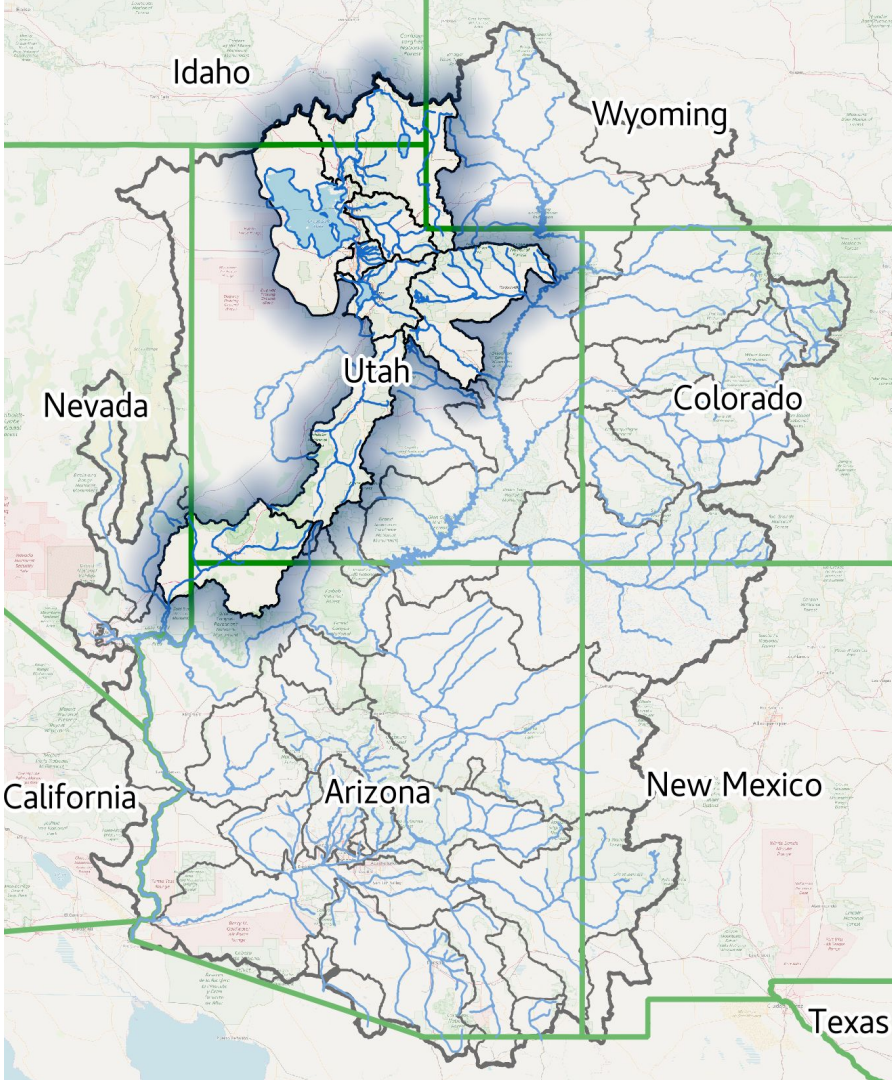
Utah Water Supply Briefing

Colorado Basin River Forecast Center

January 8, 2024

Presenter: - Ashley Nielson

Utah Forecasters: Trevor Grout
Brenda Alcorn
Wolfgang Hanft
Nanette Hosenfeld
Cody Moser



Presentation Overview

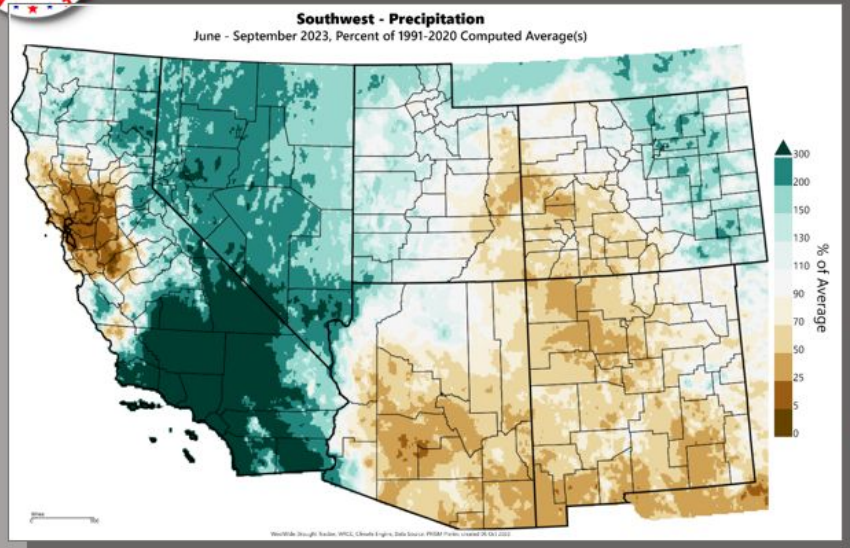
- Precipitation Review
- Model Soil Moisture Conditions
- Current Snow Conditions
- 2024 Water Supply Forecasts
- Early Season Forecast Error
- Upcoming Weather
- Contacts & Questions

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

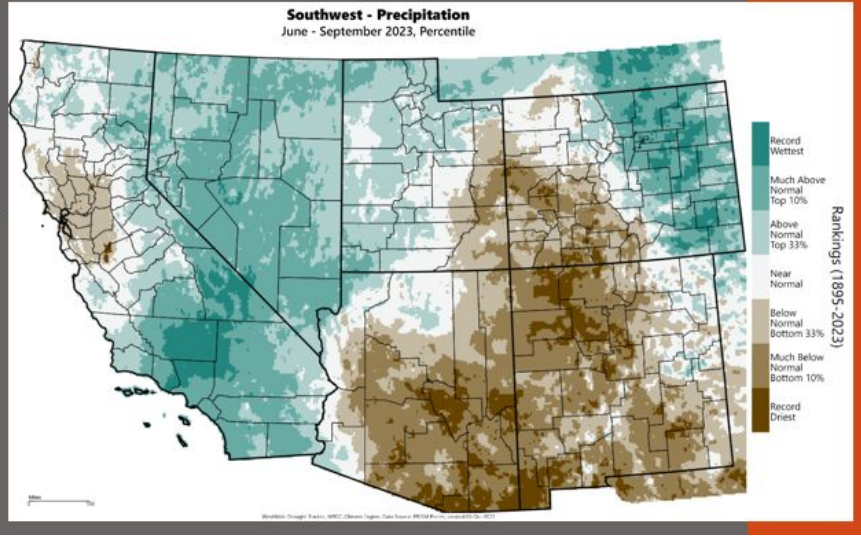
2023 Monsoon Summary

June-September 2023 Precipitation

Sources:
NWS
azwater.gov

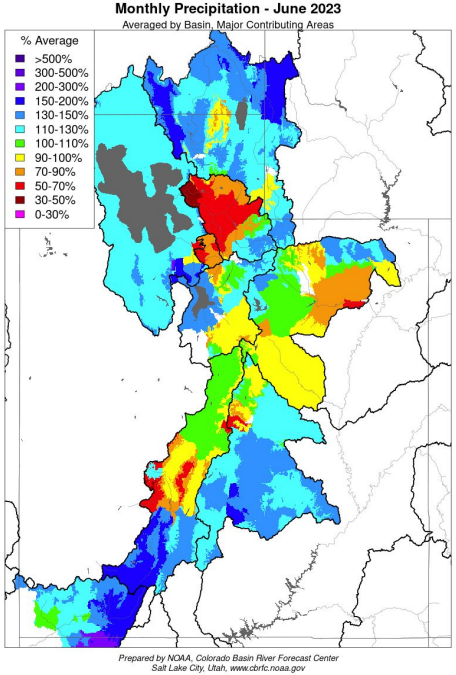


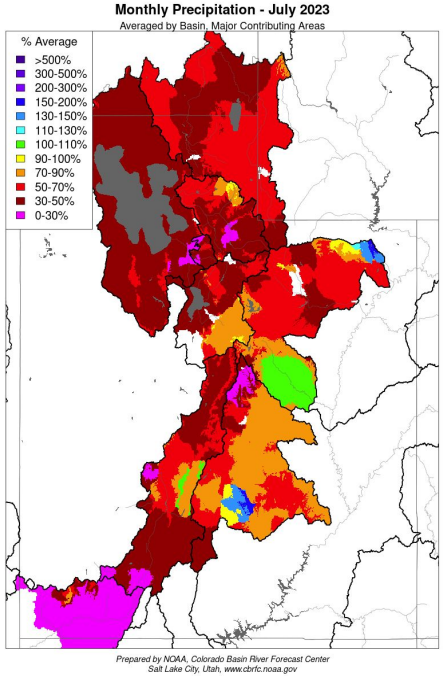
- With the exception of far western and northern Arizona, Monsoon 2023 was much drier than normal
- Much of the southeast half of the state received less than 50% of normal monsoon rainfall

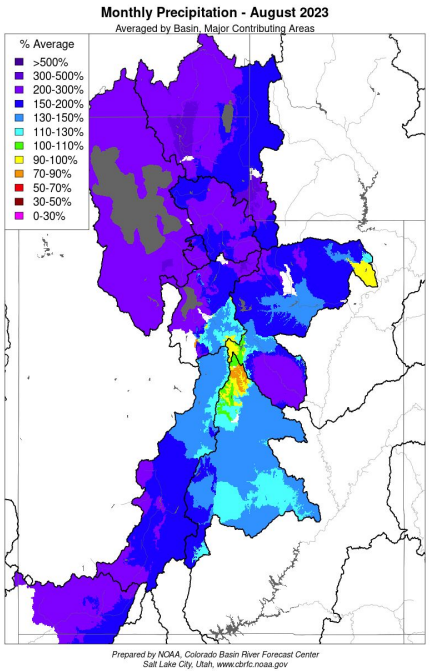


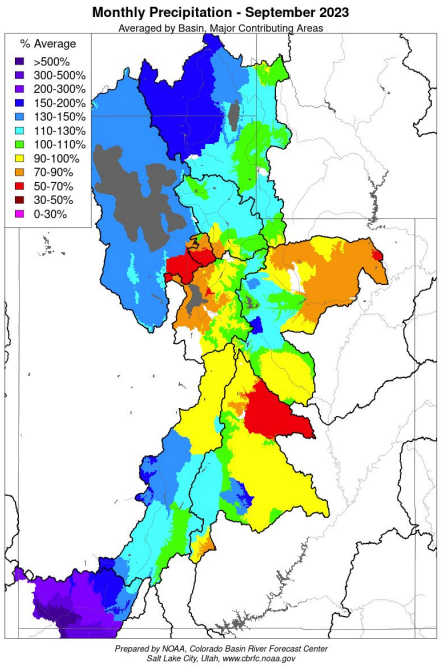
- Summer rainfall was equally spotty and/or absent across the Upper Colorado basin
- Similar to southern Arizona, much of eastern Utah and western Colorado ranked in the lowest 1/3 of historical summer rainfall

