U.S. DEPARTMENT OF COMMERCE / Environmental Science Services Administration
Coast & Geodetic Survey

# SURFACE WATER TEMPERATURE AND DENSITY

## PACIFIC COAST

### NORTH AND SOUTH AMERICA & PACIFIC OCEAN ISLANDS

C&GS PUBLICATION 31-3
SECOND EDITION 1967

U.S. DEPARTMENT OF COMMERCE
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# INTRODUCTION

The summaries of sea water temperatures and densities presented in this publication are based on observations made at locations along the Pacific coast of North and South America and Pacific Ocean islands through the year 1964. The sea water temperatures and densities were observed primarily at tide stations which, in the United States and possessions, were maintained by the Coast and Geodetic Survey, often with the cooperation of other organizations. The data for six places on the California coast, namely La Jolla, Balboa, Port Hueneme, Pacific Grove, Southeast Farallon Island and Blunts Reef Lightship were supplied by the Scripps Institution of Oceanography. The data for places in Chile were supplied by the Departamento de Navegación e Hidrografía, República de Chile. Other observations in Latin America were obtained through cooperation with the Inter American Geodetic Survey. Data for the Philippine Islands were supplied by the Bureau of Coast and Geodetic Survey of the Republic of the Philippines. For places in other countries the Coast and Geodetic Survey derived the data from observations made by organizations in the particular country.

Table 1 presents monthly means and annual means and extremes of the surface water temperatures and densities for each year of observation after 1959. Earlier observations, with the exception of certain nineteenth century data, are combined in five-year groups. For each station at which the series of observations covered two or more years, the following monthly values are presented: 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 appears in either extreme temperature column in Table 1, it indicates that the extreme may 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 may have occurred, the extreme has been omitted. For densities, the yearly extremes are from the months of the year for which means are given. If they are from an incomplete year, they are followed by an asterisk.

The temperature data given in degrees Celsius are based on thermometer readings made in a sample of water drawn by bucket from a foot or two below the surface. They can be converted to degrees Fahrenheit by means of Table 2.

The density of any substance is defined as the mass per unit volume. The density of sea water, as observed, depends not only upon the amount of soluble matter held in solution but also upon the temperature of the water at the time the reading was made. It is necessary, therefore, to reduce the observed densities to some standard temperature in order that they may be comparable. In this publication the observed densities have been reduced to a standard temperature of 15°C (59°F). The density of pure water at a temperature of 15°C is taken as 0.9991. The density values obtained by using a hydrometer were reduced to the standard temperature by using the tables given in C&GS Special Publication No. 298.

Densities in Table 1 are expressed in terms of the Greek letter sigma with a subscript that refers to temperature and is called a sigma-t ($\sigma_t$) value. Thus: $\sigma_{15} = (\rho_{15} - 1)1000$ where $\rho_{15}$ is the density of sea water at 15°C (59°F) referred to pure water at 4°C (39.2°F) as unity. For example: If sea water has a density at 15°C of 1.0268, $\sigma_{15} = 26.8$. The actual density of the water may vary from a little less than unity for fresh water at a temperature other than 4°C to approximately 1.0410 for the heaviest sea water.

The salinity of sea water, denoted by the symbol °/oo, is defined as the number of grams of salts contained in 1000 grams of sea water.

Table 3 gives the salinity corresponding to different values of density at the standard temperature of 15°C.

The observations are usually made once each weekday at whatever time the observer attends the gage. At some stations situated within or near the entrance of an estuary, the temperature or density varies with the stage of tide or with the direction of the tidal current. It may be assumed that in the course of a month or more the distribution of observations is fairly uniform over all phases of the tide.

The mean temperature and density curves are derived from the monthly means given in Table 1 and show graphically the seasonal variation for many places.

For some practical uses of density data, it is more important to know the density at the temperature apt to be encountered than at the standard temperature. The graph, Sea Water Density at Various Temperatures, provides for converting density at 59°F (15°C) to density at other temperatures.

The following Coast and Geodetic Survey publications on sea water temperatures, salinities and densities are also available:

C&GS Publication 31-1, Surface Water Temperature and Salinity, Atlantic Coast, North and South America (Second Edition) 1965, 55 cents.

C&GS Special Publication No. 298, Sea Water Temperature and Density Reduction Tables, 1953, 25 cents.

# LIST OF STATIONS

| Station | Lat. ° ′ | Long. ° ′ | Page |
|---|---|---|---|
| Aberdeen, Grays Harbor, Wash. | 46 58N. | 123 51W. | 30 |
| Acajutla, El Salvador | 13 35N. | 89 51W. | 70 |
| Acapulco, Mexico | 16 51N. | 99 55W. | 72,82 |
| Admiralty Islands (Seeadler Harbor) | 2 02S. | 147 23E. | 48 |
| Alameda, Calif. | 37 47N. | 122 18W. | 22,78 |
| Anacortes, Wash. | 48 31N. | 122 37W. | 32,34 |
| Angaur Island, Palau Islands | 6 54N. | 134 08E. | 52 |
| Antofagasta, Chile | 23 39S. | 70 25W. | 60,81 |
| Apia (observatory), Western Samoa | 13 48S. | 171 46W. | 48,80 |
| Arica, Chile | 18 29S. | 70 20W. | 60,81 |
| Astoria (Tongue Point), Ore. | 46 13N. | 123 46W. | 28,78 |
| Avila Beach, Calif. | 35 10N. | 120 44W. | 18,78 |
| Bahía Solano, Colombia | 6 14N. | 77 24W. | 66 |
| Balboa, Calif. | 33 36N. | 117 54W. | 14,78 |
| Bandon, Coquille River, Ore. | 43 07N. | 124 25W. | 26 |
| Benicia, Carquinez Strait, Calif. | 38 03N. | 122 08W. | 24 |
| Blaine, Wash. | 49 00N. | 122 46W. | 34 |
| Blunts Reef Lightship, Calif. | 40 26N. | 124 30W. | 24,26,78 |
| Bremerton, Wash. | 47 34N. | 122 38W. | 32 |
| Brighton, Nehalem River, Ore. | 45 40N. | 123 56W. | 28 |
| Buenaventura, Colombia | 3 54N. | 77 05W. | 66,82 |
| Caldera, Chile | 27 04S. | 70 50W. | 60,81 |
| Caleta Percy, Magellan Strait, Chile | 52 54S. | 70 16W. | 56 |
| Callao (La Punta), Peru | 12 04S. | 77 11W. | 64,81 |
| Callao (Naval Arsenal), Peru | 12 03S. | 77 09W. | 62 |
| Canton Island, Phoenix Islands | 2 48S. | 171 43W. | 46,80 |
| Cathlamet, Columbia River, Wash. | 46 12N. | 123 23W. | 30 |
| Cebu, Cebu Island, Philippine Islands | 10 18N. | 123 54E. | 54,56,81 |
| Chimbote, Peru | 9 05S. | 78 38W. | 64,81 |
| Christmas Island | 1 59N. | 157 29W. | 46 |
| Collinsville, Sacramento River, Calif. | 38 04N. | 121 51W. | 24 |
| Constantine Harbor, Amchitka Island, Alaska | 51 25N. | 179 17E. | 42 |
| Coos Bay entrance, Ore. | 43 21N. | 124 19W. | 26 |
| Cordova, Alaska | 60 33N. | 145 46W. | 38 |
| Corinto, Nicaragua | 12 29N. | 87 10W. | 70 |
| Corral, Chile | 39 52S. | 73 26W. | 58 |
| Crescent City, Calif. | 41 45N. | 124 12W. | 26,78 |
| Davao, Mindanao Island, Philippine Islands | 7 05N. | 125 38E. | 56,81 |
| Dumbarton Bridge, San Francisco Bay, Calif. | 37 30N. | 122 07W. | 22 |
| Dutch Harbor, Amaknak Island, Alaska | 53 54N. | 166 32W. | 40,80 |
| Easter Island, Chile | 27 09S. | 109 26W. | 62 |
| Eniwetok Atoll, Marshall Islands | 11 22N. | 162 21E. | 50,80 |
| Ensenada, Mexico | 31 51N. | 116 38W. | 76,82 |
| Everett, Wash. | 47 59N. | 122 13W. | 32 |
| Florence, Siuslaw River, Ore. | 43 58N. | 124 06W. | 26 |
| Friday Harbor, San Juan Island, Wash. | 48 33N. | 123 00W. | 34,79 |
| Funafuti Atoll, Ellice Islands | 8 31S. | 179 12E. | 48 |
| Galápagos Islands (San Cristóbal), Ecuador | 0 54S. | 89 37W. | 66 |
| Gardiner, Umpqua River, Ore. | 43 44N. | 124 07W. | 26 |
| Garibaldi, Tillamook Bay, Ore. | 45 33N. | 123 54W. | 26 |
| Guadalcanal I. (Kukum), Solomon Islands | 9 26S. | 160 00E. | 48 |
| Guam (Apra Harbor), Marianas | 13 26N. | 144 39E. | 52,80 |
| Guaymas, Mexico | 27 55N. | 110 55W. | 74,82 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | LA JOLLA, |
| 1945-1949 | 13.4 | 24.9 | 13.3 | 24.9 | 13.7 | 24.9 | 14.6 | 24.9 | 16.7 | 25.0 | 18.1 | 25.0 | 18.1 | 25.0 |
| 1950-1954 | 13.6 | 24.8 | 13.4 | 24.8 | 13.6 | 24.9 | 14.9 | 24.9 | 15.7 | 24.9 | 16.9 | 24.9 | 18.6 | 25.0 |
| 1955-1959 | 14.5 | 24.9 | 14.6 | 24.9 | 14.8 | 24.8 | 15.7 | 24.8 | 16.7 | 24.9 | 17.9 | 24.9 | 18.6 | 24.9 |
| 1960 | 14.2 | 24.9 | 13.4 | 24.9 | 14.2 | 24.9 | 15.9 | 25.0 | 17.5 | 25.0 | 15.9 | 25.0 | 16.8 | 25.0 |
| 1961 | 14.6 | 24.9 | 14.4 | 24.9 | 14.3 | 24.9 | 15.0 | 25.0 | 15.7 | 25.1 | 15.9 | 25.1 | 19.6 | 25.1 |
| 1962 | 13.3 | 24.8 | 13.8 | 24.8 | 13.4 | 24.8 | 14.8 | 24.9 | 15.5 | 25.0 | 16.4 | 25.1 | 16.6 | 25.1 |
| 1963 | 13.9 | 25.0 | 14.8 | 25.0 | 14.3 | 25.0 | 14.3 | 25.0 | 15.4 | 25.1 | 18.1 | 25.1 | 18.1 | 25.0 |
| 1964 | 15.3 | 25.0 | 14.6 | 25.1 | 14.2 | 25.1 | 14.8 | 25.1 | 14.2 | 25.1 | 16.8 | 25.2 | 17.4 | 25.1 |
| Mean | 14.1 | 24.9 | 13.9 | 24.8 | 14.2 | 24.8 | 15.0 | 24.9 | 16.3 | 24.9 | 17.4 | 25.0 | 18.1 | 25.0 |
| Maximum | 17 | 25.2 | 17 | 25.2 | 18 | 25.2 | 19 | 25.2 | 21 | 25.5 | 23 | 25.3 | 25 | 25.3 |
| Mean Max. | 15.0 | 24.9 | 14.6 | 24.9 | 15.4 | 24.9 | 16.7 | 25.0 | 18.3 | 25.1 | 19.7 | 25.1 | 21.2 | 25.1 |
| Mean Min. | 13.3 | 24.8 | 13.1 | 24.7 | 12.9 | 24.7 | 13.1 | 24.8 | 13.2 | 24.9 | 14.2 | 24.9 | 14.6 | 24.9 |
| Minimum | 11 | 24.2 | 11 | 23.2 | 11 | 23.5 | 11 | 23.8 | 11 | 24.4 | 11 | 24.7 | 11 | 24.8 |
| | | | | | | | | | | | | | | NEWPORT BAY, |
| 1955-1959 | 14.6 | 24.4 | 14.7 | 24.2 | 16.2 | 24.3 | 17.3 | 24.0 | 17.9 | 24.6 | 19.8 | 24.6 | 20.7 | 24.8 |
| 1960 | 14.1 | 24.0 | 13.7 | 24.1 | 15.2 | 24.1 | 17.6 | 24.3 | 18.9 | 24.2 | 19.5 | 24.4 | 18.8 | 24.4 |
| 1961 | 14.7 | 24.2 | 15.4 | 24.2 | 15.6 | 24.3 | 16.9 | 24.5 | 17.7 | 24.6 | 18.4 | 24.8 | 21.7 | 25.0 |
| 1962 | 13.3 | 24.9 | 13.6 | 23.8 | 13.4 | 24.7 | 16.4 | 25.2 | 17.8 | 25.3 | 17.8 | 25.4 | 19.9 | 25.8 |
| 1963 | 13.8 | 25.1 | 15.3 | 24.6 | 15.0 | 25.0 | 15.2 | 25.0 | 17.1 | 25.4 | 18.9 | 25.4 | 20.7 | 25.4 |
| 1964 | 14.6 | 24.8 | 14.5 | 24.9 | 14.2 | 25.1 | 15.8 | 24.9 | 15.8 | 25.0 | 17.9 | 25.2 | 19.8 | 25.3 |
| Mean | 14.3 | 24.5 | 14.6 | 24.3 | 15.3 | 24.5 | 16.8 | 24.4 | 17.7 | 24.8 | 19.0 | 24.9 | 20.4 | 25.0 |
| Maximum | 17 | 25.4 | 17 | 25.3 | 19 | 25.5 | 21 | 25.6 | 21 | 26.5 | 22 | 26.2 | 24 | 26.2 |
| Mean Max. | 15.2 | 24.9 | 15.6 | 24.9 | 16.7 | 24.9 | 18.4 | 25.0 | 19.5 | 25.2 | 20.9 | 25.4 | 22.7 | 25.4 |
| Mean Min. | 13.3 | 23.9 | 13.6 | 23.4 | 13.8 | 24.0 | 14.3 | 23.3 | 15.7 | 24.5 | 16.9 | 24.6 | 18.0 | 24.8 |
| Minimum | 12 | 22.1 | 12 | 21.9 | 12 | 21.9 | 12 | 16.1 | 13 | 23.8 | 15 | 24.2 | 15 | 24.3 |
| | | | | | | | | | | | | | | BALBOA, |
| 1925-1929 | 14.2 | 24.8 | 14.2 | 24.7 | 14.3 | 24.8 | 15.1 | 24.9 | 16.6 | 25.0 | 18.1 | 25.0 | 19.2 | 25.0 |
| 1930-1934 | 14.1 | 24.9 | 14.1 | 24.9 | 14.9 | 24.9 | 15.9 | 25.0 | 16.6 | 25.1 | 17.9 | 25.1 | 19.7 | 25.1 |
| 1935-1939 | 14.3 | 24.8 | 13.7 | 24.7 | 13.9 | 24.8 | 14.7 | 25.0 | 16.6 | 25.0 | 18.1 | 25.0 | 18.7 | 25.1 |
| 1940-1944 | 15.0 | 24.8 | 14.8 | 24.7 | 15.3 | 24.7 | 15.7 | 24.8 | 17.0 | 24.9 | 17.9 | 25.0 | 17.9 | 24.9 |
| 1945-1949 | 13.4 | 24.8 | 13.3 | 24.8 | 13.6 | 24.8 | 14.9 | 24.9 | 16.6 | 24.9 | 18.4 | 24.9 | 18.9 | 25.0 |
| 1950-1954 | 13.3 | 24.8 | 13.4 | 24.8 | 13.3 | 24.7 | 14.8 | 24.8 | 14.8 | 24.9 | 16.6 | 24.9 | 18.2 | 25.0 |
| 1955-1959 | 14.4 | 24.9 | 14.0 | 24.8 | 14.8 | 24.8 | 14.8 | 24.7 | 15.8 | 24.9 | 17.7 | 24.9 | 18.9 | 24.9 |
| 1960 | 14.4 | 24.8 | 13.4 | 24.8 | 14.2 | 24.8 | 15.5 | 24.9 | 17.3 | 24.9 | 17.4 | 25.0 | 17.2 | 25.0 |
| 1961 | 14.4 | 24.9 | 14.8 | 24.9 | 14.1 | 24.9 | 14.9 | 24.9 | 15.6 | 25.1 | 16.5 | 25.2 | 19.3 | 25.1 |
| 1962 | 13.4 | 24.8 | 13.7 | 24.7 | 14.2 | 24.8 | 15.0 | 24.9 | 15.7 | 25.0 | 15.6 | 25.1 | 18.2 | 25.0 |
| 1963 | 14.0 | 25.0 | 14.9 | 24.9 | 13.9 | 24.9 | 13.5 | 25.0 | 15.6 | 25.0 | 18.0 | 25.1 | 18.8 | 25.1 |
| 1964 | 15.3 | 25.1 | 14.8 | 25.1 | 13.7 | 25.1 | 14.4 | 25.1 | 13.8 | 25.1 | 16.6 | 25.1 | 17.8 | 25.1 |
| Mean | 14.1 | 24.8 | 14.0 | 24.8 | 14.3 | 24.8 | 15.1 | 24.9 | 16.2 | 24.9 | 17.7 | 25.0 | 18.7 | 25.0 |
| Maximum | 18 | 26.2 | 17 | 25.8 | 18 | 25.6 | 19 | 25.4 | 20 | 25.7 | 22 | 25.5 | 25 | 26.8 |
| Mean Max. | 15.0 | 25.0 | 14.9 | 25.0 | 15.4 | 25.0 | 16.6 | 25.0 | 17.8 | 25.2 | 19.3 | 25.2 | 20.8 | 25.2 |
| Mean Min. | 13.1 | 24.7 | 12.9 | 24.5 | 12.9 | 24.6 | 13.2 | 24.7 | 14.1 | 24.8 | 15.6 | 24.9 | 16.1 | 24.9 |
| Minimum | 11 | 23.9 | 10 | 22.6 | 11 | 23.1 | 11 | 23.8 | 11 | 24.5 | 12 | 24.7 | 12 | 24.6 |
| | | | | | | | | | | | | | | LOS ANGELES (Outer |
| 1924 | 13.0 | 24.8 | 14.6 | 24.9 | 14.3 | 24.8 | 14.2 | 24.7 | 16.4 | 24.9 | 16.8 | 24.7 | 18.2 | 24.8 |
| 1925-1929 | 13.8 | 24.7 | 14.2 | 24.4 | 14.6 | 24.6 | 15.0 | 24.7 | 16.7 | 24.8 | 18.1 | 24.9 | 19.3 | 24.8 |
| 1930-1934 | 13.6 | 24.7 | 14.2 | 24.7 | 15.2 | 25.0 | 16.1 | 25.0 | 16.7 | 25.1 | 17.9 | 25.1 | 19.3 | 25.1 |
| 1935-1939 | 13.3 | 24.7 | 12.8 | 24.6 | 13.4 | 24.5 | 13.9 | 24.9 | 15.4 | 25.0 | 17.2 | 25.1 | 18.4 | 25.1 |
| 1940-1944 | 14.1 | 24.5 | 14.3 | 24.3 | 14.8 | 24.4 | 15.1 | 25.0 | 16.1 | 25.0 | 17.2 | 25.0 | 17.7 | 25.2 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| CALIF.-bottom-continued | | | | | | | | | | | | | | | |
| 19.2 | 24.9 | 18.2 | 24.9 | 17.7 | 24.9 | 15.6 | 24.9 | 14.2 | 24.9 | 16.1 | 24.9 | 22 | 25.1 | 11 | 24.6 |
| 18.8 | 25.0 | 17.4 | 24.9 | 16.8 | 24.9 | 16.0 | 24.9 | 14.6 | 24.9 | 15.9 | 24.9 | 23 | 25.1 | 11 | 24.4 |
| 19.4 | 24.9 | 18.8 | 24.9 | 18.1 | 24.9 | 16.6 | 24.9 | 15.6 | 24.9 | 16.8 | 24.9 | 23 | 25.2 | 11 | 23.8 |
| 17.1 | 25.0 | 17.2 | 24.9 | 17.1 | 25.0 | 16.2 | 24.9 | 14.2 | 24.9 | 15.8 | 25.0 | 23 | 25.1 | 12 | 24.7 |
| 17.2 | 25.0 | 17.9 | 25.0 | 16.3 | 24.9 | 14.6 | 24.9 | 14.2 | 24.8 | 15.8 | 25.0 | 22 | 25.5 | 12 | 24.8 |
| 18.7 | 25.1 | 18.2 | 25.0 | 17.0 | 25.0 | 15.8 | 24.9 | 14.7 | 25.0 | 15.7 | 25.0 | 22 | 25.2 | 11 | 24.7 |
| 19.9 | 25.0 | 18.5 | 24.9 | 17.9 | 24.9 | 16.6 | 24.9 | 15.7 | 24.9 | 16.5 | 25.0 | 22 | 25.1 | 12 | 24.8 |
| 20.8 | 25.2 | 18.6 | 25.2 | 16.7 | 25.0 | 14.6 | 25.0 | 13.4 | 24.9 | 15.9 | 25.1 | 23 | 25.3 | 12 | 24.8 |
| 18.9 | 25.0 | 18.1 | 24.9 | 17.3 | 24.9 | 16.1 | 24.9 | 14.9 | 24.9 | 16.2 | 24.9 | | | | |
| 24 | 25.3 | 23 | 25.2 | 21 | 25.2 | 20 | 25.2 | 18 | 25.2 | | | 25 | 25.5 | | |
| 21.7 | 25.1 | 20.5 | 25.0 | 19.2 | 25.0 | 17.5 | 25.0 | 16.1 | 25.0 | | | | | | |
| 15.3 | 24.9 | 15.0 | 24.8 | 15.1 | 24.8 | 14.6 | 24.8 | 13.9 | 24.8 | | | | | | |
| 13 | 24.7 | 12 | 24.7 | 13 | 24.6 | 12 | 24.5 | 13 | 24.5 | | | | | 11 | 23.2 |
| CALIF. | | | | | | | | | | | | | | | |
| 21.1 | 24.8 | 19.8 | 24.7 | 18.7 | 24.6 | 16.4 | 24.7 | 15.4 | 24.6 | 17.7 | 24.5 | 24 | 26.5 | 12 | 16.1 |
| 20.4 | 24.4 | 19.8 | 24.4 | 18.2 | 24.4 | 16.9 | 24.3 | 14.3 | 24.3 | 17.3 | 24.3 | 24 | 25.0 | 12 | 23.4 |
| 19.6 | 24.9 | 18.9 | 24.8 | 17.9 | 24.8 | 15.2 | 24.8 | 14.0 | 24.8 | 17.2 | 24.6 | 24 | 25.4 | 13 | 23.9 |
| 20.6 | 25.7 | 19.6 | 25.3 | 18.3 | 25.0 | 16.2 | 24.8 | 14.9 | 25.0 | 16.8 | 25.1 | 23 | 26.2 | 12 | 21.9 |
| 21.3 | 25.2 | 21.0 | 25.2 | 20.0 | 25.0 | 16.6 | 24.1 | 15.1 | 24.8 | 17.5 | 25.0 | 23 | 26.0 | 12 | 21.0 |
| 21.8 | 25.6 | 20.1 | 25.4 | 18.1 | 25.3 | 14.2 | 25.0 | 13.7 | 24.8 | 16.7 | 25.1 | 23 | 26.6 | 12 | 23.4 |
| 20.9 | 25.0 | 19.8 | 24.9 | 18.6 | 24.8 | 16.1 | 24.7 | 14.9 | 24.7 | 17.4 | 24.7 | | | | |
| 24 | 26.2 | 24 | 25.8 | 23 | 26.6 | 20 | 25.6 | 17 | 25.4 | | | 24 | 26.6 | | |
| 22.8 | 25.4 | 22.1 | 25.3 | 20.4 | 25.3 | 17.8 | 25.1 | 15.7 | 25.0 | | | | | | |
| 18.3 | 24.7 | 17.2 | 24.5 | 16.6 | 24.5 | 14.3 | 24.0 | 14.0 | 24.3 | | | | | | |
| 17 | 23.9 | 14 | 24.1 | 14 | 24.2 | 12 | 21.0 | 13 | 23.4 | | | | | 12 | 16.1 |
| CALIF. | | | | | | | | | | | | | | | |
| 19.4 | 24.9 | 18.2 | 24.9 | 17.3 | 24.8 | 16.4 | 24.9 | 15.5 | 24.8 | 16.5 | 24.9 | 22 | 25.6 | 12 | 22.6 |
| 19.6 | 25.0 | 18.3 | 24.9 | 17.6 | 25.0 | 16.2 | 24.9 | 14.8 | 24.9 | 16.6 | 25.0 | 25 | 26.8 | 12 | 23.8 |
| 19.7 | 25.1 | 18.7 | 25.0 | 18.2 | 25.0 | 16.7 | 25.0 | 16.0 | 25.0 | 16.6 | 25.0 | 23 | 25.9 | 11 | 23.3 |
| 19.6 | 24.9 | 18.6 | 24.9 | 18.4 | 24.9 | 16.8 | 24.8 | 15.5 | 24.7 | 16.9 | 24.8 | 23 | 25.4 | 12 | 23.9 |
| 19.4 | 25.0 | 18.9 | 25.0 | 17.7 | 24.9 | 15.6 | 24.8 | 14.2 | 24.8 | 16.2 | 24.9 | 23 | 25.1 | 11 | 24.5 |
| 18.1 | 25.0 | 16.9 | 25.0 | 16.6 | 24.9 | 15.6 | 24.9 | 14.4 | 24.8 | 15.5 | 24.9 | 23 | 25.1 | 10 | 24.4 |
| 19.3 | 24.9 | 18.7 | 24.9 | 18.1 | 24.9 | 16.4 | 24.9 | 15.4 | 24.9 | 16.5 | 24.9 | 23 | 25.7 | 11 | 23.8 |
| 18.6 | 25.0 | 18.4 | 24.9 | 17.2 | 24.9 | 16.6 | 24.9 | 14.3 | 24.9 | 16.2 | 24.9 | 22 | 25.2 | 12 | 24.6 |
| 17.7 | 25.1 | 17.7 | 25.0 | 16.9 | 24.9 | 15.1 | 24.9 | 14.3 | 24.8 | 15.9 | 25.0 | 22 | 25.5 | 12 | 24.7 |
| 18.7 | 25.1 | 18.9 | 25.0 | 17.8 | 24.9 | 16.0 | 25.1 | 15.1 | 25.0 | 16.0 | 25.0 | 22 | 25.5 | 12 | 24.2 |
| 19.7 | 25.0 | 19.8 | 24.9 | 19.3 | 24.9 | 16.9 | 24.8 | 15.4 | 25.0 | 16.6 | 25.0 | 22 | 25.5 | 12 | 24.3 |
| 20.5 | 25.2 | 18.4 | 25.1 | 17.6 | 25.1 | 14.8 | 24.9 | 14.2 | 24.9 | 16.0 | 25.1 | 23 | 26.2 | 12 | 24.5 |
| 19.3 | 25.0 | 18.4 | 24.9 | 17.7 | 24.9 | 16.2 | 24.9 | 15.1 | 24.9 | 16.4 | 24.9 | | | | |
| 23 | 26.8 | 23 | 26.3 | 22 | 25.8 | 20 | 26.2 | 19 | 25.5 | | | 25 | 26.8 | | |
| 21.3 | 25.1 | 20.4 | 25.1 | 19.1 | 25.1 | 17.7 | 25.1 | 16.1 | 25.0 | | | | | | |
| 16.8 | 24.9 | 16.2 | 24.8 | 15.9 | 24.8 | 14.8 | 24.8 | 13.9 | 24.7 | | | | | | |
| 14 | 24.7 | 12 | 24.6 | 13 | 24.5 | 12 | 24.3 | 12 | 24.5 | | | | | 10 | 22.6 |
| Harbor), CALIF. | | | | | | | | | | | | | | | |
| 18.2 | 24.8 | 16.8 | 24.9 | 15.0 | 24.7 | 13.4 | 24.6 | 12.7 | 24.7 | 15.3 | 24.8 | 20 | 25.4 | 11 | 24.4 |
| 19.9 | 24.9 | 18.7 | 24.8 | 17.8 | 24.7 | 16.3 | 24.7 | 15.2 | 24.7 | 16.6 | 24.7 | 23 | 25.8 | 11 | 19.1 |
| 19.3 | 25.0 | 18.3 | 25.0 | 17.7 | 25.0 | 16.1 | 25.0 | 13.9 | 24.9 | 16.5 | 25.0 | 24 | 25.7 | 11 | 20.1 |
| 19.3 | 25.1 | 18.8 | 25.0 | 17.4 | 24.9 | 15.9 | 25.0 | 15.1 | 24.8 | 15.9 | 24.9 | 22 | 25.7 | 10 | 18.6 |
| 19.3 | 25.1 | 18.4 | 25.1 | 18.1 | 25.0 | 16.3 | 25.0 | 14.8 | 24.7 | 16.4 | 24.9 | 22 | 25.9 | 12 | 16.8 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | LOS ANGELES (Outer Harbor), | | | |
| 1945-1949 | 12.8 | 24.7 | 13.2 | 24.8 | 13.5 | 24.9 | 14.6 | 25.0 | 16.1 | 25.1 | 17.8 | 25.1 | 18.7 | 25.1 |
| 1950-1954 | 13.9 | 24.5 | 14.3 | 24.8 | 14.4 | 24.9 | 15.8 | 25.0 | 15.7 | 25.1 | 17.7 | 25.3 | 19.3 | 25.2 |
| 1955-1959 | 14.5 | 24.2 | 14.4 | 24.2 | 15.5 | 24.4 | 15.7 | 24.5 | 16.4 | 24.6 | 18.2 | 24.8 | 19.5 | 24.8 |
| 1960 | 13.9 | 24.2 | 13.4 | 24.4 | 14.9 | 24.5 | 16.5 | 24.5 | 17.6 | 24.6 | 18.3 | 24.7 | 18.4 | 24.7 |
| 1961 | 14.8 | 24.7 | 15.6 | 24.7 | 15.0 | 24.8 | 16.3 | 24.8 | 15.7 | 25.0 | 17.2 | 25.0 | 21.2 | 25.2 |
| 1962 | 13.9 | 24.2 | 14.2 | 22.4 | 13.6 | 24.4 | 15.8 | 24.8 | 16.3 | 24.9 | 16.6 | 24.8 | 18.3 | 24.8 |
| 1963 | 14.2 | 24.9 | 15.6 | 24.4 | 15.3 | 24.8 | 14.1 | 25.0 | 16.2 | 25.1 | 17.9 | 25.0 | 19.4 | 25.1 |
| 1964 | 14.9 | 25.1 | 15.1 | 25.3 | 14.1 | 25.2 | 15.0 | 25.3 | 13.9 | 25.4 | 16.5 | 25.4 | 17.6 | 25.2 |
| Mean | 13.8 | 24.6 | 14.1 | 24.5 | 14.5 | 24.7 | 15.2 | 24.9 | 16.1 | 25.0 | 17.7 | 25.0 | 18.8 | 25.0 |
| Maximum | 17 | 25.5 | 17 | 25.4 | 19 | 25.7 | 20 | 25.6 | 20 | 25.9 | 22 | 25.8 | 24 | 26.3 |
| Mean Max. | 14.9 | 25.0 | 15.3 | 25.0 | 15.9 | 25.1 | 16.8 | 25.2 | 17.8 | 25.3 | 19.3 | 25.3 | 20.8 | 25.4 |
| Mean Min. | 12.8 | 23.6 | 13.0 | 23.3 | 13.2 | 23.9 | 13.7 | 24.4 | 14.4 | 24.6 | 15.9 | 24.7 | 16.9 | 24.8 |
| Minimum | 10 | 16.9 | 11 | 17.1 | 11 | 16.8 | 11 | 20.8 | 12 | 21.3 | 13 | 24.2 | 14 | 24.4 |
| | | | | | | | | | | | SANTA MONICA, | | | |
| 1946-1949 | 12.9 | 24.8 | 13.2 | 24.8 | 14.0 | 24.9 | 15.4 | 25.0 | 16.7 | 25.1 | 18.7 | 25.1 | 19.6 | 25.2 |
| 1950-1954 | 13.1 | 24.7 | 13.2 | 24.7 | 13.3 | 24.8 | 14.4 | 24.9 | 14.8 | 25.0 | 16.8 | 25.1 | 19.0 | 25.1 |
| 1955-1959 | 14.1 | 24.9 | 13.8 | 24.9 | 14.4 | 24.9 | 14.8 | 24.9 | 16.1 | 25.0 | 18.1 | 25.0 | 19.3 | 25.1 |
| 1960 | 13.7 | 24.9 | 13.2 | 24.8 | 14.1 | 24.8 | 14.8 | 25.0 | 16.3 | 25.3 | 17.7 | 25.2 | 18.1 | 25.0 |
| 1961 | 14.3 | 25.0 | 14.5 | 25.0 | 13.4 | 25.1 | 14.8 | 25.3 | 15.1 | 25.4 | 16.4 | 25.4 | 20.2 | 25.6 |
| 1962 | 13.5 | 24.7 | 13.4 | 24.1 | 12.8 | 24.9 | 14.1 | 24.9 | 15.1 | 25.1 | 15.5 | 25.0 | 18.0 | 25.0 |
| 1963 | 13.8 | 25.2 | 14.6 | 24.9 | 13.7 | 24.9 | 14.0 | 25.0 | 15.6 | 25.0 | 17.8 | 25.1 | 19.5 | 25.1 |
| 1964 | 14.4 | 25.1 | 14.5 | 25.1 | 13.4 | 25.1 | 14.2 | 25.1 | 14.1 | 25.1 | 16.3 | 25.1 | 18.2 | 25.1 |
| Mean | 13.6 | 24.8 | 13.6 | 24.8 | 13.8 | 24.9 | 14.7 | 25.0 | 15.7 | 25.1 | 17.5 | 25.1 | 19.2 | 25.1 |
| Maximum | 16 | 25.6 | 17 | 25.8 | 18 | 25.7 | 19 | 26.3 | 19 | 25.9 | 23 | 26.2 | 23 | 26.5 |
| Mean Max. | 14.3 | 25.2 | 14.5 | 25.2 | 15.2 | 25.3 | 16.2 | 25.4 | 17.4 | 25.5 | 19.3 | 25.6 | 21.0 | 25.6 |
| Mean Min. | 12.5 | 24.2 | 12.5 | 23.7 | 12.3 | 24.3 | 13.1 | 24.4 | 13.8 | 24.7 | 15.6 | 24.6 | 17.2 | 24.7 |
| Minimum | 11 | 23.0 | 11 | 20.3 | 11 | 22.8 | 11 | 23.4 | 12 | 24.3 | 13 | 24.1 | 14 | 24.3 |
| | | | | | | | | | | | PORT HUENEME, | | | |
| 1920-1924 | 13.3 | 24.8 | 12.9 | 24.9 | 13.2 | 24.9 | 12.4 | 25.0 | 13.6 | 25.0 | 14.6 | 25.0 | 14.8 | 25.0 |
| 1925-1929 | 13.8 | 24.9 | 13.5 | 24.8 | 13.4 | 24.9 | 13.1 | 24.9 | 13.8 | 25.0 | 14.9 | 25.0 | 15.8 | 24.9 |
| 1930-1934 | 13.3 | 24.9 | 13.5 | 24.8 | 13.7 | 24.9 | 13.9 | 25.0 | 14.0 | 25.1 | 14.8 | 25.0 | 16.4 | 25.0 |
| 1935-1939 | 13.6 | 24.7 | 12.8 | 24.7 | 12.6 | 24.8 | 12.6 | 24.9 | 13.3 | 25.0 | 14.5 | 25.0 | 15.6 | 25.0 |
| 1940-1944 | 14.3 | 24.6 | 14.0 | 24.5 | 14.2 | 24.4 | 13.7 | 24.7 | 14.3 | 24.5 | 15.0 | 24.7 | 15.8 | 24.8 |
| 1945-1949 | 12.6 | 24.8 | 12.6 | 24.7 | 12.6 | 24.7 | 12.9 | 24.8 | 13.9 | 24.9 | 14.8 | 24.9 | 16.3 | 25.0 |
| 1950-1954 | 13.1 | 24.8 | 13.1 | 24.8 | 13.1 | 24.8 | 14.1 | 24.8 | 14.1 | 24.9 | 15.8 | 24.9 | 17.2 | 25.0 |
| 1955-1959 | 13.8 | 24.4 | 13.4 | 24.7 | 13.6 | 24.7 | 13.9 | 24.6 | 14.7 | 24.6 | 15.7 | 24.4 | 16.8 | 24.5 |
| 1960 | 12.6 | 24.8 | 12.1 | 24.9 | 13.2 | 25.0 | 13.2 | 25.0 | 13.5 | 25.1 | 15.1 | 25.0 | 14.7 | 25.0 |
| 1961 | 13.2 | 25.0 | 13.3 | 25.0 | 11.8 | 25.1 | 12.8 | 25.2 | 12.8 | 25.2 | 14.4 | 25.2 | 16.7 | 25.1 |
| 1962 | 12.3 | 24.9 | 13.0 | 24.2 | 11.9 | 24.9 | 13.5 | 25.1 | 13.7 | 25.2 | 14.6 | 25.1 | 15.7 | 25.2 |
| 1963 | 13.3 | 25.0 | 14.6 | 24.9 | 12.8 | 25.1 | 13.2 | 25.1 | -- | -- | -- | -- | -- | -- |
| Mean | 13.4 | 24.8 | 13.2 | 24.7 | 13.2 | 24.8 | 13.3 | 24.9 | 13.9 | 24.9 | 15.0 | 24.9 | 16.1 | 24.9 |
| Maximum | 17 | 25.4 | 17 | 25.6 | 18 | 25.4 | 18 | 25.6 | 18 | 25.6 | 20 | 25.6 | 22 | 25.4 |
| Mean Max. | 14.6 | 25.0 | 14.3 | 25.0 | 14.6 | 25.0 | 14.9 | 25.1 | 15.9 | 25.1 | 17.1 | 25.1 | 18.6 | 25.1 |
| Mean Min. | 12.1 | 24.2 | 12.0 | 24.3 | 11.7 | 24.4 | 11.9 | 24.6 | 12.1 | 24.7 | 12.9 | 24.5 | 13.9 | 24.7 |
| Minimum | 9 | 17.3 | 10 | 20.8 | 9 | 21.9 | 10 | 21.6 | 11 | 21.8 | 11 | 19.1 | 12 | 21.6 |
| | | | | | | | | | | | SANTA BARBARA, | | | |
| 1930-1932 | 12.7 | 25.0 | 13.3 | 25.0 | 14.1 | 25.2 | 15.1 | 25.3 | 15.0 | 25.3 | 16.7 | 25.4 | 18.8 | 25.4 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| CALIF.-continued | | | | | | | | | | | | | | | |
| 19.3 | 25.1 | 19.0 | 25.0 | 17.7 | 25.0 | 15.6 | 24.9 | 13.8 | 24.8 | 16.0 | 25.0 | 21 | 25.6 | 11 | 22.8 |
| 19.3 | 25.1 | 18.6 | 25.1 | 18.2 | 25.1 | 17.0 | 25.0 | 15.3 | 24.9 | 16.6 | 25.0 | 23 | 26.0 | 11 | 16.9 |
| 19.2 | 24.8 | 19.4 | 24.8 | 18.8 | 24.7 | 16.8 | 24.7 | 15.4 | 24.7 | 17.0 | 24.6 | 24 | 25.9 | 12 | 18.3 |
| 19.4 | 24.8 | 20.0 | 24.7 | 18.1 | 24.7 | 17.3 | 24.6 | 14.9 | 24.7 | 16.9 | 24.6 | 22 | 25.1 | 12 | 23.5 |
| 19.3 | 25.1 | 19.0 | 25.0 | 17.2 | 24.7 | 15.7 | 24.6 | 14.4 | 24.3 | 16.8 | 24.8 | 23 | 26.3 | 14 | 23.9 |
| 19.4 | 25.0 | 19.4 | 24.9 | 18.5 | 24.7 | 16.8 | 24.7 | 15.6 | 24.7 | 16.5 | 24.5 | 21 | 25.3 | 12 | 17.9 |
| 20.7 | 25.1 | 20.3 | 25.2 | 19.6 | 25.2 | 17.0 | 24.8 | 15.4 | 25.0 | 17.1 | 25.0 | 22 | 25.8 | 13 | 19.7 |
| 20.2 | 25.3 | 18.6 | 25.0 | 17.9 | 25.2 | 15.1 | 25.1 | 14.2 | 25.1 | 16.1 | 25.2 | 22 | 25.9 | 12 | 24.5 |
| 19.4 | 25.0 | 18.8 | 25.0 | 17.9 | 24.9 | 16.2 | 24.9 | 14.8 | 24.8 | 16.4 | 24.9 | | | | |
| 23 | 25.8 | 23 | 25.8 | 22 | 26.0 | 21.1 | 25.7 | 18.3 | 25.9 | | | 24 | 26.3 | | |
| 21.2 | 25.3 | 20.5 | 25.3 | 19.3 | 25.2 | 17.8 | 25.2 | 16.1 | 25.1 | | | | | | |
| 17.8 | 24.7 | 17.3 | 24.7 | 16.7 | 24.6 | 14.9 | 24.5 | 13.6 | 24.2 | | | | | | |
| 16 | 24.2 | 15 | 24.1 | 13 | 24.3 | 12.8 | 23.3 | 10.6 | 20.5 | | | | | 10 | 16.8 |
| CALIF. | | | | | | | | | | | | | | | |
| 20.0 | 25.0 | 18.9 | 25.0 | 17.1 | 24.9 | 15.2 | 24.9 | 13.8 | 24.8 | 16.3 | 25.0 | 23 | 27.3 | 11 | 22.7 |
| 19.1 | 25.0 | 18.3 | 25.0 | 17.0 | 24.9 | 15.6 | 24.8 | 14.2 | 24.7 | 15.7 | 24.9 | 22 | 26.3 | 11 | 22.8 |
| 20.0 | 25.0 | 19.3 | 25.0 | 18.0 | 24.9 | 15.9 | 25.1 | 15.0 | 25.0 | 16.6 | 25.0 | 23 | 26.5 | 10 | 20.9 |
| 20.1 | 25.1 | 19.7 | 24.9 | 17.3 | 24.9 | 16.3 | 25.0 | 14.2 | 25.2 | 16.3 | 25.0 | 22 | 27.3 | 12 | 24.1 |
| 19.3 | 25.4 | 17.9 | 25.5 | 16.7 | 25.2 | 14.8 | 25.0 | 13.9 | 24.8 | 15.9 | 25.2 | 22 | 26.4 | 12 | 24.1 |
| 19.1 | 25.0 | 19.3 | 24.8 | 17.7 | 24.9 | 15.8 | 24.8 | 14.8 | 24.8 | 15.8 | 24.8 | 21 | 26.2 | 12 | 20.3 |
| 20.2 | 25.0 | 20.7 | 25.0 | 19.0 | 24.9 | 16.2 | 25.0 | 14.8 | 25.0 | 16.7 | 25.0 | 23 | 25.8 | 12 | 24.1 |
| 20.7 | 25.2 | 18.8 | 24.9 | 17.2 | 25.0 | 13.9 | 24.7 | 13.8 | 24.8 | 15.8 | 25.0 | 22 | 25.9 | 11 | 22.8 |
| 19.7 | 25.0 | 18.9 | 25.0 | 17.4 | 24.9 | 15.6 | 24.9 | 14.4 | 24.9 | 16.2 | 25.0 | | | | |
| 23 | 27.3 | 22 | 26.4 | 23 | 25.7 | 19 | 26.5 | 17 | 25.8 | | | 23 | 27.3 | | |
| 21.3 | 25.6 | 20.6 | 25.5 | 18.9 | 25.3 | 17.1 | 25.5 | 15.3 | 25.3 | | | | | | |
| 17.8 | 24.6 | 17.3 | 24.5 | 15.8 | 24.5 | 14.2 | 24.3 | 13.3 | 24.4 | | | | | | |
| 16 | 24.3 | 16 | 24.0 | 13 | 23.9 | 11 | 22.8 | 12 | 22.8 | | | | | 11 | 20.3 |
| CALIF. | | | | | | | | | | | | | | | |
| 15.4 | 24.9 | 15.9 | 25.0 | 15.4 | 25.0 | 15.2 | 25.1 | 13.8 | 25.0 | 14.2 | 25.0 | 19 | 25.7 | 10 | 23.6 |
| 16.7 | 24.9 | 16.6 | 24.9 | 16.4 | 24.9 | 15.5 | 24.9 | 14.8 | 24.9 | 14.9 | 24.9 | 22 | 25.7 | 11 | 24.2 |
| 17.0 | 25.0 | 16.4 | 24.9 | 16.1 | 24.9 | 14.9 | 24.9 | 13.9 | 24.9 | 14.8 | 24.9 | 22 | 25.3 | 11 | 24.4 |
| 16.8 | 24.9 | 17.2 | 24.9 | 16.9 | 24.9 | 15.8 | 24.9 | 15.3 | 24.7 | 14.8 | 24.9 | 21 | 25.2 | 10 | 22.6 |
| 17.4 | 24.8 | 17.4 | 24.8 | 16.9 | 24.8 | 15.5 | 24.8 | 14.8 | 24.7 | 15.3 | 24.7 | 21 | 25.1 | 11 | 21.6 |
| 16.4 | 24.9 | 16.6 | 24.9 | 16.0 | 24.9 | 14.9 | 24.8 | 13.6 | 24.8 | 14.4 | 24.8 | 19 | 25.2 | 10 | 24.5 |
| 17.4 | 24.9 | 17.0 | 24.9 | 16.3 | 24.8 | 15.4 | 24.8 | 14.1 | 24.8 | 15.1 | 24.9 | 21 | 25.1 | 9 | 24.5 |
| 17.3 | 24.6 | 17.0 | 24.6 | 16.8 | 24.8 | 15.6 | 24.8 | 14.7 | 24.7 | 15.3 | 24.6 | 21 | 25.6 | 10 | 17.3 |
| 14.7 | 25.0 | 14.9 | 24.9 | 15.0 | 24.9 | 15.0 | 24.8 | 13.3 | 25.0 | 13.9 | 25.0 | 17 | 25.3 | 11 | 23.3 |
| 16.5 | 25.1 | 16.1 | 25.0 | 15.9 | 25.0 | 13.7 | 25.1 | 13.0 | 24.8 | 14.2 | 25.0 | 20 | 25.6 | 9 | 24.1 |
| 16.6 | 25.0 | 17.6 | 25.0 | 16.8 | 25.1 | 15.3 | 25.0 | 14.7 | 25.1 | 14.6 | 25.0 | 19 | 25.4 | 11 | 20.8 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 25.4* | 11* | 21.9* |
| 16.8 | 24.9 | 16.7 | 24.9 | 16.3 | 24.9 | 15.3 | 24.9 | 14.3 | 24.8 | 14.8 | 24.9 | | | | |
| 22 | 25.5 | 21 | 25.3 | 20 | 25.7 | 19 | 25.6 | 18 | 25.5 | | | 22 | 25.7 | | |
| 18.8 | 25.0 | 18.8 | 25.0 | 18.0 | 25.0 | 16.7 | 25.1 | 15.6 | 25.0 | | | | | | |
| 14.6 | 24.7 | 14.6 | 24.7 | 14.5 | 24.7 | 13.6 | 24.7 | 12.9 | 24.4 | | | | | | |
| 10 | 23.1 | 11 | 23.2 | 11 | 24.0 | 11 | 23.3 | 11 | 18.9 | | | | | 9 | 17.3 |
| CALIF. | | | | | | | | | | | | | | | |
| 19.9 | 25.4 | 18.0 | 25.2 | 16.4 | 25.2 | 14.4 | 25.2 | 13.4 | 25.1 | 15.6 | 25.2 | 22 | 26.2 | 10 | 21.6 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | SANTA BARBARA, |
| Mean | 12.7 | 25.0 | 13.3 | 25.0 | 14.1 | 25.2 | 15.1 | 25.3 | 15.0 | 25.3 | 16.7 | 25.4 | 18.8 | 25.4 |
| Maximum | 15 | 25.6 | 17 | 25.8 | 17 | 25.8 | 18 | 25.9 | 19 | 26.2 | 19 | 26.0 | 22 | 25.9 |
| Mean Max. | 14.2 | 25.5 | 15.1 | 25.6 | 16.2 | 25.7 | 17.3 | 25.8 | 17.1 | 25.9 | 18.7 | 25.7 | 20.5 | 25.8 |
| Mean Min. | 11.4 | 24.4 | 11.5 | 23.2 | 11.5 | 24.7 | 12.9 | 24.9 | 12.4 | 24.9 | 14.6 | 25.1 | 15.8 | 25.0 |
| Minimum | 10 | 23.9 | 10 | 21.6 | 11 | 24.6 | 10 | 24.8 | 11 | 24.8 | 14 | 25.0 | 14 | 24.9 |
| | | | | | | | | | | | | | | AVILA BEACH, |
| 1945-1949 | 11.6 | 25.0 | 11.6 | 25.0 | 11.4 | 25.1 | 12.0 | 25.2 | 12.4 | 25.3 | 13.8 | 25.3 | 14.8 | 25.3 |
| 1950-1954 | 11.8 | 24.6 | 11.8 | 24.7 | 11.7 | 24.9 | 12.1 | 25.2 | 12.4 | 25.3 | 13.2 | 25.3 | 15.0 | 25.2 |
| 1955-1959 | 12.4 | 24.9 | 12.1 | 24.6 | 12.2 | 25.1 | 12.3 | 25.1 | 13.1 | 25.1 | 13.9 | 25.2 | 14.9 | 25.5 |
| 1960 | 12.3 | 24.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1961 | 12.8 | 24.8 | 12.2 | 24.6 | -- | -- | -- | -- | -- | -- | 13.9 | 25.4 | 15.3 | 25.5 |
| 1962 | 12.1 | 24.5 | 13.0 | 21.2 | 11.7 | 23.9 | 12.6 | 25.6 | 12.1 | 25.5 | 14.1 | 25.3 | 15.0 | 25.2 |
| 1963 | 12.5 | 25.0 | 13.6 | 23.2 | 12.2 | 23.7 | -- | -- | 13.6 | 24.7 | -- | -- | 15.7 | 25.4 |
| 1964 | 12.8 | 24.9 | 12.7 | 25.1 | 11.5 | 25.1 | 11.9 | 25.5 | 12.3 | 25.1 | 13.6 | 25.3 | 14.9 | 25.3 |
| Mean | 12.1 | 24.8 | 12.1 | 24.5 | 11.8 | 24.8 | 12.2 | 25.2 | 12.7 | 25.1 | 13.7 | 25.3 | 14.9 | 25.3 |
| Maximum | 15 | 25.9 | 15 | 25.7 | 15 | 26.0 | 17 | 26.0 | 16 | 26.3 | 18 | 26.2 | 18 | 26.5 |
| Mean Max. | 13.2 | 25.4 | 13.1 | 25.3 | 13.3 | 25.5 | 13.9 | 25.7 | 14.3 | 25.8 | 15.6 | 25.8 | 16.5 | 25.8 |
| Mean Min. | 11.1 | 24.1 | 10.9 | 23.3 | 10.5 | 23.3 | 10.5 | 24.7 | 11.2 | 24.7 | 11.9 | 24.9 | 13.1 | 24.9 |
| Minimum | 10 | 21.2 | 8 | 17.2 | 9 | 11.9 | 9 | 24.2 | 10 | 22.2 | 10 | 24.3 | 12 | 24.2 |
| | | | | | | | | | | | | | | PACIFIC GROVE, |
| 1920-1924 | 10.9 | 24.7 | 11.3 | 24.5 | 11.5 | 24.6 | 11.6 | 24.8 | 11.7 | 25.0 | 12.9 | 25.0 | 13.1 | 24.9 |
| 1925-1929 | 11.4 | 24.8 | 11.8 | 24.7 | 12.1 | 24.7 | 12.3 | 24.7 | 12.2 | 25.0 | 12.4 | 25.1 | 13.1 | 25.1 |
| 1930-1934 | 11.7 | 24.7 | 12.1 | 24.7 | 12.7 | 24.7 | 12.8 | 24.9 | 13.2 | 24.9 | 13.6 | 25.0 | 13.7 | 25.0 |
| 1935-1939 | 12.1 | 24.6 | 11.7 | 24.4 | 12.1 | 24.4 | 12.2 | 24.8 | 12.8 | 24.9 | 13.7 | 25.0 | 13.9 | 25.0 |
| -- | | | | | | | | | | | | | | |
| 1941-1944 | 12.8 | 24.6 | 12.8 | 24.4 | 13.1 | 24.4 | 13.0 | 24.4 | 13.3 | 24.8 | 13.5 | 25.1 | 14.4 | 25.1 |
| 1945-1949 | 11.4 | 24.7 | 11.6 | 24.6 | 11.6 | 24.7 | 12.3 | 24.7 | 13.2 | 24.9 | 14.1 | 24.9 | 14.4 | 25.0 |
| 1950-1954 | 11.6 | 24.7 | 11.6 | 24.8 | 11.6 | 24.7 | 12.2 | 24.7 | 12.6 | 24.8 | 13.3 | 24.9 | 13.9 | 25.0 |
| 1955-1959 | 12.3 | 24.7 | 12.2 | 24.7 | 12.7 | 24.6 | 12.7 | 24.7 | 13.4 | 24.8 | 13.8 | 24.9 | 13.7 | 25.0 |
| 1960 | 12.4 | 24.9 | 12.6 | 24.8 | 12.3 | 24.8 | 12.9 | 24.9 | 12.2 | 24.9 | 14.4 | 24.8 | 14.1 | 24.9 |
| 1961 | 12.3 | 24.9 | 13.1 | 24.8 | 12.0 | 25.0 | 12.3 | 25.1 | 12.4 | 25.1 | 13.8 | 25.1 | 14.1 | 25.1 |
| 1962 | 11.3 | 24.9 | 11.8 | 24.7 | 11.8 | 24.5 | 12.2 | 25.0 | 12.5 | 25.2 | 12.5 | 25.2 | 13.0 | 25.2 |
| 1963 | 11.7 | 25.0 | 13.3 | 24.5 | 12.0 | 24.7 | 13.3 | 24.7 | 12.9 | 25.0 | 13.5 | 25.1 | 14.9 | 25.2 |
| 1964 | 12.1 | 25.7 | 11.9 | 25.0 | 11.4 | 25.1 | 11.5 | 25.1 | 12.1 | 25.1 | 13.1 | 25.2 | 13.4 | 25.1 |
| Mean | 11.8 | 24.8 | 11.9 | 24.6 | 12.1 | 24.6 | 12.3 | 24.8 | 12.7 | 24.9 | 13.4 | 25.0 | 13.8 | 25.0 |
| Maximum | 14 | 27.8 | 15 | 25.2 | 15 | 26.0 | 17 | 25.4 | 17 | 25.4 | 18 | 25.5 | 17 | 26.0 |
| Mean Max. | 12.6 | 24.9 | 12.7 | 24.9 | 13.0 | 24.9 | 13.6 | 25.0 | 14.2 | 25.1 | 15.0 | 25.2 | 15.2 | 25.2 |
| Mean Min. | 10.8 | 24.5 | 11.1 | 24.2 | 11.2 | 24.2 | 11.1 | 24.4 | 11.3 | 24.6 | 12.3 | 24.7 | 12.2 | 24.8 |
| Minimum | 8 | 23.7 | 8 | 21.2 | 9 | 20.8 | 9 | 23.1 | 9 | 22.8 | 10 | 23.7 | 11 | 24.1 |
| | | | | | | | | | | | | | | SOUTHEAST FARALLON |
| 1926-1929 | 11.7 | 24.6 | 11.9 | 24.5 | 11.6 | 24.6 | 11.1 | 24.6 | 10.7 | 25.0 | 11.3 | 25.1 | 11.8 | 25.1 |
| 1930-1934 | 11.1 | 24.7 | 11.3 | 24.6 | 11.6 | 24.6 | 11.2 | 24.8 | 11.3 | 24.9 | 11.8 | 25.0 | 12.1 | 25.0 |
| 1935-1939 | 11.4 | 24.6 | 11.2 | 24.4 | 11.2 | 24.4 | 11.2 | 24.6 | 11.6 | 24.8 | 12.3 | 24.9 | 12.5 | 25.1 |
| 1940-1942 | 13.1 | 24.1 | 12.8 | 23.8 | 12.8 | 24.1 | 12.2 | 24.2 | 12.1 | 24.6 | 11.9 | 24.9 | 12.8 | 25.0 |
| -- | | | | | | | | | | | | | | |
| 1955 | -- | -- | 10.4 | -- | 10.3 | -- | 9.8 | -- | 9.8 | -- | 10.2 | -- | 10.0 | -- |
| -- | | | | | | | | | | | | | | |
| 1957-1959 | 12.1 | 24.5 | 12.3 | 23.8 | 12.1 | 23.5 | 11.6 | 22.8 | 12.1 | 24.3 | 12.8 | 24.5 | 13.0 | 24.7 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| CALIF.-continued | | | | | | | | | | | | | | | |
| 19.9 | 25.4 | 18.0 | 25.2 | 16.4 | 25.2 | 14.4 | 25.2 | 13.4 | 25.1 | 15.6 | 25.2 | | | | |
| 22 | 25.9 | 22 | 25.7 | 18 | 25.7 | 18 | 25.8 | 16 | 25.5 | | | 22 | 26.2 | | |
| 21.6 | 25.8 | 21.0 | 25.6 | 17.8 | 25.7 | 17.2 | 25.6 | 15.0 | 25.4 | | | | | | |
| 17.4 | 25.1 | 15.2 | 24.8 | 15.0 | 24.7 | 11.1 | 24.4 | 12.0 | 23.4 | | | | | | |
| 17 | 25.0 | 14 | 24.7 | 15 | 24.4 | 11 | 24.1 | 11 | 22.1 | | | | | 10 | 21.6 |
| CALIF. | | | | | | | | | | | | | | | |
| 15.3 | 25.3 | 15.1 | 25.2 | 14.2 | 25.1 | 13.1 | 25.0 | 12.2 | 25.0 | 13.1 | 25.2 | 19 | 26.6 | 9 | 23.9 |
| 15.2 | 25.2 | 15.1 | 25.1 | 13.9 | 25.0 | 13.6 | 24.8 | 12.6 | 24.8 | 13.2 | 25.0 | 18 | 26.8 | 9 | 23.6 |
| 15.3 | 25.4 | 15.5 | 25.3 | 15.3 | 25.2 | 13.7 | 25.0 | 13.2 | 25.1 | 13.7 | 25.1 | 18 | 26.5 | 9 | 20.9 |
| -- | -- | 14.3 | 24.7 | -- | -- | -- | -- | -- | -- | -- | -- | 16* | 25.6* | 12* | 23.8* |
| 15.8 | 25.4 | -- | -- | 14.6 | 25.2 | 12.4 | 24.7 | 12.3 | 24.6 | -- | -- | 18* | 26.2* | 8* | 22.0* |
| 15.8 | 25.4 | 15.6 | 25.3 | 14.9 | 25.3 | 13.5 | 25.2 | 13.4 | 25.0 | 13.6 | 24.8 | 18* | 26.2 | 10 | 19.5 |
| 17.2 | 25.4 | 17.4 | 25.4 | 16.1 | 25.1 | 14.8 | 24.8 | 13.2 | 24.9 | -- | -- | 19 | 26.0* | 10 | 11.9* |
| 16.4 | 25.3 | 15.1 | 25.1 | 15.1 | 25.1 | 13.8 | 25.1 | -- | -- | -- | -- | 21 | 26.3* | 10 | 23.9* |
| 15.5 | 25.3 | 15.3 | 25.2 | 14.6 | 25.1 | 13.5 | 24.9 | 12.7 | 24.9 | 13.4 | 25.0 | | | | |
| 21 | 26.8 | 19 | 26.1 | 18 | 26.6 | 17 | 25.8 | 15 | 25.9 | | | 21 | 26.8 | | |
| 17.3 | 25.9 | 16.8 | 25.6 | 16.0 | 25.7 | 14.8 | 25.3 | 13.7 | 25.4 | | | | | | |
| 14.0 | 24.9 | 14.0 | 24.7 | 13.3 | 24.7 | 12.3 | 24.4 | 11.7 | 24.2 | | | | | | |
| 12 | 24.4 | 12 | 23.8 | 11 | 24.1 | 11 | 22.5 | 11 | 22.5 | | | | | 8 | 11.9 |
| CALIF. | | | | | | | | | | | | | | | |
| 12.8 | 25.0 | 13.3 | 24.9 | 12.8 | 24.8 | 11.7 | 24.7 | 11.1 | 24.7 | 12.1 | 24.8 | 17 | 25.4 | 8 | 22.8 |
| 13.0 | 25.1 | 13.4 | 25.0 | 12.9 | 25.0 | 12.8 | 24.9 | 12.2 | 24.8 | 12.5 | 24.9 | 17 | 25.4 | 8 | 23.5 |
| 14.0 | 25.0 | 14.8 | 24.9 | 14.1 | 24.8 | 12.6 | 24.7 | 12.1 | 24.7 | 13.1 | 24.8 | 18 | 25.4 | 9 | 23.8 |
| 14.3 | 25.0 | 14.3 | 24.9 | 14.2 | 24.9 | 13.0 | 24.8 | 13.2 | 24.8 | 13.1 | 24.8 | 18 | 25.4 | 9 | 21.2 |
| 14.1 | 25.0 | 14.7 | 24.9 | 13.8 | 24.9 | 13.6 | 24.8 | 12.9 | 24.8 | 13.5 | 24.8 | 17 | 25.2 | 10 | 22.0 |
| 14.3 | 25.0 | 14.2 | 24.9 | 13.7 | 24.8 | 12.6 | 24.8 | 11.9 | 24.7 | 12.9 | 24.8 | 17 | 25.1 | 9 | 24.4 |
| 13.9 | 24.9 | 14.4 | 24.9 | 13.4 | 24.9 | 13.2 | 24.8 | 12.6 | 24.8 | 12.9 | 24.8 | 17 | 25.1 | 9 | 24.3 |
| 14.3 | 24.9 | 14.8 | 24.9 | 14.7 | 24.9 | 12.9 | 24.9 | 13.1 | 24.8 | 13.4 | 24.8 | 18 | 25.2 | 10 | 21.5 |
| 13.5 | 25.1 | 13.4 | 25.0 | 14.2 | 24.9 | 12.7 | 24.9 | 12.5 | 24.9 | 13.1 | 24.9 | 16 | 25.3 | 11 | 24.1 |
| 14.7 | 25.1 | 13.9 | 25.1 | 13.6 | 25.0 | 12.3 | 24.8 | 12.0 | 24.8 | 13.0 | 25.0 | 16 | 25.4 | 11 | 24.5 |
| 14.3 | 25.1 | 13.3 | 25.2 | 13.6 | 25.0 | 12.8 | 25.0 | 12.1 | 24.9 | 12.6 | 25.0 | 16 | 25.7 | 9 | 24.1 |
| 13.8 | 25.2 | 14.7 | 25.1 | 15.6 | 25.1 | 13.6 | 24.8 | 12.1 | 25.1 | 13.4 | 25.0 | 17 | 27.1 | 11 | 20.8 |
| 13.7 | 25.2 | 13.8 | 25.5 | 14.0 | 25.1 | 13.4 | 24.8 | 12.2 | 24.6 | 12.7 | 25.1 | 16 | 27.8 | 10 | 24.1 |
| 13.8 | 25.0 | 14.2 | 25.0 | 13.7 | 24.9 | 12.8 | 24.8 | 12.3 | 24.8 | 12.9 | 24.8 | | | | |
| 17 | 26.4 | 18 | 27.1 | 18 | 25.4 | 16 | 25.2 | 16 | 27.1 | | | 18 | 27.8 | | |
| 15.2 | 25.1 | 15.5 | 25.1 | 15.2 | 25.0 | 13.9 | 25.0 | 13.3 | 25.0 | | | | | | |
| 12.4 | 24.8 | 12.8 | 24.8 | 12.2 | 24.7 | 11.6 | 24.7 | 11.3 | 24.5 | | | | | | |
| 11 | 23.9 | 11 | 24.3 | 11 | 24.2 | 9 | 24.0 | 9 | 22.8 | | | | | 8 | 20.8 |
| ISLAND, CALIF. | | | | | | | | | | | | | | | |
| 12.2 | 25.1 | 12.4 | 25.0 | 12.1 | 25.0 | 12.8 | 24.8 | 12.1 | 24.6 | 11.8 | 24.8 | 15 | 25.6 | 8 | 20.5 |
| 12.6 | 25.0 | 13.3 | 25.0 | 12.7 | 24.9 | 12.0 | 24.8 | 11.1 | 24.7 | 11.8 | 24.8 | 16 | 25.3 | 9 | 23.7 |
| 12.8 | 25.1 | 13.6 | 25.0 | 14.1 | 24.9 | 12.5 | 24.9 | 12.7 | 24.8 | 12.3 | 24.8 | 17 | 25.4 | 8 | 22.1 |
| 13.5 | 25.0 | 14.7 | 25.0 | 13.5 | 24.9 | 13.4 | 24.8 | 13.3 | 24.7 | 13.0 | 24.6 | 19 | 25.7 | 8 | 21.6 |
| 10.8 | -- | 11.7 | -- | 11.6 | -- | 10.3 | -- | 11.2 | -- | -- | -- | 13 | -- | 9* | -- |
| 13.4 | 24.6 | 14.2 | 24.7 | 14.9 | 24.8 | 13.9 | 24.8 | 12.7 | 24.8 | 12.9 | 24.3 | 18 | 25.1 | 9 | 14.3 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | SOUTHEAST FARALLON | | | |
| 1960 | 11.7 | 24.8 | 11.7 | 24.7 | 10.2 | 24.7 | 10.0 | 24.8 | 10.6 | 25.0 | 11.4 | 25.1 | 12.1 | 25.0 |
| 1961 | 11.0 | -- | 11.6 | -- | 10.8 | -- | 10.8 | -- | 10.3 | -- | 11.4 | -- | 11.8 | -- |
| 1962 | 10.7 | 24.7 | 11.6 | 24.7 | 11.1 | 24.6 | 10.5 | 25.0 | 10.1 | 25.2 | 10.2 | 25.4 | 10.8 | 25.2 |
| 1963 | 11.1 | 24.5 | 12.3 | 24.4 | 10.2 | 24.9 | 11.6 | 24.3 | 10.9 | 24.8 | 10.5 | 25.3 | 11.7 | 25.2 |
| 1964 | 11.6 | 24.7 | 11.1 | 24.8 | 9.8 | 25.2 | 9.4 | 25.2 | 10.0 | 25.2 | 11.0 | 25.3 | 11.3 | 25.3 |
| Mean | 11.6 | 24.6 | 11.6 | 24.4 | 11.4 | 24.5 | 11.1 | 24.6 | 11.2 | 24.8 | 11.7 | 25.0 | 12.1 | 25.1 |
| Maximum | 15 | 25.3 | 14 | 25.4 | 15 | 25.4 | 15 | 25.4 | 16 | 25.4 | 18 | 26.0 | 16 | 25.6 |
| Mean Max. | 12.6 | 24.9 | 12.4 | 24.8 | 12.5 | 24.9 | 12.4 | 25.0 | 12.4 | 25.1 | 13.2 | 25.3 | 13.3 | 25.2 |
| Mean Min. | 10.7 | 24.0 | 10.7 | 23.5 | 10.1 | 23.7 | 9.8 | 23.6 | 10.1 | 24.3 | 10.3 | 24.7 | 10.8 | 24.8 |
| Minimum | 9 | 22.6 | 9 | 20.5 | 8 | 21.2 | 8 | 14.3 | 9 | 22.9 | 9 | 23.4 | 9 | 23.9 |
| | | | | | | | | | | | SAN FRANCISCO | | | |
| 1855 | -- | -- | -- | -- | -- | -- | -- | -- | 12.7 | -- | -- | -- | 14.7 | -- |
| 1856 | 9.9 | -- | 11.7 | -- | 12.1 | -- | 13.7 | -- | 12.6 | -- | 13.3 | -- | 13.6 | -- |
| 1857 | 9.4 | -- | 10.6 | -- | 11.9 | -- | 13.2 | -- | 13.3 | -- | 13.4 | -- | 13.6 | -- |
| 1858 | 10.2 | -- | 11.0 | -- | 11.5 | -- | 11.6 | -- | 12.3 | -- | 13.0 | -- | 14.3 | -- |
| 1859 | 9.4 | -- | 10.9 | -- | 10.8 | -- | 10.8 | -- | 12.4 | -- | 13.3 | -- | 13.7 | -- |
| 1860 | 10.3 | -- | 10.8 | -- | 11.6 | -- | 12.7 | -- | 12.2 | -- | 13.1 | -- | 14.7 | -- |
| 1861 | 10.1 | -- | 10.0 | -- | 10.8 | -- | 12.4 | -- | 12.1 | -- | 12.6 | -- | 13.8 | -- |
| 1862 | 9.9 | -- | 10.0 | -- | 10.8 | -- | 12.4 | -- | 12.1 | -- | 12.6 | -- | 14.9 | -- |
| 1863 | 10.3 | -- | 10.0 | -- | 11.3 | -- | 12.7 | -- | 12.9 | -- | 13.2 | -- | 14.2 | -- |
| 1864 | 10.2 | -- | 10.7 | -- | 11.7 | -- | 12.2 | -- | 13.8 | -- | 14.7 | -- | 14.8 | -- |
| 1865 | 11.1 | -- | 10.7 | -- | 10.8 | -- | 11.4 | -- | 14.6 | -- | 13.8 | -- | 14.3 | -- |
| 1866 | 8.9 | -- | 10.8 | -- | 11.9 | -- | 13.1 | -- | 12.7 | -- | 13.5 | -- | 14.3 | -- |
| 1867 | 11.6 | -- | 10.2 | -- | 10.4 | -- | 12.4 | -- | 13.8 | -- | 13.9 | -- | 14.6 | -- |
| 1868 | 9.6 | -- | 10.8 | -- | 11.9 | -- | 12.8 | -- | 13.9 | -- | 13.1 | -- | 15.0 | -- |
| 1869 | 11.8 | -- | 11.4 | -- | 13.5 | -- | 13.6 | -- | 13.4 | -- | 14.6 | -- | 15.6 | -- |
| 1870 | 8.9 | -- | 10.3 | -- | 9.9 | -- | 12.6 | -- | 14.1 | -- | 15.2 | -- | 17.9 | -- |
| 1871 | 9.3 | -- | 9.7 | -- | 10.2 | -- | 10.4 | -- | 11.3 | -- | 13.4 | -- | 14.9 | -- |
| 1872 | 11.4 | -- | 12.0 | -- | 12.1 | -- | 11.4 | -- | 12.8 | -- | 14.8 | -- | 15.1 | -- |
| 1873 | 12.0 | -- | 10.8 | -- | 11.6 | -- | 12.3 | -- | 13.3 | -- | 13.9 | -- | 14.8 | -- |
| 1874 | 10.7 | -- | 10.8 | -- | 11.2 | -- | 12.4 | -- | 14.3 | -- | 14.9 | -- | 14.2 | -- |
| 1875 | 10.4 | -- | 11.2 | -- | 10.8 | -- | 11.9 | -- | 13.6 | -- | 14.5 | -- | 16.0 | -- |
| 1876 | 11.2 | -- | 11.6 | -- | 12.3 | -- | 13.0 | -- | 14.2 | -- | 15.3 | -- | 15.8 | -- |
| 1877 | 12.0 | -- | 13.8 | -- | 14.4 | -- | 13.5 | -- | 14.3 | -- | -- | -- | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1922-1924 | 9.9 | 21.9 | 10.3 | 21.1 | 11.3 | 20.4 | 12.0 | 20.5 | 13.1 | 20.2 | 14.1 | 20.4 | 15.0 | 22.4 |
| 1925-1929 | 10.2 | 22.3 | 11.3 | 19.9 | 12.2 | 19.8 | 12.7 | 19.0 | 13.1 | 20.2 | 14.0 | 21.3 | 14.8 | 22.8 |
| 1930-1934 | 10.2 | 21.9 | 11.0 | 21.8 | 12.5 | 21.1 | 12.9 | 21.3 | 13.5 | 21.9 | 14.3 | 22.5 | 14.9 | 23.5 |
| 1935-1939 | 10.6 | 21.4 | 10.4 | 19.6 | 11.4 | 17.9 | 12.2 | 17.6 | 13.2 | 18.5 | 14.6 | 19.6 | 14.7 | 22.2 |
| 1940-1944 | 11.3 | 19.9 | 11.8 | 17.0 | 12.6 | 16.7 | 12.9 | 17.4 | 13.5 | 19.1 | 13.8 | 20.2 | 15.3 | 22.6 |
| 1945-1949 | 11.1 | 21.0 | 10.8 | 21.5 | 11.6 | 20.8 | 12.5 | 21.0 | 13.2 | 21.3 | 14.6 | 21.7 | 15.4 | 23.4 |
| 1950-1954 | 10.3 | 19.9 | 10.6 | 18.6 | 11.0 | 19.8 | 12.1 | 20.0 | 12.8 | 20.4 | 13.4 | 21.1 | 14.5 | 22.6 |
| 1955-1959 | 10.3 | 19.9 | 10.6 | 19.1 | 11.3 | 18.5 | 12.5 | 20.9 | 13.4 | 21.4 | 14.4 | 21.5 | 14.3 | 23.0 |
| 1960 | 10.4 | 24.1 | 12.6 | 24.0 | 13.2 | 23.5 | 13.0 | 23.2 | 12.7 | 24.1 | 13.9 | 24.3 | 14.4 | 24.8 |
| 1961 | 9.7 | 23.1 | 11.6 | 22.0 | 10.9 | 22.2 | 12.2 | 23.6 | 11.5 | 23.3 | 12.9 | 24.3 | 14.8 | 24.7 |
| 1962 | 9.0 | 23.6 | 10.2 | 23.6 | 10.1 | 23.4 | 11.9 | 22.5 | 11.7 | 22.4 | 12.1 | 22.7 | 13.5 | 23.3 |
| 1963 | 9.9 | 21.6 | 12.8 | 17.3 | 11.6 | 21.4 | 12.7 | 16.9 | 12.7 | 19.2 | 13.9 | 21.2 | 14.9 | 21.1 |
| 1964 | 10.5 | 21.9 | 10.7 | 20.9 | 10.5 | 23.0 | 11.1 | 23.2 | 11.6 | 23.8 | 13.4 | 23.5 | 13.8 | 23.9 |
| Mean | 10.4 | 21.3 | 10.9 | 20.0 | 11.7 | 19.7 | 12.4 | 19.9 | 13.1 | 20.6 | 14.0 | 21.3 | 14.8 | 22.9 |
| Maximum | 14 | 25.2 | 14 | 24.8 | 16 | 25.8 | 17 | 25.4 | 18 | 25.5 | 20 | 25.5 | 19 | 25.9 |
| Mean Max. | 11.6 | 23.0 | 12.0 | 22.5 | 12.7 | 22.7 | 13.7 | 22.8 | 14.7 | 22.9 | 15.6 | 23.2 | 16.1 | 24.0 |
| Mean Min. | 9.3 | 18.6 | 9.9 | 16.3 | 10.6 | 15.7 | 11.6 | 16.4 | 11.6 | 18.1 | 12.4 | 18.9 | 13.2 | 21.5 |
| Minimum | 5 | 7.4 | 7 | 3.7 | 8 | 4.3 | 8 | 7.5 | 8 | 10.7 | 7 | 11.1 | 9 | 17.7 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| ISLAND, CALIF. - continued | | | | | | | | | | | | | | | |
| 11.9 | 25.1 | 12.6 | 25.1 | 12.8 | 25.0 | 11.7 | 25.0 | 12.1 | 24.9 | 11.6 | 24.9 | 14 | 25.6 | 8 | 24.2 |
| 13.2 | -- | 12.9 | -- | 12.3 | -- | 11.7 | -- | 11.8 | -- | 11.6 | -- | 14 | -- | 9 | -- |
| -- | -- | 11.8 | 25.1 | 12.8 | 24.8 | 12.6 | 24.7 | 11.6 | 24.8 | -- | -- | 14* | 25.7* | 9* | 23.7* |
| 11.7 | 25.1 | 13.8 | 25.2 | 14.4 | 25.1 | 13.2 | 24.7 | 11.8 | 24.7 | 11.9 | 24.9 | 16 | 26.0 | 9 | 21.9 |
| 11.9 | 25.1 | 12.2 | 25.0 | 12.3 | 25.0 | 12.8 | 24.6 | 11.8 | 24.5 | 11.3 | 25.0 | 14 | 25.6 | 9 | 23.7 |
| 12.6 | 25.0 | 13.3 | 25.0 | 13.2 | 24.9 | 12.6 | 24.8 | 12.2 | 24.7 | 12.0 | 24.8 | 19 | 26.0 | | |
| 18 | 25.7 | 19 | 25.4 | 18 | 25.4 | 17 | 25.6 | 15 | 25.6 | | | | | | |
| 13.9 | 25.2 | 14.8 | 25.1 | 14.4 | 25.1 | 13.8 | 25.0 | 13.2 | 25.0 | | | | | | |
| 11.7 | 24.8 | 12.1 | 24.8 | 12.1 | 24.7 | 11.3 | 24.6 | 10.8 | 24.5 | | | | | | |
| 10 | 23.7 | 11 | 24.5 | 10 | 24.1 | 9 | 23.1 | 9 | 24.1 | | | | | 8 | 14.3 |
| (Fort Point), CALIF. | | | | | | | | | | | | | | | |
| 16.2 | -- | 16.1 | -- | 15.2 | -- | 12.9 | -- | 10.8 | -- | -- | -- | 16* | -- | 8* | -- |
| 14.8 | -- | 15.2 | -- | 14.2 | -- | 12.3 | -- | 9.6 | -- | 12.8 | -- | 17 | -- | 9 | -- |
| 14.6 | -- | 15.5 | -- | 15.1 | -- | 12.4 | -- | 11.6 | -- | 12.9 | -- | 16 | -- | 8 | -- |
| 15.4 | -- | 15.3 | -- | 14.2 | -- | 12.9 | -- | 9.8 | -- | 12.6 | -- | 16 | -- | 9 | -- |
| 13.8 | -- | 14.4 | -- | 14.0 | -- | 13.0 | -- | 10.6 | -- | 12.3 | -- | 16 | -- | 8 | -- |
| 14.6 | -- | 14.5 | -- | 14.3 | -- | 12.2 | -- | 10.8 | -- | 12.6 | -- | 16 | -- | 10 | -- |
| 13.8 | -- | 14.5 | -- | 14.2 | -- | 12.6 | -- | 11.3 | -- | 12.4 | -- | 15 | -- | 9 | -- |
| 14.6 | -- | 14.8 | -- | 13.7 | -- | 13.0 | -- | 11.2 | -- | 12.5 | -- | 16 | -- | 9 | -- |
| 14.8 | -- | 14.8 | -- | 13.8 | -- | 11.4 | -- | 10.7 | -- | 12.5 | -- | 16 | -- | 9 | -- |
| 15.9 | -- | 15.6 | -- | 14.9 | -- | 12.8 | -- | 10.9 | -- | 13.2 | -- | 17 | -- | 10 | -- |
| 15.0 | -- | 14.9 | -- | 14.1 | -- | 12.8 | -- | 9.9 | -- | 12.8 | -- | 16 | -- | 9 | -- |
| 14.1 | -- | 14.9 | -- | 14.7 | -- | 13.0 | -- | 12.4 | -- | 12.9 | -- | 16 | -- | 8 | -- |
| 15.3 | -- | 14.5 | -- | 14.3 | -- | 12.7 | -- | 11.8 | -- | 13.0 | -- | 17 | -- | 9 | -- |
| 14.3 | -- | 14.3 | -- | 14.6 | -- | 13.1 | -- | 12.0 | -- | 13.0 | -- | 16 | -- | 9 | -- |
| 14.8 | -- | 14.8 | -- | 13.0 | -- | 11.7 | -- | 9.1 | -- | 13.1 | -- | 17 | -- | 7 | -- |
| 16.7 | -- | 14.3 | -- | 14.3 | -- | 12.4 | -- | 9.8 | -- | 13.0 | -- | 20 | -- | 8 | -- |
| 15.1 | -- | 16.2 | -- | 15.6 | -- | 13.2 | -- | 11.6 | -- | 12.6 | -- | 17 | -- | 8 | -- |
| 15.8 | -- | 15.9 | -- | 15.2 | -- | 12.5 | -- | 11.7 | -- | 13.4 | -- | 17 | -- | 11 | -- |
| 16.1 | -- | 16.3 | -- | 15.3 | -- | 13.3 | -- | 11.2 | -- | 13.4 | -- | 18 | -- | 10 | -- |
| 14.9 | -- | 15.3 | -- | 15.3 | -- | 14.2 | -- | 12.3 | -- | 13.4 | -- | 17 | -- | 9 | -- |
| 16.2 | -- | 16.5 | -- | 15.9 | -- | 14.8 | -- | 12.8 | -- | 13.7 | -- | 19 | -- | 10 | -- |
| 15.3 | -- | 16.3 | -- | 15.4 | -- | 14.8 | -- | 12.6 | -- | 14.0 | -- | 18 | -- | 10 | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 15.0 | 23.4 | 15.7 | 23.9 | 14.8 | 23.8 | 12.8 | 23.3 | 10.7 | 22.5 | 12.9 | 22.0 | 17 | 25.1 | 8 | 12.4 |
| 15.2 | 23.8 | 15.3 | 24.0 | 14.6 | 23.9 | 13.4 | 23.4 | 11.6 | 22.5 | 13.2 | 21.9 | 17 | 24.6 | 8 | 11.0 |
| 15.4 | 24.2 | 15.8 | 24.4 | 15.3 | 24.4 | 13.3 | 24.2 | 10.8 | 23.5 | 13.3 | 22.9 | 17 | 25.7 | 7 | 14.8 |
| 15.5 | 23.4 | 15.6 | 23.8 | 15.3 | 23.7 | 12.9 | 23.3 | 11.8 | 22.4 | 13.2 | 21.1 | 18 | 25.5 | 7 | 5.0 |
| 15.5 | 23.4 | 16.2 | 24.1 | 15.3 | 23.9 | 14.1 | 23.0 | 12.6 | 22.4 | 13.7 | 20.8 | 18 | 25.2 | 9 | 4.3 |
| 16.0 | 23.9 | 15.9 | 24.1 | 15.2 | 23.9 | 12.6 | 23.2 | 11.1 | 22.4 | 13.3 | 22.4 | 19 | 26.2 | 8 | 11.6 |
| 15.0 | 23.3 | 15.7 | 23.5 | 14.6 | 23.4 | 13.1 | 22.7 | 11.7 | 21.1 | 12.9 | 21.4 | 18 | 25.2 | 7 | 8.6 |
| 15.1 | 23.8 | 15.3 | 23.6 | 15.2 | 23.5 | 12.7 | 23.0 | 11.0 | 22.6 | 13.0 | 21.7 | 20 | 26.2 | 10 | 3.7 |
| 14.5 | 24.6 | 14.6 | 24.4 | 14.5 | 24.0 | 12.4 | 23.8 | 10.8 | 22.8 | 13.1 | 24.0 | 19 | 25.9 | 5 | 19.5 |
| 15.6 | 24.9 | 16.5 | 24.5 | 14.5 | 24.1 | 10.6 | 23.5 | 8.8 | 23.2 | 12.5 | 23.6 | 19 | 26.3 | 5 | 19.7 |
| 15.3 | 23.6 | 14.5 | 23.4 | 14.3 | 21.5 | 12.7 | 22.1 | 11.2 | 21.5 | 12.2 | 22.8 | 17 | 24.6 | 5 | 17.1 |
| 14.8 | 22.7 | 15.8 | 23.1 | 15.4 | 23.3 | 13.2 | 22.7 | 9.5 | 22.1 | 13.1 | 21.0 | 17 | 24.5 | 8 | 9.8 |
| 15.7 | 24.4 | 15.7 | 24.2 | 14.3 | 24.2 | 12.3 | 22.7 | 11.4 | 21.1 | 12.6 | 23.1 | 17 | 25.2 | 9 | 10.3 |
| 15.3 | 23.7 | 15.5 | 23.9 | 14.8 | 23.8 | 13.0 | 22.7 | 11.2 | 22.4 | 13.1 | 21.8 | | | | |
| 20 | 26.3 | 18 | 26.2 | 19 | 26.2 | 17 | 25.3 | 16 | 25.3 | | | 20 | 26.[illegible] | | |
| 16.5 | 24.4 | 16.6 | 24.5 | 15.[illegible] | [illegible] | [illegible] | [illegible] | 12.6 | 23.7 | | | | | | |
| 14.1 | 23.0 | 14.5 | 23.4 | 13.[illegible] | [illegible] | [illegible] | [illegible] | 10.0 | 19.9 | | | | | | |
| 10 | 20.4 | 10 | 20.6 | 10 | [illegible] | [illegible] | [illegible] | 5 | 9.9 | | | | | 5 | [illegible] |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | YERBA BUENA ISLAND, | |
| 1937 | 8.7 | 21.5 | 9.3 | 18.7 | 12.7 | 14.3 | 13.4 | 13.9 | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | ALAMEDA, | |
| 1940-1944 | 10.7 | 16.4 | 12.1 | 12.9 | 14.6 | 12.1 | 15.7 | 12.9 | 17.8 | 14.8 | 18.9 | 16.8 | 20.1 | 19.1 |
| 1945-1949 | 9.6 | 19.0 | 11.0 | 18.2 | 13.1 | 17.9 | 16.1 | 17.7 | 17.6 | 17.9 | 19.7 | 19.1 | 20.8 | 20.7 |
| 1950-1954 | 10.2 | 16.4 | 11.7 | 14.7 | 13.1 | 15.6 | 16.1 | 16.0 | 17.9 | 16.6 | 18.9 | 17.8 | 20.4 | 19.8 |
| 1955-1959 | 10.9 | 16.9 | 11.9 | 16.0 | 14.5 | 15.0 | 16.4 | 16.6 | 18.4 | 18.0 | 20.6 | 18.8 | 20.8 | 20.7 |
| 1960 | 9.5 | 21.8 | 12.5 | 18.6 | 14.9 | 17.7 | 18.0 | 18.7 | 18.3 | 20.2 | 20.8 | 21.6 | 20.9 | 22.6 |
| 1961 | 9.9 | 20.6 | 13.2 | 19.0 | 14.3 | 18.4 | 17.6 | 19.0 | 17.3 | 20.5 | 19.7 | 21.9 | 22.3 | 22.6 |
| 1962 | 10.1 | 19.9 | 11.6 | 16.2 | 13.2 | 14.9 | 18.2 | 17.1 | 17.8 | 19.1 | 21.0 | 20.3 | 20.8 | 21.4 |
| 1963 | 9.6 | 18.9 | 13.7 | 14.0 | 13.9 | 16.8 | 15.1 | 14.0 | 17.4 | 14.7 | 19.4 | 17.8 | 19.8 | 17.6 |
| 1964 | 10.7 | 19.5 | 12.2 | 17.9 | 13.7 | 15.6 | 16.2 | 20.5 | 16.8 | 21.4 | 18.8 | 21.7 | 20.3 | 21.8 |
| Mean | 10.3 | 17.8 | 11.9 | 15.8 | 13.8 | 15.4 | 16.3 | 16.2 | 17.8 | 17.3 | 19.6 | 18.6 | 20.6 | 20.3 |
| Maximum | 13 | 22.7 | 16 | 21.3 | 18 | 21.5 | 22 | 21.3 | 22 | 21.8 | 25 | 23.5 | 25 | 24.8 |
| Mean Max. | 11.6 | 19.4 | 13.6 | 17.8 | 15.9 | 17.3 | 18.6 | 17.4 | 20.2 | 18.4 | 22.3 | 19.7 | 22.7 | 21.5 |
| Mean Min. | 9.2 | 15.3 | 10.4 | 13.1 | 11.9 | 13.1 | 14.1 | 14.3 | 15.8 | 15.7 | 17.6 | 17.4 | 18.8 | 18.8 |
| Minimum | 6 | 7.0 | 7 | 7.1 | 9 | 7.4 | 12 | 1.2 | 14 | 10.9 | 16 | 13.9 | 17 | 12.7 |
| | | | | | | | | | | | | | SAN FRANCISCO | |
| 1945-1946 -- 1951-1954 | 10.7 | 14.4 | 10.4 | 17.0 | 11.4 | 18.7 | 13.7 | 18.8 | 14.7 | 18.4 | 16.4 | 19.8 | 17.7 | 21.6 |
| 1955 | 10.6 | 15.7 | 11.3 | 14.7 | 11.9 | 15.2 | 13.9 | 15.2 | 14.7 | 17.2 | 15.7 | 18.5 | 17.1 | 21.1 |
| 1956 | 9.5 | 19.2 | 10.3 | 19.5 | 11.8 | 19.7 | 12.7 | 20.7 | 14.6 | 20.2 | 16.1 | 20.7 | 16.4 | 21.9 |
| Mean | 10.6 | 9.0 | 10.1 | 12.1 | 11.4 | 14.5 | 12.8 | 18.0 | 15.1 | 17.4 | 16.1 | 17.6 | 16.8 | 20.6 |
| Maximum | 14 | 21.5 | 13 | 20.8 | 14 | 20.9 | 16 | 21.2 | 18 | 20.8 | 19 | 22.0 | 20 | 23.5 |
| Mean Max. | 11.8 | 18.0 | 12.3 | 18.6 | 13.3 | 19.0 | 15.1 | 19.0 | 16.3 | 19.4 | 17.6 | 20.4 | 18.6 | 22.2 |
| Mean Min. | 9.4 | 11.1 | 9.8 | 12.2 | 10.3 | 14.7 | 12.0 | 15.7 | 13.1 | 16.1 | 14.5 | 16.9 | 15.8 | 19.6 |
| Minimum | 8 | 6.1 | 9 | 6.4 | 9 | 10.0 | 12 | 12.1 | 12 | 9.3 | 13 | 9.5 | 16 | 14.2 |
| | | | | | | | | | | | | | DUMBARTON BRIDGE, SAN | |
| 1937 -- 1952 | 6.8 | 23.6 | 9.2 | 19.5 | 12.8 | 14.6 | 14.5 | 11.4 | 17.0 | 14.4 | 19.5 | 16.4 | 21.7 | 18.3 |
| | 8.8 | 12.8 | 11.4 | 10.3 | 12.1 | 9.8 | 15.8 | 11.2 | 18.2 | 12.7 | 18.9 | 13.7 | 21.4 | 15.2 |
| | | | | | | | | | | | | | SAUSALITO, | |
| 1893-1896 -- 1937 -- 1952 | 10.6 | -- | 11.1 | -- | 11.9 | -- | 12.8 | -- | 14.1 | -- | 15.0 | -- | 15.7 | -- |
| | 9.0 | 22.4 | 9.0 | 22.4 | 9.1 | 22.4 | 11.0 | 20.8 | 14.0 | 16.1 | 14.1 | 15.7 | 16.2 | 19.4 |
| | 8.9 | 12.1 | 10.6 | 11.8 | 10.5 | 13.4 | 13.2 | 14.5 | 14.9 | 14.4 | 14.9 | 16.1 | 16.0 | 18.7 |
| Mean | 10.1 | -- | 10.7 | -- | 11.2 | -- | 12.6 | -- | 14.2 | -- | 14.8 | -- | 15.9 | -- |
| Maximum | 13 | -- | 13 | -- | 15 | -- | 16 | -- | 18 | -- | 19 | -- | 20 | -- |
| Mean Max. | 11.3 | -- | 12.0 | -- | 13.4 | -- | 14.5 | -- | 16.1 | -- | 16.6 | -- | 17.3 | -- |
| Mean Min. | 8.9 | -- | 9.7 | -- | 10.0 | -- | 11.2 | -- | 11.7 | -- | 13.3 | -- | 14.4 | -- |
| Minimum | 7 | -- | 8 | -- | 8 | -- | 9 | -- | 10 | -- | 12 | -- | 13 | -- |
| | | | | | | | | | | | | | POINT SAN QUENTIN, | |
| 1937 | 6.7 | 17.4 | 9.0 | 10.2 | 13.2 | 7.8 | 14.9 | 6.9 | 16.7 | 8.4 | 18.2 | 11.3 | 19.1 | 16.7 |

