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: FULTON, MO **COOP ID: 233079**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 870 Feet** **Lat: 38˚51N** **Lon: 91˚56W**

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	36.0	17.3	26.7	76+	1967	24	37.7	1990	-22+	1930	22	13.2	1977	1189	0	.0	.0	5.3	12.5	28.1	3.7
Feb	42.7	22.3	32.5	81	1930	24	40.9	1976	-20	1934	27	20.6	1978	911	0	.0	.0	9.2	7.3	22.8	1.8
Mar	53.9	31.5	42.7	89	1918	13	48.2	1973	-12	1948	12	34.0	1984	692	0	.0	.0	18.4	1.7	17.1	.1
Apr	65.0	41.8	53.4	94	1930	10	60.9	1981	13	1920	5	46.4	1983	359	9	.0	.1	26.7	@	4.4	.0
May	73.9	51.7	62.8	101	1934	31	68.7	1987	28	1976	3	58.2	1997	147	79	.0	.4	30.9	.0	.1	.0
Jun	82.6	61.1	71.9	106	1936	19	76.8	1971	41+	1945	4	67.2	1982	13	219	@	4.1	30.0	.0	.0	.0
Jul	87.9	65.9	76.9	116	1954	15	84.3	1980	47+	1947	23	73.6	1971	0	369	1.3	13.0	31.0	.0	.0	.0
Aug	86.6	63.8	75.2	109+	1936	15	81.2	1983	43+	1986	29	69.0	1992	8	324	.7	11.5	31.0	.0	.0	.0
Sep	78.9	55.3	67.1	105+	1954	5	73.0	1978	30+	1942	28	61.4	1974	71	135	.0	3.7	30.0	.0	@	.0
Oct	67.9	43.7	55.8	96	1939	7	62.3	1971	19+	1976	22	50.3	1988	299	12	.0	.2	29.8	.0	3.7	.0
Nov	53.0	32.9	43.0	85	1937	1	51.6	1999	-7	1929	30	35.7	1976	661	0	.0	.0	17.5	1.4	15.2	.1
Dec	40.7	22.2	31.5	76+	1991	9	38.2	1982	-21	1989	22	16.4	1983	1040	0	.0	.0	7.7	7.3	26.0	1.7
Ann	64.1	42.5	53.3	116	Jul 1954	15	84.3	Jul 1980	-22+	Jan 1930	22	13.2	Jan 1977	5390	1147	2.0	33.0	267.5	30.2	117.4	7.4

\+ 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: 1918-2001

(3) Derived from 1971-2000 serially complete daily data

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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	1.87	1.54	2.74	1938	24	4.41	1999	.03	1986
Feb	2.17	2.13	2.26	1959	10	5.30	1998	.16	1991
Mar	3.14	2.83	3.00	1922	14	9.83	1973	.81	1971
Apr	3.96	3.81	2.90	1941	19	11.10	1994	1.26	2000
May	4.97	4.87	4.83	1990	16	12.35	1995	1.80	1992
Jun	3.87	3.86	4.00	1997	22	10.52	1985	.30	1980
Jul	4.12	3.63	4.31	1993	7	13.53	1981	.21	1976
Aug	3.64	2.90	5.37	1993	12	11.72	2000	.56	1976
Sep	3.68	2.79	4.76	1969	16	14.74	1993	.55+	1979
Oct	3.25	3.00	3.76	1998	6	7.84	1998	1.20	1992
Nov	3.85	3.41	3.20	1946	1	10.07	1985	.39	1999
Dec	2.70	2.45	2.81	1925	5	7.56	1982	.19	1976
Ann	41.22	41.04	5.37	Aug 1993	12	14.74	Sep 1993	.03	Jan 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.2	4.8	1.0	.3
Feb	7.7	4.2	1.4	.5
Mar	9.5	5.9	2.2	.6
Apr	11.0	7.3	2.6	1.0
May	11.9	7.7	3.0	1.2
Jun	9.7	6.6	2.4	.9
Jul	8.6	5.8	2.6	1.1
Aug	8.2	5.2	2.1	1.0
Sep	7.9	5.3	2.2	1.0
Oct	8.6	5.6	2.4	.8
Nov	9.4	6.5	2.8	1.1
Dec	8.2	4.9	1.8	.5
Ann	108.9	69.8	26.5	10.0

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	.24	.39	.65	.91	1.19	1.49	1.84	2.28	2.87	3.84	4.78
Feb	.33	.51	.83	1.13	1.44	1.78	2.18	2.66	3.30	4.35	5.36
Mar	1.03	1.33	1.77	2.14	2.50	2.87	3.28	3.75	4.36	5.31	6.19
Apr	1.23	1.60	2.16	2.64	3.11	3.59	4.12	4.74	5.54	6.79	7.94
May	1.75	2.22	2.90	3.47	4.02	4.58	5.19	5.90	6.81	8.21	9.50
Jun	.91	1.27	1.84	2.35	2.85	3.38	3.98	4.69	5.63	7.11	8.50
Jul	.55	.88	1.47	2.04	2.65	3.31	4.08	5.04	6.32	8.43	10.46
Aug	.49	.79	1.31	1.82	2.35	2.94	3.62	4.45	5.58	7.42	9.20
Sep	.51	.81	1.34	1.85	2.38	2.97	3.65	4.49	5.62	7.46	9.24
Oct	1.25	1.55	1.98	2.34	2.68	3.03	3.40	3.84	4.39	5.24	6.02
Nov	.75	1.10	1.67	2.19	2.71	3.28	3.92	4.69	5.71	7.35	8.91
Dec	.53	.78	1.17	1.54	1.90	2.30	2.74	3.28	3.99	5.13	6.22
Ann	25.60	28.46	32.22	35.13	37.76	40.33	43.01	46.01	49.69	55.11	59.86

