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Department of Commerce
U. S. COAST AND GEODETIC SURVEY
Washington

50-J

SURFACE WATER TEMPERATURES

COAST AND GEODETIC SURVEY TIDE STATIONS

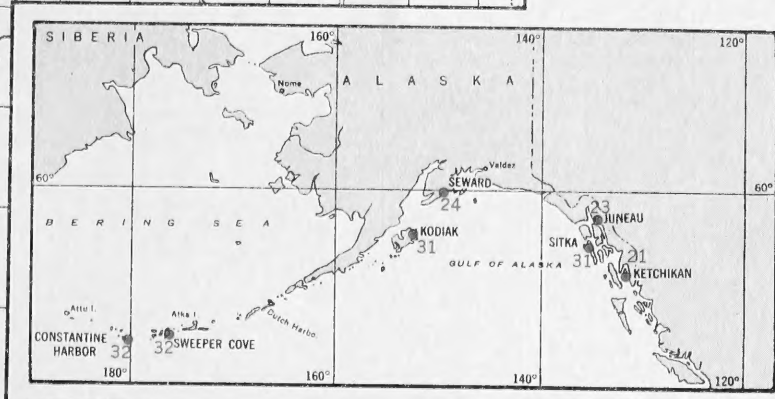
PACIFIC COAST

TW - 2

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DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey
Washington, D. C.

INDEX MAP
SURFACE WATER TEMPERATURES
PACIFIC COAST

TW-2

1945

The red dots indicate the locations of the temperature stations. Each red number corresponds to the page in the publication where the data for surface water temperatures at that station will be found.

LIST OF STATIONS

Part I.

Station	Lat.		Long.		Page
CALIFORNIA					
San Diego	32	42	117	14	5
La Jolla	32	52	117	15	6
Los Angeles Harbor	33	43	118	16	7
San Francisco	37	48	122	27	9
Alameda	37	46	122	18	10
Sausalito	37	51	122	29	11
Crescent City	41	45	124	12	12
OREGON					
Astoria (Tongue Point)	46	13	123	46	13
WASHINGTON					
Tokeland	46	42	123	58	15
Raymond	46	41	123	45	16
Neah Bay	48	22	124	37	17
Port Townsend	48	08	122	46	18
Seattle	44	37	122	20	19
Friday Harbor	48	33	123	00	20
ALASKA					
Ketchikan	55	21	131	39	21
Juneau	58	18	134	25	23
Seward	60	06	149	27	24
Part II.					
CALIFORNIA					
Balboa Pier	33	36	117	54	33
Hueneme Pier	34	09	119	12	33
Santa Barbara	34	25	119	41	25
Pacific Grove	36	38	121	55	33
Dumbarton Bridge, San Francisco Bay	37	30	122	07	25
Yerba Buena I., San Francisco Bay	37	49	122	22	25
Point San Quentin, San Francisco Bay	37	57	122	29	25
Mare Island	38	06	122	15	25
Benicia, Carquinez Strait	38	03	122	08	25
Collinsville, Sacramento River	38	04	121	51	26
Rio Vista, Sacramento River	38	09	121	42	26
Three Mile Slough, San Joaquin River	38	05	121	41	26
New Hope Bridge, Mokelumne River	38	14	121	29	26
North Farallon Island	37	46	123	06	33
Blunts Reef Lightship	40	26	124	30	33
OREGON					
Brookings	42	03	124	17	26
Port Orford	42	44	124	30	27
Bandon	43	07	124	25	27
Coos Bay Jetty	43	21	124	19	27
Gardiner	43	44	124	07	27
Florence	43	58	124	06	27

LIST OF STATIONS- Continued

Part II.- Continued

Station	Lat.	Long.	Page
OREGON - Continued			
Waldport	44 26	124 04	28
Newport	44 38	124 03	28
Taft	44 56	124 01	28
Garibaldi	45 33	123 54	28
Brighton	45 40	123 56	28
WASHINGTON			
Aberdeen	46 58	123 51	29
Port Angeles	48 07	123 26	29
Fort Worden	48 08	122 46	29
Bremerton	47 33	122 38	29
Tacoma	47 17	122 25	29
Olympia	47 03	122 54	30
Everett	47 59	122 13	30
Anacortes	48 31	122 37	30
Bellingham	48 45	122 30	31
Blaine	49 00	122 46	31
ALASKA			
Sitka	57 03	135 20	31
Kodiak	57 47	152 24	31
Sweeper Cove, Adak Island	51 51	176 39	32
Constantine Harbor, Amchitka Island	51 25	180 43	32
MIDWAY ISLANDS			
Sand Island	28 12	177 22	32

SURFACE WATER TEMPERATURES

PACIFIC COAST

This publication supersedes mimeographed pamphlet TW-2, "Water Temperatures, Coast and Geodetic Survey Tide Stations, Pacific Coast", issued in April 1941. Eight new stations have been added; five along the California coast, two in the Aleutian Islands and one at Midway in the Hawaiian group. The temperature data contained in this publication are based on observations through 1944.

The publication is divided into two parts. Part I consists of stations where three or more years of continuous observations are available. For these stations a table of expectancy range has been computed. This table follows the table of means and extremes for the station and shows the percentage of times in which individual temperature readings agree with the average monthly means within the limits indicated. The average percentages given in the right-hand column of this table are the means of the corresponding 12 monthly values. Part II consists of stations where less than three years of continuous observations are available, together with results for five stations furnished by the Scripps Institution.

The temperature observations usually consist of single readings each day made by the tide observer at the time of securing the tide record. The tide observer is not required to visit the station at any specified hour, nor at the same hour each day, neither is he required to visit it on Sundays and holidays. However, the visits are usually made during daylight hours, and it may be assumed that in the course of a year the distribution of the observations is fairly uniform over all phases of the tide.

The water samples are drawn with a bucket from near the surface and may be regarded as giving the temperature of the first foot of water. The readings are made in the bucket immediately after the sample has been drawn and before it has had time to become affected appreciably by the temperature of the surrounding air. At some stations recording thermometers are being installed. These, of course, give a continuous record. The bulb of the recording thermometer is set a foot or two below the lowest tide.

In the table of means and extremes for each station, the value for any month of a given year represents the average or mean value of the observed readings for that month. In the three columns at the extreme right of the table are given, respectively, the mean temperature for the given year, and the maximum and minimum temperatures observed during the year. In the three bottom lines of the table are given, respectively, the means for the different months and the extreme values for each month from the whole series of observations. The monthly means may be taken as applying to the middle of the month, and the mean values at other times of the month may be determined by interpolation.

In order to obtain a yearly mean where some of the monthly means were not determined because of insufficient observations, values have been interpolated or inferred and enclosed within parentheses.

The mean and extreme temperatures are given in degrees and tenths of the centigrade scale. If it is desired to change them to the corresponding Fahrenheit scale, this may be done by use of the following formula:

$$\text{Temp. in degrees F.} = \text{Temp. in degrees C.} \times 1.8 + 32^{\circ}$$

For convenience a Centigrade-Fahrenheit conversion table is given on the back cover page.

Part I.
Surface Water Temperatures
SAN DIEGO, CALIF.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.	
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1922	13.0	12.5	13.4	14.2	15.9	16.9	19.3	20.0	19.4	16.6	14.3	14.6	15.8	22.5	10.5	
1923	13.8	13.5	14.5	15.7	17.2	17.2	19.2	19.9	18.7	18.4	17.2	14.3	16.6	21.0	11.0	
1924	13.8	14.8	15.1	15.4	17.7	17.9	19.4	18.9	17.3	16.2	14.3	13.3	16.2	21.0	11.8	
1925	13.2	14.1	15.4	15.2	17.0	19.1	20.5	19.7	18.1	17.7	15.8	15.8	16.8	22.2	12.0	
Means	13.4	13.7	14.6	15.1	17.0	17.8	19.6	19.6	18.4	17.2	15.4	14.5	16.4			
Max.	15.0	16.0	17.0	18.5	20.0	21.0	22.2	22.5	21.5	20.0	18.0	17.5		22.5		
Min.	11.0	10.5	11.5	12.5	13.5	13.0	14.8	15.5	14.5	14.0	13.0	11.8			10.5	