*Observations for the year are incomplete; extremes are for the months shown.

**Extremes**

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| SAN FRANCISCO BAY, CALIF. | | | | | | | | | | | | | | | |
| 18.1 | 22.7 | 17.2 | 23.5 | -- | -- | -- | -- | -- | -- | -- | -- | 19* | 23.9* | 7 | 7.9* |
| CALIF. | | | | | | | | | | | | | | | |
| 19.9 | 20.9 | 19.7 | 22.1 | 17.6 | 22.4 | 14.2 | 21.6 | 11.6 | 20.2 | 16.1 | 17.7 | 23 | 23.8 | 8 | 1.2 |
| 20.4 | 22.1 | 20.1 | 22.8 | 17.6 | 22.2 | 13.7 | 21.3 | 10.8 | 20.5 | 15.9 | 20.0 | 24 | 25.0 | 6 | 11.8 |
| 20.0 | 21.2 | 20.0 | 22.0 | 17.7 | 21.7 | 14.4 | 20.2 | 11.4 | 17.8 | 16.0 | 18.3 | 24 | 23.7 | 7 | 9.1 |
| 21.3 | 22.1 | 21.3 | 22.6 | 18.5 | 21.6 | 14.6 | 21.0 | 12.0 | 20.3 | 16.8 | 19.1 | 25 | 25.2 | 9 | 6.9 |
| -- | -- | -- | -- | 17.3 | 22.4 | 14.4 | 23.3 | 11.4 | 20.7 | -- | -- | 24* | 24.3* | 8 | 14.8* |
| 21.7 | 23.0 | 20.8 | 23.3 | 18.1 | 22.4 | 13.7 | 22.4 | 11.3 | 20.8 | 16.7 | 21.2 | 25 | 24.5 | 9 | 17.0 |
| 22.4 | 22.0 | 18.9 | 23.6 | 17.8 | 19.6 | 15.7 | 18.6 | 12.4 | 19.1 | 16.7 | 19.0 | 25 | 24.1 | 9 | 10.9 |
| 20.1 | 19.7 | 20.7 | 21.7 | 18.3 | 22.4 | 14.6 | 21.6 | 10.8 | 19.2 | 16.1 | 18.0 | 23 | 23.9 | 9 | 9.5 |
| 20.4 | 23.3 | 19.2 | 23.0 | 17.8 | 22.5 | 14.2 | 21.2 | 11.3 | 17.7 | 16.0 | 20.0 | 22 | 24.8 | 9 | 9.3 |
| 20.5 | 21.6 | 20.2 | 22.4 | 17.8 | 21.9 | 14.2 | 21.1 | 11.4 | 19.7 | 16.2 | 25.9 | | | | |
| 25 | 25.2 | 24 | 25.0 | 21 | 24.6 | 18 | 24.3 | 14 | 23.6 | | | 25 | 25.2 | | |
| 22.2 | 22.6 | 22.1 | 23.2 | 20.0 | 22.8 | 16.4 | 22.2 | 12.8 | 21.0 | | | | | | |
| 18.7 | 20.2 | 18.7 | 21.4 | 15.9 | 20.4 | 12.3 | 19.1 | 10.7 | 16.9 | | | | | | |
| 17 | 12.8 | 17 | 19.3 | 14 | 15.2 | 10 | 12.0 | 8 | 9.3 | | | | | 6 | 1.2 |
| (Hunters Point), CALIF. | | | | | | | | | | | | | | | |
| 17.4 | 22.6 | 17.3 | 22.8 | 17.0 | 22.6 | 14.0 | 21.2 | 11.4 | 18.5 | 14.3 | 19.7 | 20 | 24.0 | 8 | 11.0 |
| 17.2 | 22.5 | 17.7 | 22.9 | 16.7 | 22.5 | 14.2 | 21.8 | 11.6 | 19.5 | 14.4 | 18.9 | 19 | 24.1 | 8 | 6.9 |
| 16.8 | 22.8 | 17.0 | 23.0 | 16.3 | 22.7 | 13.4 | 22.1 | 11.7 | 18.3 | 13.9 | 20.9 | 18 | 23.4 | 9 | 6.3 |
| 17.7 | 21.8 | 18.0 | 22.1 | 16.4 | 21.6 | -- | -- | -- | -- | -- | -- | 18 | 22.6* | 9* | 6.1* |
| 17.3 | 22.5 | 17.6 | 22.8 | 16.7 | 22.5 | 14.0 | 21.8 | 11.6 | 19.2 | 14.3 | 19.4 | | | | |
| 19 | 24.0 | 19 | 24.1 | 18 | 23.7 | 16 | 23.1 | 13 | 21.9 | | | 20 | 24.1 | | |
| 18.3 | 23.1 | 18.4 | 23.4 | 17.8 | 23.0 | 15.4 | 22.5 | 13.0 | 21.3 | | | | | | |
| 16.3 | 21.7 | 16.7 | 22.3 | 15.3 | 21.8 | 12.7 | 20.7 | 10.3 | 14.7 | | | | | | |
| 16 | 19.6 | 16 | 21.4 | 14 | 21.0 | 12 | 19.5 | 9 | 6.3 | | | | | 8 | 6.1 |
| FRANCISCO BAY, CALIF. | | | | | | | | | | | | | | | |
| 21.2 | 20.4 | 20.2 | 21.8 | 18.8 | 22.2 | -- | -- | -- | -- | -- | -- | 23 | 26.1* | 4* | 9.1* |
| 21.1 | 17.5 | 20.3 | 19.5 | 18.5 | 20.4 | 14.3 | 20.7 | 10.8 | 19.3 | 16.0 | 15.3 | 23 | 21.1 | 8 | 7.6 |
| CALIF. | | | | | | | | | | | | | | | |
| 15.8 | -- | 15.9 | -- | 14.8 | -- | 12.9 | -- | 11.6 | -- | 13.5 | -- | 20 | -- | 7 | -- |
| 15.9 | 19.8 | 16.4 | 20.0 | -- | -- | -- | -- | -- | -- | -- | -- | 17 | 23.8* | 7* | 12.2* |
| 16.1 | 21.2 | 17.0 | 22.3 | 15.4 | 22.2 | 12.8 | 22.0 | 11.5 | 18.3 | 13.5 | 17.2 | 19 | 24.0 | 7 | 4.9* |
| 15.9 | -- | 16.2 | -- | 14.9 | -- | 12.9 | -- | 11.6 | -- | 13.4 | -- | | | | |
| 19 | -- | 18 | -- | 19 | -- | 17 | -- | 14 | -- | | | 20 | -- | | |
| 17.4 | -- | 17.3 | -- | 16.7 | -- | 14.7 | -- | 12.9 | -- | | | | | | |
| 14.6 | -- | 14.6 | -- | 13.5 | -- | 10.8 | -- | 10.1 | -- | | | | | | |
| 14 | -- | 13 | -- | 12 | -- | 7 | -- | 9 | -- | | | | | 7 | -- |
| SAN FRANCISCO BAY, CALIF. | | | | | | | | | | | | | | | |
| 19.2 | 20.3 | 19.1 | 20.1 | 17.9 | 19.8 | 16.3 | 19.4 | -- | -- | -- | -- | 22 | 22.0* | 4* | 0.4* |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | MARE ISLAND |
| 1937 | 6.7 | 10.8 | 8.7 | 2.8 | 12.4 | 2.3 | 14.2 | 1.2 | 16.6 | 1.7 | 19.2 | 2.9 | 20.2 | 9.2 |
| | | | | | | | | | | | | | | BENICIA, CARQUINEZ |
| 1937 -- 1952 | 6.5 | 7.4 | 8.5 | 1.2 | 12.3 | 0.1 | 14.4 | 0.3 | 16.6 | 0.5 | 19.6 | 1.0 | 20.9 | 2.5 |
| | 7.5 | 0.7 | 9.8 | -0.2 | 10.7 | -0.5 | 14.5 | -0.3 | 16.7 | -0.4 | 18.1 | -0.2 | 19.4 | 3.0 |
| | | | | | | | | | | | | | | PITTSBURG, NEW YORK |
| 1952 | 7.0 | -0.8 | 9.4 | -0.8 | 10.7 | -0.8 | 15.1 | -0.9 | 17.5 | -0.7 | 18.8 | -0.5 | 20.5 | -0.7 |
| | | | | | | | | | | | | | | THREEMILE SLOUGH, |
| 1938-1940 | 8.7 | -0.6 | 9.4 | -0.6 | 12.2 | -0.3 | 15.9 | -0.4 | 18.5 | -0.1 | 20.6 | 0.0 | 20.9 | 1.2 |
| | | | | | | | | | | | | | | PRISONERS POINT, SAN |
| 1939-1940 | 10.5 | -0.7 | 11.9 | -0.8 | 14.8 | -0.9 | 16.2 | -0.6 | 20.4 | -0.1 | 23.2 | -0.6 | -- | -- |
| | | | | | | | | | | | | | | COLLINSVILLE, SACRAMENTO |
| 1937 | 4.8 | -0.1 | 7.8 | -0.5 | 12.1 | -0.3 | 13.8 | -0.1 | 16.6 | 0.1 | 19.8 | -0.2 | 21.1 | 0.5 |
| | | | | | | | | | | | | | | RIO VISTA, SACRAMENTO |
| 1938-1940 | 8.4 | -1.0 | 9.3 | -1.0 | 12.1 | -0.7 | 15.2 | -0.7 | 17.6 | -0.7 | 20.1 | -0.8 | 21.1 | -0.2 |
| Mean | 8.4 | -1.0 | 9.3 | -1.0 | 12.1 | -0.7 | 15.2 | -0.7 | 17.6 | -0.7 | 20.1 | -0.8 | 21.1 | -0.2 |
| Maximum | 11 | -0.7 | 12 | -0.7 | 16 | 0.0 | 18 | -0.2 | 21 | -0.1 | 23 | 0.1 | 24 | -1.5 |
| Mean Max. | 9.4 | -0.8 | 11.4 | -0.7 | 15.2 | -0.3 | 17.8 | -0.4 | 20.2 | -0.4 | 21.7 | -0.2 | 24.2 | 0.6 |
| Mean Min. | 6.7 | -1.1 | 8.1 | -1.0 | 9.8 | -1.0 | 12.4 | -1.0 | 15.0 | -1.2 | 18.3 | -1.1 | 18.3 | -0.9 |
| Minimum | 6 | -1.2 | 7 | -1.0 | 9 | -1.2 | 11 | -1.1 | 13 | -1.4 | 17 | -1.2 | 18 | -1.0 |
| | | | | | | | | | | | | | | NEW HOPE BRIDGE, |
| 1938-1940 | 8.8 | -0.7 | 9.4 | -0.7 | 11.8 | -0.6 | 14.1 | -0.4 | 15.8 | -0.4 | 18.7 | 0.2 | 20.9 | -0.1 |
| Mean | 8.8 | -0.7 | 9.4 | -0.7 | 11.8 | -0.6 | 14.1 | -0.4 | 15.8 | -0.4 | 18.7 | 0.2 | 20.9 | -0.1 |
| Maximum | 12 | -0.5 | 13 | -0.5 | 15 | -0.3 | 18 | 0.0 | 23 | 0.7 | 24 | 1.2 | 24 | 0.6 |
| Mean Max. | 11.1 | -0.5 | 10.8 | -0.6 | 15.0 | -0.3 | 15.9 | -0.2 | 18.9 | 0.2 | 22.1 | 1.0 | 23.3 | 0.3 |
| Mean Min. | 6.7 | -0.8 | 8.1 | -0.9 | 8.9 | -0.8 | 12.1 | -0.8 | 13.9 | -0.7 | 15.9 | -0.5 | 18.6 | -1.0 |
| Minimum | 6 | -0.9 | 7 | -1.0 | 8 | -0.9 | 10 | -0.9 | 12 | -0.7 | 15 | -0.8 | 16 | -1.5 |
| | | | | | | | | | | | | | | BLUNTS REEF |
| 1923-1924 | 10.0 | 24.4 | 10.0 | 24.6 | 8.7 | 25.0 | 9.2 | 24.9 | 9.2 | 25.0 | 9.9 | 25.0 | 10.7 | 24.9 |
| 1925-1929 | 10.8 | 24.4 | 10.8 | 24.4 | 10.1 | 24.5 | 10.2 | 24.4 | 10.3 | 24.8 | 9.9 | 25.0 | 10.0 | 25.1 |
| 1930-1934 | 11.0 | 24.7 | 10.8 | 24.5 | 10.6 | 24.5 | 10.6 | 24.5 | 10.8 | 24.8 | 10.6 | 25.1 | 10.4 | 25.2 |
| 1935-1939 | 11.1 | 24.5 | 10.8 | 24.5 | 10.7 | 24.3 | 10.2 | 24.5 | 10.4 | 24.8 | 10.7 | 25.0 | 10.1 | 25.1 |
| 1940-1941 -- 1955 | 13.0 | 24.3 | 13.1 | 24.1 | 12.4 | 24.3 | 11.2 | 24.6 | 11.7 | 24.7 | 11.0 | 24.9 | 11.0 | 25.1 |
| | -- | -- | 8.7 | -- | 8.8 | -- | 8.3 | -- | 8.9 | -- | 8.8 | -- | 9.2 | -- |
| 1957-1959 | 11.2 | 24.5 | 10.9 | 24.4 | 10.7 | 24.3 | 10.2 | 24.4 | 10.1 | 24.7 | 10.9 | 24.7 | 10.1 | 24.9 |
| 1960 | 10.4 | 24.6 | 10.3 | 24.2 | 9.9 | 24.3 | 9.4 | 24.0 | 10.4 | 24.4 | 9.9 | 25.1 | 10.2 | 25.2 |
| 1961 | 11.1 | 24.8 | 10.9 | 23.8 | 10.9 | 24.2 | 10.2 | 24.8 | 10.9 | 24.4 | 10.6 | 24.6 | 10.1 | 25.0 |
| 1962 | 10.3 | 24.8 | 10.4 | 24.7 | 10.3 | 24.4 | 9.8 | 24.8 | 10.1 | 24.9 | 8.8 | 25.2 | 9.1 | 25.2 |
| 1963 | 10.7 | 24.8 | 11.4 | 24.7 | 10.1 | 24.7 | 11.1 | 23.8 | 11.3 | 24.5 | 9.4 | 25.3 | 10.6 | 25.0 |
| 1964 | 11.2 | 24.5 | 10.2 | 24.9 | 9.4 | 25.1 | 8.7 | 25.2 | 9.2 | 25.4 | 10.0 | 25.2 | -- | -- |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| STRAIT, CALIF. | | | | | | | | | | | | | | | |
| 20.1 | 14.0 | 19.5 | 15.9 | -- | -- | -- | -- | -- | -- | -- | -- | 22 | 16.5* | 5 | -0.7 |
| STRAIT, CALIF. | | | | | | | | | | | | | | | |
| 20.4 | 8.4 | 20.3 | 12.5 | 18.5 | 10.4 | -- | -- | -- | -- | -- | -- | 25 | 13.5* | 5 | -0.5* |
| 19.4 | 7.8 | 19.2 | 9.0 | 17.4 | 9.8 | 13.6 | 9.7 | 9.6 | 4.8 | 14.7 | 3.6 | 21 | 12.1 | 6 | -1.5 |
| SLOUGH, CALIF. | | | | | | | | | | | | | | | |
| 20.9 | -0.3 | 20.4 | -0.2 | 18.6 | -0.5 | 13.8 | -0.5 | 9.1 | -0.8 | 15.2 | -0.6 | 22 | 0.7 | 6 | -1.3 |
| SAN JOAQUIN RIVER, CALIF. | | | | | | | | | | | | | | | |
| 20.0 | 4.3 | 20.3 | 3.7 | 18.5 | 0.4 | 12.9 | -0.2 | 10.2 | -0.4 | 15.7 | 0.6 | 22 | 6.8 | 7 | -1.0 |
| JOAQUIN RIVER, CALIF. | | | | | | | | | | | | | | | |
| 22.4 | 5.9 | 21.7 | 1.4 | 19.1 | 0.5 | 15.3 | 0.0 | 11.3 | -0.3 | -- | -- | 25* | 11.7 | 8 | -1.1 |
| RIVER, CALIF. | | | | | | | | | | | | | | | |
| 21.1 | 3.3 | 19.8 | 5.0 | 18.3 | 2.1 | 14.4 | 0.0 | 11.7 | -0.6 | 15.1 | 0.8 | 22 | 7.0 | 3 | -0.8 |
| RIVER, CALIF. | | | | | | | | | | | | | | | |
| 20.7 | 1.2 | 20.9 | 0.8 | 17.8 | -0.4 | 12.4 | -0.8 | 9.5 | -1.0 | 15.4 | -0.4 | 25 | 4.9 | 6 | -1.4 |
| 20.7 | 1.2 | 20.9 | 0.8 | 17.8 | -0.4 | 12.4 | -0.8 | 9.5 | -1.0 | 15.4 | -0.4 | | | | |
| 25 | 4.9 | 24 | 3.7 | 21 | 0.5 | 17 | -0.4 | 11 | -0.7 | | | 25 | 4.9 | | |
| 23.3 | 2.4 | 23.6 | 1.8 | 20.3 | 0.1 | 15.8 | -0.4 | 10.8 | -0.8 | | | | | | |
| 18.6 | 0.1 | 19.2 | -0.2 | 15.8 | 0.9 | 10.0 | -1.2 | 8.1 | -1.2 | | | | | | |
| 18 | -0.8 | 18 | -1.0 | 16 | -1.0 | 9 | -1.2 | 8 | -1.2 | | | | | 6 | -1.4 |
| MOKELUMNE RIVER, CALIF. | | | | | | | | | | | | | | | |
| 21.1 | -0.1 | 20.1 | -0.6 | 16.7 | -0.6 | 11.8 | -0.7 | 9.8 | -0.7 | 14.9 | -0.4 | 24 | 1.2 | 6 | -1.6 |
| 21.1 | -0.1 | 20.1 | -0.6 | 16.7 | -0.6 | 11.8 | -0.7 | 9.8 | -0.7 | 14.9 | -0.4 | | | | |
| 23 | 0.8 | 23 | 0.6 | 19 | 0.4 | 15 | -0.4 | 12 | -0.5 | | | 24 | 1.2 | | |
| 22.5 | 0.3 | 21.9 | 0.0 | 18.3 | 0.1 | 15.0 | -0.5 | 11.7 | -0.6 | | | | | | |
| 19.4 | -0.4 | 18.3 | -1.3 | 14.6 | -0.8 | 10.0 | -0.9 | 8.3 | -0.8 | | | | | | |
| 19 | -0.9 | 18 | -1.6 | 14 | -0.9 | 10 | -0.9 | 8 | -0.9 | | | | | 6 | -1.6 |
| LIGHTSHIP, CALIF. | | | | | | | | | | | | | | | |
| 11.1 | 24.8 | 10.2 | 24.8 | 11.2 | 24.6 | 12.1 | 24.3 | 10.1 | 24.5 | 10.2 | 24.7 | 17 | 25.7 | 7 | 22.5 |
| 10.8 | 25.0 | 11.8 | 24.8 | 10.9 | 24.8 | 11.8 | 24.6 | 11.3 | 24.6 | 10.7 | 24.7 | 16 | 25.7 | 8 | 20.7 |
| 11.3 | 25.1 | 11.9 | 24.9 | 11.6 | 24.9 | 11.6 | 24.6 | 11.7 | 24.5 | 11.1 | 24.8 | 15 | 25.5 | 8 | 22.2 |
| 10.6 | 25.2 | 11.1 | 25.1 | 11.9 | 24.9 | 11.3 | 24.9 | 11.8 | 24.7 | 10.9 | 24.8 | 16 | 25.6 | 7 | 21.2 |
| 11.6 | 25.0 | 13.0 | 24.9 | 12.3 | 25.0 | 12.8 | 24.7 | 12.7 | 24.5 | 12.2 | 24.7 | 16 | 25.4 | 8 | 23.1 |
| 8.8 | -- | 9.2 | -- | -- | -- | 10.2 | -- | 11.1 | -- | -- | -- | 13 | -- | 7* | -- |
| 10.7 | 24.9 | 11.3 | 24.8 | 11.8 | 24.7 | 11.9 | 24.7 | 11.4 | 24.6 | 10.9 | 24.6 | 16 | 25.8 | 8 | 22.8 |
| 9.8 | 25.1 | 10.0 | 25.0 | 10.8 | 24.8 | 10.9 | 24.8 | 11.4 | 24.5 | 10.3 | 24.7 | 14 | 25.8 | 9 | 22.5 |
| 10.8 | 24.8 | 10.6 | 25.1 | 10.7 | 25.2 | 10.7 | 25.1 | 10.6 | 25.1 | 10.7 | 24.7 | 13 | 25.4 | 8 | 22.5 |
| 10.6 | 25.1 | 10.8 | 25.0 | 11.7 | 24.8 | 11.8 | 24.8 | 11.5 | 24.7 | 10.4 | 24.9 | 14 | 25.4 | 7 | 22.6 |
| 9.9 | 25.2 | 12.2 | 24.9 | 13.8 | 24.9 | 12.5 | 24.5 | 12.2 | 24.8 | 11.3 | 24.8 | 17 | 26.0 | 8 | 21.2 |
| -- | -- | 10.4 | 25.1 | 12.0 | 24.6 | 13.1 | 24.1 | 11.5 | 23.9 | -- | -- | 15 | 25.7* | 8 | 23.3* |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | BLUNTS REEF LIGHTSHIP, | | | |
| Mean | 11.0 | 24.5 | 10.8 | 24.4 | 10.4 | 24.5 | 10.2 | 24.5 | 10.3 | 24.8 | 10.3 | 25.0 | 10.2 | 25.1 |
| Maximum | 14 | 25.8 | 15 | 25.4 | 14 | 25.4 | 14 | 25.7 | 15 | 25.7 | 16 | 26.0 | 14 | 25.8 |
| Mean Max. | 12.1 | 24.9 | 11.8 | 24.9 | 11.6 | 24.9 | 11.4 | 25.0 | 12.0 | 25.1 | 12.2 | 25.2 | 11.9 | 25.3 |
| Mean Min. | 10.1 | 23.9 | 9.9 | 23.8 | 9.1 | 23.6 | 8.9 | 23.6 | 9.1 | 24.2 | 8.9 | 24.6 | 8.9 | 24.8 |
| Minimum | 8 | 21.2 | 8 | 22.5 | 7 | 21.8 | 8 | 20.7 | 8 | 23.0 | 7 | 24.1 | 7 | 24.2 |
| | | | | | | | | | | | CRESCENT CITY, | | | |
| 1934 | 10.8 | 19.2 | 11.2 | 22.2 | 12.5 | 21.7 | 12.3 | 23.0 | 13.5 | 22.9 | 12.1 | 24.3 | 13.2 | 23.9 |
| 1935-1939 | 8.8 | 21.1 | 8.7 | 20.3 | 8.9 | 20.0 | 9.7 | 20.6 | 10.4 | 22.8 | 11.2 | 22.6 | 12.5 | 23.7 |
| 1940-1944 | 10.3 | 20.4 | 10.6 | 20.3 | 10.8 | 21.2 | 11.4 | 21.8 | 11.9 | 22.2 | 12.8 | 22.9 | 14.0 | 23.4 |
| 1945-1947 | 10.1 | 22.1 | 9.9 | 22.1 | 10.1 | 22.5 | 10.4 | 23.1 | 12.2 | 22.5 | 13.2 | 24.0 | 14.2 | 24.2 |
| -- | | | | | | | | | | | | | | |
| 1950-1954 | 9.9 | 20.1 | 10.2 | 19.0 | 10.1 | 22.1 | 10.8 | 22.8 | 11.2 | 22.0 | 12.0 | 22.8 | 13.1 | 23.9 |
| 1955-1959 | 9.6 | 20.4 | 9.9 | 20.8 | 10.4 | 20.6 | 10.9 | 20.6 | 12.1 | 23.8 | 13.6 | 23.7 | 13.6 | 25.1 |
| 1960 | 9.4 | 23.3 | 10.7 | 21.4 | 10.9 | 19.3 | 12.2 | 19.9 | -- | -- | 12.4 | 22.6 | 14.8 | 23.4 |
| 1961 | 10.3 | 22.6 | 11.5 | 19.6 | 11.1 | 18.8 | 10.4 | 23.1 | 13.3 | 20.4 | 14.2 | 22.4 | 14.8 | 24.0 |
| 1962 | 8.9 | 23.5 | 9.6 | 21.6 | 10.1 | 21.0 | 11.4 | 23.1 | 11.2 | 23.7 | 12.1 | 24.5 | 12.2 | 24.3 |
| 1963 | 9.3 | 23.7 | 11.6 | 19.9 | 9.7 | 23.2 | 11.4 | 18.5 | 13.2 | 19.8 | 11.9 | 23.9 | 13.9 | 24.6 |
| 1964 | 9.8 | 21.3 | 9.6 | 23.1 | 9.1 | 23.4 | -- | -- | -- | -- | -- | -- | -- | -- |
| Mean | 9.7 | 21.1 | 10.0 | 20.6 | 10.2 | 21.2 | 10.8 | 21.6 | 11.7 | 22.5 | 12.5 | 23.2 | 13.5 | 24.0 |
| Maximum | 12 | 25.1 | 13 | 26.0 | 14 | 25.8 | 15 | 25.5 | 17 | 26.3 | 17 | 26.9 | 18 | 26.4 |
| Mean Max. | 11.0 | 23.4 | 11.2 | 23.2 | 11.6 | 23.7 | 12.2 | 23.8 | 13.4 | 24.5 | 14.7 | 25.2 | 15.3 | 25.3 |
| Mean Min. | 8.1 | 17.0 | 8.4 | 17.1 | 8.7 | 17.3 | 9.5 | 17.6 | 10.0 | 19.0 | 10.6 | 20.3 | 11.4 | 22.3 |
| Minimum | 5 | 9.4 | 7 | 10.2 | 6 | 10.3 | 7 | 9.6 | 8 | 9.5 | 9 | 11.8 | 8 | 16.6 |
| | | | | | | | | | | | BANDON, COQUILLE | | | |
| 1933-1934 | 9.7 | 4.6 | 10.3 | 8.3 | 12.0 | 10.6 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | COOS BAY | | | |
| 1933-1934 | 10.5 | 16.3 | 10.8 | 20.5 | 12.1 | 20.1 | 10.6 | 22.0 | 10.9 | 16.0 | 11.7 | 23.5 | 11.9 | 26.2 |
| | | | | | | | | | | | GARDINER, UMPQUA | | | |
| 1933-1934 | 8.9 | -0.5 | 9.4 | 1.6 | 12.6 | 1.5 | -- | -- | -- | -- | 15.8 | 0.9 | 17.6 | 9.1 |
| | | | | | | | | | | | FLORENCE, SIUSLAW | | | |
| 1933-1934 | 9.3 | 2.3 | 10.1 | 9.2 | 12.0 | 6.1 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | WALDPORT, ALSEA | | | |
| 1933-1934 | 9.3 | -- | 9.7 | -- | 11.1 | -- | -- | -- | 11.7 | -- | 13.7 | -- | 14.0 | -- |
| | | | | | | | | | | | NEWPORT, YAQUINA | | | |
| 1933-1934 | 10.5 | 17.2 | 10.7 | 21.3 | 11.9 | 21.4 | 11.0 | 15.9 | 11.1 | 17.2 | 12.8 | 21.2 | 10.1 | 24.3 |
| | | | | | | | | | | | TAFT, SILETZ | | | |
| 1933-1934 | 9.2 | 3.4 | 10.3 | 15.1 | 11.1 | 8.7 | 12.3 | 14.3 | -- | -- | 13.3 | 10.4 | 11.2 | 22.1 |
| | | | | | | | | | | | GARIBALDI, TILLAMOOK | | | |
| 1933-1934 | 9.5 | -- | 10.2 | 14.7 | 11.0 | 13.1 | 12.2 | 12.1 | 11.3 | 11.9 | 13.8 | 16.8 | 13.0 | 22.4 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| CALIF. - continued | | | | | | | | | | | | | | | |
| 10.8 | 25.0 | 11.3 | 24.9 | 11.6 | 24.8 | 11.7 | 24.7 | 11.5 | 24.6 | 10.8 | 24.7 | | | | |
| 17 | 25.5 | 16 | 25.5 | 17 | 25.7 | 15 | 25.4 | 15 | 25.4 | | | 17 | 26.0 | | |
| 12.7 | 25.2 | 13.3 | 25.2 | 13.6 | 25.1 | 13.3 | 25.0 | 12.9 | 24.9 | | | | | | |
| 9.4 | 24.7 | 9.9 | 24.6 | 10.1 | 24.5 | 10.1 | 24.3 | 10.1 | 24.1 | | | | | | |
| 8 | 24.1 | 8 | 24.3 | 9 | 23.8 | 8 | 22.5 | 8 | 22.8 | | | | | 7 | 20.7 |
| CALIF. | | | | | | | | | | | | | | | |
| 12.9 | 23.9 | 11.7 | 24.0 | 10.8 | 23.8 | 11.0 | 21.0 | 9.6 | 20.9 | 11.8 | 22.6 | 17 | 25.4 | 7 | 12.7 |
| 13.0 | 24.0 | 12.6 | 24.3 | 11.3 | 23.8 | 9.9 | 23.0 | 9.9 | 22.5 | 10.6 | 22.4 | 16 | 26.1 | 5 | 9.4 |
| 14.6 | 23.7 | 13.5 | 23.8 | 12.7 | 24.2 | 12.1 | 22.5 | 10.7 | 21.4 | 12.1 | 22.3 | 18 | 26.9 | 5 | 9.7 |
| 14.8 | 24.2 | 13.3 | 24.2 | 10.7 | 24.2 | 10.4 | 22.0 | 10.4 | 21.6 | 11.6 | 23.1 | 18 | 25.7 | 7 | 14.7 |
| 14.1 | 23.9 | 14.2 | 23.5 | 13.0 | 23.2 | 11.2 | 23.2 | 10.6 | 21.6 | 11.7 | 22.3 | 17 | 26.5 | 8 | 12.6 |
| 15.0 | 24.9 | 14.9 | 24.7 | 12.4 | 23.9 | 11.1 | 22.9 | 9.8 | 22.4 | 11.9 | 22.8 | 17 | 26.5 | 7 | 14.1 |
| 13.3 | 24.3 | 12.4 | -- | 12.4 | -- | 10.6 | 22.3 | 10.4 | 21.4 | 11.8 | -- | 17 | 25.3* | 8 | 9.6* |
| 15.3 | 23.8 | 11.8 | 24.3 | 11.3 | 24.1 | 10.4 | 23.1 | 9.6 | 22.6 | 12.0 | 22.4 | 18 | 25.3 | 8 | 13.5 |
| 14.7 | 23.9 | 14.5 | 24.1 | 12.7 | 22.4 | 12.1 | 22.6 | 10.8 | 20.9 | 11.7 | 23.0 | 17 | 26.0 | 7 | 16.6 |
| 13.4 | 24.6 | 14.9 | 24.5 | 14.4 | 24.2 | 12.4 | 21.7 | 10.7 | 23.2 | 12.2 | 22.6 | 18 | 26.4 | 7 | 9.5 |
| 13.5 | 24.4 | 11.2 | 24.4 | 11.6 | 24.3 | 11.4 | 22.7 | 10.2 | 20.1 | -- | -- | 17* | 25.4* | 6* | 17.1* |
| 14.2 | 24.1 | 13.5 | 24.1 | 12.1 | 23.8 | 11.1 | 22.7 | 10.3 | 21.9 | 11.6 | 22.6 | | | | |
| 18 | 26.5 | 17 | 26.1 | 16 | 25.6 | 14 | 25.4 | 14 | 25.5 | | | 18 | 26.9 | | |
| 15.8 | 25.0 | 15.2 | 25.0 | 13.6 | 24.8 | 12.5 | 24.4 | 11.6 | 23.8 | | | | | | |
| 12.3 | 23.0 | 11.7 | 23.0 | 10.8 | 22.2 | 9.5 | 19.7 | 8.7 | 18.4 | | | | | | |
| 9 | 19.2 | 9 | 19.0 | 8 | 14.4 | 6 | 9.7 | 7 | 9.7 | | | | | 5 | 9.4 |
| RIVER, ORE. | | | | | | | | | | | | | | | |
| 11.5 | 22.9 | 11.9 | 22.8 | 10.6 | 22.7 | 10.1 | 21.6 | 9.5 | 9.6 | -- | -- | 15* | 25.4* | 7 | -1.3* |
| ENTRANCE, ORE. | | | | | | | | | | | | | | | |
| 12.3 | 26.2 | 10.1 | 25.7 | 10.4 | -- | -- | -- | 9.9 | 17.5 | -- | -- | 14 | 27.1* | 8 | 3.7* |
| RIVER, ORE. | | | | | | | | | | | | | | | |
| 16.7 | 13.4 | 15.2 | 11.0 | 13.5 | 11.7 | 9.9 | 8.2 | 9.0 | 0.4 | -- | -- | 20 | 18.0* | 8 | -1.2* |
| RIVER, ORE. | | | | | | | | | | | | | | | |
| -- | -- | 13.4 | 16.3 | 12.1 | 12.8 | 9.9 | 10.4 | 9.3 | 2.4 | -- | -- | 16* | 23.7* | 7 | -0.6* |
| BAY, ORE. | | | | | | | | | | | | | | | |
| 13.2 | -- | 11.9 | -- | 10.8 | -- | 10.9 | -- | 9.3 | -- | -- | -- | 18 | -- | 8 | -- |
| BAY, ORE. | | | | | | | | | | | | | | | |
| 10.0 | 24.8 | 11.5 | 24.4 | 10.9 | 24.0 | 11.2 | 22.6 | 10.5 | -- | 11.0 | -- | 16 | 25.8* | 7 | -0.2* |
| BAY, ORE. | | | | | | | | | | | | | | | |
| 12.1 | 21.9 | 12.0 | 21.3 | 11.0 | 17.7 | 9.9 | 14.9 | 9.1 | 3.1 | -- | -- | 18 | 25.2* | 8 | -1.1 |
| BAY, ORE. | | | | | | | | | | | | | | | |
| 13.3 | 22.9 | 13.0 | 17.3 | 11.6 | 12.3 | 10.2 | 11.3 | -- | -- | -- | -- | 17 | 25.3* | 7* | 0.1* |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | BRIGHTON, NEHALEM | |
| 1933-1934 | 9.3 | 4.1 | 10.2 | 13.9 | 11.3 | 10.6 | 13.5 | 11.7 | 10.2 | 8.9 | 13.3 | 9.9 | 13.3 | 19.1 |
| | | | | | | | | | | | | | ASTORIA (Tongue | |
| 1854 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14.7 | -- | 18.0 | -- |
| 1855 | 5.7 | -- | 6.1 | -- | 8.1 | -- | 10.8 | -- | 12.8 | -- | 16.0 | -- | 18.8 | -- |
| 1856 | 4.0 | -- | 5.8 | -- | 8.2 | -- | 10.7 | -- | 13.0 | -- | 15.9 | -- | 17.2 | -- |
| 1857 | 3.0 | -- | 5.6 | -- | 8.1 | -- | 11.4 | -- | 13.6 | -- | 17.2 | -- | 19.3 | -- |
| 1858 | 5.1 | -- | 5.6 | -- | 8.0 | -- | 10.4 | -- | 13.9 | -- | 15.8 | -- | 17.3 | -- |
| 1859 | 5.0 | -- | 4.9 | -- | 6.3 | -- | 9.6 | -- | 12.6 | -- | 15.5 | -- | 17.7 | -- |
| 1860 | 4.0 | -- | 5.0 | -- | 6.9 | -- | 9.7 | -- | 12.2 | -- | 14.3 | -- | 17.2 | -- |
| 1861 | 4.3 | -- | 5.7 | -- | 7.6 | -- | 9.7 | -- | 11.7 | -- | 13.7 | -- | 17.4 | -- |
| 1862 | 0.1 | -- | 0.5 | -- | 4.0 | -- | 7.8 | -- | 11.8 | -- | 14.6 | -- | 17.0 | -- |
| 1863 | 4.6 | -- | 3.4 | -- | 6.4 | -- | 9.2 | -- | 11.9 | -- | 14.6 | -- | 18.4 | -- |
| 1864 | 3.4 | -- | 5.4 | -- | 7.7 | -- | 9.6 | -- | 13.3 | -- | 14.3 | -- | 16.8 | -- |
| 1865 | 3.4 | -- | 3.2 | -- | 2.8 | -- | 8.3 | -- | 12.2 | -- | 14.3 | -- | 17.0 | -- |
| 1866 | 2.7 | -- | 2.6 | -- | 5.8 | -- | 8.6 | -- | 11.3 | -- | 12.6 | -- | -- | -- |
| 1867 | 4.3 | -- | 4.4 | -- | 4.3 | -- | 8.6 | -- | 12.4 | -- | 14.3 | -- | 16.6 | -- |
| 1868 | 1.0 | -- | 2.2 | -- | 5.3 | -- | 10.5 | -- | 12.8 | -- | 14.6 | -- | 17.6 | -- |
| 1869 | 5.6 | -- | 5.2 | -- | 8.2 | -- | 10.8 | -- | 14.8 | -- | 17.7 | -- | 18.3 | -- |
| 1870 | 4.3 | -- | 5.7 | -- | 5.8 | -- | 9.9 | -- | 12.7 | -- | 15.2 | -- | 18.7 | -- |
| 1871 | 4.2 | -- | 5.3 | -- | 6.9 | -- | 10.0 | -- | 11.8 | -- | 14.7 | -- | 17.4 | -- |
| 1872 | 2.9 | -- | 4.7 | -- | 7.8 | -- | 9.6 | -- | 12.8 | -- | 15.2 | -- | 18.0 | -- |
| 1873 | 5.4 | -- | 4.4 | -- | 7.1 | -- | 9.6 | -- | 12.4 | -- | -- | -- | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1875 | -- | -- | -- | -- | -- | -- | -- | -- | 11.7 | -- | 14.2 | -- | 18.3 | -- |
| 1876 | 3.1 | -- | 4.6 | -- | 6.3 | -- | 9.9 | -- | 11.5 | -- | 14.2 | -- | 16.9 | -- |
| -- | | | | | | | | | | | | | | |
| 1925-1929 | 4.3 | 0.4 | 5.1 | 0.0 | 7.9 | -0.4 | 10.7 | -0.3 | 13.7 | -0.4 | 15.9 | -0.3 | 19.2 | -0.3 |
| 1930-1934 | 4.4 | 1.1 | 4.9 | 0.2 | 7.8 | -0.3 | 11.1 | -0.5 | 13.4 | -0.5 | 15.9 | -0.4 | 18.6 | -0.4 |
| 1935-1939 | 4.8 | 0.5 | 4.6 | 0.7 | 7.4 | -0.1 | 10.6 | -0.4 | 13.8 | -0.5 | 16.0 | -0.5 | 19.1 | -0.4 |
| 1940-1944 | 4.4 | 1.0 | 6.0 | 0.3 | 7.9 | -0.2 | 11.2 | -0.6 | 13.8 | -0.8 | 16.1 | -0.8 | 19.2 | -0.6 |
| 1945-1949 | 4.2 | 0.7 | 5.2 | -0.3 | 7.4 | -0.4 | 10.4 | -0.6 | 13.3 | -0.7 | 15.8 | -0.5 | 18.7 | -0.4 |
| 1950-1954 | 4.9 | -0.2 | 6.0 | -0.5 | 7.2 | -0.5 | 10.6 | -0.6 | 13.5 | -0.5 | 15.5 | -0.4 | 18.8 | -0.2 |
| 1955-1959 | 5.4 | -0.4 | 5.5 | -0.5 | 7.4 | -0.8 | 10.7 | -0.8 | 14.1 | -0.8 | 16.4 | -0.8 | 19.2 | -0.6 |
| 1960 | 3.7 | 0.5 | 6.2 | -0.7 | 6.9 | -0.6 | 10.3 | -1.0 | 13.1 | -0.9 | 16.6 | -1.1 | 20.1 | -0.9 |
| 1961 | 7.0 | -0.1 | 8.1 | -1.1 | 8.8 | -1.2 | 11.1 | -1.0 | 13.7 | -1.0 | 16.9 | -0.8 | 20.0 | -0.9 |
| 1962 | 5.4 | -0.5 | 6.3 | -0.4 | 7.2 | -0.6 | 11.8 | -1.1 | 12.8 | -1.1 | 16.6 | -0.9 | 18.6 | -1.0 |
| 1963 | 5.0 | -0.4 | 6.8 | -0.6 | 8.5 | -0.7 | 10.3 | -1.0 | 14.3 | -0.9 | 16.9 | -0.8 | 18.6 | -0.8 |
| 1964 | 7.1 | -1.1 | 7.2 | -0.9 | 8.2 | -1.1 | 11.2 | -0.9 | 13.1 | -1.1 | 15.4 | -1.1 | 18.4 | -1.0 |
| Mean | 4.4 | 0.3 | 5.2 | -0.1 | 7.3 | -0.5 | 10.4 | -0.6 | 13.2 | -0.7 | 15.6 | -0.6 | 18.6 | -0.5 |
| Maximum | 9 | 10.2 | 11 | 7.6 | 14 | 4.8 | 16 | 2.9 | 19 | 0.9 | 21 | 0.4 | 24 | 0.8 |
| Mean Max. | 6.1 | 3.3 | 6.8 | 2.5 | 9.2 | 1.1 | 12.4 | 0.3 | 15.8 | -0.2 | 17.6 | -0.1 | 20.2 | 0.0 |
| Mean Min. | 2.6 | -1.0 | 3.6 | -1.1 | 5.6 | -1.1 | 8.4 | -1.1 | 11.4 | -1.0 | 13.0 | -0.9 | 16.7 | -0.9 |
| Minimum | -1 | -1.4 | 0 | -1.6 | 1 | -1.4 | 6 | -1.8 | 9 | -1.5 | 11 | -1.5 | 14 | -1.4 |
| | | | | | | | | | | | | | WAUNA, COLUMBIA | |
| 1940-1942 | 3.8 | -1.0 | 5.9 | -1.0 | 7.7 | -1.0 | 11.2 | -0.8 | 13.9 | -0.7 | 16.1 | -0.4 | 19.8 | -0.6 |
| | | | | | | | | | | | | | HARRINGTON POINT, | |
| 1940-1942 | 4.0 | -0.9 | 6.2 | -0.9 | 8.0 | -0.9 | 11.8 | -0.6 | 14.3 | -0.4 | 16.7 | -0.2 | 20.2 | -0.2 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| RIVER, ORE. | | | | | | | | | | | | | | | |
| 13.6 | 20.2 | 12.3 | 20.0 | 11.1 | 17.1 | 10.2 | 15.5 | 9.6 | 4.3 | 11.5 | 12.9 | 17 | 28.2 | 5 | -1.5 |
| Point), ORE. | | | | | | | | | | | | | | | |
| 17.9 | -- | 17.1 | -- | 13.8 | -- | 10.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 19.0 | -- | 17.2 | -- | 14.6 | -- | 9.5 | -- | 4.4 | -- | 11.9 | -- | 20 | -- | 0 | -- |
| 18.5 | -- | 16.6 | -- | 14.9 | -- | 8.6 | -- | 4.7 | -- | 11.5 | -- | 19 | -- | 2 | -- |
| 19.8 | -- | 17.9 | -- | 14.7 | -- | 9.9 | -- | 6.4 | -- | 12.2 | -- | 21 | -- | 1 | -- |
| 18.7 | -- | 15.3 | -- | 12.7 | -- | 9.6 | -- | 5.0 | -- | 11.4 | -- | 20 | -- | 3 | -- |
| 18.5 | -- | 16.7 | -- | 13.2 | -- | 7.6 | -- | 3.1 | -- | 10.9 | -- | 20 | -- | -1 | -- |
| 19.4 | -- | 17.0 | -- | 13.3 | -- | 8.6 | -- | 5.6 | -- | 11.1 | -- | 21 | -- | 3 | -- |
| 18.3 | -- | 17.3 | -- | 12.6 | -- | 7.7 | -- | 5.0 | -- | 10.9 | -- | 19 | -- | 1 | -- |
| 18.2 | -- | 16.6 | -- | 12.0 | -- | 7.7 | -- | 4.3 | -- | 9.6 | -- | 20 | -- | -1 | -- |
| 17.6 | -- | 16.2 | -- | 12.2 | -- | 7.2 | -- | 5.2 | -- | 10.6 | -- | 21 | -- | 2 | -- |
| 18.0 | -- | 15.5 | -- | 12.7 | -- | 8.0 | -- | 4.1 | -- | 10.7 | -- | 19 | -- | 0 | -- |
| 17.9 | -- | 14.8 | -- | 12.9 | -- | 9.2 | -- | 2.1 | -- | 9.8 | -- | 19 | -- | 0 | -- |
| 18.2 | -- | 16.6 | -- | 12.7 | -- | 9.2 | -- | 6.0 | -- | -- | -- | 19* | -- | -1 | -- |
| 18.4 | -- | 16.5 | -- | 12.1 | -- | 8.6 | -- | 6.1 | -- | 10.6 | -- | 19 | -- | 2 | -- |
| 18.1 | -- | 14.6 | -- | 11.4 | -- | 8.3 | -- | 6.2 | -- | 10.2 | -- | 19 | -- | -1 | -- |
| 17.5 | -- | 15.7 | -- | 12.7 | -- | 9.1 | -- | 5.9 | -- | 11.8 | -- | 20 | -- | 4 | -- |
| 19.6 | -- | 16.6 | -- | 13.4 | -- | 8.9 | -- | 4.7 | -- | 11.3 | -- | 22 | -- | 1 | -- |
| 18.1 | -- | 16.1 | -- | 12.8 | -- | 8.1 | -- | 4.4 | -- | 10.8 | -- | 19 | -- | 1 | -- |
| 18.1 | -- | 16.2 | -- | 12.9 | -- | 6.8 | -- | 4.6 | -- | 10.8 | -- | 20 | -- | 1 | -- |
| 19.2 | -- | 17.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21* | -- | 3* | -- |
| 19.1 | -- | 16.6 | -- | 14.5 | -- | 7.8 | -- | 6.4 | -- | -- | -- | 20 | -- | 6* | -- |
| 17.5 | -- | 16.2 | -- | 14.2 | -- | -- | -- | -- | -- | -- | -- | 19 | -- | 1* | -- |
| 19.6 | -0.2 | 17.1 | 0.0 | 13.3 | 0.6 | 9.1 | 1.1 | 5.5 | 0.6 | 11.8 | 0.1 | 24 | 8.8 | 0 | -1.6 |
| 19.7 | -0.1 | 17.3 | 0.3 | 13.4 | 1.2 | 9.1 | 0.6 | 5.5 | 1.1 | 11.8 | 0.2 | 22 | 10.2 | 0 | -1.8 |
| 19.8 | -0.1 | 18.1 | 1.0 | 14.4 | 2.5 | 9.0 | 2.9 | 6.6 | 2.1 | 12.0 | 0.6 | 24 | 9.7 | 0 | -1.6 |
| 19.6 | -0.2 | 18.0 | 0.6 | 14.9 | 1.7 | 9.4 | 1.7 | 6.3 | 1.1 | 12.2 | 0.2 | 24 | 9.9 | 1 | -1.8 |
| 19.2 | -0.1 | 18.1 | 0.9 | 13.6 | 1.2 | 9.1 | 0.7 | 6.6 | 0.3 | 11.8 | 0.1 | 22 | 8.2 | -1 | -1.5 |
| 19.6 | 0.0 | 18.3 | 0.5 | 14.6 | 1.4 | 10.2 | 1.4 | 7.3 | 0.9 | 12.2 | 0.1 | 22 | 9.2 | 0 | -1.4 |
| 20.2 | -0.3 | 18.4 | 0.3 | 14.5 | 0.2 | 9.2 | -0.2 | 6.8 | -0.3 | 12.3 | -0.4 | 23 | 5.1 | 0 | -1.8 |
| 19.7 | -0.5 | 17.9 | 0.2 | 15.4 | 0.5 | 10.7 | -0.4 | 7.0 | 0.5 | 12.3 | -0.4 | 21 | 4.3 | 2 | -1.3 |
| 20.4 | -0.4 | 17.9 | -0.1 | 13.9 | 0.8 | 9.0 | 0.3 | 6.4 | -0.6 | 12.8 | -0.5 | 22 | 4.1 | 5 | -1.4 |
| 20.0 | -0.7 | 18.3 | 0.1 | 14.8 | 0.2 | 11.6 | 0.0 | 8.0 | -1.0 | 12.6 | -0.6 | 21 | 3.4 | 3 | -1.5 |
| 19.9 | -0.3 | 19.6 | 0.5 | 16.2 | 0.5 | 10.9 | -0.4 | 7.4 | -1.0 | 12.9 | -0.5 | 21 | 4.4 | 2 | -1.4 |
| 19.3 | -0.7 | 17.5 | -0.2 | 14.9 | 0.0 | 10.3 | -0.3 | 6.9 | -1.0 | 12.5 | -0.8 | 21 | 2.8 | 4 | -1.4 |
| 19.2 | -0.2 | 17.4 | 0.5 | 13.8 | 1.1 | 9.1 | 0.9 | 6.0 | 0.1 | 11.7 | -0.2 | | | | |
| 24 | 5.5 | 22 | 6.3 | 19 | 9.9 | 14 | 9.7 | 11 | 9.6 | | | 24 | 10.2 | | |
| 20.7 | 1.1 | 19.3 | 3.0 | 16.1 | 4.5 | 11.5 | 4.1 | 7.8 | 4.3 | | | | | | |
| 18.0 | -0.8 | 15.5 | -0.7 | 11.4 | -0.7 | 7.0 | -0.9 | 4.0 | -1.0 | | | | | | |
| 14 | -1.3 | 12 | -1.3 | 8 | -1.8 | 3 | -1.8 | -1 | -1.6 | | | | | -1 | -1.8 |
| RIVER, ORE. | | | | | | | | | | | | | | | |
| 20.6 | -0.5 | 17.7 | -0.5 | 14.5 | -0.8 | 9.2 | -1.0 | 6.2 | -1.0 | 12.2 | -0.8 | 23 | 0.0 | 2 | -1.2 |
| COLUMBIA RIVER, WASH. | | | | | | | | | | | | | | | |
| 21.1 | -0.5 | 17.6 | -0.6 | 15.3 | -0.8 | 9.9 | -1.0 | 6.7 | -0.9 | 12.6 | -0.7 | 23 | 0.5 | 2 | -1.3 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | |
| **SKAMOKAWA, COLUMBIA** | | | | | | | | | | | | | | |
| 1940-1942 | 3.8 | -1.2 | 5.8 | -1.2 | 7.9 | -1.1 | 11.6 | -1.0 | 13.9 | -0.8 | 16.1 | -0.9 | 19.8 | 0.8 |
| **CATHLAMET, COLUMBIA** | | | | | | | | | | | | | | |
| 1940-1942 | 3.6 | -0.9 | 5.8 | -0.6 | 7.9 | -0.5 | 11.7 | -0.4 | 14.0 | -0.5 | 16.3 | -0.4 | 20.7 | -0.2 |
| **TOKELAND, WILLAPA** | | | | | | | | | | | | | | |
| 1935-1939 | 7.0 | 14.6 | 6.7 | 15.8 | 8.8 | 15.4 | 10.8 | 15.7 | 13.2 | 17.3 | 15.8 | 17.4 | 17.4 | 19.3 |
| Mean | 7.0 | 14.6 | 6.7 | 15.8 | 8.8 | 15.4 | 10.8 | 15.7 | 13.2 | 17.3 | 15.8 | 17.4 | 17.4 | 19.3 |
| Maximum | 10 | 23.7 | 11 | 20.9 | 12 | 21.5 | 18 | 20.1 | 18 | 22.3 | 19 | 23.4 | 22 | 23.1 |
| Mean Max. | 8.8 | 20.5 | 9.1 | 20.0 | 10.8 | 20.3 | 14.3 | 19.2 | 16.8 | 20.9 | 18.6 | 21.4 | 21.1 | 22.3 |
| Mean Min. | 3.8 | 8.4 | 3.8 | 7.4 | 7.2 | 6.3 | 8.5 | 10.5 | 10.7 | 13.8 | 13.2 | 13.7 | 15.1 | 15.5 |
| Minimum | 0 | 4.1 | 0 | 4.3 | 7 | 1.1 | 7 | 0.7 | 8 | 11.3 | 12 | 10.1 | 14 | 11.7 |
| **RAYMOND, WILLAPA** | | | | | | | | | | | | | | |
| 1935-1939 | 6.2 | 3.0 | 5.7 | 4.3 | 7.9 | 2.8 | 10.9 | 4.3 | 15.0 | 6.0 | 17.3 | 7.0 | 19.8 | 10.1 |
| 1940-1942 | 7.6 | 5.5 | 9.2 | 4.6 | 10.8 | 5.3 | 13.7 | 5.8 | 16.2 | 5.8 | 18.8 | 9.8 | 21.4 | 13.8 |
| Mean | 6.8 | 4.1 | 7.2 | 4.4 | 9.0 | 3.7 | 11.9 | 4.9 | 15.4 | 5.9 | 17.9 | 8.0 | 20.3 | 11.3 |
| Maximum | 11 | 13.9 | 11 | 13.9 | 15 | 13.5 | 18 | 13.5 | 20 | 14.5 | 22 | 13.2 | 26.1 | 17.8 |
| Mean Max. | 8.8 | 9.8 | 9.2 | 10.1 | 11.2 | 9.0 | 14.6 | 9.2 | 18.2 | 10.6 | 20.4 | 11.1 | 23.5 | 15.6 |
| Mean Min. | 4.8 | 0.6 | 5.1 | 0.6 | 6.9 | 0.4 | 9.2 | 1.4 | 12.6 | 1.3 | 15.7 | 4.3 | 17.4 | 7.0 |
| Minimum | 2 | -0.6 | 2 | -0.6 | 6 | -0.6 | 6 | 0.5 | 11 | 0.2 | 14 | 1.1 | 15 | 2.9 |
| **ABERDEEN, GRAYS** | | | | | | | | | | | | | | |
| 1934-1935 | 6.0 | 0.1 | 7.3 | 0.7 | 7.0 | -0.2 | 10.4 | 1.3 | 14.5 | 2.4 | 17.4 | 4.0 | 17.8 | 7.0 |
| **NEAH BAY,** | | | | | | | | | | | | | | |
| 1936-1939 | 7.8 | 23.3 | 7.0 | 23.6 | 7.7 | 23.4 | 8.5 | 23.7 | 10.1 | 23.6 | 10.9 | 23.4 | 10.7 | 24.3 |
| 1940-1944 | 8.1 | 23.1 | 8.2 | 23.1 | 8.5 | 23.3 | 10.1 | 22.9 | 10.8 | 23.4 | 11.3 | 23.9 | 11.8 | 24.0 |
| 1945-1949 | 6.9 | 22.4 | 6.8 | 22.3 | 8.1 | 22.2 | 9.1 | 22.7 | 11.3 | 22.8 | 12.8 | 22.5 | 12.9 | 23.5 |
| 1950-1954 | 6.7 | 21.9 | 7.0 | 20.5 | 7.4 | 22.1 | 8.8 | 22.5 | 10.3 | 23.0 | 11.6 | 23.2 | 11.8 | 23.6 |
| 1955-1959 | 7.5 | 22.3 | 7.4 | 22.7 | 7.8 | 22.7 | 9.2 | 22.6 | 10.6 | 23.3 | 11.6 | 23.0 | 11.6 | 23.6 |
| 1960 | 6.8 | 22.8 | 7.8 | 22.1 | 7.4 | 22.6 | 9.3 | 21.6 | 11.2 | 21.8 | 11.3 | 22.7 | 11.8 | 23.9 |
| 1961 | 8.1 | 22.3 | 8.7 | 21.1 | 8.8 | 20.8 | 9.3 | 22.8 | 11.2 | 22.1 | 12.6 | 22.7 | 12.6 | 23.6 |
| 1962 | 6.8 | 22.3 | 7.3 | 22.4 | 7.3 | 23.3 | 9.6 | 22.6 | 10.6 | 22.2 | 11.0 | 23.8 | 11.1 | 24.2 |
| 1963 | 7.4 | 22.8 | 8.2 | 22.1 | 8.5 | 23.1 | 9.6 | 21.9 | 11.3 | 22.8 | -- | -- | 13.1 | 22.6 |
| 1964 | 8.1 | 21.8 | 7.8 | 22.4 | 7.7 | 22.8 | 8.7 | 23.4 | 9.6 | 23.8 | 12.1 | 23.4 | 12.1 | 23.2 |
| Mean | 7.4 | 22.5 | 7.4 | 22.4 | 7.9 | 22.7 | 9.2 | 22.8 | 10.7 | 23.1 | 11.7 | 23.2 | 11.8 | 23.7 |
| Maximum | 11 | 25.0 | 11 | 24.8 | 11 | 24.9 | 13 | 25.4 | 16 | 25.0 | 18 | 26.1 | 18 | 25.5 |
| Mean Max. | 8.6 | 23.5 | 8.4 | 23.6 | 9.1 | 23.7 | 10.7 | 23.8 | 12.9 | 24.0 | 14.2 | 24.3 | 14.4 | 24.5 |
| Mean Min. | 5.8 | 21.3 | 6.2 | 19.8 | 6.8 | 21.3 | 8.1 | 20.9 | 9.1 | 21.2 | 9.8 | 21.3 | 9.9 | 22.3 |
| Minimum | 2 | 18.9 | 3 | 9.9 | 3 | 16.6 | 6 | 11.5 | 8 | 17.8 | 8 | 15.3 | 8 | 19.1 |
| **PORT ANGELES,** | | | | | | | | | | | | | | |
| 1934-1935 | 7.3 | 20.0 | 7.7 | 21.5 | 8.1 | 21.7 | 9.5 | 22.0 | 10.3 | 22.8 | 11.0 | 23.0 | 11.7 | 22.9 |
| **PORT TOWNSEND** | | | | | | | | | | | | | | |
| 1935-1936 | 8.0 | 23.0 | 7.5 | 22.9 | -- | -- | 8.3 | 22.5 | 9.3 | 22.6 | 10.4 | 22.7 | 10.8 | 23.0 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| RIVER, WASH. | | | | | | | | | | | | | | | |
| 19.8 | -1.1 | 17.1 | -1.1 | 13.9 | -1.0 | 8.8 | -1.2 | 6.1 | -1.2 | 12.0 | -1.0 | 22 | 0.0 | 1 | -1.6 |
| RIVER, WASH. | | | | | | | | | | | | | | | |
| 21.3 | -0.6 | 18.3 | -0.6 | 15.2 | -0.8 | 9.3 | -0.8 | 6.4 | -0.8 | 12.5 | -0.6 | 24 | 0.2 | 1 | -1.1 |
| BAY, WASH. | | | | | | | | | | | | | | | |
| 17.6 | 21.3 | 15.7 | 21.4 | 13.3 | 21.2 | 9.9 | 19.1 | 8.2 | 17.3 | 12.0 | 18.0 | 22 | 23.7 | 0 | 0.7 |
| 17.6 | 21.3 | 15.7 | 21.4 | 13.3 | 21.2 | 9.9 | 19.1 | 8.2 | 17.3 | 12.0 | 18.0 | 22 | 23.7 | 0 | 0.7 |
| 21 | 23.3 | 20 | 23.6 | 17 | 23.2 | 16 | 23.5 | 11 | 21.0 | | | 22 | 23.7 | | |
| 20.2 | 22.7 | 18.5 | 23.0 | 15.5 | 22.7 | 11.8 | 21.9 | 10.0 | 20.3 | | | | | | |
| 15.2 | 19.7 | 13.7 | 19.7 | 10.7 | 19.2 | 8.1 | 15.1 | 5.6 | 11.2 | | | | | | |
| 13 | 18.7 | 13 | 18.9 | 8 | 18.7 | 5 | 6.5 | 5 | 5.6 | | | | | 0 | 0.7 |
| BAY, WASH. | | | | | | | | | | | | | | | |
| 19.8 | 15.2 | 18.0 | 15.7 | 14.3 | 14.7 | 8.9 | 8.6 | 7.4 | 5.6 | 12.6 | 8.1 | 26 | 19.6 | 2 | -0.6 |
| 21.1 | 15.0 | 18.6 | 11.6 | 15.3 | 10.1 | 10.5 | 6.4 | 8.8 | 4.6 | 14.3 | 8.2 | 26 | 18.1 | 3 | 0.4 |
| 20.2 | 15.1 | 18.2 | 14.1 | 14.6 | 12.9 | 9.4 | 7.9 | 7.8 | 5.3 | 13.2 | 8.1 | | | | |
| 25 | 18.0 | 23 | 18.4 | 18 | 18.3 | 15 | 19.6 | 12 | 18.3 | | | 26 | 19.6 | | |
| 22.8 | 17.4 | 20.5 | 17.0 | 17.0 | 16.8 | 12.3 | 13.7 | 10.3 | 11.5 | | | | | | |
| 18.1 | 12.1 | 15.7 | 10.7 | 10.9 | 7.0 | 6.7 | 2.3 | 5.1 | 0.4 | | | | | | |
| 16 | 11.0 | 14 | 3.2 | 8 | 22 | 5 | 0.5 | 4 | -0.5 | | | | | 2 | -0.6 |
| HARBOR, WASH. | | | | | | | | | | | | | | | |
| 18.2 | 9.7 | 16.6 | 10.7 | 13.3 | 8.2 | 9.9 | 0.2 | 7.3 | 0.4 | 12.1 | 3.7 | 20 | 15.6 | 1 | -1.1 |
| WASH. | | | | | | | | | | | | | | | |
| 10.2 | 24.6 | 9.7 | 24.7 | 10.2 | 24.2 | 9.8 | 23.8 | 9.0 | 23.6 | 9.3 | 23.8 | 17 | 25.5 | 5 | 17.3 |
| 11.2 | 24.4 | 11.4 | 24.2 | 11.1 | 23.8 | 10.2 | 23.6 | 8.7 | 23.0 | 10.1 | 23.6 | 17 | 25.9 | 4 | 16.1 |
| 12.6 | 23.8 | 11.8 | 23.7 | 10.2 | 23.4 | 8.6 | 22.7 | 7.7 | 22.0 | 9.9 | 22.8 | 18 | 25.5 | 4 | 10.6 |
| 12.0 | 23.6 | 12.2 | 23.3 | 11.1 | 23.1 | 9.8 | 22.7 | 8.6 | 22.1 | 9.8 | 22.6 | 16 | 25.3 | 2 | 9.9 |
| 11.4 | 23.6 | 11.2 | 23.7 | 10.7 | 23.3 | 8.9 | 22.8 | 8.1 | 22.2 | 9.7 | 23.0 | 16 | 25.4 | 3 | 18.5 |
| 11.3 | 24.0 | 10.9 | 24.0 | 10.3 | 23.4 | 9.7 | 22.7 | 8.2 | 22.3 | 9.7 | 22.8 | 14 | 24.8 | 4 | 19.4 |
| 11.6 | 23.7 | 10.6 | 24.1 | 9.2 | 23.8 | 7.9 | 23.4 | 7.2 | 22.3 | 9.8 | 22.7 | 15 | 24.6 | 6 | 19.0 |
| 12.9 | 22.9 | 11.0 | 23.9 | 12.0 | 23.0 | 10.9 | 22.4 | 9.3 | 21.8 | 10.0 | 22.9 | 17 | 24.6 | 4 | 11.5 |
| 12.3 | 23.8 | 12.5 | 23.8 | 13.2 | 22.6 | 11.2 | 22.2 | 8.8 | 22.0 | -- | -- | 16* | 25.0* | 4 | 19.1* |
| 12.1 | 23.3 | 10.9 | 23.4 | 10.2 | 23.3 | 8.8 | 22.8 | 6.6 | 22.1 | 9.6 | 23.0 | 17 | 26.1 | 4 | 19.6 |
| 11.6 | 23.9 | 11.3 | 23.9 | 10.7 | 23.5 | 9.5 | 23.0 | 8.3 | 22.5 | 9.8 | 23.1 | | | | |
| 17 | 25.5 | 17 | 25.5 | 14 | 25.9 | 13 | 25.0 | 11 | 24.9 | | | 18 | 26.1 | | |
| 14.1 | 24.7 | 13.6 | 24.7 | 12.6 | 24.4 | 10.8 | 23.9 | 9.6 | 23.4 | | | | | | |
| 9.8 | 22.7 | 9.3 | 22.6 | 9.1 | 22.1 | 8.1 | 21.2 | 6.7 | 21.0 | | | | | | |
| 8 | 18.0 | 8 | 16.7 | 7 | 19.0 | 5 | 10.6 | 3 | 16.1 | | | | | 2 | 9.9 |
| WASH. | | | | | | | | | | | | | | | |
| 12.0 | 22.8 | 11.3 | 23.0 | 10.1 | 22.8 | 9.8 | 22.1 | 8.5 | 22.2 | 9.8 | 22.2 | 16 | 23.9 | 4 | 14.7 |
| (Fort Worden), WASH. | | | | | | | | | | | | | | | |
| 10.7 | 23.2 | 10.6 | 23.4 | 9.8 | 23.4 | 8.5 | 23.5 | 8.2 | 23.4 | -- | -- | 12 | 24.1* | 7 | 21.7* |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | PORT | TOWNSEND | |
| 1874-1876 | 6.4 | -- | 6.5 | -- | 6.7 | -- | 7.8 | -- | 9.1 | -- | 10.1 | -- | 10.9 | -- |
| Mean | 6.4 | -- | 6.5 | -- | 6.7 | -- | 7.8 | -- | 9.1 | -- | 10.1 | -- | 10.9 | -- |
| Maximum | 8 | -- | 7 | -- | 8 | -- | 10 | -- | 12 | -- | 12 | -- | 13 | -- |
| Mean Max. | 7.6 | -- | 6.9 | -- | 7.2 | -- | 9.4 | -- | 9.9 | -- | 11.0 | -- | 12.3 | -- |
| Mean Min. | 5.4 | -- | 5.9 | -- | 6.0 | -- | 6.9 | -- | 8.2 | -- | 9.3 | -- | 10.0 | -- |
| Minimum | 5 | -- | 6 | -- | 6 | -- | 6 | -- | 8 | -- | 9 | -- | 9 | -- |
| | | | | | | | | | | | | | | EVERETT, |
| 1934-1935 | 7.0 | 15.3 | 6.9 | 13.1 | 7.1 | 15.8 | 9.5 | 14.0 | 12.5 | 10.1 | 14.1 | 10.4 | 16.4 | 11.3 |
| | | | | | | | | | | | | | | BREMERTON, |
| 1934-1936 | 7.8 | 20.8 | 7.1 | 20.8 | 7.8 | 20.4 | 9.1 | 20.8 | 11.9 | 21.3 | 13.9 | 21.2 | 15.2 | 21.8 |
| | | | | | | | | | | | | | | SEATTLE (Elliott |
| 1922-1924 | 8.9 | 18.6 | 8.7 | 18.1 | 8.6 | 18.2 | 9.3 | 16.6 | 10.7 | 16.9 | 12.0 | 18.5 | 13.1 | 20.5 |
| 1925-1929 | 8.6 | 19.8 | 8.4 | 19.4 | 8.9 | 18.7 | 9.8 | 18.2 | 11.8 | 18.0 | 13.7 | 18.6 | 14.9 | 20.7 |
| 1930-1934 | 8.0 | 19.2 | 7.7 | 19.3 | 7.9 | 18.2 | 8.9 | 17.7 | 10.3 | 18.0 | 11.9 | 18.6 | 13.1 | 19.7 |
| 1935-1939 | 8.5 | 20.2 | 7.9 | 20.2 | 7.9 | 19.5 | 8.6 | 19.2 | 10.2 | 18.9 | 12.0 | 19.0 | 12.9 | 20.3 |
| 1940-1944 | 9.3 | 22.3 | 8.8 | 22.1 | 8.7 | 22.1 | 9.3 | 21.8 | 10.6 | 21.7 | 11.7 | 21.9 | 12.8 | 22.2 |
| 1945-1949 | 8.7 | 21.8 | 8.1 | 21.8 | 8.0 | 21.5 | 8.5 | 21.3 | 9.8 | 21.3 | 11.4 | 21.1 | 12.3 | 21.5 |
| 1950-1954 | 8.4 | 21.7 | 7.8 | 21.3 | 7.6 | 21.2 | 8.1 | 21.2 | 9.2 | 21.2 | 10.6 | 21.3 | 12.2 | 21.4 |
| 1955-1959 | 8.7 | 21.5 | 8.2 | 21.5 | 7.9 | 21.3 | 8.3 | 21.3 | 9.6 | 21.3 | 11.1 | 21.2 | 12.5 | 21.7 |
| 1960 | 8.5 | 21.8 | 8.0 | 21.7 | 7.8 | 21.5 | 8.5 | 21.5 | 9.4 | 21.9 | 11.2 | 21.1 | 12.5 | 21.4 |
| 1961 | 9.1 | 21.8 | 8.8 | 21.6 | 8.6 | 21.1 | 8.9 | 20.9 | 9.9 | 20.9 | 11.8 | 20.8 | 12.7 | 21.6 |
| 1962 | 8.3 | 21.7 | 8.1 | 22.0 | 7.4 | 22.0 | 8.3 | 21.5 | 9.2 | 21.8 | 10.6 | 21.9 | 12.0 | 22.0 |
| 1963 | 9.3 | 21.6 | 8.6 | 21.7 | 8.4 | 21.5 | 8.8 | 21.6 | 9.8 | 21.6 | 11.4 | 21.6 | 12.2 | 21.7 |
| 1964 | 9.5 | 21.8 | 8.9 | 21.4 | 8.5 | 21.6 | 8.8 | 21.5 | 9.4 | 21.7 | -- | -- | 13.3 | 18.6 |
| Mean | 8.7 | 20.9 | 8.2 | 20.7 | 8.2 | 20.3 | 8.8 | 20.0 | 10.2 | 20.0 | 11.8 | 20.2 | 12.9 | 21.0 |
| Maximum | 11 | 24.0 | 10 | 25.7 | 12 | 23.4 | 16 | 25.9 | 18 | 26.3 | 18 | 24.9 | 20 | 23.9 |
| Mean Max. | 9.4 | 21.9 | 8.7 | 21.8 | 8.8 | 21.6 | 9.8 | 21.5 | 11.8 | 21.5 | 13.3 | 21.6 | 14.1 | 22.0 |
| Mean Min. | 7.9 | 19.2 | 7.7 | 18.9 | 7.7 | 18.5 | 8.1 | 18.1 | 9.1 | 18.0 | 10.6 | 18.2 | 11.8 | 19.8 |
| Minimum | 4 | 12.3 | 6 | 9.9 | 6 | 10.6 | 6 | 10.4 | 7 | 6.8 | 9 | 10.1 | 10 | 15.4 |
| | | | | | | | | | | | | | | SEATTLE (Duwamish |
| 1924-1925 | 5.7 | 9.6 | 6.9 | 9.9 | 7.1 | 10.6 | 10.0 | 10.3 | -- | -- | -- | -- | 17.8 | 8.8 |
| | | | | | | | | | | | | | | TACOMA, |
| 1934-1935 | 7.3 | 16.0 | 7.3 | 17.2 | 7.4 | 18.7 | 8.5 | 17.2 | 11.1 | 15.3 | 13.3 | 14.5 | 14.2 | 14.7 |
| | | | | | | | | | | | | | | OLYMPIA, |
| 1923-1924 -- | 6.5 | 17.4 | 7.9 | 13.5 | 8.7 | 17.1 | -- | -- | -- | -- | -- | -- | -- | -- |
| 1934-1935 | 6.7 | 12.1 | 6.9 | 13.1 | 7.2 | 14.1 | 9.9 | 13.5 | 12.0 | 16.6 | 14.6 | 16.9 | 16.1 | 18.8 |
| | | | | | | | | | | | | | | ANACORTES, |
| 1922-1924 -- | 6.9 | 22.1 | 6.8 | 22.0 | 7.2 | 22.2 | 8.2 | 22.4 | 9.3 | 22.5 | 10.7 | 22.2 | 11.8 | 22.0 |
| 1934-1935 | 6.6 | 21.7 | 6.9 | 21.0 | 7.1 | 21.5 | 8.0 | 21.5 | 10.3 | 21.7 | 11.2 | 21.9 | 12.1 | 21.0 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| (town), WASH. | | | | | | | | | | | | | | | |
| 11.1 | -- | 10.4 | -- | 9.8 | -- | 8.7 | -- | 8.0 | -- | 8.8 | -- | 13 | -- | 5 | -- |
| 11.1 | -- | 10.4 | -- | 9.8 | -- | 8.7 | -- | 8.0 | -- | 8.8 | -- | 13 | -- | 5 | -- |
| 13 | -- | 12 | -- | 11 | -- | 10 | -- | 10 | -- | | | 13 | -- | | |
| 12.1 | -- | 11.5 | -- | 10.8 | -- | 9.4 | -- | 8.8 | -- | | | | | | |
| 10.2 | -- | 9.8 | -- | 8.9 | -- | 7.6 | -- | 6.9 | -- | | | | | | |
| 9 | -- | 9 | -- | 9 | -- | 7 | -- | 6 | -- | | | | | 5 | -- |
| WASH. | | | | | | | | | | | | | | | |
| 15.9 | 17.3 | 14.2 | 18.9 | 11.9 | 18.3 | 9.8 | 14.6 | 8.1 | 15.6 | 11.1 | 14.6 | 21 | 22.1 | 3 | -1.5 |
| WASH. | | | | | | | | | | | | | | | |
| 15.7 | 21.9 | 14.9 | 22.2 | 12.7 | 22.2 | 10.3 | 22.2 | 9.1 | 21.4 | 11.3 | 21.4 | 18 | 25.7 | 6 | 9.7 |
| Bay), WASH. | | | | | | | | | | | | | | | |
| 13.7 | 21.2 | 13.1 | 21.6 | 11.8 | 21.6 | 10.3 | 20.8 | 9.7 | 19.8 | 10.8 | 19.4 | 17 | 23.2 | 6 | 6.8 |
| 14.5 | 21.3 | 13.6 | 21.5 | 12.3 | 21.3 | 10.4 | 21.1 | 9.2 | 20.7 | 11.3 | 19.9 | 21 | 22.8 | 3 | 10.1 |
| 13.3 | 20.5 | 12.9 | 20.9 | 11.8 | 20.8 | 10.6 | 19.8 | 9.3 | 19.5 | 10.5 | 19.4 | 16 | 22.1 | 6 | 12.3 |
| 13.1 | 21.0 | 12.8 | 21.4 | 12.1 | 21.9 | 10.8 | 21.8 | 9.8 | 21.4 | 10.6 | 20.4 | 18 | 24.1 | 7 | 13.2 |
| 13.2 | 22.6 | 13.3 | 22.8 | 13.0 | 22.9 | 11.8 | 22.9 | 10.4 | 22.6 | 11.1 | 22.3 | 16 | 25.2 | 8 | 16.7 |
| 12.9 | 21.9 | 12.7 | 22.3 | 11.9 | 22.5 | 10.9 | 22.4 | 9.4 | 22.0 | 10.4 | 21.8 | 14 | 26.3 | 6 | 18.1 |
| 12.3 | 21.7 | 12.1 | 22.1 | 11.8 | 21.9 | 10.8 | 22.3 | 9.7 | 21.9 | 10.0 | 21.6 | 14 | 23.7 | 6 | 16.2 |
| 12.8 | 21.9 | 12.7 | 22.2 | 12.1 | 22.3 | 10.8 | 22.0 | 9.6 | 21.8 | 10.4 | 21.7 | 14 | 23.2 | 7 | 19.7 |
| 12.8 | 21.8 | 12.4 | 22.2 | 11.8 | 22.4 | 10.8 | 22.3 | 9.7 | 22.1 | 10.3 | 21.8 | 14 | 22.9 | 7 | 19.8 |
| 13.1 | 21.8 | 12.9 | 22.2 | 12.1 | 22.4 | 10.7 | 22.5 | 9.4 | 22.2 | 10.7 | 21.6 | 14 | 23.2 | 8 | 19.5 |
| 12.8 | 22.0 | 12.8 | 22.3 | 11.9 | 22.4 | 11.2 | 22.4 | 9.7 | 21.6 | 10.2 | 22.0 | 13 | 23.7 | 7 | 19.4 |
| 12.9 | 22.0 | 12.9 | 22.4 | 12.5 | 22.6 | 11.4 | 22.4 | 10.5 | 21.9 | 10.7 | 21.9 | 14 | 23.1 | 8 | 20.2 |
| 13.3 | 20.7 | 12.8 | 20.0 | 12.2 | 18.9 | 10.8 | 20.6 | 8.2 | 17.5 | -- | -- | 14 | 22.2* | 7 | 10.7* |
| 13.2 | 21.5 | 12.9 | 21.8 | 12.1 | 21.9 | 10.8 | 21.7 | 9.6 | 21.2 | 10.6 | 20.9 | | | | |
| 18 | 25.2 | 16 | 24.4 | 15 | 25.0 | 15 | 25.4 | 12 | 24.1 | | | 20 | 26.3 | | |
| 14.2 | 22.2 | 13.7 | 22.5 | 13.0 | 22.6 | 11.7 | 22.6 | 10.4 | 22.3 | | | | | | |
| 12.4 | 20.7 | 12.2 | 20.9 | 11.4 | 20.6 | 9.9 | 20.5 | 8.7 | 19.5 | | | | | | |
| 11 | 18.5 | 10 | 11.6 | 10 | 13.7 | 8 | 14.6 | 6 | 10.7 | | | | | 4 | 6.8 |
| River), WASH. | | | | | | | | | | | | | | | |
| 17.0 | 18.5 | 15.5 | 18.8 | 12.3 | 19.9 | 7.1 | 12.0 | 4.1 | 10.5 | -- | -- | 21* | 24.0* | 0* | 3.8* |
| WASH. | | | | | | | | | | | | | | | |
| 14.7 | 16.0 | 12.9 | 19.4 | 11.8 | 19.2 | 10.0 | 16.1 | 8.7 | 17.5 | 10.6 | 16.8 | 17 | 23.0* | 4 | 5.9* |
| WASH. | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | -- | -- | 10.6 | 19.9 | 8.4 | 17.1 | -- | -- | -- | 21.4* | 3 | 1.4* |
| 16.4 | 19.0 | 14.9 | 19.8 | 12.8 | 19.2 | 10.5 | 14.3 | 8.5 | 15.9 | 11.4 | 16.1 | 18 | 21.6* | 4 | -1.4* |
| WASH. | | | | | | | | | | | | | | | |
| 11.9 | 22.4 | 11.7 | 22.0 | 10.6 | 22.4 | 9.2 | 22.4 | 7.8 | 22.5 | 9.3 | 22.3 | 15 | 24.0 | 4 | 19.2 |
| 11.9 | 21.5 | 11.4 | 21.8 | -- | -- | 8.6 | 22.2 | 8.1 | 21.9 | -- | -- | 16* | 23.0* | 5* | 19.0* |

