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: MAPLETON NO 2, IA **COOP ID: 135123**

Climate Division: IA 4 **NWS Call Sign:** **Elevation: 1,140 Feet** **Lat: 42˚10N** **Lon: 95˚47W**

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	27.9	7.5	17.7	67	1981	24	30.0	1990	-32	1970	21	3.7	1979	1466	0	.0	.0	1.4	17.3	30.2	8.8
Feb	34.5	14.0	24.3	71	1999	10	33.8	1998	-27+	1958	16	9.6	1979	1140	0	.0	.0	4.8	11.9	25.9	4.7
Mar	47.1	24.7	35.9	88	1986	29	42.5	2000	-22	1960	5	26.8	1975	903	0	.0	.0	14.2	4.1	22.1	.9
Apr	61.9	37.2	49.6	96	1980	22	57.5	1981	-1	1975	3	42.8	1983	469	6	.0	.4	25.5	.2	9.1	@
May	73.3	49.6	61.5	101	1967	25	68.1	1977	23	1961	2	55.5	1997	169	60	.0	.6	30.9	.0	.9	.0
Jun	82.4	59.5	71.0	104	1988	21	75.9	1988	36	1969	3	66.8	1998	16	194	.2	4.4	30.0	.0	.0	.0
Jul	85.7	63.8	74.8	105	1955	31	78.7	1974	42	1971	30	68.9	1992	5	307	.1	7.6	31.0	.0	.0	.0
Aug	83.5	61.3	72.4	104+	1988	15	79.1	1983	36	1950	20	66.7	1992	18	248	.2	5.8	31.0	.0	.0	.0
Sep	76.3	51.5	63.9	98	1976	6	69.7	1998	24	1984	30	58.7	1993	107	73	@	1.8	29.9	.0	.9	.0
Oct	64.2	38.4	51.3	94	1963	5	55.8+	1973	10	1993	31	45.8	1976	428	2	.0	.1	28.0	.1	7.6	.0
Nov	44.7	25.0	34.9	80	1999	8	44.7	1999	-13+	1959	14	25.8	1985	904	0	.0	.0	11.7	4.7	21.7	.6
Dec	30.9	12.0	21.5	65+	2001	5	29.3	1979	-28	1989	23	4.6	1983	1349	0	.0	.0	2.2	14.2	29.8	5.2
Ann	59.4	37.0	48.2	105	Jul 1955	31	79.1	Aug 1983	-32	Jan 1970	21	3.7	Jan 1979	6974	890	.5	20.7	240.6	52.5	148.2	20.2

\+ 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

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	.71	.76	1.18	1949	3	1.82	1975	.03+	1986
Feb	.71	.57	1.73	1951	28	3.34	1971	.05	1996
Mar	2.05	1.53	2.01	1987	23	5.64	1987	.00	1994
Apr	3.20	2.59	2.95	1986	27	8.52	1986	.70	1981
May	4.16	3.92	2.98	1976	22	9.40	1974	1.15	1994
Jun	4.27	3.73	3.62	1953	25	8.98	1998	1.00	1985
Jul	3.91	3.38	9.77	1996	17	10.85	1996	.84	1991
Aug	3.46	3.49	4.06	1988	22	7.58	1987	.58	2000
Sep	2.92	2.89	3.34	1982	12	7.24	1978	.72	1998
Oct	2.21	1.75	2.80	1979	30	6.21	1984	.07	1988
Nov	1.51	1.32	1.58	1991	29	4.20	1991	.00	1976
Dec	.87	.78	1.50	1959	27	3.03	1984	.05	1979
Ann	29.98	31.42	9.77	Jul 1996	17	10.85	Jul 1996	.00+	Mar 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	2.2	.2	.0
Feb	4.1	2.1	.3	@
Mar	6.3	4.6	1.3	.4
Apr	8.6	6.3	2.2	.6
May	9.8	7.7	2.9	.9
Jun	8.6	6.7	3.0	1.2
Jul	7.4	6.0	2.5	.9
Aug	7.2	5.5	2.2	1.2
Sep	6.7	5.3	2.0	.7
Oct	5.6	4.1	1.3	.5
Nov	5.2	3.5	1.0	.3
Dec	4.4	2.6	.4	.1
Ann	78.0	56.6	19.3	6.8

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	.10	.19	.29	.40	.52	.67	.86	1.13	1.57	2.01
Feb	.08	.14	.24	.33	.44	.56	.69	.86	1.09	1.47	1.84
Mar	.14	.35	.67	.98	1.29	1.64	2.04	2.53	3.19	4.27	5.32
Apr	.67	.96	1.43	1.86	2.29	2.75	3.26	3.88	4.70	6.01	7.26
May	1.63	2.02	2.57	3.02	3.45	3.89	4.36	4.90	5.60	6.66	7.63
Jun	1.23	1.64	2.25	2.78	3.30	3.83	4.43	5.13	6.04	7.47	8.79
Jul	.82	1.18	1.75	2.27	2.80	3.36	3.99	4.75	5.75	7.35	8.87
Aug	.73	1.05	1.56	2.02	2.48	2.98	3.54	4.21	5.10	6.51	7.85
Sep	.74	1.01	1.44	1.82	2.19	2.58	3.02	3.53	4.21	5.28	6.28
Oct	.21	.36	.66	.97	1.30	1.68	2.13	2.69	3.46	4.74	6.00
Nov	.16	.34	.59	.81	1.03	1.27	1.54	1.86	2.29	2.98	3.63
Dec	.16	.24	.36	.48	.60	.74	.88	1.06	1.30	1.69	2.06
Ann	19.40	21.37	23.94	25.92	27.69	29.42	31.22	33.23	35.68	39.28	42.42