Expectancy range

Limits referred to means	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	50	30	28	31	30	32	29	36	25	29	20	33	31	31
± 1.0	73	60	56	57	55	60	55	61	51	52	44	53	56	56
± 2.0	97	91	91	89	83	77	85	86	84	89	85	87	87	87
± 3.0	100	97	98	99	97	93	96	96	95	98	99	99	99	97
± 4.0	100	100	100	100	100	97	100	100	100	100	100	100	100	100
± 5.0	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Surface Water Temperatures
LA JOLLA, CALIF.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1925	13.0	13.3	14.2	14.9	16.7	18.9	20.9	20.9	18.6	17.5	16.3	16.2	16.8	22.7	12.3
1926	15.6	16.0	17.1	18.1	18.8	20.4	20.3	20.8	18.6	17.6	16.6	15.2	17.9	22.9	13.8
1927	14.1	14.0	14.0	14.6	16.1	18.0	19.8	20.1	19.4	17.7	17.4	15.1	16.7	21.6	11.6
1928	14.6	14.2	14.9	14.9	17.3	18.5	19.5	19.8	18.0	17.2	15.5	14.4	16.6	21.9	12.5
1929	13.8	13.1	13.6	14.4	17.5	18.6	21.2	21.7	19.9	18.4	16.7	15.9	17.1	23.3	12.3
1930	14.6	14.7	14.9	16.6	17.2	18.7	19.3	21.5	19.7	18.1	17.5	16.1	17.4	23.6	13.3
1931	15.5	16.0	16.8	18.0	19.0	19.9	23.6	23.3	20.1	18.8	16.5	14.1	18.5	25.7	12.5
1932	13.3	13.2	14.8	14.8	16.1	19.0	19.4	18.7	18.6	17.4	16.2	14.0	16.3	20.9	12.1
1933	13.0	12.6	13.5	14.9	15.4	17.3	18.7	19.0	17.0	17.2	15.4	13.9	15.7	21.3	11.9
1934	13.3	13.9	15.7	17.3	19.2	19.0	20.4	20.4	20.5	17.8	16.9	15.4	17.3	22.0	12.1
1935	14.4	14.0	13.3	15.0	17.6	18.8	20.0	20.7	19.3	17.2	15.3	14.7	16.7	23.2	11.9
1936	14.0	14.6	15.1	14.2	18.1	17.9	22.3	22.1	20.9	18.5	17.2	16.1	17.6	23.8	11.7
1937	13.4	13.1	14.2	14.9	17.7	19.1	20.7	20.6	20.5	17.7	16.9	15.3	17.0	22.1	12.0
1938	15.0	14.4	14.6	15.1	16.7	17.8	19.1	20.9	20.0	17.0	14.5	14.8	16.7	22.2	12.8
1939	14.1	12.0	13.2	15.5	16.6	18.3	20.7	21.3	19.4	19.2	18.2	17.4	17.2	22.5	10.8
1940	15.8	15.2	15.0	16.5	18.6	18.1	18.3	20.6	19.2	18.6	16.0	16.1	17.3	22.3	14.0
1941	15.6	15.7	16.8	17.0	18.0	18.9	18.9	20.0	19.2	18.5	17.3	15.7	17.6	21.6	13.9
1942	14.3	13.9	14.3	15.5	16.8	18.6	20.1	20.6	18.8	19.1	16.8	14.9	17.0	22.2	13.5
1943	14.1	14.5	15.7	14.9	17.4	18.3	18.0	21.8	18.7	18.2	16.6	15.6	17.0	22.9	13.4
1944	14.2	13.8	14.5	15.3	16.3	18.3	18.0	19.5	19.1	17.7	16.4	14.7	16.5	21.3	13.1
Means	14.3	14.1	14.8	15.6	17.4	18.6	20.0	20.7	19.3	18.0	16.5	15.3	17.0		
Max.	17.6	19.3	18.4	19.7	21.1	22.0	25.7	25.4	24.5	20.5	19.6	18.5		25.7	
Min.	12.0	10.8	11.9	11.6	12.8	14.4	14.0	15.2	13.8	14.1	13.4	12.5			10.8

Surface Water Temperatures
LA JOLLA, CALIF. - Continued

Expectancy range

Limits referred to means °C	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
+ 0.5	38	36	32	28	28	40	24	29	29	34	36	36	32
+ 1.0	64	64	57	50	52	63	45	53	51	64	59	62	57
+ 2.0	94	91	88	83	85	88	77	84	83	93	90	92	87
+ 3.0	100	99	98	96	96	97	89	94	96	99	100	99	97
+ 4.0	100	100	100	99	99	99	96	98	98	100	100	100	99
+ 5.0	100	100	100	100	100	100	98	100	100	100	100	100	100

LOS ANGELES HARBOR, CALIF.

Means and extremes

Year	Means and extremes												Max.	Min.	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			°C
1924	13.0	14.6	14.3	14.2	16.4	16.8	18.2	18.2	16.8	15.0	13.4	12.7	15.3	20.0	10.5
1925	12.0	13.2	13.1	13.3	15.9	17.8	19.4	19.0	17.5	17.3	15.3	15.5	15.8	21.8	10.8
1926	14.8	15.5	16.7	17.6	17.0	18.7	19.4	20.6	18.3	17.9	16.5	15.1	17.3	23.0	13.5
1927	14.4	15.0	14.4	15.4	16.6	17.2	19.4	19.6	20.4	18.8	18.0	15.5	17.1	21.5	13.2
1928	14.1	14.3	15.2	14.5	17.0	18.0	18.7	19.9	18.2	17.0	15.4	14.2	16.4	21.2	12.5
1929	13.7	13.2	13.4	14.2	16.8	18.6	19.8	20.3	18.9	18.0	16.6	15.7	16.6	21.8	12.3
1930	13.9	14.7	14.8	16.9	16.3	18.4	19.1	21.1	19.4	18.4	16.6	15.4	17.1	22.4	12.8
1931	15.1	16.2	17.0	18.3	19.2	19.8	22.3	20.8	18.9	18.3	16.0	13.3	17.9	24.4	12.6
1932	12.8	12.8	14.9	14.9	15.9	17.0	18.4	17.9	18.4	17.4	16.4	13.3	15.9	19.4	11.6
1933	12.2	12.8	13.5	13.6	13.7	16.7	17.0	18.3	16.3	16.8	15.5	13.3	15.0	19.9	11.2
1934	13.7	14.2	15.9	16.7	18.3	17.5	19.5	18.4	18.7	17.7	15.9	14.4	16.7	20.8	12.9
1935	13.3	13.3	12.7	13.6	14.7	17.6	17.9	18.8	17.8	16.1	14.7	13.9	15.4	21.3	11.9
1936	13.6	13.7	14.1	12.9	16.1	16.7	19.9	19.8	18.9	18.1	16.8	14.9	16.3	21.9	11.6
1937	11.8	12.0	13.8	14.3	16.5	17.7	18.2	19.1	19.2	17.4	16.3	15.1	16.0	20.8	9.9
1938	14.4	13.7	13.6	14.0	14.6	17.1	17.2	19.8	18.9	16.8	13.7	14.7	15.7	21.8	11.3