\+ 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: 1918-2001
(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	7.3	4.7	1	#
Feb	5.8	4.6	1	#
Mar	2.9	1.3	#	#
Apr	.6	.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	1.6	.4	#	#
Dec	4.7	2.5	1	#
Ann	22.9	13.5	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	9.9	1995	19	21.9	1987	14	1995	22	6	1979
Feb	9.2	1993	25	19.4	1993	12	1993	27	7	1979
Mar	8.1	1990	24	10.1	1980	8	1990	24	1	1998
Apr	4.0	1973	9	4.0	1973	4	1973	9	#+	1997
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	7.4	1975	27	7.4	1975	13	1984	1	1	1991
Dec	11.0	1973	31	18.1	1973	11	1987	15	4	1983
Ann	11.0	Dec 1973	31	21.9	Jan 1987	14	Jan 1995	22	7	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.2	2.5	.7	.3	.0
Feb	3.1	1.7	.8	.3	.0
Mar	1.7	.8	.4	.2	.0
Apr	.3	.2	.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	.8	.4	.2	.1	.0
Dec	2.8	1.3	.4	.2	.1
Ann	12.9	6.9	2.6	1.1	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	8.4	2.7	1.5	.2
Feb	4.2	2.2	.8	.1
Mar	1.8	.8	.3	.0
Apr	.2	.2	.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	.8	.4	.1	.0
Dec	5.2	3.1	1.3	.1
Ann	20.6	9.4	4.0	.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	5/09	5/04	5/01	4/28	4/26	4/23	4/21	4/17	4/13
32	4/22	4/18	4/16	4/13	4/11	4/09	4/07	4/04	3/31
28	4/17	4/13	4/09	4/07	4/04	4/02	3/30	3/27	3/22
24	4/10	4/05	4/01	3/29	3/26	3/23	3/20	3/16	3/11
20	3/29	3/24	3/20	3/17	3/14	3/11	3/08	3/04	2/27
16	3/21	3/14	3/08	3/04	2/27	2/23	2/18	2/13	2/05

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	9/25	9/29	10/02	10/05	10/07	10/09	10/12	10/15	10/19
32	10/03	10/08	10/12	10/15	10/18	10/21	10/24	10/27	11/01
28	10/15	10/21	10/24	10/27	10/30	11/02	11/05	11/09	11/14
24	10/24	10/30	11/03	11/07	11/10	11/14	11/17	11/22	11/28
20	11/02	11/09	11/13	11/17	11/20	11/24	11/28	12/02	12/08
16	11/12	11/18	11/22	11/26	11/30	12/03	12/07	12/11	12/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	181	175	171	167	163	160	156	152	146
32	206	200	196	192	189	185	182	177	171
28	227	221	216	212	208	205	201	196	190
24	250	243	237	233	229	224	220	215	207
20	275	267	261	256	251	246	241	235	227
16	304	294	287	280	275	269	262	255	245

***** 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	1189	911	692	359	147	13	0	8	71	299	661	1040	5390
60	1034	771	542	232	72	2	0	1	25	176	513	885	4253
57	941	691	456	169	42	0	0	0	11	118	431	794	3653
55	879	639	401	133	27	0	0	0	6	86	376	736	3283
50	735	510	275	63	8	0	0	0	0	34	254	592	2471
32	280	160	32	0	0	0	0	0	0	0	26	189	687

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	114	174	363	641	955	1195	1392	1339	1054	737	355	172	8491
55	0	8	19	83	269	505	679	626	370	110	16	6	2691
57	0	5	13	60	222	446	617	564	315	79	10	2	2333
60	0	0	5	33	159	357	524	472	239	45	3	0	1837
65	0	0	0	9	79	219	369	324	135	12	0	0	1147
70	0	0	0	2	29	107	224	194	63	2	0	0	621

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	23	71	199	428	721	965	1158	1101	823	502	187	48	23	94	293	721	1442	2407	3565	4666	5489	5991	6178	6226
45	5	36	118	299	566	815	1003	946	674	359	109	23	5	41	159	458	1024	1839	2842	3788	4462	4821	4930	4953
50	0	11	67	189	413	665	848	791	525	230	60	6	0	11	78	267	680	1345	2193	2984	3509	3739	3799	3805
55	0	4	30	101	271	515	693	636	385	130	24	1	0	4	34	135	406	921	1614	2250	2635	2765	2789	2790
60	0	0	12	52	156	367	538	481	256	59	6	0	0	0	12	64	220	587	1125	1606	1862	1921	1927	1927
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	17	57	132	261	442	647	784	743	533	309	114	33	17	74	206	467	909	1556	2340	3083	3616	3925	4039	4072

(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