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: AURORA, IL **COOP ID: 110338**

Climate Division: IL 2 **NWS Call Sign:** **Elevation: 640 Feet** **Lat: 41˚46N** **Lon: 88˚19W**

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	29.4	10.5	20.0	66+	1989	31	31.5	1990	-26	1985	20	6.9	1977	1397	0	.0	.0	1.1	17.1	29.8	7.2
Feb	34.9	15.6	25.3	72	2000	25	38.5	1998	-25+	1951	2	13.1	1979	1113	0	.0	.0	3.0	11.1	25.6	4.3
Mar	46.4	26.1	36.3	83+	1986	31	43.3	2000	-15	1943	8	29.0	1984	890	0	.0	.0	11.5	2.9	22.7	.2
Apr	59.3	36.2	47.8	92	1930	11	53.1	1977	8	1982	7	43.0	1975	519	1	.0	.1	24.1	.1	8.8	.0
May	71.5	46.4	59.0	104	1934	31	65.9	1977	21	1966	10	53.3	1997	237	49	.0	.7	30.7	.0	.8	.0
Jun	80.7	55.7	68.2	106	1934	1	72.5	1971	34	1929	4	62.6	1982	40	136	.1	4.5	30.0	.0	.0	.0
Jul	84.2	60.6	72.4	111	1936	14	77.3	1999	40	1907	3	68.7	1971	8	237	.2	6.7	31.0	.0	.0	.0
Aug	82.1	58.4	70.3	105	1934	9	75.4	1995	37	1915	31	65.4	1994	27	189	@	4.0	31.0	.0	.0	.0
Sep	75.2	49.9	62.6	103+	1939	15	67.6	1998	25+	1942	28	57.7	1993	120	46	.0	1.4	30.0	.0	.3	.0
Oct	63.1	38.2	50.7	90+	1971	1	57.0	1971	11+	1952	29	44.4	1988	448	3	.0	@	28.3	.0	6.5	.0
Nov	47.2	27.7	37.5	81	1950	1	44.5	1975	-11	1947	30	29.3	1976	828	0	.0	.0	12.7	2.1	19.4	.1
Dec	34.2	16.4	25.3	69	2001	5	33.9	1982	-25	1914	26	12.9	1983	1232	0	.0	.0	2.5	11.0	28.6	3.4
Ann	59.0	36.8	48.0	111	Jul 1936	14	77.3	Jul 1999	-26	Jan 1985	20	6.9	Jan 1977	6859	661	.3	17.4	235.9	44.3	142.5	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: 1901-2001

(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	1.62	1.35	2.91	1960	12	3.53	1995	.07	1981
Feb	1.52	1.18	3.26	1997	21	5.79	1997	.00	1987
Mar	2.57	2.06	3.51	1948	19	5.37	1985	.33	1994
Apr	3.88	3.95	3.52	1959	28	6.59	1983	.98	1971
May	3.91	3.72	3.59	1990	10	8.00	1990	.75	1992
Jun	4.34	4.24	4.38	1994	24	9.56	1993	.95	1988
Jul	4.39	3.65	16.91	1996	18	21.50	1996	1.45	1991
Aug	4.38	3.37	7.12	1972	26	14.49	1972	.77	1996
Sep	3.50	3.26	6.10	1978	13	8.26	1992	.00	1979
Oct	2.71	2.23	10.48	1954	10	7.82	1991	.89	1999
Nov	3.17	2.64	2.74	1995	11	7.89	1985	.50	1976
Dec	2.40	2.24	2.83	1982	3	5.87	1982	.55	1989
Ann	38.39	37.73	16.91	Jul 1996	18	21.50	Jul 1996	.00+	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.7	4.6	.6	.2
Feb	7.8	4.1	.7	.2
Mar	10.4	5.8	1.6	.4
Apr	11.8	7.3	2.5	1.1
May	11.2	7.4	2.7	1.2
Jun	10.2	7.4	2.9	1.2
Jul	9.3	6.1	2.5	1.2
Aug	10.0	6.7	2.8	1.2
Sep	8.9	5.6	2.1	.9
Oct	8.9	5.1	2.0	.6
Nov	10.2	5.9	1.9	.9
Dec	10.7	5.2	1.1	.5
Ann	119.1	71.2	23.4	9.6

