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: CUSTER, SD **COOP ID: 392087**

Climate Division: SD 4 **NWS Call Sign:** **Elevation: 5,480 Feet** **Lat: 43˚46N** **Lon: 103˚37W**

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	35.6	12.4	24.0	68	1981	24	33.6	1981	-43	1963	19	13.0	1979	1272	0	.0	.0	2.8	11.8	30.4	6.9
Feb	40.1	16.2	28.2	68	1958	23	35.5	1992	-34	1962	28	12.6	1989	1032	0	.0	.0	6.1	7.6	27.1	4.0
Mar	45.7	20.9	33.3	72	1946	28	40.1	1986	-30	1956	12	26.5	1975	983	0	.0	.0	11.5	5.0	28.5	1.3
Apr	53.8	28.0	40.9	84	1989	21	48.7	1987	-15	1966	20	35.4	1997	724	0	.0	.0	17.4	1.7	21.9	.1
May	63.4	37.4	50.4	90	1969	28	56.5	1987	5	1954	3	45.7	1983	455	3	.0	.0	27.3	@	8.8	.0
Jun	73.4	46.0	59.7	97	1954	23	70.3	1988	19	1951	4	53.2	1998	208	48	.0	.6	29.6	.0	1.2	.0
Jul	80.1	52.1	66.1	100	1954	12	71.0	1988	30+	1971	30	59.9	1992	78	113	.0	3.4	31.0	.0	.1	.0
Aug	79.5	50.4	65.0	96+	1988	16	71.0	1983	22	1966	22	59.8	1977	93	92	.0	1.1	31.0	.0	.1	.0
Sep	70.8	41.4	56.1	97	1971	3	63.2	1998	8	1961	30	50.5	1985	286	19	.0	.3	28.3	.1	5.7	.0
Oct	58.9	31.3	45.1	85+	1992	1	49.8	1986	-5	1991	30	39.5	1984	618	0	.0	.0	23.7	.6	17.5	.1
Nov	43.9	21.3	32.6	76	1975	6	44.4	1999	-25	1952	27	20.1	1985	973	0	.0	.0	9.6	5.4	27.1	1.6
Dec	37.4	14.3	25.9	68	1979	19	33.7	1980	-37	1964	17	12.1	1983	1214	0	.0	.0	4.4	9.6	29.9	4.7
Ann	56.9	31.0	43.9	100	Jul 1954	12	71.0+	Jul 1988	-43	Jan 1963	19	12.1	Dec 1983	7936	275	.0	5.4	222.7	41.8	198.3	18.7

\+ 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: 1926-2001

(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	.39	.35	.58	1944	27	1.03	1996	.00	1984
Feb	.63	.48	.73+	2001	7	2.01	1987	.02	1985
Mar	1.07	1.01	1.05	1973	14	2.38	1992	.00	1984
Apr	2.06	1.99	3.53	1943	10	4.30	2000	.32	1987
May	3.31	2.71	4.03	1952	22	8.81	1978	1.34	1985
Jun	3.17	2.98	3.45	1972	10	6.40	1972	.75	1981
Jul	3.02	2.64	3.65	1930	11	7.58	1979	.37	1975
Aug	2.38	2.03	3.50	1933	27	7.54	1999	.64	1971
Sep	1.50	1.13	1.73	1929	25	4.85	1989	.10	1979
Oct	1.47	1.10	2.62	1934	16	4.40	1998	.18	1978
Nov	.67	.59	.80	2000	1	1.85	1998	.02	1997
Dec	.52	.49	.90	1948	24	1.28	1983	.00+	1995
Ann	20.19	20.61	4.03	May 1952	22	8.81	May 1978	.00+	Dec 1995

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.4	1.5	@	.0
Feb	4.8	2.4	.2	.0
Mar	6.6	3.1	.4	.1
Apr	9.0	4.9	1.2	.2
May	11.9	6.9	2.2	.6
Jun	12.1	7.0	1.9	.3
Jul	10.6	6.5	1.8	.5
Aug	9.1	5.1	1.5	.4
Sep	6.9	3.6	.9	.3
Oct	6.2	3.2	.9	.3
Nov	5.1	2.1	.1	.0
Dec	4.3	1.9	.1	.0
Ann	91.0	48.2	11.2	2.7

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	.02	.06	.12	.17	.23	.30	.38	.49	.62	.85	1.07
Feb	.04	.08	.16	.24	.34	.45	.59	.76	1.00	1.41	1.82
Mar	.17	.31	.49	.64	.79	.94	1.11	1.32	1.58	2.00	2.39
Apr	.61	.80	1.10	1.35	1.60	1.86	2.14	2.48	2.91	3.59	4.22
May	.99	1.30	1.77	2.18	2.57	2.99	3.44	3.97	4.66	5.74	6.74
Jun	.75	1.05	1.51	1.93	2.34	2.78	3.26	3.85	4.61	5.82	6.96
Jul	.96	1.25	1.67	2.03	2.38	2.74	3.14	3.61	4.21	5.14	6.01
Aug	.64	.87	1.21	1.51	1.81	2.12	2.46	2.86	3.39	4.22	5.00
Sep	.14	.25	.45	.66	.89	1.15	1.45	1.83	2.35	3.22	4.07
Oct	.19	.31	.52	.72	.94	1.18	1.46	1.80	2.26	3.02	3.75
Nov	.10	.15	.25	.34	.43	.54	.66	.81	1.02	1.35	1.66
Dec	.00	.00	.15	.24	.33	.42	.53	.66	.82	1.09	1.35
Ann	13.93	15.12	16.67	17.84	18.89	19.91	20.96	22.12	23.54	25.60	27.40

