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: LINCOLN 1 ESE, KS **COOP ID: 144712**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,380 Feet** **Lat: 39˚02N** **Lon: 98˚07W**

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	39.2	13.0	26.1	81	1989	31	35.5	1992	-26	1947	4	9.9	1979	1206	0	.0	.0	8.5	9.2	30.0	3.8
Feb	46.5	17.8	32.2	87	1972	29	42.4	1976	-24	1979	1	18.4	1978	920	0	.0	.0	12.8	5.6	24.7	2.3
Mar	56.5	27.5	42.0	95	1946	31	49.0	1986	-19	1948	11	35.6	1996	714	0	.0	@	22.3	1.3	18.8	.5
Apr	66.7	37.9	52.3	104	1989	23	58.9	1981	11+	1994	6	45.1	1983	387	6	.1	.5	27.7	.1	7.5	.0
May	76.4	49.9	63.2	108	1939	23	68.8	1977	25	1944	6	56.3	1995	137	80	.1	2.0	30.9	.0	.6	.0
Jun	88.3	60.1	74.2	114	1956	30	79.9	1988	35	1982	1	66.3	1982	17	293	3.1	14.6	30.0	.0	.0	.0
Jul	94.5	66.0	80.3	114	1940	25	87.3	1980	44	1990	14	75.1	1994	0	472	8.7	23.8	31.0	.0	.0	.0
Aug	91.7	63.5	77.6	114	1946	7	85.8	1983	44+	1976	28	71.8	1992	5	396	5.9	20.9	31.0	.0	.0	.0
Sep	83.2	53.8	68.5	117	1947	3	74.5	1998	26	1984	30	63.0	1993	50	155	1.6	10.3	29.9	.0	.5	.0
Oct	71.3	40.5	55.9	103	1947	5	59.9	1975	10	1993	31	50.1	1976	293	11	.0	1.5	29.9	@	5.7	.0
Nov	54.0	26.7	40.4	87	1980	6	48.8	1999	-7	1976	28	33.3	1985	741	0	.0	.0	19.9	1.3	20.1	.2
Dec	42.6	17.2	29.9	81	1939	6	34.9	1988	-27	1989	23	12.4	1983	1088	0	.0	.0	10.8	5.5	29.0	1.8
Ann	67.6	39.5	53.6	117	Sep 1947	3	87.3	Jul 1980	-27	Dec 1989	23	9.9	Jan 1979	5558	1413	19.5	73.6	284.7	23.0	136.9	8.6

\+ 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: 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	.76	.64	2.07	1985	9	2.72	1979	.00	1986
Feb	.86	.88	2.06	1948	27	2.81	1971	.00	1974
Mar	2.45	1.87	2.36	1973	31	10.68	1973	.16	1997
Apr	2.40	2.04	3.15	1987	14	7.23	1976	.62	1989
May	4.75	4.09	5.50	1971	22	12.38	1995	.91	1994
Jun	3.21	2.49	3.30	1993	23	8.51	1992	1.29	1990
Jul	4.07	3.78	4.30	1990	26	11.82	1993	.20	1974
Aug	3.72	3.63	4.25	1975	14	9.12	1977	.33	2000
Sep	2.41	1.88	5.97	1946	6	9.41	1973	.62	2000
Oct	2.02	1.30	3.87	1976	4	5.94	1979	.00+	1999
Nov	1.60	1.31	2.50	1971	17	4.36	1998	.00+	1989
Dec	.87	.64	2.63	1984	16	3.65	1984	.00+	1977
Ann	29.12	28.66	5.97	Sep 1946	6	12.38	May 1995	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.5	2.3	.4	.1
Feb	4.0	2.2	.6	.1
Mar	7.0	4.7	1.8	.6
Apr	7.2	5.3	1.4	.4
May	10.2	7.9	2.9	1.4
Jun	7.8	5.7	2.2	1.0
Jul	7.3	5.9	2.5	1.3
Aug	7.1	5.6	2.5	1.3
Sep	6.3	4.3	1.7	.5
Oct	4.9	3.5	1.0	.4
Nov	5.0	3.2	1.1	.3
Dec	4.1	2.3	.5	.1
Ann	74.4	52.9	18.6	7.5

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	.03	.09	.20	.31	.43	.56	.73	.93	1.21	1.68	2.15
Feb	.02	.07	.17	.29	.43	.59	.79	1.04	1.39	2.00	2.60
Mar	.25	.43	.77	1.11	1.48	1.89	2.38	2.99	3.82	5.21	6.56
Apr	.69	.92	1.26	1.56	1.85	2.16	2.49	2.89	3.40	4.21	4.96
May	1.11	1.55	2.24	2.86	3.48	4.14	4.88	5.76	6.91	8.74	10.46
Jun	1.07	1.37	1.82	2.20	2.56	2.93	3.34	3.82	4.44	5.39	6.27
Jul	.44	.75	1.31	1.88	2.48	3.17	3.97	4.96	6.32	8.57	10.76
Aug	.63	.95	1.49	2.00	2.53	3.10	3.75	4.54	5.60	7.31	8.94
Sep	.56	.79	1.14	1.46	1.77	2.10	2.48	2.92	3.51	4.43	5.31
Oct	.00	.20	.56	.88	1.21	1.58	2.00	2.52	3.22	4.39	5.52
Nov	.00	.16	.44	.70	.96	1.25	1.59	1.99	2.55	3.47	4.36
Dec	.00	.09	.25	.39	.53	.69	.87	1.08	1.38	1.86	2.33
Ann	17.58	19.67	22.43	24.57	26.51	28.42	30.41	32.64	35.39	39.44	43.01

