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: CANTON L AND D 20, MO **COOP ID: 231275**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 490 Feet** **Lat: 40˚09N** **Lon: 91˚31W**

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	33.4	14.8	24.1	72	1950	24	37.9	1990	-20+	1982	11	11.3	1979	1269	0	.0	.0	3.4	13.0	28.6	4.4
Feb	39.0	19.2	29.1	78	1972	29	39.2	1998	-20	1979	9	16.0	1978	1005	0	.0	.0	6.4	8.0	23.4	2.7
Mar	51.0	29.4	40.2	89	1986	30	45.9	1990	-10+	1978	5	31.6	1984	769	0	.0	.0	16.9	1.9	16.9	.3
Apr	63.1	40.9	52.0	95	1986	26	60.6	1981	15	1975	3	44.9	1983	401	11	.0	.3	26.6	.0	4.3	.0
May	73.6	51.9	62.8	96+	1989	30	69.7	1991	32+	1967	2	57.3	1997	154	84	.0	1.2	30.9	.0	.0	.0
Jun	83.2	61.8	72.5	103+	1988	22	77.2	1971	42+	1993	6	66.9	1982	13	238	.4	7.0	30.0	.0	.0	.0
Jul	87.9	66.4	77.2	110	1980	30	82.3	1980	49+	1975	14	73.1	1996	0	377	1.7	13.2	31.0	.0	.0	.0
Aug	85.6	64.0	74.8	108	1988	19	80.5	1983	43	1950	20	69.1	1992	13	316	1.1	9.0	31.0	.0	.0	.0
Sep	78.2	55.0	66.6	104	1990	6	72.6	1990	31	1949	29	61.6	1993	74	123	.1	3.4	30.0	.0	.1	.0
Oct	67.2	43.1	55.2	94	1997	4	62.3	1971	18	1952	29	48.6	1976	317	12	.0	.2	29.7	.0	3.1	.0
Nov	51.3	31.4	41.4	82+	1987	4	49.1	1999	-8	1964	30	34.3	1996	710	0	.0	.0	17.0	1.5	15.5	.1
Dec	38.3	20.3	29.3	73	1991	9	34.7	1982	-18+	1989	24	14.5	1983	1107	0	.0	.0	5.3	8.1	26.4	2.2
Ann	62.7	41.5	52.1	110	Jul 1980	30	82.3	Jul 1980	-20+	Jan 1982	11	11.3	Jan 1979	5832	1161	3.3	34.3	258.2	32.5	118.3	9.7

\+ 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: 1948-2001

(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	1.50	1.43	3.03	1965	2	4.64	1979	.06	1986
Feb	1.64	1.43	2.10	1994	20	3.81	1997	.50	1987
Mar	2.91	2.48	4.35	1985	4	7.14	1973	.62	1994
Apr	3.48	3.59	3.39	1973	21	7.50	1973	.76	1971
May	5.22	4.66	5.40	1973	27	13.02	1991	1.01	1992
Jun	3.69	3.28	4.48	1990	14	9.06	1998	.28	1992
Jul	4.32	3.57	4.98	1985	31	10.14	1981	.64	1975
Aug	3.51	3.31	3.73	1970	5	10.50	1995	.08	1984
Sep	4.18	3.14	6.57	1986	20	18.16	1986	.03	1979
Oct	2.69	2.15	4.84	1955	5	6.89	1991	.35	1987
Nov	3.19	3.17	2.85	1984	1	8.85	1985	.32	1999
Dec	2.11	2.03	2.17	1971	15	5.29	1982	.09	1996
Ann	38.44	38.66	6.57	Sep 1986	20	18.16	Sep 1986	.03	Sep 1979

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.4	3.6	.7	.2
Feb	7.0	4.0	.9	.3
Mar	9.6	5.9	1.8	.5
Apr	10.5	7.0	2.3	.6
May	11.2	7.9	3.4	1.3
Jun	8.9	6.3	2.5	.8
Jul	8.9	6.6	3.1	1.1
Aug	8.1	5.5	2.4	1.0
Sep	7.8	5.7	3.0	1.2
Oct	7.4	5.2	1.8	.7
Nov	8.9	5.9	2.5	.8
Dec	7.8	4.5	1.3	.5
Ann	103.5	68.1	25.7	9.0

