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: MONMOUTH, IL **COOP ID: 115768**

Climate Division: IL 3 **NWS Call Sign:** **Elevation: 745 Feet** **Lat: 40˚55N** **Lon: 90˚38W**

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	30.6	14.8	22.7	69	1989	31	34.2	1989	-25+	1999	5	9.7	1977	1312	0	.0	.0	1.6	15.4	28.8	5.7
Feb	36.9	20.4	28.7	73	1921	15	38.6	1998	-27	1905	13	16.2	1979	1018	0	.0	.0	5.0	10.1	23.7	3.0
Mar	49.4	30.3	39.9	88+	1910	23	47.9	2000	-12	1962	1	31.7	1984	780	0	.0	.0	15.0	2.4	18.4	.1
Apr	62.7	40.5	51.6	93+	1980	22	57.4	1977	12+	1982	7	45.7	1983	407	6	.0	.1	26.5	.1	5.9	.0
May	72.9	50.8	61.9	102	1934	31	68.3	1991	25	1966	10	56.8	1990	170	73	.0	1.0	30.9	.0	.2	.0
Jun	81.3	60.1	70.7	104	1934	1	75.9	1971	33	1903	12	66.0	1982	19	190	.1	5.0	30.0	.0	.0	.0
Jul	84.8	64.1	74.5	110	1936	15	78.1	1983	45+	1972	5	70.7	1971	3	297	.4	9.9	31.0	.0	.0	.0
Aug	83.3	61.8	72.6	105+	1936	18	78.5	1988	38	1915	31	67.4	1986	16	249	.5	6.3	31.0	.0	.0	.0
Sep	77.4	53.9	65.7	103	1913	3	71.2	1998	26	1942	28	60.6	1993	80	98	.0	2.1	30.0	.0	.3	.0
Oct	65.4	43.3	54.4	92+	1953	2	60.8	1971	7	1925	30	48.2	1976	341	10	.0	.1	29.0	.0	4.2	.0
Nov	49.1	31.5	40.3	82	1933	1	47.2	1999	-3+	1977	26	33.1	1976	740	0	.0	.0	14.7	1.8	17.0	.1
Dec	35.1	20.2	27.7	69+	1998	4	35.5	1982	-22	1924	28	14.2	2000	1159	0	.0	.0	3.3	10.3	27.1	3.0
Ann	60.7	41.0	50.9	110	Jul 1936	15	78.5	Aug 1988	-27	Feb 1905	13	9.7	Jan 1977	6045	923	1.0	24.5	248.0	40.1	125.6	11.9

\+ 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

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1901-2001

(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	1.62	1.45	2.30	1938	24	3.69	1974	.10	1981
Feb	1.72	1.40	2.85	1997	21	4.32	1997	.28	1987
Mar	2.85	2.74	2.65	1948	19	5.38	1990	.64	1981
Apr	3.76	3.46	3.11	1950	24	8.11	1999	1.11	1971
May	4.27	4.05	2.83	1990	4	8.81	1995	.86	1992
Jun	4.26	3.80	5.76	1946	12	8.79+	1990	.82	1988
Jul	4.33	3.72	6.53	1929	15	12.57	1982	.79	1983
Aug	4.02	3.21	4.57	1998	9	9.91	1977	.77	2000
Sep	3.45	2.84	4.48	1911	24	8.58	1986	.03	1979
Oct	2.97	2.40	4.14	1927	1	7.59	1998	.76	1975
Nov	2.74	2.65	2.46	1990	27	6.80	1985	.21	1999
Dec	2.32	2.18	2.15	1965	24	4.37	1971	.40	1995
Ann	38.31	37.32	6.53	Jul 1929	15	12.57	Jul 1982	.03	Sep 1979

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.7	4.5	.7	.2
Feb	7.0	4.5	1.0	.2
Mar	9.5	6.7	1.8	.5
Apr	10.6	7.0	2.6	1.0
May	11.7	8.1	3.2	.9
Jun	9.6	6.7	2.9	1.3
Jul	8.8	6.2	2.7	1.3
Aug	8.6	5.9	2.6	1.0
Sep	8.0	5.7	2.4	.8
Oct	8.7	5.9	1.7	.6
Nov	8.8	5.9	2.0	.4
Dec	8.2	5.1	1.3	.6
Ann	107.2	72.2	24.9	8.8

