

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: FORMAN 5 SSE, ND

1971-2000

COOP ID: 323117

Climate Division: ND 9

NWS Call Sign:

Elevation: 1,250 Feet Lat: 46°02N

Lon: 97°36W

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	17.5	-2.0	7.8	65	1981	25	22.4	1990	-39	1951	29	-6.0	1982	1776	0	.0	.0	.2	25.3	31.0	17.6
Feb	24.7	5.4	15.1	67	1958	25	28.4	1987	-40+	1996	2	-.6	1979	1399	0	.0	.0	1.2	18.2	28.0	11.6
Mar	36.8	18.6	27.7	80+	1986	29	37.0	2000	-27	1995	8	18.7	1975	1156	0	.0	.0	5.2	9.9	28.0	4.0
Apr	54.5	32.4	43.5	98	1980	22	50.6	1987	-2	1975	1	34.7	1975	648	2	.0	.2	19.5	1.3	16.1	.1
May	68.9	45.1	57.0	103	1959	1	65.5	1977	19	1981	10	50.1	1979	284	35	.0	.6	29.5	.0	3.0	.0
Jun	77.4	54.2	65.8	105	1988	25	75.5	1988	32	1964	2	60.2	1982	89	113	.1	2.9	30.0	.0	.0	.0
Jul	83.2	58.8	71.0	106	1949	3	75.9	1988	38	1950	13	62.9	1992	29	216	.8	6.9	31.0	.0	.0	.0
Aug	82.2	56.4	69.3	107	1965	13	75.6	1983	32	1987	31	63.7	1977	47	180	.7	5.9	31.0	.0	@	.0
Sep	71.2	45.3	58.3	102	1983	3	64.3	1978	19	1974	25	53.1	1993	231	30	.1	1.6	29.3	.0	2.5	.0
Oct	57.4	33.3	45.4	93	1955	10	51.8	1973	6	1972	18	41.4	1976	610	0	.0	.1	23.0	.4	15.4	.0
Nov	36.9	18.8	27.9	78+	1990	2	38.8	1999	-22	1977	25	15.9	1985	1115	0	.0	.0	6.2	11.0	27.8	2.4
Dec	23.0	4.8	13.9	60+	1995	1	24.4	1999	-36	1993	28	-1.9	1983	1585	0	.0	.0	.6	22.1	31.0	12.1
Ann	52.8	30.9	41.9	107	Aug 1965	13	75.9	Jul 1988	-40+	Feb 1996	2	-6.0	Jan 1982	8969	576	1.7	18.2	206.7	88.2	182.8	47.8

+ 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

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: 1,250 Feet Lat: 46°02N

Lon: 97°36W

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	.65	.63	.83	1999	2	1.84	1997	.05	1987	6.4	2.0	.2	.0	.08	.13	.22	.31	.41	.52	.64	.80	1.01	1.36	1.70
Feb	.53	.47	1.11	1955	20	1.44	1984	.05	1985	5.7	1.9	.1	.0	.09	.13	.21	.28	.36	.44	.53	.65	.80	1.05	1.28
Mar	1.24	1.19	1.70	1982	20	3.10	1977	.07	1971	6.5	3.2	.7	.1	.26	.38	.56	.72	.89	1.07	1.27	1.51	1.83	2.34	2.82
Apr	1.68	1.55	3.69	1957	19	8.83	1986	.03	1988	7.5	4.0	.8	.3	.14	.25	.47	.70	.96	1.25	1.60	2.05	2.66	3.68	4.69
May	2.60	2.44	2.30	1998	12	6.36	1972	.24	1976	9.5	5.4	1.6	.6	.64	.88	1.26	1.60	1.93	2.29	2.68	3.15	3.76	4.74	5.65
Jun	3.54	3.01	3.10	1998	25	8.42	1998	.55	1974	9.7	6.2	2.4	1.0	.67	.99	1.51	1.99	2.47	3.00	3.59	4.31	5.27	6.80	8.26
Jul	3.02	2.74	4.15	1949	28	5.43	1995	.58	1976	9.3	5.6	2.2	.7	.90	1.19	1.62	1.99	2.35	2.73	3.14	3.62	4.25	5.23	6.15
Aug	2.25	2.15	3.33	1975	20	5.18	1975	.44	1976	7.5	4.6	1.5	.5	.72	.93	1.25	1.52	1.78	2.05	2.34	2.69	3.13	3.82	4.46
Sep	1.93	1.57	3.42	1957	2	5.68	1988	.31	1979	6.7	3.9	1.1	.3	.33	.50	.78	1.05	1.32	1.61	1.95	2.36	2.90	3.78	4.63
Oct	1.68	1.29	2.35	1998	17	5.11	1998	.10	1992	5.9	3.7	1.1	.3	.11	.21	.41	.64	.90	1.20	1.57	2.03	2.68	3.78	4.88
Nov	1.02	.80	1.36	1977	20	3.69	1977	.00+	1999	5.6	2.6	.7	@	.00	.06	.22	.37	.54	.73	.96	1.25	1.65	2.32	2.99
Dec	.44	.37	.87	1949	11	1.11	1988	.00	1986	6.2	1.5	@	.0	.03	.07	.13	.20	.27	.34	.43	.54	.69	.93	1.17
Ann	20.58	20.27	4.15	Jul 1949	28	8.83	Apr 1986	.00+	Nov 1999	86.5	44.6	12.4	3.8	12.92	14.33	16.18	17.61	18.90	20.16	21.47	22.94	24.74	27.39	29.71

