



WY Conditions & Outlooks:

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

April 15, 2021



Presentation Outline

- Current Conditions
- Outlooks
- How to Get Involved



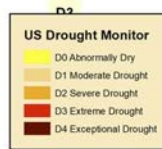
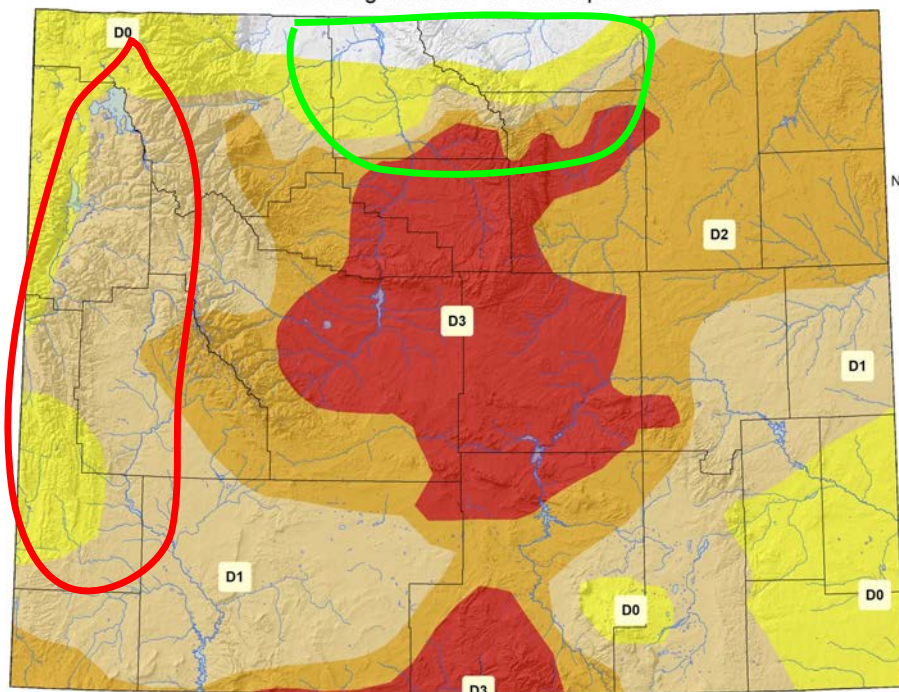
Current Conditions

US Drought Monitor for April 13, 2021

(Released Thursday, April 15, 2021)

Valid 8 a.m. EDT

US Drought Monitor as of 13 Apr 2021



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



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



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

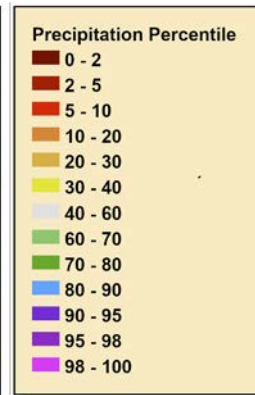
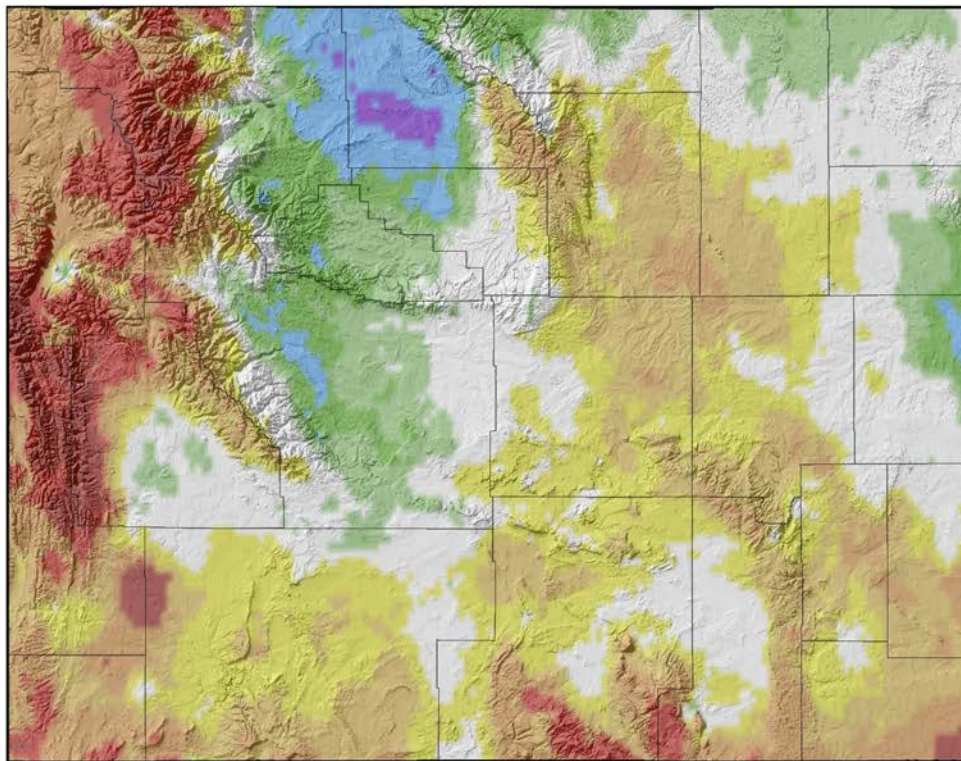
Continued wetness in north-central Wyoming has prompted **improvements** this week while a growing deficit has led to **degradation** in the west.

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>



14-Day Precipitation Percentile (01 Apr 2021 to 14 Apr 2021)

14-Day Precipitation (Percentile) for 01 Apr 2021 to 14 Apr 2021



Precipitation 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

Daily precipitation data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University,
<http://prism.oregonstate.edu>
Map Created 15 Apr 2021 <http://www.wrds.uwyo.edu>
Daily percentiles created from PRISM daily precipitation grids

Above Median:

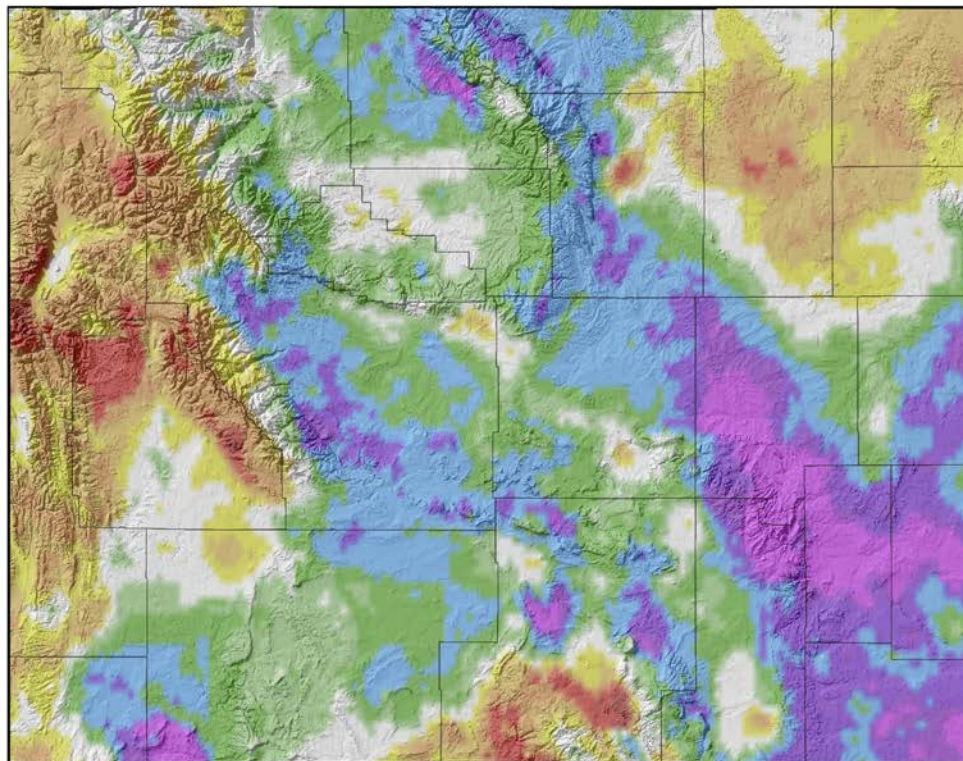
- Bighorn Basin
- Fremont County
- Far East-central
- Far Northeast

Below Median (Areas of Concern):

- West
- South
- Eastern Central

90-Day Precipitation Percentile (15 Jan 2021 to 14 Apr 2021)

90-Day Precipitation (Percentile) for 15 Jan 2021 to 14 Apr 2021



Precipitation 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

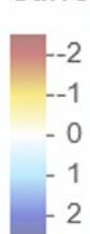
Above Median:

- Sweetwater, eastern Uinta County
- Central
- North-central
- East-central
- Southeast

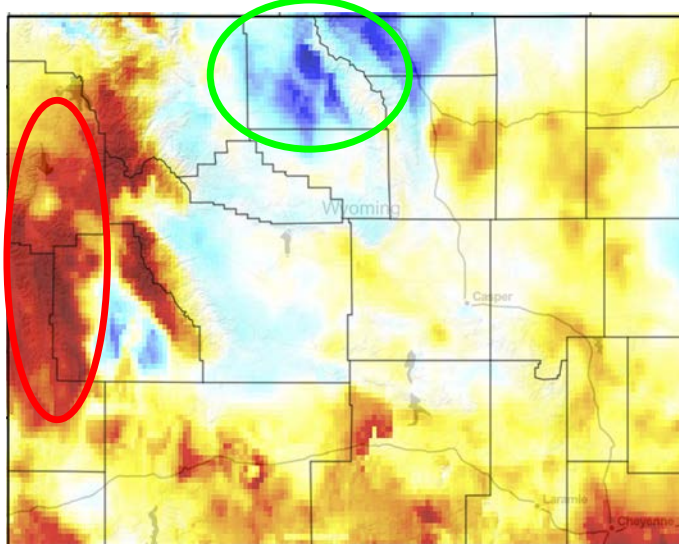
Below Median (Areas of Concern):

- Far South-central
- Far West
- Northeast

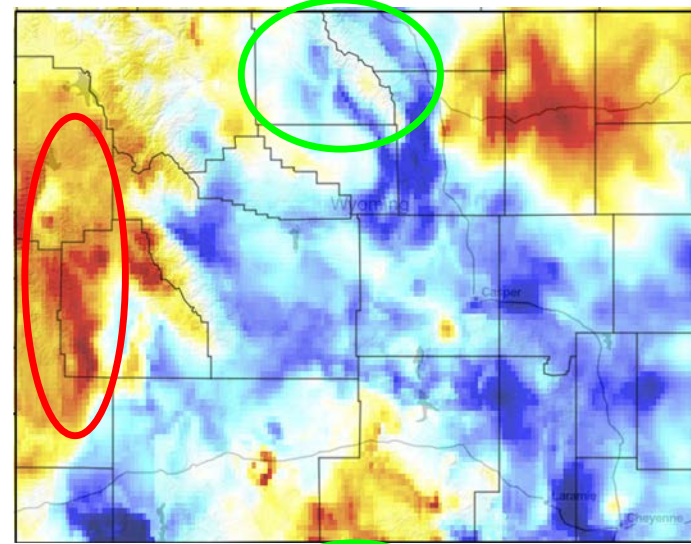
Current SPI



30-Day



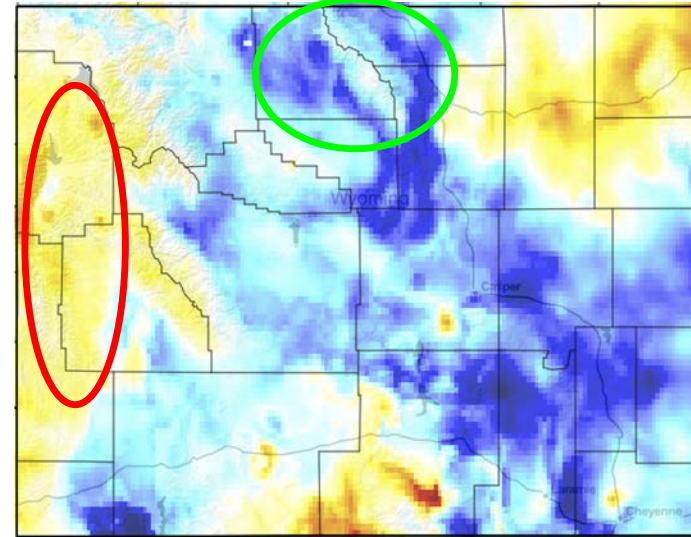
60-Day



Standardized Precipitation Index (SPI)

- Wet SPIs north-central Wyoming improved US Drought Monitor
- Negative SPIs in Western Wyoming caused further degradation of conditions.

