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: MORGANTON, NC **COOP ID: 315838**

Climate Division: NC 3 **NWS Call Sign:** **Elevation: 1,160 Feet** **Lat: 35˚44N** **Lon: 81˚40W**

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	48.8	24.9	36.9	81+	1952	2	48.8	1974	-9	1985	21	27.0	1977	874	0	.0	.0	16.7	1.0	21.8	.2
Feb	53.5	27.6	40.6	81+	1982	24	47.3	1976	-1	1996	5	34.0	1978	686	0	.0	.0	19.2	.5	18.3	@
Mar	61.7	34.4	48.1	91	1945	17	53.7	1997	0+	1980	3	42.6	1993	525	0	.0	.0	28.3	.1	11.1	@
Apr	70.4	42.6	56.5	93+	1986	27	60.3	1977	20	1992	3	51.9	1983	260	5	.0	.4	29.8	.0	3.9	.0
May	78.1	51.9	65.0	98	1941	29	69.2	1975	29+	1963	2	60.0	1992	82	83	.0	1.4	31.0	.0	.1	.0
Jun	84.7	60.1	72.4	105	1936	30	76.7	1986	37	1966	2	68.0	1992	8	231	.0	8.3	30.0	.0	.0	.0
Jul	88.7	64.6	76.7	106	1952	29	81.1	1993	46+	1988	2	73.7	1979	0	360	.6	16.2	31.0	.0	.0	.0
Aug	86.8	63.4	75.1	104+	1988	18	78.9	1988	42+	1986	30	70.5	1992	1	315	.3	11.2	31.0	.0	.0	.0
Sep	80.6	56.8	68.7	100	1954	6	72.5	1973	33+	1947	28	65.9	1994	32	142	.0	3.3	30.0	.0	.0	.0
Oct	71.0	43.6	57.3	96	1954	5	63.4	1984	19	1962	27	52.2	1987	258	18	.0	@	30.9	.0	3.5	.0
Nov	60.9	34.7	47.8	86	1974	2	54.1	1985	9	1970	25	43.1	1976	517	0	.0	.0	27.2	.0	12.2	.0
Dec	51.4	27.3	39.4	78+	1998	7	46.9	1971	-3	1962	13	31.1	1989	795	0	.0	.0	19.7	.3	20.3	@
Ann	69.7	44.3	57.0	106	Jul 1952	29	81.1	Jul 1993	-9	Jan 1985	21	27.0	Jan 1977	4038	1154	.9	40.8	324.8	1.9	91.2	.2

\+ 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: 1933-2001

(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	4.43	4.21	5.06	1995	15	8.85	1995	.32	1981
Feb	4.14	4.33	3.92	1984	14	8.37	1990	.22	1978
Mar	4.85	4.45	3.94	1975	14	12.53	1975	1.13	1988
Apr	3.79	3.89	3.18	1957	5	8.33	1983	.23	1986
May	4.49	4.57	2.79	1973	28	10.96	1975	.78	1999
Jun	4.74	4.57	7.39	1947	14	10.86	1987	.62	1986
Jul	3.91	3.46	5.45	1934	18	7.97	1981	.50	1983
Aug	3.74	3.28	6.10	1940	14	9.39	1989	.82	1972
Sep	4.18	3.91	5.23	1945	17	11.52	1979	.08	1985
Oct	3.84	3.10	6.07	1990	13	12.84	1990	.00	2000
Nov	3.79	3.50	4.20	1964	25	10.52	1985	1.09	1981
Dec	3.72	3.57	4.35	1950	7	8.36	1983	.77	1980
Ann	49.62	50.02	7.39	Jun 1947	14	12.84	Oct 1990	.00	Oct 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	7.2	3.0	1.1
Feb	9.1	6.4	3.0	1.1
Mar	11.3	7.6	3.2	1.5
Apr	9.5	6.3	2.5	1.1
May	11.8	7.4	2.9	1.4
Jun	10.4	6.9	3.2	1.4
Jul	11.0	7.2	2.3	1.0
Aug	9.9	6.6	2.4	.9
Sep	9.3	6.3	3.0	1.3
Oct	7.4	4.9	2.5	1.2
Nov	9.1	6.1	2.6	1.2
Dec	10.1	6.5	2.5	1.1
Ann	119.0	79.4	33.1	14.3

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	1.34	1.76	2.39	2.93	3.46	4.01	4.61	5.31	6.23	7.66	8.98
Feb	.93	1.32	1.92	2.47	3.01	3.59	4.24	5.02	6.05	7.68	9.21
Mar	1.52	1.98	2.67	3.25	3.82	4.40	5.05	5.80	6.78	8.30	9.70
Apr	.73	1.07	1.63	2.14	2.66	3.22	3.85	4.61	5.62	7.25	8.79
May	1.44	1.86	2.49	3.03	3.55	4.08	4.67	5.36	6.25	7.63	8.90
Jun	1.26	1.70	2.39	2.99	3.58	4.21	4.90	5.71	6.78	8.46	10.03
Jul	.84	1.20	1.77	2.29	2.82	3.37	4.00	4.76	5.75	7.34	8.84
Aug	.98	1.34	1.88	2.36	2.83	3.32	3.87	4.51	5.36	6.69	7.94
Sep	.53	.86	1.46	2.04	2.66	3.34	4.13	5.11	6.44	8.61	10.72
Oct	.36	.79	1.43	1.99	2.56	3.18	3.89	4.75	5.89	7.74	9.51
Nov	1.26	1.62	2.14	2.59	3.02	3.47	3.95	4.52	5.25	6.38	7.43
Dec	1.05	1.41	1.94	2.41	2.86	3.34	3.86	4.48	5.28	6.54	7.72
Ann	36.67	39.21	42.45	44.90	47.06	49.15	51.29	53.66	56.51	60.64	64.19

