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: KINGSPORT, TN **COOP ID: 404858**

Climate Division: TN 1 **NWS Call Sign:** **Elevation: 1,284 Feet** **Lat: 36˚31N** **Lon: 82˚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	44.9	26.2	35.6	79	1947	29	46.8	1974	-18	1985	21	23.6	1977	913	0	.0	.0	12.5	3.4	20.5	.4
Feb	50.2	28.0	39.1	82	1977	26	46.1	1976	-11	1996	5	30.1	1978	725	0	.0	.0	16.8	1.8	16.5	.1
Mar	59.7	35.1	47.4	86+	1954	25	53.7	1973	-2	1980	3	42.0	1996	545	0	.0	.0	26.6	.2	10.1	@
Apr	69.1	42.9	56.0	91+	1986	27	60.4	1981	23	1964	1	51.2	1983	276	6	.0	.1	29.1	@	3.0	.0
May	77.0	53.0	65.0	98+	1934	20	70.0	1991	30	1971	4	61.0	1989	91	90	.0	.2	31.0	.0	.1	.0
Jun	83.6	61.2	72.4	104	1936	30	75.0+	1994	39+	1936	1	68.9	1972	3	224	.0	3.4	30.0	.0	.0	.0
Jul	86.9	65.5	76.2	102+	1936	1	80.0	1993	46	1961	10	73.6+	1984	0	347	.0	10.1	31.0	.0	.0	.0
Aug	85.7	63.7	74.7	101+	1932	31	78.5	1995	45+	1946	31	71.8	1992	0	302	.1	6.8	31.0	.0	.0	.0
Sep	80.3	57.5	68.9	102	1932	1	73.3	1998	32	1947	30	66.2+	1981	28	145	.0	2.2	30.0	.0	.0	.0
Oct	70.0	44.6	57.3	92	1953	1	64.2	1984	19	1962	27	50.6	1988	263	24	.0	.0	30.8	.0	2.1	.0
Nov	58.9	36.0	47.5	83+	1934	30	55.6	1985	6	1950	25	40.1	1976	526	1	.0	.0	24.6	.1	10.2	.0
Dec	48.7	29.2	39.0	80	1951	7	47.5	1971	-5	1962	13	28.4	1989	808	0	.0	.0	16.3	1.7	18.5	.1
Ann	67.9	45.2	56.6	104	Jun 1936	30	80.0	Jul 1993	-18	Jan 1985	21	23.6	Jan 1977	4178	1139	.1	22.8	309.7	7.2	81.0	.6

\+ 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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1931-2001

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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	3.87	4.04	2.35	1954	16	7.84	1974	1.52	1981
Feb	3.67	3.79	2.26	1996	2	7.33	1982	.86	1978
Mar	4.20	3.81	3.37	1963	12	10.15	1975	1.25	1983
Apr	3.35	3.20	2.78	1956	16	9.16	1998	.47	1986
May	4.50	4.44	3.00	1984	7	9.06	1974	1.73	1977
Jun	4.00	4.20	2.07	1947	27	6.90	1975	1.24	1986
Jul	4.64	4.69	3.35	1962	4	9.33	1971	1.58	1995
Aug	3.70	3.55	4.12	1972	3	6.65	1992	1.22	1995
Sep	3.10	3.13	3.22	1962	17	7.10	1982	.35	1984
Oct	2.64	2.57	2.95	1964	17	5.68	1990	.03	2000
Nov	3.22	2.98	2.27+	1993	27	7.22	1985	1.23	1990
Dec	3.55	3.10	2.50	1991	2	9.78	1991	.80	1985
Ann	44.44	43.86	4.12	Aug 1972	3	10.15	Mar 1975	.03	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	13.1	8.3	2.6	.7
Feb	11.9	7.3	2.6	.8
Mar	13.1	8.7	2.8	.8
Apr	11.9	7.4	2.2	.5
May	13.2	8.7	3.5	.9
Jun	12.0	8.0	3.1	.8
Jul	12.4	9.1	3.3	.9
Aug	10.4	6.8	2.3	.8
Sep	9.5	6.1	1.9	.7
Oct	8.9	5.3	1.5	.7
Nov	11.4	6.8	2.2	.6
Dec	12.4	7.3	2.4	.5
Ann	140.2	89.8	30.4	8.7

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	1.63	1.98	2.48	2.88	3.26	3.65	4.06	4.54	5.14	6.06	6.89
Feb	1.50	1.83	2.31	2.70	3.06	3.44	3.84	4.30	4.89	5.79	6.61
Mar	1.48	1.88	2.45	2.94	3.40	3.87	4.39	4.99	5.76	6.96	8.05
Apr	1.01	1.33	1.80	2.21	2.61	3.03	3.48	4.02	4.71	5.79	6.79
May	2.01	2.41	2.96	3.42	3.84	4.26	4.72	5.24	5.89	6.89	7.79
Jun	1.58	1.95	2.48	2.91	3.32	3.74	4.19	4.71	5.37	6.39	7.31
Jul	2.25	2.65	3.19	3.63	4.03	4.44	4.87	5.36	5.97	6.90	7.73
Aug	1.49	1.83	2.32	2.71	3.09	3.47	3.88	4.35	4.95	5.87	6.71
Sep	.53	.80	1.26	1.68	2.12	2.59	3.13	3.78	4.65	6.07	7.41
Oct	.42	.64	1.03	1.39	1.77	2.18	2.65	3.22	3.99	5.23	6.43
Nov	1.27	1.57	1.99	2.34	2.67	3.01	3.37	3.79	4.32	5.14	5.89
Dec	.98	1.31	1.82	2.27	2.71	3.16	3.67	4.27	5.05	6.27	7.41
Ann	33.42	35.60	38.36	40.44	42.28	44.05	45.87	47.86	50.28	53.75	56.73

