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: TRIBUNE 1 W, KS **COOP ID: 148235**

Climate Division: KS 4 **NWS Call Sign:** **Elevation: 3,636 Feet** **Lat: 38˚28N** **Lon: 101˚47W**

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	42.2	12.8	27.5	79	1986	30	37.6	1986	-25	1984	18	15.4	1979	1164	0	.0	.0	11.0	7.8	30.8	3.4
Feb	48.5	17.1	32.8	81	1981	20	40.4	1991	-24	1933	9	20.4	1978	901	0	.0	.0	15.0	4.5	27.0	1.8
Mar	56.2	24.2	40.2	88+	1988	28	45.4	1972	-22	1948	11	34.5	1980	768	0	.0	.0	22.0	2.3	24.4	.3
Apr	65.7	33.0	49.4	97	1989	23	55.6	1981	4	1936	2	43.6	1997	472	3	.0	.3	26.7	.4	12.9	.0
May	74.5	44.1	59.3	103+	2000	30	63.7	1991	20	1917	4	52.9	1995	210	33	.1	1.8	30.4	.0	1.6	.0
Jun	86.4	54.9	70.7	107+	1990	30	74.9	1990	30	1917	2	65.7	1982	30	199	1.9	12.2	30.0	.0	@	.0
Jul	92.1	59.8	76.0	108+	2000	15	79.7	1980	41+	1952	8	72.5	1992	0	341	4.9	20.7	31.0	.0	.0	.0
Aug	89.9	58.4	74.2	106	1934	6	79.2	1983	40+	1944	31	68.8	1992	6	289	2.1	17.7	31.0	.0	.0	.0
Sep	81.9	48.4	65.2	104	2000	7	70.5	1998	20	1983	21	59.7	1993	88	93	.5	8.1	29.6	.0	.9	.0
Oct	70.0	35.1	52.6	95	1967	3	56.0	1974	2	1917	23	47.7	1976	387	1	.0	.8	29.2	.2	9.5	.0
Nov	53.3	23.1	38.2	86	2001	1	46.5	1999	-10	1952	28	31.8	1972	804	0	.0	.0	18.7	2.2	25.4	.2
Dec	44.4	15.1	29.8	79+	1980	17	36.4	1980	-24	1932	12	16.4	1983	1092	0	.0	.0	12.1	5.6	30.3	1.9
Ann	67.1	35.5	51.3	108+	Jul 2000	15	79.7	Jul 1980	-25	Jan 1984	18	15.4	Jan 1979	5922	959	9.5	61.6	286.7	23.0	162.8	7.6

\+ 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: 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	.45	.25	1.38	1921	24	1.33	1993	.00	1986
Feb	.52	.31	1.67	1939	27	1.85	1993	.00+	1991
Mar	1.22	.83	1.62	1973	24	4.12	1987	.00	1997
Apr	1.29	1.05	2.06	1969	17	3.71	1994	.00	1992
May	2.76	2.38	3.91	1929	29	5.52	1977	.25	2000
Jun	2.62	2.42	6.46	1932	4	8.01	1983	.42	1981
Jul	3.10	3.21	3.73	1982	27	6.53	1998	.21	1993
Aug	2.09	1.58	4.46	1940	8	5.27	1993	.07	1983
Sep	1.31	.77	3.10	1969	10	5.11	1973	.24	1984
Oct	1.08	.64	2.88	1930	11	4.80	2000	.00+	1996
Nov	.63	.43	2.02	1925	7	2.32	1991	.00	1989
Dec	.37	.23	1.77	1979	28	1.82	1979	.00+	1995
Ann	17.44	17.91	6.46	Jun 1932	4	8.01	Jun 1983	.00+	Mar 1997

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.0	1.3	.2	.0
Feb	2.9	1.4	.2	@
Mar	5.1	2.9	.6	.1
Apr	5.5	3.1	.8	.2
May	9.0	5.4	1.6	.7
Jun	7.7	5.2	1.7	.7
Jul	7.7	5.1	2.2	.8
Aug	7.3	4.2	1.5	.4
Sep	5.1	2.9	.8	.2
Oct	3.2	1.9	.7	.2
Nov	3.5	1.8	.3	.1
Dec	2.3	1.4	.1	@
Ann	62.3	36.6	10.7	3.4

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	.02	.07	.13	.20	.28	.39	.53	.73	1.09	1.44
Feb	.00	.00	.05	.12	.22	.33	.46	.64	.88	1.30	1.72
Mar	.02	.09	.24	.41	.60	.84	1.12	1.48	1.99	2.86	3.73
Apr	.13	.28	.50	.68	.88	1.08	1.31	1.59	1.97	2.57	3.14
May	.67	.93	1.33	1.69	2.04	2.42	2.84	3.34	3.99	5.03	6.00
Jun	.51	.75	1.14	1.49	1.85	2.23	2.67	3.19	3.89	5.00	6.06
Jul	.59	.86	1.32	1.74	2.16	2.62	3.15	3.77	4.61	5.95	7.23
Aug	.24	.40	.69	.98	1.29	1.64	2.04	2.55	3.23	4.36	5.45
Sep	.13	.23	.41	.59	.79	1.01	1.27	1.60	2.04	2.78	3.50
Oct	.00	.00	.04	.15	.32	.54	.83	1.23	1.83	2.89	4.00
Nov	.01	.04	.11	.20	.30	.42	.57	.76	1.03	1.50	1.97
Dec	.00	.00	.06	.13	.19	.27	.35	.46	.61	.85	1.09
Ann	11.46	12.58	14.03	15.15	16.15	17.12	18.13	19.26	20.63	22.64	24.40

