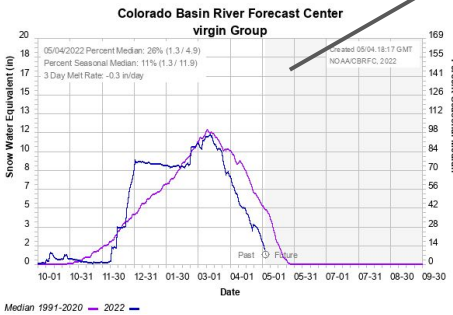
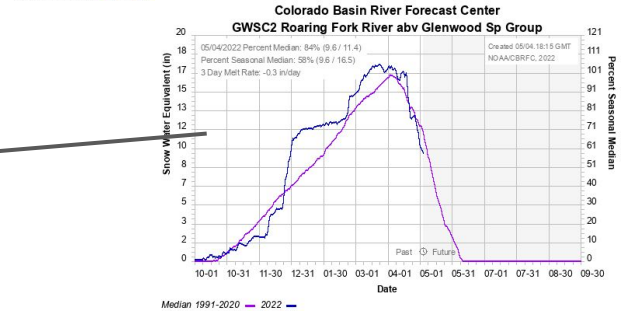
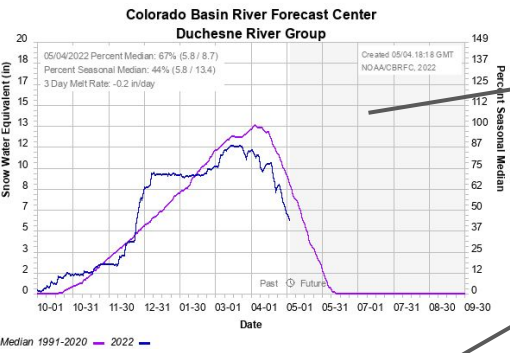
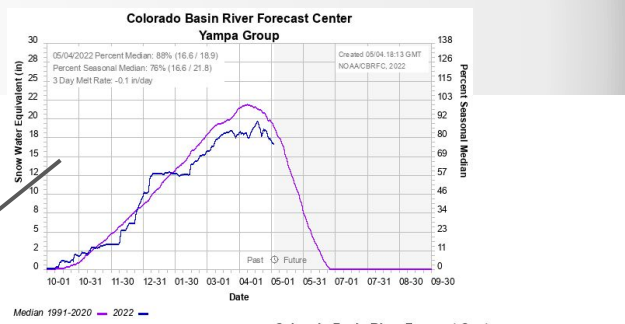
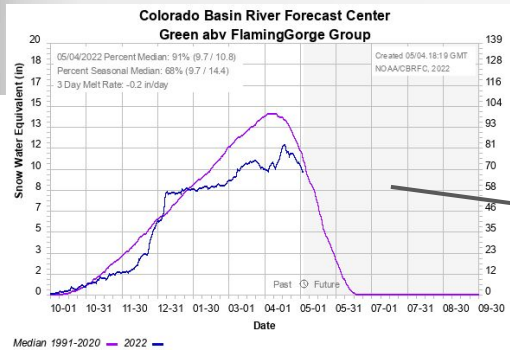
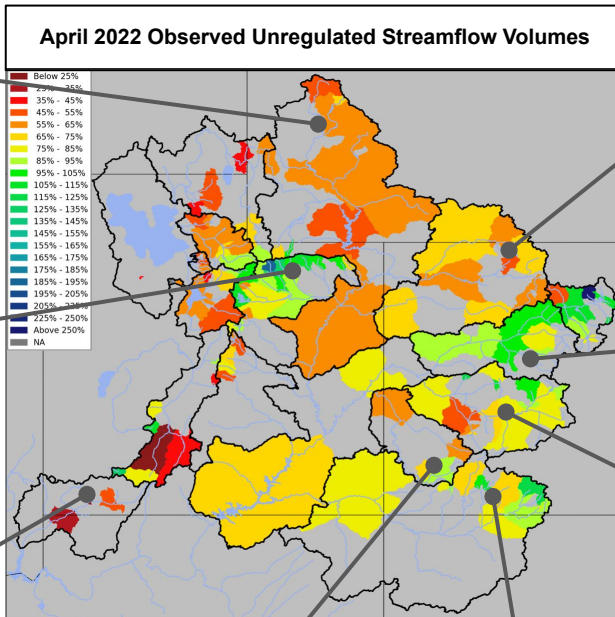
Wetter across northern basins  
Drier across southern basins



# Antecedent Model Soil Moisture Conditions & April Observed Flow

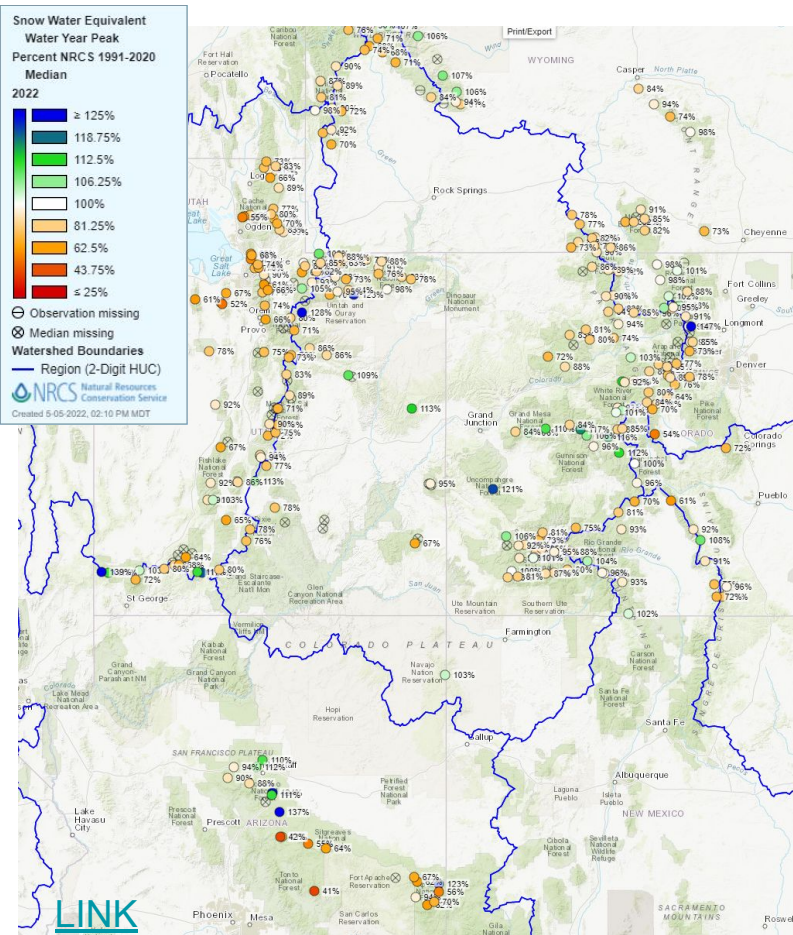


# April Flows/Snowmelt





# Colorado River Basin Seasonal Peak SWE Summary (SNOTEL)



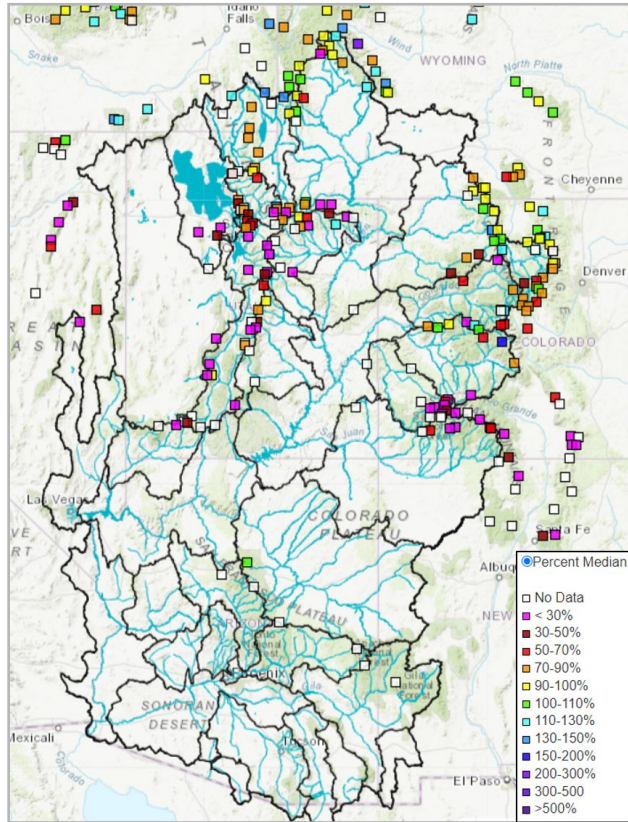
## Basin

## % Peak SWE

Upper Green	83%
Duchesne	88%
Price/San Rafael	80%
Yampa/White	90%
Upper CO Mainstem	93%
Gunnison	101%
Dolores	100%
San Juan	96%
Virgin	97%
Little Colorado	58%
Verde	82%
Salt	67%
Upper Gila	58%

