

# Climatography of the United States No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: KANSAS CITY DOWNTOWN AP, MO

1971-2000

COOP ID: 234359

Climate Division: MO 1

NWS Call Sign: MKC

Elevation: 742 Feet

Lat: 39°07N

Lon: 94°36W

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	37.8	20.7	29.3	75	1950	24	40.2	1990	-14	1982	10	16.9	1979	1108	0	.0	.0	5.1	7.7	27.0	2.3
Feb	44.1	26.3	35.2	83	1972	29	44.8	1976	-12	1982	6	21.9	1978	835	0	.0	.0	8.0	4.8	21.0	.9
Mar	55.8	36.0	45.9	87	1966	31	51.3	1986	-1	1962	1	38.7	1984	592	0	.0	.0	20.7	.9	12.8	@
Apr	66.5	46.4	56.5	93	1980	21	66.5	1981	22	1950	13	50.2	1983	280	23	.0	.5	28.2	.0	2.2	.0
May	76.2	57.0	66.6	97	1956	21	72.3	1998	34	1961	2	60.6	1995	76	126	.0	.7	31.0	.0	@	.0
Jun	85.5	66.7	76.1	108	1980	27	80.0	1980	46	1982	1	71.2	1982	4	337	.3	7.4	30.0	.0	.0	.0
Jul	90.5	72.0	81.3	112	1954	13	90.2	1980	52+	1972	5	76.4	1971	0	503	2.6	17.3	31.0	.0	.0	.0
Aug	88.8	70.2	79.5	110	1984	29	86.2	1983	48	1986	28	73.3	1992	3	452	1.8	14.2	31.0	.0	.0	.0
Sep	80.1	61.1	70.6	106	2000	2	75.8	1978	34+	1989	24	64.1	1974	37	205	.2	4.1	30.0	.0	.0	.0
Oct	68.8	49.1	59.0	97+	1963	10	64.0	1971	21	1972	19	53.4	1976	217	29	.0	.2	29.8	.0	1.4	.0
Nov	53.4	36.1	44.8	82	1980	8	53.7	1999	7+	1991	8	38.0	1976	607	1	.0	.0	19.8	.8	12.1	.0
Dec	41.9	25.2	33.6	73+	1982	1	39.8	1982	-19	1989	22	17.2	1983	975	0	.0	.0	6.8	4.6	24.9	1.0
Ann	65.8	47.2	56.5	112	Jul 1954	13	90.2	Jul 1980	-19	Dec 1989	22	16.9	Jan 1979	4734	1676	4.9	44.4	271.4	18.8	101.4	4.2

+ 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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**Lon: 94°36W**

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	1.13	.95	3.50	2001	28	3.17	1982	.02	1986	5.9	2.7	.4	.2	.10	.18	.33	.49	.66	.85	1.08	1.37	1.77	2.43	3.08
Feb	1.02	.92	2.50	2001	27	2.92	1997	.04	1991	5.8	2.5	.6	.1	.17	.26	.41	.55	.70	.85	1.03	1.25	1.53	2.00	2.44
Mar	2.38	2.12	2.34	1961	12	8.35	1973	.85	1985	8.3	4.8	1.3	.2	.76	.98	1.32	1.60	1.88	2.17	2.48	2.85	3.32	4.06	4.75
Apr	3.27	2.95	2.66	1967	1	10.45	1994	.54	1980	10.5	6.3	2.0	.7	.71	1.01	1.50	1.93	2.37	2.83	3.35	3.98	4.80	6.11	7.36
May	4.55	4.11	4.73	1990	15	10.22	1995	1.27	1998	12.7	8.5	3.4	1.2	1.37	1.80	2.44	3.00	3.54	4.10	4.72	5.45	6.39	7.87	9.23
Jun	4.73	3.98	5.25	2000	20	10.56	1999	1.63	1980	10.2	7.3	3.3	1.3	1.55	1.99	2.65	3.22	3.76	4.32	4.93	5.65	6.57	8.00	9.32
Jul	3.61	3.28	6.45	1998	26	11.40	1993	.28	1999	9.1	6.3	2.2	1.0	.42	.70	1.21	1.71	2.25	2.84	3.54	4.41	5.58	7.52	9.41
Aug	3.62	2.92	7.45	1969	15	11.64	1982	.72	2000	8.6	5.7	2.3	.9	.66	.98	1.50	2.00	2.50	3.04	3.66	4.41	5.40	7.01	8.54
Sep	4.17	3.66	4.74	1961	13	11.31	1993	.47	1990	8.8	6.3	2.9	1.3	.96	1.35	1.96	2.51	3.05	3.63	4.28	5.05	6.06	7.68	9.19
Oct	3.28	2.95	4.95	1998	4	9.22	1998	.24	1999	7.5	5.3	2.0	1.0	.56	.85	1.33	1.78	2.24	2.74	3.31	4.01	4.93	6.43	7.86
Nov	2.30	2.03	3.69	1964	15	5.79	1992	.00	1989	7.4	4.5	1.6	.7	.35	.66	1.05	1.37	1.69	2.02	2.39	2.83	3.40	4.31	5.17
Dec	1.45	1.13	2.60	1992	13	4.13	1992	.00	1996	6.8	3.0	.9	.2	.06	.18	.39	.60	.83	1.09	1.39	1.78	2.30	3.17	4.02
Ann	35.51	34.37	7.45	Aug 1969	15	11.64	Aug 1982	.00+	Dec 1996	101.6	63.2	22.9	8.8	24.14	26.30	29.09	31.22	33.12	34.97	36.89	39.01	41.60	45.37	48.65

