

# Oceanographic Data Tables of the 8th Japanese Antarctic Research Expedition 1966-1967

Ryuzo WATANABE,\* Masaru SHIOZAKI\* and Yukio SUGIMURA\*\*

## 第8次南極地域観測隊海洋部門報告

渡辺隆三\*・塩崎 愈\*・杉村行男\*\*

### 要 旨

第8次南極地域観測(1966-1967)において、  
定常観測として行なった表面観測、バシサーモ

グラフ観測および垂直(各層)観測の結果を報  
告する。

This report deals with the data of the oceanographic observations made on board the icebreaker FUJI during the summer mission of the 8th Japanese Antarctic Research Expedition in 1966-1967. The track chart of the cruise is shown in Fig. 1, and the locations of standard oceanographic stations are given in Fig. 2.

**Surface observations:** Surface temperature measurements and surface water samplings for chemical analyses were made three times a day from Fremantle to Syowa Station and twice a day for the rest of the cruise, so far as the circumstances permitted. The results are given in Table 1.

**Current measurements:** Measurements of surface currents were made by GEK twice a day except the region near the magnetic equator and in the pack ice area. The results are also given in Table 1.

**Bathythermograph observation:** Water temperature in the upper layer (surface to about 250 metres depth) was measured with bathythermograph (BT) at almost the same frequency as the surface observations except in the ice. The results are given in Table 2.

**Vertical (serial) observation:** Standard oceanographic observations were made

\* 海上保安庁水路部. Hydrographic Division, Maritime Safety Agency, Tsukiji 5-chome, Chuo-ku, Tokyo.

\*\* 気象研究所. Meteorological Research Institute, 35-8, Koenji-Kita 4-chome, Suginami-ku, Tokyo.

at 18 stations in the Southern Ocean, using reversing thermometers and Nansen-type water bottles (Fig. 2).

The observed data are shown in Table 3 with pertinent meteorological data. The interpolated and computed values (temperature, salinity, sigma-t, and dynamic

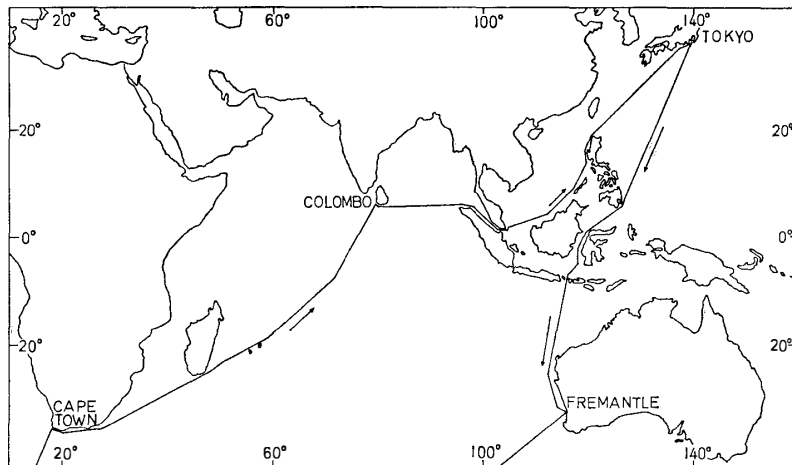


Fig. 1. Track of JARE-8 cruise 1966-1967.

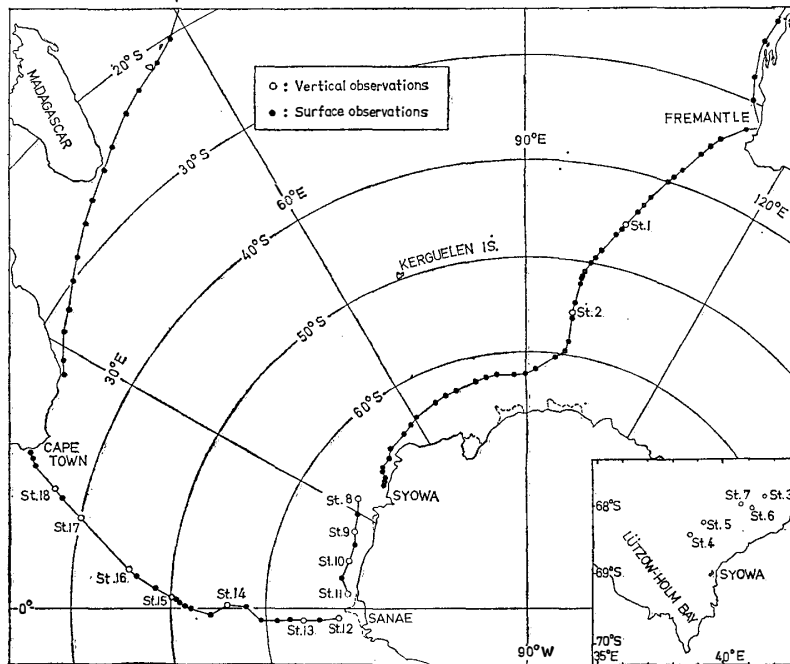


Fig. 2. Track of JARE-8 cruise and oceanographic stations 1966-1967.

depth anomalies) at standard depths are also included in Table 3. These values were calculated using electronic computer facilities available at the Japanese Oceanographic Data Center in Hydrographic Division.

