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: LAMAR, MO **COOP ID: 234705**

Climate Division: MO 4 **NWS Call Sign:** **Elevation: 980 Feet** **Lat: 37˚30N** **Lon: 94˚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	40.8	22.1	31.5	77	1950	25	40.4	1990	-15+	1985	21	19.5	1979	1041	0	.0	.0	8.6	8.2	27.4	1.9
Feb	47.2	26.7	37.0	80	1996	23	46.7	1976	-11	1979	9	23.2	1978	786	0	.0	.0	12.1	5.0	21.1	1.3
Mar	57.5	35.1	46.3	89	1995	23	51.7	1973	0+	1962	1	39.2	1996	580	0	.0	.0	21.6	.9	13.8	.0
Apr	67.8	44.5	56.2	92	1987	20	63.5	1981	20+	1987	1	49.0	1983	282	18	.0	.1	28.2	.0	3.1	.0
May	75.7	55.1	65.4	93+	1953	27	71.1	1987	30	1963	1	60.5	1995	100	113	.0	.4	31.0	.0	@	.0
Jun	84.0	64.3	74.2	102+	1953	15	78.7	1971	43	1988	10	70.0	1992	7	283	.1	5.8	30.0	.0	.0	.0
Jul	89.7	69.3	79.5	116	1954	15	87.3	1980	48	1970	21	76.3	1996	0	450	1.2	16.8	31.0	.0	.0	.0
Aug	89.1	66.8	78.0	108+	1956	17	83.8	1983	43	1950	21	71.3	1992	3	404	1.5	15.4	31.0	.0	.0	.0
Sep	80.9	58.2	69.6	105+	2000	3	75.7	1998	32+	1989	25	63.0	1974	50	186	.5	5.1	30.0	.0	.1	.0
Oct	70.7	46.3	58.5	95+	1953	2	63.7	1971	17	1952	29	52.1	1976	232	30	.0	.3	30.1	.0	2.0	.0
Nov	56.3	35.2	45.8	85+	1978	4	55.2	1999	4+	1959	18	38.4	1976	578	0	.0	.0	20.3	.9	13.4	.0
Dec	44.9	25.7	35.3	76	1948	14	42.5	1971	-18	1989	23	19.0	1983	922	0	.0	.0	11.1	5.0	24.0	.9
Ann	67.1	45.8	56.4	116	Jul 1954	15	87.3	Jul 1980	-18	Dec 1989	23	19.0	Dec 1983	4581	1484	3.3	43.9	285.0	20.0	104.9	4.1

\+ 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

Issue Date: February 2004

(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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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	1.94	1.85	2.95	1975	31	4.73	1975	.00	1986
Feb	2.21	2.09	4.39	1985	23	7.20	1985	.25	1996
Mar	3.97	3.72	3.42	1974	11	10.17	1973	.95	1991
Apr	4.44	3.83	5.85	1983	23	12.75	1994	.30	1989
May	5.42	5.40	4.20	1995	18	14.37	1995	2.16	1975
Jun	5.49	4.88	3.54	1963	4	14.12	1981	.62	1991
Jul	4.62	3.91	9.10	1976	3	18.43	1992	.50	1980
Aug	3.69	3.44	4.50	1994	31	11.65	1985	.02	2000
Sep	5.39	3.76	7.30	1993	25	18.96	1986	1.10	1980
Oct	4.24	3.48	7.30	1998	5	13.35	1998	.40	1995
Nov	4.37	4.14	5.40	1979	21	11.22	1992	.00	1989
Dec	2.88	2.77	2.95	1992	14	6.42	1971	.38	1976
Ann	48.66	47.70	9.10	Jul 1976	3	18.96	Sep 1986	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.7	4.8	1.3	.3
Feb	4.9	4.1	1.7	.4
Mar	7.5	6.8	3.1	1.2
Apr	8.0	6.9	3.0	1.2
May	9.5	8.5	4.3	1.6
Jun	9.4	8.4	4.3	1.9
Jul	6.7	5.8	2.9	1.4
Aug	6.0	5.3	2.5	1.3
Sep	7.3	6.4	3.1	1.7
Oct	6.6	5.4	2.9	1.4
Nov	6.7	5.7	2.8	1.4
Dec	5.8	4.8	2.3	.9
Ann	84.1	72.9	34.2	14.7

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	.20	.43	.75	1.03	1.32	1.63	1.98	2.40	2.96	3.86	4.72
Feb	.34	.52	.84	1.15	1.46	1.81	2.21	2.69	3.34	4.41	5.42
Mar	1.05	1.43	2.00	2.51	3.00	3.52	4.10	4.78	5.68	7.08	8.39
Apr	.91	1.31	1.97	2.56	3.16	3.80	4.53	5.41	6.56	8.41	10.16
May	1.83	2.34	3.09	3.73	4.34	4.97	5.66	6.46	7.49	9.09	10.57
Jun	1.50	2.02	2.82	3.51	4.19	4.90	5.69	6.62	7.83	9.74	11.52
Jul	.69	1.07	1.74	2.38	3.05	3.78	4.62	5.65	7.03	9.28	11.45
Aug	.20	.40	.84	1.34	1.91	2.58	3.40	4.45	5.93	8.46	10.99
Sep	1.00	1.48	2.27	3.00	3.75	4.55	5.47	6.57	8.05	10.41	12.67
Oct	.68	1.05	1.66	2.24	2.85	3.50	4.26	5.17	6.40	8.39	10.30
Nov	.31	.77	1.46	2.10	2.78	3.51	4.36	5.39	6.79	9.08	11.28
Dec	.46	.70	1.12	1.52	1.93	2.38	2.89	3.52	4.36	5.73	7.04
Ann	32.66	35.69	39.61	42.61	45.29	47.90	50.61	53.61	57.28	62.63	67.29

