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: CEDAR RAPIDS NO 1, IA **COOP ID: 131319**

Climate Division: IA 6 **NWS Call Sign:** **Elevation: 850 Feet** **Lat: 42˚02N** **Lon: 91˚35W**

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	28.3	11.5	19.9	68	1989	31	32.1	1990	-27+	1910	7	7.2	1979	1399	0	.0	.0	1.0	18.8	30.1	8.2
Feb	34.9	17.6	26.3	73	1921	15	37.5	1998	-28	1996	2	13.5	1979	1086	0	.0	.0	3.6	11.7	25.5	4.2
Mar	47.4	28.1	37.8	88	1986	29	45.2	2000	-17	1962	1	27.6	1975	846	0	.0	.0	12.7	3.7	21.4	.6
Apr	61.8	38.9	50.4	94+	1896	15	57.2	1977	3	1982	6	44.7	1983	445	5	.0	@	25.3	.2	8.7	.0
May	73.1	50.4	61.8	104	1934	31	69.1	1977	24	1925	7	55.9	1997	171	70	.0	.5	30.9	.0	.4	.0
Jun	81.8	60.0	70.9	103+	1901	30	75.8	1971	36	1945	4	65.6	1982	17	193	.1	3.3	30.0	.0	.0	.0
Jul	85.3	64.3	74.8	110	1911	6	78.3	1988	42	1924	2	70.0	1992	3	307	.2	7.4	31.0	.0	.0	.0
Aug	83.1	62.3	72.7	108+	1930	3	79.4	1983	37	1915	30	67.4	1992	17	255	.2	4.8	31.0	.0	.0	.0
Sep	75.7	53.7	64.7	105	1925	4	69.0	1978	22	1899	30	59.4	1993	84	74	.0	1.3	30.0	.0	.4	.0
Oct	64.1	42.5	53.3	94	1997	3	60.2	1971	-2	1925	30	47.9	1988	369	6	.0	.1	28.5	.0	5.6	.0
Nov	46.4	29.6	38.0	80	1999	8	46.0	1999	-10	1977	26	31.1	1976	810	0	.0	.0	12.4	3.5	19.7	.2
Dec	32.6	17.3	25.0	69	1998	4	32.6	1982	-28	1924	28	12.2	1983	1241	0	.0	.0	2.3	13.8	29.0	4.2
Ann	59.5	39.7	49.6	110	Jul 1911	6	79.4	Aug 1983	-28+	Feb 1996	2	7.2	Jan 1979	6488	910	.5	17.4	238.7	51.7	140.8	17.4

\+ 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: 1895-2001

(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	1.13	1.01	2.92	1960	12	2.57	1996	.09	1981
Feb	1.10	.86	2.50	1898	9	2.66+	1997	.03	1995
Mar	2.08	1.83	2.61	1998	31	5.25	1998	.34	1980
Apr	3.46	3.16	3.30	1896	8	6.09	1999	.83	1988
May	4.50	4.54	3.40+	1962	29	9.12	1996	.33	1992
Jun	4.80	4.76	4.63	1914	5	11.27	1990	1.11	1992
Jul	4.47	3.52	6.63	1993	5	16.99	1993	.42	1991
Aug	4.73	3.90	4.71	1968	5	11.89	1987	.71	1971
Sep	3.79	3.51	7.78	1914	15	9.11	1973	.39	1979
Oct	2.58	2.22	2.35	1960	31	6.79	1998	.23	1994
Nov	2.50	2.42	2.64	1961	2	6.31	1992	.11	1976
Dec	1.48	1.62	1.89	1971	15	3.84	1982	.17	1976
Ann	36.62	35.41	7.78	Sep 1914	15	16.99	Jul 1993	.03	Feb 1995

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.0	3.2	.5	.1
Feb	7.2	3.2	.5	.1
Mar	9.2	5.0	1.2	.2
Apr	11.7	7.2	2.2	.6
May	13.2	7.9	3.2	1.0
Jun	11.9	7.8	3.2	1.2
Jul	10.3	6.4	2.7	1.1
Aug	10.1	6.7	3.0	1.5
Sep	9.8	5.9	2.5	1.0
Oct	9.0	5.2	1.8	.6
Nov	10.4	5.3	1.6	.4
Dec	9.3	3.9	.8	.1
Ann	121.1	67.7	23.2	7.9

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	.27	.37	.54	.69	.83	.99	1.16	1.37	1.64	2.07	2.47
Feb	.11	.19	.35	.50	.67	.85	1.07	1.35	1.72	2.35	2.95
Mar	.31	.49	.79	1.08	1.37	1.70	2.08	2.53	3.15	4.15	5.11
Apr	1.30	1.62	2.08	2.47	2.84	3.21	3.62	4.09	4.69	5.61	6.45
May	1.14	1.57	2.22	2.80	3.37	3.97	4.64	5.44	6.48	8.12	9.66
Jun	1.69	2.14	2.80	3.35	3.88	4.42	5.01	5.70	6.58	7.94	9.19
Jul	.41	.72	1.32	1.94	2.62	3.39	4.30	5.44	7.02	9.64	12.21
Aug	.91	1.34	2.03	2.67	3.32	4.02	4.81	5.76	7.03	9.07	11.00
Sep	.90	1.26	1.81	2.31	2.80	3.31	3.90	4.59	5.49	6.93	8.28
Oct	.52	.76	1.14	1.48	1.83	2.21	2.63	3.14	3.82	4.90	5.92
Nov	.41	.63	.99	1.33	1.69	2.07	2.51	3.05	3.76	4.93	6.04
Dec	.25	.37	.59	.80	1.00	1.23	1.49	1.81	2.24	2.92	3.58
Ann	24.52	26.81	29.77	32.03	34.06	36.03	38.08	40.35	43.12	47.16	50.69

