WY Conditions & Outlooks:

Precipitation, Temperatures, Drought, Floods, & Everything In-between

January 18, 2024

The University of Wyoming is an equal opportunity/affirmative action institution.

Presentation Outline

- **Current Conditions:** Overview
  - Drought, Temperature, Precipitation, Soils, Snow Water Equivalent (SWE)
  - Streamflow
- **Outlooks:**
  - Temperature & Precipitation
- **Highlight of the Month:**
  - 2023 – A Look Back
- **Questions**

Current Conditions

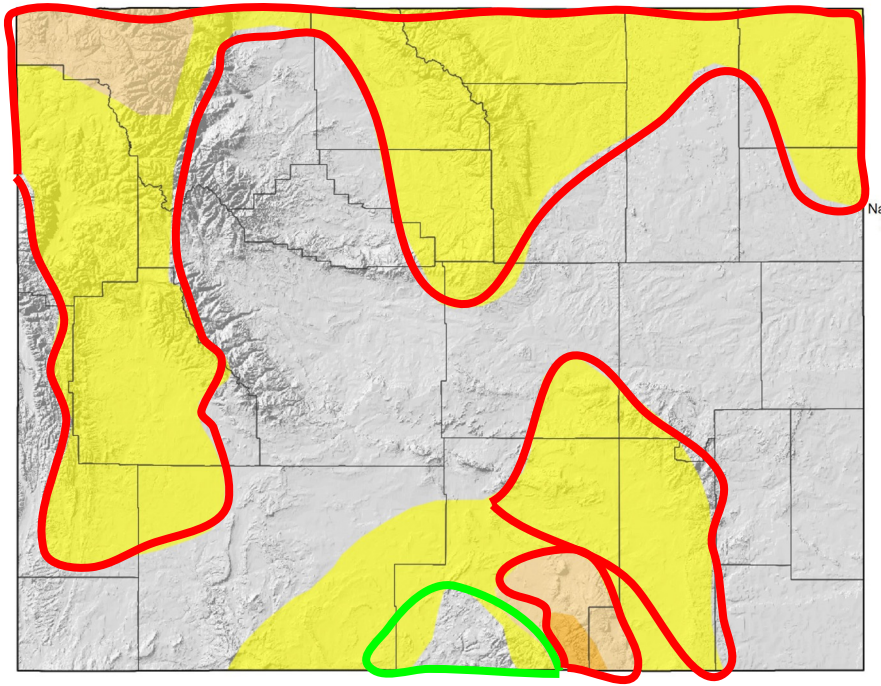
US Drought Monitor for January 18, 2024

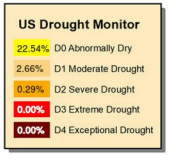
(Released Thursday, January 16, 2024)

Valid 8 a.m. EDT

Drought Level	Percentile
None	>30
D0 (Abnormally Dry)	21 to 30
D1 (Moderate Drought)	11 to 20
D2 (Severe Drought)	6 to 10
D3 (Extreme Drought)	3 to 5
D4 (Exceptional Drought)	0 to 2

US Drought Monitor for 16 Jan 2024





Map Created by:
National Drought Mitigation Center
https://droughtmonitor.unl.edu

Map Layout Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

The U.S. Drought Monitor, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln. The U.S. Drought Monitor website is hosted and maintained by the NDMC. http://droughtmonitor.unl.edu

Map Layout Created 18 Jan 2024 http:/www.wrds.uwyo.edu

How are Drought categories assigned?
https://youtu.be/45MQ1GB-uTc

Degradations since the last webinar (Nov). Continued decline in conditions in the south-central part of the state.

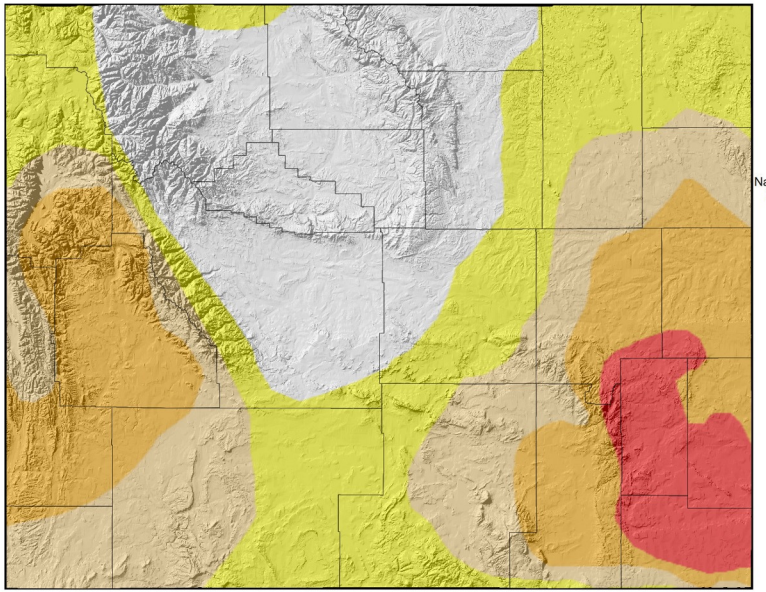
https://droughtmonitor.unl.edu

droughtmonitor.unl.edu

WRDS Water Resources Data System

One Year Ago

US Drought Monitor for 17 Jan 2023



US Drought Monitor
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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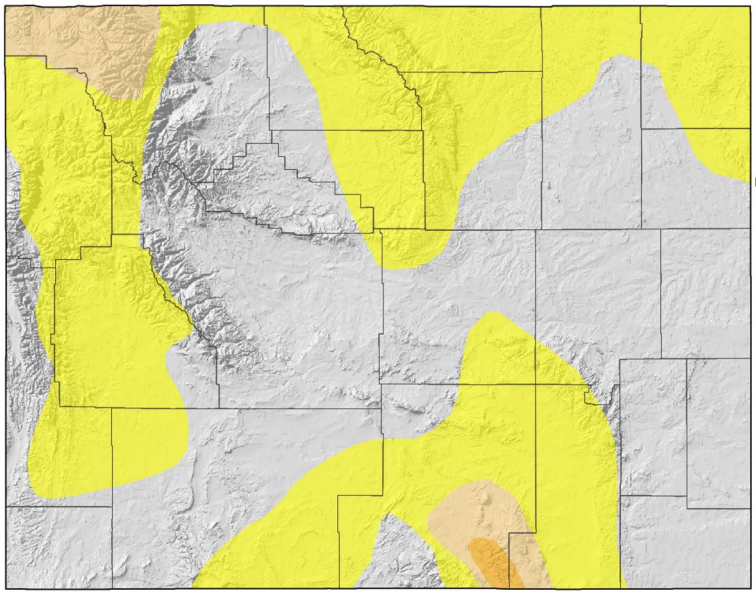
Map Layout Created 31 Jan 2023 http:/www.wrds.uwyo.edu

Today

US Drought Monitor for 16 Jan 2024



US Drought Monitor
- 22.54% D0 Abnormally Dry
- 2.66% D1 Moderate Drought
- 0.29% D2 Severe Drought
- 0.00% D3 Extreme Drought
- 0.00% D4 Exceptional Drought

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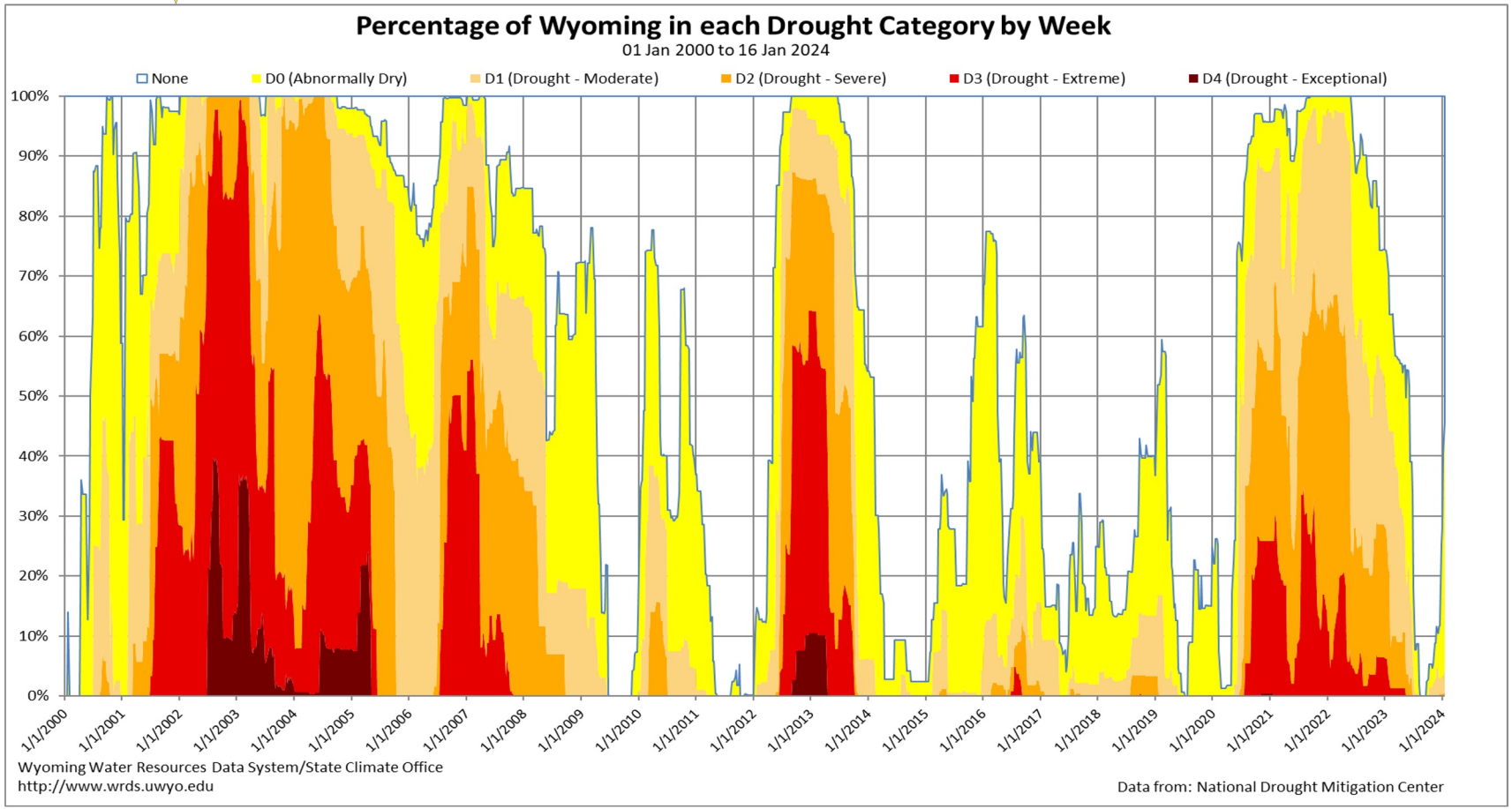
Map Layout Created 18 Jan 2024 http:/www.wrds.uwyo.edu

https://droughtmonitor.unl.edu

droughtmonitor.unl.edu

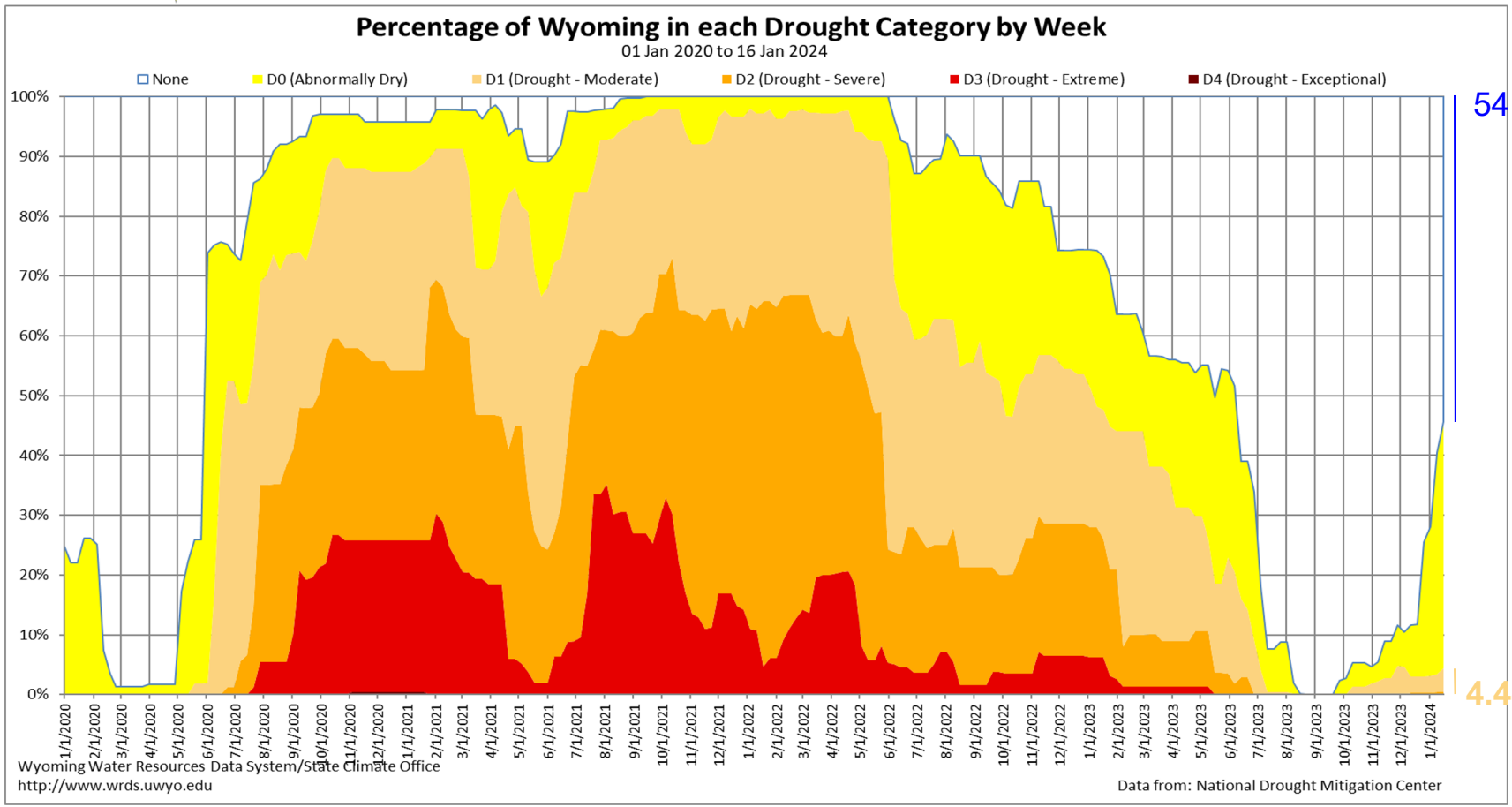
WRDS
Water Resources Data System

Wyoming Area Affected: 54.24% D0-D4 ; 4.44% D1-D4



http://www.wrds.uwyo.edu/drought/droughttimeline.html

WRDS
Water Resources Data System



http://www.wrds.uwyo.edu/drought/droughttimeline.html

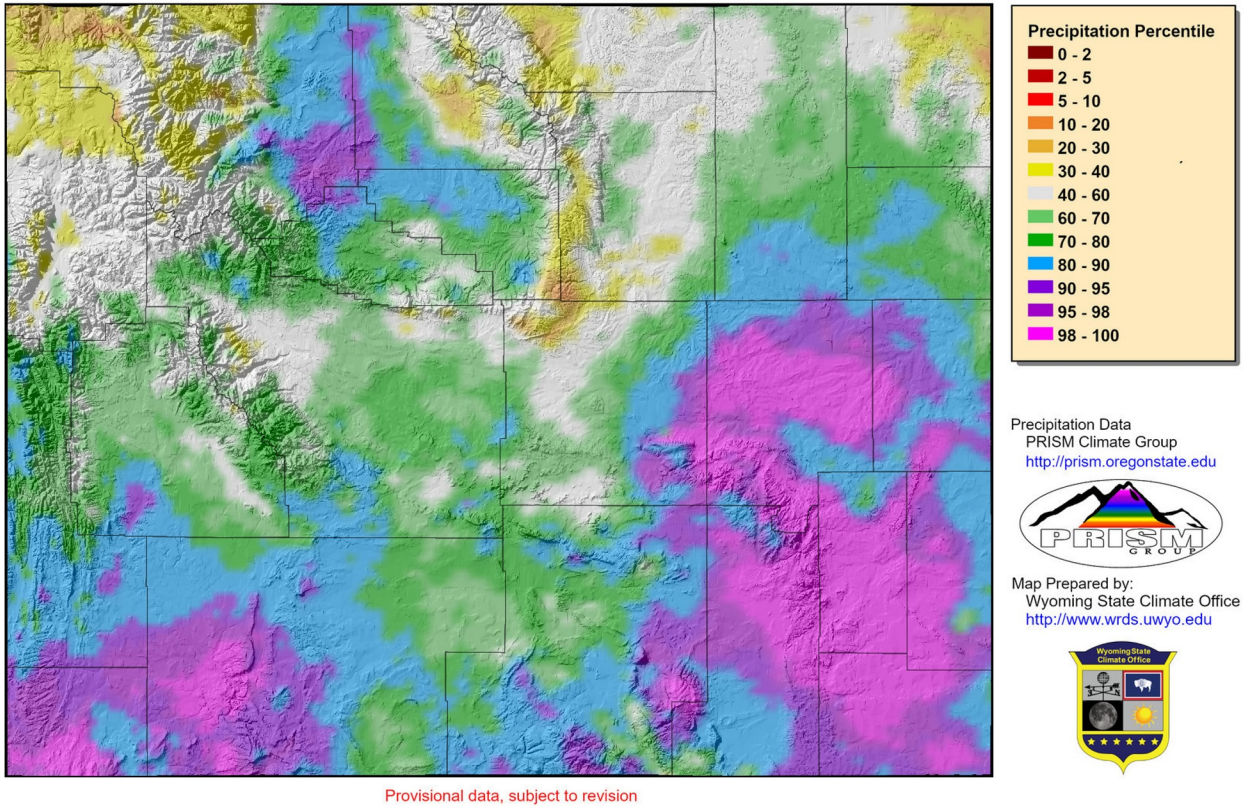
14-Day Precipitation Percentile (04 Jan 2024 to 17 Jan 2024)

Above Median:

- Southern half
- Bighorn basin
- Southern NE WY

Below Median (Areas of Concern):

- Northwest
- Far northeast
- Bighorn Mountains



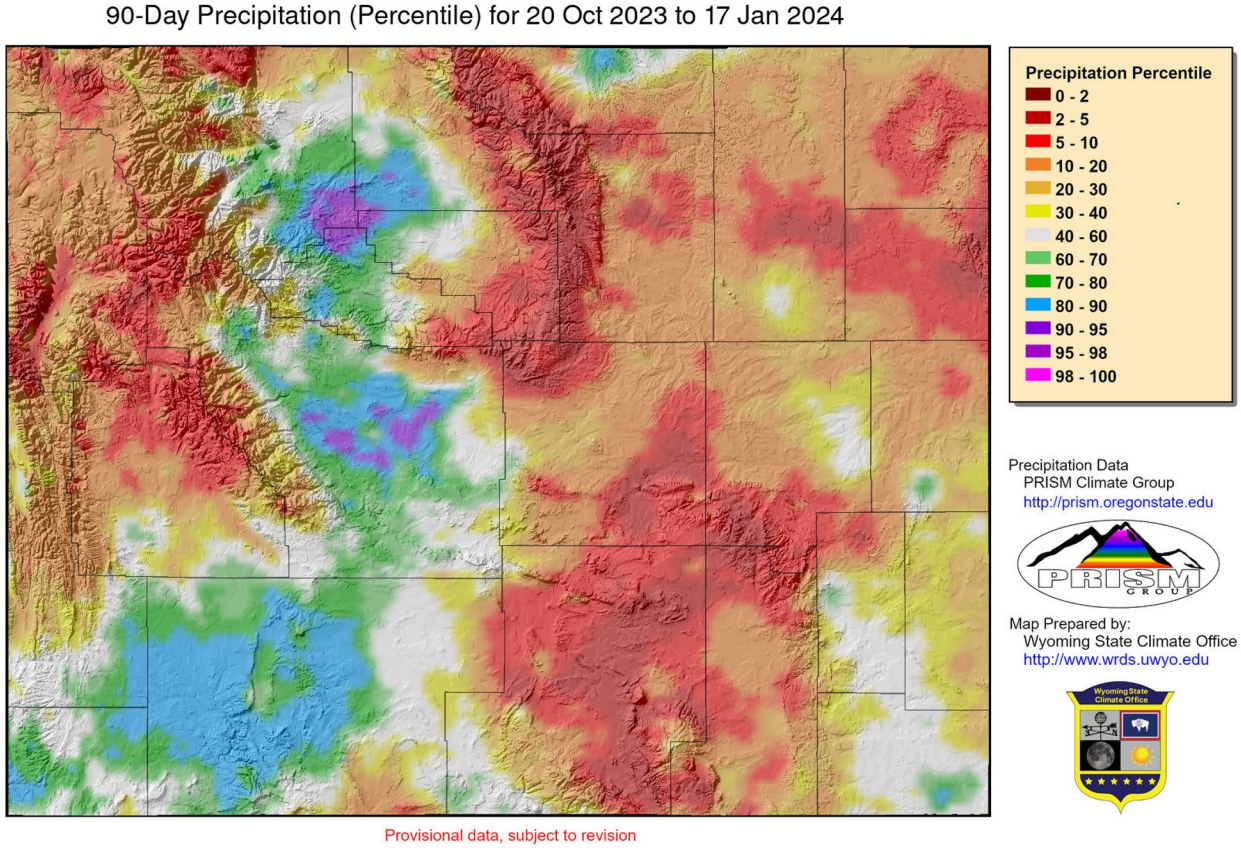
90-Day Precipitation Percentile (20 Oct 2023 to 17 Jan 2024)

