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: CHATTANOOGA AP, TN **COOP ID: 401656**

Climate Division: TN 1 **NWS Call Sign: CHA** **Elevation: 671 Feet** **Lat: 35˚02N** **Lon: 85˚12W**

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	29.9	39.4	78+	1949	10	49.3	1974	-10+	1966	31	28.5	1977	797	0	.0	.0	14.8	2.3	18.8	.1
Feb	54.1	32.6	43.4	79+	1930	25	51.5	1990	1+	1958	17	35.5	1978	618	0	.0	.0	18.0	1.0	14.6	.0
Mar	62.8	40.0	51.4	89	1929	24	57.1	1997	8	1960	5	45.2	1971	432	5	.0	.0	27.2	.1	6.9	.0
Apr	72.1	47.0	59.6	93	1942	30	64.7	1981	25	1992	3	54.3	1983	195	32	.0	.2	29.7	.0	1.4	.0
May	79.1	56.2	67.7	99	1941	29	73.1	1987	34	1971	4	63.5	1976	48	124	.0	1.3	31.0	.0	.0	.0
Jun	86.2	64.6	75.4	104	1952	28	78.4+	1998	41+	1956	3	68.4	1974	2	312	.1	9.0	30.0	.0	.0	.0
Jul	89.8	69.4	79.6	106	1952	28	85.2	1993	51+	1967	15	75.7	1974	0	450	1.1	17.1	31.0	.0	.0	.0
Aug	88.7	68.3	78.5	105	1947	4	82.5	1993	50	1946	31	73.5	1992	0	418	.4	14.0	31.0	.0	.0	.0
Sep	82.5	61.7	72.1	102+	1954	4	77.2	1998	36	1967	30	68.0	1984	16	229	.1	4.7	30.0	.0	.0	.0
Oct	72.3	48.5	60.4	94	1954	5	66.7	1984	22	1952	30	54.9	1987	180	35	.0	.1	30.8	.0	.6	.0
Nov	61.1	39.5	50.3	84	1961	2	58.8	1985	4	1950	25	42.7	1976	442	2	.0	.0	25.6	.0	8.6	.0
Dec	52.0	32.7	42.4	78	1951	7	49.4	1971	-2+	1962	13	35.0	1989	697	1	.0	.0	18.7	1.0	16.6	@
Ann	70.8	49.2	60.0	106	Jul 1952	28	85.2	Jul 1993	-10+	Jan 1966	31	28.5	Jan 1977	3427	1608	1.7	46.4	317.8	4.4	67.5	.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: 1928-2001

(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	5.40	5.29	3.69	1959	21	9.80	1999	.90	1986
Feb	4.85	4.58	3.35	1948	12	9.74	1990	.72	1978
Mar	6.19	5.12	6.19	1994	27	16.32	1980	1.42	1986
Apr	4.23	3.93	3.36	1983	5	9.10	1977	1.02	1976
May	4.28	4.31	3.41	1964	2	9.21	1979	1.41	1998
Jun	3.99	3.47	4.85	1949	15	9.19	1989	.63	1988
Jul	4.73	4.46	4.64	1979	20	11.93	1994	.80	1978
Aug	3.59	3.53	3.63	1941	5	7.54	1975	.45	1999
Sep	4.31	3.64	6.37	1977	7	14.18	1977	.51	1984
Oct	3.26	2.72	4.04	1932	16	7.13	1995	.22	1991
Nov	4.88	4.77	4.53	1948	28	9.57	1983	1.93	1971
Dec	4.81	4.67	4.85	1942	28	10.34	1990	.90	1980
Ann	54.52	52.99	6.37	Sep 1977	7	16.32	Mar 1980	.22	Oct 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.8	8.0	4.1	1.8
Feb	10.0	6.8	3.6	1.5
Mar	12.2	8.9	3.8	1.7
Apr	9.4	6.8	3.1	1.2
May	10.6	7.7	2.8	1.1
Jun	10.6	7.2	2.7	1.1
Jul	11.2	7.4	3.0	1.4
Aug	9.6	6.1	2.6	1.0
Sep	8.7	5.9	2.9	1.2
Oct	7.1	4.7	2.2	1.0
Nov	9.8	7.2	3.5	1.6
Dec	11.2	7.8	3.5	1.4
Ann	122.2	84.5	37.8	16.0

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	2.08	2.58	3.30	3.89	4.46	5.03	5.65	6.37	7.29	8.69	9.98
Feb	1.64	2.10	2.77	3.34	3.88	4.45	5.06	5.78	6.71	8.14	9.46
Mar	1.89	2.48	3.36	4.11	4.84	5.60	6.44	7.42	8.69	10.67	12.50
Apr	1.23	1.64	2.24	2.76	3.28	3.81	4.39	5.09	5.98	7.39	8.69
May	1.48	1.88	2.47	2.97	3.45	3.94	4.47	5.10	5.90	7.13	8.27
Jun	1.12	1.50	2.07	2.57	3.06	3.57	4.14	4.81	5.67	7.03	8.30
Jul	1.05	1.48	2.18	2.80	3.43	4.09	4.84	5.74	6.92	8.79	10.56
Aug	1.10	1.44	1.95	2.39	2.81	3.25	3.74	4.31	5.04	6.19	7.25
Sep	.58	.94	1.55	2.15	2.78	3.47	4.28	5.27	6.60	8.78	10.89
Oct	.46	.73	1.20	1.65	2.12	2.64	3.24	3.98	4.97	6.59	8.15
Nov	2.09	2.53	3.15	3.65	4.12	4.60	5.12	5.71	6.45	7.58	8.61
Dec	1.42	1.88	2.56	3.16	3.73	4.33	5.00	5.78	6.79	8.37	9.83
Ann	38.59	41.67	45.62	48.62	51.29	53.86	56.53	59.48	63.05	68.24	72.73

