

# Climatology of the United States

No. 20

1971-2000

Station: MADISON 2 W, NE

COOP ID: 255080

Climate Division: NE 3

NWS Call Sign:

Elevation: 1,675 Feet Lat: 41° 50N

Lon: 97° 27W

## 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	30.2	8.2	19.2	71	1981	25	30.6	1992	-30+	1974	12	5.1	1979	1419	0	.0	.0	2.7	16.2	30.9	8.6
Feb	36.4	13.2	24.8	76	1995	26	34.5	1992	-32	1962	28	10.5	1979	1125	0	.0	.0	6.3	10.9	27.1	4.6
Mar	47.6	22.7	35.2	89	1986	30	40.9	1986	-19	1960	4	27.9	1984	925	0	.0	.0	14.1	4.0	24.4	.5
Apr	60.8	33.6	47.2	94	1980	22	55.7	1981	-2	1975	3	40.4	1983	536	2	.0	.5	24.1	.4	10.6	@
May	72.0	46.6	59.3	104	1967	25	65.1	1977	22	1961	2	54.2	1997	219	43	.0	1.1	30.6	.0	1.4	.0
Jun	82.2	57.0	69.6	104+	1988	22	75.4	1988	35+	1983	7	63.4	1982	37	175	.3	6.9	30.0	.0	.0	.0
Jul	86.3	61.9	74.1	110	1954	11	79.1	1974	38	1971	30	68.2	1992	5	288	1.0	10.9	31.0	.0	.0	.0
Aug	83.9	59.1	71.5	104+	1983	17	77.7	1983	37+	1967	27	66.4	1974	21	223	.2	8.6	31.0	.0	.0	.0
Sep	76.4	48.3	62.4	100+	1971	7	68.5	1998	19	1984	29	57.2	1974	139	58	@	3.6	29.6	.0	1.5	.0
Oct	64.5	35.7	50.1	94	1951	1	54.1	1975	8	1993	31	44.1	1987	463	1	.0	.2	27.8	.1	9.5	.0
Nov	45.6	22.8	34.2	81+	1999	14	44.5	1999	-20	1964	30	25.2	1985	924	0	.0	.0	11.7	4.8	24.9	.6
Dec	33.6	12.8	23.2	72	1970	8	30.3	1979	-28	1989	22	5.4	1983	1295	0	.0	.0	3.8	12.9	30.5	5.0
Ann	60.0	35.2	47.6	110	Jul 1954	11	79.1	Jul 1974	-32	Feb 1962	28	5.1	Jan 1979	7108	790	1.5	31.8	242.7	49.3	160.8	19.3

+ 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/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: 1948-2001

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

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**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: MADISON 2 W, NE**

**COOP ID: 255080**

**Climate Division: NE 3**

**NWS Call Sign:**

**Elevation: 1,675 Feet Lat: 41°50N**

**Lon: 97°27W**

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	.51	.30	1.46	1949	3	1.93	1989	.00+	1986	3.6	1.5	.3	.1	.00	.03	.10	.18	.26	.36	.48	.63	.84	1.19	1.54
Feb	.64	.52	1.40	1971	19	2.62	1971	.00	1996	3.6	2.0	.4	.1	.04	.10	.20	.29	.39	.50	.63	.79	1.00	1.35	1.69
Mar	2.02	1.41	2.54	1981	29	8.02	1987	.00	1994	5.9	4.0	1.4	.5	.08	.24	.53	.83	1.15	1.51	1.94	2.48	3.23	4.47	5.69
Apr	2.62	2.13	2.68	1985	26	7.64	1984	.40	1981	7.5	5.7	1.7	.6	.44	.67	1.05	1.41	1.78	2.18	2.64	3.19	3.94	5.15	6.30
May	4.12	3.86	3.22	1960	5	8.43	1982	.50	1994	9.8	7.5	3.1	.9	1.39	1.78	2.35	2.83	3.30	3.78	4.30	4.91	5.69	6.91	8.03
Jun	4.19	3.36	5.79	1960	20	12.43	1999	.67	1987	8.5	6.3	2.9	1.2	.84	1.22	1.83	2.40	2.97	3.58	4.27	5.10	6.20	7.96	9.63
Jul	3.75	3.32	4.34	1965	19	10.29	1993	.69	1991	7.9	5.9	2.4	1.1	.80	1.15	1.70	2.20	2.70	3.23	3.83	4.55	5.50	7.02	8.45
Aug	3.18	2.85	5.96	1998	21	10.07	1998	.36	1976	7.0	4.7	1.8	.8	.46	.72	1.18	1.62	2.08	2.58	3.17	3.88	4.85	6.42	7.93
Sep	2.23	2.15	3.79	2001	15	5.21	1973	.39	1999	6.2	3.9	1.4	.7	.35	.54	.86	1.17	1.49	1.84	2.23	2.72	3.37	4.43	5.45
Oct	1.85	1.50	3.42	1968	16	4.65	1992	.03	1988	5.7	3.8	1.1	.4	.14	.26	.50	.75	1.03	1.36	1.75	2.24	2.93	4.08	5.22
Nov	1.46	1.41	1.93	1998	10	4.00	1991	.00	1976	4.0	2.9	1.1	.4	.02	.10	.28	.48	.71	.99	1.33	1.76	2.38	3.44	4.50
Dec	.62	.49	1.34	1953	3	2.02	1982	.14+	1980	3.6	2.1	.3	@	.11	.17	.26	.34	.43	.52	.63	.75	.92	1.20	1.46
Ann	27.19	27.21	5.96	Aug 1998	21	12.43	Jun 1999	.00+	Feb 1996	73.3	50.3	17.9	6.8	17.97	19.70	21.95	23.67	25.22	26.72	28.28	30.02	32.14	35.24	37.95