Above Median:

- Southwest
- Wind/Bighorn Basins

Below Median (Areas of Concern):

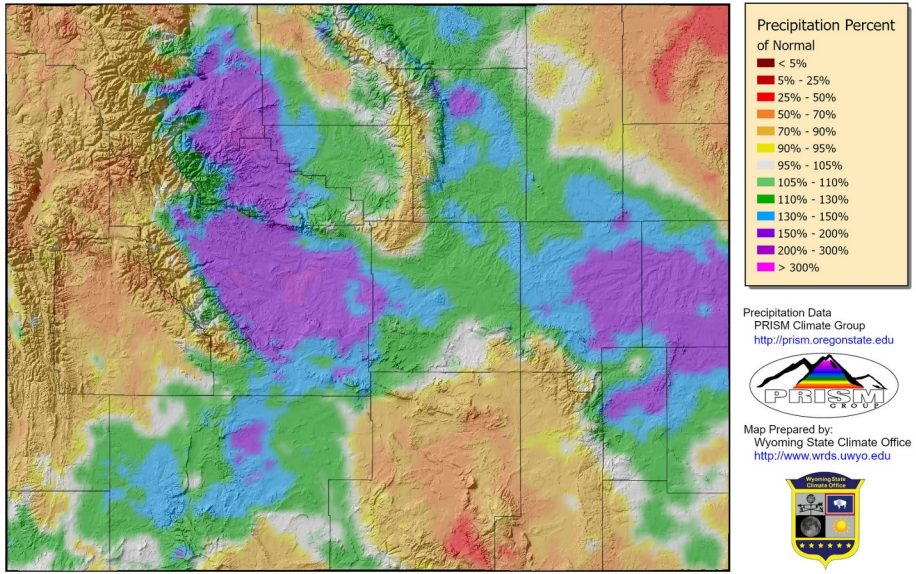
- Bighorns
- High-elevation West
- Much of Carbon Co
- Eastern Plains



“Year”-to-Date Precipitation (Percent of Average)

Current Water Year

Water-Year Precipitation (Percent of 1991-2020 Average) for 01 Oct 2023 to 17 Jan 2024

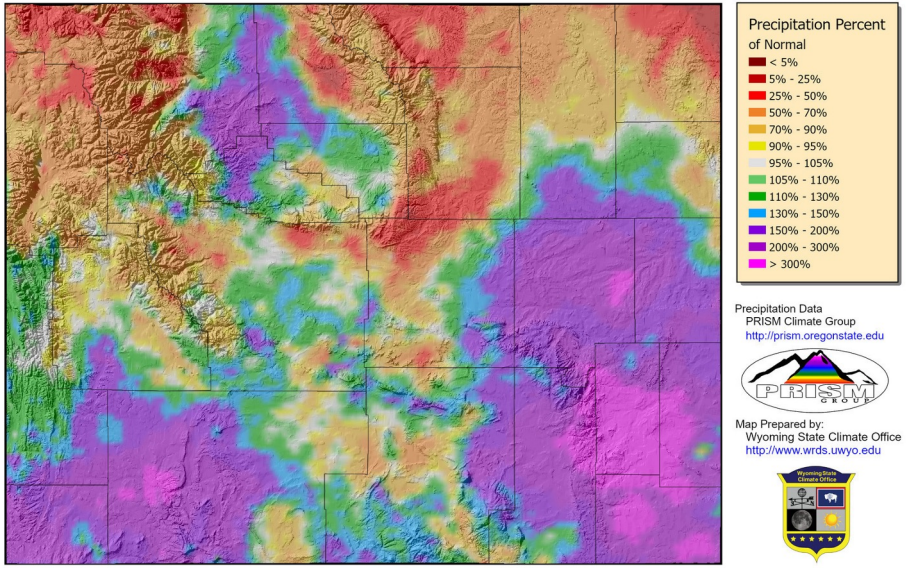


Provisional data, subject to revision

Monthly and Normal precipitation data from PRISM Climate Group, Copyright ©2024, PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu
Map Created 18 Jan 2024 http://www.wrds.uwyo.edu
Daily averages created from PRISM daily precipitation grids

Current Calendar Year

Calendar-Year Precipitation (Percent of 1991-2020 Average) for 01 Jan 2024 to 17 Jan 2024



Provisional data, subject to revision

Monthly and Normal precipitation data from PRISM Climate Group, Copyright ©2024, PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu
Map Created 18 Jan 2024 http://www.wrds.uwyo.edu
Daily averages created from PRISM daily precipitation grids

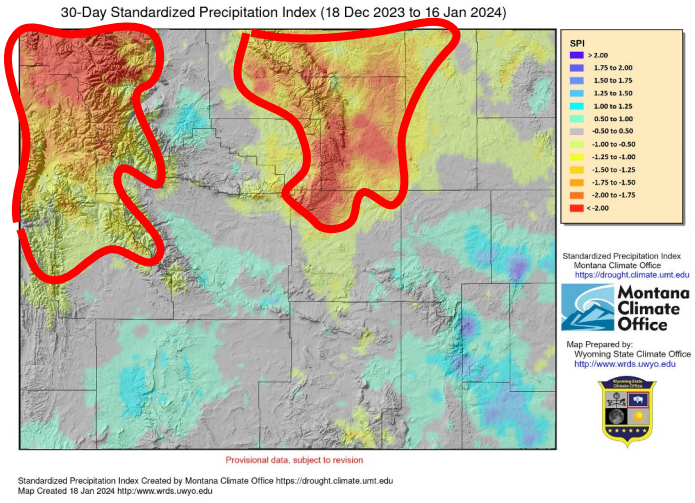
Note: a water year is October 1 through September 30 of the following year.

WRDS
Water Resources Data System

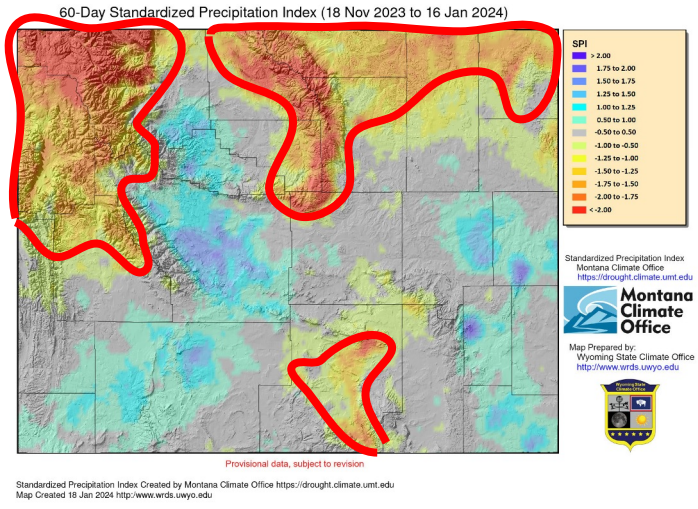
Standardized Precipitation Index (SPI)

Short term: North and South-Central, dry
Long term: Central and North-Central along with Southeast, wet

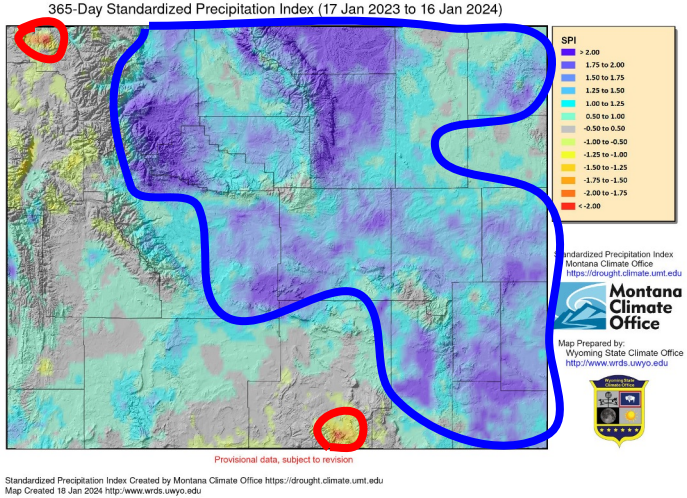
30-Day →
Dec 18 - Jan 16



60-Day →
Nov 18 - Jan 16



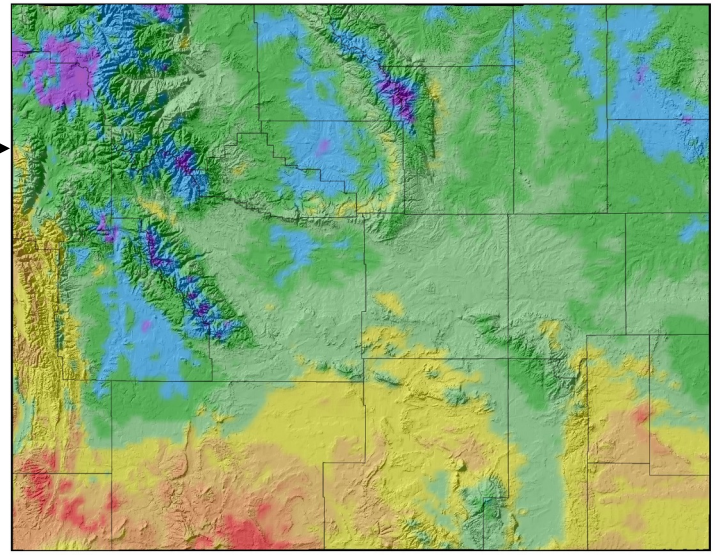
1-Year →



https://drought.climate.umt.edu

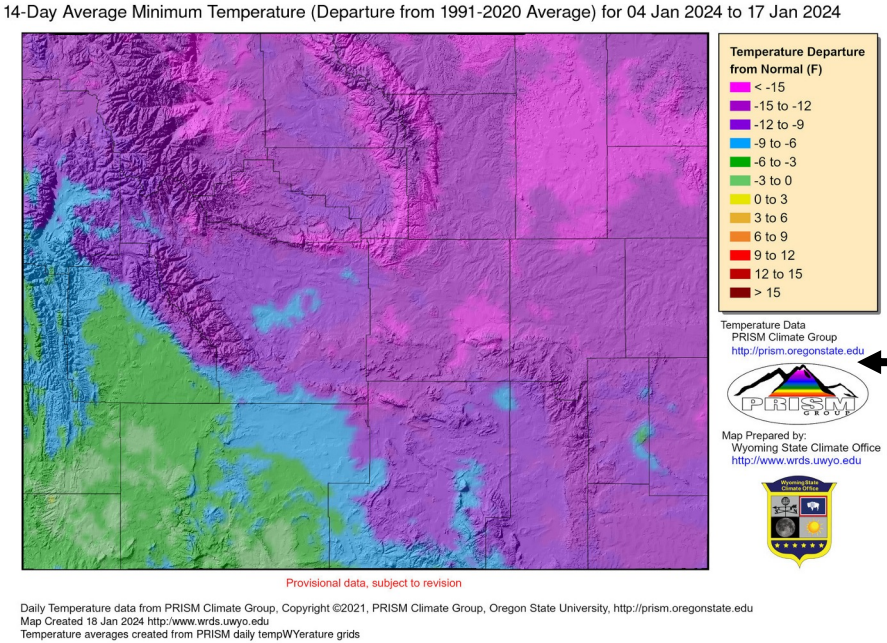
14-Day Average Minimum Temperature (04 Jan to 17 Jan)

- Lows well below freezing
- Southwest the warmest with lows in the low-teens



14-Day *Departure from* Normal Average Minimum Temperature

- Most of state more than 10 degrees below average
- Southwest closest to average but lows there still as much as 6 degrees below average

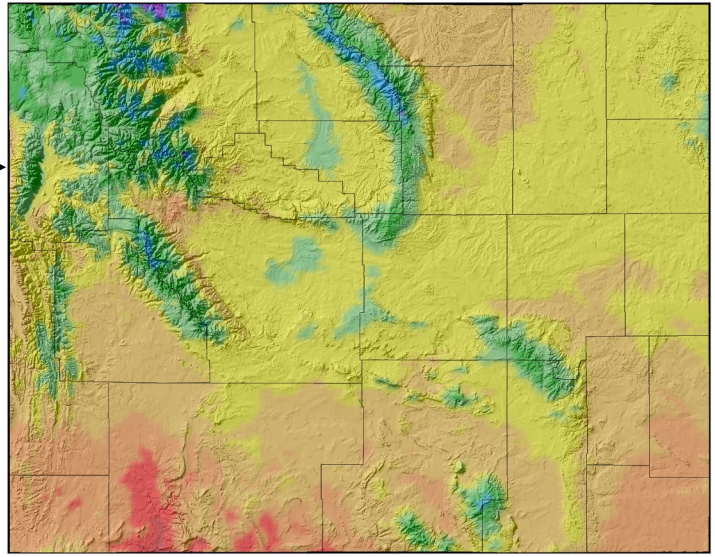


WRDS Water Resources Data System

14-Day Average Maximum Temperature (04 Jan to 17 Jan)

- Highs barely reaching 32F in the southwest
- Mountainous regions in teens, 20s elsewhere

14-Day Average Maximum Temperature for 04 Jan 2024 to 17 Jan 2024



Temperature Data
PRISM Climate Group
http://prism.oregonstate.edu

Map Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

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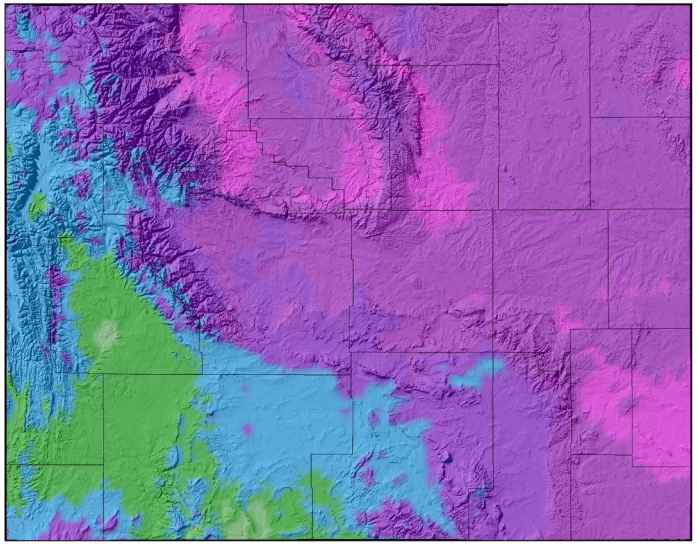
Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu
Map Created 18 Jan 2024 http://www.wrds.uwyo.edu
Temperature averages created from PRISM daily tempWYerature grids

14-Day Average Maximum Temperature (Departure from 1991-2020 Average) for 04 Jan 2024 to 17 Jan 2024



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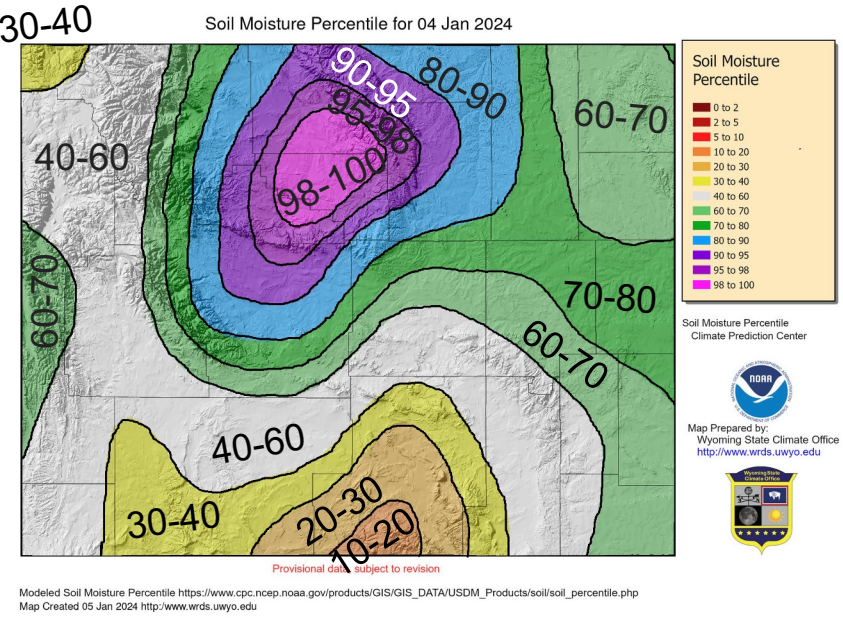
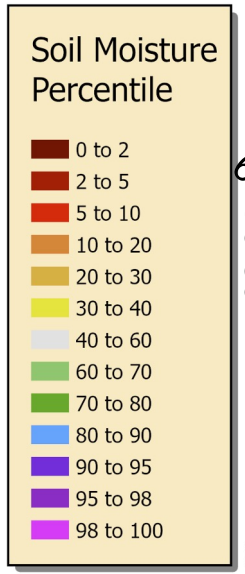
14- Day *Departure from* Normal Average Maximum Temperature

- East of divide more than 10 degrees below average
- Southwest closer to average but lows there still as much as 6 degrees below average

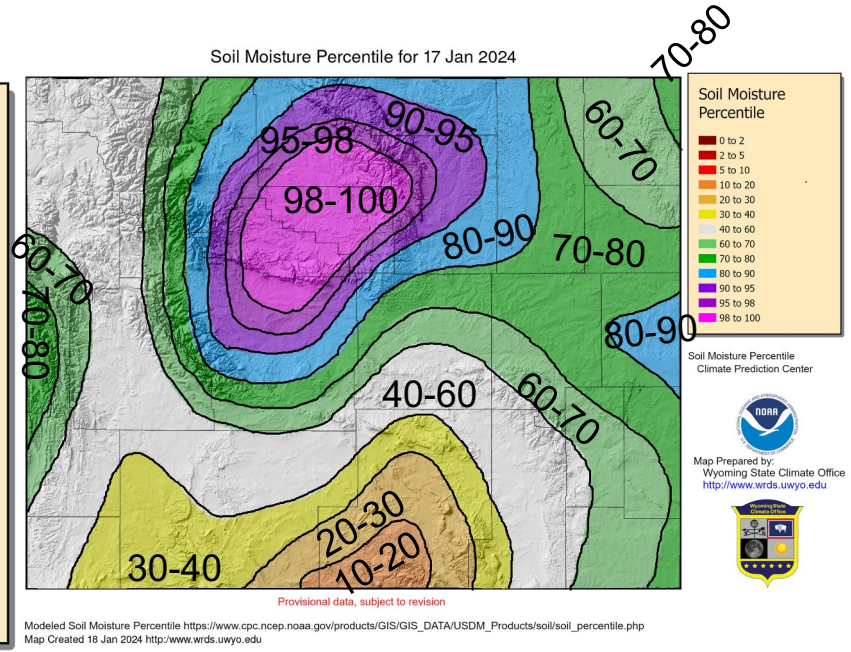
Soil Moisture Percentile

Two Weeks Ago





17 Jan 2024



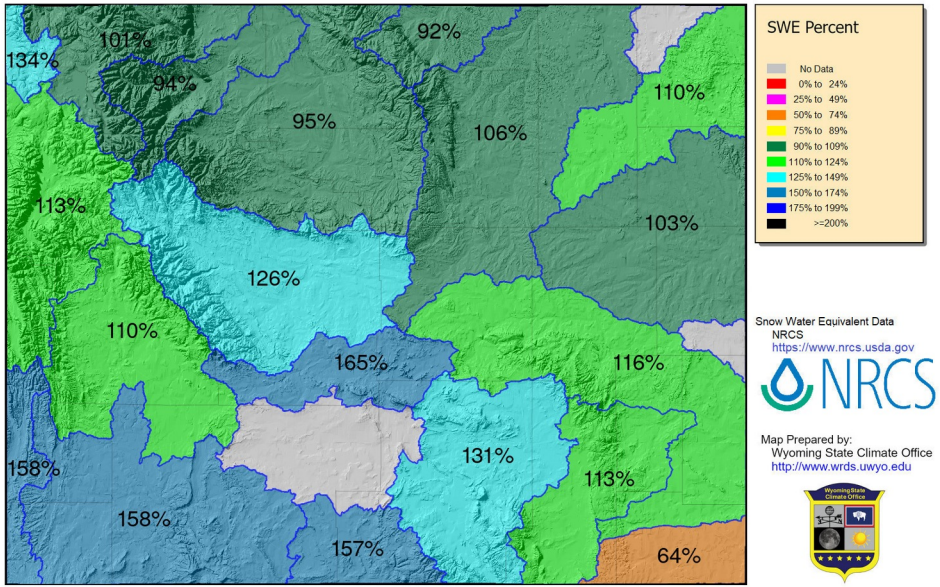
http://www.wrds.uwyo.edu/Soil/Current_SoilMoisture_Ptile.html

Improvements or status quo statewide, but with very slight degradations in a few minor areas.

