

Under the Big Sky
e-Letter
October 2021

National Weather Service
Glasgow, MT



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Join CoCoRaHS Today!

CoCoRaHS is a grassroots organization with a network of highly committed observers who report daily precipitation such as rain, hail, or snow from all across the country. The data are used by meteorologists, insurance adjusters, mosquito control, and even by those in academia.



Participating in the CoCoRaHS program is a great way to make a difference in your community. Check out the [CoCoRaHS main page](#) to learn more! We are still accepting new observers so feel free to join through the main CoCoRaHS website today. All you'll need is a ruler and a rain gage to get started!

Announcement: We will be doing a Montana statewide virtual CoCoRaHS winter training for anyone interested in becoming a weather observer. Current observers can take the training as a refresher as well! The training will be held on December 1, 2021 from 12-12:30 PM MST. More details to come.

Percent of Average Precipitation (%)
10/3/2021 – 11/1/2021

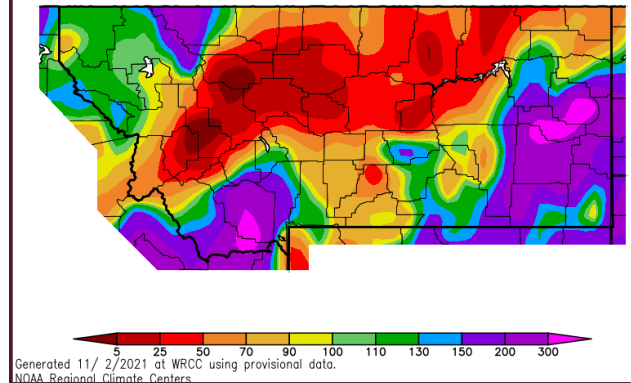


Figure 1: 30-day percent of normal precipitation across Montana.

Avg. Temp Departure from Normal (Montana)

Ave. Temperature dep from Ave (deg F)
10/3/2021 – 11/1/2021

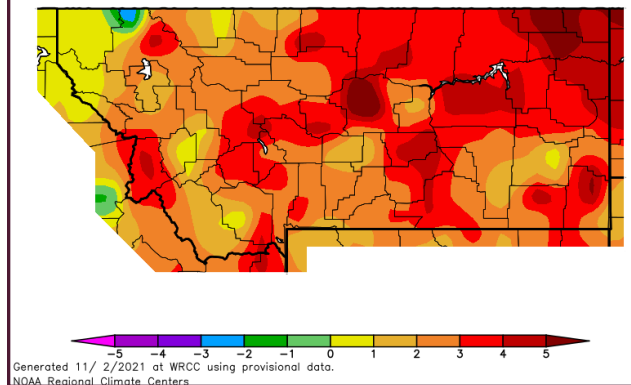


Figure 2: 30-day temperature anomalies across Montana.

Summary: The recent 30 day history shows generally below average precipitation for central and NE Montana. However, above average precipitation is noted in SE, SW, and portions of NW Montana. Though welcome, the precipitation is not enough to move the needle on the drought at scale despite some local improvements. Temperatures, meanwhile, have trended above the average across the state over the last 30 day.

Hydrologic Summary for September 2021, By Greg Forrester, Lead Forecaster at NWS Glasgow:

It was a very dry month across Northeast Montana. Most areas received less than 25 percent of their normal precipitation for the month. The dry spots were Hoyt and Glasgow 14NW with only a trace, Malta 35S with 0.01 inch, and Fort Peck with 0.02 inch. The wet spots were Malta with 0.76 inch, Cohagen 22SE, and Carlyle 13NW with 0.51 inch. Glasgow had 0.03 inch which was only 2 percent of normal. Temperatures varied from 2 to 5 degrees above normal across the region. Glasgow averaged 63.6 degrees which was 3.7 degrees above normal.

The lack of precipitation continued the extreme to exceptional drought over the region.

Stream flow on the Milk River was well below normal for the entire month. Flow on the Yellowstone and Poplar Rivers was below normal during the entire month. The Missouri River had near normal stream flow for the first 3 weeks of the month and fell to below normal for the remainder of the month.

The Fort Peck Reservoir elevation fell to 2227.2 feet during the month. The reservoir was at 73 percent of capacity and 92 percent of the mean pool.

