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OREGON STATE UNIVERSITY

**Surface Temperature and Salinity
Observations at Pacific Northwest
Shore Stations during 1971**

by

Bruce Wyatt

and

William Gilbert

Office of Naval Research
Contract N00014-67-A-0369-0007
Project NR 083-102

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Data Report 51

Reference 72-2

March 1972

DEPARTMENT OF OCEANOGRAPHY

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OREGON STATE UNIVERSITY

Corvallis, Oregon 97331

SURFACE TEMPERATURE AND SALINITY OBSERVATIONS

AT PACIFIC NORTHWEST SHORE STATIONS

DURING 1971

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John V. Byrne
Chairman

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INTRODUCTION

During 1971 the Department of Oceanography, Oregon State University, continued its program of shore sampling of ocean temperatures and salinities along the coast of the Pacific Northwest. Observations for 1960 through 1970 are contained in nine Data Reports which are listed following the references. The data in this report were collected at six stations. Table I lists the station names and locations, sampling sites, and names of the observers at each station. The assistance of these observers is greatly appreciated.

PROCEDURE

The original goals of the shore sampling program were to obtain basic information about the distribution of temperature and salinity along the coast and to aid in monitoring offshore conditions. Detailed analysis of the early data showed that we can classify Oregon coastal waters into several types according to the major processes that affect them (Pattullo and Denner, 1965). These results led us to modify the sampling program to provide us with more detailed data.

In 1971 data were taken daily, and generally at high tide. Except as noted in Table I, sampling sites were located at points exposed to the open ocean where the influence of fresh water runoff was minimal.

Temperatures were read to the nearest 0.1C with a calibrated thermometer. The observations are considered accurate to approximately $\pm 0.2C$.

Most salinity data were computed from hydrometer readings and tables (Zerbe and Taylor, 1953). Hydrometers were calibrated against an inductive salinometer which has an accuracy of about $\pm 0.003\text{‰}$ (Brown and Hamon, 1961). The accuracy of salinity determined by a corrected hydrometer is about $\pm 0.2\text{‰}$ determined by running replicate samples on an inductive salinometer. Newport salinities were bottled samples run on an inductive salinometer.

Table II lists chronologically all the observations taken at each coast station in 1971. Table III is a summary of monthly means, maxima, minima, and numbers of observations for each station. All times are Pacific Standard Time (+ 8) except those from 0200 25 April to 0200 31 October 1970 when Daylight Standard Time was in effect (+ 7).

Figures 1 through 6 are plots of the temperature and salinity data appearing in Table II. A light line is used in the graph to represent the yearly mean of the plotted values. The cyclic appearance of some of the data results from the samples being taken at the same time each day. Future data will be taken at high tide.

REFERENCES

- Brown, N. L. and B. V. Hamon, 1961. An inductive salinometer. *Deep-Sea Res.*, 7(4): 65-75.
- Pattullo, J. G. and W. Denner, 1965. Processes affecting seawater characteristics along the Oregon coast. *Limnol. Oceanogr.*, 10(3): 443.
- Zerbe, W. B. and C. B. Taylor, 1953. Sea water temperature and density reduction tables, U.S. Dept. Comm., Coast and Geod. Surv. Spec. Publ. No. 298. 21 pp.

CHRONOLOGICAL LISTING OF

SHORE STATION DATA REPORTS

- Kujala, N. and B. Wyatt, 1961. Surface temperature and salinity observations at shore stations on the Oregon coast for 1960. Data Report No. 6, Department of Oceanography, Oregon State University, Ref. 61-4. 23 pp.
- Oliphant, M., B. Wyatt and N. Kujala, 1962. Surface temperature and salinity observations at shore stations on the Oregon coast for 1961, Data Report No. 8, Department of Oceanography, Oregon State University, Ref. 62-11. 16 pp.
- Still, R., B. Wyatt and N. Kujala, 1963. Surface temperature and salinity observations at shore stations on the Oregon coast for 1962. Data Report No. 11, Department of Oceanography, Oregon State University, Ref. 63-27. 15 pp.
- Wyatt, B., R. Still and C. Haag, 1965. Surface temperature and salinity observations at Pacific Northwest shore stations for 1963 and 1964, Data Report No. 21, Department of Oceanography, Oregon State University, Ref. 65-20. 18 pp.

Listing of Shore Station Data Reports (continued)

- Wyatt, B. and W. Gilbert, 1967. Surface temperature and salinity observations at Pacific Northwest shore stations for 1965 and 1966, Data Report No. 25, Department of Oceanography, Oregon State University, Ref. 67-8. 28 pp.
- Gilbert, William and Bruce Wyatt, 1968. Surface Temperature and Salinity Observations at Pacific Northwest Shore Stations for 1967, Data Report No. 28, Department of Oceanography, Oregon State University, Ref. 68-1. 21 pp.
- Wyatt, B. and W. Gilbert, 1969. Surface temperature and salinity observations at Pacific Northwest shore stations for 1968, Data Report No. 37, Department of Oceanography, Oregon State University, Ref. 69-7. 20 pp.
- Wyatt, B. and W. Gilbert, 1970. Surface temperature and salinity observations at Pacific Northwest shore stations during 1969, Data Report No. 41, Department of Oceanography, Oregon State University, Ref. 70-11. 21 pp.
- Wyatt, B. and W. Gilbert, 1971. Surface temperature and salinity observations at Pacific Northwest shore stations during 1970. Data Report No. 47, Department of Oceanography, Oregon State University, Ref. 71-8. 19 pp.
- Bourke, R. H., B. Glenne, and B. W. Adams, 1971. The nearshore physical oceanographic environment of the Pacific Northwest Coast, Department of Oceanography, Oregon State University, Ref. 71-45. 127 pp.

TABLE I. LIST OF SHORE STATIONS

Station Name and Location	Sampling Site	Observer
Columbia River Lightship 46°11.2'N, 124°11.0'W	Five miles southwest of Columbia River South Jetty	U.S. Coast Guard WLV-604, WLV-605
Seaside 45°49.7'N, 123°55.6'W	At pump outlet into Seaside Aquarium settling tank from surf inlet pipe on beach	Mr. John O'Brian
Marine Science Center 44°37.2'N, 124°01.7'W	At pump outlet into the Center from bottom of Yaquina Bay	Mr. Ronald Jones
Charleston 43°37.2'N, 124°19.7'W	From surface inside bay mouth	Mr. Alan McGie
Port Orford 42°44.7'N, 124°30.4'W	In vicinity of Oregon Fish Commission tanks	Mr. Robert Courtright
Crescent City, California 41°44.6'N, 124°11.7'W	Off end of Crescent City Municipal Wharf	Mr. Darold Richcreek

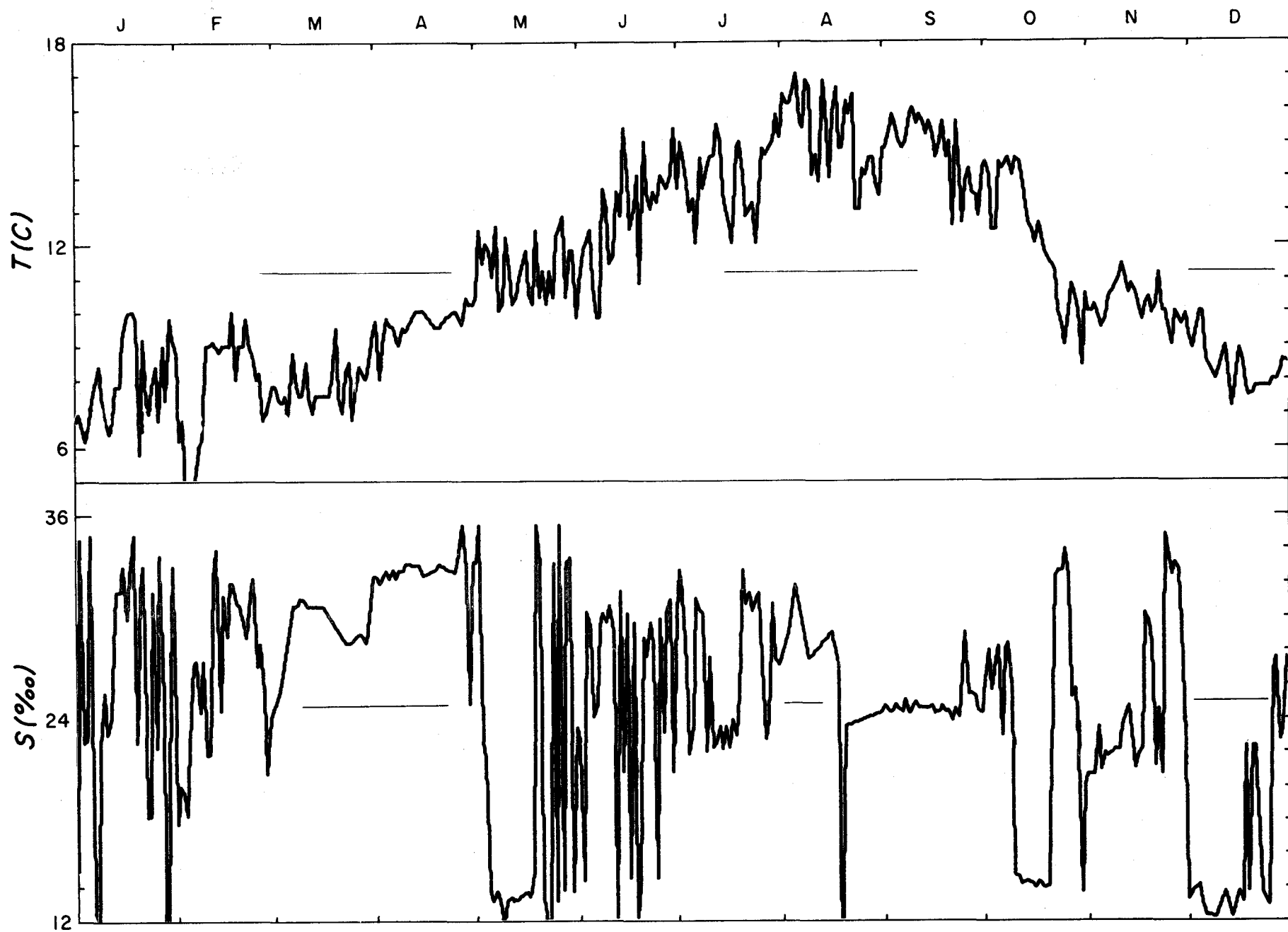


Figure 1. Daily temperature and salinity at Columbia River Lightship.
Light line indicates yearly mean.

