

Utah Water Supply Briefing

February 7th, 2022

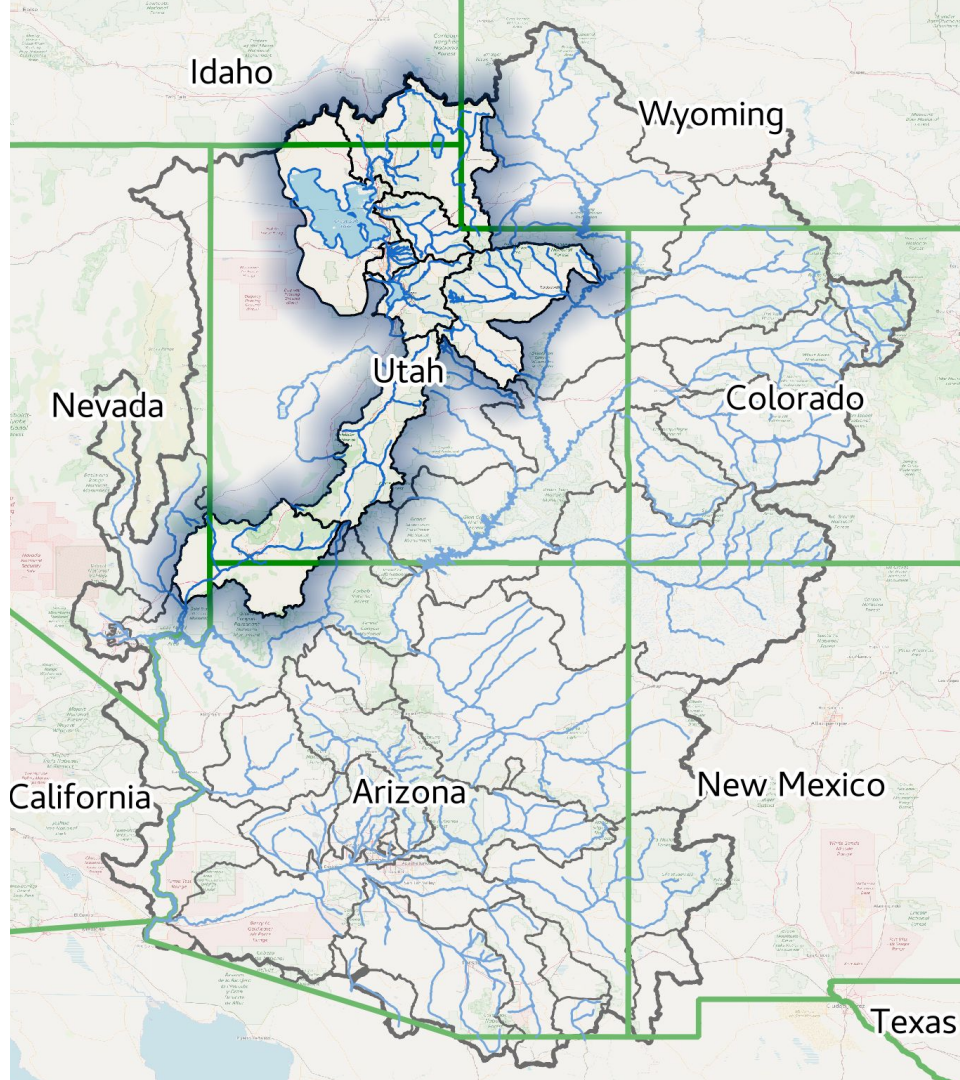
Colorado Basin River Forecast Center

Presenter: Patrick Kormos - Hydrologist

Utah Forecasters: Trevor Grout
Brenda Alcorn
Patrick Kormos

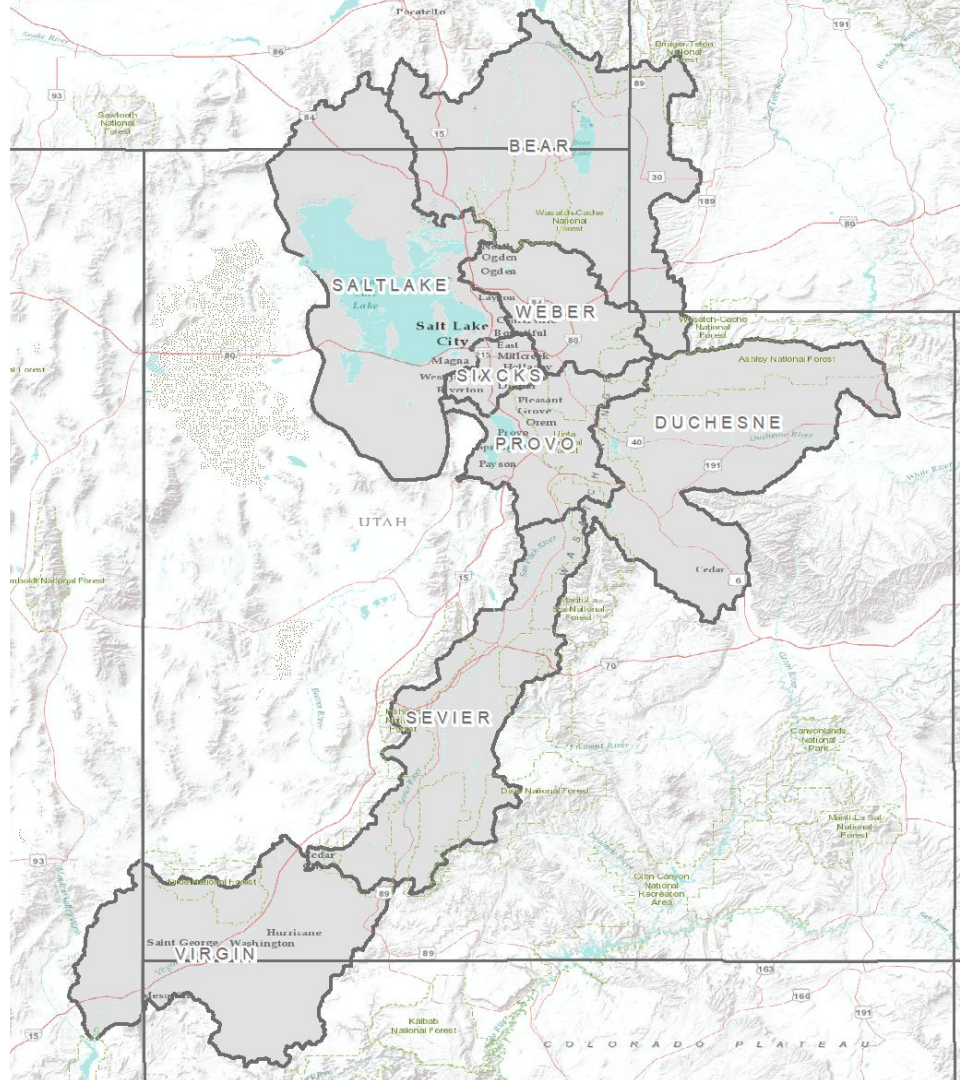
Questions: Type questions into the 'Questions'
Box or Raise Hand

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



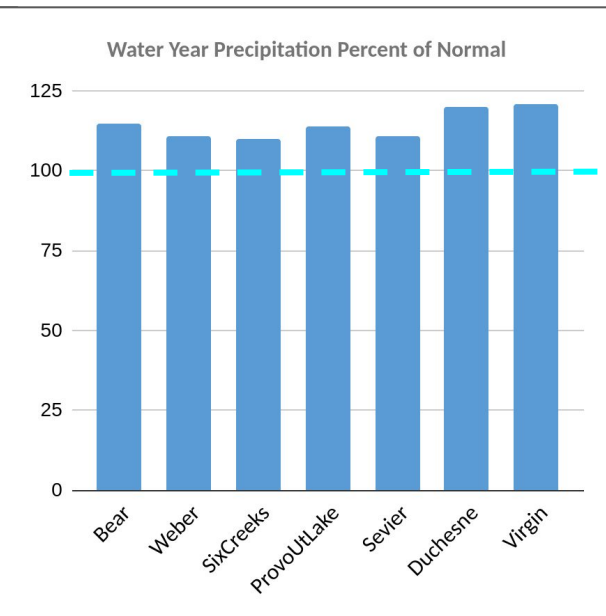
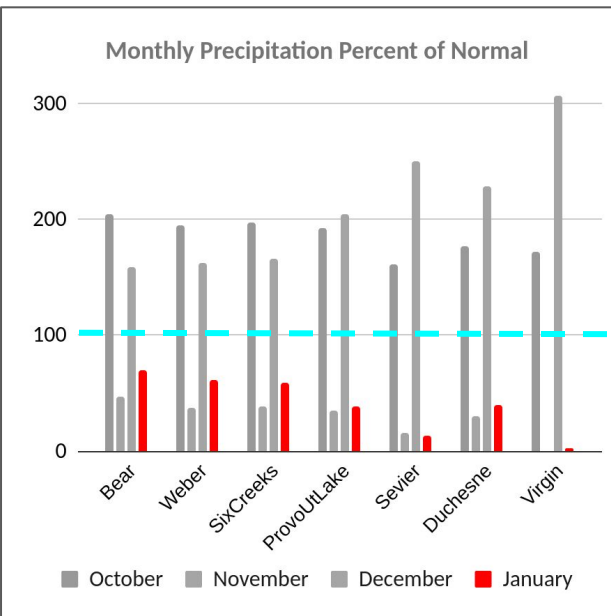
Utah Water Supply Briefing

1. Weather Review (Precipitation)
2. Current Snowpack
3. 2022 Water Supply Forecasts
4. Early Season Forecast Error
5. Upcoming Weather
6. Science Update: New Normals
7. Contacts & Questions



