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: SIBLEY 5 NNE, IA **COOP ID: 137664**

Climate Division: IA 1 **NWS Call Sign:** **Elevation: 1,670 Feet** **Lat: 43˚28N** **Lon: 95˚43W**

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	21.6	2.0	11.8	63	1981	24	25.6	1990	-31	1949	22	-1.3	1979	1648	0	.0	.0	.4	23.3	31.0	13.5
Feb	28.5	8.4	18.5	67	1958	23	31.5	1987	-36	1962	28	4.4	1979	1304	0	.0	.0	2.0	16.5	27.9	7.6
Mar	40.4	19.5	30.0	84	1968	30	38.9	2000	-24	1960	5	21.0	1975	1087	0	.0	.0	8.4	7.7	26.7	2.3
Apr	55.9	31.2	43.6	93	1980	21	50.8	1987	3	1982	6	36.4	1975	645	1	.0	.1	21.4	1.0	14.6	.0
May	69.5	44.3	56.9	97	1967	25	64.2	1988	15	1967	3	50.2	1997	286	34	.0	.7	29.9	.0	2.2	.0
Jun	78.6	54.8	66.7	102+	1953	18	73.2	1988	32	1969	3	62.0	1993	61	112	.1	3.5	29.9	.0	.0	.0
Jul	81.9	59.2	70.6	102	1966	10	75.5	1983	40	1971	30	62.7	1992	24	196	.1	4.9	31.0	.0	.0	.0
Aug	79.3	56.8	68.1	104	1988	1	75.2	1983	30	1950	20	63.2	1992	49	144	@	2.9	31.0	.0	.0	.0
Sep	71.8	46.8	59.3	102	1976	6	65.8	1998	23+	1955	11	53.9	1975	202	31	@	1.0	29.5	.0	1.7	.0
Oct	59.7	34.6	47.2	93	1958	15	52.5	1973	11	1967	28	42.0	1976	553	0	.0	@	25.5	.2	11.5	.0
Nov	39.9	20.6	30.3	77+	1978	3	41.2	1999	-20	1959	14	21.9	1991	1042	0	.0	.0	8.0	8.9	25.8	1.2
Dec	26.1	8.0	17.1	64+	1998	2	25.2	1979	-29+	1983	18	3.9	1983	1486	0	.0	.0	1.0	20.5	30.7	8.8
Ann	54.4	32.2	43.3	104	Aug 1988	1	75.5	Jul 1983	-36	Feb 1962	28	-1.3	Jan 1979	8387	518	.2	13.1	218.0	78.1	172.1	33.4

+ 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: 1948-2001

(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	.56	.50	1.11	1982	23	2.09	1975	.05	1995
Feb	.50	.38	2.50	1962	18	1.84	1971	.03	1987
Mar	1.98	1.78	2.24	1987	23	5.17	1987	.07	1994
Apr	2.89	2.61	2.74	2001	23	6.56	1984	.08	1981
May	3.44	3.27	3.34	1959	31	6.60	1993	1.11	1994
Jun	4.35	3.51	3.75+	1953	7	8.92	1993	1.89	1980
Jul	3.29	2.77	3.76	1950	9	8.76	1978	.13	1975
Aug	4.29	3.88	5.24	1975	22	14.36	1979	.64	1976
Sep	2.91	2.68	3.28	1987	15	7.30	1987	.45	1998
Oct	1.89	1.31	2.51	1966	15	5.92	1979	.00	1975
Nov	1.42	1.09	1.77	1977	9	3.94	1991	.03	1976
Dec	.66	.55	1.53	1982	28	2.87	1982	.03	1979
Ann	28.18	27.26	5.24	Aug 1975	22	14.36	Aug 1979	.00	Oct 1975

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	1.6	.1	.1
Feb	4.7	1.8	.1	@
Mar	7.1	4.3	1.3	.3
Apr	9.5	5.8	2.0	.6
May	10.7	7.2	2.3	.6
Jun	10.1	7.6	3.2	1.1
Jul	8.6	5.8	2.1	.8
Aug	9.0	6.0	2.6	1.4
Sep	7.7	5.4	1.9	.7
Oct	6.4	3.8	1.2	.4
Nov	5.9	3.3	.7	.2
Dec	5.2	2.0	.2	@
Ann	90.5	54.6	17.7	6.2

