

# 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: HAMILTON 2 W, MO

1971-2000

COOP ID: 233568

Climate Division: MO 1

NWS Call Sign:

Elevation: 900 Feet

Lat: 39°45N

Lon: 94°02W

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	33.8	9.4	21.6	71	1967	23	32.9	1989	-27	1979	15	6.6	1979	1347	0	.0	.0	3.7	13.3	30.2	5.9
Feb	40.0	14.7	27.4	77	1995	26	38.3	1998	-27+	1982	6	12.4	1978	1054	0	.0	.0	7.8	8.8	25.6	3.8
Mar	52.0	25.3	38.7	86+	1991	27	44.1	2000	-17	1998	12	30.8	1978	818	0	.0	.0	17.5	2.4	20.4	.3
Apr	63.5	35.7	49.6	92	1989	27	56.4	1981	9	1975	3	42.0	1983	466	3	.0	.1	26.0	.1	8.6	.0
May	73.2	46.2	59.7	97	1956	21	66.9	1998	25	1995	2	54.6	1995	217	53	.0	.4	30.9	.0	.7	.0
Jun	83.1	56.1	69.6	102+	1988	26	73.1	1986	34	1988	10	63.6	1982	30	168	.3	5.9	30.0	.0	.0	.0
Jul	88.1	61.1	74.6	109	1954	14	78.7	1980	43	1971	31	68.7	1971	1	299	1.0	13.4	31.0	.0	.0	.0
Aug	86.6	57.9	72.3	108	1984	30	78.6	1995	40	1986	28	66.2	1992	31	255	.9	11.3	31.0	.0	.0	.0
Sep	78.4	48.2	63.3	100+	2000	2	70.3	1998	27+	1991	19	55.1	1974	127	77	.1	3.6	30.0	.0	.7	.0
Oct	66.7	35.7	51.2	96+	1963	10	56.5	2000	14	1993	31	44.6	1976	432	5	.0	.1	28.9	.0	8.0	.0
Nov	50.6	25.2	37.9	82	1980	9	47.1	1999	-10	1991	8	30.2	1976	813	0	.0	.0	16.5	2.0	19.8	.2
Dec	38.0	14.1	26.1	72	1995	1	32.0	1998	-27	1989	23	8.9	1983	1207	0	.0	.0	5.7	8.9	28.9	3.3
Ann	62.8	35.8	49.3	109	Jul 1954	14	78.7	Jul 1980	-27+	Dec 1989	23	6.6	Jan 1979	6543	860	2.3	34.8	259.0	35.5	142.9	13.5

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1954-2001

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

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## No. 20

### 1971-2000

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**Climate Division: MO 1**

**NWS Call Sign:**

**Elevation: 900 Feet Lat: 39°45N**

**Lon: 94°02W**

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	1.07	1.01	2.00	1982	30	3.07	1973	.00+	1986	6.0	3.2	.5	.1	.00	.17	.38	.55	.72	.90	1.11	1.34	1.66	2.18	2.68
Feb	1.15	1.00	2.77	1997	21	3.74	1997	.01	1991	5.9	3.3	.5	.2	.11	.19	.35	.51	.68	.88	1.11	1.40	1.79	2.45	3.10
Mar	2.72	2.23	2.75	1982	19	8.17	1973	.26	1994	8.1	5.8	1.7	.5	.60	.85	1.24	1.61	1.97	2.35	2.78	3.30	3.98	5.07	6.10
Apr	3.57	3.44	3.03	1997	11	7.14	1978	.78	1980	9.9	6.4	2.5	.8	1.08	1.42	1.93	2.36	2.79	3.23	3.71	4.28	5.02	6.17	7.24
May	4.84	4.45	4.04	1959	19	11.40	1996	1.00	1992	11.2	8.0	3.5	1.4	1.29	1.75	2.45	3.06	3.67	4.30	5.00	5.83	6.92	8.62	10.22
Jun	4.18	3.89	4.10	1982	9	8.46	2000	1.79	1988	9.7	6.7	2.9	1.2	1.52	1.91	2.48	2.95	3.40	3.87	4.37	4.96	5.71	6.86	7.92
Jul	3.87	3.27	4.00	1957	22	10.27	1993	.35	1976	8.6	6.1	2.5	1.2	.82	1.18	1.75	2.26	2.78	3.34	3.96	4.71	5.70	7.27	8.77
Aug	3.70	3.74	3.49	1977	6	9.29	1982	.11	1984	8.4	5.7	2.6	1.0	.71	1.05	1.59	2.09	2.60	3.14	3.76	4.51	5.50	7.09	8.61
Sep	4.63	3.78	4.92	1993	14	16.58	1993	.95	1990	8.1	6.0	2.9	1.3	.92	1.34	2.02	2.64	3.28	3.95	4.72	5.64	6.86	8.82	10.67
Oct	3.22	3.03	4.47	1998	5	8.65	1977	.14	1999	8.1	5.3	1.9	.7	.41	.67	1.13	1.58	2.05	2.57	3.18	3.93	4.95	6.62	8.23
Nov	2.44	2.24	3.00	1958	17	5.78	1983	.00	1989	7.5	4.8	1.6	.5	.36	.68	1.10	1.44	1.78	2.14	2.53	3.01	3.62	4.60	5.52
Dec	1.63	1.50	2.10	1992	14	4.58	1982	.02	1996	6.0	3.1	1.0	.5	.14	.25	.46	.69	.94	1.22	1.56	1.99	2.57	3.56	4.52
Ann	37.02	36.83	4.92	Sep 1993	14	16.58	Sep 1993	.00+	Nov 1989	97.5	64.4	24.1	9.4	24.77	27.09	30.09	32.39	34.44	36.44	38.52	40.82	43.63	47.74	51.32