Surface Water Temperatures
SAN FRANCISCO, CALIF.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1922	9.7	9.5	10.7	10.9	13.5	13.9	15.1	14.6	15.0	14.6	11.9	10.6	12.5	16.0	10.0
1923	10.4	9.8	10.8	12.7	12.7	13.2	14.7	15.1	16.1	15.2	13.7	11.2	13.0	16.7	9.0
1924	9.5	11.7	12.3	12.4	13.7	15.1	15.1	15.3	16.0	14.5	12.9	10.2	13.2	16.5	8.5
1925	9.4	11.3	12.1	12.9	13.4	14.3	14.6	15.4	16.0	15.1	13.4	11.9	13.3	16.8	8.8
1926	10.3	12.3	13.5	15.1	14.3	14.2	15.0	15.2	15.4	14.9	14.4	11.6	13.8	16.0	9.5
1927	10.8	11.4	11.5	11.5	12.5	13.5	14.4	15.3	14.9	13.7	13.7	12.1	12.9	15.8	9.8
1928	11.1	12.0	13.2	12.6	12.8	13.8	14.5	14.7	14.6	14.0	12.7	10.1	13.0	15.3	8.5
1929	9.2	9.8	10.8	11.2	12.3	14.1	15.6	15.6	15.9	15.2	13.0	12.2	12.9	16.8	8.4
1930	10.6	12.1	12.8	14.3	13.0	14.0	14.5	15.6	16.1	15.5	13.0	10.8	13.5	17.0	8.8
1931	11.2	12.5	13.5	13.0	15.2	16.2	15.9	15.8	15.9	15.2	13.2	10.2	14.0	17.0	9.4
1932	10.0	9.5	11.8	12.4	13.6	13.7	14.9	15.1	16.1	15.2	12.9	10.6	13.0	16.7	7.3
1933	9.0	9.7	11.2	12.0	11.9	13.0	14.2	15.3	15.2	14.9	13.1	10.5	12.5	16.0	8.5
1934	10.4	11.3	13.1	13.1	13.9	14.8	15.3	15.4	15.6	15.8	14.6	11.8	13.8	17.0	10.5
1935	10.6	11.2	11.2	12.6	13.3	14.0	14.2	14.6	14.8	15.0	11.6	11.1	12.8	16.0	9.3
1936	11.3	11.1	12.2	12.2	14.0	15.6	14.5	15.2	16.0	15.3	13.1	11.5	13.5	17.2	10.0
1937	9.0	9.1	11.6	12.0	12.4	14.6	15.7	15.8	15.4	15.5	14.1	12.6	13.2	16.5	7.2
1938	11.1	10.6	11.9	12.0	12.9	14.0	14.5	15.2	14.7	14.6	12.0	11.0	12.9	16.0	9.2
1939	10.7	10.1	10.3	11.9	13.4	14.4	14.8	16.5	16.8	16.3	14.0	12.9	13.5	17.6	9.5
1940	11.8	12.7	13.4	13.8	13.9	14.8	16.0	15.7	17.1	15.8	13.4	11.8	14.2	18.0	10.0
1941	11.8	12.4	13.5	13.5	14.6	14.4	15.5	15.9	16.1	14.5	14.0	12.7	14.1	17.0	11.0
1942	10.8	11.2	11.6	12.6	12.4	14.4	14.3	14.7	--	--	--	--	--	--	--
1943	10.7	11.4	12.9	12.8	13.0	12.9	14.9	15.2	16.0	15.4	14.1	12.8	13.5	17.5	9.5
1944	11.3	11.4	11.4	11.9	13.5	14.1	15.6	15.9	15.6	15.7	14.7	12.9	13.7	17.0	10.8
Means	10.5	11.0	12.1	12.6	13.3	14.2	14.9	15.4	15.7	15.1	13.3	11.5	13.3		
Max.	13.7	14.0	15.1	16.2	16.8	17.2	17.4	17.6	18.0	17.0	15.8	14.1		18.0	
Min.	7.2	7.3	9.5	10.0	10.5	11.1	13.0	13.2	14.2	13.0	11.0	8.5			7.2

Surface Water Temperatures
SAN FRANCISCO, CALIF. - Continued

Expectancy range

Limits referred to means °C	Expectancy range												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	38	31	32	36	38	34	38	56	47	43	33	27	38
± 1.0	65	58	62	60	61	58	72	77	78	75	58	48	64
± 2.0	95	94	92	89	90	87	100	98	98	98	93	80	93
± 3.0	100	96	99	99	99	97	100	100	100	100	100	93	99
± 4.0	100	100	100	100	100	99	100	100	100	100	100	95	100
± 5.0	100	100	100	100	100	99	100	100	100	100	100	96	100

ALAMEDA, CALIF.

Means and extremes

Year	Means and extremes														
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1939	--	--	12.2	15.5	16.8	19.4	20.3	20.0	20.5	18.0	11.9	12.6	--	23.7	--
1940	11.6	13.0	15.8	17.2	18.5	20.5	21.0	20.3	21.0	18.1	13.8	11.5	16.9	24.0	10.0
1941	11.0	12.4	14.6	14.9	17.6	18.9	19.8	19.1	19.5	16.5	14.5	11.8	15.9	22.5	9.5
1942	10.5	11.6	14.0	15.3	17.4	19.3	20.6	19.8	18.5	17.3	13.6	11.5	15.8	22.5	9.4
1943	10.2	12.4	15.0	16.4	17.9	18.4	19.6	20.2	19.9	17.9	14.7	11.3	16.2	22.5	8.0
1944	10.2	11.0	13.4	14.5	17.7	17.8	19.3	19.6	20.0	18.2	14.4	11.8	15.6	22.0	9.5
Means	10.7	12.1	14.2	15.6	17.6	19.0	20.1	19.8	19.9	17.7	14.3	11.8	16.1		
Max.	13.2	15.0	17.5	20.0	21.5	24.0	23.0	23.7	23.6	21.0	17.0	13.8		24.0	
Min.	8.0	10.0	9.6	12.5	14.5	15.5	17.5	18.0	17.0	14.8	11.5	9.5			8.0

Surface Water Temperatures
ALAMEDA, CALIF. - Continued

Expectancy range

Limits referred to means °C	Expectancy range												Average %
	Jan. %	Feb. %	Mar. %	Apr. %	May %	June %	July %	Aug. %	Sept. %	Oct. %	Nov. %	Dec. %	
± 0.5	43	30	26	27	28	32	33	39	30	24	31	34	31
± 1.0	71	57	45	51	52	59	62	71	56	47	50	64	57
± 2.0	94	93	77	85	86	81	91	97	84	86	81	98	88
± 3.0	99	98	92	94	97	95	99	99	97	99	97	100	97
± 4.0	100	100	99	98	99	99	100	100	100	100	100	100	100
± 5.0	100	100	100	99	100	99	100	100	100	100	100	100	100

SAUSALITO, CALIF.

Means and extremes

Year	Means and extremes												Max. °C	Min. °C	
	Jan. °C	Feb. °C	Mar. °C	Apr. °C	May °C	June °C	July °C	Aug. °C	Sept. °C	Oct. °C	Nov. °C	Dec. °C			Means °C
1893	10.4	10.5	11.4	13.1	14.1	15.1	14.9	15.1	15.7	13.9	12.9	12.1	13.3	16.5	8.0
1894	10.1	10.1	10.8	12.6	13.8	14.9	15.1	15.4	16.4	15.7	14.1	11.8	13.4	17.8	9.4
1895	10.6	11.6	12.6	13.3	15.0	15.4	16.8	16.3	16.1	14.8	12.9	11.3	13.9	18.3	8.6
1896	11.2	12.1	12.8	12.1	13.3	14.6	16.0	16.3	15.4	14.6	11.9	11.3	13.5	20.0	7.3
Means	10.6	11.1	11.9	12.8	14.0	15.0	15.7	15.8	15.9	14.8	13.0	11.6	13.5		
Max.	12.6	13.4	14.7	15.5	17.3	18.6	20.0	19.6	18.3	19.4	17.2	13.4		20.0	
Min.	8.0	9.0	9.4	9.7	10.3	12.2	13.3	13.9	13.4	12.2	7.3	8.9			7.3

Surface Water Temperatures
SAUSALITO, CALIF. - Continued

Expectancy range

Limits referred to means °C	Expectancy range												Average	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	%	%
± 0.5	44	30	33	45	33	45	38	40	45	38	40	44	40	40
± 1.0	73	58	61	75	61	82	63	69	82	69	72	77	70	70
± 2.0	98	92	95	95	93	97	93	98	100	96	92	98	96	96
± 3.0	100	100	100	100	100	100	99	100	100	100	97	99	100	100
± 4.0	100	100	100	100	100	100	100	100	100	100	97	100	100	100
± 5.0	100	100	100	100	100	100	100	100	100	100	100	100	100	100

CRESCENT CITY, CALIF.

Means and extremes

Year	Means and extremes												Max.	Min.	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			°C
1934	10.8	11.2	12.5	12.3	13.5	12.1	13.2	12.9	11.7	10.8	11.0	9.6	11.8	17.0	7.0
1935	8.7	9.4	8.0	9.7	10.0	10.4	11.0	11.6	12.9	10.7	8.6	9.6	10.0	14.5	6.5
1936	9.8	8.8	8.7	9.7	11.0	13.3	12.8	13.0	11.4	10.8	9.4	9.0	10.6	15.5	6.0
1937	7.0	7.8	9.6	9.5	9.9	10.9	12.8	12.6	12.3	11.1	11.4	10.7	10.6	14.0	6.0
1938	9.8	8.9	9.9	9.8	9.9	10.9	13.0	13.2	12.4	12.1	9.9	9.6	10.8	16.0	6.5
1939	9.0	8.5	8.4	9.5	11.3	10.8	12.9	14.5	13.8	11.9	10.5	10.8	11.0	16.0	7.0
1940	11.1	11.5	11.4	11.4	12.4	12.2	13.9	13.8	14.9	12.9	12.1	11.0	12.4	17.0	8.3
1941	10.6	11.7	12.4	11.8	13.3	14.1	14.5	15.1	13.1	11.6	12.5	11.0	12.6	17.0	8.5
1942	10.6	10.3	10.1	11.2	12.0	12.6	15.0	14.8	12.3	12.1	10.8	10.2	11.8	18.0	8.5
1943	9.1	9.7	11.0	11.8	10.4	12.2	13.5	14.9	14.1	13.8	12.4	9.8	12.0	17.0	5.0
1944	10.0	9.7	9.4	10.9	11.3	12.8	13.2	14.5	13.2	13.0	12.7	11.7	11.9	15.5	7.5
Means	9.7	9.8	10.1	10.7	11.4	12.0	13.3	13.7	12.9	11.9	11.0	10.3	11.4		
Max.	12.5	13.0	14.0	15.0	16.0	17.0	17.0	17.0	16.5	16.0	14.0	14.0		18.0	
Min.	5.0	6.5	6.0	7.0	8.0	9.0	8.5	9.0	9.5	7.5	5.5	7.0			5.0

