

1998

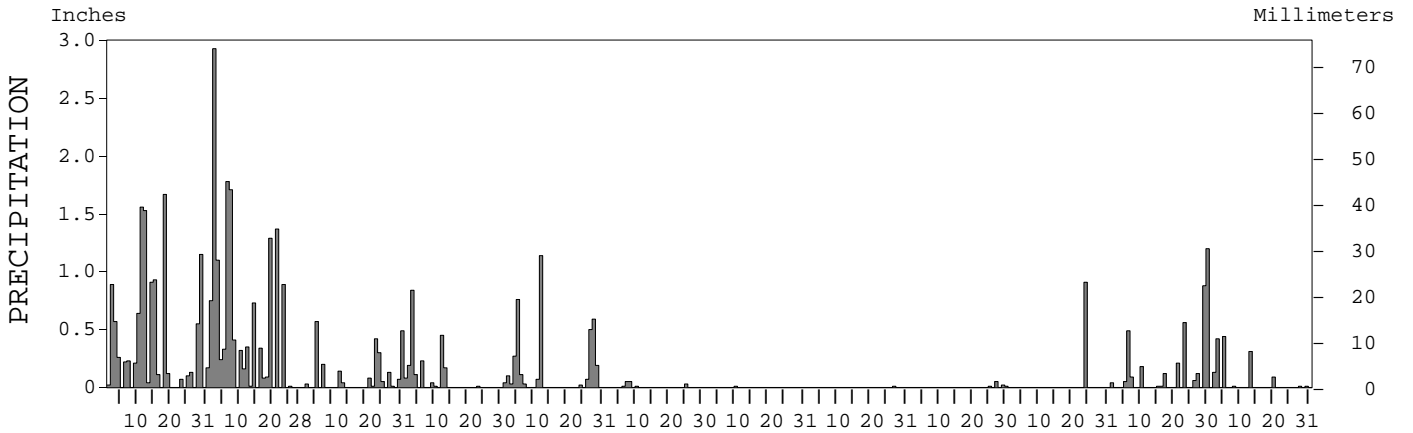
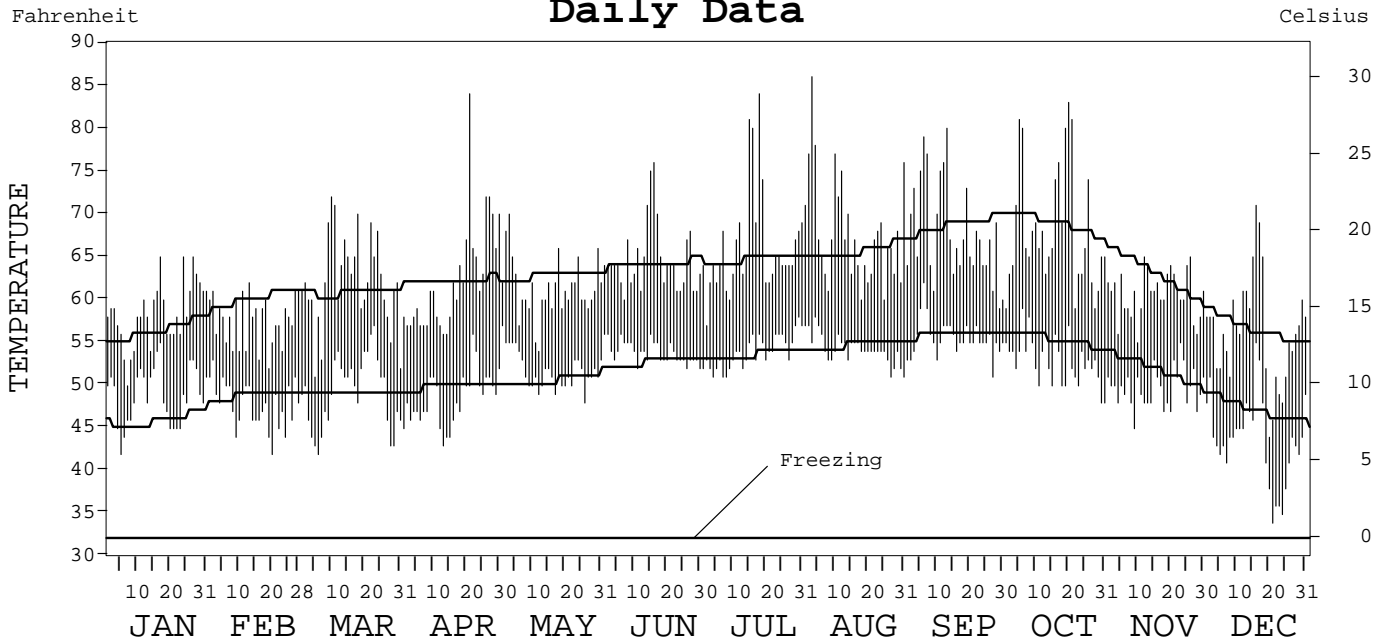
LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA



