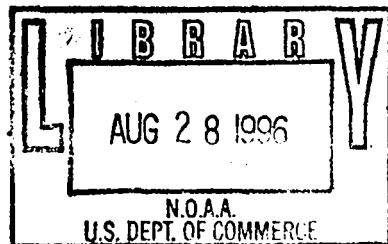


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# **National Oceanic and Atmospheric Administration**

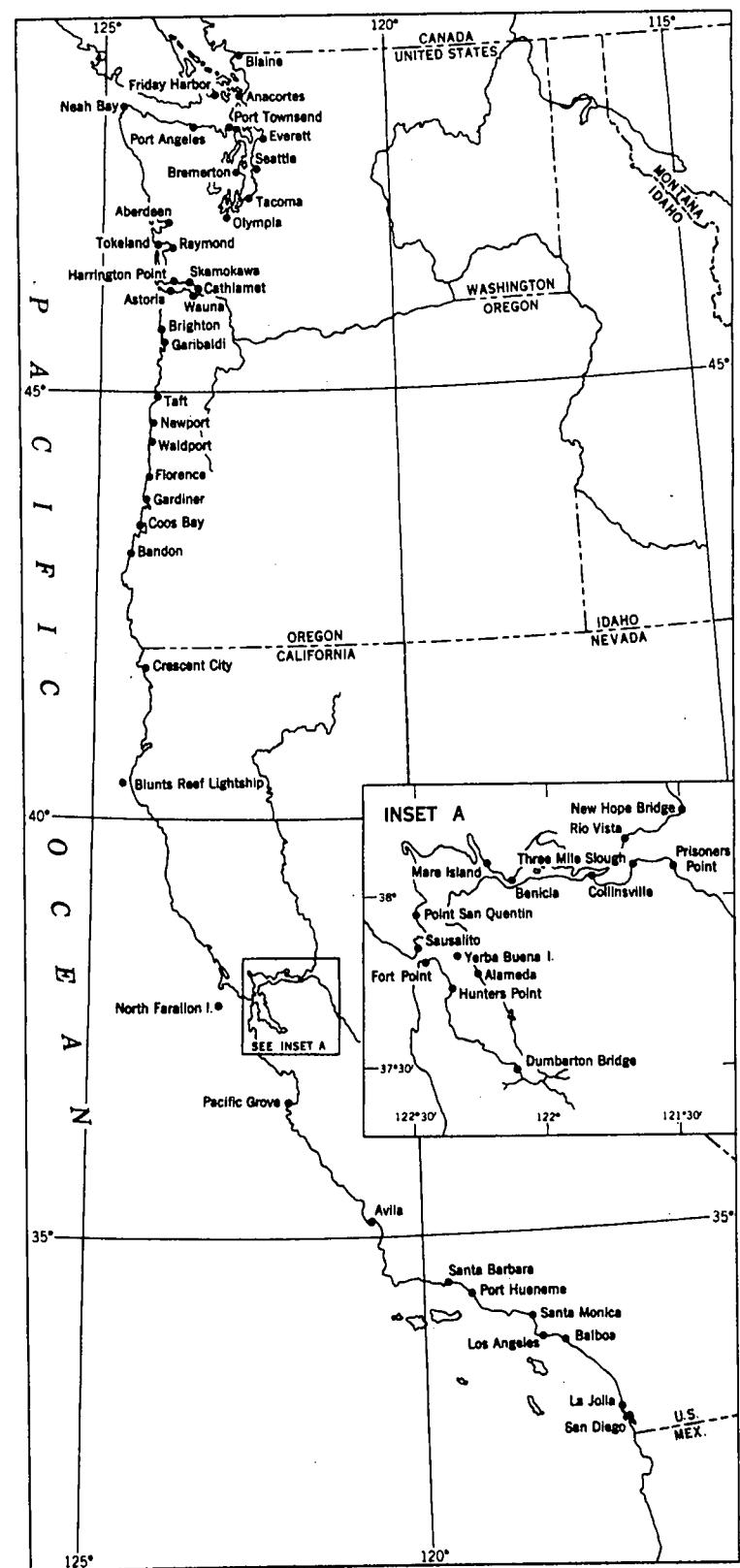
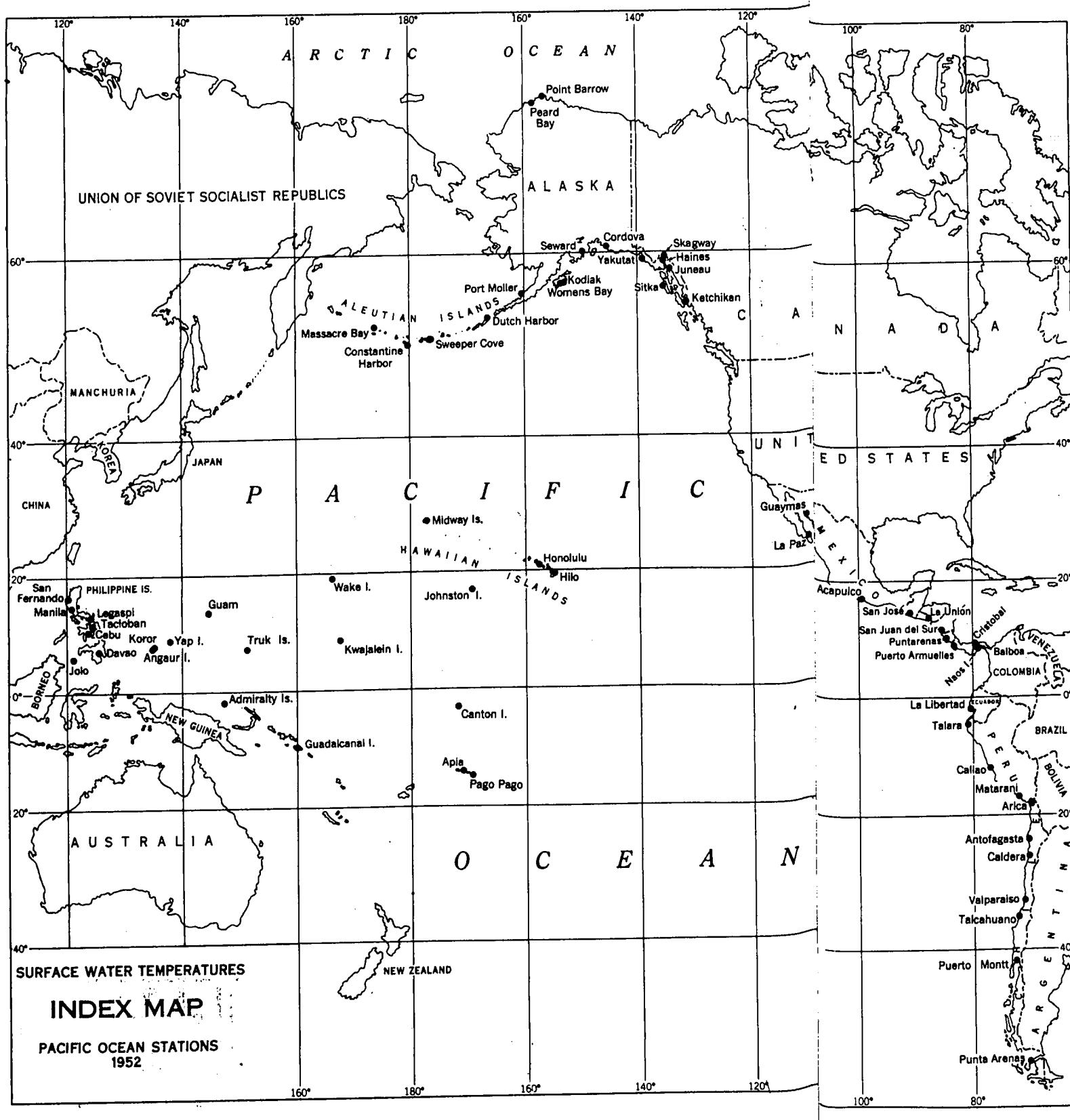
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## LIST OF STATIONS

Station	Lat. ° ,	Long. ° ,	Page
Aberdeen, Grays Harbor, Wash.	46 58N.	123 51W.	21
Acapulco, Mexico	16 51N.	99 55W.	49
Admiralty Islands (Seeadler Harbor)	2 02S.	147 23E.	38
Alameda (Naval Air Station), Calif.	37 47N.	122 18W.	13,55
Anacortes, Wash.	48 31N.	122 37W.	25
Angaur Island, Palau Islands	6 54N.	134 08E.	38
Antofagasta, Chile	23 39S.	70 25W.	44,59
Apia (observatory), Samoa Islands	13 48S.	171 46W.	37,58
Arica, Chile	18 29S.	70 20W.	44
Astoria (Tongue Point), Ore.	46 13N.	123 46W.	18,55
Avila, Calif.	35 10N.	120 44W.	11,50,54
Balboa, Calif.	33 36N.	117 54W.	8,54
Balboa, Canal Zone	8 57N.	79 34W.	47,52,59
Bandon, Coquille River, Ore.	43 07N.	124 25W.	17
Benicia, Carquinez Strait, Calif.	38 03N.	122 08W.	15
Blaine, Wash.	49 00N.	122 46W.	26
Blunts Reef Lightship	40 26N.	124 30W.	16,55
Bremerton, Wash.	47 34N.	122 38W.	23
Brighton, Nehalem River, Ore.	45 40N.	123 56W.	18
Caldera, Chile	27 04S.	70 50W.	44
Callao, Peru	12 03S.	77 09W.	45,59
Canton Island, Phoenix Islands	2 48S.	171 43W.	37
Cathlamet, Columbia River, Wash.	46 12N.	123 23W.	20
Cebu, Cebu Island, Philippine Islands	10 18N.	123 54E.	40,58
Collinsville, Sacramento River, Calif.	38 04N.	121 51W.	15
Constantine Harbor, Amchitka Island, Alaska	51 25N.	179 17E.	33
Coos Bay entrance, Ore.	43 21N.	124 19W.	17
Cordova, Alaska	60 33N.	145 46W.	30
Crescent City, Calif.	41 45N.	124 12W.	16,55
Cristobal, Canal Zone	9 21N.	79 54W.	47,53
Davao, Mindanao Island, Philippine Islands	7 05N.	125 38E.	41,58
Dumbarton Bridge, San Francisco Bay, Calif.	37 30N.	122 07W.	14
Dutch Harbor, Unalaska Island, Alaska	53 54N.	166 32W.	32,57
Everett, Wash.	47 59N.	122 13W.	22
Florence, Siuslaw River, Ore.	43 58N.	124 06W.	17
Friday Harbor, San Juan Island, Wash.	48 33N.	123 00W.	25,51,56
Gardiner Umpqua River, Ore.	43 44N.	124 07W.	17
Garibaldi, Tillamook Bay, Ore.	45 33N.	123 54W.	18
Guadalcanal I. (Kukum), Solomon Islands	9 26S.	160 00E.	37
Guam (Apra Harbor), Marianas	13 26N.	144 39E.	39
Guaymas, Mexico	27 55N.	110 55W.	49
Haines, Alaska	59 14N.	135 26W.	29
Harrington Point, Columbia River, Wash.	46 16N.	123 39W.	19
Hilo, Hawaiian Islands	19 44N.	155 03W.	36,58
Honolulu, Hawaiian Islands	21 18N.	157 52W.	35,57
Johnston Island, Hawaiian Islands	16 45N.	169 31W.	36
Jolo, Jolo Island, Philippine Islands	6 04N.	121 00E.	41,58
Juneau, Alaska	58 18N.	134 25W.	28,56
Ketchikan, Alaska	55 20N.	131 38W.	26,56
Kodiak, Kodiak Island, Alaska	57 47N.	152 24W.	31
Koror, Koror Island, Palau Islands	7 21N.	134 29E.	39
Kwajalein Island, Marshall Islands	8 44N.	167 44E.	38
La Jolla, Calif.	32 52N.	117 15W.	7,54
La Libertad, Ecuador	2 13S.	80 55W.	46
La Paz, Mexico	24 10N.	110 19W.	49
La Unión, El Salvador	13 20N.	87 49W.	48
Legaspi, Luzon Island, Philippine Islands	13 09N.	123 45E.	40,58
Los Angeles (Outer Harbor), Calif.	33 43N.	118 16W.	9,54

## LIST OF STATIONS—Continued

5

Stations	Lat. °   °   '	Long. °   °   '	Page
Manila, Luzon Island, Philippine Islands-----	14 35N.	120 58E.	39,58
Mare Island (Navy Yard), Calif.-----	38 06N.	122 16W.	14
Massacre Bay, Attu Island, Alaska-----	52 50N.	173 12E.	34,57
Matarani, Peru-----	17 00S.	72 07W.	44,59
Midway Islands, Hawaiian Islands-----	28 12N.	177 22W.	35,57
Naos Island, Canal Zone-----	8 55N.	79 32W.	46
Neah Bay, Wash.-----	48 22N.	124 37W.	21,56
New Hope Bridge, Mokelumne River, Calif.-----	38 14N.	121 29W.	16
Newport, Yaquina Bay, Ore.-----	44 38N.	124 03W.	18
North Farallon Island, Calif.-----	37 46N.	123 06W.	12,55
Olympia, Wash.-----	47 03N.	122 54W.	24
Pacific Grove, Calif.-----	36 38N.	121 55W.	11,54
Pago Pago, Samoa Islands-----	14 17S.	170 41W.	37
Peard Bay, Alaska-----	70 48N.	158 28W.	34
Point Barrow (Elson Lagoon), Alaska-----	71 23N.	156 27W.	34
Point Barrow (ocean), Alaska-----	71 23N.	156 27W.	34
Point San Quentin, San Francisco Bay, Calif.-----	37 57N.	122 29W.	14
Port Angeles, Wash.-----	48 08N.	123 26W.	22
Port Hueneme, Calif.-----	34 09N.	119 12W.	10,54
Port Moller, Alaska-----	55 59N.	160 34W.	34
Port Townsend (Fort Worden), Wash.-----	48 08N.	122 46W.	22
Port Townsend (town), Wash.-----	48 07N.	122 45W.	22
Puerto Armuelles, Panama-----	8 16N.	82 52W.	47
Puerto Montt, Chile-----	41 29S.	72 58W.	42,58
Prisoners Point, San Joaquin River, Calif.-----	38 04N.	121 33W.	15
Punta Arenas, Magellan Strait, Chile-----	53 09S.	70 54W.	41,58
Puntarenas, Costa Rica-----	9 58N.	84 50W.	48,59
Raymond, Willapa Bay, Wash.-----	46 41N.	123 45W.	20,56
Rio Vista, Sacramento River, Calif.-----	38 09N.	121 42W.	15
San Diego, Calif.-----	32 42N.	117 14W.	7,54
San Fernando, Luzon Island, Philippine Islands-----	16 37N.	120 18E.	39
San Francisco (Fort Point), Calif.-----	37 48N.	122 28W.	12,55
San Francisco (Hunters Point), Calif.-----	37 44N.	122 22W.	14
San José, Guatemala-----	13 55N.	90 50W.	48
San Juan del Sur, Nicaragua-----	11 15N.	85 53W.	48
Santa Barbara, Calif.-----	34 25N.	119 41W.	11
Santa Monica, Calif.-----	34 00N.	118 30W.	10,54
Sausalito, Calif.-----	37 51N.	122 29W.	14,55
Seattle (Duwamish River), Wash.-----	47 32N.	122 19W.	24
Seattle (Elliott Bay), Wash.-----	47 36N.	122 20W.	23,56
Seward, Alaska-----	60 06N.	149 27W.	30,57
Sitka, Alaska-----	57 03N.	135 20W.	27,56
Skagway, Alaska-----	59 27N.	135 19W.	29,57
Skamokawa, Columbia River, Wash.-----	46 16N.	123 27W.	20
Sweeper Cove, Adak Island, Alaska-----	51 51N.	176 39W.	33,57
Tacloban, Leyte Island, Philippine Islands-----	11 15N.	125 00E.	40
Tacoma, Wash.-----	47 17N.	122 25W.	24
Taft, Siletz Bay, Ore.-----	44 56N.	124 01W.	18
Talara, Peru-----	4 35S.	81 17W.	45,59
Talcahuano, Chile-----	36 41S.	73 06W.	43,59
Three Mile Slough, San Joaquin River, Calif.-----	38 05N.	121 41W.	15
Tokeland, Willapa Bay, Wash.-----	46 42N.	123 58W.	20,55
Truk Islands (Moen Island), Caroline Islands-----	7 27N.	151 51E.	38
Valparaiso, Chile-----	33 02S.	71 38W.	43,59
Wake Island-----	18 17N.	166 37E.	38
Waldport, Alsea Bay, Ore.-----	44 26N.	124 04W.	17
Wauna, Columbia River, Ore.-----	46 10N.	123 24W.	19
Womens Bay, Kodiak Island, Alaska-----	57 43N.	152 31W.	32
Yakutat, Alaska-----	59 33N.	139 44W.	30,57
Yap Island, Caroline Islands-----	9 30N.	138 08E.	38
Yerba Buena Island, San Francisco Bay, Calif.-----	37 49N.	122 22W.	13

## INTRODUCTION

The summaries of sea water temperatures presented in this publication are based on observations made in Pacific harbor and coastal waters through the year 1951. The temperatures were observed primarily at tide stations which, in the United States and possessions, were maintained by the U.S. Coast and Geodetic Survey, often with the cooperation of other organizations. Summarized data for five places on the California coast, namely, Balboa, Port Hueneme, Pacific Grove, North Farallon Island and Blunts Reef Lightship, were supplied by the Scripps Institution of Oceanography. Final results for the Canal Zone were supplied by the Meteorological and Hydrographic Branch, the Panama Canal Company, for Chile by the Departamento de Navegación e Hidrografia, República de Chile, and for the Philippine Islands by the Bureau of Coast and Geodetic Survey of the Republic of the Philippines. For other countries, the U.S. Coast and Geodetic Survey derived the data from observations made by organizations in the countries concerned. In Latin America the observations were obtained through the cooperation of the Inter American Geodetic Survey.

Table 1, Surface Water Temperatures, presents monthly means and annual mean and extremes for each year of observations. For each station at which the series of observations covered two or more years, there are given also the following monthly values for the series: the mean of the monthly means, the maximum observed, the mean of the monthly maxima, the mean of the monthly minima, and the minimum observed.

When an asterisk accompanies an annual extreme in either of the two right hand columns of Table 1, it indicates the extreme might have been exceeded if observations had been available for all months in which the maximum or minimum normally occurs. If observations are not available for any month in which the yearly maximum or minimum might occur, the extreme has been omitted.

These data are based upon thermometer readings made in a sample of water drawn by bucket from a foot or two below the surface. The observations are usually made once each weekday at whatever time the observer attends the tide gage, and it may be assumed that in the course of a month or a year the distribution of observations is fairly uniform over all phases of the tide.

Table 2, Bihourly Sea Water Temperatures, shows mean bihourly temperatures and series means and extremes by months. They have been derived from a continuous trace made by recording thermometers. At stations within the United States, the thermometer bulbs were fixed just below the lowest observed low water, so that during a day they were covered by varying amounts of tidal water. At stations in the Canal Zone, the bulbs were kept about three feet below surface of the water.

Following Table 2, there are shown graphically for a number of places the mean temperature variations during the month and year and monthly extreme temperatures as obtained from Table 1.

All temperatures in this publication are given in degrees Fahrenheit. They can be converted to the centigrade scale by means of Table 3 which is on the inside back cover.

The following publications complete this series:

Special Pub. 278. Surface Water Temperatures, Atlantic Coast.

Special Pub. 279. Density of Sea Water, Atlantic Coast.

Special Pub. 281. Density of Sea Water, Pacific Ocean.

**Table 1 – Surface Water Temperatures**  
**Means and Extremes in °F.**

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>SAN DIEGO, CALIF.</b>															
1922	55.4	54.5	56.0	57.6	60.6	62.4	66.7	68.0	66.9	61.9	57.7	58.3	60.5	72	51
1923	56.8	56.3	58.1	60.3	63.0	63.0	66.6	67.8	65.7	65.1	63.0	57.9	62.0	70	52
1924	56.8	58.6	59.2	59.9	63.9	64.2	66.9	66.0	63.1	61.2	57.7	55.9	61.1	70	53
1925	55.9	57.4	59.7	59.4	62.6	66.4	68.3	67.5	64.6	63.9	60.4	60.4	62.2	72	54
Mean	56.2	56.7	58.2	59.3	62.5	64.0	67.2	67.3	65.1	63.0	59.7	58.1	61.4		
Max.	59	61	63	65	68	70	72	72	71	68	64	64		72	
Mean Max.	58.6	59.1	61.1	63.0	66.9	67.1	70.7	70.9	68.7	66.3	61.7	60.8			
Mean Min.	53.2	54.3	56.1	56.1	58.3	58.9	62.4	62.6	60.4	60.2	58.1	56.0			
Min.	52	51	53	54	56	55	60	61	58	57	55	53			51
<b>LA JOLLA, CALIF. †</b>															
1925	55.4	55.9	57.6	58.8	62.1	66.0	69.6	69.6	65.5	63.5	61.3	61.2	62.2	73	54
1926	60.1	60.8	62.8	64.6	65.8	68.7	68.5	69.4	65.5	63.7	61.9	59.4	64.1	73	57
1927	57.4	57.2	57.2	58.3	61.0	64.4	67.6	68.2	66.9	63.9	63.3	59.2	62.0	71	53
1928	58.3	57.6	58.8	58.8	63.1	65.3	67.1	67.6	64.4	63.0	59.9	57.9	61.8	71	54
1929	56.8	55.6	56.5	57.9	63.5	65.5	70.2	71.1	67.8	65.1	62.1	60.6	62.7	74	54
1930	58.3	58.5	58.8	61.9	63.0	65.7	66.7	70.7	67.5	64.6	63.5	61.0	63.4	74	56
1931	59.9	60.8	62.2	64.4	66.2	67.8	74.5	73.9	68.2	65.8	61.7	57.4	65.0	78	54
1932	55.9	55.8	58.6	58.6	61.0	66.2	66.9	65.7	65.5	63.3	61.2	57.2	61.3	70	54
1933	55.4	54.7	56.3	58.8	59.7	63.1	65.7	66.2	62.6	63.0	59.7	57.0	60.2	70	53
1934	55.9	57.0	60.3	63.1	66.6	66.2	68.7	68.7	68.9	64.0	62.4	59.7	63.5	72	54

† Daily bottom temperatures at La Jolla are available for the years 1946-1951. Means from the six years are as follows:

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means
55.6	55.7	56.8	59.2	61.8	64.2	64.9	65.4	64.2	63.3	60.7	57.9	60.8

