U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

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

Station: GLASGOW INTL AP, MT **COOP ID: 243558**

Climate Division: MT 6 **NWS Call Sign: GGW** **Elevation: 2,294 Feet** **Lat: 48˚13N** **Lon: 106˚37W**

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	19.9	1.8	10.8	57	1992	28	26.0	1992	-47	1969	25	-5.3	1982	1671	0	.0	.0	.3	22.1	30.9	13.8
Feb	28.3	9.9	19.1	71	1992	27	33.8	1984	-38	1996	2	1.0	1979	1290	0	.0	.0	2.2	14.7	27.5	7.9
Mar	41.3	20.6	30.9	79	1993	23	40.1	1986	-27+	1996	8	18.9	1996	1055	0	.0	.0	10.1	7.1	28.0	2.0
Apr	56.7	32.2	44.5	91	1980	20	51.9	1987	-3+	1975	1	35.5	1975	610	1	.0	@	21.9	.9	15.0	@
May	67.9	43.0	55.5	102	1988	29	62.3	1988	20	1976	2	50.0	1996	308	17	@	.8	29.6	.0	2.2	.0
Jun	77.1	51.6	64.4	108+	1988	26	76.7	1988	32	1998	3	59.6	1998	91	80	.3	3.2	30.0	.0	@	.0
Jul	83.8	56.6	70.2	104+	1983	8	74.9	1989	41+	1977	14	62.7	1993	22	185	.8	8.7	31.0	.0	.0	.0
Aug	83.3	55.7	69.5	108	1983	6	76.6	1971	37+	1994	31	61.0	1977	38	182	.8	9.2	31.0	.0	.0	.0
Sep	70.4	44.1	57.3	103	1983	1	65.8	1998	15	1995	21	50.2	1985	253	28	@	1.5	28.5	.0	2.0	.0
Oct	57.1	33.0	45.0	90+	1992	1	48.6	1979	-6	1991	30	41.2	1972	609	1	.0	.1	23.4	.9	12.9	.2
Nov	37.4	18.5	27.9	79	1999	12	39.9	1999	-26+	1985	29	9.2	1985	1097	0	.0	.0	7.0	9.3	27.2	2.8
Dec	24.8	6.4	15.6	59	1979	18	29.1	1999	-38+	1989	21	-3.8	1983	1516	0	.0	.0	1.2	18.6	30.8	9.9
Ann	54.0	31.1	42.6	108+	Jun 1988	26	76.7	Jun 1988	-47	Jan 1969	25	-5.3	Jan 1982	8560	494	1.9	23.5	216.2	73.6	176.5	36.6

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1955-2001

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

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.35	.27	.31	1969	22	.99	1971	.00	1973
Feb	.26	.22	.27	1959	6	.74	1979	.04+	1997
Mar	.47	.38	.68+	1993	27	1.27	1987	.11	1977
Apr	.75	.56	1.03+	1998	25	1.79	1997	.10+	1984
May	1.72	1.66	2.02	1974	20	3.74	1982	.46	1980
Jun	2.20	1.98	2.35	1972	9	4.79	1995	.09	1985
Jul	1.78	1.38	2.49	1962	13	5.93	1993	.01	1984
Aug	1.25	.89	2.96	1985	2	5.74	1985	.03	1983
Sep	.98	.68	1.63	1978	11	4.14	1978	.07	1974
Oct	.71	.57	1.22	1998	10	3.05	1998	.03	1987
Nov	.39	.37	.48	2000	6	1.53	1996	.02	1972
Dec	.37	.36	.34	1990	18	1.03	1982	.01	1997
Ann	11.23	11.09	2.96	Aug 1985	2	5.93	Jul 1993	.00	Jan 1973

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.4	.8	.0	.0
Feb	6.1	.7	.0	.0
Mar	8.0	1.4	.1	.0
Apr	7.2	2.1	.1	.1
May	10.4	4.5	.7	.2
Jun	11.0	5.4	1.2	.3
Jul	8.1	3.9	1.2	.3
Aug	7.6	2.8	.5	.2
Sep	6.4	2.3	.5	.1
Oct	4.9	1.8	.4	.1
Nov	6.6	1.3	.0	.0
Dec	7.9	1.0	.0	.0
Ann	92.6	28.0	4.7	1.3

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.04	.08	.13	.18	.23	.29	.35	.43	.53	.69	.84
Feb	.04	.06	.09	.13	.17	.21	.26	.31	.39	.52	.65
Mar	.14	.19	.25	.31	.37	.42	.49	.56	.66	.82	.96
Apr	.11	.17	.28	.39	.49	.61	.75	.91	1.14	1.50	1.85
May	.43	.59	.84	1.07	1.29	1.52	1.78	2.08	2.48	3.12	3.71
Jun	.42	.62	.94	1.24	1.54	1.87	2.24	2.68	3.27	4.22	5.12
Jul	.14	.26	.49	.74	1.01	1.32	1.69	2.16	2.81	3.89	4.96
Aug	.08	.16	.32	.49	.68	.90	1.17	1.51	1.99	2.79	3.59
Sep	.06	.12	.25	.38	.53	.70	.91	1.18	1.56	2.19	2.82
Oct	.06	.10	.19	.29	.40	.53	.68	.87	1.13	1.57	2.01
Nov	.04	.07	.12	.17	.23	.30	.38	.48	.61	.84	1.06
Dec	.04	.07	.13	.18	.23	.29	.37	.45	.58	.77	.96
Ann	6.71	7.53	8.60	9.44	10.20	10.94	11.73	12.60	13.68	15.27	16.67