SAN FRANCISCO, CALIFORNIA  
DOWNTOWN (7772)

ISSN 0198-0831

Daily Data



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE	NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA	DIRECTOR NATIONAL CLIMATIC DATA CENTER
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# METEOROLOGICAL DATA FOR 1998

## SAN FRANCISCO C.O., CA (7772)

LATITUDE: 37° 46' 0" N      LONGITUDE: 122° 26' 0" W      ELEVATION (FT): GRND: 75      BARO: 75      TIME ZONE: PACIFIC (UTC+ 8)      WBAN: 23272

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	58.4	57.6	62.2	62.4	61.3	64.7	66.3	67.9	67.9	68.2	60.7	56.3	62.8	
	HIGHEST DAILY MAXIMUM	65	62	72	84	70	76	84	86	80	83	65	71	86	
	DATE OF OCCURRENCE	27+	13	10	21	03	16	18	03	13	20	26+	16	AUG 03	
	MEAN DAILY MINIMUM	48.8	47.8	49.2	48.5	51.8	53.9	53.9	54.3	55.5	52.9	49.7	43.6	50.8	
	LOWEST DAILY MINIMUM	42	42	42	43	48	52	51	51	51	48	45	34	34	
	DATE OF OCCURRENCE	05	20	06	13	26	30+	08+	31+	27	31	09	21	DEC 21	
	AVERAGE DRY BULB	53.6	52.7	55.7	55.5	56.6	59.3	60.1	61.1	61.7	60.6	55.2	50.0	56.8	
	MEAN WET BULB														
	MEAN DEW POINT														
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIMUM ≤ 32°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MINIMUM ≤ 32°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H/C	HEATING DEGREE DAYS	345	339	284	282	253	165	156	127	107	145	287	458	2948	
	COOLING DEGREE DAYS	0	0	0	2	0	2	11	12	17	15	0	0	59	
RH	MEAN (PERCENT)														
	HOUR 04 LST														
	HOUR 10 LST														
	HOUR 16 LST														
	HOUR 22 LST														
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)														
CLOUDINESS	AVG. SKY COVER (OKTAS)														
	SUNRISE - SUNSET														
	MIDNIGHT - MIDNIGHT														
	NUMBER OF DAYS WITH:														
	CLEAR														
	PARTLY CLOUDY														
	CLOUDY														
PR	MEAN STATION PRESS. (IN.)														
	MEAN SEA-LEVEL PRESS. (IN.)														
WINDS	RESULTANT SPEED (MPH)														
	RES. DIR. (TENS OF DEGS.)														
	MEAN SPEED (MPH)														
	PREVAIL.DIR.(TENS OF DEGS.)														
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)														
	DIR. (TENS OF DEGS.)														
	DATE OF OCCURRENCE														
	PEAK GUST :														
	SPEED (MPH)														
DIR. (TENS OF DEGS.)															
DATE OF OCCURRENCE															
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	12.08	14.89	2.54	2.13	3.92	0.15	0.01	0.01	0.09	0.91	4.02	1.42	42.17	
	GREATEST 24-HOUR (IN.)	1.67	2.93	0.57	0.84	1.14	0.05	0.01	0.01	0.05	0.91	1.20	0.44	2.93	
	DATE OF OCCURRENCE	18	02	05	03	12	08+	10	27	27	24	30	05	FEB 02	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	22	20	14	10	14	5	1	1	4	1	14	8	114	
PRECIPITATION ≥ 0.10	19	16	7	6	8	0	0	0	0	1	8	4	69		
PRECIPITATION ≥ 1.00	4	6	0	0	1	0	0	0	0	0	1	0	12		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	GREATEST 24-HOUR (IN.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	DATE OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN.)	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NUMBER OF DAYS WITH:														
SNOWFALL ≥ 1.0	0	0	0	0	0	0	0	0	0	0	0	0	0		

# NORMALS, MEANS, AND EXTREMES

SAN FRANCISCO C.O., CA (7772)