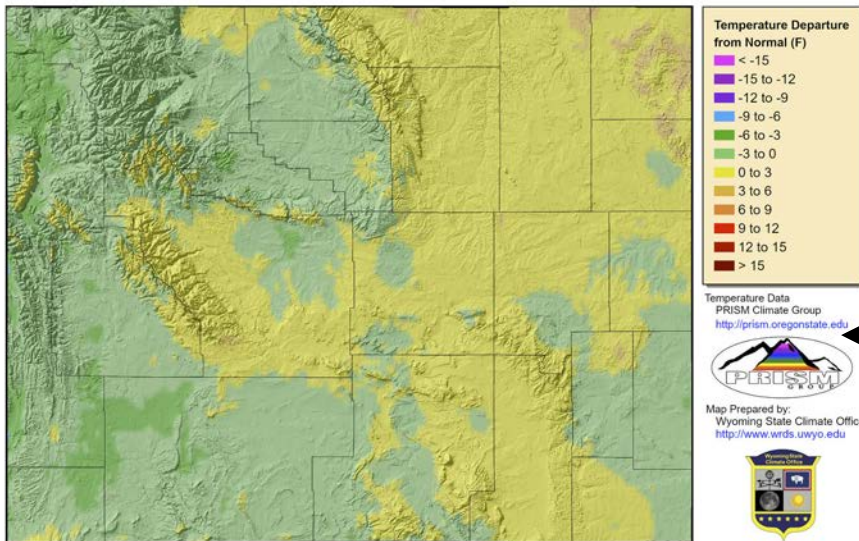
90-Day



14-Day Average Minimum Temperature (01 Apr to 14 Apr)

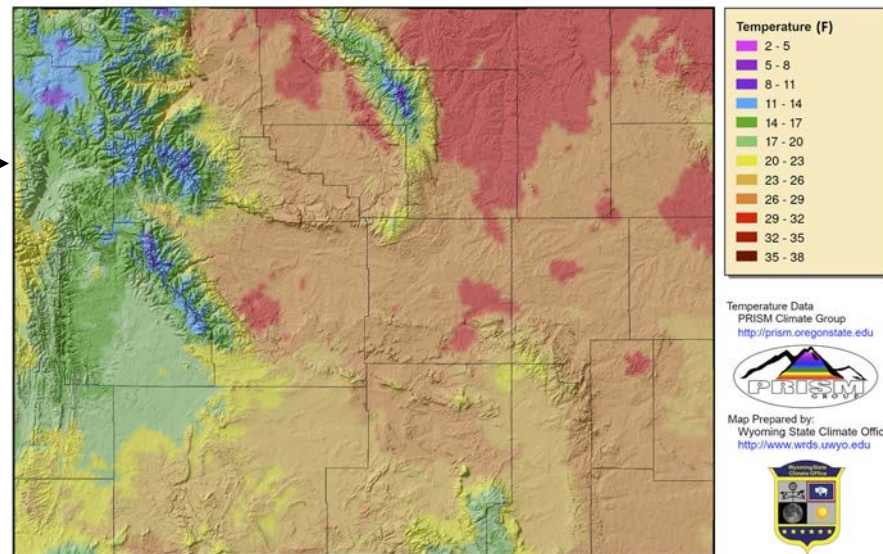
- Nighttime lows still below freezing

14-Day Average Minimum Temperature (Departure from 1991-2020 Average) for 01 Apr 2021 to 14 Apr 2021



Provisional data, subject to revision

Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
Map Created 15 Apr 2021 <http://www.wrds.uwyo.edu>
Temperature averages created from PRISM daily temperature grids



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Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
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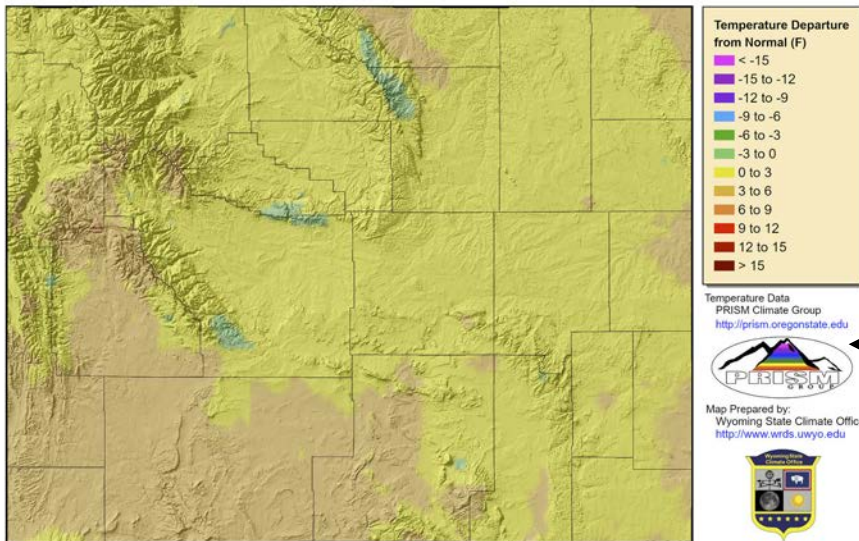
14-Day *Departure from Normal* Average Minimum Temperature

- Northeast & Central above average
- West/Southwest below average
- Southeast mixed

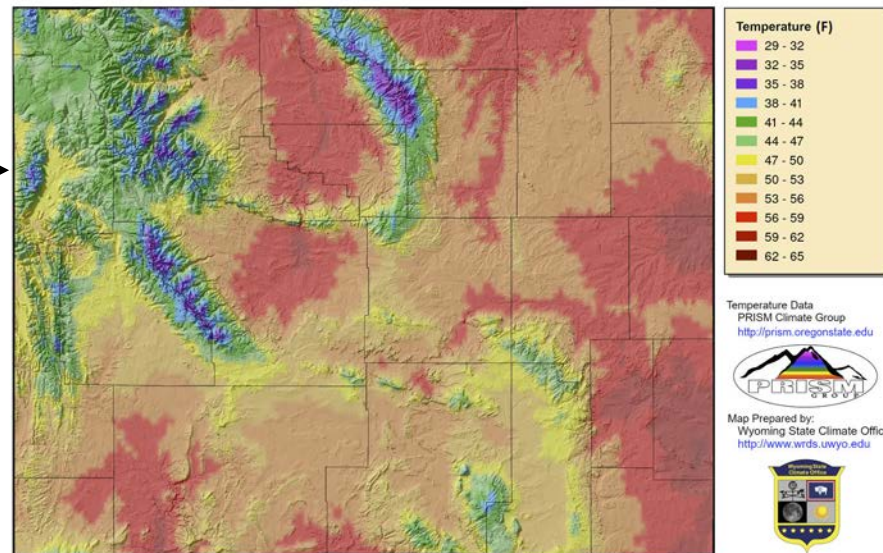
14-Day Average **Maximum** Temperature (01 Apr to 14 Apr)

- Daytime highs above freezing

14-Day Average Maximum Temperature (Departure from 1991-2020 Average) for 01 Apr 2021 to 14 Apr 2021



14-Day Average Maximum Temperature for 01 Apr 2021 to 14 Apr 2021



Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
Map Created 15 Apr 2021 <http://www.wrds.uwyo.edu>
Temperature averages created from PRISM daily temperature grids

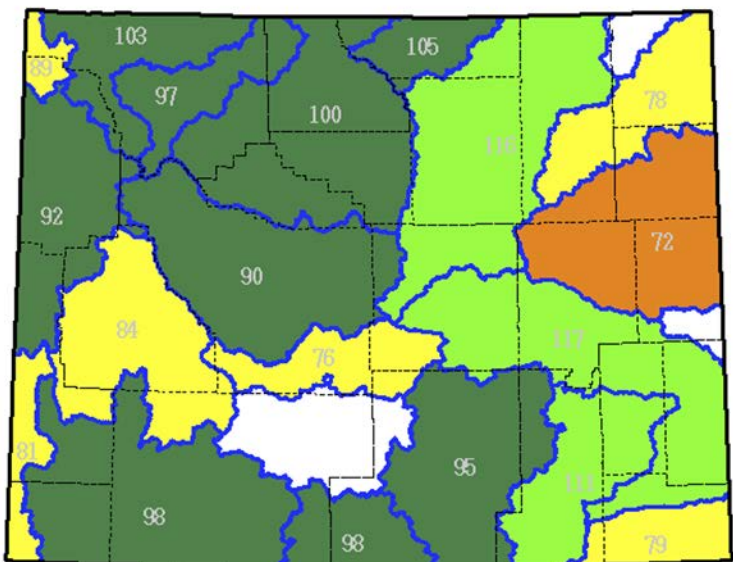
14- Day *Departure from Normal* Average **Maximum** Temperature