Surface Water Temperatures
CRESCENT CITY, CALIF. - Continued

Expectancy range

Limits referred to means °C	Expectancy range												Average %
	Jan. %	Feb. %	Mar. %	Apr. %	May %	June %	July %	Aug. %	Sept. %	Oct. %	Nov. %	Dec. %	
± 0.5	30	25	22	27	21	21	34	28	26	27	21	34	26
± 1.0	55	46	42	51	42	42	53	52	48	53	44	58	49
± 2.0	89	83	72	90	77	76	81	86	84	87	83	89	83
± 3.0	95	98	91	99	94	94	94	96	99	97	96	98	96
± 4.0	98	100	99	100	99	99	98	98	100	99	99	100	99
± 5.0	100	100	100	100	100	100	100	100	100	100	100	100	100

ASTORIA (Tongue Point), OREGON

Means and extremes

Year	Means and extremes												Max. °C	Min. °C	
	Jan. °C	Feb. °C	Mar. °C	Apr. °C	May °C	June °C	July °C	Aug. °C	Sept. °C	Oct. °C	Nov. °C	Dec. °C			Means °C
1925	5.5	6.3	7.8	10.6	13.6	15.5	19.4	19.4	17.3	13.4	8.7	6.7	12.0	21.0	4.0
1926	5.1	6.9	9.8	13.5	14.9	18.2	20.4	19.3	17.0	13.2	9.5	5.4	12.8	21.5	3.0
1927	4.4	5.3	7.3	10.2	12.2	15.2	18.2	19.7	16.7	13.0	9.3	4.5	11.4	21.0	0.8
1928	3.0	5.0	7.6	9.7	14.0	15.4	18.6	19.2	16.8	13.3	9.1	5.0	11.4	21.5	0.5
1929	3.4	2.2	6.9	9.2	13.5	15.1	19.2	20.1	17.5	13.7	8.6	5.9	11.3	24.0	0.2
1930	2.3	4.6	7.4	12.1	13.2	15.5	18.4	20.4	17.6	13.1	9.0	5.7	11.6	21.9	0.0
1931	5.1	6.3	8.1	10.7	15.1	17.3	19.3	19.8	18.0	13.4	8.5	4.3	12.2	21.8	1.8
1932	4.3	4.0	7.1	10.1	13.0	15.4	18.1	19.4	17.3	14.0	9.3	4.0	11.3	20.0	1.2
1933	4.1	2.9	6.7	10.1	11.6	14.6	18.4	19.9	16.3	13.3	8.6	7.2	11.1	20.2	1.0
1934	6.2	7.0	9.5	12.6	14.1	16.7	18.6	19.6	17.5	13.5	10.1	6.4	12.6	21.0	5.0
1935	4.3	5.7	6.7	10.1	13.6	16.0	17.9	18.9	18.2	13.7	6.9	5.9	11.5	21.0	1.0
1936	6.0	3.1	6.8	10.9	13.9	16.6	20.1	20.8	17.6	14.7	8.7	6.4	12.1	22.2	1.0
1937	2.3	3.7	8.1	9.7	13.5	16.0	19.4	19.8	18.1	14.7	10.4	6.8	11.9	21.2	0.0
1938	5.6	5.5	7.8	10.8	13.6	15.9	19.3	19.2	18.0	14.8	8.7	5.6	12.1	22.0	4.0
1939	5.9	5.1	7.8	11.5	14.6	15.6	19.0	20.1	17.6	14.2	10.4	8.0	12.5	23.8	3.0

Surface Water Temperatures
TOKELAND, WASH.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1935	7.2	8.2	7.9	10.8	12.8	15.5	16.8	17.4	15.5	12.8	7.7	7.4	11.7	20.5	3.0
1936	7.7	4.5	8.8	8.5	12.0	16.9	18.9	19.1	14.4	13.0	9.0	8.4	11.8	21.0	0.0
1937	4.0	6.0	9.5	10.3	13.1	15.8	17.4	17.4	16.5	13.7	11.4	9.5	12.0	20.5	0.0
1938	7.9	7.7	9.2	11.8	13.3	15.1	16.4	16.8	16.5	13.6	9.8	7.7	12.2	21.5	5.0
1939	8.1	6.8	8.7	12.2	14.2	15.8	17.6	17.0	15.7	13.4	11.7	(8.2)	12.4	22.0	4.5
Means	7.0	6.6	8.8	10.7	13.1	15.8	17.4	17.5	15.7	13.3	9.9	8.2	12.0		
Max.	10.0	10.5	12.1	17.5	18.5	19.0	22.0	21.0	20.0	17.0	13.0	11.0		22.0	
Min.	0.0	0.0	6.5	7.0	8.5	11.5	14.0	13.5	13.0	8.0	5.0	5.0			0.0

Expectancy range

Limits referred to means	Expectancy range												Average	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
°C	%	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	13	19	35	22	21	29	21	29	27	38	16	20	24	24
± 1.0	29	38	66	43	42	54	40	52	51	60	31	44	46	46
± 2.0	68	73	96	76	73	82	74	83	80	88	72	79	79	79
± 3.0	90	92	99	89	87	96	93	95	96	95	90	96	93	93
± 4.0	95	98	100	96	96	99	98	98	99	97	97	100	98	98
± 5.0	96	98	100	99	99	100	100	100	100	99	100	100	99	99

Surface Water Temperatures
RAYMOND, WASH.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1935	-	-	7.0	10.3	15.0	17.5	19.1	19.0	17.5	13.1	6.9	6.6	--	24.0	--
1936	7.4	4.3	7.6	11.6	15.5	17.1	20.1	20.9	17.4	14.4	8.4	7.3	12.7	23.0	2.5
1937	2.9	5.5	8.7	8.8	13.6	16.9	20.0	19.4	18.0	14.1	10.3	7.8	12.2	22.0	1.5
1938	6.8	6.4	8.3	10.9	14.9	17.8	19.4	19.3	18.9	15.1	8.4	6.6	12.7	22.5	4.0
1939	7.9	6.7	7.9	12.5	16.3	17.2	20.4	20.7	18.1	14.9	10.6	8.8	13.5	26.0	4.0
1940	7.9	9.1	10.8	13.2	16.2	19.8	20.7	21.3	19.7	15.8	9.6	8.8	14.4	23.5	4.5
Means	6.6	6.4	8.4	11.2	15.2	17.7	20.0	20.1	18.3	14.6	9.0	7.6	12.9		
Max.	11.0	10.5	13.5	16.0	20.0	22.0	26.0	25.0	23.0	18.5	14.0	12.0		26.0	
Min.	1.5	2.5	5.5	5.5	10.5	14.0	16.0	17.0	14.5	7.5	5.0	4.0			1.5

Expectancy range

Limits referred to means	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	21	15	23	15	22	30	30	29	23	29	22	24	24	24
± 1.0	37	30	45	29	41	55	54	55	45	50	41	45	45	44
± 2.0	69	61	79	56	72	76	82	88	79	74	71	62	62	74
± 3.0	81	85	92	82	89	93	93	96	95	90	88	95	95	90
± 4.0	92	97	97	96	97	97	98	98	99	97	97	99	99	97
± 5.0	98	100	99	99	99	99	99	99	100	98	98	100	100	99

