

February 21, 2023

Urban & Small Farms Conference

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# Utah Water Status & Outlook



Laura Haskell | DWRe Drought Coordinator  
Division of Water Resources

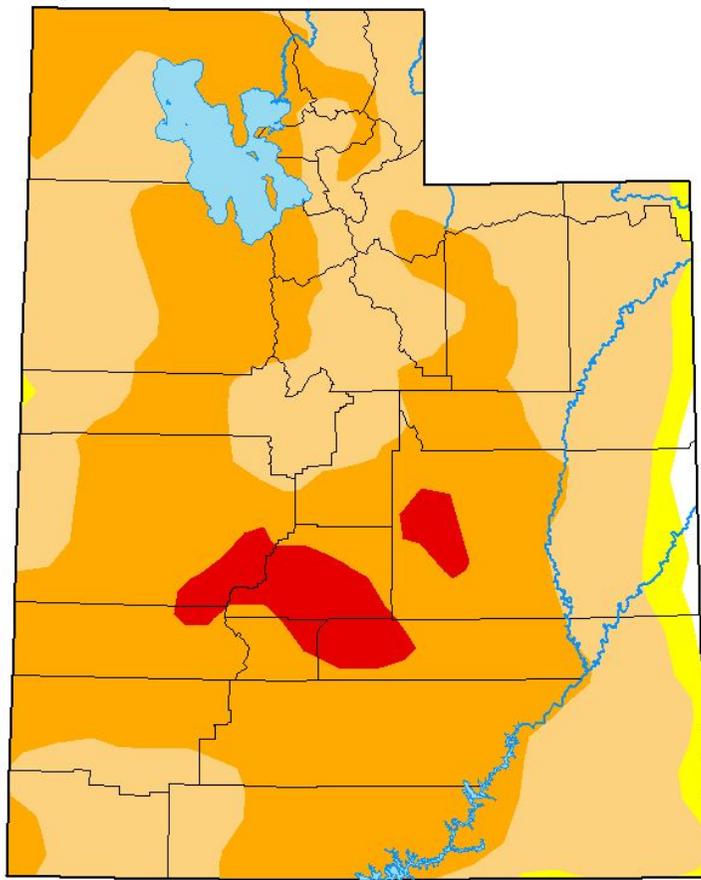


PLAN | CONSERVE | DEVELOP | PROTECT  
Utah's Water Resources

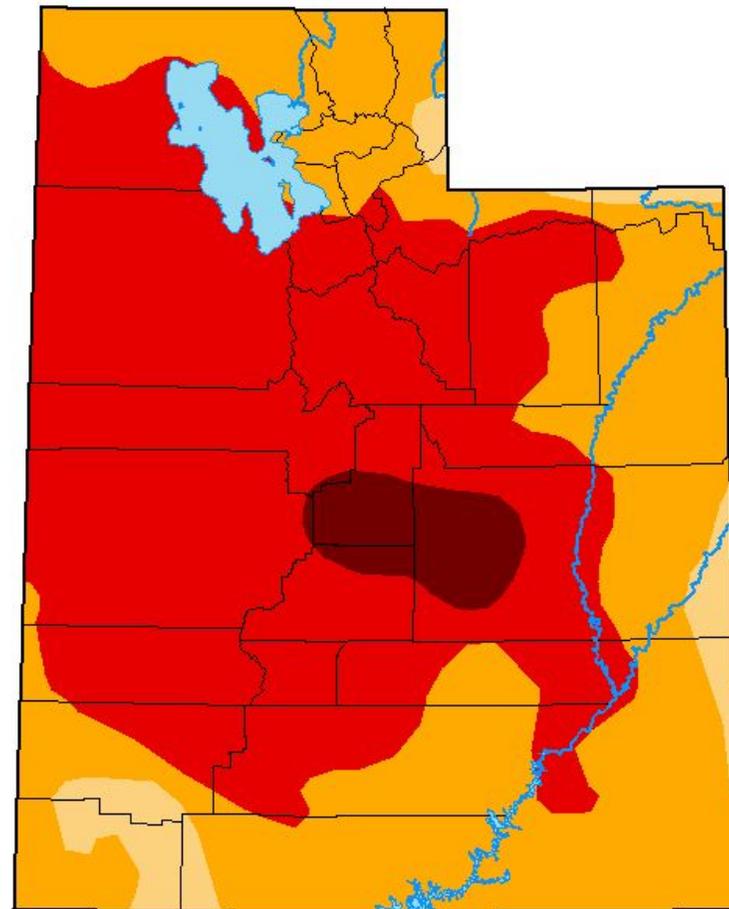
## U.S. Drought Monitor

# Utah

- 96% of state in drought
- 4% in Extreme Drought
- 56% in D3 or D4 at start of water year (Oct. 1)

