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: WILMINGTON 7 N, NC **COOP ID: 319467**

Climate Division: NC 6 **NWS Call Sign:** **Elevation: 40 Feet** **Lat: 34˚19N** **Lon: 77˚55W**

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	56.2	33.3	44.8	80+	1975	30	56.9	1974	0	1985	21	35.1	1977	631	0	.0	.0	22.5	.5	15.2	@
Feb	59.3	35.3	47.3	84	1977	27	53.7	1976	10+	1996	5	37.6	1978	495	0	.0	.0	21.8	.4	12.0	.0
Mar	66.5	42.1	54.3	90	1985	30	59.3	1997	9	1980	4	49.2	1999	340	9	.0	@	29.1	.1	6.3	.0
Apr	74.5	49.0	61.8	94+	1995	21	65.6	1977	26+	1972	10	57.5	1987	131	33	.0	.9	29.9	.0	1.1	.0
May	81.0	58.0	69.5	97+	2000	21	73.7	1991	31	1963	2	65.6	1992	19	159	.0	3.0	31.0	.0	@	.0
Jun	86.9	65.6	76.3	102+	1993	11	81.0	1981	43	1966	2	72.9	1979	0	338	.2	9.7	30.0	.0	.0	.0
Jul	90.0	70.2	80.1	103	1993	11	83.4	1993	47	1988	7	78.0	1975	0	468	.5	17.7	31.0	.0	.0	.0
Aug	88.4	68.7	78.6	104	1999	2	80.7	1983	52	1979	15	75.6	1976	0	419	.2	12.9	31.0	.0	.0	.0
Sep	83.7	63.4	73.6	96+	1993	2	77.3	1980	39	1999	23	69.7	1999	4	261	.0	4.7	30.0	.0	.0	.0
Oct	75.0	51.4	63.2	96	1997	7	69.3	1985	22	1962	27	57.0	1988	135	79	.0	.2	31.0	.0	.7	.0
Nov	67.7	43.2	55.5	87+	1974	4	64.7	1985	16	1950	26	48.8	1976	304	17	.0	.0	29.2	.0	6.0	.0
Dec	59.3	35.9	47.6	83	1971	17	56.7	1971	0	1989	25	36.2	1989	547	8	.0	.0	25.5	.2	12.7	@
Ann	74.0	51.3	62.7	104	Aug 1999	2	83.4	Jul 1993	0+	Dec 1989	25	35.1	Jan 1977	2606	1791	.9	49.1	342.0	1.2	54.0	.0

+ 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: 1949-2001

(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	4.81	5.24	3.03	1982	4	8.33	1991	1.21	1981
Feb	3.86	3.30	4.83	1998	17	11.24	1998	1.14	2000
Mar	4.34	3.92	4.57	2001	21	9.18	1983	1.97	1982
Apr	3.09	3.22	3.26	1961	10	7.45	1973	.15	1995
May	4.66	4.01	5.36	1995	31	12.61	1998	1.14	1993
Jun	5.13	4.76	6.51	1966	11	11.84	1976	.34	1990
Jul	7.97	7.65	5.28	1973	6	17.25	1991	2.39	1977
Aug	7.35	5.70	14.40	1998	27	17.97	1981	.93+	1997
Sep	6.93	5.88	14.04	1999	16	24.95	1999	.42	1981
Oct	3.11	2.76	5.72	1994	14	8.90	1995	.42	2000
Nov	3.19	2.53	5.05	1969	2	7.54	1972	.73	1973
Dec	4.00	3.88	3.45	1978	25	8.04	1989	.29	1988
Ann	58.44	57.42	14.40	Aug 1998	27	24.95	Sep 1999	.15	Apr 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.0	8.2	3.6	1.2
Feb	9.0	6.2	2.6	1.1
Mar	9.3	7.0	3.0	1.4
Apr	7.4	5.2	2.0	.8
May	9.7	6.7	2.9	1.3
Jun	9.5	6.9	3.3	1.6
Jul	11.7	9.3	4.8	2.5
Aug	12.6	9.3	4.3	2.2
Sep	9.8	7.3	3.9	2.2
Oct	7.0	4.7	1.8	.9
Nov	7.8	5.1	2.0	.8
Dec	9.1	6.2	2.7	1.2
Ann	113.9	82.1	36.9	17.2