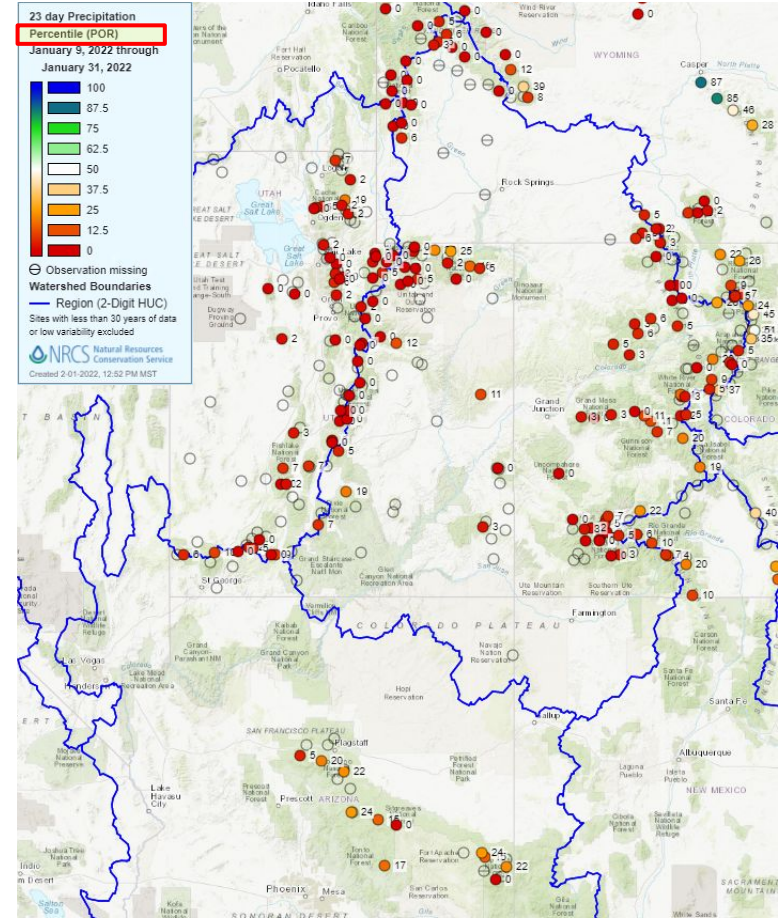
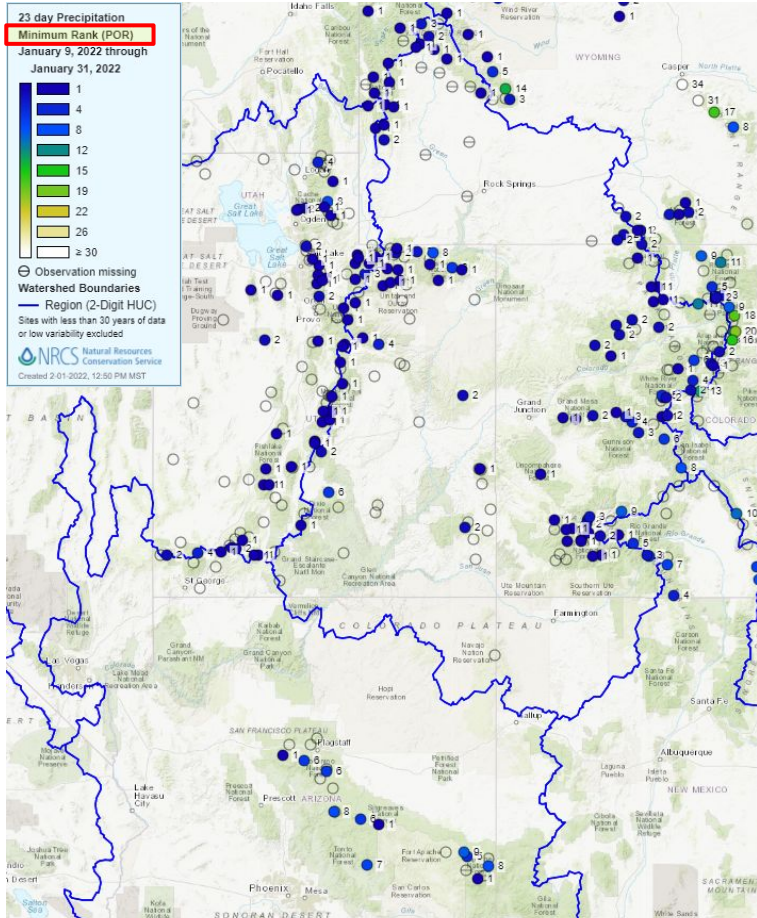
2022 Water Year Precipitation October - December

- Much above normal precip.
 - October, December
- Much below normal precip.
 - November, January



Forecast Group	Percent of WY normal
Bear	115
Weber	110
Six Creeks	110
Provo	115
Sevier	110
Duchesne	120
Virgin	120

January 9th-31st Precipitation: Record/Near Record Dry

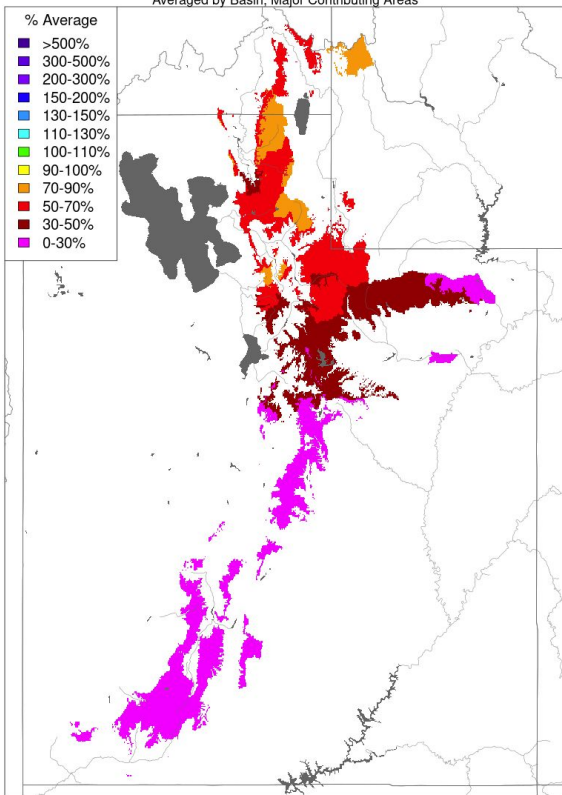


Utah Weather Review - Precipitation

January 2022

Monthly Precipitation - January 2022

Averaged by Basin, Major Contributing Areas

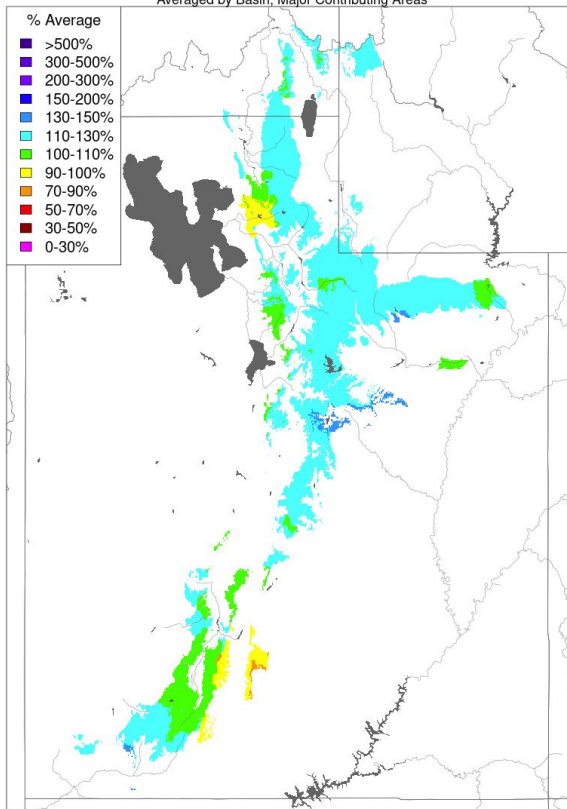


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

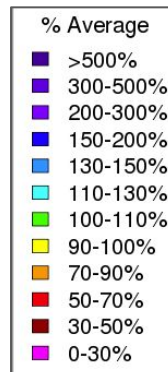
Water Year Precipitation to Date (Jan. 31)

Water Year Precipitation, October 2021 - January 2022

Averaged by Basin, Major Contributing Areas

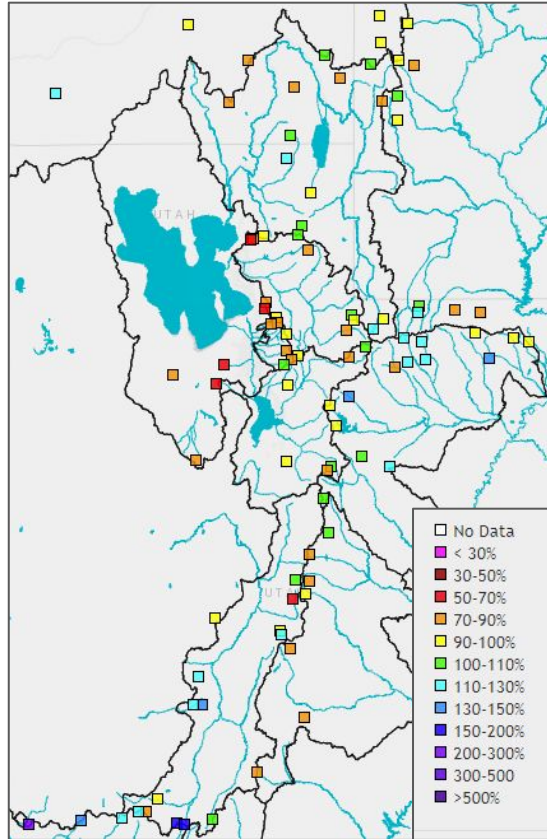


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

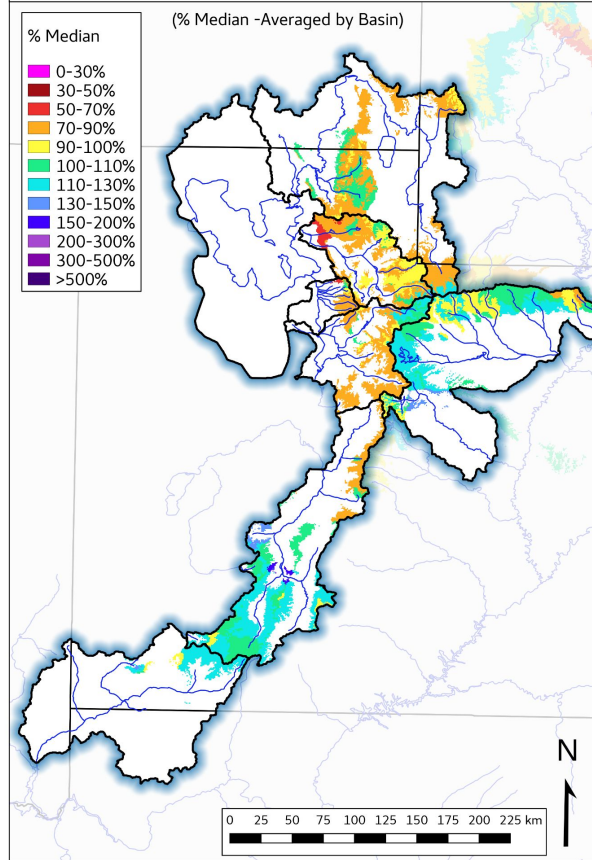


Utah Current Snowpack - February 2

SNOTEL (Observed)



CBRFC Model Snow, Significant Areas - Feb 2, 2022

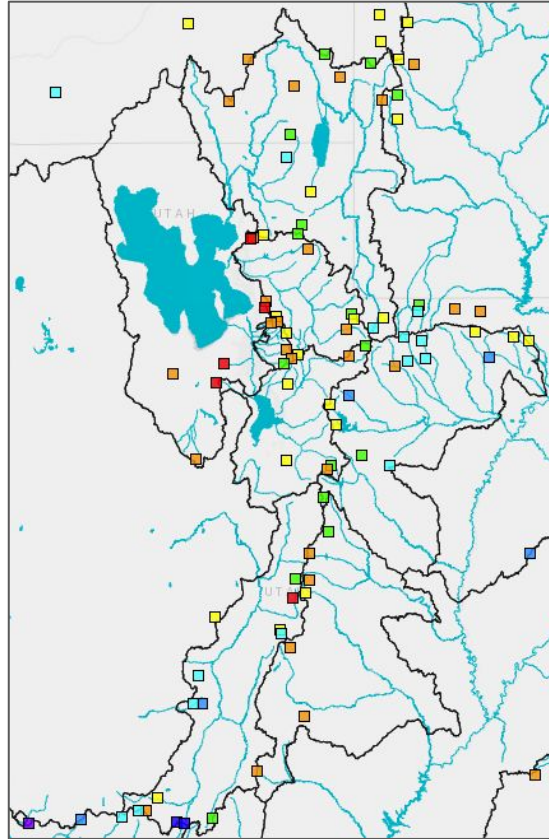


As of February 1, 2022
CBRFC Snow Groups (SNOTEL Stations)

