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: CRESCO 1 NE, IA **COOP ID: 131954**

Climate Division: IA 3 **NWS Call Sign:** **Elevation: 1,255 Feet** **Lat: 43˚23N** **Lon: 92˚06W**

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	21.5	2.8	12.2	54+	1981	25	24.9	1990	-35	1963	15	-1.3	1977	1638	0	.0	.0	.1	24.7	31.0	13.7
Feb	27.6	9.4	18.5	63	1981	18	30.6	1998	-36+	1996	2	6.2	1979	1302	0	.0	.0	.8	17.3	27.5	8.4
Mar	40.0	21.9	31.0	83	1986	30	39.9	1973	-29	1962	1	20.8	1975	1056	0	.0	.0	6.6	8.2	26.2	2.2
Apr	55.6	34.0	44.8	91	1980	23	52.1	1977	-1	1982	6	38.6	1975	608	1	.0	@	20.4	.7	13.7	@
May	68.7	45.8	57.3	91+	1949	3	65.9	1977	23	1989	6	50.7	1997	277	38	.0	.2	30.2	.0	2.1	.0
Jun	78.3	55.5	66.9	100+	1988	21	72.1	1971	34	1990	4	60.9	1982	58	115	.1	1.8	30.0	.0	.0	.0
Jul	81.9	59.6	70.8	102	1955	31	74.6	1983	40+	1988	1	64.3	1992	17	194	.0	3.0	31.0	.0	.0	.0
Aug	79.7	57.3	68.5	101	1955	21	74.1	1995	34	1950	20	63.3	1992	43	151	.1	1.8	31.0	.0	.0	.0
Sep	71.6	47.9	59.8	98	1955	9	64.8	1998	24+	1951	28	53.9	1993	187	29	.0	.5	29.5	.0	1.5	.0
Oct	59.3	36.2	47.8	92	1997	4	56.0	1971	10	1988	30	42.3	1988	536	1	.0	.1	24.9	.1	12.7	.0
Nov	41.4	23.5	32.5	75	2001	8	39.7	1999	-16	1977	26	24.6	1991	978	0	.0	.0	7.7	7.5	24.6	1.2
Dec	26.7	9.4	18.1	62+	1962	1	26.0	1998	-30+	1983	19	3.7	1983	1456	0	.0	.0	.7	21.1	30.5	8.9
Ann	54.4	33.6	44.0	102	Jul 1955	31	74.6	Jul 1983	-36+	Feb 1996	2	-1.3	Jan 1977	8156	529	.2	7.4	212.9	79.6	169.8	34.4

\+ 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

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	1.02	.93	1.15	1967	25	3.01	1996	.14	1981
Feb	.88	.81	1.00+	1951	26	2.40	1981	.02	1987
Mar	2.21	2.20	1.91	1990	14	5.31	1990	.11	1994
Apr	3.52	3.15	2.90	1981	4	6.99	1991	.76	2000
May	3.92	3.92	2.42	1979	19	9.09	1983	1.17	1988
Jun	4.65	4.29	4.12	2000	1	12.23	2000	.71	1988
Jul	4.54	3.68	4.75	1950	16	13.69	1972	1.48	1976
Aug	5.17	4.94	6.20	1962	31	11.50	1993	.84	1971
Sep	3.69	2.51	5.15	1986	21	11.04	1986	.64+	1976
Oct	2.40	2.42	4.45	1966	15	4.79	1984	.42	1987
Nov	2.36	2.01	3.09	1991	1	6.83	1991	.04	1976
Dec	1.27	1.12	1.51	1982	28	3.55	1982	.28+	1998
Ann	35.63	35.74	6.20	Aug 1962	31	13.69	Jul 1972	.02	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.7	3.2	.3	.0
Feb	6.2	2.8	.3	.0
Mar	7.9	5.1	1.3	.4
Apr	10.4	6.9	2.2	.6
May	11.5	7.8	2.6	.9
Jun	10.3	7.4	3.3	1.4
Jul	10.0	6.4	2.8	1.3
Aug	10.5	7.2	3.2	1.6
Sep	9.3	6.0	2.5	.7
Oct	8.4	5.1	1.5	.4
Nov	8.1	4.6	1.5	.5
Dec	7.8	3.7	.5	.1
Ann	108.1	66.2	22.0	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	.23	.33	.48	.61	.74	.89	1.04	1.23	1.48	1.88	2.25
Feb	.11	.19	.31	.43	.56	.70	.87	1.07	1.35	1.80	2.23
Mar	.46	.67	.99	1.28	1.58	1.90	2.26	2.68	3.25	4.16	5.01
Apr	1.02	1.35	1.85	2.29	2.72	3.16	3.65	4.23	4.98	6.16	7.25
May	1.55	1.91	2.43	2.85	3.26	3.66	4.11	4.62	5.27	6.26	7.17
Jun	1.26	1.71	2.38	2.96	3.54	4.14	4.81	5.60	6.63	8.24	9.75
Jul	1.26	1.69	2.35	2.92	3.47	4.06	4.70	5.46	6.45	8.01	9.45
Aug	1.52	2.01	2.75	3.39	4.01	4.66	5.37	6.21	7.30	9.00	10.58
Sep	.56	.87	1.41	1.92	2.45	3.03	3.70	4.51	5.61	7.39	9.10
Oct	.58	.81	1.16	1.47	1.78	2.10	2.47	2.90	3.47	4.37	5.21
Nov	.25	.42	.74	1.07	1.43	1.82	2.29	2.88	3.67	4.99	6.28
Dec	.32	.44	.63	.79	.95	1.12	1.31	1.53	1.82	2.28	2.72
Ann	25.03	27.07	29.69	31.68	33.45	35.16	36.93	38.89	41.27	44.73	47.72

