WY Conditions & Outlooks:

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

January 16, 2025

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

Presentation Outline

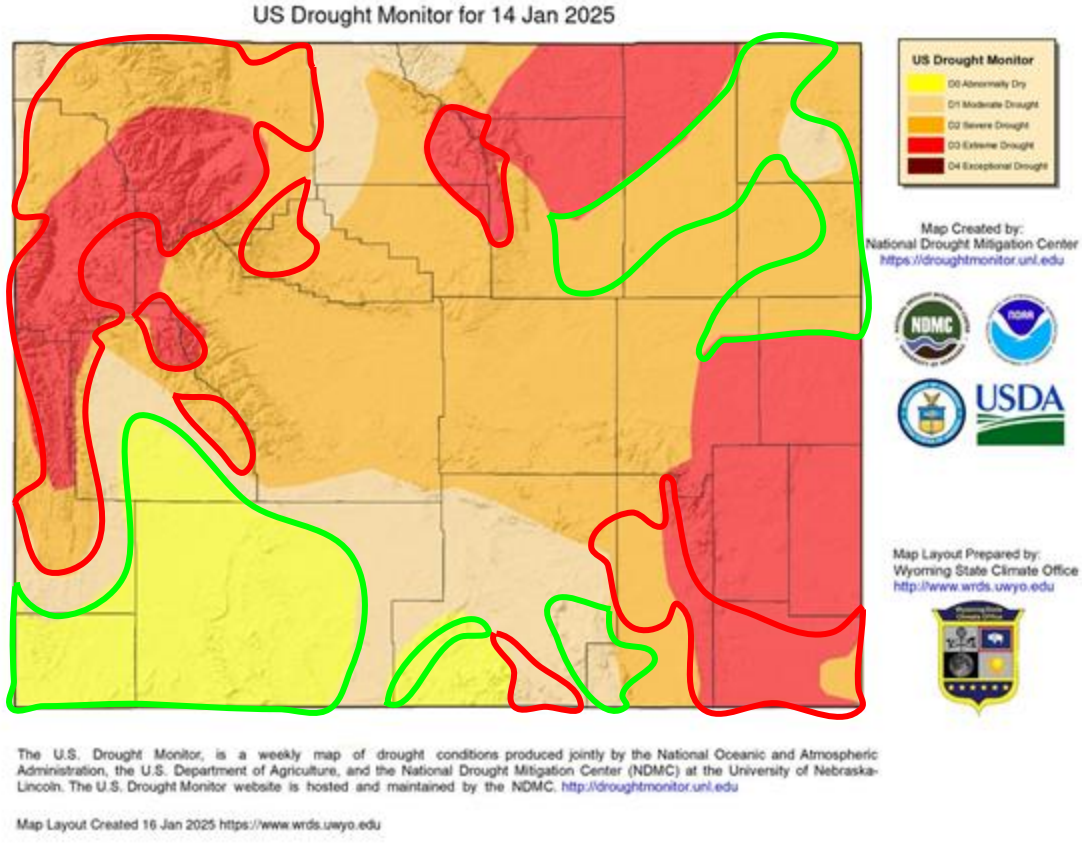
- **Current Conditions:** Overview
  - Drought, Temperature, Precipitation, Soil Moisture, and Snow Water Equivalent
  - Streamflows
- **Outlooks:**
  - Temperature & Precipitation
- **Highlight of the Month:**
  - USDA NRCS Interactive Mapper
- **Questions**

Current Conditions

US Drought Monitor for January 14, 2025

(Released Thursday, January 16th, 2025)

Valid 8 a.m. EDT



Drought Level	Percentile
None	>30.01
D0 (Abnormally Dry)	20.01 to 30
D1 (Moderate Drought)	10.01 to 20
D2 (Severe Drought)	5.01 to 10
D3 (Extreme Drought)	2.01 to 5
D4 (Exceptional Drought)	0 to 2

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

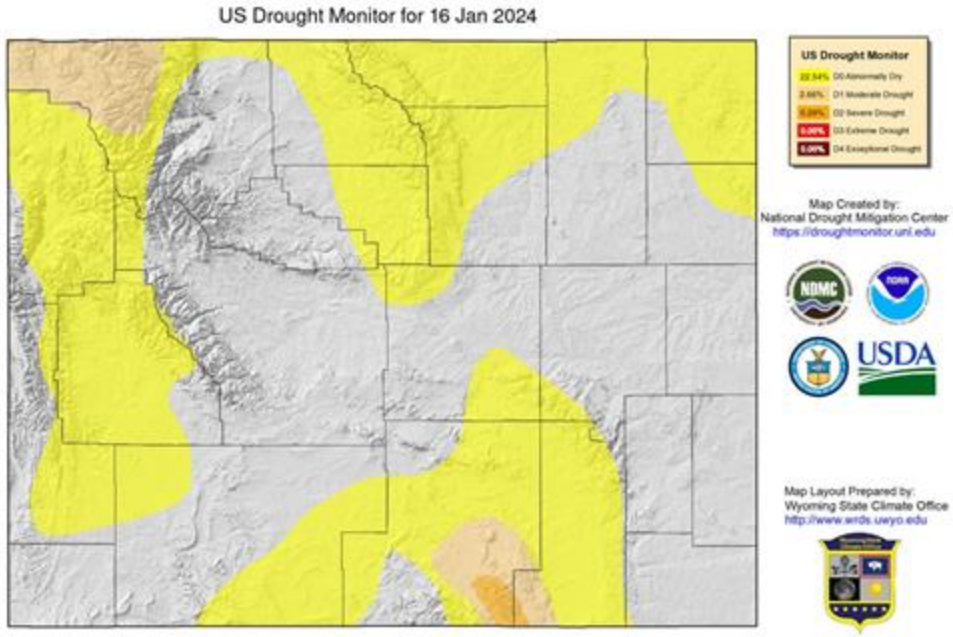
Generally **Degradations** northwest and southeast with **Improvements** in northeast and southwest.

https://droughtmonitor.unl.edu

droughtmonitor.unl.edu

WRDS
Water Resources Data System

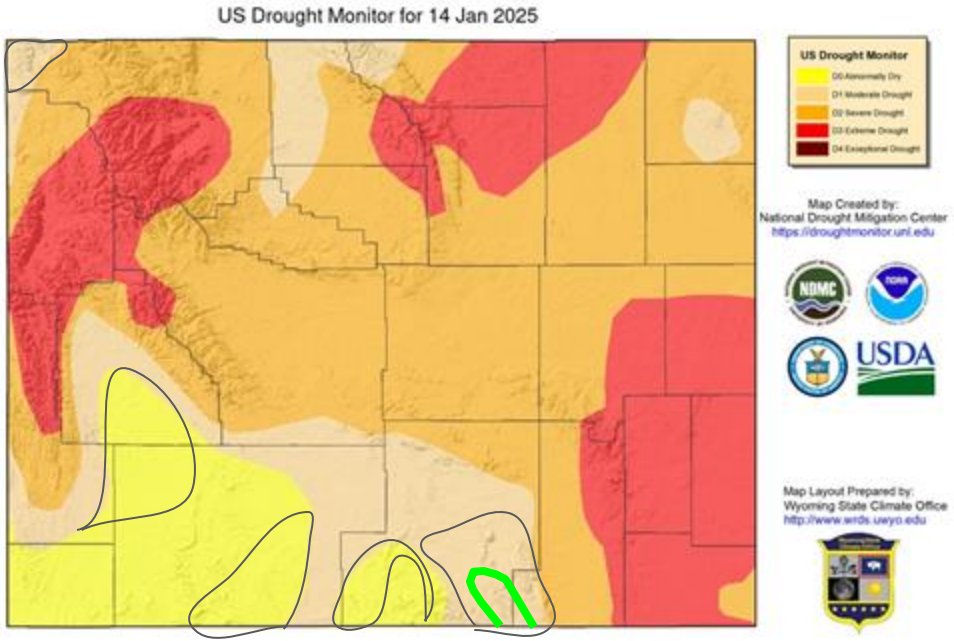
One Year Ago



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 16 Jan 2024 http://www.wrds.uwyo.edu

Today



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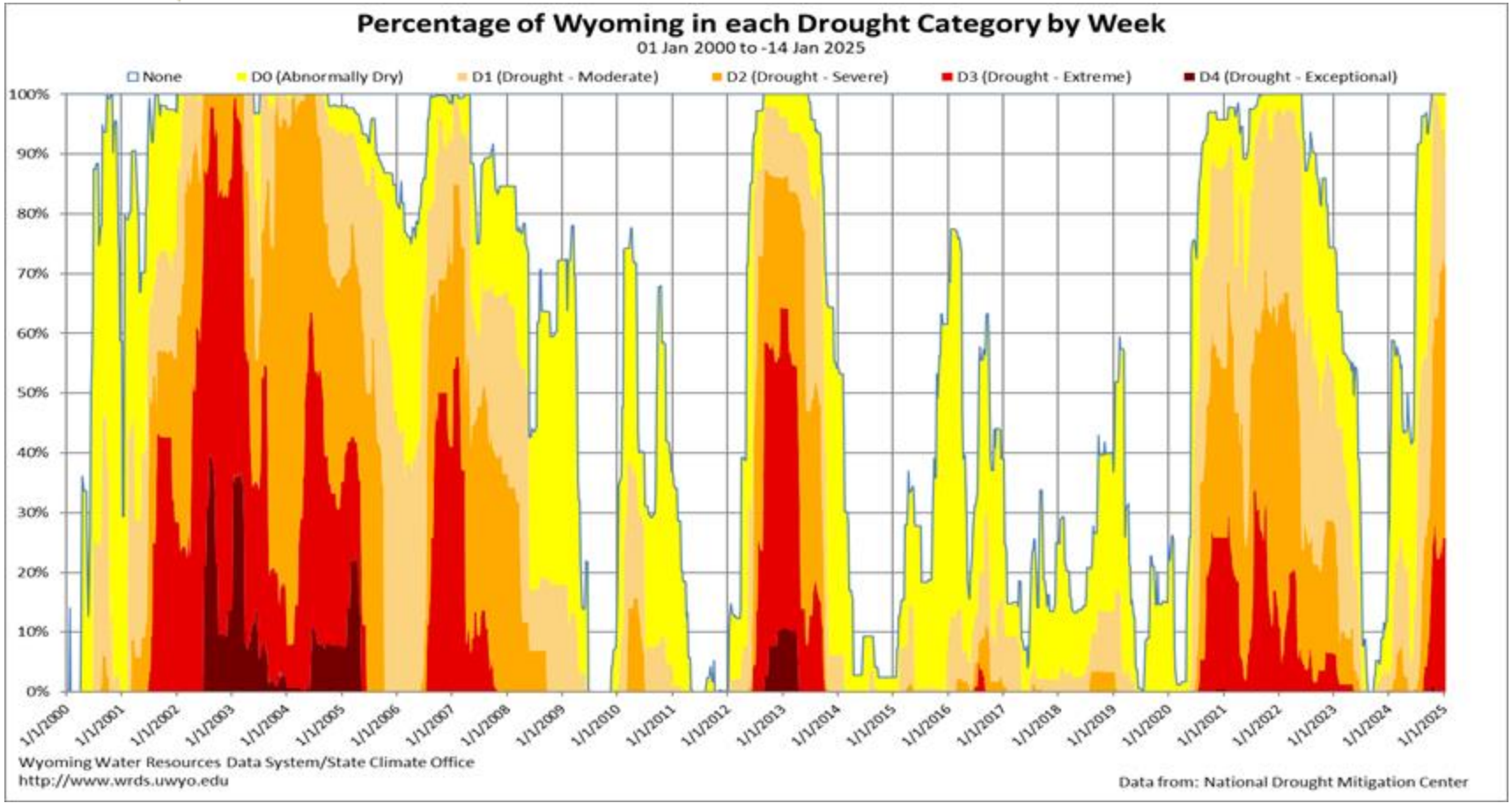
Map Layout Created 16 Jan 2025 https://www.wrds.uwyo.edu

https://droughtmonitor.unl.edu

droughtmonitor.unl.edu

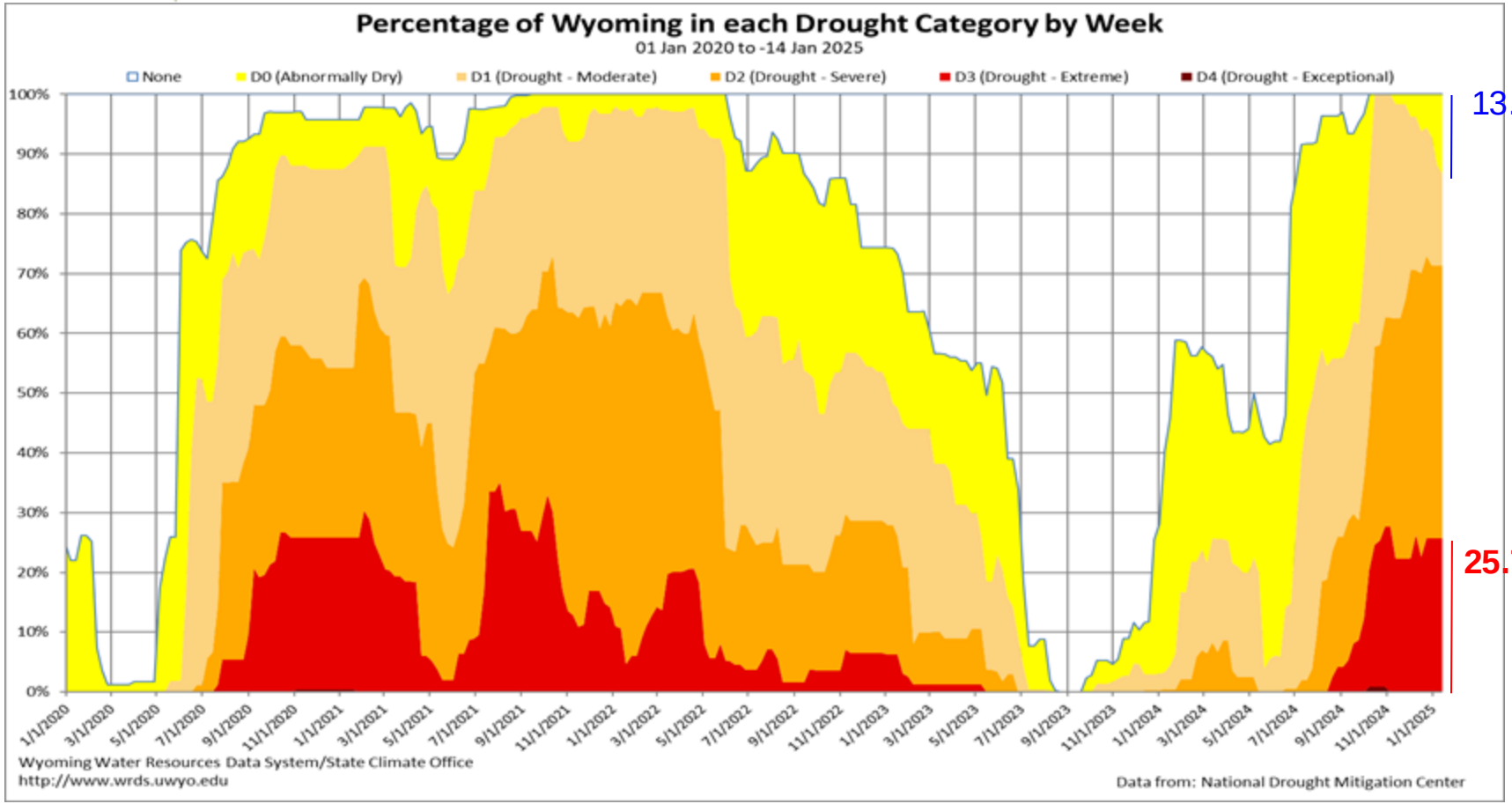
WRDS
Water Resources Data System

Wyoming Area Affected: 100% D0-D4 ; 86.76% D1-D4



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

WRDS
Water Resources Data System



13.24%

25.72%

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

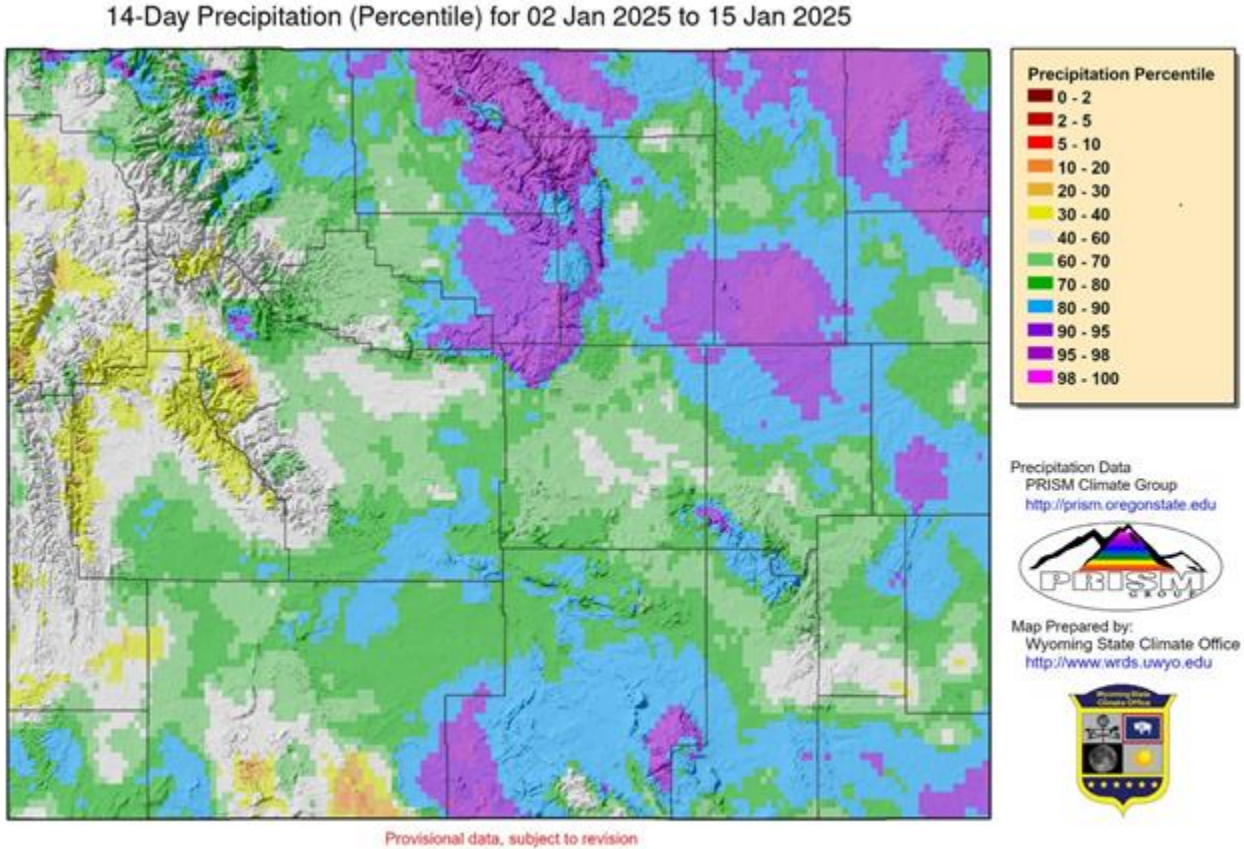
14-Day Precipitation Percentile (02 Jan 2025 to 15 Jan 2025)

