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: LEWISBURG EXP STN, TN **COOP ID: 405187**

Climate Division: TN 3 **NWS Call Sign:** **Elevation: 787 Feet** **Lat: 35˚25N** **Lon: 86˚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	46.1	24.6	35.4	77+	1949	11	43.7	1998	-20	1985	21	21.9	1977	919	0	.0	.0	12.7	4.4	22.1	.7
Feb	51.1	26.8	39.0	81	1996	24	46.7	1990	-12	1951	2	26.7	1978	729	0	.0	.0	15.7	2.4	18.5	.2
Mar	60.6	34.9	47.8	88	1929	24	53.3	1973	2	1980	3	41.3	1971	536	0	.0	.0	25.2	.4	13.1	.0
Apr	70.0	41.9	56.0	90	1989	28	62.2	1981	19+	1989	11	51.4	1982	283	12	.0	@	29.1	.0	5.0	.0
May	78.4	51.4	64.9	98	1941	22	71.3	1987	29	1986	4	59.7	1976	107	104	.0	.8	31.0	.0	.2	.0
Jun	86.3	60.3	73.3	104	1936	28	77.3	1998	38	1966	1	68.7	1974	6	254	.2	8.1	30.0	.0	.0	.0
Jul	90.0	64.7	77.4	110	1930	29	80.6	1993	43	1947	23	74.4	1972	0	382	.3	15.3	31.0	.0	.0	.0
Aug	89.5	62.4	76.0	108+	1930	8	81.2	1983	42	1946	31	71.8	1976	2	341	.7	14.1	31.0	.0	.0	.0
Sep	83.0	55.4	69.2	105+	1954	6	74.4	1980	31+	1942	29	64.2	1974	40	167	.2	5.6	30.0	.0	@	.0
Oct	72.3	43.0	57.7	94	1941	2	65.4	1984	20	1987	22	51.2	1988	263	34	.0	@	30.8	.0	5.0	.0
Nov	60.2	35.0	47.6	86	1950	1	55.9	1985	-2	1950	25	38.4	1976	524	2	.0	.0	24.2	.1	13.2	.0
Dec	49.9	27.4	38.7	78	1970	2	47.7	1984	-12	1989	22	27.5	1989	817	0	.0	.0	16.5	2.2	19.6	.3
Ann	69.8	44.0	56.9	110	Jul 1930	29	81.2	Aug 1983	-20	Jan 1985	21	21.9	Jan 1977	4226	1296	1.4	43.9	307.2	9.5	96.7	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/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	4.97	4.77	6.05	1999	23	11.49	1999	.50	1986
Feb	4.07	3.52	4.28	1945	22	9.88	1991	.88	1978
Mar	6.32	5.31	5.73	2000	11	15.94	1973	2.35	1987
Apr	4.51	4.14	3.32	1995	21	8.95	1983	1.47	1976
May	5.33	5.03	4.00	1983	19	14.42	1983	1.23	1977
Jun	4.43	4.08	6.81	1939	18	10.37	1997	.06	1988
Jul	4.58	4.24	5.23	1989	12	14.03	1989	.67	1983
Aug	3.12	2.48	4.45	1963	29	8.69	1992	.54	1999
Sep	4.50	4.12	5.91	1979	14	12.33	1979	.08	1984
Oct	3.79	3.52	5.44	1975	17	9.95	1975	.54	1987
Nov	5.15	4.98	4.98	1986	9	11.46	1986	1.67	1998
Dec	5.38	4.76	5.25	1956	13	14.61	1990	1.27	1985
Ann	56.15	56.51	6.81	Jun 1939	18	15.94	Mar 1973	.06	Jun 1988

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.4	7.9	3.6	1.3
Feb	9.0	6.5	2.8	1.1
Mar	11.0	8.6	3.8	1.6
Apr	9.8	7.3	3.3	1.3
May	10.6	7.2	3.7	1.6
Jun	10.0	7.4	2.9	1.3
Jul	11.2	7.7	3.4	1.2
Aug	8.2	5.4	2.2	.8
Sep	8.1	5.8	2.8	1.4
Oct	7.2	5.1	2.5	1.1
Nov	9.7	7.1	3.6	1.6
Dec	10.0	7.7	3.7	1.4
Ann	115.2	83.7	38.3	15.7

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	1.41	1.88	2.59	3.22	3.82	4.45	5.15	5.98	7.05	8.73	10.29
Feb	1.34	1.72	2.29	2.77	3.24	3.72	4.25	4.86	5.65	6.88	8.01
Mar	2.26	2.85	3.71	4.43	5.12	5.83	6.60	7.50	8.65	10.42	12.04
Apr	1.49	1.92	2.55	3.08	3.59	4.12	4.70	5.38	6.24	7.59	8.83
May	1.56	2.07	2.83	3.49	4.13	4.80	5.53	6.40	7.53	9.29	10.92
Jun	.82	1.22	1.86	2.47	3.08	3.74	4.49	5.40	6.60	8.54	10.39
Jul	1.16	1.59	2.26	2.85	3.43	4.04	4.72	5.53	6.59	8.26	9.83
Aug	.75	1.05	1.50	1.91	2.31	2.73	3.21	3.78	4.52	5.69	6.80
Sep	.70	1.08	1.74	2.36	3.00	3.70	4.51	5.49	6.81	8.95	11.01
Oct	.88	1.24	1.79	2.29	2.79	3.31	3.90	4.60	5.52	6.98	8.36
Nov	1.69	2.18	2.90	3.51	4.09	4.70	5.37	6.14	7.14	8.70	10.13
Dec	1.41	1.92	2.70	3.39	4.06	4.77	5.56	6.49	7.71	9.63	11.43
Ann	41.15	44.09	47.83	50.66	53.16	55.58	58.06	60.81	64.12	68.91	73.04

