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 75th ANNIVERSARY WATER RESOURCES

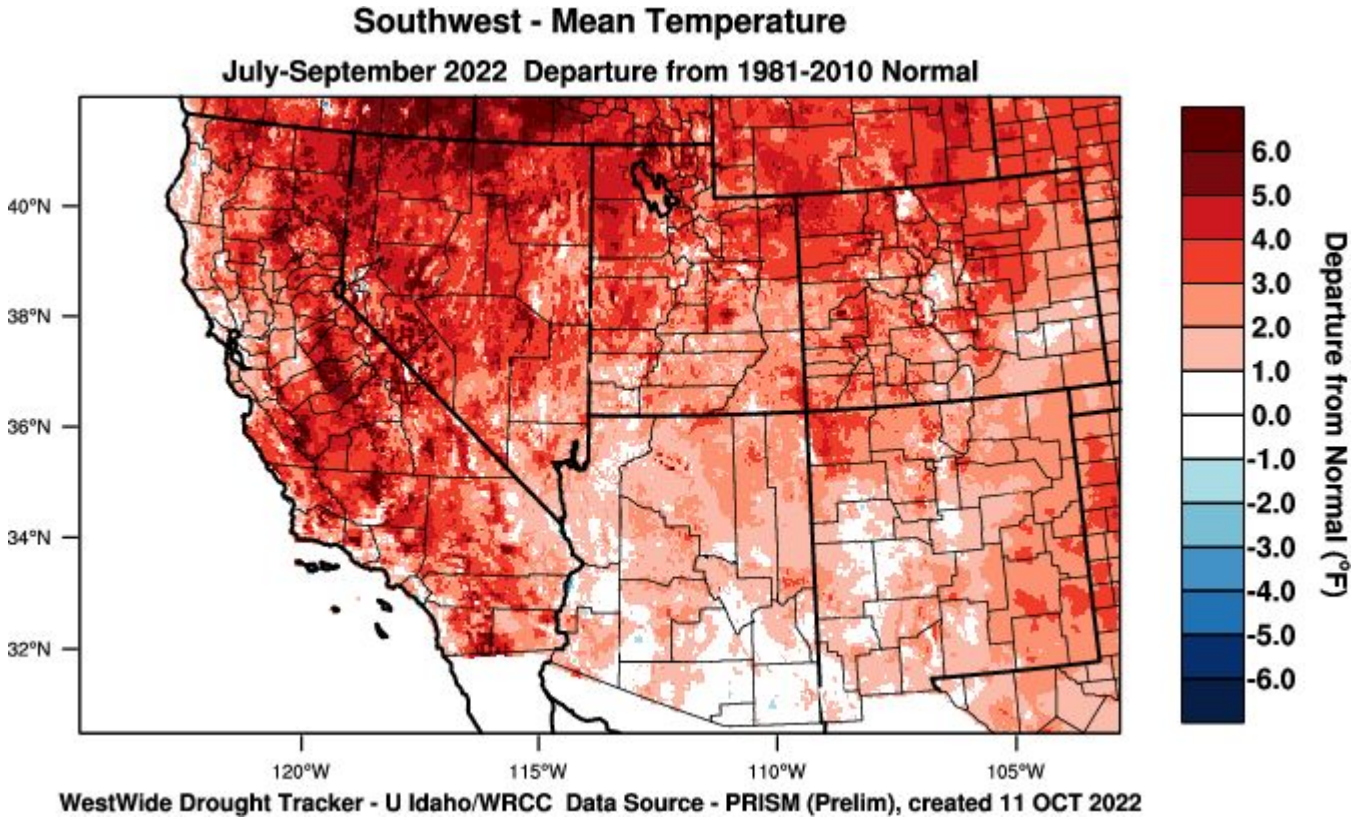
Thank you to our contributors

Utah Water Assessment & Conditions Monitoring Webinar

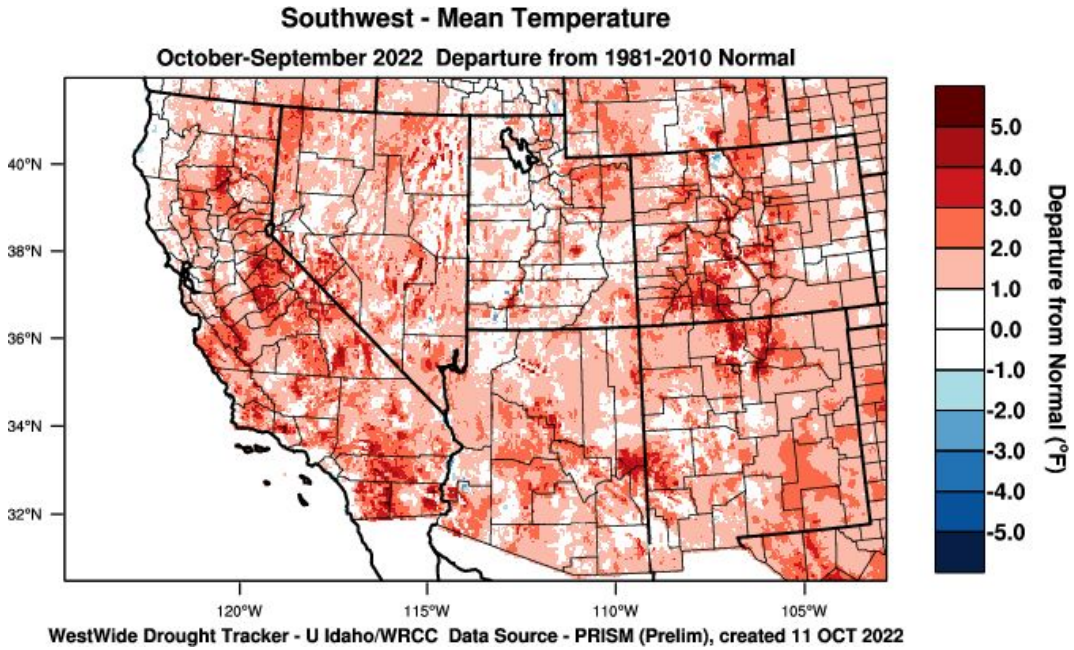
October 11, 2022

Mean Temperature Anomaly and Percentile

3-month (Summer) overview



2022 Water Year Summary

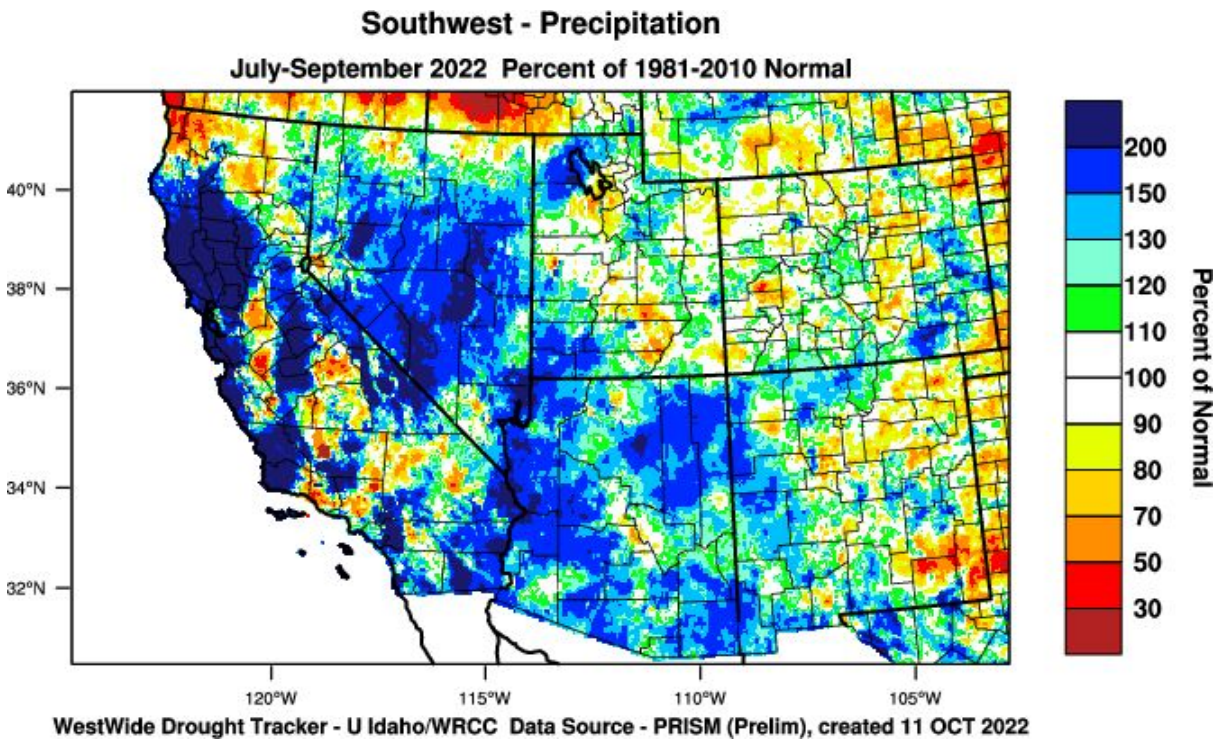


Southern latitudes saw warmer than normal temps while northern latitudes experienced one of the hottest summers on record.

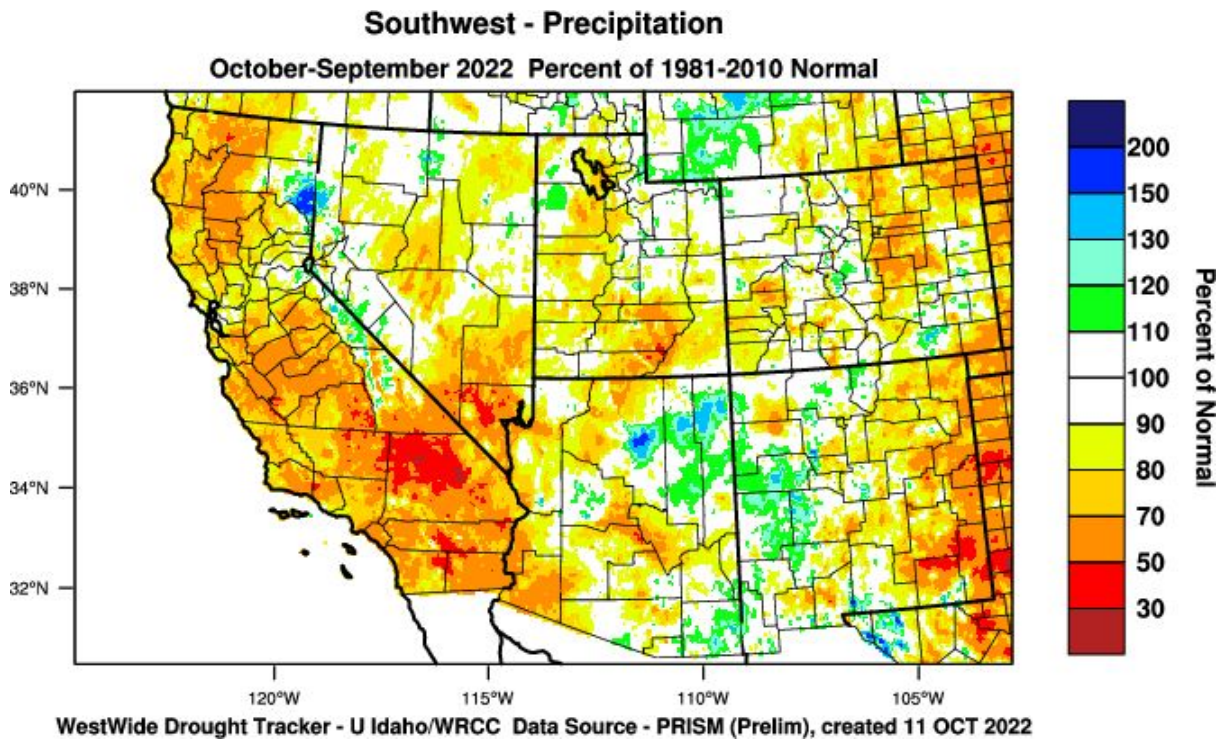
Agency - Utah Climate Center
Presenter - Jon Meyer

Precipitation Anomaly and Percentile

3-month (Summer) overview



2022 Water Year Summary



Active monsoon season improved the short-term drought pressure, but the long-term water-year perspective remains problematic thanks to under-performing snowpack and spring rains.

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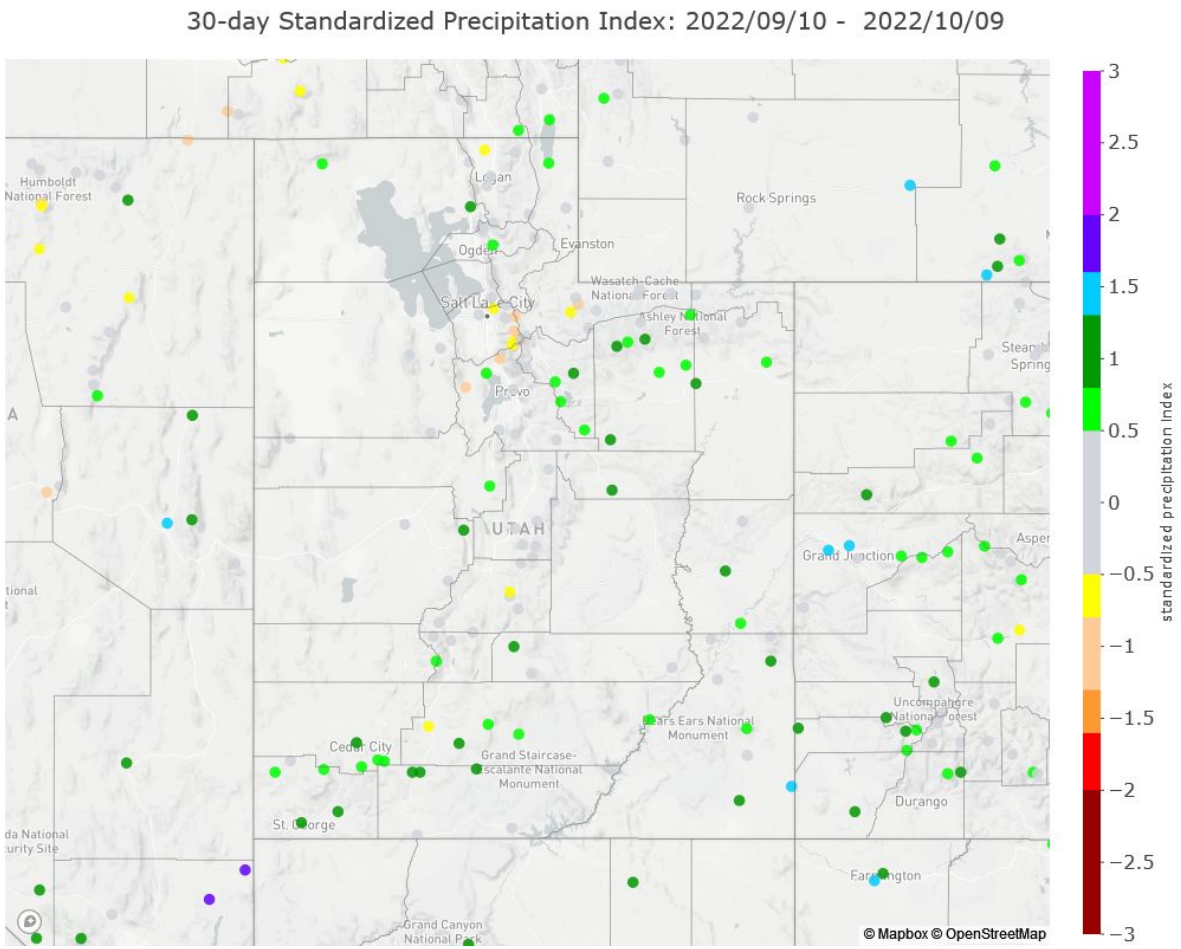
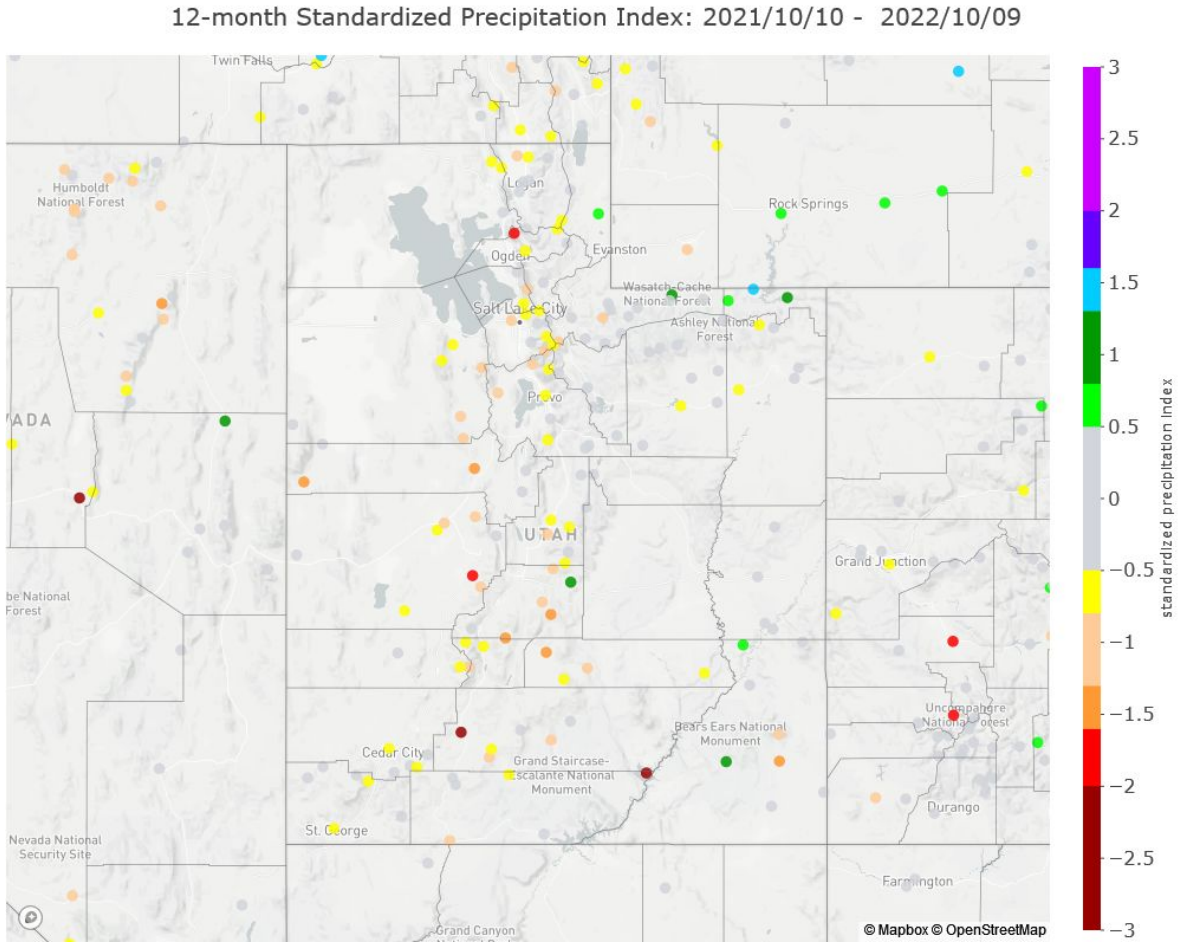
SPI (30-day and 12-month)





