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: CONCORD, NC **COOP ID: 311975**

Climate Division: NC 5 **NWS Call Sign:** **Elevation: 690 Feet** **Lat: 35˚25N** **Lon: 80˚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	50.8	27.9	39.4	79+	1975	30	49.5	1974	-5+	1985	22	28.9	1977	795	0	.0	.0	16.5	1.3	21.0	.1
Feb	55.4	30.2	42.8	82+	1996	27	49.0	1990	5	1958	18	35.6	1978	622	0	.0	.0	18.6	.5	17.5	.0
Mar	63.7	37.9	50.8	89+	1985	30	55.6	1997	1	1980	4	45.6	1996	442	1	.0	.0	27.5	.1	9.9	.0
Apr	73.0	45.7	59.4	95	1980	24	63.8	1977	24	1982	8	54.6	1983	190	19	.0	.6	29.5	.0	1.8	.0
May	79.8	55.0	67.4	98	1996	20	71.0	1991	32+	1989	9	63.6	1997	50	125	.0	2.6	31.0	.0	.1	.0
Jun	86.7	63.7	75.2	102+	1954	28	79.6	1986	43	1984	1	71.4	1979	2	308	.1	11.0	30.0	.0	.0	.0
Jul	90.3	68.1	79.2	106+	1952	29	83.1	1993	53	1988	2	76.3	1979	0	440	1.1	18.6	31.0	.0	.0	.0
Aug	88.8	66.6	77.7	107	1983	22	81.5	1980	50+	1986	30	75.1	1994	0	394	.9	15.0	31.0	.0	.0	.0
Sep	83.0	59.7	71.4	102	1954	7	76.0	1980	38	1967	30	68.8	1974	15	205	.1	6.2	30.0	.0	.0	.0
Oct	73.2	46.6	59.9	98+	1954	7	67.8	1984	24	1952	30	53.4	1987	204	45	.0	.3	30.8	.0	1.3	.0
Nov	63.5	37.6	50.6	88	1974	3	58.5	1985	12	1950	26	43.7	1976	437	3	.0	.0	27.2	.0	10.2	.0
Dec	54.0	30.5	42.3	80+	1984	31	50.8	1971	4+	1983	26	33.8	1989	706	0	.0	.0	20.0	.5	19.2	.0
Ann	71.9	47.5	59.7	107	Aug 1983	22	83.1	Jul 1993	-5+	Jan 1985	22	28.9	Jan 1977	3463	1540	2.2	54.3	323.1	2.4	81.0	.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/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	4.26	4.33	2.53	1979	21	8.00	1978	.44	1981
Feb	3.48	3.54	2.71	1990	17	7.00	1984	.38	1978
Mar	4.48	4.31	3.72	1952	4	8.99	1993	.82	1985
Apr	3.49	3.47	2.85	1994	16	7.23	1997	.81	1995
May	4.00	3.80	3.03	1982	25	10.29	1975	.64	1987
Jun	4.36	3.82	3.87	1982	18	9.72	1994	.32	1986
Jul	4.60	3.86	6.40	1997	23	15.02	1984	.51	1983
Aug	3.58	3.01	4.00	1995	27	10.48	1995	1.02	1997
Sep	4.33	4.33	4.62	1997	25	9.54	2000	.00	1985
Oct	3.98	3.18	5.60	1990	11	15.44	1990	.00	2000
Nov	3.46	3.08	3.47	1985	22	7.81	1985	.65	1981
Dec	3.28	3.05	1.98	1961	12	7.85	1983	.93	2000
Ann	47.30	45.85	6.40	Jul 1997	23	15.44	Oct 1990	.00+	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.6	7.8	3.3	1.1
Feb	8.8	6.1	2.6	1.0
Mar	10.4	7.6	3.0	1.2
Apr	8.5	6.1	2.4	1.0
May	10.0	6.8	2.7	.8
Jun	10.0	7.3	2.8	1.2
Jul	10.4	7.3	2.9	1.0
Aug	9.0	5.9	2.5	.9
Sep	7.9	4.9	2.5	1.5
Oct	7.1	4.8	2.4	1.5
Nov	8.8	5.9	2.4	1.1
Dec	10.0	6.5	2.1	.8
Ann	111.5	77.0	31.6	13.1

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	1.49	1.89	2.48	2.97	3.44	3.92	4.45	5.06	5.85	7.06	8.18
Feb	.91	1.24	1.75	2.19	2.63	3.08	3.59	4.20	4.98	6.22	7.38
Mar	1.49	1.91	2.54	3.06	3.57	4.10	4.67	5.34	6.20	7.53	8.76
Apr	1.05	1.38	1.87	2.30	2.72	3.15	3.62	4.18	4.91	6.03	7.08
May	.99	1.36	1.94	2.46	2.97	3.51	4.12	4.83	5.77	7.26	8.65
Jun	1.02	1.43	2.06	2.63	3.20	3.80	4.48	5.28	6.34	8.01	9.59
Jul	1.00	1.42	2.10	2.71	3.32	3.97	4.70	5.58	6.74	8.58	10.32
Aug	.88	1.22	1.74	2.20	2.66	3.15	3.69	4.34	5.18	6.52	7.78
Sep	.21	.60	1.25	1.89	2.57	3.33	4.22	5.33	6.84	9.35	11.79
Oct	.34	.79	1.44	2.02	2.62	3.27	4.01	4.92	6.13	8.09	9.96
Nov	1.14	1.47	1.95	2.36	2.75	3.16	3.61	4.13	4.80	5.84	6.80
Dec	.95	1.26	1.73	2.14	2.53	2.95	3.40	3.94	4.64	5.74	6.75
Ann	35.14	37.53	40.57	42.87	44.89	46.84	48.85	51.06	53.73	57.58	60.89

