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SURFACE WATER TEMPERATURES AT SHORE STATIONS, UNITED STATES WES--ETC(U)
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data report

SURFACE WATER TEMPERATURES

AT SHORE STATIONS

United States West Coast

1968

SIO Reference 69-14
28 July 1969

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INTRODUCTION

✓ This report presents temperature and salinity data observed during 1968 at shoreline stations along the west coast of North America from the Strait of Juan de Fuca, Washington, to La Jolla, California. Also included are data from shore stations reporting to Oregon State University. The data consist of monthly means, ranges and standard deviations based on daily observations. Daily temperature and salinity values from which the means were derived are reproduced by computer for limited distribution and are available, upon request, for the cost of reproduction.

Various agencies and volunteers have participated in the collection of these data. The agencies are: Hopkins Marine Station, U. S. Coast and Geodetic Survey, U. S. Coast Guard, the California State Park System, Mendocino County, Oregon State University, Pacific Gas and Electric Company, and Scripps Institution of Oceanography of the University of California, San Diego. We are also indebted to all volunteer observers and to staff members of Scripps who have tabulated the data and compiled the statistics.

Temperature readings and water samples are obtained from surf and sandy beaches, off rocky cliffs and ledges, over the sides of lightships and off piers, depending upon the station location. Temperatures have been listed as reported with no attempt to screen or eliminate observers' errors. The assumption is made that thermometer accuracies are equivalent to the reading accuracies noted below.

All stations, excluding the U. S. Coast and Geodetic Survey and those reporting to Oregon State University, are maintained in cooperation with Scripps Institution of Oceanography. At these cooperative stations, temperatures are taken by obtaining a sample of water in a container, then measuring the temperature of the sample by immersion of a high-grade mercury thermometer supplied and calibrated by Scripps. At Scripps Pier, Balboa, San Clemente, and Doheny Beach, temperature readings are listed to 0.01°C. Shelter Cove temperatures were reported to 1.0°F; Ventura Marina to 0.5°F, and Bodega Bay (January 1 through March 6, and May 15 through December 31) and Santa Cruz (January 1 through August 31) to 0.1°F. The Fahrenheit temperatures were converted and listed to the nearest 0.1°C. At all other cooperative stations, and at Bodega Bay (March 7 through May 14) and Santa Cruz (September 1 through December 31), temperatures were reported to 0.1°C.

Salinities for Scripps Pier, Balboa, Blunts Reef, S. E. Farallon Island, Pacific Grove, San Clemente and Ventura Marina are obtained from sea-water samples in special salinity bottles supplied by Scripps. Water samples are forwarded to Scripps once a month for determination by salinometer. Salinities are listed in hundredths of a part per thousand. Values of maximum salinities may possibly be in error, due to evaporation or contamination of the samples in the bottles.

Each month, the U. S. Coast and Geodetic Survey sends to Scripps Institution daily temperature and density values from four tide stations, located at Neah Bay, Washington, and Avila, Crescent City and Santa Monica, California. Temperature readings for Avila and Santa Monica are listed to 1.0°F; for Neah Bay and Crescent City, to 0.5°F. These Fahrenheit readings have been converted and are listed to the nearest 0.1°C. The density values are obtained by hydrometer and are converted at Scripps to salinity values listed in tenths of a part per thousand. Reported salinities exceeding 34‰ may be due to faulty density determinations. Salinities less than 30‰ are due to local precipitation or fresh water runoff. Neither are representative of offshore oceanic waters.

Temperature data from stations reporting to Oregon State University were taken with calibrated thermometers contained in plastic-lined, brass, protecting enclosures. The thermometers were calibrated against a standard and read to the nearest 0.1°C. The observations are considered accurate to approximately ±0.2°C.

Most salinity data from Oregon State University were determined by hydrometer readings and tables. Hydrometers were calibrated against an inductive salinometer which has an accuracy of about ±0.003‰. The accuracy of salinity determined by a corrected hydrometer is believed to be ±0.4‰. At Newport Marine Science Center, salinities were run on an inductive salinometer. Salinities reported in excess of 34.4‰ are doubtful values and possibly are due to salt residue accumulating on the measuring equipment. At Depoe Bay, samples are taken from an aquarium intake pipe. The ocean side of this pipe is located in a tidal pool which apparently has high evaporation. It is isolated from the ocean more than one-half the tidal cycle.

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⑥
SURFACE WATER TEMPERATURES
AT SHORE STATIONS ,
United States West Coast ,
1968 ,
Including surface salinities from
several stations and five-meter
temperatures and salinities at
Scripps Pier

⑨ Data rept.

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⑪ 28 Jun 1969

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W. A. Nierenberg
W. A. Nierenberg, Director

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W. A. RICHARDS

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SURFACE-TEMPERATURE STATIONS
IN GEOGRAPHICAL ORDER

<u>Station Name</u>	<u>Position</u>	<u>Location</u>	<u>Page</u>
<u>Washington</u>			
Neah Bay	48°22.0'N, 124°37.0'W	USCGS Tide Gauge Station Strait of Juan de Fuca	10
Umatilla Lightship	48°10.0'N, 124°50.0'W	Off Cape Flattery	10
<u>Oregon</u>			
Columbia River Lightship	46°11.2'N, 124°11.0'W	Mouth of Columbia River	10
Seaside Aquarium	45°59.7'N, 123°55.6'W	At pump outlet into Aquarium settling tank from surf inlet pipe	11
Depoe Bay Aquarium	44°49.4'N, 124°04.0'W	At pump outlet into Aquarium settling tank from surf inlet pipe	11
Newport Marine Science Center	44°37.2'N, 124°01.5'W	At pump outlet into Laboratory from bottom of Yaquina Bay	12
Charleston	43°21.0'N, 124°19.0'W	From surface of bay	12
Port Orford	42°44.6'N, 124°30.6'W	Off east side of Port Orford River	12
<u>California</u>			
Crescent City	41°44.6'N, 124°11.7'W	USCGS Tide Gauge Station Crescent City	13
Blunts Reef Lightship	40°26.0'N, 124°30.0'W	Off Cape Mendocino	14
Shelter Cove	40°01.4'N, 124°03.9'W	Mendocino County	14
Mendocino	39°18.2'N, 123°48.2'W	Russian Gulch State Park near Mendocino	14
Fort Ross	38°30.7'N, 123°14.5'W	Fort Ross Historical Monument Sonoma County	15
Bodega Bay	38°19.0'N, 123°04.2'W	University of California Marine Laboratory	15
Farallon Island, S. E.	37°42.0'N, 123°00.0'W	SE Farallon Island Light Station off San Francisco	15
Santa Cruz	36°57.8'N, 122°00.0'W	Twin Lakes Beach State Park	16
Pacific Grove	36°37.2'N, 121°54.2'W	Hopkins Marine Station Pacific Grove	16
Point Lobos: north side	36°31.3'N, 121°56.3'W	Point Lobos Reserve State Park Whalers Cove	16
Point Lobos: south side	36°30.8'N, 121°56.6'W	Point Lobos Reserve State Park Carmel	17
Piedras Blancas Lighthouse	35°40.0'N, 121°16.9'W	U. S. Coast Guard	17
Morro Bay	35°22.2'N, 120°51.3'W	Pacific Gas and Electric Plant	17