Above Median:

- Most of Wyoming

Below Median (Areas of Concern):

- Southcentral Sweetwater County
- Winds and Snake Basin



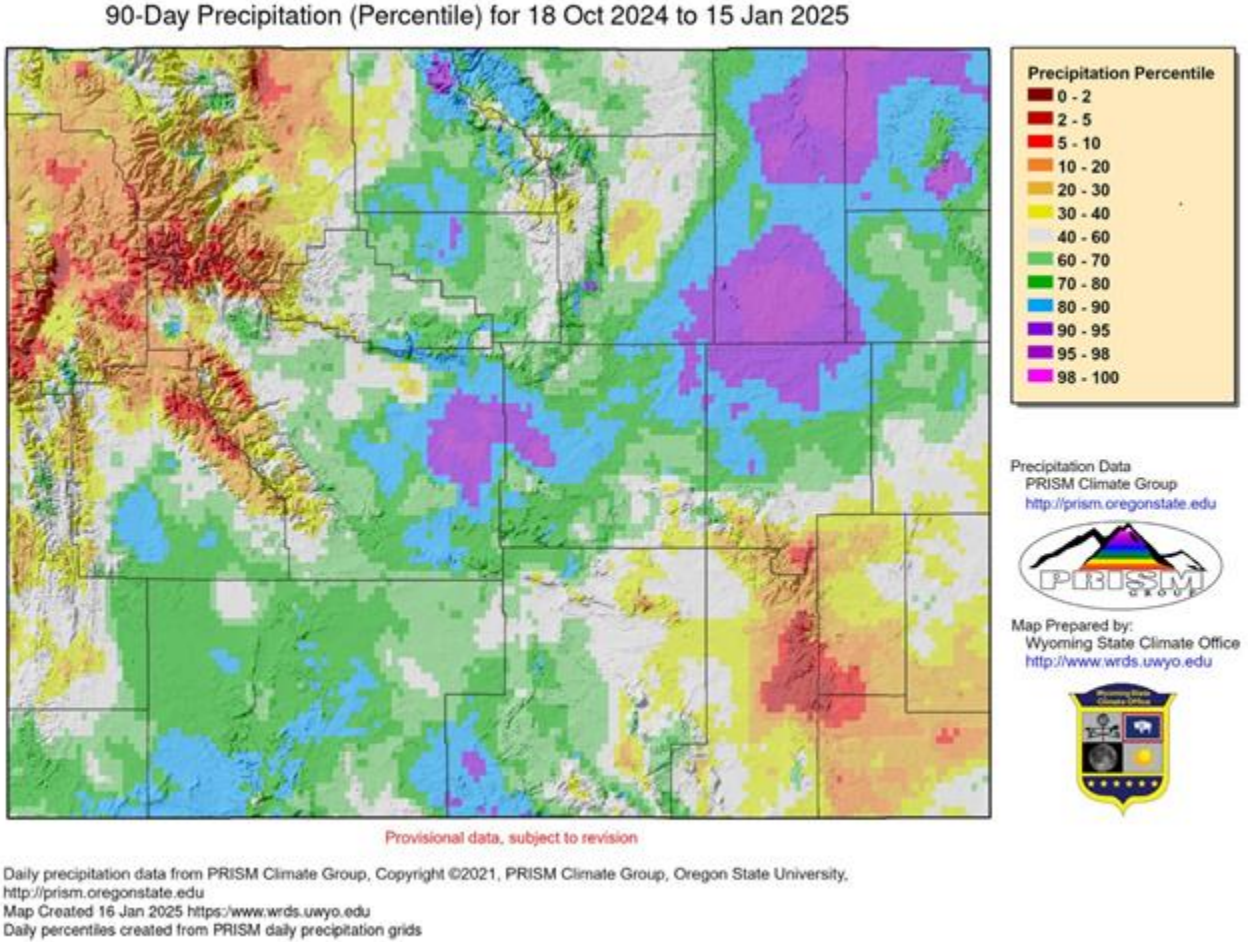
90-Day Precipitation Percentile (18 Oct 2024 to 16 Jan)

At or Above Median:

- Still much of Wyoming at or above median. Especially Big Horn Basin, and wide diagonal swath from SW to NE.

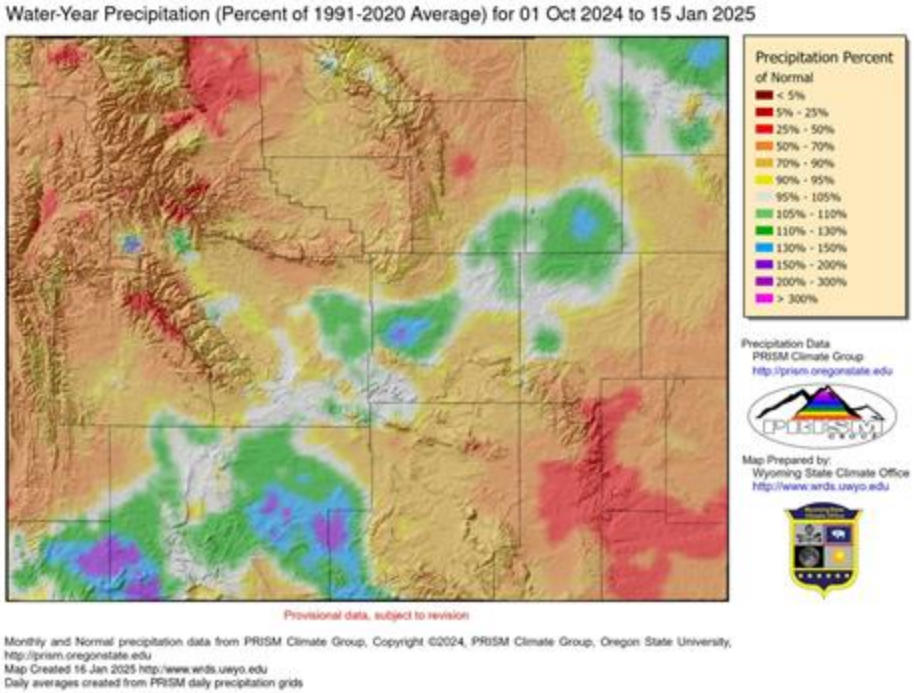
Below Median (Areas of Concern):

- Northwest and Southeast

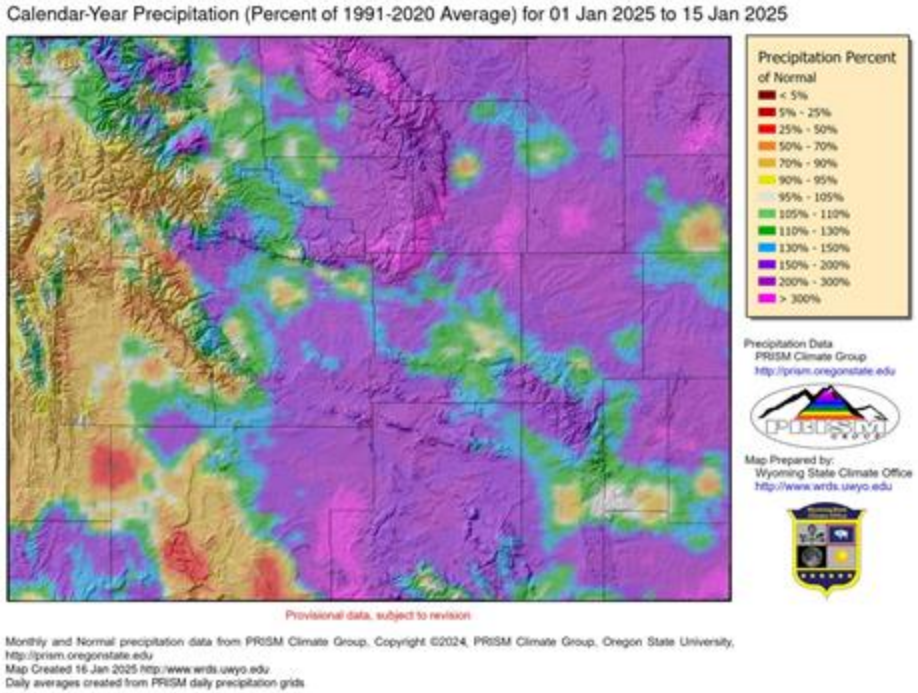


“Year”-to-Date Precipitation (Percent of Average)

Current Water Year



Current Calendar Year

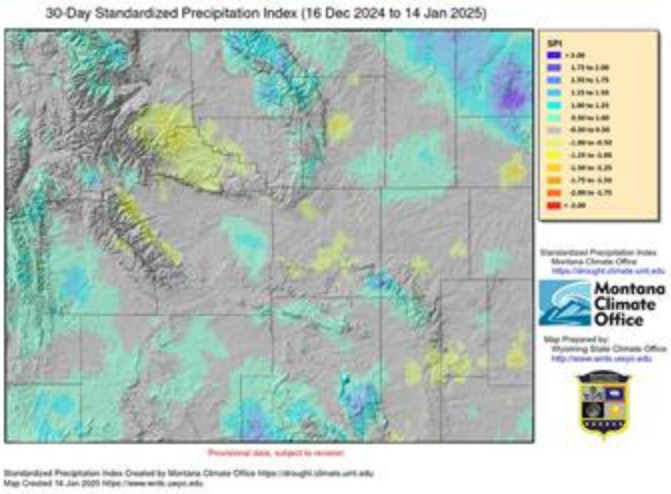


Note: a water year is October 1 through September 30 of the following year.

WRDS
Water Resources Data System

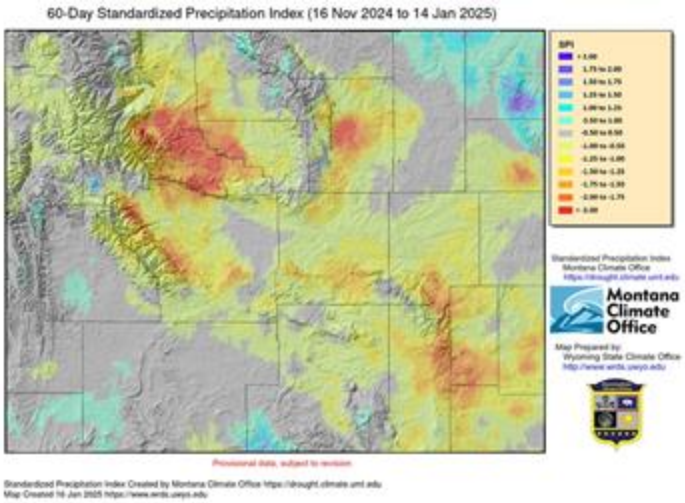
30-Day →

Dec 16 - Jan 14



60-Day →

Nov 16 - Jan 14

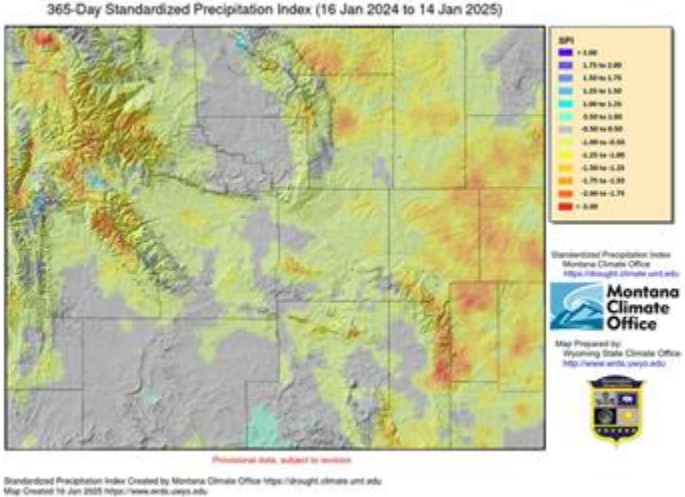


Standardized Precipitation Index (SPI)

Short term: Wet or Normal 30-day vs Dry at 60-day (shows improving conditions). Northeast wet at both timeframes

Long term: Dry in northwest and east.

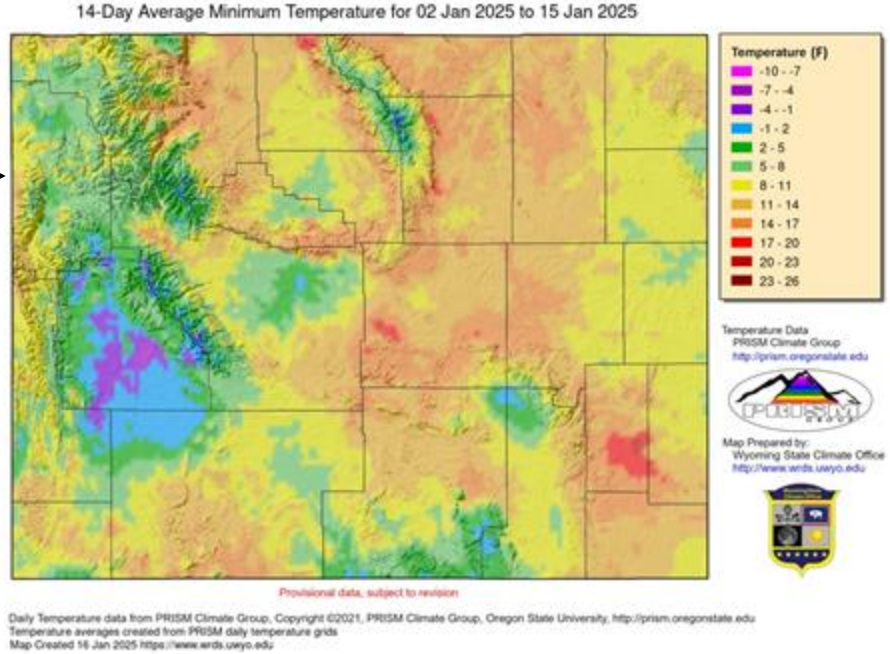
1-Year →

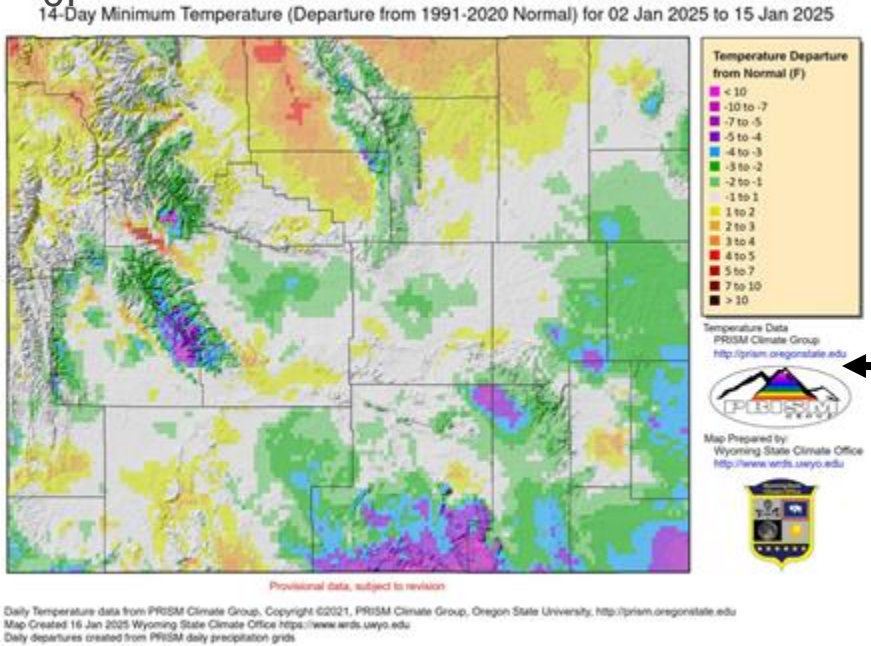


https://drought.climate.umt.edu

14-Day Average Minimum Temperature (02 Jan to 15 Jan)

- Minimums below freezing statewide
- Upper Green coolest with avg min temps below 0F



