

# Climatology of the United States

## No. 20

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

Station: UNDERWOOD, ND

1971-2000

COOP ID: 328872

Climate Division: ND 4

NWS Call Sign:

Elevation: 2,020 Feet Lat: 47° 27N

Lon: 101° 09W

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	17.0	-2.8	7.1	54	1974	19	20.9	1992	-37	1966	29	-8.5	1982	1796	0	.0	.0	.1	23.6	30.9	15.5
Feb	24.3	4.2	14.3	65	1958	26	26.4	1998	-36	1962	28	-2.1	1979	1420	0	.0	.0	1.1	16.8	27.9	9.7
Mar	36.9	16.0	26.5	75	1967	29	36.4	1986	-26	1962	1	16.2	1996	1194	0	.0	.0	7.0	9.3	29.0	3.3
Apr	53.5	29.4	41.5	94	1980	21	50.8	1987	-9	1975	1	32.1	1979	708	1	.0	.1	20.3	1.4	18.5	.3
May	67.6	42.6	55.1	97	1955	22	62.7	1977	12	1967	3	48.9	1979	328	20	.0	.6	29.6	.0	3.7	.0
Jun	76.0	51.9	64.0	102+	1988	27	75.9	1988	31+	1969	20	58.9	1993	118	87	.2	2.4	30.0	.0	@	.0
Jul	81.9	56.4	69.2	105	1988	27	74.2	1989	38	1972	4	62.3	1993	38	167	.6	6.5	31.0	.0	.0	.0
Aug	81.1	54.1	67.6	104+	1983	7	74.6	1983	33+	1964	12	60.7	1977	77	158	.3	7.1	31.0	.0	.0	.0
Sep	70.2	44.3	57.3	102+	2001	6	63.9	1998	18	1974	30	52.2	1986	262	30	.1	1.5	29.1	.0	2.0	.0
Oct	55.9	31.5	43.7	94	1963	4	46.5	1973	-6	1991	31	38.8	1972	661	0	.0	.2	22.6	.8	14.3	@
Nov	34.6	16.3	25.5	78	1999	8	38.5	1999	-22	1964	29	12.5	1985	1187	0	.0	.0	5.1	11.6	27.6	2.3
Dec	21.5	2.9	12.2	59+	1979	4	24.6	1999	-36	1967	31	-4.0	1983	1638	0	.0	.0	.3	21.6	30.9	11.0
Ann	51.7	28.9	40.3	105	Jul 1988	27	75.9	Jun 1988	-37	Jan 1966	29	-8.5	Jan 1982	9427	463	1.2	18.4	207.2	85.1	184.8	42.1