<u>Station Name</u>	<u>Position</u>	<u>Location</u>	<u>Page</u>
<u>California</u> (cont.)			
Avila	35°10.0'N, 120°44.0'W	USCGS Tide Gauge Station Port San Luis Obispo	17
Santa Barbara	34°24.3'N, 119°41.5'W	Harbor Department Santa Barbara	18
Ventura Marina	34°14.7'N, 119°15.8'W	Ventura County Small Boat Harbor	18
Point Dume: west of	34°01.4'N, 118°50.0'W	Zuma Beach County Park near Malibu	19
Santa Monica	34°00.0'N, 118°30.0'W	USCGS Tide Gauge Station Santa Monica	19
Balboa	33°36.0'N, 117°54.0'W	Newport Beach Pier Newport Beach	19
Dana Point: east of	33°27.7'N, 117°41.1'W	Doheny Beach State Park Dana Point	20
San Clemente	33°25.0'N, 117°37.0'W	San Clemente Beach State Park	20
Oceanside	33°11.6'N, 117°23.1'W	Oceanside Pier Oceanside	20
La Jolla: Scripps Pier, surface	32°52.0'N, 117°15.3'W	Scripps Institution of Oceanography La Jolla	21
La Jolla: Scripps Pier, bottom	32°52.0'N, 117°15.3'W	Scripps Institution of Oceanography La Jolla	21

ALPHABETICAL LIST OF
SURFACE-TEMPERATURE STATIONS

<u>Station Name</u>	<u>Type of Data Collected</u>	<u>Agency</u>	<u>Page</u>
	1968		
Avila	TS ^{1/} d ^{2/}	USCGS	17
Balboa	TS d	SIO	19
Blunts Reef Lightship	TS d	USCG	14
Bodega Bay	T ^{3/} d	UCML	15
Charleston	TS d	OSU	12
Columbia River Lightship	TS d	USCG	10
Crescent City	TS d	USCGS	13
Dana Point: east of	T d	CSP	20
Depoe Bay Aquarium	TS d	OSU	11
Farallon Island, S. E.	TS d	USCG	15
Fort Ross	T d	CSP	15
La Jolla: Scripps Pier, surface	TS d	SIO	21
La Jolla: Scripps Pier, bottom	TS d	SIO	21
Mendocino	T d	CSP	14
Morro Bay	T d	PG and E	17
Neah Bay	TS d	USCGS	10
Newport Marine Science Center	TS d	OSU	12
Oceanside	T d	SIO	20
Pacific Grove	TS d	HMS	16
Piedras Blancas Lighthouse	T d	USCG	17
Point Dume: west of	T d	SIO	19
Point Lobos: north side	T d	CSP	16

^{1/} S: Surface salinities

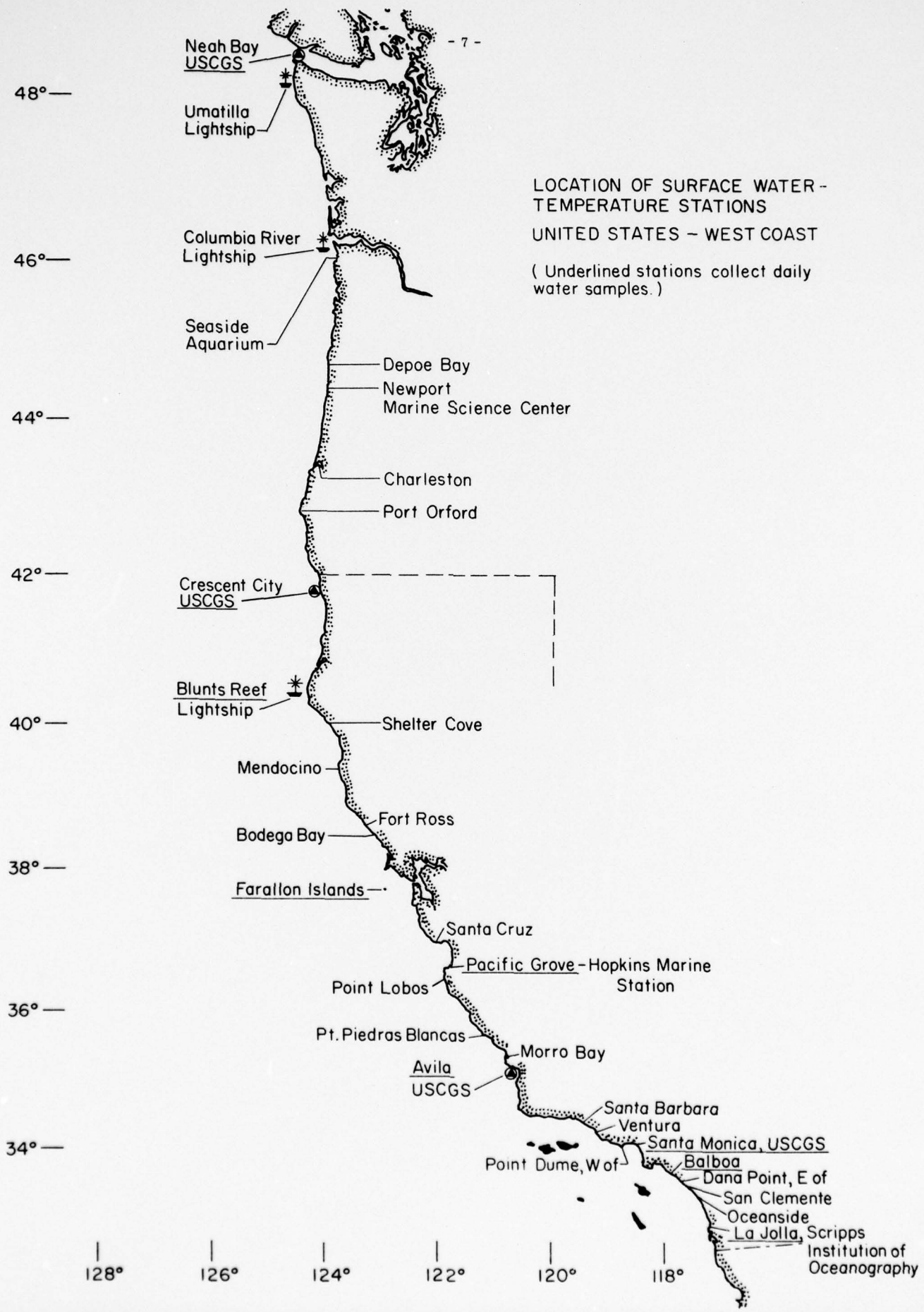
^{3/} T: Surface temperatures

^{2/} d: Values taken daily

^{4/} i: Values taken at irregular intervals

<u>Station Name</u>	<u>Type of Data Collected</u>	<u>Agency</u>	<u>Page</u>
	1968		
Point Lobos: south side	T d	CSP	17
Port Orford	TS d	OSU	12
San Clemente	TS d	SIO	20
Santa Barbara	T d	SIO	18
Santa Cruz	T d	CSP	16
Santa Monica	TS d	USCGS	19
Seaside Aquarium	TS d	OSU	11
Shelter Cove	T i ⁴ / ₁	MC	14
Umatilla Lightship	T d	USCG	10
Ventura Marina	TS d	SIO	18

SIO: University of California, Scripps Institution of Oceanography, La Jolla, California
MC: Mendocino County
CSP: California State Park System
OSU: Oregon State University, Corvallis, Oregon
HMS: Hopkins Marine Station, Pacific Grove, California
USCG: United States Coast Guard
UCML: University of California Marine Laboratory
USCGS: United States Coast and Geodetic Survey
PG and E: Pacific Gas and Electric Company



SHORELINE SURFACE WATER-TEMPERATURE DATA

For the daily stations, the data presented show the monthly means, ranges, and standard deviations. A code designates the number of observations from which the averages were computed. This code is as follows:

- | | |
|----------------|--|
| No Designation | 25 or more observations in a month, or 23 or more in February. |
| S Scattered | Minimum of 5 observations per month with at least one in any 7-day period. Exception is Shelter Cove, where data are difficult to obtain and are shown even though only 1 to 3 observations per month. |
| A-B-C | Minimum of 6 or more observations in any group during a 10-day period. These periods are: A, 1 to 10; B, 11 to 20; C, 21 to 30 or 31. |

Means, maxima, minima, ranges and standard deviations are included for those months marked "S" but the values are listed in parentheses.

