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: SYRACUSE, KS **COOP ID: 148038**

Climate Division: KS 7 **NWS Call Sign:** **Elevation: 3,260 Feet** **Lat: 37˚59N** **Lon: 101˚45W**

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	44.0	12.8	28.4	82	1997	3	41.8	1986	-27	1942	5	14.7	1979	1136	0	.0	.0	12.9	6.8	30.9	3.4
Feb	50.6	18.2	34.4	86	1970	17	41.9	1991	-19	1951	1	20.3	1978	856	0	.0	.0	16.3	3.8	26.2	1.6
Mar	59.0	26.4	42.7	94+	1989	11	51.5	1986	-24	1948	11	36.4	1980	691	0	.0	.1	24.3	1.3	22.0	.1
Apr	68.2	35.6	51.9	100	1989	23	58.1	1986	8	1975	2	45.2	1973	399	6	@	.8	27.7	.1	9.7	.0
May	76.6	47.0	61.8	104+	1967	25	66.2+	1994	22+	1967	1	56.6	1995	161	62	.2	3.1	30.6	.0	1.0	.0
Jun	88.3	57.5	72.9	110	1952	15	78.4	1994	36+	1969	2	68.3	1989	16	252	3.2	14.9	30.0	.0	.0	.0
Jul	93.2	62.9	78.1	112	1960	27	83.2	1980	44+	1994	8	74.8	1972	0	403	6.4	22.9	31.0	.0	.0	.0
Aug	91.3	61.3	76.3	110	1943	1	82.6	1983	40+	1976	28	71.2	1992	5	355	4.4	20.4	31.0	.0	.0	.0
Sep	83.4	51.1	67.3	106+	1959	5	73.0	1983	21	1984	30	61.0	1974	66	134	.8	10.9	29.8	.0	.7	.0
Oct	72.3	37.1	54.7	98	1997	4	58.3	1983	9	1975	25	48.4	1976	322	4	.0	1.7	29.7	.1	8.5	.0
Nov	56.1	23.9	40.0	87+	2001	1	46.3	1990	-8+	1991	3	32.5	1972	750	0	.0	.0	20.7	1.3	24.4	.2
Dec	46.3	15.3	30.8	82	1955	24	37.6	1994	-21	1989	22	19.4	1983	1060	0	.0	.0	14.3	4.5	30.4	2.0
Ann	69.1	37.4	53.3	112	Jul 1960	27	83.2	Jul 1980	-27	Jan 1942	5	14.7	Jan 1979	5462	1216	15.0	74.8	298.3	17.9	153.8	7.3

\+ 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

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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	.42	.29	.92	1939	8	1.34	1985	.00	1986
Feb	.45	.33	1.11	1966	27	2.09	1990	.00+	1991
Mar	1.12	.92	1.86	1992	4	3.05	1984	.00	1997
Apr	1.27	1.05	2.40+	1944	29	4.96	1984	.00	1972
May	2.45	2.24	3.66	1951	15	5.14	1977	.73	1974
Jun	2.52	2.55	5.25	1949	5	5.90	1978	.40	1998
Jul	2.63	2.00	3.60	1950	12	9.08	1998	.17	1983
Aug	2.36	1.95	3.00	1997	6	7.67	1996	.00	1995
Sep	1.24	1.08	2.40	1964	6	3.30	1988	.01	2000
Oct	1.05	.55	3.71	1965	18	4.50	2000	.00+	1987
Nov	.71	.55	1.55	1946	4	2.41	1992	.00+	1995
Dec	.40	.33	.96	1953	3	1.24	1997	.00+	1988
Ann	16.62	15.79	5.25	Jun 1949	5	9.08	Jul 1998	.00+	Mar 1997

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.6	1.3	.1	.0
Feb	3.8	1.2	.2	.0
Mar	5.6	2.9	.6	.1
Apr	5.7	3.1	.7	.2
May	8.9	5.0	1.4	.6
Jun	8.0	4.8	1.7	.5
Jul	7.6	4.6	1.9	.7
Aug	6.8	4.2	1.7	.7
Sep	5.2	2.6	.9	.2
Oct	3.6	1.9	.8	.3
Nov	3.7	1.7	.4	.1
Dec	3.4	1.4	.1	.0
Ann	65.9	34.7	10.5	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	.02	.05	.11	.17	.24	.31	.40	.51	.67	.92	1.18
Feb	.00	.00	.04	.10	.18	.27	.39	.54	.76	1.14	1.52
Mar	.04	.12	.28	.44	.62	.82	1.07	1.37	1.79	2.50	3.19
Apr	.06	.18	.37	.55	.75	.98	1.24	1.57	2.01	2.75	3.47
May	.81	1.04	1.38	1.67	1.95	2.24	2.55	2.92	3.39	4.12	4.80
Jun	.70	.94	1.30	1.62	1.93	2.25	2.61	3.03	3.58	4.45	5.25
Jul	.35	.57	.94	1.31	1.69	2.12	2.61	3.22	4.04	5.38	6.67
Aug	.50	.83	1.23	1.55	1.85	2.15	2.49	2.89	3.39	4.19	4.92
Sep	.05	.11	.25	.41	.60	.83	1.12	1.48	2.01	2.91	3.81
Oct	.00	.00	.12	.27	.44	.66	.92	1.27	1.76	2.61	3.47
Nov	.00	.02	.10	.19	.31	.45	.62	.85	1.18	1.75	2.33
Dec	.00	.00	.06	.13	.20	.28	.37	.49	.66	.94	1.23
Ann	11.35	12.35	13.65	14.64	15.52	16.38	17.27	18.25	19.45	21.20	22.72

