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: YANKTON 2 E, SD **COOP ID: 399502**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,180 Feet** **Lat: 42˚53N** **Lon: 97˚22W**

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	28.5	7.6	18.1	74	1981	25	30.6	1992	-29+	1970	20	3.0	1978	1456	0	.0	.0	2.2	17.7	30.7	10.2
Feb	34.8	13.6	24.2	78	1982	23	35.2	1987	-25	1981	12	7.2	1979	1143	0	.0	.0	5.0	12.8	27.2	5.8
Mar	46.1	23.9	35.0	90	1968	31	41.4	2000	-25	1962	1	27.3	1984	930	0	.0	.0	12.1	5.4	25.0	.9
Apr	60.3	34.6	47.5	95	1980	22	55.1	1981	2	1975	4	42.1	1975	529	3	.0	.6	23.3	.4	11.2	.0
May	72.4	46.0	59.2	97	1950	24	66.0	1977	24	1980	8	54.1	1997	227	48	.0	1.4	30.5	.0	1.0	.0
Jun	82.2	56.5	69.4	110	1988	22	77.0	1988	33	1969	3	64.4	1982	38	167	.5	6.2	30.0	.0	.0	.0
Jul	87.3	61.6	74.5	108+	1995	13	78.6+	1989	41	1971	30	67.3	1992	9	302	1.5	12.3	31.0	.0	.0	.0
Aug	85.1	59.6	72.4	107+	1988	16	80.1	1983	35	1950	20	66.6	1985	21	250	.6	9.0	31.0	.0	.0	.0
Sep	76.8	49.3	63.1	102	1970	7	69.9	1998	23+	1984	30	57.2	1993	136	78	.2	4.0	29.8	.0	.9	.0
Oct	63.9	37.8	50.9	96	1997	3	54.3	1994	14+	1991	31	46.0	1976	439	1	.0	.3	27.2	.1	8.2	.0
Nov	44.7	24.2	34.5	83	1999	9	45.4	1999	-15	1959	14	24.0	1985	917	0	.0	.0	11.0	5.6	24.6	1.1
Dec	32.0	11.9	22.0	70	1998	3	28.9	1979	-31	1989	23	3.4	1983	1334	0	.0	.0	3.1	14.5	30.6	6.0
Ann	59.5	35.6	47.6	110	Jun 1988	22	80.1	Aug 1983	-31	Dec 1989	23	3.0	Jan 1978	7179	849	2.8	33.8	236.2	56.5	159.4	24.0

\+ 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	.43	.31	1.45	1949	4	1.31	1982	.00+	1981
Feb	.53	.35	1.62	1971	19	1.81	1971	.00	1985
Mar	1.77	1.27	2.15	1966	23	5.23	1987	.11	1994
Apr	2.51	2.23	2.15	2001	23	7.07	1984	.38	1987
May	3.87	3.46	3.72	1972	23	11.69	1972	1.12	1989
Jun	3.91	3.50	4.20	1990	17	9.25	1984	.95	1988
Jul	3.36	3.32	3.70	1971	10	8.86	1972	.25	1975
Aug	2.93	2.66	3.70	1965	21	6.57	2000	.27	1971
Sep	2.17	1.65	2.98	1973	29	7.44	1973	.20	1998
Oct	1.85	1.46	2.28	1998	5	5.53	1982	.23	1989
Nov	1.25	1.04	2.36	1959	5	4.21	1983	.01	1976
Dec	.51	.42	1.24+	1959	28	1.99	1982	.05	1986
Ann	25.09	25.26	4.20	Jun 1990	17	11.69	May 1972	.00+	Feb 1985

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	1.3	.1	.0
Feb	4.3	1.6	.2	.1
Mar	6.4	4.1	1.1	.3
Apr	9.6	5.6	1.6	.5
May	10.9	7.0	2.7	.9
Jun	10.5	6.7	2.7	.9
Jul	8.6	5.2	2.2	.9
Aug	8.1	4.8	2.0	.9
Sep	7.7	4.6	1.4	.5
Oct	6.2	3.7	1.1	.4
Nov	6.0	2.8	.7	.3
Dec	4.5	1.4	.1	@
Ann	86.9	48.8	15.9	5.7