30-day SPI shows the positive rainfall to start the fall; recent weather has been warm and dry, so expect the 30-day SPI to begin to slide more negative in upcoming weeks. 12-month SPI shows ongoing drought pressure in most areas with only a few pockets of the state saw-above normal precipitation for WY2022.

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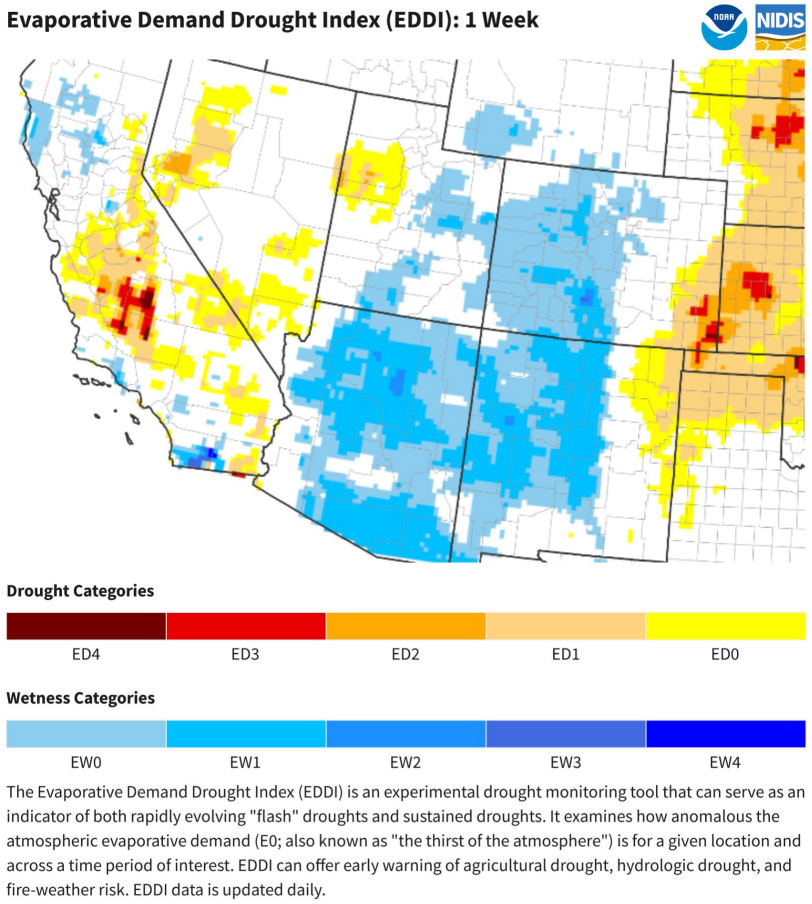
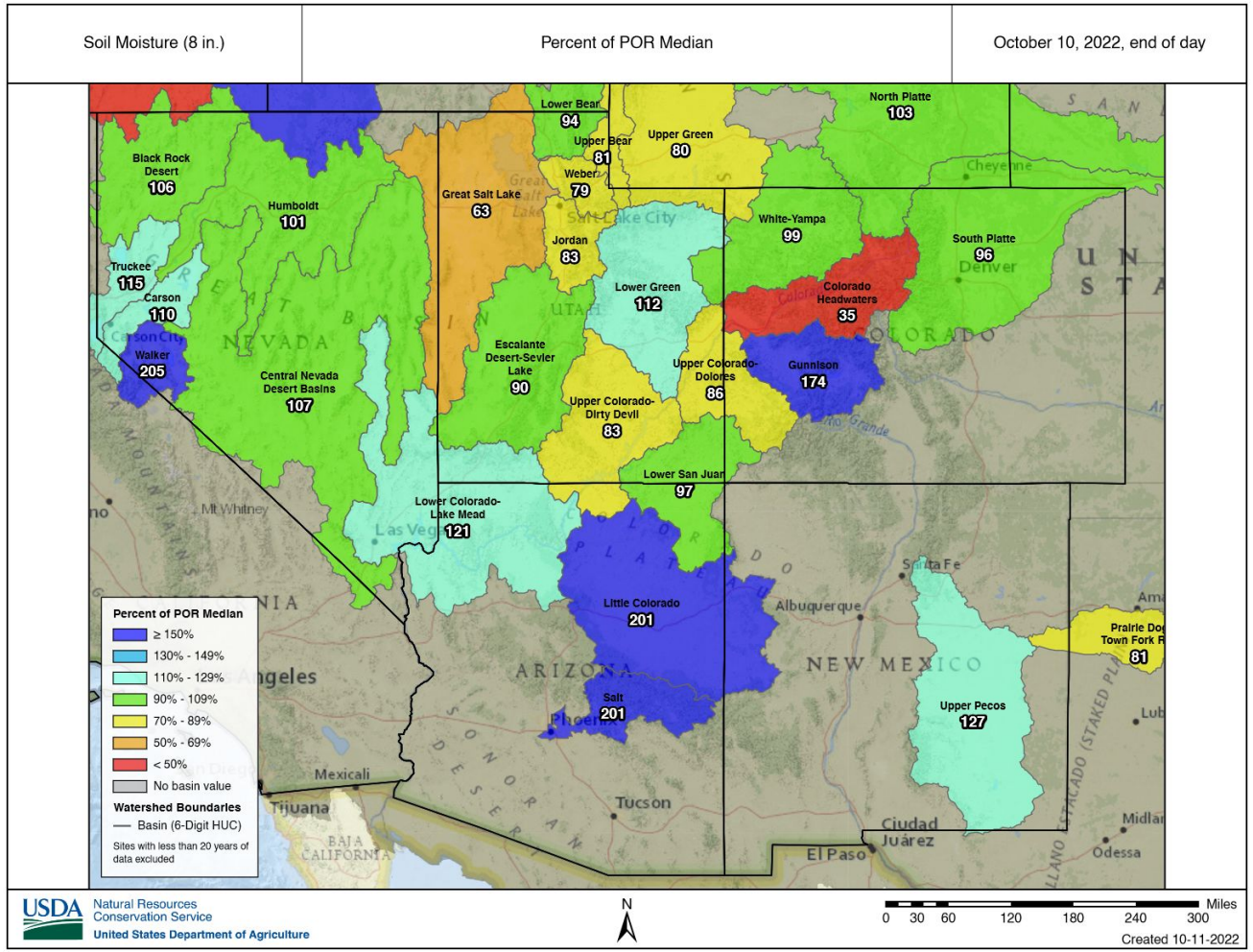
Limited evaporative demand is helping preserve soil moisture, but recent weather is beginning to dry the landscape. Still, year-over-year improvements are noted as positives to consider for next years runoff efficiency.





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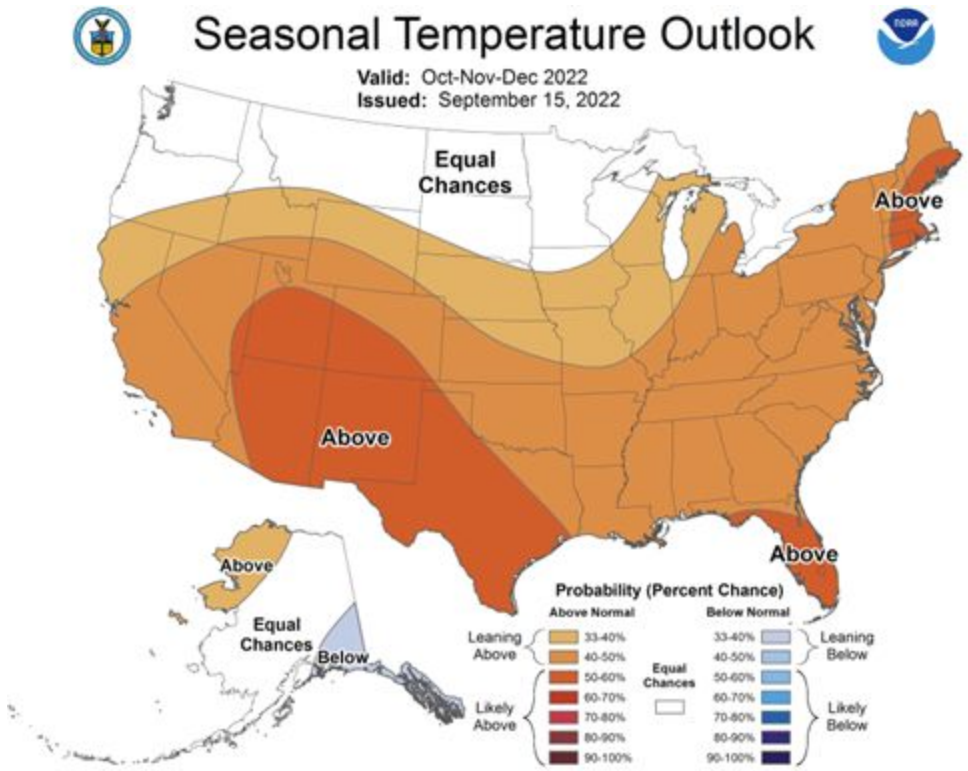
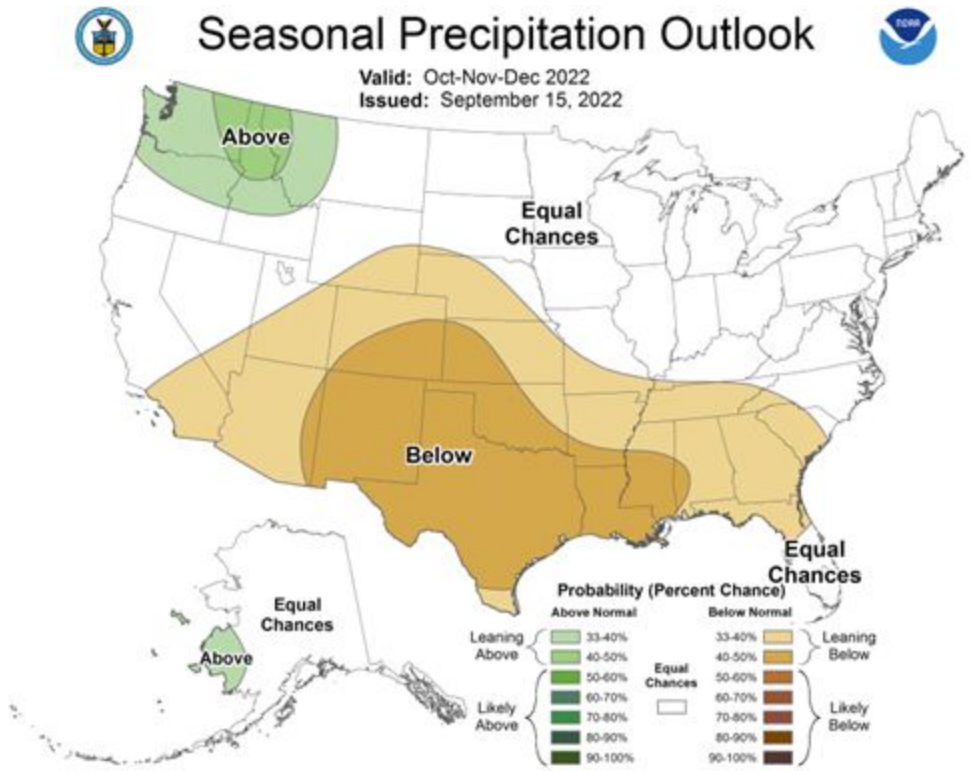
Seasonal outlook reflects expected weak La Nina conditions (third year in a row). Expect this to limit the snowpacks ability to make meaningful hydrologic drought improvements next spring/summer.





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Summary:

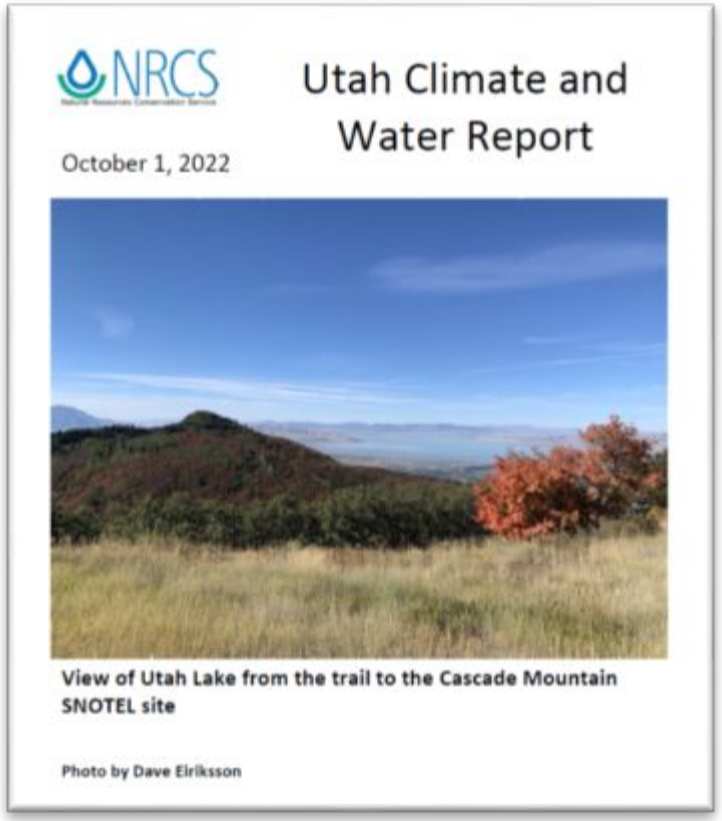
Recent weather hasn’t “hurt” and added further drought stress, and maybe even helped in areas, but most importantly, the summer and early fall hasn’t exacerbated the drought problem. “Bought us some time” for subsequent favorable seasonal conditions to start the road to recovery.

