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: MOBRIDGE 2 NNW, SD **COOP ID: 395691**

Climate Division: SD 2 **NWS Call Sign: Y26** **Elevation: 1,696 Feet** **Lat: 45˚34N** **Lon: 100˚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	23.9	3.4	13.7	64	1964	20	26.3	1990	-33+	1966	29	-.7	1978	1591	0	.0	.0	.7	21.2	30.9	13.3
Feb	31.1	10.6	20.9	70+	1992	29	32.0	1998	-38	1994	9	4.3	1979	1236	0	.0	.0	3.2	14.8	27.9	7.6
Mar	41.7	20.8	31.3	81	1963	23	38.4	1973	-22	1948	10	22.2	1996	1047	0	.0	.0	8.8	7.4	27.6	2.3
Apr	56.9	33.1	45.0	96	1992	30	52.1	1981	-1	1975	1	38.0	1975	603	2	.0	.1	21.3	.8	14.6	@
May	69.6	45.6	57.6	101	1992	19	64.7	1977	21	1967	2	52.7	1996	255	26	@	.6	30.0	.0	1.4	.0
Jun	78.6	55.2	66.9	105	1988	24	76.1	1988	33	1950	3	62.0	1993	67	124	.1	2.6	30.0	.0	.0	.0
Jul	85.4	61.0	73.2	110	1949	3	79.4	1974	39	1959	1	64.9	1992	19	273	.8	8.0	31.0	.0	.0	.0
Aug	84.5	59.3	71.9	106+	1988	15	76.9	1983	39	1958	31	66.0	1992	26	241	.5	7.5	31.0	.0	.0	.0
Sep	73.8	48.7	61.3	104	1948	15	67.8	1998	22	1965	26	56.3	1993	167	54	.1	2.2	29.4	.0	.7	.0
Oct	60.1	36.4	48.3	95	1953	1	52.3	1973	1	1991	30	44.8	1991	519	0	.0	.1	24.9	.4	9.2	.0
Nov	40.6	21.8	31.2	76+	1975	4	41.9	1999	-20+	1985	28	17.5	1985	1014	0	.0	.0	7.5	8.5	27.0	1.2
Dec	28.0	9.1	18.6	69	1965	4	29.3	1997	-33	1983	23	1.8	1983	1440	0	.0	.0	1.2	18.6	30.9	8.2
Ann	56.2	33.8	45.0	110	Jul 1949	3	79.4	Jul 1974	-38	Feb 1994	9	-.7	Jan 1978	7984	720	1.5	21.1	219.0	71.7	170.2	32.6

\+ 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	.33	.27	.61	1949	3	1.10	1997	.05+	1984
Feb	.41	.34	.90	1972	20	1.53	1987	.06	1985
Mar	1.04	.60	1.64	1966	4	3.95	1977	.06	1988
Apr	1.64	1.36	2.25	1971	20	4.31	1971	.14	1987
May	2.63	2.33	2.65	1986	8	6.55	1999	.22	1980
Jun	2.94	3.17	3.10	1964	18	5.23	1988	.26	1974
Jul	2.27	1.85	3.66	1997	11	5.25	1981	.05	1988
Aug	1.87	1.50	2.63	1999	12	4.51	1978	.48	1984
Sep	1.34	.94	2.65	1962	2	4.65	1977	.08	1972
Oct	1.54	1.06	2.44	1972	5	4.98	1982	.05	1988
Nov	.55	.49	1.46	1956	2	2.72	1977	.00	1999
Dec	.38	.27	.79	1965	11	1.34	1972	.01	1991
Ann	16.94	17.06	3.66	Jul 1997	11	6.55	May 1999	.00	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.9	.9	@	.0
Feb	5.9	1.4	.1	.0
Mar	7.8	2.4	.4	.3
Apr	8.6	4.1	.7	.1
May	10.3	6.0	1.5	.5
Jun	11.1	5.9	2.0	.6
Jul	8.7	4.9	1.3	.3
Aug	8.4	4.0	.9	.4
Sep	6.3	3.3	.6	.3
Oct	6.6	3.1	.8	.3
Nov	5.8	1.8	.1	@
Dec	6.4	.9	.1	.0
Ann	92.8	38.7	8.5	2.8