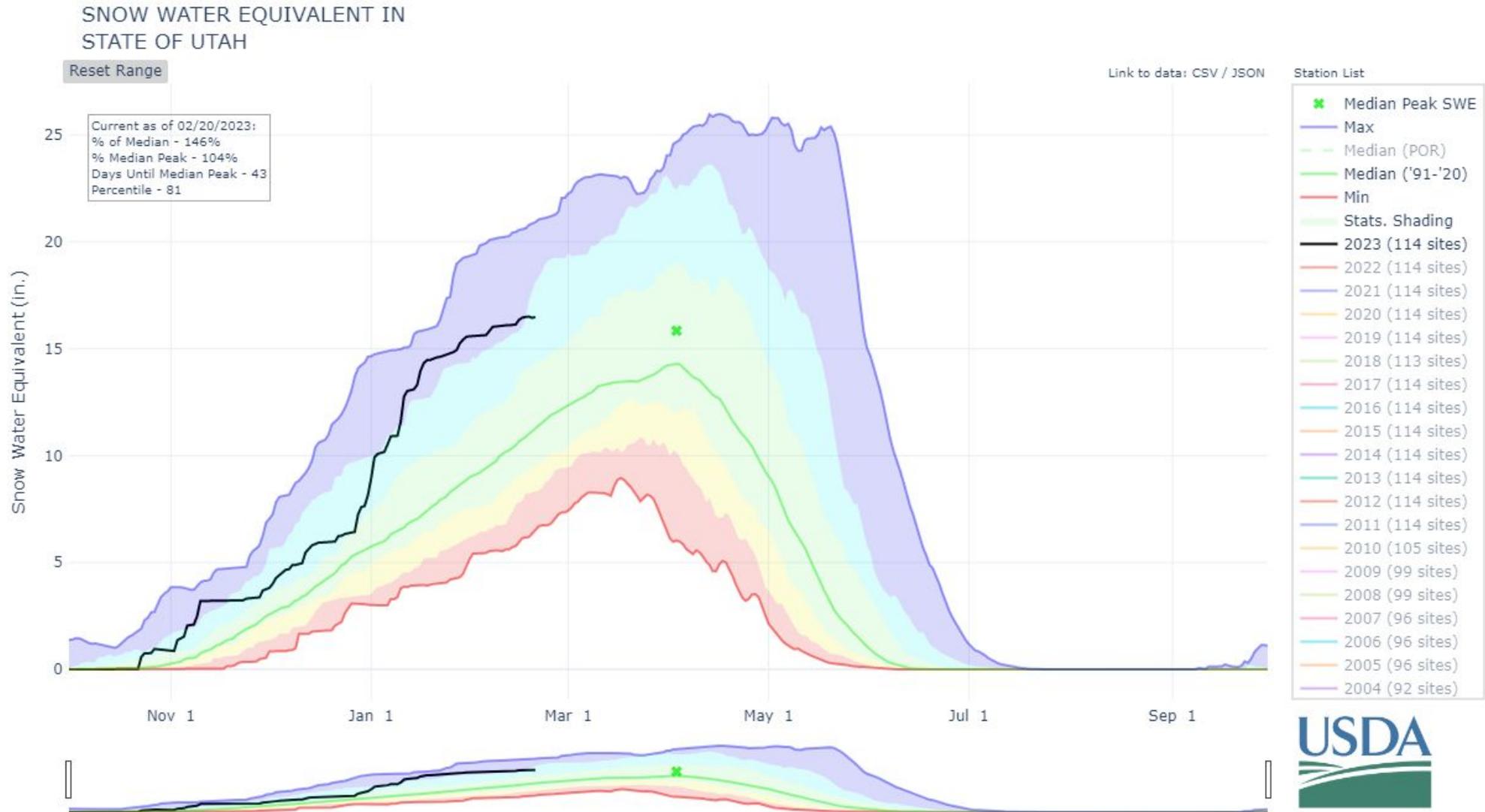


February 16, 2023



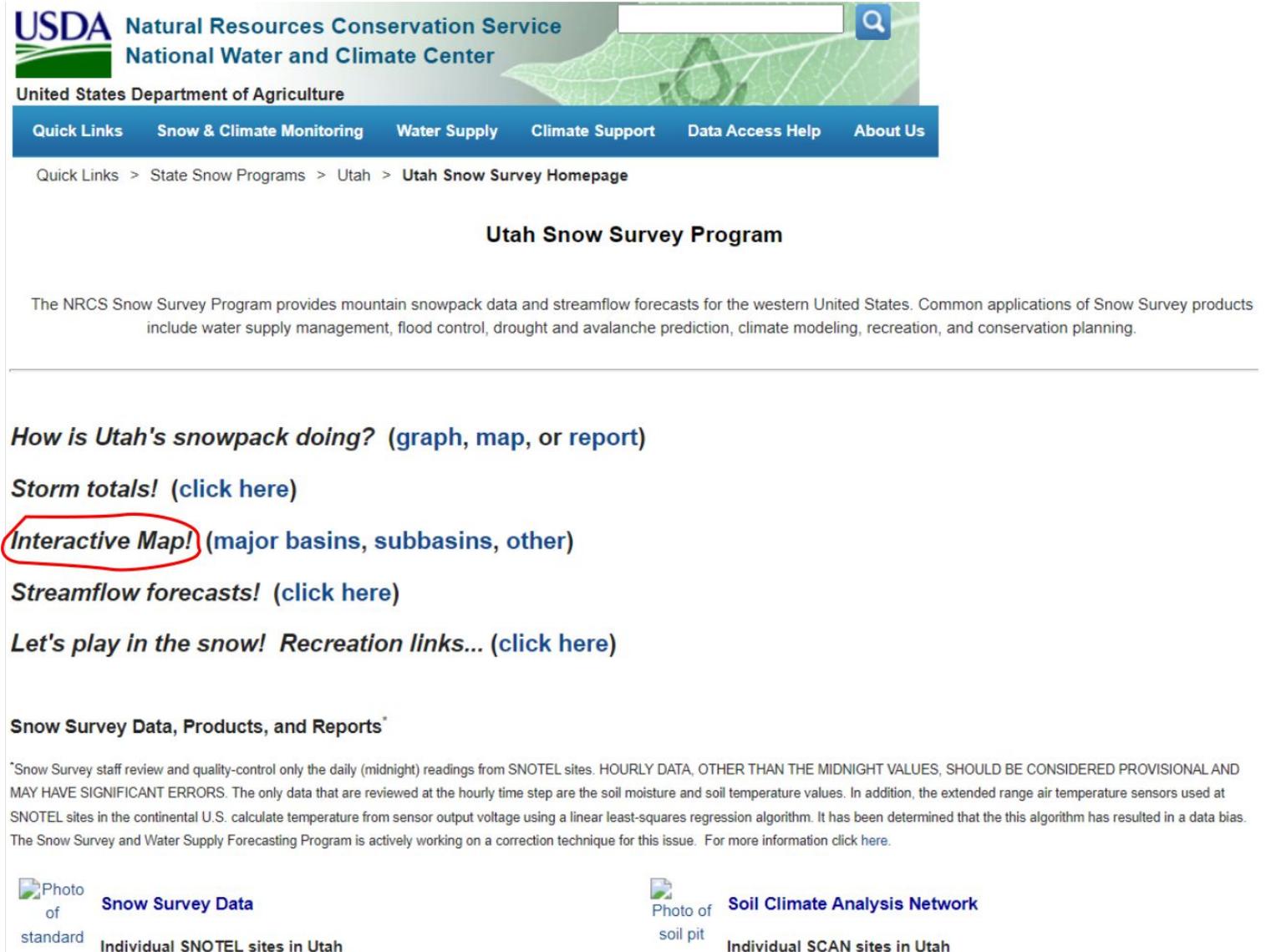
October 4, 2022

# Snow Water Equivalent



# NRCS Utah Snow Survey

- NRCS Utah Snow Survey Homepage
- Snow totals
- Precipitation
- Soil moisture



The screenshot shows the NRCS Utah Snow Survey Program homepage. At the top is the USDA logo and the text "Natural Resources Conservation Service National Water and Climate Center". Below this is a navigation bar with links for "Quick Links", "Snow & Climate Monitoring", "Water Supply", "Climate Support", "Data Access Help", and "About Us". The breadcrumb trail reads "Quick Links > State Snow Programs > Utah > Utah Snow Survey Homepage". The main heading is "Utah Snow Survey Program". A paragraph describes the program's purpose: "The NRCS Snow Survey Program provides mountain snowpack data and streamflow forecasts for the western United States. Common applications of Snow Survey products include water supply management, flood control, drought and avalanche prediction, climate modeling, recreation, and conservation planning." Below this are several links: "How is Utah's snowpack doing? (graph, map, or report)", "Storm totals! (click here)", "Interactive Map! (major basins, subbasins, other)", "Streamflow forecasts! (click here)", and "Let's play in the snow! Recreation links... (click here)". A section titled "Snow Survey Data, Products, and Reports" contains a disclaimer: "Snow Survey staff review and quality-control only the daily (midnight) readings from SNOTEL sites. HOURLY DATA, OTHER THAN THE MIDNIGHT VALUES, SHOULD BE CONSIDERED PROVISIONAL AND MAY HAVE SIGNIFICANT ERRORS. The only data that are reviewed at the hourly time step are the soil moisture and soil temperature values. In addition, the extended range air temperature sensors used at SNOTEL sites in the continental U.S. calculate temperature from sensor output voltage using a linear least-squares regression algorithm. It has been determined that the this algorithm has resulted in a data bias. The Snow Survey and Water Supply Forecasting Program is actively working on a correction technique for this issue. For more information click here." At the bottom, there are two photo galleries: "Photo of standard Snow Survey Data Individual SNOTEL sites in Utah" and "Photo of soil pit Soil Climate Analysis Network Individual SCAN sites in Utah".

USDA Natural Resources Conservation Service  
National Water and Climate Center

United States Department of Agriculture

Quick Links Snow & Climate Monitoring Water Supply Climate Support Data Access Help About Us

Quick Links > State Snow Programs > Utah > Utah Snow Survey Homepage

## Utah Snow Survey Program

The NRCS Snow Survey Program provides mountain snowpack data and streamflow forecasts for the western United States. Common applications of Snow Survey products include water supply management, flood control, drought and avalanche prediction, climate modeling, recreation, and conservation planning.