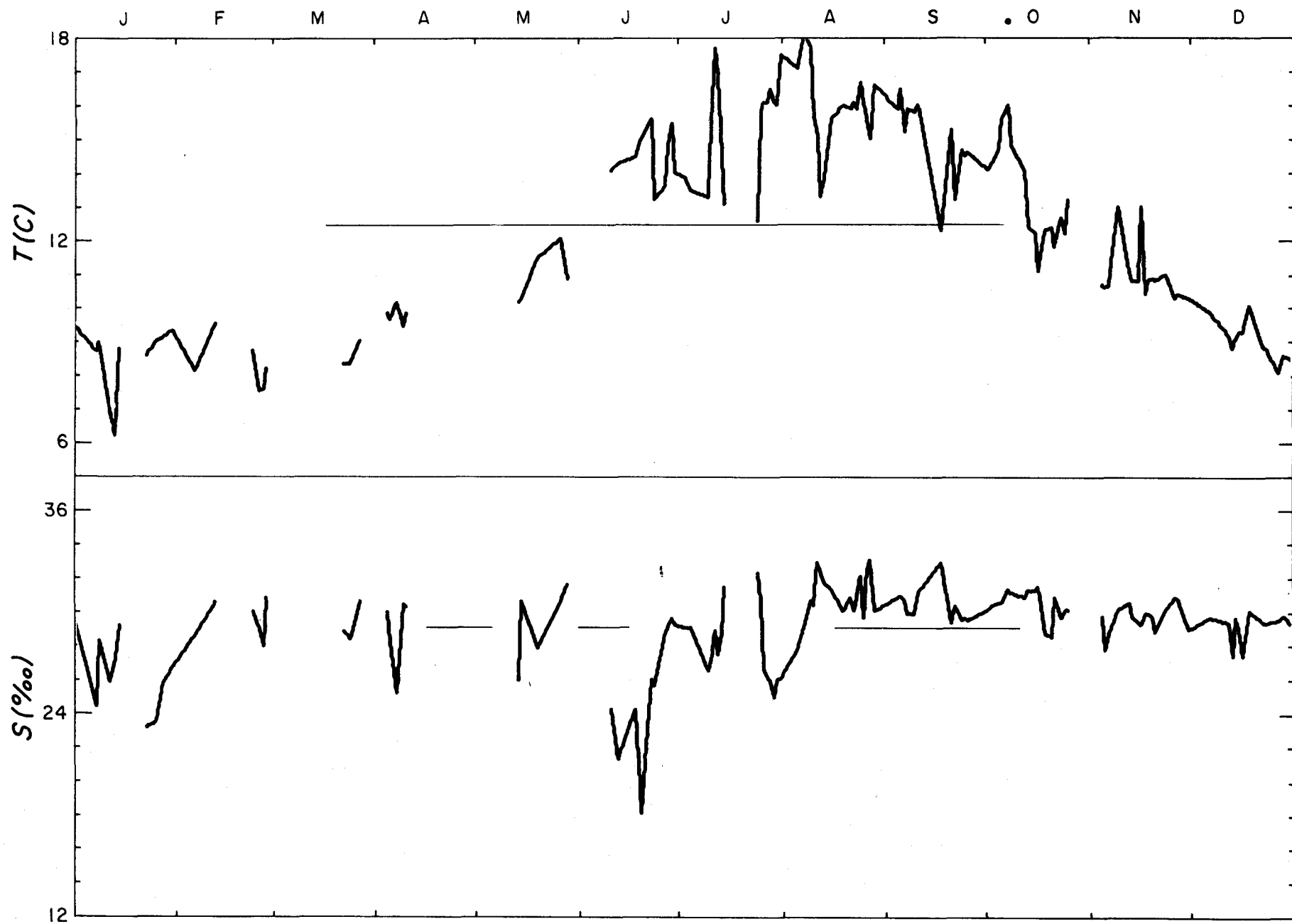


Figure 2. Daily temperature and salinity at Seaside. Light line indicates yearly mean.

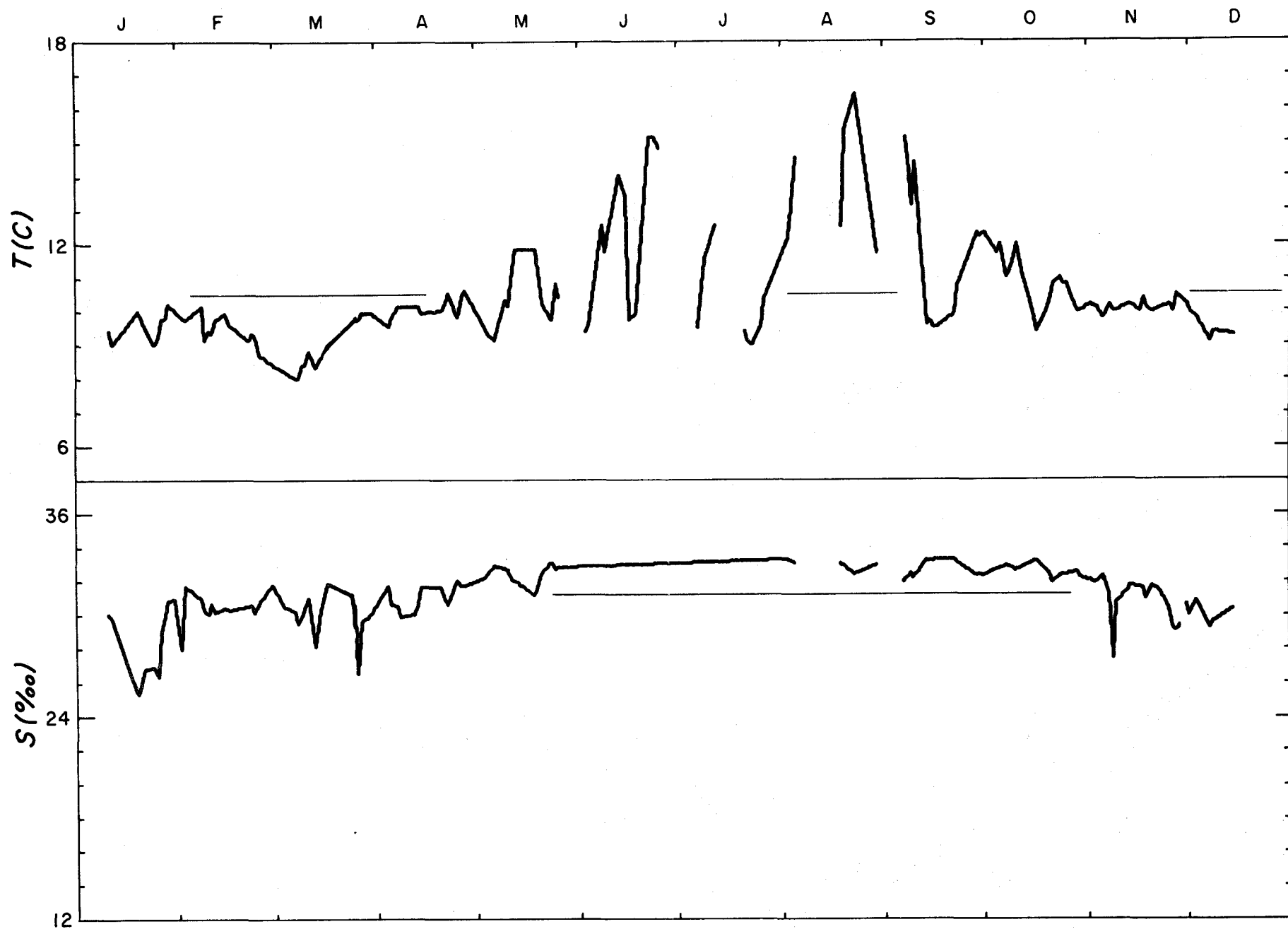


Figure 3. Daily temperature and salinity at Newport. Light line indicates yearly mean.

