

# Climatography of the United States

No. 20

1971-2000

Station: KEOSAUQUA, IA

COOP ID: 134389

Climate Division: IA 9

NWS Call Sign:

Elevation: 625 Feet Lat: 40°44N Lon: 91°59W

## 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	33.0	15.1	24.1	70+	1909	23	36.5	1990	-36	1930	22	10.8	1979	1270	0	.0	.0	3.0	13.7	28.9	6.2
Feb	39.6	20.7	30.2	78	1930	24	39.4	1998	-29	1996	3	16.9	1978	976	0	.0	.0	6.6	8.8	24.1	3.4
Mar	52.0	31.1	41.6	89	1938	21	47.4	1973	-15	1960	6	33.5	1984	727	0	.0	.0	17.2	1.9	18.2	.2
Apr	65.2	41.6	53.4	92+	1930	11	60.1	1981	7	1920	5	47.6	1983	358	9	.0	.2	27.1	@	6.6	.0
May	75.4	52.1	63.8	103	1934	31	70.1	1977	24	1907	4	58.3	1997	132	92	.0	.9	31.0	.0	.3	.0
Jun	84.1	61.6	72.9	107	1934	29	78.1	1971	36	1903	12	68.3	1974	9	245	.1	6.2	30.0	.0	.0	.0
Jul	88.3	66.6	77.5	115	1936	15	82.5	1980	43	1911	26	74.0	1992	0	386	1.2	12.9	31.0	.0	.0	.0
Aug	86.4	64.5	75.5	115	1934	9	83.1	1983	36+	1915	31	68.8	1992	8	332	1.0	10.3	31.0	.0	.0	.0
Sep	78.8	55.7	67.3	102+	1913	1	71.8	1998	23	1984	29	61.6	1993	61	128	.1	3.4	30.0	.0	.5	.0
Oct	66.9	44.1	55.5	95+	1938	4	61.8	1971	1	1925	30	49.6	1988	305	11	.0	.1	29.4	.0	5.9	.0
Nov	50.4	32.2	41.3	83+	1915	7	48.8	1999	-6	1991	8	34.6	1996	711	0	.0	.0	15.5	1.9	17.7	.1
Dec	36.8	20.3	28.6	73	1998	4	35.8	1982	-30	1924	28	13.4	1983	1129	0	.0	.0	4.3	9.5	27.5	3.0
Ann	63.1	42.1	52.6	115+	Jul 1936	15	83.1	Aug 1983	-36	Jan 1930	22	10.8	Jan 1979	5686	1203	2.4	34.0	256.1	35.8	129.7	12.9

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1893-2001

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

064-A

# 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: KEOSAUQUA, IA

COOP ID: 134389

Climate Division: IA 9

NWS Call Sign:

Elevation: 625 Feet Lat: 40°44N

Lon: 91°59W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	1.39	1.29	1.86	1955	5	3.09	1974	.06	1981	7.0	4.0	.8	.2	.25	.37	.58	.77	.96	1.17	1.41	1.70	2.09	2.71	3.30
Feb	1.38	1.26	3.00	2001	9	2.77	1998	.41	1987	6.1	3.8	.8	.0	.46	.59	.79	.95	1.10	1.26	1.44	1.64	1.91	2.32	2.69
Mar	2.67	2.46	3.00	1935	7	5.76	1973	.45	1981	8.1	5.7	1.9	.5	.62	.87	1.26	1.61	1.96	2.33	2.75	3.24	3.89	4.93	5.91
Apr	3.62	3.43	4.20	1973	21	12.44	1973	.77	1971	10.1	7.1	2.4	.8	1.00	1.34	1.87	2.32	2.77	3.24	3.75	4.36	5.16	6.41	7.57
May	4.86	4.30	5.66	1944	23	13.01	1996	1.37	1980	11.6	8.1	3.3	1.2	1.37	1.83	2.52	3.13	3.73	4.35	5.03	5.84	6.90	8.55	10.09
Jun	4.49	3.97	4.61	1929	1	11.10	1980	.83	1992	9.8	7.3	3.1	1.4	1.61	2.04	2.65	3.16	3.64	4.14	4.69	5.32	6.13	7.38	8.52
Jul	5.00	4.70	5.86	1967	21	13.38	1993	.54	1975	8.7	6.4	3.2	1.7	.89	1.34	2.07	2.75	3.45	4.20	5.06	6.10	7.49	9.72	11.85
Aug	3.67	3.52	4.08	1898	14	9.75	1980	.89	1971	8.9	6.3	2.7	1.1	.94	1.29	1.82	2.29	2.76	3.25	3.79	4.44	5.28	6.61	7.86
Sep	3.90	3.36	7.15	1961	13	12.28	1986	.17	1979	7.9	6.2	2.5	1.0	.67	1.01	1.58	2.11	2.66	3.25	3.93	4.75	5.85	7.62	9.31
Oct	2.86	2.48	3.49	1954	5	7.52	1985	.49	1987	7.7	5.5	1.9	.6	.52	.78	1.20	1.59	1.98	2.41	2.89	3.48	4.26	5.52	6.72
Nov	2.91	2.63	2.76	1984	1	7.12	1983	.03	1989	8.0	6.0	2.2	.6	.33	.56	.96	1.37	1.80	2.29	2.85	3.55	4.51	6.08	7.61
Dec	2.00	1.82	2.76	1971	15	4.53	1971	.20	1976	7.0	4.7	1.2	.4	.47	.66	.95	1.21	1.47	1.75	2.05	2.42	2.90	3.67	4.38
Ann	38.75	37.73	7.15	Sep 1961	13	13.38	Jul 1993	.03	Nov 1989	100.9	71.1	26.0	9.5	26.14	28.53	31.62	33.99	36.10	38.15	40.28	42.64	45.52	49.72	53.37