\+ 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	10.0	8.7	6	4
Feb	6.9	6.6	7	8
Mar	6.4	6.7	2	#
Apr	2.5	1.3	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.4	.0	#	0
Nov	4.9	3.8	#	0
Dec	9.0	7.6	1	#
Ann	40.1	34.7	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	10.0	1971	4	24.7	1979	23	1971	5	17	1971
Feb	6.5	1997	4	15.6	1983	22	1971	5	19	1982
Mar	9.0	1995	7	13.3	1992	19	1971	19	13	1971
Apr	8.0	1973	9	15.0	1973	3	1975	9	#+	2000
May	#	1997	15	#+	1997	#	1997	15	#	1997
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	4.0	1982	20	4.0	1982	2	1976	19	#+	2000
Nov	6.5	1986	20	15.9	1985	4	1971	30	1	1971
Dec	10.0	1990	3	27.1	2000	11	1978	30	6	1978
Ann	10.0+	Dec 1990	3	27.1	Dec 2000	23	Jan 1971	5	19	Feb 1982

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.7	4.1	1.0	.6	@
Feb	4.7	2.6	.8	.2	.0
Mar	3.3	2.0	.9	.3	.0
Apr	1.4	1.0	.2	.1	.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	.3	@	.0	.0
Nov	3.2	1.8	.7	.2	.0
Dec	5.9	3.2	.8	.3	@
Ann	25.5	15.0	4.4	1.7	@

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	-9.9	-9.9	-9.9	-9.9
Apr	.5	.1	.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	.0
Nov	.6	.4	.0	.0
Dec	-9.9	-9.9	-9.9	-9.9
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	6/04	5/29	5/25	5/21	5/17	5/14	5/10	5/05	4/29
32	5/19	5/14	5/11	5/08	5/06	5/03	5/01	4/28	4/23
28	5/08	5/03	4/30	4/27	4/24	4/22	4/19	4/15	4/11
24	4/28	4/22	4/18	4/15	4/12	4/09	4/05	4/01	3/27
20	4/17	4/13	4/11	4/08	4/06	4/04	4/02	3/30	3/26
16	4/11	4/06	4/02	3/29	3/26	3/23	3/20	3/16	3/11

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	9/10	9/14	9/17	9/20	9/22	9/24	9/27	9/30	10/04
32	9/17	9/22	9/25	9/28	10/01	10/04	10/07	10/10	10/15
28	9/26	9/30	10/03	10/06	10/08	10/11	10/14	10/17	10/21
24	10/05	10/10	10/14	10/18	10/21	10/24	10/28	11/01	11/06
20	10/15	10/19	10/23	10/26	10/29	10/31	11/03	11/07	11/12
16	10/29	11/02	11/05	11/08	11/10	11/12	11/15	11/18	11/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	149	142	136	131	127	122	118	112	104
32	166	160	155	151	147	143	139	135	128
28	186	179	174	170	166	162	158	153	147
24	216	207	201	196	191	187	181	175	167
20	221	215	211	208	205	201	198	194	188
16	246	240	235	232	228	224	221	216	210

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1638	1302	1056	608	277	58	17	43	187	536	978	1456	8156
60	1483	1162	901	463	173	18	2	11	91	388	828	1301	6821
57	1390	1078	808	380	123	7	0	3	53	307	738	1208	6095
55	1328	1022	746	329	95	4	0	1	34	257	679	1146	5641
50	1173	882	600	213	43	0	0	0	8	151	535	991	4596
32	642	428	179	12	0	0	0	0	0	5	139	479	1884

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	27	50	147	395	783	1047	1200	1131	832	493	152	46	6303
55	0	0	0	21	165	360	487	419	176	31	1	0	1660
57	0	0	0	13	131	303	425	359	135	19	0	0	1385
60	0	0	0	6	88	224	334	274	83	8	0	0	1017
65	0	0	0	1	38	115	194	151	29	1	0	0	529
70	0	0	0	0	13	43	92	67	6	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	1	46	212	543	811	957	886	594	271	41	1	0	1	47	259	802	1613	2570	3456	4050	4321	4362	4363
45	0	0	20	120	393	661	802	731	447	159	17	0	0	0	20	140	533	1194	1996	2727	3174	3333	3350	3350
50	0	0	7	62	259	511	647	576	308	86	3	0	0	0	7	69	328	839	1486	2062	2370	2456	2459	2459
55	0	0	2	29	150	368	492	421	196	42	0	0	0	0	2	31	181	549	1041	1462	1658	1700	1700	1700
60	0	0	0	10	77	229	338	275	105	11	0	0	0	0	0	10	87	316	654	929	1034	1045	1045	1045
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	32	137	328	519	632	578	370	169	26	0	0	1	33	170	498	1017	1649	2227	2597	2766	2792	2792

(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