\+ 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: 1928-2001
(3) Derived from 1971-2000 serially complete daily data

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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	.6	#	0	10.2	1988	7	10.2	1988	8	1988	8	1	1988	1.4	.5	.2	.1	@	1.5	.3	.2	.0
Feb	1.3	.0	#	0	5.5	1982	27	8.7	1979	5	1979	19	1+	1980	1.1	.3	.1	.1	.0	.7	.2	@	.0
Mar	1.2	.0	#	0	18.5	1993	13	20.0	1993	19	1993	14	1	1993	.4	.2	.1	@	@	.3	.2	.2	.1
Apr	.2	.0	#	0	2.8	1987	3	2.8	1987	2	1987	3	#	1987	.1	.1	.0	.0	.0	@	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1994	.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	#	1993	31	#	1993	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.0	.0	0	0	.3	1989	16	.3	1989	#+	1976	29	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.1	#	#	0	1.6	1997	29	1.9	1997	2	1997	29	#	1997	.3	.0	.0	.0	.0	@	.0	.0	.0
Ann	4.8	.6	N/A	N/A	18.5	Mar 1993	13	20.0	Mar 1993	19	Mar 1993	14	1+	Mar 1993	3.3	1.1	.4	.2	@	2.5	.7	.4	.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	4/28	4/24	4/20	4/17	4/14	4/12	4/09	4/05	3/31
32	4/17	4/11	4/07	4/04	4/01	3/28	3/25	3/21	3/15
28	4/07	3/31	3/26	3/22	3/19	3/15	3/11	3/06	2/27
24	3/16	3/11	3/07	3/03	2/28	2/25	2/22	2/18	2/13
20	3/09	3/02	2/24	2/19	2/15	2/10	2/06	1/31	1/23
16	3/02	2/22	2/15	2/10	2/05	1/30	1/24	1/15	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	10/12	10/15	10/18	10/20	10/23	10/25	10/29	11/02
32	10/21	10/26	10/29	11/01	11/04	11/07	11/10	11/14	11/19
28	10/30	11/05	11/09	11/13	11/16	11/19	11/23	11/27	12/03
24	11/11	11/19	11/24	11/29	12/03	12/07	12/12	12/17	12/25
20	11/30	12/07	12/13	12/17	12/22	12/26	12/31	1/05	1/13
16	12/03	12/15	12/23	12/30	1/06	1/13	1/21	2/02	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	199	195	192	188	185	181	177	171
32	241	233	227	222	217	212	207	201	193
28	268	259	252	247	242	237	231	225	216
24	299	292	286	281	277	272	268	262	254
20	342	329	321	314	308	302	295	287	277
16	>365	>365	>365	338	328	319	312	304	293

***** 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	797	618	432	195	48	2	0	0	16	180	442	697	3427
60	649	468	286	96	21	0	0	0	3	100	310	550	2483
57	561	391	213	55	9	0	0	0	1	62	238	464	1994
55	505	339	171	35	4	0	0	0	0	43	196	407	1700
50	373	222	87	8	0	0	0	0	0	14	110	277	1091
32	69	15	0	0	0	0	0	0	0	0	1	26	111

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	271	336	603	826	1104	1302	1474	1442	1203	881	550	341	10333
55	7	14	64	181	393	612	761	729	513	198	51	13	3536
57	4	8	43	141	333	552	699	667	453	154	34	8	3096
60	2	3	22	91	249	462	606	574	366	98	16	4	2493
65	0	0	5	32	124	312	450	418	229	35	2	1	1608
70	0	0	1	5	45	176	297	265	114	7	0	0	910

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	113	179	373	595	866	1066	1236	1202	970	644	329	157	113	292	665	1260	2126	3192	4428	5630	6600	7244	7573	7730
45	57	98	244	447	711	916	1081	1047	820	489	210	82	57	155	399	846	1557	2473	3554	4601	5421	5910	6120	6202
50	22	48	142	306	556	766	926	892	670	337	117	38	22	70	212	518	1074	1840	2766	3658	4328	4665	4782	4820
55	2	15	68	191	402	616	771	737	520	207	54	13	2	17	85	276	678	1294	2065	2802	3322	3529	3583	3596
60	0	0	24	97	256	466	616	582	375	102	15	0	0	0	24	121	377	843	1459	2041	2416	2518	2533	2533
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	69	116	229	374	567	736	850	832	651	402	198	93	69	185	414	788	1355	2091	2941	3773	4424	4826	5024	5117

(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