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: MILFORD LAKE, KS **COOP ID: 145306**

Climate Division: KS 6 **NWS Call Sign:** **Elevation: 1,210 Feet** **Lat: 39˚04N** **Lon: 96˚54W**

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	36.8	14.8	25.8	75	1981	25	36.7	1989	-17+	1985	13	10.7	1979	1216	0	.0	.0	6.0	11.4	29.7	3.6
Feb	43.4	20.0	31.7	79	1972	29	41.4	1976	-18	1979	1	16.3	1979	933	0	.0	.0	10.0	7.2	24.1	2.7
Mar	54.3	30.1	42.2	90	1967	30	48.6	1986	-9+	1978	5	34.0	1975	707	0	.0	.0	19.3	1.5	17.7	.3
Apr	64.9	41.2	53.1	96	1989	26	59.5	1981	8	1975	4	45.2	1983	367	8	.0	.4	27.0	.1	4.9	.0
May	74.3	51.8	63.1	100	1998	31	69.3	1987	29	1981	11	57.3	1995	146	85	@	.8	30.9	.0	.2	.0
Jun	84.0	61.5	72.8	108	1980	28	77.4	1988	41+	1998	6	66.9	1982	16	248	.7	7.7	30.0	.0	.0	.0
Jul	90.0	66.9	78.5	110	1980	15	85.6	1980	47	1972	5	74.2	1971	0	416	3.4	17.2	31.0	.0	.0	.0
Aug	88.2	64.9	76.6	108+	1983	18	84.5	2000	49+	1981	21	71.3	1992	8	366	2.6	14.6	31.0	.0	.0	.0
Sep	80.3	55.3	67.8	109	2000	3	74.0	1998	28	1984	30	60.8	1974	64	147	.6	6.2	29.9	.0	.2	.0
Oct	69.0	42.8	55.9	94+	1994	1	60.7	2000	15	1993	31	50.3	1976	294	12	.0	.4	29.6	.0	3.8	.0
Nov	52.9	30.4	41.7	83+	1999	14	52.0	1999	-1	1976	28	34.4	1985	700	0	.0	.0	18.2	1.4	17.0	.1
Dec	40.8	19.6	30.2	75	1995	1	36.6	1999	-21	1989	22	13.4	1983	1079	0	.0	.0	7.7	7.2	28.6	1.7
Ann	64.9	41.6	53.3	110	Jul 1980	15	85.6	Jul 1980	-21	Dec 1989	22	10.7	Jan 1979	5530	1282	7.3	47.3	270.6	28.8	126.2	8.4

\+ 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: 1965-2001

(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	.72	.69	.91	1980	19	2.50	1979	.00	1986
Feb	.94	.83	2.10	2001	26	2.99	1997	.00+	1996
Mar	2.50	1.98	2.27	1980	30	8.04	1973	.17	1997
Apr	2.71	2.60	2.29	2001	11	6.99	1999	.39	1989
May	4.86	4.54	3.13	1995	17	17.22	1995	1.00	1998
Jun	4.42	3.93	4.78	1977	18	9.55	1977	1.38	1997
Jul	4.23	3.58	3.12	1973	20	12.32	1992	.04	1983
Aug	3.50	2.76	4.73	1990	16	8.39	1977	.00+	2000
Sep	3.24	3.08	3.33	1978	20	8.14	1973	.47	1994
Oct	2.51	2.34	3.99	1973	11	6.20	1983	.07	1975
Nov	1.82	1.58	3.03	1998	2	4.40	1998	.00+	1989
Dec	1.09	.77	1.98	1980	8	3.33	1980	.00	1976
Ann	32.54	31.78	4.78	Jun 1977	18	17.22	May 1995	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.2	2.3	.3	.0
Feb	4.4	2.1	.6	.1
Mar	7.1	4.4	1.6	.7
Apr	8.8	5.2	2.0	.6
May	11.4	7.7	3.4	1.5
Jun	9.3	6.3	3.1	1.2
Jul	8.5	5.8	2.7	1.3
Aug	8.2	5.3	2.2	1.2
Sep	7.9	4.8	2.2	1.0
Oct	6.4	4.0	1.8	.7
Nov	5.7	3.4	1.0	.5
Dec	4.3	2.4	.6	.2
Ann	86.2	53.7	21.5	9.0

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	.04	.11	.23	.33	.44	.57	.71	.89	1.14	1.53	1.92
Feb	.00	.10	.27	.42	.58	.75	.94	1.17	1.50	2.02	2.53
Mar	.33	.53	.88	1.23	1.60	2.01	2.48	3.06	3.85	5.13	6.38
Apr	.58	.83	1.23	1.59	1.95	2.34	2.77	3.29	3.97	5.06	6.10
May	1.19	1.65	2.36	2.98	3.61	4.27	5.00	5.88	7.03	8.84	10.54
Jun	1.87	2.27	2.83	3.29	3.72	4.16	4.63	5.17	5.86	6.90	7.84
Jul	.26	.50	1.02	1.60	2.25	3.01	3.93	5.11	6.76	9.57	12.36
Aug	.00	.77	1.50	2.04	2.56	3.10	3.70	4.36	5.27	6.70	8.04
Sep	.72	1.02	1.50	1.93	2.36	2.81	3.32	3.93	4.74	6.02	7.23
Oct	.23	.41	.75	1.10	1.48	1.91	2.42	3.06	3.94	5.41	6.85
Nov	.00	.24	.59	.88	1.17	1.49	1.85	2.27	2.86	3.80	4.71
Dec	.06	.16	.33	.49	.66	.85	1.07	1.34	1.71	2.32	2.91
Ann	21.19	23.32	26.08	28.20	30.10	31.96	33.89	36.04	38.67	42.51	45.87

