Utah Water Assessment & Conditions Monitoring
(Drought Webinar)

The meeting will begin shortly

UTAH CLIMATE CENTER

NOAA

USGS science for a changing world

BUREAU OF RECLAMATION

NRCS Natural Resources Conservation Service

UDAF

UTAH DNR WATER RESOURCES

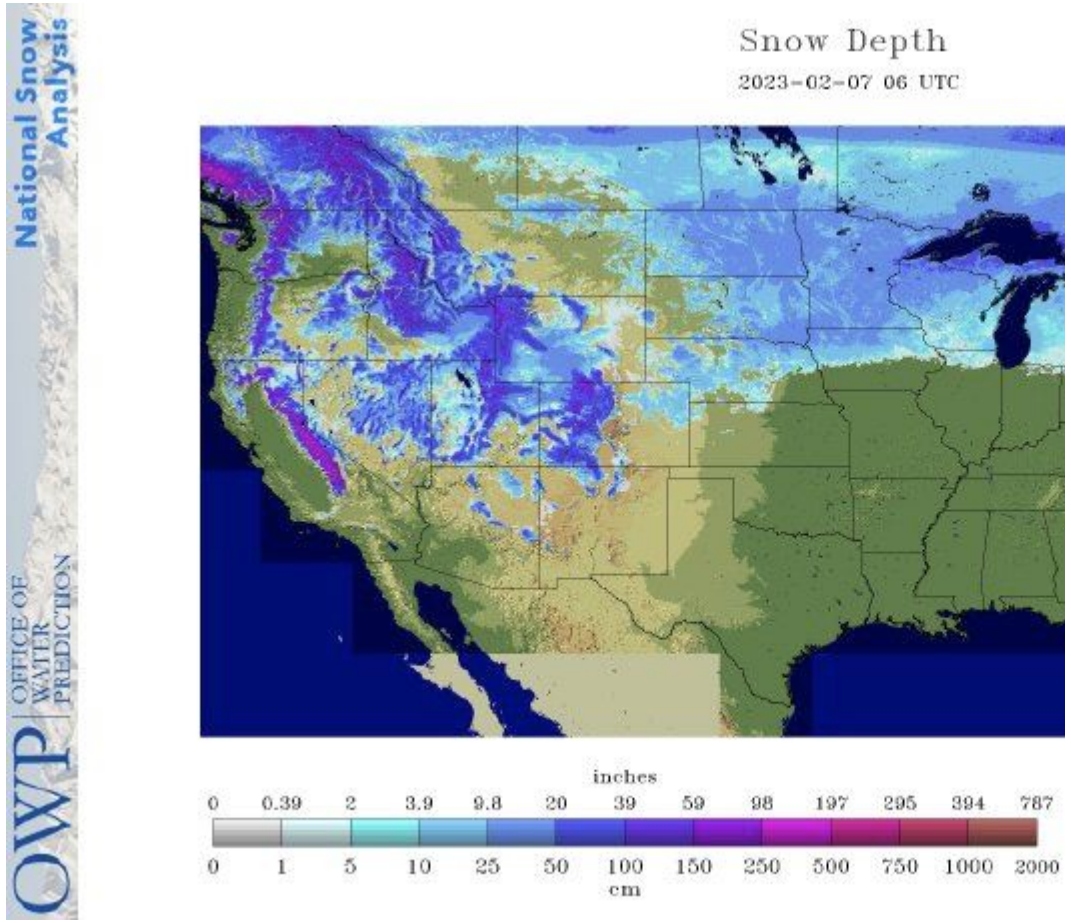
Thank you to our contributors

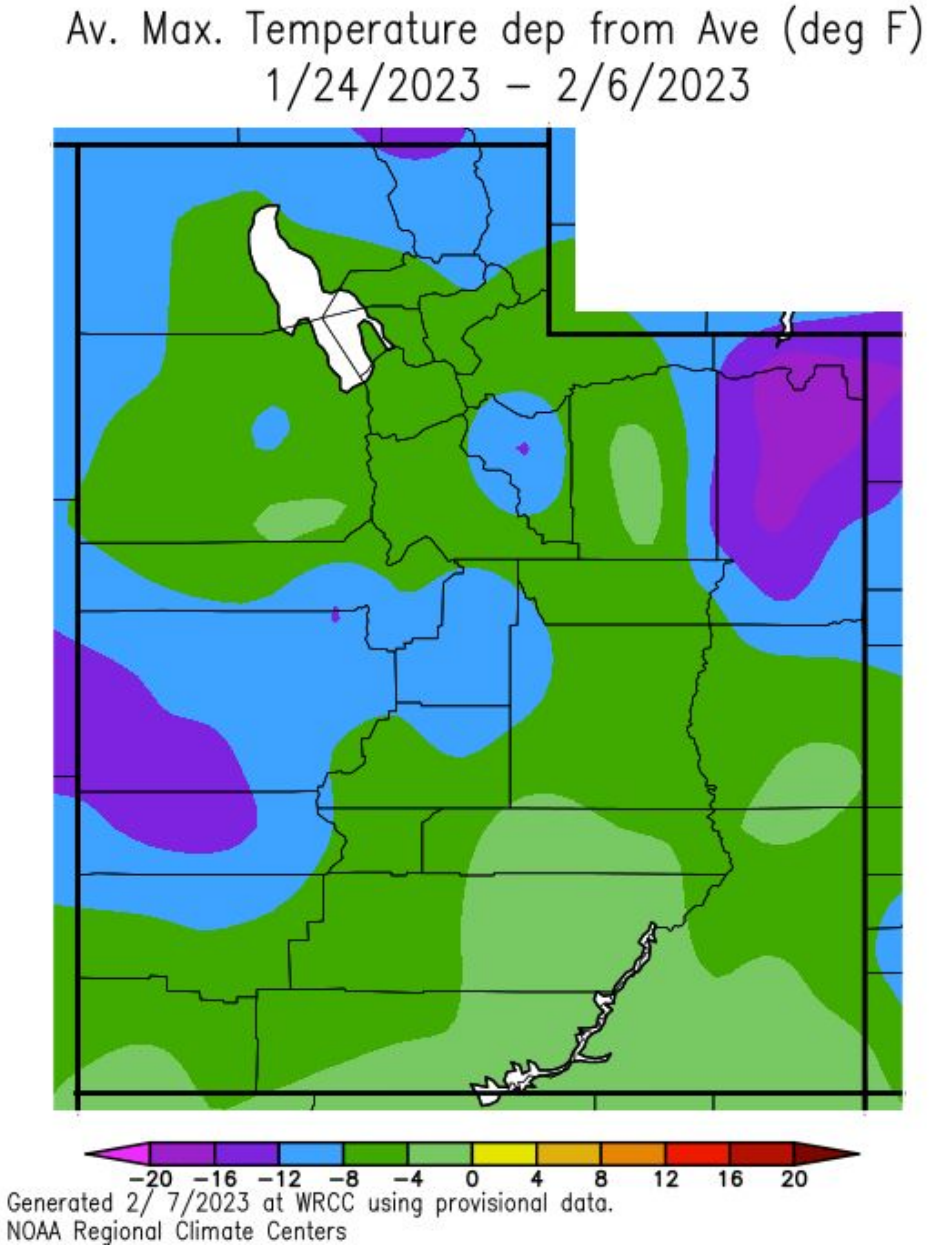
Utah Water Assessment & Conditions Monitoring Webinar

February 7, 2023

Temperature 14 day (Related to Average)

Much below normal weather prevailed since our last meeting–helping preserve snowpack across the state

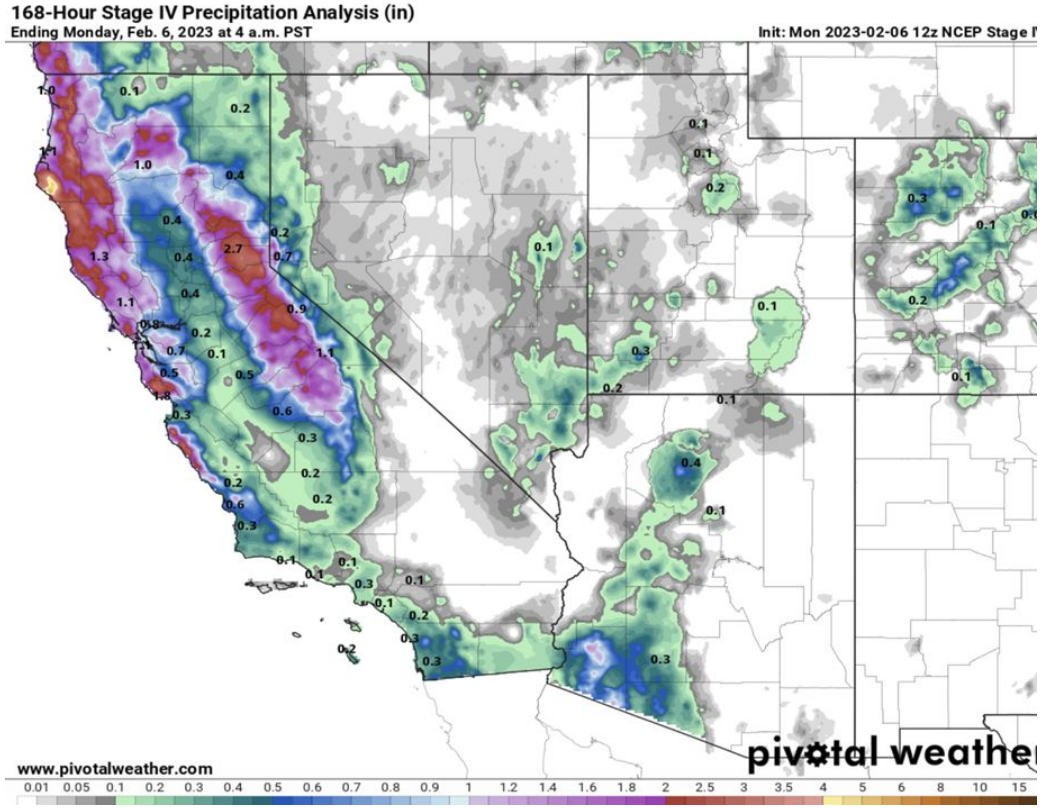


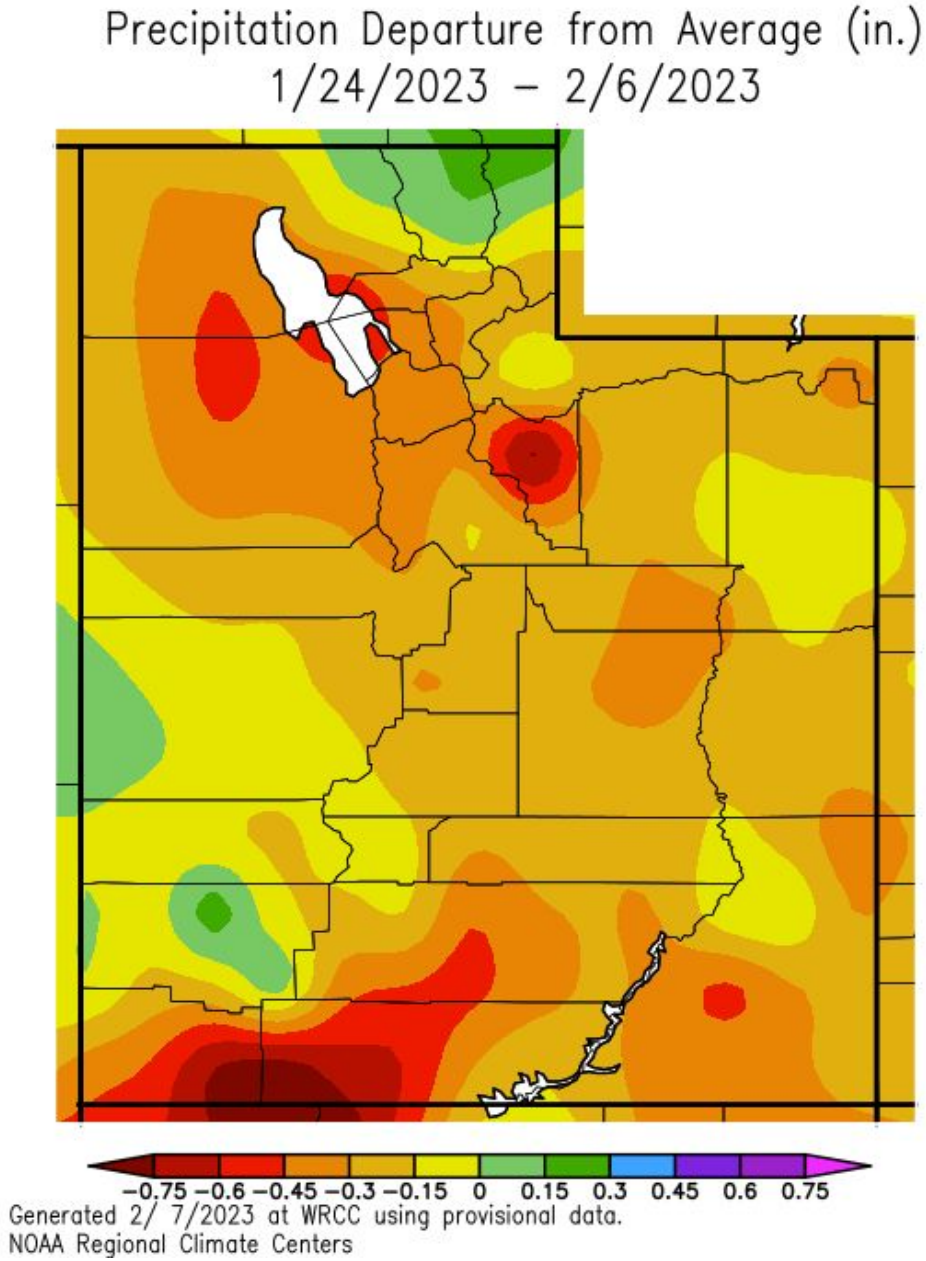


Agency - Utah Climate Center
Presenter - Jon Meyer

Precipitation 14 day history (Percent of Average)

Quiet weather over last two weeks; short time scale and ongoing active weather pattern means the slow down in snow accumulation is no cause for concern for the seasonal status…which remains significantly favorable.





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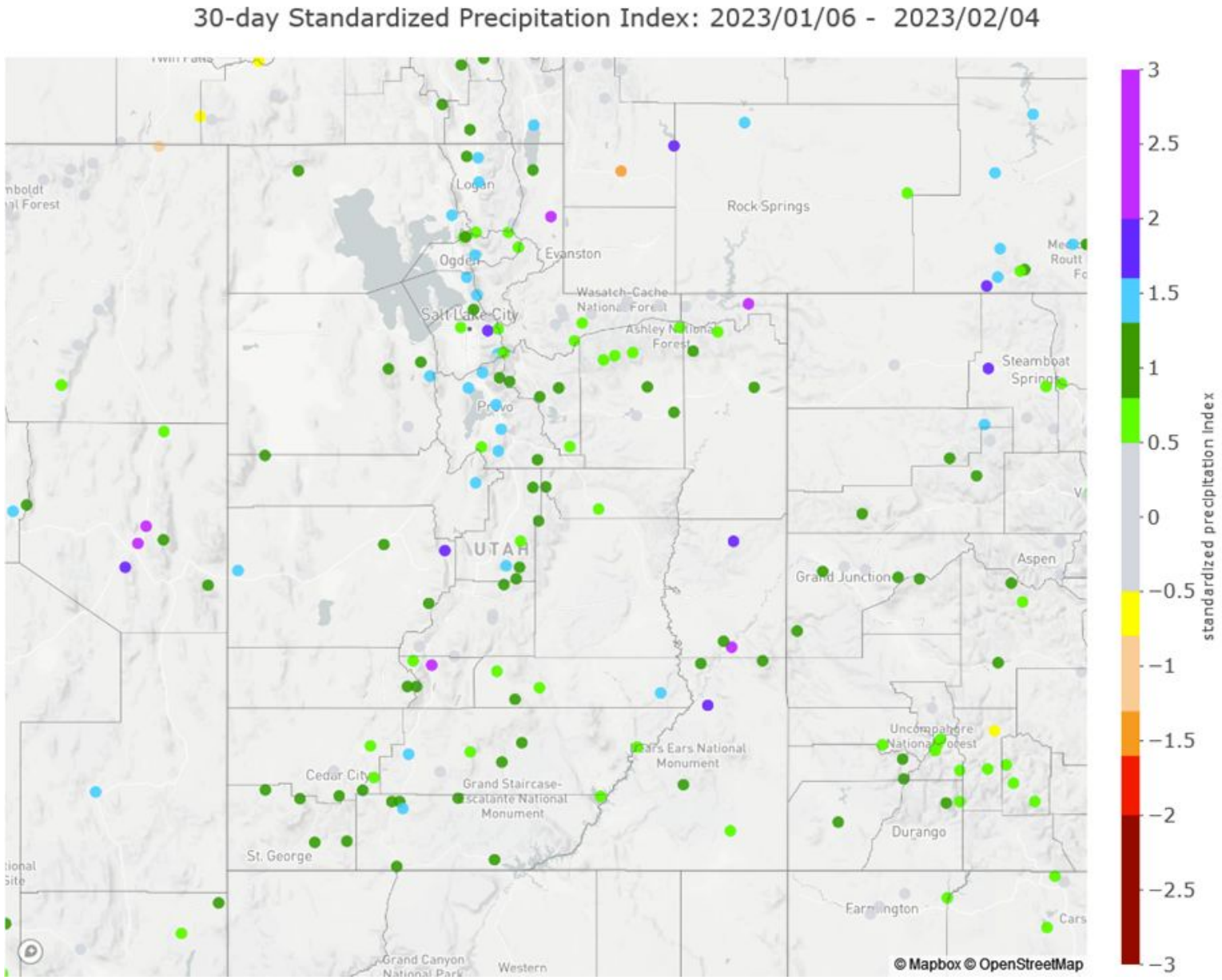
Precipitation 30 day Standardized Precipitation Index (SPI)

With a push for drought improvement, let's focus on the spectrum of timescales for precipitation conditions across the state.

