

Climatology of the United States

No. 20

1971-2000

Station: BOONE, IA

COOP ID: 130807

Climate Division: IA 5

NWS Call Sign:

Elevation: 1,051 Feet Lat: 42°03N Lon: 93°53W

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	28.1	6.6	17.4	64	1956	5	28.9	1990	-32	1996	31	6.1	1979	1479	0	.0	.0	1.3	18.7	30.8	10.9
Feb	34.3	13.1	23.7	70	1981	19	33.4	1987	-35+	1996	3	10.8	1979	1157	0	.0	.0	3.8	13.2	27.4	6.6
Mar	46.5	25.9	36.2	86	1986	30	43.1	2000	-22	1962	1	27.3	1975	893	0	.0	.0	11.8	3.9	24.5	1.0
Apr	60.1	37.4	48.8	95	1980	23	56.2	1977	-1	1982	6	42.6	1983	492	4	.0	.2	23.3	.4	10.3	@
May	72.1	48.3	60.2	98+	1967	25	68.0	1977	26	1963	22	53.7	1997	208	59	.0	.5	30.7	.0	1.2	.0
Jun	81.3	57.8	69.6	102	1985	9	75.5	1971	35	1983	6	64.8	1982	29	165	.2	4.1	30.0	.0	.0	.0
Jul	85.3	62.6	74.0	104+	1955	30	78.9	1977	41	1971	30	68.2	1992	7	286	.3	8.3	31.0	.0	.0	.0
Aug	83.0	60.5	71.8	106	1988	17	76.8	1995	37	1986	28	66.0	1992	19	228	.3	5.6	31.0	.0	.0	.0
Sep	76.2	51.6	63.9	102	1948	19	69.2	1978	23	1983	23	57.2	1993	109	75	@	2.2	29.9	.0	1.1	.0
Oct	64.1	38.8	51.5	95	1963	5	58.8	1971	14	1972	19	45.9	1987	422	4	.0	.2	27.6	@	10.6	.0
Nov	45.9	26.5	36.2	81	1999	14	44.8	1999	-11	1977	26	27.1	1991	864	0	.0	.0	11.7	4.3	23.5	.5
Dec	32.0	12.9	22.5	68	1998	5	29.5	1998	-25	1989	23	8.7	2000	1319	0	.0	.0	2.3	14.6	30.3	6.1
Ann	59.1	36.8	48.0	106	Aug 1988	17	78.9	Jul 1977	-35+	Feb 1996	3	6.1	Jan 1979	6998	821	.8	21.1	234.4	55.1	159.7	25.1

+ 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/normal/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: BOONE, IA

COOP ID: 130807

Climate Division: IA 5

NWS Call Sign:

Elevation: 1,051 Feet Lat: 42°03N

Lon: 93°53W

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	1.14	1.17	1.41	1953	15	2.99	1974	.04	1981	7.7	2.8	.7	.1	.15	.25	.41	.57	.73	.92	1.13	1.39	1.75	2.33	2.89
Feb	1.10	1.01	1.87	1976	21	2.47	1971	.10	1987	6.3	3.0	.5	.1	.21	.31	.47	.62	.77	.93	1.11	1.33	1.63	2.10	2.55
Mar	2.44	2.49	2.30	1990	8	6.12	1990	.15	1994	8.7	5.1	1.6	.5	.37	.58	.93	1.27	1.62	2.00	2.44	2.98	3.70	4.87	6.00
Apr	3.45	2.99	2.40	1973	16	7.96	1991	.78	1971	12.0	7.0	2.2	.6	.94	1.26	1.76	2.20	2.63	3.07	3.57	4.16	4.93	6.13	7.25
May	4.46	4.21	4.38	1990	9	10.24	1990	.89	1981	12.6	8.2	2.8	1.2	1.13	1.55	2.20	2.77	3.34	3.94	4.60	5.39	6.42	8.05	9.58
Jun	5.35	5.12	4.09	1968	25	13.06	1998	.67	1992	12.0	8.0	3.5	1.4	1.67	2.18	2.94	3.58	4.21	4.86	5.57	6.41	7.48	9.17	10.72
Jul	4.42	3.71	6.06	1993	9	16.28	1993	.50	1976	10.3	6.7	3.0	1.3	1.05	1.46	2.11	2.68	3.26	3.86	4.55	5.36	6.42	8.11	9.70
Aug	4.40	3.90	3.28	1954	17	13.02	1987	.15	1984	9.8	6.3	2.9	1.3	.68	1.06	1.70	2.30	2.93	3.62	4.41	5.37	6.67	8.77	10.78
Sep	3.15	2.85	3.65	1961	30	8.16	1973	.63	1976	9.3	5.9	2.3	.7	.75	1.05	1.51	1.92	2.32	2.75	3.24	3.81	4.56	5.75	6.87
Oct	2.65	2.82	2.69	1974	31	5.18	1974	.30	1988	8.4	5.2	2.0	.6	.40	.62	1.00	1.37	1.75	2.17	2.65	3.24	4.03	5.31	6.55
Nov	2.30	2.10	2.25	1984	1	5.50	1983	.00	1976	8.4	4.9	1.5	.4	.24	.52	.90	1.24	1.57	1.94	2.35	2.84	3.49	4.55	5.55
Dec	1.44	1.15	1.97	1982	28	4.52	1982	.43+	1989	7.6	3.8	.7	.2	.33	.47	.68	.87	1.05	1.25	1.48	1.74	2.09	2.65	3.17
Ann	36.30	37.99	6.06	Jul 1993	9	16.28	Jul 1993	.00	Nov 1976	113.1	66.9	23.7	8.4	22.66	25.17	28.46	31.00	33.29	35.53	37.87	40.48	43.68	48.40	52.54

