

# Climatography of the United States

No. 20

1971-2000

Station: GRANT CITY, MO

COOP ID: 233369

Climate Division: MO 1

NWS Call Sign:

Elevation: 1,130 Feet Lat: 40°29N

Lon: 94°24W

## 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	33.1	13.0	23.1	70	1989	31	35.5	1990	-25	1974	12	8.4	1979	1300	0	.0	.0	3.1	14.1	29.6	5.7
Feb	39.6	18.3	29.0	75+	1995	25	38.7	1987	-27	1996	3	15.0	1979	1010	0	.0	.0	7.3	9.2	24.1	3.2
Mar	51.9	28.5	40.2	89	1986	29	46.1	1986	-19	1998	12	32.8+	1984	769	0	.0	.0	17.2	2.0	18.4	.3
Apr	64.5	39.8	52.2	94	1989	25	59.5	1981	7	1975	3	45.1	1983	393	7	.0	.2	26.7	.1	6.0	.0
May	74.3	50.5	62.4	96+	1967	24	68.0	1987	28	1976	3	57.2	1997	151	70	.0	.4	31.0	.0	.3	.0
Jun	83.4	59.3	71.4	107	1988	25	76.7	1988	40+	2001	1	66.2	1989	20	210	.4	5.3	30.0	.0	.0	.0
Jul	87.8	63.7	75.8	108+	1980	30	82.4	1980	43	1997	5	71.8	1992	3	337	1.1	12.5	31.0	.0	.0	.0
Aug	86.1	61.2	73.7	105+	1988	17	81.3	1983	41	1950	20	67.9	1992	13	282	.9	9.9	31.0	.0	.0	.0
Sep	78.2	53.0	65.6	102	1953	28	70.6	1990	26+	1989	24	59.6	1993	85	102	.0	3.3	30.0	.0	.3	.0
Oct	66.6	41.3	54.0	95	1953	2	60.5	1971	14	1972	19	47.7	1988	349	6	.0	.2	29.4	.0	5.2	.0
Nov	49.6	29.2	39.4	81	1999	13	48.0	1999	-9	1964	30	32.2	1991	769	0	.0	.0	16.0	2.4	17.9	.2
Dec	36.5	17.8	27.2	70	1984	28	32.8	1979	-25	1989	23	10.3	1983	1174	0	.0	.0	4.4	10.2	28.2	3.2
Ann	62.6	39.6	51.2	108+	Jul 1980	30	82.4	Jul 1980	-27	Feb 1996	3	8.4	Jan 1979	6036	1014	2.4	31.8	257.1	38.0	130.0	12.6

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(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

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# 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: GRANT CITY, MO

COOP ID: 233369

Climate Division: MO 1

NWS Call Sign:

Elevation: 1,130 Feet Lat: 40°29N

Lon: 94°24W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.84	.84	.87	1960	12	2.26	1979	.00+	1994	4.4	2.5	.2	.0	.00	.00	.25	.39	.54	.69	.86	1.07	1.33	1.78	2.20
Feb	1.10	1.04	1.89	1961	18	2.84	1992	.09	1991	4.9	2.9	.6	.1	.22	.32	.48	.62	.77	.93	1.12	1.33	1.62	2.09	2.53
Mar	2.36	1.95	1.55	1987	18	6.40	1973	.46	1994	7.2	5.2	1.5	.6	.45	.66	1.00	1.32	1.65	2.00	2.40	2.88	3.51	4.54	5.51
Apr	3.05	2.79	2.40	2001	9	6.05	1976	.80	1989	8.5	6.1	2.1	.6	.95	1.24	1.67	2.04	2.40	2.77	3.18	3.66	4.27	5.24	6.13
May	4.33	3.73	3.60	1999	31	9.66	1996	.80	1988	10.1	8.3	3.0	.9	1.09	1.50	2.13	2.69	3.24	3.82	4.47	5.23	6.24	7.83	9.31
Jun	4.37	4.44	3.70	2000	24	9.15	2000	.20	1988	8.7	6.8	3.1	1.3	1.27	1.69	2.31	2.85	3.38	3.93	4.53	5.25	6.17	7.62	8.96
Jul	4.46	3.91	4.80	1993	5	19.20	1993	.38	1975	7.9	6.6	3.3	1.5	.64	1.01	1.66	2.27	2.92	3.63	4.44	5.44	6.79	8.99	11.10
Aug	3.58	2.98	4.00	1959	5	10.03	1977	.78	1984	7.9	6.4	2.5	1.0	.88	1.22	1.74	2.20	2.66	3.15	3.69	4.34	5.18	6.52	7.77
Sep	3.84	3.04	3.60	1971	5	8.27	1973	1.31	1974	6.8	5.6	2.7	1.2	1.12	1.48	2.03	2.51	2.97	3.45	3.98	4.61	5.42	6.69	7.87
Oct	2.89	2.74	4.37	1973	11	6.10	1973	.06	1975	6.1	4.8	1.6	1.0	.43	.67	1.09	1.49	1.91	2.36	2.88	3.52	4.39	5.79	7.13
Nov	2.33	2.24	2.77	1987	1	5.29	1987	.00	1989	6.1	4.8	1.5	.5	.30	.59	.99	1.32	1.65	2.01	2.40	2.88	3.50	4.50	5.44
Dec	1.38	1.35	2.10	1992	14	3.54	1982	.06	1996	5.1	3.2	.8	.3	.22	.34	.54	.74	.93	1.15	1.39	1.69	2.09	2.74	3.36
Ann	34.53	34.50	4.80	Jul 1993	5	19.20	Jul 1993	.00+	Jan 1994	83.7	63.2	22.9	9.0	22.64	24.87	27.77	29.99	31.98	33.92	35.94	38.19	40.93	44.95	48.45

+ 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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**Station: GRANT CITY, MO**

**COOP ID: 233369**

**Climate Division: MO 1**

**NWS Call Sign:**

**Elevation: 1,130 Feet**

**Lat: 40°29N**

**Lon: 94°24W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	6.0	6.0	2	1	7.0	1971	4	15.0	1973	16	1979	31	11	1979	2.7	2.2	.8	.3	.0	13.7	8.8	5.1	.4
Feb	5.0	3.8	2	1	9.0	1978	13	12.5	1975	16	1979	6	13	1979	2.1	1.9	.6	.2	.0	10.7	7.9	4.8	.6
Mar	4.0	2.0	1	#	9.0	1998	9	15.0+	1984	16	1978	12	10	1978	1.6	1.5	.6	.1	.0	4.4	3.1	1.2	.6
Apr	.9	.0	#	0	6.0	1980	12	7.0	1973	6	1973	10	1	1973	.4	.4	.1	@	.0	.4	.2	.1	.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	.2	.0	#	0	3.0	1980	28	3.0+	1997	1+	1987	11	#+	1987	.1	.1	.1	.0	.0	@	.0	.0	.0
Nov	2.0	1.0	#	#	6.0	1972	14	8.0+	1983	6	1972	14	2	1991	1.1	.8	.3	.1	.0	2.0	.8	.1	.0
Dec	4.6	3.0	1	#	6.0	1985	2	15.0	1983	10	1983	30	5	1983	1.9	1.8	.6	.1	.0	7.6	3.1	1.5	.2
Ann	22.7	15.8	N/A	N/A	9.0+	Mar 1998	9	15.0+	Mar 1984	16+	Feb 1979	6	13	Feb 1979	9.9	8.7	3.1	.8	.0	38.8	23.9	12.8	1.8

+ 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

Complete documentation available from:

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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	5/11	5/07	5/04	5/01	4/29	4/26	4/24	4/20	4/16
32	5/06	5/01	4/27	4/24	4/22	4/19	4/16	4/12	4/07
28	4/22	4/17	4/14	4/12	4/10	4/07	4/05	4/02	3/29
24	4/14	4/09	4/05	4/02	3/31	3/28	3/25	3/22	3/17
20	4/08	4/03	3/30	3/26	3/23	3/19	3/16	3/12	3/06
16	3/31	3/25	3/20	3/16	3/13	3/09	3/05	2/28	2/22
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	9/23	9/27	9/30	10/03	10/06	10/09	10/13	10/18
32	9/25	9/30	10/04	10/07	10/09	10/12	10/15	10/19	10/24
28	10/03	10/10	10/14	10/18	10/22	10/26	10/30	11/03	11/10
24	10/13	10/19	10/23	10/27	10/31	11/03	11/07	11/11	11/17
20	10/24	10/30	11/03	11/07	11/10	11/14	11/17	11/22	11/28
16	11/06	11/12	11/16	11/19	11/22	11/25	11/29	12/03	12/08
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	176	169	164	160	156	153	149	144	137
32	189	183	178	174	170	166	162	157	151
28	218	210	204	199	195	190	185	179	171
24	236	228	222	218	213	209	204	198	191
20	258	249	242	237	232	226	221	214	205
16	278	270	264	259	254	249	244	238	229

\* 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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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**Degree Days to Selected Base Temperatures (° F)**

<b>Base</b>	<b>Heating Degree Days (1)</b>												
<b>Below</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>65</b>	1300	1010	769	393	151	20	3	13	85	349	769	1174	6036
<b>60</b>	1145	870	615	262	73	4	0	2	30	217	620	1019	4857
<b>57</b>	1052	794	530	195	42	1	0	0	13	152	534	926	4239
<b>55</b>	991	742	472	156	27	0	0	0	7	115	479	865	3854
<b>50</b>	847	612	338	79	7	0	0	0	0	51	347	721	3002
<b>32</b>	375	241	55	0	0	0	0	0	0	0	58	274	1003

<b>Base</b>	<b>Cooling Degree Days (1)</b>												
<b>Above</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Ann</b>
<b>32</b>	98	154	309	605	942	1180	1357	1292	1008	680	279	122	8026
<b>55</b>	1	11	13	70	256	490	644	579	325	82	11	1	2483
<b>57</b>	0	7	9	49	209	430	582	517	271	57	5	0	2136
<b>60</b>	0	0	1	26	147	343	489	426	198	30	1	0	1661
<b>65</b>	0	0	0	7	70	210	337	282	102	6	0	0	1014
<b>70</b>	0	0	0	1	24	106	197	160	41	1	0	0	530

**Growing Degree Units (2)**

<b>Base</b>	<b>Growing Degree Units (Monthly)</b>												<b>Growing Degree Units (Accumulated Monthly)</b>											
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>40</b>	6	46	163	406	724	974	1144	1084	799	472	133	19	6	52	215	621	1345	2319	3463	4547	5346	5818	5951	5970
<b>45</b>	0	17	97	275	569	824	989	929	649	329	71	5	0	17	114	389	958	1782	2771	3700	4349	4678	4749	4754
<b>50</b>	0	3	49	168	417	674	834	774	501	205	30	2	0	3	52	220	637	1311	2145	2919	3420	3625	3655	3657
<b>55</b>	0	0	16	93	273	524	679	619	360	112	8	0	0	0	16	109	382	906	1585	2204	2564	2676	2684	2684
<b>60</b>	0	0	5	42	156	378	524	464	236	50	1	0	0	0	5	47	203	581	1105	1569	1805	1855	1856	1856
<b>Base</b>	<b>Growing Degree Units for Corn (Monthly)</b>												<b>Growing Degree Units for Corn (Accumulated Monthly)</b>											
<b>50/86</b>	3	38	109	249	446	650	778	731	517	289	78	13	3	41	150	399	845	1495	2273	3004	3521	3810	3888	3901

(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](http://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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)