- Mostly above average
- Southwest 3-6F above average

Basin Snow Water Equivalent (SWE) Percent of Median

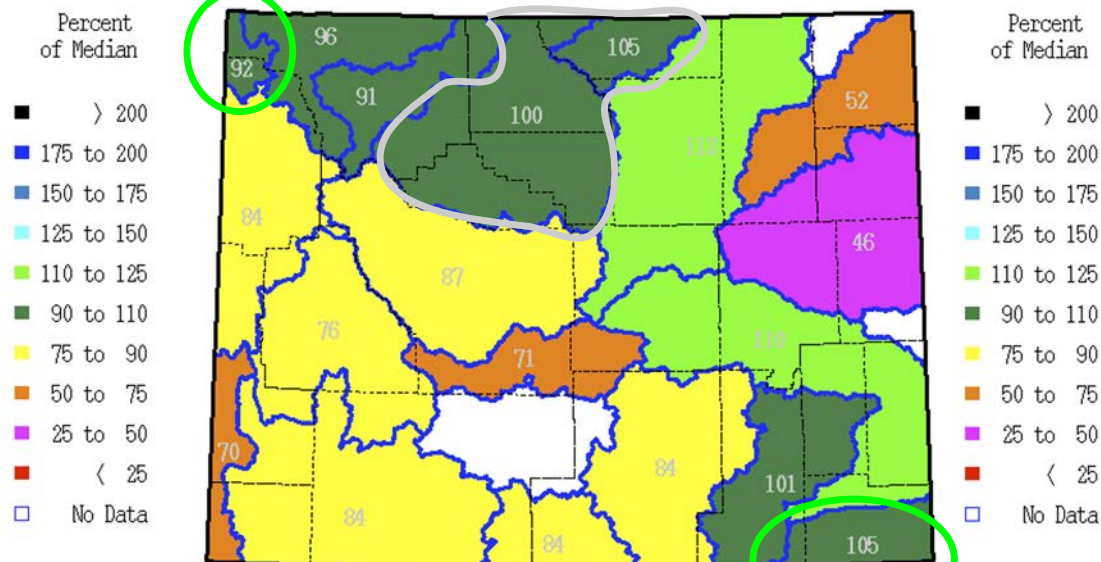
2 Weeks Ago (01 Apr 2021)

SWE % of Median as of Thursday, 01 April 2021



Today (15 Apr 2021)

SWE % of Median as of Thursday, 15 April 2021



Produced by the Wyoming Water Resources Data System: <http://www.wrds.uwyo.edu>
* Data may not provide a valid measure of conditions

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* Data may not provide a valid measure of conditions

All basins had declined until 14 Apr when far NW and far SE improved. Bighorn and Tongue Basins unchanged

Modeled Snow Water Equivalent (SWE)

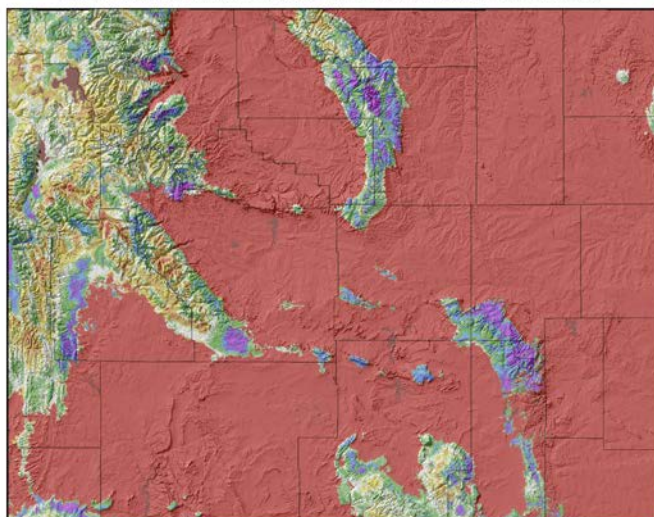
2-Week Comparison

01 Apr 2021

Snow Water Equivalent Percentile for 01 Apr 2021 (2004-2021 Period)

15 Apr 2021

Snow Water Equivalent Percentile for 15 Apr 2021 (2004-2021 Period)



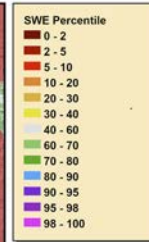
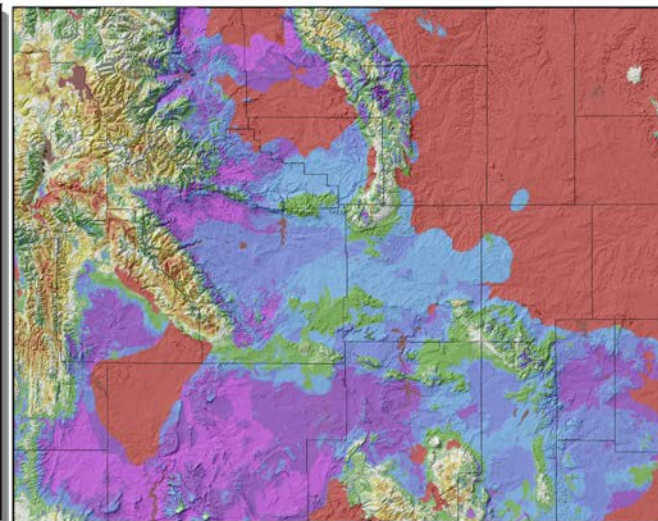
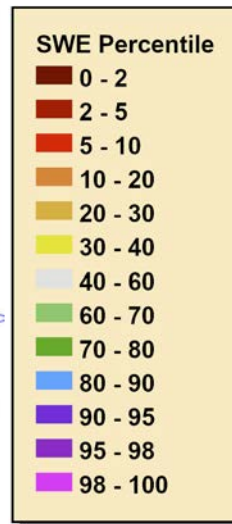
Snow Water Equivalent
NOHRSC
<https://doi.org/10.7265/N5TB14TC>



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



Provisional data, subject to revision



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



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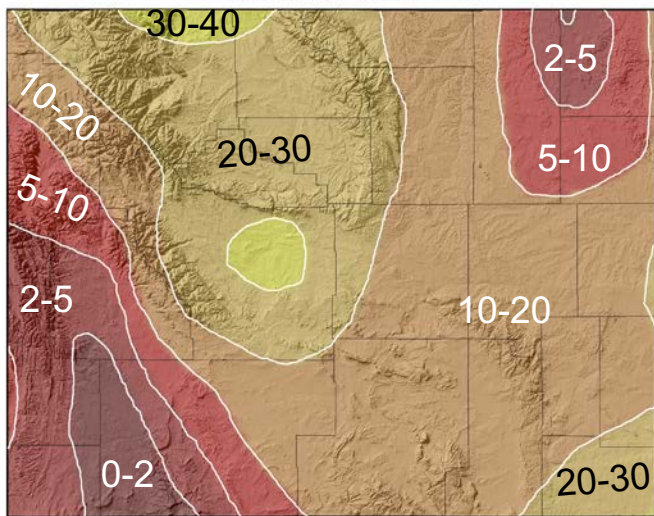
Modeled Snow Water Equivalent from National Operational Hydrologic Remote Sensing Center, 2004. Snow Data Assimilation System (SNODAS) Data Products at NSIDC, Version 1. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. doi: <https://doi.org/10.7265/N5TB14TC>. Daily Percentiles and Percents created by Wyoming State Climate Office. Map Created 01 Apr 2021 - <http://www.wrds.uwyo.edu>

Modeled 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 Percents created by Wyoming State Climate Office. Map Created 15 Apr 2021 - <http://www.wrds.uwyo.edu>

Soil Moisture Percentile

31 Mar 2021

Soil Moisture Percentile for 31 Mar 2021



Provisional data, subject to revision



Soil Moisture Percentile
Climate Prediction Center

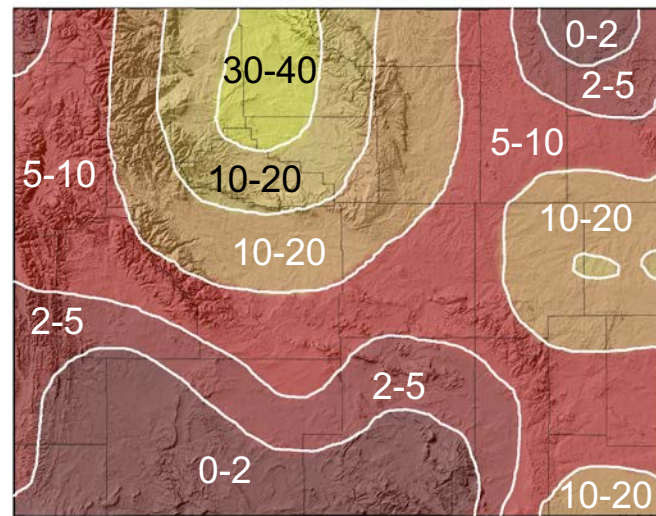


Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



14 Apr 2021

Soil Moisture Percentile for 14 Apr 2021



Provisional data, subject to revision



Soil Moisture Percentile
Climate Prediction Center



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



Modeled Soil Moisture Percentile https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php
Map Created 15 Apr 2021 <http://www.wrds.uwyo.edu>

Soil Moisture has worsened in most places other than the Bighorn Basin and East-central Wyoming

