

1999

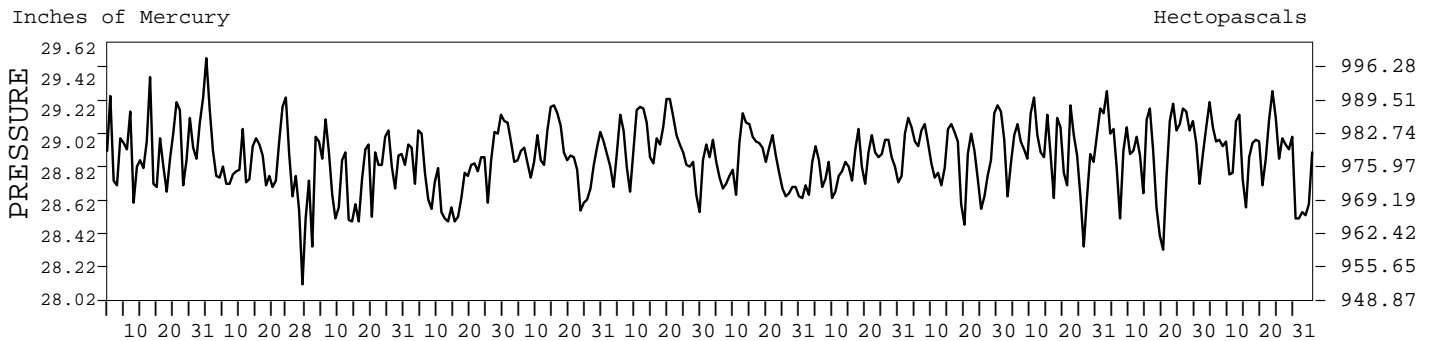
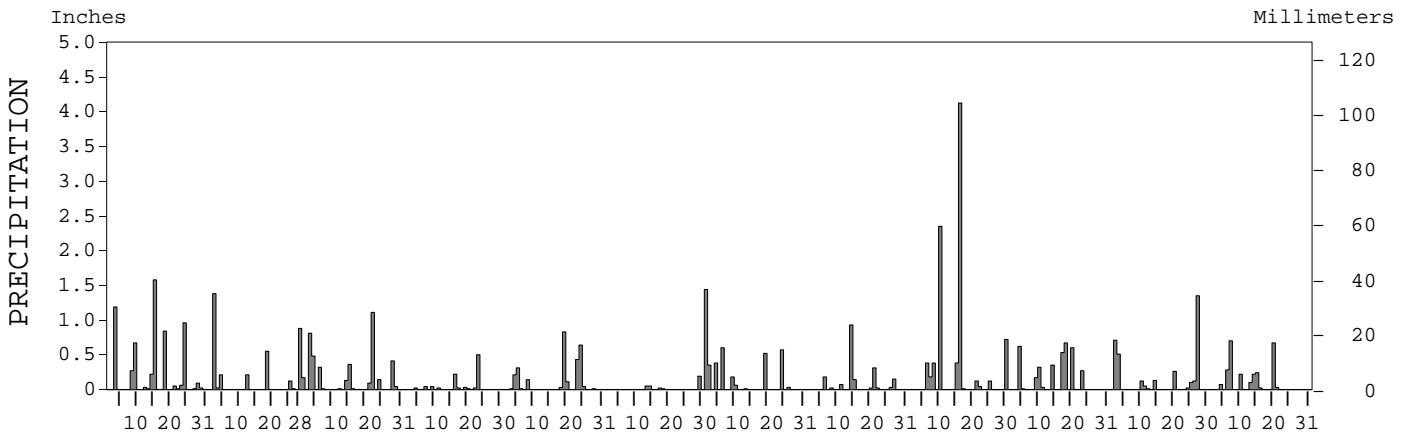
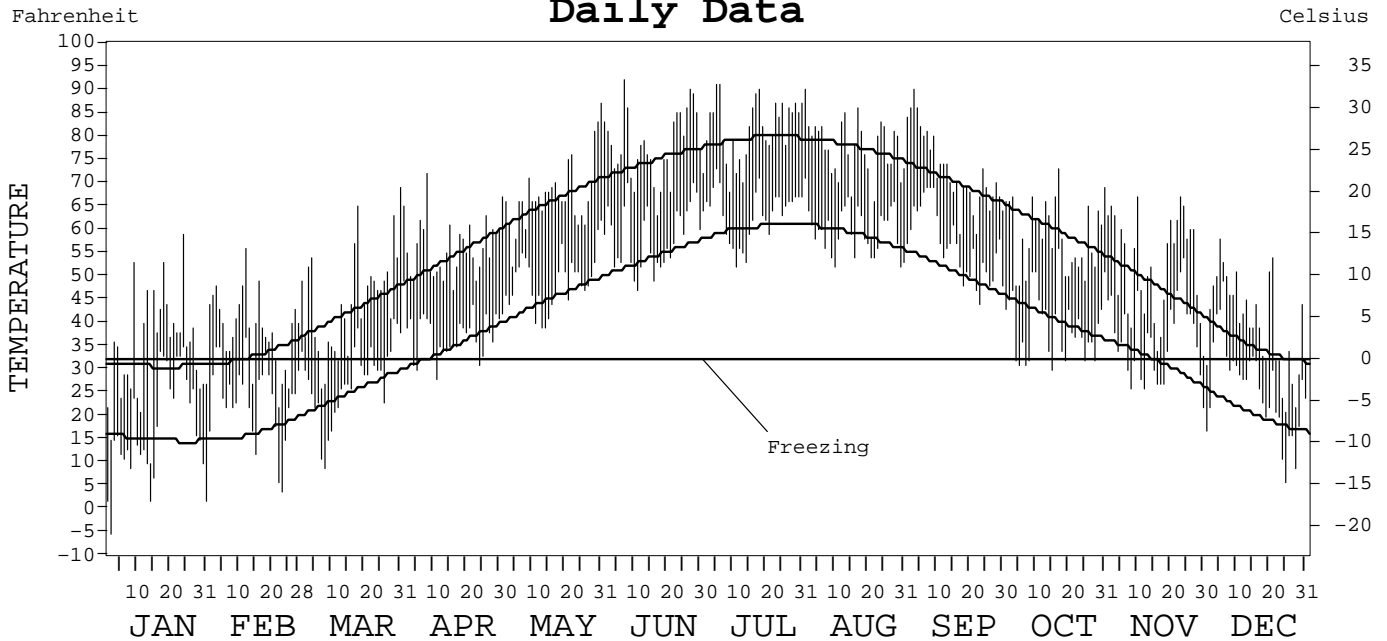
LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-2451