+ 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	1.4	.0	#	#
Feb	1.7	.0	#	#
Mar	1.0	.0	#	0
Apr	#	.0	#	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	.0	.0	0	0
Nov	.0	.0	#	0
Dec	.6	.0	#	0
Ann	4.7	.0	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	9.0	1988	8	10.0	1988	9	1988	8	1+	2000
Feb	9.0	1979	19	17.0	1979	11	1979	19	2	1979
Mar	7.0	1983	25	7.0	1983	7	1983	25	#+	1999
Apr	#	1983	19	#+	1983	#+	1983	19	#+	1983
May	.0	0	0	.0	0	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	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	.5	2000	20	.5	2000	1	2000	20	#	2000
Dec	7.5	1971	4	7.5	1971	7	1971	4	#+	1998
Ann	9.0+	Jan 1988	8	17.0	Feb 1979	11	Feb 1979	19	2	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.7	.5	.2	.1	.0
Feb	.7	.5	.2	.1	.0
Mar	.2	.2	.2	.1	.0
Apr	.0	.0	.0	.0	.0
May	.0	.0	.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	.0	.0	.0	.0	.0
Nov	@	.0	.0	.0	.0
Dec	.1	.1	.1	@	.0
Ann	1.7	1.3	.7	.3	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.6	.7	.3	.0
Feb	1.0	.4	.2	@
Mar	.3	.2	.1	.0
Apr	.0	.0	.0	.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	.0	.0	.0	.0
Nov	@	.0	.0	.0
Dec	.2	.1	@	.0
Ann	3.1	1.4	.6	@

+ 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	5/02	4/28	4/24	4/21	4/19	4/16	4/13	4/10	4/05
32	4/23	4/17	4/12	4/08	4/05	4/01	3/28	3/24	3/17
28	4/11	4/05	3/31	3/27	3/24	3/20	3/16	3/12	3/05
24	3/24	3/17	3/12	3/08	3/05	3/01	2/25	2/20	2/14
20	3/12	3/04	2/27	2/23	2/19	2/15	2/11	2/06	1/29
16	3/04	2/22	2/15	2/09	2/03	1/28	1/21	1/12	12/27

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	10/07	10/11	10/14	10/17	10/20	10/22	10/25	10/28	11/02
32	10/16	10/21	10/25	10/29	11/01	11/04	11/07	11/11	11/16
28	10/28	11/02	11/06	11/10	11/13	11/16	11/19	11/23	11/29
24	11/08	11/14	11/19	11/23	11/27	12/01	12/05	12/10	12/17
20	11/22	12/02	12/09	12/15	12/21	12/27	1/02	1/09	1/19
16	12/04	12/15	12/22	12/29	1/04	1/11	1/18	1/27	2/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	203	196	191	187	183	179	175	171	164
32	231	224	218	214	209	205	200	195	187
28	258	249	243	238	233	229	224	218	209
24	292	284	277	272	267	262	256	250	241
20	334	322	314	308	302	296	290	283	273
16	>365	>365	347	335	326	318	311	303	292

***** 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	795	622	442	190	50	2	0	0	15	204	437	706	3463
60	643	482	297	89	12	0	0	0	3	111	299	555	2491
57	556	398	219	49	4	0	0	0	1	71	225	468	1991
55	498	347	174	30	1	0	0	0	0	50	181	412	1693
50	362	221	85	6	0	0	0	0	0	17	95	282	1068
32	56	8	0	0	0	0	0	0	0	0	0	28	92

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	284	311	583	820	1098	1296	1463	1417	1180	864	556	346	10218
55	13	5	44	159	386	606	750	704	491	201	47	16	3422
57	9	1	27	118	327	546	688	642	431	160	30	11	2990
60	3	0	12	69	242	456	595	549	343	107	15	4	2395
65	0	0	1	19	125	308	440	394	205	45	3	0	1540
70	0	0	0	3	48	173	286	241	94	14	0	0	859

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	112	165	354	581	854	1065	1228	1183	958	633	342	160	112	277	631	1212	2066	3131	4359	5542	6500	7133	7475	7635
45	53	87	226	435	699	915	1073	1028	808	479	219	86	53	140	366	801	1500	2415	3488	4516	5324	5803	6022	6108
50	22	41	132	296	544	765	918	873	658	329	123	41	22	63	195	491	1035	1800	2718	3591	4249	4578	4701	4742
55	3	14	65	181	395	615	763	718	508	201	57	18	3	17	82	263	658	1273	2036	2754	3262	3463	3520	3538
60	0	0	26	96	248	465	608	563	363	104	22	2	0	0	26	122	370	835	1443	2006	2369	2473	2495	2497
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	78	128	240	378	559	724	838	814	635	404	229	112	78	206	446	824	1383	2107	2945	3759	4394	4798	5027	5139

(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