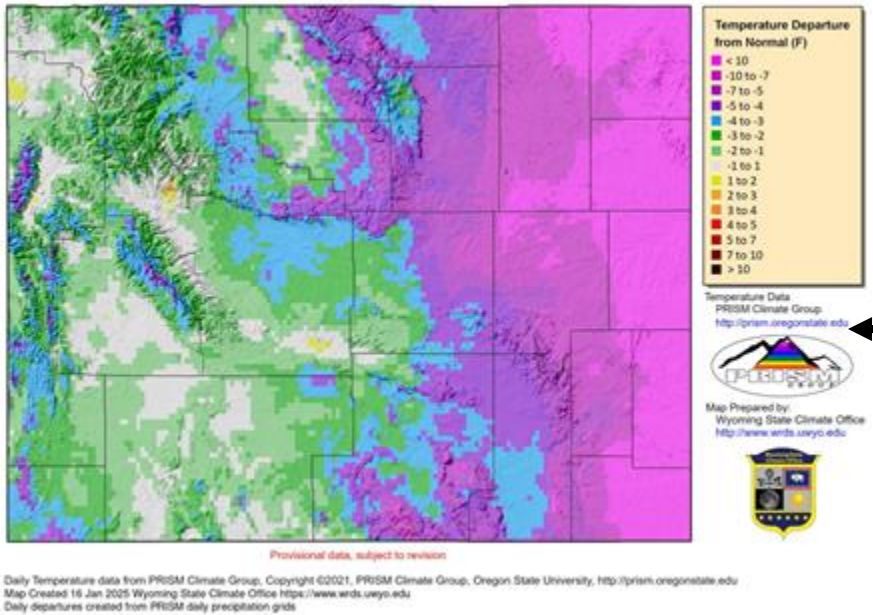


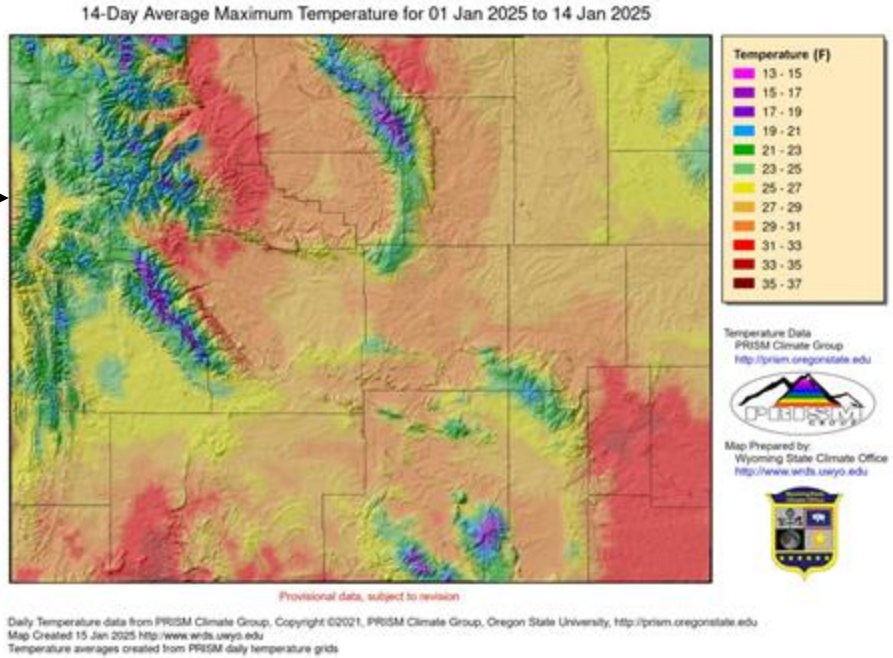
14-Day *Departure from* Normal Average Minimum Temperature

- Diagonally SW to NE about normal
- North Central about 1-4F above normal
- Winds, Bighorns, and SE 3-10F below normal

14-Day Average Maximum Temperature (02 Jan to 15 Jan)

- W BH Basin, SW and SE highs just above 32F
- Plains elsewhere upper 20s
- Higher elevations mid-20s or less

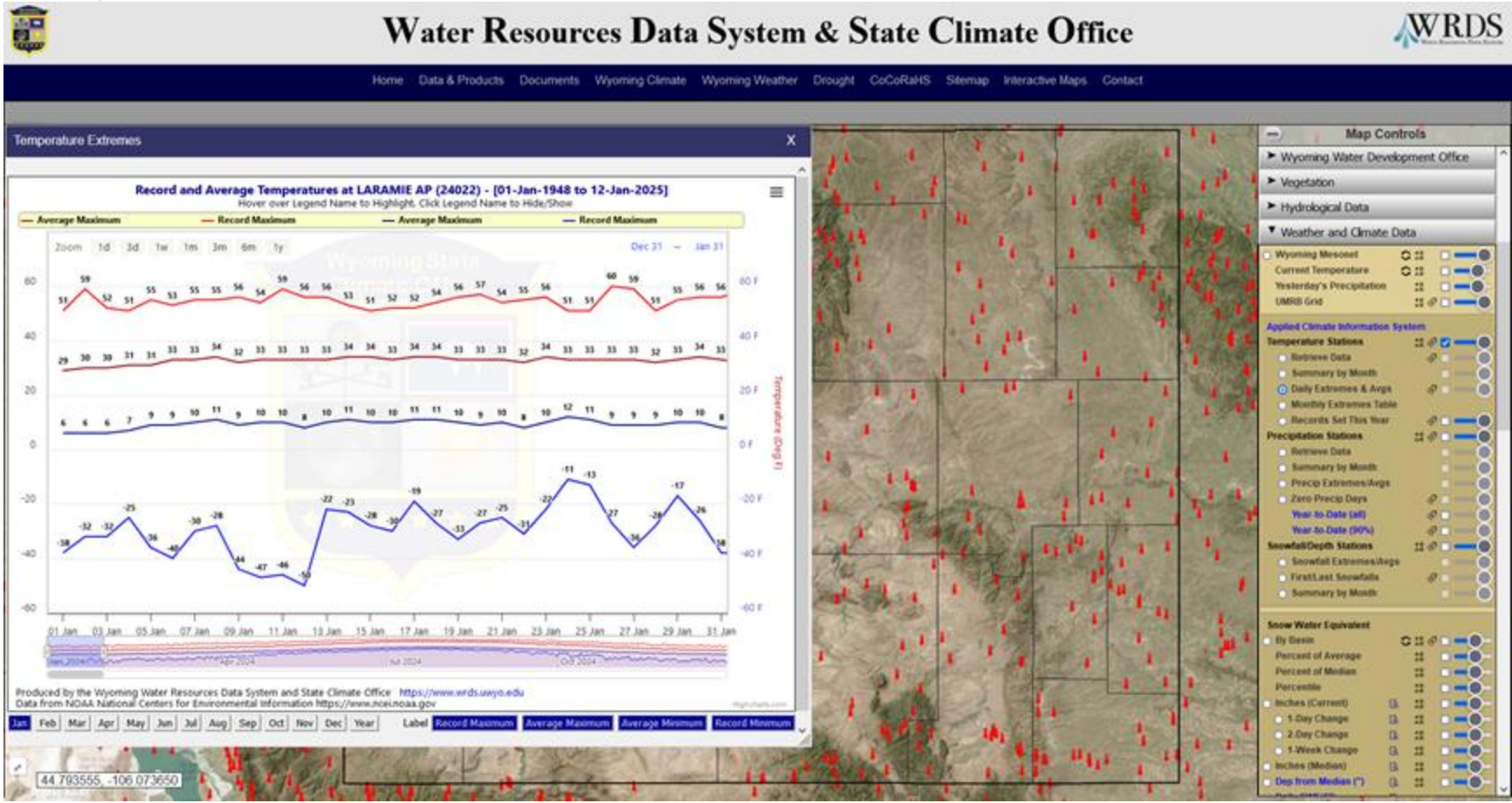




14- Day *Departure from* Normal Average Maximum Temperature

- Almost entire state below average.
- Eastern tier more than 10F below
- Departure lessening the further west one goes

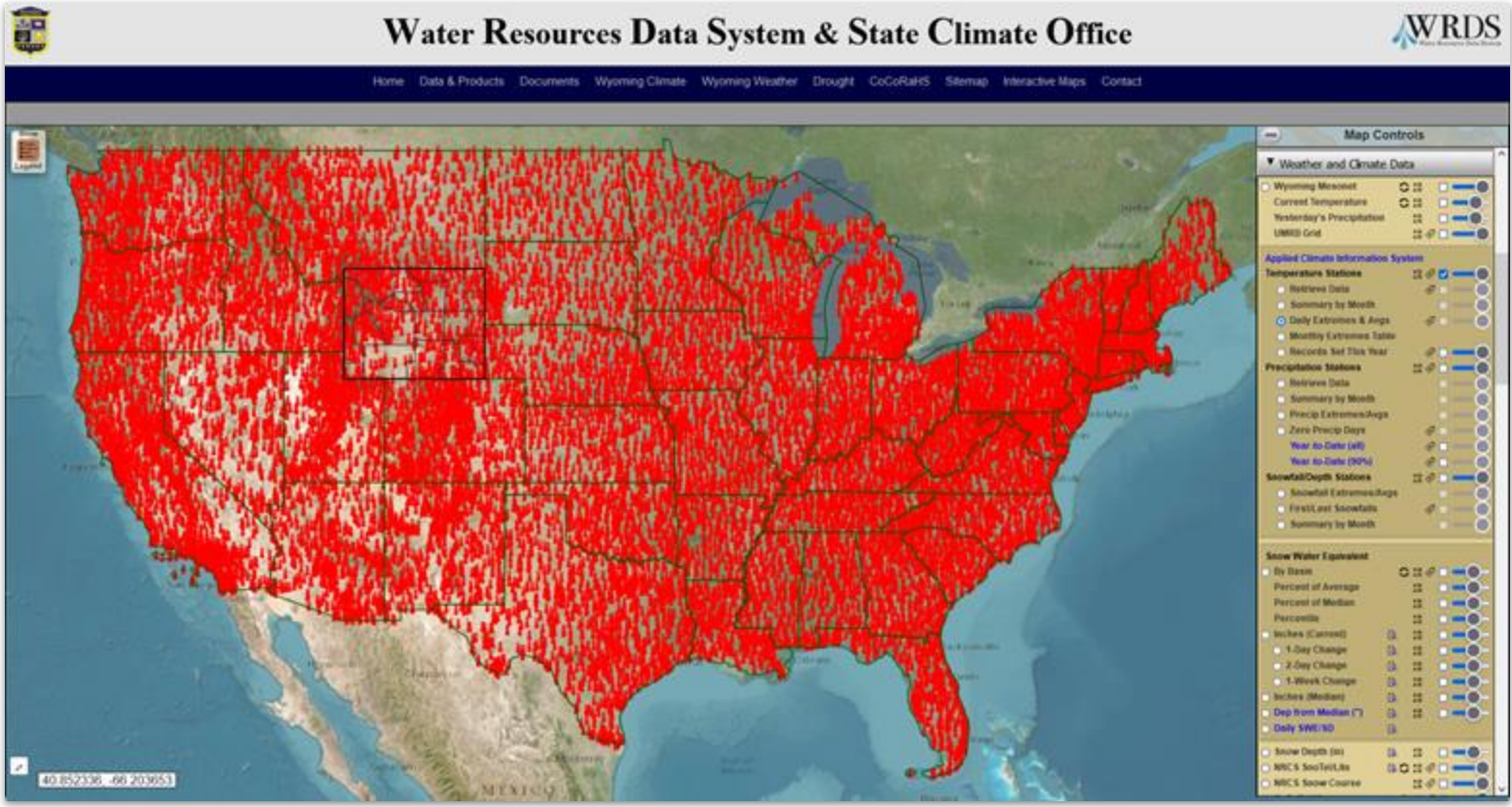
Temperature Means and Extremes



https://www.wrds.uwyo.edu/wace/wacehome.html

Temperature Means and Extremes



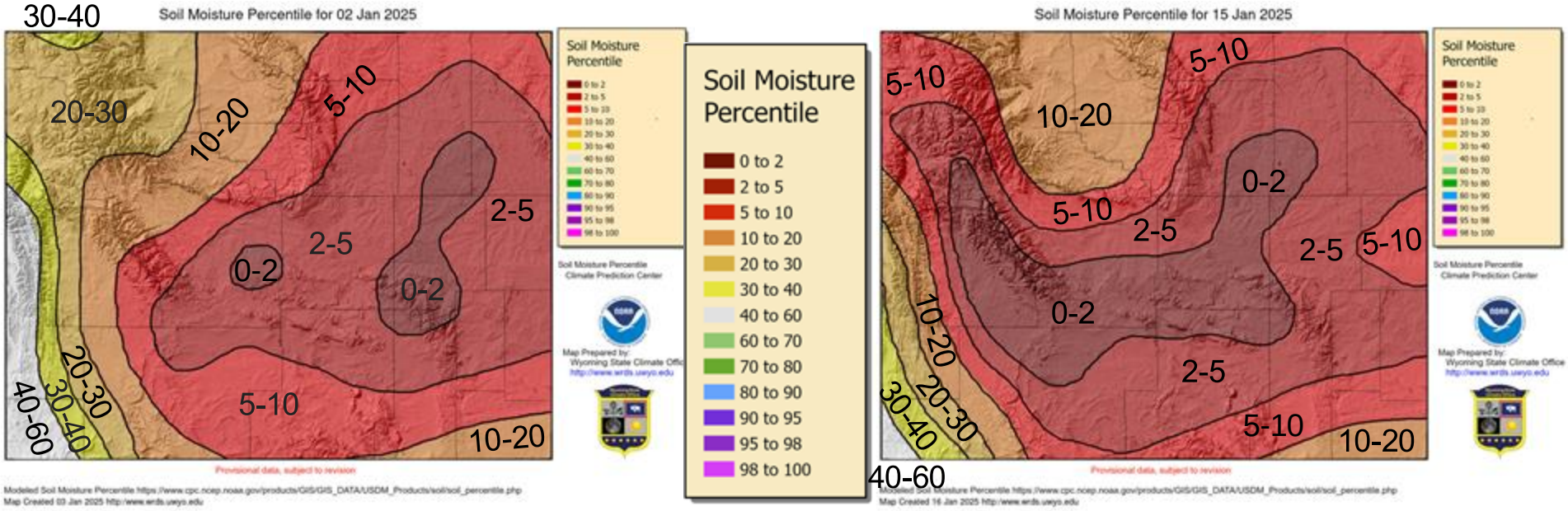


https://www.wrds.uwyo.edu/wace/wacehome.html

Soil Moisture Percentile

~Two Weeks Ago

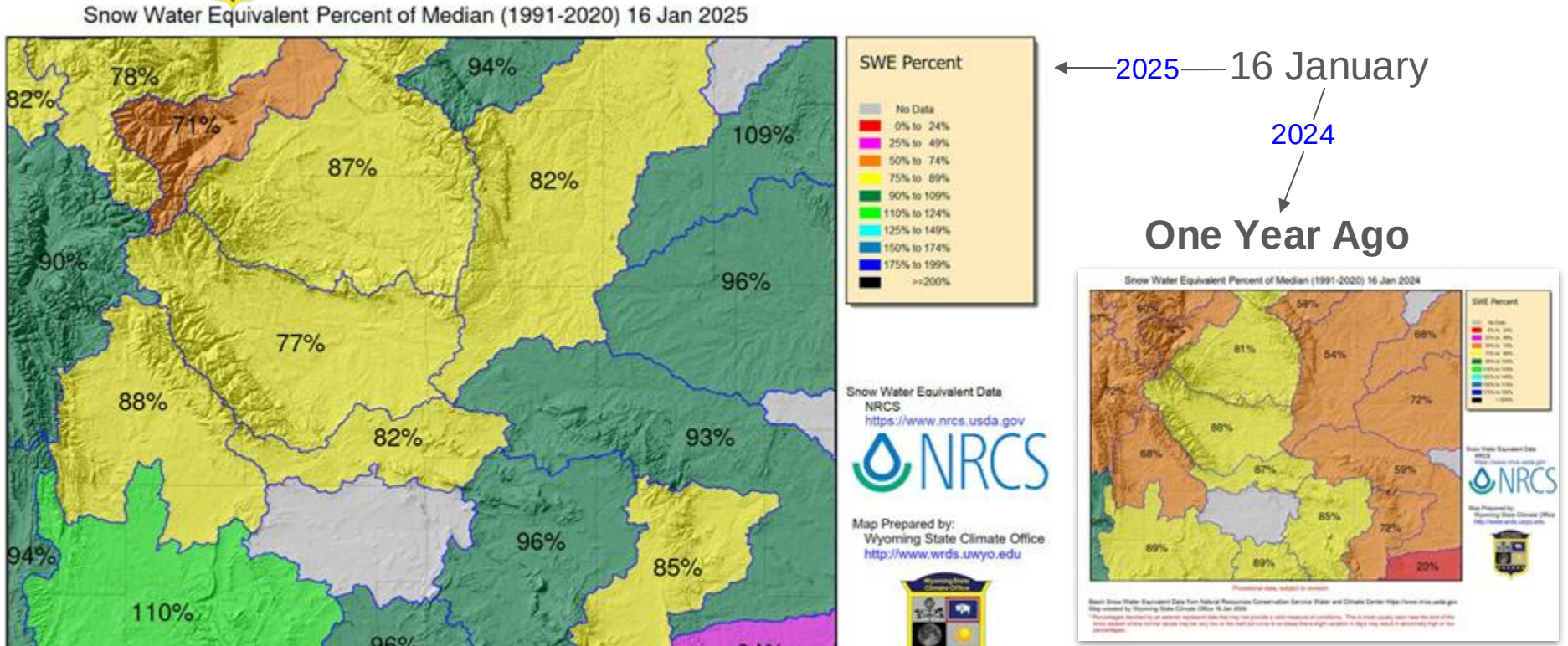
15 Jan 2025



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

Declines everywhere except for the areas already at the lowest percentiles.