30-day SPI (short timescales) remains well above normal statewide



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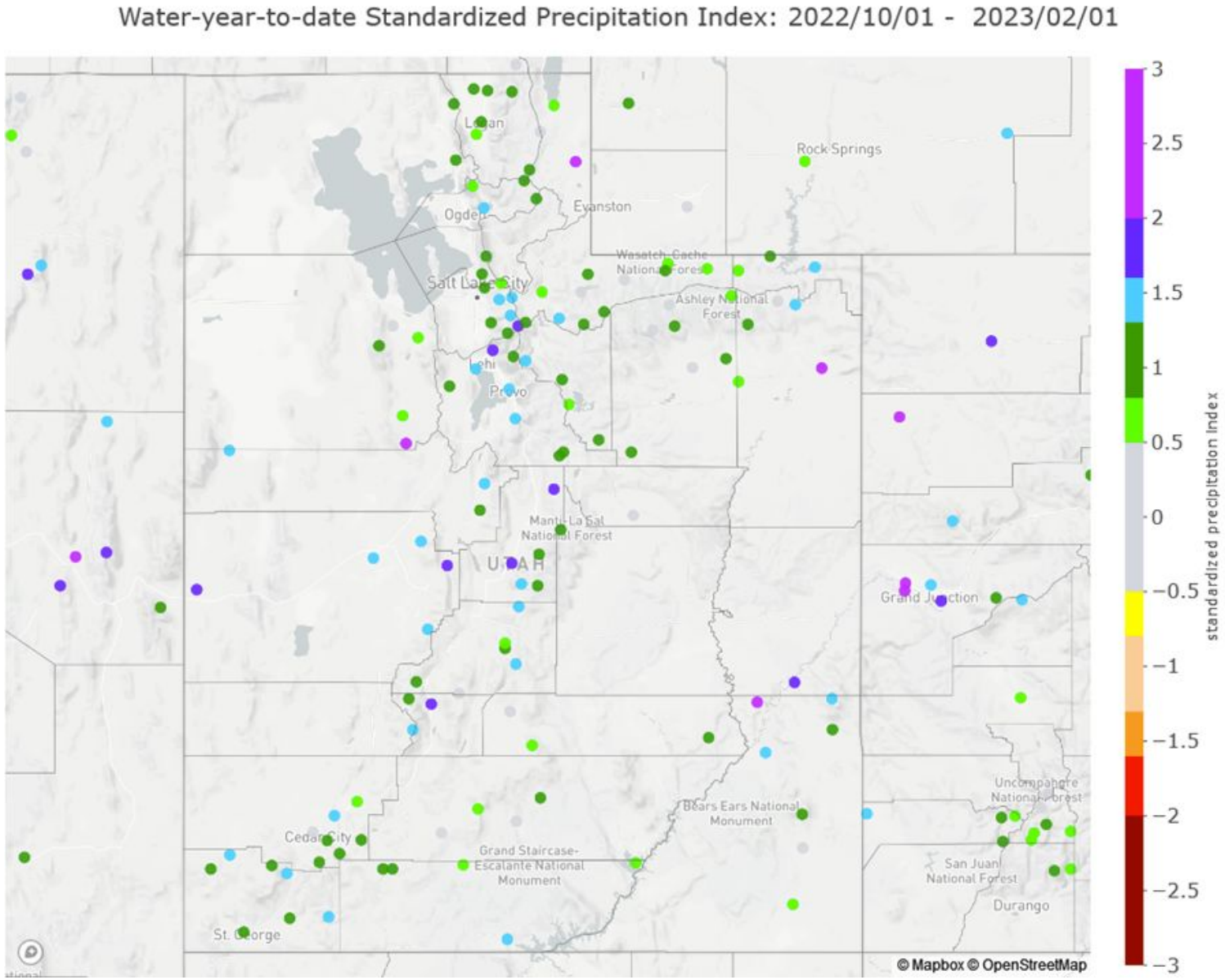
Presenter - Jon Meyer

Precipitation Water-Year-to-date Standardized Precipitation Index (SPI)

With a push for drought improvement, let's focus on the spectrum of timescales for precipitation conditions across the state.

Water-year-to-day SPI (intermediate timescales) remains even more above normal statewide



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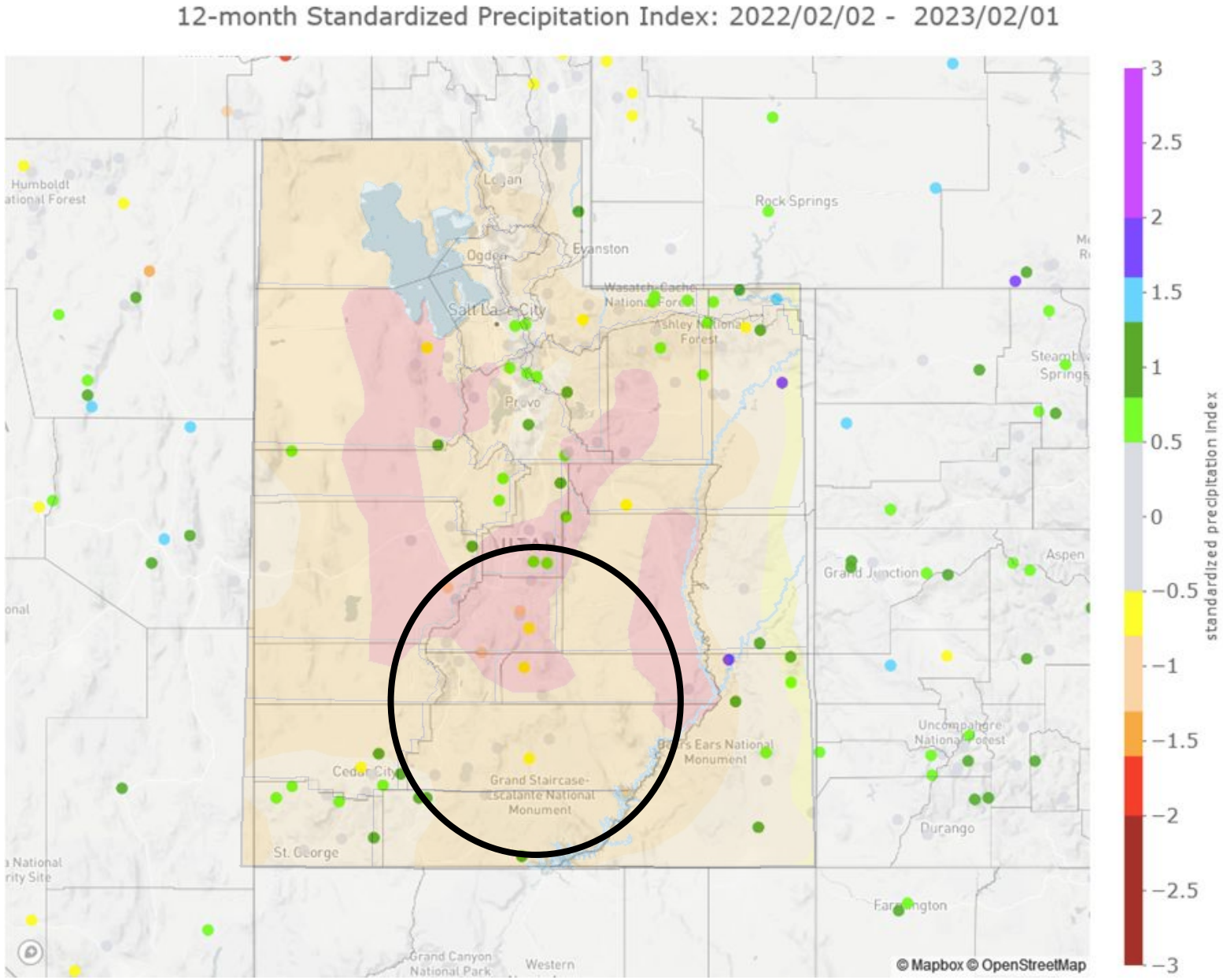
Presenter - Jon Meyer

Precipitation 12-month Standardized Precipitation Index (SPI)

With a push for drought improvement, let's focus on the spectrum of timescales for precipitation conditions across the state.

12-month SPI (long timescales) is less favorable for south/central Utah, while rest of the state experienced near-normal to slightly above normal precipitation.

Layered Drought Categories for reference



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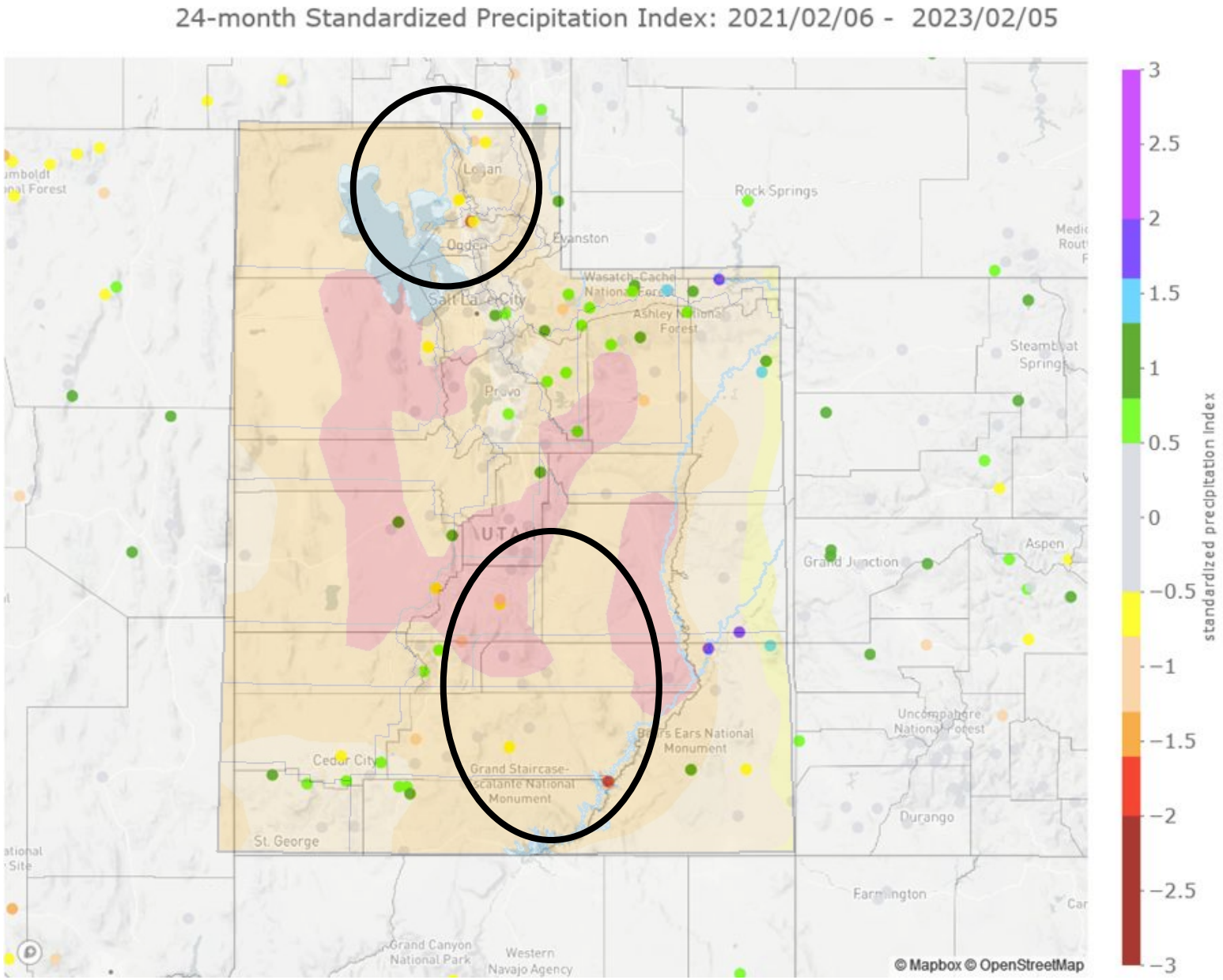
Precipitation 24-month Standardized Precipitation Index (SPI)

With a push for drought improvement, let's focus on the spectrum of timescales for precipitation conditions across the state.

24-month SPI (long timescales) is less favorable for south/central Utah, while rest of the state experienced near-normal to above normal precipitation.

Layered Drought Categories for reference



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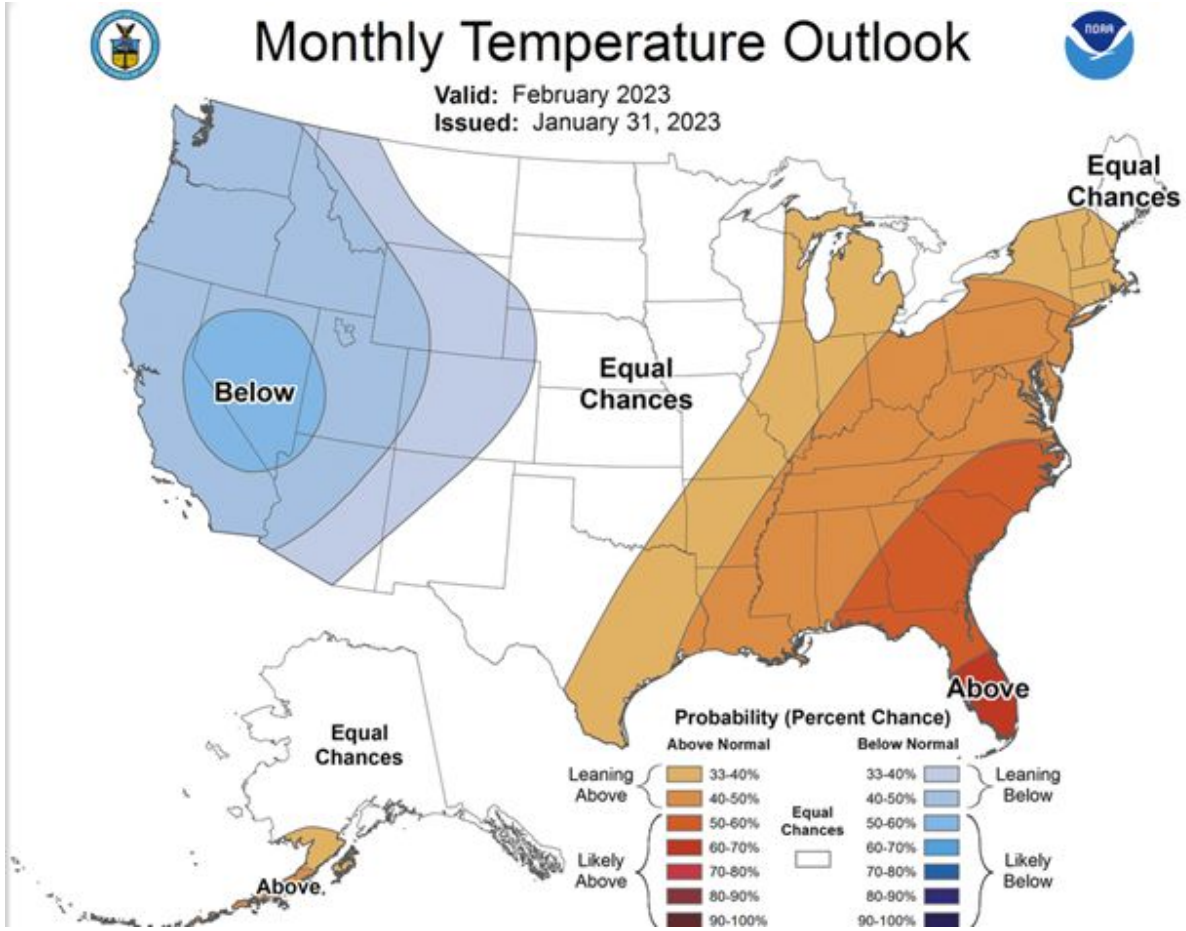
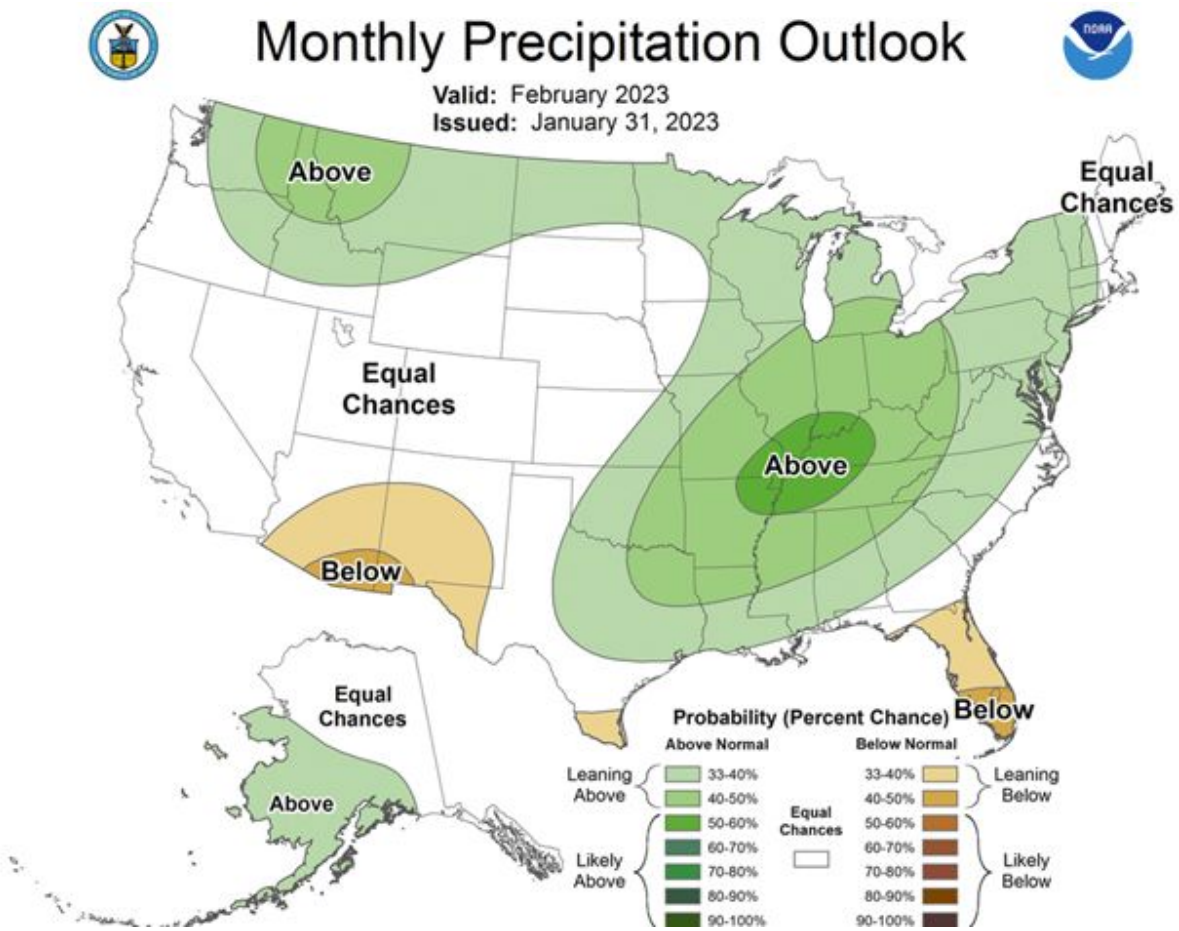
Climate Prediction Center February Outlook