\+ 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	6.2	6.0	2	1	15.0	1985	9	26.0	1979	16	1985	11	9	1979	2.3	2.1	.9	.3	.1	9.1	5.6	4.2	1.0
Feb	4.5	2.0	2	#	14.0	1980	8	19.0	1971	16	1983	2	7	1983	1.7	1.6	.6	.3	.1	6.7	4.5	3.1	.9
Mar	2.6	1.3	#	#	8.0	1975	10	9.0	1975	8	1975	10	2	1998	1.3	1.1	.4	.1	.0	2.6	1.0	.4	.0
Apr	.7	.0	#	#	5.0	1997	12	7.5	1997	7	1997	12	1	1997	.3	.3	.1	@	.0	.4	.1	.1	.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	1.0	1991	31	1.5	1997	1+	1997	26	#+	1997	.1	.1	.0	.0	.0	.1	.0	.0	.0
Nov	1.2	.0	#	#	4.0	1975	26	7.0	1991	5	1975	26	1	1992	.8	.7	.1	.0	.0	1.5	.4	@	.0
Dec	3.4	2.0	1	#	10.0	1983	21	18.0	1983	12	1983	27	5	1983	2.0	1.7	.4	.1	@	5.2	1.1	.5	.2
Ann	18.7	11.3	N/A	N/A	15.0	Jan 1985	9	26.0	Jan 1979	16+	Jan 1985	11	9	Jan 1979	8.5	7.6	2.5	.8	.2	25.6	12.7	8.3	2.1

+ 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	5/19	5/15	5/12	5/09	5/07	5/04	5/02	4/28	4/24
32	5/11	5/06	5/03	4/30	4/27	4/24	4/21	4/18	4/13
28	5/04	4/29	4/25	4/22	4/19	4/16	4/13	4/09	4/04
24	4/20	4/15	4/12	4/09	4/06	4/04	4/01	3/28	3/24
20	4/13	4/06	4/01	3/28	3/24	3/20	3/16	3/11	3/05
16	4/04	3/28	3/22	3/18	3/14	3/10	3/05	2/28	2/21

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	9/15	9/20	9/23	9/25	9/28	9/30	10/03	10/06	10/10
32	9/22	9/27	10/01	10/04	10/07	10/10	10/13	10/17	10/22
28	9/30	10/05	10/10	10/13	10/16	10/20	10/23	10/28	11/02
24	10/14	10/19	10/22	10/25	10/28	10/31	11/03	11/06	11/11
20	10/22	10/28	11/02	11/06	11/10	11/14	11/18	11/22	11/29
16	11/02	11/08	11/13	11/17	11/21	11/24	11/28	12/03	12/09

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	164	157	152	147	143	139	135	130	123
32	187	179	172	167	162	157	152	146	137
28	203	195	189	184	180	175	170	164	156
24	224	217	212	208	204	200	196	191	184
20	257	248	241	235	230	225	219	212	203
16	282	271	264	257	251	245	238	231	220

***** 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	1206	920	714	387	137	17	0	5	50	293	741	1088	5558
60	1051	788	560	255	64	4	0	0	15	170	591	933	4431
57	958	709	473	187	36	1	0	0	5	111	503	840	3823
55	898	657	415	147	23	0	0	0	2	80	446	778	3446
50	748	531	282	71	5	0	0	0	0	30	313	632	2612
32	289	193	31	0	0	0	0	0	0	0	37	198	748

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	107	197	340	609	966	1266	1495	1414	1095	741	286	133	8649
55	2	17	11	66	276	576	782	701	407	109	5	0	2952
57	1	13	7	45	227	517	720	639	350	77	2	0	2598
60	0	8	1	23	162	430	627	546	269	43	0	0	2109
65	0	0	0	6	80	293	472	396	155	11	0	0	1413
70	0	0	0	0	31	178	325	258	75	2	0	0	869

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	19	74	218	436	742	1048	1264	1199	893	546	151	29	19	93	311	747	1489	2537	3801	5000	5893	6439	6590	6619
45	3	32	129	300	587	898	1109	1044	743	402	84	7	3	35	164	464	1051	1949	3058	4102	4845	5247	5331	5338
50	0	8	66	194	435	748	954	889	594	269	36	2	0	8	74	268	703	1451	2405	3294	3888	4157	4193	4195
55	0	0	29	105	290	598	799	734	450	165	16	0	0	0	29	134	424	1022	1821	2555	3005	3170	3186	3186
60	0	0	6	48	172	450	644	580	317	80	2	0	0	0	6	54	226	676	1320	1900	2217	2297	2299	2299
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	33	84	175	298	476	678	810	774	575	372	128	42	33	117	292	590	1066	1744	2554	3328	3903	4275	4403	4445

(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

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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