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	.18	.29	.50	.71	.93	1.18	1.47	1.83	2.31	3.11	3.89
Feb	.50	.66	.89	1.09	1.28	1.48	1.70	1.96	2.30	2.82	3.31
Mar	.73	1.00	1.42	1.80	2.17	2.56	3.00	3.51	4.19	5.27	6.27
Apr	.91	1.24	1.75	2.19	2.63	3.09	3.60	4.21	4.99	6.24	7.40
May	1.35	1.84	2.60	3.27	3.93	4.62	5.39	6.30	7.49	9.37	11.13
Jun	.84	1.18	1.73	2.21	2.69	3.21	3.79	4.47	5.38	6.82	8.17
Jul	.80	1.19	1.82	2.41	3.00	3.65	4.38	5.26	6.44	8.33	10.13
Aug	.46	.75	1.25	1.73	2.25	2.82	3.48	4.29	5.39	7.19	8.93
Sep	.57	.91	1.51	2.09	2.70	3.37	4.15	5.10	6.39	8.50	10.53
Oct	.51	.75	1.15	1.51	1.88	2.28	2.73	3.28	4.01	5.17	6.28
Nov	.52	.79	1.25	1.69	2.15	2.64	3.20	3.89	4.81	6.30	7.73
Dec	.30	.47	.78	1.07	1.38	1.71	2.10	2.58	3.22	4.27	5.28
Ann	24.81	27.35	30.66	33.20	35.49	37.71	40.03	42.62	45.78	50.42	54.47

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.4	5.3	1	0
Feb	4.4	.0	1	0
Mar	1.9	.0	#	0
Apr	#	.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	.9	.0	#	0
Dec	2.1	.0	#	0
Ann	13.7	5.3	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	5.0	1971	3	9.5	1975	8	1979	1	8	1979
Feb	10.0	1975	24	18.0	1975	12	1978	17	6	1978
Mar	4.0	1975	10	15.7	1978	14	1978	4	6	1978
Apr	#	1977	5	#	1977	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	.0	0	0	.0	0	0	0	0	0	0
Nov	7.0	1974	30	8.0	1974	7	1974	30	#+	1996
Dec	6.0	1978	31	11.0	1978	11	1977	10	3	1977
Ann	10.0	Feb 1975	24	18.0	Feb 1975	14	Mar 1978	4	8	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.7	1.5	.5	.1	.0
Feb	1.8	1.5	.5	.2	.1
Mar	.9	.9	.3	.0	.0
Apr	.0	.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	.0	.0
Nov	.5	.3	.1	.1	.0
Dec	.5	.5	.1	.1	.0
Ann	5.4	4.7	1.5	.5	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.2	2.8	1.6	.0
Feb	3.6	2.6	1.9	.6
Mar	1.1	.8	.6	.4
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	.1	@	@	.0
Dec	.9	.1	.1	.0
Ann	9.9	6.3	4.2	1.0

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	186	179	174	170	166	162	157	152	145
32	212	205	201	197	193	189	186	181	175
28	228	222	217	214	210	206	203	198	192
24	252	244	238	233	228	223	218	212	204
20	286	276	268	261	255	249	242	235	224
16	307	296	288	281	275	268	261	253	242

***** 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	1269	1005	769	401	154	13	0	13	74	317	710	1107	5832
60	1114	865	616	274	79	2	0	2	26	193	562	952	4685
57	1021	786	530	209	48	1	0	0	12	133	477	859	4076
55	959	734	472	170	33	0	0	0	6	100	423	799	3696
50	814	603	338	93	11	0	0	0	0	43	296	655	2853
32	344	229	53	1	0	0	0	0	0	0	38	227	892

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	99	148	307	601	953	1215	1400	1326	1039	718	319	144	8269
55	0	9	13	81	273	525	687	613	355	105	13	2	2676
57	0	5	9	59	226	465	625	551	301	76	8	0	2325
60	0	0	2	34	164	377	532	460	225	43	2	0	1839
65	0	0	0	11	84	238	377	316	123	12	0	0	1161
70	0	0	0	3	33	124	233	190	55	2	0	0	640

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	13	45	167	422	750	1015	1184	1105	833	503	168	33	13	58	225	647	1397	2412	3596	4701	5534	6037	6205	6238
45	3	15	96	291	595	865	1029	950	683	358	96	9	3	18	114	405	1000	1865	2894	3844	4527	4885	4981	4990
50	0	4	49	181	443	715	874	795	533	233	49	3	0	4	53	234	677	1392	2266	3061	3594	3827	3876	3879
55	0	0	22	100	297	565	719	640	390	133	20	0	0	0	22	122	419	984	1703	2343	2733	2866	2886	2886
60	0	0	6	50	172	416	564	485	260	62	7	0	0	0	6	56	228	644	1208	1693	1953	2015	2022	2022
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	6	31	105	248	464	689	806	750	540	308	98	22	6	37	142	390	854	1543	2349	3099	3639	3947	4045	4067

(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