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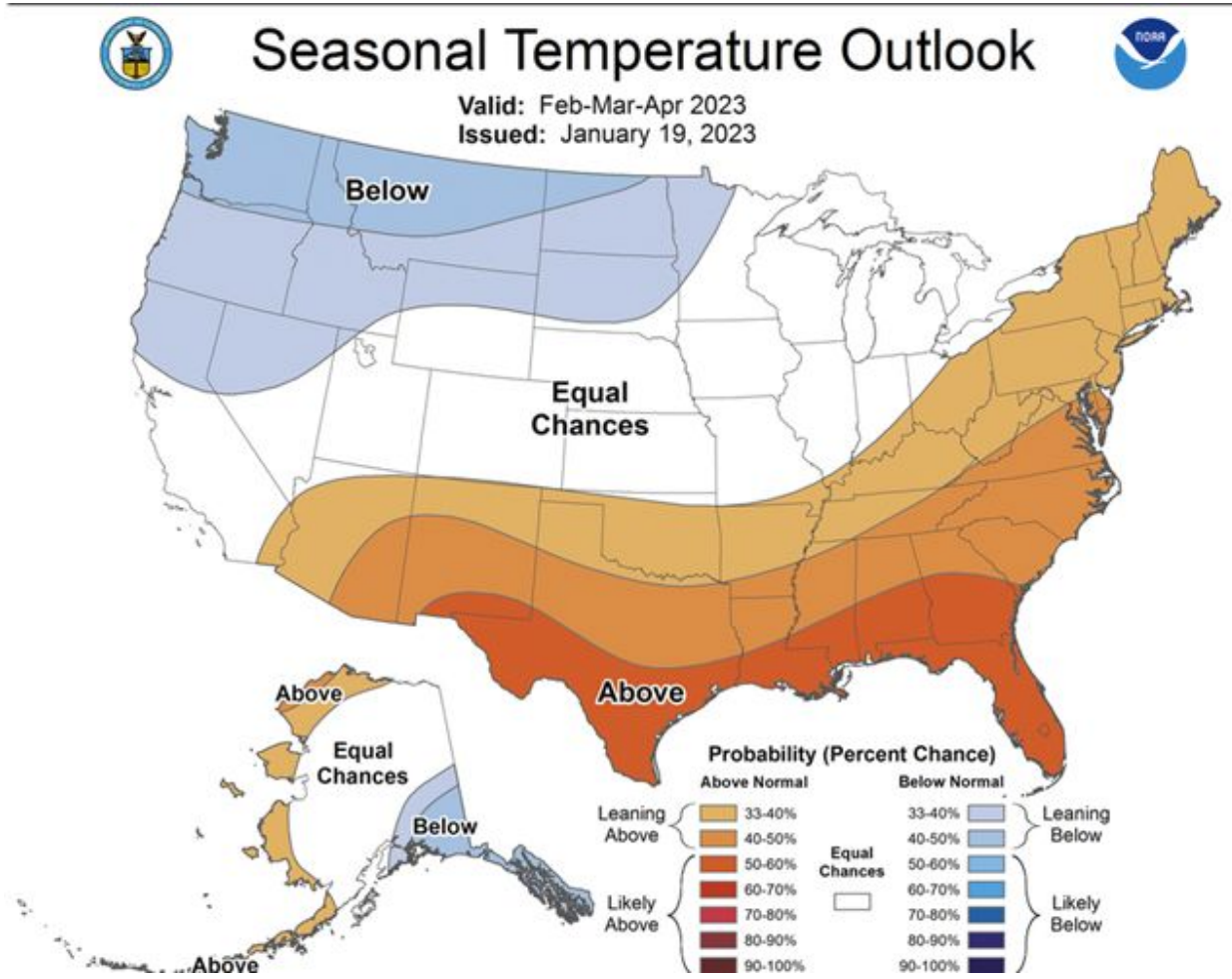
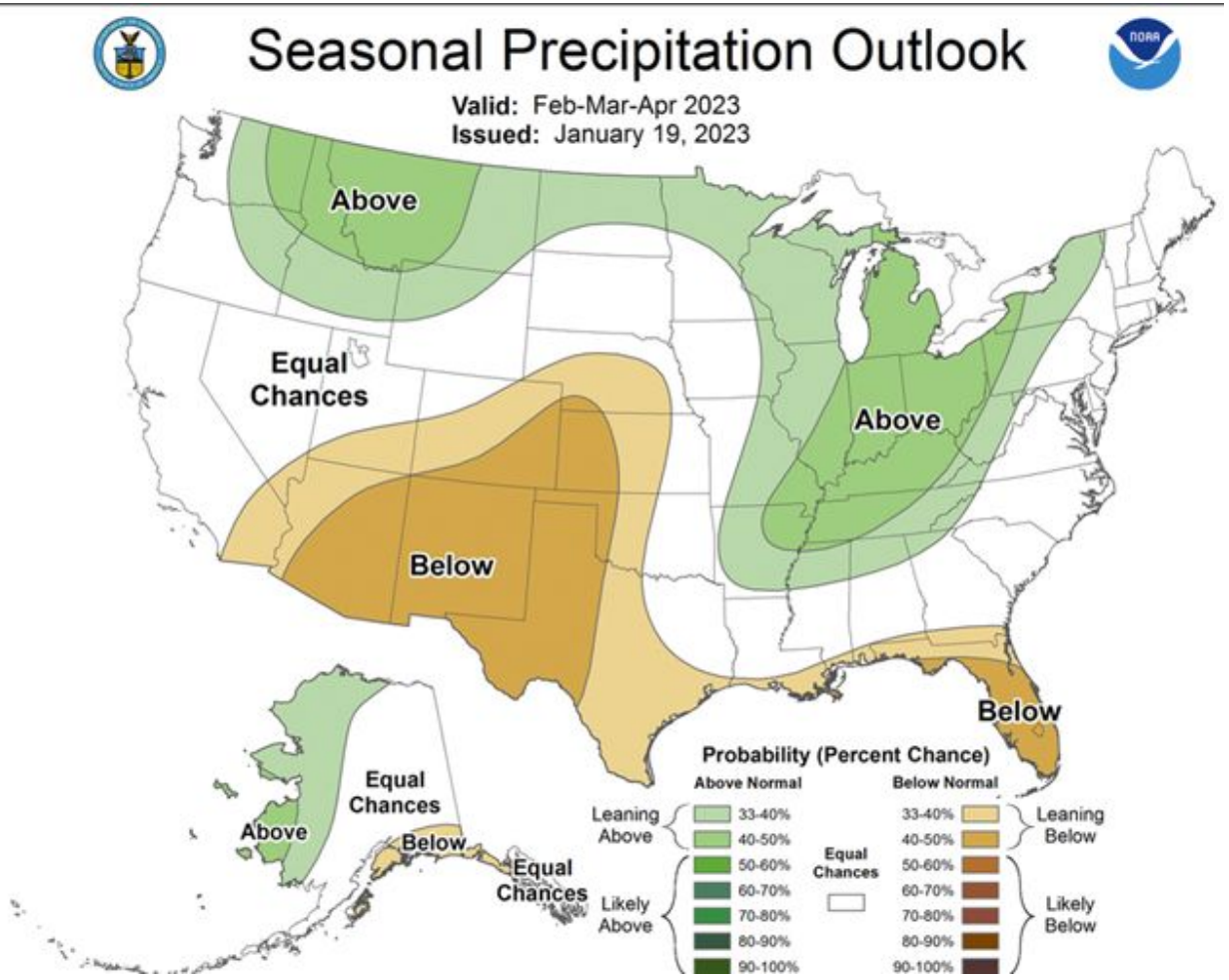
Presenter - Jon Meyer

Climate Prediction Center February-April Outlook





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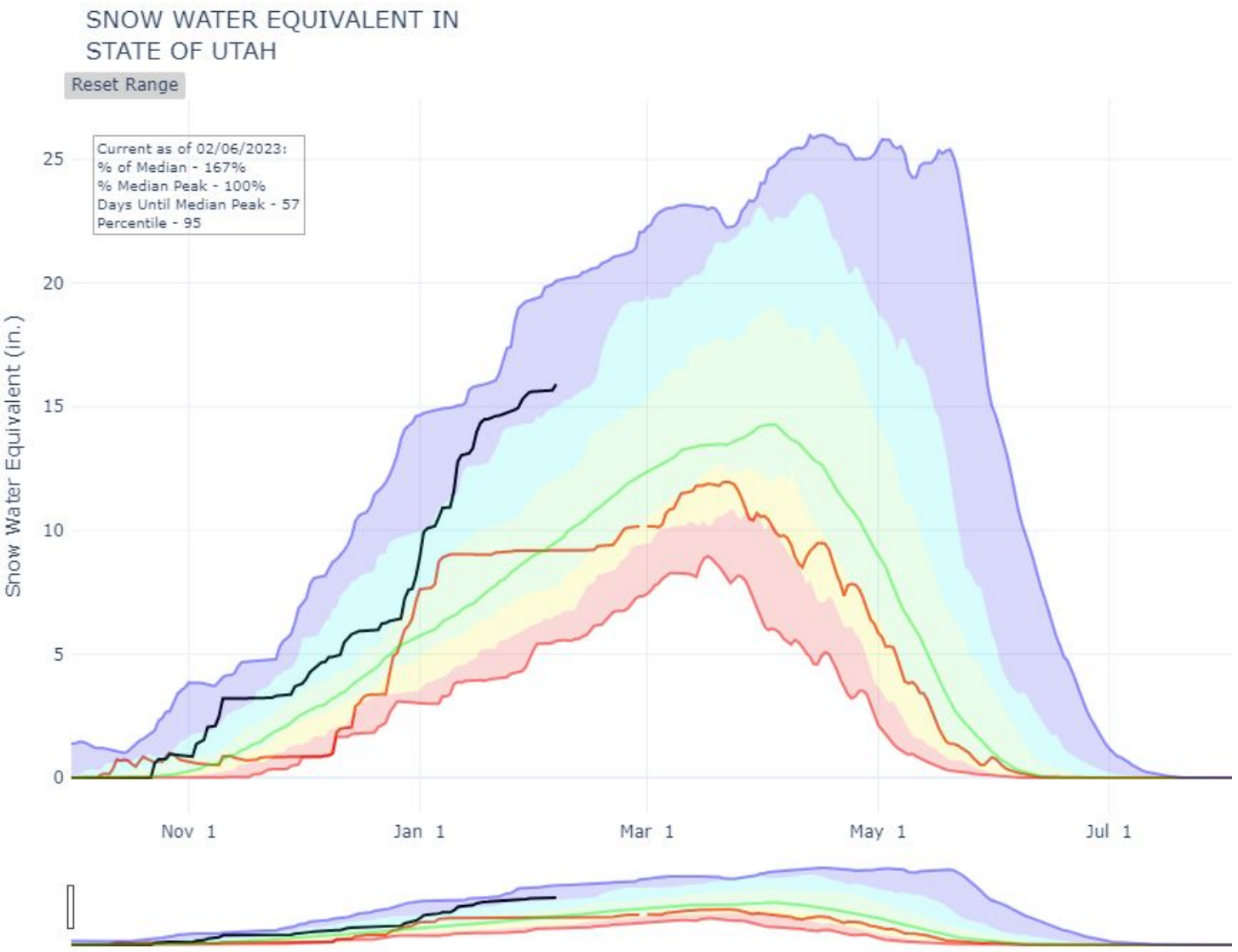
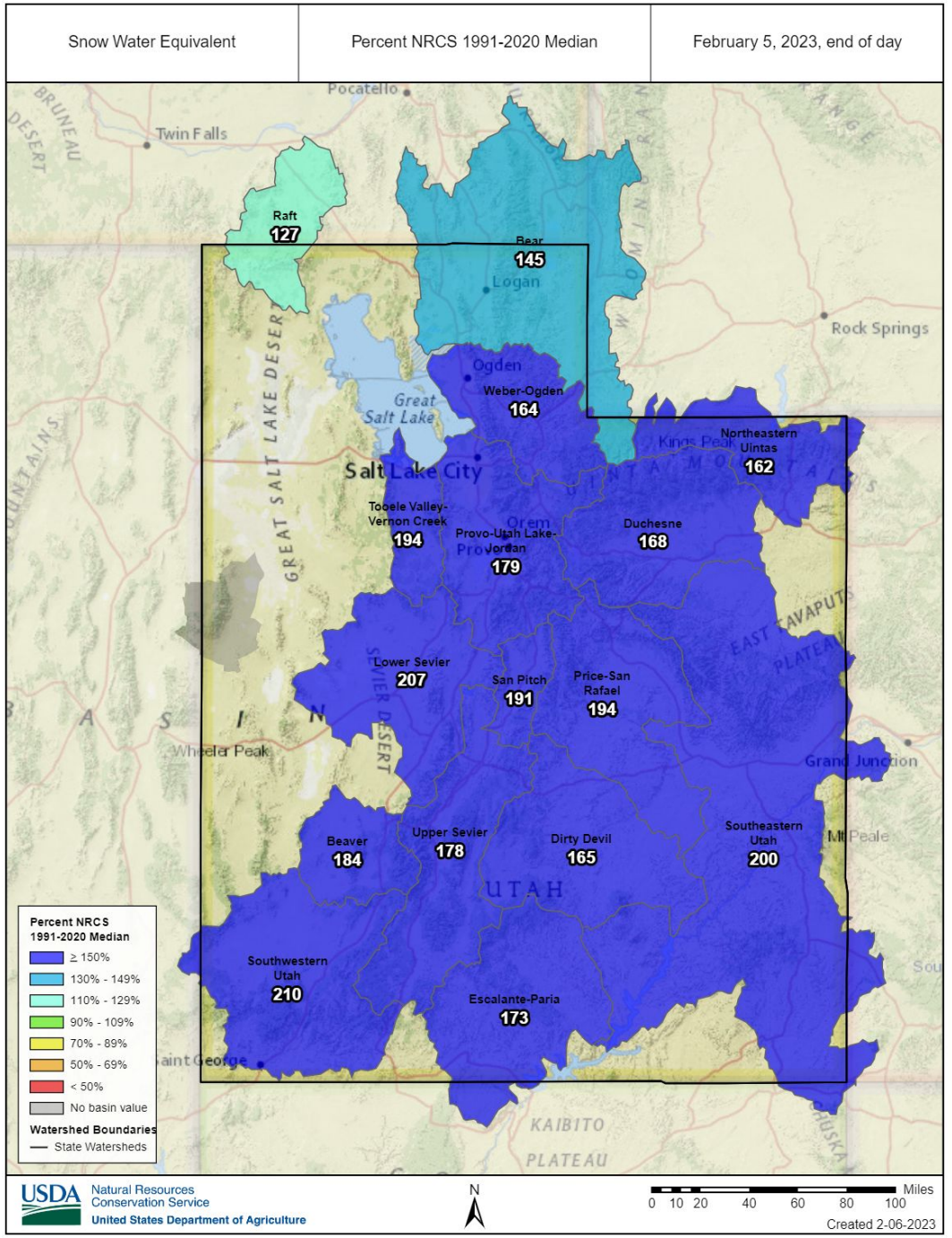
Presenter - Jon Meyer