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.6	3.5	1	1
Feb	3.5	2.3	1	#
Mar	5.8	4.4	#	#
Apr	2.4	.2	#	#
May	#	.0	0	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	1.1	.0	#	0
Nov	2.7	2.0	#	#
Dec	3.9	3.0	1	#
Ann	24.2	15.4	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	1984	15	15.0	1984	13	1984	18	4	1985
Feb	7.0	1997	24	16.4	1978	10	1978	13	6	1978
Mar	8.5	1981	8	20.0	1984	18	1987	29	2	1981
Apr	14.0	1988	2	16.0	1994	14	1988	2	1	1994
May	#	1991	5	#+	1991	0	0	0	0	0
Jun	.0	0	0	.0	0	1	1980	16	#	1980
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	3.0	1995	21	3.0	1995	3	1995	21	#+	1995
Oct	19.0	1997	26	22.0	1997	22	1997	26	4	1997
Nov	5.0	1972	13	10.3	1991	10	1997	1	1	1997
Dec	12.0	1979	28	14.0	1997	12	1979	28	2	1997
Ann	19.0	Oct 1997	26	22.0	Oct 1997	22	Oct 1997	26	6	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.1	1.7	.6	.2	.0
Feb	2.5	1.6	.7	.2	.0
Mar	2.7	1.8	.8	.3	.0
Apr	.9	.7	.3	.2	@
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	.1	.1	@	.0	.0
Oct	.2	.2	.1	@	@
Nov	1.7	1.0	.3	.1	.0
Dec	2.2	1.5	.4	.1	@
Ann	13.4	8.6	3.2	1.1	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	8.6	4.0	1.6	.4
Feb	5.0	2.3	1.2	@
Mar	3.4	1.4	.6	.1
Apr	1.0	.4	.2	@
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	@	.0	.0
Oct	.4	.3	.2	.2
Nov	2.6	.9	.3	@
Dec	5.1	1.5	.9	.1
Ann	26.2	10.8	5.0	.8

+ 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	5/25	5/21	5/18	5/16	5/13	5/11	5/08	5/05	5/01
32	5/21	5/16	5/13	5/10	5/07	5/05	5/02	4/29	4/24
28	5/12	5/07	5/03	4/30	4/27	4/24	4/21	4/17	4/12
24	4/27	4/22	4/19	4/16	4/13	4/10	4/08	4/04	3/30
20	4/16	4/11	4/07	4/04	4/01	3/29	3/26	3/23	3/18
16	4/13	4/07	4/02	3/29	3/26	3/22	3/18	3/13	3/07

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	145	141	138	135	132	128	125	119
32	167	160	156	152	148	145	141	137	130
28	189	182	177	173	168	164	160	155	148
24	211	204	199	195	191	187	183	178	171
20	241	232	225	220	215	210	204	198	189
16	258	249	243	238	233	227	222	216	207

***** 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	1164	901	768	472	210	30	0	6	88	387	804	1092	5922
60	1009	761	613	332	110	8	0	1	31	241	654	937	4697
57	916	677	520	255	68	3	0	0	13	164	564	844	4024
55	854	625	459	209	46	1	0	0	6	121	506	782	3609
50	702	494	312	114	14	0	0	0	0	46	368	629	2679
32	239	138	18	0	0	0	0	0	0	0	53	180	628

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	161	273	520	846	1159	1364	1306	995	637	239	111	7709
55	0	4	1	39	179	470	651	593	311	45	2	0	2295
57	0	0	0	25	138	412	589	531	257	26	0	0	1978
60	0	0	0	12	88	326	496	439	185	10	0	0	1556
65	0	0	0	3	33	199	341	289	93	1	0	0	959
70	0	0	0	0	8	101	192	157	36	0	0	0	494

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	22	61	164	344	634	934	1134	1076	774	431	109	31	22	83	247	591	1225	2159	3293	4369	5143	5574	5683	5714
45	0	22	83	224	484	784	979	921	625	296	52	7	0	22	105	329	813	1597	2576	3497	4122	4418	4470	4477
50	0	4	34	123	338	634	824	766	484	178	14	0	0	4	38	161	499	1133	1957	2723	3207	3385	3399	3399
55	0	0	8	59	205	485	669	611	346	91	0	0	0	0	8	67	272	757	1426	2037	2383	2474	2474	2474
60	0	0	0	21	107	345	514	457	221	31	0	0	0	0	0	21	128	473	987	1444	1665	1696	1696	1696
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	50	91	166	267	403	587	716	683	492	326	120	56	50	141	307	574	977	1564	2280	2963	3455	3781	3901	3957

(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