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: CYNTHIANA, KY **COOP ID: 151998**

Climate Division: KY 3 **NWS Call Sign:** **Elevation: 700 Feet** **Lat: 38˚23N** **Lon: 84˚18W**

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	39.7	20.9	30.3	74	1999	23	40.0	1998	-33+	1994	20	14.4	1977	1075	0	.0	.0	6.9	8.3	26.5	2.0
Feb	44.9	23.6	34.3	77	1996	24	42.0	2000	-10	1980	2	19.7	1978	861	0	.0	.0	9.9	5.6	22.0	1.1
Mar	55.2	31.5	43.4	84	1986	31	50.9	1973	-6	1980	3	36.9	1996	671	0	.0	.0	20.3	.9	18.0	.1
Apr	65.6	39.7	52.7	91+	1986	28	58.3	1986	14	1987	1	46.6	1997	376	5	.0	.1	27.5	.0	7.0	.0
May	75.2	49.9	62.6	92	1987	30	68.9	1991	27+	1989	12	56.6	1997	162	86	.0	.3	30.9	.0	.5	.0
Jun	83.5	59.4	71.5	102	1988	26	75.2	1984	42+	1993	2	65.5	1982	17	210	@	4.7	30.0	.0	.0	.0
Jul	87.4	63.8	75.6	104	1983	24	80.6	1999	47+	1984	8	72.7	1979	0	328	.3	10.1	31.0	.0	.0	.0
Aug	86.2	61.8	74.0	106	1983	21	79.0	1995	38	1986	29	69.6	1992	5	285	.3	8.6	31.0	.0	.0	.0
Sep	80.0	54.2	67.1	100	1983	11	71.1	1998	33+	1983	24	62.6	1974	57	120	@	2.9	30.0	.0	.0	.0
Oct	68.4	41.5	55.0	89+	1982	8	62.2	1971	19+	1987	13	48.2	1987	333	21	.0	.0	30.3	.0	4.8	.0
Nov	55.4	33.6	44.5	83+	1987	3	51.8	1985	13+	2000	22	36.4	1976	615	0	.0	.0	20.0	.2	14.9	.0
Dec	44.5	25.5	35.0	77	1982	3	43.4	1984	-21	1989	23	20.5	1989	930	0	.0	.0	10.9	4.7	23.0	.6
Ann	65.5	42.1	53.8	106	Aug 1983	21	80.6	Jul 1999	-33+	Jan 1994	20	14.4	Jan 1977	5102	1055	.6	26.7	278.7	19.7	116.7	3.8

\+ 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

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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	3.12	3.27	3.10	1933	22	5.78	1999	.52	1981
Feb	3.12	2.80	4.41	2000	18	8.81	1989	.86	1985
Mar	4.25	3.71	3.78	1964	5	11.98	1997	1.31	1983
Apr	3.94	3.51	2.98	1975	25	7.75	1975	.89	1985
May	4.59	4.13	2.61	1961	8	9.21	1990	.66	1987
Jun	4.18	4.45	4.12	1950	19	7.83	1973	.66	1988
Jul	3.99	4.08	3.23	1962	6	8.89	1992	.79	1983
Aug	3.40	3.03	4.24	1971	26	7.33	1988	.90	1986
Sep	2.92	2.73	4.88	1965	1	6.75	1975	.65	1995
Oct	2.83	2.55	2.85	1962	3	7.84	1983	.30	1987
Nov	3.31	3.22	3.08	1957	19	6.57	1986	.45	1991
Dec	3.83	3.53	2.45	1933	17	10.39	1990	.90	1976
Ann	43.48	42.91	4.88	Sep 1965	1	11.98	Mar 1997	.30	Oct 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.5	6.8	2.1	.6
Feb	9.7	5.9	2.1	.8
Mar	11.2	8.2	3.0	1.1
Apr	11.6	8.0	2.7	.8
May	11.8	8.2	3.5	1.1
Jun	9.9	7.2	2.6	1.0
Jul	9.5	7.1	2.7	1.0
Aug	8.3	6.1	2.3	.8
Sep	7.6	5.5	2.0	.6
Oct	7.6	5.5	1.9	.6
Nov	10.2	6.8	2.4	.8
Dec	11.2	7.3	2.6	.8
Ann	119.1	82.6	29.9	10.0

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	1.02	1.32	1.76	2.13	2.48	2.85	3.26	3.73	4.34	5.28	6.15
Feb	.93	1.23	1.68	2.06	2.43	2.82	3.25	3.75	4.40	5.41	6.36
Mar	1.48	1.88	2.46	2.95	3.43	3.91	4.44	5.06	5.85	7.07	8.19
Apr	1.18	1.55	2.11	2.60	3.07	3.55	4.09	4.72	5.54	6.82	8.00
May	1.29	1.73	2.39	2.96	3.52	4.11	4.76	5.53	6.53	8.09	9.55
Jun	1.33	1.73	2.32	2.82	3.31	3.81	4.36	5.00	5.83	7.13	8.32
Jul	1.42	1.80	2.34	2.80	3.24	3.68	4.17	4.74	5.47	6.59	7.61
Aug	.90	1.22	1.71	2.15	2.57	3.02	3.51	4.10	4.86	6.07	7.19
Sep	.73	1.00	1.43	1.81	2.18	2.57	3.01	3.54	4.22	5.30	6.32
Oct	.59	.84	1.26	1.64	2.02	2.43	2.89	3.44	4.17	5.34	6.45
Nov	.94	1.26	1.73	2.14	2.55	2.97	3.43	3.98	4.69	5.80	6.83
Dec	1.33	1.69	2.22	2.66	3.08	3.52	4.00	4.55	5.26	6.36	7.37
Ann	33.08	35.15	37.77	39.74	41.48	43.15	44.86	46.74	49.01	52.27	55.08

