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: SMITHVILLE 2 SE, TN **COOP ID: 408405**

Climate Division: TN 3 **NWS Call Sign:** **Elevation: 890 Feet** **Lat: 35˚58N** **Lon: 85˚48W**

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	44.8	23.8	34.3	74+	1985	1	42.6	1974	-24	1985	21	20.0	1977	952	0	.0	.0	12.1	4.5	23.4	.9
Feb	49.5	25.8	37.7	78+	1982	24	46.3	1990	-14+	1996	5	25.6	1978	766	0	.0	.0	14.9	2.9	20.2	.3
Mar	59.2	33.7	46.5	85+	1982	19	51.9	1997	0	1980	3	40.1	1971	576	0	.0	.0	24.7	.4	13.9	@
Apr	68.4	41.3	54.9	90	1995	11	60.3	1981	20	1992	3	49.7	1983	310	5	.0	@	28.7	.0	5.2	.0
May	76.5	50.9	63.7	91+	1975	26	69.7	1987	29	1986	3	59.4	1994	125	84	.0	.1	30.9	.0	.1	.0
Jun	83.9	60.0	72.0	100+	1988	24	74.9	1981	38+	1972	1	66.5	1974	8	216	.1	5.4	30.0	.0	.0	.0
Jul	87.2	64.3	75.8	104	1980	17	78.7	1993	49+	1972	6	72.9	1976	0	332	.2	12.3	31.0	.0	.0	.0
Aug	86.3	62.4	74.4	102	1983	22	78.7	1995	44+	1986	28	70.8	1976	1	292	.2	8.4	31.0	.0	.0	.0
Sep	80.4	55.4	67.9	99	1990	8	73.2	1998	29	1983	25	63.8	1976	48	134	.0	3.0	30.0	.0	.1	.0
Oct	70.5	42.2	56.4	89+	1971	1	63.6	1984	21	1976	29	49.0	1988	297	28	.0	.0	30.5	.0	4.6	.0
Nov	59.1	33.8	46.5	82+	2000	1	54.1	1985	9	1976	30	37.5	1976	558	1	.0	.0	23.6	.1	14.0	.0
Dec	49.1	27.1	38.1	76	1998	4	46.5	1984	-7+	1983	25	28.5	1989	835	0	.0	.0	16.6	2.6	21.3	.3
Ann	67.9	43.4	55.7	104	Jul 1980	17	78.7+	Aug 1995	-24	Jan 1985	21	20.0	Jan 1977	4476	1092	.5	29.2	304.0	10.5	102.8	1.5

\+ 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: 1971-2001

(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	4.94	4.75	3.49	1974	11	9.89	1974	.79	1986
Feb	4.35	4.08	3.69	1990	4	8.58	1991	1.52	1996
Mar	6.04	5.00	5.60	1975	13	14.93	1994	1.83	1987
Apr	4.04	3.92	2.50	1977	4	7.44	1979	.74	1976
May	5.32	4.66	3.42	1973	28	11.93	1984	1.12	1988
Jun	4.56	4.02	4.51	1998	4	14.50	1998	.56	1988
Jul	4.76	4.73	4.89	1973	1	10.96	1973	1.25	1997
Aug	4.14	3.87	4.55	1982	17	9.91	1974	1.25	1973
Sep	4.16	4.37	3.87	1979	28	8.54	1972	.55+	1998
Oct	3.51	2.81	4.80	1975	17	8.01	1975	.15	2000
Nov	4.78	4.36	4.39	1973	27	9.29	1973	1.34	1971
Dec	5.59	5.26	4.55	1998	12	14.53	1990	2.12	1985
Ann	56.19	55.03	5.60	Mar 1975	13	14.93	Mar 1994	.15	Oct 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.0	8.4	3.5	1.1
Feb	10.3	7.5	3.2	1.2
Mar	12.6	9.5	4.0	1.5
Apr	10.6	7.4	2.8	1.0
May	11.5	8.7	3.6	1.5
Jun	10.6	7.6	3.5	1.1
Jul	10.6	7.9	3.2	1.2
Aug	8.9	6.2	2.9	1.2
Sep	8.9	6.2	3.0	1.1
Oct	8.7	5.6	2.2	1.0
Nov	10.2	7.6	3.2	1.4
Dec	11.9	8.8	3.8	1.6
Ann	126.8	91.4	38.9	14.9

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	1.65	2.12	2.80	3.39	3.94	4.52	5.15	5.88	6.83	8.29	9.64
Feb	1.60	2.01	2.59	3.08	3.55	4.03	4.55	5.15	5.92	7.10	8.18
Mar	1.97	2.55	3.39	4.11	4.80	5.51	6.29	7.21	8.38	10.21	11.89
Apr	1.32	1.70	2.27	2.75	3.21	3.69	4.21	4.82	5.61	6.84	7.97
May	1.86	2.37	3.09	3.71	4.30	4.90	5.56	6.32	7.31	8.82	10.22
Jun	1.22	1.65	2.31	2.89	3.46	4.05	4.72	5.50	6.53	8.13	9.63
Jul	1.74	2.18	2.83	3.37	3.88	4.41	4.98	5.65	6.50	7.81	9.01
Aug	1.15	1.54	2.14	2.66	3.17	3.70	4.29	4.99	5.89	7.32	8.64
Sep	.83	1.21	1.82	2.37	2.94	3.55	4.23	5.06	6.15	7.90	9.56
Oct	.68	.99	1.50	1.98	2.46	2.98	3.56	4.27	5.21	6.71	8.14
Nov	1.78	2.23	2.87	3.40	3.91	4.43	5.00	5.65	6.49	7.78	8.95
Dec	1.75	2.29	3.07	3.75	4.40	5.08	5.82	6.69	7.81	9.56	11.18
Ann	42.90	45.55	48.89	51.40	53.62	55.74	57.92	60.32	63.21	67.36	70.92

