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: MOUND CITY, KS **COOP ID: 145528**

Climate Division: KS 6 **NWS Call Sign:** **Elevation: 840 Feet** **Lat: 38˚09N** **Lon: 94˚49W**

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	38.8	17.7	28.3	77	1965	7	38.1	1990	-17	1977	11	14.9	1979	1141	0	.0	.0	7.8	8.8	27.9	2.1
Feb	45.9	23.2	34.6	81	1972	29	46.3	1976	-20	1979	1	22.4	1978	854	0	.0	.0	12.0	4.8	21.8	1.4
Mar	56.3	32.7	44.5	88	1966	31	48.5+	1985	-4	1980	2	37.3	1996	636	0	.0	.0	22.2	.8	14.9	.1
Apr	66.5	42.7	54.6	93	1972	12	64.0	1981	16	1975	3	47.9	1983	330	17	.0	.1	28.1	.0	4.3	.0
May	75.6	53.0	64.3	98	1953	31	69.4	1977	27	1976	3	58.3	1997	115	92	.0	.2	31.0	.0	.3	.0
Jun	84.3	62.6	73.5	107	1953	13	78.4	1980	42+	1956	2	68.0	1992	11	264	.1	7.1	30.0	.0	.0	.0
Jul	90.1	67.7	78.9	117	1954	14	89.8	1980	44	1972	5	74.8	1992	4	435	3.1	17.3	31.0	.0	.0	.0
Aug	88.8	65.4	77.1	110	1980	1	84.9	1983	41	1950	21	68.8	1992	9	384	2.7	16.2	31.0	.0	.0	.0
Sep	80.6	56.5	68.6	105+	2000	3	75.4	1980	28	1984	30	62.1	1993	67	174	.4	5.9	29.9	.0	.2	.0
Oct	70.1	45.1	57.6	97	1963	7	62.8	1971	17+	1993	31	51.3	1988	254	25	.0	.4	30.0	.0	4.0	.0
Nov	54.6	33.2	43.9	84+	1980	6	51.6	1999	3+	1976	29	37.6	1976	633	0	.0	.0	20.1	.7	14.3	.0
Dec	43.2	22.7	33.0	75	1966	7	39.2	1982	-27	1989	23	17.6	1983	993	0	.0	.0	10.4	5.2	25.1	1.3
Ann	66.2	43.5	54.9	117	Jul 1954	14	89.8	Jul 1980	-27	Dec 1989	23	14.9	Jan 1979	5047	1391	6.3	47.2	283.5	20.3	112.8	4.9

\+ 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: 1949-2001

(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	1.59	1.27	2.75	1971	3	3.94	1979	.00	1986
Feb	1.83	1.43	4.50	1997	21	5.75	1985	.15	1991
Mar	3.37	3.26	3.25	1985	4	10.35	1973	.56	1995
Apr	3.99	3.46	4.04	1994	28	13.23	1994	.41	1989
May	4.91	4.73	3.98	1970	31	11.67	1981	1.13	1992
Jun	4.95	5.24	3.80	1950	28	9.18	1985	.55	1972
Jul	3.79	3.14	4.50	1957	26	11.44	1993	.14	1975
Aug	3.77	3.15	3.54	1964	14	9.96	1974	.15	2000
Sep	4.32	3.71	5.70	1970	22	14.57	1973	.80	1979
Oct	3.75	3.39	4.10	1986	3	13.58	1986	.35	1995
Nov	3.29	3.02	3.50	1979	20	10.16	1992	.00	1989
Dec	1.93	1.90	2.00	1992	14	5.21	1984	.09	1976
Ann	41.49	41.31	5.70	Sep 1970	22	14.57	Sep 1973	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.7	3.8	.9	.3
Feb	5.3	3.6	1.2	.5
Mar	7.9	5.6	2.3	1.0
Apr	8.8	6.4	2.7	1.1
May	10.4	7.8	3.4	1.6
Jun	8.7	6.5	3.6	1.7
Jul	7.4	5.3	2.6	1.2
Aug	7.0	5.1	2.4	1.1
Sep	7.8	5.6	2.9	1.3
Oct	7.9	5.9	2.7	1.3
Nov	7.3	5.6	2.4	.8
Dec	5.5	3.8	1.4	.5
Ann	89.7	65.0	28.5	12.4

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	.23	.43	.70	.93	1.15	1.39	1.65	1.96	2.37	3.02	3.64
Feb	.29	.44	.71	.96	1.22	1.51	1.83	2.24	2.77	3.64	4.48
Mar	.77	1.08	1.58	2.02	2.46	2.93	3.46	4.09	4.92	6.24	7.48
Apr	.82	1.18	1.77	2.30	2.84	3.42	4.07	4.86	5.89	7.55	9.12
May	1.27	1.73	2.44	3.07	3.69	4.35	5.07	5.93	7.06	8.83	10.49
Jun	1.48	1.95	2.65	3.26	3.85	4.47	5.14	5.94	6.97	8.59	10.09
Jul	.35	.62	1.13	1.65	2.23	2.88	3.65	4.62	5.95	8.16	10.33
Aug	.45	.75	1.28	1.80	2.36	2.98	3.71	4.61	5.83	7.84	9.80
Sep	.83	1.22	1.86	2.44	3.03	3.67	4.39	5.26	6.42	8.28	10.04
Oct	.62	.95	1.50	2.01	2.54	3.12	3.78	4.58	5.65	7.39	9.05
Nov	.36	.75	1.30	1.78	2.26	2.78	3.36	4.06	5.00	6.50	7.93
Dec	.17	.30	.56	.83	1.12	1.45	1.85	2.35	3.04	4.19	5.33
Ann	27.72	30.33	33.70	36.29	38.60	40.85	43.18	45.77	48.94	53.56	57.58

