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: LOCKWOOD, MO **COOP ID: 235027**

Climate Division: MO 4 **NWS Call Sign:** **Elevation: 1,080 Feet** **Lat: 37˚23N** **Lon: 93˚57W**

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	41.1	20.7	30.9	76	1950	24	41.2	1990	-22	1930	18	17.7	1979	1057	0	.0	.0	9.4	7.1	25.8	1.6
Feb	47.6	25.6	36.6	83	1962	12	46.2	1976	-12+	1979	9	23.6	1978	795	0	.0	.0	13.6	4.0	19.8	.8
Mar	57.7	34.8	46.3	92	1929	24	50.7	1986	-10	1943	7	39.8	1996	582	0	.0	.0	22.7	.8	12.0	.0
Apr	67.4	43.2	55.3	91+	1987	20	62.3	1981	17	1920	5	48.0	1983	302	11	.0	.1	28.5	.0	3.0	.0
May	76.2	53.8	65.0	98+	1934	31	70.7	1987	29+	1976	3	60.0	1976	103	102	.0	.5	31.0	.0	@	.0
Jun	84.8	62.9	73.9	104+	1936	28	77.4	1991	44	1972	1	69.2	1982	7	272	.1	7.2	30.0	.0	.0	.0
Jul	90.5	68.1	79.3	116	1954	14	86.5	1980	47+	1972	6	75.2	1971	0	443	1.3	19.2	31.0	.0	.0	.0
Aug	89.7	65.9	77.8	108+	1936	15	84.0	2000	45	1950	21	72.0	1992	3	400	1.6	17.2	31.0	.0	.0	.0
Sep	81.4	57.7	69.6	108	1947	7	76.7	1998	32+	1995	22	62.1	1974	48	184	.3	5.5	30.0	.0	.1	.0
Oct	70.9	46.5	58.7	95+	1963	7	63.5	1971	18	1993	31	52.5	1976	220	25	.0	.2	30.3	.0	1.8	.0
Nov	56.1	34.7	45.4	87	1982	1	54.9	1999	1	1932	16	37.6	1976	588	0	.0	.0	20.6	.7	11.6	.0
Dec	45.2	25.0	35.1	78	1948	13	40.9	1971	-17+	1989	23	20.0	1983	927	0	.0	.0	12.0	4.2	22.6	.8
Ann	67.4	44.9	56.2	116	Jul 1954	14	86.5	Jul 1980	-22	Jan 1930	18	17.7	Jan 1979	4632	1437	3.3	49.9	290.1	16.8	96.7	3.2

\+ 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

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	1.95	1.63	2.35	1996	18	4.50	1982	.03	1986
Feb	2.30	2.01	5.28	1985	23	7.11	1985	.12	1996
Mar	3.68	3.74	3.68	1920	25	10.06	1973	.49	1995
Apr	4.22	3.58	4.35	1929	8	11.28	1994	.27	1989
May	4.95	4.10	3.70	1931	19	14.30	1990	1.29	1988
Jun	5.16	5.31	4.80	1928	9	11.67	1981	1.05	1991
Jul	4.14	3.47	5.16	1924	12	12.56	1992	.27	1980
Aug	3.84	3.44	4.76	1982	13	10.82	1982	.00	2000
Sep	4.96	4.07	8.92	1925	21	16.23	1993	.84	1980
Oct	3.96	3.72	5.37	1998	6	11.37	1983	.39	1995
Nov	4.25	3.70	4.05	1985	14	9.98	1992	.00	1989
Dec	2.89	2.76	3.10	1928	16	6.74	1999	.70+	1996
Ann	46.30	47.14	8.92	Sep 1925	21	16.23	Sep 1993	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.4	4.4	1.2	.4
Feb	6.3	4.0	1.6	.5
Mar	9.3	6.3	2.7	1.0
Apr	9.8	6.9	2.6	1.2
May	10.8	7.9	3.7	1.4
Jun	9.9	7.3	3.4	1.7
Jul	7.5	5.2	2.5	1.3
Aug	7.1	5.0	2.2	1.3
Sep	8.1	5.9	2.9	1.5
Oct	8.0	5.4	2.4	1.3
Nov	8.1	5.5	2.8	1.4
Dec	7.8	4.5	2.2	.8
Ann	100.1	68.3	30.2	13.8

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	.21	.36	.63	.90	1.19	1.52	1.90	2.38	3.02	4.09	5.14
Feb	.38	.57	.91	1.23	1.55	1.91	2.31	2.81	3.47	4.54	5.56
Mar	.82	1.16	1.70	2.19	2.68	3.19	3.78	4.47	5.39	6.84	8.22
Apr	.78	1.15	1.77	2.34	2.93	3.56	4.28	5.15	6.31	8.17	9.94
May	1.56	2.03	2.73	3.33	3.90	4.50	5.15	5.92	6.91	8.46	9.88
Jun	1.57	2.06	2.79	3.42	4.03	4.67	5.36	6.18	7.24	8.89	10.42
Jul	.71	1.07	1.67	2.24	2.82	3.45	4.17	5.05	6.21	8.10	9.91
Aug	.25	.64	1.24	1.80	2.40	3.05	3.81	4.74	5.99	8.05	10.04
Sep	.92	1.36	2.08	2.76	3.44	4.18	5.02	6.04	7.39	9.57	11.64
Oct	.67	1.02	1.60	2.14	2.70	3.30	3.99	4.83	5.95	7.77	9.50
Nov	.47	.98	1.70	2.31	2.93	3.59	4.34	5.24	6.44	8.36	10.18
Dec	.66	.93	1.35	1.73	2.11	2.51	2.96	3.50	4.21	5.34	6.40
Ann	30.82	33.74	37.52	40.42	43.01	45.53	48.15	51.06	54.61	59.80	64.32

