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: SHARON SPRINGS, KS **COOP ID: 147397**

Climate Division: KS 4 **NWS Call Sign:** **Elevation: 3,450 Feet** **Lat: 38˚54N** **Lon: 101˚45W**

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	40.2	14.4	27.3	78+	1986	19	38.8	1986	-20+	1984	18	14.9	1979	1169	0	.0	.0	11.3	6.6	29.8	2.4
Feb	46.2	18.4	32.3	82+	1972	28	41.3	1999	-17	1960	28	19.9	1978	916	0	.0	.0	15.2	3.9	25.2	1.3
Mar	54.8	25.6	40.2	89	1963	28	46.9	1986	-18	1960	3	35.2	1980	769	0	.0	.0	23.0	1.5	20.9	.2
Apr	65.2	35.4	50.3	98+	1992	30	57.0	1981	8	1953	12	44.7	1983	445	4	.0	.4	27.4	.1	8.9	.0
May	74.3	46.3	60.3	103	1967	24	64.7	1998	21	1967	1	53.2	1995	182	37	.1	2.4	30.8	.0	.8	.0
Jun	86.2	57.4	71.8	112	1971	24	76.1	1990	33	1951	2	67.2	1982	18	221	2.5	14.0	30.0	.0	.0	.0
Jul	91.0	62.4	76.7	109+	1973	6	81.2	1980	41	1952	8	73.3	1992	0	364	5.5	22.3	31.0	.0	.0	.0
Aug	88.7	60.7	74.7	107+	1970	5	80.4	1983	44	1993	31	69.1	1992	7	309	2.9	19.5	31.0	.0	.0	.0
Sep	80.2	50.9	65.6	104	1959	5	71.1	1998	22	1985	30	60.8	1973	83	98	.4	8.4	29.7	.0	.6	.0
Oct	68.8	37.3	53.1	96	1967	3	55.7	1974	10	1993	30	47.0	1976	372	1	.0	.8	29.6	.3	6.0	.0
Nov	51.2	24.2	37.7	87	1980	6	46.9	1999	-8	1952	28	31.4	1972	820	0	.0	.0	19.0	1.5	22.6	.1
Dec	42.0	17.0	29.5	82	1980	17	36.7	1980	-22	1989	22	16.6	1983	1101	0	.0	.0	11.9	4.9	29.0	1.5
Ann	65.7	37.5	51.6	112	Jun 1971	24	81.2	Jul 1980	-22	Dec 1989	22	14.9	Jan 1979	5882	1034	11.4	67.8	289.9	18.8	143.8	5.5

\+ 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: 1948-2001

(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	.48	.36	1.14	1960	14	1.28	1979	.00+	1998
Feb	.56	.39	1.01	1984	18	1.66	1993	.00+	1996
Mar	1.47	1.07	1.43	1984	19	4.97	1981	.00	1997
Apr	1.60	1.51	1.92	1988	2	3.51	1994	.00	1992
May	3.38	3.13	5.35	1976	22	6.83	1977	.33	2000
Jun	3.04	2.84	4.10	1964	13	9.06	1980	.09	1976
Jul	3.32	3.00	3.58	1957	10	6.96	1998	.21	1974
Aug	2.43	2.10	3.80	1999	2	9.41	1999	.15	1995
Sep	1.32	1.07	4.32	1969	17	6.04	1973	.00	1978
Oct	1.14	.73	2.85	2000	29	4.26	2000	.00+	1988
Nov	.94	.73	1.45+	1990	3	2.79	1972	.00	1989
Dec	.43	.34	1.00	1979	28	1.86	1982	.00+	1995
Ann	20.11	19.69	5.35	May 1976	22	9.41	Aug 1999	.00+	Jan 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.1	1.4	.2	.0
Feb	2.9	1.8	.3	@
Mar	5.1	3.5	1.0	.3
Apr	5.3	3.7	1.0	.3
May	8.3	6.3	2.1	.9
Jun	7.3	5.4	2.3	.6
Jul	7.6	5.6	2.4	1.0
Aug	6.0	4.5	1.4	.6
Sep	4.0	2.9	1.0	.3
Oct	3.2	2.5	.6	.2
Nov	3.6	2.4	.5	.1
Dec	2.4	1.4	.1	@
Ann	58.8	41.4	12.9	4.3

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	.06	.14	.22	.30	.38	.48	.59	.75	1.01	1.26
Feb	.00	.02	.10	.18	.27	.38	.51	.68	.92	1.33	1.73
Mar	.06	.18	.39	.60	.83	1.10	1.41	1.80	2.34	3.24	4.13
Apr	.25	.46	.73	.95	1.17	1.40	1.66	1.96	2.36	2.99	3.58
May	.85	1.17	1.66	2.09	2.52	2.98	3.48	4.08	4.86	6.10	7.26
Jun	.47	.73	1.17	1.59	2.02	2.50	3.04	3.71	4.61	6.06	7.46
Jul	.85	1.16	1.64	2.07	2.49	2.93	3.42	4.01	4.77	5.98	7.11
Aug	.35	.55	.90	1.24	1.59	1.98	2.43	2.97	3.71	4.91	6.07
Sep	.03	.12	.29	.48	.69	.94	1.23	1.61	2.13	3.02	3.90
Oct	.00	.00	.12	.30	.50	.75	1.03	1.41	1.93	2.81	3.69
Nov	.05	.14	.28	.42	.57	.73	.92	1.15	1.47	2.00	2.51
Dec	.00	.03	.10	.17	.24	.32	.42	.54	.70	.98	1.25
Ann	15.19	16.16	17.39	18.32	19.14	19.93	20.74	21.63	22.70	24.25	25.57