+ 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: 1954-2001

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

Complete documentation available from:  
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**Station: HAMILTON 2 W, MO**

**COOP ID: 233568**

**Climate Division: MO 1**

**NWS Call Sign:**

**Elevation: 900 Feet**

**Lat: 39°45N**

**Lon: 94°02W**

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	2.9	.0	0	0	6.5	1971	3	15.0	1977	12	1979	14	5	1979	1.5	1.1	.4	.1	.0	-9.9	-9.9	-9.9	-9.9
Feb	3.8	3.7	#	0	10.0	1978	13	15.5	1978	5	1976	2	3	1981	1.5	1.2	.6	.1	.1	-9.9	-9.9	-9.9	-9.9
Mar	2.3	.0	#	0	5.5	1978	2	10.5	1984	4+	1976	16	#+	1979	.7	.7	.4	.1	.0	.3	.2	.0	.0
Apr	.1	.0	#	0	2.5	1979	4	2.5	1979	3	1979	4	#	1979	@	@	.0	.0	.0	.1	.1	.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	#	1976	19	#	1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.5	.0	#	0	4.0	1975	26	5.0	1975	4	1975	26	#	1975	.2	.2	.1	.0	.0	.2	.1	.0	.0
Dec	1.3	.0	#	0	8.0	1987	15	8.0	1987	2+	1995	8	#+	1995	.6	.6	.3	.1	.0	-9.9	-9.9	-9.9	-9.9
Ann	10.9	3.7	N/A	N/A	10.0	Feb 1978	13	15.5	Feb 1978	12	Jan 1979	14	5	Jan 1979	4.5	3.8	1.8	.4	.1	-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

Complete documentation available from:

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**NWS Call Sign:**

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**Lon: 94°02W**

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	5/29	5/23	5/18	5/15	5/11	5/07	5/03	4/29	4/23
32	5/14	5/09	5/05	5/02	4/29	4/26	4/23	4/19	4/14
28	5/03	4/28	4/24	4/21	4/18	4/16	4/12	4/09	4/04
24	4/22	4/17	4/14	4/11	4/09	4/06	4/03	3/31	3/27
20	4/11	4/07	4/03	4/01	3/29	3/26	3/24	3/21	3/16
16	4/08	3/31	3/25	3/20	3/16	3/11	3/06	2/28	2/20
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	9/11	9/15	9/18	9/21	9/23	9/25	9/28	9/30	10/04
32	9/24	9/28	10/01	10/04	10/06	10/09	10/11	10/14	10/19
28	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/23	10/28
24	10/12	10/17	10/21	10/25	10/28	10/31	11/03	11/07	11/13
20	10/18	10/24	10/28	11/01	11/05	11/08	11/12	11/16	11/23
16	11/06	11/11	11/14	11/18	11/21	11/24	11/27	12/01	12/06
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	155	148	143	138	134	130	126	121	113
32	180	173	168	163	159	155	151	145	138
28	196	190	185	181	177	174	170	165	159
24	220	214	209	205	201	198	194	189	183
20	245	236	230	225	220	215	210	203	195
16	280	269	262	255	249	243	237	230	219

\* 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:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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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	1347	1054	818	466	217	30	1	31	127	432	813	1207	6543
60	1192	914	663	327	125	7	0	10	57	293	663	1052	5303
57	1099	836	571	251	83	3	0	4	30	220	574	959	4630
55	1037	784	515	206	60	1	0	1	19	177	516	897	4213
50	887	654	372	113	23	0	0	0	4	92	379	751	3275
32	406	270	60	1	0	0	0	0	0	1	60	293	1091

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	82	140	265	528	860	1128	1320	1248	940	596	237	109	7453
55	0	10	7	44	207	439	607	536	269	59	3	0	2181
57	0	6	1	29	167	381	545	477	220	40	1	0	1867
60	0	0	0	14	116	295	452	389	157	20	0	0	1443
65	0	0	0	3	53	168	299	255	77	5	0	0	860
70	0	0	0	0	19	73	159	150	30	0	0	0	431

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	9	40	150	364	675	944	1130	1066	771	429	134	19	9	49	199	563	1238	2182	3312	4378	5149	5578	5712	5731
45	0	15	85	245	521	794	975	911	621	294	68	7	0	15	100	345	866	1660	2635	3546	4167	4461	4529	4536
50	0	4	42	150	373	644	820	756	479	181	32	1	0	4	46	196	569	1213	2033	2789	3268	3449	3481	3482
55	0	0	19	79	239	494	665	601	339	97	11	0	0	0	19	98	337	831	1496	2097	2436	2533	2544	2544
60	0	0	5	38	127	347	510	447	215	41	3	0	0	0	5	43	170	517	1027	1474	1689	1730	1733	1733
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	10	43	113	236	418	626	761	706	500	288	96	22	10	53	166	402	820	1446	2207	2913	3413	3701	3797	3819

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://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"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)