**Table 1. – Surface Water**
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | ANACORTES, |
| Mean | 6.9 | 22.0 | 6.8 | 21.8 | 7.2 | 22.0 | 8.1 | 22.2 | 9.6 | 22.3 | 10.9 | 22.1 | 11.9 | 21.6 |
| Maximum | 8 | 23.2 | 8 | 22.4 | 8 | 23.0 | 10 | 23.2 | 12 | 24.0 | 15 | 23.3 | 16 | 23.3 |
| Mean Max. | 7.5 | 22.6 | 7.4 | 22.1 | 7.9 | 22.6 | 9.1 | 22.8 | 10.9 | 23.2 | 13.5 | 23.0 | 14.8 | 23.1 |
| Mean Min. | 5.5 | 21.4 | 5.8 | 21.1 | 6.4 | 21.6 | 7.2 | 21.6 | 8.4 | 20.8 | 9.7 | 20.6 | 10.3 | 19.8 |
| Minimum | 5 | 20.9 | 4 | 20.0 | 6 | 21.0 | 6 | 20.2 | 8 | 19.7 | 9 | 20.4 | 10 | 19.0 |
| | | | | | | | | | | | | | | FRIDAY HARBOR, SAN |
| 1935-1939 | 7.4 | 22.3 | 6.9 | 22.5 | 7.1 | 22.6 | 7.8 | 22.6 | 8.9 | 22.4 | 9.8 | 22.3 | 10.7 | 21.8 |
| 1940-1944 | 8.2 | 22.3 | 8.1 | 22.2 | 8.3 | 22.4 | 9.1 | 22.5 | 10.0 | 22.3 | 10.8 | 22.3 | 11.5 | 22.3 |
| 1945-1949 | 7.3 | 22.3 | 6.9 | 22.4 | 7.2 | 22.5 | 8.1 | 22.5 | 9.3 | 22.4 | 10.4 | 21.9 | 11.1 | 22.1 |
| 1950-1952 | 6.8 | 22.6 | 6.4 | 22.5 | 6.7 | 22.5 | 7.5 | 22.6 | 8.4 | 22.7 | 9.3 | 22.5 | 10.3 | 22.1 |
| Mean | 7.4 | 22.4 | 7.1 | 22.4 | 7.3 | 22.5 | 8.1 | 22.5 | 9.2 | 22.4 | 10.2 | 22.2 | 10.9 | 22.0 |
| Maximum | 9 | 23.2 | 8 | 23.2 | 9 | 23.2 | 10 | 23.2 | 13 | 23.3 | 13 | 23.6 | 16 | 24.7 |
| Mean Max. | 7.8 | 22.7 | 7.4 | 22.7 | 7.7 | 22.7 | 8.6 | 22.8 | 10.0 | 23.0 | 11.3 | 22.9 | 13.1 | 23.1 |
| Mean Min. | 6.9 | 21.9 | 6.7 | 22.1 | 7.0 | 22.2 | 7.6 | 22.2 | 8.6 | 21.4 | 9.6 | 20.2 | 10.1 | 19.7 |
| Minimum | 5 | 19.3 | 5 | 21.2 | 6 | 21.5 | 7 | 21.6 | 8 | 18.9 | 9 | 16.4 | 9 | 14.1 |
| | | | | | | | | | | | | | | BLAINE, |
| 1934-1935 | 4.8 | -- | 6.4 | -- | 6.6 | -- | 8.7 | -- | 12.1 | -- | 14.9 | -- | 16.2 | -- |
| | | | | | | | | | | | | | | KETCHIKAN, |
| 1922-1924 | 5.4 | 21.5 | 5.1 | 21.6 | 5.3 | 21.9 | 6.1 | 21.9 | 8.2 | 20.1 | 12.3 | 18.4 | 13.6 | 19.0 |
| 1925-1929 | 5.6 | 20.5 | 5.6 | 21.8 | 5.9 | 21.4 | 6.8 | 21.6 | 9.4 | 20.5 | 12.9 | 18.9 | 14.2 | 18.3 |
| 1930-1934 | 5.1 | 20.6 | 5.1 | 21.1 | 5.4 | 21.4 | 6.9 | 21.6 | 9.6 | 20.2 | 11.9 | 18.7 | 13.5 | 18.1 |
| 1935-1939 | 4.7 | 20.5 | 3.9 | 20.5 | 5.0 | 20.9 | 5.9 | 20.8 | 8.6 | 20.4 | 12.6 | 20.2 | 13.8 | 19.0 |
| 1940-1944 | 5.4 | 20.2 | 5.5 | 21.4 | 5.7 | 22.0 | 7.4 | 22.0 | 9.4 | 21.8 | 12.6 | 21.7 | 14.3 | 20.6 |
| 1945-1949 | 5.1 | 21.4 | 4.7 | 22.2 | 5.3 | 22.0 | 6.2 | 21.8 | 9.4 | 20.5 | 12.6 | 18.0 | 13.7 | 17.6 |
| 1950-1954 | 5.1 | 22.1 | 4.9 | 21.9 | 4.9 | 22.3 | 5.7 | 22.0 | 8.4 | 19.9 | 12.1 | 17.7 | 13.7 | 17.8 |
| 1955-1959 | 5.3 | 21.2 | 5.2 | 21.9 | 5.4 | 22.2 | 6.4 | 21.9 | 8.7 | 20.8 | 12.2 | 18.9 | 13.9 | 18.4 |
| 1960 | 5.3 | 21.7 | 5.8 | 21.7 | 5.6 | 21.6 | 6.4 | 19.9 | 9.6 | 20.3 | 11.1 | 20.0 | 13.5 | 17.0 |
| 1961 | 5.8 | 19.8 | 5.7 | 20.7 | 6.1 | 21.6 | 7.1 | 20.8 | 10.1 | 20.2 | 12.2 | 18.3 | 14.7 | 18.5 |
| 1962 | 4.9 | 20.1 | 4.8 | 21.1 | 5.3 | 22.6 | 6.2 | 22.1 | 8.2 | 21.5 | 11.2 | 19.3 | 13.9 | 17.9 |
| 1963 | 5.8 | 20.1 | 6.2 | 20.6 | 6.4 | 20.9 | 7.3 | 21.7 | 9.3 | 21.5 | 11.5 | 20.1 | 14.3 | 19.3 |
| 1964 | 5.7 | 19.6 | 6.1 | 20.4 | 5.9 | 21.0 | 6.8 | 21.2 | 8.4 | 21.2 | 13.1 | 17.5 | 13.4 | 16.2 |
| Mean | 5.2 | 20.9 | 5.1 | 21.5 | 5.4 | 21.7 | 6.5 | 21.6 | 9.1 | 20.6 | 12.3 | 19.1 | 13.8 | 18.5 |
| Maximum | 8 | 24.4 | 9 | 24.4 | 8 | 25.0 | 11 | 26.7 | 15 | 24.0 | 20 | 24.4 | 20 | 24.2 |
| Mean Max. | 6.3 | 21.8 | 6.1 | 22.6 | 6.3 | 22.8 | 8.1 | 22.9 | 11.6 | 22.4 | 14.6 | 21.0 | 15.8 | 20.3 |
| Mean Min. | 3.7 | 17.8 | 3.6 | 18.7 | 4.2 | 19.1 | 5.4 | 19.3 | 6.9 | 17.8 | 10.2 | 16.5 | 11.9 | 16.5 |
| Minimum | 1 | 10.7 | 0 | 10.1 | 0 | 10.7 | 3 | 11.0 | 4 | 11.1 | 7 | 10.7 | 8 | 11.4 |
| | | | | | | | | | | | | | | SITKA, |
| 1924-1925 -- | 3.0 | 21.1 | 3.4 | 22.8 | 3.7 | 21.3 | 5.2 | 21.1 | 8.3 | 15.9 | 10.4 | 16.4 | 12.0 | 13.6 |
| 1943-1944 | 6.0 | 21.8 | 5.6 | 22.1 | 5.4 | 22.0 | 6.7 | 21.6 | 9.4 | 19.4 | 11.7 | 17.4 | 13.4 | 17.8 |
| 1945-1949 | 4.5 | 21.8 | 4.5 | 22.9 | 4.7 | 22.0 | 6.0 | 22.0 | 9.3 | 19.5 | 11.2 | 18.4 | 13.2 | 18.3 |
| 1950-1954 | 4.6 | 23.2 | 3.8 | 22.8 | 3.9 | 23.0 | 5.2 | 22.4 | 7.9 | 20.1 | 11.2 | 18.3 | 13.5 | 18.6 |
| 1955-1959 | 4.8 | 22.5 | 4.3 | 22.5 | 4.4 | 22.4 | 6.1 | 21.8 | 8.6 | 19.8 | 11.4 | 18.7 | 13.7 | 18.6 |
| 1960 | 5.3 | 21.9 | 5.7 | 22.6 | 5.2 | 22.5 | 6.7 | 22.0 | 10.5 | 20.4 | 11.9 | 20.1 | 13.2 | 19.7 |
| 1961 | 5.5 | 21.1 | 5.5 | 22.1 | 5.9 | 22.2 | 6.9 | 20.6 | 10.4 | 21.4 | 11.8 | 20.2 | 14.4 | 19.0 |
| 1962 | 4.5 | 21.2 | 4.2 | 21.6 | 4.5 | 21.2 | 6.1 | 21.5 | 9.3 | 20.8 | 11.5 | 18.7 | 13.4 | 18.1 |
| 1963 | 5.1 | 19.6 | 6.0 | 21.4 | 5.9 | 21.2 | 7.1 | 21.8 | 10.7 | 20.8 | 11.7 | 19.7 | 14.5 | 19.1 |
| 1964 | 5.7 | 21.5 | 5.1 | 20.6 | 5.2 | 21.5 | 6.4 | 20.2 | 9.0 | 19.9 | 12.6 | 18.5 | 13.6 | 18.4 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **WASH.–continued** | | | | | | | | | | | | | | | |
| 11.9 | 22.1 | 11.6 | 22.0 | 10.6 | 22.4 | 9.0 | 22.4 | 7.9 | 22.3 | 9.4 | 22.1 | | | | |
| 14 | 23.9 | 15 | 22.9 | 14 | 23.2 | 10 | 23.0 | 9 | 23.2 | | | 16 | 24.0 | | |
| 13.8 | 23.2 | 14.3 | 22.8 | 12.8 | 23.0 | 9.8 | 22.8 | 8.8 | 22.6 | | | | | | |
| 10.7 | 20.4 | 10.3 | 19.6 | 9.2 | 21.8 | 7.8 | 21.8 | 5.8 | 21.8 | | | | | | |
| 10 | 19.4 | 10 | 19.2 | 9 | 21.5 | 7 | 21.5 | 6 | 21.2 | | | | | 4 | 19.0 |
| **JUAN ISLAND, WASH.** | | | | | | | | | | | | | | | |
| 10.9 | 22.1 | 10.3 | 22.3 | 9.6 | 22.8 | 8.7 | 22.8 | 8.2 | 22.5 | 8.9 | 22.4 | 14 | 23.6 | 6 | 17.6 |
| 11.4 | 22.5 | 11.0 | 22.6 | 10.2 | 22.6 | 9.6 | 22.6 | 8.7 | 22.5 | 9.7 | 22.4 | 15 | 24.7 | 7 | 18.9 |
| 11.1 | 22.4 | 10.6 | 22.6 | 9.7 | 22.7 | 8.8 | 22.7 | 8.0 | 22.6 | 9.0 | 22.4 | 16 | 23.9 | 6 | 14.1 |
| 10.8 | 22.4 | 10.6 | 22.6 | 9.5 | 23.0 | 8.7 | 22.9 | 8.1 | 22.6 | 8.6 | 22.6 | 13 | 23.7 | 5 | 19.4 |
| 11.1 | 22.3 | 10.6 | 22.5 | 9.8 | 22.8 | 8.9 | 22.7 | 8.3 | 22.5 | 9.1 | 22.4 | | | | |
| 15 | 23.7 | 13 | 23.5 | 11 | 23.7 | 11 | 23.5 | 9 | 23.4 | | | 16 | 24.7 | | |
| 12.9 | 23.0 | 11.7 | 23.1 | 10.4 | 23.2 | 9.4 | 23.1 | 8.6 | 22.9 | | | | | | |
| 10.2 | 20.2 | 10.1 | 21.4 | 9.3 | 22.0 | 8.5 | 22.3 | 7.7 | 22.0 | | | | | | |
| 9 | 18.5 | 9 | 19.4 | 9 | 20.0 | 8 | 21.8 | 7 | 19.8 | | | | | 5 | 14.1 |
| **WASH.** | | | | | | | | | | | | | | | |
| 16.2 | -- | 13.8 | -- | 10.7 | -- | 9.1 | -- | 6.9 | -- | 10.5 | -- | 18 | -- | 0 | -- |
| **ALASKA** | | | | | | | | | | | | | | | |
| 14.1 | 19.3 | 11.5 | 17.8 | 9.4 | 18.3 | 7.3 | 17.7 | 5.3 | 20.4 | 8.6 | 19.8 | 17 | 23.8 | 3 | 8.0 |
| 14.5 | 18.6 | 12.2 | 20.1 | 9.3 | 19.5 | 7.3 | 19.4 | 5.9 | 20.1 | 9.1 | 20.1 | 18 | 24.2 | 2 | 10.1 |
| 14.5 | 18.0 | 11.9 | 18.6 | 9.2 | 18.3 | 7.1 | 18.0 | 5.7 | 19.7 | 8.8 | 19.5 | 17 | 25.4 | 2 | 10.2 |
| 13.2 | 18.4 | 12.1 | 18.5 | 9.7 | 18.2 | 7.2 | 17.2 | 5.2 | 17.4 | 8.5 | 19.3 | 20 | 26.7 | 1 | 10.1 |
| 13.9 | 19.3 | 12.7 | 19.4 | 9.9 | 18.9 | 7.1 | 18.4 | 6.2 | 19.3 | 9.2 | 20.4 | 20 | 24.4 | 0 | 12.4 |
| 13.9 | 18.3 | 12.1 | 18.4 | 9.2 | 18.0 | 6.9 | 18.5 | 5.4 | 20.8 | 8.7 | 19.8 | 17 | 24.6 | 0 | 11.2 |
| 14.2 | 18.1 | 12.2 | 18.7 | 9.5 | 18.5 | 7.4 | 19.1 | 6.2 | 20.3 | 8.7 | 19.9 | 17 | 23.8 | 2 | 10.7 |
| 13.8 | 17.9 | 12.3 | 18.6 | 9.2 | 18.8 | 6.8 | 19.1 | 5.7 | 20.2 | 8.7 | 20.0 | 18 | 24.3 | 0 | 10.0 |
| 14.2 | 17.8 | 12.2 | 18.4 | 9.8 | 17.7 | 7.4 | 17.6 | 6.6 | 20.1 | 9.0 | 19.5 | 16 | 23.4 | 4 | 14.8 |
| 15.1 | 19.3 | 12.4 | 18.4 | 9.2 | 17.0 | 6.5 | 18.0 | 5.6 | 21.6 | 9.2 | 19.5 | 17 | 22.4 | 4 | 13.6 |
| 13.8 | 18.0 | 11.8 | 19.2 | 9.7 | 19.2 | 8.1 | 18.6 | 6.7 | 18.2 | 8.7 | 19.8 | 16 | 23.4 | 3 | 14.4 |
| 15.0 | 19.0 | 13.3 | 18.1 | 10.6 | 17.4 | 7.6 | 18.9 | 6.9 | 20.7 | 9.5 | 19.9 | 16 | 22.8 | 4 | 14.2 |
| 13.3 | 17.0 | 12.2 | 18.5 | 9.9 | 18.4 | 7.3 | 18.6 | 5.7 | 21.1 | 9.0 | 19.2 | 14 | 22.5 | 4 | 14.6 |
| 14.1 | 18.4 | 12.2 | 18.8 | 9.4 | 18.5 | 7.2 | 18.5 | 5.8 | 19.8 | 8.8 | 19.8 | | | | |
| 18 | 22.8 | 19 | 22.8 | 15 | 22.9 | 16 | 22.6 | 10 | 23.3 | | | 20 | 26.7 | | |
| 15.9 | 20.3 | 14.1 | 20.8 | 11.1 | 20.7 | 8.7 | 20.5 | 7.2 | 21.9 | | | | | | |
| 12.4 | 16.4 | 10.4 | 16.2 | 7.8 | 15.0 | 5.4 | 15.3 | 4.1 | 16.9 | | | | | | |
| 8 | 11.3 | 8 | 9.7 | 4 | 10.1 | 2 | 8.0 | 1 | 10.1 | | | | | 0 | 8.0 |
| **ALASKA** | | | | | | | | | | | | | | | |
| 13.4 | 15.1 | 11.4 | 15.7 | 9.7 | 17.2 | 6.4 | 18.7 | 5.4 | 18.6 | 7.7 | 18.1 | 18 | 23.3 | -1 | 8.2 |
| 14.2 | 17.8 | 12.4 | 17.4 | 9.8 | 19.1 | 7.3 | 20.8 | 6.1 | 20.4 | 9.0 | 19.8 | 17 | 24.0 | 4 | 10.2 |
| 13.7 | 19.1 | 11.9 | 18.3 | 9.2 | 19.9 | 6.9 | 20.9 | 5.2 | 22.4 | 8.4 | 20.5 | 17 | 23.9 | 1 | 10.5 |
| 14.2 | 19.3 | 12.1 | 19.2 | 9.4 | 20.6 | 7.3 | 21.4 | 5.9 | 22.0 | 8.2 | 20.9 | 18 | 24.2 | 2 | 10.7 |
| 14.1 | 18.6 | 12.2 | 19.9 | 8.9 | 20.5 | 6.9 | 20.6 | 5.7 | 21.8 | 8.4 | 20.6 | 17 | 23.8 | 2 | 11.1 |
| 13.4 | 19.3 | 12.0 | 18.9 | 9.6 | 19.2 | 7.3 | 21.0 | 6.4 | 20.9 | 8.9 | 20.7 | 16 | 23.2 | 4 | 14.7 |
| 14.9 | 18.1 | 12.7 | 18.3 | 9.1 | 19.2 | 6.9 | 21.3 | 5.2 | 21.9 | 9.1 | 20.4 | 18 | 26.3 | 4 | 11.5 |
| 13.9 | 18.7 | 12.2 | 18.4 | 9.8 | 20.5 | 8.1 | 20.8 | 6.6 | 20.8 | 8.7 | 20.2 | 17 | 23.0 | 2 | 14.4 |
| 15.4 | 20.0 | 13.8 | 20.1 | 10.7 | 19.4 | 7.9 | 21.7 | 6.1 | 21.2 | 9.6 | 20.5 | 18 | 23.3 | 3 | 15.1 |
| 14.0 | 18.4 | 12.4 | 20.6 | 9.8 | 19.7 | 7.4 | 20.7 | 4.8 | 21.9 | 8.8 | 20.2 | 17 | 23.3 | 3 | 13.0 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | **SITKA,** |
| Mean | 4.8 | 22.1 | 4.4 | 22.5 | 4.6 | 22.2 | 6.0 | 21.8 | 8.9 | 19.8 | 11.4 | 18.5 | 13.5 | 18.3 |
| Maximum | 8 | 24.2 | 7 | 24.2 | 7 | 24.2 | 11 | 24.2 | 15 | 23.5 | 18 | 22.5 | 17 | 26.3 |
| Mean Max. | 5.9 | 23.3 | 5.2 | 23.4 | 5.4 | 23.3 | 7.9 | 23.0 | 11.7 | 22.4 | 13.4 | 21.3 | 15.6 | 21.4 |
| Mean Min. | 3.3 | 19.8 | 3.4 | 20.5 | 3.6 | 20.0 | 4.6 | 19.9 | 6.9 | 16.0 | 9.6 | 14.7 | 11.7 | 14.8 |
| Minimum | -1 | 15.1 | 2 | 15.9 | 2 | 14.1 | 3 | 16.9 | 5 | 10.2 | 7 | 10.5 | 10 | 9.3 |
| | | | | | | | | | | | | | | **JUNEAU,** |
| 1937-1939 | 3.0 | 21.1 | 1.9 | 21.5 | 3.4 | 21.8 | 5.1 | 21.1 | 8.2 | 14.9 | 10.8 | 10.9 | 11.5 | 9.4 |
| 1940-1944 | 3.2 | 20.4 | 3.2 | 21.1 | 3.4 | 21.5 | 5.2 | 18.8 | 8.4 | 13.8 | 11.1 | 10.0 | 10.9 | 7.9 |
| 1945-1949 | 2.3 | 20.2 | 1.9 | 22.0 | 2.8 | 21.2 | 4.1 | 20.3 | 7.5 | 13.3 | 10.2 | 9.1 | 10.6 | 8.8 |
| 1950-1954 | 1.4 | 21.9 | 1.3 | 22.0 | 2.2 | 22.4 | 3.9 | 21.0 | 7.1 | 13.7 | 10.2 | 11.2 | 10.9 | 9.9 |
| 1955-1959 | 2.0 | 21.1 | 2.0 | 21.2 | 2.5 | 22.1 | 4.3 | 21.0 | 6.9 | 14.5 | 10.3 | 9.7 | 10.9 | 8.0 |
| 1960 | 3.3 | 20.9 | 3.8 | 21.2 | 3.8 | 21.7 | 5.8 | 20.6 | 9.5 | 13.7 | 9.7 | 9.7 | 10.2 | 7.9 |
| 1961 | 3.9 | 20.1 | 3.6 | 21.3 | 3.7 | 21.4 | 5.4 | 19.1 | 7.7 | 13.7 | 10.3 | 9.4 | 10.6 | 6.9 |
| 1962 | 2.1 | 20.0 | 2.2 | 21.6 | 2.3 | 22.2 | 4.5 | 21.4 | 7.6 | 16.8 | 9.1 | 8.9 | 11.8 | 8.0 |
| 1963 | 3.0 | 20.7 | 3.6 | 20.3 | 3.7 | 19.6 | 4.9 | 21.5 | 9.3 | 15.9 | 9.9 | 11.1 | 11.8 | 7.8 |
| 1964 | 3.7 | 21.2 | 3.7 | 20.8 | 3.3 | 21.7 | 4.9 | 21.0 | 7.3 | 19.3 | 11.3 | 9.4 | 11.1 | 9.5 |
| Mean | 2.4 | 20.9 | 2.3 | 21.5 | 2.9 | 21.7 | 4.6 | 20.5 | 7.7 | 14.3 | 10.4 | 10.1 | 10.9 | 8.7 |
| Maximum | 6 | 25.9 | 5 | 24.4 | 5 | 27.7 | 10 | 24.5 | 15 | 24.5 | 15 | 20.6 | 16 | 19.4 |
| Mean Max. | 3.7 | 23.0 | 3.4 | 23.1 | 3.9 | 23.6 | 6.6 | 23.0 | 11.0 | 21.2 | 13.6 | 16.2 | 13.6 | 13.8 |
| Mean Min. | 0.6 | 15.3 | 0.8 | 15.9 | 1.6 | 16.9 | 3.1 | 14.3 | 5.3 | 6.2 | 7.4 | 4.3 | 8.6 | 3.7 |
| Minimum | -2 | 5.4 | -1 | 9.5 | -1 | 5.0 | 1 | 5.8 | 4 | -0.9 | 4 | -0.1 | 6 | 1.1 |
| | | | | | | | | | | | | | | **HAINES,** |
| 1949-1950 | 1.4 | 22.7 | -0.9 | 22.8 | 2.9 | 23.2 | 4.3 | 22.4 | 8.8 | 19.9 | 12.6 | 13.3 | 12.8 | 6.4 |
| | | | | | | | | | | | | | | **SKAGWAY,** |
| 1944 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1945-1949 | 2.8 | 23.0 | 2.4 | 23.5 | 2.8 | 22.8 | 3.7 | 23.0 | 7.4 | 14.7 | 10.2 | 5.6 | 10.5 | 3.6 |
| 1950-1954 | 2.3 | 23.3 | 1.9 | 23.5 | 2.1 | 23.4 | 3.1 | 22.9 | 7.2 | 16.4 | 10.4 | 6.0 | 10.9 | 1.8 |
| 1955-1959 | 2.6 | 22.6 | 2.2 | 22.8 | 2.3 | 23.2 | 3.1 | 22.9 | 6.8 | 17.6 | 10.4 | 7.2 | 10.8 | 3.5 |
| 1960 | 2.3 | 22.4 | 3.2 | 23.0 | 3.3 | 24.1 | 4.4 | 23.6 | 7.7 | 17.7 | 10.2 | 12.2 | 8.8 | 8.9 |
| 1961 | 3.0 | 21.5 | 3.3 | 22.4 | 3.6 | 22.6 | 4.3 | 23.0 | 5.6 | 23.0 | 8.0 | 15.1 | 9.4 | 4.4 |
| 1962 | 2.4 | 23.4 | 1.7 | 23.1 | 1.7 | 23.0 | 2.6 | 22.6 | 3.9 | 21.9 | 7.0 | 11.2 | 10.1 | 1.8 |
| 1963 | 2.6 | 23.7 | 1.8 | 22.8 | 3.5 | 22.8 | 3.6 | 24.0 | 7.4 | 19.1 | 10.4 | 8.3 | 10.7 | 6.3 |
| 1964 | 3.7 | 22.8 | 3.3 | 22.8 | -- | -- | 3.9 | 23.0 | 4.4 | 22.1 | 7.9 | 7.6 | 9.7 | 4.0 |
| Mean | 2.6 | 22.9 | 2.3 | 23.1 | 2.5 | 23.2 | 3.4 | 23.0 | 6.8 | 17.5 | 9.9 | 7.6 | 10.5 | 3.5 |
| Maximum | 5 | 24.8 | 4 | 25.2 | 4 | 24.9 | 7 | 25.1 | 14 | 24.2 | 14 | 23.4 | 15 | 18.2 |
| Mean Max. | 3.4 | 23.6 | 2.9 | 23.7 | 3.0 | 23.8 | 4.9 | 24.0 | 9.5 | 22.7 | 11.8 | 16.1 | 12.2 | 7.8 |
| Mean Min. | 1.7 | 22.1 | 1.6 | 22.4 | 2.0 | 21.9 | 2.4 | 20.3 | 4.6 | 9.5 | 8.0 | 2.1 | 9.0 | 3.5 |
| Minimum | -1 | 20.2 | 0 | 20.6 | 0 | 13.5 | 1 | 9.5 | 3 | 1.3 | 4 | -0.6 | 7 | -1.3 |
| | | | | | | | | | | | | | | **YAKUTAT,** |
| 1941-1944 | 5.1 | 22.0 | 5.0 | 22.1 | 5.4 | 21.7 | 6.4 | 21.6 | 8.9 | 20.9 | 11.5 | 19.0 | 13.4 | 17.0 |
| 1945-1949 | 4.2 | 22.1 | 3.5 | 22.6 | 4.0 | 22.2 | 5.2 | 22.1 | 8.1 | 20.5 | 10.9 | 19.3 | 12.7 | 18.0 |
| 1950-1954 | 3.2 | 22.5 | 3.0 | 22.8 | 3.3 | 22.8 | 4.9 | 22.2 | 7.1 | 21.2 | 10.3 | 19.3 | 12.7 | 17.1 |
| 1955-1959 | 3.2 | 21.7 | 2.8 | 21.7 | 3.3 | 21.8 | 5.4 | 21.2 | 7.9 | 20.1 | 11.3 | 19.0 | 13.4 | 17.0 |
| 1960 | 3.3 | 21.6 | 4.3 | 21.8 | 3.9 | 22.1 | 5.6 | 21.4 | 9.7 | 20.9 | 11.6 | 20.0 | 12.9 | 17.0 |
| 1961 | 4.6 | 21.8 | 3.4 | 22.0 | 4.1 | 22.2 | 6.1 | 21.1 | 9.6 | 20.4 | 11.0 | 19.4 | 12.1 | 16.9 |
| 1962 | 2.9 | 22.0 | 2.4 | 22.4 | 2.8 | 22.7 | 4.3 | 22.0 | 7.7 | 21.1 | 10.1 | 20.0 | 13.2 | 17.4 |
| 1963 | 4.7 | 22.2 | 4.9 | 22.3 | 5.1 | 22.3 | 5.6 | 22.7 | 8.3 | 22.3 | 10.2 | 21.0 | 13.4 | 19.2 |
| 1964 | 5.2 | 22.1 | 4.4 | 21.9 | 4.3 | 22.2 | 5.1 | 21.8 | 7.1 | 21.6 | 11.8 | 19.7 | 12.6 | 19.6 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| ALASKA–continued | | | | | | | | | | | | | | | |
| 14.1 | 18.7 | 12.2 | 18.9 | 9.4 | 19.9 | 7.1 | 20.8 | 5.7 | 21.5 | 8.5 | 20.4 | | | | |
| 18 | 23.2 | 16 | 22.8 | 13 | 23.3 | 10 | 24.2 | 8 | 24.2 | | | 18 | 26.3 | | |
| 15.7 | 21.4 | 13.8 | 21.7 | 11.2 | 22.2 | 8.6 | 22.8 | 6.9 | 22.9 | | | | | | |
| 12.7 | 14.5 | 10.4 | 14.8 | 7.6 | 15.3 | 5.4 | 16.8 | 4.1 | 17.9 | | | | | | |
| 11 | 9.1 | 8 | 9.5 | 6 | 11.1 | 3 | 8.2 | 0 | 8.9 | | | | | -1 | 8.2 |
| ALASKA | | | | | | | | | | | | | | | |
| 11.1 | 9.4 | 9.6 | 11.0 | 7.2 | 13.6 | 5.1 | 18.6 | 3.7 | 19.8 | 6.7 | 16.1 | 14 | 24.3 | -2 | 0.5 |
| 10.6 | 9.2 | 9.3 | 11.0 | 6.8 | 13.2 | 4.9 | 17.4 | 3.5 | 20.6 | 6.7 | 15.4 | 15 | 23.5 | -1 | 0.8 |
| 10.4 | 9.8 | 8.9 | 11.0 | 6.4 | 13.1 | 4.2 | 15.9 | 2.6 | 20.6 | 6.0 | 15.4 | 16 | 27.5 | -2 | -1.4 |
| 11.1 | 10.9 | 9.3 | 10.8 | 6.6 | 14.3 | 4.5 | 17.3 | 3.2 | 19.4 | 6.0 | 16.2 | 16 | 27.7 | -1 | 1.4 |
| 10.0 | 8.8 | 9.0 | 12.0 | 6.2 | 15.0 | 4.5 | 17.7 | 3.3 | 19.6 | 6.0 | 15.9 | 15 | 24.5 | -1 | -0.9 |
| 10.5 | 8.5 | 8.9 | 9.7 | 6.9 | 11.6 | 4.9 | 16.7 | 4.2 | 17.6 | 6.8 | 15.0 | 13 | 22.7 | 2 | 1.9 |
| 10.7 | 6.7 | 9.3 | 9.7 | 6.2 | 11.8 | 4.0 | 17.7 | 2.7 | 21.7 | 6.5 | 15.0 | 14 | 22.7 | 1 | 1.1 |
| 11.7 | 9.4 | 9.0 | 10.5 | 7.2 | 14.0 | 5.8 | 16.8 | 4.1 | 18.1 | 6.4 | 15.6 | 16 | 23.3 | -1 | 2.0 |
| 12.1 | 9.7 | 10.0 | 10.4 | 7.6 | 14.2 | 5.1 | 20.4 | 4.5 | 20.8 | 7.1 | 16.0 | 15 | 22.8 | 1 | 4.9 |
| 10.4 | 10.0 | 9.7 | 14.7 | 7.2 | 16.0 | 4.9 | 19.3 | 2.2 | 21.7 | 6.6 | 17.0 | 14 | 23.6 | -1 | 5.7 |
| 10.7 | 9.6 | 9.2 | 11.1 | 6.7 | 13.8 | 4.7 | 17.4 | 3.3 | 20.0 | 6.3 | 15.8 | | | | |
| 16 | 23.5 | 14 | 20.1 | 9 | 22.2 | 8 | 23.7 | 6 | 24.9 | | | 16 | 27.7 | | |
| 13.1 | 15.3 | 11.2 | 16.8 | 8.4 | 18.9 | 6.0 | 21.4 | 4.4 | 22.8 | | | | | | |
| 8.9 | 4.3 | 7.6 | 4.5 | 4.9 | 6.8 | 2.8 | 10.1 | 1.5 | 13.2 | | | | | | |
| 8 | 0.5 | 6 | -0.3 | 2 | -1.4 | 0 | 2.8 | -2 | 5.8 | | | | | -2 | -1.4 |
| ALASKA | | | | | | | | | | | | | | | |
| 12.7 | 5.3 | 10.6 | 7.3 | 6.8 | 17.5 | 3.4 | 20.8 | 1.8 | 22.2 | 6.4 | 17.0 | 18 | 26.1* | -2 | 0.9* |
| ALASKA | | | | | | | | | | | | | | | |
| 9.4 | 3.6 | 8.2 | 7.1 | 6.2 | 10.2 | 4.5 | 21.4 | 3.6 | 20.5 | -- | -- | 12* | 25.9* | 2* | -0.3* |
| 10.1 | 3.0 | 9.0 | 7.2 | 6.6 | 13.7 | 4.7 | 19.4 | 3.6 | 22.2 | 6.2 | 15.1 | 14 | 25.9 | -1 | -0.5 |
| 10.4 | 2.5 | 8.5 | 8.0 | 6.3 | 16.4 | 4.5 | 20.0 | 3.3 | 22.2 | 5.9 | 15.5 | 15 | 25.2 | 0 | -1.2 |
| 9.8 | 3.5 | 9.2 | 7.7 | 6.4 | 18.4 | 3.8 | 21.4 | 2.9 | 22.1 | 5.9 | 16.1 | 15 | 25.4 | 1 | -0.4 |
| 9.5 | 1.2 | 9.3 | 10.2 | 8.1 | 10.9 | 5.1 | 20.6 | 2.7 | 20.8 | 6.2 | 16.3 | 11 | 24.9 | 1 | -0.3 |
| 8.9 | -0.7 | 9.2 | 7.4 | 6.9 | 17.4 | 3.9 | 15.1 | 3.1 | 23.4 | 5.8 | 16.2 | 10 | 23.9 | 2 | -1.5 |
| 10.3 | 1.8 | 9.6 | 10.2 | 7.2 | 14.7 | 5.7 | 20.3 | 3.9 | 23.6 | 5.5 | 16.5 | 11 | 24.1 | 2 | -1.0 |
| 10.7 | 2.8 | 8.6 | 12.4 | 7.2 | 13.2 | 5.1 | 13.5 | 4.3 | 21.8 | 6.3 | 15.9 | 11 | 25.1 | 1 | -0.6 |
| 10.7 | 3.9 | 9.1 | 9.8 | 7.6 | 16.9 | 4.8 | 21.0 | 3.3 | 24.0 | -- | -- | 13* | 25.2* | 2* | -0.1* |
| 10.1 | 2.7 | 8.9 | 8.3 | 6.7 | 15.6 | 4.4 | 19.8 | 3.3 | 22.2 | 6.0 | 15.8 | | | | |
| 13 | 19.3 | 13 | 22.4 | 9 | 25.4 | 7 | 25.9 | 6 | 25.2 | | | 15 | 25.9 | | |
| 11.4 | 7.6 | 10.2 | 16.5 | 8.1 | 20.8 | 5.6 | 22.5 | 4.1 | 23.4 | | | | | | |
| 8.8 | 2.9 | 7.4 | 2.6 | 5.1 | 7.2 | 3.2 | 13.9 | 2.4 | 19.6 | | | | | | |
| 7 | -1.5 | 5 | -0.3 | 2 | 0.0 | 1 | 0.9 | 1 | 10.8 | | | | | -2 | -1.5 |
| ALASKA | | | | | | | | | | | | | | | |
| 13.7 | 16.9 | 11.8 | 19.2 | 9.2 | 19.8 | 7.6 | 21.5 | 5.5 | 21.8 | 8.6 | 20.3 | 17 | 26.5 | 2 | 10.5 |
| 12.6 | 17.8 | 11.2 | 18.9 | 8.9 | 20.6 | 6.8 | 21.7 | 4.7 | 22.3 | 7.7 | 20.7 | 18 | 24.2 | 1 | 10.3 |
| 12.8 | 17.0 | 11.3 | 18.0 | 8.9 | 20.4 | 6.6 | 21.3 | 4.9 | 22.0 | 7.4 | 20.6 | 17 | 24.9 | 1 | 10.1 |
| 13.1 | 17.0 | 11.2 | 18.6 | 8.2 | 20.0 | 5.7 | 20.5 | 4.1 | 21.5 | 7.5 | 20.0 | 18 | 25.1 | -1 | 5.4 |
| 13.0 | 16.9 | 10.8 | 17.8 | 8.8 | 19.7 | 6.1 | 21.1 | 5.2 | 21.0 | 7.9 | 20.1 | 15 | 23.0 | 2 | 10.0 |
| 12.8 | 16.0 | 11.6 | 19.1 | 8.3 | 20.4 | 5.9 | 22.1 | 2.9 | 22.2 | 7.7 | 20.3 | 15 | 23.3 | 2 | 13.8 |
| 13.4 | 18.2 | 11.6 | 19.3 | 9.2 | 20.8 | 7.9 | 21.5 | 6.0 | 22.1 | 7.6 | 20.8 | 16 | 23.1 | 2 | 15.1 |
| 13.5 | 18.0 | 12.6 | 18.8 | 10.4 | 20.9 | 7.1 | 22.2 | 5.8 | 21.8 | 8.5 | 21.1 | 16 | 23.5 | 3 | 14.4 |
| 12.7 | 19.9 | 11.5 | 20.4 | 9.7 | 20.7 | 7.4 | 21.7 | 4.2 | 22.0 | 8.0 | 21.1 | 14 | 23.6 | 3 | 16.2 |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | YAKUTAT, |
| Mean | 3.9 | 22.0 | 3.6 | 22.3 | 3.9 | 22.2 | 5.4 | 21.8 | 8.1 | 20.8 | 10.9 | 19.4 | 13.0 | 17.4 |
| Maximum | 7 | 25.1 | 8 | 24.2 | 8 | 25.1 | 9 | 24.9 | 15 | 23.9 | 16 | 23.3 | 18 | 23.3 |
| Mean Max. | 5.1 | 23.2 | 4.7 | 23.2 | 5.0 | 23.2 | 7.6 | 23.0 | 10.7 | 22.9 | 13.8 | 22.1 | 15.2 | 21.1 |
| Mean Min. | 2.3 | 20.2 | 2.6 | 20.5 | 2.7 | 20.5 | 3.8 | 19.6 | 5.7 | 17.7 | 8.7 | 15.4 | 10.9 | 13.0 |
| Minimum | -1 | 16.8 | 1 | 17.8 | -1 | 17.7 | 2 | 14.6 | 4 | 10.0 | 7 | 10.1 | 9 | 5.4 |
| | | | | | | | | | | | | | | CORDOVA, |
| 1949-1953 | 3.2 | 22.9 | 2.1 | 22.8 | 2.1 | 23.0 | 3.5 | 22.7 | 5.3 | 22.5 | 7.8 | 21.4 | 9.8 | 20.2 |
| -- | | | | | | | | | | | | | | |
| 1956 | -- | -- | -- | -- | -- | -- | -- | -- | 4.1 | -- | 6.1 | -- | 9.5 | -- |
| 1957 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.7 | 22.3 | 10.9 | 21.1 |
| -- | | | | | | | | | | | | | | |
| 1959 | -- | -- | -- | -- | -- | -- | -- | -- | 6.9 | 22.9 | 10.6 | 22.3 | 10.4 | 20.7 |
| -- | | | | | | | | | | | | | | |
| 1961 | -- | -- | -- | -- | -- | -- | -- | -- | 7.8 | 21.6 | 10.1 | 20.5 | -- | -- |
| Mean | 3.2 | 22.9 | 2.1 | 22.8 | 2.1 | 23.0 | 3.5 | 22.7 | 5.8 | 22.4 | 8.6 | 21.6 | 10.0 | 20.5 |
| Maximum | 8 | 23.4 | 4 | 23.6 | 4 | 23.8 | 7 | 23.4 | 10 | 23.6 | 14 | 23.8 | 13 | 22.9 |
| Mean Max. | 5.0 | 23.3 | 3.3 | 23.3 | 2.9 | 23.4 | 5.0 | 23.3 | 7.6 | 23.3 | 10.9 | 22.8 | 12.4 | 21.8 |
| Mean Min. | 1.5 | 22.5 | 1.0 | 21.5 | 0.6 | 22.5 | 2.6 | 21.7 | 4.6 | 20.6 | 6.7 | 20.2 | 8.4 | 18.2 |
| Minimum | 0 | 22.3 | 1 | 18.7 | -1 | 22.4 | 1 | 20.3 | 3 | 18.0 | 5 | 19.2 | 8 | 16.3 |
| | | | | | | | | | | | | | | SEWARD, |
| 1926-1929 | 4.1 | 20.8 | 3.7 | 21.4 | 3.3 | 21.4 | 4.8 | 20.3 | 7.6 | 16.5 | 11.3 | 9.4 | 12.3 | 4.4 |
| 1930-1934 | 3.6 | 23.0 | 2.9 | 22.0 | 3.5 | 21.3 | 4.7 | 21.1 | 7.5 | 16.8 | 10.9 | 11.0 | 12.2 | 7.9 |
| 1935-1939 | 3.7 | 21.3 | 3.8 | 21.6 | 3.8 | 22.4 | 5.3 | 21.9 | 7.8 | 17.3 | 11.9 | 8.5 | 13.1 | 6.6 |
| -- | | | | | | | | | | | | | | |
| 1945-1949 | 3.2 | 21.2 | 3.1 | 21.2 | 3.3 | 20.8 | 4.2 | 21.4 | 6.8 | 15.5 | 9.4 | 7.8 | 10.9 | 5.8 |
| 1950-1954 | 3.5 | 22.0 | 2.6 | 21.9 | 2.8 | 22.2 | 4.1 | 20.4 | 7.2 | 15.3 | 9.3 | 10.7 | 11.8 | 7.1 |
| 1955-1959 | 3.0 | 22.2 | 3.3 | 22.7 | 3.3 | 22.8 | 4.1 | 22.1 | 7.1 | 17.5 | 10.2 | 10.0 | 11.5 | 3.8 |
| 1960 | -- | -- | 3.6 | 22.4 | 3.7 | 22.9 | 4.5 | 21.8 | 7.9 | 10.3 | 10.8 | 8.4 | 12.9 | 7.8 |
| 1961 | 4.4 | 21.1 | -- | -- | 3.3 | 23.3 | 4.9 | 22.5 | 8.4 | 18.0 | 11.3 | 9.4 | -- | -- |
| 1962 | 1.9 | 23.4 | 2.3 | 23.2 | 2.2 | 23.4 | 3.6 | 23.0 | 6.6 | 19.2 | 10.7 | 11.8 | 12.8 | 6.8 |
| 1963 | 3.1 | 21.7 | 3.4 | 22.5 | 3.6 | 22.4 | 4.6 | 22.5 | 7.2 | 18.8 | 10.9 | 10.6 | 13.2 | 9.9 |
| 1964 | 4.6 | 22.4 | 3.1 | 22.6 | -- | -- | -- | -- | -- | -- | 11.6 | 14.1 | 13.7 | 12.8 |
| Mean | 3.5 | 22.0 | 3.2 | 22.0 | 3.3 | 22.0 | 4.6 | 21.4 | 7.3 | 16.5 | 10.6 | 9.8 | 12.1 | 6.5 |
| Maximum | 7 | 29.2 | 6 | 25.5 | 7 | 25.5 | 8 | 27.4 | 12 | 23.9 | 16 | 24.4 | 18 | 24.3 |
| Mean Max. | 4.9 | 23.6 | 4.3 | 23.6 | 4.4 | 23.8 | 6.4 | 23.8 | 10.0 | 22.6 | 13.4 | 20.2 | 14.8 | 17.1 |
| Mean Min. | 1.9 | 17.6 | 1.6 | 18.3 | 2.2 | 18.6 | 3.1 | 15.7 | 4.8 | 6.8 | 7.8 | 1.5 | 9.1 | 0.7 |
| Minimum | 0 | 6.4 | -2 | 7.9 | 0 | 9.8 | 1 | 6.2 | 0 | -2.2 | 6 | -1.6 | 6 | -1.5 |
| | | | | | | | | | | | | | | KODIAK, KODIAK |
| 1889-1890 | 3.3 | -- | 2.8 | -- | 3.2 | -- | 2.7 | -- | 6.1 | -- | 7.8 | -- | 9.4 | -- |
| -- | | | | | | | | | | | | | | |
| 1935-1936 | 3.9 | 22.7 | 3.9 | 23.2 | 3.1 | 23.7 | 4.3 | 24.1 | 6.3 | 22.3 | 8.6 | 22.8 | 9.8 | 23.2 |
| Mean | 3.5 | -- | 3.2 | -- | 3.2 | -- | 3.4 | -- | 6.2 | -- | 8.2 | -- | 9.6 | -- |
| Maximum | 5 | -- | 5 | -- | 5 | -- | 6 | -- | 9 | -- | 12 | -- | 14 | -- |
| Mean Max. | 4.6 | -- | 4.0 | -- | 3.8 | -- | 4.6 | -- | 7.9 | -- | 10.7 | -- | 12.0 | -- |
| Mean Min. | 2.3 | -- | 0.9 | -- | 1.9 | -- | 2.1 | -- | 5.2 | -- | 6.5 | -- | 8.0 | -- |
| Minimum | 2 | -- | 0 | -- | 1 | -- | 1 | -- | 4 | -- | 6 | -- | 7 | -- |
| | | | | | | | | | | | | | | WOMENS BAY, KODIAK |
| 1950-1954 | 0.4 | 22.0 | 0.2 | 22.4 | 1.2 | 23.0 | 3.7 | 21.7 | 6.4 | 17.2 | 8.8 | 13.3 | 11.9 | 15.3 |
| 1955-1959 | -0.2 | 21.2 | 0.6 | 19.9 | 1.2 | 21.7 | 3.8 | 21.6 | 6.5 | 16.0 | 9.0 | 12.4 | 11.4 | 14.1 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| ALASKA–continued | | | | | | | | | | | | | | | |
| 13.1 | 17.3 | 11.4 | 18.7 | 8.9 | 20.3 | 6.7 | 21.3 | 4.8 | 21.9 | 7.8 | 20.4 | | | | |
| 18 | 23.1 | 15 | 22.8 | 12 | 23.4 | 10 | 23.8 | 8 | 26.5 | | | 18 | 26.5 | | |
| 14.9 | 20.9 | 12.9 | 21.5 | 10.6 | 22.0 | 8.3 | 22.5 | 6.4 | 23.0 | | | | | | |
| 11.6 | 13.4 | 9.8 | 15.4 | 7.2 | 17.1 | 4.7 | 19.2 | 3.2 | 20.3 | | | | | | |
| 10 | 10.0 | 8 | 11.1 | 5 | 10.4 | 2 | 14.4 | 0 | 17.4 | | | | | -1 | 5.4 |
| ALASKA | | | | | | | | | | | | | | | |
| 11.3 | 18.5 | 10.0 | 18.6 | 7.5 | 20.2 | 5.3 | 21.7 | 4.6 | 22.5 | 6.0 | 21.4 | 14 | 23.8 | -1 | 13.5 |
| 10.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 12* | -- | -- | -- |
| 11.9 | 19.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14* | 23.8* | -- | 12.7* |
| 11.7 | 20.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14* | 23.7* | -- | 16.3* |
| 12.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 13* | 23.3* | -- | 18.0* |
| 11.4 | 19.2 | 10.0 | 18.6 | 7.5 | 20.2 | 5.3 | 21.7 | 4.6 | 22.5 | 6.2 | 21.5 | 14 | 23.8 | -1 | 13.5 |
| 14 | 21.9 | 13 | 22.5 | 9 | 22.3 | 7 | 23.1 | 7 | 23.2 | | | 14 | 23.8 | | |
| 13.0 | 20.4 | 11.7 | 21.1 | 8.6 | 21.8 | 6.1 | 22.7 | 5.6 | 23.0 | | | | | | |
| 10.0 | 16.0 | 7.8 | 15.1 | 6.2 | 17.7 | 3.7 | 20.5 | 2.3 | 21.8 | | | | | | |
| 9 | 12.7 | 7 | 13.5 | 5 | 16.1 | 1 | 20.2 | -1 | 21.3 | | | | | -1 | 13.5 |
| ALASKA | | | | | | | | | | | | | | | |
| 12.4 | 6.9 | 11.5 | 10.7 | 7.8 | 18.1 | 4.4 | 17.6 | 4.7 | 21.6 | 7.3 | 15.8 | 18 | 27.4 | 0 | -0.2 |
| 12.0 | 7.3 | 10.5 | 14.0 | 7.8 | 17.6 | 5.8 | 20.3 | 4.7 | 21.4 | 7.2 | 17.0 | 18 | 29.2 | 1 | -0.2 |
| 13.0 | 9.3 | 11.0 | 13.1 | 8.2 | 14.9 | 6.1 | 18.4 | 4.8 | 20.0 | 7.7 | 16.3 | 18 | 26.5 | 0 | -0.4 |
| 11.1 | 8.8 | 9.6 | 10.6 | 7.5 | 15.1 | 5.8 | 19.5 | 4.6 | 21.7 | 6.6 | 15.8 | 14 | 23.6 | -2 | -0.5 |
| 11.8 | 8.5 | 10.1 | 12.4 | 7.9 | 15.7 | 6.1 | 18.8 | 4.5 | 21.4 | 6.8 | 16.4 | 15 | 26.0 | -1 | -1.3 |
| 12.3 | 10.1 | 10.7 | 13.7 | 7.9 | 19.3 | 5.9 | 20.2 | 4.1 | 22.1 | 7.0 | 17.2 | 16 | 26.4 | 1 | -2.0 |
| 12.6 | 11.1 | 11.2 | 16.0 | 8.7 | 19.0 | 6.7 | 21.0 | 5.2 | 21.6 | -- | -- | 16 | 23.5* | 1 | -2.2* |
| -- | -- | 11.2 | 14.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 23.7* | 2* | 0.9* |
| 12.9 | 12.4 | 9.9 | 18.9 | 8.4 | 19.8 | 6.3 | 21.7 | 3.9 | 22.3 | 6.8 | 18.8 | 15 | 24.1 | 0 | -1.1 |
| 13.7 | 11.9 | 12.2 | 14.6 | 9.2 | 18.2 | 6.7 | 21.8 | 4.6 | 20.7 | 7.7 | 18.0 | 16 | 23.8 | 1 | 1.6 |
| 12.4 | 16.3 | 11.9 | 15.9 | 9.4 | 19.4 | 6.4 | 20.6 | 4.8 | -- | -- | -- | 15 | 23.2* | 2* | 5.0* |
| 12.2 | 9.0 | 10.6 | 13.1 | 8.0 | 17.0 | 5.8 | 19.5 | 4.6 | 21.3 | 7.2 | 16.7 | | | | |
| 18 | 22.8 | 15 | 23.6 | 13 | 26.9 | 9 | 26.6 | 8 | 27.4 | | | 18 | 29.2 | | |
| 14.8 | 19.2 | 12.9 | 21.0 | 10.2 | 22.0 | 7.7 | 22.9 | 6.1 | 23.5 | | | | | | |
| 9.4 | 1.5 | 8.1 | 3.4 | 5.6 | 7.6 | 3.6 | 10.8 | 2.6 | 16.0 | | | | | | |
| 7 | -0.5 | 6 | -0.7 | 2 | -0.4 | 0 | 0.6 | 0 | 4.5 | | | | | -2 | -2.2 |
| ISLAND, ALASKA | | | | | | | | | | | | | | | |
| 10.5 | -- | 9.7 | -- | 7.6 | -- | 5.7 | -- | 3.5 | -- | 6.0 | -- | 14 | -- | 0 | -- |
| 10.4 | 23.8 | 9.9 | 22.6 | 7.3 | 22.8 | 5.4 | 23.1 | 3.5 | 23.1 | 6.4 | 23.1 | 12 | 25.1 | 2 | 16.2 |
| 10.4 | -- | 9.8 | -- | 7.5 | -- | 5.6 | -- | 3.5 | -- | 6.2 | | | | | |
| 12 | -- | 12 | -- | 9 | -- | 7 | -- | 6 | -- | | | 14 | -- | | |
| 11.6 | -- | 11.1 | -- | 9.0 | -- | 6.7 | -- | 4.7 | -- | | | | | | |
| 9.8 | -- | 8.8 | -- | 6.0 | -- | 4.1 | -- | 2.2 | -- | | | | | | |
| 9 | -- | 8 | -- | 3 | -- | 3 | -- | 1 | -- | | | | | 0 | -- |
| ISLAND, ALASKA | | | | | | | | | | | | | | | |
| 11.8 | 17.5 | 10.4 | 18.6 | 7.2 | 19.4 | 3.9 | 19.7 | 1.5 | 21.8 | 5.6 | 19.3 | 17 | 28.5 | -2 | -0.1 |
| 12.2 | 19.0 | 9.7 | 19.6 | 6.1 | 20.2 | 3.1 | 18.6 | 0.8 | 21.2 | 5.4 | 18.8 | 17 | 27.8 | -3 | -1.2 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | WOMENS BAY, KODIAK ISLAND, | | | |
| 1960 | 1.0 | 17.6 | 1.7 | 20.9 | 1.1 | 22.8 | 3.2 | 22.5 | 6.6 | -- | 8.4 | -- | 11.1 | 13.2 |
| 1961 | 2.1 | 17.1 | 1.9 | 22.1 | 0.1 | 23.3 | 3.4 | 23.1 | 7.8 | 17.7 | 9.8 | 16.9 | 11.3 | 19.1 |
| 1962 | -0.8 | 18.8 | -0.1 | 19.8 | 1.4 | 23.1 | 3.8 | 21.7 | 6.4 | 19.4 | 9.2 | 18.4 | 12.8 | 20.0 |
| 1963 | 1.8 | 17.6 | 1.8 | 19.3 | 2.6 | 19.4 | 3.6 | 23.3 | 7.7 | 20.3 | 10.3 | 18.5 | 13.4 | 20.2 |
| 1964 | 1.9 | 19.7 | 1.1 | 21.8 | 1.3 | 22.7 | 3.4 | 22.8 | 5.8 | 21.4 | 9.3 | 10.4 | 11.2 | 14.6 |
| Mean | 0.5 | 20.4 | 0.7 | 20.9 | 1.2 | 22.2 | 3.7 | 22.0 | 6.6 | 17.5 | 9.1 | 13.8 | 11.8 | 15.6 |
| Maximum | 4 | 26.8 | 4 | 25.1 | 6 | 25.0 | 8 | 27.8 | 11 | 27.6 | 16 | 23.8 | 17 | 23.7 |
| Mean Max. | 2.6 | 23.9 | 2.8 | 23.5 | 3.4 | 23.8 | 5.9 | 24.4 | 8.9 | 23.7 | 12.3 | 21.3 | 14.9 | 21.8 |
| Mean Min. | -1.7 | 12.6 | -1.5 | 14.4 | -0.6 | 18.8 | 1.3 | 16.9 | 4.7 | 4.3 | 5.8 | 2.7 | 9.2 | 4.3 |
| Minimum | -3 | -0.1 | -3 | 3.2 | -3 | 1.3 | -1 | 13.7 | 4 | -1.2 | 4 | -1.2 | 6 | -1.0 |
| | | | | | | | | | | | DUTCH HARBOR, AMAKNAK | | | |
| 1946-1949 | 2.2 | 23.8 | 2.3 | 23.6 | 2.4 | 23.7 | 4.2 | 23.6 | 5.0 | 23.9 | 6.9 | 23.0 | 9.0 | 23.6 |
| 1950-1954 | 2.9 | 23.7 | 2.2 | 23.7 | 3.0 | 23.8 | 3.9 | 23.6 | 5.7 | 23.4 | 7.2 | 23.1 | 9.3 | 23.4 |
| 1955 | 3.3 | 23.4 | 3.2 | 23.9 | 3.7 | 24.0 | 3.8 | 24.1 | 4.7 | 23.5 | -- | -- | 7.6 | 23.5 |
| Mean | 2.7 | 23.7 | 2.3 | 23.7 | 2.9 | 23.8 | 4.1 | 23.7 | 5.3 | 23.6 | 7.1 | 23.1 | 8.9 | 23.5 |
| Maximum | 4 | 24.6 | 4 | 24.6 | 4 | 24.8 | 7 | 25.2 | 9 | 25.2 | 11 | 26.2 | 12 | 24.8 |
| Mean Max. | 3.8 | 24.3 | 2.9 | 24.2 | 3.8 | 24.2 | 5.6 | 24.5 | 6.8 | 24.6 | 9.0 | 24.6 | 10.6 | 24.4 |
| Mean Min. | 1.7 | 22.6 | 1.4 | 23.0 | 1.8 | 23.0 | 2.6 | 21.7 | 4.0 | 22.0 | 5.5 | 21.2 | 6.9 | 21.7 |
| Minimum | 1 | 18.8 | 0 | 21.4 | 1 | 22.0 | 1 | 18.1 | 3 | 17.9 | 4 | 16.5 | 6 | 19.7 |
| | | | | | | | | | | | UNALASKA, UNALASKA | | | |
| 1955-1959 | 2.0 | 19.4 | 1.5 | 17.0 | 1.5 | 20.6 | 3.8 | 18.9 | 5.3 | 16.2 | 7.7 | 15.8 | 9.8 | 18.0 |
| 1960 | 2.7 | 18.3 | 1.8 | 21.6 | -- | -- | -- | -- | 5.3 | 19.2 | 7.8 | 17.7 | 10.3 | 20.7 |
| 1961 | 2.0 | 19.8 | 1.4 | 19.3 | 2.0 | 17.6 | 4.4 | -- | 6.8 | 14.3 | 8.8 | 18.4 | 9.8 | 20.9 |
| 1962 | 1.2 | 20.7 | 2.3 | 20.4 | 3.1 | 21.0 | 3.6 | 20.2 | 5.0 | 21.5 | 9.3 | 21.1 | 9.1 | 22.3 |
| 1963 | 3.1 | 20.2 | 2.0 | 22.0 | 3.7 | 22.7 | 4.4 | 22.6 | 5.6 | 22.4 | 6.5 | 22.2 | 9.6 | 22.7 |
| 1964 | 3.1 | 23.0 | 2.9 | 22.8 | 2.9 | 23.1 | 3.7 | 22.4 | 5.2 | 22.1 | 7.6 | 20.8 | 8.3 | 22.4 |
| Mean | 2.3 | 20.1 | 1.9 | 20.0 | 2.4 | 21.0 | 3.9 | 20.3 | 5.4 | 18.3 | 7.9 | 18.1 | 9.6 | 20.1 |
| Maximum | 4 | 23.9 | 4 | 25.2 | 4 | 23.8 | 7 | 24.3 | 9 | 24.2 | 13 | 23.8 | 15 | 25.1 |
| Mean Max. | 3.5 | 23.3 | 3.4 | 23.6 | 3.6 | 23.5 | 5.4 | 23.7 | 6.9 | 23.0 | 10.0 | 22.3 | 11.9 | 23.1 |
| Mean Min. | 0.3 | 13.5 | -0.1 | 12.4 | 1.2 | 14.6 | 2.6 | 13.8 | 4.1 | 11.9 | 6.1 | 12.8 | 7.4 | 15.0 |
| Minimum | -2 | 7.9 | -1 | -0.2 | -1 | 4.2 | 1 | 5.8 | 3 | 3.4 | 4 | 5.9 | 4 | 7.2 |
| | | | | | | | | | | | SWEEPER COVE, ADAK | | | |
| 1944 | 1.7 | 23.8 | 2.2 | 22.5 | 2.6 | 21.0 | 3.5 | 20.3 | 4.8 | 22.3 | 6.4 | 23.7 | -- | -- |
| 1945-1949 | 2.4 | 20.6 | 2.7 | 20.7 | 3.0 | 19.7 | 3.9 | 17.4 | 5.3 | 17.9 | 6.8 | 20.5 | 8.2 | 20.7 |
| 1950-1954 | 2.7 | 23.2 | 2.4 | 23.2 | 3.3 | 22.4 | 3.7 | 21.1 | 5.1 | 21.1 | 6.6 | 22.6 | 7.3 | 23.8 |
| 1955-1959 | 2.9 | 24.1 | 3.1 | 23.7 | 3.1 | 23.8 | 4.1 | 23.7 | 4.8 | 24.0 | 6.4 | 24.0 | 7.6 | 24.3 |
| 1960 | 3.2 | 24.0 | 2.6 | 24.4 | 3.5 | 22.9 | 3.4 | 24.5 | 4.7 | 24.1 | 6.6 | 24.2 | 7.9 | 24.2 |
| 1961 | -- | -- | -- | -- | -- | -- | -- | -- | 4.8 | 24.3 | 6.6 | -- | -- | -- |
| 1962 | -- | -- | -- | -- | -- | -- | 3.8 | 24.5 | 4.6 | 24.3 | 7.3 | 24.3 | 7.6 | 23.8 |
| 1963 | 3.1 | 21.9 | 1.4 | 21.2 | 3.4 | 20.0 | 4.2 | -- | 5.1 | 23.6 | 6.6 | 23.4 | 8.4 | 22.9 |
| 1964 | -- | -- | -- | -- | -- | -- | 1.1 | 24.1 | 3.3 | 24.4 | 5.4 | 24.5 | 5.6 | 24.6 |
| Mean | 2.7 | 22.7 | 2.6 | 22.4 | 3.2 | 21.7 | 3.7 | 21.0 | 4.9 | 21.6 | 6.6 | 22.8 | 7.6 | 23.1 |
| Maximum | 5 | 25.2 | 6 | 27.0 | 7 | 26.2 | 7 | 26.4 | 8 | 25.9 | 12 | 26.1 | 14 | 26.8 |
| Mean Max. | 4.0 | 24.8 | 4.1 | 24.8 | 4.8 | 24.8 | 5.3 | 24.9 | 6.8 | 25.0 | 9.1 | 25.0 | 10.9 | 25.2 |
| Mean Min. | 0.6 | 18.4 | 0.7 | 16.9 | 15 | 14.0 | 1.9 | 14.3 | 3.4 | 14.7 | 4.6 | 17.3 | 5.3 | 18.4 |
| Minimum | -2 | 8.5 | -1 | 8.9 | -1 | 3.8 | -2 | 0.5 | 1 | -1.2 | 3 | 3.5 | 2 | 3.4 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| ALASKA–continued | | | | | | | | | | | | | | | |
| -- | -- | 9.5 | 18.9 | -- | -- | 3.6 | 21.5 | 2.7 | 20.4 | -- | -- | 14 | 26.2* | -2 | 0.9* |
| 11.8 | 21.4 | -- | -- | 5.6 | 22.3 | 2.1 | -- | -0.1 | -- | -- | -- | 14 | 26.8* | -1 | -1.2* |
| 12.4 | 21.5 | 9.9 | 21.3 | 7.0 | 21.6 | 4.4 | 17.1 | 2.2 | 18.2 | 5.7 | 20.1 | 16 | 26.1 | -3 | -0.3 |
| 14.4 | 21.9 | 11.4 | 14.9 | 7.2 | 21.0 | 3.0 | 22.6 | 2.9 | 16.4 | 6.7 | 19.6 | 17 | 26.0 | -2 | -1.5 |
| 11.3 | 18.0 | 10.1 | 17.6 | 6.7 | 19.3 | 3.1 | 21.1 | -0.2 | -- | 5.4 | -- | 16 | 24.1* | -2 | 0.9* |
| 12.1 | 18.9 | 10.1 | 18.8 | 6.6 | 20.1 | 3.4 | 19.6 | 1.3 | 20.8 | 5.6 | 19.2 | | | | |
| 17 | 26.8 | 14 | 27.3 | 11 | 27.7 | 7 | 28.5 | 6 | 25.3 | | | 17 | 28.5 | | |
| 14.7 | 23.1 | 12.2 | 23.4 | 9.2 | 24.6 | 5.7 | 23.8 | 3.5 | 23.7 | | | | | | |
| 10.2 | 8.7 | 7.4 | 9.2 | 3.6 | 10.7 | 0.5 | 10.8 | -1.2 | 12.2 | | | | | | |
| 6 | -0.1 | 4 | 0.0 | 2 | 0.6 | -2 | -0.4 | -3 | -1.5 | | | | | -3 | -1.5 |
| ISLAND, ALASKA | | | | | | | | | | | | | | | |
| 9.4 | 23.9 | 8.2 | 23.6 | 6.2 | 23.9 | 4.6 | 23.6 | 3.3 | 23.8 | 5.3 | 23.7 | 12 | 27.5 | 1 | 16.5 |
| 10.1 | 23.8 | 8.4 | 23.8 | 6.7 | 23.7 | 5.0 | 23.8 | 3.7 | 23.7 | 5.7 | 23.6 | 18 | 25.4 | 0 | 17.9 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 24.7* | 2* | 21.5* |
| 9.8 | 23.8 | 8.3 | 23.7 | 6.5 | 23.8 | 4.8 | 23.7 | 3.6 | 23.8 | 5.5 | 23.7 | | | | |
| 18 | 27.5 | 12 | 24.9 | 9 | 25.4 | 7 | 24.9 | 5 | 25.4 | | | 18 | 27.5 | | |
| 12.2 | 24.9 | 10.0 | 24.4 | 7.7 | 24.4 | 5.8 | 24.4 | 4.6 | 24.4 | | | | | | |
| 7.9 | 22.7 | 7.3 | 23.0 | 5.4 | 23.1 | 3.4 | 22.7 | 2.4 | 23.1 | | | | | | |
| 6 | 22.0 | 7 | 22.3 | 4 | 22.1 | 2 | 19.1 | 1 | 22.8 | | | | | 0 | 16.5 |
| ISLAND, ALASKA | | | | | | | | | | | | | | | |
| 10.4 | 20.0 | 8.7 | 17.4 | 5.8 | 16.4 | 4.2 | 18.8 | 2.3 | 18.1 | 5.2 | 18.0 | 15 | 25.2 | -1 | -0.2 |
| 10.4 | -- | 9.2 | -- | 6.9 | -- | 3.6 | -- | 2.4 | -- | -- | -- | 13 | 23.8* | 0* | 13.2* |
| 10.1 | 21.2 | 9.4 | 20.9 | 6.1 | 21.4 | -- | -- | 2.1 | 21.1 | -- | -- | 14 | 23.5* | -1* | 4.2* |
| 9.7 | 23.4 | 8.6 | 22.4 | 6.4 | 22.0 | 4.7 | 21.7 | 2.9 | 22.6 | 5.5 | 21.6 | 13 | 24.1 | -2 | 6.4 |
| 10.0 | 22.7 | 8.8 | 22.0 | 6.7 | 21.6 | 4.6 | 22.7 | 3.3 | 22.3 | 5.7 | 22.2 | 12 | 24.6 | 0 | 14.8 |
| 8.3 | 23.0 | 7.8 | 22.1 | 5.6 | 21.9 | 4.1 | 22.6 | 3.0 | 22.9 | 5.2 | 22.4 | 11 | 24.6 | 2 | 16.2 |
| 10.0 | 21.3 | 8.7 | 19.6 | 6.1 | 19.1 | 4.2 | 20.3 | 2.6 | 20.5 | 5.4 | 19.9 | | | | |
| 13 | 24.6 | 14 | 23.9 | 9 | 24.3 | 6 | 24.6 | 7 | 23.9 | | | 15 | 25.2 | | |
| 12.1 | 23.7 | 10.1 | 23.4 | 7.9 | 23.1 | 5.3 | 23.7 | 4.2 | 23.3 | | | | | | |
| 8.4 | 15.2 | 7.2 | 11.2 | 4.1 | 13.2 | 2.8 | 13.9 | 0.4 | 14.4 | | | | | | |
| 7 | 8.1 | 6 | 4.2 | 0 | 2.3 | 2 | 6.7 | -1 | 4.9 | | | | | -2 | -0.2 |
| ISLAND, ALASKA | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | 6.6 | 18.3 | 5.1 | 18.2 | 3.2 | 18.5 | -- | -- | -- | 25.8* | 0 | 6.6* |
| 8.1 | 21.0 | 8.0 | 20.3 | 6.1 | 20.2 | 4.3 | 20.8 | 3.3 | 21.5 | 5.2 | 20.1 | 14 | 27.6 | -2 | 0.5 |
| 8.3 | 23.9 | 7.9 | 24.2 | 6.1 | 23.9 | 4.6 | 23.7 | 3.2 | 23.6 | 5.1 | 23.1 | 13 | 27.0 | -2 | -1.2 |
| 8.6 | 24.5 | 7.7 | 24.0 | 6.3 | 24.1 | 4.6 | 24.1 | 3.3 | 23.9 | 5.2 | 24.0 | 13 | 26.2 | -2 | 13.2 |
| 6.9 | 24.7 | 7.6 | 24.4 | 6.7 | 24.5 | 4.4 | 24.3 | 3.1 | 24.4 | 5.0 | 24.2 | 12 | 25.3 | -1 | 19.2 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 6.9 | 24.9 | 7.3 | 24.0 | 6.3 | 23.6 | 4.3 | 24.2 | 3.2 | 22.8 | -- | -- | 12 | 25.4* | -- | 14.6* |
| -- | -- | -- | -- | 5.7 | 24.6 | 4.3 | 24.4 | 1.8 | 24.8 | -- | -- | 12 | 25.5* | -1* | 13.0* |
| 5.7 | 24.6 | -- | -- | 1.6 | 24.3 | -- | -- | -- | -- | -- | -- | 9* | 25.1* | -2 | 22.6* |
| 8.0 | 23.4 | 7.8 | 23.0 | 5.9 | 23.1 | 4.5 | 23.1 | 3.2 | 23.0 | 5.1 | 22.6 | | | | |
| 14 | 27.6 | 11 | 26.3 | 9 | 25.8 | 8 | 25.3 | 8 | 25.6 | | | 14 | 27.6 | | |
| 10.9 | 25.2 | 9.5 | 25.1 | 7.7 | 25.0 | 5.9 | 24.6 | 4.9 | 24.8 | | | | | | |
| 6.1 | 19.0 | 6.6 | 17.1 | 4.4 | 19.2 | 2.6 | 19.1 | 0.9 | 18.8 | | | | | | |
| 4 | 3.8 | 4 | 9.1 | 0 | 8.4 | 1 | 6.6 | -1 | 9.2 | | | | | -2 | -1.2 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | CONSTANTINE HARBOR, | | | |
| 1944-1948 | 3.1 | 24.4 | 2.8 | 25.0 | 3.1 | 24.8 | 4.5 | 24.5 | -- | -- | 5.5 | 24.7 | 6.3 | 24.6 |
| Mean | 3.1 | 24.4 | 2.8 | 25.0 | 3.1 | 24.8 | 4.5 | 24.5 | -- | -- | 5.5 | 24.7 | 6.3 | 24.6 |
| Maximum | 4 | 25.9 | 3 | 27.8 | 3 | 25.2 | 6 | 25.0 | -- | -- | 8 | 26.7 | 11 | 26.6 |
| Mean Max. | 3.6 | 25.2 | 33 | 26.4 | -- | -- | -- | -- | -- | -- | 6.9 | 25.4 | 8.4 | 25.4 |
| Mean Min. | 2.2 | 22.9 | 22 | 23.5 | -- | -- | -- | -- | -- | -- | 4.8 | 24.2 | 4.9 | 23.2 |
| Minimum | 2 | 19.7 | 2 | 22.1 | 2 | 23.7 | 3 | 22.9 | -- | -- | 4 | 23.9 | 4 | 22.1 |
| | | | | | | | | | | | MASSACRE BAY (Pyramid Cove), | | | |
| 1946-1949 | 2.1 | 24.4 | 2.0 | 24.2 | 2.7 | 24.7 | 3.5 | 24.2 | 4.9 | 23.8 | 6.7 | 23.0 | 7.7 | 23.8 |
| 1950-1954 | 2.4 | 24.2 | 1.8 | 24.5 | 1.8 | 24.6 | 3.1 | 24.4 | 4.5 | 24.0 | 6.6 | 23.6 | 8.7 | 23.2 |
| 1955-1958 | 2.2 | 24.4 | 2.3 | 24.4 | 2.6 | 24.4 | 3.3 | 24.3 | 4.7 | 24.1 | 6.4 | 23.5 | 8.8 | 23.1 |
| -- | | | | | | | | | | | | | | |
| 1960 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1961 | -- | -- | -- | -- | -- | -- | 2.7 | -- | 4.1 | 19.5 | 5.6 | 19.2 | 7.6 | 17.6 |
| 1962 | -- | -- | -- | -- | 2.6 | 19.4 | 3.8 | 23.9 | 5.0 | 23.7 | 6.6 | 23.2 | 8.1 | 23.5 |
| 1963 | 3.2 | 24.5 | 2.8 | 24.5 | 2.9 | 24.7 | 3.7 | 24.7 | 4.9 | 24.4 | 6.8 | 23.9 | 8.4 | 22.5 |
| 1964 | 2.6 | 24.3 | 1.3 | 24.4 | 1.7 | 24.7 | 2.2 | 24.6 | 4.9 | 23.9 | 6.1 | 24.1 | 6.6 | 24.0 |
| Mean | 2.3 | 24.3 | 2.1 | 24.4 | 2.3 | 24.2 | 3.2 | 24.3 | 4.7 | 23.6 | 6.5 | 23.2 | 8.2 | 22.9 |
| Maximum | 4 | 25.4 | 6 | 26.1 | 4 | 26.1 | 6 | 25.5 | 9 | 25.4 | 11 | 25.5 | 13 | 25.3 |
| Mean Max. | 3.2 | 24.9 | 3.1 | 25.1 | 3.4 | 24.7 | 4.4 | 25.0 | 6.2 | 24.5 | 8.8 | 24.5 | 11.1 | 24.3 |
| Mean Min. | 1.1 | 23.5 | 0.5 | 23.3 | 1.0 | 23.4 | 2.0 | 23.1 | 3.4 | 21.4 | 4.7 | 20.5 | 6.2 | 20.3 |
| Minimum | -2 | 20.7 | -2 | 19.6 | -1 | 18.4 | 1 | 21.2 | 2 | 17.9 | 3 | 17.0 | 5 | 15.1 |
| | | | | | | | | | | | MASSACRE BAY (Murder Point), | | | |
| 1958 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.8 | 22.7 | 8.5 | 23.3 |
| 1959 | 2.4 | 23.8 | 1.6 | 23.6 | 2.1 | 23.9 | 3.9 | 23.3 | 5.6 | 23.8 | 6.5 | 23.3 | 9.8 | 23.9 |
| 1960 | 0.9 | 24.2 | 0.6 | 24.3 | 2.2 | 24.2 | 3.2 | 23.7 | 4.9 | 23.2 | 6.5 | 23.3 | 8.2 | 23.3 |
| | | | | | | | | | | | PORT MOLLER, | | | |
| 1948 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1949 | (ice) | (ice) | (ice) | (ice) | 0.4 | 22.2 | 0.9 | 22.5 | 4.8 | 22.7 | 10.4 | 22.7 | 11.8 | 23.0 |
| 1950 | -0.1 | 21.6 | (ice) | (ice) | -0.6 | 22.4 | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1955 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.5 | 21.5 | 10.6 | 21.5 |
| -- | | | | | | | | | | | | | | |
| 1957 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10.9 | 21.8 | 12.1 | 22.0 |
| 1958 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10.8 | 21.9 |
| 1959 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 21.9 |
| 1960 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11.9 | 22.6 |
| | | | | | | | | | | | PEARD BAY, | | | |
| 1947 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | POINT BARROW | | | |
| 1945 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1951 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.8 | 21.4 |
| | | | | | | | | | | | POINT BARROW | | | |
| 1945 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1951 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.5 | 18.6 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **AMCHITKA ISLAND, ALASKA** | | | | | | | | | | | | | | | |
| 7.0 | 24.6 | 6.9 | 24.3 | 5.8 | 24.5 | 4.7 | 24.3 | 3.7 | 24.2 | -- | -- | 11 | 27.8 | 2 | 19.7 |
| 7.0 | 24.6 | 6.9 | 24.3 | 5.8 | 24.5 | 4.7 | 24.3 | 3.7 | 24.2 | -- | -- | | | | |
| 9 | 25.6 | 10 | 25.6 | 8 | 25.8 | 6 | 24.8 | 4 | 25.0 | | | 11 | 27.8 | | |
| 9.0 | 25.1 | 8.6 | 24.9 | 6.8 | 24.9 | 5.3 | 24.7 | 4.4 | 24.8 | | | | | | |
| 5.8 | 23.2 | 5.8 | 22.8 | 4.8 | 23.6 | 3.7 | 23.5 | 2.9 | 22.7 | | | | | | |
| 6 | 21.6 | 6 | 20.2 | 4 | 22.3 | 3 | 22.9 | 2 | 21.0 | | | | | 2 | 19.7 |
| **ATTU ISLAND, ALASKA** | | | | | | | | | | | | | | | |
| 9.1 | 24.0 | 9.0 | 24.1 | 6.6 | 24.4 | 4.4 | 24.2 | 2.6 | 24.4 | 5.1 | 24.1 | 15 | 26.1 | -1 | 17.9 |
| 9.5 | 23.9 | 8.8 | 24.3 | 6.8 | 24.3 | 4.6 | 24.2 | 2.9 | 24.2 | 5.1 | 24.1 | 14 | 26.1 | -2 | 17.7 |
| 10.1 | 23.4 | 8.9 | 24.2 | 7.2 | 24.4 | 5.0 | 24.3 | 3.2 | 24.4 | 5.4 | 24.1 | 14 | 26.0 | 0 | 19.2 |
| -- | -- | -- | -- | 6.1 | 23.8 | 2.3 | 23.7 | 0.6 | 24.3 | -- | -- | -- | -- | -- | -- |
| 8.7 | 18.7 | 8.5 | 19.1 | 7.2 | 18.9 | 4.4 | 19.2 | -- | -- | -- | -- | 11* | 19.9* | 2* | 15.1* |
| 8.6 | 23.5 | 8.4 | 24.0 | 7.1 | 24.0 | 4.9 | -- | 3.6 | 24.4 | -- | -- | 11* | 25.3* | 2* | 18.4* |
| 9.4 | 23.5 | 8.6 | 23.9 | 7.4 | 24.1 | 5.2 | 24.3 | 3.5 | 24.3 | 5.6 | 24.1 | 12 | 26.0 | 2* | 18.2 |
| 7.8 | 24.1 | 7.7 | 24.0 | 6.4 | 24.1 | 2.6 | 23.8 | 2.7 | 24.1 | 4.4 | 24.2 | 11 | 25.6 | -3 | 19.6 |
| 9.3 | 23.3 | 8.7 | 23.8 | 6.8 | 23.9 | 4.4 | 23.8 | 2.8 | 24.3 | 5.1 | 23.8 | | | | |
| 15 | 25.9 | 11 | 25.5 | 10 | 26.0 | 7 | 25.5 | 5 | 25.3 | | | 15 | 26.1 | | |
| 11.8 | 24.5 | 10.1 | 24.6 | 8.3 | 24.7 | 5.8 | 24.4 | 4.2 | 24.8 | | | | | | |
| 7.6 | 21.2 | 7.3 | 22.0 | 5.1 | 22.4 | 2.5 | 22.5 | 1.3 | 23.4 | | | | | | |
| 6 | 17.7 | 5 | 18.5 | 3 | 18.4 | -3 | 18.3 | -2 | 22.2 | | | | | -3 | 15.1 |
| **ATTU ISLAND, ALASKA** | | | | | | | | | | | | | | | |
| 10.1 | 24.0 | 9.9 | 24.2 | 6.8 | 24.5 | -- | -- | 2.0 | -- | -- | -- | 13 | 25.8* | 1* | 19.1* |
| 11.3 | 22.9 | 9.7 | 22.9 | 6.3 | 23.3 | 4.6 | 23.7 | 1.2 | 24.3 | 5.4 | 23.6 | 14 | 25.5 | 0 | 18.6 |
| 9.1 | 23.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 25.1 | -1* | 18.2* |
| **ALASKA** | | | | | | | | | | | | | | | |
| -- | -- | 10.9 | 22.3 | 6.1 | 22.2 | 2.2 | 22.3 | (ice) | (ice) | -- | -- | -- | 22.8* | (ice) | 21.4* |
| 13.0 | 22.8 | 11.8 | 22.8 | 7.4 | 21.9 | 4.4 | 21.8 | 0.7 | 21.6 | -- | -- | 14 | 23.6* | (ice) | 21.1* |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 22.7* | (ice) | 21.1* |
| 11.6 | 21.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 13 | 21.9* | -- | 20.0* |
| 13.6 | 22.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 15 | 22.4* | -- | 21.3* |
| 11.1 | 21.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 12* | 22.4* | -- | 21.2* |
| 8.9 | 22.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11* | 22.4* | -- | 21.6* |
| 11.4 | 22.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 13* | 22.8* | -- | 21.8* |
| **ALASKA** | | | | | | | | | | | | | | | |
| -- | -- | 2.3 | 21.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21.7* | -- | 18.4* |
| **(ocean), ALASKA** | | | | | | | | | | | | | | | |
| -- | -- | -0.3 | 19.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21.7* | -- | 15.3* |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 24.1* | -- | 10.0* |
| **(Elson Lagoon), ALASKA** | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 20.5* | -- | 11.1* |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21.6* | -- | 12.2* |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | MIDWAY |
| 1944 | -- | -- | -- | -- | 18.9 | 26.2 | 21.1 | 26.1 | -- | -- | 24.8 | 26.2 | 26.2 | 26.3 |
| 1945-1949 | 19.6 | 26.0 | 19.1 | 26.0 | 20.3 | 26.3 | 21.1 | 26.6 | 22.1 | 26.5 | 24.7 | 26.8 | 25.9 | 26.6 |
| 1950-1954 | 20.2 | 26.4 | 20.2 | 26.5 | 20.5 | 26.5 | 21.5 | 26.5 | 23.6 | 26.5 | 25.1 | 26.5 | 26.7 | 26.8 |
| 1955-1959 | 19.1 | 26.4 | 19.1 | 26.3 | 19.9 | 26.4 | 20.8 | 26.4 | 22.6 | 26.6 | 25.2 | 26.8 | 26.3 | 26.7 |
| 1960 | 21.1 | 26.5 | 18.9 | 26.4 | 19.7 | 26.5 | 21.5 | 26.5 | 23.8 | 26.6 | 26.8 | 26.5 | 27.1 | 26.6 |
| 1961 | 19.9 | 27.1 | 20.3 | 26.8 | 21.2 | 26.6 | 19.2 | 26.5 | 20.8 | 26.5 | 24.7 | 26.2 | 26.2 | 26.5 |
| 1962 | -- | -- | 19.9 | 26.6 | 20.3 | 26.5 | 20.2 | 26.3 | 21.8 | 26.6 | 23.3 | 26.6 | 25.5 | 26.4 |
| 1963 | 19.0 | 26.4 | 18.7 | 26.7 | 20.4 | 26.4 | 21.1 | 27.0 | 23.7 | 26.9 | 25.8 | 27.0 | 26.2 | 26.9 |
| 1964 | 20.6 | 26.6 | 21.1 | 26.8 | 20.9 | 26.5 | 20.1 | 26.4 | 22.7 | 26.4 | 25.1 | 26.5 | 26.2 | 26.4 |
| Mean | 19.8 | 26.4 | 19.6 | 26.4 | 20.3 | 26.4 | 20.9 | 26.5 | 22.6 | 26.6 | 25.1 | 26.6 | 26.3 | 26.7 |
| Maximum | 23 | 27.8 | 22 | 27.5 | 24 | 27.3 | 25 | 28.1 | 27 | 27.7 | 28 | 28.1 | 29 | 27.9 |
| Mean Max. | 21.2 | 26.9 | 20.8 | 26.9 | 22.1 | 26.8 | 22.7 | 27.0 | 24.6 | 27.0 | 26.7 | 27.1 | 26.7 | 27.2 |
| Mean Min. | 18.1 | 25.8 | 18.0 | 25.9 | 18.5 | 26.0 | 19.2 | 26.0 | 20.9 | 26.2 | 22.8 | 26.0 | 25.3 | 26.1 |
| Minimum | 17 | 24.6 | 16 | 25.1 | 18 | 25.4 | 17 | 25.0 | 19 | 25.3 | 20 | 23.9 | 24 | 25.3 |
| | | | | | | | | | | | | | | HONOLULU, |
| 1945-1949 | 24.1 | 25.3 | 24.3 | 25.4 | 24.1 | 25.7 | 24.4 | 25.7 | 25.3 | 25.8 | 26.0 | 25.9 | 26.4 | 26.0 |
| 1950-1954 | 24.3 | 25.0 | 24.9 | 25.7 | 24.6 | 24.9 | 24.9 | 25.7 | 25.1 | 25.8 | 25.5 | 25.9 | 26.4 | 25.9 |
| 1955-1959 | 24.6 | 25.2 | 24.2 | 25.4 | 24.4 | 25.7 | 24.7 | 25.8 | 25.3 | 25.8 | 26.1 | 25.6 | 26.7 | 25.6 |
| 1960 | 24.4 | 25.9 | 24.3 | 26.0 | 24.7 | 25.6 | 24.6 | 25.8 | 25.5 | 25.5 | 26.3 | 25.9 | 26.9 | 25.9 |
| 1961 | 25.1 | 25.8 | 25.0 | 26.1 | 25.4 | 26.4 | 26.1 | 26.5 | 26.3 | 26.0 | 26.8 | 26.0 | 27.0 | 25.8 |
| 1962 | 25.1 | 26.1 | 24.7 | 25.9 | 24.1 | 26.9 | 25.2 | 25.7 | 25.7 | 25.8 | 26.7 | 26.4 | 26.9 | 26.5 |
| 1963 | 24.4 | 25.2 | 24.2 | 26.0 | 24.4 | 25.7 | 24.9 | 25.4 | 24.8 | 25.8 | 25.8 | 26.0 | 26.3 | 26.1 |
| 1964 | 24.7 | 26.0 | 24.4 | 26.1 | 24.4 | 26.0 | 24.8 | 26.0 | 24.8 | 26.1 | 25.7 | 25.9 | 25.8 | 25.9 |
| Mean | 24.4 | 25.4 | 24.4 | 25.6 | 24.4 | 25.6 | 24.8 | 25.8 | 25.3 | 25.8 | 25.9 | 25.9 | 26.5 | 25.9 |
| Maximum | 27 | 27.9 | 27 | 28.1 | 28 | 28.4 | 27 | 28.7 | 28 | 27.6 | 29 | 28.0 | 29 | 27.8 |
| Mean Max. | 25.6 | 26.5 | 25.9 | 26.5 | 25.8 | 26.5 | 25.9 | 26.6 | 26.4 | 26.5 | 26.9 | 26.5 | 27.4 | 26.7 |
| Mean Min. | 22.9 | 23.0 | 23.1 | 23.5 | 23.1 | 23.7 | 23.6 | 24.5 | 24.2 | 24.7 | 25.2 | 25.3 | 25.6 | 25.0 |
| Minimum | 21 | 19.6 | 21 | 19.0 | 22 | 9.9 | 22 | 22.3 | 23 | 22.5 | 24 | 23.5 | 24 | 19.1 |
| | | | | | | | | | | | | | | KANEOHE BAY (Mokuoloe I.), |
| 1957-1959 | 23.0 | 25.5 | 22.7 | 25.2 | 23.6 | 25.2 | 23.9 | 25.4 | 24.9 | 25.8 | 26.5 | 26.0 | 26.6 | 25.9 |
| 1960 | 22.2 | 25.6 | 22.2 | 25.8 | 23.3 | 24.8 | 23.5 | 25.2 | 25.2 | 25.4 | 26.4 | 25.8 | 26.4 | 25.8 |
| 1961 | 22.9 | 25.4 | 23.1 | 25.6 | 24.3 | 25.9 | 24.2 | 25.8 | 25.2 | 25.9 | 25.8 | 25.8 | 26.1 | 26.0 |
| 1962 | 22.3 | 26.1 | 23.1 | 25.9 | 22.1 | 24.9 | 24.6 | 25.6 | 25.1 | 25.6 | 26.0 | 26.2 | 25.7 | 26.2 |
| 1963 | 22.3 | 25.0 | 23.3 | 25.2 | 24.2 | 24.9 | 24.4 | 24.4 | 24.4 | 24.1 | 26.0 | 25.4 | 26.2 | 25.8 |
| 1964 | 23.5 | 25.7 | 22.9 | 25.8 | 23.4 | 25.8 | 23.9 | 25.6 | 23.9 | 26.0 | 26.0 | 26.0 | 26.2 | 26.0 |
| Mean | 22.8 | 25.5 | 22.8 | 25.5 | 23.5 | 25.2 | 24.1 | 25.4 | 24.8 | 25.5 | 26.2 | 25.9 | 26.3 | 25.9 |
| Maximum | 24 | 27.3 | 25 | 26.4 | 26 | 26.4 | 26 | 26.2 | 27 | 26.6 | 28 | 26.5 | 28 | 27.3 |
| Mean Max. | 23.6 | 26.1 | 24.1 | 26.0 | 24.8 | 26.1 | 25.3 | 25.9 | 25.8 | 26.3 | 27.2 | 26.2 | 27.2 | 26.4 |
| Mean Min. | 21.9 | 24.8 | 21.4 | 24.3 | 22.3 | 24.0 | 23.0 | 23.9 | 23.6 | 24.6 | 25.3 | 25.5 | 25.5 | 25.2 |
| Minimum | 21 | 24.0 | 21 | 21.7 | 21 | 22.8 | 23 | 21.9 | 23 | 22.5 | 24 | 24.9 | 25 | 23.6 |
| | | | | | | | | | | | | | | HILO, |
| 1947-1949 | 21.2 | 18.2 | 22.0 | 20.0 | 21.8 | 17.8 | 21.3 | 15.5 | 21.8 | 15.4 | 22.7 | 16.9 | 22.7 | 15.7 |
| 1950-1954 | 21.2 | 17.4 | 20.9 | 16.5 | 20.4 | 15.1 | 20.7 | 15.1 | 21.2 | 14.8 | 21.5 | 15.2 | 21.9 | 15.1 |
| 1955-1959 | 21.2 | 16.6 | 20.9 | 16.1 | 20.8 | 16.0 | 20.8 | 14.9 | 20.9 | 14.6 | 21.3 | 14.9 | 21.9 | 15.5 |
| 1960 | 21.6 | 15.8 | 21.4 | 16.2 | 22.2 | 17.0 | 22.3 | 16.9 | 23.3 | 20.8 | 23.7 | 20.0 | 23.4 | 18.0 |
| 1961 | 24.1 | 24.1 | 23.8 | 19.7 | 23.7 | 22.3 | 24.5 | 24.3 | 24.0 | 19.9 | 25.6 | 25.0 | 25.6 | 24.0 |
| 1962 | 23.2 | 23.3 | 24.2 | 24.7 | 22.9 | 23.2 | 24.4 | 24.8 | 24.1 | 24.0 | 24.1 | 24.5 | 24.4 | 23.6 |
| 1963 | 22.5 | 23.6 | 22.9 | 25.5 | 22.7 | 23.6 | 23.3 | 18.0 | 23.1 | 23.0 | 24.3 | 21.9 | 24.7 | 21.0 |
| 1964 | 23.4 | 19.9 | 22.8 | 19.1 | 22.5 | 21.0 | 22.9 | 20.7 | 22.9 | 19.0 | 24.4 | 22.1 | 25.1 | 20.6 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **ISLANDS** | | | | | | | | | | | | | | | |
| 26.8 | 26.0 | 25.8 | 25.6 | 24.6 | 25.7 | 22.4 | 25.6 | 21.5 | 25.6 | --. | -- | 28 | 27.4* | 19 | 24.6* |
| 26.7 | 26.6 | 26.5 | 26.8 | 24.9 | 26.6 | 23.1 | 26.7 | 21.4 | 26.6 | 23.0 | 26.5 | 29 | 28.6 | 17 | 24.4 |
| 27.1 | 26.7 | 26.8 | 26.6 | 25.7 | 26.7 | 23.8 | 26.5 | 21.8 | 26.4 | 23.6 | 26.6 | 29 | 27.9 | 17 | 23.9 |
| 26.6 | 26.5 | 27.0 | 26.6 | 24.7 | 26.5 | 22.5 | 26.6 | 20.9 | 26.5 | 22.9 | 26.5 | 29 | 27.9 | 17 | 24.8 |
| 27.2 | 26.5 | 27.1 | 26.6 | 24.6 | 26.7 | 22.8 | 26.7 | 20.5 | 26.8 | 23.4 | 26.6 | 28 | 27.2 | 18 | 25.0 |
| 27.2 | 26.5 | 27.5 | 26.6 | 25.9 | 26.5 | 23.9 | 26.5 | 22.0 | 26.3 | 23.2 | 26.6 | 29 | 27.4 | 18 | 24.5 |
| 27.0 | 26.6 | 27.9 | 26.9 | 25.6 | 26.8 | 23.8 | 26.7 | 21.1 | 26.6 | -- | -- | 29 | 27.3* | 18 | 25.0* |
| 26.1 | 26.6 | 26.4 | 26.6 | 25.9 | 26.8 | 24.7 | 26.4 | 20.7 | 26.5 | 23.2 | 26.7 | 28 | 27.7 | 16 | 25.8 |
| 26.7 | 26.2 | 27.2 | 26.2 | 26.0 | 25.9 | 22.7 | 25.9 | 19.7 | 26.2 | 23.2 | 26.3 | 28 | 27.2 | 16 | 25.2 |
| 26.8 | 26.6 | 26.9 | 26.6 | 25.2 | 26.5 | 23.2 | 26.5 | 21.3 | 26.4 | 23.2 | 26.5 | | | | |
| 29 | 27.9 | 29 | 28.6 | 29 | 27.5 | 26 | 27.6 | 26 | 27.5 | | | 29 | 28.6 | | |
| 27.9 | 27.0 | 28.2 | 27.0 | 26.9 | 27.1 | 24.9 | 27.0 | 23.1 | 26.9 | | | | | | |
| 25.6 | 26.0 | 25.3 | 26.1 | 23.2 | 26.1 | 21.2 | 26.0 | 19.4 | 25.9 | | | | | | |
| 23 | 24.8 | 22 | 25.2 | 20 | 25.1 | 17 | 24.4 | 16 | 25.1 | | | | | 16 | 23.9 |
| **HAWAII** | | | | | | | | | | | | | | | |
| 26.6 | 26.1 | 26.8 | 25.9 | 26.6 | 26.1 | 25.8 | 26.0 | 25.1 | 25.9 | 25.5 | 25.8 | 28 | 27.0 | 22 | 20.0 |
| 26.8 | 25.9 | 26.9 | 25.8 | 27.0 | 25.8 | 25.9 | 25.4 | 24.9 | 25.2 | 25.6 | 25.6 | 29 | 28.7 | 22 | 9.9 |
| 26.8 | 25.7 | 27.1 | 25.8 | 26.9 | 25.9 | 26.3 | 25.8 | 24.9 | 25.7 | 25.7 | 25.7 | 29 | 27.5 | 21 | 16.1 |
| 26.8 | 26.0 | 27.3 | 25.9 | 27.4 | 25.9 | 26.2 | 26.0 | 25.7 | 25.9 | 25.8 | 25.9 | 29 | 27.4 | 23 | 22.5 |
| 27.1 | 26.2 | 27.0 | 26.3 | 27.5 | 26.2 | 26.3 | 26.4 | 24.9 | 26.6 | 26.2 | 26.2 | 29 | 28.4 | 22 | 19.2 |
| 27.2 | 26.5 | 26.9 | 26.8 | 27.1 | 25.8 | 25.9 | -- | 25.1 | 27.0 | 25.9 | -- | 29 | 28.4* | 22 | 19.6* |
| 26.9 | 26.1 | 26.9 | 26.1 | 26.7 | 26.2 | 25.9 | 26.2 | 25.4 | 26.2 | 25.6 | 25.9 | 28 | 26.8 | 22 | 21.0 |
| 26.3 | 26.1 | 26.6 | 26.1 | 25.9 | 26.1 | 25.5 | 25.9 | 25.3 | 25.5 | 25.4 | 26.0 | 27 | 26.4 | 24 | 22.5 |
| 26.8 | 26.0 | 26.9 | 25.9 | 26.8 | 26.0 | 26.0 | 25.8 | 25.1 | 25.8 | 25.6 | 25.8 | | | | |
| 29 | 27.9 | 29 | 28.1 | 29 | 27.6 | 29 | 28.0 | 28 | 28.4 | | | 29 | 28.7 | | |
| 27.8 | 26.6 | 27.9 | 26.6 | 27.9 | 26.7 | 27.3 | 26.6 | 26.3 | 26.6 | | | | | | |
| 26.0 | 25.0 | 26.1 | 24.7 | 26.0 | 24.6 | 24.8 | 24.2 | 23.7 | 24.2 | | | | | | |
| 24 | 22.8 | 25 | 20.0 | 25 | 19.2 | 23 | 16.1 | 22 | 19.2 | | | | | 21 | 9.9 |
| **OAHU I., HAWAII** | | | | | | | | | | | | | | | |
| 26.8 | 25.9 | 26.7 | 26.0 | 26.4 | 25.8 | 25.1 | 25.3 | 22.8 | 25.3 | 24.9 | 25.6 | 29 | 26.8 | 21 | 21.7 |
| 26.6 | 26.0 | 26.0 | 25.8 | 26.2 | 25.8 | 24.1 | 25.8 | 23.3 | 25.4 | 24.6 | 25.6 | 28 | 26.3 | 21 | 23.4 |
| 26.5 | 26.1 | 26.9 | 26.2 | 25.9 | 25.9 | 24.2 | 25.2 | 22.7 | 26.0 | 24.8 | 25.8 | 27 | 26.5 | 22 | 23.2 |
| 26.2 | 26.3 | 25.8 | 26.5 | 25.5 | 26.3 | 24.3 | 26.3 | 22.7 | 25.8 | 24.4 | 26.0 | 27 | 27.3 | 21 | 22.8 |
| 26.7 | 26.1 | 26.7 | 26.1 | 26.1 | 26.0 | 24.8 | 26.1 | 24.2 | 25.6 | 24.9 | 25.4 | 28 | 26.5 | 21 | 22.5 |
| 26.4 | 26.0 | 26.4 | 26.0 | 25.1 | 25.7 | -- | -- | 24.1 | 24.8 | -- | -- | 27 | 27.3* | 22 | 22.4* |
| 26.6 | 26.0 | 26.5 | 26.1 | 26.0 | 25.9 | 24.7 | 25.6 | 23.2 | 25.4 | 24.8 | 25.7 | | | | |
| 28 | 26.8 | 28 | 27.3 | 29 | 26.8 | 27 | 27.0 | 26 | 26.4 | | | 29 | 27.3 | | |
| 27.4 | 26.4 | 27.5 | 26.6 | 27.1 | 26.3 | 26.2 | 26.3 | 24.2 | 26.2 | | | | | | |
| 26.2 | 25.6 | 25.6 | 25.3 | 24.9 | 25.0 | 23.1 | 24.6 | 22.1 | 24.4 | | | | | | |
| 26 | 24.9 | 25 | 23.3 | 24 | 22.6 | 23 | 21.9 | 21 | 22.4 | | | | | 21 | 21.7 |
| **HAWAII** | | | | | | | | | | | | | | | |
| 23.0 | 16.0 | 23.3 | 16.9 | 23.3 | 17.3 | 22.4 | 17.2 | 21.4 | 15.3 | 22.2 | 16.8 | 27 | 26.5 | 18 | 2.8 |
| 22.0 | 15.5 | 22.4 | 16.0 | 22.4 | 16.4 | 22.2 | 16.7 | 21.8 | 16.5 | 21.6 | 15.9 | 27 | 26.1 | 19 | 4.9 |
| 22.3 | 14.8 | 22.2 | 15.4 | 22.6 | 16.4 | 22.1 | 16.1 | 21.7 | 16.5 | 21.6 | 15.6 | 27 | 25.9 | 19 | 7.3 |
| 24.2 | 19.3 | 24.4 | 20.8 | 24.6 | -- | 24.7 | 22.5 | 24.4 | 24.0 | 23.4 | -- | 26 | 27.5* | 18 | 4.0* |
| 25.9 | 23.9 | 26.3 | 24.6 | 25.7 | 23.9 | 25.4 | 22.9 | 22.9 | 21.8 | 24.8 | 23.0 | 27 | 27.6 | 22 | 12.4 |
| 24.9 | 25.0 | 25.1 | 25.6 | 23.7 | 25.6 | 23.4 | 24.2 | 22.0 | 20.0 | 23.9 | 24.0 | 26 | 26.9 | 21 | 18.4 |
| 25.3 | 21.4 | 26.0 | 21.4 | 25.6 | 22.3 | 25.1 | 21.0 | 24.8 | 23.0 | 24.2 | 22.1 | 27 | 26.4 | 21 | 13.9 |
| 24.7 | 20.4 | 24.5 | 19.5 | -- | -- | 23.2 | 19.7 | 24.2 | 22.0 | -- | -- | 26* | 26.1* | 20 | 10.8* |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | HILO, |
| Mean | 21.7 | 18.4 | 21.7 | 18.1 | 21.4 | 17.6 | 21.6 | 16.7 | 21.8 | 16.7 | 22.5 | 17.5 | 22.8 | 17.0 |
| Maximum | 25 | 26.5 | 26 | 26.3 | 24 | 25.4 | 27 | 26.1 | 26 | 27.5 | 26 | 27.6 | 26 | 25.8 |
| Mean Max. | 23.3 | 23.3 | 23.6 | 23.1 | 22.8 | 22.5 | 23.3 | 22.3 | 23.6 | 22.4 | 24.1 | 21.8 | 24.8 | 22.4 |
| Mean Min. | 20.3 | 14.6 | 20.2 | 13.9 | 20.1 | 12.9 | 20.4 | 12.4 | 20.4 | 11.9 | 21.2 | 13.7 | 21.3 | 13.1 |
| Minimum | 18 | 9.8 | 18 | 7.3 | 19 | 6.9 | 19 | 4.0 | 19 | 2.8 | 19 | 9.3 | 19 | 8.4 |
| | | | | | | | | | | | | | | JOHNSTON |
| 1947-1949 | -- | -- | 23.7 | 26.0 | 23.9 | 26.0 | 24.4 | 26.4 | 25.4 | 26.2 | 25.6 | 26.0 | 26.6 | 26.2 |
| 1950-1954 | 25.3 | 26.1 | 25.1 | 26.1 | 24.9 | 26.0 | 25.6 | 26.0 | 25.9 | 26.1 | 26.7 | 26.0 | 27.3 | 26.2 |
| 1955-1959 | 25.3 | 26.2 | 24.7 | 26.3 | 24.7 | 26.4 | 25.1 | 26.4 | 25.7 | 26.4 | 26.5 | 26.5 | 27.2 | 26.5 |
| 1960 | 25.0 | 26.1 | 24.6 | 26.2 | 24.9 | 26.3 | 25.3 | 26.0 | 26.2 | 25.9 | 26.8 | 26.0 | 27.3 | 26.1 |
| 1961 | 25.3 | 25.8 | 25.2 | 26.0 | 25.3 | 26.2 | 25.8 | 26.2 | 26.3 | 26.2 | 26.7 | 26.2 | 26.9 | 26.3 |
| 1962 | 25.4 | 26.0 | 25.2 | 26.0 | 25.1 | 26.2 | 25.6 | 26.8 | 26.6 | 26.5 | 27.7 | 26.5 | 27.6 | 26.4 |
| 1963 | 24.1 | 26.2 | 24.4 | 26.5 | 24.3 | 26.2 | 25.3 | 26.0 | 25.2 | 26.0 | 25.6 | 26.4 | 26.3 | 26.4 |
| 1964 | 25.4 | 26.5 | 24.9 | 25.9 | 25.1 | 26.1 | 25.4 | 26.3 | 26.0 | 26.3 | 26.7 | 26.4 | 27.1 | 26.4 |
| Mean | 25.2 | 26.1 | 24.8 | 26.2 | 24.7 | 26.2 | 25.2 | 26.2 | 25.8 | 26.2 | 26.5 | 26.2 | 27.1 | 26.3 |
| Maximum | 27 | 27.3 | 27 | 27.6 | 27 | 27.8 | 27 | 28.2 | 28 | 27.5 | 29 | 27.7 | 29 | 27.6 |
| Mean Max. | 26.2 | 26.7 | 25.7 | 26.6 | 25.7 | 26.8 | 26.2 | 26.9 | 26.8 | 26.7 | 27.4 | 26.8 | 27.9 | 26.9 |
| Mean Min. | 23.9 | 25.6 | 23.8 | 25.7 | 23.6 | 25.7 | 23.9 | 25.6 | 24.8 | 25.6 | 25.5 | 25.8 | 26.3 | 25.9 |
| Minimum | 23 | 25.0 | 22 | 25.1 | 21 | 25.1 | 22 | 24.9 | 23 | 24.3 | 22 | 25.5 | 26 | 25.6 |
| | | | | | | | | | | | | | | CHRISTMAS |
| 1956-1959 | 27.9 | 26.6 | 28.2 | 26.6 | 28.4 | 27.3 | 28.7 | 26.0 | 29.2 | 26.5 | 28.8 | 26.4 | 28.9 | 26.6 |
| 1960 | 27.2 | 26.8 | 27.2 | 26.6 | 27.7 | 27.3 | 28.0 | 27.4 | 28.2 | 27.2 | 28.6 | 27.3 | 28.4 | 27.2 |
| 1961 | 27.1 | 27.4 | 26.8 | 27.1 | 27.3 | 27.5 | 28.1 | 27.5 | 28.3 | 27.5 | 28.8 | 27.6 | 28.0 | 27.0 |
| 1962 | 26.2 | 27.9 | 26.7 | 28.0 | 27.2 | 27.5 | 27.4 | 27.9 | 27.6 | 27.4 | 27.9 | 26.6 | 27.6 | 27.1 |
| 1963 | 26.1 | 27.3 | 26.9 | 27.6 | 27.3 | 27.6 | 28.0 | 27.8 | 28.2 | 27.7 | 28.5 | 27.5 | 28.6 | 27.3 |
| 1964 | 27.9 | 26.5 | 27.7 | 26.9 | 27.6 | 25.1 | 28.1 | 26.9 | 27.1 | 27.5 | 27.1 | 27.4 | 26.5 | 27.5 |
| Mean | 27.3 | 26.9 | 27.6 | 27.0 | 27.8 | 27.1 | 28.3 | 26.8 | 28.4 | 27.0 | 28.4 | 26.9 | 28.2 | 27.0 |
| Maximum | 32 | 28.7 | 30 | 29.2 | 31 | 28.9 | 31 | 29.0 | 32 | 28.3 | 31 | 28.4 | 31 | 28.4 |
| Mean Max. | 28.6 | 27.8 | 28.7 | 27.9 | 29.1 | 28.1 | 29.6 | 27.9 | 29.6 | 27.7 | 29.4 | 27.6 | 29.2 | 27.9 |
| Mean Min. | 26.0 | 25.8 | 26.4 | 26.0 | 26.6 | 26.2 | 26.9 | 25.3 | 27.2 | 26.1 | 27.2 | 25.9 | 26.8 | 26.3 |
| Minimum | 24 | 20.2 | 25 | 21.0 | 26 | 23.0 | 26 | 21.3 | 26 | 24.8 | 26 | 23.6 | 26 | 25.5 |
| | | | | | | | | | | | | | | CANTON ISLAND, |
| 1950-1954 | 28.3 | 26.9 | 28.0 | 27.1 | 28.3 | 27.0 | 28.8 | 26.7 | 28.8 | 27.0 | 28.8 | 26.8 | 28.3 | 26.7 |
| 1955-1959 | 28.4 | 27.0 | 28.2 | 27.0 | 28.2 | 26.9 | 28.8 | 27.0 | 28.8 | 26.8 | 28.9 | 27.0 | 28.5 | 26.8 |
| 1960 | 27.6 | 26.5 | 27.2 | 26.5 | 27.6 | 26.5 | 27.8 | 26.7 | 28.1 | 26.6 | 28.3 | 26.8 | 28.1 | 26.8 |
| 1961 | 28.3 | 26.8 | 27.8 | 27.2 | 27.7 | 27.1 | 28.3 | 27.1 | 28.6 | 27.0 | -- | -- | 28.4 | 26.9 |
| 1962 | 27.3 | 26.9 | 27.5 | 26.9 | 27.6 | 26.7 | 27.9 | 26.6 | 28.4 | 26.7 | 28.4 | 26.7 | 28.3 | 26.7 |
| 1963 | 27.4 | 27.0 | 27.6 | 27.1 | 27.7 | 27.1 | 28.4 | 26.9 | 28.5 | 26.6 | 28.7 | 26.7 | 28.7 | 26.6 |
| 1964 | 29.3 | 26.6 | 28.9 | 26.7 | 28.2 | 26.9 | 28.2 | 26.9 | 28.3 | 26.9 | 27.9 | 26.9 | 27.7 | 26.6 |
| Mean | 28.2 | 26.9 | 28.0 | 27.0 | 28.1 | 26.9 | 28.6 | 26.8 | 28.7 | 26.8 | 28.7 | 26.8 | 28.3 | 26.7 |
| Maximum | 30 | 27.8 | 31 | 27.8 | 31 | 27.7 | 31 | 27.9 | 31 | 27.8 | 30 | 27.7 | 30 | 27.7 |
| Mean Max. | 28.7 | 27.3 | 28.6 | 27.3 | 28.8 | 27.3 | 29.3 | 27.3 | 29.3 | 27.2 | 29.2 | 27.2 | 29.0 | 27.2 |
| Mean Min. | 27.6 | 26.5 | 27.4 | 26.6 | 27.3 | 26.6 | 27.8 | 26.5 | 28.1 | 26.4 | 28.1 | 26.4 | 27.9 | 26.4 |
| Minimum | 27 | 26.0 | 26 | 26.1 | 26 | 26.1 | 27 | 26.1 | 27 | 26.0 | 27 | 26.3 | 27 | 26.2 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **HAWAII - continued** | | | | | | | | | | | | | | | |
| 23.1 | 17.2 | 23.3 | 17.8 | 23.2 | 18.0 | 22.8 | 18.1 | 22.2 | 17.9 | 22.3 | 17.6 | | | | |
| 27 | 25.8 | 27 | 27.0 | 27 | 26.6 | 27 | 26.6 | 26 | 25.6 | | | 27 | 27.6 | | |
| 24.8 | 21.9 | 25.2 | 22.7 | 25.0 | 23.2 | 24.5 | 23.1 | 23.8 | 22.8 | | | | | | |
| 21.7 | 13.1 | 21.8 | 14.0 | 21.5 | 14.0 | 21.1 | 13.5 | 20.7 | 13.9 | | | | | | |
| 20 | 8.6 | 20 | 11.1 | 19 | 10.9 | 20 | 10.1 | 19 | 5.9 | | | | | 18 | 2.8 |
| **ATOLL** | | | | | | | | | | | | | | | |
| 27.4 | 26.1 | 27.6 | 26.1 | 27.1 | -- | -- | -- | -- | -- | -- | -- | 28 | 27.5* | 22* | 25.1* |
| 27.4 | 26.1 | 27.6 | 26.2 | 27.3 | 26.2 | 26.7 | 26.1 | 25.7 | 26.1 | 26.3 | 26.1 | 31 | 27.4 | 23 | 25.2 |
| 27.6 | 26.5 | 27.7 | 26.6 | 27.6 | 26.5 | 26.9 | 26.4 | 25.8 | 26.2 | 26.2 | 26.4 | 31 | 28.2 | 21 | 23.1 |
| 27.6 | 26.2 | 27.5 | 26.1 | 27.4 | 26.1 | 26.7 | 26.2 | 25.8 | 25.8 | 26.3 | 26.1 | 28 | 27.3 | 24 | 25.4 |
| 27.1 | 26.1 | 27.2 | 26.3 | 27.0 | 26.1 | 26.2 | 26.3 | 25.6 | 26.0 | 26.2 | 26.1 | 28 | 27.1 | 25 | 24.9 |
| 27.2 | -- | 27.2 | 26.3 | 27.1 | 26.3 | 25.0 | 26.2 | 24.3 | 26.3 | 26.2 | -- | 29 | 27.7* | 22 | 25.3* |
| 26.8 | 26.5 | 27.5 | 26.5 | 27.2 | 26.2 | 26.9 | 26.1 | 26.3 | 26.2 | 25.8 | 26.3 | 28 | 27.2 | 23 | 24.3 |
| 27.3 | 26.5 | 27.3 | 26.8 | 26.9 | 26.8 | 26.4 | 26.7 | 26.1 | 26.2 | 26.2 | 26.4 | 28 | 27.2 | 24 | 25.6 |
| 27.4 | 26.3 | 27.6 | 26.4 | 27.3 | 26.3 | 26.6 | 26.3 | 25.7 | 26.1 | 26.2 | 26.2 | | | | |
| 29 | 27.6 | 29 | 27.9 | 31 | 27.9 | 29 | 27.8 | 27 | 28.0 | | | 31 | 28.2 | | |
| 28.2 | 26.8 | 28.3 | 26.9 | 28.4 | 26.9 | 27.6 | 27.0 | 26.6 | 26.8 | | | | | | |
| 26.6 | 25.8 | 26.6 | 25.9 | 26.5 | 25.9 | 25.5 | 25.8 | 24.5 | 25.3 | | | | | | |
| 26 | 24.9 | 24 | 25.1 | 26 | 24.9 | 24 | 25.4 | 22 | 23.1 | | | | | 21 | 23.1 |
| **ISLAND** | | | | | | | | | | | | | | | |
| 28.9 | 27.1 | 28.4 | 27.1 | 28.8 | 27.4 | 28.6 | 27.4 | 27.9 | 27.0 | 28.6 | 26.8 | 32 | 28.8 | 24 | 20.2 |
| 28.3 | 27.1 | 27.7 | 27.2 | 27.7 | 27.2 | 27.1 | 27.2 | 27.2 | 27.4 | 27.8 | 27.2 | 30 | 28.4 | 25 | 25.5 |
| 27.6 | 27.0 | 27.2 | 27.2 | 26.8 | 26.9 | 27.1 | 27.4 | 26.8 | 27.7 | 27.5 | 27.3 | 29 | 29.0 | 26 | 26.2 |
| 27.7 | 26.2 | 26.9 | 26.7 | 26.9 | 27.2 | 26.3 | 27.3 | 26.2 | 27.1 | 27.0 | 27.2 | 29 | 29.1 | 25 | 25.2 |
| 28.5 | 27.3 | 28.8 | 27.2 | 28.6 | 27.2 | 28.6 | 27.2 | 27.9 | 27.1 | 28.0 | 27.4 | 30 | 29.2 | 25 | 26.4 |
| 26.3 | 27.5 | 26.3 | 27.5 | 26.1 | 27.4 | 25.6 | 27.5 | 26.0 | 27.6 | 26.9 | 27.1 | 30 | 28.5 | 24 | 23.0 |
| 28.1 | 27.0 | 27.8 | 27.1 | 27.8 | 27.2 | 27.6 | 27.3 | 27.3 | 27.2 | 27.9 | 27.0 | | | | |
| 30 | 28.4 | 30 | 28.3 | 31 | 28.3 | 31 | 28.5 | 31 | 28.4 | | | 32 | 29.2 | | |
| 28.9 | 27.7 | 28.9 | 27.8 | 28.8 | 27.9 | 28.6 | 28.0 | 28.6 | 27.8 | | | | | | |
| 26.7 | 26.4 | 26.6 | 26.5 | 26.6 | 26.7 | 26.1 | 26.6 | 26.1 | 26.3 | | | | | | |
| 26 | 25.4 | 26 | 25.2 | 25 | 26.3 | 24 | 26.3 | 25 | 24.1 | | | | | 24 | 20.2 |
| **PHOENIX ISLANDS** | | | | | | | | | | | | | | | |
| 28.2 | 26.7 | 28.2 | 26.8 | 28.3 | 26.8 | 28.4 | 26.9 | 28.3 | 26.9 | 28.4 | 26.9 | 30 | 27.9 | 26 | 26.0 |
| 28.3 | 26.9 | 28.3 | 26.8 | 28.4 | 26.9 | 28.4 | 26.9 | 28.5 | 26.9 | 28.5 | 26.9 | 34 | 28.7 | 26 | 26.0 |
| 28.1 | 27.0 | 28.0 | 27.1 | 28.3 | 27.3 | 28.6 | 27.2 | 28.4 | 27.0 | 28.0 | 26.8 | 29 | 27.7 | 27 | 26.3 |
| 28.2 | 26.7 | 28.1 | 26.8 | 28.1 | 26.9 | 28.2 | 26.8 | 27.9 | 27.0 | -- | -- | 29* | 27.8* | 27 | 26.4* |
| 28.2 | 26.8 | 27.6 | 26.6 | 27.9 | 26.5 | 27.7 | 26.7 | 28.0 | 26.8 | 27.9 | 26.7 | 29 | 27.2 | 27 | 26.1 |
| 28.8 | 26.5 | 29.0 | 26.5 | 29.2 | 26.5 | 29.7 | 26.8 | 29.8 | 26.8 | 28.6 | 26.8 | 30 | 27.6 | 27 | 26.2 |
| 27.4 | 26.5 | 27.3 | 26.7 | 27.3 | 26.6 | 26.9 | 26.6 | 27.1 | 26.5 | 27.9 | 26.7 | 30 | 27.6 | 27 | 26.2 |
| 28.2 | 26.8 | 28.2 | 26.8 | 28.3 | 26.8 | 28.4 | 26.9 | 28.3 | 26.9 | 28.3 | 26.8 | | | | |
| 30 | 27.6 | 31 | 27.6 | 31 | 27.8 | 32 | 28.7 | 34 | 28.4 | | | 34 | 28.7 | | |
| 28.7 | 27.1 | 28.8 | 27.2 | 28.7 | 27.2 | 29.2 | 27.3 | 29.1 | 27.3 | | | | | | |
| 27.8 | 26.5 | 27.5 | 26.4 | 27.7 | 26.6 | 27.8 | 26.6 | 27.6 | 26.5 | | | | | | |
| 26 | 26.2 | 26 | 26.0 | 27 | 26.2 | 26 | 26.2 | 26 | 26.1 | | | | | 26 | 26.0 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | PAGO PAGO, | |
| 1950-1954 | 27.9 | 25.7 | 28.0 | 25.9 | 28.3 | 25.9 | 28.8 | 25.8 | 28.8 | 25.5 | 28.8 | 25.6 | 28.3 | 25.8 |
| 1955-1959 | 29.1 | 25.8 | 28.9 | 25.7 | 29.1 | 26.0 | 29.1 | 25.8 | 28.9 | 25.7 | 29.0 | 25.6 | 27.7 | 26.0 |
| 1960 | 29.2 | 25.0 | 29.2 | 25.2 | 29.2 | 25.3 | 29.5 | 25.3 | 28.6 | 25.1 | 28.1 | 25.2 | 27.3 | 25.0 |
| 1961 | 29.5 | 25.9 | 29.6 | 25.9 | 28.2 | 25.3 | 28.4 | 25.4 | 28.6 | 25.6 | 27.6 | 25.2 | 27.6 | 25.7 |
| 1962 | 28.7 | 25.1 | 28.2 | 25.2 | 28.8 | 25.4 | 29.2 | 25.4 | 28.6 | 24.9 | 28.2 | 25.2 | 27.7 | 24.9 |
| 1963 | 28.6 | 25.7 | 28.9 | 25.8 | 28.6 | 25.5 | 28.9 | 24.8 | 28.6 | 24.9 | 27.8 | 25.6 | 27.4 | 25.9 |
| 1964 | 28.9 | 26.2 | 29.3 | 25.7 | 29.4 | 25.8 | 29.3 | 25.8 | 28.6 | 25.4 | 27.4 | 24.4 | 27.4 | 24.9 |
| Mean | 28.7 | 25.7 | 28.7 | 25.7 | 28.8 | 25.7 | 28.9 | 25.6 | 28.4 | 25.4 | 27.7 | 25.4 | 27.3 | 25.7 |
| Maximum | 31 | 26.7 | 31 | 26.8 | 32 | 27.3 | 31 | 26.9 | 30 | 27.1 | 30 | 27.0 | 29 | 27.4 |
| Mean Max. | 29.9 | 26.3 | 29.9 | 26.3 | 30.1 | 26.3 | 29.8 | 26.1 | 29.3 | 26.1 | 28.8 | 26.0 | 28.3 | 26.2 |
| Mean Min. | 27.3 | 24.0 | 27.4 | 24.5 | 27.3 | 24.1 | 27.9 | 24.4 | 27.3 | 23.2 | 26.7 | 24.1 | 26.4 | 24.3 |
| Minimum | 24 | 14.9 | 24 | 23.0 | 24 | 19.5 | 26 | 23.1 | 25 | 12.3 | 24 | 22.3 | 23 | 20.1 |
| | | | | | | | | | | | | | APIA (observatory), | |
| 1945-1949 | 29.2 | 25.9 | 29.1 | 26.2 | 29.3 | 25.9 | 29.3 | 25.8 | 28.8 | 25.6 | 28.3 | 26.0 | 27.7 | 26.2 |
| 1950-1954 | 29.1 | 26.9 | 29.2 | 26.9 | 29.3 | 26.6 | 29.2 | 26.4 | 28.6 | 26.4 | 27.9 | 26.4 | 27.3 | 26.7 |
| 1955-1959 | 29.1 | 26.8 | 29.1 | 26.6 | 29.1 | 26.4 | 29.1 | 26.6 | 28.8 | 26.8 | 28.0 | 26.7 | 27.7 | 26.9 |
| 1960 | 29.7 | 26.4 | 29.7 | 26.8 | 29.9 | 26.5 | 29.9 | 26.7 | 29.4 | 26.6 | 28.8 | 26.7 | 28.3 | 26.9 |
| 1961 | 29.8 | 27.2 | 29.8 | 27.2 | 28.5 | 26.6 | 29.3 | 26.5 | 29.4 | 26.7 | 28.7 | 26.7 | 28.3 | 26.7 |
| 1962 | 29.2 | 26.8 | 28.9 | 26.7 | 29.3 | 26.5 | 29.6 | 26.5 | 29.0 | 26.5 | 28.4 | 26.7 | 28.1 | 26.9 |
| 1963 | 28.8 | 27.4 | 29.0 | 27.3 | 28.4 | 27.1 | 28.7 | 27.0 | 28.7 | 27.2 | 28.1 | 27.3 | 27.6 | 27.2 |
| 1964 | 30.3 | 28.2 | 30.7 | 28.5 | 30.8 | 27.8 | 30.9 | 27.8 | 30.2 | 27.5 | 28.2 | 26.3 | 27.8 | 26.6 |
| Mean | 29.2 | 26.9 | 29.3 | 26.9 | 29.3 | 26.6 | 29.3 | 26.6 | 28.9 | 26.6 | 28.2 | 26.6 | 27.7 | 26.8 |
| Maximum | 35 | 29.6 | 35 | 29.5 | 34 | 28.9 | 34 | 32.5 | 33 | 28.7 | 30 | 28.4 | 30 | 28.1 |
| Mean Max. | 30.7 | 27.7 | 30.5 | 27.7 | 30.7 | 27.5 | 30.4 | 27.6 | 29.9 | 27.1 | 29.2 | 27.2 | 28.6 | 27.2 |
| Mean Min. | 27.7 | 25.6 | 27.9 | 25.6 | 27.9 | 23.8 | 28.3 | 25.2 | 27.8 | 25.7 | 27.2 | 25.7 | 26.7 | 26.0 |
| Minimum | 27 | 19.2 | 27 | 22.0 | 26 | 17.4 | 27 | 21.0 | 27 | 24.2 | 26 | 24.3 | 26 | 24.5 |
| | | | | | | | | | | | | | FUNAFUTI ATOLL, | |
| 1961 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 28.8 | 25.7 |
| 1962 | 30.3 | 26.1 | 29.8 | 25.9 | 30.2 | 26.0 | 30.3 | 26.1 | 30.6 | 26.2 | 30.6 | 26.1 | 29.8 | 26.0 |
| 1963 | 30.3 | 26.0 | 29.8 | 25.9 | 30.2 | 26.2 | 29.8 | 26.0 | 29.7 | 26.0 | 29.4 | 26.0 | 29.3 | 26.0 |
| 1964 | 30.2 | 26.2 | 29.9 | 26.1 | 29.9 | 26.3 | 29.9 | 26.2 | 29.5 | 26.1 | 29.4 | 26.0 | 29.0 | 26.2 |
| Mean | 30.3 | 26.1 | 29.8 | 26.0 | 30.1 | 26.2 | 30.0 | 26.1 | 29.9 | 26.1 | 29.8 | 26.0 | 29.2 | 26.0 |
| Maximum | 31 | 26.6 | 31 | 26.6 | 31 | 27.4 | 31 | 26.5 | 31 | 26.7 | 32 | 26.6 | 31 | 27.3 |
| Mean Max. | 31.1 | 26.5 | 31.1 | 26.4 | 30.9 | 26.9 | 31.1 | 26.4 | 30.9 | 26.6 | 30.6 | 26.5 | 30.1 | 26.6 |
| Mean Min. | 29.1 | 25.6 | 28.3 | 25.3 | 28.9 | 25.5 | 28.7 | 25.6 | 28.2 | 25.4 | 28.7 | 25.5 | 28.3 | 25.4 |
| Minimum | 29 | 25.3 | 28 | 25.2 | 29 | 25.3 | 28 | 25.4 | 27 | 24.9 | 28 | 25.3 | 28 | 25.2 |
| | | | | | | | | | | | GUADALCANAL I. (Kukum), | | | |
| 1947-1949 | 29.4 | 25.4 | 29.7 | 25.5 | 29.4 | 25.5 | 30.0 | 25.3 | 29.9 | 25.2 | 29.3 | 25.2 | 28.8 | 25.4 |
| | | | | | | | | | | | | | ADMIRALTY ISLANDS | |
| 1947-1948 | -- | -- | 29.6 | -- | 29.3 | -- | 30.0 | -- | 29.4 | -- | 29.5 | -- | 29.1 | -- |
| | | | | | | | | | | | | | WAKE | |
| 1950-1954 | 24.8 | 26.1 | 25.2 | 26.2 | 24.8 | 26.4 | 26.0 | 26.4 | 27.1 | 26.3 | 28.2 | 26.3 | 28.3 | 26.3 |
| 1955-1959 | 23.8 | 26.0 | 24.0 | 26.1 | 24.8 | 26.2 | 25.1 | 26.1 | 26.1 | 26.1 | 27.9 | 26.3 | 28.2 | 26.6 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| AMERICAN SAMOA | | | | | | | | | | | | | | | |
| 28.2 | 25.8 | 28.2 | 25.9 | 28.3 | 25.7 | 28.4 | 25.4 | 28.3 | 25.6 | 28.4 | 25.7 | 32 | 27.3 | 22 | 12.3 |
| 27.4 | 25.8 | 27.3 | 25.8 | 27.9 | 25.9 | 28.4 | 25.7 | 28.7 | 25.7 | 28.5 | 25.8 | 31 | 27.4 | 26 | 22.3 |
| 26.9 | 24.8 | 27.6 | 25.9 | 27.6 | 25.8 | 28.8 | 25.9 | 29.3 | 25.9 | 28.4 | 25.4 | 30 | 26.4 | 26 | 22.4 |
| 27.1 | 25.5 | 27.3 | 25.8 | 27.5 | 25.7 | 27.8 | 25.6 | 28.6 | 25.8 | 28.2 | 25.6 | 31 | 36.4 | 27 | 19.5 |
| 27.1 | 25.1 | 27.6 | 25.3 | 27.3 | 25.5 | 27.9 | 25.5 | 28.1 | 25.0 | 28.1 | 25.2 | 30 | 26.2 | 27 | 14.9 |
| 27.2 | 25.5 | 27.7 | 25.6 | 27.3 | 24.5 | 27.9 | 25.3 | 28.6 | 25.9 | 28.1 | 25.4 | 30 | 26.6 | 24 | 15.8 |
| 27.2 | 25.3 | 27.4 | 25.0 | 28.0 | 24.8 | 28.2 | 25.9 | 27.9 | 25.5 | 28.2 | 25.4 | 30 | 26.5 | 26 | 21.1 |
| 27.1 | 25.6 | 27.3 | 25.8 | 27.5 | 25.7 | 28.0 | 25.6 | 28.4 | 25.6 | 28.1 | 25.6 | | | | |
| 29 | 27.1 | 31 | 26.9 | 30 | 27.0 | 31 | 26.7 | 31 | 27.2 | | | 32 | 27.4 | | |
| 27.9 | 26.2 | 28.2 | 26.3 | 28.7 | 26.3 | 29.4 | 26.4 | 29.6 | 26.3 | | | | | | |
| 26.3 | 24.4 | 26.2 | 24.4 | 26.4 | 23.8 | 26.9 | 23.7 | 27.1 | 23.7 | | | | | | |
| 24 | 22.4 | 24 | 21.1 | 24 | 15.8 | 24 | 20.7 | 22 | 18.1 | | | | | 22 | 12.3 |
| WESTERN SAMOA | | | | | | | | | | | | | | | |
| 27.6 | 26.4 | 28.0 | 26.6 | 28.4 | 26.6 | 29.2 | 26.5 | 29.2 | 26.2 | 28.7 | 26.2 | 31 | 27.4 | 26 | 19.2 |
| 27.4 | 26.8 | 28.1 | 27.0 | 28.2 | 27.0 | 28.7 | 27.0 | 28.9 | 27.0 | 28.5 | 26.8 | 31 | 28.7 | 25 | 20.9 |
| 27.6 | 26.8 | 27.8 | 27.1 | 28.6 | 27.1 | 29.2 | 26.8 | 29.0 | 26.8 | 28.6 | 26.8 | 32 | 28.3 | 26 | 17.4 |
| 28.4 | 27.0 | 28.5 | 27.2 | 28.6 | 27.2 | 29.7 | 27.1 | 29.9 | 27.1 | 29.2 | 26.8 | 31 | 28.6 | 28 | 25.7 |
| 28.2 | 26.9 | 28.0 | 27.1 | 28.3 | 27.1 | 28.7 | 27.0 | 29.2 | 27.0 | 28.8 | 26.9 | 31 | 28.6 | 26 | 24.2 |
| 27.7 | 26.8 | 27.9 | 27.0 | 27.8 | 27.0 | 28.4 | 27.3 | -- | -- | -- | -- | 31* | 27.6* | 27* | 23.4* |
| 28.9 | 27.8 | 29.4 | 27.8 | 30.1 | 28.4 | 29.3 | 27.8 | 29.8 | 28.1 | 28.9 | 27.5 | 35 | 29.5 | 27 | 22.9 |
| 27.7 | 26.8 | 28.2 | 26.7 | 28.7 | 26.8 | 28.8 | 27.1 | 28.6 | 27.4 | 29.2 | 27.3 | 35 | 32.5 | 26 | 24.6 |
| 27.7 | 26.8 | 28.1 | 27.0 | 28.5 | 27.1 | 29.0 | 27.0 | 29.1 | 27.0 | 28.7 | 26.8 | | | | |
| 30 | 29.1 | 33 | 29.1 | 32 | 29.4 | 32 | 29.9 | 35 | 30.9 | | | 35 | 32.5 | | |
| 28.7 | 27.5 | 29.5 | 27.6 | 29.9 | 27.7 | 30.4 | 27.9 | 30.7 | 27.8 | | | | | | |
| 26.8 | 26.0 | 27.0 | 26.3 | 27.3 | 25.9 | 27.7 | 26.2 | 27.6 | 25.7 | | | | | | |
| 25 | 24.6 | 26 | 24.2 | 26 | 21.1 | 26 | 25.0 | 26 | 23.6 | | | | | 25 | 17.4 |
| ELLICE ISLANDS | | | | | | | | | | | | | | | |
| 28.9 | 25.7 | 28.9 | 25.8 | 29.6 | 26.0 | 29.7 | 26.0 | 30.1 | 26.0 | -- | -- | 32* | 26.7* | 26* | 25.2* |
| 29.8 | 26.0 | 30.1 | 26.1 | 29.9 | 26.0 | 30.0 | 26.0 | 29.8 | 25.9 | 30.1 | 26.0 | 32 | 26.6 | 28 | 25.2 |
| 29.1 | 25.9 | 29.4 | 26.0 | 29.7 | 26.0 | 30.1 | 26.2 | 30.1 | 26.2 | 29.7 | 26.0 | 31 | 26.6 | 27 | 24.9 |
| 28.9 | 26.6 | 29.3 | 26.8 | 29.7 | 27.2 | 29.4 | 27.1 | 29.3 | 27.0 | 29.5 | 26.5 | 31 | 28.6 | 27 | 24.7 |
| 29.2 | 26.0 | 29.4 | 26.2 | 29.7 | 26.3 | 29.8 | 26.3 | 29.8 | 26.3 | 29.8 | 26.1 | | | | |
| 31 | 27.6 | 31 | 27.6 | 31 | 28.5 | 31 | 28.6 | 32 | 28.4 | | | 32 | 28.6 | | |
| 30.3 | 26.7 | 30.3 | 26.7 | 30.7 | 26.8 | 31.0 | 27.0 | 31.2 | 27.0 | | | | | | |
| 28.1 | 25.6 | 28.1 | 25.6 | 28.8 | 25.8 | 28.2 | 25.6 | 28.2 | 25.3 | | | | | | |
| 27 | 25.3 | 26 | 25.3 | 28 | 25.4 | 28 | 25.3 | 28 | 24.7 | | | | | 26 | 24.7 |
| SOLOMON ISLANDS | | | | | | | | | | | | | | | |
| 28.7 | 25.5 | 29.0 | 25.6 | 29.1 | 25.6 | 29.7 | 25.5 | 29.9 | 25.3 | 29.4 | 25.4 | 32 | 26.2* | 28 | 20.4* |
| (Seeadler Harbor) | | | | | | | | | | | | | | | |
| 29.6 | -- | 29.3 | -- | 28.9 | -- | -- | -- | -- | -- | -- | -- | 31 | -- | 27 | -- |
| ISLAND | | | | | | | | | | | | | | | |
| 28.3 | 26.0 | 28.1 | 25.8 | 27.6 | 25.6 | 26.7 | 25.8 | 25.7 | 25.7 | 26.7 | 26.1 | 33 | 28.4 | 22 | 22.5 |
| 28.5 | 26.2 | 28.2 | 26.0 | 27.6 | 26.0 | 25.8 | 25.9 | 25.2 | 26.0 | 26.3 | 26.1 | 31 | 27.9 | 18 | 22.0 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | WAKE |
| 1960 | 25.6 | 26.3 | 25.0 | 26.3 | 26.5 | 26.3 | 26.3 | 26.0 | 27.2 | 26.4 | 28.4 | 26.6 | 28.3 | 26.4 |
| 1961 | 25.1 | 26.4 | 26.1 | 26.6 | 25.8 | 26.3 | 25.1 | 26.6 | 25.9 | 26.8 | 27.8 | 26.8 | 27.7 | 26.4 |
| 1962 | 24.9 | 26.3 | 24.4 | 26.3 | 24.4 | 26.5 | 26.1 | 26.6 | 26.9 | 26.8 | 27.5 | 26.3 | 28.1 | 26.0 |
| 1963 | 26.1 | 26.2 | 25.7 | 26.3 | 26.4 | 26.4 | 24.4 | 26.2 | 26.3 | 26.2 | 27.7 | 26.2 | 28.3 | 26.4 |
| 1964 | 25.0 | 26.0 | 24.7 | 26.2 | 25.7 | 26.2 | 24.8 | 26.2 | 26.7 | 26.3 | 27.9 | 26.1 | 27.8 | 26.0 |
| Mean | 24.7 | 26.1 | 24.8 | 26.2 | 25.2 | 26.3 | 25.4 | 26.3 | 26.6 | 26.3 | 28.0 | 26.3 | 28.2 | 26.4 |
| Maximum | 28 | 27.6 | 27 | 27.6 | 28 | 27.6 | 28 | 28.4 | 30 | 27.9 | 31 | 27.7 | 32 | 27.6 |
| Mean Max. | 26.2 | 26.8 | 26.3 | 26.9 | 26.9 | 27.0 | 26.9 | 27.1 | 28.1 | 27.1 | 29.3 | 27.1 | 29.5 | 26.9 |
| Mean Min. | 22.6 | 25.0 | 23.0 | 25.0 | 23.4 | 24.9 | 23.9 | 25.0 | 25.1 | 25.0 | 26.8 | 25.3 | 26.9 | 25.5 |
| Minimum | 18 | 23.3 | 21 | 22.0 | 22 | 22.4 | 22 | 22.8 | 23 | 23.5 | 26 | 23.8 | 26 | 24.7 |
| | | | | | | | | | | | | | | KWAJALEIN ATOLL, |
| 1949 | -- | -- | 27.2 | 25.9 | 27.1 | 25.8 | 27.2 | 25.8 | 27.6 | 25.6 | 28.0 | 25.3 | 28.7 | 25.6 |
| 1950-1954 | 26.7 | 25.3 | 26.9 | 25.6 | 27.9 | 25.7 | 27.8 | 25.7 | 28.1 | 25.8 | 28.1 | 25.7 | 28.0 | 25.7 |
| 1955-1959 | 27.6 | 25.9 | 27.3 | 26.2 | 27.6 | 26.1 | 27.6 | 26.3 | 27.6 | 26.2 | 28.0 | 26.1 | 28.4 | 26.1 |
| 1960 | 27.1 | 25.8 | 27.1 | 26.1 | 27.8 | 26.2 | 27.5 | 25.9 | 27.7 | 26.2 | 28.0 | 26.2 | 28.4 | 26.1 |
| 1961 | 27.9 | 25.8 | 28.1 | 25.8 | 28.3 | 25.6 | 28.3 | 25.6 | 28.4 | 25.5 | 28.7 | 25.8 | 28.8 | 25.3 |
| 1962 | 27.9 | 25.6 | 28.1 | 25.7 | 28.0 | 26.1 | 28.5 | 25.9 | 28.5 | 26.4 | 28.7 | 26.0 | 28.8 | 26.2 |
| 1963 | 27.4 | 25.7 | 27.2 | 25.6 | 27.6 | 25.9 | 28.2 | 25.9 | 28.9 | 25.9 | 28.9 | 25.8 | 28.9 | 25.7 |
| 1964 | 27.3 | 25.9 | 27.0 | 26.1 | 27.3 | 26.3 | 26.2 | 25.4 | 28.2 | 26.2 | 28.6 | 26.3 | 28.6 | 26.3 |
| Mean | 27.3 | 25.6 | 27.2 | 25.9 | 27.7 | 26.0 | 27.7 | 25.9 | 28.0 | 26.0 | 28.2 | 25.9 | 28.7 | 25.9 |
| Maximum | 29 | 26.8 | 31 | 26.8 | 31 | 27.6 | 32 | 27.6 | 31 | 27.0 | 31 | 27.8 | 33 | 27.2 |
| Mean Max. | 28.3 | 26.3 | 28.3 | 26.3 | 28.7 | 26.6 | 28.9 | 26.4 | 29.0 | 26.5 | 29.3 | 26.6 | 29.7 | 26.5 |
| Mean Min. | 26.4 | 25.0 | 26.3 | 25.4 | 26.6 | 25.2 | 26.7 | 25.2 | 27.0 | 25.4 | 27.0 | 24.7 | 27.4 | 25.0 |
| Minimum | 24 | 24.1 | 24 | 24.4 | 26 | 21.8 | 26 | 24.0 | 26 | 24.5 | 26 | 19.9 | 26 | 23.8 |
| | | | | | | | | | | | | | | ENIWETOK ATOLL, |
| 1951-1954 | 26.8 | 25.6 | 26.7 | 25.7 | 26.7 | 25.6 | 27.1 | 25.6 | 27.4 | 25.8 | 28.2 | 25.7 | 28.7 | 25.6 |
| 1955-1959 | 28.4 | 26.1 | 28.2 | 26.0 | 27.7 | 26.0 | 27.7 | 26.0 | 27.9 | 26.0 | 28.3 | 26.0 | 28.7 | 26.1 |
| 1960 | 28.1 | 25.8 | 27.7 | 25.6 | 27.9 | 25.7 | 28.2 | 25.9 | 28.2 | 26.0 | 28.6 | 26.0 | 29.0 | 26.3 |
| 1961 | 27.4 | 25.7 | 27.2 | 25.7 | 27.1 | 25.8 | 27.4 | 25.8 | 27.4 | 25.6 | 27.9 | 25.4 | 28.3 | 25.7 |
| 1962 | 26.9 | 25.7 | 27.0 | 25.7 | 26.5 | 25.8 | 27.0 | 25.8 | 28.1 | 26.1 | 28.9 | 26.0 | 28.2 | 26.0 |
| 1963 | 26.8 | 25.8 | 26.7 | 25.5 | 26.9 | 25.8 | 27.2 | 25.8 | 27.9 | 25.8 | 28.2 | 26.0 | 28.3 | 25.5 |
| 1964 | 26.8 | 25.7 | 26.7 | 25.7 | 26.6 | 25.7 | 26.9 | 25.9 | 28.7 | 26.2 | 28.4 | 26.1 | 28.4 | 25.9 |
| Mean | 27.5 | 25.8 | 27.3 | 25.7 | 27.2 | 25.8 | 27.4 | 25.8 | 27.8 | 25.9 | 28.3 | 25.9 | 28.6 | 25.9 |
| Maximum | 30 | 26.9 | 30 | 26.7 | 29 | 27.1 | 30 | 27.1 | 30 | 27.3 | 31 | 26.9 | 30 | 27.1 |
| Mean Max. | 28.4 | 26.3 | 28.3 | 26.1 | 28.0 | 26.2 | 28.7 | 26.4 | 28.8 | 26.3 | 29.2 | 26.3 | 29.4 | 26.3 |
| Mean Min. | 26.3 | 25.4 | 26.4 | 25.4 | 26.2 | 25.4 | 26.3 | 25.4 | 26.9 | 25.5 | 27.5 | 25.4 | 27.3 | 25.4 |
| Minimum | 24 | 25.0 | 26 | 25.0 | 24 | 25.0 | 24 | 24.0 | 26 | 25.0 | 27 | 24.7 | 26 | 24.6 |
| | | | | | | | | | | | | | | TRUK ISLANDS (Moen Island), |
| 1949 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 28.6 | 25.1 |
| 1950-1954 | 27.9 | 25.4 | 27.8 | 25.6 | 27.9 | 25.6 | 28.4 | 25.4 | 28.6 | 25.5 | 28.8 | 25.3 | 29.2 | 25.2 |
| 1955-1959 | 27.5 | 25.9 | 27.2 | 26.0 | 27.5 | 26.1 | 27.9 | 25.9 | 28.2 | 25.8 | 28.4 | 25.8 | 28.7 | 25.6 |
| 1960 | -- | -- | -- | -- | 28.1 | 25.7 | 28.3 | 25.8 | 28.8 | 25.5 | 28.7 | 25.4 | 29.0 | 25.5 |
| 1961 | 28.3 | 25.1 | 28.2 | 25.3 | 28.2 | 25.4 | 28.5 | 25.4 | 28.8 | 25.4 | 29.2 | 25.5 | 29.0 | 25.0 |
| 1962 | 27.9 | 25.3 | 27.7 | 25.8 | 27.6 | 25.2 | 28.2 | 25.5 | 28.5 | 25.6 | 29.0 | 25.6 | 28.7 | 24.8 |
| 1963 | 28.2 | 25.0 | 28.1 | 25.1 | 28.0 | 25.2 | 28.3 | 25.3 | 28.7 | 25.2 | 29.3 | 25.0 | 29.3 | 25.0 |
| 1964 | 27.8 | 25.4 | -- | -- | 28.0 | 26.0 | 28.5 | 26.0 | 30.6 | 26.8 | 29.3 | 25.6 | 29.4 | 25.1 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **ISLAND - continued** | | | | | | | | | | | | | | | |
| 28.8 | 26.5 | 28.8 | 26.3 | 27.8 | 26.2 | 26.2 | 26.3 | 25.7 | 26.1 | 27.0 | 26.3 | 30 | 27.2 | 24 | 25.5 |
| -- | -- | 28.2 | 26.2 | 27.2 | 26.0 | 25.9 | 26.1 | 25.4 | 26.1 | -- | -- | 29* | 27.1* | 22 | 25.4* |
| 28.4 | 25.9 | 28.6 | 26.0 | 27.0 | 25.6 | 26.3 | 26.0 | 25.1 | 26.1 | 26.5 | 26.2 | 29 | 27.4 | 22 | 25.3 |
| 28.7 | 26.2 | 28.6 | 26.1 | 28.0 | 26.0 | 27.2 | 26.0 | 25.2 | 26.1 | 26.9 | 26.2 | 30 | 26.8 | 22 | 25.1 |
| 28.4 | 26.0 | 28.1 | 25.7 | 27.7 | 25.9 | 27.4 | 26.0 | 25.4 | 26.1 | 26.6 | 26.1 | 29 | 26.7 | 22 | 25.2 |
| 28.4 | 26.1 | 28.3 | 25.9 | 27.6 | 25.9 | 26.4 | 25.9 | 25.4 | 25.9 | 26.6 | 26.1 | | | | |
| 33 | 27.2 | 31 | 27.3 | 32 | 27.6 | 29 | 27.7 | 28 | 27.2 | | | 33 | 28.4 | | |
| 30.0 | 26.8 | 29.4 | 26.7 | 29.2 | 26.7 | 27.6 | 26.7 | 26.6 | 26.6 | | | | | | |
| 27.2 | 25.3 | 27.3 | 24.9 | 26.2 | 24.7 | 25.0 | 24.7 | 23.8 | 24.7 | | | | | | |
| 26 | 24.0 | 26 | 23.3 | 25 | 22.9 | 23 | 22.5 | 23 | 23.0 | | | | | 18 | 22.0 |
| **MARSHALL ISLANDS** | | | | | | | | | | | | | | | |
| 28.6 | 25.3 | 28.4 | 25.4 | 28.5 | 25.4 | 27.7 | 25.3 | 26.3 | 25.0 | -- | -- | 29 | 26.3* | 24* | 23.4* |
| 28.4 | 26.0 | 29.2 | 25.8 | 29.1 | 25.8 | 28.5 | 25.6 | 27.9 | 25.4 | 28.0 | 25.7 | 34 | 27.3 | 24 | 15.8 |
| 28.7 | 26.1 | 28.9 | 25.7 | 29.2 | 25.7 | 28.6 | 25.7 | 28.2 | 25.8 | 28.1 | 26.0 | 32 | 27.6 | 26 | 19.7 |
| -- | -- | 29.4 | 25.8 | 29.4 | 25.7 | 28.6 | 25.5 | 28.5 | 25.6 | -- | -- | 31* | 27.0* | 26 | 23.4* |
| 29.1 | 25.6 | 29.3 | 25.1 | 29.4 | 25.1 | 29.0 | 25.4 | 28.3 | 25.7 | 28.6 | 25.5 | 31 | 27.8 | 27 | 23.1 |
| 28.9 | 26.2 | 28.6 | 26.0 | 28.9 | 26.0 | 28.3 | 25.6 | 27.8 | 25.8 | 28.4 | 26.0 | 29 | 27.6 | 27 | 24.4 |
| 29.1 | 25.6 | 29.6 | 25.7 | 29.3 | 25.4 | 28.9 | 25.6 | 27.8 | 25.8 | 28.5 | 25.7 | 31 | 26.5 | 27 | 24.3 |
| 28.7 | 26.2 | 28.6 | 26.0 | 28.7 | 25.6 | 28.3 | 25.9 | 27.8 | 26.1 | 27.9 | 26.0 | 29 | 27.6 | 27 | 24.2 |
| 28.7 | 25.9 | 29.1 | 25.7 | 29.1 | 25.7 | 28.5 | 25.6 | 27.9 | 25.6 | 28.2 | 25.8 | | | | |
| 34 | 27.6 | 34 | 27.6 | 31 | 26.8 | 31 | 27.2 | 31 | 27.2 | | | 34 | 27.8 | | |
| 30.1 | 26.6 | 30.3 | 26.5 | 30.2 | 26.2 | 29.6 | 26.3 | 29.0 | 26.2 | | | | | | |
| 27.6 | 25.1 | 27.8 | 24.3 | 27.9 | 24.4 | 27.4 | 24.2 | 26.8 | 24.3 | | | | | | |
| 26 | 23.4 | 27 | 19.7 | 27 | 22.4 | 27 | 22.3 | 24 | 15.8 | | | | | 24 | 15.8 |
| **MARSHALL ISLANDS** | | | | | | | | | | | | | | | |
| 28.8 | 25.8 | 28.9 | 25.8 | 28.7 | 25.7 | 28.2 | 25.6 | 28.3 | 25.6 | 27.9 | 25.7 | 30 | 26.7 | 24 | 24.4 |
| 29.0 | 26.2 | 29.2 | 26.1 | 29.1 | 26.0 | 28.7 | 25.8 | 28.6 | 26.0 | 28.5 | 26.0 | 31 | 27.1 | 25 | 23.8 |
| 28.9 | 25.9 | 28.2 | 25.7 | 28.4 | 25.7 | 28.9 | 25.8 | 27.6 | 25.5 | 28.3 | 25.8 | 30 | 26.9 | 27 | 25.0 |
| 28.8 | 25.9 | 28.6 | 25.7 | 28.1 | 25.5 | 27.7 | 25.6 | 27.2 | 25.8 | 27.8 | 25.7 | 30 | 26.5 | 26 | 24.8 |
| 29.1 | 26.5 | 28.9 | 26.1 | 28.6 | 25.5 | 28.3 | 25.9 | 27.5 | 25.5 | 27.9 | 25.9 | 30 | 28.0 | 24 | 24.0 |
| 28.7 | 25.6 | -- | -- | -- | -- | 28.1 | 25.4 | 27.6 | 25.6 | -- | -- | 30* | 26.7* | 26 | 24.0* |
| 28.5 | 26.1 | 28.4 | 25.7 | 28.3 | 26.1 | 27.6 | 25.6 | 27.1 | 25.9 | 27.7 | 25.9 | 30 | 26.9 | 26 | 25.1 |
| 28.9 | 26.0 | 28.8 | 25.9 | 28.7 | 25.8 | 28.3 | 25.7 | 27.8 | 25.8 | 28.0 | 25.8 | | | | |
| 31 | 28.0 | 31 | 26.9 | 31 | 26.9 | 31 | 26.7 | 31 | 26.9 | | | 31 | 28.0 | | |
| 30.0 | 26.5 | 29.9 | 26.4 | 29.9 | 26.3 | 29.6 | 26.2 | 29.0 | 26.2 | | | | | | |
| 27.9 | 25.5 | 27.7 | 25.5 | 27.2 | 25.2 | 26.9 | 24.9 | 26.5 | 25.2 | | | | | | |
| 27 | 25.1 | 26 | 24.7 | 27 | 24.8 | 25 | 23.8 | 26 | 24.0 | | | | | 24 | 23.8 |
| **CAROLINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.3 | 25.0 | 29.5 | 24.8 | 29.8 | 25.1 | 28.7 | 24.9 | 28.0 | 25.1 | -- | -- | 32* | 26.9* | 27* | 22.6* |
| 28.8 | 24.0 | 29.3 | 24.5 | 29.2 | 24.8 | 29.0 | 25.2 | 28.4 | 25.4 | 28.6 | 25.2 | 32* | 27.3 | 25 | 14.5 |
| 28.9 | 25.7 | 29.1 | 25.6 | 28.9 | 25.5 | 28.8 | 25.6 | 28.3 | 25.7 | 28.3 | 25.8 | 32 | 27.8 | 25 | 17.0 |
| 29.3 | 25.4 | 29.5 | 25.4 | 29.7 | 25.3 | 29.5 | 25.3 | 28.7 | 25.0 | -- | -- | 31 | 26.1* | 27* | 20.0* |
| 29.2 | 25.2 | 29.4 | 24.6 | 29.2 | 25.1 | 28.8 | 25.0 | 28.4 | 25.0 | 28.8 | 25.2 | 31 | 25.8 | 27 | 20.7 |
| 28.9 | 25.0 | 29.3 | 24.8 | 29.5 | 24.9 | 28.8 | 24.2 | 28.5 | 24.7 | 28.6 | 25.1 | 30 | 27.3 | 27 | 16.4 |
| 29.4 | 24.8 | 29.2 | 24.4 | 28.6 | 24.1 | 28.8 | 25.1 | 28.4 | 25.2 | 28.7 | 25.0 | 31 | 25.7 | 27 | 19.2 |
| 29.3 | 24.8 | 29.2 | 25.0 | 29.2 | 25.4 | 29.2 | 25.7 | 28.9 | 25.9 | -- | -- | 32 | 29.0* | 28* | 22.8* |

