

# Climatography of the United States No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: OAHE DAM, SD

1971-2000

COOP ID: 396170

Climate Division: SD 6

NWS Call Sign:

Elevation: 1,660 Feet Lat: 44° 27N

Lon: 100° 25W

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	27.5	7.9	17.7	68	1964	21	31.8	1990	-27+	1970	20	2.3	1978	1467	0	.0	.0	1.6	18.4	30.7	9.7
Feb	33.4	13.0	23.2	71+	1995	22	34.1	1998	-34+	1994	10	6.3	1979	1170	0	.0	.0	4.5	13.2	27.5	5.3
Mar	43.7	22.0	32.9	87	1988	27	40.3	2000	-18	1962	1	23.3	1996	996	0	.0	.0	10.3	6.0	27.0	1.2
Apr	57.5	33.7	45.6	98	1980	22	52.2	1987	6	1975	3	38.6	1995	584	1	.0	.2	21.7	.9	13.1	.0
May	69.7	45.4	57.6	105	1969	28	64.8	1977	23	1967	3	51.6	1983	263	32	@	1.1	29.9	.0	1.0	.0
Jun	80.3	55.4	67.9	114	1988	24	78.0	1988	34	1998	3	63.0	1982	65	151	.7	5.1	30.0	.0	.0	.0
Jul	88.1	61.3	74.7	112	1966	11	81.4	1974	45+	1971	31	65.6	1992	15	316	3.6	13.4	31.0	.0	.0	.0
Aug	87.2	59.1	73.2	112	1988	15	79.6	1983	41	1964	12	65.6	1992	22	275	2.7	12.9	31.0	.0	.0	.0
Sep	76.2	48.7	62.5	108	1976	7	68.4	1998	22	1995	22	56.3	1993	150	73	.6	4.5	29.6	.0	.7	.0
Oct	62.2	37.4	49.8	99	1963	5	53.7	1973	6	1991	31	45.2	1987	472	0	.0	.3	26.4	.3	7.9	.0
Nov	43.5	23.9	33.7	86	1990	1	43.8	1999	-12	1960	30	19.4	1985	939	0	.0	.0	10.3	6.4	24.5	.8
Dec	32.2	12.8	22.5	69	1998	2	32.0	1999	-31	1983	22	6.2	1983	1317	0	.0	.0	2.9	14.7	30.4	5.5
Ann	58.5	35.1	46.8	114	Jun 1988	24	81.4	Jul 1974	-34+	Feb 1994	10	2.3	Jan 1978	7460	848	7.6	37.5	229.2	59.9	162.8	22.5

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1960-2001

(3) Derived from 1971-2000 serially complete daily data

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**NWS Call Sign:**

**Elevation: 1,660 Feet Lat: 44°27N**

**Lon: 100°25W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.27	.17	.48	1992	8	2.44	1997	.00+	1987	2.9	.7	.0	.0	.00	.00	.01	.05	.09	.15	.22	.32	.46	.70	.94
Feb	.34	.21	1.10	1991	18	1.87	1987	.00+	1999	2.8	1.1	.1	@	.00	.00	.03	.09	.15	.22	.31	.42	.58	.85	1.12
Mar	.77	.62	1.12	1977	29	2.41	1977	.00	1988	4.5	2.1	.4	.1	.04	.11	.23	.34	.46	.59	.75	.94	1.21	1.64	2.06
Apr	1.47	1.06	2.41	1964	27	4.57	1971	.00	1987	6.5	3.6	1.1	.2	.08	.22	.44	.66	.89	1.14	1.44	1.81	2.32	3.15	3.96
May	2.71	2.52	2.20	1982	14	6.27	1972	.45	1980	8.7	5.0	1.5	.5	.61	.87	1.26	1.62	1.98	2.36	2.78	3.29	3.96	5.03	6.03
Jun	2.72	2.75	3.40	1984	4	6.93	1984	.20	1976	9.0	5.4	1.6	.6	.50	.75	1.15	1.52	1.89	2.30	2.76	3.32	4.06	5.25	6.39
Jul	2.28	1.72	2.40	1969	17	6.31	1992	.09	1988	7.3	4.4	1.4	.4	.27	.45	.77	1.09	1.43	1.80	2.24	2.78	3.52	4.73	5.91
Aug	1.43	1.41	2.25	1997	14	3.69	1997	.14	2000	5.8	3.2	.9	.2	.28	.40	.61	.81	1.00	1.21	1.45	1.74	2.12	2.74	3.32
Sep	1.16	.76	2.63	1989	20	4.07	1996	.00+	1998	4.3	2.4	.7	.2	.00	.06	.22	.40	.59	.82	1.08	1.42	1.90	2.70	3.50
Oct	1.10	.96	1.28	1982	9	2.81	1998	.05	1978	5.0	2.6	.8	.3	.09	.16	.31	.46	.63	.82	1.05	1.33	1.73	2.39	3.05
Nov	.41	.29	.97	1998	10	1.32	1977	.00+	1990	3.5	1.1	.1	.0	.00	.00	.10	.17	.24	.32	.41	.52	.66	.90	1.14
Dec	.28	.25	.52	1977	31	1.60	1996	.00+	1995	3.4	1.0	@	.0	.00	.00	.07	.11	.16	.21	.28	.35	.45	.62	.78
Ann	14.94	14.40	3.40	Jun 1984	4	6.93	Jun 1984	.00+	Feb 1999	63.7	32.6	8.6	2.5	8.22	9.40	10.97	12.21	13.34	14.46	15.64	16.98	18.63	21.09	23.27

