U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: CARRINGTON, ND **COOP ID: 321360**

Climate Division: ND 5 **NWS Call Sign:** **Elevation: 1,586 Feet** **Lat: 47˚27N** **Lon: 99˚08W**

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	16.4	-2.5	7.0	53	1990	10	23.0	1990	-38	1950	26	-8.2	1982	1802	0	.0	.0	.1	25.5	30.9	18.2
Feb	23.1	4.7	13.9	61	1958	26	26.0	1998	-36	1996	2	-2.5	1979	1432	0	.0	.0	.5	19.7	28.0	12.0
Mar	34.4	16.1	25.3	74	1963	24	35.1	1973	-29	1962	1	15.9	1996	1232	0	.0	.0	3.3	12.0	29.7	4.9
Apr	51.9	29.4	40.7	97	1980	22	49.5	1987	-8+	1979	6	31.2	1979	732	1	.0	.2	17.4	2.3	19.8	.3
May	67.0	42.9	55.0	95+	1980	22	63.9	1977	13+	1967	3	48.0	1979	334	22	.0	.3	29.0	.0	4.3	.0
Jun	74.9	52.6	63.8	103	1961	28	73.1	1988	30	1964	1	57.8	1985	119	82	@	1.6	29.9	.0	.0	.0
Jul	79.9	57.2	68.6	107	1973	12	74.1	1988	37+	1967	4	61.9	1992	50	160	.4	3.8	31.0	.0	.0	.0
Aug	79.3	54.2	66.8	102	1983	8	72.8	1983	32	1949	29	60.9	1977	74	128	.2	3.7	31.0	.0	.0	.0
Sep	68.3	43.4	55.9	102	1959	9	61.5	1978	18	1965	26	50.9	1984	289	15	.1	.9	28.7	.0	2.3	.0
Oct	55.1	31.8	43.5	94	1963	5	48.5	1973	0	1991	31	39.1	1991	668	0	.0	.1	19.9	.9	15.3	@
Nov	34.2	16.7	25.5	75	1975	6	36.2	1999	-23+	1964	30	13.2	1996	1188	0	.0	.0	3.9	13.7	28.4	3.0
Dec	20.9	3.3	12.1	60	1969	2	24.1	1999	-34+	1983	23	-2.8	1983	1640	0	.0	.0	.2	24.0	31.0	13.5
Ann	50.5	29.2	39.8	107	Jul 1973	12	74.1	Jul 1988	-38	Jan 1950	26	-8.2	Jan 1982	9560	408	.7	10.6	194.9	98.1	189.7	51.9

\+ 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/normals/usnormals.html

(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

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.68	.58	.90	1988	12	1.70	1988	.03	1973
Feb	.56	.46	.98	2000	25	2.13	1998	.03	1989
Mar	.91	.90	1.20	1950	24	1.98	1984	.04	1986
Apr	1.36	1.30	1.67	1999	1	3.71	1986	.02	1980
May	2.11	1.86	2.17	1954	31	5.60	1999	.39	1976
Jun	3.32	3.22	2.94	1964	9	7.17	1975	.78	1974
Jul	3.15	2.09	3.45	1987	18	8.36	1987	.48	1988
Aug	2.19	1.86	3.31	1989	18	6.99	1989	.11	1971
Sep	1.60	1.43	2.34	1992	2	4.07	1973	.18	1993
Oct	1.45	1.02	2.13	1973	9	4.17	2000	.05	1976
Nov	.89	.89	1.45	1986	7	1.90	2000	.00	1999
Dec	.51	.38	.60	1960	6	1.33	1993	.03	1989
Ann	18.73	18.83	3.45	Jul 1987	18	8.36	Jul 1987	.00	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.8	2.3	.2	.0
Feb	6.0	2.1	.1	.0
Mar	7.4	3.2	.3	.0
Apr	7.2	3.7	.6	.2
May	8.9	5.1	1.2	.2
Jun	11.4	6.7	2.1	.9
Jul	10.0	6.2	1.9	.8
Aug	8.8	4.8	1.1	.3
Sep	7.4	3.7	.9	.3
Oct	6.1	3.1	1.0	.3
Nov	5.9	2.9	.3	.1
Dec	6.4	1.8	.1	.0
Ann	92.3	45.6	9.8	3.1

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.08	.14	.23	.33	.43	.54	.67	.83	1.05	1.41	1.76
Feb	.05	.10	.17	.25	.34	.43	.55	.69	.88	1.21	1.52
Mar	.18	.27	.40	.52	.65	.78	.93	1.11	1.35	1.73	2.10
Apr	.12	.22	.40	.59	.79	1.03	1.31	1.66	2.14	2.94	3.73
May	.49	.68	.99	1.27	1.54	1.84	2.17	2.56	3.08	3.90	4.67
Jun	1.04	1.35	1.82	2.22	2.61	3.01	3.45	3.97	4.64	5.68	6.64
Jul	.55	.83	1.29	1.72	2.16	2.64	3.18	3.84	4.72	6.14	7.49
Aug	.36	.55	.87	1.17	1.48	1.82	2.20	2.67	3.30	4.32	5.30
Sep	.27	.41	.64	.86	1.09	1.33	1.61	1.95	2.41	3.15	3.86
Oct	.06	.13	.30	.49	.71	.98	1.31	1.74	2.35	3.41	4.46
Nov	.05	.13	.27	.40	.54	.70	.88	1.10	1.40	1.90	2.39
Dec	.09	.13	.21	.28	.35	.43	.52	.63	.77	1.01	1.24
Ann	12.32	13.53	15.09	16.30	17.37	18.42	19.51	20.73	22.21	24.38	26.27

