

# Under the Big Sky

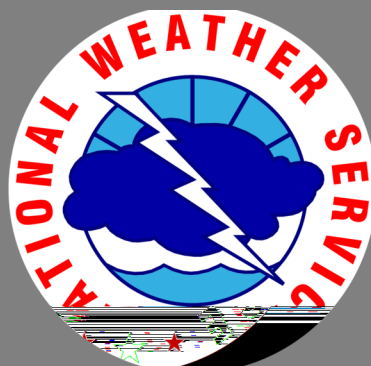
e-Letter

August 2022



Photo Credit: Anjel Enriquez, Meteorologist at NWS Glasgow.

National Weather Service  
Glasgow, MT



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**National Weather Service**

←————→  
**Glasgow, MT**



## NEW Meteorologist In Charge at NWS Glasgow:

Effective August 28, Patrick Gilchrist has been promoted to Meteorologist-In-Charge at the National Weather Service in Glasgow, MT. Patrick was born and raised in Glasgow & built his career in the state of Montana. Patrick launched his start at the Missoula office in 2001 where he worked his way up to a journey meteorologist. Patrick became selected as a lead meteorologist in Glasgow, leading him to return to his hometown in 2007. Here in Glasgow, he has served as Warning Coordination Meteorologist at Glasgow since 2016 we now look forward to his service as Meteorologist-In Charge. We are excited to begin a new chapter together under his leadership.



Figure 1: Patrick Gilchrist, newly promoted Meteorologist-In-Charge at NWS Glasgow.

## NEW Meteorologist In Charge at NWS Glasgow:

Effective August 28, Patrick Gilchrist has been promoted to Meteorologist-In-Charge at the National Weather Service in Glasgow, MT. He has served as Warning Coordination Meteorologist at Glasgow since 2016 and was a Lead Forecaster before that. We look forward to moving ahead as an office under his leadership as we all begin a new chapter together.

## 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!

### **Warm Season Training 2022: Did you miss it?**

No problem, we are always looking for those interested in becoming a new weather observer who can send in daily precipitation reports! [Check out the training](#) and then sign up to [join](#) via the CoCoRaHS website.

## Percent of Normal Precipitation (Montana)

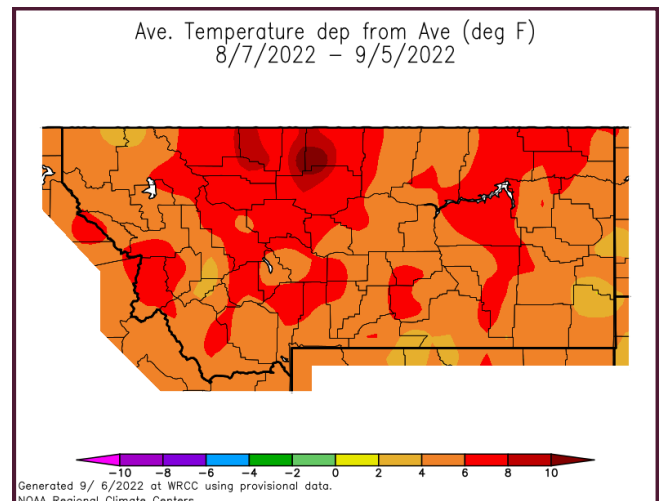


Figure 2: 30-day percent of normal precipitation across Montana.

## Avg. Temp Departure from Normal (Montana)

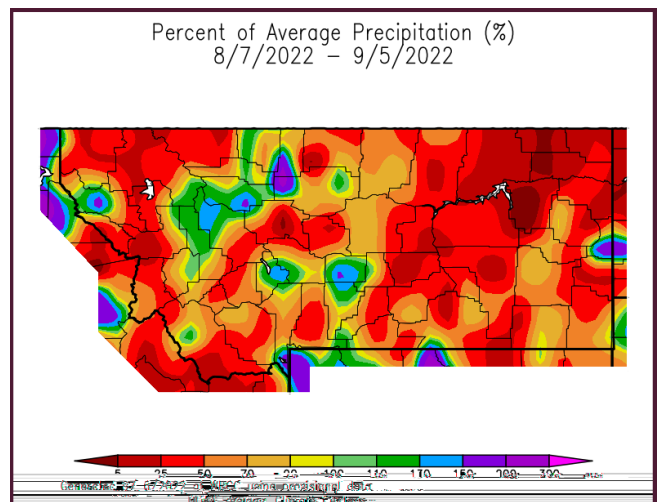


Figure 3: 30-day temperature anomalies across Montana.