Utah June-September Monthly Precipitation

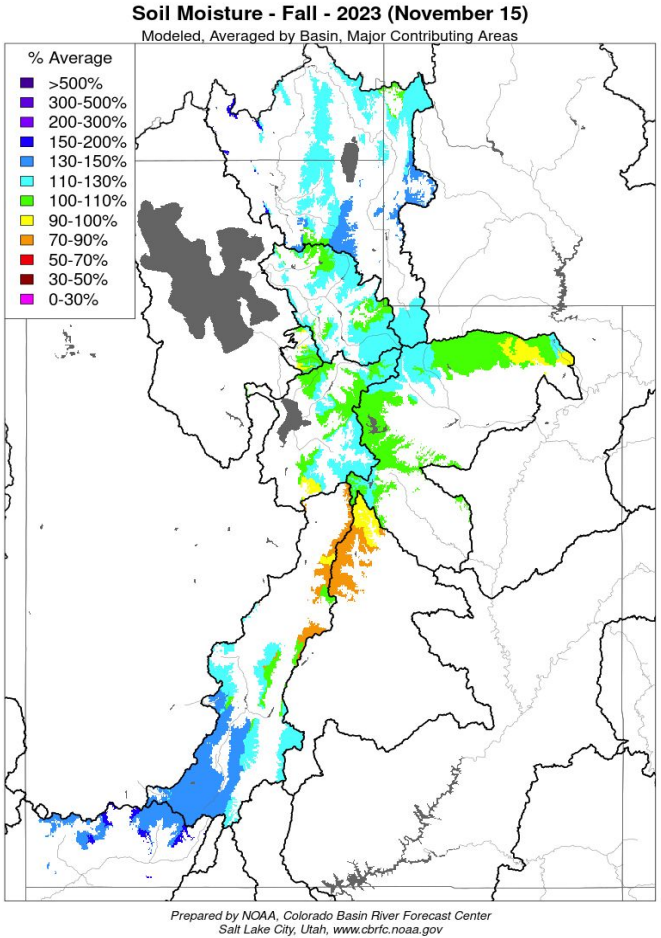








Fall 2023 Hydrologic Model Soil Moisture Conditions



The map shows the model soil moisture conditions from the lower soil zone in CBRFC's hydrologic model, and is a result of past hydrologic conditions including but not limited to:

- -previous year(s) runoff
- -summer/fall precipitation

CBRFC hydrologic model soil moisture is adjusted (if necessary) every fall after irrigation season has ended and before winter.
Data used to make adjustments:

- -Early November streamflow observations (baseflow)
- -Reservoir inflows
- -July-October precipitation
- -Past season(s) runoff conditions

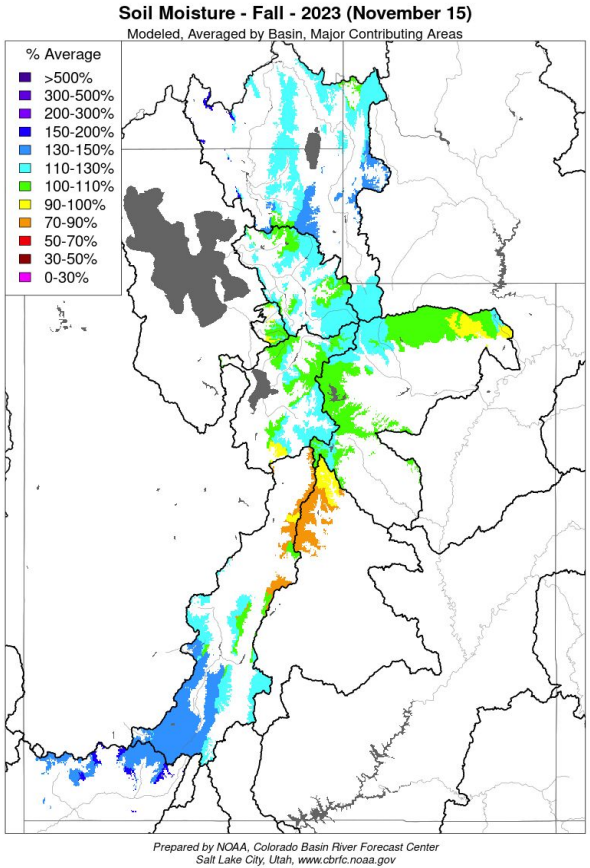
<u>Soil Moisture Impacts on Water Supply / Runoff</u>
Above normal soil moisture conditions → positive impact (increased runoff efficiency)
Below normal soil moisture conditions → negative impact (decreased runoff efficiency)

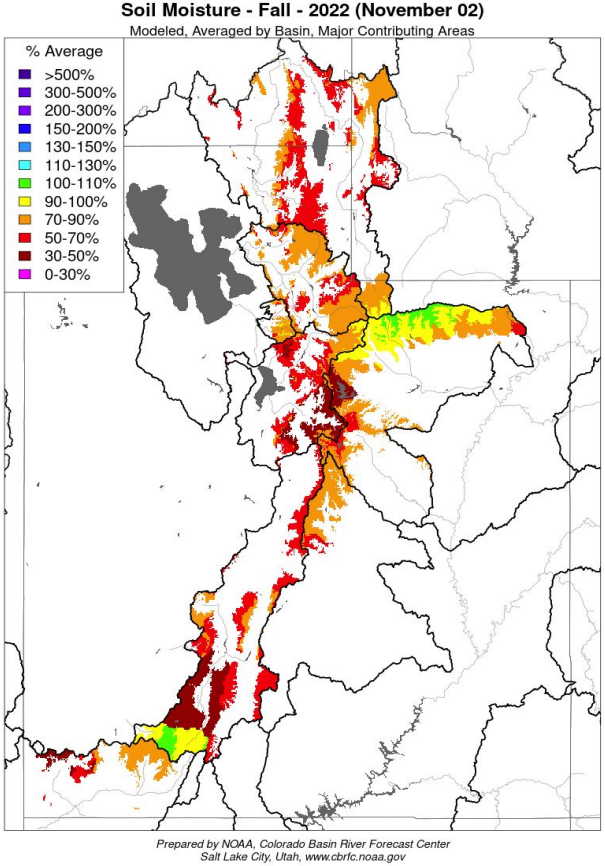
Great Basin / Utah: near to above normal

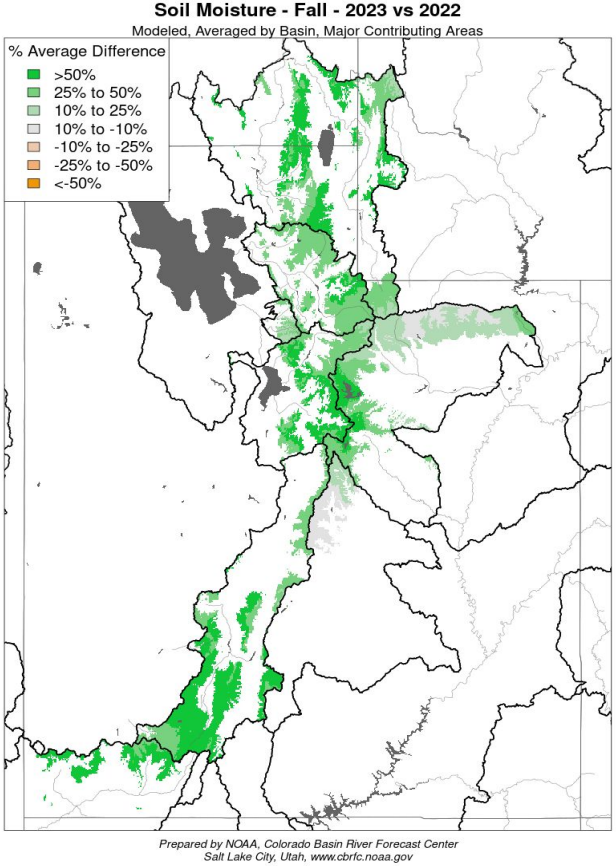
The timing and magnitude of spring runoff is ultimately a result of snowpack conditions, spring weather, and soil moisture conditions.

Fall Model Soil Moisture Conditions: 2023 vs. 2022

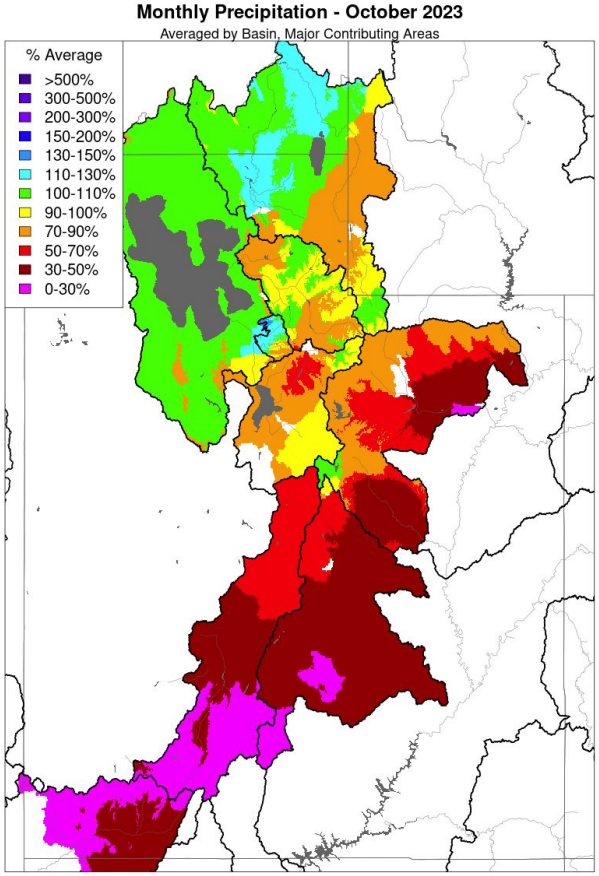
Near to above normal soils moisture conditions and better or similar conditions to last year.