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	1.94	2.39	3.01	3.53	4.02	4.51	5.04	5.66	6.44	7.63	8.72
Feb	.97	1.34	1.90	2.40	2.89	3.41	3.98	4.67	5.57	6.99	8.31
Mar	2.10	2.47	2.98	3.39	3.77	4.15	4.55	5.02	5.59	6.46	7.24
Apr	.58	.85	1.30	1.72	2.15	2.61	3.13	3.76	4.60	5.94	7.22
May	1.26	1.70	2.37	2.96	3.54	4.15	4.82	5.62	6.66	8.28	9.81
Jun	1.19	1.67	2.42	3.09	3.76	4.47	5.27	6.21	7.46	9.43	11.29
Jul	3.41	4.13	5.13	5.96	6.73	7.51	8.35	9.32	10.54	12.39	14.07
Aug	1.60	2.28	3.36	4.33	5.31	6.35	7.52	8.92	10.77	13.72	16.50
Sep	.81	1.35	2.32	3.28	4.31	5.46	6.80	8.47	10.73	14.45	18.07
Oct	.47	.73	1.18	1.61	2.05	2.54	3.11	3.80	4.72	6.23	7.68
Nov	.83	1.13	1.60	2.01	2.41	2.83	3.30	3.86	4.58	5.73	6.80
Dec	.94	1.31	1.90	2.42	2.94	3.49	4.11	4.84	5.81	7.34	8.77
Ann	44.33	47.13	50.68	53.35	55.70	57.96	60.28	62.83	65.91	70.34	74.14

\+ 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: 1949-2001
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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	.2	.0	#	0	3.5	1988	16	3.5	1988	5	1988	16	#+	1988	.3	.1	.1	.0	.0	@	.0	.0	.0
Feb	.7	.0	#	0	8.5	1973	10	12.5	1973	13	1973	11	2	1973	.2	.1	.1	@	.0	.1	.1	.0	.0
Mar	.7	.0	#	0	11.0	1980	3	12.0	1980	11	1980	3	1	1980	.1	.1	.1	.1	@	.2	.2	.1	.1
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.1	.0	0	0	1.0	1973	17	1.0+	1993	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Ann	1.7	.0	N/A	N/A	11.0	Mar 1980	3	12.5	Feb 1973	13	Feb 1973	11	2	Feb 1973	.7	.4	.3	.1	@	.3	.3	.1	.1

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	4/28	4/22	4/19	4/15	4/12	4/09	4/06	4/02	3/28
32	4/19	4/13	4/09	4/05	4/02	3/29	3/26	3/22	3/16
28	4/04	3/29	3/25	3/21	3/17	3/14	3/10	3/06	2/27
24	3/16	3/09	3/04	2/28	2/24	2/20	2/16	2/11	2/04
20	3/05	2/24	2/18	2/13	2/08	2/03	1/29	1/22	1/12
16	2/23	2/14	2/07	1/31	1/24	1/16	1/01	0/00	0/00

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	10/12	10/16	10/19	10/22	10/24	10/26	10/29	11/01	11/05
32	10/18	10/24	10/29	11/02	11/05	11/09	11/13	11/17	11/23
28	11/03	11/08	11/12	11/15	11/18	11/22	11/25	11/29	12/04
24	11/12	11/18	11/23	11/27	12/01	12/05	12/09	12/14	12/21
20	11/30	12/09	12/16	12/22	12/28	1/03	1/09	1/17	1/28
16	12/14	12/25	1/03	1/10	1/18	1/28	2/14	0/00	0/00

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	213	206	202	198	194	190	186	182	175
32	242	233	227	222	217	212	206	200	191
28	269	261	255	250	245	241	236	230	222
24	308	298	291	285	280	274	268	261	251
20	>365	354	339	330	321	314	306	297	285
16	>365	>365	>365	>365	>365	348	334	321	306

***** 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	631	495	340	131	19	0	0	0	4	135	304	547	2606
60	487	364	209	51	2	0	0	0	0	64	188	405	1770
57	404	289	146	24	0	0	0	0	0	36	133	327	1359
55	352	242	112	12	0	0	0	0	0	23	102	280	1123
50	240	147	47	2	0	0	0	0	0	6	44	182	668
32	23	4	0	0	0	0	0	0	0	0	0	12	39

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	419	433	692	892	1163	1327	1491	1442	1247	967	704	496	11273
55	35	27	90	215	450	637	778	729	557	277	116	50	3961
57	25	17	63	166	388	577	716	667	497	228	87	36	3467
60	15	9	32	103	297	487	623	574	408	163	51	21	2783
65	0	0	9	33	159	338	468	419	261	79	17	8	1791
70	0	0	0	6	62	197	313	264	131	28	4	0	1005

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	218	264	462	661	927	1103	1255	1203	1015	728	476	285	218	482	944	1605	2532	3635	4890	6093	7108	7836	8312	8597
45	124	165	323	511	772	953	1100	1048	865	574	339	177	124	289	612	1123	1895	2848	3948	4996	5861	6435	6774	6951
50	66	90	207	368	617	803	945	893	715	425	222	102	66	156	363	731	1348	2151	3096	3989	4704	5129	5351	5453
55	28	44	110	240	462	653	790	738	565	286	130	50	28	72	182	422	884	1537	2327	3065	3630	3916	4046	4096
60	8	13	52	135	312	503	635	583	416	162	61	19	8	21	73	208	520	1023	1658	2241	2657	2819	2880	2899
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	146	175	292	423	612	762	873	844	701	467	306	181	146	321	613	1036	1648	2410	3283	4127	4828	5295	5601	5782

(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