**Summary:** The last 30 days brought warmer than normal temperatures across the state of Montana. Meanwhile, precipitation has generally trended below to well below average over the state. A particularly large area of 25 to 50 percent of normal precipitation occurred over northeast Montana during this timeframe.

**Hydrologic Summary for August 2022, By Greg Forrester, Lead Forecaster at NWS Glasgow:**

August was a hot and dry month over northeast Montana. A few locations had near normal precipitation, most areas had less than 50 percent of their normal precipitation. The wet spots for the month were Carlyle 13NW with 2.10 inches, Lindsay with 1.13 inches, and Mildred with 1.01 inches. Scobey 4NW had no precipitation at all in August. Other dry spots included Sidney Airport with 0.01 inch, Fort Peck with 0.05 inch, and Glasgow 14NW with 0.10 inch. Glasgow received 0.29 inch which was 23 percent of normal. Temperatures varied from 4 to 8 degrees above normal across the region. Glasgow averaged 77.0 degrees which was 6.0 degrees above normal.

The dry weather allowed for the drought to return to northeast Montana. At the end of August, moderate drought developed over Phillips, Valley, Daniels, and western Roosevelt Counties.

The Milk, Yellowstone, and Missouri Rivers had below normal streamflow for the entire month. The Poplar River had near normal streamflow at the beginning of the month and fell to well below normal streamflow by the end of the month.

The Fort Peck Reservoir elevation fell to 2221.1 feet during the month. The reservoir was at 66 percent of capacity and 83 percent of the mean pool.

## CPC Outlook:

The Climate Prediction Center released its latest three month outlook for temperature and precipitation for September, October, and November on August 18, 2022. The outlook shows that warmer than normal temperatures are favored across southwestern Montana while equal chances for normal, below normal, or above normal temperatures exist for the rest of the state. Meanwhile, precipitation has equal chances for normal, below normal, and above normal precipitation across the state of Montana.

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.