State needs to preserve as much soil moisture over next two months before snow accumulation season descends the mountainside. Also prefer to see more frequent storm systems than the last two weeks has provided (Christine, please help us order those storms!)

Entering the period of the year where status quo is the default drought recommendation while we wait to see how spring snowpack looks. Are we comfortable with current drought classifications in the state?

WAI values

- WAI values combine current streamflow and reservoir volume
- Percentiles are compared to 30-year average WAI values



Oct 1, 2022 | Water Availability Index (WAI)

Basin or Region	Reservoir Storage[1] (KAF)[2]	Monthly Flow	Flow + Storage (KAF)[2]	WAI[3]	Percentile[4] (%)	Similar Years
Bear	381.6	4.3	385.9	-2.03	26	[1990, 2006]
Woodruff Narrows	11.8	1.8	13.6	-1.26	35	[1981, 2021]
Little Bear	5.1	1.4	6.5	0.4	55	[2000, 2020]
Ogden	38.4	3.6	42.0	-1.84	28	[1987, 1996]
Weber	109.1	10.0	119.1	0.36	54	[1989, 1991]
Provo	259.5	2.8	262.3	-2.82	16	[2007, 2013]
Western Uintas	127.2	15.2	142.4	-1.26	35	[2010, 2020]
Eastern Uintas	16.5	9.0	25.5	-2.42	21	[2003, 2020]
Blacks Fork	5.9	3.4	9.4	0.21	52	[1985, 2006]
Smiths Fork	5.2	3.9	9.1	1.25	65	[1993, 2009]
Price	11.6	0.3	11.9	-2.03	26	[2003, 2007]
Joes Valley	29.7	6.1	35.8	-2.03	26	[2012, 2018]
Ferron Creek	8.4	0.7	9.1	-1.45	33	[2007, 2009]
Moab	1.6	0.4	2.0	2.78	83	[1993, 2016]
Upper Sevier	5.4	0.6	6.0	-3.59	7	[1992, 2004]
San Pitch	0.0	0.4	0.4	-3.2	12	[2002, 2020]
Lower Sevier	4.5	2.7	7.2	-3.78	5	[2003, 2004]
Beaver River	1.2	1.1	2.3	-3.59	7	[2002, 2004]
Virgin River	28.3	7.8	36.1	0.13	52	[2008, 2017]

[1] End of Month Reservoir Storage; [2] KAF, Thousand Acre-Feet; [3] WAI, Water Availability Index; [4] Threshold for coloring: >75% Green, <25% Red

WAI's for the Sevier, San Pitch and Beaver basins are very low

- mainly due to poor reservoir storage

Precipitation deficits for Water Years 2020-2022

units = inches

	WY20	WY21	WY22	Normal	total deficit	total deficit as % of normal (%)
Bear	27.7	25.1	30.1	31.3	11	35%
Beaver	21.1	26.3	27.9	30.1	15	50%
Deep Creek	15.3	20	20.8	20.8	6.3	30%
Dirty Devil	17.6	19.8	21.5	23.1	10.4	45%
Duchesne	20.5	24.3	28.4	26.9	7.5	28%
Escalante	17.1	19.7	20.9	23.4	12.5	53%
Lower Sevier	16.1	20.4	22.4	26.1	19.4	74%
NE Uintas	21.5	24.6	27.5	25.8	3.8	15%
Price-San Rafael	19.9	20.6	27	25.8	9.9	38%
Provo-Utah Lake-Jordan	27.3	28.9	33.2	34.2	13.2	39%
Raft	32	24.8	33.9	36.7	19.4	53%
San Pitch	21.1	20.7	26.9	27.1	12.6	46%
SE Utah	19.9	22.4	24.8	25.5	9.4	37%
SW Utah	20.1	21.3	25.4	24.2	5.8	24%
Tooele-Vernon Creek	24.1	25	29	32.3	18.8	58%
Upper Sevier	19.3	21.3	23.4	25.8	13.4	52%
Weber-Ogden	28.2	27.3	32.8	35.3	17.6	50%
				avg	12.1	43%

- Precipitation deficits range from 3.8 to 19.4” for Utah basins
- Equivalent of 15% - 74% of annual water budgets
- Suggests statewide deficit value of approx. 12”
- Will take multiple year to recover (hopefully…)

NRCS
Natural Resources Conservation Service

Willard Bay: current 38%, last year 37%, median 65%

Rockport: current 54%, last year 26%, median 64%

Deer Creek: current 42%, last year 59%, median 65%

Starvation: current 60%, last year 59%, median 75%

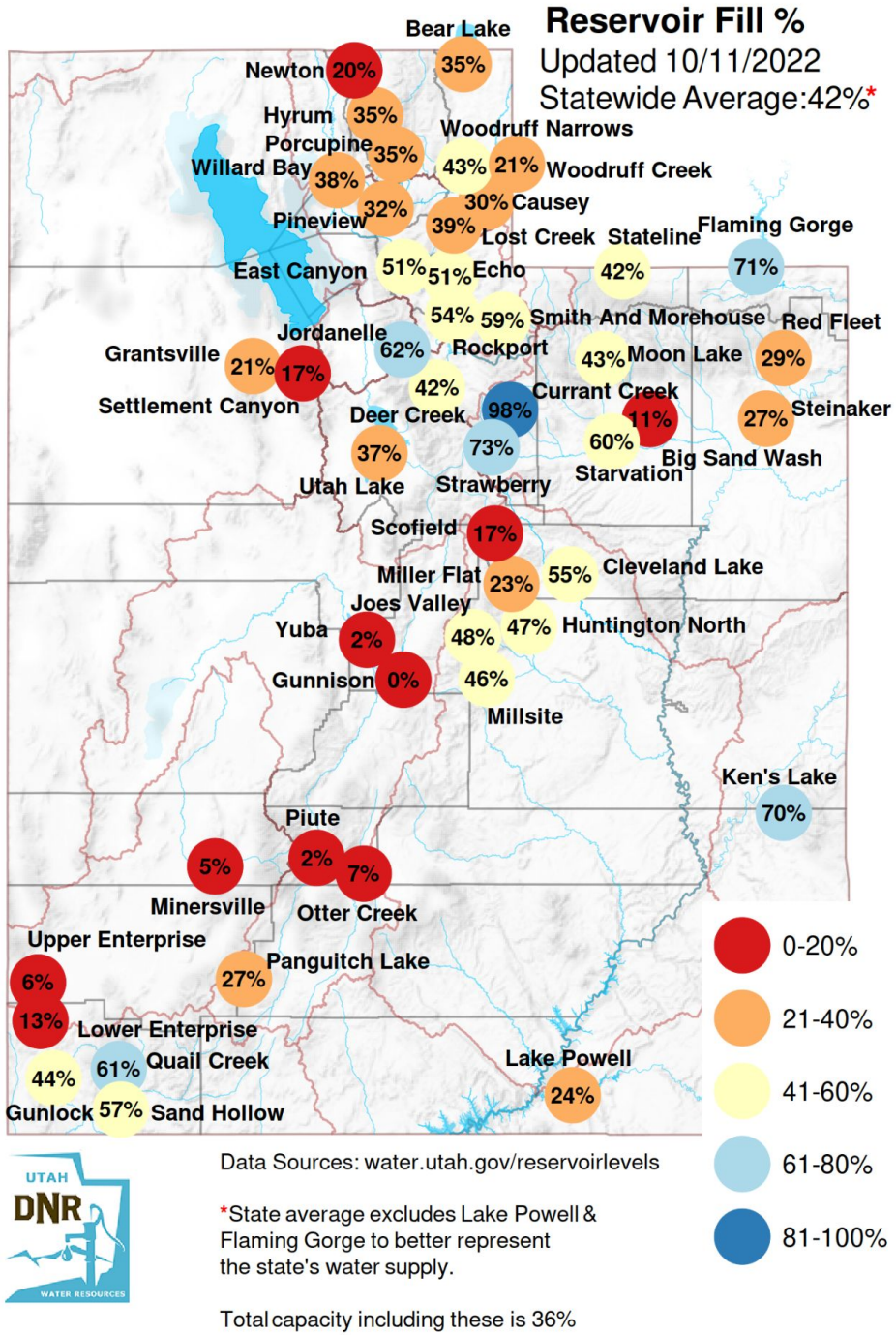
Scofield: current 17%, last year 21%, median 35%

Yuba: current 2%, last year 9%, median 24%

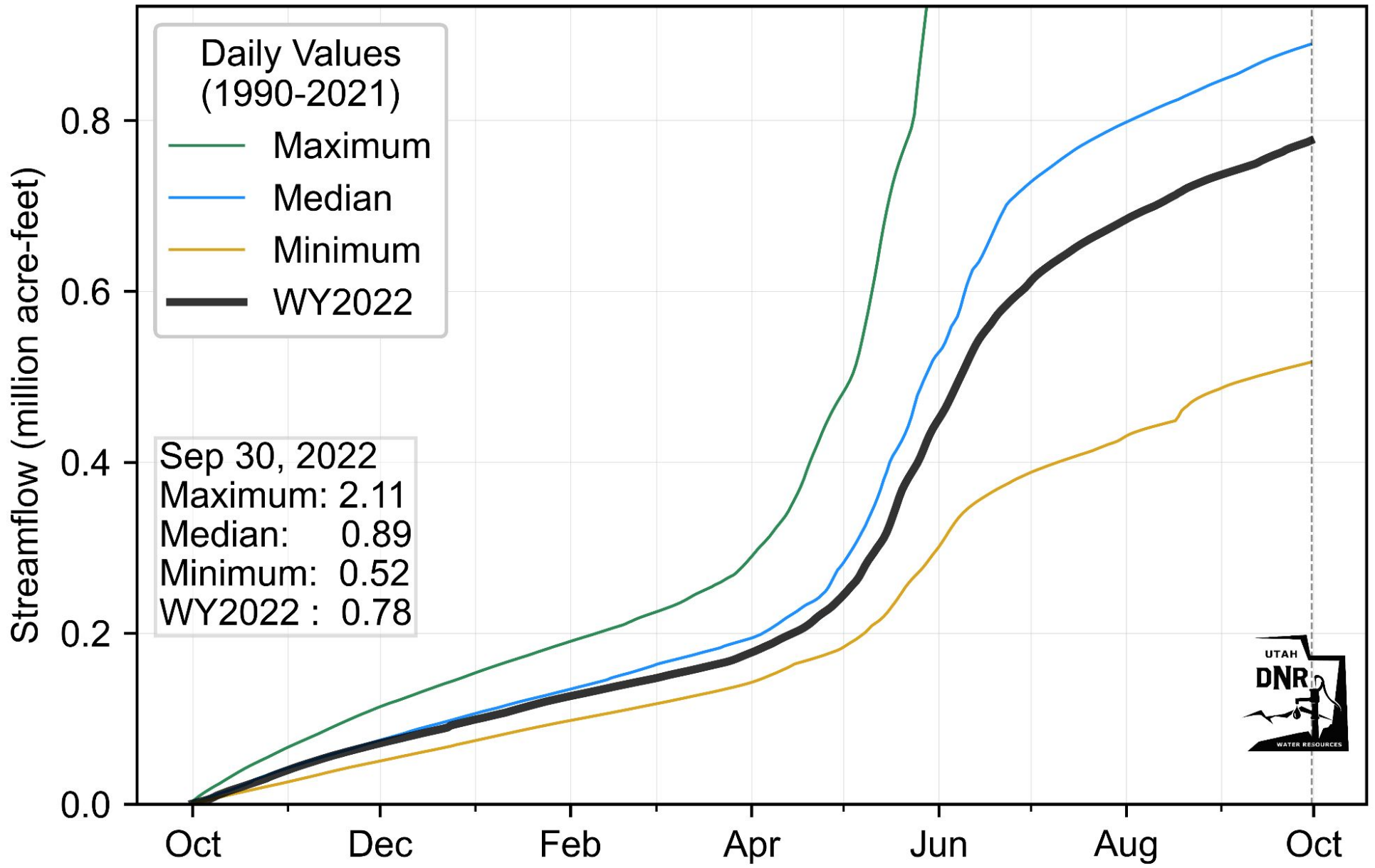
Ken's Lake: current 70%, last year 31%, median 30%

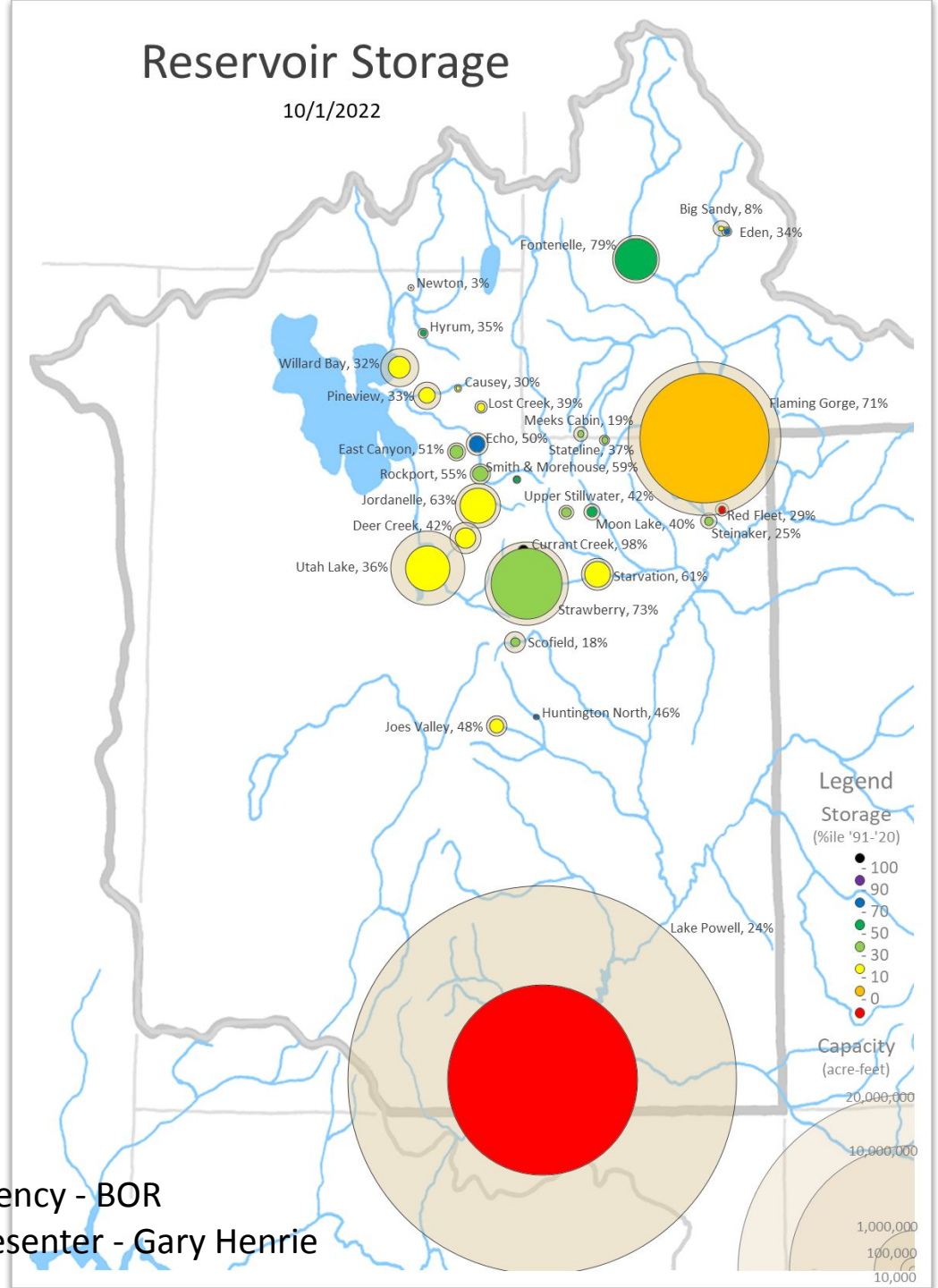
Piute: current 2%, last year 4%, median 19%

