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: LAKE PARK, IA **COOP ID: 134561**

Climate Division: IA 1 **NWS Call Sign:** **Elevation: 1,465 Feet** **Lat: 43˚27N** **Lon: 95˚19W**

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	21.6	4.4	13.0	67	1981	25	26.6	1990	-30	1970	21	.1	1979	1613	0	.0	.0	.3	23.5	31.0	13.3
Feb	27.6	10.4	19.0	65+	1954	14	32.2	1987	-30	1972	9	4.1	1979	1288	0	.0	.0	1.4	16.7	27.7	8.1
Mar	39.4	22.5	31.0	79	1963	24	40.0	2000	-22	1962	1	21.0	1975	1055	0	.0	.0	7.4	8.8	26.6	2.1
Apr	55.4	34.8	45.1	90	1960	22	52.3	1977	6	1997	9	37.9	1975	601	3	.0	.0	20.2	.9	11.9	.0
May	69.4	47.6	58.5	99	1967	25	66.6	1977	16	1967	3	51.4	1997	254	52	.0	.3	29.8	.0	1.2	.0
Jun	79.0	57.5	68.3	101+	1956	13	73.8	1988	38+	1969	2	63.0	1982	42	140	@	2.8	30.0	.0	.0	.0
Jul	82.8	61.9	72.4	100+	1955	28	77.5	1974	42	1967	4	64.9	1992	12	240	.1	5.0	31.0	.0	.0	.0
Aug	80.1	59.3	69.7	101+	1955	1	76.6	1983	38+	1950	20	64.6	1992	32	177	@	2.9	31.0	.0	.0	.0
Sep	71.9	49.2	60.6	98+	1955	15	66.4	1978	27+	1967	28	55.3	1993	171	37	.0	.9	29.6	.0	.8	.0
Oct	58.9	37.2	48.1	91+	1963	5	53.7	1973	12	1967	28	43.0	1976	526	0	.0	@	24.6	.2	9.9	.0
Nov	39.8	23.6	31.7	78	1999	14	42.7	1999	-11+	1976	28	22.6	1985	999	0	.0	.0	7.5	8.9	25.5	1.0
Dec	25.8	10.4	18.1	64	1998	2	26.2	1979	-28	1989	23	1.4	1983	1454	0	.0	.0	.9	20.5	30.8	8.3
Ann	54.3	34.9	44.6	101+	Jun 1956	13	77.5	Jul 1974	-30+	Feb 1972	9	.1	Jan 1979	8047	649	.1	11.9	213.7	79.5	165.4	32.8

\+ 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

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	.67	.41	1.97	1975	11	3.26	1975	.00+	1985
Feb	.58	.46	1.50	1969	28	2.06	1971	.00+	1987
Mar	1.92	1.82	1.91	1987	23	4.63	1987	.10	1994
Apr	2.82	2.64	2.47	1991	13	6.74	1991	.50	1971
May	3.53	3.17	3.17	1993	30	8.25	1993	1.29	1978
Jun	4.63	4.02	6.00	1953	7	10.35	1993	1.24	1988
Jul	3.66	2.88	4.36	1962	4	12.37	1978	.30	1975
Aug	3.76	3.53	4.00	1979	21	12.01	1979	.38	1976
Sep	2.68	2.32	4.04	1964	8	5.81	1973	.37	1984
Oct	1.96	1.69	2.44	1979	31	4.98	1998	.00	1989
Nov	1.66	1.39	2.13	1977	9	4.79	1991	.04	1980
Dec	.67	.51	1.90	1968	30	2.48	1987	.00	1982
Ann	28.54	28.35	6.00	Jun 1953	7	12.37	Jul 1978	.00+	Oct 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.7	1.6	.3	.1
Feb	4.4	1.8	.2	@
Mar	7.0	4.3	1.2	.3
Apr	9.5	6.0	1.9	.6
May	10.5	7.4	2.0	1.0
Jun	10.2	7.2	3.2	1.4
Jul	8.3	5.6	2.4	.9
Aug	8.6	5.6	2.3	1.1
Sep	7.6	5.1	1.9	.6
Oct	5.9	4.0	1.1	.6
Nov	5.8	3.3	1.0	.4
Dec	4.9	2.1	.3	.1
Ann	87.4	54.0	17.8	7.1

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	.00	.00	.07	.16	.27	.41	.58	.80	1.12	1.67	2.22
Feb	.00	.08	.20	.29	.38	.48	.59	.72	.90	1.19	1.47
Mar	.27	.43	.70	.97	1.25	1.56	1.91	2.34	2.93	3.88	4.81
Apr	.57	.82	1.24	1.62	2.00	2.41	2.88	3.43	4.18	5.36	6.49
May	1.28	1.61	2.09	2.49	2.87	3.26	3.69	4.18	4.82	5.79	6.68
Jun	1.49	1.93	2.58	3.14	3.67	4.22	4.83	5.53	6.44	7.86	9.17
Jul	.63	.95	1.48	1.98	2.50	3.06	3.70	4.47	5.51	7.18	8.78
Aug	.71	1.04	1.59	2.10	2.62	3.18	3.81	4.58	5.59	7.22	8.77
Sep	.66	.91	1.30	1.64	1.99	2.35	2.76	3.24	3.87	4.87	5.80
Oct	.11	.30	.60	.88	1.19	1.53	1.92	2.41	3.07	4.17	5.23
Nov	.16	.28	.51	.74	.99	1.27	1.61	2.02	2.59	3.54	4.46
Dec	.03	.08	.18	.28	.39	.51	.65	.83	1.07	1.48	1.87
Ann	17.72	19.70	22.30	24.32	26.14	27.91	29.77	31.85	34.39	38.14	41.43