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.	
LA JOLLA, CALIF. †—Continued																
1935	57.9	57.2	55.9	59.0	63.7	65.8	68.0	69.3	66.7	63.0	59.5	58.5	62.0	74	53	
1936	57.2	58.3	59.2	57.6	64.6	64.2	72.1	71.8	69.6	65.3	63.0	61.0	63.6	75	53	
1937	56.1	55.6	57.6	58.8	63.9	66.4	69.3	69.1	68.9	63.9	62.4	59.5	62.6	72	54	
1938	59.0	57.9	58.3	59.2	62.1	64.0	66.4	69.6	68.0	62.6	58.1	58.6	62.0	72	55	
1939	57.4	53.6	55.8	59.9	61.9	64.9	69.3	70.3	66.9	66.6	64.8	63.3	62.9	72	51	
1940	60.4	59.4	59.0	61.7	65.5	64.6	64.9	69.1	66.6	65.5	60.8	61.0	63.2	72	57	
1941	60.1	60.3	62.2	62.6	64.4	66.0	66.0	68.0	66.6	65.3	63.1	60.3	63.7	71	57	
1942	57.7	57.0	57.7	59.9	62.2	65.5	68.2	69.1	65.8	66.4	62.2	58.8	62.5	72	56	
1943	57.4	58.1	60.3	58.8	63.3	64.9	64.4	71.2	65.7	64.8	61.9	60.1	62.6	73	56	
1944	57.6	56.8	58.1	59.5	61.3	64.6	64.4	67.1	66.4	63.9	61.5	58.5	61.6	70	56	
1945	57.6	57.2	55.6	56.8	60.6	65.5	68.0	70.5	68.5	65.3	59.4	57.7	61.9	73	52	
1946	55.4	55.0	56.5	61.0	63.7	67.3	68.7	70.2	66.0	65.3	60.3	57.9	62.3	74	52	
1947	56.1	56.8	58.8	60.3	64.4	66.4	66.7	68.0	67.1	65.8	60.4	57.4	62.4	74	54	
1948	56.3	55.6	56.1	58.6	62.4	63.0	65.1	67.6	66.7	62.4	59.9	56.7	60.9	70	54	
1949	54.1	54.9	56.1	57.9	63.3	67.1	68.2	69.4	68.4	63.3	60.4	57.6	61.7	72	52	
1950	55.0	55.4	57.0	60.3	60.3	63.5	68.9	66.4	66.7	64.4	61.5	58.8	61.5	72	53	
1951	55.8	56.3	57.2	60.8	61.9	65.5	68.2	67.5	63.9	64.9	62.1	58.8	61.9	72	54	
Mean	57.2	57.0	58.2	59.9	63.0	65.5	67.9	69.1	66.7	64.4	61.4	59.1	62.4			
Max.	64	67	65	68	70	73	78	78	76	69	67	65		78		
Mean Max.	58.9	58.5	60.1	62.6	65.7	68.3	71.3	72.2	70.2	67.0	64.0	61.2				
Mean Min.	55.7	55.6	56.2	56.8	58.9	61.2	62.9	64.6	62.2	61.1	59.1	57.0				
Min.	52	51	52	53	54	57	57	59	57	57	56	54		51		
BALBOA, CALIF.																
Mean	57.3	57.1	57.9	59.4	61.7	64.3	1925 - 1951			66.0	67.0	65.3	64.1	61.4	59.3	61.7
Max.	64	62	65	67	68	71	77	74	73	69	68	63		77		
Min.	51	50	51	52	53	56	59	59	56	58	55	54		50		

LOS ANGELES (Outer Harbor), CALIF.															
1924	55.4	58.3	57.7	57.6	61.5	62.2	64.3	64.8	62.2	59.0	56.1	54.9	59.5	68	51
1925	53.6	55.8	55.6	55.9	60.6	64.0	66.9	66.2	63.5	63.1	59.5	59.9	60.4	71	51
1926	58.6	59.9	62.1	63.7	62.6	65.7	66.9	69.1	64.9	64.3	61.7	59.2	63.2	75	56
1927	57.9	59.0	57.9	59.7	61.9	63.0	66.9	67.3	68.7	65.8	64.4	59.9	62.7	71	56
1928	57.4	57.7	59.4	58.1	62.6	64.4	65.7	67.3	64.8	62.6	59.7	57.6	61.5	70	54
1929	56.7	55.8	56.1	57.6	62.2	65.5	67.6	68.5	66.0	64.4	61.9	60.3	61.9	71	54
1930	57.0	58.5	58.6	62.4	61.3	65.1	66.4	70.0	66.9	65.1	61.9	59.7	62.7	72	55
1931	59.2	61.2	62.6	64.9	66.6	67.6	72.1	69.4	66.0	64.9	60.8	55.9	64.3	76	55
1932	55.0	55.0	58.8	58.8	60.6	62.6	65.1	64.2	65.1	63.3	61.5	55.9	60.5	67	53
1933	54.0	55.0	56.3	56.5	56.7	62.1	62.6	64.9	61.3	62.2	59.9	55.9	59.0	68	52
1934	56.7	57.6	60.6	62.1	64.9	63.5	67.1	65.1	65.7	63.9	60.6	57.9	62.1	69	55
1935	55.9	55.9	55.0	56.5	58.5	63.7	64.4	66.0	64.0	61.0	58.5	57.0	59.6	70	53
1936	56.5	56.7	57.4	55.2	61.0	62.1	67.9	67.6	66.0	64.6	62.2	58.8	61.3	71	53
1937	53.2	53.6	56.8	57.7	61.7	63.9	64.8	66.4	66.6	63.3	61.3	59.2	60.7	69	50
1938	58.0	56.7	56.5	57.2	58.5	62.8	63.0	67.6	66.0	62.2	56.7	58.5	60.3	71	52
1939	56.5	52.7	54.3	58.6	59.0	61.9	65.3	66.6	66.2	66.0	64.8	62.6	61.2	71	51
1940	59.9	59.0	58.1	60.6	62.2	61.3	62.8	66.2	65.1	64.8	60.4	59.5	61.6	69	57
1941	58.6	59.7	61.2	---	63.5	64.4	64.4	66.7	65.5	64.4	62.2	59.2	---	70	*56
1942	56.3	56.5	57.2	59.5	60.1	64.9	66.6	66.2	65.7	65.7	62.4	57.9	61.6	70	54
1943	55.8	57.2	59.0	58.8	60.6	62.6	63.9	68.5	64.9	64.9	61.0	58.8	61.3	71	54
1944	56.5	56.5	58.1	57.9	58.8	61.3	61.7	65.7	64.9	63.3	61.0	57.7	60.3	68	54
1945	56.5	56.8	54.9	55.6	58.3	62.2	64.6	68.2	66.0	63.3	58.8	56.1	60.1	70	52
1946	55.4	54.5	56.1	60.1	60.1	64.9	66.9	66.4	66.4	64.4	60.4	57.9	61.1	70	53
1947	55.2	57.6	59.2	60.3	62.8	65.7	66.0	67.6	66.7	65.1	59.9	57.6	62.0	70	54
1948	56.1	55.6	56.1	57.7	61.0	62.2	64.2	64.6	65.7	63.3	59.4	55.8	60.1	68	54
1949	52.3	53.8	55.4	58.0	62.4	65.2	66.1	66.7	66.1	62.3	61.4	57.3	60.6	70	51
1950	54.1	55.9	58.5	60.9	58.0	63.0	67.4	66.1	67.6	66.6	62.8	61.8	61.9	70	53
1951	57.6	57.3	58.5	61.0	60.6	63.8	66.8	66.0	65.2	66.0	64.4	59.4	62.2	70	55

† See footnote † on page 7.

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means:	Max.	Min.
<b>LOS ANGELES (Outer Harbor), CALIF. —Continued</b>															
Mean	56.3	56.8	57.8	59.0	61.0	63.6	65.7	66.8	65.5	63.9	60.9	58.3	61.3		
Max.	63	63	64	68	68	71	76	74	72	69	67	65		76	
Mean Max.	58.5	58.9	60.3	61.9	63.9	66.8	68.8	69.9	68.5	66.5	63.6	60.6			
Mean Min.	54.7	55.0	55.6	56.2	57.9	60.5	62.4	63.9	62.9	61.8	58.8	56.1			50
Min.	50	51	52	51	54	56	58	61	59	56	55	51			
<b>SANTA MONICA, CALIF.</b>															
1946	56.1	56.1	58.1	62.4	63.5	67.6	70.9	70.3	67.1	64.0	60.0	57.8	62.8	73	52
1947	55.9	57.6	59.0	59.6	61.9	66.3	66.3	68.1	66.4	63.7	58.2	56.9	61.7	71	54
1948	56.1	54.9	55.5	58.1	60.6	63.3	65.1	67.0	65.4	62.5	59.1	56.0	60.3	69	53
1949	52.8	54.3	56.3	58.9	62.4	65.0	66.7	66.7	65.2	60.6	60.4	56.8	60.5	70	51
1950	54.1	54.7	56.6	58.9	58.1	61.4	66.6	65.4	65.5	63.1	60.2	59.1	60.3	70	53
1951	55.4	55.3	55.8	59.5	58.9	64.4	67.0	66.1	65.7	64.0	62.0	57.0	60.9	71	52
Mean	55.1	55.5	56.9	59.6	60.9	64.7	67.1	67.3	65.9	63.0	60.0	57.3	61.1		
Max.	61	59	61	65	67	73	73	72	71	66	64	61		73	
Mean Max.	57.2	57.2	59.3	62.4	64.6	68.0	70.1	69.6	68.3	65.2	62.2	59.7			
Mean Min.	53.2	53.8	54.7	56.2	57.6	61.0	63.8	64.5	63.6	60.8	58.3	55.2			51
Min.	51	53	52	55	54	57	60	62	63	58	57	54			
<b>PORT HUENEME, CALIF.</b>															
Mean	56.1	55.7	55.8	55.7	56.9	58.5	60.6	61.9	62.1	61.4	59.6	57.8	58.5		
Max.	62	61	64	65	65	69	71	72	70	69	66	64		72	
Min.	51	50	50	50	51	51	53	54	54	53	52	51			50

	<b>SANTA BARBARA, CALIF.</b>															
1930	--	--	56.5	60.1	56.5	62.4	63.1	67.3	64.8	61.2	58.5	57.7	--	70	*51	
1931	57.0	58.8	58.8	61.2	63.0	63.0	68.5	68.4	63.9	61.9	57.6	54.7	61.4	72	52	
1932	52.5	53.1	56.8	56.1	57.4	60.8	--	--	--	--	--	--	--	--	--	*50
Mean	54.8	56.0	57.4	59.1	59.0	62.1	65.8	67.8	64.4	61.6	58.0	56.2	60.2			
Max.	59	63	62	64	66	67	72	72	72	65	64	61		72		
Mean Max.	57.6	59.1	61.2	63.1	62.7	65.6	68.9	70.8	69.8	64.0	63.0	59.0				
Mean Min.	52.6	52.7	52.7	55.3	54.4	58.3	60.4	63.4	59.4	59.0	52.0	53.6				
Min.	50	50	52	50	51	57	58	63	58	59	52	52				50
<b>AVILA, CALIF. †</b>																
1945	--	--	--	--	--	--	59.4	60.6	59.7	59.4	56.5	53.8	--	*66	*52	
1946	53.1	52.9	51.4	53.6	54.5	54.7	59.7	59.2	58.5	57.7	55.8	55.2	55.5	64	50	
1947	53.8	54.1	54.3	53.4	55.9	57.9	57.6	58.8	59.4	57.7	54.0	53.6	55.9	63	50	
1948	53.6	52.5	51.3	53.4	52.6	57.2	58.2	60.0	58.7	57.4	55.2	53.0	55.3	64	49	
1949	51.0	51.5	53.4	54.1	54.8	57.7	57.9	58.8	59.6	55.9	56.3	54.3	55.4	63	49	
1950	52.3	51.6	51.7	53.6	53.7	55.5	58.6	58.4	58.6	56.5	57.1	55.9	55.3	61	49	
1951	52.8	52.7	52.6	54.1	54.8	56.6	57.8	59.0	59.0	58.7	57.9	54.3	55.9	62	51	
Mean	52.8	52.6	52.4	53.7	54.4	56.6	58.5	59.3	59.1	57.6	56.1	54.3	55.6			
Max.	55	56	57	58	59	64	64	66	64	61	60	59				
Mean Max.	54.2	54.2	55.2	56.5	57.2	60.2	61.5	62.8	62.3	59.7	58.3	56.3				
Mean Min.	51.2	50.7	50.3	50.9	52.0	53.5	55.4	56.3	56.2	55.4	54.2	52.7				
Min.	50	49	49	49	50	51	54	54	54	54	52	52				49
<b>PACIFIC GROVE, CALIF.</b>																
Mean	53.0	53.3	53.8	54.1	54.8	56.0	56.7	56.8	57.3	56.4	55.0	54.0	55.1			
Max.	58	58	59	60	63	64	62	63	63	65	60	60		65		
Min.	47	49	49	49	49	50	51	51	52	51	49	48				47
1919 - 1939, 1941 - 1951																

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

† For mean bihourly temperatures by months, see Table 2.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
NORTH FARALLON ISLAND, CALIF.															
Mean	53.0	52.8	53.0	52.4	52.6	53.3	54.2	55.0	56.3	55.7	54.7	54.0	53.9		
Max.	57	57	57	59	58	61	60	64	66	61	60	58		66	
Min.	49	48	46	47	48	49	50	51	52	51	49	49			46
SAN FRANCISCO (Fort Point), CALIF.															
1922	49.5	49.1	51.3	51.6	54.9	57.0	59.2	58.3	59.0	58.3	53.4	51.2	54.4	61	47
1923	50.7	49.7	51.4	54.9	54.9	55.8	58.5	59.2	61.0	59.4	56.7	52.2	55.4	63	48
1924	49.1	53.1	54.1	54.4	56.7	59.2	59.2	59.5	60.8	58.1	55.2	50.4	55.8	62	47
1925	48.9	52.3	53.8	55.2	56.1	57.7	58.3	59.7	60.8	59.2	56.1	53.4	56.0	62	48
1926	50.5	54.1	56.3	59.2	57.7	57.6	59.0	59.4	59.7	58.8	57.9	52.9	56.9	61	49
1927	51.4	52.5	52.7	52.7	54.5	56.3	57.3	59.5	58.8	56.7	56.7	53.8	55.3	61	50
1928	52.0	53.6	55.8	54.7	55.0	56.8	58.1	58.5	58.3	57.2	54.9	50.2	55.4	60	47
1929	48.6	49.6	51.4	52.2	54.1	57.4	60.1	60.1	60.6	59.4	55.4	54.0	55.2	62	47
1930	51.1	53.8	55.0	57.7	55.4	57.2	58.1	60.1	61.0	59.9	55.4	51.4	56.3	63	48
1931	52.2	54.5	56.3	55.4	59.4	61.2	60.6	60.4	60.6	59.4	55.8	50.4	57.2	63	49
1932	50.0	49.1	53.2	54.3	56.5	56.7	58.3	59.2	61.0	59.4	55.2	51.1	55.4	62	45
1933	48.2	49.5	52.2	53.6	53.4	55.4	57.6	59.5	59.4	58.9	55.6	50.9	54.5	61	47
1934	50.7	52.3	55.6	55.6	57.0	58.6	59.5	59.8	60.1	60.4	58.2	53.2	56.8	63	50
1935	51.2	52.2	52.0	54.8	55.9	57.3	57.6	58.4	58.6	59.0	52.9	52.0	55.2	61	49
1936	52.3	52.0	54.0	54.0	57.0	60.1	58.1	59.4	60.8	59.5	55.6	52.7	56.3	63	50
1937	48.2	48.4	52.9	53.6	54.3	58.3	60.3	60.4	59.7	59.9	57.4	54.7	55.7	62	45
1938	52.0	51.1	53.4	53.6	55.2	57.2	58.1	59.4	58.5	58.3	53.6	51.8	55.2	61	49
1939	51.3	50.2	50.5	53.4	56.1	57.9	58.6	61.7	62.2	61.3	57.2	55.2	56.3	64	49
1940	53.2	54.9	56.1	56.8	57.0	58.6	60.8	60.3	62.8	60.4	56.1	53.2	57.5	64	50
1941	53.2	54.3	56.3	56.3	58.3	57.9	59.9	60.0	61.0	53.1	57.2	54.9	57.3	63	52
1942	51.4	52.2	52.9	54.7	54.3	55.2	57.7	58.5	--	--	--	--	--	*62	*48
1943	51.3	52.5	55.2	55.0	55.4	55.2	58.8	59.4	60.8	59.7	57.4	55.0	56.3	64	49
1944	52.3	52.5	52.5	53.4	56.3	57.4	60.1	60.6	60.1	60.3	58.5	55.2	56.6	63	51
1945	54.0	54.0	52.0	53.1	56.1	58.3	61.7	60.4	61.5	61.0	57.6	55.0	57.1	64	50
1946	51.6	51.3	52.2	--	--	58.6	60.6	60.8	59.7	59.0	53.6	--	--	64	*49
1947	50.2	52.7	54.5	56.3	57.0	59.7	59.9	62.2	62.4	61.5	54.1	--	--	65	*49
1948	--	--	--	--	54.7	56.7	58.6	60.4	59.8	57.9	53.2	49.6	--	66	*46
1949	--	47.7	52.4	54.1	55.4	58.1	57.7	60.4	60.3	56.9	54.9	51.5	--	64	*46
1950	48.3	50.0	52.7	54.1	54.0	56.6	59.1	60.5	60.8	58.3	57.5	54.9	55.6	64	44
1951	50.4	50.6	51.0	52.4	55.1	55.8	57.5	58.0	59.7	59.1	55.2	52.7	54.8	62	47
Mean	50.8	51.7	53.4	54.5	55.8	57.5	59.0	59.8	60.3	59.1	55.8	52.7	55.9		
Max.	57	57	59	61	62	64	64	66	65	64	62	61		66	
Mean Max.	52.5	53.6	55.2	56.7	58.6	60.3	61.0	61.6	62.0	61.1	58.0	55.1			
Mean Min.	49.2	49.8	51.5	52.4	53.3	54.8	56.6	58.1	58.9	57.1	53.9	50.5			
Min.	45	44	46	50	51	51	52	56	57	54	51	46			44
YERBA BUENA ISLAND, SAN FRANCISCO BAY, CALIF.															
1937	47.7	48.7	54.8	56.1	--	--	--	64.6	63.0	--	--	--	--	*67	*45
ALAMEDA (Naval Air Station), CALIF.															
1940	52.9	55.4	60.4	63.0	65.3	68.9	69.8	68.5	69.8	64.6	56.8	52.7	62.3	73	50
1941	51.8	54.3	58.3	58.8	63.7	66.0	67.6	67.1	66.4	61.7	58.1	53.2	60.6	72	49
1942	50.9	52.9	57.2	59.5	63.3	66.7	69.1	67.6	65.3	63.1	56.5	52.7	60.4	72	49
1943	50.4	54.3	59.0	61.5	64.2	65.1	67.3	68.4	67.8	64.2	58.5	52.3	61.1	72	46
1944	50.4	51.8	56.1	58.1	63.9	64.0	66.7	67.3	68.0	64.8	57.9	53.2	60.2	72	49
1945	50.7	54.3	54.1	59.2	61.7	67.5	69.4	67.8	67.1	64.2	57.2	52.3	60.5	72	49
1946	51.1	51.4	55.6	60.6	62.8	66.6	69.8	68.4	66.9	63.0	54.7	51.8	60.2	74	47
1947	48.0	53.6	58.2	63.9	66.2	69.0	70.5	70.0	69.2	64.3	55.8	51.1	61.6	75	46
1948	51.8	51.3	55.4	58.2	62.1	65.6	68.7	69.1	67.7	63.5	56.7	50.2	60.0	73	47
1949	44.6	48.5	54.8	62.5	65.4	68.2	69.3	68.6	69.4	62.8	58.4	52.3	60.4	73	42
1950	47.7	51.5	56.1	62.3	62.8	65.4	68.2	68.6	67.7	64.1	60.7	55.1	60.8	74	45
1951	51.2	52.6	56.3	57.7	63.6	65.1	66.3	66.8	66.1	64.0	57.1	51.3	59.8	71	48
Mean	50.1	52.6	56.8	60.5	63.8	66.5	68.6	68.2	67.6	63.7	57.4	52.4	60.7		
Max.	56	59	64	71	71	74	75	75	73	70	64	58		75	
Mean Max.	52.7	56.1	60.7	64.7	68.4	70.3	72.2	71.5	71.4	67.8	61.4	55.7			
Mean Min.	47.8	49.9	53.0	56.4	59.5	62.7	65.5	65.1	64.3	59.9	54.1	49.6			
Min.	42	44	49	54	57	60	65	64	62	58	50	47			42

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>SAN FRANCISCO (Hunters Point), CALIF.</b>															
1945	--	--	52.0	55.8	57.9	61.0	63.9	62.8	63.5	62.6	57.2	52.5	--	68	*49
1946	51.3	50.7	53.2	57.4	59.0	62.1	63.7	63.9	62.8	62.6	--	--	--	67	*47
--	--	--	--	--	58.1	59.9	62.5	63.1	63.6	62.6	57.4	52.5	--	66	*50
<b>DUMBARTON BRIDGE, SAN FRANCISCO BAY, CALIF.</b>															
1937	44.2	48.5	55.0	58.1	62.6	67.1	71.1	70.2	68.4	65.8	--	--	--	73	*39
<b>SAUSALITO, CALIF.</b>															
1893	50.8	51.0	52.6	55.6	57.4	59.2	59.0	59.1	60.3	57.0	55.2	53.7	55.9	62	48
1894	50.2	50.2	51.4	54.6	57.0	59.0	59.2	59.8	61.4	60.2	57.3	53.3	56.1	64	49
1895	51.0	52.8	54.6	55.9	59.0	59.7	62.3	61.4	60.8	58.7	55.2	52.4	57.0	65	48
1896	52.2	53.8	55.1	53.8	56.0	58.3	60.8	61.4	59.8	58.4	53.4	52.3	56.3	68	45
--	48.2	48.2	48.4	51.8	57.2	57.4	61.2	60.6	61.5	--	--	--	--	*63	*45
Mean	50.5	51.2	52.4	54.3	57.3	58.7	60.5	60.5	60.8	58.6	55.3	52.9	56.1		
Max.	55	56	59	60	63	66	68	67	65	67	63	56		68	
Mean Max.	52.5	53.5	55.9	58.0	60.7	61.6	63.0	63.1	63.1	61.6	58.6	55.0			
Mean Min.	48.4	49.5	50.3	52.0	52.9	56.0	57.8	58.1	58.1	56.2	52.1	50.1			45
Min.	45	47	47	49	50	54	56	57	56	54	45	48			
<b>POINT SAN QUENTIN, SAN FRANCISCO BAY, CALIF.</b>															
1937	44.1	48.2	55.8	58.8	62.1	64.8	66.4	66.6	66.4	64.2	61.3	--	--	71	*39
<b>MARE ISLAND (Navy Yard), CALIF.</b>															
1937	44.1	47.7	54.3	57.6	61.9	66.6	68.4	68.2	67.1	--	--	--	--	71	*41

<b>BENICIA, CARQUINEZ STRAIT, CALIF.</b>															
1937	43.7	47.3	54.1	57.9	61.9	67.3	69.6	68.7	68.5	65.3	--	--	--	77	*41
<b>THREE MILE SLOUGH, SAN JOAQUIN RIVER, CALIF.</b>															
1938	--	--	--	--	--	--	--	--	--	--	52.0	49.3	--	--	*46
1939	46.6	46.6	52.2	61.0	64.4	68.0	69.6	68.0	68.5	65.3	58.5	51.4	60.0	72	45
1940	48.6	51.4	55.8	60.1	66.2	70.2	--	--	--	--	--	--	--	*72	*45
<b>PRISONERS POINT, SAN JOAQUIN RIVER, CALIF.</b>															
1939	--	--	--	--	--	--	--	72.3	71.1	66.4	59.5	52.3	--	*76	*50
1940	50.9	53.4	58.6	61.2	68.7	73.8	--	--	--	--	--	--	--	*77	*46
<b>COLLINSVILLE, SACRAMENTO RIVER, CALIF.</b>															
1937	40.6	46.0	53.8	56.8	61.9	67.6	70.0	70.0	67.6	64.9	57.9	53.1	59.2	72	37
<b>RIO VISTA, SACRAMENTO RIVER, CALIF.</b>															
1938	--	--	52.5	57.6	61.0	66.0	71.1	70.9	70.0	62.6	51.4	48.2	--	77	*46
1939	46.0	46.0	53.4	60.8	64.9	68.2	68.7	67.5	69.4	65.5	57.4	50.0	59.8	76	44
1940	48.4	51.4	55.4	59.4	64.8	70.5	--	--	--	--	--	--	--	*73	*43
Mean	47.2	48.7	53.8	59.3	63.6	68.2	69.9	69.2	69.7	64.0	54.4	49.1	59.8		
Max.	52	54	61	65	70	73	76	77	76	69	62	52		77	
Mean Max.	49.0	52.5	59.3	64.0	68.3	71.0	75.5	74.0	74.5	68.5	60.5	51.5			
Mean Min.	44.0	46.5	49.7	54.3	59.0	65.0	65.0	65.5	66.5	60.5	50.0	46.5			
Min.	43	44	48	52	55	63	64	65	65	60	48	46			43