LATITUDE: 37° 46' 0 " N      LONGITUDE: 122° 26' 0 " W      ELEVATION (FT): GRND: 75      BARO: 75      TIME ZONE: PACIFIC (UTC+ 8)      WBAN: 23272

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	56.3	60.0	60.8	62.1	62.7	64.1	64.6	65.6	68.7	68.7	62.7	56.4	62.7
	MEAN DAILY MAXIMUM	78	56.2	59.9	61.5	62.9	64.1	66.1	65.9	66.7	69.9	69.2	62.9	57.2	63.5
	HIGHEST DAILY MAXIMUM	62	79	81	83	94	96	101	103	98	101	102	86	76	103
	YEAR OF OCCURRENCE		1962	1986	1996	1989	1976	1961	1988	1993	1971	1987	1966	1958	JUL 1988
	MEAN OF EXTREME MAXS.	78	65.7	70.2	74.8	78.9	81.7	83.8	80.4	81.2	88.6	86.1	74.5	66.3	77.7
	NORMAL DAILY MINIMUM	30	45.8	48.7	49.0	49.8	50.5	52.6	53.5	54.6	55.9	55.2	51.6	47.0	51.2
	MEAN DAILY MINIMUM	78	45.6	48.0	49.0	49.8	51.2	53.1	53.7	54.5	55.6	54.6	50.5	46.9	51.0
	LOWEST DAILY MINIMUM	62	30	31	38	40	44	47	47	48	48	45	40	28	28
	YEAR OF OCCURRENCE		1937	1989	1942	1967	1964	1955	1953	1969	1955	1949	1994	1990	DEC 1990
	MEAN OF EXTREME MINS.	78	39.2	42.1	43.8	45.3	47.7	49.9	50.7	51.5	51.8	50.0	44.9	40.4	46.4
	NORMAL DRY BULB	30	51.1	54.4	54.9	56.0	56.6	58.4	59.1	60.1	62.3	62.0	57.2	51.7	57.0
	MEAN DRY BULB	78	50.9	53.9	55.2	56.4	57.8	59.5	59.8	60.6	62.8	61.9	56.7	52.1	57.3
	MEAN WET BULB														
	MEAN DEW POINT														
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.1	1.1	0.5	0.0	0.0	2.9
MAXIMUM ≤ 32°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MINIMUM ≤ 32°	30	*	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	
MINIMUM ≤ 0°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
H/C	NORMAL HEATING DEG. DAYS	30	431	297	313	275	260	198	187	156	116	123	237	412	3005
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	0	0	0	0	35	30	0	0	65
RH	NORMAL (PERCENT)														
	HOUR 04 LST														
	HOUR 10 LST														
	HOUR 16 LST														
	HOUR 22 LST														
S	PERCENT POSSIBLE SUNSHINE	38	56	62	69	73	72	73	66	65	72	70	62	53	66
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI) THUNDERSTORMS	29	0.3	0.2	0.1	0.3	0.2	0.1	0.2	0.0	0.3	0.2	0.1	0.3	2.3
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR														
	PARTLY CLOUDY														
	CLOUDY														
PR	MEAN STATION PRESSURE(IN)														
	MEAN SEA-LEVEL PRES. (IN)														
WINDS	MEAN SPEED (MPH)	28	6.7	7.5	8.5	9.5	10.4	10.9	11.2	10.5	9.1	7.6	6.3	6.5	8.7
	PREVAIL.DIR(TENS OF DEGS)														
	FASTEST MILE:														
	SPEED (MPH)	36	47	47	44	38	38	40	38	34	32	43	41	45	47
	DIR.		SE	SW	S	W	W	W	W	W	W	SE	S	SE	SE
	YEAR OF OCCURRENCE		1965	1938	1948	1965	1965	1965	1939	1966	1956	1950	1953	1965	JAN 1965
PEAK GUST :															
	SPEED (MPH)														
	DIR. (TENS OF DEGS)														
	YEAR OF OCCURRENCE														
PRECIPITATION	NORMAL (IN)	30	4.06	2.95	3.07	1.29	0.25	0.15	0.04	0.07	0.26	1.26	3.21	3.10	19.71
	MAXIMUM MONTHLY (IN)	62	12.08	14.89	9.04	5.47	3.92	1.42	0.62	0.78	2.06	5.51	10.49	11.47	14.89
	YEAR OF OCCURRENCE		1998	1998	1983	1958	1998	1967	1974	1976	1959	1962	1994	1955	FEB 1998
	MINIMUM MONTHLY (IN)	62	0.31	0.04	0.07	T	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.00
	YEAR OF OCCURRENCE		1976	1953	1988	1949	1982	1983	1982	1982	1980	1980	1959	1989	DEC 1989
	MAXIMUM IN 24 HOURS (IN)	62	4.22	2.93	3.65	2.36	1.47	1.36	0.61	0.54	2.06	3.11	6.19	3.69	6.19
	YEAR OF OCCURRENCE		1982	1998	1940	1953	1990	1967	1974	1997	1959	1962	1994	1995	NOV 1994
NORMAL NO. DAYS WITH:															
PRECIPITATION ≥ 0.01	30	10.1	9.2	10.2	5.9	2.5	1.2	0.3	0.8	2.0	4.3	9.8	10.8	67.1	
PRECIPITATION ≥ 1.00	30	1.2	0.6	0.6	0.2	*	*	0.0	0.0	0.0	0.5	0.7	0.4	4.2	
SNOWFALL	NORMAL (IN)	30	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MAXIMUM MONTHLY (IN)	41	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T
	YEAR OF OCCURRENCE		1962	1951	1951									1972	DEC 1972
	MAXIMUM IN 24 HOURS (IN)	37	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T
	YEAR OF OCCURRENCE		1962	1951	1951									1941	MAR 1951
	MAXIMUM SNOW DEPTH (IN)	51	0	0	0	0	0	0	0	0	0	0	0	0	0
	YEAR OF OCCURRENCE														
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

