



# WY Conditions & Outlooks:

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

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June 17, 2021



# Presentation Outline

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- Current Conditions
- Outlooks
- How to Get Involved



# Current Conditions

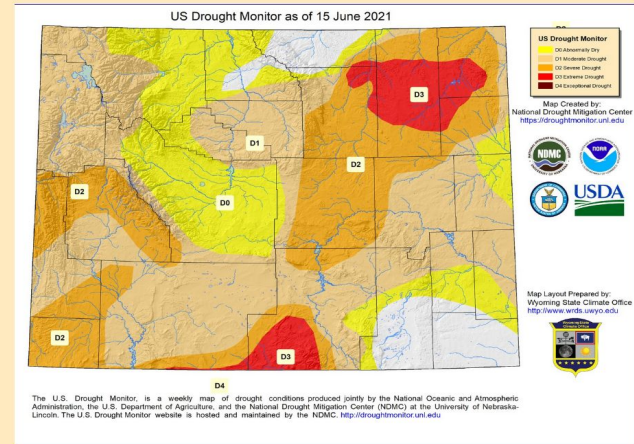


### How is a Drought Disaster Declared?

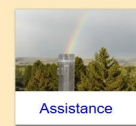
Current disaster designations: Automatic federal designation applies when, during the growing season, any portion of a county meets the D2 (Severe Drought) drought intensity value for 8 consecutive weeks – or a higher drought intensity value for any length of time as reported in the U.S. Drought Monitor.

11 May 2021: USDA Designates Two Wyoming Counties as Primary Natural Disaster Areas  
 10 May 2021: USDA Designates 19 Wyoming Counties as Primary Natural Disaster Areas

- Agriculture
- Ecosystems
- Recreation & Tourism
- Wildfire Management



- Public Health
- Hazard Planning & Preparedness
- Municipalities & Water Utilities
- Maps and Data



# Wyoming Drought Website

(Officially launched via Press Release from Governor Mark Gordon)  
 Wednesday, June 9, 2021



### Gordon Administration Launches New Wyoming Drought Resources Website

Governor of Wyoming sent this bulletin at 06/09/2021 02:30 PM MDT

FOR IMMEDIATE RELEASE

June 9, 2021

CONTACT: Michael Pearlman, Communications Director

Michael.Pearlman@wyo.gov

### Gordon Administration Launches New Wyoming Drought Resources Website

Timely information is now available detailing drought conditions, current emergency declarations and useful resources for affected areas

CHEYENNE, Wyo. – Governor Mark Gordon has announced the launch of a new website that will provide detailed, updated information on drought conditions in Wyoming. Developed through a collaboration of multiple state and federal agencies, [drought.wyo.gov](http://drought.wyo.gov) will be a resource for multiple sectors that monitor drought conditions.

<https://drought.wyo.gov>

# Everyone can help monitor drought

Stay tuned until the end of this Webinar  
to learn about ways that YOU can help

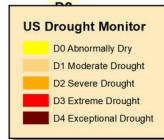
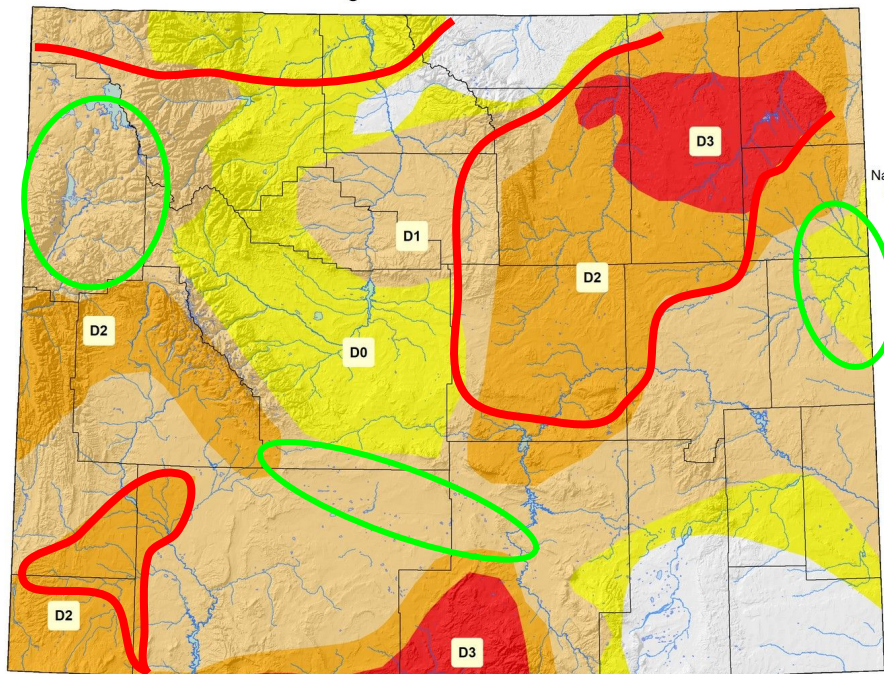


# US Drought Monitor for June 15, 2021

(Released Thursday, June 17, 2021)

Valid 8 a.m. EDT

US Drought Monitor as of 15 June 2021



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



Map Layout Prepared by:  
Wyoming State Climate Office  
<http://www.wrds.wyo.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

A few **improvements** since the last webinar followed by several **degradations**. Dry across most the state.

D4

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 (03 Jun 2021 to 16 Jun 2021)

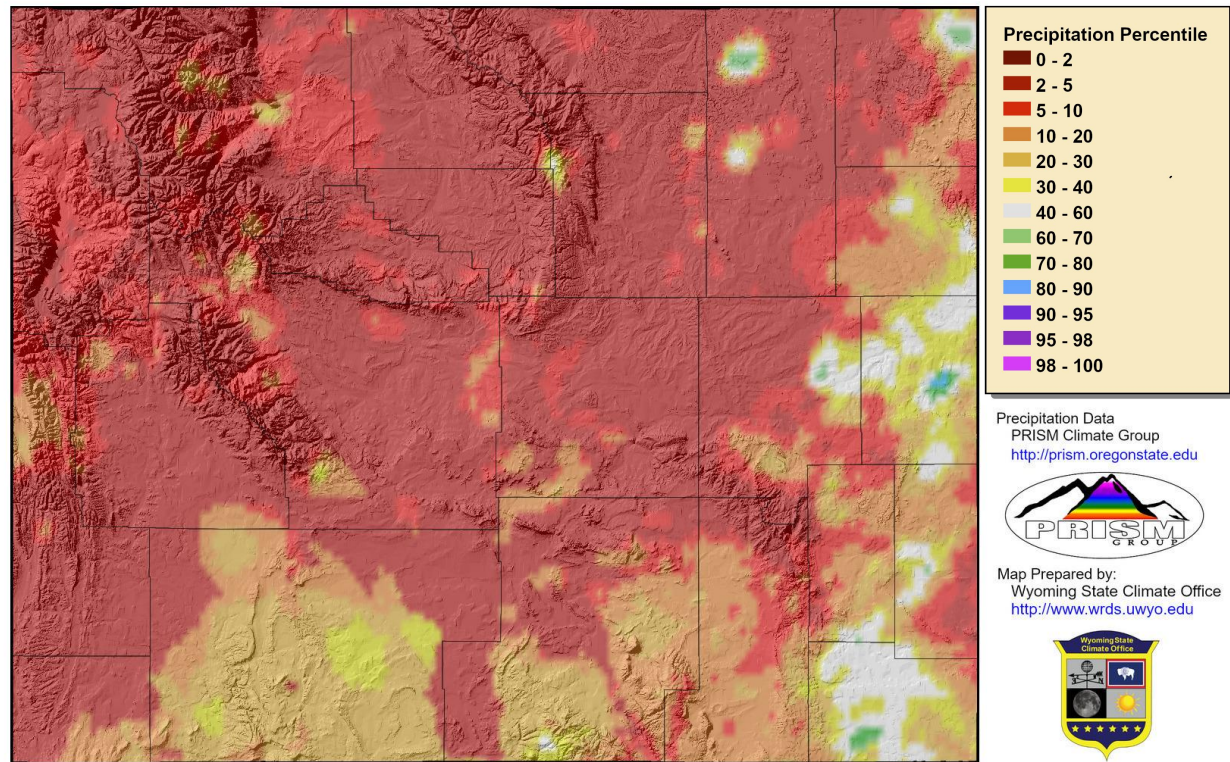
14-Day Precipitation (Percentile) for 03 Jun 2021 to 16 Jun 2021

### Above Median:

- A few eastern locations

### Below Median (Areas of Concern):

- All but scattered pockets



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

# 90-Day Precipitation Percentile (19 Mar 2021 to 16 Jun 2021)

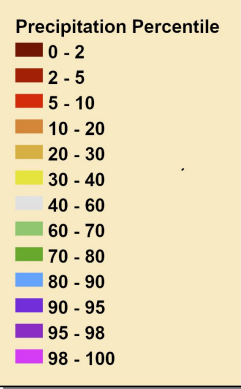
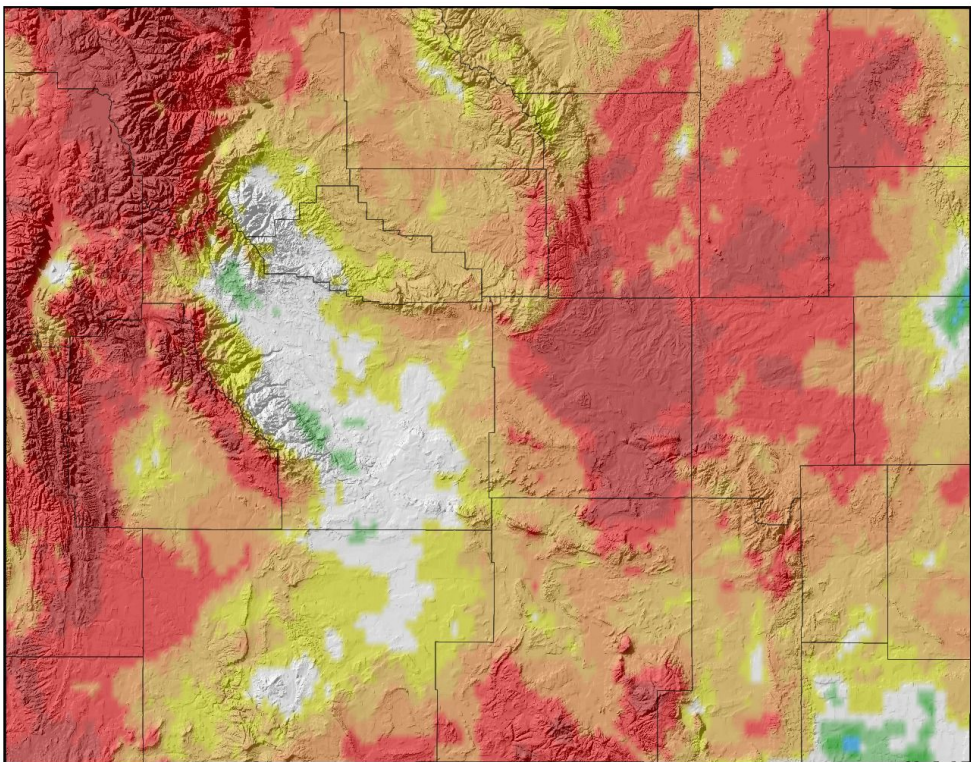
90-Day Precipitation (Percentile) for 19 Mar 2021 to 16 Jun 2021

## Above Median:

- SE Weston/NE Niobrara Counties
- Minor spots in Fremont County
- Southern Laramie County