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

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	4.6	4.0	1	#	9.0	1990	20	11.5	1990	10+	1990	20	8	1984	2.1	1.9	.8	.2	.0	5.7	3.1	1.2	.1
Feb	4.2	2.0	1	#	9.0	1978	13	15.5	1978	10	1990	21	3	1993	1.5	1.3	.6	.1	.0	2.8	1.9	.4	.1
Mar	6.5	4.5	#	#	14.0	1981	7	29.8	1980	16	1981	8	3	1980	1.8	1.6	.8	.4	.2	2.1	1.2	.6	.2
Apr	2.2	.0	#	0	19.0	1988	2	19.0	1988	10	1988	2	#+	1997	.5	.5	.3	.1	@	.5	.3	@	@
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.2	.0	#	0	3.0	1985	29	3.0	1985	2	1995	21	#	1995	.1	.1	@	.0	.0	@	.0	.0	.0
Oct	1.1	.0	#	0	19.0	1997	26	19.0	1997	6	1991	31	#+	1995	.2	.2	.1	@	@	.1	.0	.0	.0
Nov	2.7	1.6	#	#	7.0	1972	13	12.0	1983	10	1991	1	1	1992	1.3	1.2	.6	.2	.0	1.4	.5	.3	.0
Dec	3.4	2.8	#	#	8.0	1982	25	12.0	1982	12	1982	28	3	1983	1.7	1.4	.4	.2	.0	2.9	1.4	.4	.1
Ann	24.9	14.9	N/A	N/A	19.0+	Oct 1997	26	29.8	Mar 1980	16	Mar 1981	8	8	Jan 1984	9.2	8.2	3.6	1.2	.2	15.5	8.4	2.9	.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	5/23	5/18	5/15	5/13	5/10	5/08	5/05	5/02	4/28
32	5/16	5/11	5/07	5/04	5/02	4/29	4/26	4/22	4/18
28	5/04	4/29	4/26	4/23	4/20	4/17	4/15	4/11	4/07
24	4/20	4/15	4/12	4/09	4/06	4/03	3/31	3/28	3/23
20	4/12	4/06	4/02	3/29	3/26	3/22	3/19	3/15	3/09
16	4/06	3/30	3/25	3/21	3/17	3/13	3/09	3/04	2/25

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	9/16	9/21	9/24	9/27	9/29	10/02	10/05	10/08	10/12
32	9/24	9/29	10/03	10/06	10/09	10/11	10/15	10/18	10/23
28	10/04	10/09	10/13	10/16	10/19	10/22	10/25	10/29	11/03
24	10/17	10/22	10/25	10/28	10/31	11/02	11/05	11/09	11/14
20	10/26	10/31	11/03	11/06	11/09	11/12	11/15	11/18	11/23
16	10/31	11/06	11/10	11/14	11/18	11/22	11/25	11/30	12/06

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	153	149	145	141	138	134	129	123
32	180	173	168	163	159	155	151	145	138
28	201	194	189	185	181	177	173	168	161
24	223	218	214	210	207	204	200	196	190
20	252	243	237	232	227	223	217	211	203
16	271	262	256	250	245	240	234	228	219

***** 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	1169	916	769	445	182	18	0	7	83	372	820	1101	5882
60	1014	776	614	306	89	3	0	1	28	227	670	946	4674
57	921	692	521	232	52	1	0	0	11	154	580	853	4017
55	859	636	459	188	34	0	0	0	5	113	523	791	3608
50	708	507	314	100	9	0	0	0	0	44	386	638	2706
32	248	143	20	0	0	0	0	0	0	0	64	188	663

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	101	152	274	549	878	1193	1387	1325	1005	652	234	110	7860
55	0	0	1	47	198	503	674	612	320	52	3	0	2410
57	0	0	0	31	154	444	612	550	266	31	0	0	2088
60	0	0	0	15	98	356	519	457	193	12	0	0	1650
65	0	0	0	4	37	221	364	309	98	1	0	0	1034
70	0	0	0	0	9	113	214	178	40	0	0	0	554

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	30	76	192	401	703	999	1198	1136	841	497	131	43	30	106	298	699	1402	2401	3599	4735	5576	6073	6204	6247
45	4	30	107	274	549	849	1043	981	692	351	66	14	4	34	141	415	964	1813	2856	3837	4529	4880	4946	4960
50	0	7	49	167	399	699	888	826	544	225	23	1	0	7	56	223	622	1321	2209	3035	3579	3804	3827	3828
55	0	0	18	87	262	550	733	671	404	120	4	0	0	0	18	105	367	917	1650	2321	2725	2845	2849	2849
60	0	0	4	34	149	404	578	516	271	52	0	0	0	0	4	38	187	591	1169	1685	1956	2008	2008	2008
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	50	90	174	287	443	636	768	730	537	345	121	58	50	140	314	601	1044	1680	2448	3178	3715	4060	4181	4239

(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

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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