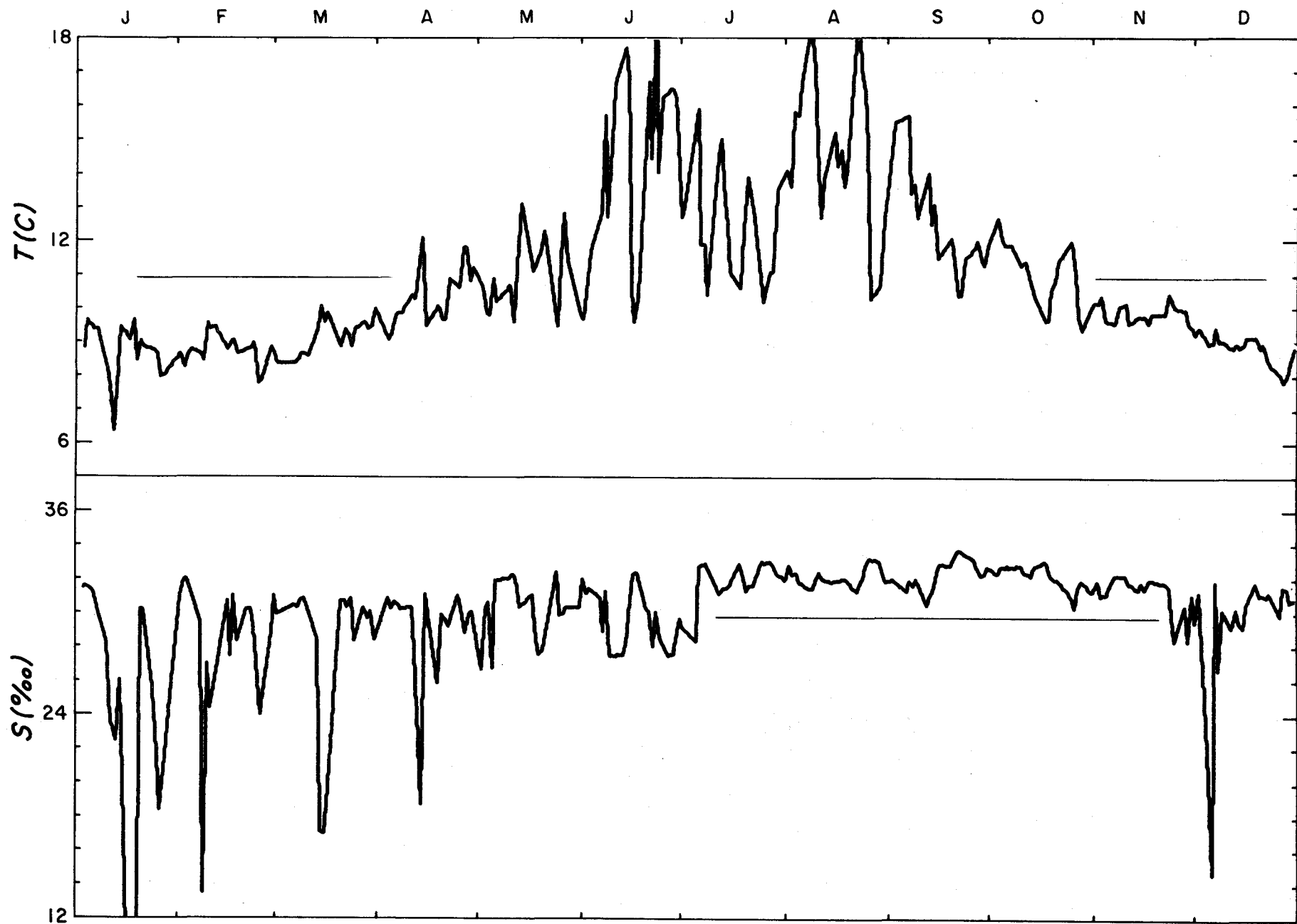


Figure 4. Daily temperature and salinity at Charleston. Light line indicates yearly mean.

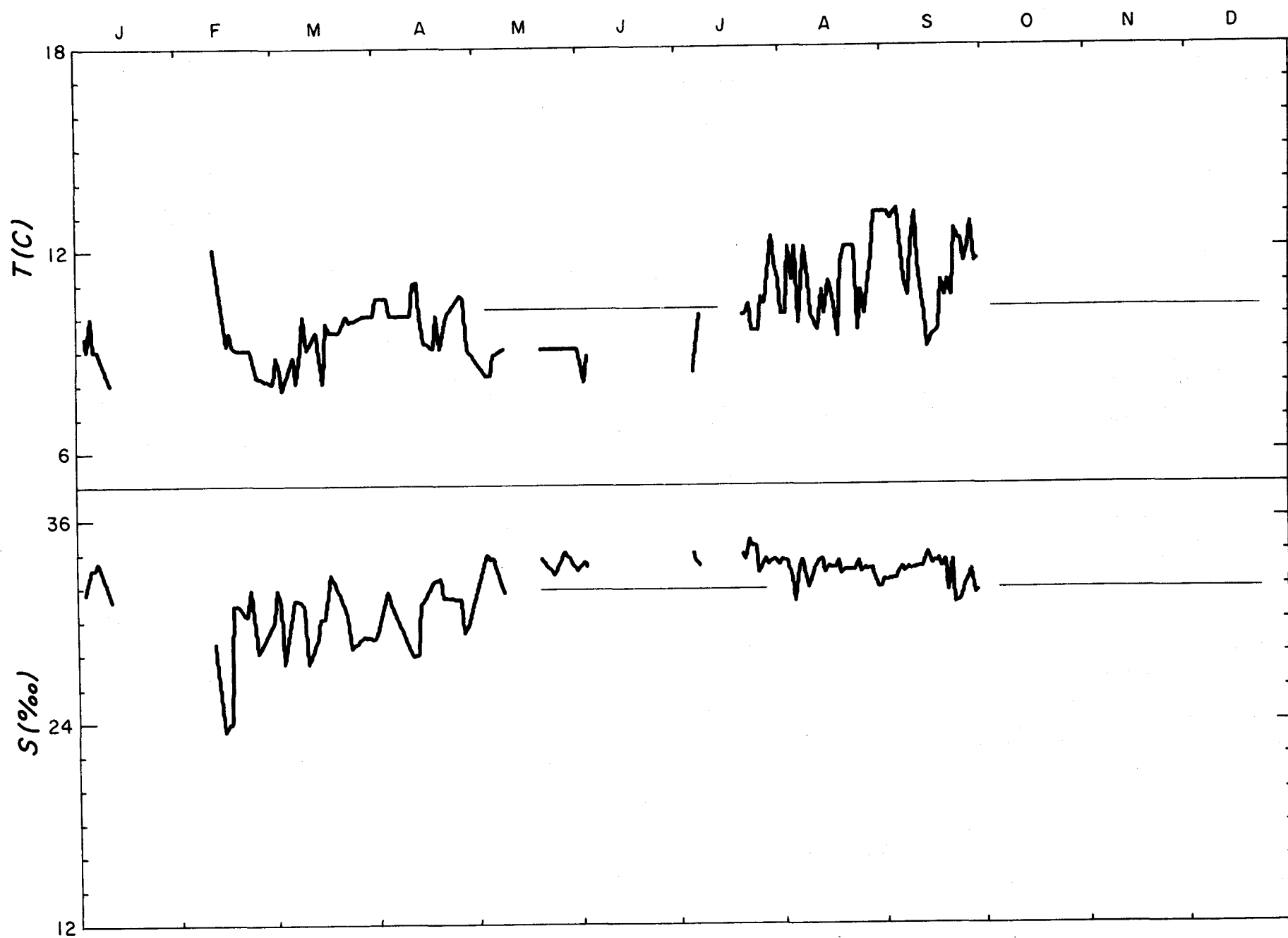


Figure 5. Daily temperature and salinity at Port Orford. Light line indicates yearly mean.

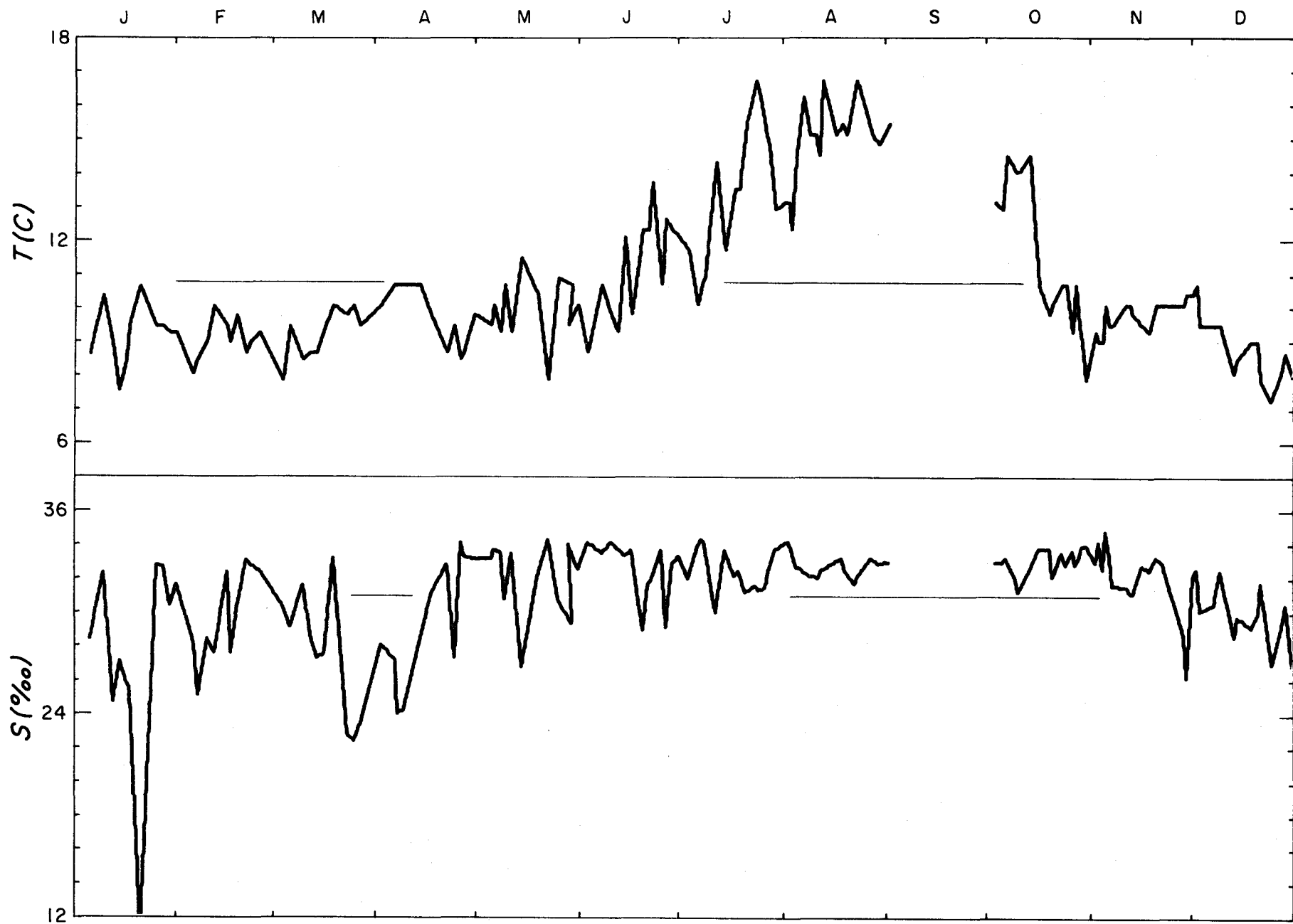


Figure 6. Daily temperature and salinity at Crescent City, California.
Light line indicates yearly mean.

