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: SAVERTON LOCK & DAM 22, MO **COOP ID: 237578**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 472 Feet** **Lat: 39˚38N** **Lon: 91˚15W**

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	34.6	16.2	25.4	74	1950	24	38.5	1990	-22	1977	17	11.9	1977	1227	0	.0	.0	4.0	12.6	28.1	3.4
Feb	40.4	20.8	30.6	82	1972	29	40.4	1976	-19	1979	9	17.4	1978	963	0	.0	.0	7.3	7.5	22.5	2.1
Mar	52.1	31.1	41.6	88	1986	30	46.5	2000	-11	1980	2	33.8	1996	726	0	.0	.0	17.6	1.8	16.7	.1
Apr	63.8	43.0	53.4	94	2001	27	61.2	1981	22+	1997	10	47.6	1983	362	13	.0	.2	26.6	.0	3.2	.0
May	74.2	53.4	63.8	96	1978	25	70.2	1987	32	1966	10	58.6	1997	133	96	.0	.9	30.9	.0	.0	.0
Jun	83.7	62.9	73.3	105	1988	26	78.0	1971	45+	1993	6	68.0	1982	10	259	.3	6.8	30.0	.0	.0	.0
Jul	88.8	67.9	78.4	110	1954	14	83.4+	1983	43	1967	13	74.6	1996	0	414	1.5	13.9	31.0	.0	.0	.0
Aug	87.0	65.9	76.5	106	1984	30	83.7	1983	47	1950	21	70.4	1992	6	360	1.1	9.9	31.0	.0	.0	.0
Sep	79.0	57.0	68.0	103+	1954	5	72.8	1998	35	1949	30	62.8	1974	51	141	@	3.7	30.0	.0	.0	.0
Oct	67.6	45.4	56.5	93+	1963	10	63.2	1971	22	1960	20	50.7	1976	277	14	.0	.1	29.7	.0	1.5	.0
Nov	52.2	33.2	42.7	83	1950	1	51.2	1999	-2	1964	30	35.9	1976	669	0	.0	.0	16.8	1.3	13.1	.0
Dec	39.3	22.0	30.7	74+	1991	9	37.4	1982	-18+	1989	24	16.5	1983	1064	0	.0	.0	6.3	7.7	25.7	1.7
Ann	63.6	43.2	53.4	110	Jul 1954	14	83.7	Aug 1983	-22	Jan 1977	17	11.9	Jan 1977	5488	1297	2.9	35.5	261.2	30.9	110.8	7.3

\+ 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	1.37	1.32	3.00	2001	29	2.97	1996	.07	1986
Feb	1.74	1.46	3.35	1997	21	5.23	1997	.07	1991
Mar	3.05	2.86	2.35	1962	21	8.56	1973	.77	1986
Apr	3.70	4.04	3.94	1956	29	7.88	1994	.93	1971
May	4.63	4.38	3.20	1981	18	8.84	1991	.83	1992
Jun	3.38	2.81	4.59	1949	24	8.22	1998	.72	1991
Jul	3.99	3.43	4.40	1957	28	16.93	1981	.52	1994
Aug	3.72	3.29	3.23	1955	30	10.61	1995	.47	1984
Sep	3.71	3.12	4.45	1965	16	13.51	1993	.76	1981
Oct	3.00	2.40	3.32	1969	13	7.31	1973	.69	1987
Nov	3.25	2.92	2.80	1958	17	9.66	1985	.40	1999
Dec	2.25	2.10	2.55	1982	3	6.50	1982	.15	1976
Ann	37.79	36.57	4.59	Jun 1949	24	16.93	Jul 1981	.07+	Feb 1991

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.0	3.8	.6	.2
Feb	7.1	3.8	1.1	.3
Mar	9.2	6.3	2.1	.5
Apr	10.1	6.9	2.6	.7
May	10.6	7.5	3.1	1.5
Jun	8.1	5.7	2.3	1.1
Jul	8.7	6.3	2.4	1.2
Aug	7.3	5.8	2.8	1.1
Sep	7.6	5.5	2.6	1.0
Oct	8.3	5.6	2.1	.7
Nov	9.0	6.5	2.3	.7
Dec	7.7	4.2	1.5	.6
Ann	100.7	67.9	25.5	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	.19	.30	.49	.68	.88	1.10	1.36	1.67	2.09	2.78	3.45
Feb	.31	.46	.71	.95	1.20	1.46	1.76	2.12	2.61	3.40	4.14
Mar	1.02	1.31	1.73	2.09	2.43	2.79	3.18	3.64	4.22	5.13	5.97
Apr	.97	1.32	1.86	2.33	2.79	3.28	3.82	4.46	5.30	6.62	7.85
May	1.56	1.99	2.64	3.18	3.71	4.24	4.83	5.52	6.41	7.78	9.04
Jun	.87	1.19	1.68	2.11	2.54	2.99	3.49	4.08	4.85	6.08	7.22
Jul	.65	1.00	1.58	2.13	2.69	3.31	4.01	4.87	6.02	7.88	9.67
Aug	.97	1.32	1.86	2.33	2.80	3.29	3.84	4.49	5.33	6.66	7.91
Sep	.87	1.22	1.76	2.25	2.73	3.24	3.81	4.50	5.39	6.81	8.15
Oct	.76	1.04	1.48	1.87	2.25	2.65	3.10	3.63	4.32	5.42	6.45
Nov	.63	.92	1.40	1.84	2.28	2.76	3.31	3.96	4.83	6.22	7.54
Dec	.45	.66	.99	1.29	1.60	1.92	2.29	2.74	3.33	4.27	5.17
Ann	25.34	27.70	30.75	33.08	35.16	37.19	39.29	41.63	44.48	48.64	52.26