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.	
<b>NEW HOPE BRIDGE, MOKELUMNE RIVER, CALIF.</b>																
1938	--	--	--	54.9	56.8	61.9	68.2	70.5	68.4	61.0	52.5	50.7	--	75	*48	
1939	47.1	46.8	52.7	62.6	65.5	69.4	71.1	69.3	68.0	63.0	54.0	48.7	59.8	75	45	
1940	48.6	51.1	53.6	54.7	59.0	65.7	--	--	--	--	--	--	--	*72	*43	
Mean	47.8	49.0	53.2	57.4	60.4	65.7	69.6	69.9	68.2	62.0	53.2	49.7	58.8			
Max.	54	55	59	64	73	75	75	73	73	66	59	54		75		
Mean Max.	52.0	51.5	59.0	60.7	66.0	71.7	74.0	72.5	71.5	65.0	59.0	53.0				
Mean Min.	44.0	46.5	48.0	53.7	57.0	60.7	65.5	67.0	65.0	58.0	50.0	47.0				
Min.	43	45	46	50	54	59	61	66	64	57	50	46			43	
<b>BLUNTS REEF LIGHTSHIP</b>																
1923 - 1941																
Mean	51.9	51.7	50.9	50.6	50.8	50.7	50.6	51.7	52.8	52.8	53.0	52.6	51.7			
Max.	57	57	58	57	58	59	58	62	61	61	59	59		62		
Min.	47	47	45	46	47	47	47	47	48	48	47	47			45	
<b>CRESCENT CITY, CALIF.</b>																
1934	51.4	52.2	54.5	54.1	56.3	53.8	55.8	55.2	53.1	51.4	51.8	49.3	53.2	63	45	
1935	47.7	48.9	46.4	49.5	50.0	50.7	51.8	52.9	55.2	51.3	47.5	49.3	50.1	58	42	
1936	49.6	47.8	47.7	49.5	51.8	55.9	55.0	55.4	52.5	51.4	48.9	48.2	51.1	60	43	
1937	44.6	46.0	49.3	49.1	49.8	51.6	55.0	54.7	54.1	52.0	52.5	51.3	50.8	57	41	
1938	49.6	48.0	49.8	49.6	49.8	51.6	55.4	55.8	54.3	53.8	49.8	49.3	51.4	61	44	
1939	48.2	47.3	47.1	49.1	52.3	51.4	55.2	58.1	56.8	53.4	50.9	51.4	51.8	61	45	
1940	52.0	52.7	52.5	52.5	54.3	54.0	57.0	56.8	58.8	55.2	53.8	51.8	54.3	63	47	
1941	51.1	53.1	54.3	53.2	55.9	57.4	58.1	59.2	55.6	52.9	54.5	51.8	54.8	63	47	
1942	51.1	50.5	50.2	52.2	53.6	54.7	59.0	58.6	54.1	53.8	51.4	50.4	53.3	64	47	
1943	48.4	49.5	51.8	53.2	50.7	54.0	56.3	58.8	57.4	56.8	54.3	49.6	53.4	63	41	
1944	50.0	49.5	48.9	51.6	52.3	55.0	55.8	58.1	55.8	55.4	54.9	53.1	53.4	60	46	
<b>1945-1951</b>																
1945	51.6	51.1	48.7	48.0	54.7	53.6	58.1	58.8	54.1	--	52.7	51.1	--	65	46	
1946	50.5	48.7	49.8	52.0	52.9	57.6	57.6	58.6	56.8	51.3	48.7	50.4	52.9	65	46	
1947	48.2	49.6	52.0	52.2	54.0	55.9	56.8	--	56.9	--	--	--	--	*60	*45	
--	--	--	--	--	48.8	54.0	55.3	57.1	58.3	55.8	--	52.2	--	62	*47	
1950	--	--	--	--	52.4	52.9	49.5	53.5	58.8	57.2	56.4	52.8	49.7	53.0	60	47
1951	50.4	51.3	50.6	52.4	52.9	49.5	53.5	58.8	57.2	56.4	52.8	49.7	53.0	60	47	
Mean	49.6	49.7	50.2	51.2	52.5	53.8	56.0	57.1	55.7	53.6	51.8	50.6	52.6			
Max.	54	55	57	59	61	63	65	63	62	61	57	57		65		
Mean Max.	52.1	52.2	53.1	54.0	56.0	58.4	59.7	60.3	58.8	56.3	54.1	53.0				
Mean Min.	46.1	46.6	47.3	48.5	49.2	50.1	51.9	53.7	52.3	50.9	48.8	47.4			41	
Min.	41	44	43	45	46	48	47	48	49	46	42	45				
<b>BANDON, COQUILLE RIVER, ORE.</b>																
1933	--	--	--	--	--	--	--	52.7	53.4	51.1	50.2	49.1	--	*59	*45	
1934	49.5	50.5	53.6	--	--	--	--	--	--	--	--	--	--	--	*46	
<b>COOS BAY ENTRANCE, ORE.</b>																
1933	--	--	--	51.1	51.6	53.0	53.5	54.1	50.2	50.7	--	49.8	--	57	*46	
1934	50.9	51.4	53.8	--	--	--	--	--	--	--	--	--	--	--	*49	
<b>GARDINER, UMPQUA RIVER, ORE.</b>																
1933	--	--	--	--	--	60.4	63.7	62.1	59.4	56.3	49.8	48.2	--	68	*46	
1934	48.0	48.9	54.7	--	--	--	--	--	--	--	--	--	--	--	*46	
<b>FLORENCE, SIUSLAW RIVER, ORE.</b>																
1933	--	--	--	--	--	--	--	56.1	53.8	49.8	48.7	--	--	*60	*45	
1934	48.7	50.2	53.6	--	--	--	--	--	--	--	--	--	--	--	*47	
<b>WALDPORT, ALSEA BAY, ORE.</b>																
1933	--	--	--	--	53.1	56.7	57.2	55.8	53.5	51.5	51.6	48.7	--	64	*46	
1934	48.7	49.5	52.0	--	--	--	--	--	--	--	--	--	--	--	*46	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — Continued  
Means and Extremes in °F.

18

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>NEWPORT, YAQUINA BAY, ORE.</b>															
1933	---	---	---	49.3	52.0	55.0	50.2	50.0	52.7	51.6	52.2	50.9	---	60	*45
1934	50.9	51.3	53.4	54.3	---	---	---	---	---	---	---	---	---	--	*49
<b>TAFT, SILETZ BAY, ORE.</b>															
1933	---	---	---	---	---	55.9	52.2	53.7	53.6	51.8	49.8	48.4	---	64	*46
1934	48.6	50.5	52.0	54.1	---	---	---	---	---	---	---	---	---	--	*46
<b>GARIBALDI, TILLAMOOK BAY, ORE.</b>															
1933	---	---	---	---	52.3	56.8	55.4	55.9	55.4	52.9	50.4	---	---	63	*45
1934	49.1	50.4	51.8	54.0	---	---	---	---	---	---	---	---	---	--	*47
<b>BRIGHTON, NEHALEM RIVER, ORE.</b>															
1933	---	---	---	---	50.4	55.9	55.9	56.5	54.1	52.0	50.4	49.3	---	63	*41
1934	48.7	50.4	52.3	56.3	---	---	---	---	---	---	---	---	---	--	*45
<b>ASTORIA (Tongue Point), ORE.</b>															
1925	41.9	43.3	46.0	51.1	56.5	59.9	66.9	66.9	63.1	56.1	48.0	44.1	53.6	70	39
1926	41.2	44.4	49.6	56.3	58.8	64.7	68.7	66.7	62.6	55.7	49.1	41.8	55.0	71	37
1927	39.9	41.5	45.1	50.4	54.0	59.4	64.7	67.5	62.1	55.3	48.7	40.1	52.4	70	33
1928	37.4	41.0	46.0	49.5	57.2	59.7	65.5	66.6	62.2	55.9	48.4	41.0	52.5	71	33
1929	38.1	36.0	44.4	48.6	56.3	59.2	66.6	68.2	64.2	56.7	47.5	42.6	52.4	75	32
1930	36.1	40.3	45.3	53.8	55.8	59.9	65.1	68.7	63.7	55.6	48.2	42.3	52.9	71	32
1931	41.2	43.3	46.6	51.3	59.2	63.1	66.7	67.6	64.4	56.1	47.3	39.7	53.9	71	35
1932	39.7	39.2	44.8	50.2	55.4	59.7	64.6	66.9	63.1	57.2	48.7	39.2	52.4	71	34
1933	39.4	37.2	44.1	50.2	52.9	58.3	65.0	66.7	61.3	55.9	47.5	45.0	52.0	69	34
1934	43.2	44.6	49.1	54.7	57.4	62.1	65.5	67.3	63.5	56.3	50.2	43.5	54.8	70	41
1935	39.7	42.3	44.1	50.2	56.5	60.8	64.2	66.0	64.8	56.7	44.4	42.6	52.7	70	34
1936	42.8	37.6	44.2	51.6	57.0	61.9	68.2	69.4	63.7	58.5	47.7	43.5	53.8	72	34
1937	36.1	38.7	46.6	49.5	56.3	60.8	66.9	67.6	64.6	58.5	50.7	44.2	53.4	70	32
1938	42.1	41.9	46.0	51.4	56.5	60.6	66.7	66.6	65.5	58.6	47.7	42.1	53.8	72	39
1939	42.6	41.2	46.0	52.7	58.3	60.1	66.2	68.2	63.7	57.6	50.7	46.4	54.5	75	37
1940	41.9	43.7	48.4	53.8	59.7	64.6	67.6	68.4	66.0	59.9	47.7	43.2	55.4	71	40
1941	42.3	45.1	49.5	54.7	59.2	63.0	69.8	67.8	63.3	57.7	50.9	44.8	55.7	75	38
1942	37.8	42.8	44.6	51.1	54.9	58.5	65.8	66.9	63.3	58.6	47.5	43.7	53.0	70	35
1943	38.1	40.6	43.5	50.0	53.4	57.7	63.7	65.8	64.4	58.3	48.4	42.8	52.2	68	33
1944	39.7	41.9	45.3	50.9	57.2	61.2	66.0	67.3	64.8	59.5	50.4	42.6	53.9	70	37
1945	42.3	43.0	44.8	49.8	56.5	60.3	66.6	67.1	65.1	57.6	48.6	44.8	53.9	71	39
1946	43.7	43.5	---	---	---	---	---	---	63.7	55.8	46.0	43.9	---	*66	38
1947	37.6	43.2	47.3	52.5	58.5	61.2	66.2	67.1	63.7	57.4	48.9	44.8	54.0	71	34
1948	41.2	39.2	44.1	48.4	53.1	60.4	65.1	65.5	63.9	55.8	46.9	41.0	52.0	71	37
1949	33.4	37.4	45.5	52.2	55.6	60.0	64.8	66.6	66.0	55.7	51.3	44.5	52.8	69	31
1950	35.8	39.1	44.8	49.6	54.3	59.0	65.5	68.2	65.4	56.2	48.6	46.8	52.8	71	32
1951	42.6	42.5	43.0	52.5	56.1	61.1	67.0	67.2	64.0	57.8	48.1	42.9	53.7	69	37
Mean	39.9	41.3	45.7	51.4	56.4	60.7	66.1	67.3	63.9	57.1	48.4	43.1	53.4		
Max.	47	48	54	60	67	70	75	75	71	65	57	51		75	
Mean Max.	43.0	44.4	49.0	55.2	60.4	64.8	69.4	70.1	67.5	61.2	52.9	46.5			
Mean Min.	36.4	38.0	42.9	47.6	53.0	57.5	62.9	65.0	60.2	52.6	44.8	39.6			
Min.	31	32	38	43	50	55	59	63	56	46	40	33			31
<b>WAUNA, COLUMBIA RIVER, ORE.</b>															
1940	---	---	---	---	---	---	---	---	---	46.0	41.7	---	---	*38	
1941	41.0	43.2	48.0	53.8	58.1	61.9	70.3	69.1	63.9	58.1	51.3	44.8	55.3	74	39
1942	36.7	41.9	43.7	50.5	56.1	60.1	64.9	---	---	---	---	---	---	*66	*35
<b>HARRINGTON POINT, COLUMBIA RIVER, WASH.</b>															
1940	---	---	---	---	---	---	---	---	63.5	60.6	47.8	43.2	---	*68	*40
1941	41.5	43.7	48.2	54.7	59.5	63.1	71.2	70.0	63.7	58.4	51.9	44.8	55.9	73	40
1942	37.0	42.6	44.6	51.8	56.1	60.8	65.7	---	---	---	---	---	---	*69	*36

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. -- Surface Water Temperatures - *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>SKAMOKAWA, COLUMBIA RIVER, WASH.</b>															
1940	--	--	--	--	--	--	--	--	--	--	45.3	41.9	--	--	*39
1941	40.8	42.8	47.7	54.0	58.6	62.4	68.4	67.6	62.8	57.0	50.2	44.1	54.7	72	38
1942	37.0	41.9	44.8	51.6	55.6	59.4	66.9	--	--	--	--	--	--	*69	*33
<b>CATHLAMET, COLUMBIA RIVER, WASH.</b>															
1940	--	--	--	--	--	--	--	--	66.0	61.0	47.3	42.4	--	*69	*37
1941	40.6	43.2	47.5	54.1	59.0	63.3	71.4	70.3	64.0	57.9	50.2	44.6	55.5	75	39
1942	36.3	41.5	44.8	51.8	55.4	59.4	66.9	--	--	--	--	--	--	*69	*33
<b>TOKELAND, WILLAPA BAY, WASH.</b>															
1935	45.0	46.8	46.2	52.0	56.5	59.9	62.2	63.3	59.9	55.0	45.9	45.3	53.2	69	37
1936	45.9	40.1	47.8	47.3	53.6	62.4	66.0	66.4	57.9	55.0	48.2	47.1	53.1	70	32
1937	39.2	42.8	49.1	50.5	55.6	60.4	63.3	63.3	61.7	56.7	52.5	49.1	53.7	69	32
1938	46.2	45.9	48.6	53.2	55.9	59.2	61.5	62.2	61.7	56.5	49.6	45.9	53.9	71	41
1939	46.6	44.2	47.7	54.0	57.6	60.4	63.7	62.6	60.3	56.1	53.1	--	--	72	*40
Mean	44.6	44.0	47.9	51.4	55.8	60.5	63.3	63.6	60.3	55.9	49.9	46.8	53.7		
Max.	50	51	54	64	65	66	72	70	68	63	60	52		72	
Mean Max.	47.8	48.4	51.5	57.8	62.2	65.5	69.9	68.4	65.3	59.9	53.3	50.0			
Mean Min.	38.8	38.9	45.0	47.3	51.3	55.3	59.2	59.4	56.7	51.3	46.5	42.1			
Min.	32	32	44	45	47	53	57	56	55	46	41	41			32
<b>RAYMOND, WILLAPA BAY, WASH.</b>															
1935	--	--	44.6	50.5	58.6	64.0	66.4	66.2	63.5	55.6	44.4	43.9	--	75	*41
1936	45.3	39.7	45.7	52.9	59.9	62.8	68.2	69.6	63.3	57.9	47.1	45.1	54.8	73	36
1937	37.2	41.9	47.7	48.4	56.5	62.4	68.0	66.9	64.4	57.4	50.5	46.0	53.9	72	35
1938	44.2	43.3	46.9	51.6	58.8	64.0	66.9	66.7	66.0	59.2	47.1	43.9	54.9	72	39
1939	46.2	44.1	46.2	54.5	61.3	63.0	68.7	69.3	64.6	58.8	51.1	47.8	56.3	79	39
<b>ABERDEEN, GRAYS HARBOR, WASH.</b>															
1934	--	--	--	--	--	64.6	64.8	64.8	61.9	55.9	50.0	45.1	--	68	*39
1935	42.8	45.1	44.6	50.5	57.9	62.2	63.1	--	--	--	--	--	--	*68	*33
<b>NEAH BAY, WASH.</b>															
1936	47.1	43.9	44.6	46.8	51.6	55.6	54.0	51.3	48.6	48.2	46.6	46.8	48.8	62	41
1937	43.3	42.8	45.5	46.9	49.3	51.8	51.1	50.2	49.1	51.3	52.5	48.7	48.5	58	41
1938	47.1	46.4	47.7	49.1	49.1	48.7	49.5	49.1	50.0	52.9	49.1	46.8	48.8	56	45
1939	46.6	45.1	45.9	46.4	50.5	50.5	50.5	50.7	50.0	49.3	50.4	50.5	48.9	56	44
1940	48.2	48.4	49.1	50.5	52.0	50.9	51.6	50.9	53.2	53.2	51.3	48.7	50.7	58	44
1941	47.8	48.7	50.0	51.4	52.2	52.9	52.9	51.6	54.9	49.6	51.6	49.8	51.1	59	46
1942	46.9	47.1	46.6	48.9	52.0	52.5	55.4	52.2	50.0	51.6	49.1	47.1	50.0	63	45
1943	44.1	44.8	45.5	50.7	50.7	52.7	53.4	53.4	52.2	53.1	49.5	46.9	49.8	59	40
1944	45.7	45.1	45.5	49.1	50.5	53.2	52.5	52.5	52.9	51.8	50.7	46.2	49.6	62	43
1945	46.2	46.0	46.4	47.7	52.7	52.9	54.0	53.0	50.9	49.3	46.0	45.7	49.2	61	44
1946	45.8	45.1	46.9	48.9	51.8	55.4	56.7	54.5	52.6	49.4	45.9	44.9	49.8	64	42
1947	43.0	45.4	47.8	49.1	51.6	57.0	57.3	55.5	53.0	52.4	48.9	46.6	50.6	62	40
1948	45.5	43.6	45.9	47.8	52.4	55.9	55.8	54.0	55.5	51.2	47.2	45.2	50.0	64	42
1949	41.7	41.5	45.6	48.6	53.1	53.9	52.2	55.8	53.8	49.3	48.8	46.6	49.2	62	40
1950	40.2	42.2	44.8	47.7	49.5	52.7	52.9	54.1	53.1	52.2	48.9	47.9	48.8	61	36
1951	45.4	44.2	--	--	--	--	--	--	--	53.0	48.1	45.5	--	*58	*40

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>NEAH BAY, WASH. —Continued</b>															
Mean	45.3	45.0	46.5	48.6	51.3	53.1	53.3	52.6	52.0	51.1	49.0	47.1	49.6		
Max.	50	51	52	55	60	64	64	62	62	58	55	52		64	
Mean Max.	47.2	46.8	48.5	51.5	55.9	58.4	58.2	56.9	56.8	54.6	51.5	49.4			
Mean Min.	42.8	43.0	44.8	46.5	48.5	49.4	49.7	49.4	48.3	47.9	46.6	44.3			
Min.	36	38	41	44	47	46	47	47	46	45	42	42			36
<b>PORT ANGELES, WASH.</b>															
1934	—	—	—	—	—	—	53.2	54.5	52.0	50.2	49.6	47.3	—	*59	*46
1935	45.1	45.9	46.6	49.1	50.5	51.8	52.7	52.7	52.7	—	—	—	—	*61	*39
<b>PORT TOWNSEND (Fort Worden), WASH.</b>															
1935	—	—	—	46.9	48.7	50.7	51.4	51.3	51.1	49.6	47.3	46.8	—	54	*46
1936	46.4	45.5	—	—	—	—	—	—	—	—	—	—	—	—	*45
<b>PORT TOWNSEND (town), WASH.</b>															
1874	43.6	43.8	44.4	47.0	49.9	51.8	52.8	52.8	51.5	50.2	47.9	47.1	48.6	56	42
1875	43.6	44.0	44.0	46.1	47.4	49.0	51.2	52.0	50.8	49.8	47.5	46.2	47.6	55	41
1876	43.4	43.4	43.6	45.3	47.6	49.5	51.0	50.8	50.0	49.1	47.5	45.8	47.2	53	41
Mean	43.5	43.7	44.0	46.1	48.3	50.1	51.7	51.9	50.8	49.7	47.6	46.4	47.8		
Max.	47	45	46	50	53	54	56	55	54	52	50	50		56	
Mean Max.	45.7	44.5	45.0	49.0	49.8	51.8	54.2	53.8	52.7	51.5	49.0	47.8			
Mean Min.	41.7	42.7	42.3	44.5	46.7	48.8	50.0	50.3	49.7	48.0	45.7	44.5			
Min.	41	42	42	43	46	48	49	49	49	48	44	42			41
<b>EVERETT, WASH.</b>															
1934	—	—	—	—	—	—	—	61.5	57.6	53.4	49.6	46.6	—	*65	*41
1935	44.6	44.4	44.8	49.1	54.5	57.4	61.5	59.7	—	—	—	—	—	*70	*38
<b>BREMERTON, WASH.</b>															
1934	—	—	—	—	—	—	59.4	59.9	58.1	54.5	51.6	48.6	—	*63	*43
1935	45.3	45.7	46.0	48.4	53.4	57.4	59.2	60.8	59.4	54.3	49.3	48.0	52.3	64	42
1936	46.6	43.9	—	—	—	56.5	59.4	59.9	—	55.6	50.9	—	—	*63	*42
<b>SEATTLE (Elliott Bay), WASH.</b>															
1922	45.3	43.9	44.5	46.7	50.2	52.9	53.1	54.1	54.0	—	50.4	49.2	—	57	43
1923	49.5	49.5	49.6	50.0	51.1	54.0	55.9	57.9	56.5	53.6	51.6	49.5	52.4	63	46
1924	49.5	49.6	48.4	49.6	52.7	54.0	57.7	58.1	55.9	52.9	49.5	49.5	52.3	63	46
1925	49.5	49.6	49.6	50.4	54.0	56.5	60.3	58.1	56.5	53.4	50.0	48.7	53.0	69	46
1926	48.2	48.4	49.8	52.3	55.0	59.5	59.7	59.4	57.4	55.0	51.9	48.6	53.8	65	42
1927	46.4	47.1	46.8	49.5	52.0	57.0	57.6	57.2	56.3	54.3	50.4	48.6	52.0	62	38
1928	48.4	45.9	47.8	48.7	54.1	55.4	59.4	58.5	55.4	53.4	50.5	48.6	52.0	64	43
1929	46.6	45.0	46.0	47.1	51.3	55.0	56.8	57.4	56.5	54.3	50.7	48.7	51.3	61	44
1930	44.2	45.0	45.5	47.8	50.0	52.5	54.9	55.9	55.8	53.4	51.6	49.6	50.5	60	42
1931	48.2	46.9	47.3	48.6	52.2	54.3	56.5	56.5	55.9	53.8	50.5	48.7	51.6	59	46
1932	46.4	45.1	45.5	47.5	49.8	53.4	55.4	55.2	54.7	53.4	50.7	47.8	50.4	58	44
1933	46.2	44.8	45.0	46.6	48.4	52.7	55.0	55.8	54.0	52.5	50.7	48.2	50.0	58	42
1934	47.1	47.3	47.8	50.0	52.2	54.5	55.9	56.7	55.4	53.6	51.8	49.6	51.8	58	46
1935	47.3	46.4	45.9	46.9	49.8	53.4	54.9	55.4	55.2	53.4	50.4	48.7	50.6	58	45
1936	46.9	46.2	46.4	47.7	51.6	55.0	56.5	56.8	55.8	54.3	51.6	49.5	51.5	64	45
1937	46.7	44.8	45.5	46.8	49.6	53.0	54.9	54.9	54.7	53.2	51.1	49.3	50.4	57	44
1938	47.7	46.8	46.6	48.6	51.3	54.5	55.6	55.6	55.2	53.8	52.0	49.6	51.4	59	46
1939	48.0	47.0	46.4	47.5	49.8	52.0	54.0	55.4	54.7	54.0	52.5	50.9	51.0	57	46
1940	49.3	48.6	48.5	49.6	51.6	53.9	55.6	56.0	55.6	54.7	52.5	50.5	52.2	57	47
1941	48.9	48.2	48.4	49.6	52.5	54.5	55.8	57.0	57.7	59.0	56.3	51.1	53.2	60	48
1942	48.7	47.8	47.5	48.2	50.4	52.5	54.3	55.2	55.4	54.3	52.3	50.9	51.4	59	47
1943	48.4	47.1	47.3	48.4	50.4	52.7	55.6	55.7	55.9	54.7	52.5	50.5	51.6	57	46
1944	48.7	47.5	46.9	47.7	50.2	52.2	54.0	54.9	55.4	54.5	52.2	50.5	51.2	56	46

