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: AMITY 4 NE, MO **COOP ID: 230143**

Climate Division: MO 1 **NWS Call Sign:** **Elevation: 974 Feet** **Lat: 39˚53N** **Lon: 94˚22W**

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	31.8	15.1	23.5	69	1981	24	33.7	1990	-24	1974	12	9.2	1979	1288	0	.0	.0	2.7	13.3	29.4	5.2
Feb	38.2	19.9	29.1	77	1995	26	38.3	1999	-19	1996	2	15.0	1978	1005	0	.0	.0	7.5	8.7	24.2	3.0
Mar	50.5	30.7	40.6	85	1991	27	46.2	1992	-17	1962	1	32.0	1984	756	0	.0	.0	18.2	2.0	18.7	.3
Apr	61.4	41.6	51.5	92	1954	6	59.4	1981	12+	1987	3	44.6	1983	412	7	.0	@	26.4	.1	6.1	.0
May	71.8	53.7	62.8	97	1956	21	69.8	1987	27+	1989	7	56.7	1997	155	86	.0	.2	31.0	.0	.3	.0
Jun	81.2	63.4	72.3	101	1953	18	76.2	1971	39+	1990	4	68.2	1982	10	228	.1	5.0	30.0	.0	.0	.0
Jul	85.9	68.1	77.0	111+	1954	18	83.8	1980	43	1971	30	71.9	1971	0	372	1.1	11.3	31.0	.0	.0	.0
Aug	84.3	65.8	75.1	105	1953	14	80.9	1983	40	1986	28	69.5	1992	7	317	.3	9.8	31.0	.0	.0	.0
Sep	76.7	56.2	66.5	104	1953	28	71.5	1990	27+	1984	30	61.3	1989	73	117	.0	3.5	29.9	.0	.3	.0
Oct	65.8	44.4	55.1	94	1963	10	61.3	1971	17	1972	19	48.7	1976	315	9	.0	.1	29.3	.0	5.2	.0
Nov	49.5	31.8	40.7	82	1980	8	49.8	1999	-7	1991	8	33.2	1991	732	0	.0	.0	16.4	1.9	17.9	.2
Dec	36.3	20.7	28.5	71+	1995	3	34.4	1994	-32	1989	23	9.8	1983	1131	0	.0	.0	5.0	9.5	28.3	2.7
Ann	61.1	42.6	51.9	111+	Jul 1954	18	83.8	Jul 1980	-32	Dec 1989	23	9.2	Jan 1979	5884	1136	1.5	29.9	258.4	35.5	130.4	11.4

\+ 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

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	.97	.83	1.38	1965	1	2.44	1973	.00+	1986
Feb	1.04	.86	1.82	1997	21	3.25	1997	.00	1991
Mar	2.40	1.89	1.73	1998	9	7.53	1973	.17	1988
Apr	3.38	3.21	3.10	1991	18	7.00	1997	.73	1996
May	4.75	3.87	3.55	1995	24	12.25	1995	1.61	1980
Jun	4.40	3.83	6.00	1984	8	12.70	1984	1.24	1992
Jul	4.27	3.60	4.85	1965	19	19.14	1993	.55	1976
Aug	3.85	3.36	6.20	1987	26	10.52	1987	.20	1984
Sep	4.75	3.94	6.70	1993	22	14.22	1993	.65	1990
Oct	3.05	3.14	5.14	1954	4	6.85	1998	.31	1988
Nov	2.07	1.89	2.18	1998	2	4.72	1983	.00	1989
Dec	1.42	1.18	2.18	1980	8	4.29	1982	.00+	1996
Ann	36.35	34.97	6.70	Sep 1993	22	19.14	Jul 1993	.00+	Dec 1996

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.9	3.0	.4	.0
Feb	5.5	3.3	.6	.1
Mar	7.4	5.2	1.4	.3
Apr	8.9	6.5	2.1	.8
May	10.2	7.8	3.3	1.2
Jun	8.8	6.5	2.9	1.4
Jul	8.3	5.7	2.9	1.3
Aug	7.7	5.6	2.4	1.2
Sep	7.5	5.9	2.9	1.5
Oct	6.6	5.1	2.2	.7
Nov	6.1	4.2	1.6	.5
Dec	5.1	3.0	1.0	.3
Ann	87.0	61.8	23.7	9.3

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	.00	.17	.37	.52	.67	.83	1.01	1.21	1.48	1.92	2.33
Feb	.10	.21	.39	.54	.69	.86	1.06	1.29	1.60	2.10	2.59
Mar	.45	.67	1.02	1.34	1.67	2.03	2.43	2.92	3.57	4.61	5.60
Apr	.92	1.24	1.72	2.15	2.57	3.01	3.50	4.07	4.82	6.00	7.10
May	1.68	2.12	2.77	3.32	3.84	4.37	4.96	5.64	6.50	7.85	9.08
Jun	1.52	1.94	2.54	3.05	3.54	4.05	4.60	5.24	6.05	7.32	8.49
Jul	.65	1.02	1.63	2.22	2.84	3.51	4.28	5.22	6.48	8.54	10.51
Aug	.69	1.03	1.59	2.11	2.65	3.23	3.89	4.69	5.76	7.48	9.12
Sep	.92	1.35	2.05	2.69	3.34	4.04	4.83	5.79	7.06	9.09	11.02
Oct	.66	.94	1.39	1.80	2.20	2.63	3.12	3.71	4.47	5.70	6.86
Nov	.18	.42	.76	1.06	1.37	1.71	2.09	2.56	3.19	4.20	5.18
Dec	.00	.00	.40	.65	.89	1.15	1.45	1.80	2.26	3.01	3.74
Ann	23.01	25.47	28.70	31.19	33.43	35.62	37.90	40.44	43.57	48.15	52.16