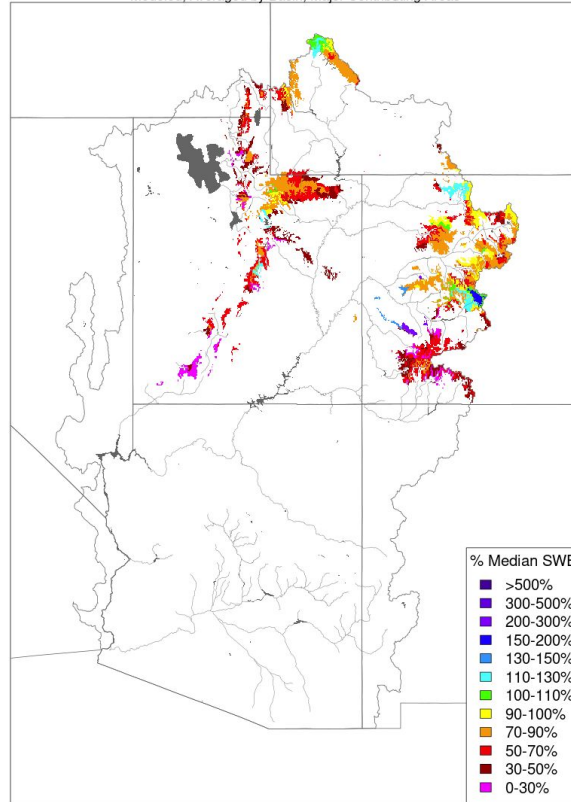
# Early May Snow Conditions

SNOTEL (Observed)  
May 5, 2022



CBRFC (Model)

Snow Conditions - May 05 2022  
Modeled, Averaged by Basin, Major Contributing Areas



May 5 SWE Summary (SNOTEL)

Basin	SWE (% Median)
Upper Green	90%
Duchesne	70%
Price/San Rafael	55%
Yampa/White	90%
Upper CO Mainstem	90%
Gunnison	75%
Dolores	0%
San Juan	35%

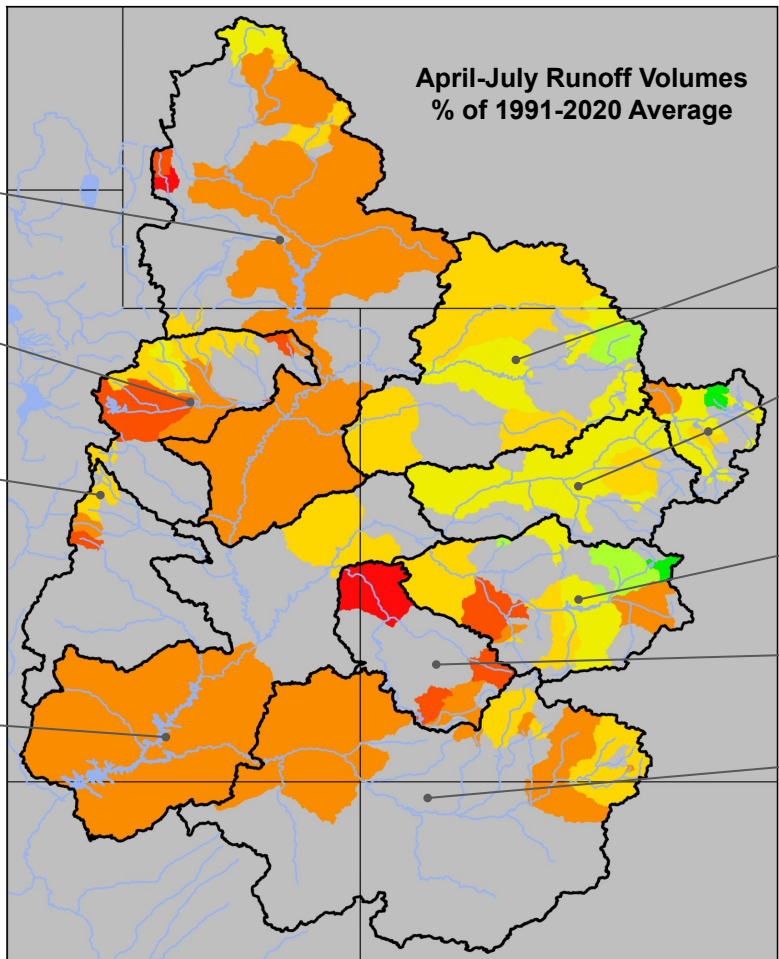
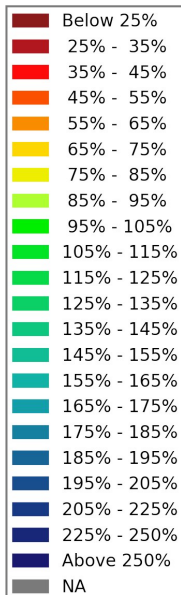
\*Percent median SWE can be misleading in the spring after the normal time of peak snowpack has passed.



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

Water supply forecast volumes:

- remained steady across northern basins
- declined across southern basins



**Upper Green: 45-80%**

**Duchesne: 50-85%**

**San Rafael/Dirty Devil: 50-75%**

**Lake Powell: 59%**

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

**White/Yampa: 65-95%**

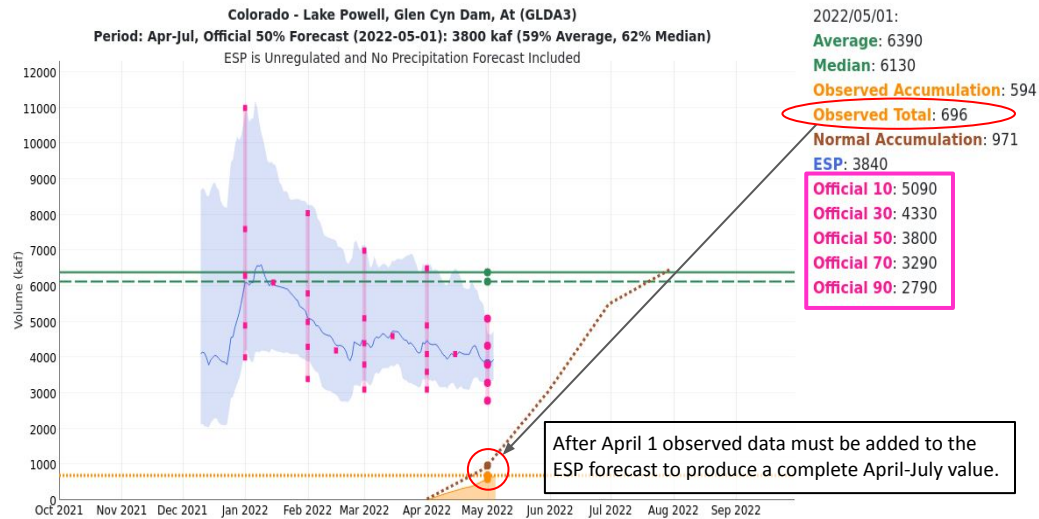
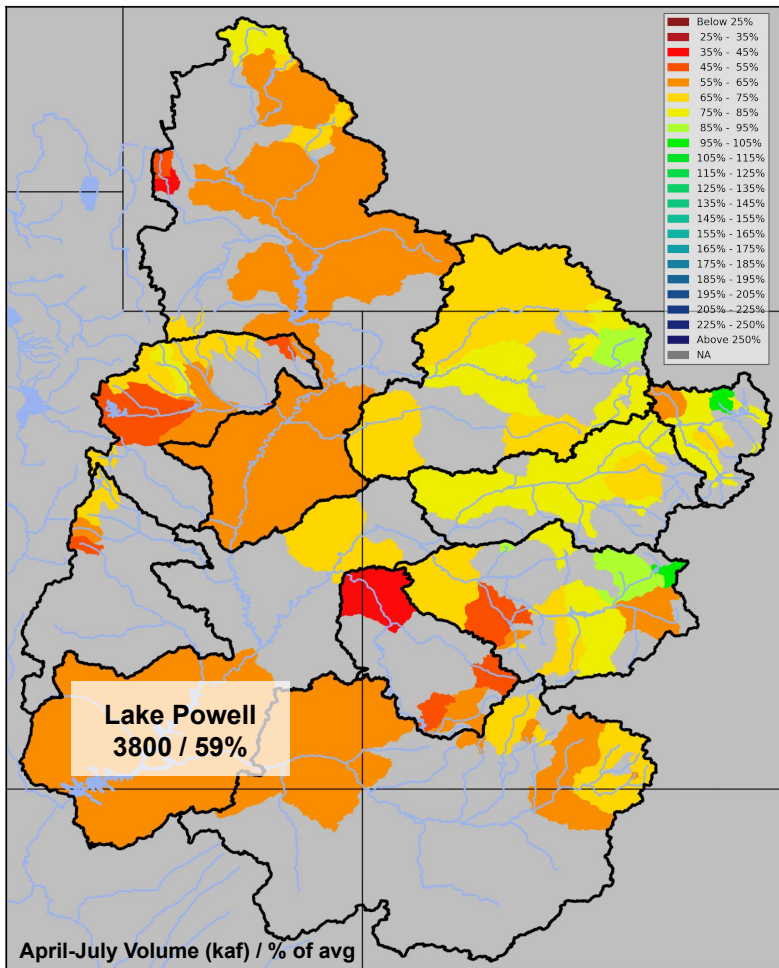
**Upper CO: 55-95%**