## Below Median (Areas of Concern):

- Everything else



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

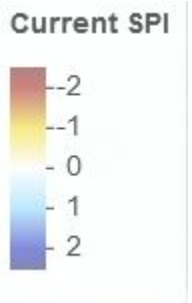


Map Prepared by:  
Wyoming State Climate Office  
<http://www.wrds.uwyo.edu>

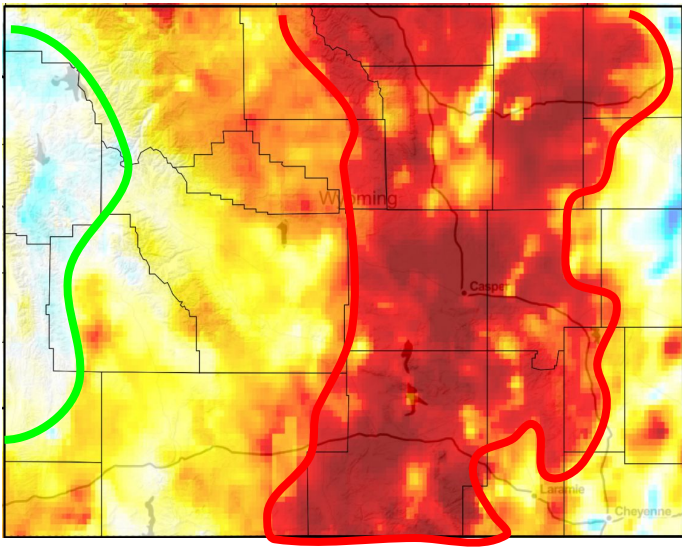


Provisional data, subject to revision

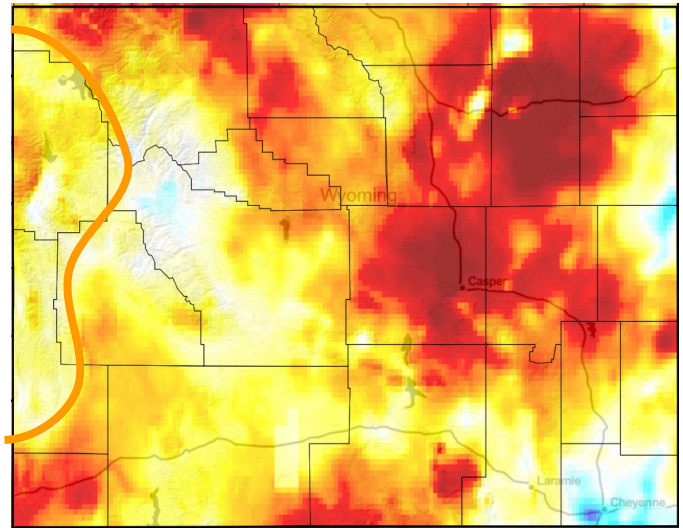




30-Day  
➔



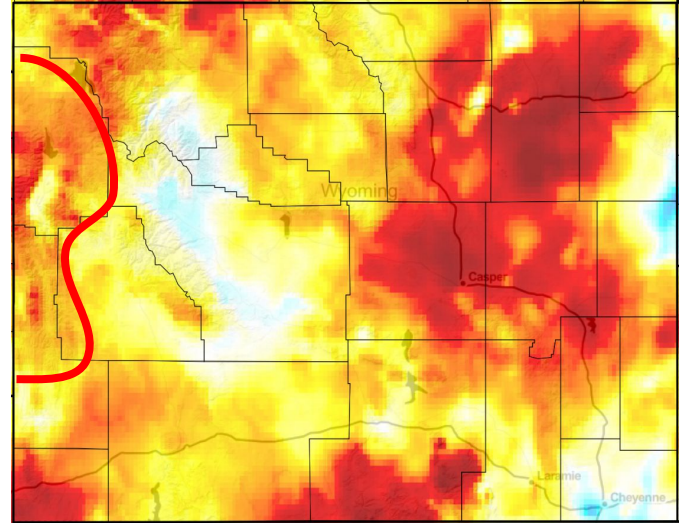
60-Day  
➔

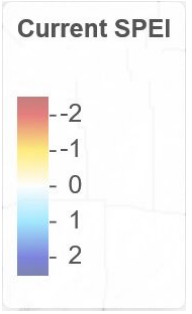


# Standardized Precipitation Index (SPI)

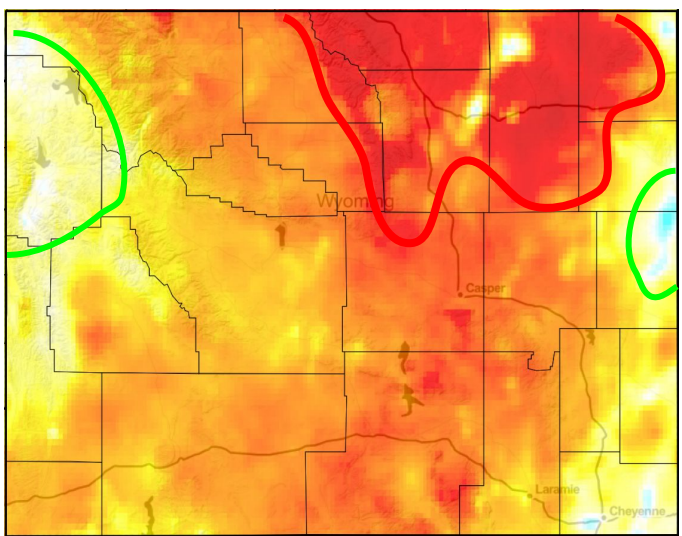
- Minor wet areas caused some improvement
- Dry conditions in Northeast/Northcentral Wyoming causing further degradation of conditions.

90-Day  
➔

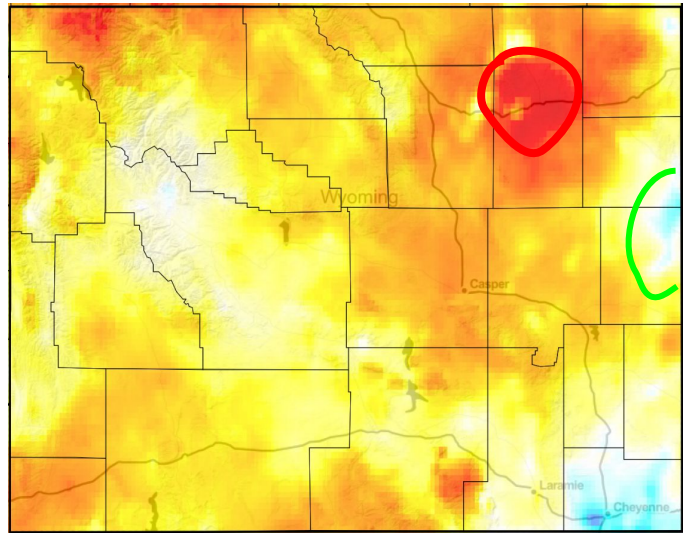




30-Day  
➔



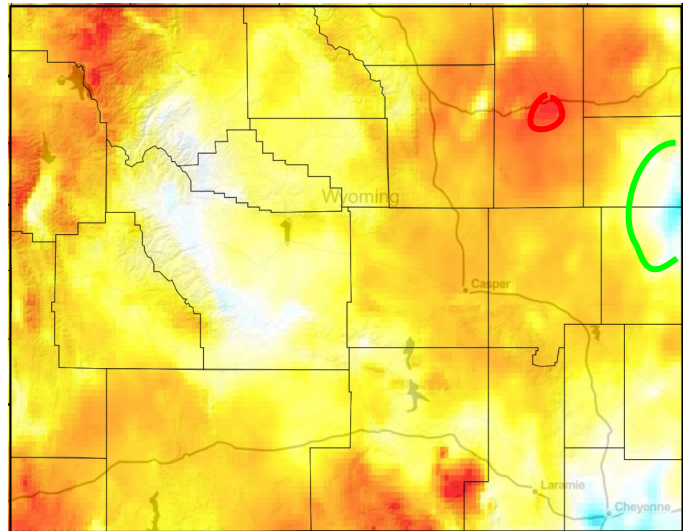
60-Day  
➔



# Standardized Precipitation Evapotranspiration Index (SPEI)

- Minor wet areas caused some improvement
- Dry conditions in Northeast/Northcentral Wyoming causing further degradation of conditions.

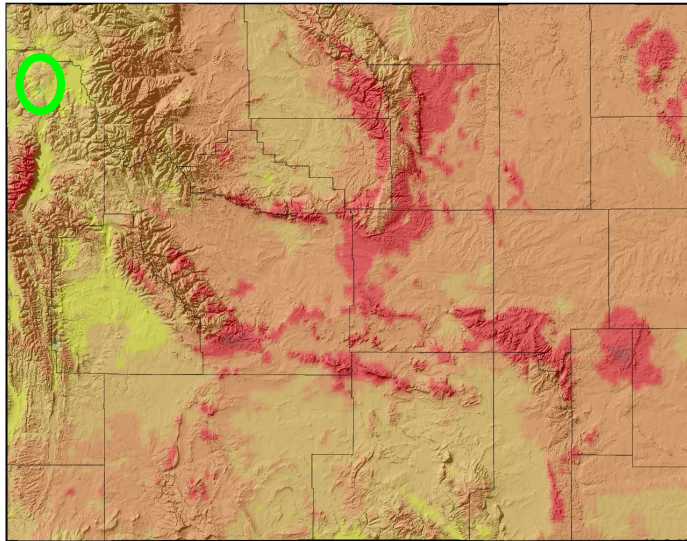
90-Day  
➔



# 14-Day Average **Minimum** Temperature (03 Jun to 16 Jun)

- Higher elev nighttime lows **BARELY** below 32F in **VERY** few spots

14-Day Average Minimum Temperature (Departure from 1991-2020 Average) for 03 Jun 2021 to 16 Jun 2021



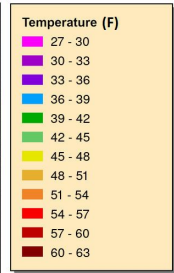
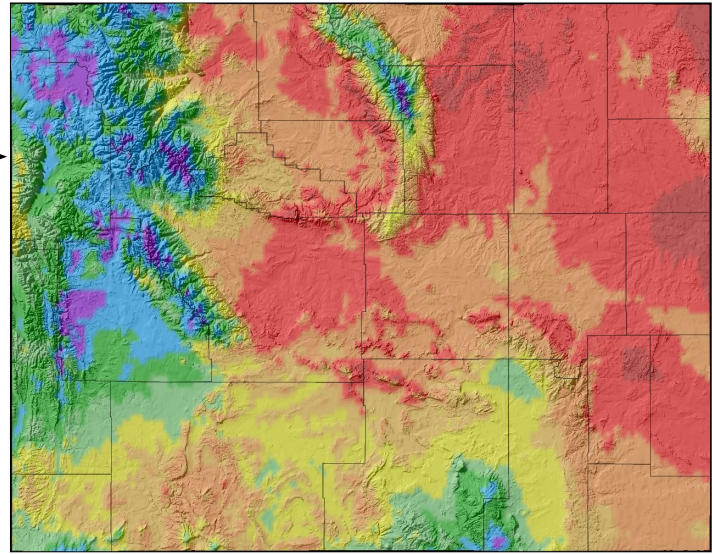
Temperature Data  
PRISM Climate Group  
<http://prism.oregonstate.edu>



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



Provisional data, subject to revision



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

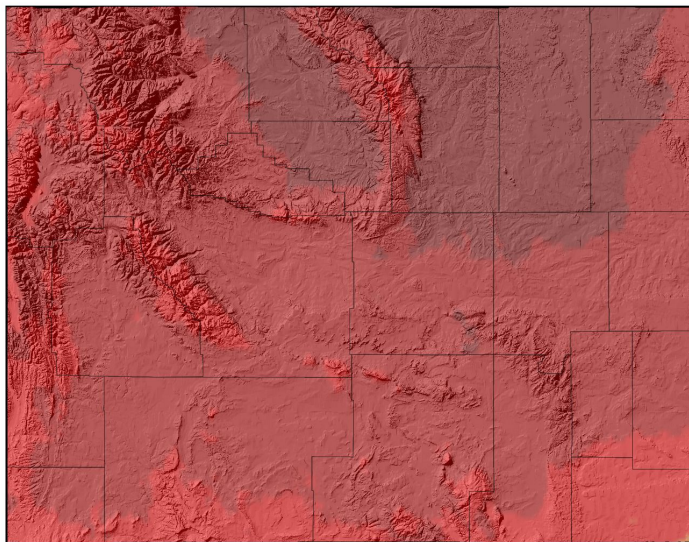
# 14-Day **Departure from Normal** Average **Minimum** Temperature

- Mostly 3-9F above average
- Spotty areas up to 12F above average

# 14-Day Average **Maximum** Temperature (03 Jun to 16 Jun)

- Lowest Daytime highs above 50F
- 90s for much of northcentral/northeast

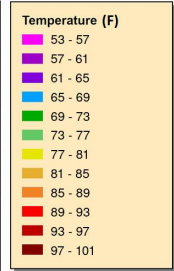
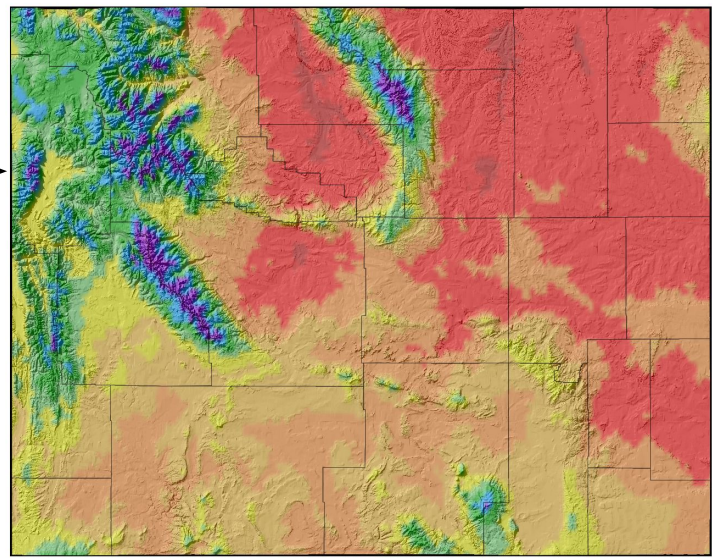
14-Day Average Maximum Temperature (Departure from 1991-2020 Average) for 03 Jun 2021 to 16 Jun 2021



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



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

Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>  
Map Created 17 Jun 2021 <http://www.wrds.uwyo.edu>  
Temperature averages created from PRISM daily temperature grids

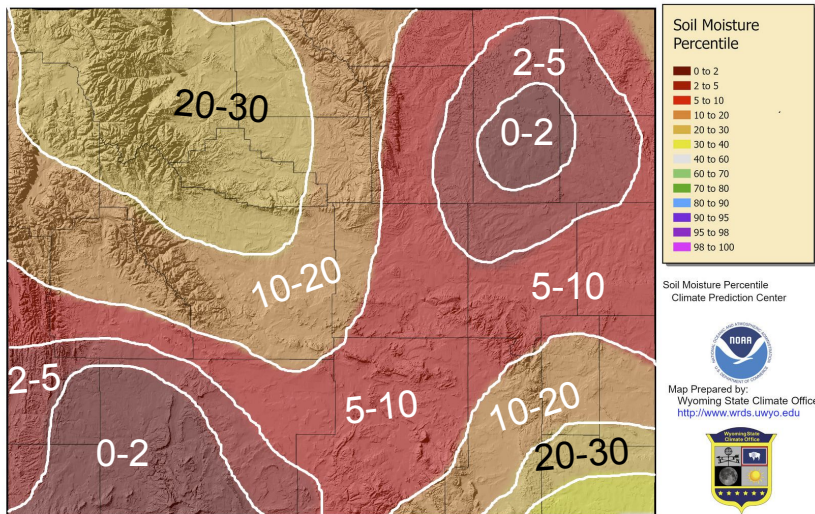
# 14- Day *Departure from Normal* Average **Maximum** Temperature