\+ 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	2.4	.8	#	#	7.2	1973	8	10.0	1982	8	1988	8	2	1988	.8	.6	.2	.2	.0	1.2	.8	.3	.0
Feb	.4	.0	#	#	5.0	1979	18	5.0	1979	11	1985	2	2	1985	.6	.2	.1	@	.0	.4	.1	@	.0
Mar	.3	.0	#	0	5.0	1993	13	5.0	1993	5	1993	14	#+	1999	.2	.1	@	@	.0	.2	.1	.1	.0
Apr	#	.0	#	0	#	1987	3	#+	1987	#	1977	6	#	1977	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	#	0	1.5	1974	15	2.0	1974	1	1976	12	#+	1991	.2	.1	.0	.0	.0	@	.0	.0	.0
Dec	.3	.0	#	0	1.3	1998	24	1.5+	1998	3	1997	29	#+	2000	.4	.2	.0	.0	.0	.3	.0	.0	.0
Ann	3.5	.8	N/A	N/A	7.2	Jan 1973	8	10.0	Jan 1982	11	Feb 1985	2	2+	Jan 1988	2.2	1.2	.3	.2	.0	2.1	1.0	.4	.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	5/15	5/10	5/06	5/03	4/30	4/27	4/23	4/20	4/14
32	4/30	4/26	4/22	4/19	4/16	4/13	4/10	4/07	4/02
28	4/20	4/15	4/12	4/09	4/06	4/03	3/31	3/28	3/23
24	4/12	4/06	4/01	3/28	3/25	3/21	3/18	3/13	3/07
20	3/29	3/20	3/14	3/08	3/03	2/26	2/21	2/14	2/05
16	3/15	3/06	2/27	2/22	2/16	2/11	2/05	1/30	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	9/21	9/26	9/30	10/03	10/06	10/09	10/12	10/16	10/21
32	10/02	10/08	10/11	10/15	10/18	10/21	10/24	10/27	11/02
28	10/10	10/16	10/20	10/24	10/27	10/31	11/03	11/08	11/14
24	10/25	10/31	11/04	11/08	11/11	11/15	11/18	11/22	11/28
20	11/02	11/09	11/14	11/19	11/23	11/27	12/01	12/06	12/13
16	11/20	11/29	12/04	12/10	12/14	12/19	12/24	12/30	1/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	181	173	168	163	159	154	150	144	137
32	203	196	192	187	184	180	176	171	165
28	222	215	211	207	203	200	196	192	185
24	255	246	240	235	231	226	221	215	206
20	298	286	278	270	264	257	250	241	230
16	332	319	311	304	298	292	286	279	268

***** 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	919	729	536	283	107	6	0	2	40	263	524	817	4226
60	764	589	390	164	45	1	0	0	11	158	383	662	3167
57	681	507	308	108	23	0	0	0	4	109	304	577	2621
55	623	457	257	78	14	0	0	0	2	82	256	519	2288
50	483	329	153	27	3	0	0	0	0	34	155	381	1565
32	128	46	5	0	0	0	0	0	0	0	5	66	250

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	231	240	492	719	1021	1239	1405	1361	1117	794	473	272	9364
55	13	7	32	107	322	549	692	648	429	163	33	12	3007
57	10	2	20	77	269	489	630	586	372	128	22	8	2613
60	0	0	10	42	198	399	537	493	288	84	11	0	2062
65	0	0	0	12	104	254	382	341	167	34	2	0	1296
70	0	0	0	2	43	128	229	200	78	10	0	0	690

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	90	139	297	499	787	1010	1165	1128	894	567	285	133	90	229	526	1025	1812	2822	3987	5115	6009	6576	6861	6994
45	47	80	188	362	632	860	1010	973	744	420	186	75	47	127	315	677	1309	2169	3179	4152	4896	5316	5502	5577
50	20	32	106	237	478	710	855	818	594	280	114	37	20	52	158	395	873	1583	2438	3256	3850	4130	4244	4281
55	4	8	53	139	331	560	700	663	447	172	55	11	4	12	65	204	535	1095	1795	2458	2905	3077	3132	3143
60	0	0	19	68	202	411	545	508	308	89	18	0	0	0	19	87	289	700	1245	1753	2061	2150	2168	2168
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	58	101	198	331	517	683	795	759	596	386	189	85	58	159	357	688	1205	1888	2683	3442	4038	4424	4613	4698

(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