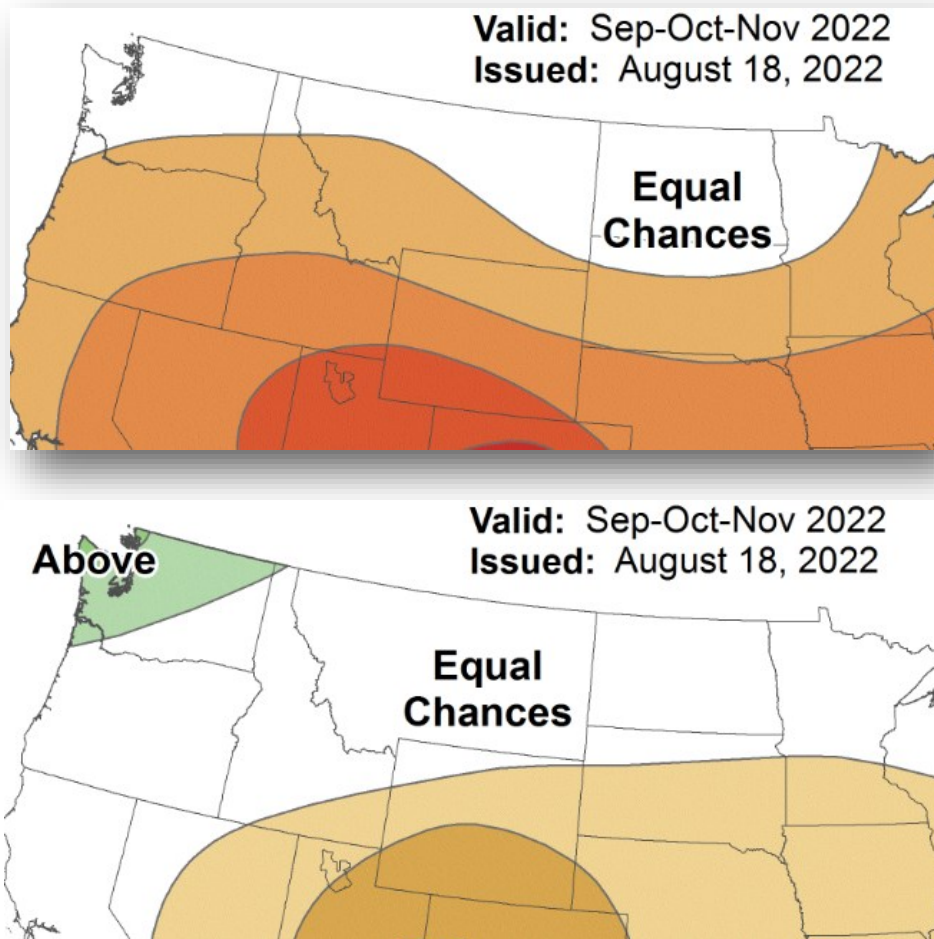


Figure 4: Climate Prediction Center three month outlook (September to November 2022) for temperature (top) and precipitation (bottom).

## U.S. Drought Monitor:

The latest U.S. Drought Monitor was released on Thursday September 8, 2022. Drought conditions have worsened in recent iterations of the U.S. Drought Monitor as moderate drought expands over larger portions of NE Montana. In fact, there is now a newly painted shading of severe drought over far northeast Phillips, much of Valley, western Daniels, and extreme northwest Roosevelt Counties. Most of the state has at least abnormally dry conditions with portions of central Montana experiencing extreme drought conditions. Only portions of southeast Montana along the Yellowstone (southwest of Glendive) are void of drought concerns at the present. This outlook is updated each Thursday. Please feel free to check out the latest [here](#).

