

# Climatography of the United States

No. 20

1971-2000

Station: HAWARDEN, IA

COOP ID: 133718

Climate Division: IA 1

NWS Call Sign:

Elevation: 1,190 Feet Lat: 43°00N

Lon: 96°29W

## 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	26.0	4.7	15.4	66	1981	24	26.8	1990	-30	1982	14	.6	1979	1539	0	.0	.0	1.0	19.2	30.9	10.6
Feb	32.6	10.6	21.6	68+	1982	22	32.6	1998	-33	1988	11	6.7	1979	1215	0	.0	.0	3.7	12.9	27.3	5.7
Mar	44.6	22.1	33.4	88	1968	30	40.3	2000	-20	1960	5	24.6	1984	981	0	.0	.0	11.9	4.8	24.3	1.3
Apr	59.6	33.9	46.8	93+	1960	22	53.8	1981	-1	1975	3	40.5	1983	551	3	.0	.2	23.8	.4	11.7	@
May	71.8	47.2	59.5	103	1967	25	67.0	1977	22	1967	3	52.4	1997	223	51	.0	.8	30.6	.0	1.5	.0
Jun	81.2	57.1	69.2	107	1988	21	75.5	1988	35	1969	3	64.3	1982	36	160	.2	4.8	30.0	.0	.0	.0
Jul	84.9	61.7	73.3	104+	1955	30	77.3	1974	40+	1971	30	66.2	1992	11	269	.4	8.9	31.0	.0	.0	.0
Aug	82.5	58.8	70.7	104	1955	25	77.6	1983	34	1950	20	65.0	1992	28	203	.3	5.9	31.0	.0	.0	.0
Sep	74.8	48.3	61.6	100+	1948	19	67.8	1998	22	1984	26	56.2	1993	152	50	@	2.0	29.8	.0	1.6	.0
Oct	62.3	35.5	48.9	96	1963	5	53.3	1973	7	1993	31	43.9	1976	499	0	.0	.1	27.1	.1	9.8	.0
Nov	42.8	22.1	32.5	80+	1999	9	42.3	1999	-19+	1959	14	22.4	1985	978	0	.0	.0	9.8	5.9	24.3	1.0
Dec	29.7	9.6	19.7	66	1998	2	28.3	1979	-29	1989	23	2.4	1983	1406	0	.0	.0	1.4	15.8	30.6	6.6
Ann	57.7	34.3	46.1	107	Jun 1988	21	77.6	Aug 1983	-33	Feb 1988	11	.6	Jan 1979	7619	736	.9	22.7	231.1	59.1	162.0	25.2

+ 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](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

Issue Date: February 2004

(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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**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: HAWARDEN, IA**

**COOP ID: 133718**

**Climate Division: IA 1**

**NWS Call Sign:**

**Elevation: 1,190 Feet Lat: 43°00N**

**Lon: 96°29W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.53	.41	1.09	2001	30	1.22	1988	.00	1984	5.1	1.8	.2	.0	.03	.08	.17	.24	.33	.42	.52	.65	.82	1.11	1.39
Feb	.60	.56	1.29	1951	28	1.94	1971	.00+	1986	4.7	1.8	.2	@	.00	.06	.16	.26	.36	.47	.59	.74	.95	1.30	1.63
Mar	1.95	1.63	2.03	1987	23	4.65	1995	.00	1994	6.7	4.0	1.3	.4	.17	.39	.71	.99	1.28	1.60	1.96	2.41	3.00	3.95	4.87
Apr	2.80	2.51	2.22	1985	22	8.81	1984	.42	1981	9.2	5.8	2.0	.6	.52	.77	1.18	1.56	1.95	2.36	2.84	3.41	4.17	5.40	6.57
May	3.52	3.64	4.10	1972	1	8.19	1972	.86	1989	10.4	7.1	2.4	.8	1.23	1.57	2.05	2.45	2.84	3.24	3.67	4.18	4.83	5.83	6.74
Jun	3.76	3.27	7.56	1953	7	15.79	1983	.83	1987	9.6	6.5	2.3	.9	.83	1.18	1.73	2.23	2.73	3.26	3.85	4.57	5.50	7.00	8.41
Jul	3.55	2.95	3.85	1952	6	9.38	1978	.45	1985	8.7	5.5	2.4	1.0	.68	1.00	1.52	2.00	2.49	3.01	3.61	4.33	5.28	6.82	8.28
Aug	3.15	2.72	4.78	1985	29	8.62	1985	.83	1973	8.4	5.6	2.1	1.0	.79	1.09	1.55	1.95	2.35	2.77	3.24	3.80	4.53	5.68	6.76
Sep	2.65	2.29	3.33	1987	16	6.92	1985	.25	1998	7.3	4.6	1.8	.7	.48	.72	1.11	1.47	1.84	2.23	2.68	3.23	3.95	5.12	6.24
Oct	1.99	1.46	2.97	1968	16	5.66	1982	.03	1989	6.2	3.9	1.2	.5	.17	.30	.56	.84	1.14	1.49	1.90	2.42	3.14	4.35	5.53
Nov	1.60	1.27	2.56	1998	10	4.48	1983	.03	1976	6.6	3.2	1.0	.4	.13	.24	.45	.67	.91	1.19	1.52	1.94	2.52	3.49	4.44
Dec	.67	.55	1.50	1972	30	2.27	1982	.13	1975	5.1	2.1	.2	@	.11	.17	.27	.36	.45	.55	.67	.81	1.00	1.31	1.61
Ann	26.77	25.64	7.56	Jun 1953	7	15.79	Jun 1983	.00+	Mar 1994	88.0	51.9	17.1	6.3	17.21	18.99	21.30	23.08	24.68	26.25	27.87	29.68	31.90	35.15	38.00