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>SEATTLE (Elliott Bay), WASH. —Continued</b>															
1945	48.9	47.7	47.7	47.8	50.2	52.0	54.1	54.7	54.5	53.2	50.9	48.9	50.9	56	47
1946	47.1	46.6	46.4	46.9	49.5	52.2	54.1	56.5	55.4	54.1	52.0	49.5	50.9	58	46
1947	48.2	47.5	47.5	48.9	51.1	53.6	55.0	55.9	55.4	54.5	52.9	--	--	57	*46
1948	48.2	47.3	46.2	47.1	48.9	53.1	54.0	54.3	54.1	52.5	50.4	47.8	50.3	56	46
1949	45.5	43.7	44.1	45.7	48.7	51.6	53.2	54.4	54.5	53.0	52.0	49.4	49.6	56	43
1950	45.1	43.8	43.8	45.2	47.2	50.1	53.9	53.6	53.3	52.1	50.1	48.4	48.9	56	43
1951	47.1	45.6	44.8	45.7	47.4	51.6	55.0	54.7	--	53.7	51.8	49.6	--	*56	44
Mean	47.5	46.7	46.8	48.1	50.8	53.7	55.6	56.1	55.4	53.9	51.5	49.3	51.3		
Max.	52	50	54	61	64	64	69	64	61	60	59	54		69	
Mean Max.	49.0	47.7	48.1	50.3	53.9	56.7	58.4	58.0	57.2	55.5	53.1	50.8			
Mean Min.	45.3	45.7	45.8	46.5	48.6	51.3	53.6	54.4	53.9	52.5	49.9	47.5			
Min.	38	42	43	44	45	48	51	52	52	51	47	42			38
<b>SEATTLE (Duwamish River), WASH.</b>															
1924	--	--	--	--	--	--	64.0	62.6	59.9	54.1	44.8	39.4	--	*70	*32
1925	42.3	44.4	44.8	50.0	--	--	--	--	--	--	--	--	--	--	*39
<b>TACOMA, WASH.</b>															
1934	--	--	--	--	--	--	57.2	58.5	55.2	53.2	50.0	47.7	--	*62	*46
1935	45.1	45.1	45.3	47.3	52.0	55.9	58.1	--	--	--	--	--	--	*63	*39
<b>OLYMPIA, WASH.</b>															
1923	--	--	--	--	--	--	--	--	--	--	51.1	47.1	--	--	*43
1924	43.7	46.2	47.7	--	--	--	--	--	--	--	--	--	--	--	*37
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1934	--	--	--	--	--	--	61.0	61.5	58.8	55.0	50.9	47.3	--	*65	*41
1935	44.0	44.4	45.0	49.8	53.6	58.3	--	--	--	--	--	--	--	*64	*39

	<b>ANACORTES, WASH.</b>															
1922	43.2	42.3	43.9	45.9	48.0	51.6	53.2	52.9	52.7	50.7	48.2	45.3	48.2	59	42	
1923	45.1	43.5	44.6	46.8	48.7	50.9	53.2	53.8	53.2	51.3	48.9	46.9	48.9	59	40	
1924	45.3	46.2	46.4	47.3	49.6	--	--	--	--	--	--	--	--	--	*44	
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
1934	--	--	--	--	--	--	--	--	--	--	47.5	46.6	--	--	*43	
1935	43.9	44.4	44.8	46.4	50.5	52.2	53.8	53.4	52.5	--	--	--	--	61	*41	
Mean	44.4	44.2	44.9	46.6	49.2	51.6	53.4	53.4	52.8	51.0	48.2	46.3	48.8			
Max.	46	46	47	50	54	59	61	57	59	58	50	48		61		
Mean Max.	45.5	45.3	46.2	48.4	51.6	56.3	58.7	56.9	57.8	55.0	49.7	47.9				
Mean Min.	41.9	42.4	43.5	45.0	47.1	49.4	50.6	51.2	50.6	48.6	46.1	42.5				
Min.	41	40	43	43	46	49	50	50	50	48	45	42			40	
<b>FRIDAY HARBOR, SAN JUAN ISLAND, WASH.†</b>																
1935	45.1	45.0	45.3	46.0	48.2	49.5	50.7	51.4	50.2	49.3	46.6	46.2	47.8	55	44	
1936	45.9	44.1	44.1	45.1	47.7	49.5	51.3	51.8	50.4	49.1	47.2	46.0	47.7	55	43	
1937	43.8	42.6	43.9	45.6	47.5	49.3	51.1	51.4	51.1	49.3	48.0	47.3	47.6	55	42	
1938	46.0	45.1	45.9	47.1	48.7	50.4	52.0	51.3	50.4	49.5	47.8	46.4	48.4	57	45	
1939	45.9	45.0	44.8	46.3	48.4	49.3	51.1	52.3	51.1	49.5	48.4	48.0	48.3	57	44	
1940	47.0	46.8	47.1	48.7	50.5	52.2	52.0	51.8	--	50.5	48.9	47.5	--	*56	47	
1941	46.8	46.9	47.8	49.5	50.5	51.3	53.7	53.4	51.8	50.9	49.6	48.2	50.0	59	46	
1942	46.2	46.7	46.8	48.1	49.5	51.3	--	--	--	--	--	--	--	--	*45	
1943	--	--	--	--	--	--	--	--	52.2	50.5	49.3	47.8	--	*55	*47	
1944	46.8	46.0	47.1	49.3	50.7	52.5	52.3	51.4	49.8	48.9	47.3	49.0	56	46		
1945	45.9	45.7	45.9	46.9	48.9	51.6	52.2	52.5	--	50.2	47.8	46.8	--	*54	42	
1946	46.2	45.5	45.7	47.1	49.1	50.5	52.3	52.7	51.1	49.1	47.3	46.2	48.6	57	44	
1947	44.4	44.1	45.1	47.1	49.1	50.9	51.4	52.9	51.3	50.0	48.7	46.8	48.5	55	42	
1948	46.0	44.6	44.6	46.0	48.0	50.7	52.5	51.4	50.9	49.1	47.5	45.7	48.1	60	43	
1949	43.7	42.8	43.9	45.9	48.2	50.4	50.9	50.5	50.7	48.9	47.8	46.6	47.5	54	42	
1950	43.0	42.1	43.3	44.3	46.8	48.4	50.5	51.3	50.9	48.7	47.5	46.6	47.0	56	41	
1951	45.5	44.2	43.9	45.7	47.1	--	--	52.2	51.1	49.5	47.8	46.4	--	*55	43	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

† For mean bihourly temperatures by months, see Table 2.

Table 1. — Surface Water Temperatures — Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>FRIDAY HARBOR, SAN JUAN ISLAND, WASH. † —Continued</b>															
Mean	45.5	44.8	45.2	46.7	48.6	50.4	51.7	51.9	51.0	49.6	48.1	46.9	48.4		
Max.	48	47	49	50	56	55	60	59	56	52	51	49		60	
Mean Max.	46.2	45.4	45.9	47.6	50.0	52.4	55.4	55.3	53.1	50.8	49.0	47.5			
Mean Min.	44.5	44.1	44.7	45.8	47.5	49.3	50.3	50.4	50.1	48.8	47.3	45.9			
Min.	41	41	43	44	46	48	50	48	49	48	46	44		41	
<b>BLAINE, WASH.</b>															
1934	—	—	—	—	—	—	—	62.4	56.8	51.3	48.4	44.4	—	*65	*41
1935	40.6	43.5	43.9	47.7	53.8	58.8	61.2	59.9	—	—	—	—	—	*64	*32
<b>KETCHIKAN, ALASKA .</b>															
1922	41.9	40.8	41.0	41.7	45.2	53.1	54.0	56.7	52.0	48.6	45.0	40.8	46.7	60	37
1923	41.0	41.0	41.1	43.5	47.4	54.7	58.4	58.8	53.8	50.0	46.2	—	—	63	*37
1924	42.2	41.9	42.8	43.9	47.8	54.9	56.7	56.8	52.3	48.0	44.0	42.2	47.8	62	38
1925	42.3	41.5	42.0	43.5	49.8	54.3	55.6	57.0	53.6	48.0	44.9	43.3	48.0	61	39
1926	43.7	43.0	44.6	46.4	50.0	55.6	58.2	59.0	54.6	49.1	46.2	43.6	49.5	62	41
1927	42.1	42.7	42.4	43.9	47.7	55.4	59.7	60.4	53.6	48.7	43.5	41.4	48.5	64	39
1928	40.3	41.0	42.1	44.4	48.7	57.1	58.1	57.0	52.0	48.0	45.1	42.8	48.0	63	37
1929	42.1	41.9	42.3	43.2	48.4	54.0	56.3	57.2	55.8	50.4	46.4	42.3	48.4	61	36
1930	40.8	41.0	40.6	43.5	47.5	53.2	57.6	59.7	52.9	47.5	44.4	43.5	47.7	63	39
1931	42.6	42.8	43.2	45.7	49.6	56.1	58.5	58.8	54.5	49.6	44.2	43.0	49.0	63	40
1932	40.8	41.4	41.4	44.8	49.1	51.8	54.7	57.0	52.9	49.8	44.8	42.0	47.5	60	37
1933	40.8	40.5	41.5	43.2	49.3	52.3	55.0	57.7	53.8	47.3	44.6	39.2	47.1	62	36
1934	40.3	40.1	41.7	45.1	50.7	54.3	55.6	57.2	53.4	48.7	45.3	43.2	47.9	61	38
<b>SITKA, ALASKA</b>															
1935	41.7	39.7	39.9	42.4	46.0	53.8	57.9	55.6	52.7	47.5	41.7	40.6	46.6	66	36
1936	39.4	37.2	39.7	41.2	49.1	57.6	55.9	55.9	52.5	50.5	46.2	39.7	47.1	64	34
1937	38.3	38.3	40.1	41.0	45.9	55.4	57.9	55.4	56.5	51.4	46.6	40.3	47.3	68	34
1938	40.6	39.0	42.8	45.1	48.0	52.3	55.6	55.9	54.3	50.0	45.5	43.3	47.7	60	34
1939	42.1	41.4	42.3	43.3	48.2	54.0	56.5	55.6	52.7	47.5	45.0	43.0	47.6	62	36
1940	43.0	42.6	43.0	46.2	50.2	55.4	58.8	57.4	54.7	50.7	45.5	44.2	49.3	64	39
1941	43.5	43.0	44.2	46.2	49.8	54.3	57.6	58.0	54.1	50.0	46.0	44.0	49.3	64	37
1942	41.5	41.0	42.3	44.0	48.9	59.0	61.5	59.7	55.4	49.8	41.5	41.4	48.8	68	34
1943	38.8	41.7	40.5	45.3	48.6	53.4	54.3	53.9	—	48.2	45.3	44.4	—	65	36
1944	41.5	41.4	41.7	45.1	47.5	50.9	56.3	56.3	55.2	50.4	45.3	41.9	47.8	61	32
1945	42.4	41.5	42.6	44.4	50.4	53.6	55.8	57.1	52.8	48.9	42.6	42.1	47.8	59	32
1946	41.7	41.5	41.4	43.0	49.3	55.9	57.4	57.6	54.5	48.7	43.7	41.5	48.0	60	39
1947	38.7	39.9	41.7	43.2	48.6	54.5	56.5	56.1	54.3	48.9	45.3	42.6	47.5	60	34
1948	41.9	39.6	41.7	43.5	48.9	57.2	57.9	58.1	52.7	48.0	44.2	40.5	47.8	62	35
1949	40.6	39.6	40.5	41.9	48.0	52.0	55.6	56.3	54.1	48.3	46.6	41.6	47.1	58	37
1950	39.4	39.6	39.8	40.9	45.0	54.8	56.1	57.5	54.0	48.3	43.1	42.6	46.8	62	37
1951	40.0	40.9	40.1	41.9	47.7	53.5	58.2	58.0	53.3	47.6	44.3	42.2	47.4	62	38
Mean	41.2	40.9	41.7	43.7	48.4	54.5	56.9	57.3	53.8	48.9	44.8	42.2	47.9		
Max.	47	49	46	52	59	68	68	65	67	59	61	50		68	
Mean Max.	43.4	43.1	43.5	47.0	53.2	59.1	61.1	61.0	57.5	52.0	47.9	45.1			
Mean Min.	38.4	37.9	39.3	41.5	44.0	50.1	53.1	53.9	50.4	45.7	41.6	38.7			
Min.	34	32	32	37	39	45	46	46	46	39	36	34			32
<b>SITKA, ALASKA</b>															
1924	—	—	—	—	—	—	—	—	—	—	42.3	39.7	—	—	*32
1925	37.4	38.1	38.7	41.4	46.9	50.7	53.6	56.1	52.5	49.5	44.9	43.7	46.1	64	30
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1943	—	—	—	—	—	—	—	—	—	—	—	—	—	60	*43
1944	42.8	42.1	41.7	44.1	48.4	52.9	57.0	57.6	54.7	49.3	45.3	42.1	48.2	63	39

† For mean bihourly temperatures by months, see Table 2.

• Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.	
<b>SITKA, ALASKA —Continued</b>																
1945	42.4	41.5	41.2	43.2	49.8	51.8	53.6	55.4	52.0	48.0	42.3	41.2	46.9	59	39	
1946	40.5	40.5	40.1	--	48.9	53.4	56.5	55.9	53.6	48.6	43.9	39.4	--	58	37	
1947	37.2	38.8	40.3	42.3	48.6	52.2	57.6	57.2	54.1	49.3	45.5	43.5	47.3	63	34	
1948	41.7	40.8	40.7	43.0	49.1	53.3	57.2	58.1	53.2	47.9	44.3	40.2	47.5	61	36	
1949	38.7	38.7	40.1	42.0	47.2	49.6	54.1	56.3	54.4	49.0	46.4	42.9	46.6	59	36	
1950	39.3	38.4	39.9	41.4	46.0	53.8	56.9	58.8	54.2	49.2	44.5	42.0	47.0	64	37	
1951	39.8	39.3	38.3	41.4	46.2	51.5	58.3	57.2	54.2	47.8	43.9	42.2	46.7	62	37	
Mean	40.0	39.8	40.1	42.4	48.1	52.2	56.0	57.0	53.7	48.8	44.4	41.9	47.0			
Max.	44	44	43	48	59	64	63	64	59	54	49	46		64		
Mean Max.	42.1	41.2	41.2	45.6	53.1	56.6	59.5	59.9	57.0	52.1	47.2	44.2				
Mean Min.	37.2	38.0	38.6	39.7	43.9	48.9	52.5	54.4	50.6	45.4	41.4	38.7				
Min.	30	36	35	39	40	47	50	53	47	44	38	32			30	
<b>JUNEAU, ALASKA</b>																
1937	36.0	35.8	38.3	40.8	47.5	53.4	52.7	51.8	49.6	46.0	41.4	36.0	44.1	57	28	
1938	37.4	34.7	38.7	42.3	46.6	49.1	52.2	53.7	50.4	45.9	41.5	39.7	44.4	58	30	
1939	38.9	36.1	37.2	40.5	46.2	52.0	53.1	50.4	47.7	42.8	40.5	40.3	43.8	57	32	
1940	39.0	39.2	38.8	43.5	48.7	54.3	55.4	51.6	--	--	--	--	--	59	*34	
1941	--	--	--	--	--	--	--	--	--	43.3	40.5	38.3	--	--	*36	
1942	38.3	38.7	38.3	41.4	49.5	52.0	51.6	52.2	49.6	44.6	40.1	36.9	44.4	59	34	
1943	34.9	34.5	36.1	39.7	45.5	50.4	48.6	49.3	47.8	44.2	41.9	--	--	59	*31	
1944	39.2	38.8	39.2	41.2	45.1	51.1	50.9	51.3	48.6	45.0	40.6	39.6	44.2	59	33	
1945	38.8	37.8	38.5	39.9	46.0	48.7	49.3	50.5	46.7	43.0	37.2	36.3	42.7	54	33	
1946	35.8	35.6	36.7	39.6	47.1	51.6	50.7	49.6	49.3	43.7	38.8	35.1	42.8	59	31	
1947	34.5	33.8	37.0	39.2	45.5	50.5	51.8	51.0	47.8	43.5	40.6	38.4	42.8	61	29	
1948	37.2	35.4	35.6	39.3	45.4	52.2	52.3	51.5	47.4	43.5	40.2	35.6	43.0	58	30	
1949	34.5	34.3	37.5	38.9	43.4	48.4	50.9	51.3	49.5	43.7	41.1	37.4	42.6	56	30	
1950	32.5	32.7	37.2	39.1	44.1	53.1	52.1	53.6	48.9	--	37.1	35.7	--	60	30	
1951	33.8	32.8	33.2	38.9	44.5	47.4	53.4	51.9	49.9	42.3	39.2	36.2	42.0	61	30	
Mean	36.5	35.7	37.3	40.3	46.1	51.0	51.8	51.4	48.7	44.0	40.0	37.3	43.3			
Max.	41	40	41	48	59	59	61	59	57	48	45	42		61		
Mean Max.	38.7	38.2	39.1	44.0	52.6	57.1	56.5	55.8	52.5	47.2	42.5	39.6				
Mean Min.	33.0	32.7	34.9	37.1	41.7	45.2	47.1	48.1	45.5	40.5	36.4	34.0				
Min.	29	30	30	33	39	42	43	46	43	35	32	28			28	
<b>HAINES, ALASKA</b>																
1949	34.6	--	37.8	40.8	48.6	51.3	54.1	53.5	50.8	43.2	39.8	35.4	--	60	*32	
1950	--	30.4	36.7	38.8	47.0	58.0	55.8	56.2	51.3	45.2	36.4	34.9	--	65	*29	
1951	32.2	--	--	--	--	--	--	--	--	--	--	--	--	--	*30	
<b>SKAGWAY, ALASKA</b>																
1944	--	--	--	--	--	--	--	--	48.9	46.8	43.2	40.1	38.5	--	*54	*36
1945	37.8	36.5	37.2	39.0	45.7	50.7	50.0	50.7	48.4	43.5	38.1	37.4	42.9	56	32	
1946	36.3	36.0	36.5	38.5	46.0	51.1	51.8	49.8	48.6	43.3	39.9	37.8	43.0	56	33	
1947	35.1	36.0	37.2	39.0	44.8	50.2	51.3	49.5	47.7	45.3	42.3	39.9	43.2	55	30	
1948	39.2	37.2	37.0	37.8	--	--	--	--	--	--	--	--	--	--	*34	
1949	--	--	--	--	45.3	49.5	50.5	50.6	--	43.4	41.6	38.5	--	55	*37	
1950	36.9	36.0	36.4	38.0	44.7	51.3	51.6	49.9	48.0	45.7	38.9	36.6	42.8	55	35	
1951	35.6	33.7	34.0	37.1	45.9	51.4	54.2	52.6	47.0	40.6	38.1	36.1	42.2	59	32	
Mean	36.8	35.9	36.4	38.2	45.4	50.7	51.6	50.3	47.8	43.6	39.9	37.8	42.9			
Max.	40	39	39	43	56	56	59	56	55	48	44	42		59		
Mean Max.	38.5	37.1	37.6	41.8	51.5	54.6	55.6	53.9	51.1	46.7	42.0	39.6				
Mean Min.	33.9	33.4	35.2	36.0	40.4	47.3	48.4	47.2	43.5	40.4	37.4	36.0				
Min.	30	32	32	35	38	46	47	45	42	36	34	34			30	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>YAKUTAT, ALASKA</b>															
1941	42.4	42.6	42.8	46.6	-- -	-- -	-- -	58.3	56.1	-- -	46.8	42.4	-- -	*61	39
1942	42.8	43.2	41.7	43.9	51.4	52.9	58.1	56.1	-- -	49.1	45.7	40.1	-- -	63	37
1943	38.3	37.6	-- -	41.7	46.9	52.2	55.6	56.1	51.4	48.2	46.2	43.7	-- -	61	*35
1944	41.5	40.5	40.5	42.3	46.0	52.9	55.0	56.1	52.0	48.6	43.7	41.4	46.7	59	37
1945	42.3	41.4	40.6	43.2	47.5	51.6	53.8	53.8	51.8	47.5	42.6	39.9	46.3	61	37
1946	39.4	38.8	39.2	40.6	46.4	53.1	55.4	53.6	52.9	49.3	45.6	39.9	46.2	58	38
1947	38.2	35.7	38.5	40.8	45.8	50.7	55.7	56.3	52.1	49.5	46.2	44.2	46.1	60	34
1948	41.1	39.8	39.2	42.2	48.0	53.9	56.7	56.3	51.7	46.6	42.2	37.6	46.3	64	35
1949	37.0	36.0	38.4	40.4	45.5	48.6	52.2	53.7	52.2	47.2	44.2	40.4	44.6	56	35
1950	37.5	36.6	37.9	40.0	43.6	51.0	55.3	57.0	52.0	48.1	42.8	39.8	45.1	62	35
1951	37.9	36.9	36.8	41.9	46.7	50.7	55.9	55.6	52.9	49.0	43.6	40.1	45.7	61	35
Mean	39.9	39.0	39.6	42.1	46.8	51.8	55.4	55.7	52.5	48.3	44.5	40.9	46.4		
Max.	45	46	46	49	54	61	64	62	59	52	50	46		64	
Mean Max.	41.8	41.2	41.2	46.0	51.0	57.4	59.4	59.5	55.3	50.9	47.4	43.7			
Mean Min.	37.8	37.3	37.4	39.3	42.0	47.5	51.0	53.3	49.9	45.6	41.6	38.3			
Min.	35	34	35	36	39	45	48	52	48	44	36	35			34
<b>CORDOVA, ALASKA</b>															
1949	-- -	-- -	-- -	-- -	-- -	46.3	50.1	52.2	50.2	43.5	-- -	39.4	-- -	57	*30
1950	37.2	36.2	35.9	38.5	41.3	44.7	49.0	52.4	49.8	46.0	39.8	40.2	42.6	55	31
1951	-- -	34.8	33.3	35.2	41.3	-- -	51.1	53.0	50.3	44.4	40.1	38.2	-- -	*56	*32
<b>SEWARD, ALASKA</b>															
1926	39.6	38.5	39.0	42.4	47.3	52.7	53.6	54.9	53.2	47.8	43.0	43.0	46.2	60	32
1927	40.2	39.4	38.8	40.3	44.6	49.8	53.2	51.4	-- -	45.3	38.3	-- -	-- -	59	*32
1928	-- -	-- -	37.8	40.4	45.0	52.5	52.3	54.0	50.0	44.8	41.2	39.0	-- -	63	*36
1929	38.1	37.8	36.3	39.4	45.4	54.3	57.2	56.8	54.9	-- -	37.4	39.6	-- -	64	32
<b>KODIAK, KODIAK ISLAND, ALASKA</b>															
1889	38.6	38.0	39.8	-- -	45.0	47.0	50.3	50.7	50.1	46.9	43.3	39.8	-- -	57	33
1890	37.4	36.0	35.8	36.8	41.0	45.2	47.6	51.1	48.8	44.4	41.0	36.8	41.8	54	32
--	-- -	-- -	-- -	-- -	43.5	47.1	49.6	50.7	49.8	45.1	41.7	38.3	-- -	54	*36
1935	-- -	-- -	37.6	39.7	43.2	47.7	-- -	-- -	-- -	-- -	-- -	-- -	-- -	*54	*35
1936	39.0	39.0	37.6	39.7	43.2	47.7	-- -	-- -	-- -	-- -	-- -	-- -	-- -		

