

1999

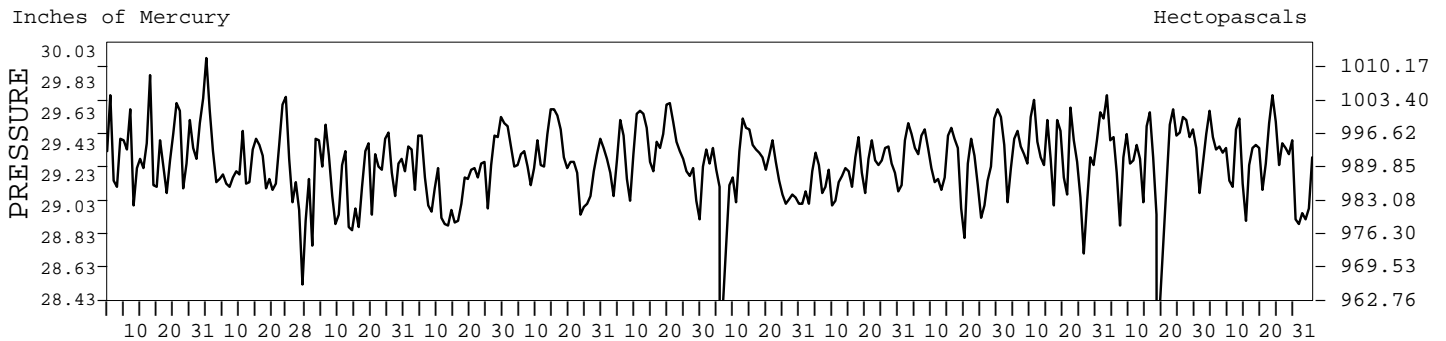
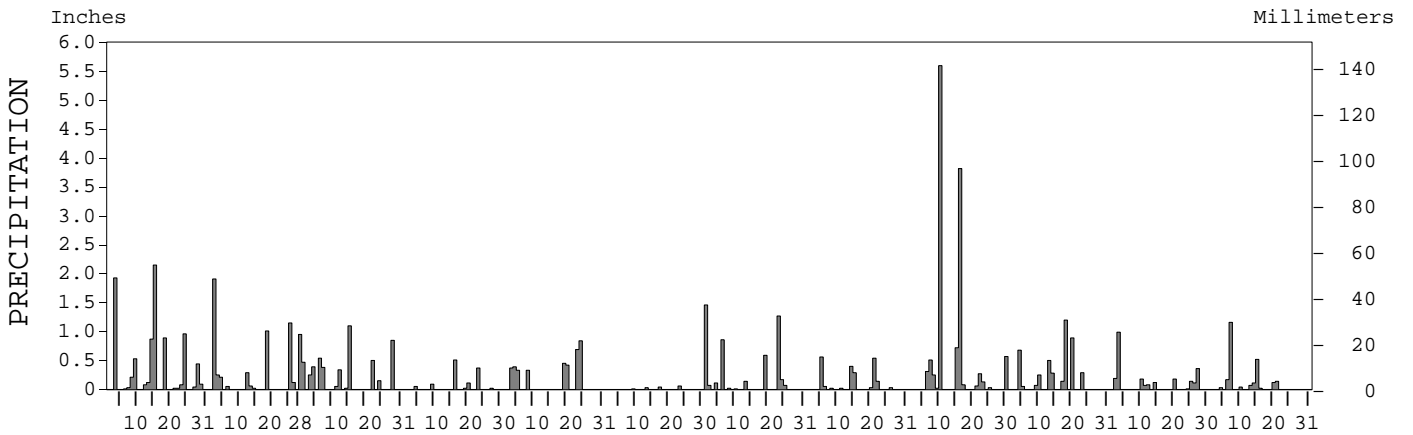
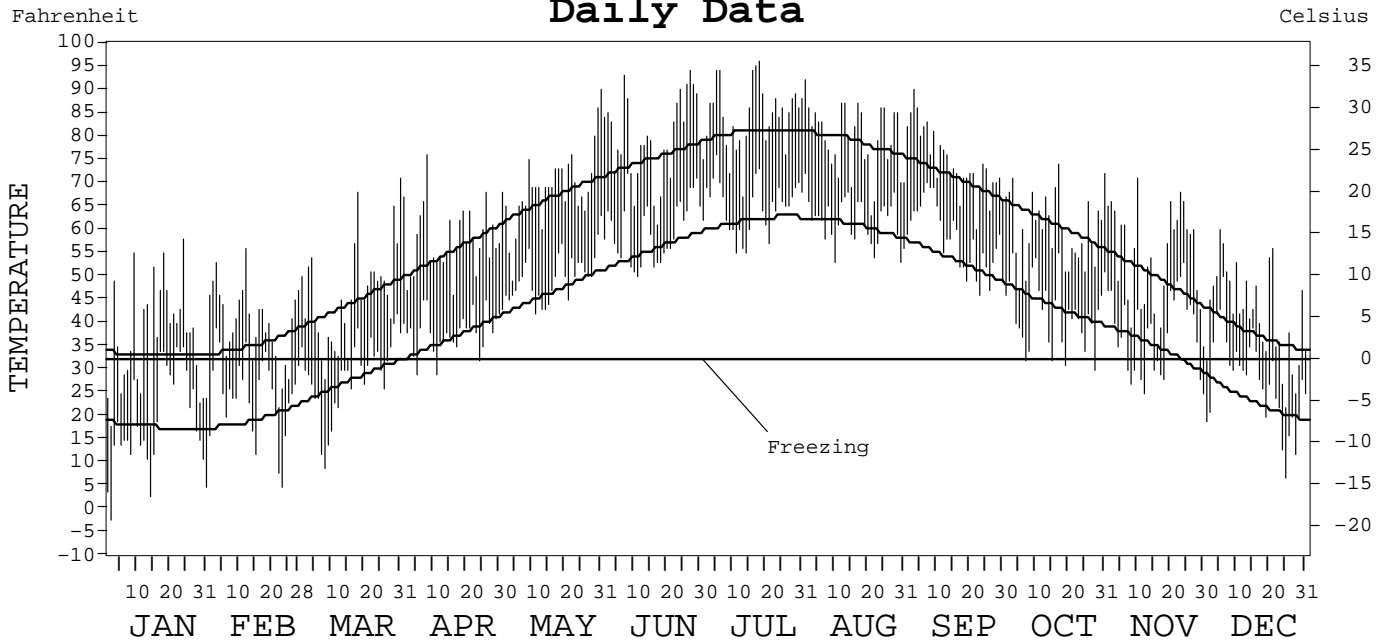
LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-2435