For values designated "A," "B," "C," or any combination of these letters, means, maxima and minima are listed in parentheses. Ranges and standard deviations are omitted.

Standard deviations included in this report were computed from the following formula:

$$\text{Standard Deviation} = \sqrt{\frac{\sum (x - \bar{x})^2}{N-1}}$$

T AND S DATA NEAH BAY

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	7.14	8.69	8.77	10.47	11.38	11.71	12.09	12.01	10.02	9.69	7.60	-	-	(16.1)	(2.8)
T	8.4	9.4	9.5	12.5	13.6	13.6	15.3	16.1	11.4	10.3	9.2				
	5.6	8.0	7.8	8.9	10.6	10.3	9.5	9.5	8.9	8.6	2.8				
Range	2.8	1.4	1.7	3.6	3.0	3.3	5.8	6.6	2.5	1.7	6.4				
Std. Dev.	0.89	0.29	0.44	1.16	0.92	0.98	1.63	1.55	0.75	0.44	1.53				
No. Obs.	29	31	29	30	29	31	29	30	29	27	30				
1968	29.61	28.60	31.01	31.71	31.33	31.86	31.37	31.47	30.84	30.00	29.08	-	-	(33.2)	(25.8)
T	31.5	30.7	31.8	32.5	31.9	32.4	32.7	33.2	33.0	30.7	29.8				
	27.2	26.9	29.3	31.1	30.4	30.8	29.7	28.9	25.8	28.0	27.7				
Range	4.3	3.8	2.5	1.4	1.5	1.6	3.0	4.3	7.2	2.7	2.1				
Std. Dev.	1.31	1.05	0.49	0.37	0.47	0.38	0.94	0.92	1.56	0.69	0.46				
No. Obs.	29	31	29	30	29	31	29	30	29	27	30				

T DATA UMATILLA LIGHTSHIP

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	7.75	7.81	8.89	10.37	12.29	13.05	13.12	13.12	14.07	10.88	11.07	9.25	(10.64)	(16.0)	(7.0)
T	8.9	9.0	9.8	13.5	14.2	15.3	16.0	16.0	15.8	13.0	11.8	11.0			
	7.0	7.0	8.0	8.5	10.1	11.9	10.0	10.0	11.5	10.0	10.0	8.0			
Range	1.9	2.0	1.8	5.0	4.1	3.4	6.0	4.3	3.0	3.0	1.8	3.0			
Std. Dev.	0.41	0.62	0.38	1.46	1.04	0.93	1.44	1.07	0.73	0.38	0.38	0.75			
No. Obs.	31	29	30	27	30	31	30	30	31	30	30	31			

T AND S DATA COLUMBIA RIVER LIGHTSHIP

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	8.58	8.80	9.81	9.89	11.50	12.93	13.54	14.89	15.30	13.06	11.96	8.29	11.55	17.4	6.6
T	10.9	10.8	10.6	11.6	13.3	14.6	16.0	17.4	17.0	14.6	13.6	11.0			
	7.0	7.0	8.7	8.9	9.6	12.4	12.0	12.8	11.1	11.5	10.2	6.6			
Range	3.9	3.8	1.9	2.7	3.7	2.2	4.0	4.6	5.9	3.1	3.4	4.4			
Std. Dev.	1.07	1.02	0.42	0.53	1.16	0.60	1.02	1.13	1.12	0.73	0.97	1.12			
No. Obs.	27	26	30	30	31	30	30	30	30	28	30	25			

T AND S DATA COLUMBIA RIVER LIGHTSHIP (cont.)

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	24.81	25.45	30.57	24.38	28.78	30.08	27.70	31.32	31.51	31.38	30.01	(20.45)	(28.04)		
Max.	33.2	32.6	32.9	32.9	32.1	31.6	29.9	33.7	33.5	33.6	32.7	(30.2)	(33.7)		
S	17.2	15.2	22.1	11.3	25.0	26.6	13.9	23.1	28.6	25.8	27.0	(13.2)			(11.3)
Range	16.0	17.4	10.8	21.6	7.1	5.0	16.0	10.6	4.9	7.8	5.7	(17.0)			
Std. Dev.	6.66	6.72	2.10	5.53	2.07	1.15	3.70	2.33	1.55	2.05	1.42	(6.34)			
No. Obs.	27	26	29	30	31	30	30	30	29	27	28	24S			

T AND S DATA SEASIDE AQUARIUM

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(8.76)	(8.43)	(10.89)		(12.38)	(14.40)									
Max.	(11.0)	(8.9)	(11.3)		(13.1)	(15.9)								(15.9)	(7.6)
Min.	(7.6)	(7.8)	(10.4)		(11.0)	(13.7)									
Range	(3.4)	-	(0.9)		(2.1)	(2.2)									
Std. Dev.	(0.96)	-	(0.27)		(0.86)	(0.89)									
No. Obs.	21S	9A	17S		8S	5S									
1968	(27.63)	(28.84)	(27.95)		(28.69)	(26.94)									
Max.	(29.0)	(29.6)	(28.3)		(30.3)	(28.6)								(30.3)	(25.6)
Min.	(26.1)	(28.2)	(27.5)		(27.7)	(25.6)									
Range	(2.9)	-	(0.8)		(2.6)	(3.0)									
Std. Dev.	(0.77)	-	(0.24)		(0.78)	(1.13)									
No. Obs.	21S	9A	17S		8S	5S									

