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: NEW ENGLAND, ND **COOP ID: 326315**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,639 Feet** **Lat: 46˚33N** **Lon: 102˚52W**

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	24.7	3.7	14.2	64	1981	23	27.8	1992	-37+	1970	18	-.2	1979	1575	0	.0	.0	.8	19.0	30.6	12.4
Feb	31.6	10.8	21.2	71	1992	1	32.7	1984	-38	1962	28	4.0	1979	1227	0	.0	.0	3.5	13.3	27.8	7.2
Mar	41.6	19.1	30.4	78	1986	28	40.1	1986	-31+	1998	11	19.6	1996	1074	0	.0	.0	9.5	7.5	28.8	2.6
Apr	55.4	30.2	42.8	94+	1980	21	51.3	1987	-11	1975	1	34.3	1975	667	0	.0	.1	20.5	1.2	18.4	.2
May	67.9	41.9	54.9	98	1969	27	61.9	1977	5	1967	3	49.5	1996	330	17	.0	.6	29.6	.0	4.1	.0
Jun	77.0	51.0	64.0	103+	1988	23	77.0	1988	27	1949	4	58.6	1998	126	95	.2	2.5	30.0	.0	.2	.0
Jul	83.5	55.5	69.5	107	1981	7	74.5	1989	34+	1967	3	62.1	1993	40	178	.9	7.7	31.0	.0	.0	.0
Aug	82.8	54.1	68.5	108	1949	7	74.9	1983	31	1950	19	62.3	1974	64	171	.3	7.7	31.0	.0	.0	.0
Sep	71.1	43.0	57.1	105	1948	16	63.8	1998	15	1965	26	51.4	1984	271	31	.2	1.7	28.8	.0	3.0	.0
Oct	58.1	31.6	44.9	94+	1963	4	47.7	1973	-10	1991	30	41.1	1972	626	0	.0	.1	23.6	.8	15.3	.1
Nov	39.3	17.7	28.5	80	1999	7	40.0	1999	-25	1985	29	14.2	1985	1095	0	.0	.0	7.2	9.2	27.8	2.6
Dec	28.7	7.2	18.0	65+	1998	1	28.1	1979	-36	1989	21	-.3	1983	1458	0	.0	.0	1.9	16.5	30.9	9.3
Ann	55.1	30.5	42.8	108	Aug 1949	7	77.0	Jun 1988	-38	Feb 1962	28	-.3	Dec 1983	8553	492	1.6	20.4	217.4	67.5	186.9	34.4

\+ 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	.38	.30	.58	1949	23	1.00	1971	.02	1974
Feb	.39	.33	.90	1998	25	1.66	1978	.00+	1985
Mar	.69	.59	1.76	1966	3	2.35	1982	.02	1999
Apr	1.62	1.34	2.32	1967	16	5.52	1989	.00+	1988
May	2.46	2.09	3.14	1970	8	6.29	1972	.10	1984
Jun	3.38	3.26	4.07	1998	18	7.02	1998	1.14	1987
Jul	1.93	1.60	2.45	2000	6	5.96	1987	.05	1984
Aug	1.73	1.38	2.90	1999	12	5.93	1981	.00	1976
Sep	1.44	.92	2.26	1971	5	5.75	1977	.18	1993
Oct	1.37	.86	2.31	1994	6	6.02	1982	.10	1993
Nov	.47	.35	1.02	1956	3	1.73	1978	.00+	1999
Dec	.38	.28	.69	1972	2	1.48	1972	.00+	1991
Ann	16.24	15.78	4.07	Jun 1998	18	7.02	Jun 1998	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.3	1.4	.0	.0
Feb	3.4	1.4	.1	.0
Mar	4.6	2.3	.2	@
Apr	7.0	3.8	.9	.2
May	7.6	5.6	1.6	.5
Jun	9.0	6.8	2.4	.7
Jul	6.9	4.9	1.2	.3
Aug	4.9	3.6	1.0	.5
Sep	4.6	3.4	.8	.3
Oct	3.7	2.8	1.1	.4
Nov	3.7	1.7	.1	.0
Dec	3.8	1.5	@	.0
Ann	63.5	39.2	9.4	2.9

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	.06	.09	.14	.19	.25	.31	.38	.46	.58	.77	.95
Feb	.00	.01	.06	.12	.18	.26	.35	.48	.65	.95	1.25
Mar	.06	.11	.21	.30	.41	.52	.67	.84	1.08	1.48	1.88
Apr	.00	.10	.35	.59	.86	1.17	1.54	2.00	2.63	3.70	4.76
May	.35	.56	.91	1.25	1.61	2.00	2.45	3.01	3.75	4.97	6.14
Jun	1.19	1.51	1.97	2.36	2.73	3.11	3.53	4.01	4.63	5.58	6.46
Jul	.22	.37	.64	.91	1.20	1.52	1.90	2.36	3.00	4.04	5.06
Aug	.07	.22	.47	.73	1.00	1.31	1.67	2.12	2.74	3.78	4.79
Sep	.16	.27	.47	.67	.89	1.13	1.41	1.76	2.24	3.04	3.81
Oct	.08	.16	.32	.51	.72	.97	1.27	1.66	2.20	3.12	4.04
Nov	.00	.02	.09	.15	.23	.32	.43	.57	.77	1.10	1.43
Dec	.00	.03	.09	.15	.21	.28	.37	.47	.62	.86	1.10
Ann	10.29	11.39	12.83	13.94	14.94	15.92	16.94	18.08	19.47	21.51	23.30

