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: SHELBYVILLE WATER DEPT, TN **COOP ID: 408246**

Climate Division: TN 3 **NWS Call Sign:** **Elevation: 760 Feet** **Lat: 35˚30N** **Lon: 86˚29W**

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	47.8	27.2	37.5	78	1952	1	46.0	1974	-20	1985	21	25.6	1977	853	0	.0	.0	14.9	3.0	19.8	.4
Feb	52.7	30.3	41.5	81	1962	13	49.4	1990	-7	1958	18	30.0	1978	658	0	.0	.0	18.3	1.5	15.8	.1
Mar	62.2	38.2	50.2	85+	1977	30	56.9	1973	3	1980	3	44.3	1996	462	3	.0	.0	27.3	.2	9.2	.0
Apr	71.3	44.9	58.1	92	1987	30	64.2	1981	21	1992	3	53.2	1997	223	16	.0	.2	29.7	.0	3.0	.0
May	78.4	54.3	66.4	96	1962	18	71.8	1987	30	1971	4	61.4	1997	77	119	.0	1.2	31.0	.0	.1	.0
Jun	85.8	62.4	74.1	103+	1952	28	76.9	1998	38	1966	1	69.8	1974	3	277	.2	9.1	30.0	.0	.0	.0
Jul	89.1	66.9	78.0	107	1952	28	81.2	1980	49+	1961	10	75.7	1996	0	404	.4	16.3	31.0	.0	.0	.0
Aug	88.7	65.5	77.1	105	1954	17	81.3	1983	47+	1956	22	71.8	1992	0	374	.3	14.6	31.0	.0	.0	.0
Sep	82.7	58.6	70.7	105	1954	6	75.3	1980	32	1967	30	66.9	1974	25	195	.1	5.6	30.0	.0	.0	.0
Oct	72.6	46.2	59.4	95	1951	5	66.9	1984	18	1952	29	52.9	1988	216	42	.0	.1	30.9	.0	2.5	.0
Nov	60.9	37.6	49.3	84+	1956	2	56.5	1985	9	1970	24	40.8	1976	475	3	.0	.0	25.5	@	9.6	.0
Dec	51.4	30.4	40.9	77+	1982	2	49.9	1984	-9	1989	22	30.4	1989	747	0	.0	.0	18.9	1.8	17.1	.2
Ann	70.3	46.9	58.6	107	Jul 1952	28	81.3	Aug 1983	-20	Jan 1985	21	25.6	Jan 1977	3739	1433	1.0	47.1	318.5	6.5	77.1	.7

\+ 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: 1951-2001

(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	4.99	4.82	3.43	1957	31	10.71	1974	.71	1986
Feb	4.34	3.89	3.66	1994	11	12.30	1994	.92	1978
Mar	6.23	5.18	5.33	1975	13	14.54	1973	2.57	1985
Apr	4.27	3.65	4.00	1983	5	9.13	1977	1.02	1976
May	5.30	5.43	3.76	1973	27	11.03	1983	1.23+	1992
Jun	4.77	5.10	4.15	1959	1	12.68	1989	.08	1988
Jul	5.05	4.77	4.40	1972	27	13.22	1972	.48	1983
Aug	3.36	3.47	6.69	1963	29	7.69	1982	.51	1973
Sep	4.25	3.89	5.19	1992	22	9.04	1992	.29	1984
Oct	3.88	3.13	5.88	1972	18	10.56	1984	.63	1987
Nov	5.37	5.08	4.33	1996	30	11.53	1986	1.60	1998
Dec	5.35	4.95	5.94	1966	9	13.86	1990	1.22	1980
Ann	57.16	57.09	6.69	Aug 1963	29	14.54	Mar 1973	.08	Jun 1988

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.8	8.3	3.7	1.4
Feb	10.7	7.6	3.0	1.2
Mar	11.8	9.1	3.7	1.9
Apr	9.4	6.8	3.1	1.2
May	10.4	7.9	3.7	1.7
Jun	9.8	7.4	3.4	1.4
Jul	10.2	7.4	3.3	1.3
Aug	7.8	5.5	2.0	1.1
Sep	8.3	6.0	2.9	1.1
Oct	7.1	5.1	2.5	1.4
Nov	9.3	7.4	3.7	2.0
Dec	11.3	8.3	3.9	1.5
Ann	117.9	86.8	38.9	17.2

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	1.59	2.06	2.77	3.37	3.94	4.54	5.20	5.97	6.96	8.51	9.94
Feb	1.34	1.75	2.37	2.89	3.40	3.93	4.51	5.19	6.07	7.45	8.72
Mar	2.43	3.01	3.83	4.51	5.16	5.81	6.52	7.34	8.38	9.98	11.44
Apr	1.49	1.89	2.48	2.97	3.44	3.93	4.46	5.07	5.86	7.08	8.20
May	1.84	2.34	3.07	3.68	4.27	4.87	5.53	6.30	7.28	8.79	10.19
Jun	.88	1.31	2.01	2.66	3.32	4.03	4.84	5.81	7.11	9.20	11.19
Jul	1.20	1.67	2.41	3.07	3.72	4.42	5.19	6.12	7.33	9.26	11.06
Aug	.81	1.12	1.62	2.05	2.49	2.95	3.46	4.07	4.88	6.15	7.34
Sep	.75	1.13	1.75	2.33	2.92	3.56	4.29	5.18	6.36	8.26	10.08
Oct	.79	1.14	1.71	2.23	2.76	3.32	3.96	4.72	5.73	7.35	8.88
Nov	2.03	2.53	3.24	3.84	4.41	4.99	5.62	6.34	7.27	8.69	10.00
Dec	1.41	1.92	2.70	3.38	4.05	4.75	5.53	6.46	7.67	9.57	11.34
Ann	42.34	45.25	48.96	51.75	54.23	56.61	59.06	61.76	65.02	69.73	73.78