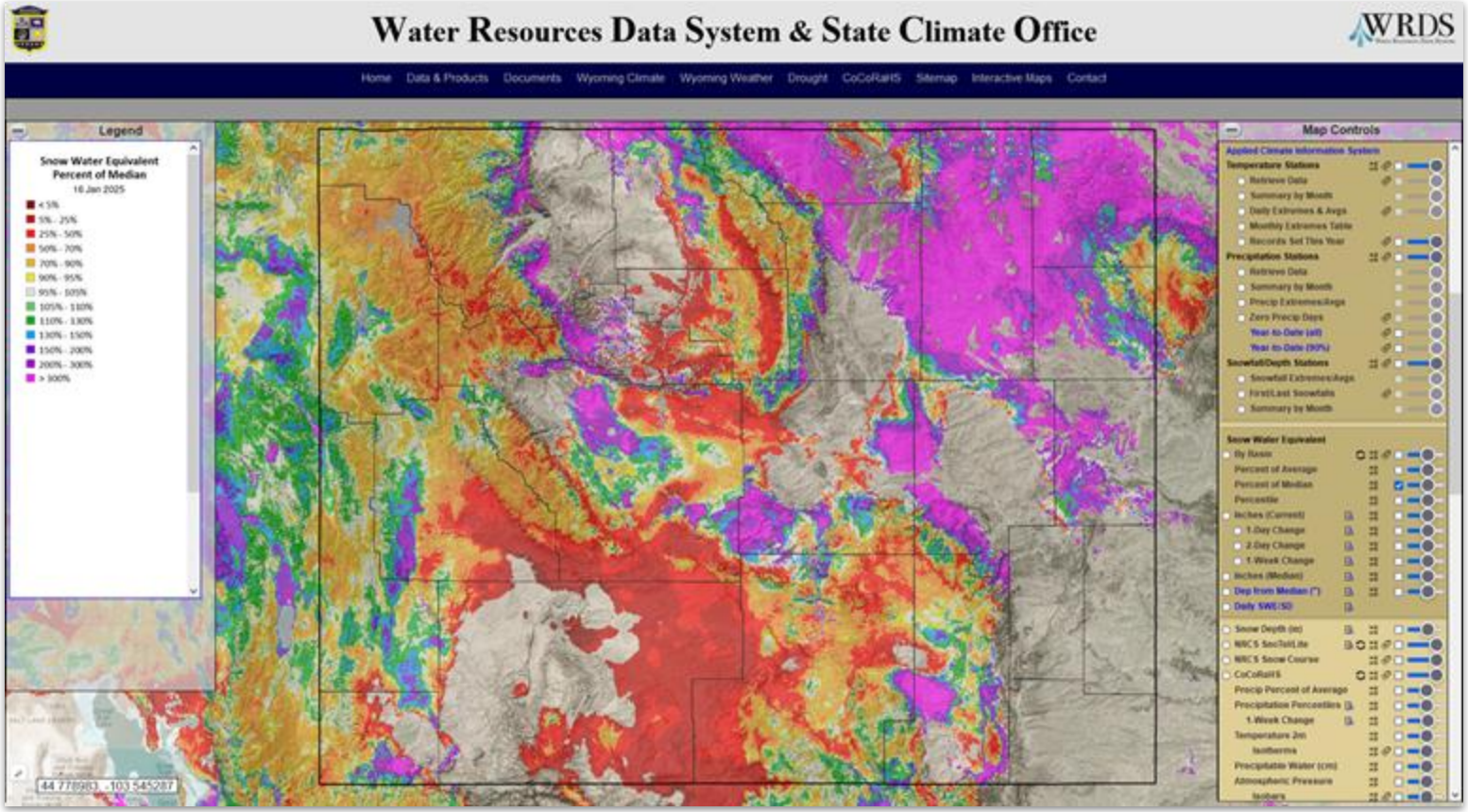
Basin Snow Water Equivalent - Percent of Median



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

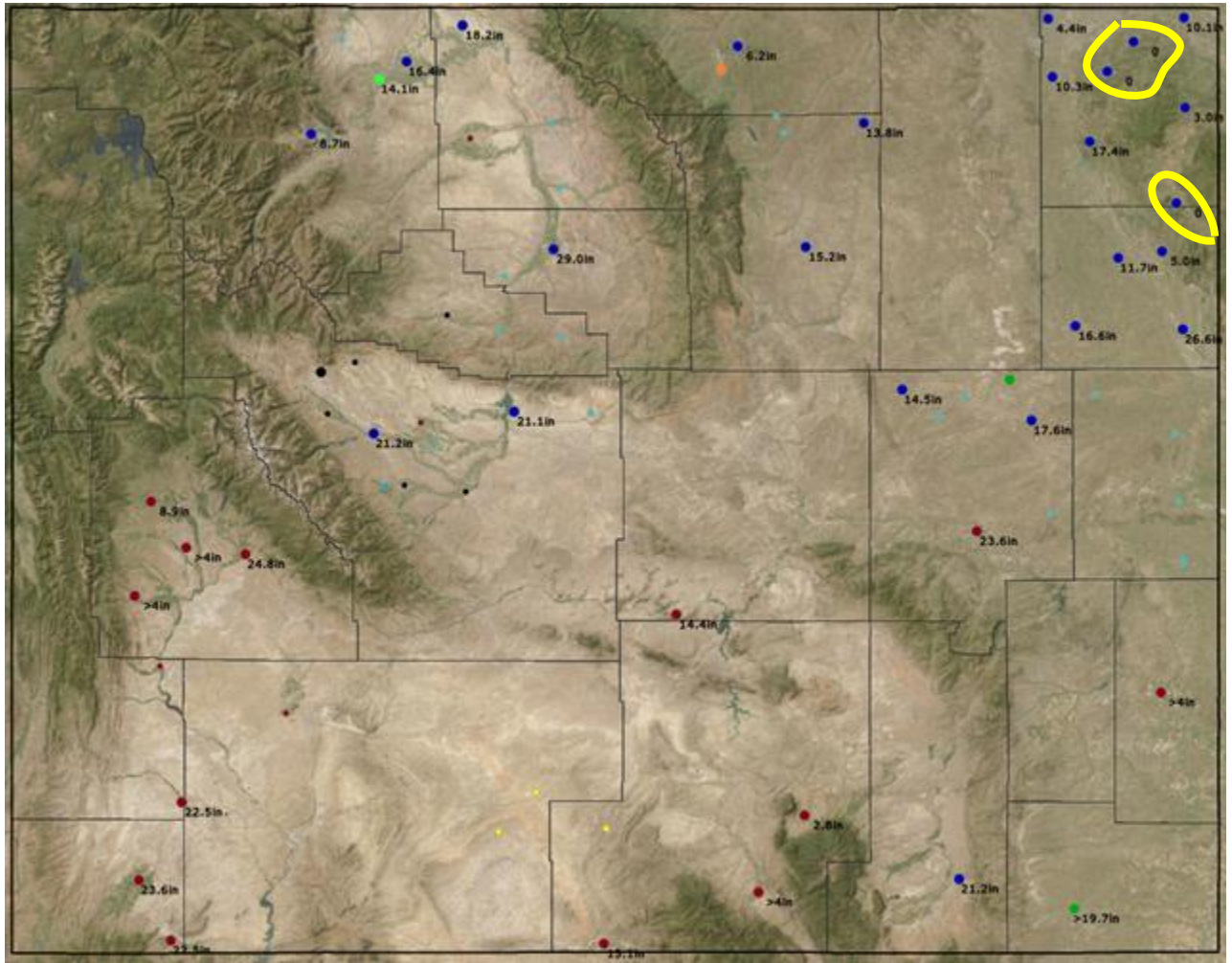
Snow Water Equivalent - Departure from Median