[How is Utah's snowpack doing? \(graph, map, or report\)](#)

[Storm totals! \(click here\)](#)

[Interactive Map! \(major basins, subbasins, other\)](#)

[Streamflow forecasts! \(click here\)](#)

[Let's play in the snow! Recreation links... \(click here\)](#)

### Snow Survey Data, Products, and Reports\*

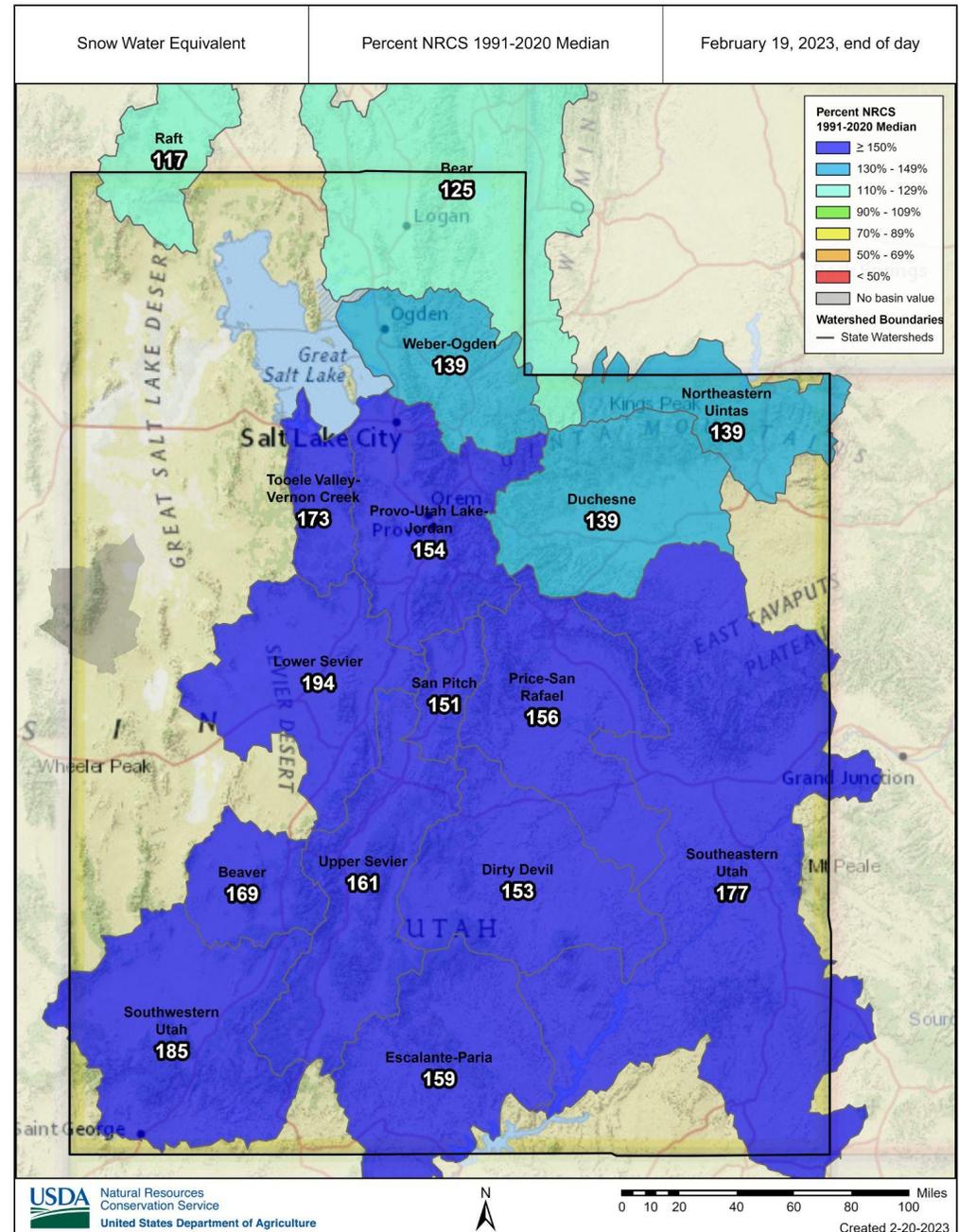
\*Snow Survey staff review and quality-control only the daily (midnight) readings from SNOTEL sites. HOURLY DATA, OTHER THAN THE MIDNIGHT VALUES, SHOULD BE CONSIDERED PROVISIONAL AND MAY HAVE SIGNIFICANT ERRORS. The only data that are reviewed at the hourly time step are the soil moisture and soil temperature values. In addition, the extended range air temperature sensors used at SNOTEL sites in the continental U.S. calculate temperature from sensor output voltage using a linear least-squares regression algorithm. It has been determined that the this algorithm has resulted in a data bias. The Snow Survey and Water Supply Forecasting Program is actively working on a correction technique for this issue. For more information click here.

Photo of standard **Snow Survey Data**  
Individual SNOTEL sites in Utah

Photo of soil pit **Soil Climate Analysis Network**  
Individual SCAN sites in Utah

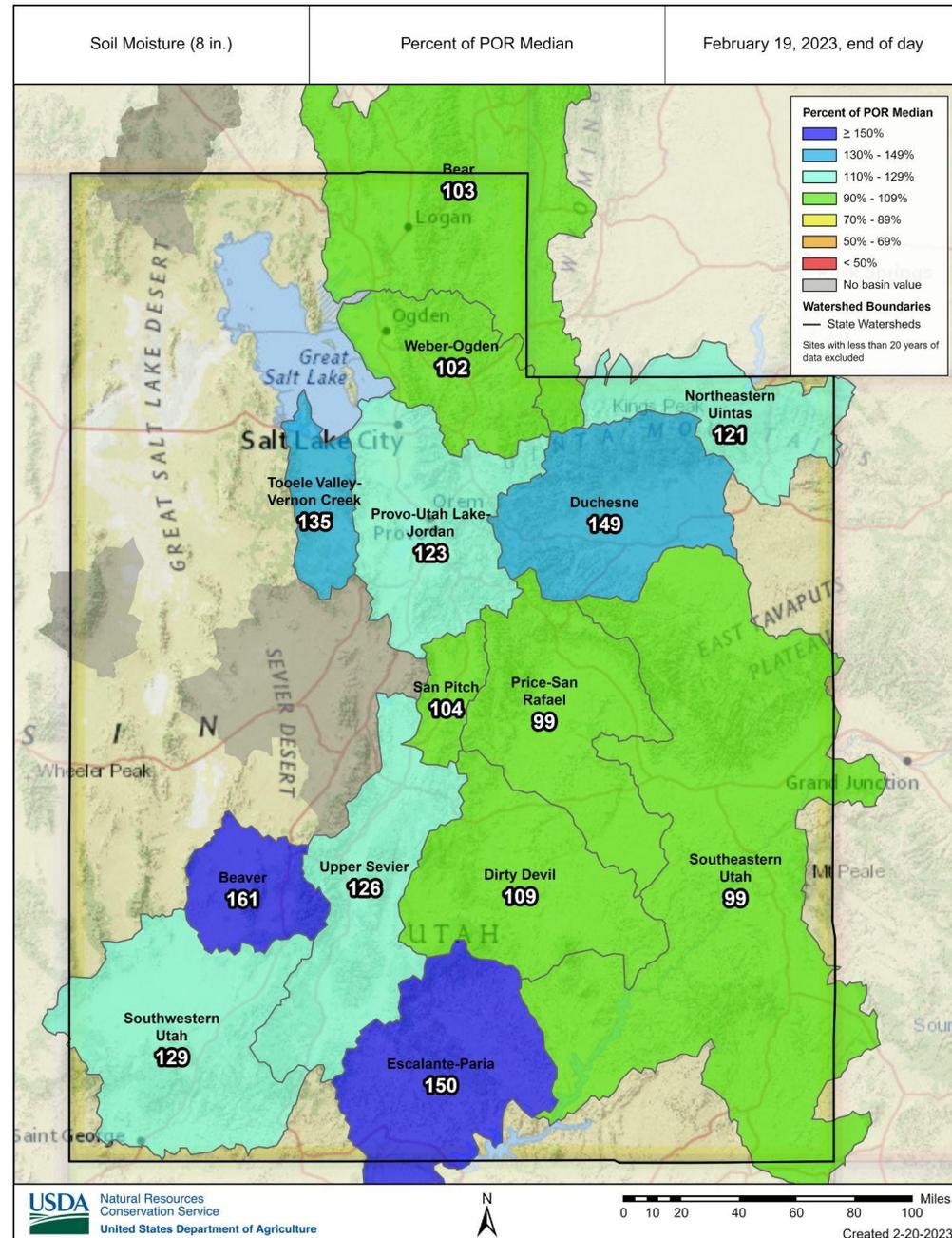
# Snow Water Equivalent

- Can be viewed by subbasin or station
- Charts available with statistics
- All basins currently over 115%
- Northern Utah (Bear & Raft) lowest