NWS Glasgow: Going Beyond the Forecast Desk

NWS Glasgow is committed to more than just providing the latest forecast, climate, and hydrology information. From IT support, to administrative needs, innovating on new ideas, to investing in our culture, our office and its staff perform a number of important roles. This month, we take a look beyond the forecast desk, and explore office safety.

Rex Morgan is the safety focal point here at NWS Glasgow. Here's how he describes the task.

"Rex is responsible for ensuring that office personnel are trained on safety protocols. The Safety Focal Point is responsible for conducting fire drill and other drills as needed. Furthermore, the Safety Focal Points from different offices get together (virtually) and discuss possible safety hazards and potential mitigation strategies for particular hazards. In addition, the safety focal point is responsible for making sure that the office documents are in compliance with state and federal regulations as it pertains to safety.



Figure 3: Photos taken by Richard Maliawco (Meteorologist) and Greg Forrester (Lead Forecaster) in the NWS Glasgow Parking lot on September 30, 2021 during an end of mid shift fire drill put together by Rex Morgan (Safety Focal Point).

CPC Three Month Outlook:

The Climate Prediction Center released its Winter 2021 outlook on October 21, 2021. The outlook shows favored below normal temperatures for the December 2021 through February 2022 period.

On the other hand, precipitation is favored to trend above normal for the western and central portions of the state. Eastern Montana is just outside the outlook for above normal precipitation. While more optimistic than lately, this should be discussed in the context of the Montana drought. A slight shift one way or another could make an appreciable difference. Thus, there's simply not the confidence to discuss impacts at scale over the longer term at this time. Lastly, this outlook likely takes into account likely effects of La Niña. With that in mind, conditions across the state can still vary among La Niña years, lending to uncertainty.

The latest outlook is always available [here](#). In addition, you can check out the Climate Prediction Center [Interactive site](#)! You can zoom in on our area, and navigate to see the climate outlook for your specific location.

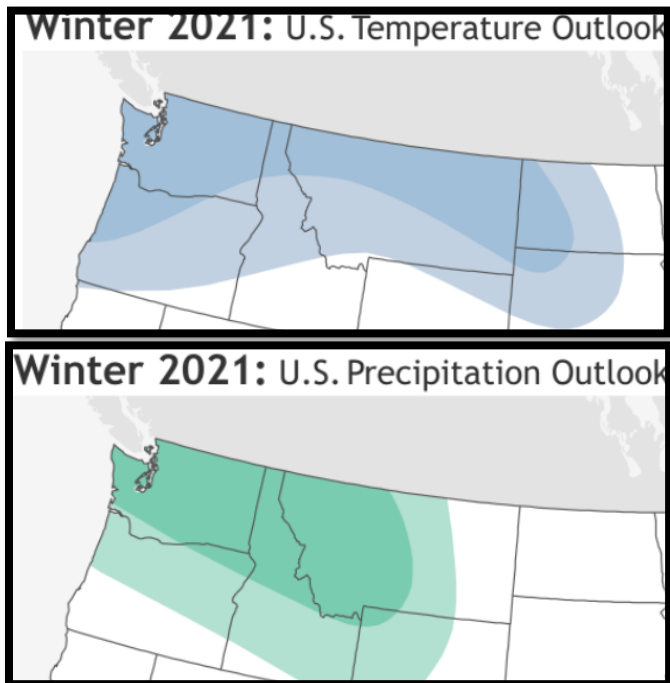


Figure 4: Climate Prediction Center Winter 2021 temperature (top) and precipitation (bottom) outlook for December 2021 through February 2022.

U.S. Drought Monitor:

The latest U.S. Drought Monitor was released on Thursday November 4, 2021. Much of NE Montana remains under the grip of an unrelenting extreme to exceptional. Recent precipitation has led to modest improvement, in SE Montana, though they remain in severe to extreme drought. It simply has not yet been enough to move the needle over the longer term. This outlook is updated weekly. Please feel free to check out the latest [here](#).

