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: STERLING, KS **COOP ID: 147796**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,636 Feet** **Lat: 38˚13N** **Lon: 98˚12W**

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	40.4	18.1	29.3	76	1989	31	38.7	1986	-12+	1973	8	15.4	1979	1108	0	.0	.0	8.7	9.2	28.9	2.2
Feb	47.2	22.7	35.0	84	1976	9	45.0	1976	-13+	1981	11	20.7	1978	841	0	.0	.0	12.3	5.4	22.3	1.3
Mar	56.9	31.6	44.3	91	1989	10	50.9	1986	-8	1960	3	36.9	1998	644	0	.0	.1	21.3	1.2	15.3	.1
Apr	67.1	41.2	54.2	102	1989	23	62.9	1981	17+	1997	11	46.7	1983	338	12	@	.7	27.7	.1	3.7	.0
May	76.4	52.5	64.5	103	1953	25	70.0	1998	28	1953	14	57.3	1995	113	96	.1	2.1	30.9	.0	@	.0
Jun	87.4	62.7	75.1	112	1980	27	79.9	1990	41	1954	4	70.3	1992	10	312	1.7	13.0	30.0	.0	.0	.0
Jul	92.7	68.0	80.4	111+	1954	12	87.8	1980	49	1990	14	76.7	1972	0	475	5.4	21.9	31.0	.0	.0	.0
Aug	90.9	66.3	78.6	110	1984	28	85.0	1983	44	1978	31	72.6	1992	3	425	3.8	19.0	31.0	.0	.0	.0
Sep	82.0	56.8	69.4	105+	2000	2	76.2	1998	30+	1985	30	61.4	1974	49	181	.8	8.5	29.9	.0	.1	.0
Oct	70.2	44.2	57.2	97	1954	3	60.1	1979	16+	1993	31	51.1	1976	254	12	.0	.7	29.6	@	2.1	.0
Nov	54.4	30.8	42.6	89	1980	8	51.9	1999	0	1952	28	35.8	1985	673	0	.0	.0	19.7	1.1	16.6	.0
Dec	43.4	21.5	32.5	80	1955	24	37.4	1979	-18	1989	22	16.0	1983	1009	0	.0	.0	10.7	6.2	27.5	1.1
Ann	67.4	43.0	55.3	112	Jun 1980	27	87.8	Jul 1980	-18	Dec 1989	22	15.4	Jan 1979	5042	1513	11.8	66.0	282.8	23.2	116.5	4.7

\+ 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: 1952-2001

(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	.80	.69	1.29	1999	28	2.35	1999	.00+	1997
Feb	1.02	.30	1.60	1980	7	3.91	1971	.00+	1996
Mar	2.70	2.01	3.50	1987	23	8.84	1973	.00+	1997
Apr	2.35	2.18	2.80	1967	11	5.68	1976	.28	1989
May	4.37	4.35	3.90	1990	30	10.48	1995	.62	1994
Jun	3.78	4.04	2.95	1957	27	10.14	1989	.36	1996
Jul	3.75	3.68	3.42	1982	1	9.06	1993	.14	1983
Aug	3.06	2.69	2.91	1969	24	8.01	1997	.03	2000
Sep	2.66	2.04	4.84	1978	17	12.82	1973	.00	1980
Oct	2.36	1.90	3.75	1979	30	6.90	1979	.00	1975
Nov	1.39	1.09	3.94	1996	16	4.42	1996	.01	1995
Dec	.97	.78	2.30	1984	15	3.67	1984	.00+	1996
Ann	29.21	29.33	4.84	Sep 1978	17	12.82	Sep 1973	.00+	Mar 1997

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	2.3	.3	.1
Feb	4.0	2.2	.7	.2
Mar	7.0	5.2	1.9	.7
Apr	7.9	4.9	1.6	.5
May	9.3	6.8	3.1	1.3
Jun	8.1	6.1	2.8	1.1
Jul	7.3	5.1	2.6	1.3
Aug	6.6	4.6	2.0	1.2
Sep	5.8	4.0	1.8	.7
Oct	6.1	3.9	1.3	.6
Nov	4.8	2.7	.9	.3
Dec	4.7	2.3	.5	.1
Ann	75.7	50.1	19.5	8.1

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	.00	.09	.24	.36	.50	.64	.80	1.00	1.27	1.71	2.13
Feb	.00	.00	.05	.16	.31	.51	.78	1.15	1.71	2.71	3.76
Mar	.00	.29	.77	1.20	1.65	2.13	2.69	3.37	4.29	5.81	7.27
Apr	.51	.72	1.07	1.38	1.70	2.03	2.41	2.86	3.45	4.40	5.30
May	1.07	1.48	2.12	2.69	3.25	3.84	4.50	5.28	6.31	7.94	9.47
Jun	.73	1.07	1.62	2.13	2.65	3.21	3.84	4.61	5.62	7.24	8.79
Jul	.46	.76	1.29	1.81	2.37	2.98	3.70	4.58	5.78	7.76	9.67
Aug	.24	.44	.84	1.26	1.73	2.26	2.91	3.72	4.84	6.74	8.60
Sep	.09	.30	.67	1.06	1.48	1.96	2.53	3.26	4.25	5.93	7.57
Oct	.07	.23	.55	.89	1.27	1.70	2.22	2.89	3.81	5.36	6.89
Nov	.03	.09	.22	.39	.60	.86	1.19	1.63	2.28	3.41	4.56
Dec	.00	.10	.28	.43	.59	.77	.97	1.21	1.54	2.09	2.62
Ann	19.08	20.98	23.45	25.34	27.04	28.69	30.41	32.33	34.67	38.10	41.09