+ 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: 1893-2001

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

Complete documentation available from:  
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**Station: KEOSAUQUA, IA**

**COOP ID: 134389**

**Climate Division: IA 9**

**NWS Call Sign:**

**Elevation: 625 Feet**

**Lat: 40°44N**

**Lon: 91°59W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	7.0	6.8	2	1	13.0	1971	3	17.0	1996	12	1974	13	8	1971	4.2	3.0	.9	.3	.1	17.4	10.2	6.2	2.1
Feb	5.5	4.0	1	1	11.0	1975	24	15.3	1975	12	1994	26	4	1990	2.5	2.0	.8	.4	@	6.7	3.1	1.3	.1
Mar	3.0	2.0	#	0	6.0	1978	3	13.0	1978	6	1994	1	2	1975	1.6	1.4	.5	.1	.0	1.7	.9	.1	.0
Apr	1.6	.0	#	0	15.0	1997	11	16.0	1997	16	1997	12	2	1997	.5	.5	.2	.1	@	.5	.2	.2	.1
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	0	1.0	1980	28	1.0+	1997	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Nov	2.1	1.0	#	0	5.0	1974	30	11.0	1974	8	1974	30	1	1975	1.0	.9	.3	@	.0	.9	.4	.1	.0
Dec	6.5	5.3	1	#	9.0	1987	15	19.0+	1997	14	2000	22	9	2000	3.3	2.5	1.0	.3	.0	6.1	2.8	1.5	.2
Ann	25.8	19.1	N/A	N/A	15.0	Apr 1997	11	19.0+	Dec 1997	16	Apr 1997	12	9	Dec 2000	13.2	10.4	3.7	1.2	.1	33.3	17.6	9.4	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

Complete documentation available from:

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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	5/20	5/15	5/12	5/09	5/06	5/03	4/30	4/26	4/21
32	5/04	4/30	4/28	4/25	4/23	4/21	4/18	4/15	4/12
28	4/24	4/19	4/16	4/13	4/11	4/08	4/05	4/02	3/29
24	4/13	4/10	4/07	4/04	4/02	3/31	3/29	3/26	3/22
20	4/11	4/06	4/03	3/31	3/28	3/25	3/22	3/19	3/14
16	3/30	3/24	3/20	3/17	3/14	3/11	3/07	3/03	2/26
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	9/20	9/23	9/26	9/29	10/02	10/06	10/09	10/14
32	9/21	9/26	9/30	10/04	10/07	10/10	10/13	10/17	10/22
28	10/03	10/08	10/12	10/16	10/19	10/22	10/25	10/29	11/04
24	10/13	10/19	10/23	10/26	10/29	11/02	11/05	11/09	11/14
20	10/29	11/02	11/06	11/08	11/11	11/14	11/17	11/20	11/24
16	11/02	11/09	11/14	11/18	11/22	11/26	11/30	12/05	12/12
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	165	159	154	150	146	142	138	133	127
32	187	180	175	170	166	162	157	152	145
28	214	206	200	195	190	186	181	175	167
24	229	222	217	213	210	206	202	197	190
20	246	240	235	231	227	223	219	215	208
16	278	269	263	257	252	247	242	236	227

\* 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:

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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	1270	976	727	358	132	9	0	8	61	305	711	1129	5686
60	1115	836	574	231	63	1	0	0	19	182	563	974	4558
57	1022	758	489	167	36	0	0	0	7	122	478	881	3960
55	960	706	432	131	23	0	0	0	3	90	423	822	3590
50	817	576	302	61	6	0	0	0	0	37	296	679	2774
32	350	211	41	0	0	0	0	0	0	0	39	249	890

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	103	158	338	642	983	1226	1409	1347	1057	729	317	142	8451
55	1	10	15	82	293	536	696	634	370	106	12	3	2758
57	0	6	10	59	244	476	634	572	314	76	7	0	2398
60	0	0	2	33	178	387	541	479	236	42	2	0	1900
65	0	0	0	9	92	245	386	332	128	11	0	0	1203
70	0	0	0	2	37	126	241	200	56	2	0	0	664

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	8	43	163	402	720	963	1140	1076	801	472	143	23	8	51	214	616	1336	2299	3439	4515	5316	5788	5931	5954
45	1	18	92	275	567	813	985	921	651	330	74	7	1	19	111	386	953	1766	2751	3672	4323	4653	4727	4734
50	0	3	50	172	414	663	830	766	503	208	39	4	0	3	53	225	639	1302	2132	2898	3401	3609	3648	3652
55	0	0	24	92	271	513	675	611	358	116	15	0	0	0	24	116	387	900	1575	2186	2544	2660	2675	2675
60	0	0	7	43	156	365	520	456	235	54	3	0	0	0	7	50	206	571	1091	1547	1782	1836	1839	1839
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	5	33	110	258	458	647	769	724	520	295	88	14	5	38	148	406	864	1511	2280	3004	3524	3819	3907	3921

(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](http://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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)