Basin Snow Water Equivalent (SWE)
% of Median

18 Jan 2023 (One Year Ago)

Snow Water Equivalent Percent of Median (1991-2020) 18 Jan 2023



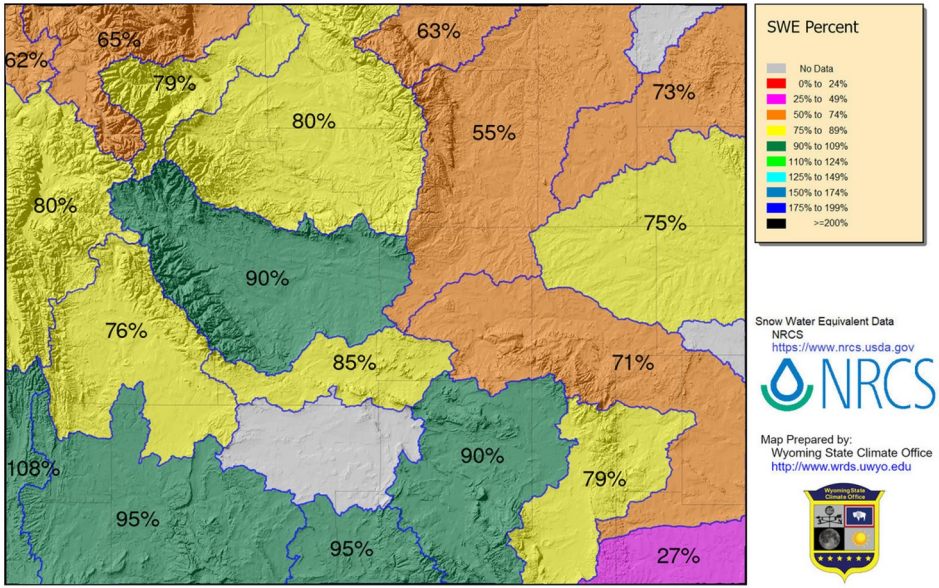
Provisional data, subject to revision

Basin Snow Water Equivalent Data from Natural Resources Conservation Service Water and Climate Center https://www.nrcs.usda.gov
Map created by Wyoming State Climate Office 11 Apr 2023

* Percentages denoted by an asterisk represent data that may not provide a valid measure of conditions. This is most usually seen near the end of the snow season where normal values may be very low or the melt out curve is so steep that a slight variation in days may result in abnormally high or low percentages.

18 Jan 2024

Snow Water Equivalent Percent of Median (1991-2020) 18 Jan 2024



Provisional data, subject to revision

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Map created by Wyoming State Climate Office 18 Jan 2024

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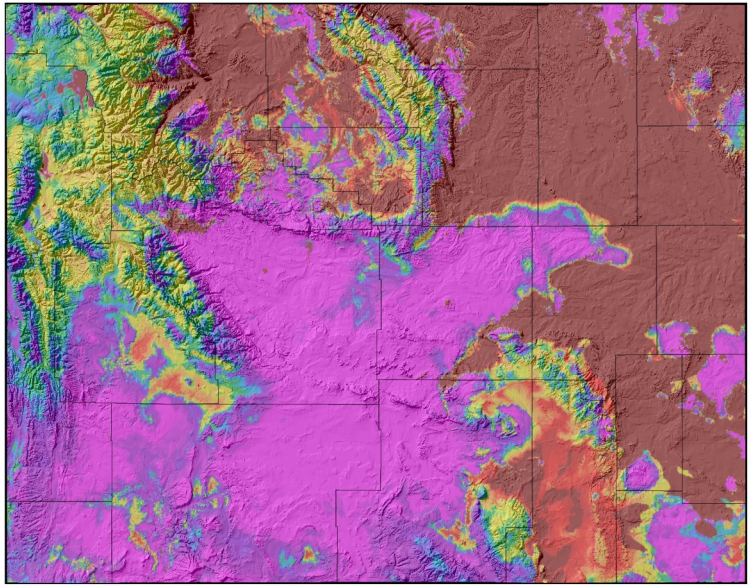
http://www.wrds.uwyo.edu/wrds/nrcs/snowmap/snowmap.html

Snow Water Equivalent (SWE)
% of Average

18 Jan 2023 (One Year Ago)

Snow Water Equivalent Percent of Average (2004-2020) for 18 Jan 2023



SWE Percent of Normal
- < 5%
- 5% - 25%
- 25% - 50%
- 50% - 70%
- 70% - 90%
- 90% - 95%
- 95% - 105%
- 105% - 110%
- 110% - 130%
- 130% - 150%
- 150% - 200%
- 200% - 300%
- > 300%

Snow Water Equivalent
NOHRSC
https://doi.org/10.7265/N5TB14TC

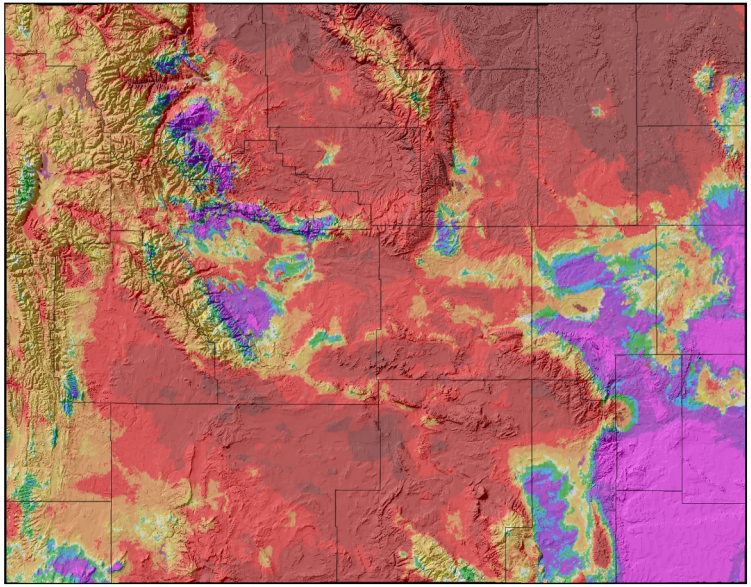
Map Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

Provisional data, subject to revision

Modelled Snow Water Equivalent from National Operational Hydrologic Remote Sensing Center. 2004. Snow Data Assimilation System (SNODAS) Data Products at NSIDC, Version 1. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center.
doi: https://doi.org/10.7265/N5TB14TC.
Daily Percentiles and Percentages created by Wyoming State Climate Office
Map created 18 Jan 2023

17 Jan 2024

Snow Water Equivalent Percent of Average (2004-2020) for 17 Jan 2024



SWE Percent of Normal
- < 5%
- 5% - 25%
- 25% - 50%
- 50% - 70%
- 70% - 90%
- 90% - 95%
- 95% - 105%
- 105% - 110%
- 110% - 130%
- 130% - 150%
- 150% - 200%
- 200% - 300%
- > 300%

Snow Water Equivalent
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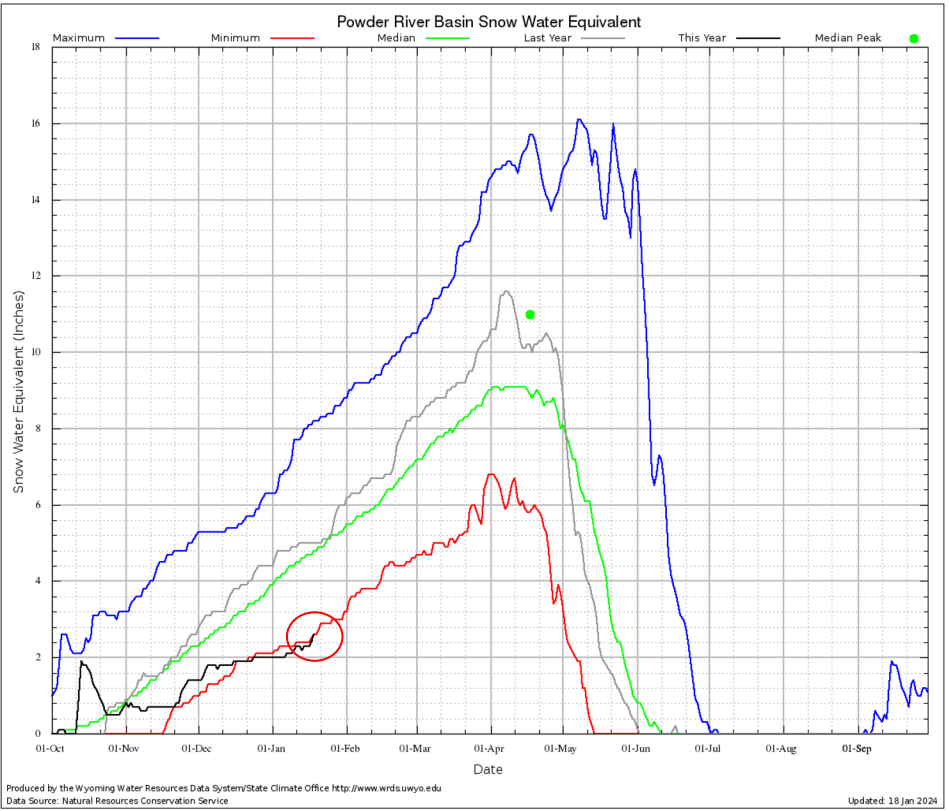
doi: https://doi.org/10.7265/N5TB14TC.
Daily Percentiles and Percentages created by Wyoming State Climate Office
Map created 17 Jan 2024

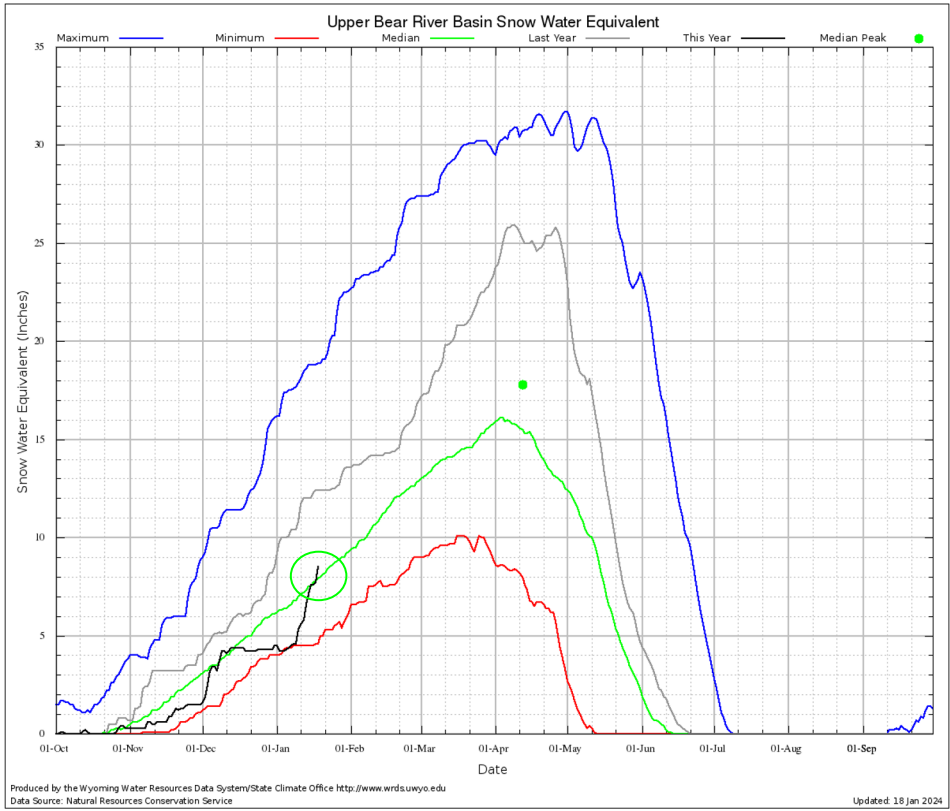
http://www.wrds.uwyo.edu/Snow/SWE-Prcnt-Current.html

Basin Snow Water Equivalent (SWE)
% of Median

Powder River Basin



Upper Bear River Basin



http://www.wrds.uwyo.edu/Snow/BasinStatus.html

WRDS Water Resources Data System

Today's Snow Water Equivalent in Inches Compared to Historical Ranges

Red indicates current SWE value is **less** than this statistic
Blue indicates current SWE value is **greater** than this statistic
Purple indicates current SWE value is **equal** to this statistic
Click Column Headers to Sort

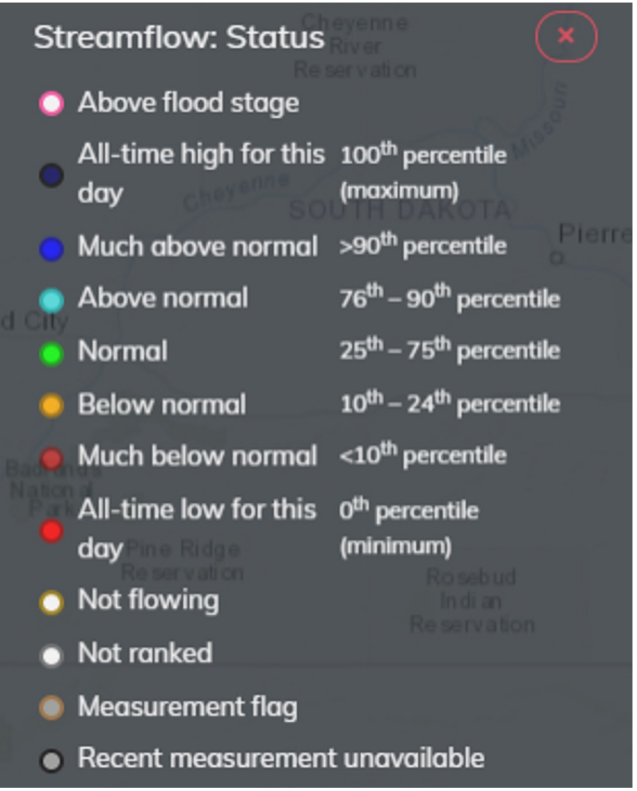
Basin Click to View Chart	Date	Today SWE (inches)	Today SWE % of Median	Minimum SWE (in)	10th Percentile (inches)	30th Percentile Inches	Median (inches)	70th Percentile (inches)	90th Percentile (inches)	Maximum (inches)	Last Year SWE (inches)	Last Year SWE % of Median
Belle Fourche	18 Jan 2024	2.6	74	1.8	2.3	3.0	3.5	3.8	5.1	7.7	3.8	109
Bighorn	18 Jan 2024	4.7	82	3.4	4.2	5.2	5.7	6.4	7.8	8.9	5.4	95
Cheyenne	18 Jan 2024	2.9	76	2.0	2.6	3.3	3.8	4.2	5.4	7.7	4.0	105
Laramie	18 Jan 2024	6.2	78	4.1	5.4	7.0	7.9	8.8	11.0	14.0	8.6	109
Little Snake	18 Jan 2024	9.9	95	7.1	7.5	8.6	10.4	11.9	14.4	19.2	16.3	157
Lower Green	18 Jan 2024	5.6	95	4.4	4.9	5.7	5.9	7.2	9.1	12.8	9.3	158
Lower North Platte	18 Jan 2024	3.8	70	1.6	3.8	4.5	5.4	6.8	7.8	11.1	6.2	115
Madison	18 Jan 2024	7.2	61	5.5	8.4	10.5	11.8	14.1	17.2	26.6	15.8	134
Powder	18 Jan 2024	2.6	54	2.6	3.7	4.3	4.8	5.5	6.5	8.2	5.0	104
Shoshone	18 Jan 2024	7.7	79	5.4	7.6	9.0	9.8	11.4	13.5	18.8	9.2	94
Snake	18 Jan 2024	8.9	79	6.4	8.4	10.0	11.2	13.1	15.8	22.5	12.7	113
South Platte	18 Jan 2024	1.2	27	0.8	1.8	3.3	4.4	4.7	5.5	7.2	2.8	64
Sweetwater	18 Jan 2024	5.3	84	4.3	4.8	6.0	6.3	7.2	10.9	15.3	10.4	165
Tongue	18 Jan 2024	3.5	62	2.7	4.3	5.2	5.6	7.0	8.0	10.0	5.1	91
Upper Bear	18 Jan 2024	8.5	108	4.6	6.3	7.6	7.9	10.8	14.3	18.9	12.4	157
Upper Green	18 Jan 2024	6.3	77	5.0	6.4	7.7	8.2	9.8	12.7	18.9	9.1	111
Upper North Platte	18 Jan 2024	10.4	90	8.0	9.2	10.7	11.5	13.4	15.9	21.2	14.9	130
Wind	18 Jan 2024	5.9	91	4.7	5.3	6.3	6.5	8.0	9.6	13.2	8.2	126
Yellowstone	18 Jan 2024	8.3	69	7.3	9.2	10.8	12.1	13.4	15.7	23.6	12.2	101

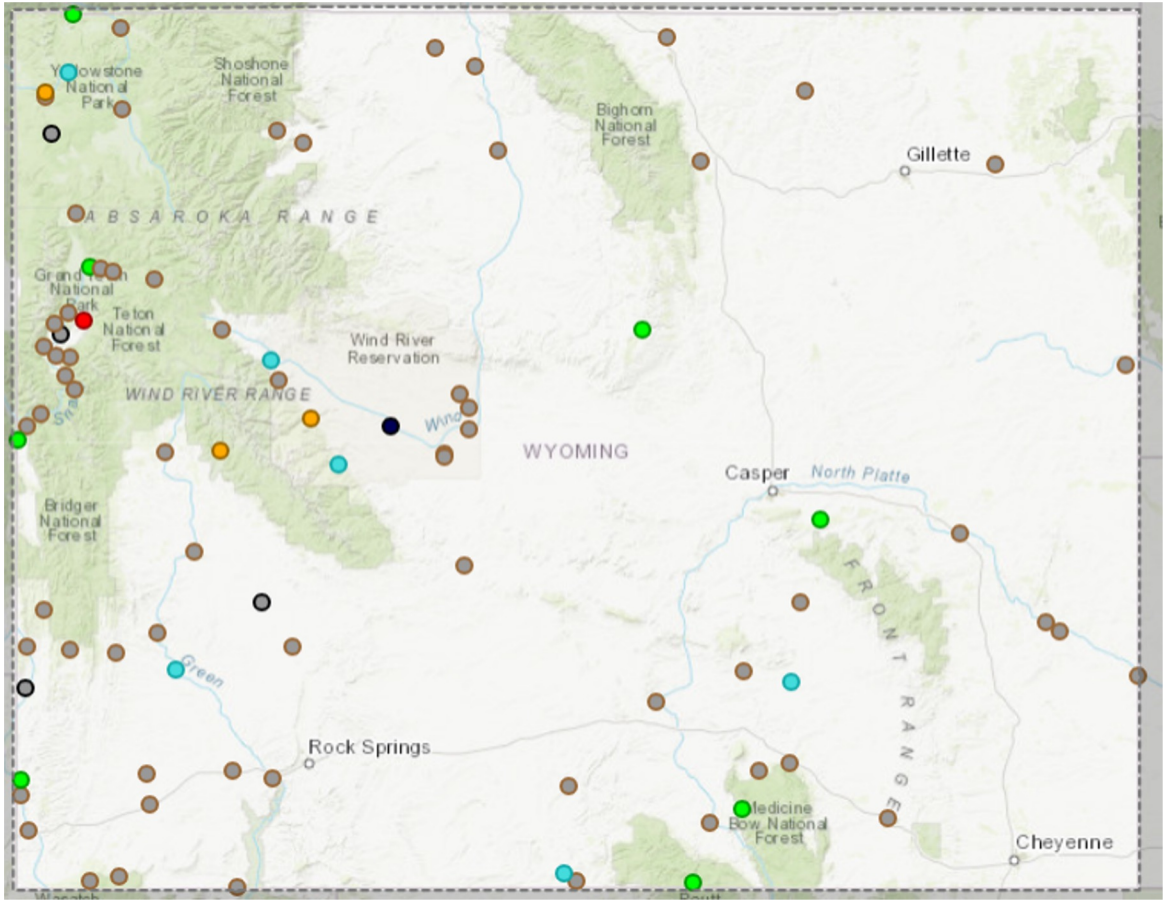
Data from Natural Resources Conservation Service SnoTel Network

http://www.wrds.uwyo.edu/Snow/BasinStatus.html

Current Streamflow Conditions (January 18, 2024)

