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: CAPE HATTERAS NWS BLDG, NC **COOP ID: 311458**

Climate Division: NC 8 **NWS Call Sign: HSE** **Elevation: 10 Feet** **Lat: 35˚14N** **Lon: 75˚37W**

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	53.6	38.6	46.1	75+	1985	1	55.5	1974	6	1985	21	35.8	1977	587	0	.0	.0	19.9	.8	9.0	.0
Feb	54.6	39.0	46.8	76	1971	22	54.4	1990	14	1958	18	35.7	1978	518	1	.0	.0	19.0	.4	7.4	.0
Mar	60.2	44.5	52.4	81	1990	13	57.3	1976	19	1967	2	45.4	1981	400	5	.0	.0	26.9	.0	2.7	.0
Apr	67.7	51.8	59.8	89+	1990	27	65.7	1994	26+	1972	10	54.7	1971	187	29	.0	.0	29.7	.0	.3	.0
May	74.9	60.2	67.6	91+	1991	29	73.4	1991	39+	1971	2	64.3	1992	44	122	.0	.1	31.0	.0	.0	.0
Jun	81.5	68.1	74.8	95	1978	28	78.3	1981	44	1966	3	70.2	1997	3	297	.0	.9	30.0	.0	.0	.0
Jul	85.4	72.9	79.2	96	1992	10	81.9	1993	54	1972	9	77.3	1974	0	440	.0	2.8	31.0	.0	.0	.0
Aug	84.8	72.3	78.6	94+	1968	23	80.8	1988	56	1979	18	75.9	1976	0	422	.0	1.8	31.0	.0	.0	.0
Sep	81.1	68.5	74.8	92	1978	9	77.3	1977	45	1970	30	71.5	1981	2	297	.0	.5	30.0	.0	.0	.0
Oct	72.6	58.8	65.7	89+	1986	5	71.4	1985	32	1979	28	61.5	1988	72	96	.0	.0	31.0	.0	@	.0
Nov	64.8	50.3	57.6	81+	1986	8	66.6	1985	22	1967	17	49.9	1976	244	24	.0	.0	28.3	.0	.9	.0
Dec	57.3	42.6	50.0	78+	1991	3	56.3	1994	12	1983	25	41.3	1989	464	4	.0	.0	24.3	.1	5.1	.0
Ann	69.9	55.6	62.8	96	Jul 1992	10	81.9	Jul 1993	6	Jan 1985	21	35.7	Feb 1978	2521	1737	.0	6.1	332.1	1.3	25.4	.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: 1957-2001

(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	5.84	5.37	5.95	1991	16	12.45	1991	1.75	1981
Feb	3.94	3.90	2.87	1970	3	8.45	1983	1.06	1991
Mar	4.95	4.61	4.57	1989	24	11.20	1989	1.22	1986
Apr	3.29	3.43	5.11	1963	7	9.57	1989	.44	1995
May	3.92	4.11	3.28	1958	26	11.44	1972	.35	1987
Jun	3.82	3.79	6.13	1962	29	9.14	1995	.38	1978
Jul	4.95	4.64	5.29	1967	7	10.85	1998	1.08	1995
Aug	6.56	5.98	8.69	1999	30	16.10	1986	.99	1983
Sep	5.68	4.81	5.46	1989	19	20.00	1989	.08	1986
Oct	5.31	4.04	8.30	1994	14	15.05	1985	.53	1984
Nov	4.93	4.56	7.69	1985	4	16.20	1985	.85	1998
Dec	4.56	4.86	3.59	1979	6	8.52	1973	.64	1985
Ann	57.75	56.99	8.69	Aug 1999	30	20.00	Sep 1989	.08	Sep 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.6	8.4	3.7	1.7
Feb	10.4	6.5	2.8	1.3
Mar	10.8	7.5	3.3	1.4
Apr	8.3	5.1	2.3	.9
May	9.5	6.4	2.8	1.0
Jun	9.4	6.7	2.7	.8
Jul	11.5	8.2	3.1	1.3
Aug	10.8	7.6	3.5	2.1
Sep	9.6	6.5	3.1	1.9
Oct	8.7	5.7	2.6	1.6
Nov	9.3	6.5	3.1	1.4
Dec	10.6	6.5	3.1	1.3
Ann	120.5	81.6	36.1	16.7

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	2.17	2.71	3.50	4.15	4.78	5.42	6.11	6.91	7.94	9.52	10.96
Feb	1.29	1.66	2.21	2.68	3.13	3.60	4.11	4.70	5.47	6.66	7.76
Mar	1.42	1.89	2.60	3.21	3.81	4.44	5.13	5.95	7.00	8.66	10.20
Apr	.62	.92	1.40	1.84	2.30	2.78	3.34	4.00	4.89	6.31	7.66
May	.59	.92	1.48	2.02	2.59	3.20	3.91	4.78	5.95	7.85	9.68
Jun	1.10	1.47	2.01	2.49	2.95	3.43	3.96	4.59	5.41	6.68	7.87
Jul	1.48	1.95	2.66	3.26	3.85	4.47	5.14	5.94	6.97	8.58	10.07
Aug	.99	1.54	2.49	3.39	4.34	5.37	6.56	8.01	9.96	13.14	16.20
Sep	.61	1.04	1.83	2.62	3.47	4.42	5.54	6.93	8.83	11.97	15.03
Oct	.82	1.27	2.04	2.77	3.53	4.36	5.31	6.48	8.04	10.58	13.02
Nov	1.17	1.63	2.35	3.00	3.63	4.31	5.07	5.97	7.15	9.02	10.78
Dec	1.33	1.76	2.41	2.98	3.53	4.10	4.74	5.48	6.45	7.96	9.37
Ann	43.18	46.05	49.70	52.45	54.88	57.21	59.62	62.26	65.45	70.05	74.01

