

Utah Water Supply Briefing

February 7th, 2023

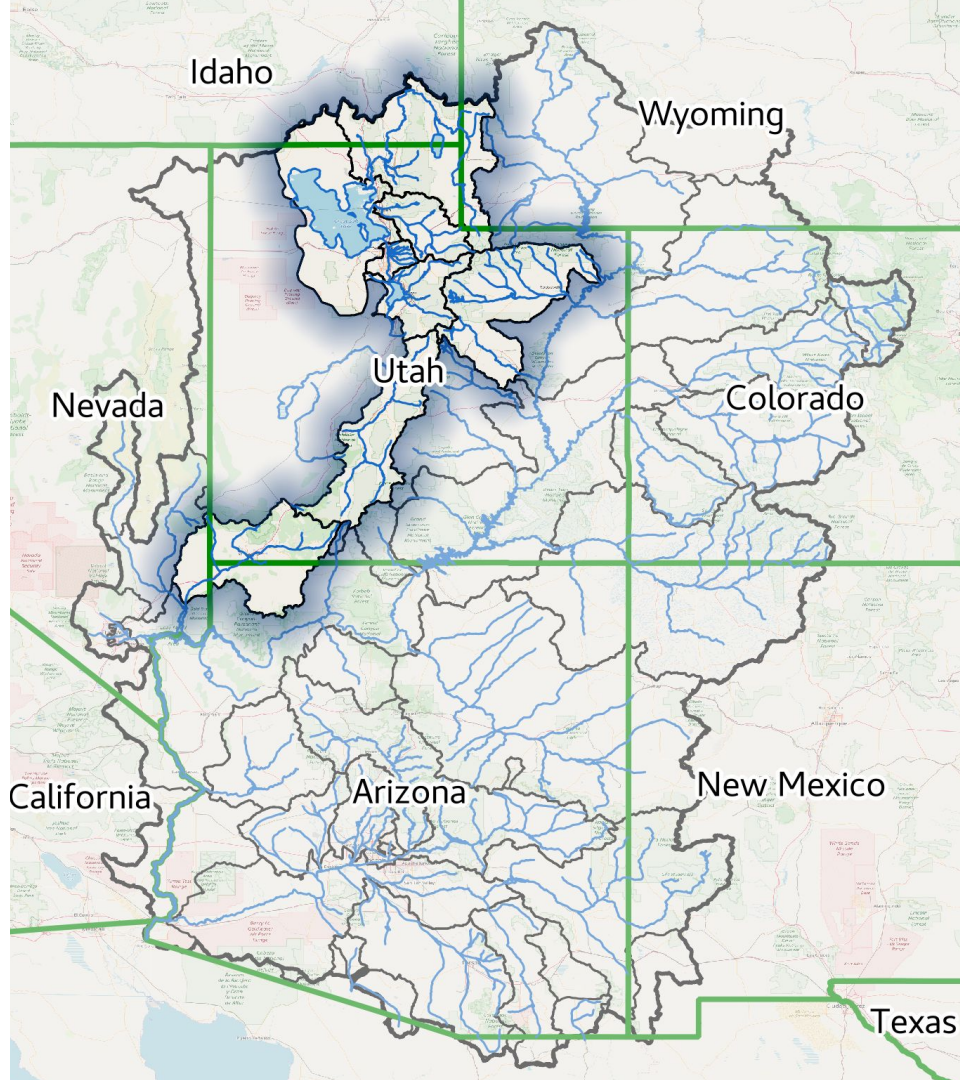
Colorado Basin River Forecast Center

Presenter: - Brenda Alcorn

Utah Forecasters: Trevor Grout
Brenda Alcorn
Patrick Kormos

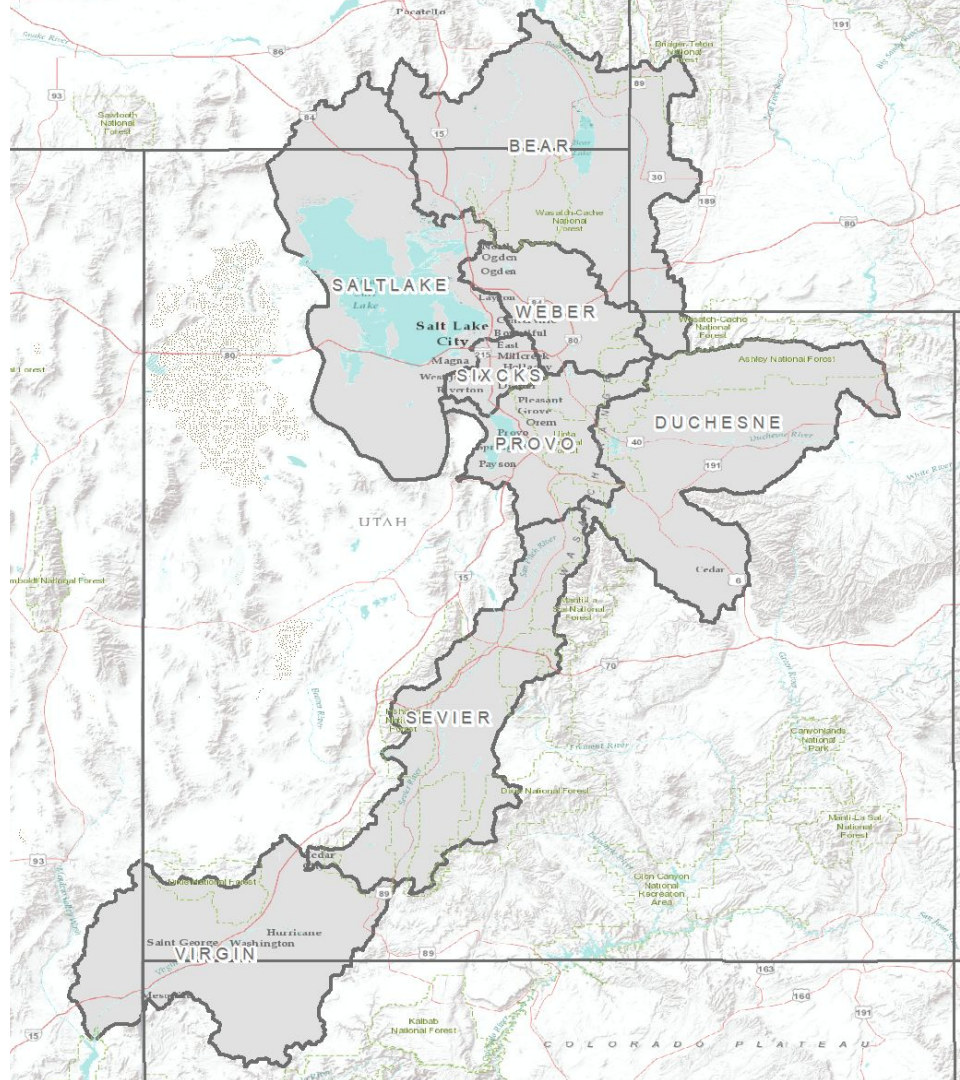
Questions: Type questions into the 'Questions'
Box or Raise Hand

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



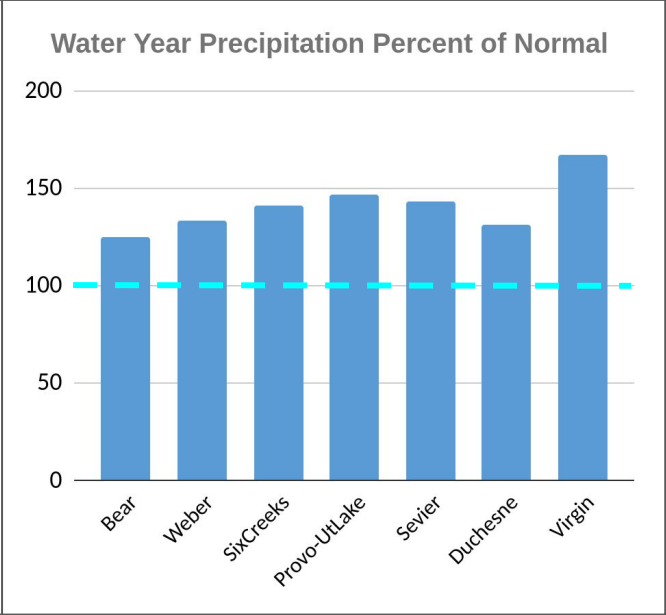
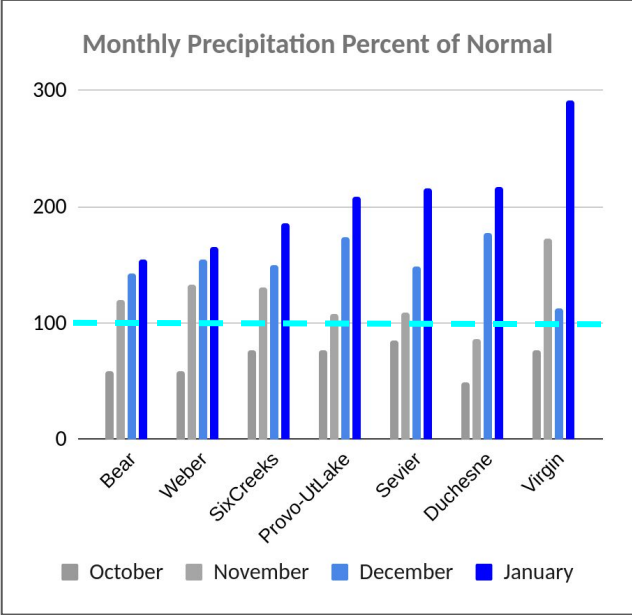
Utah Water Supply Briefing