\+ 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: 1952-2001
(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	5.8	4.5	1	#
Feb	4.3	1.2	1	#
Mar	1.4	.0	#	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
Nov	1.0	.0	#	0
Dec	2.4	1.2	#	#
Ann	16.0	6.9	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	1993	9	16.4	1993	9	1979	31	5	1979
Feb	12.0	1971	21	24.5	1971	12	1983	7	5	1983
Mar	7.0	1975	9	9.0	1975	7+	1998	10	1+	1998
Apr	16.0	1983	4	19.0	1983	5	1983	4	#+	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	#	1993	29	#+	1993	0	0	0	0	0
Nov	4.3	1972	18	7.5	1972	4	1972	18	#+	1996
Dec	7.0	1978	31	10.0	1978	11	1983	29	6	1983
Ann	16.0	Apr 1983	4	24.5	Feb 1971	12	Feb 1983	7	6	Dec 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.3	1.6	.7	.2	.0
Feb	1.6	1.0	.4	.2	.2
Mar	.7	.4	.3	.1	.0
Apr	.2	.2	.1	.1	@
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	.1	.0	.0
Dec	1.6	.8	.2	@	.0
Ann	6.9	4.4	1.8	.6	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.9	4.2	2.6	.0
Feb	4.6	3.2	2.3	.5
Mar	.6	.3	.2	.0
Apr	.2	.1	@	.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	.0	.0
Dec	1.9	.5	@	.0
Ann	14.6	8.5	5.1	.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	4/25	4/22	4/20	4/16	4/12
32	4/26	4/22	4/19	4/16	4/13	4/10	4/07	4/04	3/31
28	4/14	4/10	4/07	4/05	4/03	3/31	3/29	3/26	3/23
24	4/08	4/03	3/30	3/27	3/24	3/22	3/19	3/15	3/10
20	4/06	3/28	3/21	3/16	3/10	3/05	2/27	2/20	2/11
16	3/24	3/15	3/09	3/04	2/27	2/22	2/17	2/11	2/03

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	9/30	10/03	10/06	10/09	10/12	10/15	10/19	10/24
32	10/05	10/10	10/14	10/17	10/20	10/23	10/27	10/31	11/05
28	10/19	10/25	10/29	11/01	11/04	11/07	11/11	11/15	11/20
24	10/24	10/30	11/03	11/07	11/10	11/14	11/18	11/22	11/28
20	11/05	11/11	11/15	11/19	11/23	11/26	11/30	12/04	12/10
16	11/08	11/15	11/21	11/25	11/29	12/04	12/08	12/14	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	187	180	175	171	167	163	158	153	146
32	213	205	199	194	190	185	180	175	167
28	237	230	224	219	215	211	206	200	193
24	252	244	239	234	230	226	221	216	209
20	290	278	270	263	257	250	243	235	224
16	308	296	288	281	275	268	261	253	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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1108	841	644	338	113	10	0	3	49	254	673	1009	5042
60	953	710	492	215	50	2	0	0	15	135	525	854	3951
57	862	632	406	155	26	0	0	0	6	82	442	761	3372
55	802	580	349	120	16	0	0	0	3	56	387	702	3015
50	656	458	225	54	4	0	0	0	0	18	264	557	2236
32	225	144	17	0	0	0	0	0	0	0	28	154	568

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	140	227	395	665	1006	1292	1498	1445	1122	782	345	168	9085
55	3	19	15	95	309	602	785	732	435	125	14	2	3136
57	1	15	10	69	257	542	723	670	378	89	9	0	2763
60	0	9	3	40	188	453	630	577	297	49	2	0	2248
65	0	0	0	12	96	312	475	425	181	12	0	0	1513
70	0	0	0	3	39	188	321	282	96	2	0	0	931

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	34	89	227	456	778	1068	1262	1212	903	559	177	46	34	123	350	806	1584	2652	3914	5126	6029	6588	6765	6811
45	7	42	134	321	623	918	1107	1057	754	411	98	11	7	49	183	504	1127	2045	3152	4209	4963	5374	5472	5483
50	0	15	71	199	470	768	952	902	607	278	45	3	0	15	86	285	755	1523	2475	3377	3984	4262	4307	4310
55	0	2	31	110	327	618	797	747	462	167	16	0	0	2	33	143	470	1088	1885	2632	3094	3261	3277	3277
60	0	0	6	52	196	471	642	592	327	84	3	0	0	0	6	58	254	725	1367	1959	2286	2370	2373	2373
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	34	78	160	286	488	707	836	805	585	347	121	39	34	112	272	558	1046	1753	2589	3394	3979	4326	4447	4486

(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