- FAR south 9-12F above average
- Most of state 12F or more above average

# Soil Moisture Percentile

**Two Weeks Ago**  
**02 Jun 2021**

Soil Moisture Percentile for 02 Jun 2021

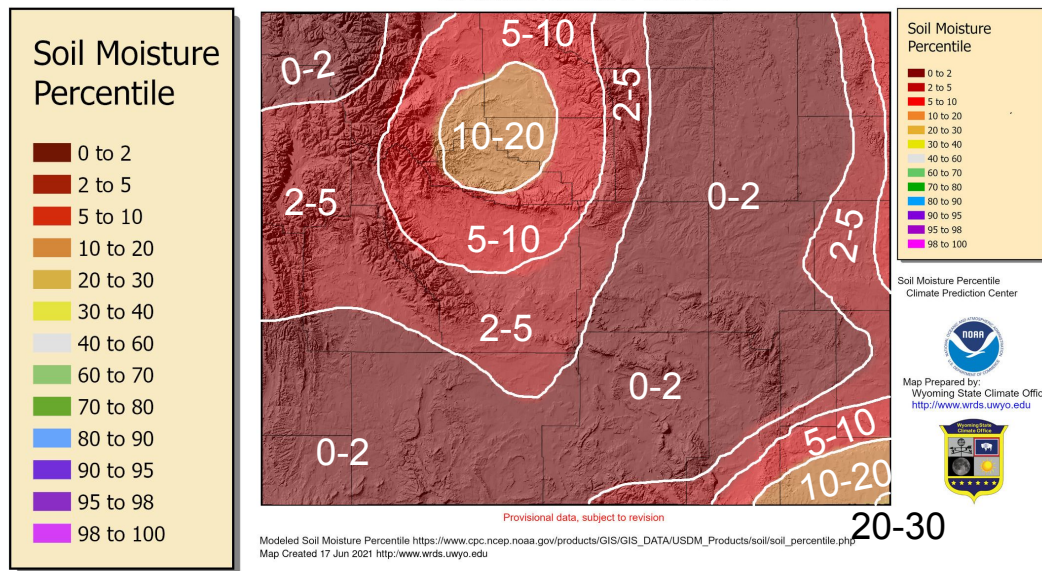


Provisional data, subject to revision

Modeled Soil Moisture Percentile [https://www.cpc.ncep.noaa.gov/products/GIS/GIS\\_DATA/USDM\\_Products/soil/soil\\_percentile.php](https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php)  
Map Created 03 Jun 2021 <http://www.wrds.uwyo.edu>

**16 Jun 2021**

Soil Moisture Percentile for 16 Jun 2021



Provisional data, subject to revision

Modeled Soil Moisture Percentile [https://www.cpc.ncep.noaa.gov/products/GIS/GIS\\_DATA/USDM\\_Products/soil/soil\\_percentile.php](https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php)  
Map Created 17 Jun 2021 <http://www.wrds.uwyo.edu>

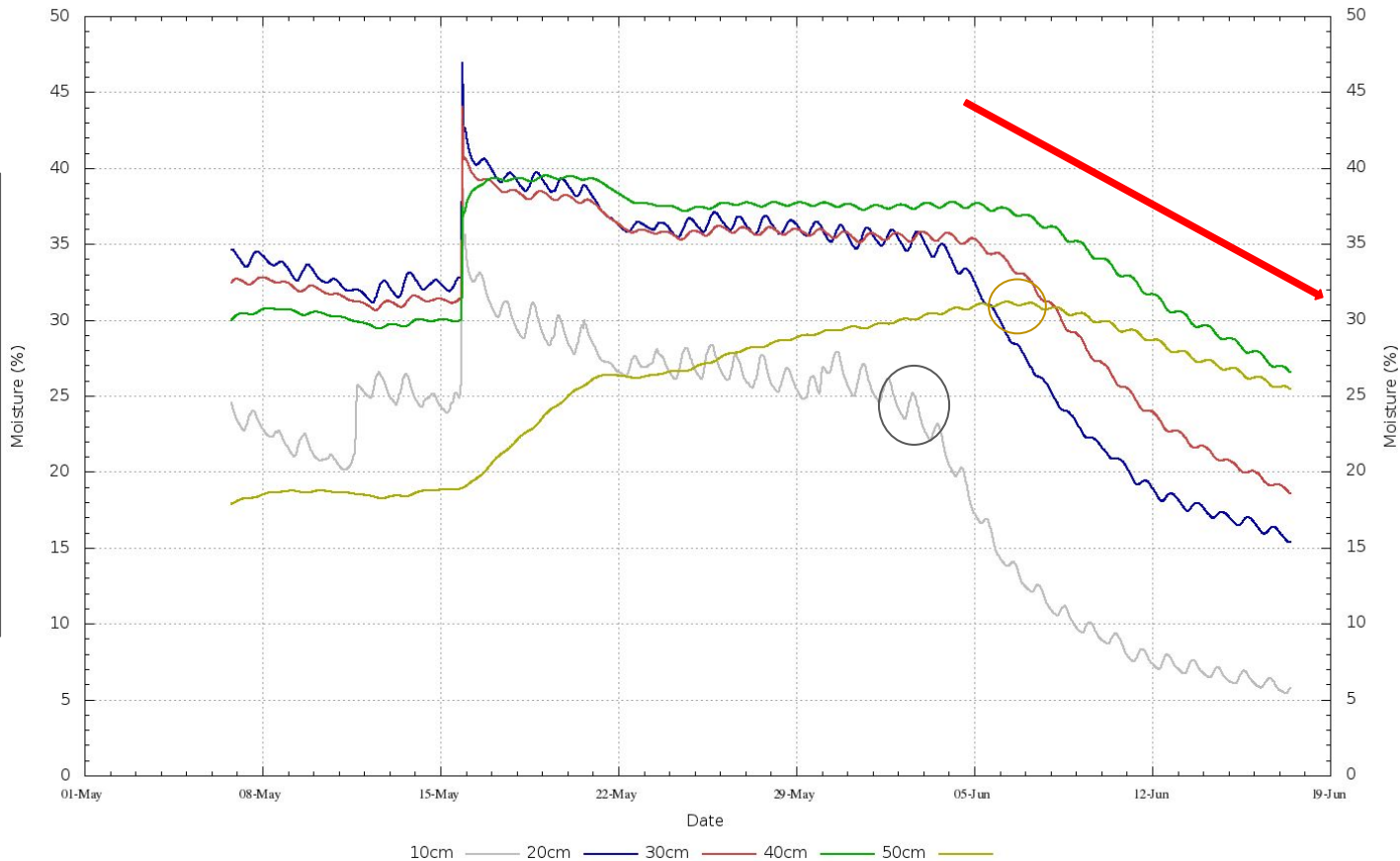
Soil Moisture has worsened in all areas except where already in the lowest category



# Soil Moisture at Thunder Basin Grasslands

## Campbell/Converse County Line Area

Thunder Basin Grasslands - 2021-06-17 10:00:00 (Created Thu Jun 17 11:05:01 MDT 2021)



Continually losing moisture.

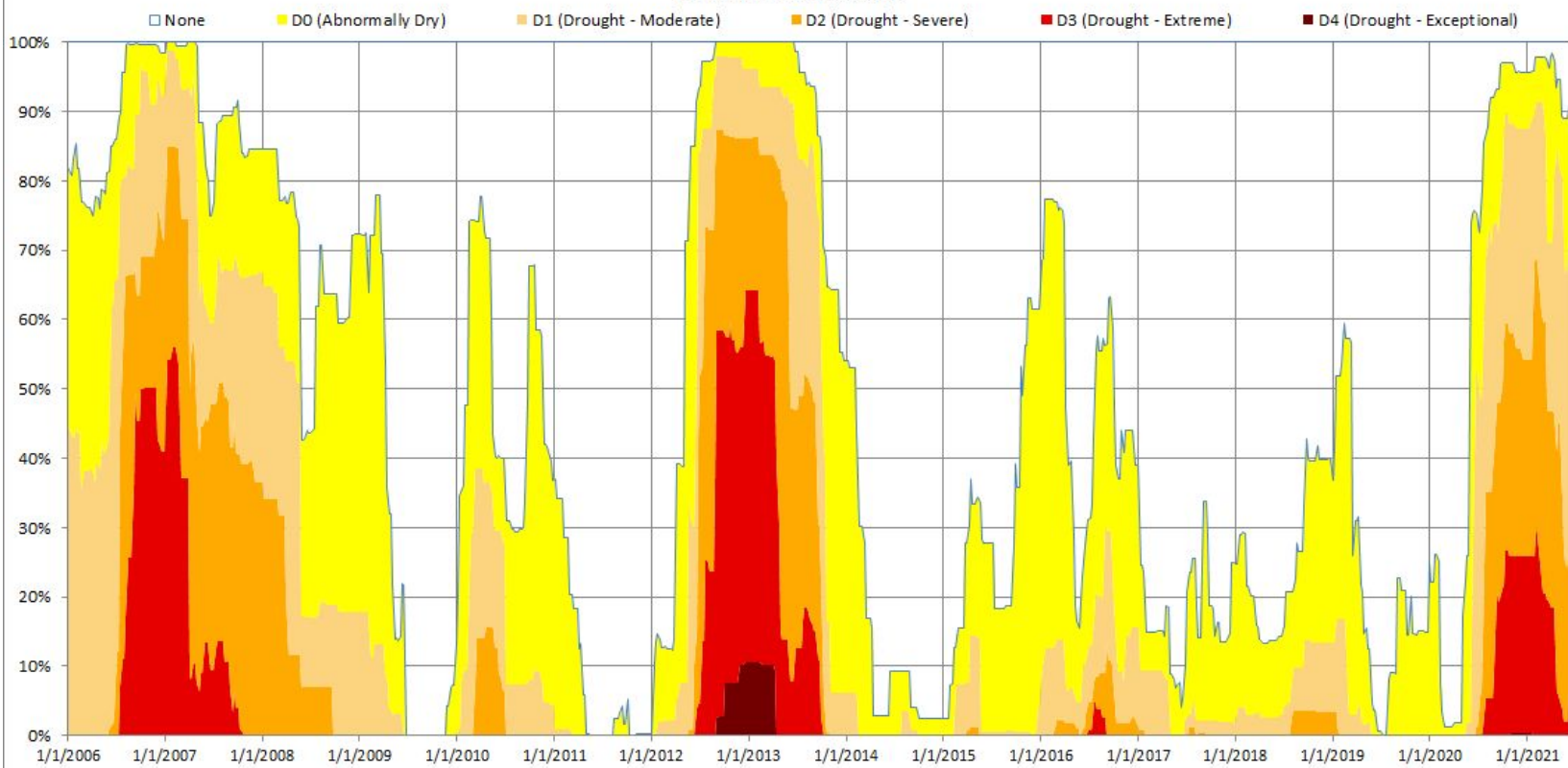
Start at shallow depths about 2 weeks ago.

Even at 50cm (20") declining steadily for last 10 days.



## Percentage of Wyoming in each Drought Category by Week

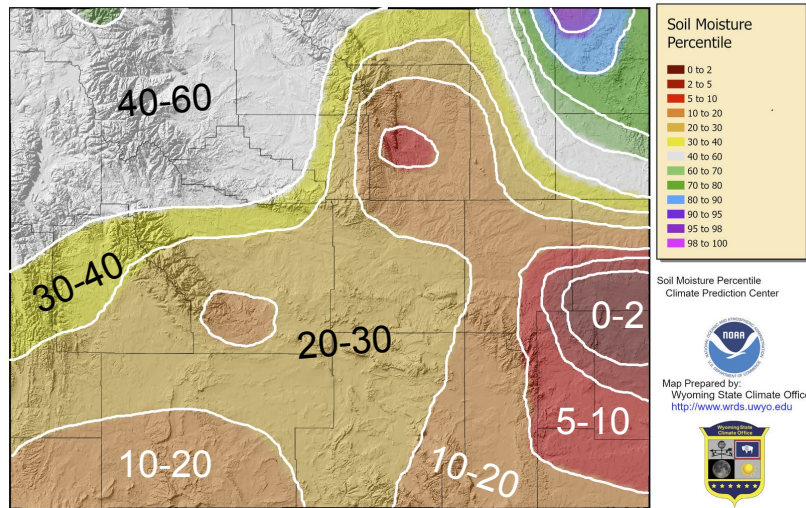
01-Jan-2006 to 15-Jun-2021



# Soil Moisture Percentile

**Eight Years Ago**  
**16 Jun 2013**

Soil Moisture Percentile for 16 Jun 2013

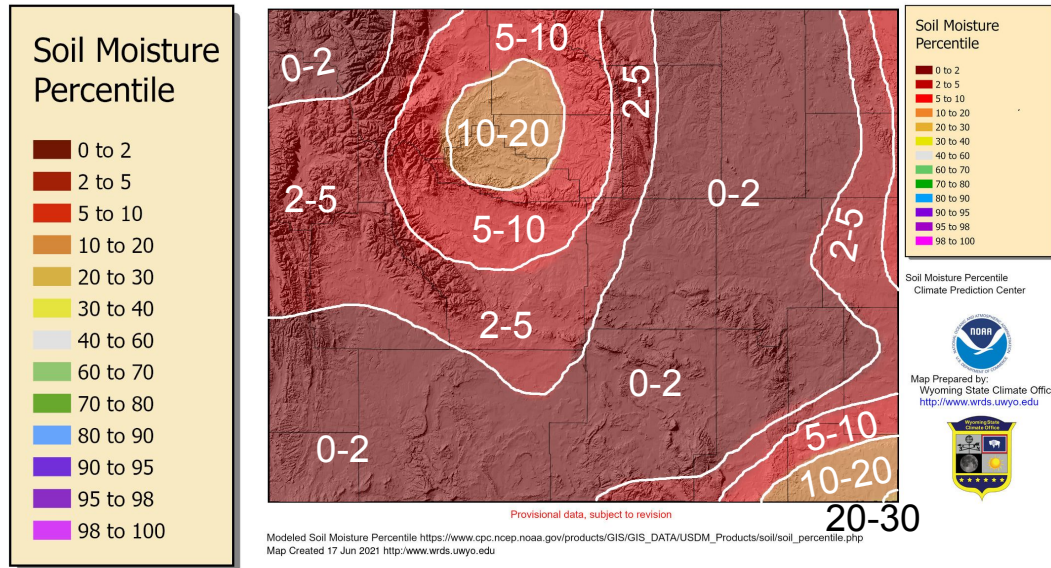


Provisional data, subject to revision

Modeled Soil Moisture Percentile [https://www.cpc.ncep.noaa.gov/products/GIS/GIS\\_DATA/USDM\\_Products/soil/soil\\_percentile.php](https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php)  
Map Created 16 Jun 2013 <http://www.wrds.uwyo.edu>

