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: GASTONIA, NC **COOP ID: 313356**

Climate Division: NC 5 **NWS Call Sign:** **Elevation: 700 Feet** **Lat: 35˚16N** **Lon: 81˚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	50.2	28.6	39.4	79	1975	31	49.7	1974	-5	1985	21	29.6	1977	793	0	.0	.0	17.5	.8	17.5	@
Feb	55.0	31.2	43.1	80+	1996	26	51.6	1990	4+	1958	18	34.7	1978	613	0	.0	.0	19.6	.4	14.6	.0
Mar	63.1	38.5	50.8	88+	1948	23	57.2	1994	-1	1980	3	45.6	1996	443	4	.0	.0	28.6	.1	7.5	@
Apr	71.6	46.7	59.2	92+	1970	23	63.7	1991	25+	1982	7	54.0	1983	194	18	.0	.3	29.8	.0	1.3	.0
May	79.0	56.2	67.6	99	1941	22	74.0	1991	31	1966	11	63.1	1989	59	139	.0	1.7	31.0	.0	.1	.0
Jun	85.4	64.6	75.0	107	1954	27	78.9	1998	40	1966	2	70.8	1972	3	303	.1	8.3	30.0	.0	.0	.0
Jul	89.3	68.9	79.1	106+	1952	29	83.6	1993	54+	1988	2	75.6	1975	0	436	.6	16.5	31.0	.0	.0	.0
Aug	87.8	67.7	77.8	104	1983	21	81.2	1999	49+	1986	30	74.5	1976	0	395	.6	12.7	31.0	.0	.0	.0
Sep	81.9	61.2	71.6	101	1954	6	76.5	1998	34	1967	30	68.6	1974	13	210	.0	4.4	30.0	.0	.0	.0
Oct	72.2	48.2	60.2	95	1954	5	66.6	1984	25	1962	27	53.7	1987	194	44	.0	.2	31.0	.0	1.0	.0
Nov	62.5	38.8	50.7	85+	1974	3	57.8	1985	11	1970	25	43.9	1976	434	2	.0	.0	27.7	.0	8.1	.0
Dec	53.3	32.0	42.7	80+	1984	18	50.0	1984	3	1983	25	35.9	1989	693	0	.0	.0	20.6	.3	16.0	.0
Ann	70.9	48.6	59.8	107	Jun 1954	27	83.6	Jul 1993	-5	Jan 1985	21	29.6	Jan 1977	3439	1551	1.3	44.1	327.8	1.6	66.1	.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: 1890-2001

(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	4.21	4.31	3.13	1936	19	7.99	1978	.76	1981
Feb	3.75	3.94	3.01	1955	6	6.49	1984	.87	1978
Mar	4.26	4.00	4.09	1952	3	10.12	1993	.41	1999
Apr	2.89	2.88	3.35	1936	6	5.88	1979	.35	1976
May	3.64	3.79	4.60	1975	30	12.65	1975	.31	1987
Jun	3.68	3.79	2.88	1941	11	8.01	1992	.01	1993
Jul	3.53	3.21	3.90	1938	23	7.74	1971	.37	1983
Aug	4.09	3.77	5.77	1985	17	11.71	1991	.73	1997
Sep	4.26	3.61	4.06	1942	7	9.42	1989	.20	1985
Oct	3.76	3.43	4.65	1949	7	11.34	1990	.00+	2000
Nov	3.16	3.08	3.93	1948	28	7.74	1985	.66	1991
Dec	3.57	3.35	4.27	1958	28	8.98	1983	1.27	2000
Ann	44.80	45.18	5.77	Aug 1985	17	12.65	May 1975	.00+	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.7	7.0	3.3	1.0
Feb	9.3	6.4	2.9	1.0
Mar	10.3	7.3	3.2	1.2
Apr	9.0	5.5	2.3	.7
May	10.3	6.2	2.6	.9
Jun	10.0	6.5	2.4	1.1
Jul	10.9	6.9	2.3	.9
Aug	9.5	6.1	2.9	1.3
Sep	8.1	5.5	2.8	1.4
Oct	7.5	4.7	2.3	1.5
Nov	9.9	5.8	2.3	.7
Dec	10.6	6.6	2.4	.9
Ann	117.1	74.5	31.7	12.6

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	1.48	1.88	2.46	2.94	3.41	3.88	4.40	5.00	5.78	6.97	8.07
Feb	1.25	1.60	2.12	2.57	2.99	3.43	3.91	4.47	5.19	6.30	7.33
Mar	.95	1.34	1.97	2.53	3.09	3.69	4.36	5.16	6.22	7.90	9.49
Apr	.65	.91	1.34	1.72	2.10	2.51	2.96	3.51	4.22	5.37	6.44
May	.57	.88	1.41	1.91	2.43	3.00	3.65	4.44	5.51	7.24	8.90
Jun	.40	.68	1.19	1.70	2.25	2.87	3.60	4.50	5.73	7.76	9.74
Jul	.84	1.17	1.68	2.14	2.60	3.08	3.63	4.27	5.12	6.46	7.72
Aug	.96	1.34	1.94	2.48	3.01	3.57	4.21	4.96	5.95	7.51	8.99
Sep	.72	1.09	1.71	2.29	2.90	3.55	4.29	5.20	6.41	8.37	10.25
Oct	.00	.79	1.56	2.16	2.72	3.31	3.96	4.70	5.70	7.28	8.76
Nov	.74	1.03	1.50	1.91	2.32	2.76	3.25	3.83	4.60	5.82	6.96
Dec	1.06	1.40	1.91	2.35	2.78	3.22	3.71	4.29	5.04	6.20	7.29
Ann	31.82	34.34	37.56	40.00	42.17	44.27	46.44	48.84	51.75	55.96	59.61