Surface Water Temperatures
SEATTLE, WASH.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1922	7.4	6.6	7.0	8.2	10.1	11.6	11.7	12.3	12.2	(12.6)	10.2	9.6	10.0	14.0	6.0
1923	9.7	9.7	9.8	10.0	10.6	12.2	13.3	14.4	13.6	12.0	10.9	9.7	11.3	17.0	8.0
1924	9.7	9.8	9.1	9.8	11.5	12.2	10.4	14.5	13.3	11.6	9.7	9.7	10.9	17.0	7.5
1925	9.7	9.8	9.8	10.2	12.2	13.6	15.7	14.5	13.6	11.9	10.0	9.3	11.7	20.5	7.8
1926	9.0	9.1	9.9	11.3	12.8	15.3	15.4	15.2	14.1	12.8	11.0	9.2	12.1	18.5	5.6
1927	8.0	8.4	8.2	9.7	11.2	13.9	14.2	14.0	13.5	12.4	10.2	9.2	11.1	16.5	3.5
1928	8.0	7.7	8.8	9.3	12.3	13.0	15.2	14.7	13.0	11.9	10.7	9.2	11.2	18.0	6.3
1929	8.1	7.2	7.8	8.4	10.7	12.8	13.8	14.1	13.6	12.4	10.4	9.3	10.7	16.0	6.5
1930	6.8	7.2	7.5	8.8	10.0	11.4	12.7	13.3	13.2	11.9	10.9	9.8	10.3	15.5	5.5
1931	9.0	8.3	8.5	9.2	11.2	12.4	13.6	13.6	13.3	12.1	10.3	9.3	10.9	15.0	7.7
1932	8.0	7.3	7.5	8.6	9.9	11.9	13.0	12.9	12.6	11.9	10.4	8.8	10.2	14.7	6.5
1933	7.9	7.1	7.2	8.1	9.1	11.5	12.8	13.2	12.2	11.4	10.4	9.0	10.0	14.3	5.7
1934	8.4	8.5	8.8	10.0	11.2	12.5	13.3	13.7	13.0	12.0	11.0	9.8	11.0	14.5	7.6
1935	8.5	8.0	7.7	8.3	9.9	11.9	12.7	13.0	12.9	11.9	10.2	9.3	10.3	14.6	7.4
1936	8.3	7.9	8.0	8.7	10.9	12.8	13.6	13.8	13.2	12.4	10.9	9.7	10.9	17.5	7.0
1937	8.2	7.1	7.5	8.2	9.8	11.7	12.7	12.7	12.6	11.8	10.6	9.6	10.2	14.0	6.5
1938	8.7	8.2	8.1	9.2	10.7	12.5	13.1	13.1	12.9	12.1	11.2	9.8	10.8	15.0	7.6
1939	8.9	8.4	8.0	8.6	9.9	11.1	12.2	13.0	12.6	12.2	11.4	10.5	10.6	14.0	7.8
1940	9.6	9.2	9.2	9.8	11.4	12.2	13.1	13.4	13.1	12.6	11.4	10.3	11.3	13.9	8.4
1941	9.4	8.6	9.1	9.8	11.4	12.5	13.2	14.0	14.3	15.0	13.5	10.6	11.8	15.3	8.8
1942	9.3	8.8	8.6	9.0	10.2	11.4	12.4	12.9	13.0	12.4	11.3	10.5	10.8	15.0	8.3
1943	9.1	8.4	8.5	9.1	10.2	11.5	13.1	13.2	13.3	12.6	11.4	10.3	10.9	14.1	7.5
1944	9.3	8.6	8.3	8.7	10.1	11.2	12.2	12.7	13.0	12.5	11.2	10.3	10.7	13.5	8.0
Means	8.7	8.3	8.4	9.2	10.7	12.3	13.2	13.6	13.1	11.8	10.8	9.7	10.9		
Max.	11.0	10.0	12.0	16.0	17.5	18.0	20.5	17.5	16.0	15.3	15.2	12.0		20.5	
Min.	3.5	6.0	6.0	6.5	8.0	9.8	10.5	11.0	11.0	10.5	8.5	5.6			3.5

Surface Water Temperatures
SEATTLE, WASH. - Continued

Expectancy range

Limits referred to means	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average %
	%	%	%	%	%	%	%	%	%	%	%	%	
± 0.5	39	38	42	40	37	37	35	43	45	43	46	50	41
± 1.0	73	65	68	70	60	61	61	66	79	81	82	80	70
± 2.0	96	96	96	94	88	88	86	93	96	93	97	97	93
± 3.0	99	100	100	98	96	96	95	99	99	97	97	99	98
± 4.0	100	100	100	99	99	97	98	100	100	100	99	100	99
± 5.0	100	100	100	100	100	99	100	100	100	100	100	100	100

FRIDAY HARBOR, WASH.

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1935	7.3	7.2	7.4	7.8	9.0	9.7	10.4	10.8	9.8	9.6	8.1	7.9	8.8	12.9	6.4
1936	7.7	6.4	6.7	7.3	8.7	9.7	10.7	11.0	10.2	9.5	8.4	7.8	8.7	13.0	6.3
1937	6.6	5.9	6.6	7.6	8.6	9.6	10.6	10.8	10.6	9.6	9.0	8.5	8.7	12.7	5.8
1938	7.8	7.3	7.7	8.4	9.3	10.2	11.1	10.7	10.2	9.7	8.8	8.0	9.1	14.0	7.2
1939	7.7	7.2	7.1	8.0	9.1	9.6	10.6	11.3	10.6	9.7	9.1	8.9	9.1	13.7	6.8
1940	8.4	8.2	8.4	9.3	10.3	11.2	11.1	11.0	(10.6)	10.3	9.4	8.6	9.7	13.5	8.1
1941	8.2	8.3	8.8	9.7	10.3	10.3	12.1	11.9	11.0	10.5	9.8	9.0	10.0	14.8	7.9
1942	7.9	8.2	8.2	8.9	9.7	10.7	--	--	--	--	--	--	--	--	--
1943	--	--	--	--	--	--	--	--	11.2	10.3	9.6	8.8	--	--	--
1944	8.2	7.8	7.8	8.4	9.6	10.4	11.4	11.3	10.8	9.9	9.4	8.5	9.5	13.6	7.5
Means	7.8	7.4	7.6	8.4	9.4	10.2	11.0	11.1	10.6	9.9	9.1	8.4	9.2		
Max.	8.7	8.4	9.2	10.2	13.5	12.8	14.5	14.8	12.8	11.1	10.6	9.5		14.8	
Min.	5.8	5.8	6.2	6.6	8.1	9.0	9.7	10.0	9.7	8.6	8.0	7.5			5.8

Surface Water Temperatures
FRIDAY HARBOR, WASH. - Continued

Expectancy range

Limits referred to means °C	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average %
	%	%	%	%	%	%	%	%	%	%	%	%	
± 0.5	48	43	45	40	69	51	38	46	66	56	54	60	51
± 1.0	84	67	74	68	85	83	71	85	87	98	91	81	81
± 2.0	99	96	99	97	98	99	93	97	100	100	100	100	98
± 3.0	100	100	100	100	99	100	99	99	100	100	100	100	100
± 4.0	100	100	100	100	100	100	100	100	100	100	100	100	100

KETCHIKAN, ALASKA

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1922	5.5	4.9	5.0	5.4	7.4	11.7	12.2	13.7	11.1	9.2	7.2	4.9	8.2	15.5	3.0
1923	5.0	5.0	5.0	6.4	8.6	12.6	14.6	14.9	12.1	10.0	7.9	(5.8)	9.0	17.0	3.0
1924	5.6	5.5	6.0	6.6	8.8	12.7	13.7	13.8	11.3	8.9	6.6	5.6	8.8	16.5	3.5
1925	5.7	5.3	5.6	6.4	9.9	12.4	13.1	13.9	12.0	8.9	7.2	6.3	8.9	16.0	4.0
1926	6.5	6.1	7.0	8.0	10.0	13.1	14.6	15.0	12.6	9.5	7.9	6.4	9.7	16.5	5.0
1927	5.6	6.0	5.8	6.6	8.7	13.0	15.4	15.8	12.0	9.3	6.4	5.2	9.2	18.0	4.0
1928	4.6	5.0	5.6	6.9	9.3	14.0	14.5	13.9	11.1	8.9	7.4	6.0	8.9	17.0	3.0
1929	5.6	5.5	5.7	6.2	9.1	12.2	13.5	14.0	13.2	10.2	8.0	5.7	9.1	16.0	2.5
1930	4.9	5.0	4.8	6.4	8.6	11.8	14.2	15.4	11.6	8.6	6.9	6.4	8.7	17.0	4.0
1931	5.9	6.0	6.2	7.6	9.8	13.4	14.7	14.9	12.5	9.8	6.8	6.1	9.5	17.0	4.5
1932	4.9	5.2	5.2	7.1	9.5	11.0	12.6	13.9	11.6	9.9	7.1	5.5	8.6	15.5	3.0
1933	4.9	4.7	5.3	6.2	9.6	11.3	12.8	14.3	12.1	8.5	7.0	4.0	8.4	16.5	2.5
1934	4.6	4.5	5.4	7.3	10.0	12.4	13.1	14.0	11.5	9.3	7.4	6.2	8.8	16.0	3.5
1935	5.4	4.3	4.4	5.8	7.8	12.1	14.4	13.1	11.5	8.6	5.4	4.8	8.1	19.0	2.0
1936	4.1	2.9	4.3	5.1	9.5	14.2	13.3	13.3	11.4	10.3	7.9	4.3	8.4	18.0	1.0