+ 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)

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	6.6	5.0	3	2	9.0	1975	10	23.5	1975	21	1979	27	11	1979	3.7	2.5	1.0	.4	.0	16.9	10.1	5.6	.6
Feb	5.8	5.0	3	2	9.0	1971	22	15.0	1978	21	1979	9	17	1979	3.1	2.4	.9	.4	.0	12.9	9.2	4.7	.2
Mar	5.6	5.8	1	#	9.0	1983	26	15.5+	1984	15	1979	4	5	1979	2.1	1.6	.8	.3	.0	6.1	3.3	1.3	.1
Apr	1.7	.0	#	0	6.0	1997	11	12.5	1997	4	1996	14	#+	2000	.6	.5	.3	.1	.0	.6	.2	.0	.0
May	#	.0	0	0	#	1989	5	#+	1989	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	.6	.0	#	0	4.5	1981	24	4.5	1981	4	1991	31	#+	1991	.3	.2	.1	.0	.0	.2	.1	.0	.0
Nov	4.1	3.2	#	#	8.0	1991	1	18.0	1991	11	1991	6	4	1991	2.1	1.6	.5	.1	.0	3.7	1.4	.6	@
Dec	7.6	7.0	2	1	8.0	1982	28	19.0	1985	15+	1985	20	10	1983	3.6	2.5	.9	.2	.0	16.0	8.0	3.8	1.2
Ann	32.0	26.0	N/A	N/A	9.0+	Mar 1983	26	23.5	Jan 1975	21+	Feb 1979	9	17	Feb 1979	15.5	11.3	4.5	1.5	.0	56.4	32.3	16.0	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	5/20	5/15	5/12	5/09	5/06	5/03	4/30	4/26	4/21
32	5/14	5/09	5/05	5/02	4/30	4/27	4/24	4/20	4/15
28	5/02	4/27	4/24	4/21	4/19	4/16	4/14	4/10	4/06
24	4/18	4/14	4/11	4/09	4/07	4/04	4/02	3/30	3/26
20	4/14	4/08	4/05	4/01	3/29	3/26	3/23	3/19	3/14
16	4/07	4/01	3/28	3/24	3/21	3/17	3/14	3/09	3/03

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	9/20	9/22	9/24	9/27	9/29	10/02
32	9/17	9/22	9/26	9/29	10/02	10/05	10/08	10/11	10/16
28	9/26	10/01	10/05	10/08	10/11	10/14	10/17	10/21	10/26
24	10/08	10/13	10/17	10/21	10/24	10/27	10/31	11/04	11/09
20	10/15	10/21	10/25	10/29	11/02	11/05	11/09	11/14	11/20
16	10/29	11/03	11/07	11/10	11/13	11/16	11/19	11/23	11/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	152	147	143	139	135	131	126	119
32	175	168	163	159	155	151	146	141	134
28	192	186	182	178	174	171	167	162	156
24	219	212	207	203	199	196	192	187	180
20	242	233	227	222	217	212	206	200	191
16	260	252	246	241	237	232	227	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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1466	1140	903	469	169	16	5	18	107	428	904	1349	6974
60	1311	1000	748	334	87	2	0	3	41	285	754	1194	5759
57	1218	916	656	261	53	0	0	0	19	210	665	1101	5099
55	1156	860	596	218	36	0	0	0	10	166	607	1039	4688
50	1003	733	455	127	11	0	0	0	1	82	469	885	3766
32	502	320	99	4	0	0	0	0	0	1	111	395	1432

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	59	103	220	530	914	1168	1325	1253	956	598	197	69	7392
55	0	0	4	55	237	478	612	540	276	50	3	0	2255
57	0	0	1	38	192	418	550	478	225	32	1	0	1935
60	0	0	0	20	132	330	457	388	157	13	0	0	1497
65	0	0	0	6	60	194	307	248	73	2	0	0	890
70	0	0	0	1	19	89	171	136	25	0	0	0	441

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	1	21	109	341	675	929	1076	1017	731	403	83	4	1	22	131	472	1147	2076	3152	4169	4900	5303	5386	5390
45	0	4	59	226	521	779	921	862	583	270	37	1	0	4	63	289	810	1589	2510	3372	3955	4225	4262	4263
50	0	1	23	132	372	629	766	707	437	161	14	0	0	1	24	156	528	1157	1923	2630	3067	3228	3242	3242
55	0	0	6	72	239	479	611	552	302	83	3	0	0	0	6	78	317	796	1407	1959	2261	2344	2347	2347
60	0	0	1	32	130	334	456	397	188	33	0	0	0	0	1	33	163	497	953	1350	1538	1571	1571	1571
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	22	80	222	422	617	732	687	472	255	51	2	1	23	103	325	747	1364	2096	2783	3255	3510	3561	3563

(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