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: BARBOURVILLE, KY **COOP ID: 150381**

Climate Division: KY 4 **NWS Call Sign:** **Elevation: 990 Feet** **Lat: 36˚53N** **Lon: 83˚53W**

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	45.1	23.1	34.1	80	1952	1	44.9	1974	-22+	1994	20	21.7	1977	958	0	.0	.0	11.7	4.7	24.5	1.4
Feb	50.0	25.9	38.0	80	1977	27	45.5	1990	-20+	1996	6	26.1	1978	757	0	.0	.0	14.9	2.9	20.9	.6
Mar	59.7	33.0	46.4	86	1963	31	52.9	1973	-5+	1980	3	40.1	1996	578	0	.0	.0	24.0	.4	16.2	.1
Apr	69.0	40.1	54.6	92	1956	28	59.3	1985	18	1969	1	49.2	1997	318	6	.0	.1	28.2	@	7.1	.0
May	76.9	49.9	63.4	95+	1956	29	69.6	1991	25	1965	3	57.7	1997	136	85	.0	.5	31.0	.0	.4	.0
Jun	84.0	59.3	71.7	100	1988	24	74.5	1971	34	1966	1	66.8	1972	10	209	@	4.2	30.0	.0	.0	.0
Jul	87.4	63.9	75.7	104+	1952	28	78.2	1986	46+	1988	3	72.6	1976	0	331	.1	10.5	31.0	.0	.0	.0
Aug	86.0	62.9	74.5	102+	1983	23	79.9	1983	44+	1986	30	70.5	1992	2	295	.1	7.8	31.0	.0	.0	.0
Sep	80.6	55.7	68.2	106	1954	5	72.2	1980	33+	1967	30	63.9	1974	42	135	.0	2.7	30.0	.0	.0	.0
Oct	70.3	42.2	56.3	94+	1954	4	64.9	1985	17+	1962	27	47.4	1987	306	34	.0	.0	30.6	.0	4.6	.0
Nov	59.1	33.8	46.5	83	1977	5	55.5	1985	2	1950	25	38.2	1976	557	1	.0	.0	23.1	.1	15.0	.0
Dec	48.7	26.7	37.7	79	1951	31	46.9	1984	-12	1962	13	27.3	1989	846	0	.0	.0	15.4	3.0	22.7	.4
Ann	68.1	43.0	55.6	106	Sep 1954	5	79.9	Aug 1983	-22+	Jan 1994	20	21.7	Jan 1977	4510	1096	.2	25.8	300.9	11.1	111.4	2.5

\+ 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: 1948-2001

(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	4.24	3.87	3.60	1957	29	9.29	1972	1.23	1981
Feb	3.81	3.47	3.15	1951	1	7.91	1994	1.09	1977
Mar	4.77	4.22	3.98	1963	12	12.43	1975	1.88	1988
Apr	4.15	3.85	3.22	1998	17	9.96	1998	.90	1976
May	5.42	5.31	4.25	1984	7	10.72	1984	1.13	1977
Jun	4.42	4.30	3.62	1999	29	11.48	1989	.85	1988
Jul	4.66	4.79	3.07	1986	10	8.53	1978	1.35	1974
Aug	4.13	4.44	2.41	1998	15	7.05	1994	.68	1972
Sep	3.65	3.69	4.10	1964	29	8.80	1974	.57	1994
Oct	2.99	2.83	2.58	1989	17	5.69	1976	.28	1987
Nov	4.35	4.13	2.91	1973	27	7.92	1996	1.25	1976
Dec	4.42	3.76	3.65	1991	3	10.84	1990	1.29	1980
Ann	51.01	50.62	4.25	May 1984	7	12.43	Mar 1975	.28	Oct 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.1	7.9	3.2	1.0
Feb	10.8	7.3	2.5	1.0
Mar	11.9	9.0	3.5	1.1
Apr	11.2	8.2	2.7	.8
May	12.0	8.7	4.0	1.5
Jun	11.0	8.2	2.9	1.1
Jul	10.2	8.1	3.5	1.2
Aug	8.2	6.4	3.1	1.2
Sep	8.5	6.0	2.6	1.1
Oct	7.9	5.4	2.1	.8
Nov	10.6	7.6	3.0	1.2
Dec	11.7	7.6	3.0	1.0
Ann	125.1	90.4	36.1	13.0

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	1.46	1.86	2.45	2.94	3.41	3.90	4.43	5.04	5.84	7.06	8.19
Feb	1.48	1.83	2.34	2.75	3.15	3.55	3.99	4.50	5.14	6.13	7.03
Mar	1.58	2.03	2.69	3.26	3.80	4.36	4.98	5.69	6.61	8.04	9.36
Apr	1.59	1.97	2.52	2.98	3.42	3.86	4.34	4.90	5.60	6.69	7.68
May	2.12	2.62	3.33	3.93	4.49	5.06	5.68	6.39	7.30	8.69	9.96
Jun	1.49	1.91	2.52	3.04	3.54	4.05	4.61	5.27	6.11	7.41	8.61
Jul	2.12	2.53	3.10	3.56	3.99	4.43	4.89	5.42	6.09	7.10	8.01
Aug	1.56	1.95	2.50	2.96	3.39	3.84	4.32	4.88	5.59	6.69	7.69
Sep	1.05	1.40	1.92	2.38	2.82	3.28	3.78	4.38	5.16	6.37	7.50
Oct	.85	1.14	1.56	1.94	2.30	2.68	3.10	3.60	4.24	5.25	6.19
Nov	1.68	2.09	2.66	3.14	3.60	4.06	4.56	5.14	5.87	7.00	8.03
Dec	1.42	1.84	2.46	2.99	3.50	4.03	4.60	5.28	6.15	7.50	8.75
Ann	39.13	41.50	44.50	46.75	48.73	50.63	52.58	54.73	57.31	61.02	64.20