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.9	7.7	4	3
Feb	6.5	5.5	4	1
Mar	7.7	6.5	3	#
Apr	4.5	3.0	1	0
May	.5	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	2.2	.0	#	0
Nov	6.1	4.0	1	#
Dec	7.0	6.8	2	#
Ann	42.4	33.5	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	1997	4	16.0	1971	19	1982	24	15	1978
Feb	6.0	1978	7	24.5	1978	28	1978	13	21	1978
Mar	10.0	1982	19	28.5	1975	28	1975	31	11	1978
Apr	18.0	1997	5	20.0	1997	25	1975	2	11	1975
May	4.0	1991	3	6.0	1996	0	0	0	0	0
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	#	1993	13	#+	1993	11	1984	24	#	1984
Oct	10.0	1991	28	18.0	1991	6	1972	31	1	1972
Nov	7.0	1996	23	15.0+	1996	14	1977	24	4	1978
Dec	8.0	1972	2	19.5	1972	16	1977	31	11	1977
Ann	18.0	Apr 1997	5	28.5	Mar 1975	28+	Feb 1978	13	21	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.4	3.6	.9	.1	.0
Feb	3.2	2.8	.7	.2	.0
Mar	3.0	2.7	1.0	.2	@
Apr	1.2	1.2	.6	.3	.1
May	.2	.2	.1	.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	.7	.3	.1	@
Nov	2.9	2.6	.8	.1	.0
Dec	3.8	3.0	.8	.1	.0
Ann	19.4	16.8	5.2	1.1	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	3.7	2.5	1.5	1.0
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	.4	.3	.2	.0
Nov	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-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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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	6/12	6/06	6/02	5/29	5/25	5/22	5/18	5/14	5/08
32	5/31	5/26	5/22	5/19	5/16	5/13	5/09	5/06	4/30
28	5/20	5/15	5/12	5/09	5/06	5/03	5/01	4/27	4/23
24	5/10	5/05	5/02	4/29	4/27	4/24	4/22	4/19	4/14
20	4/26	4/22	4/19	4/16	4/13	4/11	4/08	4/05	3/31
16	4/17	4/13	4/10	4/07	4/04	4/02	3/30	3/27	3/22

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	8/31	9/04	9/07	9/09	9/11	9/14	9/16	9/19	9/22
32	9/08	9/12	9/14	9/17	9/19	9/21	9/23	9/26	9/30
28	9/16	9/21	9/24	9/27	9/30	10/02	10/05	10/08	10/13
24	9/22	9/27	10/01	10/04	10/07	10/09	10/12	10/16	10/21
20	10/01	10/07	10/11	10/15	10/19	10/23	10/27	10/31	11/07
16	10/14	10/20	10/24	10/27	10/30	11/02	11/06	11/10	11/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	127	120	116	112	108	105	101	96	90
32	145	138	133	129	125	122	117	113	106
28	165	158	154	150	146	142	138	134	127
24	181	174	170	166	162	158	154	150	143
20	207	200	196	192	188	185	181	176	170
16	230	223	217	213	208	204	199	194	186

***** 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	1575	1227	1074	667	330	126	40	64	271	626	1095	1458	8553
60	1420	1087	919	522	208	58	11	24	162	471	945	1303	7130
57	1327	1006	826	438	149	32	3	11	110	379	855	1210	6346
55	1265	956	764	384	115	21	1	6	81	318	795	1148	5854
50	1116	825	618	262	53	6	0	1	30	179	653	997	4740
32	618	408	189	25	0	0	0	0	0	4	226	503	1973

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	66	105	138	348	710	960	1162	1130	750	401	121	68	5959
55	0	9	0	17	112	290	450	424	141	2	0	0	1445
57	0	4	0	11	84	242	390	367	110	1	0	0	1209
60	0	0	0	5	50	178	305	286	73	0	0	0	897
65	0	0	0	0	17	95	178	171	31	0	0	0	492
70	0	0	0	0	4	39	89	88	11	0	0	0	231

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	3	31	173	481	732	930	903	533	226	31	0	0	3	34	207	688	1420	2350	3253	3786	4012	4043	4043
45	0	0	6	91	336	582	775	748	394	126	9	0	0	0	6	97	433	1015	1790	2538	2932	3058	3067	3067
50	0	0	1	41	208	432	620	593	262	57	0	0	0	0	1	42	250	682	1302	1895	2157	2214	2214	2214
55	0	0	0	16	110	290	466	440	153	17	0	0	0	0	0	16	126	416	882	1322	1475	1492	1492	1492
60	0	0	0	4	45	165	314	292	75	4	0	0	0	0	0	4	49	214	528	820	895	899	899	899
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	9	42	136	302	455	593	579	338	170	29	2	0	9	51	187	489	944	1537	2116	2454	2624	2653	2655

(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.
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