WORCESTER,
MASSACHUSETTS (ORH)

Daily Data



I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

Thomas R. Karl

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL ENVIRONMENTAL AND INFORMATION SERVICE
 NATIONAL ENVIRONMENTAL AND INFORMATION SERVICE
 NATIONAL CLIMATIC DATA CENTER
 NATIONAL CLIMATIC DATA CENTER
 DIRECTOR NATIONAL CLIMATIC DATA CENTER
 ASHEVILLE, NORTH CAROLINA

METEOROLOGICAL DATA FOR 1999

WORCESTER, MA (ORH)

LATITUDE: 42° 16' 02" N LONGITUDE: 71° 52' 34" W ELEVATION (FT): GRND: 998 BARO: 998 TIME ZONE: EASTERN (UTC + 5) WBAN: 94746

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	34.5	38.6	44.8	55.9	67.4	78.1	81.5	77.2	72.5	58.6	52.4	39.7	58.4	
	HIGHEST DAILY MAXIMUM	59	56	69	72	87	92	91	90	90	73	67	58	92	
	DATE OF OCCURRENCE	24	12	31	08	31	07	06+	01	03	17	23+	05	JUN 07	
	MEAN DAILY MINIMUM	17.5	23.9	27.8	37.4	48.7	58.3	63.3	59.7	56.7	39.5	36.5	26.0	41.3	
	LOWEST DAILY MINIMUM	-5	4	9	28	39	47	52	52	44	30	22	6	-5	
	DATE OF OCCURRENCE	02	23	08	11	14+	11	11	30+	23	15	30	25	JAN 02	
	AVERAGE DRY BULB	26.0	31.3	36.3	46.7	58.1	68.2	72.4	68.5	64.6	49.1	44.5	32.9	49.9	
	MEAN WET BULB	23.4	27.0	30.8	39.7		60.8		61.6			40.3	29.5		
	MEAN DEW POINT	16.2	16.5	21.4	29.5		55.6		56.5			34.4	22.7		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	2	3	1	1	0	0	0	0	7
	MAXIMUM ≤ 32°	13	6	3	0	0	0	0	0	0	0	0	10	32	
	MINIMUM ≤ 32°	26	24	22	4	0	0	0	0	0	8	11	25	120	
MINIMUM ≤ 0°	1	0	0	0	0	0	0	0	0	0	0	0	1		
H/C	HEATING DEGREE DAYS	1201	938	882	540	226	39	7	27	91	486	609	989	6035	
	COOLING DEGREE DAYS	0	0	0	0	19	142	245	140	86	0	0	0	632	
RH	MEAN (PERCENT)	68	59	59	55	66	67	71	70	76	74	71	69	67	
	HOUR 01 LST	70	62	67	66	77	79	84	82	85	83	79	73	76	
	HOUR 07 LST	72	64	68	63	72	74	77	80	84	84	79	77	74	
	HOUR 13 LST	60	50	49	41	53	53	56	53	62	55	58	59	54	
	HOUR 19 LST	68	59	56	53	60	64	68	66	77	73	69	67	65	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	8	7	7	1	9	1	4	5	11	5	5	5	68	
	THUNDERSTORMS	0	0	0	0	0	0	0	0	0	0	0	0	0	
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.)	29.01	28.90	28.79	28.82	28.96	29.00	28.89	28.90	28.94	29.00	28.98	28.93	28.93	
	MEAN SEA-LEVEL PRESS. (IN.)	30.14	30.02	29.90	29.92	30.05	30.08		29.97			30.06	30.03		
WINDS	RESULTANT SPEED (MPH)			7.1	6.3	0.9	4.1				5.5	7.4	6.9		
	RES. DIR. (TENS OF DEGS.)			30	30	25	25				26	26	28		
	MEAN SPEED (MPH)	11.1	10.4	13.6	10.9	8.3	9.3	8.9		8.8	10.4	12.0	11.3		
	PREVAIL. DIR. (TENS OF DEGS.)	26	32	32	27	04	22	26	29	22	22	25	28	26	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	38	38	37	34	28	25	28	31	41	38	36	41	41	
	DIR. (TENS OF DEGS.)	28	29	19	28	23	27	26	32	32	31	15	30	30	
	DATE OF OCCURRENCE	18	12	04	08+	25	08	06	06	17	14	02	10	DEC 10	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	53	45	47	45	34	32	37	41	52	48	45	49	53	
DIR. (TENS OF DEGS.)	25	29	30	26	21	26	31	31	29	30	18	30	25		
DATE OF OCCURRENCE	18	12	18+	08+	25	08	02	06	17	14	03	11	JAN 18		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	6.01	3.38	4.09	0.92	2.77	0.32	4.14	1.87	8.81	3.57	3.38	2.55	41.81	
	GREATEST 24-HOUR (IN.)	1.70	1.39	1.20	0.51	0.92	0.19	1.44	0.94	4.26	1.20	1.37	0.97	4.26	
	DATE OF OCCURRENCE	14-15	02-03	21-22	22-23	23-24	29	01	14-15	15-16	17-18	26-27	06-07	SEP 15-16	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	15	8	14	10	12	5	10	10	11	10	11	10	126	
PRECIPITATION ≥ 0.10	7	6	9	2	7	1	7	5	9	8	8	7	76		
PRECIPITATION ≥ 1.00	2	1	1	0	0	0	1	0	2	0	1	0	8		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)														
	GREATEST 24-HOUR (IN.)														
	DATE OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN.)														
	DATE OF OCCURRENCE														
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0															