T AND S DATA DEPOE BAY

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(10.01)	(10.32)	(10.25)	(9.92)	(10.58)	(13.67)	(11.77)	(15.10)	(13.20)	(13.34)	(11.45)	(8.54)	(11.51)	(16.3)	(7.8)
Max.	(10.4)	(10.8)	(10.8)	(10.2)	(11.6)	(16.3)	(12.8)	(16.2)	(14.3)	(14.3)	(12.4)	(9.4)		(16.3)	
Min.	(9.4)	(9.8)	(9.8)	(9.6)	(9.8)	(11.8)	(11.0)	(13.8)	(11.8)	(12.4)	(9.6)	(7.8)			
Range	(1.0)	(1.0)	(1.0)	(0.6)	(1.8)	(4.5)	(1.8)	(2.4)	(2.5)	(1.9)	(2.8)	(1.6)			
Std. Dev.	(0.27)	(0.31)	(0.32)	(0.23)	(0.59)	(1.54)	(0.47)	(0.78)	(0.75)	(0.61)	(0.88)	(0.54)			
No. Obs.	22S	22S	20S	21S	20S	21S	20S	21S	22S	18S	19S	20S			
1968	(30.22)	(31.25)	(31.23)	(33.79)	(34.49)	(30.95)	(33.54)	(35.03)	(34.43)	(32.85)	(32.46)	(32.61)	(32.74)	(36.0)	(28.3)
Max.	(30.9)	(32.2)	(32.4)	(34.7)	(34.9)	(34.2)	(34.5)	(36.0)	(35.4)	(34.0)	(33.5)	(34.2)		(36.0)	
Min.	(28.8)	(30.0)	(30.2)	(30.5)	(34.0)	(28.3)	(32.2)	(33.6)	(33.1)	(31.8)	(31.5)	(31.1)			
Range	(2.1)	(2.2)	(2.2)	(4.2)	(0.9)	(5.9)	(2.3)	(2.4)	(2.3)	(2.2)	(2.0)	(3.1)			
Std. Dev.	(0.50)	(0.56)	(0.63)	(0.90)	(0.31)	(1.70)	(0.61)	(0.76)	(0.55)	(0.64)	(0.58)	(0.94)			
No. Obs.	22S	22S	20S	19S	19S	20S	20S	21S	22S	18S	19S	20S			

T AND S DATA NEWPORT MARINE SCIENCE CENTER

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(9.00)	(9.75)	(11.01)	(10.34)	(11.84)	(12.36)	(10.78)	(12.96)	(13.41)	(11.06)	(12.25)	(10.55)	(11.28)	(16.0)	(8.3)
T	(9.5)	(12.0)	(11.9)	(11.1)	(13.5)	(15.2)	(13.4)	(16.0)	(15.0)	(12.4)	(13.2)	(11.3)			
Range	(8.3)	(8.7)	(10.4)	(9.0)	(9.5)	(10.3)	(9.4)	(10.0)	(11.6)	(9.5)	(11.6)	(9.5)			
Std. Dev.	(1.2)	(3.3)	(1.5)	(2.1)	(4.0)	(4.9)	(4.0)	(6.0)	(3.4)	(2.9)	(1.6)	(1.8)			
No. Obs.	(0.36)	(1.18)	(0.43)	(0.58)	(1.49)	(1.35)	(1.35)	(1.98)	(1.00)	(0.93)	(0.45)	(0.52)			
	15S	11S	17S	12S	16S	24S	9S	20S	17S	13S	15S	15S			
Mean	(29.83)	(29.97)	(29.45)	(32.32)	(32.12)	(31.82)	(33.29)	(32.93)	(32.08)	(32.29)	(30.01)	(28.17)	(31.19)	(33.67)	(22.03)
Max.	(32.44)	(32.18)	(31.64)	(33.41)	(33.58)	(33.09)	(33.61)	(33.67)	(33.07)	(33.25)	(31.95)	(30.84)			
Min.	(26.84)	(22.03)	(26.18)	(31.45)	(30.79)	(28.12)	(32.77)	(31.76)	(30.60)	(30.41)	(28.42)	(26.23)			
Range	(5.60)	(10.15)	(5.46)	(1.96)	(2.79)	(4.97)	(0.84)	(1.91)	(2.47)	(2.84)	(3.53)	(4.61)			
Std. Dev.	(1.89)	(2.83)	(1.59)	(0.55)	(0.95)	(1.28)	(0.31)	(0.63)	(0.94)	(0.92)	(1.20)	(1.40)			
No. Obs.	15S	11S	17S	12S	16S	23S	9S	20S	17S	13S	15S	15S			

T AND S DATA CHARLESTON

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(9.06)	(10.44)	(11.49)	(11.22)	(12.14)	(13.57)	(12.86)		(13.46)	(11.86)		(10.30)			
T	(10.7)	(12.4)	(13.2)	(12.6)	(15.4)	(16.2)	(15.4)		(14.8)	(14.0)		(11.4)		(16.2)	(7.2)
Range	(7.2)	(9.0)	(10.4)	(9.1)	(9.4)	(11.0)	(10.4)		(11.8)	(9.8)		(9.2)			
Std. Dev.	(3.5)	(3.4)	(2.8)	(3.5)	(6.0)	(5.2)	(5.0)		(3.0)	(4.2)		(2.2)			
No. Obs.	(0.76)	(1.00)	(0.81)	(0.90)	(1.88)	(1.61)	(1.70)		(1.17)	(1.30)		(0.67)			
	23S	16S	17S	18S	13S	12S	20S		8S	10S		20S			
Mean	(31.15)	(29.78)	(30.65)	(31.51)	(32.38)	(32.49)	(33.27)		(32.58)			(29.35)			
Max.	(33.0)	(32.3)	(32.1)	(32.7)	(33.4)	(33.4)	(33.9)		(33.2)			(31.2)		(33.9)	
Min.	(25.7)	(25.3)	(28.8)	(26.9)	(30.0)	(31.4)	(32.4)		(32.1)			(20.4)			(20.4)
Range	(7.3)	(7.0)	(3.3)	(5.8)	(3.4)	(2.0)	(1.5)		-			(10.8)			
Std. Dev.	(2.01)	(2.12)	(0.77)	(1.46)	(0.90)	(0.63)	(0.41)		-			(2.51)			
No. Obs.	23S	14S	17S	18S	12S	12S	20S		10C			19S			

T AND S DATA PORT ORFORD

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1967	(32.17)	32.90	32.12	30.99	33.28	33.60	33.96	34.01	32.88	32.60	32.86	33.35	(32.89)	(34.6)	(30.0)
S	(31.6)	33.7	33.7	32.5	33.7	34.2	34.6	34.6	34.5	33.8	33.2	33.6			
Range	(1.0)	1.8	3.7	2.5	1.5	1.0	1.1	1.0	2.6	2.5	-	(0.7)			
Std. Dev.	(0.24)	0.57	1.29	0.70	0.34	0.25	0.29	0.28	0.75	0.48	-	(0.23)			
No. Obs.	24S	24	26	27	27	29	29	28	25	27	13C	17S			

* Corrected values.

T AND S DATA PORT ORFORD (cont.)

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(9.17)	10.51	11.45	9.55	11.06	11.35	11.57	13.60	(12.92)	(12.53)		10.66	-		
Max.	(11.0)	12.2	12.0	11.5	13.2	13.5	15.2	15.6	(14.8)	(12.8)		11.8		(15.6)	(7.8)
Min.	(8.2)	9.9	10.6	7.8	8.8	9.8	10.2	11.2	(12.3)	(12.0)		9.8			
Range	(2.8)	2.3	1.4	3.7	4.4	3.7	5.0	4.4	(2.5)	(0.8)		2.0			
Std. Dev.	(0.97)	0.71	0.39	1.28	1.33	1.43	1.30	1.36	(0.67)	(0.26)		0.72			
No. Obs.	24S	24	27	26	29	28	26	26	23S	20S		28			
1968	(32.52)	31.04	31.63	33.63	32.66	33.51	33.55	33.35	(32.81)	(32.67)		30.75	-		
Max.	(33.2)	32.5	32.9	34.2	33.9	34.2	34.0	33.9	(33.2)	(32.9)		31.7		(34.2)	
Min.	(31.9)	29.2	29.3	32.5	31.2	31.8	33.1	32.2	(32.5)	(32.5)		29.8			(29.2)
Range	(1.3)	3.3	3.6	1.7	2.7	2.4	0.9	1.7	(0.7)	(0.4)		1.9			
Std. Dev.	(0.37)	1.28	1.24	0.50	1.00	0.63	0.26	0.60	(0.17)	(0.13)		0.46			
No. Obs.	24S	24	27	26	29	28	26	26	23S	20S		28			

