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: ELSBERRY 1 S, MO **COOP ID: 232591**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 450 Feet** **Lat: 39˚09N** **Lon: 90˚47W**

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	39.1	18.6	28.9	78	1950	25	41.0	1990	-24+	1979	15	14.3	1977	1122	0	.0	.0	5.9	10.9	27.5	3.9
Feb	46.1	24.0	35.1	81	1932	10	44.4	1976	-24+	1979	9	19.5	1978	839	0	.0	.0	10.0	6.0	22.0	2.3
Mar	57.7	32.7	45.2	88	1986	29	52.4	1973	-14+	1978	5	37.5	1978	614	1	.0	.0	20.4	1.1	16.4	.2
Apr	69.5	42.5	56.0	94	1986	25	63.1	1981	16	1950	14	50.6	1983	288	18	.0	.5	27.9	.0	5.2	.0
May	78.1	51.9	65.0	102	1934	31	71.6	1991	28	1950	1	60.6	1981	111	112	.0	1.8	30.9	.0	.4	.0
Jun	86.4	61.2	73.8	107	1936	19	79.0	1971	38	1972	1	68.9	1982	7	271	.3	9.7	30.0	.0	.0	.0
Jul	90.4	65.6	78.0	116	1954	15	82.0	1980	40+	1975	13	74.3	1984	0	404	1.7	16.8	31.0	.0	.0	.0
Aug	88.4	63.5	76.0	110	1934	9	81.3	1980	39	1986	29	71.1	1992	4	343	1.3	11.8	31.0	.0	.0	.0
Sep	81.3	55.4	68.4	105	1984	1	73.0	1998	16	1931	7	63.4	1974	48	149	.2	4.8	30.0	.0	.2	.0
Oct	70.2	43.8	57.0	95+	1963	10	63.8	1971	14	1952	29	50.4	1976	270	22	.0	.2	30.2	.0	4.9	.0
Nov	55.9	34.5	45.2	88+	1950	2	51.8	1999	-7	1991	8	36.9	1976	595	0	.0	.0	19.1	.8	14.2	@
Dec	42.7	23.5	33.1	77	1948	15	40.8	1971	-23	1989	23	20.1	1983	989	0	.0	.0	8.1	7.0	24.8	1.6
Ann	67.2	43.1	55.1	116	Jul 1954	15	82.0	Jul 1980	-24+	Feb 1979	9	14.3	Jan 1977	4887	1320	3.5	45.6	274.5	25.8	115.6	8.0

\+ 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: 1931-2001

(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	1.44	2.22	1975	10	5.42	1995	.06	1986
Feb	2.02	1.68	2.00	1959	10	5.25	1998	.45	1991
Mar	3.54	3.24	3.12	1972	13	8.49	1973	.41	1971
Apr	3.84	3.63	3.44	1994	12	11.56	1994	.89	1977
May	4.10	3.56	3.70	1981	10	9.32	1995	1.02	1972
Jun	3.45	2.62	4.40	1993	20	11.06	1993	.50	1992
Jul	3.43	3.27	3.50	1962	4	8.77	1981	.67	1975
Aug	3.20	3.22	3.85	1946	16	6.39	1975	.27	1984
Sep	3.30	2.62	3.75	1973	9	11.12	1993	.13	1979
Oct	2.84	2.56	4.50	1941	5	6.39	1976	.82	1992
Nov	3.53	3.18	3.25	1946	1	10.54	1985	.40	1989
Dec	2.99	2.55	5.04	1982	3	11.57	1982	.46	1976
Ann	38.25	37.36	5.04	Dec 1982	3	11.57	Dec 1982	.06	Jan 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.4	4.7	1.0	.4
Feb	7.8	4.6	1.3	.4
Mar	9.6	6.7	2.4	.8
Apr	10.5	6.9	2.5	1.1
May	10.8	7.7	2.7	1.0
Jun	8.7	6.2	2.3	.9
Jul	8.3	6.0	2.3	.9
Aug	7.7	4.8	2.3	1.0
Sep	7.6	5.4	2.2	.9
Oct	8.3	5.6	1.9	.6
Nov	8.4	6.2	2.7	.9
Dec	8.6	5.8	2.1	.8
Ann	104.7	70.6	25.7	9.7