\+ 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: 1949-2001
(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	5.0	4.0	1	0
Feb	4.4	4.0	#	0
Mar	1.3	.0	#	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	.1	.0	0	0
Nov	.9	.0	#	0
Dec	3.2	1.0	#	0
Ann	14.9	9.0	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	6.0	1978	16	24.0	1979	11	1987	19	3	1987
Feb	9.0	1980	8	14.0	1980	10	1975	23	1	1989
Mar	7.0	1975	9	11.0	1975	9	1975	10	2	1975
Apr	.3	1994	6	.3	1994	0	0	0	0	0
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	2.0	1976	30	2.0	1976	0	0	0	0	0
Nov	8.0	1975	26	10.0	1975	5	1988	20	#+	2000
Dec	9.0	1987	15	16.5	1987	12	1987	15	2	1987
Ann	9.0+	Dec 1987	15	24.0	Jan 1979	12	Dec 1987	15	3	Jan 1987

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	2.0	.8	.2	.0
Feb	1.8	1.4	.7	.2	.0
Mar	.7	.7	.1	@	.0
Apr	@	.0	.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
Nov	.5	.3	.1	.1	.0
Dec	1.7	1.1	.3	.1	.0
Ann	7.4	5.5	2.0	.6	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.6	2.9	1.7	.1
Feb	1.7	.9	.3	.1
Mar	.7	.1	.0	.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	.4	.1	.1	.0
Dec	1.9	.6	.4	.2
Ann	9.3	4.6	2.5	.4

+ 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	5/17	5/12	5/08	5/04	5/01	4/28	4/24	4/20	4/14
32	5/05	4/30	4/26	4/23	4/20	4/17	4/13	4/10	4/04
28	4/21	4/16	4/12	4/09	4/06	4/03	3/31	3/28	3/23
24	4/09	4/05	4/01	3/29	3/27	3/24	3/21	3/17	3/13
20	4/04	3/27	3/21	3/16	3/12	3/07	3/02	2/24	2/16
16	3/22	3/14	3/08	3/04	2/27	2/23	2/18	2/12	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	9/20	9/25	9/28	10/01	10/04	10/07	10/09	10/13	10/17
32	9/27	10/03	10/08	10/12	10/15	10/19	10/22	10/27	11/02
28	10/11	10/17	10/22	10/25	10/29	11/01	11/05	11/09	11/15
24	10/19	10/27	11/01	11/05	11/09	11/13	11/18	11/23	11/30
20	11/05	11/11	11/15	11/18	11/22	11/25	11/28	12/03	12/08
16	11/14	11/20	11/24	11/28	12/01	12/05	12/08	12/13	12/18

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	159	155	151	147	142	135
32	201	193	187	182	178	173	168	162	154
28	226	218	213	209	204	200	196	190	183
24	252	243	237	232	227	222	217	211	202
20	285	274	267	260	254	248	242	234	224
16	304	295	288	282	276	271	265	258	249

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1141	854	636	330	115	11	4	9	67	254	633	993	5047
60	986	718	482	211	51	1	0	1	25	143	488	838	3944
57	893	639	396	153	28	0	0	0	13	92	405	750	3369
55	832	587	339	120	17	0	0	0	7	66	352	692	3012
50	686	461	214	55	4	0	0	0	0	24	235	549	2228
32	241	137	12	0	0	0	0	0	0	0	22	164	576

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	123	207	399	677	1000	1244	1453	1397	1096	793	378	193	8960
55	1	14	13	106	304	554	740	684	413	146	19	8	3002
57	0	10	8	80	252	494	678	622	359	111	12	4	2630
60	0	4	1	48	183	405	585	530	282	69	4	0	2111
65	0	0	0	17	92	264	435	384	174	25	0	0	1391
70	0	0	0	5	35	145	291	249	94	6	0	0	825

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	29	95	250	477	772	1021	1221	1175	876	566	211	57	29	124	374	851	1623	2644	3865	5040	5916	6482	6693	6750
45	6	49	151	342	617	871	1066	1020	727	420	129	27	6	55	206	548	1165	2036	3102	4122	4849	5269	5398	5425
50	1	19	85	221	464	721	911	865	579	288	70	6	1	20	105	326	790	1511	2422	3287	3866	4154	4224	4230
55	0	7	39	129	318	572	756	710	432	175	32	1	0	7	46	175	493	1065	1821	2531	2963	3138	3170	3171
60	0	1	12	66	188	424	601	555	305	91	10	0	0	1	13	79	267	691	1292	1847	2152	2243	2253	2253
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	27	74	169	300	494	695	823	786	575	361	135	44	27	101	270	570	1064	1759	2582	3368	3943	4304	4439	4483

(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