

# Climatography of the United States No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: GERALDINE, MT

1971-2000

COOP ID: 243445

Climate Division: MT 3

NWS Call Sign:

Elevation: 3,130 Feet Lat: 47° 36N

Lon: 110° 16W

Temperature (°F)																					
Mean (1)				Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
Month	Daily Max	Daily Min	Mean	Highest Daily(2)	Year	Day	Highest Month(1) Mean	Year	Lowest Daily(2)	Year	Day	Lowest Month(1) Mean	Year	Heating	Cooling	Max ≥ 100	Max ≥ 90	Max ≥ 50	Max ≤ 32	Min ≤ 32	Min ≤ 0
Jan	34.2	11.4	22.8	70	1992	31	37.1	1992	-42	1969	24	5.9	1979	1309	0	.0	.0	6.6	11.2	27.1	9.6
Feb	39.9	16.2	28.1	73	1992	27	40.7	1991	-36	1994	8	12.6	1989	1035	0	.0	.0	9.5	7.3	24.0	5.9
Mar	48.2	24.0	36.1	77	1993	23	45.1	1986	-30	1951	8	26.5	1996	897	0	.0	.0	16.5	3.3	24.7	1.6
Apr	58.6	32.5	45.6	91	1980	20	52.7	1987	-6	1975	6	34.3	1975	583	0	.0	@	23.9	.8	15.6	.1
May	68.2	41.8	55.0	95	1980	22	60.0	1988	13	1954	2	50.2	1996	320	8	.0	.2	29.6	.0	3.9	.0
Jun	76.9	49.6	63.3	103	1988	4	71.8	1988	29+	1979	8	59.6	1998	115	63	.1	2.8	30.0	.0	.2	.0
Jul	84.6	53.7	69.2	103+	1963	22	73.9	2000	32	1972	4	61.0	1993	44	172	.5	9.7	31.0	.0	@	.0
Aug	84.7	53.3	69.0	108	1961	5	75.7	1971	28	1992	25	63.4	1974	64	188	.5	10.5	31.0	.0	.1	.0
Sep	73.3	43.9	58.6	98+	1983	1	66.0	1998	17	1995	21	50.8	1985	241	49	.0	2.2	28.7	.0	3.6	.0
Oct	61.4	34.6	48.0	92	1992	1	50.9	1979	-14	1991	30	42.3	1984	527	0	.0	@	26.1	.6	14.2	.3
Nov	44.6	23.0	33.8	81	1975	5	43.4	1999	-30	1959	13	14.9	1985	936	0	.0	.0	12.4	5.2	23.3	2.4
Dec	36.4	14.6	25.5	69	1956	29	38.5	1999	-41+	1983	24	2.8	1983	1225	0	.0	.0	7.5	9.7	27.4	6.6
Ann	59.3	33.2	46.3	108	Aug 1961	5	75.7	Aug 1971	-42	Jan 1969	24	2.8	Dec 1983	7296	480	1.1	25.4	252.8	38.1	164.1	26.5

+ Also occurred on an earlier date(s)

@ Denotes mean number of days greater than 0 but less than .05

Complete documentation available from: [www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1950-2001