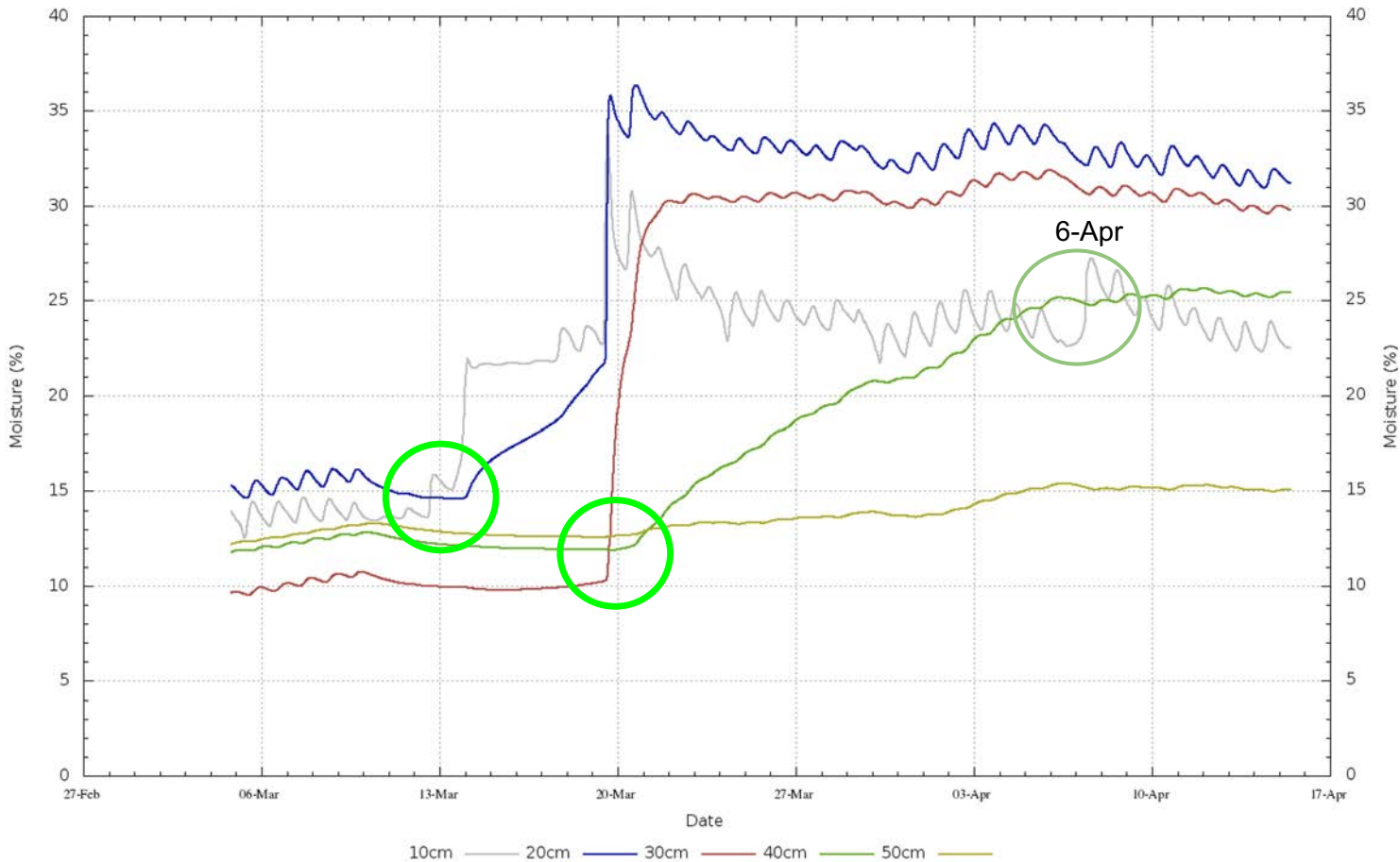


Soil Moisture at Thunder Basin Mesonet Station

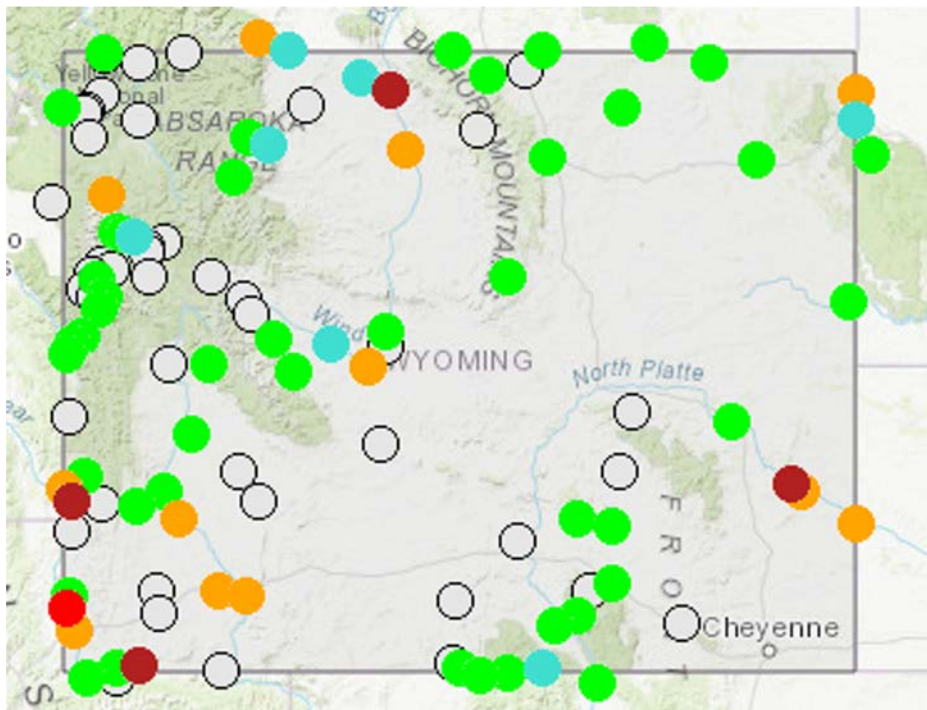
Thunder Basin Grasslands - 2021-04-15 10:00:00 (Created Thu Apr 15 11:05:01 MDT 2021)

Infiltration into soil from melting March snows








Different response times at varying depths



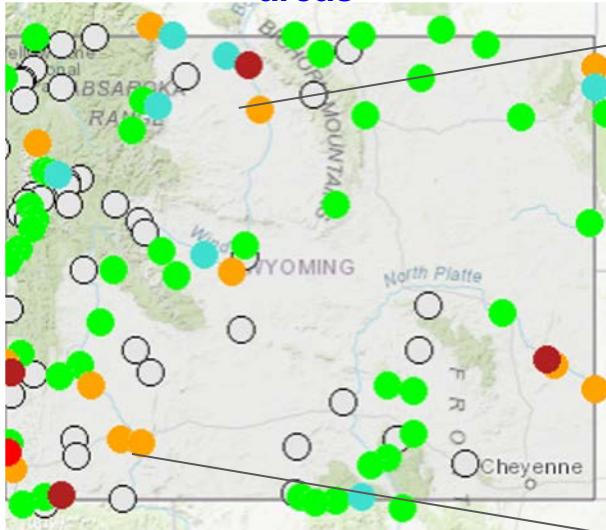
Current (7-day average) streamflow compared to historical streamflow for this time of year



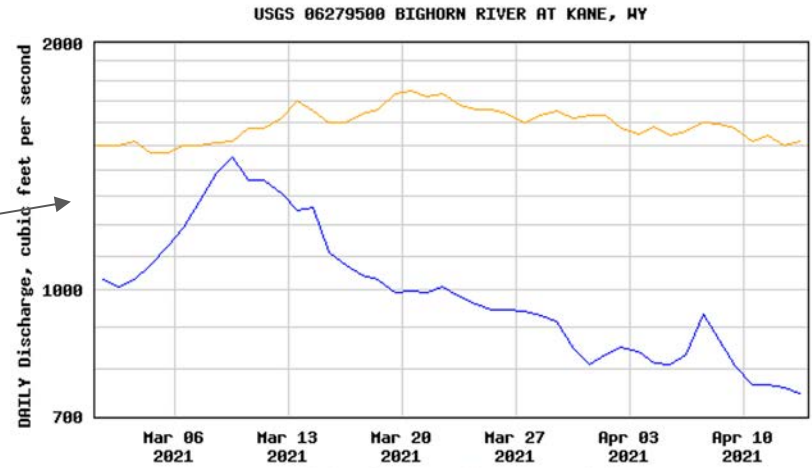
- Higher elevation sites still in ice (white dots)
- Flows generally are near normal.
- Green, Bear, North Platte (near Nebraska) and Bighorn Rivers are below normal

Explanation - Percentile classes							
							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

A closer look at select dry areas

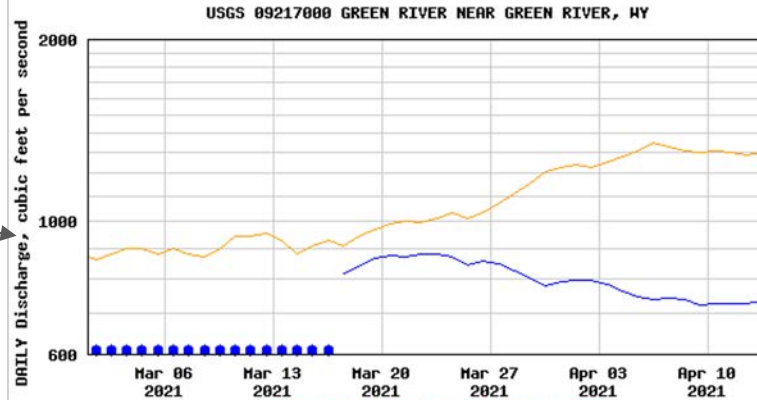


<https://waterwatch.usgs.gov>
<https://waterdata.usgs.gov/>



----- Provisional Data Subject to Revision -----

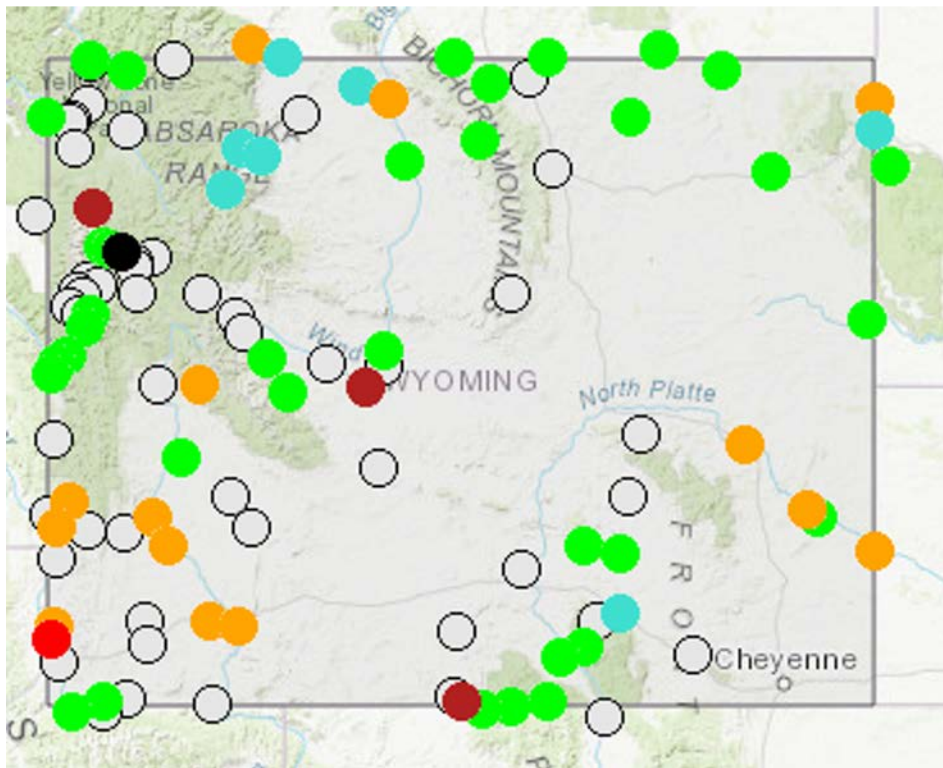
— Median daily statistic (91 years) — Daily mean discharge










----- Provisional Data Subject to Revision -----

— Median daily statistic (69 years) — Daily mean discharge
 ● Value is affected by ice at the measurement site.

