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: GARNETT 1 E, KS **COOP ID: 143008**

Climate Division: KS 6 **NWS Call Sign:** **Elevation: 980 Feet** **Lat: 38˚17N** **Lon: 95˚14W**

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	41.2	20.0	30.6	72+	1997	2	41.2	1990	-15	1982	10	16.5	1979	1066	0	.0	.0	8.5	8.3	26.9	2.1
Feb	47.7	25.0	36.4	82	1972	29	47.5	1976	-17	1979	9	24.0	1979	802	0	.0	.0	12.7	5.1	20.8	1.4
Mar	59.1	34.5	46.8	88	1995	22	51.2	1986	-3	1978	4	40.3	1984	565	0	.0	.0	23.3	.6	13.8	.1
Apr	69.0	44.1	56.6	92+	1963	21	64.9	1981	15	1975	3	49.2	1983	274	20	.0	.1	28.6	.0	3.4	.0
May	77.4	54.0	65.7	97	1953	26	71.8	1998	29+	1976	3	61.3	1995	89	110	.0	.7	31.0	.0	.2	.0
Jun	85.7	63.0	74.4	107	1980	27	78.6	1980	42+	1998	6	69.4	1982	6	286	.2	8.0	30.0	.0	.0	.0
Jul	91.3	68.2	79.8	116	1954	14	88.0	1980	48+	1985	16	75.9	1994	0	457	2.5	18.7	31.0	.0	.0	.0
Aug	90.4	66.3	78.4	108	1980	1	85.4+	2000	44	1988	29	71.8	1992	5	419	2.2	16.7	31.0	.0	.0	.0
Sep	82.8	58.0	70.4	107	2000	2	77.2	1978	28	1984	30	63.9	1974	41	202	.5	6.0	30.0	.0	.1	.0
Oct	72.0	46.6	59.3	96	1976	1	64.6	1971	18	1993	31	54.5	1976	201	24	.0	.3	30.2	.0	2.2	.0
Nov	56.3	34.6	45.5	86	1978	4	53.7	1999	2	1959	17	39.7	2000	588	0	.0	.0	20.8	.6	13.2	.0
Dec	44.7	24.4	34.6	75	1966	7	39.2	1982	-23	1989	23	19.0	1983	945	0	.0	.0	10.4	4.9	24.5	1.0
Ann	68.1	44.9	56.5	116	Jul 1954	14	88.0	Jul 1980	-23	Dec 1989	23	16.5	Jan 1979	4582	1518	5.4	50.5	287.5	19.5	105.1	4.6

\+ 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

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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	1.35	1.12	2.00	1967	26	3.98	1973	.00	1986
Feb	1.52	1.25	3.10	1997	21	4.68	1997	.00	1991
Mar	2.94	2.44	2.78	1987	18	9.43	1973	.27	1995
Apr	3.55	3.03	4.27	1970	19	10.53	1994	.35	2000
May	4.83	4.71	5.17	1964	28	10.33	1995	.81	1994
Jun	5.38	4.81	5.30	1998	22	12.66	1981	1.16	1980
Jul	3.97	2.88	4.81	1949	10	16.51	1993	.14	1975
Aug	4.09	3.11	6.87	1996	17	11.49	1974	.08	2000
Sep	3.90	3.06	5.28	1961	13	11.12	1973	.44	1990
Oct	3.90	3.73	4.20	1973	11	9.62	1998	.44	1995
Nov	2.73	2.70	3.89	1985	15	6.86	1992	.01	1989
Dec	1.84	1.54	2.35	1971	15	4.99	1984	.00	1979
Ann	40.00	40.70	6.87	Aug 1996	17	16.51	Jul 1993	.00+	Feb 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.1	3.5	.9	.2
Feb	4.7	3.4	1.1	.2
Mar	7.1	5.4	2.2	.7
Apr	7.6	5.9	2.5	1.0
May	8.8	7.3	3.5	1.5
Jun	8.3	6.8	3.5	1.8
Jul	6.3	5.2	2.7	1.3
Aug	6.1	4.9	2.6	1.3
Sep	6.8	5.3	2.6	1.2
Oct	6.4	5.3	2.7	1.3
Nov	5.2	4.4	1.9	.8
Dec	5.2	3.3	1.3	.5
Ann	77.6	60.7	27.5	11.8

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	.14	.30	.52	.72	.91	1.13	1.37	1.67	2.06	2.68	3.28
Feb	.18	.37	.63	.85	1.07	1.30	1.56	1.88	2.30	2.96	3.59
Mar	.56	.82	1.25	1.65	2.06	2.49	2.99	3.59	4.38	5.65	6.86
Apr	.74	1.07	1.59	2.06	2.54	3.05	3.62	4.31	5.22	6.68	8.05
May	1.47	1.92	2.61	3.20	3.77	4.36	5.02	5.79	6.78	8.33	9.76
Jun	1.75	2.26	3.01	3.65	4.27	4.90	5.60	6.42	7.47	9.10	10.61
Jul	.24	.48	.97	1.50	2.11	2.83	3.69	4.80	6.34	8.96	11.57
Aug	.40	.70	1.26	1.83	2.45	3.15	3.97	4.99	6.40	8.74	11.02
Sep	.55	.87	1.43	1.97	2.53	3.16	3.88	4.76	5.95	7.89	9.77
Oct	.78	1.14	1.71	2.24	2.77	3.33	3.98	4.75	5.77	7.41	8.97
Nov	.31	.52	.90	1.28	1.68	2.14	2.67	3.33	4.22	5.70	7.14
Dec	.10	.27	.55	.82	1.11	1.43	1.80	2.27	2.91	3.96	4.98
Ann	25.06	27.81	31.41	34.20	36.70	39.16	41.72	44.57	48.08	53.24	57.76