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	.31	.46	.69	.91	1.14	1.37	1.65	1.97	2.41	3.10	3.76
Feb	.44	.60	.85	1.07	1.29	1.52	1.78	2.08	2.48	3.10	3.69
Mar	.72	.98	1.40	1.77	2.13	2.51	2.94	3.45	4.11	5.16	6.14
Apr	1.19	1.55	2.08	2.53	2.97	3.42	3.92	4.50	5.25	6.42	7.50
May	1.58	1.98	2.55	3.03	3.49	3.96	4.46	5.05	5.80	6.96	8.02
Jun	1.34	1.75	2.34	2.86	3.35	3.87	4.43	5.09	5.95	7.27	8.50
Jul	.91	1.31	1.95	2.53	3.11	3.73	4.43	5.27	6.37	8.14	9.82
Aug	.92	1.30	1.88	2.41	2.94	3.50	4.12	4.87	5.85	7.41	8.88
Sep	.59	.89	1.39	1.86	2.35	2.87	3.47	4.21	5.18	6.76	8.27
Oct	.83	1.11	1.54	1.91	2.27	2.65	3.08	3.58	4.22	5.24	6.19
Nov	.56	.81	1.21	1.58	1.95	2.35	2.80	3.34	4.05	5.19	6.28
Dec	.63	.85	1.19	1.48	1.77	2.07	2.41	2.80	3.32	4.12	4.88
Ann	26.44	28.71	31.64	33.87	35.85	37.78	39.77	41.99	44.67	48.59	51.98

\+ 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: 1901-2001
(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	8.5	8.6	3	2	13.0	1979	13	22.5	1997	25	1979	15	16	1979	4.7	3.1	.8	.3	.1	18.5	11.4	5.6	1.1
Feb	5.4	4.4	2	2	6.5	1975	24	15.0	1989	17	1979	10	14	1979	3.6	2.3	.6	.2	.0	12.8	8.4	5.2	1.7
Mar	3.3	2.3	1	#	5.0	1972	29	11.0	1972	11	1993	1	3	1979	1.7	1.1	.5	.1	.0	4.3	2.5	1.0	@
Apr	1.0	.0	#	0	15.0	1997	11	15.0	1997	8	1997	11	1	1997	.5	.4	.1	.1	@	.4	.3	.1	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.1	.0	#	0	1.0	1983	13	1.0+	1997	#	1997	27	#	1997	.1	.1	.0	.0	.0	.0	.0	.0	.0
Nov	2.3	1.8	#	#	7.0	1974	30	11.6	1974	8	1974	30	1	1974	1.5	.9	.3	@	.0	1.5	.2	.1	.0
Dec	6.6	4.9	1	1	12.0	1987	15	18.5	1983	12+	2000	29	6+	2000	3.5	2.3	.9	.2	@	8.5	4.6	2.3	.3
Ann	27.2	22.0	N/A	N/A	15.0	Apr 1997	11	22.5	Jan 1997	25	Jan 1979	15	16	Jan 1979	15.6	10.2	3.2	.9	.1	46.0	27.4	14.3	3.1

+ 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	5/20	5/15	5/11	5/08	5/05	5/02	4/29	4/25	4/19
32	5/02	4/28	4/25	4/22	4/19	4/17	4/14	4/11	4/06
28	4/21	4/17	4/14	4/11	4/09	4/06	4/04	3/31	3/27
24	4/16	4/11	4/07	4/04	4/01	3/29	3/26	3/22	3/16
20	4/06	3/31	3/27	3/23	3/20	3/16	3/13	3/08	3/03
16	3/30	3/23	3/18	3/14	3/10	3/06	3/02	2/25	2/18

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	170	163	158	154	150	147	142	138	131
32	198	191	185	181	177	172	168	163	155
28	219	212	207	203	199	195	191	186	179
24	236	230	226	222	218	214	211	206	200
20	267	257	251	245	239	234	228	222	212
16	280	272	267	262	258	253	249	243	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	1312	1018	780	407	170	19	3	16	80	341	740	1159	6045
60	1157	878	625	275	89	4	0	2	27	214	590	1004	4865
57	1064	794	539	206	55	1	0	0	12	151	502	911	4235
55	1002	741	481	165	38	0	0	0	6	116	446	849	3844
50	850	611	345	85	12	0	0	0	0	52	314	706	2975
32	369	224	54	0	0	0	0	0	0	0	39	264	950

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	80	130	297	589	926	1161	1317	1257	1008	692	289	128	7874
55	0	4	11	64	251	471	604	544	324	95	6	0	2374
57	0	0	8	44	206	412	542	482	270	68	3	0	2035
60	0	0	1	24	147	324	449	391	196	38	0	0	1570
65	0	0	0	6	73	190	297	249	98	10	0	0	923
70	0	0	0	1	27	86	159	135	37	2	0	0	447

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	8	36	145	391	710	955	1105	1033	780	459	132	22	8	44	189	580	1290	2245	3350	4383	5163	5622	5754	5776
45	0	10	80	261	556	805	950	878	631	316	70	6	0	10	90	351	907	1712	2662	3540	4171	4487	4557	4563
50	0	1	43	156	406	655	795	723	484	200	31	3	0	1	44	200	606	1261	2056	2779	3263	3463	3494	3497
55	0	0	20	87	268	505	640	568	341	109	9	0	0	0	20	107	375	880	1520	2088	2429	2538	2547	2547
60	0	0	6	34	156	362	485	413	219	49	2	0	0	0	6	40	196	558	1043	1456	1675	1724	1726	1726
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	19	91	242	444	639	757	698	502	276	74	8	1	20	111	353	797	1436	2193	2891	3393	3669	3743	3751

(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