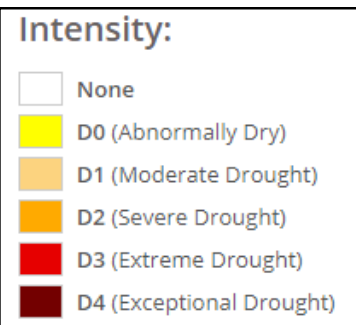
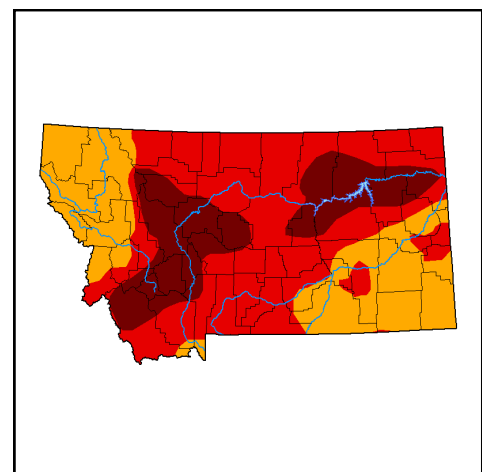
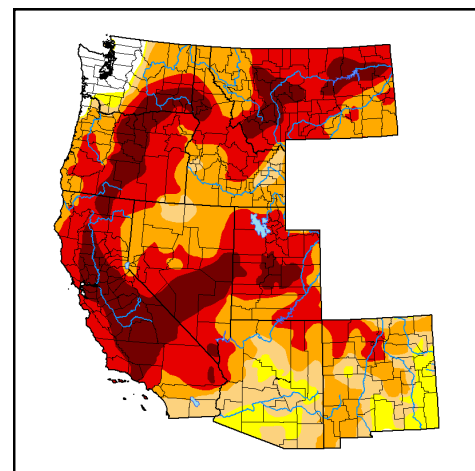


Figure 5: U.S. Drought Monitor updated November 4, 2021

U.S. & Global Climate Highlights (September):

The [U.S.](#) & [Global](#) climate highlights for September 2021 have been released, the latest month for which data was available. A few points for you to take home are provided below.

Precipitation Percent of Average

September 2021

Average Period: 20th Century

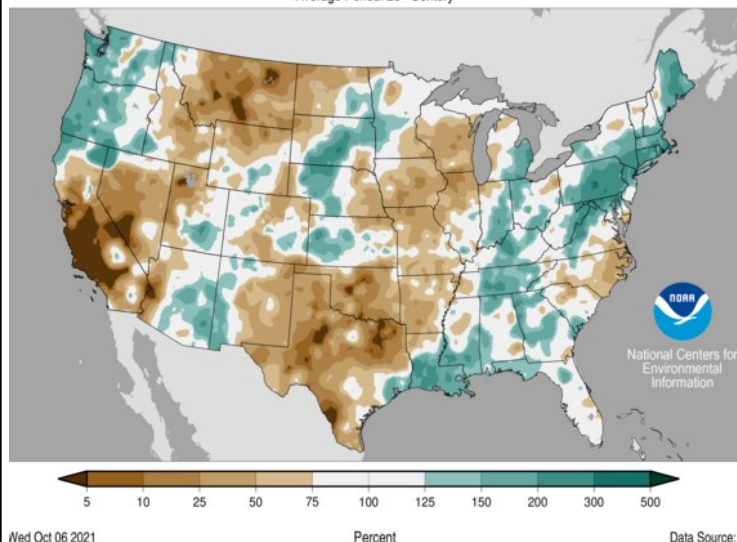


Figure 6: September 2021 Percent of Average Precipitation (U.S.).

U.S. Highlights for September 2021

- 1) The contiguous U.S. average temperature for August 2021 was 67.8 °F, 5th warmest on record
- 2) The average September precipitation total for the contiguous U.S. came in at 2.33 inches. This ranks in the middle 3rd of the period of record.

Global Highlights for September 2021

- 1) The September 2021 global surface temperature was the 5th hottest on record for September.
- 2) The eight warmest Septembers have all unfolded since 2014.
- 3) Precipitation anomalies varied considerably around the world in September 2021, which is fairly typical.

Staffing Changes

- ◆ Felix Castro has been promoted from Lead Forecaster here at Glasgow to Warning Coordination Meteorologist in Hanford, CA. We will miss him but appreciate his contributions to our office & wish him a very bright future! He started his new role on October 24th.



