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: VINTON, IA **COOP ID: 138568**

Climate Division: IA 6 **NWS Call Sign:** **Elevation: 850 Feet** **Lat: 42˚10N** **Lon: 92˚00W**

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	26.2	8.7	17.5	62	1989	31	28.9	1989	-29	1974	12	4.5	1977	1475	0	.0	.0	.6	19.6	30.2	8.9
Feb	32.7	14.9	23.8	66+	1981	17	36.2	1998	-30	1996	3	11.2	1978	1154	0	.0	.0	2.8	12.6	26.0	5.1
Mar	45.8	26.3	36.1	88	1986	29	43.7	2000	-34	1962	1	26.0	1975	898	0	.0	.0	11.8	3.9	21.9	.8
Apr	60.6	37.3	49.0	91	1952	29	54.3	1977	4	1982	6	43.1	1982	484	2	.0	@	25.1	.2	9.0	.0
May	72.0	48.7	60.4	93+	1967	26	66.6	1977	28	1989	6	55.1	1997	194	51	.0	.5	30.9	.0	.7	.0
Jun	80.9	58.2	69.6	101+	1988	20	74.6	1971	36	1993	1	63.6	1982	27	164	.1	3.4	30.0	.0	.0	.0
Jul	84.3	62.1	73.2	105+	1955	30	77.3	1999	44+	1967	4	68.8	1992	6	259	.3	7.8	31.0	.0	.0	.0
Aug	82.0	60.4	71.2	104	1988	1	77.5	1995	36	1950	20	66.2	1992	23	216	.3	5.3	31.0	.0	.0	.0
Sep	74.7	51.4	63.1	100+	1953	28	68.2	1998	23	1984	29	57.6	1975	118	59	.0	1.4	30.0	.0	.7	.0
Oct	62.7	39.9	51.3	94	1953	2	57.5	1971	10	1952	29	45.3	1976	428	3	.0	.1	28.5	@	7.9	.0
Nov	44.6	27.1	35.9	79	1999	8	44.5	1999	-10+	1976	30	28.3	1976	874	0	.0	.0	11.8	3.8	20.8	.2
Dec	30.8	14.9	22.9	68	1998	4	30.5	1982	-27	1985	19	10.0+	1985	1307	0	.0	.0	1.8	14.6	29.4	4.8
Ann	58.1	37.5	47.8	105+	Jul 1955	30	77.5	Aug 1995	-34	Mar 1962	1	4.5	Jan 1977	6988	754	.7	18.5	235.3	54.7	146.6	19.8

\+ 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

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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	1.03	.99	1.71	1960	12	2.66	1996	.05	1981
Feb	1.01	.91	1.20+	1981	22	2.88	1981	.00	1987
Mar	2.09	1.98	1.98	1991	27	4.54	1998	.11	1981
Apr	3.38	3.41	3.00	1954	30	6.81	1991	1.07	1996
May	4.08	3.70	4.65	1957	30	8.02	1974	.48	1981
Jun	4.52	4.08	4.00	1982	15	10.23	1990	1.43	1992
Jul	3.95	3.16	3.30	1993	9	14.42	1993	.30	1975
Aug	4.31	3.47	7.23	1977	8	14.75	1977	.59	1984
Sep	3.66	3.58	4.08	1977	18	7.44	1986	.90	1979
Oct	2.53	2.34	2.37	2001	23	7.09	1998	.27	1975
Nov	2.35	2.04	2.21	1959	4	5.98	1992	.15	1976
Dec	1.33	1.23	1.50+	1952	20	3.52	1982	.18	1998
Ann	34.24	33.66	7.23	Aug 1977	8	14.75	Aug 1977	.00	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	2.8	.5	.1
Feb	5.3	3.0	.5	.1
Mar	7.6	4.9	1.4	.2
Apr	9.9	6.7	2.3	.7
May	11.1	8.0	2.8	.9
Jun	9.5	7.4	3.2	1.4
Jul	8.8	6.4	2.7	1.2
Aug	9.0	6.6	2.6	1.4
Sep	8.4	6.0	2.3	1.1
Oct	7.1	5.1	1.6	.6
Nov	7.5	5.1	1.4	.6
Dec	6.2	3.5	.7	.1
Ann	96.5	65.5	22.0	8.4

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	.18	.27	.42	.56	.71	.86	1.04	1.25	1.54	2.00	2.44
Feb	.09	.21	.37	.52	.67	.83	1.02	1.24	1.54	2.02	2.49
Mar	.28	.45	.74	1.03	1.34	1.68	2.07	2.55	3.20	4.27	5.30
Apr	.98	1.30	1.78	2.20	2.61	3.04	3.51	4.06	4.78	5.91	6.95
May	.98	1.37	1.96	2.49	3.02	3.58	4.20	4.95	5.92	7.46	8.91
Jun	1.51	1.94	2.57	3.10	3.61	4.14	4.72	5.39	6.26	7.60	8.84
Jul	.54	.87	1.43	1.98	2.56	3.19	3.92	4.82	6.04	8.03	9.94
Aug	.77	1.15	1.78	2.36	2.97	3.62	4.36	5.26	6.45	8.38	10.22
Sep	1.25	1.60	2.10	2.53	2.94	3.36	3.82	4.36	5.05	6.11	7.09
Oct	.44	.67	1.04	1.38	1.73	2.12	2.55	3.08	3.79	4.93	6.01
Nov	.39	.60	.94	1.26	1.59	1.96	2.37	2.87	3.54	4.63	5.67
Dec	.25	.37	.57	.75	.93	1.13	1.35	1.62	1.97	2.55	3.09
Ann	22.09	24.35	27.30	29.57	31.61	33.59	35.66	37.97	40.79	44.93	48.55

