

Climatography of the United States

No. 20

1971-2000

Station: SOUTHBRIDGE 3 SW, MA

COOP ID: 197627

Climate Division: MA 2

NWS Call Sign:

Elevation: 720 Feet

Lat: 42°03N

Lon: 72°05W

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	.0	.0	.0	59+	1995	15	.0	0	-12+	1981	13	.0	0	0	0	.0	.0	.8	16.2	30.2	4.8
Feb	.0	.0	.0	65	1997	22	.0	0	-11	1996	5	.0	0	0	0	.0	.0	2.6	10.8	26.6	2.9
Mar	.0	.0	.0	79	1998	29	.0+	0	-2	1996	10	.0	0	0	0	.0	.0	9.3	3.3	26.4	.2
Apr	.0	.0	.0	85+	1991	9	.0	0	15+	1995	5	.0	0	0	0	.0	.1	22.1	.2	13.0	.0
May	.0	.0	.0	93+	1992	22	.0	0	29+	1969	27	.0	0	0	0	.0	.2	29.6	.0	1.3	.0
Jun	.0	.0	.0	97	1994	19	.0	0	37+	1980	11	.0	0	0	0	.0	1.2	30.0	.0	.0	.0
Jul	.0	.0	.0	96+	1991	21	.0	0	45	1992	4	.0	0	0	0	.0	2.1	31.0	.0	.0	.0
Aug	.0	.0	.0	98	2001	10	.0	0	44+	1995	26	.0	0	0	0	.0	.2	31.0	.0	.0	.0
Sep	.0	.0	.0	86+	1993	4	.0	0	31	1991	29	.0	0	0	0	.0	@	30.0	.0	.2	.0
Oct	.0	.0	.0	77+	1990	7	.0	0	22+	1993	11	.0	0	0	0	.0	.0	28.4	.0	8.0	.0
Nov	.0	.0	.0	79	2001	2	.0	0	10	2000	25	.0	0	0	0	.0	.0	13.5	1.1	19.4	@
Dec	.0	.0	.0	70	1998	8	.0	0	-11	1980	26	.0	0	0	0	.0	.0	4.2	8.4	28.0	.9
Ann	.0	.0	.0	98	Aug 2001	10	-99.9	0	-12+	Jan 1981	13	99.9	0	0	0	.0	3.8	232.5	40.0	153.1	8.8

+ 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

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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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: SOUTHBRIDGE 3 SW, MA

COOP ID: 197627

Climate Division: MA 2

NWS Call Sign:

Elevation: 720 Feet

Lat: 42°03N

Lon: 72°05W

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	4.77	4.79	3.13	1978	26	12.20	1979	.80	1981	12.2	7.5	3.4	1.5	1.23	1.69	2.38	2.99	3.59	4.22	4.93	5.77	6.86	8.58	10.19
Feb	3.49	3.23	2.48	1970	4	8.39	1981	.29	1987	10.4	6.2	2.5	.8	1.17	1.50	1.98	2.39	2.79	3.20	3.64	4.16	4.83	5.87	6.83
Mar	4.63	3.97	3.07	1998	10	8.60	1980	.82	1981	11.6	7.5	3.2	1.5	1.81	2.24	2.85	3.36	3.83	4.32	4.85	5.46	6.23	7.42	8.50
Apr	4.58	4.21	3.40	2000	22	11.05	1987	1.17	1999	12.2	7.7	2.6	1.2	1.55	1.99	2.62	3.16	3.67	4.20	4.78	5.46	6.32	7.67	8.91
May	4.02	3.99	2.68	1967	26	8.77	1984	.79	1993	12.9	8.2	2.7	.8	1.40	1.78	2.33	2.79	3.24	3.70	4.19	4.78	5.52	6.67	7.73
Jun	4.25	3.38	3.23	1972	1	12.74	1982	.39	1999	11.8	7.2	2.7	1.2	.81	1.20	1.82	2.39	2.98	3.60	4.31	5.17	6.31	8.13	9.87
Jul	4.32	3.92	3.08	1952	11	10.48	1988	1.60	1983	10.5	6.7	3.1	1.3	2.00	2.37	2.90	3.32	3.71	4.11	4.53	5.01	5.62	6.53	7.36
Aug	4.29	3.67	10.05	1955	19	10.83	1978	.58	1984	10.3	6.7	2.8	1.3	1.01	1.41	2.04	2.60	3.16	3.75	4.41	5.20	6.24	7.89	9.43
Sep	4.46	4.57	4.28	1960	13	11.69	1974	.76	1986	10.1	6.5	2.7	1.4	1.11	1.53	2.18	2.76	3.33	3.93	4.60	5.40	6.44	8.09	9.64
Oct	4.76	4.39	3.65	1955	15	9.67	1995	1.06	1994	9.9	6.5	3.0	1.7	1.81	2.25	2.88	3.41	3.91	4.42	4.98	5.62	6.44	7.69	8.84
Nov	4.75	4.86	2.88	1988	2	9.57	1988	.71	1976	11.3	7.4	3.5	1.5	1.58	2.03	2.69	3.25	3.79	4.35	4.96	5.67	6.58	8.00	9.31
Dec	4.44	4.16	2.73	1992	12	10.44	1973	1.16	1980	12.4	7.7	3.0	1.4	1.18	1.60	2.24	2.81	3.36	3.94	4.59	5.36	6.36	7.93	9.40
Ann	52.76	52.08	10.05	Aug 1955	19	12.74	Jun 1982	.29	Feb 1987	135.6	85.8	35.2	15.6	43.00	44.99	47.49	49.34	50.97	52.52	54.10	55.83	57.89	60.84	63.35