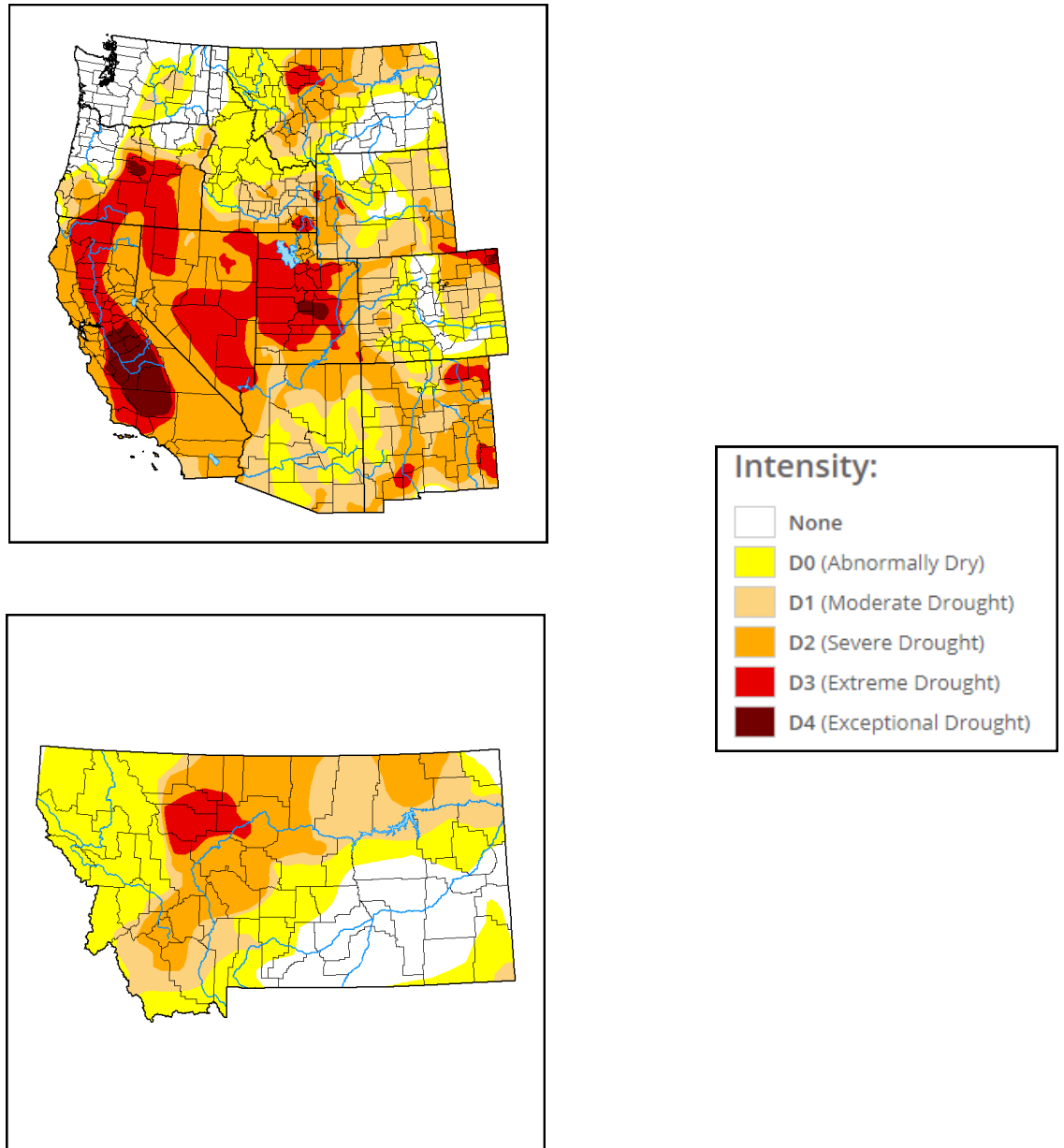


Figure 5: U.S. Drought Monitor updated September 8, 2022.

**U.S. & Global Climate Highlights (July):** The [U.S.](#) & [Global](#) climate highlights for July 2022 have been released, the latest month for which data was available. A few points for you to take home are provided below.