Surface Water Temperatures
KETCHIKAN, ALASKA - Continued

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1937	3.5	3.5	4.5	5.0	7.7	13.0	14.4	13.0	13.6	10.8	8.1	4.6	8.5	20.0	1.0
1938	4.6	3.9	6.0	7.3	8.9	11.3	13.1	13.3	12.4	10.0	7.5	6.3	8.7	15.5	1.0
1939	5.6	5.2	5.7	6.3	9.0	12.2	13.6	13.1	11.5	8.6	7.3	6.1	8.7	16.5	2.0
1940	6.1	5.9	6.1	7.9	10.1	13.0	14.9	14.1	12.6	10.4	7.5	6.8	9.6	18.0	4.0
1941	6.4	6.1	6.8	7.9	9.9	12.4	14.2	14.5	12.3	10.3	7.8	(6.1)	9.6	18.0	3.0
1942	(5.3)	5.0	5.7	6.6	9.4	14.8	16.4	15.4	13.0	9.9	5.3	5.2	9.3	20.0	1.0
1943	3.8	5.4	4.7	7.4	9.2	11.9	12.4	12.1	(11.0)	9.0	7.4	6.9	8.4	18.0	2.0
1944	5.3	5.2	5.4	7.3	8.6	10.5	13.5	13.5	12.9	10.2	7.4	5.5	8.8	16.2	0.0
Means	5.2	5.0	5.5	6.7	9.1	12.5	13.9	14.0	12.1	9.5	7.2	5.7	8.9		
Max.	8.0	8.2	8.0	11.0	15.0	20.0	20.0	18.2	19.2	15.0	16.0	10.0		20.0	
Min.	1.5	1.0	0.0	3.0	4.0	7.0	8.0	8.0	8.0	4.0	2.0	1.0			0.0

Expectancy range

Limits referred to means °C	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	38	39	44	34	25	28	28	32	32	36	41	34	34
± 1.0	62	65	72	63	47	47	52	56	55	61	64	65	59
± 2.0	91	93	95	92	79	75	83	86	85	89	90	89	87
± 3.0	99	98	100	98	94	91	94	95	96	97	97	96	96
± 4.0	100	100	100	100	98	98	97	98	98	99	99	100	99
± 5.0	100	100	100	100	99	99	99	100	99	100	99	100	100

Surface Water Temperatures JUNEAU, ALASKA

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1936	-	-	-	-	-	13.2	12.1	12.1	9.0	7.6	5.7	2.8	-	17.5	-
1937	2.2	2.1	3.5	4.9	8.6	11.9	11.5	11.0	9.8	7.8	5.2	2.2	6.7	14.0	-2.0
1938	3.0	1.5	3.7	5.7	8.1	9.5	11.2	12.1	10.2	7.7	5.3	4.3	6.9	14.6	-1.0
1939	3.8	2.3	2.9	4.7	7.9	11.1	11.7	10.2	8.7	6.0	4.7	4.6	6.6	14.0	0.2
1940	3.9	4.0	3.8	6.4	9.3	12.4	13.0	10.9	-	-	-	-	-	15.0	1.0
1941	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1942	3.5	3.7	3.5	5.2	9.7	11.1	10.9	11.2	9.8	7.0	4.5	2.7	6.9	15.0	1.3
1943	1.6	1.4	2.3	4.1	7.5	10.2	9.2	9.6	8.8	6.8	5.5	(3.0)	5.8	15.2	-0.6
1944	4.0	3.8	4.0	5.1	7.3	10.6	10.5	10.7	9.2	7.2	4.8	4.2	6.8	15.1	0.5
Means	3.1	2.7	3.4	5.2	8.3	11.2	11.3	11.0	9.4	7.0	5.0	3.4	6.7		
Max.	5.1	4.7	4.8	9.0	14.9	17.5	14.5	16.1	14.0	9.1	7.1	5.5		17.5	
Min.	-0.6	-1.0	1.0	0.5	5.1	5.8	6.4	8.4	7.5	4.8	1.6	-2.0			-2.0

Expectancy range

Limits referred to means	Expectancy range												Average		
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
°C	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
+ 0.5	31	24	47	36	27	18	33	31	46	33	43	36	34	58	34
+ 1.0	36	47	71	64	44	34	54	58	68	64	78	57	57	87	58
+ 1.5	43	56	86	89	75	61	80	88	92	92	98	87	87	98	87
+ 2.0	49	68	100	97	92	84	93	98	98	100	100	97	96	99	96
+ 2.5	100	100	100	100	98	95	99	100	99	100	100	99	99	99	99
+ 3.0	100	100	100	100	99	98	100	100	100	100	100	100	100	100	100

Surface Water Temperatures
SEWARD, ALASKA

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1926	4.2	3.6	3.9	5.8	8.5	11.5	12.0	12.7	11.6	9.1	6.1	6.1	7.2	15.5	0.0
1927	4.6	4.1	3.8	4.6	7.0	9.9	11.8	10.8	(11.4)	7.4	3.5	(5.4)	7.0	15.0	0.0
1928	(4.4)	(3.8)	3.2	4.6	7.2	11.4	11.3	12.2	10.0	7.1	5.1	3.9	7.0	17.0	2.0
1929	3.4	3.2	2.4	4.1	7.4	13.7	14.0	13.8	13.0	(5.5)	3.0	4.2	7.3	18.0	0.0
1930	4.2	3.0	4.4	5.2	7.5	10.6	11.8	11.4	10.0	6.9	5.1	3.9	7.0	15.0	2.0
1931	3.8	3.3	3.9	5.3	7.0	10.7	12.0	12.7	10.6	8.6	6.0	4.9	7.4	15.0	1.5
1932	3.7	2.8	3.1	4.4	7.0	10.3	12.7	11.9	10.0	7.6	6.1	4.8	7.0	15.5	2.0
1933	3.7	2.9	2.8	3.8	7.5	11.1	12.5	11.3	10.0	7.6	5.4	4.5	6.9	16.0	0.5
1934	2.4	2.6	3.3	4.7	8.4	12.0	12.2	12.8	10.9	8.3	6.4	5.4	7.4	17.5	1.0
1935	4.2	4.0	4.6	5.2	8.0	13.0	13.1	13.0	11.3	7.9	5.6	4.2	7.8	15.5	1.5
1936	3.1	3.8	3.6	5.6	8.3	13.3	15.0	14.8	11.3	8.6	6.4	5.8	8.3	18.5	1.5
1937	4.4	4.1	3.6	4.6	7.9	10.9	13.2	12.7	10.9	9.3	7.2	4.8	7.8	15.5	0.0
1938	3.7	3.3	3.5	5.7	7.1	10.3	11.9	13.1	9.9	7.6	5.0	3.9	7.1	15.5	1.0
1939	3.1	3.6	3.6	5.5	(8.5)	12.2	12.4	11.4	11.7	7.8	6.2	5.1	7.6	15.5	1.5
Means	3.8	3.4	3.6	4.9	7.7	11.5	12.6	12.5	10.9	7.8	5.5	4.8	7.3		
Max.	6.5	5.5	6.5	8.5	12.5	16.0	18.5	18.0	16.0	12.0	9.5	8.0		18.5	
Min.	0.5	0.0	0.0	1.0	4.5	6.0	5.5	8.0	7.0	2.0	0.0	0.0			0.0

Expectancy range

Limits referred to means	Expectancy range												Average		
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
°C	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
± 0.5	41	45	44	39	29	19	21	30	25	28	28	35	35	32	32
± 1.0	75	74	78	68	55	36	40	49	46	53	51	65	65	58	58
± 2.0	96	98	97	92	86	64	72	75	75	84	81	91	91	84	84
± 3.0	100	100	100	98	97	84	91	91	93	96	94	98	98	95	95
± 4.0	100	100	100	100	99	97	96	97	99	99	99	100	100	99	99
± 5.0	100	100	100	100	100	100	99	100	100	100	99	100	100	100	100

Part II.
Surface Water Temperatures
Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1930	--	--	13.6	15.6	13.6	16.9	17.3	19.6	18.2	16.2	14.7	14.3	--	--	--
1931	13.9	14.9	14.9	16.2	17.2	17.2	20.3	20.2	17.7	16.6	14.2	12.6	16.3	22.0	11.0
1932	11.4	11.7	13.8	13.4	14.1	16.0	--	--	--	--	--	--	--	--	--
	SANTA BARBARA, CALIF.														
1937	6.8	8.6	12.6	14.5	17.0	19.5	21.7	19.7	20.2	18.8	--	--	--	--	--
	DUMBARTON BRIDGE, SAN FRANCISCO BAY, CALIF.														
1937	8.7	9.3	12.6	13.4	--	--	17.4	18.1	17.2	17.1	--	--	--	--	--
	YERBA BUENA ISLAND, SAN FRANCISCO BAY, CALIF.														
1937	6.7	9.0	13.2	14.9	16.7	18.2	19.8	19.2	19.1	17.9	16.3	--	--	--	--
	POINT SAN QUENTIN, SAN FRANCISCO BAY, CALIF.														
1937	6.7	8.7	12.4	14.2	16.6	18.5	20.2	20.1	19.5	--	--	--	--	--	--
	MARE ISLAND, CALIF.														
1937	6.5	8.5	12.3	14.4	16.6	19.6	20.9	19.7	19.6	18.5	17.0	--	--	--	--
	BENICIA, CARQUINEZ STRAIT, CALIF.														