BLUE HILL OBSERVATORY,  
MILTON, MASSACHUSETTS (MQE)

Daily Data



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*Thomas R. Karl*

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	NATIONAL ENVIRONMENTAL AND INFORMATION SERVICE	NATIONAL SATELLITE, DATA, AND INFORMATION SERVICE	NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA	DIRECTOR NATIONAL CLIMATIC DATA CENTER
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# METEOROLOGICAL DATA FOR 1999

## MILTON, MA (MQE)

LATITUDE: 42° 12' 44" N      LONGITUDE: 71° 06' 53" W      ELEVATION (FT): GRND: 629      BARO: 629      TIME ZONE: EASTERN (UTC + 5)      WBAN: 14753

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	36.6	39.9	46.1	57.7	68.9	79.6	84.3	79.3	74.4	60.2	53.9	41.8	60.2	
	HIGHEST DAILY MAXIMUM	58	56	71	76	90	94	96	92	90	74	71	60	96	
	DATE OF OCCURRENCE	24	12	31	08	31	27	18	01	03	17	10	05	JUL 18	
	MEAN DAILY MINIMUM	19.2	24.8	28.8	38.0	49.7	59.7	64.9	61.8	58.0	42.0	37.7	27.7	42.7	
	LOWEST DAILY MINIMUM	-2	5	9	29	42	50	55	53	46	30	25	7	-2	
	DATE OF OCCURRENCE	02	23	08	11+	11	11	14+	30+	23	28	30	25	JAN 02	
	AVERAGE DRY BULB	27.9	32.4	37.5	47.9	59.3	69.7	74.6	70.6	66.2	51.1	45.8	34.8	51.5	
	MEAN WET BULB	25.5	28.0	32.0	40.6	52.3	61.8	67.1	62.7	60.9	46.9	30.8	23.2		
	MEAN DEW POINT	18.7	18.2	23.3	31.2	46.1	57.1	63.1	57.9	57.5	42.4				
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	1	5	5	1	1	0	0	0	0	13
	MAXIMUM ≤ 32°	12	5	3	0	0	0	0	0	0	0	0	6	26	
MINIMUM ≤ 32°	26	24	21	3	0	0	0	0	0	4	11	22	111		
MINIMUM ≤ 0°	1	0	0	0	0	0	0	0	0	0	0	0	1		
H/C	HEATING DEGREE DAYS	1141	908	845	505	192	34	3	16	56	423	568	929	5620	
	COOLING DEGREE DAYS	0	0	0	0	23	180	308	194	100	0	0	0	805	
RH	MEAN (PERCENT)	69	61	62	58	69	69	72	70	79	75	70	66	68	
	HOUR 01 LST	72	66	70	68	81	83	84	83	87	86	78	69	77	
	HOUR 07 LST	77	67	72	67	75	77	82	80	85	86	77	74	77	
	HOUR 13 LST	61	50	50	42	53	54	55	53	65	58	56	56	54	
	HOUR 19 LST	70	61	59	56	67	66	70	67	80	73	71	64	67	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	2	2	2	0	6	1	4	4	5	4	3	1	34	
	THUNDERSTORMS	1	0	0	0	1	1	5	1	0	0	0	0	9	
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
	MIDNIGHT-MIDNIGHT: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
NUMBER OF DAYS WITH:															
CLEAR															
PARTLY CLOUDY															
CLOUDY															
PR	MEAN STATION PRESS. (IN.)	29.43	29.30	29.19	29.21	29.35	29.38		29.27	29.32	29.39		29.31		
	MEAN SEA-LEVEL PRESS. (IN.)	30.16	30.03	29.91	29.92	30.05	30.08		29.97	30.02	30.10		30.04		
WINDS	RESULTANT SPEED (MPH)		5.3	7.2	5.6	2.8	4.8	3.3	2.4	5.0	5.6		6.8		
	RES. DIR. (TENS OF DEGS.)		31	29	30	18	22	22	23	20	24		28		
	MEAN SPEED (MPH)	14.8	13.9	17.2	12.9	11.4	12.1	11.3	11.1	12.7	13.8		14.5		
	PREVAIL. DIR. (TENS OF DEGS.)	26	33	32	32	33	19	26	19	18	19	18	29	31	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	46	41	55	44	36	34	45	33	46	47	56	51	56	
	DIR. (TENS OF DEGS.)	20	14	14	27	20	21	31	31	15	31	16	29	16	
	DATE OF OCCURRENCE	24	02	22	08	25	28	06	06	16	14	03	11	NOV 03	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	57	56	74	55	49	43	54	45	59	60	76	63	76	
DIR. (TENS OF DEGS.)	18	14	15	27	20	21	32	31	15	31	16	29	16		
DATE OF OCCURRENCE	24	02	22	08	25	28	06	06	16	14	03	11	NOV 03		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	8.47	6.02	5.04	1.17	3.82	0.14	4.77	2.08	12.37	4.35	2.43	2.38	53.04	
	GREATEST 24-HOUR (IN.)	2.56	2.16	1.10	0.51	1.46	0.06	1.46	0.67	5.60	1.34	1.18	1.33	5.60	
	DATE OF OCCURRENCE	14-15	02-03	15	16	23-24	23	01	14-15	10	17-18	02-03	06-07	SEP 10	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	17	11	12	7	8	4	11	10	13	10	11	10	124	
PRECIPITATION ≥ 0.10	9	8	10	3	8	0	7	5	9	8	8	6	81		
PRECIPITATION ≥ 1.00	2	3	1	0	0	0	2	0	2	1	0	1	12		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	19.7	14.4	22.5	T	0.0	0.0	0.0	0.0	0.0	T	T	T	56.6	
	GREATEST 24-HOUR (IN.)	9.0	11.5	11.0	T	0.0	0.0	0.0	0.0	0.0	0.0	T	T	11.5	
	DATE OF OCCURRENCE	14	25	15	16	0	0	0	0	0	14	29+	23+	FEB 25	
	MAXIMUM SNOW DEPTH (IN.)	8	12	12	0	0	0	0	0	0	0	0	0	12	
	DATE OF OCCURRENCE	15	26	16										MAR 16	
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	5	2	4	0	0	0	0	0	0	0	0	0	11		

