

Climatology of the United States

No. 20

1971-2000

Station: ROCK RAPIDS, IA

COOP ID: 137147

Climate Division: IA 1

NWS Call Sign:

Elevation: 1,350 Feet Lat: 43° 26N

Lon: 96° 10W

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	23.8	2.9	13.4	66	1981	25	26.7	1990	-40	1912	12	.8	1979	1601	0	.0	.0	.6	21.4	31.0	13.4
Feb	30.2	9.9	20.1	70	1896	26	32.5	1987	-40	1899	9	5.4	1979	1259	0	.0	.0	2.6	14.6	27.7	7.9
Mar	42.2	21.7	32.0	90	1967	24	39.4	2000	-23	1948	11	23.1	1975	1023	0	.0	.0	9.6	6.5	26.2	2.1
Apr	57.8	33.8	45.8	95	1987	27	53.7	1977	3	1936	3	40.4	1983	578	3	.0	.2	21.7	.6	13.5	.0
May	71.4	46.2	58.8	106	1934	30	66.9	1977	20	1967	3	52.0	1997	243	51	.0	1.3	30.1	.0	1.5	.0
Jun	80.8	56.6	68.7	107	1988	22	76.4	1988	32+	1915	9	63.6	1982	43	156	.3	5.2	30.0	.0	@	.0
Jul	85.3	61.1	73.2	111+	1936	4	77.5	1974	32	1895	9	65.5	1992	12	266	.5	10.0	31.0	.0	.0	.0
Aug	83.0	58.3	70.7	109	1936	24	78.0	1983	34+	1893	28	64.6	1992	27	202	.3	6.7	31.0	.0	.0	.0
Sep	74.3	47.6	61.0	104	1976	7	67.7	1998	18	1893	27	55.6	1993	170	47	@	1.9	29.7	.0	1.7	.0
Oct	61.4	34.7	48.1	94	1963	5	52.7	1973	-10	1925	29	43.1	1987	525	0	.0	@	25.6	.1	13.0	.0
Nov	41.8	21.5	31.7	80	1999	9	41.3	1999	-20	1959	14	22.7	1985	1000	0	.0	.0	9.1	7.3	26.6	.9
Dec	28.0	8.5	18.3	70	1998	4	26.2	1979	-30	1917	29	.5	1983	1449	0	.0	.0	1.5	18.2	30.8	8.6
Ann	56.7	33.6	45.2	111+	Jul 1936	4	78.0	Aug 1983	-40+	Jan 1912	12	.5	Dec 1983	7930	725	1.1	25.3	222.5	68.7	172.0	32.9

+ 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/normal/usnormals.html

Issue Date: February 2004

(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

096-A

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: ROCK RAPIDS, IA

COOP ID: 137147

Climate Division: IA 1

NWS Call Sign:

Elevation: 1,350 Feet Lat: 43°26N

Lon: 96°10W

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	.48	1.09	1975	11	2.23	1975	.00+	1995	4.5	1.9	.1	@	.00	.04	.12	.21	.29	.39	.51	.66	.86	1.19	1.52
Feb	.52	.39	1.74	1951	28	1.66	1971	.01	1986	4.2	1.8	.2	@	.04	.08	.14	.22	.30	.39	.50	.64	.83	1.15	1.47
Mar	1.91	1.67	1.75	1987	23	5.06	1987	.00	1994	6.7	4.5	1.3	.3	.25	.49	.82	1.09	1.36	1.65	1.97	2.36	2.87	3.68	4.44
Apr	2.69	2.39	3.60	2001	23	6.28	1984	.40	1996	8.5	5.7	1.8	.5	.55	.79	1.18	1.54	1.91	2.30	2.74	3.27	3.97	5.09	6.15
May	3.22	2.92	3.49	1936	22	7.48	1993	1.02	1988	10.2	7.0	1.9	.7	1.07	1.38	1.83	2.21	2.57	2.95	3.36	3.84	4.46	5.42	6.30
Jun	4.31	3.85	4.15	1905	30	10.98	1984	1.53	1980	9.4	6.6	2.8	1.3	1.33	1.74	2.35	2.88	3.38	3.91	4.48	5.16	6.03	7.40	8.66
Jul	3.58	3.16	3.85	1982	6	8.09	1993	.70	1985	8.6	5.7	2.5	.9	.78	1.11	1.64	2.11	2.59	3.09	3.66	4.35	5.25	6.68	8.04
Aug	3.89	3.66	4.15	1977	16	9.41	1979	.83	1999	8.5	5.8	2.4	1.0	.92	1.28	1.85	2.36	2.86	3.40	4.00	4.71	5.65	7.14	8.54
Sep	2.47	2.22	6.41	1933	1	5.85	1985	.39	1998	6.9	4.9	1.6	.6	.53	.76	1.12	1.45	1.78	2.13	2.53	3.00	3.63	4.62	5.57
Oct	1.89	1.41	2.73	1968	16	5.78	1982	.06	1988	5.7	3.6	1.3	.4	.10	.21	.44	.69	.98	1.33	1.74	2.28	3.03	4.32	5.60
Nov	1.65	1.47	2.55	1975	20	4.77	1975	.05	1999	5.5	3.4	1.1	.3	.10	.20	.40	.62	.88	1.18	1.54	2.00	2.65	3.74	4.84
Dec	.74	.62	1.57	1931	30	2.90	1982	.05	1997	4.7	1.9	.4	.1	.07	.13	.23	.33	.44	.57	.71	.90	1.15	1.56	1.97
Ann	27.40	26.56	6.41	Sep 1933	1	10.98	Jun 1984	.00+	Jan 1995	83.4	52.8	17.4	6.1	16.50	18.48	21.08	23.11	24.94	26.74	28.63	30.74	33.34	37.17	40.55