Figure 7: Felix Castro, now Warning Coordination Meteorologist at Hanford, CA, & Tanja Fransen, Meteorologist in Charge at NWS Glasgow, MT.

- ◆ On October 11, we also welcomed back to our office as a new meteorologist on station Julianna Glinskas. Julianna was our summer pathways student back in 2020 and we now look forward to her service in NE Montana as the newest member of our team!

Links You May Like:

[ENSO Update](#)

[2021-2022 Winter Outlook](#)

[Nobel Prize in Physics](#)

[Living with Drought](#)

COOP 2021 Precipitation Totals for September 2021 (Preliminary)

| Station | Precipitation | Location |
|---------|---------------|------------------|
| BAYM8 | 0.02 | Baylor |
| BRDM8 | 0.15 | Bredette |
| BTNM8 | M | Brockton 17 N |
| BKNM8 | 0.06 | Brockton 20 S |
| BKYM8 | 0.36 | Brockway 3 WSW |
| BRSM8 | M | Brusette |
| CLLM8 | 0.51 | Carlyle 13 NW |
| CIRM8 | 0.14 | Circle |
| CHNM8 | 0.40 | Cohagen |
| COM8 | 0.62 | Cohagen 22 SE |
| CNTM8 | 0.18 | Content 3 SSE |
| CULM8 | 0.14 | Culbertson |
| DSNM8 | 0.12 | Dodson 11 N |
| FLTM8 | 0.12 | Flatwillow 4 ENE |
| FPKM8 | 0.02 | Fort Peck PP |
| GLAM8 | T | Glasgow 14 NW |
| GGWM8 | 0.03 | Glasgow WFO |
| GGSM8 | 0.03 | Glasgow 46 SW |
| GNDM8 | 0.29 | Glendive WTP |
| HRBM8 | M | Harb |
| HINM8 | 0.03 | Hinsdale 4 SW |
| HNSM8 | M | Hinsdale 21 SW |
| HOMM8 | 0.03 | Homestead 5 SE |
| HOYM8 | T | Hoyt |
| JORM8 | M | Jordan |
| LNDM8 | 0.39 | Lindsay |
| MLAM8 | 0.76 | Malta |
| MLTM8 | 0.19 | Malta 7 E |
| MTAM8 | 0.01 | Malta 35 S |

| Station | Precipitation | Location |
|---------|---------------|------------------------|
| MDCM8 | 0.23 | Medicine Lake 3 SE |
| MLDM8 | 0.09 | Mildred 5 N |
| MSBM8 | 0.05 | Mosby 4 ENE |
| OPNM8 | 0.02 | Opheim 10 N |
| OPMM8 | 0.03 | Opheim 12 SSE |
| PTYM8 | 0.17 | Plentywood |
| PTWM8 | 0.15 | Plentywood 1 NE |
| POGM8 | 0.16 | Port of Morgan |
| RAYM8 | 0.21 | Raymond Border Station |
| SAOM8 | 0.06 | Saco 1 NNW |
| SMIM8 | 0.03 | St. Marie |
| SAVM8 | M | Savage |
| SCOM8 | 0.18 | Scobey 4 NW |
| SDYM8 | 0.49 | Sidney |
| SIDM8 | 0.37 | Sidney 2S |
| TERM8 | 0.22 | Terry |
| TYNM8 | M | Terry 21 NNW |
| VIDM8 | 0.18 | Vida 6 NE |
| WSBM8 | 0.25 | Westby |
| WTRM8 | 0.03 | Whitewater |
| WHIM8 | M | Whitewater 18 NE |
| WBXM8 | 0.37 | Wibaux 2 E |
| WTTM8 | 0.11 | Winnett |
| WNEM8 | M | Winnett 6 NNE |
| WNTM8 | M | Winnett 8 ESE |
| WITM8 | 0.12 | Winnett 12 SW |
| WLFM8 | 0.03 | Wolf Point |
| ZRTM8 | 0.10 | Zortman |

Monthly Trivia:

Last time we asked...