\+ 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	6.6	6.0	4	3
Feb	5.4	6.0	3	#
Mar	7.4	8.0	2	#
Apr	2.6	1.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	.5	.0	#	0
Nov	5.2	4.3	#	0
Dec	6.9	7.0	1	#
Ann	34.6	32.3	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	11.0	1975	11	19.7	1982	27	1979	29	16	1979
Feb	10.0	1997	4	14.1	1997	34	1979	23	30	1979
Mar	12.0	1983	27	25.5	1983	34	1979	5	17	1979
Apr	6.5	1983	6	14.5	1983	4	1982	8	#+	1999
May	.3	1976	2	.3	1976	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	#	1995	22	#	1995	#	1995	22	#	1995
Oct	3.0	1976	19	4.0	1976	3	1976	19	#+	1997
Nov	8.0	1983	28	12.0	2000	6	1996	24	2	1997
Dec	9.0	1987	28	20.5	2000	10+	1996	31	8	1978
Ann	12.0	Mar 1983	27	25.5	Mar 1983	34+	Mar 1979	5	30	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	2.8	.7	.3	.1
Feb	3.1	2.2	.6	.1	@
Mar	3.2	2.4	1.1	.3	.1
Apr	1.2	1.0	.4	.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	.3	.3	@	.0	.0
Nov	3.2	2.6	.6	.2	.0
Dec	3.7	2.7	.9	.2	.0
Ann	18.5	14.0	4.3	1.2	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	7.8	4.4	2.7	.6
Apr	.3	.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	.1	.1	.0	.0
Nov	2.7	2.0	.5	.0
Dec	9.9	7.2	5.8	.7
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	5/19	5/15	5/12	5/09	5/06	5/04	5/01	4/28	4/24
32	5/15	5/09	5/06	5/02	4/29	4/26	4/22	4/19	4/13
28	5/02	4/27	4/24	4/21	4/18	4/15	4/12	4/08	4/03
24	4/18	4/14	4/11	4/09	4/06	4/04	4/02	3/30	3/26
20	4/12	4/07	4/04	4/01	3/29	3/27	3/24	3/20	3/16
16	4/08	4/03	3/30	3/27	3/24	3/21	3/17	3/13	3/08

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	9/17	9/20	9/22	9/24	9/27	9/29	10/02	10/06
32	9/21	9/25	9/29	10/01	10/04	10/06	10/09	10/12	10/17
28	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/24	10/29
24	10/10	10/15	10/18	10/21	10/24	10/27	10/30	11/02	11/07
20	10/20	10/25	10/29	11/01	11/04	11/07	11/10	11/14	11/19
16	10/27	11/02	11/06	11/10	11/13	11/17	11/20	11/24	11/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	152	148	144	140	137	133	128	122
32	177	170	165	161	157	153	149	144	137
28	199	192	187	183	179	175	170	165	158
24	219	213	208	204	200	196	192	188	181
20	241	233	228	223	219	215	210	204	197
16	257	249	243	238	234	229	224	218	210

***** 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	1613	1288	1055	601	254	42	12	32	171	526	999	1454	8047
60	1458	1148	900	458	157	11	0	7	81	375	849	1299	6743
57	1365	1064	807	378	112	4	0	2	45	290	759	1206	6032
55	1303	1008	745	328	86	2	0	0	28	240	700	1144	5584
50	1148	873	599	216	40	0	0	0	6	132	560	989	4563
32	626	429	179	15	0	0	0	0	0	4	166	482	1901

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	36	65	148	407	821	1088	1251	1168	856	501	157	51	6549
55	0	0	0	30	194	400	538	455	194	24	1	0	1836
57	0	0	0	20	158	342	476	395	151	13	0	0	1555
60	0	0	0	10	110	259	383	307	97	4	0	0	1170
65	0	0	0	3	52	140	240	177	37	0	0	0	649
70	0	0	0	0	20	58	124	83	9	0	0	0	294

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	3	43	218	570	846	999	918	625	286	46	2	0	3	46	264	834	1680	2679	3597	4222	4508	4554	4556
45	0	1	17	124	423	696	844	763	477	174	18	0	0	1	18	142	565	1261	2105	2868	3345	3519	3537	3537
50	0	0	4	65	286	546	689	608	339	88	3	0	0	0	4	69	355	901	1590	2198	2537	2625	2628	2628
55	0	0	0	32	173	397	534	453	213	40	0	0	0	0	0	32	205	602	1136	1589	1802	1842	1842	1842
60	0	0	0	11	86	257	382	304	118	14	0	0	0	0	0	11	97	354	736	1040	1158	1172	1172	1172
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	29	135	336	540	668	601	381	178	31	0	0	2	31	166	502	1042	1710	2311	2692	2870	2901	2901

(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