

OCEANOGRAPHIC DATA AT THE S. M. B. L., 1971

Measurements of the surface sea water temperature were made every day at 9:00 in the morning at the fixed site on the south coast of the laboratory ground near the water intake of the laboratory by

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The salinity was measured by salinometer (Tsurumi CO., LTD. Type E2).

Meteorological observations were made similarly in the laboratory yard by
Miss Junko Kondô.

The necessary correction after formal manuals of oceanographical and meteorological observations, as well as the typewriting of tables, were made by
Dr. Shin-ichirô Fuse.

Weather is shown in Beaufort notation, and wind force in Beaufort scale. The codes used are:

b	Blue sky	0	Calm	less than 0.3 m/sec
bc	Partly clouded	1	Light air	0.3~ 1.5 m/sec
c	Cloudy	2	Light breeze	1.6~ 3.3 m/sec
o	Overcast	3	Gentle breeze	3.4~ 5.4 m/sec
d	Drizzling rain	4	Moderate breeze	5.5~ 7.9 m/sec
r	Rain	5	Fresh breeze	8.0~10.7 m/sec
s	Snow			
p	Passing showers			
q	Squalls			

Summarizing the data, the following annual values are obtained for 1971:

	Lowest	Highest	Mean
Air temperature (°C)	4.0 (Feb. 4)	31.2 (July 15)	17.7
Water temperature (°C)	9.10 (Mar. 11)	29.08 (Aug. 3)	19.92
Salinity (‰)	29.651 (May 19)	35.163 (Jan. 18)	33.944
Total precipitation (mm)	1816.0		

JANUARY						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	c	8.8	—	NW 1	16.50	34.668
2	b	8.6	—	NW 1	16.60	34.686
3	o	8.2	—	— 0	16.40	34.632
4	c	7.4	3.4	— 0	16.86	34.108
5	r	5.2	1.9	NW 2	16.00	34.632
6	bc	5.4	1.2	N 1	15.50	34.650
7	c	6.1	—	— 0	15.24	34.632
8	o	7.8	—	— 0	14.90	34.596
9	b	7.1	—	NW 1	14.16	34.596
10	b	4.8	—	— 0	13.80	34.325
11	o	5.4	—	NE 1	15.42	34.469
12	b	8.5	—	— 0	15.76	34.747
13	d	10.1	0.5	NE 1	15.50	34.840
14	bc	8.8	0.6	NW 1	13.92	34.879
15	b	6.6	—	NW 1	13.94	34.948
16	c	9.6	—	NW 2	13.98	35.013
17	bc	7.4	—	NW 3	13.90	34.998
18	b	8.4	—	NW 3	12.50	35.163
19	c	10.9	—	NW 2	13.36	34.934
20	o	8.4	—	— 0	14.20	35.029
21	r	14.6	12.5	— 0	16.30	34.388
22	b	10.4	3.0	NW 1	16.28	34.887
23	b	6.8	0.2	NNW 2	13.80	34.836
24	b	6.3	—	NW 1	13.40	34.695
25	o	6.4	—	NE 1	13.85	34.922
26	b	6.4	3.2	NW 2	13.30	34.870
27	bc	6.4	—	N 1	13.52	34.806
28	c	5.4	—	N 2	11.80	34.851
29	b	5.2	—	N 1	10.40	34.795
30	bc	4.6	—	NW 3	10.80	34.637
31	bc	6.4	—	NW 2	11.20	34.448
mean		7.5			14.29	34.732