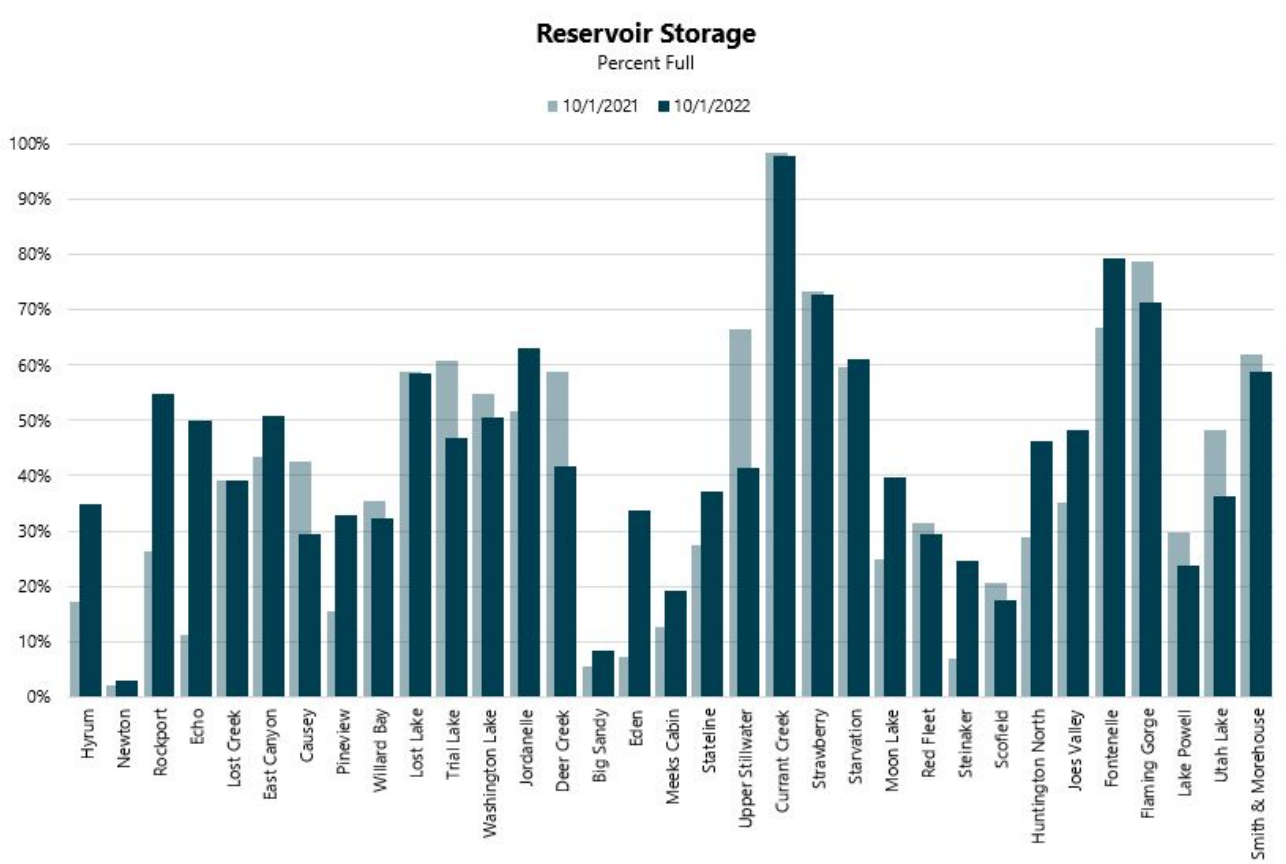
Sand Hollow: current 57%, last year 69%, median 77%

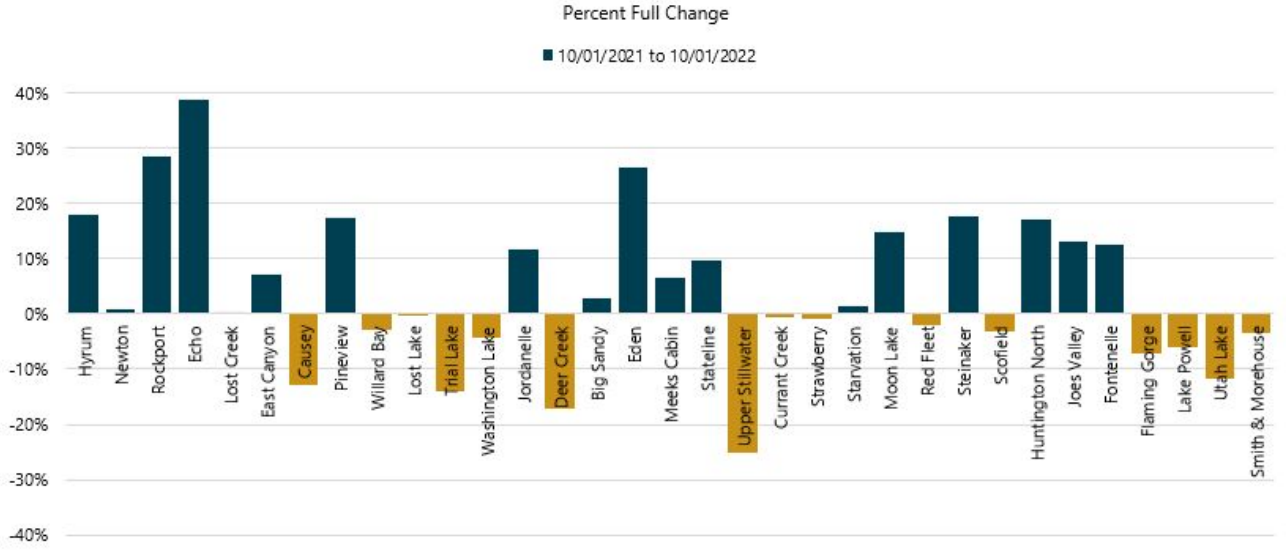


Cumulative Flow of 28 Headwater Streams









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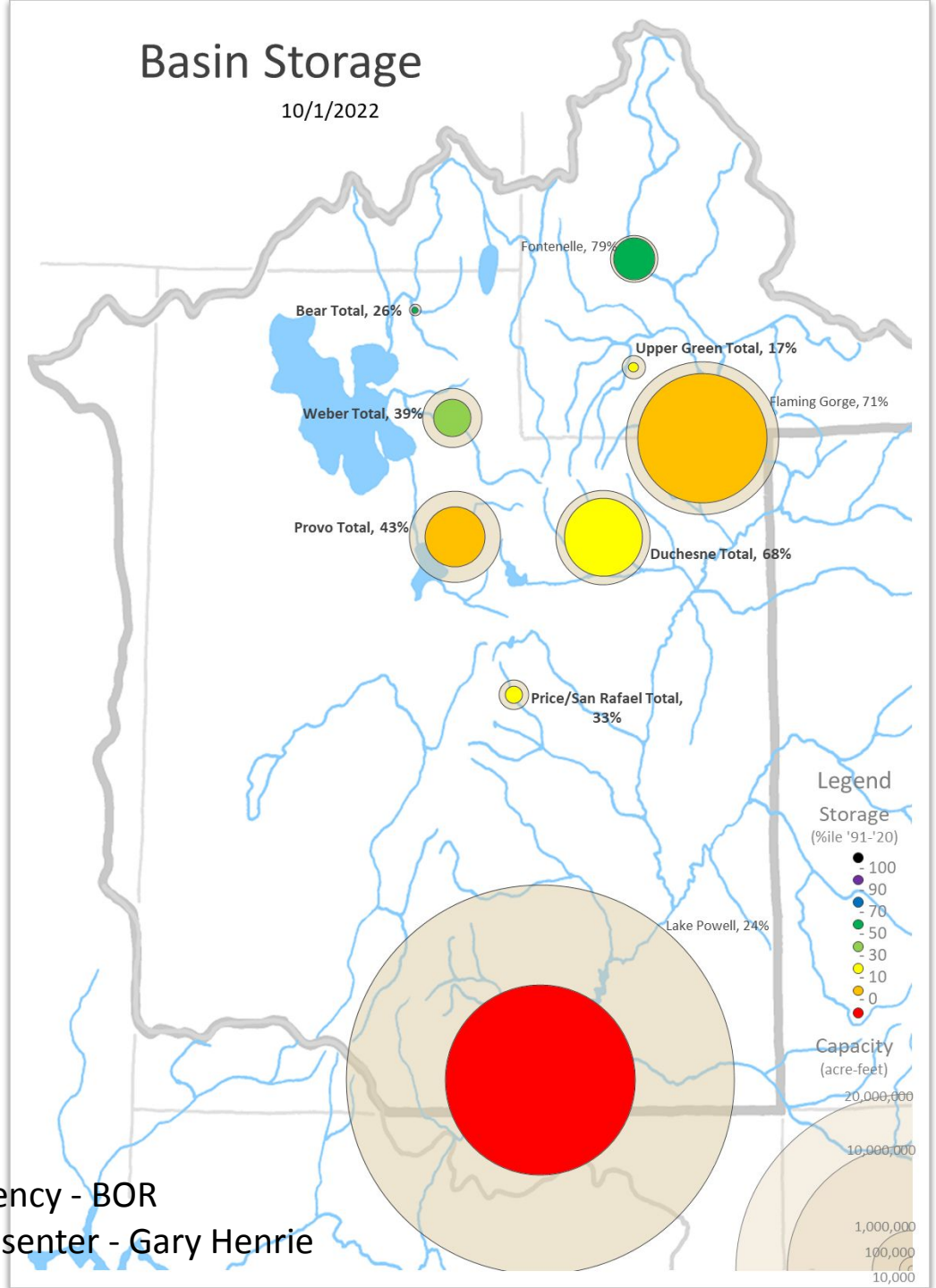

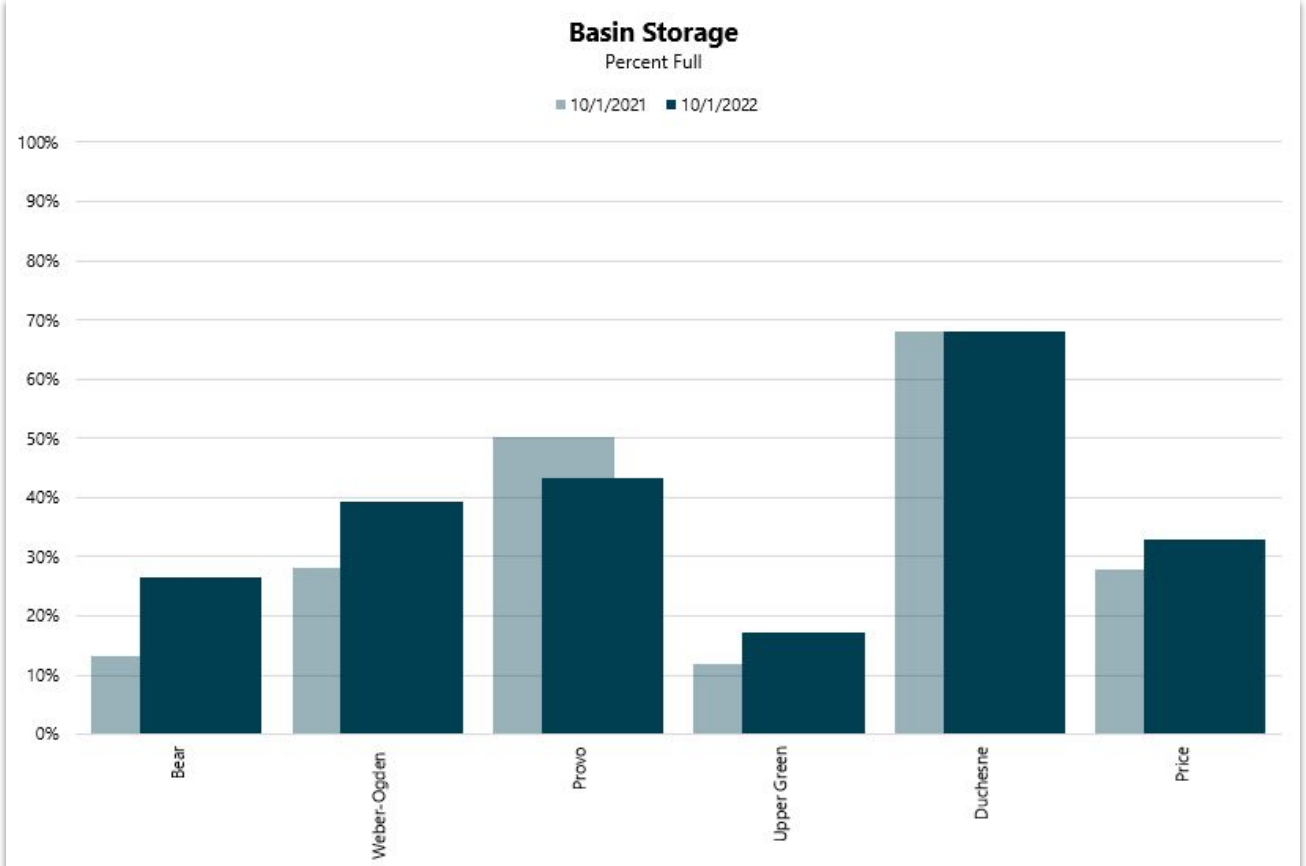

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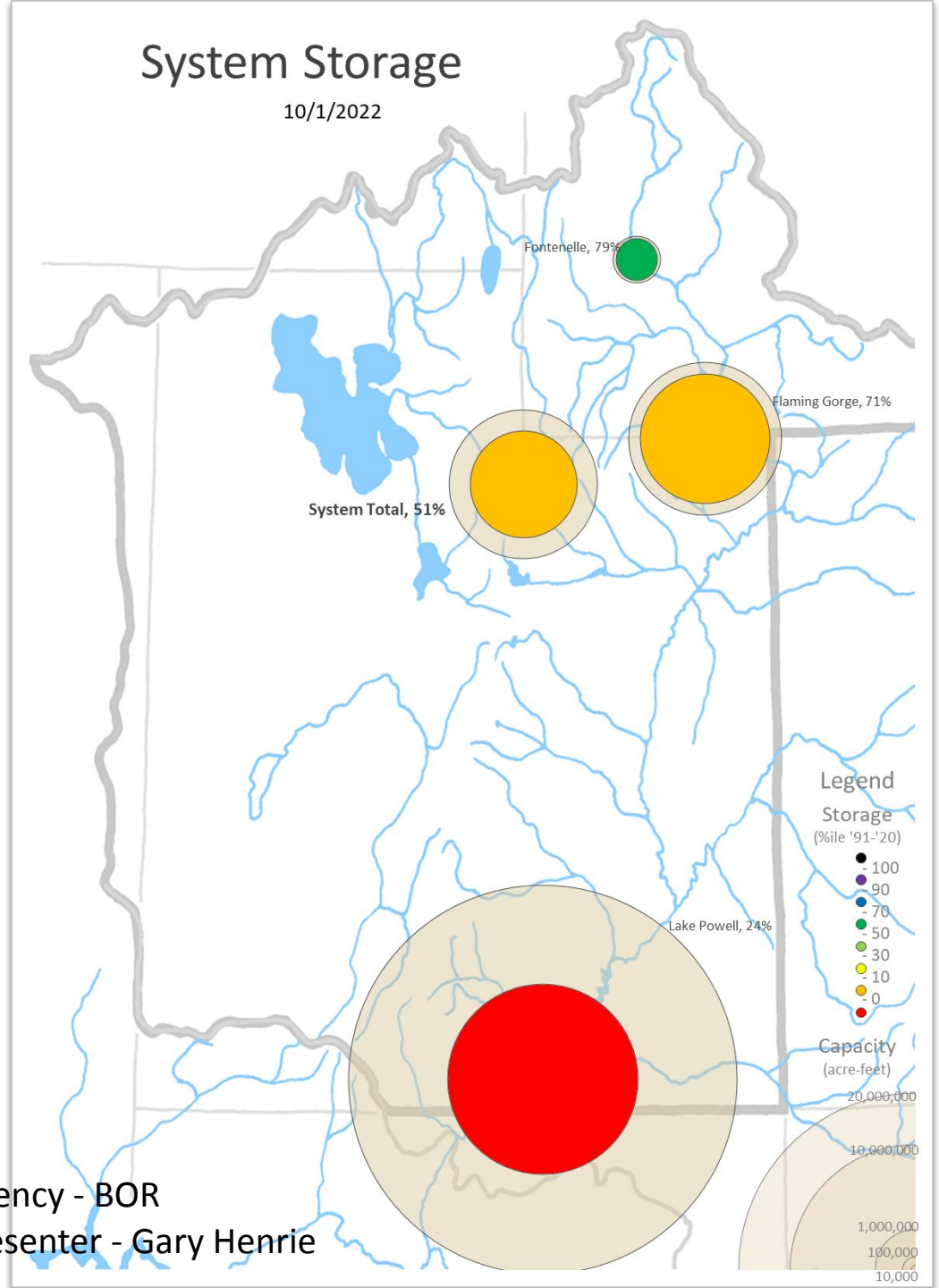