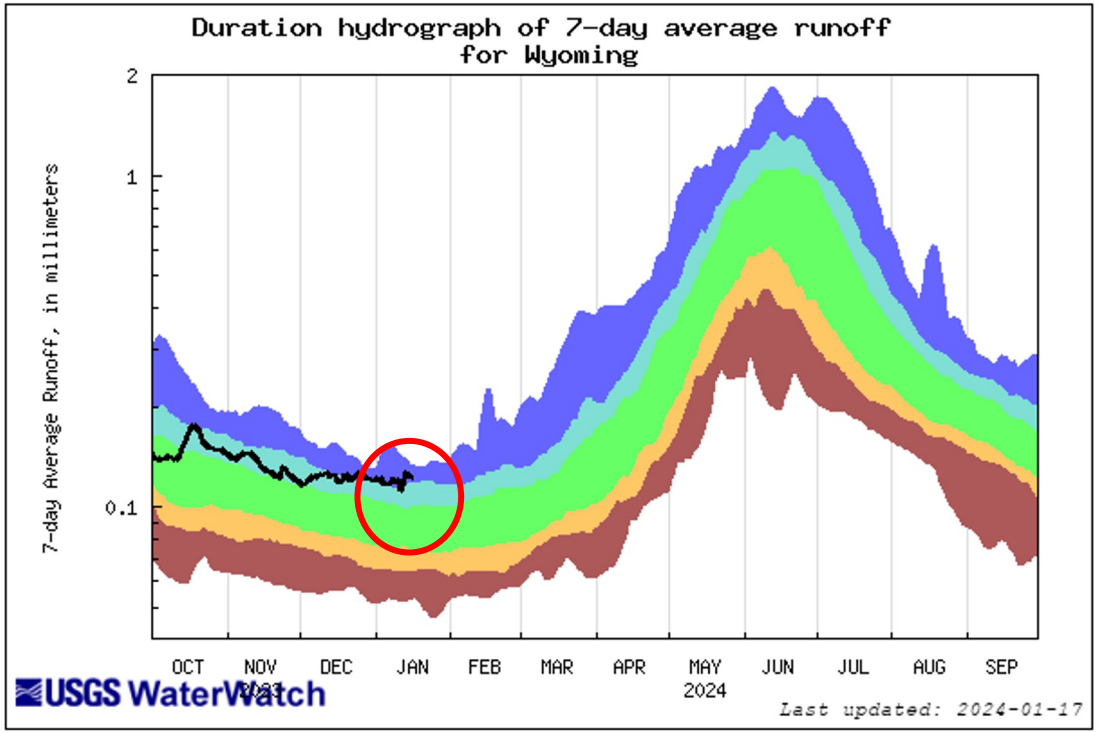
Streamflow Status





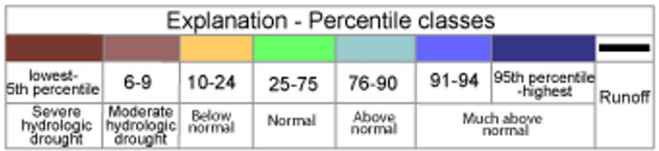
https://dashboard.waterdata.usgs.gov/

WY Duration Hydrograph of 7-day runoff



Winter Streamflow

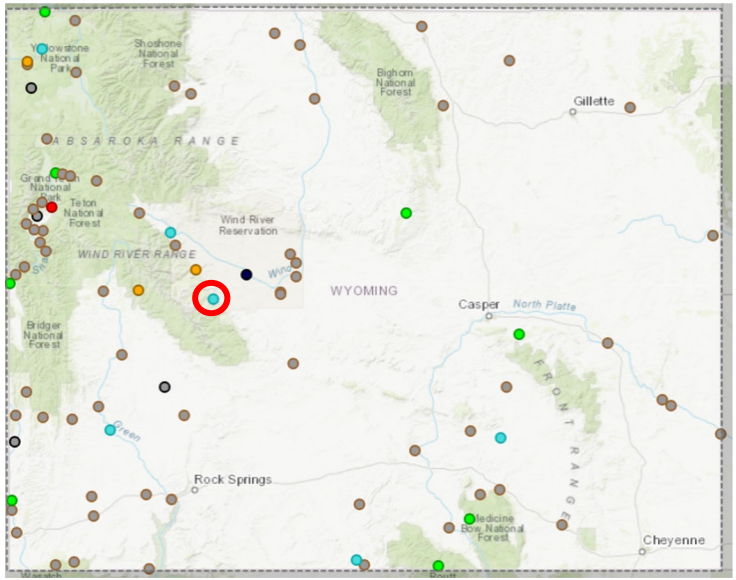
- Most sites are in ice (19 of 126 sites reporting)
- Time of baseflow (limited water supply)
- Above normal with a grain of salt.



https://dashboard.waterdata.usgs.gov/

https://waterdata.usgs.gov/

Select WY Streamflows

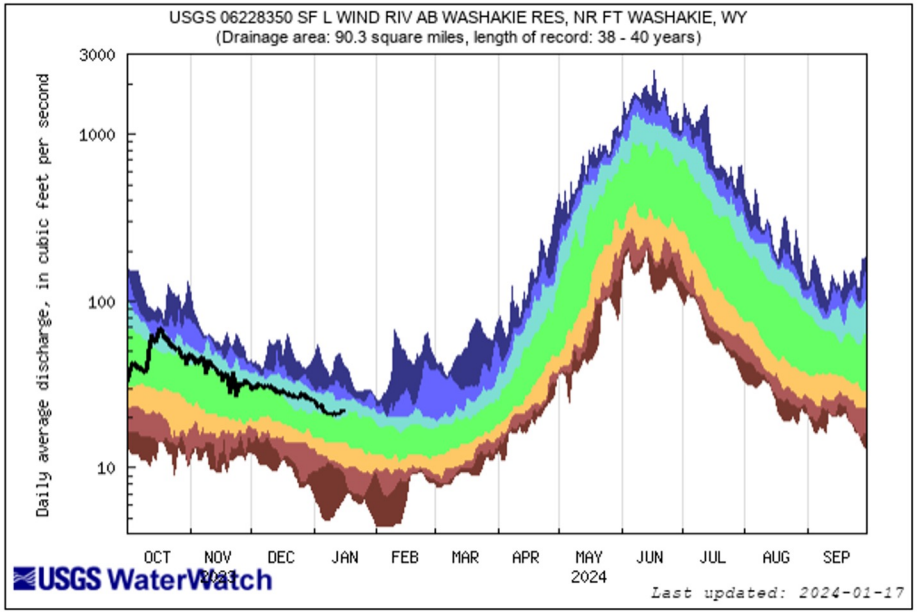


https://dashboard.waterdata.usgs.gov/

https://waterdata.usgs.gov/

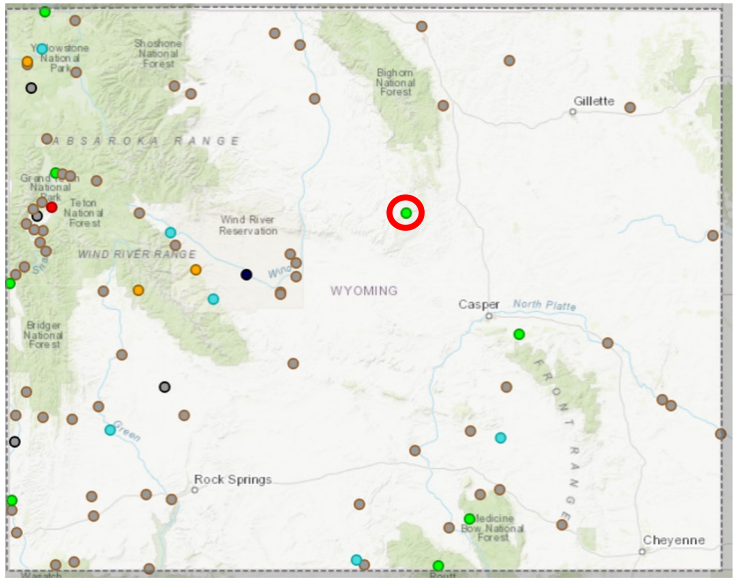
South Fork Little Wind River, Near Washakie, WY

Last updated January 18, 2024



Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		

Select WY Streamflows

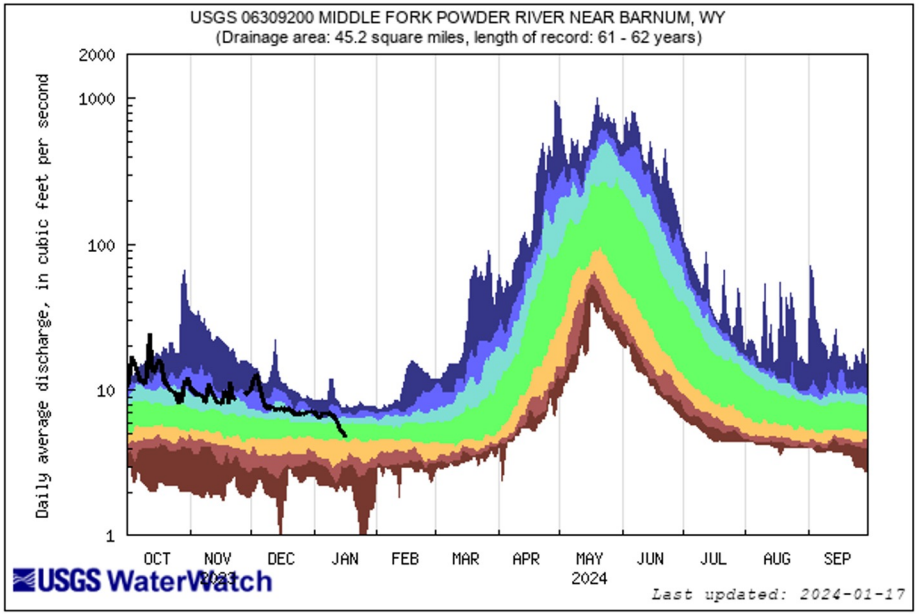


https://dashboard.waterdata.usgs.gov/

https://waterdata.usgs.gov/

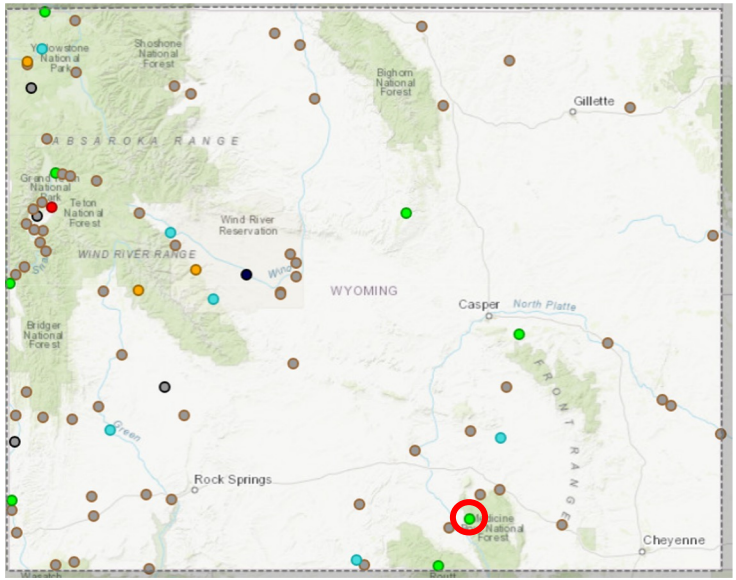
Middle Fork Powder River, Near Barnum, WY

Last updated January 18, 2024



Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		

Select WY Streamflows

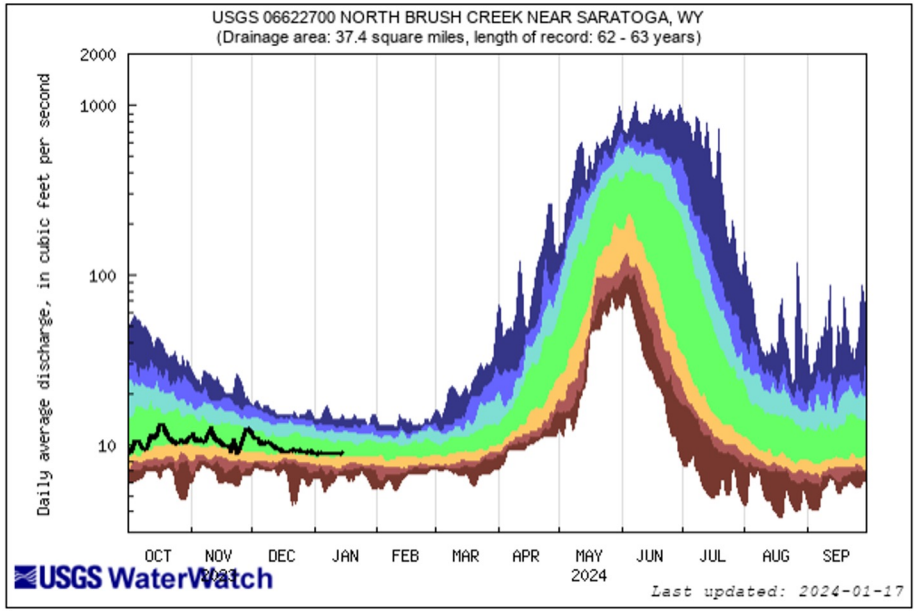


https://dashboard.waterdata.usgs.gov/

https://waterdata.usgs.gov/

North Brush Creek, Near Saratoga, WY

Last updated January 18, 2024

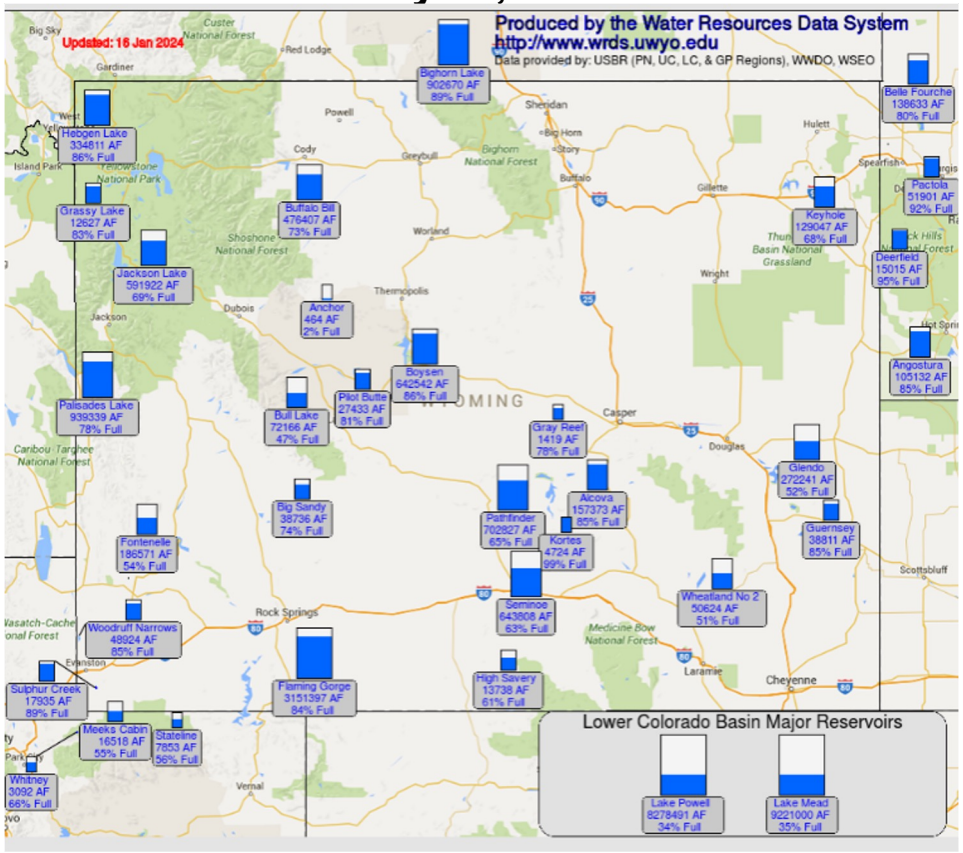


Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		

WY Reservoirs

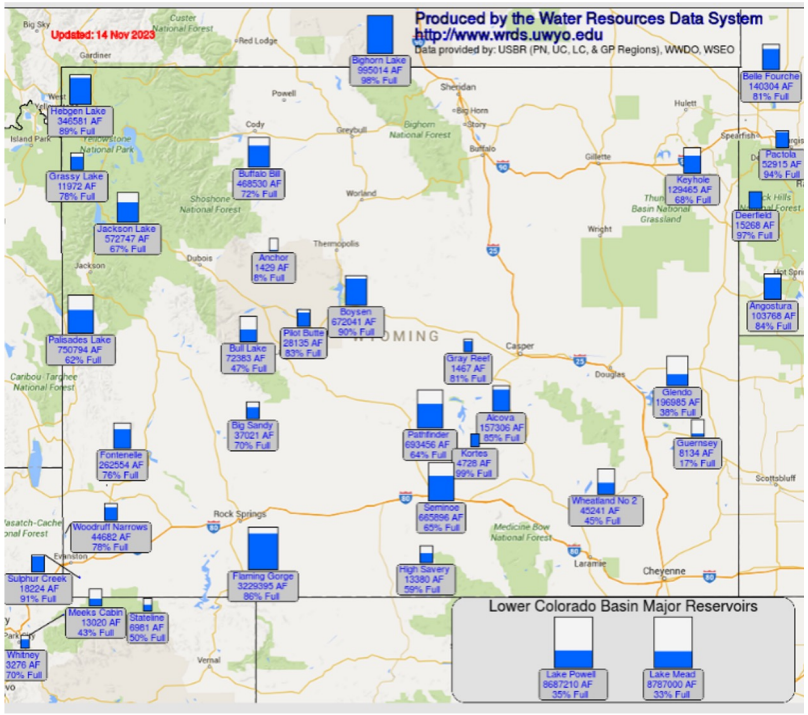
- Minor changes (+/-) in reservoir storage
- Fontenelle and Bighorn larger decreases.
- Most are approximately 50-90% full

