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: EAST GLACIER, MT **COOP ID: 242629**

Climate Division: MT 3 **NWS Call Sign:** **Elevation: 4,806 Feet** **Lat: 48˚27N** **Lon: 113˚13W**

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	29.8	9.0	19.4	56	1994	24	32.5	1986	-35	1996	30	3.7	1979	1414	0	.0	.0	.7	15.2	30.0	7.8
Feb	34.3	12.5	23.4	63	1995	21	36.0	1991	-44	1989	2	9.5	1989	1165	0	.0	.0	1.4	8.7	26.8	5.1
Mar	41.4	18.0	29.7	63+	1992	16	38.3	1986	-29+	1989	4	22.8	1996	1094	0	.0	.0	5.9	4.0	29.7	2.2
Apr	48.9	26.3	37.6	80	1987	29	43.9	1987	-7	1997	11	28.1	1975	822	0	.0	.0	14.2	.9	25.3	.2
May	59.4	33.9	46.7	86	1986	31	50.9	1987	19+	1983	12	42.2	1974	569	0	.0	.0	25.6	.0	13.4	.0
Jun	67.3	40.4	53.9	87+	1988	26	60.1	1988	25	1982	8	49.7	1998	338	3	.0	.0	29.4	.0	2.2	.0
Jul	73.6	44.1	58.9	92	1984	27	62.7	1998	30	1987	11	52.6	1993	204	12	.0	1.1	31.0	.0	.4	.0
Aug	73.5	43.3	58.4	93+	1996	29	62.9	1971	18	1992	24	52.8	1987	232	28	.0	.6	30.8	.0	.5	.0
Sep	63.1	36.0	49.6	92	1998	8	56.0	1998	8	2000	23	41.8	1985	468	5	.0	.1	26.8	.1	10.2	.0
Oct	52.5	30.2	41.4	86	1992	1	45.1	1986	-12	1991	29	36.9	1984	733	0	.0	.0	18.1	1.0	20.8	.2
Nov	37.5	20.5	29.0	67	1997	7	37.4	1987	-26	1993	23	11.6	1985	1081	0	.0	.0	2.6	7.2	27.4	2.1
Dec	31.2	12.8	22.0	53	1993	11	30.0	1999	-42+	1983	25	5.0	1983	1333	0	.0	.0	.7	14.0	30.0	5.6
Ann	51.0	27.3	39.2	93+	Aug 1996	29	62.9	Aug 1971	-44	Feb 1989	2	3.7	Jan 1979	9453	48	.0	1.8	187.2	51.1	216.7	23.2

\+ 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: 1953-2001

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

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COOP ID: 242629

Climate Division: MT 3 **NWS Call Sign:** **Elevation: 4,806 Feet** **Lat: 48˚27N** **Lon: 113˚13W**

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	3.07	2.68	3.26	1954	19	11.34	1972	.26	1985
Feb	2.14	1.63	1.83	1994	22	5.96	1972	.28	1998
Mar	2.10	1.93	1.45	1955	22	4.16	1974	.40	1978
Apr	1.79	1.89	1.35	2001	3	3.23	1989	.28	1977
May	2.69	2.59	2.50	1964	2	6.37	1980	.86	1983
Jun	2.91	2.13	6.80	1964	8	10.86	1975	.85	1977
Jul	1.69	1.25	1.75	1987	23	7.03	1987	.00	1991
Aug	1.92	1.75	2.00	1972	2	5.85	1977	.18	1986
Sep	1.78	1.50	1.97	1985	18	5.93	1985	.16	1994
Oct	2.01	1.52	2.75	1990	5	6.76	1990	.06	1987
Nov	3.08	2.70	2.50	1990	25	8.47	1990	.14	1972
Dec	3.08	2.84	2.60	1971	18	6.73	1996	.40	1985
Ann	28.26	27.01	6.80	Jun 1964	8	11.34	Jan 1972	.00	Jul 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	13.7	7.5	1.4	.2
Feb	10.9	5.8	.7	.2
Mar	11.8	6.5	.5	.1
Apr	9.3	4.8	.5	.1
May	10.3	5.8	1.2	.4
Jun	11.1	5.7	1.2	.4
Jul	8.8	4.2	.9	.2
Aug	8.4	4.6	.9	.3
Sep	8.4	4.4	.8	.2
Oct	8.1	4.4	.7	.3
Nov	12.3	6.9	1.5	.4
Dec	13.2	7.8	1.6	.3
Ann	126.3	68.4	11.9	3.1

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	.40	.64	1.08	1.51	1.96	2.46	3.04	3.75	4.72	6.31	7.84
Feb	.43	.62	.94	1.22	1.51	1.83	2.18	2.60	3.16	4.06	4.91
Mar	.61	.81	1.11	1.37	1.62	1.89	2.18	2.52	2.97	3.67	4.32
Apr	.54	.71	.96	1.18	1.40	1.62	1.86	2.15	2.53	3.11	3.65
May	.95	1.20	1.57	1.88	2.17	2.48	2.81	3.19	3.68	4.44	5.14
Jun	.59	.85	1.28	1.67	2.06	2.49	2.96	3.54	4.30	5.52	6.67
Jul	.04	.16	.38	.62	.89	1.20	1.58	2.06	2.72	3.85	4.96
Aug	.27	.42	.70	.97	1.25	1.56	1.91	2.35	2.94	3.90	4.83
Sep	.24	.38	.64	.89	1.15	1.44	1.77	2.18	2.73	3.64	4.51
Oct	.16	.30	.56	.84	1.15	1.50	1.92	2.45	3.18	4.40	5.61
Nov	.46	.72	1.17	1.60	2.04	2.52	3.08	3.76	4.68	6.17	7.60
Dec	.70	.98	1.43	1.84	2.24	2.67	3.16	3.74	4.50	5.70	6.84
Ann	17.11	19.14	21.81	23.88	25.75	27.59	29.52	31.68	34.33	38.24	41.68

