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: MOUNT CARMEL, IL **COOP ID: 115888**

Climate Division: IL 9 **NWS Call Sign:** **Elevation: 430 Feet** **Lat: 38˚25N** **Lon: 87˚45W**

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	38.0	21.0	29.5	72+	2000	3	40.9	1990	-19	1985	20	14.3	1977	1100	0	.0	.0	4.3	7.6	27.7	1.4
Feb	44.1	24.8	34.5	78	1996	28	42.4	1990	-12	1951	2	19.9	1978	856	0	.0	.0	8.5	5.0	21.3	.9
Mar	54.5	34.5	44.5	83	1986	31	51.6	1973	0	1978	5	36.7	1978	636	0	.0	.0	20.4	.8	15.0	@
Apr	65.8	43.9	54.9	90+	1989	27	60.8	1981	22+	1995	1	49.8	1997	315	10	.0	@	28.4	.0	2.5	.0
May	75.9	54.1	65.0	94	1949	6	72.0	1991	34+	1992	7	59.8	1989	118	119	.0	1.0	30.9	.0	.0	.0
Jun	85.1	63.2	74.2	101	1988	26	77.5	1971	43+	1992	22	70.0	1982	5	279	.1	7.3	30.0	.0	.0	.0
Jul	88.6	67.1	77.9	102+	1988	9	81.5	1993	51+	2001	6	74.7	2000	0	398	.4	13.3	31.0	.0	.0	.0
Aug	87.0	64.5	75.8	102+	1991	4	81.3	1980	43	1986	29	71.6+	1992	3	336	.3	9.1	31.0	.0	.0	.0
Sep	80.7	56.5	68.6	99+	1999	5	73.0	1998	33	1995	24	63.1	1974	43	150	.0	4.3	30.0	.0	.0	.0
Oct	69.6	44.7	57.2	90+	1998	6	64.9	1971	24+	1988	31	49.4	1987	272	28	.0	.1	30.5	.0	2.4	.0
Nov	55.3	35.7	45.5	85	2000	2	51.1	1999	2	1950	25	37.7	1976	585	0	.0	.0	19.9	.4	11.8	.0
Dec	43.0	25.5	34.3	73	1998	7	42.5	1982	-17	1989	22	21.2	2000	954	0	.0	.0	8.3	5.7	24.8	.6
Ann	65.6	44.6	55.2	102+	Aug 1991	4	81.5	Jul 1993	-19	Jan 1985	20	14.3	Jan 1977	4887	1320	.8	35.1	273.2	19.5	105.5	2.9

\+ 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	2.90	2.68	4.25	1949	24	7.93	1982	.41	1981
Feb	2.73	2.52	2.70	1950	13	6.18	2000	.53	1978
Mar	4.15	4.01	2.96	1985	30	8.13	1989	1.44	1994
Apr	4.24	3.26	3.93	1996	29	10.19	1996	1.62	1976
May	5.12	4.35	3.85	1995	18	11.60	1981	1.54	1991
Jun	3.70	3.45	3.50	2000	16	8.05	2000	.20	1984
Jul	4.24	3.80	4.60	1979	27	14.26	1979	1.22	1994
Aug	3.61	3.06	3.65	1981	6	9.59	1985	.29	1988
Sep	2.80	2.61	3.10	1950	1	7.03	1993	.31	1999
Oct	3.03	2.64	2.35	1998	7	7.19	1985	.64	2000
Nov	4.19	4.33	2.95	1993	15	10.43	1985	.28	1999
Dec	3.05	2.80	3.57	1949	12	7.40	1990	.47	1976
Ann	43.76	45.37	4.60	Jul 1979	27	14.26	Jul 1979	.20	Jun 1984

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.6	5.9	2.1	.6
Feb	8.9	5.2	1.9	.6
Mar	11.3	7.6	3.0	.9
Apr	11.3	8.1	3.0	1.0
May	11.9	7.9	3.5	1.4
Jun	9.2	6.5	2.6	1.0
Jul	9.1	6.1	2.6	1.2
Aug	8.2	5.9	2.4	1.1
Sep	7.1	4.9	2.2	.6
Oct	8.2	5.3	2.1	.6
Nov	10.2	6.9	3.1	1.1
Dec	10.4	6.6	2.2	.6
Ann	115.4	76.9	30.7	10.7

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	.69	.96	1.38	1.76	2.14	2.53	2.98	3.51	4.20	5.30	6.34
Feb	.70	.95	1.35	1.70	2.05	2.41	2.82	3.30	3.93	4.93	5.86
Mar	1.50	1.89	2.45	2.92	3.37	3.83	4.34	4.92	5.66	6.81	7.87
Apr	1.27	1.67	2.28	2.80	3.30	3.83	4.41	5.09	5.97	7.34	8.62
May	1.66	2.14	2.86	3.47	4.06	4.67	5.33	6.11	7.12	8.68	10.12
Jun	.78	1.12	1.66	2.16	2.65	3.18	3.78	4.50	5.45	6.96	8.40
Jul	1.20	1.60	2.21	2.74	3.26	3.80	4.40	5.10	6.02	7.45	8.79
Aug	.61	.92	1.45	1.95	2.45	3.01	3.64	4.40	5.43	7.08	8.67
Sep	.59	.85	1.26	1.64	2.01	2.41	2.86	3.40	4.12	5.26	6.33
Oct	.93	1.22	1.65	2.02	2.38	2.75	3.16	3.63	4.25	5.22	6.11
Nov	1.05	1.44	2.05	2.59	3.13	3.69	4.32	5.07	6.05	7.59	9.04
Dec	.92	1.21	1.65	2.02	2.38	2.75	3.17	3.65	4.28	5.26	6.17
Ann	32.98	35.11	37.82	39.86	41.66	43.39	45.17	47.12	49.48	52.88	55.79