\+ 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: 1965-2001
(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	5.1	4.0	2	1
Feb	3.6	2.8	1	#
Mar	1.4	.0	#	0
Apr	.3	.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	.8	.0	#	0
Dec	2.4	.5	1	#
Ann	13.6	7.3	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	10.0	1985	10	12.5	1983	13	1979	31	8	1979
Feb	10.0	1971	22	16.0	1971	15	1983	6	7	1979
Mar	9.0	1975	10	9.0	1975	9	1975	10	1+	1995
Apr	3.0	1977	4	3.0+	1977	3+	1997	12	#+	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	.0	0	0	.0	0	1	1991	31	#	1991
Nov	7.0	1975	26	7.3	1975	7	1975	27	1	1975
Dec	10.0	1983	21	10.0	1983	14	1983	31	7	1983
Ann	10.0+	Jan 1985	10	16.0	Feb 1971	15	Feb 1983	6	8	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.6	2.0	.6	.2	.1
Feb	1.5	1.1	.3	.2	@
Mar	.5	.4	.1	@	.0
Apr	.1	.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	.3	.2	.1	@	.0
Dec	1.0	.6	.2	@	@
Ann	6.0	4.4	1.3	.4	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	8.3	5.3	2.5	.4
Feb	4.9	2.8	1.9	.1
Mar	1.0	.6	.2	.0
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	.6	.2	.1	.0
Dec	1.9	.7	.1	.0
Ann	16.8	9.7	4.8	.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	5/12	5/07	5/03	4/30	4/27	4/24	4/21	4/18	4/12
32	5/01	4/26	4/22	4/18	4/15	4/12	4/08	4/04	3/30
28	4/15	4/11	4/08	4/06	4/03	4/01	3/30	3/27	3/23
24	4/09	4/03	3/30	3/27	3/24	3/20	3/17	3/13	3/07
20	3/30	3/25	3/21	3/18	3/15	3/12	3/09	3/06	3/01
16	3/23	3/15	3/10	3/05	3/01	2/24	2/20	2/14	2/07

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	9/21	9/26	9/30	10/03	10/06	10/09	10/12	10/16	10/21
32	9/30	10/06	10/10	10/13	10/17	10/20	10/23	10/27	11/02
28	10/12	10/17	10/21	10/24	10/27	10/30	11/02	11/06	11/11
24	10/23	10/30	11/03	11/08	11/12	11/15	11/20	11/24	12/01
20	11/03	11/09	11/14	11/18	11/21	11/25	11/28	12/03	12/09
16	11/09	11/16	11/21	11/25	11/28	12/02	12/06	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	184	176	171	166	161	157	152	146	138
32	209	201	194	189	184	179	173	167	158
28	224	218	213	210	206	202	199	194	188
24	259	250	243	237	232	227	221	215	205
20	273	265	259	255	250	245	240	235	227
16	303	292	285	278	272	266	259	251	241

***** 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	1216	933	707	367	146	16	0	8	64	294	700	1079	5530
60	1061	801	556	238	72	3	0	1	21	171	552	924	4400
57	970	723	469	173	42	1	0	0	9	113	468	831	3799
55	910	671	413	136	28	0	0	0	5	83	413	769	3428
50	766	545	285	64	8	0	0	0	0	32	287	625	2612
32	317	206	37	0	0	0	0	0	0	0	34	201	795

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	124	198	353	632	962	1222	1439	1381	1074	741	324	145	8595
55	4	18	16	77	277	532	726	668	388	111	13	1	2831
57	2	14	11	55	229	473	664	606	333	79	8	0	2474
60	0	9	4	30	166	385	571	514	255	44	2	0	1980
65	0	0	0	8	85	248	416	366	147	12	0	0	1282
70	0	0	0	1	34	135	268	233	72	2	0	0	745

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	16	65	194	423	727	999	1209	1152	849	517	162	31	16	81	275	698	1425	2424	3633	4785	5634	6151	6313	6344
45	2	31	111	293	575	849	1054	997	699	374	91	8	2	33	144	437	1012	1861	2915	3912	4611	4985	5076	5084
50	0	9	58	184	423	699	899	842	552	243	43	2	0	9	67	251	674	1373	2272	3114	3666	3909	3952	3954
55	0	1	23	100	282	549	744	687	410	143	16	0	0	1	24	124	406	955	1699	2386	2796	2939	2955	2955
60	0	0	5	49	165	400	589	532	281	70	2	0	0	0	5	54	219	619	1208	1740	2021	2091	2093	2093
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	22	61	138	261	451	666	808	767	547	325	110	30	22	83	221	482	933	1599	2407	3174	3721	4046	4156	4186

(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