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: COOPERSTOWN, ND **COOP ID: 321766**

Climate Division: ND 6 **NWS Call Sign:** **Elevation: 1,380 Feet** **Lat: 47˚24N** **Lon: 98˚02W**

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	14.3	-4.3	5.0	54	1944	20	20.4	1990	-41	1937	22	-9.8	1982	1861	0	.0	.0	.1	26.1	31.0	18.9
Feb	22.1	3.4	12.8	62	1958	25	24.9	1998	-47	1936	15	-3.1	1979	1463	0	.0	.0	.4	19.4	28.0	12.3
Mar	34.6	16.3	25.5	80	1946	27	34.7	1973	-36	1948	10	15.8	1996	1226	0	.0	.0	3.7	10.3	29.0	4.7
Apr	53.0	30.0	41.5	98	1980	21	49.8	1987	-9	1979	6	32.3	1979	707	1	.0	.1	19.7	1.5	18.7	.2
May	68.3	42.8	55.6	98	1964	21	65.0	1977	13	1946	12	48.1	1979	319	26	.0	.7	29.9	.0	4.1	.0
Jun	76.4	52.2	64.3	106	1936	24	71.9	1988	26	1935	5	58.8	1985	110	89	.0	2.5	30.0	.0	.1	.0
Jul	81.2	56.5	68.9	118	1936	6	73.4	1989	34	1945	2	61.4	1992	41	160	.4	5.2	31.0	.0	.0	.0
Aug	80.4	54.0	67.2	108	1947	3	74.3	1983	31	1982	27	60.7	1977	73	142	.3	5.0	31.0	.0	@	.0
Sep	69.4	43.9	56.7	103	1978	5	63.1	1978	17+	1945	29	52.2	1985	269	18	.1	1.4	29.4	.0	3.0	.0
Oct	55.6	32.2	43.9	92	1963	4	49.0	1973	-2+	1936	26	39.5	1991	655	0	.0	@	22.2	.7	15.0	@
Nov	33.3	16.5	24.9	76	1999	7	35.5	1981	-31	1985	29	13.0	1985	1204	0	.0	.0	3.9	13.7	28.3	3.0
Dec	19.5	2.1	10.8	65	1939	7	22.1	1997	-35+	1990	30	-1.9	1983	1679	0	.0	.0	.2	24.1	31.0	13.8
Ann	50.7	28.8	39.8	118	Jul 1936	6	74.3	Aug 1983	-47	Feb 1936	15	-9.8	Jan 1982	9607	436	.8	14.9	201.5	95.8	188.2	52.9

\+ 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: 1932-2001

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

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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	.67	.75	.76	1983	6	1.30	1996	.00+	2000
Feb	.53	.49	1.48	1937	8	1.42	1998	.00	1986
Mar	1.01	1.10	1.28	1942	27	2.29	1995	.00	1986
Apr	1.31	.91	1.74	1990	28	4.32	1986	.00	1980
May	2.56	2.34	3.57	1985	11	7.56	1985	.48	1976
Jun	3.30	3.21	2.48	1970	16	7.88	1990	.84+	1989
Jul	3.33	2.26	6.30	1993	25	11.12	1993	.62	1985
Aug	2.78	2.83	4.21	1964	21	5.22	1980	.46	1976
Sep	1.96	1.39	3.63	1969	5	5.82	1986	.07	1974
Oct	1.65	1.23	2.76	2000	26	5.95	1982	.06	1987
Nov	.90	.71	1.50	1952	18	3.12	1977	.00+	1999
Dec	.50	.49	.98	1960	5	1.38	1977	.00+	1999
Ann	20.50	20.11	6.30	Jul 1993	25	11.12	Jul 1993	.00+	Jan 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	2.1	.1	.0
Feb	5.2	1.9	.1	@
Mar	6.1	3.4	.4	.0
Apr	6.6	3.3	.7	.2
May	9.5	5.5	1.4	.4
Jun	10.3	6.3	2.4	.8
Jul	9.9	6.3	2.0	.8
Aug	8.9	5.1	1.6	.9
Sep	7.2	4.3	1.3	.4
Oct	6.1	3.5	1.0	.3
Nov	5.4	2.8	.5	.2
Dec	5.7	1.7	.1	.0
Ann	87.0	46.2	11.6	4.0

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	.00	.12	.26	.36	.47	.58	.70	.84	1.03	1.34	1.63
Feb	.03	.07	.15	.23	.32	.41	.52	.66	.84	1.15	1.45
Mar	.17	.30	.48	.61	.75	.89	1.05	1.24	1.49	1.87	2.23
Apr	.04	.14	.33	.52	.72	.96	1.25	1.60	2.09	2.92	3.73
May	.60	.84	1.21	1.55	1.88	2.23	2.63	3.10	3.72	4.71	5.63
Jun	.94	1.25	1.72	2.13	2.54	2.96	3.42	3.97	4.68	5.79	6.83
Jul	.67	.97	1.46	1.91	2.36	2.84	3.39	4.05	4.92	6.32	7.64
Aug	.78	1.04	1.44	1.79	2.13	2.48	2.88	3.34	3.94	4.89	5.77
Sep	.20	.34	.61	.88	1.17	1.51	1.90	2.39	3.06	4.17	5.26
Oct	.04	.11	.27	.47	.72	1.03	1.42	1.94	2.69	4.01	5.35
Nov	.00	.00	.17	.34	.50	.69	.89	1.14	1.49	2.04	2.58
Dec	.00	.00	.17	.26	.34	.43	.52	.64	.79	1.03	1.25
Ann	14.19	15.39	16.95	18.13	19.19	20.21	21.27	22.44	23.87	25.94	27.74