FEBRUARY						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	c	4.7	—	NW 2	11.27	34.590
2	o	4.8	—	NW 1	13.90	34.875
3	b	4.4	—	NW 1	14.10	34.832
4	bc	4.0	—	NW 2	12.70	34.878
5	bc	5.9	—	NW 2	12.50	34.889
6	b	6.5	—	NW 1	12.60	34.898
7	b	6.1	—	— 0	12.40	34.707
8	b	5.8	—	— 0	10.80	34.829
9	bc	5.4	—	NW 2	10.80	34.570
10	bc	6.0	—	NW 2	11.10	34.562
11	b	5.3	—	NW 1	12.70	34.964
12	o	7.2	—	— 0	12.90	34.602
13	b	10.6	2.6	NW 2	13.60	34.573
14	b	8.6	—	— 0	14.58	34.611
15	o	12.8	12.0	NW 1	14.90	34.443
16	b	8.9	—	— 0	13.40	34.561
17	r	14.2	0.7	N 1	14.60	34.533
18	b	9.3	17.5	N 2	13.68	34.732
19	bc	9.4	—	N 2	13.70	34.539
20	b	7.4	—	— 0	12.50	34.594
21	o	10.3	—	E 1	13.52	34.433
22	o	12.7	9.1	E 1	14.40	30.955
23	o	17.8	8.0	S 2	16.20	34.607
24	bc	10.2	5.2	N 2	15.00	34.669
25	c	5.8	—	— 0	13.80	34.879
26	r	10.1	5.0	— 0	13.80	34.228
27	b	11.6	6.5	N 1	14.80	34.724
28	bc	9.4	—	N 1	14.10	34.813
mean		8.4			13.37	34.540

MARCH						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	o	8.6	—	S 1	13.72	34.796
2	c	11.3	—	— 0	14.20	34.714
3	o	14.0	29.0	N 2	17.10	34.444
4	bc	7.4	—	N 3	12.40	34.650
5	bc	6.8	—	N 2	12.36	34.642
6	b	8.0	—	NW 1	12.20	34.516
7	bc	6.4	—	NW 2	10.50	34.603
8	bc	6.2	—	NW 2	11.90	34.472
9	b	9.0	—	N 2	10.00	34.248
10	b	7.3	—	NW 2	9.50	34.208
11	b	6.1	—	N 1	9.10	34.243
12	o	6.8	—	— 0	10.50	34.267
13	c	8.9	0.5	N 2	11.70	34.423
14	c	5.3	—	NW 2	10.90	34.519
15	b	7.0	—	NW 2	11.00	34.500
16	c	11.9	—	NW 1	12.24	34.484
17	bc	10.4	0.8	NW 3	13.20	34.577
18	b	9.6	—	— 0	13.60	34.547
19	bc	12.6	—	NW 2	14.40	34.662
20	b	13.6	—	— 0	15.10	34.652
21	b	15.1	—	— 0	14.92	34.692
22	b	14.4	—	WNW 1	15.63	34.986
23	r	7.4	6.6	NNW 2	13.54	34.403
24	bc	7.8	1.7	NW 2	12.42	34.403
25	b	10.3	—	NW 1	13.70	
26	o	15.1	—	SW 1	15.80	34.681
27	bc	15.8	13.1	NW 2	16.28	34.527
28	bc	15.4	—	SW 1	15.51	34.564
29	bc	19.4	—	SE 2	16.94	34.609
30	r	13.8	17.5	NW 1	16.14	34.318
31	r	15.6	38.3	NW 2	16.36	34.001
mean		10.6			13.32	34.512

APRIL						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	o	14.8	30.1	NW 1	16.52	34.329
2	bc	15.8	—	— 0	16.33	34.188
3	b	16.8	—	WNW3	16.20	34.153
4	o	15.2	—	WNW2	16.48	34.331
5	c	17.4	—	NE 1	16.22	34.385
6	r	15.4	0.6	S 1	16.59	34.394
7	bc	13.8	—	— 0	15.66	34.320
8	o	17.3	2.6	SW 1	16.84	34.007
9	r	18.7	13.5	SSW 3	17.80	34.074
10	bc	13.4	42.2	NW 3	15.28	34.024
11	bc	15.2	—	NW 1	15.62	34.007
12	b	16.1	—	NE 1	15.34	34.305
13	o	15.4	—	NE 1	15.55	34.166
14	o	16.6	—	— 0	15.91	34.029
15	o	17.3	—	WNW2	16.22	33.979
16	o	17.3	—	— 0	16.47	33.959
17	o	18.2	—	— 0	16.51	33.833
18	o	17.4	2.7	NW 3	14.73	33.884
19	b	15.2	—	— 0	15.49	33.922
20	bc	16.9	—	NW 1	17.42	34.390
21	bc	17.8	—	— 0	17.72	34.434
22	r	13.9	14.2	— 0	19.18	34.369
23	b	18.4	—	S 1	19.06	33.804
24	c	19.3	—	— 0	19.54	34.668
25	c	19.4	—	— 0	19.02	34.495
26	o	20.0	—	S 1	19.48	34.647
27	bc	17.8	—	NW 1	18.71	34.647
28	o	18.7	—	NE 2	18.41	34.609
29	o	17.3	24.4	NW 3	17.62	34.546
30	o	16.4	17.4	NW 2	17.19	34.406
mean		16.8			16.97	34.243

