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: CLARINDA, IA **COOP ID: 131533**

Climate Division: IA 7 **NWS Call Sign:** **Elevation: 980 Feet** **Lat: 40˚43N** **Lon: 95˚01W**

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	30.6	10.2	20.4	68+	1939	2	32.0	1989	-31	1912	13	6.7	1979	1382	0	.0	.0	2.4	15.4	30.2	6.6
Feb	37.4	15.9	26.7	80	1930	24	36.4	1998	-29+	1905	13	12.9	1979	1074	0	.0	.0	6.2	10.3	25.8	3.4
Mar	49.2	25.9	37.6	92+	1907	26	43.3	1986	-24+	1960	5	29.9	1975	851	0	.0	.0	16.0	3.0	20.3	.6
Apr	61.7	37.4	49.6	96+	1902	20	56.9	1981	6	1975	3	43.4	1983	466	3	.0	.3	25.7	.1	7.8	.0
May	72.7	48.8	60.8	105	1934	30	66.8	1977	21	1907	4	55.4	1997	187	56	.0	.4	30.9	.0	.4	.0
Jun	82.5	58.6	70.6	105	1933	6	75.3	1988	36	1946	3	65.8	1982	18	184	.3	5.9	30.0	.0	.0	.0
Jul	86.3	63.0	74.7	112	1936	25	79.7	1974	42+	1911	26	70.4	1992	2	301	.9	11.2	31.0	.0	.0	.0
Aug	84.1	60.2	72.2	114	1934	8	79.7	1983	36	1946	29	66.3	1992	25	248	.5	8.3	31.0	.0	.0	.0
Sep	76.7	50.7	63.7	108	1913	1	69.4	1998	24	1984	30	57.3	1993	113	73	@	3.0	29.8	.0	.5	.0
Oct	64.7	38.3	51.5	94+	1953	2	56.0	1973	-1	1925	30	45.8	1976	420	2	.0	.2	28.5	@	6.4	.0
Nov	47.6	26.2	36.9	82	1999	14	44.0	1999	-10	1964	30	29.0	1991	842	0	.0	.0	14.2	3.1	20.6	.2
Dec	34.5	15.1	24.8	71	1939	6	30.7	1991	-27	1924	28	8.6	1983	1246	0	.0	.0	4.0	11.9	29.0	3.7
Ann	60.7	37.5	49.1	114	Aug 1934	8	79.7+	Aug 1983	-31	Jan 1912	13	6.7	Jan 1979	6626	867	1.7	29.3	249.7	43.8	141.0	14.5

\+ 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: 1893-2001

(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	.93	.82	1.26	1960	12	2.44	1973	.00+	1986
Feb	1.03	.75	1.99	1955	19	2.67	1976	.15	1991
Mar	2.45	2.09	2.90	1982	19	6.84	1973	.25	1994
Apr	3.30	2.95	4.40	1963	29	7.69	1978	.82	1989
May	4.80	4.51	3.44	1971	24	9.76	1987	1.22	1980
Jun	4.77	3.92	5.38	2000	24	10.90	2000	.71	1988
Jul	5.15	4.44	7.60	1987	9	14.49	1993	.66	1975
Aug	4.27	3.24	5.60	1893	13	16.60	1977	.92	1998
Sep	3.89	3.20	5.74	1926	3	8.39	1973	.81+	1990
Oct	2.65	2.18	3.50	1900	31	6.57	1977	.22	1999
Nov	2.36	2.23	2.55	1952	17	5.74	1983	.00	1976
Dec	1.16	.99	1.80	1924	4	2.82	1982	.14	1976
Ann	36.76	36.58	7.60	Jul 1987	9	16.60	Aug 1977	.00+	Jan 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.0	2.8	.4	@
Feb	5.4	2.8	.6	.1
Mar	7.4	5.4	1.8	.3
Apr	9.5	6.5	2.2	.7
May	11.5	8.3	3.6	1.1
Jun	9.4	7.2	3.3	1.4
Jul	9.4	7.1	3.3	1.6
Aug	8.7	5.9	2.6	1.2
Sep	7.9	5.6	2.6	1.3
Oct	6.9	4.8	1.8	.7
Nov	6.9	4.6	1.7	.6
Dec	5.7	3.1	.7	.1
Ann	93.7	64.1	24.6	9.1

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	.00	.17	.35	.50	.65	.80	.97	1.17	1.43	1.86	2.26
Feb	.18	.26	.42	.56	.70	.86	1.04	1.26	1.55	2.02	2.47
Mar	.39	.60	.95	1.29	1.64	2.02	2.46	2.99	3.70	4.86	5.97
Apr	.94	1.25	1.72	2.13	2.54	2.96	3.42	3.97	4.68	5.80	6.84
May	1.44	1.89	2.58	3.17	3.74	4.33	4.99	5.76	6.76	8.32	9.76
Jun	1.41	1.86	2.54	3.13	3.70	4.30	4.95	5.73	6.73	8.29	9.75
Jul	1.03	1.50	2.26	2.95	3.65	4.40	5.25	6.27	7.62	9.79	11.84
Aug	.85	1.24	1.87	2.44	3.02	3.65	4.35	5.20	6.32	8.12	9.83
Sep	.95	1.31	1.88	2.38	2.88	3.41	4.00	4.71	5.63	7.08	8.45
Oct	.43	.65	1.04	1.40	1.78	2.19	2.66	3.23	4.00	5.24	6.43
Nov	.14	.37	.74	1.09	1.45	1.86	2.33	2.92	3.71	5.00	6.26
Dec	.19	.29	.46	.62	.79	.97	1.17	1.42	1.75	2.28	2.80
Ann	23.70	26.14	29.31	31.75	33.94	36.08	38.31	40.79	43.83	48.28	52.17