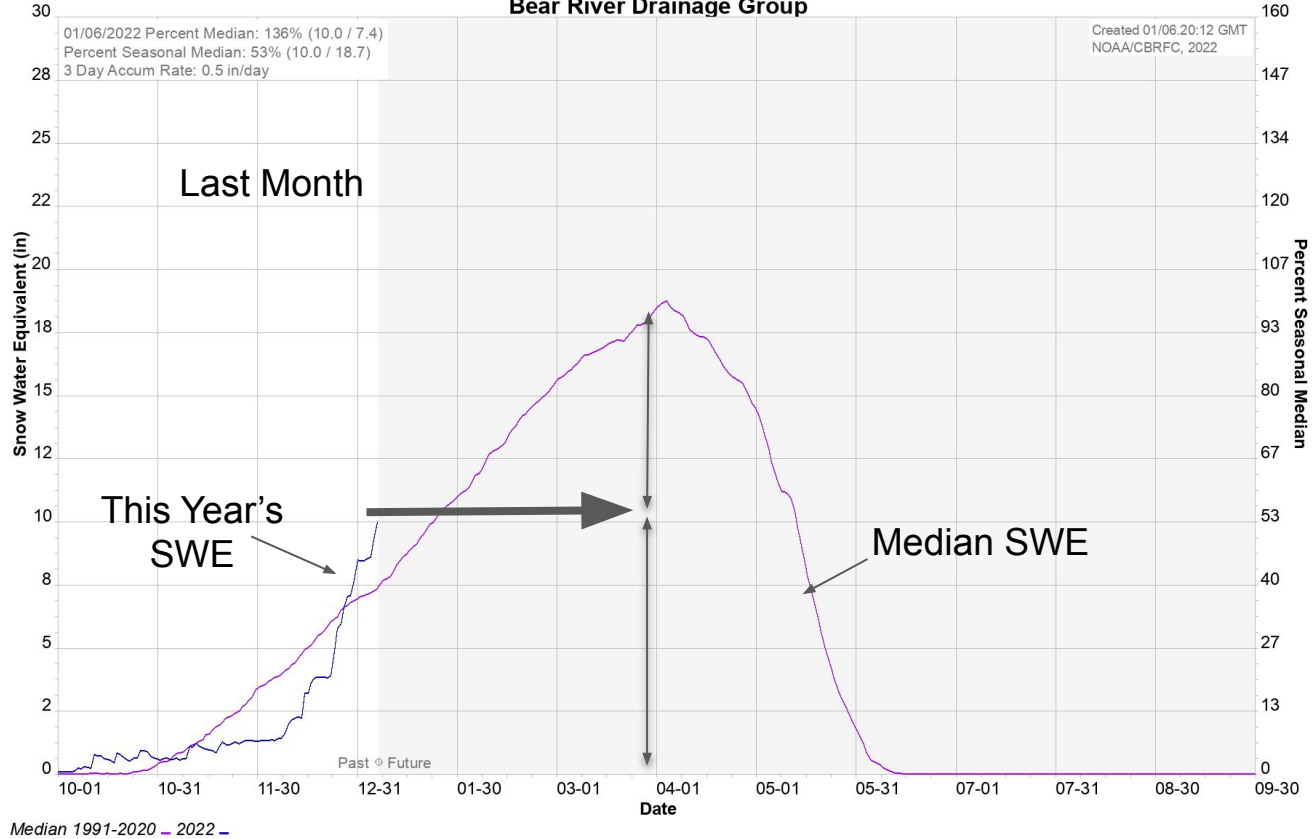
Bear	105%
Weber	90%
Six Creeks	95%
Provo	95%
Duchesne	120%
Sevier	110%
Virgin	115%

Utah Current Snowpack

SNOTEL (Observed)

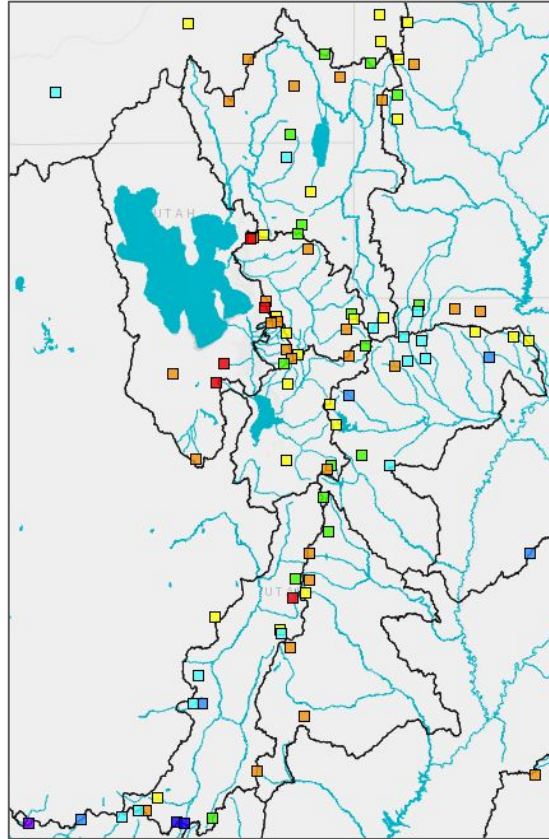


Colorado Basin River Forecast Center
Bear River Drainage Group

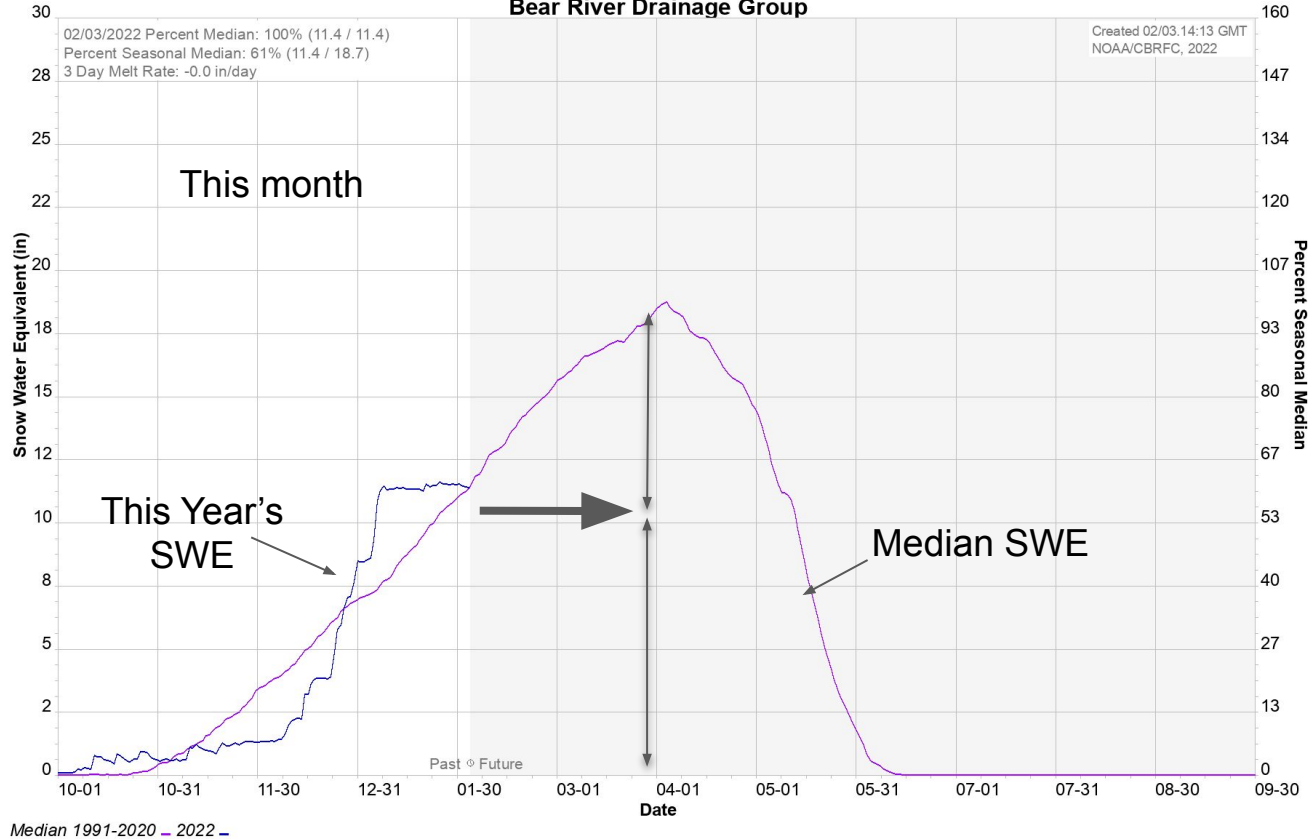


Utah Current Snowpack

SNOTEL (Observed)

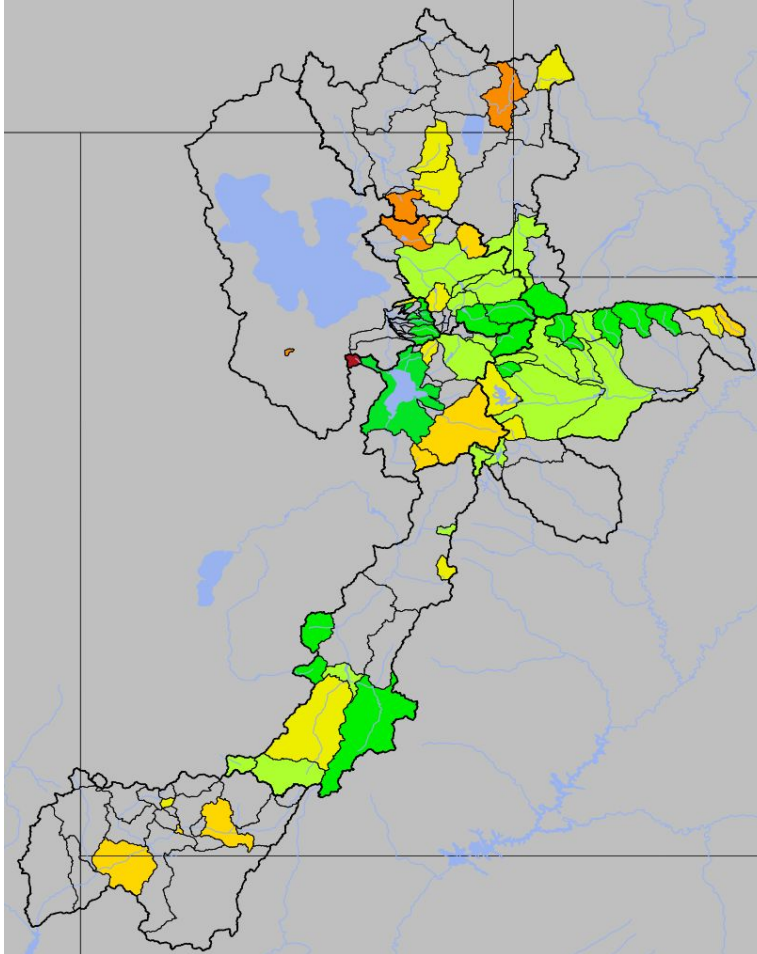
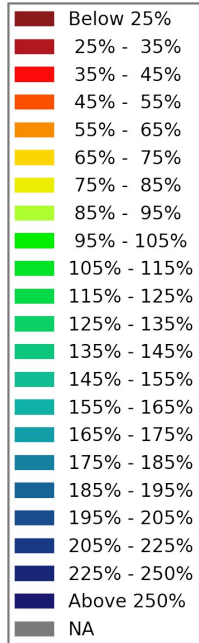