\+ 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

Complete documentation available from:
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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	4.6	1.9	1	#
Feb	4.2	1.5	1	#
Mar	1.6	.0	#	0
Apr	.0	.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	.0	#	0
Nov	.1	.0	#	0
Dec	1.6	.3	#	0
Ann	12.2	3.7	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	8.0	1978	17	16.6	1979	11	1978	27	5	1978
Feb	7.0	1985	12	13.9	1993	9	1984	29	6	1984
Mar	10.0	1996	20	10.0	1996	4	1978	5	1	1978
Apr	.5	1982	8	.5	1982	0	0	0	0	0
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	1993	31	2.0	1993	#	1993	31	#	1993
Nov	1.8	1977	27	1.8	1977	2	1977	27	#+	1991
Dec	7.0	1990	28	8.3	1990	7	1990	28	1	1989
Ann	10.0	Mar 1996	20	16.6	Jan 1979	11	Jan 1978	27	6	Feb 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.4	1.2	.4	.1	.0
Feb	1.7	1.3	.6	.2	.0
Mar	.5	.4	.2	.1	.1
Apr	@	.0	.0	.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	.1	@	.0	.0	.0
Nov	@	@	.0	.0	.0
Dec	.9	.6	.3	.1	.0
Ann	5.6	3.5	1.5	.5	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.9	2.1	1.7	.9
Feb	5.1	3.9	1.1	.0
Mar	.7	.3	.0	.0
Apr	.0	.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	.0	.0	.0	.0
Nov	.2	.0	.0	.0
Dec	.5	.2	.1	.0
Ann	9.4	6.5	2.9	.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	5/09	5/02	4/27	4/22	4/18	4/14	4/10	4/05	3/29
32	4/19	4/15	4/12	4/09	4/07	4/04	4/02	3/30	3/25
28	4/12	4/07	4/04	4/01	3/29	3/26	3/23	3/19	3/14
24	4/03	3/29	3/25	3/22	3/19	3/16	3/13	3/10	3/05
20	3/20	3/15	3/11	3/08	3/05	3/02	2/26	2/22	2/17
16	3/13	3/06	3/01	2/25	2/21	2/17	2/13	2/08	2/01

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	9/24	10/01	10/06	10/10	10/14	10/18	10/22	10/27	11/03
32	10/10	10/16	10/21	10/25	10/28	11/01	11/05	11/09	11/16
28	10/16	10/24	10/31	11/05	11/10	11/15	11/20	11/26	12/05
24	11/01	11/08	11/13	11/17	11/21	11/25	11/29	12/04	12/11
20	11/11	11/19	11/24	11/29	12/03	12/07	12/12	12/17	12/25
16	11/15	11/28	12/07	12/15	12/22	12/30	1/07	1/16	1/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	213	201	192	185	178	171	163	155	142
32	230	221	214	209	204	198	193	186	177
28	258	247	239	232	225	219	212	204	193
24	271	263	256	251	246	241	236	229	221
20	303	292	285	278	273	267	260	253	242
16	345	329	319	310	302	295	287	277	264

***** 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	1100	856	636	315	118	5	0	3	43	272	585	954	4887
60	945	716	489	191	56	1	0	0	11	163	440	799	3811
57	852	638	404	131	31	0	0	0	4	112	359	714	3245
55	795	587	350	98	20	0	0	0	2	84	307	656	2899
50	651	459	233	39	6	0	0	0	0	35	195	514	2132
32	231	129	22	0	0	0	0	0	0	0	11	148	541

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	154	197	409	685	1024	1264	1421	1356	1097	779	416	217	9019
55	4	11	24	93	331	574	708	643	409	150	22	12	2981
57	0	7	16	66	280	514	646	581	352	116	14	8	2600
60	0	0	9	36	211	425	553	488	269	74	5	0	2070
65	0	0	0	10	119	279	398	336	150	28	0	0	1320
70	0	0	0	2	55	149	245	198	66	8	0	0	723

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	25	60	195	450	789	1028	1183	1114	857	529	216	50	25	85	280	730	1519	2547	3730	4844	5701	6230	6446	6496
45	8	28	107	313	634	878	1028	959	707	379	127	25	8	36	143	456	1090	1968	2996	3955	4662	5041	5168	5193
50	2	7	55	188	480	728	873	804	557	243	66	7	2	9	64	252	732	1460	2333	3137	3694	3937	4003	4010
55	0	1	30	99	334	578	718	649	412	133	28	0	0	1	31	130	464	1042	1760	2409	2821	2954	2982	2982
60	0	0	5	44	200	429	563	496	277	61	8	0	0	0	5	49	249	678	1241	1737	2014	2075	2083	2083
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	16	40	113	264	497	703	818	763	561	331	132	33	16	56	169	433	930	1633	2451	3214	3775	4106	4238	4271

(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