\+ 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: 1953-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	33.8	25.2	20	17
Feb	22.6	19.0	25	23
Mar	21.9	24.0	26	24
Apr	15.6	16.0	17	13
May	1.5	.0	3	#
Jun	#	.0	#	0
Jul	.0	.0	0	0
Aug	.3	.0	#	0
Sep	2.0	.0	#	0
Oct	8.1	6.5	1	#
Nov	23.7	18.5	5	4
Dec	28.1	21.0	12	12
Ann	157.6	130.2	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	21.0	1972	20	106.0	1972	79	1972	25	52	1972
Feb	18.0	1986	17	57.0	1972	81	1972	29	65	1972
Mar	15.0	1974	6	46.0	1971	83	1972	1	63	1972
Apr	12.0	1973	6	40.0	1979	59	1971	2	48	1972
May	8.0	1989	28	12.0	1982	37	1972	1	19	1972
Jun	#	1982	8	#	1982	#	1999	10	#	1999
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	5.0	1992	22	9.5	1992	7	1992	23	#	1992
Sep	8.0	1985	18	16.0	1984	10	1984	27	1	1985
Oct	17.0	1985	7	29.0	1985	24	1984	31	3	1991
Nov	29.0	1978	17	59.1	1978	42+	1996	21	19	1996
Dec	17.0	1984	30	63.0	1977	53	1996	30	31	1996
Ann	29.0	Nov 1978	17	106.0	Jan 1972	83	Mar 1972	1	65	Feb 1972

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	11.3	10.1	3.8	2.2	.4
Feb	7.5	6.8	3.0	1.3	.2
Mar	8.5	7.3	3.0	1.4	.1
Apr	4.9	4.2	2.0	.8	.2
May	1.2	.9	.2	.1	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.1	.1	.1	@	.0
Sep	1.0	.9	.4	.1	.0
Oct	2.6	2.5	1.1	.5	.2
Nov	7.3	6.7	2.6	1.4	.4
Dec	9.2	8.4	3.8	2.0	.5
Ann	53.6	47.9	20.0	9.8	2.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9
May	1.5	.9	.6	.3
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.1	.1	.1	.0
Sep	.5	.3	.1	.0
Oct	2.7	1.7	.9	.2
Nov	13.9	11.9	9.5	3.1
Dec	27.0	24.3	20.7	11.9
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	7/27	7/21	7/17	7/14	7/10	7/07	7/04	6/30	6/24
32	7/12	7/04	6/29	6/24	6/20	6/15	6/10	6/05	5/28
28	6/05	5/31	5/28	5/25	5/22	5/20	5/17	5/13	5/09
24	5/17	5/12	5/08	5/05	5/02	4/29	4/26	4/23	4/18
20	5/07	5/01	4/26	4/22	4/19	4/15	4/11	4/07	4/01
16	4/24	4/17	4/13	4/09	4/06	4/02	3/29	3/25	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	8/02	8/08	8/11	8/15	8/18	8/21	8/24	8/28	9/02
32	8/22	8/26	8/29	9/01	9/03	9/06	9/08	9/12	9/16
28	8/31	9/04	9/08	9/11	9/14	9/16	9/19	9/23	9/27
24	9/10	9/18	9/23	9/27	10/01	10/05	10/10	10/15	10/22
20	9/22	9/30	10/06	10/11	10/15	10/20	10/25	10/31	11/08
16	10/08	10/15	10/21	10/25	10/29	11/03	11/07	11/12	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	63	54	48	42	38	33	27	21	12
32	102	93	86	80	75	70	64	57	48
28	133	126	122	117	113	109	105	100	94
24	181	171	164	157	151	145	139	132	121
20	212	201	193	185	179	172	165	157	145
16	239	228	220	213	206	200	193	184	173

***** 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	1414	1165	1094	822	569	338	204	232	468	733	1081	1333	9453
60	1259	1025	939	672	415	204	94	131	330	578	931	1178	7756
57	1166	941	846	582	326	138	48	84	255	485	841	1085	6797
55	1104	885	784	522	270	102	27	59	210	423	781	1023	6190
50	962	756	629	380	148	37	5	21	116	273	641	879	4847
32	476	334	159	43	1	0	0	0	0	10	221	399	1643

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	85	93	88	211	455	655	832	819	526	301	130	89	4284
55	0	0	0	1	10	68	146	165	46	0	0	0	436
57	0	0	0	0	4	44	105	128	31	0	0	0	312
60	0	0	0	0	1	19	57	81	16	0	0	0	174
65	0	0	0	0	0	3	12	28	5	0	0	0	48
70	0	0	0	0	0	0	1	8	0	0	0	0	9

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	1	9	60	213	420	621	582	302	111	15	0	0	1	10	70	283	703	1324	1906	2208	2319	2334	2334
45	0	0	0	19	103	273	467	427	177	41	2	0	0	0	0	19	122	395	862	1289	1466	1507	1509	1509
50	0	0	0	2	39	149	317	278	85	10	0	0	0	0	0	2	41	190	507	785	870	880	880	880
55	0	0	0	0	9	65	178	151	27	0	0	0	0	0	0	0	9	74	252	403	430	430	430	430
60	0	0	0	0	1	18	77	59	4	0	0	0	0	0	0	0	1	19	96	155	159	159	159	159
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	13	55	155	269	404	380	214	85	7	0	0	1	14	69	224	493	897	1277	1491	1576	1583	1583

(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:
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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