Colorado Basin River Forecast Center
Bear River Drainage Group



Utah Water Supply Forecasts - Overview

Percent of Average



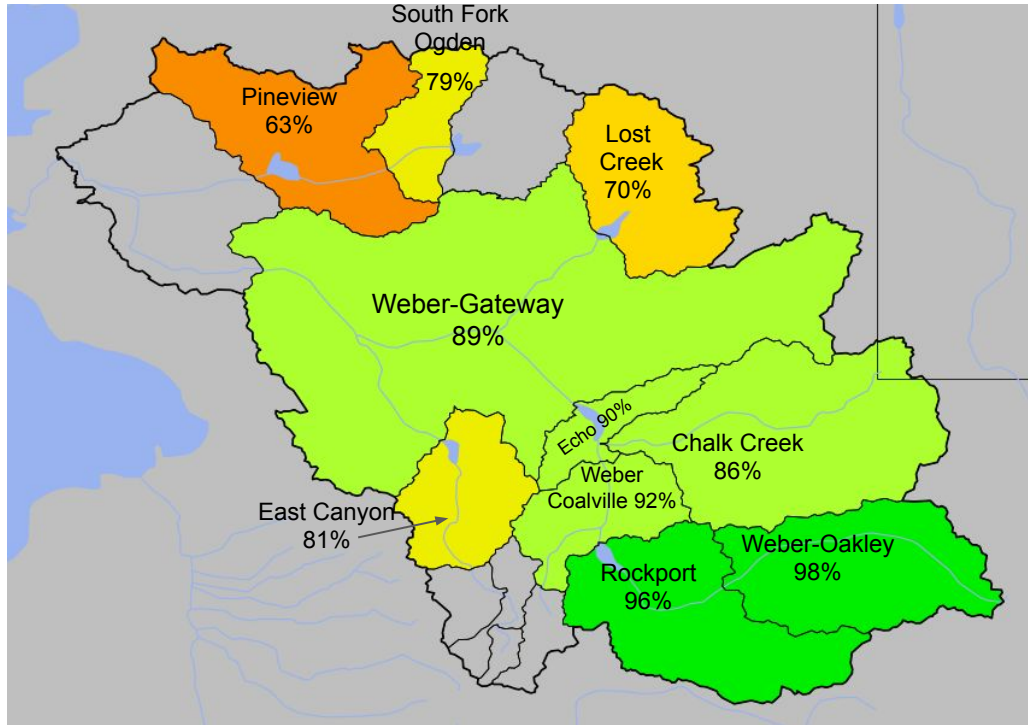
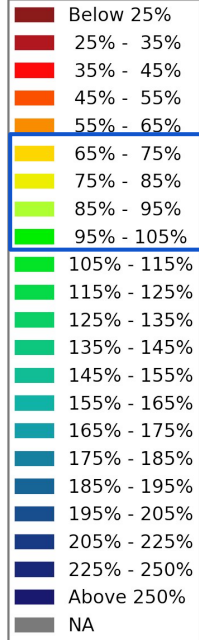
- February 1 Forecast for April-July Volume
- April-July Forecast Streamflow Volumes are in percent of 1991-2020 average

Median value of the ...
 ...individual forecasts (in % of average)
 ...by Forecast Group.

Weber	85%
Bear	80%
Six Creeks	100%
Provo / Utah Lake	85%
Sevier	90%
Duchesne	90%
Virgin	75%

Utah Water Supply Forecasts - Weber

Percent of Average



Weber River Basin Forecasts

January: 110% of Normal

February: **85%** of Normal

- Forecasts range from 65-100% of normal

Utah Water Supply Forecasts - Weber

Weber - Oakley, Nr (OAWU1)

Period: Apr-Jul, Official 50% Forecast (2022-02-01): 109 kaf (98% Average, 112% Median)

ESP is Unregulated and No Precipitation Forecast Included

2022/02/01:

Max 1907: 254.23

Min 1934: 35.47

Average: 111

Median: 97

ESP: 109

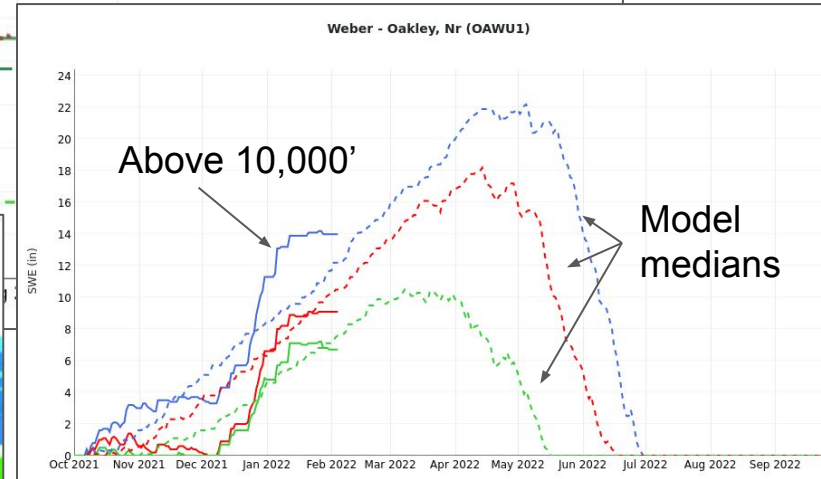
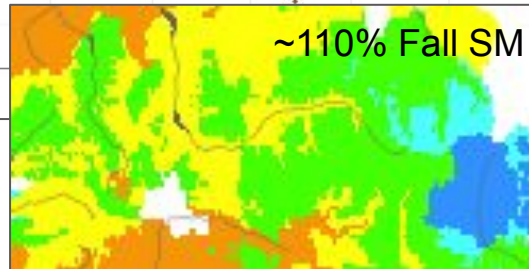
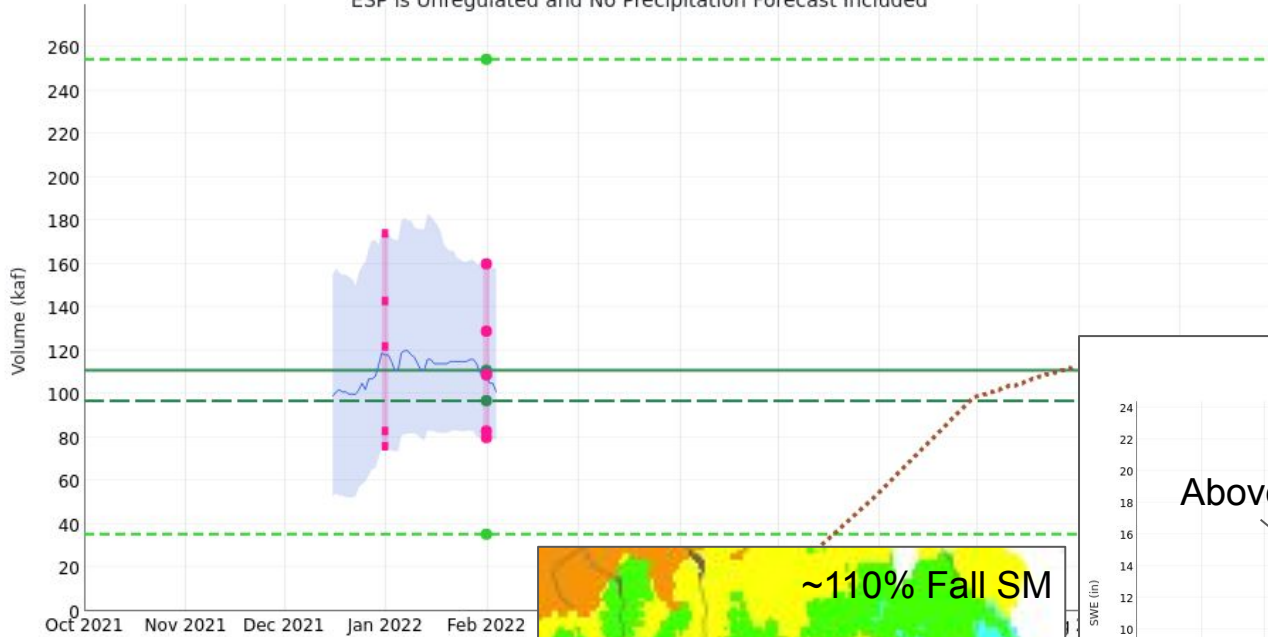
Official 10: 160

Official 30: 129

Official 50: 109

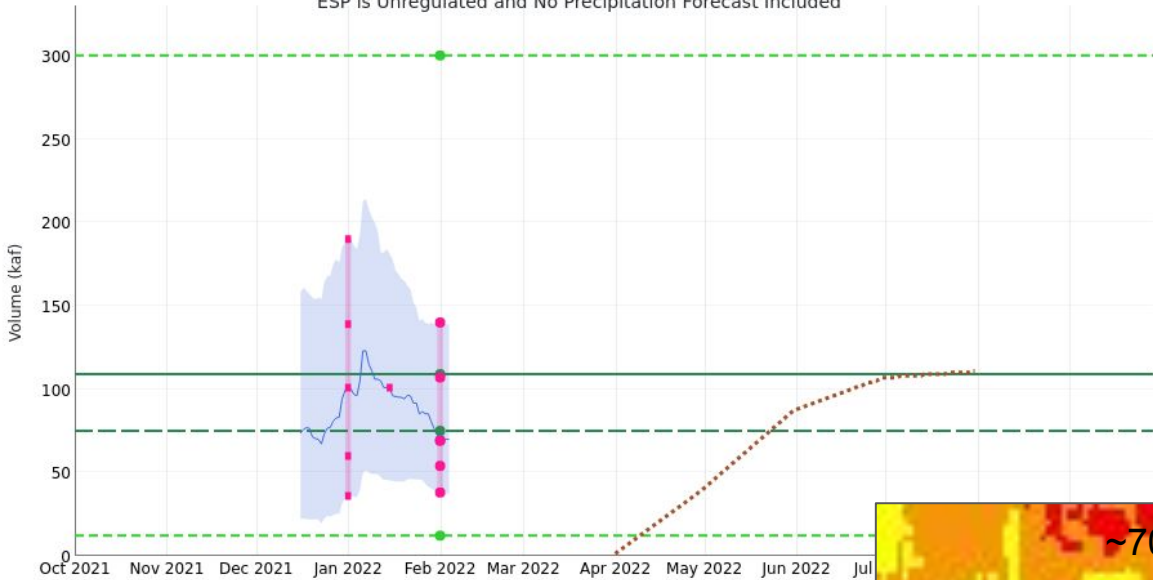
Official 70: 83

Official 90: 80

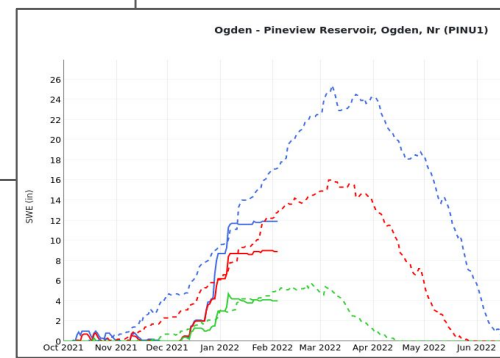
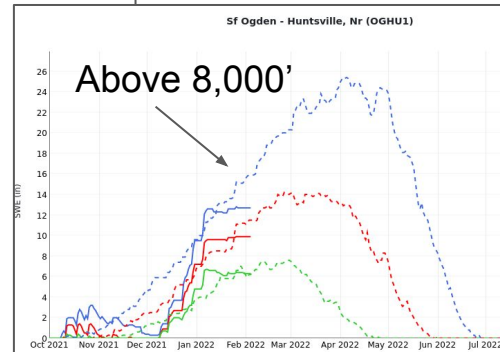
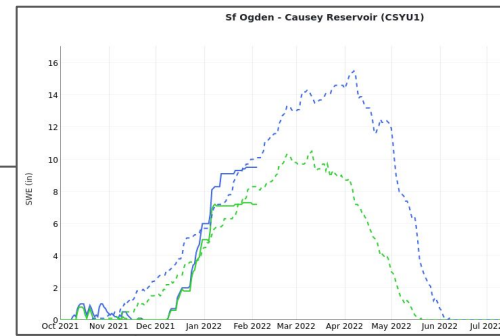
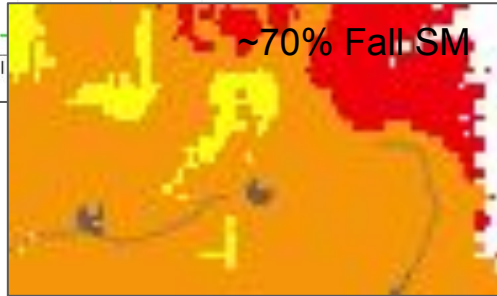