**16 Jun 2021**

Soil Moisture Percentile for 16 Jun 2021



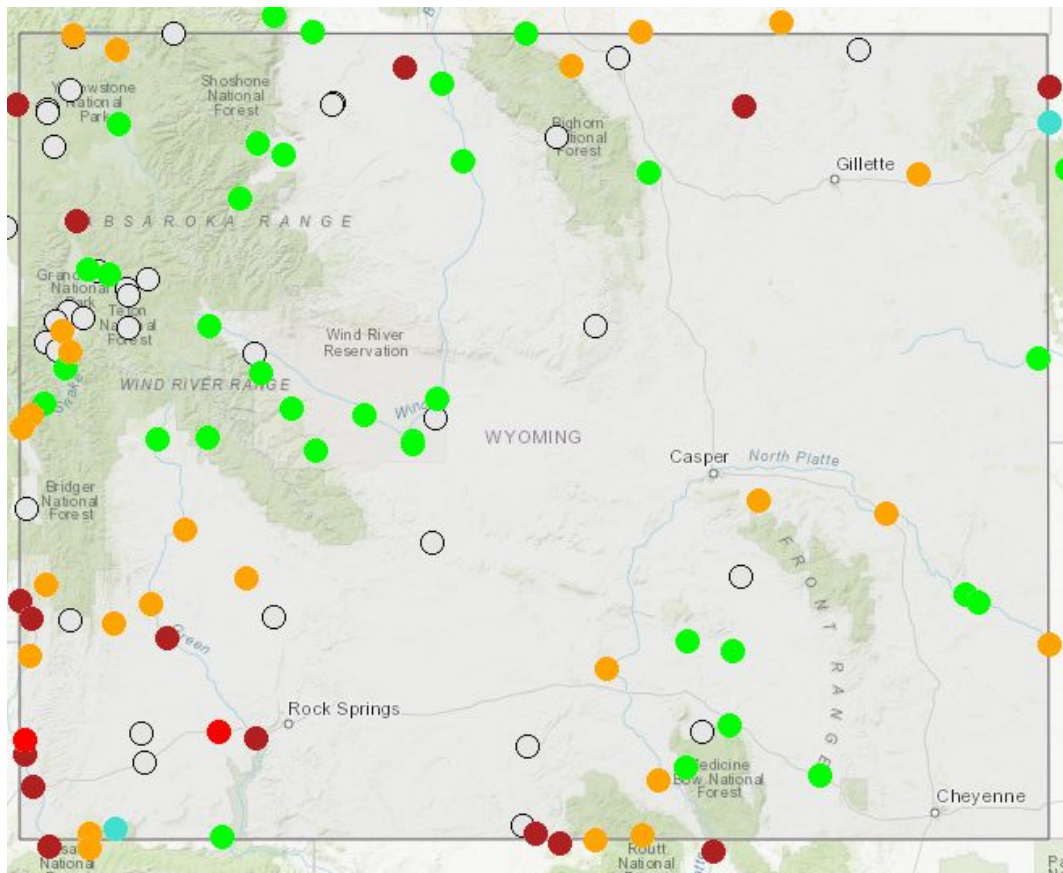
Provisional data, subject to revision

Modeled Soil Moisture Percentile [https://www.cpc.ncep.noaa.gov/products/GIS/GIS\\_DATA/USDM\\_Products/soil/soil\\_percentile.php](https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php)  
Map Created 17 Jun 2021 <http://www.wrds.uwyo.edu>









Soil Moisture has worsened in all areas except where already in the lowest category



# Current 7 Day Average Streamflow

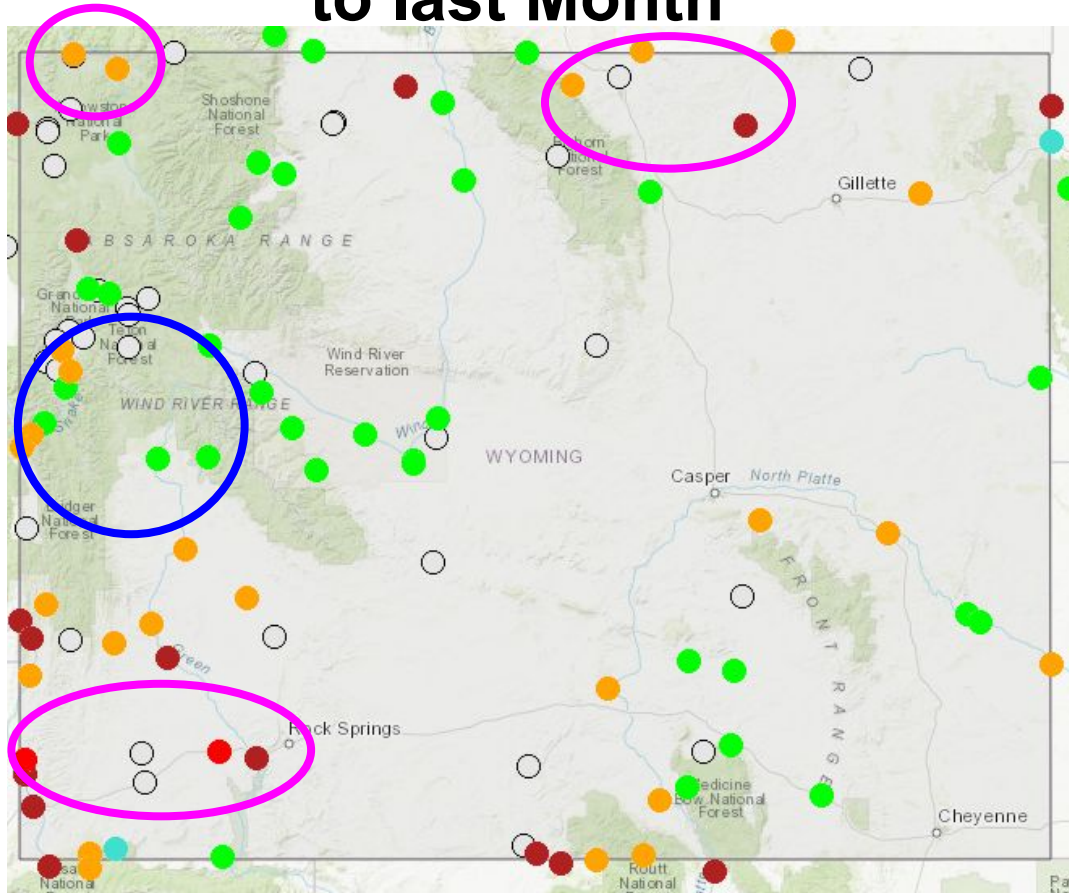


- “Normal” 25-75 percentile.
- White- not ranked or missing data
- Most green on the map is below the median

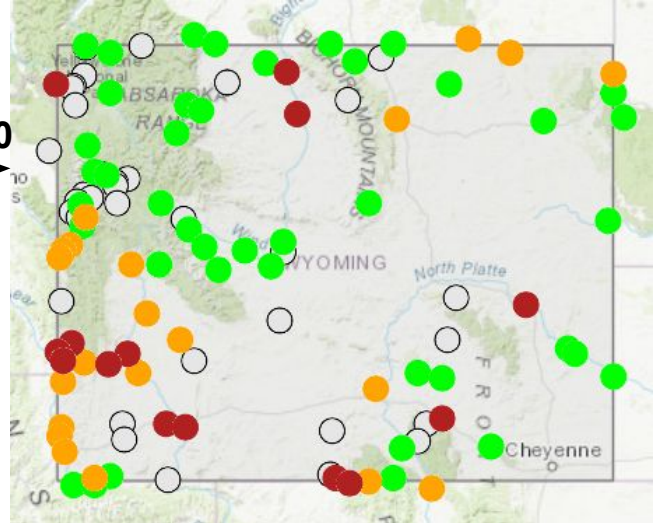
Explanation - Percentile classes							
							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

<https://waterwatch.usgs.gov>

# 7 Day Avg Compared to last Month



May 20



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

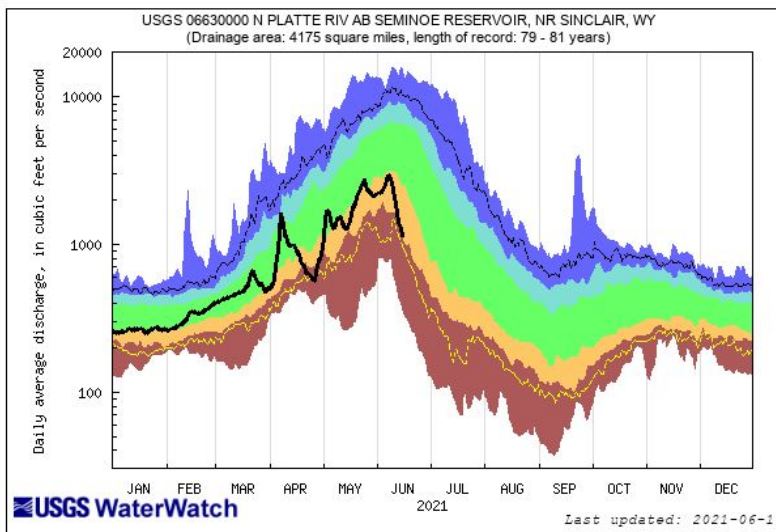
<https://waterwatch.usgs.gov>

# Streamflow Conditions

As of 06/16/2021

- Significant high flow conditions have **not** been observed 2021.
- Peak flows are typically observed in early-mid June. (higher elevation sites)
- Moving on to the falling limb and baseflow

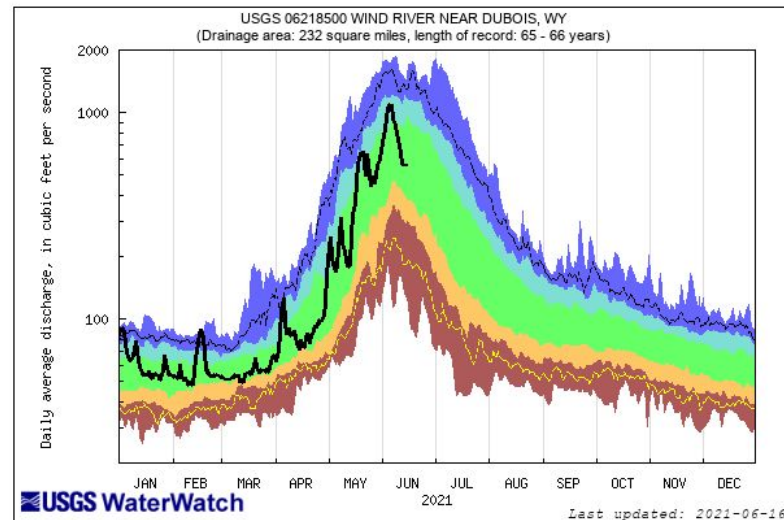
<https://waterwatch.usgs.gov>



N Platte River AB  
Seminoe Reservoir

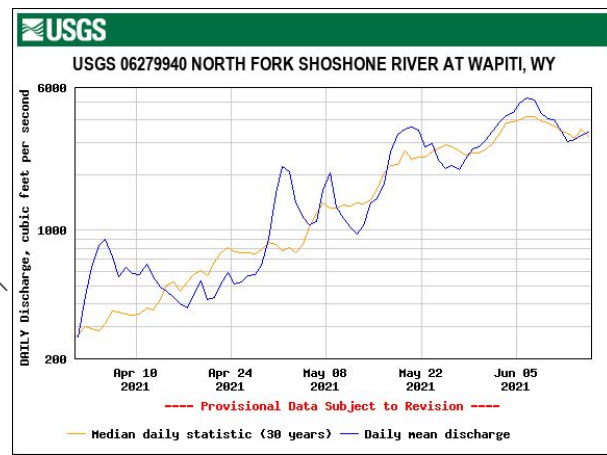
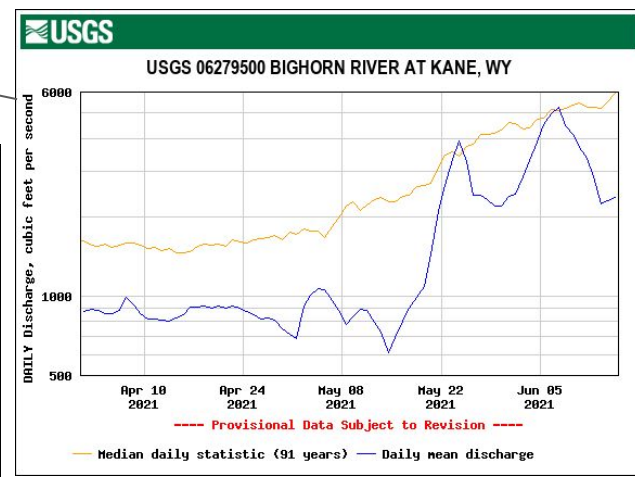
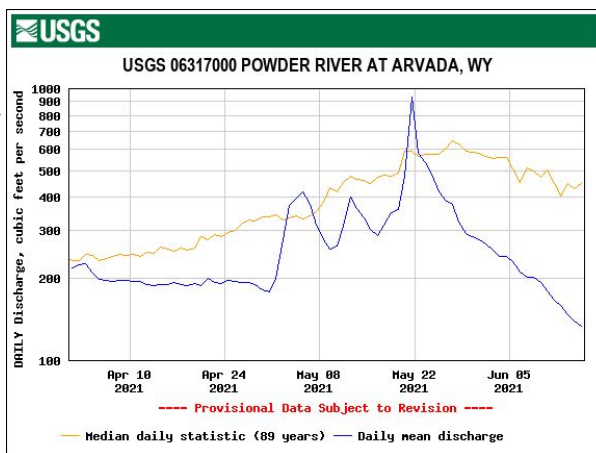
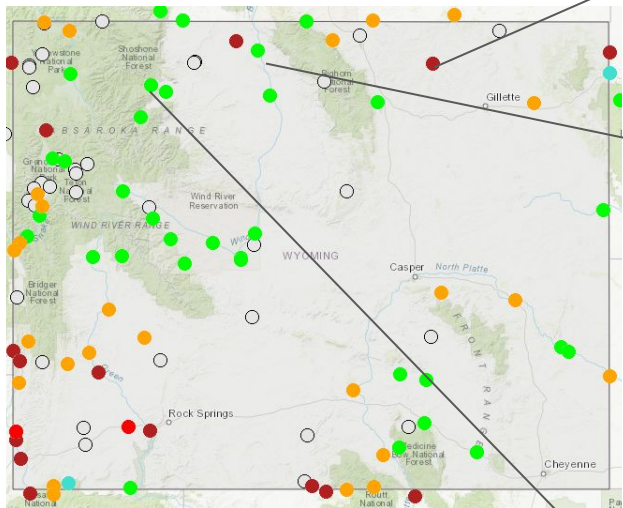


