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: GREENSBURG, KS **COOP ID: 143239**

Climate Division: KS 8 **NWS Call Sign:** **Elevation: 2,230 Feet** **Lat: 37˚37N** **Lon: 99˚18W**

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	40.0	17.6	28.8	80+	1989	31	38.8	1986	-16	1959	4	13.7	1979	1122	0	.0	.0	9.2	8.6	29.2	2.2
Feb	46.7	22.0	34.4	88	1962	12	42.6	1976	-18	1951	1	19.3	1978	858	0	.0	.0	13.8	5.2	23.2	1.2
Mar	56.0	29.8	42.9	94	1946	31	51.1	1986	-14	1948	11	36.7	1998	684	0	.0	.1	21.4	1.4	17.2	.2
Apr	66.3	40.1	53.2	101	1989	23	62.4	1981	14+	1997	13	45.4	1983	367	12	@	.6	27.3	.1	5.4	.0
May	75.3	51.9	63.6	104+	1953	26	68.2	1974	27	1946	11	56.2	1995	124	80	.2	2.4	30.7	.0	.1	.0
Jun	85.7	61.8	73.8	110	1953	13	79.5	1990	37	1969	2	67.7	1992	19	281	1.8	11.7	30.0	.0	.0	.0
Jul	91.6	67.1	79.4	111	1939	7	85.5	1980	48+	1970	21	76.0	1994	0	444	5.6	20.3	31.0	.0	.0	.0
Aug	90.0	65.0	77.5	112	1943	2	83.7	1983	45+	1985	25	71.3	1992	4	391	3.5	18.3	31.0	.0	.0	.0
Sep	81.0	55.9	68.5	107	1947	3	76.0	1998	23	1984	30	62.1	1974	64	167	.9	7.5	29.7	.0	.4	.0
Oct	69.5	43.1	56.3	99	1963	7	59.9	1979	15	1993	31	50.2	1976	281	11	.0	.6	29.7	.1	3.2	.0
Nov	53.6	29.4	41.5	86	1980	8	50.0	1999	-3	1952	28	34.7	1991	706	0	.0	.0	19.1	1.6	18.3	@
Dec	43.1	20.6	31.9	88	1955	24	36.8	1999	-20	1989	22	16.3	1983	1029	0	.0	.0	11.5	6.0	28.2	1.2
Ann	66.6	42.0	54.3	112	Aug 1943	2	85.5	Jul 1980	-20	Dec 1989	22	13.7	Jan 1979	5258	1386	12.0	61.5	284.4	23.0	125.2	4.8

\+ 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: 1939-2001

(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	.59	.53	1.03	1960	14	1.32+	1993	.00+	1996
Feb	.73	.43	3.01	1948	27	3.59	1971	.00+	1996
Mar	2.01	1.67	2.18	1973	31	8.36	1973	.03	1997
Apr	2.11	1.62	3.04	1976	28	6.87	1976	.27	1982
May	3.52	3.02	3.56	1978	26	9.49	1978	.44	1973
Jun	4.20	3.51	5.30	1977	23	9.58	1992	.20	1976
Jul	3.40	2.56	6.92	1993	14	9.72	1972	.60	1983
Aug	2.74	2.53	4.09	1969	25	7.00	1997	.00	2000
Sep	2.45	1.97	7.54	1973	26	14.04	1973	.01	1980
Oct	1.87	1.11	3.60	2000	25	6.52	2000	.00	1975
Nov	1.12	.84	2.19	1964	16	3.12	1998	.00+	1999
Dec	.75	.45	1.53	1973	4	3.24	1984	.00	1998
Ann	25.49	24.49	7.54	Sep 1973	26	14.04	Sep 1973	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.1	1.6	.3	.0
Feb	3.3	1.6	.5	.2
Mar	6.2	4.2	1.1	.5
Apr	6.0	4.0	1.5	.3
May	8.8	6.3	2.2	1.0
Jun	7.6	6.0	2.7	1.1
Jul	6.8	5.2	2.1	1.2
Aug	6.1	4.9	1.8	.8
Sep	5.9	4.4	1.5	.5
Oct	4.7	3.1	1.1	.6
Nov	4.1	2.5	.7	.1
Dec	3.3	1.9	.5	.1
Ann	65.9	45.7	16.0	6.4

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	.00	.20	.31	.40	.51	.62	.76	.93	1.21	1.48
Feb	.00	.00	.03	.11	.22	.37	.57	.84	1.24	1.95	2.68
Mar	.11	.22	.46	.74	1.05	1.41	1.86	2.43	3.23	4.60	5.97
Apr	.34	.52	.83	1.12	1.42	1.74	2.12	2.57	3.18	4.16	5.10
May	.75	1.07	1.59	2.06	2.53	3.03	3.60	4.28	5.18	6.61	7.96
Jun	.57	.92	1.52	2.10	2.71	3.39	4.17	5.14	6.44	8.56	10.61
Jul	.50	.78	1.27	1.74	2.23	2.77	3.39	4.15	5.18	6.85	8.45
Aug	.42	.78	1.25	1.63	2.01	2.41	2.85	3.37	4.06	5.15	6.17
Sep	.08	.18	.44	.75	1.12	1.58	2.15	2.90	3.98	5.86	7.77
Oct	.06	.21	.47	.74	1.04	1.38	1.78	2.29	3.00	4.17	5.33
Nov	.00	.00	.19	.40	.61	.83	1.09	1.42	1.86	2.57	3.27
Dec	.02	.06	.16	.27	.39	.53	.69	.91	1.21	1.72	2.23
Ann	16.72	18.36	20.50	22.14	23.61	25.05	26.54	28.20	30.22	33.19	35.78