January 18, 2024



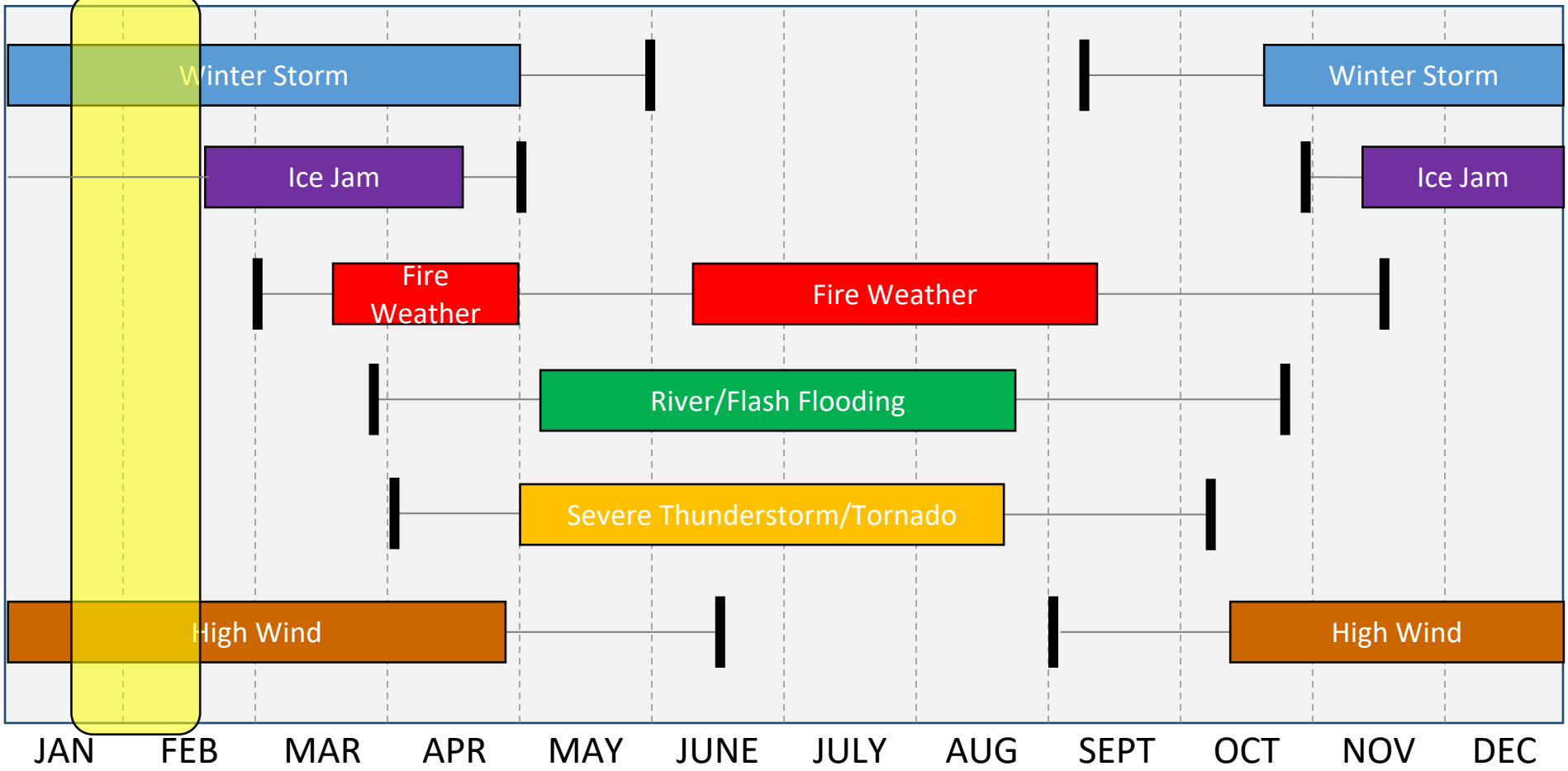
http://www.wrds.uwyo.edu/surface_water/teacups.html

Nov 16, 2023



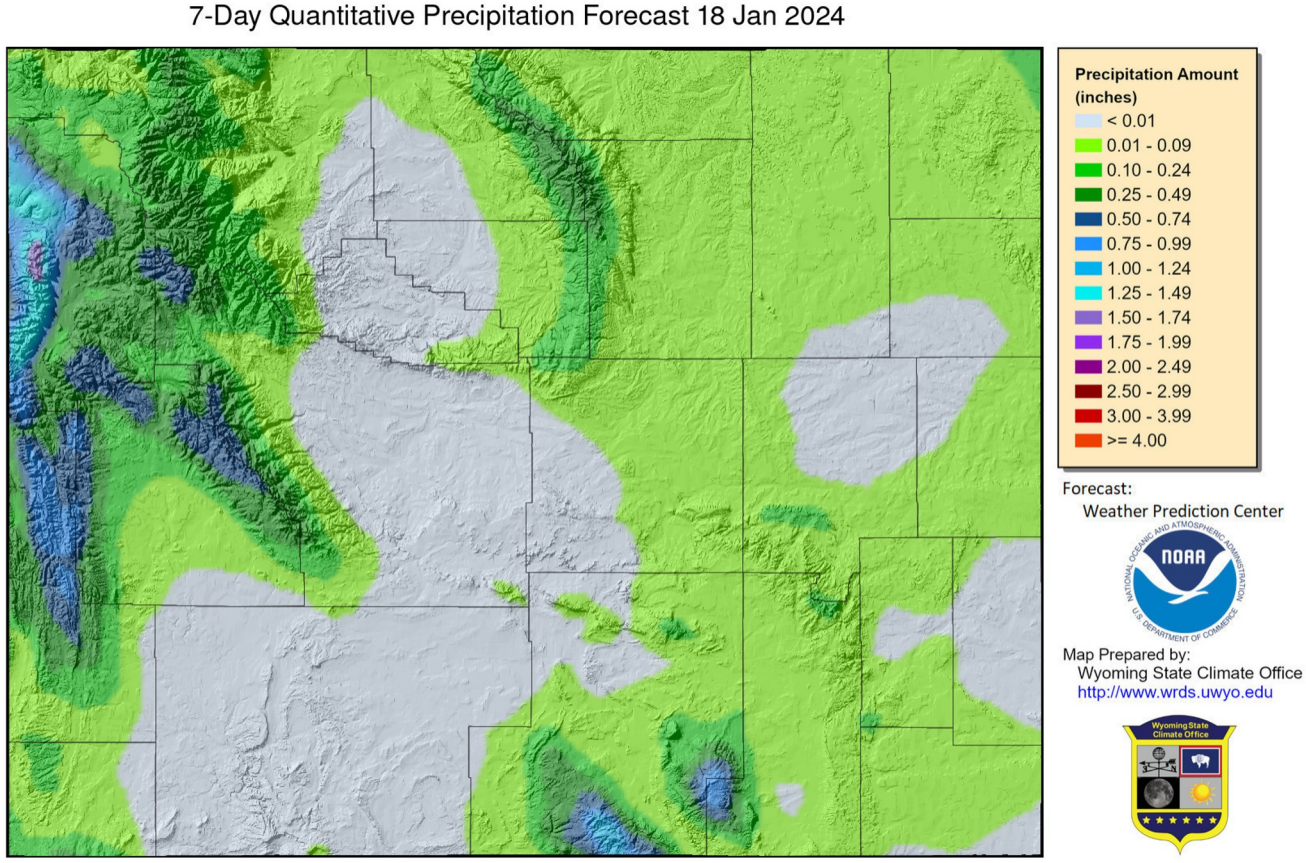
Weather Info & Forecasts

NWS Wyoming Typical Hazard Calendar



7-Day Total Precipitation Forecast

(Jan 18 - Jan 24)

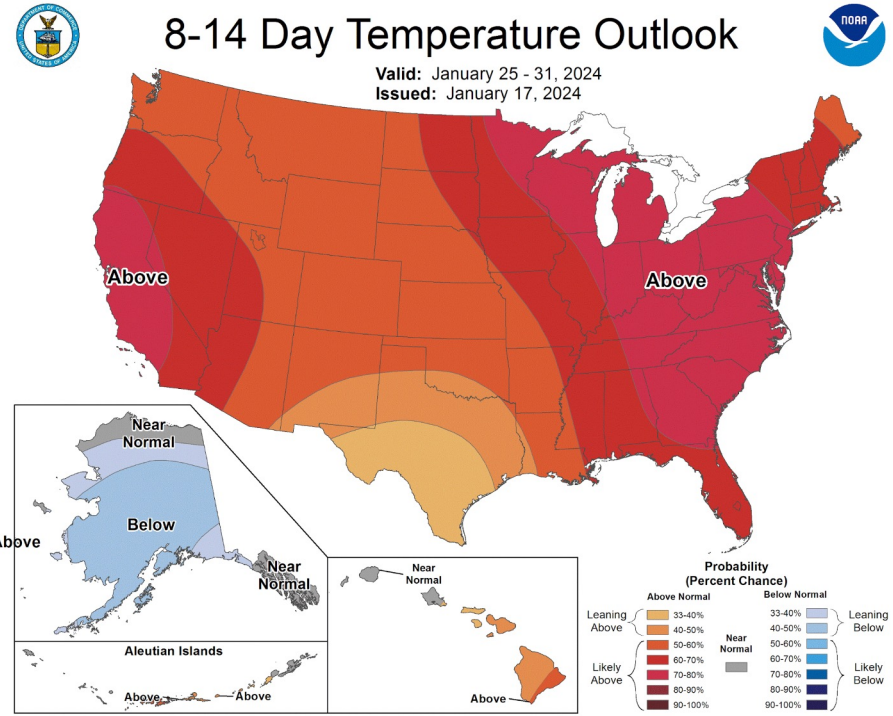


- Multiple rounds of light to moderate mountain snow in the west
- Higher peaks in the south also could see another inch or so of SWE
- Fairly dry forecast for the rest of state

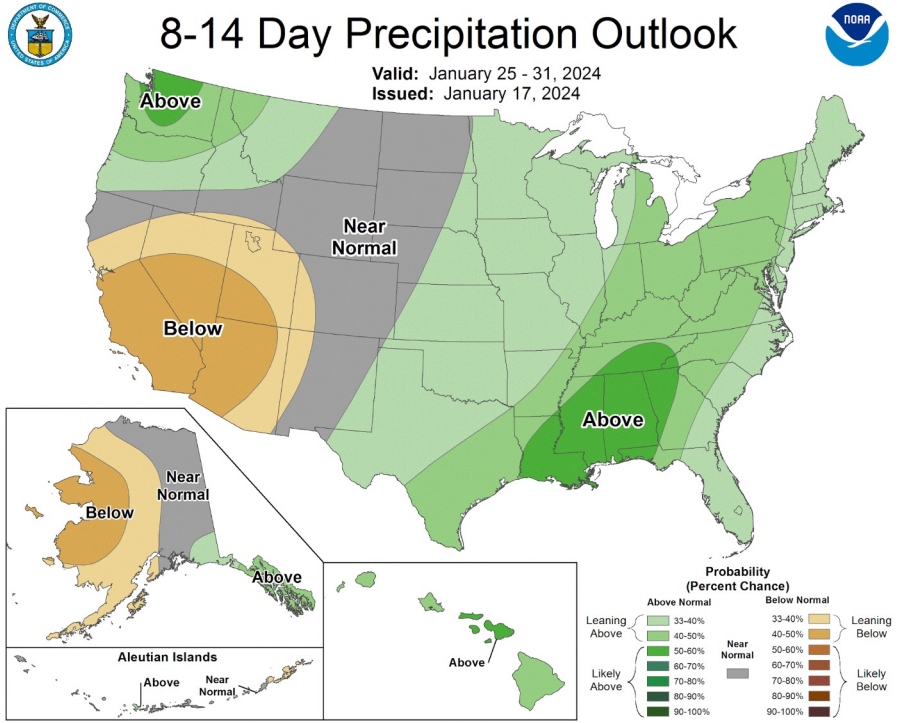
https://bit.ly/7_dayQPForecast

8-14 Day Outlooks
(Jan 25 - Jan 31)

https://bit.ly/CPC8_14Day



- Likely above normal temps statewide



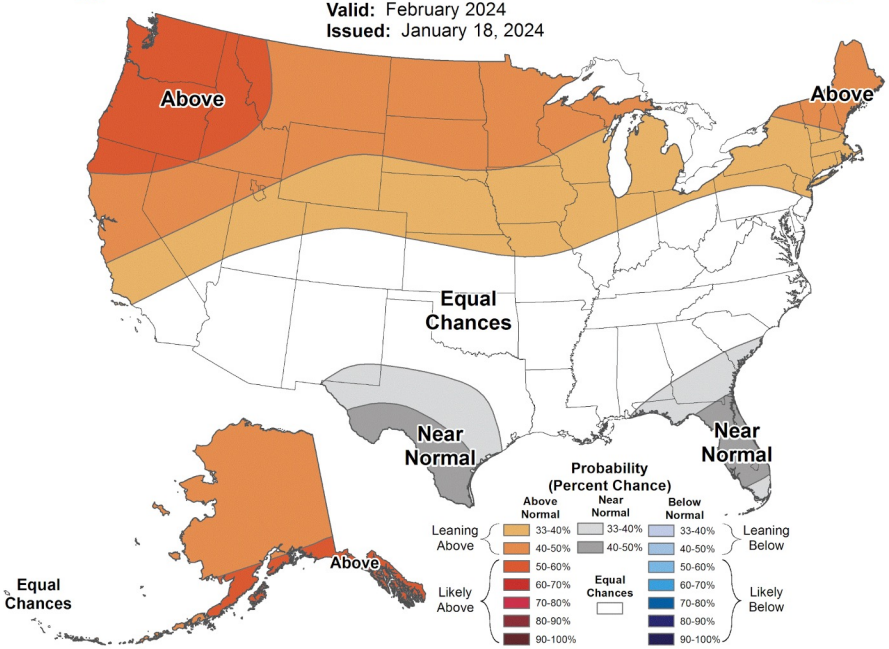
- No strong signal for precipitation
- Climatology is the best forecast

1-Month Outlooks

(February)

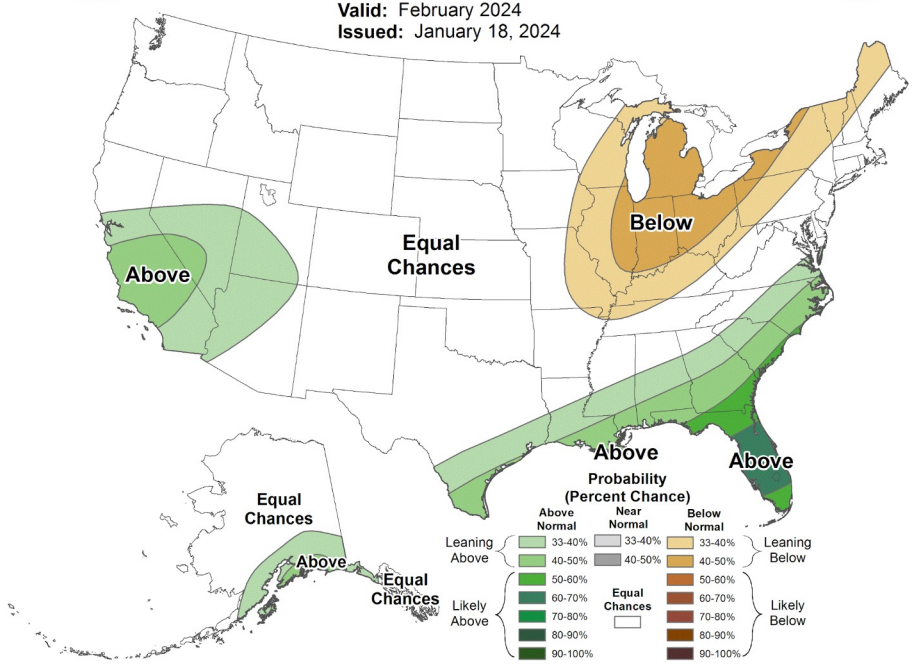
cpc.ncep.noaa.gov/products/predictions/30day/

Monthly Temperature Outlook



- Lean toward above normal temperatures, especially across northern Wyoming

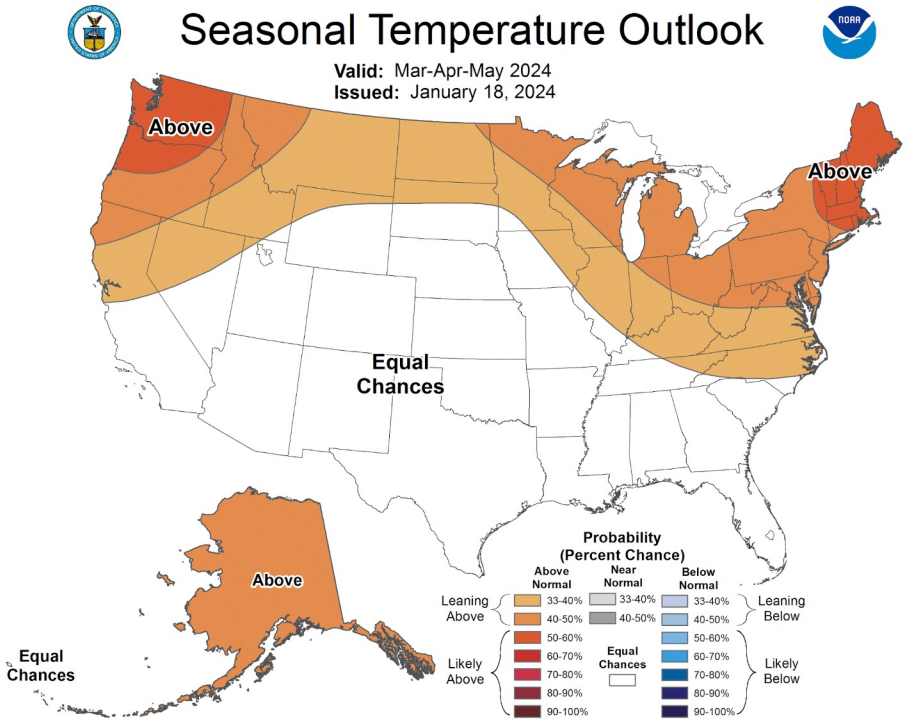
Monthly Precipitation Outlook

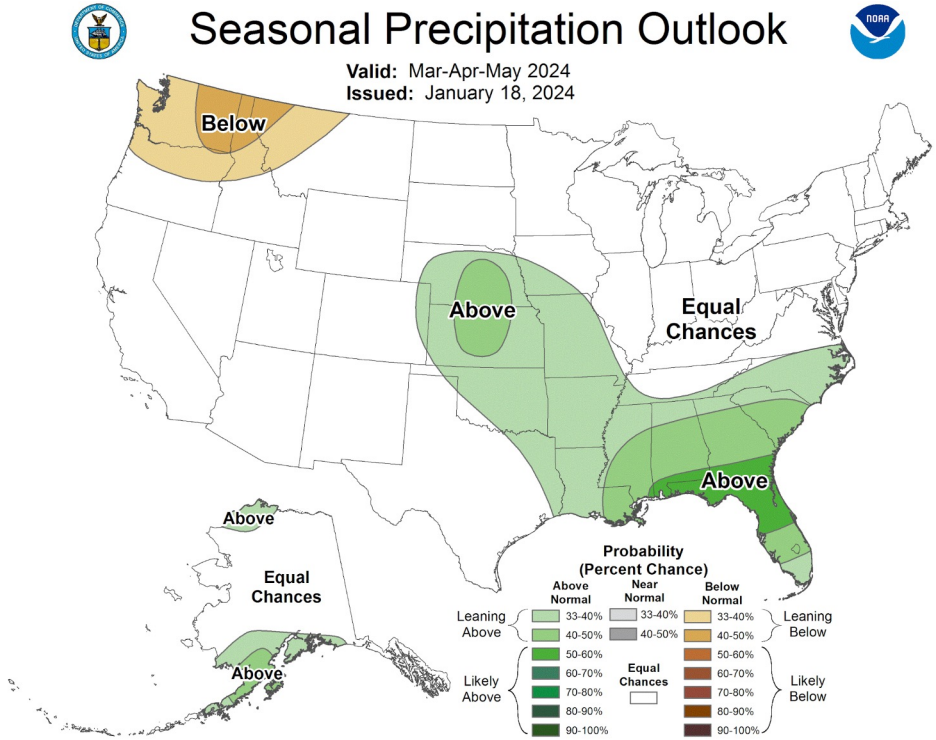


- No strong signal for precipitation
- Climatology is the best forecast

Spring Outlooks
(Mar-Apr-May)