PRECIPITATION (inches) 1998 SAN FRANCISCO, CALIFORNIA CA (7772)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	7.74	7.26	1.01	1.74	T	0.05	T	T	0.01	2.61	0.45	6.15	27.02
1970	7.81	1.56	1.55	0.06	0.03	0.57	T	T	0.00	0.84	6.44	5.39	24.25
1971	2.04	0.26	2.91	0.72	0.19	T	0.01	0.01	0.22	0.11	1.92	3.93	12.32
1972	1.32	2.13	0.23	1.07	T	0.11	0.01	0.04	0.54	5.41	6.40	3.53	20.79
1973	9.38	6.32	2.63	0.02	0.08	0.00	0.00	0.00	0.30	1.62	7.80	3.65	31.80
1974	3.40	1.53	4.49	2.34	0.00	0.10	0.62	0.00	0.00	0.85	0.40	1.53	15.26
1975	2.57	3.72	5.15	1.25	0.02	0.04	0.20	0.02	0.00	2.44	0.43	0.18	16.02
1976	0.31	1.83	1.01	0.70	0.01	0.03	0.00	0.78	0.51	0.38	1.04	2.13	8.73
1977	1.65	0.90	2.01	0.05	0.57	0.00	0.00	0.03	0.86	0.17	1.96	3.30	11.50
1978	6.20	3.54	5.20	3.82	0.00	0.00	0.00	0.00	0.20	0.00	1.67	0.89	21.52
1979	6.74	4.96	1.58	0.87	0.15	0.00	0.07	0.00	0.01	1.66	2.98	3.10	22.12
1980	3.77	4.84	1.25	0.97	0.23	0.02	0.04	0.00	0.00	0.00	0.14	2.95	14.21
1981	4.00	1.78	3.71	0.17	0.12	0.00	0.00	0.00	0.22	1.74	3.73	4.15	19.62
1982	6.84	3.26	7.65	3.03	0.00	0.06	0.00	0.00	0.72	2.79	5.62	2.22	32.19
1983	5.77	8.06	9.04	3.48	0.47	0.00	0.01	0.06	0.68	0.26	8.20	7.72	43.75
1984	0.50	2.34	1.32	0.92	0.16	0.30	0.00	0.24	0.10	2.94	7.45	2.10	18.37
1985	0.59	1.98	3.94	0.27	0.09	0.31	0.00	0.00	0.38	0.80	4.83	2.47	15.66
1986	4.77	8.29	6.25	0.76	0.13	0.00	0.03	0.01	1.32	0.11	0.20	1.64	23.51
1987	4.26	3.77	2.31	0.14	0.06	0.01	0.00	0.00	0.00	1.07	3.09	5.09	19.80
1988	4.93	0.40	0.07	1.73	0.66	0.70	0.00	0.00	0.00	0.64	3.70	4.23	17.06
1989	1.26	1.49	5.28	0.70	0.06	0.07	0.00	0.05	0.98	1.18	1.33	0.00	12.40
1990	4.02	2.45	1.34	0.58	2.38	0.01	0.00	0.04	0.12	0.20	0.52	1.94	13.60
1991	0.60	3.29	5.89	1.07	0.36	0.05	0.00	0.42	0.00	2.35	0.50	2.32	16.85
1992	2.09	6.34	4.41	0.38	0.00	0.39	0.00	0.02	0.00	1.16	0.40	6.03	21.22
1993	9.82	4.48	2.90	0.71	0.87	0.27	0.00	0.00	0.00	0.33	2.16	2.25	23.79
1994	2.77	4.87	0.35	1.12	1.31	0.06	0.00	0.00	0.22	0.33	10.49	2.69	24.21
1995	8.97	0.24	7.88	1.61	0.97	0.62	0.00	0.00	0.00	0.06	0.08	8.13	28.56
1996	6.71	5.28	1.28	1.56	1.79	0.00	0.00	0.00	0.04	1.05	4.73	7.63	30.07
1997	7.59	0.32	0.58	0.29	0.16	0.30	0.00	0.73	0.04	1.00	6.97	2.77	20.75
1998	12.08	14.89	2.54	2.13	3.92	0.15	0.01	0.01	0.09	0.91	4.02	1.42	42.17
POR= 149 YRS	4.64	3.60	3.06	1.46	0.62	0.15	0.00	0.00	0.20	1.00	2.56	4.09	21.38

