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: WINFIELD NO. 1, KS **COOP ID: 148964**

Climate Division: KS 9 **NWS Call Sign:** **Elevation: 1,160 Feet** **Lat: 37˚14N** **Lon: 96˚58W**

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	41.9	19.2	30.6	75+	1981	24	39.6	1990	-20+	1947	4	16.8	1979	1067	0	.0	.0	11.0	7.1	27.2	1.3
Feb	49.1	24.1	36.6	88	1996	22	46.4	1976	-27	1905	13	24.0	1978	796	0	.0	.0	14.6	3.7	20.2	.9
Mar	58.7	33.0	45.9	94	1940	31	51.7	1986	-3+	1960	3	39.3	1996	593	0	.0	@	25.1	.6	12.6	.0
Apr	68.3	42.5	55.4	98	1972	12	64.3	1981	15	1936	3	48.6	1983	305	16	.0	.5	29.2	.0	3.0	.0
May	77.3	53.4	65.4	102+	1934	31	70.6	1987	26	1907	4	60.3	1995	93	103	.0	1.4	31.0	.0	@	.0
Jun	86.6	62.9	74.8	110	1933	5	79.6	1990	40+	1983	7	70.1	1982	8	300	.8	12.4	30.0	.0	.0	.0
Jul	92.8	68.2	80.5	115+	1954	14	87.6	1980	48	1924	3	76.7	1994	0	479	4.9	22.9	31.0	.0	.0	.0
Aug	91.8	66.3	79.1	118	1936	12	86.1	2000	45+	1988	29	72.6	1992	3	438	5.1	21.6	31.0	.0	.0	.0
Sep	83.2	57.9	70.6	110+	2000	3	78.6	1998	31+	1995	22	62.2	1974	45	210	1.2	9.3	30.0	.0	.2	.0
Oct	71.9	45.8	58.9	98+	1947	5	62.5	2000	12	1993	31	52.9	1976	211	21	.0	.8	30.5	.0	2.1	.0
Nov	56.5	33.1	44.8	87	1950	1	55.0	1999	2	1975	27	39.2	1976	606	0	.0	.0	22.0	.6	12.9	.0
Dec	45.2	23.4	34.3	81	1955	24	39.5	1999	-15	1989	22	20.2	1983	951	0	.0	.0	12.7	3.7	24.0	.7
Ann	68.6	44.2	56.4	118	Aug 1936	12	87.6	Jul 1980	-27	Feb 1905	13	16.8	Jan 1979	4678	1567	12.0	68.9	298.1	15.7	102.2	2.9

\+ 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: 1900-2001

(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	1.17	1.05	2.65	1907	19	3.00	1973	.00+	1986
Feb	1.67	1.37	4.00	1997	21	5.23	1997	.03	1991
Mar	3.06	2.94	2.99	1995	13	7.94	1973	.11	1971
Apr	3.28	2.93	6.10	1994	28	12.58	1994	.21	1989
May	5.39	4.05	5.35	1982	31	16.57	1993	1.18	1994
Jun	4.83	4.83	6.55	1916	5	9.79	1999	.72	1990
Jul	3.57	3.07	7.60	1922	12	9.81	1995	.04	1975
Aug	3.59	3.08	4.05	1968	18	9.34	1974	.17	1998
Sep	3.26	2.16	5.05	1989	5	9.43	1986	.78	1980
Oct	3.29	2.71	9.12	1973	11	14.78	1998	.11	1975
Nov	2.76	2.77	4.00	1909	13	6.68	1992	.00	1989
Dec	1.77	1.55	2.52	1933	19	4.64	1999	.03	1977
Ann	37.64	37.95	9.12	Oct 1973	11	16.57	May 1993	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.8	2.8	.6	.2
Feb	5.8	3.3	.9	.4
Mar	8.1	5.2	2.1	.9
Apr	8.3	5.5	2.3	.7
May	10.4	7.4	3.2	1.7
Jun	9.1	6.7	3.1	1.6
Jul	7.2	5.3	2.3	1.2
Aug	7.6	5.2	2.3	1.1
Sep	7.8	4.9	2.0	.7
Oct	6.7	4.5	1.8	.8
Nov	6.8	4.4	1.7	.8
Dec	5.9	3.5	1.1	.4
Ann	89.5	58.7	23.4	10.5

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	.14	.35	.54	.73	.94	1.18	1.46	1.85	2.48	3.09
Feb	.14	.25	.47	.70	.96	1.25	1.60	2.03	2.64	3.65	4.64
Mar	.51	.77	1.22	1.64	2.07	2.54	3.08	3.73	4.61	6.03	7.39
Apr	.56	.84	1.32	1.77	2.23	2.73	3.30	4.00	4.93	6.42	7.86
May	1.24	1.74	2.53	3.24	3.95	4.69	5.54	6.54	7.86	9.95	11.92
Jun	1.15	1.60	2.31	2.94	3.57	4.23	4.97	5.85	7.01	8.85	10.58
Jul	.40	.67	1.16	1.66	2.19	2.79	3.49	4.36	5.54	7.50	9.41
Aug	.39	.65	1.15	1.65	2.19	2.79	3.50	4.38	5.58	7.56	9.50
Sep	.52	.80	1.27	1.72	2.19	2.69	3.27	3.98	4.92	6.46	7.93
Oct	.22	.42	.83	1.28	1.79	2.38	3.09	3.99	5.25	7.38	9.49
Nov	.12	.35	.76	1.16	1.60	2.09	2.67	3.40	4.40	6.05	7.68
Dec	.17	.30	.54	.79	1.06	1.36	1.71	2.16	2.77	3.78	4.77
Ann	23.80	26.36	29.70	32.28	34.61	36.88	39.25	41.89	45.14	49.90	54.07

