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: ST LOUIS SCIENCE CTR, MO **COOP ID: 237452**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 540 Feet** **Lat: 38˚38N** **Lon: 90˚16W**

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	21.2	29.5	74	1970	28	41.3	1990	-10	1977	16	16.4	1977	1100	0	.0	.0	5.8	10.2	26.4	1.7
Feb	44.5	26.1	35.3	79+	1976	28	43.9	1976	-13	1996	3	21.3	1978	832	0	.0	.0	9.6	5.8	19.5	.7
Mar	54.9	36.5	45.7	88	1997	22	51.1	1976	2	1978	5	37.8	1984	598	1	.0	.0	20.4	1.0	11.0	.0
Apr	66.3	46.9	56.6	92+	1989	28	63.4	1977	20	1975	4	50.8	1983	272	21	.0	.2	27.7	.0	1.7	.0
May	76.8	56.8	66.8	95	1996	19	73.5	1987	34	1978	1	62.4	1997	87	144	.0	1.6	30.9	.0	.1	.0
Jun	85.7	66.1	75.9	102	1988	25	80.2	1971	40	1976	20	71.6	1982	3	330	.3	8.3	30.0	.0	.0	.0
Jul	90.5	70.9	80.7	105	1999	30	85.8	1980	53	1975	13	76.7	1996	0	486	1.1	15.9	31.0	.0	.0	.0
Aug	88.0	68.6	78.3	104	1970	1	84.1	1983	51	1992	15	73.4	1992	1	413	.8	12.2	31.0	.0	.0	.0
Sep	80.7	60.7	70.7	99+	1990	7	75.8	1998	35	1969	25	64.7	1974	27	198	@	4.4	30.0	.0	.0	.0
Oct	69.4	49.4	59.4	93	1971	1	66.1	1971	28	1987	12	53.4	1976	214	39	.0	.3	30.0	.0	1.2	.0
Nov	54.4	37.5	46.0	83	1989	12	54.8	1999	7	1976	28	38.7	1996	572	1	.0	.0	18.3	.7	11.4	.0
Dec	42.2	26.9	34.6	78	1970	3	42.1	1982	-17	1989	23	21.3	1983	944	0	.0	.0	8.7	5.4	22.1	.9
Ann	65.9	47.3	56.6	105	Jul 1999	30	85.8	Jul 1980	-17	Dec 1989	23	16.4	Jan 1977	4650	1633	2.2	42.9	273.4	23.1	93.4	3.3

\+ 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: 1968-2001

(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	2.01	1.61	2.40	1995	13	4.89	1995	.18	1986
Feb	2.06	1.73	2.70	1999	7	4.94	1990	.52+	1996
Mar	3.70	3.28	3.36	1977	28	9.14	1998	1.49	1986
Apr	3.82	3.27	3.48	1996	29	11.09	1994	1.06	1977
May	3.92	3.15	3.51	1995	17	12.20	1995	1.21	1972
Jun	3.73	3.62	3.47	2000	24	10.13	1998	.68	1992
Jul	3.78	3.58	2.52	1991	10	7.18	1981	.54	1997
Aug	3.70	3.78	3.05	1995	7	6.96	1977	.45	1971
Sep	2.69	2.37	3.02	1993	23	8.69	1993	.61	1988
Oct	2.81	2.68	2.00	1977	7	6.23	1983	.75	1989
Nov	4.06	3.77	3.28	1996	7	10.09	1985	.30	1999
Dec	2.56	1.88	3.35	1971	10	7.69	1982	.61	1996
Ann	38.84	38.85	3.51	May 1995	17	12.20	May 1995	.18	Jan 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.4	4.5	1.1	.3
Feb	7.7	4.6	1.3	.4
Mar	10.6	7.4	2.5	.8
Apr	10.9	7.1	2.4	.7
May	11.2	7.3	2.7	1.1
Jun	9.4	6.1	2.6	1.3
Jul	8.1	5.6	2.3	.7
Aug	8.8	5.9	2.4	1.0
Sep	8.0	5.0	2.1	.7
Oct	8.8	5.3	2.0	.6
Nov	10.3	6.3	2.7	1.0
Dec	8.2	4.9	1.4	.7
Ann	110.4	70.0	25.5	9.3

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	.29	.46	.75	1.03	1.32	1.64	2.00	2.45	3.06	4.04	4.98
Feb	.46	.65	.96	1.23	1.50	1.79	2.12	2.50	3.02	3.83	4.60
Mar	1.36	1.71	2.21	2.62	3.02	3.42	3.87	4.38	5.03	6.04	6.96
Apr	1.13	1.49	2.04	2.51	2.97	3.44	3.97	4.59	5.38	6.64	7.80
May	1.10	1.47	2.03	2.52	3.01	3.51	4.06	4.72	5.57	6.91	8.16
Jun	1.19	1.54	2.06	2.51	2.94	3.39	3.88	4.46	5.20	6.35	7.42
Jul	1.29	1.65	2.17	2.61	3.03	3.47	3.95	4.50	5.21	6.32	7.33
Aug	1.16	1.51	2.03	2.48	2.91	3.36	3.85	4.42	5.17	6.32	7.40
Sep	.62	.87	1.27	1.62	1.97	2.35	2.77	3.27	3.92	4.97	5.95
Oct	.84	1.11	1.51	1.85	2.19	2.54	2.92	3.38	3.96	4.88	5.73
Nov	.87	1.24	1.84	2.38	2.92	3.50	4.15	4.93	5.96	7.60	9.15
Dec	.53	.76	1.14	1.48	1.83	2.20	2.61	3.11	3.77	4.83	5.83
Ann	27.62	29.79	32.57	34.68	36.56	38.37	40.25	42.31	44.83	48.47	51.61

