

Climatology of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: MALDEN MUNICIPAL AP, MO

1971-2000

COOP ID: 235207

Climate Division: MO 6

NWS Call Sign:

Elevation: 290 Feet

Lat: 36° 37N

Lon: 89° 59W

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	42.0	24.6	33.3	75	1967	24	43.0	1990	-15+	1982	17	19.5	1977	984	0	.0	.0	8.4	6.2	23.4	.8
Feb	48.0	28.5	38.3	81	1962	14	45.0	1998	-5+	1996	4	24.3	1978	749	0	.0	.0	13.1	3.7	17.9	.2
Mar	58.2	36.5	47.4	85	1982	18	52.4	1973	9	1967	7	40.7	1996	546	0	.0	.0	24.6	.3	9.1	.0
Apr	68.9	47.1	58.0	92+	1987	22	64.5	1981	24	1982	7	52.3	1983	234	24	.0	.4	29.1	.0	1.3	.0
May	78.6	56.8	67.7	96+	1998	22	73.2+	1998	35	1963	1	63.2	1976	70	154	.0	3.0	31.0	.0	.0	.0
Jun	87.3	65.8	76.6	104+	1988	27	79.6	1986	45+	1988	10	71.7	1974	1	347	.5	13.5	30.0	.0	.0	.0
Jul	91.3	69.9	80.6	108	1980	17	85.7	1980	52	1971	31	77.4	1972	0	484	2.4	21.1	31.0	.0	.0	.0
Aug	89.0	67.4	78.2	106	1964	5	83.4	1980	47	1986	29	73.7	1992	0	410	1.2	16.1	31.0	.0	.0	.0
Sep	82.3	59.3	70.8	101	1980	10	76.5	1986	36+	1967	30	65.1	1974	26	200	.1	7.2	30.0	.0	.0	.0
Oct	71.8	47.0	59.4	93	1969	4	66.5	1971	23	1981	24	54.2	1976	209	35	.0	.3	30.6	.0	1.1	.0
Nov	57.9	37.9	47.9	87	1968	1	53.6	1999	12+	1976	30	41.1	1976	514	1	.0	.0	22.7	@	8.9	.0
Dec	46.0	28.8	37.4	77	1982	3	45.2	1971	-9	1989	24	25.8	1983	857	0	.0	.0	12.3	3.3	19.9	.2
Ann	68.4	47.5	58.0	108	Jul 1980	17	85.7	Jul 1980	-15+	Jan 1982	17	19.5	Jan 1977	4190	1655	4.2	61.6	293.8	13.5	81.6	1.2

+ 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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1960-2001

(3) Derived from 1971-2000 serially complete daily data

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Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	3.03	2.81	4.72	1966	2	8.10	2000	.24	1983	6.9	4.8	2.2	.9	.58	.85	1.29	1.70	2.12	2.56	3.07	3.69	4.50	5.81	7.05
Feb	3.19	2.69	3.61	1988	2	9.54	1990	.70	1983	6.6	4.8	1.8	.9	.75	1.05	1.52	1.93	2.35	2.78	3.27	3.86	4.63	5.84	6.99
Mar	4.73	4.20	4.65	1975	29	13.69	1975	.62	1982	9.1	7.0	3.0	1.4	1.33	1.77	2.45	3.05	3.63	4.23	4.90	5.69	6.72	8.33	9.83
Apr	4.61	4.12	4.90	1985	27	11.39	1973	1.18	1976	9.2	7.2	2.9	1.3	1.46	1.90	2.54	3.10	3.63	4.19	4.80	5.51	6.43	7.86	9.18
May	4.52	4.27	3.84	1961	6	8.68	2000	1.71	1994	9.8	7.3	2.7	1.4	1.96	2.37	2.94	3.40	3.83	4.27	4.74	5.28	5.96	7.00	7.94
Jun	3.75	3.59	3.27	1989	12	8.21	1998	.90	1988	8.2	5.9	2.6	1.1	1.46	1.81	2.30	2.72	3.10	3.50	3.93	4.43	5.06	6.03	6.91
Jul	3.69	2.80	4.10	1978	11	10.94	1988	.19	1999	7.1	5.3	2.4	1.2	.49	.78	1.31	1.82	2.36	2.96	3.65	4.51	5.66	7.55	9.38
Aug	2.47	2.09	3.50	1978	30	7.23	1975	.19	1980	6.1	4.1	1.8	.6	.38	.59	.95	1.29	1.64	2.03	2.48	3.02	3.75	4.93	6.06
Sep	3.10	2.36	3.45	1965	11	10.09	1977	.23	1978	6.5	4.6	2.2	1.0	.35	.58	1.02	1.45	1.91	2.43	3.04	3.79	4.82	6.51	8.16
Oct	2.90	2.49	4.23	1998	6	7.31	1984	.64	2000	6.4	4.5	2.0	.8	.60	.87	1.29	1.68	2.07	2.49	2.96	3.52	4.27	5.46	6.59
Nov	4.41	4.24	2.85	1993	17	8.64	1996	.30	1999	8.4	6.3	3.0	1.5	.86	1.26	1.91	2.50	3.11	3.75	4.49	5.37	6.54	8.42	10.21
Dec	4.17	3.81	5.15	1984	22	12.27	1984	.16	1989	7.9	6.1	2.8	1.2	.64	.99	1.59	2.17	2.77	3.42	4.18	5.10	6.33	8.34	10.26
Ann	44.57	44.13	5.15	Dec 1984	22	13.69	Mar 1975	.16	Dec 1989	92.2	67.9	29.4	13.3	30.34	33.05	36.54	39.21	41.60	43.91	46.31	48.97	52.21	56.93	61.03