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	.05	.08	.13	.18	.22	.27	.33	.40	.50	.66	.80
Feb	.07	.10	.16	.22	.28	.34	.41	.49	.61	.80	.98
Mar	.09	.16	.30	.44	.60	.78	1.00	1.26	1.63	2.25	2.86
Apr	.23	.37	.61	.83	1.07	1.33	1.63	2.00	2.50	3.32	4.10
May	.53	.76	1.15	1.50	1.86	2.24	2.67	3.20	3.89	4.99	6.04
Jun	.83	1.11	1.53	1.90	2.26	2.63	3.04	3.53	4.16	5.15	6.08
Jul	.33	.52	.85	1.16	1.49	1.85	2.27	2.77	3.46	4.57	5.64
Aug	.40	.58	.85	1.10	1.35	1.61	1.91	2.27	2.74	3.49	4.20
Sep	.11	.20	.37	.56	.76	.99	1.27	1.63	2.12	2.94	3.74
Oct	.09	.18	.36	.57	.81	1.09	1.42	1.86	2.46	3.49	4.52
Nov	.01	.04	.11	.18	.27	.37	.50	.67	.90	1.30	1.70
Dec	.02	.04	.09	.14	.20	.27	.35	.46	.61	.86	1.12
Ann	10.90	12.02	13.48	14.61	15.62	16.60	17.63	18.77	20.17	22.22	24.01

\+ 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

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Climate Division: SD 2 **NWS Call Sign: Y26** **Elevation: 1,696 Feet** **Lat: 45°34N** **Lon: 100°27W**

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	5.0	4.4	5	4	9.0	1997	4	15.4	1997	34+	1997	17	31	1997	5.6	2.0	.3	@	.0	23.4	16.5	11.3	2.9
Feb	5.8	4.1	4	2	10.0	1997	3	22.0	1987	29	1997	3	21	1997	4.9	2.1	.5	.1	@	17.6	11.2	8.4	4.8
Mar	7.4	5.4	2	2	12.7	1977	11	30.2	1975	23+	1975	29	9+	1997	4.5	2.2	.8	.3	.1	13.6	8.6	5.7	2.8
Apr	3.5	1.0	#	1	8.9	1995	11	15.9	1995	21	1975	1	4	1975	2.0	1.2	.4	.2	.0	2.5	1.3	.8	.2
May	.2	.0	#	0	3.0	1991	3	3.2	1979	2+	1991	4	#	1999	.1	.1	@	.0	.0	.1	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1991	.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	#	.0	0	0	#	1995	21	#+	1995	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.6	.0	#	0	2.8	1971	30	4.9	1971	4	1971	30	#	1999	.6	.3	.0	.0	.0	.5	.1	.0	.0
Nov	5.1	3.6	1	0	7.0	1985	25	24.1	1985	23	1985	30	7	1985	3.8	1.9	.6	.1	.0	7.4	4.2	2.4	1.1
Dec	5.2	4.4	3	1	7.1	1971	7	19.3	1996	29+	1985	20	24	1985	5.2	1.8	.4	.2	.0	17.6	9.7	6.4	3.1
Ann	32.8	22.9	N/A	N/A	12.7	Mar 1977	11	30.2	Mar 1975	34+	Jan 1997	17	31	Jan 1997	26.7	11.6	3.0	.9	.1	82.7	51.6	35.0	14.9

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	144	140	137	133	130	127	123	117
32	169	163	159	156	152	149	146	141	136
28	186	181	177	173	170	167	164	160	154
24	218	210	205	201	197	192	188	183	176
20	229	222	218	213	210	206	202	197	190
16	244	238	233	229	225	222	218	213	206

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1591	1236	1047	603	255	67	19	26	167	519	1014	1440	7984
60	1436	1096	892	460	147	22	4	6	81	365	864	1285	6658
57	1343	1012	799	379	98	9	0	2	45	277	774	1192	5930
55	1281	962	737	328	72	4	0	1	28	221	714	1130	5478
50	1129	832	591	216	28	0	0	0	6	109	576	979	4466
32	621	408	171	16	0	0	0	0	0	2	178	487	1883

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	53	96	147	405	794	1047	1277	1238	877	506	153	70	6663
55	0	5	0	27	152	361	564	525	215	12	0	0	1861
57	0	0	0	18	116	306	502	465	172	6	0	0	1585
60	0	0	0	9	73	228	414	376	118	1	0	0	1219
65	0	0	0	2	26	124	273	241	54	0	0	0	720
70	0	0	0	0	6	53	159	134	19	0	0	0	371

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	5	39	209	550	803	1026	977	631	279	31	0	0	5	44	253	803	1606	2632	3609	4240	4519	4550	4550
45	0	1	10	119	401	653	871	822	482	166	10	0	0	1	11	130	531	1184	2055	2877	3359	3525	3535	3535
50	0	0	2	59	264	503	716	667	345	84	0	0	0	0	2	61	325	828	1544	2211	2556	2640	2640	2640
55	0	0	0	24	147	359	561	512	220	34	0	0	0	0	0	24	171	530	1091	1603	1823	1857	1857	1857
60	0	0	0	8	69	222	408	362	125	9	0	0	0	0	0	8	77	299	707	1069	1194	1203	1203	1203
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	7	40	147	329	505	677	638	383	174	28	0	0	7	47	194	523	1028	1705	2343	2726	2900	2928	2928

(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