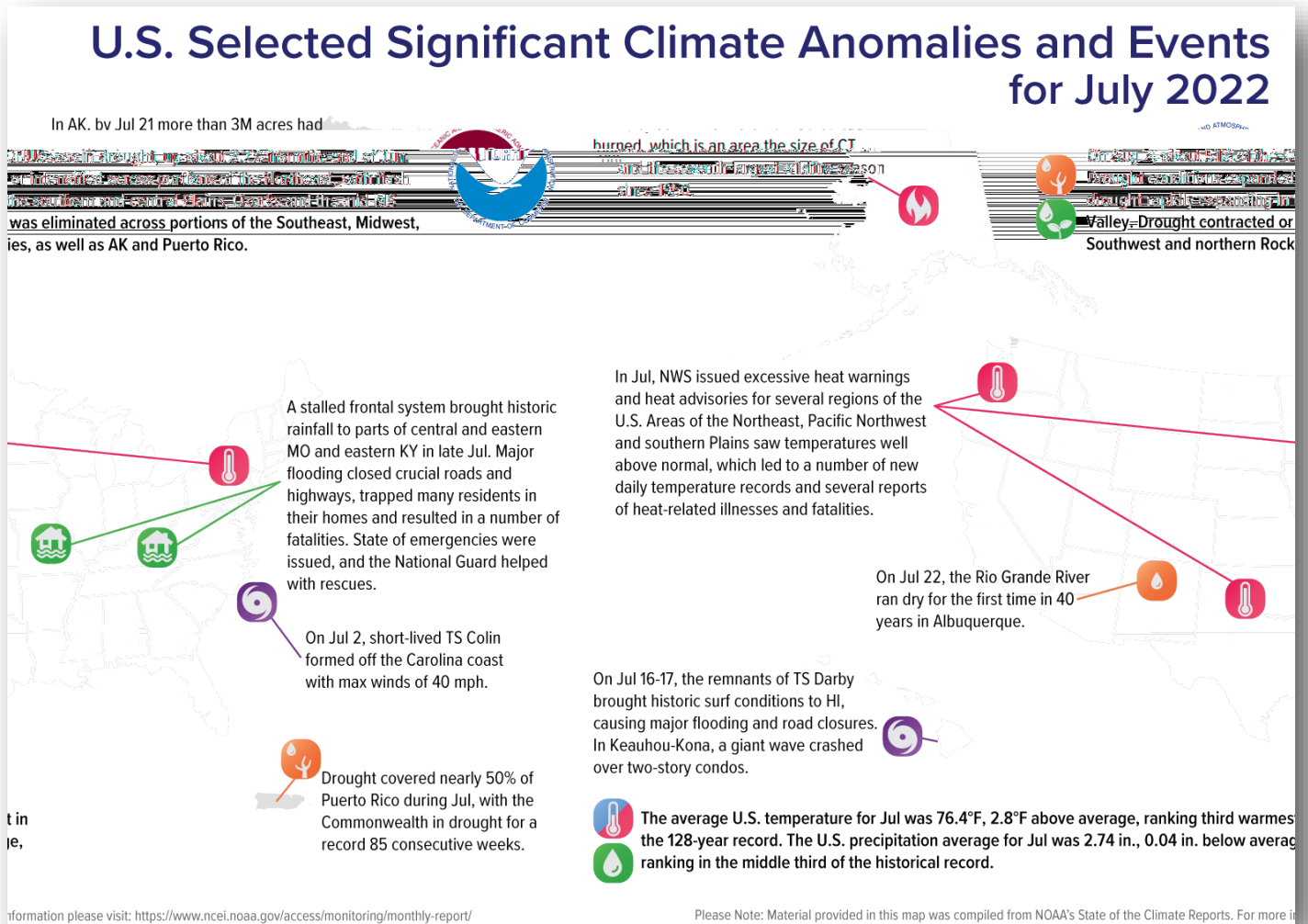


Figure 6: Significant Climate anomalies and events in July 2022

U.S. Highlights for July 2022

- 1) The contiguous U.S. average temperature for July 2022 was 76.4 °F, ranking 3rd warmest on record.
- 2) The average June precipitation total for the contiguous U.S. came in at 2.74 inches, ranking within the middle third of the period for which records have been kept.

Global Highlights for July 2022

- 1) The July 2022 global surface temperature anomaly came in as the 6th highest for July on record.
- 2) Interestingly, as much as 7.3% of the world's surface experienced a record high temperature in July, and this is the fourth highest July percentage on record.
- 3) Precipitation anomalies varied considerably around the world in May 2022, which is fairly typical.



## Wildfire & Air Quality Safety Reminders

- ◆ As wildfire season continues across the region, smoke and haze may lead to air quality concerns. Remember to pay attention to symptoms which may result from poor air quality. For more on smoke forecasts and air quality information, visit the [MT DEQ webpage](#). Please visit our [wildfire safety page](#) for more information on how to stay safe during wildfire season.