https://bit.ly/CPC_Seasonal



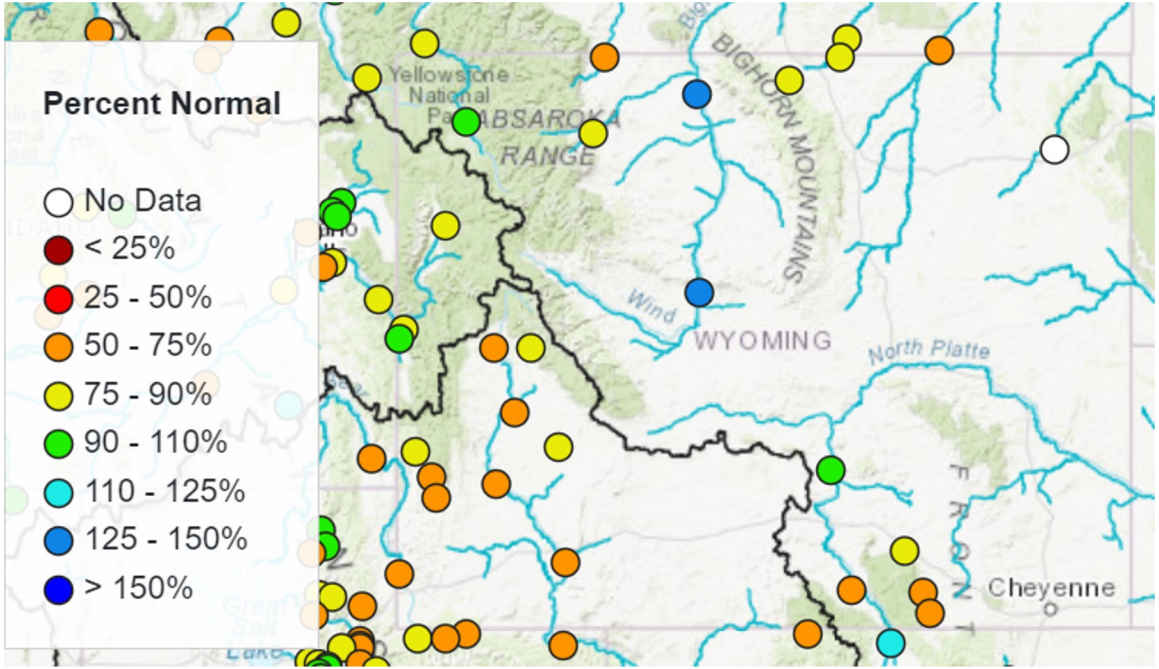


- Slight lean toward above normal temperatures for far northern Wyoming

- No strong signal for precipitation
- Climatology is the best forecast

Wyoming Water Supply Outlook: 2024

Valid April-September



https://www.cbrfc.noaa.gov/wsup/graph/west/map/esp_map.html

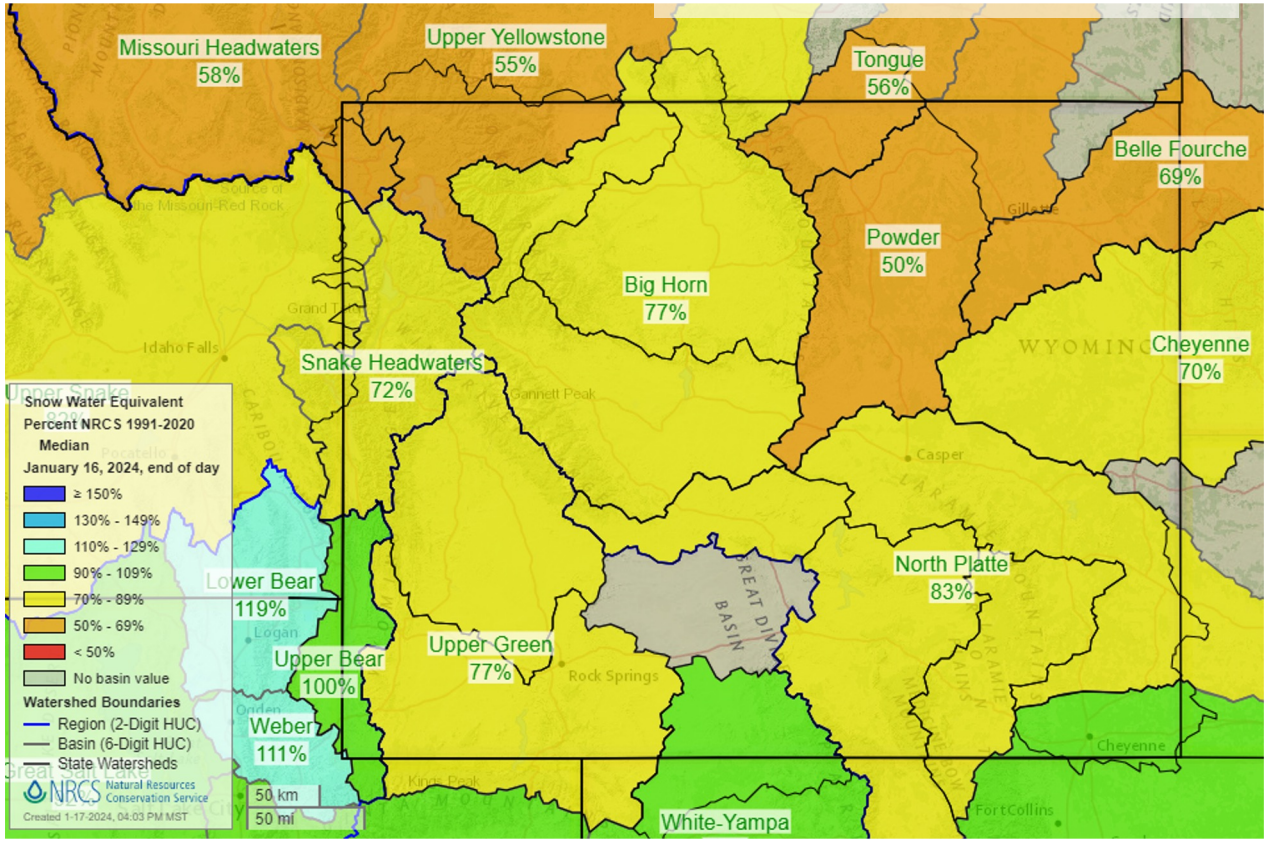
April thru September runoff appears to be lower-than-normal.

This graphic depicts the NWS water supply outlook locations, colored by the percent of Apri-thru-Sept volumetric normal. Many Wyoming stations are projected to see lower-than-normal volumes this season

**Please note that the Colorado River basin colors reflect April-thru-July percent-of-normals.*

Wyoming Water Supply Outlook: 2024

Valid April-September



Runoff forecasts directly reflect snowpack

Statewide snow deficit.

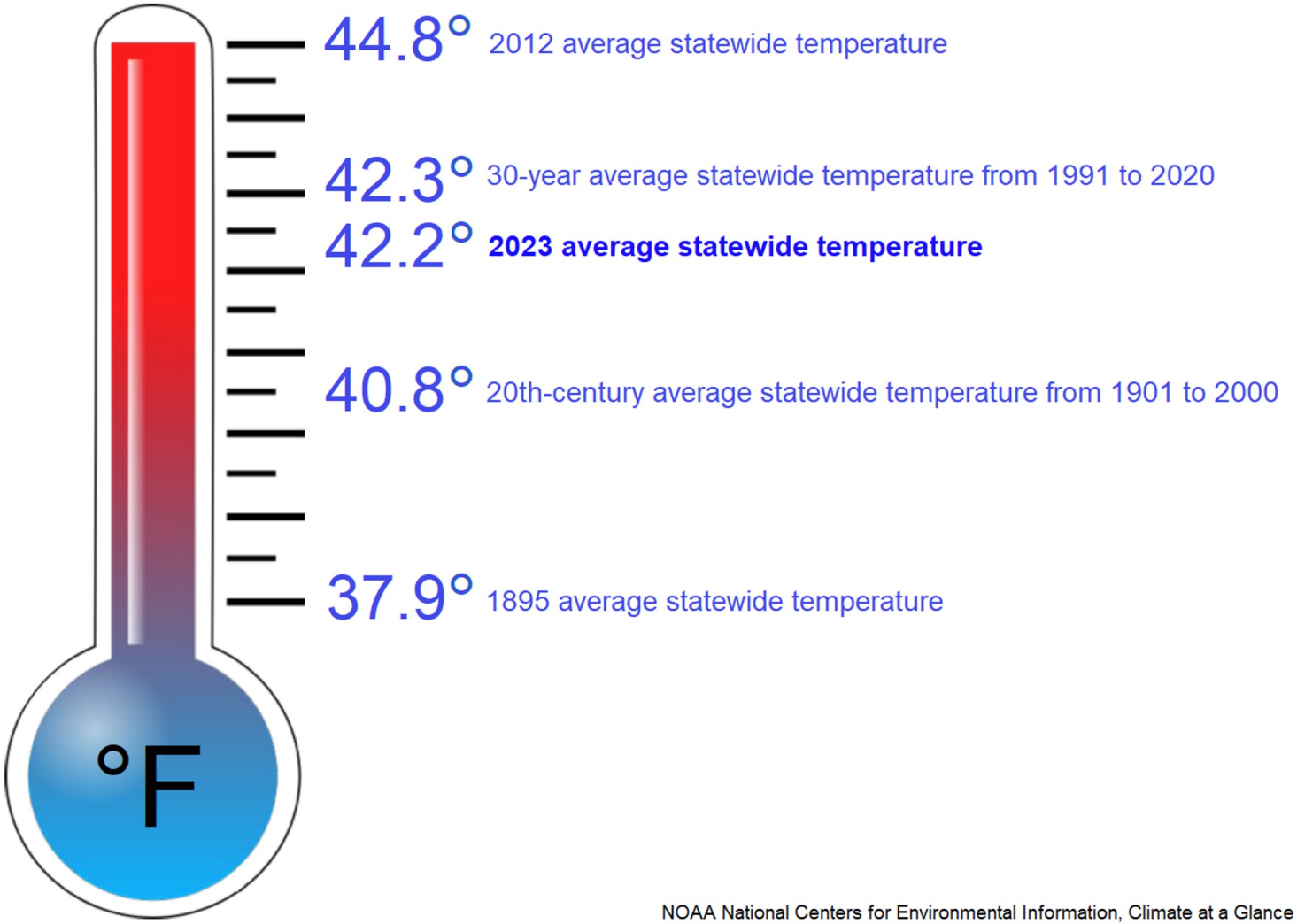
Early in the season!! Time to recover.

February-April peak snow months

Limited snow means limited runoff and a lower-than-normal probability of flooding.

This graphic depicts the NRCS snowpack estimates as a percent of normal by major basin, colored by the percent current date's 30-year median snow water equivalent. Many Wyoming stations are projected to see lower-than-normal volumes this season

Highlight of the Month: 2023 – A Look Back



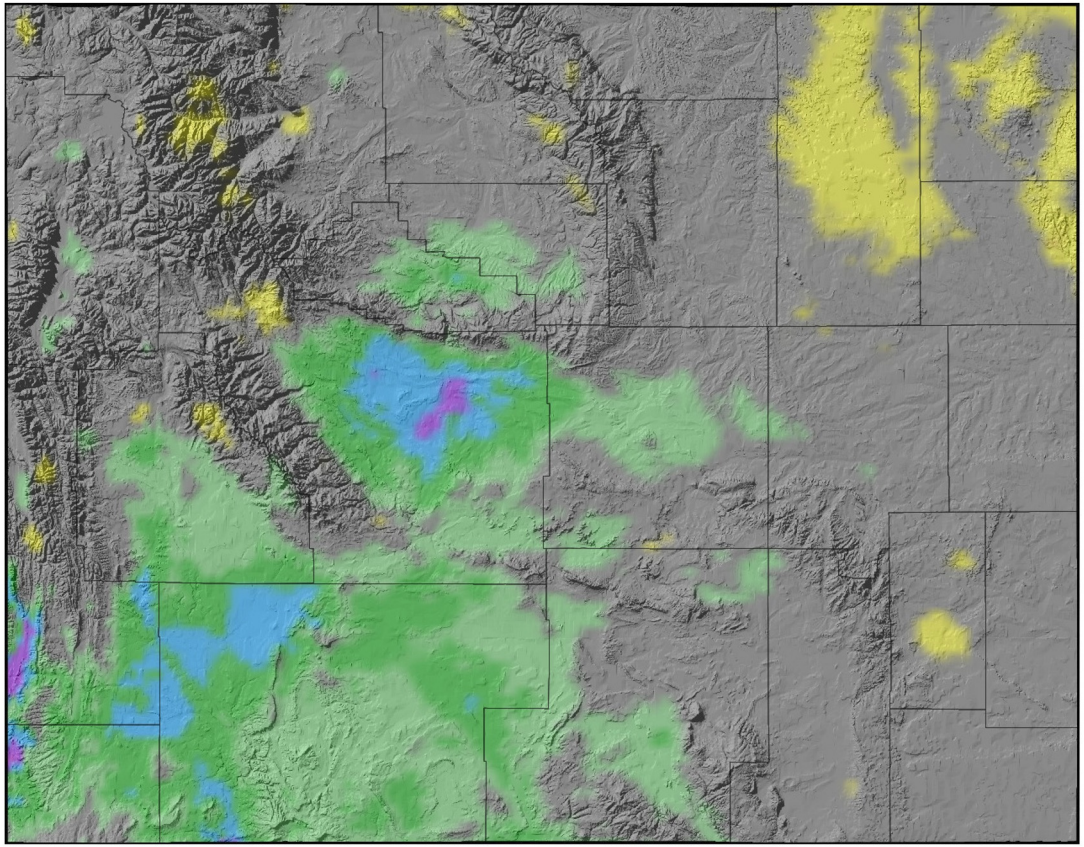
NOAA National Centers for Environmental Information, Climate at a Glance

WRDS Water Resources Data System

2023 Temperature - Departure from 1991-2020 Normal

Below normal in Southwest and Wind River Basin

Slightly above normal in parts of Northeast



Temperature Departure from Normal (F)

- <-6
- -6 to -5
- -5 to -4
- -4 to -3
- -3 to -2
- -2 to -1
- -1 to 1
- 1 to 2
- 2 to 3
- 3 to 4
- 4 to 5
- 5 to 6
- > 6

Temperature Data
PRISM Climate Group
http://prism.oregonstate.edu

Map Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

Provisional data, subject to revision

Monthly and Normal temperature data from PRISM Climate Group, Copyright ©2024, PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu
Map Created 10 Jan 2024 http:/www.wrds.uwyo.edu

WRDS
Water Resources Data System

20.50" 1927 average statewide precipitation

18.92" **2023 average statewide precipitation**

16.02" 30-year average statewide precipitation from 1991 to 2020

15.94" 20th-century average statewide precipitation from 1901 to 2000

10.96" 2012 average statewide precipitation

NOAA National Centers for Environmental Information, Climate at a Glance

WRDS Water Resources Data System

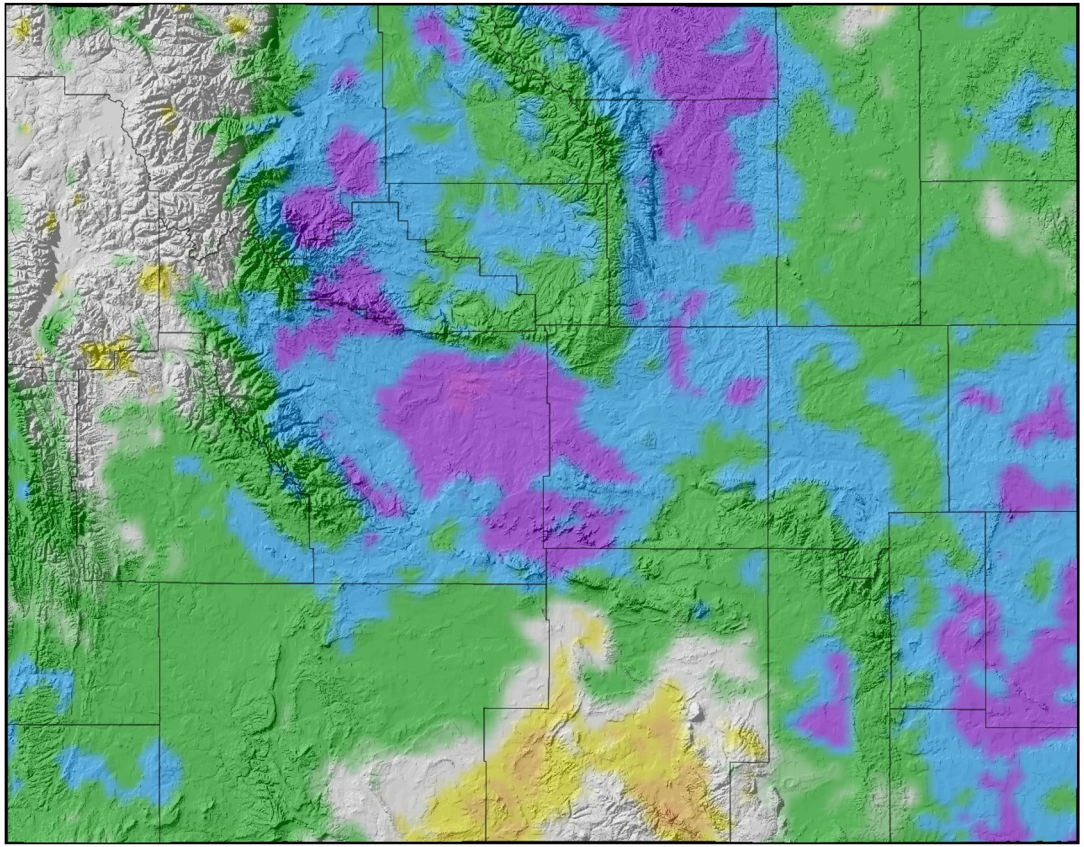
Wyoming State Climate Office

2023 Precipitation - Percent of 1991-2020 Normal

Normal in the Northwest

Normal to below normal in the South Central areas

Above Normal most elsewhere



Precipitation Percent of Normal
- < 5%
- 5% - 25%
- 25% - 50%
- 50% - 70%
- 70% - 90%
- 90% - 95%
- 95% - 105%
- 105% - 110%
- 110% - 130%
- 130% - 150%
- 150% - 200%
- 200% - 300%
- > 300%

Precipitation Data
PRISM Climate Group
http://prism.oregonstate.edu

PRISM GROUP

Map Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

Wyoming State Climate Office

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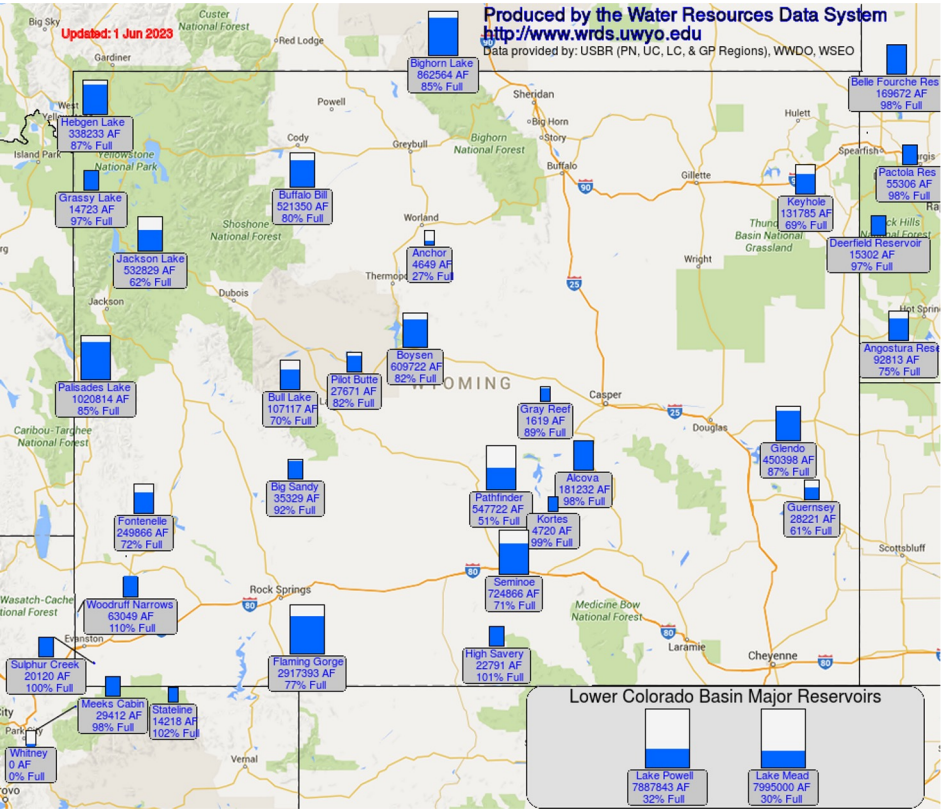
Monthly and Normal precipitation data from PRISM Climate Group, Copyright ©2024, PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu
Map Created 10 Jan 2024 http:/www.wrds.uwyo.edu