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	.00	.03	.09	.16	.23	.31	.40	.52	.69	.97	1.25
Feb	.02	.06	.14	.21	.30	.39	.51	.65	.85	1.17	1.50
Mar	.18	.32	.56	.81	1.07	1.37	1.72	2.16	2.76	3.75	4.72
Apr	.50	.72	1.09	1.43	1.77	2.14	2.55	3.05	3.71	4.77	5.78
May	.95	1.32	1.88	2.38	2.88	3.40	3.99	4.68	5.59	7.03	8.38
Jun	1.41	1.78	2.31	2.76	3.18	3.61	4.09	4.64	5.34	6.42	7.42
Jul	.71	1.02	1.52	1.96	2.41	2.89	3.43	4.08	4.94	6.31	7.60
Aug	.53	.79	1.22	1.62	2.02	2.46	2.96	3.57	4.37	5.67	6.90
Sep	.31	.49	.80	1.11	1.42	1.77	2.17	2.65	3.31	4.39	5.42
Oct	.19	.33	.58	.84	1.11	1.43	1.80	2.26	2.88	3.93	4.95
Nov	.05	.12	.26	.42	.61	.84	1.13	1.49	2.01	2.91	3.81
Dec	.07	.11	.18	.25	.32	.41	.50	.62	.78	1.04	1.29
Ann	15.90	17.60	19.82	21.53	23.07	24.57	26.14	27.89	30.03	33.18	35.94

+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.8	2.5	3	3
Feb	4.8	4.0	3	1
Mar	4.8	3.0	1	1
Apr	2.5	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
Oct	.5	.0	#	0
Nov	5.6	3.0	1	#
Dec	6.0	5.5	2	1
Ann	29.0	19.0	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	16.0	1988	20	18.5	1988	18	1988	23	9	1983
Feb	11.0	1984	19	17.5	1993	19	1978	22	16	1978
Mar	7.0	1975	24	18.0	1983	16	1978	5	9	1978
Apr	8.0	1994	29	14.0	1994	7	1992	21	1	1992
May	#	1989	6	#	1989	0	0	0	0	0
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	#	1985	29	#+	1985	0	0	0	0	0
Oct	6.0	1982	20	6.0	1982	5	1982	20	#+	1997
Nov	13.0	1983	28	20.0	1983	15	1983	30	6	2000
Dec	9.0	1982	28	18.0	1982	15	1982	31	7	2000
Ann	16.0	Jan 1988	20	20.0	Nov 1983	19	Feb 1978	22	16	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.1	.4	.2	@
Feb	2.5	1.8	.5	.2	.1
Mar	2.2	1.9	.8	.2	.0
Apr	1.0	.9	.4	.1	.0
May	.0	.0	.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	.0
Oct	.3	.2	@	@	.0
Nov	2.0	1.7	.7	.4	.1
Dec	3.1	2.2	.8	.3	.0
Ann	13.9	10.8	3.6	1.4	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	14.8	8.5	5.3	.4
Feb	11.0	6.8	5.0	.7
Mar	5.6	3.7	2.3	.4
Apr	1.1	.4	.1	.0
May	.0	.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	@	@	.0
Nov	4.9	3.1	2.0	1.0
Dec	13.6	6.8	4.3	.6
Ann	51.3	29.3	19.0	3.1

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

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	160	154	149	146	142	139	135	130	124
32	184	176	170	165	160	155	150	144	136
28	205	197	191	186	182	177	172	167	159
24	219	212	207	203	199	196	191	187	180
20	247	238	232	227	222	217	212	206	197
16	267	258	251	244	239	233	227	220	210

***** 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	1456	1143	930	529	227	38	9	21	136	439	917	1334	7179
60	1301	1003	775	388	132	10	0	5	62	291	767	1179	5913
57	1208	922	682	309	89	3	0	1	34	211	677	1086	5222
55	1146	872	622	261	65	2	0	0	21	164	621	1024	4798
50	996	741	478	158	26	0	0	0	5	75	483	873	3835
32	503	337	107	5	0	0	0	0	0	1	125	391	1469

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	70	118	200	468	844	1119	1316	1251	932	586	199	81	7184
55	0	9	2	34	196	431	603	539	263	36	5	0	2118
57	0	3	0	23	157	373	541	478	216	21	0	0	1812
60	0	0	0	11	108	289	448	388	154	8	0	0	1406
65	0	0	0	3	48	167	302	250	78	1	0	0	849
70	0	0	0	0	16	79	174	138	31	0	0	0	438

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	16	81	280	623	905	1087	1020	708	361	68	3	0	16	97	377	1000	1905	2992	4012	4720	5081	5149	5152
45	0	4	37	170	470	755	932	865	560	236	32	0	0	4	41	211	681	1436	2368	3233	3793	4029	4061	4061
50	0	0	12	95	330	605	777	710	418	131	7	0	0	0	12	107	437	1042	1819	2529	2947	3078	3085	3085
55	0	0	3	50	207	457	622	555	287	64	1	0	0	0	3	53	260	717	1339	1894	2181	2245	2246	2246
60	0	0	0	22	109	316	467	402	175	23	0	0	0	0	0	22	131	447	914	1316	1491	1514	1514	1514
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	2	25	68	188	387	584	723	674	447	240	58	4	2	27	95	283	670	1254	1977	2651	3098	3338	3396	3400

(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