

# Climatography of the United States

No. 20

1971-2000

Station: MOFFIT 3 SE, ND

COOP ID: 326015

Climate Division: ND 8

NWS Call Sign:

Elevation: 1,800 Feet Lat: 46° 40N

Lon: 100° 15W

## 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	20.9	-7	10.1	57+	1981	24	23.9	1990	-39+	1972	15	-5.3	1979	1704	0	.0	.0	.2	22.6	31.0	16.0
Feb	27.8	6.9	17.4	67	1958	25	30.2	1998	-39	1994	9	.9	1979	1333	0	.0	.0	1.7	15.4	27.9	9.6
Mar	39.9	18.0	29.0	79	1967	29	39.0	1986	-30	1962	1	20.8	1996	1117	0	.0	.0	8.0	7.8	28.6	3.5
Apr	57.3	30.8	44.1	96	1980	21	52.9	1987	-12	1975	1	34.6	1975	630	2	.0	.2	22.1	.7	17.2	.1
May	71.0	43.3	57.2	98	1969	28	64.8	1977	14	1980	8	50.5	1979	274	30	.0	.7	30.3	.0	3.9	.0
Jun	79.2	52.6	65.9	104	1988	28	77.7	1988	26+	1969	20	61.2	1985	91	119	.2	3.3	30.0	.0	@	.0
Jul	85.3	57.2	71.3	111+	1973	12	76.7	1989	32+	1972	4	64.5	1992	26	219	1.3	8.8	31.0	.0	@	.0
Aug	85.0	55.1	70.1	107+	1973	27	76.0	1983	32+	1964	13	61.9	1977	45	201	1.1	9.7	31.0	.0	.0	.0
Sep	74.2	44.3	59.3	105+	1978	5	65.7	1998	10	1974	30	54.4	1984	209	36	.4	2.3	29.4	.0	3.2	.0
Oct	60.1	32.7	46.4	95	1963	4	50.1	2000	-6	1991	31	38.9	1976	577	0	.0	@	25.2	.5	14.4	@
Nov	38.5	17.9	28.2	76	1975	4	39.6	1999	-34	1964	29	16.4	1985	1103	0	.0	.0	6.3	9.6	27.9	2.6
Dec	25.0	4.8	14.9	62	1969	1	26.4	1997	-44	1983	23	-2.7	1983	1553	0	.0	.0	.7	19.9	30.9	11.3
Ann	55.4	30.2	42.8	111+	Jul 1973	12	77.7	Jun 1988	-44	Dec 1983	23	-5.3	Jan 1979	8662	607	3.0	25.0	215.9	76.5	185.0	43.1

+ 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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**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: MOFFIT 3 SE, ND**

**COOP ID: 326015**

**Climate Division: ND 8**

**NWS Call Sign:**

**Elevation: 1,800 Feet Lat: 46° 40N**

**Lon: 100° 15W**

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	.29	.18	.80	1952	21	.83	1996	.00	1978	3.9	1.1	@	.0	.01	.04	.08	.12	.17	.22	.28	.36	.47	.64	.82
Feb	.33	.18	.75	1966	9	1.84	1979	.01	1977	3.7	1.3	.0	.0	.01	.03	.06	.11	.16	.22	.30	.40	.54	.78	1.03
Mar	.66	.54	1.47	1968	18	1.53	1990	.01	1986	4.5	1.6	.3	.1	.07	.12	.21	.31	.41	.52	.65	.81	1.02	1.39	1.74
Apr	1.31	1.01	1.81	1964	27	3.62	1975	.00	1996	6.5	3.4	.7	.1	.03	.11	.27	.46	.66	.91	1.21	1.59	2.12	3.03	3.93
May	2.16	1.58	2.80	1962	22	6.85	1999	.03	1997	7.9	4.8	1.2	.4	.30	.48	.79	1.09	1.40	1.75	2.15	2.64	3.30	4.37	5.41
Jun	3.00	2.67	4.55	1956	6	7.19	1975	.27	1974	10.0	6.2	2.1	.4	.68	.95	1.39	1.79	2.18	2.60	3.08	3.64	4.38	5.56	6.67
Jul	2.84	2.43	4.68	1993	16	12.06	1993	.43	1984	7.8	4.9	1.7	.6	.44	.68	1.09	1.48	1.89	2.33	2.84	3.46	4.30	5.66	6.97
Aug	2.08	1.65	2.86	1999	12	6.25	1998	.10	1971	7.0	3.8	1.4	.5	.32	.50	.80	1.09	1.38	1.71	2.08	2.54	3.15	4.14	5.09
Sep	1.73	1.01	3.05	1994	16	7.91	1977	.24	1993	5.9	2.9	.9	.4	.15	.27	.50	.74	1.01	1.31	1.66	2.11	2.73	3.76	4.77
Oct	1.36	1.00	2.76	1982	9	4.50	1982	.00+	1993	5.0	2.5	.8	.4	.00	.08	.28	.49	.72	.98	1.29	1.67	2.21	3.12	4.02
Nov	.50	.36	.97	1956	2	1.98	1977	.00+	1990	4.0	1.6	.1	.0	.00	.02	.08	.15	.23	.33	.45	.60	.82	1.20	1.57
Dec	.27	.24	.80	1969	5	.78+	1988	.00+	2000	4.5	.9	@	.0	.00	.00	.08	.12	.17	.22	.28	.35	.44	.59	.73
Ann	16.53	15.78	4.68	Jul 1993	16	12.06	Jul 1993	.00+	Dec 2000	70.7	35.0	9.2	2.9	9.98	11.17	12.73	13.95	15.05	16.13	17.26	18.53	20.09	22.39	24.41