1. Precipitation Review
2. Current Snowpack
3. Fall Soil Moisture
4. 2023 Water Supply Forecasts
5. Forecast Error
6. Upcoming Weather
7. Contacts & Questions
8. CBRFC Web Page Demo



2023 Water Year Precipitation

- All forecast groups have seen above normal WY precipitation

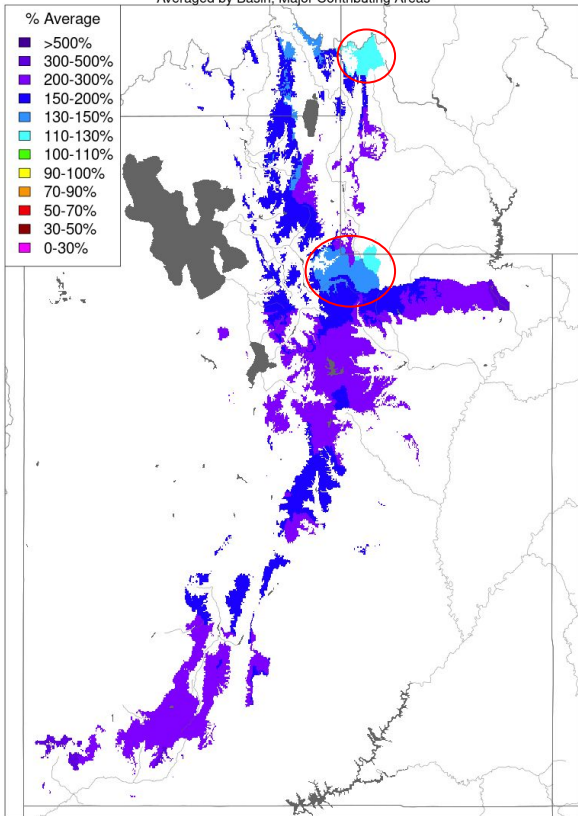


Forecast Group	Percent of WY normal
Bear	125
Weber	134
Six Creeks	142
Provo	148
Sevier	143
Duchesne	132
Virgin	167

Utah Weather Review - Monthly and Seasonal Precipitation

Monthly Precipitation - January 2023

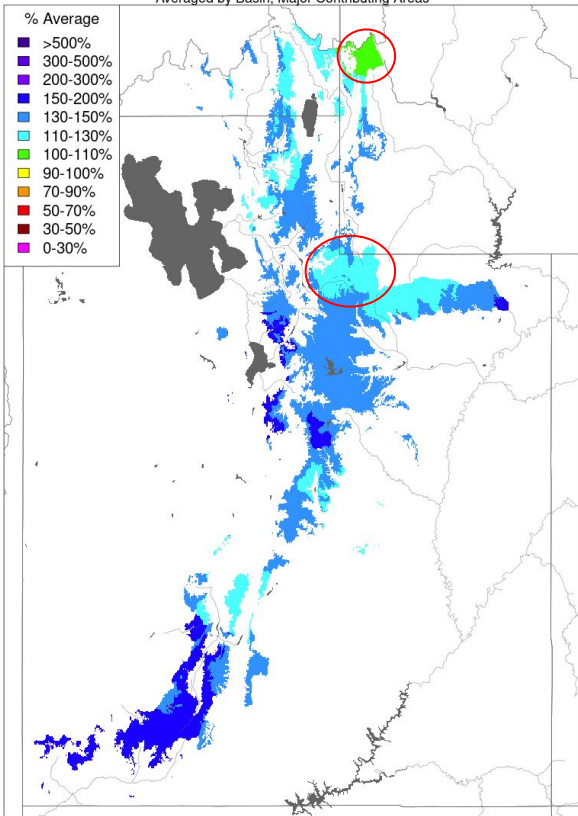
Averaged by Basin, Major Contributing Areas



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Water Year Precipitation, October 2022 - January 2023

Averaged by Basin, Major Contributing Areas



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

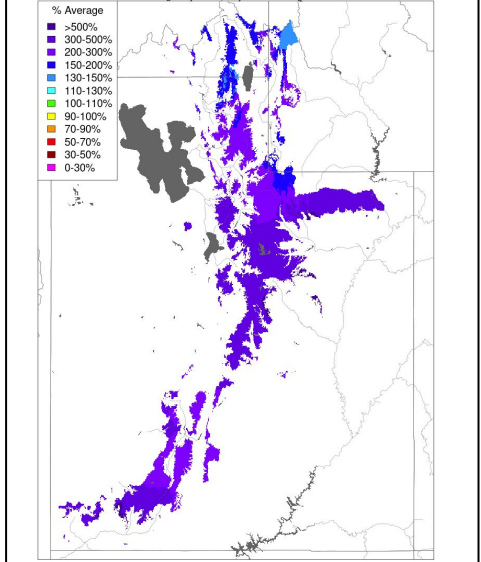
Most of Utah received 150%-300% of average precipitation in January.

- The majority of the January precipitation occurred during the first 18 days

Water year precipitation is above average across Utah.

Month to Date Precipitation - January 18 2023

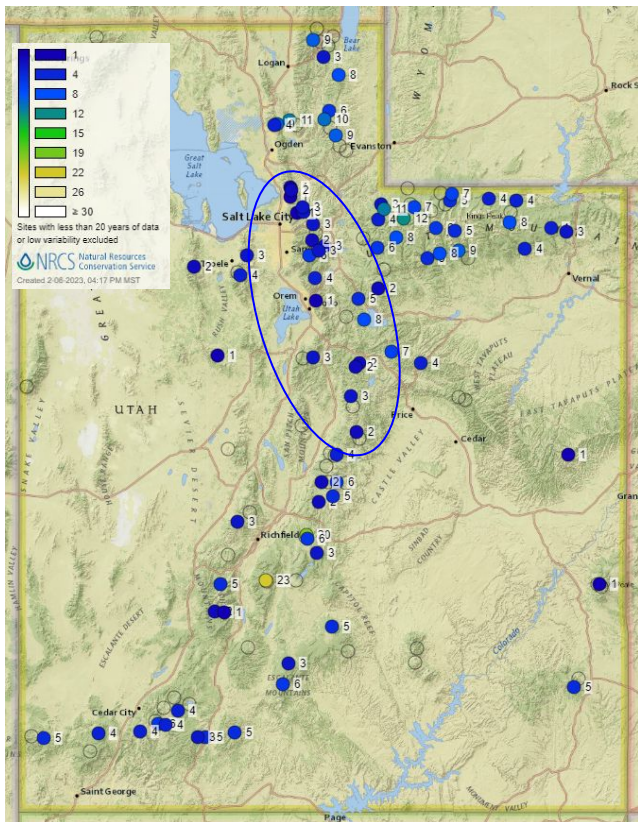
Averaged by Basin, Major Contributing Areas



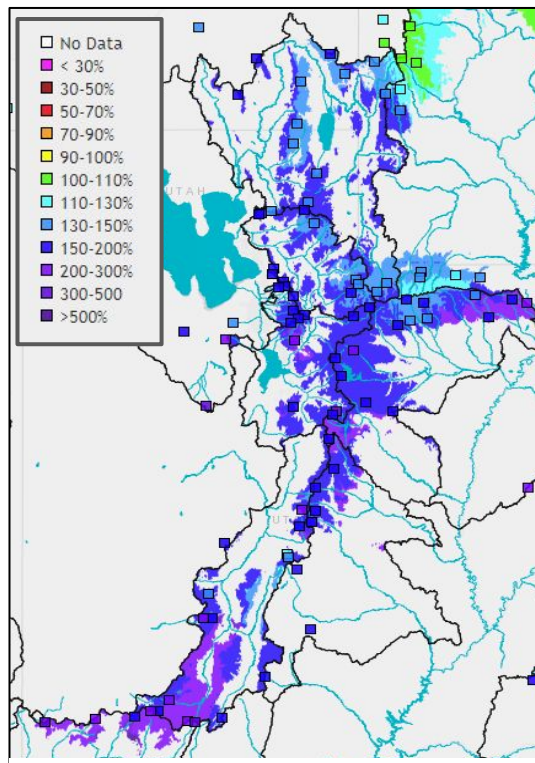
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Utah Current Snowpack: February 6th

NRCS SWE Maximum Rank
February 5, 2023



CBRFC Model SWE %Median
February 6, 2023



Shading = CBRFC Model %median SWE
□ = SNOTEL Observed %median SWE

CBRFC Model Snow by Forecast Group
February 6th % median

Bear	148%
Weber	164%
Six Creeks	168%
Provo	188%
Duchesne	169%
Sevier	175%
Virgin	245%