+ 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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**Climate Division: IA 1**

**NWS Call Sign:**

**Elevation: 1,190 Feet**

**Lat: 43°00N**

**Lon: 96°29W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	6.3	5.0	4	4	11.0	1988	19	15.5	1982	20	1983	1	15	1983	3.6	2.3	.5	.2	.1	19.2	15.1	10.4	3.5
Feb	4.0	3.8	2	1	12.0	1984	18	12.1	1984	17	1983	10	12	1983	2.6	1.5	.6	.2	.1	12.8	8.3	6.1	1.0
Mar	5.3	4.0	1	#	15.0	1977	2	15.0	1977	18	1979	10	8	1979	2.5	1.9	.7	.3	@	6.1	4.0	2.8	.9
Apr	1.8	.0	#	0	6.0	1994	13	12.5	1994	5	1992	21	1	1975	.9	.7	.2	.1	.0	.6	.2	.1	.0
May	.0	.0	0	0	.0	0	0	.0	0	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	.6	.0	#	0	7.0	1991	31	8.0	1982	7+	1991	31	1	1982	.3	.3	.1	.1	.0	.3	.3	.2	.0
Nov	5.8	5.5	1	#	10.0	1983	27	16.0+	1985	13	1983	30	4	1991	2.7	2.1	.8	.3	@	5.8	3.5	1.8	.3
Dec	6.6	6.0	3	2	8.0	1982	27	21.5	1982	20	1982	31	14	1983	3.4	2.3	.9	.3	.0	13.7	10.6	6.3	2.0
Ann	30.4	24.3	N/A	N/A	15.0	Mar 1977	2	21.5	Dec 1982	20+	Jan 1983	1	15	Jan 1983	16.0	11.1	3.8	1.5	.2	58.5	42.0	27.7	7.7

+ 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	5/27	5/22	5/18	5/15	5/12	5/09	5/06	5/02	4/27
32	5/15	5/10	5/07	5/05	5/02	4/29	4/27	4/24	4/19
28	5/08	5/03	4/29	4/26	4/23	4/20	4/17	4/14	4/09
24	4/23	4/19	4/16	4/13	4/11	4/08	4/06	4/03	3/29
20	4/14	4/09	4/05	4/02	3/31	3/28	3/25	3/22	3/17
16	4/08	4/02	3/29	3/26	3/23	3/20	3/16	3/12	3/07
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	9/16	9/19	9/21	9/23	9/25	9/28	10/02
32	9/12	9/17	9/21	9/24	9/27	9/30	10/03	10/06	10/11
28	9/23	9/28	10/02	10/05	10/08	10/11	10/14	10/18	10/24
24	10/02	10/07	10/11	10/14	10/17	10/20	10/23	10/27	11/01
20	10/13	10/18	10/21	10/24	10/27	10/30	11/02	11/05	11/10
16	10/20	10/26	10/30	11/03	11/06	11/09	11/13	11/17	11/23
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	145	140	135	131	127	122	117	109
32	168	161	156	151	147	143	138	133	126
28	183	178	174	170	167	164	161	157	151
24	208	201	196	192	188	184	180	175	169
20	231	224	218	214	210	205	201	195	188
16	252	243	237	232	227	222	217	211	203

\* 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

Complete documentation available from:

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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	1539	1215	981	551	223	36	11	28	152	499	978	1406	7619
60	1384	1075	826	410	130	9	0	6	69	349	828	1251	6337
57	1291	991	733	331	87	3	0	2	37	266	738	1158	5637
55	1229	935	671	283	65	1	0	0	23	217	678	1096	5198
50	1075	805	526	178	26	0	0	0	4	114	536	941	4205
32	564	374	129	8	0	0	0	0	0	2	145	442	1664

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	47	83	172	450	851	1114	1281	1198	887	526	158	59	6826
55	0	0	1	35	203	425	568	485	220	28	0	0	1965
57	0	0	0	24	163	367	506	425	175	15	0	0	1675
60	0	0	0	12	113	282	413	336	117	5	0	0	1278
65	0	0	0	3	51	160	269	203	50	0	0	0	736
70	0	0	0	0	18	72	147	103	15	0	0	0	355

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	11	77	290	641	912	1062	994	692	346	58	2	0	11	88	378	1019	1931	2993	3987	4679	5025	5083	5085
45	0	1	35	181	488	762	907	839	543	217	23	0	0	1	36	217	705	1467	2374	3213	3756	3973	3996	3996
50	0	0	13	102	346	614	752	684	398	121	7	0	0	0	13	115	461	1075	1827	2511	2909	3030	3037	3037
55	0	0	3	51	218	464	597	529	270	58	0	0	0	0	3	54	272	736	1333	1862	2132	2190	2190	2190
60	0	0	1	25	119	320	442	381	161	21	0	0	0	0	1	26	145	465	907	1288	1449	1470	1470	1470
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	13	59	193	402	598	717	665	442	227	43	0	0	13	72	265	667	1265	1982	2647	3089	3316	3359	3359

(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](http://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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)