MAY							JUNE						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	b	17.2	—	NW 3	17.43	34.452	1	b	23.4	—	— 0	22.54	33.488
2	b	19.9	—	SSW 2	18.20	34.263	2	o	25.3	—	NW 1	22.39	33.542
3	bc	20.6	—	SW 1	19.76	34.416	3	r	18.6	11.2	NE 1	21.28	32.261
4	r	19.9	2.2	SSW 2	19.55	34.221	4	o	23.4	15.3	S 3	21.20	33.651
5	bc	15.6	—	NW 2	17.33	34.463	5	o	19.4	35.5	— 0	20.82	30.494
6	r	15.9	1.8	— 0	18.29	34.080	6	r	17.4	50.2	NW 2	20.21	31.233
7	bc	16.6	10.9	NW 3	18.09	33.742	7	o	20.8	1.5	— 0	20.87	32.879
8	b	18.7	—	NW 3	18.50	33.949	8	o	22.4	—	— 0	21.56	32.826
9	b	15.2	—	— 0	17.77	34.275	9	o	23.4	0.6	— 0	22.07	33.792
10	c	21.2	—	— 0	18.72	34.352	10	o	23.7	3.2	S 1	23.04	33.869
11	c	21.7	—	— 0	19.62	34.377	11	o	24.3	3.5	SW 2	23.83	33.385
12	bc	21.8	—	— 0	20.72	34.315	12	bc	25.4	—	SSW 3	23.42	33.877
13	bc	21.2	—	S 1	20.69	34.363	13	r	21.0	11.3	SW 1	22.91	33.781
14	bc	22.3	—	— 0	20.62	34.371	14	o	22.8	0.3	— 0	22.15	33.864
15	o	16.6	4.0	— 0	19.84	34.076	15	bc	20.4	16.5	N 1	22.58	33.025
16	b	19.7	4.0	— 0	19.50	34.367	16	o	22.4	54.0	— 0	22.23	32.758
17	c	22.3	—	— 0	20.59	34.293	17	bc	24.3	—	NW 1	22.70	32.371
18	o	21.2	—	— 0	20.77	34.247	18	o	24.2	—	NW 1	22.79	32.804
19	r	18.4	23.2	— 0	20.60	29.651	19	b	23.8	—	S 1	22.78	33.581
20	bc	20.8	25.3	— 0	21.54	33.280	20	r	22.4	—	E 1	22.83	32.809
21	b	21.6	—	SSW 1	21.17	34.236	21	o	22.9	2.3	NW 1	22.71	33.482
22	c	22.1	—	— 0	22.22	34.076	22	o	22.6	—	— 0	22.90	32.836
23	r	18.4	1.8	NE 1	21.91	34.202	23	o	22.6	—	— 0	23.06	33.691
24	o	20.4	6.1	— 0	21.41	34.315	24	r	22.9	1.0	— 0	23.38	33.789
25	o	22.1	8.4	NW 3	22.16	34.386	25	o	23.3	6.4	SW 1	23.63	33.788
26	bc	23.2	—	— 0	22.12	34.523	26	bc	25.8	—	S 1	24.45	33.869
27	r	17.8	4.6	— 0	22.08	34.303	27	r	24.7	0.5	— 0	24.22	33.661
28	r	18.8	61.2	NE 1	21.78	33.601	28	b	26.6	—	NW 1	25.22	33.153
29	o	19.6	0.2	— 0	21.89	33.468	29	b	28.8	—	NW 2	24.65	33.580
30	o	20.1	0.2	— 0	20.99	33.412	30	o	25.4	—	SW 1	25.02	33.783
31	o	21.2	—	— 0	21.72	32.779							
mean		19.7			20.24	33.963	mean		23.1			22.78	33.197