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

Complete documentation available from:
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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	2.6	2.7	#	0
Feb	.4	.0	#	0
Mar	.2	.0	#	0
Apr	.3	.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
Dec	.6	.0	#	0
Ann	4.2	2.7	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	3.6	1987	25	8.9	1977	3	1997	11	1	1977
Feb	2.5	1976	3	2.5	1976	8	1996	3	1	1996
Mar	2.3	1978	3	2.3	1978	#+	1999	3	#+	1999
Apr	4.0	1971	7	4.0	1971	#	1971	7	#	1971
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	1.0	1976	30	1.2	1976	6	1996	10	#+	1996
Dec	3.4	1988	24	3.4	1988	2+	2000	17	#+	2000
Ann	4.0	Apr 1971	7	8.9	Jan 1977	8	Feb 1996	3	1+	Feb 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.1	.8	.2	.0	.0
Feb	.3	.2	.0	.0	.0
Mar	.2	.1	.0	.0	.0
Apr	.1	.1	.1	.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	.1	.0	.0	.0
Dec	.5	.2	.1	.0	.0
Ann	2.3	1.5	.4	.0	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.2	.1	.0	.0
Feb	.1	.0	.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	.1	.0	.0	.0
Ann	.4	.1	.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	5/19	5/13	5/10	5/06	5/03	4/30	4/27	4/24	4/18
32	4/30	4/26	4/22	4/19	4/17	4/14	4/11	4/08	4/04
28	4/19	4/15	4/11	4/09	4/06	4/04	4/01	3/29	3/25
24	4/11	4/06	4/01	3/29	3/25	3/22	3/18	3/14	3/08
20	3/27	3/20	3/15	3/11	3/07	3/03	2/27	2/22	2/15
16	3/17	3/09	3/03	2/26	2/21	2/16	2/11	2/05	1/28

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	9/26	9/30	10/03	10/06	10/08	10/10	10/12	10/15	10/19
32	10/01	10/07	10/11	10/14	10/17	10/20	10/24	10/27	11/02
28	10/09	10/15	10/20	10/24	10/27	10/31	11/04	11/08	11/14
24	10/28	11/02	11/05	11/08	11/11	11/14	11/17	11/20	11/25
20	11/07	11/12	11/16	11/19	11/23	11/26	11/29	12/03	12/08
16	11/20	11/29	12/06	12/11	12/16	12/21	12/27	1/02	1/11

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	176	169	165	160	157	153	149	144	137
32	202	195	190	186	183	179	175	170	163
28	224	217	212	207	203	199	194	189	182
24	252	245	239	234	230	226	221	215	208
20	282	274	269	264	260	256	251	246	238
16	323	313	306	301	296	291	285	279	271

***** 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	952	766	576	310	125	8	0	1	48	297	558	835	4476
60	797	626	428	181	55	1	0	0	14	185	413	680	3380
57	713	544	343	120	29	0	0	0	6	131	332	595	2813
55	654	493	290	86	18	0	0	0	3	102	280	536	2462
50	512	365	179	29	4	0	0	0	0	46	171	397	1703
32	145	64	8	0	0	0	0	0	0	0	5	73	295

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	216	223	455	686	983	1198	1355	1314	1077	754	438	261	8960
55	12	8	24	81	287	508	642	601	390	143	23	11	2730
57	9	2	15	55	237	448	580	539	333	110	15	8	2351
60	0	0	7	27	170	359	487	446	251	71	6	0	1824
65	0	0	0	5	84	216	332	292	134	28	1	0	1092
70	0	0	0	0	31	98	183	152	53	8	0	0	525

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	75	119	281	483	764	976	1131	1092	857	536	263	117	75	194	475	958	1722	2698	3829	4921	5778	6314	6577	6694
45	36	59	171	346	609	826	976	937	707	386	160	62	36	95	266	612	1221	2047	3023	3960	4667	5053	5213	5275
50	12	26	96	222	455	676	821	782	557	256	90	30	12	38	134	356	811	1487	2308	3090	3647	3903	3993	4023
55	0	4	43	125	310	527	666	627	411	144	41	5	0	4	47	172	482	1009	1675	2302	2713	2857	2898	2903
60	0	0	12	59	181	378	511	472	274	63	9	0	0	0	12	71	252	630	1141	1613	1887	1950	1959	1959
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	56	88	190	316	494	663	772	741	570	359	183	84	56	144	334	650	1144	1807	2579	3320	3890	4249	4432	4516

(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