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: ROUGH RIVER LAKE, KY **COOP ID: 156988**

Climate Division: KY 2 **NWS Call Sign:** **Elevation: 556 Feet** **Lat: 37˚37N** **Lon: 86˚30W**

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	40.3	19.3	29.8	72	1967	24	40.5	1990	-27	1994	20	12.1	1977	1091	0	.0	.0	8.0	7.9	26.3	2.7
Feb	46.3	22.1	34.2	78+	2000	26	42.9	1990	-13+	1996	5	19.5	1978	864	0	.0	.0	11.9	4.5	22.1	1.5
Mar	56.4	30.9	43.7	85	1998	30	50.2	1973	-2+	1980	3	36.7	1996	662	0	.0	.0	22.4	.7	17.6	.1
Apr	67.2	39.9	53.6	91	1989	28	59.1	1981	16	1992	3	48.6	1997	348	4	.0	.1	28.2	.0	7.3	.0
May	76.1	49.1	62.6	93	1996	25	69.0	1991	27	1966	10	57.2	1997	150	75	.0	.6	30.9	.0	.8	.0
Jun	84.5	58.6	71.6	101	1988	25	75.2	1984	37	1966	1	66.8	1992	10	206	.1	6.9	30.0	.0	.0	.0
Jul	88.6	62.7	75.7	107	1999	31	80.4	1993	41	1988	2	72.9	1971	0	330	.5	14.8	31.0	.0	.0	.0
Aug	87.6	60.4	74.0	104	1983	22	80.6	1983	38	1986	30	68.7	1992	6	286	.5	12.0	31.0	.0	.0	.0
Sep	81.2	52.9	67.1	102	1999	5	72.6	1998	30+	2001	27	62.1	1974	62	123	.1	4.8	30.0	.0	.3	.0
Oct	69.5	40.4	55.0	91	1998	1	62.0	1971	19+	1981	24	47.3	1988	335	23	.0	.1	30.5	.0	7.7	.0
Nov	56.7	32.7	44.7	84+	2000	3	50.4	1985	2	1976	30	35.3	1976	610	0	.0	.0	21.4	.3	15.0	.0
Dec	45.4	23.8	34.6	76+	1998	5	44.6	1982	-18+	1989	23	22.6	2000	944	0	.0	.0	11.9	4.4	22.9	1.2
Ann	66.7	41.1	53.9	107	Jul 1999	31	80.6	Aug 1983	-27	Jan 1994	20	12.1	Jan 1977	5082	1047	1.2	39.3	287.2	17.8	120.0	5.5

\+ 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: 1964-2001

(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	3.45	3.15	3.56	1999	23	7.76	1999	.68	1981
Feb	3.87	2.79	5.57	1990	16	13.85	1989	.80	1978
Mar	4.42	3.60	7.40	1997	2	15.73	1997	1.51	1995
Apr	4.24	3.99	2.80	1984	22	9.60	1979	.83	1976
May	5.43	4.78	5.37	1995	18	16.31	1995	1.83	1994
Jun	4.05	4.10	3.90	1979	8	8.03	1998	.69	1988
Jul	4.33	3.90	3.76	2001	26	9.47	1979	.13	1997
Aug	3.44	3.19	3.15	1979	22	7.60	1979	.60	1987
Sep	3.59	3.11	4.34	1979	14	10.07	1979	.63	1983
Oct	3.27	3.07	4.40	1989	17	6.02	1985	.28	1982
Nov	4.05	3.79	2.95	1988	19	8.69	1988	.61	1976
Dec	4.14	3.79	3.55	1987	26	10.85	1990	.78	1976
Ann	48.28	46.28	7.40	Mar 1997	2	16.31	May 1995	.13	Jul 1997

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.2	6.3	2.3	1.0
Feb	8.2	6.4	2.2	1.0
Mar	9.5	7.5	3.1	1.0
Apr	9.0	7.5	3.0	1.2
May	9.7	8.2	3.6	1.5
Jun	8.3	7.2	2.9	1.3
Jul	7.5	6.4	3.0	1.4
Aug	6.5	5.5	2.4	1.1
Sep	6.7	5.5	2.4	1.0
Oct	6.8	5.4	2.2	.9
Nov	8.5	6.9	3.1	1.1
Dec	8.9	6.8	2.8	1.2
Ann	97.8	79.6	33.0	13.7

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	.80	1.13	1.63	2.08	2.53	3.01	3.54	4.18	5.02	6.35	7.60
Feb	.84	1.19	1.76	2.27	2.79	3.34	3.96	4.70	5.68	7.24	8.71
Mar	1.38	1.79	2.42	2.95	3.47	4.01	4.59	5.29	6.18	7.57	8.85
Apr	1.26	1.66	2.26	2.78	3.29	3.82	4.40	5.09	5.97	7.36	8.65
May	1.95	2.46	3.20	3.82	4.41	5.01	5.67	6.44	7.42	8.94	10.33
Jun	1.31	1.69	2.26	2.74	3.21	3.69	4.22	4.84	5.63	6.87	8.02
Jul	.90	1.30	1.93	2.51	3.09	3.71	4.42	5.26	6.37	8.15	9.84
Aug	.81	1.13	1.63	2.08	2.53	3.00	3.54	4.17	5.00	6.32	7.57
Sep	.91	1.25	1.77	2.23	2.69	3.17	3.70	4.34	5.17	6.48	7.70
Oct	.76	1.07	1.55	1.97	2.40	2.85	3.36	3.96	4.76	6.02	7.20
Nov	1.19	1.57	2.15	2.65	3.14	3.65	4.21	4.87	5.72	7.06	8.30
Dec	1.09	1.48	2.08	2.61	3.13	3.67	4.28	5.00	5.93	7.41	8.79
Ann	34.96	37.55	40.87	43.38	45.60	47.75	49.97	52.41	55.37	59.65	63.35