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures — *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>KODIAK, KODIAK ISLAND, ALASKA — Continued</b>															
Mean	38.3	37.7	37.7	38.2	43.2	46.8	49.2	50.8	49.6	45.5	42.0	38.3	43.1		
Max.	41	41	41	43	48	54	57	54	54	49	45	42		57	
Mean Max.	40.2	39.2	38.8	40.3	46.3	51.2	53.6	52.8	52.0	48.2	44.0	40.4			
Mean Min.	36.2	33.6	35.4	35.7	41.3	43.7	46.4	49.6	47.8	42.8	39.4	36.0			
Min.	35	32	33	34	39	42	44	49	47	38	38	33			32
<b>WOMENS BAY, KODIAK ISLAND, ALASKA</b>															
1950	--	--	--	--	--	46.1	51.3	54.9	48.8	44.7	35.2	33.1	--	61	*31
1951	32.0	33.4	33.2	39.6	44.2	47.6	56.7	55.4	51.5	44.9	40.3	35.1	42.8	63	28
<b>DUTCH HARBOR, UNALASKA ISLAND, ALASKA</b>															
1946	--	--	--	--	--	--	46.8	48.0	47.5	44.6	40.6	37.9	--	51	*36
1947	36.5	35.4	35.4	39.2	41.4	43.9	46.6	49.4	46.8	42.4	40.5	37.9	41.3	54	33
1948	35.2	36.3	36.1	41.0	41.0	44.2	47.8	49.1	47.1	43.2	39.7	38.3	41.6	52	33
1949	36.3	36.7	37.6	38.7	40.6	45.3	51.4	49.5	45.5	42.6	40.1	37.9	41.8	54	34
1950	38.1	35.6	37.6	38.5	40.9	44.5	47.4	51.7	46.3	42.8	39.9	37.9	41.8	64	34
1951	36.5	37.6	37.5	39.7	43.3	45.7	50.4	50.3	46.8	43.8	40.8	38.7	42.6	56	35
Mean	36.5	36.3	36.8	39.4	41.4	44.7	48.4	49.7	46.7	43.2	40.3	38.1	41.8		
Max.	40	38	39	44	47	52	54	64	52	46	44	41		64	
Mean Max.	38.8	37.3	38.4	42.5	44.6	48.8	51.7	55.2	49.7	45.4	42.2	40.1			
Mean Min.	33.9	34.6	35.2	36.7	38.6	41.2	44.4	45.6	44.6	41.3	37.8	35.8			
Min.	33	33	34	34	37	40	43	43	44	40	36	34			33

	<b>SWEEPER COVE, ADAK ISLAND, ALASKA</b>															
1944	35.1	36.0	36.7	38.3	40.6	43.5	--	--	--	43.9	41.2	37.8	--	--	32	
1945	36.9	37.2	37.6	41.0	43.3	46.0	48.4	48.6	47.8	44.2	40.5	38.1	42.5	53	32	
1946	36.3	36.7	36.7	37.2	42.4	45.3	47.3	48.6	48.0	43.3	39.6	38.3	41.6	58	32	
1947	35.4	36.4	37.6	38.8	39.1	43.2	44.0	45.5	45.4	42.0	40.7	38.1	40.5	49	29	
1948	37.0	37.3	38.3	39.9	41.6	43.7	44.8	45.3	47.0	42.2	38.4	37.6	41.1	51	34	
1949	--	36.9	36.8	38.6	41.1	42.6	49.3	44.8	43.7	--	--	--	--	56	*34	
1950	--	--	38.3	37.0	40.7	42.6	43.5	47.2	45.2	42.9	40.1	39.3	--	53	*32	
1951	37.3	37.9	38.0	39.3	41.3	44.8	45.8	47.4	47.2	43.0	41.0	39.1	41.8	54	33	
Mean	36.3	36.9	37.5	38.8	41.3	44.0	46.2	46.8	46.3	43.1	40.2	38.3	41.3			
Max.	40	39	43	45	47	52	58	57	52	47	46	43		58		
Mean Max.	38.9	38.6	39.9	41.9	44.9	48.9	51.8	52.5	49.5	45.7	43.0	41.3				
Mean Min.	32.5	33.8	34.5	36.0	38.1	40.4	42.1	42.7	43.5	40.2	36.7	34.5				
Min.	29	32	32	32	36	38	40	40	40	38	34	33			29	
	<b>CONSTANTINE HARBOR, AMCHITKA ISLAND, ALASKA</b>															
1944	--	--	--	--	--	42.1	43.0	44.4	44.2	42.6	41.0	38.7	--	48	*37	
1945	37.8	--	--	--	--	--	44.1	45.2	45.1	43.5	40.6	38.7	--	49	*36	
1946	37.6	--	--	--	--	43.3	44.1	45.1	45.3	42.4	40.1	38.8	--	50	*36	
1947	37.6	37.2	--	--	--	39.9	41.4	43.5	43.2	41.9	40.3	38.1	--	48	*36	
1948	36.9	36.9	37.6	40.1	--	42.4	44.2	45.0	44.6	42.2	--	--	--	51	*35	
Mean	37.5	37.0	37.6	40.1	--	41.9	43.4	44.6	44.5	42.5	40.5	38.6	--			
Max.	39	38	38	43	--	46	51	49	50	46	42	40		51		
Mean Max.	38.5	37.9	--	--	--	44.5	47.2	48.2	47.4	44.2	41.6	40.0				
Mean Min.	36.0	36.0	--	--	--	40.6	40.9	42.4	42.5	40.6	38.7	37.2				
Min.	35	35	36	37	--	39	40	42	42	39	37	36			35	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>MASSACRE BAY, ATTU ISLAND, ALASKA</b>															
1946	--	--	--	--	40.3	44.2	46.8	50.4	50.0	45.0	40.6	--	--	59	--
1947	--	--	--	--	--	--	--	--	--	43.1	40.0	37.3	--	--	*36
1948	36.3	35.8	37.4	38.7	41.5	45.7	47.5	--	--	--	--	37.6	--	*52	34
1949	35.4	35.4	36.1	37.9	40.5	42.3	43.3	46.4	46.3	43.5	39.3	34.9	40.1	51	31
1950	38.9	37.4	36.5	38.5	41.4	46.1	48.3	49.1	47.8	44.5	40.6	38.4	42.3	52	33
1951	37.3	37.3	35.3	37.9	--	45.0	46.2	50.0	48.6	44.5	40.6	37.5	--	53	30
Mean	37.0	36.5	36.3	38.2	40.9	44.7	46.4	49.0	48.2	44.1	40.2	37.1	41.6		
Max.	40	42	40	43	48	52	52	59	53	50	43	41		59	
Mean Max.	38.3	39.0	38.8	41.0	43.8	49.4	49.9	53.8	51.2	46.7	42.4	39.8			
Mean Min.	35.2	33.4	33.7	35.4	38.8	41.6	43.3	45.2	45.6	41.6	37.6	34.5			
Min.	34	32	30	34	38	41	42	43	43	40	34	31			30
<b>PORT MOLLER, ALASKA</b>															
1948	--	--	--	--	--	--	--	--	51.6	43.0	36.0	(ice)	--	--	(ice)
1949	(ice)	(ice)	32.7	33.6	40.6	50.7	53.2	55.4	53.2	45.3	39.9	33.3	--	58	(ice)
1950	31.8	(ice)	30.9	--	--	--	--	--	--	--	--	--	--	--	(ice)
<b>PEARD BAY, ALASKA</b>															
1947	--	--	--	--	--	--	--	--	36.1	--	--	--	--	--	--
<b>POINT BARROW (Ocean), ALASKA</b>															
1945	--	--	--	--	--	--	--	--	31.5	--	--	--	--	--	--
1951	--	--	--	--	--	--	44.2	--	--	--	--	--	--	--	--
<b>POINT BARROW (Elson Lagoon), ALASKA</b>															
1945	--	--	--	--	--	--	--	--	31.3	--	--	--	--	--	--
1951	--	--	--	--	--	--	45.5	--	--	--	--	--	--	--	--

	<b>MIDWAY ISLANDS, HAWAIIAN ISLANDS</b>															
1944	--	--	67.1	70.0	--	76.6	79.2	80.2	78.4	76.3	72.3	70.7	--	82	*66	
1945	68.4	65.7	69.6	70.3	71.6	76.3	--	--	--	--	--	--	--	--	*63	
1946	--	--	--	--	--	--	78.8	79.0	79.3	75.4	72.5	70.0	--	82	*66	
1947	66.0	65.3	65.3	68.5	72.7	77.4	79.2	80.8	79.7	78.1	73.0	69.1	72.9	83	62	
1948	66.7	66.2	68.7	68.2	71.2	75.6	77.9	80.1	--	77.0	73.7	71.5	--	*82	62	
1949	68.0	68.4	70.8	73.2	--	--	--	--	80.2	--	75.0	71.8	--	*84	65	
1950	68.8	69.8	70.0	71.3	--	--	--	81.6	81.8	80.8	75.8	72.3	--	*85	65	
1951	70.6	70.0	67.8	70.9	73.5	76.5	80.2	80.8	81.0	79.0	76.4	71.9	74.9	84	64	
Mean	68.1	67.6	68.5	70.3	72.2	76.5	79.1	80.4	80.1	77.8	74.1	71.0	73.8			
Max.	73	72	74	77	77	81	83	85	84	84	78	78		85		
Mean Max.	70.3	69.7	71.7	74.4	75.2	79.6	81.1	82.6	82.3	80.6	77.2	74.3				
Mean Min.	64.8	65.1	65.2	66.8	69.2	72.2	77.1	78.2	77.7	74.6	69.7	67.5				
Min.	63	62	64	64	69	70	76	77	76	72	62	64			62	
<b>HONOLULU, HAWAIIAN ISLANDS</b>																
1945	--	--	75.9	77.7	79.5	79.9	81.0	80.8	81.0	80.8	79.9	77.9	--	82	*74	
1946	76.6	76.6	75.7	74.8	76.6	77.7	78.6	80.2	80.4	79.7	78.1	77.0	77.7	83	73	
1947	74.8	75.9	75.4	76.5	77.2	79.3	80.1	80.1	80.8	80.1	79.5	77.4	78.1	82	72	
1948	75.6	75.2	75.0	76.3	78.1	78.8	79.5	79.9	80.2	79.3	77.5	76.5	77.7	82	72	
1949	74.7	75.2	74.3	74.5	76.5	78.1	78.4	78.3	79.0	79.0	77.2	76.5	76.8	82	72	
1950	74.8	76.8	76.3	76.1	77.0	78.1	78.8	80.4	80.8	80.8	78.6	--	--	82	73	
1951	--	--	75.9	77.4	77.9	77.9	79.7	80.4	80.7	80.5	78.1	77.0	--	83	*72	
Mean	75.3	75.9	75.5	76.2	77.5	78.5	79.4	80.0	80.4	80.0	78.4	77.0	77.8			
Max.	78	81	80	81	82	82	82	83	83	82	82	81		83		
Mean Max.	76.9	78.4	77.7	78.2	80.0	80.6	81.1	81.6	81.8	81.3	80.2	79.0				
Mean Min.	73.1	73.5	73.5	74.2	75.8	77.3	77.4	78.9	79.3	78.8	77.0	75.5				
Min.	72	72	72	73	74	76	75	77	78	77	76	74			72	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.	
<b>HILO, HAWAIIAN ISLANDS</b>																
1947	71.1	71.8	71.1	71.1	71.4	72.5	71.8	73.8	74.7	73.9	72.3	72.0	72.3	80	64	
1948	70.2	--	71.8	71.8	72.5	75.2	75.4	75.7	75.9	76.1	73.8	70.7	--	79	*66	
1949	68.9	71.4	70.7	68.2	69.6	70.9	71.6	70.7	71.4	72.0	70.7	68.7	70.4	77	66	
1950	70.2	69.4	68.0	68.5	68.0	68.5	69.8	71.1	72.0	71.6	72.5	72.1	70.1	81	66	
1951	69.6	69.1	68.9	68.7	69.3	70.3	71.4	70.0	72.7	72.1	71.2	71.2	70.4	77	66	
Mean	70.0	70.4	70.1	69.7	70.2	71.5	72.0	72.3	73.3	73.1	72.1	70.9	71.3			
Max.	77	77	76	76	76	78	79	79	80	81	78	78		81		
Mean Max.	74.7	75.3	73.5	73.2	73.0	74.7	77.5	75.6	78.1	77.9	75.3	74.7				
Mean Min.	66.3	67.1	66.7	66.5	67.6	68.3	69.5	69.3	69.9	69.8	69.2	67.7				
Min.	64	66	66	66	66	66	67	68	68	67	68	66			64	
<b>JOHNSTON ISLAND, HAWAIIAN ISLANDS</b>																
1947	--	--	--	--	--	79.0	79.9	80.4	81.3	81.7	80.7	--	--	83	--	
1948	--	74.6	75.9	76.9	78.3	--	--	--	--	--	--	--	--	--	*74	
1949	--	74.8	74.1	74.9	76.0	76.3	79.1	--	--	--	--	--	--	*80	*72	
1950	--	76.6	76.7	77.6	78.4	79.9	80.1	80.6	80.3	79.7	--	--	--	82	*74	
1951	76.6	77.0	76.2	77.4	78.7	80.1	81.7	--	82.1	81.5	80.6	78.8	--	*84	74	
Mean	76.6	75.8	75.7	76.7	78.1	79.0	80.3	81.0	81.4	80.6	80.6	78.8	78.7			
Max.	79	79	78	80	82	83	84	83	84	83	82	80		84		
Mean Max.	--	77.0	77.2	78.5	80.4	81.2	81.8	82.6	82.5	81.7	--	--				
Mean Min.	--	74.2	73.8	74.0	76.2	76.7	79.1	79.6	79.7	79.5	--	--				
Min.	75	72	72	72	73	72	78	79	78	79	78	76			72	
<b>CANTON ISLAND, PHOENIX ISLANDS</b>																
1950	--	--	--	--	--	80.2	79.9	80.1	80.4	81.1	81.0	--	--	*82	*79	
1951	80.9	80.5	81.8	83.4	84.2	83.8	84.2	83.5	83.8	83.8	84.1	83.9	83.2	85	80	
<b>PAGO PAGO, SAMOA ISLANDS</b>																
1949	--	--	--	--	--	--	--	--	--	--	83.4	82.3	--	--	--	
1950	--	81.2	81.8	82.6	82.5	80.8	80.3	81.2	82.0	79.7	81.2	79.1	--	*90	*72	
1951	79.5	79.9	79.8	80.7	79.2	78.2	76.3	77.0	77.2	78.3	78.0	81.0	78.8	84	74	
<b>APIA (Observatory), SAMOA ISLANDS</b>																
1944	--	--	--	--	--	--	81.9	81.0	81.5	82.0	82.0	84.0	--	*87	*79	
1945	83.8	83.9	84.5	83.8	82.6	82.2	81.5	81.3	81.3	82.8	83.4	84.9	83.0	87	80	
1946	84.6	83.3	84.9	85.3	84.6	82.9	81.9	81.9	82.4	82.8	85.3	85.1	83.8	88	79	
1947	84.7	85.1	85.1	85.3	84.0	83.7	82.9	82.2	82.8	83.7	84.2	85.1	84.1	87	78	
1948	84.9	84.0	84.6	84.2	83.7	82.9	81.0	81.1	82.0	82.3	84.0	83.3	83.2	87	79	
1949	85.1	85.1	84.6	85.5	84.2	82.8	81.9	81.7	83.3	84.0	85.5	84.4	84.0	88	79	
1950	84.6	84.0	84.2	84.0	82.3	81.5	81.3	81.7	82.8	83.5	84.6	83.8	83.2	87	80	
1951	83.7	85.1	85.3	85.6	84.4	83.2	81.6	--	82.3	82.8	83.9	84.9	--	88	*80	
Mean	84.5	84.4	84.7	84.8	83.8	82.7	81.3	81.6	82.3	83.0	84.1	84.4	83.5			
Max.	88	87	87	87	87	85	86	86	86	87	88	88				
Mean Max.	86.6	86.0	86.3	86.3	85.5	83.9	83.4	83.9	84.1	85.6	86.4	86.7				
Mean Min.	81.6	81.6	82.7	83.1	81.6	81.2	79.8	79.9	80.6	81.1	82.1	81.9				
Min.	81	80	81	80	80	79	78	80	80	80	80	79			78	
<b>GUADALCANAL ISLAND (Kukum), SOLOMON ISLANDS</b>																
1947	--	--	--	--	86.9	86.2	84.9	84.2	83.4	84.2	84.6	86.0	86.4	--	*89	*82
1948	85.2	--	--	85.2	--	84.4	83.4	83.8	84.6	84.5	84.8	85.1	--	*88	*82	
1949	84.8	85.4	84.9	85.3	85.6	85.0	84.1	83.7	83.8	84.2	85.6	--	--	*88	*83	
1950	--	85.6	--	--	--	--	--	--	--	--	--	--	--	--	--	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>ADMIRALTY ISLANDS (Seeadler Harbor)</b>															
1947	---	85.2	85.1	86.0	84.9	84.9	83.6	85.4	84.1	---	---	---	---	*88	*80
1948	---	---	84.6	---	84.9	85.3	85.1	85.0	85.4	84.1	---	---	---	*88	*80
<b>WAKE ISLAND</b>															
1950	---	---	---	---	---	82.0	81.5	82.3	81.2	80.8	78.4	77.8	---	85	*76
1951	76.5	77.5	74.9	78.1	79.6	82.0	83.4	84.3	83.5	82.6	80.9	79.1	80.2	86	72
<b>KWAJALEIN ISLAND, MARSHALL ISLANDS</b>															
1949	---	81.0	80.8	80.9	81.7	82.4	83.6	83.5	83.2	83.3	81.9	79.4	---	85	*76
1950	78.5	79.5	82.6	82.8	84.2	83.6	83.4	---	---	---	84.2	82.1	---	*90	76
1951	80.7	79.9	81.4	82.2	83.2	84.1	83.1	84.5	85.8	85.6	84.5	83.7	83.2	90	77
Mean	79.6	80.1	81.6	82.0	83.0	83.4	83.4	84.0	84.5	84.4	83.5	81.7	82.6		
Max.	84	84	86	86	86	87	90	88	90	88	87	87		90	
Mean Max.	82.5	83.0	85.0	85.0	85.7	85.7	87.0	86.5	87.0	86.5	86.0	85.0			
Mean Min.	77.0	77.3	78.7	78.7	80.7	80.7	81.0	82.5	83.0	82.5	81.3	78.3			
Min.	76	76	78	78	80	80	80	82	82	82	80	76			76
<b>TRUK ISLANDS (Moen Island), CAROLINE ISLANDS</b>															
1949	---	---	---	---	---	83.5	84.7	85.1	85.6	83.6	82.4	---	---	*89	*80
1950	81.9	81.1	81.5	83.2	83.6	83.8	85.3	---	85.4	83.5	---	---	---	*89	*78
1951	82.7	83.2	82.7	82.5	---	---	---	---	---	---	84.0	83.3	---	*85	*78
<b>YAP ISLAND, CAROLINE ISLANDS</b>															
1951	---	---	83.5	84.9	85.3	85.5	86.6	84.7	86.0	85.3	85.6	84.5	---	*89	*81
<b>ANGAUR ISLAND, PALAU ISLANDS</b>															
1951	---	---	---	---	---	---	---	---	84.4	84.6	84.2	84.2	---	*87	*81

<b>KOROR, KOROR ISLAND, PALAU ISLANDS</b>															
1947	---	82.7	82.3	83.5	---	83.7	84.0	84.2	---	---	---	---	---	*87	*81
--															
1949	---	---	---	84.7	84.5	85.7	85.8	---	85.9	85.5	---	---	---	*89	*82
1950	---	---	81.4	82.5	83.8	84.3	84.6	84.0	84.1	---	---	---	---	*87	*80
<b>GUAM (Apra Harbor), MARIANAS</b>															
1949	---	---	---	---	82.7	83.7	84.3	85.4	85.4	84.3	83.4	81.9	---	87	*81
1950	81.0	80.3	81.0	82.2	83.2	83.9	84.9	84.7	84.5	84.9	83.9	82.9	83.1	88	80
1951	82.1	82.2	82.0	82.0	82.6	83.3	84.3	84.3	85.4	85.7	84.9	83.5	83.5	88	81
Mean	81.6	81.2	81.5	82.1	82.3	83.6	84.5	84.8	85.1	85.0	84.1	82.8	83.3		
Max.	84	.84	82	83	84	85	88	87	88	87	86	85		88	
Mean Max.	83.0	83.0	82.0	82.5	83.4	84.3	86.3	86.3	87.1	86.0	84.8	83.7			
Mean Min.	80.5	80.5	81.0	82.0	82.0	82.7	82.7	83.4	83.3	83.9	83.4	82.0			
Min.	80	80	80	82	81	82	82	83	82	83	82	81			80
<b>SAN FERNANDO, LUZON ISLAND, PHILIPPINE ISLANDS</b>															
1948	---	77.5	79.7	81.9	88.0	84.2	84.4	84.7	82.9	84.0	81.5	81.5	---	90	*77
1949	80.8	80.8	81.7	84.2	86.0	86.7	85.6	84.7	84.9	84.7	84.4	82.8	83.9	88	80
<b>MANILA, LUZON ISLAND, PHILIPPINE ISLANDS</b>															
1947	---	---	---	---	---	84.3	85.6	84.8	84.4	82.0	81.2	---	---	*87	*76
1948	79.2	79.9	80.9	82.5	84.4	84.7	84.3	83.0	82.5	83.7	85.2	81.2	82.6	87	77
1949	80.2	79.7	80.8	82.0	84.5	86.9	85.4	86.8	87.9	85.1	83.4	81.4	83.7	92	77
1950	81.6	80.9	81.4	85.2	87.0	86.2	84.0	83.4	85.2	85.8	83.5	81.5	83.8	90	78
1951	81.6	84.9	86.7	86.7	86.2	84.6	84.2	84.1	85.2	86.0	85.0	83.4	84.9	90	80
Mean	80.6	81.4	82.4	84.1	85.5	85.6	84.4	84.6	85.1	85.0	83.8	81.7	83.7		
Max.	84	85	87	88	90	88	88	92	90	90	89	89			
Mean Max.	82.6	82.9	84.2	85.8	88.0	87.1	86.8	87.1	86.8	87.4	86.2	85.0			
Mean Min.	78.2	79.6	80.7	82.4	83.8	83.4	81.5	82.0	82.2	82.4	81.2	79.1			
Min.	77	78	78	80	82	80	80	80	80	81	79	76			76