\+ 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
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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	6.0	1.8	1	#
Feb	3.6	1.8	1	#
Mar	1.7	.0	#	0
Apr	.1	.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
Nov	1.0	.0	#	0
Dec	2.1	.0	#	#
Ann	14.5	3.6	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	9.0	1995	19	21.5	1987	9	1997	31	4	1983
Feb	16.0	1980	8	16.0	1980	16	1980	8	16	1980
Mar	10.5	1975	10	10.5	1975	11	1975	10	1	1999
Apr	2.7	1973	9	2.7	1973	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	#	1993	31	#+	1993	0	0	0	0	0
Nov	10.0	1988	20	10.0	1988	5	1984	19	#+	2000
Dec	12.0	1987	15	12.0	1973	8	1988	28	1+	2000
Ann	16.0	Feb 1980	8	21.5	Jan 1987	16	Feb 1980	8	16	Feb 1980

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.6	1.5	.4	.3	.0
Feb	.9	.8	.4	.1	@
Mar	.3	.3	.2	@	@
Apr	@	@	.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	.2	.2	.1	.1	@
Dec	.7	.7	.3	.1	@
Ann	3.7	3.5	1.4	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.4	.1	.0	.0
Feb	.7	.3	.1	.0
Mar	.3	.2	@	@
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	.2	.1	.1	.0
Dec	.5	.2	.1	.0
Ann	2.1	.9	.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	5/02	4/27	4/24	4/21	4/19	4/16	4/13	4/10	4/06
32	4/22	4/18	4/15	4/12	4/09	4/07	4/04	4/01	3/27
28	4/13	4/08	4/05	4/02	3/30	3/27	3/25	3/21	3/16
24	4/03	3/28	3/23	3/20	3/16	3/13	3/09	3/05	2/27
20	3/28	3/20	3/14	3/09	3/04	2/28	2/23	2/17	2/08
16	3/18	3/10	3/04	2/27	2/22	2/17	2/11	2/05	1/28

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	9/26	10/02	10/06	10/09	10/13	10/16	10/19	10/24	10/29
32	10/06	10/12	10/17	10/20	10/24	10/27	10/31	11/04	11/10
28	10/18	10/24	10/29	11/02	11/06	11/10	11/14	11/18	11/25
24	10/29	11/05	11/10	11/14	11/18	11/22	11/26	12/01	12/08
20	11/07	11/14	11/19	11/24	11/28	12/02	12/06	12/12	12/19
16	11/18	11/25	11/30	12/04	12/08	12/12	12/16	12/21	12/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	200	192	186	181	176	172	167	161	153
32	219	212	206	201	197	192	188	182	174
28	244	236	230	225	220	215	210	204	196
24	276	266	258	252	246	240	234	226	216
20	301	290	281	274	268	261	254	246	234
16	323	311	303	295	289	282	275	266	254

***** 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	1041	786	580	282	100	7	0	3	50	232	578	922	4581
60	886	653	434	168	42	1	0	0	16	126	436	770	3532
57	794	574	349	114	21	0	0	0	7	80	355	683	2977
55	734	523	297	85	13	0	0	0	4	56	304	625	2641
50	591	400	187	32	3	0	0	0	0	18	196	485	1912
32	182	100	11	0	0	0	0	0	0	0	14	130	437

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	163	237	455	725	1036	1266	1473	1424	1126	821	427	231	9384
55	3	16	27	120	335	576	760	711	440	164	27	13	3192
57	1	12	18	89	282	516	698	649	383	126	17	9	2800
60	0	6	9	53	209	426	605	556	303	79	9	3	2258
65	0	0	0	18	113	283	450	404	186	30	0	0	1484
70	0	0	0	4	48	158	300	261	99	7	0	0	877

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	39	105	256	479	771	1007	1207	1163	880	576	233	75	39	144	400	879	1650	2657	3864	5027	5907	6483	6716	6791
45	14	52	156	344	616	857	1052	1008	730	432	147	34	14	66	222	566	1182	2039	3091	4099	4829	5261	5408	5442
50	5	26	89	221	462	707	897	853	581	290	81	15	5	31	120	341	803	1510	2407	3260	3841	4131	4212	4227
55	0	5	39	130	315	557	742	698	438	176	36	2	0	5	44	174	489	1046	1788	2486	2924	3100	3136	3138
60	0	0	13	64	188	408	587	543	303	90	9	0	0	0	13	77	265	673	1260	1803	2106	2196	2205	2205
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	35	77	167	295	480	685	823	786	575	361	148	55	35	112	279	574	1054	1739	2562	3348	3923	4284	4432	4487

(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