Surface Water Temperatures

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1934	--	--	--	--	--	18.1	18.2	18.2	16.6	13.3	10.0	7.3	--	--	--
1935	6.0	7.3	7.0	10.3	14.4	16.8	17.3	--	--	--	--	--	--	--	--
	ABERDEEN, WASH.														
1934	--	--	--	--	--	--	--	12.5	11.1	10.1	9.8	8.5	--	--	--
1935	7.3	7.7	8.1	9.5	10.3	11.0	11.5	11.5	11.5	--	--	--	--	--	--
	PORT ANGELES, WASH.														
1935	--	--	--	8.3	9.3	10.4	13.7	10.7	10.6	9.8	8.5	8.2	--	--	--
1936	8.3	7.5	--	--	--	--	--	--	--	--	--	--	--	--	--
	FORT WORDEN, WASH.														
1934	--	--	--	--	--	--	--	15.5	14.5	12.5	10.9	9.2	--	--	--
1935	7.4	7.6	7.8	9.1	11.9	14.1	15.1	16.0	15.2	12.4	9.6	8.4	11.2	18.0	5.5
1936	8.1	6.5	--	--	--	13.6	15.2	15.5	--	13.1	10.5	--	--	--	--
	BREMERTON, WASH.														
1934	--	--	--	--	--	--	14.0	14.7	12.9	11.8	10.0	8.7	--	--	--
1935	7.3	7.3	7.3	8.5	11.1	13.3	14.5	--	--	--	--	--	--	--	--
	TACOMA, WASH.														

Surface Water Temperatures

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
	OLYMPIA, WASH.														
1923	--	--	--	--	--	--	--	--	--	--	10.6	8.4	--	--	--
1924	6.5	7.9	8.7	--	--	--	--	--	--	--	--	--	--	--	--
* *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1934	--	--	--	--	--	--	16.1	16.4	14.9	12.8	10.5	8.5	--	--	--
1935	6.7	6.9	7.2	9.9	12.0	14.6	--	--	--	--	--	--	--	--	--
	EVERETT, WASH.														
1934	--	--	--	--	--	--	--	16.4	14.2	11.9	9.8	8.1	--	--	--
1935	7.0	6.9	7.1	9.5	12.5	14.1	16.4	15.4	--	--	--	--	--	--	--
	ANACORTES, WASH.														
1922	6.2	6.0	6.6	7.7	8.9	10.9	11.8	11.6	11.5	10.4	9.0	7.4	9.0	15.0	5.5
1923	7.3	6.4	7.0	8.2	8.0	10.5	11.8	12.1	11.8	10.7	9.4	8.3	9.6	15.0	4.5
1924	7.4	7.9	8.0	8.5	9.8	--	--	--	--	--	--	--	--	--	--
* *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1934	--	--	--	--	--	--	--	--	--	--	8.6	8.1	--	--	--
1935	6.6	6.9	7.1	8.0	10.3	11.2	12.1	11.9	11.4	--	--	--	--	--	--

Surface Water Temperatures

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C

BELLINGHAM, WASH.

BLAINE, WASH.

SITKA, ALASKA

KODIAK, ALASKA

Surface Water Temperatures

Means and extremes

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means	Max.	Min.
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1943	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	-
1944	1.7	2.2	2.6	3.5	4.8	6.4	-	-	-	6.6	5.1	3.2	-	-	-
1944	-	-	-	-	-	5.6	6.1	6.9	6.8	5.9	5.0	3.7	-	-	-
1944	-	-	19.5	21.1	--	24.8	26.2	26.8	25.8	24.6	22.4	21.5	-	-	-

Surface Water Temperatures

Average monthly values derived from data furnished by the Scripps Institution, La Jolla, California.

Station and Series	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Means
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Balboa Pier, Calif. 1925-1943	14.4	14.2	14.6	15.4	16.7	18.0	19.9	19.6	18.5	17.9	16.5	15.5	16.8
Hueneme Pier, Calif. 1919-1943	13.6	13.4	13.4	13.2	13.8	14.6	15.7	16.7	16.7	16.4	15.4	14.5	14.8
Pacific Grove, Calif. 1919-1943	11.8	11.9	12.3	12.3	12.6	13.2	13.5	13.6	14.1	13.5	12.6	12.2	12.8
North Farallon I. 1925-1942	11.7	11.6	11.7	11.3	11.4	11.8	12.3	12.8	13.5	13.2	12.6	12.2	12.2
Blunts Reef Lightship 1922-1941	11.1	11.0	10.4	10.3	10.5	10.4	10.3	11.0	11.5	11.5	11.7	11.4	10.9

Case No.	Case Name	Case Type	Case Status	Case Date	Case Time	Case Location	Case Description	Case Notes
100-1000	John Doe	Arrest	Completed	10/10/20	10:00	1000	Arrested for possession of a controlled substance.	10/10/20
100-1001	Jane Smith	Arrest	Completed	10/10/20	10:05	1001	Arrested for driving under the influence.	10/10/20
100-1002	Bob Johnson	Arrest	Completed	10/10/20	10:10	1002	Arrested for public intoxication.	10/10/20
100-1003	Alice Brown	Arrest	Completed	10/10/20	10:15	1003	Arrested for disorderly conduct.	10/10/20
100-1004	Charlie White	Arrest	Completed	10/10/20	10:20	1004	Arrested for trespassing.	10/10/20
100-1005	Diana Green	Arrest	Completed	10/10/20	10:25	1005	Arrested for criminal mischief.	10/10/20
100-1006	Frank Black	Arrest	Completed	10/10/20	10:30	1006	Arrested for criminal damage to property.	10/10/20
100-1007	Grace King	Arrest	Completed	10/10/20	10:35	1007	Arrested for criminal trespass.	10/10/20
100-1008	Henry Lee	Arrest	Completed	10/10/20	10:40	1008	Arrested for criminal mischief.	10/10/20
100-1009	Ivy Scott	Arrest	Completed	10/10/20	10:45	1009	Arrested for criminal damage to property.	10/10/20
100-1010	Jack Adams	Arrest	Completed	10/10/20	10:50	1010	Arrested for criminal trespass.	10/10/20
100-1011	Karen Baker	Arrest	Completed	10/10/20	10:55	1011	Arrested for criminal mischief.	10/10/20
100-1012	Liam Clark	Arrest	Completed	10/10/20	11:00	1012	Arrested for criminal damage to property.	10/10/20
100-1013	Mia Evans	Arrest	Completed	10/10/20	11:05	1013	Arrested for criminal trespass.	10/10/20
100-1014	Noah Foster	Arrest	Completed	10/10/20	11:10	1014	Arrested for criminal mischief.	10/10/20
100-1015	Olivia Grant	Arrest	Completed	10/10/20	11:15	1015	Arrested for criminal damage to property.	10/10/20
100-1016	Peter Harris	Arrest	Completed	10/10/20	11:20	1016	Arrested for criminal trespass.	10/10/20
100-1017	Quinn King	Arrest	Completed	10/10/20	11:25	1017	Arrested for criminal mischief.	10/10/20
100-1018	Rachel Lee	Arrest	Completed	10/10/20	11:30	1018	Arrested for criminal damage to property.	10/10/20
100-1019	Samuel Miller	Arrest	Completed	10/10/20	11:35	1019	Arrested for criminal trespass.	10/10/20
100-1020	Tina Nelson	Arrest	Completed	10/10/20	11:40	1020	Arrested for criminal mischief.	10/10/20
100-1021	Uma Owen	Arrest	Completed	10/10/20	11:45	1021	Arrested for criminal damage to property.	10/10/20
100-1022	Victor Parker	Arrest	Completed	10/10/20	11:50	1022	Arrested for criminal trespass.	10/10/20
100-1023	Wendy Quinn	Arrest	Completed	10/10/20	11:55	1023	Arrested for criminal mischief.	10/10/20
100-1024	Xavier Reed	Arrest	Completed	10/10/20	12:00	1024	Arrested for criminal damage to property.	10/10/20
100-1025	Yara Stone	Arrest	Completed	10/10/20	12:05	1025	Arrested for criminal trespass.	10/10/20
100-1026	Zoe Taylor	Arrest	Completed	10/10/20	12:10	1026	Arrested for criminal mischief.	10/10/20
100-1027	Adam White	Arrest	Completed	10/10/20	12:15	1027	Arrested for criminal damage to property.	10/10/20
100-1028	Bella Young	Arrest	Completed	10/10/20	12:20	1028	Arrested for criminal trespass.	10/10/20
100-1029	Charlie King	Arrest	Completed	10/10/20	12:25	1029	Arrested for criminal mischief.	10/10/20
100-1030	Diana Lee	Arrest	Completed	10/10/20	12:30	1030	Arrested for criminal damage to property.	10/10/20