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

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Table 1.—Surface Water Temperatures—Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>LEGASPI, LUZON ISLAND, PHILIPPINE ISLANDS</b>															
1947	---	---	---	---	87.6	87.9	85.2	85.1	86.4	84.1	81.7	80.6	---	92	*77
1948	78.6	81.2	82.6	86.9	87.7	87.4	86.0	84.4	83.6	85.2	82.2	82.3	84.0	91	75
1949	80.5	82.1	82.8	85.6	87.5	87.1	86.7	86.0	86.7	85.3	83.7	82.2	84.7	93	77
1950	81.1	82.3	83.0	86.5	87.8	85.9	84.4	84.7	85.0	85.0	82.3	80.8	84.2	91	76
1951	81.7	83.0	82.9	83.7	82.7	83.7	84.0	83.1	82.4	82.9	82.1	82.3	82.9	88	76
Mean	80.5	82.3	82.8	85.7	86.7	86.4	85.3	84.7	84.8	84.5	82.5	81.6	84.0		
Max.	85	86	88	90	91	93	92	89	91	88	88	86			
Mean Max.	84.1	84.8	87.0	88.2	89.8	90.4	89.4	87.8	88.4	87.6	86.9	85.2		93	
Mean Min.	76.0	78.1	79.0	82.0	83.3	82.7	81.6	81.4	81.8	81.2	78.8	78.0			
Min.	75	78	77	79	78	80	80	80	80	80	78	77			75
<b>TACLOBAN, LEYTE ISLAND, PHILIPPINE ISLANDS</b>															
1951	---	---	---	---	---	86.0	85.3	85.7	86.2	86.4	86.0	85.0	---	*89	*82
<b>CEBU, CEBU ISLAND, PHILIPPINE ISLANDS</b>															
1947	---	---	---	---	86.4	86.6	86.3	85.4	85.5	84.4	82.2	82.1	---	89	*79
1948	79.2	81.7	82.0	84.8	86.1	86.5	85.2	84.3	83.7	84.9	82.9	82.1	83.6	88	72
1949	80.8	80.8	81.5	84.0	84.9	85.8	85.2	85.3	85.9	84.8	83.5	82.4	83.7	88	79
1950	81.6	82.3	83.6	85.5	86.7	86.4	85.7	85.3	84.4	85.2	83.2	80.8	84.2	88	80
1951	81.1	81.5	82.4	84.6	84.8	85.3	85.4	84.7	84.8	85.3	84.8	82.2	83.9	88	79
Mean	80.7	81.6	82.4	84.7	85.8	86.1	85.6	85.0	84.9	84.9	83.3	81.9	83.9		
Max.	84	84	86	88	88	89	88	88	87	88	86	86			
Mean Max.	83.1	83.5	84.0	87.0	87.7	88.1	87.8	87.0	86.6	87.2	84.9	83.8		89	
Mean Min.	77.6	79.8	81.0	82.9	83.6	84.0	83.3	83.2	82.8	82.4	81.3	79.9			
Min.	72	79	80	82	82	83	82	82	82	80	79	79			72
<b>DAVAO, MINDANAO ISLAND, PHILIPPINE ISLANDS</b>															
1947	---	---	---	---	84.5	84.7	84.0	84.7	84.8	83.6	82.4	81.4	---	88	*80
1948	80.7	80.5	80.9	83.0	85.1	84.7	84.3	84.5	84.2	83.3	83.6	82.0	83.1	90	77
1949	81.2	80.6	80.5	82.9	84.0	85.6	84.7	84.8	84.7	86.2	85.3	83.8	83.7	91	76
1950	83.7	83.3	83.1	83.9	85.3	85.2	85.4	85.2	85.0	85.5	84.3	83.2	84.4	90	78
1951	82.9	83.6	82.6	83.2	83.4	82.2	83.3	82.5	81.4	83.0	82.9	82.0	82.8	90	78
Mean	82.1	82.0	81.8	83.2	84.5	84.5	84.3	84.3	84.0	84.3	83.7	82.5	83.4		
Max.	86	85	86	89	90	90	90	89	88	91	89	87		91	
Mean Max.	84.2	83.5	85.5	87.8	88.8	88.4	88.0	88.4	86.4	87.0	86.2	84.0			
Mean Min.	79.2	79.2	78.8	80.5	81.4	80.8	81.6	81.6	81.8	81.8	81.4	79.2			76
Min.	78	78	77	80	78	78	80	79	80	80	79	76			
<b>JOLO, JOLO ISLAND, PHILIPPINE ISLANDS</b>															
1947	---	---	---	---	---	---	---	---	---	82.5	82.6	81.5	---	---	--
1948	80.0	79.1	78.9	80.6	82.2	82.0	80.9	81.9	81.0	81.0	82.0	81.0	80.9	86	78
1949	80.2	79.6	79.2	79.9	81.2	81.8	81.8	81.0	81.8	83.7	82.6	82.0	81.2	87	76
1950	80.9	81.6	80.5	81.4	83.4	82.9	82.4	81.4	81.4	82.5	82.4	81.7	81.9	87	78
1951	80.8	81.4	80.6	81.8	82.3	82.0	81.7	81.3	81.1	81.4	82.2	82.4	81.6	88	78
Mean	80.5	80.4	79.8	80.9	82.3	82.2	81.7	81.4	81.3	82.2	82.4	81.7	81.4		
Max.	84	86	84	88	88	85	86	86	86	87	88	86		88	
Mean Max.	82.8	83.2	82.4	83.1	86.0	84.0	84.8	84.9	84.0	84.5	85.2	83.9			
Mean Min.	78.4	78.5	78.0	79.5	80.1	80.2	80.2	79.6	80.0	80.6	80.9	80.1			
Min.	78	78	76	78	79	78	80	79	80	80	80	80			76
<b>PUNTA ARENAS, MAGELLAN STRAIT, CHILE</b>															
1944	---	---	---	---	43.9	40.3	39.7	38.7	41.2	45.3	44.4	46.2	---	--	36
1945	49.8	48.7	44.1	43.0	42.6	---	---	---	---	---	---	---	55	--	
1946	---	---	---	---	---	42.1	40.5	41.9	42.8	41.0	45.5	46.4	---	--	*39
1947	48.0	48.4	48.6	47.5	---	41.7	41.2	41.4	41.9	43.2	45.5	46.4	55	40	
1948	48.7	48.6	45.9	45.5	43.0	41.2	42.1	42.3	41.9	42.8	44.8	45.9	44.4	55	36
1949	46.6	47.7	46.6	45.3	43.3	41.5	41.7	40.3	41.5	42.3	44.4	46.2	50	36	

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

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Table 1. — Surface Water Temperatures — *Continued*  
Means and Extremes in °F

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	<b>PUNTA ARENAS, MAGELLAN STRAIT, CHILE —Continued</b>														
1950	-- -	-- -	-- -	43.9	40.6	41.0	36.3	39.0	40.3	43.5	44.2	43.3	-- -	--	30
1951	44.1	47.3	48.2	45.3	43.3	41.5	41.5	42.4	42.4	43.9	44.8	45.0	44.1	50	37
Mean	47.4	48.1	46.7	45.1	42.8	41.2	40.7	40.7	41.6	43.4	44.1	45.4	43.9		
Max.	55	55	50	50	46	45	45	45	46	48	49	48		55	
Mean Max.	52.9	52.2	49.1	47.2	44.7	43.7	42.9	43.6	44.3	45.2	46.4	46.9			
Mean Min.	44.6	44.6	44.3	42.7	40.1	38.3	37.9	37.5	39.2	41.1	41.9	43.8			
Min.	42	43	41	41	37	36	30	36	36	39	39	42		30	
	<b>PUERTO MONTT, CHILE</b>														
1944	-- -	-- -	-- -	-- -	52.0	50.4	49.6	49.6	50.9	51.6	56.5	-- -	-- -	--	45
1945	-- -	62.4	58.8	54.0	51.8	50.2	50.0	51.1	52.7	-- -	57.0	59.5	-- -	*66	45
1946	61.7	57.6	58.1	55.0	52.2	50.4	50.7	51.3	53.6	54.0	54.0	59.2	54.8	65	47
1947	59.2	60.3	59.5	55.8	52.5	51.3	-- -	50.0	51.1	54.1	59.2	59.2	-- -	67	*44
1948	63.1	61.0	58.1	54.3	52.3	50.5	50.9	50.5	52.7	52.9	56.5	58.6	55.1	68	44
1949	62.8	59.2	-- -	53.4	51.8	-- -	49.6	49.6	50.7	-- -	57.9	-- -	-- -	*67	*48
1950	63.7	-- -	56.3	52.0	51.3	50.7	50.7	50.0	50.5	53.1	54.7	56.7	-- -	*68	46
1951	59.9	59.0	55.8	54.9	51.1	49.8	49.6	50.0	50.0	52.9	53.6	61.5	54.0	70	46
Mean	61.7	59.9	57.8	54.2	51.9	50.5	50.2	50.3	51.5	53.1	56.2	59.1	54.7		
Max.	70	66	67	59	57	60	54	54	58	59	66	67		70	
Mean Max.	66.7	64.2	62.5	56.9	54.0	53.4	53.1	52.8	54.8	57.8	61.7	64.4			
Mean Min.	55.5	55.1	53.2	51.0	50.0	46.6	46.4	47.2	48.7	50.2	52.1	54.2			
Min.	51	52	52	48	49	44	44	45	46	49	51	54			44
	<b>TALCAHUANO, CHILE</b>														
1945	-- -	53.8	54.9	55.2	57.2	56.5	55.9	55.4	53.6	55.9	57.6	55.9	-- -	*60	48
1946	55.9	55.8	54.9	55.0	55.6	55.2	51.1	50.5	50.7	-- -	52.5	54.0	-- -	60	*49
1947	51.6	52.7	51.3	50.2	51.1	49.6	50.2	50.5	51.4	50.9	51.4	52.2	51.1	54	48
1948	52.7	53.2	52.2	52.7	54.7	53.4	51.8	51.1	53.8	53.1	54.7	54.5	53.2	56	45
1949	54.5	54.9	52.7	51.3	50.7	50.2	50.0	51.8	51.8	54.1	55.9	56.3	52.8	60	48
1950	57.7	57.9	58.1	55.2	54.1	53.2	50.4	48.6	-- -	-- -	55.4	55.6	-- -	64	*45
1951	57.4	58.5	55.4	55.2	55.8	53.2	53.6	54.3	54.0	55.0	56.8	59.7	55.7	68	46
Mean	55.0	55.3	54.2	53.5	54.2	53.0	51.9	51.7	52.6	53.8	54.9	55.5	53.8		
Max.	64	64	64	59	59	58	57	59	57	59	62	68		68	
Mean Max.	58.0	57.7	57.2	56.0	56.2	55.1	54.7	54.5	54.6	56.0	57.7	59.9			
Mean Min.	52.0	52.8	52.0	51.9	51.4	49.4	48.8	48.5	50.0	51.2	51.5	52.5			
Min.	49	50	49	49	48	46	45	45	48	48	48	50			45
	<b>VALPARAISO, CHILE</b>														
1944	-- -	-- -	-- -	59.5	55.4	56.1	55.8	55.6	54.7	55.8	57.7	60.1	-- -	*64	53
1945	62.0	62.8	60.8	57.6	55.6	53.4	52.9	53.8	56.7	56.7	57.7	58.5	57.4	68	50
1946	60.6	59.7	58.3	58.3	57.0	54.4	55.9	54.5	55.0	55.4	56.7	60.3	57.2	64	52
1947	59.2	58.6	58.5	57.0	54.5	53.6	52.3	53.1	53.4	54.3	55.9	56.7	55.6	64	51
1948	57.9	57.7	58.3	56.3	56.1	54.3	53.6	53.2	55.0	56.3	56.3	60.8	56.3	64	51
1949	60.4	62.2	57.7	56.8	56.7	54.0	53.6	52.7	53.4	55.6	56.3	59.4	56.6	64	47
1950	61.5	59.2	59.4	57.4	56.1	55.9	55.8	53.6	55.6	55.2	57.9	58.3	57.2	65	52
1951	59.5	59.2	57.7	56.5	56.7	55.4	57.0	56.5	55.0	55.8	56.3	58.8	57.0	64	52
Mean	60.2	59.9	58.7	57.4	56.0	54.6	54.6	54.1	54.8	55.6	56.8	59.1	56.8		
Max.	67	68	64	63	61	58	59	59	62	61	64	64		68	
Mean Max.	63.6	62.7	61.2	60.1	58.0	56.6	56.4	56.3	57.5	58.6	61.1	62.5			
Mean Min.	56.6	56.9	55.9	54.8	54.1	52.6	52.0	52.2	52.9	53.1	53.8	54.8			
Min.	55	56	54	52	52	50	47	52	52	53	52	54			47

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

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Table 1. — Surface Water Temperatures — Continued  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>CALDERA, CHILE</b>															
1951	64.8	63.3	62.6	61.2	60.6	58.3	58.8	58.3	59.0	60.1	61.7	61.3	60.8	71	55
<b>ANTOFAGASTA, CHILE</b>															
1946	69.4	68.2	66.7	63.1	60.4	58.8	59.2	59.4	60.3	61.2	63.7	--	--	*71	57
1947	69.4	67.8	67.1	65.3	61.7	60.1	59.0	58.8	59.9	61.0	64.4	67.1	63.5	72	57
1948	69.3	68.9	66.4	62.4	60.8	--	57.7	58.5	59.9	61.5	64.4	68.9	--	81	*57
1949	69.6	69.8	65.3	63.9	61.3	59.9	57.4	58.1	58.5	61.5	64.0	66.4	63.0	73	56
1950	68.2	67.1	65.1	61.5	60.6	57.9	58.1	57.7	61.2	61.7	63.7	66.0	62.4	71	56
1951	69.6	68.0	64.8	63.3	62.6	62.8	61.9	61.7	61.3	63.5	65.5	66.0	64.2	72	59
Mean	69.2	68.3	65.9	63.2	61.2	59.9	58.9	59.0	60.2	61.7	64.3	66.9	63.2		
Max.	77	73	70	67	64	64	65	64	64	66	68	81		81	
Mean Max.	72.6	71.4	68.4	65.5	62.9	61.9	59.9	60.7	62.3	63.8	66.9	72.0			
Mean Min.	66.1	65.5	63.0	61.0	59.6	58.0	57.8	57.6	58.4	59.2	62.1	64.1			
Min.	64	64	62	60	59	57	56	56	57	59	61	63			56
<b>ARICA, CHILE</b>															
1951	66.7	65.7	64.9	63.7	64.4	64.0	64.0	63.7	63.1	64.4	64.6	64.5	64.5	70	61
<b>MATARANI, PERU</b>															
1944	--	--	59.5	59.7	59.4	59.5	59.9	61.0	60.3	59.0	60.3	--	--	*64	57
1945	60.8	--	--	63.1	61.7	62.2	59.3	59.0	59.7	59.9	60.3	60.8	--	*66	56
1946	61.1	61.0	62.8	61.2	60.1	59.0	59.2	59.0	59.0	59.0	59.0	59.5	60.0	66	57
1947	62.8	60.6	62.1	61.3	59.5	58.6	57.4	56.1	55.8	57.0	59.7	59.9	59.2	66	53
1948	60.4	62.8	62.8	61.7	63.1	59.0	57.6	57.2	57.9	58.3	59.0	61.5	60.1	66	55
1949	65.8	--	--	--	--	--	--	--	--	57.3	59.8	60.0	--	*68	*56
<b>CALLAO, PERU</b>															
1944	--	71.1	69.3	67.8	65.7	64.2	--	64.9	63.5	63.5	65.8	.66.6	--	*75	*62
1945	69.8	68.4	68.7	66.7	64.9	62.1	63.0	63.3	64.5	65.3	65.5	66.6	65.7	74	60
1946	67.6	71.4	70.7	70.0	65.5	--	63.7	62.8	64.0	64.6	66.4	70.7	--	75	*61
1947	--	71.4	68.5	68.4	67.5	63.1	--	62.6	63.0	62.6	64.8	66.7	--	*75	*60
1948	71.6	70.3	75.2	71.8	67.1	64.9	65.1	61.0	61.3	64.8	66.6	67.6	67.3	79	59
1949	70.7	74.1	74.3	69.4	64.9	62.8	61.2	60.4	61.3	62.8	65.1	66.0	66.1	81	59
1950	67.6	68.7	67.3	64.9	61.3	59.2	60.1	59.7	61.3	63.0	63.0	64.2	63.4	72	58
1951	65.7	66.0	66.7	66.7	66.9	66.6	66.0	65.3	63.9	65.7	66.6	66.6	66.1	72	62
Mean	68.8	70.2	70.1	68.2	65.5	63.3	63.2	62.5	62.8	64.0	65.5	66.9	65.9		
Max.	78	81	79	74	72	68	69	67	68	72	71	72			
Mean Max.	73.8	74.3	74.0	72.0	68.9	65.8	66.2	64.4	66.2	68.2	68.4	70.4		81	
Mean Min.	65.2	65.3	66.8	64.2	62.8	61.5	61.2	60.9	60.7	61.2	62.7	63.8			
Min.	63	62	63	59	60	58	59	59	59	59	60	60			58
<b>TALARA, PERU</b>															
1944	72.3	--	74.1	69.8	68.7	66.7	66.9	64.9	65.8	63.9	63.0	63.0	--	*81	59
1945	75.2	77.2	73.2	69.1	66.9	69.8	68.4	66.7	66.2	67.0	66.7	64.2	69.2	82	61
1946	71.1	78.8	74.3	67.9	66.4	65.7	66.6	64.8	62.8	64.2	--	69.5	--	83	*60
1947	71.1	72.0	70.8	69.4	67.4	67.9	--	66.3	66.4	64.5	65.2	66.9	--	78	62
1948	73.7	74.6	74.0	73.1	67.6	66.9	64.5	62.1	62.5	64.0	61.8	64.2	67.4	80	59
1949	71.1	74.5	73.9	68.8	65.9	64.6	63.2	62.6	61.0	60.8	61.5	65.1	66.1	78	57

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

Table 1. — Surface Water Temperatures - *Continued*  
Means and Extremes in °F.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
TALARA, PERU—Continued															
1950	66.2	70.8	71.1	62.4	65.4	63.7	63.2	62.3	63.6	64.3	63.9	64.5	65.1	78	58
1951	73.7	69.1	69.7	71.4	70.6	--	68.9	65.9	66.0	67.7	67.2	64.3	--	78	61
Mean	71.8	73.9	72.6	69.0	67.4	66.5	66.0	64.4	64.3	64.6	64.2	65.2	67.5		
Max.	82	83	82	78	73	77	75	72	73	76	74	75			
Mean Max.	77.7	78.6	78.2	73.9	71.1	71.4	70.2	68.2	69.6	71.3	68.8	70.6		83	
Mean Min.	65.3	68.1	67.1	66.0	64.1	63.4	63.0	62.0	61.0	60.9	60.6	61.0			
Min.	58	62	64	60	62	61	61	60	58	58	57	58			57
LA LIBERTAD, ECUADOR															
1948	--	--	--	--	--	--	--	--	--	--	73.9	75.4	--	--	--
1949	77.4	78.7	80.8	--	--	76.4	--	--	74.3	73.0	73.1	75.6	--	*84	*71
1950	78.2	81.6	81.8	74.5	74.7	74.1	72.2	71.5	73.4	71.9	74.5	77.0	75.4	86	66
1951	79.8	79.1	79.5	77.2	76.0	78.4	77.7	75.6	75.1	74.9	76.1	77.0	77.2	84	72
Mean	78.5	79.8	80.7	75.8	75.4	76.3	75.0	73.6	74.3	73.3	74.4	76.2	76.1		
Max.	83	84	86	80	80	82	80	78	78	77	78	80		86	
Mean Max.	81.7	82.7	84.0	79.5	79.5	79.0	79.0	76.0	77.0	76.0	76.2	78.5			
Mean Min.	76.3	77.0	77.0	71.5	71.0	73.7	71.0	70.0	71.3	70.7	72.0	72.8			
Min.	75	75	76	70	68	72	68	66	68	68	70	72			66
NAOS ISLAND, CANAL ZONE															
1949	--	--	--	--	81.4	82.9	83.1	82.8	83.3	82.1	81.4	79.8	--	86	--
1950	79.5	76.9	75.6	73.7	82.0	82.5	82.1	82.2	83.5	82.1	80.3	79.3	80.0	86	68
1951	77.9	76.9	74.7	78.9	82.4	83.6	83.9	83.6	83.8	82.9	82.6	82.0	81.1	86	70
Mean	78.7	76.9	75.2	76.3	81.9	83.0	83.0	82.9	83.5	82.4	81.4	80.4	80.5		
Max.	82	81	79	82	84	86	86	84	86	85	84	84		86	
Mean Max.	81.0	80.5	78.0	80.0	84.0	85.0	84.7	84.0	84.7	84.3	83.3	82.0			
Mean Min.	74.5	71.0	69.5	70.0	78.0	81.3	81.7	81.3	82.3	80.3	80.0	78.0			68
Min.	72	70	68	70	75	80	81	80	82	80	78	76			
BALBOA, CANAL ZONE †															
1908 - 1951															
Mean	78.7	74.9	73.5	76.9	81.6	83.0	82.6	82.6	82.8	82.2	81.3	80.8	80.1		
Max.	85	85	84	86	89	89	88	89	90	88	90	86		90	
Mean Max.	82.3	80.0	78.4	82.3	85.7	86.1	85.6	85.7	86.2	85.6	84.5	83.8			
Mean Min.	74.4	69.2	68.7	71.3	77.0	80.0	79.9	79.6	79.6	79.0	76.4	78.0			60
Min.	67	60	64	66	69	78	76	77	77	77	75	73			
CRISTOBAL, CANAL ZONE †															
1908 - 1951															
Mean	80.8	80.5	81.2	82.5	83.3	83.8	83.3	83.1	83.7	83.5	82.4	81.5	82.4		
Max.	86	85	86	87	88	88	88	87	88	88	89	86		89	
Mean Max.	83.1	82.8	83.6	85.1	85.9	86.2	85.7	85.6	86.0	85.8	85.2	83.8			
Mean Min.	78.6	78.6	79.0	80.2	80.4	81.0	80.8	80.4	81.3	80.6	78.9	78.8			74
Min.	75	76	76	77	76	79	79	77	79	74	75	75			
PUERTO ARMUELLES, PANAMA															
1951	--	83.2	83.9	83.3	83.5	84.0	84.2	84.2	82.8	83.9	83.1	84.1	--	*86	*81

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

† Means and extremes are from 44 years of bihourly readings of recording thermometers. For mean bihourly temperatures by months, see Table 2.

