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: LIMA, MT **COOP ID: 245030**

Climate Division: MT 2 **NWS Call Sign:** **Elevation: 6,273 Feet** **Lat: 44˚38N** **Lon: 112˚35W**

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	27.7	5.8	16.8	60	1900	9	26.2	1981	-44	1943	18	3.1	1979	1495	0	.0	.0	.1	19.7	30.9	8.4
Feb	33.0	9.4	21.2	57	1950	26	31.1	1991	-43	1933	9	9.6	1989	1227	0	.0	.0	.5	11.6	28.1	5.3
Mar	41.6	17.0	29.3	75+	1936	18	37.5	1992	-29	1943	2	22.0	1976	1106	0	.0	.0	5.1	4.0	29.9	1.4
Apr	51.9	24.0	38.0	79	1946	17	44.1	1987	-7	1997	6	29.6	1975	810	0	.0	.0	17.4	.7	25.2	.1
May	61.2	31.7	46.5	90	1931	26	52.6	1992	7	1943	13	42.4	1995	576	0	.0	.0	26.4	.0	15.8	.0
Jun	70.8	38.6	54.7	95+	1900	29	60.9	1988	17	1942	21	48.9	1998	316	7	.0	.2	29.5	.0	4.3	.0
Jul	79.3	43.2	61.3	100	1901	31	65.9	1989	24+	1987	19	52.2	1993	158	41	.0	1.0	31.0	.0	.6	.0
Aug	78.3	41.9	60.1	99	1941	3	64.4	1991	23+	1992	26	54.4	1993	177	26	.0	.5	31.0	.0	1.1	.0
Sep	68.7	33.9	51.3	92+	1950	4	57.3	1990	6	1985	29	45.3	1986	414	3	.0	.0	28.3	@	10.3	.0
Oct	56.2	25.8	41.0	80+	1992	1	47.9	1988	-16	1935	30	35.5	1984	745	0	.0	.0	22.8	1.1	23.6	.3
Nov	37.7	15.2	26.5	71	1901	8	36.6	1999	-35	1959	13	14.3	1985	1157	0	.0	.0	4.4	9.4	28.4	2.8
Dec	28.1	6.9	17.5	66	1931	20	27.3	1980	-44	1990	21	7.3	1983	1473	0	.0	.0	.2	20.0	30.9	7.5
Ann	52.9	24.5	38.7	100	Jul 1901	31	65.9	Jul 1989	-44+	Dec 1990	21	3.1	Jan 1979	9654	77	.0	1.7	196.7	66.5	229.1	25.8

\+ 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: 1898-2001

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

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Climate Division: MT 2 **NWS Call Sign:** **Elevation: 6,273 Feet** **Lat: 44˚38N** **Lon: 112˚35W**

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	.41	.39	.65	1977	4	.90	1977	.01	1983
Feb	.34	.22	.74	1978	11	1.53	1978	.00	1977
Mar	.63	.57	1.00	1946	20	2.16	1982	.09	1978
Apr	1.10	.78	4.00	1901	25	3.36	1975	.12	1977
May	2.15	1.83	1.48	1916	24	4.63	1980	.57	1976
Jun	1.96	1.90	1.70	1944	9	4.89	1995	.21	2000
Jul	1.54	1.38	1.23	1996	17	5.10	1987	.11	1999
Aug	1.38	1.08	1.63	1993	5	4.41	1993	.23	1981
Sep	1.11	.99	1.28	1971	3	2.33+	1978	.00	1987
Oct	.92	.84	1.70	1938	17	2.48	1989	.00	1987
Nov	.46	.44	4.00	1901	23	1.07	1988	.00	1989
Dec	.43	.35	2.00	1898	28	.98	1981	.03	1980
Ann	12.43+	13.20+	4.00+	Nov 1901	23	5.10	Jul 1987	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.3	1.6	@	.0
Feb	3.7	1.2	.1	.0
Mar	5.2	2.1	.1	.0
Apr	7.7	3.6	.3	@
May	11.4	6.2	1.2	.1
Jun	10.6	6.1	.8	.1
Jul	8.4	4.5	.6	.1
Aug	7.9	4.0	.6	.1
Sep	6.2	3.5	.4	.1
Oct	5.6	2.8	.4	@
Nov	4.8	1.6	.0	.0
Dec	4.6	1.7	.1	.0
Ann	80.4	38.9	4.6	.5

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	.09	.13	.19	.25	.30	.35	.42	.49	.59	.75	.89
Feb	.02	.05	.11	.16	.21	.27	.34	.42	.54	.72	.91
Mar	.18	.24	.33	.40	.48	.56	.65	.75	.89	1.10	1.30
Apr	.19	.28	.44	.59	.75	.92	1.11	1.34	1.66	2.16	2.64
May	.69	.90	1.20	1.46	1.70	1.96	2.24	2.57	2.99	3.65	4.26
Jun	.32	.49	.77	1.04	1.32	1.62	1.97	2.39	2.96	3.87	4.75
Jul	.29	.43	.66	.87	1.08	1.31	1.56	1.88	2.29	2.95	3.59
Aug	.22	.34	.54	.73	.93	1.14	1.39	1.69	2.09	2.74	3.37
Sep	.03	.10	.24	.40	.58	.78	1.03	1.35	1.79	2.55	3.30
Oct	.05	.14	.28	.41	.55	.71	.90	1.13	1.45	1.96	2.47
Nov	.04	.09	.16	.23	.30	.37	.46	.57	.71	.93	1.15
Dec	.05	.09	.15	.21	.27	.34	.42	.52	.66	.88	1.10
Ann	7.81	8.66	9.78	10.63	11.41	12.16	12.95	13.83	14.91	16.50	17.89