Snowpack

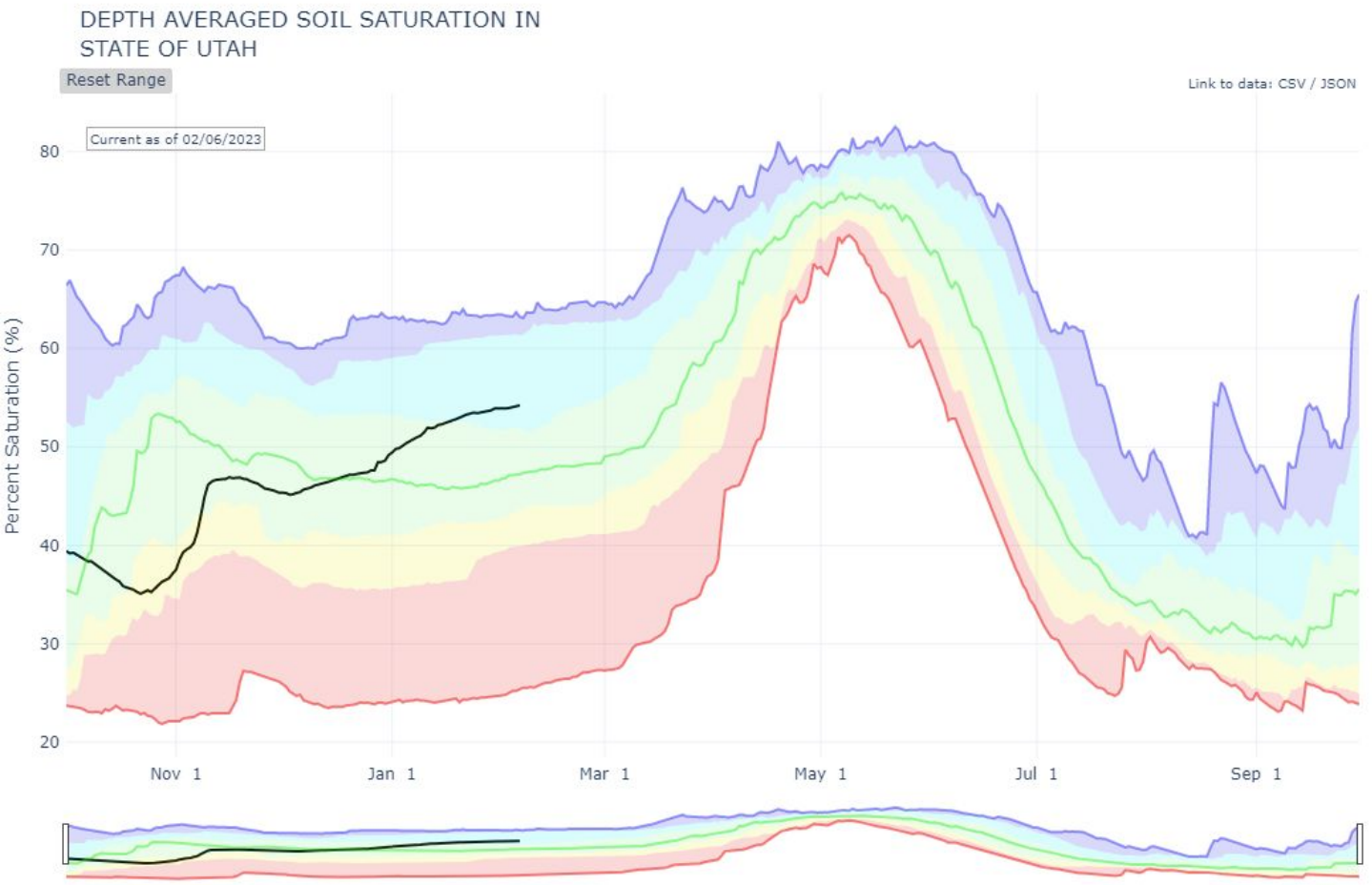


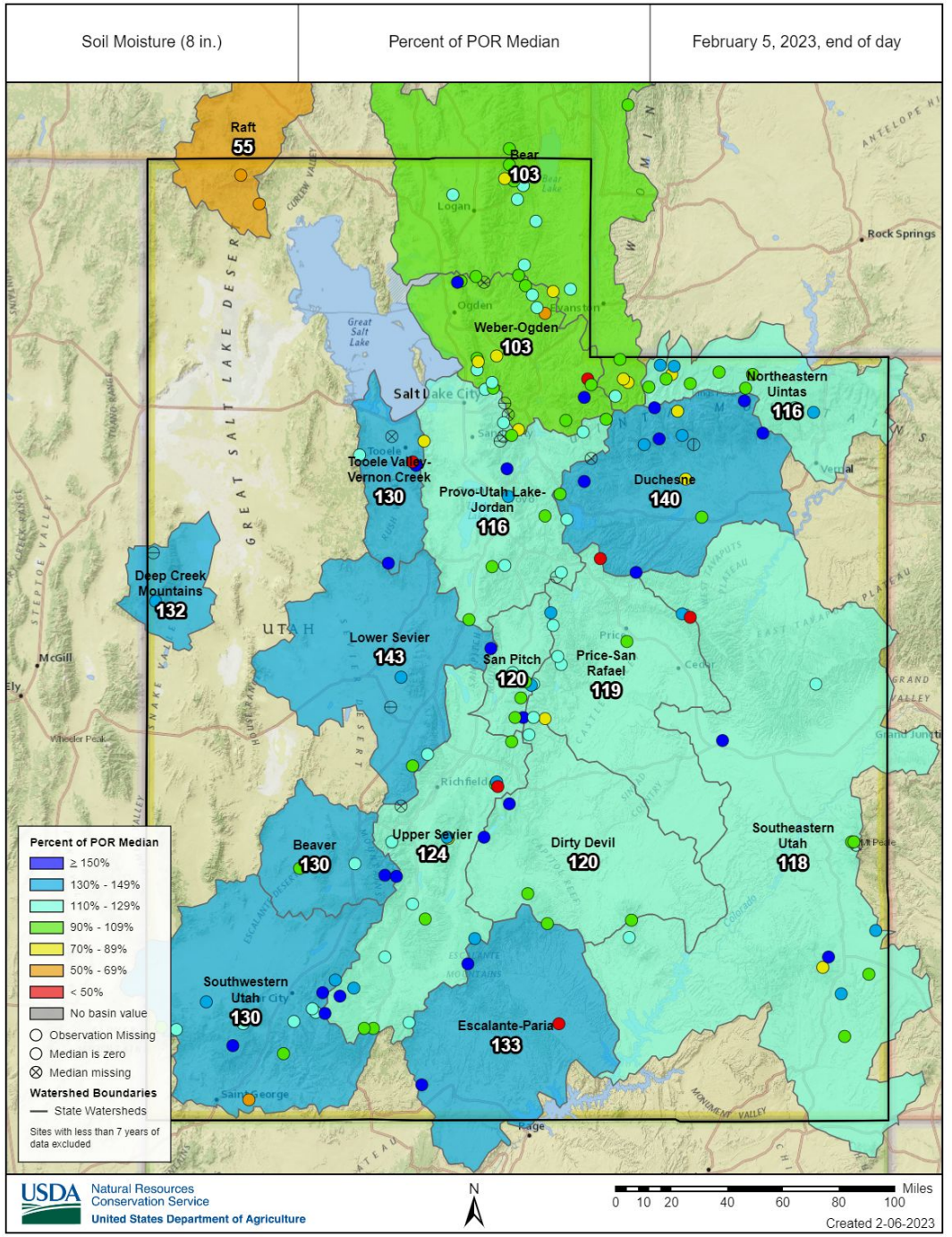


Agency - NRCS Snow Survey

Presenter - Jordan Clayton

Soil Moisture





Agency - NRCS Snow Survey
Presenter - Jordan Clayton

Streamflow forecasts

NOAA & NRCS FORECAST COMPARISON TOOL

FORECASTING PARADIGMS

AREA: GREEN | COLORADO | SAN JUAN | GREAT | SEVIER | VIRGIN | LOWER COLORADO

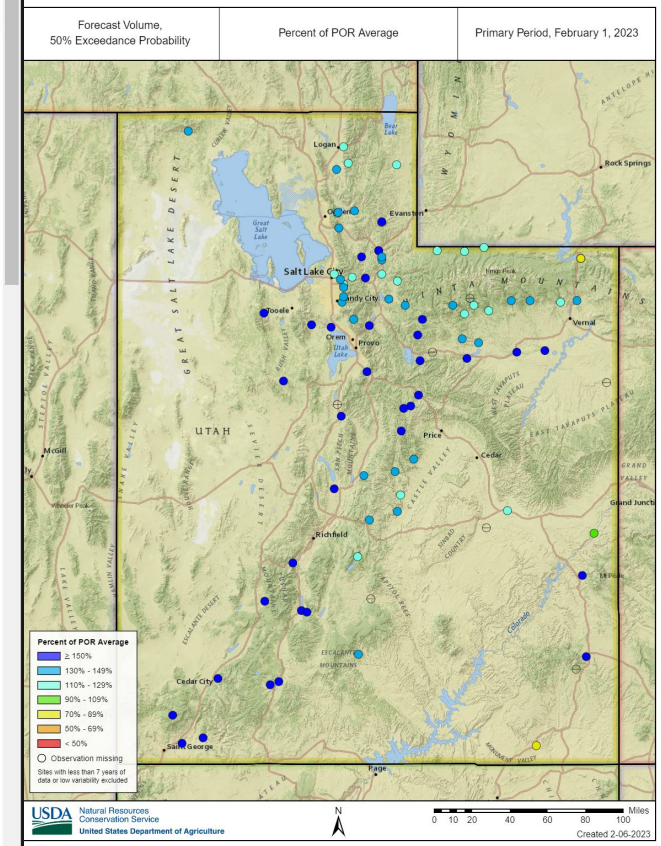
MONTH: JAN | FEB

YEAR: 2023 | 2022 | 2021 | 2020

PROBABILITY: MIN 90 | P 70 | MOST PROB | P 30 | MAX 10

COLUMNS | FILTERS (1) | DENSITY | EXPORT | AVERAGE | MEDIAN

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	CLLU1	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	FRRU1	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

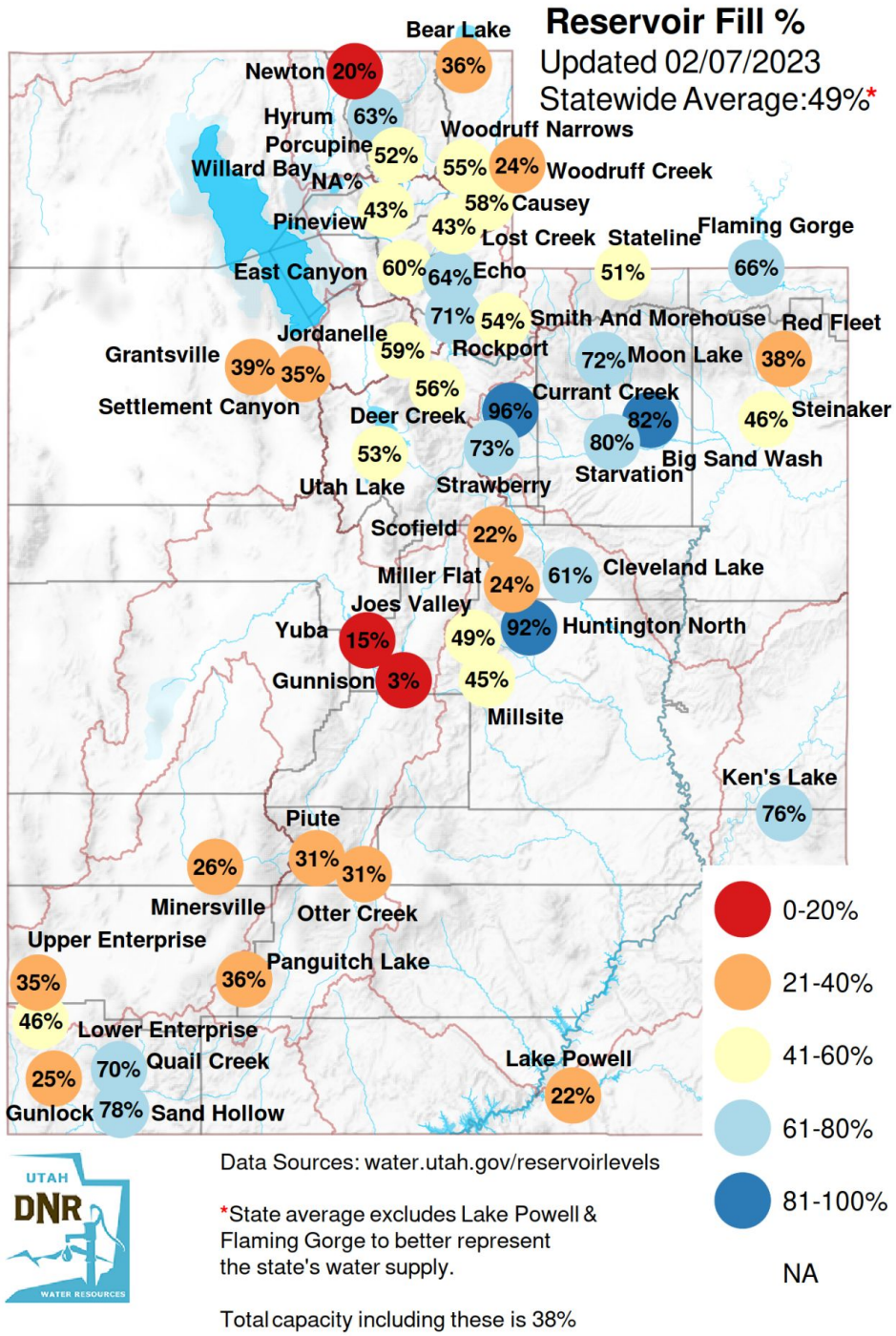


https://www.cbrfc.noaa.gov/dbdata/station/info/nrcsCompare/

Agency - NRCS Snow Survey
Presenter - Jordan Clayton

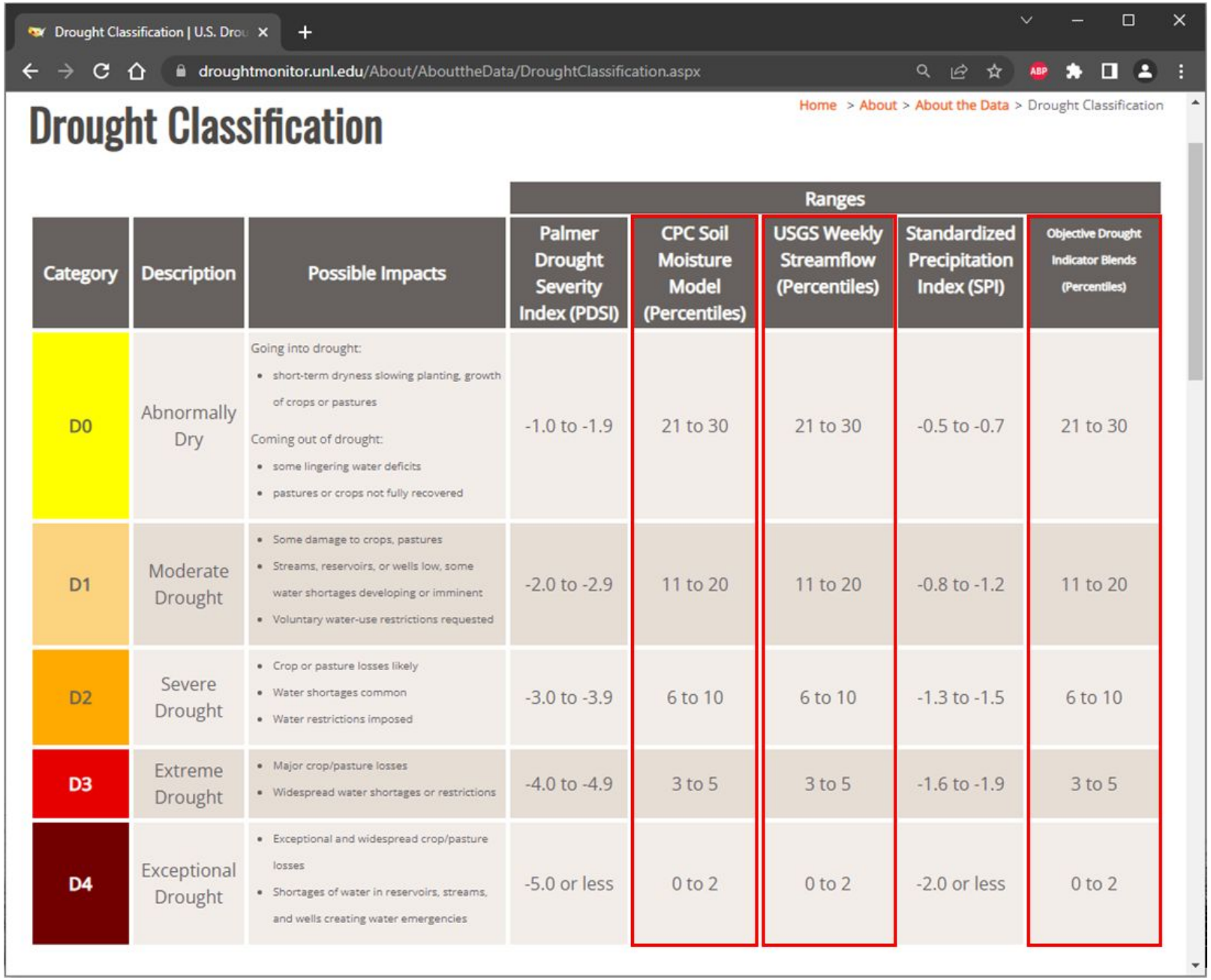
Three Reservoirs below 20%: Newton, Yuba, Gunnison