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	3.8	2.0	1	#
Feb	2.6	.9	1	#
Mar	4.2	3.0	#	#
Apr	1.3	.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	.8	.0	#	0
Nov	2.0	.5	#	#
Dec	2.9	3.0	1	#
Ann	17.8	9.4	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	1990	19	12.0	1988	10	1990	20	4	1993
Feb	6.0	1990	20	17.4	1990	12	1993	18	6	1978
Mar	9.0	1998	19	13.0	1984	9	1998	19	1	1998
Apr	5.0	1988	2	10.0	1994	6	1988	2	1	1988
May	1.0	1990	3	1.0	1990	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	2.0	1984	29	2.0+	1995	2	1995	21	#+	1995
Oct	12.0	1997	26	12.0	1997	12	1997	26	2	1997
Nov	10.0	1992	25	13.0	1992	13	1991	2	2	1992
Dec	5.5	1979	28	8.8	1987	9	1992	16	5	1992
Ann	12.0	Oct 1997	26	17.4	Feb 1990	13	Nov 1991	2	6	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	1.4	.5	.1	.0
Feb	2.0	1.0	.4	.1	.0
Mar	2.2	1.4	.6	.1	.0
Apr	.7	.5	.2	.1	.0
May	@	@	.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	.0
Oct	.2	.1	.1	.1	@
Nov	1.1	.7	.1	.1	@
Dec	2.5	1.4	.4	@	.0
Ann	11.5	6.6	2.3	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	8.2	4.6	2.5	.1
Feb	3.7	1.3	.3	.1
Mar	2.6	1.2	.5	.0
Apr	.9	.3	@	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.0	.0	.0
Oct	.4	.3	.2	.1
Nov	1.6	.7	.6	.2
Dec	5.8	2.7	1.1	.0
Ann	23.3	11.1	5.2	.5

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

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	9/19	9/22	9/25	9/27	9/29	10/02	10/05	10/09
32	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/13	10/18
28	9/27	10/02	10/06	10/09	10/12	10/15	10/18	10/22	10/27
24	10/13	10/18	10/22	10/25	10/28	10/31	11/03	11/07	11/12
20	10/22	10/27	10/30	11/02	11/05	11/08	11/11	11/14	11/19
16	10/29	11/03	11/06	11/09	11/12	11/15	11/18	11/21	11/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	157	151	147	143	139	136	132	127	121
32	173	167	162	158	154	151	147	142	135
28	191	185	181	177	173	170	166	162	155
24	223	216	211	206	202	198	193	188	181
20	242	234	229	224	219	215	210	204	197
16	265	256	250	245	239	234	229	222	214

***** 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	1136	856	691	399	161	16	0	5	66	322	750	1060	5462
60	981	716	536	266	80	3	0	1	21	185	600	905	4294
57	888	633	445	198	47	1	0	0	8	119	512	812	3663
55	826	583	388	158	31	0	0	0	4	83	455	750	3278
50	679	453	251	79	8	0	0	0	0	28	320	598	2416
32	234	116	13	0	0	0	0	0	0	0	38	163	564

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	121	184	345	597	923	1226	1426	1373	1058	704	278	125	8360
55	1	7	7	66	241	536	713	660	372	74	5	0	2682
57	0	1	2	45	195	477	651	598	317	48	2	0	2336
60	0	0	0	24	135	389	558	506	239	21	0	0	1872
65	0	0	0	6	62	252	403	355	134	4	0	0	1216
70	0	0	0	1	21	139	251	218	63	0	0	0	693

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	71	203	404	707	1005	1201	1147	841	494	134	32	22	93	296	700	1407	2412	3613	4760	5601	6095	6229	6261
45	0	28	114	279	555	855	1046	992	693	351	65	8	0	28	142	421	976	1831	2877	3869	4562	4913	4978	4986
50	0	8	54	168	408	705	891	837	551	229	24	0	0	8	62	230	638	1343	2234	3071	3622	3851	3875	3875
55	0	0	21	90	270	556	736	682	409	122	3	0	0	0	21	111	381	937	1673	2355	2764	2886	2889	2889
60	0	0	2	37	153	407	581	528	278	52	0	0	0	0	2	39	192	599	1180	1708	1986	2038	2038	2038
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	55	109	197	306	452	630	762	731	536	367	151	66	55	164	361	667	1119	1749	2511	3242	3778	4145	4296	4362

(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