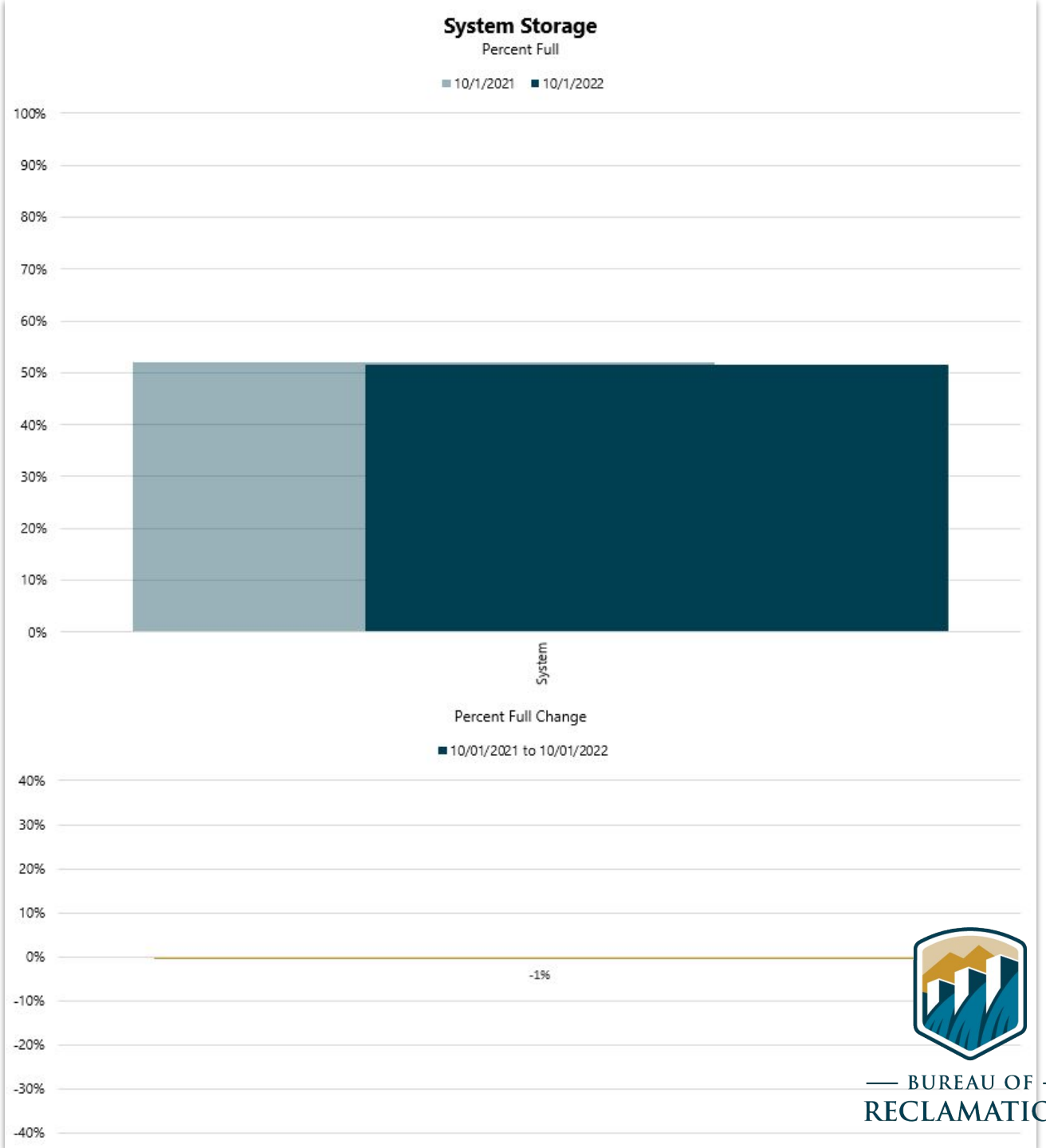

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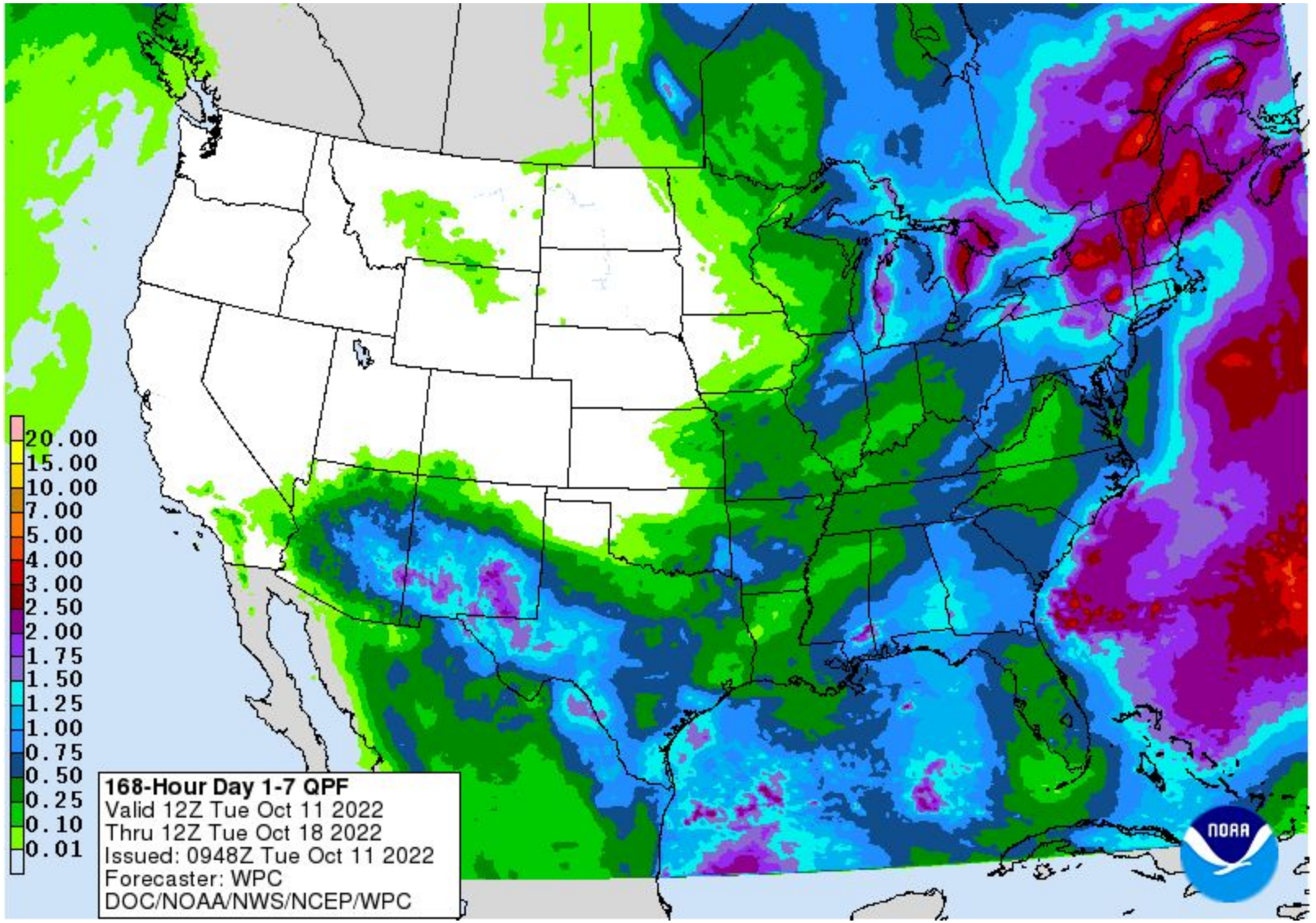
BUREAU OF RECLAMATION

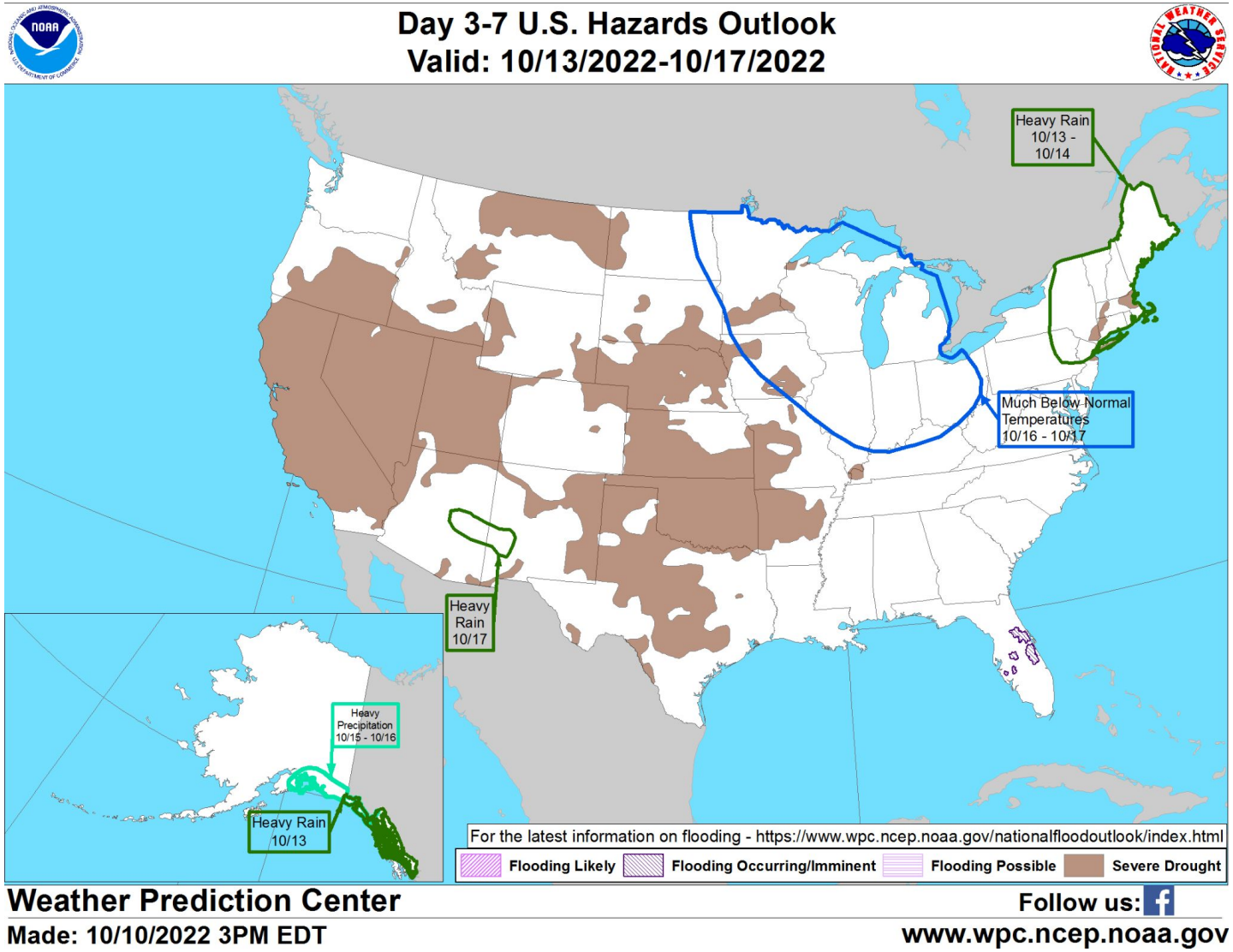
Weather Forecast Office Utah Day 1-7 Outlook



Agency - National Weather Service Weather Forecast Office

Presenter - Christine Kruse

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



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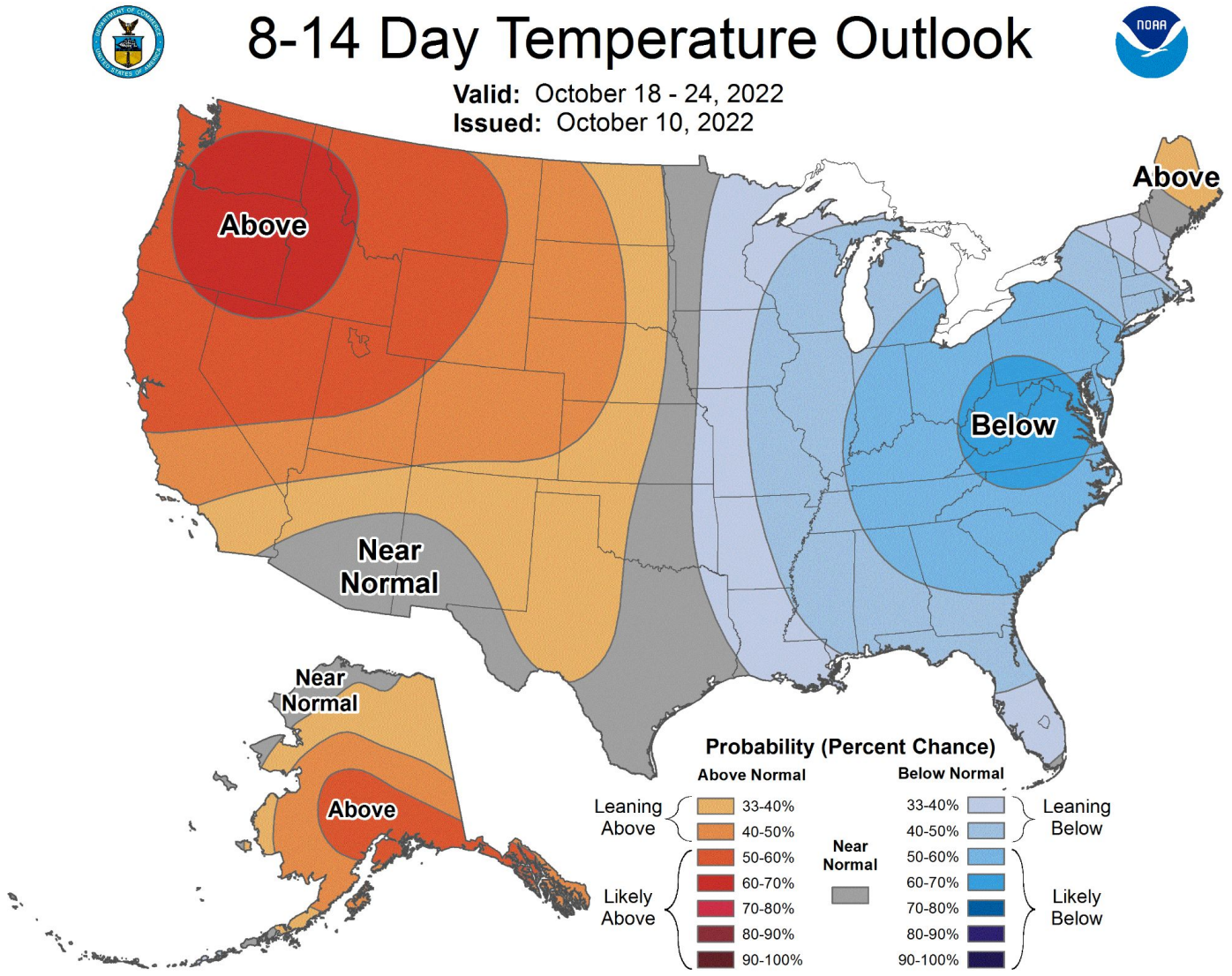
Presenter - Christine Kruse