JULY						
date	weather	air tem- perature °C	precipi- tation mm	wind	water tem- perature °C	salinity ‰
1	r	24.8	—	NE 1	24.14	33.613
2	o	26.3	21.6	— 0	24.55	33.597
3	bc	28.4	—	— 0	24.80	33.431
4	b	28.9	—	NW 1	26.00	33.328
5	c	28.8	—	W 1	26.10	33.439
6	c	28.2	—	S 1	26.64	33.237
7	r	26.8	28.8	ENE 2	25.60	32.469
8	b	27.8	10.6	S 1	25.62	33.064
9	bc	27.5	2.5	S 1	26.80	33.236
10	o	27.3	—	S 1	25.86	33.540
11	o	27.5	—	— 0	26.40	33.019
12	o	27.8	—	S 1	26.10	—
13	b	27.8	—	W 1	26.10	33.466
14	bc	30.1	—	NW 1	26.42	33.729
15	b	31.2	—	W 1	26.10	33.682
16	b	29.4	—	NW 1	26.30	33.680
17	bc	29.2	—	S 1	26.42	33.662
18	b	29.5	—	S 1	—	—
19	c	28.4	—	NW 1	26.05	33.464
20	o	26.4	—	W 2	25.00	33.888
21	o	24.6	1.8	NW 1	23.50	33.942
22	o	28.1	—	NE 1	24.31	33.670
23	r	24.8	39.5	NE 1	25.45	33.388
24	r	24.5	96.2	W 1	25.10	30.114
25	o	26.4	73.4	S 2	24.75	32.928
26	r	27.4	0.9	S 1	24.60	33.065
27	c	27.8	—	— 0	25.42	33.106
28	o	28.0	—	S 1	26.72	32.961
29	bc	28.8	—	S 1	27.79	33.269
30	b	28.4	—	— 0	28.22	33.282
31	b	29.3	—	S 1	28.31	33.195
mean		27.7			25.84	33.223

AUGUST						
date	weather	air tem- perature °C	precipi- tation mm	wind	water tem- perature °C	salinity ‰
1	b	30.7	—	NE 1	28.42	33.471
2	o	30.3	—	S 1	27.82	33.263
3	bc	30.4	2.5	ESE 1	29.08	33.514
4	bc	31.0	0.5	NE 2	28.60	33.399
5	c	29.7	5.5	S 3	28.30	33.621
6	r	27.3	21.0	S 3	27.46	31.958
7	c	27.2	3.5	S 1	27.60	33.522
8	b	29.4	—	— 0	28.30	33.490
9	o	28.3	—	S 1	27.80	33.094
10	bc	29.4	—	S 2	27.60	33.266
11	b	28.4	0.8	S 1	27.80	33.708
12	c	28.6	0.6	S 1	28.10	33.600
13	b	29.6	—	N 1	27.90	33.703
14	bc	29.9	—	N 1	27.80	33.723
15	bc	28.9	—	— 0	27.74	33.861
16	b	30.5	—	— 0	27.94	33.287
17	c	26.8	0.5	N 1	26.80	33.500
18	b	27.8	—	— 0	26.28	33.404
19	o	24.4	1.8	NE 2	26.02	33.465
20	o	24.6	2.7	NE 2	25.53	33.608
21	c	25.8	—	— 0	26.10	33.699
22	bc	27.8	—	— 0	26.96	33.892
23	b	28.6	—	— 0	27.30	34.020
24	bc	28.6	—	— 0	27.50	34.090
25	c	27.8	—	— 0	27.60	34.145
26	o	25.8	4.0	— 0	26.63	34.001
27	c	26.8	0.7	— 0	26.70	34.057
28	bc	29.7	—	W 1	27.20	33.791
29	r	29.9	—	N 1	27.56	33.795
30	r	24.3	32.0	W 3	25.50	32.500
31	r	23.3	111.6	N 4	25.70	31.807
mean		28.1			27.34	33.492

