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: MASON CITY 1 W, IL **COOP ID: 115413**

Climate Division: IL 4 **NWS Call Sign:** **Elevation: 585 Feet** **Lat: 40˚12N** **Lon: 89˚42W**

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	33.1	15.7	24.4	70	1989	31	36.6	1990	-24	1977	17	10.0	1977	1259	0	.0	.0	2.7	14.3	28.1	4.6
Feb	39.2	20.6	29.9	75	1996	26	40.1	1998	-21	1996	3	16.6	1978	983	0	.0	.0	6.2	8.8	22.8	2.8
Mar	52.0	30.5	41.3	87+	1986	29	47.5	2000	-8	1978	5	32.6	1978	736	0	.0	.0	16.5	1.9	16.8	.1
Apr	65.1	40.5	52.8	91	1986	25	58.4	1977	15	1982	6	46.8	1983	375	8	.0	@	26.9	.1	5.2	.0
May	75.6	51.3	63.5	96	1967	25	69.7	1987	29	1976	3	58.0	1990	150	101	.0	1.0	30.9	.0	.2	.0
Jun	84.3	60.4	72.4	103	1988	25	76.9	1971	39	1993	1	67.0	1982	11	232	.2	6.1	30.0	.0	.0	.0
Jul	87.4	64.1	75.8	103+	1966	13	79.6	1983	45	1962	27	72.2	1971	0	333	.2	9.6	31.0	.0	.0	.0
Aug	85.3	62.2	73.8	103+	1987	2	80.0	1983	40	1986	28	68.8	1992	10	281	.3	6.2	31.0	.0	.0	.0
Sep	79.5	54.5	67.0	99	1984	1	71.7	1998	28	1995	23	62.1	1974	59	118	.0	3.0	30.0	.0	.3	.0
Oct	67.3	43.5	55.4	90+	1997	3	61.9	1971	18	1962	26	49.1	1976	312	15	.0	@	29.8	.0	4.2	.0
Nov	51.0	32.4	41.7	82	2000	1	48.4	1999	-5	1964	30	34.0	1976	698	0	.0	.0	15.8	1.3	15.6	@
Dec	37.6	21.3	29.5	73+	1998	4	37.9	1982	-23	1989	22	15.5	1983	1102	0	.0	.0	4.8	9.1	25.7	2.2
Ann	63.1	41.4	52.3	103+	Jun 1988	25	80.0	Aug 1983	-24	Jan 1977	17	10.0	Jan 1977	5695	1088	.7	25.9	255.6	35.5	118.9	9.7

\+ 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	1.56	1.19	1.92	1993	4	4.01	1993	.06	1986
Feb	1.53	1.30	2.08	1990	22	4.02	1990	.26	1978
Mar	2.77	2.61	2.01	1972	13	8.17	1973	.66	1971
Apr	3.34	3.24	2.76	1970	30	6.88	1999	.51	1971
May	4.20	3.76	3.89	1995	17	11.81	1995	.66	1992
Jun	3.70	3.28	3.68	1951	27	9.91	1998	.49	1971
Jul	4.04	3.20	3.56	1981	4	11.45	1992	.21	1988
Aug	3.47	3.36	3.26	1991	6	6.52	1972	.67	1992
Sep	3.00	2.67	4.87	1993	14	10.38	1993	.11	1979
Oct	2.73	2.12	4.82	1991	4	8.77	1991	1.02	1988
Nov	2.95	2.61	2.01	1985	18	9.44	1985	.33	1999
Dec	2.42	2.16	3.10	1982	3	7.29	1982	.35	1976
Ann	35.71	36.54	4.87	Sep 1993	14	11.81	May 1995	.06	Jan 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	3.9	.8	.2
Feb	7.2	3.9	.8	.2
Mar	9.7	6.0	1.8	.6
Apr	10.5	7.0	2.2	.5
May	11.0	7.2	2.5	1.1
Jun	9.8	6.6	2.5	1.1
Jul	8.7	6.2	2.7	1.3
Aug	8.0	5.7	2.4	1.0
Sep	7.4	5.3	2.0	.9
Oct	9.0	5.2	1.8	.4
Nov	9.1	6.4	2.1	.6
Dec	8.2	5.1	1.5	.5
Ann	106.4	68.5	23.1	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	.30	.52	.74	.97	1.23	1.53	1.91	2.42	3.27	4.09
Feb	.31	.45	.67	.88	1.09	1.31	1.56	1.86	2.26	2.90	3.50
Mar	.84	1.11	1.50	1.84	2.17	2.51	2.88	3.33	3.90	4.79	5.61
Apr	.92	1.24	1.72	2.14	2.55	2.98	3.46	4.02	4.75	5.90	6.97
May	1.02	1.41	2.02	2.57	3.11	3.68	4.32	5.08	6.08	7.66	9.14
Jun	.62	.94	1.48	1.99	2.51	3.08	3.72	4.51	5.56	7.26	8.89
Jul	.75	1.11	1.70	2.25	2.80	3.41	4.09	4.92	6.02	7.79	9.48
Aug	.99	1.32	1.81	2.25	2.67	3.11	3.59	4.17	4.91	6.08	7.17
Sep	.49	.74	1.18	1.59	2.02	2.48	3.01	3.66	4.52	5.92	7.27
Oct	.79	1.05	1.44	1.78	2.11	2.45	2.83	3.28	3.85	4.76	5.60
Nov	.68	.96	1.39	1.78	2.16	2.57	3.03	3.58	4.30	5.44	6.51
Dec	.54	.77	1.12	1.44	1.76	2.09	2.48	2.93	3.53	4.48	5.38
Ann	23.03	25.39	28.46	30.83	32.95	35.02	37.18	39.58	42.52	46.83	50.60