# NORMALS, MEANS, AND EXTREMES

MILTON, MA (MQE)

LATITUDE: 42° 12' 44" N      LONGITUDE: 71° 06' 53" W      ELEVATION (FT): GRND: 629      BARO: 629      TIME ZONE: EASTERN (UTC + 5)      WBAN: 14753

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	33.1	35.3	44.1	55.2	66.6	75.1	80.6	78.5	70.7	60.6	49.2	37.4	57.2
	MEAN DAILY MAXIMUM	37	33.6	35.7	44.2	55.6	66.9	75.3	81.0	78.7	70.6	60.6	49.1	38.0	57.4
	HIGHEST DAILY MAXIMUM	114	68	68	89	94	93	99	100	101	99	88	81	74	101
	YEAR OF OCCURRENCE		1950	1985	1998	1976	1930	1919	1977	1975	1953	1963	1950	1998	AUG 1975
	MEAN OF EXTREME MAXS.	37	54.3	54.5	67.2	77.5	85.9	89.5	93.4	90.1	85.9	77.6	68.1	58.8	75.2
	NORMAL DAILY MINIMUM	30	17.6	19.2	27.5	36.6	46.5	55.5	61.7	60.5	53.0	43.2	34.3	22.7	39.9
	MEAN DAILY MINIMUM	37	18.1	19.6	27.5	36.9	46.7	55.8	62.1	60.7	53.1	43.2	34.3	23.5	40.1
	LOWEST DAILY MINIMUM	114	-16	-21	-5	6	27	36	44	39	28	21	5	-19	-21
	YEAR OF OCCURRENCE		1957	1934	1950	1923	1911	1945	1988	1965	1914	1936	1932	1933	FEB 1934
	MEAN OF EXTREME MINS.	37	-1.3	1.1	10.4	24.5	36.4	44.9	52.7	49.5	39.6	29.1	19.2	4.2	25.9
	NORMAL DRY BULB	30	25.3	27.3	35.8	45.9	56.6	65.3	71.2	69.6	61.9	51.9	41.7	30.1	48.5
	MEAN DRY BULB	37	25.9	27.7	35.8	46.2	56.8	65.5	71.6	69.7	61.8	51.9	41.6	30.8	48.8
	MEAN WET BULB	1	25.5	28.0	32.0	40.6	52.3	61.8	67.1	62.7	60.9	47.0	37.6	31.7	45.6
	MEAN DEW POINT	1	18.7	18.2	23.3	31.2	46.1	57.1	63.1	57.9	57.5	42.0	31.3	24.0	39.2
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.1	0.3	1.1	3.4	1.4	0.4	0.0	0.0	0.0	6.7	
MAXIMUM ≤ 32°	30	14.8	11.4	3.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.9	10.3	40.9	
MINIMUM ≤ 32°	30	28.8	25.7	22.3	7.8	0.3	0.0	0.0	0.0	0.0	3.4	13.4	26.3	128.0	
MINIMUM ≤ 0°	30	2.1	1.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.8	
H/C	NORMAL HEATING DEG. DAYS	30	1231	1056	905	573	265	54	0	11	116	406	699	1082	6398
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	0	63	194	154	23	0	0	0	434
RH	NORMAL (PERCENT)														
	HOUR 01 LST														
	HOUR 07 LST														
	HOUR 13 LST														
	HOUR 19 LST														
S	PERCENT POSSIBLE SUNSHINE	112	46	50	48	49	52	55	57	58	56	55	47	46	52
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	7	6.3	5.0	7.7	5.7	7.5	6.1	4.3	5.9	6.5	5.8	5.1	4.9	70.8
	THUNDERSTORMS	7	0.4	0.3	0.9	1.3	2.5	3.4	4.4	3.5	1.1	0.8	0.2	0.0	18.8
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR														
	PARTLY CLOUDY														
	CLOUDY														
PR	MEAN STATION PRESSURE (IN)	1	29.43	29.30	29.19	29.21	29.35	29.38		29.27	29.32	29.38	29.31	29.33	
	MEAN SEA-LEVEL PRES. (IN)	1	30.16	30.03	29.91	29.92	30.05	30.08		29.97	30.02	30.08	30.02	30.06	
WINDS	MEAN SPEED (MPH)	57	17.4	17.2	17.4	16.5	14.6	13.8	12.9	12.6	13.5	15.2	16.3	16.8	15.3
	PREVAIL. DIR (TENS OF DEGS)														
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	1	46	41	55	44	36	34	45	33	46	47	56	51	56
	DIR. (TENS OF DEGS)		20	14	14	27	20	21	31	31	15	31	16	29	16
	YEAR OF OCCURRENCE		1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	NOV 1999
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	1	57	56	74	55	49	43	54	45	59	60	76	63	76
	DIR. (TENS OF DEGS)		18	14	15	27	20	21	32	31	15	31	16	29	16
	YEAR OF OCCURRENCE		1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	NOV 1999
PRECIPITATION	NORMAL (IN)	30	4.15	4.31	4.41	4.05	3.80	3.43	3.49	3.92	3.82	3.94	4.92	4.71	48.95
	MAXIMUM MONTHLY (IN)	114	11.61	9.32	10.96	10.37	9.16	17.32	11.67	18.78	12.37	11.76	9.78	12.60	18.78
	YEAR OF OCCURRENCE		1979	1969	1968	1987	1954	1998	1938	1955	1999	1996	1983	1969	AUG 1955
	MINIMUM MONTHLY (IN)	114	0.89	0.71	0.06	0.92	0.50	0.14	0.13	0.53	0.45	0.22	0.55	0.92	0.06
	YEAR OF OCCURRENCE		1955	1987	1915	1892	1944	1999	1952	1981	1914	1924	1976	1955	MAR 1915
	MAXIMUM IN 24 HOURS (IN)	113	3.10	4.85	6.62	3.19	5.02	6.10	4.67	9.93	5.86	7.41	5.06	5.68	9.93
	YEAR OF OCCURRENCE		1889	1886	1968	1991	1984	1998	1979	1955	1961	1996	1955	1969	AUG 1955
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	11.3	10.0	11.5	11.3	11.5	11.3	9.3	10.1	8.9	9.0	11.5	12.5	128.2
	PRECIPITATION ≥ 1.00	30	1.1	1.4	0.9	1.1	0.8	0.8	1.1	0.9	1.1	1.1	1.5	1.3	13.1
SNOWFALL	NORMAL (IN)	30	15.5	16.0	10.6	2.5	0.3	0.0	0.0	0.0	0.0	0.4	2.9	11.7	59.9
	MAXIMUM MONTHLY (IN)	114	56.3	65.4	52.0	24.2	7.8	T	0.0	0.0	0.0	6.8	23.0	45.2	65.4
	YEAR OF OCCURRENCE		1948	1969	1956	1996	1977	1991				1979	1889	1945	FEB 1969
	MAXIMUM IN 24 HOURS (IN)	110	20.0	28.2	27.2	15.1	7.8	T	0.0	0.0	0.0	6.8	16.0	21.0	28.2
	YEAR OF OCCURRENCE		1898	1969	1960	1996	1977	1991				1979	1898	1960	FEB 1969
	MAXIMUM SNOW DEPTH (IN)	36	27	41	43	27	8	0	0	0	0	5	12	20	43
	YEAR OF OCCURRENCE		1978	1969	1969	1997	1977					1979	1971	1975	MAR 1969
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0	30	3.6	3.3	2.8	0.8	0.1	0.0	0.0	0.0	0.0	0.1	0.9	3.1	14.7