Table 1. – Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | |
| **TRUK ISLANDS (Moen Island),** | | | | | | | | | | | | | | |
| Mean | 27.8 | 25.5 | 27.6 | 25.8 | 27.8 | 25.7 | 28.2 | 25.6 | 28.6 | 25.7 | 28.8 | 25.6 | 28.9 | 25.3 |
| Maximum | 31 | 27.8 | 29 | 27.3 | 30 | 27.4 | 31 | 28.3 | 30 | 29.0 | 31 | 27.0 | 32 | 26.8 |
| Mean Max. | 28.8 | 26.3 | 28.4 | 26.3 | 28.7 | 26.3 | 29.2 | 26.4 | 29.4 | 26.3 | 29.5 | 26.2 | 29.9 | 26.1 |
| Mean Min. | 26.8 | 24.1 | 26.6 | 25.2 | 26.9 | 24.9 | 27.2 | 24.2 | 27.6 | 24.3 | 27.9 | 24.6 | 27.6 | 22.9 |
| Minimum | 25 | 17.5 | 26 | 24.7 | 26 | 20.9 | 26 | 16.4 | 26 | 20.0 | 27 | 23.2 | 25 | 17.0 |
| **YAP ISLAND,** | | | | | | | | | | | | | | |
| 1951-1953 | 28.1 | 25.4 | 27.7 | 25.0 | 28.3 | 25.7 | 29.3 | 25.8 | 29.8 | 24.4 | 29.7 | 23.4 | 30.2 | 24.6 |
| Mean | 28.1 | 25.4 | 27.7 | 25.0 | 28.3 | 25.7 | 29.3 | 25.8 | 29.8 | 24.4 | 29.7 | 23.4 | 30.2 | 24.6 |
| Maximum | 30 | 26.1 | 29 | 26.1 | 29 | 26.2 | 32 | 26.5 | 32 | 26.1 | 31 | 25.7 | 32 | 25.4 |
| Mean Max. | 29.7 | 25.9 | 29.2 | 26.0 | 29.4 | 26.2 | 30.8 | 26.3 | 31.4 | 25.4 | 31.1 | 24.8 | 31.7 | 25.4 |
| Mean Min. | 26.7 | 24.6 | 26.9 | 23.6 | 27.2 | 25.0 | 28.6 | 24.6 | 27.8 | 22.8 | 27.8 | 19.1 | 28.6 | 22.8 |
| Minimum | 27 | 24.5 | 27 | 22.3 | 27 | 24.7 | 28 | 23.7 | 27 | 20.6 | 28 | 17.0 | 28 | 21.9 |
| **ANGAUR ISLAND,** | | | | | | | | | | | | | | |
| 1951-1952 | 28.4 | 22.7 | 28.2 | 24.1 | 28.2 | 24.4 | 28.9 | 23.5 | 29.2 | 21.9 | -- | -- | -- | -- |
| **KOROR, KOROR ISLAND,** | | | | | | | | | | | | | | |
| 1947 | -- | -- | 28.2 | -- | 28.2 | -- | 28.6 | -- | -- | -- | 28.7 | -- | 28.9 | -- |
| -- | | | | | | | | | | | | | | |
| 1949-1950 | -- | -- | -- | -- | 27.4 | -- | 28.7 | -- | 29.0 | -- | 29.4 | -- | 29.6 | -- |
| **GUAM (Apra Harbor),** | | | | | | | | | | | | | | |
| 1949 | -- | -- | -- | -- | -- | -- | -- | -- | 28.2 | 25.7 | 28.7 | 25.6 | 29.1 | 25.5 |
| 1950-1954 | 27.5 | 25.6 | 27.3 | 25.7 | 27.5 | 25.8 | 27.9 | 25.9 | 28.4 | 26.0 | 28.9 | 26.1 | 29.4 | 26.0 |
| 1955-1959 | 26.8 | 25.6 | 26.8 | 25.5 | 27.2 | 25.9 | 27.7 | 26.0 | 28.2 | 26.1 | 28.6 | 26.0 | 28.9 | 25.9 |
| 1960 | 27.4 | 25.6 | 27.4 | 25.9 | 28.1 | 26.2 | 29.1 | 26.3 | 28.9 | 26.1 | 28.7 | 25.8 | 29.4 | 26.0 |
| 1961 | 28.7 | 26.4 | 28.1 | 26.1 | 27.4 | 25.7 | 28.2 | 25.4 | 28.2 | 25.3 | 29.0 | 25.2 | 29.1 | 25.3 |
| 1962 | 27.8 | 25.3 | 27.1 | 25.5 | -- | -- | 28.5 | 25.6 | 28.9 | 25.7 | 29.4 | 25.6 | 29.7 | 25.8 |
| 1963 | 28.1 | 26.0 | 27.6 | 25.6 | 28.2 | 26.1 | 28.7 | 26.0 | 28.6 | 25.6 | 29.6 | 25.6 | 29.4 | 25.7 |
| 1964 | 27.9 | 26.0 | 27.2 | 26.2 | 27.4 | 26.0 | 28.2 | 25.8 | 28.6 | 25.3 | 29.6 | 25.8 | 29.8 | 25.6 |
| Mean | 27.4 | 25.7 | 27.2 | 25.7 | 27.5 | 25.9 | 28.1 | 25.9 | 28.4 | 25.9 | 28.9 | 25.9 | 29.3 | 25.8 |
| Maximum | 29 | 27.2 | 29 | 26.9 | 29 | 27.4 | 32 | 27.4 | 31 | 27.1 | 31 | 27.1 | 31 | 26.9 |
| Mean Max. | 28.3 | 26.2 | 28.0 | 26.1 | 28.3 | 26.3 | 28.9 | 26.3 | 29.1 | 26.3 | 29.6 | 26.3 | 30.2 | 26.3 |
| Mean Min. | 26.6 | 25.3 | 26.6 | 25.1 | 26.6 | 25.5 | 27.2 | 25.4 | 27.7 | 25.4 | 28.1 | 25.4 | 28.2 | 25.2 |
| Minimum | 24 | 24.1 | 25 | 24.0 | 26 | 25.0 | 26 | 24.7 | 26 | 23.3 | 27 | 24.0 | 27 | 23.7 |
| **MARCUS** | | | | | | | | | | | | | | |
| 1964 | 24.2 | 26.6 | 23.9 | 26.6 | 23.6 | 26.3 | 26.7 | 26.7 | 27.4 | 26.9 | 30.1 | 26.4 | 31.1 | 26.5 |
| **SAN FERNANDO, LUZON ISLAND,** | | | | | | | | | | | | | | |
| 1948-1949 | 27.1 | 24.7 | 26.2 | 24.8 | 27.1 | 24.9 | 28.3 | 24.7 | 30.6 | 25.5 | 29.7 | 24.8 | 29.4 | 24.2 |
| **MANILA, LUZON ISLAND,** | | | | | | | | | | | | | | |
| 1947-1949 | 26.5 | 22.0 | 26.6 | 22.2 | 27.1 | 23.3 | 27.9 | 24.2 | 29.1 | 24.8 | 29.9 | 25.0 | 29.3 | 22.4 |
| 1950-1954 | 27.8 | 23.7 | 28.2 | 23.7 | 28.5 | 23.8 | 29.7 | 24.1 | 30.4 | 24.8 | 30.2 | 24.2 | 29.7 | 21.8 |
| 1955-1959 | 27.6 | 22.5 | 28.0 | 22.7 | 28.2 | 23.6 | 29.1 | 25.1 | 30.2 | 25.4 | 30.4 | 25.2 | 29.9 | 22.4 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **CAROLINE ISLANDS–continued** | | | | | | | | | | | | | | | |
| 29.1 | 25.1 | 29.2 | 25.0 | 29.2 | 25.1 | 28.9 | 25.3 | 28.4 | 25.4 | 28.5 | 25.4 | | | | |
| 32 | 27.3 | 32 | 27.0 | 32 | 27.3 | 32 | 27.2 | 30 | 27.0 | | | 32 | 29.0 | | |
| 30.2 | 26.1 | 30.6 | 26.1 | 30.3 | 25.9 | 29.9 | 26.1 | 29.3 | 25.9 | | | | | | |
| 27.8 | 22.3 | 28.0 | 22.6 | 27.7 | 23.1 | 27.7 | 23.9 | 27.3 | 24.5 | | | | | | |
| 27 | 14.5 | 27 | 17.4 | 27 | 15.8 | 27 | 16.4 | 25 | 22.0 | | | | | 25 | 14.5 |
| **CAROLINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.3 | 24.0 | 29.6 | 24.0 | 29.4 | 24.4 | 29.6 | 24.6 | 29.1 | 24.7 | 29.2 | 24.7 | 32 | 26.5 | 24 | 16.8 |
| 29.3 | 24.0 | 29.6 | 24.0 | 29.4 | 24.4 | 29.6 | 24.6 | 29.1 | 24.7 | 29.2 | 24.7 | 32 | 26.5 | 24 | 16.8 |
| 32 | 25.4 | 32 | 25.5 | 32 | 25.3 | 31 | 26.0 | 31 | 25.6 | | | 32 | 26.5 | | |
| 31.1 | 25.0 | 31.4 | 25.4 | 31.4 | 25.3 | 30.8 | 25.6 | 30.3 | 25.6 | | | | | | |
| 27.8 | 20.8 | 27.8 | 19.2 | 27.5 | 20.7 | 26.7 | 22.8 | 27.8 | 20.6 | | | | | | |
| 28 | 20.7 | 27 | 16.8 | 27 | 17.2 | 24 | 21.7 | 28 | 20.4 | | | | | 24 | 16.8 |
| **PALAU ISLANDS** | | | | | | | | | | | | | | | |
| -- | -- | 29.1 | 21.2 | 29.2 | 21.0 | 29.0 | 21.7 | 29.0 | 23.1 | -- | -- | 31 | 28.7* | 26 | 12* |
| **PALAU ISLANDS** | | | | | | | | | | | | | | | |
| 29.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 31* | | 27* | |
| 28.9 | -- | 29.4 | -- | 29.7 | -- | -- | -- | -- | -- | -- | -- | 32 | | 27 | |
| **MARIANAS** | | | | | | | | | | | | | | | |
| 29.7 | 25.4 | 29.7 | 25.1 | 29.1 | 25.1 | 28.6 | 25.4 | 27.7 | 25.5 | -- | -- | 31 | 25.9* | 27* | 23.4* |
| 29.3 | 25.6 | 29.2 | 25.5 | 29.3 | 25.4 | 28.9 | 25.5 | 28.3 | 25.7 | 28.5 | 25.7 | 31 | 26.9 | 27 | 23.0 |
| 28.9 | 25.8 | 28.8 | 25.5 | 29.1 | 25.5 | 28.7 | 25.7 | 27.6 | 25.4 | 28.1 | 25.7 | 31 | 27.2 | 24 | 23.1 |
| 29.6 | 25.4 | 30.0 | 25.8 | 29.6 | 25.8 | 29.2 | 25.9 | 28.9 | 26.4 | 28.9 | 25.9 | 32 | 27.4 | 27 | 23.9 |
| 29.3 | 24.7 | 29.6 | 24.6 | 29.1 | 25.1 | 29.1 | 25.2 | 27.9 | 25.2 | 28.6 | 25.4 | 32 | 27.4 | 26 | 21.8 |
| 29.7 | 25.6 | 29.9 | 25.7 | 28.9 | 25.2 | 28.7 | 25.9 | 27.9 | 25.8 | -- | -- | 31 | 26.7* | 27* | 23.2* |
| 29.9 | 25.8 | 30.1 | 25.1 | 29.6 | 25.0 | 29.1 | 26.2 | 28.5 | 26.0 | 29.0 | 25.7 | 31 | 26.8 | 27 | 23.3 |
| 29.4 | 25.6 | 29.5 | 25.8 | 29.6 | 25.8 | 30.1 | 25.8 | 29.6 | 25.6 | 28.9 | 25.8 | 31 | 26.8 | 26 | 24.2 |
| 29.3 | 25.6 | 29.3 | 25.4 | 29.2 | 25.4 | 28.9 | 25.6 | 28.2 | 25.6 | 28.5 | 25.7 | | | | |
| 31 | 26.8 | 32 | 26.5 | 31 | 26.5 | 31 | 26.8 | 30 | 26.9 | | | 32 | 27.4 | | |
| 30.1 | 26.3 | 30.3 | 26.0 | 30.3 | 26.0 | 29.7 | 26.1 | 28.9 | 26.1 | | | | | | |
| 28.2 | 24.6 | 28.2 | 24.6 | 28.1 | 24.6 | 28.2 | 24.9 | 27.3 | 24.9 | | | | | | |
| 26 | 21.8 | 26 | 22.5 | 26 | 23.4 | 27 | 23.0 | 26 | 23.1 | | | | | 24 | 21.8 |
| **ISLAND** | | | | | | | | | | | | | | | |
| 30.8 | 26.5 | 28.1 | 26.2 | 27.6 | 26.2 | 26.6 | 26.3 | 23.8 | 26.4 | 27.0 | 26.5 | 33 | 28.5 | 21 | 25.4 |
| **PHILIPPINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.3 | 22.6 | 28.8 | 21.5 | 29.1 | 22.8 | 28.3 | 24.1 | 27.9 | 24.8 | 28.5 | 24.1 | 32 | 26.4 | 25 | 14.9 |
| **PHILIPPINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.5 | 21.1 | 29.5 | 16.0 | 29.1 | 18.4 | 28.6 | 22.0 | 27.4 | 22.1 | 28.4 | 22.0 | 33 | 26.0 | 24 | 0.8 |
| 28.9 | 16.8 | 29.6 | 18.5 | 29.8 | 20.3 | 28.9 | 20.9 | 27.9 | 23.1 | 29.1 | 22.1 | 32 | 26.8 | 26 | 5.9 |
| 29.6 | 19.6 | 29.0 | 14.4 | 29.4 | 19.6 | 28.9 | 22.3 | 27.9 | 22.3 | 29.0 | 22.1 | 33 | 27.8 | 26 | 5.8 |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | |
| **MANILA, LUZON ISLAND,** | | | | | | | | | | | | | | |
| 1960 | 27.8 | 23.3 | 27.6 | 22.7 | 28.6 | 23.0 | 29.4 | 25.1 | 29.8 | 24.3 | 29.4 | 19.6 | 29.4 | 18.2 |
| 1961 | 25.9 | 22.6 | 27.1 | 22.6 | 28.3 | 23.0 | 29.3 | 24.9 | 29.7 | 25.4 | 29.1 | 24.7 | 27.6 | 9.7 |
| 1962 | 26.1 | 22.3 | 24.8 | 21.6 | 26.7 | 23.4 | 28.1 | 24.3 | 29.6 | -- | 30.1 | 23.9 | 28.4 | 16.2 |
| 1963 | 25.6 | 22.2 | 24.8 | 22.5 | 25.6 | 23.6 | 27.4 | 24.2 | 29.2 | -- | 28.7 | 19.3 | 28.7 | 14.7 |
| 1964 | 26.9 | 22.1 | 25.8 | -- | 26.6 | -- | 27.4 | -- | 29.4 | -- | 29.8 | -- | 29.3 | 19.3 |
| Mean | 27.2 | 22.8 | 27.3 | 22.9 | 27.8 | 23.6 | 28.9 | 24.6 | 29.9 | 25.0 | 30.0 | 24.0 | 29.4 | 20.4 |
| Maximum | 31 | 26.8 | 31 | 26.7 | 32 | 26.4 | 32 | 26.6 | 32 | 26.8 | 32 | 27.8 | 33 | 26.5 |
| Mean Max. | 28.8 | 25.0 | 28.6 | 24.8 | 29.2 | 25.3 | 30.2 | 25.4 | 31.1 | 25.8 | 31.2 | 25.3 | 30.9 | 23.7 |
| Mean Min. | 25.7 | 19.2 | 26.1 | 19.5 | 26.6 | 21.1 | 27.7 | 22.9 | 28.8 | 22.6 | 28.3 | 21.9 | 27.6 | 16.2 |
| Minimum | 23 | 14.0 | 24 | 10.1 | 24 | 16.0 | 27 | 16.6 | 28 | 14.9 | 25 | 13.5 | 26 | 3.2 |
| **LEGASPI, LUZON ISLAND,** | | | | | | | | | | | | | | |
| 1947-1949 | 26.4 | 20.5 | 27.6 | 20.9 | 28.2 | 21.2 | 30.1 | 21.8 | 30.9 | 21.4 | 30.8 | 23.9 | 30.0 | 23.8 |
| 1950-1954 | 28.1 | 20.0 | 28.4 | 20.6 | 28.3 | 19.4 | 29.3 | 20.6 | 29.4 | 20.3 | 29.5 | 21.3 | 29.3 | 22.0 |
| 1955-1959 | 26.1 | 18.5 | 26.5 | 19.6 | 27.0 | 19.4 | 28.1 | 20.7 | 29.1 | 20.8 | 29.4 | 21.3 | 29.0 | 22.7 |
| 1960 | 26.7 | 19.6 | 26.4 | 19.4 | 27.8 | 20.8 | 29.4 | 19.8 | 29.4 | 23.6 | 28.9 | 22.1 | 29.2 | 23.1 |
| 1961 | 25.1 | 23.6 | 26.2 | 23.5 | 27.9 | 24.4 | 28.6 | 23.8 | 29.2 | 24.5 | 29.4 | 24.9 | 28.4 | 25.2 |
| 1962 | 25.8 | 21.4 | 25.2 | 22.6 | 27.5 | -- | 28.8 | 23.6 | 29.4 | 23.2 | 29.9 | 24.8 | 28.4 | 24.8 |
| 1963 | 24.7 | 22.7 | 23.9 | 22.6 | 25.7 | 23.5 | 27.4 | 24.3 | 28.9 | 24.2 | 27.2 | 24.4 | 27.8 | 25.2 |
| 1964 | 26.9 | -- | 25.7 | -- | 27.2 | 23.5 | 27.7 | -- | 28.7 | 24.2 | 29.3 | 25.3 | 28.7 | 25.2 |
| Mean | 26.6 | 20.0 | 26.9 | 20.7 | 27.6 | 20.6 | 28.8 | 21.3 | 29.5 | 21.6 | 29.6 | 22.6 | 29.1 | 23.2 |
| Maximum | 31 | 29.9 | 31 | 28.6 | 31 | 29.7 | 32 | 30.0 | 33 | 29.8 | 34 | 29.6 | 33 | 30.2 |
| Mean Max. | 28.5 | 23.0 | 28.8 | 23.6 | 29.8 | 23.9 | 30.7 | 24.0 | 31.2 | 24.7 | 31.6 | 25.1 | 31.2 | 26.1 |
| Mean Min. | 24.9 | 14.6 | 25.1 | 16.3 | 25.7 | 16.6 | 26.9 | 17.3 | 27.8 | 16.1 | 27.4 | 18.2 | 27.3 | 18.8 |
| Minimum | 23 | 9.3 | 23 | 10.5 | 23 | 8.6 | 26 | 11.7 | 26 | 8.3 | 24 | 8.6 | 27 | 4.8 |
| **TACLOBAN, LEYTE ISLAND,** | | | | | | | | | | | | | | |
| 1951-1954 | 29.8 | 24.3 | 29.3 | 24.2 | 29.8 | 24.5 | 30.2 | 24.9 | 30.3 | 24.6 | 30.1 | 24.6 | 30.1 | 24.4 |
| 1955-1959 | 28.8 | 24.4 | 28.6 | 23.8 | 29.0 | 23.9 | 29.6 | 24.4 | 30.0 | 24.1 | 30.6 | 24.9 | 30.2 | 24.4 |
| 1960 | 29.6 | 24.0 | 29.1 | 22.6 | 29.3 | 23.1 | 29.6 | 24.4 | 29.7 | 24.4 | 29.8 | 24.5 | 29.8 | 24.6 |
| 1961 | 29.4 | 23.4 | 29.2 | 23.1 | 29.8 | 24.6 | 29.8 | 24.7 | 29.8 | 24.7 | 29.8 | 24.6 | 29.6 | 24.2 |
| 1962 | 29.5 | 22.6 | 29.6 | 23.1 | 29.8 | 23.8 | 29.1 | 24.4 | 29.7 | 23.5 | 29.6 | 23.4 | 29.4 | 23.0 |
| 1963 | 27.9 | 20.9 | 26.2 | 22.4 | 26.3 | 24.0 | 27.5 | 23.9 | 28.9 | 24.2 | 29.2 | 24.4 | 29.4 | 24.6 |
| 1964 | 28.9 | 23.6 | 28.7 | 23.5 | 29.9 | 24.1 | 29.4 | 23.6 | 30.2 | 24.5 | 30.0 | 24.0 | 30.4 | 24.7 |
| Mean | 29.2 | 23.6 | 28.7 | 23.5 | 29.2 | 24.1 | 29.6 | 24.4 | 29.9 | 24.3 | 30.1 | 24.5 | 29.9 | 24.3 |
| Maximum | 32 | 25.6 | 32 | 26.3 | 32 | 26.1 | 32 | 26.3 | 32 | 26.6 | 33 | 26.4 | 32 | 26.5 |
| Mean Max. | 30.2 | 24.5 | 29.7 | 24.5 | 30.1 | 25.0 | 30.2 | 25.2 | 30.6 | 25.2 | 30.9 | 25.2 | 30.8 | 25.1 |
| Mean Min. | 28.3 | 22.5 | 27.7 | 21.7 | 28.3 | 22.3 | 28.9 | 23.4 | 29.2 | 22.7 | 29.0 | 23.5 | 28.8 | 23.1 |
| Minimum | 26 | 19.6 | 26 | 18.0 | 24 | 17.9 | 26 | 19.5 | 27 | 15.9 | 26 | 19.8 | 26 | 20.1 |
| **CEBU, CEBU ISLAND,** | | | | | | | | | | | | | | |
| 1947-1949 | 26.7 | 24.6 | 27.3 | 25.2 | 27.7 | 25.4 | 29.1 | 25.6 | 29.9 | 25.3 | 30.2 | 24.6 | 29.8 | 24.4 |
| 1950-1954 | 27.6 | 24.5 | 27.7 | 25.0 | 28.3 | 25.2 | 29.4 | 25.5 | 29.9 | 25.3 | 30.0 | 25.0 | 29.8 | 25.0 |
| 1955-1959 | 27.4 | 24.7 | 27.6 | 24.9 | 28.1 | 25.3 | 29.0 | 25.5 | 29.8 | 25.6 | 30.2 | 25.7 | 29.6 | 25.4 |
| 1960 | 27.7 | 25.6 | 27.1 | 25.7 | 28.3 | 25.6 | 29.0 | 25.8 | 29.8 | 26.0 | 29.8 | 25.8 | 30.1 | 25.6 |
| 1961 | 26.2 | 25.4 | 27.0 | 24.2 | 27.8 | 25.8 | 29.0 | 25.6 | 29.8 | 25.6 | 29.7 | 25.6 | 28.8 | 25.2 |
| 1962 | 26.9 | 25.2 | 25.7 | 24.6 | 27.5 | 24.8 | 28.9 | 24.5 | 29.7 | 25.2 | 30.1 | 25.2 | 29.3 | 25.3 |
| 1963 | 26.5 | 24.6 | 25.8 | 24.8 | 26.5 | 24.8 | 28.3 | 24.8 | 29.4 | 25.0 | 29.0 | 25.4 | 30.4 | 25.1 |
| 1964 | 27.7 | 24.7 | 26.9 | 24.7 | 27.3 | 24.6 | 28.7 | 25.1 | 29.7 | 25.3 | 30.4 | 25.2 | 29.4 | 25.0 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **PHILIPPINE ISLANDS–continued** | | | | | | | | | | | | | | | |
| 28.2 | 12.2 | 29.1 | 14.8 | 28.8 | 16.6 | 28.8 | 21.2 | 27.9 | 22.9 | 28.7 | 20.3 | 32 | 25.7 | 26 | 9.7 |
| 27.8 | 12.2 | 28.6 | 9.9 | 28.9 | 15.7 | 27.6 | 21.6 | 27.1 | 21.9 | 28.1 | 19.5 | 32 | 25.7 | 23 | 3.2 |
| 29.3 | 12.7 | 27.8 | 14.4 | 28.9 | 18.4 | 27.9 | 22.4 | 26.7 | 22.2 | 27.9 | -- | 31 | 25.2* | 24 | 5.0* |
| 28.6 | 17.8 | 28.2 | 12.5 | 28.8 | 18.6 | 28.4 | 22.6 | 27.7 | 22.9 | 27.6 | -- | 32 | 24.7* | 24 | 4.5* |
| 28.3 | 14.0 | 28.7 | 15.9 | 28.3 | 17.4 | 28.1 | 21.1 | 26.7 | 21.4 | 27.9 | -- | 31 | 25.2* | 24 | 6.7* |
| 29.1 | 17.4 | 29.1 | 15.6 | 29.3 | 19.0 | 28.7 | 21.7 | 27.7 | 22.5 | 28.7 | 21.6 | | | | |
| 33 | 25.8 | 32 | 25.6 | 32 | 25.4 | 32 | 26.7 | 32 | 26.8 | | | 33 | 27.8 | | |
| 30.7 | 22.7 | 30.4 | 20.0 | 30.7 | 23.4 | 30.2 | 24.6 | 29.1 | 24.7 | | | | | | |
| 27.1 | 12.0 | 27.4 | 10.9 | 27.8 | 13.3 | 27.2 | 16.3 | 26.4 | 17.2 | | | | | | |
| 24 | 4.4 | 26 | 4.5 | 27 | 8.5 | 26 | 0.8 | 24 | 11.2 | | | | | 23 | 0.8 |
| **PHILIPPINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.6 | 24.4 | 29.8 | 24.7 | 29.4 | 23.9 | 28.1 | 20.9 | 27.6 | 19.5 | 29.1 | 22.2 | 34 | 27.7 | 24 | 11.3 |
| 28.8 | 23.2 | 28.8 | 23.5 | 28.8 | 22.9 | 28.2 | 22.3 | 27.9 | 21.1 | 28.7 | 21.4 | 33 | 30.2 | 24 | 12.4 |
| 28.9 | 23.7 | 28.5 | 24.5 | 28.4 | 22.6 | 27.6 | 21.0 | 26.5 | 19.2 | 27.9 | 21.2 | 33 | 26.7 | 24 | 4.8 |
| 28.1 | 25.7 | 29.1 | 23.7 | 28.3 | 22.2 | 27.5 | -- | 26.9 | 23.5 | 28.1 | -- | 32 | 26.2* | 24 | 12.4* |
| 28.1 | 25.3 | 28.0 | 25.1 | 28.1 | 24.7 | 27.6 | -- | 26.9 | 22.1 | 27.8 | -- | 32 | 26.4* | 23 | 12.4* |
| 28.4 | 25.4 | 28.2 | 23.5 | 28.9 | 24.7 | 27.4 | 19.0 | 25.9 | -- | 27.8 | -- | 32 | 26.4* | 23 | 3.3* |
| 28.6 | 24.3 | 28.6 | 25.1 | 28.7 | 24.4 | 27.6 | -- | 27.2 | -- | 27.2 | -- | 31 | 26.9* | 23 | 8.8* |
| 27.8 | 25.2 | 28.4 | 23.6 | 28.3 | 22.1 | 28.1 | 21.7 | 25.9 | 17.5 | 27.7 | -- | 31 | 26.7* | 24 | 5.6* |
| 28.8 | 24.1 | 28.8 | 24.2 | 28.7 | 23.2 | 27.9 | 21.3 | 27.1 | 20.1 | 28.3 | 21.9 | | | | |
| 32 | 29.6 | 33 | 29.8 | 32 | 28.1 | 31 | 27.8 | 30 | 29.6 | | | 34 | 30.2 | | |
| 30.6 | 26.3 | 30.7 | 26.3 | 30.6 | 25.9 | 29.8 | 25.1 | 28.9 | 24.4 | | | | | | |
| 27.2 | 19.5 | 27.3 | 18.7 | 27.0 | 17.5 | 26.0 | 13.7 | 25.2 | 13.9 | | | | | | |
| 26 | 10.4 | 27 | 8.6 | 26 | 7.5 | 25 | 3.3 | 24 | 5.6 | | | | | 23 | 3.3 |
| **PHILIPPINE ISLANDS** | | | | | | | | | | | | | | | |
| 30.1 | 24.5 | 30.1 | 24.4 | 30.1 | 24.2 | 29.9 | 24.7 | 29.6 | 24.3 | 30.0 | 24.5 | 32 | 26.4 | 28 | 21.9 |
| 30.0 | 24.6 | 30.1 | 24.7 | 29.9 | 24.7 | 29.3 | 23.0 | 28.8 | 22.9 | 29.6 | 24.2 | 32 | 26.1 | 26 | 3.0 |
| 29.7 | 24.4 | 29.7 | 24.4 | 28.9 | 23.0 | 28.6 | 23.2 | 29.4 | 23.5 | 29.4 | 23.8 | 30 | 25.4 | 24 | 18.5 |
| 29.7 | 24.0 | 29.7 | 24.5 | 29.7 | 24.4 | 29.6 | 23.6 | 29.5 | 22.8 | 29.6 | 24.0 | 30 | 25.4 | 28 | 21.4 |
| 29.0 | 22.5 | 28.9 | 22.4 | 29.1 | 22.6 | 28.5 | 21.8 | 28.5 | 21.8 | 29.2 | 22.9 | 30 | 25.0 | 28 | 21.0 |
| 29.2 | 23.8 | 29.2 | 24.4 | 29.5 | 24.3 | 29.5 | 23.6 | 29.7 | 24.0 | 28.5 | 23.7 | 32 | 25.8 | 24 | 6.3 |
| 30.7 | 24.8 | 30.4 | 24.6 | 29.9 | 25.5 | 30.5 | 25.6 | 29.9 | 24.1 | 29.9 | 24.4 | 33 | 28.6 | 26 | 14.1 |
| 29.9 | 24.3 | 29.9 | 24.4 | 29.8 | 24.2 | 29.5 | 23.9 | 29.3 | 23.5 | 29.6 | 24.1 | | | | |
| 32 | 26.3 | 32 | 26.7 | 32 | 28.6 | 32 | 28.5 | 32 | 26.4 | | | 33 | 28.6 | | |
| 30.6 | 25.0 | 30.6 | 25.0 | 30.6 | 25.2 | 30.4 | 25.2 | 30.3 | 24.8 | | | | | | |
| 29.1 | 21.8 | 29.2 | 23.1 | 28.7 | 22.8 | 28.1 | 21.2 | 27.9 | 20.4 | | | | | | |
| 27 | 3.4 | 27 | 17.0 | 26 | 14.1 | 24 | 12.6 | 26 | 3.0 | | | | | 24 | 3.0 |
| **PHILIPPINE ISLANDS** | | | | | | | | | | | | | | | |
| 29.4 | 24.8 | 29.4 | 24.5 | 29.3 | 24.4 | 28.3 | 24.0 | 27.9 | 24.1 | 28.8 | 24.7 | 32 | 26.3 | 22 | 12.7 |
| 29.4 | 25.0 | 29.3 | 24.7 | 29.6 | 24.6 | 29.1 | 24.7 | 27.9 | 24.4 | 29.0 | 24.9 | 31 | 26.2 | 26 | 15.7 |
| 29.6 | 25.1 | 29.6 | 25.5 | 29.4 | 25.1 | 28.9 | 25.1 | 28.1 | 25.1 | 28.9 | 25.2 | 32 | 27.7 | 26 | 19.3 |
| 29.3 | 25.7 | 29.8 | 24.9 | 28.9 | 25.1 | 28.9 | 23.4 | 27.7 | 24.8 | 28.9 | 25.3 | 31 | 26.5 | 26 | 19.5 |
| 29.0 | 25.5 | 29.1 | 25.1 | 28.9 | 24.3 | 28.7 | 23.9 | 28.1 | 24.8 | 28.5 | 25.1 | 31 | 26.4 | 26 | 20.6 |
| 28.8 | 25.1 | 29.1 | 24.6 | 29.8 | 24.5 | 28.8 | 24.5 | 27.8 | 24.5 | 28.5 | 24.8 | 31 | 26.6 | 24 | 21.5 |
| 29.9 | 25.1 | 29.7 | 25.2 | 29.2 | 24.2 | 28.7 | 24.5 | 28.2 | 24.5 | 28.5 | 24.8 | 33 | 26.6 | 25 | 22.4 |
| 29.2 | 25.4 | 29.6 | 25.4 | 29.4 | 24.8 | 29.0 | 23.7 | 27.6 | 24.0 | 28.7 | 24.8 | 31 | 26.6 | 26 | 20.5 |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | |
| **CEBU, CEBU ISLAND,** | | | | | | | | | | | | | | |
| Mean | 27.2 | 24.8 | 27.3 | 24.9 | 27.9 | 25.2 | 29.1 | 25.4 | 29.8 | 25.4 | 30.0 | 25.2 | 29.7 | 25.1 |
| Maximum | 29 | 26.2 | 29 | 26.4 | 30 | 26.5 | 31 | 26.5 | 31 | 27.0 | 32 | 27.0 | 33 | 26.5 |
| Mean Max. | 28.1 | 25.5 | 28.2 | 25.7 | 28.8 | 25.9 | 29.9 | 26.0 | 30.6 | 26.1 | 30.9 | 26.0 | 30.7 | 25.8 |
| Mean Min. | 26.2 | 22.3 | 26.4 | 23.1 | 27.1 | 23.3 | 28.1 | 24.1 | 28.8 | 23.7 | 29.1 | 23.0 | 28.6 | 22.1 |
| Minimum | 22 | 18.9 | 24 | 21.0 | 25 | 20.5 | 27 | 22.1 | 27 | 20.0 | 28 | 14.8 | 28 | 12.7 |
| **DAVAO, MINDANAO ISLAND,** | | | | | | | | | | | | | | |
| 1947-1949 | 27.2 | 25.6 | 27.0 | 25.6 | 27.1 | 25.7 | 28.3 | 25.0 | 29.2 | 24.1 | 29.4 | 21.9 | 29.1 | 20.5 |
| 1950-1954 | 28.1 | 24.5 | 28.3 | 24.4 | 28.1 | 24.4 | 28.8 | 24.3 | 29.5 | 22.2 | 29.1 | 21.4 | 29.1 | 20.5 |
| 1955-1959 | 28.2 | 24.8 | 28.2 | 24.8 | 28.7 | 24.8 | 29.1 | 23.6 | 29.3 | 22.8 | 29.4 | 21.7 | 29.4 | 21.1 |
| 1960 | 27.3 | 25.3 | 26.8 | 24.6 | 27.4 | 24.6 | 28.1 | 23.6 | 28.3 | 23.6 | 28.2 | 22.6 | 28.1 | 21.4 |
| 1961 | 26.3 | 22.8 | 26.1 | 22.9 | 26.5 | 25.0 | 28.0 | 24.8 | 28.2 | 24.2 | 28.1 | 20.6 | 27.9 | 22.7 |
| 1962 | 26.5 | 22.8 | 25.6 | 20.4 | 26.3 | 22.2 | 27.4 | 22.8 | 27.7 | 21.0 | 28.3 | 20.4 | 27.9 | 21.9 |
| 1963 | 27.0 | 24.8 | 26.0 | 24.7 | 26.0 | 23.4 | 27.3 | 24.3 | 28.1 | 23.0 | 29.0 | 22.4 | 28.4 | 21.6 |
| 1964 | 27.3 | -- | 26.4 | 23.5 | 26.9 | 23.8 | 28.1 | 23.4 | 29.1 | 22.1 | 29.3 | 22.3 | 29.3 | 21.6 |
| Mean | 27.7 | 24.6 | 27.4 | 24.3 | 27.7 | 24.5 | 28.5 | 24.1 | 29.1 | 22.8 | 29.1 | 21.6 | 28.9 | 21.0 |
| Maximum | 31 | 27.1 | 31 | 27.4 | 31 | 27.5 | 32 | 27.4 | 32 | 27.8 | 32 | 27.2 | 32 | 26.6 |
| Mean Max. | 29.1 | 26.1 | 28.7 | 26.1 | 29.4 | 26.2 | 30.7 | 26.2 | 30.8 | 26.0 | 31.0 | 25.6 | 30.7 | 25.3 |
| Mean Min. | 26.3 | 19.5 | 26.0 | 18.7 | 26.2 | 18.7 | 26.9 | 18.1 | 27.5 | 15.3 | 27.2 | 14.6 | 27.6 | 14.1 |
| Minimum | 24 | 8.5 | 23 | 12.3 | 24 | 10.1 | 26 | 14.2 | 25 | 4.4 | 26 | 6.8 | 26 | 5.8 |
| **JOLO, JOLO ISLAND,** | | | | | | | | | | | | | | |
| 1947-1949 | 26.7 | 24.8 | 26.3 | 24.9 | 26.1 | 24.6 | 26.8 | 25.0 | 27.6 | 25.2 | 27.7 | 25.2 | 27.4 | 25.1 |
| 1950-1954 | 27.4 | 25.2 | 27.4 | 25.1 | 27.6 | 25.0 | 28.1 | 25.2 | 28.6 | 25.1 | 28.4 | 24.8 | 28.2 | 24.5 |
| 1955 | 27.8 | 24.8 | 27.2 | 24.8 | 27.3 | 25.0 | 26.8 | 25.0 | 28.2 | 25.4 | 27.6 | 25.2 | 28.1 | 25.4 |
| Mean | 27.3 | 25.0 | 27.1 | 25.0 | 27.1 | 24.9 | 27.5 | 25.1 | 28.3 | 25.2 | 28.1 | 24.9 | 27.9 | 24.7 |
| Maximum | 30 | 27.2 | 30 | 29.6 | 29 | 26.1 | 31 | 26.2 | 32 | 31.1 | 32 | 28.5 | 32 | 26.6 |
| Mean Max. | 28.7 | 26.0 | 28.6 | 26.4 | 28.4 | 25.7 | 29.1 | 25.8 | 30.3 | 26.8 | 29.7 | 26.2 | 29.7 | 25.8 |
| Mean Min. | 26.1 | 23.5 | 25.9 | 22.4 | 25.6 | 23.3 | 26.3 | 23.3 | 26.8 | 23.2 | 26.8 | 22.9 | 26.7 | 22.4 |
| Minimum | 26 | 21.3 | 26 | 15.9 | 24 | 22.1 | 24 | 19.8 | 26 | 16.3 | 26 | 18.9 | 26 | 15.5 |
| **CALETA PERCY, MAGELLAN** | | | | | | | | | | | | | | |
| 1962 | 10.8 | 22.8 | 10.9 | 23.7 | 9.6 | 22.4 | 7.4 | 22.2 | 5.8 | 22.3 | 3.7 | 22.2 | 3.7 | 22.2 |
| 1963 | 10.3 | 23.6 | 11.1 | 23.6 | 9.0 | 23.3 | 6.7 | 23.2 | 5.2 | 23.4 | 3.8 | 23.4 | 2.7 | 23.3 |
| 1964 | 11.4 | 23.8 | 10.7 | 23.6 | 9.3 | 23.6 | 7.4 | 23.3 | 5.1 | 23.3 | 2.8 | 23.0 | 3.2 | 23.0 |
| Mean | 10.8 | 23.4 | 10.9 | 23.3 | 9.3 | 23.1 | 7.2 | 22.9 | 5.4 | 23.0 | 3.4 | 22.9 | 3.2 | 22.8 |
| Maximum | 15 | 25.1 | 13 | 23.9 | 12 | 24.3 | 9 | 23.6 | 7 | 23.7 | 9 | 23.8 | 5 | 23.5 |
| Mean Max. | 13.9 | 24.0 | 12.4 | 23.6 | 10.9 | 23.5 | 9.1 | 23.2 | 6.3 | 23.3 | 6.3 | 23.1 | 4.6 | 23.1 |
| Mean Min. | 8.2 | 23.0 | 9.3 | 22.9 | 7.9 | 22.8 | 6.1 | 22.6 | 3.5 | 22.6 | 0.9 | 22.5 | 2.1 | 22.6 |
| Minimum | 7 | 22.5 | 8 | 22.3 | 8 | 22.1 | 6 | 21.9 | 3 | 21.8 | 0 | 21.6 | 1 | 21.8 |
| **PUNTA ARENAS, MAGELLAN** | | | | | | | | | | | | | | |
| 1944 | -- | -- | -- | -- | -- | -- | -- | -- | 6.6 | 22.6 | 4.6 | 22.2 | 4.3 | 22.5 |
| 1945-1949 | 9.1 | 22.6 | 9.1 | 22.4 | 7.9 | 22.2 | 7.4 | 22.0 | 6.1 | 21.8 | 5.3 | 21.6 | 5.4 | 21.7 |
| 1950-1954 | 8.1 | 22.5 | 8.6 | 22.6 | 8.6 | 22.6 | 7.4 | 22.4 | 6.2 | 22.2 | 5.6 | 22.0 | 4.8 | 22.2 |
| 1955-1959 | 8.4 | 22.7 | 8.0 | 22.7 | 7.8 | 22.7 | 7.0 | 22.7 | 6.4 | 22.6 | 5.3 | 22.5 | 4.8 | 22.4 |
| 1960 | 8.9 | 22.6 | 8.5 | 22.6 | 9.0 | 22.4 | 7.2 | 22.2 | 5.8 | 22.0 | 3.5 | -- | 5.3 | 22.8 |
| 1961 | 9.3 | 22.8 | 9.3 | 22.8 | 7.8 | 22.6 | 7.1 | 22.4 | 5.9 | 22.2 | -- | -- | -- | -- |
| 1962 | 8.6 | 23.8 | 8.3 | 23.5 | 7.8 | 23.1 | 6.8 | 23.1 | 4.8 | 22.8 | 4.5 | 23.2 | 5.2 | 23.5 |
| 1963 | 8.1 | 23.8 | 10.7 | 24.0 | 7.4 | 23.8 | 4.9 | 23.6 | 4.4 | 23.5 | 3.9 | 23.5 | 3.2 | 23.4 |
| 1964 | 9.8 | 24.2 | 10.2 | 24.2 | 9.7 | 24.0 | -- | -- | -- | -- | -- | -- | -- | -- |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| PHILIPPINE ISLANDS–continued | | | | | | | | | | | | | | | |
| 29.4 | 25.1 | 29.4 | 25.0 | 29.4 | 24.7 | 28.8 | 24.5 | 27.9 | 24.6 | 28.8 | 25.0 | | | | |
| 32 | 26.6 | 31 | 27.7 | 31 | 26.4 | 32 | 26.2 | 30 | 26.2 | | | 33 | 27.7 | | |
| 30.4 | 25.9 | 30.2 | 25.8 | 30.4 | 25.5 | 29.8 | 25.5 | 28.7 | 25.4 | | | | | | |
| 28.3 | 22.6 | 28.3 | 22.5 | 28.2 | 22.1 | 27.8 | 21.5 | 27.1 | 22.3 | | | | | | |
| 28 | 17.8 | 28 | 15.7 | 27 | 14.9 | 26 | 13.1 | 26 | 18.4 | | | | | 22 | 12.7 |
| PHILIPPINE ISLANDS | | | | | | | | | | | | | | | |
| 29.3 | 22.2 | 29.2 | 20.0 | 29.1 | 20.3 | 28.8 | 22.3 | 28.0 | 24.0 | 28.5 | 23.1 | 33 | 28.6 | 24 | 4.0 |
| 29.1 | 21.4 | 28.7 | 20.1 | 29.1 | 20.8 | 28.9 | 22.7 | 28.4 | 24.4 | 28.8 | 22.6 | 32 | 28.8 | 26 | 6.8 |
| 29.2 | 21.2 | 29.3 | 21.8 | 29.4 | 21.8 | 29.2 | 22.9 | 28.4 | 24.8 | 29.0 | 23.0 | 32 | 27.8 | 25 | 12.9 |
| 27.8 | 22.3 | 27.3 | 20.2 | 27.3 | 20.7 | 27.4 | 22.6 | 26.9 | 23.3 | 27.6 | 22.9 | 31 | 27.0 | 25 | 12.5 |
| 28.1 | 23.6 | 27.9 | 24.3 | 27.9 | 24.2 | 27.7 | 24.8 | 27.6 | 24.9 | 27.5 | 23.7 | 32 | 26.6 | 25 | 13.4 |
| 28.0 | 22.2 | 27.9 | 21.8 | 28.4 | 23.8 | 28.0 | 23.9 | 27.1 | 25.4 | 27.4 | 22.4 | 34 | 26.6 | 23 | 13.6 |
| 28.0 | 22.1 | 28.7 | 22.7 | 28.5 | 23.7 | 28.1 | 23.8 | 27.6 | 24.4 | 27.7 | 23.4 | 32 | 26.9 | 24 | 13.2 |
| 28.8 | 22.8 | 29.0 | 22.8 | 29.3 | 22.5 | 28.9 | 23.5 | 28.6 | 24.3 | 28.4 | -- | 32 | 25.7* | 22 | 15.3* |
| 28.8 | 21.8 | 28.8 | 21.3 | 28.9 | 21.7 | 28.7 | 23.0 | 28.1 | 24.5 | 28.5 | 22.9 | | | | |
| 32 | 28.6 | 32 | 28.8 | 33 | 26.1 | 34 | 27.6 | 31 | 27.7 | | | 34 | 28.8 | | |
| 30.8 | 25.7 | 30.3 | 25.7 | 30.7 | 25.4 | 30.4 | 26.0 | 29.2 | 26.1 | | | | | | |
| 27.6 | 14.8 | 27.4 | 15.3 | 27.5 | 15.2 | 27.3 | 16.1 | 26.3 | 19.3 | | | | | | |
| 26 | 4.0 | 25 | 6.4 | 26 | 5.7 | 26 | 6.2 | 22 | 9.9 | | | | | 22 | 4.0 |
| PHILIPPINE ISLANDS | | | | | | | | | | | | | | | |
| 27.4 | 25.3 | 27.4 | 25.1 | 28.0 | 25.2 | 28.0 | 24.3 | 27.5 | 24.2 | 27.2 | 24.9 | 31 | 26.6 | 24 | 17.1 |
| 28.2 | 24.8 | 28.1 | 24.6 | 28.1 | 24.5 | 28.2 | 24.4 | 28.1 | 24.6 | 28.0 | 24.8 | 32 | 31.1 | 26 | 14.9 |
| 28.3 | 25.4 | 27.6 | 25.2 | 28.1 | 25.3 | -- | -- | -- | -- | -- | -- | 29* | 26.2* | 24 | 21.3* |
| 28.0 | 25.0 | 27.6 | 24.8 | 28.1 | 24.8 | 28.2 | 24.4 | 27.8 | 24.5 | 27.8 | 24.9 | | | | |
| 31 | 26.8 | 31 | 26.5 | 31 | 26.6 | 31 | 28.8 | 30 | 26.7 | | | 32 | 31.1 | | |
| 29.8 | 25.9 | 29.4 | 25.6 | 29.1 | 26.1 | 29.7 | 25.9 | 29.1 | 25.6 | | | | | | |
| 26.6 | 23.0 | 26.9 | 22.6 | 26.8 | 21.0 | 27.0 | 20.4 | 26.8 | 21.5 | | | | | | |
| 26 | 20.2 | 27 | 19.3 | 26 | 14.9 | 26 | 17.1 | 26 | 15.9 | | | | | 24 | 14.9 |
| STRAIT, CHILE | | | | | | | | | | | | | | | |
| 3.3 | 22.4 | 5.4 | 22.6 | 7.4 | 22.5 | 9.0 | 22.3 | 10.7 | 22.5 | 7.3 | 22.4 | 12 | 23.0 | 0 | 21.6 |
| 2.4 | 23.3 | 4.3 | 23.2 | 6.8 | 23.2 | 8.9 | 23.4 | 10.3 | 23.5 | 6.8 | 23.4 | 15 | 24.6 | 0 | 22.9 |
| 3.6 | 23.1 | 4.6 | 23.0 | 7.3 | 23.3 | 8.7 | 23.6 | 10.6 | 23.6 | 7.1 | 23.4 | 19 | 25.1 | 0 | 22.7 |
| 3.1 | 22.9 | 4.8 | 22.9 | 7.2 | 23.0 | 8.9 | 23.1 | 10.5 | 23.2 | 7.1 | 23.0 | | | | |
| 4 | 23.8 | 7 | 23.5 | 9 | 23.6 | 11 | 23.6 | 19 | 24.6 | | | 19 | 25.1 | | |
| 4.4 | 23.4 | 6.7 | 23.2 | 8.9 | 23.3 | 10.2 | 23.2 | 13.9 | 23.7 | | | | | | |
| 0.9 | 22.6 | 3.2 | 22.7 | 5.6 | 22.7 | 5.7 | 22.9 | 7.9 | 22.9 | | | | | | |
| 0 | 21.9 | 3 | 22.2 | 6 | 22.1 | 4 | 22.1 | 6 | 22.2 | | | | | 0 | 21.6 |
| STRAIT, CHILE | | | | | | | | | | | | | | | |
| 3.7 | 22.4 | 5.1 | 22.7 | 7.4 | 22.9 | 6.9 | 22.9 | 7.9 | 23.0 | -- | -- | -- | 23.1* | 2 | 20.9* |
| 5.1 | 22.1 | 5.4 | 22.2 | 6.0 | 22.4 | 6.6 | 22.4 | 7.7 | 22.4 | 6.8 | 22.2 | 13 | 23.3 | 2 | 19.3 |
| 5.1 | 23.3 | 5.5 | 23.3 | 6.4 | 22.3 | 7.1 | 22.5 | 7.3 | 22.7 | 6.7 | 22.6 | 11 | 25.5 | -1 | 20.1 |
| 4.4 | 22.4 | 4.7 | 22.4 | 5.9 | 22.5 | 7.1 | 22.6 | 7.7 | 22.7 | 6.5 | 22.6 | 14 | 24.5 | 0 | 20.4 |
| 6.2 | 22.8 | 6.4 | 22.7 | 6.4 | 22.7 | 7.3 | 22.8 | 8.8 | 22.8 | 6.9 | -- | 12 | 23.3* | 1 | 21.4* |
| 3.9 | 22.9 | 3.9 | 22.4 | 5.9 | 23.3 | 6.8 | 23.5 | 7.0 | 23.5 | -- | -- | 14 | 24.1* | 1* | 21.8* |
| 4.6 | 23.4 | 5.6 | 23.6 | 7.4 | 23.8 | 7.7 | 23.9 | 8.7 | 24.0 | 6.7 | 23.5 | 12 | 24.8 | 1 | 21.7 |
| 2.5 | 23.4 | 4.0 | 23.5 | 6.1 | 23.7 | 7.4 | 23.8 | 9.0 | 24.1 | 6.0 | 23.7 | 18 | 25.4 | -2 | 23.2 |
| 5.4 | 23.5 | 5.5 | 23.8 | 7.0 | 24.2 | 7.6 | 24.0 | 9.7 | 23.8 | -- | -- | 16* | 25.2* | 3* | 22.9* |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | PUNTA ARENAS, MAGELLAN | | | |
| Mean | 8.6 | 22.8 | 8.8 | 22.9 | 8.2 | 22.8 | 7.1 | 22.6 | 6.1 | 22.4 | 5.1 | 22.3 | 4.8 | 22.4 |
| Maximum | 14 | 25.1 | 18 | 25.4 | 16 | 24.4 | 10 | 24.1 | 9 | 24.5 | 8 | 24.1 | 8 | 23.9 |
| Mean Max. | 11.3 | 23.4 | 11.3 | 23.4 | 10.1 | 23.3 | 8.6 | 23.0 | 7.7 | 22.9 | 6.7 | 22.9 | 63 | 22.3 |
| Mean Min. | 7.1 | 22.4 | 6.6 | 22.3 | 6.5 | 22.3 | 5.2 | 22.0 | 4.0 | 21.8 | 3.3 | 21.5 | 3.1 | 21.8 |
| Minimum | 6 | 20.4 | 3 | 20.9 | 3 | 21.7 | 0 | 20.3 | 1 | 20.9 | 1 | 19.3 | 1 | 19.8 |
| | | | | | | | | | | | PUERTO MONTT, | | | |
| 1944 | -- | -- | -- | -- | -- | -- | -- | -- | 11.1 | 23.8 | 10.2 | 22.5 | 9.8 | 22.8 |
| 1945-1949 | 16.5 | 19.6 | 15.6 | 20.7 | 14.8 | 22.0 | 12.5 | 22.7 | 11.2 | 22.9 | 10.3 | 22.8 | 10.2 | 23.1 |
| 1950-1954 | 16.4 | 19.8 | 16.2 | 20.7 | 13.7 | 22.2 | 12.2 | 22.5 | 10.9 | 23.6 | 9.9 | 22.9 | 10.1 | 23.3 |
| 1955-1959 | 14.4 | 21.7 | 15.7 | 21.3 | 14.4 | 21.9 | 11.6 | 22.7 | 10.5 | 22.8 | 10.3 | 23.3 | 10.3 | 23.1 |
| 1960 -- 1964 | 16.7 | 20.0 | 18.7 | 20.4 | 16.2 | 21.3 | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10.1 | 23.5 | 10.7 | 24.0 |
| Mean | 16.0 | 20.2 | 16.0 | 20.9 | 14.4 | 22.0 | 12.1 | 22.6 | 10.9 | 23.1 | 10.2 | 23.0 | 10.2 | 23.2 |
| Maximum | 21 | 25.1 | 21 | 24.7 | 20 | 24.7 | 15 | 25.4 | 14 | 28.4 | 15 | 25.3 | 15 | 25.7 |
| Mean Max. | 18.7 | 23.3 | 18.3 | 23.3 | 17.1 | 23.8 | 13.6 | 24.3 | 12.2 | 24.7 | 11.6 | 24.4 | 11.9 | 24.5 |
| Mean Min. | 13.1 | 17.3 | 13.1 | 18.2 | 11.9 | 19.5 | 10.5 | 20.4 | 9.6 | 20.2 | 8.3 | 20.9 | 8.1 | 20.6 |
| Minimum | 11 | 15.1 | 11 | 12.4 | 11 | 15.6 | 9 | 17.8 | 8 | 15.8 | 6 | 15.9 | 5 | 14.5 |
| | | | | | | | | | | | CORRAL, | | | |
| 1963 | 16.7 | -- | 16.4 | -- | 14.7 | -- | 13.9 | -- | 11.6 | -- | 9.9 | -- | 9.4 | 2.3 |
| 1964 | 17.1 | 9.9 | 15.9 | 10.9 | 14.7 | 11.9 | 13.1 | 12.9 | 11.7 | 7.6 | 9.7 | 2.5 | 10.0 | 4.9 |
| | | | | | | | | | | | TALCAHUANO, | | | |
| 1945-1949 | 12.1 | -- | 12.3 | -- | 11.8 | -- | 11.6 | -- | 12.2 | -- | 11.7 | -- | 11.0 | -- |
| 1950-1954 | 14.5 | 25.6 | 14.7 | 25.8 | 14.0 | 25.7 | 13.0 | 25.8 | 12.8 | 24.2 | 11.4 | 20.8 | 10.9 | 21.0 |
| 1955-1959 | 14.1 | 25.7 | 13.9 | 25.9 | 13.8 | 25.8 | 12.6 | 25.4 | 11.4 | 24.3 | 10.8 | 22.9 | 10.6 | 22.5 |
| 1960 | 16.8 | 25.4 | 14.7 | 26.2 | 14.5 | 25.7 | 13.2 | 26.1 | 12.8 | 25.7 | 12.3 | 23.2 | 11.2 | 21.1 |
| 1961 | 15.1 | 25.8 | 14.3 | 25.9 | 14.3 | 25.8 | 12.4 | 25.8 | 11.9 | 25.4 | 11.1 | 24.0 | 11.3 | 22.6 |
| 1962 | 13.2 | 25.5 | 14.4 | 25.6 | 13.5 | 25.7 | 13.0 | 25.5 | 12.4 | -- | 11.7 | 24.9 | 11.0 | 24.3 |
| 1963 | 14.0 | 25.7 | 15.6 | 25.6 | 14.5 | 25.6 | 13.5 | 25.6 | 13.2 | 25.6 | 11.8 | 25.3 | 11.5 | 24.6 |
| 1964 | 14.0 | 25.9 | 14.0 | 25.6 | 13.6 | -- | 13.4 | 25.5 | 12.9 | 25.6 | 11.5 | 24.6 | 10.8 | 24.4 |
| Mean | 13.9 | 25.7 | 13.9 | 25.8 | 13.4 | 25.7 | 12.6 | 25.6 | 12.2 | 24.7 | 11.4 | 22.8 | 10.9 | 22.6 |
| Maximum | 18 | 26.9 | 18 | 27.1 | 18 | 29.0 | 16 | 30.6 | 15 | 26.8 | 14 | 27.4 | 14 | 27.4 |
| Mean Max. | 15.8 | 26.4 | 15.7 | 26.6 | 15.3 | 26.7 | 14.0 | 26.7 | 13.5 | 26.1 | 12.6 | 25.2 | 12.4 | 25.1 |
| Mean Min. | 12.0 | 24.5 | 12.4 | 25.0 | 11.8 | 24.4 | 11.6 | 24.5 | 10.5 | 22.0 | 9.3 | 18.1 | 8.9 | 16.1 |
| Minimum | 9 | 22.7 | 10 | 23.1 | 9 | 20.8 | 9 | 21.7 | 7 | 17.2 | 6 | 1.4 | 6 | 0.5 |
| | | | | | | | | | | | VALPARAISO, | | | |
| 1944 | -- | -- | -- | -- | -- | -- | 15.3 | 26.1 | 13.0 | 26.2 | 13.4 | 26.0 | 13.2 | 26.1 |
| 1945-1949 | 15.6 | 26.2 | 15.7 | 26.3 | 14.8 | 26.3 | 14.0 | 26.0 | 13.3 | 25.8 | 12.2 | 25.7 | 12.1 | 25.5 |
| 1950-1954 | 15.8 | 26.1 | 15.9 | 26.2 | 15.0 | 26.2 | 14.0 | 25.8 | 13.5 | 25.7 | 12.9 | 25.5 | 12.7 | 25.4 |
| 1955-1959 | 15.7 | 26.0 | 15.6 | 26.1 | 14.6 | 25.9 | 13.4 | 26.0 | 12.5 | 26.1 | 12.6 | 25.7 | 12.4 | 25.6 |
| 1960 | 17.3 | 25.9 | 17.1 | 25.9 | 15.8 | 26.1 | 13.3 | 26.4 | 12.7 | 26.4 | 12.3 | 25.8 | 12.3 | 25.8 |
| 1961 | 15.6 | 26.2 | 16.5 | 26.5 | 14.8 | 26.5 | 13.4 | 26.5 | 12.9 | 26.2 | 12.9 | 26.0 | 12.6 | 25.8 |
| 1962 | 16.6 | 26.6 | 16.3 | 26.6 | 15.7 | 26.5 | 13.7 | 26.4 | 13.3 | 26.5 | 13.0 | 25.7 | 12.4 | 25.6 |
| 1963 | 16.2 | 26.5 | 17.7 | 26.2 | 15.6 | 26.2 | 13.9 | 26.1 | 13.2 | 25.9 | 12.6 | 25.7 | 13.4 | 24.4 |
| 1964 | 17.5 | 24.7 | 15.5 | 25.8 | 15.2 | 26.0 | 13.7 | 26.2 | 13.4 | 25.9 | 12.7 | 25.9 | 11.7 | 25.6 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| STRAIT, CHILE - continued | | | | | | | | | | | | | | | |
| 4.7 | 22.6 | 5.2 | 22.6 | 6.3 | 22.7 | 7.1 | 22.9 | 7.9 | 22.9 | 6.7 | 22.7 | | | | |
| 9 | 24.3 | 9 | 24.4 | 10 | 25.1 | 11 | 24.6 | 13 | 25.5 | | | 18 | 25.5 | | |
| 6.3 | 23.1 | 7.2 | 23.0 | 7.8 | 23.3 | 8.7 | 23.3 | 9.7 | 23.5 | | | | | | |
| 2.7 | 22.1 | 3.5 | 22.2 | 4.3 | 22.1 | 5.4 | 22.4 | 6.3 | 22.4 | | | | | | |
| -2 | 20.5 | 1 | 21.7 | 1 | 20.1 | 3 | 21.0 | 5 | 21.0 | | | | | -2 | 19.3 |
| CHILE | | | | | | | | | | | | | | | |
| 9.8 | 23.5 | 10.5 | 23.2 | 10.9 | 22.9 | 13.6 | 19.9 | -- | -- | -- | -- | -- | 25.1* | 7 | 17.6* |
| 10.3 | 22.9 | 11.2 | 22.3 | 12.1 | 22.1 | 13.8 | 22.3 | 15.1 | 19.6 | 12.8 | 21.9 | 20 | 28.4 | 7 | 15.0 |
| 10.1 | 23.7 | 10.4 | 23.2 | 11.8 | 22.0 | 12.8 | 21.9 | 15.8 | 19.5 | 12.5 | 22.1 | 21 | 25.3 | 6 | 12.4 |
| 10.7 | 22.6 | 10.0 | 22.8 | 11.8 | 21.4 | 14.3 | 19.8 | 14.9 | 20.5 | 12.4 | 22.0 | 20 | 25.7 | 5 | 14.1 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21* | 23.5* | -- | 17.3* |
| 10.6 | 23.8 | 10.9 | 23.9 | 12.6 | 18.9 | 14.2 | 18.5 | 14.3 | 19.7 | -- | -- | 18 | 25.8* | 9* | 0.0 |
| 10.3 | 23.1 | 10.6 | 22.8 | 11.9 | 21.6 | 13.7 | 21.2 | 15.2 | 19.9 | 12.6 | 22.0 | | | | |
| 13 | 25.3 | 15 | 27.0 | 15 | 25.5 | 19 | 27.8 | 19 | 25.1 | | | 21 | 28.4 | | |
| 11.5 | 24.3 | 12.3 | 24.4 | 14.2 | 23.9 | 16.6 | 24.0 | 17.9 | 23.4 | | | | | | |
| 8.7 | 21.4 | 9.2 | 20.7 | 10.2 | 17.2 | 11.1 | 16.7 | 12.4 | 15.2 | | | | | | |
| 7 | 18.4 | 7 | 17.2 | 9 | 0.0 | 10 | 0.0 | 10 | 0.0 | | | | | 5 | 0.0 |
| CHILE | | | | | | | | | | | | | | | |
| 9.8 | 2.5 | 10.3 | 2.5 | 12.2 | 4.0 | 14.4 | 7.2 | 15.6 | 9.1 | 12.9 | -- | 20 | 10.9 | 7 | 0.0 |
| 10.2 | 6.7 | 10.8 | 5.1 | 13.8 | 7.3 | 14.7 | 1.2 | 16.9 | 1.3 | 13.2 | 6.8 | 21 | 19.3 | 6 | 0.5 |
| CHILE | | | | | | | | | | | | | | | |
| 11.1 | -- | 11.3 | -- | 11.9 | -- | 12.4 | -- | 12.6 | -- | 11.8 | -- | 16 | -- | 7 | -- |
| 10.8 | 22.0 | 12.1 | 23.4 | 12.3 | 25.1 | 13.3 | 25.3 | 14.3 | 25.3 | 12.8 | 24.2 | 26 | 30.6 | 6 | 0.5 |
| 10.7 | 23.0 | 11.2 | 23.9 | 12.2 | 25.1 | 12.9 | 25.6 | 13.4 | 25.7 | 12.3 | 24.6 | 18 | 29.0 | 6 | 9.2 |
| 11.5 | 24.7 | 12.3 | 25.1 | 12.5 | 25.6 | 12.8 | 25.8 | 13.6 | 25.9 | 13.2 | 25.0 | 19 | 27.0 | 8 | 11.3 |
| 12.1 | 22.1 | 12.2 | 22.9 | 12.5 | 24.7 | 12.1 | 25.4 | 12.7 | 25.5 | 12.7 | 24.7 | 18 | 27.1 | 9 | 9.3 |
| 11.5 | 24.1 | 11.7 | 24.5 | 12.3 | 24.9 | 13.6 | 25.4 | 15.1 | 25.6 | 12.8 | -- | 17 | 26.1* | 10 | 21.7* |
| 11.4 | 24.0 | 11.3 | 22.3 | 13.4 | 24.8 | -- | -- | 13.7 | 25.7 | -- | -- | 18 | 27.4* | 7 | 19.6* |
| 11.0 | 25.0 | 10.6 | 24.6 | 11.5 | 25.3 | 12.6 | 25.4 | 14.8 | 25.1 | 12.6 | -- | 17 | 26.4* | 5 | 22.2* |
| 11.0 | 23.1 | 11.5 | 23.8 | 12.2 | 25.1 | 12.8 | 25.5 | 13.5 | 25.6 | 12.4 | 24.7 | | | | |
| 15 | 26.5 | 14 | 26.6 | 16 | 26.6 | 17 | 27.2 | 20 | 27.7 | | | 20 | 30.6 | | |
| 12.5 | 25.3 | 12.8 | 25.4 | 13.8 | 26.1 | 14.6 | 26.5 | 15.7 | 26.3 | | | | | | |
| 9.1 | 18.8 | 9.8 | 21.1 | 10.8 | 23.2 | 10.9 | 24.1 | 11.7 | 24.5 | | | | | | |
| 7 | 9.3 | 5 | 18.1 | 9 | 21.5 | 9 | 21.2 | 10 | 21.6 | | | | | 5 | 0.5 |
| CHILE | | | | | | | | | | | | | | | |
| 13.1 | 25.6 | 12.6 | 26.3 | 13.2 | 26.2 | 14.3 | 26.3 | 15.6 | 25.9 | -- | -- | 18* | 27.7* | 12 | 24.0* |
| 11.9 | 25.8 | 12.6 | 25.9 | 13.2 | 26.1 | 13.7 | 26.2 | 15.1 | 26.2 | 13.7 | 26.0 | 20 | 29.1 | 8 | 23.7 |
| 12.5 | 25.7 | 12.8 | 25.9 | 12.9 | 26.2 | 14.3 | 26.2 | 15.1 | 25.9 | 14.0 | 25.9 | 19 | 27.6 | 11 | 21.1 |
| 12.2 | 25.5 | 12.2 | 25.9 | 12.9 | 26.1 | 14.4 | 26.1 | 15.3 | 26.2 | 13.6 | 25.9 | 19 | 27.8 | 10 | 23.4 |
| 12.3 | 26.3 | 12.8 | 26.5 | 12.7 | 26.4 | 13.6 | 26.3 | 15.7 | 26.1 | 14.0 | 26.2 | 20 | 27.5 | 11 | 24.3 |
| 13.1 | 26.1 | 12.8 | 25.9 | 13.4 | 26.2 | 14.0 | 26.2 | 15.4 | 26.1 | 14.0 | 26.2 | 19 | 27.2 | 12 | 24.6 |
| 12.8 | 26.1 | 12.6 | 26.6 | 13.3 | 26.2 | 16.1 | 26.2 | 16.6 | 26.3 | 14.4 | 26.3 | 19 | 27.3 | 12 | 23.8 |
| 13.4 | 24.2 | 13.7 | 25.0 | 14.2 | 25.9 | 14.7 | 26.2 | 15.4 | 25.7 | 14.5 | 25.7 | 21 | 27.2 | 12 | 19.6 |
| 11.6 | 25.9 | 12.1 | 26.5 | 13.2 | 26.4 | 14.1 | 26.7 | 15.2 | 26.5 | 13.8 | 26.0 | 21 | 27.3 | 11 | 22.7 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | VALPARAISO, |
| Mean | 15.9 | 26.1 | 15.9 | 26.2 | 14.9 | 26.1 | 13.8 | 26.1 | 13.2 | 26.0 | 12.6 | 25.7 | 12.4 | 25.5 |
| Maximum | 21 | 28.9 | 21 | 28.0 | 19 | 29.1 | 17 | 27.8 | 16 | 27.5 | 15 | 27.0 | 15 | 27.1 |
| Mean Max. | 18.0 | 26.7 | 17.7 | 26.8 | 16.8 | 26.7 | 15.3 | 26.7 | 14.4 | 26.5 | 13.7 | 26.3 | 13.4 | 26.2 |
| Mean Min. | 13.6 | 25.3 | 13.9 | 25.5 | 13.1 | 25.6 | 12.5 | 25.4 | 12.1 | 25.2 | 11.6 | 24.8 | 11.4 | 24.5 |
| Minimum | 12 | 22.7 | 12 | 24.0 | 10 | 25.0 | 11 | 24.4 | 11 | 23.8 | 10 | 23.7 | 8 | 20.2 |
| | | | | | | | | | | | | | | CALDERA, |
| 1951-1954 | 17.3 | 25.4 | 17.4 | 25.2 | 17.2 | 25.3 | 16.0 | 25.5 | 15.9 | 25.6 | 14.8 | 25.8 | 15.0 | 25.8 |
| 1955-1959 | 18.1 | 25.5 | 18.1 | 25.7 | 17.5 | 25.7 | 16.0 | 25.7 | 15.1 | 25.6 | 14.0 | 25.6 | 13.8 | 25.5 |
| 1960 | 18.6 | 24.7 | 17.7 | 25.3 | 17.9 | 25.4 | 17.8 | 25.4 | 14.8 | 25.3 | 13.9 | 25.3 | 14.0 | 25.3 |
| 1961 | 18.8 | 25.4 | 18.8 | 25.3 | 18.8 | 25.3 | 16.4 | 25.2 | 15.4 | 25.2 | 14.2 | 25.2 | 13.3 | 25.3 |
| 1962 | 17.9 | 25.4 | 17.8 | 25.4 | 19.2 | 25.9 | 17.3 | 25.7 | 16.4 | 25.8 | 14.3 | 25.5 | 14.2 | 25.5 |
| 1963 | 19.4 | 25.9 | 19.9 | 26.0 | 19.4 | 25.9 | 17.8 | 25.7 | 16.8 | 25.6 | 15.3 | 25.4 | 15.3 | 25.5 |
| 1964 | 19.4 | 26.1 | 19.3 | 26.1 | 18.3 | 25.8 | 16.6 | 25.7 | 16.0 | 25.6 | 13.9 | 25.5 | 13.7 | 25.5 |
| Mean | 18.1 | 25.5 | 18.1 | 25.5 | 17.8 | 25.6 | 16.4 | 25.6 | 15.6 | 25.6 | 14.3 | 25.6 | 14.2 | 25.6 |
| Maximum | 22 | 26.7 | 22 | 26.8 | 22 | 26.8 | 21 | 26.5 | 19 | 26.7 | 18 | 26.6 | 18 | 26.6 |
| Mean Max. | 20.5 | 26.1 | 20.2 | 25.9 | 20.2 | 26.0 | 18.3 | 26.0 | 17.4 | 26.0 | 15.7 | 25.9 | 15.6 | 26.0 |
| Mean Min. | 15.3 | 25.0 | 16.1 | 25.1 | 15.4 | 25.0 | 14.6 | 25.1 | 13.6 | 25.2 | 13.0 | 25.2 | 12.9 | 25.3 |
| Minimum | 12 | 24.0 | 14 | 24.1 | 13 | 24.5 | 12 | 24.6 | 10 | 24.8 | 9 | 24.8 | 9 | 25.0 |
| | | | | | | | | | | | | | | ANTOFAGASTA, |
| 1946-1949 | 20.8 | 26.2 | 20.4 | 26.1 | 19.1 | 26.1 | 17.6 | 26.1 | 16.1 | 26.1 | 15.3 | 25.9 | 14.6 | 26.1 |
| 1950-1954 | 20.9 | 26.2 | 20.6 | 26.1 | 19.3 | 25.9 | 17.2 | 25.8 | 16.4 | 25.8 | 15.4 | 25.8 | 15.0 | 25.8 |
| 1955-1959 | 19.8 | 25.9 | 20.6 | 25.8 | 19.1 | 25.8 | 17.3 | 25.8 | 16.1 | 25.8 | 15.1 | 25.7 | 15.0 | 25.8 |
| 1960 | 20.3 | 25.7 | 20.6 | 25.6 | 19.6 | 25.4 | 18.7 | 25.5 | 16.1 | 25.4 | 15.4 | 25.4 | 15.1 | 25.6 |
| 1961 | 20.6 | 25.4 | 21.2 | 25.5 | 19.4 | 25.4 | 17.7 | 25.4 | 16.0 | 25.3 | 14.7 | 25.5 | 13.9 | 25.5 |
| 1962 | 20.2 | 25.8 | 20.2 | 25.9 | 19.3 | 25.7 | 17.7 | 25.6 | 16.9 | 25.7 | 14.9 | 25.8 | 14.6 | 25.7 |
| 1963 | 20.6 | 25.8 | 20.9 | 25.7 | 19.6 | 25.6 | 17.8 | 25.4 | 16.4 | 25.5 | 14.9 | 25.4 | 15.2 | 25.5 |
| 1964 | 20.2 | 26.0 | 19.4 | 25.9 | 19.3 | 26.0 | 17.5 | 25.9 | 15.9 | 25.7 | 15.1 | 25.6 | 14.2 | 25.8 |
| Mean | 20.4 | 26.0 | 20.5 | 25.9 | 19.2 | 25.8 | 17.5 | 25.8 | 16.2 | 25.8 | 15.2 | 25.7 | 14.8 | 25.8 |
| Maximum | 25 | 27.3 | 23 | 27.2 | 23 | 26.8 | 20 | 27.1 | 19 | 27.2 | 18 | 26.9 | 17 | 27.0 |
| Mean Max. | 22.0 | 26.4 | 22.2 | 26.4 | 21.0 | 26.3 | 18.9 | 26.3 | 17.4 | 26.2 | 16.2 | 26.1 | 15.3 | 26.2 |
| Mean Min. | 18.9 | 25.6 | 18.8 | 25.5 | 17.4 | 25.4 | 16.2 | 25.5 | 15.2 | 25.4 | 14.4 | 25.5 | 14.2 | 25.4 |
| Minimum | 18 | 24.9 | 17 | 25.2 | 15 | 24.9 | 15 | 25.1 | 14 | 25.0 | 13 | 25.0 | 13 | 24.9 |
| | | | | | | | | | | | | | | IQUIQUE, |
| 1959 | -- | -- | 19.3 | 25.5 | 18.7 | 25.4 | 18.6 | 25.5 | 17.5 | 25.5 | 16.6 | 25.5 | 16.1 | 25.5 |
| | | | | | | | | | | | | | | ARICA, |
| 1951-1954 | 19.1 | 26.0 | 19.4 | 25.7 | 19.2 | 25.4 | 18.1 | 25.4 | 17.7 | 25.4 | 16.7 | 25.5 | 16.0 | 25.6 |
| 1955-1959 | 19.3 | 25.8 | 19.8 | 25.8 | 19.6 | 25.8 | 18.4 | 25.8 | 17.7 | 25.7 | 16.9 | 25.7 | 16.1 | 25.7 |
| 1960 | 19.1 | 26.3 | 19.5 | 26.2 | 19.6 | 26.1 | 19.2 | 26.0 | 17.5 | 25.8 | 16.6 | 25.7 | 15.9 | 25.6 |
| 1961 | 19.7 | 26.0 | 20.3 | 26.2 | 19.2 | 26.0 | 19.2 | 26.0 | 17.2 | 25.6 | 16.2 | 25.7 | 15.2 | 25.6 |
| 1962 | 17.9 | 25.8 | 18.1 | 25.8 | 18.6 | 26.0 | 17.7 | 25.6 | 17.4 | 25.6 | 16.1 | 25.5 | 15.3 | 25.5 |
| 1963 | 19.8 | 26.1 | 19.6 | 25.5 | 19.2 | 25.2 | 17.5 | 25.4 | 16.6 | 25.4 | 16.8 | 25.5 | 16.8 | 25.4 |
| 1964 | 19.4 | 25.8 | 19.6 | 25.6 | 19.6 | 25.6 | 17.3 | 25.8 | 15.8 | 25.4 | 15.1 | 25.3 | 14.8 | 25.2 |
| Mean | 19.2 | 25.9 | 19.6 | 25.8 | 19.3 | 25.7 | 18.3 | 25.7 | 17.4 | 25.6 | 16.6 | 25.6 | 15.9 | 25.6 |
| Maximum | 23 | 26.8 | 22 | 27.1 | 23 | 26.7 | 25 | 27.1 | 21 | 26.9 | 19 | 26.8 | 19 | 26.4 |
| Mean Max. | 20.5 | 26.4 | 21.1 | 26.4 | 20.8 | 26.1 | 20.4 | 26.2 | 18.7 | 26.0 | 17.6 | 26.0 | 16.8 | 25.9 |
| Mean Min. | 17.2 | 25.5 | 17.8 | 25.2 | 17.6 | 25.3 | 17.0 | 25.3 | 16.3 | 25.3 | 15.8 | 25.2 | 15.2 | 25.3 |
| Minimum | 16 | 24.9 | 16 | 24.1 | 15 | 24.2 | 14 | 24.8 | 15 | 24.8 | 14 | 23.8 | 14 | 24.8 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| CHILE-continued | | | | | | | | | | | | | | | |
| 12.4 | 25.7 | 12.6 | 26.0 | 13.1 | 26.2 | 14.2 | 26.2 | 15.3 | 26.1 | 13.9 | 26.0 | | | | |
| 15 | 27.2 | 17 | 27.6 | 16 | 27.7 | 18 | 27.8 | 20 | 27.6 | | | 21 | 29.1 | | |
| 13.4 | 26.4 | 14.1 | 26.7 | 14.7 | 26.7 | 16.2 | 26.8 | 17.4 | 26.8 | | | | | | |
| 11.3 | 24.7 | 11.6 | 24.9 | 11.7 | 25.6 | 12.4 | 25.6 | 13.1 | 25.2 | | | | | | |
| 11 | 19.6 | 11 | 22.1 | 11 | 24.9 | 11 | 24.8 | 12 | 23.5 | | | | | 8 | 19.6 |
| CHILE | | | | | | | | | | | | | | | |
| 14.3 | 25.6 | 14.4 | 25.6 | 14.8 | 25.6 | 15.7 | 25.6 | 16.2 | 25.4 | 15.8 | 25.5 | 22 | 26.7 | 12 | 24.1 |
