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: WILLIAMSBURG, KY **COOP ID: 158709**

Climate Division: KY 4 **NWS Call Sign:** **Elevation: 940 Feet** **Lat: 36˚44N** **Lon: 84˚09W**

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	43.9	23.8	33.9	75+	1999	23	44.5	1974	-21+	1994	20	20.8	1977	966	0	.0	.0	11.1	5.3	24.0	1.2
Feb	48.4	26.0	37.2	82	1977	27	45.8	1990	-19	1996	4	25.4	1978	778	0	.0	.0	14.4	3.4	20.6	.5
Mar	58.3	33.2	45.8	88	1963	31	51.7	1973	-4+	1980	4	40.0	1981	596	0	.0	.0	24.0	.5	15.9	.1
Apr	67.8	40.5	54.2	92	1995	11	59.5	1981	19+	1996	10	47.2	1997	331	7	.0	.2	28.1	@	6.5	.0
May	75.1	50.6	62.9	95+	1962	20	69.6	1987	28+	1966	10	56.3	1997	152	85	.0	.5	30.9	.0	.5	.0
Jun	81.7	59.5	70.6	101	1988	24	74.4	1987	36	1966	1	65.7	1974	16	184	.1	4.4	30.0	.0	.0	.0
Jul	84.6	64.0	74.3	103+	1988	10	77.9	1986	45	1988	2	70.3	1976	0	289	.1	9.4	31.0	.0	.0	.0
Aug	83.1	62.4	72.8	100+	1988	18	77.0	1980	42	1986	30	69.1	1976	7	246	@	6.3	31.0	.0	.0	.0
Sep	77.7	55.7	66.7	99	1957	2	71.3	1978	31+	1993	30	63.1	1976	59	109	.0	1.2	30.0	.0	@	.0
Oct	67.9	42.8	55.4	91+	1959	6	63.0	1984	20	1962	26	49.0	1988	318	19	.0	.0	30.3	.0	4.7	.0
Nov	57.8	34.7	46.3	83	1961	3	55.9	1985	11	1970	24	36.8	1976	562	1	.0	.0	22.8	.2	13.6	.0
Dec	47.7	27.3	37.5	77+	1982	5	47.3	1984	-11	1983	25	27.7	1989	852	0	.0	.0	14.7	2.7	21.5	.3
Ann	66.2	43.4	54.8	103+	Jul 1988	10	77.9	Jul 1986	-21+	Jan 1994	20	20.8	Jan 1977	4637	940	.2	22.0	298.3	12.1	107.3	2.1

\+ 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: 1957-2001

(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	4.26	3.71	2.83	2001	19	8.11	1974	1.31	1981
Feb	4.00	3.80	2.66	1994	11	9.37	1994	1.34	1977
Mar	5.03	4.83	3.23	1963	12	12.92	1975	1.74	1986
Apr	4.08	3.54	2.39	1998	19	9.15	1998	.70	1976
May	5.14	4.99	4.63	1984	7	10.06	1984	.56	1977
Jun	4.34	4.15	2.75	1997	15	10.54	1997	.47	1988
Jul	4.19	3.98	3.76	1960	11	7.30	1971	1.42	1974
Aug	4.41	4.16	2.59	1994	22	9.00	1977	1.67	1976
Sep	3.75	3.40	4.39	1989	23	10.29	1989	.84	1985
Oct	2.99	2.54	2.50	1990	8	7.13	1990	.11	1987
Nov	4.19	3.64	3.06	1973	27	7.92	1986	.34	1976
Dec	4.44	3.63	3.75	1991	3	10.86	1991	.95	1980
Ann	50.82	50.24	4.63	May 1984	7	12.92	Mar 1975	.11	Oct 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.4	8.5	3.1	.7
Feb	11.1	7.8	2.7	.9
Mar	11.9	9.0	3.4	1.2
Apr	9.8	7.3	2.7	.9
May	11.4	8.8	3.3	1.4
Jun	9.8	7.5	3.0	1.3
Jul	10.2	7.8	2.9	1.0
Aug	9.2	6.9	3.4	1.3
Sep	8.0	6.2	2.7	1.1
Oct	7.8	5.6	1.9	.7
Nov	9.8	7.2	3.0	1.1
Dec	11.3	8.4	2.9	.8
Ann	122.7	91.0	35.0	12.4

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	1.62	2.01	2.58	3.05	3.50	3.96	4.45	5.03	5.76	6.88	7.91
Feb	1.60	1.97	2.49	2.92	3.33	3.74	4.19	4.71	5.37	6.37	7.29
Mar	1.65	2.13	2.83	3.43	4.00	4.60	5.25	6.00	6.98	8.50	9.89
Apr	1.37	1.75	2.32	2.80	3.26	3.73	4.25	4.86	5.64	6.85	7.96
May	1.75	2.24	2.94	3.55	4.12	4.71	5.36	6.12	7.09	8.59	9.97
Jun	1.16	1.58	2.20	2.75	3.29	3.86	4.49	5.24	6.21	7.73	9.16
Jul	1.88	2.25	2.76	3.19	3.58	3.97	4.39	4.88	5.49	6.41	7.25
Aug	2.02	2.41	2.95	3.38	3.79	4.19	4.62	5.12	5.74	6.69	7.54
Sep	1.08	1.43	1.97	2.44	2.89	3.37	3.89	4.51	5.31	6.57	7.74
Oct	.48	.74	1.18	1.59	2.01	2.48	3.01	3.65	4.52	5.92	7.27
Nov	1.12	1.52	2.12	2.65	3.17	3.72	4.33	5.05	5.99	7.46	8.84
Dec	1.28	1.71	2.34	2.89	3.43	3.99	4.61	5.34	6.28	7.76	9.13
Ann	38.98	41.34	44.32	46.57	48.54	50.44	52.38	54.52	57.09	60.79	63.96