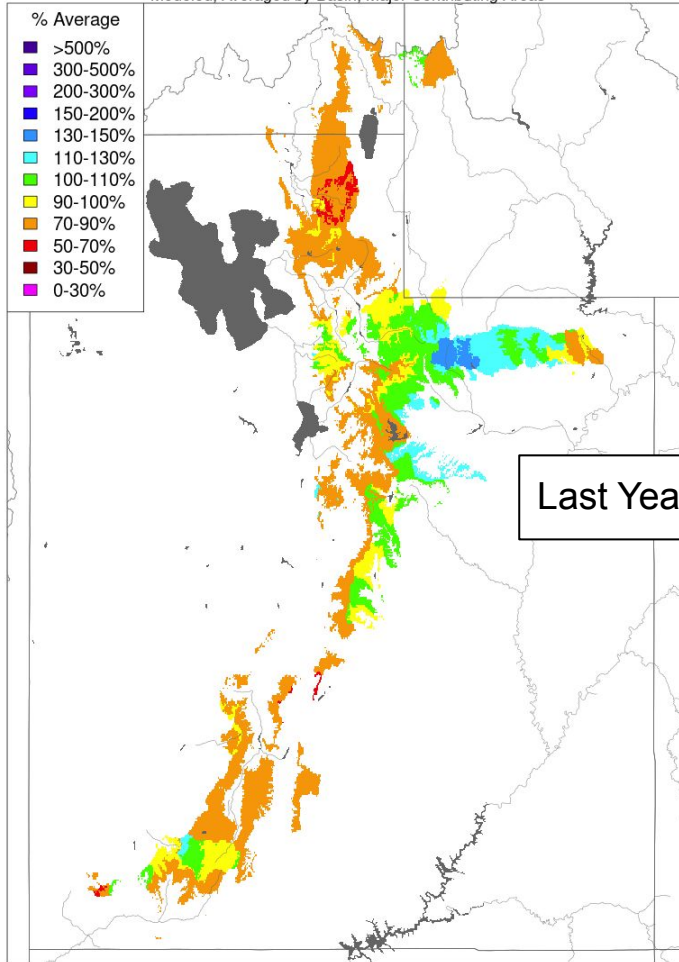
Fall Model Soil Moisture Conditions:

Larger Soil Moisture Deficit than last year

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

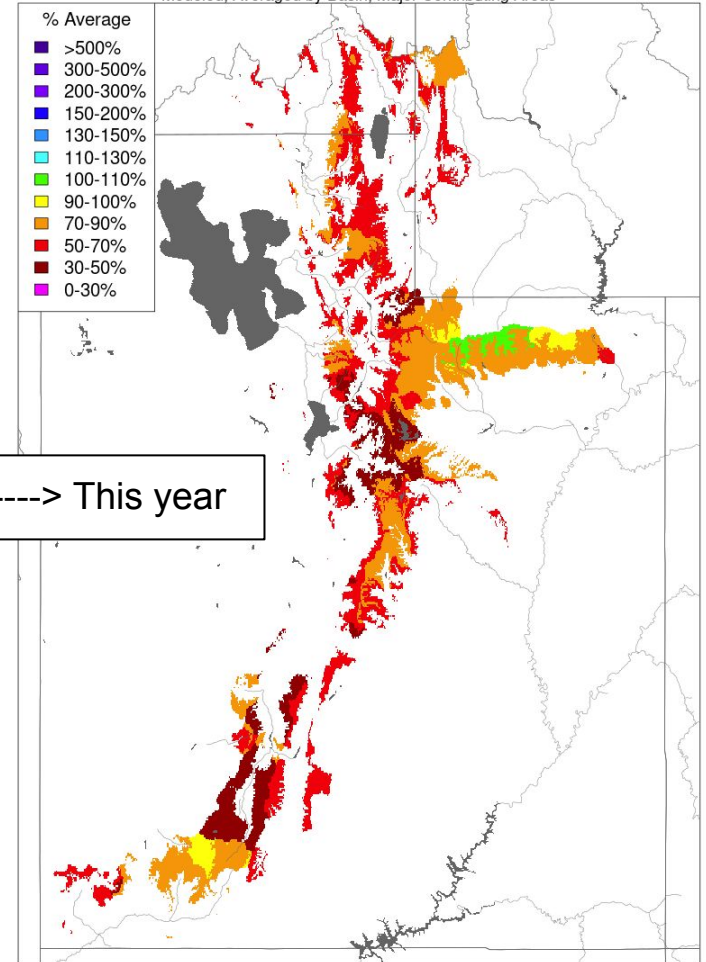
Soil Moisture - Fall - 2021 (November 15)

Modeled, Averaged by Basin, Major Contributing Areas



Soil Moisture - Fall - 2022 (November 02)

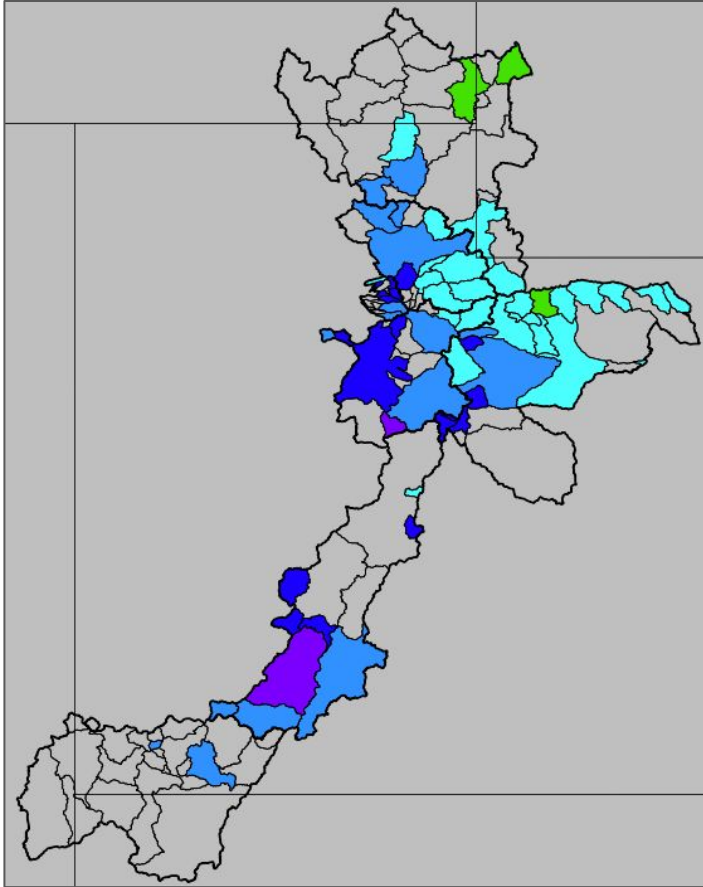
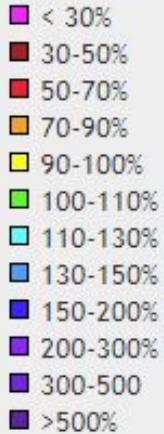
Modeled, Averaged by Basin, Major Contributing Areas



Last Year -----> This year

Utah Water Supply Forecasts

Percent of
Average



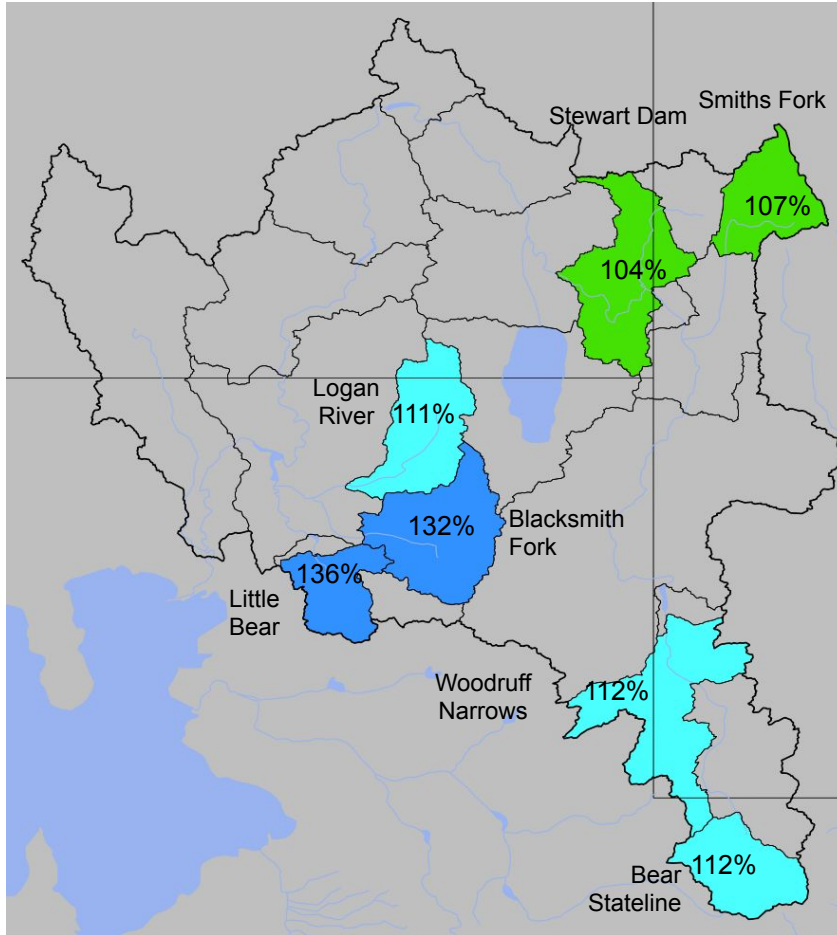
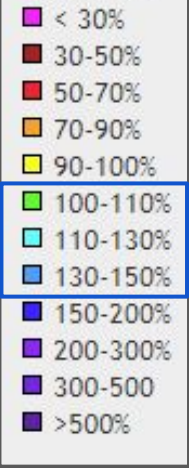
- February 1 forecast for April-July volume
- April-July forecast streamflow volumes are in percent of 1991-2020 average.