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	.05	.09	.17	.25	.33	.43	.54	.68	.88	1.20	1.51
Feb	.05	.09	.16	.23	.30	.39	.49	.61	.78	1.07	1.34
Mar	.30	.47	.76	1.03	1.32	1.63	1.98	2.42	3.00	3.95	4.86
Apr	.43	.67	1.09	1.49	1.90	2.36	2.89	3.53	4.40	5.81	7.17
May	1.41	1.72	2.17	2.53	2.88	3.23	3.61	4.04	4.60	5.44	6.21
Jun	1.64	2.04	2.62	3.11	3.57	4.04	4.55	5.14	5.89	7.05	8.11
Jul	.56	.85	1.33	1.78	2.24	2.74	3.32	4.01	4.93	6.43	7.86
Aug	.89	1.28	1.91	2.49	3.06	3.68	4.37	5.21	6.31	8.08	9.75
Sep	.59	.85	1.28	1.67	2.06	2.48	2.96	3.53	4.29	5.51	6.66
Oct	.06	.19	.45	.72	1.02	1.37	1.78	2.30	3.03	4.26	5.47
Nov	.12	.22	.41	.61	.82	1.07	1.36	1.73	2.24	3.08	3.92
Dec	.07	.12	.21	.30	.40	.51	.64	.81	1.03	1.40	1.76
Ann	18.37	20.21	22.59	24.42	26.06	27.66	29.33	31.18	33.44	36.76	39.66

\+ 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: 1948-2001
(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	5.7	4.8	6	4
Feb	4.8	5.0	4	2
Mar	8.0	7.3	2	1
Apr	3.6	1.6	#	#
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.9	.0	#	0
Nov	5.4	4.1	1	#
Dec	7.4	6.2	4	2
Ann	35.8	29.0	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	11.0	1975	11	21.1	1975	27	1982	27	14+	1997
Feb	6.8	1984	19	8.8	1992	22	1982	13	14	1982
Mar	9.0	1979	4	24.1	1983	12+	1995	9	7	1984
Apr	9.7	2000	7	16.2	1983	9	2000	7	1+	2000
May	#	1989	5	#	1989	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	#	1984	28	#	1984	0	0	0	0	0
Oct	8.0	1982	20	8.0	1982	8	1982	20	#+	1999
Nov	11.0	1983	28	21.5	1991	14	1991	3	7	1985
Dec	12.0	1982	28	21.3	2000	20	2000	31	14	1985
Ann	12.0	Dec 1982	28	24.1	Mar 1983	27	Jan 1982	27	14+	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.4	2.6	.6	.1	.1
Feb	3.8	1.9	.4	@	.0
Mar	3.3	2.4	1.0	.5	.0
Apr	1.7	1.3	.4	.2	.0
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	.0	.0	.0	.0	.0
Oct	.4	.3	.1	@	.0
Nov	3.1	2.1	.7	.2	@
Dec	4.8	2.4	.9	.1	@
Ann	22.5	13.0	4.1	1.1	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.5	17.8	14.4	4.7
Feb	19.1	12.3	9.0	3.2
Mar	9.9	6.8	4.3	1.5
Apr	2.7	1.1	.4	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.4	.2	.1	.0
Nov	7.9	4.3	2.5	.8
Dec	21.2	11.3	5.1	1.6
Ann	84.7	53.8	35.8	11.8

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

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	152	145	140	136	132	128	124	119	112
32	163	157	152	148	145	141	137	132	126
28	180	174	170	166	163	160	156	152	146
24	204	198	193	189	186	182	178	174	168
20	227	220	215	211	207	203	199	194	187
16	249	241	235	230	226	221	217	211	203

***** 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	1648	1304	1087	645	286	61	24	49	202	553	1042	1486	8387
60	1493	1164	932	499	179	18	6	13	104	401	892	1331	7032
57	1400	1080	839	415	127	7	0	4	62	314	802	1238	6288
55	1338	1024	777	362	99	4	0	2	41	261	742	1176	5826
50	1183	890	627	242	46	0	0	0	11	148	599	1021	4767
32	658	444	190	17	0	0	0	0	0	5	186	502	2002

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	33	64	127	363	771	1041	1195	1117	819	475	134	39	6178
55	0	0	0	18	157	354	482	406	170	19	0	0	1606
57	0	0	0	11	124	298	420	347	131	9	0	0	1340
60	0	0	0	5	82	219	333	263	83	3	0	0	988
65	0	0	0	1	34	112	196	144	31	0	0	0	518
70	0	0	0	0	11	42	98	62	8	0	0	0	221

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	0	2	47	221	567	829	971	898	620	297	42	1	0	2	49	270	837	1666	2637	3535	4155	4452	4494	4495
45	0	0	22	128	419	679	816	743	476	188	17	0	0	0	22	150	569	1248	2064	2807	3283	3471	3488	3488
50	0	0	5	75	281	531	661	588	336	100	3	0	0	0	5	80	361	892	1553	2141	2477	2577	2580	2580
55	0	0	0	36	169	384	506	433	214	46	0	0	0	0	0	36	205	589	1095	1528	1742	1788	1788	1788
60	0	0	0	11	87	248	352	282	120	18	0	0	0	0	0	11	98	346	698	980	1100	1118	1118	1118
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	39	153	348	533	643	585	392	194	32	0	0	2	41	194	542	1075	1718	2303	2695	2889	2921	2921

(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