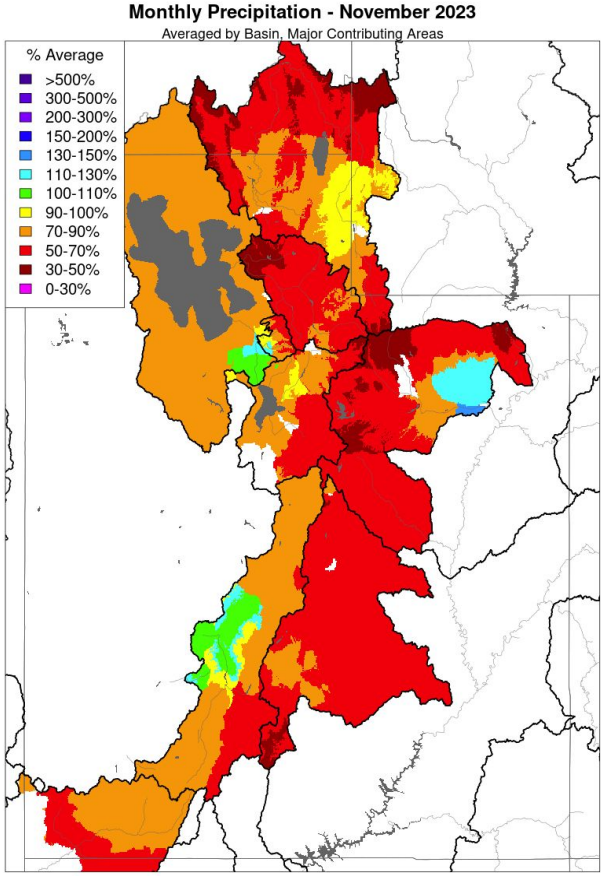


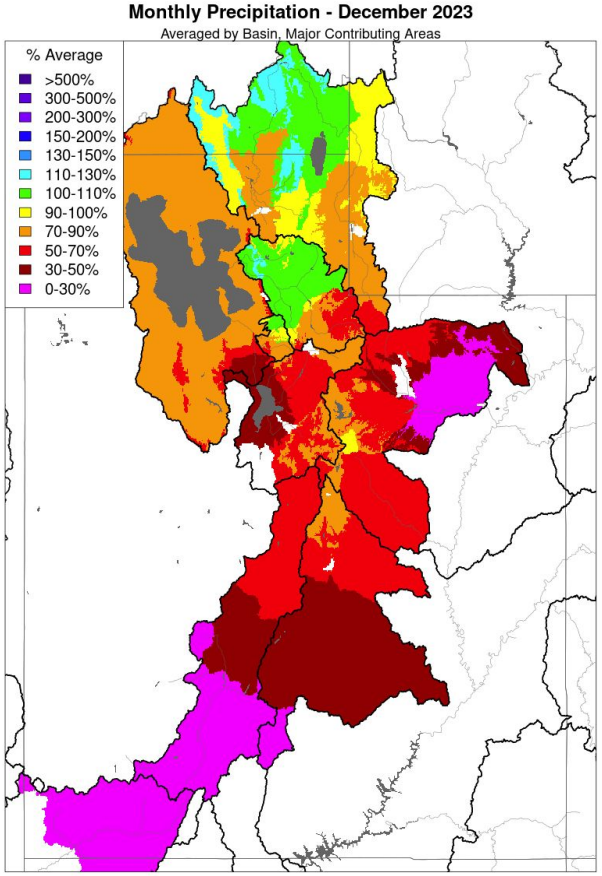




Water Year 2024 (October-December) Monthly Precipitation

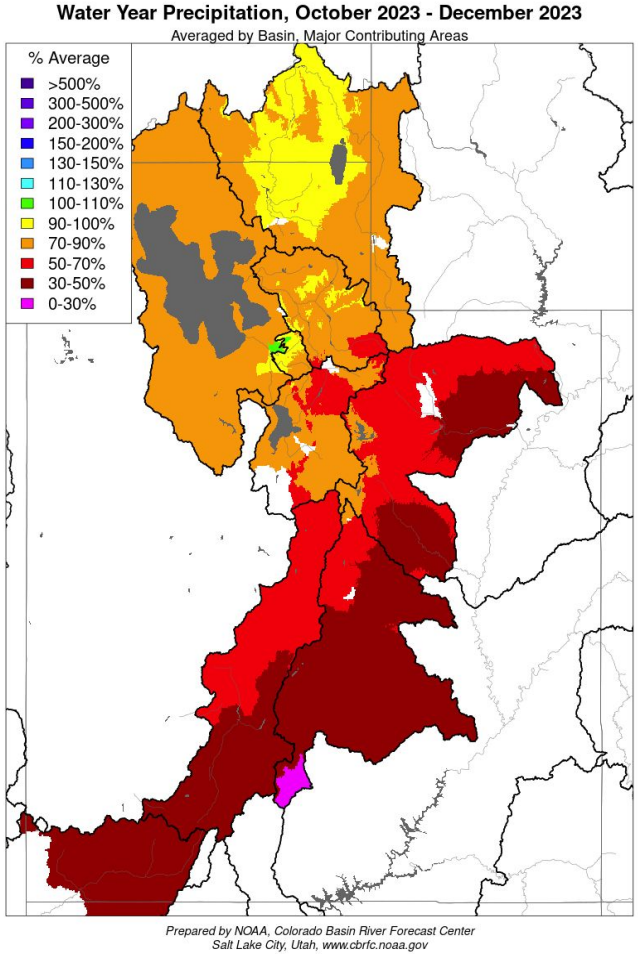






Water Year 2024 (October - December) Monthly Precipitation

Below average start to the water year. Water year precipitation is currently near to below average across most of Utah.



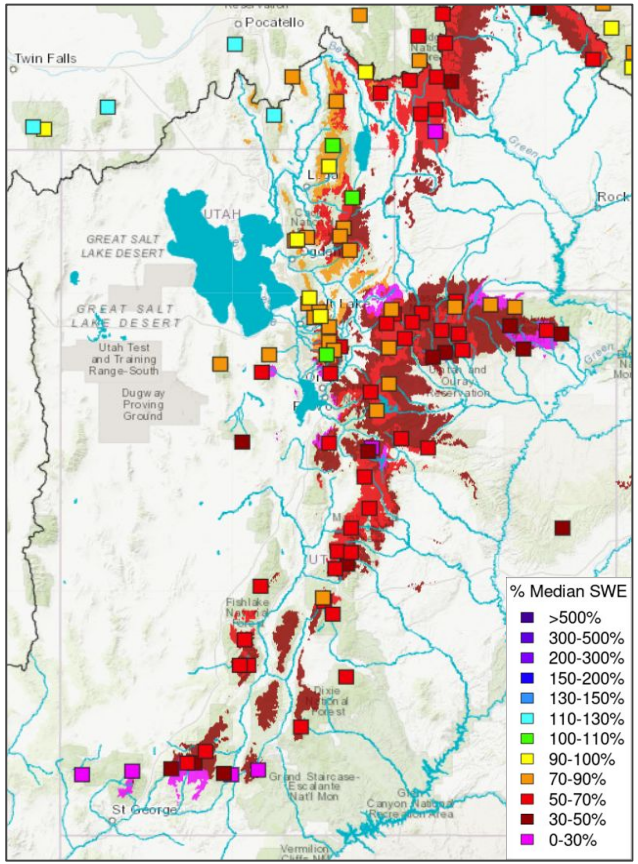
Water Year 2024
CBRFC Precipitation (Major Contributing Areas)
Percent of 1991-2020 Average

UTAH				
	Oct	Nov	Dec	Oct-Dec
Bear	103	55	101	85
Weber	91	59	88	79
Six Creeks	97	72	93	86
Provo/Utah Lake	83	75	64	73
Duchesne	77	52	53	61
Price/San Rafael	77	60	72	70
Sevier	38	82	33	51
Virgin	26	77	19	40

Early January 2024 Snowpack Conditions

January 1 SWE Conditions

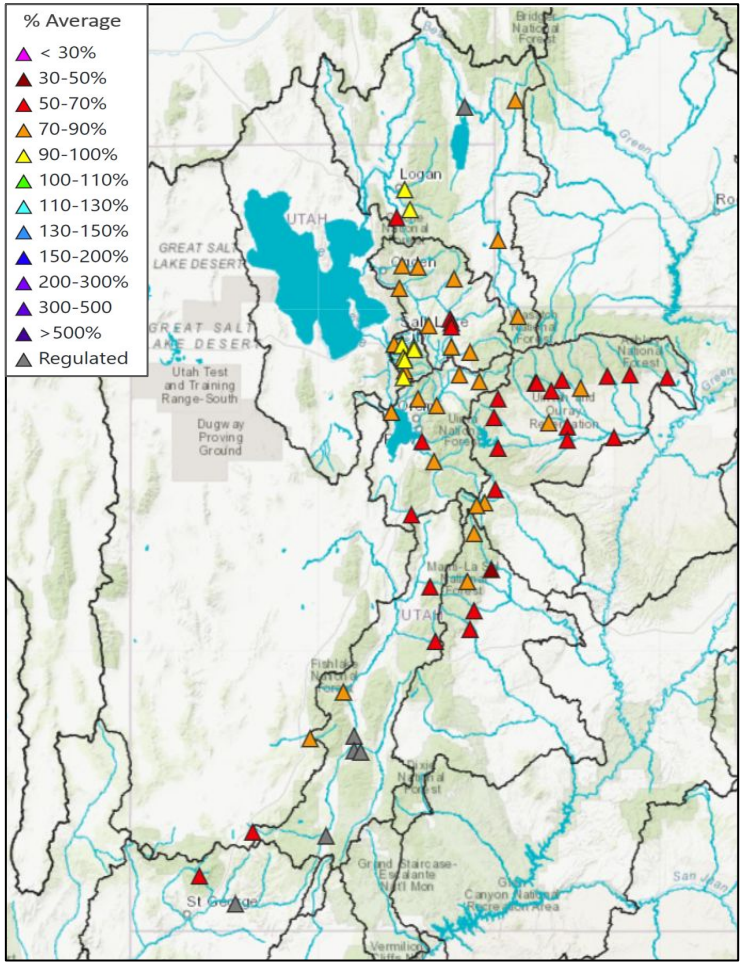
NRCS SNOTEL Observed (Squares)
CBRFC Model (Significant Areas)



Water Year 2024 CBRFC Model SWE (Major Contributing Areas) Percent of 1991-2020 Median			
UTAH			
	Dec1	**Jan1**	**Change**
Bear	33	68	35
Weber	30	58	28
Six Creeks	55	72	17
Provo/Utah Lake	45	50	5
Duchesne	32	42	10
Price/San Rafael	40	54	14
Sevier	74	44	-30
Virgin	77	11	-66

Early January SWE conditions are below normal across Utah with conditions worsening from north to south.

Utah Water Supply Forecasts: Overview



Utah April-July volume forecasts are near to below normal.

Forecasts are more favorable in areas that have:
-better soil moisture conditions
-better snowpack conditions

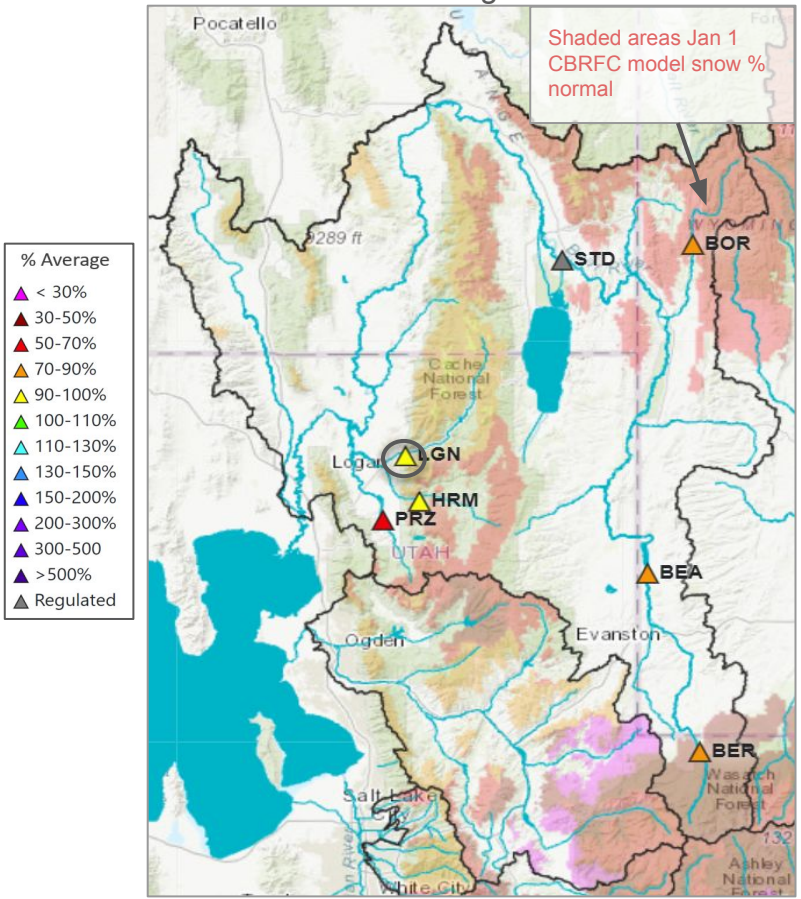
Colorado Basin River Forecast Center Water Supply Forecasts
January 1, 2024