Median forecasts by forecast group.

Bear	120%
Weber	120%
Six Creeks	155%
Provo / Utah Lake	145%
Sevier	150%
Duchesne	115%
Virgin	145%

Utah Water Supply Forecasts - Bear

Percent of Average



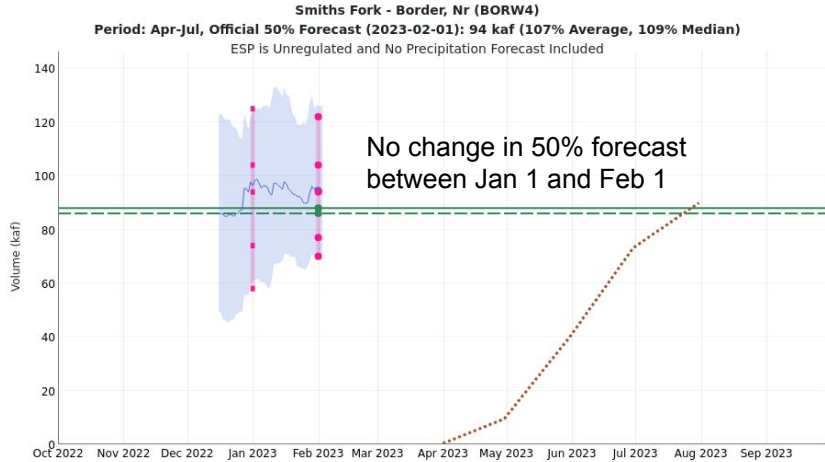
Bear River Basin Forecasts

January: 110% of Normal

February: 120% of Normal

- Forecasts range from 104-136% of normal

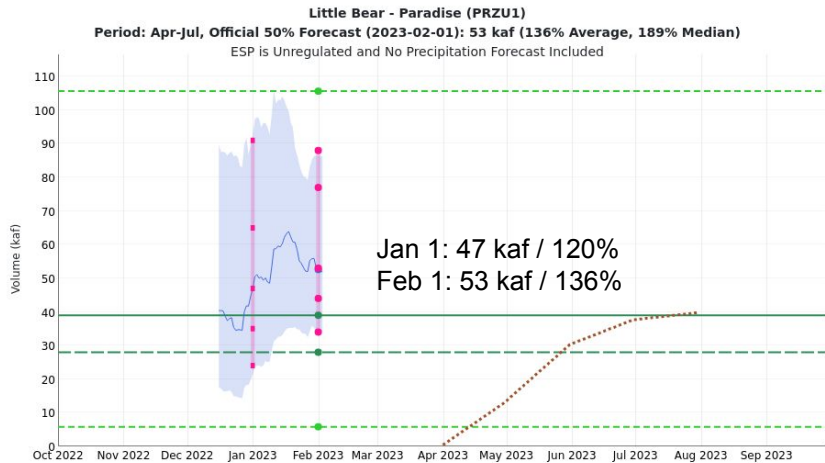
Utah Water Supply Forecasts - Bear



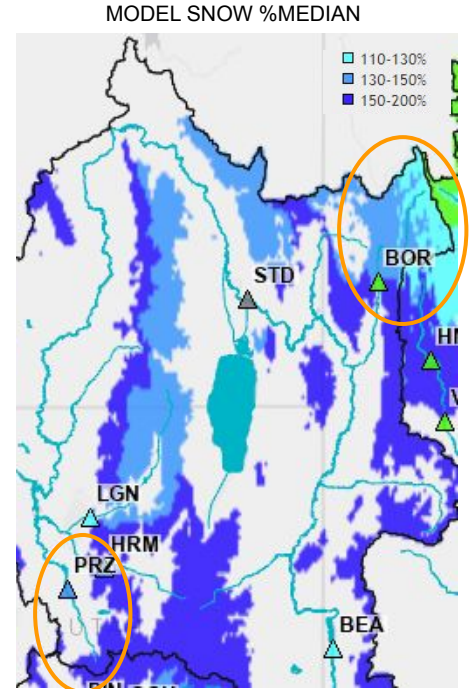
2023/02/01:
 Average: 88
 Median: 86
 ESP: 94.5
 Official 10: 122
 Official 30: 104
 Official 50: 94
 Official 70: 77
 Official 90: 70

- Official 10: 122 → 10% chance of exceeding 122 KAF
- Official 30: 104 → 50% chance of exceeding 94 KAF
50% chance of **NOT** exceeding 94 KAF
- Official 50: 94
- Official 70: 77 → 90% chance of exceeding 70 KAF
- Official 90: 70

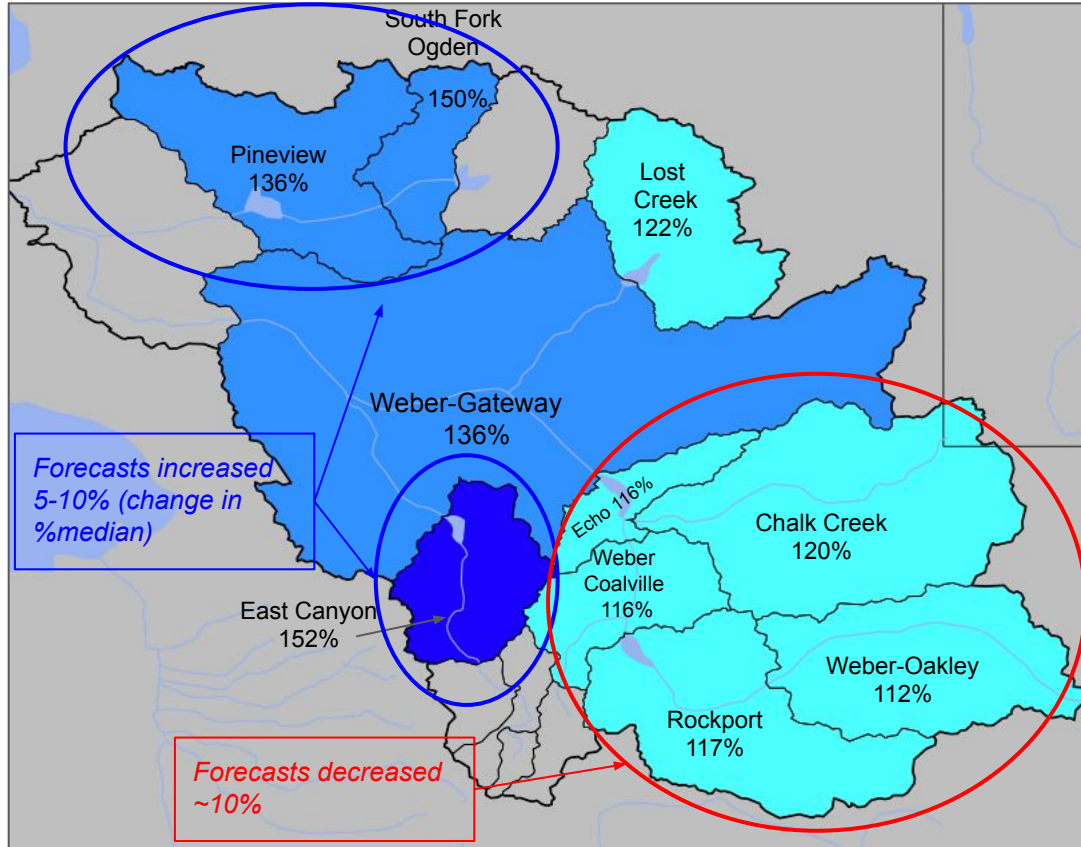
*20% chance observed runoff volume could be outside of the forecast range.
 Large amount of uncertainty and spread in the forecast.*



2023/02/01:
 Max 2011: 105.64
 Min 2021: 5.83
 Average: 39
 Median: 28
 ESP: 52.6
 Official 10: 88
 Official 30: 77
 Official 50: 53
 Official 70: 44
 Official 90: 34



Utah Water Supply Forecasts - Weber



Weber River Basin Forecasts

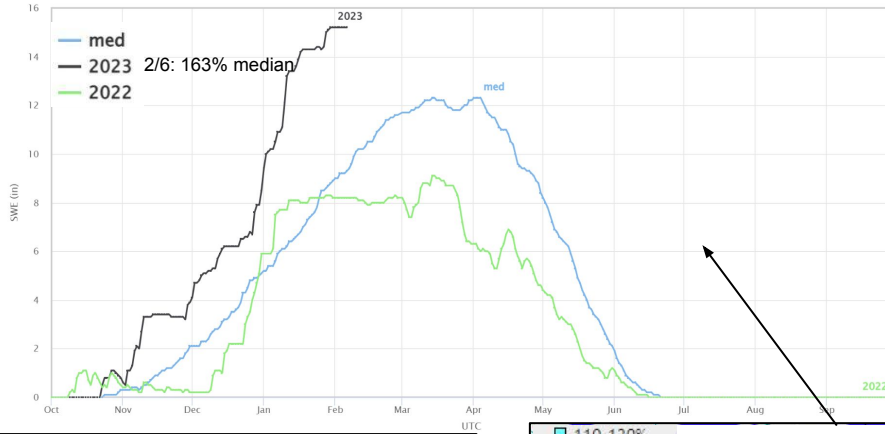
January: 130% of Normal

February: 120% of Normal

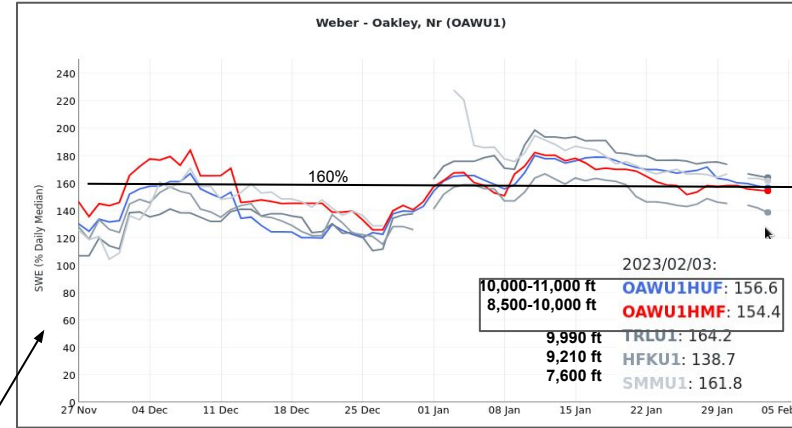
- Forecasts range from 112-152% of normal