Wind River Near  
Dubois



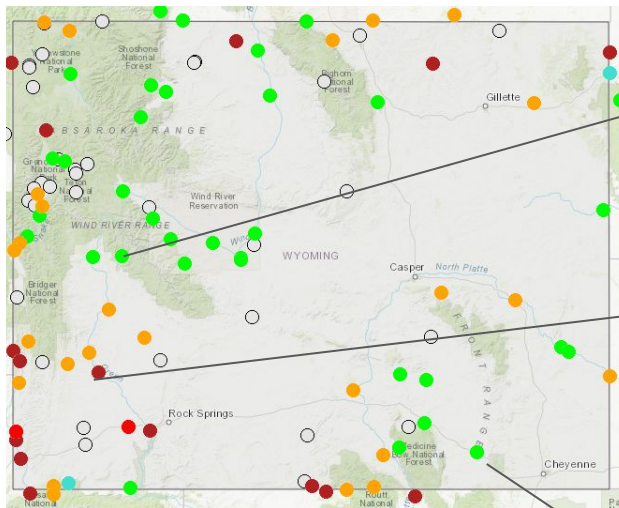
Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal		Below normal	Normal	Above normal	Much above normal	Flow

# Runoff in the North

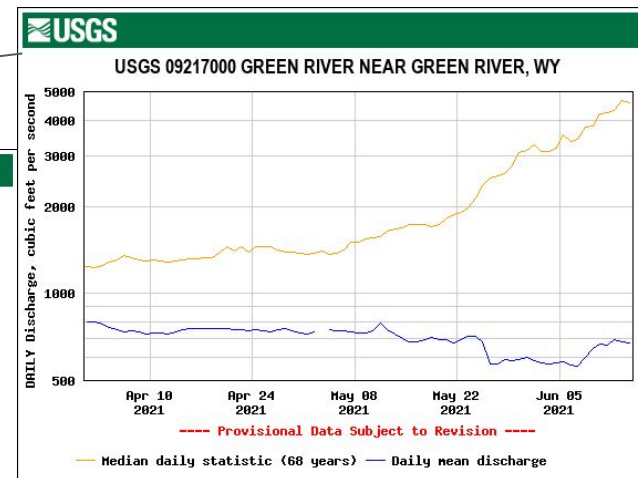
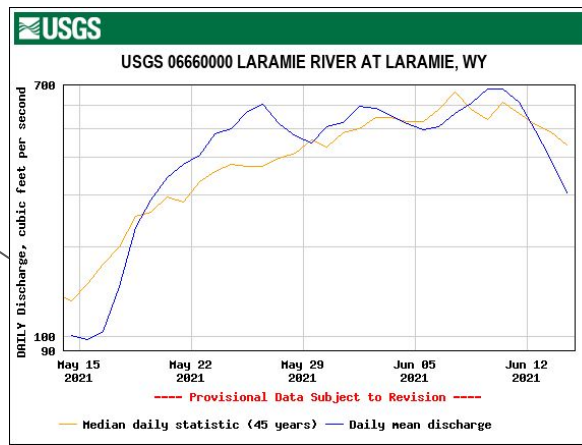
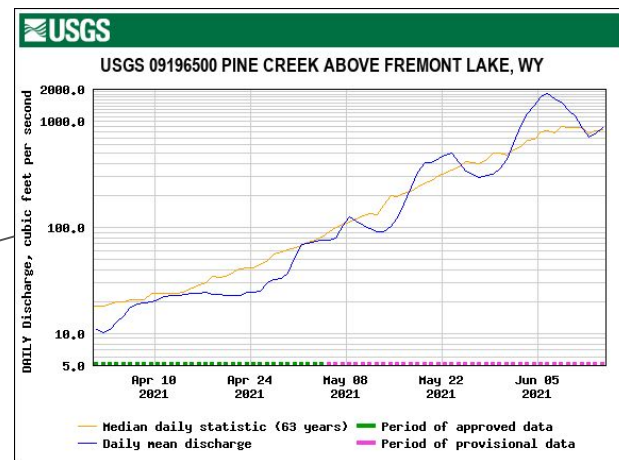


<https://waterwatch.usgs.gov>  
<https://waterdata.usgs.gov/>

# Runoff in the South/Central

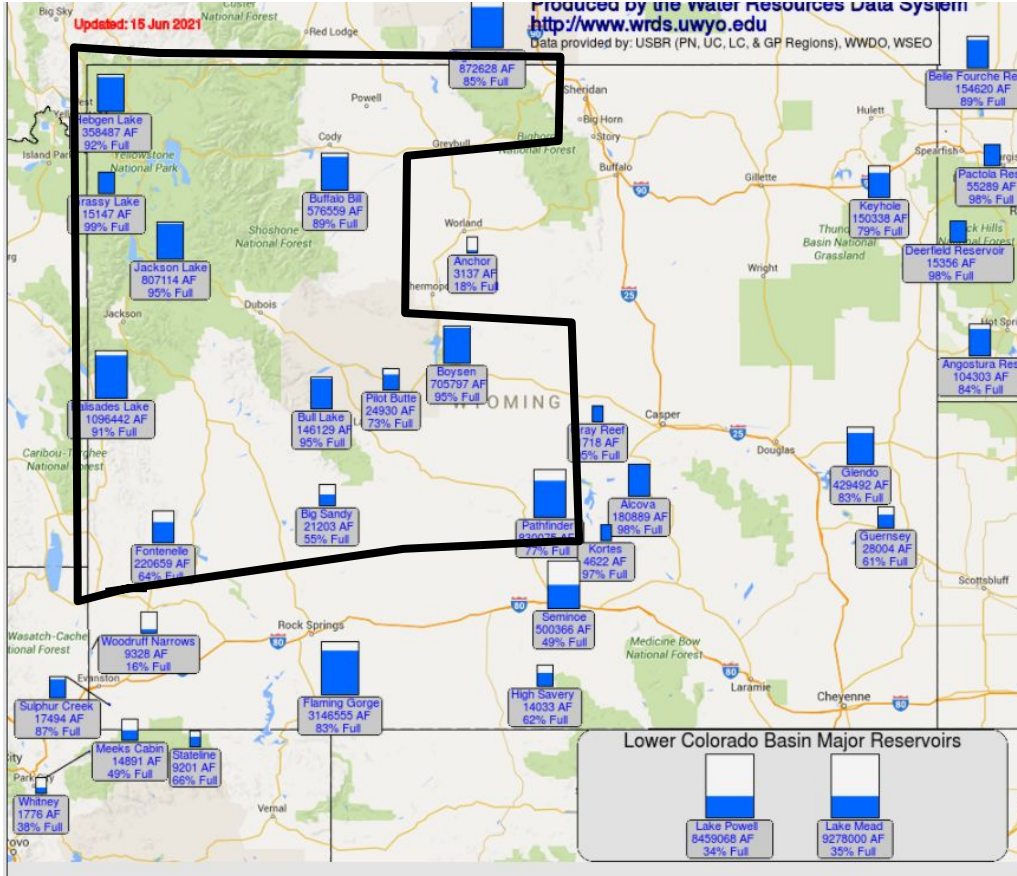


<https://waterwatch.usgs.gov>  
<https://waterdata.usgs.gov/>

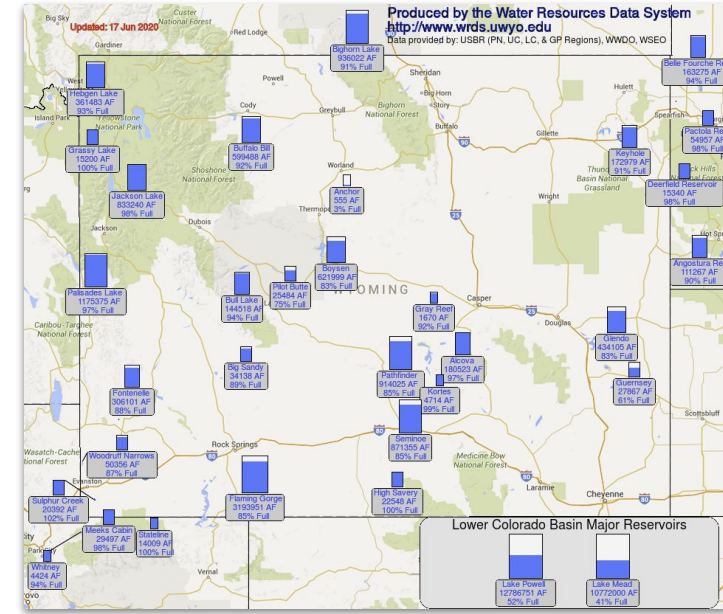


# Reservoir Storage (6/17/21)

- Reservoirs in northwest and west central gained storage.
- The rest stayed the same or lost storage.
- Compared to last year, less water in storage.



**2020**



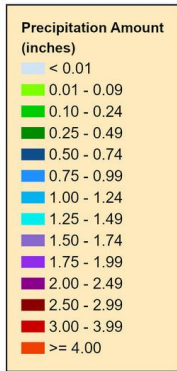
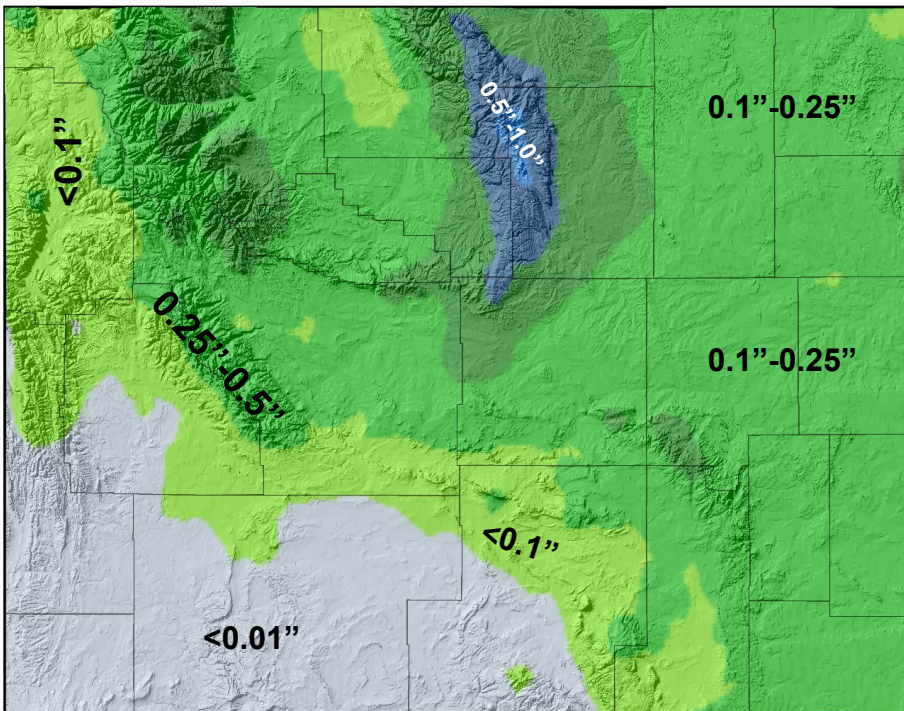


# Forecasts & Outlooks



# 7-Day Quantitative Precipitation Forecast June 17 - 24

7-Day Quantitative Precipitation Forecast 17 Jun 2021



Forecast:  
Weather Prediction Center



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



- Quantitative Precipitation Forecast = Liquid Precipitation Forecast
- Isolated storms Today/Friday for South Wyoming. Becoming more scattered Saturday south half.
- Cool front will pass through Sunday with widespread light rain & temperatures falling into the 70s/80s Monday.

