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: OSCEOLA, MO **COOP ID: 236402**

Climate Division: MO 3 **NWS Call Sign:** **Elevation: 766 Feet** **Lat: 38˚03N** **Lon: 93˚42W**

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	41.0	20.8	30.9	76	1989	31	41.4	1989	-19	1959	5	16.9	1979	1057	0	.0	.0	8.0	8.1	26.3	2.0
Feb	47.5	26.1	36.8	83	1972	29	47.2	1976	-20	1979	9	23.3	1978	789	0	.0	.0	12.5	4.5	20.1	1.1
Mar	58.4	35.7	47.1	90	1974	31	51.9	1986	-5	1960	5	40.3	1984	556	0	.0	@	23.1	.5	12.8	.1
Apr	68.7	45.0	56.9	92+	1987	20	64.4	1981	19	1975	3	49.8	1983	262	18	.0	.3	28.8	.0	3.3	.0
May	76.8	54.1	65.5	96	1963	8	71.5	1987	27	1976	3	60.4	1976	99	112	.0	1.0	31.0	.0	.3	.0
Jun	85.1	63.2	74.2	104+	1988	24	77.5	1986	41	1972	1	69.6	1982	7	282	.2	8.3	30.0	.0	.0	.0
Jul	90.9	68.2	79.6	110	1980	12	87.5	1980	44	1972	6	75.7	1971	0	451	2.8	19.1	31.0	.0	.0	.0
Aug	89.9	66.3	78.1	107	2000	31	84.7	1983	44	1967	28	71.1	1992	3	409	2.6	17.1	31.0	.0	.0	.0
Sep	81.1	57.9	69.5	107	2000	2	74.7	1998	29	1984	30	61.9	1974	48	183	.4	6.1	30.0	.0	.1	.0
Oct	70.6	46.2	58.4	96	1963	7	64.9	1971	20	1993	31	51.5	1976	229	24	.0	.2	30.3	.0	3.0	.0
Nov	55.8	35.2	45.5	84+	1980	8	54.4	1999	0	1991	8	37.0	1976	586	0	.0	.0	20.6	.7	12.7	@
Dec	44.4	25.0	34.7	76	1966	7	41.2	1971	-25	1989	23	18.7	1983	940	0	.0	.0	10.7	4.9	22.7	1.0
Ann	67.5	45.3	56.4	110	Jul 1980	12	87.5	Jul 1980	-25	Dec 1989	23	16.9	Jan 1979	4576	1479	6.0	52.1	287.0	18.7	101.3	4.2

\+ 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: 1955-2001

(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	1.74	1.59	2.13	1996	18	3.90	1979	.10	1986
Feb	2.03	1.81	4.00	1997	21	5.99	1997	.29	1996
Mar	3.06	2.46	4.00	1974	10	9.77	1973	.31	1995
Apr	4.11	3.65	4.50	1994	10	16.47	1994	.56	1989
May	4.67	4.58	3.86	1995	17	11.63	1995	.88	1992
Jun	4.73	3.74	4.90	1975	17	13.83	1981	.87	1972
Jul	3.45	2.97	4.90	2001	25	10.43	1993	.12	1980
Aug	4.04	3.38	8.15	1975	26	13.72	1975	.06	2000
Sep	4.02	2.98	4.74	1986	23	12.51	1993	1.50	1995
Oct	3.89	3.13	7.28	1986	3	15.00	1986	.45	1999
Nov	3.60	3.49	3.07	1994	20	9.96	1992	.03	1989
Dec	2.51	2.07	2.50	1999	4	5.59	1973	.33	1976
Ann	41.85	40.89	8.15	Aug 1975	26	16.47	Apr 1994	.03	Nov 1989

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.2	4.1	1.0	.4
Feb	6.0	4.2	1.2	.5
Mar	7.8	5.5	2.1	.8
Apr	9.0	6.6	2.7	1.3
May	10.6	7.4	3.3	1.4
Jun	8.7	6.8	3.3	1.7
Jul	7.2	5.2	2.6	1.0
Aug	7.2	5.1	2.8	1.1
Sep	8.0	5.7	2.8	1.3
Oct	7.6	5.5	2.2	1.2
Nov	7.6	5.4	2.6	1.2
Dec	6.1	4.5	2.1	.7
Ann	92.0	66.0	28.7	12.6