NORMALS, MEANS, AND EXTREMES

WORCESTER, MA (ORH)

LATITUDE: 42° 16' 02" N LONGITUDE: 71° 52' 34" W ELEVATION (FT): GRND: 998 BARO: 998 TIME ZONE: EASTERN (UTC + 5) WBAN: 94746

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	30.7	33.0	42.4	54.0	65.9	74.5	79.3	77.3	69.7	59.5	47.4	34.7	55.7
	MEAN DAILY MAXIMUM	45	31.6	33.8	42.0	54.5	66.1	74.7	77.7	77.1	69.3	59.3	47.1	35.8	55.8
	HIGHEST DAILY MAXIMUM	43	60	67	84	91	92	94	96	96	91	85	78	72	96
	YEAR OF OCCURRENCE		1995	1985	1998	1976	1962	1988	1988	1975	1983	1963	1982	1998	JUL 1988
	MEAN OF EXTREME MAXS.	46	51.4	52.2	65.2	75.9	83.9	88.1	88.3	87.7	84.0	76.0	66.5	56.6	73.0
	NORMAL DAILY MINIMUM	30	15.0	16.5	24.9	34.7	45.1	53.9	60.1	58.6	50.5	40.5	31.3	20.1	37.6
	MEAN DAILY MINIMUM	46	15.6	17.1	25.4	35.6	45.9	55.2	59.5	59.2	51.4	41.4	32.1	21.4	38.3
	LOWEST DAILY MINIMUM	44	-19	-12	-4	11	28	36	43	38	30	20	6	-13	-19
	YEAR OF OCCURRENCE		1957	1967	1986	1982	1970	1986	1988	1965	1992	1969	1989	1962	JAN 1957
	MEAN OF EXTREME MINS.	46	-2.9	-1.9	7.5	22.5	34.3	43.2	50.2	48.0	37.6	27.3	17.2	2.4	23.8
	NORMAL DRY BULB	30	22.8	24.8	33.7	44.4	55.5	64.2	69.7	68.0	60.2	50.0	39.4	27.4	46.7
	MEAN DRY BULB	45	23.8	25.7	33.8	45.0	55.9	65.0	68.6	68.1	60.3	50.4	39.5	28.5	47.0
	MEAN WET BULB	14	22.3	23.7	30.3	39.4	49.7	58.7	59.3	62.4	50.7	45.4	35.8	24.7	41.9
	MEAN DEW POINT	14	14.9	15.7	21.7	30.8	42.4	53.5	55.3	58.3	46.4	39.4	29.5	18.2	35.5
NORMAL NO. DAYS WITH:															
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.1	0.1	0.7	1.5	0.8	*	0.0	0.0	0.0	3.2	
MAXIMUM ≤ 32°	30	17.6	13.9	5.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.7	13.6	52.1	
MINIMUM ≤ 32°	30	29.5	26.4	24.9	11.1	0.6	0.0	0.0	0.0	*	4.9	17.0	27.9	142.3	
MINIMUM ≤ 0°	30	3.1	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.1	
H/C	NORMAL HEATING DEG. DAYS	30	1308	1126	970	618	301	69	6	25	157	465	768	1166	6979
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	6	45	151	118	13	0	0	0	333
RH	NORMAL (PERCENT)	30	65	64	63	60	64	68	70	73	75	69	71	70	68
	HOUR 01 LST	30	68	68	68	68	73	78	79	82	83	77	75	74	74
	HOUR 07 LST	30	70	71	70	68	70	74	76	79	81	78	77	75	74
	HOUR 13 LST	30	58	57	54	50	52	57	57	60	61	56	61	62	57
	HOUR 19 LST	30	64	62	60	57	60	66	68	72	75	68	70	69	66
S	PERCENT POSSIBLE SUNSHINE														
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI) THUNDERSTORMS	27	6.0	5.7	7.8	6.6	7.1	7.8	6.0	6.1	7.8	6.8	7.6	6.9	82.2
		27	0.0	0.1	0.7	1.2	2.6	3.8	4.6	3.7	1.3	1.0	0.4	0.1	19.5
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS) MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR	1			1.0				5.9						