+ 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: 1926-2001
(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	4.5	3.0	1	0
Feb	9.0	5.8	1	0
Mar	13.1	13.9	#	0
Apr	11.0	11.1	#	0
May	.8	.0	#	0
Jun	.2	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.6	.0	#	0
Oct	3.8	1.5	#	0
Nov	7.0	4.6	#	0
Dec	7.9	6.7	#	0
Ann	57.9	46.6	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	9.5	1999	6	14.6+	1998	28	1977	5	8	1982
Feb	9.0	1995	14	26.0	1987	8+	1978	20	5	1978
Mar	10.0	1971	18	32.1	1998	12	1971	18	3	1971
Apr	24.0	2000	19	31.0	2000	8+	1982	8	1+	1982
May	5.5	1991	3	5.5	1991	2	1980	12	#	2000
Jun	3.0	1995	9	4.0	1995	#+	1998	5	#	1998
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	4.0	1995	20	4.5	2000	2	1980	16	#	1980
Oct	6.0	1971	28	16.0	1995	3	1975	24	#	1981
Nov	7.0	1979	21	25.1	1998	7	1979	21	1	1979
Dec	8.0	1973	18	19.2	1981	8	1981	31	2+	1981
Ann	24.0	Apr 2000	19	32.1	Mar 1998	28	Jan 1977	5	8	Jan 1982

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.7	1.6	.8	.3	.0
Feb	5.0	3.3	.9	.4	.0
Mar	5.8	3.9	1.4	.8	.1
Apr	4.7	3.8	1.5	.5	.1
May	.3	.3	.1	.1	.0
Jun	.1	.1	@	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.4	.2	.1	.0	.0
Oct	1.6	1.4	.5	.2	.0
Nov	4.3	2.1	.8	.2	.0
Dec	3.9	2.7	1.0	.4	.0
Ann	29.8	19.4	7.1	2.9	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	11.8	4.5	2.8	.6
Feb	8.9	5.4	3.3	.0
Mar	6.9	3.0	1.2	.2
Apr	1.4	.6	.3	.0
May	@	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.0	.0	.0
Oct	.1	@	.0	.0
Nov	2.2	.4	.2	.0
Dec	8.2	2.7	.8	.0
Ann	39.6	16.6	8.6	.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	7/05	6/27	6/22	6/17	6/13	6/09	6/04	5/30	5/22
32	6/27	6/18	6/12	6/06	6/01	5/27	5/22	5/15	5/06
28	5/30	5/25	5/21	5/18	5/15	5/12	5/09	5/06	5/01
24	5/17	5/12	5/08	5/05	5/02	4/30	4/27	4/23	4/18
20	5/07	5/03	4/29	4/26	4/23	4/20	4/17	4/14	4/09
16	4/24	4/20	4/16	4/13	4/11	4/08	4/05	4/02	3/28

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	8/15	8/21	8/26	8/30	9/02	9/06	9/10	9/14	9/21
32	8/30	9/04	9/07	9/10	9/13	9/16	9/19	9/22	9/27
28	9/10	9/14	9/17	9/20	9/22	9/25	9/27	9/30	10/05
24	9/16	9/22	9/27	9/30	10/04	10/07	10/11	10/15	10/22
20	9/22	9/29	10/04	10/08	10/11	10/15	10/19	10/24	10/30
16	10/05	10/12	10/17	10/21	10/26	10/30	11/03	11/08	11/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	109	99	92	86	80	75	69	61	51
32	135	124	116	110	103	97	90	82	71
28	151	144	138	134	129	125	120	115	107
24	178	170	164	159	154	149	144	138	129
20	192	185	179	175	171	166	162	156	149
16	223	214	208	202	197	192	187	180	172

***** 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	1272	1032	983	724	455	208	78	93	286	618	973	1214	7936
60	1117	892	828	574	312	118	26	34	172	463	823	1059	6418
57	1024	808	735	486	235	76	12	16	118	372	733	966	5581
55	962	752	673	429	189	54	6	8	87	313	673	904	5050
50	807	616	518	293	98	19	1	1	33	182	533	750	3851
32	314	206	93	21	0	0	0	0	0	4	140	269	1047

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	65	98	133	287	571	831	1058	1022	723	410	158	78	5434
55	0	0	0	5	47	195	351	317	120	5	0	0	1040
57	0	0	0	2	31	157	295	262	91	2	0	0	840
60	0	0	0	0	15	109	215	187	55	1	0	0	582
65	0	0	0	0	3	48	113	92	19	0	0	0	275
70	0	0	0	0	0	17	43	31	5	0	0	0	96

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	12	39	114	323	585	809	764	477	203	43	9	1	13	52	166	489	1074	1883	2647	3124	3327	3370	3379
45	0	1	9	56	196	440	654	610	343	110	17	0	0	1	10	66	262	702	1356	1966	2309	2419	2436	2436
50	0	0	1	25	105	299	499	457	221	46	2	0	0	0	1	26	131	430	929	1386	1607	1653	1655	1655
55	0	0	0	8	44	172	348	307	125	13	0	0	0	0	0	8	52	224	572	879	1004	1017	1017	1017
60	0	0	0	0	7	88	204	175	55	0	0	0	0	0	0	0	7	95	299	474	529	529	529	529
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	16	42	96	204	358	505	487	318	163	38	7	1	17	59	155	359	717	1222	1709	2027	2190	2228	2235

(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