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: SAVAGE, MT **COOP ID: 247382**

Climate Division: MT 6 **NWS Call Sign:** **Elevation: 1,985 Feet** **Lat: 47˚27N** **Lon: 104˚20W**

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	25.0	3.5	14.3	60	1931	29	28.6	1992	-46	1912	11	-2.2	1982	1573	0	.0	.0	.7	19.0	30.3	13.2
Feb	33.4	11.5	22.5	70+	1992	29	33.6	1984	-53	1936	16	5.3	1979	1191	0	.0	.0	4.3	11.9	27.1	6.9
Mar	45.4	20.8	33.1	87	1910	22	42.5	1986	-31	1998	11	21.9	1996	989	0	.0	.0	13.3	5.5	27.4	2.3
Apr	59.9	31.8	45.9	95	1926	30	53.8	1987	-11	1975	1	36.6	1975	576	1	.0	.1	23.8	.6	15.7	.1
May	71.6	43.3	57.5	104	1934	29	64.7	1988	15	1937	31	51.6	1974	267	33	.1	1.2	30.0	.0	3.2	.0
Jun	80.5	52.3	66.4	109+	1988	20	79.8	1988	29+	1919	2	59.8	1998	94	137	.7	5.0	30.0	.0	.1	.0
Jul	87.2	56.7	72.0	111	1936	5	77.7	1989	37+	1967	3	64.8	1993	25	239	2.0	12.1	31.0	.0	.0	.0
Aug	86.6	55.0	70.8	110	1949	7	78.3	1983	31	1906	2	64.3	1977	47	227	1.4	13.0	31.0	.0	@	.0
Sep	74.6	44.3	59.5	104	1908	7	65.5	1998	15	1907	29	53.7	1984	214	47	.3	2.9	29.2	.0	2.1	.0
Oct	60.9	33.7	47.3	93+	1963	4	51.0	1979	-14	1919	26	42.8	1972	549	0	.0	.1	25.4	.4	12.6	@
Nov	40.4	19.5	30.0	82	1934	21	41.9	1999	-24	1964	29	15.1	1985	1051	0	.0	.0	8.3	8.4	26.6	2.3
Dec	28.8	8.0	18.4	73	1939	5	30.9	1999	-42	1983	23	-1.1	1983	1445	0	.0	.0	1.5	16.1	30.6	9.4
Ann	57.9	31.7	44.8	111	Jul 1936	5	79.8	Jun 1988	-53	Feb 1936	16	-2.2	Jan 1982	8021	684	4.5	34.4	228.5	61.9	175.7	34.2

\+ 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: 1905-2001

(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	.35	.31	1.20	1907	11	.86	1995	.02+	1983
Feb	.29	.20	.80	1910	15	1.05	1998	.00+	1985
Mar	.53	.50	.96	1910	27	1.86	1982	.01	1977
Apr	1.09	.83	2.14	1992	18	3.49	1992	.02	1977
May	2.01	1.53	2.87	1909	30	5.39	1978	.09	1980
Jun	2.89	2.48	4.08	1973	18	5.94	1973	.56	1985
Jul	2.18	1.66	3.23	1997	1	7.39	1997	.03	1984
Aug	1.30	1.15	2.95	1916	5	4.42	1980	.11	1979
Sep	1.42	.97	2.94	1991	15	5.00	1991	.00	1989
Oct	1.01	.69	2.00	1940	4	4.02	1998	.04	1987
Nov	.50	.38	1.46	2000	1	2.41	2000	.03	1972
Dec	.39	.44	1.20	1906	13	.75+	1988	.00+	1987
Ann	13.96	14.08	4.08	Jun 1973	18	7.39	Jul 1997	.00+	Sep 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.7	1.1	@	.0
Feb	3.8	.9	.1	.0
Mar	5.0	2.0	.1	.0
Apr	5.6	3.0	.5	@
May	8.5	4.9	1.0	.3
Jun	8.8	5.4	1.9	.7
Jul	7.1	4.4	1.3	.4
Aug	5.8	3.2	.8	.2
Sep	5.5	3.0	.8	.3
Oct	4.5	2.0	.7	.2
Nov	4.6	1.7	.1	@
Dec	5.3	1.1	.0	.0
Ann	69.2	32.7	7.3	2.1