+ 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: 1960-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:

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**Climate Division: SD 6**

**NWS Call Sign:**

**Elevation: 1,660 Feet**

**Lat: 44° 27N**

**Lon: 100° 25W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	1.1	#	1	0	3.0	1973	21	4.0	1973	6	1973	8	4+	1973	.3	.2	.1	.0	.0	-9.9	-9.9	-9.9	-9.9
Feb	.4	#	#	0	1.0	1971	3	2.0	1971	5	1971	10	4	1971	.3	.2	.0	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	.7	.0	1	0	4.0	1977	3	5.8	1977	29	1975	30	12	1975	.3	.2	.1	.0	.0	.0	.0	.0	.0
Apr	.0	.0	0	0	.3	1973	1	.3	1973	0	0	0	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	#	.0	#	0	#	1976	26	#+	1976	#	1991	31	#	1991	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	#	#	0	1.5	1972	12	1.5+	1972	3	1972	13	#+	1995	.3	.2	.0	.0	.0	.3	.1	.0	.0
Dec	.8	-99.9	#	0	4.0	1972	29	4.0	1972	6	1972	31	2	1972	.4	.4	.2	.0	.0	.8	.1	.0	.0
Ann	3.3	-9.9	N/A	N/A	4.0+	Mar 1977	3	5.8	Mar 1977	29	Mar 1975	30	12	Mar 1975	1.7	1.2	.4	.0	.0	-9.9	-9.9	-9.9	-9.9

+ 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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

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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	5/24	5/20	5/16	5/14	5/11	5/08	5/05	5/02	4/27
32	5/16	5/11	5/08	5/05	5/03	4/30	4/27	4/24	4/19
28	5/03	4/29	4/26	4/23	4/21	4/18	4/15	4/12	4/08
24	4/24	4/19	4/16	4/13	4/10	4/07	4/04	4/01	3/27
20	4/13	4/09	4/05	4/02	3/31	3/28	3/25	3/22	3/17
16	4/05	3/31	3/27	3/24	3/21	3/18	3/15	3/12	3/07
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	9/18	9/22	9/24	9/27	9/29	10/01	10/04	10/06	10/10
32	9/23	9/27	10/01	10/04	10/06	10/09	10/12	10/15	10/20
28	9/28	10/03	10/07	10/11	10/14	10/17	10/20	10/24	10/29
24	10/08	10/14	10/17	10/21	10/24	10/27	10/30	11/03	11/08
20	10/22	10/27	10/31	11/03	11/06	11/09	11/13	11/17	11/22
16	10/31	11/05	11/09	11/12	11/15	11/18	11/21	11/25	12/01
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	158	152	148	144	140	137	133	129	122
32	175	169	164	160	156	152	148	144	137
28	194	188	183	179	175	172	168	163	157
24	217	210	205	200	196	192	187	182	174
20	240	233	228	224	220	216	212	207	200
16	261	253	248	243	238	233	228	223	215

\* 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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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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	1467	1170	996	584	263	65	15	22	150	472	939	1317	7460
60	1312	1030	841	440	157	23	2	5	72	319	789	1162	6152
57	1219	953	748	358	107	11	0	2	40	233	699	1069	5439
55	1158	902	687	307	80	6	0	1	25	180	645	1007	4998
50	1009	771	542	195	33	1	0	0	6	79	505	859	4000
32	518	366	141	9	0	0	0	0	0	1	140	383	1558

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	74	120	168	416	792	1076	1324	1276	913	552	190	89	6990
55	1	12	1	24	159	391	611	564	248	18	5	0	2034
57	0	7	0	15	124	336	549	503	203	9	0	0	1746
60	0	0	0	7	81	259	459	414	145	3	0	0	1368
65	0	0	0	1	32	151	316	275	73	0	0	0	848
70	0	0	0	0	9	74	193	162	30	0	0	0	468

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	13	54	229	558	851	1091	1048	692	331	57	3	1	14	68	297	855	1706	2797	3845	4537	4868	4925	4928
45	0	2	19	136	409	701	936	893	545	209	21	0	0	2	21	157	566	1267	2203	3096	3641	3850	3871	3871
50	0	0	3	71	270	551	781	738	406	113	6	0	0	0	3	74	344	895	1676	2414	2820	2933	2939	2939
55	0	0	1	32	157	406	626	584	277	54	0	0	0	0	1	33	190	596	1222	1806	2083	2137	2137	2137
60	0	0	0	12	80	267	472	433	167	20	0	0	0	0	0	12	92	359	831	1264	1431	1451	1451	1451
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	1	21	51	157	331	536	708	674	430	212	48	6	1	22	73	230	561	1097	1805	2479	2909	3121	3169	3175

(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:

[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

## 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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)