Autumn is here, and for NE Montana that means winter weather isn't that far off. Snow, freezing rain, and wintry mix will soon be in the forecast. Do you know what causes precipitation to fall as snow versus freezing rain, versus say a plain rain? We'll share that with you next month along with some winter safety reminders to help you prepare for the changing seasons.

Answer: The short answer is that it depends on how deep the cold layer is from the ground to the cloud. If it's above freezing all the way up, you end up with rain, if it's below freezing, you end up with snow. However, if you introduce a midlevel warm layer you end up with sleet. If it's below freezing right at the surface but warmer the rest of the way up, rain will freeze on contact with the cold ground—we call that freezing rain. This is all nicely summarized in the graphic below.

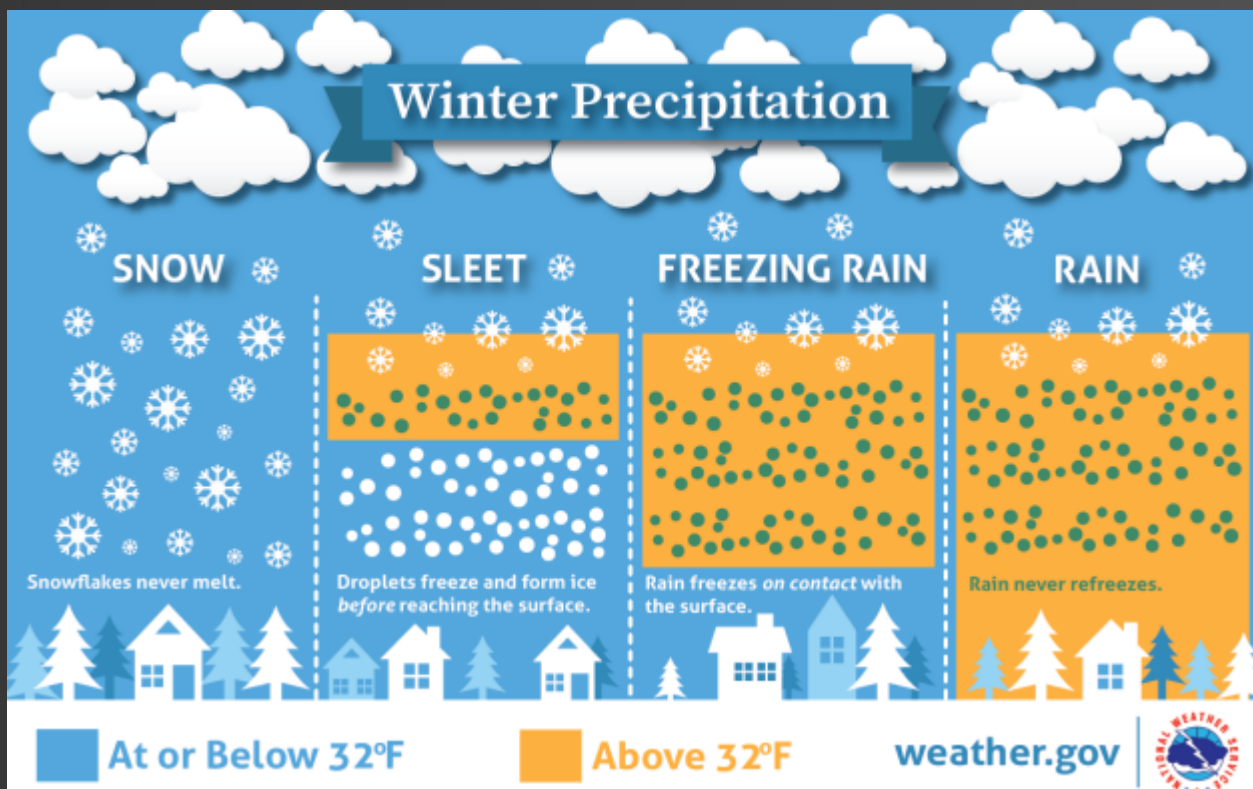


Figure 8: Graphic depicting the science of wintry precipitation.

New Question: With winter coming, soon we'll be dealing with colder temperatures, and that means bitter cold wind chills. What's the science behind why it "feels colder" on windy days in the winter time? We'll take a deeper look at the science next month, and explore some safety tips to help you and your loved ones through all season long.

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