| 13.9 | 25.6 | 14.4 | 25.6 | 15.0 | 25.5 | 15.7 | 25.5 | 16.9 | 25.4 | 15.7 | 25.6 | 22 | 26.8 | 9 | 24.5 |
| 14.4 | 25.3 | 14.7 | 25.4 | 15.6 | 25.7 | 16.9 | 25.5 | 17.9 | 25.4 | 16.2 | 25.3 | 21 | 26.1 | 12 | 24.0 |
| 14.8 | 25.7 | 14.9 | 25.6 | 15.8 | 25.5 | 17.0 | 25.4 | 17.3 | 25.4 | 16.3 | 25.4 | 21 | 26.1 | 12 | 24.8 |
| 14.4 | 25.5 | 15.1 | 25.7 | 16.1 | 25.8 | 17.3 | 25.9 | 19.8 | 26.0 | 16.6 | 25.7 | 22 | 27.0 | 10 | 25.0 |
| 15.0 | 25.5 | 15.7 | 25.7 | 15.8 | 25.7 | 17.1 | 25.8 | 18.7 | 26.0 | 17.2 | 25.7 | 22 | 26.8 | 13 | 24.7 |
| 14.4 | 25.5 | 14.6 | 25.7 | 15.5 | 25.8 | 17.9 | 25.7 | 18.0 | 25.7 | 16.5 | 25.7 | 21 | 26.6 | 11 | 24.9 |
| 14.3 | 25.5 | 14.6 | 25.6 | 15.2 | 25.6 | 16.3 | 25.6 | 17.3 | 25.5 | 16.0 | 25.6 | | | | |
| 16 | 26.2 | 18 | 26.3 | 21 | 26.7 | 20 | 26.6 | 22 | 27.0 | | | 22 | 27.0 | | |
| 15.6 | 25.8 | 16.3 | 26.0 | 17.2 | 26.0 | 18.6 | 26.0 | 19.5 | 26.0 | | | | | | |
| 12.7 | 25.2 | 13.1 | 25.2 | 13.3 | 25.1 | 14.6 | 25.2 | 15.3 | 25.2 | | | | | | |
| 9 | 24.9 | 12 | 25.0 | 12 | 24.7 | 12 | 24.6 | 13 | 24.4 | | | | | 9 | 24.0 |
| CHILE | | | | | | | | | | | | | | | |
| 14.8 | 26.2 | 15.3 | 26.0 | 16.3 | 26.2 | 17.8 | 26.2 | 19.7 | 26.3 | 17.3 | 26.1 | 27 | 27.5 | 13 | 24.3 |
| 15.3 | 25.8 | 16.3 | 25.9 | 16.7 | 26.0 | 17.7 | 26.2 | 19.3 | 26.2 | 17.5 | 26.0 | 23 | 27.4 | 13 | 24.9 |
| 14.9 | 25.8 | 15.3 | 25.6 | 16.4 | 25.6 | 17.6 | 25.7 | 19.2 | 25.8 | 17.2 | 25.8 | 23 | 26.8 | 12 | 24.8 |
| 14.7 | 25.5 | 15.3 | 25.5 | 16.7 | 25.5 | 17.9 | 25.5 | 20.2 | 25.4 | 17.6 | 25.5 | 22 | 26.0 | 14 | 24.6 |
| 15.0 | 25.8 | 15.2 | 25.7 | 16.3 | 25.7 | 17.8 | 25.7 | 18.8 | 25.6 | 17.2 | 25.5 | 23 | 26.1 | 13 | 24.9 |
| 15.1 | 25.7 | 15.8 | 25.6 | 16.5 | 25.7 | 17.8 | 25.8 | 19.8 | 26.0 | 17.4 | 25.8 | 21 | 26.5 | 14 | 25.3 |
| 15.3 | 25.6 | 15.8 | 25.8 | 16.0 | 25.9 | 17.4 | 26.0 | 18.4 | 25.9 | 17.4 | 25.7 | 23 | 26.3 | 14 | 25.2 |
| 14.2 | 25.8 | 15.3 | 26.0 | 16.4 | 25.9 | 18.2 | 25.9 | 19.8 | 26.0 | 17.1 | 25.9 | 22 | 26.5 | 14 | 24.9 |
| 14.9 | 25.8 | 15.6 | 25.8 | 16.4 | 25.8 | 17.8 | 25.9 | 19.3 | 26.0 | 17.3 | 25.8 | | | | |
| 18 | 27.0 | 18 | 26.9 | 19 | 27.2 | 20 | 27.5 | 27 | 27.4 | | | 27 | 27.5 | | |
| 15.8 | 26.2 | 16.7 | 26.2 | 17.7 | 26.3 | 19.3 | 26.4 | 21.2 | 26.4 | | | | | | |
| 14.2 | 25.5 | 14.7 | 25.5 | 15.1 | 25.4 | 16.5 | 25.5 | 17.6 | 25.5 | | | | | | |
| 13 | 24.8 | 13 | 25.0 | 14 | 24.3 | 16 | 24.6 | 12 | 24.9 | | | | | 12 | 24.3 |
| CHILE | | | | | | | | | | | | | | | |
| 16.6 | 25.4 | 16.7 | 25.5 | -- | -- | -- | -- | 17.9 | 25.7 | -- | -- | 22* | 26.1* | 15* | 25.2* |
| CHILE | | | | | | | | | | | | | | | |
| 16.4 | 25.6 | 16.7 | 25.5 | 16.9 | 25.6 | 17.3 | 25.7 | 18.1 | 25.6 | 17.6 | 25.6 | 22 | 27.1 | 14 | 24.1 |
| 15.9 | 25.7 | 15.8 | 25.7 | 16.7 | 25.8 | 17.5 | 25.8 | 18.1 | 25.9 | 17.6 | 25.8 | 25 | 27.1 | 14 | 24.6 |
| 15.7 | 25.6 | 15.9 | 25.6 | 16.4 | 25.8 | 17.0 | 26.0 | 18.3 | 26.1 | 17.6 | 25.9 | 21 | 26.8 | 15 | 25.3 |
| 15.6 | 25.6 | 15.8 | 25.7 | 16.6 | 25.6 | 16.9 | 25.6 | 18.2 | 25.8 | 17.5 | 25.8 | 24 | 27.1 | 14 | 24.9 |
| 16.2 | 25.6 | 16.2 | 25.5 | 16.1 | 25.6 | 16.4 | 25.7 | 18.4 | 25.9 | 17.0 | 25.7 | 21 | 26.8 | 14 | 23.8 |
| 16.0 | 25.3 | 17.6 | 25.4 | 16.0 | 25.7 | 16.6 | 25.7 | 18.2 | 26.1 | 17.6 | 25.6 | 22 | 26.7 | 14 | 24.2 |
| 14.4 | 25.2 | 15.4 | 25.3 | 16.6 | 25.5 | 15.6 | 25.9 | 17.5 | 25.6 | 16.8 | 25.5 | 22 | 26.4 | 14 | 25.0 |
| 15.9 | 25.6 | 16.2 | 25.6 | 16.7 | 25.7 | 17.1 | 25.8 | 18.1 | 25.8 | 17.5 | 25.7 | | | | |
| 21 | 26.8 | 19 | 26.5 | 19 | 26.6 | 20 | 26.7 | 21 | 26.9 | | | 25 | 27.1 | | |
| 17.0 | 25.9 | 17.3 | 25.9 | 18.1 | 26.1 | 18.6 | 26.2 | 19.6 | 26.3 | | | | | | |
| 15.1 | 25.3 | 15.2 | 25.3 | 15.3 | 25.3 | 15.9 | 25.4 | 16.6 | 25.4 | | | | | | |
| 14 | 25.0 | 14 | 25.1 | 14 | 25.2 | 14 | 25.1 | 16 | 25.1 | | | | | 14 | 23.8 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | EASTER ISLAND, |
| 1957-1958 | 25.5 | 26.7 | 25.2 | 26.6 | 24.5 | 26.5 | 23.3 | 26.4 | 21.5 | 26.1 | 20.2 | 25.8 | 19.8 | 26.1 |
| -- | | | | | | | | | | | | | | |
| 1962 | -- | -- | 26.6 | 27.5 | 26.2 | 27.5 | 24.9 | 27.5 | -- | -- | -- | -- | 20.3 | 26.0 |
| 1963 | 24.9 | 25.4 | 26.1 | 27.3 | 25.7 | 27.2 | 24.4 | 27.3 | 21.6 | 25.8 | 19.9 | 25.4 | 19.2 | 24.8 |
| 1964 | -- | -- | -- | -- | -- | -- | -- | -- | 22.5 | 26.9 | 19.8 | 25.7 | 19.2 | 25.9 |
| Mean | 25.3 | 26.3 | 25.8 | 27.0 | 25.2 | 26.9 | 23.9 | 26.9 | 21.8 | 26.2 | 20.0 | 25.7 | 19.7 | 25.8 |
| Maximum | 29 | 28.1 | 29 | 28.2 | 29 | 28.1 | 27 | 28.8 | 24 | 27.8 | 26 | 27.8 | 23 | 27.5 |
| Mean Max. | 28.3 | 27.7 | 28.6 | 27.8 | 28.4 | 27.8 | 26.9 | 28.0 | 24.3 | 27.4 | 23.1 | 27.3 | 22.2 | 27.3 |
| Mean Min. | 21.8 | 24.2 | 23.2 | 25.7 | 22.2 | 25.2 | 21.0 | 25.5 | 18.8 | 24.4 | 17.1 | 23.3 | 16.9 | 22.8 |
| Minimum | 19 | 22.9 | 21 | 25.2 | 20 | 24.0 | 21 | 24.6 | 17 | 23.3 | 17 | 21.9 | 16 | 21.5 |
| | | | | | | | | | | | | | | MATARANI, |
| 1944 | -- | -- | -- | -- | 15.3 | 26.2 | 15.4 | 26.2 | 15.2 | 26.2 | 15.3 | 26.0 | 15.5 | 26.4 |
| 1945-1949 | 16.8 | 26.3 | 16.4 | 26.4 | 17.0 | 26.3 | 16.6 | 26.3 | 16.2 | 26.3 | 15.4 | 26.2 | 14.7 | 26.4 |
| 1950-1954 | 17.3 | 26.5 | 15.6 | 26.2 | 15.7 | 26.2 | 16.0 | 26.2 | 15.4 | 26.3 | 15.6 | 26.4 | 15.3 | 26.3 |
| 1955-1959 | 16.9 | 26.4 | 17.1 | 26.7 | 18.0 | 26.8 | 17.2 | 26.4 | 16.7 | 26.7 | 15.8 | 26.6 | 15.3 | 26.4 |
| 1960 | 16.8 | 26.2 | 16.6 | 26.7 | 16.0 | 26.2 | 16.5 | 26.7 | 16.5 | 26.6 | 15.9 | 26.5 | 15.3 | 26.4 |
| 1961 | 16.7 | 26.2 | 17.0 | 26.8 | 16.9 | 26.6 | 15.9 | 26.5 | 15.1 | 26.4 | 14.9 | 26.4 | 14.5 | 26.3 |
| 1962 | 15.7 | 26.8 | 15.5 | 26.4 | 15.5 | 26.7 | 15.7 | 26.5 | 15.8 | 26.5 | 15.3 | -- | 14.6 | 26.3 |
| 1963 | 16.2 | 26.7 | 16.4 | 26.5 | 15.7 | 26.7 | 15.4 | 26.5 | 15.7 | 26.7 | 15.7 | 26.5 | 15.3 | 26.7 |
| 1964 | 16.8 | 26.0 | 17.9 | 26.0 | 16.3 | 25.7 | 15.3 | 26.4 | 14.5 | 26.4 | 14.0 | 26.2 | 14.1 | 26.2 |
| Mean | 16.8 | 26.4 | 16.7 | 26.5 | 16.7 | 26.4 | 16.3 | 26.4 | 15.9 | 26.5 | 15.4 | 26.4 | 15.0 | 26.4 |
| Maximum | 22 | 27.4 | 20 | 27.4 | 21 | 27.8 | 21 | 27.4 | 21 | 28.2 | 19 | 27.4 | 18 | 28.5 |
| Mean Max. | 18.4 | 26.9 | 17.8 | 26.9 | 18.1 | 27.0 | 17.6 | 26.8 | 16.9 | 27.0 | 16.2 | 26.8 | 15.9 | 26.9 |
| Mean Min. | 15.6 | 25.9 | 15.6 | 25.9 | 15.6 | 26.0 | 15.4 | 25.9 | 15.3 | 26.0 | 14.8 | 26.1 | 14.3 | 26.0 |
| Minimum | 14 | 25.0 | 14 | 22.0 | 14 | 25.1 | 14 | 25.1 | 14 | 24.9 | 14 | 24.9 | 12 | 24.4 |
| | | | | | | | | | | | | | | SAN JUAN, |
| 1958-1959 | 16.2 | 25.6 | 17.4 | 25.7 | 18.0 | 25.7 | 16.3 | 25.6 | 15.4 | 25.6 | 14.6 | 25.6 | 14.2 | 25.7 |
| 1960 | 15.3 | 25.5 | 15.4 | 25.7 | 15.0 | 25.7 | 15.1 | 25.7 | 14.5 | 25.6 | 14.3 | 25.6 | 15.0 | 25.6 |
| 1961 | 15.8 | 25.8 | 15.7 | 25.8 | 15.9 | 25.8 | 14.4 | 25.6 | 14.3 | 25.6 | 14.2 | 25.7 | 13.7 | 25.6 |
| 1962 | 14.8 | 25.6 | 15.2 | 25.7 | 14.9 | 25.6 | 14.6 | 25.6 | -- | -- | 14.0 | 25.6 | -- | -- |
| 1963 | 15.5 | 26.3 | 15.2 | -- | 14.9 | 26.1 | 14.7 | 26.1 | 14.9 | 26.0 | 14.7 | 25.8 | 14.7 | 25.9 |
| 1964 | 15.0 | 25.9 | 15.7 | 26.1 | 15.8 | 26.0 | 14.4 | 25.8 | 13.6 | 25.9 | 13.1 | 25.8 | 12.8 | 25.7 |
| Mean | 15.6 | 25.8 | 16.0 | 25.8 | 16.1 | 25.8 | 15.2 | 25.7 | 14.7 | 25.7 | 14.2 | 25.7 | 14.1 | 25.7 |
| Maximum | 19 | 27.0 | 21 | 26.5 | 22 | 26.5 | 18 | 26.8 | 17 | 26.3 | 16 | 26.1 | 16 | 26.3 |
| Mean Max. | 16.7 | 26.2 | 18.1 | 26.1 | 17.9 | 26.2 | 16.3 | 26.1 | 15.7 | 25.9 | 15.0 | 25.8 | 14.8 | 25.9 |
| Mean Min. | 14.7 | 25.4 | 14.8 | 25.5 | 14.9 | 25.4 | 14.2 | 25.5 | 13.7 | 25.5 | 13.6 | 25.5 | 13.2 | 25.5 |
| Minimum | 13 | 24.6 | 14 | 25.2 | 14 | 25.1 | 13 | 25.3 | 12 | 25.1 | 12 | 25.3 | 12 | 25.2 |
| | | | | | | | | | | | | | | CALLAO (Naval Arsenal), |
| 1944 | -- | -- | 21.7 | 23.9 | 20.7 | 23.4 | 19.9 | 23.5 | 18.7 | 24.2 | 17.9 | 24.4 | -- | -- |
| 1945-1949 | 21.1 | 25.2 | 21.7 | 24.6 | 21.9 | 24.7 | 20.7 | 24.1 | 18.9 | 24.6 | 17.3 | 24.5 | 17.3 | 24.4 |
| 1950-1953 | 19.1 | 25.0 | 19.9 | 24.6 | 20.4 | 24.6 | 19.7 | 24.6 | 18.2 | 25.3 | 17.4 | 25.6 | 17.1 | 25.1 |
| Mean | 20.1 | 25.1 | 21.0 | 24.5 | 21.2 | 24.5 | 20.3 | 24.2 | 18.7 | 24.8 | 17.4 | 24.9 | 17.2 | 24.7 |
| Maximum | 26 | 29.6 | 27 | 27.0 | 26 | 28.4 | 24 | 27.7 | 22 | 27.0 | 20 | 27.0 | 21 | 26.7 |
| Mean Max. | 22.7 | 26.8 | 23.1 | 26.0 | 23.3 | 26.1 | 22.4 | 25.9 | 20.6 | 26.0 | 18.8 | 26.3 | 18.7 | 25.8 |
| Mean Min. | 18.1 | 23.8 | 18.4 | 23.1 | 19.4 | 22.9 | 18.0 | 22.8 | 17.2 | 23.3 | 16.5 | 23.9 | 16.3 | 23.5 |
| Minimum | 17 | 21.9 | 17 | 21.5 | 17 | 22.0 | 15 | 21.3 | 16 | 21.3 | 14 | 22.0 | 15 | 22.0 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **CHILE** | | | | | | | | | | | | | | | |
| 19.9 | 25.3 | 20.5 | 25.0 | 21.2 | 25.4 | 22.0 | 25.7 | 23.6 | 26.1 | 22.3 | 26.0 | 29 | 28.8 | 16 | 21.0 |
| 20.3 | 26.2 | 20.6 | 25.9 | 22.1 | 25.5 | 22.7 | 25.6 | 24.9 | 26.3 | -- | -- | 30 | 28.2* | 18* | 20.5* |
| 20.4 | 25.0 | 21.5 | 25.1 | 21.8 | 25.5 | 22.0 | 26.3 | 24.9 | 26.6 | 22.7 | 26.0 | 31 | 29.9 | 16 | 21.9 |
| 20.6 | 24.6 | 20.8 | 25.8 | 22.1 | 26.0 | 22.9 | 25.3 | 25.8 | 26.1 | -- | -- | 31* | 27.8* | 17* | 21.8* |
| 20.2 | 25.3 | 20.9 | 25.4 | 21.7 | 25.5 | 22.3 | 25.7 | 24.6 | 26.2 | 22.6 | 26.1 | | | | |
| 24 | 27.6 | 26 | 28.8 | 27 | 29.9 | 28 | 28.6 | 31 | 29.4 | | | 31 | 29.9 | | |
| 22.9 | 26.9 | 24.2 | 27.7 | 25.1 | 28.0 | 25.6 | 27.6 | 29.4 | 27.9 | | | | | | |
| 17.4 | 22.4 | 18.1 | 22.6 | 18.8 | 22.1 | 18.9 | 22.4 | 20.8 | 24.0 | | | | | | |
| 16 | 21.5 | 17 | 21.3 | 17 | 20.5 | 17 | 21.0 | 20 | 23.4 | | | | | 16 | 20.5 |
| **PERU** | | | | | | | | | | | | | | | |
| 16.1 | 26.3 | 15.7 | 26.3 | 15.0 | 26.4 | 15.7 | 26.2 | -- | -- | -- | -- | 18* | 28.0* | 14 | 24.7* |
| 14.3 | 26.3 | 14.5 | 26.5 | 14.6 | 26.4 | 15.3 | 26.3 | 15.7 | 26.4 | 15.6 | 26.3 | 20 | 28.5 | 12 | 24.4 |
| 15.2 | 26.3 | 14.1 | 26.4 | 15.3 | 26.5 | 15.6 | 27.1 | 17.2 | 27.0 | 15.7 | 26.4 | 20 | 28.0 | 13 | 25.6 |
| 14.9 | 26.4 | 14.4 | 26.2 | 15.0 | 26.4 | 15.4 | 26.2 | 16.1 | 26.5 | 16.1 | 26.5 | 22 | 28.2 | 13 | 25.0 |
| -- | -- | 14.5 | 26.2 | 14.1 | 26.2 | 15.2 | 26.2 | 16.5 | 26.7 | -- | -- | 18 | 27.0* | 14 | 25.7* |
| 14.8 | 26.4 | 14.2 | 26.2 | 14.5 | 26.3 | 15.1 | 26.6 | 16.8 | 26.8 | 15.5 | 26.5 | 19 | 27.3 | 13 | 26.0 |
| 14.2 | 26.2 | 14.7 | 26.2 | 14.2 | 26.3 | 14.9 | 26.3 | 15.8 | 26.6 | -- | -- | 18 | 27.2* | 14 | 25.8* |
| 15.0 | 26.4 | 14.9 | 26.2 | 14.6 | 26.3 | 14.9 | 26.1 | 15.8 | 26.0 | 15.5 | 26.4 | 18 | 27.3 | 14 | 22.0 |
| 13.4 | 26.1 | 14.2 | 26.2 | 14.3 | 26.2 | 14.9 | 26.2 | 15.3 | 26.5 | 15.1 | 26.2 | 20 | 27.3 | 13 | 25.3 |
| 14.8 | 26.3 | 14.5 | 26.3 | 14.8 | 26.4 | 15.3 | 26.3 | 16.2 | 26.5 | 15.7 | 26.4 | | | | |
| 18 | 28.1 | 17 | 28.1 | 19 | 28.1 | 18 | 27.3 | 19 | 27.8 | | | 22 | 28.5 | | |
| 15.5 | 26.8 | 15.4 | 27.0 | 15.9 | 26.8 | 16.6 | 26.8 | 17.7 | 27.0 | | | | | | |
| 14.1 | 25.9 | 13.9 | 25.9 | 14.0 | 26.0 | 14.6 | 25.9 | 15.1 | 26.2 | | | | | | |
| 12 | 24.7 | 12 | 25.5 | 12 | 25.7 | 13 | 25.2 | 13 | 25.5 | | | | | 12 | 22.0 |
| **PERU** | | | | | | | | | | | | | | | |
| 13.4 | 25.6 | 13.0 | 25.7 | 13.4 | 25.8 | 13.9 | 25.7 | 14.4 | 25.4 | 15.0 | 25.6 | 22 | 26.8 | 12 | 24.6 |
| 13.8 | 25.6 | 13.4 | 25.6 | 13.3 | 25.6 | -- | -- | 14.4 | 25.6 | -- | -- | 18 | 25.9* | 13 | 25.3* |
| 13.7 | 25.6 | 12.9 | 25.5 | 13.1 | 25.5 | -- | -- | -- | -- | -- | -- | 18 | 26.2* | 12* | 25.2* |
| -- | -- | -- | -- | -- | -- | -- | -- | 14.3 | 26.1 | -- | -- | 19 | 27.1* | 13* | 25.1* |
| 14.2 | 25.8 | 13.9 | 25.8 | 13.4 | 25.7 | 13.7 | 25.7 | 14.5 | 25.9 | 14.5 | -- | 17 | 27.0* | 13 | 25.4* |
| 12.6 | 25.7 | 12.6 | 25.7 | 12.7 | 25.7 | 12.9 | 25.7 | 13.7 | 25.8 | 13.7 | 25.8 | 19 | 26.5 | 12 | 25.4 |
| 13.6 | 25.6 | 13.2 | 25.7 | 13.2 | 25.7 | 13.6 | 25.7 | 14.3 | 25.7 | 14.5 | 25.7 | | | | |
| 14 | 26.2 | 14 | 26.7 | 14 | 26.1 | 17 | 26.2 | 19 | 27.1 | | | 22 | 27.1 | | |
| 14.0 | 25.8 | 13.8 | 25.9 | 14.1 | 25.9 | 14.7 | 26.0 | 16.0 | 26.2 | | | | | | |
| 12.9 | 25.4 | 12.6 | 25.5 | 12.7 | 25.5 | 12.7 | 25.4 | 13.5 | 25.3 | | | | | | |
| 12 | 25.2 | 12 | 25.3 | 12 | 25.3 | 12 | 25.2 | 13 | 24.7 | | | | | 12 | 24.6 |
| **PERU** | | | | | | | | | | | | | | | |
| 18.3 | 24.7 | 17.5 | 24.8 | 17.5 | 25.0 | 18.8 | 25.1 | 19.2 | 25.4 | -- | -- | 24* | 27.5* | 17* | 21.4* |
| 16.7 | 24.9 | 17.1 | 24.9 | 17.8 | 25.1 | 18.7 | 25.2 | 19.7 | 25.1 | 19.1 | 24.8 | 27 | 29.6 | 15 | 19.8 |
| 17.0 | 25.2 | 17.1 | 25.2 | 17.7 | 25.0 | 17.9 | 25.0 | 18.6 | 25.1 | 18.3 | 25.0 | 24 | 27.0 | 14 | 22.0 |
| 17.0 | 25.0 | 17.1 | 25.0 | 17.7 | 25.1 | 18.4 | 25.1 | 19.2 | 25.1 | 18.8 | 24.8 | | | | |
| 20 | 26.9 | 20 | 26.7 | 22 | 27.0 | 22 | 27.1 | 22 | 26.9 | | | 27 | 29.6 | | |
| 18.1 | 26.0 | 18.9 | 25.9 | 19.8 | 26.2 | 20.1 | 26.1 | 21.1 | 26.1 | | | | | | |
| 16.1 | 23.9 | 15.9 | 23.7 | 16.2 | 23.3 | 16.8 | 24.0 | 17.5 | 23.9 | | | | | | |
| 15 | 22.4 | 15 | 21.6 | 15 | 19.8 | 15 | 22.7 | 16 | 21.6 | | | | | 14 | 19.8 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | CALLAO (La Punta), | |
| 1954 | -- | -- | 16.3 | 26.3 | 16.4 | 26.4 | 16.2 | 26.2 | 15.5 | 26.0 | 15.2 | 25.7 | 14.7 | 25.8 |
| 1955-1959 | 16.8 | 26.5 | 18.4 | 26.3 | 18.8 | 26.4 | 18.3 | 26.4 | 17.9 | 26.4 | 17.1 | 26.1 | 16.9 | 26.3 |
| 1960 | 16.7 | 26.6 | 17.2 | 26.3 | 17.6 | 26.4 | 16.9 | 26.5 | 16.2 | 26.2 | 16.1 | 26.2 | 15.6 | 26.1 |
| 1961 | 16.2 | 26.2 | 17.6 | 26.3 | 17.9 | 26.4 | 17.1 | 26.2 | 17.2 | 25.9 | 15.9 | 26.0 | 15.6 | 25.9 |
| 1962 | 16.7 | 26.3 | 17.8 | 26.4 | 16.6 | 26.2 | 16.3 | 26.1 | 15.7 | 25.9 | 16.2 | 26.1 | 16.0 | 26.2 |
| 1963 | 15.6 | 26.1 | 16.3 | 26.0 | 18.2 | 26.4 | 17.3 | 26.1 | 17.1 | 26.0 | 17.3 | 26.1 | 16.9 | 26.1 |
| 1964 | 17.3 | 26.3 | 18.2 | 26.4 | 17.3 | 26.2 | 16.7 | 26.2 | 15.8 | 26.1 | -- | -- | 14.9 | 26.4 |
| Mean | 16.7 | 26.4 | 17.8 | 26.3 | 18.0 | 26.3 | 17.4 | 26.3 | 17.0 | 26.2 | 16.6 | 26.1 | 16.1 | 26.2 |
| Maximum | 21 | 28.2 | 22 | 27.1 | 23 | 27.4 | 21 | 27.5 | 22 | 27.0 | 20 | 26.9 | 21 | 27.9 |
| Mean Max. | 18.1 | 27.1 | 19.7 | 26.8 | 19.8 | 26.8 | 19.7 | 26.9 | 18.3 | 26.6 | 17.6 | 26.4 | 17.1 | 26.6 |
| Mean Min. | 15.4 | 26.0 | 16.2 | 25.8 | 16.4 | 26.0 | 16.3 | 25.8 | 16.1 | 25.9 | 16.1 | 25.6 | 15.6 | 25.8 |
| Minimum | 14 | 25.7 | 14 | 25.0 | 16 | 25.4 | 15 | 25.3 | 14 | 25.3 | 14 | 23.9 | 14 | 25.1 |
| | | | | | | | | | | | | | CHIMBOTE, | |
| 1955-1959 | 20.1 | 25.8 | 22.5 | 25.8 | 23.2 | 25.8 | 21.6 | 25.9 | 20.1 | 25.8 | 19.2 | 26.0 | 18.7 | 25.9 |
| 1960 | 20.3 | 26.2 | 21.5 | 26.2 | 21.1 | 26.3 | 19.4 | 26.5 | 17.9 | 26.5 | 17.7 | 26.4 | 16.8 | 26.5 |
| 1961 | 20.1 | 26.4 | 22.0 | 26.4 | 21.7 | 26.3 | 20.4 | 26.3 | 18.9 | 26.5 | 17.8 | 26.5 | 17.1 | 26.2 |
| 1962 | 20.7 | 26.0 | 21.7 | 26.6 | 20.1 | 26.2 | 19.1 | 26.1 | 18.6 | 26.1 | 16.8 | 26.0 | 16.9 | 26.1 |
| 1963 | 18.8 | 26.1 | 19.7 | 26.1 | 21.9 | 26.2 | 20.1 | 26.4 | 19.4 | 25.8 | 18.3 | 26.1 | 18.0 | 26.0 |
| 1964 | 21.3 | 26.5 | -- | -- | -- | -- | 20.6 | 26.3 | 17.7 | 26.0 | 16.1 | 26.1 | 16.2 | 26.1 |
| Mean | 20.2 | 26.0 | 21.9 | 26.1 | 22.3 | 26.0 | 20.7 | 26.1 | 19.3 | 26.0 | 18.3 | 26.1 | 17.8 | 26.0 |
| Maximum | 25 | 27.5 | 26 | 26.9 | 27 | 27.2 | 24 | 27.5 | 26 | 27.0 | 23 | 27.3 | 23 | 27.4 |
| Mean Max. | 21.9 | 26.5 | 23.4 | 26.5 | 24.2 | 26.5 | 22.5 | 26.6 | 20.9 | 26.4 | 19.4 | 26.5 | 19.0 | 26.6 |
| Mean Min. | 18.1 | 25.5 | 20.0 | 25.7 | 20.6 | 25.6 | 19.2 | 25.5 | 17.8 | 25.3 | 17.1 | 25.6 | 16.7 | 25.6 |
| Minimum | 15 | 24.9 | 18 | 25.3 | 19 | 25.1 | 17 | 25.1 | 16 | 22.3 | 14 | 25.2 | 14 | 25.1 |
| | | | | | | | | | | | | | TALARA, | |
| 1944 | 22.4 | -- | -- | -- | 23.4 | -- | 21.0 | -- | 20.4 | -- | 19.3 | 26.8 | 19.4 | 26.6 |
| 1945-1949 | 22.4 | 26.5 | 24.1 | 26.4 | 22.9 | 26.7 | 20.9 | 26.8 | 19.3 | 26.7 | 19.4 | 26.6 | 18.7 | 26.7 |
| 1950-1954 | 20.4 | 26.2 | 21.4 | 25.9 | 21.7 | 26.0 | 19.6 | 26.3 | 18.6 | 26.2 | 17.9 | 26.2 | 17.9 | 26.2 |
| 1955-1959 | 21.3 | 26.0 | 23.7 | 25.9 | 22.8 | 25.7 | 21.4 | 26.1 | 20.3 | 26.2 | 19.9 | 26.2 | 18.3 | 26.1 |
| 1960 | 21.3 | 25.7 | 20.4 | 26.1 | 20.6 | 26.0 | 18.7 | 26.1 | 17.7 | 26.2 | 18.7 | 26.2 | 17.6 | 26.1 |
| 1961 | 22.4 | -- | 24.2 | 26.4 | 20.7 | 26.1 | 19.9 | 26.3 | 18.9 | 25.9 | 18.1 | 26.3 | 17.8 | 26.3 |
| 1962 | 21.8 | 26.4 | 19.3 | 26.1 | 18.2 | 26.1 | 17.7 | 26.2 | 18.2 | 26.2 | 17.5 | 26.1 | 17.1 | 26.1 |
| 1963 | 19.4 | 26.0 | 22.3 | 25.7 | 20.8 | 26.1 | 19.4 | 26.3 | 19.9 | 26.3 | 18.9 | 26.2 | 19.0 | -- |
| 1964 | 20.2 | 25.9 | 19.9 | 26.3 | 21.4 | 26.8 | 18.8 | 25.7 | 14.9 | 24.7 | 16.0 | 25.8 | 16.1 | 25.6 |
| Mean | 21.4 | 26.2 | 22.6 | 26.1 | 21.9 | 26.2 | 20.2 | 26.4 | 19.1 | 26.2 | 18.8 | 26.3 | 18.2 | 26.3 |
| Maximum | 28 | 28.0 | 28 | 27.8 | 29 | 28.1 | 27 | 29.3 | 24 | 27.7 | 25 | 27.9 | 22 | 27.6 |
| Mean Max. | 24.3 | 26.9 | 25.3 | 27.0 | 25.1 | 26.9 | 22.7 | 27.1 | 21.1 | 26.8 | 20.9 | 26.9 | 20.0 | 26.8 |
| Mean Min. | 18.3 | 25.4 | 19.9 | 25.4 | 19.0 | 25.4 | 18.7 | 25.7 | 17.7 | 25.8 | 17.3 | 25.8 | 16.8 | 25.7 |
| Minimum | 14 | 24.6 | 17 | 24.4 | 17 | 23.5 | 16 | 22.9 | 16 | 25.2 | 15 | 25.3 | 15 | 24.0 |
| | | | | | | | | | | | | | LA LIBERTAD, | |
| 1949 | 25.2 | 25.4 | 25.9 | 25.6 | 27.1 | 25.7 | -- | -- | -- | -- | 24.7 | 26.5 | -- | -- |
| 1950-1953 | 26.1 | 25.3 | 26.9 | 25.6 | 27.6 | 25.8 | 25.7 | 26.2 | 25.2 | 26.2 | 24.9 | 25.8 | 23.6 | 25.8 |
| -- 1955-1959 | 25.8 | 25.3 | 27.3 | 25.5 | 27.2 | 25.6 | 26.4 | 26.0 | 25.1 | 26.1 | 24.4 | 26.0 | 23.7 | 25.7 |
| 1960 | 26.4 | 24.9 | 26.7 | 25.0 | 27.3 | 25.3 | 25.3 | 25.9 | 26.1 | 25.3 | 21.8 | 25.5 | 22.5 | 25.6 |
| 1961 | 26.9 | 25.0 | 28.4 | 24.9 | 26.4 | 25.4 | 25.6 | 25.9 | 25.1 | 26.0 | 24.2 | 25.4 | 22.3 | 25.2 |
| 1962 | 25.1 | 25.7 | 26.2 | 26.4 | 26.1 | 27.0 | 25.8 | 27.0 | 25.4 | 26.8 | 23.6 | 26.6 | 22.8 | 26.2 |
| 1963 | 27.4 | 25.9 | 27.3 | 26.1 | 27.1 | 26.5 | 26.1 | 26.8 | 24.7 | 26.9 | 23.1 | 26.8 | 23.4 | 26.4 |
| 1964 | 26.1 | 25.9 | 26.6 | 26.0 | 28.7 | 26.0 | 26.4 | 26.1 | 25.6 | 26.5 | 24.3 | 26.3 | 22.9 | 26.2 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| PERU | | | | | | | | | | | | | | | |
| 14.5 | 25.7 | 14.4 | 25.8 | 14.2 | 25.9 | 14.1 | 26.0 | 15.2 | 26.0 | -- | -- | 19* | 26.7* | 13 | 23.9* |
| 15.9 | 26.2 | 15.4 | 26.3 | 15.3 | 26.4 | 15.6 | 26.4 | 16.1 | 26.4 | 16.9 | 26.3 | 23 | 27.4 | 13 | 25.0 |
| 15.6 | 26.1 | 15.4 | 26.1 | 15.1 | 26.0 | 15.2 | 26.1 | 15.8 | 26.1 | 16.1 | 26.2 | 19 | 28.2 | 14 | 25.9 |
| 15.7 | 26.0 | 15.5 | 26.4 | 15.4 | 26.0 | 15.1 | 25.9 | 15.3 | 25.9 | 16.2 | 26.1 | 20 | 28.0 | 14 | 25.6 |
| 15.6 | 25.9 | 15.5 | 26.0 | 15.4 | 26.0 | 15.2 | 26.0 | 15.7 | 26.1 | 16.1 | 26.1 | 21 | 27.9 | 14 | 25.8 |
| 16.5 | 26.0 | 16.2 | 26.1 | 15.6 | 26.0 | 15.9 | 26.2 | 15.8 | 26.1 | 16.6 | 26.1 | 21 | 26.8 | 15 | 25.7 |
| 14.7 | 26.1 | 14.6 | 25.9 | 14.3 | 25.9 | 14.5 | 26.0 | 14.9 | 26.2 | -- | -- | 19 | 26.9* | 14 | 25.7* |
| 15.7 | 26.1 | 15.3 | 26.2 | 15.1 | 26.1 | 15.3 | 26.2 | 15.7 | 26.2 | 16.4 | 26.2 | | | | |
| 18 | 27.0 | 18 | 27.1 | 18 | 26.7 | 18 | 27.4 | 20 | 27.2 | | | 23 | 28.2 | | |
| 16.4 | 26.4 | 16.3 | 26.4 | 16.2 | 26.4 | 16.4 | 26.6 | 17.1 | 26.6 | | | | | | |
| 15.2 | 25.8 | 14.6 | 25.9 | 14.4 | 25.9 | 14.4 | 26.0 | 14.7 | 25.9 | | | | | | |
| 14 | 24.8 | 14 | 25.5 | 13 | 25.7 | 13 | 25.6 | 13 | 25.7 | | | | | 13 | 23.9 |
| PERU | | | | | | | | | | | | | | | |
| 17.9 | 25.9 | 17.6 | 25.8 | 18.1 | 25.8 | 18.8 | 25.8 | 19.4 | 25.9 | 19.8 | 25.8 | 27 | 27.5 | 14 | 25.0 |
| 16.9 | 26.2 | 17.6 | 26.0 | 17.2 | 26.1 | 18.2 | 26.2 | 18.9 | 26.2 | 18.6 | 26.3 | 23 | 27.2 | 14 | 25.5 |
| 17.3 | 26.1 | 17.3 | 26.0 | 17.7 | 26.0 | 18.6 | 26.1 | 19.2 | 26.2 | 19.0 | 26.2 | 23 | 27.4 | 16 | 24.9 |
| 17.1 | 25.9 | 17.6 | 26.0 | 16.8 | 26.0 | 18.1 | 26.1 | 18.7 | 26.3 | 18.5 | 26.1 | 23 | 27.2 | 14 | 25.3 |
| 18.2 | 26.1 | 18.6 | 26.1 | 18.9 | 26.1 | 19.3 | 26.3 | 20.2 | 26.4 | 19.3 | 26.1 | 23 | 27.5 | 16 | 22.3 |
| 15.8 | 26.0 | 16.1 | 26.1 | 17.1 | 26.1 | 17.4 | 26.4 | 18.6 | 26.4 | -- | -- | 22* | 27.5* | 14 | 25.1* |
| 17.5 | 26.0 | 17.5 | 25.9 | 17.8 | 25.9 | 18.6 | 26.0 | 19.3 | 26.1 | 19.3 | 26.0 | | | | |
| 22 | 26.8 | 20 | 26.8 | 20 | 26.7 | 21 | 27.0 | 23 | 27.3 | | | 27 | 27.5 | | |
| 18.7 | 26.4 | 18.5 | 26.3 | 18.7 | 26.3 | 19.8 | 26.4 | 20.4 | 26.5 | | | | | | |
| 16.2 | 25.6 | 16.2 | 25.5 | 16.8 | 25.5 | 17.3 | 25.7 | 18.1 | 25.7 | | | | | | |
| 14 | 25.0 | 14 | 25.1 | 16 | 25.1 | 16 | 25.1 | 17 | 25.2 | | | | | 14 | 22.3 |
| PERU | | | | | | | | | | | | | | | |
| 18.3 | 26.8 | 18.8 | 26.8 | 17.7 | 26.6 | 17.2 | 26.6 | 17.2 | 26.9 | -- | -- | 27* | 27.5* | 15 | 25.9* |
| 18.1 | 26.6 | 17.7 | 26.4 | 17.8 | 26.4 | 17.7 | 26.4 | 18.9 | 26.5 | 19.8 | 26.6 | 28 | 29.5 | 14 | 24.9 |
| 17.2 | 26.3 | 18.0 | 26.2 | 17.9 | 26.5 | 18.6 | 26.1 | 18.3 | 26.3 | 19.0 | 26.2 | 29 | 27.9 | 14 | 22.9 |
| 18.1 | 26.2 | 18.0 | 26.1 | 18.0 | 26.2 | 18.7 | 26.1 | 18.6 | 26.1 | 19.9 | 26.1 | 28 | 27.8 | 15 | 24.1 |
| 17.7 | 25.8 | 18.0 | 25.9 | -- | -- | 17.7 | 26.0 | 19.6 | 25.7 | -- | -- | 24 | 27.0* | 16* | 24.1* |
| 17.6 | 26.0 | 17.3 | 26.1 | 17.4 | 25.8 | 17.1 | 26.1 | 18.1 | 26.1 | 19.1 | -- | 28 | 27.3* | 15 | 24.0* |
| 17.3 | 25.9 | 17.8 | 26.1 | 16.4 | 26.0 | 17.2 | 25.9 | 16.7 | 25.6 | 17.9 | 26.1 | 26 | 27.9 | 15 | 25.2 |
| 19.0 | 26.1 | 18.7 | 25.9 | 17.8 | 25.8 | 17.9 | 25.8 | 19.3 | 25.7 | 19.4 | -- | 25 | 27.6* | 16 | 24.3* |
| 16.0 | 25.6 | 15.9 | 25.9 | 16.9 | 25.8 | 17.6 | 25.7 | 17.6 | 25.6 | 17.6 | 25.8 | 24 | 26.9 | 14 | 24.7 |
| 17.8 | 26.3 | 17.8 | 26.2 | 17.7 | 26.3 | 18.1 | 26.1 | 18.4 | 26.2 | 19.3 | 26.2 | | | | |
| 22 | 29.5 | 23 | 27.4 | 24 | 27.4 | 23 | 27.3 | 24 | 27.5 | | | 29 | 29.5 | | |
| 19.7 | 26.9 | 20.2 | 26.8 | 20.9 | 26.9 | 20.8 | 26.9 | 21.5 | 26.8 | | | | | | |
| 16.6 | 25.7 | 16.1 | 25.6 | 15.9 | 25.6 | 15.8 | 25.5 | 16.2 | 25.7 | | | | | | |
| 15 | 25.3 | 15 | 24.1 | 14 | 25.1 | 14 | 24.3 | 14 | 24.8 | | | | | 14 | 22.9 |
| ECUADOR | | | | | | | | | | | | | | | |
| -- | -- | 23.5 | 25.6 | 22.8 | 25.6 | 22.8 | 25.3 | 24.2 | 25.2 | -- | -- | 29* | 27.5* | 22* | 24.1* |
| 22.9 | 25.9 | 23.4 | 25.8 | 23.3 | 25.3 | 24.2 | 25.3 | 24.7 | 25.3 | 24.9 | 25.7 | 31 | 30.0 | 19 | 22.2 |
| 23.6 | 25.7 | 23.8 | 25.6 | 23.9 | 25.5 | 23.9 | 25.4 | 25.1 | 25.4 | 25.0 | 25.6 | 31 | 27.5 | 18 | 23.4 |
| 22.4 | 25.4 | 23.1 | 25.4 | 23.1 | 25.0 | 23.3 | 24.7 | 24.8 | 25.0 | 24.4 | 25.2 | 29 | 26.2 | 18 | 24.2 |
| 21.4 | 25.6 | 23.1 | 26.0 | 23.7 | 26.0 | 23.5 | 25.9 | 25.1 | 25.7 | 24.6 | 25.6 | 30 | 27.0 | 20 | 24.3 |
| 22.6 | 26.3 | 23.6 | 26.2 | 23.8 | 26.3 | 24.6 | 26.2 | 25.8 | 26.0 | 24.6 | 26.4 | 29 | 27.6 | 21 | 25.1 |
| 23.4 | 26.1 | 23.2 | 26.0 | 24.0 | 26.0 | 23.9 | 25.8 | -- | -- | -- | -- | 29 | 27.1* | 21 | 25.2* |
| 23.3 | 25.9 | 23.4 | 26.0 | 23.9 | 25.9 | 24.2 | 25.7 | 24.8 | 25.5 | 25.0 | 26.0 | 30 | 27.3 | 20 | 25.2 |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | LA LIBERTAD, |
| Mean | 26.0 | 25.4 | 27.0 | 25.6 | 27.3 | 25.8 | 26.0 | 26.2 | 25.2 | 26.2 | 24.2 | 26.0 | 23.3 | 25.8 |
| Maximum | 29 | 26.4 | 30 | 27.4 | 31 | 27.8 | 30 | 27.6 | 29 | 28.0 | 28 | 27.5 | 27 | 28.6 |
| Mean Max. | 27.8 | 25.9 | 28.6 | 26.2 | 29.2 | 26.5 | 28.0 | 26.8 | 27.3 | 26.7 | 26.1 | 26.5 | 24.8 | 26.5 |
| Mean Min. | 24.2 | 24.9 | 24.7 | 24.8 | 24.6 | 25.1 | 23.3 | 25.7 | 22.4 | 25.7 | 22.3 | 25.6 | 21.6 | 25.3 |
| Minimum | 22 | 24.2 | 23 | 23.4 | 22 | 22.2 | 21 | 24.3 | 20 | 24.5 | 18 | 24.6 | 18 | 24.4 |
| | | | | | | | | | | | | | | GALÁPAGOS ISLANDS |
| 1959 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1960 | 21.4 | 25.7 | 23.3 | 25.6 | 24.9 | 25.5 | 21.8 | 26.0 | 20.9 | 26.1 | 19.9 | 25.9 | 19.8 | 25.9 |
| 1961 | 22.7 | 25.4 | 25.4 | 24.9 | 24.7 | 25.4 | 24.8 | 25.8 | 22.0 | 26.2 | 20.4 | 26.3 | 19.3 | 26.1 |
| 1962 | 22.6 | 25.9 | 24.6 | 25.2 | 22.7 | 26.0 | 21.1 | 27.3 | 22.1 | 27.6 | 20.4 | 27.4 | 19.5 | 27.1 |
| 1963 | 21.2 | 26.3 | 24.4 | 26.2 | 25.1 | 26.1 | 23.6 | 26.0 | 22.0 | 26.1 | 21.3 | 26.2 | 21.3 | 26.0 |
| 1964 | 23.4 | 25.7 | 23.7 | 25.4 | 24.1 | 25.7 | 22.9 | 25.8 | 19.0 | 26.3 | 19.1 | 26.0 | 18.3 | 25.9 |
| Mean | 22.3 | 25.8 | 24.3 | 25.5 | 24.3 | 25.7 | 22.8 | 26.2 | 21.2 | 26.5 | 20.2 | 26.4 | 19.6 | 26.2 |
| Maximum | 25 | 27.2 | 27 | 26.9 | 27 | 27.2 | 27 | 27.8 | 23 | 27.8 | 22 | 28.1 | 22 | 27.5 |
| Mean Max. | 24.4 | 26.3 | 26.1 | 26.1 | 26.3 | 26.4 | 25.0 | 26.6 | 23.0 | 27.0 | 21.2 | 26.7 | 20.9 | 26.6 |
| Mean Min. | 19.2 | 25.2 | 21.9 | 24.6 | 21.3 | 25.1 | 20.7 | 25.7 | 19.1 | 26.2 | 19.2 | 26.1 | 17.6 | 25.1 |
| Minimum | 17 | 24.7 | 19 | 23.9 | 19 | 24.8 | 19 | 25.0 | 17 | 25.7 | 18 | 25.5 | 16 | 22.1 |
| | | | | | | | | | | | | | | TUMACO, |
| 1951-1954 | 26.9 | 22.1 | 26.7 | 21.4 | 26.8 | 23.1 | 27.6 | 22.2 | 27.6 | 21.1 | 27.3 | 21.6 | 27.0 | 22.4 |
| 1955-1959 | 26.1 | 21.9 | 26.7 | 21.4 | 26.6 | 22.3 | 27.4 | 22.5 | 27.4 | 22.6 | 27.3 | 22.2 | 27.1 | 22.6 |
| 1960 | 26.4 | 21.2 | 26.7 | 21.9 | 26.7 | 21.9 | 27.2 | 22.7 | 27.2 | 21.2 | 26.8 | 22.6 | 26.2 | 23.0 |
| 1961 | 26.3 | 21.6 | 26.7 | 22.9 | 25.7 | 23.7 | 27.2 | 22.6 | 27.4 | 22.4 | 26.8 | 22.2 | 26.7 | 22.4 |
| 1962 | 26.8 | 20.5 | 26.2 | 21.3 | 26.4 | 22.3 | 26.9 | 21.8 | 27.2 | 21.6 | 26.7 | 22.0 | 26.4 | 23.1 |
| 1963 | 26.4 | 21.6 | 26.7 | 21.6 | 27.3 | 21.1 | 27.2 | 22.2 | 26.9 | 22.1 | 27.1 | 22.9 | 27.0 | 22.7 |
| 1964 | 26.8 | 20.9 | 26.7 | 21.9 | 27.6 | 21.2 | 27.1 | 21.3 | 26.9 | 22.1 | 26.7 | 21.9 | 26.4 | 22.1 |
| Mean | 26.5 | 21.6 | 26.7 | 21.6 | 26.7 | 22.4 | 27.3 | 22.3 | 27.4 | 22.0 | 27.1 | 22.1 | 26.8 | 22.6 |
| Maximum | 28 | 24.0 | 28 | 24.4 | 29 | 25.1 | 29 | 24.8 | 30 | 24.5 | 28 | 24.0 | 28 | 24.0 |
| Mean Max. | 27.3 | 22.9 | 27.7 | 23.4 | 28.2 | 24.1 | 28.2 | 24.3 | 28.2 | 23.5 | 27.9 | 23.3 | 27.4 | 23.5 |
| Mean Min. | 25.7 | 19.1 | 24.8 | 19.2 | 24.9 | 19.8 | 26.3 | 18.7 | 26.8 | 19.7 | 26.4 | 19.5 | 26.3 | 21.2 |
| Minimum | 24 | 15.2 | 22 | 16.6 | 22 | 17.6 | 26 | 13.8 | 27 | 13.8 | 26 | 14.7 | 26 | 18.0 |
| | | | | | | | | | | | | | | BUENAVENTURA, |
| 1953-1954 | 28.1 | 9.8 | 28.1 | 11.4 | 28.7 | 13.3 | 28.3 | 12.1 | 27.9 | 9.8 | 28.2 | 9.9 | 28.3 | 10.1 |
| 1955-1959 | 28.2 | 10.0 | 28.8 | 12.4 | 28.9 | 14.2 | 29.3 | 12.8 | 28.7 | 10.8 | 28.5 | 10.2 | 28.7 | 10.5 |
| 1960 | 27.9 | 8.2 | 28.5 | 9.7 | 28.8 | 11.4 | 28.7 | 11.2 | 28.5 | 8.7 | 28.3 | 9.2 | 28.3 | 8.3 |
| 1961 | 28.4 | 11.4 | 28.9 | 13.7 | 28.4 | 14.0 | 28.8 | 12.9 | 28.9 | 11.6 | 27.9 | 9.6 | 28.0 | 9.8 |
| 1962 | 28.3 | 9.6 | 28.2 | 12.0 | 28.0 | 11.7 | 28.1 | 11.9 | 28.2 | 10.1 | 27.8 | 8.7 | 28.0 | 10.2 |
| 1963 | 28.2 | 9.9 | 28.3 | 12.6 | 29.2 | 13.2 | 28.3 | 10.8 | 28.4 | 9.8 | 28.5 | 9.7 | 28.4 | 9.4 |
| 1964 | 28.4 | 10.9 | 28.4 | 11.2 | 29.3 | 12.9 | 28.4 | 11.2 | 27.6 | 8.3 | 27.4 | 9.1 | 27.6 | 8.8 |
| Mean | 28.2 | 10.0 | 28.6 | 12.0 | 28.8 | 13.3 | 28.8 | 12.1 | 28.4 | 10.2 | 28.2 | 9.8 | 28.3 | 9.9 |
| Maximum | 31 | 15.3 | 31 | 18.8 | 31 | 19.5 | 31 | 17.2 | 30 | 16.1 | 30 | 15.3 | 30 | 14.2 |
| Mean Max. | 29.2 | 13.1 | 29.5 | 15.2 | 29.7 | 16.0 | 29.6 | 15.5 | 29.3 | 13.2 | 28.9 | 12.7 | 29.2 | 12.8 |
| Mean Min. | 27.3 | 6.7 | 27.8 | 9.0 | 27.8 | 10.4 | 27.8 | 8.6 | 27.4 | 7.2 | 27.4 | 6.6 | 27.6 | 7.6 |
| Minimum | 27 | 3.3 | 27 | 6.4 | 26 | 6.5 | 26 | 6.5 | 27 | 5.9 | 27 | 5.4 | 27 | 5.4 |
| | | | | | | | | | | | | | | BAHÍA SOLANO, |
| 1964 | 28.8 | 19.2 | 28.6 | 20.8 | 28.5 | 22.0 | 28.5 | 20.4 | 28.0 | 18.5 | 27.3 | 16.9 | 28.2 | 17.9 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| ECUADOR–continued | | | | | | | | | | | | | | | |
| 23.1 | 25.8 | 23.5 | 25.8 | 23.6 | 25.6 | 23.9 | 25.5 | 24.9 | 25.4 | 24.8 | 25.8 | | | | |
| 27 | 30.0 | 26 | 27.2 | 26 | 26.6 | 26 | 27.0 | 28 | 26.3 | | | 31 | 30.0 | | |
| 24.3 | 26.5 | 24.6 | 26.2 | 24.6 | 26.1 | 25.1 | 26.0 | 26.4 | 25.9 | | | | | | |
| 21.4 | 25.2 | 21.9 | 25.4 | 22.3 | 25.2 | 22.6 | 25.0 | 22.9 | 24.8 | | | | | | |
| 19 | 24.7 | 18 | 24.8 | 20 | 24.6 | 21 | 24.2 | 21 | 23.7 | | | | | 18 | 22.2 |
| (San Cristóbal), ECUADOR | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | -- | -- | 20.2 | 25.2 | 20.4 | 25.6 | -- | -- | -- | -- | -- | -- |
| 18.5 | 25.9 | 19.1 | 25.8 | 18.3 | 25.8 | 18.8 | 25.5 | 20.9 | 25.6 | 20.6 | 25.8 | 27 | 27.6 | 16 | 24.4 |
| 18.6 | 25.8 | 17.8 | 26.0 | 18.3 | 25.9 | 19.1 | 25.8 | 20.8 | 25.7 | 21.6 | 25.8 | 27 | 26.7 | 16 | 23.9 |
| 19.7 | 26.4 | 18.5 | 26.2 | 19.4 | 26.0 | 19.2 | 25.9 | 19.0 | 26.0 | 20.7 | 26.4 | 27 | 28.1 | 15 | 24.1 |
| 21.4 | 25.7 | 20.2 | 25.7 | 20.6 | 25.6 | 21.8 | 25.6 | 21.9 | 25.8 | 22.1 | 25.9 | 27 | 27.2 | 16 | 25.2 |
| 17.2 | 26.0 | 18.7 | 25.7 | 18.3 | 25.6 | 19.1 | 25.6 | 19.3 | 25.8 | 20.3 | 25.8 | 27 | 26.6 | 16 | 22.1 |
| 19.1 | 26.0 | 18.8 | 25.9 | 19.0 | 25.8 | 19.7 | 25.6 | 20.4 | 25.8 | 21.0 | 26.0 | | | | |
| 23 | 27.3 | 23 | 26.7 | 23 | 26.4 | 24 | 26.5 | 24 | 26.5 | | | 27 | 28.1 | | |
| 21.0 | 26.3 | 21.0 | 26.3 | 21.8 | 26.2 | 22.5 | 26.2 | 22.6 | 26.2 | | | | | | |
| 17.3 | 25.6 | 16.3 | 25.4 | 16.1 | 25.2 | 16.8 | 25.0 | 17.7 | 25.3 | | | | | | |
| 16 | 25.3 | 16 | 25.2 | 16 | 25.1 | 15 | 24.4 | 16 | 25.2 | | | | | 15 | 22.1 |
| COLOMBIA | | | | | | | | | | | | | | | |
| 27.0 | 23.1 | 26.9 | 22.7 | 27.1 | 21.7 | 27.0 | 21.6 | 26.8 | 22.0 | 27.1 | 22.1 | 30 | 25.1 | 22 | 13.8 |
| 26.9 | 22.8 | 26.7 | 22.4 | 26.6 | 22.2 | 26.5 | 22.3 | 26.4 | 22.2 | 26.8 | 22.3 | 29 | 24.8 | 23 | 15.1 |
| 26.4 | 23.0 | 26.6 | 22.1 | 26.4 | 22.7 | 26.2 | 21.7 | 26.2 | 21.2 | 26.6 | 22.1 | 28* | 23.9 | 24* | 16.2 |
| -- | -- | -- | -- | 26.6 | 22.3 | 26.4 | 21.0 | 26.4 | 21.2 | -- | -- | 28 | 24.6* | 24* | 18.7* |
| 26.6 | 23.3 | 26.8 | 22.4 | 26.5 | 22.1 | 26.3 | 21.5 | 26.3 | 21.7 | 26.6 | 22.0 | 28 | 24.0 | 22 | 17.6 |
| 26.9 | 22.9 | 26.9 | 23.1 | 27.0 | 21.7 | 26.8 | 21.6 | 26.8 | 21.7 | 26.9 | 22.1 | 28 | 24.6 | 26 | 17.6 |
| 26.2 | 22.7 | 26.7 | 21.9 | 26.5 | 21.6 | 26.4 | 20.9 | 26.0 | 21.6 | 26.7 | 21.7 | 29 | 23.5 | 26 | 17.7 |
| 26.8 | 22.9 | 26.8 | 22.5 | 26.8 | 22.0 | 26.6 | 21.7 | 26.4 | 21.9 | 26.8 | 22.1 | | | | |
| 28 | 24.0 | 29 | 24.3 | 29 | 23.4 | 28 | 23.7 | 28 | 23.4 | | | 30 | 25.1 | | |
| 27.6 | 23.5 | 27.6 | 23.2 | 27.6 | 23.0 | 27.2 | 22.6 | 27.0 | 22.8 | | | | | | |
| 26.3 | 22.1 | 26.4 | 21.7 | 26.1 | 20.7 | 26.2 | 20.7 | 25.8 | 20.6 | | | | | | |
| 26 | 20.6 | 26 | 20.5 | 26 | 17.9 | 26 | 17.7 | 25 | 18.7 | | | | | 22 | 13.8 |
| COLOMBIA | | | | | | | | | | | | | | | |
| 28.4 | 10.2 | 28.3 | 8.6 | 28.0 | 7.9 | 27.7 | 6.6 | 27.6 | 7.6 | 28.1 | 9.8 | 30 | 15.2 | 27 | 2.5 |
| 28.7 | 10.4 | 28.7 | 9.2 | 28.0 | 7.8 | 27.8 | 7.0 | 27.7 | 7.5 | 28.5 | 10.2 | 31 | 19.5 | 26 | 2.4 |
| 28.3 | 8.1 | 28.3 | 8.2 | 27.8 | 7.0 | 27.4 | 6.6 | 27.6 | 7.0 | 28.2 | 8.6 | 30 | 15.4 | 27 | 3.3 |
| 28.2 | 8.8 | 27.7 | 7.2 | 27.8 | 7.5 | 27.2 | 6.7 | 27.3 | 7.2 | 28.1 | 10.0 | 30 | 17.0 | 26 | 3.7 |
| 28.2 | 9.2 | 28.6 | 8.3 | 27.6 | 6.1 | 27.6 | 7.2 | 27.7 | 7.8 | 28.0 | 9.4 | 29 | 15.7 | 27 | 4.0 |
| 28.4 | 9.1 | 27.9 | 9.0 | 28.2 | 7.0 | 27.6 | 7.9 | 28.0 | 8.4 | 28.3 | 9.7 | 30 | 16.1 | 27 | 4.0 |
| 27.6 | 8.0 | -- | -- | 27.3 | 8.7 | 27.3 | 8.6 | 26.9 | 8.3 | -- | -- | 30 | 16.7* | 26 | 4.0 |
| 28.4 | 9.6 | 28.3 | 8.7 | 27.9 | 7.6 | 27.6 | 7.1 | 27.6 | 7.6 | 28.3 | 9.8 | | | | |
| 30 | 14.4 | 30 | 14.7 | 30 | 13.8 | 30 | 12.3 | 29 | 12.5 | | | 31 | 19.5 | | |
| 29.2 | 12.4 | 29.4 | 12.0 | 28.9 | 11.1 | 28.6 | 10.2 | 28.4 | 11.2 | | | | | | |
| 27.6 | 6.6 | 27.4 | 6.1 | 26.8 | 4.1 | 26.6 | 4.0 | 26.7 | 4.6 | | | | | | |
| 27 | 5.2 | 27 | 3.7 | 26 | 3.4 | 26 | 2.4 | 26 | 3.2 | | | | | 26 | 2.4 |
| COLOMBIA | | | | | | | | | | | | | | | |
| 27.8 | 16.7 | 27.6 | 16.8 | 27.6 | 16.4 | 27.2 | 16.8 | 27.4 | 17.4 | 28.0 | 18.3 | 31 | 25.0 | 26 | -0.3 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | NAOS ISLAND, |
| 1949 | -- | -- | -- | -- | -- | -- | -- | -- | 27.4 | 25.4 | 28.3 | 22.8 | 28.4 | 22.1 |
| 1950-1954 | 26.4 | 23.3 | 24.3 | 24.8 | 23.9 | 25.4 | 25.3 | 25.5 | 28.3 | 24.0 | 28.7 | 22.5 | 28.3 | 22.0 |
| 1955-1959 | 26.1 | 23.5 | 25.3 | 24.4 | 24.3 | 25.4 | 25.8 | 25.5 | 27.9 | 24.4 | 28.6 | 22.8 | 28.3 | 22.6 |
| 1960 | 27.7 | 22.0 | 27.4 | 23.8 | 24.6 | 25.6 | 26.8 | 25.3 | 28.6 | 23.4 | 28.7 | 21.0 | 28.4 | 21.5 |
| 1961 | 26.4 | 23.5 | 23.4 | 25.8 | 22.4 | 26.9 | 27.4 | 26.3 | 28.1 | 25.9 | 28.4 | 22.6 | 28.4 | 21.8 |
| 1962 | 27.0 | 23.1 | 22.9 | 25.7 | 23.7 | 26.0 | 26.7 | 26.6 | 27.9 | 25.2 | 28.3 | 20.7 | 27.9 | 20.8 |
| 1963 | 26.1 | 23.7 | 27.3 | 24.0 | 25.4 | 25.3 | 26.9 | 24.7 | 28.1 | 24.7 | 28.7 | 22.6 | 28.6 | 21.5 |
| 1964 | 27.2 | 23.1 | 24.9 | 25.6 | 25.1 | 25.6 | 26.2 | 25.1 | -- | -- | 28.3 | 20.1 | 28.2 | 21.0 |
| Mean | 26.4 | 23.3 | 24.9 | 24.7 | 24.2 | 25.6 | 26.0 | 25.5 | 28.1 | 24.4 | 28.6 | 22.3 | 28.3 | 22.0 |
| Maximum | 30 | 26.1 | 30 | 27.2 | 28 | 27.2 | 30 | 28.7 | 31 | 26.7 | 31 | 25.2 | 30 | 24.1 |
| Mean Max. | 28.2 | 24.8 | 27.2 | 25.7 | 26.1 | 26.1 | 28.4 | 26.2 | 29.6 | 25.6 | 29.7 | 23.9 | 29.3 | 23.1 |
| Mean Min. | 24.1 | 21.8 | 22.4 | 23.6 | 21.8 | 24.9 | 22.8 | 24.7 | 26.4 | 22.7 | 27.7 | 20.4 | 27.6 | 20.2 |
| Minimum | 21 | 20.7 | 20 | 21.8 | 20 | 23.9 | 20 | 22.0 | 24 | 20.6 | 27 | 17.3 | 27 | 15.4 |
| | | | | | | | | | | | | | | PUERTO ARMUELLES, |
| 1951-1954 | 28.9 | 23.2 | 28.7 | 23.8 | 28.7 | 24.5 | 28.8 | 25.0 | 28.2 | 25.2 | 28.2 | 24.8 | 28.4 | 24.2 |
| 1955-1959 | 29.0 | 22.7 | 29.1 | 23.5 | 29.1 | 24.2 | 29.2 | 24.8 | 28.8 | 24.9 | 28.7 | 24.5 | 29.0 | 24.0 |
| 1960 | 28.7 | 24.2 | 28.6 | 23.9 | 28.7 | 24.0 | 28.7 | 24.0 | 28.2 | 24.3 | 28.3 | 24.1 | 28.3 | 23.5 |
| 1961 | 28.7 | 23.3 | 29.7 | 23.6 | 29.0 | 24.6 | 29.1 | 25.4 | 28.6 | 25.3 | 29.0 | 24.9 | 29.1 | 23.6 |
| 1962 | 29.2 | 22.9 | 29.8 | 23.3 | -- | -- | -- | -- | 29.6 | 24.1 | 29.2 | 23.4 | 29.1 | 23.1 |
| 1963 | -- | -- | 29.4 | 23.5 | 30.4 | 23.5 | 29.5 | 23.6 | 29.3 | 23.7 | 29.2 | 23.5 | 29.4 | 23.2 |
| 1964 | 29.3 | 22.2 | 29.3 | 23.0 | 29.2 | 23.8 | -- | -- | 29.1 | 24.3 | 27.5 | 24.2 | 27.4 | 24.2 |
| Mean | 28.9 | 23.0 | 29.1 | 23.6 | 29.1 | 24.2 | 29.0 | 24.7 | 28.7 | 24.8 | 28.6 | 24.4 | 28.7 | 23.9 |
| Maximum | 31 | 25.2 | 31 | 25.1 | 31 | 26.1 | 31 | 26.6 | 31 | 26.4 | 31 | 26.8 | 31 | 26.7 |
| Mean Max. | 29.8 | 23.8 | 30.0 | 24.1 | 30.1 | 24.9 | 30.4 | 25.5 | 30.1 | 25.6 | 29.9 | 25.3 | 29.8 | 24.9 |
| Mean Min. | 27.8 | 22.2 | 28.0 | 22.9 | 27.7 | 23.5 | 27.6 | 24.0 | 27.0 | 23.2 | 27.1 | 23.2 | 27.4 | 22.8 |
| Minimum | 27 | 21.0 | 27 | 21.5 | 27 | 22.2 | 27 | 22.4 | 23 | 21.2 | 26 | 22.1 | 26 | 21.5 |
| | | | | | | | | | | | | | | QUEPOS, |
| 1957-1959 | 29.2 | 22.8 | 29.4 | 23.6 | 29.6 | 24.0 | 29.3 | 24.4 | 29.6 | 24.3 | 29.1 | 22.8 | 28.7 | 22.5 |
| 1960 | 28.5 | 23.6 | 28.7 | 24.1 | 29.3 | 24.5 | 29.4 | 24.5 | 28.5 | 23.6 | 27.7 | 22.6 | 28.2 | 22.0 |
| 1961 | 29.1 | 22.8 | 28.9 | 23.5 | 29.2 | 24.5 | 28.2 | 24.6 | 28.8 | 24.2 | 28.3 | 23.0 | 28.7 | 21.8 |
| 1962 | 28.8 | 23.4 | 29.6 | 24.0 | 29.3 | 24.8 | 28.9 | 24.9 | 28.9 | 23.7 | 28.5 | 22.9 | 28.5 | 22.5 |
| 1963 | 29.1 | 23.0 | 29.3 | 23.8 | 29.8 | 23.8 | 29.7 | 23.8 | 29.6 | 23.6 | 29.1 | 22.5 | 29.3 | 22.7 |
| 1964 | 29.3 | 23.3 | 29.8 | 24.1 | 30.1 | 25.1 | 30.0 | 25.1 | 29.1 | 24.3 | 28.1 | 21.8 | 28.4 | 21.2 |
| Mean | 29.0 | 23.1 | 29.3 | 23.8 | 29.6 | 24.4 | 29.3 | 24.5 | 29.2 | 24.0 | 28.6 | 22.6 | 28.7 | 22.2 |
| Maximum | 31 | 24.3 | 31 | 25.2 | 31 | 25.6 | 31 | 25.8 | 31 | 25.9 | 31 | 25.1 | 31 | 24.5 |
| Mean Max. | 29.9 | 23.9 | 30.3 | 24.4 | 30.7 | 24.9 | 30.7 | 25.2 | 30.2 | 24.9 | 29.8 | 24.3 | 30.0 | 23.8 |
| Mean Min. | 28.0 | 22.2 | 28.2 | 23.1 | 28.2 | 23.8 | 27.8 | 23.2 | 27.8 | 21.8 | 27.2 | 19.6 | 27.4 | 18.2 |
| Minimum | 27 | 21.7 | 27 | 22.3 | 27 | 23.3 | 26 | 22.2 | 27 | 19.2 | 27 | 14.3 | 27 | 15.2 |
| | | | | | | | | | | | | | | SAN JUAN DEL |
| 1950-1953 | 24.3 | 25.9 | 21.8 | 25.4 | 22.4 | 25.8 | 25.0 | 26.1 | 27.0 | 25.5 | 28.5 | 25.0 | 27.7 | 25.4 |
| Mean | 24.3 | 25.9 | 21.8 | 25.4 | 22.4 | 25.8 | 25.0 | 26.1 | 27.0 | 25.5 | 28.5 | 25.0 | 27.7 | 25.4 |
| Maximum | 29 | 28.4 | 28 | 28.0 | 30 | 28.1 | 32 | 28.6 | 32 | 26.8 | 32 | 26.8 | 32 | 27.4 |
| Mean Max. | 27.3 | 27.1 | 26.8 | 26.6 | 27.3 | 27.3 | 29.6 | 27.4 | 30.4 | 26.7 | 31.0 | 26.0 | 30.4 | 26.6 |
| Mean Min. | 19.6 | 24.6 | 18.2 | 24.2 | 19.3 | 24.6 | 21.1 | 25.0 | 21.1 | 24.1 | 24.9 | 23.4 | 24.3 | 23.9 |
| Minimum | 18 | 24.3 | 16 | 23.4 | 17 | 24.0 | 19 | 24.2 | 18 | 21.7 | 22 | 23.1 | 22 | 23.1 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **CANAL ZONE** | | | | | | | | | | | | | | | |
| 28.2 | 22.4 | 28.5 | 20.9 | 27.8 | 19.6 | 27.4 | 20.3 | 26.6 | 20.9 | -- | -- | 30 | 26.7* | -- | 12.7* |
| 28.3 | 22.4 | 28.9 | 20.7 | 28.2 | 20.2 | 27.8 | 20.5 | 27.4 | 21.4 | 27.2 | 22.7 | 31 | 26.4 | 20 | 13.7 |
| 28.2 | 22.2 | 28.7 | 21.4 | 28.6 | 20.0 | 27.9 | 20.3 | 27.7 | 21.5 | 27.3 | 22.8 | 31 | 26.2 | 21 | 12.1 |
| 28.4 | 21.0 | 28.8 | 20.7 | 28.8 | 20.5 | 28.1 | 19.8 | 27.0 | 20.3 | 27.8 | 22.1 | 31 | 26.8 | 21 | 17.4 |
| 28.2 | 22.3 | 28.3 | 21.2 | 28.2 | 20.8 | 27.6 | 17.8 | 27.3 | 20.7 | 27.0 | 23.0 | 30 | 27.2 | 20 | 13.1 |
| 28.2 | 21.7 | 28.8 | 20.8 | 28.3 | 19.7 | 27.7 | 19.7 | 27.4 | 21.4 | 27.1 | 22.6 | 30 | 28.7 | 20 | 17.9 |
| 28.5 | 21.5 | 29.1 | 20.5 | 29.3 | 19.9 | 28.1 | 19.1 | 28.3 | 20.7 | 27.9 | 22.4 | 31 | 26.2 | 22 | 16.9 |
| 28.2 | 21.2 | 28.8 | 20.1 | 28.2 | 19.3 | 27.7 | 19.9 | 27.2 | 21.6 | -- | -- | 31 | 26.4* | 20 | 16.9* |
| 28.3 | 22.0 | 28.8 | 20.9 | 28.4 | 20.1 | 27.8 | 20.0 | 27.4 | 21.2 | 27.3 | 22.7 | | | | |
| 30 | 23.9 | 31 | 23.5 | 31 | 23.3 | 30 | 23.6 | 29 | 24.1 | | | 31 | 28.7 | | |
| 29.2 | 23.1 | 29.9 | 22.1 | 29.7 | 21.6 | 29.2 | 21.7 | 28.4 | 22.6 | | | | | | |
| 27.4 | 20.5 | 27.8 | 19.4 | 27.3 | 17.4 | 26.9 | 17.9 | 26.4 | 19.3 | | | | | | |
| 27 | 16.8 | 27 | 17.5 | 27 | 12.1 | 26 | 13.1 | 24 | 14.8 | | | | | 20 | 12.1 |
| **PANAMA** | | | | | | | | | | | | | | | |
| 28.7 | 23.7 | 28.4 | 23.7 | 28.1 | 23.6 | 28.2 | 23.4 | 28.4 | 23.0 | 28.5 | 24.0 | 30 | 26.8 | 26 | 21.2 |
| 29.0 | 23.5 | 29.0 | 23.0 | 28.2 | 22.6 | 28.1 | 22.9 | 28.4 | 22.8 | 28.8 | 23.6 | 32 | 26.4 | 23 | 15.5 |
| 28.5 | 23.4 | 28.7 | 23.5 | 28.8 | 22.1 | -- | -- | 28.4 | 22.6 | -- | -- | 31 | 25.3* | 24 | 20.8* |
| 29.5 | 22.7 | 28.5 | 22.4 | 28.2 | 22.4 | 27.3 | 22.8 | 29.0 | 21.9 | 28.8 | 23.6 | 31 | 25.7 | 26 | 20.8 |
| 29.4 | 22.1 | 29.5 | 22.5 | 28.5 | 21.7 | -- | -- | -- | -- | -- | -- | 31* | 25.6* | 27* | 16.6* |
| -- | -- | 29.4 | 22.4 | 29.1 | 23.0 | 28.7 | 23.2 | 29.2 | 22.6 | -- | -- | 31 | 24.9* | 27 | 21.1* |
| 28.4 | 23.5 | 28.3 | 23.2 | 27.7 | 22.5 | 27.9 | 22.5 | 28.4 | 22.1 | -- | -- | 31 | 25.7* | 27 | 18.6* |
| 28.9 | 23.4 | 28.8 | 23.1 | 28.3 | 22.8 | 28.1 | 23.0 | 28.5 | 22.7 | 28.7 | 23.6 | | | | |
| 32 | 26.0 | 31 | 25.2 | 32 | 25.3 | 31 | 25.3 | 31 | 25.2 | | | 32 | 26.8 | | |
| 30.3 | 24.5 | 30.3 | 24.2 | 30.0 | 24.0 | 29.6 | 24.1 | 29.7 | 23.5 | | | | | | |
| 27.4 | 22.2 | 27.3 | 21.7 | 26.6 | 20.4 | 26.7 | 21.5 | 27.4 | 21.8 | | | | | | |
| 26 | 19.2 | 25 | 20.5 | 24 | 15.5 | 25 | 19.9 | 26 | 20.4 | | | | | 23 | 15.5 |
| **COSTA RICA** | | | | | | | | | | | | | | | |
| 28.6 | 22.2 | 28.8 | 22.1 | 28.4 | 21.2 | 28.3 | 21.9 | 28.4 | 22.5 | 29.0 | 22.9 | 31 | 25.3 | 26 | 13.4 |
| 27.8 | 21.8 | 27.8 | 20.8 | 27.8 | 20.1 | 26.8 | 21.9 | 28.0 | 22.6 | 28.2 | 22.7 | 30 | 25.0 | 26 | 11.8 |
| 28.6 | 21.5 | 27.8 | 21.5 | 28.3 | 22.3 | 26.7 | 22.2 | 28.3 | 22.4 | 28.4 | 22.9 | 31 | 25.2 | 24 | 12.4 |
| 28.8 | 22.2 | 29.1 | 21.8 | 28.3 | 21.0 | 28.3 | 22.0 | 28.3 | 21.8 | 28.8 | 22.9 | 31 | 25.8 | 27 | 14.0 |
| 29.1 | 22.5 | 29.6 | 22.0 | 29.2 | 21.5 | 27.4 | 21.4 | 29.1 | 23.0 | 29.2 | 22.8 | 31 | 24.5 | 26 | 16.5 |
| 28.1 | 20.8 | 28.4 | 21.8 | 28.3 | 21.0 | 27.8 | 21.7 | 28.4 | 21.6 | 28.8 | 22.5 | 31 | 25.9 | 26 | 14.3 |
| 28.5 | 21.9 | 28.7 | 21.8 | 28.4 | 21.2 | 27.8 | 21.9 | 28.4 | 22.4 | 28.8 | 22.8 | | | | |
| 31 | 23.9 | 31 | 23.9 | 30 | 23.7 | 30 | 24.0 | 30 | 24.1 | | | 31 | 25.9 | | |
| 29.9 | 23.6 | 29.8 | 23.4 | 29.5 | 23.2 | 29.1 | 23.6 | 29.4 | 23.2 | | | | | | |
| 27.2 | 17.8 | 27.2 | 18.1 | 27.0 | 15.4 | 26.2 | 19.2 | 27.2 | 19.6 | | | | | | |
| 27 | 15.4 | 26 | 12.4 | 26 | 11.8 | 24 | 16.6 | 27 | 15.3 | | | | | 24 | 11.8 |
| **SUR, NICARAGUA** | | | | | | | | | | | | | | | |
| 28.8 | 25.5 | 30.8 | 25.7 | 29.8 | 25.2 | 27.8 | 25.4 | 25.9 | 25.9 | 26.6 | 25.6 | 37 | 28.6 | 16 | 21.7 |
| 28.8 | 25.5 | 30.8 | 25.7 | 29.8 | 25.2 | 27.8 | 25.4 | 25.9 | 25.9 | 26.6 | 25.6 | | | | |
| 34 | 27.7 | 36 | 28.0 | 37 | 26.9 | 36 | 27.5 | 33 | 28.1 | | | 37 | 28.6 | | |
| 32.9 | 27.3 | 33.8 | 27.4 | 34.8 | 26.8 | 32.4 | 26.9 | 31.5 | 27.9 | | | | | | |
| 24.6 | 24.0 | 26.0 | 24.0 | 23.5 | 22.9 | 22.6 | 23.5 | 21.1 | 24.0 | | | | | | |
| 24 | 23.5 | 25 | 23.3 | 22 | 22.0 | 22 | 23.4 | 20 | 23.8 | | | | | 16 | 21.7 |