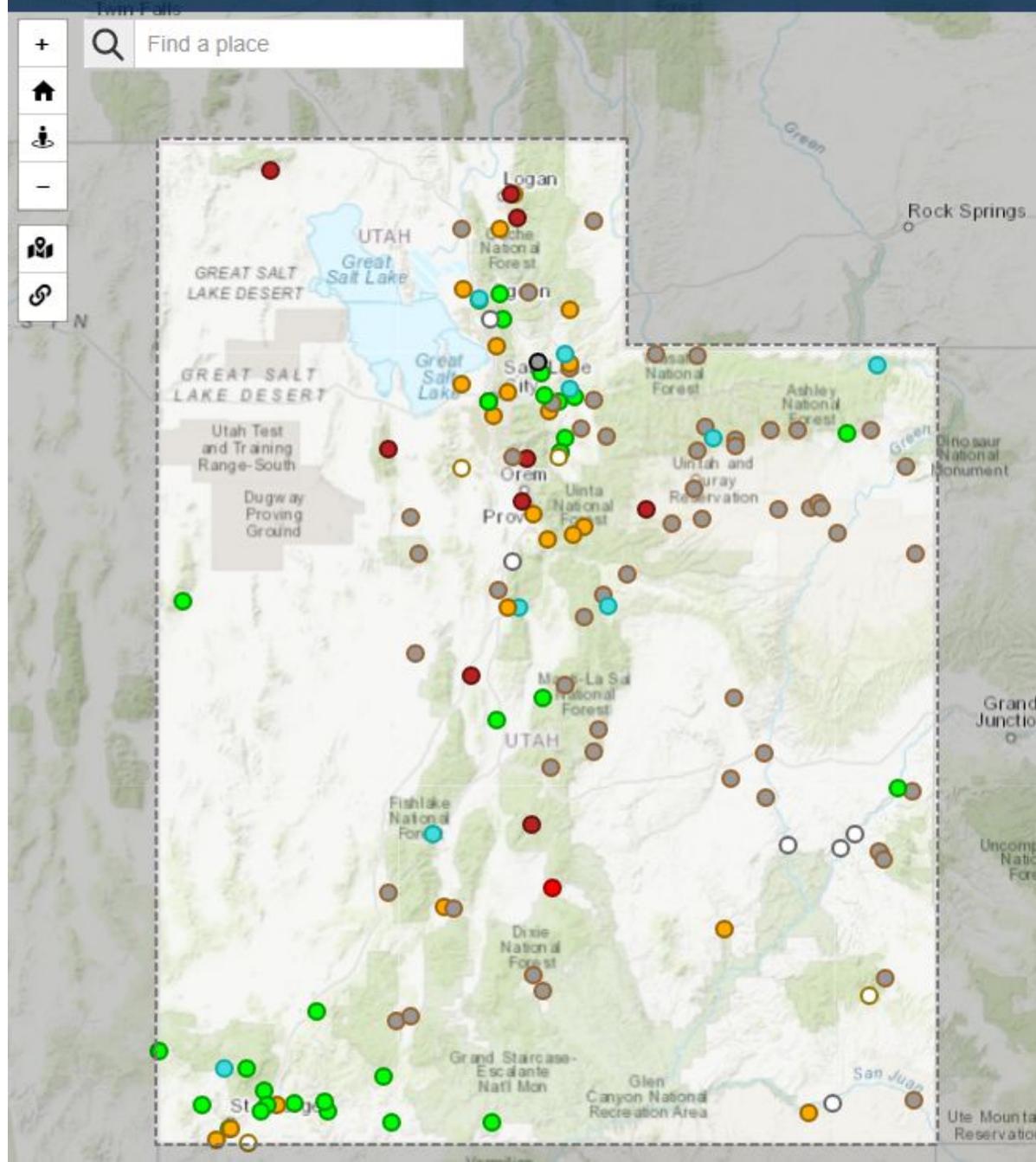
# Soil Moisture

- All basins at 99% or greater
- Can be viewed by subbasin or station
- Can show locations of readings



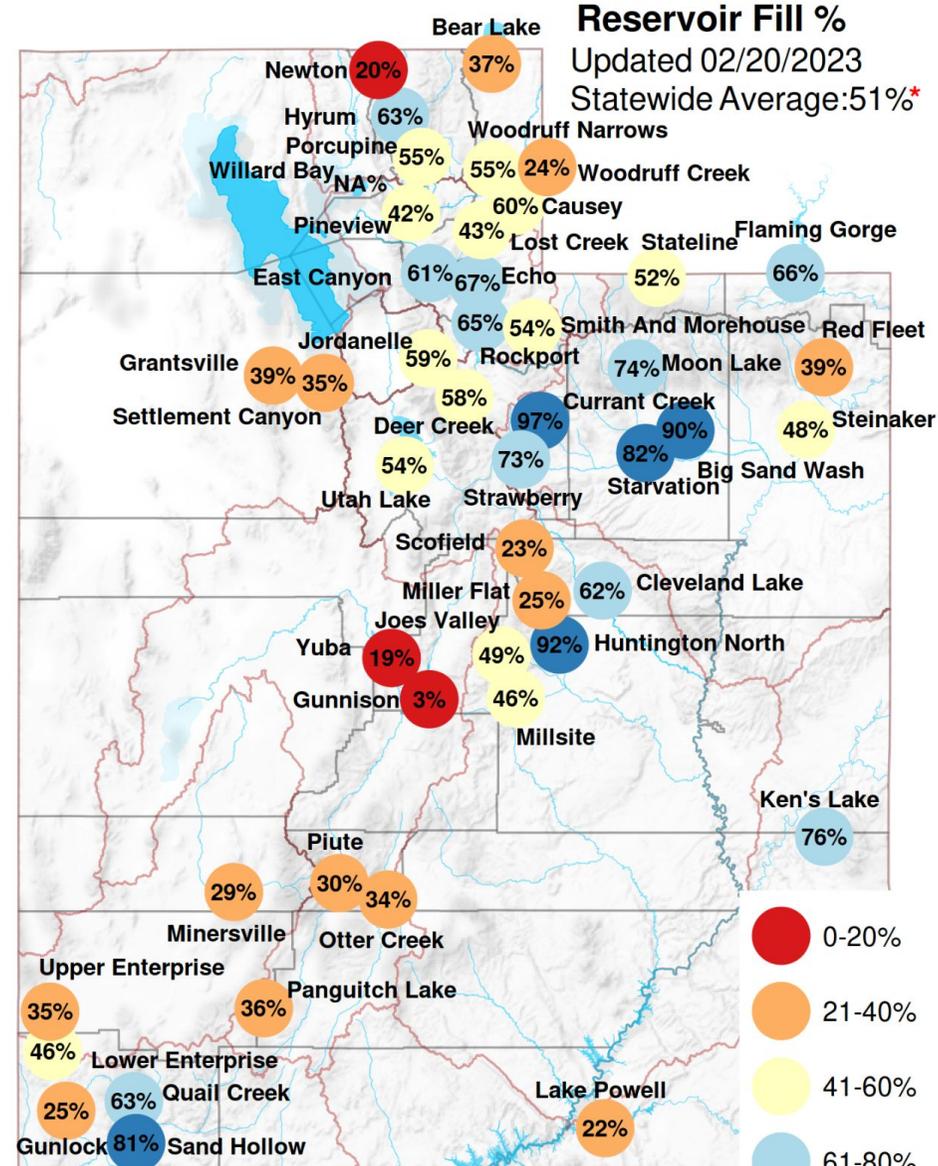
# Streamflow

- Shows real-time data
- Gray color indicates no current data
- Colors indicate flow level
- Detailed information available