Utah Water Supply Forecasts - Weber

Ogden - Pineview Reservoir, Ogden, Nr (PINU1)
Period: Apr-Jul, Official 50% Forecast (2022-02-01): 69 kaf (63% Average, 92% Median)
 ESP is Unregulated and No Precipitation Forecast Included

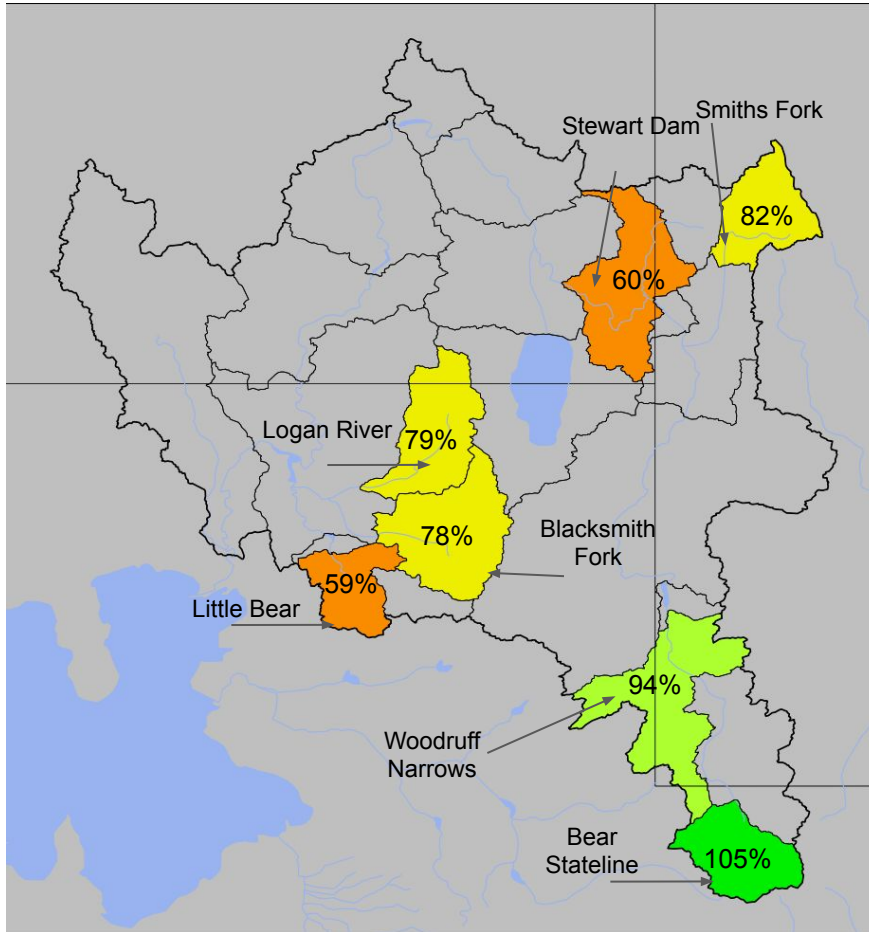
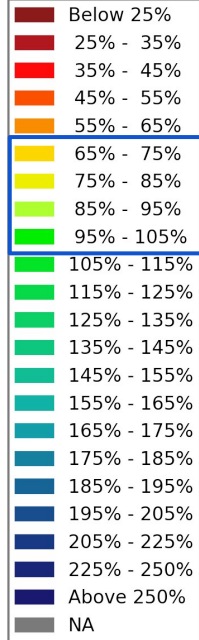


- 2022/02/01:
- Max 2011: 300.18
- Min 1992: 12.14
- Average: 109
- Median: 75
- ESP: 69.4
- Official 10: 140
- Official 30: 107
- Official 50: 69
- Official 70: 54
- Official 90: 38



Utah Water Supply Forecasts - Bear

Percent of Average



Bear River Basin Forecasts

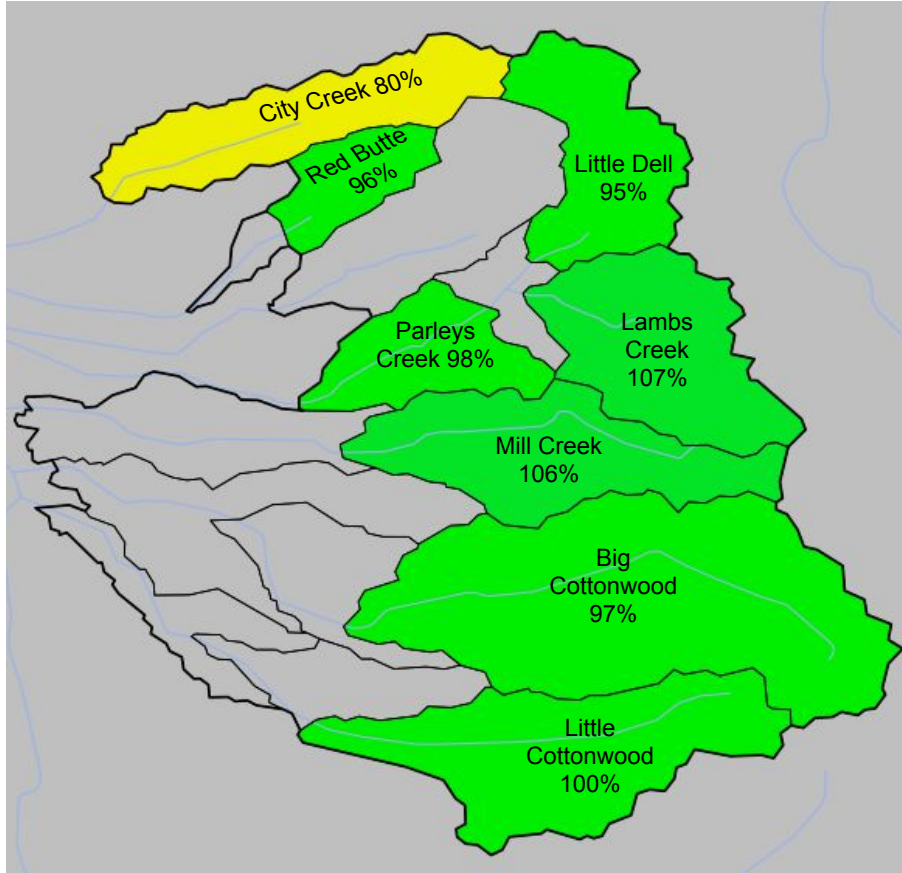
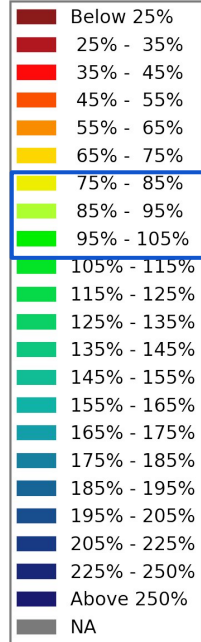
January: 95% of Normal

February: **80%** of Normal

- Forecasts range from 60-105% of normal

Utah Water Supply Forecasts - Six Creeks

Percent of Average



Six Creeks Basin Forecasts

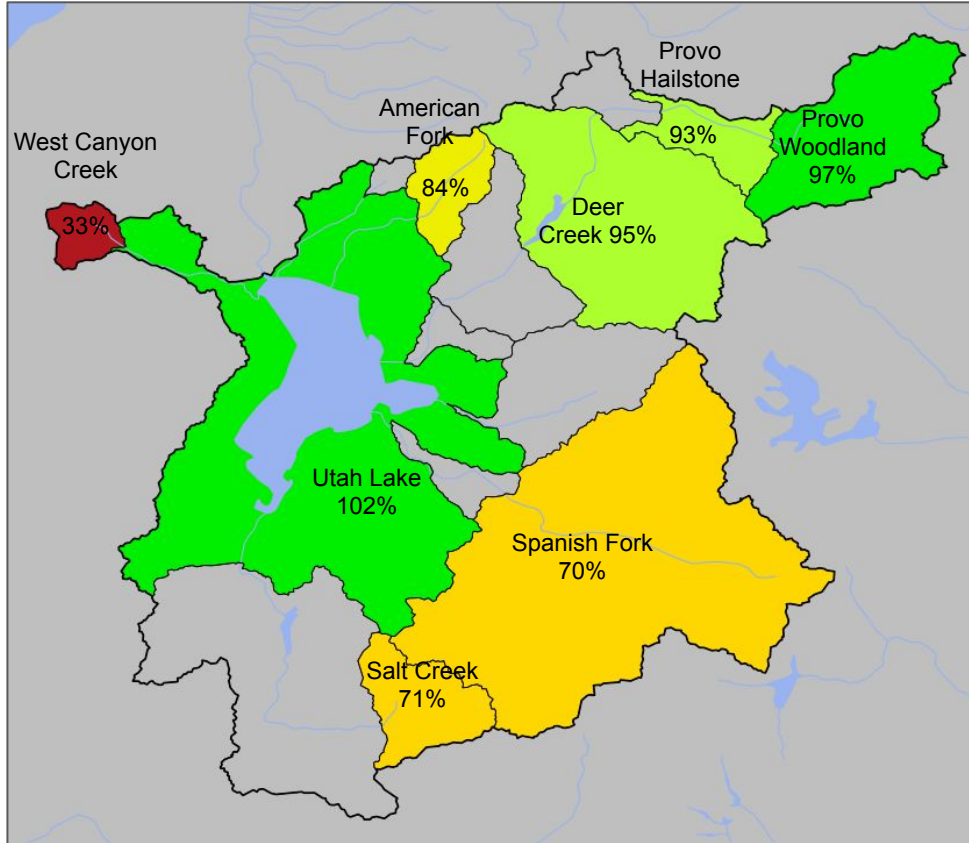
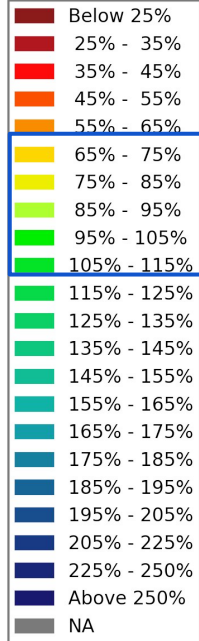
January: 115% of Normal

