

# Climatology of the United States

## No. 20

### 1971-2000

**Station: GATLINBURG 2 SW, TN**

**COOP ID: 403420**

**Climate Division: TN 1**

**NWS Call Sign:**

**Elevation: 1,454 Feet Lat: 35° 41N**

**Lon: 83° 32W**

### 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	47.6	24.9	36.3	81	1937	21	48.1	1974	-18	1985	21	23.2	1977	892	0	.0	.0	13.5	3.6	23.5	.7
Feb	52.0	26.3	39.2	85	1996	24	46.1	1990	-13	1958	18	29.0	1978	723	0	.0	.0	16.6	1.9	20.4	.3
Mar	60.9	33.0	47.0	86+	1973	15	52.5	1973	-6+	1980	3	41.1	1971	560	0	.0	.0	25.2	.5	16.2	.1
Apr	69.4	39.4	54.4	92+	1941	19	59.3	1981	19+	1943	4	49.5	1983	322	4	.0	.1	28.8	.0	7.6	.0
May	76.0	48.6	62.3	98	1941	22	67.5	1987	26	1947	9	58.1	1989	142	58	.0	@	30.9	.0	.6	.0
Jun	82.1	57.0	69.6	106	1936	29	73.0	1986	33	1966	1	65.4	1972	17	153	.0	1.9	30.0	.0	.0	.0
Jul	84.8	61.7	73.3	105	1952	28	77.0	1993	43+	1952	10	70.4	1979	0	255	.0	5.0	31.0	.0	.0	.0
Aug	83.7	60.2	72.0	100	1941	25	75.6	1995	40	1950	7	69.3	1992	2	217	.0	3.3	31.0	.0	.0	.0
Sep	78.6	54.2	66.4	101+	1954	5	71.3	1998	27	1942	29	63.1	1976	49	91	.0	1.0	30.0	.0	.0	.0
Oct	69.7	41.6	55.7	94	1941	6	62.8	1984	15+	1952	21	48.9	1988	309	19	.0	.0	30.7	.0	5.4	.0
Nov	60.3	33.2	46.8	85	1961	2	56.6	1985	2	1950	25	39.3	1976	547	0	.0	.0	24.6	.1	15.5	.0
Dec	51.0	27.5	39.3	80	1946	12	47.8	1971	-12	1962	13	30.2	1989	799	0	.0	.0	17.5	1.9	22.7	.1
Ann	68.0	42.3	55.2	106	1936	29	77.0	1993	-18	1985	21	23.2	1977	4362	797	.0	11.3	309.8	8.0	111.9	1.2

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(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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### Precipitation (inches)