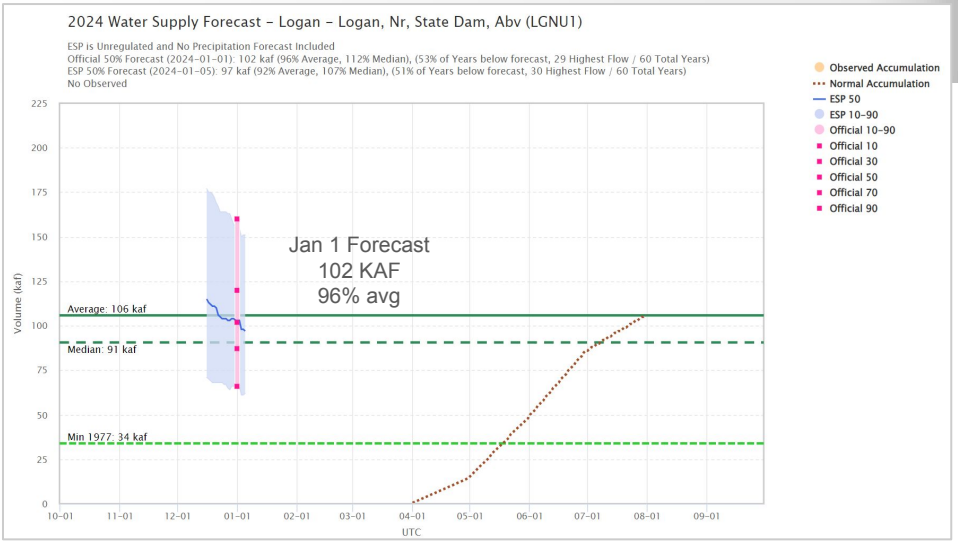
UTAH			
Basin	**Volume (KAF)**	**%Normal (1991-2020)**	**Period**
Bear-UT/WY State Line	87	80	Apr-Jul
Weber-Oakley	83	75	Apr-Jul
Big Cottonwood Creek	29	85	Apr-Jul
Provo-Woodland	76	79	Apr-Jul
Duchesne-Tabiona	73	71	Apr-Jul
Sevier-Hatch (*Regulated)	30	62	Apr-Jul
Virgin-Virgin (*Regulated)	47	84	Apr-Jul