WBAN : 23272

AVERAGE TEMPERATURE (°F) 1998 SAN FRANCISCO, CALIFORNIA CA (7772)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	48.6	50.1	54.3	54.2	57.0	58.7	57.6	59.4	60.9	61.9	59.3	55.8	56.5
1970	54.0	57.4	57.8	53.3	57.7	56.8	57.8	57.2	64.4	58.6	57.9	50.6	57.0
1971	50.8	51.9	53.3	53.1	54.6	57.3	57.5	61.1	64.7	57.8	55.6	49.0	55.6
1972	48.5	54.0	55.8	55.5	55.5	57.5	60.9	60.2	61.5	61.7	54.9	47.2	56.1
1973	50.1	54.9	52.5	57.2	56.3	60.7	58.6	57.1	61.3	61.0	55.3	52.0	56.4
1974	51.1	52.2	53.3	55.4	54.9	58.2	59.6	59.9	60.3	62.2	56.6	51.1	56.2
1975	51.0	53.3	53.1	51.9	57.2	56.9	58.9	59.5	59.5	59.7	55.6	53.4	55.8
1976	53.4	52.8	52.5	54.1	56.8	61.5	59.2	62.5	62.2	62.8	60.4	54.6	57.7
1977	49.9	56.1	53.2	56.1	55.3	57.1	59.0	61.6	62.0	60.6	58.6	54.9	57.0
1978	55.0	55.2	59.0	56.3	60.7	58.9	58.4	60.6	65.5	61.9	55.9	49.6	58.1
1979	51.0	52.9	55.7	56.5	59.2	58.6	60.2	60.8	66.3	63.2	57.7	55.4	58.1
1980	53.0	57.2	56.0	56.9	55.4	57.9	59.5	58.0	61.3	62.0	58.3	53.4	57.4
1981	52.4	56.1	54.9	55.8	56.8	62.2	57.8	59.2	60.4	59.3	58.3	54.0	57.3
1982	48.5	55.0	52.8	55.6	55.8	56.3	57.9	60.1	62.6	62.8	54.4	52.2	56.2
1983	49.4	54.6	55.3	56.8	59.7	61.8	63.4	65.9	67.1	64.0	56.1	52.8	58.9
1984	51.6	52.6	56.7	54.2	59.9	59.7	63.9	62.8	69.4	61.5	56.0	50.9	58.3
1985	50.0	56.0	53.2	59.8	58.1	63.9	64.1	64.1	64.1	63.2	55.0	51.3	58.6
1986	56.6	58.9	60.4	58.6	60.0	63.2	62.8	61.9	62.8	63.6	60.2	52.5	60.1
1987	51.8	56.4	57.1	60.5	61.1	60.5	61.5	63.5	63.8	65.1	58.8	52.3	59.4
1988	52.8	57.7	59.1	58.8	59.1	61.1	64.2	64.0	63.1	61.5	57.3	53.3	59.3
1989	51.3	50.0	55.4	60.9	59.3	61.6	62.4	63.0	61.8	62.0	58.8	52.6	58.3
1990	52.8	52.0	54.9	59.2	59.0	62.4	62.9	65.3	66.0	64.2	58.0	49.1	58.8
1991	53.4	57.9	53.2	57.1	56.8	58.6	61.3	63.0	63.1	64.4	60.1	53.4	58.5
1992	51.5	58.4	59.2	62.6	62.7	62.5	65.1	63.8	65.8	66.7	59.8	51.7	60.8
1993	51.1	53.8	59.0	59.4	62.5	65.9	63.4	66.6	63.4	64.3	58.2	51.5	59.9
1994	53.7	52.7	58.1	57.6	58.7	61.1	59.7	63.4	63.7	62.2	51.9	49.6	57.7
1995	54.1	56.9	56.2	56.9	57.4	61.7	66.0	64.1	64.7	64.6	60.9	55.5	59.9
1996	54.1	57.1	58.8	61.4	61.7	62.8	63.7	63.7	63.6	62.8		55.9	
1997	52.7	56.1	58.2	58.1	62.6	61.6	62.3	65.8	67.8	62.5	59.3	53.9	60.1
1998	53.6	52.7	55.7	55.5	56.6	59.3	60.1	61.1	61.7	60.6	55.2	50.0	56.8
POR= 124 YRS	50.5	53.3	54.6	55.9	57.2	59.1	58.7	59.5	62.2	61.3	56.5	51.7	56.7