T AND S DATA CRESCENT CITY

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(8.65)	(10.49)	(11.51)	(9.25)	(11.10)	(12.57)	(14.45)	(15.23)	(13.93)	(11.14)	(11.24)	(9.73)	(11.61)	(16.7)	(7.2)
Max.	(10.6)	(12.2)	(12.2)	(11.6)	(14.7)	(15.0)	(15.8)	(16.7)	(16.1)	(12.2)	(12.0)	(10.6)			
Min.	(7.2)	(8.4)	(10.8)	(7.5)	(7.8)	(9.5)	(12.8)	(13.9)	(11.6)	(10.0)	(10.0)	(8.6)			
Range	(3.4)	(3.8)	(1.4)	(4.1)	(6.9)	(5.5)	(3.0)	(2.8)	(4.5)	(2.2)	(2.0)	(2.0)			
Std. Dev.	(0.94)	(1.11)	(0.45)	(1.61)	(2.54)	(1.85)	(1.09)	(1.09)	(1.65)	(0.68)	(0.55)	(0.71)			
No. Obs.	17S	16S	15S	10S	11S	12S	11S	13S	16S	16S	12S	10S			
1968	(30.19)	(26.55)	(29.59)	(33.25)	(31.75)	(33.04)	(32.98)	(32.32)	(32.88)	(32.68)	(31.15)	(29.31)	(31.31)	(34.2)	(16.6)
Max.	(32.9)	(30.7)	(31.9)	(34.2)	(34.1)	(34.1)	(33.6)	(33.0)	(33.6)	(33.3)	(32.0)	(31.4)			
Min.	(25.5)	(16.6)	(25.1)	(31.8)	(28.4)	(31.2)	(32.3)	(30.2)	(32.3)	(32.0)	(30.0)	(26.1)			
Range	(7.4)	(14.1)	(6.8)	(2.4)	(5.7)	(2.9)	(1.3)	(2.8)	(1.3)	(1.3)	(2.0)	(5.3)			
Std. Dev.	(2.56)	(3.64)	(1.88)	(0.86)	(2.14)	(0.99)	(0.36)	(0.87)	(0.36)	(0.39)	(0.69)	(1.69)			
No. Obs.	17S	16S	15S	10S	11S	12S	11S	13S	16S	16S	12S	10S			

T AND S DATA BLUNTS REEF LIGHTSHIP

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	10.56	11.43	11.69	9.09	9.88	11.30	10.13	11.37	12.14	11.50	12.41		-	(14.0)	(7.8)
T	12.0	12.5	10.0	7.8	8.3	10.0	9.1	9.8	10.0	10.0	11.0				
Range	3.0	2.0	2.5	2.7	3.9	2.2	1.9	3.2	4.0	3.5	2.5				
Std. Dev.	0.57	0.48	0.61	0.90	1.39	0.57	0.40	1.30	1.28	0.92	0.64				
No. Obs.	31	29	31	30	31	30	30	31	30	31	30				
Mean	33.58	33.37	33.09	33.86	33.85	33.42	33.85	33.21	33.40	33.49	33.29		-	(34.97)	(31.14)
Max.	33.96	33.71	33.55	34.43	34.97	33.97	34.15	33.77	33.87	34.01	33.68				
Min.	33.05	32.36	31.14	32.78	33.11	32.94	33.21	32.54	32.92	32.66	32.86				
Range	0.91	1.35	2.41	1.65	1.86	1.03	0.94	1.23	0.95	1.35	0.82				
Std. Dev.	0.22	0.27	0.47	0.48	0.41	0.27	0.20	0.40	0.22	0.30	0.18				
No. Obs.	31	29	31	30	31	30	30	26	29	31	30				

T DATA SHELTER COVE

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(9.85)	(10.93)	(12.50)	(11.10)	(10.30)	(10.00)	(12.20)	(13.85)	(11.10)				-	(14.4)	(8.9)
T	(10.0)	(11.1)	(12.8)	-	(11.7)	-	-	(14.4)	-						
Range	(9.7)	(10.6)	(12.2)	-	(8.9)	-	-	(13.3)	-						
Std. Dev.	(0.3)	(0.5)	(0.6)	-	(2.8)	-	-	(1.1)	-						
No. Obs.	(0.21)	(0.29)	(0.42)	(1)	(1.98)	(1)	(1)	(0.78)	(1)						
	2S	3S	2S		2S			2S							

T DATA MENDOCINO

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	10.35	11.46	11.43	9.13	9.52	10.03	10.55	(12.17)	12.61	11.44	(11.47)	10.33	(10.87)	(16.2)	(8.0)
T	11.1	12.6	12.4	10.9	10.9	11.9	12.5	(16.2)	15.0	13.4	(12.5)	12.4			
Range	9.5	10.5	10.6	8.3	8.5	8.7	9.4	(8.9)	9.5	10.2	(8.5)	8.0			
Std. Dev.	1.6	2.1	1.8	2.6	2.4	3.2	3.1	(7.3)	5.5	3.2	(4.0)	4.4			
No. Obs.	0.48	0.75	0.51	0.64	0.74	0.87	0.77	(1.95)	1.66	1.01	(0.94)	0.94			
	29	25	29	28	28	30	31	21S	28	26	19S	25			

T DATA FORT ROSS

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	10.33	11.48	11.21	9.42	9.29	9.35	(10.58)	11.24	11.99	11.36	(11.84)	10.72	(10.74)	(14.2)	(7.9)
T	10.8	12.8	12.7	10.7	10.3	10.5	(13.2)	13.8	14.2	12.6	(12.5)	11.5			
Max.	9.3	10.5	9.8	7.9	8.5	8.4	(9.2)	9.2	9.5	9.8	(11.0)	8.9			
Min.	1.5	2.3	2.9	2.8	1.8	2.1	(4.0)	4.6	4.7	2.8	(1.5)	2.6			
Range	0.29	0.74	0.83	0.85	0.54	0.61	(1.04)	1.08	1.44	0.71	(0.48)	0.63			
Std. Dev.	29	28	30	26	28	28	23S	30	30	30	19S	27			
No. Obs.															

T DATA BODEGA BAY

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(10.21)	12.03	11.99	9.94	(10.58)	(10.82)	(11.48)	(12.55)	(12.69)	(12.55)	(12.35)	(11.07)	(11.52)	(14.9)	(8.3)
T	(11.4)	13.4	13.4	12.7	(12.5)	(14.2)	(13.3)	(14.9)	(14.9)	(13.4)	(13.3)	(11.4)			
Max.	(9.2)	10.4	10.3	8.3	(9.7)	(9.0)	(10.0)	(10.6)	(10.8)	(11.8)	(11.1)	(10.3)			
Min.	(2.2)	3.0	3.1	4.4	(2.8)	(5.2)	(3.3)	(4.3)	(4.1)	(1.6)	(2.2)	(1.1)			
Range	(0.56)	0.88	0.78	1.01	(0.82)	(1.21)	(0.99)	(1.26)	(1.31)	(0.52)	(0.59)	(0.30)			
Std. Dev.	24S	26	27	28	24S	23S	16S	20S	17S	20S	15S	19S			
No. Obs.															