Three Reservoirs above 80%: Currant Creek, Big Sand Wash, Huntington North



Agency - Division of Water Resources
Presenter - Laura Haskell

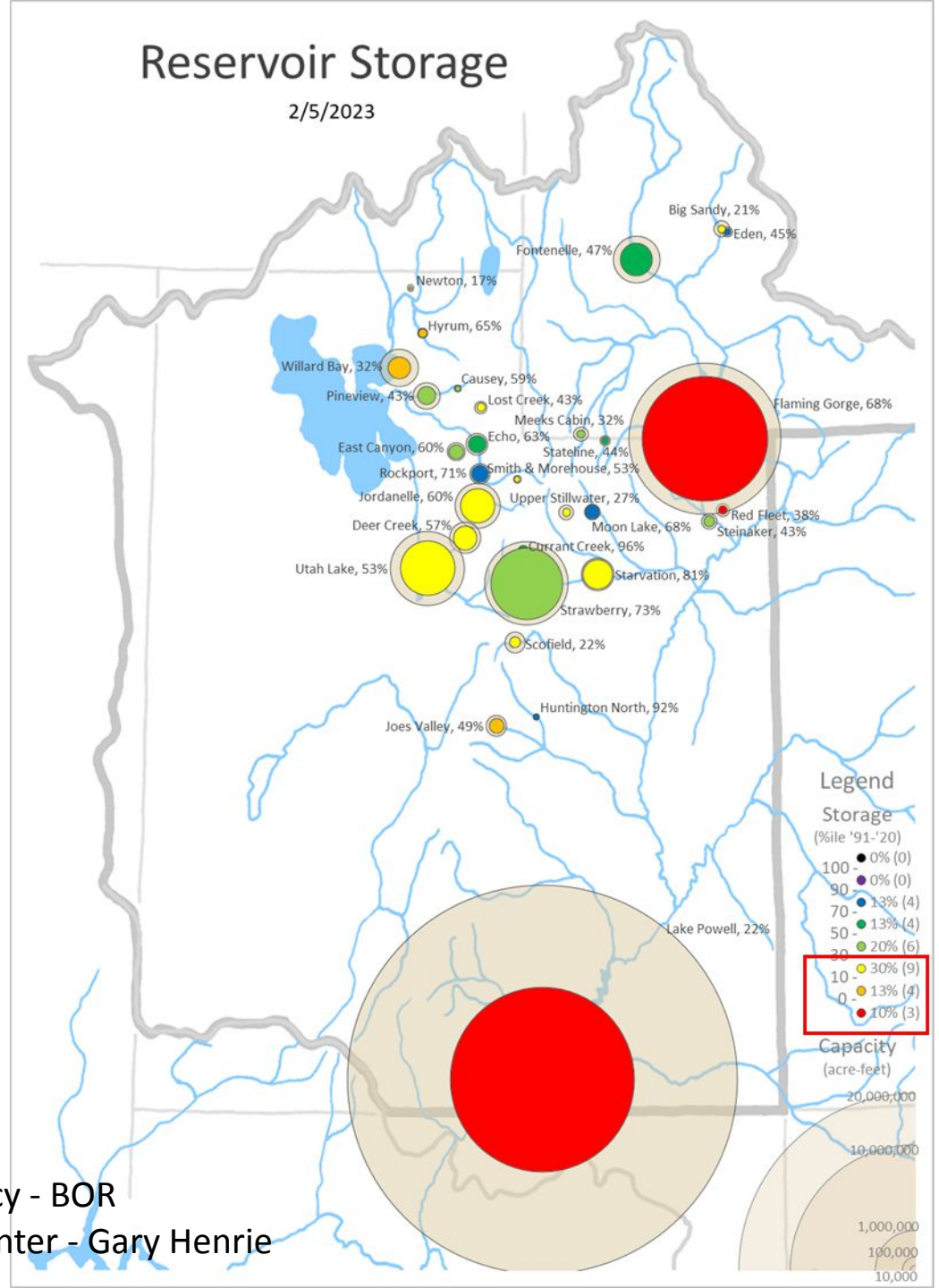
Reservoir Levels

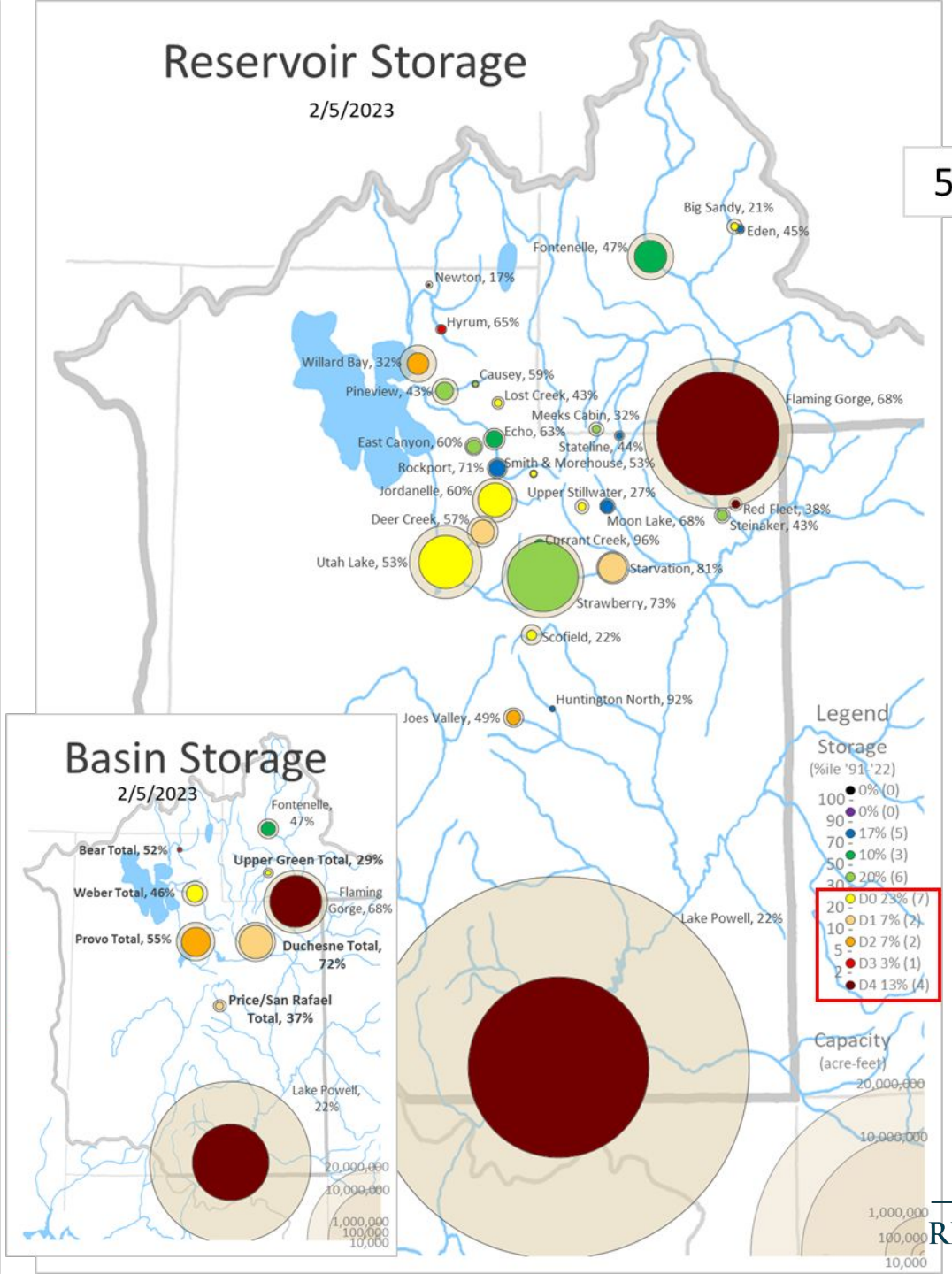


Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: • some lingering water deficits • pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	• Major crop/pasture losses • Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Agency - BOR
Presenter - Gary Henrie

BUREAU OF RECLAMATION



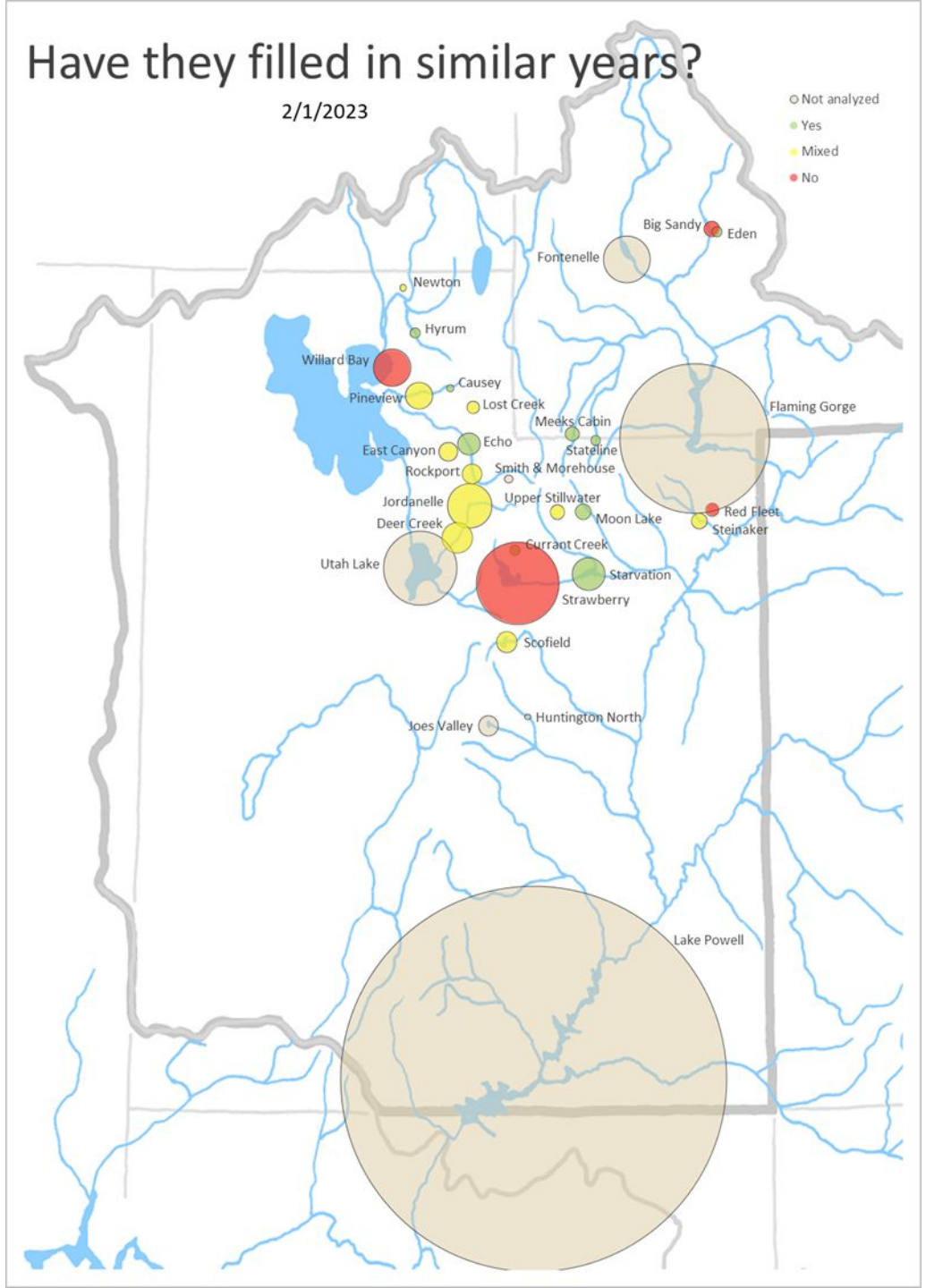


59% full

Agency - BOR
Presenter - Gary Henrie

BUREAU OF RECLAMATION

Reservoir Levels



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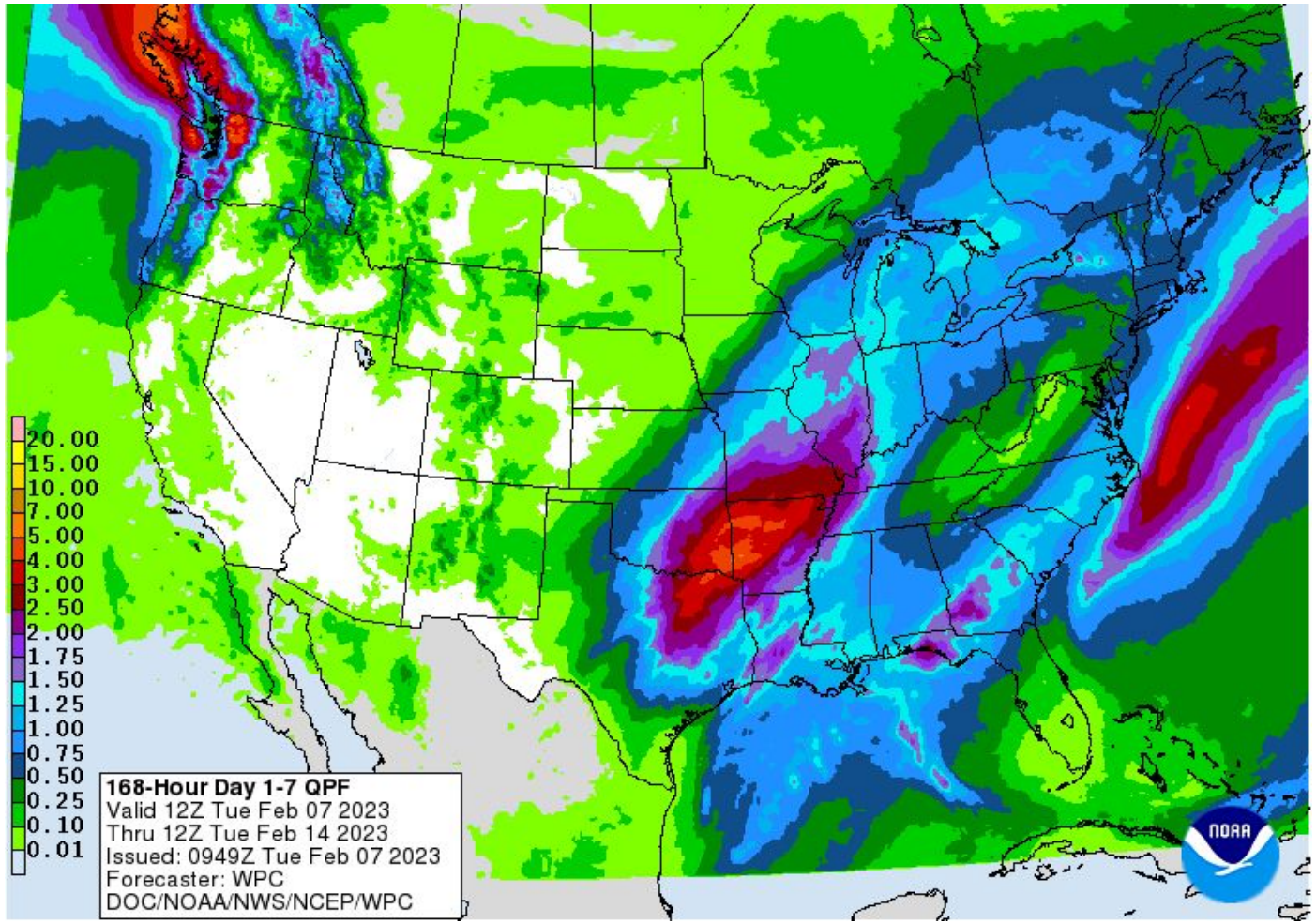
Presenter - Gary Henrie

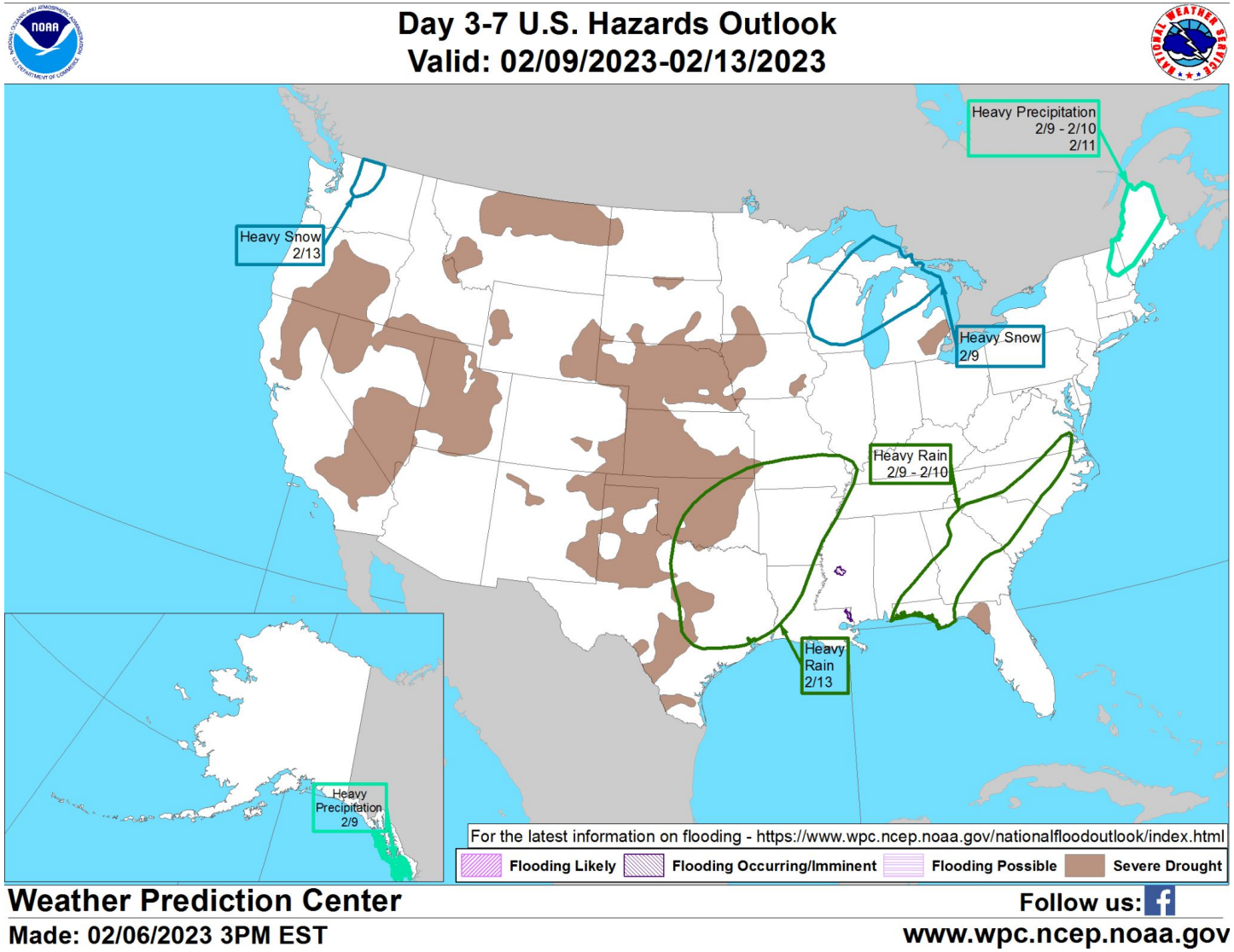
BUREAU OF RECLAMATION

Weather Forecast Office Utah Day 1-7 Outlook



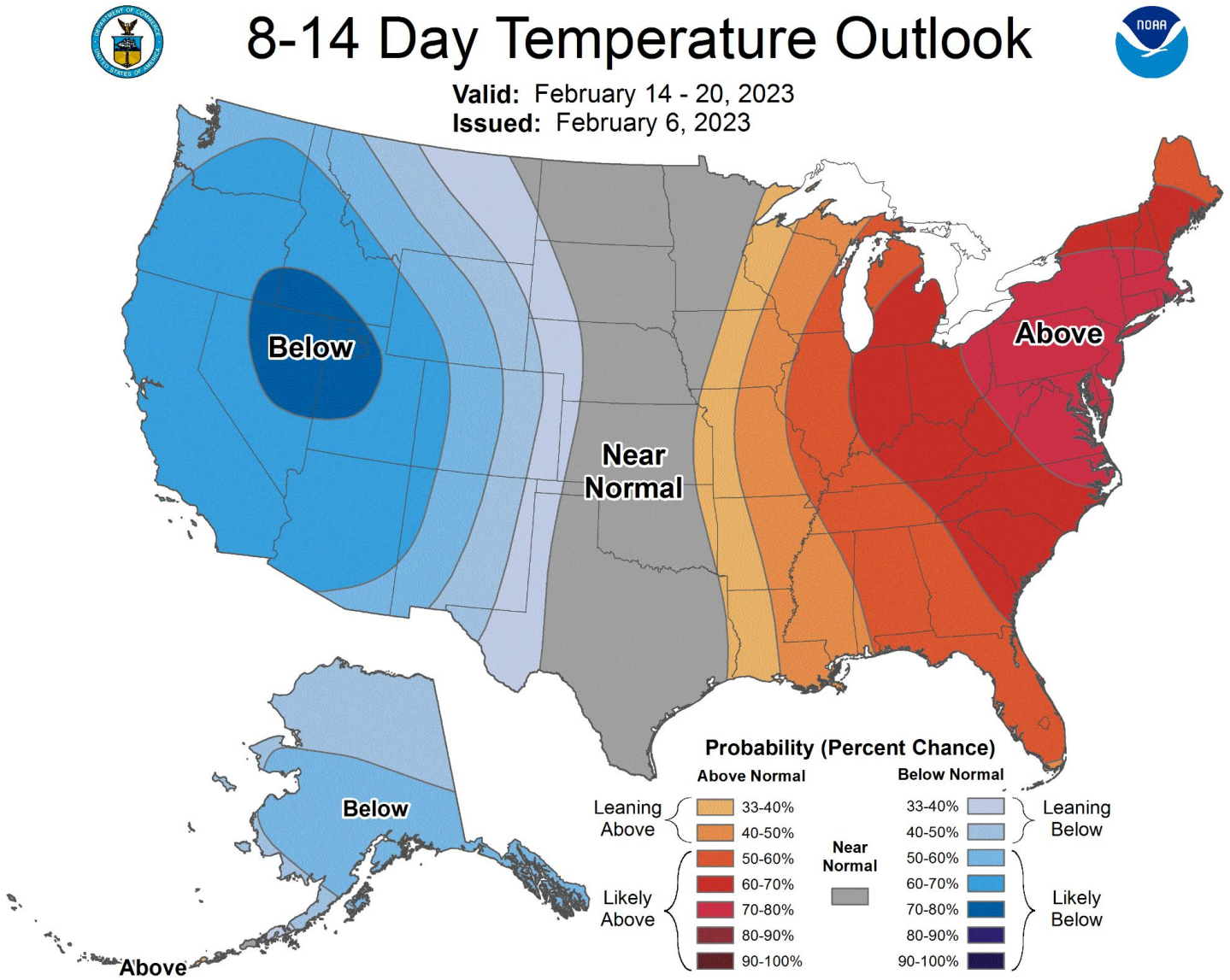
Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse

Weather Prediction Center U.S. Day 3-7 Hazards Outlook



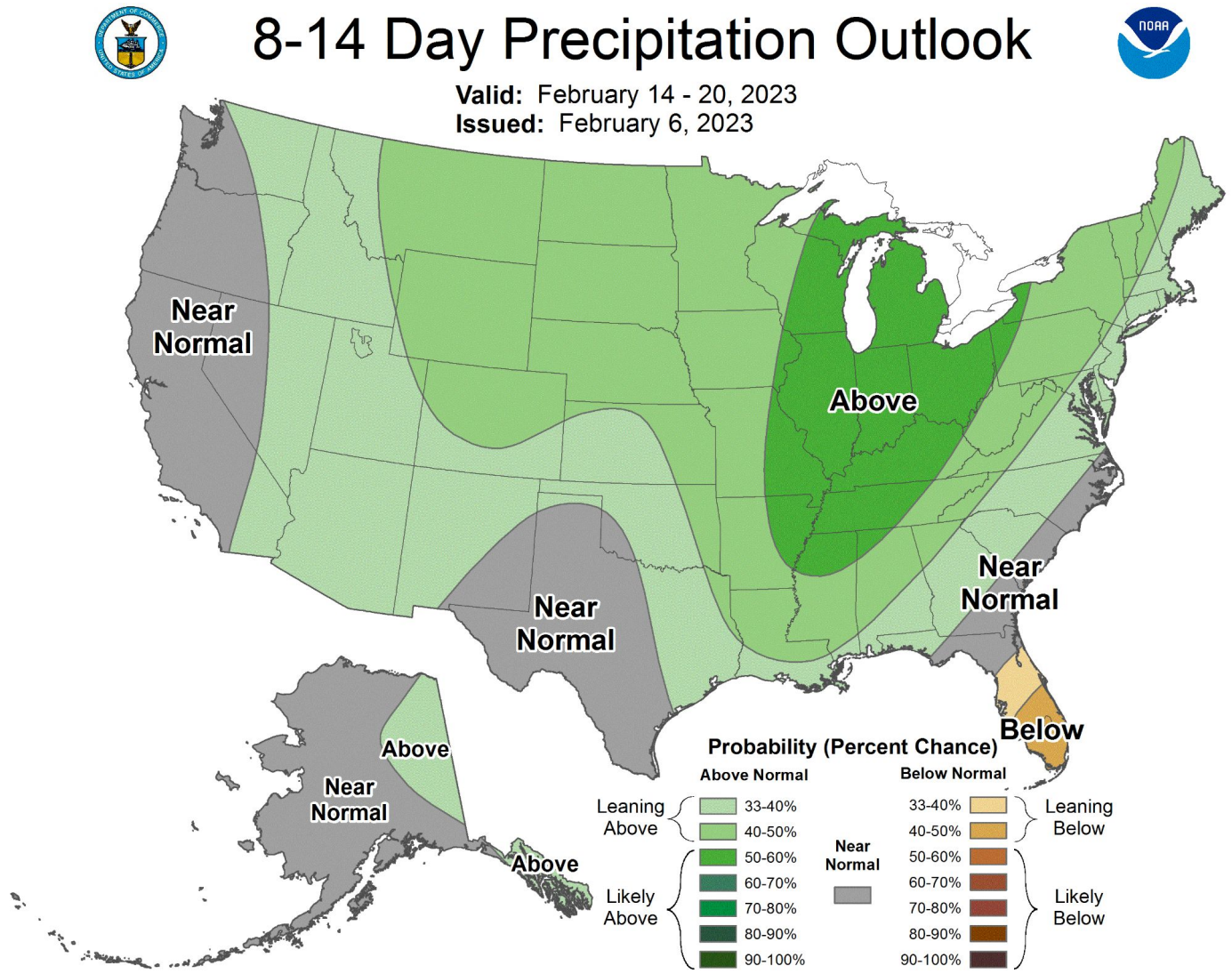
Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse

Climate Prediction Center 8 to 14 Day Outlooks - Temperature



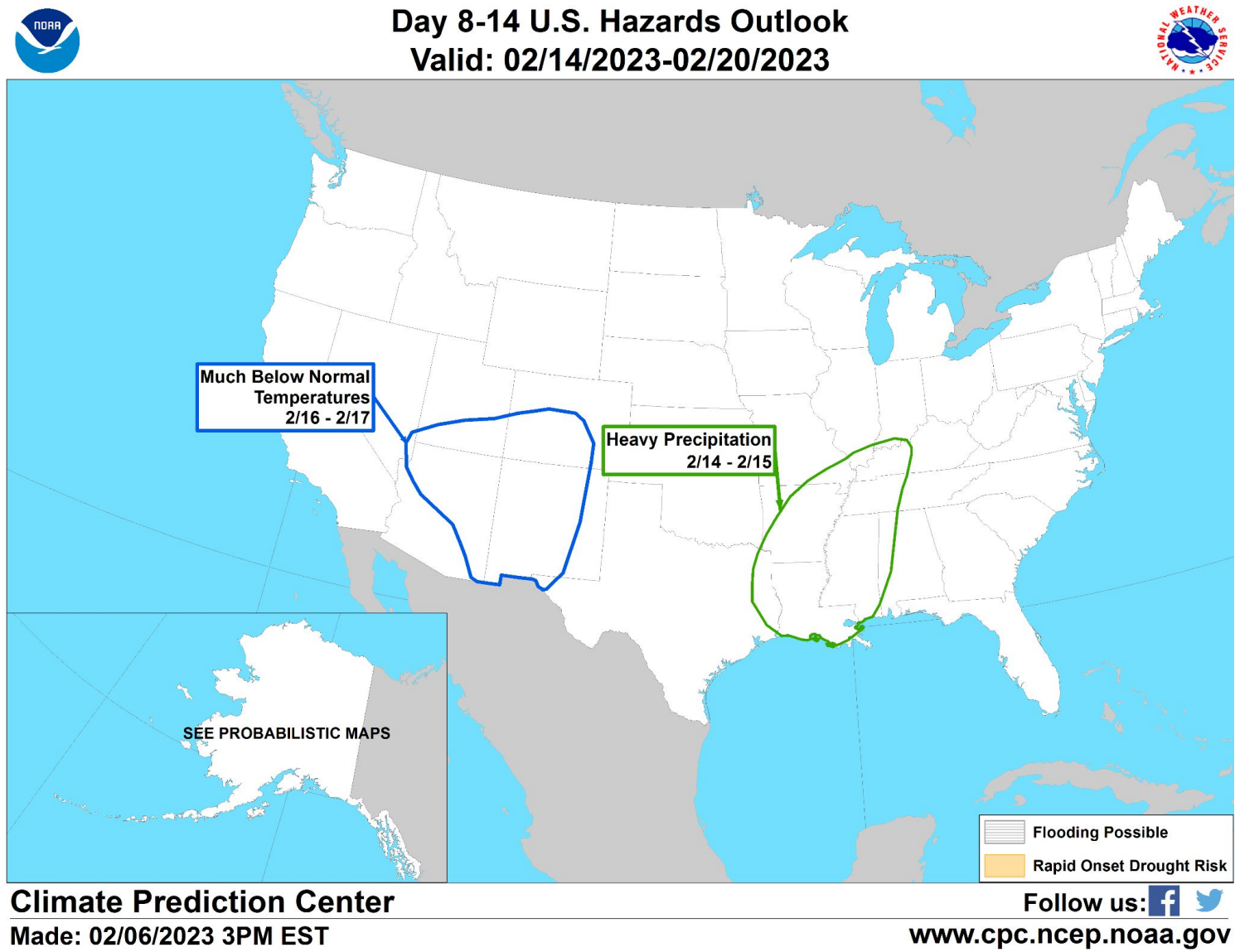
Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse

Climate Prediction Center 8 to 14 Day Outlooks - Precipitation



Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse

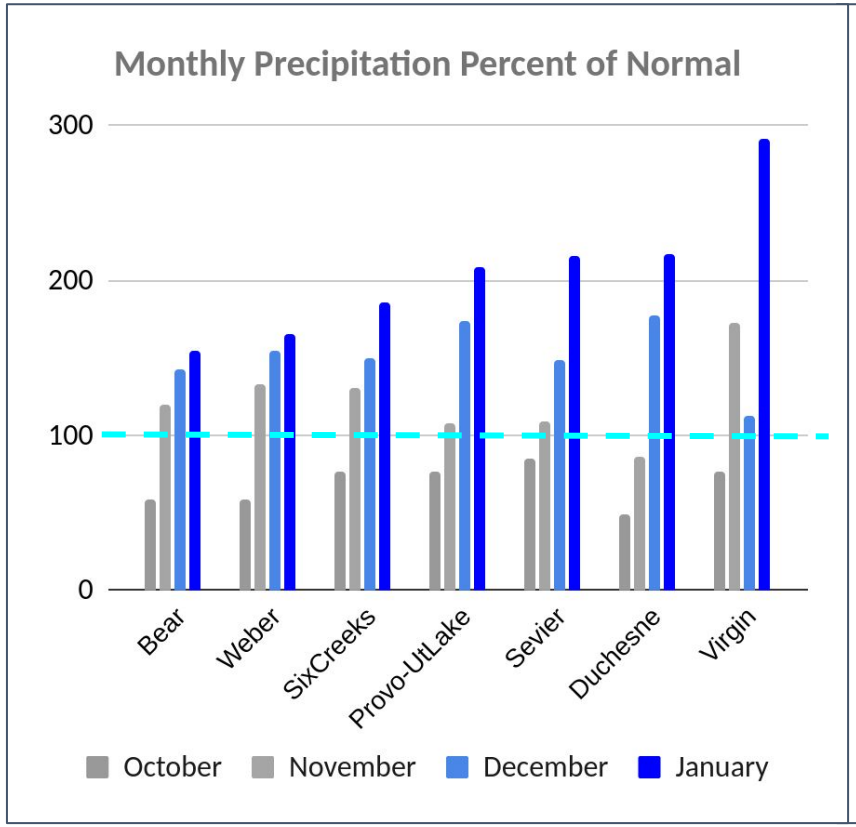
Climate Prediction Center U.S. Week-2 Hazards Outlook

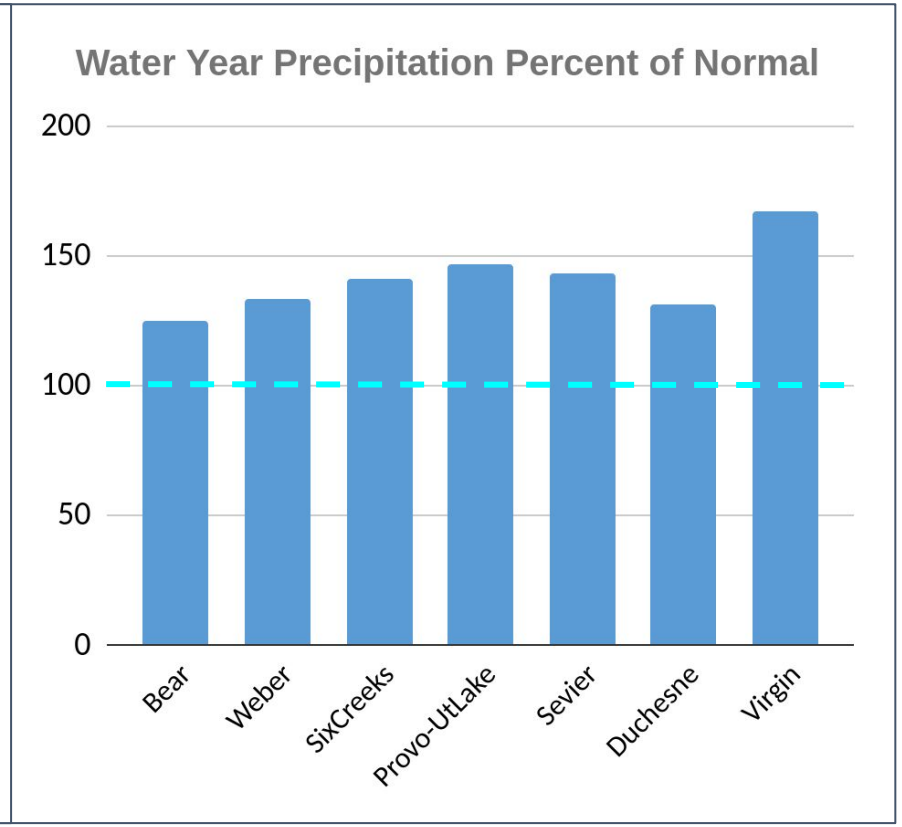


Agency - National Weather Service Weather Forecast Office

Presenter - Christine Kruse

2023 Water Year Precipitation



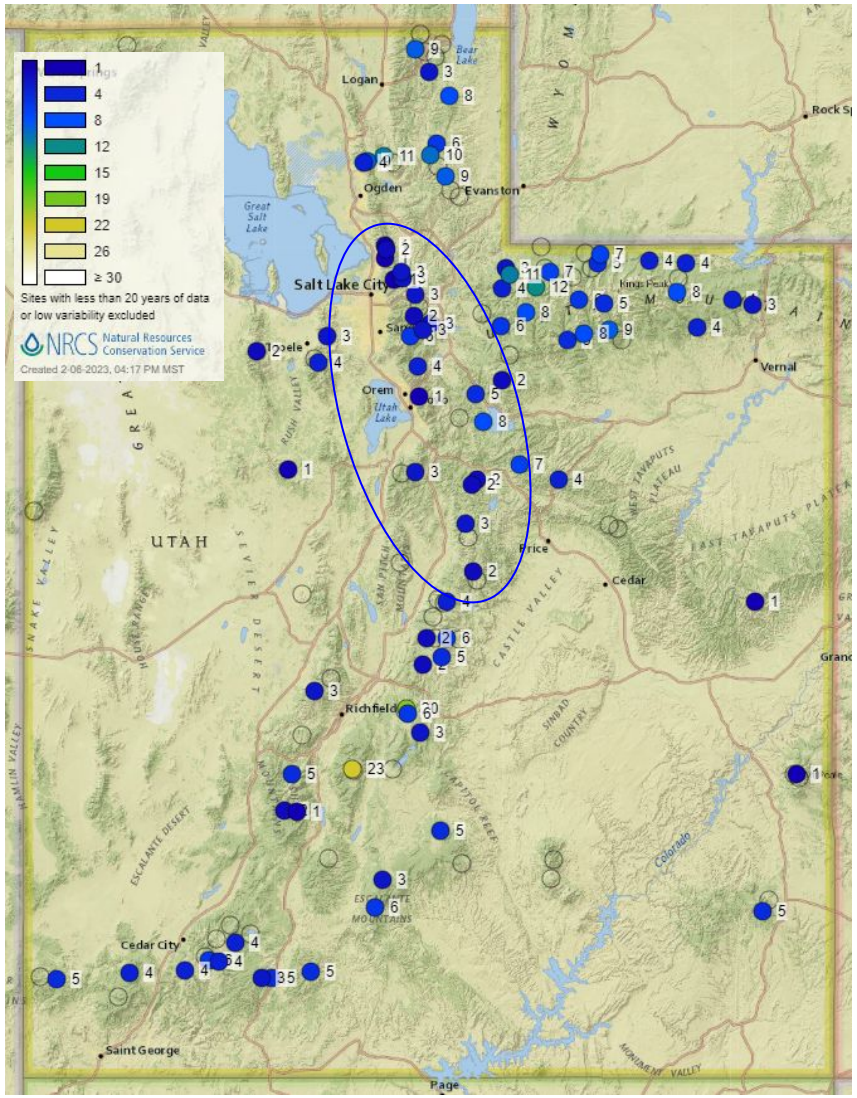


All forecast groups have seen above normal WY precipitation

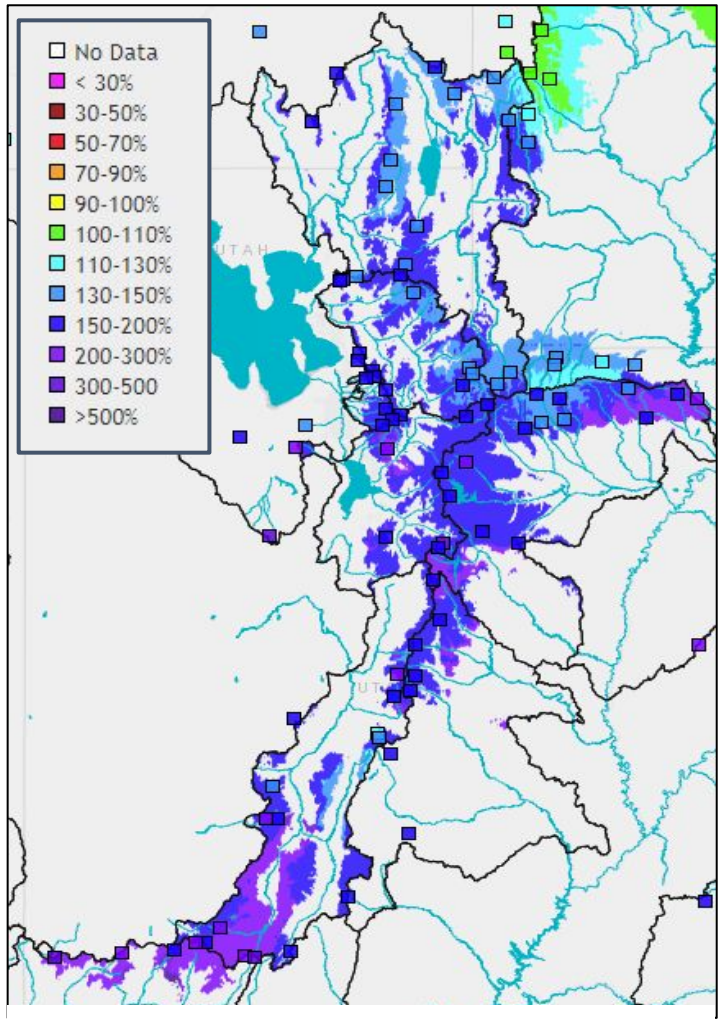
Forecast Group	Percent of WY normal
Bear	125
Weber	134
Six Creeks	142
Provo	148
Sevier	143
Duchesne	132
Virgin	167