PRECIPITATION (inches) 1999 BLUE HILL OBSERVATORY, MA (MQE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	1.07	5.68	5.07	2.95	4.42	3.75	1.13	6.86	2.20	3.25	5.63	6.29	48.30
1971	1.96	5.51	3.23	3.10	4.18	1.21	3.41	1.84	1.64	2.51	6.78	2.72	38.09
1972	2.21	6.59	7.37	3.72	6.29	7.15	3.10	1.67	6.69	3.97	9.17	7.58	65.51
1973	3.85	3.02	2.59	6.48	3.78	5.80	4.30	4.35	4.24	2.93	2.09	8.22	51.65
1974	4.14	3.84	5.17	5.14	3.48	2.99	1.77	3.63	7.59	3.34	2.22	4.80	48.11
1975	6.15	3.99	3.57	3.32	3.28	4.28	3.54	7.72	7.10	6.39	6.09	6.95	62.38
1976	6.52	3.06	3.29	2.45	2.84	0.91	4.51	8.92	2.41	5.73	0.55	3.52	44.71
1977	4.85	2.67	5.62	4.05	3.41	4.82	2.23	3.11	5.05	6.43	3.17	6.29	51.70
1978	9.85	2.97	3.24	1.88	5.00	1.53	2.04	5.91	1.36	3.24	2.28	4.19	43.49
1979	11.61	4.22	3.08	4.34	4.67	1.00	5.55	6.76	4.73	4.09	4.17	1.68	55.90
1980	0.97	1.07	6.07	5.08	1.58	3.91	2.43	2.09	0.69	4.72	3.19	1.19	32.99
1981	1.25	7.93	0.63	3.16	1.60	1.89	4.09	0.53	3.76	4.14	5.60	7.24	41.82
1982	5.61	3.25	3.14	4.03	3.47	13.73	4.66	1.84	2.37	3.69	4.34	2.11	52.24
1983	5.53	6.15	10.02	7.57	3.33	1.27	1.11	6.59	1.67	3.35	9.78	6.08	62.45
1984	2.81	7.80	9.00	4.34	9.14	4.10	5.26	0.91	1.73	5.02	1.59	3.21	54.91
1985	1.31	2.91	3.17	1.80	3.58	4.66	4.53	4.04	2.74	1.83	8.16	1.32	40.05
1986	4.11	3.55	3.09	1.80	1.92	7.13	4.97	4.65	1.04	3.61	6.37	7.71	49.95
1987	7.94	0.71	5.42	10.37	2.45	2.18	1.23	4.09	9.62	2.38	4.91	2.99	54.29
1988	3.38	5.46	4.23	2.36	3.67	0.91	10.66	1.28	1.78	3.11	8.93	1.52	47.29
1989	1.00	3.45	3.83	5.03	4.74	4.44	7.31	6.96	5.39	8.07	4.77	1.14	56.13
1990	4.85	5.21	2.21	5.62	7.81	1.35	5.04	6.03	1.86	6.23	1.96	3.95	52.12
1991	4.00	2.03	5.64	5.05	1.54	3.30	2.95	6.46	6.72	6.51	5.01	2.80	52.01
1992	3.64	2.31	4.48	3.33	1.50	5.09	2.85	5.36	3.40	1.95	5.06	9.80	48.77
1993	3.15	4.42	8.72	6.59	1.23	2.12	1.77	1.67	4.16	4.36	2.97	8.01	49.17
1994	6.25	4.00	7.98	2.46	5.23	1.01	1.84	6.92	5.00	0.39	5.10	6.48	52.66
1995	4.32	3.28	2.20	1.86	2.12	1.83	2.54	2.21	3.63	5.94	6.01	3.42	39.36
1996	8.49	3.53	4.01	6.68	3.37	3.05	5.48	3.31	8.78	11.76	2.59	8.31	69.36
1997	3.43	2.16	6.75	4.96	3.07	1.33	1.18	2.94	1.36	2.00	7.41	3.31	39.90
1998	7.22	6.82	5.96	5.18	8.18	17.32	2.06	5.84	1.53	7.37	1.83	1.69	71.00
1999	8.47	6.02	5.04	1.17	3.82	0.14	4.77	2.08	12.37	4.35	2.43	2.38	53.04
POR= 114 YRS	4.29	3.97	4.43	3.97	3.62	3.53	3.60	3.98	3.97	3.88	4.27	4.19	47.70