\+ 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: 1955-2001
(3) Derived from 1971-2000 serially complete daily data

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Climate Division: MT 6 **NWS Call Sign: GGW** **Elevation: 2,294 Feet** **Lat: 48°13N** **Lon: 106°37W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	6.7	4.8	4	4
Feb	4.4	3.0	3	2
Mar	4.2	3.6	2	1
Apr	2.2	1.2	#	0
May	.8	.0	#	0
Jun	#	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	0	0
Oct	1.0	.2	#	0
Nov	4.2	2.2	1	0
Dec	6.3	5.9	2	2
Ann	30.0	20.9	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	6.2	1988	11	24.2	1971	19	1971	31	9+	1989
Feb	4.2	1994	23	15.9	1979	20	1971	1	15	1979
Mar	9.0	1987	21	14.9	1987	20+	1979	5	9	1979
Apr	10.8	1995	8	13.5	1995	12+	1995	10	1+	1995
May	10.1	1983	12	10.7	1983	10	1983	13	#	2000
Jun	#	1998	2	#	1998	0	0	0	#	1999
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	2.1	1983	29	2.2	1983	#+	1982	29	0	0
Oct	5.3	1975	14	7.0	1975	2+	1985	10	#	1997
Nov	10.4	1993	23	22.4	1996	13+	1996	25	6	1996
Dec	7.0	1972	1	15.1	1998	15+	1996	31	8	1985
Ann	10.8	Apr 1995	8	24.2	Jan 1971	20+	Mar 1979	5	15	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.9	2.2	.4	.1	.0
Feb	6.3	1.6	.1	.0	.0
Mar	5.7	1.4	.3	@	.0
Apr	2.4	.6	.1	.1	@
May	.5	.2	.1	@	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.3	.1	.0	.0	.0
Oct	1.3	.3	.1	@	.0
Nov	5.4	1.2	.3	.1	@
Dec	7.3	1.9	.5	.1	.0
Ann	38.1	9.5	1.9	.4	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	25.2	19.5	13.2	1.4
Feb	16.9	11.8	8.7	3.4
Mar	11.5	7.0	4.1	.8
Apr	2.0	.3	.2	.1
May	.1	.1	@	@
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.8	.0	.0	.0
Nov	7.2	3.2	2.6	.3
Dec	19.2	11.9	7.0	.5
Ann	82.9	53.8	35.8	6.5

+ 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

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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	6/01	5/28	5/25	5/22	5/19	5/17	5/14	5/11	5/06
32	5/19	5/15	5/12	5/10	5/07	5/05	5/03	4/30	4/26
28	5/07	5/04	5/01	4/29	4/26	4/24	4/22	4/19	4/15
24	4/30	4/25	4/22	4/19	4/16	4/13	4/10	4/06	4/01
20	4/21	4/16	4/12	4/08	4/05	4/02	3/30	3/26	3/21
16	4/14	4/08	4/05	4/01	3/29	3/26	3/23	3/19	3/14

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	9/09	9/12	9/13	9/15	9/17	9/18	9/20	9/22	9/24
32	9/13	9/17	9/20	9/22	9/25	9/27	9/30	10/03	10/07
28	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/14	10/18
24	9/28	10/04	10/08	10/12	10/15	10/19	10/23	10/27	11/02
20	10/03	10/09	10/14	10/18	10/22	10/26	10/30	11/03	11/10
16	10/13	10/20	10/25	10/30	11/03	11/07	11/11	11/17	11/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	136	131	126	123	120	116	113	108	103
32	157	151	147	143	140	136	133	128	122
28	180	173	168	164	160	156	152	147	140
24	204	196	191	186	182	177	173	167	160
20	225	216	210	204	199	194	188	181	172
16	244	235	229	223	218	213	207	200	191

***** 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

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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	1671	1290	1055	610	308	91	22	38	253	609	1097	1516	8560
60	1524	1151	902	472	191	50	9	34	170	464	962	1376	7305
57	1431	1074	811	390	133	27	2	20	119	372	875	1283	6537
55	1371	1022	754	338	101	17	0	13	90	312	821	1221	6060
50	1221	891	610	224	42	4	0	4	37	178	680	1073	4964
32	717	478	207	18	0	0	0	0	0	7	271	577	2275

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	9	38	135	398	733	976	1188	1168	766	431	97	17	5956
55	0	0	0	19	112	293	476	457	151	19	0	0	1527
57	0	0	0	12	82	239	414	398	116	12	0	0	1273
60	0	0	0	5	49	166	324	311	74	5	0	0	934
65	0	0	0	1	17	80	185	182	28	1	0	0	494
70	0	0	0	0	4	30	83	87	8	0	0	0	212

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	0	5	40	205	497	745	949	928	538	231	28	0	0	5	45	250	747	1492	2441	3369	3907	4138	4166	4166
45	0	1	10	115	352	595	794	773	395	125	7	0	0	1	11	126	478	1073	1867	2640	3035	3160	3167	3167
50	0	0	0	56	221	445	639	619	266	60	1	0	0	0	0	56	277	722	1361	1980	2246	2306	2307	2307
55	0	0	0	20	119	301	484	465	158	17	0	0	0	0	0	20	139	440	924	1389	1547	1564	1564	1564
60	0	0	0	5	53	175	330	321	77	4	0	0	0	0	0	5	58	233	563	884	961	965	965	965
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	6	36	148	304	457	606	585	333	162	25	0	0	6	42	190	494	951	1557	2142	2475	2637	2662	2662

(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

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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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 are 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.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/usnormalsprods.html
Snow Climatology Project Description, 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