**Table 1. – Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | PUERTO SOMOZA, |
| 1958 | 27.2 | 24.8 | 27.2 | 25.3 | 28.8 | 25.7 | 29.3 | 25.9 | 29.2 | 24.6 | 29.0 | 18.7 | 29.1 | 24.1 |
| | | | | | | | | | | | | | | CORINTO, |
| 1963 | 26.6 | 25.1 | -- | -- | 27.4 | 26.1 | 28.2 | 26.2 | 28.8 | 25.7 | 29.0 | 24.5 | 28.7 | 23.5 |
| 1964 | 26.1 | 25.3 | 26.9 | 25.6 | 27.2 | 26.2 | 28.4 | 26.3 | 28.6 | 26.2 | 28.1 | 24.9 | 28.4 | 23.6 |
| Mean | 26.4 | 25.2 | 26.9 | 25.6 | 27.3 | 26.2 | 28.3 | 26.2 | 28.7 | 26.0 | 28.6 | 24.7 | 28.6 | 23.6 |
| Maximum | 27 | 25.9 | 29 | 26.0 | 30 | 27.0 | 30 | 27.1 | 29 | 26.8 | 30 | 26.1 | 30 | 26.0 |
| Mean Max. | 26.9 | 25.8 | 28.9 | 26.0 | 29.7 | 26.8 | 29.7 | 26.8 | 29.4 | 26.8 | 29.4 | 26.0 | 29.7 | 25.8 |
| Mean Min. | 25.6 | 24.5 | 25.6 | 25.2 | 25.8 | 25.6 | 27.2 | 25.8 | 27.8 | 24.8 | 27.5 | 22.0 | 27.5 | 21.2 |
| Minimum | 26 | 24.3 | 26 | 25.2 | 26 | 25.5 | 27 | 25.7 | 28 | 24.0 | 27 | 21.8 | 27 | 20.8 |
| | | | | | | | | | | | | | | LA UNIÓN, |
| 1949 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1950-1954 | 27.2 | 25.2 | 27.3 | 26.1 | 28.3 | 26.7 | 29.9 | 26.8 | 30.3 | 24.7 | 29.9 | 20.1 | 30.1 | 19.8 |
| 1955-1959 | 27.1 | 25.2 | 28.1 | 26.0 | 29.3 | 26.4 | 30.3 | 26.7 | 30.7 | 25.7 | 30.7 | 20.9 | 30.7 | 21.5 |
| 1960 | 27.7 | 25.6 | 28.0 | 26.3 | 28.6 | 26.7 | 29.8 | 27.1 | 31.1 | 25.7 | 31.1 | 19.0 | 31.0 | 20.2 |
| 1961 | 27.8 | 25.2 | 28.7 | 26.1 | 29.7 | 26.7 | 31.1 | 26.9 | 31.6 | 26.5 | 29.9 | 23.1 | 30.8 | 22.2 |
| 1962 | 27.0 | 25.0 | 28.0 | 25.9 | 29.2 | 26.5 | 30.0 | 27.0 | 30.7 | 26.4 | 30.9 | 22.5 | 31.0 | 20.3 |
| 1963 | 27.7 | 25.2 | 28.4 | 25.9 | 29.9 | 26.5 | 29.8 | 26.9 | 31.3 | 26.7 | 31.1 | 24.0 | 31.5 | 20.9 |
| 1964 | 27.4 | -- | 28.7 | 25.8 | 29.9 | 26.5 | 30.7 | 27.0 | 31.0 | 26.6 | 30.6 | 21.8 | 31.0 | 19.9 |
| Mean | 27.3 | 25.2 | 27.9 | 26.0 | 29.1 | 26.6 | 30.2 | 26.8 | 30.7 | 25.6 | 30.4 | 21.0 | 30.6 | 20.7 |
| Maximum | 30 | 27.8 | 31 | 29.1 | 32 | 28.5 | 32 | 28.5 | 34 | 28.4 | 33 | 27.5 | 33 | 26.4 |
| Mean Max. | 29.4 | 26.4 | 29.8 | 26.8 | 30.6 | 27.3 | 31.2 | 27.6 | 32.2 | 27.3 | 32.0 | 24.4 | 31.8 | 23.1 |
| Mean Min. | 25.4 | 24.3 | 26.0 | 24.9 | 27.6 | 25.9 | 28.8 | 26.2 | 29.4 | 22.8 | 28.2 | 16.8 | 29.2 | 16.7 |
| Minimum | 23 | 22.3 | 24 | 20.8 | 26 | 25.2 | 27 | 25.3 | 28 | 17.1 | 28 | 12.7 | 28 | 13.9 |
| | | | | | | | | | | | | | | ACAJUTLA, |
| 1963 | 27.9 | 26.0 | 28.8 | 26.0 | 29.2 | 26.2 | 29.6 | 26.3 | 29.8 | 26.3 | 29.9 | 26.1 | 29.9 | 26.0 |
| 1964 | 28.4 | 25.8 | 29.1 | 25.9 | 29.4 | 26.1 | 29.7 | 26.0 | 29.2 | 25.9 | 29.2 | 25.7 | 29.4 | 25.2 |
| Mean | 28.1 | 25.9 | 28.9 | 26.0 | 29.3 | 26.2 | 29.6 | 26.2 | 29.5 | 26.1 | 29.6 | 25.9 | 29.6 | 25.6 |
| Maximum | 30 | 26.4 | 31 | 27.1 | 31 | 26.7 | 31 | 27.0 | 31 | 26.9 | 31 | 26.5 | 31 | 26.6 |
| Mean Max. | 29.4 | 26.4 | 30.6 | 26.8 | 30.6 | 26.6 | 30.6 | 26.8 | 30.8 | 26.6 | 30.3 | 26.4 | 31.1 | 26.5 |
| Mean Min. | 26.7 | 25.4 | 27.8 | 25.3 | 27.8 | 25.6 | 28.6 | 25.6 | 27.8 | 25.5 | 28.1 | 24.6 | 28.3 | 24.9 |
| Minimum | 27 | 25.3 | 28 | 25.2 | 28 | 25.5 | 28 | 25.5 | 27 | 25.2 | 28 | 23.6 | 28 | 24.1 |
| | | | | | | | | | | | | | | SAN JOSÉ, |
| 1949 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1950-1954 | 28.2 | 25.3 | 28.2 | 25.5 | 28.6 | 25.7 | 29.4 | 25.8 | 29.8 | 25.5 | 29.8 | 24.6 | 30.2 | 23.9 |
| 1955-1959 | 28.1 | 24.5 | 28.1 | 25.0 | 28.2 | 25.2 | 28.7 | 25.3 | 29.9 | 25.3 | 29.9 | 24.9 | 30.0 | 24.3 |
| 1960 | 27.3 | 24.7 | 27.1 | 25.2 | 28.8 | 25.2 | 28.6 | 25.4 | 29.9 | 25.4 | 29.6 | 24.5 | 30.1 | 23.1 |
| 1961 | 28.5 | 25.4 | 28.6 | 25.1 | 28.9 | 25.3 | 29.3 | 25.6 | 29.9 | 25.0 | 29.8 | 24.8 | 30.3 | 25.0 |
| 1962 | 28.8 | 24.6 | 28.7 | 24.8 | 29.0 | 25.0 | 29.2 | 25.3 | 29.5 | 25.6 | 29.2 | 24.2 | 29.8 | 24.0 |
| 1963 | 28.9 | 24.8 | 29.5 | 25.1 | 29.3 | 25.2 | 29.3 | 25.5 | 30.6 | 25.6 | 30.4 | 25.3 | 30.7 | 24.9 |
| 1964 | 28.5 | 24.6 | 28.6 | 24.9 | 29.3 | 24.9 | 29.8 | 24.7 | 29.7 | 25.0 | 29.5 | 25.1 | 29.7 | 23.7 |
| Mean | 28.2 | 24.9 | 28.2 | 25.2 | 28.6 | 25.4 | 29.1 | 25.5 | 29.9 | 25.4 | 29.8 | 24.8 | 30.1 | 24.1 |
| Maximum | 31 | 26.4 | 30 | 26.3 | 31 | 26.7 | 31 | 26.8 | 31 | 26.6 | 31 | 26.6 | 32 | 26.4 |
| Mean Max. | 29.2 | 25.4 | 29.2 | 25.6 | 29.6 | 25.8 | 29.9 | 25.9 | 30.6 | 25.9 | 30.9 | 25.7 | 31.0 | 25.2 |
| Mean Min. | 27.3 | 24.6 | 27.1 | 24.5 | 27.5 | 24.6 | 27.8 | 24.7 | 28.8 | 24.6 | 28.2 | 23.5 | 28.9 | 22.6 |
| Minimum | 24 | 22.7 | 24 | 23.1 | 24 | 22.9 | 24 | 23.5 | 27 | 23.8 | 22 | 20.9 | 28 | 19.6 |