This report was prepared by the
 Police Department on 10/10/20.
 The information is for your information only.
 It is not to be used for any other purpose.
 If you have any questions, please contact the
 Police Department at (555) 123-4567.
 Thank you for your cooperation.

Officer: [Name]
 Supervisor: [Name]

CONVERSION TABLE Centigrade to Fahrenheit

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-5.0	23.0	0.0	32.0	10.0	50.0	15.0	59.0	20.0	68.0	25.0	77.0	30.0	86.0						
-4.9	23.2	0.1	32.2	10.1	50.2	15.1	59.2	20.1	68.2	25.1	77.2	30.1	86.2						
-4.8	23.4	0.2	32.4	10.2	50.4	15.2	59.4	20.2	68.4	25.2	77.4	30.2	86.4						
-4.7	23.5	0.3	32.5	10.3	50.5	15.3	59.5	20.3	68.5	25.3	77.5	30.3	86.5						
-4.6	23.7	0.4	32.7	10.4	50.7	15.4	59.7	20.4	68.7	25.4	77.7	30.4	86.7						
-4.5	23.9	0.5	32.9	10.5	50.9	15.5	59.9	20.5	68.9	25.5	77.9	30.5	86.9						
-4.4	24.1	0.6	33.1	10.6	51.1	15.6	60.1	20.6	69.1	25.6	78.1	30.6	87.1						
-4.3	24.3	0.7	33.3	10.7	51.3	15.7	60.3	20.7	69.3	25.7	78.3	30.7	87.3						
-4.2	24.4	0.8	33.4	10.8	51.4	15.8	60.4	20.8	69.4	25.8	78.4	30.8	87.4						
-4.1	24.6	0.9	33.6	10.9	51.6	15.9	60.6	20.9	69.6	25.9	78.6	30.9	87.6						
-4.0	24.8	1.0	33.8	11.0	51.8	16.0	60.8	21.0	69.8	26.0	78.8	31.0	87.8						
-3.9	25.0	1.1	34.0	11.1	52.0	16.1	61.0	21.1	70.0	26.1	79.0	31.1	88.0						
-3.8	25.2	1.2	34.2	11.2	52.2	16.2	61.2	21.2	70.2	26.2	79.2	31.2	88.2						
-3.7	25.3	1.3	34.3	11.3	52.3	16.3	61.3	21.3	70.3	26.3	79.3	31.3	88.3						
-3.6	25.5	1.4	34.5	11.4	52.5	16.4	61.5	21.4	70.5	26.4	79.5	31.4	88.5						
-3.5	25.7	1.5	34.7	11.5	52.7	16.5	61.7	21.5	70.7	26.5	79.7	31.5	88.7						
-3.4	25.9	1.6	34.9	11.6	52.9	16.6	61.9	21.6	70.9	26.6	79.9	31.6	88.9						
-3.3	26.1	1.7	35.1	11.7	53.1	16.7	62.1	21.7	71.1	26.7	80.1	31.7	89.1						
-3.2	26.2	1.8	35.2	11.8	53.2	16.8	62.2	21.8	71.2	26.8	80.2	31.8	89.2						
-3.1	26.4	1.9	35.4	11.9	53.4	16.9	62.4	21.9	71.4	26.9	80.4	31.9	89.4						
-3.0	26.6	2.0	35.6	12.0	53.6	17.0	62.6	22.0	71.6	27.0	80.6	32.0	89.6						
-2.9	26.8	2.1	35.8	12.1	53.8	17.1	62.8	22.1	71.8	27.1	80.8	32.1	89.8						
-2.8	27.0	2.2	36.0	12.2	54.0	17.2	63.0	22.2	72.0	27.2	81.0	32.2	90.0						
-2.7	27.1	2.3	36.1	12.3	54.1	17.3	63.1	22.3	72.1	27.3	81.1	32.3	90.1						
-2.6	27.3	2.4	36.3	12.4	54.3	17.4	63.3	22.4	72.3	27.4	81.3	32.4	90.3						
-2.5	27.5	2.5	36.5	12.5	54.5	17.5	63.5	22.5	72.5	27.5	81.5	32.5	90.5						
-2.4	27.7	2.6	36.7	12.6	54.7	17.6	63.7	22.6	72.7	27.6	81.7	32.6	90.7						
-2.3	27.9	2.7	36.9	12.7	54.9	17.7	63.9	22.7	72.9	27.7	81.9	32.7	90.9						
-2.2	28.0	2.8	37.0	12.8	55.0	17.8	64.0	22.8	73.0	27.8	82.0	32.8	91.0						
-2.1	28.2	2.9	37.2	12.9	55.2	17.9	64.2	22.9	73.2	27.9	82.2	32.9	91.2						
-2.0	28.4	3.0	37.4	13.0	55.4	18.0	64.4	23.0	73.4	28.0	82.4	33.0	91.4						
-1.9	28.6	3.1	37.6	13.1	55.6	18.1	64.6	23.1	73.6	28.1	82.6	33.1	91.6						
-1.8	28.8	3.2	37.8	13.2	55.8	18.2	64.8	23.2	73.8	28.2	82.8	33.2	91.8						
-1.7	28.9	3.3	37.9	13.3	55.9	18.3	64.9	23.3	73.9	28.3	82.9	33.3	91.9						
-1.6	29.1	3.4	38.1	13.4	56.1	18.4	65.1	23.4	74.1	28.4	83.1	33.4	92.1						
-1.5	29.3	3.5	38.3	13.5	56.3	18.5	65.3	23.5	74.3	28.5	83.3	33.5	92.3						
-1.4	29.5	3.6	38.5	13.6	56.5	18.6	65.5	23.6	74.5	28.6	83.5	33.6	92.5						
-1.3	29.7	3.7	38.7	13.7	56.7	18.7	65.7	23.7	74.7	28.7	83.7	33.7	92.7						
-1.2	29.8	3.8	38.8	13.8	56.8	18.8	65.8	23.8	74.8	28.8	83.8	33.8	92.8						
-1.1	30.0	3.9	39.0	13.9	57.0	18.9	66.0	23.9	75.0	28.9	84.0	33.9	93.0						
-1.0	30.2	4.0	39.2	14.0	57.2	19.0	66.2	24.0	75.2	29.0	84.2	34.0	93.2						
-0.9	30.4	4.1	39.4	14.1	57.4	19.1	66.4	24.1	75.4	29.1	84.4	34.1	93.4						
-0.8	30.6	4.2	39.6	14.2	57.6	19.2	66.6	24.2	75.6	29.2	84.6	34.2	93.6						
-0.7	30.7	4.3	39.7	14.3	57.7	19.3	66.7	24.3	75.7	29.3	84.7	34.3	93.7						
-0.6	30.9	4.4	39.9	14.4	57.9	19.4	66.9	24.4	75.9	29.4	84.9	34.4	93.9						
-0.5	31.1	4.5	40.1	14.5	58.1	19.5	67.1	24.5	76.1	29.5	85.1	34.5	94.1						
-0.4	31.3	4.6	40.3	14.6	58.3	19.6	67.3	24.6	76.3	29.6	85.3	34.6	94.3						
-0.3	31.5	4.7	40.5	14.7	58.5	19.7	67.5	24.7	76.5	29.7	85.5	34.7	94.5						
-0.2	31.6	4.8	40.6	14.8	58.6	19.8	67.6	24.8	76.6	29.8	85.6	34.8	94.6						
-0.1	31.8	4.9	40.8	14.9	58.8	19.9	67.8	24.9	76.8	29.9	85.8	34.9	94.8						