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	.03	.05	.10	.15	.20	.26	.34	.43	.55	.76	.97
Feb	.00	.02	.06	.11	.16	.21	.28	.36	.47	.65	.84
Mar	.05	.09	.16	.24	.32	.41	.51	.65	.83	1.13	1.43
Apr	.07	.13	.26	.41	.58	.77	1.01	1.31	1.74	2.46	3.17
May	.29	.45	.74	1.02	1.31	1.63	2.00	2.45	3.06	4.06	5.02
Jun	.80	1.07	1.49	1.85	2.21	2.58	2.99	3.48	4.12	5.11	6.04
Jul	.15	.28	.56	.86	1.19	1.58	2.05	2.64	3.47	4.87	6.26
Aug	.13	.23	.40	.59	.78	1.00	1.26	1.58	2.02	2.76	3.47
Sep	.06	.19	.40	.61	.83	1.08	1.38	1.75	2.26	3.10	3.93
Oct	.04	.10	.21	.34	.50	.68	.91	1.21	1.63	2.35	3.08
Nov	.03	.06	.12	.19	.27	.36	.46	.60	.80	1.13	1.46
Dec	.00	.05	.13	.19	.25	.32	.40	.49	.62	.82	1.01
Ann	8.40	9.41	10.73	11.77	12.70	13.62	14.58	15.65	16.98	18.93	20.65

\+ 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: 1905-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	6.9	5.0	4	4	8.0	1980	6	19.0	1982	15	1982	25	11	1979	4.3	2.8	.7	.1	.0	21.4	16.3	11.8	3.0
Feb	6.1	3.5	3	2	7.5	1998	25	20.5	1979	17	1979	18	13	1979	3.2	2.3	.7	.3	.0	14.0	8.9	6.9	2.3
Mar	6.3	3.5	1	#	14.0	1975	23	30.0	1975	19	1979	3	9	1979	2.8	2.0	.8	.2	.1	6.8	4.5	3.1	1.1
Apr	2.8	1.0	#	#	12.0	1986	13	13.0	1986	13	1975	5	5	1975	1.0	.9	.3	.2	@	1.6	.9	.5	.3
May	.7	.0	0	0	15.0	1983	12	15.0	1983	12	1983	12	1	1983	.1	.1	.1	@	@	.1	.1	@	@
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.2	.0	#	0	3.0	1972	25	4.0	1984	2+	1984	24	#+	1984	.1	.1	.1	.0	.0	.1	.0	.0	.0
Oct	1.4	.0	#	0	8.0	1972	29	10.0	1972	6	1972	30	1	1985	.5	.5	.1	.1	.0	.5	.2	.1	.0
Nov	4.5	3.0	1	#	9.0	1996	23	17.0	1986	13	1996	24	5	1996	2.6	2.0	.7	.2	.0	5.6	2.2	1.1	.0
Dec	8.6	9.0	3	2	8.0	1978	28	17.0	1977	14	1996	30	11	1996	4.7	3.5	.8	.2	.0	17.2	9.8	4.1	.2
Ann	37.5	25.0	N/A	N/A	15.0	May 1983	12	30.0	Mar 1975	19	Mar 1979	3	13	Feb 1979	19.3	14.2	4.3	1.3	.1	67.3	42.9	27.6	6.9

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	138	131	126	122	118	114	110	105	98
32	155	148	143	139	135	131	127	122	115
28	169	163	158	155	151	148	144	140	134
24	196	188	183	178	173	169	164	158	151
20	216	208	203	198	194	190	185	180	172
16	234	226	220	215	210	206	201	195	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	1573	1191	989	576	267	94	25	47	214	549	1051	1445	8021
60	1418	1051	834	432	160	40	7	17	117	395	901	1290	6662
57	1325	978	745	352	109	22	1	8	73	304	811	1197	5925
55	1266	925	689	301	82	14	0	4	51	247	754	1135	5468
50	1122	794	545	191	33	3	0	0	15	126	615	987	4431
32	628	392	166	10	0	0	0	0	0	3	214	498	1911

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	78	125	200	425	789	1033	1237	1203	823	477	153	76	6619
55	3	14	10	25	158	357	524	494	184	7	3	0	1779
57	1	11	4	16	124	305	463	436	146	3	0	0	1509
60	0	0	0	7	81	233	376	352	100	1	0	0	1150
65	0	0	0	1	33	137	239	227	47	0	0	0	684
70	0	0	0	0	10	67	134	131	18	0	0	0	360

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	10	55	232	554	803	998	963	595	269	35	1	0	10	65	297	851	1654	2652	3615	4210	4479	4514	4515
45	0	2	14	132	405	653	843	808	450	158	11	0	0	2	16	148	553	1206	2049	2857	3307	3465	3476	3476
50	0	0	2	64	269	503	688	653	310	75	1	0	0	0	2	66	335	838	1526	2179	2489	2564	2565	2565
55	0	0	0	22	155	356	533	498	193	26	0	0	0	0	0	22	177	533	1066	1564	1757	1783	1783	1783
60	0	0	0	7	76	221	380	348	103	6	0	0	0	0	0	7	83	304	684	1032	1135	1141	1141	1141
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	12	58	182	354	503	634	606	382	194	29	0	0	12	70	252	606	1109	1743	2349	2731	2925	2954	2954

(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