\+ 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: 1898-2001
(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	7.7	8.0	4	4
Feb	6.0	4.7	3	3
Mar	9.2	6.2	2	1
Apr	11.7	10.0	1	#
May	7.9	3.5	#	#
Jun	.6	.0	#	0
Jul	#	.0	#	0
Aug	.0	.0	0	0
Sep	1.7	.0	#	0
Oct	7.1	4.1	#	#
Nov	5.7	5.0	1	1
Dec	7.6	7.6	3	3
Ann	65.2	49.1	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	8.0	1982	21	14.5+	1982	15	1979	31	12	1979
Feb	13.0	1987	23	18.5	1987	15	1979	6	10	1979
Mar	14.0	1985	2	37.7	1982	18	1982	19	14	1985
Apr	11.0	1997	4	40.0	1975	24	1976	27	4	1975
May	16.0	1980	25	26.5	1983	12	1981	11	2	1986
Jun	8.0	1995	6	11.0	1995	2	1995	8	#+	2000
Jul	#	1994	6	#	1994	3	1993	3	#	1993
Aug	.5	1992	24	.5	1992	0	0	0	0	0
Sep	14.0	1978	18	16.0	1982	14	1978	18	1	1984
Oct	13.0	1991	27	35.0	1971	12	1971	1	2	1971
Nov	9.0	1982	9	20.0	1985	10	1985	30	6	1985
Dec	17.0	1982	1	17.0	1982	17	1982	1	9	1985
Ann	17.0	Dec 1982	1	40.0	Apr 1975	24	Apr 1976	27	14	Mar 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	2.8	.9	.2	.0
Feb	3.3	2.1	.6	.4	@
Mar	3.8	2.9	1.2	.6	@
Apr	4.3	3.5	1.5	.9	.1
May	1.8	1.5	.8	.5	.2
Jun	.2	.2	.1	@	.0
Jul	.0	.0	.0	.0	.0
Aug	@	.0	.0	.0	.0
Sep	.3	.3	.2	.1	.1
Oct	2.3	1.9	.9	.5	.2
Nov	3.0	2.3	.7	.3	.0
Dec	4.2	2.8	1.0	.2	@
Ann	27.0	20.3	7.9	3.7	.6

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.0	20.0	12.1	3.4
Feb	22.2	12.4	5.2	1.6
Mar	9.3	5.1	2.3	.5
Apr	3.2	2.3	1.5	.4
May	.9	.6	.5	.2
Jun	.1	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.3	.2	.1	.1
Oct	2.3	1.4	.8	@
Nov	8.8	5.1	2.1	.0
Dec	22.3	14.7	7.3	.9
Ann	96.4	61.8	31.9	7.1

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

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	8/04	8/10	8/13	8/17	8/20	8/23	8/26	8/30	9/04
32	8/14	8/19	8/23	8/27	8/30	9/02	9/06	9/10	9/15
28	8/27	9/01	9/05	9/08	9/10	9/13	9/16	9/20	9/25
24	9/06	9/11	9/15	9/18	9/21	9/24	9/27	10/01	10/06
20	9/15	9/21	9/25	9/28	10/01	10/04	10/07	10/11	10/16
16	9/21	9/27	10/02	10/06	10/09	10/13	10/17	10/21	10/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	62	54	49	44	39	35	30	24	16
32	91	82	75	69	63	58	52	45	35
28	118	108	101	95	90	84	78	71	61
24	144	134	127	121	115	109	103	96	86
20	172	163	157	152	148	143	138	132	123
16	198	188	182	176	171	166	160	154	145

***** 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	1495	1227	1106	810	576	316	158	177	414	745	1157	1473	9654
60	1340	1087	951	660	421	189	72	82	276	590	1007	1318	7993
57	1247	1003	858	570	331	127	37	43	204	497	917	1225	7059
55	1185	947	796	512	275	93	22	26	161	436	857	1163	6473
50	1030	807	641	371	151	33	4	5	78	292	710	1008	5130
32	486	327	165	44	1	0	0	0	0	19	258	473	1773

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	14	24	82	224	449	681	906	871	579	298	91	23	4242
55	0	0	0	2	9	83	215	184	50	1	0	0	544
57	0	0	0	0	4	57	168	139	33	0	0	0	401
60	0	0	0	0	1	29	111	85	15	0	0	0	241
65	0	0	0	0	0	7	41	26	3	0	0	0	77
70	0	0	0	0	0	1	10	5	0	0	0	0	16

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	0	6	82	242	463	682	650	375	143	13	0	0	0	6	88	330	793	1475	2125	2500	2643	2656	2656
45	0	0	0	32	128	320	527	498	242	66	0	0	0	0	0	32	160	480	1007	1505	1747	1813	1813	1813
50	0	0	0	8	54	191	374	344	134	18	0	0	0	0	0	8	62	253	627	971	1105	1123	1123	1123
55	0	0	0	0	14	90	226	200	51	2	0	0	0	0	0	0	14	104	330	530	581	583	583	583
60	0	0	0	0	0	32	103	82	12	0	0	0	0	0	0	0	0	32	135	217	229	229	229	229
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	12	82	194	324	464	447	294	138	14	0	0	0	12	94	288	612	1076	1523	1817	1955	1969	1969

(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