\+ 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: 1939-2001
(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	4.2	4.5	1	#	9.0	1993	9	12.0	1973	9	1993	11	4	1993	2.2	1.7	.6	.1	.0	7.0	4.2	1.2	.0
Feb	3.2	1.0	1	#	11.0	1971	21	22.5	1971	21	1971	23	5	1978	1.5	1.1	.5	.2	@	2.8	1.7	.9	.3
Mar	3.8	2.0	#	#	10.0	1999	14	16.0	1999	10	1999	15	2	1998	1.2	1.1	.5	.3	@	2.0	1.2	.9	@
Apr	.4	.0	#	0	3.5	1979	3	5.5	1979	11	1983	4	#+	1989	.2	.2	.1	.0	.0	.2	.2	.0	.0
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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	2.0	1996	22	2.0	1996	1+	1991	31	#+	1991	.1	.1	.0	.0	.0	.1	.0	.0	.0
Nov	1.6	.0	#	0	12.0	1992	25	15.0	1992	12	1992	26	1	1992	.5	.5	.2	@	@	.8	.3	.1	.1
Dec	3.6	2.8	#	#	6.5	1997	24	14.0	1997	8	1997	25	2	1997	1.6	1.3	.6	.1	.0	2.0	.8	.3	.0
Ann	17.0	10.3	N/A	N/A	12.0	Nov 1992	25	22.5	Feb 1971	21	Feb 1971	23	5	Feb 1978	7.3	6.0	2.5	.7	@	14.9	8.4	3.4	.4

+ 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	5/10	5/06	5/03	4/30	4/28	4/25	4/23	4/20	4/15
32	4/28	4/24	4/21	4/18	4/16	4/13	4/11	4/08	4/04
28	4/20	4/16	4/12	4/10	4/07	4/04	4/02	3/30	3/25
24	4/07	4/03	3/31	3/29	3/27	3/24	3/22	3/19	3/15
20	4/05	3/31	3/27	3/23	3/20	3/17	3/13	3/09	3/04
16	3/31	3/23	3/18	3/13	3/08	3/04	2/27	2/21	2/13

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	9/24	9/29	10/02	10/05	10/08	10/11	10/14	10/17	10/22
32	9/29	10/06	10/10	10/14	10/18	10/21	10/25	10/30	11/05
28	10/12	10/17	10/22	10/25	10/28	11/01	11/04	11/08	11/14
24	10/19	10/25	10/30	11/04	11/07	11/11	11/15	11/20	11/27
20	10/27	11/03	11/08	11/13	11/17	11/21	11/26	12/01	12/08
16	11/06	11/13	11/19	11/23	11/28	12/02	12/06	12/12	12/19

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	182	176	171	166	163	159	154	149	143
32	207	199	193	189	184	180	175	169	162
28	225	218	212	208	204	199	195	189	182
24	247	239	234	229	225	221	216	211	204
20	264	256	251	246	241	237	232	226	219
16	297	285	277	270	264	257	250	242	231

***** 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	1122	858	684	367	124	19	0	4	64	281	706	1029	5258
60	967	723	530	242	54	4	0	0	23	157	556	874	4130
57	875	645	444	180	29	1	0	0	10	99	470	781	3534
55	815	593	387	144	18	0	0	0	6	69	415	719	3166
50	669	467	257	73	4	0	0	0	0	23	285	573	2351
32	232	143	21	0	0	0	0	0	0	0	30	155	581

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	132	209	360	635	980	1252	1466	1411	1093	754	314	149	8755
55	2	15	13	89	284	562	753	698	409	110	9	0	2944
57	1	11	8	65	234	503	691	636	354	78	4	0	2585
60	0	5	1	38	166	416	598	543	276	43	0	0	2086
65	0	0	0	12	80	281	444	391	167	11	0	0	1386
70	0	0	0	3	30	168	295	250	88	2	0	0	836

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	32	92	222	443	753	1033	1242	1180	873	538	168	45	32	124	346	789	1542	2575	3817	4997	5870	6408	6576	6621
45	8	45	134	307	598	883	1087	1025	723	395	91	14	8	53	187	494	1092	1975	3062	4087	4810	5205	5296	5310
50	0	18	70	198	446	733	932	870	575	264	41	4	0	18	88	286	732	1465	2397	3267	3842	4106	4147	4151
55	0	3	34	111	307	583	777	715	439	156	16	0	0	3	37	148	455	1038	1815	2530	2969	3125	3141	3141
60	0	1	10	53	183	434	622	560	307	78	2	0	0	1	11	64	247	681	1303	1863	2170	2248	2250	2250
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	40	85	166	287	468	675	820	776	559	341	125	44	40	125	291	578	1046	1721	2541	3317	3876	4217	4342	4386

(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