\+ 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: 1900-2001
(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	3.4	.5	1	#	5.9	1978	16	17.0	1979	9	1979	7	5	1979	2.3	1.1	.3	@	.0	5.2	2.9	1.2	.0
Feb	4.6	1.1	1	#	12.0	1980	8	17.1	1980	12	1980	8	4	1978	1.5	.9	.5	.2	.1	4.0	2.9	1.7	.2
Mar	.9	.0	#	0	4.3	2000	10	5.0	1995	4+	2000	10	#+	2000	.8	.5	.1	.0	.0	.4	.1	.0	.0
Apr	.0	.0	#	0	.8	1979	4	.8	1979	1	1979	4	#+	1997	.1	.0	.0	.0	.0	@	.0	.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	#	.0	#	0	#	1981	26	#+	1981	#	1996	21	#	1996	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.9	.0	#	0	4.8	1975	26	8.0	1972	5	1975	26	#+	1997	.3	.2	.1	.0	.0	.4	.2	@	.0
Dec	2.0	1.0	#	#	4.5	1984	5	9.3	1973	6	1989	18	1+	2000	1.3	.8	.3	.0	.0	1.0	.4	.1	.0
Ann	11.8	2.6	N/A	N/A	12.0	Feb 1980	8	17.1	Feb 1980	12	Feb 1980	8	5	Jan 1979	6.3	3.5	1.3	.2	.1	11.0	6.5	3.0	.2

+ 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	5/06	5/02	4/29	4/26	4/23	4/20	4/16	4/10
32	4/26	4/22	4/19	4/16	4/14	4/11	4/09	4/06	4/02
28	4/14	4/10	4/07	4/04	4/01	3/30	3/27	3/24	3/19
24	4/08	4/02	3/29	3/25	3/22	3/18	3/14	3/10	3/04
20	3/29	3/22	3/17	3/13	3/09	3/05	2/28	2/23	2/16
16	3/18	3/10	3/05	2/28	2/23	2/18	2/13	2/08	1/31

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	9/28	10/02	10/05	10/08	10/10	10/13	10/17	10/22
32	10/01	10/07	10/12	10/16	10/19	10/23	10/27	10/31	11/07
28	10/15	10/22	10/27	10/31	11/04	11/08	11/12	11/17	11/23
24	10/26	11/01	11/06	11/10	11/14	11/18	11/22	11/27	12/03
20	11/03	11/11	11/16	11/20	11/24	11/28	12/03	12/08	12/15
16	11/10	11/18	11/23	11/28	12/02	12/06	12/11	12/16	12/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	185	178	172	168	164	160	155	150	143
32	209	202	197	192	188	184	179	174	167
28	240	231	226	220	216	211	206	200	192
24	262	254	247	242	237	232	226	220	211
20	288	278	271	265	260	254	248	241	231
16	314	303	295	288	281	275	268	260	248

***** 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	1067	796	593	305	93	8	0	3	45	211	606	951	4678
60	912	663	443	188	36	1	0	0	14	103	463	796	3619
57	820	585	357	132	17	0	0	0	6	59	381	704	3061
55	759	533	303	100	10	0	0	0	3	38	328	644	2718
50	614	410	186	42	2	0	0	0	0	10	215	501	1980
32	192	108	9	0	0	0	0	0	0	0	18	118	445

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	147	237	439	701	1033	1282	1502	1459	1155	833	402	190	9380
55	2	17	19	112	330	592	789	746	468	158	22	3	3258
57	1	13	12	83	275	532	727	684	412	117	14	1	2871
60	0	7	4	49	201	443	634	591	330	68	6	0	2333
65	0	0	0	16	103	300	479	438	210	21	0	0	1567
70	0	0	0	4	40	176	326	293	119	4	0	0	962

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	46	123	298	532	830	1081	1290	1250	954	632	240	69	46	169	467	999	1829	2910	4200	5450	6404	7036	7276	7345
45	15	65	190	392	675	931	1135	1095	805	480	144	27	15	80	270	662	1337	2268	3403	4498	5303	5783	5927	5954
50	2	27	107	261	520	781	980	940	655	336	79	9	2	29	136	397	917	1698	2678	3618	4273	4609	4688	4697
55	0	9	52	157	369	631	825	785	506	210	34	1	0	9	61	218	587	1218	2043	2828	3334	3544	3578	3579
60	0	1	23	80	233	483	670	630	371	114	9	0	0	1	24	104	337	820	1490	2120	2491	2605	2614	2614
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	44	96	197	336	538	726	856	825	630	404	151	55	44	140	337	673	1211	1937	2793	3618	4248	4652	4803	4858

(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