Utah Water Supply Forecasts - Weber

CBRFC Model Group SWE Plot
Weber Basin



MODEL SEGMENT SNOW - % DAILY MEDIAN



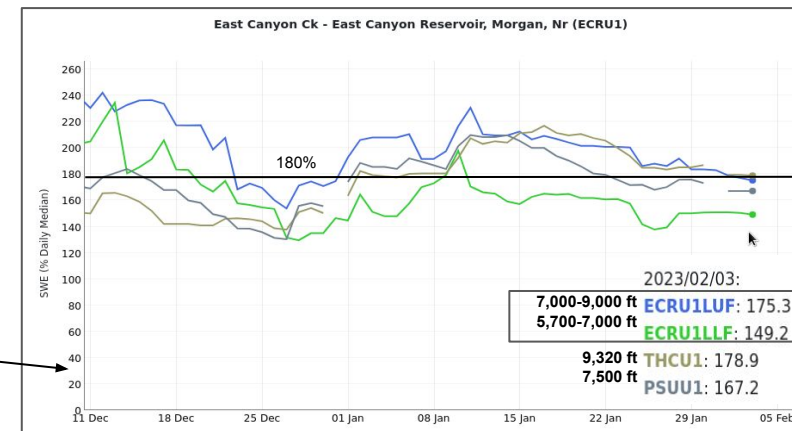
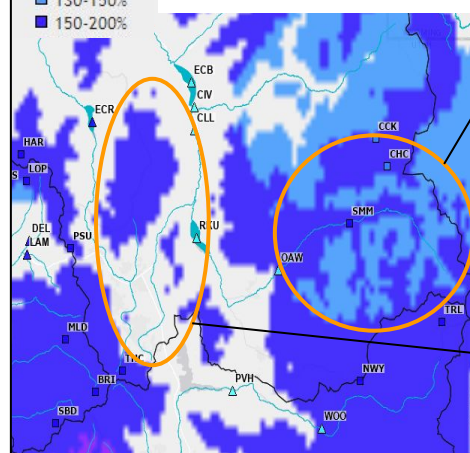
CBRFC Model Group SWE Plot

- similar to SNOTEL group plots
- averages all significant areas within the basin
- no weighting of areas
- not yet available on web

CBRFC Model Segment SWE

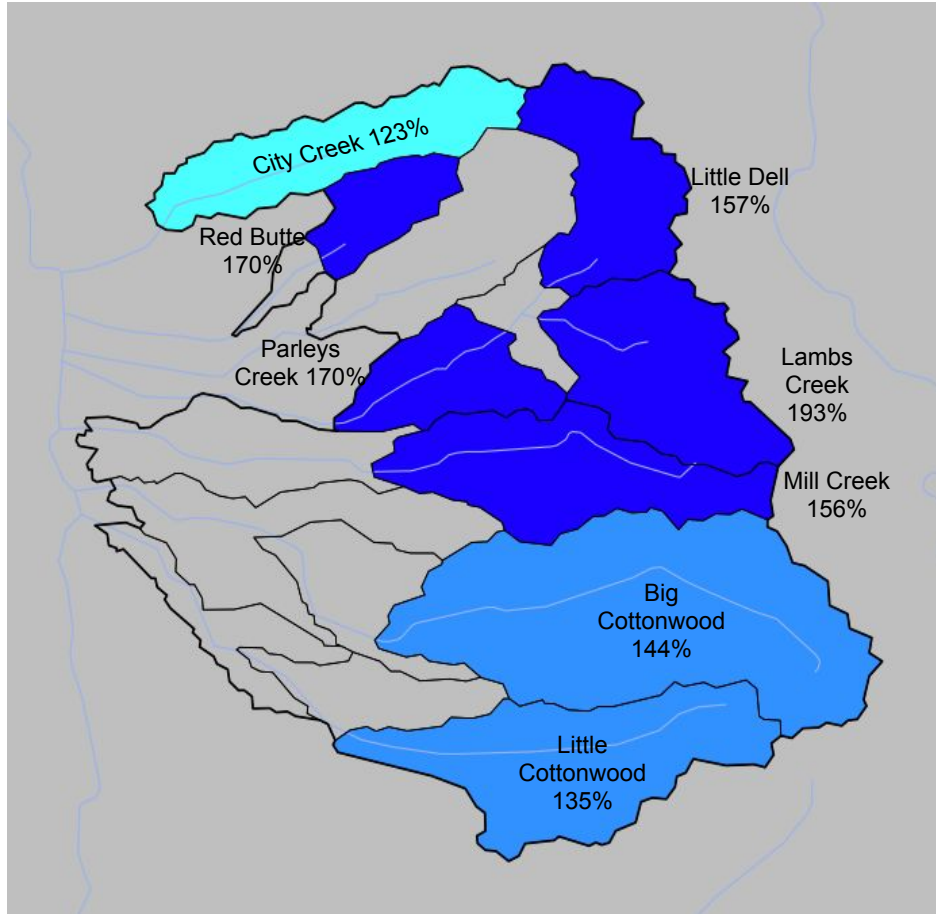
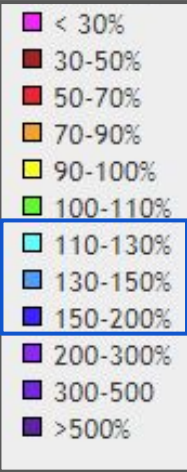
- individual elevation zones for a specific forecast point
- local segment area only (does not include all upstream areas if not a headwater)
- available on web