\+ 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: 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	4.4	1.9	2	#
Feb	3.7	4.5	1	#
Mar	2.1	.0	#	0
Apr	.1	.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	.4	.0	#	0
Dec	2.9	.5	1	#
Ann	13.6	6.9	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	1987	10	21.0	1979	22	1979	15	12	1979
Feb	10.0	1993	25	10.0	1993	15	1979	10	10	1979
Mar	7.0	1978	8	24.0	1978	12	1978	7	5	1978
Apr	2.0	1971	6	2.0	1971	3	1980	14	#+	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	#	1993	30	#	1993	0	0	0	0	0
Nov	6.0	1977	27	6.0	1977	8	1975	27	1	1977
Dec	10.0	1973	19	16.0	1981	10	1973	19	3	1983
Ann	10.0+	Feb 1993	25	24.0	Mar 1978	22	Jan 1979	15	12	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.4	1.2	.4	.1	.0
Feb	1.1	1.0	.3	.1	@
Mar	.5	.5	.3	.1	.0
Apr	.1	.1	.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	.0	.0	.0	.0	.0
Nov	.1	.1	.1	@	.0
Dec	1.1	.9	.4	.2	@
Ann	4.3	3.8	1.5	.5	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.5	3.2	2.2	1.6
Feb	4.8	3.0	2.2	1.6
Mar	.6	.3	.0	.0
Apr	.1	.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	2.7	1.7	1.4	@
Ann	14.9	8.3	5.9	3.2

+ 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	4/28	4/24	4/21	4/18	4/16	4/13	4/11	4/08	4/04
32	4/16	4/13	4/11	4/09	4/08	4/06	4/04	4/02	3/30
28	4/13	4/08	4/05	4/02	3/30	3/27	3/25	3/21	3/17
24	4/06	3/31	3/27	3/23	3/20	3/16	3/13	3/09	3/03
20	3/25	3/19	3/15	3/11	3/08	3/04	3/01	2/24	2/18
16	3/21	3/12	3/05	2/28	2/23	2/17	2/12	2/05	1/27

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	10/02	10/07	10/10	10/13	10/15	10/18	10/21	10/24	10/29
32	10/11	10/17	10/21	10/24	10/27	10/30	11/03	11/06	11/12
28	10/29	11/02	11/06	11/09	11/11	11/14	11/17	11/20	11/24
24	11/03	11/09	11/13	11/16	11/19	11/22	11/26	11/30	12/05
20	11/07	11/13	11/18	11/22	11/26	11/30	12/04	12/09	12/15
16	11/18	11/24	11/29	12/02	12/06	12/09	12/13	12/18	12/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	200	194	189	185	182	178	175	170	164
32	220	214	209	205	202	198	194	190	184
28	244	238	233	229	225	222	218	213	206
24	269	260	254	249	244	239	233	227	218
20	291	281	274	268	262	257	251	244	234
16	322	309	300	293	286	278	271	262	250

***** 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	1227	963	726	362	133	10	0	6	51	277	669	1064	5488
60	1072	823	574	238	65	2	0	0	14	159	522	909	4378
57	979	743	488	176	37	0	0	0	5	104	439	817	3788
55	917	691	432	140	24	0	0	0	2	75	385	758	3424
50	774	561	303	70	7	0	0	0	0	28	262	615	2620
32	314	197	41	0	0	0	0	0	0	0	29	203	784

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	110	158	338	641	986	1239	1437	1377	1081	759	350	161	8637
55	0	9	16	91	297	549	724	664	392	122	16	4	2884
57	0	4	11	67	248	489	662	602	335	88	10	0	2516
60	0	0	3	39	182	401	569	509	255	50	3	0	2011
65	0	0	0	13	96	259	414	360	141	14	0	0	1297
70	0	0	0	3	39	139	266	225	64	2	0	0	738

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	18	57	182	436	759	1015	1195	1133	854	530	191	38	18	75	257	693	1452	2467	3662	4795	5649	6179	6370	6408
45	5	26	104	306	604	865	1040	978	704	382	112	14	5	31	135	441	1045	1910	2950	3928	4632	5014	5126	5140
50	0	10	59	191	452	715	885	823	556	251	57	5	0	10	69	260	712	1427	2312	3135	3691	3942	3999	4004
55	0	2	31	107	307	565	730	668	411	146	23	2	0	2	33	140	447	1012	1742	2410	2821	2967	2990	2992
60	0	0	8	55	182	417	575	513	276	72	5	0	0	0	8	63	245	662	1237	1750	2026	2098	2103	2103
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	12	38	115	254	471	687	821	776	555	307	104	27	12	50	165	419	890	1577	2398	3174	3729	4036	4140	4167

(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