Provisional data, subject to revision

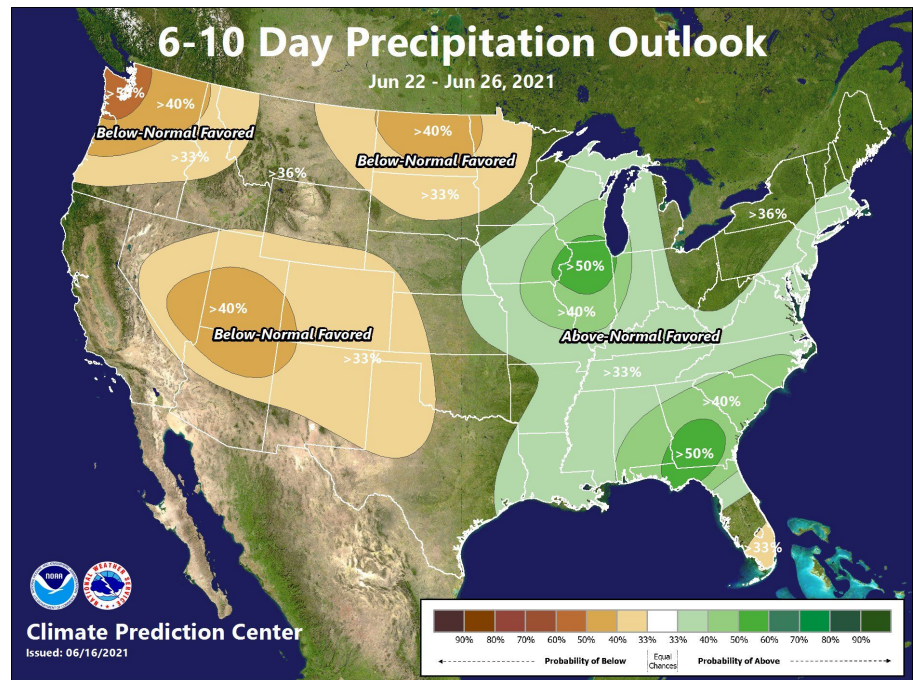
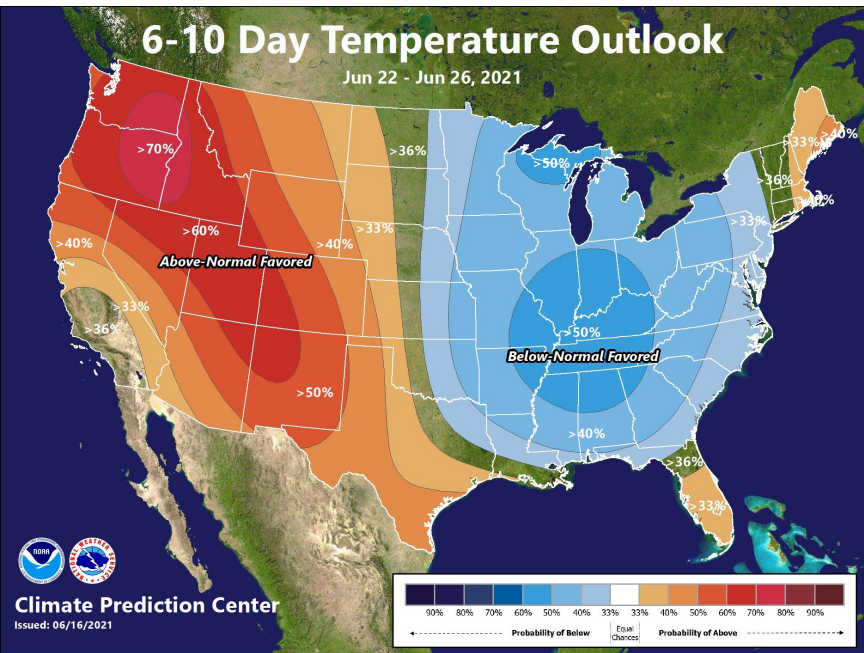




# 6-10 Day Precipitation

June 22 - 26

- Probability = Chance
- Near Equal to Below normal chances of precipitation favored



## 6 - 10 Day Temperatures

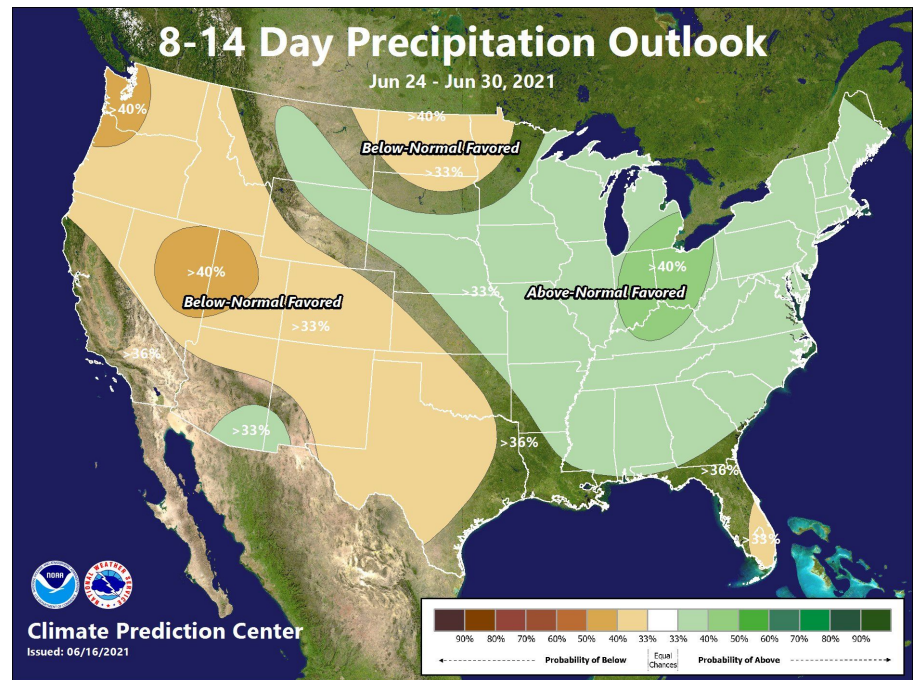
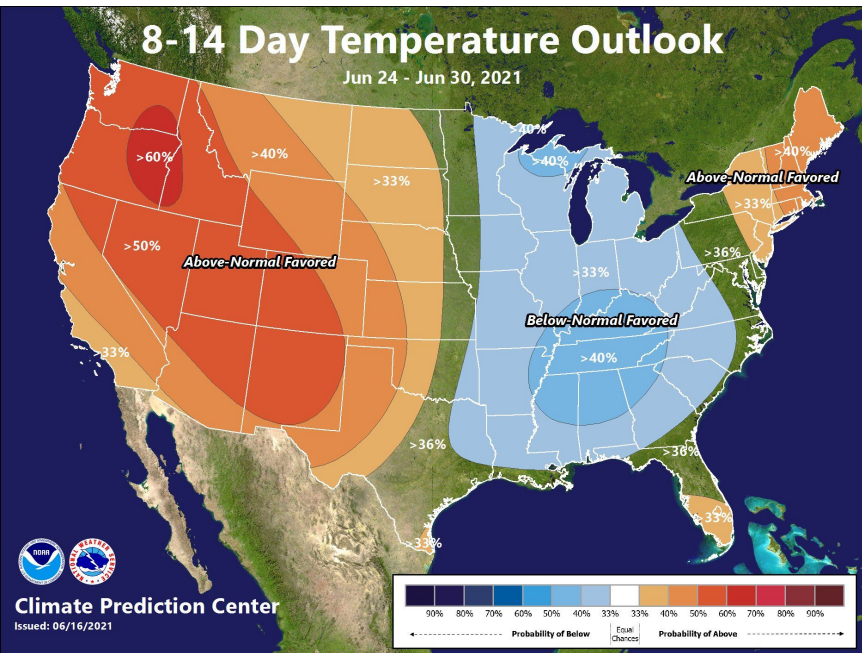
- Decent signal for Above Normal temperatures favored for Wyoming.

<http://bit.ly/3kq3LxA>



# 8-14 Day Precipitation Outlook June 24 - 30

- Probability = Chance
- Mix of Above, Equal Chances, to Slightly Below normal precipitation.

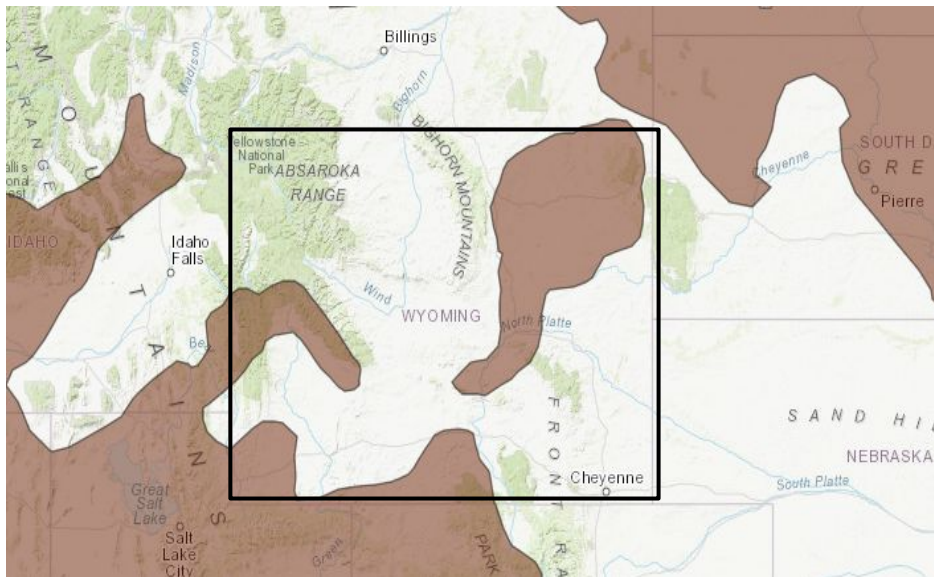


## 8 - 14 Day Temperatures

- Above Normal temperatures favored for WY.

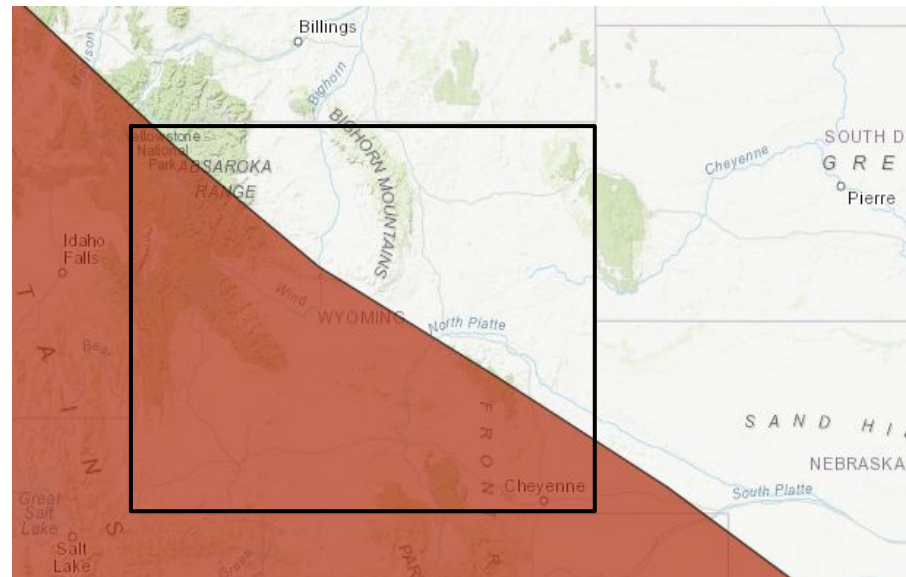


## Climate Prediction Center 3-7 Hazard Outlook: June 19-23



Severe drought remains in Wyoming

## Climate Prediction Center 2-week Hazard Outlook: June 24-30



Excessive Heat Builds mid-next week

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



wcc.nrcs.usda.gov/snow/

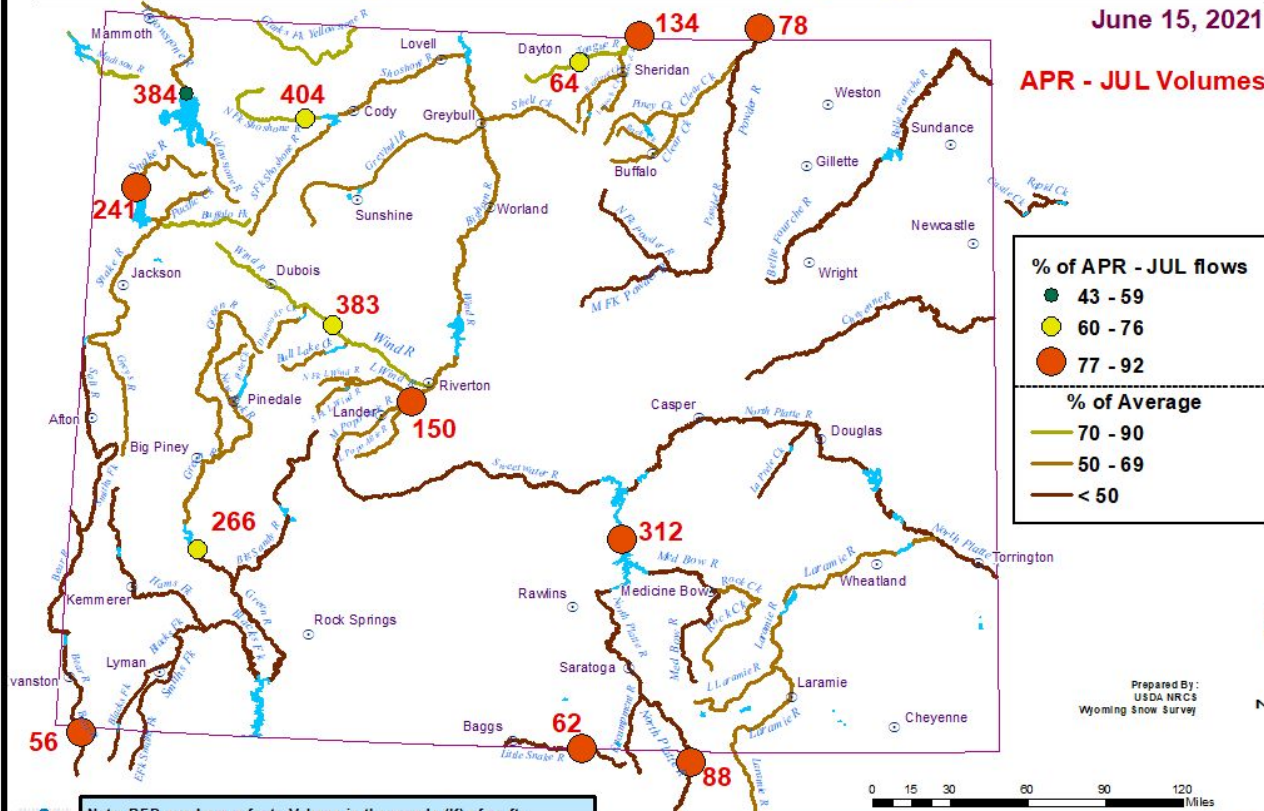
# June 15, 2021 Final Update

- **55 - 65 %** of average streamflow volumes (statewide) through end of July.
- Lowest volumes (<**50%** avg) along Bear, Powder, North Platte, and Little Snake Basins.
- ~ **75%** of April - July flows

# Wyoming Water Supply Outlook

June 15, 2021

APR - JUL Volumes



% of APR - JUL flows	
● (Green)	43 - 59
● (Yellow)	60 - 76
● (Red)	77 - 92
% of Average	
— (Green)	70 - 90
— (Yellow)	50 - 69
— (Brown)	< 50

Note: RED numbers refer to Volume in thousands (K) of ac-ft.  
 One ac-ft is the volume necessary to cover 1 acre at a depth of 1 foot.  
 1 ac-ft is roughly equal to 326,000 gallons of water.

Forecasted volumes represent full natural flow and do not take into account diversions due to irrigation and other water management practices.