**Gunnison: 50-95%**

**Dolores: 45-60%**

**San Juan: 55-70%**

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

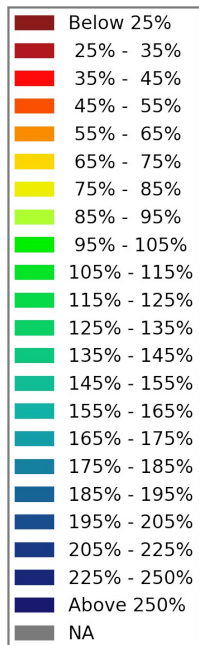
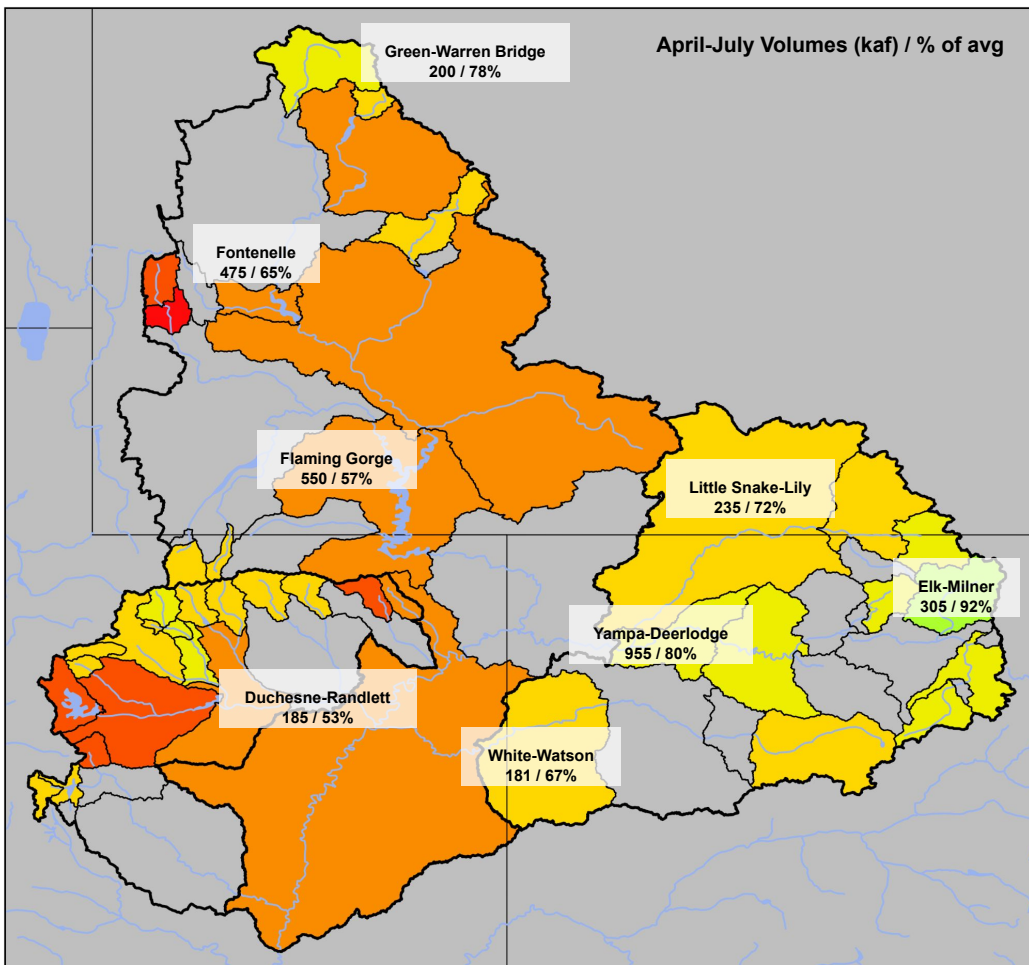


Forecast uncertainty has decreased since the early season forecasts but still exists due to uncertainty in future weather and model states.

- Official 10: 5090 → 10% chance of exceeding 5090 KAF / 80% avg  
90% chance of **NOT** exceeding 5090 KAF / 80% avg
- Official 30: 4330 → 50% chance of exceeding 3800 KAF / 59% avg  
50% chance of **NOT** exceeding 3800 KAF / 59% avg
- Official 50: 3800 → 50% chance of exceeding 3800 KAF / 59% avg  
50% chance of **NOT** exceeding 3800 KAF / 59% avg
- Official 70: 3290 → 90% chance of exceeding 2790 KAF / 44% avg  
10% chance of **NOT** exceeding 2790 KAF / 44% avg
- Official 90: 2790 → 90% chance of exceeding 2790 KAF / 44% avg  
10% chance of **NOT** exceeding 2790 KAF / 44% avg

\*20% chance observed volume could fall out of the 10-90 range.

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



## May 1<sup>st</sup> 2022 Forecasts

Volume (kaf) / % of 1991-2020 avg

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

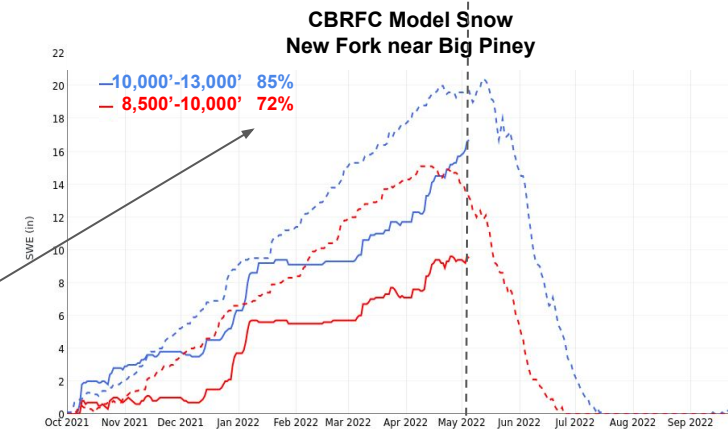
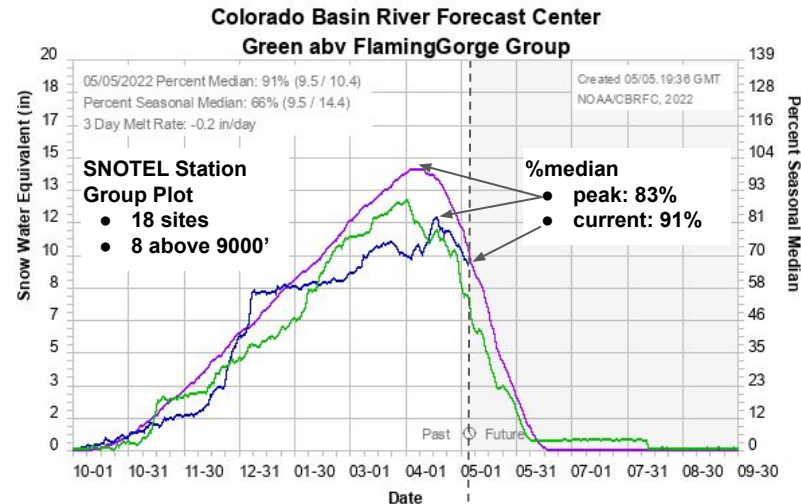
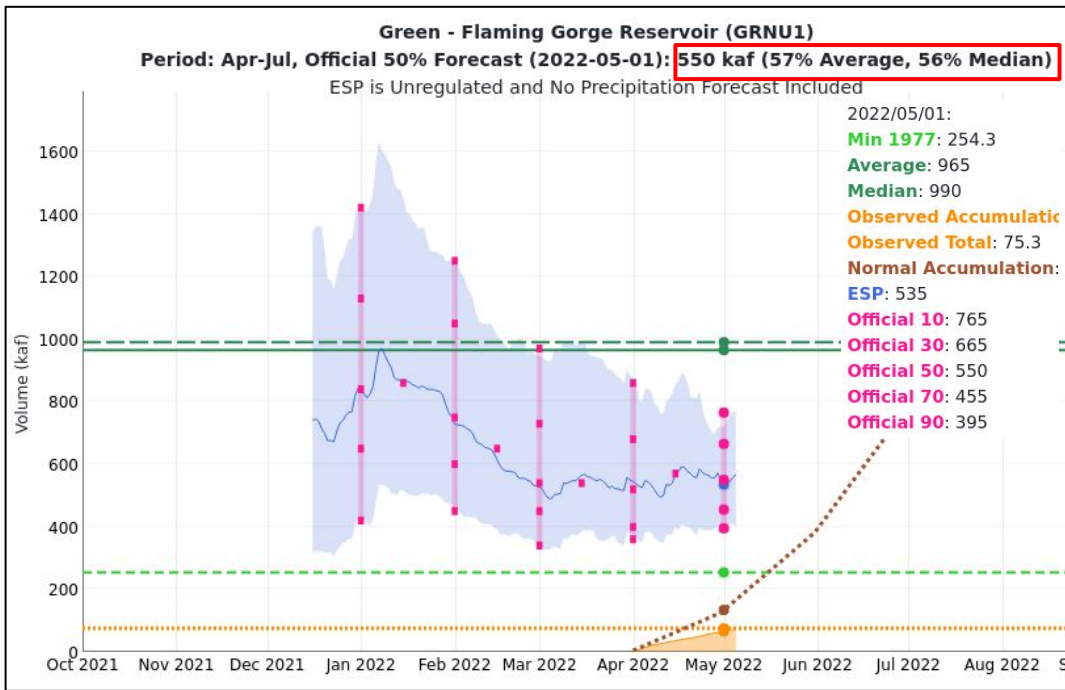
**Upper Green:** 45 - 80%  
(0-15% increase)