	PARTLY CLOUDY	1	1.0		1.0		2.0		12.1						
	CLOUDY	1	1.0	1.0	1.0			13.0							
PR	MEAN STATION PRESSURE(IN)	26	28.87	28.87	28.86	28.85	28.88	28.88	28.91	28.95	28.97	28.96	28.92	28.89	28.90
	MEAN SEA-LEVEL PRES. (IN)	14	30.03	29.99	29.99	29.94	29.98	29.95	29.99	30.05	30.08	30.08	30.06	30.02	30.01
WINDS	MEAN SPEED (MPH)	27	12.3	12.4	12.6	11.7	10.6	9.9	9.2	9.0	9.6	10.2	11.2	11.9	10.9
	PREVAIL.DIR(TENS OF DEGS)	14	28	29	29	29	28	28	27	25	25	27	27	29	28
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	3	40	49	47	34	51	32	33	41	41	38	41	41	51
	DIR. (TENS OF DEGS)		19	28	27	28	31	30	25	31	32	31	29	30	31
	YEAR OF OCCURRENCE		1996	1996	1997	1999	1998	1998	1997	1996	1999	1999	1997	1999	MAY 1998
	MAXIMUM 5-SECOND:														
SPEED (MPH)	3	53	70	61	48	94	43	43	49	52	52	52	53	94	
DIR. (TENS OF DEGS)		25	29	27	02	26	31	28	30	29	29	29	28	26	
YEAR OF OCCURRENCE		1999	1996	1997	1998	1998	1998	1996	1996	1999	1998	1997	1998	MAY 1998	
PRECIPITATION	NORMAL (IN)	30	3.68	3.46	3.95	3.91	4.33	3.88	3.85	3.82	4.01	4.32	4.49	4.05	47.75
	MAXIMUM MONTHLY (IN)	44	11.16	8.37	7.96	8.79	9.94	12.17	8.11	8.01	13.13	10.19	10.40	9.83	13.13
	YEAR OF OCCURRENCE		1979	1981	1972	1987	1984	1982	1959	1991	1974	1990	1972	1973	SEP 1974
	MINIMUM MONTHLY (IN)	44	0.89	0.25	0.74	0.92	0.86	0.32	0.74	1.03	0.69	1.24	0.67	0.74	0.25
	YEAR OF OCCURRENCE		1970	1987	1981	1999	1959	1999	1987	1981	1986	1994	1976	1989	FEB 1987
	MAXIMUM IN 24 HOURS (IN)	44	2.97	2.46	4.56	3.24	3.03	3.98	3.87	5.00	4.79	3.91	2.98	3.00	5.00
	YEAR OF OCCURRENCE		1978	1973	1987	1996	1967	1986	3087	1991	1960	1990	1972	1986	AUG 1991
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	11.5	10.6	12.0	11.4	12.2	11.6	9.5	10.1	9.2	8.7	11.9	12.7	131.4	
PRECIPITATION ≥ 1.00	30	0.9	1.0	1.0	1.1	1.2	0.9	1.2	1.1	1.2	1.4	1.2	1.2	13.4	
SNOWFALL	NORMAL (IN)	30	16.6	16.4	10.9	3.6	0.4	0.0	0.0	0.0	0.0	0.5	4.2	12.9	65.5
	MAXIMUM MONTHLY (IN)	40	46.8	45.2	44.1	21.0	12.7	0.1	0.0	T	T	7.5	20.7	37.0	46.8
	YEAR OF OCCURRENCE		1987	1962	1993	1987	1977	1992		1994	1994	1979	1971	1992	JAN 1987
	MAXIMUM IN 24 HOURS (IN)	40	18.7	24.0	19.7	17.0	12.7	0.1	0.0	T	T	7.5	14.8	28.1	28.1
	YEAR OF OCCURRENCE		1961	1962	1993	1987	1977	1992		1994	1994	1979	1971	1992	DEC 1992
	MAXIMUM SNOW DEPTH (IN)	42	35	42	33	17	10	0	0	0	0	8	15	29	42
	YEAR OF OCCURRENCE		1966	1961	1969	1987	1977					1979	1971	1992	FEB 1961
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	4.2	3.5	2.7	0.9	0.1	0.0	0.0	0.0	0.0	0.1	1.0	3.6	16.1	