(3) Derived from 1971-2000 serially complete daily data

060-A

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## No. 20 1971-2000

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**Station: GERALDINE, MT**

**COOP ID: 243445**

**Climate Division: MT 3**

**NWS Call Sign:**

**Elevation: 3,130 Feet Lat: 47°36N**

**Lon: 110°16W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.75	.71	.90	1975	18	2.29	1978	.00	1973	7.6	2.6	.1	.0	.08	.17	.30	.40	.51	.63	.76	.92	1.13	1.48	1.80
Feb	.49	.39	.73	1951	21	1.10	1982	.04	1998	5.6	1.9	@	.0	.08	.12	.19	.26	.33	.40	.49	.59	.73	.96	1.18
Mar	1.01	.90	1.43	1995	25	3.51	1981	.18	1994	8.3	2.9	.4	.1	.20	.29	.44	.58	.71	.86	1.02	1.22	1.49	1.91	2.31
Apr	1.37	1.14	1.55	1975	26	3.40	1991	.15	1977	8.2	3.8	.5	.2	.26	.38	.58	.77	.95	1.16	1.39	1.67	2.04	2.63	3.20
May	2.78	2.37	3.90	1962	21	8.48	1981	.79	1973	11.2	6.3	1.5	.6	.80	1.06	1.46	1.81	2.14	2.50	2.89	3.35	3.94	4.88	5.75
Jun	2.52	2.20	3.45	1979	19	6.41	1993	.54	1974	12.0	6.0	1.2	.3	.67	.91	1.27	1.59	1.91	2.24	2.61	3.04	3.61	4.50	5.34
Jul	1.85	1.64	3.08	1993	12	7.23	1993	.13	1984	8.8	4.3	1.0	.2	.24	.39	.65	.91	1.18	1.48	1.83	2.26	2.84	3.79	4.72
Aug	1.66	1.28	1.95	1987	25	5.55	1985	.06	2000	7.6	4.0	.9	.3	.20	.33	.56	.79	1.04	1.31	1.63	2.03	2.57	3.46	4.32
Sep	1.40	.98	1.93	1988	18	4.55	1985	.16	1972	7.2	3.6	.7	.1	.23	.35	.55	.75	.95	1.16	1.41	1.71	2.12	2.77	3.40
Oct	.89	.90	1.41	1954	23	2.26	1975	.07+	1990	6.5	3.0	.2	@	.16	.23	.36	.49	.61	.74	.90	1.08	1.33	1.73	2.11
Nov	.64	.61	.67	1999	26	1.49	1978	.02	1972	6.6	2.3	.1	.0	.08	.14	.23	.31	.41	.51	.63	.78	.97	1.30	1.61
Dec	.68	.50	.67	1951	22	2.50	1977	.10	1979	7.6	2.3	.1	.0	.08	.14	.23	.33	.43	.54	.67	.83	1.04	1.40	1.75
Ann	16.04	15.23	3.90	May 1962	21	8.48	May 1981	.00	Jan 1973	97.2	43.0	6.7	1.8	10.62	11.64	12.96	13.97	14.88	15.76	16.67	17.69	18.93	20.75	22.33

+ Also occurred on an earlier date(s)

# Denotes amounts of a trace

@ Denotes mean number of days greater than 0 but less than .05

\*\* Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1950-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:  
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Station: GERALDINE, MT

COOP ID: 243445

Climate Division: MT 3

NWS Call Sign:

Elevation: 3,130 Feet

Lat: 47°36N

Lon: 110°16W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										Snow Fall >= Thresholds					Snow Depth >= Thresholds			
Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	12.1	12.9	2	2	8.0	1972	2	29.0	1978	20	1978	31	11	1978	7.7	4.8	1.2	.4	.0	13.3	7.9	4.8	1.5
Feb	6.8	4.8	2	1	8.5	1982	22	16.2	1986	23	1978	17	16	1978	5.0	2.8	.5	.2	.0	8.7	5.2	3.0	1.3
Mar	8.8	8.0	1	#	12.0	1977	29	19.3	1996	13	1996	8	6	1978	5.6	3.3	.9	.3	.1	5.5	3.2	2.0	.4
Apr	5.3	2.3	#	#	18.0	1982	7	25.5	1982	18	1982	7	2	1997	2.3	1.5	.7	.2	.1	.9	.7	.4	.2
May	1.4	.0	#	0	18.0	1983	10	18.0	1983	14	1983	10	1	1983	.6	.4	.1	@	@	.3	.2	.1	.1
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	#	0	.0	0	0	.0	0	#	2000	5	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	#	.0	0	0	#	1992	23	#	1992	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.6	.0	#	0	4.5	1984	26	7.3	1984	2	1984	26	#+	2000	.4	.2	.1	.0	.0	@	.0	.0	.0
Oct	2.9	1.0	#	#	8.0	1971	16	9.5	1991	8	1991	31	1	1991	1.5	1.0	.2	.2	.0	1.0	.4	.3	.0
Nov	7.8	7.2	1	1	7.0	1983	25	21.0	1978	10	1983	30	3	1985	4.9	3.0	.8	.2	.0	6.2	3.3	1.2	.1
Dec	10.1	9.1	2	1	8.5	1984	23	26.9	1984	16	1984	31	11	1983	7.1	4.0	.9	.3	.0	10.0	5.7	3.4	1.4
Ann	55.8	45.3	N/A	N/A	18.0+	May 1983	10	29.0	Jan 1978	23	Feb 1978	17	16	Feb 1978	35.1	21.0	5.4	1.8	.2	45.9	26.6	15.2	5.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