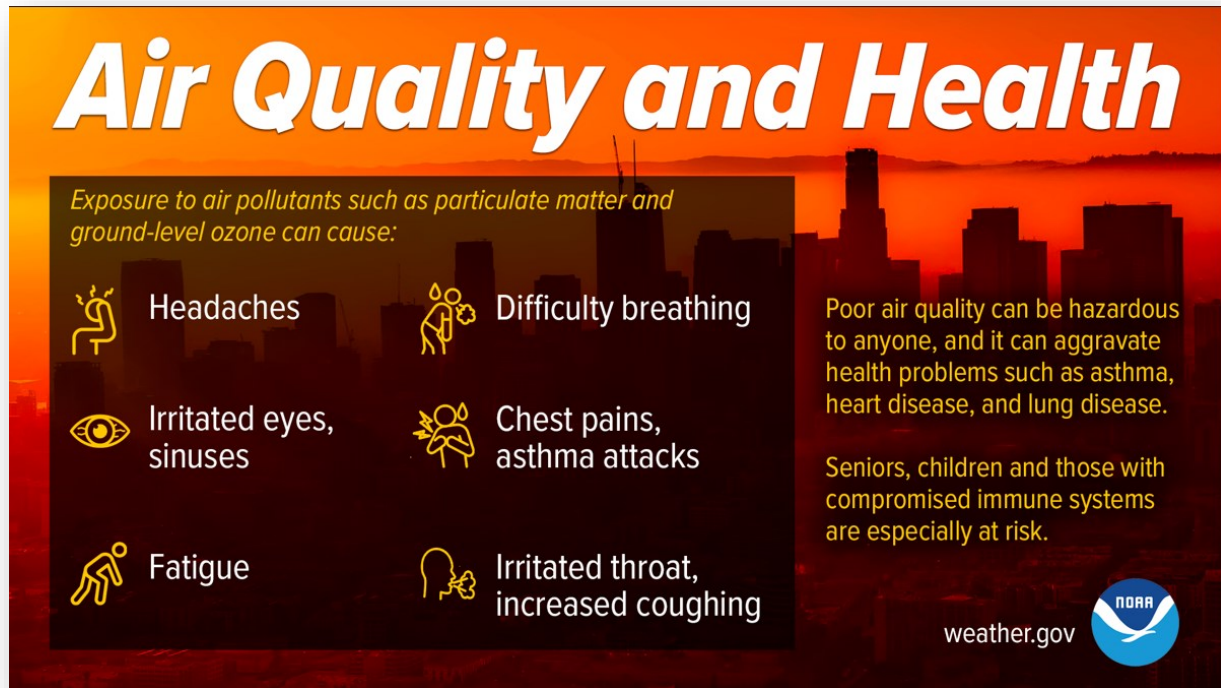


Figure 7: NOAA Air Quality safety graphic.

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### Links You May Like:

[ENSO Update](#)

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[Ocean Heat Transport in the Arctic](#)

[Worms and Methane Ice](#)

## COOP 2021 Precipitation Totals for July 2022 (Preliminary)

Station	Precipitation	Location
BAYM8	2.52	Baylor
BRDM8	3.09	Bredette
BTNM8	M	Brockton 17 N
BKNM8	1.70	Brockton 20 S
BKYM8	3.44	Brockway 3 WSW
BRSM8	3.02	Brusette
CLLM8	3.47	Carlyle 13 NW
CIRM8	1.81	Circle
CHNM8	3.42	Cohagen
COM8	3.82	Cohagen 22 SE
CNTM8	1.44	Content 3 SSE
CULM8	2.53	Culbertson
DSNM8	1.06	Dodson 11 N
FLTM8	2.63	Flatwillow 4 ENE
FPKM8	2.35	Fort Peck PP
GLAM8	1.86	Glasgow 14 NW
GGWM8	1.94	Glasgow WFO
GGSM8	4.70	Glasgow 46 SW
GNDM8	2.80	Glendive WTP
HRBM8	M	Harb
HINM8	1.76	Hinsdale 4 SW
HNSM8	1.61	Hinsdale 21 SW
HOMM8	4.26	Homestead 5 SE
HOYM8	3.90	Hoyt
JORM8	M	Jordan
LNDM8	3.90	Lindsay
MLAM8	1.75	Malta
MLTM8	1.44	Malta 7 E
MTAM8	2.95	Malta 35 S

Station	Precipitation	Location
MDCM8	3.79	Medicine Lake 3 SE
MLDM8	3.70	Mildred 5 N
MSBM8	5.91	Mosby 4 ENE
OPNM8	2.48	Opheim 10 N
OPMM8	3.29	Opheim 12 SSE
PTYM8	2.62	Plentywood
PTWM8	2.20	Plentywood 1 NE
POGM8	1.76	Port of Morgan
RAYM8	3.63	Raymond Border Station
SAOM8	2.27	Saco 1 NNW
SMIM8	1.74	St. Marie
SAVM8	3.11	Savage
SCOM8	3.33	Scobey 4 NW
SDYM8	1.67	Sidney
SIDM8	2.46	Sidney 2S
TERM8	3.26	Terry
TYNM8	M	Terry 21 NNW
VIDM8	M	Vida 6 NE
WSBM8	M	Westby
WTRM8	1.76	Whitewater
WHIM8	M	Whitewater 18 NE
WBXM8	M	Wibaux 2 E
WTTM8	1.95	Winnett
WNEM8	2.29	Winnett 6 NNE
WNTM8	2.25	Winnett 8 ESE
WITM8	M	Winnett 12 SW
WLFM8	3.53	Wolf Point
ZRTM8	3.17	Zortman