TABLE II. TEMPERATURE AND SALINITY OBSERVATIONS.

COLUMBIA RIVER LIGHTSHIP - 1971														
DATE		TIME	T	S	DATE		TIME	T	S	DATE		TIME	T	S
JAN.	2	1101	6.8	15.1	APR.	1	1101	9.4	32.3		7	0800	12.0	31.1
	3	1101	7.0	34.6		2	1101	9.7	32.4		8	0842	14.5	30.4
	4	1101	6.5	22.6		3	1101	8.0	31.9		9	0918	13.6	30.2
	5	1101	6.2	22.8		4	1101	9.0	32.3		10	1000	14.2	22.1
	6	1101	6.8	34.9		5	1101	9.8	32.7		11	1036	14.5	27.7
	7	1101	7.4	18.2		6	1101	9.6	32.2		12	1118	14.6	22.3
	8	1101	8.0	4.6		7	1101	9.5	32.8		13	1200	15.5	22.6
	9	1101	8.4	22.3		8	1101	9.2	32.2		14	0059	15.0	23.6
	10	1101	7.2	25.6		9	1101	9.0	32.7		15	0154	13.5	22.2
	11	1101	6.8	23.1		10	1101	9.5	32.7		16	0300	13.0	23.6
	12	1101	6.4	24.0		11	1101	9.4	33.1		17	0412	12.6	22.3
	13	1101	6.8	28.2		14	1101	10.0	33.0		18	0318	12.0	24.0
	14	1101	7.8	31.5		15	1101	10.0	33.0		19	0618	14.8	23.0
	15	1101	7.8	31.5		16	1101	10.0	32.4		20	0712	15.0	25.4
	16	1101	9.2	33.0		20	1101	9.5	32.8		21	0800	14.0	32.8
	17	1101	9.8	29.9		21	1101	9.5	33.1		22	0842	12.8	30.7
	18	1101	10.0	32.5		23	1101	9.8	32.8		23	0918	13.0	31.4
	19	1101	10.0	34.9		26	1101	10.0	32.6		24	0954	13.2	30.3
	20	1101	9.8	22.6		28	0354	9.6	35.4		25	1030	12.0	31.0
	21	1101	5.8	31.5		29	0442	10.4	32.8		26	1100	13.5	31.4
	22	1101	9.2	33.0		30	0531	10.2	24.9		27	1130	14.8	27.3
	23	1101	7.4	18.2	MAY	1	0630	10.2	33.3		28	0012	14.6	22.8
	24	1101	7.0	18.3		2	0736	10.4	33.2		29	0100	14.8	23.9
	25	1101	7.8	31.5		3	2206	12.4	35.4		30	0154	15.0	30.8
	26	1101	8.4	22.3		4	2248	11.4	22.7		31	0259	15.8	27.5
	27	1101	6.8	33.7		5	2331	12.0	21.8	AUG.	1	0354	15.1	27.2
	28	1101	9.0	24.8		6	1154	11.8	13.8		2	0500	16.4	
	29	1101	7.4	4.6		7	0006	11.0	13.3		3	0600	16.1	
	30	1101	9.8	26.4		8	0036	12.5	13.9		4	0648	16.1	29.0
	31	1101	9.2	33.0		9	0112	19.0	13.3		5	0736	16.6	
FEB.	1	1101	8.8	17.8		10	0142	10.2	11.9		6	0812	17.0	31.9
	2	1101	6.2	20.1		11	0212	12.2	13.3		7	0854	15.6	
	3	1101	6.8	19.6		12	0248	11.2	13.5		8	0930	15.4	
	4	1101	4.1	18.3		13	0318	10.2	13.3		9	1012	16.8	
	5	1101	4.6	24.4		14	0400	10.4			10	1048	16.6	27.5
	6	1101	4.8	27.2		15	0448	11.0			11	1130	14.0	
	7	1101	5.0	27.4		17	0654	11.8	13.8		12	0030	14.6	
	8	1101	6.0	24.4		18	2130	10.5	13.5		13	0130	13.8	
	9	1101	6.2	27.4		19	2218	10.2	14.9		14	0242	16.8	
	10	1101	9.0	21.9		20	2306	12.4	35.4		15	0348	16.0	
	11	1030	9.0	21.9		21	2354	10.4	33.2		16	0500	13.9	
	12	1030	9.1	32.2		22	1300	11.2	13.5		17	0600	15.8	29.1
	13	1045	9.0	34.0		23	0036	10.2	11.9		18	0654	16.6	
	14	1101	8.8	24.5		24	0124	11.2	12.1		19	0736	14.8	27.2
	15	1101	9.0	31.3		25	0206	10.4	33.2		20	0812	14.8	8.6
	16	1101	9.0	28.9		26	0248	12.2	13.3		21	0848	16.2	23.6
	17	1145	9.0	32.0		27	0336	12.4	35.4		22	0924	15.8	
	18	1101	10.0	32.0		28	0418	12.8	13.9		23	0948	16.4	
	19	1101	8.0	30.9		29	0506	10.4	33.2		24	1018	13.0	
	20	1101	9.0	30.7		30	0600	11.8	33.5		25	1042	13.0	
	21	1101	9.0	29.7		31	2024	11.8	13.8		26	1112	14.2	
	22	1101	9.8	28.8	JUNE	1	0630	9.8	23.5		27	0012	14.0	
	23	1101	8.9	31.3		2	0736	10.8	22.7		28	0106	14.5	
	24	1101	8.8	32.3		3	0848	11.8	14.5		29	0206	14.5	
	25	1101	8.0	27.1		4	1000	12.0	30.3		30	0318	13.8	
	26	1051	8.2	23.5		5	1100	12.4	29.5		31	0424	13.4	
	27	1101	6.8	25.7		6	1154	10.8	24.1	SEP.	1	0524	14.8	24.4
	28	1101	7.0	20.8		7	0006	9.8	24.8		2	0618	14.8	24.8
MAR.	1	1101	7.4	24.1		8	0036	9.8	29.4		3	0700	15.3	24.5
	2	1201	7.8			9	0112	13.6	30.2		4	0106	15.8	24.4
	3	1201	7.8			10	0142	13.0	29.7		5	0154	15.4	24.9
	4	1101	7.4	25.7		11	0212	11.4	30.7		6	0242	15.0	24.6
	5	1101	7.3			12	0248	11.6	29.1		7	0230	14.8	24.4
	6	1101	7.5			13	0318	13.5	12.3		8	0324	15.0	25.2
	7	1101	7.0			14	0400	12.8	31.5		9	0418	15.8	24.3
	8	1101	8.9	33.7		15	0448	15.4	20.9		10	0618	16.0	24.6
	9	1101	8.0	30.6		16	0548	13.9	30.2		11	0112	15.5	25.0
	10	1101	7.5	31.1		17	0654	12.4	14.6		12	0218	15.8	24.6
	11	1101	7.5	31.0		18	0818	13.0	29.7		13	0324	15.5	24.6
	12	1101	8.5	30.7		19	0936	14.0	12.3		14	0436	15.2	24.6
	13	1101	7.5	30.6		20	1048	10.8	14.2		15	0530	15.6	24.6
	14	1101	7.0			21	1154	15.0	28.8		16	0624	15.2	24.8
	15	1101	7.5			22	0100	13.5	27.7		17	0106	14.5	24.3
	17	1101	7.5	33.6		23	0036	13.0	29.7		18	0112	15.0	24.5
	19	1101	7.5			24	0124	13.5	28.5		19	0154	15.6	24.8
	20	1101	8.0			25	0200	13.2	14.6		20	0230	14.5	24.4
	21	1101	9.5			26	0248	14.0	29.9		21	0306	15.0	24.5
	22	1101	7.5			27	0336	13.8	23.2		22	0324	12.5	23.9
	23	1101	7.0			28	0418	13.6	33.2		23	0424	15.6	24.6
	24	1101	8.2	28.5		29	0506	14.0	31.0		24	0506	14.0	24.1
	25	1101	8.5	28.5		30	0600	15.4	20.9		25	0548	12.6	
	26	1101	6.8		JULY	1	0242	13.6	30.2		26	0654	13.8	29.1
	27	1101	7.5			2	0342	15.0	32.8		27	0130	14.2	25.4
	28	1101	8.4	29.0		3	0442	14.6	31.4		28	0236	13.5	25.5
	29	1101	8.2	28.9		4	0536	13.8	27.0		29	0342	13.4	25.3
	30	1101	8.0	28.5		5	0624	12.9	21.9		30	0442	12.8	24.5
	31	1101	8.5			6	0712	13.3	23.6	OCT.	1	0336	14.2	24.4

COLUMBIA RIVER LIGHTSHIP (continued)

DATE	TIME	T	S
OCT. 2	0424	14.4	26.2
3	0506	14.0	28.1
4	2342	12.4	25.7
5	0036	12.4	27.4
6	0124	14.4	28.3
7	0218	14.2	23.0
8	0312	14.4	28.1
9	0412	14.5	28.5
10	0518	14.0	25.9
11	2348	14.5	14.9
12	0054	14.4	14.7
13	0154	14.0	14.3
14	0254	13.1	14.5
15	0342	12.6	14.5
16	0424	12.4	14.3
17	0500	12.0	14.1
18	0336	12.6	14.5
20	0054	11.8	14.1
21	0130	11.5	14.2
23	0259	11.2	32.4
24	0342	10.0	32.7
25	0436	9.6	32.7
26	0542	9.0	34.0
27	2354	10.0	32.3
28	0130	10.8	25.3
29	0200	10.4	25.8

