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: MOLINE QUAD CITY AP, IL **COOP ID: 115751**

Climate Division: IL 1 **NWS Call Sign: MLI** **Elevation: 592 Feet** **Lat: 41˚28N** **Lon: 90˚31W**

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	29.8	12.3	21.1	69	1989	31	32.7	1990	-27	1979	2	6.8	1979	1374	0	.0	.0	1.6	17.4	29.2	7.3
Feb	35.6	18.2	26.9	71+	2000	25	37.7	1998	-28	1996	3	13.6	1979	1083	0	.0	.0	3.8	11.5	24.4	4.1
Mar	48.3	29.0	38.7	88	1986	29	45.8	1973	-19	1960	6	31.0	1975	831	1	.0	.0	13.0	3.1	19.9	.2
Apr	61.7	39.3	50.5	93	1986	25	57.1	1985	7	1982	7	44.9	1982	450	12	.0	.1	25.0	.2	7.3	.0
May	73.3	50.0	61.7	95+	1985	26	69.2	1977	26	1966	10	56.1	1997	172	62	.0	1.2	30.8	.0	.5	.0
Jun	82.7	59.7	71.2	104	1988	25	76.8	1971	39+	1993	1	66.4	1982	19	205	.1	5.3	30.0	.0	.0	.0
Jul	86.1	64.5	75.3	103+	1983	22	79.6	1983	46+	1971	31	70.5	1992	3	322	.3	8.9	31.0	.0	.0	.0
Aug	83.9	62.4	73.2	103+	1988	17	79.8	1983	40	1986	28	67.4	1992	8	254	.4	6.0	31.0	.0	.0	.0
Sep	76.5	53.4	65.0	99+	1953	29	69.5	1978	30+	1991	20	60.6	1974	108	101	.0	2.0	30.0	.0	.3	.0
Oct	64.4	41.6	53.0	93	1997	3	60.2	1971	16+	1988	30	47.2	1976	394	12	.0	.1	28.2	.0	5.9	.0
Nov	48.0	30.1	39.1	80	2000	1	45.5	1975	-9	1976	29	30.6	1976	782	0	.0	.0	13.0	2.7	18.5	.2
Dec	34.5	18.3	26.4	71	1998	4	35.8	1982	-24	1989	23	13.2	2000	1191	0	.0	.0	2.7	12.1	27.7	3.4
Ann	60.4	39.9	50.2	104	Jun 1988	25	79.8	Aug 1983	-28	Feb 1996	3	6.8	Jan 1979	6415	969	.8	23.6	240.1	47.0	133.7	15.2

\+ 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	1.58	1.26	1.70	1971	3	4.39	1974	.32	1981
Feb	1.51	1.32	1.33	1953	20	3.30	2000	.43	1991
Mar	2.92	2.67	2.16	1993	22	7.43	1973	.64	1994
Apr	3.82	3.56	4.26	1973	21	11.30	1973	1.36	1988
May	4.25	3.74	3.23	1970	13	11.43	1974	.31	1992
Jun	4.63	3.68	4.61	1967	7	13.21	1993	1.16	1988
Jul	4.03	3.29	5.08	1971	10	11.76	1992	.41	1991
Aug	4.41	3.31	4.60	1951	29	15.23	1987	.35	1971
Sep	3.16	3.12	6.21	1961	13	6.74	1973	.02	1979
Oct	2.80	2.24	4.77	1954	10	8.54	1985	.37	1993
Nov	2.73	2.76	2.04	1995	10	6.77	1992	.49	1999
Dec	2.20	1.97	3.11	1982	2	4.99	1982	.34	1976
Ann	38.04	37.20	6.21	Sep 1961	13	15.23	Aug 1987	.02	Sep 1979

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.8	4.2	.7	.3
Feb	8.0	3.7	.6	.2
Mar	10.6	6.1	1.7	.6
Apr	11.0	6.9	2.6	1.0
May	12.1	7.3	2.8	1.3
Jun	10.6	7.1	3.1	1.3
Jul	10.0	6.4	2.7	.8
Aug	10.1	6.4	2.7	1.5
Sep	8.1	5.4	2.1	.8
Oct	8.8	5.3	1.8	.5
Nov	10.2	5.4	1.8	.4
Dec	10.0	4.9	1.3	.4
Ann	119.3	69.1	23.9	9.1

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	.41	.56	.79	.99	1.19	1.40	1.63	1.91	2.27	2.84	3.38
Feb	.45	.60	.81	1.00	1.18	1.37	1.57	1.82	2.13	2.62	3.08
Mar	.59	.86	1.29	1.68	2.07	2.50	2.98	3.55	4.32	5.54	6.69
Apr	1.30	1.66	2.19	2.63	3.06	3.50	3.98	4.55	5.27	6.39	7.42
May	1.12	1.52	2.14	2.68	3.21	3.77	4.40	5.13	6.10	7.61	9.03
Jun	1.19	1.62	2.29	2.89	3.47	4.09	4.78	5.59	6.66	8.33	9.91
Jul	.88	1.26	1.85	2.38	2.92	3.49	4.13	4.90	5.91	7.52	9.04
Aug	.62	.99	1.62	2.23	2.87	3.58	4.39	5.39	6.73	8.93	11.04
Sep	.49	.76	1.22	1.65	2.10	2.60	3.16	3.86	4.79	6.30	7.74
Oct	.53	.79	1.20	1.57	1.96	2.37	2.84	3.41	4.16	5.36	6.51
Nov	.57	.82	1.22	1.58	1.95	2.34	2.78	3.32	4.02	5.14	6.20
Dec	.50	.70	1.02	1.31	1.60	1.91	2.26	2.67	3.21	4.08	4.89
Ann	26.05	28.33	31.28	33.53	35.54	37.49	39.51	41.75	44.47	48.44	51.89