\+ 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: 1951-2001
(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	2.6	1.1	#	#	7.0	1988	7	10.3	1979	7	1988	8	1	1988	1.8	.9	.2	.1	.0	1.7	.7	.3	.0
Feb	2.0	1.0	#	#	6.0	1979	18	12.5	1979	4	1985	12	2	1985	1.3	.9	.2	@	.0	1.7	.5	.0	.0
Mar	.5	.0	#	0	7.0	1993	13	7.0	1993	7	1993	13	#+	1993	.4	.1	@	@	.0	.2	.1	.1	.0
Apr	#	.0	#	0	#	1987	3	#+	1987	#	1987	2	#	1987	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.1	.0	#	0	1.0	1976	12	1.5	1976	#	1976	30	#	1976	.2	@	.0	.0	.0	.0	.0	.0	.0
Dec	.4	.0	#	0	1.5	1988	9	1.5	1988	1	1993	22	#+	2000	.6	.2	.0	.0	.0	.1	.0	.0	.0
Ann	5.6	2.1	N/A	N/A	7.0+	Mar 1993	13	12.5	Feb 1979	7+	Mar 1993	13	2	Feb 1985	4.3	2.1	.4	.1	.0	3.7	1.3	.4	.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

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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	5/08	5/02	4/28	4/25	4/22	4/18	4/15	4/11	4/06
32	4/28	4/23	4/19	4/16	4/13	4/10	4/06	4/03	3/28
28	4/14	4/09	4/06	4/03	3/31	3/28	3/25	3/22	3/17
24	4/04	3/27	3/22	3/17	3/13	3/08	3/03	2/26	2/18
20	3/16	3/10	3/05	3/01	2/26	2/22	2/18	2/14	2/08
16	3/07	2/27	2/22	2/17	2/13	2/08	2/03	1/29	1/21

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	9/28	10/02	10/05	10/07	10/09	10/12	10/14	10/17	10/21
32	10/05	10/11	10/14	10/18	10/21	10/24	10/27	10/31	11/05
28	10/15	10/21	10/25	10/28	11/01	11/04	11/07	11/11	11/17
24	10/29	11/04	11/09	11/12	11/16	11/19	11/23	11/27	12/03
20	11/10	11/18	11/24	11/29	12/04	12/08	12/13	12/19	12/27
16	11/21	12/02	12/09	12/16	12/22	12/28	1/04	1/12	1/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	189	182	178	174	170	166	162	158	151
32	211	204	199	194	190	186	182	177	170
28	234	227	222	218	214	210	206	200	193
24	276	266	259	253	247	242	236	229	219
20	306	297	291	285	280	275	270	263	255
16	349	332	322	315	308	302	295	287	276

***** 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	853	658	462	223	77	3	0	0	25	216	475	747	3739
60	703	519	320	114	27	0	0	0	6	119	337	599	2744
57	616	441	243	68	12	0	0	0	2	77	261	511	2231
55	558	389	199	44	6	0	0	0	1	55	215	454	1921
50	421	267	109	11	0	0	0	0	0	19	123	323	1273
32	91	26	2	0	0	0	0	0	0	0	2	45	166

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	262	292	565	784	1065	1264	1427	1397	1160	850	520	321	9907
55	15	11	50	138	358	574	714	684	471	192	43	17	3267
57	11	7	32	101	302	514	652	622	412	152	28	12	2845
60	5	1	16	58	224	424	559	529	326	101	14	7	2264
65	0	0	3	16	119	277	404	374	195	42	3	0	1433
70	0	0	0	2	49	144	249	225	94	13	0	0	776

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	120	182	375	582	848	1049	1202	1169	943	635	334	168	120	302	677	1259	2107	3156	4358	5527	6470	7105	7439	7607
45	59	105	249	437	693	899	1047	1014	793	481	220	95	59	164	413	850	1543	2442	3489	4503	5296	5777	5997	6092
50	28	52	152	298	538	749	892	859	643	335	125	45	28	80	232	530	1068	1817	2709	3568	4211	4546	4671	4716
55	6	20	75	182	385	599	737	704	494	206	64	22	6	26	101	283	668	1267	2004	2708	3202	3408	3472	3494
60	0	3	36	96	248	449	582	549	349	108	23	0	0	3	39	135	383	832	1414	1963	2312	2420	2443	2443
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	71	123	238	376	559	717	824	796	632	413	207	99	71	194	432	808	1367	2084	2908	3704	4336	4749	4956	5055

(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