

# 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: WENTWORTH 2 WNW, SD

1971-2000

COOP ID: 399042

Climate Division: SD 7

NWS Call Sign:

Elevation: 1,690 Feet Lat: 44°01N

Lon: 97°00W

## 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	24.2	3.4	13.8	66	1981	24	28.2	1990	-34	1972	15	.3	1979	1588	0	.0	.0	.7	21.4	31.0	12.6
Feb	30.7	10.6	20.7	68	2000	22	32.9	1987	-34	1994	9	6.4	1979	1242	0	.0	.0	2.3	14.5	27.3	7.3
Mar	42.6	22.3	32.5	85	1968	30	41.3	2000	-23	1948	11	24.0	1984	1009	0	.0	.0	9.0	6.4	25.4	1.9
Apr	58.7	34.6	46.7	95	1980	21	54.2	1987	0	1975	3	39.9	1995	555	4	.0	.3	22.8	.7	13.0	@
May	71.1	47.2	59.2	99	1967	25	66.4	1977	17	1967	3	53.9	1997	222	41	.0	.3	30.5	.0	1.7	.0
Jun	79.6	56.7	68.2	104+	1988	24	74.9	1988	34	1969	14	63.5	1982	43	137	.2	3.0	30.0	.0	.0	.0
Jul	83.8	61.2	72.5	107	1976	10	76.9	1974	37	1971	30	64.1	1992	17	249	.4	7.3	31.0	.0	.0	.0
Aug	81.6	59.3	70.5	105	1973	26	77.6	1983	35	1964	13	64.7	1992	29	197	.2	4.6	31.0	.0	.0	.0
Sep	73.2	49.3	61.3	103	1976	6	67.3	1978	22	1951	28	56.4	1993	159	47	@	1.5	29.6	.0	1.1	.0
Oct	60.4	36.9	48.7	92	1980	7	53.5	1973	9	1976	27	43.7	1976	507	0	.0	.1	26.0	.1	10.2	.0
Nov	40.7	22.2	31.5	80	1978	3	43.0	1999	-16+	1964	30	20.6	1985	1007	0	.0	.0	7.9	7.9	25.3	1.1
Dec	27.8	8.7	18.3	64	1998	2	26.9	1979	-29	1989	22	.6	1983	1450	0	.0	.0	1.1	19.1	30.7	8.4
Ann	56.2	34.4	45.3	107	Jul 1976	10	77.6	Aug 1983	-34+	Feb 1994	9	.3	Jan 1979	7828	675	.8	17.1	221.9	70.1	165.7	31.3

+ 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: 1948-2001

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

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**NWS Call Sign:**

**Elevation: 1,690 Feet Lat: 44°01N**

**Lon: 97°00W**

### Precipitation (inches)

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	.50	.47	.80	2001	30	1.55	1975	.00+	1990	4.2	1.7	.1	.0	.00	.04	.12	.20	.28	.38	.49	.62	.81	1.12	1.42
Feb	.69	.56	1.00	1992	18	2.37	1992	.10+	1985	4.9	2.1	.4	@	.11	.17	.27	.36	.46	.57	.69	.84	1.04	1.37	1.69
Mar	1.59	1.43	1.31	1977	3	4.16	1977	.21	1991	6.5	4.3	1.0	.1	.30	.44	.67	.89	1.11	1.34	1.61	1.94	2.37	3.07	3.74
Apr	2.31	2.17	2.32	1986	14	6.08	1986	.30	1987	9.3	5.9	1.4	.2	.56	.78	1.12	1.42	1.71	2.03	2.38	2.80	3.35	4.22	5.04
May	3.22	3.00	4.42	1972	1	9.30	1972	.36	1981	9.8	6.5	2.2	.7	.59	.88	1.35	1.79	2.23	2.72	3.26	3.92	4.80	6.22	7.57
Jun	3.95	3.07	4.25	1980	22	10.12	1984	.66	1978	10.1	6.7	2.7	1.1	.87	1.24	1.82	2.34	2.86	3.42	4.05	4.80	5.78	7.35	8.84
Jul	3.21	2.74	3.80	1993	3	8.86	1993	1.16	1996	9.1	5.6	2.2	1.0	.87	1.17	1.63	2.04	2.44	2.86	3.32	3.87	4.59	5.71	6.76
Aug	3.11	2.56	4.45	1974	9	6.97	1975	.67	1976	8.3	5.0	2.3	.7	.95	1.25	1.69	2.07	2.44	2.82	3.24	3.73	4.37	5.37	6.29
Sep	2.58	2.37	2.49	1996	7	6.51	1986	.20	1980	7.8	4.8	1.9	.5	.43	.66	1.03	1.39	1.75	2.15	2.60	3.15	3.89	5.07	6.21
Oct	1.76	1.62	3.10	1950	1	5.96	1998	.00	1988	6.1	3.9	1.1	.4	.08	.23	.50	.75	1.03	1.34	1.71	2.17	2.80	3.84	4.85
Nov	1.32	1.14	1.70	2001	24	4.58	1983	.00+	1984	5.8	3.5	.8	.1	.00	.09	.30	.50	.72	.97	1.27	1.63	2.14	2.98	3.81
Dec	.52	.46	1.60	1972	30	2.14	1972	.00	1986	3.8	1.9	.1	@	.03	.07	.15	.23	.31	.40	.51	.64	.83	1.13	1.42
Ann	24.76	25.47	4.45	Aug 1974	9	10.12	Jun 1984	.00+	Jan 1990	85.7	51.9	16.2	4.8	16.51	18.07	20.09	21.64	23.02	24.37	25.77	27.33	29.23	32.00	34.42