\+ 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: 1964-2001
(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	1.6	.7	1	#	8.0	1994	17	9.0	1980	13	1978	22	4	1978	1.3	.8	.2	.1	.0	.8	.2	.1	.0
Feb	1.7	.3	1	#	7.0	1998	5	11.0	1971	10	1985	4	4	1978	1.1	.8	.3	.1	.0	1.3	.8	.5	.0
Mar	.5	.0	#	#	4.0	1975	10	4.0	1975	5	1978	6	1	1978	.4	.2	@	.0	.0	.3	@	.0	.0
Apr	#	.0	#	0	#	1983	18	#+	1983	#	1971	7	#	1971	.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	#	1993	30	#	1993	#	1993	30	#	1993	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	5.5	1977	27	5.5	1977	6	1977	27	#+	1981	.1	.1	@	@	.0	.1	@	@	.0
Dec	.6	.0	#	0	3.4	1997	10	4.7	1997	3+	2000	31	1+	2000	.8	.4	.1	.0	.0	.4	@	.0	.0
Ann	4.7	1.0	N/A	N/A	8.0	Jan 1994	17	11.0	Feb 1971	13	Jan 1978	22	4+	Feb 1978	3.7	2.3	.6	.2	.0	2.9	1.0	.6	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	5/23	5/17	5/14	5/10	5/07	5/04	5/01	4/27	4/21
32	5/11	5/05	5/01	4/28	4/25	4/21	4/18	4/14	4/08
28	4/21	4/17	4/14	4/11	4/09	4/06	4/04	4/01	3/27
24	4/16	4/11	4/07	4/04	4/02	3/30	3/27	3/23	3/18
20	4/07	4/01	3/27	3/24	3/20	3/16	3/13	3/08	3/02
16	3/22	3/15	3/10	3/06	3/02	2/27	2/22	2/18	2/11

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	9/18	9/22	9/26	9/28	10/01	10/03	10/06	10/09	10/14
32	9/26	10/01	10/04	10/08	10/11	10/13	10/17	10/20	10/25
28	10/08	10/13	10/16	10/19	10/22	10/25	10/28	11/01	11/06
24	10/16	10/23	10/27	10/31	11/04	11/08	11/12	11/16	11/23
20	10/23	10/31	11/05	11/10	11/14	11/18	11/23	11/28	12/06
16	11/12	11/19	11/24	11/29	12/03	12/07	12/12	12/17	12/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	167	160	155	150	146	142	137	132	125
32	189	182	177	172	168	164	160	155	148
28	215	209	204	200	196	192	188	183	177
24	240	231	226	220	216	211	206	200	192
20	267	257	250	244	238	233	227	220	210
16	303	294	287	281	275	269	264	257	247

***** 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	1091	864	662	348	150	10	0	6	62	335	610	944	5082
60	936	724	513	216	74	2	0	0	21	217	464	789	3956
57	851	642	427	150	43	0	0	0	9	159	382	704	3367
55	792	592	372	113	28	0	0	0	5	126	329	645	3002
50	647	462	250	45	8	0	0	0	1	63	212	503	2191
32	239	123	24	0	0	0	0	0	0	0	12	139	537

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	171	184	385	646	948	1186	1353	1303	1051	711	393	218	8549
55	11	8	20	69	263	496	640	590	366	124	19	11	2617
57	8	2	13	46	216	437	578	528	310	95	12	8	2253
60	0	0	6	22	154	348	485	435	232	60	4	0	1746
65	0	0	0	4	75	206	330	286	123	23	0	0	1047
70	0	0	0	0	28	91	183	156	49	6	0	0	513

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	48	83	221	435	719	963	1122	1073	827	493	224	85	48	131	352	787	1506	2469	3591	4664	5491	5984	6208	6293
45	22	44	134	303	564	813	967	918	677	349	138	42	22	66	200	503	1067	1880	2847	3765	4442	4791	4929	4971
50	6	18	71	191	411	663	812	763	528	226	78	21	6	24	95	286	697	1360	2172	2935	3463	3689	3767	3788
55	1	4	38	111	275	513	657	608	383	128	40	4	1	5	43	154	429	942	1599	2207	2590	2718	2758	2762
60	0	0	11	54	155	365	502	453	252	60	10	0	0	0	11	65	220	585	1087	1540	1792	1852	1862	1862
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	33	65	160	291	470	644	755	715	545	338	151	57	33	98	258	549	1019	1663	2418	3133	3678	4016	4167	4224

(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