WBAN : 14753

AVERAGE TEMPERATURE (°F) 1999 BLUE HILL OBSERVATORY, MA (MQE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	17.8	28.6	33.4	47.1	58.1	64.7	72.1	71.2	62.6	53.8	43.3	25.6	48.2
1971	20.6	28.3	34.3	43.2	55.2	66.8	71.8	70.9	65.7	57.3	38.8	31.7	48.7
1972	28.6	25.3	32.4	42.0	55.7	62.9	70.6	68.0	62.1	47.9	38.0	31.3	47.1
1973	29.3	26.9	41.3	48.4	55.4	67.8	71.4	72.6	61.9	52.8	41.6	35.2	50.4
1974	28.5	26.6	36.5	48.7	53.4	64.1	70.3	71.2	61.5	47.6	41.5	33.8	48.6
1975	30.9	28.5	34.1	42.7	60.0	64.6	73.0	69.3	59.9	54.4	48.0	30.5	49.7
1976	22.0	34.0	37.5	51.4	57.0	69.3	70.0	68.5	61.3	48.0	37.2	24.2	48.4
1977	18.6	27.5	41.9	48.2	59.5	63.8	71.5	70.8	61.3	51.2	43.5	29.0	48.9
1978	23.6	22.3	32.6	44.2	56.6	65.5	70.5	70.0	59.0	50.3	40.9	31.3	47.2
1979	28.3	18.5	39.2	45.8	58.9	64.4	72.9	68.8	62.0	50.8	46.7	34.2	49.2
1980	26.6	24.5	34.8	47.7	57.2	63.3	73.1	71.1	64.0	49.1	38.1	25.7	47.9
1981	17.7	34.6	36.2	48.7	58.5	67.3	71.8	69.4	60.0	48.5	40.8	29.9	48.6
1982	19.0	27.5	35.5	44.5	56.3	61.1	71.7	66.1	61.7	51.7	44.7	35.5	47.9
1983	27.5	29.8	37.7	46.8	54.0	66.7	73.5	70.0	65.6	51.3	43.5	29.3	49.6
1984	23.9	35.2	30.0	45.0	56.2	67.6	70.6	70.9	60.3	53.6	42.0	36.3	49.3
1985	20.6	30.0	37.7	47.4	57.4	62.1	71.3	68.5	62.9	53.1	43.1	28.1	48.5
1986	28.7	25.5	38.7	47.1	57.4	63.0	68.3	67.2	60.4	50.9	39.4	32.4	48.3
1987	25.9	26.1	36.9	45.3	57.7	66.2	71.1	68.2	62.0	50.5	41.5	32.9	48.7
1988	24.8	29.4	36.9	44.7	56.9	66.0	72.8	73.3	61.5	47.8	44.1	29.4	49.0
1989	31.2	27.3	35.1	44.8	58.6	65.7	70.2	69.4	63.2	53.5	39.8	17.9	48.1
1990	34.2	31.2	38.2	46.2	53.6	65.5	71.0	71.0	62.1	56.0	44.8	36.8	50.9
1991	26.9	33.0	39.0	49.5	62.1	66.7	72.1	71.1	60.7	54.2	42.3	32.4	50.8
1992	27.9	29.2	32.6	44.0	55.2	65.3	67.9	68.2	61.1	49.2	39.7	31.1	47.6
1993	27.8	22.5	32.7	45.8	58.5	66.3	72.4	72.2	62.1	49.5	42.6	30.7	48.6
1994	19.1	23.8	35.6	49.5	55.5	68.9	75.3	69.0	60.9	52.7	45.8	35.4	49.3
1995	32.4	25.9	37.3	45.0	55.5	66.6	74.1	70.3	61.2	56.3	38.1	26.6	49.1
1996	26.1	27.3	33.6	46.6	56.3	66.5	69.8	69.5	62.0	51.4	37.5	36.6	48.6
1997	26.1	33.3	34.7	45.1	54.2	66.6	72.4	69.6	62.3	51.0	39.0	32.4	48.9
1998	31.8	34.3	39.4	48.6	59.9	63.7	72.0	71.3	64.5	52.1	42.2	36.9	51.4
1999	27.9	32.4	37.5	47.9	59.3	69.7	74.6	70.6	66.2	51.1	45.8	34.8	51.5
POR= 114 YRS	26.2	26.8	35.0	45.8	56.7	65.4	71.1	69.3	62.4	52.1	41.3	30.2	48.5