HEATING DEGREE DAYS (base 65°F) 1998 SAN FRANCISCO, CALIFORNIA CA (7772)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	221	171	132	107	166	277	334	210	222	341	237	242	2660
1970-71	231	246	95	201	208	439	433	359	354	351	317	230	3464
1971-72	225	120	85	229	275	490	506	312	279	278	287	226	3312
1972-73	144	139	110	115	298	546	455	277	380	225	267	167	3123
1973-74	199	239	137	134	285	396	423	353	354	284	309	202	3315
1974-75	167	153	153	119	243	422	428	320	360	386	257	238	3246
1975-76	185	170	177	164	276	352	353	344	378	321	262	179	3161
1976-77	173	86	114	102	152	315	463	242	359	261	294	233	2794
1977-78	197	116	93	139	187	304	304	269	188	254	154	177	2382
1978-79	196	137	43	138	268	471	431	332	281	250	185	197	2929
1979-80	151	125	23	64	213	293	366	221	275	240	291	218	2480
1980-81	165	212	132	128	201	350	384	243	304	284	248	121	2772
1981-82	220	175	136	174	196	334	506	273	369	278	281	253	3195
1982-83	210	151	82	90	311	391	478	283	296	238	174	112	2816
1983-84	83	14	30	52	257	369	408	354	251	321	172	159	2470
1984-85	70	84	19	117	263	430	459	254	359	173	209	57	2494
1985-86	71	49	35	99	302	419	254	172	146	196	154	67	1964
1986-87	78	93	63	84	152	383	399	233	243	140	154	147	2169
1987-88	106	52	50	60	179	387	370	207	183	197	196	125	2112
1988-89	60	53	79	137	229	358	419	416	289	171	181	129	2521
1989-90	86	68	94	113	183	377	371	357	305	170	188	97	2409
1990-91	74	23	8	56	204	487	351	192	358	234	248	188	2423
1991-92	129	74	74	74	150	350	414	186	171	87	75	76	1860
1992-93	30	51	28	31	163	406	423	310	178	163	90	49	1922
1993-94	73	33	74	63	204	411	346	339	211	215	188	134	2291
1994-95	163	70	54	95	384	471	331	221	268	236	227	133	2653
1995-96	30	63	43	68	117	286	334	226	191	139	131	109	1737
1996-97	69	58	74	112	275	375	375	242	206	200	110	97	2393
1997-98	83	16	4	100	184	338	345	339	284	282	253	165	2393
1998-	156	127	107	145	287	458							