\+ 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	6.0	5.4	2	1
Feb	4.8	3.7	2	1
Mar	2.3	1.0	#	#
Apr	.6	.0	#	0
May	#	.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	1.4	.0	#	0
Dec	4.4	3.3	1	#
Ann	19.5	13.4	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	7.0	1979	13	18.4	1979	16	1979	31	10	1979
Feb	6.0	1975	24	15.0	1989	18	1979	13	14	1979
Mar	8.0	1999	8	10.3	1978	9	1978	8	4	1978
Apr	4.0	1980	14	8.0	1982	5	1982	8	#+	1997
May	#	1974	7	#	1974	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	.2	1993	31	.2	1993	0	0	0	0	0
Nov	4.5	1975	27	8.0	1975	7	1975	27	1	1977
Dec	8.0	1973	19	20.0	1973	12+	2000	31	5	2000
Ann	8.0+	Mar 1999	8	20.0	Dec 1973	18	Feb 1979	13	14	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.7	2.5	.7	.1	.0
Feb	3.2	2.1	.5	.1	.0
Mar	1.8	1.0	.2	.1	.0
Apr	.4	.2	.1	.0	.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	@	.0	.0	.0	.0
Nov	.8	.6	.1	.0	.0
Dec	3.4	2.1	.5	.1	.0
Ann	14.3	8.5	2.1	.4	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	12.2	5.7	2.9	.7
Feb	9.1	4.6	2.3	.7
Mar	1.3	.4	.1	.0
Apr	.2	.1	@	.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	.0	.0	.0	.0
Nov	.8	.3	.1	.0
Dec	6.4	2.4	1.3	.2
Ann	30.0	13.5	6.7	1.6

+ 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	5/14	5/09	5/06	5/03	4/30	4/28	4/25	4/21	4/17
32	5/02	4/28	4/25	4/22	4/19	4/17	4/14	4/11	4/07
28	4/19	4/15	4/12	4/10	4/08	4/06	4/03	4/01	3/28
24	4/14	4/09	4/06	4/03	4/01	3/29	3/26	3/23	3/18
20	4/05	3/30	3/26	3/23	3/20	3/17	3/13	3/09	3/04
16	3/25	3/19	3/14	3/10	3/06	3/02	2/26	2/21	2/14

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	9/23	9/27	9/29	10/02	10/04	10/06	10/08	10/10	10/14
32	9/26	10/01	10/05	10/08	10/11	10/14	10/17	10/20	10/25
28	10/06	10/13	10/18	10/22	10/26	10/29	11/02	11/07	11/14
24	10/19	10/24	10/28	11/01	11/04	11/07	11/11	11/15	11/21
20	10/30	11/04	11/08	11/12	11/15	11/19	11/22	11/26	12/02
16	11/08	11/14	11/19	11/22	11/26	11/29	12/03	12/07	12/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	172	166	162	159	156	153	149	145	140
32	194	187	182	177	173	169	165	160	153
28	221	214	209	204	200	196	191	186	178
24	241	233	227	222	217	212	207	201	193
20	264	256	250	245	240	235	230	224	215
16	293	283	276	270	264	259	253	245	236

***** 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	1259	983	736	375	150	11	0	10	59	312	698	1102	5695
60	1104	843	582	246	78	2	0	1	17	192	550	947	4562
57	1011	764	497	180	48	1	0	0	6	133	464	854	3958
55	949	712	440	141	33	0	0	0	3	101	410	797	3586
50	804	582	308	67	11	0	0	0	0	44	282	653	2751
32	334	214	43	0	0	0	0	0	0	0	32	234	857

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	155	331	623	975	1211	1356	1294	1050	726	323	156	8298
55	0	9	14	75	295	521	643	581	363	114	11	6	2632
57	0	5	9	53	247	462	581	519	306	84	6	0	2272
60	0	0	1	29	185	373	488	427	227	49	1	0	1780
65	0	0	0	8	101	232	333	281	118	15	0	0	1088
70	0	0	0	2	45	115	187	157	47	3	0	0	556

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	12	44	163	413	739	986	1118	1056	817	494	161	37	12	56	219	632	1371	2357	3475	4531	5348	5842	6003	6040
45	3	17	96	282	585	836	963	901	667	347	92	14	3	20	116	398	983	1819	2782	3683	4350	4697	4789	4803
50	0	4	51	176	435	686	808	746	520	222	47	4	0	4	55	231	666	1352	2160	2906	3426	3648	3695	3699
55	0	1	24	92	294	536	653	591	377	127	20	0	0	1	25	117	411	947	1600	2191	2568	2695	2715	2715
60	0	0	7	44	177	386	498	436	243	63	3	0	0	0	7	51	228	614	1112	1548	1791	1854	1857	1857
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	5	26	104	253	466	664	769	720	531	301	93	17	5	31	135	388	854	1518	2287	3007	3538	3839	3932	3949

(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