# Reservoir Levels

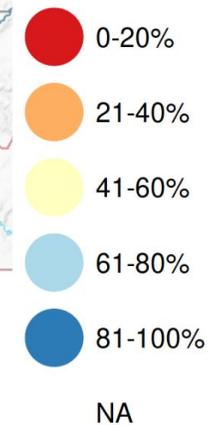
- 3 reservoirs below 20% full
- 5 reservoirs above 80% full
- State average 51% currently
- State average 60% typically this time of year



Data Sources: [water.utah.gov/reservoirlevels](http://water.utah.gov/reservoirlevels)

\*State average excludes Lake Powell & Flaming Gorge to better represent the state's water supply.

Total capacity including these is 32%

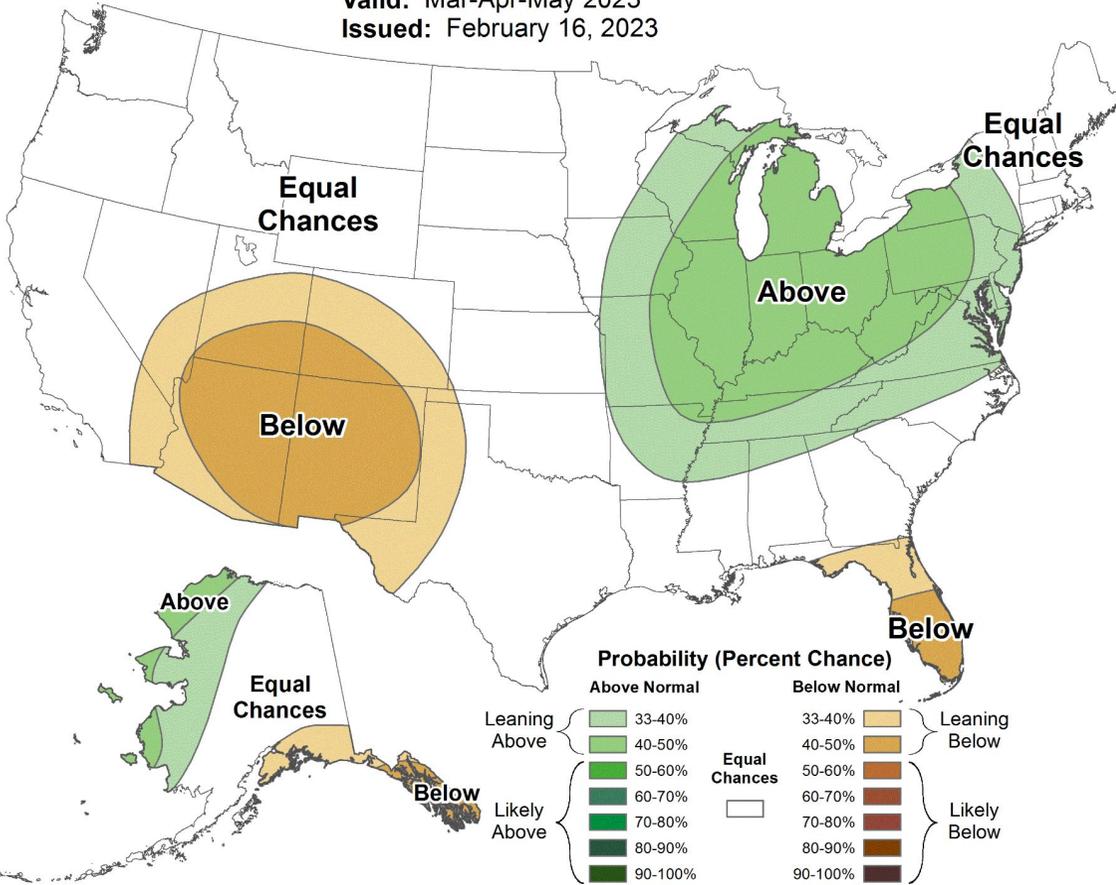




# Seasonal Precipitation Outlook



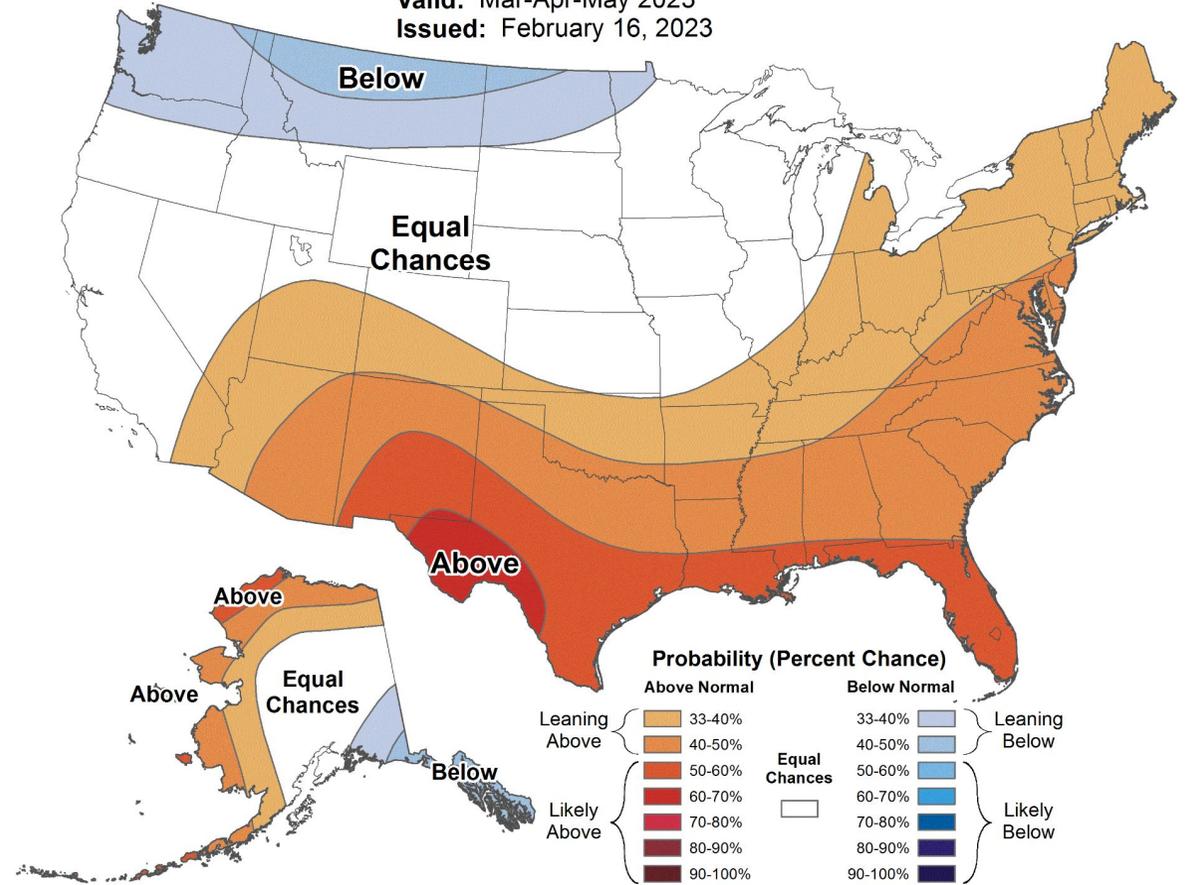
Valid: Mar-Apr-May 2023  
Issued: February 16, 2023