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COOLING DEGREE DAYS (base 65°F) 1998 SAN FRANCISCO, CALIFORNIA CA (7772)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	0	0	5	0	1	1	0	0	14	20	3	0	44
1970	0	0	5	0	19	1	17	8	82	10	0	0	142
1971	0	0	0	0	0	7	0	6	83	12	0	0	108
1972	0	0	3	0	1	4	22	0	13	20	0	0	63
1973	0	0	0	2	5	43	8	0	34	15	0	0	107
1974	0	0	0	3	4	3	4	3	19	41	0	0	77
1975	0	0	0	0	23	0	4	8	15	5	0	0	55
1976	0	0	0	0	16	82	0	15	37	41	15	0	206
1977	0	0	0	0	0	1	18	17	8	8	0	0	52
1978	0	0	8	2	30	0	0	6	65	46	3	0	160
1979	0	0	0	0	11	13	10	3	72	16	0	0	125
1980	0	0	0	5	0	12	2	3	29	43	3	0	97
1981	0	0	0	13	1	44	6	3	3	5	2	0	77
1982	0	0	0	7	1	0	0	8	16	27	0	0	59
1983	0	0	0	0	16	21	41	50	101	27	0	0	256
1984	0	0	0	5	20	5	42	20	158	14	0	0	264
1985	0	7	0	24	2	28	50	27	16	49	8	0	211
1986	0	7	10	8	6	22	17	1	4	49	12	0	136
1987	0	0	5	12	38	19	5	14	22	68	0	0	183
1988	0	3	6	18	20	12	42	27	30	34	3	0	195
1989	0	0	0	56	9	35	15	12	5	28	2	0	162
1990	0	0	0	5	8	25	18	39	45	40	1	0	181
1991	0	0	0	3	1	5	20	20	26	62	9	0	146
1992	0	2	0	21	13	9	41	23	61	93	10	0	273
1993	0	0	0	1	21	82	32	88	31	48	7	0	310
1994	0	0	5	0	3	22	4	29	24	19	0	0	106
1995	0	0	0	3	0	40	70	43	43	63	4	0	266
1996	0	3	4	39	38	49	34	26	37	53	0	0	257
1997	0	0	7	1	44	2	5	47	97	30	24	0	257
1998	0	0	0	2	0	2	11	12	17	15	0	0	59

SNOWFALL (inches) 1998 SAN FRANCISCO, CALIFORNIA CA (7772)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1967-68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968-69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969-70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970-71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971-72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972-73	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0			
1973-74													
1975-76													
1976-77													
1977-78													
1978-79													
1979-80													
1980-81													
1981-82													
1982-83													
1983-84													
1984-85													
1996-97													
1997-98							0.0	0.0	0.0	0.0	0.0	0.0	
1998-	0.0	0.0	0.0	0.0	0.0	0.0							
POR= 37 YRS	0.0	0.0	0.0	0.0	0.0	T	T	T	T	0.0	0.0	0.0	T

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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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1998  
SAN FRANCISCO, CALIFORNIA  
DOWNTOWN (7772)

San Francisco is located at the northern end of a narrow peninsula which separates San Francisco Bay from the Pacific Ocean. It is known as the air conditioned city with cool pleasant summers and mild winters. Flowers bloom throughout the year and warm clothing may be needed at times during any month.

Precipitation averages about 20 inches a year with pronounced wet and dry seasons, characteristic of its Mediterranean climate. Little or no rain falls from June through September while about 80 percent of the annual total falls from November through March. Snow is extremely rare. Measurable amounts fall about once every 15 years. Freezing temperatures are also extremely rare. On average, thunderstorms occur on only two days each year. The average annual wind speed is about 9 mph with lighter winds, 6 to 7 mph, occurring in the winter and stronger winds, 10 to 11 mph, in the summer.

San Francisco probably has greater climatic variability by far with respect to temperature, cloudiness, and sunshine within its 49 square mile area than any other similarly sized urban area in the country. Likewise, the San Francisco Bay area has considerably more variability than San Francisco itself.

Sea fogs, and the low stratus clouds associated with them are most common in the summertime, but may occur at any time of the year. In the summer the temperature of the Pacific Ocean is much lower than the temperature inland, particularly in the Central Valley of California. This condition tends to enhance the sea breeze effect common to coastal areas. Brisk westerly winds blow throughout the afternoon and evening hours. The fog is carried inland by these westerly winds in the late afternoon and evening and then evaporates during the subsequent forenoon.

The complex topography of San Francisco causes complex patterns of fog and sun as well as temperature. A range of hills with elevations of nearly 1000 feet above sea level, bisects the city from north to south. This range partially blocks the inland movement of the fog, but gaps in the hills permit small masses of fog to pass through, further complicating the pattern. Occasionally, the fog will reach 50 miles south to San Jose, while the area just to the lee of the highest hills is still mostly clear.

