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: NEWTON, IA **COOP ID: 135992**

Climate Division: IA 5 **NWS Call Sign:** **Elevation: 960 Feet** **Lat: 41˚43N** **Lon: 93˚02W**

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	29.0	8.8	18.9	67	1989	31	31.2	1989	-31	1982	10	6.2	1979	1429	0	.0	.0	1.2	18.5	30.2	8.0
Feb	35.7	14.6	25.2	68	1990	12	35.9	1998	-26+	1996	2	12.0	1979	1115	0	.0	.0	4.1	12.3	25.4	3.9
Mar	48.4	26.0	37.2	90	1986	29	43.6	1977	-18	1962	1	27.8	1975	861	0	.0	@	13.2	3.6	20.9	.5
Apr	61.9	37.3	49.6	96	1980	22	56.2	1977	9	1982	6	43.0	1983	467	4	.0	.2	24.9	.2	6.9	.0
May	73.8	50.1	62.0	96	1967	25	69.2	1977	28	1966	10	56.4	1997	164	69	.0	.5	30.9	.0	.2	.0
Jun	83.1	59.6	71.4	102+	1988	21	77.4	1971	41+	1969	2	66.0	1982	20	211	.2	4.4	30.0	.0	.0	.0
Jul	87.1	64.1	75.6	105	1988	31	79.5	1977	44	1972	5	71.0	1992	2	331	.4	8.8	31.0	.0	.0	.0
Aug	84.8	62.0	73.4	105	1988	17	81.9	1983	37	1950	20	69.1	1992	17	277	.3	5.8	31.0	.0	.0	.0
Sep	77.3	52.1	64.7	98+	1953	1	69.1	1971	27	1972	30	59.4	1974	97	87	.0	1.9	29.9	.0	.3	.0
Oct	65.2	40.6	52.9	95	1963	5	61.1	1971	13+	1972	19	44.6	1976	386	10	.0	.1	28.1	@	5.3	.0
Nov	47.6	26.7	37.2	80	1999	14	44.7	1999	-5	1977	26	30.2	1991	837	0	.0	.0	12.3	3.8	19.7	.2
Dec	33.4	14.6	24.0	69	1998	5	30.9	1982	-22	1989	23	10.0	2000	1271	0	.0	.0	2.3	14.5	29.2	4.3
Ann	60.6	38.0	49.3	105+	Aug 1988	17	81.9	Aug 1983	-31	Jan 1982	10	6.2	Jan 1979	6666	989	.9	21.7	238.9	52.9	138.1	16.9

\+ 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: 1899-2001

(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	.97	.90	1.59	1960	12	2.32	1996	.05	1981
Feb	1.10	1.03	1.22	1961	18	2.82	1973	.00	1991
Mar	2.14	2.10	1.80	1970	3	5.29	1990	.20	1971
Apr	3.30	2.71	3.24	1974	29	7.97	1991	.86	1971
May	4.60	4.39	2.72	1966	24	11.79	1974	.87	1992
Jun	4.44	3.83	4.36	1990	17	10.75	1990	.63	1992
Jul	3.99	3.55	2.94	1959	1	12.16	1992	.30	1991
Aug	4.10	3.71	4.08	1970	5	12.24	1993	.19	1984
Sep	3.56	3.45	3.73	1961	13	7.60	1978	.56	1979
Oct	2.80	2.68	2.83	1970	9	7.64	1997	.10	1975
Nov	2.27	2.02	2.93	1959	4	5.57	1983	.14	1976
Dec	1.13	1.26	1.18	1994	7	2.49	1973	.14	1976
Ann	34.40	34.19	4.36	Jun 1990	17	12.24	Aug 1993	.00	Feb 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.9	2.7	.4	@
Feb	5.8	3.1	.6	@
Mar	7.9	4.7	1.5	.4
Apr	10.0	6.1	2.3	.7
May	11.6	8.4	3.0	1.3
Jun	10.4	7.3	3.3	1.2
Jul	8.8	6.3	2.8	1.2
Aug	9.2	6.0	2.6	1.2
Sep	8.4	5.8	2.7	1.0
Oct	7.4	4.8	2.0	.7
Nov	7.8	4.8	1.4	.4
Dec	6.1	3.2	.5	@
Ann	99.3	63.2	23.1	8.1

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	.12	.20	.34	.47	.62	.77	.96	1.18	1.48	1.98	2.46
Feb	.11	.24	.42	.58	.75	.92	1.12	1.36	1.68	2.19	2.68
Mar	.23	.40	.69	.99	1.31	1.67	2.09	2.62	3.33	4.51	5.66
Apr	.86	1.17	1.65	2.07	2.49	2.93	3.41	3.99	4.74	5.92	7.03
May	1.25	1.69	2.35	2.93	3.50	4.10	4.76	5.55	6.57	8.17	9.67
Jun	1.23	1.65	2.29	2.85	3.39	3.96	4.60	5.34	6.31	7.84	9.26
Jul	.73	1.08	1.67	2.21	2.76	3.36	4.04	4.87	5.96	7.73	9.41
Aug	.63	.98	1.58	2.14	2.73	3.37	4.11	5.01	6.22	8.18	10.07
Sep	.82	1.16	1.68	2.14	2.61	3.10	3.66	4.32	5.19	6.57	7.86
Oct	.32	.53	.93	1.32	1.73	2.20	2.74	3.42	4.34	5.85	7.33
Nov	.30	.49	.81	1.13	1.46	1.82	2.25	2.77	3.48	4.64	5.75
Dec	.20	.30	.46	.62	.78	.95	1.14	1.38	1.70	2.21	2.71
Ann	22.09	24.39	27.37	29.67	31.74	33.76	35.86	38.20	41.07	45.27	48.95