PRECIPITATION (inches) 1999 WORCESTER, MA (ORH)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	0.89	5.47	3.51	3.44	4.18	3.88	1.08	5.86	2.17	3.47	3.75	3.09	40.79
1971	1.97	5.60	1.93	1.71	5.22	1.88	5.27	4.67	4.23	3.66	5.01	2.68	43.83
1972	2.34	4.91	7.96	4.29	7.83	9.25	6.39	2.89	4.98	4.93	10.40	5.49	71.66
1973	4.04	3.30	3.50	6.33	4.73	6.98	3.82	4.29	3.80	4.63	2.00	9.83	57.25
1974	3.54	2.75	5.05	3.24	5.15	4.35	3.22	3.50	13.13	3.45	3.06	6.04	56.48
1975	5.35	3.52	3.37	2.66	2.07	3.32	3.92	4.59	7.21	6.06	5.28	4.61	51.96
1976	6.03	2.57	2.74	2.45	3.46	2.95	3.28	5.72	2.38	4.99	0.67	3.20	40.44
1977	2.76	2.46	5.75	3.69	2.20	4.00	3.84	2.73	6.54	6.33	3.69	4.99	48.98
1978	9.90	2.08	3.22	2.24	3.69	1.57	3.57	5.00	1.02	3.85	2.07	3.56	41.77
1979	11.16	2.64	3.71	4.49	4.14	0.79	5.74	7.39	3.80	4.36	3.58	1.89	53.69
1980	0.95	0.73	6.86	4.77	2.23	4.55	3.59	1.95	1.82	6.16	4.58	1.06	39.25
1981	0.93	8.37	0.74	3.85	4.48	2.45	7.90	1.03	4.66	5.49	3.13	5.94	48.97
1982	5.00	3.22	3.67	4.30	2.96	12.17	3.61	3.36	2.69	2.67	4.32	1.70	49.67
1983	4.85	4.67	7.84	8.59	5.97	2.56	1.32	6.26	1.38	5.77	8.75	6.37	64.33
1984	2.44	5.78	5.47	4.23	9.94	2.85	5.69	1.17	1.68	3.99	2.71	2.84	48.79
1985	1.16	2.72	2.89	1.26	5.46	5.24	6.35	3.74	3.77	3.12	6.41	1.93	44.05
1986	5.56	3.14	2.93	1.59	3.14	7.21	4.83	3.20	0.69	2.72	5.63	7.25	47.89
1987	5.52	0.25	6.57	8.79	1.55	4.55	0.74	4.61	6.37	4.18	2.77	1.85	47.75
1988	2.71	2.78	3.46	3.45	4.47	1.25	6.27	2.19	2.70	3.66	7.91	1.42	42.27
1989	1.18	2.47	2.66	4.25	6.17	5.27	5.67	5.65	4.71	8.21	4.00	0.74	50.98
1990	3.75	3.88	1.52	4.78	7.65	1.74	2.44	6.84	1.73	10.19	2.41	5.46	52.39
1991	2.98	2.08	4.92	5.04	4.16	3.06	2.78	8.01	6.40	3.44	5.47	2.89	51.23
1992	3.01	2.51	4.15	2.59	2.54	4.68	5.25	4.83	3.58	2.36	4.94	4.61	45.05
1993	2.56	2.38	5.46	4.00	1.79	2.36	3.34	1.90	8.85	3.88	4.85	5.11	46.48
1994	4.78	1.86	5.38	2.73	5.87	2.48	3.09	7.64	4.84	1.24	4.54	4.81	49.26
1995	3.71	2.86	1.85	2.19	2.39	1.51	4.33	2.02	3.15	8.65	4.61	1.04	38.31
1996	6.30	2.66	2.20	6.70	3.34	3.01	6.50	3.99	6.07	5.81	2.93	6.91	56.42
1997	3.25	1.71	4.66	3.22	2.72	1.60	2.97	4.34	1.44	2.11	5.50	2.32	35.84
1998	4.59	3.17	5.82	3.30	5.89	9.68	1.76	2.38	1.69	4.93	2.28	1.46	46.95
1999	6.01	3.38	4.09	0.92	2.77	0.32	4.14	1.87	8.81	3.57	3.38	2.55	41.81
POR= 51 YRS	3.78	3.23	4.05	3.93	3.98	3.57	3.58	4.12	3.96	4.19	4.43	3.85	46.67