\+ 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: 1932-2001
(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	7.3	6.0	8	6
Feb	5.5	4.0	7	4
Mar	6.1	5.8	5	3
Apr	2.2	.0	1	0
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.8	.0	#	0
Nov	7.2	5.5	2	1
Dec	4.8	4.5	5	3
Ann	33.9	25.8	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	8.0	1993	12	16.5	1997	26	1997	30	24	1997
Feb	9.0	1977	24	14.5	1979	26	1979	28	23	1997
Mar	6.8	1995	26	17.1	1995	29	1997	6	23	1997
Apr	12.0	1986	14	17.0	1986	15	1979	8	7	1979
May	1.0	1979	5	1.0	1979	#	1997	8	#	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	.4	1995	21	.4	1995	0	0	0	0	0
Oct	6.0	1985	8	8.0	1985	4	1971	31	#+	2000
Nov	12.0	1977	20	21.5	1985	21	1985	30	7	1985
Dec	6.0	1977	4	13.4	1977	25	1985	20	21	1985
Ann	12.0+	Apr 1986	14	21.5	Nov 1985	29	Mar 1997	6	24	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	3.1	1.0	.4	.0
Feb	2.7	2.1	.5	.1	.0
Mar	2.8	2.4	.9	.3	.0
Apr	.8	.6	.2	.2	@
May	@	@	.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
Oct	.4	.3	@	@	.0
Nov	3.0	2.7	1.0	.3	@
Dec	3.5	2.6	.8	.2	.0
Ann	17.0	13.8	4.4	1.5	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.0	17.8	11.4	6.0
Feb	20.5	12.5	9.5	5.6
Mar	14.4	10.9	6.8	2.3
Apr	1.9	1.2	1.0	.8
May	.0	.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	.0	.0	.0
Nov	11.3	5.5	3.0	1.7
Dec	21.2	13.4	9.4	5.1
Ann	96.9	61.3	41.1	21.5

+ 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	6/08	6/03	5/31	5/28	5/25	5/23	5/20	5/16	5/12
32	5/24	5/20	5/17	5/14	5/12	5/10	5/07	5/05	5/01
28	5/15	5/11	5/08	5/05	5/02	4/30	4/27	4/24	4/20
24	5/06	5/01	4/28	4/25	4/22	4/19	4/16	4/12	4/07
20	4/28	4/23	4/19	4/16	4/13	4/11	4/08	4/04	3/30
16	4/17	4/13	4/09	4/06	4/03	4/01	3/29	3/25	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	8/28	9/01	9/05	9/08	9/10	9/13	9/16	9/19	9/24
32	9/08	9/12	9/15	9/18	9/20	9/23	9/25	9/28	10/03
28	9/17	9/21	9/24	9/27	9/29	10/02	10/04	10/07	10/12
24	9/25	9/30	10/04	10/07	10/10	10/13	10/16	10/20	10/25
20	10/04	10/10	10/14	10/18	10/21	10/24	10/28	11/01	11/07
16	10/12	10/17	10/21	10/24	10/27	10/31	11/03	11/07	11/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	126	119	115	111	107	104	100	95	89
32	148	142	138	134	131	127	124	119	113
28	168	161	157	153	149	146	142	137	131
24	193	185	180	175	171	166	161	156	148
20	213	205	199	194	190	185	180	175	167
16	228	220	215	211	206	202	198	192	185

***** 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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1861	1463	1226	707	319	110	41	73	269	655	1204	1679	9607
60	1706	1323	1071	563	204	46	11	26	154	500	1054	1524	8182
57	1613	1239	978	480	149	23	3	13	99	408	964	1431	7400
55	1551	1183	916	427	117	14	0	7	70	348	904	1369	6906
50	1396	1043	764	307	58	3	0	1	22	214	754	1214	5776
32	859	575	294	46	0	0	0	0	0	11	294	682	2761

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	21	36	91	330	730	969	1143	1092	739	379	81	26	5637
55	0	0	0	22	134	293	430	385	119	3	0	0	1386
57	0	0	0	14	104	242	371	330	88	1	0	0	1150
60	0	0	0	7	66	175	285	250	53	0	0	0	836
65	0	0	0	1	26	89	160	142	18	0	0	0	436
70	0	0	0	0	7	32	75	67	4	0	0	0	185

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	10	165	523	756	918	870	531	211	18	0	0	0	10	175	698	1454	2372	3242	3773	3984	4002	4002
45	0	0	2	88	382	606	763	715	387	116	9	0	0	0	2	90	472	1078	1841	2556	2943	3059	3068	3068
50	0	0	0	47	253	459	608	560	257	53	1	0	0	0	0	47	300	759	1367	1927	2184	2237	2238	2238
55	0	0	0	19	147	314	453	407	145	18	0	0	0	0	0	19	166	480	933	1340	1485	1503	1503	1503
60	0	0	0	6	75	186	300	262	74	3	0	0	0	0	0	6	81	267	567	829	903	906	906	906
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	11	126	335	479	593	556	336	147	14	0	0	0	11	137	472	951	1544	2100	2436	2583	2597	2597

(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