		Precipitation Totals								Mean Number of Days (3)				Precipitation Probabilities (1)											
														Probability that the monthly/annual precipitation will be equal to or less than the indicated amount											
		Means/Medians(1)		Extremes						Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels											
														These values were determined from the incomplete gamma distribution											
Month	Mean	Median	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95	
Jan	4.88	5.34	3.35	1954	16	7.92	1974	.88	1984	13.5	9.3	3.4	1.1	1.86	2.32	2.97	3.51	4.02	4.54	5.11	5.77	6.60	7.89	9.06	
Feb	4.25	4.16	2.65	1969	2	7.83	1989	.72	1978	11.5	8.0	3.1	1.1	1.59	1.98	2.55	3.03	3.48	3.94	4.45	5.03	5.77	6.91	7.96	
Mar	5.56	5.07	4.48	1965	26	12.69	1994	1.88	1984	13.8	9.8	4.0	1.5	2.12	2.64	3.38	3.99	4.57	5.17	5.81	6.56	7.51	8.97	10.31	
Apr	4.36	4.09	2.95	1994	11	9.66	1998	.40	1976	11.1	8.3	3.2	1.2	1.53	1.94	2.53	3.04	3.52	4.01	4.55	5.18	5.98	7.22	8.37	
May	5.58	5.87	3.00	2000	24	8.57	1976	2.88	1980	14.0	10.2	3.9	1.3	2.79	3.26	3.90	4.41	4.88	5.35	5.85	6.41	7.12	8.19	9.14	
Jun	5.82	6.35	4.59	1966	30	11.46	1997	1.37	1986	12.8	9.6	4.2	1.7	2.01	2.56	3.36	4.04	4.68	5.35	6.08	6.92	8.01	9.69	11.23	
Jul	6.07	5.23	5.34	1943	26	15.59	1984	1.50	1987	13.9	10.2	4.2	1.5	2.33	2.89	3.70	4.37	5.00	5.65	6.35	7.16	8.19	9.78	11.22	
Aug	4.59	4.68	3.83	1928	31	7.74	1977	1.10+	1999	12.1	8.1	2.8	1.2	1.65	2.08	2.70	3.23	3.73	4.24	4.80	5.45	6.28	7.56	8.73	
Sep	4.62	4.51	3.05	1978	22	10.29	1989	1.16	1985	10.6	7.3	3.2	1.5	1.84	2.27	2.87	3.37	3.85	4.33	4.84	5.44	6.20	7.36	8.42	
Oct	2.96	2.85	3.45	1949	31	6.46	1971	.08	2000	8.5	5.1	2.0	.7	.54	.80	1.24	1.64	2.05	2.49	3.00	3.61	4.42	5.73	6.98	
Nov	4.02	3.79	3.25	1991	22	7.36	1982	1.58	1987	11.3	7.5	2.6	1.0	1.88	2.23	2.72	3.11	3.47	3.83	4.22	4.66	5.22	6.06	6.82	
Dec	4.47	4.18	3.10	1993	5	9.05	1991	1.22	1985	13.5	8.5	2.8	.9	1.48	1.90	2.52	3.05	3.56	4.09	4.66	5.33	6.20	7.54	8.77	
Ann	57.18	57.62	5.34	Jul 1943	26	15.59	Jul 1984	.08	Oct 2000	146.6	101.9	39.4	14.7	42.24	45.18	48.91	51.73	54.22	56.63	59.10	61.82	65.11	69.87	73.96	

+ 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

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Climate Division: TN 1

NWS Call Sign:

Elevation: 1,454 Feet

Lat: 35° 41N

Lon: 83° 32W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	3.6	3.0	#	#	6.0	1987	22	15.0	1987	8	1998	1	1	1998	1.8	1.3	.3	.1	.0	1.4	.4	.2	.0
Feb	1.4	1.0	#	#	6.0	1996	3	7.5	1995	14	1985	13	2	1996	1.1	.6	.2	@	.0	1.6	.6	.3	.0
Mar	1.2	.2	#	0	16.0	1993	13	16.0+	1993	4	1972	26	#+	1999	.8	.5	.2	.1	.1	.2	.0	.0	.0
Apr	.9	.0	0	0	11.5	1987	4	21.5	1987	0	0	0	0	0	.1	.1	.1	.1	.1	.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	0	.5	1993	31	.5	1993	0	0	0	0	0	@	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.2	.0	#	0	1.0	1975	14	1.4	1975	1+	1996	10	#+	1996	.2	.1	.0	.0	.0	.1	.0	.0	.0
Dec	.7	.0	#	0	4.0	1997	30	4.0	1976	6	1997	31	#+	1999	.7	.5	.1	.0	.0	.5	.1	.1	.0
Ann	8.0	4.2	N/A	N/A	16.0	Mar 1993	13	21.5	Apr 1987	14	Feb 1985	13	2	Feb 1996	4.7	3.1	.9	.3	.2	3.8	1.1	.6	.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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<b>Freeze Data</b>									
<b>Spring Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of later date in spring (thru Jul 31) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	5/24	5/18	5/13	5/10	5/06	5/03	4/29	4/25	4/19
<b>32</b>	5/10	5/05	5/02	4/29	4/26	4/23	4/20	4/17	4/12
<b>28</b>	4/22	4/18	4/15	4/12	4/09	4/07	4/04	4/01	3/27
<b>24</b>	4/15	4/09	4/04	3/31	3/28	3/24	3/20	3/16	3/10
<b>20</b>	3/26	3/19	3/14	3/10	3/06	3/02	2/26	2/21	2/14
<b>16</b>	3/16	3/08	3/02	2/25	2/20	2/15	2/10	2/04	1/26
<b>Fall Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of earlier date in fall (beginning Aug 1) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	9/27	10/01	10/05	10/07	10/10	10/12	10/15	10/18	10/22
<b>32</b>	10/03	10/08	10/12	10/15	10/18	10/21	10/24	10/28	11/02
<b>28</b>	10/10	10/16	10/20	10/24	10/27	10/30	11/03	11/07	11/13
<b>24</b>	10/30	11/04	11/08	11/11	11/13	11/16	11/19	11/22	11/27
<b>20</b>	11/08	11/15	11/20	11/24	11/28	12/02	12/07	12/12	12/19
<b>16</b>	11/21	11/30	12/06	12/11	12/16	12/21	12/26	1/02	1/10
<b>Freeze Free Period</b>									
<b>Temp (F)</b>	<b>Probability of longer than indicated freeze free period (Days)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	176	169	164	160	156	151	147	142	135
<b>32</b>	195	188	183	178	174	170	166	161	154
<b>28</b>	222	214	209	204	200	196	191	186	178
<b>24</b>	251	244	238	234	230	226	221	216	208
<b>20</b>	294	285	278	272	266	261	255	248	239
<b>16</b>	334	320	311	304	297	291	284	276	264