**Yampa/White:** 65 - 90%  
(-5% - +5% change)

**Duchesne:** 50 - 85%  
(0-15% decrease)



# Upper Green Water Supply Forecasts & Snow Conditions



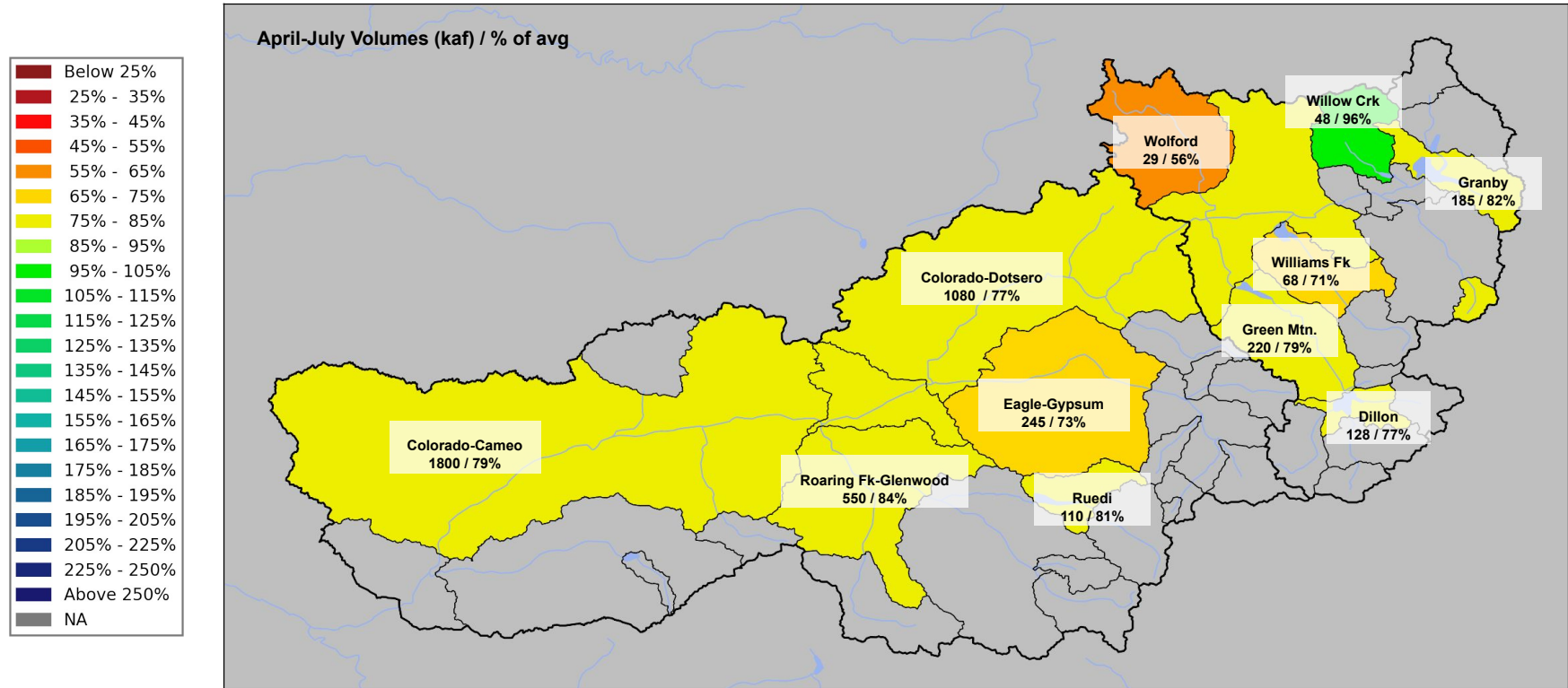
The Upper Green benefitted from the cool, wet April weather, however overall conditions remain below normal with little chance for normal runoff volumes.

On average, over half of the unregulated runoff volume for Flaming Gorge comes from the Wind River Range. This plot is an example of the current model snow conditions in that region.

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

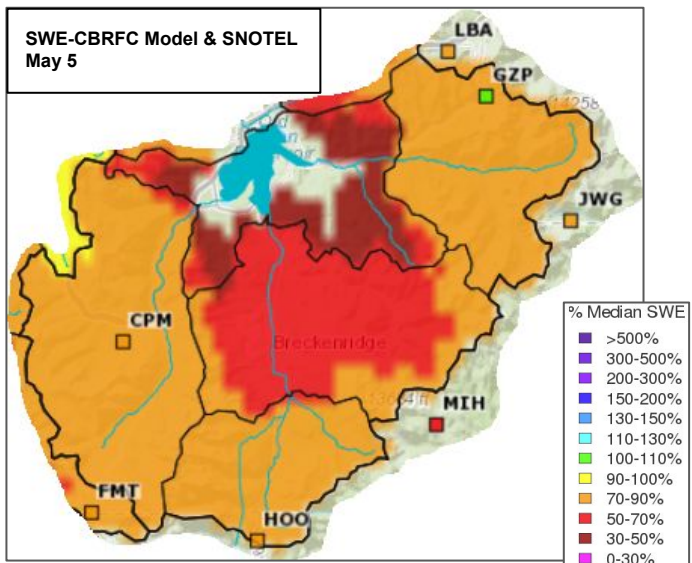
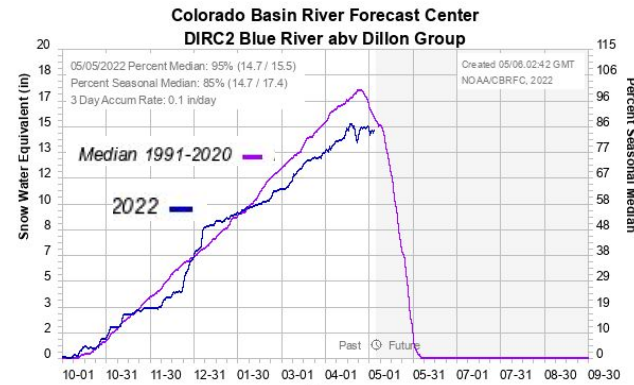
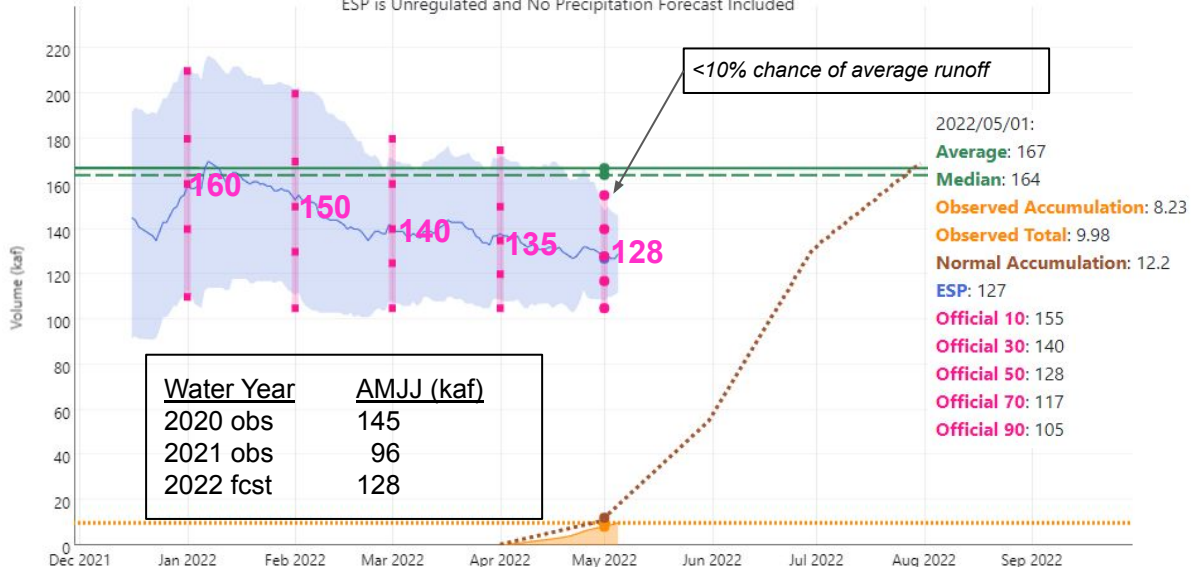
## Forecast Ranges & (1-month Trend):

Granby to Kremmling: 55 - 95% of average (0-10% decrease)  
Kremmling to Cameo: 75 - 85% of average (5-10% decrease)



# Upper Colorado Mainstem Water Supply Forecasts & Snow Conditions

Blue - Dillon Reservoir (DIRC2)  
 Period: Apr-Jul, Official 50% Forecast (2022-05-01): **128 kaf (77% Average, 78% Median)**  
 ESP is Unregulated and No Precipitation Forecast Included



Significant high elevation snowmelt hasn't yet occurred above Dillon Reservoir.

