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: ABILENE 1 W, KS **COOP ID: 140010**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,170 Feet** **Lat: 38˚55N** **Lon: 97˚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	40.9	18.5	29.7	77	1990	10	40.3	1992	-19	1979	31	14.0	1979	1095	0	.0	.0	8.1	9.0	28.4	3.1
Feb	47.7	23.8	35.8	83	1972	29	46.2	1999	-22	1979	1	20.2	1979	827	0	.0	.0	12.3	5.3	22.5	2.2
Mar	59.0	33.4	46.2	91	1956	26	51.8	1986	-9	1978	4	38.7	1975	583	1	.0	.0	22.0	.9	15.3	.2
Apr	69.7	43.3	56.5	98	1989	23	63.6	1981	15	1970	2	48.4	1983	276	21	.0	.7	28.4	@	4.3	.0
May	78.3	53.8	66.1	102	1964	26	71.5	1998	27	1976	3	60.2	1983	93	127	@	2.0	31.0	.0	.1	.0
Jun	88.8	63.3	76.1	111	1980	27	80.4	1988	39+	1982	1	69.9	1982	6	336	1.7	12.7	30.0	.0	.0	.0
Jul	94.4	68.5	81.5	113+	1954	15	87.7	1980	44	1972	5	76.5	1971	0	510	6.2	22.4	31.0	.0	.0	.0
Aug	92.5	66.5	79.5	111	1983	16	87.7	2000	41	1949	31	74.2	1992	2	453	4.8	19.0	31.0	.0	.0	.0
Sep	83.8	57.6	70.7	111	2000	2	76.6	1998	23	1984	30	62.7	1974	43	214	1.1	8.9	30.0	.0	.2	.0
Oct	71.8	45.5	58.7	98+	1963	4	63.1	2000	16	1993	31	50.0	1976	230	33	.0	1.1	29.9	.0	3.4	.0
Nov	55.1	32.9	44.0	86	1980	6	53.4	1999	-6	1975	27	37.3	1976	630	0	.0	.0	19.9	1.1	16.3	.1
Dec	44.1	22.7	33.4	73	2001	4	40.2	1991	-24	1989	22	15.3	1983	980	0	.0	.0	9.7	5.2	26.7	1.3
Ann	68.8	44.2	56.5	113+	Jul 1954	15	87.7+	Aug 2000	-24	Dec 1989	22	14.0	Jan 1979	4765	1695	13.8	66.8	283.3	21.5	117.2	6.9

\+ 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: 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	.82	.67	1.33	1980	19	2.05	1979	.00	1986
Feb	1.09	.97	2.06	1997	21	3.50	1997	.00	1991
Mar	2.55	2.22	2.27	1987	17	7.56	1973	.12	1997
Apr	2.80	2.34	2.62	1987	14	8.92	1999	.21	1989
May	4.73	4.28	4.80	1995	17	17.96	1995	1.13	1994
Jun	4.35	4.22	4.35	1996	1	8.25	1984	.89	1980
Jul	4.31	3.53	6.32	1972	18	12.94	1993	.00	1975
Aug	3.88	3.77	5.85	1981	31	8.80	1981	.28	1971
Sep	2.54	2.04	4.93	1967	4	10.47	1973	.45	1994
Oct	2.64	2.44	4.37	1979	31	9.71	1979	.14	1999
Nov	1.99	1.42	2.73	1998	2	6.99	1998	.00	1989
Dec	1.04	.87	1.92	1980	8	3.38	1973	.00	1976
Ann	32.74	32.43	6.32	Jul 1972	18	17.96	May 1995	.00+	Feb 1991

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	2.6	.4	.1
Feb	4.2	2.4	.6	.2
Mar	6.8	4.7	1.8	.6
Apr	7.7	5.2	1.8	.6
May	10.3	7.2	3.0	1.6
Jun	8.4	6.1	3.0	1.3
Jul	7.5	5.4	2.5	1.4
Aug	7.9	5.5	2.3	1.2
Sep	6.5	4.2	1.7	.8
Oct	6.0	4.0	1.8	.8
Nov	5.4	3.5	1.3	.5
Dec	4.6	2.6	.6	.1
Ann	79.4	53.4	20.8	9.2

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	.05	.12	.25	.37	.50	.64	.81	1.02	1.30	1.76	2.21
Feb	.05	.15	.31	.47	.64	.83	1.06	1.34	1.73	2.36	2.98
Mar	.30	.49	.85	1.20	1.58	2.00	2.50	3.11	3.94	5.31	6.64
Apr	.50	.75	1.16	1.54	1.93	2.35	2.83	3.42	4.20	5.45	6.65
May	1.17	1.61	2.30	2.91	3.52	4.16	4.87	5.72	6.83	8.59	10.24
Jun	1.54	1.95	2.54	3.04	3.52	4.01	4.54	5.16	5.96	7.19	8.31
Jul	.14	.47	1.07	1.69	2.37	3.16	4.09	5.27	6.91	9.64	12.34
Aug	.88	1.24	1.81	2.32	2.83	3.37	3.98	4.70	5.66	7.17	8.60
Sep	.52	.75	1.12	1.46	1.80	2.17	2.59	3.09	3.74	4.80	5.80
Oct	.26	.45	.81	1.17	1.57	2.02	2.55	3.22	4.13	5.64	7.12
Nov	.08	.23	.52	.81	1.12	1.48	1.91	2.44	3.17	4.40	5.60
Dec	.05	.14	.30	.45	.61	.80	1.01	1.28	1.65	2.26	2.85
Ann	20.03	22.35	25.39	27.76	29.89	31.98	34.17	36.62	39.62	44.06	47.95