\+ 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)

Extremes (2)

Mean Number of Days (1)

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	10.2	9.5	3	2	16.4	1971	3	26.7	1979	28+	1979	19	18	1979	8.0	3.1	.7	.3	.1	18.2	11.1	5.9	1.8
Feb	7.0	6.2	2	2	9.3	2000	18	23.2	1975	17+	1979	12	14	1979	5.3	2.1	.7	.2	.0	14.9	10.4	5.5	1.5
Mar	5.0	3.5	#	1	9.8	1972	29	19.8	1972	8+	1994	1	2	1979	3.8	1.5	.5	.2	.0	4.6	1.7	.5	.0
Apr	1.4	.1	#	0	7.8	1982	5	13.0	1982	6	1982	6	1	1982	.9	.3	.1	.1	.0	.5	.2	.1	.0
May	#	.0	#	0	#	1989	6	#+	1989	0	0	0	#	1996	.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	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	2.3	1980	27	2.4	1980	1	1972	18	#	1972	.1	.1	.0	.0	.0	@	.0	.0	.0
Nov	3.0	1.9	#	0	8.4	1975	26	15.6	1974	8+	1975	28	1+	1975	2.8	1.0	.3	.1	.0	1.6	.6	.2	.0
Dec	8.4	6.8	1	1	9.2	1987	15	32.9	2000	11	1987	16	5	1983	6.5	2.5	.9	.3	.0	10.3	5.6	2.9	.2
Ann	35.2	28.0	N/A	N/A	16.4	Jan 1971	3	32.9	Dec 2000	28+	Jan 1979	19	18	Jan 1979	27.4	10.6	3.2	1.2	.1	50.1	29.6	15.1	3.5

+ 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	5/23	5/17	5/14	5/10	5/07	5/04	5/01	4/27	4/22
32	5/09	5/05	5/01	4/29	4/26	4/23	4/21	4/17	4/13
28	4/24	4/20	4/17	4/14	4/12	4/09	4/07	4/04	3/31
24	4/15	4/11	4/08	4/05	4/03	3/31	3/29	3/26	3/22
20	4/09	4/03	3/30	3/26	3/23	3/19	3/15	3/11	3/05
16	3/28	3/22	3/18	3/15	3/11	3/08	3/05	3/01	2/23

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	9/21	9/25	9/28	9/30	10/02	10/04	10/07	10/09	10/13
32	9/27	10/01	10/04	10/06	10/09	10/11	10/14	10/17	10/21
28	10/06	10/12	10/16	10/19	10/23	10/26	10/29	11/03	11/08
24	10/17	10/22	10/26	10/29	11/01	11/04	11/08	11/11	11/17
20	10/31	11/05	11/08	11/11	11/14	11/17	11/20	11/24	11/29
16	11/06	11/11	11/15	11/18	11/21	11/24	11/27	12/01	12/06

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	166	160	155	151	147	143	140	135	128
32	184	177	173	169	165	161	157	153	146
28	215	207	202	197	193	189	184	179	172
24	230	224	219	216	212	208	204	200	194
20	258	250	245	240	236	232	227	221	214
16	275	267	262	258	254	249	245	240	233

***** 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	1374	1083	831	450	172	19	3	8	108	394	782	1191	6415
60	1208	927	662	302	98	3	0	2	27	247	629	1042	5147
57	1115	843	571	229	63	1	0	0	11	180	541	949	4503
55	1053	790	515	185	44	0	0	0	5	141	484	887	4104
50	901	660	373	97	16	0	0	0	0	69	350	744	3210
32	415	261	62	0	0	0	0	0	0	0	53	294	1085

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	33	76	256	554	915	1174	1340	1272	984	645	251	62	7562
55	0	0	14	62	233	484	627	559	308	88	9	1	2385
57	0	0	10	46	188	424	565	497	258	64	6	1	2059
60	0	0	5	29	130	337	472	404	190	38	2	0	1607
65	0	0	1	12	62	205	322	254	101	12	0	0	969
70	0	0	0	3	23	99	180	132	44	3	0	0	484

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	5	23	117	338	675	943	1098	1034	754	414	113	15	5	28	145	483	1158	2101	3199	4233	4987	5401	5514	5529
45	0	9	63	220	521	793	943	879	604	277	63	6	0	9	72	292	813	1606	2549	3428	4032	4309	4372	4378
50	0	1	34	126	371	643	788	724	458	169	27	2	0	1	35	161	532	1175	1963	2687	3145	3314	3341	3343
55	0	0	11	65	240	493	633	569	316	93	8	0	0	0	11	76	316	809	1442	2011	2327	2420	2428	2428
60	0	0	5	33	136	344	478	414	197	43	3	0	0	0	5	38	174	518	996	1410	1607	1650	1653	1653
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	18	73	205	418	629	752	698	478	252	65	6	1	19	92	297	715	1344	2096	2794	3272	3524	3589	3595

(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