+ 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

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Lat: 39°07N

Lon: 94°36W

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	5.2	3.3	1	#	10.0	1979	13	17.0	1979	20	1979	15	11	1979	3.4	1.4	.5	.2	.1	4.4	1.1	.3	.0
Feb	1.8	1.5	1	#	3.7	1980	4	5.1	1983	10	1982	12	3	1982	2.2	.9	.2	.0	.0	2.6	1.1	.2	.0
Mar	1.6	.0	#	0	7.0	1990	23	7.4	1971	4	1971	25	1	1971	1.2	.8	.2	.1	.0	.5	.1	.0	.0
Apr	.3	.0	#	0	4.0	1983	4	4.0	1983	#+	1997	10	#+	1997	.2	.1	.1	.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	.4	.0	#	0	6.0	1996	22	6.0	1996	#	1996	23	#	1996	.1	.1	.1	.1	.0	.0	.0	.0	.0
Nov	.4	#	#	0	2.5	1992	25	2.5	1992	1	1985	30	#+	1995	.5	.2	.0	.0	.0	.1	.0	.0	.0
Dec	2.9	1.1	#	#	5.2	1984	31	11.2	1983	9	1983	23	3	1983	2.0	1.2	.3	.1	.0	2.1	1.3	1.0	.0
Ann	12.6	5.9	N/A	N/A	10.0	Jan 1979	13	17.0	Jan 1979	20	Jan 1979	15	11	Jan 1979	9.6	4.7	1.4	.5	.1	9.7	3.6	1.5	.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	5/01	4/26	4/23	4/20	4/17	4/15	4/12	4/09	4/04
32	4/21	4/16	4/13	4/10	4/07	4/04	4/01	3/29	3/24
28	4/11	4/05	4/01	3/29	3/26	3/23	3/20	3/16	3/11
24	4/03	3/27	3/23	3/18	3/15	3/11	3/07	3/02	2/24
20	3/30	3/21	3/14	3/09	3/04	2/27	2/22	2/15	2/07
16	3/21	3/12	3/06	3/01	2/24	2/19	2/14	2/07	1/30
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	9/28	10/03	10/07	10/11	10/14	10/17	10/20	10/24	10/30
32	10/14	10/19	10/22	10/25	10/28	10/31	11/03	11/06	11/11
28	10/21	10/27	10/31	11/04	11/07	11/11	11/14	11/18	11/24
24	11/02	11/08	11/12	11/15	11/19	11/22	11/26	11/30	12/06
20	11/08	11/16	11/21	11/25	11/29	12/03	12/08	12/13	12/20
16	11/18	11/26	12/01	12/06	12/10	12/15	12/19	12/25	1/02
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	199	192	187	183	179	174	170	165	158
32	225	217	212	208	203	199	194	189	182
28	253	244	237	231	225	220	214	207	198
24	274	265	259	253	248	243	238	231	222
20	303	291	283	276	269	263	256	248	236
16	325	313	304	296	289	282	274	265	252

\* 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:

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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	1108	835	592	280	76	4	0	3	37	217	607	975	4734
60	953	701	446	171	28	0	0	0	10	113	467	821	3710
57	861	623	362	119	13	0	0	0	4	70	386	734	3172
55	802	571	309	90	7	0	0	0	1	49	335	677	2841
50	659	447	197	37	1	0	0	0	0	16	224	535	2116
32	238	132	14	0	0	0	0	0	0	0	23	159	566

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	153	222	445	733	1073	1324	1526	1472	1158	835	406	207	9554
55	4	16	27	133	367	634	813	759	469	171	28	12	3433
57	2	12	18	102	311	574	751	697	411	130	19	7	3034
60	0	7	9	64	233	484	658	604	328	81	10	1	2479
65	0	0	0	23	126	337	503	452	205	29	1	0	1676
70	0	0	0	6	54	205	352	309	111	6	0	0	1043

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	27	75	241	488	817	1083	1268	1211	917	579	194	45	27	102	343	831	1648	2731	3999	5210	6127	6706	6900	6945
45	6	38	148	349	662	933	1113	1056	767	433	110	17	6	44	192	541	1203	2136	3249	4305	5072	5505	5615	5632
50	0	16	80	222	507	783	958	901	618	295	52	6	0	16	96	318	825	1608	2566	3467	4085	4380	4432	4438
55	0	3	38	125	356	633	803	746	470	181	21	1	0	3	41	166	522	1155	1958	2704	3174	3355	3376	3377
60	0	1	10	64	219	484	648	591	328	92	5	0	0	1	11	75	294	778	1426	2017	2345	2437	2442	2442
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	20	46	147	286	518	752	871	836	605	344	107	23	20	66	213	499	1017	1769	2640	3476	4081	4425	4532	4555

(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.  
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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
|---|---|

## 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)