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: ELLSWORTH, KS **COOP ID: 142459**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,530 Feet** **Lat: 38˚44N** **Lon: 98˚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	38.8	13.2	26.0	78	1951	27	35.1	1992	-30	1913	8	10.5	1979	1210	0	.0	.0	8.8	8.4	29.8	3.4
Feb	45.9	18.1	32.0	89	1972	29	41.4	1976	-28	1905	13	18.2	1978	924	0	.0	.0	12.9	5.0	24.4	2.0
Mar	55.5	27.9	41.7	98	1907	21	49.1	1986	-16	1948	11	34.5	1975	722	0	.0	@	22.5	1.1	17.8	.4
Apr	65.7	38.5	52.1	101	1989	23	60.1	1981	7	1920	5	45.2	1983	392	6	@	.5	28.0	.1	6.9	.0
May	74.9	51.0	63.0	108	1939	23	67.8	1977	17	1909	1	56.8	1995	132	68	.0	1.7	31.0	.0	.5	.0
Jun	85.7	61.1	73.4	115	1911	25	78.2	1980	40+	1983	1	67.9	1992	14	266	1.5	12.7	30.0	.0	.0	.0
Jul	91.5	66.7	79.1	116	1936	24	86.4	1980	43	1990	14	75.0	1994	0	437	5.6	21.9	31.0	.0	.0	.0
Aug	89.1	64.0	76.6	117+	1936	13	83.9	1983	40	1910	26	69.8	1992	8	365	3.4	19.2	31.0	.0	.0	.0
Sep	80.9	54.3	67.6	114	1947	3	74.2	1998	24	1984	30	61.6	1974	61	140	.9	8.7	29.9	.0	.4	.0
Oct	69.7	40.8	55.3	102	1947	5	59.3	2000	8	1917	30	49.6	1976	309	8	.0	.9	30.0	@	5.1	.0
Nov	53.4	26.8	40.1	88	1950	1	49.3	1999	-7	1929	22	32.2	1985	747	0	.0	.0	19.8	1.1	19.4	.1
Dec	42.1	17.3	29.7	80	1939	6	35.3	1999	-28	1989	23	13.0	1983	1095	0	.0	.0	10.4	5.2	28.4	1.5
Ann	66.1	40.0	53.1	117+	Aug 1936	13	86.4	Jul 1980	-30	Jan 1913	8	10.5	Jan 1979	5614	1290	11.4	65.6	285.3	20.9	132.7	7.4

+ 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: 1904-2001

(3) Derived from 1971-2000 serially complete daily data

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: ELLSWORTH, KS **COOP ID: 142459**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,530 Feet** **Lat: 38˚44N** **Lon: 98˚14W**

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	.72	.68	1.04	1965	23	1.80	1979	.00	1986
Feb	.86	.68	2.05	1948	27	2.63	1993	.01	1981
Mar	2.46	1.77	4.00	1914	28	9.10	1973	.38	1994
Apr	2.49	2.33	3.25	1955	13	6.10	1976	.61	1982
May	5.11	4.99	5.46	1974	19	11.32	1995	.67	1994
Jun	3.46	3.12	4.20	1925	23	9.95	1992	.59	1980
Jul	3.58	3.55	5.30	1990	25	11.20	1993	.20	1984
Aug	3.36	3.32	4.14	1917	14	8.57	1977	.13	2000
Sep	2.61	2.38	5.87	1967	19	12.89	1973	.16	1991
Oct	2.31	2.03	4.01	1973	11	5.83	1994	.01	1975
Nov	1.25	1.06	2.10	1953	7	3.86	1972	.00+	1989
Dec	.80	.57	2.42	1984	15	3.02	1984	.00	1976
Ann	29.01	28.88	5.87	Sep 1967	19	12.89	Sep 1973	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.4	2.1	.4	.0
Feb	4.4	2.1	.6	.1
Mar	7.3	4.9	1.8	.8
Apr	7.5	5.3	1.4	.5
May	10.5	7.7	3.4	1.4
Jun	8.6	5.8	2.2	.8
Jul	7.9	5.5	2.2	1.0
Aug	7.4	5.1	2.1	1.0
Sep	7.1	4.5	1.6	.7
Oct	5.6	3.5	1.3	.5
Nov	5.0	3.0	.8	.2
Dec	4.0	2.2	.3	@
Ann	79.7	51.7	18.1	7.0

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	.08	.16	.28	.39	.49	.60	.73	.88	1.08	1.41	1.72
Feb	.03	.06	.15	.26	.39	.55	.75	1.02	1.40	2.06	2.74
Mar	.35	.55	.91	1.25	1.60	2.00	2.45	3.00	3.75	4.97	6.14
Apr	.74	.98	1.33	1.64	1.93	2.24	2.58	2.98	3.50	4.31	5.06
May	1.33	1.81	2.55	3.20	3.85	4.53	5.28	6.18	7.34	9.18	10.91
Jun	.91	1.24	1.74	2.18	2.61	3.07	3.57	4.17	4.96	6.19	7.34
Jul	.35	.60	1.09	1.59	2.13	2.74	3.46	4.37	5.60	7.66	9.68
Aug	.42	.69	1.17	1.64	2.13	2.68	3.31	4.10	5.17	6.91	8.61
Sep	.24	.43	.78	1.14	1.54	1.99	2.52	3.18	4.09	5.61	7.10
Oct	.10	.22	.48	.79	1.14	1.57	2.09	2.77	3.73	5.39	7.05
Nov	.00	.00	.37	.60	.81	1.03	1.29	1.60	1.99	2.64	3.26
Dec	.05	.13	.26	.38	.50	.63	.79	.98	1.24	1.67	2.08
Ann	17.43	19.52	22.28	24.44	26.38	28.29	30.29	32.53	35.29	39.37	42.95