\+ 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: 1933-2001
(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	1.7	.0	1	#
Feb	1.9	.2	#	#
Mar	1.2	.0	#	0
Apr	.1	.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	.7	.0	#	0
Ann	5.6	.2	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	10.0	1987	22	10.0	1987	12	1987	23	4	1988
Feb	7.0	1979	7	15.0	1979	8	1979	19	2	1979
Mar	10.0	1981	23	10.0	1981	11	1993	14	1+	1993
Apr	2.0	1987	4	2.0	1987	1	1983	19	#+	1987
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	.8	1971	24	1.1	1971	1	1971	25	#	1971
Dec	7.0	1971	4	8.0	1971	8+	1993	21	1	1993
Ann	10.0+	Jan 1987	22	15.0	Feb 1979	12	Jan 1987	23	4	Jan 1988

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.8	.6	.2	.2	@
Feb	.7	.5	.2	.1	.0
Mar	.4	.3	.2	.1	@
Apr	@	@	.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	.1	.0	.0	.0	.0
Dec	.3	.2	.1	@	.0
Ann	2.3	1.6	.7	.4	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.2	.8	.4	.1
Feb	1.2	.5	.2	.0
Mar	.5	.2	.1	@
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	.1	.0	.0	.0
Dec	.3	.1	@	.0
Ann	4.3	1.6	.7	.1

+ 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	5/16	5/11	5/08	5/05	5/02	4/29	4/26	4/23	4/18
32	5/04	4/29	4/25	4/21	4/18	4/15	4/12	4/07	4/02
28	4/21	4/15	4/11	4/07	4/03	3/31	3/27	3/23	3/17
24	4/09	4/01	3/27	3/22	3/18	3/13	3/09	3/03	2/24
20	3/25	3/18	3/12	3/08	3/03	2/27	2/22	2/16	2/09
16	3/14	3/05	2/27	2/22	2/17	2/11	2/06	1/31	1/22

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	9/24	9/28	10/02	10/04	10/07	10/10	10/13	10/16	10/21
32	10/04	10/08	10/11	10/14	10/16	10/19	10/21	10/24	10/28
28	10/15	10/20	10/24	10/27	10/30	11/02	11/05	11/09	11/14
24	10/30	11/05	11/09	11/12	11/15	11/18	11/21	11/25	11/30
20	11/06	11/12	11/17	11/21	11/24	11/28	12/02	12/07	12/13
16	11/17	11/27	12/04	12/10	12/16	12/21	12/27	1/03	1/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	174	168	164	161	157	154	150	146	140
32	201	194	189	184	180	176	171	166	159
28	233	225	219	214	209	204	199	193	185
24	269	260	253	247	242	236	230	224	214
20	298	287	279	272	266	259	252	244	233
16	341	323	313	306	299	292	285	277	266

***** 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	874	686	525	260	82	8	0	1	32	258	517	795	4038
60	719	546	376	137	25	1	0	0	7	144	371	640	2966
57	630	462	292	81	9	0	0	0	2	92	289	548	2405
55	572	407	240	54	4	0	0	0	1	66	237	492	2073
50	429	276	133	13	0	0	0	0	0	22	131	351	1355
32	81	15	1	0	0	0	0	0	0	0	1	43	141

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	231	253	499	735	1023	1213	1383	1337	1100	784	474	272	9304
55	8	1	25	99	315	523	670	624	411	136	20	8	2840
57	4	0	15	66	258	463	608	562	352	101	12	1	2442
60	0	0	6	32	181	373	515	469	267	59	4	0	1906
65	0	0	0	5	83	231	360	315	142	18	0	0	1154
70	0	0	0	0	26	113	209	172	55	3	0	0	578

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	103	155	336	554	809	1002	1158	1114	888	585	297	136	103	258	594	1148	1957	2959	4117	5231	6119	6704	7001	7137
45	44	78	212	407	654	852	1003	959	738	432	177	66	44	122	334	741	1395	2247	3250	4209	4947	5379	5556	5622
50	16	32	114	268	500	702	848	804	588	286	92	29	16	48	162	430	930	1632	2480	3284	3872	4158	4250	4279
55	0	7	49	153	348	552	693	649	439	165	42	7	0	7	56	209	557	1109	1802	2451	2890	3055	3097	3104
60	0	0	16	71	213	402	538	495	298	77	10	0	0	0	16	87	300	702	1240	1735	2033	2110	2120	2120
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	74	123	236	366	533	671	779	760	592	385	203	99	74	197	433	799	1332	2003	2782	3542	4134	4519	4722	4821

(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