WBAN : 94746

AVERAGE TEMPERATURE (°F) 1999 WORCESTER, MA (ORH)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	14.9	24.2	30.4	44.6	56.9	63.7	71.1	70.1	60.6	51.7	40.2	22.2	45.9
1971	17.7	25.9	29.9	42.5	54.2	65.6	70.6	68.2	63.4	56.5	36.6	30.5	46.8
1972	26.4	23.3	30.4	40.4	55.7	62.2	71.1	66.9	59.7	44.7	34.9	27.6	45.3
1973	26.1	24.7	40.9	46.3	54.2	67.4	71.1	71.7	60.1	51.3	39.8	31.9	48.8
1974	26.4	23.9	33.5	47.5	52.4	64.0	69.7	69.7	59.7	45.8	39.4	30.4	46.9
1975	27.5	25.2	31.3	40.8	60.1	63.6	71.8	67.5	57.3	51.5	45.2	27.3	47.4
1976	19.2	31.2	35.1	49.1	55.0	68.0	67.8	67.2	58.9	46.4	34.6	21.9	46.2
1977	16.2	24.9	39.1	45.9	58.1	62.4	69.3	68.6	59.6	49.3	41.1	26.0	46.7
1978	20.9	20.0	30.8	42.4	56.6	64.3	68.2	68.1	57.6	48.4	39.2	28.8	45.4
1979	25.3	16.5	38.2	44.7	57.7	63.6	71.2	67.7	60.0	49.0	44.3	31.9	47.5
1980	25.0	22.2	33.1	46.0	57.0	61.5	71.3	69.9	61.1	47.3	36.4	24.2	46.3
1981	15.9	32.8	34.7	47.4	57.9	66.0	70.7	67.4	58.2	46.7	39.1	27.8	47.1
1982	17.1	25.7	33.8	43.6	58.3	61.5	71.5	65.9	61.3	50.8	43.8	34.8	47.3
1983	26.1	29.1	36.6	46.6	54.7	67.9	72.3	70.2	64.9	50.3	42.0	27.3	49.0
1984	22.7	34.0	29.2	45.6	55.4	68.1	70.0	71.4	59.6	53.9	41.1	34.9	48.8
1985	20.1	28.6	37.2	47.4	57.8	61.4	70.4	67.9	62.0	51.7	40.9	25.3	47.6
1986	25.9	23.1	36.4	48.1	57.9	62.6	68.2	66.8	59.4	49.6	37.1	30.3	47.1
1987	24.0	24.5	36.8	45.7	57.6	65.8	70.7	66.6	60.6	48.8	39.4	30.8	47.6
1988	23.0	26.6	35.0	43.8	57.3	64.6	72.6	72.3	60.2	45.5	41.7	27.2	47.5
1989	28.5	24.4	33.0	42.4	57.0	64.0	68.7	67.3	60.6	50.7	36.5	15.1	45.7
1990	31.3	28.8	36.2	43.9	51.5	64.6	69.2	68.8	59.3	53.0	42.1	34.0	48.6
1991	23.8	30.3	36.5	48.2	61.2	64.7	70.0	69.1	58.7	51.9	40.2	29.7	48.7
1992	25.3	27.1	30.7	42.3	55.5	63.5	65.9	65.5	59.2	46.8	37.8	28.7	45.7
1993	26.0	19.6	31.3	45.7	57.8	64.5	70.4	70.0	59.5	47.2	39.7	28.9	46.7
1994	15.9	21.1	33.5	47.7	54.3	67.2	72.9	66.3	59.0	50.9	43.5	33.3	47.1
1995	29.8	23.0	36.1	42.6	54.4	65.5			59.4	53.5	35.5	24.1	
1996	23.4	24.9	31.6	45.3	54.9	65.9		68.9	61.1	49.7	35.9	33.2	
1997	23.6	0.0	31.9	43.5	52.2	65.8	69.1	67.6	60.3	48.8	36.2	30.0	44.1
1998		32.9	37.0	47.2	59.7	62.9	70.0	70.3	63.1	50.3	40.2	35.7	
1999	26.0	31.3	36.3	46.7	58.1	68.2	72.4	68.5	64.6	49.1	44.5	32.9	49.9
POR= 51 YRS	23.2	25.2	33.6	45.1	56.0	64.9	68.6	68.2	60.4	50.3	39.5	28.3	46.9

HEATING DEGREE DAYS (base 65°F) 1999 WORCESTER, MA (ORH)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	2	12	174	410	738	1319	1461	1087	1083	667	327	61	7341
1971-72	3	35	98	258	844	1061	1189	1203	1065	733	290	116	6895
1972-73	16	41	171	622	897	1152	1200	1120	738	555	338	37	6887
1973-74	6	8	202	420	750	1017	1191	1145	969	520	391	82	6701
1974-75	6	9	190	592	760	1063	1158	1110	1037	721	180	104	6930
1975-76	2	47	223	413	586	1161	1412	972	920	511	310	60	6617
1976-77	17	46	192	571	905	1331	1508	1115	798	571	244	115	7413
1977-78	16	32	189	481	711	1202	1359	1255	1054	674	288	69	7330
1978-79	33	38	229	511	767	1116	1225	1354	824	601	243	80	7021
1979-80	25	53	180	500	614	1019	1235	1233	983	562	246	148	6798
1980-81	2	19	165	540	853	1259	1516	894	934	521	241	42	6986
1981-82	1	29	204	562	772	1145	1478	1094	961	639	212	127	7224
1982-83	7	55	140	436	632	929	1199	996	871	548	318	44	6175
1983-84	5	20	115	459	682	1163	1303	892	1099	577	300	54	6669
1984-85	9	1	184	338	713	928	1382	1011	855	518	230	121	6290
1985-86	2	25	128	406	713	1223	1206	1166	879	501	262	119	6630
1986-87	48	49	182	471	830	1069	1266	1130	867	571	273	58	6814
1987-88	9	56	152	495	761	1052	1298	1107	922	629	253	115	6849
1988-89	19	32	155	597	693	1166	1123	1129	984	674	257	90	6919
1989-90	7	38	172	436	846	1540	1035	1006	884	632	413	58	7067
1990-91	22	30	192	379	683	957	1270	965	877	501	167	80	6123
1991-92	13	16	222	402	739	1090	1222	1092	1056	676	321	82	6931
1992-93	40	55	203	558	810	1117	1204	1259	1039	574	229	74	7162
1993-94	10	5	201	545	754	1115	1515	1226	968	515	337	49	7240
1994-95	5	48	182	431	636	975	1086	1170	887	667	329	58	6474
1995-96			191	352	877	1260	1279	1158	1031	587	331	36	
1996-97		14	159	467	863	980	1277		1020	638	394	93	
1997-98	15	18	158	498	858	1079		891	872	527	180	111	
1998-99	3	8	98	450	736	902	1201	938	882	540	226	39	6023
1999-	7	27	91	486	609	989							