\+ 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

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	1.8	.0	#	#
Feb	2.8	1.9	1	#
Mar	1.1	.0	#	0
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
Nov	.1	.0	#	0
Dec	1.1	.0	#	0
Ann	7.1	1.9	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	6.4	1980	31	10.0	1985	5	1985	20	2	1982
Feb	5.5	1993	26	10.8	1971	10	1985	4	8	1985
Mar	4.5	1972	3	7.6	1971	4	1987	31	#+	1998
Apr	2.3	1973	10	3.2	1973	4	1987	5	#+	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	#	1992	21	#	1992	0	0	0	0	0
Nov	1.0	1979	30	1.2	1979	1	1987	10	#+	1997
Dec	6.0	1984	6	6.4	1981	6	1984	7	#+	2000
Ann	6.4	Jan 1980	31	10.8	Feb 1971	10	Feb 1985	4	8	Feb 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.0	.7	.2	.1	.0
Feb	1.4	.8	.3	.1	.0
Mar	.5	.3	.1	.0	.0
Apr	.1	@	.0	.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	.2	@	.0	.0	.0
Dec	.7	.3	.2	.1	.0
Ann	3.9	2.1	.8	.3	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.7	.2	.0	.0
Feb	1.6	.6	.2	.0
Mar	.4	.2	.0	.0
Apr	.1	.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	.1	.0	.0	.0
Dec	.4	.1	.1	.0
Ann	3.3	1.1	.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	5/18	5/13	5/09	5/06	5/04	5/01	4/28	4/24	4/19
32	5/08	5/02	4/29	4/25	4/22	4/19	4/16	4/12	4/07
28	4/23	4/18	4/14	4/11	4/08	4/05	4/02	3/29	3/24
24	4/13	4/08	4/04	4/01	3/28	3/25	3/22	3/18	3/12
20	4/01	3/26	3/22	3/18	3/14	3/11	3/07	3/03	2/25
16	3/19	3/12	3/06	3/01	2/25	2/21	2/16	2/11	2/03

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	9/24	9/28	10/01	10/03	10/06	10/08	10/10	10/13	10/17
32	10/06	10/10	10/13	10/16	10/19	10/21	10/24	10/27	10/31
28	10/10	10/16	10/21	10/25	10/28	11/01	11/04	11/09	11/15
24	10/20	10/27	10/31	11/04	11/08	11/12	11/16	11/21	11/27
20	10/30	11/07	11/12	11/17	11/21	11/26	12/01	12/06	12/14
16	11/17	11/25	11/30	12/04	12/08	12/12	12/17	12/22	12/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	173	166	162	158	154	151	147	142	136
32	200	192	187	183	179	174	170	165	157
28	227	218	212	207	202	197	192	186	178
24	253	243	236	230	224	218	212	205	195
20	280	270	263	257	251	246	240	233	223
16	311	302	296	290	285	280	275	268	259

***** 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	1075	861	671	376	162	17	0	5	57	333	615	930	5102
60	920	721	518	243	85	4	0	0	18	215	468	775	3967
57	827	640	433	174	52	1	0	0	8	157	385	690	3367
55	774	589	376	135	36	0	0	0	4	123	330	631	2998
50	628	459	250	61	12	0	0	0	1	61	211	489	2172
32	218	122	21	0	0	0	0	0	0	0	11	128	500

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	166	186	374	620	947	1183	1351	1303	1053	711	386	221	8501
55	9	8	16	65	270	493	638	590	367	121	16	11	2604
57	0	3	10	44	224	434	576	528	310	92	10	8	2239
60	0	0	3	22	164	347	483	435	231	58	3	0	1746
65	0	0	0	5	86	210	328	285	120	21	0	0	1055
70	0	0	0	1	36	102	182	154	46	6	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	41	68	190	400	709	951	1111	1064	820	477	207	74	41	109	299	699	1408	2359	3470	4534	5354	5831	6038	6112
45	17	34	109	268	554	801	956	909	670	333	121	36	17	51	160	428	982	1783	2739	3648	4318	4651	4772	4808
50	4	12	56	163	403	651	801	754	520	207	62	16	4	16	72	235	638	1289	2090	2844	3364	3571	3633	3649
55	0	1	28	87	264	501	646	599	377	111	24	3	0	1	29	116	380	881	1527	2126	2503	2614	2638	2641
60	0	0	4	38	149	357	491	444	240	51	6	0	0	0	4	42	191	548	1039	1483	1723	1774	1780	1780
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	28	50	134	260	453	638	760	723	537	309	129	44	28	78	212	472	925	1563	2323	3046	3583	3892	4021	4065

(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