Prepared By:  
 USDA NRCS  
 Wyoming Snow Survey





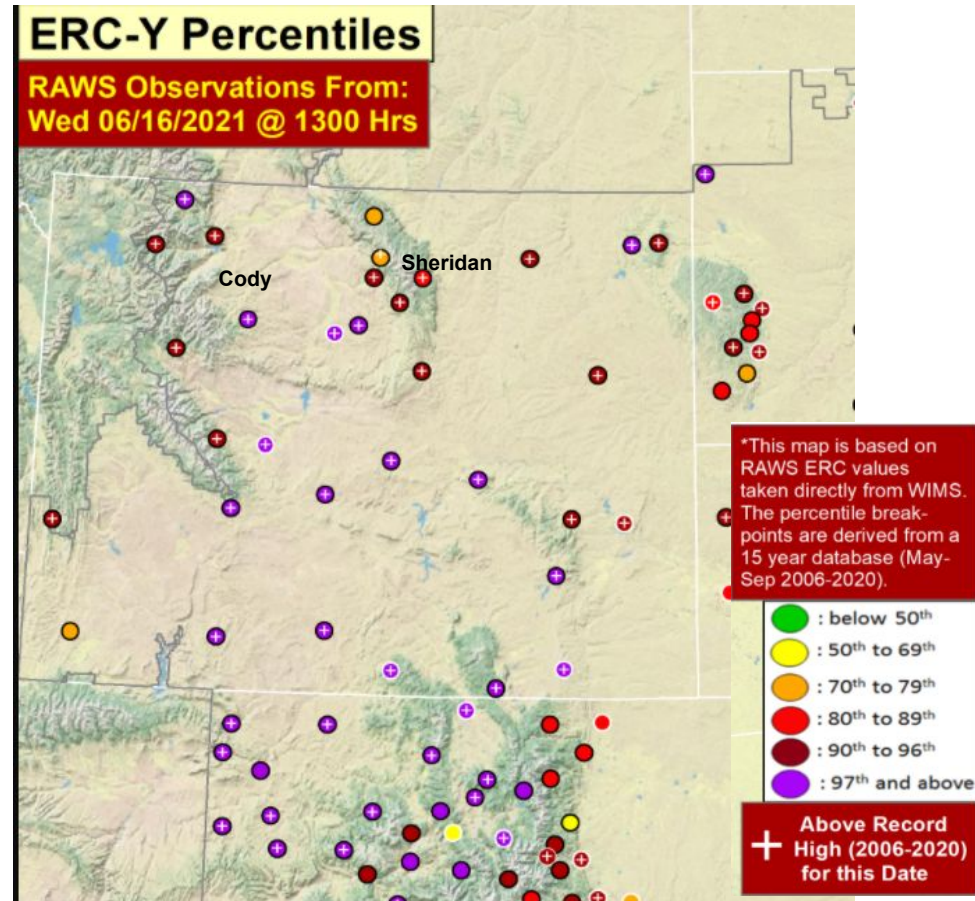
# Green-up and Fuels Status

## ERC= Energy Release Component

- Potential total energy released per unit area within flaming zone of fire.
- Combines live & dead fuel moistures from all size classes.
- Percentiles based on May-September values from last 15 years.

## Currently in Wyoming

- Nearly all stations are reporting ERC's above the 80th percentile with the majority reporting above the 97th percentile.
- Most stations also reporting record high ERC values compared to the same date in past 15 years.
- Fuels starting to cure low to mid elevations across Wyoming, cheatgrass mostly cured.
- At high elevations, fuels still approaching peak green-up.





# 2021 Wildfire Activity to Date

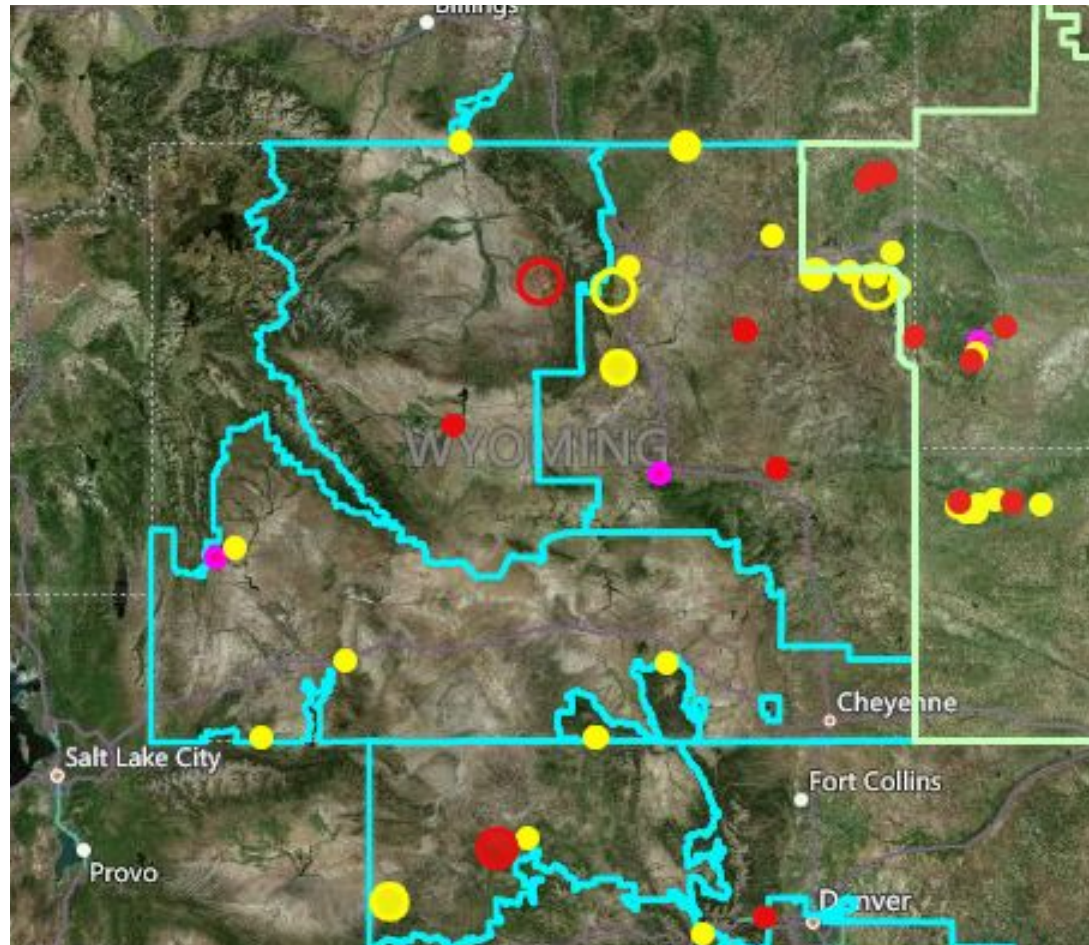
## Recent/Active Fires as of 06/17/2021

- Increased fire activity in last two weeks.
  - Type 2 IMT Assigned to Robinson Fire in southern Bighorns.
- Fires burning actively in a variety of fuel types.
- Increased fire activity neighboring states as well.

New Fires Initial Attack Age < 30 hrs ●

Ongoing Fires Age < 10 days & Updated < 5 days ●

Prescribed Fires Age < 10 days & Updated < 5 days ●



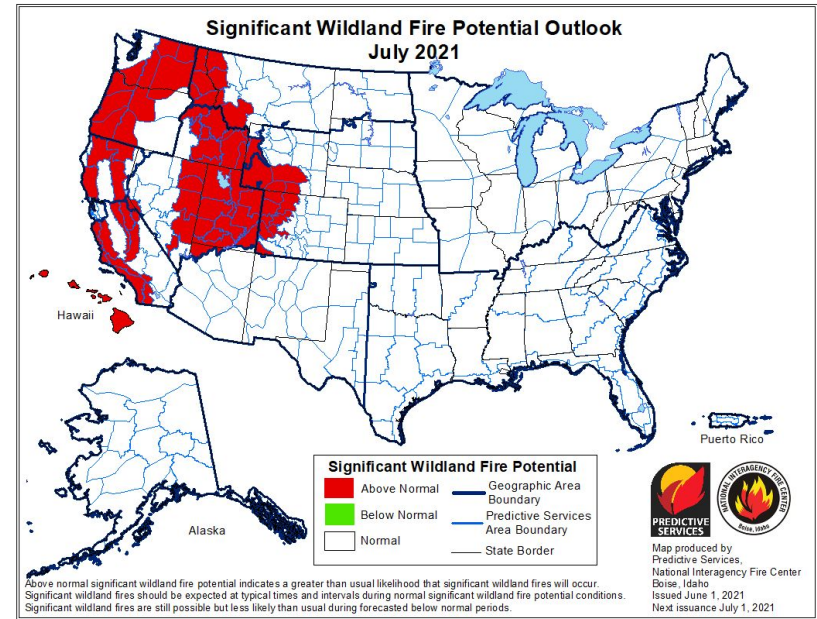
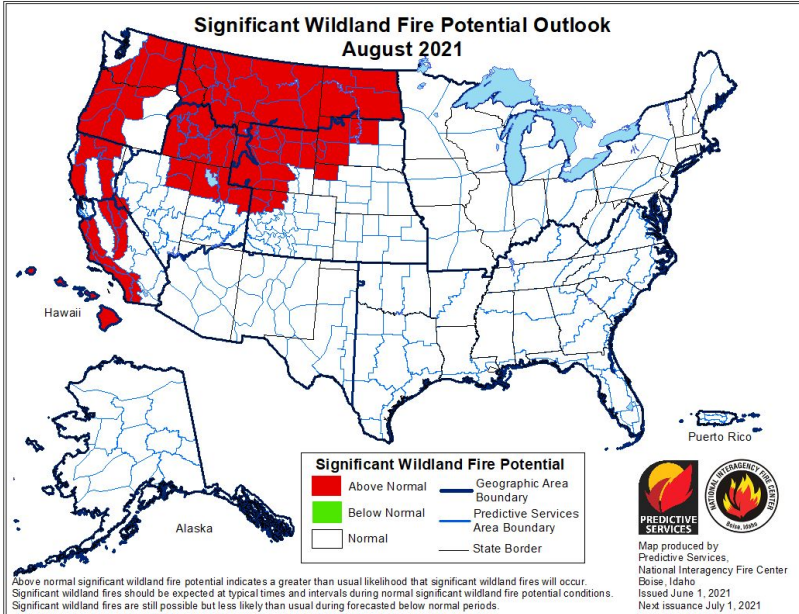


# Wildland Fire Outlooks

## July 2021

Issued **June 1, 2021**

- Large Shift in Danger from last month to this month.
- 1-2 months ahead of schedule.



## August 2021

- Most of Wyoming into Above Normal Significant Wildfire potential by August.
- Concerning from not only from an occurrence standpoint but a resource perspective.



# How to get involved ...

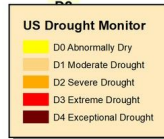
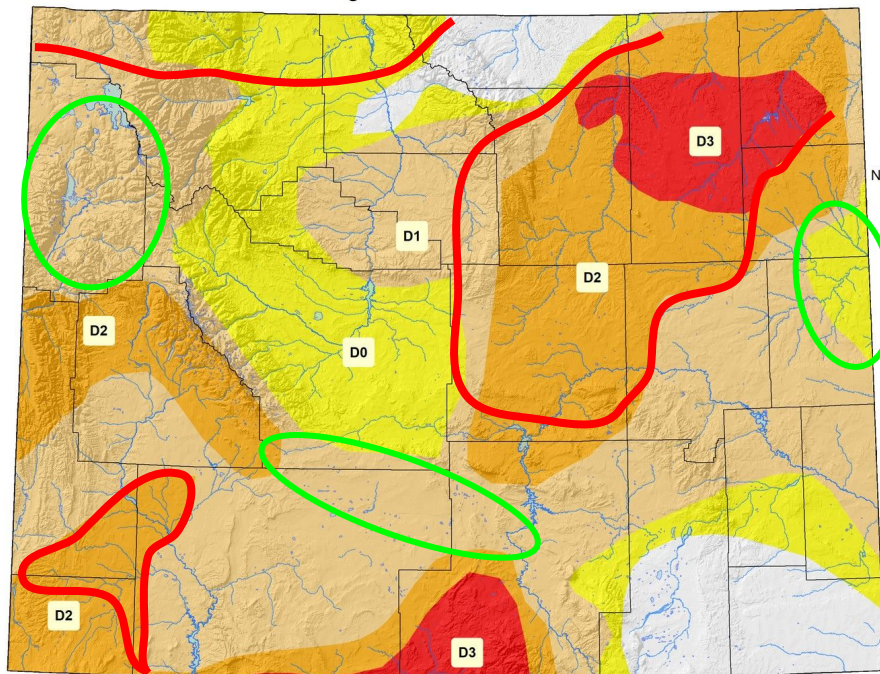


# US Drought Monitor for June 15, 2021

(Released Thursday, June 17, 2021)

Valid 8 a.m. EDT

US Drought Monitor as of 15 June 2021



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



Map Layout Prepared by:  
Wyoming State Climate Office  
<http://www.wrds.wyo.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

A few **improvements** since the last webinar followed by several **degradations**. Dry across most the state.

