U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: BOSTON LOGAN INTL AP, MA **COOP ID: 190770**

Climate Division: MA 3 **NWS Call Sign: BOS** **Elevation: 20 Feet** **Lat: 42˚22N** **Lon: 71˚01W**

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	36.5	22.1	29.3	72	1950	26	36.4	1990	-12	1957	15	21.4	1981	1104	0	.0	.0	3.5	10.8	25.6	.5
Feb	38.7	24.2	31.5	70	1985	24	37.6	1984	-18	1934	9	23.1	1979	951	0	.0	.0	4.1	7.6	22.4	.3
Mar	46.3	31.5	38.9	89	1998	31	44.7	1977	1	1948	5	31.9	1984	815	1	.0	.0	10.6	2.1	16.0	.0
Apr	56.1	40.5	48.3	94	1976	18	55.1	1976	13	1923	1	44.9	1972	503	4	.0	.1	22.1	.1	2.4	.0
May	66.7	50.2	58.5	96+	1929	30	63.3	1991	34+	1936	16	54.7	1974	233	32	.0	.5	30.1	.0	.0	.0
Jun	76.6	59.4	68.0	100+	1925	6	73.4	1976	41	1945	1	63.3	1982	48	139	.0	2.9	30.0	.0	.0	.0
Jul	82.2	65.5	73.9	103	1926	22	78.0	1983	50	1988	1	69.5	1992	4	282	.1	6.0	31.0	.0	.0	.0
Aug	80.1	64.5	72.3	102	1975	2	75.5	1988	46	1940	25	70.3+	2000	8	235	@	3.4	31.0	.0	.0	.0
Sep	72.5	56.8	64.7	100	1953	2	69.1	1983	37+	1947	27	61.4	1978	84	76	.0	.7	30.0	.0	.0	.0
Oct	61.8	46.4	54.1	90+	1954	12	59.8	1971	25	1936	27	50.1	1974	344	7	.0	.0	29.5	.0	.4	.0
Nov	51.8	37.9	44.9	83	1950	2	51.8	1975	8	1932	27	40.3	1996	604	1	.0	.0	16.7	.4	7.3	.0
Dec	41.7	27.8	34.8	76	1998	7	40.7	1990	-17	1933	29	21.7	1989	932	0	.0	.0	6.2	5.1	21.2	.1
Ann	59.3	43.9	51.6	103	Jul 1926	22	78.0	Jul 1983	-18	Feb 1934	9	21.4	Jan 1981	5630	777	.1	13.6	244.8	26.1	95.3	.9

+ 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

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1920-2001

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

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	3.92	3.33	2.52	1979	21	10.55	1979	.61	1989
Feb	3.30	2.91	2.64	1958	16	7.81	1984	.72	1987
Mar	3.85	3.47	4.00	1939	28	9.72	1983	.62	1981
Apr	3.60	3.44	3.32	1991	21	9.46	1987	.83	1999
May	3.24	2.87	4.47	1954	16	8.77	1984	.92	1991
Jun	3.22	2.20	5.69	1998	13	13.20	1982	.00	1999
Jul	3.06	2.57	6.04	1921	9	7.62	1988	.63	1997
Aug	3.37	2.97	7.06	1955	19	7.99	1976	.82	1995
Sep	3.47	3.02	5.63+	1933	16	9.86	1999	.82	1980
Oct	3.79	3.35	6.11	1996	20	10.66	1996	.41	1994
Nov	3.98	3.78	3.31	1992	23	8.89	1983	.64	1976
Dec	3.73	3.28	4.21	1992	12	8.26	1992	.81	1989
Ann	42.53	43.47	7.06	Aug 1955	19	13.20	Jun 1982	.00	Jun 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.7	7.0	2.7	1.1
Feb	10.0	5.8	2.4	.9
Mar	12.0	7.0	2.5	.9
Apr	11.0	6.6	2.4	.9
May	11.8	6.9	2.1	.5
Jun	10.4	6.0	1.7	.6
Jul	9.3	5.7	2.2	.7
Aug	9.8	5.9	2.0	.8
Sep	9.0	5.6	2.3	.8
Oct	8.9	6.1	2.7	.9
Nov	10.2	6.6	2.8	1.1
Dec	12.0	7.0	2.3	.8
Ann	126.1	76.2	28.1	10.0

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.87	1.24	1.81	2.33	2.85	3.40	4.02	4.76	5.74	7.29	8.76
Feb	1.07	1.38	1.84	2.24	2.62	3.01	3.44	3.94	4.59	5.60	6.53
Mar	1.25	1.61	2.15	2.61	3.06	3.51	4.02	4.60	5.36	6.54	7.62
Apr	1.15	1.49	2.00	2.43	2.85	3.28	3.75	4.31	5.02	6.13	7.16
May	.93	1.24	1.70	2.10	2.50	2.90	3.36	3.89	4.58	5.66	6.67
Jun	.18	.48	.98	1.45	1.95	2.51	3.16	3.97	5.06	6.86	8.61
Jul	.90	1.20	1.63	2.01	2.38	2.76	3.18	3.68	4.32	5.32	6.25
Aug	.74	1.05	1.54	1.99	2.44	2.91	3.45	4.09	4.94	6.28	7.56
Sep	.67	.99	1.50	1.96	2.44	2.95	3.53	4.23	5.15	6.63	8.04
Oct	1.13	1.49	2.03	2.50	2.95	3.42	3.94	4.55	5.34	6.57	7.72
Nov	1.09	1.47	2.04	2.54	3.04	3.55	4.12	4.79	5.67	7.05	8.33
Dec	.83	1.18	1.72	2.21	2.71	3.23	3.82	4.53	5.46	6.93	8.33
Ann	31.88	33.99	36.66	38.67	40.45	42.16	43.92	45.85	48.19	51.55	54.44