+ 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

Complete documentation available from:
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Station: BOONE, IA

COOP ID: 130807

Climate Division: IA 5

NWS Call Sign:

Elevation: 1,051 Feet

Lat: 42°03N

Lon: 93°53W

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	8.2	7.6	4	3	11.0	1996	27	21.8	1996	17	1996	28	9+	1999	5.2	2.7	.9	.5	.1	20.6	14.2	8.4	1.6
Feb	7.0	7.4	4	2	11.0	1994	23	18.0	1994	20	1979	9	14	1979	3.4	2.2	.9	.3	.1	16.1	10.6	7.3	2.9
Mar	4.6	3.2	1	#	10.0	1998	8	19.8	1998	14	1998	11	8	1978	2.4	1.5	.6	.2	@	6.2	3.9	2.2	.6
Apr	1.6	.0	#	#	6.0	1973	9	12.0	1973	10	1973	10	1	1973	.8	.5	.2	.1	.0	.9	.4	.2	@
May	#	.0	0	0	#	1997	1	#+	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	.3	.0	#	0	5.0	1997	26	8.0	1997	5	1997	27	#+	1997	.1	.1	.1	@	.0	.1	.1	.1	.0
Nov	3.0	2.5	#	#	7.5	1972	14	13.0	1991	8	1972	14	2	1991	1.8	1.1	.3	.1	.0	3.7	1.4	.4	.0
Dec	7.5	6.4	2	1	10.5	1990	3	27.0	2000	17	2000	23	10	2000	4.3	2.5	.8	.2	.1	15.7	8.4	4.5	1.0
Ann	32.2	27.1	N/A	N/A	11.0+	Jan 1996	27	27.0	Dec 2000	20	Feb 1979	9	14	Feb 1979	18.0	10.6	3.8	1.4	.3	63.3	39.0	23.1	6.1

+ 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

Complete documentation available from:

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Elevation: 1,051 Feet

Lat: 42° 03N

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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	4/26
32	5/13	5/09	5/06	5/03	5/01	4/29	4/26	4/23	4/19
28	5/02	4/27	4/24	4/21	4/19	4/16	4/13	4/10	4/05
24	4/19	4/16	4/13	4/11	4/09	4/07	4/05	4/02	3/29
20	4/15	4/10	4/07	4/04	4/02	3/30	3/27	3/24	3/19
16	4/06	3/31	3/27	3/23	3/20	3/17	3/13	3/09	3/03
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	9/11	9/15	9/19	9/21	9/24	9/27	9/30	10/03	10/07
32	9/19	9/24	9/27	9/30	10/03	10/05	10/08	10/12	10/16
28	9/26	10/01	10/05	10/08	10/11	10/14	10/18	10/21	10/27
24	10/04	10/10	10/15	10/19	10/23	10/26	10/30	11/04	11/10
20	10/19	10/26	10/30	11/03	11/07	11/11	11/15	11/19	11/26
16	10/26	11/02	11/07	11/11	11/15	11/18	11/22	11/27	12/04
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	148	143	139	134	130	126	120	113
32	173	166	162	158	154	150	146	142	135
28	196	189	184	179	175	171	166	161	154
24	220	212	206	201	196	191	186	180	172
20	242	234	228	223	219	214	209	204	196
16	269	259	251	245	239	233	226	219	208

* 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	1479	1157	893	492	208	29	7	19	109	422	864	1319	6998
60	1324	1017	738	354	119	6	0	3	44	282	714	1164	5765
57	1231	933	645	279	79	2	0	0	21	210	626	1071	5097
55	1169	877	585	233	58	1	0	0	12	167	568	1009	4679
50	1014	746	444	137	22	0	0	0	2	84	431	856	3736
32	501	323	91	3	0	0	0	0	0	1	92	370	1381

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	45	90	222	505	874	1126	1301	1232	957	605	218	74	7249
55	0	0	3	45	219	437	588	519	278	58	4	0	2151
57	0	0	1	31	178	378	526	457	228	39	2	0	1840
60	0	0	0	16	125	292	433	367	160	19	0	0	1412
65	0	0	0	4	59	165	286	228	75	4	0	0	821
70	0	0	0	0	22	73	156	119	26	0	0	0	396

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	10	83	290	623	877	1044	970	693	354	76	5	0	10	93	383	1006	1883	2927	3897	4590	4944	5020	5025
45	0	1	43	179	470	727	889	815	547	229	30	2	0	1	44	223	693	1420	2309	3124	3671	3900	3930	3932
50	0	0	17	102	325	577	734	660	401	130	12	0	0	0	17	119	444	1021	1755	2415	2816	2946	2958	2958
55	0	0	5	48	201	429	579	505	272	65	0	0	0	0	5	53	254	683	1262	1767	2039	2104	2104	2104
60	0	0	1	21	104	283	425	351	161	26	0	0	0	0	1	22	126	409	834	1185	1346	1372	1372	1372
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	16	64	188	383	571	698	642	450	242	56	4	0	16	80	268	651	1222	1920	2562	3012	3254	3310	3314

(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/normal/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
- 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">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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