## COOP 2021 Precipitation Totals for August 2022 (Preliminary)

Station	Precipitation	Location
BAYM8	M	Baylor
BRDM8	0.15	Bredette
BTNM8	M	Brockton 17 N
BKNM8	0.64	Brockton 20 S
BKYM8	0.19	Brockway 3 WSW
BRSM8	M	Brusette
CLLM8	2.10	Carlyle 13 NW
CIRM8	0.21	Circle
CHNM8	0.43	Cohagen
COM8	M	Cohagen 22 SE
CNTM8	0.39	Content 3 SSE
CULM8	0.50	Culbertson
DSNM8	M	Dodson 11 N
FLTM8	1.21	Flatwillow 4 ENE
FPKM8	0.05	Fort Peck PP
GLAM8	0.10	Glasgow 14 NW
GGWM8	0.29	Glasgow WFO
GGSM8	0.33	Glasgow 46 SW
GNDM8	0.54	Glendive WTP
HRBM8	M	Harb
HINM8	M	Hinsdale 4 SW
HNSM8	M	Hinsdale 21 SW
HOMM8	0.17	Homestead 5 SE
HOYM8	M	Hoyt
JORM8	M	Jordan
LNDM8	1.13	Lindsay
MLAM8	0.26	Malta
MLTM8	M	Malta 7 E
MTAM8	M	Malta 35 S

Station	Precipitation	Location
MDCM8	M	Medicine Lake 3 SE
MLDM8	1.01	Mildred 5 N
MSBM8	1.31	Mosby 4 ENE
OPNM8	M	Opheim 10 N
OPMM8	M	Opheim 12 SSE
PTYM8	M	Plentywood
PTWM8	0.30	Plentywood 1 NE
POGM8	0.85	Port of Morgan
RAYM8	M	Raymond Border Station
SAOM8	M	Saco 1 NNW
SMIM8	0.40	St. Marie
SAVM8	M	Savage
SCOM8	0.04	Scobey 4 NW
SDYM8	M	Sidney
SIDM8	0.18	Sidney 2S
TERM8	0.98	Terry
TYNM8	M	Terry 21 NNW
VIDM8	M	Vida 6 NE
WSBM8	M	Westby
WTRM8	0.53	Whitewater
WHIM8	M	Whitewater 18 NE
WBXM8	M	Wibaux 2 E
WTTM8	M	Winnett
WNEM8	M	Winnett 6 NNE
WNTM8	M	Winnett 8 ESE
WITM8	M	Winnett 12 SW
WLFM8	0.08	Wolf Point
ZRTM8	0.98	Zortman

## Monthly Trivia:

Last time we asked...

The late summer and fall months are wildfire season for NE Montana. The National Weather Service issues a number of products to help keep you safe during this time and to help raise awareness as to when conditions may lead to new fire starts or make containment of existing wildfires more difficult. This month we ask, what is the difference between a Fire Weather Watch and a Red Flag Warning?

**Answer:** A **Fire Weather Watch** simply means be prepared. This products alerts land managers and the public of upcoming weather conditions which could result in new fire starts or extreme fire behavior. In short, critical fire weather conditions are possible, but not imminent or occurring. A **Red Flag Warning** means take action. Be careful with open flames. Fire conditions are either ongoing or expected to occur shortly. This often is issued when area wind speeds exceed relative humidity values, or if dry thunderstorms may result in increased risk of new fire starts. To learn more, about the differences between these products see the graphic below. For more on wildfire safety, check out our page [here](#).

The infographic is split into two columns. The left column has a dark red background and is titled 'Red Flag Warning'. It contains text explaining that the NWS issues this warning in conjunction with land management agencies to alert people to an ongoing or expected 'critical fire weather' pattern. It notes that critical conditions are either 'occurring now, or will shortly' and advises to 'Be extremely careful with open flames.' Below this, it says 'Take action.' The right column has a dark brown background and is titled 'Fire Weather Watch'. It explains that this watch alerts land managers and the public that upcoming weather conditions could result in extensive wildland fire occurrence or extreme fire behavior. It states that a watch means 'critical fire weather conditions are possible' but not imminent or occurring. Below this, it says 'Be prepared.' At the bottom right of the infographic is the NOAA logo and the website 'weather.gov/fire'.

Figure 8: NOAA info-graphic showing the differences between a Red Flag Warning and a Fire Weather Watch.



**New Question:** Several of you may have seen our recent aurora which was visible across portions of NE Montana on Saturday September 3rd. Our question this month, what causes the aurora borealis?

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