MODEL SNOW %MEDIAN



Utah Water Supply Forecasts - Six Creeks

Percent of Average



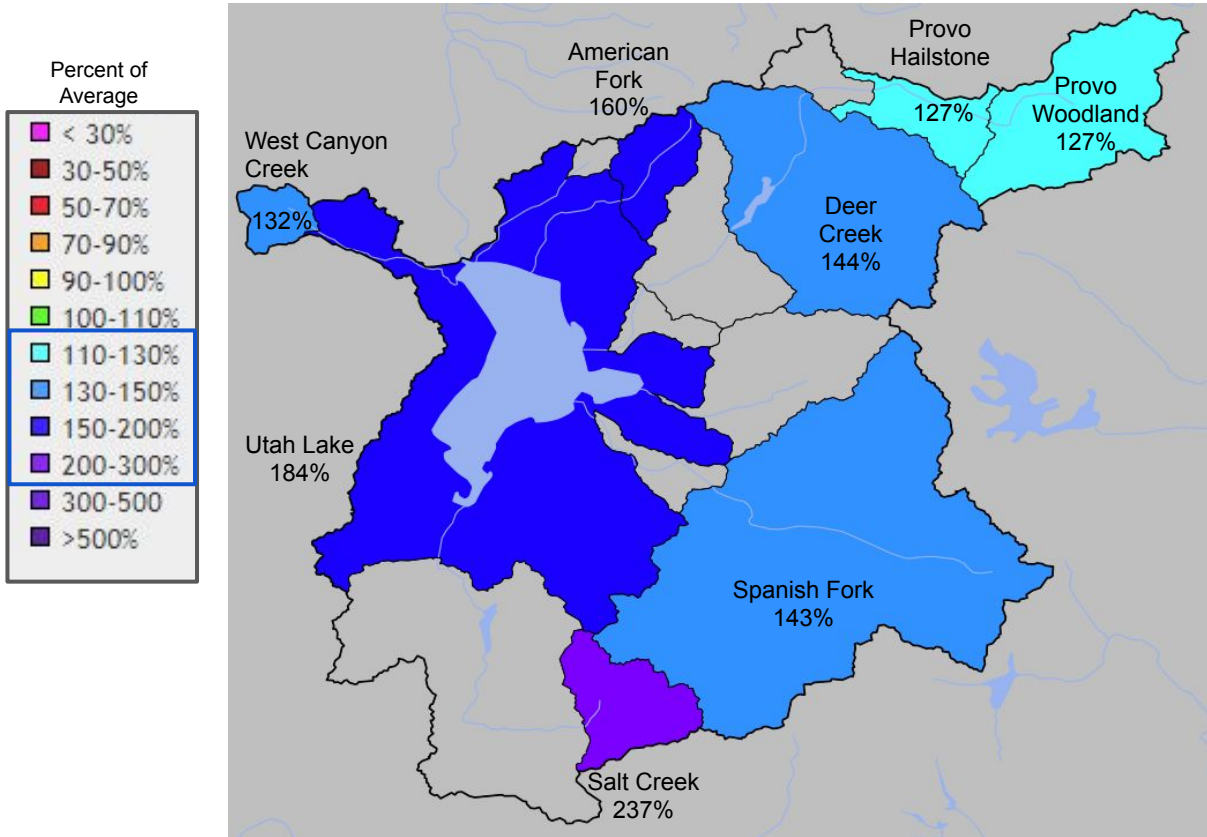
Six Creeks Basin Forecasts

January: 135% of Normal

February: 155% of Normal

- Forecasts range from 123-193% of normal

Utah Water Supply Forecasts - Utah Lake Basin



Utah Lake Basin Forecasts

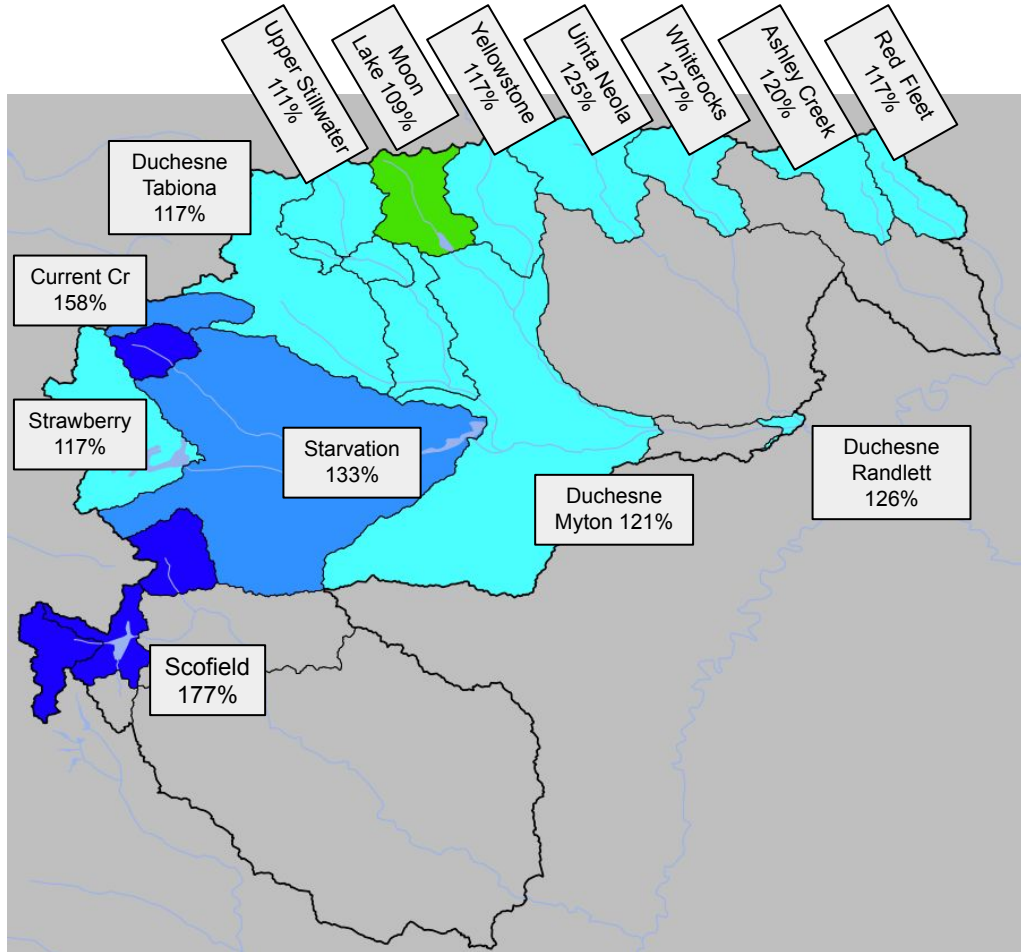
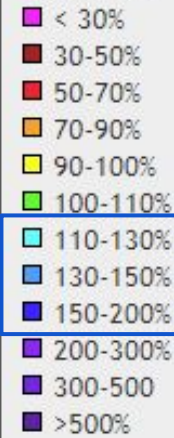
January: 135% of Normal

February: 145% of Normal

- Forecasts range from 127% to >200% of normal

Utah Water Supply Forecasts - Duchesne

Percent of Average



Duchesne River Basin

January: 110% of Normal

February: 115% of Normal

- Forecasts range from 109% - 158% of normal

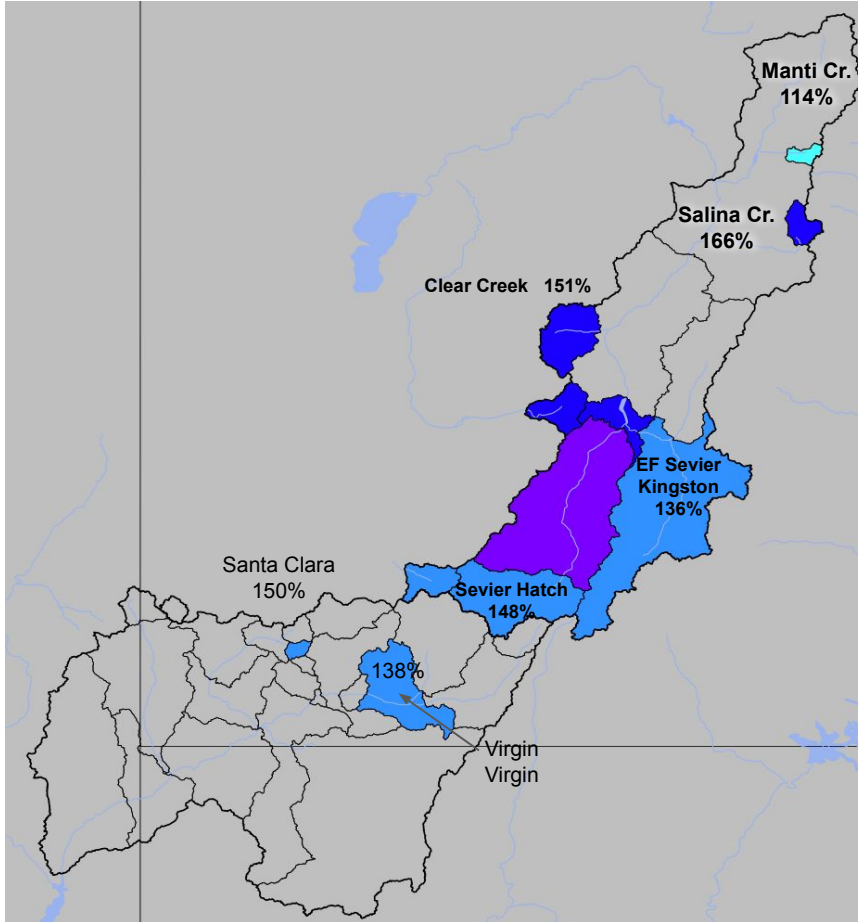
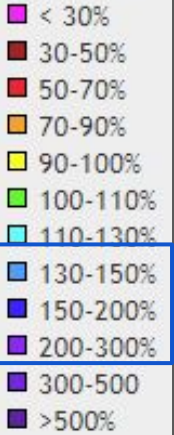
Price River Basin

January: 162% of Normal

February: 177% of Normal

Utah Water Supply Forecasts - Sevier and Virgin

Percent of Average



Sevier River Basin Forecasts (regulated)

January: 110% of Normal
February: 150% of Normal

- Forecasts range from 115-205% of normal

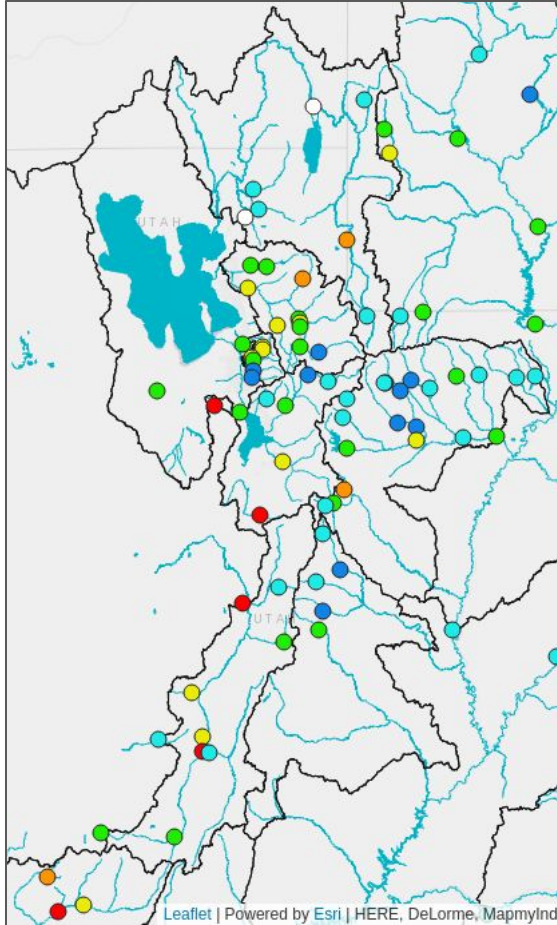
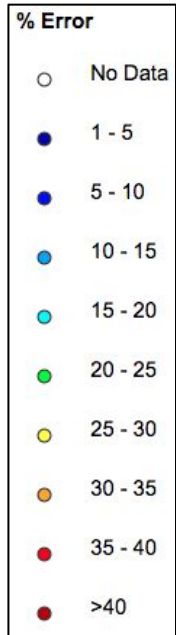
Virgin River Basin Forecasts