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	.32	.46	.70	.92	1.14	1.38	1.65	1.97	2.40	3.09	3.75
Feb	.20	.40	.65	.87	1.08	1.31	1.57	1.87	2.27	2.91	3.51
Mar	.52	.76	1.13	1.48	1.83	2.20	2.62	3.13	3.80	4.87	5.89
Apr	1.48	1.84	2.35	2.79	3.19	3.61	4.06	4.59	5.25	6.28	7.21
May	1.34	1.71	2.25	2.70	3.14	3.59	4.08	4.65	5.38	6.52	7.57
Jun	1.55	1.96	2.55	3.04	3.52	4.00	4.53	5.14	5.93	7.14	8.26
Jul	1.15	1.56	2.20	2.76	3.31	3.89	4.53	5.30	6.30	7.87	9.34
Aug	.84	1.23	1.87	2.46	3.06	3.71	4.44	5.33	6.50	8.39	10.18
Sep	.68	1.17	1.76	2.23	2.69	3.16	3.68	4.29	5.08	6.31	7.45
Oct	.73	.98	1.37	1.72	2.06	2.41	2.81	3.27	3.88	4.84	5.73
Nov	.71	1.01	1.47	1.89	2.31	2.75	3.25	3.85	4.64	5.89	7.07
Dec	.64	.87	1.21	1.52	1.82	2.13	2.48	2.89	3.43	4.27	5.06
Ann	28.67	30.59	33.03	34.86	36.48	38.04	39.65	41.41	43.54	46.62	49.26

+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	10.0	8.5	4	3
Feb	7.0	8.5	3	2
Mar	3.7	2.7	1	#
Apr	.8	.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	1.4	.5	#	#
Dec	7.5	6.0	2	1
Ann	30.5	26.2	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	11.0	1999	3	27.6	1979	25+	1999	15	18	1979
Feb	9.0	1990	15	13.0	1990	26	1979	20	23	1979
Mar	7.0	1999	9	15.4	1972	19	1979	1	6	1979
Apr	7.0	1975	2	9.0	1975	9	1975	3	1	1975
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	1.0	1997	27	1.0	1997	1	1997	27	#	1997
Nov	7.5	1975	27	7.5	1975	5	1977	30	1	1977
Dec	12.0	1988	27	19.0	1973	20	2000	31	10	2000
Ann	12.0	Dec 1988	27	27.6	Jan 1979	26	Feb 1979	20	23	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.7	3.4	.9	.4	@
Feb	4.5	2.7	.8	.2	.0
Mar	2.1	1.2	.2	.1	.0
Apr	.4	.2	.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	1.2	.4	.1	@	.0
Dec	4.9	2.4	1.0	.3	@
Ann	19.9	10.3	3.1	1.1	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	19.2	14.9	9.0	2.9
Feb	13.3	9.3	6.3	1.6
Mar	4.2	2.3	1.5	.5
Apr	.3	.1	.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
Nov	1.3	.4	.1	.0
Dec	10.9	6.2	2.7	.3
Ann	49.2	33.2	19.7	5.3

+ 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	5/30	5/23	5/19	5/15	5/11	5/07	5/03	4/29	4/22
32	5/16	5/10	5/06	5/03	4/29	4/26	4/23	4/19	4/13
28	4/24	4/21	4/18	4/16	4/14	4/11	4/09	4/06	4/03
24	4/18	4/14	4/11	4/08	4/05	4/03	3/31	3/28	3/24
20	4/12	4/06	4/01	3/29	3/25	3/22	3/18	3/14	3/08
16	3/31	3/25	3/20	3/16	3/13	3/09	3/05	3/01	2/22

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	162	155	150	146	142	138	134	129	122
32	180	174	169	166	162	158	155	150	144
28	210	203	198	194	189	185	181	176	169
24	229	222	217	213	209	205	201	196	189
20	257	248	241	236	230	225	219	213	204
16	280	271	265	259	254	249	243	237	228

***** 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	1397	1113	890	519	237	40	8	27	120	448	828	1232	6859
60	1242	973	735	374	140	10	0	6	46	306	678	1077	5587
57	1149	889	642	292	96	4	0	1	22	232	588	984	4899
55	1087	833	580	242	71	2	0	0	11	187	529	922	4464
50	932	699	434	134	29	0	0	0	2	99	388	774	3491
32	432	277	72	1	0	0	0	0	0	1	55	307	1145

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	58	88	205	472	836	1085	1252	1185	916	579	218	98	6992
55	0	0	0	24	194	397	539	472	238	52	1	0	1917
57	0	0	0	14	156	339	477	410	188	35	0	0	1619
60	0	0	0	6	108	256	384	322	122	16	0	0	1214
65	0	0	0	1	49	136	237	189	46	3	0	0	661
70	0	0	0	0	18	53	115	92	10	0	0	0	288

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	2	15	91	290	630	890	1049	985	721	382	100	14	2	17	108	398	1028	1918	2967	3952	4673	5055	5155	5169
45	0	3	49	175	475	740	894	830	572	248	51	4	0	3	52	227	702	1442	2336	3166	3738	3986	4037	4041
50	0	0	26	95	331	590	739	675	424	146	21	1	0	0	26	121	452	1042	1781	2456	2880	3026	3047	3048
55	0	0	6	45	207	440	584	520	286	72	4	0	0	0	6	51	258	698	1282	1802	2088	2160	2164	2164
60	0	0	1	18	115	297	429	365	170	29	0	0	0	0	1	19	134	431	860	1225	1395	1424	1424	1424
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	11	62	179	390	581	707	657	455	234	58	6	0	11	73	252	642	1223	1930	2587	3042	3276	3334	3340

(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