\+ 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: 1948-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	8.6	8.3	7	6
Feb	7.7	6.8	6	5
Mar	6.9	4.8	3	3
Apr	3.2	2.0	1	0
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	1.5	.0	#	0
Nov	8.4	7.5	2	1
Dec	7.5	6.5	3	2
Ann	44.0	35.9	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	7.0	1976	1	21.0	1982	19+	1982	26	16	1979
Feb	8.0	1979	23	23.0	1979	32	1979	23	22	1979
Mar	12.0	1972	27	21.0	1975	34	1979	3	20	1979
Apr	8.0	1979	12	13.0	1999	16	1975	2	6	1979
May	2.5	1979	11	6.0	1979	2	1979	4	#+	1997
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	#	1995	22	#+	1995	#+	1995	22	#+	1995
Oct	7.0	1972	30	10.0	1991	7	1972	30	#+	1997
Nov	12.0	1986	7	25.7	1996	17	1985	28	8	1986
Dec	6.5	1978	29	20.3	1993	16	1985	3	12	1985
Ann	12.0+	Nov 1986	7	25.7	Nov 1996	34	Mar 1979	3	22	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.8	3.8	1.0	.4	.0
Feb	4.8	3.1	.7	.2	.0
Mar	4.1	2.9	.8	.2	.1
Apr	1.5	1.0	.4	.3	.0
May	.1	.1	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.7	.5	.1	.1	.0
Nov	3.9	3.1	1.1	.4	.1
Dec	5.2	3.4	.8	.1	.0
Ann	26.1	17.9	4.9	1.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.5	24.1	21.3	7.5
Feb	25.1	19.9	16.9	5.5
Mar	17.1	12.2	7.5	2.9
Apr	3.8	2.2	1.8	.6
May	.1	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.6	.2	.1	.0
Nov	10.5	5.8	4.1	1.4
Dec	20.5	13.9	7.1	.3
Ann	105.2	78.3	58.8	18.2

+ 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	6/03	5/29	5/25	5/22	5/19	5/16	5/13	5/09	5/04
32	5/20	5/17	5/14	5/12	5/10	5/09	5/06	5/04	5/01
28	5/14	5/09	5/06	5/03	4/30	4/27	4/24	4/21	4/16
24	5/08	5/02	4/28	4/25	4/22	4/18	4/15	4/11	4/06
20	4/21	4/17	4/14	4/11	4/09	4/07	4/04	4/01	3/28
16	4/17	4/12	4/09	4/06	4/03	3/31	3/28	3/24	3/19

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	9/07	9/10	9/13	9/15	9/17	9/19	9/22	9/24	9/28
32	9/17	9/20	9/22	9/24	9/26	9/28	9/30	10/02	10/06
28	9/21	9/26	9/29	10/02	10/05	10/07	10/10	10/13	10/18
24	9/28	10/04	10/08	10/12	10/16	10/19	10/23	10/27	11/03
20	10/07	10/13	10/17	10/20	10/23	10/27	10/30	11/03	11/08
16	10/19	10/24	10/28	10/31	11/03	11/06	11/09	11/12	11/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	140	133	128	124	120	117	113	108	101
32	154	148	144	141	138	135	132	128	122
28	178	170	165	161	157	153	148	143	136
24	199	191	186	181	176	172	167	161	153
20	217	210	205	201	197	192	188	183	176
16	233	226	221	217	213	210	205	201	194

***** 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

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Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1802	1432	1232	732	334	119	50	74	289	668	1188	1640	9560
60	1647	1292	1077	588	217	52	14	26	171	513	1038	1485	8120
57	1554	1208	984	505	160	27	6	12	113	421	948	1392	7330
55	1492	1152	922	452	127	17	2	6	82	360	888	1330	6830
50	1337	1012	771	329	64	3	0	1	28	221	741	1175	5682
32	811	554	308	57	1	0	0	0	0	10	291	654	2686

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	32	46	99	316	712	953	1134	1077	716	365	93	37	5580
55	0	0	0	21	125	279	422	370	108	2	0	0	1327
57	0	0	0	14	96	230	365	314	80	1	0	0	1100
60	0	0	0	7	60	165	280	235	47	0	0	0	794
65	0	0	0	1	22	82	160	128	15	0	0	0	408
70	0	0	0	0	6	29	77	56	4	0	0	0	172

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	0	8	147	472	711	889	838	488	187	14	0	0	0	8	155	627	1338	2227	3065	3553	3740	3754	3754
45	0	0	2	79	330	561	734	683	348	100	6	0	0	0	2	81	411	972	1706	2389	2737	2837	2843	2843
50	0	0	0	38	208	412	579	528	224	43	0	0	0	0	0	38	246	658	1237	1765	1989	2032	2032	2032
55	0	0	0	15	115	274	425	373	123	14	0	0	0	0	0	15	130	404	829	1202	1325	1339	1339	1339
60	0	0	0	3	51	153	275	233	59	3	0	0	0	0	0	3	54	207	482	715	774	777	777	777
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	7	106	291	428	568	524	294	126	12	0	0	1	8	114	405	833	1401	1925	2219	2345	2357	2357

(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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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 are 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.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

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