\+ 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: 1920-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	13.3	11.8	3	1
Feb	11.3	8.5	2	2
Mar	8.0	3.7	1	1
Apr	1.1	.0	#	0
May	.0	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	1.4	.2	#	0
Dec	6.7	5.2	1	0
Ann	41.8	29.4	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	21.0	1978	20	39.8	1996	31	1996	11	12+	1997
Feb	19.0	1978	7	36.2	1994	29	1978	8	14	1978
Mar	18.4	1984	14	38.9	1993	20	1978	4	6	1978
Apr	10.8	1982	6	13.3	1982	12	1982	7	1	1982
May	.5	1977	10	.5	1977	#	1977	10	#	2000
Jun	.0	0	0	.0	0	0	0	0	#	1996
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	.2	1979	10	.2	1979	0	0	0	0	0
Nov	5.9	1987	12	9.0	1987	6+	1987	13	#	1996
Dec	11.9	1981	6	24.1	1995	14	1975	22	5	1995
Ann	21.0	Jan 1978	20	39.8	Jan 1996	31	Jan 1996	11	14	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.4	3.5	1.5	.8	.1
Feb	5.6	2.7	1.2	.7	.1
Mar	4.1	2.2	.8	.4	.1
Apr	.7	.3	.1	@	@
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	1.1	.5	.2	@	.0
Dec	4.6	1.9	.6	.3	.1
Ann	22.5	11.1	4.4	2.2	.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	13.0	8.9	6.1	2.6
Feb	10.7	6.9	4.2	1.3
Mar	5.4	3.0	1.6	.6
Apr	.3	.2	.1	.1
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.9	.2	.1	.0
Dec	5.1	2.1	1.5	.7
Ann	35.4	21.3	13.6	5.3

+ 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	5/01	4/27	4/24	4/22	4/20	4/18	4/16	4/13	4/10
32	4/21	4/16	4/13	4/10	4/07	4/04	4/01	3/29	3/24
28	4/08	4/04	4/01	3/30	3/27	3/25	3/22	3/20	3/15
24	4/02	3/29	3/25	3/23	3/20	3/17	3/15	3/11	3/07
20	3/30	3/25	3/21	3/17	3/14	3/11	3/08	3/04	2/26
16	3/24	3/17	3/12	3/08	3/04	3/01	2/25	2/20	2/13

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	10/09	10/14	10/18	10/21	10/24	10/27	10/31	11/03	11/09
32	10/23	10/28	11/01	11/04	11/07	11/10	11/13	11/16	11/21
28	11/07	11/12	11/15	11/18	11/21	11/23	11/26	11/29	12/04
24	11/18	11/22	11/26	11/28	12/01	12/04	12/07	12/10	12/15
20	11/23	11/28	12/02	12/05	12/08	12/11	12/14	12/18	12/23
16	12/03	12/09	12/13	12/16	12/19	12/23	12/26	12/30	1/05

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	203	197	193	190	187	183	180	176	170
32	234	227	222	217	213	209	205	200	193
28	258	251	246	242	238	233	229	224	217
24	275	268	264	259	255	251	247	242	236
20	289	282	276	272	268	264	259	254	247
16	313	305	299	294	289	284	279	273	265

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1104	951	815	503	233	48	4	8	84	344	604	932	5630
60	951	800	654	352	104	9	0	0	16	202	454	783	4325
57	858	716	561	268	57	3	0	0	5	134	367	690	3659
55	796	660	499	216	36	1	0	0	2	97	311	628	3246
50	641	520	350	108	7	0	0	0	0	35	185	484	2330
32	179	108	24	0	0	0	0	0	0	0	5	100	416

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	87	96	243	491	820	1081	1297	1248	981	685	390	161	7580
55	0	0	6	29	153	393	584	535	297	78	16	2	2093
57	0	0	4	20	116	336	522	473	243	53	10	1	1778
60	0	0	2	11	73	254	429	381	169	27	5	0	1351
65	0	0	1	4	32	139	282	235	76	7	1	0	777
70	0	0	0	1	9	62	146	114	27	1	0	0	360

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	24	29	92	270	582	850	1059	1011	751	447	196	52	24	53	145	415	997	1847	2906	3917	4668	5115	5311	5363
45	3	7	41	147	427	700	904	856	601	301	99	21	3	10	51	198	625	1325	2229	3085	3686	3987	4086	4107
50	0	0	13	71	281	550	749	701	452	170	45	3	0	0	13	84	365	915	1664	2365	2817	2987	3032	3035
55	0	0	4	32	162	402	594	546	305	82	13	0	0	0	4	36	198	600	1194	1740	2045	2127	2140	2140
60	0	0	3	11	81	261	439	391	176	26	3	0	0	0	3	14	95	356	795	1186	1362	1388	1391	1391
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	8	11	48	123	299	539	723	687	455	215	84	23	8	19	67	190	489	1028	1751	2438	2893	3108	3192	3215

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

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

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