@ Denotes mean number of days greater than 0 but less than .05

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

(1) Derived from Snow Climatology and 1971-2000 daily data

(2) Derived from 1971-2000 daily data

Complete documentation available from:

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# Climatography of the United States

## No. 20 1971-2000

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**COOP ID: 243445**

**Climate Division: MT 3**

**NWS Call Sign:**

**Elevation: 3,130 Feet**

**Lat: 47°36N**

**Lon: 110°16W**

Freeze Data									
Spring Freeze Dates (Month/Day)									
Temp (F)	Probability of later date in spring (thru Jul 31) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	6/29	6/22	6/16	6/11	6/07	6/02	5/28	5/23	5/15
32	6/12	6/05	5/31	5/27	5/23	5/18	5/14	5/09	5/02
28	5/18	5/14	5/10	5/07	5/05	5/02	4/29	4/26	4/21
24	5/06	5/01	4/28	4/25	4/22	4/20	4/17	4/13	4/09
20	4/29	4/24	4/20	4/16	4/13	4/10	4/07	4/03	3/28
16	4/16	4/11	4/08	4/04	4/02	3/30	3/27	3/23	3/18
Fall Freeze Dates (Month/Day)									
Temp (F)	Probability of earlier date in fall (beginning Aug 1) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	8/22	8/27	8/31	9/04	9/07	9/10	9/14	9/18	9/24
32	9/05	9/09	9/13	9/15	9/18	9/20	9/23	9/26	10/01
28	9/08	9/13	9/17	9/20	9/23	9/27	9/30	10/04	10/09
24	9/23	9/28	10/02	10/05	10/08	10/11	10/14	10/17	10/22
20	9/28	10/04	10/07	10/10	10/13	10/16	10/20	10/23	10/28
16	10/11	10/16	10/20	10/23	10/26	10/29	11/01	11/05	11/10
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	126	114	106	99	92	85	78	69	58
32	144	135	128	123	118	112	107	100	91
28	164	156	150	146	141	137	132	126	118
24	187	180	175	171	167	164	159	155	148
20	203	196	191	187	183	178	174	169	162
16	226	220	215	211	207	203	199	194	187

\* Probability of observing a temperature as cold, or colder, later in the spring or earlier in the fall than the indicated date.

**0/00** Indicates that the probability of occurrence of threshold temperature is less than the indicated probability.

Derived from 1971-2000 serially complete daily data

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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of the United States  
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**Station: GERALDINE, MT**

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**Climate Division: MT 3**

**NWS Call Sign:**

**Elevation: 3,130 Feet    Lat: 47° 36N    Lon: 110° 16W**

Degree Days to Selected Base Temperatures (° F)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1309	1035	897	583	320	115	44	64	241	527	936	1225	7296
60	1162	907	742	440	190	45	12	25	144	374	791	1078	5910
57	1077	828	650	359	129	21	5	13	98	284	707	992	5163
55	1019	776	590	307	96	12	1	7	72	229	650	933	4692
50	876	649	446	196	38	1	0	1	27	114	514	790	3652
32	439	290	88	10	0	0	0	0	0	2	163	367	1359

