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: ATLANTIC 1 NE, IA **COOP ID: 130364**

Climate Division: IA 7 **NWS Call Sign:** **Elevation: 1,160 Feet** **Lat: 41˚25N** **Lon: 95˚00W**

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	28.8	9.5	19.2	66	1981	24	31.6	1990	-37	1974	12	6.4	1979	1420	0	.0	.0	1.8	17.3	30.2	8.8
Feb	35.1	15.2	25.2	76	1930	24	34.9	2000	-36+	1905	2	10.0	1978	1116	0	.0	.0	4.5	12.1	26.2	5.3
Mar	47.8	26.5	37.2	91	1907	25	43.2	2000	-32	1962	1	28.4	1975	863	0	.0	@	14.3	4.2	22.9	.8
Apr	61.5	37.7	49.6	94+	1910	28	58.3	1981	4+	1899	4	42.0	1983	468	6	.0	.3	25.0	.3	9.3	.0
May	72.6	49.4	61.0	105	1934	30	67.4	1977	17	1908	2	55.6	1997	188	63	.0	.6	30.9	.0	1.2	.0
Jun	82.3	59.1	70.7	106	1937	25	75.1	1971	32+	1894	6	65.3	1982	18	188	.3	5.4	30.0	.0	.0	.0
Jul	85.5	63.4	74.5	117	1936	25	79.4	1974	37	1895	9	69.3	1992	6	297	.4	9.3	31.0	.0	.0	.0
Aug	82.9	60.8	71.9	111+	1918	5	80.0	1983	33	1893	30	66.2	1992	31	243	.2	5.8	31.0	.0	.0	.0
Sep	76.0	51.3	63.7	104	1913	5	71.0	1998	17	1899	29	57.9	1993	113	72	@	2.4	29.9	.0	1.2	.0
Oct	63.6	39.1	51.4	96	1893	10	56.4	1971	1	1925	30	46.0	1987	425	3	.0	.2	27.7	@	8.8	.0
Nov	45.9	26.5	36.2	83	1999	13	44.8	1999	-16	1952	28	28.4	1991	865	0	.0	.0	12.9	4.2	22.1	.4
Dec	32.4	14.6	23.5	69	1939	6	29.7	1991	-33	1983	19	4.9	1983	1287	0	.0	.0	2.8	14.1	29.7	5.0
Ann	59.5	37.8	48.7	117	Jul 1936	25	80.0	Aug 1983	-37	Jan 1974	12	4.9	Dec 1983	6800	872	.9	24.0	241.8	52.2	151.6	20.3

\+ 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

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	.85	.72	1.25	1944	27	2.15	1975	.00+	1987
Feb	.94	.71	1.52	1976	21	2.44	1976	.11	1977
Mar	2.34	1.90	2.12	1946	6	5.97	1973	.13	1994
Apr	3.49	2.80	2.72	1999	5	9.15	1999	.76	1990
May	4.32	4.16	2.78	1946	3	9.83	1996	1.04	1994
Jun	4.99	4.33	13.18	1998	14	17.91	1998	.67	1988
Jul	4.62	4.12	5.35	1948	21	12.73	1998	.43	1975
Aug	3.76	3.16	5.83	1922	30	10.57	1987	.32	1976
Sep	3.81	2.91	6.52	1989	8	13.18	1972	.63	1980
Oct	2.74	2.67	3.78	1931	6	6.72	1997	.06	1975
Nov	1.80	1.71	3.44	1909	13	4.19	1996	.00	1976
Dec	1.11	.91	1.25	1982	28	3.54	1982	.16	1976
Ann	34.77	33.31	13.18	Jun 1998	14	17.91	Jun 1998	.00+	Jan 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.1	2.8	.4	@
Feb	5.1	2.7	.5	.1
Mar	7.9	4.9	1.6	.6
Apr	10.6	7.1	2.2	.8
May	12.0	8.1	3.1	.9
Jun	9.8	6.6	3.0	1.3
Jul	9.8	6.8	3.0	1.4
Aug	9.0	5.7	2.4	1.1
Sep	8.2	5.5	2.2	1.1
Oct	7.6	4.9	2.0	.7
Nov	7.0	3.9	1.2	.4
Dec	6.3	3.2	.5	@
Ann	98.4	62.2	22.1	8.4

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	.48	.61	.74	.89	1.05	1.28	1.64	1.97
Feb	.14	.22	.36	.49	.62	.77	.94	1.15	1.43	1.88	2.31
Mar	.19	.35	.66	.98	1.33	1.74	2.23	2.84	3.69	5.10	6.50
Apr	.77	1.10	1.61	2.07	2.53	3.02	3.58	4.24	5.11	6.49	7.80
May	1.34	1.75	2.36	2.88	3.39	3.91	4.49	5.17	6.05	7.41	8.68
Jun	.66	1.06	1.77	2.46	3.19	4.00	4.94	6.09	7.65	10.20	12.67
Jul	.83	1.24	1.92	2.55	3.19	3.88	4.67	5.63	6.90	8.95	10.91
Aug	.67	1.00	1.55	2.07	2.59	3.16	3.80	4.59	5.63	7.31	8.91
Sep	.65	.98	1.54	2.06	2.60	3.18	3.84	4.65	5.73	7.47	9.13
Oct	.45	.69	1.09	1.46	1.85	2.28	2.76	3.35	4.14	5.42	6.64
Nov	.16	.36	.66	.92	1.19	1.49	1.82	2.23	2.77	3.65	4.49
Dec	.18	.27	.43	.59	.75	.92	1.12	1.36	1.68	2.21	2.71
Ann	21.59	24.01	27.18	29.63	31.85	34.01	36.27	38.80	41.91	46.47	50.48