SEPTEMBER

date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	c	25.3	0.2	NW 3	25.50	32.483
2	b	24.6	—	— 0	25.77	31.855
3	b	26.1	—	— 0	26.28	32.685
4	o	25.8	—	— 0	26.30	32.989
5	c	27.6	6.8	WSW 3	26.40	33.315
6	o	26.6	0.2	SSW 2	26.10	33.579
7	r	24.8	0.9	— 0	25.93	33.213
8	bc	25.4	2.4	— 0	26.14	33.231
9	bc	25.8	—	— 0	25.94	33.120
10	r	22.8	5.4	ENE 3	25.54	33.238
11	d	25.5	12.2	— 0	25.80	33.457
12	bc	26.5	0.2	NW 1	25.42	33.517
13	b	25.2	—	N 2	25.30	33.025
14	bc	24.2	—	— 0	25.30	33.539
15	o	22.4	—	— 0	25.11	33.400
16	o	24.2	—	— 0	25.15	32.938
17	o	24.2	3.6	NE 2	25.19	33.210
18	r	21.7	20.3	NE 3	24.57	32.586
19	o	26.3	23.1	— 0	25.55	33.518
20	bc	26.6	—	NW 1	25.43	33.601
21	o	25.4	2.7	— 0	26.32	33.802
22	r	25.3	14.5	— 0	26.17	33.599
23	bc	25.8	0.9	— 0	26.00	33.628
24	b	27.2	—	S 2	26.40	33.695
25	bc	26.6	—	— 0	26.70	33.782
26	r	22.7	18.0	N 1	26.50	31.926
27	c	24.7	147.0	— 0	25.50	32.808
28	bc	23.4	—	NW 2	24.67	32.935
29	o	20.2	—	NW 2	23.91	32.864
30	b	22.6	—	NW 1	24.27	33.343
mean		24.9			25.64	33.163

OCTOBER

date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	r	17.4	3.0	WSW 2	23.82	32.734
2	o	20.4	22.2	NE 2	24.37	33.255
3	c	20.5	0.2	— 0	24.53	33.414
4	r	19.9	—	ENE 1	23.50	33.362
5	r	17.7	26.2	NNE 2	23.43	33.077
6	p	18.4	0.4	— 0	23.01	34.285
7	bc	20.2	2.3	NW 1	23.88	34.097
8	b	20.4	—	— 0	23.60	34.283
9	o	21.8	—	NE 1	24.35	34.113
10	r	21.6	6.3	— 0	24.26	34.281
11	o	21.3	14.9	— 0	23.74	33.939
12	o	16.6	12.1	NW 3	23.84	34.659
13	o	18.6	—	NW 2	22.04	34.470
14	r	17.8	18.3	NW 2	22.82	33.555
15	b	20.2	8.3	— 0	22.73	34.031
16	b	18.9	—	— 0	21.76	32.870
17	b	19.6	—	— 0	22.90	33.670
18	o	17.4	—	NW 1	22.24	33.195
19	o	19.1	—	— 0	22.12	33.204
20	b	18.9	—	— 0	21.66	33.475
21	b	19.4	—	NW 1	22.07	33.376
22	bc	20.0	—	NW 1	21.76	33.458
23	o	22.1	4.4	— 0	22.80	33.606
24	bc	20.4	—	NW 1	22.42	33.411
25	b	18.4	—	— 0	21.36	33.787
26	r	15.7	37.0	NNE 2	21.40	33.449
27	bc	16.4	—	NW 2	20.85	33.146
28	bc	16.1	—	NW 2	19.22	32.933
29	bc	16.1	—	— 0	19.81	32.887
30	o	16.6	8.4	NE 2	21.11	32.438
31	bc	18.0	7.9	NE 3	19.74	33.013
mean		18.9			22.49	33.531