+ 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

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Station: ROCK RAPIDS, IA

COOP ID: 137147

Climate Division: IA 1

NWS Call Sign:

Elevation: 1,350 Feet

Lat: 43°26N

Lon: 96°10W

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	4.8	2.0	4	4	11.0	1975	11	20.5	1975	17	1979	28	12	1979	2.8	2.3	.6	.2	@	22.9	20.5	12.6	2.5
Feb	3.7	2.3	3	2	11.0	1997	4	11.0	1997	16	1994	13	11	1994	2.2	1.7	.4	.2	@	18.8	13.1	7.4	1.8
Mar	6.4	7.5	1	1	12.0	1977	3	16.0	1977	11	1993	1	6	1993	2.4	2.0	.9	.2	@	7.5	5.5	3.6	.0
Apr	1.4	.0	#	#	8.0	1994	29	8.0+	1994	6	1994	29	#+	2000	.9	.7	.2	@	.0	1.2	.3	@	.0
May	#	.0	#	0	#	1976	3	#	1976	#+	1994	1	#+	1994	.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	#	1984	25	#	1984	#	1984	25	#	1984	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	7.0	1982	20	7.0	1982	7	1982	20	1	1982	.2	.2	@	@	.0	.2	.1	.1	.0
Nov	4.6	4.0	1	1	12.0	1994	28	14.0	1994	12	1994	28	3	1991	2.0	1.6	.6	.3	@	4.8	2.6	1.5	.1
Dec	5.1	4.8	3	2	9.0	1982	28	12.0	1982	13	1983	31	11	1983	2.7	2.0	.4	.1	.0	17.3	10.6	4.9	1.7
Ann	26.4	20.6	N/A	N/A	12.0+	Nov 1994	28	20.5	Jan 1975	17	Jan 1979	28	12	Jan 1979	13.2	10.5	3.1	1.0	@	72.7	52.7	30.1	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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Lon: 96°10W

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	5/24	5/20	5/16	5/12	5/08	5/04	4/30	4/23
32	5/17	5/12	5/09	5/05	5/02	4/30	4/26	4/23	4/18
28	5/04	4/30	4/27	4/24	4/22	4/19	4/16	4/13	4/09
24	4/22	4/18	4/15	4/12	4/10	4/08	4/05	4/02	3/29
20	4/15	4/10	4/07	4/04	4/01	3/29	3/26	3/22	3/17
16	4/08	4/03	3/30	3/27	3/24	3/21	3/17	3/14	3/09
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	9/18	9/20	9/23	9/25	9/27	10/01
32	9/16	9/20	9/23	9/26	9/28	10/01	10/03	10/07	10/11
28	9/23	9/29	10/03	10/06	10/09	10/12	10/16	10/20	10/25
24	10/05	10/10	10/13	10/16	10/19	10/21	10/24	10/28	11/02
20	10/14	10/19	10/22	10/25	10/28	10/30	11/02	11/06	11/10
16	10/23	10/28	11/01	11/04	11/07	11/10	11/13	11/17	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	155	146	140	135	131	126	121	115	106
32	168	161	156	152	148	144	140	135	128
28	187	181	177	173	170	166	163	158	152
24	209	203	198	194	191	187	183	179	173
20	229	222	217	213	209	205	201	196	189
16	247	240	236	232	228	224	220	215	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

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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	1601	1259	1023	578	243	43	12	27	170	525	1000	1449	7930
60	1446	1119	868	435	147	12	0	6	83	373	850	1294	6633
57	1353	1035	775	356	102	5	0	2	47	287	760	1201	5923
55	1291	979	713	306	78	2	0	1	30	235	700	1139	5474
50	1136	847	567	197	34	0	0	0	7	126	557	984	4455
32	618	409	153	11	0	0	0	0	0	2	157	478	1828

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	40	74	153	426	830	1102	1277	1198	867	500	147	52	6666
55	0	0	0	31	195	414	564	486	207	20	0	0	1917
57	0	0	0	21	158	357	502	425	164	11	0	0	1638
60	0	0	0	11	110	274	409	336	110	3	0	0	1253
65	0	0	0	3	51	156	266	202	47	0	0	0	725
70	0	0	0	0	19	71	145	102	14	0	0	0	351

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	5	58	245	604	883	1043	963	640	297	43	1	0	5	63	308	912	1795	2838	3801	4441	4738	4781	4782
45	0	1	23	147	452	733	888	808	496	185	17	0	0	1	24	171	623	1356	2244	3052	3548	3733	3750	3750
50	0	0	6	83	312	583	733	653	355	97	4	0	0	0	6	89	401	984	1717	2370	2725	2822	2826	2826
55	0	0	2	41	196	435	578	498	230	41	0	0	0	0	2	43	239	674	1252	1750	1980	2021	2021	2021
60	0	0	0	15	104	297	424	345	132	16	0	0	0	0	0	15	119	416	840	1185	1317	1333	1333	1333
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	5	47	171	371	569	696	629	408	210	39	0	0	5	52	223	594	1163	1859	2488	2896	3106	3145	3145

(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.
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