\+ 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: 1895-2001
(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	8.2	7.6	4	3	9.0	1971	3	22.3	1979	20	1979	31	14	1979	3.1	2.2	.8	.2	@	13.1	7.0	2.6	.3
Feb	5.9	6.7	3	3	7.0	1976	21	15.5	1975	19	1979	2	15	1979	2.4	1.8	.7	.1	.0	11.0	5.8	1.5	.3
Mar	4.1	2.5	1	#	7.5	1998	8	12.1	1984	12	1979	2	6	1979	1.7	1.1	.4	.1	.0	3.2	1.0	.4	.0
Apr	2.4	.4	#	#	10.0	1973	9	17.0	1973	16	1973	10	2	1973	.5	.4	.1	.1	.1	.6	.3	.3	.2
May	.0	.0	0	0	.2	1997	1	.2	1997	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	.4	.0	#	0	6.5	1997	26	7.0	1997	6	1997	26	#+	1997	.1	.1	@	.0	.0	.2	.1	@	.0
Nov	3.5	1.9	#	#	8.0	1991	23	14.5	1971	8	1991	25	2	1991	.8	.7	.2	@	.0	1.4	.3	.1	.0
Dec	7.8	5.8	2	2	10.0	2000	11	26.5	2000	16	2000	31	10	2000	2.1	1.8	.6	.3	.0	7.6	3.9	2.0	.0
Ann	32.3	24.9	N/A	N/A	10.0+	Dec 2000	11	26.5	Dec 2000	20	Jan 1979	31	15	Feb 1979	10.7	8.1	2.8	.8	.1	37.1	18.4	6.9	.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	5/21	5/16	5/12	5/09	5/06	5/03	4/30	4/26	4/21
32	5/09	5/04	5/01	4/28	4/25	4/23	4/20	4/16	4/12
28	4/24	4/20	4/17	4/14	4/12	4/09	4/07	4/04	3/30
24	4/18	4/14	4/11	4/09	4/07	4/05	4/03	3/31	3/28
20	4/12	4/07	4/03	3/31	3/28	3/25	3/22	3/19	3/14
16	4/04	3/29	3/24	3/20	3/17	3/13	3/09	3/05	2/27

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	9/18	9/22	9/25	9/28	9/30	10/02	10/05	10/07	10/11
32	9/23	9/27	10/01	10/04	10/06	10/09	10/12	10/15	10/20
28	10/03	10/09	10/13	10/16	10/19	10/22	10/25	10/29	11/04
24	10/17	10/22	10/25	10/28	10/31	11/03	11/06	11/09	11/14
20	10/23	10/28	11/02	11/05	11/09	11/12	11/16	11/20	11/26
16	11/02	11/08	11/12	11/16	11/19	11/22	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	165	158	154	150	146	143	139	134	128
32	182	175	171	167	163	159	156	151	145
28	212	204	199	194	190	185	181	175	168
24	222	216	212	209	206	203	199	195	190
20	249	241	235	229	225	220	215	209	200
16	275	265	258	252	246	241	235	227	218

***** 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	1399	1086	846	445	171	17	3	17	84	369	810	1241	6488
60	1244	946	691	311	90	3	0	3	27	236	661	1086	5298
57	1151	862	602	239	56	1	0	0	10	170	573	993	4657
55	1089	806	546	197	39	0	0	0	5	132	516	931	4261
50	934	677	406	109	13	0	0	0	0	63	381	782	3365
32	438	270	81	2	0	0	0	0	0	0	68	315	1174

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	63	109	259	552	922	1167	1327	1261	981	660	248	97	7646
55	0	1	10	57	247	477	614	548	295	79	6	0	2334
57	0	0	4	39	203	417	552	486	241	54	3	0	1999
60	0	0	1	21	144	329	459	396	167	28	0	0	1545
65	0	0	0	5	70	193	307	255	74	6	0	0	910
70	0	0	0	1	25	88	169	141	23	0	0	0	447

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	18	107	336	678	933	1086	1016	742	420	100	8	1	19	126	462	1140	2073	3159	4175	4917	5337	5437	5445
45	0	5	60	221	524	783	931	861	592	287	50	4	0	5	65	286	810	1593	2524	3385	3977	4264	4314	4318
50	0	1	30	125	373	633	776	706	444	178	22	2	0	1	31	156	529	1162	1938	2644	3088	3266	3288	3290
55	0	0	12	65	241	483	621	551	307	93	5	0	0	0	12	77	318	801	1422	1973	2280	2373	2378	2378
60	0	0	5	29	135	337	466	397	187	42	0	0	0	0	5	34	169	506	972	1369	1556	1598	1598	1598
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	12	68	209	422	624	743	687	473	254	56	5	0	12	80	289	711	1335	2078	2765	3238	3492	3548	3553

(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