DATE	TIME	T	S
30	0254	10.0	22.3
31	0242	8.4	13.8
NOV. 1	0530	10.5	20.1
2	0618	10.0	20.8
3	0706	10.0	20.8
4	0748	10.2	20.8
5	0836	9.8	23.6
6	0930	9.5	21.0
7	1024	9.8	22.1
8	1136	10.4	21.8
10	0112	10.7	22.2
11	0206	11.0	22.2
12	0300	11.4	23.6
14	0436	10.5	24.8
15	0518	10.8	23.2
16	0600	10.5	21.1
17	0636	10.2	21.8
18	0712	9.7	22.3
19	0742	10.2	30.2
20	0818	10.4	29.7
21	0854	9.9	28.5
22	0936	10.2	21.3
23	1036	11.1	24.6
24	1148	10.0	20.8
25	0018	10.0	34.9
27	0206	9.0	32.5

DATE	TIME	T	S
28	0306	10.0	33.2
29	0406	9.8	32.7
30	0500	9.6	29.5
DEC. 1	1154	9.9	22.6
2	1242	9.3	13.4
3	1330	8.9	13.9
5	1500	10.0	14.3
6	1548	10.0	13.3
7	1642	8.6	12.5
10	0748	8.0	12.4
13	0954	9.0	13.9
15	1118	7.2	12.4
17	1236	8.9	13.9
18	1312	8.5	13.3
19	1348	7.8	22.5
20	1430	7.5	13.9
21	1518	7.6	22.5
22	1606	7.8	22.5
24	0618	7.8	13.8
26	0800	7.8	13.1
27	0854	8.0	26.9
28	0954	8.0	27.7
29	1048	8.2	22.8
30	1142	8.6	23.5
31	1230	8.5	27.7

SEASIDE - 1971

DATE	TIME	T	S
JAN. 1	1515	9.5	30.1
8	0930	8.7	24.5
9	0930	9.0	28.4
12	1100	7.0	25.9
14	1530	6.2	27.3
15	1330	8.8	29.3
23	0930	8.6	23.3
26	0930	9.0	23.6
28	1400	9.1	25.8
31	1530	9.3	26.8
FEB. 7	1100	8.1	28.7
13	1400	9.5	30.6
24	1100	8.7	30.1
26	1300	7.5	29.0
27	1430	7.6	28.0
28	1600	8.2	30.9
MAR. 23	0855	8.3	28.9
25	1000	8.3	28.4
28	1400	9.0	30.6
APR. 5	2210	9.8	30.0
6	1000	9.6	28.2
8	1030	10.1	25.2
10	1100	9.4	30.5
11	1435	9.8	30.3
25	1530	10.9	28.5
MAY 4	1030	10.8	29.7
14	1700	10.1	26.0
15	1630	10.2	30.6
20	1130	11.4	27.8
27	1600	12.0	30.6
29	1630	10.8	31.6
JUNE 11	1630	14.0	24.2
13	1600	14.2	21.3
18	2030	14.4	24.2
20	2115	14.9	18.1
23	1430	15.5	26.0
24	1600	13.1	25.6
27	1545	13.5	28.7
28	1700	14.7	29.0
29	1900	15.4	29.6
30	1930	13.9	29.2
JULY 3	2000	13.8	29.0
5	2045	13.4	29.0
10	1530	13.2	26.5

DATE	TIME	T	S
JULY 11	1500	15.3	27.0
12	1530	17.6	28.9
13	1600	16.8	27.4
14	1635	14.4	28.6
15	1330	13.0	31.4
25	1400	12.5	32.2
26	1550	15.7	30.6
27	1500	16.0	26.6
28	1525	16.0	26.1
29	1600	16.4	25.9
30	1645	16.0	24.9
31	2000	15.9	25.9
AUG. 1	2000	17.4	26.1
6	1230	17.0	27.7
8	1425	18.0	29.0
10	1500	17.6	30.6
11	1500	15.6	30.3
12	1515	15.0	32.9
13	1700	13.2	32.4
14	1800	13.7	31.7
16	1930	15.5	31.3
20	1230	15.9	30.0
22	1430	15.8	30.8
23	1400	16.0	30.0
24	1430	15.8	30.8
25	1530	16.6	32.1
26	1330	16.0	29.6
27	1525	15.3	32.4
28	1600	14.9	33.0
29	1600	16.5	30.0
SEP. 5	1230	15.8	30.8
6	1645	16.4	30.9
7	1300	15.1	30.6
8	1315	15.8	29.8
10	1505	15.7	29.8
11	1530	15.9	31.0
18	1340	12.2	32.9
21	1330	15.2	29.3
22	1330	13.1	30.3
24	1400	14.6	29.4
25	1525	14.4	29.6
26	1545	14.5	29.4
OCT. 2	1040	14.0	30.1
3	1115	14.2	30.3

DATE	TIME	T	S
OCT. 5	1200	14.6	30.5
6	1300	15.5	30.5
8	1340	15.9	31.3
9	1430	14.7	31.0
13	0925	14.0	30.8
14	1030	12.3	31.2
16	1230	12.1	31.2
17	1100	11.0	31.4
19	1125	12.2	28.6
21	1450	12.3	28.5
22	1350	11.7	30.8
24	1345	12.6	29.6
25	1445	12.1	30.0
26	1600	13.1	30.1
NOV. 5	1120	10.6	29.7
6	1400	10.5	27.7
7	1525	10.6	28.6
10	1630	12.9	30.1
13	0910	11.0	30.5
14	0845	10.7	29.7
16	1100	10.7	29.3
17	0935	12.9	29.2
18	1015	10.3	29.8
19	1050	10.7	29.8
20	1045	10.8	29.6
21	1250	10.7	28.7
24	1445	10.9	30.1
27	0900	10.2	30.8
28	1000	10.3	30.6
DEC. 1	0835	10.2	28.9
7	1430	9.8	29.6
13	0940	9.1	29.3
14	0940	8.7	27.3
15	1035	9.0	29.6
16	1030	9.2	28.5
17	1015	9.2	27.3
19	1230	10.0	30.0
23	1530	8.8	29.3
24	1630	8.7	29.3
28	0935	8.0	29.4
29	1000	8.5	29.7
31	1035	8.4	29.2

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DATE	TIME	T	S
JAN. 11	1145	9.4	30.04
12	1225	9.0	29.76
18	1650	9.7	26.41
20	1830	10.0	25.35
22	0740	9.5	26.87
25	1030	9.0	26.94
26	1145	9.2	26.42
27	1210	9.7	29.02
28	1315	9.8	30.02
29	1350	10.2	30.84
31	1600	10.0	30.97
FEB. 2	0900	9.8	28.03
3	0900	9.7	31.74

DATE	TIME	T	S
8	1050	10.1	30.94
9	1120	9.1	30.28
10	1207	9.4	30.12
11	1247	9.3	30.74
12	1340	9.7	30.16
15	1527	9.9	30.52
16	1615	9.6	30.33
22	0915	9.1	30.56
23	1025	9.3	30.62
24	1115	9.2	30.16
25	1201	8.7	30.69
MAR. 1		8.4	31.88
5		8.2	30.53

DATE	TIME	T	S
8	0945	8.0	33.21
9	1035	8.0	29.52
10	1130	8.4	29.92
11	1235	8.4	30.38
12	1245	8.8	31.04
14	1350	8.3	28.19
16	1520	8.6	30.30
18	1707	9.0	31.89
25	1105		31.20
26	1155	9.8	30.44
27	1250	9.7	26.55
28	1345	9.9	29.60
31	1633	9.9	30.09

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NEWPORT (continued)

		TIME	T	S
APR.	5	0825	9.5	31.74
	6	0926	9.8	30.61
	8	1102	10.1	30.58
	9	1140	10.1	29.92
	13	1430	10.1	30.11
	14	1530	10.1	30.67
	15	1604	9.9	31.69
	21	0850	10.0	31.65
	22	0955	10.1	31.17
	23	1103	10.5	30.65
MAY	26	1446	9.8	32.12
	27	1535	10.4	31.75
	28	1624	10.6	31.73
	4	0852	9.5	32.27
	5	0957	9.3	32.44
	7	1146	9.1	32.95
	10	1400	10.3	32.83
	11	1442	10.1	32.74
	12	1520	11.2	32.18
	13	1620	11.8	32.10
JUNE	19	0820	11.8	31.23
	21	1100	10.2	32.48
	24	1342	9.7	33.26
	25	1455	10.8	32.72
	26	1545	10.4	32.88
	3	0927	9.4	
	4	1030	9.5	
	8	1347	12.5	
	9	1426	11.7	
	13	1720	14.0	
	15	1910	13.4	
	16	2000	9.7	
	18	0950	9.9	
	22	1345	15.1	
	23	1428	15.1	
	25	1600	14.8	

		DATE	TIME	T	S
JULY	7	1335	9.5		
	9	1447	11.5		
	12	1642	12.5		
	21	1320	9.4		
	22	1410	9.1		
	23	1436	9.0		
	26	1620	9.5		
	27	1650	10.3		
	3	1145	12.1	33.38	
	5	1305	14.5	33.11	
AUG.	19	1320	12.5	33.13	
	20	1335	15.3	33.03	
	23	1410	16.4	32.49	
	30	0910	11.7	33.01	
SEP.	7	1440	15.1	32.11	
	8	1525	14.5	32.25	
	9	1604	13.1	32.59	
	10	1650	14.4	32.27	
	14	1025	9.6	33.33	
	15	1120	9.7	33.28	
	16	1147	9.5	33.31	
	17	1212	9.5	33.34	
	22	1430	9.9	33.40	
	23	1451	10.7	33.18	
OCT.	29	0940	12.3	32.44	
	30	1045	12.2	32.47	
	1	1110	12.3	32.36	
	5	1330	11.7	32.79	
	6	1330	12.0	32.83	
	8	1600	11.0	33.06	
	9	1530	11.2	32.98	
	10	1600	11.6	32.80	
	11	1630	12.0	32.71	
	13	0945	11.0	32.97	
	14	1110	10.6	33.02	
	16	1230	9.8	33.27	

