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: VIDA 6 NE, MT **COOP ID: 248569**

Climate Division: MT 6 **NWS Call Sign:** **Elevation: 2,400 Feet** **Lat: 47˚53N** **Lon: 105˚27W**

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	24.7	2.8	13.8	61	1992	31	28.2	1992	-39	1950	26	-3.3	1982	1588	0	.0	.0	.9	18.9	30.7	13.5
Feb	33.0	11.0	22.0	71	1992	27	35.6	1984	-36+	1996	3	3.7	1989	1205	0	.0	.0	3.2	12.3	27.2	7.7
Mar	44.1	20.6	32.4	78	1999	26	40.8	1986	-33	1996	8	21.1	1996	1012	0	.0	.0	11.4	6.1	27.4	2.6
Apr	59.1	31.3	45.2	95	1980	20	51.8	1977	-8	1975	1	37.2	1975	595	1	.0	.1	22.8	.8	16.5	@
May	70.5	41.9	56.2	103	1984	30	62.0	1988	14	1954	3	49.6	1996	294	20	.1	1.0	29.7	.0	3.9	.0
Jun	79.4	50.5	65.0	108	1988	26	76.6	1988	29+	1998	4	59.3	1998	101	100	.4	3.7	30.0	.0	.1	.0
Jul	86.0	55.0	70.5	109	1960	19	75.8	1989	37+	1977	8	62.9	1993	35	205	1.2	9.7	31.0	.0	.0	.0
Aug	85.6	53.6	69.6	112	1949	7	77.5	1971	32+	1994	31	62.8	1980	77	220	1.4	10.6	31.0	.0	.1	.0
Sep	73.1	42.7	57.9	103	1978	3	65.7	1998	14	1995	21	50.9	1985	260	47	.1	2.2	28.8	.0	3.2	.0
Oct	59.4	32.3	45.9	95	1997	2	50.3	1974	-4	1991	30	41.6	1972	594	0	.0	.1	24.6	.6	14.8	.1
Nov	40.0	18.5	29.3	80	1999	7	40.9	1999	-25	1985	29	12.8	1985	1073	0	.0	.0	7.7	8.2	26.9	2.9
Dec	28.8	7.4	18.1	62	1997	14	30.9	1999	-39	1989	21	-.7	1983	1454	0	.0	.0	1.7	16.8	30.7	9.2
Ann	57.0	30.6	43.8	112	Aug 1949	7	77.5	Aug 1971	-39+	Dec 1989	21	-3.3	Jan 1982	8288	593	3.2	27.4	222.8	63.7	181.5	36.0

\+ 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: 1948-2001

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

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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	.45	.26	.77	1971	30	2.25	1971	.00+	1995
Feb	.32	.19	.65	1953	4	1.30	1972	.00+	1990
Mar	.66	.56	1.19	1985	28	2.06	1995	.00	1994
Apr	1.14	.88	1.98	1967	29	3.54	1992	.00	1983
May	2.03	1.59	2.80	1965	6	6.99	1978	.20	1980
Jun	2.70	2.32	3.75	1976	12	8.71	1984	.27	1979
Jul	1.98	1.66	2.82	1966	4	6.13	1993	.11	1989
Aug	1.27	1.09	2.35	1948	6	4.07	1974	.00	2000
Sep	1.34	.96	1.80	1987	27	5.22	1978	.00	1979
Oct	.97	.57	1.72	1953	22	5.49	1998	.00	1978
Nov	.57	.45	1.20	2000	1	2.38	2000	.00	1987
Dec	.45	.43	.70	1982	2	1.45	1982	.00+	1999
Ann	13.88	14.06	3.75	Jun 1976	12	8.71	Jun 1984	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.1	1.4	.1	.0
Feb	3.3	1.1	@	.0
Mar	4.1	1.9	.3	@
Apr	5.7	3.0	.5	@
May	8.2	5.0	1.1	.3
Jun	8.5	5.3	1.5	.4
Jul	6.7	4.3	1.3	.4
Aug	5.1	2.9	.7	.2
Sep	4.8	3.0	.7	.2
Oct	3.9	2.2	.5	.2
Nov	3.9	1.7	.1	.1
Dec	5.0	1.5	.1	.0
Ann	64.3	33.3	6.9	1.8

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	.00	.04	.12	.19	.26	.35	.44	.56	.72	.99	1.26
Feb	.00	.00	.04	.08	.14	.20	.28	.39	.54	.79	1.05
Mar	.03	.09	.19	.29	.39	.51	.64	.81	1.04	1.42	1.79
Apr	.12	.25	.44	.60	.77	.95	1.16	1.40	1.73	2.26	2.76
May	.32	.49	.79	1.07	1.36	1.67	2.04	2.48	3.07	4.04	4.96
Jun	.48	.71	1.11	1.48	1.85	2.26	2.73	3.29	4.05	5.26	6.42
Jul	.24	.39	.67	.95	1.24	1.57	1.95	2.42	3.06	4.11	5.14
Aug	.05	.16	.34	.53	.73	.96	1.23	1.56	2.02	2.79	3.54
Sep	.05	.16	.35	.54	.75	1.00	1.28	1.65	2.14	2.98	3.80
Oct	.03	.11	.25	.39	.54	.72	.93	1.19	1.56	2.17	2.77
Nov	.06	.13	.22	.30	.39	.48	.58	.70	.86	1.13	1.38
Dec	.00	.00	.11	.19	.27	.35	.45	.57	.73	.99	1.24
Ann	8.16	9.18	10.55	11.61	12.57	13.52	14.52	15.64	17.01	19.05	20.85

