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: CRESTON, MT **COOP ID: 242104**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 2,940 Feet** **Lat: 48˚11N** **Lon: 114˚08W**

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	30.4	15.1	22.8	53+	1971	31	33.0	1994	-40	1950	30	4.0	1979	1310	0	.0	.0	.3	15.2	28.7	5.1
Feb	36.1	18.6	27.4	62	1995	25	34.6	1991	-33+	1950	3	12.7	1989	1054	0	.0	.0	1.2	7.6	26.1	3.1
Mar	44.5	25.3	34.9	71	1986	28	40.6	1986	-32	1960	3	28.6	1989	933	0	.0	.0	8.1	2.2	26.9	.4
Apr	55.0	31.9	43.5	85	1977	26	47.8	1987	4	1951	19	38.1	1975	647	0	.0	.0	21.3	.1	17.4	.0
May	63.8	39.6	51.7	93	1986	30	56.1	1993	15	1954	1	46.7	1996	413	1	.0	.1	29.5	.0	4.4	.0
Jun	70.8	46.0	58.4	96	1955	22	64.6	1986	28+	1969	13	54.1	1981	215	17	.0	.4	29.8	.0	.2	.0
Jul	78.5	49.3	63.9	98	1960	19	69.9	1975	32	1971	7	56.5	1993	110	76	.0	2.5	31.0	.0	@	.0
Aug	79.4	47.6	63.5	100	1961	4	68.8	1971	31	1992	29	59.0	1980	112	66	.0	3.1	31.0	.0	.1	.0
Sep	68.2	38.6	53.4	96	1988	4	59.7	1998	18+	2000	23	48.4	1985	355	7	.0	.2	29.1	.0	5.5	.0
Oct	55.4	30.3	42.9	80+	1992	3	47.5	1988	0	1984	31	40.2	1984	686	0	.0	.0	22.8	.3	19.9	@
Nov	39.8	24.5	32.2	67	1999	13	38.1	1999	-30	1959	16	18.8	1985	986	0	.0	.0	3.7	5.0	25.1	.9
Dec	31.5	17.6	24.6	56	1975	10	32.3	1979	-41	1968	30	11.2	1983	1255	0	.0	.0	.5	15.2	28.7	3.2
Ann	54.5	32.0	43.3	100	Aug 1961	4	69.9	Jul 1975	-41	Dec 1968	30	4.0	Jan 1979	8076	167	.0	6.3	208.3	45.6	183.0	12.7

\+ 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: 1949-2001

(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	1.32	1.37	1.13	1950	19	2.39	1986	.31	1985
Feb	1.19	1.15	1.50	1984	25	2.33	1986	.33	1998
Mar	1.31	1.17	1.12	1981	30	3.47	1987	.11	1994
Apr	1.71	1.66	1.89	1951	30	3.77	1993	.41	1977
May	2.54	2.54	1.77	1985	30	5.48	1980	.89	2000
Jun	2.86	2.54	2.29	1956	16	5.63	1995	.52	1977
Jul	1.80	1.25	1.66	1954	1	7.00	1993	.01	1973
Aug	1.48	1.16	1.71	1963	25	4.26	1975	.13	1988
Sep	1.59	1.38	1.34	1959	15	5.35	1985	.00	1990
Oct	1.25	1.01	.86	1975	7	2.96	1975	.12+	1987
Nov	1.54	1.40	1.52	1989	12	3.75	1989	.33	1997
Dec	1.59	1.35	1.02	1968	8	4.10	1977	.42	1997
Ann	20.18	19.65	2.29	Jun 1956	16	7.00	Jul 1993	.00	Sep 1990

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	13.2	4.6	.2	.0
Feb	10.3	4.6	.2	@
Mar	10.6	4.6	.4	@
Apr	10.8	5.0	.8	.1
May	12.7	6.9	1.2	.3
Jun	12.6	7.5	1.6	.2
Jul	9.1	4.9	1.0	.2
Aug	7.7	4.0	.8	.1
Sep	9.0	4.8	.8	@
Oct	9.0	4.1	.4	.0
Nov	12.2	5.4	.3	@
Dec	13.2	5.6	.3	.0
Ann	130.4	62.0	8.0	.9

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	.49	.62	.79	.94	1.08	1.23	1.38	1.56	1.80	2.15	2.48
Feb	.42	.53	.70	.83	.96	1.10	1.25	1.42	1.63	1.97	2.28
Mar	.31	.44	.63	.80	.97	1.14	1.34	1.58	1.89	2.39	2.85
Apr	.54	.70	.94	1.15	1.35	1.55	1.78	2.04	2.39	2.92	3.41
May	.93	1.17	1.51	1.80	2.07	2.35	2.65	3.01	3.46	4.15	4.79
Jun	1.01	1.28	1.67	2.00	2.32	2.64	2.99	3.40	3.93	4.74	5.48
Jul	.12	.24	.46	.71	.99	1.31	1.69	2.18	2.86	4.01	5.14
Aug	.24	.37	.59	.79	1.00	1.23	1.49	1.80	2.23	2.92	3.57
Sep	.28	.50	.77	.98	1.20	1.42	1.66	1.95	2.32	2.91	3.46
Oct	.20	.30	.49	.66	.84	1.03	1.26	1.53	1.89	2.48	3.05
Nov	.48	.62	.84	1.03	1.21	1.40	1.60	1.84	2.15	2.64	3.09
Dec	.50	.65	.88	1.07	1.25	1.44	1.66	1.90	2.22	2.72	3.18
Ann	14.55	15.64	17.04	18.10	19.04	19.95	20.89	21.92	23.17	24.99	26.55