16 January 2025



https://www.wrds.uwyo.edu/wace/wacehome.html

Frost Depths

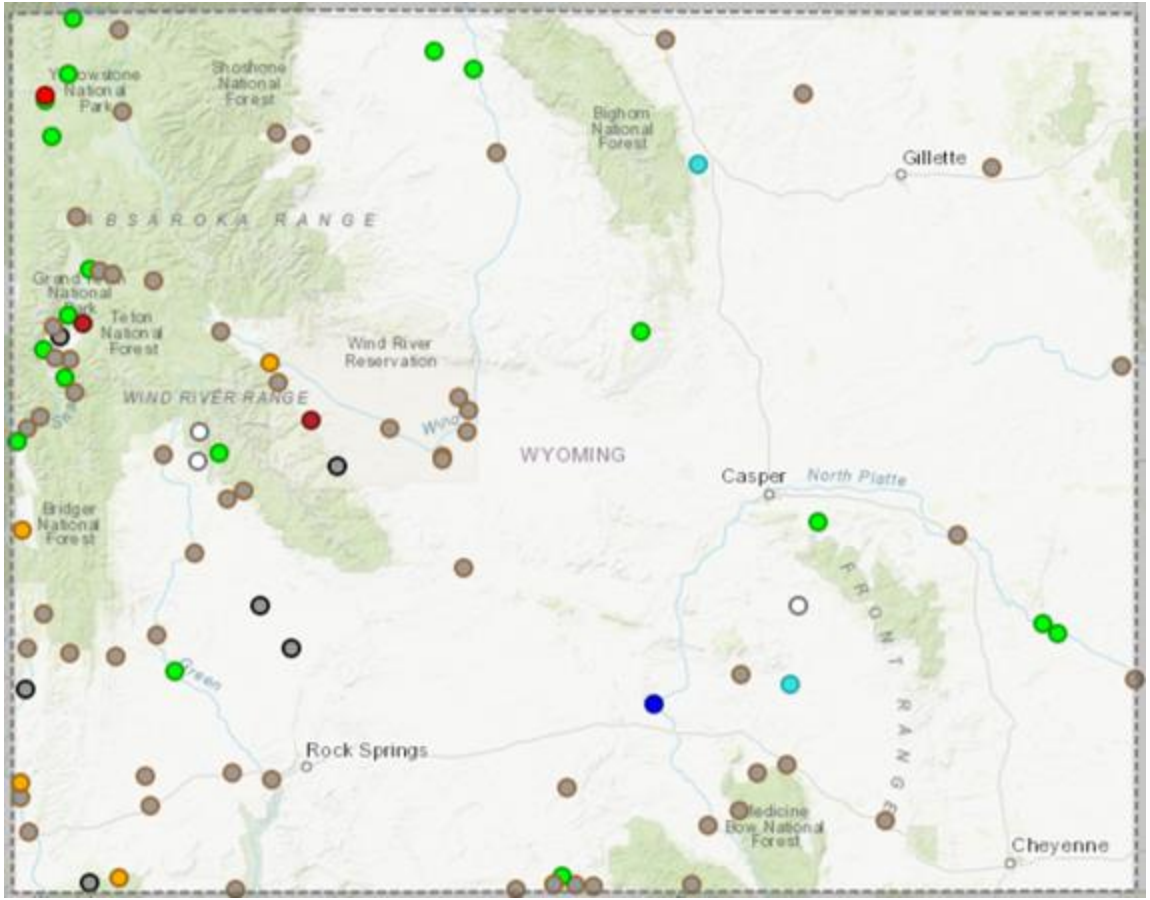


https://www.wrds.uwyo.edu/wace/wacehome.html

Current Streamflow Conditions

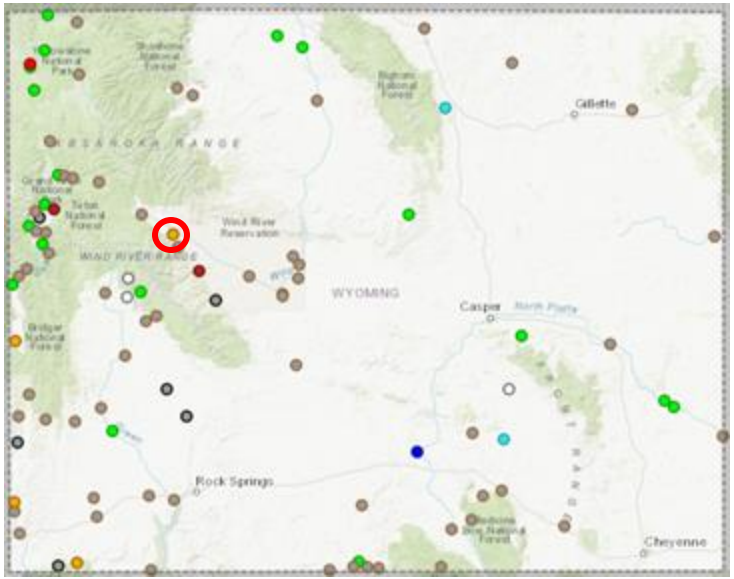
Streamflow Status





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

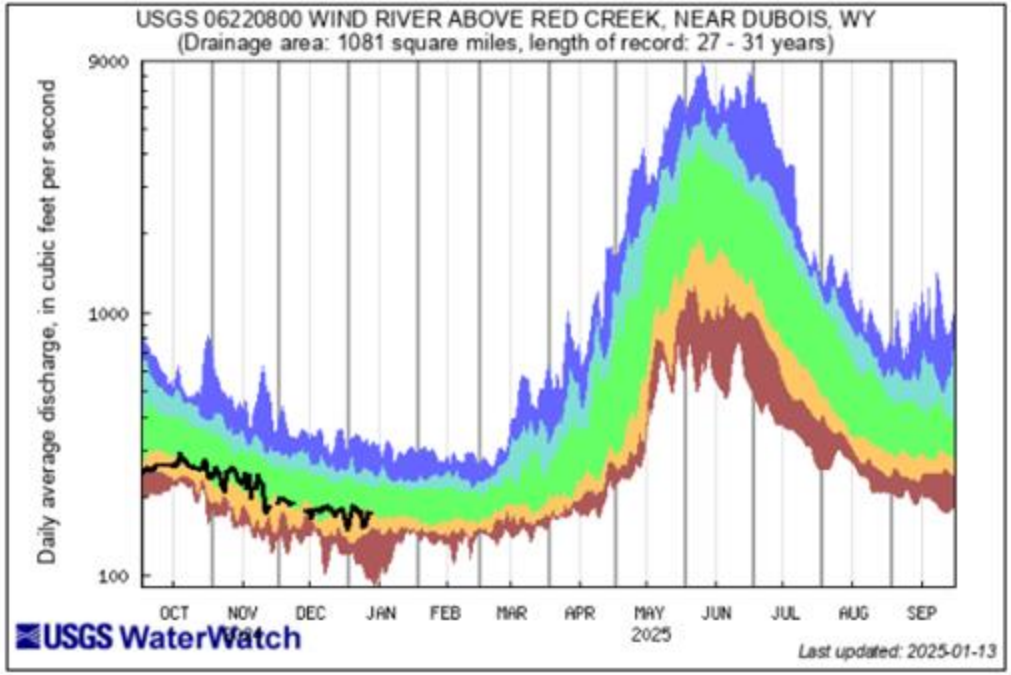
Select WY Streamflows



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

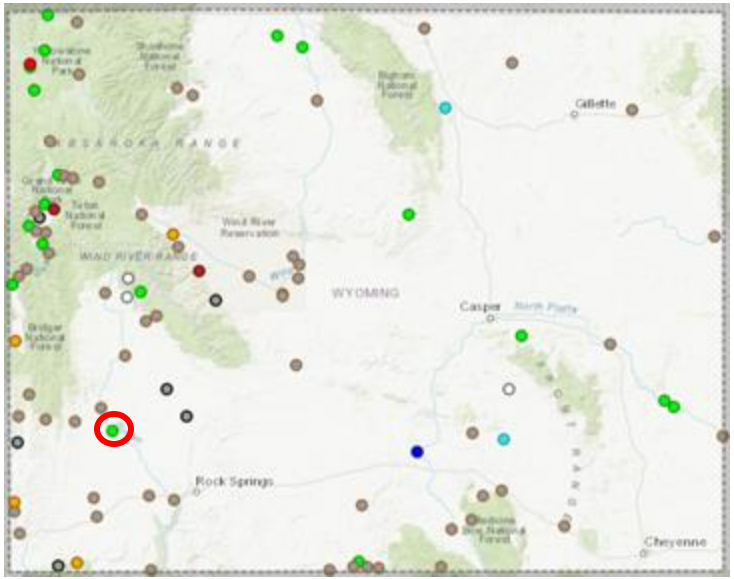
https://waterwatch.usgs.gov/

Wind River above Red Cr, nr Dubois, WY





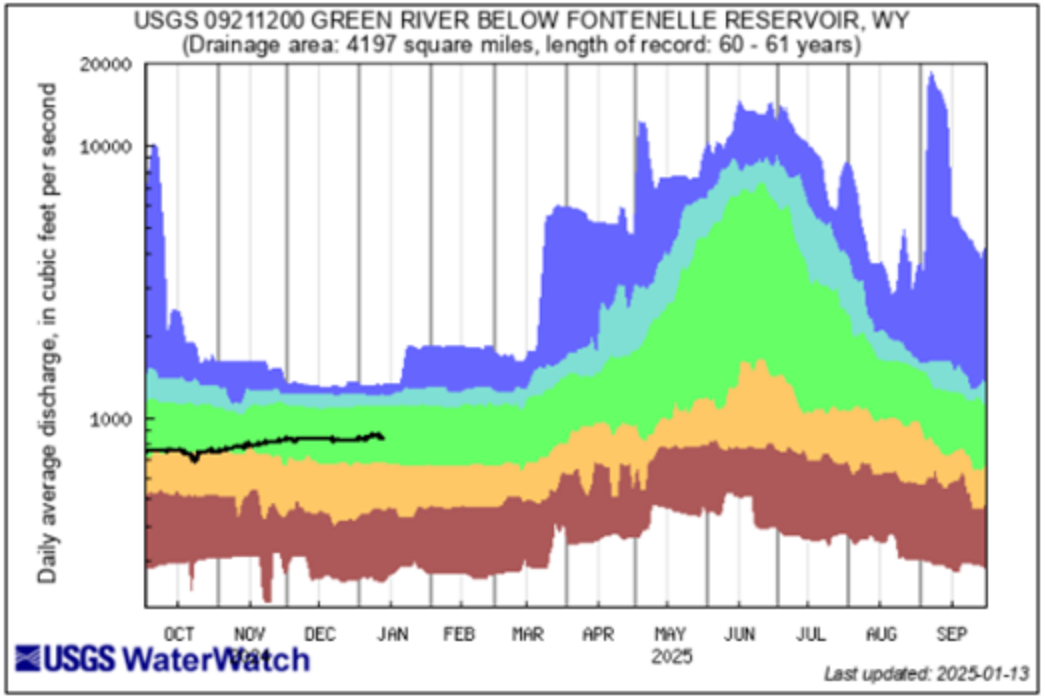
Select WY Streamflows

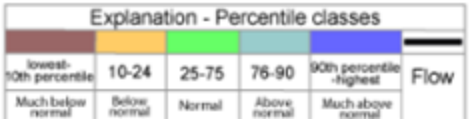


https://dashboard.waterdata.usgs.gov/

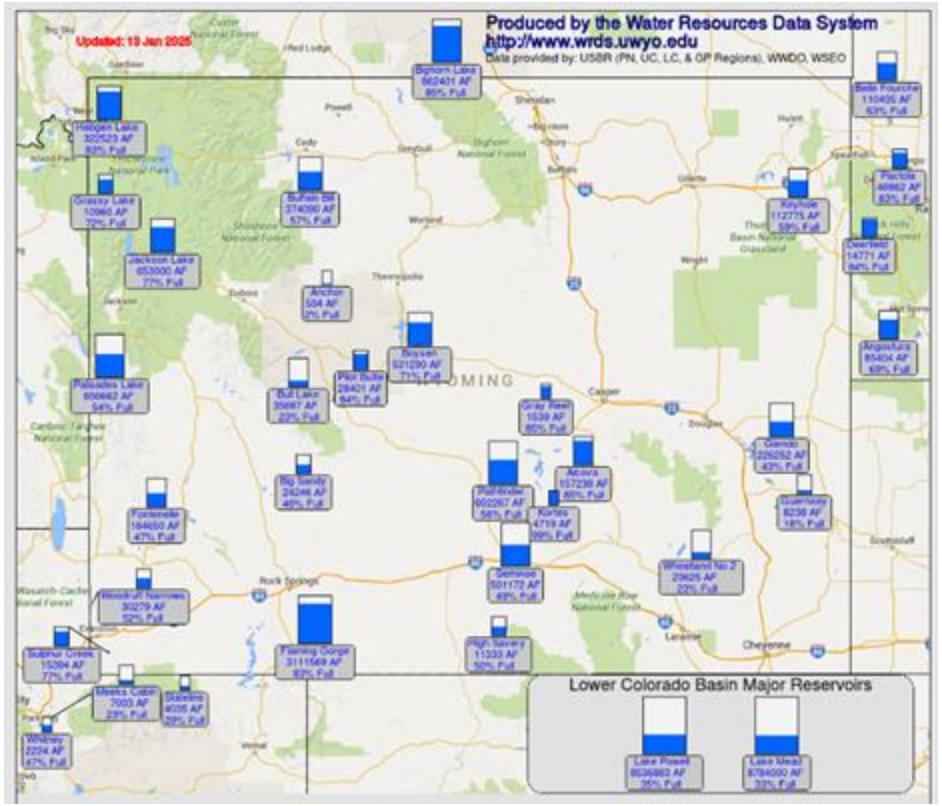
https://waterwatch.usgs.gov/

Green River bl Fontenelle Reservoir, WY





WY Reservoirs



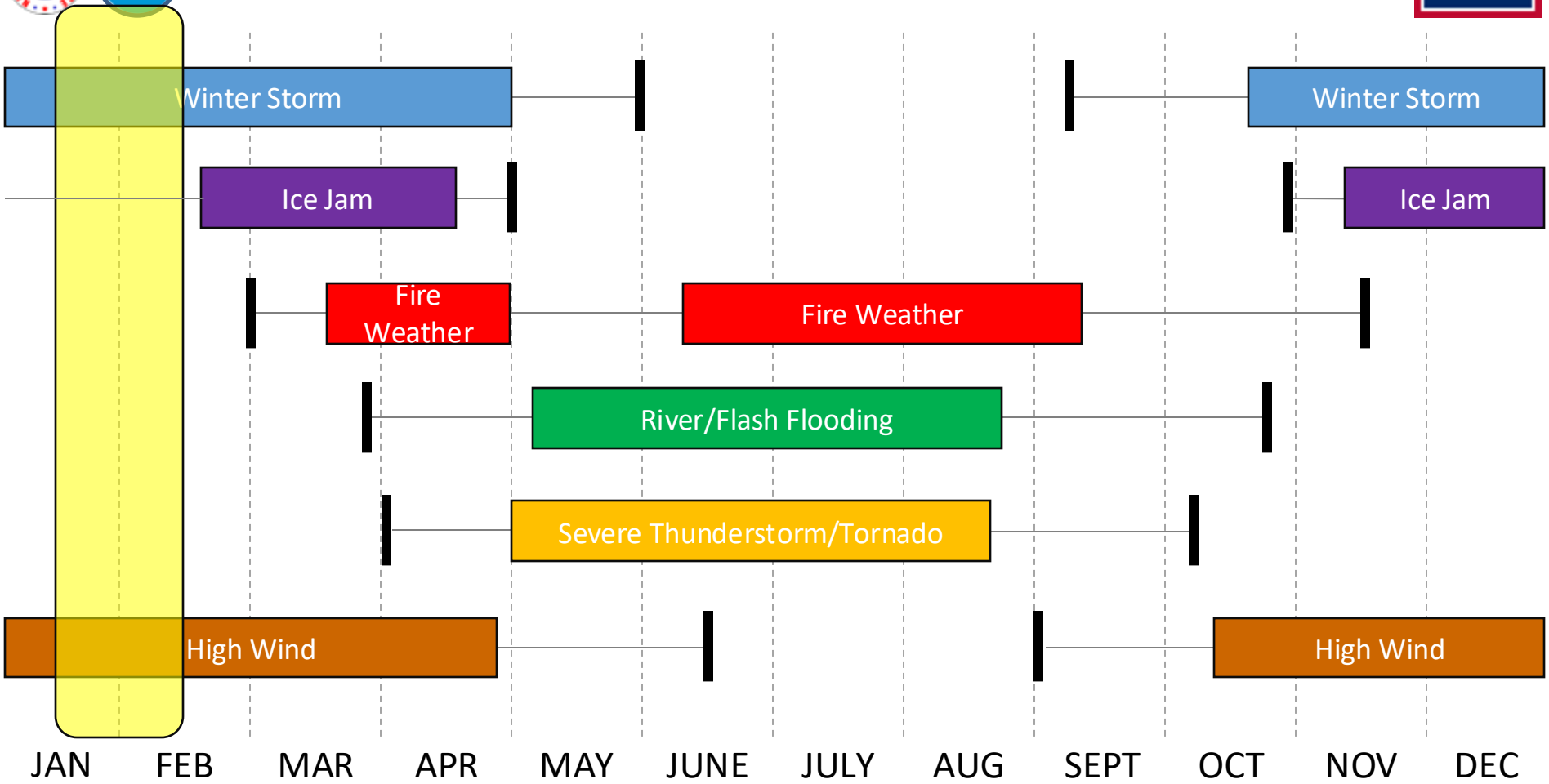
http://www.wrds.uwyo.edu/surface_water/teacups.html

Reservoir Storage

- Minor changes in storage
- Most major reservoirs are ~ 50-80% full.

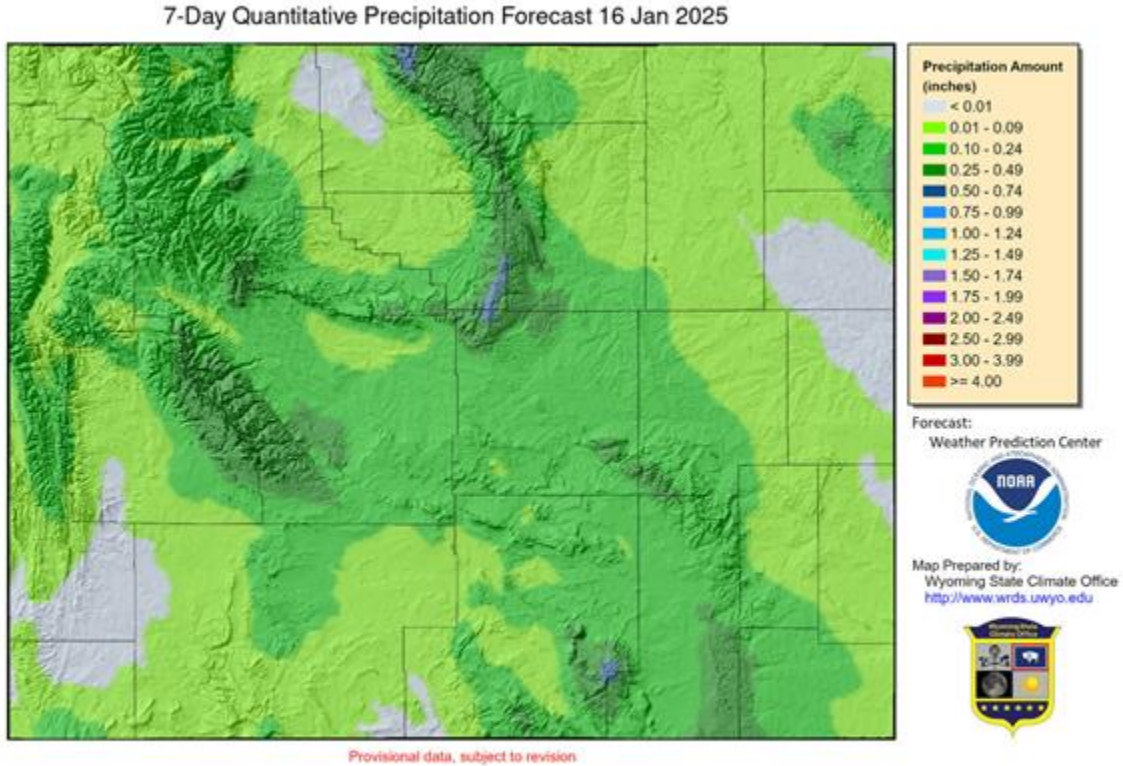
Weather Info & Forecasts

NWS Wyoming Typical Hazard Calendar



7-Day Total Precipitation Forecast

(Jan 16 - Jan 21)



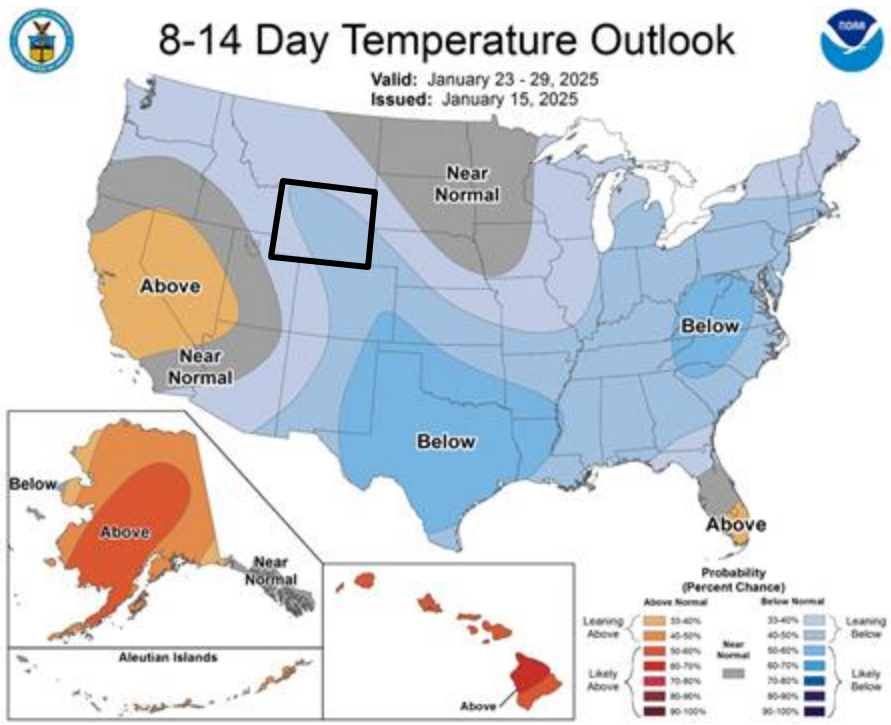
- Cold front on Friday and early Saturday will bring snow across the state.
- Mostly dry and frigidly cold starting Saturday.

https://bit.ly/7_dayQPForecast

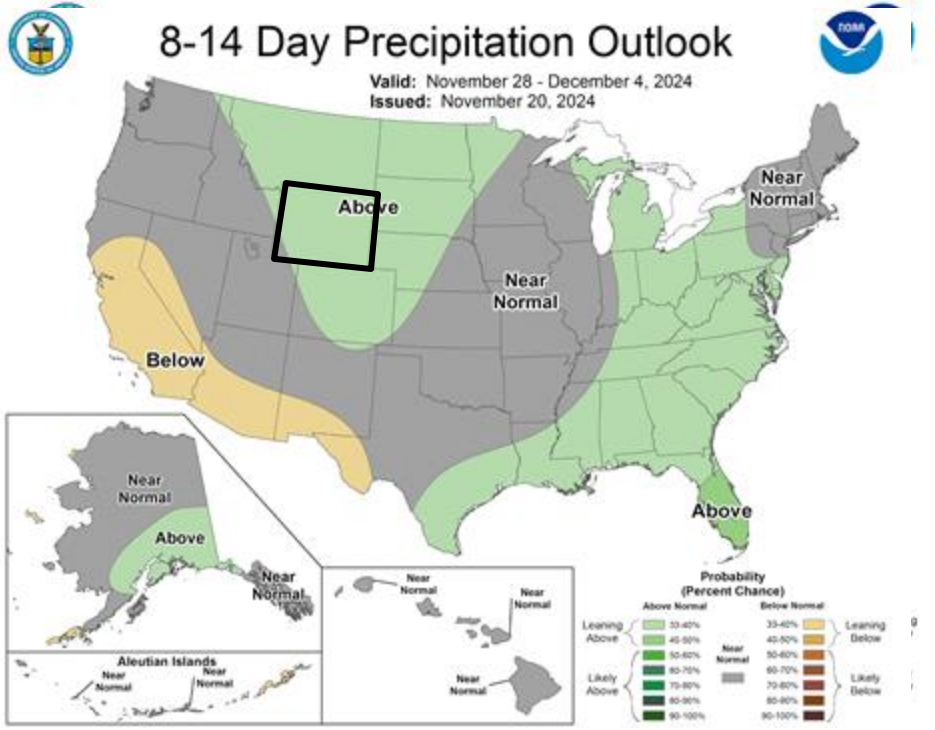
8-14 Day Outlooks

(Jan 23 - Jan 29)

https://bit.ly/CPC8_14Day



- Below normal temperatures indicated with a 33 to 50 percent chance.
- Interactive Version: cpc.ncep.noaa.gov/products/predictions/814day/interactive/index.php

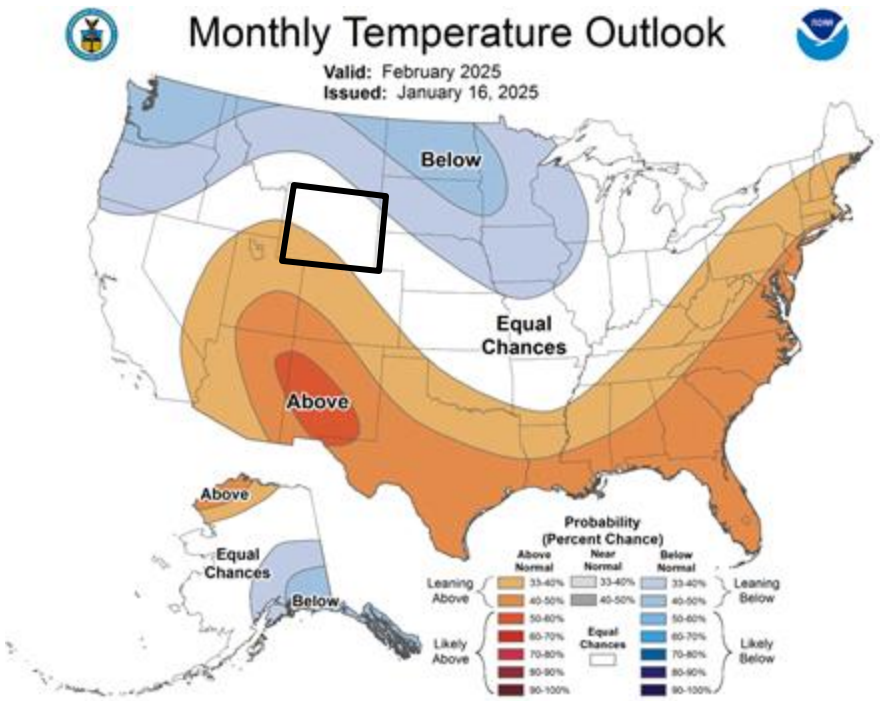


- Majority of the state is showing 33 to 40 % chance o wetter than average
- Southwest sliver shows near normal chances

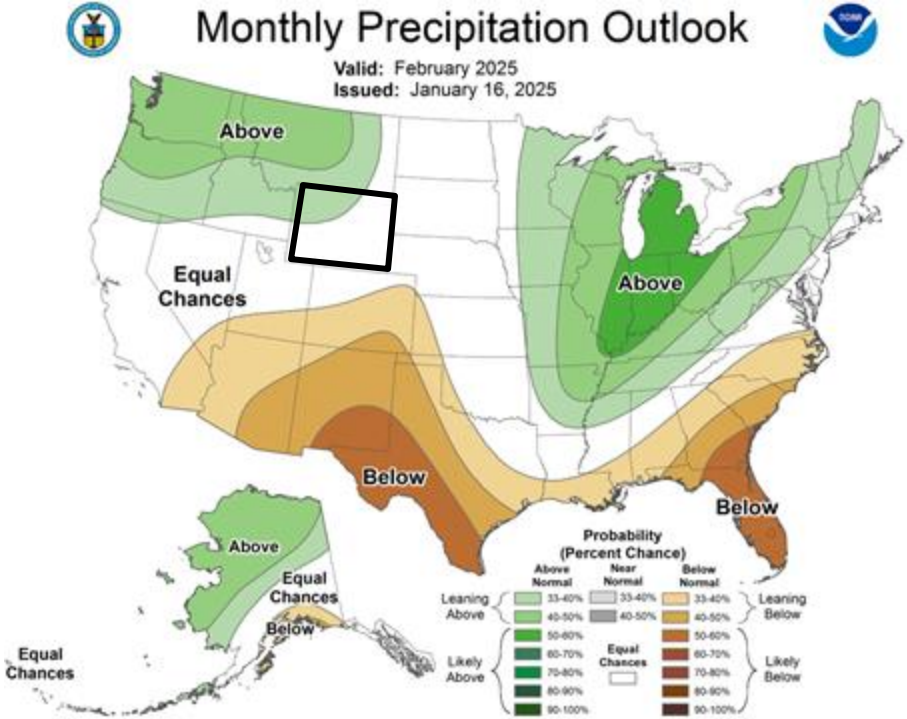
1-Month Outlooks

(February)

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



- Leaning above normal for small portion of the southwest. Otherwise equal chances indicated, so climate is the best forecast.