T AND S DATA FARALLON ISLAND, S. E.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	11.12	11.68	12.58	11.70	11.73	12.65	12.64	14.18	14.39	13.47	13.22	12.23	12.63	16.1	10.0
T	12.9	13.8	14.4	13.1	13.6	13.4	15.0	15.6	16.1	14.6	14.5	14.9			
Max.	10.0	11.1	11.1	10.2	10.2	11.1	11.1	12.2	10.1	11.9	10.0	10.0			
Min.	2.9	2.7	3.3	2.9	3.4	2.3	3.9	3.4	6.0	2.7	4.5	4.9			
Range	0.93	0.66	0.90	0.82	1.14	0.70	0.89	0.96	1.38	0.60	0.83	0.88			
Std. Dev.	31	29	31	30	31	30	31	31	30	31	30	31			
No. Obs.															
Mean	33.33	33.25	32.78	33.59	33.86	33.44	33.76	33.70	33.67	33.57	33.39	33.11	33.45	34.42	26.33
Max.	33.72	33.78	33.89	34.42	34.31	34.10	34.07	34.16	33.83	34.10	33.76	33.96			
Min.	32.83	32.62	30.33	32.98	33.56	28.96	33.34	33.36	33.52	33.21	32.24	26.33			
Range	0.89	1.16	3.56	1.44	0.75	5.12	0.73	0.80	0.31	0.89	1.52	7.63			
Std. Dev.	0.21	0.25	0.73	0.35	0.15	1.06	0.15	0.16	0.06	0.18	0.31	1.34			
No. Obs.	31	29	31	30	29	29	30	31	30	30	29	30			

T DATA SANTA CRUZ

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	11.16	12.87	13.48	13.24	13.58	14.78	15.08	15.40	15.77	14.15	12.81	11.16	13.62	18.0	10.0
T	12.2	14.4	14.7	14.7	17.7	16.3	16.5	17.2	18.0	14.9	13.8	12.2			
	10.0	11.2	12.8	10.9	11.1	12.5	13.9	13.6	14.0	13.1	11.7	10.0			
Range	2.2	3.2	1.9	3.8	6.6	3.8	2.6	3.6	4.0	1.8	2.1	2.2			
Std. Dev.	0.57	0.95	0.52	0.92	1.74	0.99	0.69	0.98	0.99	0.51	0.60	0.71			
No. Obs.	31	29	31	28	30	26	27	30	30	31	30	26			

T AND S DATA PACIFIC GROVE

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	11.52	13.03	13.44	12.64	12.64	13.15	13.86	14.56	14.41	13.19	12.91	11.74	13.09	16.4	10.5
T	12.9	14.4	14.6	13.8	14.5	14.2	15.9	16.1	16.4	14.2	13.8	12.6			
	10.5	11.8	12.6	11.4	11.0	12.0	12.5	13.1	12.3	11.9	11.1	10.7			
Range	2.4	2.6	2.0	2.4	3.5	2.2	3.4	3.0	4.1	2.3	2.7	1.9			
Std. Dev.	0.55	0.72	0.49	0.57	1.16	0.63	0.99	0.80	1.05	0.51	0.60	0.49			
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31			

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	33.40	33.30	33.08	33.36	33.76	33.88	33.80	33.89	33.79	33.65	33.54	33.47	33.58	34.86	31.34
S	33.61	33.50	33.41	33.86	34.06	34.24	33.90	34.86	34.16	33.80	33.77	33.72			
	32.55	33.07	32.31	31.34	33.28	33.65	33.67	33.64	33.50	33.51	33.28	33.13			
Range	1.06	0.43	1.10	2.52	0.78	0.59	0.23	1.22	0.66	0.29	0.49	0.59			
Std. Dev.	0.19	0.12	0.28	0.53	0.18	0.13	0.05	0.20	0.13	0.07	0.09	0.12			
No. Obs.	31	29	30	30	30	30	31	31	30	31	30	29			

T DATA POINT LOBOS: north side

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	11.80	12.83	12.13	(10.97)	(12.51)	(12.54)	12.55	13.95	13.57	12.51	12.45	11.62	(12.45)	(15.6)	(10.3)
T	12.5	14.1	13.0	(12.0)	(14.7)	(14.2)	13.5	15.4	15.6	13.9	13.4	13.0			
	11.0	12.0	10.9	(10.4)	(10.7)	(11.1)	11.6	12.6	12.0	11.5	11.7	10.3			
Range	1.5	2.1	2.1	(1.6)	(4.0)	(3.1)	1.9	2.8	3.6	2.4	1.7	2.7			
Std. Dev.	0.40	0.55	0.55	(0.49)	(1.26)	(0.73)	0.57	0.80	0.91	0.68	0.39	0.61			
No. Obs.	31	29	31	23S	24S	16S	28	25	30	29	28	30			

T DATA POINT LOBOS: south side

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	11.75	12.69	11.52	(10.36)	(11.13)	(11.58)	11.76	12.42	12.55	12.17	12.37	11.63	(11.83)	(14.8)	(9.6)
T	12.5	13.3	12.7	(11.7)	(13.3)	(12.8)	12.7	14.8	13.5	13.8	13.1	12.9			
	10.7	12.1	10.0	(9.6)	(10.4)	(10.0)	10.8	11.3	11.2	11.0	11.8	10.1			
	1.8	1.2	2.7	(2.1)	(2.9)	(2.8)	1.9	3.5	2.3	2.8	1.3	2.8			
Std. Dev.	0.52	0.35	0.69	(0.59)	(0.87)	(0.74)	0.52	0.77	0.59	0.77	0.34	0.62			
No. Obs.	31	29	31	23S	24S	17S	28	25	30	30	28	30			

T DATA PIEDRAS BLANCAS LIGHTHOUSE

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	(13.54)	(13.48)	(12.60)	(12.68)	(12.67)	(12.65)								(14.5)	(12.0)
T	(14.5)	(14.0)	(13.5)	(13.5)	(13.5)	(13.5)									
	(13.0)	(13.0)	(12.0)	(12.0)	(12.0)	(12.0)									
Range	(1.5)	(1.0)	(1.5)	(1.5)	(1.5)	-									
Std. Dev.	(0.44)	(0.38)	(0.49)	(0.45)	(0.47)	-									
No. Obs.	24S	20S	21S	22S	23S	10A									

T DATA MORRO BAY

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	12.14	12.64	11.88	11.61	12.17	13.28	14.20	14.18	13.27	13.13	12.74	11.61	12.74	16.1	9.4
T	12.8	13.8	13.8	14.4	15.6	15.6	16.1	16.1	14.4	14.4	14.4	12.8			
	11.1	11.7	10.0	9.4	10.6	11.1	11.7	11.7	12.2	11.1	11.0	11.1			
	1.7	2.1	3.8	5.0	5.0	4.5	4.4	4.4	2.2	3.3	3.4	1.7			
Std. Dev.	0.34	0.62	0.97	1.08	1.02	1.25	1.19	1.25	0.52	0.80	0.78	0.54			
No. Obs.	31	29	31	30	31	30	31	30	30	31	30	31			

T AND S DATA AVILA

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.26	14.26	14.75	(12.98)	12.89	14.56	16.22	15.65	16.05	15.28	(14.24)	13.28	(14.45)	(18.4)	(10.6)
T	14.4	16.1	17.8	(15.0)	15.0	17.2	18.4	17.8	17.2	17.2	(15.0)	13.9			
	12.2	12.8	12.8	(11.1)	10.6	11.7	14.5	13.9	14.5	13.9	(13.4)	12.2			
	2.2	3.3	5.0	-	4.4	5.5	3.9	3.9	2.7	3.3	-	1.7			
Std. Dev.	0.49	0.80	1.36	-	1.18	1.43	0.92	1.15	0.78	0.90	-	0.52			
No. Obs.	30	28	30	21BC	31	30	31	31	28	30	17AC	30			

T AND S DATA AVILA (cont.)