# Seasonal Temperature Outlook

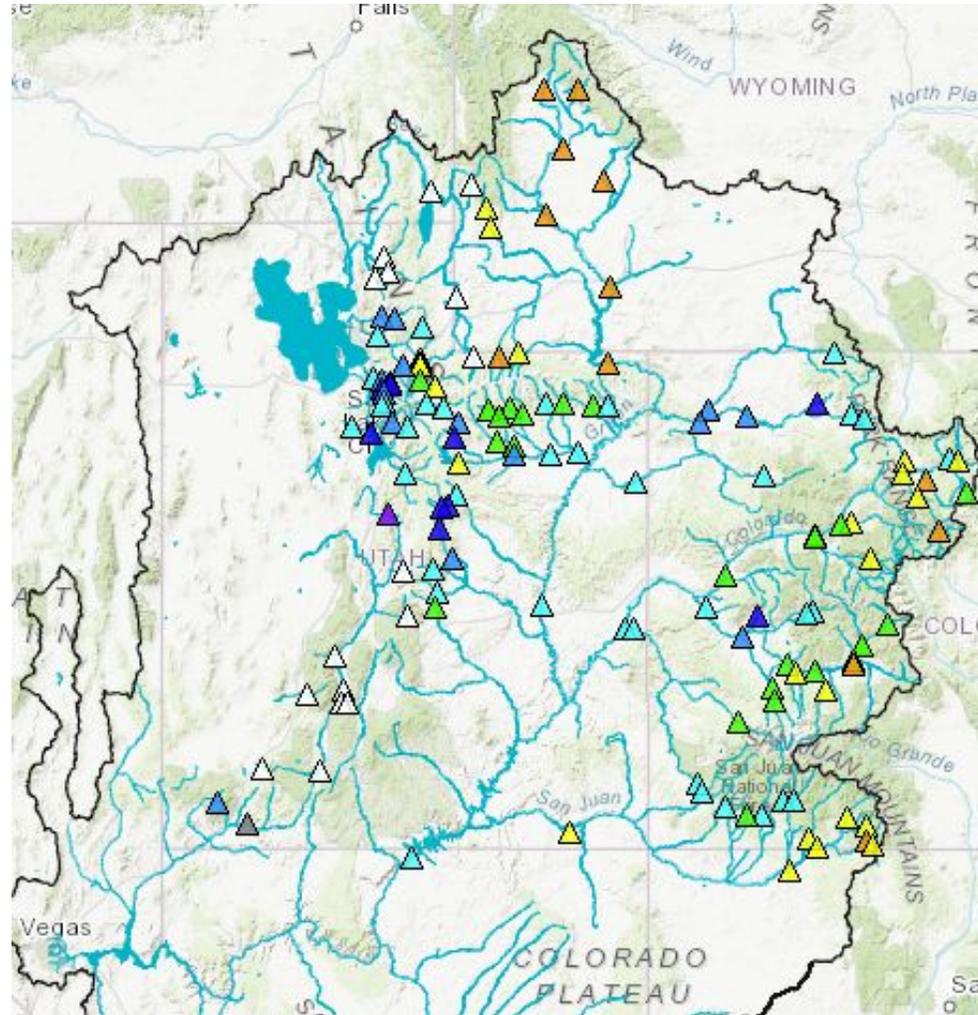


Valid: Mar-Apr-May 2023  
Issued: February 16, 2023



# Colorado River Basin Forecast

- Colorado River Basin Forecast Center
- Forecasts start the first of January
- Specific points



▸ River Conditions

▸ Snow Conditions

▾ Water Supply Forecasts

First of Month Forecast Date: 2023-02-01 [Help](#)

Latest Model Run Date: 2023-02-15

Show [Hide Other Types](#)

- First of Month Forecast Percent Average
- First of Month Forecast Percent Median
- Latest Model Guidance Percent Average
- Latest Model Guidance Percent Median

- ▲ < 30%
- ▲ 30-50%
- ▲ 50-70%
- ▲ 70-90%
- ▲ 90-100%
- ▲ 100-110%
- ▲ 110-130%
- ▲ 130-150%
- ▲ 150-200%
- ▲ 200-300%
- ▲ 300-500%
- ▲ >500%

# Forecasts

<https://www.cbrfc.noaa.gov/dbdata/station/info/nrcsCompare/>

USDA NOAA & NRCS FORECAST COMPARISON TOOL															FORECASTING PARADIGMS				
AREA						MONTH				YEAR				PROBABILITY					
GREEN	COLORADO	SAN JUAN	GREAT	SEVIER	VIRGIN	LOWER COLORADO	JAN	FEB	2023	2022	2021	2020	MIN 90	P 70	MOST PROB 30	P 10	MAX 10		
▼	Area	Station ID ↑	USGS Station ID	River	Location	Fcst Period	CBRFC Fcst (KAF)	CBRFC Avg (KAF)	RFC % of Avg	NRCS Fcst (KAF)	NRCS Avg (KAF)	NRCS % of Avg	Difference (NRCS-CBRFC)	Difference % (NRCS-CBRFC)					
UT	SL	AFPU1	10164500	AMERICAN FORK	AMERICAN FORK; NR; UP PWRPLNT; ABV	4-7	40	25	160	43	26	165	3	7					
UT	GN	ASHU1	09266500	ASHLEY CK	VERNAL; NR	4-7	55	46	120	59	46	128	4	7					
UT	SL	BCTU1	10168500	BIG COTTONWOOD CK	SALT LAKE CITY; NR	4-7	49	34	144	49	33	148		0					
UT	SL	BERU1	10011500	BEAR	UTAH	4-7	128	109	117	141	109	129	13	10					
UT	SV	BEVU1	10234500	BEAVER	BEAVER; NR	4-7	35	23	152	45	23	196	10	25					
UT	SJ	BFFU1	09379500	SAN JUAN	BLUFF; NR	4-7	1050	1110	95	1020	915	111	?	N/A					
UT	GN	BNRU1	09217900	BLACKS FORK	ROBERTSON; NR	4-7	88	88	100	102	87	117	14	15					
UT	GN	BRUU1	09261700	BIG BRUSH CK	VERNAL; NR; RED FLEET RES; ABV	4-7	23	20	117	26	20	133	3	12					
UT	SL	CASU1	10150500	SPANISH FORK	CASTILLA; NR	4-7	77	54	143	90	53	170	?	N/A					
UT	SV	CCDU1	10194200	CLEAR CK	SEVIER; NR; DIVERSIONS; ABV	4-7	28	19	151	35	19	189	7	22					
UT	SL	CCSU1	10172500	CITY CK	SALT LAKE CITY; NR	4-7	8	7	123	8.3	7	128	?	N/A					
UT	SL	CIVU1	10131000	CHALK CK	COALVILLE	4-7	42	35	120	50	35	143	8	17					
UT	SL	CLUU1	10130500	WEBER	COALVILLE; NR	4-7	138	119	116	170	115	148	32	21					
UT	UC	CLRU1	09180500	COLORADO	CISCO; NR	4-7	4550	4080	112	4480	3890	115	-70	-2					
UT	SV	COAU1	10242000	COAL CK	CEDAR CITY; NR	4-7	27	18	149	35	18	193	8	26					
UT	SL	CRAU1	10132490	LOST CK	LOST CK RESERVOIR; CROYDEN; NR	4-7	15.6	13	122	20	13	156	4.4	25					
UT	GN	CRUU1	09286700	CURRANT CK	CURRANT CK RESERVOIR	4-7	28	18	158	31	18	175	3	10					
UT	GN	DADU1	09279150	DUCHESNE	DUCHESNE; NR; KNIGHT DIV; ABV	4-7	220	188	117	255	188	136	35	15					
UT	SL	DCRU1	10159500	PROVO	DEER CK RESERVOIR	4-7	171	119	144	187	122	153	16	9					
UT	SL	DELU1	10171000	DELL FK	LITTLE DELL RESERVOIR	4-7	6.9	4	157	6.1	4	139	-0.8	-12					
UT	UC	DOLU1		DOLORES	CISCO; NR	4-7	600	505	119										
UT	GN	DURU1	09302000	DUCHESNE	RANDLETT; NR	4-7	440	350	126	565	345	164	125	25					
UT	SL	ECBU1	10131500	WEBER	ECHO RESERVOIR; ECHO; AT	4-7	176	152	116	225	148	152	49	24					
UT	SL	ECRU1	10134500	EAST CANYON CK	EAST CANYON RESERVOIR; MORGAN; NR	4-7	35	23	152	41	23	178	6	16					
UT	GN	ELLU1	09317801	HUNTINGTON CK	ELECTRIC LAKE	4-7	20	11	177	23	11	202	3	14					
UT		EMIU1		Emigr	Emigration Ck nr SLC	4-7				5	3	161							
UT	GN	FCNU1	09310500	FISH CK	SCOFIELD; NR; RESERVOIR; ABV	4-7	45	26	173	50	26	192	5	11					
UT	GN	FRU1	09326500	FERRON CK	FERRON; NR	4-7	41	35	117	48	35	137	7	16					
UT	SL	GATU1	10136500	WEBER	GATEWAY	4-7	375	275	136	435	270	161	60	15					
UT	GN	GRNU1	09234400	GREEN	FLAMING GORGE RESERVOIR	4-7	880	965	91	945	965	98	65	7					
UT	GN	GRVU1	09315000	GREEN	GREEN RIVER; UT	4-7	3500	2810	125	3900	2800	139	400	11					
UT	SV	HATU1	10174500	SEVIER	HATCH	4-7	71	48	148	88	48	183	17	21					
UT	GN	HPBU1	09317997	HUNTINGTON CK	POWER PLANT; BLO	4-7	55	40	138	65	40	163	10	17					