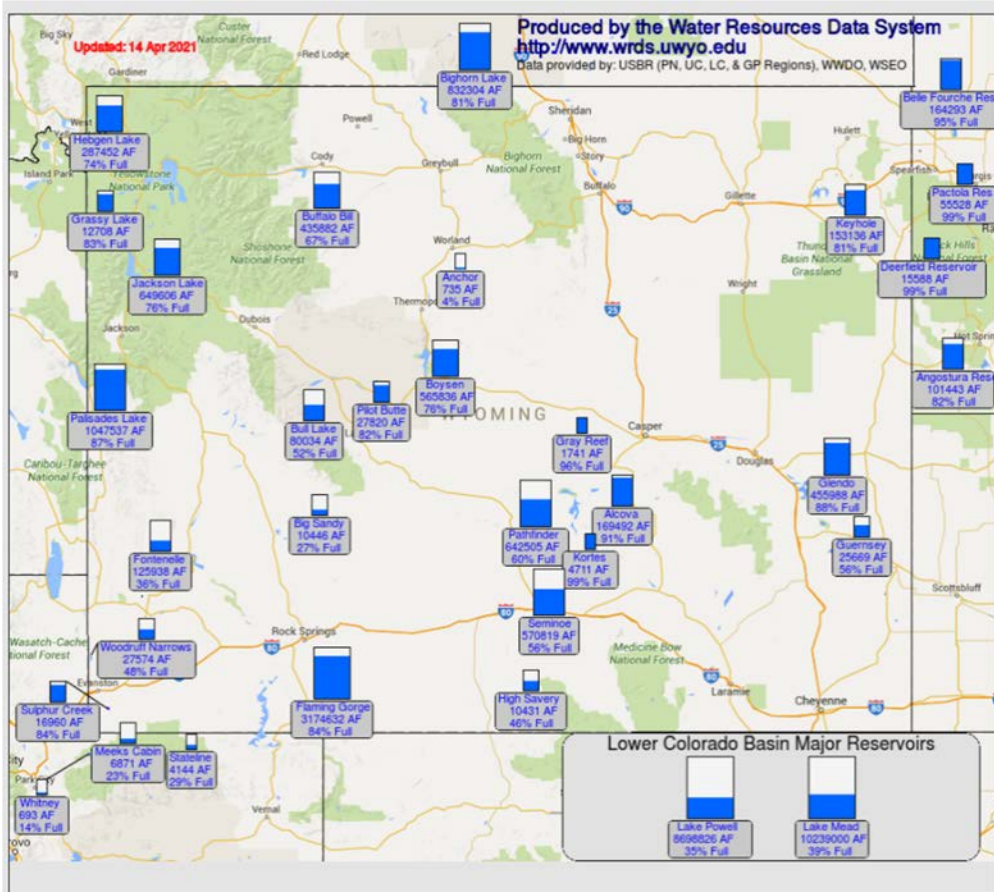
Current (28-day average) streamflow compared to historical streamflow for this time of year



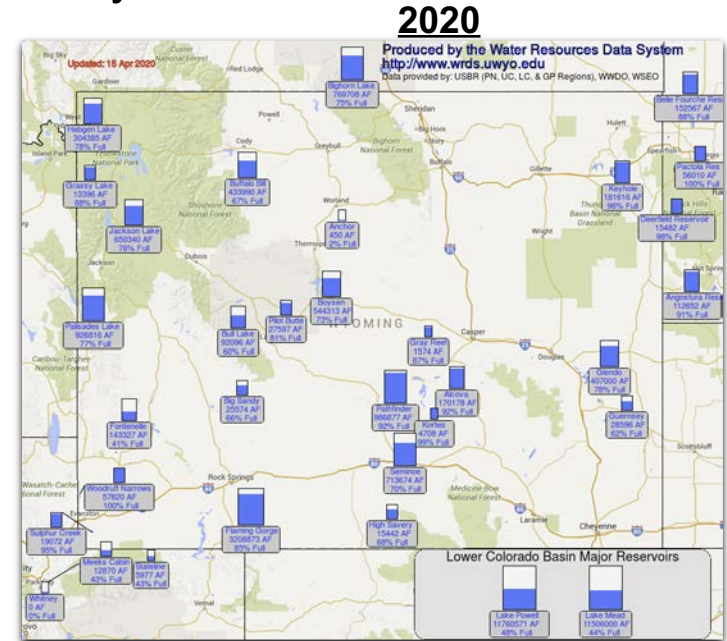
- Longer term averages agree well with the 7-day average.
- It's early and the effects of persistent/current precipitation and snow-melt trends on runoff will become more evident in the coming weeks.

Explanation - Percentile classes							
							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Reservoir Storage (4/14/21)



- Very modest ~1 -2% gains in storage from last month.
- Storage volumes continue to lag behind this time last year.





Wind River Reservation: Conditions & Impacts

- The Wind River Reservation has received moisture the last few weeks, much better place than early March, but not out of the woods yet
- Much of the moisture is going into the ground and not showing up as increased stream and river flows; this most recent storm may change that
- Streamflows are also down due to colder than normal temps
- Still major concerns along Little Wind drainage regarding the drought
- Better towards the north and south ends of the Wind River Range
 - (Togwotee, Owl Creeks, South Pass, Lander area)
- This years impact will be greater unless significant spring moisture due to last years drought conditions; cannot make up for the lack of hay produced last year
- Market forces along with weather still impacting local producers (price of diesel, price of feed, cattle prices, etc)
- Thank goodness for the recent moisture and lower temps
- Critical period for the next 2 months as drought worsens or conditions improve

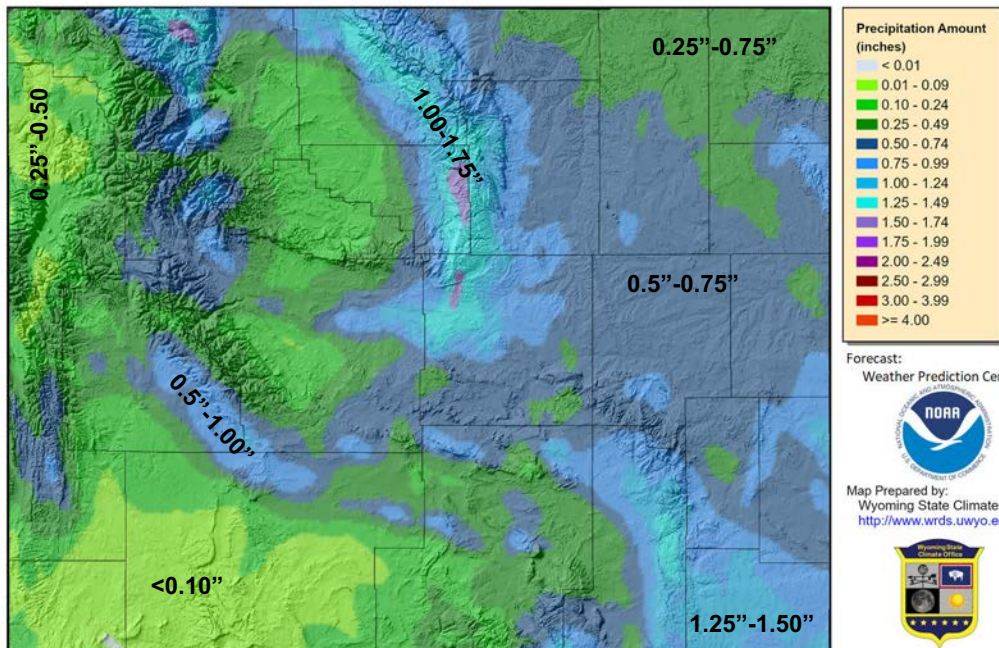


Forecasts & Outlooks



7-Day Quantitative Precipitation Forecast April 15 - 22

7-Day Quantitative Precipitation Forecast 15 Apr 2021



Provisional data, subject to revision

Forecast:
Weather Prediction Center



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



- Quantitative Precipitation Forecast = Liquid Precipitation Forecast
- Widespread Snow Today through early Saturday
- Cold Front passage Late Sunday into Monday with more snow likely

The Quantitative Precipitation Forecast shows the liquid amount of forecasted precipitation over the next 7 days
The Forecast is created by the National Weather Service Weather Prediction Center
Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, National Centers for Environmental Prediction,
and Weather Prediction Center - <https://www.wpc.ncep.noaa.gov>
Map Layout Created 15 Apr 2021 <http://www.wrds.uwyo.edu>

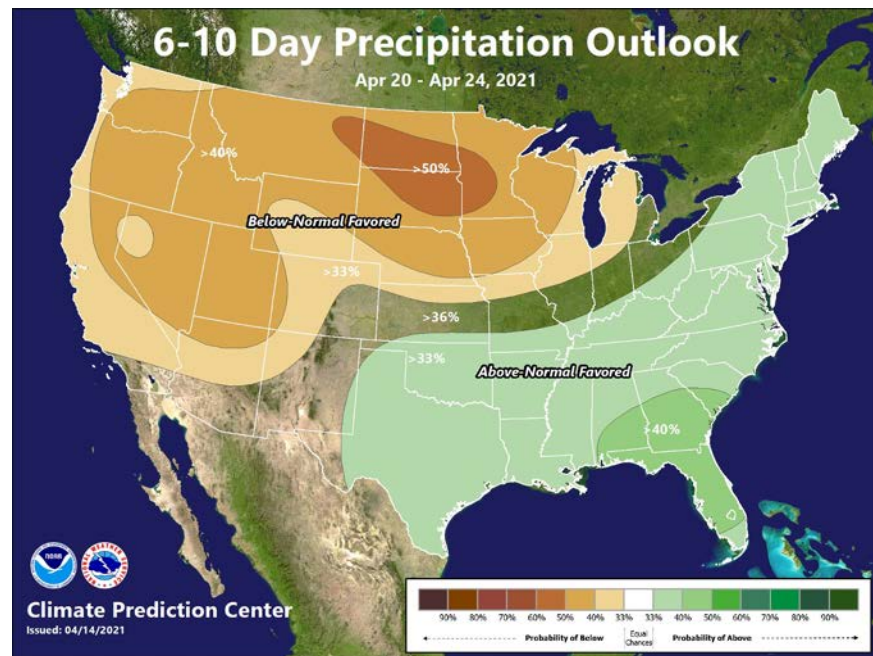
<https://bit.ly/3bZXQeN>



6-10 Day Precipitation

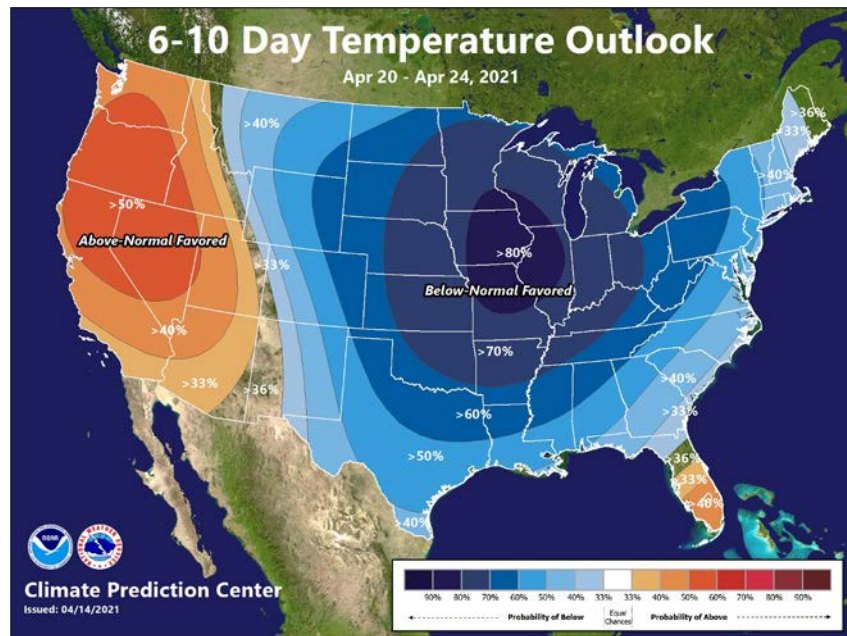
April 20 - 24

- Probability = Chance
- Below normal chances of precipitation favored



6 - 10 Day Temperatures

- Below normal temperatures favored for the state.