*Observations for the year are incomplete; extremes are for the months shown.

Extremes

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **NICARAGUA** | | | | | | | | | | | | | | | |
| 29.4 | 24.5 | 30.2 | 23.4 | 29.5 | 20.7 | 28.9 | 23.7 | -- | -- | -- | -- | 32 | 26.7* | 26* | -0.2* |
| **NICARAGUA** | | | | | | | | | | | | | | | |
| 29.4 | 23.6 | 28.7 | 22.7 | 28.5 | 23.1 | 27.4 | 22.9 | 26.5 | 25.1 | -- | -- | 31 | 27.0 | 23 | 18.6 |
| 27.2 | 22.9 | 28.8 | 23.7 | 28.0 | 22.6 | 27.4 | 24.1 | 26.3 | 25.3 | 27.6 | 24.7 | 31 | 27.1 | 26 | 18.3 |
| 28.3 | 23.2 | 28.8 | 23.2 | 28.2 | 22.8 | 27.4 | 23.5 | 26.4 | 25.2 | 27.8 | 24.6 | | | | |
| 31 | 25.5 | 31 | 25.7 | 29 | 25.1 | 30 | 25.9 | 28 | 26.4 | | | 31 | 27.1 | | |
| 30.6 | 25.4 | 30.6 | 25.5 | 29.2 | 25.0 | 29.4 | 25.3 | 27.8 | 26.2 | | | | | | |
| 28.1 | 21.6 | 27.5 | 20.2 | 27.2 | 19.2 | 26.4 | 20.0 | 24.4 | 23.8 | | | | | | |
| 28 | 21.2 | 27 | 18.9 | 27 | 18.3 | 26 | 18.6 | 23 | 22.9 | | | | | 23 | 18.3 |
| **EL SALVADOR** | | | | | | | | | | | | | | | |
| -- | -- | 29.9 | 19.9 | 28.1 | 17.4 | 25.6 | 21.8 | 26.6 | 23.8 | -- | -- | 31* | 25.4* | 23* | 14.2* |
| 30.6 | 21.9 | 30.1 | 17.6 | 28.9 | 17.8 | 28.0 | 22.2 | 27.1 | 24.0 | 29.0 | 22.7 | 33 | 29.1 | 23 | 12.7 |
| 31.1 | 22.0 | 30.2 | 20.4 | 29.7 | 18.6 | 29.1 | 21.9 | 27.5 | 24.0 | 29.5 | 23.3 | 34 | 28.5 | 23 | 12.9 |
| 30.8 | 20.9 | 31.2 | 18.2 | 30.1 | 18.1 | 29.4 | 20.9 | 27.4 | 24.0 | 29.7 | 22.7 | 33 | 28.5 | 24 | 14.3 |
| 31.4 | 23.2 | 30.6 | 19.3 | 30.0 | 19.7 | 28.1 | 20.6 | 27.8 | 23.8 | 29.8 | 23.6 | 33 | 27.7 | 26 | 13.1 |
| 30.8 | 22.3 | 30.7 | 17.3 | 30.2 | 16.3 | 28.6 | 21.9 | 27.2 | 24.0 | 29.5 | 23.0 | 33 | 27.5 | 24 | 14.3 |
| 31.6 | 21.7 | 31.0 | 20.0 | 30.3 | 20.5 | 28.8 | 20.4 | 27.6 | 23.8 | 29.9 | 23.5 | 33 | 27.3 | 25 | 14.3 |
| 31.3 | 23.2 | 31.3 | 18.5 | 29.8 | 19.9 | 29.4 | 22.7 | 28.4 | 24.4 | 30.0 | -- | 33 | 27.6* | 24 | 14.5* |
| 30.9 | 22.0 | 30.4 | 18.9 | 29.4 | 18.4 | 28.4 | 21.8 | 27.4 | 24.0 | 29.4 | 23.1 | | | | |
| 33 | 25.0 | 33 | 24.6 | 32 | 24.3 | 32 | 24.5 | 32 | 27.6 | | | 34 | 29.1 | | |
| 32.4 | 23.3 | 31.9 | 22.4 | 31.1 | 21.6 | 30.3 | 23.5 | 29.4 | 25.5 | | | | | | |
| 29.6 | 18.6 | 28.8 | 14.6 | 27.6 | 14.5 | 26.3 | 18.1 | 25.1 | 22.6 | | | | | | |
| 28 | 14.4 | 27 | 12.9 | 24 | 13.3 | 23 | 13.1 | 23 | 20.8 | | | | | 23 | 12.7 |
| **EL SALVADOR** | | | | | | | | | | | | | | | |
| 29.8 | 26.0 | 29.9 | 25.3 | 29.4 | 25.9 | 29.2 | 25.4 | 28.6 | 25.8 | 29.3 | 25.9 | 31 | 27.1 | 27 | 23.8 |
| 29.6 | 24.9 | 29.5 | 24.9 | 29.2 | 24.8 | 29.1 | 25.4 | 28.8 | 25.4 | 29.2 | 25.5 | 31 | 27.1 | 27 | 23.6 |
| 29.7 | 25.4 | 29.7 | 25.1 | 29.3 | 25.4 | 29.1 | 25.4 | 28.7 | 25.6 | 29.3 | 25.7 | | | | |
| 31 | 27.1 | 31 | 26.0 | 31 | 26.4 | 31 | 25.9 | 31 | 26.3 | | | 31 | 27.1 | | |
| 30.8 | 26.4 | 30.8 | 25.9 | 30.3 | 26.1 | 30.3 | 25.9 | 30.3 | 26.0 | | | | | | |
| 28.1 | 24.4 | 28.6 | 23.8 | 28.3 | 24.6 | 27.8 | 24.9 | 27.2 | 25.2 | | | | | | |
| 28 | 24.3 | 28 | 23.8 | 28 | 24.0 | 28 | 24.7 | 27 | 25.1 | | | | | 27 | 23.6 |
| **GUATEMALA** | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | 27.7 | -- | 28.7 | 24.5 | 28.4 | 25.4 | -- | -- | -- | -- | 26* | 24.5* |
| 30.2 | 24.3 | 30.3 | 23.6 | 29.1 | 22.9 | 28.6 | 24.2 | 29.3 | 24.7 | 29.3 | 24.7 | 32 | 26.8 | 22 | 16.8 |
| 29.8 | 24.1 | 29.6 | 23.8 | 29.6 | 23.5 | 29.3 | 24.0 | 28.9 | 24.4 | 29.2 | 24.5 | 32 | 26.7 | 24 | 13.1 |
| 30.7 | 23.2 | 30.0 | 22.7 | 30.4 | 23.3 | 29.7 | 22.6 | 28.3 | 24.7 | 29.2 | 24.2 | 31 | 26.0 | 26 | 19.4 |
| 30.6 | 24.4 | 30.2 | 24.0 | 30.4 | 24.1 | 29.1 | 22.7 | 29.9 | 25.1 | 29.6 | 24.7 | 31 | 26.3 | 27 | 19.9 |
| 30.6 | 24.3 | 30.6 | 23.7 | 30.8 | 23.9 | 30.6 | 24.0 | 30.2 | 24.8 | 29.8 | 24.5 | 31 | 25.9 | 28 | 22.4 |
| 30.8 | 24.5 | 30.6 | 23.9 | 30.4 | 24.5 | 30.0 | 24.5 | 29.1 | 24.4 | 30.0 | 24.8 | 31 | 26.1 | 28 | 23.1 |
| 30.2 | 23.8 | 30.4 | 22.3 | 30.1 | 23.4 | 29.6 | 24.4 | 29.2 | 24.6 | 29.6 | 24.3 | 31 | 25.7 | 27 | 19.8 |
| 30.2 | 24.2 | 30.1 | 23.6 | 29.6 | 23.4 | 29.4 | 24.0 | 28.9 | 24.7 | 29.3 | 24.6 | | | | |
| 32 | 25.8 | 32 | 25.4 | 32 | 25.7 | 31 | 26.2 | 31 | 26.0 | | | 32 | 26.8 | | |
| 31.0 | 25.1 | 31.1 | 24.6 | 30.6 | 24.7 | 30.3 | 25.0 | 30.4 | 25.2 | | | | | | |
| 28.9 | 22.1 | 28.7 | 21.5 | 28.3 | 21.6 | 28.4 | 22.8 | 27.9 | 23.9 | | | | | | |
| 27 | 13.1 | 27 | 19.3 | 24 | 16.8 | 26 | 19.9 | 26 | 22.8 | | | | | 22 | 13.1 |

**Table 1. - Surface Water**
**Means and**

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | **SALINA CRUZ,** |
| 1952-1954 | 22.9 | 25.9 | 23.7 | 25.8 | 23.6 | 26.1 | 25.5 | 25.9 | 27.8 | 25.8 | 28.6 | 25.0 | 28.5 | 25.0 |
| 1955-1959 | 23.4 | 25.4 | 24.1 | 25.6 | 25.9 | 25.8 | 27.3 | 25.8 | 28.6 | 25.8 | 28.8 | 25.2 | 28.5 | 25.1 |
| 1960 | 23.6 | 25.6 | 23.1 | 25.8 | 23.3 | 25.9 | -- | -- | 28.2 | 26.0 | 29.6 | 25.6 | 28.9 | 24.7 |
| 1961 | 21.9 | 25.7 | 23.7 | 25.5 | 25.7 | 25.8 | 26.1 | 25.9 | 29.6 | 25.8 | 29.2 | 25.6 | 28.9 | 25.3 |
| 1962 | 22.0 | 25.4 | 25.5 | 25.4 | 24.9 | 25.0 | 23.5 | 25.6 | 27.3 | 25.6 | 29.9 | 25.1 | 28.9 | 24.9 |
| 1963 | 23.4 | 25.6 | 21.8 | 25.4 | 24.9 | 25.4 | 27.5 | 25.4 | 28.2 | 25.6 | 30.4 | 25.3 | 29.7 | 25.2 |
| 1964 | 23.2 | 25.5 | 24.7 | 25.6 | 26.2 | 25.6 | 27.2 | 25.7 | 27.5 | 25.9 | 28.9 | 25.5 | 28.7 | 25.3 |
| Mean | 23.1 | 25.6 | 23.9 | 25.6 | 25.3 | 25.7 | 26.4 | 25.7 | 28.2 | 25.8 | 29.1 | 25.3 | 28.7 | 25.1 |
| Maximum | 28 | 27.3 | 30 | 26.9 | 29 | 27.9 | 28 | 28.1 | 31 | 27.3 | 31 | 27.3 | 32 | 26.6 |
| Mean Max. | 26.3 | 26.4 | 27.0 | 26.1 | 28.1 | 26.4 | 29.2 | 26.4 | 30.3 | 26.4 | 30.2 | 26.0 | 29.9 | 25.7 |
| Mean Min. | 18.4 | 24.9 | 20.4 | 24.9 | 20.3 | 25.1 | 22.5 | 25.1 | 25.3 | 25.3 | 27.6 | 23.6 | 27.5 | 24.3 |
| Minimum | 17 | 24.2 | 16 | 24.0 | 17 | 24.5 | 17 | 24.8 | 21 | 24.6 | 25 | 17.6 | 26 | 23.1 |
| | | | | | | | | | | | | | | **ACAPULCO,** |
| 1950-1954 | 27.3 | 25.4 | 27.0 | 25.5 | 25.9 | 25.7 | 26.4 | 25.7 | 26.9 | 25.8 | 28.7 | 25.3 | 29.3 | 24.7 |
| 1955-1959 | 27.3 | 25.2 | 26.8 | 25.4 | 26.7 | 25.4 | 26.7 | 25.6 | 28.4 | 25.6 | 29.1 | 25.2 | 29.7 | 24.4 |
| 1960 | 27.5 | 25.1 | 26.8 | 25.4 | 25.7 | 25.5 | 25.4 | 25.6 | 25.3 | 25.6 | 28.0 | 25.6 | 29.6 | 25.0 |
| 1961 | 27.8 | 25.2 | 26.9 | 25.2 | 25.7 | 25.4 | 24.8 | 25.5 | 27.4 | 25.6 | 29.1 | 25.2 | 29.6 | 24.8 |
| 1962 | 26.8 | 25.1 | 26.5 | 25.2 | 24.3 | 25.4 | 25.4 | 25.7 | 26.7 | 25.7 | 28.3 | 25.0 | 29.2 | 24.6 |
| 1963 | 27.4 | 25.3 | 25.9 | 25.5 | 25.9 | 25.6 | 25.4 | 25.7 | 27.8 | 25.6 | 28.8 | 25.7 | 29.4 | 25.2 |
| 1964 | 27.7 | 25.3 | 26.7 | 25.4 | 26.0 | 25.6 | 26.0 | 25.4 | 24.7 | 25.6 | 27.3 | 25.3 | 28.9 | 24.5 |
| Mean | 27.4 | 25.2 | 26.8 | 25.4 | 26.1 | 25.5 | 26.1 | 25.6 | 27.3 | 25.7 | 28.7 | 25.3 | 29.4 | 24.6 |
| Maximum | 30 | 26.1 | 29 | 26.7 | 29 | 26.1 | 30 | 26.3 | 30 | 26.2 | 31 | 27.1 | 31 | 26.5 |
| Mean Max. | 28.3 | 25.6 | 28.2 | 25.8 | 27.3 | 25.8 | 27.4 | 25.9 | 28.9 | 26.0 | 30.2 | 26.1 | 30.3 | 25.6 |
| Mean Min. | 26.4 | 24.9 | 25.4 | 25.1 | 24.5 | 25.3 | 24.3 | 25.3 | 25.2 | 25.1 | 26.7 | 23.3 | 27.8 | 22.6 |
| Minimum | 25 | 23.5 | 24 | 24.6 | 22 | 24.9 | 22 | 24.6 | 23 | 24.3 | 24 | 19.2 | 26 | 15.9 |
| | | | | | | | | | | | | | | **MANZANILLO,** |
| 1953-1954 | 26.9 | 27.0 | 27.5 | 26.2 | 24.1 | 26.0 | 25.2 | 26.2 | 25.1 | 26.2 | 27.4 | 26.1 | 29.1 | 26.5 |
| 1955-1959 | 27.6 | 25.5 | 26.9 | 26.1 | 25.9 | 26.0 | 26.1 | 26.2 | 27.8 | 26.4 | 28.4 | 26.1 | 29.1 | 26.1 |
| 1960 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1961 | 26.4 | 25.6 | 25.5 | 25.8 | 23.5 | 26.1 | 23.2 | 26.2 | 25.7 | 26.1 | 27.4 | 25.9 | 29.4 | 25.7 |
| 1962 | 26.0 | 25.8 | 24.9 | 26.0 | 20.9 | 26.2 | 22.7 | 26.3 | 24.9 | 26.3 | 27.3 | 26.2 | 29.3 | 25.5 |
| 1963 | 26.1 | 26.1 | -- | -- | 23.6 | 26.3 | 25.3 | 26.3 | 26.8 | 26.3 | 28.6 | 26.1 | 29.2 | 25.5 |
| 1964 | 26.3 | 25.7 | 25.8 | 26.0 | 23.7 | 26.1 | 25.3 | 26.4 | 24.3 | 26.3 | 25.5 | 26.3 | 28.3 | 25.9 |
| Mean | 26.9 | 25.8 | 26.4 | 26.1 | 24.4 | 26.1 | 25.0 | 26.2 | 26.3 | 26.3 | 27.8 | 26.1 | 29.1 | 26.0 |
| Maximum | 31 | 27.9 | 31 | 27.5 | 28 | 27.0 | 28 | 27.2 | 30 | 27.8 | 31 | 27.9 | 31 | 27.7 |
| Mean Max. | 28.2 | 26.5 | 27.7 | 26.6 | 26.1 | 26.5 | 26.7 | 26.6 | 27.9 | 26.8 | 29.2 | 26.8 | 30.1 | 26.5 |
| Mean Min. | 25.6 | 25.0 | 24.7 | 25.6 | 22.3 | 25.6 | 23.7 | 25.8 | 24.5 | 25.8 | 26.0 | 25.4 | 27.8 | 25.0 |
| Minimum | 24 | 23.7 | 22 | 25.0 | 19 | 25.1 | 21 | 25.4 | 22 | 25.2 | 23 | 24.0 | 26 | 20.8 |
| | | | | | | | | | | | | | | **MAZATLÁN,** |
| 1953-1954 | 21.9 | 26.0 | 21.7 | 26.0 | 21.0 | 26.0 | 22.5 | 26.2 | 23.9 | 26.4 | 28.2 | 26.5 | 29.9 | 25.8 |
| 1955-1959 | 22.2 | 26.0 | 20.7 | 26.1 | 21.3 | 26.3 | 22.3 | 26.4 | 25.2 | 26.4 | 28.6 | 26.5 | 29.6 | 25.8 |
| 1960 | -- | -- | 19.6 | 26.0 | 20.9 | 26.8 | 22.2 | 26.6 | 23.8 | 27.0 | -- | -- | 29.4 | 26.8 |
| 1961 | 22.3 | 25.9 | 23.3 | 25.9 | 21.6 | 26.6 | 23.8 | 26.7 | 26.4 | 26.8 | 28.4 | 26.0 | -- | -- |
| 1962 | 21.7 | 25.9 | 23.6 | 26.5 | 17.6 | 26.0 | 19.8 | 25.9 | 23.4 | 26.1 | 26.2 | 26.6 | 29.8 | 26.2 |
| 1963 | 18.7 | 24.8 | 18.1 | 24.4 | 20.5 | 24.7 | 22.3 | 25.0 | -- | -- | -- | -- | -- | -- |
| 1964 | 22.4 | 25.6 | 20.6 | 26.0 | 19.3 | 26.2 | 21.2 | 26.2 | 23.5 | 26.5 | 25.8 | 26.5 | -- | -- |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| MEXICO | | | | | | | | | | | | | | | |
| 28.9 | 25.3 | 28.8 | 24.7 | 25.1 | 25.0 | 24.1 | 25.6 | 23.3 | 25.8 | 25.9 | 25.5 | 31 | 27.8 | 17 | 17.6 |
| 28.9 | 25.2 | 29.0 | 24.4 | 28.2 | 24.8 | 24.8 | 25.3 | 22.3 | 25.5 | 26.6 | 25.3 | 32 | 28.1 | 17 | 15.8 |
| 29.4 | 24.3 | 28.8 | 24.4 | 28.2 | 24.3 | 22.6 | 25.4 | 21.2 | 25.6 | -- | -- | 31 | 27.0* | 17 | 21.9* |
| 28.4 | 25.3 | 28.9 | 25.0 | 25.2 | 25.1 | 22.7 | 24.8 | 24.8 | 25.0 | 26.3 | 25.4 | 31 | 26.6 | 17 | 23.7 |
| 29.2 | 25.0 | 29.4 | 24.3 | 27.7 | 24.3 | 24.2 | 24.6 | 23.8 | 25.3 | 26.4 | 25.0 | 31 | 26.1 | 16 | 22.8 |
| 28.9 | 24.8 | 28.8 | 24.5 | 25.6 | 25.1 | 24.9 | 25.3 | 22.2 | 25.7 | 26.4 | 25.3 | 31 | 27.3 | 18 | 23.2 |
| 29.6 | 24.8 | 29.6 | 24.4 | 24.2 | 25.2 | 23.7 | 25.6 | 23.2 | 25.6 | 26.4 | 25.4 | 31 | 26.4 | 18 | 23.7 |
| 28.9 | 25.1 | 29.0 | 24.5 | 26.7 | 24.8 | 24.1 | 25.3 | 22.8 | 25.5 | 26.4 | 25.3 | | | | |
| 31 | 26.9 | 31 | 26.5 | 32 | 27.0 | 29 | 26.5 | 29 | 27.8 | | | 32 | 28.1 | | |
| 30.3 | 25.7 | 30.2 | 25.4 | 29.8 | 25.7 | 28.6 | 26.0 | 27.4 | 26.3 | | | | | | |
| 27.6 | 24.2 | 27.7 | 22.9 | 22.6 | 23.7 | 18.9 | 24.3 | 18.2 | 24.8 | | | | | | |
| 24 | 21.9 | 27 | 15.8 | 18 | 22.4 | 17 | 22.8 | 17 | 24.3 | | | | | 16 | 15.8 |
| MEXICO | | | | | | | | | | | | | | | |
| 29.9 | 24.9 | 29.6 | 24.2 | 28.8 | 24.3 | 28.3 | 25.0 | 27.7 | 25.1 | 28.0 | 25.1 | 32 | 26.7 | 22 | 15.5 |
| 30.1 | 24.6 | 29.4 | 24.0 | 29.1 | 24.1 | 28.3 | 24.7 | 27.9 | 25.1 | 28.3 | 24.9 | 31 | 27.1 | 22 | 15.9 |
| 29.8 | 24.6 | 29.3 | 23.7 | 29.4 | 23.8 | 28.2 | 24.6 | 28.2 | 24.9 | 27.8 | 25.0 | 31 | 26.1 | 23 | 18.6 |
| 29.8 | 25.0 | 29.7 | 23.5 | 29.7 | 24.9 | 26.7 | 24.1 | 27.1 | 24.9 | 27.9 | 24.9 | 31 | 26.1 | 22 | 16.2 |
| 30.0 | 24.9 | 29.8 | 24.1 | 29.1 | 23.9 | 28.5 | 24.8 | 27.2 | 25.1 | 27.6 | 25.0 | 31 | 26.0 | 22 | 19.7 |
| 29.9 | 24.7 | 29.8 | 23.9 | 29.5 | 24.3 | 28.6 | 24.8 | 28.2 | 25.0 | 28.0 | 25.1 | 31 | 26.3 | 23 | 15.2 |
| 29.5 | 24.7 | 29.8 | 24.1 | 29.4 | 24.4 | 27.2 | 25.0 | 26.4 | 25.2 | 27.5 | 25.0 | 31 | 26.2 | 23 | 20.7 |
| 29.9 | 24.8 | 29.6 | 24.0 | 29.1 | 24.2 | 28.2 | 24.8 | 27.7 | 25.1 | 28.0 | 25.0 | | | | |
| 31 | 26.0 | 32 | 26.2 | 31 | 25.8 | 31 | 26.0 | 30 | 26.4 | | | 32 | 27.1 | | |
| 30.7 | 25.4 | 30.7 | 25.1 | 30.1 | 25.1 | 29.4 | 25.4 | 28.8 | 25.6 | | | | | | |
| 29.2 | 23.5 | 27.9 | 20.4 | 27.8 | 22.0 | 26.9 | 23.6 | 26.4 | 24.5 | | | | | | |
| 28 | 22.3 | 24 | 15.2 | 23 | 18.6 | 24 | 19.5 | 23 | 23.7 | | | | | 22 | 15.2 |
| MEXICO | | | | | | | | | | | | | | | |
| 30.2 | 26.4 | 29.9 | 25.6 | -- | -- | 27.1 | -- | 28.0 | 26.5 | -- | -- | 31 | 27.9* | 23 | 25.3* |
| 29.9 | 25.6 | 29.4 | 25.1 | 28.9 | 24.5 | 28.0 | 24.6 | 27.6 | 25.2 | 28.0 | 25.6 | 31 | 27.9 | 21 | 19.2 |
| -- | -- | 28.9 | 25.7 | 29.5 | 25.6 | 28.2 | 25.7 | 27.0 | 25.7 | -- | -- | 31* | 26.1* | 26* | 25.0* |
| 29.9 | 25.9 | 29.4 | 25.3 | 30.1 | 25.4 | 26.9 | 25.7 | 25.7 | 25.9 | 26.9 | 25.8 | 31 | 26.6 | 21 | 23.7 |
| 29.9 | 25.6 | 29.5 | 23.7 | 29.3 | 23.4 | 28.0 | 24.6 | 25.7 | 25.5 | 26.5 | 25.4 | 31 | 26.8 | 19 | 19.2 |
| 29.9 | 25.6 | 29.7 | 24.8 | 29.2 | 23.8 | 27.7 | 25.2 | 26.9 | 25.8 | -- | -- | 31 | 27.2* | 21* | 20.6* |
| 29.3 | 25.8 | 29.6 | 25.5 | 29.2 | 25.3 | 27.9 | 26.1 | 25.2 | 26.2 | 26.7 | 26.0 | 31 | 26.9 | 21 | 24.7 |
| 29.9 | 25.8 | 29.4 | 25.1 | 29.2 | 24.6 | 27.8 | 25.1 | 26.9 | 25.6 | 27.4 | 25.7 | | | | |
| 31 | 27.1 | 31 | 26.5 | 31 | 26.5 | 30 | 26.5 | 30 | 27.0 | | | 31 | 27.9 | | |
| 30.7 | 26.3 | 30.4 | 25.8 | 30.1 | 25.6 | 29.1 | 25.9 | 27.9 | 26.2 | | | | | | |
| 28.8 | 25.3 | 28.2 | 25.0 | 28.1 | 23.1 | 26.3 | 24.0 | 25.6 | 24.7 | | | | | | |
| 26 | 23.3 | 27 | 20.0 | 26 | 19.2 | 23 | 21.4 | 23 | 22.0 | | | | | 19 | 19.2 |
| MEXICO | | | | | | | | | | | | | | | |
| 30.2 | 25.2 | 30.2 | 25.0 | 28.4 | 25.6 | 26.0 | 26.1 | 22.8 | 26.0 | 25.6 | 25.9 | 32 | 27.3 | 16 | 7.7 |
| 30.1 | 25.0 | 29.8 | 24.1 | 28.8 | 25.1 | 25.3 | 26.1 | 20.9 | 26.2 | 25.4 | 25.8 | 32 | 27.9 | 14 | 3.6 |
| 29.5 | 26.6 | 30.2 | 25.7 | 29.7 | 25.9 | 26.4 | 26.1 | 22.5 | 26.5 | -- | -- | 31* | 28.0* | 17* | 24.2* |
| -- | -- | -- | -- | 28.8 | 25.9 | 21.9 | 25.7 | 22.8 | 26.7 | -- | -- | 33 | 27.8* | 19 | 24.6* |
| 30.3 | 25.4 | 30.1 | 24.6 | 29.3 | 25.4 | 27.2 | 26.8 | -- | -- | -- | -- | 32 | 27.5* | 16 | 23.0* |
| -- | -- | -- | -- | 29.2 | 25.0 | 25.9 | 25.9 | 23.9 | 25.7 | -- | -- | 31* | 25.9* | 17 | 22.6* |
| 29.9 | 25.6 | 30.0 | 25.1 | 29.1 | 24.9 | 22.9 | 25.3 | 21.3 | 25.7 | -- | -- | 31* | 27.0* | 17 | 22.8* |