D4

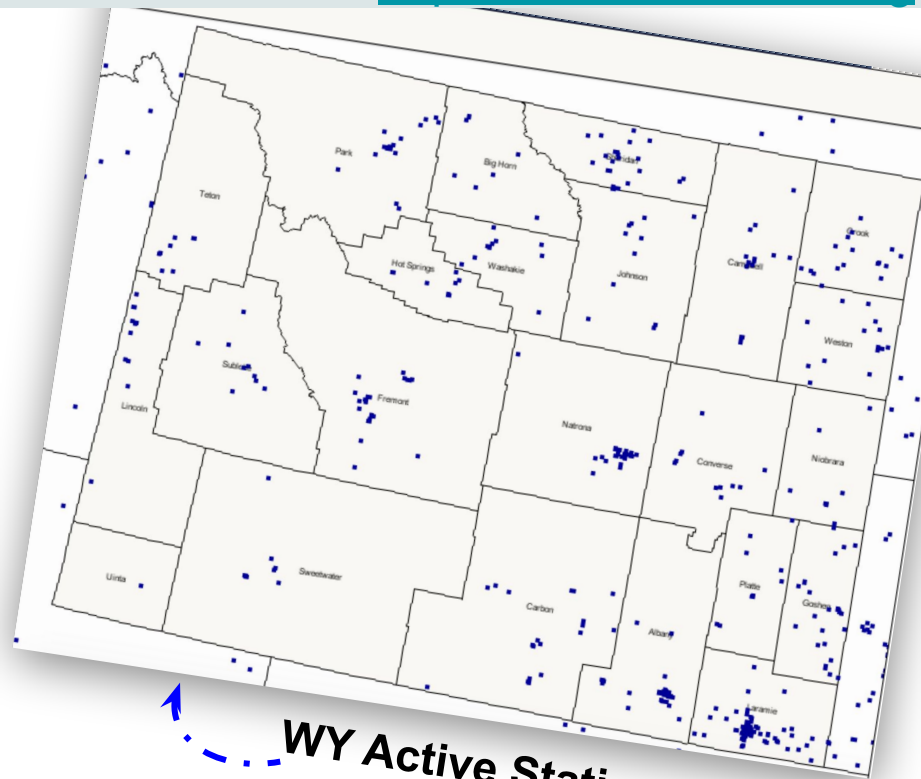
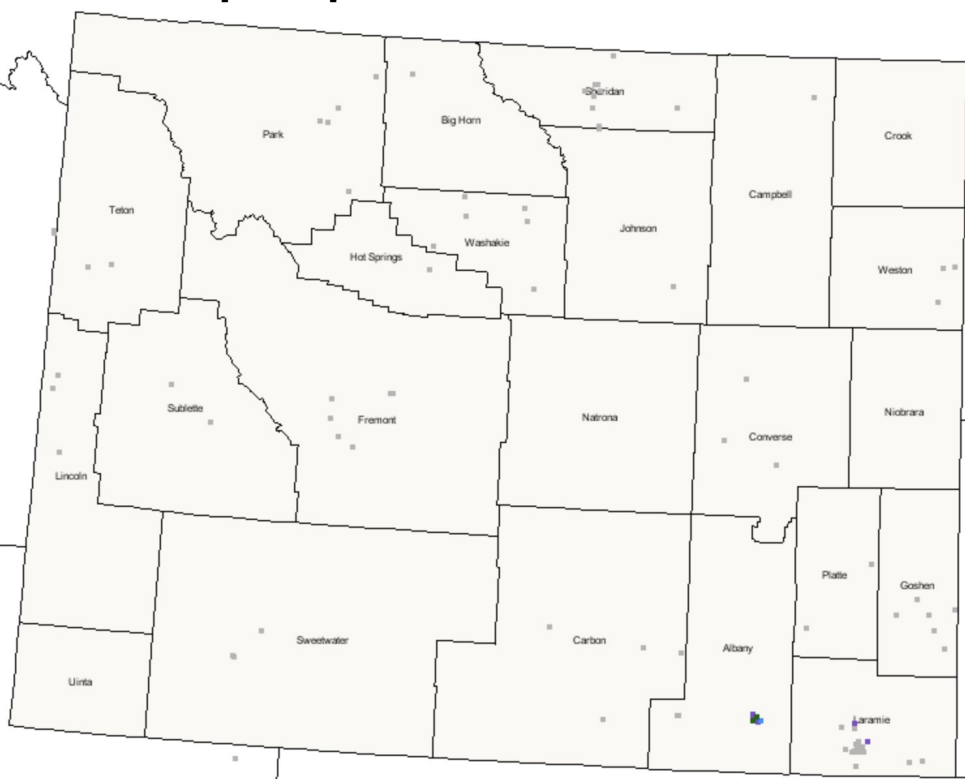
The U.S. Drought Monitor, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln. The U.S. Drought Monitor website is hosted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



# CoCoRaHS Mapping System

<https://www.cocorahs.org>

**June 17, 2021:  
24-hour precip as of ~ 7 am**



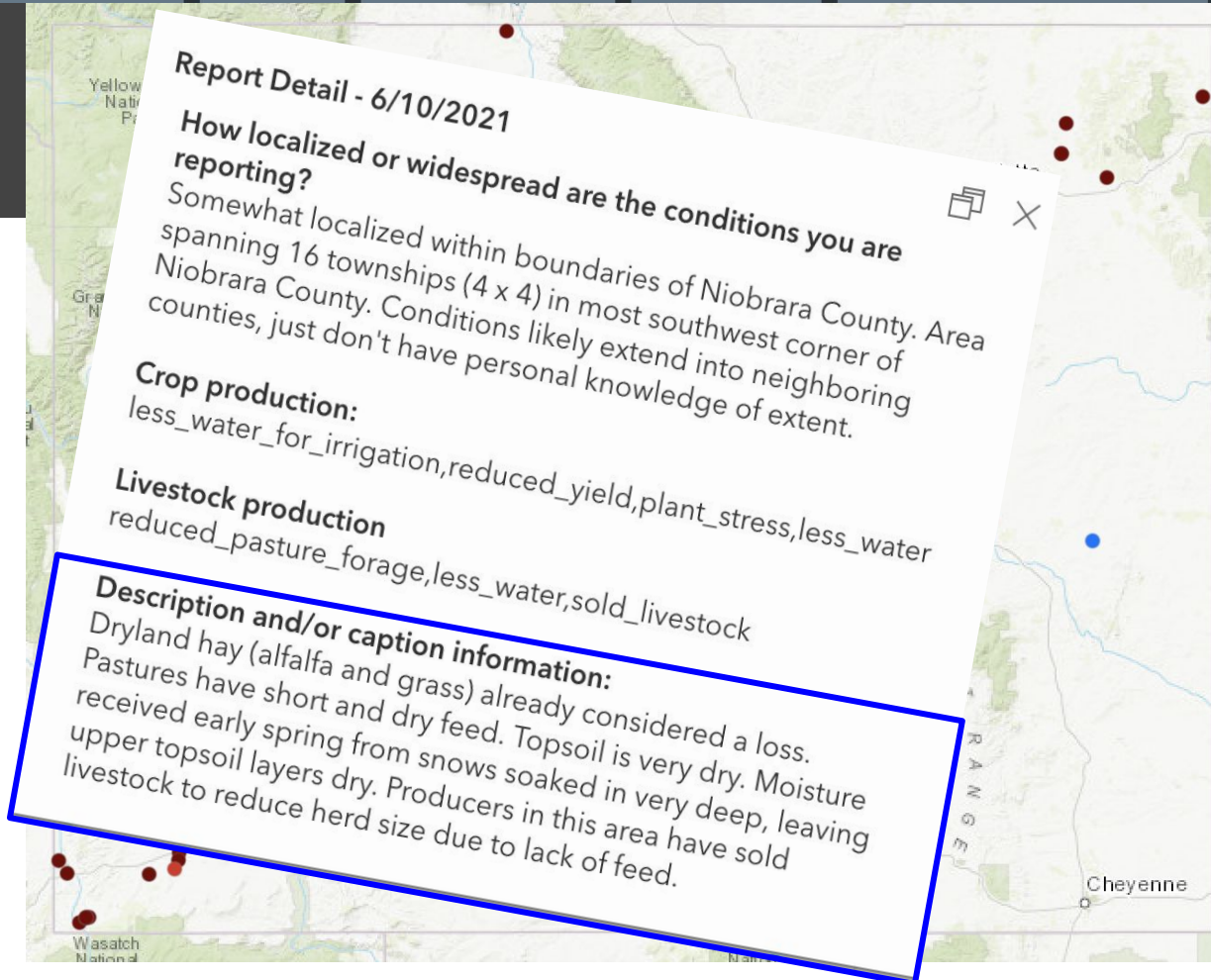
**WY Active Station Locations**



# Condition Monitoring Observer Reports

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

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



# Condition Monitoring Observer Reports

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

**County:** Sublette

**Date:** 6/16/2021

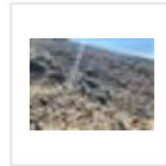
**How dry or wet:** Severely Dry

How localized or widespread are the conditions you are reporting?

Middle piney drainage appears to be the worst. Surrounding area are also really bad

## Description and/or caption information:

First photo is of range pasture on BLM. We pulled off at 50% usage do to lack of feed and water Second photo is of irrigated pasture. It typically looks like a nice meadow. 1-2" nap length this year. Approximately 75% of irrigated pasture will see no water do to water regulations. This appears to be cumulative effect from past years shortage of moisture. All Libestock storage ponds are dry. Stream flow is at about 25% of normal It has been way above normal temperatures with extreme wind.



7A89



B127



# 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

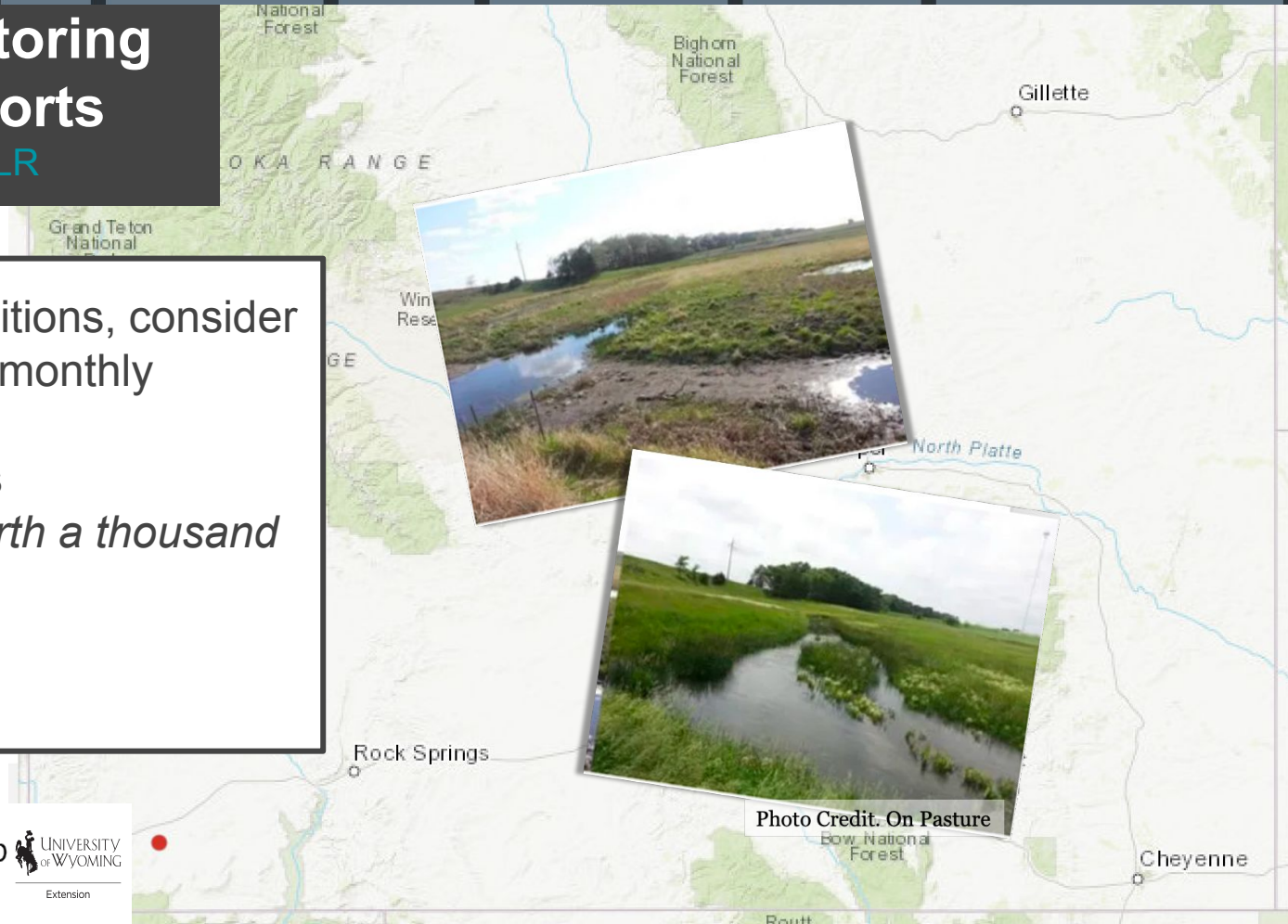


Photo Credit. On Pasture

## Getting started with the field app

Reporting on a mobile device is easy. CMOR uses Esri's Survey123 field app. Go to the app store on your mobile device and download the Survey123 field app.

Click on "Continue without signing in."

To take full advantage of the geo-location capabilities, choose "Allow While Using App." This will let it pinpoint your location.



Then, use the link or the QR code:

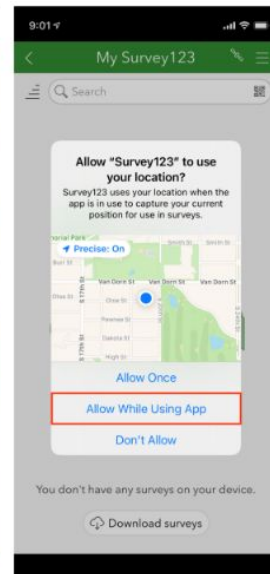
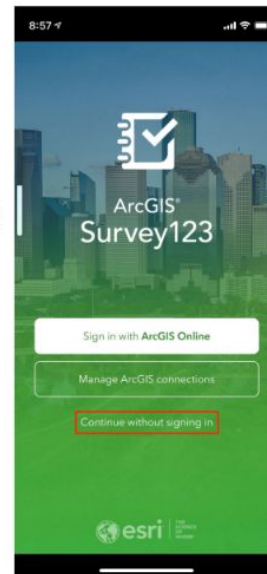
[go.unl.edu/CMOR](https://go.unl.edu/CMOR)

which will prompt you to download the survey.

This survey is open to the general public, so you won't need to log in.

**CMOR Fact Sheet:**  
includes 'how to' submit a  
report via the field app

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





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## WY Drought Info & Resources

<https://drought.wyo.gov>

## CoCoRaHS

<https://www.cocorahs.org>

## Condition Monitoring Observer Reports (CMOR)

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

# Thank you! Questions?