HEATING DEGREE DAYS (base 65°F) 1999 BLUE HILL OBSERVATORY, MA (MQE)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	2	3	123	354	642	1215	1371	1022	945	647	303	49	6676
1971-72	0	15	68	237	779	1025	1122	1141	1004	686	288	105	6470
1972-73	12	30	115	522	802	1038	1101	1064	729	491	304	35	6243
1973-74	4	10	153	372	694	916	1123	1073	879	488	371	85	6168
1974-75	4	6	148	530	695	959	1048	1016	950	663	190	92	6301
1975-76	3	31	156	327	502	1061	1327	895	847	450	254	50	5903
1976-77	7	37	135	522	826	1257	1428	1045	710	503	214	92	6776
1977-78	7	17	148	419	640	1109	1278	1188	997	618	284	50	6755
1978-79	19	19	196	447	717	1036	1134	1296	790	573	207	66	6500
1979-80	15	41	138	445	546	949	1183	1168	927	512	245	116	6285
1980-81	0	18	112	489	799	1208	1461	843	888	482	230	22	6552
1981-82	3	16	168	501	721	1080	1417	1046	907	611	269	143	6882
1982-83	8	50	132	407	601	911	1159	979	840	543	337	56	6023
1983-84	4	23	108	431	638	1101	1267	857	1079	592	277	58	6435
1984-85	14	5	170	349	679	882	1370	975	839	522	247	113	6165
1985-86	0	20	110	363	651	1138	1119	1100	803	527	278	113	6222
1986-87	42	39	156	435	762	1003	1205	1081	866	584	272	55	6500
1987-88	6	41	121	442	699	987	1238	1025	864	605	267	90	6385
1988-89	17	22	117	531	615	1098	1043	1050	923	598	207	72	6293
1989-90	9	20	123	349	751	1454	948	941	825	563	350	63	6396
1990-91	10	17	128	299	603	866	1171	889	798	461	147	69	5458
1991-92	6	12	168	333	675	1004	1143	1033	998	624	333	64	6393
1992-93	30	29	160	482	756	1043	1146	1184	996	567	204	61	6658
1993-94	4	2	148	474	665	1054	1417	1149	905	456	300	22	6596
1994-95	4	22	139	373	571	910	1004	1089	852	593	296	52	5905
1995-96	0	17	152	275	801	1181	1196	1086	968	551	290	29	6546
1996-97	4	15	137	416	819	873	1200	878	935	591	329	102	6299
1997-98	8	9	127	437	772	1005	1026	855	799	489	183	84	5794
1998-99	0	6	67	394	676	865	1141	908	845	505	192	34	5633
1999-	3	16	56	423	568	929							