\+ 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: 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	7.8	7.4	4	3
Feb	6.5	7.0	4	4
Mar	5.1	5.0	1	#
Apr	1.9	.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	.3	.0	#	0
Nov	3.5	1.5	#	#
Dec	7.7	5.8	3	2
Ann	32.8	26.7	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	20.5	1979	20	1979	27	14	1979
Feb	7.0	1976	21	16.5+	1994	18	1994	13	16	1979
Mar	10.0	1998	9	17.0	1984	11	1984	21	5	1975
Apr	8.0	1973	9	12.5	1982	12	1973	10	1	1982
May	1.0	1994	1	1.0	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	7.0	1997	27	7.0	1997	7	1997	27	#+	1997
Nov	10.0	1971	29	15.0	1971	10	1971	30	2	1991
Dec	9.0	1977	5	32.0	2000	30	2000	31	12	2000
Ann	10.0+	Mar 1998	9	32.0	Dec 2000	30	Dec 2000	31	16	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.7	3.1	1.0	.4	@
Feb	3.4	2.3	1.0	.4	.0
Mar	2.2	2.0	.7	.2	@
Apr	.8	.8	.3	.1	.0
May	@	@	.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	.1	@	@	@	.0
Nov	1.5	1.2	.4	.2	@
Dec	3.6	2.9	.9	.3	.0
Ann	16.3	12.3	4.3	1.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	21.0	15.6	11.3	2.8
Feb	16.8	12.4	8.8	3.8
Mar	5.6	3.3	1.8	.1
Apr	.8	.5	.3	.1
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	.1	@	.0
Nov	3.1	1.5	.8	.1
Dec	13.1	8.9	5.2	2.2
Ann	60.5	42.3	28.2	9.1

+ 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

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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	5/21	5/17	5/13	5/11	5/08	5/06	5/03	4/30	4/25
32	5/10	5/06	5/03	4/30	4/27	4/25	4/22	4/19	4/14
28	4/24	4/20	4/17	4/15	4/12	4/10	4/08	4/05	4/01
24	4/17	4/13	4/11	4/08	4/06	4/04	4/01	3/30	3/26
20	4/10	4/06	4/03	3/31	3/28	3/26	3/23	3/19	3/15
16	4/05	3/30	3/26	3/22	3/19	3/15	3/12	3/07	3/01

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	9/26	9/29	10/02	10/07
32	9/20	9/24	9/27	9/30	10/02	10/05	10/07	10/11	10/15
28	9/28	10/03	10/06	10/09	10/12	10/15	10/18	10/22	10/27
24	10/09	10/15	10/19	10/22	10/25	10/28	11/01	11/05	11/10
20	10/22	10/27	10/31	11/03	11/06	11/08	11/11	11/15	11/20
16	10/29	11/04	11/09	11/12	11/16	11/19	11/23	11/27	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	157	151	146	142	138	134	130	125	119
32	173	168	164	160	157	154	151	147	142
28	202	195	190	186	182	178	174	169	162
24	216	211	207	204	201	199	196	192	187
20	243	236	230	226	222	217	213	208	200
16	269	260	253	247	241	236	230	223	213

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1475	1154	898	484	194	27	6	23	118	428	874	1307	6988
60	1320	1014	743	344	104	5	0	5	46	287	724	1152	5744
57	1227	930	651	268	66	2	0	1	22	214	635	1059	5075
55	1165	874	595	221	46	1	0	0	12	171	576	997	4658
50	1010	744	452	125	15	0	0	0	2	87	438	846	3719
32	502	325	101	2	0	0	0	0	0	1	90	366	1387

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	50	96	227	511	879	1127	1277	1215	931	599	206	82	7200
55	0	0	8	40	212	437	564	502	253	56	2	0	2074
57	0	0	1	26	170	378	502	441	203	37	1	0	1759
60	0	0	0	12	116	292	409	352	138	17	0	0	1336
65	0	0	0	2	51	164	259	216	59	3	0	0	754
70	0	0	0	0	16	70	130	112	17	0	0	0	345

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	12	92	316	655	905	1052	993	718	386	89	6	0	12	104	420	1075	1980	3032	4025	4743	5129	5218	5224
45	0	2	46	201	500	755	897	838	568	254	40	3	0	2	48	249	749	1504	2401	3239	3807	4061	4101	4104
50	0	0	22	114	351	605	742	683	423	150	18	0	0	0	22	136	487	1092	1834	2517	2940	3090	3108	3108
55	0	0	6	54	219	457	587	528	288	76	3	0	0	0	6	60	279	736	1323	1851	2139	2215	2218	2218
60	0	0	1	22	118	309	433	373	177	30	0	0	0	0	1	23	141	450	883	1256	1433	1463	1463	1463
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	6	64	200	406	599	706	664	458	237	54	3	0	6	70	270	676	1275	1981	2645	3103	3340	3394	3397

(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