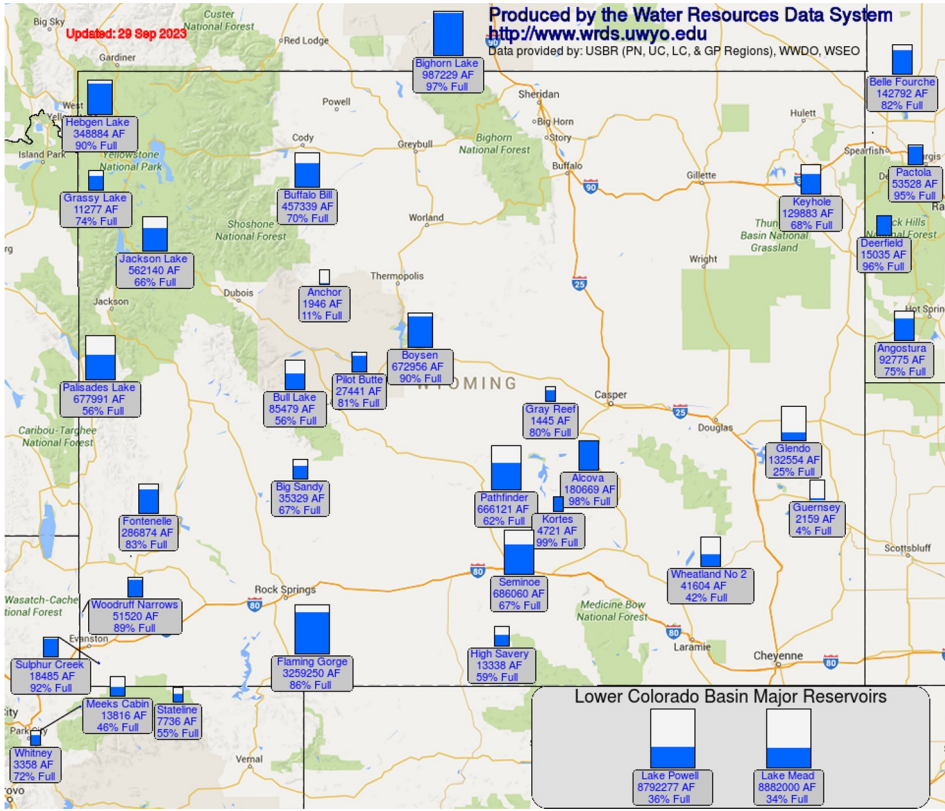
WRDS
Water Resources Data System

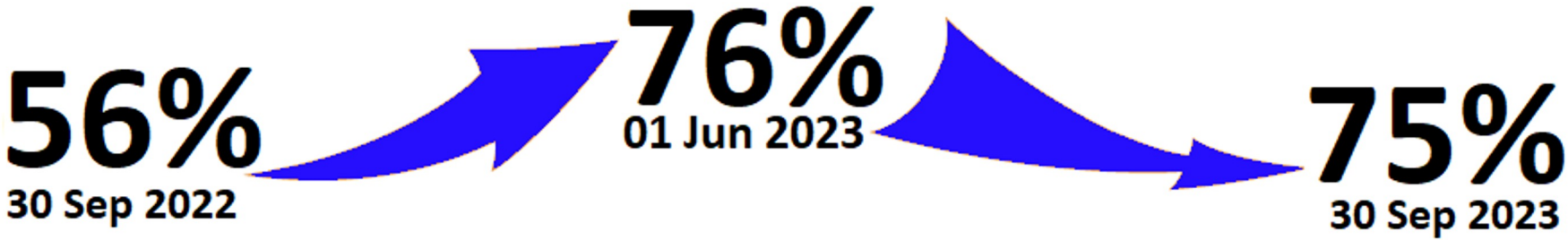
Basin Click to View Chart	This Year Peak Date	This Year Peak SWE (inches)	Days Early/Late	Peak SWE Dif (inches)	Percent of Median Peak SWE	Median Peak Date	Median Peak SWE (inches)	Current SWE	Median Meltout Date
Belle Fourche	07 Apr 2023	9.5	5	2.6	138%	02 Apr IMG	6.9 IMG	0.0	30 Apr IMG
South Platte	09 Apr 2023	6.0	11	-1.2	83%	29 Mar IMG	7.2 IMG	0.0	26 Apr IMG
Cheyenne	07 Apr 2023	9.2	5	1.7	123%	02 Apr IMG	7.5 IMG	0.0	30 Apr IMG
Lower North Platte	09 Apr 2023	14.7	-6	1.9	115%	15 Apr IMG	12.8 IMG	0.2	29 May IMG
Tongue	09 Apr 2023	12.8	-23	-0.6	96%	02 May IMG	13.4 IMG	0.7	09 Jun IMG
Powder	08 Apr 2023	11.6	-9	1.0	109%	17 Apr IMG	10.6 IMG	1.1	08 Jun IMG
Bighorn	09 Apr 2023	12.0	-16	0.3	103%	25 Apr IMG	11.7 IMG	1.9	19 Jun IMG
Laramie	08 Apr 2023	17.3	-11	1.4	109%	19 Apr IMG	15.9 IMG	4.0	12 Jun IMG
Lower Green	09 Apr 2023	18.4	0	4.8	135%	09 Apr IMG	13.6 IMG	4.4	12 Jun IMG
Wind	28 Apr 2023	15.6	6	1.6	111%	22 Apr IMG	14.0 IMG	4.8	25 Jun IMG
Shoshone	09 Apr 2023	18.1	-15	0.0	100%	24 Apr IMG	18.1 IMG	5.0	29 Jun IMG
Upper Green	08 Apr 2023	18.2	-5	2.2	114%	13 Apr IMG	16.0 IMG	6.4	18 Jun IMG
Upper Bear	09 Apr 2023	25.9	-3	9.3	156%	12 Apr IMG	16.6 IMG	7.2	15 Jun IMG
Yellowstone	28 Apr 2023	24.1	4	2.9	114%	24 Apr IMG	21.2 IMG	9.0	02 Jul IMG
Snake	25 Apr 2023	25.6	13	5.0	124%	12 Apr IMG	20.6 IMG	10.2	28 Jun IMG
Sweetwater	28 Apr 2023	20.0	10	5.0	133%	18 Apr IMG	15.0 IMG	10.3	05 Jun IMG
Little Snake	09 Apr 2023	32.1	3	11.6	157%	06 Apr IMG	20.5 IMG	13.4	19 Jun IMG
Upper North Platte	09 Apr 2023	29.2	-7	4.8	120%	16 Apr IMG	24.4 IMG	14.2	26 Jun IMG
Madison	09 Apr 2023	29.4	-6	5.6	124%	15 Apr IMG	23.8 IMG	19.6	24 Jun IMG

Data from Natural Resources Conservation Service SnoTel Network

WRDS
Water Resources Data System





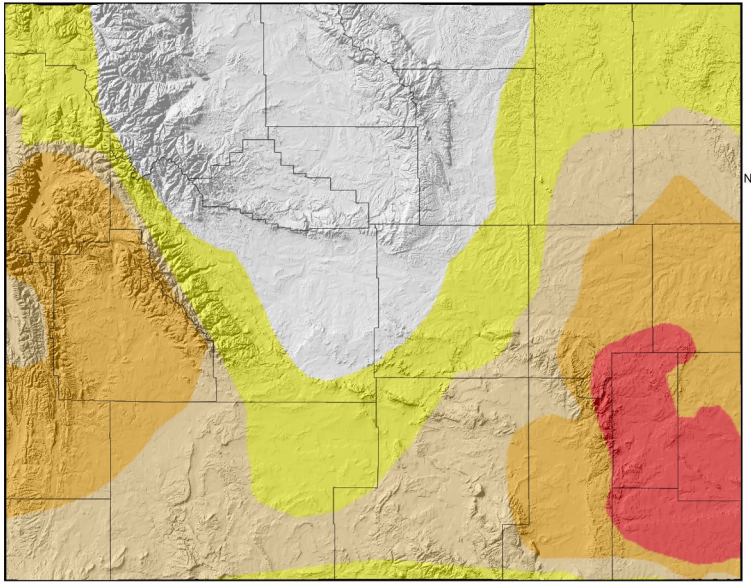


Total capacity in Wyoming's reservoirs remaining at the end of the 2023 Water Year was 19% higher than at the end of Water Year 2022.

Drought Conditions in Wyoming

Start of calendar year 2023

US Drought Monitor for 03 Jan 2023



US Drought Monitor
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Map Created by:
National Drought Mitigation Center
https://droughtmonitor.unl.edu

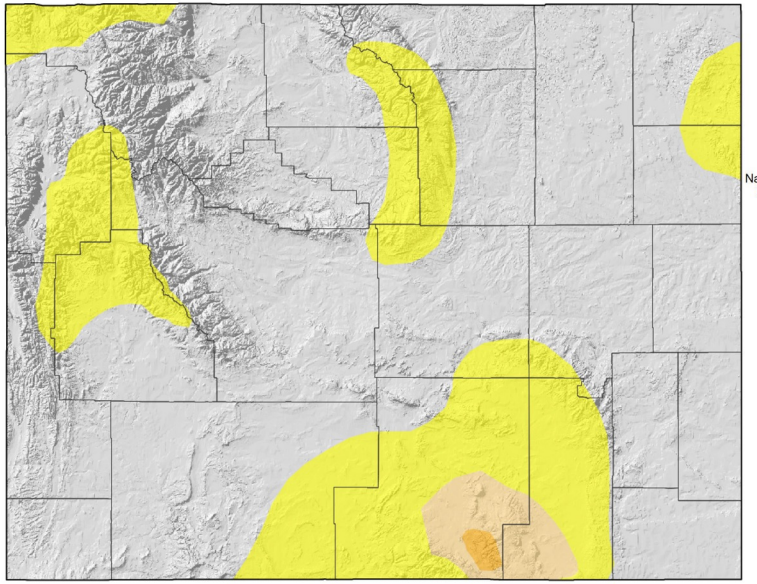
Map Layout Prepared by:
Wyoming State Climate Office
http://www.wrds.uwyo.edu

The U.S. Drought Monitor, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln. The U.S. Drought Monitor website is hosted and maintained by the NDMC. http://droughtmonitor.unl.edu

Map Layout Created 31 Jan 2023 http:/www.wrds.uwyo.edu

End of 2023

US Drought Monitor for 26 Dec 2023



US Drought Monitor
- 22.54% D0 Abnormally Dry
- 2.66% D1 Moderate Drought
- 0.29% D2 Severe Drought
- 0.00% D3 Extreme Drought
- 0.00% D4 Exceptional Drought

Map Created by:
National Drought Mitigation Center
https://droughtmonitor.unl.edu

Map Layout Prepared by:
Wyoming State Climate Office
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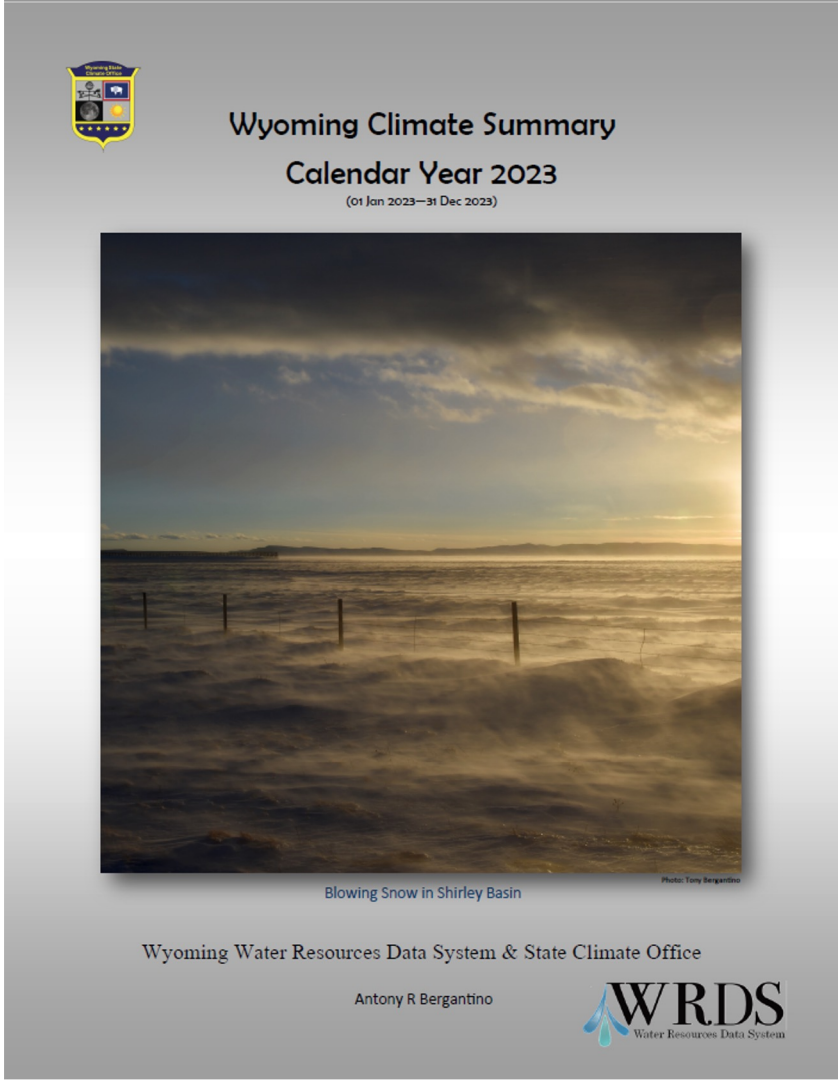
Map Layout Created 28 Dec 2023 http:/www.wrds.uwyo.edu

Wyoming Climate Summary (Calendar Year 2023)

http://dx.doi.org/10.13140/RG.2.2.25475.48164



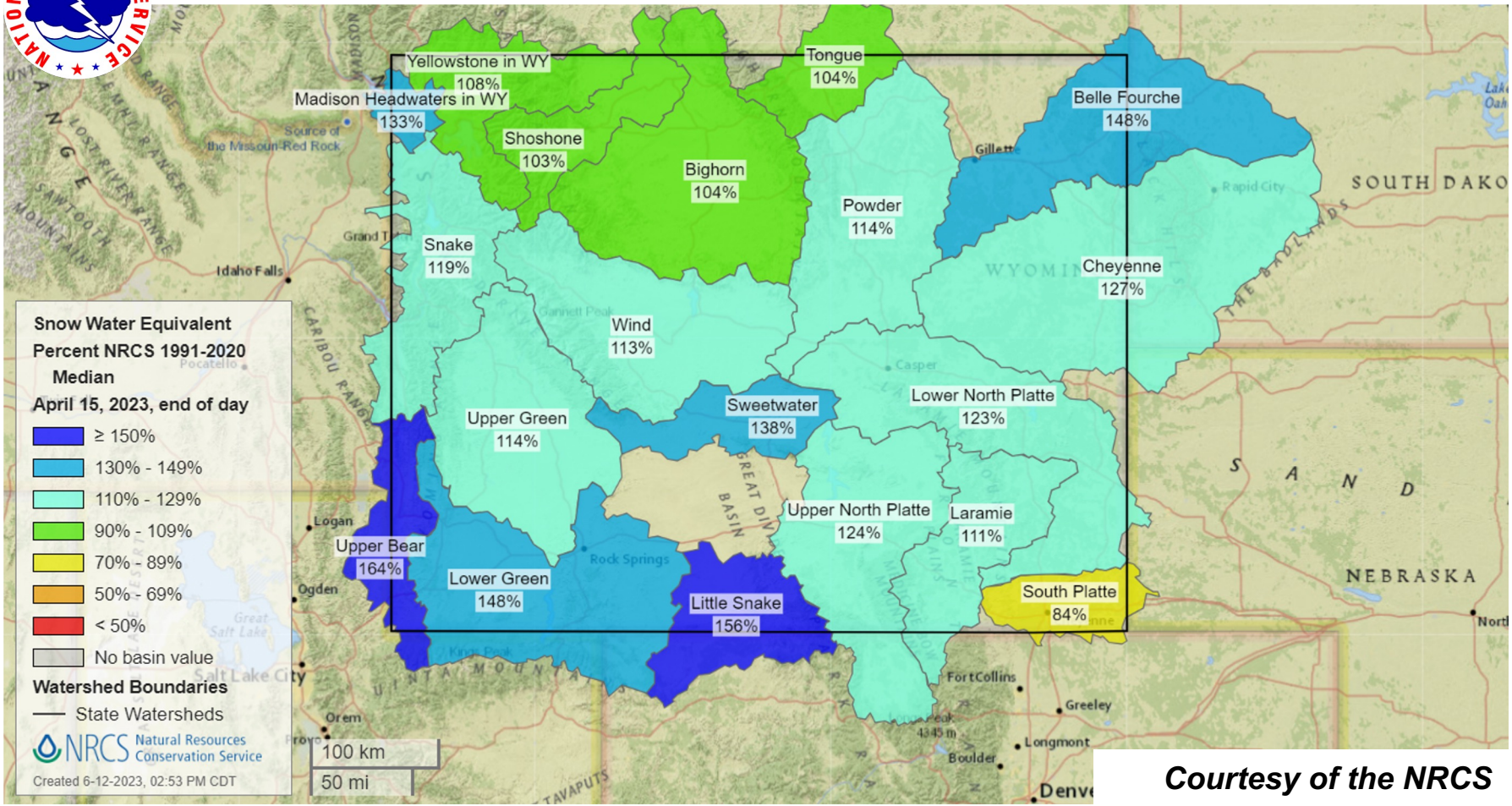
Water Supply Forecasts

- NWS, NRCS, Bureau of Reclamation - All forecast runoff volumes
  - Three different methods

- NWS and NRCS forecast “native” flow
  - Native Flow is the runoff produced from precipitation and snowpack or from springs within the basin.
  - Native flow attempts to discount reservoir operations, diversions, or trans-basin transfers.

- Measuring and calculating native flow can be very difficult

Snow Water Equivalent as of 15 April 2023, Percent of 30-Year Median



Courtesy of the NRCS

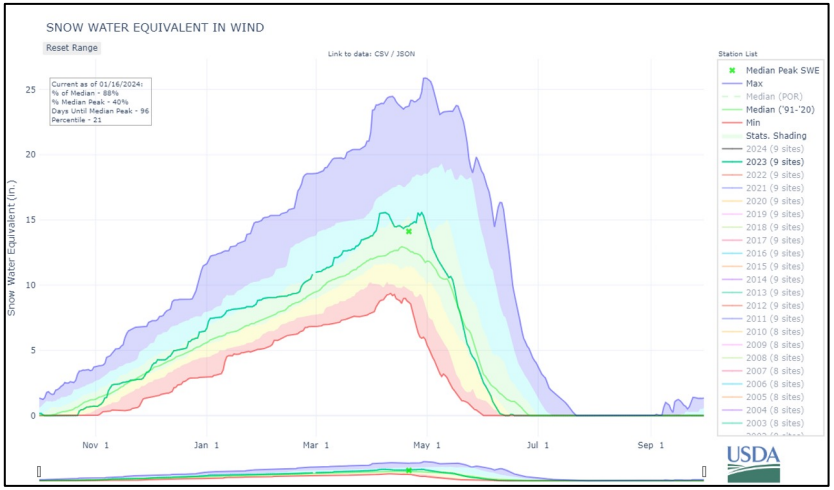
SUMMARY OF 2023 Runoff in Wyoming

- Near or greater than 100% of 30-year median peak SWE and runoff volume in all basins

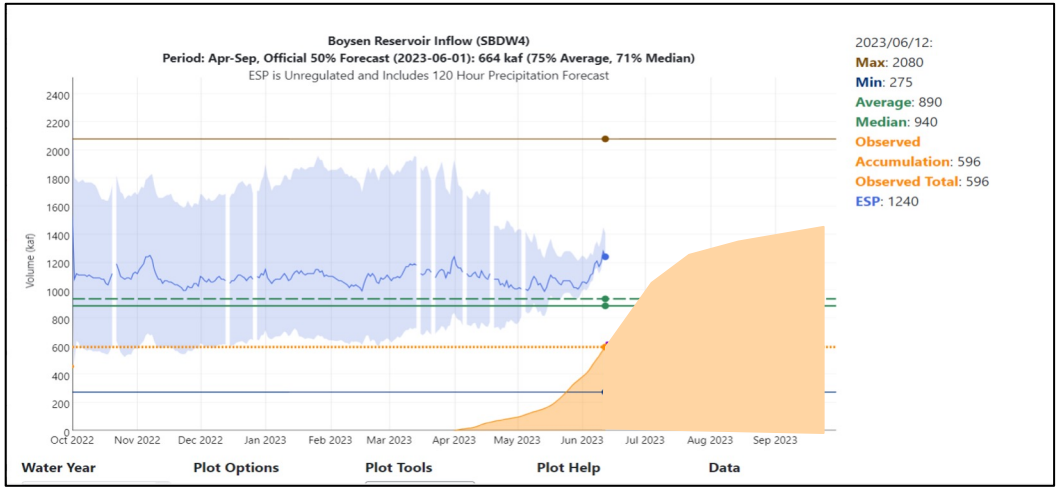
Basin	Peak SWE (% of 30-year median peak SWE)	Total runoff volume (% of 30-year median)
Yellowstone	109	91
Wind	111	123
Bighorn	102	86
Tongue	95	129
Powder	107	171
North Platte	119	116
Snake	123	100
Upper Green	113	139
Lower Green	135	144
Bear	151	225
Little Snake	155	207