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	.27	.42	.67	.91	1.16	1.43	1.75	2.13	2.64	3.48	4.28
Feb	.38	.56	.86	1.14	1.41	1.71	2.06	2.47	3.01	3.89	4.73
Mar	.64	.92	1.37	1.78	2.19	2.63	3.13	3.72	4.51	5.77	6.95
Apr	.86	1.23	1.84	2.39	2.94	3.53	4.19	4.99	6.05	7.74	9.34
May	1.50	1.95	2.60	3.16	3.70	4.25	4.86	5.58	6.50	7.93	9.25
Jun	1.13	1.58	2.27	2.88	3.49	4.14	4.86	5.72	6.85	8.64	10.32
Jul	.42	.69	1.17	1.66	2.17	2.74	3.40	4.22	5.33	7.16	8.94
Aug	.58	.92	1.50	2.06	2.64	3.29	4.03	4.94	6.16	8.15	10.07
Sep	1.00	1.38	1.96	2.48	3.00	3.54	4.14	4.86	5.80	7.29	8.68
Oct	.79	1.14	1.71	2.23	2.76	3.32	3.96	4.73	5.75	7.38	8.92
Nov	.43	.71	1.21	1.71	2.25	2.84	3.54	4.39	5.56	7.48	9.34
Dec	.47	.69	1.06	1.40	1.74	2.12	2.54	3.06	3.74	4.84	5.88
Ann	27.69	30.35	33.81	36.46	38.83	41.14	43.54	46.21	49.46	54.22	58.38

\+ 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: 1955-2001
(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	6.1	3.8	1	#
Feb	4.4	3.0	1	#
Mar	1.8	.8	#	#
Apr	.2	.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
Nov	1.1	.0	#	0
Dec	2.9	1.0	#	#
Ann	16.5	8.6	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	8.0	1978	16	25.3	1979	11	1979	15	6	1979
Feb	9.0	1980	8	14.0	1980	8	1980	9	4	1979
Mar	9.0	1989	6	9.3	1989	7	1975	9	1	1975
Apr	3.5	1973	9	3.5	1973	2	1973	9	#+	1982
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	.5	1980	28	.5	1980	#+	1997	26	#+	1997
Nov	7.0	1975	26	7.1	1975	6	1975	26	#+	2000
Dec	11.0	2000	13	13.0	1987	10	2000	13	4	2000
Ann	11.0	Dec 2000	13	25.3	Jan 1979	11	Jan 1979	15	6	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.5	2.5	.6	.2	.0
Feb	2.4	1.7	.7	.1	.0
Mar	1.0	.6	.2	.1	.0
Apr	.1	.1	@	.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	@	.0	.0	.0	.0
Nov	.5	.4	.1	.1	.0
Dec	1.6	1.0	.4	.2	@
Ann	9.1	6.3	2.0	.7	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.3	3.7	1.3	.0
Feb	4.1	1.5	.5	.0
Mar	.8	.3	.1	.0
Apr	@	.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	.1	.1	.0
Dec	3.7	2.1	1.3	@
Ann	16.1	7.7	3.3	@

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	179	172	167	162	158	154	150	144	137
32	205	196	190	185	180	176	170	164	156
28	235	227	221	216	211	206	201	195	187
24	249	242	237	233	229	225	220	215	208
20	288	277	269	262	256	249	242	234	223
16	310	300	292	286	280	275	268	261	251

***** 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	1057	789	556	262	99	7	0	3	48	229	586	940	4576
60	902	656	410	150	40	1	0	0	15	121	446	786	3527
57	812	578	326	98	20	0	0	0	6	75	365	700	2980
55	757	527	274	70	12	0	0	0	3	52	314	642	2651
50	612	405	168	24	2	0	0	0	0	16	206	501	1934
32	209	106	9	0	0	0	0	0	0	0	18	139	481

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	175	241	476	745	1037	1265	1474	1429	1125	818	422	222	9429
55	10	18	28	126	336	575	761	716	437	157	29	13	3206
57	3	13	18	94	282	515	699	654	381	118	19	8	2804
60	0	8	9	56	209	426	606	561	299	71	10	1	2256
65	0	0	0	18	112	282	451	409	183	24	0	0	1479
70	0	0	0	4	47	157	300	267	96	5	0	0	876

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	43	108	275	516	799	1027	1228	1186	895	588	238	69	43	151	426	942	1741	2768	3996	5182	6077	6665	6903	6972
45	12	58	176	376	644	877	1073	1031	745	438	148	34	12	70	246	622	1266	2143	3216	4247	4992	5430	5578	5612
50	4	26	103	249	492	727	918	876	596	297	81	12	4	30	133	382	874	1601	2519	3395	3991	4288	4369	4381
55	0	11	53	148	342	577	763	721	450	181	41	2	0	11	64	212	554	1131	1894	2615	3065	3246	3287	3289
60	0	2	22	76	206	427	608	566	312	93	13	0	0	2	24	100	306	733	1341	1907	2219	2312	2325	2325
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	33	77	177	320	512	698	831	799	587	368	140	46	33	110	287	607	1119	1817	2648	3447	4034	4402	4542	4588

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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