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: MOBERLY, MO **COOP ID: 235671**

Climate Division: MO 2 **NWS Call Sign:** **Elevation: 840 Feet** **Lat: 39˚25N** **Lon: 92˚26W**

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	35.7	18.8	27.3	76	1950	24	40.5	1990	-21	1982	10	12.7	1977	1171	0	.0	.0	4.9	10.9	26.8	3.0
Feb	42.3	24.2	33.3	82	1972	29	42.4	2000	-15	1996	3	19.4	1978	889	0	.0	.0	8.9	6.7	21.7	1.4
Mar	54.2	33.9	44.1	87+	1986	30	49.6	1991	-12	1960	5	34.4	1984	650	0	.0	.0	19.5	1.2	14.2	.1
Apr	66.3	44.3	55.3	92	1987	20	62.8	1981	17	1982	6	47.4	1983	309	17	.0	.3	27.3	.0	3.4	.0
May	75.3	54.2	64.8	96	1937	29	71.2	1987	28	1966	10	60.4	1976	115	108	.0	.5	31.0	.0	@	.0
Jun	84.1	63.4	73.8	102+	1988	24	77.4	1988	40	1945	4	69.2	1982	6	267	.1	6.4	30.0	.0	.0	.0
Jul	88.7	67.7	78.2	112	1954	14	85.3	1980	48+	1975	13	73.6	1971	0	409	1.4	14.8	31.0	.0	.0	.0
Aug	86.8	65.7	76.3	108+	1936	16	84.1	1983	44+	1967	31	72.1	1992	6	355	1.0	11.9	31.0	.0	.0	.0
Sep	78.7	57.6	68.2	102	1938	10	72.8	1998	32	1937	17	60.5	1974	52	146	.0	3.7	30.0	.0	.0	.0
Oct	67.7	46.7	57.2	96	1938	15	62.6	1971	18+	1972	19	48.8	1976	262	20	.0	.1	29.9	.0	2.1	.0
Nov	52.2	34.8	43.5	83	1938	1	52.0	1990	-4	1964	30	33.5	1976	645	0	.0	.0	17.9	1.2	12.8	.0
Dec	39.6	23.7	31.7	71+	1991	8	37.9	1994	-20+	1989	23	16.6	1983	1033	0	.0	.0	7.1	7.1	24.5	1.5
Ann	64.3	44.6	54.5	112	Jul 1954	14	85.3	Jul 1980	-21	Jan 1982	10	12.7	Jan 1977	5138	1322	2.5	37.7	268.5	27.1	105.5	6.0

\+ 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: 1936-2001

(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	1.63	1.56	2.00	1937	7	3.72	1995	.00	1986
Feb	1.88	1.62	3.15	1997	21	5.51	1997	.24	1991
Mar	3.12	2.78	3.40	1998	31	8.97	1973	1.04+	1995
Apr	4.01	3.71	8.28	1973	21	12.94	1973	.88	2000
May	4.88	4.18	3.92	1995	24	11.39	1995	.72	1992
Jun	4.20	4.27	3.48	1969	22	9.85	1981	.51	1992
Jul	4.10	3.74	8.09	1967	9	13.02	1981	.60	1975
Aug	3.67	3.00	3.88	1968	3	9.27	1982	.65	1996
Sep	4.04	3.36	5.56	1961	13	15.48	1986	1.00	1979
Oct	3.17	3.11	4.08	1986	3	7.76	1986	.72	1975
Nov	3.05	2.75	3.08	1977	1	8.15	1992	.10	1989
Dec	2.29	2.21	2.94	1982	2	6.70	1982	.62+	1996
Ann	40.04	36.76	8.28	Apr 1973	21	15.48	Sep 1986	.00	Jan 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.4	3.9	.9	.2
Feb	7.0	4.0	1.2	.3
Mar	9.5	6.3	2.1	.7
Apr	10.3	6.8	2.6	.8
May	11.8	8.0	3.2	1.4
Jun	9.3	6.0	3.1	1.2
Jul	7.8	5.1	2.6	1.3
Aug	8.0	5.4	2.5	1.0
Sep	7.6	5.6	2.8	1.2
Oct	8.2	5.3	2.2	.9
Nov	8.5	5.7	2.2	.6
Dec	7.4	4.5	1.5	.5
Ann	101.8	66.6	26.9	10.1