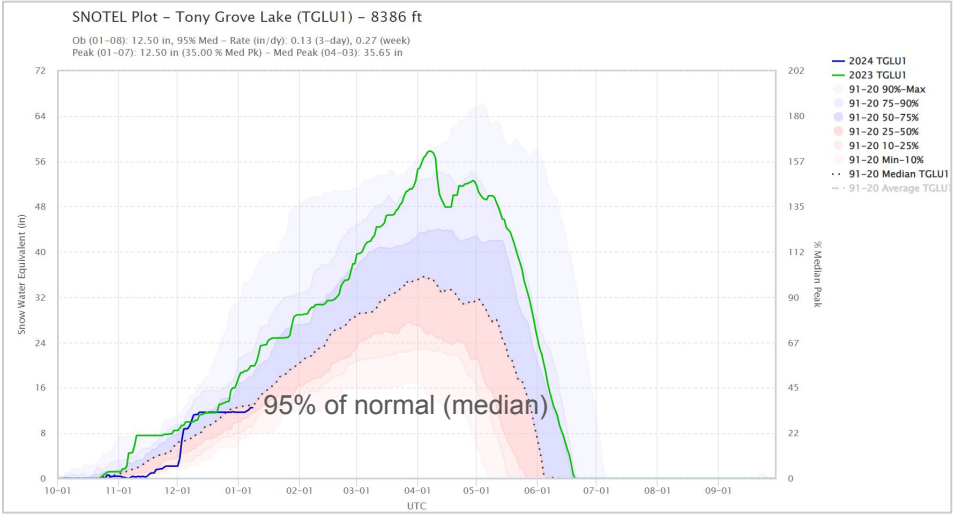
KAF = thousand acre-feet

Bear River Basin

Forecast Range: 70-95%

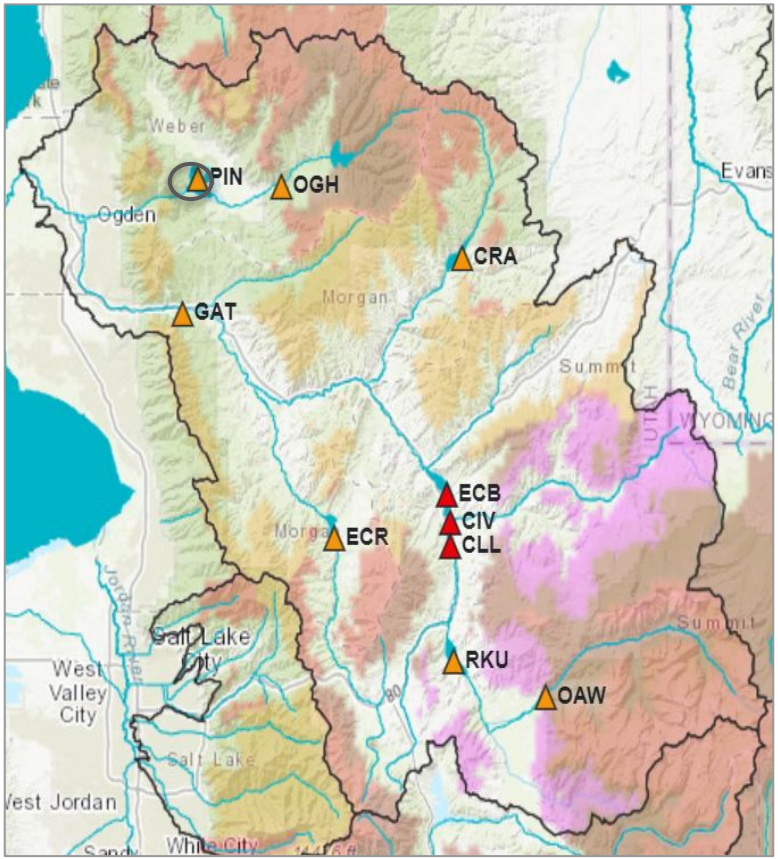


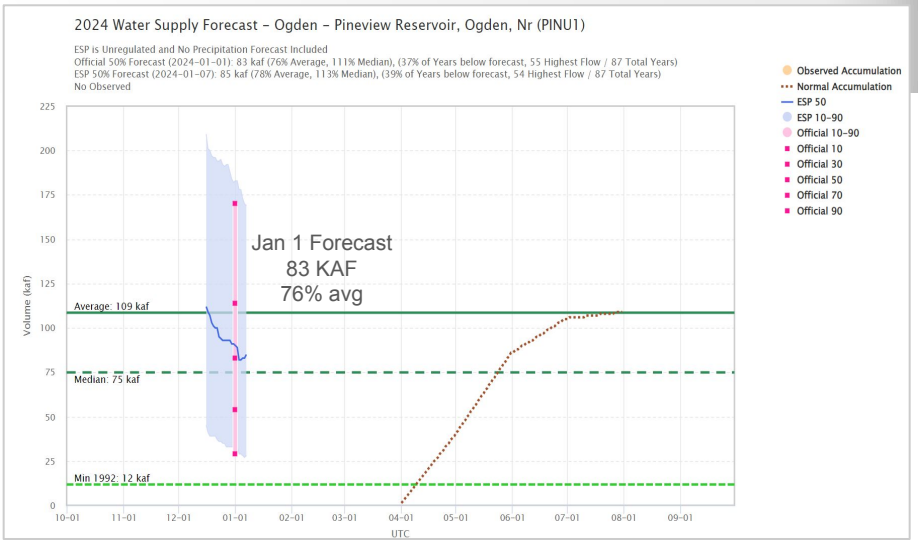


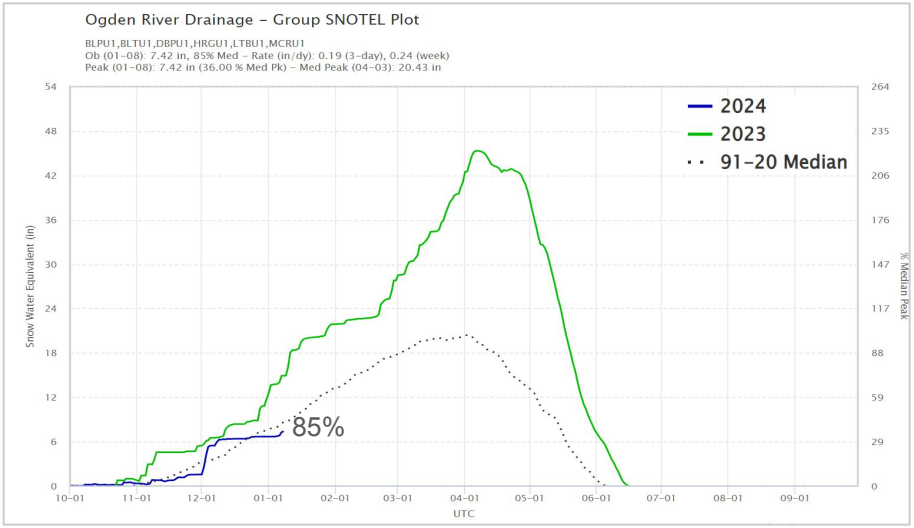


Weber River Basin

Forecast Range: 65-90%

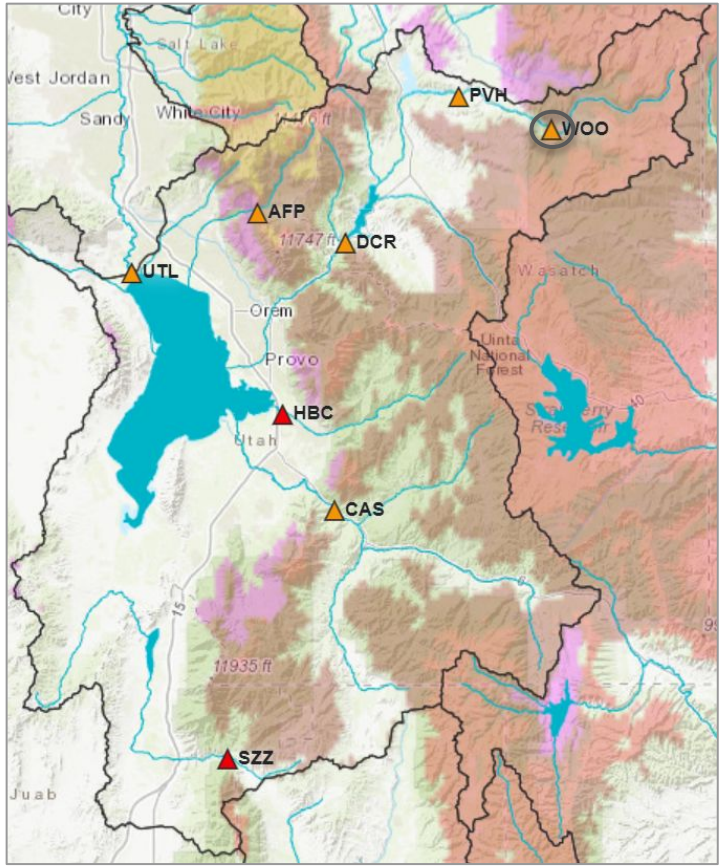


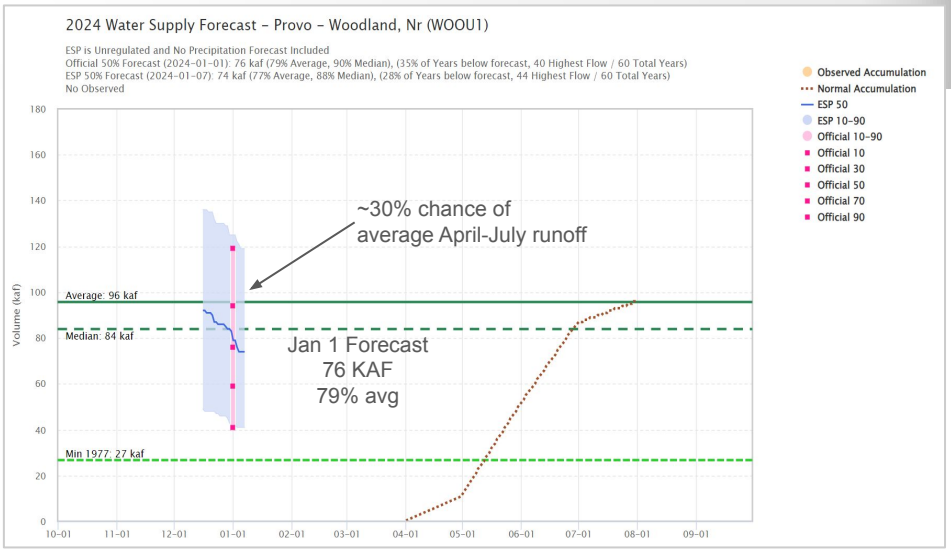


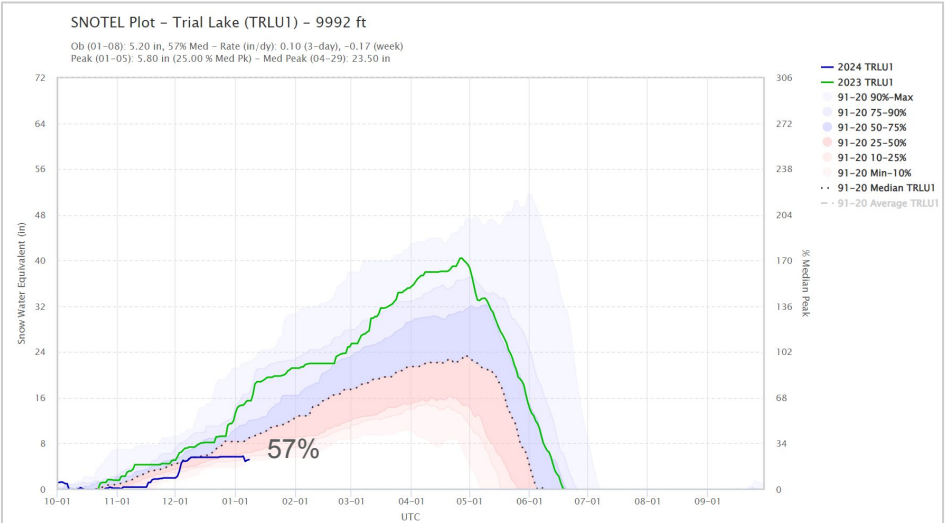


Provo River Basin

Forecast Range: 55-90%

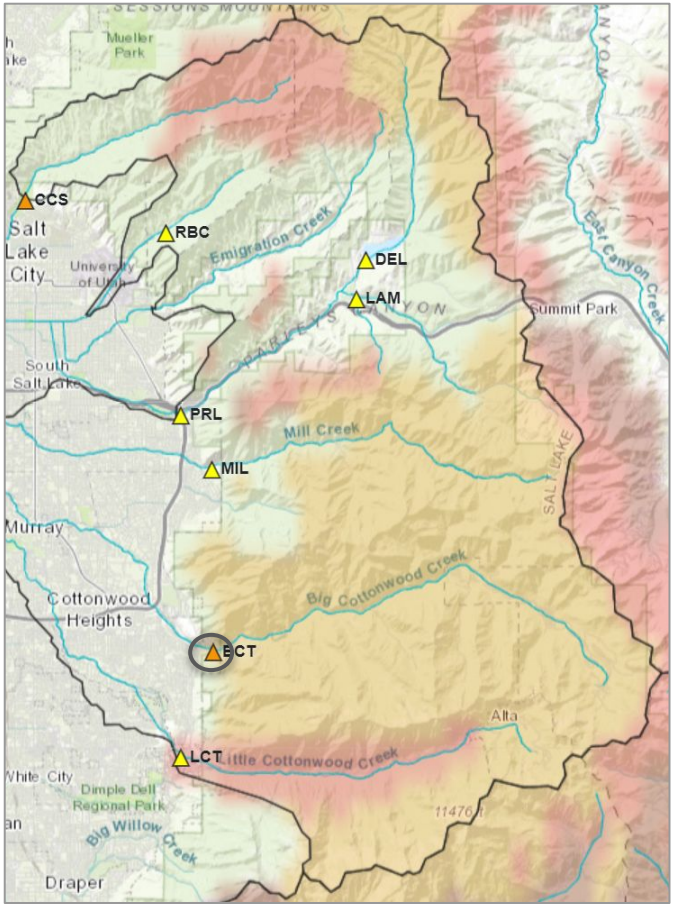


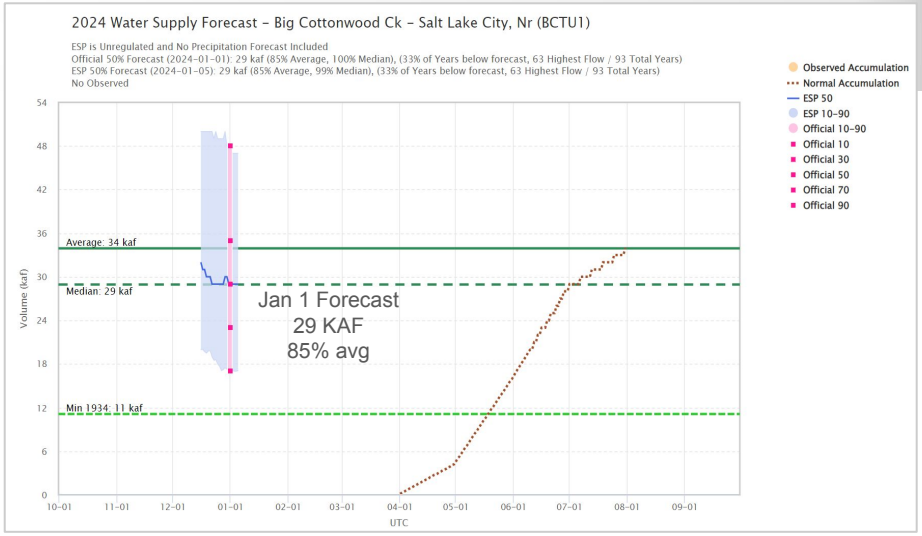


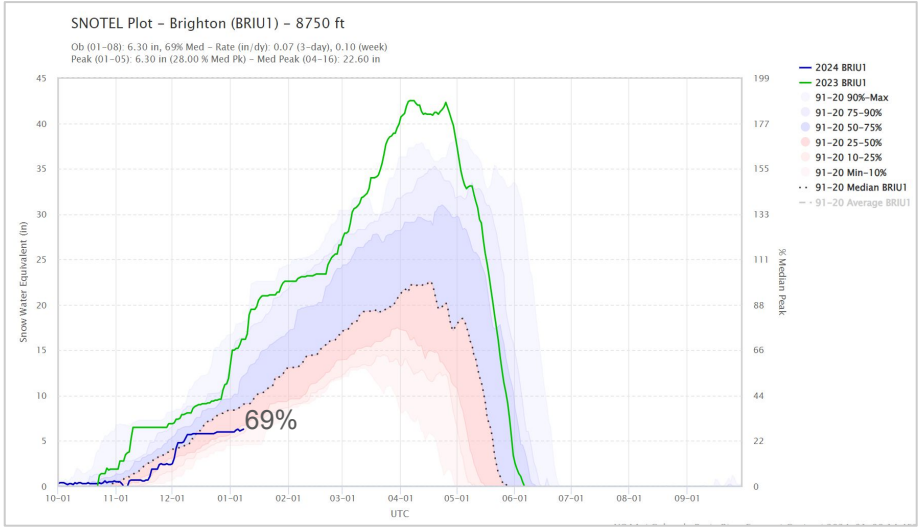


Six Creeks Basin

Forecast Range: 85-100%

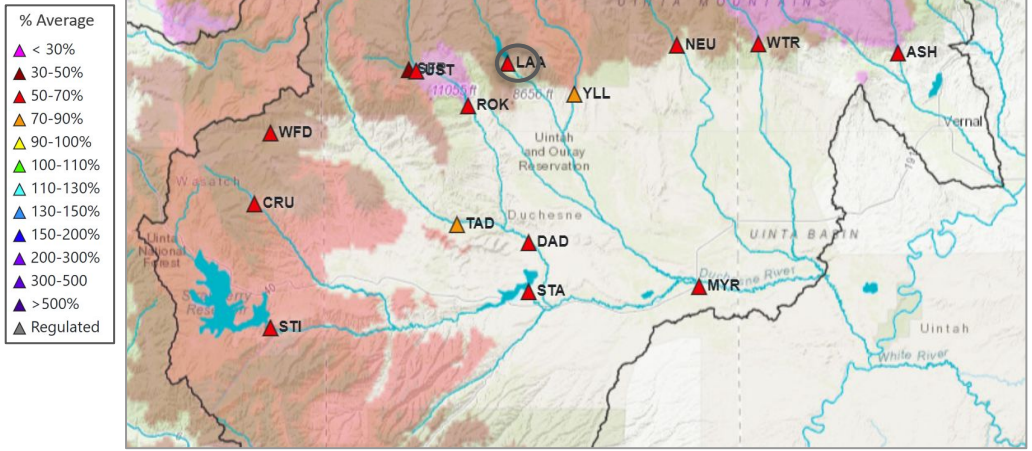


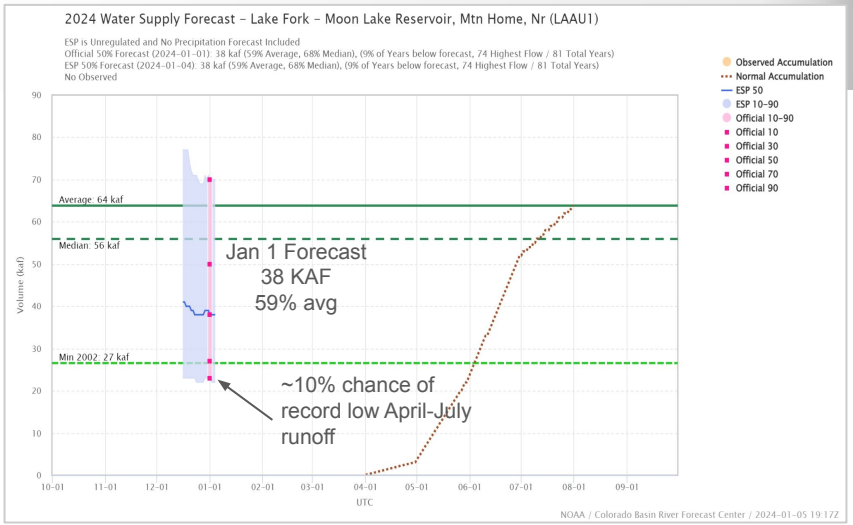


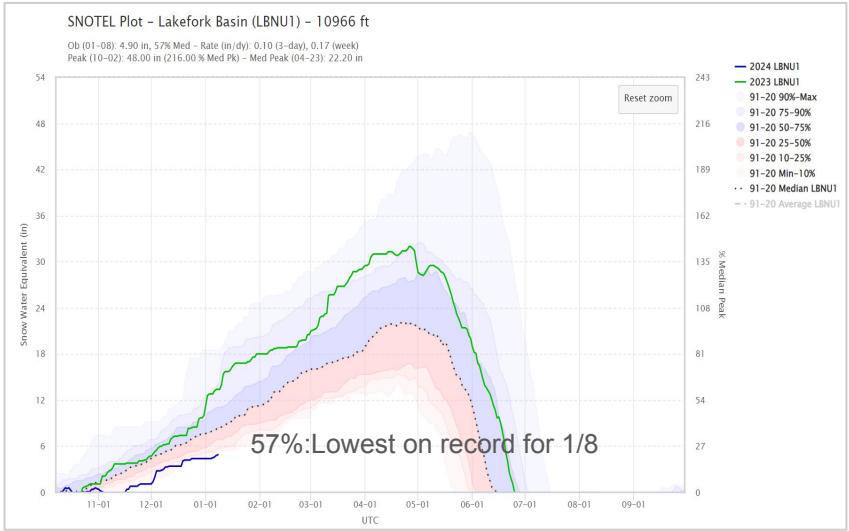


Duchesne River Basin

Forecast Range: 50-70%

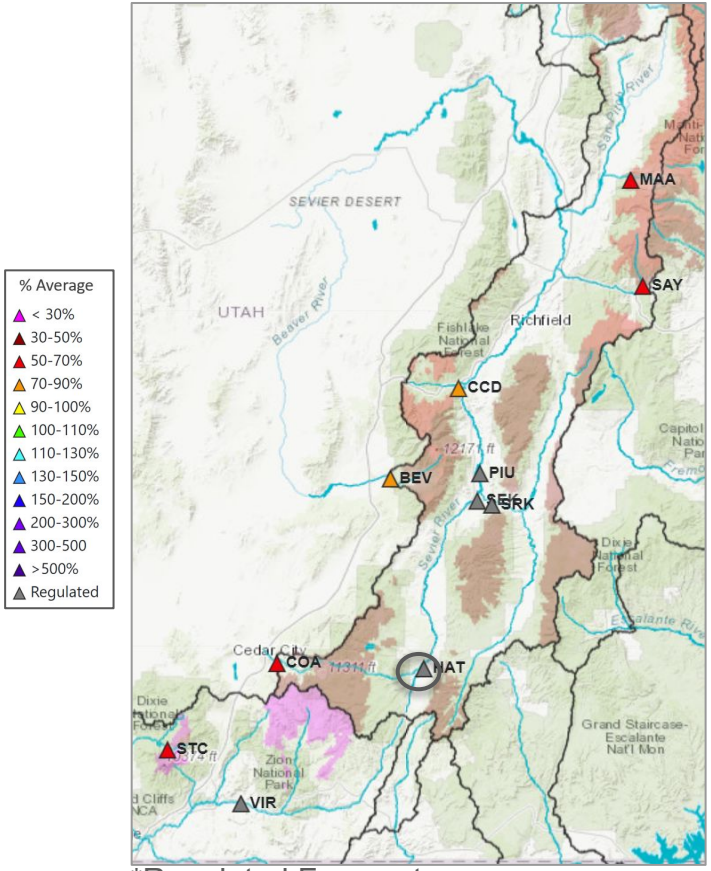




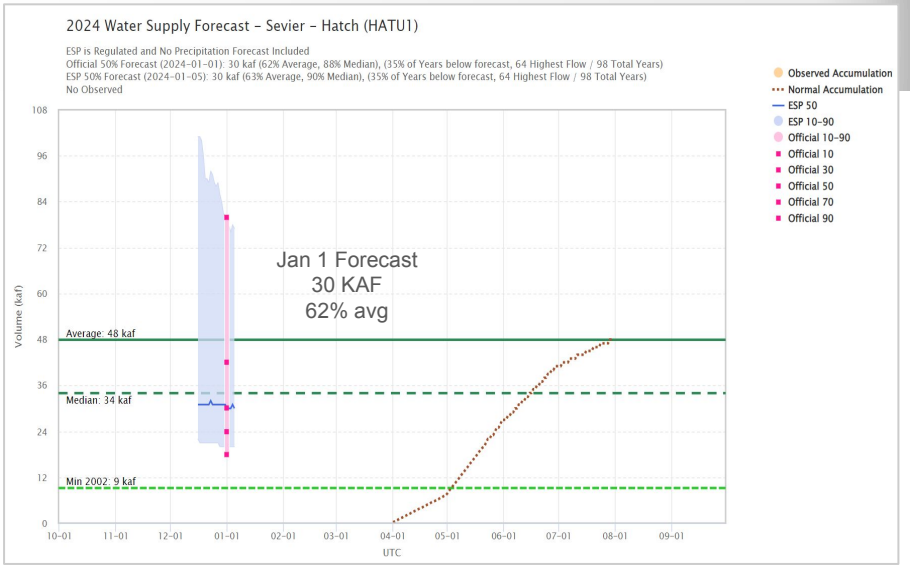


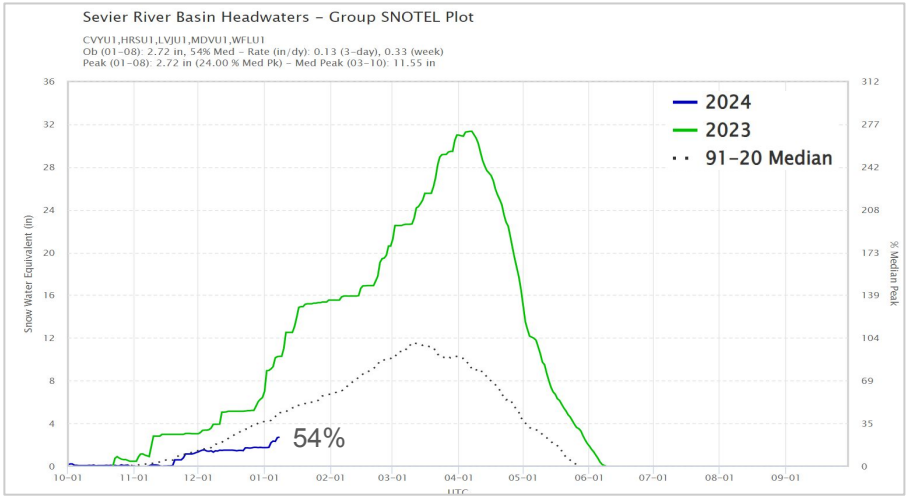
