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: OELWEIN 2 S, IA **COOP ID: 136200**

Climate Division: IA 3 **NWS Call Sign:** **Elevation: 1,010 Feet** **Lat: 42˚39N** **Lon: 91˚55W**

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	5.5	14.7	56+	1981	24	27.4	1990	-30+	1951	30	1.9	1977	1561	0	.0	.0	.4	22.4	30.6	11.1
Feb	30.2	12.8	21.5	64+	1981	17	33.9	1998	-32	1996	3	9.6	1979	1218	0	.0	.0	1.7	14.8	26.8	6.4
Mar	43.0	25.1	34.1	85	1986	29	42.5	1973	-27	1962	1	23.7	1975	959	0	.0	.0	9.1	5.9	23.9	1.2
Apr	57.9	36.4	47.2	96	1980	22	55.3	1977	3	1972	8	41.5	1975	538	2	.0	.1	23.2	.2	10.7	.0
May	70.1	48.2	59.2	92	1949	5	66.9	1977	24	1966	10	53.0	1997	231	50	.0	.3	30.7	.0	1.0	.0
Jun	79.4	57.8	68.6	100	1988	21	73.3	1991	36+	1951	5	63.7	1982	31	139	@	2.3	30.0	.0	.0	.0
Jul	82.4	62.1	72.3	103	1988	31	76.4	1987	40	1975	13	66.9	1992	11	236	.1	4.3	31.0	.0	.0	.0
Aug	80.0	59.8	69.9	103	1988	17	75.6	1995	37	1964	13	64.3	1992	33	185	.2	2.6	31.0	.0	.0	.0
Sep	72.6	50.6	61.6	99	1955	9	66.4	1998	25+	1961	28	55.6	1993	145	43	.0	.9	29.8	.0	.7	.0
Oct	60.8	38.4	49.6	94	1997	3	56.6	1971	9	1952	29	43.8	1988	480	2	.0	.1	26.8	@	8.2	.0
Nov	42.7	24.6	33.7	78	1999	8	41.8	1999	-18	1977	26	26.6	1976	941	0	.0	.0	9.4	5.6	22.5	.6
Dec	28.7	11.7	20.2	66	1998	4	27.8	1982	-29	2000	25	7.0	1985	1388	0	.0	.0	.8	17.9	29.9	6.1
Ann	56.0	36.1	46.1	103+	Aug 1988	17	76.4	Jul 1987	-32	Feb 1996	3	1.9	Jan 1977	7536	657	.3	10.6	223.9	66.8	154.3	25.4

\+ 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

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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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	1.13	1.09	.96	1960	12	2.53	1999	.17	1976
Feb	1.13	.94	1.46	1962	18	3.08	1981	.00	1995
Mar	1.93	1.76	2.01	1998	30	5.90	1998	.08	1994
Apr	3.34	3.17	2.38	1991	12	8.44	1991	1.39	1971
May	3.88	3.70	4.38	1999	16	8.45	1999	.86	1992
Jun	4.59	4.88	3.52	1963	9	7.76	1998	.73	1992
Jul	4.13	4.01	4.63	1963	19	10.12	1999	.54	1998
Aug	4.99	4.31	6.38	1981	31	11.16	1979	.60	1976
Sep	3.50	3.11	7.19	1989	7	8.96	1989	.43	1975
Oct	2.49	2.42	2.26	1997	12	5.35	1998	.33	1975
Nov	2.08	2.11	2.10	1958	17	4.47	1992	.12	1976
Dec	1.46	1.51	1.40	1950	6	3.74	2000	.11	1975
Ann	34.65	34.08	7.19	Sep 1989	7	11.16	Aug 1979	.00	Feb 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.4	3.6	.5	.0
Feb	5.3	3.2	.7	.1
Mar	7.2	5.2	1.2	.1
Apr	10.7	7.0	2.4	.5
May	12.2	7.6	2.5	.9
Jun	11.1	7.5	3.4	1.3
Jul	10.2	6.6	3.1	.9
Aug	9.8	7.1	3.2	1.7
Sep	9.0	6.0	2.4	.8
Oct	8.6	4.9	1.6	.5
Nov	8.0	4.9	1.4	.3
Dec	6.3	3.9	.8	.1
Ann	104.8	67.5	23.2	7.2

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	.34	.44	.61	.74	.88	1.02	1.17	1.35	1.59	1.96	2.30
Feb	.11	.24	.43	.59	.76	.94	1.14	1.39	1.72	2.25	2.75
Mar	.31	.48	.76	1.03	1.30	1.60	1.94	2.35	2.91	3.81	4.67
Apr	1.36	1.67	2.10	2.46	2.79	3.13	3.49	3.92	4.45	5.27	6.01
May	1.08	1.45	2.01	2.50	2.97	3.47	4.02	4.67	5.52	6.85	8.09
Jun	1.42	1.86	2.51	3.06	3.60	4.16	4.78	5.50	6.43	7.89	9.23
Jul	1.11	1.50	2.10	2.62	3.13	3.67	4.27	4.97	5.90	7.34	8.70
Aug	1.03	1.49	2.22	2.89	3.56	4.28	5.09	6.07	7.36	9.42	11.37
Sep	.77	1.09	1.61	2.07	2.54	3.03	3.59	4.25	5.13	6.53	7.85
Oct	.59	.83	1.19	1.52	1.84	2.18	2.56	3.02	3.62	4.56	5.45
Nov	.51	.70	1.00	1.27	1.54	1.82	2.14	2.51	3.00	3.78	4.51
Dec	.24	.37	.58	.78	.99	1.21	1.47	1.78	2.20	2.88	3.53
Ann	24.48	26.45	28.96	30.87	32.57	34.21	35.91	37.79	40.06	43.37	46.23