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COOLING DEGREE DAYS (base 65°F) 1999 BLUE HILL OBSERVATORY, MA (MQE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	0	0	0	0	20	84	227	204	58	13	0	0	606
1971	0	0	0	0	4	111	216	203	97	6	0	0	637
1972	0	0	0	0	9	46	190	131	38	0	0	0	414
1973	0	0	0	1	14	126	208	249	65	1	0	0	664
1974	0	0	0	7	18	66	177	206	50	0	0	0	524
1975	0	0	0	0	42	84	255	169	10	5	0	0	565
1976	0	0	0	48	13	184	171	150	30	3	0	0	599
1977	0	0	4	4	48	60	218	204	45	0	0	0	583
1978	0	0	0	0	31	72	196	180	23	0	0	0	502
1979	0	0	0	0	26	56	264	167	57	14	0	0	584
1980	0	0	0	0	7	72	258	213	87	0	0	0	637
1981	0	0	0	0	36	95	224	156	27	0	0	0	538
1982	0	0	0	0	7	34	221	89	40	2	0	0	393
1983	0	0	0	2	4	115	274	190	134	13	0	0	732
1984	0	0	0	0	11	142	195	191	36	2	0	0	577
1985	0	0	0	3	17	32	203	135	54	1	0	0	445
1986	0	0	0	0	49	61	149	113	22	4	0	0	398
1987	0	0	0	0	52	100	203	148	36	0	1	0	540
1988	0	0	0	0	23	128	266	289	23	4	0	0	733
1989	0	0	0	0	16	100	178	163	76	1	0	0	534
1990	0	0	0	8	0	84	203	208	48	26	3	0	580
1991	0	0	0	0	64	124	234	208	50	5	0	0	685
1992	0	0	0	0	36	77	123	135	48	0	0	0	419
1993	0	0	0	0	12	108	244	233	66	1	0	0	664
1994	0	0	0	0	12	146	329	154	20	0	0	0	661
1995	0	0	0	0	11	108	291	185	44	10	0	0	649
1996	0	0	0	4	27	81	159	163	55	0	0	0	489
1997	0	0	0	0	2	157	243	159	54	6	0	0	621
1998	0	0	14	2	32	54	225	206	61	0	0	0	594
1999	0	0	0	0	23	180	308	194	100	0	0	0	805

SNOWFALL (inches) 1999 BLUE HILL OBSERVATORY, MA (MQE)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0.0	0.0	0.0	T	0.0	26.5	12.2	5.3	9.6	4.8	0.0	0.0	58.4
1971-72	0.0	0.0	0.0	0.0	12.0	10.7	6.2	24.1	21.8	4.5	0.0	0.0	79.3
1972-73	0.0	0.0	0.0	1.0	2.0	9.1	6.1	4.0	2.0	T	0.0	0.0	24.2
1973-74	0.0	0.0	0.0	0.0	0.0	0.4	17.4	13.6	0.4	3.0	0.0	0.0	34.8
1974-75	0.0	0.0	0.0	0.0	4.8	7.3	5.1	20.1	4.2	6.3	0.0	0.0	47.8
1975-76	0.0	0.0	0.0	T	2.3	23.9	17.3	2.4	13.7	T	0.0	0.0	59.6
1976-77	0.0	0.0	0.0	0.0	1.6	22.5	27.1	9.5	12.7	T	7.8	0.0	81.2
1977-78	0.0	0.0	0.0	0.0	0.8	7.6	35.6	30.4	19.0	0.1	T	0.0	93.5
1978-79	0.0	0.0	0.0	0.0	7.5	8.0	9.0	9.1	0.1	3.2	0.0	0.0	36.9
1979-80	0.0	0.0	0.0	6.8	0.0	6.2	0.7	6.9	4.7	T	0.0	0.0	25.3
1980-81	0.0	0.0	0.0	0.0	7.3	8.1	16.1	8.3	2.5	T	0.0	0.0	42.3
1981-82	0.0	0.0	0.0	0.0	T	27.3	17.4	10.9	6.0	14.0	0.0	0.0	75.6
1982-83	0.0	0.0	0.0	0.0	T	15.8	11.2	28.5	1.0	T	0.0	0.0	56.5
1983-84	0.0	0.0	0.0	0.0	T	9.5	23.6	0.6	26.7	T	0.0	0.0	60.4
1984-85	0.0	0.0	0.0	0.0	0.2	5.2	11.1	16.7	10.4	3.5	T	0.0	47.1
1985-86	0.0	0.0	0.0	0.0	5.1	2.9	1.6	13.8	3.0	T	T	0.0	26.4
1986-87	0.0	0.0	0.0	0.0	13.5	6.4	38.3	5.6	8.4	13.5	0.0	0.0	85.7
1987-88	0.0	0.0	0.0	0.0	11.4	12.1	20.3	16.3	8.5	T	0.0	0.0	68.6
1988-89	0.0	0.0	0.0	T	0.0	8.4	1.4	10.2	9.3	4.7	0.0	0.0	34.0
1989-90	0.0	0.0	0.0	0.0	5.6	7.3	13.3	25.8	5.7	1.5	0.2	0.0	59.4
1990-91	0.0	0.0	0.0	0.0	0.4	5.6	11.7	5.8	5.5	T	0.0	T	29.0
1991-92	0.0	0.0	0.0	T	0.2	7.5	1.1	5.0	11.9	1.5	0.0	0.0	27.2
1992-93	0.0	0.0	0.0	0.0	0.5	19.0	13.5	12.8	35.5	3.0	0.0	0.0	84.3
1993-94	0.0	0.0	0.0	0.0	0.3	15.0	33.0	33.9	18.9	0.0	0.0	0.0	101.1
1994-95	0.0	0.0	0.0	0.0	1.6	1.3	4.3	10.0	0.7	T	T	0.0	17.9
1995-96	0.0	0.0	0.0	0.0	5.8	25.3	47.6	18.3	23.2	24.2	T	0.0	144.4
1996-97	0.0	0.0	0.0	T	2.6	9.3	12.2	7.8	22.6	15.1	0.0	0.0	69.6
1997-98	0.0	0.0	0.0	0.0	4.1	15.3	15.8	1.0	5.3	0.1	0.0	0.0	41.6
1998-99	0.0	0.0	0.0	0.0			19.7	14.4	22.5	T	0.0	0.0	
1999-	0.0	0.0	0.0	T	T	T							
POR= 113 YRS	0.0	0.0	0.0	0.2	2.8	10.7	15.5	15.7	11.5	3.3	0.1	T	59.8