February: 100% of Normal

- Forecasts range from 80-105% of normal

Utah Water Supply Forecasts - Utah Lake Basin

Percent of Average



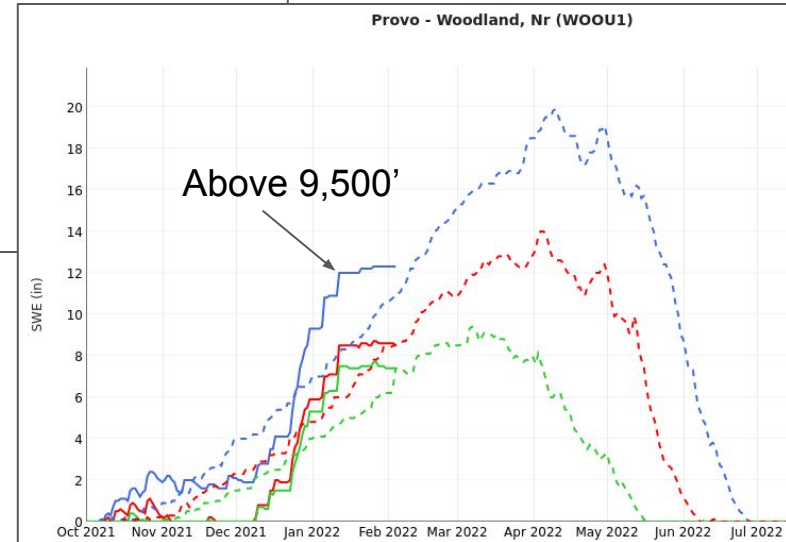
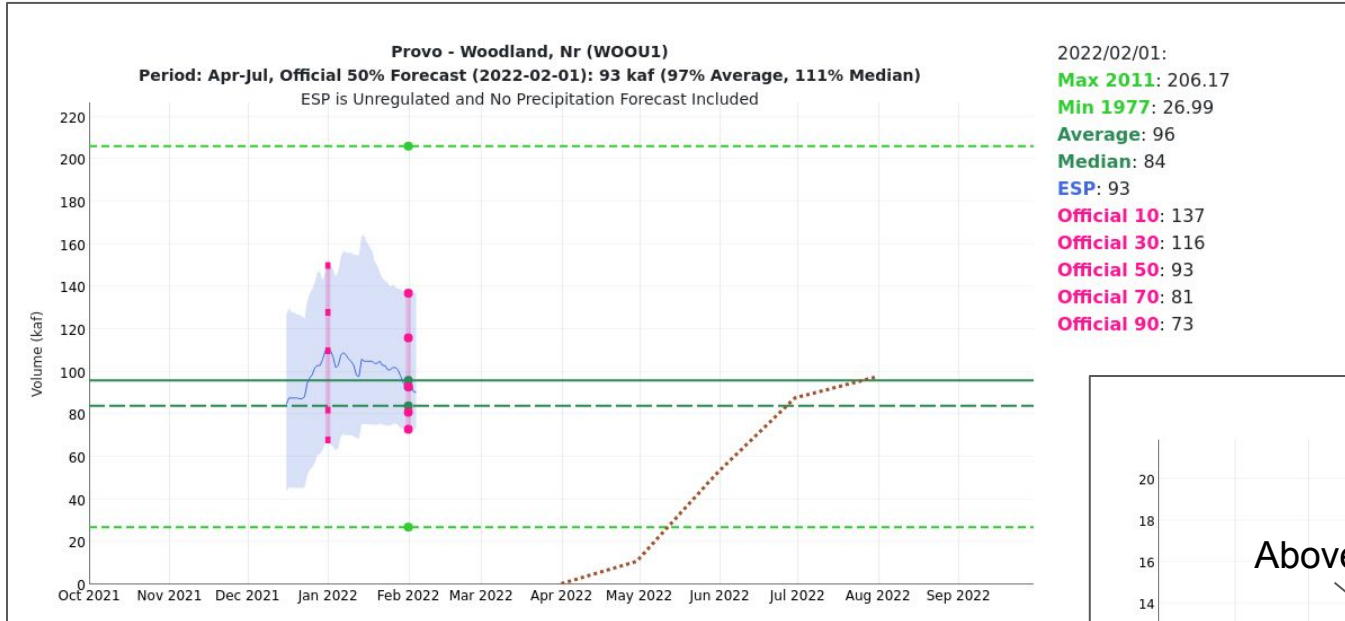
Utah Lake Basin Forecasts

January: 110% of Normal

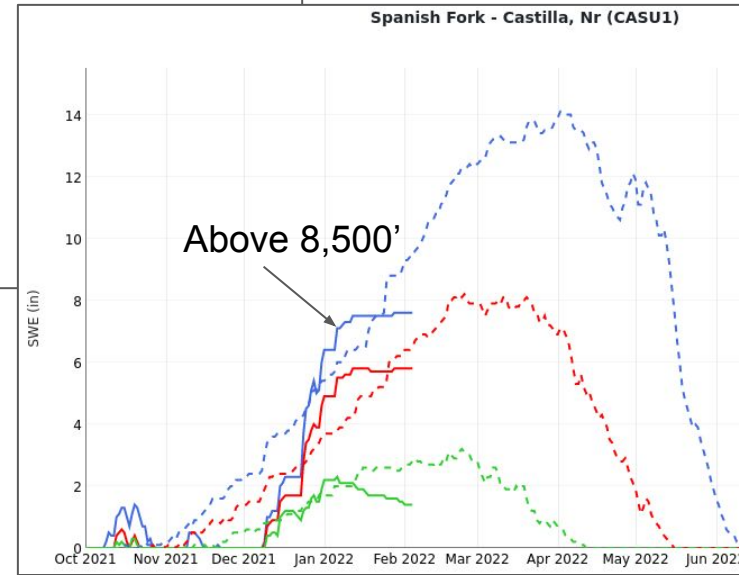
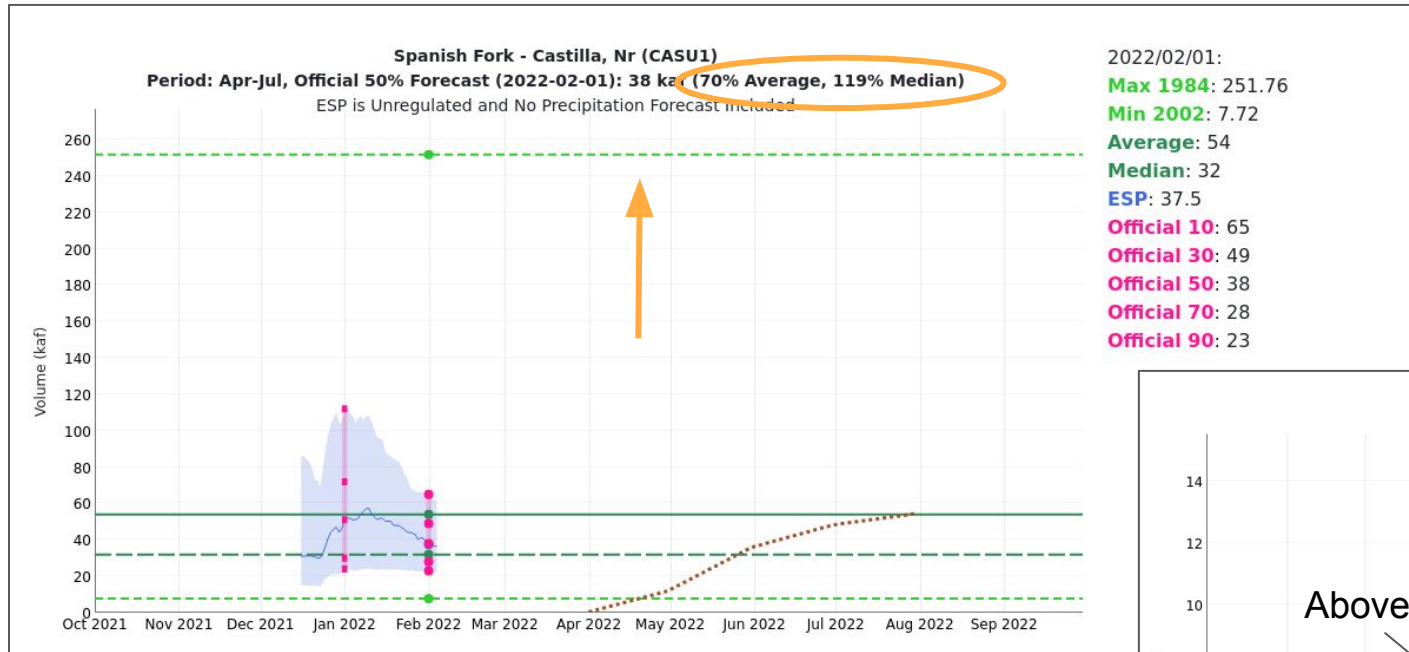
February: 85% of Normal

- Forecasts range from 70-100% of normal

Utah Water Supply Forecasts - Utah Lake Basin

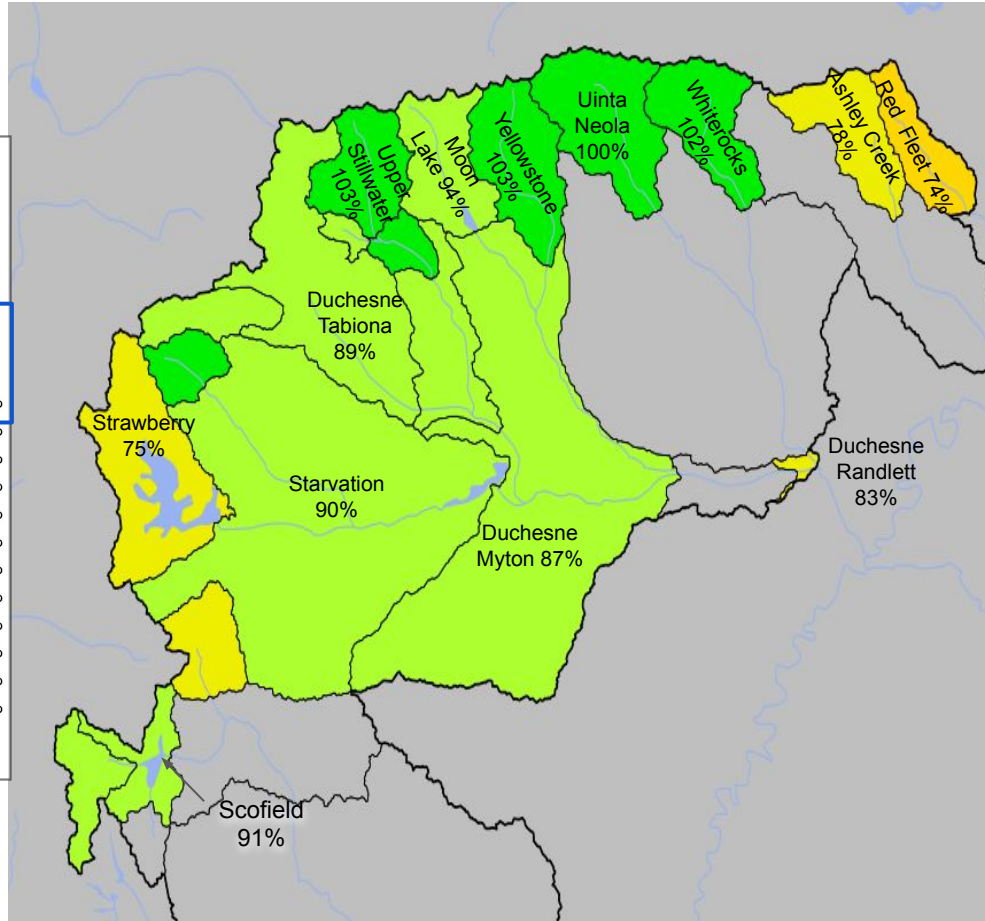
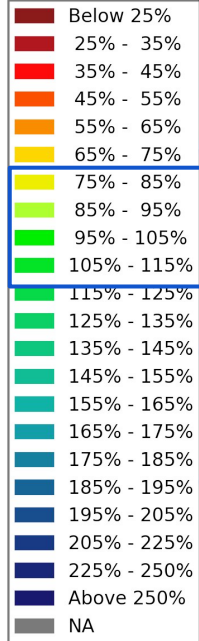


Utah Water Supply Forecasts - Utah Lake Basin



Utah Water Supply Forecasts - Duchesne

Percent of Average



Duchesne River Basin

January: 110% of Normal

February: **90%** of Normal

- Forecasts range from 85-105% of normal

Price River Basin

January: 125% of Normal

February: **85%** of Normal

Utah Water Supply Forecasts - Duchesne

Upper Stillwater Reservoir

Rock Ck - Upper Stillwater Reservoir (USTU1)

Period: Apr-Jul, Official 50% Forecast (2022-02-01): 74 kaf (103% Average, 116% Median)

ESP is Unregulated and No Precipitation Forecast Included



2022/02/01:

Average: 72

Median: 64

ESP: 74.3

Official 10: 112

Official 30: 81

Official 50: 74

Official 70: 64

Official 90: 55

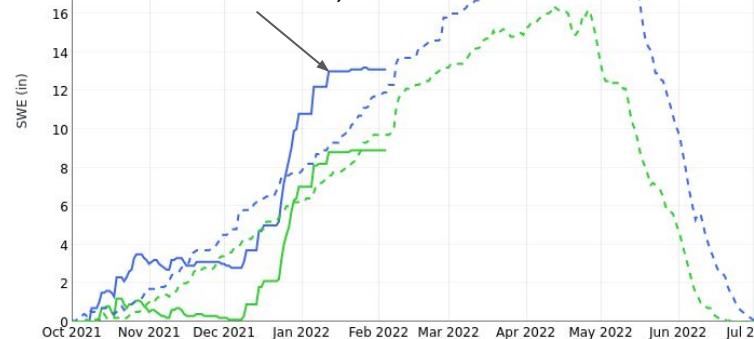
Rock Ck - Upper Stillwater Reservoir (USTU1)

CBRFC Model Snow (2/4)

10,500'-12,100': 110% median

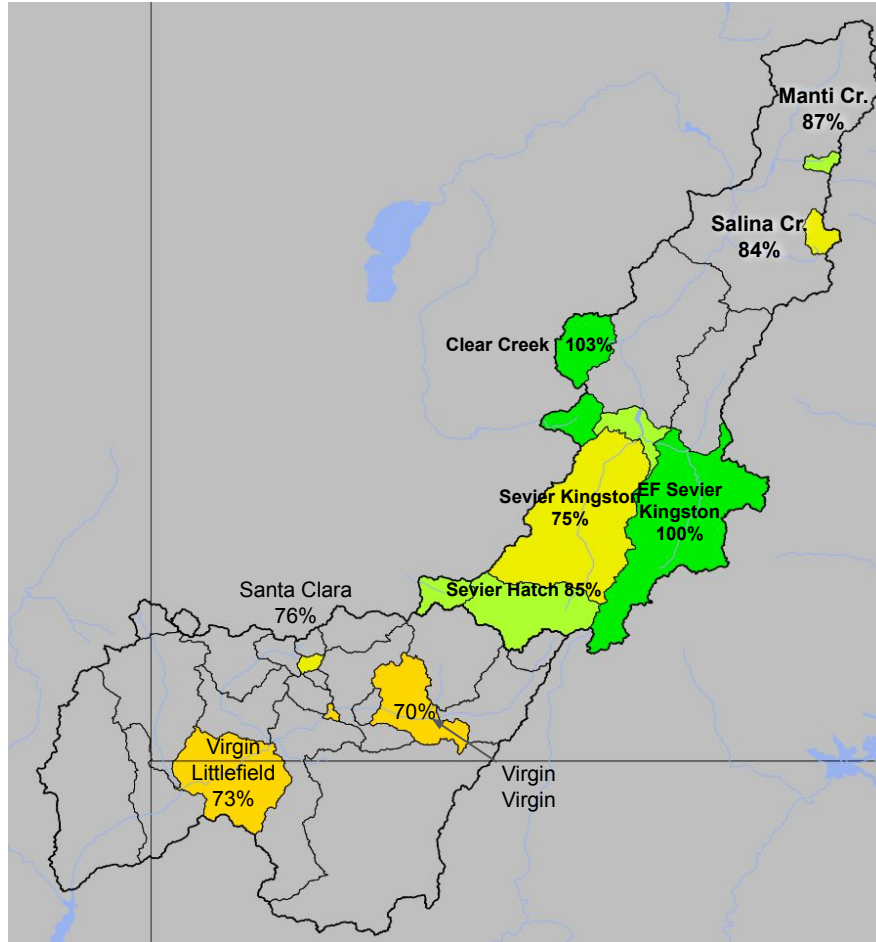
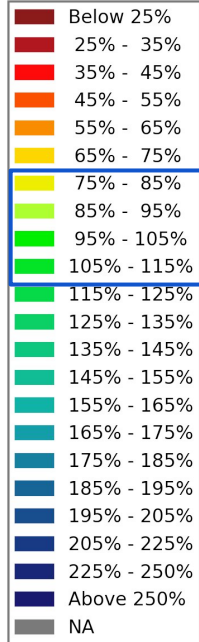
8,200'-10,500': 92% median

Above 10,500'



Utah Water Supply Forecasts - Sevier and Virgin

Percent of Average



Sevier River Basin Forecasts (regulated)

January: 105% of Normal

February: **90%** of Normal

- Forecasts range from 75-105% of normal

Virgin River Basin Forecasts

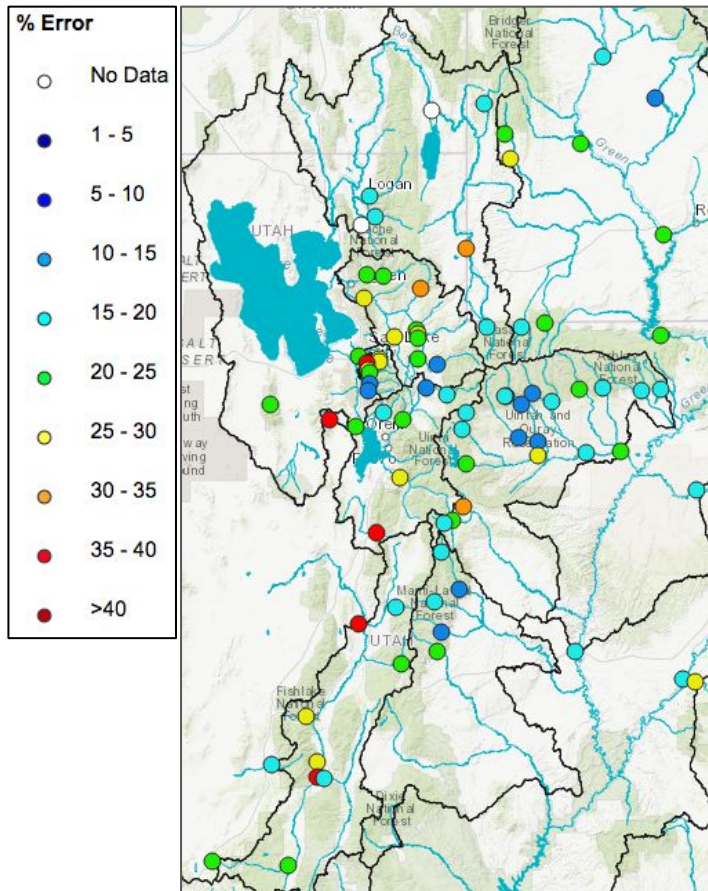
January: 90% of Normal

February: **75%** of Normal

- Forecasts range from 70-75% of normal

Historical (1981-2010) Forecast Verification

February Forecast Error: April-July Volume



Location

BEAR - UTAH-WYOMING STATE	20%
BEAR - WOODRUFF NARROWS	38%
LOGAN - LOGAN- NR	22%
WEBER - OAKLEY- NR	19%
WEBER - ROCKPORT RES	25%
BIG COTTONWOOD CK	18%
PARLEYS CK	32%
PROVO - WOODLAND- NR	20%
PROVO - DEER CK RES	26%
VIRGIN - VIRGIN	34%

February Forecast Error

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

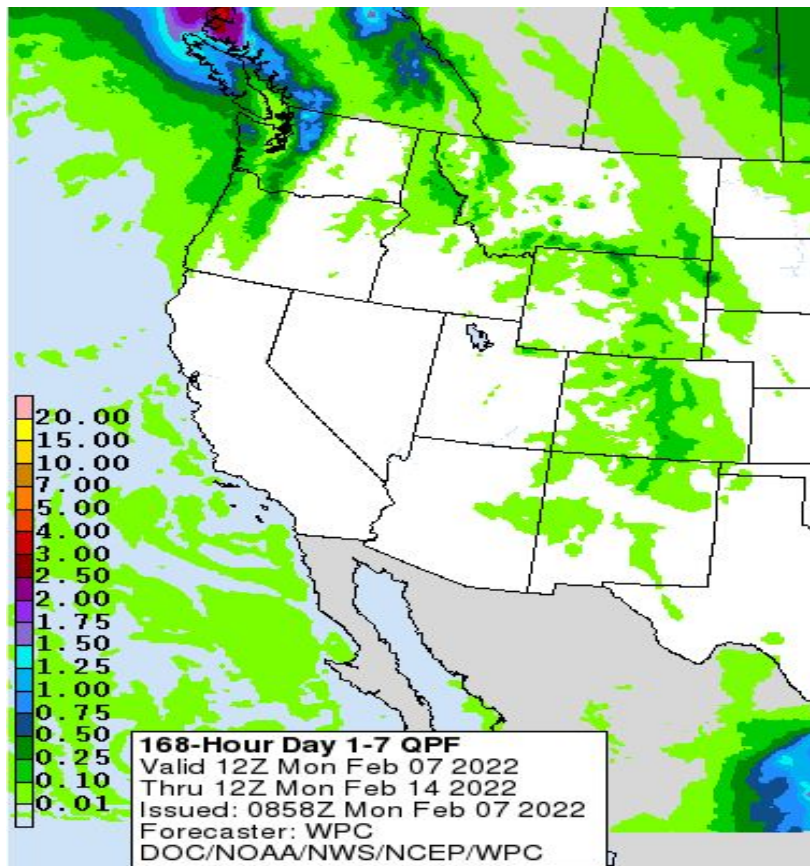
Where Forecasts are Better:

- 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: WPC February 07-14 Precipitation Outlook



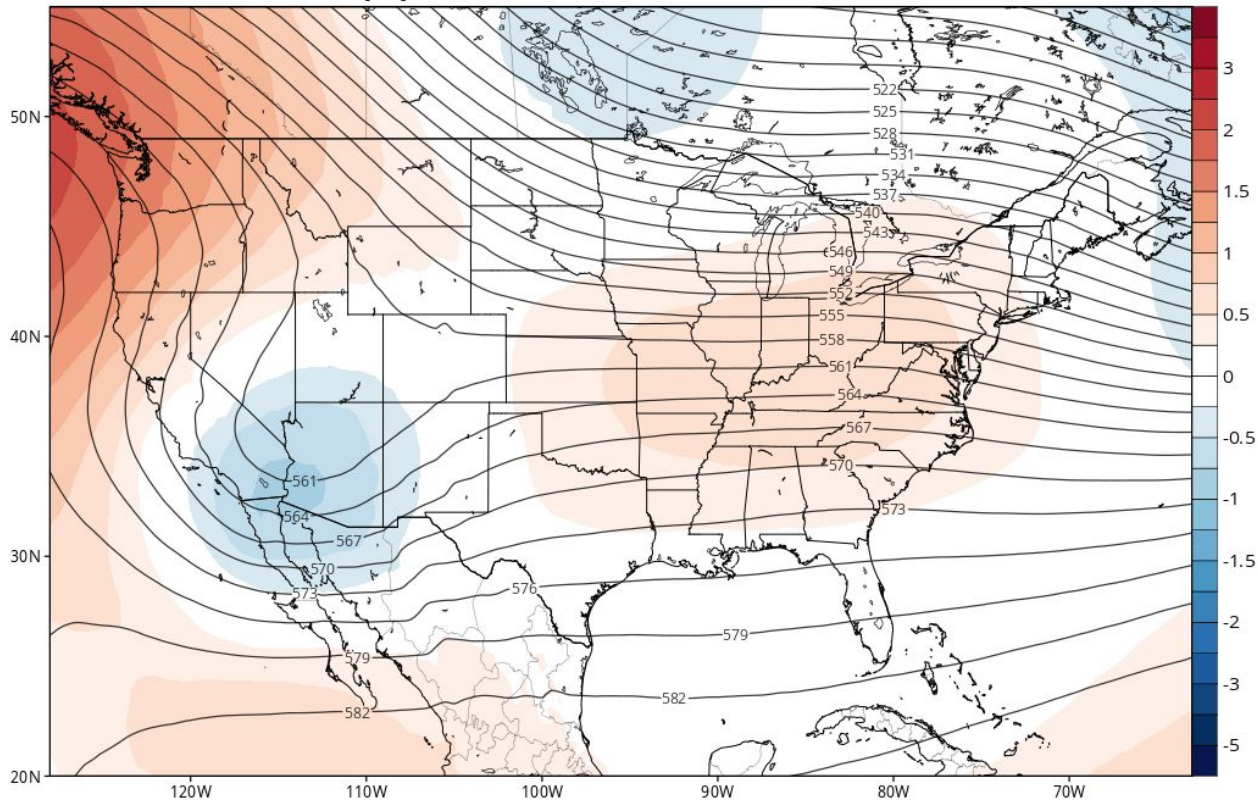
- A ridge over the Eastern Pacific will keep most of the basin dry
- A trough will dig to the east of the basin mid-week, bringing a chance of light precipitation to the Uintas
 - <0.25” of precipitation in the forecast
- The ridge moves over the western US towards the end of the week