Utah 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

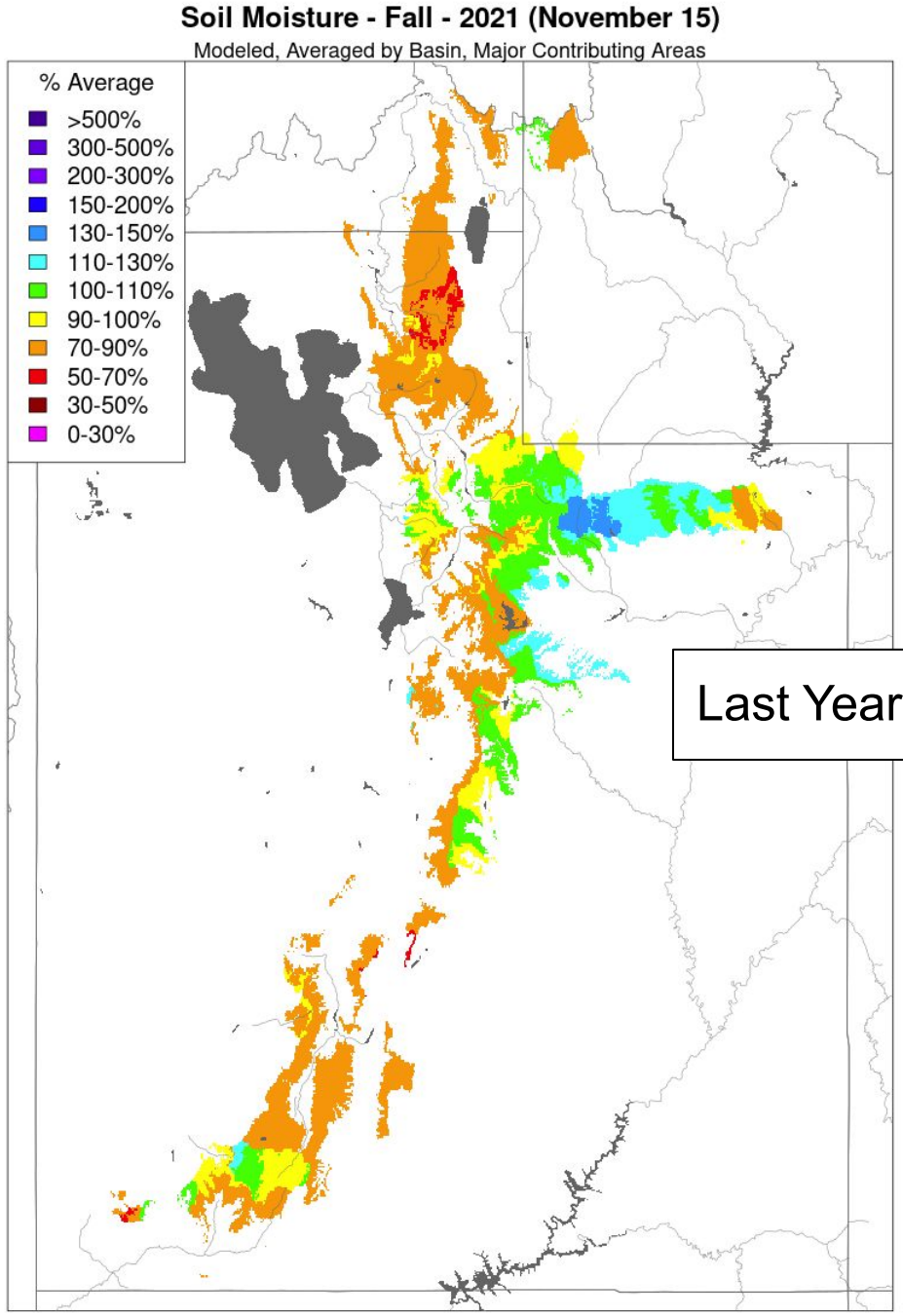
CBRFC Model Snow by Forecast Group
February 6th % median

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

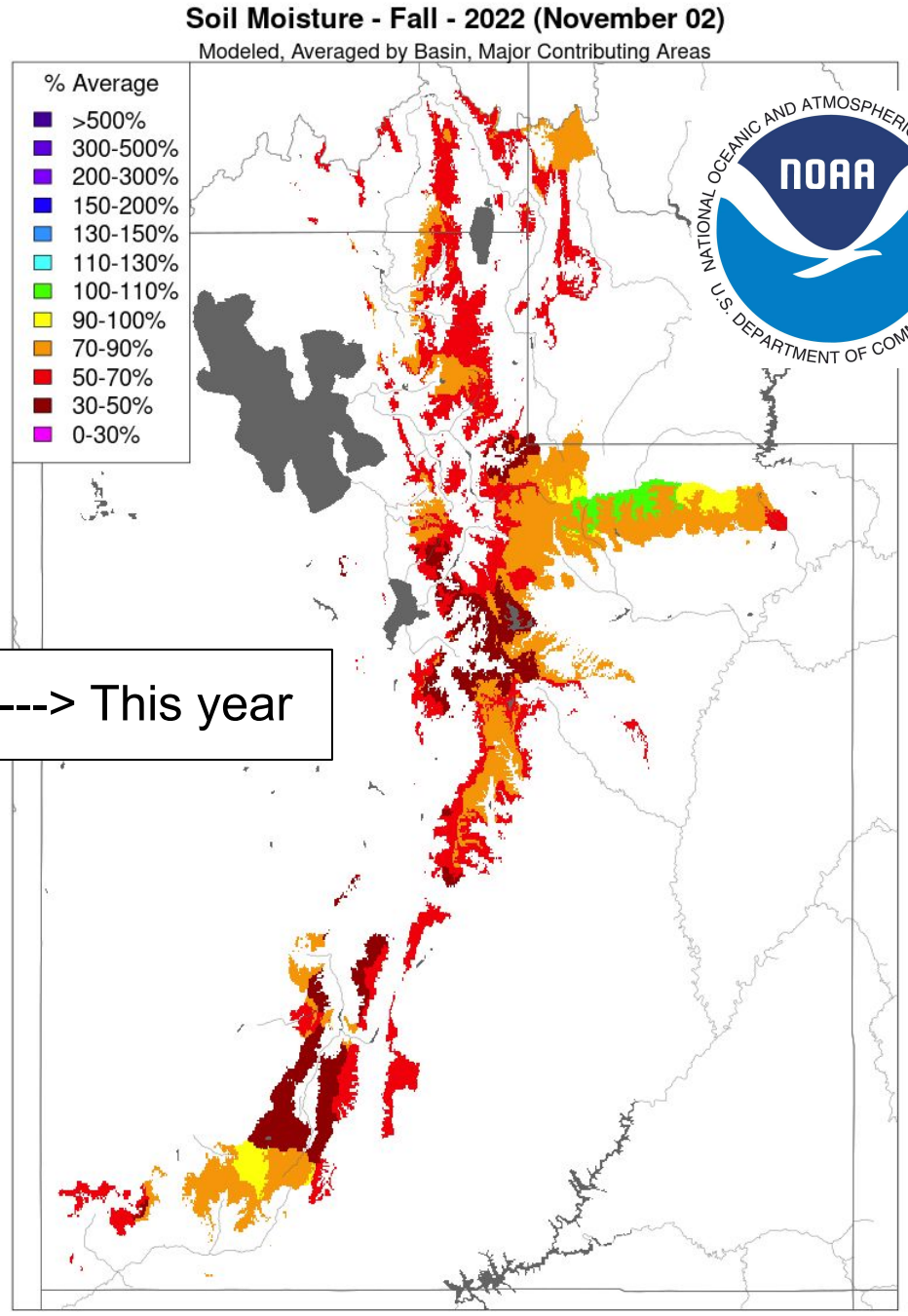
Fall Model Soil Moisture Conditions:

Larger Soil Moisture Deficit than last year

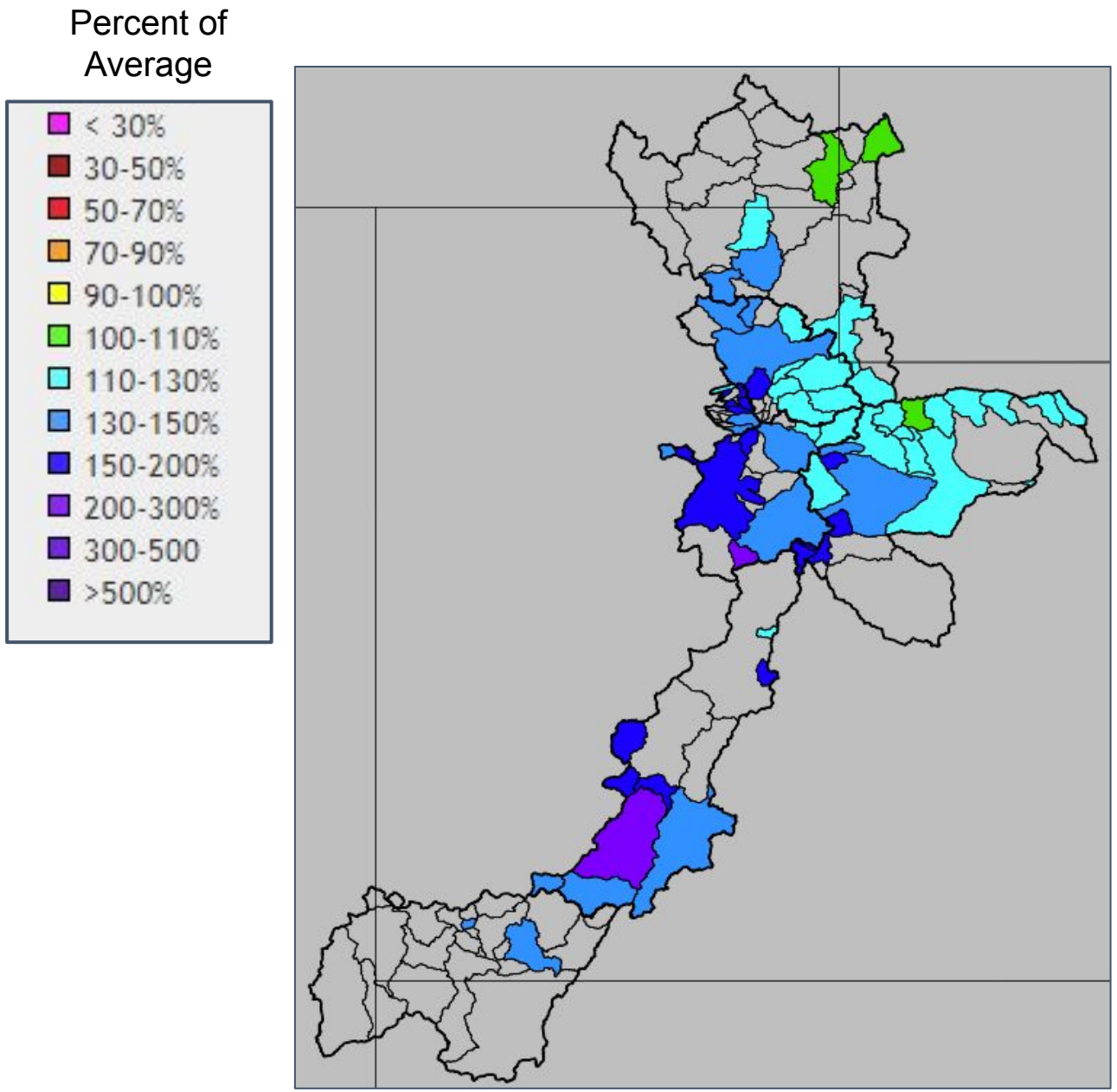
The timing and magnitude of spring runoff is ultimately a result of SWE conditions, spring weather, and antecedent soil moisture conditions.



Last Year ——-----> This year



Utah Water Supply Forecasts

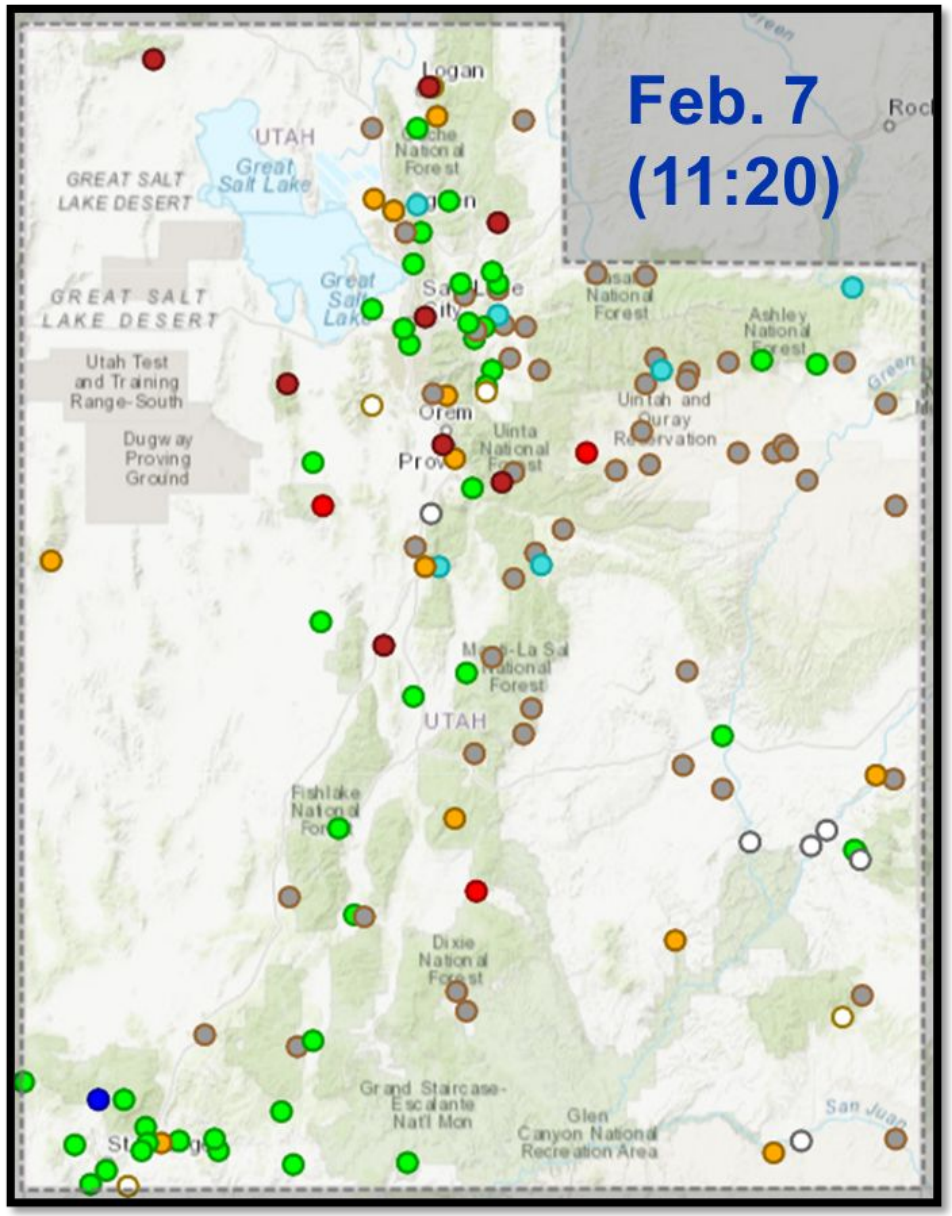


- February 1 forecast for April-July volume
- April-July forecast streamflow volumes are in percent of 1991-2020 average.

Median forecasts by forecast group.