+ 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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Station: FORMAN 5 SSE, ND

COOP ID: 323117

Climate Division: ND 9

NWS Call Sign:

Elevation: 1,250 Feet

Lat: 46°02N

Lon: 97°36W

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	8.1	8.1	5	5	9.0	1999	2	17.8	1994	17	1989	8	16	1989	5.0	3.1	.8	.4	.0	21.5	14.7	10.4	2.0
Feb	5.0	5.2	5	3	5.0	1977	24	10.0	1979	22	1979	27	18	1979	3.7	2.3	.6	.1	.0	19.7	12.0	8.1	3.1
Mar	6.0	4.0	3	1	11.0	1982	20	17.0+	1984	22	1979	6	17	1979	3.7	2.4	.9	.2	@	8.5	5.7	2.1	.2
Apr	1.8	1.5	#	#	5.0	1997	7	7.0	1990	12	1975	1	3	1975	1.2	.9	.2	@	.0	1.3	.5	.2	.1
May	.0	.0	#	0	1.0	1976	2	1.0	1976	1	1976	2	#+	1996	@	@	.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	#	1985	24	#	1985	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	3.0	1985	15	3.0	1985	3+	1995	31	#+	1995	.2	.2	@	.0	.0	.2	.1	.0	.0
Nov	6.7	4.5	1	1	13.0	1993	25	30.0	1993	25	1993	27	7	1992	3.1	2.2	1.0	.4	.1	6.0	1.5	.9	.0
Dec	5.4	4.0	3	2	8.0	1993	17	13.4	1993	21	1985	20	17	1985	4.1	2.2	.3	.1	.0	13.3	8.6	4.0	.0
Ann	33.4	27.3	N/A	N/A	13.0	Nov 1993	25	30.0	Nov 1993	25	Nov 1993	27	18	Feb 1979	21.0	13.3	3.8	1.2	.1	70.5	43.1	25.7	5.4

+ 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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Station: FORMAN 5 SSE, ND

COOP ID: 323117

Climate Division: ND 9

NWS Call Sign:

Elevation: 1,250 Feet

Lat: 46° 02N

Lon: 97° 36W

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	6/02	5/28	5/25	5/22	5/19	5/16	5/13	5/09	5/05
32	5/23	5/18	5/15	5/12	5/09	5/06	5/03	4/29	4/24
28	5/15	5/10	5/06	5/03	4/30	4/27	4/24	4/21	4/15
24	5/03	4/28	4/23	4/20	4/17	4/13	4/10	4/06	3/31
20	4/24	4/19	4/14	4/11	4/08	4/04	4/01	3/28	3/22
16	4/11	4/07	4/03	3/31	3/29	3/26	3/23	3/20	3/15
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	9/03	9/07	9/10	9/12	9/15	9/17	9/20	9/22	9/27
32	9/10	9/15	9/18	9/20	9/23	9/25	9/28	10/01	10/05
28	9/19	9/24	9/27	9/30	10/03	10/06	10/08	10/12	10/16
24	9/27	10/03	10/07	10/10	10/14	10/17	10/20	10/24	10/30
20	10/03	10/10	10/15	10/19	10/22	10/26	10/30	11/04	11/10
16	10/20	10/25	10/29	11/01	11/04	11/07	11/10	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	139	132	127	122	118	114	110	104	97
32	157	150	145	140	136	132	128	123	115
28	176	169	164	159	155	151	146	141	134
24	201	194	188	183	179	175	170	165	157
20	223	214	208	202	197	192	186	180	171
16	238	231	227	223	219	216	212	207	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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COOP ID: 323117

Climate Division: ND 9 NWS Call Sign: Elevation: 1,250 Feet Lat: 46°02N Lon: 97°36W

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	1776	1399	1156	648	284	89	29	47	231	610	1115	1585	8969
60	1621	1259	1001	504	178	34	8	15	127	456	965	1430	7598
57	1528	1175	908	423	127	17	1	6	80	365	875	1337	6842
55	1466	1119	846	371	98	10	0	3	56	307	815	1275	6366
50	1311	983	701	255	45	2	0	0	17	181	671	1120	5286
32	780	530	254	27	0	0	0	0	0	7	238	605	2441

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	28	56	121	371	774	1014	1210	1156	788	420	113	43	6094
55	0	0	0	25	159	334	497	446	154	8	0	0	1623
57	0	0	0	16	126	281	436	386	118	3	0	0	1366
60	0	0	0	8	84	208	350	303	76	1	0	0	1030
65	0	0	0	2	35	113	216	180	30	0	0	0	576
70	0	0	0	0	12	47	117	92	9	0	0	0	277

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	22	187	540	785	973	918	556	226	27	0	0	1	23	210	750	1535	2508	3426	3982	4208	4235	4235
45	0	0	5	108	397	635	818	763	413	129	9	0	0	0	5	113	510	1145	1963	2726	3139	3268	3277	3277
50	0	0	0	56	264	486	663	608	281	65	3	0	0	0	0	56	320	806	1469	2077	2358	2423	2426	2426
55	0	0	0	25	160	342	509	455	178	25	0	0	0	0	0	25	185	527	1036	1491	1669	1694	1694	1694
60	0	0	0	11	79	213	357	308	93	8	0	0	0	0	0	11	90	303	660	968	1061	1069	1069	1069
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	20	131	335	494	635	591	351	156	24	0	0	0	20	151	486	980	1615	2206	2557	2713	2737	2737

(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

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
- 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">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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