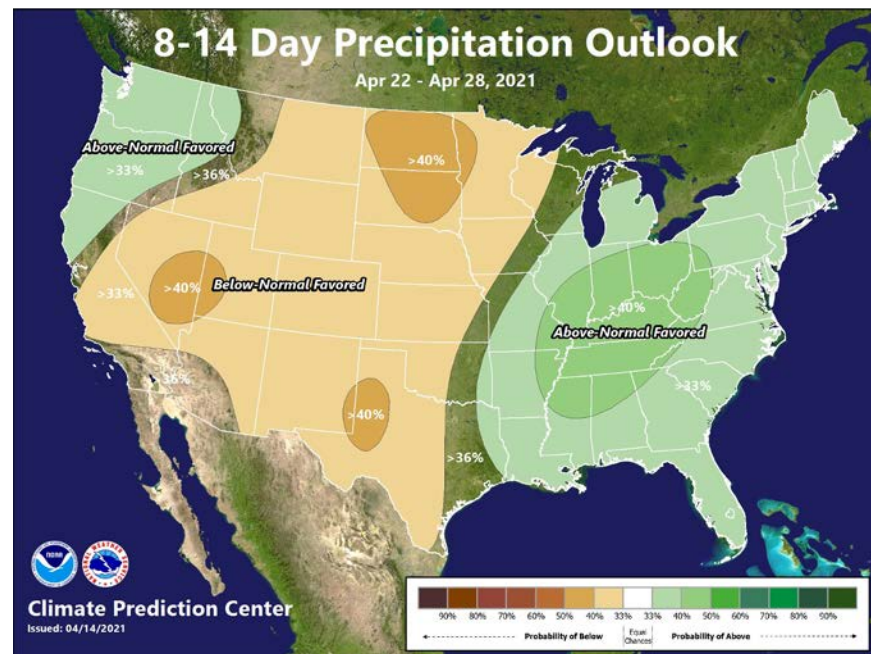




8-14 Day Precipitation Outlook

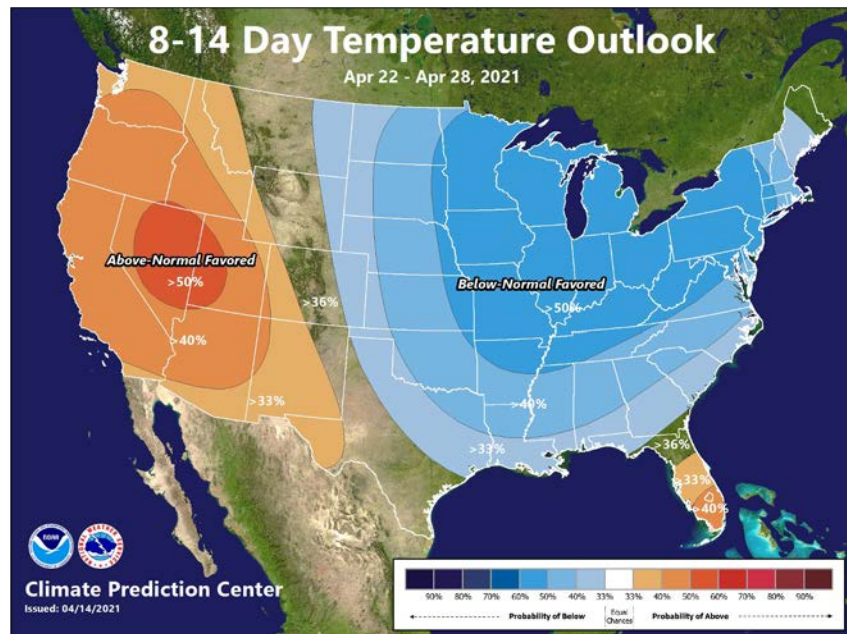
April 22 - 28

- Probability = Chance
- Slightly Below normal precipitation favored for the state.



8 - 14 Day Temperatures

- Equal Chances of near normal temperatures favored for the state.

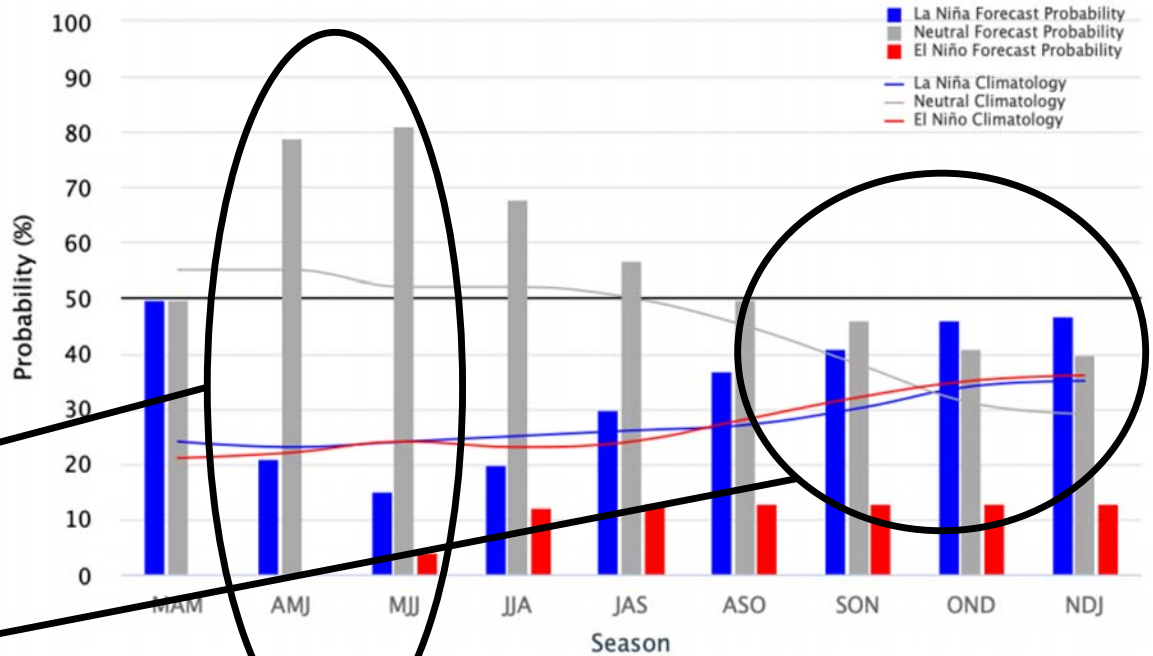




Early-April 2021 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5 °C to 0.5 °C

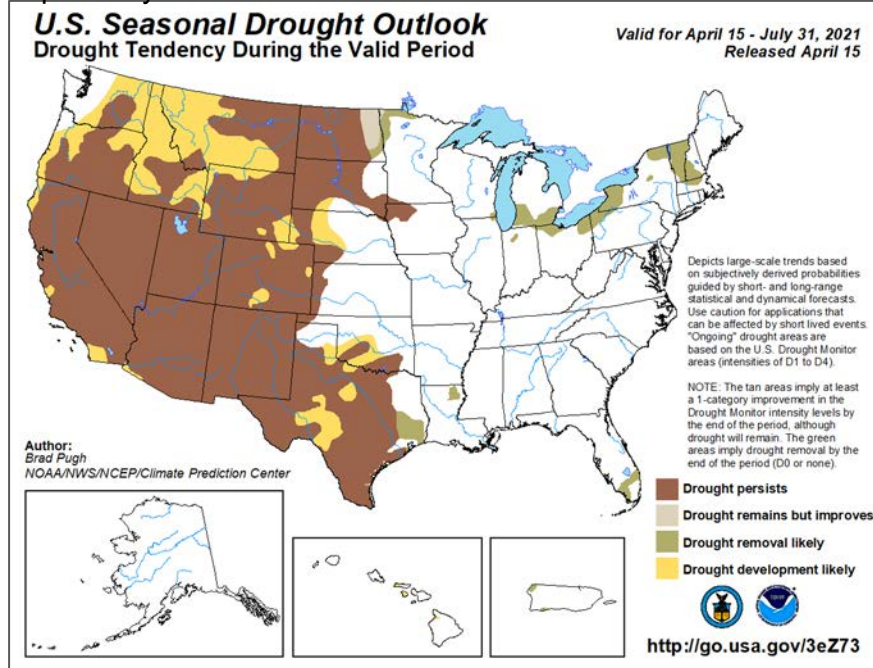
- Note: WY's weather is not as strongly connected to ENSO due to our distance from the ocean
- Coming out of La Nina to neutral = more precipitation possible?
- Slight indication of another La Nina next summer & fall = dry long-term?





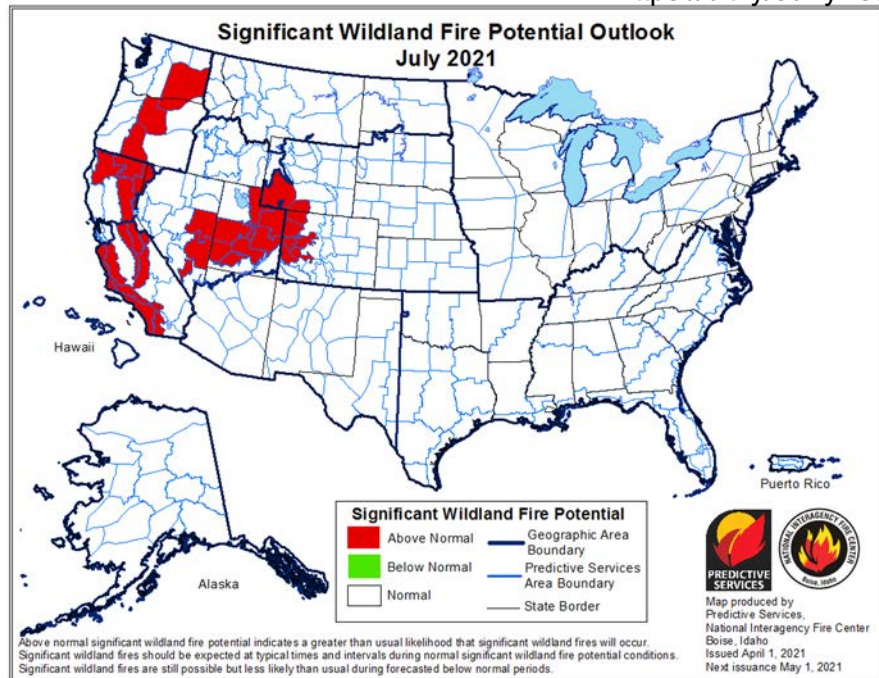
Long Term Drought & Increased Wildfire Risk

<https://bit.ly/3uYbneR>



- Persistent drought or development likely for the state.