\+ 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	5.2	2.5	1	1
Feb	3.8	2.3	1	#
Mar	2.7	.3	#	0
Apr	.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
Nov	.9	.0	#	0
Dec	3.0	1.5	1	#
Ann	15.7	6.6	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	21.8	1979	13	1979	31	6	1979
Feb	16.0	1980	8	16.5	1980	16	1980	8	8	1984
Mar	15.0	1999	14	15.0	1999	15	1999	14	1	1999
Apr	1.0	1971	6	1.0	1971	1	1973	9	#+	1995
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	#	1997	26	#+	1997	#+	1997	26	#+	1997
Nov	5.0	1972	19	7.0	1972	5	1988	20	#+	2000
Dec	8.0	2000	13	11.2	1983	11	2000	15	4	2000
Ann	16.0	Feb 1980	8	21.8	Jan 1979	16	Feb 1980	8	8	Feb 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.0	.6	.1	.0
Feb	1.5	1.1	.5	.2	.1
Mar	.8	.7	.3	.2	.1
Apr	.1	@	.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	.4	.2	.1	.1	.0
Dec	1.6	1.0	.5	.1	.0
Ann	7.2	5.0	2.0	.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.3	3.9	1.1	.0
Feb	4.9	2.8	2.0	.3
Mar	1.2	.7	.4	.1
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	.4	.2	.1	.0
Dec	3.5	1.6	.9	.1
Ann	16.3	9.2	4.5	.5

+ 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	5/08	5/03	4/30	4/27	4/24	4/21	4/18	4/14	4/09
32	4/21	4/17	4/14	4/12	4/10	4/07	4/05	4/02	3/29
28	4/13	4/08	4/05	4/03	3/31	3/29	3/26	3/23	3/19
24	4/03	3/28	3/23	3/20	3/16	3/12	3/09	3/04	2/26
20	3/27	3/20	3/16	3/11	3/08	3/04	2/28	2/23	2/16
16	3/16	3/08	3/02	2/25	2/21	2/16	2/12	2/06	1/29

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	10/02	10/05	10/08	10/11	10/14	10/16	10/20	10/24
32	10/07	10/12	10/16	10/19	10/22	10/25	10/28	11/01	11/06
28	10/18	10/24	10/28	11/01	11/05	11/08	11/12	11/16	11/22
24	10/27	11/03	11/08	11/12	11/15	11/19	11/23	11/28	12/04
20	11/05	11/11	11/16	11/20	11/24	11/28	12/02	12/07	12/14
16	11/14	11/21	11/27	12/02	12/06	12/10	12/15	12/20	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	191	184	178	174	169	165	161	155	148
32	214	207	203	199	195	191	187	182	176
28	238	231	226	222	218	214	209	204	197
24	264	257	252	248	244	239	235	230	223
20	285	277	271	266	261	256	251	245	236
16	321	309	301	294	287	280	273	265	253

***** 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	1057	795	582	302	103	7	0	3	48	220	588	927	4632
60	902	660	433	181	43	1	0	0	15	114	447	772	3568
57	811	582	347	123	21	0	0	0	6	69	366	685	3010
55	755	530	293	91	13	0	0	0	3	47	315	628	2675
50	610	406	179	34	3	0	0	0	0	14	205	486	1937
32	204	103	9	0	0	0	0	0	0	0	16	125	457

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	169	232	450	699	1022	1255	1466	1419	1126	828	418	222	9306
55	7	15	21	100	322	565	753	706	439	162	27	11	3128
57	2	11	13	72	268	505	691	644	382	122	18	6	2734
60	0	6	6	40	197	416	598	551	301	74	9	0	2198
65	0	0	0	11	102	272	443	400	184	25	0	0	1437
70	0	0	0	2	41	149	293	259	97	5	0	0	846

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	50	122	286	506	797	1033	1229	1194	908	607	255	84	50	172	458	964	1761	2794	4023	5217	6125	6732	6987	7071
45	18	66	181	369	642	883	1074	1039	758	455	155	43	18	84	265	634	1276	2159	3233	4272	5030	5485	5640	5683
50	3	32	104	239	490	733	919	884	609	314	83	12	3	35	139	378	868	1601	2520	3404	4013	4327	4410	4422
55	0	11	47	142	340	583	764	729	463	200	43	3	0	11	58	200	540	1123	1887	2616	3079	3279	3322	3325
60	0	1	20	69	208	433	609	574	327	102	11	0	0	1	21	90	298	731	1340	1914	2241	2343	2354	2354
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	37	88	180	315	508	704	837	805	599	382	152	53	37	125	305	620	1128	1832	2669	3474	4073	4455	4607	4660

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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