Upcoming Weather: February 14-20

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

Init: 00z Feb 07 2022 Forecast Hour: [228] valid at 12z Wed, Feb 16 2022

TROPICALTIDBITS.COM



- A ridge will build over the eastern Pacific into next week
- A series of troughs will move over the basin next week, bringing chances of precipitation to most of the basin
- High uncertainty in precipitation amounts and placement

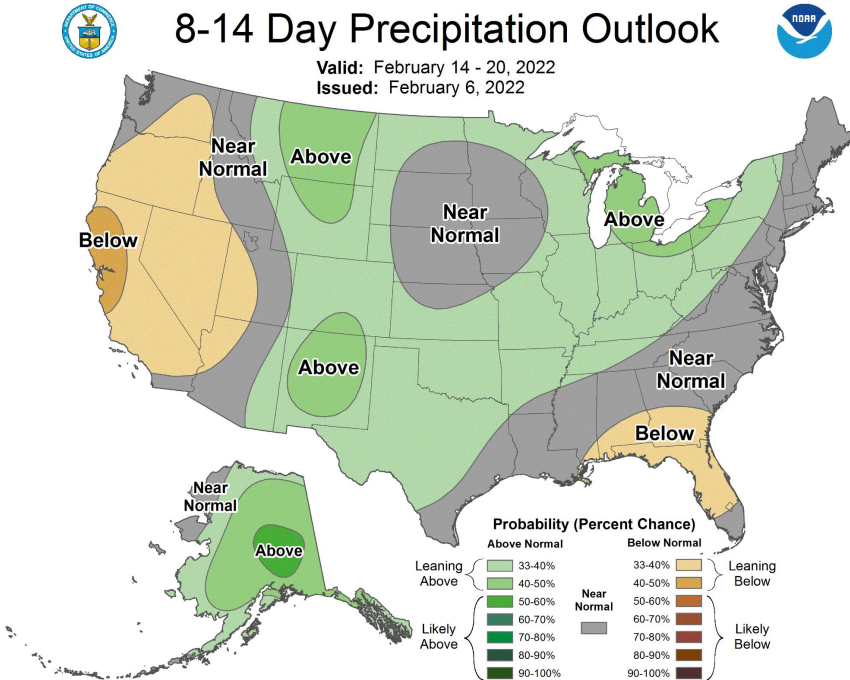
Upcoming Weather: 8-14 Day Outlook (February 14-20)

Slightly elevated odds of above average precipitation east of Utah.
Slightly elevated odds of above average temperatures across southwestern basins.

Precipitation Outlook

8-14 Day Precipitation Outlook

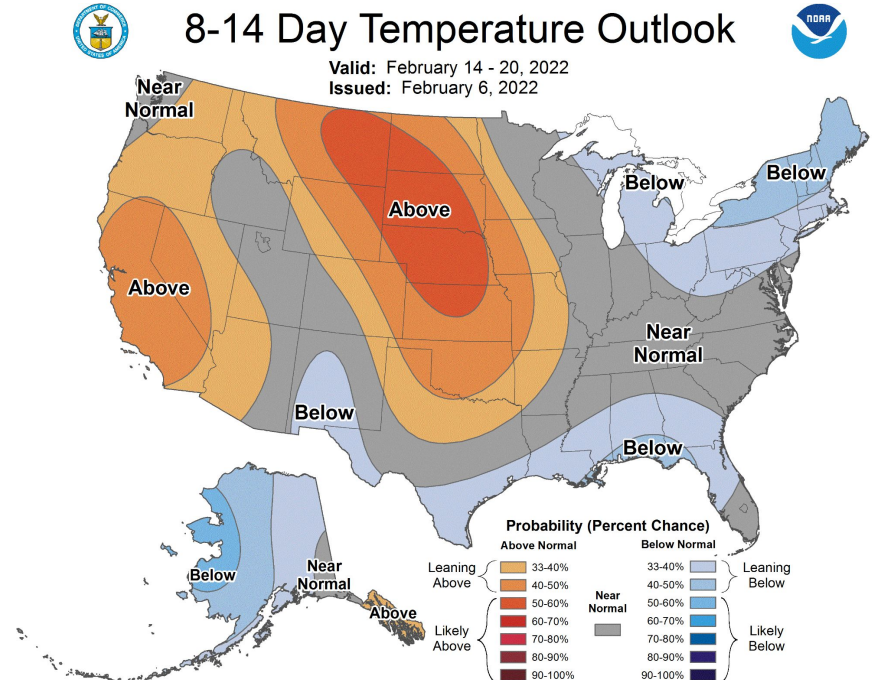
Valid: February 14 - 20, 2022
Issued: February 6, 2022



Temperature Outlook

8-14 Day Temperature Outlook

Valid: February 14 - 20, 2022
Issued: February 6, 2022



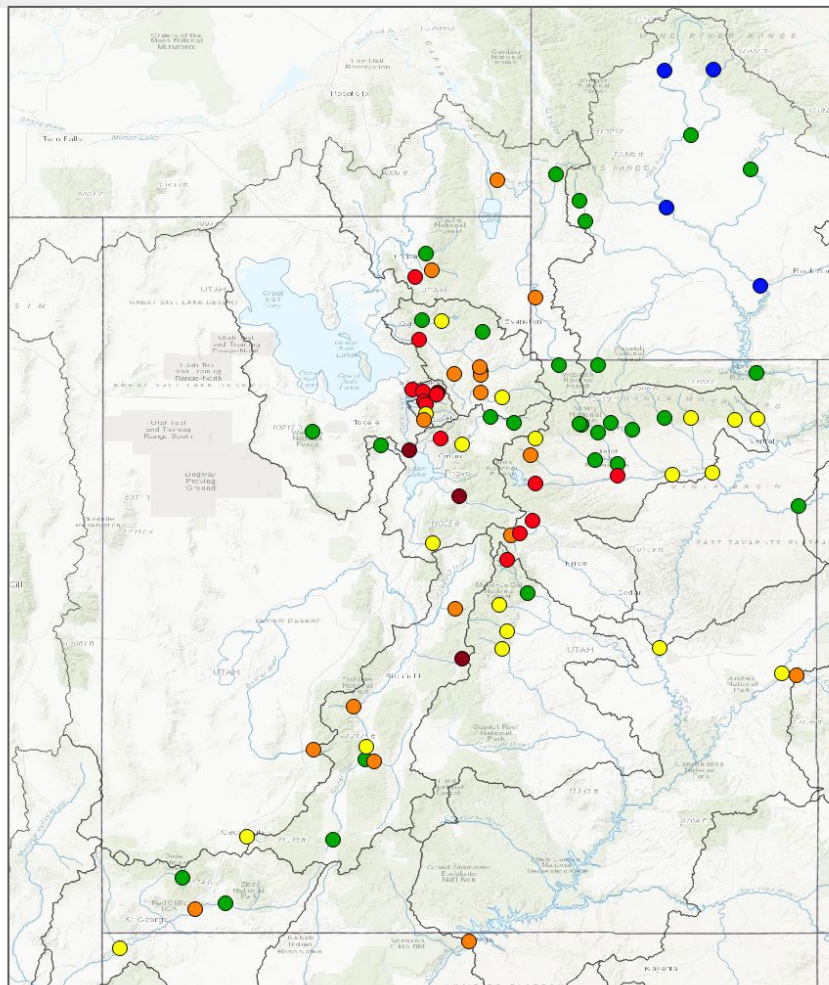
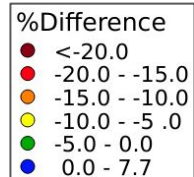
Science Update: New 30 year averages

- 1981-2010 vs. 1991-2020 Seasonal Streamflow Normals Comparison
 - CBRFC unregulated streamflow definition
 - Great Basin
 - April-July Volume
 - Change In Average (%Difference)
 - $\%Difference = \frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \times 100$
 - New Value: 1991-2020
 - Old Value: 1981-2010

Unregulated Flow

- Most CBRFC water supply forecasts in Utah are unregulated flow forecasts
 - Exception: Sevier River Basin and Stewart Dam in the Bear are regulated flow forecasts
- CBRFC unregulated flow definition:
 - Unregulated flow accounts for measured diversions and reservoir regulation
 - Diversions that are usually larger in magnitude
 - Data available in near real-time
 - Long historical period of record
 - Unregulated flow does not account for unmeasured depletions or unmeasured return flow
 - Non-real time data
 - Lack of historical data
 - Challenging to measure

1981-2010 vs. 1991-2020 Comparison: April-July Change in Average (%Difference)

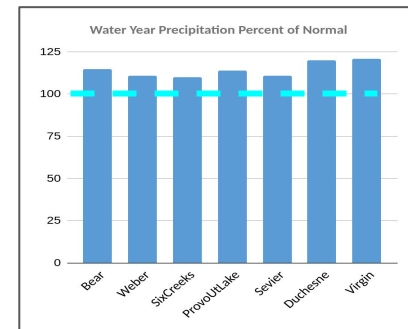


1981-2010 -> 1991-2020 April-July Volume

<u>Basin</u>	<u>%Difference</u>
Duchesne	-16 to 0
Price/San Rafael	-19 to 0
Bear	-17 to -1
Weber	-15 to -4
Six Creeks	-20 to -6
Provo/UT Lake	-34 to -1
Virgin	-14 to 0
Sevier	-22 to 0
Lake Powell	-11

Summary

- Thanks to October and December precipitation, the water year precipitation is above normal.
- Snowpack conditions are near normal. High elevation Uintas snowpack is above normal.
- Fall soil moisture was below normal in general (Duchesne and Uinta Headwaters are the exception)
- January precipitation was below normal across Utah.
- Water Supply Forecasts have declined from January in response to lack of January precipitation.
- The weather looks dry for the next week, with a possible pattern change next week
- It is still relatively early in the water year.



2022 Water Supply Webinar Schedule

**All Times Mountain Time (MT)*

Colorado River Basin

Friday	Jan 7 th	10 am
Monday	Feb 7 th	10 am
Monday	Mar 7 th	10 am
Thursday	Apr 7 th	10 am
Friday	May 6 th	10 am

Great Basin

Friday	Jan 7 th	11:30 am
Monday	Feb 7 th	11:30 am
Monday	Mar 7 th	11:30 am
Thursday	Apr 7 th	11:30 am
Friday	May 6 th	11:30 am

Peak flow forecast webinar Thursday, March 17th, 10 am MT

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

CBRFC Contacts & WY22 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

Brent Bernard – Hydrologist
brent.bernard@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>