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

Current Streamflow Conditions



***Sites must have at least 10 years of streamflow record to be ranked on this graphic**

Day-of-Year Status	# Gages	% Gages
All-time high for this day-of-year	0	0.0%
Much above normal for this day-of-year	1	0.7%
Above normal for this day-of-year	6	4.4%
Normal for this day-of-year	44	32.1%
Below normal for this day-of-year	14	10.2%
Much below normal for this day-of-year	8	5.8%
All-time low for this day-of-year	3	2.2%
Not ranked - insufficient record	11	8.0%
Not ranked - no measurement	44	32.1%
Not ranked - no recent measurement	1	0.7%
Not ranked - stream not flowing	5	3.6%

Provisional data, subject to revision

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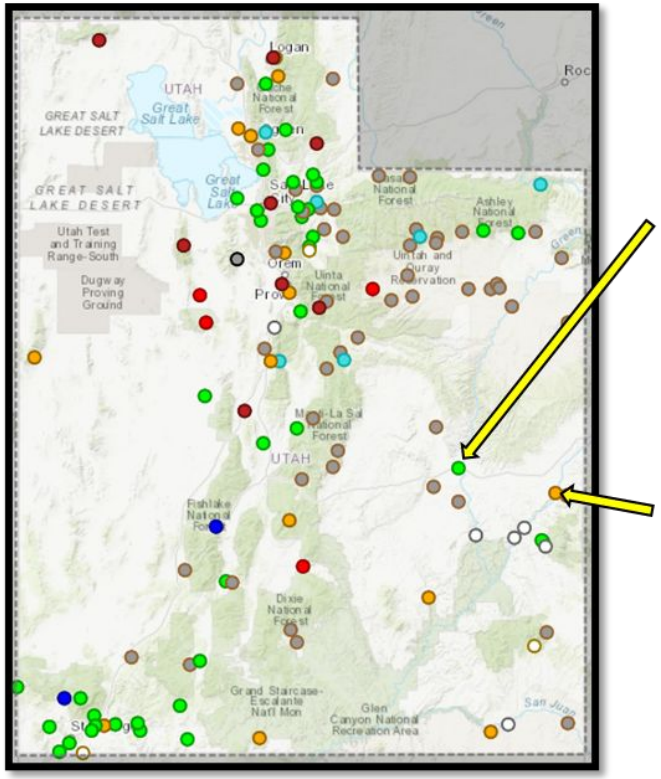
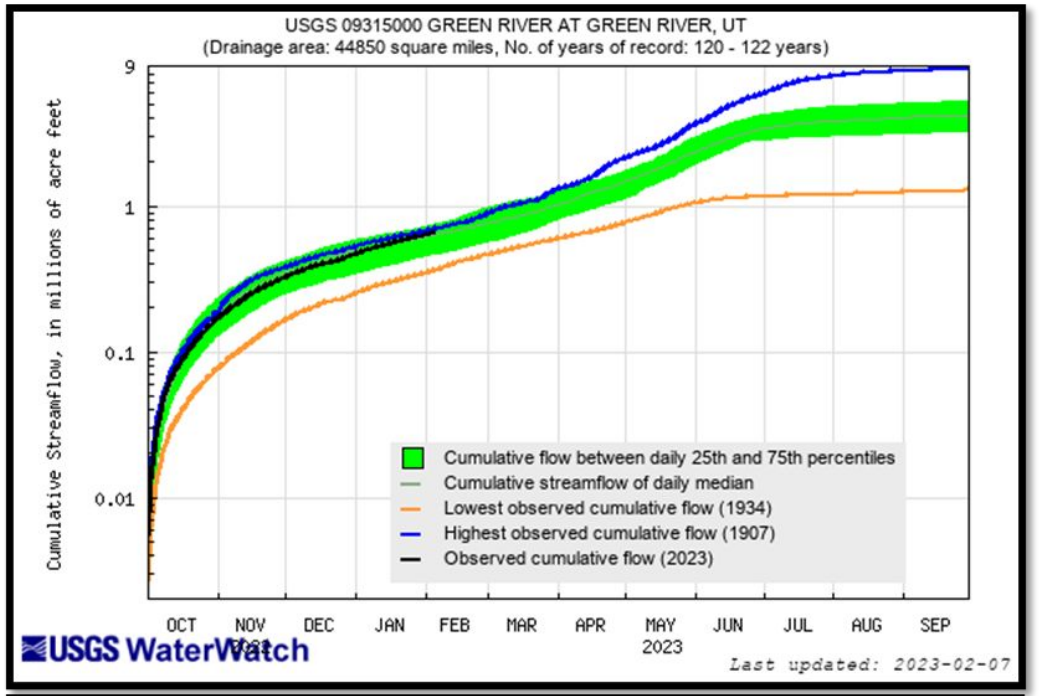
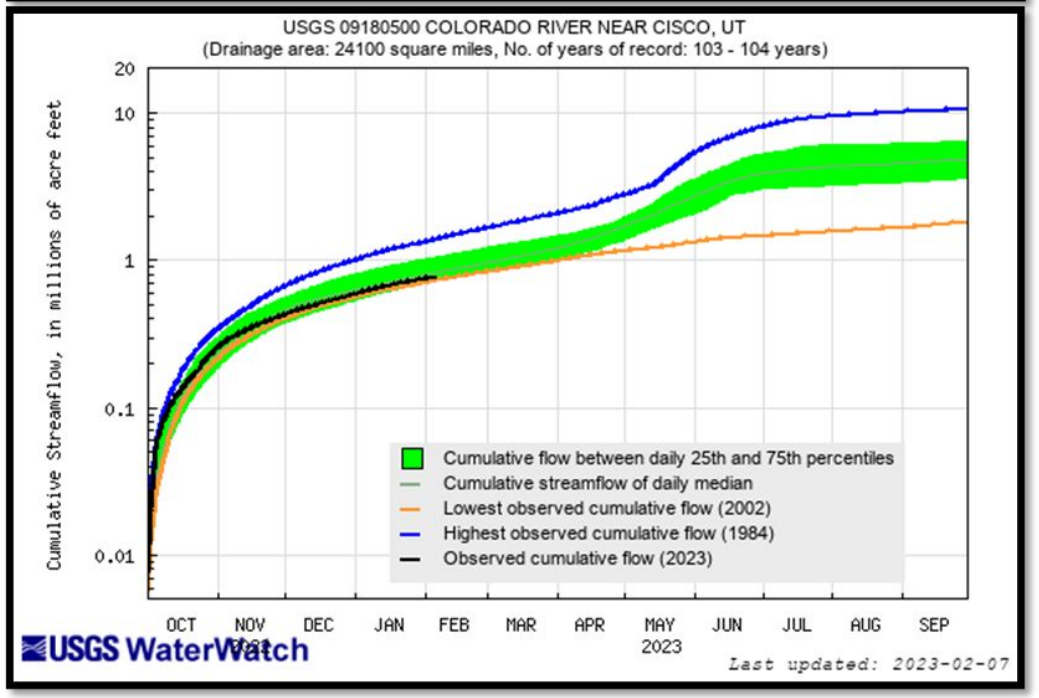
Cumulative Streamflow at Selected Gages



Provisional data, subject to revision





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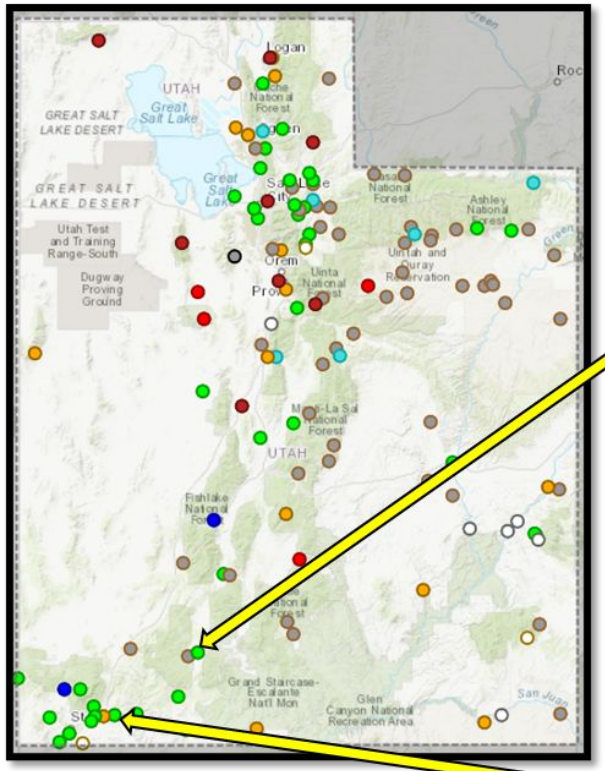
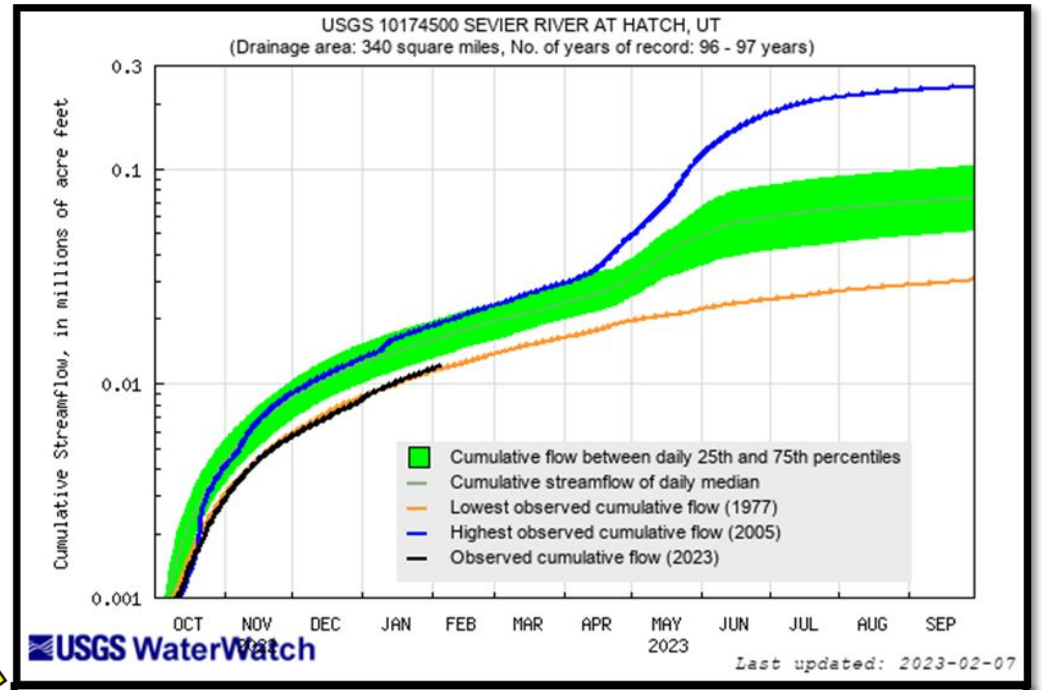
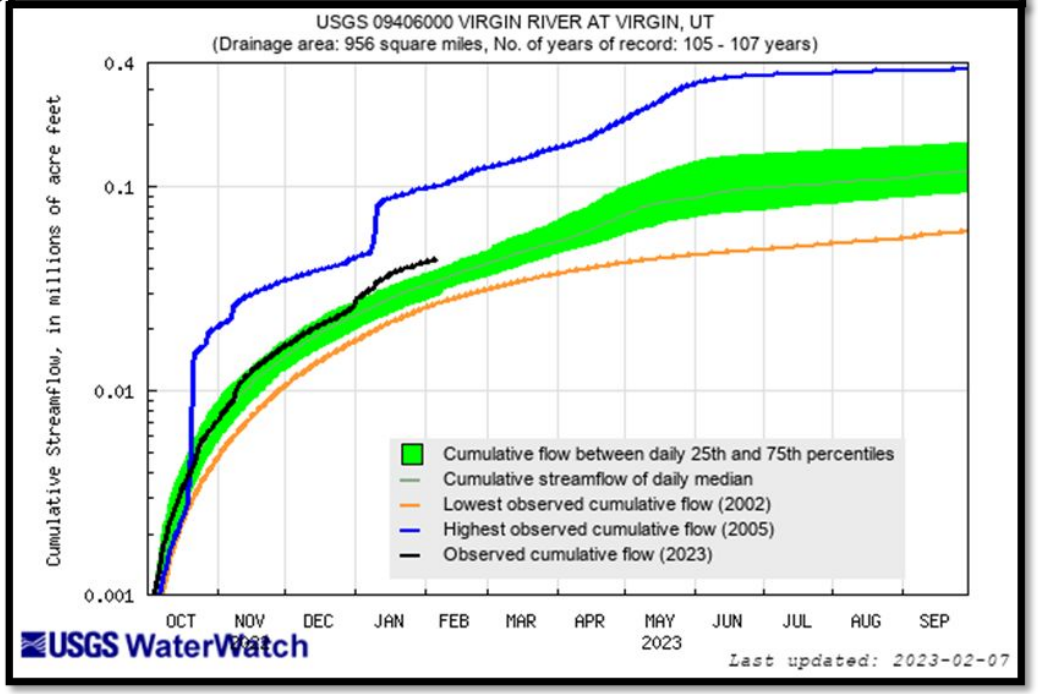
Cumulative Streamflow at Selected Gages



Provisional data, subject to revision





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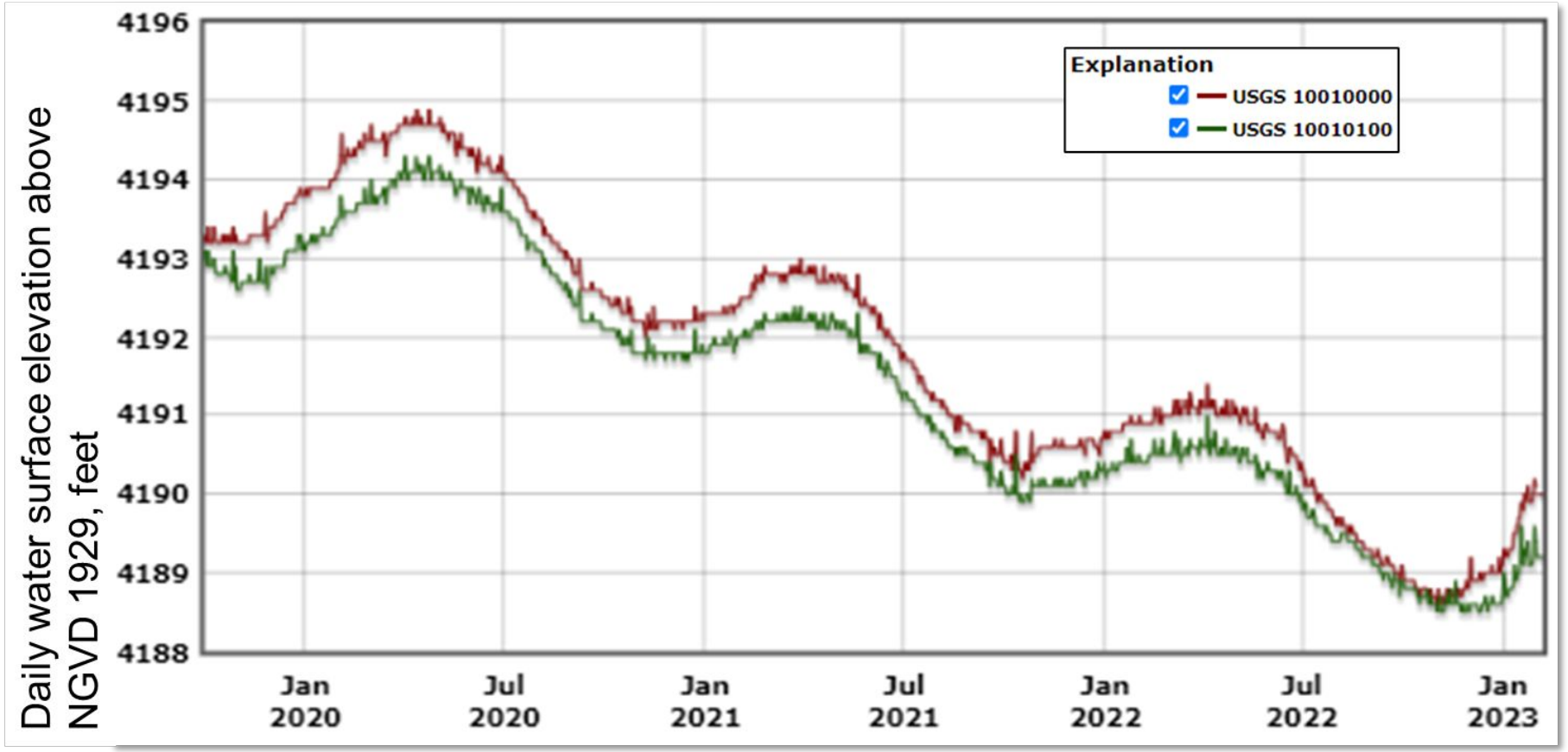
Great Salt Lake Water Surface Elevations



Provisional data, subject to revision

- Station 10010000
  Mean daily value
  2/6/2023 = 4,190.0’
- Station 10010100
  Mean daily value
  2/6/2023 = 4,189.2’

See the GSL Hydro Mapper website for interactive plots of water surface elevations, inflows, salinity, and more

Great Salt Lake Hydro Mapper

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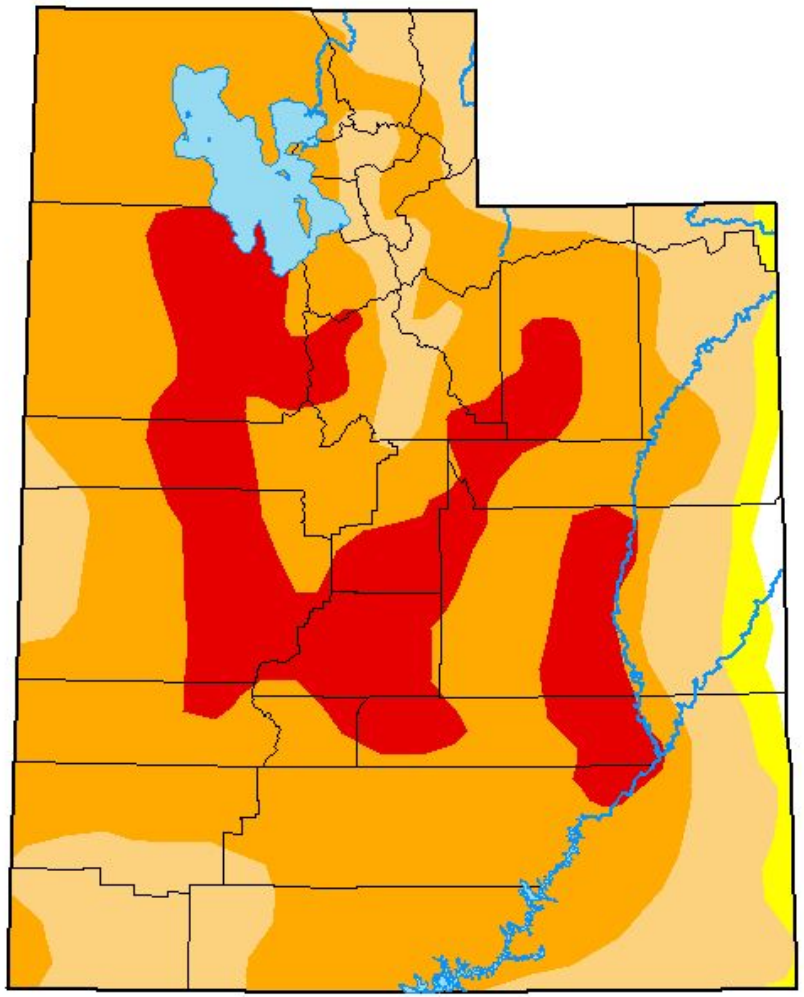
U.S. Drought Monitor

Utah

January 31, 2023

(Released Thursday, Feb. 2, 2023)

Valid 7 a.m. EST



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Rocky Bilotta
NCEI/NOAA

droughtmonitor.unl.edu