\+ 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

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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	7.4	7.7	2	2
Feb	4.7	4.5	2	1
Mar	3.9	2.4	1	#
Apr	.9	.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	.1	.0	#	0
Nov	2.2	.6	#	#
Dec	5.4	3.0	1	1
Ann	24.6	18.2	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	1971	3	21.0	1971	20	1971	4	9	1971
Feb	7.0	1971	22	13.8	1971	14	1978	14	9	1979
Mar	13.0	1998	8	15.5+	1998	16	1978	3	6	1998
Apr	7.0	1992	21	7.0	1992	7	1992	21	1	1997
May	.0	0	0	.0	0	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	.0	0	0	.0	0	0	0	0	0	0
Oct	1.9	1996	23	1.9	1996	2	1996	23	#+	1997
Nov	10.0	1987	29	12.0	1987	10	1987	29	2	1991
Dec	8.0	1973	19	21.0	1983	13	1983	23	7	1983
Ann	13.0	Mar 1998	8	21.0+	Dec 1983	20	Jan 1971	4	9+	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.4	2.9	.8	.3	.0
Feb	3.1	2.1	.7	.2	.0
Mar	2.8	2.0	.8	.2	@
Apr	1.1	.9	.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	.3	.1	.0	.0	.0
Nov	2.3	1.4	.6	.1	.0
Dec	4.4	2.8	.8	.2	.0
Ann	18.4	12.2	3.9	1.0	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	18.7	14.1	11.1	3.9
Feb	16.4	13.4	11.2	5.6
Mar	7.1	4.3	2.7	.9
Apr	1.3	.3	.1	.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	.1	.0	.0	.0
Nov	4.5	2.7	.9	.0
Dec	16.3	10.2	6.7	1.3
Ann	64.4	45.0	32.7	11.7

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

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	9/13	9/18	9/21	9/23	9/26	9/28	10/01	10/04	10/09
32	9/23	9/28	10/02	10/05	10/08	10/11	10/14	10/18	10/23
28	10/04	10/10	10/14	10/17	10/21	10/24	10/27	10/31	11/06
24	10/11	10/17	10/22	10/26	10/30	11/03	11/07	11/12	11/19
20	10/19	10/26	10/31	11/04	11/08	11/12	11/16	11/21	11/28
16	11/02	11/08	11/12	11/16	11/19	11/23	11/26	11/30	12/06

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	162	156	152	148	145	141	138	133	127
32	185	179	174	170	166	162	158	154	147
28	211	204	198	194	190	186	181	176	169
24	230	223	218	214	210	206	202	197	190
20	252	243	237	231	226	221	216	210	201
16	275	267	261	256	252	247	242	236	228

***** 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.

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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	1382	1074	851	466	187	18	2	25	113	420	842	1246	6626
60	1227	934	696	327	100	3	0	6	45	277	692	1091	5398
57	1134	850	604	253	63	1	0	2	21	202	603	998	4731
55	1072	799	549	208	44	0	0	0	12	159	545	936	4324
50	919	669	406	115	14	0	0	0	1	76	407	785	3392
32	426	272	76	1	0	0	0	0	0	0	75	314	1164

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	67	122	247	528	892	1156	1322	1246	950	606	223	90	7449
55	0	5	7	44	222	466	609	533	272	51	3	0	2212
57	0	0	1	29	179	407	547	472	222	33	1	0	1891
60	0	0	0	14	124	319	454	384	155	14	0	0	1464
65	0	0	0	3	56	184	301	248	73	2	0	0	867
70	0	0	0	0	18	81	164	140	26	0	0	0	429

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	4	28	134	359	684	955	1112	1044	758	429	105	13	4	32	166	525	1209	2164	3276	4320	5078	5507	5612	5625
45	0	10	73	236	530	805	957	889	610	291	53	4	0	10	83	319	849	1654	2611	3500	4110	4401	4454	4458
50	0	1	36	140	378	655	802	734	462	176	22	0	0	1	37	177	555	1210	2012	2746	3208	3384	3406	3406
55	0	0	11	78	250	505	647	579	326	92	3	0	0	0	11	89	339	844	1491	2070	2396	2488	2491	2491
60	0	0	3	38	137	357	493	425	208	39	0	0	0	0	3	41	178	535	1028	1453	1661	1700	1700	1700
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	3	27	99	225	420	635	758	700	487	266	71	8	3	30	129	354	774	1409	2167	2867	3354	3620	3691	3699

(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