+ 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: SOUTHBRIDGE 3 SW, MA

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Climate Division: MA 2

NWS Call Sign:

Elevation: 720 Feet

Lat: 42°03N

Lon: 72°05W

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	14.1	13.4	5	3	12.0	1983	16	35.0	1996	32	1996	16	15	1996	4.9	4.7	1.9	.9	.1	18.3	14.3	9.9	6.0
Feb	11.6	9.0	5	3	21.0	1978	7	32.0	1972	34	1978	8	20	1978	3.8	3.4	1.5	.7	.2	16.0	12.8	10.2	6.2
Mar	7.6	5.0	3	1	13.0	1972	15	22.5	1984	26	1994	4	19	1994	2.8	2.7	1.0	.6	.1	7.8	6.2	5.2	2.8
Apr	2.4	.0	#	#	20.0	1997	1	20.0	1997	20	1997	1	2+	1997	.6	.6	.3	.2	.1	1.1	.7	.5	.3
May	#	.0	#	0	#	1996	7	#	1996	6	1977	10	#+	1996	.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	#	1975	31	#+	1975	4	1979	11	#+	1979	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	2.7	1.0	#	#	12.0	1986	19	16.6	1971	13	1971	27	2	1986	1.0	1.0	.3	.2	@	1.8	.7	.5	.2
Dec	9.3	8.0	2	1	16.0	1992	12	24.0	1996	22	1996	8	8	1992	3.8	3.4	1.1	.5	.1	9.3	6.1	3.2	.5
Ann	47.7	36.4	N/A	N/A	21.0	Feb 1978	7	35.0	Jan 1996	34	Feb 1978	8	20	Feb 1978	16.9	15.8	6.1	3.1	.6	54.3	40.8	29.5	16.0

+ 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

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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	5/27	5/23	5/20	5/18	5/15	5/13	5/10	5/07	5/03
32	5/17	5/13	5/10	5/07	5/04	5/02	4/29	4/26	4/21
28	5/01	4/27	4/24	4/22	4/20	4/18	4/16	4/13	4/10
24	4/20	4/15	4/11	4/08	4/05	4/02	3/29	3/26	3/20
20	4/07	4/03	3/31	3/29	3/26	3/24	3/22	3/19	3/15
16	4/01	3/28	3/25	3/23	3/21	3/18	3/16	3/13	3/10
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	9/17	9/20	9/22	9/24	9/25	9/27	9/29	10/01	10/04
32	9/26	9/30	10/04	10/07	10/09	10/12	10/15	10/18	10/23
28	10/06	10/11	10/15	10/18	10/21	10/24	10/27	10/31	11/05
24	10/15	10/21	10/26	10/30	11/03	11/07	11/11	11/16	11/22
20	10/31	11/06	11/11	11/15	11/18	11/22	11/26	11/30	12/06
16	11/14	11/19	11/23	11/26	11/29	12/02	12/05	12/08	12/13
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	146	141	138	135	132	129	126	123	118
32	177	170	165	161	157	153	149	145	138
28	202	195	191	187	183	179	175	171	164
24	236	227	221	216	212	207	202	196	188
20	260	252	246	241	236	231	226	220	212
16	270	264	260	256	253	249	246	241	235

* 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	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	4	8	44	194	475	759	938	757	595	287	98	18	4	12	56	250	725	1484	2422	3179	3774	4061	4159	4177
45	0	0	15	98	325	609	783	602	446	162	40	4	0	0	15	113	438	1047	1830	2432	2878	3040	3080	3084
50	0	0	3	45	195	460	628	447	303	74	18	0	0	0	3	48	243	703	1331	1778	2081	2155	2173	2173
55	0	0	1	18	94	317	473	293	174	28	4	0	0	0	1	19	113	430	903	1196	1370	1398	1402	1402
60	0	0	0	2	39	185	320	146	83	7	0	0	0	0	0	2	41	226	546	692	775	782	782	782
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	5	36	115	269	474	618	449	349	166	55	8	0	5	41	156	425	899	1517	1966	2315	2481	2536	2544

(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