Sunshine varies greatly from one part of the city to another, especially in the summer. Spring and fall are the sunniest seasons. In the summer the sunniest area is a triangular shaped area to the lee of the highest hills and extending to the bay. The least sunny area is along the ocean due to the high frequency of fog there. The percent of possible summer sunshine varies from an estimated 25 to 35 percent at the ocean to 70 to 80 percent in the sunniest area.

The extent and behavior of the summertime fog on a particular day depends on several factors. A typical day would find the fog covering the entire city at sunrise and little wind. During the forenoon the skies become sunny in the eastern part of the city with some partial clearing reaching the ocean for a couple of hours in the early afternoon. By early afternoon the winds pick up and by late afternoon the fog is rolling inland again. The wind usually reaches a maximum velocity in the early evening.

In the winter relatively little difference in the climate is observed from one part of the city to another. This is due to the lack of temperature contrast between the ocean and the land and to the relative frequency of passage of Pacific frontal systems. However, those areas near the ocean have more sunshine than areas further inland. The source region for fog is inland during winter, mainly in the Central Valley, rather than the ocean.

Temperature patterns in the city are the same as those of sunshine. In the winter there is little variation, with average maximums from 55 to 60 degrees and average minimums in the mid to upper 40s. Average temperatures rise until June and remain nearly constant through August with average maximums in the lower 60s near the ocean and upper 60s in the sunny eastern half of the city. Summer minimums range from 50 to 55. The warmest time of the year is September and October when the fog diminishes greatly and some of the warmth from the Central Valley flows westward. At this time of year the average maximums are in the mid 60s near the ocean and in the mid 70s in the warmest areas of the city. The average minimums are about the same as they are during the summer.

# STATION LOCATION

SAN FRANCISCO, CALIFORNIA  
DOWNTOWN

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	NORTH	WEST	ELEVATION ABOVE										AUTOMATED	* Type	REMARKS	
						SEA LEVEL	GROUND												
							WIND	EMERSON	REMEMOR	SUNSHINE	TRIP	RAIN	WEIGH	8	INCH				RAIN
<i>COOPERATIVE - - NOTE: For period August 14, 1849 through July 1864, refer to previous editions.</i>																			
East side Leavenworth Street, between Pine & California Streets	7/1864	7/1866	800 ft. SW	37° 47'	122°25'	260													
Battery Street between Washington & Jackson	7/1866	2/01/71	0.9 mi. ENE	37° 48'	122°24'	14													
<b>CITY</b> Merchants Exchange Bldg Sacramento & Leidesdorff Streets	2/02/71	9/03/90	0.2 mi. SW	37° 48'	122°24'	15		48	48		75			75					
Phelan Building Market, Grant & O'Farrell Streets	9/04/90	10/31/92	0.5 mi. SW	37° 47'	122°24'	41	109	109	109		101			101					
Mills Building 220 Montgomery Street	11/01/92	4/18/06	0.3 mi. NE	37° 48'	122°24'	25	167	161	161		154			154					
Residence 3018 Clay Street	5/01/06	9/30/06	3.1 mi. W	37° 47'	122°27'	257	42	29	29		40						Temporary quarters in private residence following earthquake and fire 4/18/06. Improvised exposure of instruments.		
Merchants Exchange Bldg 465 California Street	10/01/06	10/21/14	3.0 mi. E	37° 48'	122°24'	17	204	200	200		191			191					
Merchants Exchange Bldg 465 California Street	10/22/14	4/21/19	No Change	37° 48'	122°24'	17	213	209	209		200			200			Instruments relocated on new tower.		
Merchants Exchange Bldg 465 California Street	4/22/19	5/12/36	No Change	37° 48'	122°24'	17	243	208	208		202			202			Instruments moved to new tower. Thermometer readings probably affected at times by nearby ventilators. Several high buildings affected wind recordings.		
Federal Office Building 50 Fulton Street	5/13/36	4/18/83	1.0 mi. SW	37° 47'	122°25'	52	132 A	112 A	112 A	129 B C	104 B	NA	104 A	a 112	NA		Exposure good except tall buildings NNE shields winds somewhat from NE. a - Temp. sensor added 12/6/53. A - Removed 4/3/73. B - Remote readout at airport Weather Service Office effective 4/3/78. C - Decommissioned Dec. 1974.		
Mission Dolores 16th & Dolores Streets +SF Downtown (effective 09/01/97)	4/18/83	Present	1.3 mi. SW	37° 46'	122°26'	75	NA	NA	NA	NA	10	NA	NA	b10 c16	NA		b - Bristol Thermograph. c - Hygrothermometer installed on roof 3/15/87.		

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  
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