<https://bit.ly/3uZyPsd>

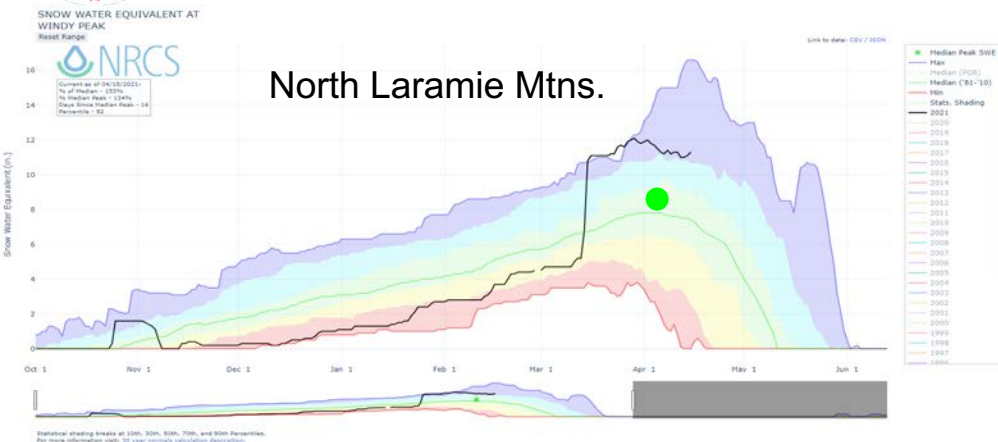


- Greater chance of significant wildfires occurring in the SW.

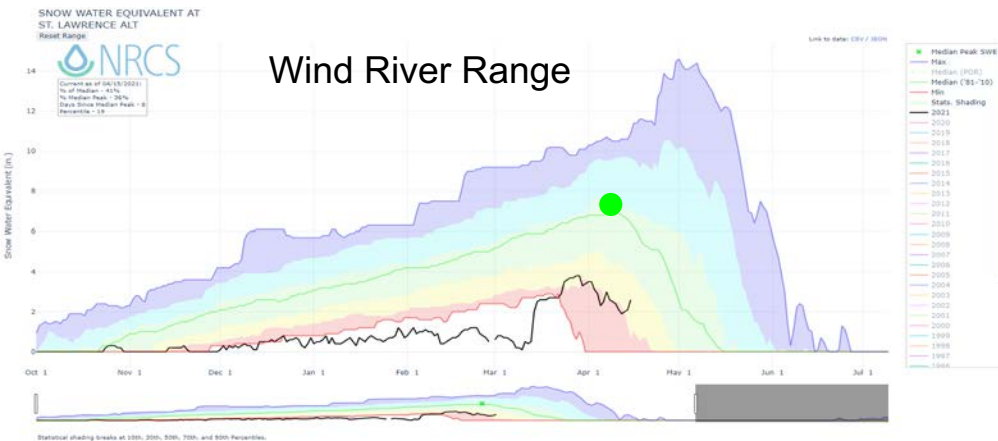


Wyoming Snotel Snapshot Update

North Laramie Mtns.



Wind River Range



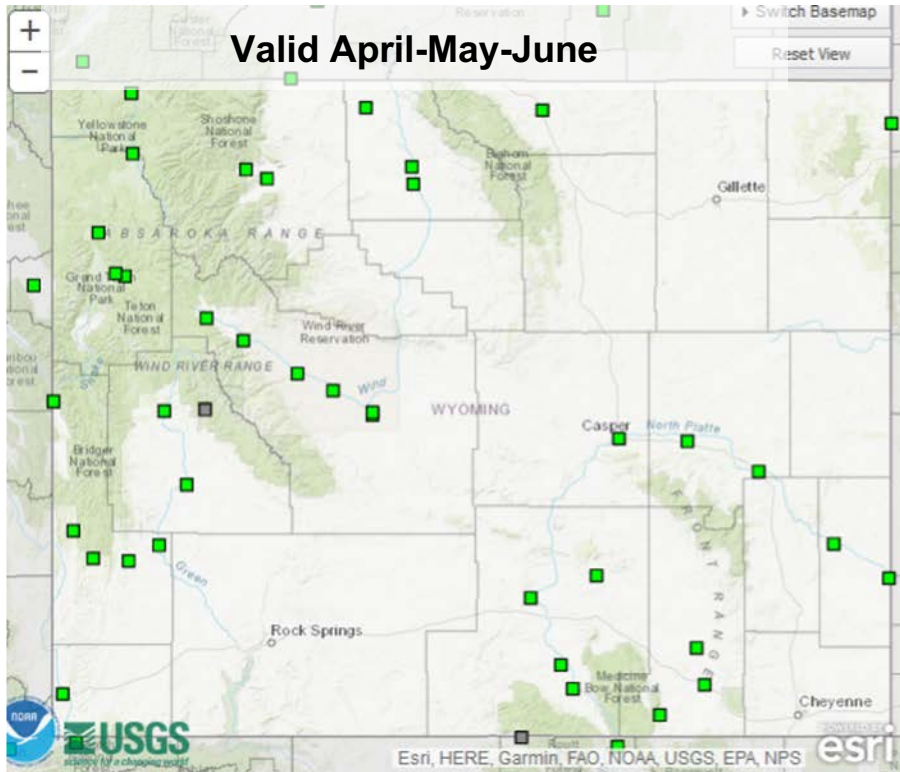
Snotel Sites - (Snow Telemetry) - are monitoring stations measuring snowpack, precipitation, temperature & other climate conditions.

- Pockets of near to above normal in North Laramie Range, Big Horn Mountains, & Sierra Madre Range
- However, Wind River Range, Wyoming Range, and high terrain in NW Wyoming remain below to well below normal



Wyoming Flood Potential Update

Valid April-May-June



[Return to national map.](#)

Click on the map or select one of the data views below:

- Wyoming
- NWS Weather Forecast Offices
- NWS River Forecast Centers
- Water Resources Regions

52 total gauges
No locations with 50% or greater chance of flooding during Apr-May-Jun

- 0 Gauges: > 50% Major Long-Range Flood Risk
- 0 Gauges: > 50% Moderate Long-Range Flood Risk
- 0 Gauges: > 50% Minor Long-Range Flood Risk
- 50 Gauges: < 50% Long-Range Flood Risk
- 2 Gauges: No forecast within selected timeframe

[Show all locations](#)

Last map update:
04/12/2021 at 12:20:56 pm EDT
04/12/2021 at 16:20:56 UTC

[What is UTC time?](#)

[Map Help](#)

[Product Description](#)

[Feedback](#)

[Disclaimer](#)

water.weather.gov

No riverine flooding is expected through June.

This graphic depicts the NWS river forecast locations, colored by the highest flood category expected during the next 90-days. All Wyoming stations are projected to stay below Flood Stage.

Please note that river ice action **is NOT accounted** for in our river forecast model.



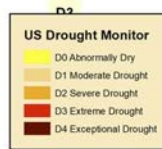
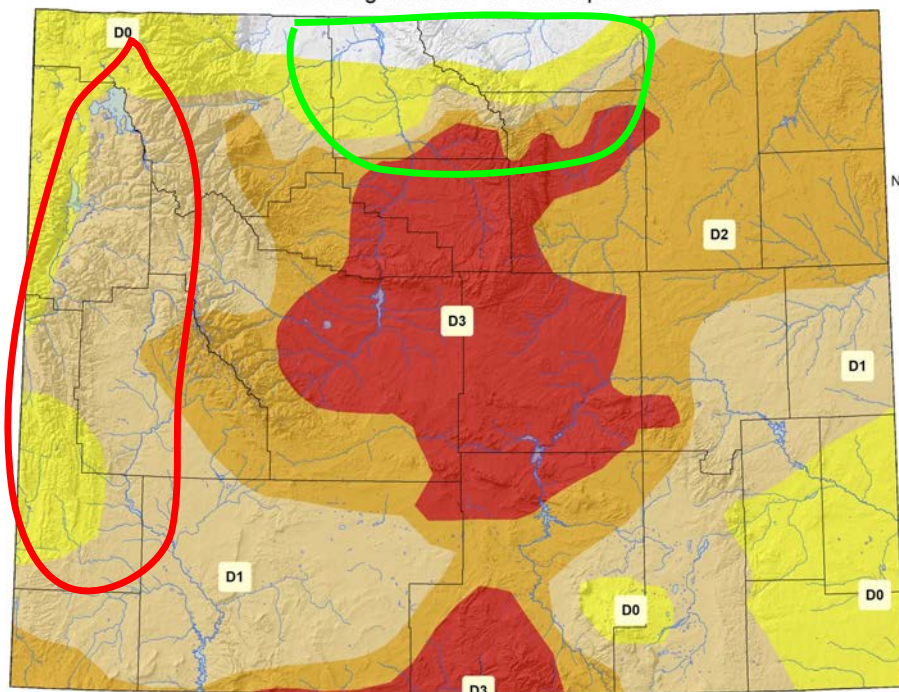
How to get involved ...

US Drought Monitor for April 13, 2021

(Released Thursday, April 15, 2021)

Valid 8 a.m. EDT

US Drought Monitor as of 13 Apr 2021



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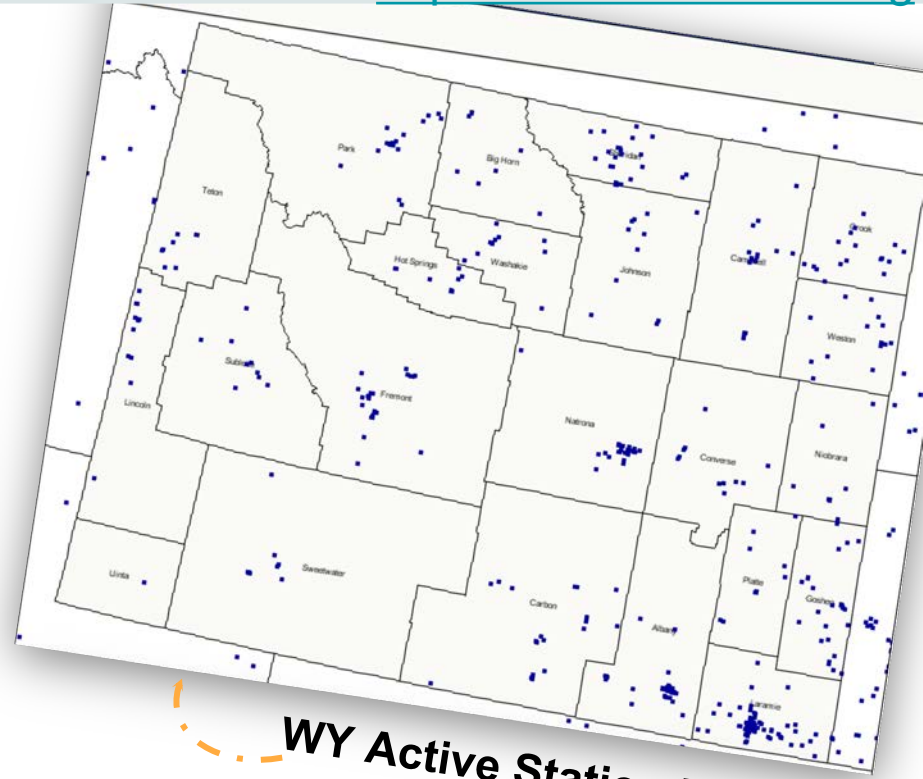
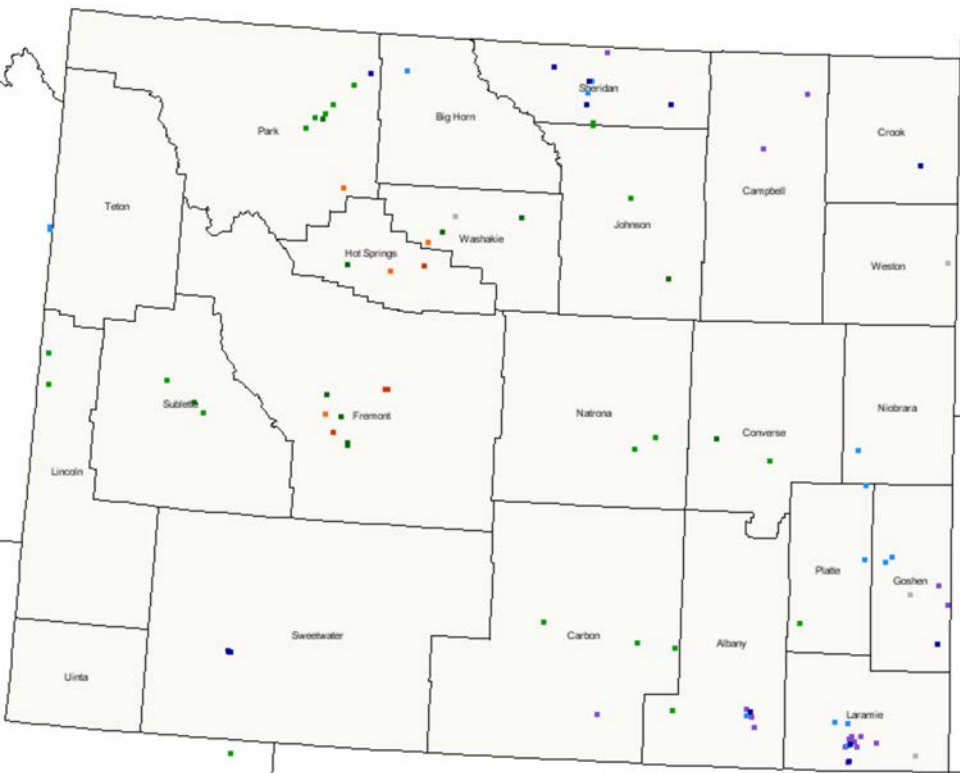
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CoCoRaHS Mapping System