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.9	4.5	1	#
Feb	6.1	5.7	1	1
Mar	3.8	4.0	#	0
Apr	1.0	.0	#	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	.5	.0	#	0
Nov	2.8	1.3	#	#
Dec	6.0	5.0	1	#
Ann	26.1	20.5	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	8.0	1971	3	15.5	1975	12	1971	4	5	1971
Feb	7.0	1978	13	13.4	1978	7	1999	23	4	1980
Mar	7.5	1985	31	10.0	1984	10	1998	8	2	1998
Apr	8.5	1973	9	11.3	1973	3	1975	2	#+	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	7.0	1997	26	7.0	1997	4	1980	27	#+	1989
Nov	7.0	1987	28	15.5	1991	7	1987	28	1	1992
Dec	7.0	1972	12	17.3	1983	11	2000	21	8	2000
Ann	8.5	Apr 1973	9	17.3	Dec 1983	12	Jan 1971	4	8	Dec 2000

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.6	2.3	.6	.2	.0
Feb	3.0	1.9	.7	.3	.0
Mar	1.7	1.1	.4	.1	.0
Apr	.7	.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	.1	.1	.1	@	.0
Nov	1.2	.9	.4	.1	.0
Dec	3.3	2.1	.7	.2	.0
Ann	13.6	8.8	3.1	.9	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	.9	.3	.2	.0
Apr	.2	@	.0	.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	1.0	.6	.2	.0
Dec	4.6	2.5	1.1	.0
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	5/31	5/25	5/21	5/17	5/14	5/10	5/07	5/02	4/26
32	5/13	5/09	5/06	5/04	5/02	4/30	4/27	4/25	4/21
28	5/10	5/05	5/01	4/28	4/25	4/22	4/19	4/16	4/11
24	4/26	4/21	4/17	4/14	4/11	4/08	4/05	4/01	3/27
20	4/14	4/10	4/06	4/04	4/01	3/30	3/27	3/24	3/19
16	4/08	4/02	3/29	3/26	3/22	3/19	3/15	3/11	3/05

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	9/09	9/12	9/15	9/17	9/19	9/21	9/23	9/25	9/28
32	9/14	9/19	9/22	9/25	9/28	9/30	10/03	10/06	10/11
28	9/25	9/29	10/03	10/06	10/08	10/11	10/14	10/17	10/22
24	10/03	10/09	10/13	10/16	10/20	10/23	10/27	10/31	11/05
20	10/08	10/15	10/19	10/23	10/27	10/31	11/04	11/09	11/15
16	10/21	10/27	11/01	11/05	11/08	11/12	11/16	11/20	11/27

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	142	137	132	127	123	118	112	104
32	165	159	155	151	148	145	141	137	131
28	184	177	173	169	165	162	158	153	147
24	213	205	200	195	191	186	182	176	169
20	230	223	217	213	208	204	199	194	186
16	254	246	240	235	230	226	221	215	207

***** 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	1420	1116	863	468	188	18	6	31	113	425	865	1287	6800
60	1265	976	708	332	103	3	0	9	45	284	715	1132	5572
57	1172	892	616	259	66	1	0	3	21	210	626	1039	4905
55	1110	841	558	216	47	0	0	0	12	167	568	977	4496
50	959	711	417	125	17	0	0	0	1	83	429	829	3571
32	469	306	80	2	0	0	0	0	0	1	87	355	1300

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	71	114	241	530	899	1161	1315	1236	949	601	211	91	7419
55	0	5	6	53	233	471	602	523	271	54	2	0	2220
57	0	0	1	37	190	411	540	464	220	36	1	0	1900
60	0	0	0	20	134	323	447	377	153	16	0	0	1470
65	0	0	0	6	63	188	297	243	72	3	0	0	872
70	0	0	0	1	23	83	164	140	25	0	0	0	436

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	107	331	664	931	1077	1004	724	381	82	7	1	22	129	460	1124	2055	3132	4136	4860	5241	5323	5330
45	0	4	56	211	510	781	922	849	575	257	34	1	0	4	60	271	781	1562	2484	3333	3908	4165	4199	4200
50	0	0	24	120	364	631	767	694	431	150	15	0	0	0	24	144	508	1139	1906	2600	3031	3181	3196	3196
55	0	0	5	62	231	481	612	539	297	79	3	0	0	0	5	67	298	779	1391	1930	2227	2306	2309	2309
60	0	0	2	29	127	338	457	385	181	33	0	0	0	0	2	31	158	496	953	1338	1519	1552	1552	1552
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	22	86	212	416	618	727	673	469	251	61	4	1	23	109	321	737	1355	2082	2755	3224	3475	3536	3540

(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

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