\+ 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: 1931-2001
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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	5.0	3.5	#	#
Feb	4.0	1.9	#	#
Mar	1.5	.0	#	#
Apr	.4	.0	#	0
May	#	.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
Nov	.3	.0	#	0
Dec	1.9	.1	#	#
Ann	13.1	5.5	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	8.2	1980	31	18.5	1996	11	1996	12	3	1996
Feb	12.0	1996	2	19.5	1979	14	1996	4	4	1996
Mar	7.6	1993	13	14.2	1993	14	1993	15	2	1993
Apr	5.8	1987	4	11.0	1987	10	1987	4	1	1987
May	#	1989	8	#	1989	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	#	1993	31	#+	1993	#	1993	31	#	1993
Nov	2.0	1977	28	2.0	1977	2	1977	28	#+	1997
Dec	9.1	1982	12	9.1	1982	5	1995	7	1	1989
Ann	12.0	Feb 1996	2	19.5	Feb 1979	14+	Feb 1996	4	4	Feb 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	1.5	.6	.2	.0
Feb	2.2	1.0	.4	.2	@
Mar	.8	.4	.2	.1	.0
Apr	.2	.1	.1	@	.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	.3	.1	.0	.0	.0
Dec	.9	.6	.2	.1	.0
Ann	7.2	3.7	1.5	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	3.8	1.6	.7	.1
Feb	2.9	1.5	.9	.1
Mar	.5	.3	.1	.1
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	.1	.0	.0	.0
Dec	.9	.3	@	.0
Ann	8.3	3.7	1.7	.3

+ 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	5/18	5/12	5/07	5/04	4/30	4/26	4/22	4/18	4/12
32	4/28	4/23	4/19	4/16	4/13	4/10	4/07	4/04	3/29
28	4/14	4/09	4/05	4/02	3/30	3/26	3/23	3/19	3/14
24	4/02	3/26	3/21	3/17	3/13	3/09	3/05	2/28	2/21
20	3/21	3/14	3/08	3/04	2/28	2/24	2/20	2/14	2/07
16	3/09	3/01	2/24	2/19	2/14	2/10	2/05	1/30	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	10/01	10/05	10/08	10/11	10/14	10/16	10/19	10/22	10/27
32	10/11	10/15	10/19	10/22	10/24	10/27	10/30	11/02	11/07
28	10/18	10/24	10/29	11/02	11/06	11/09	11/13	11/18	11/24
24	11/05	11/10	11/13	11/16	11/18	11/21	11/24	11/27	12/02
20	11/16	11/22	11/27	12/01	12/05	12/09	12/13	12/18	12/24
16	11/27	12/05	12/11	12/16	12/20	12/25	12/30	1/05	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	187	180	175	170	166	162	157	152	145
32	209	204	200	197	193	190	187	183	177
28	241	234	229	224	220	216	212	206	199
24	271	263	258	254	250	245	241	236	228
20	302	294	289	284	279	275	270	264	256
16	340	328	319	313	306	300	294	286	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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	913	725	545	276	91	3	0	0	28	263	526	808	4178
60	758	585	398	152	33	0	0	0	6	152	383	653	3120
57	671	501	314	94	14	0	0	0	2	102	302	566	2566
55	613	447	262	64	8	0	0	0	1	76	252	507	2230
50	471	318	155	19	1	0	0	0	0	29	148	368	1509
32	113	33	4	0	0	0	0	0	0	0	3	55	208

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	224	232	482	720	1022	1211	1370	1325	1107	785	467	270	9215
55	11	2	27	94	317	521	657	612	417	147	26	10	2841
57	7	0	17	64	261	461	595	550	358	112	16	7	2448
60	0	0	7	31	187	371	502	457	272	69	7	0	1903
65	0	0	0	6	90	224	347	302	145	24	1	0	1139
70	0	0	0	0	31	97	196	156	53	5	0	0	538

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	88	136	326	539	804	984	1137	1103	895	586	291	131	88	224	550	1089	1893	2877	4014	5117	6012	6598	6889	7020
45	37	68	203	395	649	834	982	948	745	434	183	66	37	105	308	703	1352	2186	3168	4116	4861	5295	5478	5544
50	14	28	116	263	495	684	827	793	595	288	94	31	14	42	158	421	916	1600	2427	3220	3815	4103	4197	4228
55	0	8	50	150	343	534	672	638	446	165	47	6	0	8	58	208	551	1085	1757	2395	2841	3006	3053	3059
60	0	0	14	76	208	386	517	483	305	76	12	0	0	0	14	90	298	684	1201	1684	1989	2065	2077	2077
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	51	89	210	344	519	669	786	764	598	366	177	72	51	140	350	694	1213	1882	2668	3432	4030	4396	4573	4645

(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