+ 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

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Station: MADISON 2 W, NE

COOP ID: 255080

Climate Division: NE 3

NWS Call Sign:

Elevation: 1,675 Feet

Lat: 41° 50N

Lon: 97° 27W

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	4.5	3.5	2	1	6.5	1999	2	9.5	1979	14	1979	31	8	1979	2.7	1.5	.3	.1	.0	10.7	6.2	3.7	1.3
Feb	4.5	3.0	1	1	7.0	1999	23	17.6	1999	16	1999	23	10	1979	2.2	1.5	.4	.1	.0	9.7	5.8	3.2	1.7
Mar	4.5	4.4	1	#	8.0	1979	3	13.0	1976	12	1979	4	3	1998	2.0	1.3	.6	.3	.0	3.3	1.8	.8	.2
Apr	1.4	.0	#	0	5.5	1997	12	10.5	1997	9	1997	12	1	1997	.7	.4	.2	@	.0	.4	.3	.1	.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	#	1985	29	#	1985	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	4.0	1980	27	4.0	1980	3	1997	26	#+	1997	.2	.1	.1	.0	.0	.2	@	.0	.0
Nov	3.3	2.2	#	#	8.0	1975	20	14.5	1975	12	1975	30	3	1975	1.5	1.1	.3	.1	.0	3.4	1.4	1.0	.2
Dec	7.2	5.9	1	1	12.0	1972	30	20.0	1972	14	1978	3	6	1978	2.5	1.7	.8	.3	.1	10.5	5.4	2.6	.5
Ann	25.8	19.0	N/A	N/A	12.0	Dec 1972	30	20.0	Dec 1972	16	Feb 1999	23	10	Feb 1979	11.8	7.6	2.7	.9	.1	38.2	20.9	11.4	3.9

+ 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	5/26	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/26
32	5/17	5/12	5/08	5/05	5/02	4/29	4/25	4/22	4/16
28	5/11	5/06	5/02	4/28	4/25	4/21	4/18	4/14	4/08
24	4/25	4/20	4/17	4/13	4/10	4/07	4/04	4/01	3/27
20	4/14	4/09	4/06	4/04	4/02	3/30	3/28	3/25	3/21
16	4/09	4/03	3/29	3/26	3/22	3/19	3/15	3/11	3/05
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	9/10	9/14	9/17	9/20	9/22	9/25	9/27	9/30	10/04
32	9/11	9/16	9/20	9/24	9/27	9/30	10/03	10/07	10/12
28	9/23	9/28	10/01	10/04	10/07	10/10	10/13	10/17	10/22
24	10/05	10/10	10/13	10/16	10/18	10/21	10/23	10/27	10/31
20	10/12	10/18	10/23	10/27	10/31	11/03	11/07	11/12	11/19
16	10/19	10/26	11/01	11/05	11/09	11/13	11/17	11/22	11/29
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	142	138	134	129	125	120	112
32	171	163	157	152	147	142	137	132	124
28	186	179	173	169	165	161	156	151	144
24	210	203	198	194	190	186	182	177	170
20	233	226	220	216	211	207	203	197	190
16	259	249	242	237	231	226	220	213	203

\* 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	1419	1125	925	536	219	37	5	21	139	463	924	1295	7108
60	1264	985	770	394	122	10	0	4	61	316	774	1140	5840
57	1171	901	677	314	80	4	0	1	32	237	684	1047	5148
55	1109	848	615	266	57	2	0	0	19	190	625	985	4716
50	956	718	469	161	21	0	0	0	4	96	483	832	3740
32	456	309	92	5	0	0	0	0	0	1	108	350	1321

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	60	108	190	461	846	1128	1306	1225	910	562	173	78	7047
55	0	3	0	32	191	439	593	512	239	38	0	0	2047
57	0	0	0	21	151	381	531	451	192	23	0	0	1750
60	0	0	0	10	101	298	438	361	131	9	0	0	1348
65	0	0	0	2	43	175	288	223	58	1	0	0	790
70	0	0	0	0	13	84	153	115	19	0	0	0	384

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	0	22	95	298	634	917	1080	1015	706	371	70	5	0	22	117	415	1049	1966	3046	4061	4767	5138	5208	5213
45	0	4	45	189	481	767	925	860	560	243	30	0	0	4	49	238	719	1486	2411	3271	3831	4074	4104	4104
50	0	1	19	110	336	618	770	705	417	140	10	0	0	1	20	130	466	1084	1854	2559	2976	3116	3126	3126
55	0	0	4	57	214	468	615	550	284	66	1	0	0	0	4	61	275	743	1358	1908	2192	2258	2259	2259
60	0	0	1	22	111	325	460	396	177	25	0	0	0	0	1	23	134	459	919	1315	1492	1517	1517	1517
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	4	29	82	206	393	598	719	671	457	257	61	11	4	33	115	321	714	1312	2031	2702	3159	3416	3477	3488

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