# Forecast Comparison Tool

<https://www.cbrfc.noaa.gov/dbdata/station/info/nrcsCompare/>

- **Previous 3 Years Available**

Select forecasts from the previous 3 years for comparison

- **View Past Months Forecasts**

See how the forecast has changed over the winter

- **Toggle Between Median & Average**

- **Downloadable Data (csv)**

## Contacts:



Jordan Clayton  
jordan.clayton@usda.gov



Paul Miller  
paul.miller@noaa.gov

USDA NOAA NOAA & NRCS FORECAST COMPARISON TOOL

AREA MONTH

GREEN COLORADO SAN JUAN GREAT SEVIER VIRGIN LOWER COLORADO JAN FEB

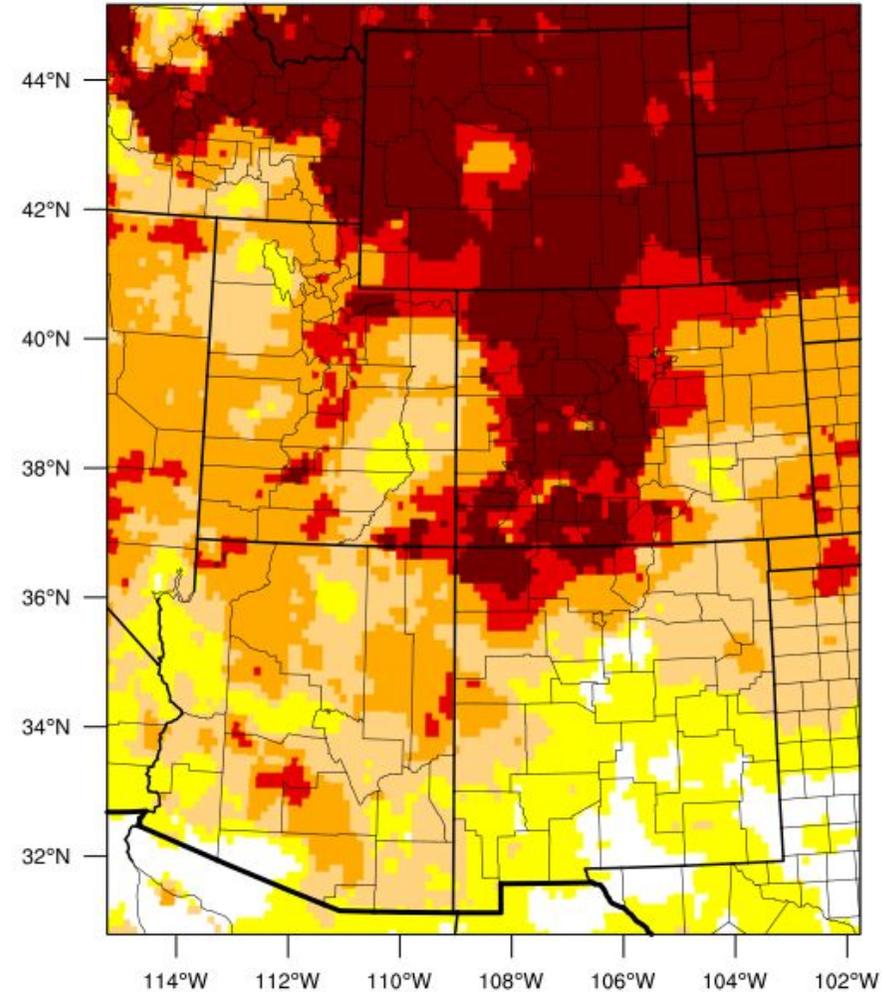
COLUMNS FILTERS DENSITY EXPORT AVERAGE MEDIAN

# Evaporative Demand

- EDDI map (Evaporative Demand Drought Index)
- Available in various time scales
- Updated daily
- Early warning guidance tool