\+ 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: 1890-2001
(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	-99.9	-99.9	0	0
Feb	.8	.0	#	0
Mar	.0	.0	0	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	0
Dec	#	.0	#	0
Ann	-9.9	-9.9	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	#	1977	9	#	1977	0	0	0	0	0
Feb	4.3	1989	23	5.8	1989	4	1989	23	#	1989
Mar	.0	0	0	.0	0	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Dec	#	1996	19	#+	1996	#	1996	19	#	1996
Ann	4.3	Feb 1989	23	5.8	Feb 1989	4	Feb 1989	23	#+	Dec 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	-9.9	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9	-9.9
May	-9.9	-9.9	-9.9	-9.9	-9.9
Jun	-9.9	-9.9	-9.9	-9.9	-9.9
Jul	-9.9	-9.9	-9.9	-9.9	-9.9
Aug	-9.9	-9.9	-9.9	-9.9	-9.9
Sep	-9.9	-9.9	-9.9	-9.9	-9.9
Oct	-9.9	-9.9	-9.9	-9.9	-9.9
Nov	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9	-9.9

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.0	.0	.0	.0
Feb	.1	@	.0	.0
Mar	.0	.0	.0	.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	.0
Dec	.0	.0	.0	.0
Ann	.1	@	.0	.0

+ 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

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	5/06	5/01	4/27	4/23	4/20	4/17	4/14	4/10	4/04
32	4/26	4/19	4/13	4/09	4/05	3/31	3/27	3/22	3/14
28	4/07	3/31	3/26	3/21	3/17	3/13	3/09	3/04	2/25
24	3/24	3/17	3/12	3/08	3/04	2/27	2/23	2/18	2/11
20	3/10	3/03	2/25	2/20	2/16	2/11	2/06	1/31	1/22
16	3/03	2/22	2/16	2/11	2/06	1/31	1/25	1/17	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	10/08	10/13	10/17	10/20	10/22	10/25	10/28	11/01	11/06
32	10/17	10/22	10/27	10/30	11/02	11/06	11/09	11/13	11/19
28	10/28	11/04	11/09	11/13	11/16	11/20	11/24	11/29	12/05
24	11/10	11/16	11/21	11/25	11/28	12/02	12/06	12/10	12/17
20	11/26	12/05	12/11	12/17	12/22	12/27	1/02	1/08	1/19
16	12/08	12/20	12/28	1/04	1/12	1/19	1/27	2/08	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	205	198	193	188	184	180	176	171	164
32	240	230	223	217	211	205	199	192	182
28	275	264	256	250	243	237	231	223	212
24	294	286	279	274	269	264	259	252	244
20	>365	329	319	312	305	299	293	286	276
16	>365	>365	>365	350	337	327	318	308	295

***** 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	793	613	443	194	59	3	0	0	13	194	434	693	3439
60	642	474	302	92	17	0	0	0	2	102	295	538	2464
57	556	396	227	50	7	0	0	0	0	63	221	453	1973
55	498	344	184	31	3	0	0	0	0	43	177	395	1675
50	363	226	98	6	0	0	0	0	0	13	91	264	1061
32	58	14	1	0	0	0	0	0	0	0	0	20	93

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	288	326	584	814	1103	1290	1459	1418	1187	874	559	350	10252
55	15	11	54	155	393	600	746	705	497	204	46	12	3438
57	11	7	36	115	335	540	684	643	437	162	29	8	3007
60	4	1	18	66	252	450	591	550	349	107	14	1	2403
65	0	0	4	18	139	303	436	395	210	44	2	0	1551
70	0	0	0	3	61	169	284	244	98	13	0	0	872

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	137	199	404	612	882	1072	1222	1190	967	662	363	182	137	336	740	1352	2234	3306	4528	5718	6685	7347	7710	7892
45	64	113	268	464	727	922	1067	1035	817	509	235	98	64	177	445	909	1636	2558	3625	4660	5477	5986	6221	6319
50	29	56	159	323	572	772	912	880	667	360	131	46	29	85	244	567	1139	1911	2823	3703	4370	4730	4861	4907
55	4	19	78	197	420	622	757	725	517	223	61	18	4	23	101	298	718	1340	2097	2822	3339	3562	3623	3641
60	0	4	33	100	277	472	602	570	371	115	22	1	0	4	37	137	414	886	1488	2058	2429	2544	2566	2567
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	80	132	253	391	583	737	844	824	655	416	223	112	80	212	465	856	1439	2176	3020	3844	4499	4915	5138	5250

(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