**Table 1. — Surface Water Temperatures - *Continued***  
Means and Extremes in °F.

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Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
<b>PUNTARENAS, COSTA RICA</b>															
1948	79.9	80.1	80.2	79.9	80.2	80.2	81.0	81.7	81.3	80.8	81.0	80.6	80.6	82	79
1949	80.6	80.8	80.8	81.5	81.7	82.8	82.2	83.7	82.0	80.6	79.7	80.2	81.4	88	79
1950	80.6	81.1	80.2	81.3	85.3	85.3	83.8	83.7	82.4	84.4	81.5	80.4	82.5	89	79
1951	81.5	81.3	82.4	83.1	85.3	83.7	84.6	85.5	83.1	82.9	83.1	83.5	83.3	88	79
Mean	80.6	80.8	80.9	81.4	83.1	83.0	82.9	83.6	82.2	82.2	81.3	81.2	81.9		
Max.	82	83	85	86	89	86	88	88	86	86	85	85			
Mean Max.	81.8	82.0	82.2	83.8	84.5	85.0	85.2	85.2	84.5	83.8	83.0	83.0		89	
Mean Min.	79.5	80.2	80.0	80.2	81.0	81.0	80.8	81.8	81.5	81.0	80.2	80.2			
Min.	79	79	79	79	79	79	79	81	81	79	79	79			79
<b>SAN JUAN DEL SUR, NICARAGUA</b>															
1949	--	--	--	--	--	--	--	--	--	--	76.9	74.7	--	--	--
1950	73.8	66.9	67.0	71.5	76.6	80.8	76.9	80.1	84.8	81.6	80.7	75.8	76.4	89	60
1951	76.2	67.5	70.0	78.7	--	84.5	85.3	86.5	89.4	89.0	86.3	84.8	--	96	63
<b>LA UNION, EL SALVADOR</b>															
1949	--	--	--	--	--	--	--	--	85.8	82.6	78.0	79.9	--	*88	*74
1950	80.2	79.3	81.7	--	85.9	85.0	85.5	85.9	84.7	82.7	79.1	76.8	--	88	73
1951	--	--	82.2	85.7	86.4	86.6	86.1	87.9	87.0	85.8	84.5	83.7	--	92	*78
<b>SAN JOSE, GUATEMALA</b>															
1949	--	--	--	--	--	--	--	--	81.9	83.6	83.2	--	--		
1950	83.1	82.4	83.0	85.2	85.3	86.2	86.4	86.3	86.9	82.6	82.8	81.8	84.3	90	76
1951	82.6	81.4	82.9	82.5	85.7	86.8	86.2	86.5	86.8	87.4	86.7	85.5	85.1	89	76

Mean	82.8	81.9	83.0	83.8	85.5	86.5	86.3	86.4	86.8	84.0	84.4	83.5	84.6		
Max.	84	84	84	86	87	88	89	88	90	89	88	86		90	
Mean Max.	84.0	84.0	84.0	86.0	87.0	88.0	88.5	88.0	89.0	87.0	86.0	84.7			
Mean Min.	81.5	79.5	80.5	79.5	84.0	85.0	84.0	84.0	85.0	80.0	83.3	82.0			
Min.	81	79	80	76	84	84	84	84	84	76	82	80			76
<b>ACAPULCO, MEXICO</b>															
1950	--	--	--	--	--	84.4	84.1	85.4	84.8	80.6	82.4	79.4	--	88	*76
1951	78.5	79.9	78.8	77.7	80.6	84.3	84.8	85.6	85.3	86.2	85.8	84.7	82.7	88	75
<b>LA PAZ, MEXICO</b>															
1950	--	--	--	--	--	--	78.9	80.8	--	83.6	77.7	72.1	--	*88	*69
1951	66.3	66.7	67.9	71.5	75.9	78.8	82.7	85.6	84.2	83.0	76.4	70.2	75.8	92	64
<b>GUAYMAS, MEXICO</b>															
1950	--	--	--	--	--	--	86.9	88.2	86.8	84.5	72.8	67.1	--	90	*65
1951	61.4	63.3	64.7	69.7	76.5	84.7	89.0	88.5	89.4	85.9	77.8	67.1	76.5	98	52

\* Data are incomplete for the part of year in which this extreme occurs. This value is from the months shown.

66

Table 2. — Bihourly Sea Water Temperatures  
Means and Extremes in °F.

AVILA, CALIF.

Hour	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	52.8	52.3	52.5	53.2	53.3	55.9	57.2	58.2	58.8	56.6	55.8	54.1
2	52.6	52.2	52.4	53.2	53.4	55.9	57.2	58.2	58.7	56.6	55.7	54.0
4	52.7	52.2	52.4	53.2	53.4	55.9	57.2	58.2	58.7	56.5	55.7	54.0
6	52.6	52.1	52.3	53.2	53.4	56.0	57.3	58.2	58.6	56.5	55.6	54.0
8	52.6	52.1	52.3	53.2	53.4	56.1	57.2	58.1	58.6	56.4	55.6	54.0
10	52.6	52.1	52.3	53.4	53.7	56.2	57.3	58.2	58.6	56.5	55.6	54.0
12	52.8	52.3	52.6	53.7	54.2	56.6	57.7	58.6	58.9	56.7	55.8	54.0
14	53.0	52.6	53.2	54.2	54.6	57.2	58.4	59.2	59.5	57.2	56.2	54.3
16	53.2	52.8	53.3	54.4	54.6	57.2	58.6	59.3	59.7	57.4	56.4	54.4
18	53.1	52.7	53.0	53.9	54.1	56.8	57.9	59.0	59.4	57.2	56.1	54.3
20	53.0	52.4	52.7	53.4	53.6	56.2	57.3	58.5	59.0	56.8	56.0	54.2
22	52.8	52.3	52.5	53.2	53.4	55.9	57.1	58.3	58.7	56.6	55.8	54.1
Mean	52.8	52.3	52.6	53.5	53.8	56.3	57.5	58.5	58.9	56.8	55.9	54.1
Max.	56	56	58	60	60	62	62	64	64	61	59	57
Mean Max.	55.0	55.0	56.4	57.4	58.2	60.8	61.8	62.5	62.8	59.5	58.2	56.0
Mean Min.	51.5	50.5	49.8	50.5	50.8	52.0	53.8	54.5	55.8	54.5	54.5	52.8
Min.	50	50	48	50	49	50	52	54	55	54	53	52

Time meridian 120°W.

This table is derived from a recording thermometer record for the periods Jan. and Feb. 1946, and March 1947 through April 1951.

For additional data for this station, see Table 1.

Table 2. — Bihourly Sea Water Temperatures — *Continued*  
Means and Extremes in °F.

FRIDAY HARBOR, SAN JUAN I., WASH.

Hour	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	42.1	41.3	42.7	44.1	45.9	47.5	49.6	--	--	--	47.7	46.8
2	42.2	41.2	42.7	44.1	45.9	47.5	49.6	--	--	--	47.6	46.7
4	42.2	41.2	42.7	44.1	45.8	47.4	49.6	--	--	--	47.6	46.7
6	42.2	41.2	42.7	44.1	45.9	47.6	49.6	--	--	--	47.6	46.8
8	42.1	41.2	42.7	44.1	46.0	47.8	49.7	--	--	--	47.6	46.8
10	42.1	41.2	42.7	44.2	46.1	48.0	49.8	--	--	--	47.6	46.8
12	42.1	41.3	42.7	44.4	46.3	48.2	49.9	--	--	--	47.6	46.8
14	42.2	41.4	42.7	44.4	46.3	48.1	49.9	--	--	--	47.6	46.8
16	42.2	41.4	42.8	44.5	46.3	47.9	49.7	--	--	--	47.6	46.8
18	42.1	41.4	42.8	44.4	46.2	47.8	49.5	--	--	--	47.6	46.8
20	42.1	41.4	42.8	44.3	46.1	47.6	49.3	--	--	--	47.6	46.7
22	42.1	41.4	42.7	44.2	45.9	47.6	49.3	--	--	--	47.6	46.7
Mean	42.1	41.3	42.7	44.2	46.1	47.8	49.6	--	--	--	47.6	46.8
Max.	44	42	44	46	49	53	54	--	--	--	49	47
Min.	40	40	42	43	45	46	48	--	--	--	47	46

Time meridian 120°W.

This table is derived from a recording thermometer record for the year 1950.

For additional data for this station, see Table 1.

Table 2. — Bihourly Sea Water Temperatures — *Continued*  
Means and Extremes in °F.

BALBOA, CANAL ZONE

Hour	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	78.3	76.7	74.4	76.4	81.5	82.4	82.1	82.4	83.2	82.5	81.4	80.6
2	78.2	76.6	73.9	75.9	81.2	82.4	82.0	82.3	83.0	82.2	81.4	80.3
4	77.8	76.5	73.6	75.6	81.0	82.3	81.9	82.2	83.2	82.1	81.2	80.2
6	77.8	76.2	73.4	75.4	81.0	82.2	81.8	82.2	83.1	82.1	81.1	80.0
8	77.6	76.0	73.4	75.2	80.8	82.1	81.8	82.0	82.9	82.0	81.0	80.0
10	77.6	76.0	73.3	75.3	80.8	82.0	81.8	82.0	82.8	82.0	81.0	79.8
12	78.0	76.4	74.1	76.1	81.2	82.4	82.1	82.2	83.0	82.2	81.2	80.2
14	78.6	77.0	74.8	76.8	82.0	82.6	82.4	82.5	83.5	82.8	81.6	80.8
16	78.8	77.5	75.3	77.4	82.3	83.0	82.6	82.8	83.6	83.0	82.0	81.3
18	78.9	77.4	75.6	77.4	82.2	83.0	82.6	82.8	83.5	83.0	82.0	81.4
20	78.8	77.2	75.1	77.4	81.9	83.0	82.5	82.6	83.5	82.8	82.0	81.1
22	78.4	77.0	74.7	76.7	81.7	82.7	82.4	82.6	83.2	82.6	81.6	80.9
Mean	78.2	76.7	74.3	76.3	81.5	82.5	82.2	82.4	83.2	82.4	81.5	80.6
Max.	83	82	81	85	89	86	87	89	90	88	86	85
Mean Max.	83.0	80.5	80.0	81.5	86.0	85.5	85.0	86.0	87.0	87.0	85.5	84.0
Mean Min.	74.0	69.5	68.0	69.0	76.5	80.5	79.0	79.0	80.5	79.0	78.0	76.5
Min.	72	69	68	68	76	80	79	79	80	78	77	75

Time meridian 75°W.

This table is derived from a recording thermometer record for the years 1950 and 1951.

For additional data for this station, see Table 1.

**CRISTOBAL, CANAL ZONE**

Hour	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	80.6	80.0	80.9	82.7	83.7	84.2	83.6	83.2	84.6	83.8	82.8	81.8
2	80.6	79.9	80.7	82.6	83.6	84.1	83.4	83.1	84.4	83.8	82.6	81.6
4	80.4	79.8	80.6	82.6	83.6	84.0	83.4	83.0	84.3	83.6	82.5	81.6
6	80.4	79.8	80.5	82.5	83.4	83.8	83.3	82.9	84.1	83.4	82.4	81.5
8	80.3	79.6	80.4	82.4	83.2	83.8	83.2	82.8	84.0	83.4	82.4	81.5
10	80.4	79.6	80.4	82.2	83.4	83.6	83.2	82.9	84.1	83.4	82.4	81.6
12	80.6	79.8	80.5	82.4	83.4	83.8	83.2	83.1	84.3	83.6	82.6	81.7
14	80.8	80.0	80.8	82.7	83.8	84.0	83.4	83.3	84.5	83.8	82.8	81.9
16	80.9	80.2	81.0	82.8	83.8	84.2	83.6	83.4	84.8	83.9	83.0	82.0
18	80.9	80.3	81.2	83.0	84.0	84.4	83.8	83.4	84.8	83.9	83.0	82.1
20	80.8	80.2	81.1	83.0	84.0	84.4	83.7	83.4	84.7	83.9	82.9	82.0
22	80.6	80.1	81.1	82.9	83.8	84.3	83.6	83.4	84.6	83.8	82.8	81.9
Mean	80.6	79.9	80.8	82.6	83.6	84.0	83.4	83.2	84.4	83.7	82.7	81.8
Max.	83	82	83	86	87	86	86	86	87	87	85	85
Mean Max.	83.0	82.0	83.0	85.5	86.0	86.0	85.0	85.5	86.5	86.0	85.0	84.5
Mean Min.	78.5	78.0	79.0	80.0	81.0	82.0	81.0	81.0	82.5	81.5	79.5	79.0
Min.	78	78	78	80	80	82	80	80	82	81	79	77

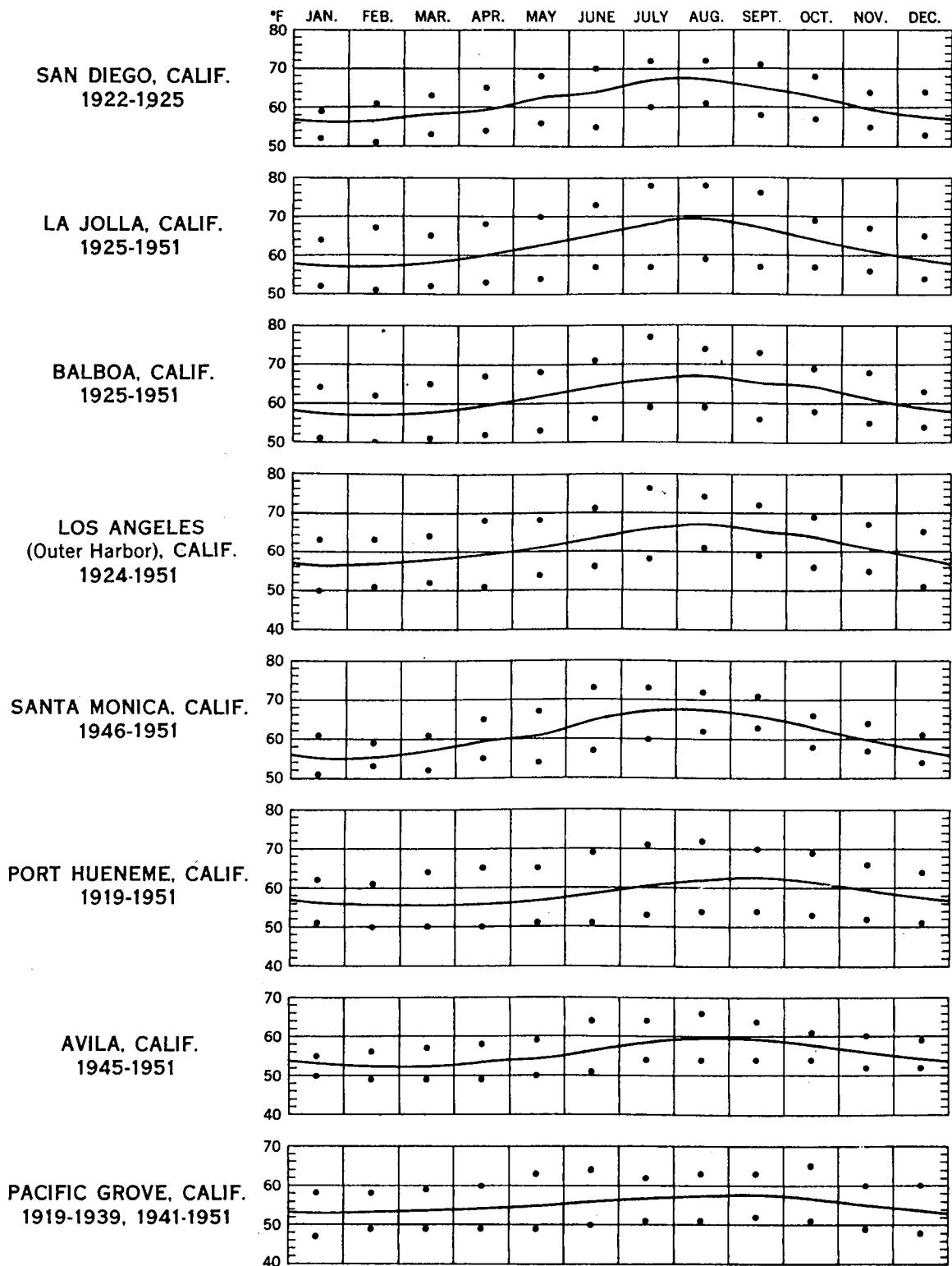
Time meridian 75°W.

This table is derived from a recording thermometer record for the years 1950 and 1951.

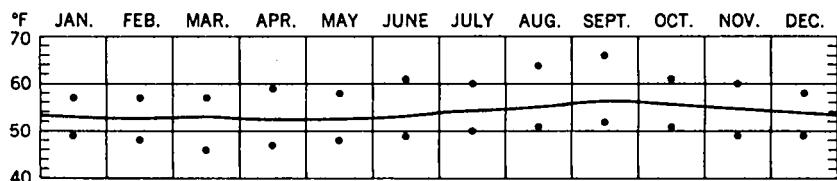
For additional data for this station, see Table 1.

### Graphs of Mean and Extreme Temperatures

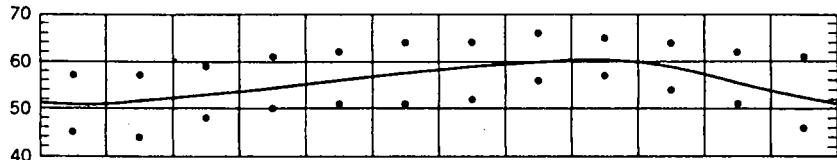
The variation in the mean surface water temperatures during the month and year for a number of places listed in Table 1 is shown by the solid lines. The dots show the maximum and minimum temperatures observed each month.



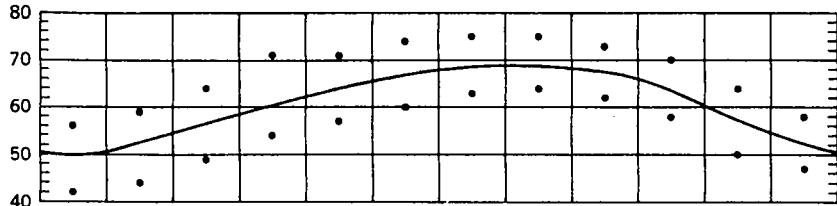
**NORTH FARALLON I., CALIF.**  
1925-1942



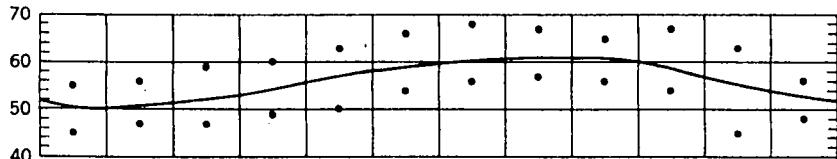
**SAN FRANCISCO (Fort Point), CALIF.**  
1922-1951



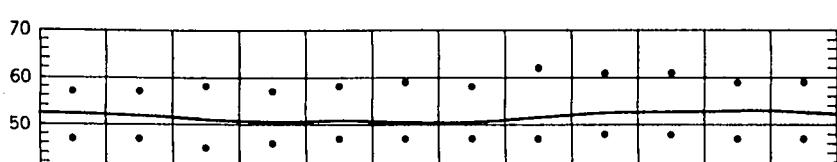
**ALAMEDA (Naval Air Station), CALIF.**  
1940-1951



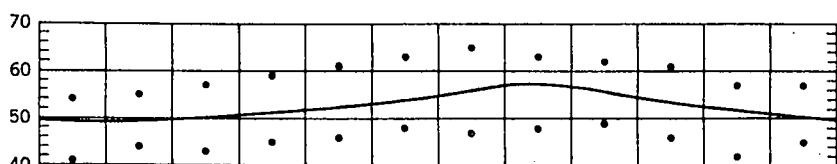
**SAUSALITO, CALIF.**  
1893-1896, 1937



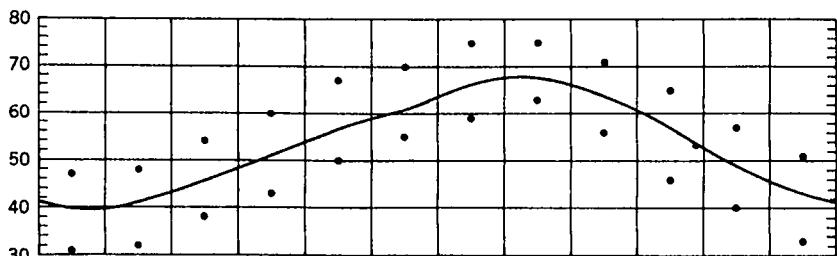
**BLUNTS REEF LIGHTSHIP**  
1923-1941



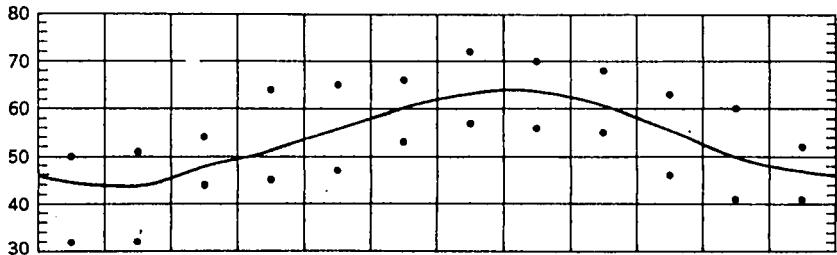
**CRESCENT CITY, CALIF.**  
1934-1947, 1950-1951



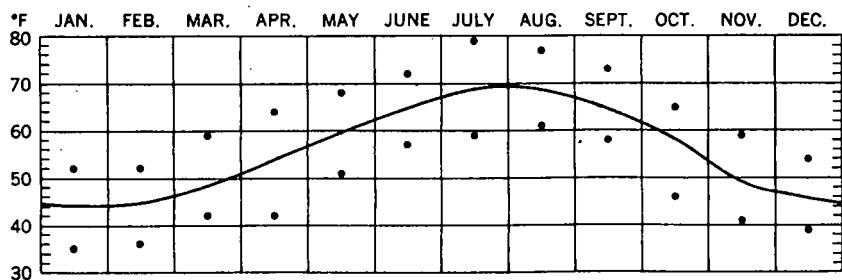
**ASTORIA (Tongue Point), ORE.**  
1925-1951



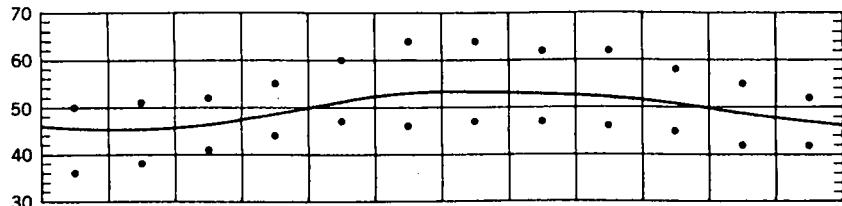
**TOKELAND, WASH.**  
1935-1939



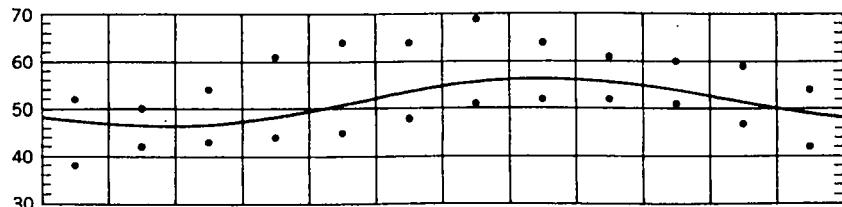
**RAYMOND, WASH.**  
1935-1942



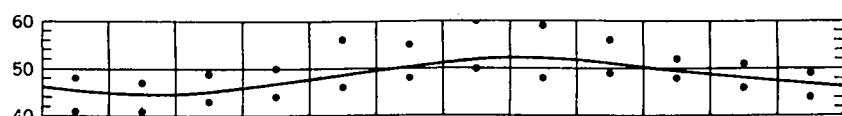
**NEAH BAY, WASH.**  
1936-1951



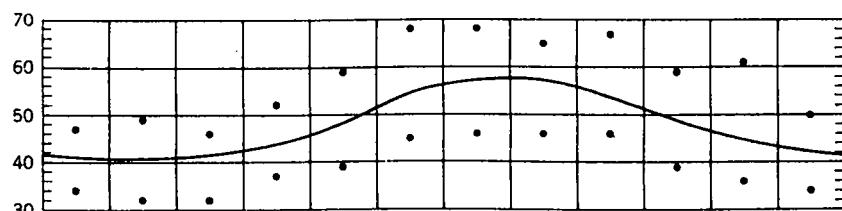
**SEATTLE**  
(Elliott Bay), WASH.  
1922-1951