\* 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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**Lon: 83°32W**

<b>Degree Days to Selected Base Temperatures (°F)</b>													
<b>Base</b>	<b>Heating Degree Days (1)</b>												
<b>Below</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>65</b>	892	723	560	322	142	17	0	2	49	309	547	799	4362
<b>60</b>	740	583	413	191	64	2	0	0	13	191	401	644	3242
<b>57</b>	654	500	329	128	33	0	0	0	5	135	319	555	2658
<b>55</b>	596	450	277	93	20	0	0	0	2	104	267	498	2307
<b>50</b>	458	321	168	33	4	0	0	0	0	46	156	357	1543
<b>32</b>	113	39	6	0	0	0	0	0	0	0	2	48	208

<b>Base</b>	<b>Cooling Degree Days (1)</b>												
<b>Above</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>32</b>	245	240	468	673	939	1126	1278	1238	1032	733	445	272	8689
<b>55</b>	15	6	26	76	246	436	565	525	344	124	20	8	2391
<b>57</b>	11	1	17	50	198	377	503	463	287	93	12	3	2015
<b>60</b>	4	0	8	24	135	288	410	370	205	56	4	0	1504
<b>65</b>	0	0	0	4	58	153	255	217	91	19	0	0	797
<b>70</b>	0	0	0	0	17	55	115	88	23	4	0	0	302

<b>Growing Degree Units (2)</b>																								
<b>Base</b>	<b>Growing Degree Units (Monthly)</b>												<b>Growing Degree Units (Accumulated Monthly)</b>											
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>40</b>	86	123	271	463	704	897	1041	1005	808	497	248	120	86	209	480	943	1647	2544	3585	4590	5398	5895	6143	6263
<b>45</b>	39	61	166	325	550	747	886	850	658	353	149	59	39	100	266	591	1141	1888	2774	3624	4282	4635	4784	4843
<b>50</b>	12	25	87	210	397	597	731	695	508	220	77	27	12	37	124	334	731	1328	2059	2754	3262	3482	3559	3586
<b>55</b>	1	6	40	112	258	448	576	540	360	115	32	8	1	7	47	159	417	865	1441	1981	2341	2456	2488	2496
<b>60</b>	0	0	9	50	136	300	422	385	223	50	5	0	0	0	9	59	195	495	917	1302	1525	1575	1580	1580
<b>Base</b>	<b>Growing Degree Units for Corn (Monthly)</b>												<b>Growing Degree Units for Corn (Accumulated Monthly)</b>											
<b>50/86</b>	62	101	203	318	457	595	712	680	521	333	182	92	62	163	366	684	1141	1736	2448	3128	3649	3982	4164	4256

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)