\+ 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: 1899-2001
(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	7.3	6.4	3	3
Feb	6.4	4.5	3	1
Mar	4.3	3.5	#	#
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	.4	.0	#	0
Nov	2.4	1.3	#	0
Dec	5.5	4.4	1	#
Ann	27.3	20.1	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	12.0	1996	27	22.5	1996	18	1996	31	10	1971
Feb	8.5	1983	2	17.3	1975	17+	1996	5	13	1979
Mar	10.0	1984	20	24.1	1984	11	1998	13	3	1998
Apr	6.0	1982	6	9.0	1982	6	1982	6	1	1982
May	.5	1994	1	.5	1994	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	6.5	1997	27	8.0	1997	8	1997	27	1	1997
Nov	8.0	1972	14	8.0	1972	8	1972	15	2	1972
Dec	10.0	1994	7	18.9	1983	18	2000	19	9	2000
Ann	12.0	Jan 1996	27	24.1	Mar 1984	18+	Dec 2000	19	13	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.9	2.6	1.0	.3	@
Feb	3.2	2.3	1.0	.3	.0
Mar	1.7	1.2	.5	.1	@
Apr	.5	.3	.1	.1	.0
May	@	.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	.2	.1	@	@	.0
Nov	1.1	.8	.3	@	.0
Dec	3.2	2.2	.9	.4	@
Ann	13.8	9.5	3.8	1.2	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	16.0	11.4	8.0	2.3
Feb	7.3	3.9	3.0	.9
Mar	3.1	1.6	.6	.3
Apr	.3	.2	.2	.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	.2	.1	.1	.0
Nov	1.2	.5	.2	.0
Dec	7.4	4.0	2.1	.1
Ann	35.5	21.7	14.2	3.6

+ 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	4/30	4/27	4/23	4/18
32	5/02	4/28	4/25	4/23	4/20	4/18	4/15	4/12	4/08
28	4/18	4/15	4/13	4/11	4/09	4/07	4/05	4/03	3/30
24	4/14	4/10	4/07	4/05	4/02	3/31	3/29	3/26	3/22
20	4/04	3/31	3/28	3/25	3/23	3/20	3/18	3/15	3/10
16	4/01	3/27	3/23	3/19	3/16	3/13	3/09	3/05	2/28

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	9/24	9/27	9/30	10/03	10/06	10/11
32	9/26	10/01	10/05	10/08	10/11	10/14	10/17	10/21	10/26
28	10/07	10/12	10/16	10/19	10/22	10/25	10/28	11/01	11/06
24	10/16	10/22	10/26	10/29	11/02	11/05	11/09	11/13	11/19
20	10/25	10/31	11/04	11/07	11/10	11/14	11/17	11/21	11/27
16	11/01	11/07	11/12	11/15	11/19	11/23	11/26	12/01	12/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	172	163	157	152	147	142	136	130	121
32	192	185	181	177	173	169	165	161	154
28	214	207	203	199	195	192	188	183	177
24	232	225	221	216	213	209	205	200	193
20	256	247	242	237	232	228	223	217	209
16	273	264	258	252	247	242	237	231	222

***** 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	1429	1115	861	467	164	20	2	17	97	386	837	1271	6666
60	1274	975	706	330	84	4	0	3	38	256	687	1116	5473
57	1181	891	614	256	51	1	0	0	18	190	598	1023	4823
55	1119	838	558	212	34	0	0	0	10	151	540	961	4423
50	965	708	415	120	11	0	0	0	1	77	402	810	3509
32	464	299	80	2	0	0	0	0	0	1	72	335	1253

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	57	108	242	530	929	1181	1352	1283	980	648	225	88	7623
55	0	3	7	49	250	491	639	570	300	85	3	0	2397
57	0	0	1	33	204	432	577	508	248	62	1	0	2066
60	0	0	0	17	144	345	484	418	178	35	0	0	1621
65	0	0	0	4	69	211	331	277	87	10	0	0	989
70	0	0	0	0	25	106	192	159	32	2	0	0	516

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	20	112	350	688	945	1097	1025	750	413	98	6	1	21	133	483	1171	2116	3213	4238	4988	5401	5499	5505
45	0	5	61	226	533	795	942	870	601	279	46	4	0	5	66	292	825	1620	2562	3432	4033	4312	4358	4362
50	0	0	30	130	381	645	787	715	455	167	15	0	0	0	30	160	541	1186	1973	2688	3143	3310	3325	3325
55	0	0	7	67	248	495	632	560	317	86	3	0	0	0	7	74	322	817	1449	2009	2326	2412	2415	2415
60	0	0	2	26	137	346	478	407	197	37	0	0	0	0	2	28	165	511	989	1396	1593	1630	1630	1630
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	18	73	209	425	632	749	697	478	249	55	4	0	18	91	300	725	1357	2106	2803	3281	3530	3585	3589

(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