\+ 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: 1968-2001
(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	3.6	2.6	1	#	6.0	1997	9	9.5	1996	7	1999	6	3	1999	2.1	.9	.4	.1	.0	4.4	2.2	.4	.0
Feb	1.2	.8	#	#	3.0	1992	12	3.0	1992	10	1993	26	2	1993	.8	.3	.1	.0	.0	.7	.2	.0	.0
Mar	.5	.0	#	#	3.0	1992	19	3.0	1992	10	1989	7	1	1989	.3	.2	.1	.0	.0	.3	.1	.0	.0
Apr	.5	.0	#	0	6.0	1971	7	7.5	1971	3	1971	7	#+	1995	.2	.1	.1	.1	.0	.1	.1	.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	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.5	.0	#	0	2.7	1972	19	3.8	1972	3	1997	14	#+	1997	.2	.2	.0	.0	.0	.1	.1	.0	.0
Dec	3.6	.0	1	#	12.0	1973	19	20.2	1973	12	1973	21	3	1973	1.1	.6	.2	.2	.1	2.5	.9	.5	.0
Ann	9.9	3.4	N/A	N/A	12.0	Dec 1973	19	20.2	Dec 1973	12	Dec 1973	21	3+	Jan 1999	4.7	2.3	.9	.4	.1	8.1	3.6	.9	.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	5/07	4/30	4/25	4/21	4/17	4/12	4/08	4/03	3/27
32	4/26	4/20	4/15	4/11	4/07	4/03	3/30	3/26	3/19
28	4/09	4/03	3/29	3/25	3/22	3/18	3/14	3/09	3/03
24	3/29	3/23	3/18	3/14	3/11	3/07	3/03	2/27	2/21
20	3/23	3/15	3/09	3/04	2/28	2/23	2/18	2/12	2/04
16	3/15	3/06	2/28	2/23	2/18	2/13	2/08	2/01	1/24

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	10/04	10/09	10/12	10/16	10/19	10/23	10/28	11/03
32	10/13	10/19	10/23	10/26	10/29	11/01	11/05	11/09	11/14
28	10/25	10/31	11/04	11/08	11/11	11/15	11/19	11/23	11/29
24	11/03	11/09	11/14	11/17	11/21	11/24	11/28	12/03	12/09
20	11/11	11/17	11/22	11/25	11/29	12/02	12/06	12/10	12/16
16	11/22	11/28	12/03	12/07	12/11	12/14	12/18	12/23	12/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	213	202	194	188	182	175	169	161	150
32	230	221	215	209	204	199	194	187	179
28	258	250	244	239	234	229	224	218	210
24	277	270	264	259	254	250	245	239	231
20	305	294	286	279	273	267	260	253	242
16	329	318	309	302	295	288	281	272	261

***** 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	1100	832	598	272	87	3	0	1	27	214	572	944	4650
60	945	695	453	161	36	0	0	0	6	116	432	791	3635
57	853	617	370	109	19	0	0	0	2	74	351	704	3099
55	795	565	318	80	11	0	0	0	0	53	302	647	2771
50	652	439	207	31	3	0	0	0	0	18	195	506	2051
32	232	120	17	0	0	0	0	0	0	0	15	144	528

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	155	212	442	739	1080	1318	1509	1435	1161	848	434	223	9556
55	5	13	31	130	378	628	796	722	472	188	31	13	3407
57	1	9	20	98	323	568	734	660	413	148	21	8	3003
60	0	3	11	60	248	478	641	567	327	97	11	2	2445
65	0	0	1	21	144	330	486	413	198	39	1	0	1633
70	0	0	0	5	69	193	331	268	99	11	0	0	976

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	37	96	245	515	786	1067	1251	1196	896	582	230	65	37	133	378	893	1679	2746	3997	5193	6089	6671	6901	6966
45	11	50	151	376	631	917	1096	1041	746	433	140	31	11	61	212	588	1219	2136	3232	4273	5019	5452	5592	5623
50	3	22	83	252	481	767	941	886	597	300	76	11	3	25	108	360	841	1608	2549	3435	4032	4332	4408	4419
55	0	7	45	149	332	617	786	731	453	185	37	2	0	7	52	201	533	1150	1936	2667	3120	3305	3342	3344
60	0	2	20	78	202	467	631	576	315	97	11	0	0	2	22	100	302	769	1400	1976	2291	2388	2399	2399
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	22	59	142	296	499	735	868	827	590	350	127	37	22	81	223	519	1018	1753	2621	3448	4038	4388	4515	4552

(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