WBAN : 14753

REFERENCE NOTES:

<p>PAGE 1: THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).</p> <p>PAGE 2 AND 3: H/C INDICATES HEATING AND COOLING DEGREE DAYS. RH INDICATES RELATIVE HUMIDITY W/O INDICATES WEATHER AND OBSTRUCTIONS S INDICATES SUNSHINE. PR INDICATES PRESSURE. CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).</p> <p>GENERAL: T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE. + INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES. BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA. NORMALS ARE 30-YEAR AVERAGES (1961 - 1990). ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM. PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH. POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING. WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED. 0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05. CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET. THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.</p>	<p>GENERAL CONTINUED: CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED. WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH. RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION. AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2. SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL. A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F. DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR. DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY. WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.</p> <p>ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTHS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.</p>
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1999  
BLUE HILL OBSERVATORY,  
MILTON, MASSACHUSETTS (MQE)

The altitude of the Observatory and its proximity to Massachusetts Bay play major roles in determining the climate of Blue Hill. The elevation of 635 feet marks the summit as the highest point of a wooded range that extends east-northeast to west-southwest. The station lies at the southwest end of this range and has a three-quadrant unrestricted exposure, at approximately 400 feet above the surrounding terrain. The orographic effect created by this difference in elevation is responsible for lower temperatures, more precipitation, higher winds, more frequent occurrences of fog, and longer periods of snow cover than at nearby lower elevations. Eight miles to the northeast lies the nearest approach of Boston Harbor, and thus, the station is within range of the sea breeze.

Summer temperatures are generally comfortable. Winters at the summit are more severe than those experienced at surrounding areas. Average occurrence of last freezing temperature in the spring is late April and the first in the fall is late October. The freeze-free period is about 178 days. Records indicate that the freeze-free period at base stations is from 6 to 7 weeks shorter than at the summit. This seeming paradox is due to temperature inversions, in which the colder air is found at lower elevations. This condition develops on clear, calm nights, and is responsible for the shorter freeze-free period in base areas.

Total precipitation is fairly evenly distributed throughout the year. Precipitation occurrences are most frequent January through March and least frequent August through October. Hourly precipitation occurrences indicate a coastal type distribution for the year as a whole, with maxima in the early morning and minima in the early afternoon. In the summer, however, convective action or the continental influence dominates, causing a late afternoon maximum. Coastal storms or northeasters are prolific producers of rain and snow.

The main snow season extends from November through early April. Nearly 14 percent of the annual total precipitation occurs as snow or sleet.

Wind velocities are higher in winter than in summer. Speeds average greatest from January through March and least in August. Surface contour is a factor in the stations wind force, particularly from the southerly and westerly directions. These are the steepest slopes of the hill, and winds velocities increase. Peak winds have been recorded from these directions. Winds from the east-northeast and northeast are somewhat slowed by striking the lower range first.

# STATION LOCATION

BLUE HILL OBSERVATORY  
MILTON, MASSACHUSETTS

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE												AUTOMATED RECORDING	* Type	REMARKS
						SEA LEVEL	GROUND													
							TEMPERATURE	WIND	EXPOSURE	RECORD	SUNSHINE	PRECIPITATION	RAIN GAGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROMETER	WIND VANE			
Blue Hill Observatory	01/31/85	10/15/98	NA	42° 13'	71° 07'	629	34 d52	a6	a6	e31	NA	c5	b4	NA	NA					

a - Temperatures were from window shelter 18 feet above ground until 1887. The Practice for many years (July 1887 to October 1931) was to use a large window shelter attached to the north window of an unheated room of the tower 18 feet above the ground from November 1 through March or April, and a large Hazen shelter about 65 feet east of the observatory and 6 feet above the ground the rest of the time. In 1905 the Hazen shelter was moved to a point about 130 feet NE of the observatory. The mean monthly temperatures in the window shelter differed from those in the Hazen shelter by no more than 0.2° in individual months but on the average they are zero. The thermometer height was 18 feet from October 1931 to September 30, 1937 and 6 feet from September 30, 1937.

b - Precipitation: Exposure to wind was great during the first decade, but was reduced by bushes, wire fencing, and a Nipher shield thereafter. Precipitation in windy snowstorms was determined by cutting sections of the accumulated new snow on the ground. The record meets standard tests for homogeneity when compared with records at stations to the south, west, and north.

Gage height were: 1.25 feet and 24 feet. April 1, 1885 to June 1, 1885 (during this period the larger of the two measurements, from tower or ground gage was used); 1-25-1.4 feet, June 1, 1885 to October 24, 1931; 2 feet, October 24, 1931 to January 20, 1948; 3.5 feet from January 20, 1948.

c - Richard weighing gage added at about 1 foot elevation in March 1886, replaced by Fergusson gage in July 1890. Elevation 2 feet 10/24/31 to 1/20/48 and 4 feet to 2/27/70. Universal weighing gage installed 2/27/70.

d - Effective 6/4/08 Type change 10/1931.

e - Heights of sunshine switch are unknown prior to 9/30/37.

Blue Hill Observatory	10/15/98	Present	NA	42°13'	71°07'	629											ASOS Commissioned 10/15/98.
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