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	32.54	32.77	33.31	(33.55)	33.86	34.14	34.14	33.66	33.51	33.63	(33.49)	33.50	(33.51)	(34.9)	(25.4)
Max.	34.6	34.0	34.9	(34.2)	34.5	34.6	34.5	34.2	34.0	34.5	(34.2)	34.1	(34.2)	(34.9)	(25.4)
Min.	25.4	29.9	31.1	(32.4)	33.0	33.7	33.7	33.2	33.0	32.0	(30.2)	32.7	(30.2)	(34.9)	(25.4)
Range	9.2	4.1	3.8	-	1.5	0.9	0.8	1.0	1.4	2.5	-	1.4	1.4	1.4	1.4
Std. Dev.	1.70	0.85	0.71	-	0.31	0.24	0.22	0.31	0.30	0.45	-	0.31	0.31	0.31	0.31
No. Obs.	30	28	30	21BC	31	29	31	31	27	30	16AC	30	30	30	30

T DATA SANTA BARBARA

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	12.93	14.51	14.53	14.36	14.95	15.87	16.36	17.90	17.52	17.42	15.54	12.37	15.36	19.4	11.5
Max.	13.9	17.2	16.1	16.5	17.8	17.0	17.7	19.4	19.1	18.1	16.5	14.2	15.36	19.4	11.5
Min.	11.9	12.9	12.6	13.0	12.8	13.5	14.5	16.8	16.2	16.5	13.6	11.5	15.36	19.4	11.5
Range	2.0	4.3	3.5	3.5	5.0	3.5	3.2	2.6	2.9	1.6	2.9	2.7	15.36	19.4	11.5
Std. Dev.	0.52	1.17	0.99	0.80	1.27	0.86	0.89	0.69	0.77	0.41	0.71	0.62	15.36	19.4	11.5
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31	31	31	31

T AND S DATA VENTURA MARINA

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.11	14.54	14.72	15.30	15.95	16.51	17.60	18.58	17.99	17.35	15.50	12.55	15.81	20.0	11.1
Max.	13.9	16.1	15.8	16.1	17.2	17.2	18.9	20.0	19.1	18.6	16.6	14.2	15.81	20.0	11.1
Min.	12.2	13.4	13.4	14.5	14.1	15.6	16.1	17.2	16.7	16.1	14.4	11.1	15.81	20.0	11.1
Range	1.7	2.7	2.4	1.6	3.1	1.6	2.8	2.8	2.4	2.5	2.2	3.1	15.81	20.0	11.1
Std. Dev.	0.44	0.85	0.67	0.37	0.69	0.51	0.66	0.78	0.64	0.63	0.58	0.78	15.81	20.0	11.1
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31	31	31	31

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	33.16	33.11	32.21	33.25	33.50	33.48	33.38	33.37	33.33	33.18	33.34	33.36	33.22	33.75	20.94
Max.	33.44	33.34	33.40	33.53	33.67	33.75	33.55	33.54	33.51	33.51	33.60	33.62	33.22	33.75	20.94
Min.	31.12	32.59	20.94	32.31	33.22	32.89	33.27	33.20	33.08	32.03	33.08	32.82	33.08	33.75	20.94
Range	2.32	0.75	12.46	1.22	0.45	0.86	0.28	0.34	0.43	1.48	0.52	0.80	0.43	33.75	20.94
Std. Dev.	0.42	0.18	2.73	0.33	0.10	0.14	0.07	0.07	0.09	0.31	0.14	0.18	0.09	33.75	20.94
No. Obs.	31	27	30	28	31	30	31	28	30	31	29	31	30	31	31

T DATA POINT DUME: west of

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.21	(13.40)	13.72	12.96	(12.80)	14.60	15.74	17.67	17.11	16.17	14.90	12.31	(14.55)		
T	13.9	(14.4)	14.7	14.3	(16.0)	17.0	19.7	19.9	19.3	17.6	15.9	14.1	(19.9)		(8.9)
Min.	12.6	(12.5)	12.8	11.1	(8.9)	13.1	11.1	14.5	14.8	15.0	12.8	10.8			
Range	1.3	(1.9)	1.9	3.2	(7.1)	3.9	8.6	5.4	4.5	2.6	3.1	3.3			
Std. Dev.	0.33	(0.50)	0.49	0.79	(1.83)	0.92	2.11	1.47	1.12	0.67	0.75	1.26			
No. Obs.	30	22S	31	30	23S	30	31	31	30	31	30	31			

T AND S DATA SANTA MONICA

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.80	14.88	14.57	14.98	15.45	17.66	18.62	19.80	19.72	17.62	15.60	13.47	16.35		
T	14.4	16.1	16.1	17.2	17.8	18.4	20.0	21.1	20.6	19.4	17.2	14.4	21.1		12.8
Min.	13.4	13.9	13.4	12.8	13.9	16.7	16.7	17.2	16.7	16.1	13.4	12.8			
Range	1.0	2.2	2.7	4.4	3.9	1.7	3.3	3.9	3.9	3.3	3.8	1.6			
Std. Dev.	0.35	0.69	0.75	1.01	1.31	0.58	0.90	0.90	0.75	0.73	1.02	0.53			
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31			
Mean	33.83	33.89	(33.46)	(33.71)	33.70	33.81	33.77	34.17	34.18	33.65	33.82	33.44	(33.79)		
Max.	34.4	34.1	(34.2)	(34.1)	34.1	34.2	34.9	34.6	34.9	34.5	34.9	34.5	(34.9)		
Min.	32.7	33.6	(29.8)	(33.2)	33.3	33.3	33.3	33.4	33.6	33.2	33.3	33.0			(29.8)
Range	1.7	0.5	-	-	0.8	0.9	1.6	1.2	1.3	1.3	1.6	1.5			
Std. Dev.	0.27	0.16	-	-	0.22	0.21	0.39	0.32	0.30	0.27	0.41	0.34			
No. Obs.	31	28	9A	19BC	31	30	31	30	30	31	29	31			