Climate Prediction Center 8 to 14 Day Outlooks - Temperature



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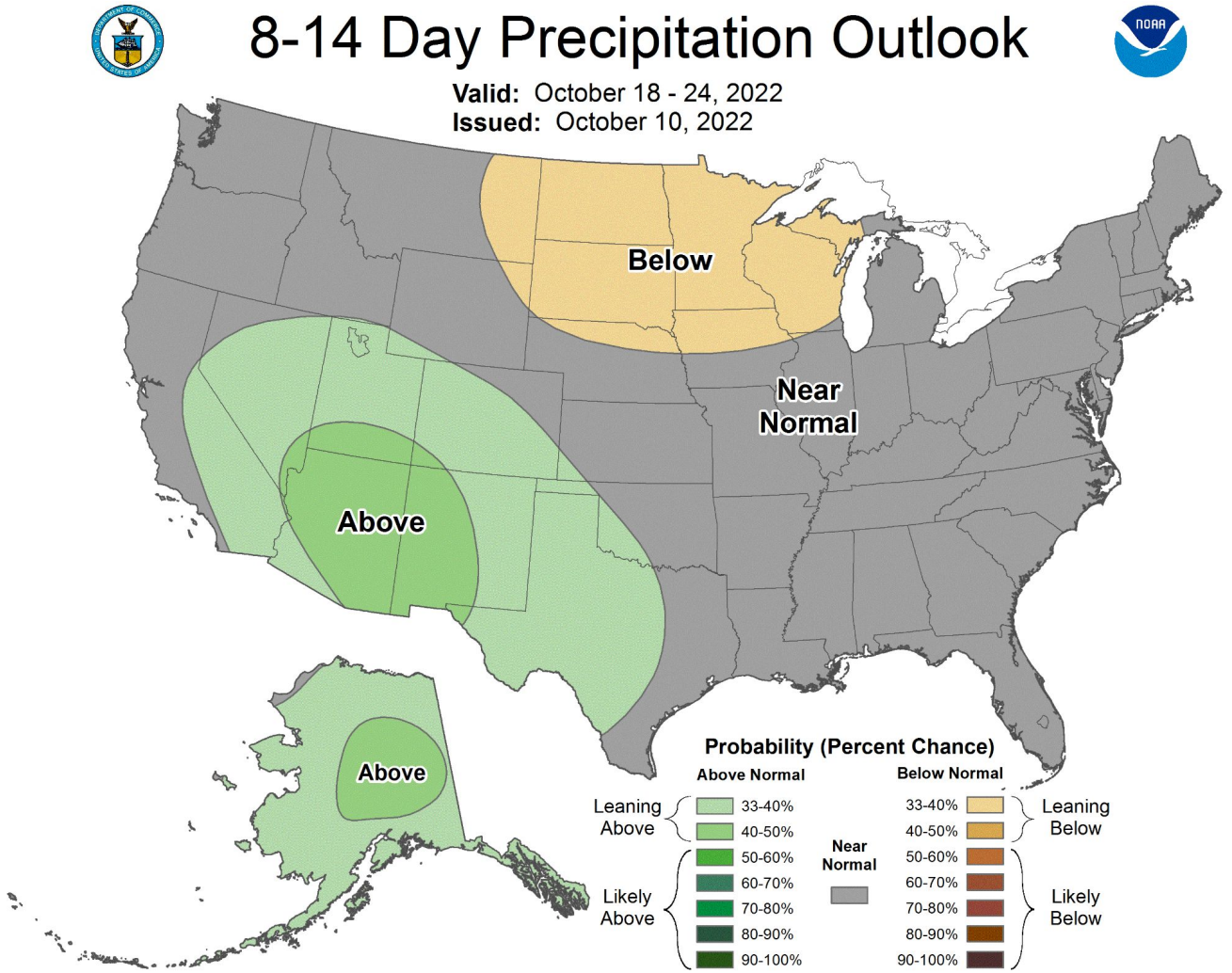
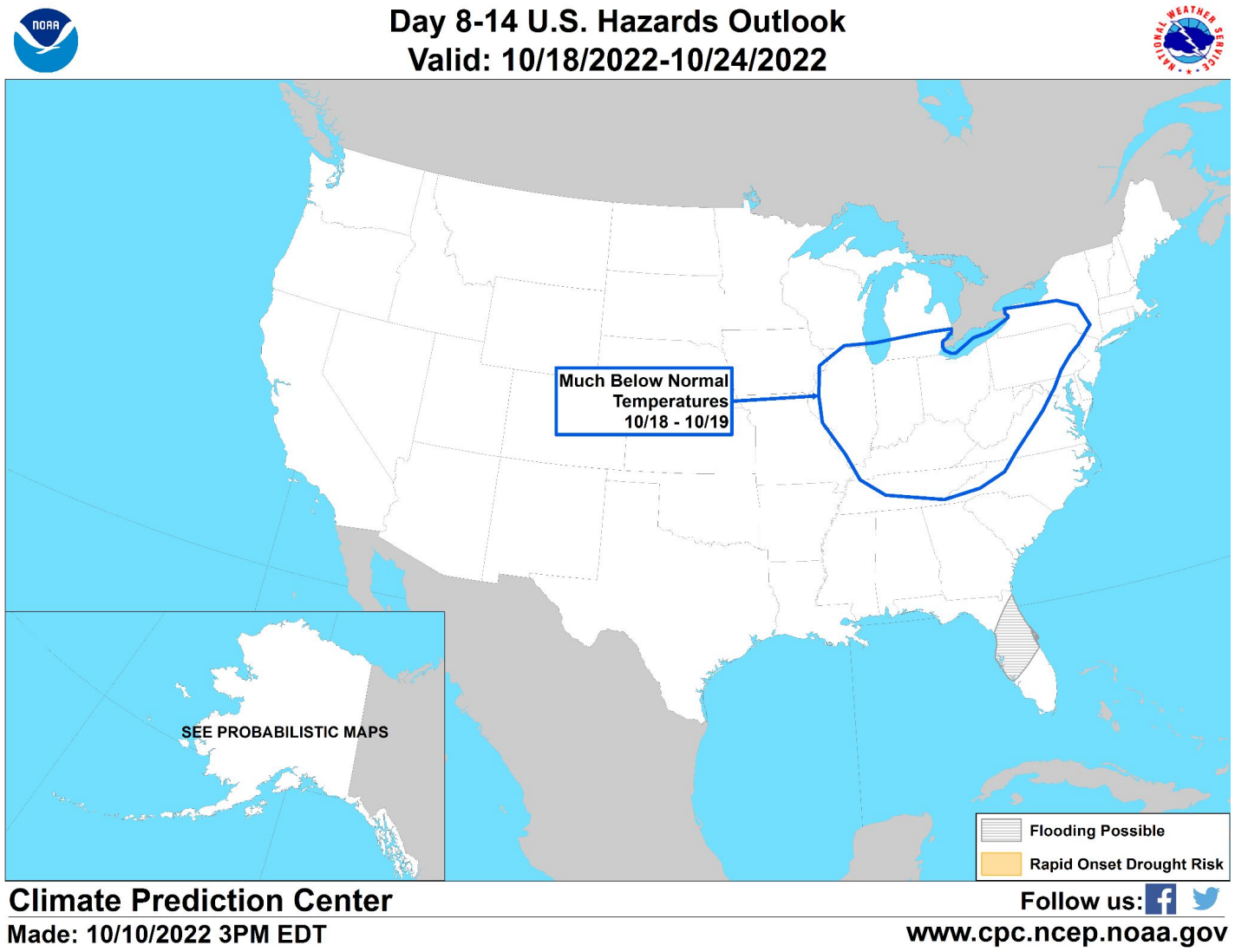
Presenter - Christine Kruse

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



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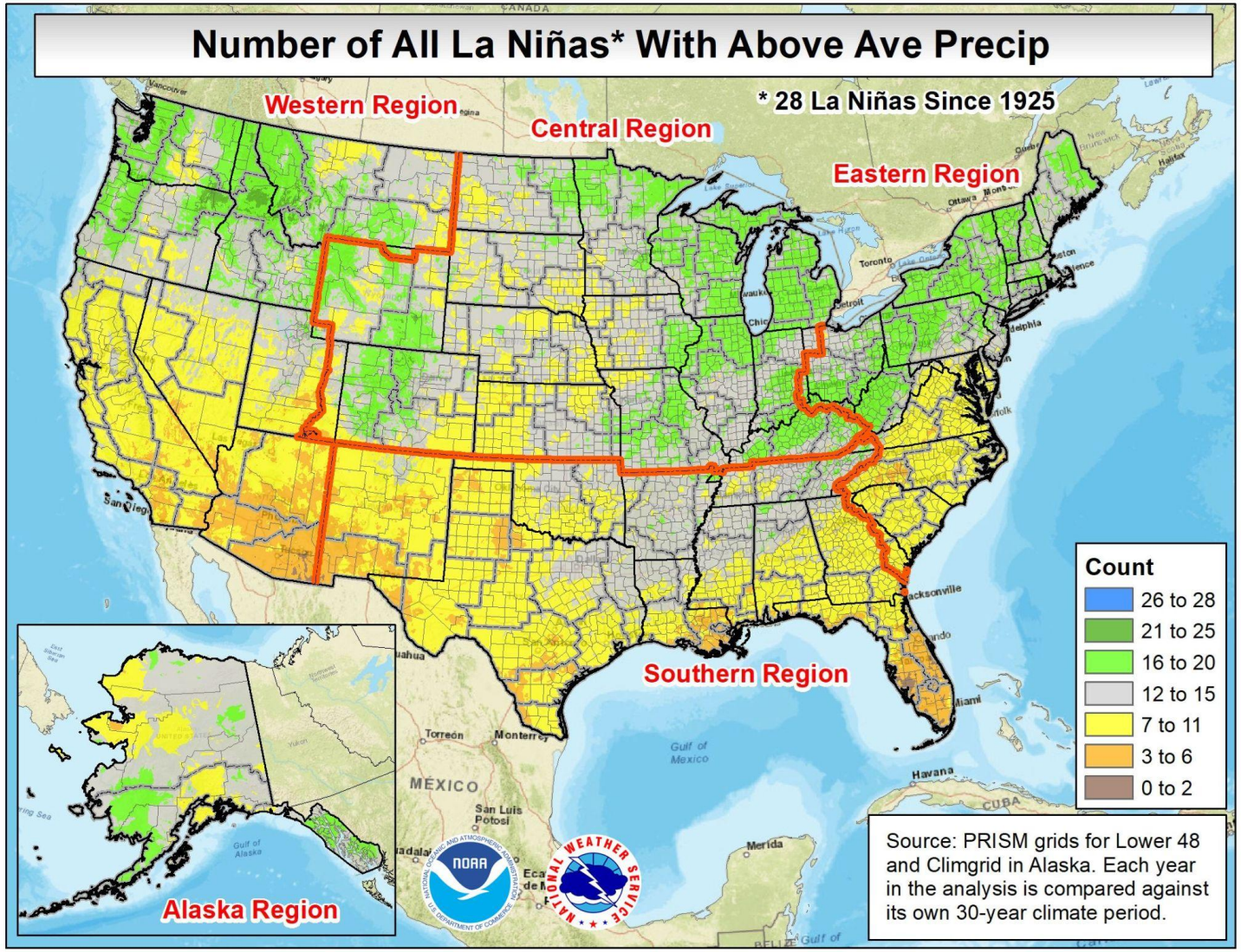
Presenter - Christine Kruse

La Niña Advisory Remains in Effect

La Niña is favored to continue through Northern Hemisphere winter 2022-23, **with a 91% chance in October-November, decreasing to a 54% chance in January-March 2023.**

Forecast will be updated Oct 13.



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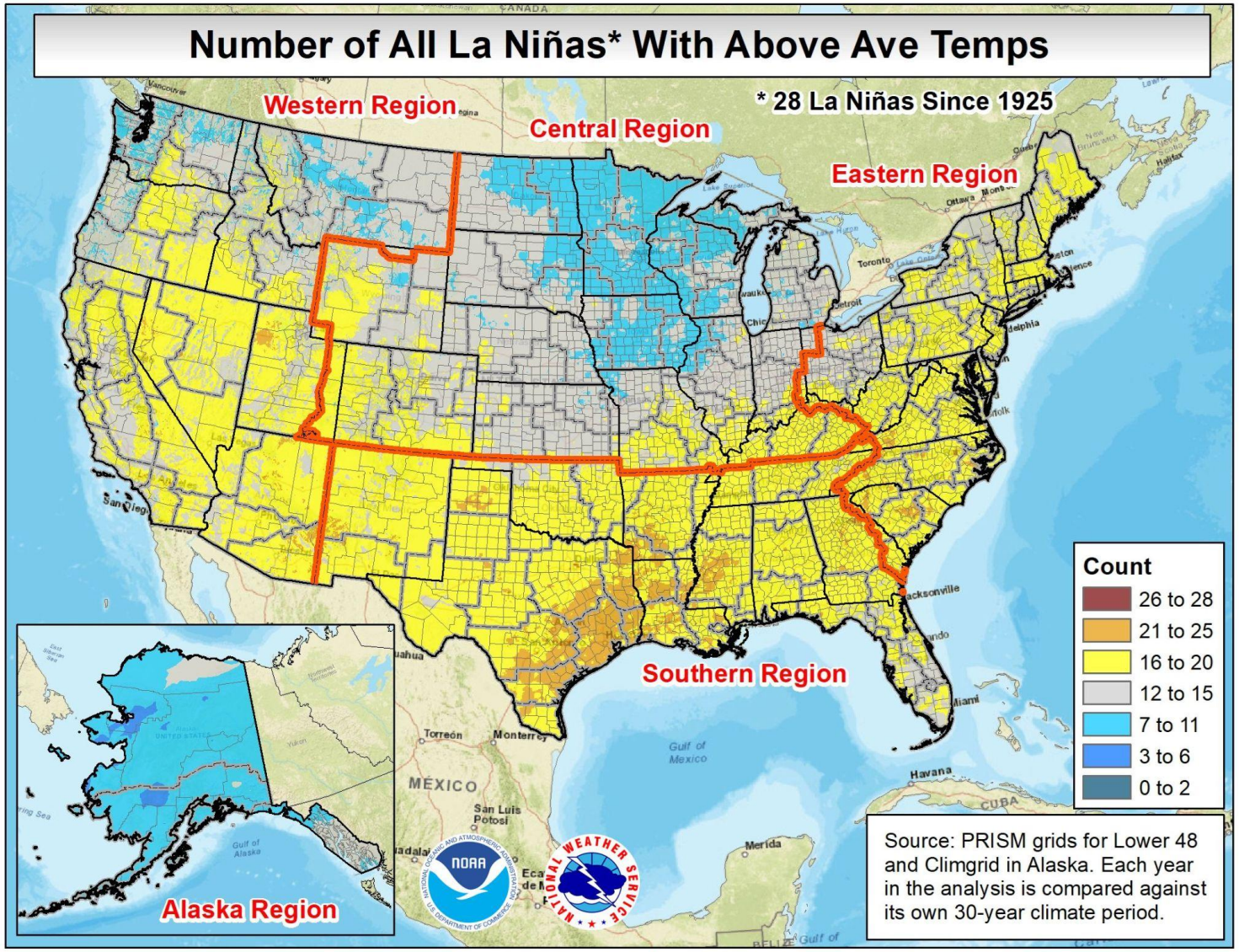

