

Climatography of the United States

No. 20

1971-2000

Station: EAST WAREHAM, MA

COOP ID: 192451

Climate Division: MA 3

NWS Call Sign:

Elevation: 20 Feet

Lat: 41°46N

Lon: 70°40W

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	37.0	20.3	28.7	67	1932	15	36.5	1998	-24	1942	11	17.7	1981	1126	0	.0	.0	3.6	9.7	27.2	1.2
Feb	38.2	21.7	30.0	64	1976	27	37.5	1984	-22+	1934	7	20.9	1979	981	0	.0	.0	3.4	7.5	24.2	.7
Mar	45.2	29.2	37.2	75+	1985	28	41.9	2000	-5	1948	6	32.1	1978	862	0	.0	.0	9.6	1.8	21.3	.0
Apr	54.2	37.5	45.9	89	1990	28	49.2	1976	13	1982	8	41.6	1972	575	0	.0	.0	21.7	.1	8.6	.0
May	64.8	47.7	56.3	94	1987	30	60.6	1991	26	1948	2	53.5	1983	274	3	.0	.2	30.1	.0	.2	.0
Jun	73.6	57.5	65.6	99	1943	25	68.4	1973	36+	1930	1	60.4	1982	53	70	.0	.4	30.0	.0	.0	.0
Jul	79.6	64.1	71.9	99	1937	9	75.9	1994	41+	1927	6	68.4	2000	3	214	.0	1.5	31.0	.0	.0	.0
Aug	78.4	62.9	70.7	100+	1948	28	73.4	1988	38+	1940	25	66.8	1982	6	180	@	.7	31.0	.0	.0	.0
Sep	71.4	54.5	63.0	96	1953	1	67.1	1971	30+	1940	27	58.8	1978	97	35	.0	.1	30.0	.0	.0	.0
Oct	61.3	43.3	52.3	89	1931	9	57.8	1971	18	1936	28	48.1	1974	395	1	.0	.0	29.4	.0	3.8	.0
Nov	51.4	35.0	43.2	82	1946	1	47.2	1994	5	1989	24	36.7	1976	654	0	.0	.0	17.4	.3	14.1	.0
Dec	42.1	25.7	33.9	70	1998	4	40.0	1996	-15	1933	30	22.1	1989	965	0	.0	.0	7.1	5.0	24.1	.2
Ann	58.1	41.6	49.9	100+	Aug 1948	28	75.9	Jul 1994	-24	Jan 1942	11	17.7	Jan 1981	5991	503	@	2.9	244.3	24.4	123.5	2.1

+ 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: 1926-2001

(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: EAST WAREHAM, MA

COOP ID: 192451

Climate Division: MA 3

NWS Call Sign:

Elevation: 20 Feet

Lat: 41°46N

Lon: 70°40W

Precipitation (inches)

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	4.54	4.01	4.64	1978	14	10.40	1979	1.17	1985	11.7	7.4	3.3	1.3	1.39	1.82	2.47	3.02	3.56	4.11	4.73	5.45	6.38	7.83	9.17
Feb	3.72	3.39	3.23	1952	18	8.36	1998	.97	1980	10.3	6.4	2.8	1.1	1.28	1.63	2.14	2.58	2.99	3.42	3.88	4.42	5.12	6.20	7.19
Mar	4.56	4.23	5.11	1968	18	8.81	1983	1.28	1981	11.5	7.8	3.5	1.1	1.92	2.34	2.92	3.39	3.84	4.29	4.78	5.34	6.05	7.13	8.11
Apr	4.39	4.17	2.64	1978	20	11.08	1987	1.16	1999	11.2	7.0	3.0	1.3	1.43	1.85	2.46	2.99	3.49	4.01	4.58	5.24	6.10	7.43	8.66
May	3.73	3.56	3.79	1967	26	6.59	1979	.90	1992	11.1	7.2	2.7	.8	1.52	1.87	2.35	2.75	3.12	3.50	3.91	4.39	4.98	5.90	6.73
Jun	3.57	2.92	4.13	1998	14	8.89	1998	.45	1971	9.8	6.3	2.4	1.1	.62	.94	1.46	1.95	2.45	2.99	3.61	4.36	5.36	6.97	8.51
Jul	3.23	3.06	2.73	1953	24	7.20	1988	.84	1994	8.5	5.7	2.1	.8	1.04	1.35	1.80	2.19	2.56	2.94	3.36	3.86	4.49	5.48	6.40
Aug	4.07	4.11	4.82	1985	31	12.61	1985	.21	1993	9.1	6.3	2.5	1.0	.76	1.12	1.72	2.27	2.83	3.44	4.13	4.96	6.06	7.83	9.52
Sep	4.06	2.99	6.69	1972	4	14.77	1996	.46	1980	8.9	5.5	2.7	1.1	.61	.95	1.54	2.10	2.68	3.32	4.06	4.96	6.16	8.13	10.02
Oct	3.89	3.77	4.12	1996	20	9.34	1996	1.24	1994	9.0	6.5	2.7	1.2	1.52	1.88	2.39	2.82	3.22	3.63	4.07	4.59	5.24	6.24	7.15
Nov	4.52	4.45	3.74	1945	30	8.55	1988	1.38	1976	10.7	7.4	3.4	1.5	1.50	1.92	2.55	3.09	3.60	4.13	4.71	5.39	6.26	7.61	8.86
Dec	4.49	3.84	4.13	1992	12	10.54	1992	.50	1989	11.9	8.0	3.1	1.1	1.10	1.52	2.17	2.75	3.33	3.94	4.62	5.43	6.49	8.17	9.75
Ann	48.77	47.84	6.69	Sep 1972	4	14.77	Sep 1996	.21	Aug 1993	123.7	81.5	34.2	13.4	35.73	38.29	41.54	44.00	46.18	48.28	50.44	52.83	55.71	59.88	63.47