+ 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: 1957-2001
(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	5.2	4.3	1	#
Feb	4.2	2.8	#	#
Mar	2.2	1.0	#	#
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
Nov	.1	.0	#	0
Dec	2.2	1.3	#	#
Ann	14.2	9.4	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	8.5	1994	18	15.1	1985	11	1996	8	4	1982
Feb	7.0	1986	15	14.0	1985	10	1986	15	2	1985
Mar	8.0	1993	13	12.0	1993	12	1993	14	1	1993
Apr	5.0	1987	3	8.5	1987	7	1987	5	1	1987
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	#	1993	31	#+	1993	#	1993	31	#	1993
Nov	1.5	1987	11	1.5	1987	#+	2000	22	#+	2000
Dec	4.5	1982	12	6.6	1997	5	1982	12	1	1989
Ann	8.5	Jan 1994	18	15.1	Jan 1985	12	Mar 1993	14	4	Jan 1982

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.1	1.8	.7	.3	.0
Feb	2.3	1.5	.5	.1	.0
Mar	1.1	.6	.3	.1	.0
Apr	.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	@	@	.0	.0	.0
Dec	1.8	.9	.1	.0	.0
Ann	8.4	4.9	1.6	.5	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.0	2.3	1.3	.2
Feb	3.2	1.6	.8	.1
Mar	.8	.3	.2	@
Apr	.2	.1	.1	.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	1.6	.2	.1	.0
Ann	9.8	4.5	2.5	.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	5/15	5/11	5/08	5/05	5/02	4/30	4/27	4/23	4/19
32	5/08	5/02	4/28	4/25	4/22	4/18	4/15	4/11	4/06
28	4/21	4/16	4/13	4/11	4/08	4/05	4/03	3/31	3/26
24	4/16	4/09	4/04	3/31	3/27	3/23	3/18	3/13	3/06
20	3/29	3/22	3/17	3/13	3/09	3/05	2/28	2/23	2/16
16	3/12	3/06	3/02	2/26	2/23	2/19	2/15	2/11	2/05

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	10/01	10/04	10/08	10/10	10/13	10/16	10/20	10/25
32	10/05	10/10	10/14	10/17	10/19	10/22	10/25	10/29	11/03
28	10/14	10/20	10/24	10/27	10/31	11/03	11/07	11/11	11/16
24	10/31	11/05	11/08	11/12	11/15	11/17	11/21	11/24	11/29
20	11/05	11/12	11/16	11/20	11/24	11/28	12/02	12/06	12/12
16	11/21	11/27	12/02	12/06	12/10	12/13	12/17	12/22	12/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	179	173	168	164	161	157	153	148	142
32	203	195	189	185	180	176	171	165	158
28	229	220	215	210	205	200	195	189	181
24	255	247	242	237	232	227	222	217	209
20	287	277	271	265	260	254	249	242	233
16	316	307	300	295	289	284	278	272	262

***** 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	966	778	596	331	152	16	0	7	59	318	562	852	4637
60	811	638	446	203	77	3	0	0	18	200	419	697	3512
57	727	555	361	139	45	1	0	0	7	143	338	612	2928
55	668	505	307	104	30	0	0	0	4	111	287	554	2570
50	526	377	190	40	9	0	0	0	0	51	179	414	1786
32	154	69	9	0	0	0	0	0	0	0	7	83	322

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	212	216	435	666	956	1158	1312	1263	1040	724	435	254	8671
55	12	8	20	80	273	468	599	550	354	122	25	11	2522
57	9	2	13	55	227	409	537	488	297	92	16	8	2153
60	0	0	5	28	165	321	444	395	218	56	8	0	1640
65	0	0	0	7	85	184	289	246	109	19	1	0	940
70	0	0	0	1	34	78	147	121	39	4	0	0	424

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	72	111	262	463	748	959	1107	1057	819	506	251	112	72	183	445	908	1656	2615	3722	4779	5598	6104	6355	6467
45	37	57	158	330	594	809	952	902	669	362	154	57	37	94	252	582	1176	1985	2937	3839	4508	4870	5024	5081
50	15	26	86	211	442	659	797	747	520	231	87	28	15	41	127	338	780	1439	2236	2983	3503	3734	3821	3849
55	0	6	41	121	298	509	642	592	373	129	41	6	0	6	47	168	466	975	1617	2209	2582	2711	2752	2758
60	0	1	8	57	176	362	487	438	236	57	10	0	0	1	9	66	242	604	1091	1529	1765	1822	1832	1832
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	47	86	186	313	486	643	757	721	533	329	170	71	47	133	319	632	1118	1761	2518	3239	3772	4101	4271	4342

(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