T AND S DATA BALBOA

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.91	14.98	14.96	15.25	15.51	18.35	18.50	19.38	19.08	17.69	15.96	13.81	16.45		
T	14.90	16.40	16.00	16.60	18.35	20.67	21.30	20.60	20.22	19.17	17.20	15.00	21.30		
Min.	12.80	14.00	13.50	12.50	12.60	15.67	14.20	17.00	17.90	15.00	14.40	12.30			12.30
Range	2.10	2.40	2.50	4.10	5.75	5.00	7.10	3.60	2.32	4.17	2.80	2.70			
Std. Dev.	0.49	0.79	0.66	0.78	1.40	1.18	2.13	0.92	0.66	0.97	0.71	0.64			
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31			
Mean	33.34	33.30	33.35	33.46	33.56	33.63	33.64	33.65	33.59	33.54	33.49	33.44	33.50	33.88	
Max.	33.76	33.44	33.51	33.66	33.74	33.88	33.72	33.78	33.68	33.60	33.71	33.68			
Min.	33.15	33.19	32.92	32.93	33.21	33.50	33.55	33.50	33.49	33.30	31.72	32.98			31.72
Range	0.61	0.25	0.59	0.73	0.53	0.38	0.17	0.28	0.19	0.30	1.99	0.70			
Std. Dev.	0.13	0.07	0.13	0.16	0.09	0.08	0.04	0.06	0.05	0.06	0.37	0.12			
No. Obs.	31	28	30	28	28	28	31	31	29	30	26	28			

T DATA DANA POINT: east of

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	13.43	14.64	15.22	16.22	16.20	19.11	19.94	20.20	19.52	17.81	16.60	13.88	16.90	23.2	12.1
T	14.7	15.7	16.0	17.5	20.0	23.0	23.2	22.5	21.7	19.1	17.9	15.3			
	12.1	13.6	13.4	15.0	13.9	15.5	14.6	17.6	17.7	16.3	13.4	12.8			
Range	2.6	2.1	2.6	2.5	6.1	7.5	8.6	4.9	4.0	2.8	4.5	2.5			
Std. Dev.	0.66	0.66	0.59	0.68	1.54	1.64	2.18	1.23	0.81	0.80	0.93	0.67			
No. Obs.	27	25	28	29	30	30	31	31	30	31	25	30			

T AND S DATA SAN CLEMENTE

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	14.06	14.97	14.78	15.72	15.68	18.87	19.68	19.93	19.57	17.95	16.31	14.28	16.82	22.83	12.56
T	15.00	15.83	16.11	16.67	19.22	20.97	22.83	21.67	21.00	19.17	17.22	15.56			
	12.89	13.89	13.13	14.17	12.56	15.28	16.17	17.89	18.33	16.00	12.78	13.06			
Range	2.11	1.94	2.98	2.50	6.66	5.69	6.66	3.78	2.67	3.17	4.44	2.50			
Std. Dev.	0.51	0.59	0.93	0.48	1.60	1.45	1.83	0.96	0.66	0.83	1.09	0.66			
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31			
Mean	33.57	33.49	33.42	33.57	33.70	33.74	33.75	33.65	33.68	33.62	33.66	33.61	(33.62)	(34.08)	(32.26)
Max.	33.75	33.70	33.64	33.68	33.92	33.93	33.98	33.84	33.86	33.74	34.08	33.78			
Min.	33.04	33.32	32.26	33.16	33.60	33.60	33.52	33.28	33.57	33.44	33.52	33.52			
Range	0.71	0.38	1.38	0.52	0.32	0.33	0.46	0.56	0.29	0.30	0.56	(0.26)			
Std. Dev.	0.12	0.09	0.24	0.10	0.06	0.09	0.09	0.10	0.06	0.08	0.11	(0.08)			
No. Obs.	31	29	30	30	30	30	30	31	30	30	30	31			

T DATA OCEANSIDE

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	14.24	15.01	15.42	15.81	16.27	18.63	18.61	20.22	20.16	17.75	16.41	13.88	16.87	22.3	11.9
T	15.4	15.8	16.1	16.9	19.5	20.4	22.2	22.3	21.1	19.8	18.3	15.6			
	13.3	14.0	14.5	15.5	12.7	16.1	15.0	18.1	18.8	15.3	12.6	11.9			
Range	2.1	1.8	1.6	1.4	6.8	4.3	7.2	4.2	2.3	4.5	5.5	3.7			
Std. Dev.	0.49	0.50	0.41	0.34	1.50	1.06	1.74	1.13	0.46	1.24	1.38	0.87			
No. Obs.	31	29	31	30	31	30	31	31	30	31	30	31			

T AND S DATA LA JOLLA: end of Scripps Pier, surface

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	14.08	14.78	15.23	16.08	16.00	18.67	20.18	20.26	20.09	17.55	16.15	14.07	16.93	22.90	13.02
T	14.80	15.70	16.20	17.30	18.40	20.75	22.90	21.68	21.12	18.95	17.68	15.70			
Min.	13.05	14.00	13.65	14.87	13.63	17.30	16.40	17.70	18.62	15.01	13.40	13.02			
Range	1.75	1.70	2.55	2.43	4.77	3.45	6.50	3.98	2.50	3.94	4.28	2.68			
Std. Dev.	0.40	0.47	0.52	0.56	1.20	0.77	2.00	1.16	0.75	1.20	1.27	0.74			
No. Obs.	30	29	31	30	30	30	31	31	30	31	30	31			
1968	33.47	33.48	33.47	33.55	33.70	33.77	33.82	33.76	33.73	33.66	33.69	33.58	33.64	34.38	33.34
T	33.78	33.61	33.70	33.68	34.00	33.92	34.38	34.09	33.95	33.84	33.87	33.67			
Min.	33.41	33.35	33.34	33.42	33.62	33.68	33.69	33.60	33.59	33.54	33.45	33.46			
Range	0.37	0.26	0.36	0.26	0.38	0.24	0.69	0.49	0.36	0.30	0.42	0.21			
Std. Dev.	0.07	0.06	0.07	0.06	0.07	0.07	0.12	0.09	0.08	0.07	0.10	0.05			
No. Obs.	31	29	30	29	30	30	31	30	30	31	30	31			

T AND S DATA LA JOLLA: end of Scripps Pier, 5-meter bottom

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	MEAN	MAX.	MIN.
1968	14.09	14.83	15.05	15.89	15.41	18.24	19.49	18.80	18.95	16.92	16.07	14.08	16.48	22.91	12.40
T	15.00	15.80	15.80	17.10	18.05	20.15	22.91	21.44	21.02	18.80	17.75	15.80			
Min.	12.95	13.70	13.50	13.90	12.40	13.98	16.12	15.42	15.70	13.90	13.56	12.90			
Range	2.05	2.10	2.30	3.20	5.65	6.17	6.79	6.02	5.32	4.90	4.19	2.90			
Std. Dev.	0.45	0.50	0.57	0.69	1.47	1.31	2.15	1.94	1.65	1.46	1.07	0.73			
No. Obs.	30	29	31	30	30	30	31	31	30	31	29	29			
1968	33.46	33.47	33.45	33.55	33.67	33.75	33.81	33.74	33.66	33.66	33.70	33.63	33.63	34.28	33.33
T	33.82	33.83	33.53	33.73	33.78	33.89	34.08	34.28	33.84	33.94	33.99	33.89			
Min.	33.38	33.36	33.33	33.38	33.58	33.44	33.38	33.43	33.55	33.49	33.46	33.46			
Range	0.44	0.47	0.20	0.35	0.20	0.45	0.70	0.85	0.29	0.45	0.53	0.43			
Std. Dev.	0.08	0.10	0.05	0.09	0.05	0.09	0.12	0.15	0.07	0.10	0.12	0.10			
No. Obs.	31	29	31	29	30	29	31	31	30	31	29	29			

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