\+ 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	5.5	5.0	2	#
Feb	3.2	3.5	1	1
Mar	2.6	.7	#	#
Apr	.3	.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	.8	.0	#	#
Dec	5.0	2.4	1	#
Ann	17.5	11.6	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	1971	4	15.1	1996	14	1974	11	7	1974
Feb	5.0	1971	5	9.9	1981	8	1983	6	5	1985
Mar	10.0	1998	9	11.6	1984	10	1998	12	3	1998
Apr	8.0	1997	11	8.0	1997	5	1997	12	1	1997
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	3.0	1996	23	3.0	1996	3	1996	23	#+	1997
Nov	4.0	1991	23	5.0	1971	4	1991	23	#+	2000
Dec	8.0	1987	15	18.0	1997	12	1983	31	7	1983
Ann	10.0	Mar 1998	9	18.0	Dec 1997	14	Jan 1974	11	7+	Dec 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.5	1.8	.7	.2	.0
Feb	2.2	1.5	.5	.1	.0
Mar	1.1	.8	.4	.2	@
Apr	.3	.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	@	@	@	.0	.0
Nov	.6	.4	.1	.0	.0
Dec	2.0	1.5	.6	.2	.0
Ann	8.7	6.2	2.4	.8	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	9.7	6.5	4.2	.5
Feb	4.9	2.4	.6	.0
Mar	1.6	.9	.5	.2
Apr	.2	.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
Nov	.7	.2	.0	.0
Dec	6.4	3.6	2.5	.4
Ann	23.5	13.8	7.9	1.1

+ 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	5/12	5/08	5/05	5/02	4/30	4/28	4/25	4/22	4/18
32	5/01	4/26	4/23	4/20	4/17	4/15	4/12	4/08	4/04
28	4/24	4/20	4/16	4/13	4/10	4/07	4/04	4/01	3/27
24	4/15	4/11	4/07	4/04	4/02	3/30	3/27	3/24	3/19
20	4/03	3/29	3/25	3/21	3/18	3/15	3/12	3/08	3/02
16	4/04	3/26	3/20	3/15	3/10	3/06	2/28	2/22	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	9/16	9/22	9/26	9/29	10/02	10/05	10/09	10/13	10/18
32	9/24	9/29	10/03	10/06	10/09	10/12	10/16	10/19	10/25
28	10/05	10/10	10/14	10/18	10/21	10/24	10/27	10/31	11/06
24	10/16	10/23	10/28	11/01	11/05	11/08	11/12	11/17	11/24
20	10/26	11/02	11/08	11/12	11/16	11/20	11/25	11/30	12/07
16	11/10	11/15	11/18	11/21	11/24	11/27	11/30	12/03	12/08

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	174	168	163	158	155	151	146	142	135
32	197	189	184	179	174	170	165	159	152
28	218	209	203	198	193	188	183	177	168
24	241	232	226	221	216	211	206	200	191
20	272	262	254	248	242	236	230	222	212
16	288	278	270	264	258	252	245	238	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	1288	1005	756	412	155	10	0	7	73	315	732	1131	5884
60	1133	865	603	281	80	1	0	0	25	189	583	976	4736
57	1040	788	518	212	49	0	0	0	11	127	499	883	4127
55	979	736	461	172	34	0	0	0	5	94	444	824	3749
50	831	607	328	91	11	0	0	0	0	39	315	680	2902
32	357	236	51	0	0	0	0	0	0	0	47	248	939

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	91	155	318	585	954	1209	1395	1334	1034	717	305	140	8237
55	0	10	14	67	275	519	682	621	350	98	12	3	2651
57	0	7	10	47	229	459	620	559	295	69	7	0	2302
60	0	0	2	26	167	370	527	466	219	37	1	0	1815
65	0	0	0	7	86	228	372	317	117	9	0	0	1136
70	0	0	0	1	34	112	230	186	50	1	0	0	614

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	10	46	162	393	709	960	1131	1073	792	470	141	21	10	56	218	611	1320	2280	3411	4484	5276	5746	5887	5908
45	0	18	93	264	554	810	976	918	643	328	74	6	0	18	111	375	929	1739	2715	3633	4276	4604	4678	4684
50	0	5	48	161	402	660	821	763	494	208	34	3	0	5	53	214	616	1276	2097	2860	3354	3562	3596	3599
55	0	0	20	88	264	511	666	608	355	111	13	0	0	0	20	108	372	883	1549	2157	2512	2623	2636	2636
60	0	0	4	43	143	362	511	454	233	51	2	0	0	0	4	47	190	552	1063	1517	1750	1801	1803	1803
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	5	40	115	245	438	644	767	727	512	288	87	15	5	45	160	405	843	1487	2254	2981	3493	3781	3868	3883

(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