+ 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: 1954-2001

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

085-A

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**Station: UNDERWOOD, ND**

**COOP ID: 328872**

**Climate Division: ND 4**

**NWS Call Sign:**

**Elevation: 2,020 Feet Lat: 47°27N**

**Lon: 101°09W**

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	.54	.47	.54	1984	29	1.21	1982	.05	1990	6.2	1.8	.1	.0	.11	.16	.23	.31	.38	.46	.55	.65	.79	1.02	1.24
Feb	.46	.35	.79	2000	26	1.31	1979	.09	1990	5.0	1.6	.2	@	.06	.10	.16	.23	.29	.37	.45	.56	.70	.93	1.16
Mar	.78	.61	1.36	1985	28	1.88	1987	.05	1981	6.1	2.2	.2	@	.12	.19	.30	.41	.52	.64	.78	.95	1.18	1.55	1.90
Apr	1.64	1.16	1.82	1964	27	5.60	1984	.02	1988	7.2	3.8	.9	.3	.10	.20	.40	.62	.87	1.17	1.53	1.99	2.63	3.72	4.81
May	2.25	1.99	2.15	1985	12	6.27	1999	.20	1980	9.7	5.3	1.4	.3	.47	.68	1.01	1.31	1.61	1.93	2.30	2.73	3.31	4.23	5.10
Jun	3.52	3.13	2.76	1965	14	6.77	1990	.64	1974	11.4	6.7	2.5	.9	1.31	1.64	2.11	2.51	2.88	3.26	3.68	4.16	4.78	5.73	6.60
Jul	2.48	1.99	2.14	1997	2	8.64	1993	.65	1984	9.1	5.5	1.7	.3	.55	.78	1.14	1.47	1.80	2.14	2.54	3.00	3.62	4.60	5.52
Aug	1.77	1.40	3.00	1980	20	7.65	1980	.00	1971	7.2	4.2	1.2	.3	.06	.19	.44	.70	.98	1.30	1.68	2.17	2.84	3.96	5.07
Sep	1.59	1.37	2.96	1978	12	5.18	1977	.27	1993	7.6	3.9	.9	.2	.35	.49	.73	.94	1.15	1.38	1.63	1.93	2.33	2.97	3.57
Oct	1.44	.88	2.22	1994	18	6.59	1994	.11	1987	5.9	2.8	.8	.2	.08	.15	.32	.52	.74	1.00	1.32	1.73	2.31	3.29	4.28
Nov	.77	.54	1.46	2000	2	2.75	2000	.04	1990	5.7	2.3	.2	.1	.05	.10	.20	.31	.42	.56	.72	.93	1.22	1.71	2.19
Dec	.53	.44	.63	1977	16	1.82	1977	.00	1986	6.2	1.8	@	.0	.07	.14	.23	.30	.38	.46	.55	.65	.80	1.02	1.24
Ann	17.77	18.64	3.00	Aug 1980	20	8.64	Jul 1993	.00+	Dec 1986	87.3	41.9	10.1	2.6	11.39	12.57	14.11	15.30	16.37	17.41	18.50	19.71	21.19	23.36	25.26

+ 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: 1954-2001

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

Complete documentation available from:  
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Station: UNDERWOOD, ND

COOP ID: 328872

Climate Division: ND 4

NWS Call Sign:

Elevation: 2,020 Feet

Lat: 47° 27N

Lon: 101° 09W

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	6.3	5.0	7	6	10.0	1995	17	17.5	1995	24	1978	30	23	1978	3.5	1.7	.7	.3	.1	-9.9	-9.9	-9.9	-9.9
Feb	4.5	3.5	7	5	8.8	1996	27	11.1	1996	31	1979	23	28	1978	3.7	1.8	.5	.1	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.2	4.4	3	#	12.0	1997	13	14.3	1997	33	1979	2	25	1979	2.0	1.3	.5	.2	.1	-9.9	-9.9	-9.9	-9.9
Apr	1.5	.0	#	0	8.0	1975	8	8.8	1975	20	1979	1	5	1975	.4	.3	.2	.1	.0	1.4	1.0	.8	.4
May	.3	.0	0	0	6.0	1991	3	6.0	1991	0	0	0	0	0	.1	.1	@	@	.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	.5	1972	26	.5	1972	1	1972	26	#	1972	@	.0	.0	.0	.0	@	.0	.0	.0
Oct	1.4	.0	#	0	10.0	1985	7	10.0	1985	6	1980	23	1	1980	.5	.5	.3	.2	@	.9	.4	.1	.0
Nov	4.3	2.0	1	#	13.5	1993	25	31.4	1993	16	1993	24	4	1998	2.7	1.5	.6	.4	.1	6.7	1.2	.0	.0
Dec	6.4	4.1	3	2	10.5	1996	16	31.6	1996	17	1978	28	13	1978	4.5	2.9	1.1	.3	.1	-9.9	-9.9	-9.9	-9.9
Ann	29.9	19.0	N/A	N/A	13.5	Nov 1993	25	31.6	Dec 1996	33	Mar 1979	2	28	Feb 1978	17.4	10.1	3.9	1.6	.4	-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:

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## No. 20 1971-2000

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**COOP ID: 328872**

**Climate Division: ND 4**

**NWS Call Sign:**

**Elevation: 2,020 Feet**

**Lat: 47° 27N**

**Lon: 101° 09W**

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	6/05	5/31	5/28	5/25	5/22	5/19	5/16	5/13	5/08
32	5/25	5/21	5/18	5/15	5/13	5/10	5/07	5/04	4/30
28	5/14	5/10	5/08	5/05	5/03	5/01	4/28	4/25	4/22
24	5/09	5/04	4/30	4/26	4/23	4/20	4/17	4/13	4/07
20	4/25	4/21	4/17	4/15	4/12	4/09	4/06	4/03	3/29
16	4/17	4/12	4/09	4/06	4/04	4/01	3/29	3/26	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	9/01	9/06	9/09	9/12	9/15	9/18	9/21	9/24	9/29
32	9/13	9/17	9/20	9/22	9/25	9/27	9/30	10/02	10/06
28	9/21	9/25	9/28	10/01	10/03	10/06	10/08	10/11	10/16
24	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/24	10/29
20	10/07	10/12	10/16	10/19	10/23	10/26	10/29	11/02	11/08
16	10/18	10/23	10/27	10/30	11/02	11/06	11/09	11/13	11/18
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	136	129	124	119	115	111	107	102	95
32	153	146	142	138	135	131	127	123	117
28	169	163	159	156	152	149	146	142	136
24	194	187	182	177	173	169	164	159	152
20	216	208	202	197	193	188	184	178	170
16	233	226	221	216	212	208	204	199	192

\* 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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of the United States  
No. 20  
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**Station: UNDERWOOD, ND**

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**NWS Call Sign:**

**Elevation: 2,020 Feet Lat: 47° 27N**

**Lon: 101° 09W**

**Degree Days to Selected Base Temperatures (°F)**

<b>Base</b>	<b>Heating Degree Days (1)</b>												
<b>Below</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>65</b>	1796	1420	1194	708	328	118	38	77	262	661	1187	1638	9427
<b>60</b>	1641	1280	1039	564	209	52	10	30	154	506	1037	1483	8005
<b>57</b>	1548	1196	946	481	151	27	2	16	102	414	947	1390	7220
<b>55</b>	1486	1140	884	427	119	17	0	9	74	354	887	1328	6725
<b>50</b>	1331	1000	732	306	57	4	0	2	26	213	740	1173	5584
<b>32</b>	809	546	273	45	0	0	0	0	0	9	290	652	2624

<b>Base</b>	<b>Cooling Degree Days (1)</b>												
<b>Above</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>32</b>	36	50	102	328	716	959	1152	1104	758	371	93	37	5706
<b>55</b>	0	0	0	20	121	286	439	400	141	2	0	0	1409
<b>57</b>	0	0	0	14	92	236	379	344	109	1	0	0	1175
<b>60</b>	0	0	0	7	56	171	293	266	72	0	0	0	865
<b>65</b>	0	0	0	1	20	87	167	158	30	0	0	0	463
<b>70</b>	0	0	0	0	5	32	79	79	10	0	0	0	205

**Growing Degree Units (2)**

<b>Base</b>	<b>Growing Degree Units (Monthly)</b>												<b>Growing Degree Units (Accumulated Monthly)</b>											
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>40</b>	0	1	22	180	515	755	938	902	556	225	22	0	0	1	23	203	718	1473	2411	3313	3869	4094	4116	4116
<b>45</b>	0	0	6	102	372	605	783	747	415	127	7	0	0	0	6	108	480	1085	1868	2615	3030	3157	3164	3164
<b>50</b>	0	0	0	51	241	457	628	592	280	60	0	0	0	0	0	51	292	749	1377	1969	2249	2309	2309	2309
<b>55</b>	0	0	0	23	138	313	473	437	164	21	0	0	0	0	0	23	161	474	947	1384	1548	1569	1569	1569
<b>60</b>	0	0	0	7	66	180	322	293	84	4	0	0	0	0	0	7	73	253	575	868	952	956	956	956
<b>Base</b>	<b>Growing Degree Units for Corn (Monthly)</b>												<b>Growing Degree Units for Corn (Accumulated Monthly)</b>											
<b>50/86</b>	0	1	21	140	325	470	606	576	347	154	19	0	0	1	22	162	487	957	1563	2139	2486	2640	2659	2659

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

## 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)