+ 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

Complete documentation available from:

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**COOP ID: 399042**

**Climate Division: SD 7**

**NWS Call Sign:**

**Elevation: 1,690 Feet**

**Lat: 44°01N**

**Lon: 97°00W**

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	6.8	5.0	6	5	8.0	1988	20	20.5	1979	25	1997	18	22	1997	3.9	3.0	.9	.2	.0	24.4	20.7	17.0	6.7
Feb	6.1	5.5	6	4	7.0	1991	18	15.5	1993	31	1997	16	26	1997	4.1	3.0	.8	.2	.0	19.0	14.6	11.1	6.4
Mar	7.5	5.5	3	2	9.0	1977	3	21.0	1989	24	1997	6	13	1997	3.3	2.9	1.0	.4	.0	10.8	7.9	5.4	1.9
Apr	3.6	2.0	#	#	10.0	2000	7	20.0	1995	10	1995	12	2	1975	1.4	1.2	.6	.2	@	1.7	1.0	.5	.1
May	#	.0	0	0	#	1976	2	#	1976	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	.5	1984	25	.5	1984	0	0	0	0	0	@	.0	.0	.0	.0	.0	.0	.0	.0
Oct	1.2	.0	#	0	6.0	1982	19	11.0	1995	6	1995	23	1	1995	.5	.4	.2	.1	.0	.5	.2	.1	.0
Nov	7.4	6.3	1	1	9.0	1993	25	23.7	1985	14	1993	26	5+	2000	3.6	2.9	1.1	.4	.0	8.7	5.8	3.5	.4
Dec	6.4	6.5	4	3	8.0	1978	3	13.0+	2000	20	1996	31	14	1983	3.5	2.9	.8	.3	.0	18.0	12.6	9.4	3.5
Ann	39.0	30.8	N/A	N/A	10.0	Apr 2000	7	23.7	Nov 1985	31	Feb 1997	16	26	Feb 1997	20.3	16.3	5.4	1.8	@	83.1	62.8	47.0	19.0

+ 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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**NWS Call Sign:**

**Elevation: 1,690 Feet**

**Lat: 44° 01N**

**Lon: 97° 00W**

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	5/25	5/20	5/17	5/15	5/12	5/10	5/07	5/04	4/30
32	5/17	5/12	5/09	5/07	5/04	5/02	4/29	4/26	4/22
28	5/10	5/05	5/01	4/28	4/25	4/22	4/19	4/15	4/09
24	4/28	4/23	4/19	4/15	4/12	4/09	4/06	4/02	3/28
20	4/15	4/11	4/08	4/05	4/03	3/31	3/28	3/25	3/21
16	4/10	4/05	4/01	3/29	3/26	3/23	3/20	3/16	3/11
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	9/12	9/15	9/18	9/21	9/23	9/25	9/27	9/30	10/04
32	9/19	9/22	9/25	9/27	9/29	9/30	10/02	10/05	10/08
28	9/24	9/29	10/03	10/06	10/09	10/12	10/16	10/19	10/25
24	10/03	10/09	10/12	10/16	10/19	10/22	10/25	10/29	11/03
20	10/12	10/18	10/22	10/25	10/29	11/01	11/04	11/08	11/14
16	10/21	10/27	10/31	11/03	11/07	11/10	11/13	11/18	11/23
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	151	145	140	136	133	129	125	121	114
32	163	157	153	150	146	143	140	136	130
28	185	179	174	170	167	163	159	154	148
24	211	203	198	193	189	184	180	174	166
20	230	223	217	213	208	204	199	194	186
16	249	241	235	230	225	220	215	209	201

\* 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:  
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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	1588	1242	1009	555	222	43	17	29	159	507	1007	1450	7828
60	1433	1102	854	416	126	11	3	6	74	355	857	1295	6532
57	1340	1018	761	339	84	3	0	2	40	270	767	1202	5826
55	1278	962	700	291	61	1	0	0	24	219	707	1140	5383
50	1125	834	555	188	24	0	0	0	5	114	567	985	4397
32	614	405	150	12	0	0	0	0	0	2	168	484	1835

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	49	87	164	452	842	1084	1255	1191	878	518	151	57	6728
55	0	0	1	41	190	395	542	479	212	22	0	0	1882
57	0	0	0	29	150	337	480	418	168	11	0	0	1593
60	0	0	0	15	100	254	391	330	112	3	0	0	1205
65	0	0	0	4	41	137	249	197	47	0	0	0	675
70	0	0	0	0	13	57	136	99	14	0	0	0	319

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	54	252	598	849	1016	956	653	311	48	2	0	5	59	311	909	1758	2774	3730	4383	4694	4742	4744
45	0	0	21	147	447	699	861	801	504	196	17	0	0	0	21	168	615	1314	2175	2976	3480	3676	3693	3693
50	0	0	7	79	306	549	706	646	365	102	6	0	0	0	7	86	392	941	1647	2293	2658	2760	2766	2766
55	0	0	2	39	186	405	551	491	234	45	0	0	0	0	2	41	227	632	1183	1674	1908	1953	1953	1953
60	0	0	0	15	93	263	397	337	131	15	0	0	0	0	0	15	108	371	768	1105	1236	1251	1251	1251
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	5	44	172	372	550	677	631	409	198	35	0	0	5	49	221	593	1143	1820	2451	2860	3058	3093	3093

(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.  
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> |
|---|---|

## 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)