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: CARROLLTON LOCK 1, KY **COOP ID: 151345**

Climate Division: KY 3 **NWS Call Sign:** **Elevation: 450 Feet** **Lat: 38˚40N** **Lon: 85˚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	41.6	24.0	32.8	72	1967	24	42.4	1990	-22+	1985	20	17.7	1977	999	0	.0	.0	8.3	6.9	24.0	1.6
Feb	47.7	26.8	37.3	80	1996	24	45.6	1976	-18	1951	2	23.5	1978	778	0	.0	.0	12.6	3.4	20.1	1.0
Mar	57.6	35.0	46.3	85	1986	31	54.1	1973	-5	1980	3	40.3	1984	579	0	.0	.0	22.7	.4	14.4	.1
Apr	67.7	43.5	55.6	89	1986	27	61.1	1985	20+	1982	7	51.4	1982	290	7	.0	.0	28.6	.0	4.7	.0
May	76.3	52.7	64.5	93+	1987	29	71.5	1991	27	1966	10	59.7	1989	118	103	.0	.2	31.0	.0	.2	.0
Jun	84.0	61.3	72.7	104	1988	26	76.2	1971	36	1966	1	68.8	1992	7	236	.1	4.7	30.0	.0	.0	.0
Jul	87.8	65.9	76.9	105+	1988	10	80.5	1980	47+	1988	2	74.1	1984	0	367	.3	9.3	31.0	.0	.0	.0
Aug	86.6	64.5	75.6	103+	1983	21	81.8	1983	42	1986	29	71.1	1992	3	331	.2	8.1	31.0	.0	.0	.0
Sep	81.1	58.0	69.6	103+	1954	5	73.4	1998	35+	1974	23	65.4	1974	33	170	.0	3.3	30.0	.0	.0	.0
Oct	70.2	46.1	58.2	91+	1951	5	65.3	1971	19	1952	21	48.8	1988	251	39	.0	@	30.7	.0	3.5	.0
Nov	57.6	37.8	47.7	84+	1987	2	53.2	1985	-2	1958	30	40.1	1976	520	1	.0	.0	22.0	.2	11.8	.0
Dec	46.2	28.7	37.5	75+	1982	4	47.0	1982	-18	1989	22	23.9	1989	854	0	.0	.0	12.1	3.8	20.4	.6
Ann	67.0	45.4	56.2	105+	Jul 1988	10	81.8	Aug 1983	-22+	Jan 1985	20	17.7	Jan 1977	4432	1254	.6	25.6	290.0	14.7	99.1	3.3

\+ 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: 1932-2001

(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	3.10	3.32	3.35	1982	23	6.23	1982	.38	1981
Feb	3.00	2.35	3.14	1971	22	7.06	1971	.39	1978
Mar	4.20	3.64	3.66	1964	5	10.78	1997	.91	1979
Apr	4.20	4.05	8.30	1947	11	8.79	1996	1.06	1976
May	4.98	4.41	3.85	1933	15	12.49	1996	.90	1987
Jun	4.44	4.41	4.25	1960	14	10.23	1998	.35	1988
Jul	4.06	3.66	3.05	1986	15	10.20	1986	.98	1983
Aug	4.09	3.68	5.05	1932	3	8.43	2000	1.07	1999
Sep	3.08	2.89	5.70	1979	14	10.57	1979	.38	1998
Oct	2.94	2.55	4.00	1983	21	12.32	1983	.69	2000
Nov	3.49	3.04	3.20	1948	6	7.78	1972	.60	1976
Dec	3.62	3.36	2.90	1948	15	8.18	1990	.65	1976
Ann	45.20	44.58	8.30	Apr 1947	11	12.49	May 1996	.35	Jun 1988

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.6	6.1	2.2	.7
Feb	9.4	5.6	1.9	.6
Mar	12.1	8.2	2.9	.9
Apr	12.3	8.4	2.5	1.0
May	11.8	8.5	3.6	1.4
Jun	10.3	7.6	3.2	1.2
Jul	9.7	6.9	2.8	1.1
Aug	8.6	6.3	3.0	1.2
Sep	8.0	5.1	2.0	.7
Oct	8.4	5.4	1.9	.8
Nov	11.4	6.7	2.4	.7
Dec	11.5	6.5	2.5	.8
Ann	124.1	81.3	30.9	11.1

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	.78	1.07	1.52	1.92	2.32	2.74	3.20	3.75	4.48	5.62	6.69
Feb	.64	.92	1.36	1.76	2.16	2.59	3.07	3.65	4.41	5.64	6.79
Mar	1.41	1.80	2.39	2.88	3.35	3.84	4.38	5.00	5.80	7.04	8.19
Apr	1.36	1.76	2.35	2.85	3.33	3.83	4.37	5.01	5.83	7.11	8.29
May	1.35	1.82	2.54	3.17	3.79	4.43	5.15	6.00	7.11	8.84	10.46
Jun	1.10	1.52	2.17	2.74	3.31	3.91	4.58	5.37	6.41	8.05	9.60
Jul	1.35	1.74	2.30	2.78	3.24	3.71	4.23	4.84	5.62	6.83	7.94
Aug	1.60	1.98	2.52	2.96	3.38	3.81	4.28	4.82	5.50	6.55	7.50
Sep	.47	.73	1.18	1.61	2.05	2.53	3.09	3.76	4.68	6.16	7.58
Oct	.77	1.05	1.48	1.85	2.22	2.61	3.04	3.55	4.22	5.26	6.24
Nov	1.07	1.40	1.89	2.32	2.73	3.16	3.63	4.18	4.89	6.00	7.03
Dec	1.12	1.46	1.97	2.41	2.84	3.28	3.77	4.34	5.08	6.23	7.29
Ann	32.49	34.96	38.12	40.51	42.64	44.69	46.80	49.14	51.97	56.08	59.62