\+ 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: 1904-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: ELLSWORTH, KS **COOP ID: 142459**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,530 Feet** **Lat: 38°44N** **Lon: 98°14W**

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	6.8	5.8	2	2	8.0	1979	30	17.8	1979	12	1979	31	6	1993	2.7	2.0	.8	.4	.0	8.0	5.7	3.5	.3
Feb	3.4	2.5	1	#	12.0	1971	22	17.0	1971	13	1971	24	7	1979	1.4	1.2	.5	.2	@	5.2	3.8	2.6	.6
Mar	2.2	1.5	#	#	7.0	1975	10	8.0	1975	12	1980	24	4	1995	1.0	.9	.2	.1	.0	1.8	.8	.5	.0
Apr	.5	.0	#	0	3.0	1979	3	3.0	1979	2	1983	4	#+	1994	.3	.2	@	.0	.0	.3	.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	.2	.0	#	0	2.0	1976	27	2.0+	1991	2	1976	27	#+	1980	.2	.1	.0	.0	.0	.1	.0	.0	.0
Nov	.9	.0	#	0	5.0	1975	26	6.0	1975	5	1975	27	1+	1992	.7	.5	.1	@	.0	1.0	.4	.1	.0
Dec	3.2	2.0	1	#	4.5	1987	27	9.8	1983	7	1983	29	4	1983	1.9	1.5	.4	.0	.0	3.5	1.4	.3	.0
Ann	17.2	11.8	N/A	N/A	12.0	Feb 1971	22	17.8	Jan 1979	13	Feb 1971	24	7	Feb 1979	8.2	6.4	2.0	.7	@	19.9	12.1	7.0	.9

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: ELLSWORTH, KS **COOP ID: 142459**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,530 Feet** **Lat: 38˚44N** **Lon: 98˚14W**

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	5/20	5/14	5/10	5/07	5/03	4/30	4/27	4/23	4/17
32	5/09	5/05	5/01	4/29	4/26	4/23	4/21	4/17	4/13
28	4/26	4/22	4/18	4/16	4/13	4/10	4/07	4/04	3/31
24	4/18	4/12	4/09	4/05	4/02	3/30	3/27	3/23	3/18
20	4/08	4/02	3/29	3/25	3/22	3/19	3/15	3/11	3/05
16	4/06	3/28	3/22	3/17	3/12	3/06	3/01	2/23	2/14

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	9/19	9/22	9/25	9/27	9/30	10/03	10/06	10/10
32	9/22	9/28	10/02	10/05	10/08	10/11	10/14	10/18	10/23
28	10/05	10/10	10/14	10/17	10/20	10/23	10/26	10/30	11/04
24	10/09	10/15	10/19	10/23	10/27	10/31	11/04	11/08	11/14
20	10/25	10/31	11/04	11/08	11/11	11/15	11/18	11/23	11/29
16	11/02	11/09	11/13	11/17	11/21	11/25	11/29	12/04	12/10

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	169	161	156	151	146	142	137	131	123
32	186	178	173	168	164	160	155	150	142
28	209	202	197	193	189	185	181	176	169
24	229	221	216	211	207	202	198	192	185
20	258	250	244	238	234	229	224	218	210
16	289	277	268	261	254	247	240	231	219

***** 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: ELLSWORTH, KS **COOP ID: 142459**

Climate Division: KS 5 **NWS Call Sign:** **Elevation: 1,530 Feet** **Lat: 38˚44N** **Lon: 98˚14W**

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	1210	924	722	392	132	14	0	8	61	309	747	1095	5614
60	1055	791	567	259	58	2	0	1	19	181	597	940	4470
57	962	713	478	191	31	0	0	0	8	120	510	847	3860
55	901	661	421	151	19	0	0	0	3	87	454	785	3482
50	751	535	285	73	4	0	0	0	0	33	321	636	2638
32	287	195	29	0	0	0	0	0	0	0	41	196	748

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	101	195	331	604	959	1242	1460	1381	1069	721	284	124	8471
55	1	17	9	64	265	552	747	668	383	95	7	0	2808
57	0	13	4	44	215	492	685	606	327	66	3	0	2455
60	0	7	1	23	149	404	592	513	248	35	0	0	1972
65	0	0	0	6	68	266	437	365	140	8	0	0	1290
70	0	0	0	0	23	150	287	231	67	1	0	0	759

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	23	76	221	440	760	1042	1251	1195	896	548	158	29	23	99	320	760	1520	2562	3813	5008	5904	6452	6610	6639
45	1	32	130	309	605	892	1096	1040	746	401	88	9	1	33	163	472	1077	1969	3065	4105	4851	5252	5340	5349
50	0	9	69	195	452	742	941	885	598	271	35	3	0	9	78	273	725	1467	2408	3293	3891	4162	4197	4200
55	0	1	33	109	305	593	786	730	456	162	15	0	0	1	34	143	448	1041	1827	2557	3013	3175	3190	3190
60	0	0	9	48	178	445	631	575	322	83	2	0	0	0	9	57	235	680	1311	1886	2208	2291	2293	2293
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	32	84	174	292	484	690	822	782	584	365	128	40	32	116	290	582	1066	1756	2578	3360	3944	4309	4437	4477

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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