+ 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	5.5	5.0	1	#	13.0	1985	10	20.0	1979	7	1993	20	4	1993	2.3	1.7	.6	.2	@	5.7	3.3	1.2	.0
Feb	3.7	2.0	1	#	13.5	1980	8	14.0	1980	12	1983	4	11	1983	1.6	1.0	.5	.2	@	2.0	.6	.0	.0
Mar	2.0	.8	#	0	8.0	1998	8	12.5	1998	11	1998	11	2	1998	.9	.7	.3	.1	.0	.3	.2	.1	.0
Apr	.1	.0	#	0	3.0	1997	12	3.0	1997	1	1983	4	#+	1994	.1	@	@	.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	.1	.0	#	0	1.5	1991	31	1.5	1991	2	1991	31	#+	1992	.1	@	.0	.0	.0	.1	.0	.0	.0
Nov	.7	.0	#	0	4.0	1983	26	9.0	1983	4	1991	1	1	1991	.5	.3	.1	.0	.0	.7	.2	.0	.0
Dec	2.0	1.8	#	0	7.0	1983	20	7.0	1983	3	1995	22	1+	1995	1.8	1.0	.1	@	.0	2.0	.0	.0	.0
Ann	14.1	9.6	N/A	N/A	13.5	Feb 1980	8	20.0	Jan 1979	12	Feb 1983	4	11	Feb 1983	7.3	4.7	1.6	.5	@	10.8	4.3	1.3	.0

+ 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	5/14	5/09	5/06	5/02	4/29	4/27	4/23	4/20	4/15
32	5/02	4/26	4/22	4/19	4/16	4/13	4/10	4/06	4/01
28	4/20	4/15	4/11	4/08	4/05	4/03	3/31	3/27	3/22
24	4/12	4/06	4/02	3/29	3/26	3/22	3/19	3/14	3/08
20	4/04	3/27	3/21	3/17	3/12	3/07	3/02	2/24	2/16
16	3/25	3/17	3/11	3/06	3/02	2/25	2/20	2/15	2/07

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	9/19	9/24	9/28	10/01	10/04	10/07	10/10	10/14	10/19
32	9/26	10/03	10/07	10/11	10/14	10/18	10/22	10/26	11/02
28	10/11	10/18	10/22	10/26	10/30	11/02	11/06	11/11	11/17
24	10/18	10/25	10/31	11/04	11/09	11/13	11/18	11/23	12/01
20	10/31	11/06	11/11	11/16	11/20	11/24	11/28	12/03	12/10
16	11/08	11/15	11/21	11/26	11/30	12/05	12/09	12/15	12/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	181	173	167	162	157	152	147	141	132
32	206	197	191	186	181	176	170	164	155
28	232	223	217	211	206	201	196	190	181
24	257	247	239	233	227	221	215	208	197
20	286	274	266	259	252	245	238	230	218
16	309	296	288	280	273	266	258	249	237

***** 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	1095	827	583	276	93	6	0	2	43	230	630	980	4765
60	942	696	437	164	38	1	0	0	14	126	484	825	3727
57	852	619	353	112	20	0	0	0	6	80	402	735	3179
55	793	569	301	83	12	0	0	0	3	57	348	679	2845
50	651	453	191	32	3	0	0	0	0	19	231	535	2115
32	241	155	15	0	0	0	0	0	0	0	20	153	584

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	169	260	456	736	1056	1321	1533	1473	1161	826	381	196	9568
55	9	31	28	128	355	631	820	760	474	170	19	9	3434
57	5	24	18	97	301	571	758	698	417	131	12	3	3035
60	2	17	9	60	227	481	665	605	335	84	4	0	2489
65	0	0	1	21	127	336	510	453	214	33	0	0	1695
70	0	0	0	5	57	206	355	308	121	9	0	0	1061

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	92	235	475	791	1063	1275	1211	909	570	183	42	30	122	357	832	1623	2686	3961	5172	6081	6651	6834	6876
45	5	43	143	337	636	913	1120	1056	759	426	103	12	5	48	191	528	1164	2077	3197	4253	5012	5438	5541	5553
50	0	13	74	216	482	763	965	901	609	288	51	5	0	13	87	303	785	1548	2513	3414	4023	4311	4362	4367
55	0	3	38	122	333	613	810	746	463	178	17	0	0	3	41	163	496	1109	1919	2665	3128	3306	3323	3323
60	0	0	9	59	207	464	655	591	331	89	4	0	0	0	9	68	275	739	1394	1985	2316	2405	2409	2409
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	29	75	167	300	503	706	837	802	596	367	127	37	29	104	271	571	1074	1780	2617	3419	4015	4382	4509	4546

(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