Current SNOTEL Snow Density ~30%

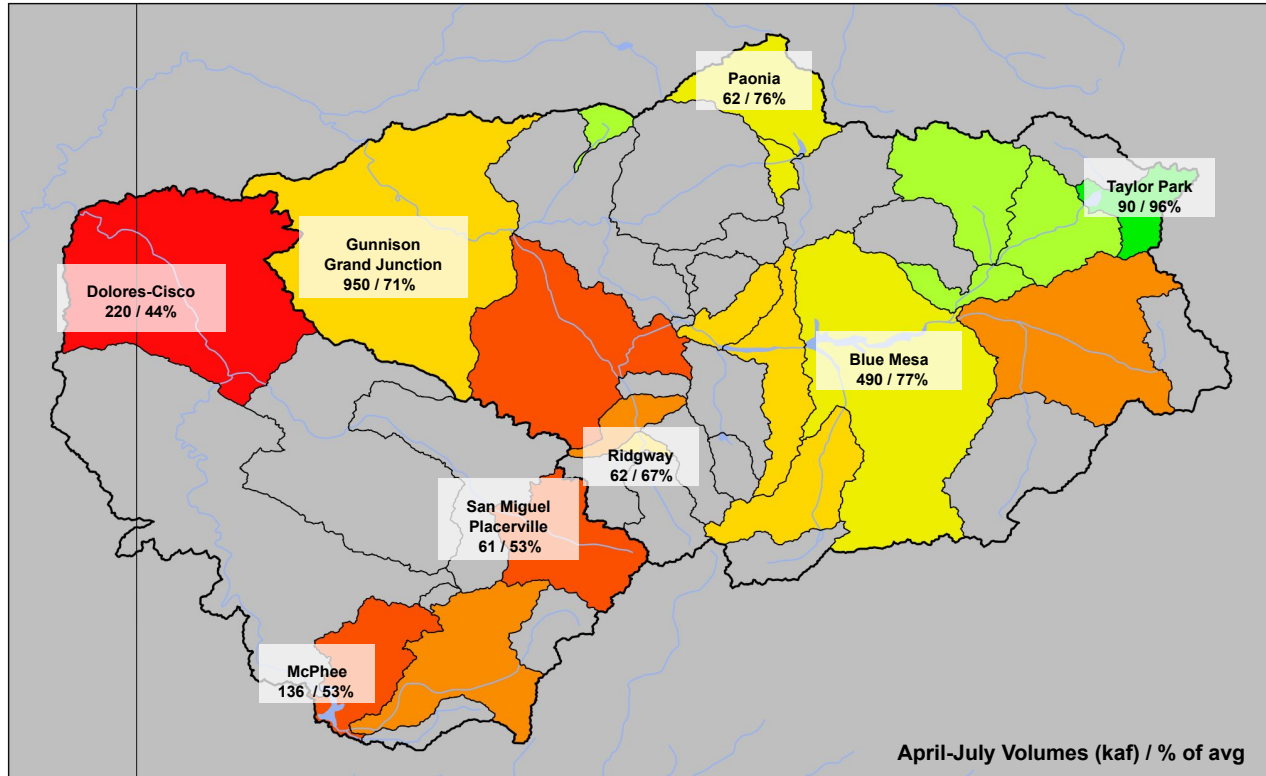
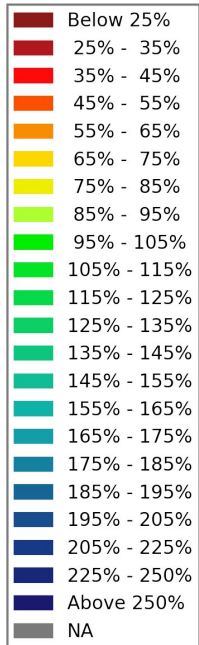


# May 1<sup>st</sup> Water Supply Forecasts: Gunnison, Dolores

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

Gunnison: 50 - 95% of average (5-15% decrease)

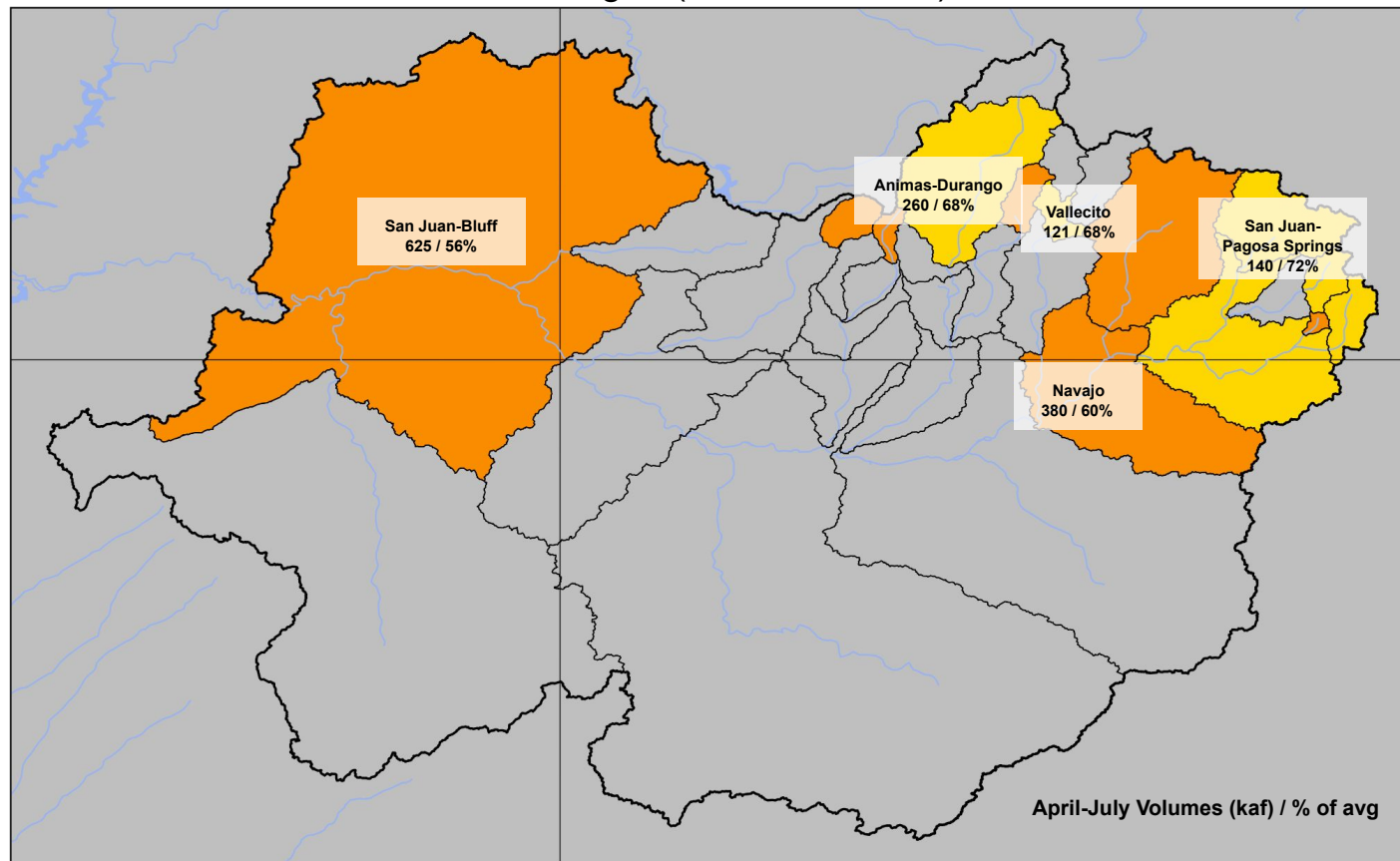
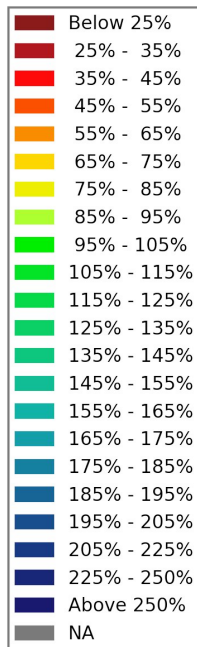
Dolores: 45 - 60% of average (5-10% decrease)



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

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

55 - 70% of average (0-5% decrease)

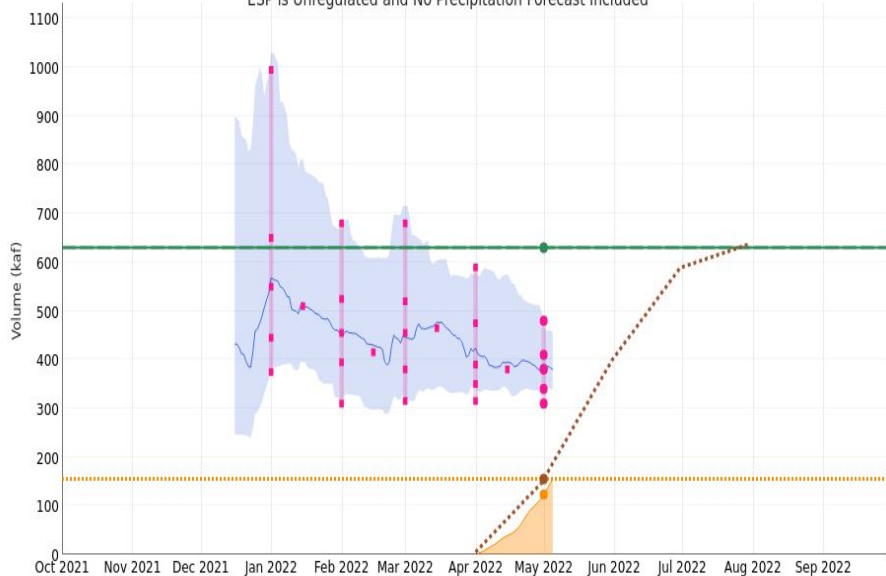


# Southwest Colorado Water Supply Forecasts & Snow Conditions

## San Juan - Navajo Reservoir, Archuleta, Nr (NVRN5)

**Period: Apr-Jul, Official 50% Forecast (2022-05-01): 380 kaf (60% Average, 60% Median)**

ESP is Unregulated and No Precipitation Forecast Included



2022/05/01:

**Average:** 630

**Median:** 630

**Observed Accumulation:** 123

**Observed Total:** 155

**Normal Accumulation:** 155

**ESP:** 381

**Official 10:** 480

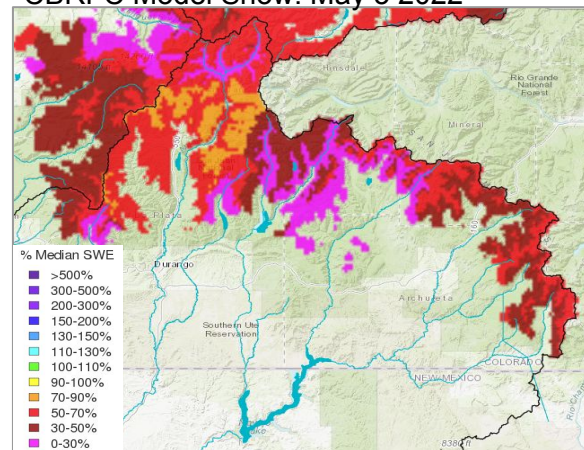
**Official 30:** 410

**Official 50:** 380

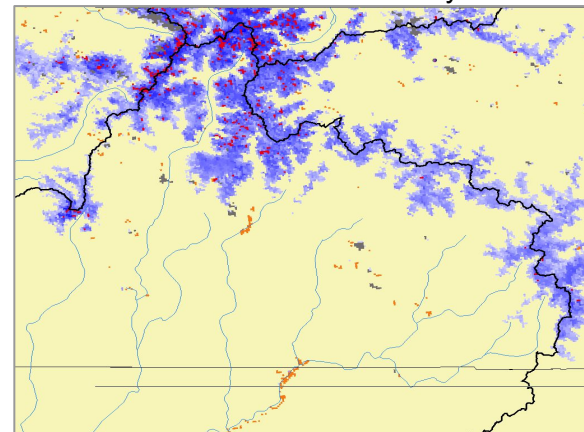
**Official 70:** 340

**Official 90:** 310

## CBRFC Model Snow: May 5 2022



## Satellite Snow Covered Area: May 2 2022

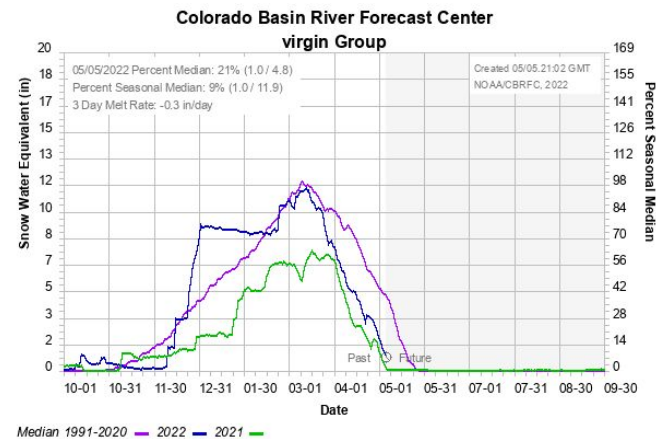
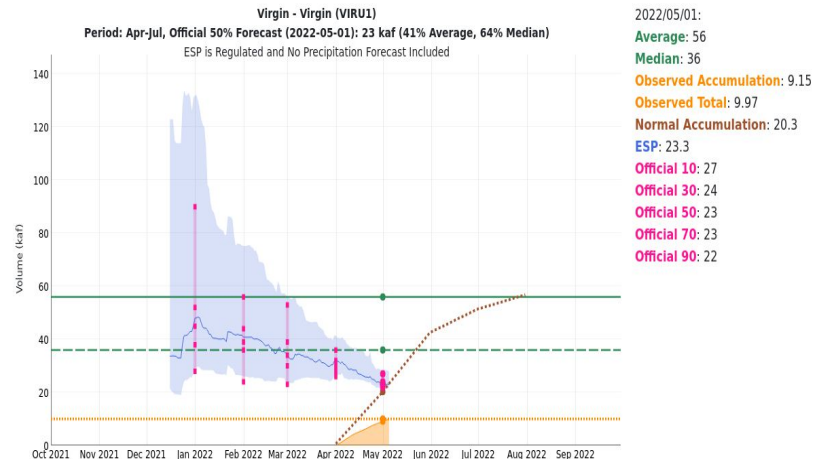
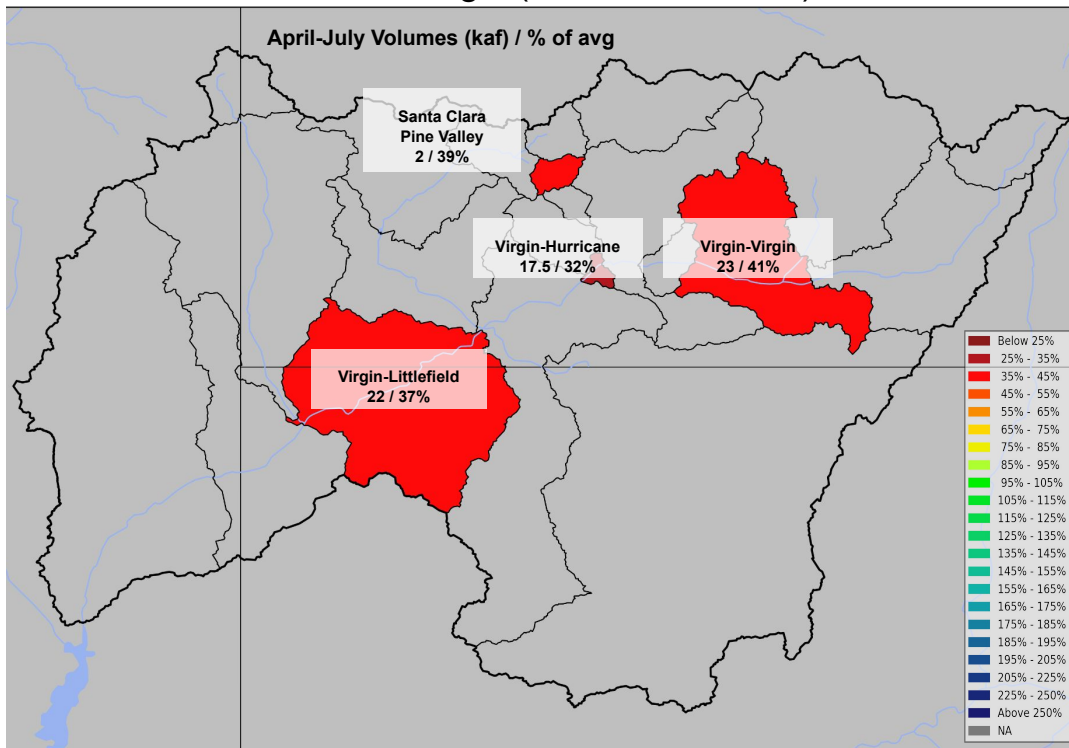


Significant melt and runoff has occurred in the San Juan River basin and any remaining snow exists above 11,000 ft.



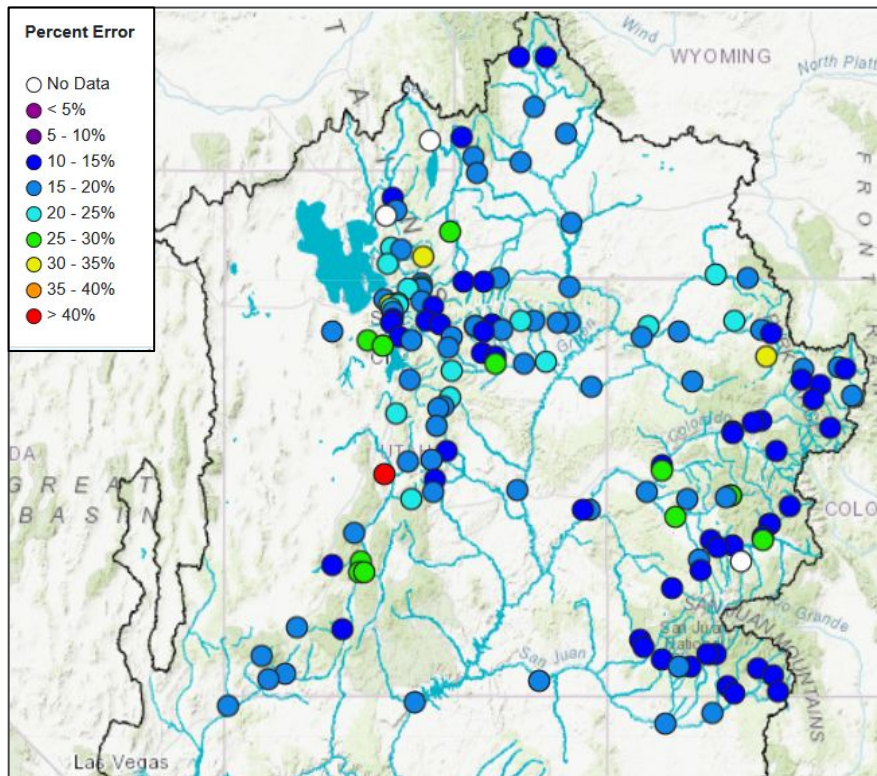
# May 1<sup>st</sup> Water Supply Forecasts: Virgin River Basin