\+ 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: 1932-2001
(3) Derived from 1971-2000 serially complete daily data

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Climate Division: KY 3 **NWS Call Sign:** **Elevation: 450 Feet** **Lat: 38°40N** **Lon: 85°09W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.6	1.1	1	#
Feb	3.4	1.3	1	#
Mar	1.2	.2	#	#
Apr	.2	.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	.2	.0	#	0
Dec	.9	.0	#	#
Ann	11.5	2.6	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	8.0	1996	7	25.1	1977	18	1978	21	8	1977
Feb	11.0	1998	6	17.0	1998	13	1977	1	5	1978
Mar	8.5	1987	31	8.5	1987	9	1987	31	2	1978
Apr	4.5	1987	2	4.5	1987	#+	1973	11	#+	1973
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	.8	1993	30	1.3	1993	0	0	0	0	0
Nov	2.0	1976	29	2.3	1976	3	1972	30	#+	1997
Dec	6.5	1990	28	6.5	1990	7	1990	28	2	1989
Ann	11.0	Feb 1998	6	25.1	Jan 1977	18	Jan 1978	21	8	Jan 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.1	1.4	.4	.2	.0
Feb	2.3	1.3	.3	.2	@
Mar	.8	.4	.1	@	.0
Apr	.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	.1	.0	.0	.0	.0
Nov	.2	.1	.0	.0	.0
Dec	.8	.3	.2	.1	.0
Ann	7.4	3.5	1.0	.5	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.1	1.6	.9	.5
Feb	4.5	2.2	.9	.1
Mar	.5	.3	@	.0
Apr	.0	.0	.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	.2	.0	.0	.0
Dec	1.2	.8	.1	.0
Ann	10.5	4.9	1.9	.6

+ 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	5/14	5/09	5/06	5/03	5/01	4/28	4/26	4/23	4/18
32	5/04	4/29	4/25	4/23	4/20	4/17	4/14	4/11	4/06
28	4/18	4/14	4/11	4/08	4/06	4/03	4/01	3/29	3/24
24	4/09	4/03	3/30	3/26	3/23	3/20	3/16	3/12	3/06
20	3/31	3/24	3/19	3/15	3/12	3/08	3/04	2/27	2/21
16	3/18	3/11	3/06	3/01	2/25	2/21	2/17	2/11	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	9/30	10/04	10/07	10/10	10/12	10/14	10/17	10/20	10/24
32	10/08	10/12	10/15	10/18	10/20	10/22	10/25	10/28	11/01
28	10/16	10/21	10/24	10/27	10/30	11/02	11/05	11/09	11/14
24	10/24	10/30	11/04	11/08	11/12	11/15	11/19	11/24	11/30
20	11/04	11/11	11/16	11/20	11/25	11/29	12/03	12/08	12/15
16	11/21	11/28	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	180	174	170	167	163	160	156	152	147
32	201	195	190	186	182	179	175	170	163
28	227	220	215	211	207	203	199	194	187
24	256	248	242	237	233	228	223	218	210
20	285	276	269	263	257	252	246	239	229
16	314	305	298	292	287	282	276	269	260

***** 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.

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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	999	778	579	290	118	7	0	3	33	251	520	854	4432
60	844	638	433	165	53	1	0	0	8	149	376	706	3373
57	757	561	348	107	28	0	0	0	3	101	295	618	2818
55	700	508	296	75	18	0	0	0	1	76	245	561	2480
50	556	382	186	24	4	0	0	0	0	30	141	425	1748
32	171	80	11	0	0	0	0	0	0	0	4	101	367

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	195	226	455	708	1008	1219	1390	1351	1128	811	474	270	9235
55	11	11	27	93	312	529	677	638	439	173	25	17	2952
57	6	7	17	64	261	469	615	576	381	137	15	13	2561
60	0	0	9	33	192	380	522	483	296	92	6	7	2020
65	0	0	0	7	103	236	367	331	170	39	1	0	1254
70	0	0	0	1	43	112	216	193	77	13	0	0	655

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	52	101	248	474	760	976	1133	1087	869	547	254	97	52	153	401	875	1635	2611	3744	4831	5700	6247	6501	6598
45	28	54	151	338	606	826	978	932	719	401	157	51	28	82	233	571	1177	2003	2981	3913	4632	5033	5190	5241
50	5	23	86	216	453	676	823	777	569	265	87	22	5	28	114	330	783	1459	2282	3059	3628	3893	3980	4002
55	0	9	43	125	306	526	668	622	421	156	41	5	0	9	52	177	483	1009	1677	2299	2720	2876	2917	2922
60	0	1	14	58	182	378	513	467	284	73	14	0	0	1	15	73	255	633	1146	1613	1897	1970	1984	1984
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	32	71	167	301	491	659	782	745	576	355	156	55	32	103	270	571	1062	1721	2503	3248	3824	4179	4335	4390

(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