January: 100% of Normal
February: 145% of Normal

- Forecasts range from 138-150% of normal

Historical Forecast Verification

February Forecast Error: April-July Volume



Location

BEAR - UTAH-WYOMING STATE
BEAR - WOODRUFF NARROWS
LOGAN - LOGAN- NR
WEBER - OAKLEY- NR
WEBER - ROCKPORT RES
BIG COTTONWOOD CK
PROVO - WOODLAND- NR
PROVO - DEER CK RES
VIRGIN - VIRGIN

Feb 1 Forecast Error

20%
38%
22%
19%
25%
18%
20%
26%
34%

Error tends to decrease each month into the spring

Where Forecasts are Better:

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

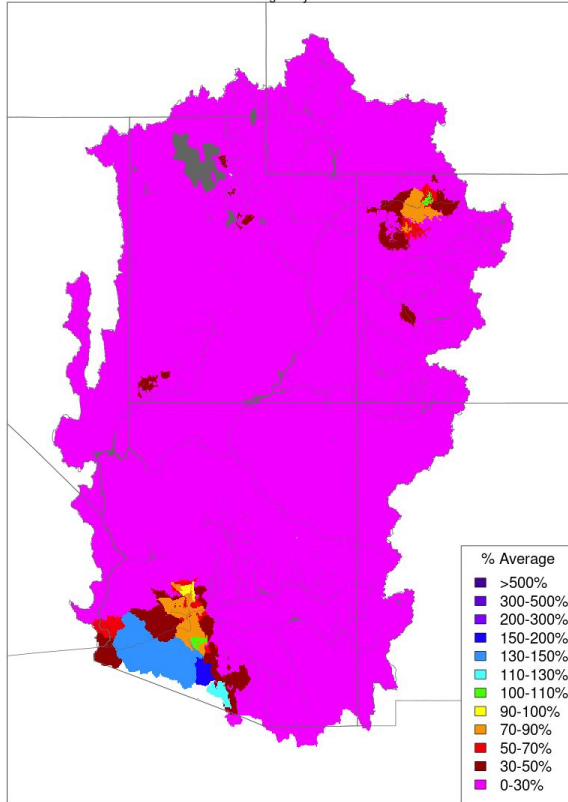
Where Forecasts are Worse:

- 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.

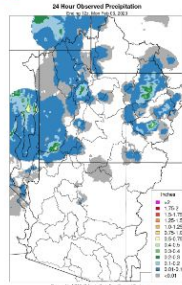
February 2023 Month-To-Date Precipitation

Month to Date Precipitation - February 06 2023
Averaged by Basin

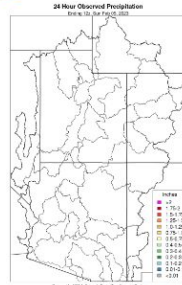


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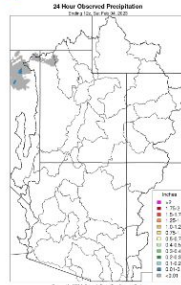
06



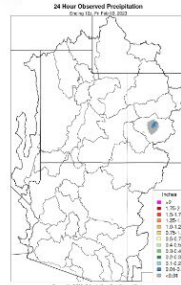
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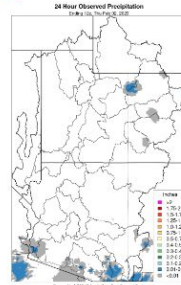
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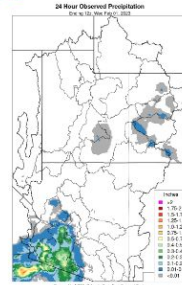
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02



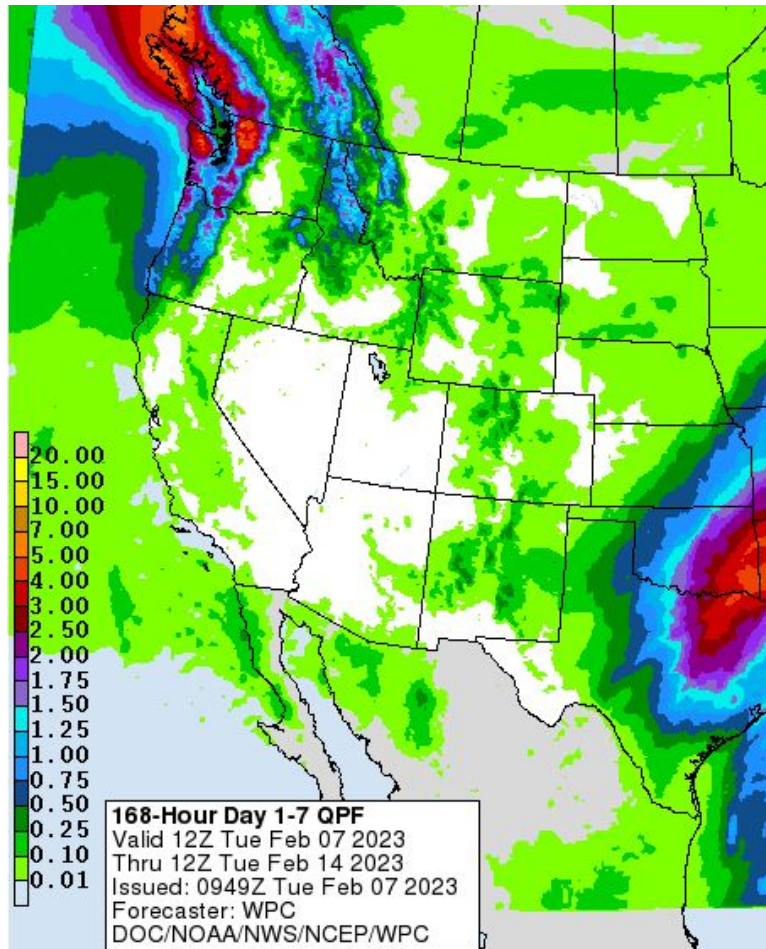
01



Mostly dry/less active
early February weather
across the region.

Water Year 2023 CBRFC Model SWE (Significant Runoff Areas) Percent of 1991-2020 Median			
	Feb1	Feb6	Change
GREAT BASIN			
Bear	156	148	-8
Weber	169	164	-5
Six Creeks	175	168	-7
Provo/Utah Lake	191	188	-3
Sevier	183	175	-8
Virgin	263	245	-18
Duchesne	174	169	-5

Upcoming Weather: WPC February 7-14 Precipitation Outlook



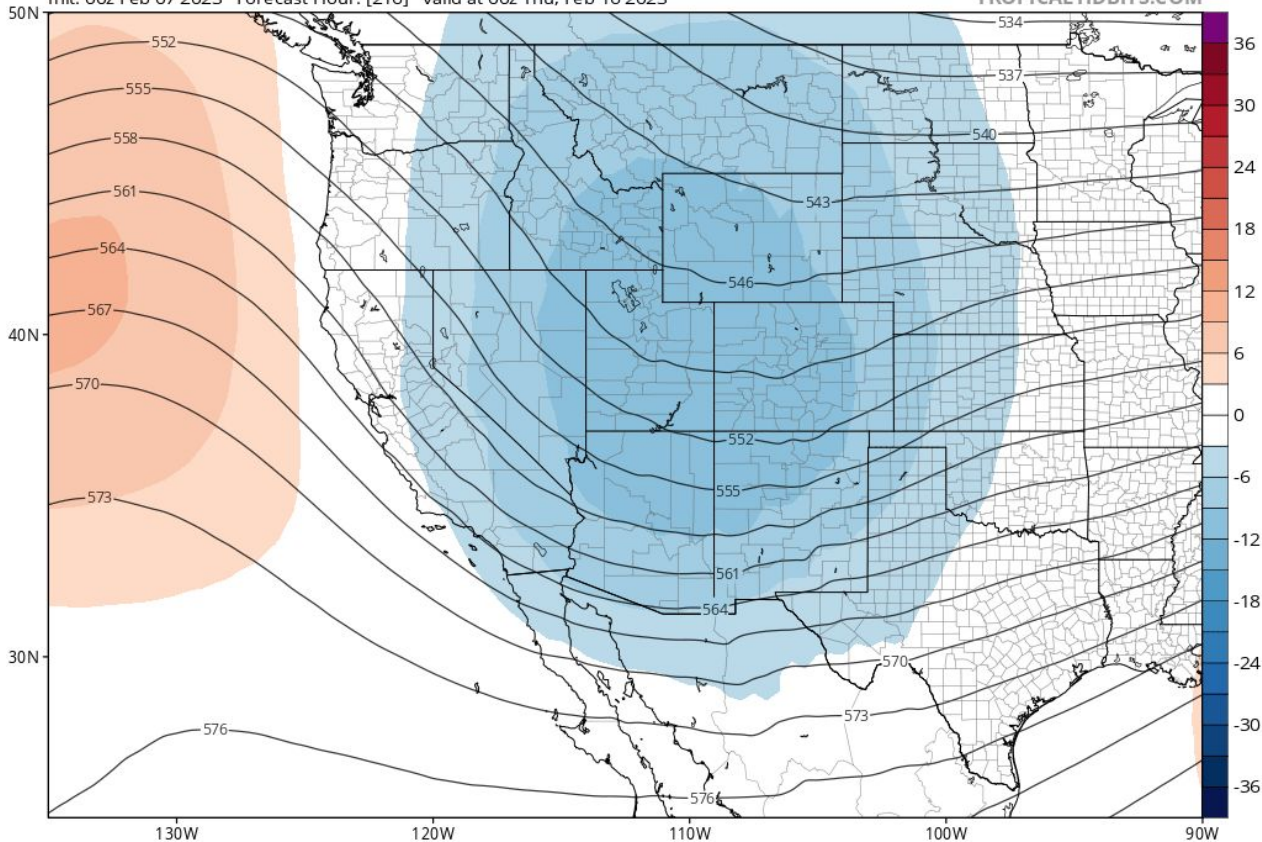
- A glancing trough will bring precipitation to northern Utah on Wednesday
 - Highest QPF less than 0.25"
- A ridge of high pressure will bring quiet weather and warming temperatures through Saturday
- On Sunday, a trough of low pressure begins to form and moves towards Arizona
 - This will bring below average temperatures but little precipitation to Utah