		DATE	TIME	T	S
	17	1205	9.4	33.29	
	20	1210	10.0	32.71	
	21	1145	10.4	32.51	
	22	1145	10.8	32.02	
	24	1350	11.0	32.44	
	25	1700	10.8	32.50	
	26	1705	10.8	32.48	
	29	1000	10.0	32.60	
	30	2200	10.0	32.33	
NOV.	2	1145	10.2	32.13	
	4	1150	10.1	31.98	
	6	1445	9.8	32.43	
	7	1315	10.0	31.86	
	8	1700	10.2	31.35	
	9	2330	10.0	27.50	
	10	2230	10.0	30.78	
	13	2200	10.2	31.48	
	14	0905	10.2	31.87	
	17	1210	10.0	31.77	
	18	1300	10.4	31.68	
	19	1400	10.1	31.02	
	20	1215	10.0	31.57	
	21	1250	10.0	31.81	
	23	1500	10.1	31.51	
	26	1945	10.2	30.59	
	27	2045	10.0	29.35	
	28	2115	10.5	29.20	
	29	2045	10.4	29.50	
DEC.	1	1300	10.2	30.73	
	2	1130	10.0	30.09	
	4	1230	9.8	30.92	
	8	1640	9.1	29.37	
	9	1700	9.4	29.67	
	15	1005	9.3	30.50	

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		DATE	TIME	T	S
JAN.	4	0815	8.8	31.5	
	5	0817	9.6	31.6	
	7	0809	9.3	31.3	
	8	0810	9.3	30.3	
	11	0803	8.2	28.4	
	12	0810	7.3	23.6	
	13	0835	6.3	23.2	
	14	0820	7.6	22.5	
	15	0820	9.4	26.1	
	18	0814	9.0	5.1	
	19	0804	9.6	8.3	
	20	0803	8.4	5.6	
	21	0806	9.0	30.2	
	22	0810	8.8	30.2	
	25	0810	8.7	25.6	
	26	0805	8.6	21.7	
	27	0829	7.9	18.4	
	28	0811	8.0	20.7	
	29	0815	8.1	22.5	
FEB.	2	0820	8.6	31.0	
	3	0820	8.2	31.9	
	4	0815	8.5	32.0	
	5	0805	8.7	31.3	
	8	0815	8.6	29.5	
	9	0730	8.4	13.5	
	10	0750	9.5	27.0	
	11	0755	9.3	24.4	
	12	0805	9.4	25.6	
	16	0803	8.7	30.7	
	17	0815	8.9	27.4	
	18	0813	9.0	31.0	
	19	0810	8.6	28.3	
	22	0813	8.7	30.2	
	23	0810	8.8	30.2	
	24	0810	8.9	29.2	
	25	0803	7.7	26.1	
	26	0830	7.8	24.0	
MAR.	1	1603	8.8	28.8	
	2	1705	8.6	31.0	
	3	1648	8.3	29.9	
	8	0933	8.3	30.5	
	9	1015	8.4	30.3	
	10	1111	8.6	30.7	
	11	1315	8.6	30.9	
	12	1225	8.5	30.2	
	15	1533	9.3	28.5	
	16	1503	10.0	17.1	
	17	1545	9.5	17.0	
	18	1653	9.8	18.6	
	22	0810	8.8	30.7	
	23	0817	9.3	30.7	
	24	0955	9.2	30.30	
	25	1127	8.8	30.90	

		DATE	TIME	T	S
	26	1623	9.3	28.3	
	29	1508	9.5	30.3	
	30	1555	9.3	29.7	
	31	1630	9.4	30.1	
APR.	1	1655	9.9	28.4	
	5	0820	9.0	30.9	
	6	0930	9.2	30.2	
	7	1034	9.7	30.6	
	8	1045	9.8	30.5	
	9	1135	9.8	30.2	
	12	1445	10.3	30.3	
	13	1425	10.2	27.8	
	15	1610	12.0	18.7	
	16	1703	9.4	31.1	
	20	1030	10.0	25.8	
	21	0826	9.6	29.9	
	22	0944	9.6	29.7	
	23	1055	10.8	29.2	
	26	1535	10.5	31.0	
	27	1657	11.7	29.8	
	28	1627	11.7	28.8	
	29	1706	10.7	29.9	
	30	1708	11.1	30.1	
MAY	3	0745	10.6	26.6	
	4	0830	9.8	30.3	
	5	0945	9.7	30.6	
	6	1030	10.8	26.7	
	7	1240	10.1	31.9	
	11	1440	10.6	32.0	
	12	1335	9.5	32.2	
	13	1603	11.1	32.0	
	14	1705	13.0	30.3	
	18	0808	11.0	31.0	
	19	0809	11.3	28.4	
	20	0945	11.5	27.5	
	21	1130	12.2	27.8	
	25	1425	9.4	32.4	
	26	1530	11.3	29.8	
	27	1505	12.7	29.9	
	28	1703	11.3	30.3	
JUNE	1	0810	9.7	30.3	
	2	0820	9.6	32.0	
	3	0955	10.8	31.1	
	4	1055	11.6	31.4	
	7	1320	12.7	30.9	
	8	1345	15.6	28.9	
	9	1436	12.6	31.3	
	10	1516	14.7	27.5	
	11	1540	15.5	27.4	
	14	1717	17.6	27.5	
	15	1735	16.7	28.1	
	16	0804	10.5	30.7	
	17	0805	9.5	32.2	

	DATE	TIME	T	S
JULY	18	1022	10.2	32.3
	21	1320	16.6	30.2
	22	1420	14.3	30.1
	23	1450	19.1	28.0
	24	1506	13.9	30.1
	25	1545	16.1	28.5
	28	1645	16.4	27.4
	29	1720	16.2	27.6
	1	0800	12.6	29.7
	2	0800	12.9	29.1
	6	1330	15.8	28.3
	7	1340	11.8	32.7
	8	1410	11.8	32.8
	9	1440	10.3	32.9
	12	1624	14.4	31.5
	13	1653	14.9	31.1
	14	1645	13.1	31.4
	15	1710	12.4	31.4
	16	0805	11.0	31.6
19	1206	10.5	32.9	
20	1259	12.2	32.4	
21	1313	13.8	31.3	
22	1415	13.3	31.6	
23	1436	12.6	31.6	
26	1605	10.1	33.0	
27	1632	10.5	32.9	
28	1702	11.0	33.0	
29	1635	11.0	32.9	
30	1705	13.4	32.4	
AUG.	2	1103	14.0	31.9
	3	1206	13.5	32.8
	4	1300	15.7	32.2
	5	1339	15.6	32.3
	6	1340	16.5	31.8
	9	1500	18.3	31.4
	10	1530	17.0	31.4
	11	1600	14.8	31.8
	12	1730	12.6	32.4
	13	1711	13.7	32.0
	16	1100	15.1	31.8
	17	1145	14.1	31.9
	18	1206	14.6	31.9
19	1318	13.5	32.0	
20	1354	14.0	32.0	
23	1436	19.0	31.3	
24	1513	17.0	31.6	
25	1620	16.3	32.0	
26	1615	14.7	32.8	
27	1636	10.2	33.2	
30	0940	10.6	33.0	
31	1015	12.6	32.2	
SEP.	1	1120	13.3	31.8
	2	1330	14.1	31.9

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DATE	TIME	T	S
SEP. 3	1430	15.4	32.0
7	1430	15.6	31.3
8	1452	13.3	31.9
9	1700	13.6	31.6
10	1624	12.6	32.0
13	0930	13.9	30.5
14	1030	12.4	31.0
15	1210	13.0	31.3
16	1130	11.4	32.4
17	1225	11.5	32.9
20	1318	12.0	32.8
22	1420	10.3	33.7
23	1450	10.3	33.7
24	1500	11.4	33.4
27	1715	11.7	33.2
28	1740	11.9	32.7
29	0940	11.4	32.2
30	1045	11.2	32.2
OCT. 1	1100	11.8	32.7
4	1309	12.6	32.3
5	1300	12.0	32.7
6	1336	11.8	32.7
7	1430	11.8	32.8
8	1507	11.8	32.7
11	0855	11.2	32.8
12	0905	11.3	32.4
14	1040	10.6	32.2

DATE	TIME	T	S
15	1025	10.3	32.7
18	1220	9.6	33.0
19	1300	9.6	32.7
20	1325	10.5	32.2
21	1422	10.7	32.0
22	1400	11.3	32.0
26	1710	11.9	31.0
27	1645	11.0	30.3
28	0845	9.7	31.5
29	0945	9.3	31.9
NOV. 1	1000	10.0	31.3
2	1034	10.1	31.5
3	1135	10.1	31.9
4	1240	10.3	31.0
5	1236	9.6	31.1
8	1530	9.5	32.2
9	1625	10.0	32.2
11	0831	10.1	32.2
12	0822	9.5	31.8
15	0950	9.7	31.4
16	1038	9.7	31.8
17	1105	9.7	31.4
18	1205	9.5	31.9
19	1345	9.8	32.0
22	1357	9.8	31.8
23	1426	9.8	31.8
24	1538	10.4	31.6