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	.13	.31	.58	.82	1.07	1.34	1.64	2.02	2.52	3.34	4.12
Feb	.37	.54	.82	1.07	1.33	1.60	1.92	2.29	2.79	3.59	4.35
Mar	.91	1.21	1.66	2.04	2.42	2.81	3.24	3.75	4.41	5.44	6.40
Apr	.79	1.16	1.75	2.29	2.83	3.42	4.09	4.89	5.95	7.64	9.26
May	1.52	1.98	2.67	3.26	3.83	4.43	5.08	5.84	6.83	8.37	9.79
Jun	.93	1.32	1.94	2.49	3.05	3.64	4.30	5.10	6.14	7.81	9.38
Jul	.77	1.14	1.74	2.30	2.86	3.47	4.16	5.00	6.10	7.88	9.58
Aug	.90	1.25	1.78	2.26	2.73	3.23	3.78	4.45	5.31	6.68	7.97
Sep	1.04	1.42	2.01	2.53	3.04	3.57	4.17	4.88	5.80	7.26	8.62
Oct	.82	1.12	1.58	1.99	2.39	2.81	3.28	3.83	4.56	5.70	6.76
Nov	.47	.73	1.17	1.59	2.02	2.50	3.05	3.72	4.62	6.08	7.49
Dec	.58	.80	1.13	1.42	1.71	2.02	2.36	2.77	3.30	4.13	4.92
Ann	25.47	28.18	31.70	34.43	36.88	39.27	41.76	44.54	47.95	52.95	57.33

\+ 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: 1936-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Climate Division: MO 2 **NWS Call Sign:** **Elevation: 840 Feet** **Lat: 39°25N** **Lon: 92°26W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	6.3	5.0	#	0
Feb	4.0	2.0	#	0
Mar	2.0	.0	#	0
Apr	.4	.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
Nov	1.3	.0	#	0
Dec	2.6	1.3	#	0
Ann	16.6	8.3	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	1979	13	20.5	1987	9	1987	19	5	1974
Feb	12.0	1975	24	18.5	1975	8	1975	25	2	1975
Mar	10.0	1978	2	19.5	1978	#	1974	23	#	1974
Apr	6.0	1973	9	6.0	1973	0	0	0	0	0
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	#	1997	26	#+	1997	#	1997	26	#	1997
Nov	8.5	1974	29	8.5	1974	7	1975	26	#+	1997
Dec	8.0	1978	31	12.3	1973	1	1974	25	#+	1999
Ann	12.0	Feb 1975	24	20.5	Jan 1987	9	Jan 1987	19	5	Jan 1974

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.6	2.1	1.1	.3	.1
Feb	1.9	1.5	.5	.2	.1
Mar	.6	.5	.3	.1	@
Apr	.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	.0	.0	.0
Nov	.4	.3	.1	.1	.0
Dec	1.5	1.1	.4	.1	.0
Ann	7.1	5.6	2.4	.8	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	.0	.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	.3	.3	.2	.0
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	187	181	177	173	169	166	162	158	152
32	212	206	201	198	194	190	186	182	176
28	237	229	223	218	214	209	204	198	190
24	262	253	246	240	235	229	224	217	208
20	280	272	266	260	256	251	246	240	231
16	314	301	292	285	278	270	263	254	241

***** 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	1171	889	650	309	115	6	0	6	52	262	645	1033	5138
60	1016	754	505	192	52	1	0	0	15	149	502	878	4064
57	925	676	420	136	29	0	0	0	5	98	420	789	3498
55	868	624	366	104	18	0	0	0	2	71	368	733	3154
50	724	497	249	45	5	0	0	0	0	27	252	588	2387
32	291	163	28	0	0	0	0	0	0	0	29	193	704

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	143	198	400	699	1016	1251	1432	1372	1085	781	374	183	8934
55	7	14	26	113	321	561	719	659	397	139	23	10	2989
57	2	11	18	85	269	501	657	597	340	104	15	3	2602
60	0	5	10	51	200	412	564	504	260	62	7	0	2075
65	0	0	0	17	108	267	409	355	146	20	0	0	1322
70	0	0	0	4	45	140	260	219	67	4	0	0	739

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	27	75	222	481	783	1026	1203	1143	863	554	202	49	27	102	324	805	1588	2614	3817	4960	5823	6377	6579	6628
45	6	39	137	347	629	876	1048	988	713	409	124	19	6	45	182	529	1158	2034	3082	4070	4783	5192	5316	5335
50	1	15	77	229	475	726	893	833	564	271	65	6	1	16	93	322	797	1523	2416	3249	3813	4084	4149	4155
55	0	3	35	133	323	576	738	678	419	165	29	1	0	3	38	171	494	1070	1808	2486	2905	3070	3099	3100
60	0	0	14	71	197	427	583	523	288	82	10	0	0	0	14	85	282	709	1292	1815	2103	2185	2195	2195
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	16	50	140	290	495	701	826	777	567	335	115	28	16	66	206	496	991	1692	2518	3295	3862	4197	4312	4340

(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