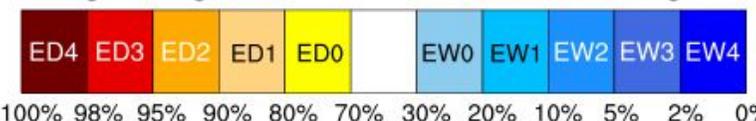


2-week EDDI categories for February 15, 2023



Drought categories

Wetness categories



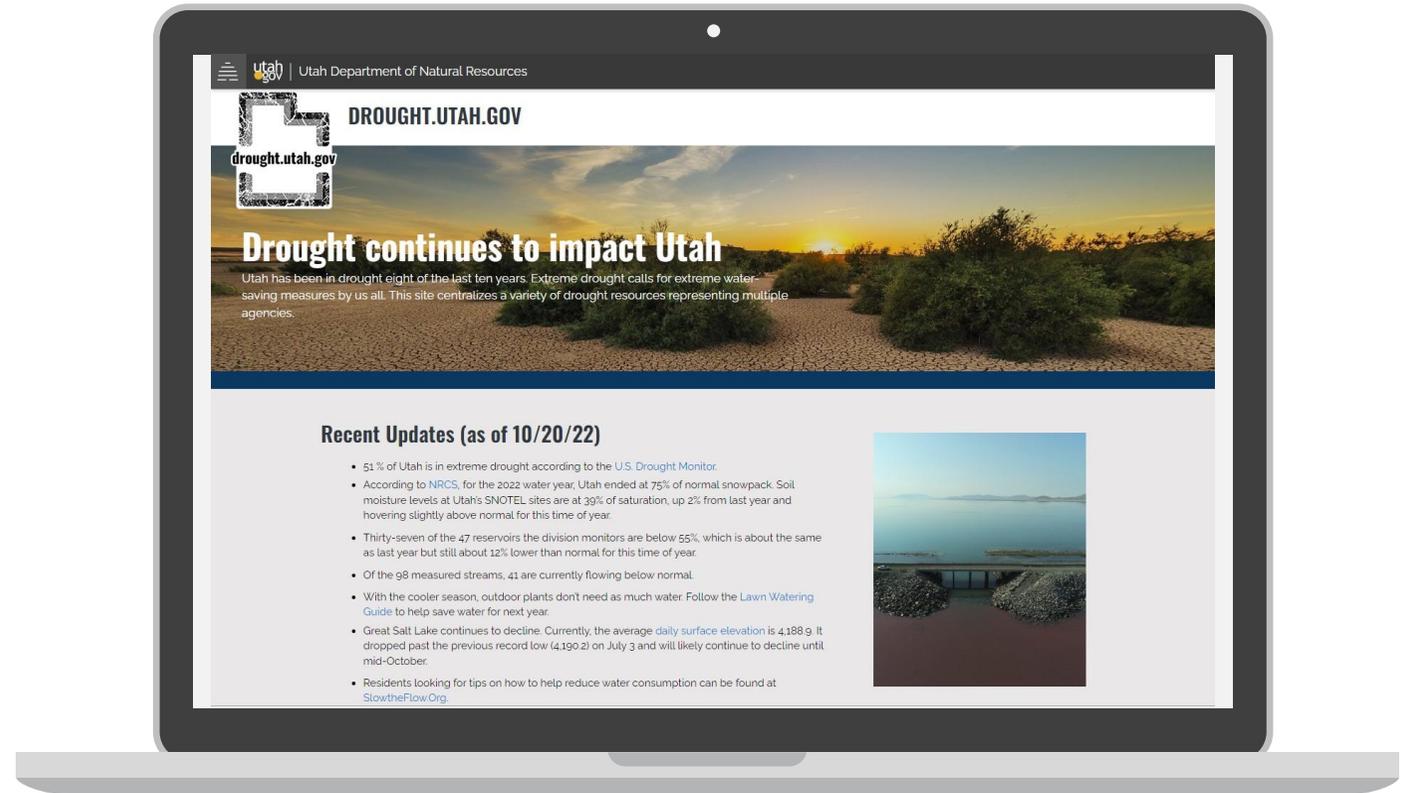
100% 98% 95% 90% 80% 70% 30% 20% 10% 5% 2% 0%

(EDDI-percentile category breaks: 100% = driest; 0% = wettest)

Generated by NOAA/ESRL/Physical Sciences Laboratory

# Drought.Utah.gov

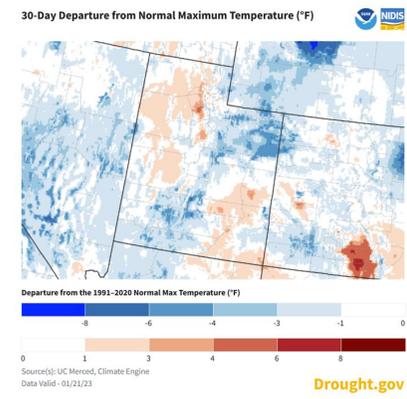
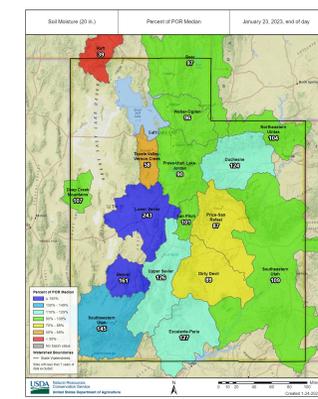
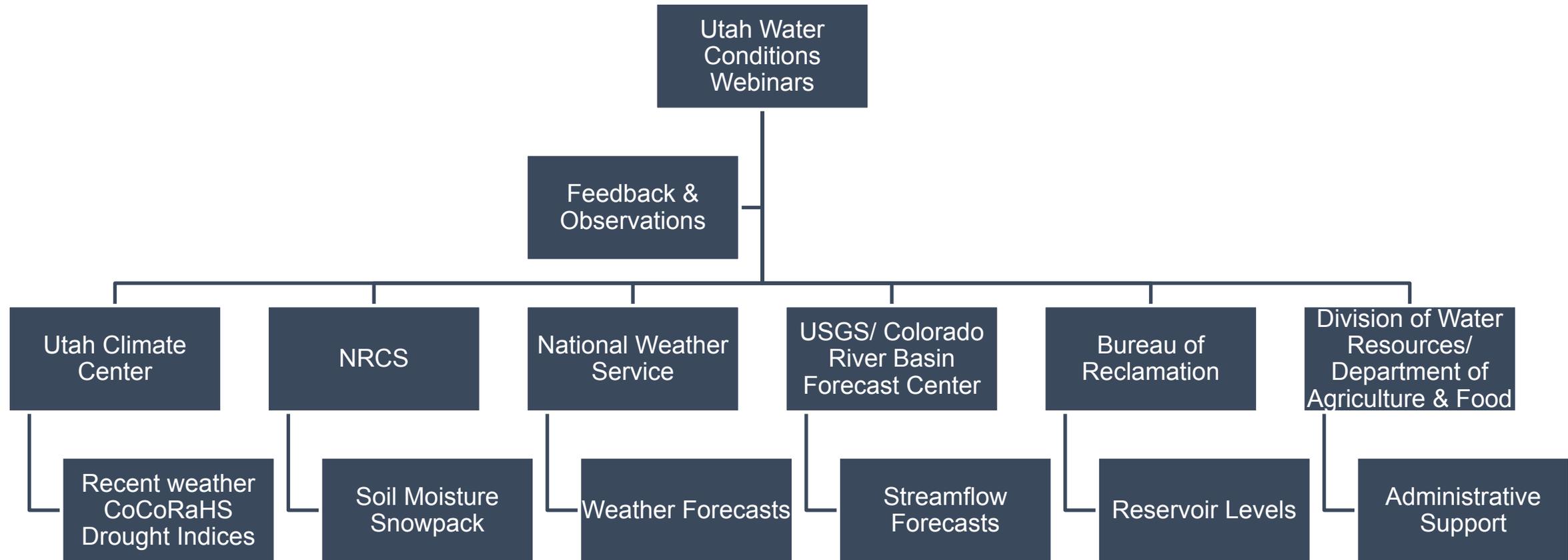
- Reservoir levels
- Wildfire information
- Drought Monitor map
- Conservation Tips
- Algal blooms
- Boat Ramp closures
- Division of Wildlife drought updates
- UDAF agricultural resources



# Water Conditions Monitoring (Drought Webinars)

- Regularly held webinars
- Water data shared
- Opportunity to ask questions
- Opportunity to submit observations
- US Drought Monitor Map recommendation





Source(s): UC Merced, Climate Engine  
Data Valid - 01/23/23  
Drought.gov

# CoCoRaHS

Collaborative Community Rain Hail and Snow Network. CoCoRaHS is a network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow)

Contact: [www.cocorahs.org](http://www.cocorahs.org) or  
Jon.Meyer@USU.EDU



# THANK YOU

Laura Haskell

[lhaskell@Utah.gov](mailto:lhaskell@Utah.gov)  
[drought@Utah.gov](mailto:drought@Utah.gov)



NRCS Utah Snow Survey <https://www.nrcs.usda.gov/wps/portal/wcc/home/quicklinks/states/utah/>

USGS Water Dashboard <https://dashboard.waterdata.usgs.gov/app/nwd/en/?aoi=wsc-ut>

Colorado Basin River Forecast Center <https://www.cbrfc.noaa.gov/lmap/lmap.php>

NOAA & NRCS forecast comparison tool

<https://www.cbrfc.noaa.gov/dbdata/station/info/nrcsCompare/>

Reservoir map, wildfire information, algal blooms, etc. <https://drought.utah.gov/>

CoCoRaHS rain gauge <https://www.cocorahs.org/>

Laura Haskell

lhaskell@Utah.gov

drought@Utah.gov