Table 1. - Surface Water
Means and

| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | MAZATLÁN, |
| Mean | 21.8 | 25.8 | 21.0 | 26.0 | 20.7 | 26.1 | 22.1 | 26.2 | 24.6 | 26.4 | 27.9 | 26.4 | 29.7 | 26.0 |
| Maximum | 26 | 26.9 | 26 | 27.1 | 26 | 27.4 | 27 | 27.9 | 30 | 28.0 | 31 | 27.5 | 31 | 27.8 |
| Mean Max. | 23.1 | 26.4 | 22.9 | 26.5 | 22.9 | 26.6 | 24.2 | 26.8 | 27.0 | 27.1 | 29.7 | 27.0 | 30.6 | 26.8 |
| Mean Min. | 20.3 | 25.2 | 19.0 | 25.5 | 18.0 | 25.7 | 19.9 | 25.7 | 21.9 | 25.9 | 26.0 | 25.8 | 28.5 | 24.6 |
| Minimum | 16 | 24.0 | 15 | 24.1 | 14 | 24.4 | 17 | 24.6 | 19 | 25.4 | 23 | 24.6 | 27 | 23.1 |
| | | | | | | | | | | | | | | TOPOLOBAMPO, |
| 1956-1959 | 19.6 | 26.6 | 20.7 | 26.8 | 20.8 | 27.0 | 23.7 | 27.4 | 26.3 | 27.7 | 29.8 | 28.0 | 31.2 | 28.1 |
| 1960 | 16.9 | 25.2 | 17.9 | 25.7 | 21.3 | 26.3 | 23.8 | 26.8 | 26.4 | 27.3 | 29.3 | 27.4 | 30.9 | 27.7 |
| 1961 | 19.1 | 26.3 | 20.1 | 26.5 | 21.2 | 26.7 | 23.4 | -- | 25.6 | -- | 29.8 | 28.1 | 31.1 | 27.8 |
| 1962 | -- | -- | -- | -- | -- | -- | -- | -- | 26.2 | 27.9 | 29.4 | 27.7 | -- | -- |
| 1963 | 18.6 | 26.6 | 20.2 | 26.6 | 20.9 | 27.0 | 22.5 | 27.4 | 26.3 | 27.7 | 29.2 | 28.2 | 30.4 | 27.9 |
| 1964 | 18.9 | 26.3 | 18.1 | 26.3 | 19.1 | 26.8 | 22.4 | 27.1 | 24.8 | 27.4 | 28.4 | 27.7 | 30.5 | 27.8 |
| Mean | 18.9 | 26.3 | 19.7 | 26.5 | 20.7 | 26.8 | 23.3 | 27.3 | 26.1 | 27.6 | 29.4 | 27.9 | 30.9 | 27.9 |
| Maximum | 22 | 28.0 | 22 | 27.8 | 23 | 28.5 | 29 | 28.5 | 30 | 28.5 | 32 | 28.8 | 32 | 29.3 |
| Mean Max. | 20.7 | 27.0 | 20.8 | 26.9 | 22.6 | 27.5 | 25.8 | 27.9 | 28.3 | 28.2 | 31.0 | 28.5 | 31.9 | 28.5 |
| Mean Min. | 17.4 | 25.9 | 18.5 | 26.2 | 19.1 | 26.4 | 21.3 | 26.6 | 23.6 | 27.0 | 27.8 | 27.2 | 29.6 | 27.1 |
| Minimum | 16 | 24.8 | 17 | 25.2 | 17 | 25.9 | 20 | 25.9 | 21 | 26.4 | 26 | 26.7 | 29 | 26.3 |
| | | | | | | | | | | | | | | GUAYMAS, |
| 1950-1952 -- 1957-1959 | 17.9 | 27.0 | 18.3 | 26.9 | 18.1 | 26.8 | 21.0 | 26.8 | 24.7 | 27.4 | 29.2 | 27.9 | 31.0 | 27.6 |
| | 18.1 | 26.3 | 19.3 | 26.6 | 20.0 | 26.8 | 23.5 | 27.0 | 25.9 | 27.4 | 29.7 | 27.2 | 32.3 | 27.3 |
| 1960 | 15.0 | 25.5 | 15.4 | 25.9 | 19.6 | 26.2 | 21.9 | 26.6 | 25.1 | 26.9 | 29.8 | 27.2 | 31.9 | 27.3 |
| 1961 | 16.7 | -- | 17.7 | 25.9 | 19.2 | 26.3 | 22.8 | 26.8 | 24.2 | 26.6 | 29.4 | 27.0 | 32.1 | 27.2 |
| 1962 | 15.9 | 25.9 | 18.7 | 26.0 | 17.4 | 26.2 | 22.8 | 26.4 | 25.5 | 26.9 | 27.8 | 26.8 | 32.2 | 27.2 |
| 1963 | 15.8 | 26.2 | 19.1 | 26.3 | 19.9 | 26.6 | 21.1 | 26.6 | 25.4 | 26.8 | 28.3 | 27.2 | 31.5 | 26.2 |
| 1964 | 16.3 | -- | 15.5 | -- | 17.1 | -- | 21.2 | -- | 23.7 | -- | 29.3 | -- | 31.5 | 28.1 |
| Mean | 17.0 | 26.3 | 18.1 | 26.4 | 18.9 | 26.6 | 22.2 | 26.8 | 25.1 | 27.1 | 29.2 | 27.3 | 31.7 | 27.4 |
| Maximum | 27 | 29.3 | 22 | 27.9 | 23 | 27.8 | 27 | 28.4 | 31 | 29.3 | 35 | 30.6 | 36 | 29.8 |
| Mean Max. | 19.3 | 27.0 | 20.0 | 26.9 | 21.7 | 27.1 | 24.7 | 27.3 | 27.8 | 27.7 | 32.2 | 28.0 | 33.3 | 28.2 |
| Mean Min. | 14.7 | 25.7 | 16.1 | 26.0 | 16.6 | 26.1 | 19.3 | 26.2 | 21.3 | 26.6 | 25.9 | 26.7 | 30.0 | 26.4 |
| Minimum | 12 | 24.6 | 13 | 25.3 | 14 | 25.2 | 14 | 25.5 | 14 | 25.2 | 14 | 25.1 | 22 | 22.6 |
| | | | | | | | | | | | | | | PUERTO PEÑASCO, |
| 1952-1955 -- 1963 | 14.9 | 26.8 | 15.7 | 26.8 | 17.8 | 27.0 | 20.5 | 27.2 | 23.7 | 27.1 | 26.3 | 27.2 | 29.6 | 27.2 |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1964 | 14.6 | 26.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mean | 14.8 | 26.8 | 15.7 | 26.8 | 17.8 | 27.0 | 20.5 | 27.2 | 23.7 | 27.1 | 26.3 | 27.2 | 29.6 | 27.2 |
| Maximum | 18 | 28.8 | 19 | 27.3 | 21 | 27.8 | 24 | 29.1 | 27 | 28.3 | 29 | 28.0 | 32 | 28.5 |
| Mean Max. | 17.6 | 27.7 | 17.8 | 27.2 | 20.2 | 27.6 | 23.3 | 28.2 | 26.0 | 27.9 | 28.9 | 27.9 | 31.9 | 28.0 |
| Mean Min. | 12.4 | 26.2 | 14.4 | 26.4 | 15.7 | 26.5 | 17.8 | 26.4 | 21.0 | 26.5 | 22.9 | 26.3 | 27.5 | 26.6 |
| Minimum | 11 | 26.2 | 12 | 26.3 | 15 | 26.3 | 17 | 25.8 | 19 | 26.3 | 22 | 25.8 | 26 | 26.2 |
| | | | | | | | | | | | | | | LA PAZ, |
| 1950-1954 | 19.4 | 26.7 | 19.8 | 26.8 | 21.4 | 27.3 | 22.4 | 27.3 | 23.9 | 27.3 | 24.8 | 27.2 | 27.3 | 27.2 |
| 1955-1959 | 20.8 | 26.9 | 20.7 | 27.0 | 21.5 | 27.1 | 22.9 | 27.1 | 24.7 | 27.1 | 25.6 | 27.3 | 27.6 | 27.3 |

*Observations for the year are incomplete; extremes are for the months shown.

| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| **MEXICO–continued** | | | | | | | | | | | | | | | |
| 30.1 | 25.3 | 30.0 | 24.7 | 28.9 | 25.3 | 25.2 | 26.0 | 22.2 | 26.2 | 25.4 | 25.9 | | | | |
| 32 | 27.4 | 32 | 26.3 | 33 | 27.1 | 29 | 27.2 | 27 | 27.8 | | | 33 | 28.0 | | |
| 31.2 | 26.3 | 31.4 | 26.0 | 30.6 | 26.3 | 27.5 | 26.5 | 24.1 | 26.7 | | | | | | |
| 28.7 | 22.8 | 28.1 | 19.8 | 26.8 | 22.8 | 22.6 | 25.6 | 19.9 | 25.6 | | | | | | |
| 28 | 14.9 | 26 | 3.6 | 25 | 14.8 | 17 | 24.8 | 16 | 24.7 | | | | | 14 | 3.6 |
| **MEXICO** | | | | | | | | | | | | | | | |
| 31.6 | 27.0 | 31.2 | 25.3 | 29.4 | 25.2 | 23.4 | 25.6 | 20.4 | 26.2 | 25.7 | 26.7 | 33 | 29.3 | 18 | 13.0 |
| 31.2 | 27.0 | 31.5 | 26.2 | 28.6 | 26.6 | 24.7 | 26.6 | 18.4 | 26.5 | 25.1 | 26.6 | 33 | 28.3 | 16 | 24.8 |
| 31.2 | 25.6 | 31.2 | 25.8 | 29.1 | 25.1 | -- | -- | -- | -- | -- | -- | 33 | 28.4* | 18 | 24.3* |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31.1 | 26.8 | 31.1 | -- | 30.8 | 27.2 | 25.4 | 26.4 | 21.8 | 26.4 | 25.7 | -- | 33 | 28.8* | 17 | 25.2* |
| 30.9 | 27.4 | 31.1 | 27.6 | 30.3 | 27.3 | 23.6 | 26.6 | 20.1 | 26.6 | 24.8 | 27.1 | 32 | 28.3 | 17 | 25.7 |
| 31.4 | 26.8 | 31.2 | 25.9 | 29.6 | 25.8 | 24.0 | 26.1 | 20.3 | 26.3 | 25.5 | 26.8 | | | | |
| 33 | 28.3 | 33 | 28.6 | 32 | 28.4 | 28 | 28.2 | 25 | 28.2 | | | 33 | 29.3 | | |
| 32.7 | 27.9 | 32.6 | 27.1 | 31.7 | 26.8 | 27.1 | 27.0 | 22.3 | 27.0 | | | | | | |
| 30.1 | 26.1 | 29.1 | 23.7 | 26.9 | 24.7 | 21.1 | 24.9 | 18.5 | 25.9 | | | | | | |
| 28 | 24.9 | 26 | 13.0 | 25 | 16.3 | 20 | 22.3 | 17 | 24.9 | | | | | 16 | 13.0 |
| **MEXICO** | | | | | | | | | | | | | | | |
| 31.1 | 26.7 | 31.1 | 27.0 | 29.2 | 27.3 | 24.1 | 26.9 | 18.5 | 26.9 | 24.5 | 27.1 | 37 | 30.6 | 11 | 23.2 |
| 32.4 | 26.7 | 31.6 | 26.9 | 27.2 | 26.3 | 21.2 | 26.6 | 18.6 | 26.3 | 25.0 | 26.8 | 35 | 28.0 | 15 | 24.8 |
| 30.8 | 26.2 | 31.3 | 26.4 | 26.4 | 25.2 | 22.2 | 24.1 | 15.7 | 22.8 | 23.8 | 25.9 | 33 | 27.9 | 13 | 22.4 |
| 32.3 | 27.2 | 30.9 | 26.7 | 26.7 | 26.4 | 20.7 | 26.3 | 17.7 | 26.1 | 24.2 | -- | 33 | 28.0* | 16 | 25.3* |
| 33.2 | 27.4 | 31.4 | 27.0 | 28.1 | 26.9 | 23.8 | 26.8 | 19.9 | 26.4 | 24.7 | 26.7 | 34 | 27.9 | 14 | 25.2 |
| 31.3 | 24.5 | 31.2 | 26.1 | 28.8 | 26.7 | 23.7 | 26.6 | 18.8 | 26.3 | 24.6 | 26.3 | 33 | 27.8 | 12 | 22.6 |
| 31.3 | 26.8 | -- | -- | 28.9 | 27.3 | 20.8 | 27.4 | 17.3 | 27.3 | -- | -- | 37 | 29.8* | 13 | 23.7* |
| 31.7 | 26.6 | 31.2 | 26.8 | 28.1 | 26.7 | 22.6 | 26.5 | 18.2 | 26.2 | 24.5 | 26.7 | | | | |
| 37 | 30.3 | 37 | 29.1 | 33 | 29.3 | 29 | 28.2 | 27 | 29.0 | | | 37 | 30.6 | | |
| 33.9 | 27.7 | 33.4 | 27.6 | 30.9 | 27.6 | 26.0 | 27.1 | 20.7 | 27.0 | | | | | | |
| 29.6 | 25.0 | 29.8 | 26.2 | 24.9 | 25.9 | 18.9 | 25.8 | 15.6 | 25.5 | | | | | | |
| 24 | 22.8 | 28 | 25.3 | 22 | 23.9 | 17 | 23.3 | 11 | 22.4 | | | | | 11 | 22.4 |
| **MEXICO** | | | | | | | | | | | | | | | |
| 31.2 | 27.2 | 31.0 | 27.3 | 28.4 | 27.2 | 21.9 | 27.0 | 17.1 | 26.8 | 23.2 | 27.1 | 33 | 29.1 | 11 | 24.1 |
| 30.9 | 27.0 | 30.1 | 27.5 | 27.6 | 27.5 | 22.7 | 27.3 | 18.1 | 27.1 | -- | -- | 32* | 28.5* | 16* | 26.2* |
| -- | -- | -- | -- | 26.7 | 27.0 | 21.1 | 27.2 | 17.3 | 26.8 | -- | -- | 28* | 28.8* | 12* | 26.1* |
| 31.1 | 27.1 | 30.8 | 27.4 | 27.9 | 27.2 | 21.9 | 27.1 | 17.3 | 26.9 | 23.1 | 27.1 | | | | |
| 33 | 28.5 | 33 | 28.6 | 31 | 28.5 | 27 | 28.5 | 23 | 28.0 | | | 33 | 29.1 | | |
| 32.2 | 27.9 | 32.2 | 28.1 | 30.2 | 28.1 | 25.4 | 27.8 | 20.4 | 27.7 | | | | | | |
| 29.8 | 26.4 | 29.0 | 26.6 | 25.3 | 26.6 | 18.9 | 26.6 | 14.4 | 25.8 | | | | | | |
| 29 | 26.3 | 28 | 26.2 | 24 | 26.1 | 18 | 26.4 | 11 | 24.1 | | | | | 11 | 24.1 |
| **MEXICO** | | | | | | | | | | | | | | | |
| 29.1 | 26.9 | 29.7 | 26.9 | 28.6 | 26.9 | 25.4 | 26.7 | 21.6 | 26.5 | 24.4 | 27.0 | 33 | 20.2 | 17 | 25.3 |
| 29.2 | 27.2 | 29.5 | 26.9 | 27.8 | 26.9 | 24.8 | 26.9 | 21.9 | 26.9 | 24.8 | 27.0 | 32 | 28.6 | 17 | 25.3 |

Table 1. - Surface Water
Means and

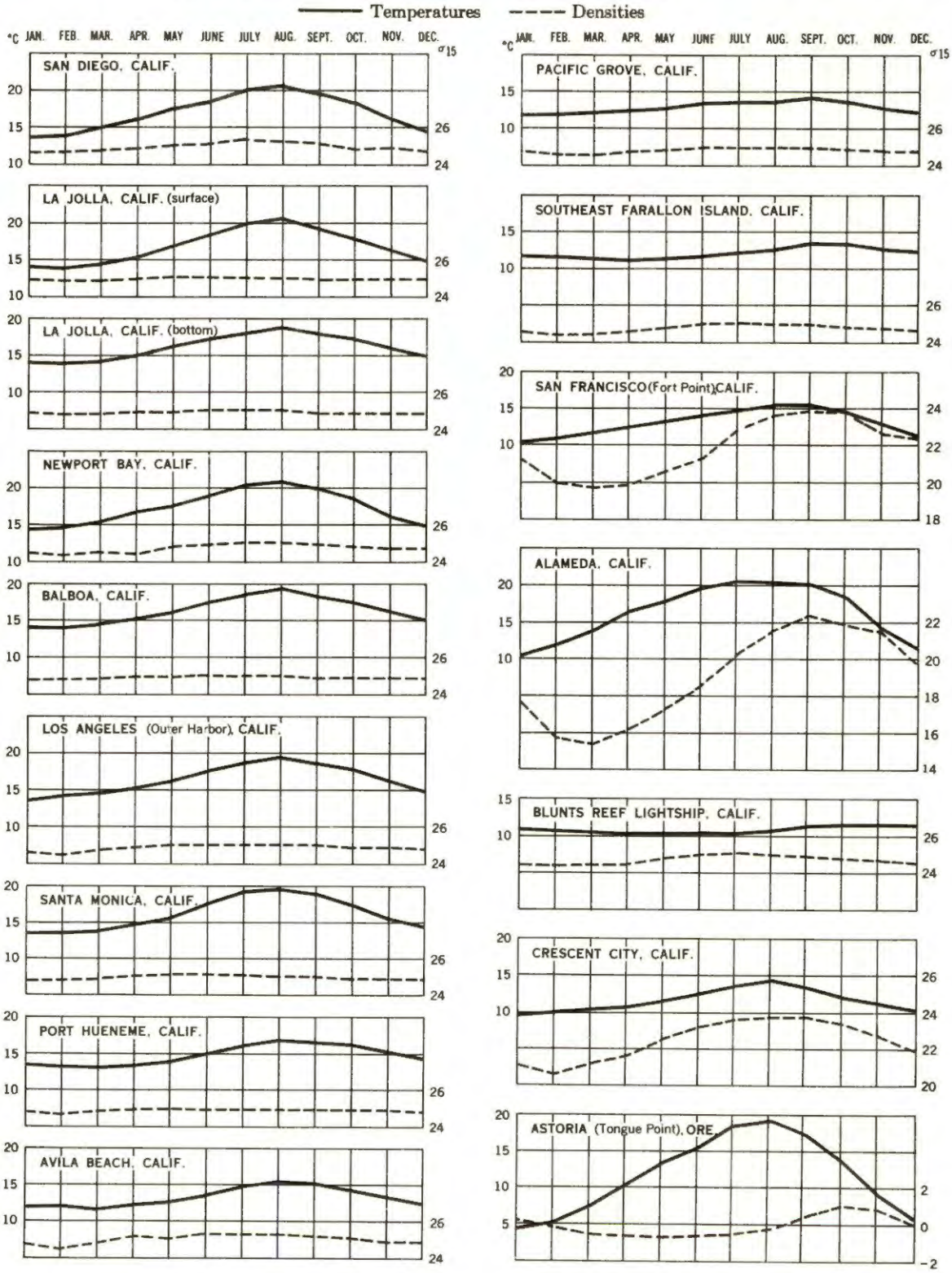
| Years | January | | February | | March | | April | | May | | June | | July | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| | | | | | | | | | | | | | | LA PAZ, |
| 1960 | 19.1 | 26.8 | 19.7 | 27.1 | 22.7 | 27.5 | 22.9 | 27.3 | 24.4 | 27.3 | 24.8 | 27.2 | -- | -- |
| -- | | | | | | | | | | | | | | |
| 1962 | 19.9 | 26.6 | 21.0 | 26.6 | 21.3 | 26.9 | 24.4 | 26.8 | 24.7 | 26.8 | 26.0 | 26.8 | 27.9 | 26.6 |
| 1963 | 20.2 | 26.3 | 21.4 | 26.5 | 22.1 | 26.8 | 24.6 | 26.9 | 26.1 | 26.7 | 26.1 | 26.7 | 28.8 | 26.6 |
| 1964 | 19.2 | 26.6 | 18.3 | 25.7 | 20.4 | 26.8 | 23.4 | 26.9 | 24.9 | 26.8 | 23.9 | 26.6 | 26.8 | 26.4 |
| Mean | 20.0 | 26.7 | 20.2 | 26.8 | 21.5 | 27.1 | 23.0 | 27.1 | 24.6 | 27.1 | 25.2 | 27.1 | 27.6 | 27.1 |
| Maximum | 23 | 28.0 | 24 | 28.1 | 26 | 28.6 | 27 | 28.6 | 30 | 28.6 | 32 | 28.6 | 32 | 28.5 |
| Mean Max. | 21.6 | 27.3 | 22.4 | 27.5 | 24.2 | 27.8 | 25.8 | 27.9 | 27.4 | 28.0 | 28.6 | 28.0 | 29.9 | 27.8 |
| Mean Min. | 18.5 | 26.0 | 18.2 | 26.4 | 19.2 | 26.5 | 20.9 | 26.4 | 22.1 | 26.4 | 22.5 | 26.3 | 24.8 | 26.4 |
| Minimum | 17 | 25.8 | 16 | 25.8 | 17 | 25.8 | 18 | 25.7 | 21 | 25.8 | 20 | 25.7 | 21 | 25.6 |
| | | | | | | | | | | | | | | ENSENADA, |
| 1956-1959 | 15.6 | 24.8 | 15.9 | 24.9 | 16.4 | 25.0 | 17.3 | 24.8 | 18.4 | 25.2 | 19.3 | 25.2 | 21.3 | 25.2 |
| 1960 | 14.8 | 25.2 | 14.7 | 25.2 | 15.5 | 25.3 | 16.7 | 25.2 | 17.9 | 25.2 | 19.0 | 25.4 | 20.8 | 25.3 |
| 1961 | 15.1 | 25.1 | 15.4 | 25.2 | 15.2 | 25.2 | 16.3 | 25.2 | 16.2 | 25.5 | 18.1 | 25.6 | 21.2 | 25.4 |
| 1962 | 14.1 | 25.1 | 14.9 | 25.1 | 14.4 | 25.2 | 16.4 | 25.2 | 16.9 | 25.3 | 17.7 | 25.5 | 19.7 | 25.5 |
| 1963 | 14.4 | 25.3 | 15.5 | 25.2 | 15.3 | 25.2 | 15.3 | 25.3 | 16.8 | 25.3 | 18.8 | 25.4 | 20.3 | 25.4 |
| 1964 | 15.2 | 25.3 | 15.2 | 25.4 | 15.1 | 25.4 | 15.8 | 25.4 | 15.8 | 25.5 | 17.7 | 25.6 | 19.1 | 25.6 |
| Mean | 14.9 | 25.1 | 15.4 | 25.1 | 15.6 | 25.2 | 16.4 | 25.1 | 17.3 | 25.3 | 18.7 | 25.3 | 20.7 | 25.3 |
| Maximum | 17 | 25.5 | 18 | 25.5 | 20 | 26.0 | 20 | 25.6 | 21 | 25.7 | 21 | 25.9 | 24 | 25.9 |
| Mean Max. | 15.7 | 25.3 | 16.3 | 25.3 | 16.8 | 25.5 | 18.0 | 25.4 | 18.7 | 25.6 | 20.9 | 25.6 | 22.4 | 25.6 |
| Mean Min. | 14.1 | 24.7 | 14.6 | 24.8 | 14.7 | 24.9 | 14.5 | 24.7 | 15.6 | 24.8 | 17.1 | 25.1 | 18.5 | 25.1 |
| Minimum | 13 | 24.1 | 13 | 24.5 | 14 | 24.5 | 13 | 23.4 | 13 | 24.5 | 15 | 24.6 | 17 | 24.7 |

*Observations for the year are incomplete; extremes are for the months shown.

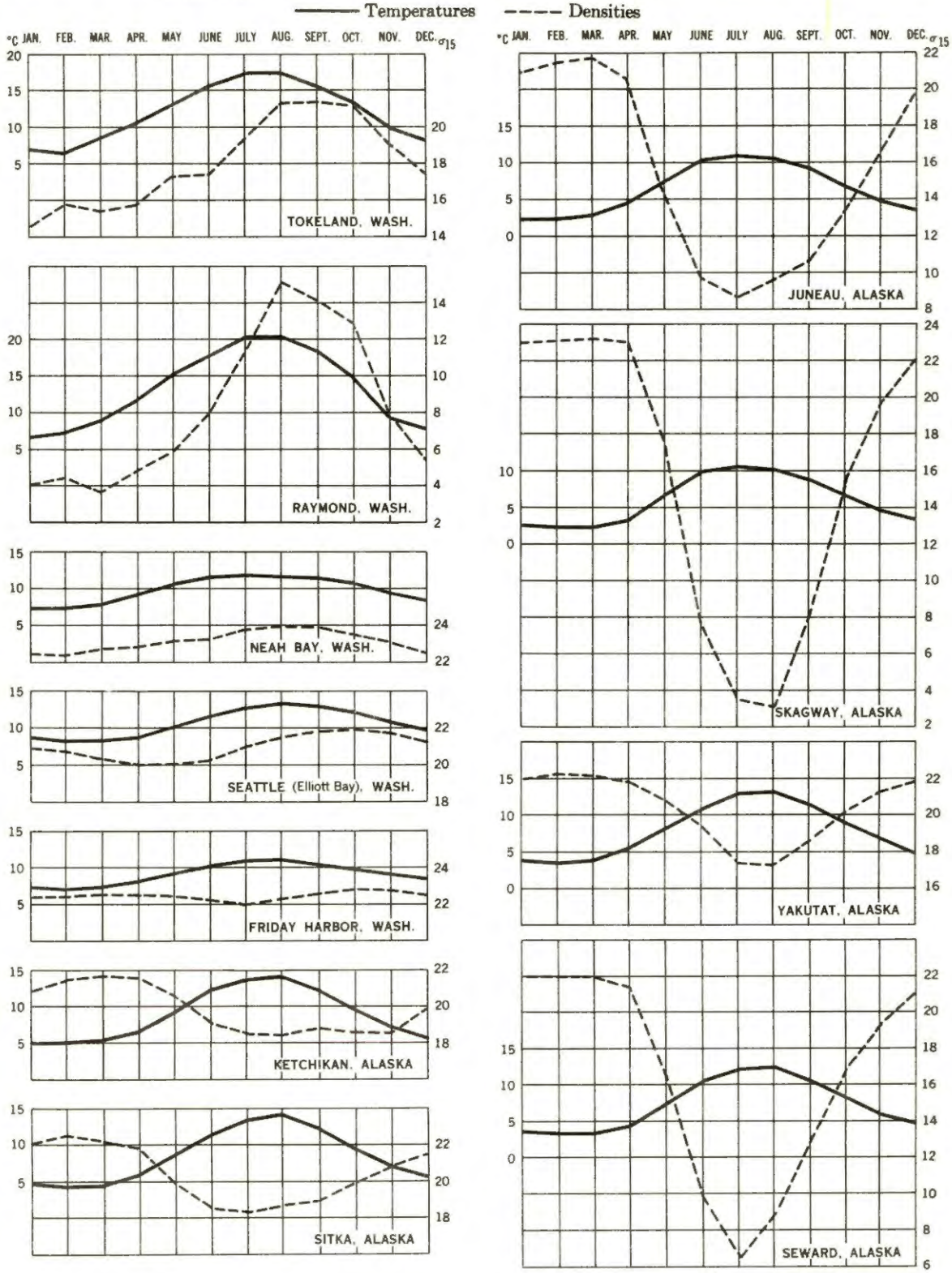
| August | | September | | October | | November | | December | | Means | | Maximum | | Minimum | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ | Temp. °C | Dens. $\sigma_{15}$ |
| MEXICO–continued | | | | | | | | | | | | | | | |
| 29.2 | 26.8 | 30.8 | 26.7 | 28.5 | 26.8 | 26.1 | 26.7 | 22.1 | 26.6 | -- | -- | 32 | 28.4* | 18 | 25.8* |
| 30.3 | 26.6 | 29.2 | 26.3 | -- | -- | 26.1 | 26.5 | 23.1 | 26.4 | -- | -- | 33 | 28.3* | 18 | 25.2* |
| 30.5 | 26.6 | 31.1 | 26.6 | 31.0 | 26.7 | 25.4 | 26.6 | 22.2 | 26.5 | 25.8 | 26.6 | 33 | 27.8 | 18 | 25.8 |
| 27.9 | 26.4 | 28.7 | 26.4 | 28.5 | 26.4 | 23.8 | 25.2 | 21.7 | 26.3 | 24.0 | 26.4 | 32 | 28.0 | 16 | 25.6 |
| 29.2 | 26.9 | 29.7 | 26.8 | 28.4 | 26.8 | 25.3 | 26.7 | 22.0 | 26.6 | 24.7 | 26.9 | | | | |
| 33 | 30.2 | 33 | 28.0 | 33 | 28.8 | 28 | 28.2 | 28 | 28.1 | | | 33 | 30.2 | | |
| 31.4 | 27.7 | 31.5 | 27.3 | 30.6 | 27.6 | 27.6 | 27.4 | 24.8 | 27.4 | | | | | | |
| 27.3 | 26.4 | 27.8 | 26.1 | 26.5 | 26.3 | 22.8 | 26.1 | 19.9 | 26.1 | | | | | | |
| 26 | 25.6 | 25 | 25.2 | 24 | 25.9 | 21 | 25.4 | 18 | 25.3 | | | | | 16 | 25.2 |
| MEXICO | | | | | | | | | | | | | | | |
| 21.8 | 25.2 | 20.7 | 25.1 | 19.4 | 25.1 | 17.1 | 25.1 | 16.4 | 25.1 | 18.3 | 25.1 | 24 | 26.2 | 13 | 23.4 |
| 22.0 | 25.3 | 21.2 | 25.2 | 17.6 | 24.9 | 16.6 | 25.0 | 14.4 | 25.0 | 17.6 | 25.2 | 24 | 25.7 | 13 | 24.0 |
| 20.8 | 25.3 | 19.9 | 25.3 | 18.3 | 25.3 | 14.8 | 25.2 | 14.3 | 25.1 | 17.1 | 25.3 | 23 | 25.8 | 13 | 24.8 |
| 20.2 | 25.3 | 19.9 | 25.3 | 17.6 | 25.2 | 16.2 | 25.2 | 14.9 | 25.3 | 16.9 | 25.3 | 22 | 25.8 | 13 | 24.8 |
| 21.6 | 25.4 | 21.7 | 25.3 | 19.8 | 25.2 | 17.6 | 25.3 | 15.9 | 25.3 | 17.8 | 25.3 | 23 | 25.6 | 13 | 24.5 |
| 21.0 | 25.5 | 19.2 | 25.4 | 18.8 | 25.5 | 15.3 | 25.3 | 14.2 | 25.3 | 16.9 | 25.4 | 23 | 25.9 | 13 | 24.2 |
| 21.4 | 25.3 | 20.5 | 25.2 | 18.8 | 25.2 | 16.6 | 25.2 | 15.5 | 25.2 | 17.6 | 25.2 | | | | |
| 24 | 25.9 | 24 | 26.2 | 23 | 25.7 | 19 | 25.6 | 19 | 25.9 | | | 24 | 26.2 | | |
| 23.0 | 25.5 | 22.3 | 25.6 | 20.5 | 25.4 | 17.9 | 25.4 | 16.4 | 25.5 | | | | | | |
| 19.4 | 25.0 | 17.7 | 24.8 | 17.3 | 24.9 | 15.2 | 24.8 | 14.5 | 24.8 | | | | | | |
| 18 | 24.7 | 16 | 24.2 | 16 | 24.6 | 14 | 24.5 | 13 | 24.3 | | | | | 13 | 23.4 |

# Mean Temperature and Density Curves

Monthly mean surface water temperatures (in degrees Celsius) and densities ($\sigma_{15}$) are presented graphically to show the seasonal variation.

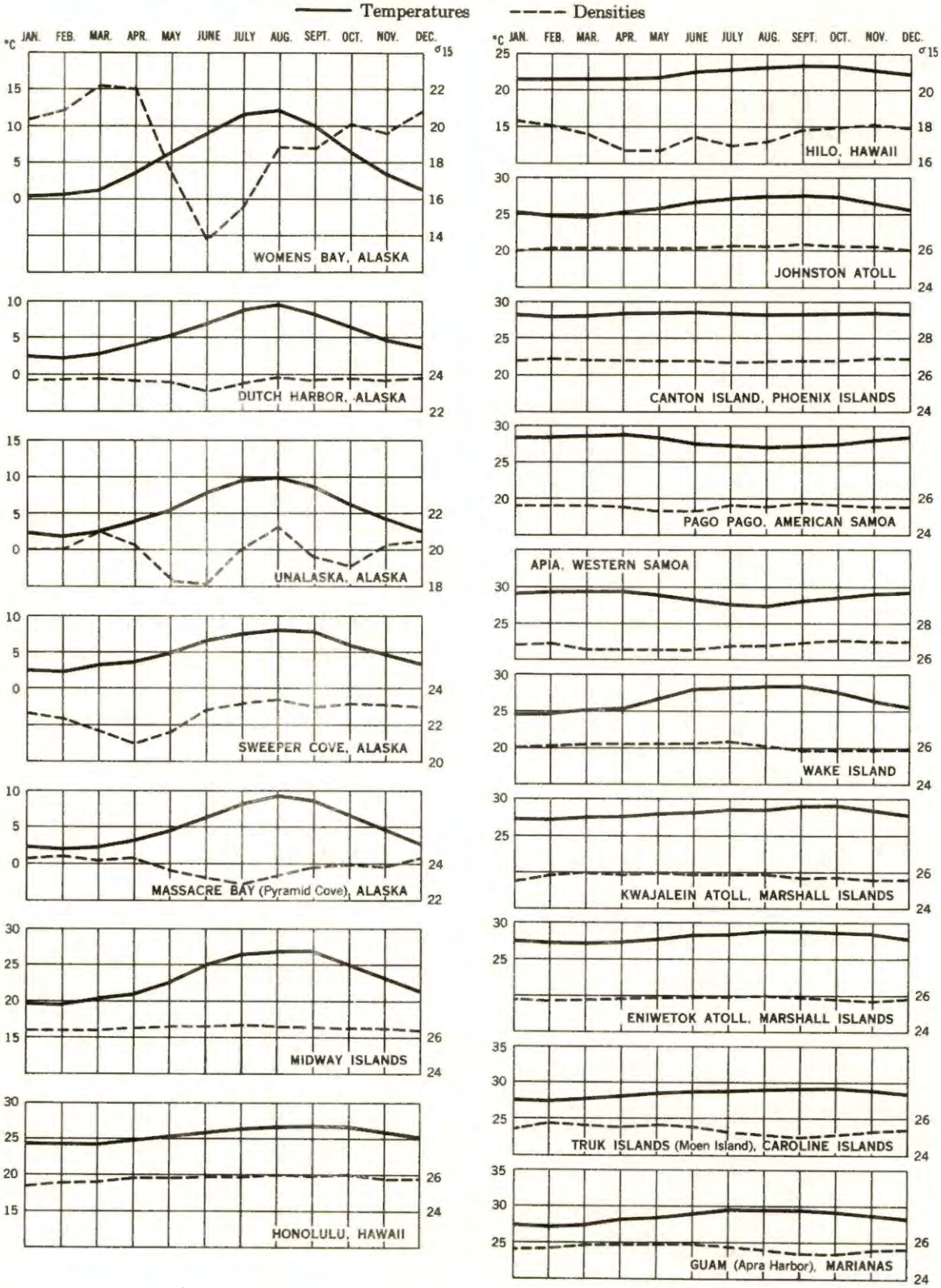


Monthly mean surface water temperatures (in degrees Celsius) and densities ($\sigma_{15}$) are presented graphically to show the seasonal variation.

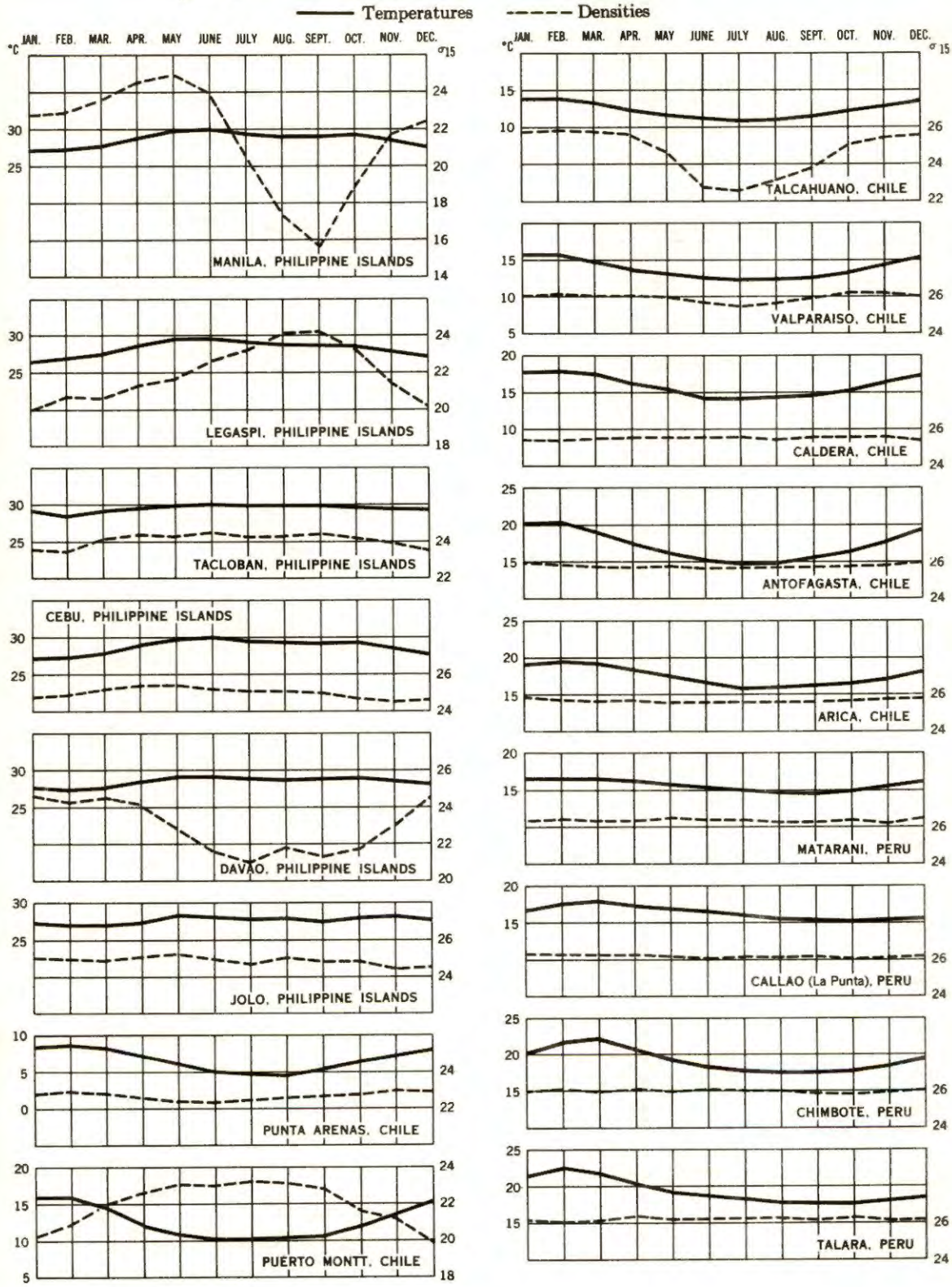


# Mean Temperature and Density Curves

Monthly mean surface water temperatures (in degrees Celsius) and densities ($\sigma_{15}$) are presented graphically to show the seasonal variation.

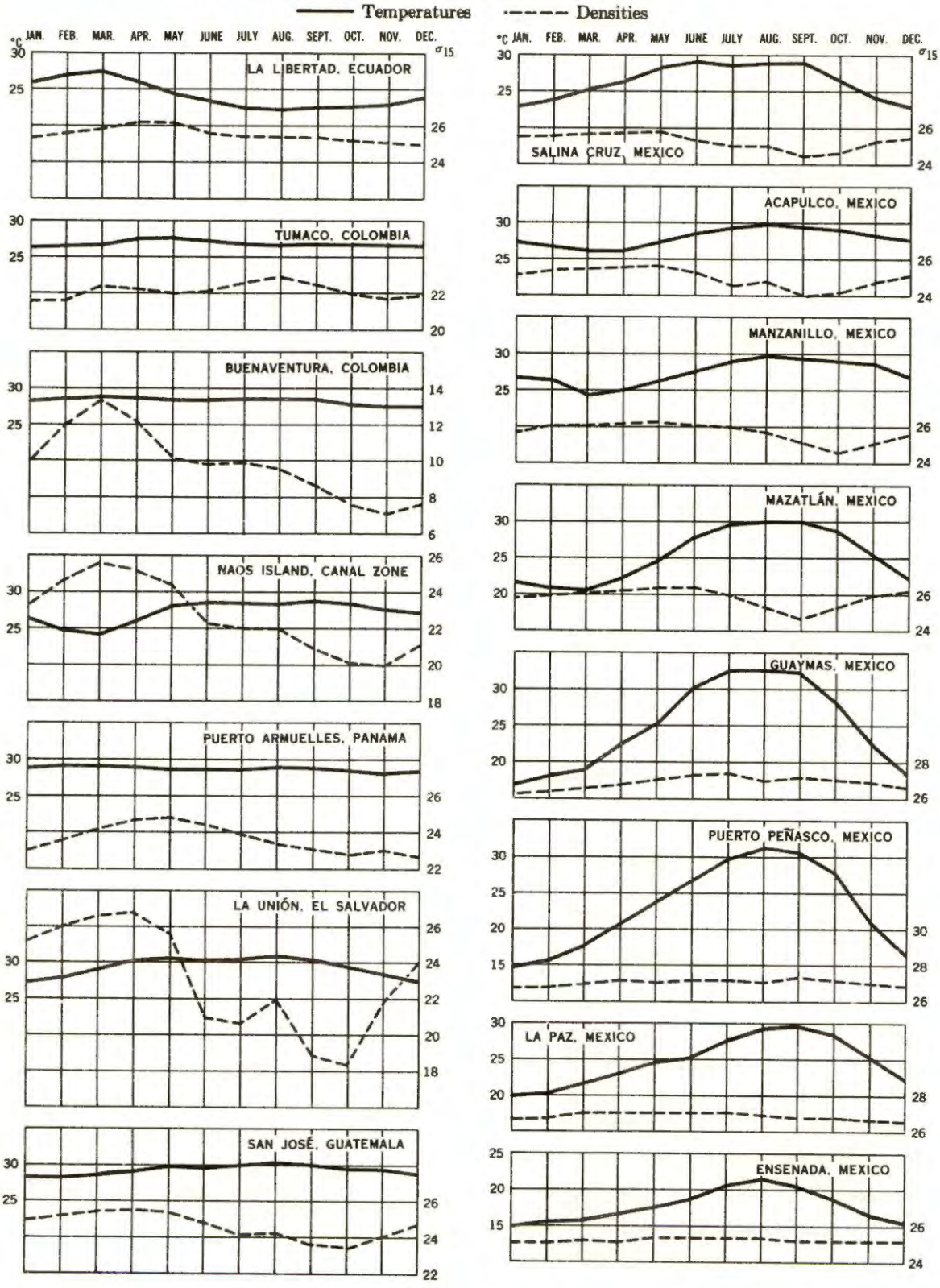


Monthly mean surface water temperatures (in degrees Celsius) and densities ($\sigma_{15}$) are presented graphically to show the seasonal variation.



# Mean Temperature and Density Curves

Monthly mean surface water temperatures (in degrees Celsius) and densities ($\sigma_{15}$) are presented graphically to show the seasonal variation.



## Table 2.—Conversion of Celsius to Fahrenheit

| °C | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| -3 | 26.6 | 26.4 | 26.2 | 26.1 | 25.9 | 25.7 | 25.5 | 25.3 | 25.2 | 25.0 |
| -2 | 28.4 | 28.2 | 28.0 | 27.9 | 27.7 | 27.5 | 27.3 | 27.1 | 27.0 | 26.8 |
| -1 | 30.2 | 30.0 | 29.8 | 29.7 | 29.5 | 29.3 | 29.1 | 28.9 | 28.8 | 28.6 |
| -0 | 32.0 | 31.8 | 31.6 | 31.5 | 31.3 | 31.1 | 30.9 | 30.7 | 30.6 | 30.4 |
| 0 | 32.0 | 32.2 | 32.4 | 32.5 | 32.7 | 32.9 | 33.1 | 33.3 | 33.4 | 33.6 |
| 1 | 33.8 | 34.0 | 34.2 | 34.3 | 34.5 | 34.7 | 34.9 | 35.1 | 35.2 | 35.4 |
| 2 | 35.6 | 35.8 | 36.0 | 36.1 | 36.3 | 36.5 | 36.7 | 36.9 | 37.0 | 37.2 |
| 3 | 37.4 | 37.6 | 37.8 | 37.9 | 38.1 | 38.3 | 38.5 | 38.7 | 38.8 | 39.0 |
| 4 | 39.2 | 39.4 | 39.6 | 39.7 | 39.9 | 40.1 | 40.3 | 40.5 | 40.6 | 40.8 |
| 5 | 41.0 | 41.2 | 41.4 | 41.5 | 41.7 | 41.9 | 42.1 | 42.3 | 42.4 | 42.6 |
| 6 | 42.8 | 43.0 | 43.2 | 43.3 | 43.5 | 43.7 | 43.9 | 44.1 | 44.2 | 44.4 |
| 7 | 44.6 | 44.8 | 45.0 | 45.1 | 45.3 | 45.5 | 45.7 | 45.9 | 46.0 | 46.2 |
| 8 | 46.4 | 46.6 | 46.8 | 46.9 | 47.1 | 47.3 | 47.5 | 47.7 | 47.8 | 48.0 |
| 9 | 48.2 | 48.4 | 48.6 | 48.7 | 48.9 | 49.1 | 49.3 | 49.5 | 49.6 | 49.8 |
| 10 | 50.0 | 50.2 | 50.4 | 50.5 | 50.7 | 50.9 | 51.1 | 51.3 | 51.4 | 51.6 |
| 11 | 51.8 | 52.0 | 52.2 | 52.3 | 52.5 | 52.7 | 52.9 | 53.1 | 53.2 | 53.4 |
| 12 | 53.6 | 53.8 | 54.0 | 54.1 | 54.3 | 54.5 | 54.7 | 54.9 | 55.0 | 55.2 |
| 13 | 55.4 | 55.6 | 55.8 | 55.9 | 56.1 | 56.3 | 56.5 | 56.7 | 56.8 | 57.0 |
| 14 | 57.2 | 57.4 | 57.6 | 57.7 | 57.9 | 58.1 | 58.3 | 58.5 | 58.6 | 58.8 |
| 15 | 59.0 | 59.2 | 59.4 | 59.5 | 59.7 | 59.9 | 60.1 | 60.3 | 60.4 | 60.6 |
| 16 | 60.8 | 61.0 | 61.2 | 61.3 | 61.5 | 61.7 | 61.9 | 62.1 | 62.2 | 62.4 |
| 17 | 62.6 | 62.8 | 63.0 | 63.1 | 63.3 | 63.5 | 63.7 | 63.9 | 64.0 | 64.2 |
| 18 | 64.4 | 64.6 | 64.8 | 64.9 | 65.1 | 65.3 | 65.5 | 65.7 | 65.8 | 66.0 |
| 19 | 66.2 | 66.4 | 66.6 | 66.7 | 66.9 | 67.1 | 67.3 | 67.5 | 67.6 | 67.8 |
| 20 | 68.0 | 68.2 | 68.4 | 68.5 | 68.7 | 68.9 | 69.1 | 69.3 | 69.4 | 69.6 |
| 21 | 69.8 | 70.0 | 70.2 | 70.3 | 70.5 | 70.7 | 70.9 | 71.1 | 71.2 | 71.4 |
| 22 | 71.6 | 71.8 | 72.0 | 72.1 | 72.3 | 72.5 | 72.7 | 72.9 | 73.0 | 73.2 |
| 23 | 73.4 | 73.6 | 73.8 | 73.9 | 74.1 | 74.3 | 74.5 | 74.7 | 74.8 | 75.0 |
| 24 | 75.2 | 75.4 | 75.6 | 75.7 | 75.9 | 76.1 | 76.3 | 76.5 | 76.6 | 76.8 |
| 25 | 77.0 | 77.2 | 77.4 | 77.5 | 77.7 | 77.9 | 78.1 | 78.3 | 78.4 | 78.6 |
| 26 | 78.8 | 79.0 | 79.2 | 79.3 | 79.5 | 79.7 | 79.9 | 80.1 | 80.2 | 80.4 |
| 27 | 80.6 | 80.8 | 81.0 | 81.1 | 81.3 | 81.5 | 81.7 | 81.9 | 82.0 | 82.2 |
| 28 | 82.4 | 82.6 | 82.8 | 82.9 | 83.1 | 83.3 | 83.5 | 83.7 | 83.8 | 84.0 |
| 29 | 84.2 | 84.4 | 84.6 | 84.7 | 84.9 | 85.1 | 85.3 | 85.5 | 85.6 | 85.8 |
| 30 | 86.0 | 86.2 | 86.4 | 86.5 | 86.7 | 86.9 | 87.1 | 87.3 | 87.4 | 87.6 |
| 31 | 87.8 | 88.0 | 88.2 | 88.3 | 88.5 | 88.7 | 88.9 | 89.1 | 89.2 | 89.4 |
| 32 | 89.6 | 89.8 | 90.0 | 90.1 | 90.3 | 90.5 | 90.7 | 90.9 | 91.0 | 91.2 |
| 33 | 91.4 | 91.6 | 91.8 | 91.9 | 92.1 | 92.3 | 92.5 | 92.7 | 92.8 | 93.0 |
| 34 | 93.2 | 93.4 | 93.6 | 93.7 | 93.9 | 94.1 | 94.3 | 94.5 | 94.6 | 94.8 |
| 35 | 95.0 | 95.2 | 95.4 | 95.5 | 95.7 | 95.9 | 96.1 | 96.3 | 96.4 | 96.6 |
| 36 | 96.8 | 97.0 | 97.2 | 97.3 | 97.5 | 97.7 | 97.9 | 98.1 | 98.2 | 98.4 |
| 37 | 98.6 | 98.8 | 99.0 | 99.1 | 99.3 | 99.5 | 99.7 | 99.9 | 100.0 | 100.2 |
| 38 | 100.4 | 100.6 | 100.8 | 100.9 | 101.1 | 101.3 | 101.5 | 101.7 | 101.8 | 102.0 |
| 39 | 102.2 | 102.4 | 102.6 | 102.7 | 102.9 | 103.1 | 103.3 | 103.5 | 103.6 | 103.8 |

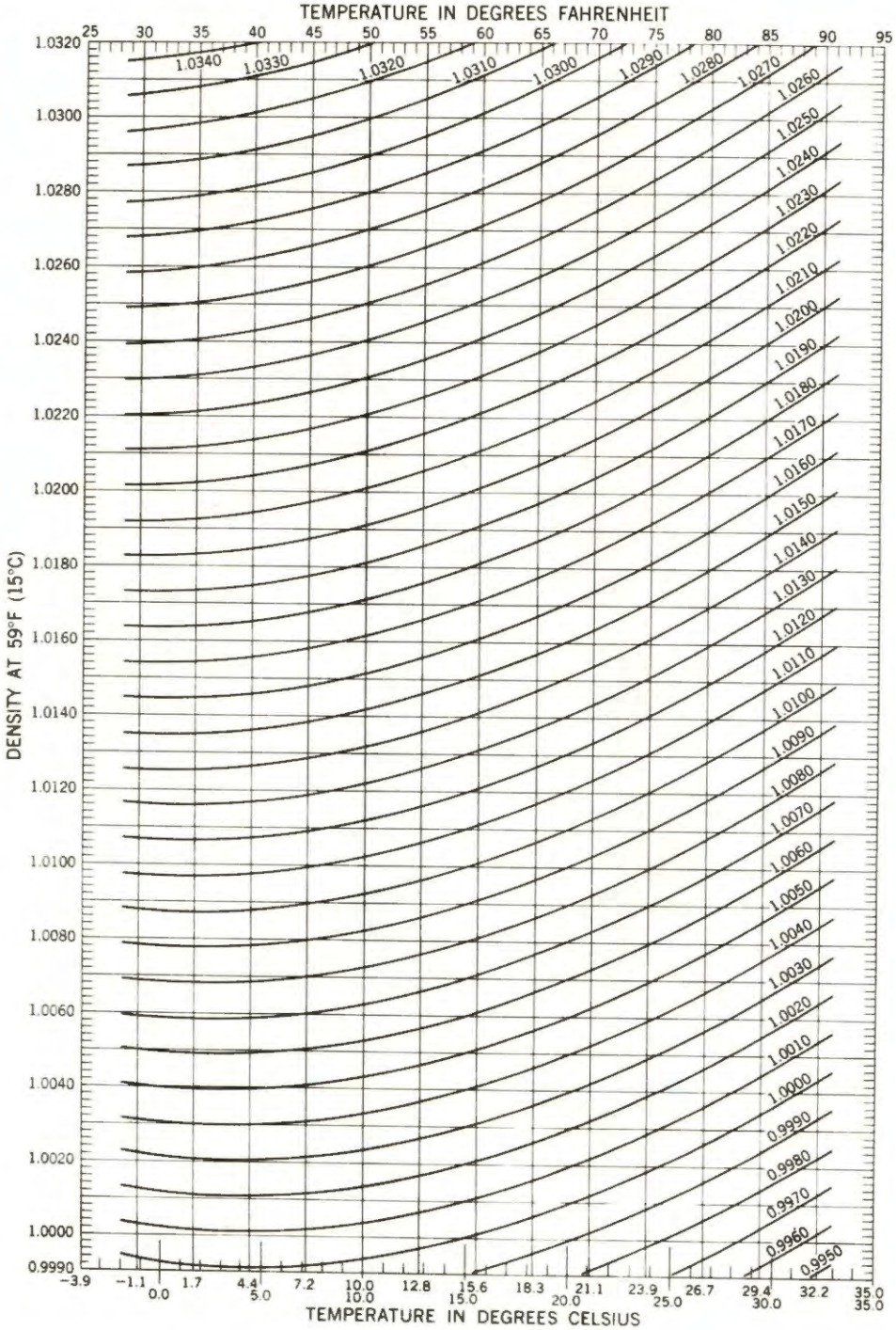
$F = 1.8C + 32$

## Table 3.—Corresponding Densities and Salinities

(Density at 15°C. -- Salinity in parts per 1000)

| Density | Salinity | Density | Salinity | Density | Salinity | Density | Salinity | Density | Salinity | Density | Salinity |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.9991 | 0.0 | 1.0046 | 7.1 | 1.0101 | 14.2 | 1.0156 | 21.4 | 1.0211 | 28.6 | 1.0266 | 35.8 |
| 0.9992 | 0.0 | 1.0047 | 7.2 | 1.0102 | 14.4 | 1.0157 | 21.6 | 1.0212 | 28.8 | 1.0267 | 35.9 |
| 0.9993 | 0.2 | 1.0048 | 7.3 | 1.0103 | 14.5 | 1.0158 | 21.7 | 1.0213 | 28.9 | 1.0268 | 36.0 |
| 0.9994 | 0.3 | 1.0049 | 7.5 | 1.0104 | 14.6 | 1.0159 | 21.8 | 1.0214 | 29.0 | 1.0269 | 36.2 |
| 0.9995 | 0.4 | 1.0050 | 7.6 | 1.0105 | 14.8 | 1.0160 | 22.0 | 1.0215 | 29.1 | 1.0270 | 36.3 |
| 0.9996 | 0.6 | 1.0051 | 7.7 | 1.0106 | 14.9 | 1.0161 | 22.1 | 1.0216 | 29.3 | 1.0271 | 36.4 |
| 0.9997 | 0.7 | 1.0052 | 7.9 | 1.0107 | 15.0 | 1.0162 | 22.2 | 1.0217 | 29.4 | 1.0272 | 36.6 |
| 0.9998 | 0.8 | 1.0053 | 8.0 | 1.0108 | 15.2 | 1.0163 | 22.4 | 1.0218 | 29.5 | 1.0273 | 36.7 |
| 0.9999 | 0.9 | 1.0054 | 8.1 | 1.0109 | 15.3 | 1.0164 | 22.5 | 1.0219 | 29.7 | 1.0274 | 36.8 |
| 1.0000 | 1.1 | 1.0055 | 8.2 | 1.0110 | 15.4 | 1.0165 | 22.6 | 1.0220 | 29.8 | 1.0275 | 37.0 |
| 1.0001 | 1.2 | 1.0056 | 8.4 | 1.0111 | 15.6 | 1.0166 | 22.7 | 1.0221 | 29.9 | 1.0276 | 37.1 |
| 1.0002 | 1.3 | 1.0057 | 8.5 | 1.0112 | 15.7 | 1.0167 | 22.9 | 1.0222 | 30.1 | 1.0277 | 37.2 |
| 1.0003 | 1.5 | 1.0058 | 8.6 | 1.0113 | 15.8 | 1.0168 | 23.0 | 1.0223 | 30.2 | 1.0278 | 37.3 |
| 1.0004 | 1.6 | 1.0059 | 8.8 | 1.0114 | 16.0 | 1.0169 | 23.1 | 1.0224 | 30.3 | 1.0279 | 37.5 |
| 1.0005 | 1.7 | 1.0060 | 8.9 | 1.0115 | 16.1 | 1.0170 | 23.3 | 1.0225 | 30.4 | 1.0280 | 37.6 |
| 1.0006 | 1.9 | 1.0061 | 9.0 | 1.0116 | 16.2 | 1.0171 | 23.4 | 1.0226 | 30.6 | 1.0281 | 37.7 |
| 1.0007 | 2.0 | 1.0062 | 9.2 | 1.0117 | 16.3 | 1.0172 | 23.5 | 1.0227 | 30.7 | 1.0282 | 37.9 |
| 1.0008 | 2.1 | 1.0063 | 9.3 | 1.0118 | 16.5 | 1.0173 | 23.7 | 1.0228 | 30.8 | 1.0283 | 38.0 |
| 1.0009 | 2.2 | 1.0064 | 9.4 | 1.0119 | 16.6 | 1.0174 | 23.8 | 1.0229 | 31.0 | 1.0284 | 38.1 |
| 1.0010 | 2.4 | 1.0065 | 9.6 | 1.0120 | 16.7 | 1.0175 | 23.9 | 1.0230 | 31.1 | 1.0285 | 38.2 |
| 1.0011 | 2.5 | 1.0066 | 9.7 | 1.0121 | 16.9 | 1.0176 | 24.1 | 1.0231 | 31.2 | 1.0286 | 38.4 |
| 1.0012 | 2.6 | 1.0067 | 9.8 | 1.0122 | 17.0 | 1.0177 | 24.2 | 1.0232 | 31.4 | 1.0287 | 38.5 |
| 1.0013 | 2.8 | 1.0068 | 9.9 | 1.0123 | 17.1 | 1.0178 | 24.3 | 1.0233 | 31.5 | 1.0288 | 38.6 |
| 1.0014 | 2.9 | 1.0069 | 10.1 | 1.0124 | 17.3 | 1.0179 | 24.4 | 1.0234 | 31.6 | 1.0289 | 38.8 |
| 1.0015 | 3.0 | 1.0070 | 10.2 | 1.0125 | 17.4 | 1.0180 | 24.6 | 1.0235 | 31.8 | 1.0290 | 38.9 |
| 1.0016 | 3.2 | 1.0071 | 10.3 | 1.0126 | 17.5 | 1.0181 | 24.7 | 1.0236 | 31.9 | 1.0291 | 39.0 |
| 1.0017 | 3.3 | 1.0072 | 10.5 | 1.0127 | 17.7 | 1.0182 | 24.8 | 1.0237 | 32.0 | 1.0292 | 39.2 |
| 1.0018 | 3.4 | 1.0073 | 10.6 | 1.0128 | 17.8 | 1.0183 | 25.0 | 1.0238 | 32.1 | 1.0293 | 39.3 |
| 1.0019 | 3.5 | 1.0074 | 10.7 | 1.0129 | 17.9 | 1.0184 | 25.1 | 1.0239 | 32.3 | 1.0294 | 39.4 |
| 1.0020 | 3.7 | 1.0075 | 10.8 | 1.0130 | 18.0 | 1.0185 | 25.2 | 1.0240 | 32.4 | 1.0295 | 39.6 |
| 1.0021 | 3.8 | 1.0076 | 11.0 | 1.0131 | 18.2 | 1.0186 | 25.4 | 1.0241 | 32.5 | 1.0296 | 39.7 |
| 1.0022 | 3.9 | 1.0077 | 11.1 | 1.0132 | 18.3 | 1.0187 | 25.5 | 1.0242 | 32.7 | 1.0297 | 39.8 |
| 1.0023 | 4.1 | 1.0078 | 11.2 | 1.0133 | 18.4 | 1.0188 | 25.6 | 1.0243 | 32.8 | 1.0298 | 39.9 |
| 1.0024 | 4.2 | 1.0079 | 11.4 | 1.0134 | 18.6 | 1.0189 | 25.8 | 1.0244 | 32.9 | 1.0299 | 40.1 |
| 1.0025 | 4.3 | 1.0080 | 11.5 | 1.0135 | 18.7 | 1.0190 | 25.9 | 1.0245 | 33.1 | 1.0300 | 40.2 |
| 1.0026 | 4.5 | 1.0081 | 11.6 | 1.0136 | 18.8 | 1.0191 | 26.0 | 1.0246 | 33.2 | 1.0301 | 40.3 |
| 1.0027 | 4.6 | 1.0082 | 11.8 | 1.0137 | 19.0 | 1.0192 | 26.1 | 1.0247 | 33.3 | 1.0302 | 40.4 |
| 1.0028 | 4.7 | 1.0083 | 11.9 | 1.0138 | 19.1 | 1.0193 | 26.3 | 1.0248 | 33.5 | 1.0303 | 40.6 |
| 1.0029 | 4.8 | 1.0084 | 12.0 | 1.0139 | 19.2 | 1.0194 | 26.4 | 1.0249 | 33.6 | 1.0304 | 40.7 |
| 1.0030 | 5.0 | 1.0085 | 12.2 | 1.0140 | 19.3 | 1.0195 | 26.5 | 1.0250 | 33.7 | 1.0305 | 40.8 |
| 1.0031 | 5.1 | 1.0086 | 12.3 | 1.0141 | 19.5 | 1.0196 | 26.7 | 1.0251 | 33.8 | 1.0306 | 41.0 |
| 1.0032 | 5.2 | 1.0087 | 12.4 | 1.0142 | 19.6 | 1.0197 | 26.8 | 1.0252 | 34.0 | 1.0307 | 41.1 |
| 1.0033 | 5.4 | 1.0088 | 12.6 | 1.0143 | 19.7 | 1.0198 | 26.9 | 1.0253 | 34.1 | 1.0308 | 41.2 |
| 1.0034 | 5.5 | 1.0089 | 12.7 | 1.0144 | 19.9 | 1.0199 | 27.1 | 1.0254 | 34.2 | 1.0309 | 41.4 |
| 1.0035 | 5.6 | 1.0090 | 12.8 | 1.0145 | 20.0 | 1.0200 | 27.2 | 1.0255 | 34.4 | 1.0310 | 41.5 |
| 1.0036 | 5.8 | 1.0091 | 12.9 | 1.0146 | 20.1 | 1.0201 | 27.3 | 1.0256 | 34.5 | 1.0311 | 41.6 |
| 1.0037 | 5.9 | 1.0092 | 13.1 | 1.0147 | 20.3 | 1.0202 | 27.5 | 1.0257 | 34.6 | 1.0312 | 41.7 |
| 1.0038 | 6.0 | 1.0093 | 13.2 | 1.0148 | 20.4 | 1.0203 | 27.6 | 1.0258 | 34.8 | 1.0313 | 41.9 |
| 1.0039 | 6.2 | 1.0094 | 13.3 | 1.0149 | 20.5 | 1.0204 | 27.7 | 1.0259 | 34.9 | 1.0314 | 42.0 |
| 1.0040 | 6.3 | 1.0095 | 13.5 | 1.0150 | 20.6 | 1.0205 | 27.8 | 1.0260 | 35.0 | 1.0315 | 42.1 |
| 1.0041 | 6.4 | 1.0096 | 13.6 | 1.0151 | 20.8 | 1.0206 | 28.0 | 1.0261 | 35.1 | 1.0316 | 42.3 |
| 1.0042 | 6.6 | 1.0097 | 13.7 | 1.0152 | 20.9 | 1.0207 | 28.1 | 1.0262 | 35.3 | 1.0317 | 42.4 |
| 1.0043 | 6.7 | 1.0098 | 13.9 | 1.0153 | 21.0 | 1.0208 | 28.2 | 1.0263 | 35.4 | 1.0318 | 42.5 |
| 1.0044 | 6.8 | 1.0099 | 14.0 | 1.0154 | 21.2 | 1.0209 | 28.4 | 1.0264 | 35.5 | 1.0319 | 42.7 |
| 1.0045 | 6.9 | 1.0100 | 14.1 | 1.0155 | 21.3 | 1.0210 | 28.5 | 1.0265 | 35.7 | 1.0320 | 42.8 |

The purpose of this graph is to provide the density of sea water at any temperature apt to be encountered when the density at the standard temperature of 59°F (15°C) is known. To convert a density at 59°F (15°C) to density at another temperature, enter the graph horizontally from the left with the known density and downward from the top or upward from the bottom with the desired temperature; the position of the point of intersection with respect to the curves gives the density at the desired temperature. Interpolate between curves when necessary. For example, by this method, water having a density of 1.0162 at 59°F is found to have a density of 1.0124 at 85°F. The densities are referred to the density of fresh water at 4°C (39.2°F) as unity.

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