<https://www.cocorahs.org>

**April 15, 2021:
24-hour precip as of ~ 7 am**



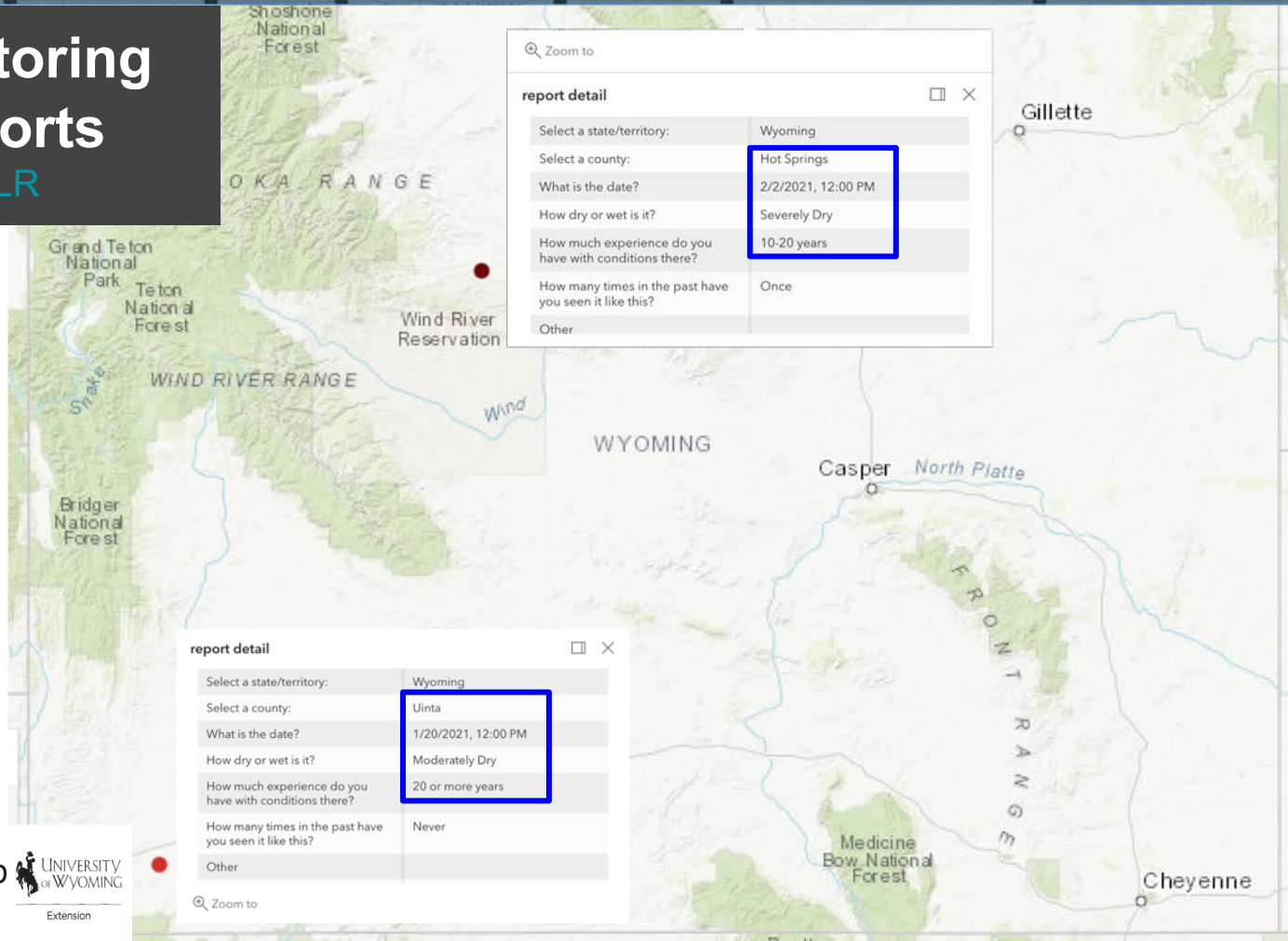
WY Active Station Locations



Condition Monitoring Observer Reports

<http://bit.ly/3c4WRLR>

- Severely Dry
- Moderately Dry
- Mildly Dry
- Near Normal
- Mildly Wet
- Moderately Wet
- Severely Wet



Zoom to

report detail

Select a state/territory:	Wyoming
Select a county:	Hot Springs
What is the date?	2/2/2021, 12:00 PM
How dry or wet is it?	Severely Dry
How much experience do you have with conditions there?	10-20 years
How many times in the past have you seen it like this?	Once
Other	

report detail

Select a state/territory:	Wyoming
Select a county:	Uinta
What is the date?	1/20/2021, 12:00 PM
How dry or wet is it?	Moderately Dry
How much experience do you have with conditions there?	20 or more years
How many times in the past have you seen it like this?	Never
Other	

Zoom to

Condition Monitoring Observer Reports

<http://bit.ly/3c4WRLR>

- Regardless of conditions, consider submitting a report monthly
- Comparison photos
 - *A picture is worth a thousand words!*
- Web browsers

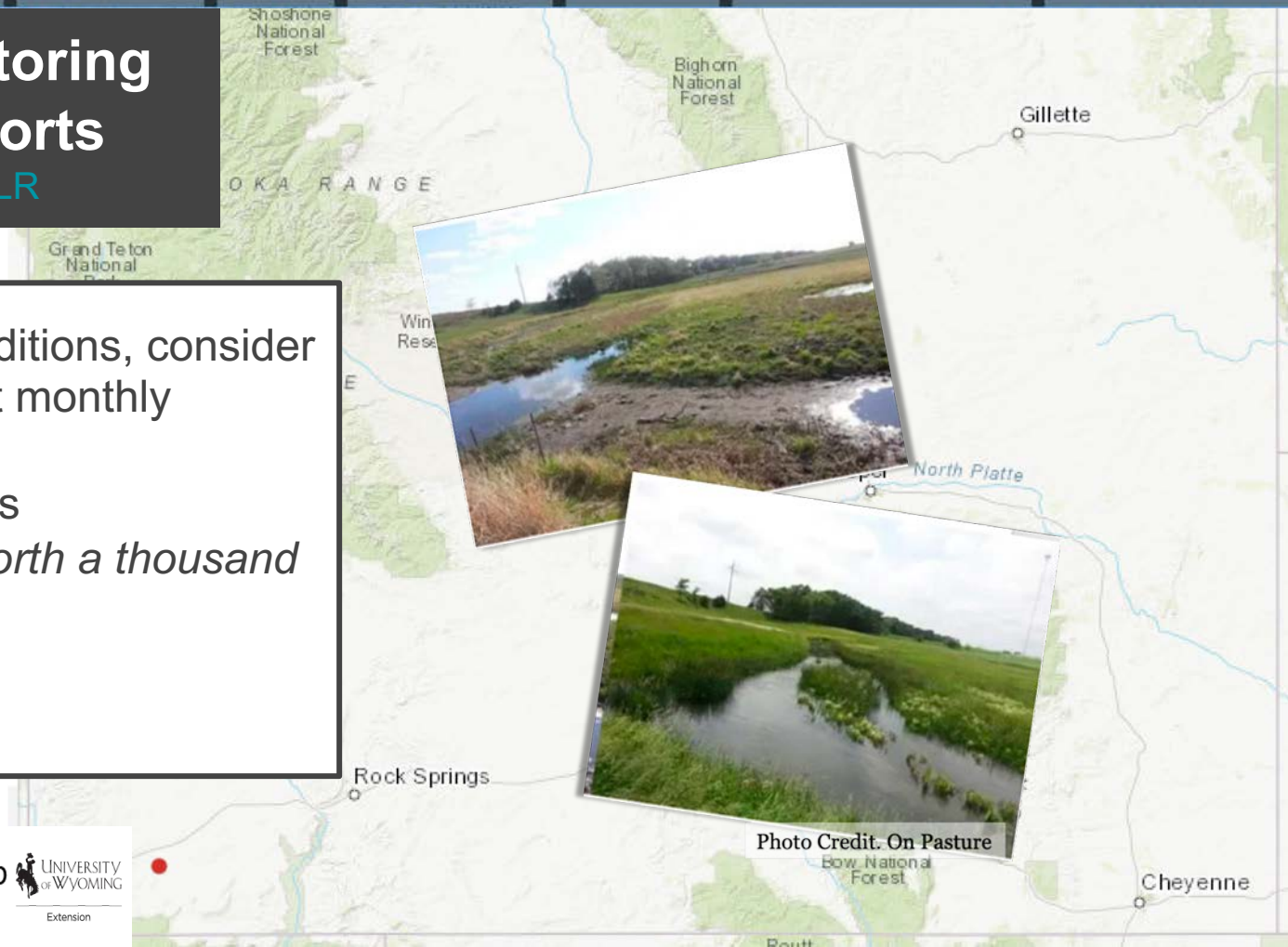


Photo Credit. On Pasture



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Condition Monitoring Observer Reports (CMOR)

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Thank you! Questions?