**Forecast Range & (1-month Trend):**  
30 - 40% avg (0-20% 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	15%

### Avg May Forecast Error

Error tends to decrease each month into the spring

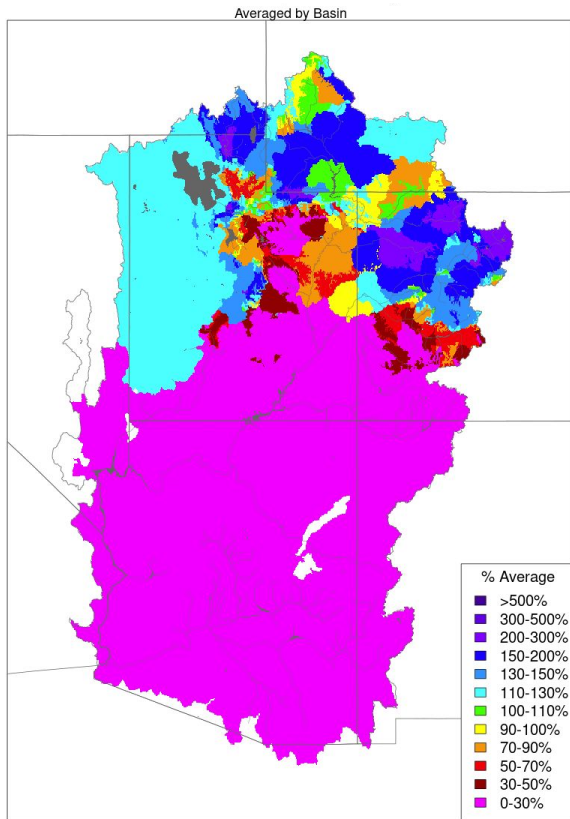
Where Forecasts are Better:

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

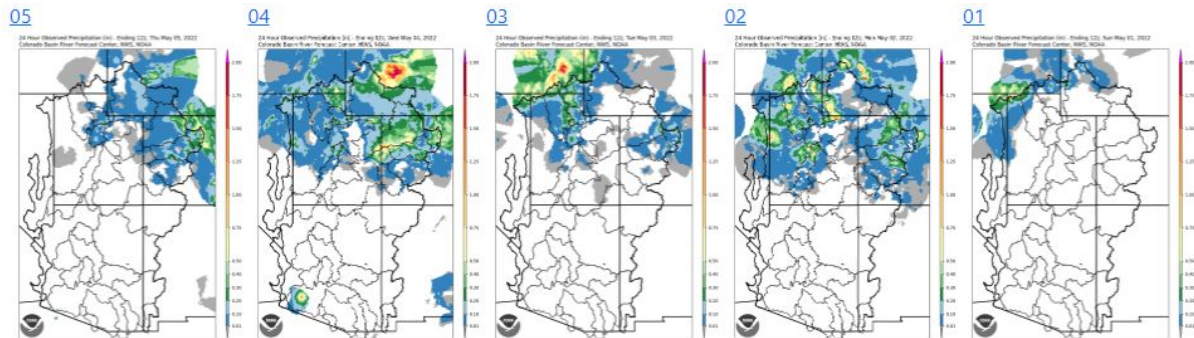
Where Forecasts are Worse:

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

# May 2022 Month-To-Date Precipitation



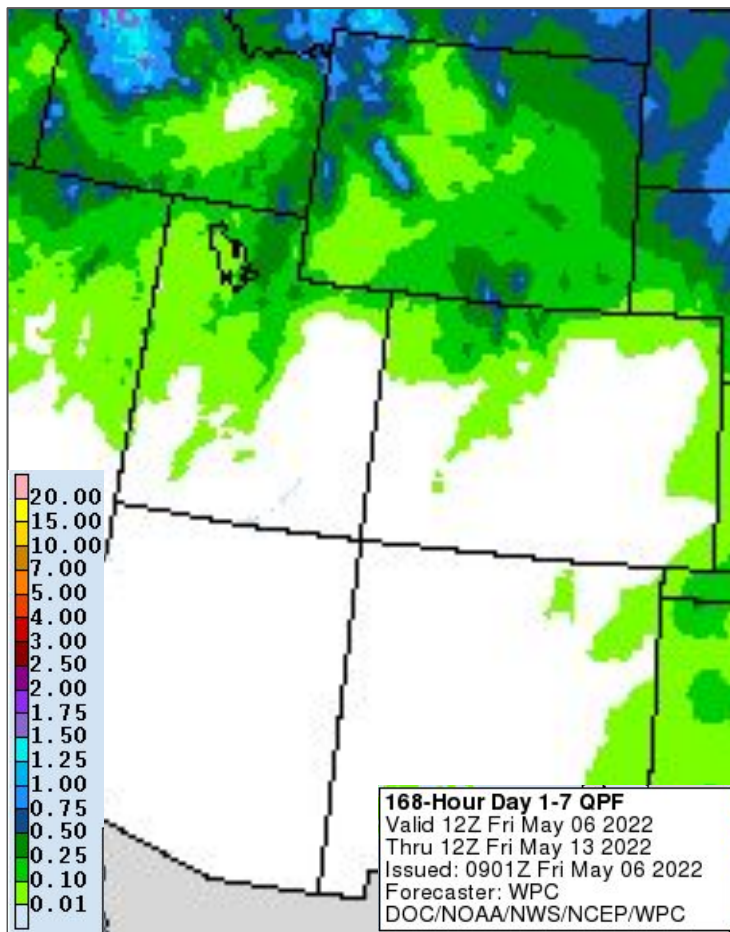
Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)



Precipitation has continued across the northern basins into early May.



# WPC May 6-12 Precipitation Outlook & Upcoming Weather



- Warm, mostly dry, and windy conditions are expected
- Fire weather conditions a concern
- Significant precipitation is not expected in the 7-day period
- Best chances of precipitation across northern, high elevation areas this weekend/early next week
  - Upper Green/White/Yampa headwaters 0.25"-0.50"
- Beyond next Wednesday there is disagreement/uncertainty in weather model ensembles
  - Currently around a 50/50 chance of precipitation possible late next week

# Upcoming Weather: 8-14 Day Outlook (May 13-19)

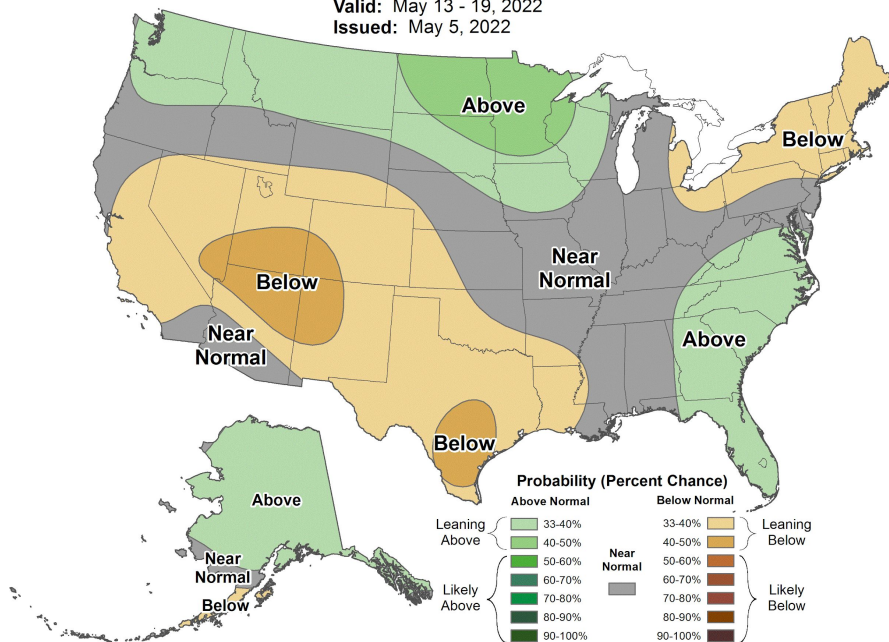
Elevated odds of below average precipitation across all basins.

Near average temperatures favored across most basins.