DATE	TIME	T	S
26	1700	10.0	28.4
29	0915	9.9	30.5
30	0925	9.5	28.4
DEC. 1	1015	9.4	31.1
2	1049	9.2	29.5
3	1140	9.4	31.3
6	1506	8.9	20.4
7	1450	9.0	14.7
8	1551	9.4	31.9
9	1650	9.0	26.7
10	0810	9.0	30.2
13	0815	8.8	29.2
14	0905	8.9	30.3
15	1018	8.8	29.5
16	1020	8.9	29.2
17	1130	9.1	30.5
20	1355	9.1	31.8
21	1505	8.8	31.1
22	1436	8.9	31.1
23	1525	8.5	31.0
24	1654	8.3	31.3
27	0820	8.0	29.9
28	0822	7.8	31.6
29	0930	8.0	31.4
30	0945	8.4	30.7
31	1107	8.8	30.9

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DATE	TIME	T	S
JAN. 4	0900	9.4	31.7
5	0911	9.0	32.3
6	0913	10.0	33.1
7	0950	9.0	33.1
8	0914	9.0	33.5
12	0921	8.0	31.2
FEB. 12	1000	12.0	28.6
15	0922	10.0	23.4
16	0905	9.1	23.9
17	0915	9.5	23.9
18	0912	9.1	30.9
19	0905	9.0	30.9
22	0925	9.0	30.2
23	0911	9.0	31.8
25	0900	8.2	28.1
MAR. 2	1126	8.0	30.0
3	0850	8.8	31.8
4	0900	8.4	31.0
5	0925	7.8	27.4
8	1000	8.8	31.2
9	0930	8.0	31.2
10	0900	9.0	31.0
11	0900	10.0	30.9
12	0930	9.0	27.4
15	1145	9.5	28.9
16	1000	8.8	30.1
17	0915	8.0	30.1
18	1015	9.8	33.9
19	0915	9.5	32.7
22	0840	9.5	31.4
24	1100	10.0	30.3
25	0900	9.8	28.3
29	0930	10.0	29.0
APR. 1	0945	10.0	28.9
2	0945	10.5	29.2
5	0900	10.5	31.7
6	0900	10.0	31.0
12	0920	10.0	28.1
13	0930	10.9	27.8
14	1010	11.0	28.0
15	0630	10.0	30.9
16	0950	9.2	31.2
19	1000	9.0	32.2
20	0930	10.0	32.3
21	0950	9.0	32.5

DATE	TIME	T	S
APR. 22	0900	9.4	31.3
23	0930	10.0	31.3
27	1500	10.6	31.2
28	1140	10.5	29.2
29	1000	9.0	29.6
MAY 5	0900	8.2	33.8
6	1000	8.2	33.5
7	0920	8.8	33.6
10	0930	9.0	31.6
21	0945	9.0	33.6
25	1101	9.0	32.6
28	1515	9.0	34.0
JUNE 1	1200	9.0	32.9
3	1000	8.0	33.4
4	1005	8.8	33.1
18	0948	9.2	33.1
JULY 6	1000	8.3	33.9
7	1000	9.0	33.4
8	1000	10.0	33.2
21	1000	10.0	33.8
22	1000	10.0	33.5
23	1000	10.3	34.7
24	1000	9.5	34.3
25	1000	9.5	34.3
26	1000	9.5	32.7
27	1000	10.5	33.0
28	1000	10.3	33.6
29	1000	11.2	33.2
30	1000	12.3	33.4
31	1000	11.5	33.5
AUG. 1	1000	11.0	33.2
2	1000	10.0	33.5
3	1000	10.0	33.4
4	1000	12.0	33.1
5	1000	11.0	32.5
6	1000	12.0	31.0
7	1000	9.7	33.0
8	1000	11.0	33.5
9	1000	12.0	32.9
10	1000	11.0	31.8
11	1000	10.0	32.3
12	1000	9.7	33.1
13	1000	9.5	33.4
14	1000	10.7	33.5
15	1000	10.0	32.7

DATE	TIME	T	S
AUG. 16	1000	11.0	33.1
17	1000	10.7	33.0
18	1000	10.0	33.0
19	1000	9.3	33.4
20	1000	11.5	32.6
21	1000	12.0	32.9
22	1000	12.0	32.9
23	1000	12.0	32.9
24	1000	12.0	32.9
25	1000	9.5	33.4
26	1000	10.7	32.7
27	1000	10.0	33.0
28	1000	10.7	32.9
29	1000	11.7	33.0
30	1000	13.0	32.5
31	1000	13.0	31.8
SEP. 1	1000	13.0	31.8
2	1000	13.0	32.3
3	1000	13.0	32.2
4	1000	12.8	32.3
5	1000	13.0	32.3
6	1000	13.1	32.6
7	1000	11.8	33.0
8	1000	11.0	32.7
9	1000	10.5	33.0
10	1000	12.0	32.9
11	1000	13.0	33.0
12	1000	11.5	33.0
13	1000	10.5	33.0
14	1000	10.0	33.5
15	1000	9.0	33.9
16	1000	9.3	33.2
18	1000	9.5	33.5
19	1000	11.0	33.0
20	1000	10.5	33.4
21	1000	11.0	31.6
22	1000	10.5	33.4
23	1300	12.5	30.9
24	1000	12.2	31.0
25	1000	12.2	31.3
26	1000	11.5	31.9
27	1000	12.0	32.3
28	1500	12.7	32.9
29	1000	11.5	31.4
30	1000	11.6	31.6

CRESCENT CITY, CALIF. - 1971

DATE	TIME	T	S
JAN. 4	1250	8.6	28.5
8	1435	10.3	32.4
11	1325	8.9	24.7
13	1355	7.5	27.2
15	1320	8.4	25.8
16	1515	9.4	25.5
19	1140	10.6	11.1
24	1000	9.4	32.8
26	1310	9.4	32.7
28	1315	9.2	30.4
30	1055	9.2	31.7

DATE	TIME	T	S
FEB. 4	2030	8.0	28.2
5	2050	8.4	25.1
8	1005	8.9	28.5
10	1345	10.0	27.6
14	1125	9.4	32.4
15	1545	8.9	27.6
17	1350	9.7	30.2
20	1035	9.6	33.1
21	1025	8.9	32.8
24	1020	9.2	32.4
MAR. 3	1525	7.8	30.3

DATE	TIME	T	S
5	1330	9.4	29.1
9	0900	8.4	31.6
11	1025	8.6	28.6
13	1100	8.6	27.3
15	1345	9.2	27.6
18	1530	10.0	33.2
22	1110	9.7	22.8
24	1235	10.0	22.4
26	1525	9.4	23.4
APR. 1	1015	10.0	28.1
5	0755	10.6	27.2

CRESCENT CITY (continued)

	TIME	T	S	DATE	TIME	T	S	DATE	TIME	T	S
	6 1613	10.6	24.0		7 1350	10.8	34.0		22 1145	10.6	33.4
	8 1345	10.6	24.3		10 1350	14.2	29.9		23 1505	10.6	32.7
	13 1325	10.6	28.5		13 1340	11.6	33.6		25 0800	9.2	33.6
	16 1513	9.7	31.0		16 1035	13.4	32.1		26 1425	10.6	32.7
	21 1025	8.6	32.8		17 0950	13.4	32.4		27 0740	9.4	33.3
	23 0950	9.4	27.3		19 1340	15.3	31.1		28 1525	8.9	33.8
	25 1015	8.4	34.1		22 1200	16.6	31.5		29 1000	7.8	33.8
	26 1140	8.6	33.3		23 1320	16.1	31.2		NOV. 1 0845	9.2	32.9
	29 1125	9.7	33.1		25 1225	15.0	31.4		2 0855	8.9	34.1
MAY	4 1325	9.4	33.1		26 1840	14.7	32.3		3 0900	8.9	32.5
	5 1505	10.0	33.7		28 1215	12.8	33.6		4 1340	10.0	34.7
	7 1015	9.2	33.4		31 0840	13.0	34.0		5 1230	9.4	33.3
	8 1330	10.6	30.7	AUG.	1 1755	13.0	34.1		6 1445	9.4	31.5
	10 1150	9.2	33.4		2 0825	12.2	33.7		10 0945	10.0	31.4
	13 1310	11.4	26.7		3 1445	14.4	32.7		11 1025	10.0	31.1
	18 1450	10.3	32.0		5 1450	16.1	32.4		12 0830	9.7	31.0
	21 0845	7.8	34.2		7 1015	15.0	32.1		15 1105	9.4	32.7
	24 1445	10.8	30.7		9 0835	15.0	32.1		17 1040	9.2	32.4
	28 1310	10.6	29.3		10 0745	14.4	31.9		19 1515	10.0	33.2
	27 1933	9.4	34.0		11 1140	16.6	32.4		21 1120	10.0	32.8
	30 1615	10.0	32.5		15 1015	15.0	32.9		27 0910	10.0	28.6
JUNE	2 0830	8.6	34.1		17 1430	15.3	33.1		28 0945	10.3	26.1
	6 0935	10.6	33.4		18 0850	15.0	32.3		30 1225	10.3	32.1
	9 1245	9.7	34.1		21 0955	16.6	31.6		DEC. 1 1050	10.6	32.5
	11 0835	9.2	33.7		22 0905	16.4	32.1		2 1425	9.4	30.0
	13 1855	12.0	33.3		26 1315	15.0	33.1		6 1350	9.4	30.4
	15 1230	9.7	33.6		28 0955	14.7	32.8		8 1310	9.4	32.4
	18 0920	12.2	28.9		31 1330	15.3	32.9		12 1135	8.0	28.5
	20 1700	12.2	31.6	OCT.	2 1140	13.0	32.9		13 1110	8.4	29.7
	21 1640	13.6	31.9		4 0940	12.8	32.9		17 1525	8.9	29.0
	24 1055	10.6	33.6		5 1345	14.4	33.1		19 1555	8.9	29.9
	25 1530	12.5	29.0		8 1330	13.9	31.9		20 1045	7.8	31.7
	27 1905	12.2	32.8		9 1300	13.9	31.1		23 1340	7.2	26.9
	29 1855	12.0	33.3		12 1410	14.4	32.3		26 1130	8.0	29.1
JULY	2 0810	11.6	31.9		15 1150	10.6	33.7		27 1330	8.6	30.4
	5 0815	10.0	33.8		18 0940	9.7	33.7		29 1330	8.0	26.7
	6 1240	10.6	34.2		19 1230	10.0	32.0				