\+ 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: 1957-2001
(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	.4	.0	#	0
Feb	.4	.0	#	0
Mar	.3	.0	#	0
Apr	#	.0	0	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	.0	.0	0	0
Nov	#	.0	0	0
Dec	.8	.0	#	0
Ann	1.9	.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	3.0	1980	31	3.0	1980	3	1981	31	#	1981
Feb	4.4	1978	22	4.4	1978	3+	1980	1	#	1980
Mar	6.3	1980	2	7.3	1980	7	1980	3	#	1980
Apr	#	1989	11	#	1989	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	#	1995
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	#	1987	11	#	1987	0	0	0	0	0
Dec	8.2	1989	23	13.5	1989	5	1989	25	1	1989
Ann	8.2	Dec 1989	23	13.5	Dec 1989	7	Mar 1980	3	1	Dec 1989

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.4	.1	@	.0	.0
Feb	.4	.2	@	.0	.0
Mar	.1	.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	.0
Dec	.2	.1	.1	.1	.0
Ann	1.1	.5	.1	.1	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.1	@	.0	.0
Feb	.3	.1	.0	.0
Mar	.1	.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	.0
Dec	.3	.2	@	.0
Ann	.8	.4	.0	.0

+ 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	4/21	4/15	4/10	4/06	4/02	3/30	3/26	3/21	3/14
32	4/07	3/30	3/25	3/20	3/16	3/12	3/07	3/02	2/23
28	3/31	3/20	3/12	3/05	2/27	2/20	2/14	2/06	1/25
24	3/01	2/21	2/14	2/09	2/03	1/27	1/17	0/00	0/00
20	2/09	1/28	1/18	1/05	0/00	0/00	0/00	0/00	0/00
16	1/23	1/10	0/00	0/00	0/00	0/00	0/00	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	11/03	11/09	11/13	11/17	11/21	11/25	11/29	12/03	12/10
32	11/11	11/20	11/26	12/02	12/07	12/12	12/17	12/23	1/01
28	11/19	12/01	12/09	12/16	12/23	12/30	1/06	1/14	1/25
24	12/19	12/29	1/05	1/12	1/19	1/28	2/12	0/00	0/00
20	1/01	1/12	1/22	2/04	0/00	0/00	0/00	0/00	0/00
16	1/11	1/23	0/00	0/00	0/00	0/00	0/00	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	261	251	244	238	232	226	220	213	202
32	299	287	279	271	265	258	251	242	230
28	>365	328	314	303	294	285	275	265	250
24	>365	>365	>365	>365	359	340	329	318	306
20	>365	>365	>365	>365	>365	>365	>365	>365	342
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

***** 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	587	518	400	187	44	3	0	0	2	72	244	464	2521
60	452	379	258	91	5	0	0	0	0	37	156	335	1713
57	372	303	187	53	1	0	0	0	0	19	108	261	1304
55	322	255	147	34	0	0	0	0	0	12	81	218	1069
50	218	157	69	8	0	0	0	0	0	3	33	130	618
32	19	6	0	0	0	0	0	0	0	0	0	4	29

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	445	417	632	832	1103	1285	1461	1444	1285	1044	766	559	11273
55	25	25	68	181	391	595	748	731	595	338	146	51	3894
57	15	16	47	139	331	535	686	669	535	281	112	34	3400
60	7	8	24	86	245	445	593	576	445	202	69	17	2717
65	0	1	5	29	122	297	440	422	297	96	24	4	1737
70	0	0	0	4	40	161	284	266	158	29	3	0	945

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	245	240	397	602	865	1052	1222	1203	1053	803	537	335	245	485	882	1484	2349	3401	4623	5826	6879	7682	8219	8554
45	142	138	263	452	710	902	1067	1048	903	648	391	213	142	280	543	995	1705	2607	3674	4722	5625	6273	6664	6877
50	72	71	147	314	555	752	912	893	753	494	259	116	72	143	290	604	1159	1911	2823	3716	4469	4963	5222	5338
55	30	26	74	188	400	602	757	738	603	341	153	56	30	56	130	318	718	1320	2077	2815	3418	3759	3912	3968
60	4	7	29	91	252	452	602	583	453	208	74	19	4	11	40	131	383	835	1437	2020	2473	2681	2755	2774
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	116	120	199	341	557	747	903	883	750	504	293	161	116	236	435	776	1333	2080	2983	3866	4616	5120	5413	5574

(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