WBAN : 94746

COOLING DEGREE DAYS (base 65°F) 1999 WORCESTER, MA (ORH)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	0	0	0	0	16	70	197	177	50	6	0	0	516
1971	0	0	0	0	0	87	184	141	57	2	0	0	471
1972	0	0	0	0	9	41	215	109	20	0	0	0	394
1973	0	0	0	1	11	118	201	224	62	0	0	0	617
1974	0	0	0	4	8	59	159	164	36	0	0	0	430
1975	0	0	0	0	33	69	218	132	0	1	0	0	453
1976	0	0	0	37	7	154	110	119	16	0	0	0	443
1977	0	0	2	4	37	44	156	150	32	0	0	0	425
1978	0	0	0	0	32	57	138	137	14	0	0	0	378
1979	0	0	0	0	24	44	225	142	38	10	0	0	483
1980	0	0	0	0	8	48	206	178	57	0	0	0	497
1981	0	0	0	0	29	78	184	110	10	0	0	0	411
1982	0	0	0	0	8	29	216	92	34	0	0	0	379
1983	0	0	0	4	4	138	238	188	118	11	0	0	701
1984	0	0	0	2	10	156	171	209	30	0	0	0	578
1985	0	0	0	0	15	22	177	120	47	0	0	0	381
1986	0	0	0	0	50	54	151	111	21	2	0	0	389
1987	0	0	0	0	49	90	193	110	25	0	0	0	467
1988	0	0	0	0	24	112	260	266	17	1	0	0	680
1989	0	0	0	0	16	70	131	116	47	0	0	0	380
1990	0	0	0	6	0	52	159	153	25	10	0	0	405
1991	0	0	0	4	57	79	173	149	40	2	0	0	504
1992	0	0	0	0	30	44	75	78	37	0	0	0	264
1993	0	0	0	0	12	67	181	163	44	0	0	0	467
1994	0	0	0	0	12	122	260	97	9	0	0	0	500
1995	0	0	0	0	6	77			29	3	0	0	
1996	0	0	0	2	23	70		143	47	0	0	0	
1997	0		0	0	0	123	148	106	25	2	0	0	
1998	0	0	10	0	21	58	165	181	47	0	0	0	
1999	0	0	0	0	19	142	245	140	86	0	0	0	632

SNOWFALL (inches) 1999 WORCESTER, MA (ORH)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0.0	0.0	0.0	T	T	32.1	16.6	11.4	12.1	7.8	0.0	0.0	80.0
1971-72	0.0	0.0	0.0	0.0	20.7	9.6	6.7	35.0	20.1	7.2	0.0	0.0	99.3
1972-73	0.0	0.0	0.0	T	6.1	13.8	17.9	5.8	0.4	0.4	0.0	0.0	44.4
1973-74	0.0	0.0	0.0	0.0	T	0.9	12.5	15.0	1.7	3.7	0.0	0.0	33.8
1974-75	0.0	0.0	0.0	T	1.2	13.1	22.6	21.9	4.9	1.4	0.0	0.0	65.1
1975-76	0.0	0.0	0.0	T	1.5	18.1	21.6	4.7	16.4	T	T	0.0	62.3
1976-77	0.0	0.0	0.0	T	3.0	13.5	21.7	13.8	21.5	1.0	12.7	0.0	87.2
1977-78	0.0	0.0	0.0	0.0	2.2	13.7	34.2	20.8	15.0	T	T	0.0	85.9
1978-79	0.0	0.0	0.0	0.0	5.4	13.1	16.0	6.5	1.3	5.4	0.0	0.0	47.7
1979-80	0.0	0.0	0.0	7.5	0.0	2.1	0.8	6.5	9.7	T	0.0	0.0	26.6
1980-81	0.0	0.0	0.0	0.0	9.0	6.8	12.5	11.4	3.3	T	T	0.0	43.0
1981-82	0.0	0.0	0.0	T	T	24.6	16.7	6.5	11.0	15.1	0.0	0.0	73.9
1982-83	0.0	0.0	0.0	0.0	0.5	6.4	18.6	32.1	3.5	2.3	T	0.0	63.4
1983-84	0.0	0.0	0.0	T	1.1	17.2	24.1	3.3	30.9	T	T	0.0	76.6
1984-85	0.0	0.0	0.0	0.0	T	7.0	9.7	11.0	7.2	4.9	0.0	0.0	39.8
1985-86	0.0	0.0	0.0	0.0	6.9	9.1	5.8	14.5	2.3	0.1	0.3	0.0	39.0
1986-87	0.0	0.0	0.0	0.0	11.5	4.9	46.8	3.0	6.4	21.0	0.0	0.0	93.6
1987-88	0.0	0.0	0.0	0.0	10.2	12.9	25.2	15.8	6.4	0.6	0.0	0.0	71.1
1988-89	0.0	0.0	0.0	0.4	T	5.0	2.8	7.7	8.5	3.7	0.0	0.0	28.1
1989-90	0.0	0.0	0.0	0.0	7.9	10.2	11.3	15.2	6.4	2.1	0.0	T	53.1
1990-91	0.0	0.0	0.0	0.0	0.7	5.0	11.3	9.1	9.3	0.2	0.0	0.0	35.6
1991-92	0.0	0.0	0.0	0.0	5.8	14.5	2.7	8.4	11.8	2.7	0.0	0.1	46.0
1992-93	0.0	0.0	T	0.0	1.9	37.0	14.6	19.7	44.1	2.8	0.0	T	120.1
1993-94	0.0	0.0	0.0	T	0.2	12.9	34.1	25.9	27.1	0.0	T	0.0	100.2
1994-95	0.0	T	T	0.0	2.9	3.2	4.5	14.3	T	T	0.0	0.0	24.9
1995-96	0.0	0.0	0.0	0.0									
1996-97													
1997-98													
1998-99													
1999-													
POR= 40 YRS	0.0	T	T	0.5	3.6	13.2	15.9	15.7	13.7	3.5	0.3	0.0	66.4