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.7	3.5	1	#
Feb	4.1	3.3	1	#
Mar	1.9	.0	#	0
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	.2	.0	#	0
Nov	1.1	.0	#	0
Dec	2.8	.8	#	#
Ann	15.8	7.6	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	7.0	1985	10	19.5	1973	13	1979	30	6	1979
Feb	10.0	1971	22	13.0	1975	14	1980	8	4	1979
Mar	7.0	1978	25	11.0	1988	4+	1988	18	1	1988
Apr	.5	1973	9	.5	1973	1	1973	9	#	1973
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	5.5	1996	23	5.5	1996	6	1996	23	#	1996
Nov	9.0	1975	26	10.0	1975	10	1975	27	1	1975
Dec	10.5	1987	15	20.5	1987	10+	2000	14	2+	2000
Ann	10.5	Dec 1987	15	20.5	Dec 1987	14	Feb 1980	8	6	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.1	2.2	.8	.3	.0
Feb	1.8	1.3	.5	.2	@
Mar	1.0	.8	.3	@	.0
Apr	@	.0	.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	.1	@	@	@	.0
Nov	.5	.4	.1	@	.0
Dec	1.5	1.2	.4	.1	.1
Ann	8.0	5.9	2.1	.6	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.7	3.2	1.5	.1
Feb	3.0	1.4	.7	.1
Mar	.8	.3	.0	.0
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
Nov	.2	.1	.1	@
Dec	2.8	.6	.1	.1
Ann	13.5	5.6	2.4	.3

+ 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	5/06	5/02	4/29	4/27	4/25	4/22	4/20	4/17	4/13
32	4/28	4/23	4/20	4/17	4/15	4/12	4/09	4/06	4/01
28	4/16	4/11	4/08	4/05	4/03	3/31	3/28	3/25	3/21
24	4/10	4/04	3/30	3/26	3/23	3/19	3/15	3/11	3/05
20	4/04	3/27	3/22	3/17	3/12	3/08	3/03	2/25	2/18
16	3/22	3/14	3/08	3/03	2/26	2/21	2/16	2/10	2/02

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	9/23	9/29	10/02	10/06	10/09	10/12	10/15	10/19	10/24
32	9/29	10/05	10/09	10/13	10/17	10/20	10/24	10/29	11/04
28	10/12	10/18	10/22	10/26	10/29	11/02	11/05	11/09	11/15
24	10/21	10/28	11/02	11/07	11/11	11/15	11/19	11/24	12/01
20	11/06	11/12	11/17	11/21	11/25	11/28	12/02	12/07	12/13
16	11/14	11/20	11/25	11/29	12/02	12/06	12/10	12/15	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	188	180	175	171	166	162	158	152	145
32	207	199	194	189	184	180	175	170	162
28	228	222	217	213	209	205	201	196	189
24	260	250	244	238	232	227	221	214	205
20	289	278	270	263	257	250	243	235	224
16	310	300	292	285	279	273	266	258	247

***** 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	1066	802	565	274	89	6	0	5	41	201	588	945	4582
60	911	672	416	162	35	0	0	0	12	97	447	790	3542
57	820	593	331	110	17	0	0	0	5	56	366	701	2999
55	761	542	278	81	9	0	0	0	2	37	315	643	2668
50	618	421	167	30	2	0	0	0	0	10	207	501	1956
32	207	120	8	0	0	0	0	0	0	0	18	130	483

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	164	242	467	737	1044	1270	1480	1437	1151	846	421	208	9467
55	5	20	23	128	340	580	767	724	463	170	28	8	3256
57	3	15	14	97	285	520	705	662	406	127	18	4	2856
60	0	9	7	59	210	430	612	569	324	75	9	0	2304
65	0	0	0	20	110	286	457	419	202	24	0	0	1518
70	0	0	0	5	44	161	309	279	112	4	0	0	914

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	40	105	267	504	800	1034	1233	1190	907	597	218	60	40	145	412	916	1716	2750	3983	5173	6080	6677	6895	6955
45	10	53	165	367	645	884	1078	1035	757	447	128	24	10	63	228	595	1240	2124	3202	4237	4994	5441	5569	5593
50	1	20	91	238	490	734	923	880	607	308	66	5	1	21	112	350	840	1574	2497	3377	3984	4292	4358	4363
55	0	6	42	140	342	584	768	725	461	188	25	0	0	6	48	188	530	1114	1882	2607	3068	3256	3281	3281
60	0	1	15	67	205	435	613	570	324	94	9	0	0	1	16	83	288	723	1336	1906	2230	2324	2333	2333
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	29	79	179	315	515	705	833	799	600	373	133	39	29	108	287	602	1117	1822	2655	3454	4054	4427	4560	4599

(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