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	154	178	215	417	712	938	1151	1147	797	498	217	165	6589
55	20	21	3	25	95	260	439	442	179	12	14	18	1528
57	17	17	1	16	66	209	382	386	145	5	10	15	1269
60	8	12	0	8	34	143	296	304	101	1	5	8	920
65	0	0	0	0	8	63	172	188	49	0	0	0	480
70	0	0	0	0	0	19	86	103	19	0	0	0	227

Growing Degree Units (2)																								
Base	Growing Degree Units (Monthly)												Growing Degree Units (Accumulated Monthly)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
40	31	39	78	212	464	690	891	888	545	277	72	31	31	70	148	360	824	1514	2405	3293	3838	4115	4187	4218
45	8	14	29	116	314	540	736	733	403	160	33	7	8	22	51	167	481	1021	1757	2490	2893	3053	3086	3093
50	1	0	6	55	186	390	581	578	271	86	10	1	1	1	7	62	248	638	1219	1797	2068	2154	2164	2165
55	0	0	0	19	94	250	428	426	158	30	1	0	0	0	0	19	113	363	791	1217	1375	1405	1406	1406
60	0	0	0	3	34	131	279	277	75	8	0	0	0	0	0	3	37	168	447	724	799	807	807	807
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	19	36	74	165	299	425	563	560	365	211	56	27	19	55	129	294	593	1018	1581	2141	2506	2717	2773	2800

(1) Derived from the 1971-2000 Monthly Normals

(2) Derived from 1971-2000 serially complete daily data

**Note:** For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86

Complete documentation available from:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

## Notes

- a. The monthly means are simple arithmetic averages computed by summing the monthly values for the period 1971-2000 and dividing by thirty. Prior to averaging, the data are adjusted if necessary to compensate for data quality issues, station moves or changes in station reporting practices. Missing months are replaced by estimates based on neighboring stations.
- b. The median is defined as the middle value in an ordered set of values. The median is being provided for the snow and precipitation elements because the mean can be a misleading value for precipitation normals.
- c. Only observed validated values were used to select the extreme daily values.
- d. Extreme monthly temperature/precipitation means were selected from the monthly normals data.  
Monthly snow extremes were calculated from daily values quality controlled to be consistent with the Snow Climatology.
- e. Degree Days were derived using the same techniques as the 1971-2000 normals.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)
- f. Mean "number of days statistics" for temperature and precipitation were calculated from a serially complete daily data set.  
Documentation of the serially complete data set is available from the link below:
- g. Snowfall and snow depth statistics were derived from the Snow Climatology.  
Documentation for the Snow Climatology project is available from the link under references.

## Data Sources for Tables

Several different data sources were used to create the Clim20 climate summaries. In some cases the daily extremes appear inconsistent with the monthly extremes and or the mean number of days statistics. For example, a high daily extreme value may not be reflected in the highest monthly value or the mean number of days threshold that is less than and equal to the extreme value. Some of these difference are caused by different periods of record. Daily extremes are derived from the station's entire period of record while the serial data and normals data were for the 1971-2000 period. Therefore extremes observed before 1971 would not be included in the 1971-2000 normals or the 1971-2000 serial daily data set. Inconsistencies can also occur when monthly values are adjusted to reflect the current observing conditions or were replaced during the 1971-2000 Monthly Normals processing and are not reconciled with the Summary of the Day data.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html)  
Eischeid, J. K., P. Pasteris, H. F. Diaz, M. Plantico, and N. Lott, 2000: Creating a serially complete, national daily time series of temperature and precipitation for the Western United States. J. Appl. Meteorol., 39, 1580-1591,  
[www1.ncdc.noaa.gov/pub/data/special/serialcomplete\\_jam\\_0900.pdf](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)