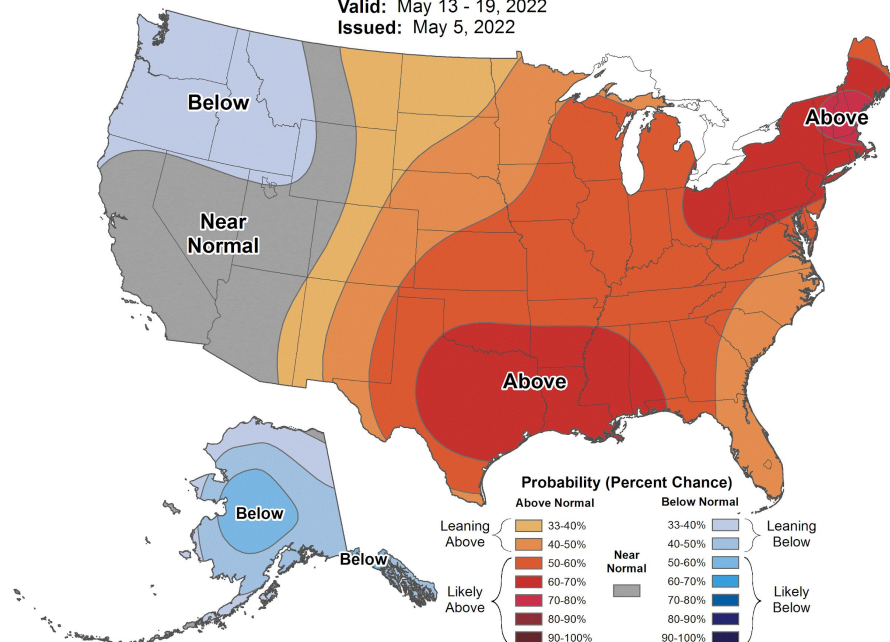
## 8-14 Day Precipitation Outlook

Valid: May 13 - 19, 2022  
Issued: May 5, 2022



## 8-14 Day Temperature Outlook

Valid: May 13 - 19, 2022  
Issued: May 5, 2022



## Summary

- Antecedent soil moisture conditions are improved from a year ago over much of the Colorado River Basin
  - But soil moisture deficits still exist, notably across much of western Colorado
- April weather:
  - Cooler/wetter over northernmost basins (Upper Green/White/Yampa)
    - Additional snow accumulation over higher elevations
  - Warmer/drier over much of western Colorado (Upper CO headwaters/Gunnison/Dolores/San Juan)
    - More snowmelt compared to northern basins
- UCRB early May SWE conditions mostly below normal:
  - Better across northern basins
  - Worse across southern basins
- UCRB May 1 water supply forecasts (April-July): 45-95% of normal
- Weather outlook
  - Warm, mostly dry, and windy conditions are expected
  - Best chances of precipitation across northern, high elevation areas this weekend/early next week
    - Upper Green/White/Yampa headwaters 0.25"-0.50"

# 2022 Water Supply Webinar Schedule

*\*All Times Mountain Time (MT)*

## Colorado River Basin

Friday	Jan 7 <sup>th</sup>	10 am
Monday	Feb 7 <sup>th</sup>	10 am
Monday	Mar 7 <sup>th</sup>	10 am
Thursday	Apr 7 <sup>th</sup>	10 am
Friday	May 6 <sup>th</sup>	10 am

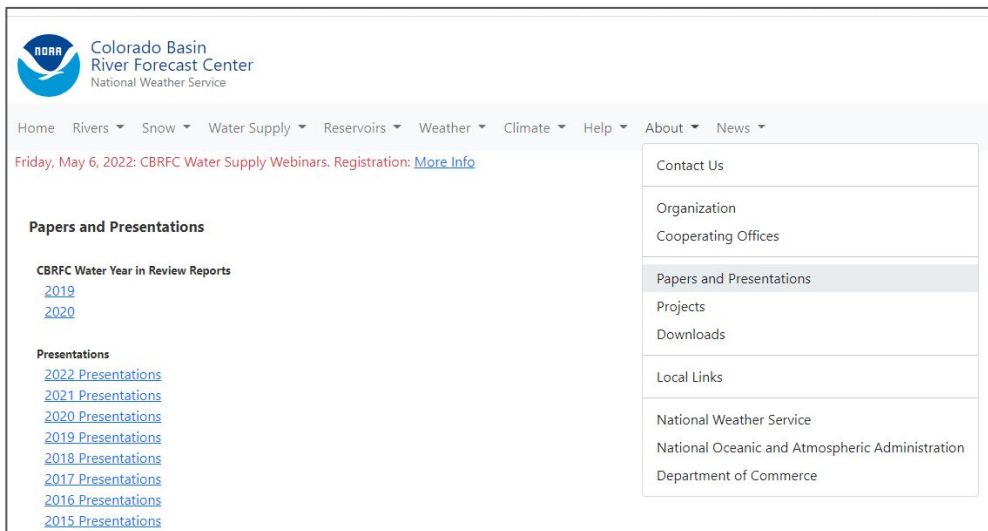
## Utah/Great Basin

Friday	Jan 7 <sup>th</sup>	11:30 am
Monday	Feb 7 <sup>th</sup>	11:30 am
Monday	Mar 7 <sup>th</sup>	11:30 am
Thursday	Apr 7 <sup>th</sup>	11:30 am
Friday	May 6 <sup>th</sup>	11:30 am

- This concludes our regularly scheduled water supply webinars
- Please contact us directly for updates/questions/comments
- Peak flow forecasts will be issued/updated Monday
- Water supply discussion will be issued/updated mid-May & early June
- Water supply forecasts will be issued/updated in early June

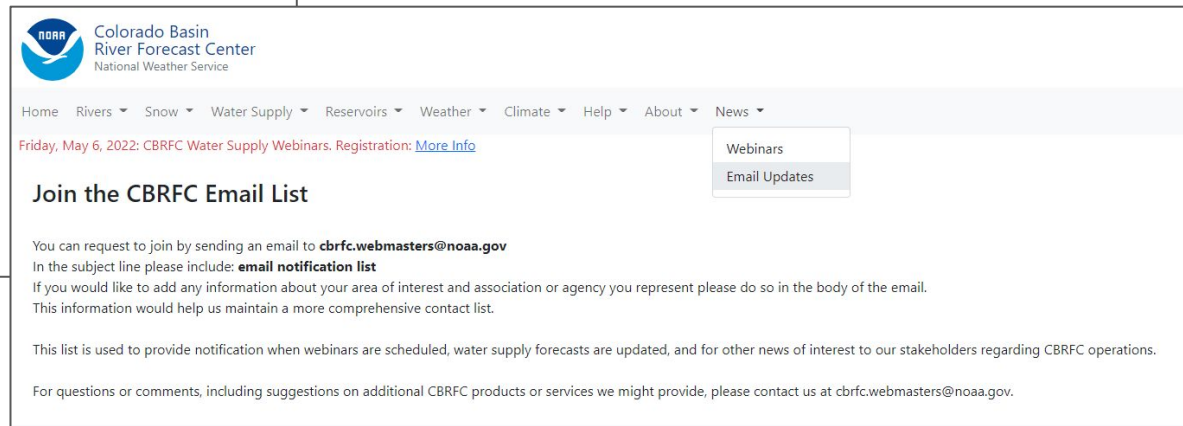


# CBRFC Webinar Slides/Recordings & Email List



The screenshot shows the top portion of the CBRFC website. On the left is the NOAA logo and the text "Colorado Basin River Forecast Center National Weather Service". A navigation menu includes links for Home, Rivers, Snow, Water Supply, Reservoirs, Weather, Climate, Help, About, and News. Below the menu, a date and event announcement are visible: "Friday, May 6, 2022: CBRFC Water Supply Webinars. Registration: [More Info](#)". A "Papers and Presentations" section lists links for "CBRFC Water Year in Review Reports" (2019, 2020) and "Presentations" from 2004 to 2022, including a link for "2008 Water Supply Training Presentations". On the right side of the page, a vertical menu lists: Contact Us, Organization, Cooperating Offices, Papers and Presentations (highlighted), Projects, Downloads, Local Links, National Weather Service, National Oceanic and Atmospheric Administration, and Department of Commerce.

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



This screenshot shows the "Join the CBRFC Email List" page. It features the NOAA logo and website title at the top. The navigation menu is present, with a dropdown menu open under "News" showing "Webinars" and "Email Updates" (highlighted). The main heading is "Join the CBRFC Email List". Below this, the text reads: "You can request to join by sending an email to [cbrfc.webmasters@noaa.gov](mailto:cbrfc.webmasters@noaa.gov). In the subject line please include: **email notification list**. If you would like to add any information about your area of interest and association or agency you represent please do so in the body of the email. This information would help us maintain a more comprehensive contact list." A paragraph follows: "This list is used to provide notification when webinars are scheduled, water supply forecasts are updated, and for other news of interest to our stakeholders regarding CBRFC operations." The final paragraph states: "For questions or comments, including suggestions on additional CBRFC products or services we might provide, please contact us at [cbrfc.webmasters@noaa.gov](mailto:cbrfc.webmasters@noaa.gov)."

# CBRFC Contacts & WY22 Basin Focal Points

## Basin Focal Points (Forecasters)

Brenda Alcorn - Green, Duchesne, White/Yampa  
[brenda.alcorn@noaa.gov](mailto:brenda.alcorn@noaa.gov)

Ashley Nielson – Gunnison, San Juan, Dolores, Lake Powell  
[ashley.nielson@noaa.gov](mailto:ashley.nielson@noaa.gov)

Cody Moser – Upper Colorado Mainstem  
[cody.moser@noaa.gov](mailto:cody.moser@noaa.gov)

Patrick Kormos – Great Basin/Sevier  
[patrick.kormos@noaa.gov](mailto:patrick.kormos@noaa.gov)

Trevor Grout - Virgin, Lower Colorado  
[trevor.grout@noaa.gov](mailto:trevor.grout@noaa.gov)

Tracy Cox - Hydrometeorologist  
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