\+ 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: 1948-2001
(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	3.6	4.2	#	#
Feb	1.3	.0	#	0
Mar	.3	.0	#	0
Apr	.5	.0	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	0	0
Nov	#	.0	#	0
Dec	1.6	.4	#	0
Ann	7.3	4.6	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	9.3	1987	13	1996	8	2	1996
Feb	9.0	1986	15	9.0	1986	11	1985	13	3	1985
Mar	6.0	1993	13	6.0	1993	3+	1999	15	#+	1999
Apr	4.0	1987	4	7.0	1987	7	1987	5	1	1987
May	#	1989	7	#	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	.0	0	0	.0	0	0	0	0	0	0
Nov	#	1997	16	#+	1997	#	1997	16	#	1997
Dec	5.0	1982	12	7.0	2000	4	1997	31	#+	2000
Ann	9.0	Feb 1986	15	9.3	Jan 1987	13	Jan 1996	8	3	Feb 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.3	.8	.4	.2	.0
Feb	.8	.5	.2	.1	.0
Mar	.3	.1	.1	.1	.0
Apr	.2	.2	.1	.0	.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	.0	.0
Dec	1.3	.7	.2	.1	.0
Ann	3.9	2.3	1.0	.5	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.2	.6	.2	.0
Feb	.7	.3	.0	.0
Mar	.2	.0	.0	.0
Apr	.1	.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	.0	.0	.0	.0
Ann	2.2	1.0	.3	.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	5/17	5/12	5/09	5/06	5/03	5/01	4/28	4/25	4/20
32	5/08	5/03	4/30	4/27	4/24	4/21	4/18	4/14	4/09
28	4/19	4/14	4/11	4/08	4/06	4/03	3/31	3/28	3/24
24	4/14	4/07	4/02	3/28	3/24	3/20	3/16	3/11	3/04
20	3/31	3/24	3/18	3/14	3/09	3/05	2/28	2/23	2/16
16	3/11	3/05	3/01	2/25	2/22	2/18	2/15	2/10	2/04

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	10/07	10/10	10/13	10/16	10/19	10/24
32	10/09	10/13	10/17	10/19	10/22	10/25	10/28	10/31	11/04
28	10/12	10/19	10/23	10/27	10/31	11/04	11/08	11/12	11/19
24	10/26	11/01	11/05	11/09	11/12	11/16	11/19	11/23	11/29
20	11/04	11/12	11/17	11/21	11/25	11/29	12/04	12/09	12/16
16	11/20	11/27	12/02	12/06	12/11	12/15	12/19	12/24	12/31

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	172	167	163	159	155	151	146	139
32	199	192	188	184	181	177	173	169	163
28	228	221	216	212	208	203	199	194	187
24	255	247	242	237	232	228	223	217	209
20	283	275	269	265	260	256	251	246	238
16	307	302	298	294	291	288	284	280	275

***** 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	958	757	578	318	136	10	0	2	42	306	557	846	4510
60	803	617	428	189	64	2	0	0	12	197	413	691	3416
57	718	534	343	126	35	0	0	0	5	145	333	605	2844
55	659	483	289	92	23	0	0	0	3	115	282	546	2492
50	516	353	175	32	6	0	0	0	0	57	173	405	1717
32	145	53	6	0	0	0	0	0	0	0	5	74	283

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	210	219	451	677	973	1189	1354	1317	1083	752	440	251	8916
55	11	6	21	79	282	499	641	604	396	153	26	10	2728
57	8	0	13	54	233	439	579	542	338	121	17	7	2351
60	0	0	5	26	169	350	486	449	255	81	8	0	1829
65	0	0	0	6	85	209	331	295	135	34	1	0	1096
70	0	0	0	1	33	93	180	157	51	12	0	0	527

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	64	106	252	451	735	957	1111	1075	852	517	244	103	64	170	422	873	1608	2565	3676	4751	5603	6120	6364	6467
45	32	53	148	315	580	807	956	920	702	368	150	50	32	85	233	548	1128	1935	2891	3811	4513	4881	5031	5081
50	7	23	79	196	427	657	801	765	552	237	80	22	7	30	109	305	732	1389	2190	2955	3507	3744	3824	3846
55	1	4	31	109	285	507	646	610	404	130	35	1	1	5	36	145	430	937	1583	2193	2597	2727	2762	2763
60	0	0	6	48	158	359	491	455	265	58	12	0	0	0	6	54	212	571	1062	1517	1782	1840	1852	1852
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	49	88	188	308	477	643	762	738	559	344	172	73	49	137	325	633	1110	1753	2515	3253	3812	4156	4328	4401

(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