Virgin and Sevier River Basins

Forecast Range: 30-105%



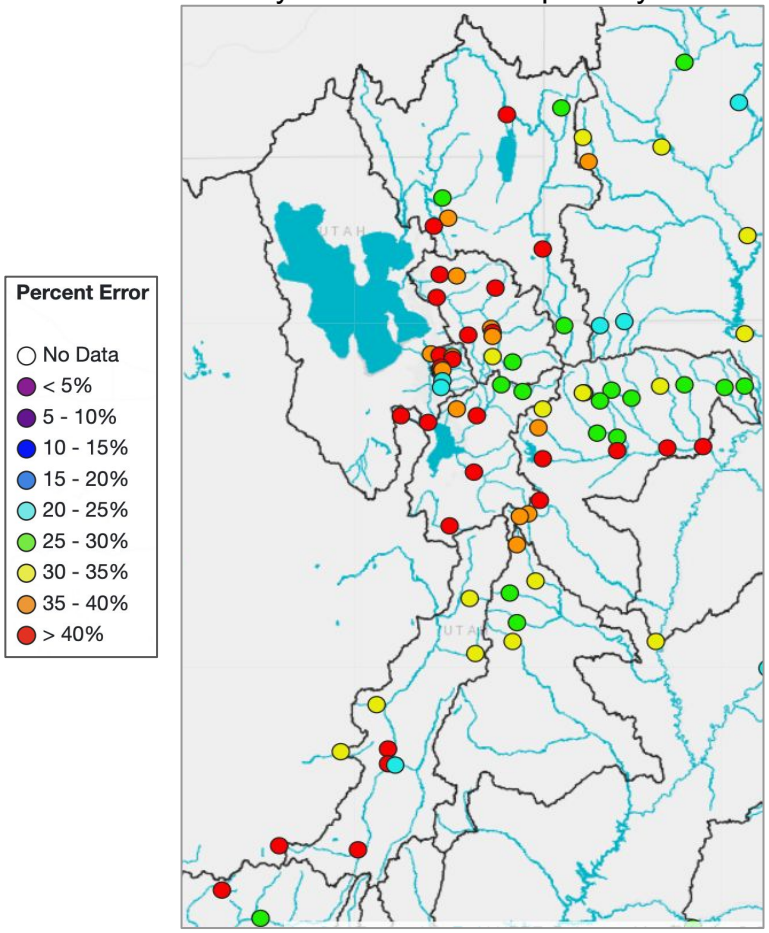
*Regulated Forecasts





Historical Forecast Verification

January Forecast Error: April-July Volume



Location	Average Jan 1 Forecast Error
BEAR - UTAH-WYOMING STATE	25%
BEAR - WOODRUFF NARROWS	45%
LOGAN - LOGAN- NR	25%
WEBER - OAKLEY- NR	25%
WEBER - ROCKPORT RES	35%
BIG COTTONWOOD CK	20%
PROVO - WOODLAND- NR	30%
PROVO - DEER CK RES	40%
VIRGIN - VIRGIN	45%

Error tends to decrease each month into the spring

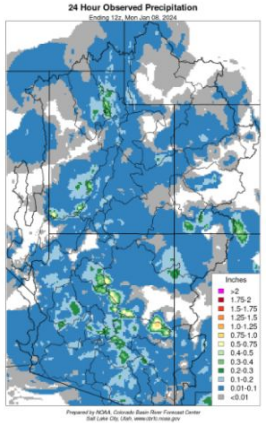
Where Forecasts are Better:
- -Headwaters
- -Primarily snow melt basins
- -Known diversions / demands

Where Forecasts are Worse:
- -Lower elevations (rain or early melt)
- -Downstream of diversions / irrigation
- -Little is known about diversions / demands

Future weather is the primary source of early season water supply forecast error/uncertainty.