\+ 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: 1949-2001
(3) Derived from 1971-2000 serially complete daily data

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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	11.0	8.5	6	5
Feb	9.3	7.6	5	3
Mar	5.3	4.8	2	#
Apr	1.3	.5	#	#
May	.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	#	0
Oct	.6	.0	#	0
Nov	4.0	3.8	1	1
Dec	12.5	10.1	4	3
Ann	44.1	35.3	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	6.3	1993	4	23.2	2000	25	1982	24	18	1978
Feb	12.0	1997	27	22.1	1994	30	1978	2	19	1978
Mar	6.0	1998	4	12.7	1975	20	1978	1	13	1997
Apr	8.0	2000	14	8.5	2000	8	2000	14	1	2000
May	1.5	1975	20	1.5	1975	2	1975	20	#+	1984
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	.5	1972	27	.5	1972	#	1972	27	#	1972
Oct	9.0	1984	27	9.0	1984	9	1984	28	1	1984
Nov	5.5	1984	1	9.5	1973	23	1996	27	9	1996
Dec	9.0	1983	27	23.7	1992	32	1996	30	18	1996
Ann	12.0	Feb 1997	27	23.7	Dec 1992	32	Dec 1996	30	19	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.2	4.6	1.4	.3	.0
Feb	5.2	3.4	.8	.2	@
Mar	3.2	2.1	.5	@	.0
Apr	.9	.6	.1	@	.0
May	@	@	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	@	.0	.0	.0	.0
Oct	.4	.3	.1	@	.0
Nov	3.3	1.9	.6	.1	.0
Dec	8.1	5.3	1.8	.6	.0
Ann	29.3	18.2	5.3	1.2	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	20.0	16.4	11.2	4.7
Feb	14.1	10.1	7.1	2.3
Mar	6.4	3.5	2.0	.7
Apr	.7	.2	.1	.0
May	@	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.3	.1	@	.0
Nov	5.5	2.1	.4	.0
Dec	16.5	11.1	7.8	2.1
Ann	63.5	43.5	28.6	9.8

+ 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	7/06	6/29	6/24	6/19	6/15	6/11	6/06	6/01	5/25
32	6/10	6/04	5/31	5/27	5/24	5/20	5/16	5/12	5/06
28	5/18	5/14	5/11	5/08	5/05	5/03	4/30	4/27	4/23
24	4/30	4/25	4/21	4/18	4/14	4/11	4/08	4/04	3/30
20	4/22	4/14	4/09	4/04	3/31	3/27	3/22	3/17	3/10
16	4/04	3/27	3/21	3/16	3/11	3/06	3/01	2/23	2/15

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	8/22	8/26	8/29	9/01	9/04	9/06	9/09	9/12	9/17
32	9/03	9/07	9/11	9/13	9/16	9/19	9/22	9/25	9/30
28	9/14	9/19	9/22	9/25	9/28	10/01	10/04	10/07	10/12
24	9/18	9/26	10/01	10/05	10/09	10/14	10/18	10/23	10/31
20	10/07	10/14	10/19	10/24	10/28	11/02	11/06	11/12	11/19
16	10/20	10/29	11/05	11/10	11/16	11/21	11/26	12/03	12/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	107	98	91	85	80	75	69	62	53
32	137	130	124	119	115	110	106	100	92
28	166	159	154	149	145	141	136	131	123
24	206	196	189	183	177	171	165	158	148
20	245	233	225	217	210	204	196	188	176
16	285	273	264	256	249	242	234	225	212

***** 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	1310	1054	933	647	413	215	110	112	355	686	986	1255	8076
60	1155	914	778	497	265	108	41	42	225	531	836	1100	6492
57	1062	830	685	407	186	63	19	20	158	438	746	1007	5621
55	1000	774	623	348	140	39	11	11	120	377	686	945	5074
50	849	636	468	208	55	9	1	1	48	226	541	790	3832
32	366	221	70	2	0	0	0	0	0	3	134	303	1099

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	79	91	160	345	611	792	989	977	642	339	138	71	5234
55	0	0	0	1	38	141	287	275	72	0	0	0	814
57	0	0	0	0	22	105	233	222	50	0	0	0	632
60	0	0	0	0	8	60	162	151	26	0	0	0	407
65	0	0	0	0	1	17	76	66	7	0	0	0	167
70	0	0	0	0	0	3	23	18	1	0	0	0	45

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	19	139	365	549	740	728	405	134	17	1	0	1	20	159	524	1073	1813	2541	2946	3080	3097	3098
45	0	0	2	63	224	399	585	573	270	55	2	0	0	0	2	65	289	688	1273	1846	2116	2171	2173	2173
50	0	0	0	21	115	257	431	423	148	15	0	0	0	0	0	21	136	393	824	1247	1395	1410	1410	1410
55	0	0	0	2	49	141	279	272	61	2	0	0	0	0	0	2	51	192	471	743	804	806	806	806
60	0	0	0	0	15	63	150	145	18	0	0	0	0	0	0	0	15	78	228	373	391	391	391	391
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	19	105	227	331	461	468	281	116	7	0	0	0	19	124	351	682	1143	1611	1892	2008	2015	2015

(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