Wind River Basin

SWE peaked 28 April at 111% of 30-year median peak



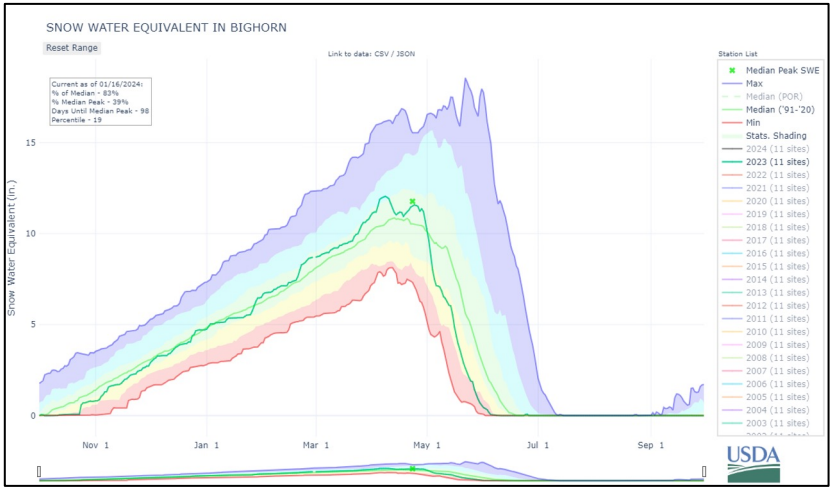
Courtesy of the NRCS



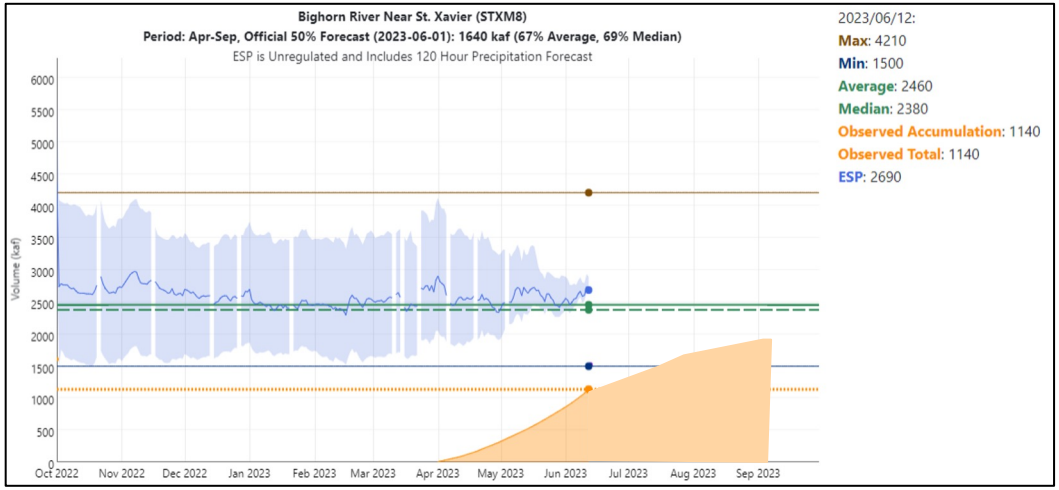
Observed runoff was 123%
(1158 kaf) of 30-year median

Bighorn River Basin

SWE peaked 09 April at 102% of 30-year median peak



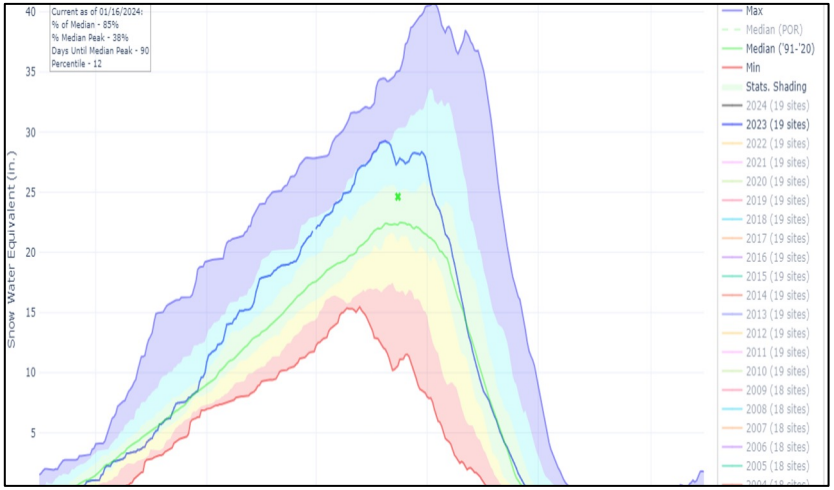
Courtesy of the NRCS



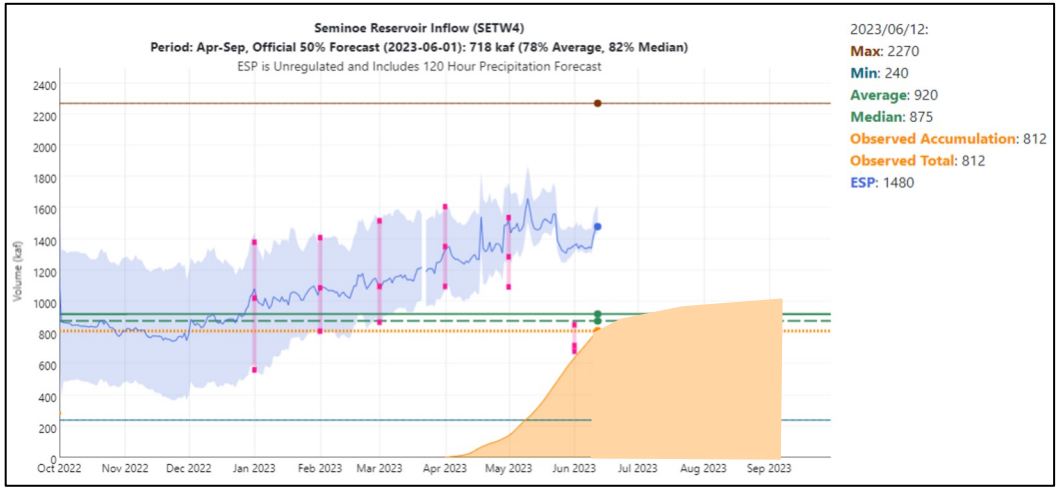
Observed runoff was 86% (2044 kaf) of 30-year median

North Platte River Basin

SWE peaked 08 April at 119% of 30-year median peak



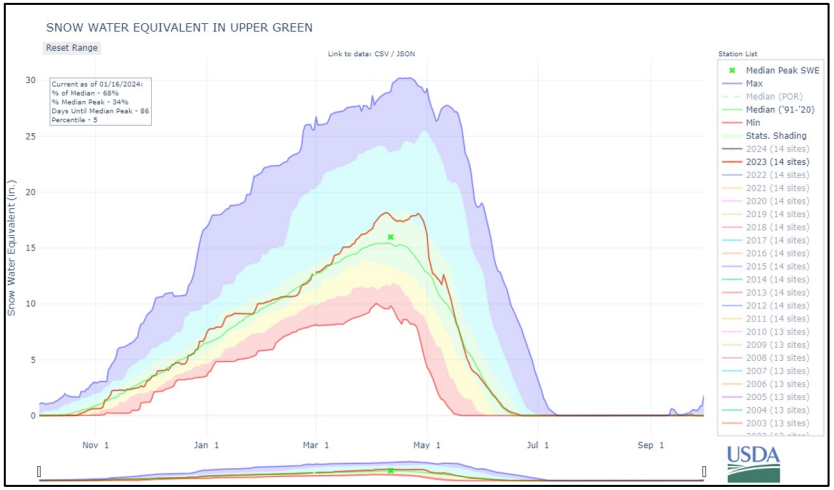
Courtesy of the NRCS



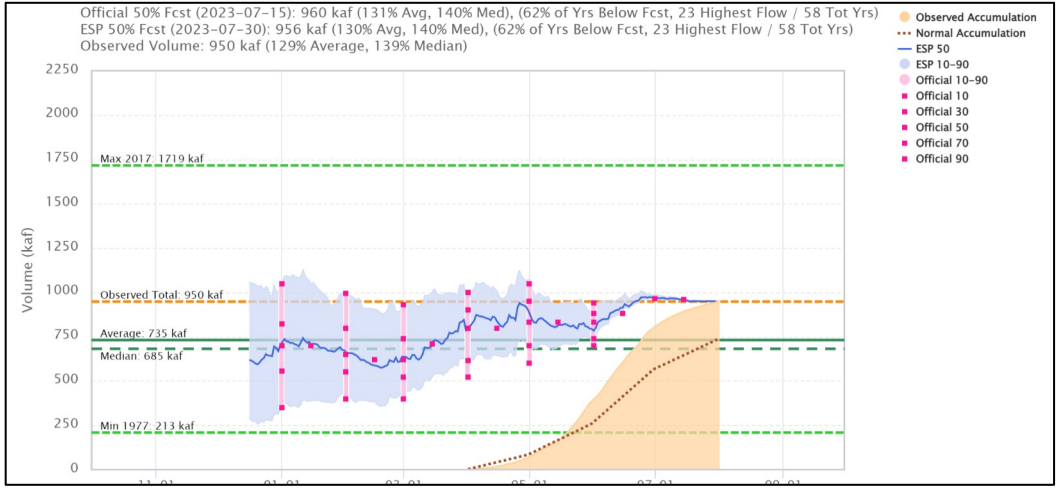
Observed runoff was 116%
(1011 kaf) of 30-year median

Upper Green River Basin

SWE peaked 26 April at 113% of 30-year median peak



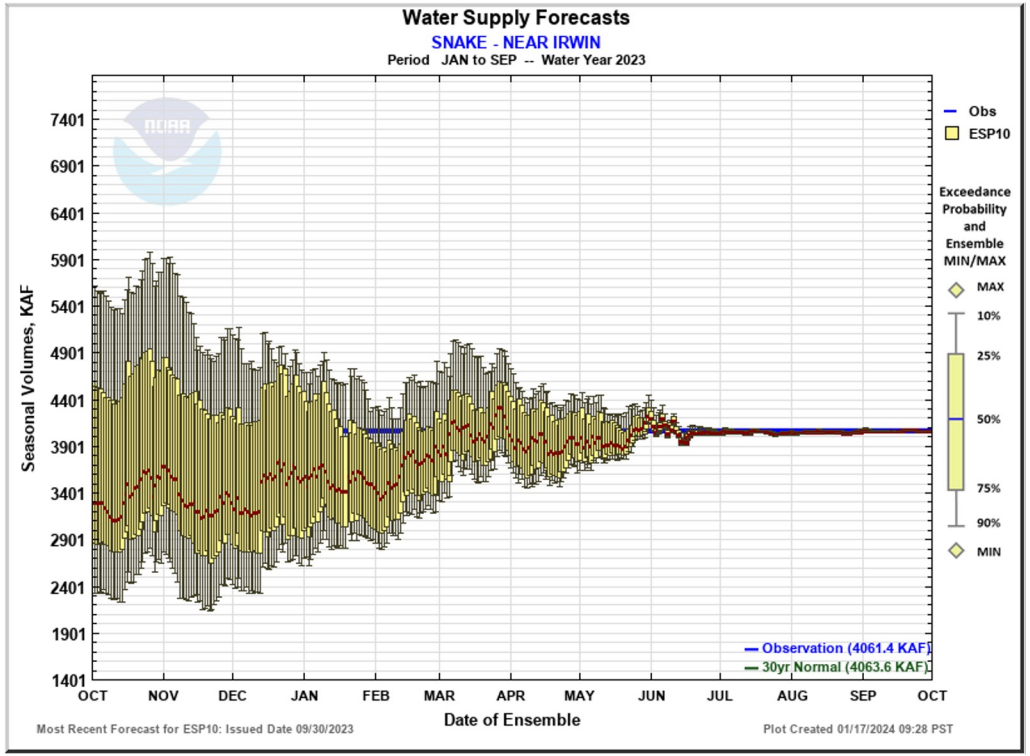
Courtesy of the NRCS

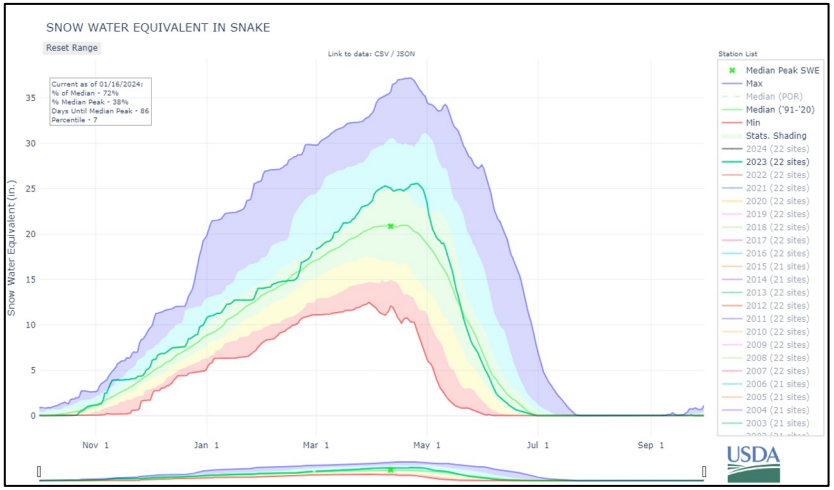


Observed runoff was 139% (950 kaf) of 30-year median

Snake River Basin

SWE peaked 26 April at 123% of 30-year median peak





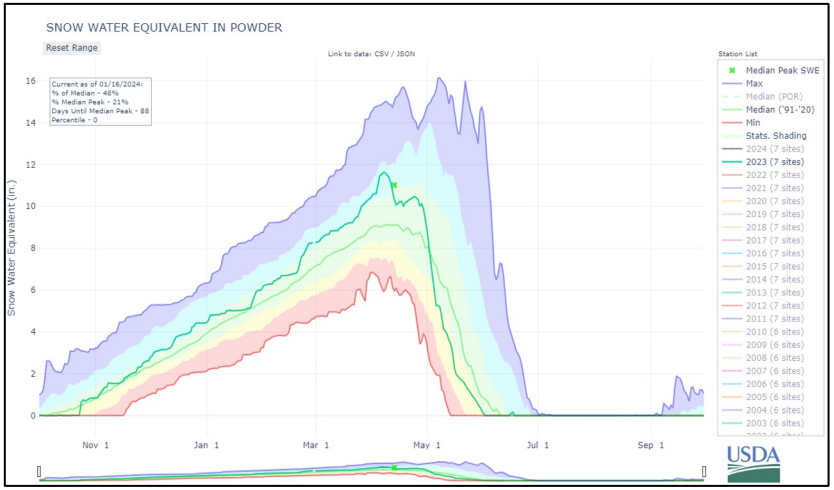
Courtesy of the NRCS

Courtesy of the USGS

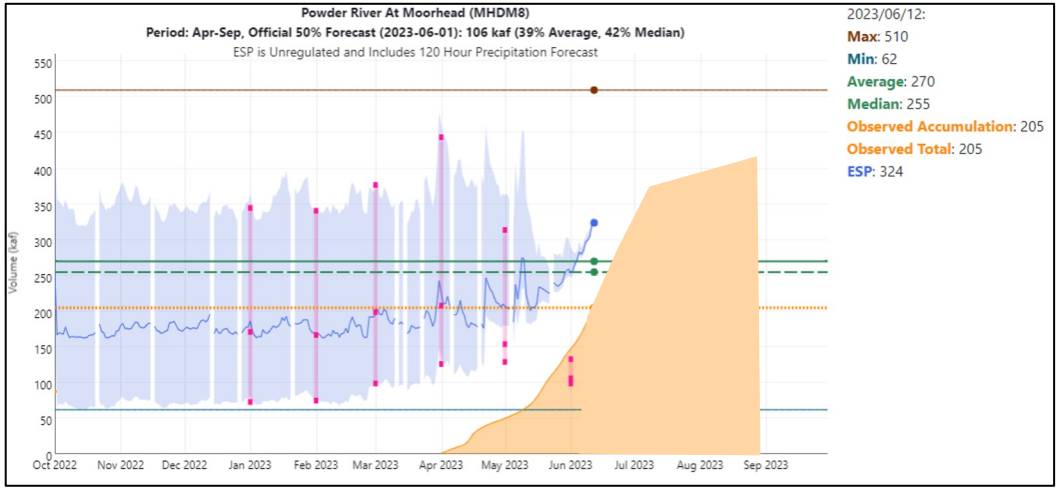
Observed runoff was 100%
(4061 kaf) of 30-year average

Powder River Basin

SWE peaked 07 April at 107% of 30-year median peak



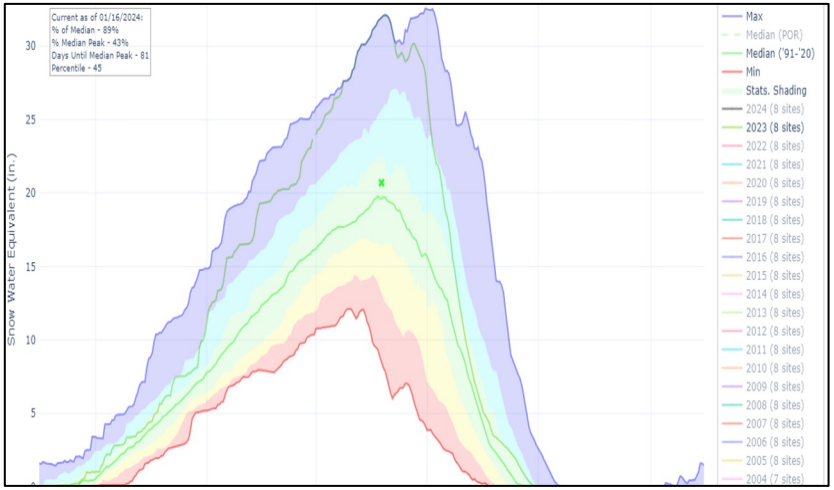
Courtesy of the NRCS



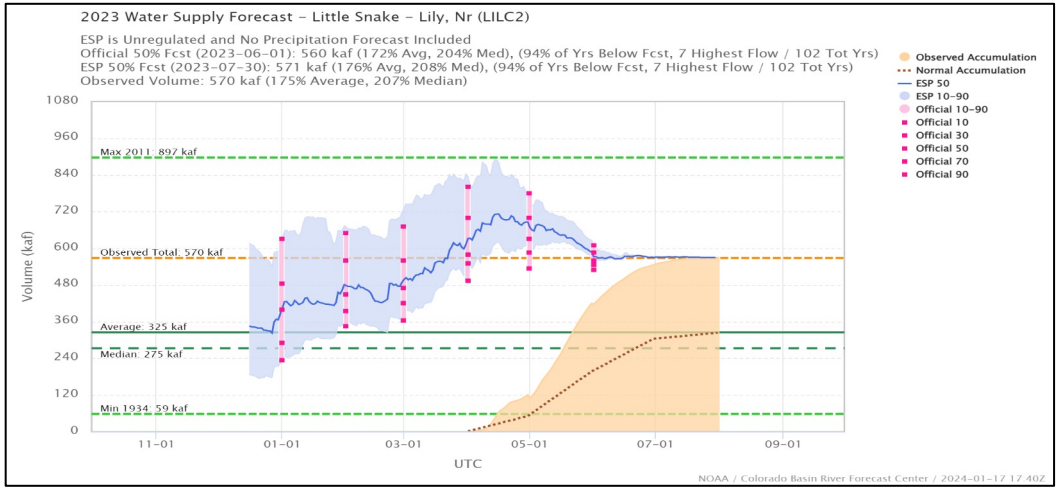
Observed runoff was 171% (435 kaf) of 30-year median

Little Snake River Basin

SWE peaked 07 April at 155% of 30-year median peak



Courtesy of the NRCS



Observed runoff was 207% (570 kaf) of 30-year median

Snow Water Equivalent - Runoff Disconnect

- Not an exact relationship
- Observations may be measured volume vs “native volume”.

- Runoff % of normal greater than SWE % of normal
  - We were very wet in May-July.
    - Rain added to runoff without adding to SWE
    - Storms added to SWE after peak SWE and sustained snowpack

- Runoff % of normal less than SWE % of normal
  - Coming out of drought. Water captured by dry soils and aquifers
  - Water filling empty reservoirs may not have been calculated

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The WY Conditions Monitoring Team (WCMT) organized and hosted this webinar. The WCMT is a collaborative effort of state, federal, tribal, and university partners that monitor conditions & impacts throughout WY weekly – and communicate this info to the U.S. Drought Monitor & others.

Learn more at:
https://drought.wyo.gov

Thank you!