WBAN : 94746

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>
---	---

1999
WORCESTER,
MASSACHUSETTS (ORH)

Worcester Municipal Airport is located on the crest of a hill, 1,000 feet above sea level. It is about 500 feet above and 3 1/2 miles northwest of the city proper. The airport is surrounded by ridges and valleys with many of the valleys containing reservoirs. Only two of the ridges extend above the airport elevation. One is 400 feet higher and 2 1/2 miles to the northwest, and the other is 1,000 feet higher and 15 miles to the north.

The proximity to the Atlantic Ocean, Long Island Sound, and the Berkshire Hills plays an important part in determining the weather and, hence, the climate of Worcester. Rapid weather changes occur when storms move up the east coast after developing off the Carolina Coast. In the majority of these cases, they pass to the south and east, resulting in northeast and easterly winds with rain or snow and fog. Storms developing in the Texas-Oklahoma area normally travel up the St. Lawrence River Valley and, depending on the movement and intensity, usually deposit little precipitation over the area. However, they do bring an influx of warm air into the region. Wintertime cold snaps are quite frequent, but temperatures are usually modified by the passage of the air over land and mountains before reaching the county. Summertime thunderstorms develop over the hills to the west, with a majority moving toward the northeast. From the use of radar, we find many break up just before reaching Worcester, or pass either north or south of the city proper.

Airport site temperatures are moderate. The normal mean for the warmest month, July, is around 70 degrees. Though winters are reasonably cold, prolonged periods of severe cold weather are extremely rare. The three coldest months, December through February, have an average temperature of over 25 degrees. A review of Worcester Cooperative records since 1901 shows maximum temperatures above 100 degrees and minimum temperatures below -24 degrees.

Precipitation is usually plentiful and well distributed throughout the year. The annual snowfall for all Worcester sites since 1901, averages slightly less than 60 inches. The airport location averages slightly higher.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 17 and the average last occurrence in the spring is April 27.

STATION LOCATION

WORCESTER, MASSACHUSETTS

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE											* Type	REMARKS	
						SEA LEVEL	GROUND												AUTOMATED
							WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND			
<u>COOPERATIVE</u>																			
On building on top of knoll	5/01/92	12/31/23		42°16'	71°48'													Residence of G.W. Swan.	
On ground on top of knoll	1/01/24	5/31/48	3.5 mi. NNW	41°18'	71°49'	628												Residence of Clifford L. Davis.	
<u>AIRPORT</u>																			
Building on SE corner of airport	11/29/47	4/27/54		42°16'	71°52'	986	69	5	4						3			CAA taking observations.	
Control Tower Building East side of runways Municipal Airport	4/27/54	07/01/95	3/4 mi. NW	42°16'	71°52'	986	a22 h33 k33	5 f5	d6	NA	b5 j4	NA	5 g5 m4	e4 i5	M			Weather Bureau opened office 11/1/55 and assumed observation program 5/21/56. a - 69 feet prior to relocation to field site 8/25/59. b - Installed 11/1/55. 3 feet to 10/18/67. M - Commissioned 11/29/56. 20' to 5/10/66 & 6' thereafter. d - 4 feet to 5/10/66. e - Removed before 12/75. re - Commissioned 2/28/75. r - Moved 265' SSW 11/18/81. rg - Moved 285' SSW 11/18/81. h - Raised 8/1/84. i - Minor move 6/1/85. j - Moved about 500' NW 6/1/85. k - Moved 2370' SE 6/1/85. m - Minor move 11/18/85.	
Worcester Regional AP	07/01/95	Present	NA	42°16'	71°53'	998										S		ASOS Commissioned 07/01/95	

SUBSCRIPTION: Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801.
INQUIRIES/COMMENTS CALL: (828) 271-4800

National Climatic Data Center
151 Patton Avenue, Rm 120
Asheville NC 28801-5001

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300
FORWARD AND ADDRESS CORRECTION

FIRST CLASS
POSTAGE & FEES PAID
United States Department of Commerce
NOAA Permit No. G - 19