Upcoming Weather: Mid-February (February 7-16)

GEFS 500mb Geopotential Height & Anomaly (dam) (based on CFSR 1981-2010 Climatology)

Init: 00z Feb 07 2023 Forecast Hour: [216] valid at 00z Thu, Feb 16 2023

TROPICALTIDBITS.COM



- An eastern Pacific ridge and Western US troughing pattern will remain in place
- This setup will favor below normal temperatures
- Additionally, chances of precipitation remain, though as in the 7-day forecast, no single event should produce substantial QPF

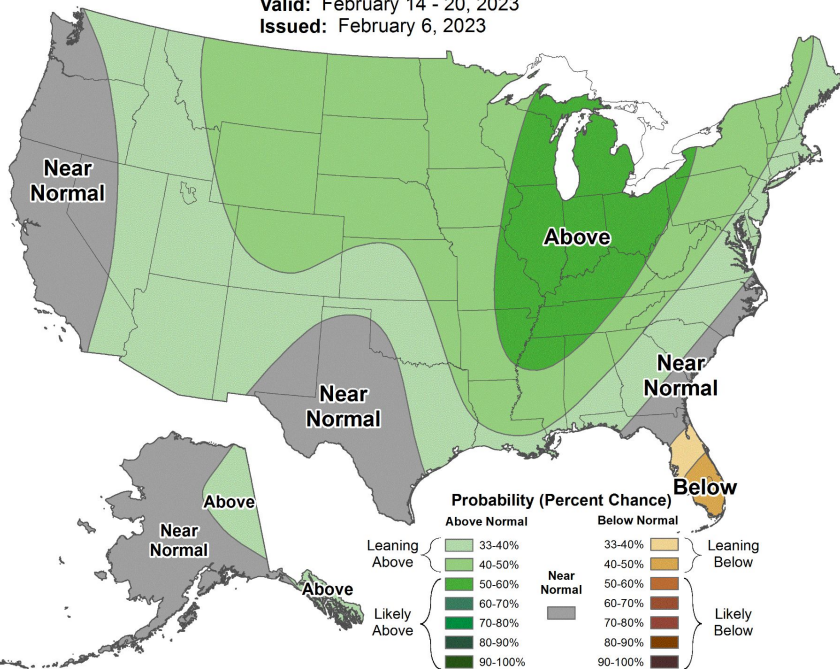
Upcoming Weather: 8-14 Day Outlook (February 14-20)

Slightly elevated odds of above average precipitation.
Elevated odds of below average temperatures across the entire region.



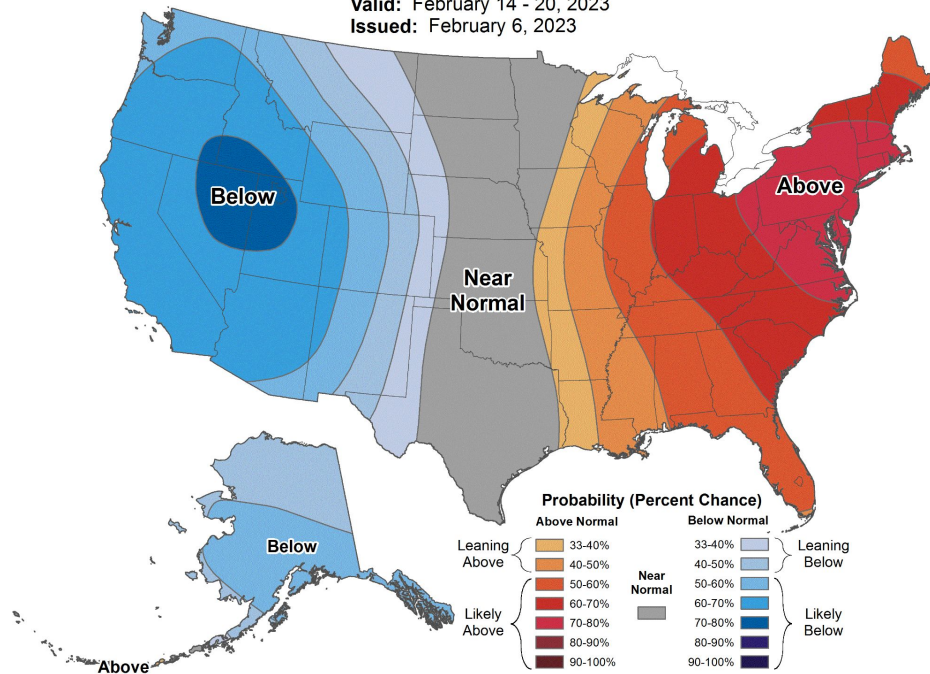
8-14 Day Precipitation Outlook

Valid: February 14 - 20, 2023
Issued: February 6, 2023



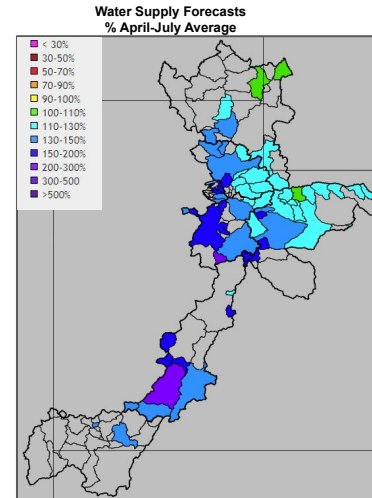
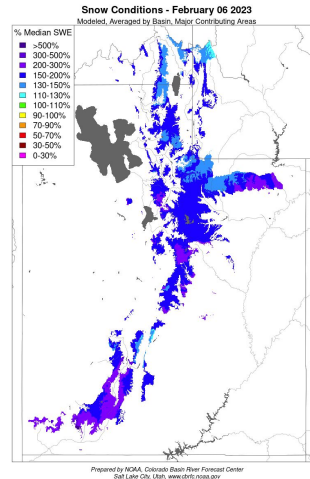
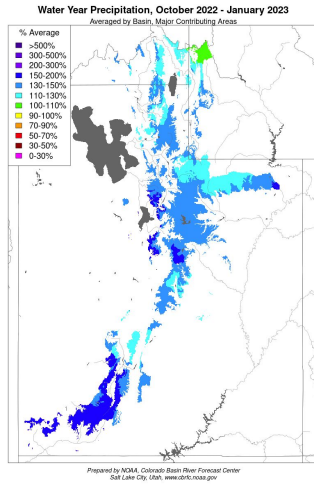
8-14 Day Temperature Outlook

Valid: February 14 - 20, 2023
Issued: February 6, 2023



Summary

- It is still early in the snow accumulation / water supply forecasting season.
 - Generally accumulate snow through March
- Water year precipitation is much above average across Utah.
- Current snowpack is much above average across Utah.
 - Current SWE values are above the average seasonal peak in most places.
- Water supply forecasts are above to much above average across Utah.
- Weather has been drier the last 2 ½ weeks. There are indications of a return to a more active pattern, however it does not look as wet as January.



2023 Water Supply Webinar Schedule

**All Times Mountain Time (MT)*

Colorado River Basin

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

Utah/Great Basin

Monday	Jan 9th	11:30 am
Tuesday	Feb 7 th	11:30 am
Tuesday	Mar 7 th	11:30 am
Friday	Apr 7 th	11:30 am
Friday	May 5 th	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 Contacts & WY23 Basin Focal Points

Basin Focal Points (Forecasters)

Brenda Alcorn - Green, Duchesne, White/Yampa
brenda.alcorn@noaa.gov

Ashley Nielson – Gunnison, San Juan, Dolores, Lake Powell
ashley.nielson@noaa.gov

Cody Moser – Upper Colorado Mainstem
cody.moser@noaa.gov

Patrick Kormos – Great Basin/Sevier
patrick.kormos@noaa.gov

Trevor Grout - Virgin, Lower Colorado
trevor.grout@noaa.gov

Tracy Cox - Hydrometeorologist
tracy.cox@noaa.gov

Nanette Hosenfeld - Senior Hydrometeorologist
nanette.hosenfeld@noaa.gov

Wolfgang Hanft - Hydrometeorologist
wolfgang.hanft@noaa.gov

Michelle Stokes – Hydrologist In Charge
michelle.stokes@noaa.gov

Paul Miller– Service Coordination Hydrologist
paul.miller@noaa.gov

John Lhotak – Development and Operations Hydrologist
john.lhotak@noaa.gov

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

CBRFC Operations
cbrfc.operations@noaa.gov
801-524-4004

CBRFC Water Supply Presentations
<https://www.cbrfc.noaa.gov/present/present.php>