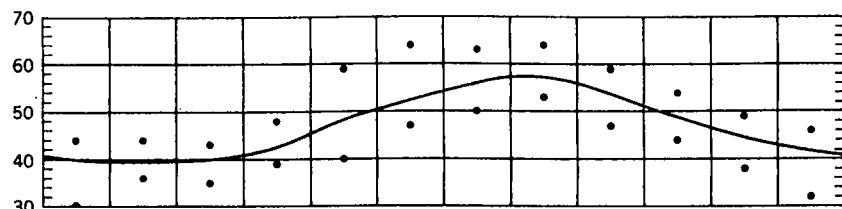
**FRIDAY HARBOR, WASH.**  
1935-1951



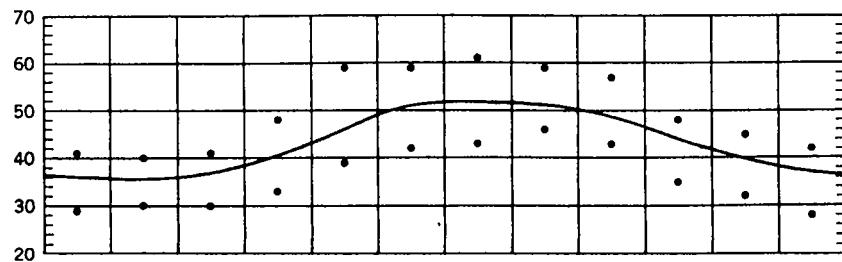
**KETCHIKAN, ALASKA**  
1922-1951



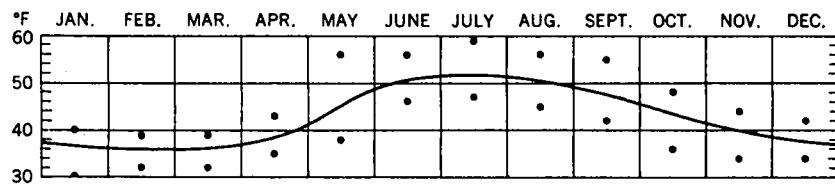
**SITKA, ALASKA**  
1924-1925, 1943-1951



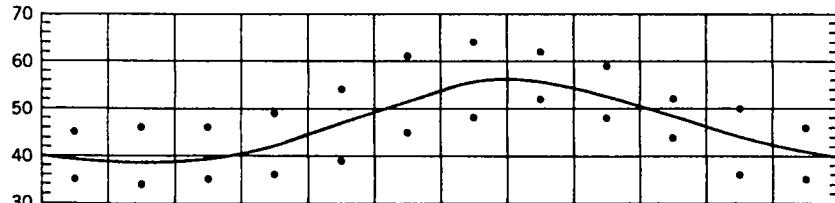
**JUNEAU, ALASKA**  
1937-1951



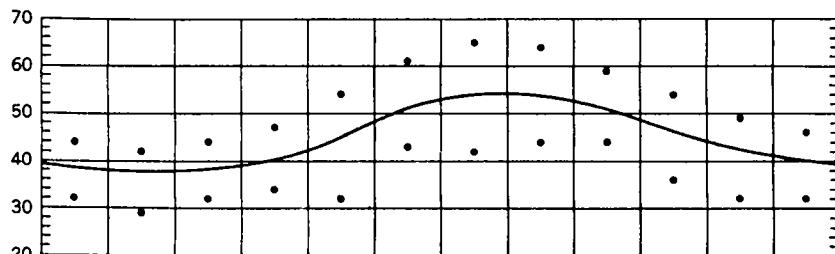
SKAGWAY, ALASKA  
1944-1951



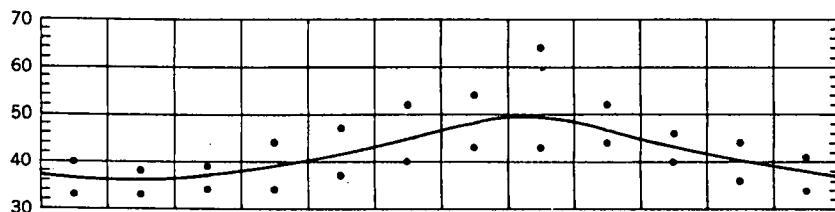
YAKUTAT, ALASKA  
1941-1951



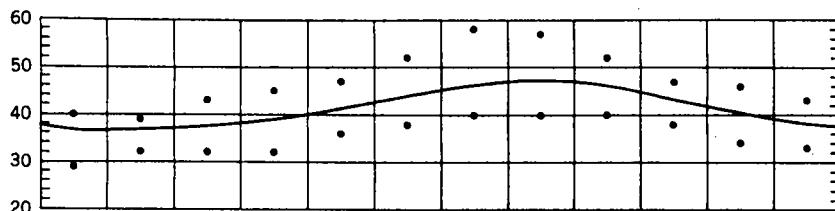
SEWARD, ALASKA  
1926-1939, 1944-1951



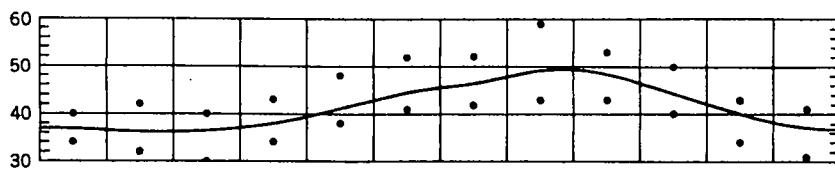
DUTCH HARBOR,  
UNALASKA I., ALASKA  
1946-1951



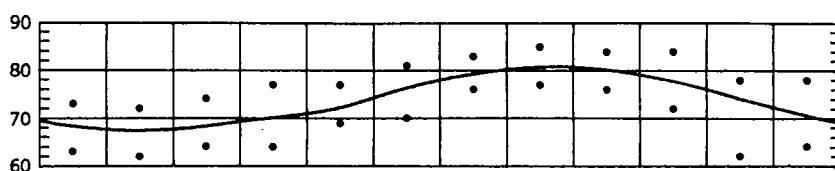
SWEeper COVE,  
ADAK ISLAND, ALASKA  
1944-1951



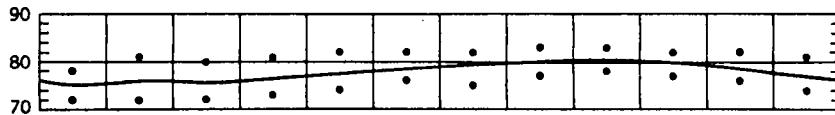
MASSACRE BAY,  
ATTU ISLAND, ALASKA  
1946-1951



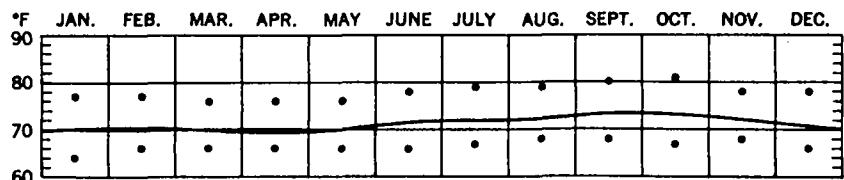
MIDWAY ISLANDS,  
HAWAIIAN ISLANDS  
1944-1951



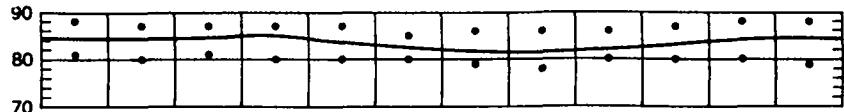
HONOLULU,  
HAWAIIAN ISLANDS  
1945-1951



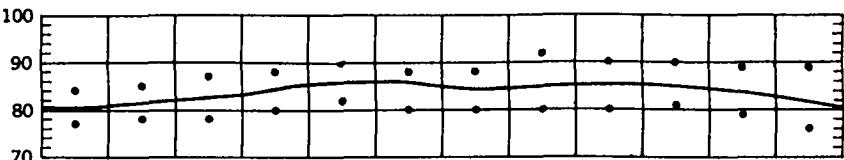
HILO,  
HAWAIIAN ISLANDS  
1947-1951



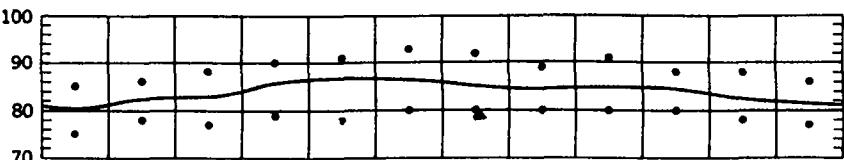
APIA, SAMOA ISLANDS  
1944-1951



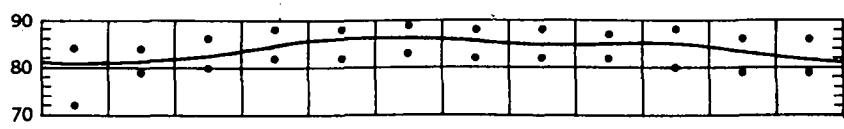
MANILA,  
PHILIPPINE ISLANDS  
1947-1951



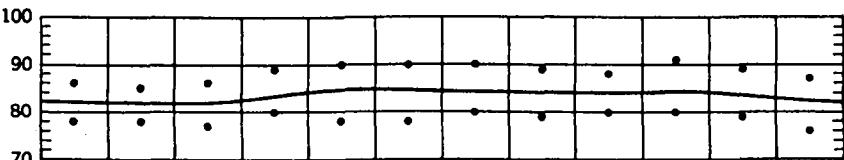
LEGASPI,  
PHILIPPINE ISLANDS  
1947-1951



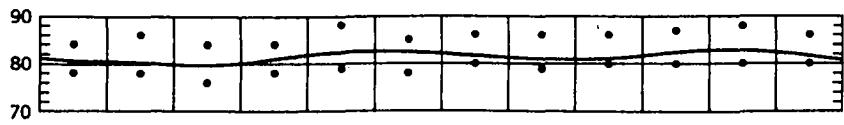
CEBU,  
PHILIPPINE ISLANDS  
1947-1951



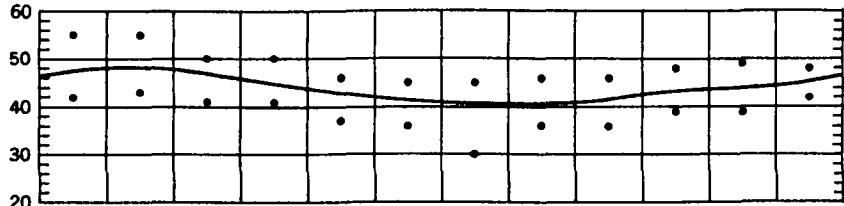
DAVAO,  
PHILIPPINE ISLANDS  
1947-1951



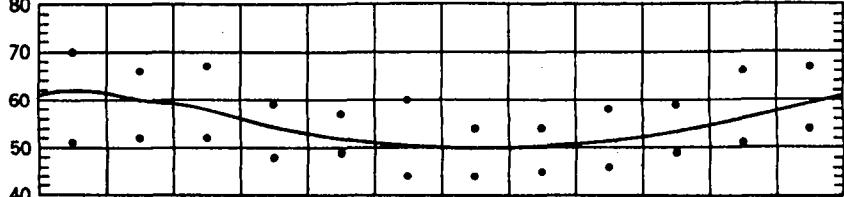
JOLO,  
PHILIPPINE ISLANDS  
1947-1951



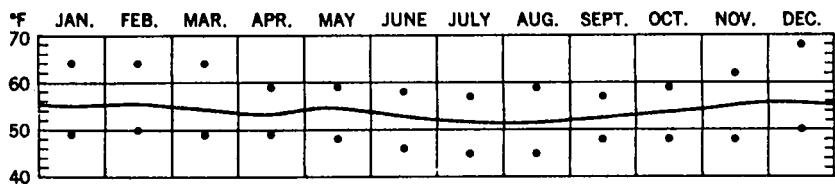
PUNTA ARENAS, CHILE  
1944-1951



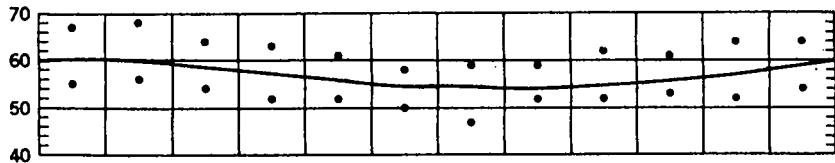
PUERTO MONTT, CHILE  
1944-1951



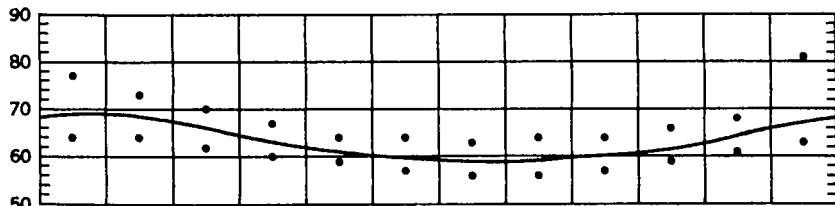
TALCAHUANO, CHILE  
1945-1951



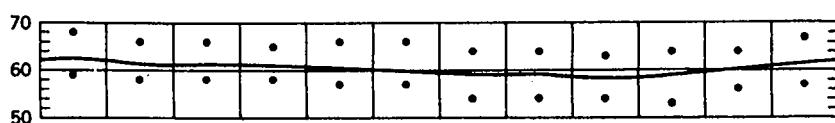
VALPARAISO, CHILE  
1944-1951



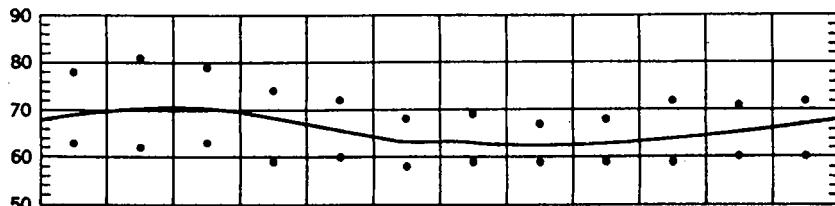
ANTOFAGASTA, CHILE  
1946-1951



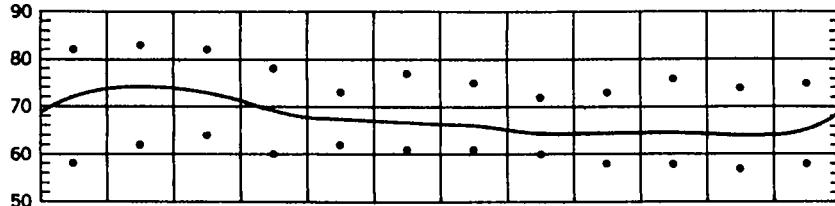
MATARANI, PERU  
1944-1951



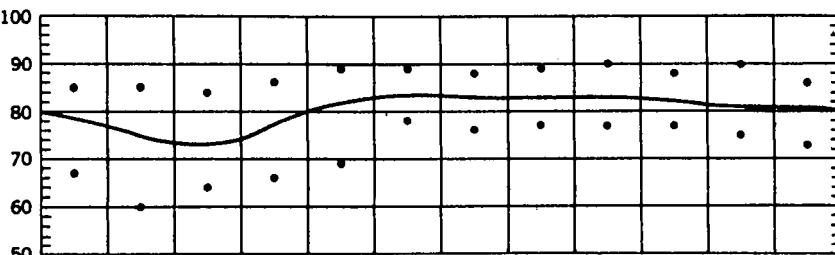
CALLAO, PERU  
1944-1951



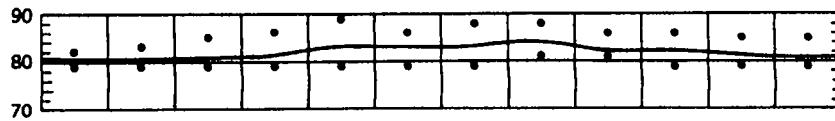
TALAR, PERU  
1944-1951



BALBOA, CANAL ZONE  
1908-1951



PUNTARENAS,  
COSTA RICA  
1948-1951



**Table 3 - Conversion of Fahrenheit to Centigrade**

$^{\circ}\text{F}$	$^{\circ}\text{C}$												
25.0	-3.9	35.0	1.7	45.0	7.2	55.0	12.8	65.0	18.3	75.0	23.9	85.0	29.4
25.2	-3.8	35.2	1.8	45.2	7.3	55.2	12.9	65.2	18.4	75.2	24.0	86.2	29.6
25.4	-3.7	35.4	1.9	45.4	7.4	55.4	13.0	65.4	18.6	75.4	24.1	86.4	29.7
25.6	-3.6	35.6	2.0	45.6	7.6	55.6	13.1	65.6	18.7	75.6	24.2	86.6	29.8
25.8	-3.4	35.8	2.1	45.8	7.7	55.8	13.2	65.8	18.8	75.8	24.3	86.8	29.9
26.0	-3.3	36.0	2.2	46.0	7.8	56.0	13.3	66.0	18.9	76.0	24.4	86.0	30.0
26.2	-3.2	36.2	2.3	46.2	7.9	56.2	13.4	66.2	19.0	76.2	24.6	86.2	30.1
26.4	-3.1	36.4	2.4	46.4	8.0	56.4	13.6	66.4	19.1	76.4	24.7	86.4	30.2
26.6	-3.0	36.6	2.6	46.6	8.1	56.6	13.7	66.6	19.2	76.6	24.8	86.6	30.3
26.8	-2.9	36.8	2.7	46.8	8.2	56.8	13.8	66.8	19.3	76.8	24.9	86.8	30.4
27.0	-2.8	37.0	2.8	47.0	8.3	57.0	13.9	67.0	19.4	77.0	25.0	87.0	30.6
27.2	-2.7	37.2	2.9	47.2	8.4	57.2	14.0	67.2	19.6	77.2	25.1	87.2	30.7
27.4	-2.6	37.4	3.0	47.4	8.6	57.4	14.1	67.4	19.7	77.4	25.2	87.4	30.8
27.6	-2.4	37.6	3.1	47.6	8.7	57.6	14.2	67.6	19.8	77.6	25.3	87.6	30.9
27.8	-2.3	37.8	3.2	47.8	8.8	57.8	14.3	67.8	19.9	77.8	25.4	87.8	31.0
28.0	-2.2	38.0	3.3	48.0	8.9	58.0	14.4	68.0	20.0	78.0	25.6	88.0	31.1
28.2	-2.1	38.2	3.4	48.2	9.0	58.2	14.6	68.2	20.1	78.2	25.7	88.2	31.2
28.4	-2.0	38.4	3.6	48.4	9.1	58.4	14.7	68.4	20.2	78.4	25.8	88.4	31.3
28.6	-1.9	38.6	3.7	48.6	9.2	58.6	14.8	68.6	20.3	78.6	25.9	88.6	31.4
28.8	-1.8	38.8	3.8	48.8	9.3	58.8	14.9	68.8	20.4	78.8	26.0	88.8	31.6
29.0	-1.7	39.0	3.9	49.0	9.4	59.0	15.0	69.0	20.6	79.0	26.1	89.0	31.7
29.2	-1.6	39.2	4.0	49.2	9.6	59.2	15.1	69.2	20.7	79.2	26.2	89.2	31.8
29.4	-1.4	39.4	4.1	49.4	9.7	59.4	15.2	69.4	20.8	79.4	26.3	89.4	31.9
29.6	-1.3	39.6	4.2	49.6	9.8	59.6	15.3	69.6	20.9	79.6	26.4	89.6	32.0
29.8	-1.2	39.8	4.3	49.8	9.9	59.8	15.4	69.8	21.0	79.8	26.6	89.8	32.1
30.0	-1.1	40.0	4.4	50.0	10.0	60.0	15.6	70.0	21.1	80.0	26.7	90.0	32.2
30.2	-1.0	40.2	4.6	50.2	10.1	60.2	15.7	70.2	21.2	80.2	26.8	90.2	32.3
30.4	-0.9	40.4	4.7	50.4	10.2	60.4	15.8	70.4	21.3	80.4	26.9	90.4	32.4
30.6	-0.8	40.6	4.8	50.6	10.3	60.6	15.9	70.6	21.4	80.6	27.0	90.6	32.6
30.8	-0.7	40.8	4.9	50.8	10.4	60.8	16.0	70.8	21.6	80.8	27.1	90.8	32.7
31.0	-0.6	41.0	5.0	51.0	10.6	61.0	16.1	71.0	21.7	81.0	27.2	91.0	32.8
31.2	-0.4	41.2	5.1	51.2	10.7	61.2	16.2	71.2	21.8	81.2	27.3	91.2	32.9
31.4	-0.3	41.4	5.2	51.4	10.8	61.4	16.3	71.4	21.9	81.4	27.4	91.4	33.0
31.6	-0.2	41.6	5.3	51.6	10.9	61.6	16.4	71.6	22.0	81.6	27.6	91.6	33.1
31.8	-0.1	41.8	5.4	51.8	11.0	61.8	16.6	71.8	22.1	81.8	27.7	91.8	33.2
32.0	0.0	42.0	5.6	52.0	11.1	62.0	16.7	72.0	22.2	82.0	27.8	92.0	33.3
32.2	0.1	42.2	5.7	52.2	11.2	62.2	16.8	72.2	22.3	82.2	27.9	92.2	33.4
32.4	0.2	42.4	5.8	52.4	11.3	62.4	16.9	72.4	22.4	82.4	28.0	92.4	33.6
32.6	0.3	42.6	5.9	52.6	11.4	62.6	17.0	72.6	22.6	82.6	28.1	92.6	33.7
32.8	0.4	42.8	6.0	52.8	11.6	62.8	17.1	72.8	22.7	82.8	28.2	92.8	33.8
33.0	0.6	43.0	6.1	53.0	11.7	63.0	17.2	73.0	22.8	83.0	28.3	93.0	33.9
33.2	0.7	43.2	6.2	53.2	11.8	63.2	17.3	73.2	22.9	83.2	28.4	93.2	34.0
33.4	0.8	43.4	6.3	53.4	11.9	63.4	17.4	73.4	23.0	83.4	28.6	93.4	34.1
33.6	0.9	43.6	6.4	53.6	12.0	63.6	17.6	73.6	23.1	83.6	28.7	93.6	34.2
33.8	1.0	43.8	6.6	53.8	12.1	63.8	17.7	73.8	23.2	83.8	28.8	93.8	34.3
34.0	1.1	44.0	6.7	54.0	12.2	64.0	17.8	74.0	23.3	84.0	28.9	94.0	34.4
34.2	1.2	44.2	6.8	54.2	12.3	64.2	17.9	74.2	23.4	84.2	29.0	94.2	34.6
34.4	1.3	44.4	6.9	54.4	12.4	64.4	18.0	74.4	23.6	84.4	29.1	94.4	34.7
34.6	1.4	44.6	7.0	54.6	12.6	64.6	18.1	74.6	23.7	84.6	29.2	94.6	34.8
34.8	1.6	44.8	7.1	54.8	12.7	64.8	18.2	74.8	23.8	84.8	29.3	94.8	34.9

$$^{\circ}\text{C} = \frac{^{\circ}\text{F} - 32}{1.8}$$