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	.38	.66	.94	1.24	1.58	1.97	2.46	3.12	4.21	5.27
Feb	.52	.71	1.00	1.26	1.52	1.79	2.09	2.44	2.91	3.64	4.33
Mar	1.18	1.51	2.01	2.42	2.83	3.24	3.69	4.22	4.90	5.96	6.93
Apr	1.05	1.41	1.97	2.45	2.93	3.43	3.98	4.63	5.48	6.82	8.06
May	1.02	1.41	2.00	2.53	3.06	3.61	4.23	4.96	5.92	7.44	8.86
Jun	.65	.96	1.46	1.93	2.40	2.92	3.50	4.20	5.13	6.62	8.05
Jul	.69	1.00	1.51	1.97	2.44	2.93	3.50	4.18	5.08	6.52	7.88
Aug	.62	.91	1.38	1.81	2.25	2.72	3.26	3.90	4.76	6.13	7.43
Sep	.62	.91	1.40	1.84	2.30	2.79	3.35	4.02	4.91	6.35	7.71
Oct	1.04	1.31	1.69	2.01	2.32	2.63	2.97	3.36	3.86	4.63	5.34
Nov	.68	1.00	1.52	1.99	2.48	3.00	3.59	4.30	5.24	6.76	8.20
Dec	.69	.97	1.40	1.80	2.19	2.60	3.07	3.63	4.36	5.52	6.62
Ann	26.13	28.44	31.42	33.70	35.73	37.70	39.75	42.01	44.77	48.79	52.28

+ 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: 1931-2001
(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	7.1	4.1	1	#
Feb	4.2	3.3	#	0
Mar	3.3	2.0	#	0
Apr	.7	.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
Nov	1.2	.0	#	0
Dec	3.8	2.5	#	0
Ann	20.3	11.9	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	8.0	1987	9	27.7	1979	14	1979	7	8	1979
Feb	7.0	1993	25	12.1	1989	11	1978	28	9	1978
Mar	10.0	1989	6	15.8	1978	15	1978	5	6	1978
Apr	3.5	1983	17	4.5	1983	3	1971	6	#+	2000
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	#	1993	31	#	1993	0	0	0	0	0
Nov	6.0	1977	27	6.0	1977	5	1975	27	#+	1997
Dec	7.5	1973	20	15.0	1981	7	2000	14	3	2000
Ann	10.0	Mar 1989	6	27.7	Jan 1979	15	Mar 1978	5	9	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.2	2.4	.7	.2	.0
Feb	2.6	1.5	.6	.2	.0
Mar	1.6	1.0	.4	.1	@
Apr	.4	.3	.1	.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	.4	.2	@	.0
Dec	2.4	1.4	.5	.2	.0
Ann	11.7	7.0	2.5	.7	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	3.6	1.7	1.1	.7
Feb	1.0	.2	.0	.0
Mar	1.4	1.1	1.0	.6
Apr	.1	.1	.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	.2	.1	.1	.0
Dec	1.7	1.2	.7	.0
Ann	8.0	4.4	2.9	1.3

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

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	9/22	9/26	9/29	10/02	10/05	10/07	10/10	10/13	10/17
32	9/27	10/01	10/05	10/08	10/10	10/13	10/16	10/19	10/24
28	10/10	10/15	10/18	10/21	10/24	10/26	10/29	11/01	11/06
24	10/20	10/26	10/30	11/03	11/06	11/10	11/14	11/18	11/24
20	10/26	11/02	11/07	11/11	11/15	11/19	11/23	11/28	12/05
16	11/10	11/16	11/20	11/23	11/26	11/29	12/03	12/07	12/12

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	194	186	181	176	172	168	163	158	150
28	215	209	205	201	198	195	191	187	181
24	244	236	230	225	221	216	211	205	197
20	266	258	252	247	242	237	233	227	219
16	284	278	273	269	265	261	257	252	246

***** 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	1122	839	614	288	111	7	0	4	48	270	595	989	4887
60	967	707	470	174	49	1	0	0	14	157	452	834	3825
57	875	629	387	120	27	0	0	0	5	105	371	745	3264
55	817	577	334	90	17	0	0	0	2	77	319	689	2922
50	674	454	223	36	4	0	0	0	0	30	208	545	2174
32	250	139	22	0	0	0	0	0	0	0	16	164	591

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	152	224	431	720	1024	1254	1427	1362	1091	775	412	198	9070
55	5	18	31	121	327	564	714	649	403	139	25	10	3006
57	2	14	21	91	275	504	652	587	346	104	16	5	2617
60	0	8	11	55	205	415	559	494	264	64	8	0	2083
65	0	0	1	18	112	271	404	343	149	22	0	0	1320
70	0	0	0	4	48	145	251	205	68	5	0	0	726

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	28	78	219	470	769	1011	1179	1116	846	519	205	52	28	106	325	795	1564	2575	3754	4870	5716	6235	6440	6492
45	7	40	134	334	615	861	1024	961	696	374	122	22	7	47	181	515	1130	1991	3015	3976	4672	5046	5168	5190
50	2	13	77	218	463	711	869	806	547	246	66	9	2	15	92	310	773	1484	2353	3159	3706	3952	4018	4027
55	0	4	36	127	318	561	714	651	401	143	27	1	0	4	40	167	485	1046	1760	2411	2812	2955	2982	2983
60	0	0	15	69	191	411	560	496	269	68	5	0	0	0	15	84	275	686	1246	1742	2011	2079	2084	2084
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	22	60	153	302	496	678	793	747	548	337	129	37	22	82	235	537	1033	1711	2504	3251	3799	4136	4265	4302

(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