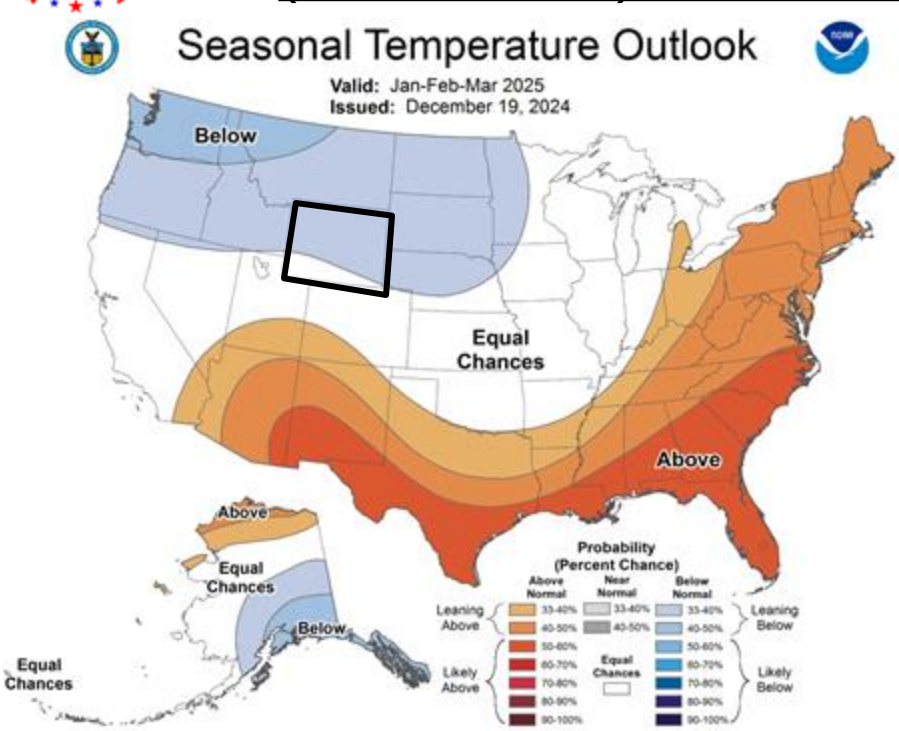


- Leaning toward above normal precipitation for the northwest portion state, 33-40%. Otherwise equal chances indicated, so climate is the best forecast.

Winter Outlook

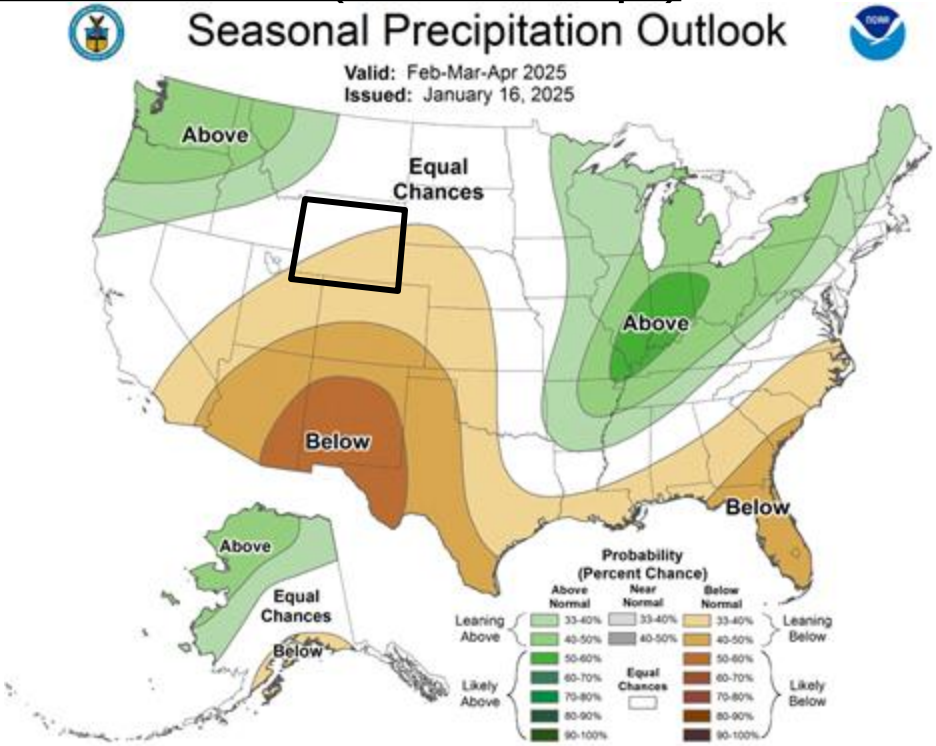
https://bit.ly/CPC_Seasonal

(Jan-Feb-Mar)



- Leaning to below normal temperatures, with less than 40% chance

(Feb-Mar-Apr)



- Leaning toward below normal in the southeast.
- Elsewhere best forecast is for climate normals.

Highlight of the Month:

USDA NRCS Interactive Mapper

Station Information

Snow Course
Manual (Measured Monthly)
Established ~1920-1970:

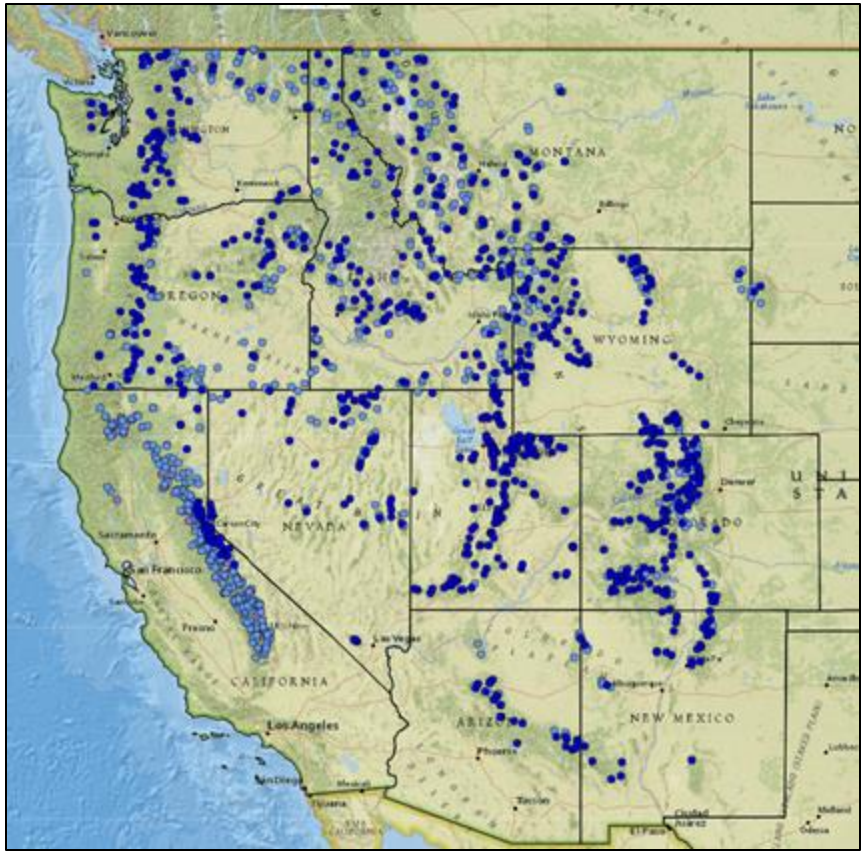


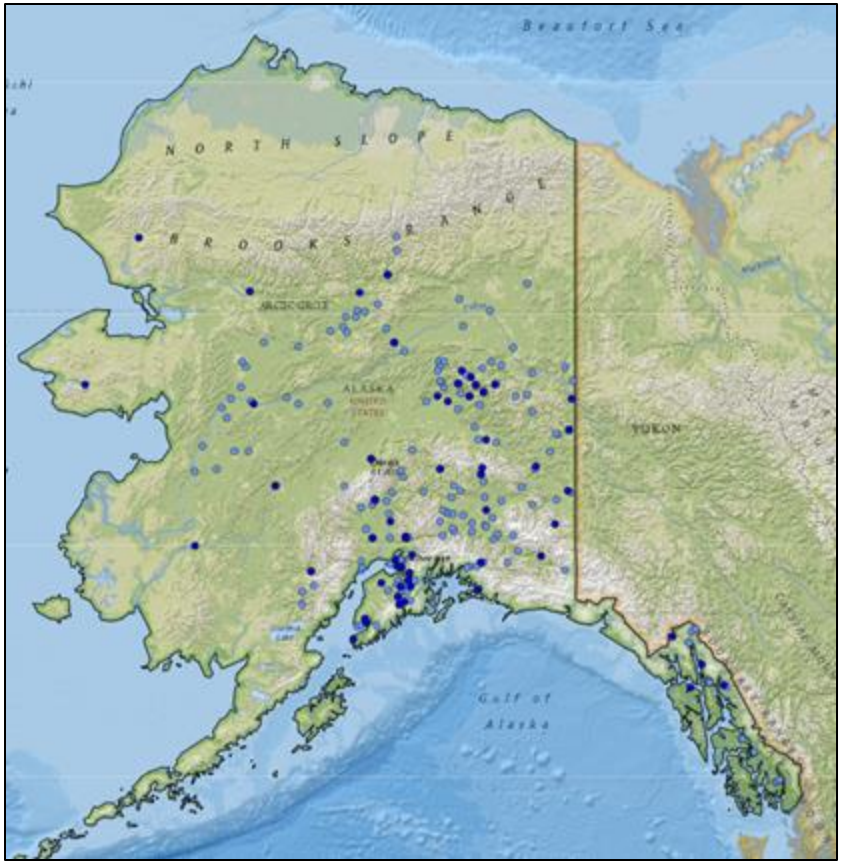
SNOwpack TELemetry (SNOTEL)
Automated (Measured Hourly)
Established ~1975-present



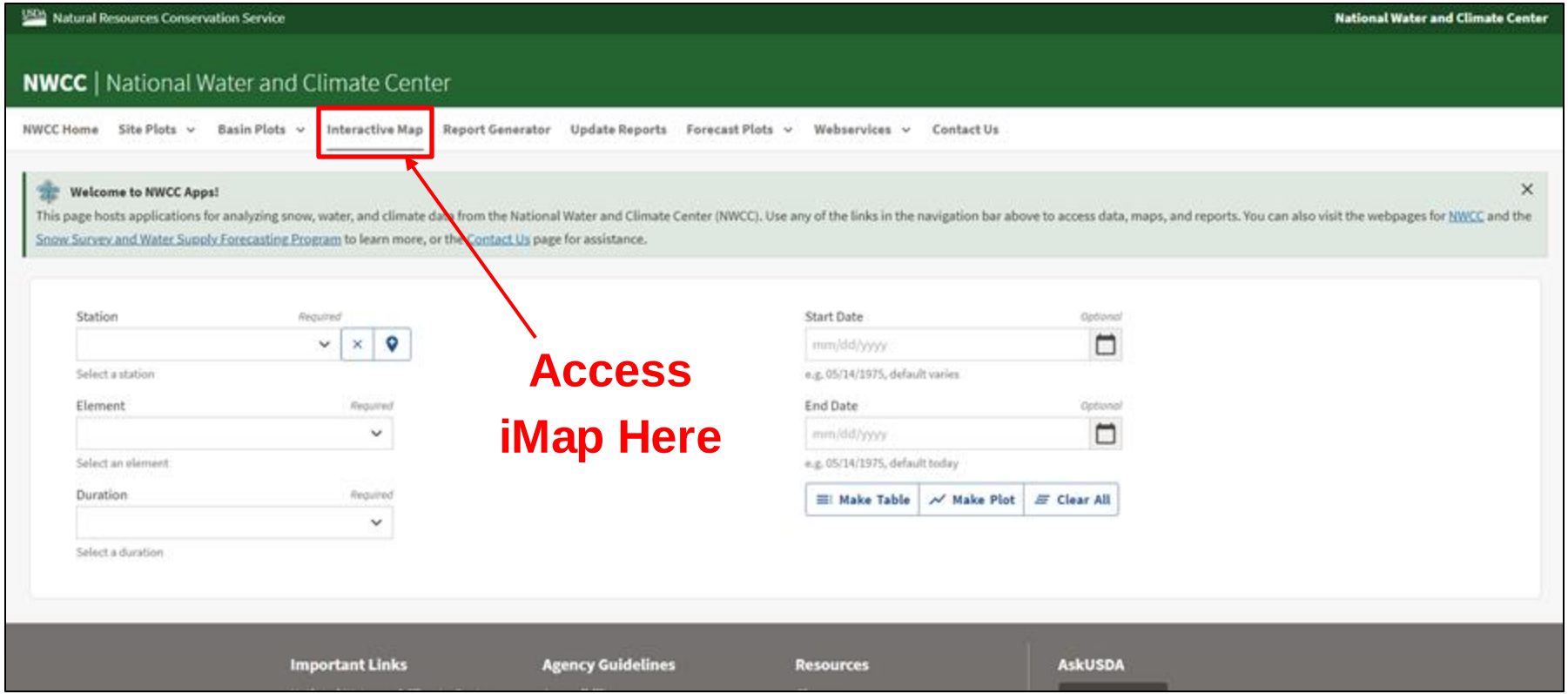
878 SNOTEL Stations

1001 Snow Courses (Includes CA DWR)





National Water Climate Center Applications (NWCC Apps)



https://nwcc-apps.sc.egov.usda.gov/

Interactive Map - Overview

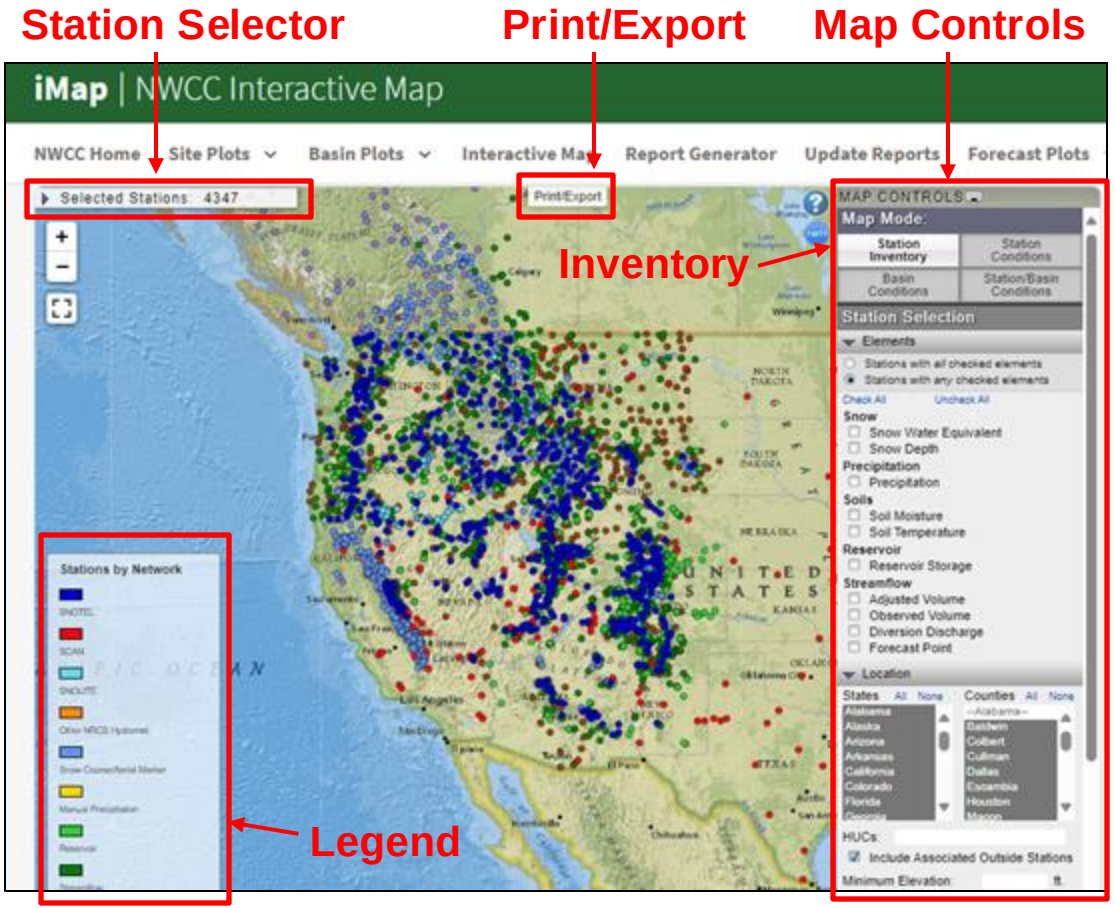
Elements:

- Snow
- Precipitation
- Soils
- Reservoir
- Streamflow

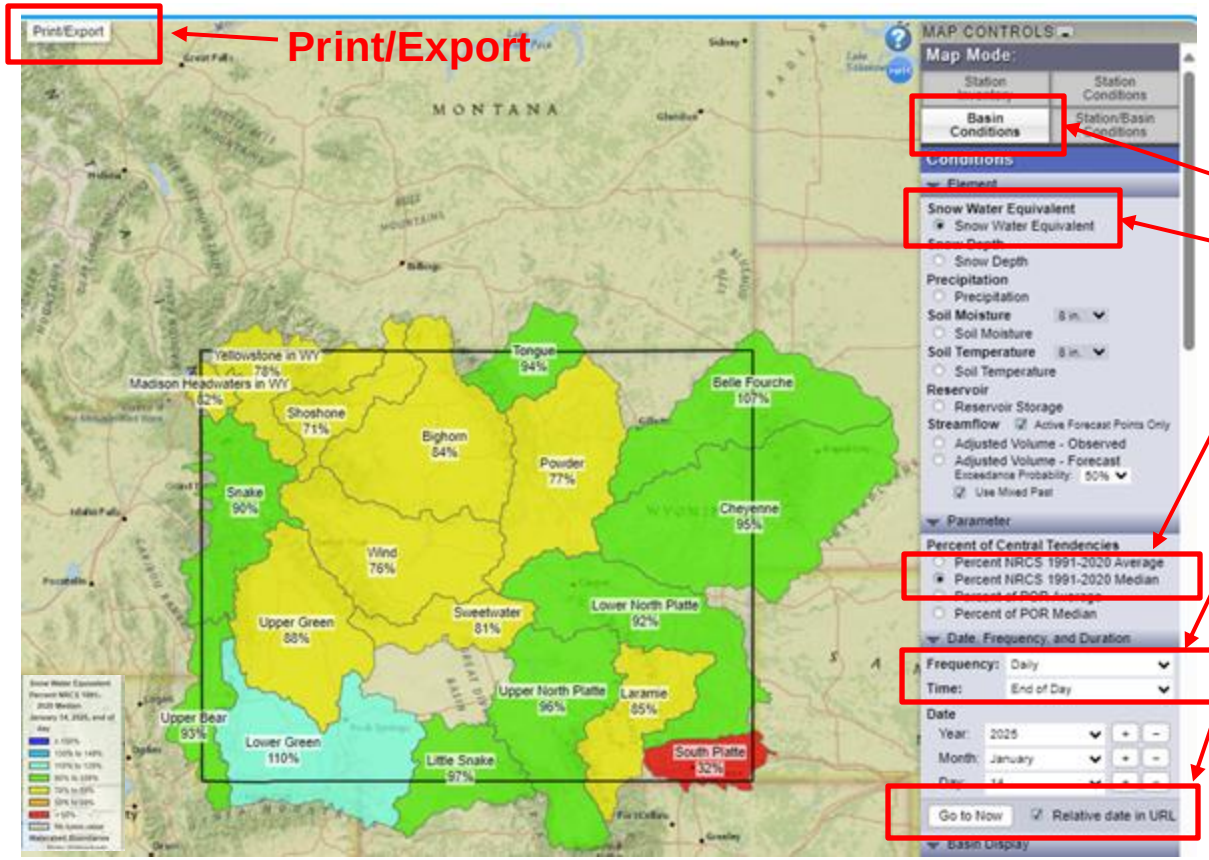
Data Sources: NRCS, USGS, ACIS, DNRC, BOR, Army Corps, Private, CA DWR, Canadian Snow

Date/Time: Only monthly and daily data are available on the iMap; however, there are links to hourly SNOTEL data in the map.

https://nwcc-apps.sc.egov.usda.gov/imap/



Example – Snow Water Equivalent, % Median



Steps

1. Basin Conditions
2. Snow Water Equivalent
3. Percent of NRCS 1991-2020 Median
4. Frequency - Daily
5. Go to Now
6. Basin Type - Wyoming
7. Bookmark Page
8. Print/Export if Needed

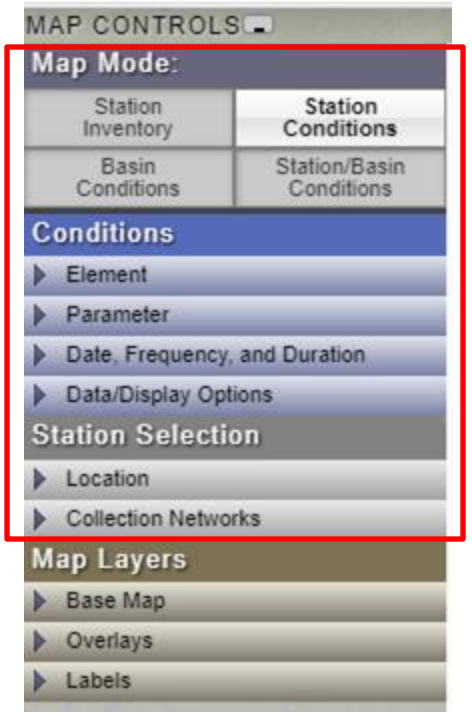
Note: if "Relative date in URL" is checked the bookmark will return you to current date

NWCC iMap

Map Controls – Overview

Map Control Sections

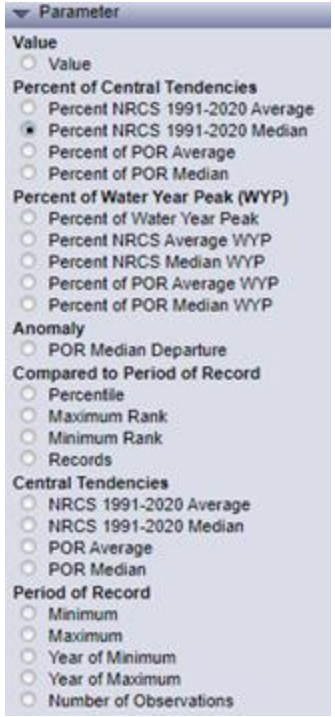
- Map Mode
- Conditions
- Station Selection
- Map Layers

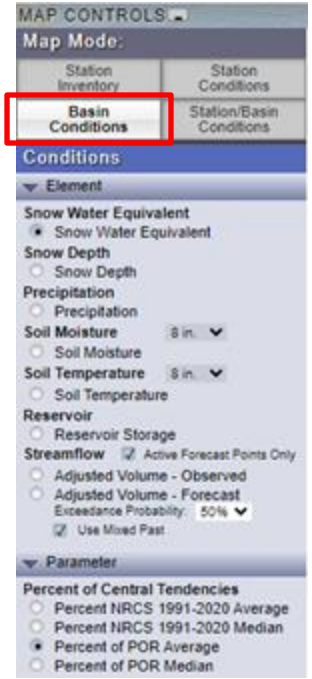


The Map Mode, Conditions, and Station Selection sections have dynamic controls. Options will vary depending on selections in other tabs.

Map Controls – Map Mode





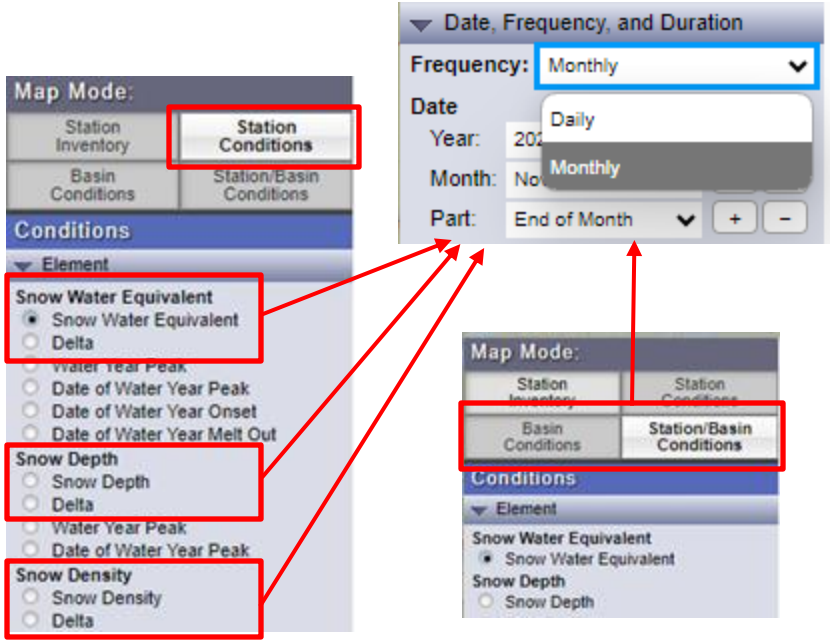




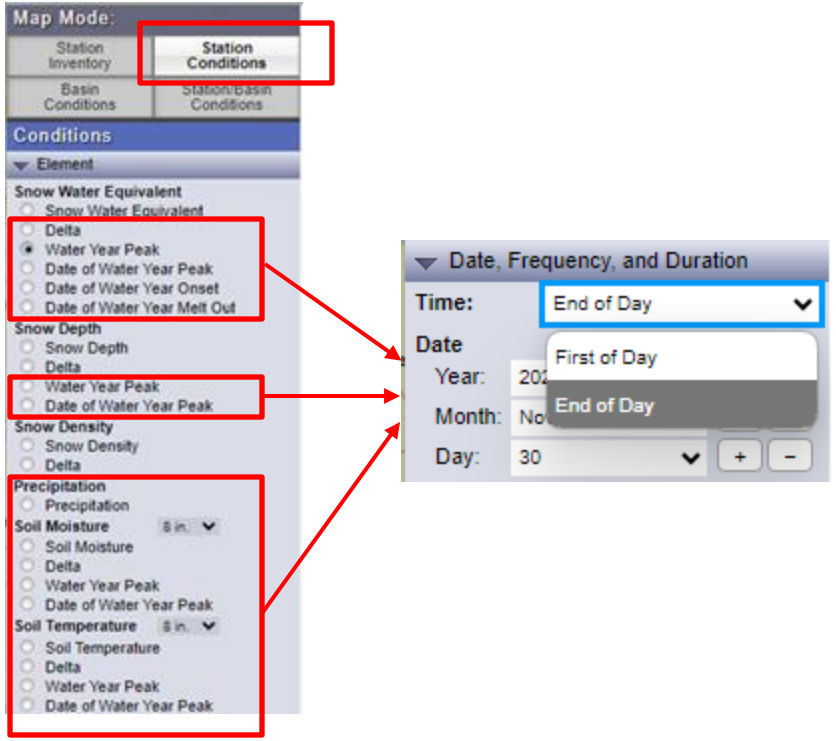
Take Away: Options change based off selections.
Daily station data has the most options

Map Controls – Data, Frequency, and Duration

Snow Course

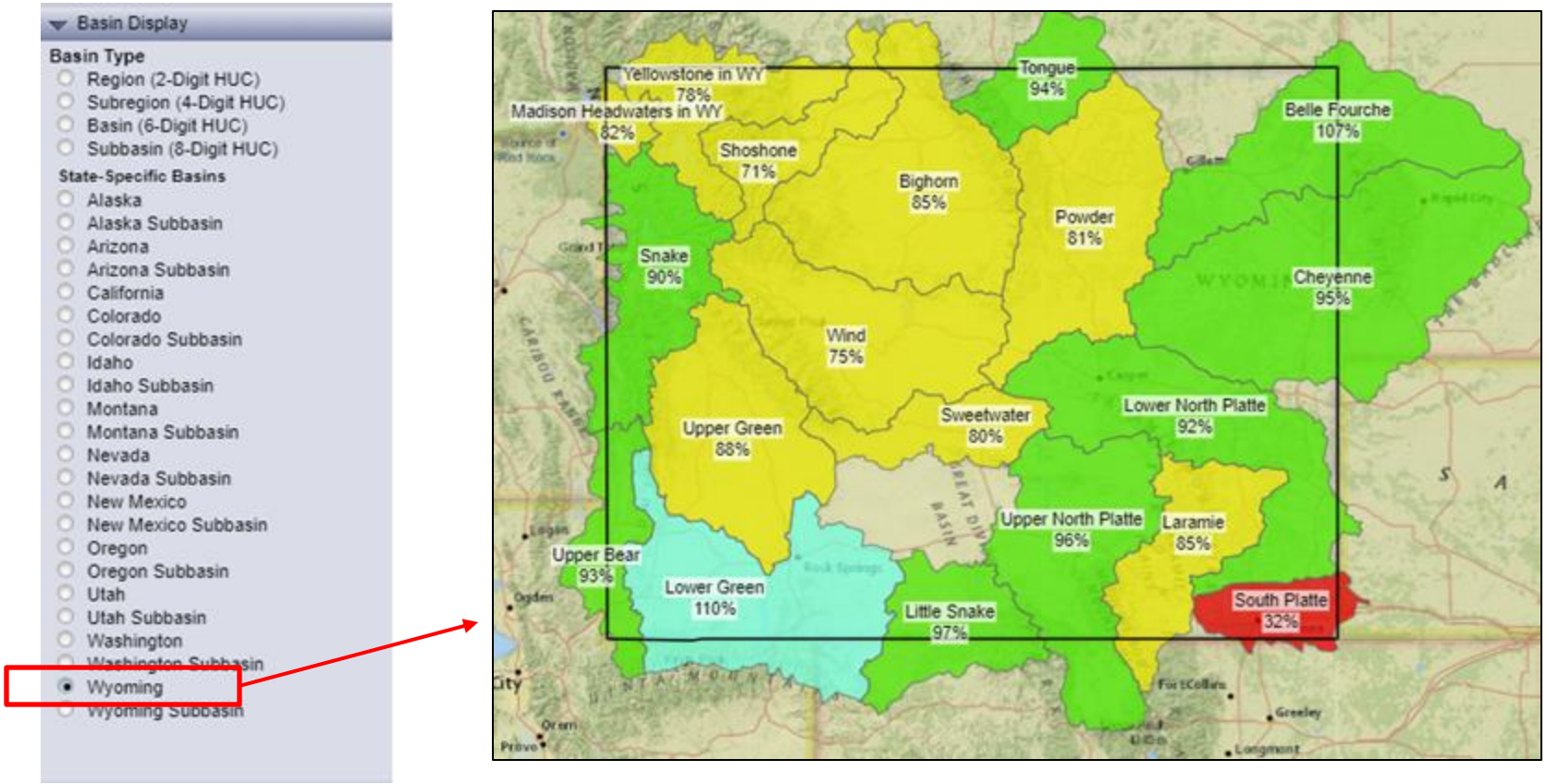


SNOTEL



Take Away: Snow Course data is limited to monthly. SNOTEL can be viewed as monthly or daily.