January Observed Precipitation

08



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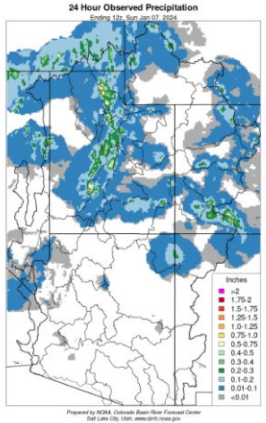

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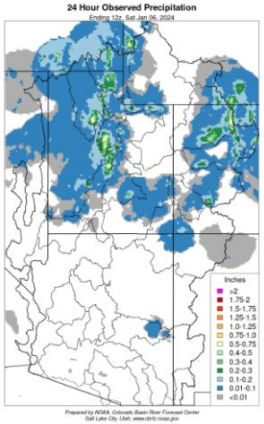

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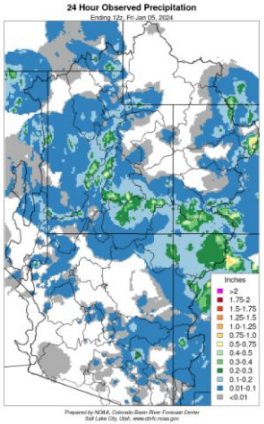

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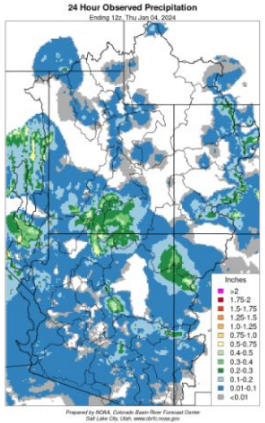

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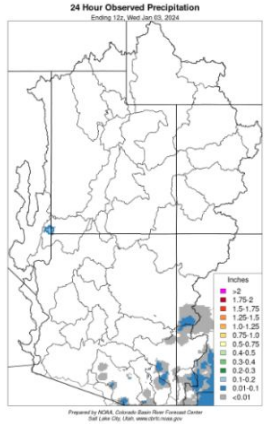

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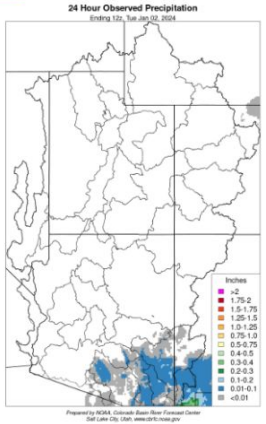

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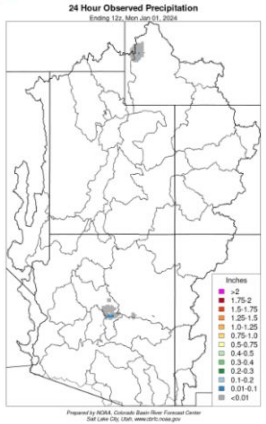


Active weather pattern

-series of storm systems

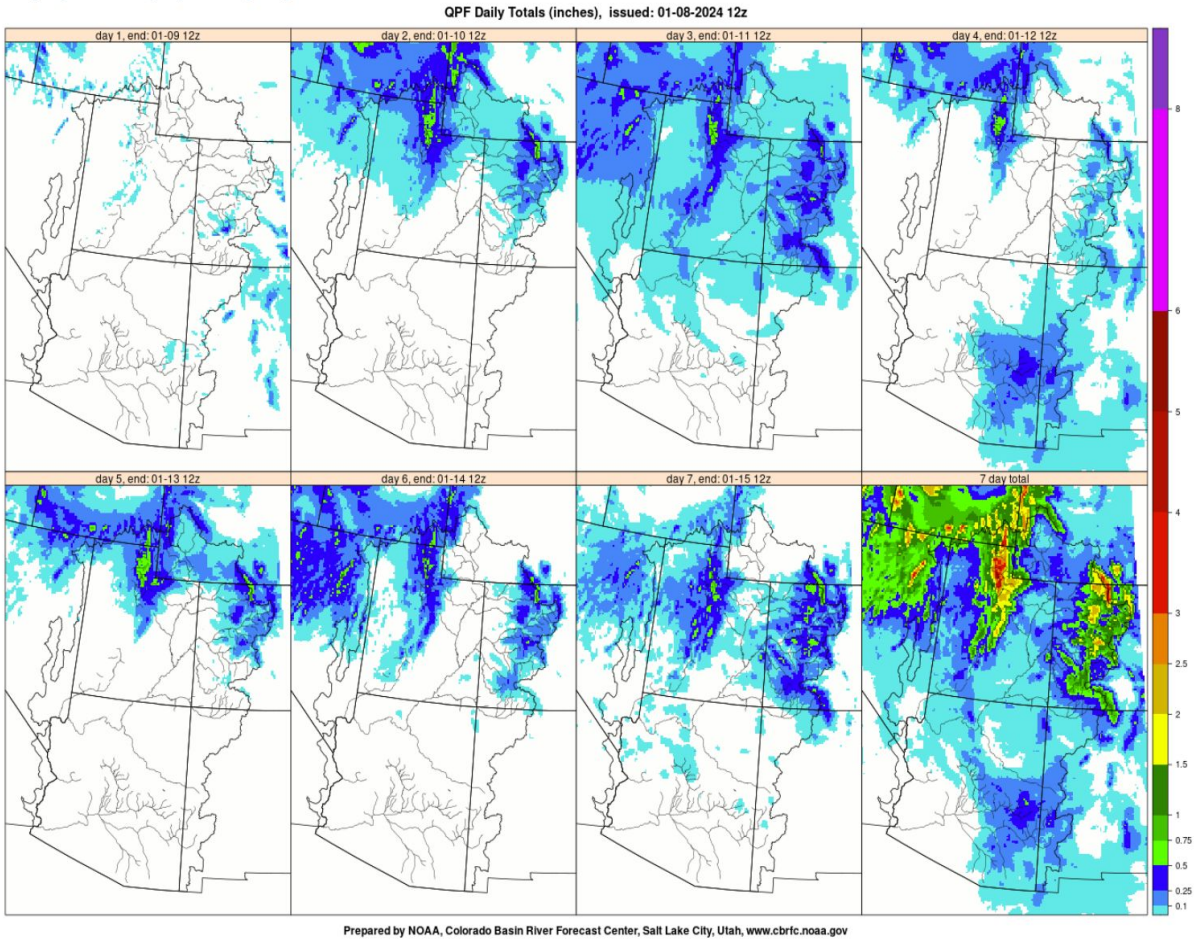
-colder temperatures

Upcoming Weather: 7-Day Precipitation Forecast

Active weather will continue this week.

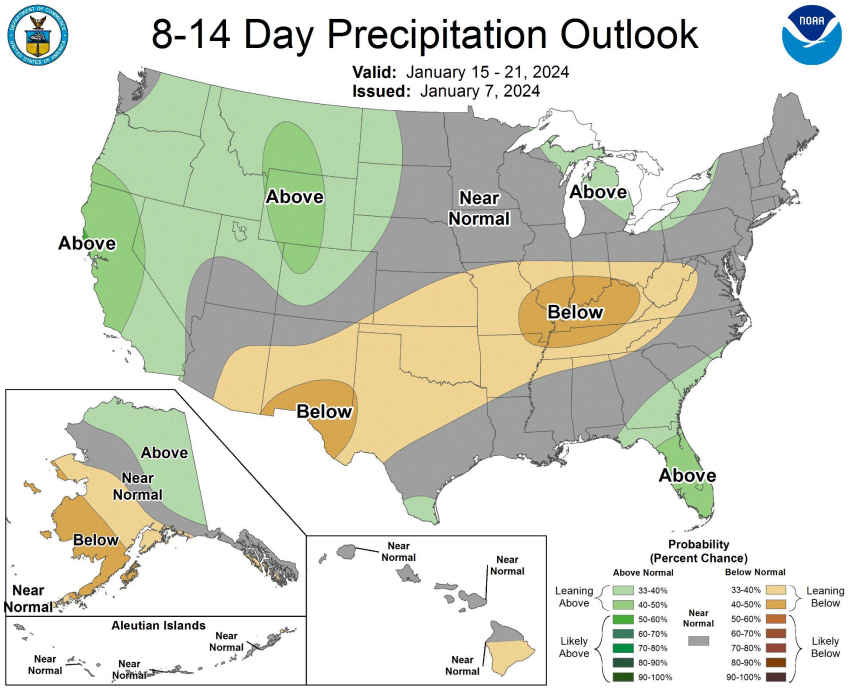
Periods of snow possible each day across higher elevations.

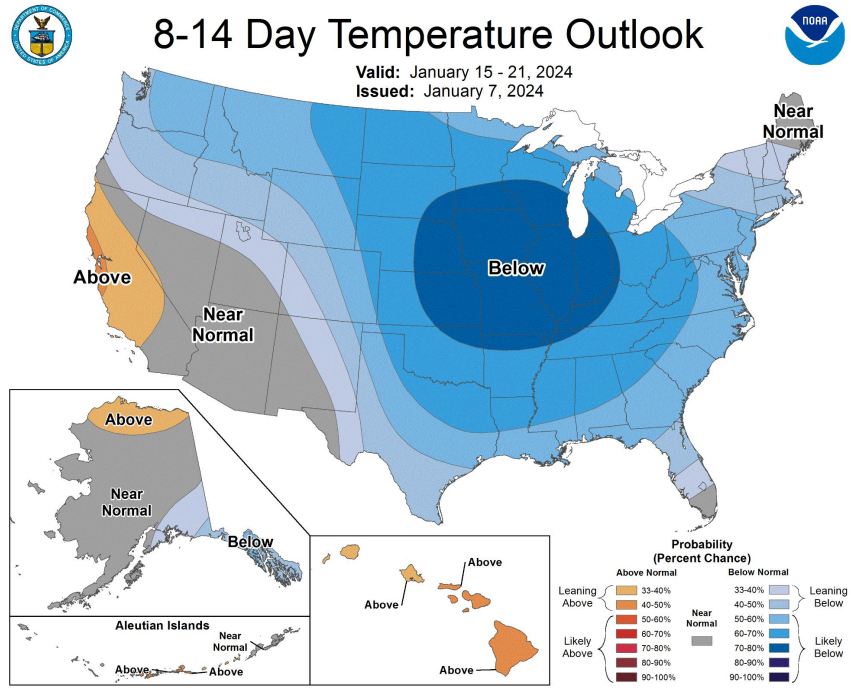
Higher precipitation amounts forecast across northern basins and central Wasatch.