\+ 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: 1948-2001
(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	7.1	4.0	5	5
Feb	5.1	2.8	3	#
Mar	4.7	1.5	1	0
Apr	.9	.0	#	0
May	.4	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	0	0
Oct	.7	.0	#	0
Nov	4.7	5.0	1	#
Dec	6.0	6.5	2	1
Ann	29.8	19.8	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	9.0	1971	30	25.5	1971	22	1989	15	16	1989
Feb	8.0	1972	27	22.0	1972	18	1971	6	16	1989
Mar	6.0	1975	23	26.0	1975	21	1975	28	5	1978
Apr	9.0	1986	13	9.0	1986	12	1975	1	3	1975
May	8.0	1986	6	8.0	1986	1	1974	13	#+	1996
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	3.0	1984	24	5.0	1984	0	0	0	0	0
Oct	3.0	1972	29	5.0+	1976	6	1985	9	1	1985
Nov	6.5	1978	18	12.0	1977	17	1996	24	4	1988
Dec	6.0	1972	1	13.2	1976	13	1977	10	7	1984
Ann	9.0+	Apr 1986	13	26.0	Mar 1975	22	Jan 1989	15	16+	Feb 1989

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.5	1.9	.4	.1	.0
Feb	1.5	1.4	.5	.1	.0
Mar	1.1	1.0	.5	.2	.0
Apr	.4	.4	.1	@	.0
May	.1	.1	.1	@	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	@	.0	.0
Oct	.3	.3	@	.0	.0
Nov	1.3	1.3	.5	.2	.0
Dec	2.4	2.1	.6	.2	.0
Ann	9.7	8.6	2.7	.8	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	7.9	5.9	4.1	1.9
Mar	3.5	2.7	1.9	1.0
Apr	.9	.7	.5	.2
May	.1	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.4	.1	.0	.0
Nov	4.0	2.5	1.5	.2
Dec	15.1	9.0	5.6	.1
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	6/07	6/03	5/30	5/28	5/25	5/22	5/20	5/16	5/12
32	5/27	5/22	5/19	5/16	5/13	5/10	5/07	5/04	4/29
28	5/14	5/10	5/07	5/04	5/02	4/30	4/27	4/24	4/20
24	5/05	5/01	4/28	4/25	4/23	4/20	4/18	4/15	4/10
20	4/23	4/18	4/14	4/11	4/08	4/05	4/01	3/29	3/23
16	4/14	4/09	4/05	4/02	3/30	3/27	3/24	3/20	3/15

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	9/01	9/05	9/08	9/10	9/12	9/14	9/16	9/19	9/22
32	9/06	9/10	9/13	9/15	9/17	9/20	9/22	9/25	9/28
28	9/16	9/21	9/24	9/27	9/29	10/02	10/05	10/08	10/12
24	9/22	9/28	10/02	10/06	10/09	10/13	10/16	10/20	10/26
20	9/30	10/06	10/11	10/15	10/18	10/22	10/26	10/31	11/06
16	10/06	10/13	10/18	10/22	10/26	10/29	11/02	11/07	11/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	127	121	116	113	109	106	102	98	92
32	148	140	135	131	127	123	118	113	106
28	168	161	157	153	150	146	142	138	132
24	191	183	178	173	169	164	160	154	147
20	221	211	204	198	193	187	181	175	165
16	232	224	218	213	209	205	200	194	186

***** 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	1588	1205	1012	595	294	101	35	77	260	594	1073	1454	8288
60	1433	1070	857	451	178	41	10	35	158	440	923	1299	6895
57	1341	993	766	369	123	21	3	20	108	348	834	1206	6132
55	1280	940	706	317	92	12	0	14	81	289	781	1144	5656
50	1133	810	562	205	38	2	0	4	32	160	640	998	4584
32	637	409	167	12	0	0	0	0	0	5	240	510	1980

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	72	129	177	408	749	989	1194	1166	777	434	157	78	6330
55	3	16	4	23	128	311	481	467	168	5	8	0	1614
57	1	13	1	15	97	260	422	412	135	2	2	0	1360
60	0	6	0	7	59	190	336	333	95	1	0	0	1027
65	0	0	0	1	20	100	205	220	47	0	0	0	593
70	0	0	0	0	5	40	111	134	20	0	0	0	310

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	1	9	48	209	501	744	940	914	542	237	34	0	1	10	58	267	768	1512	2452	3366	3908	4145	4179	4179
45	0	1	11	117	357	594	785	759	396	136	13	0	0	1	12	129	486	1080	1865	2624	3020	3156	3169	3169
50	0	0	2	56	225	444	630	605	264	61	3	0	0	0	2	58	283	727	1357	1962	2226	2287	2290	2290
55	0	0	0	18	123	302	476	453	161	20	0	0	0	0	0	18	141	443	919	1372	1533	1553	1553	1553
60	0	0	0	6	55	174	321	306	76	4	0	0	0	0	0	6	61	235	556	862	938	942	942	942
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	9	50	162	320	464	592	578	347	179	29	0	0	9	59	221	541	1005	1597	2175	2522	2701	2730	2730

(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

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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