+ 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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Station: MOFFIT 3 SE, ND

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Climate Division: ND 8

NWS Call Sign:

Elevation: 1,800 Feet

Lat: 46° 40N

Lon: 100° 15W

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	3.7	2.7	4	3	11.0	1996	18	11.0	1996	21	1979	31	17	1979	3.5	1.8	.5	.2	@	19.4	14.7	11.0	2.8
Feb	3.7	2.1	4	1	5.0	1982	1	12.6	1987	23	1979	28	21	1979	3.1	1.5	.4	.1	.0	13.8	6.1	2.3	.0
Mar	4.6	4.1	2	1	12.0	1997	13	12.5	1975	25	1979	1	18	1979	2.5	1.7	.6	.3	@	7.1	3.4	1.9	.4
Apr	1.9	.1	#	0	12.0	1986	14	12.7	1986	12	1979	5	4	1975	1.0	.5	.2	.1	@	1.0	.7	.6	.3
May	.3	.0	#	0	7.0	1991	3	7.0	1991	7	1991	3	#	1991	.1	.1	.1	@	.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	.2	.0	#	0	4.0	1984	23	6.0	1984	3	1984	23	#	1984	.1	.1	@	.0	.0	.1	@	.0	.0
Oct	.7	.0	#	0	3.0	1991	23	9.4	1991	6	1991	29	1	1991	.3	.3	.1	.0	.0	.3	.1	@	.0
Nov	4.2	1.8	1	#	14.0	1993	24	20.0	1986	22	1993	25	7	1993	2.1	1.4	.5	.3	@	4.6	1.6	.8	.0
Dec	4.6	3.1	2	1	10.0	1988	26	13.1	1988	15	1978	31	7	1978	3.2	1.4	.5	.2	@	10.3	5.8	4.8	.7
Ann	23.9	13.9	N/A	N/A	14.0	Nov 1993	24	20.0	Nov 1986	25	Mar 1979	1	21	Feb 1979	15.9	8.8	2.9	1.2	@	56.6	32.4	21.4	4.2

+ 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	6/27	6/18	6/11	6/05	5/31	5/25	5/19	5/12	5/03
32	6/03	5/28	5/24	5/20	5/17	5/13	5/10	5/06	4/30
28	5/21	5/16	5/13	5/10	5/07	5/04	5/02	4/28	4/23
24	5/13	5/08	5/04	5/01	4/28	4/25	4/22	4/18	4/13
20	5/04	4/28	4/24	4/20	4/17	4/14	4/10	4/06	3/31
16	4/22	4/17	4/13	4/09	4/06	4/03	3/31	3/27	3/21
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	8/23	8/29	9/02	9/06	9/09	9/13	9/16	9/21	9/27
32	9/06	9/11	9/14	9/17	9/20	9/22	9/25	9/28	10/03
28	9/11	9/16	9/19	9/22	9/25	9/28	10/01	10/04	10/09
24	9/19	9/25	9/29	10/03	10/06	10/09	10/13	10/17	10/22
20	9/30	10/06	10/11	10/15	10/18	10/22	10/25	10/30	11/05
16	10/09	10/15	10/20	10/23	10/27	10/30	11/03	11/08	11/14
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	135	123	115	108	101	94	87	78	67
32	150	141	135	130	125	120	115	109	101
28	160	153	148	144	140	136	132	127	120
24	183	175	169	165	160	156	151	145	137
20	207	199	193	188	184	179	174	168	160
16	224	217	212	207	203	199	195	190	182

\* 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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**NWS Call Sign:**

**Elevation: 1,800 Feet    Lat: 46° 40N**

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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	1704	1333	1117	630	274	91	26	45	209	577	1103	1553	8662
60	1549	1193	962	488	166	36	7	15	109	423	953	1398	7299
57	1456	1109	869	408	115	18	1	6	66	333	863	1305	6549
55	1394	1053	808	357	87	11	0	3	44	276	803	1243	6079
50	1240	925	663	245	37	2	0	0	11	156	661	1088	5028
32	731	482	230	27	0	0	0	0	0	5	233	584	2292

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	50	73	136	389	779	1017	1216	1179	817	451	121	54	6282
55	0	0	1	30	153	338	503	468	171	9	0	0	1673
57	0	0	0	20	119	286	442	409	133	4	0	0	1413
60	0	0	0	11	77	213	355	325	86	1	0	0	1068
65	0	0	0	2	30	119	219	201	36	0	0	0	607
70	0	0	0	0	8	52	117	108	11	0	0	0	296

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	1	24	197	539	787	975	944	580	249	23	0	0	1	25	222	761	1548	2523	3467	4047	4296	4319	4319
45	0	0	4	113	392	637	820	789	435	142	9	0	0	0	4	117	509	1146	1966	2755	3190	3332	3341	3341
50	0	0	0	58	258	489	665	634	301	70	1	0	0	0	0	58	316	805	1470	2104	2405	2475	2476	2476
55	0	0	0	26	149	343	510	479	190	27	0	0	0	0	0	26	175	518	1028	1507	1697	1724	1724	1724
60	0	0	0	7	71	211	359	330	95	8	0	0	0	0	0	7	78	289	648	978	1073	1081	1081	1081
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	30	151	346	500	629	605	379	187	27	0	0	1	31	182	528	1028	1657	2262	2641	2828	2855	2855

(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)