Map Controls – Basin Display



Map Controls – Other Options

Conditions



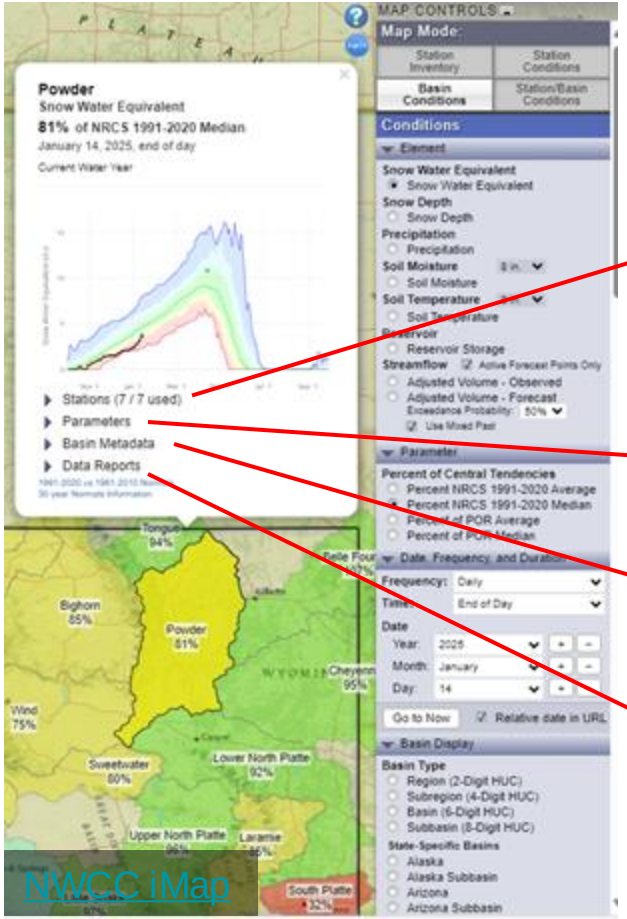
Station Selection



Map Layers



Pop Up Windows - Basins



Stations (7 / 7 used)

Station	Network	Elev. (ft.)	Obs	NRCS Median	% NRCS Median
Bear Trap Meadow	SNOTEL	8,200	3.4	3.4	100%
Cloud Peak Reservoir	SNOTEL	9,830	5.7	7.2	79%
Grave Springs	SNOTEL	8,560	4.4	4	110%
Hansen Sawmill	SNOTEL	8,360	2.2	3.7	59%
Middle Powder	SNOTEL	7,760	5.4	5	108%
Powder River Pass	SNOTEL	9,480	3.8	6.2	61%
Soldier Park	SNOTEL	8,680	1.7	3.2	53%
Basin Index					81%

Parameters

Snow Water Equivalent on January 14, 2025, end of day	
% of POR Median:	87%
% of NRCS 1991-2020 Median:	81%
% of POR Average:	86%
% of NRCS 1991-2020 Average:	78%

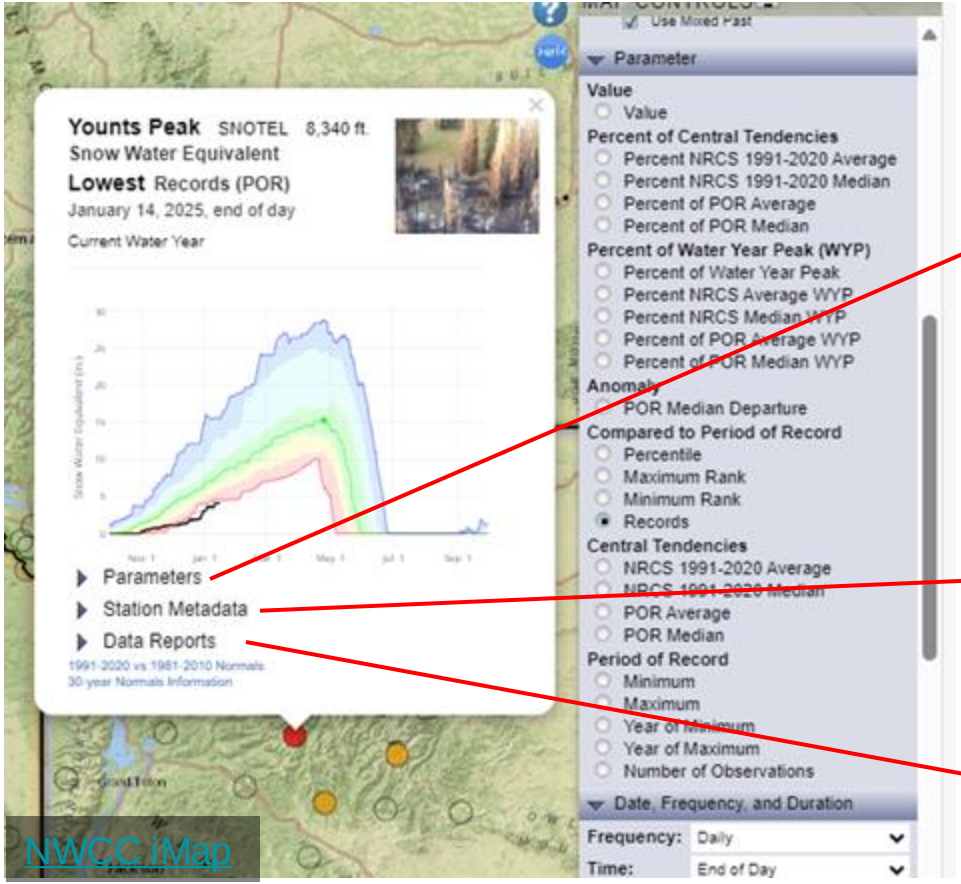
Basin Metadata

HUC: 10090201, 10090202, 10090205, 10090206, 10090203, 10090204
States: WY
Area: 7,622 square miles

Data Reports

View Metadata Report
Export Site Data as CSV
Export Basin Data as CSV

Pop Up Windows - Stations



Parameters

Snow Water Equivalent (inches) on January 14, 2025, end of day			
Value:	4.1	Anomaly (POR):	-4.1
POR Median:	8.2	NRCS 1991-2020 Median:	7.9
% of POR Median:	50%	% of NRCS 1991-2020 Median:	52%
POR Average:	8.6	NRCS 1991-2020 Average:	8.6
% of POR Average:	48%	% of NRCS 1991-2020 Average:	48%
% of WY Peak:	100%		
% of Median WY Peak (POR):	26%	% of NRCS 1991-2020 Median WY Peak	26%
% of Average WY Peak (POR):	23%	% of NRCS 1991-2020 Average WY Peak	24%
Percentile (POR):	0	# of Observations (POR):	42
Maximum (POR) (year):	15.5 (1997)	Maximum Rank (POR):	42
Minimum (POR) (year):	4.1 (2025)	Minimum Rank (POR):	1

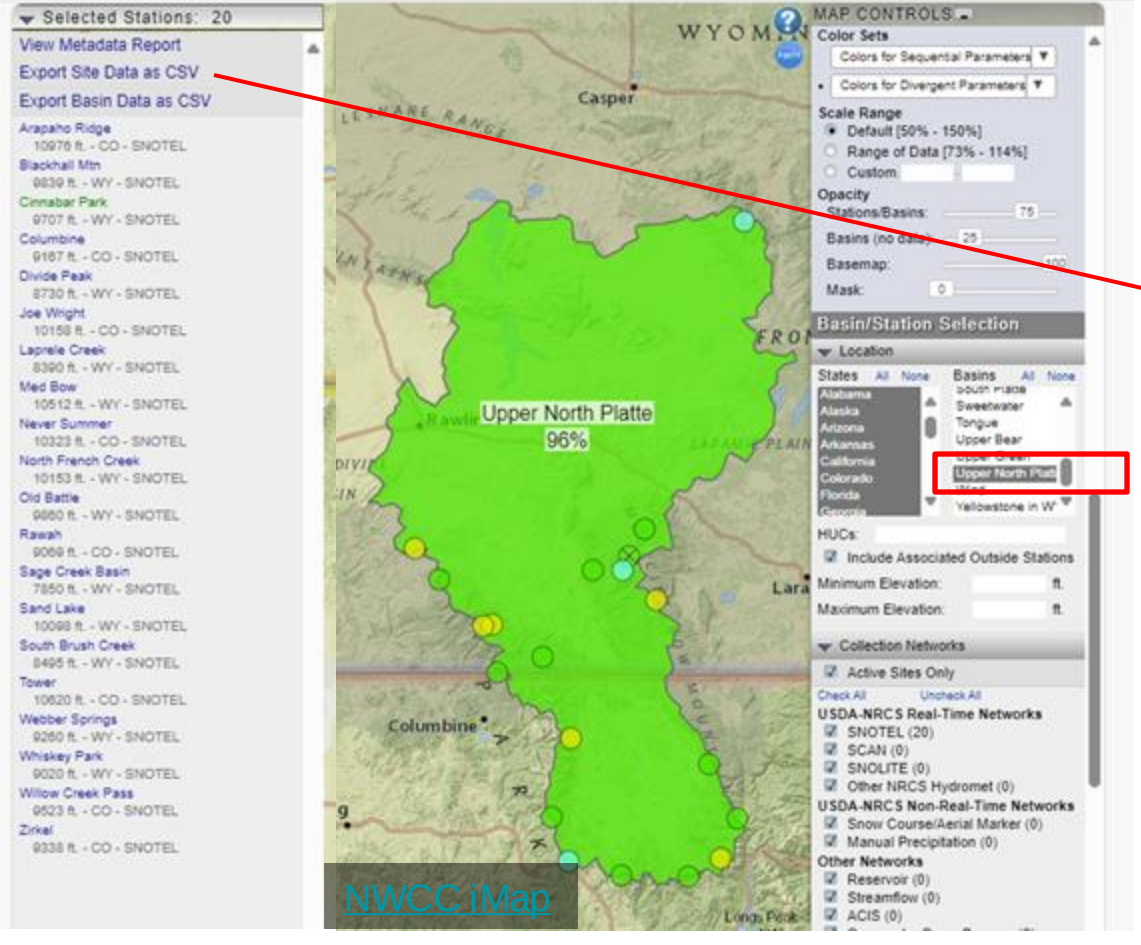
Station Metadata

Station ID:	878
State:	Wyoming
Network:	SNOTEL
County:	Park
Elevation:	8,340 ft.
Latitude:	43.93
Longitude:	-109.82
HUC:	100800130103

Data Reports

30-Day Daily Table
7-Day Hourly Table
Water Year Chart (SWE and Precip)
Site Page
Export Site Data as CSV

Export Site Data as CSV

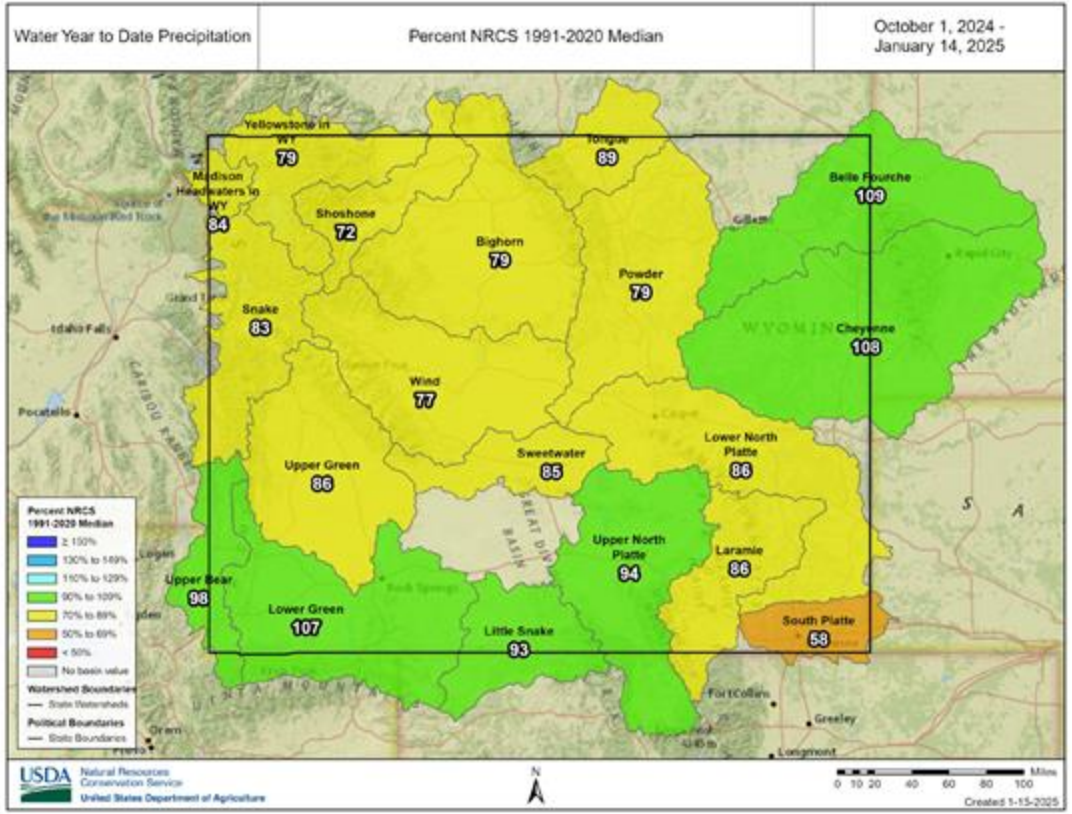


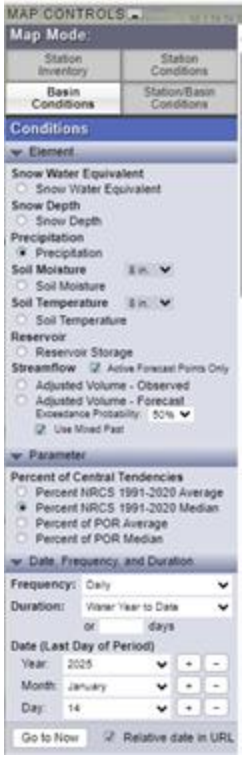
CSV Output For all Stations on Map

- Name
- ID
- State
- Network
- County
- Elevation_ft
- Latitude
- Longitude
- HUC
- Date_of_Data
- Date_Report_Created
- Value_inches
- Percent_NRCS_1991_2020_Average
- Percent_NRCS_1991_2020_Median
- Percent_of_POR_Average
- Percent_of_POR_Median
- Percent_of_Water_Year_Peak
- Percent_NRCS_1991_2020_Average_Water_Year_Peak
- Percent_NRCS_1991_2020_Median_Water_Year_Peak
- Percent_of_POR_Average_Water_Year_Peak
- Percent_of_POR_Median_Water_Year_Peak
- POR_Median_Departure_inches
- Percentile_POR
- Maximum_Rank_POR
- Minimum_Rank_POR
- Records_POR
- NRCS_1991_2020_Average_inches
- NRCS_1991_2020_Median_inches
- POR_Average_inches
- POR_Median_inches
- Minimum_POR_inches
- Maximum_POR_inches
- Year_of_Minimum_POR
- Year_of_Maximum_POR
- Number_of_Observations_POR

Example – Water Year Precipitation, % Median

Map Control Settings: Basin Conditions, Precipitation, Percent NRCS Median, Daily (WYTD), Wyoming Basins, Export





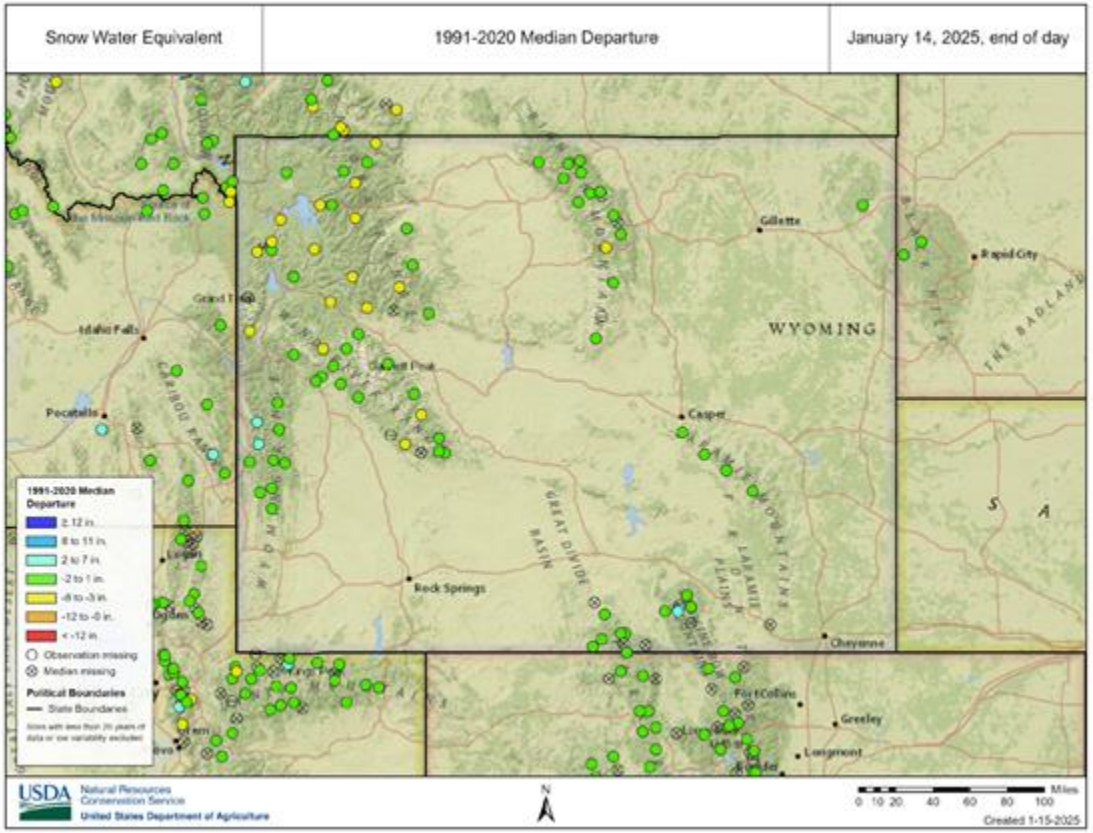


NWCC iMap

Exported Map

Example – Snow Water Equivalent Departure from Median, Inches

Map Control Settings: Station Conditions, Snow Water Equivalent, Daily, Fixed Ref. Period, Median Departure, Export









NWCC iMap

Exported Map

Summary

- Only daily and monthly data is available on the iMap.
- The iMap is a complex tool with lots of features and can be confusing, create bookmarks.
- Utilize the popup windows to access water year plots and report generator.
- Print/Export button replaces old static pdf maps

URLs

Snow Water Equivalent > Daily > Percent of 1991-2020 Median > **Stations** | **Basins**
Snow Water Equivalent > End of Previous Month (SNOTEL and Snow Course) > Percent of 1991-2020 Median > **Stations** | **Basins**
Snow Water Equivalent > Daily > Compared to POR > **Stations**
Snow Water Equivalent > End of Previous Month (SNOTEL and Snow Course) > Percentile > **Stations**
Snow Depth > Daily > **Stations**
Snow Density > Daily > **Stations**

Month-to-Date Precipitation > Daily > **Stations**
Month-to-Date Precipitation > Daily > Percent of 1991-2020 Median > **Stations** | **Basins**
Water Year-to-Date Precipitation > Daily > Percent of 1991-2020 Median > **Stations** | **Basins**
Water Year-to-Date Precipitation > Daily > Compared to POR > **Stations**

Forecast (Adjusted Volume) > Most Recent (Available March 1 through June 1) > Percent of 1991-2020 Median > **Stations** | **Basins**

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The Wyoming 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 the state on a weekly basis – and communicate this information to the U.S. Drought Monitor among others.

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

Thank you!

Your feedback is important!