+ 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: 1926-2001

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

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Station: EAST WAREHAM, MA

COOP ID: 192451

Climate Division: MA 3

NWS Call Sign:

Elevation: 20 Feet

Lat: 41°46N

Lon: 70°40W

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	10.2	6.6	2	1	13.5	1996	8	29.8	1996	28	1996	11	8	1996	4.3	3.2	1.5	.6	.1	11.3	7.1	4.1	.9
Feb	9.4	8.8	2	1	14.0	1983	12	31.0	1994	18	1994	12	8	1978	4.1	2.7	1.0	.7	.2	10.1	6.5	3.7	1.2
Mar	4.7	2.0	1	#	11.0	1996	3	18.7	1978	13	1978	5	6	1978	2.2	1.6	.4	.2	@	3.7	2.2	1.3	.3
Apr	1.1	.0	#	0	11.0	1997	1	11.0	1997	11	1997	1	1	1997	.4	.3	.1	.1	@	.4	.4	.1	.0
May	#	.0	0	0	#	1977	10	#	1977	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	.5	1972	18	.5	1972	#	1972	18	#	1972	@	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.2	.0	#	0	10.0	1987	12	12.0	1989	12	1989	24	1	1989	.6	.4	.1	.1	@	.6	.2	.2	.1
Dec	4.8	4.0	#	#	8.0	1987	30	16.0	1995	9	1995	22	3	1995	2.3	1.9	.5	.2	.0	3.2	1.3	.7	.0
Ann	31.4	21.4	N/A	N/A	14.0	Feb 1983	12	31.0	Feb 1994	28	Jan 1996	11	8+	Jan 1996	13.9	10.1	3.6	1.9	.3	29.3	17.7	10.1	2.5

+ 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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No. 20 1971-2000

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Climate Division: MA 3

NWS Call Sign:

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Lon: 70° 40W

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	5/20	5/16	5/13	5/10	5/07	5/05	5/02	4/29	4/24
32	5/05	5/02	4/29	4/27	4/25	4/23	4/21	4/19	4/15
28	4/23	4/19	4/16	4/13	4/11	4/08	4/05	4/02	3/29
24	4/10	4/06	4/03	4/01	3/29	3/27	3/24	3/22	3/17
20	4/03	3/29	3/25	3/22	3/19	3/16	3/13	3/09	3/04
16	3/27	3/21	3/16	3/13	3/09	3/06	3/02	2/25	2/19
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	9/26	9/30	10/03	10/05	10/08	10/10	10/13	10/16	10/20
32	10/06	10/11	10/15	10/18	10/21	10/24	10/27	10/30	11/04
28	10/22	10/27	10/30	11/01	11/04	11/06	11/09	11/12	11/16
24	10/31	11/06	11/10	11/13	11/17	11/20	11/24	11/28	12/04
20	11/14	11/19	11/23	11/26	11/29	12/02	12/05	12/09	12/14
16	11/24	11/30	12/04	12/08	12/12	12/15	12/19	12/24	12/30
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	170	164	160	156	153	149	146	142	136
32	194	189	185	181	178	175	171	167	162
28	227	220	215	210	206	202	198	193	186
24	255	247	241	236	232	227	223	217	209
20	277	269	264	259	254	250	245	240	232
16	304	295	288	282	277	271	266	259	249

* 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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Climate Division: MA 3 NWS Call Sign: Elevation: 20 Feet Lat: 41°46N Lon: 70°40W

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	1126	981	862	575	274	53	3	6	97	395	654	965	5991
60	971	841	707	425	140	10	0	0	30	251	504	810	4689
57	878	757	614	336	79	2	0	0	11	176	414	717	3984
55	816	701	552	278	49	1	0	0	5	133	356	655	3546
50	663	561	397	148	10	0	0	0	0	55	219	507	2560
32	208	144	30	0	0	0	0	0	0	0	5	106	493

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	105	87	191	415	752	1006	1234	1197	928	630	341	164	7050
55	0	0	0	3	88	317	521	484	243	50	2	0	1708
57	0	0	0	1	55	259	459	422	189	31	0	0	1416
60	0	0	0	0	23	176	366	329	117	12	0	0	1023
65	0	0	0	0	3	70	214	180	35	1	0	0	503
70	0	0	0	0	0	16	88	65	4	0	0	0	173

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	18	15	58	191	507	765	985	950	689	385	156	41	18	33	91	282	789	1554	2539	3489	4178	4563	4719	4760
45	1	1	19	93	353	615	830	795	539	244	77	12	1	2	21	114	467	1082	1912	2707	3246	3490	3567	3579
50	0	0	3	30	211	465	675	640	389	135	32	1	0	0	3	33	244	709	1384	2024	2413	2548	2580	2581
55	0	0	0	7	95	319	520	485	248	59	9	0	0	0	0	7	102	421	941	1426	1674	1733	1742	1742
60	0	0	0	0	36	183	365	332	138	17	0	0	0	0	0	0	36	219	584	916	1054	1071	1071	1071
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	2	28	90	262	475	668	636	416	205	75	16	0	2	30	120	382	857	1525	2161	2577	2782	2857	2873

(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