TABLE III. MONTHLY MEAN TEMPERATURE AND SALINITY.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
COLUMBIA RIVER LIGHTSHIP - 1971													
TEMPERATURE													
MEAN	7.88	7.78	7.78	9.58	11.22	12.72	13.92	15.21	14.75	12.32	10.19	8.45	11.13
STANDARD DEV.	1.27	1.71	.61	.51	.89	1.58	1.36	1.23	.99	1.90	.52	.81	
MAX.	10.0	10.0	9.5	10.4	12.8	15.4	15.8	17.0	16.0	14.5	11.4	10.0	
MIN.	5.8	4.0	6.8	8.0	10.0	9.8	12.0	13.0	12.5	8.4	9.0	7.2	
RANGE	4.2	6.0	2.7	2.4	2.8	5.6	3.8	4.0	3.5	6.1	2.4	2.8	
NO. OF OBS.	30	28	29	21	30	30	31	31	30	29	27	22	
SALINITY													
MEAN	25.64	26.82	29.18	32.39	20.62	24.96	27.01	25.51	24.80	22.79	24.82	17.85	24.98
STANDARD DEV.	8.11	4.76	2.10	1.85	9.68	6.46	3.90	7.22	.90	7.26	4.64	5.70	
MAX.	34.9	34.0	31.1	35.4	35.4	31.5	32.8	31.9	29.1	34.0	34.9	27.7	
MIN.	4.6	17.8	24.1	24.9	11.9	12.3	21.9	8.6	23.9	13.8	20.1	12.4	
RANGE	30.3	16.2	7.0	10.5	23.5	19.2	10.9	23.3	5.2	20.2	14.8	15.3	
NO. OF OBS.	30	28	14	21	28	30	31	8	29	29	27	22	
SEASIDE - 1971													
TEMPERATURE													
MEAN	8.52	8.27	8.53	9.93	10.88	14.36	15.07	15.88	14.89	13.27	10.92	9.05	12.41
STANDARD DEV.	1.06	.74	.40	.53	.72	.78	1.56	1.24	1.23	1.45	.83	.64	
MAX.	9.5	9.5	9.0	10.9	12.0	15.5	17.6	18.0	16.4	15.9	12.9	10.2	
MIN.	6.2	7.5	8.3	9.4	10.1	13.1	12.5	13.2	12.2	11.0	10.2	8.0	
RANGE	3.3	2.0	.7	1.5	1.9	2.4	5.1	4.8	4.2	4.9	2.7	2.2	
NO. OF OBS.	10	6	3	6	6	10	15	18	12	16	15	13	
SALINITY													
MEAN	26.50	29.55	29.30	28.78	29.38	25.59	28.00	30.59	30.32	30.37	29.61	29.03	29.05
STANDARD DEV.	2.32	1.15	1.15	2.00	2.09	3.79	2.18	1.80	1.02	.88	.82	.85	
MAX.	30.1	30.9	30.6	30.5	31.6	29.6	32.2	33.0	32.9	31.4	30.8	30.0	
MIN.	23.3	28.0	28.4	25.2	26.0	18.1	24.9	26.1	29.3	28.5	27.7	27.3	
RANGE	6.8	2.9	2.2	5.3	5.6	11.5	7.3	6.9	3.6	2.9	3.1	2.7	
NO. OF OBS.	10	6	3	6	6	10	15	18	12	16	15	13	

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
NEWPORT - 1971													
TEMPERATURE													
MEAN	9.59	9.45	8.81	10.08	10.35	12.28	10.10	13.75	11.71	10.86	10.13	9.63	10.43
STANDARD DEV.	.41	.39	.72	.30	.91	2.35	1.26	1.92	2.17	.81	.17	.43	
MAX.	10.2	10.1	9.9	10.6	11.8	15.1	12.5	16.4	15.1	12.3	10.5	10.2	
MIN.	9.0	8.7	8.0	9.5	9.1	9.4	9.0	11.7	9.5	9.4	9.8	9.1	
RANGE	1.2	1.4	1.9	1.1	2.7	5.7	3.5	4.7	5.6	2.9	.7	1.1	
NO. OF OBS.	11	13	14	13	12	11	8	6	12	19	19	6	

SALINITY													
MEAN	28.42	30.38	30.12	31.11	32.51			33.03	32.83	32.72	31.02	30.21	31.26
STANDARD DEV.	2.04	.83	1.36	.72	.53			.29	.51	.33	1.27	.61	
MAX.	30.97	31.74	31.89	32.12	33.26			33.38	33.40	33.29	32.43	30.92	
MIN.	25.35	28.03	26.55	29.92	31.23			32.49	32.11	32.02	27.50	29.37	
RANGE	5.62	3.72	5.34	2.20	2.03			.88	1.29	1.27	4.93	1.56	
NO. OF OBS.	11	13	15	13	12			6	12	19	19	6	

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
CHARLESTON - 1971													
TEMPERATURE													
MEAN	8.52	8.68	9.01	10.26	10.94	13.85	12.35	14.70	12.51	10.99	9.85	8.80	10.93
STANDARD DEV.	.86	.48	.51	.87	1.06	3.01	1.58	2.19	1.50	.96	.27	.45	
MAX.	9.6	9.5	10.0	12.0	13.0	19.1	15.8	19.0	15.6	12.6	10.4	9.4	
MIN.	6.3	7.7	8.3	9.0	9.4	9.5	10.1	10.2	10.3	9.3	9.5	7.8	
RANGE	3.3	1.8	1.7	3.0	3.6	9.6	5.7	8.8	5.3	3.3	.9	1.6	
NO. OF OBS.	19	18	20	19	17	21	21	22	20	19	20	23	

SALINITY													
MEAN	22.97	27.96	28.22	29.10	29.98	29.69	31.74	32.08	32.22	32.24	31.31	29.36	29.80
STANDARD DEV.	8.48	4.41	4.67	2.82	1.94	1.75	1.33	.51	.88	.69	1.09	3.99	
MAX.	31.6	32.0	31.0	31.1	32.4	32.3	33.0	33.2	33.7	33.0	32.2	31.9	
MIN.	5.1	13.5	17.0	18.7	26.6	27.4	28.3	31.3	30.5	30.3	28.4	14.7	
RANGE	26.5	18.5	14.0	12.4	5.8	4.9	4.7	1.9	3.2	2.7	3.8	17.2	
NO. OF OBS.	19	18	20	19	17	21	21	22	20	19	20	23	

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
PORT ORFORD - 1971													
TEMPERATURE													
MEAN	9.07	9.43	9.04	9.98	8.74	8.75	10.14	10.93	11.56				10.25
STANDARD DEV.	.65	1.07	.76	.66	.38	.53	1.03	1.04	1.22				
MAX.	10.0	12.0	10.0	11.0	9.0	9.2	12.3	13.0	13.1				
MIN.	8.0	8.2	7.8	9.0	8.2	8.0	8.3	9.3	9.0				
RANGE	2.0	3.8	2.2	2.0	.8	1.2	4.0	3.7	4.1				
NO. OF OBS.	6	9	18	17	7	4	14	31	29				

SALINITY													
MEAN	32.43	27.97	30.20	30.38	33.24	33.12	33.61	32.87	32.51				31.87
STANDARD DEV.	.90	3.38	1.48	1.58	.85	.21	.55	.56	.80				
MAX.	33.5	31.8	32.7	32.5	34.0	33.4	34.7	33.5	33.9				
MIN.	31.2	23.4	27.4	27.8	31.6	32.9	32.7	31.0	30.9				
RANGE	2.3	8.4	5.3	4.7	2.4	.5	2.0	2.5	3.0				
NO. OF OBS.	6	9	18	17	7	4	14	30	29				

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
CRESCENT CITY, CALIF. - 1971													
TEMPERATURE													
MEAN	9.17	9.40	9.11	9.71	9.89	11.16	13.27	15.00		11.24	9.67	8.66	10.76
STANDARD DEV.	.85	.60	.73	.37	.96	1.52	2.05	1.19		2.16	.47	.90	
MAX.	10.6	10.0	10.0	10.6	11.4	13.6	16.6	16.6		14.4	10.3	10.6	
MIN.	7.5	8.0	7.8	8.4	7.3	8.6	10.0	12.2		7.8	8.9	7.2	
RANGE	3.1	2.0	2.2	2.2	3.6	5.0	6.6	4.4		6.6	1.4	3.4	
NO. OF OBS.	11	10	10	11	12	13	15	16		16	16	13	

SALINITY													
MEAN	27.53	29.79	27.63	29.43	31.97	32.56	32.47	32.64		32.93	31.90	29.78	31.06
STANDARD DEV.	6.24	2.78	3.74	3.63	2.25	1.77	1.33	.66		.79	2.09	1.81	
MAX.	32.8	33.1	33.2	34.1	34.2	34.1	34.2	34.1		33.8	34.7	32.5	
MIN.	11.1	25.1	22.4	24.0	26.7	28.9	29.9	31.6		31.1	26.1	26.7	
RANGE	21.7	8.0	10.8	10.1	7.5	5.2	4.3	2.5		2.7	8.6	5.8	
NO. OF OBS.	11	10	10	11	12	13	15	16		16	16	13	

Unclassified

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13. ABSTRACT During 1971 the Department of Oceanography, Oregon State University, continued its program of shore sampling of ocean temperatures and salinities along the coast of the Pacific Northwest. Daily observations for six stations are listed along with monthly maxima, minima, means and standard deviations of temperature and salinity.			