\+ 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	8.6	7.8	4	2
Feb	6.2	5.4	3	2
Mar	5.0	4.5	1	#
Apr	1.5	.8	#	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	.0	#	0
Nov	4.3	3.0	#	#
Dec	7.8	5.9	3	1
Ann	33.5	27.4	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	8.0	1996	27	20.0	1979	22	1979	31	13	1979
Feb	10.0	1983	2	16.9	1983	21	1979	3	16	1979
Mar	10.0	1998	7	20.0	1984	12	1978	3	5	1979
Apr	6.0	1973	9	9.5	1973	10	1973	10	1	1973
May	.0	0	0	.0	0	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	1.5	1982	20	1.5	1982	#+	1999	3	#+	1999
Nov	8.5	1991	23	15.5	1991	9	1991	26	2	1977
Dec	12.0	1985	1	19.5	1987	25	2000	31	14	1985
Ann	12.0	Dec 1985	1	20.0+	Mar 1984	25	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	5.0	3.6	1.2	.3	.0
Feb	3.4	2.3	.7	.2	@
Mar	2.3	1.8	.7	.2	@
Apr	.7	.6	.1	.1	.0
May	.0	.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	.1	@	.0	.0	.0
Nov	2.3	1.5	.4	.2	.0
Dec	4.3	2.8	1.0	.4	@
Ann	18.1	12.6	4.1	1.4	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	17.7	7.7	3.5	.8
Feb	10.4	6.2	1.4	.1
Mar	4.5	2.0	.9	.0
Apr	.4	.2	.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	.0	.0	.0	.0
Nov	2.9	.9	.5	.0
Dec	14.0	5.1	2.4	.0
Ann	49.9	22.1	8.8	.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	5/24	5/19	5/16	5/13	5/10	5/07	5/04	5/01	4/26
32	5/13	5/08	5/05	5/02	4/30	4/27	4/24	4/21	4/16
28	5/03	4/28	4/24	4/21	4/18	4/15	4/11	4/08	4/02
24	4/20	4/17	4/14	4/12	4/10	4/08	4/06	4/03	3/30
20	4/14	4/10	4/06	4/03	4/01	3/29	3/26	3/23	3/18
16	4/06	4/01	3/28	3/24	3/21	3/17	3/14	3/10	3/04

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	9/14	9/18	9/21	9/23	9/25	9/28	9/30	10/03	10/07
32	9/20	9/24	9/27	9/29	10/02	10/04	10/06	10/09	10/13
28	9/29	10/03	10/07	10/10	10/12	10/15	10/18	10/21	10/26
24	10/10	10/15	10/18	10/22	10/25	10/27	10/31	11/03	11/08
20	10/21	10/25	10/28	10/31	11/03	11/05	11/08	11/11	11/16
16	10/30	11/04	11/07	11/10	11/13	11/16	11/19	11/23	11/27

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	150	146	141	138	134	130	125	118
32	173	167	162	158	154	151	146	142	135
28	198	191	186	181	177	173	168	163	155
24	216	209	205	201	197	193	189	184	178
20	234	228	223	219	215	212	208	203	196
16	261	252	246	241	237	232	227	221	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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1561	1218	959	538	231	31	11	33	145	480	941	1388	7536
60	1406	1078	804	397	137	7	0	8	63	335	791	1233	6259
57	1313	994	712	318	93	2	0	2	32	258	701	1140	5565
55	1251	938	652	269	70	1	0	0	19	212	642	1078	5132
50	1096	802	509	165	29	0	0	0	3	117	500	923	4144
32	575	364	130	6	0	0	0	0	0	3	121	424	1623

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	36	70	194	460	842	1098	1248	1175	888	549	170	58	6788
55	0	0	3	34	198	409	535	462	217	45	1	0	1904
57	0	0	1	22	160	350	473	402	171	29	0	0	1608
60	0	0	0	11	110	264	380	316	111	13	0	0	1205
65	0	0	0	2	50	139	236	185	43	2	0	0	657
70	0	0	0	0	18	53	118	92	11	0	0	0	292

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	71	264	609	870	1010	944	668	342	67	5	0	5	76	340	949	1819	2829	3773	4441	4783	4850	4855
45	0	1	31	155	457	720	855	789	519	216	28	2	0	1	32	187	644	1364	2219	3008	3527	3743	3771	3773
50	0	0	14	84	312	570	700	634	376	122	14	0	0	0	14	98	410	980	1680	2314	2690	2812	2826	2826
55	0	0	4	43	190	423	545	479	249	57	3	0	0	0	4	47	237	660	1205	1684	1933	1990	1993	1993
60	0	0	0	18	103	275	392	326	144	25	0	0	0	0	0	18	121	396	788	1114	1258	1283	1283	1283
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	45	162	370	568	682	623	418	202	40	2	0	1	46	208	578	1146	1828	2451	2869	3071	3111	3113

(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