Upcoming Weather: 8-14 Day Outlook (January 15-21)

Northern basins: increased chances of above average precipitation & below average temperatures.





Summary

- Soil Moisture:
  - Near to above normal
  - Better conditions than last year

- Snow:
  - Below normal conditions
    - Better conditions: Bear, Weber, and Six Creeks
    - Near record low early January conditions: Duchesne, Sevier, and Virgin

- January 1 Water Supply Forecasts
  - Near to below normal
  - Forecasts may trend higher in northern basins by mid-January if the forecast precipitation verifies.

- Weather forecast
  - Active weather will continue this week

2024 Water Supply Webinar Schedule

**All Times Mountain Time (MT)*

Colorado River Basin

~~Monday~~	~~Jan 9th~~	~~10 am~~
Tuesday	Feb 7th	10 am
Tuesday	Mar 7th	10 am
Friday	Apr 7th	10 am
Friday	May 5th	10 am

Utah/Great Basin

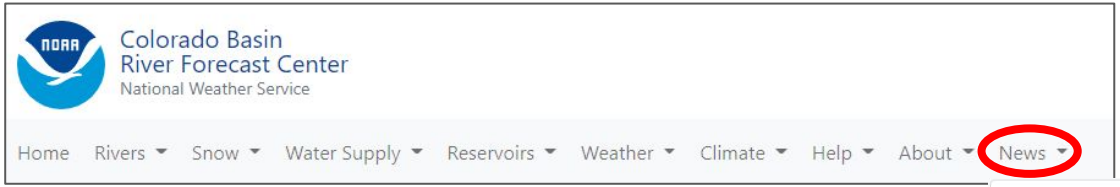
Monday	Jan 9th	11:30 am
Tuesday	Feb 7th	11:30 am
Tuesday	Mar 7th	11:30 am
Friday	Apr 7th	11:30 am
Friday	May 5th	11:30 am

Peak flow forecast webinar Monday, March 20th, 10 am MT

Additional briefings scheduled as needed

Webinar schedule & registration information has been posted to the CBRFC web page

CBRFC Webinar Registration & Email List



cbrfc.noaa.gov

CBRFC Water Supply Forecast Webinar Schedule & Registration - Water Year 2024

The Colorado Basin River Forecast Center (CBRFC) produces water supply forecasts for the Colorado River Basin and the eastern Great Basin. CBRFC conducts December through May webinars explaining the forecasts and current conditions.

Follow the links below to register for a webinar.

Early Season Water Supply Outlook Webinar

- Wednesday December 13 @ 10:00 am MT

Colorado River Basin Water Supply Webinars

- Monday January 8 @ 10:00 am MT
- Wednesday February 7 @ 10:00 am MT
- Thursday March 7 @ 10:00 am MT
- Friday April 5 @ 10:00 am MT
- Tuesday May 7 @ 10:00 am MT

Utah Water Supply Webinars

- Monday January 8 @ 11:30 am MT
- Wednesday February 7 @ 11:30 am MT
- Thursday March 7 @ 11:30 am MT
- Friday April 5 @ 11:30 am MT
- Tuesday May 7 @ 11:30 am MT

Peak Flow Webinar

- Wednesday March 20 @ 10:00 am MT

A notification email will be sent if a date or time change occurs. Additional webinars are scheduled as needed.
The webinar slides will be available on the CBRFC presentations page soon after each briefing.

Email Updates

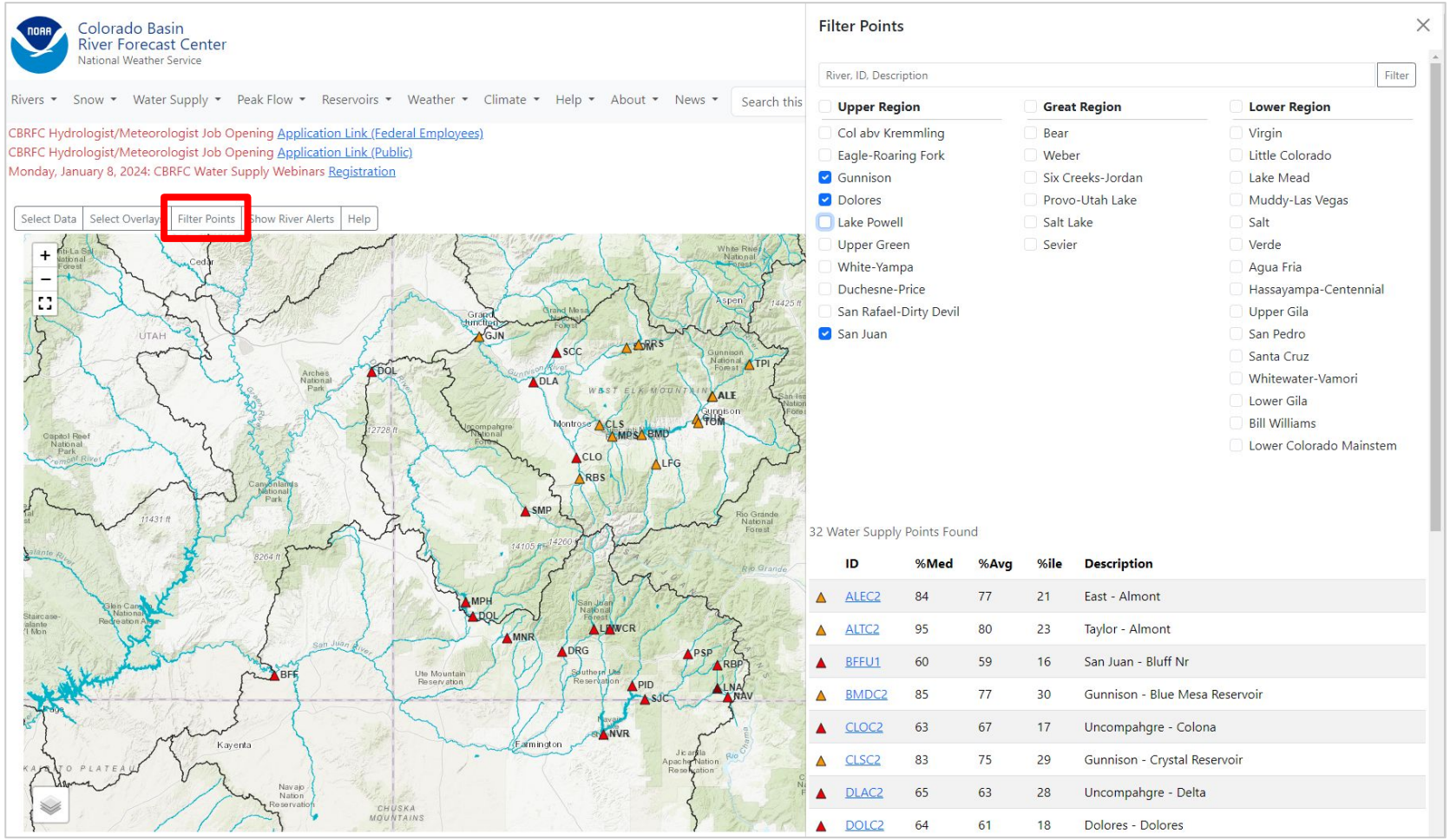
Available Email Lists

- General Stakeholders
- Water Supply: Green River Basin Forecasts
- Water Supply: Upper Colorado Mainstem Forecasts
- Water Supply: San Juan, Gunnison and Dolores River Basins Forecasts
- Water Supply: Eastern Great Basin Forecasts
- Special forecasts for the Dolores River Basin
- Special forecasts for the San Juan River Basin
- Special forecasts for CUWCD
- Upper Basin Reclamation Reservoirs
- Utah Reservoir Forecasts

Addition Requests

- Request to be on one of our lists by emailing cbrfc.webmasters@noaa.gov

CBRFC Webpage Updates - Filter Points Option



CBRFC Webpage Updates - Data Plots

Some older data plots have been migrated to the same software as the updated hydrographs.

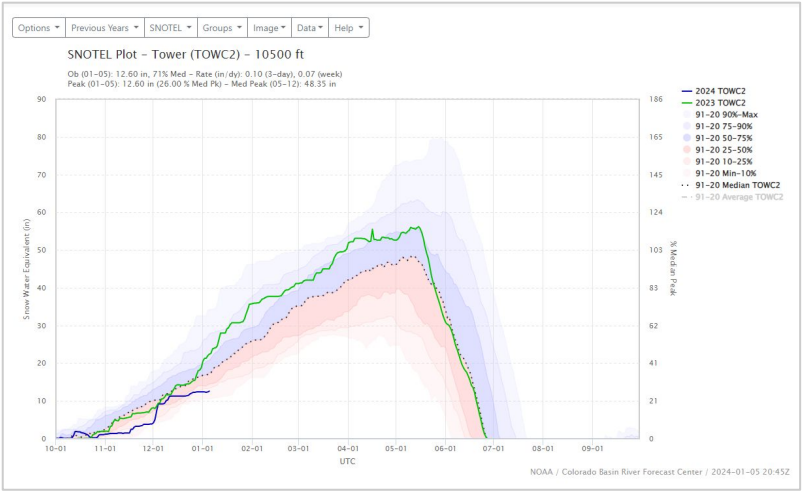
- Snow (SWE) plots
- Water Supply Forecast evolution plots

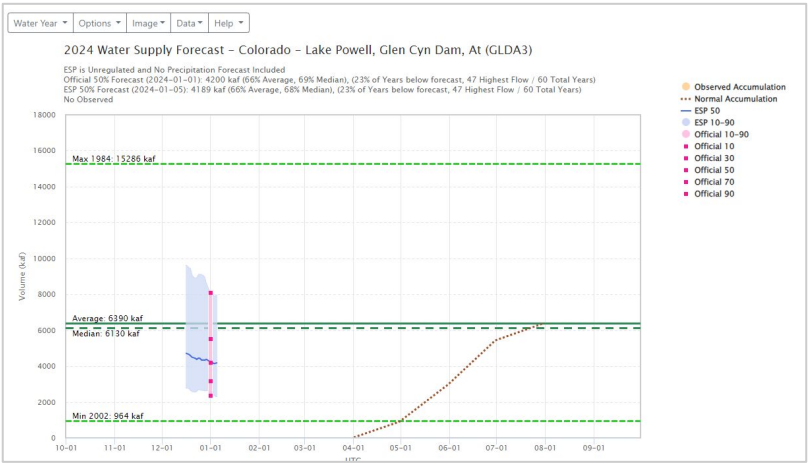
This allows for hover information capability, among other things. It also includes other updates to those pages, most notably the look and location of option menus.

Work is continuing on these plot pages as well as on some of the front page map options.

If you have any questions please feel free to contact one of us directly or send an email to:

cbrfc.webmasters@noaa.gov





CBRFC Contacts & Water Year 2024 Basin Focal Points

Basin Focal Points (Forecasters)

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CBRFC Webpage
https://www.cbrfc.noaa.gov/

CBRFC Water Supply Presentations
https://www.cbrfc.noaa.gov/present/present.html

CBRFC Hydrologist/Meteorologist Job Opening
2 Additional Job Openings Available Soon