+ 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: 1960-2001

(3) Derived from 1971-2000 serially complete daily data

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Lat: 36°37N

Lon: 89°59W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										Snow Fall >= Thresholds					Snow Depth >= Thresholds			
Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	2.4	.0	#	0	8.0	1977	10	11.5	1977	4	1997	9	#+	2000	.6	.4	.3	.2	.0	.0	.0	.0	.0
Feb	.8	#	#	0	3.0	1978	2	6.0	1978	2	1985	2	1	1985	.3	.3	.1	.0	.0	.0	.0	.0	.0
Mar	#	.0	#	0	#	1999	15	#+	1999	#+	1999	15	#+	1999	.0	.0	.0	.0	.0	.0	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	#	.0	0	0	#	1989	16	#	1989	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	#	.0	#	0	#	1993	29	#+	1993	#	2000	26	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	3.2	#	N/A	N/A	8.0	Jan 1977	10	11.5	Jan 1977	4	Jan 1997	9	1	Feb 1985	.9	.7	.4	.2	.0	.0	.0	.0	.0

+ 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

Complete documentation available from:

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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	4/20	4/16	4/13	4/11	4/09	4/07	4/05	4/02	3/29
32	4/13	4/09	4/06	4/03	3/31	3/29	3/26	3/23	3/18
28	4/03	3/30	3/26	3/24	3/21	3/18	3/16	3/12	3/08
24	3/25	3/20	3/15	3/12	3/08	3/05	3/01	2/25	2/19
20	3/15	3/07	3/01	2/24	2/20	2/15	2/10	2/04	1/27
16	3/09	2/28	2/22	2/17	2/12	2/08	2/02	1/27	1/19
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	10/03	10/08	10/11	10/14	10/17	10/19	10/22	10/25	10/30
32	10/13	10/18	10/22	10/26	10/29	11/01	11/05	11/09	11/14
28	10/26	11/02	11/06	11/10	11/14	11/17	11/21	11/26	12/02
24	11/02	11/10	11/15	11/20	11/24	11/29	12/03	12/09	12/17
20	11/13	11/21	11/26	12/01	12/05	12/09	12/14	12/19	12/27
16	11/21	12/01	12/09	12/16	12/22	12/28	1/04	1/12	1/23
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	209	202	198	194	190	186	182	178	171
32	231	224	219	215	211	207	203	198	192
28	259	251	246	241	237	233	228	223	215
24	289	279	272	266	260	254	248	241	231
20	320	309	301	294	288	281	274	266	255
16	346	329	321	314	308	302	295	288	278

* 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

Complete documentation available from:
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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	984	749	546	234	70	1	0	0	26	209	514	857	4190
60	829	610	400	128	25	0	0	0	6	110	373	702	3183
57	739	534	317	81	12	0	0	0	2	68	294	614	2661
55	683	481	266	56	7	0	0	0	0	47	246	557	2343
50	539	357	160	18	1	0	0	0	0	14	146	417	1652
32	157	68	7	0	0	0	0	0	0	0	5	83	320

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	197	243	484	780	1107	1336	1507	1432	1164	849	482	249	9830
55	10	12	30	146	401	646	794	719	475	183	33	10	3459
57	3	8	19	110	344	586	732	657	416	142	21	6	3044
60	0	1	9	68	265	496	639	564	330	91	10	0	2473
65	0	0	0	24	154	347	484	410	200	35	1	0	1655
70	0	0	0	5	74	206	329	262	100	9	0	0	985

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	58	125	298	572	880	1113	1278	1207	954	628	283	96	58	183	481	1053	1933	3046	4324	5531	6485	7113	7396	7492
45	26	64	184	426	725	963	1123	1052	804	474	180	44	26	90	274	700	1425	2388	3511	4563	5367	5841	6021	6065
50	7	26	101	292	570	813	968	897	654	333	100	17	7	33	134	426	996	1809	2777	3674	4328	4661	4761	4778
55	0	5	47	178	417	663	813	742	506	206	46	4	0	5	52	230	647	1310	2123	2865	3371	3577	3623	3627
60	0	0	17	95	273	513	658	587	360	111	15	0	0	0	17	112	385	898	1556	2143	2503	2614	2629	2629
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	35	75	173	344	571	759	866	825	632	393	166	49	35	110	283	627	1198	1957	2823	3648	4280	4673	4839	4888

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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