NOVEMBER						
date	weather	air tem- perature °C	precipi- tation mm	wind	water tem- perature °C	salinity ‰
1	b	17.6	—	— 0	19.75	33.162
2	b	20.5	—	— 0	20.50	33.454
3	o	18.3	—	NE 2	21.18	34.071
4	o	16.9	4.8	NE 1	21.98	34.102
5	b	17.1	—	NW 2	21.56	34.325
6	c	17.6	—	SE 1	21.57	34.186
7	o	16.8	—	NW 2	21.80	34.215
8	b	14.6	—	NW 3	18.52	33.981
9	b	13.3	—	NW 1	19.48	34.205
10	r	12.2	6.9	NE 1	19.46	33.680
11	b	14.4	10.0	— 0	19.80	33.812
12	b	15.9	—	— 0	19.42	33.803
13	bc	17.8	—	— 0	20.99	34.195
14	o	17.6	0.3	— 0	21.48	34.402
15	r	16.7	8.0	NW 1	21.15	33.784
16	o	13.9	4.3	NW 2	20.44	34.131
17	o	14.3	—	— 0	19.64	34.259
18	o	13.2	2.0	N 1	19.51	34.343
19	b	14.8	—	NW 2	19.22	34.161
20	b	13.8	—	NE 1	19.85	34.062
21	b	12.9	—	E 1	19.72	34.103
22	b	15.7	—	NNW 4	18.63	34.147
23	c	12.8	—	— 0	19.12	33.894
24	b	14.3	—	NW 3	19.10	33.814
25	c	15.5	—	NW 3	17.71	34.248
26	b	14.7	—	NW 2	17.85	33.852
27	c	14.9	—	NE 1	18.33	33.646
28	b	15.7	—	NW 1	18.93	33.671
29	c	13.8	—	NW 3	18.53	34.126
30	c	8.8	—	WNW 4	15.49	34.250
mean		15.2			19.69	34.003

DECEMBER						
date	weather	air tem- perature °C	precipi- tation mm	wind	water tem- perature °C	salinity ‰
1	o	11.3	—	WNW 3	15.75	34.653
2	b	10.4	—	N 1	17.80	34.691
3	bc	15.9	3.5	WNW 2	18.81	34.930
4	bc	10.8	—	NW 2	17.80	34.682
5	c	11.3	—	NE 1	18.14	34.745
6	bc	13.2	0.4	— 0	17.90	34.789
7	bc	7.4	0.5	N 2	15.50	34.656
8	bc	9.4	—	N 2	17.00	34.533
9	bc	8.8	—	N 2	16.60	34.668
10	b	9.1	—	NW 1	16.51	34.990
11	b	10.7	—	— 0	17.10	34.965
12	c	12.0	54.0	W 2	16.82	34.688
13	b	8.4	—	NW 1	16.10	34.998
14	bc	9.8	—	— 0	16.80	34.929
15	bc	9.6	1.7	N 2	16.00	34.923
16	bc	8.4	—	N 1	15.50	34.950
17	b	11.2	—	N 1	16.20	35.035
18	o	11.8	3.9	— 0	17.30	34.961
19	d	15.1	1.6	— 0	19.50	34.946
20	b	11.8	2.6	N 1	17.30	34.946
21	b	11.6	—	N 1	17.20	34.942
22	c	8.8	—	N 1	15.30	35.044
23	o	8.6	—	N 1	15.30	34.963
24	bc	7.9	—	— 0	16.30	34.962
25	d	11.9	—	— 0	16.30	34.858
26	r	12.5	39.0	N 1	17.40	32.803
27	r	12.4	6.2	— 0	17.80	34.244
28	bc	9.6	30.6	N 1	16.50	34.553
29	b	4.2	—	— 0	14.12	34.063
30	r	12.0	1.5	— 0	16.88	34.518
31	o	12.4	25.4	NW 1	17.42	34.653
mean		10.6			16.80	34.719