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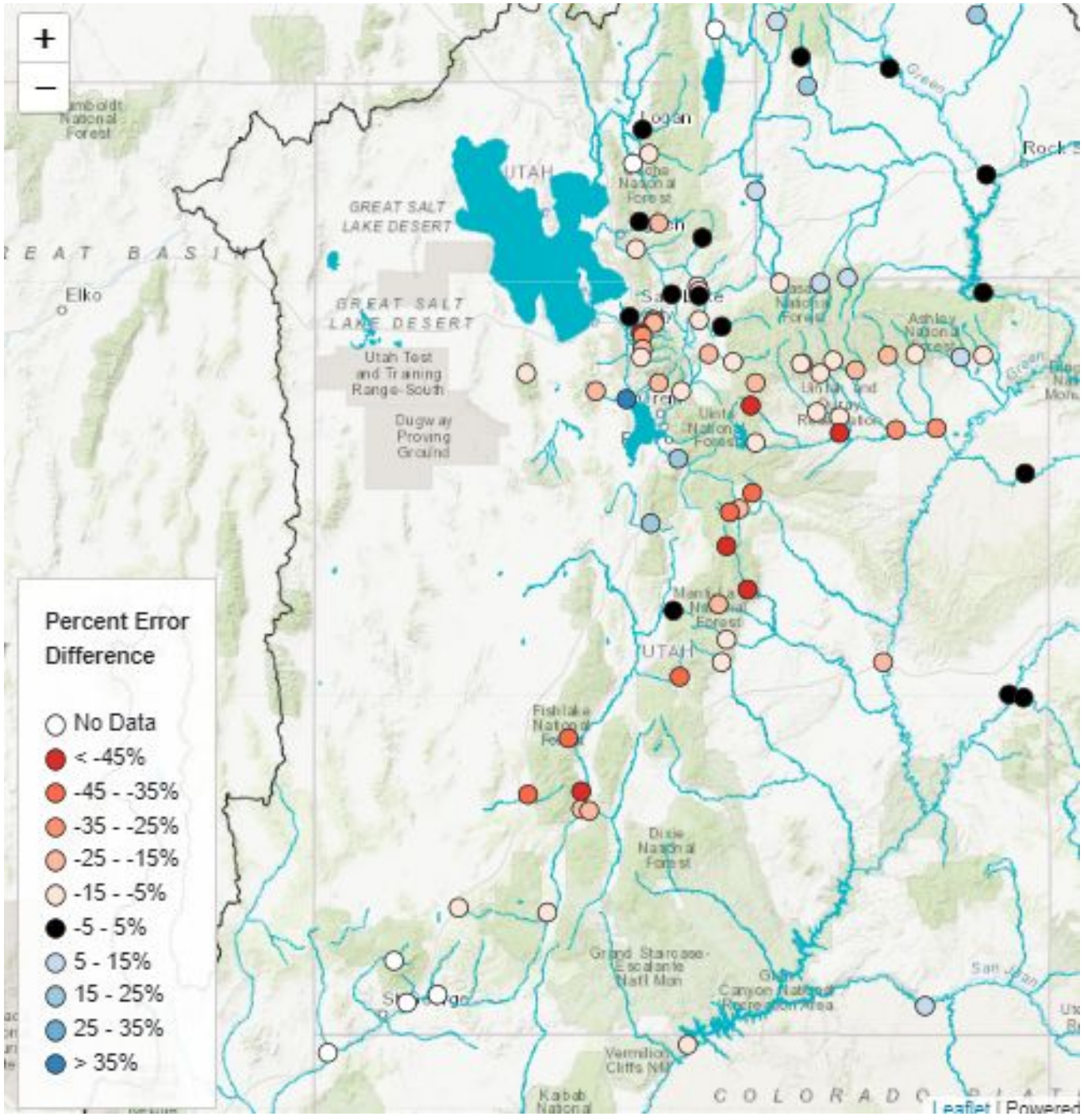
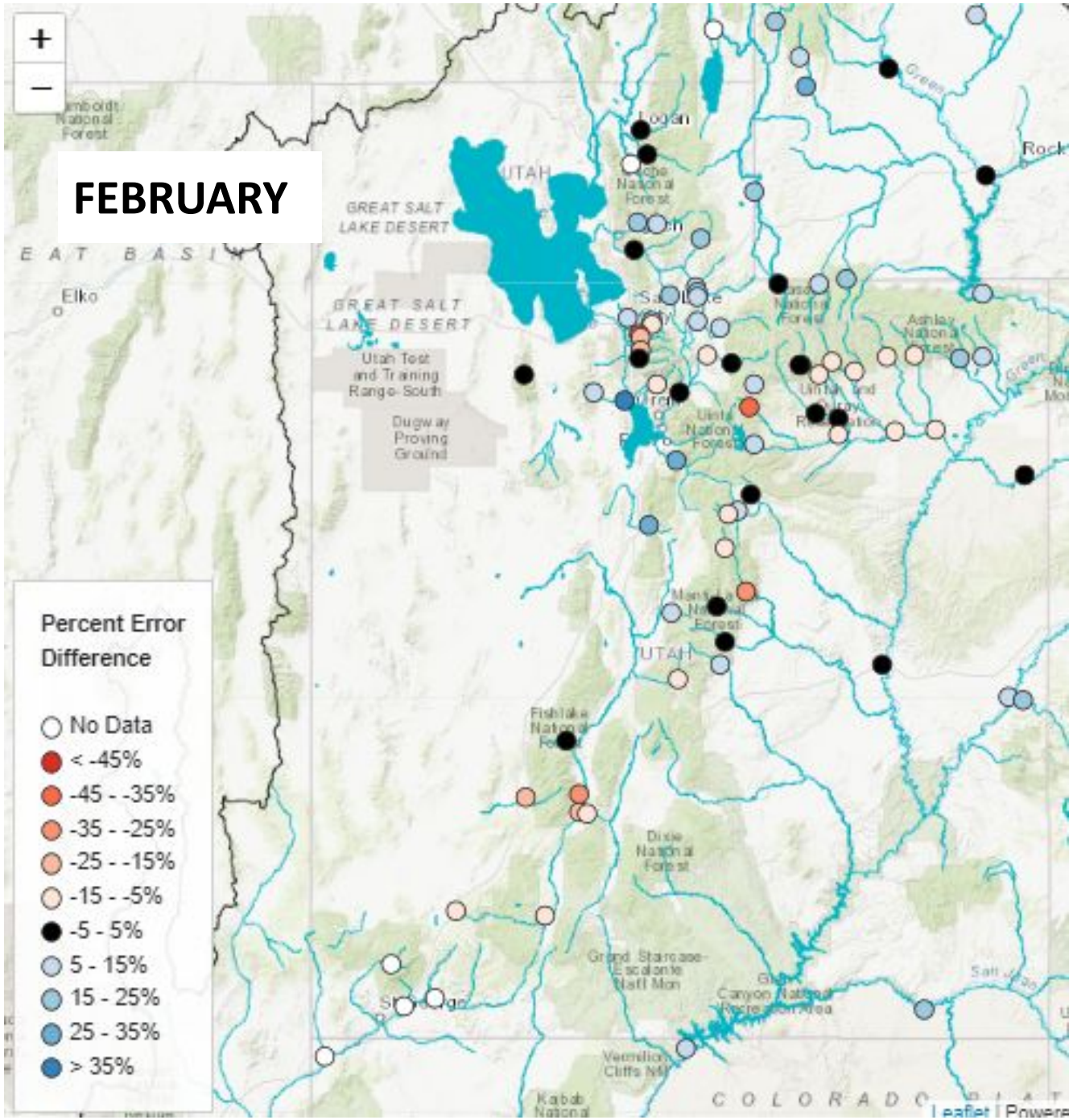
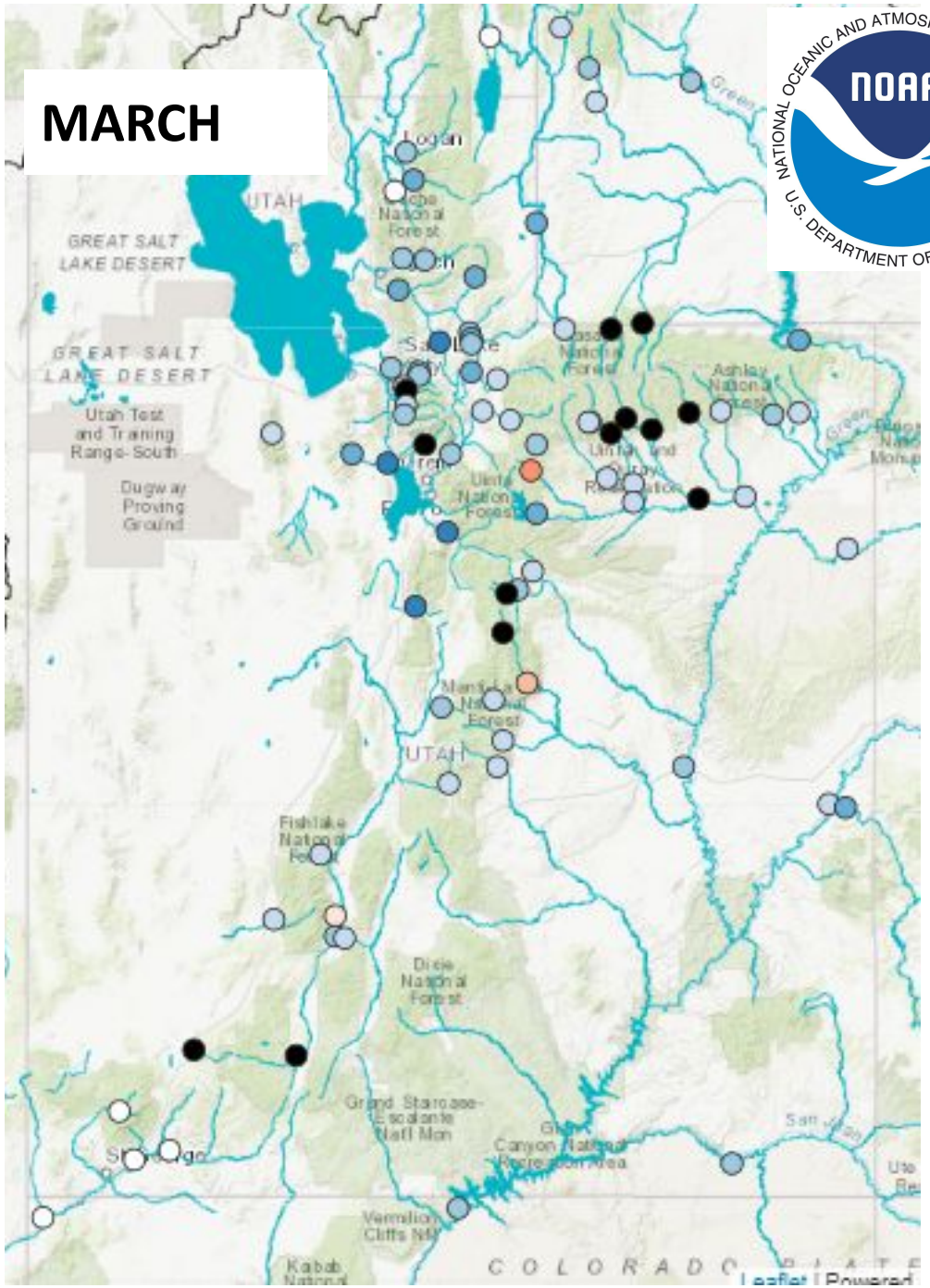


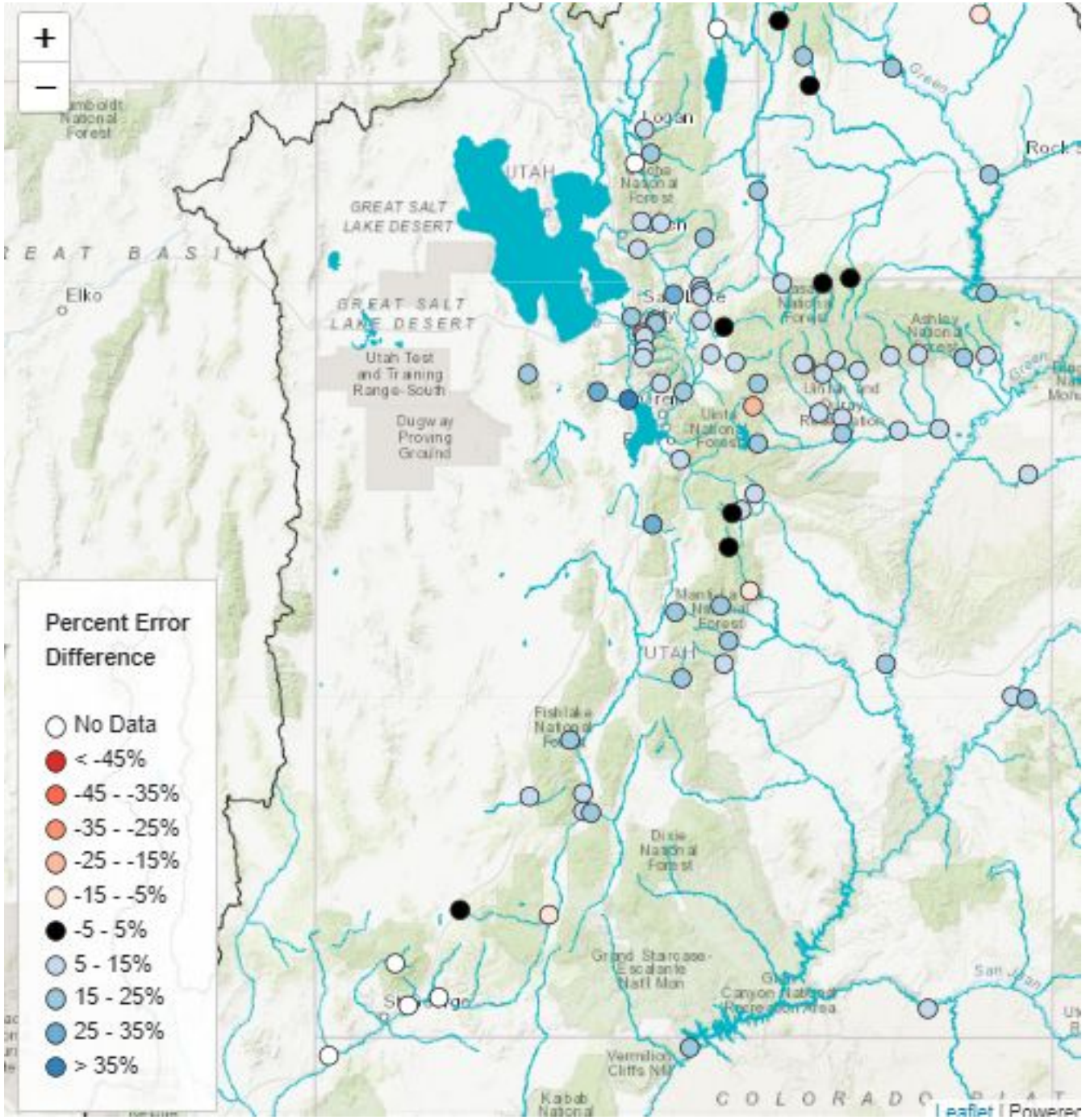
CBRFC Forecast Verification - January

Near normal snowpack conditions in January led to forecasts in the area that were higher than what was observed. A historically dry February impacted the trajectory of forecasts.





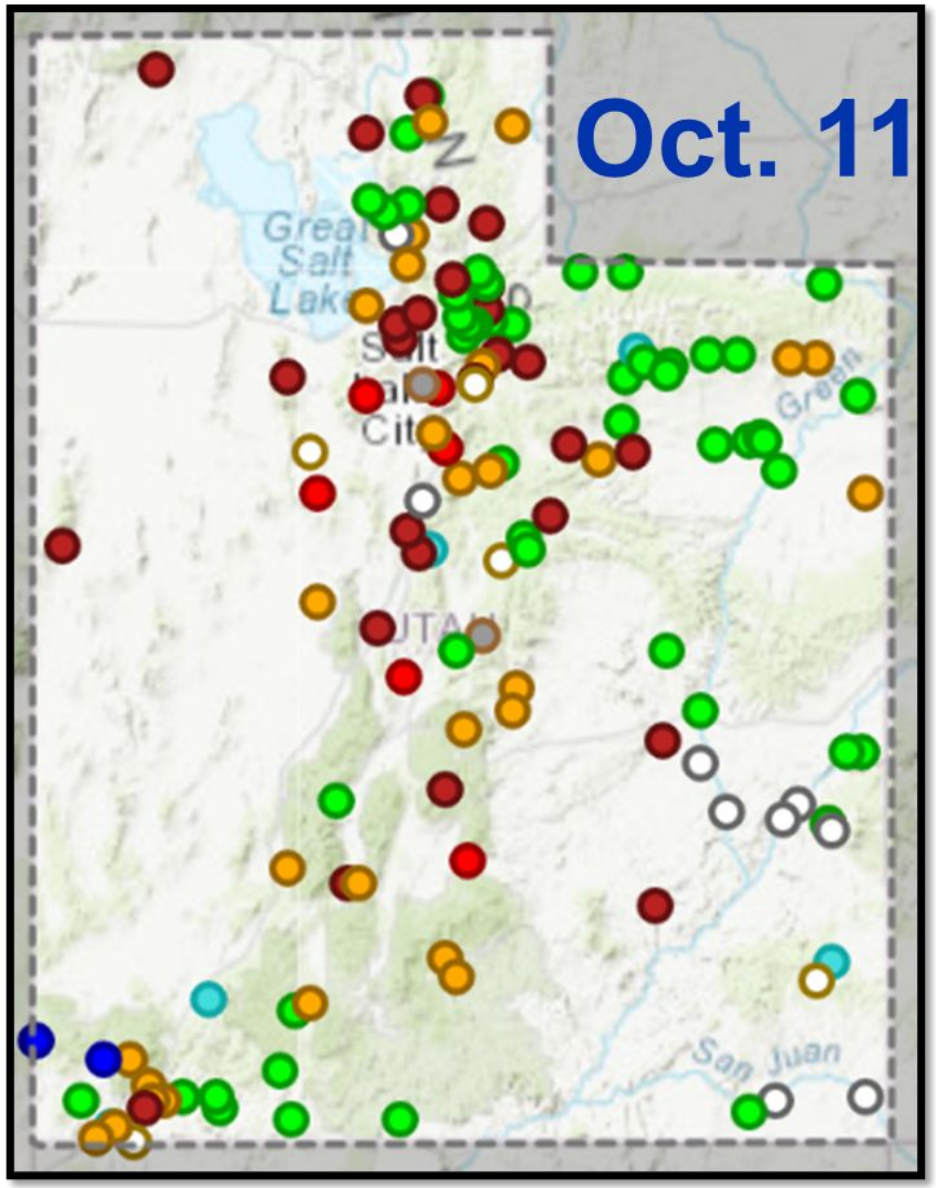
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



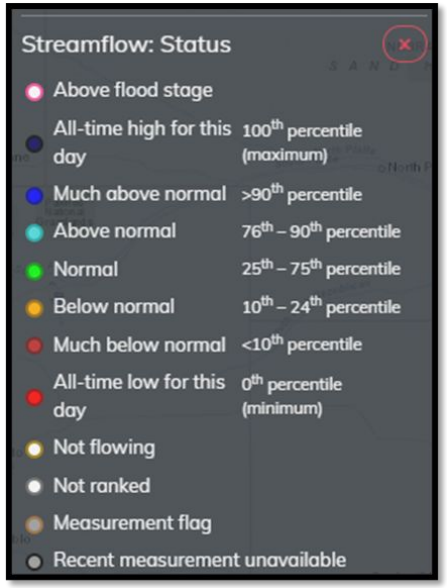
CBRFC Forecast Verification - April

By April, most of the forecasts in the area were very accurate. Model successfully captured the impacts of dry conditions over the basin, and a lack of extreme weather events did not impact the forecast.

Current Streamflow Conditions



Day-of-Year Status	Sep. 20 % Gages	Oct. 11 % Gages
All-time high for this day-of-year	0.7%	0.0%
Much above normal for this day-of-year	2.9%	1.5%
Above normal for this day-of-year	5.8%	3.6%
Normal for this day-of-year	42.3%	35.8%
Below normal for this day-of-year	19.0%	22.6%
Much below normal for this day-of-year	13.9%	20.4%
All-time low for this day-of-year	3.6%	4.4%
Not ranked - insufficient record	7.3%	8.0%
Not ranked - stream not flowing	1.5%	3.6%



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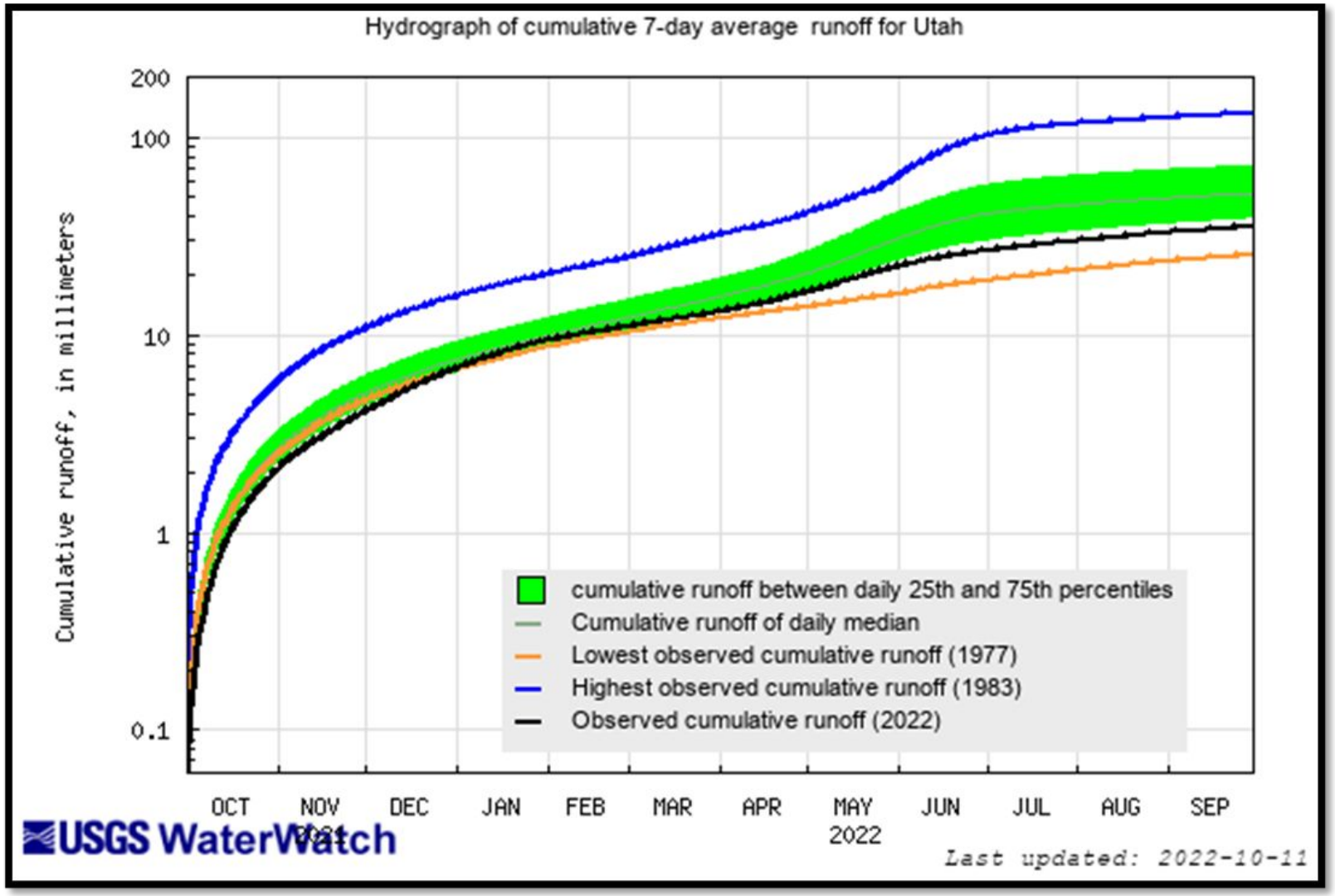
USGS science for a changing world

Area Based Cumulative Runoff for Utah



- Area based runoff computed from mixed regulated and unregulated streamflows
- WY2022 ends just below 25th percentile

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Great Salt Lake Water Surface Elevation

USGS

USGS 10010000 GREAT SALT LAKE AT SALTAIR BOAT HARBOR, UT

urface
feet
4195.0

USGS 10010000 GREAT SALT LAKE AT SALTAIR BOAT HARBOR, UT

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site | Time-series: Daily data | GO

Click to hide station-specific text

Station operated by the U.S. Geological Survey, with Cooperative Matching Funds with the Utah Department of Natural Resources, Division of Forestry, Fire, and State Lands.

NOTICE (09/29/2022)

Due to low lake levels, the Saltair Lake Elevation Gage can no longer measure accurate water levels. To see current lake elevation of the S. Arm of GSL, please visit USGS Gage; GSL S. Side of Causeway, East of Lakeside, UT (10010024).

Period of approved data
Period of provisional data

- GSL Marina water levels too low for Saltair gage (Station

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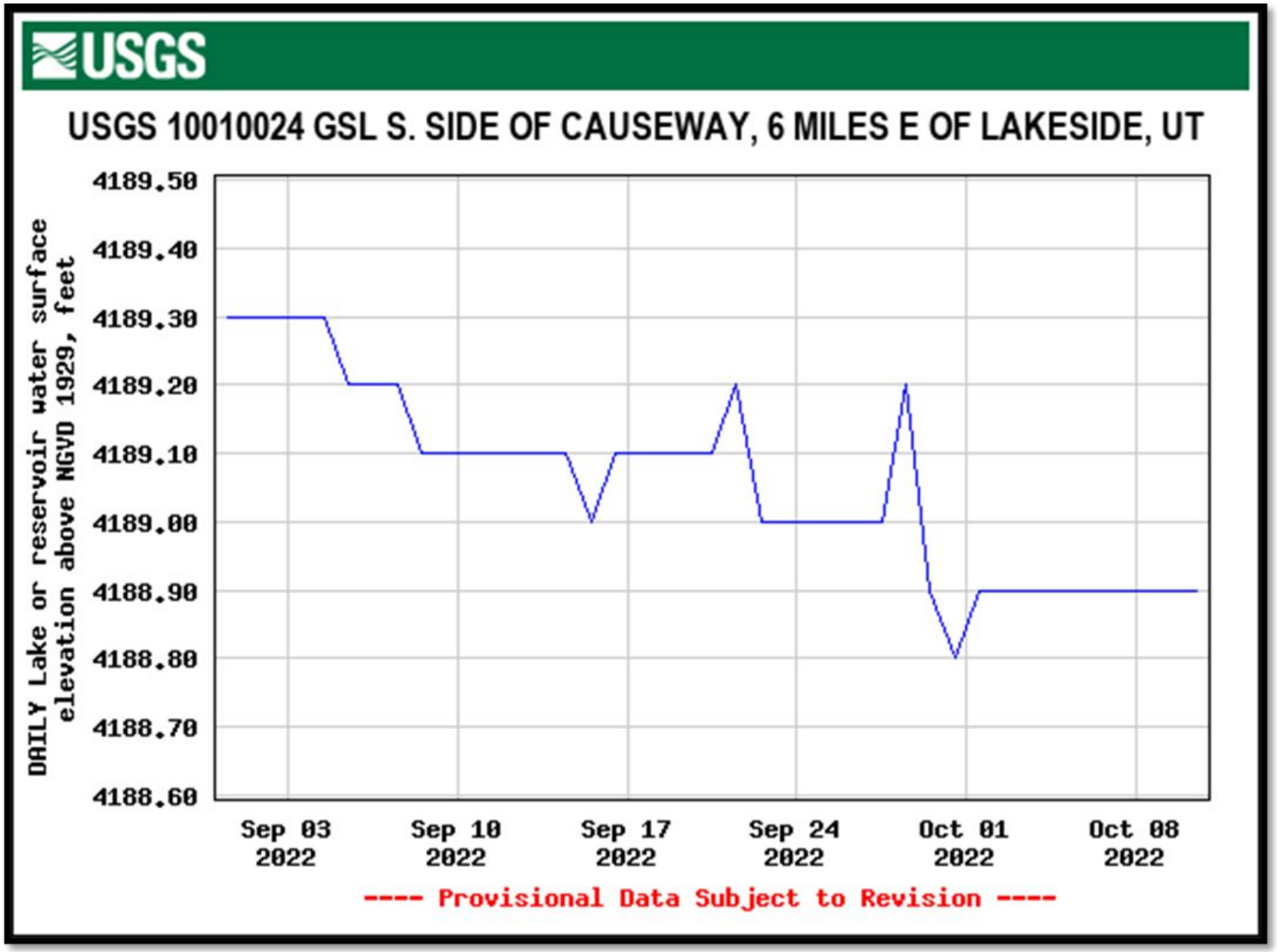
Great Salt Lake Water Surface Elevation



- Mean daily value 10/10/2022 = 4,188.9’
- Mean daily value 9/19/2022 = 4,189.1’

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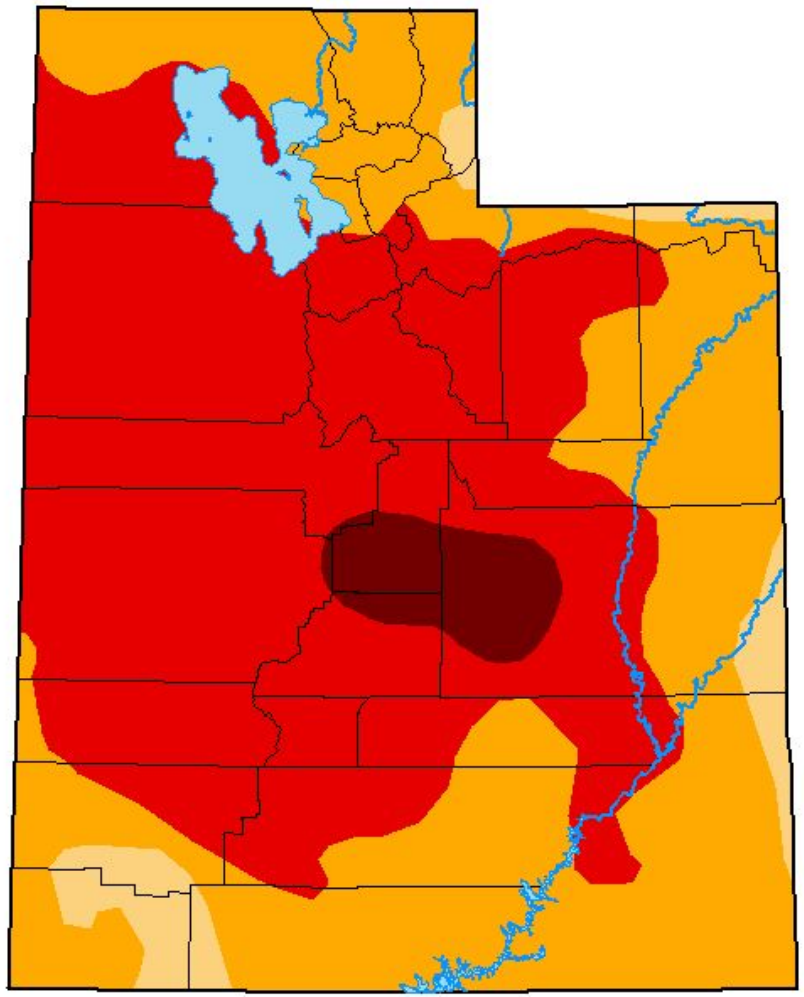
U.S. Drought Monitor

Utah

October 4, 2022

(Released Thursday, Oct. 6, 2022)

Valid 8 a.m. EDT



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:

Brad Pugh
CPC/NOAA

droughtmonitor.unl.edu