**Chemical analyses of sea water :** The followings are the elements and the methods (or instruments) of analyses. The results are also presented in Table 3.

Salinity	Inductive salinometer
pH	Potentiometric method (pH-meter with glass electrode)
Dissolved oxygen	Winkler method
Silicate-Si	Robinson and Thompson method
Phosphate-P	Denigès method
Nitrite-N	Griess-Romijn method
Nitrate-N	Mullin and Riley method
Ammonium-N	Richards and Kletsch method

*(Received November 30, 1967)*

Table 1. Surface observation data.

Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>2</sub>	Phosphate-P	Silicate-Si	Nitrite-N	Nitrate-N	Ammonia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
1966 Dec.1	1400	0500	Leave	Tokyo												kt	
2	1800	0900	30°57' 2N	137°22' 8 E	14.2	23.0	—	—	4.98	0.05	1	0.06	—	—	270°	0.3	
3	0900	0000	27-54.5	135-50.0	18.0	23.1	34.73	8.37	4.90	—	2	0.04	—	2.4	—	—	BT. 1
	1800	0900	26-12.5	135-01.0	19.4	24.2	34.84	8.31	4.72	0.01	1	0.02	—	0.5	308	0.6	BT. 2
4	0900	0000	23-22.4	133-30.0	23.0	24.9	34.86	8.32	4.73	0.00	1	0.01	—	1.2	27	0.3	BT. 3
	1800	0900	21-41.2	132-39.0	25.1	26.3	34.85	8.32	4.66	0.00	0	0.03	—	0.8	195	0.6	BT. 4
5	0900	0000	18-53.0	131-21.0	27.3	27.5	34.51	8.32	4.45	0.00	1	0.01	—	0.3	340	1.5	BT. 5
	1800	0900	17-14.0	130-33.2	26.9	27.9	34.61	8.37	4.45	0.00	0	0.00	—	0.3	—	—	
6	0900	0000	14-18.5	129-26.0	28.6	28.1	34.47	8.29	4.47	0.05	0	0.01	0.6	0.5	—	—	BT. 6
	1800	0900	12-30.5	128-48.2	28.1	28.4	34.33	8.27	4.36	0.05	1	0.01	0.7	0.7	—	—	BT. 7
7	0900	0000	9-26.0	127-40.0	29.2	28.6	34.19	8.27	4.43	0.04	1	0.02	0.4	0.4	—	—	BT. 8
	1800	0900	7-27.5	126-46.0	28.3	28.6	33.83	8.27	4.49	0.05	1	0.02	0.7	0.9	—	—	BT. 9
8	0900	0100	4-23.0	124-20.8	28.0	28.7	34.09	8.24	4.44	0.04	1	0.02	0.6	0.8	—	—	BT. 10
	1800	1000	3-03.6	122-41.2	28.4	29.5	34.24	8.24	4.53	0.00	0	0.00	0.7	1.0	—	—	BT. 11
9	0900	0100	1-19.5	120-16.2	28.2	28.6	33.50	8.26	4.48	0.00	1	0.01	0.6	1.3	—	—	BT. 12
	1800	1000	0-18.6 S	119-13.0	27.5	28.9	33.20	8.26	4.40	0.00	2	0.02	0.5	0.8	—	—	BT. 13
10	0900	0100	3-21.0	118-33.8	28.1	29.1	33.64	8.25	4.54	0.00	1	0.02	0.6	0.4	—	—	BT. 14
	1800	1000	5-19.7	118-15.8	26.0	28.9	33.45	8.27	4.38	0.11	1	0.00	0.6	0.3	—	—	
11	0900	0100	7-57.4	116-07.6	29.0	29.5	34.31	8.25	4.44	0.00	2	0.03	0.7	0.3	—	—	BT. 15
	1800	1000	9-37.0	115-34.0	29.0	29.4	33.12	8.28	4.42	0.00	1	0.01	0.8	0.7	67	1.7	BT. 16
12	0900	0100	12-43.5	114-54.0	28.5	28.9	34.30	8.24	4.37	0.08	1	0.03	0.6	1.3	280	0.5	BT. 17
	1800	1000	14-38.0	114-34.0	28.5	28.8	34.64	8.24	4.47	0.05	2	0.06	1.0	0.4	24	0.9	BT. 18
13	0900	0100	17-40.0	113-59.0	27.6	28.0	34.52	8.26	4.54	0.09	1	0.02	0.8	0.9	95	0.4	BT. 19
	1800	1000	19-29.0	113-36.0	27.6	28.3	35.01	8.24	4.68	0.05	2	0.01	0.5	0.1	12	0.6	BT. 20
14	0900	0100	22.42.8	113-03.4	25.9	24.5	35.21	8.26	4.74	0.04	2	0.03	0.8	0.7	356	0.5	BT. 21
	1800	1000	24-42.0	112-41.0	24.8	23.3	35.34	8.27	4.89	0.08	1	0.01	0.8	0.4	—	—	

Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>2</sub>	Phos- phate-P	Sili- cate-Si	Nitrite- -N	Ni- trate-N	Ammo- nia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
Dec. 15	0900	0100	27°54' 5 S	113°02' 4 E	22.9	22.5	35.46	8.28	4.86	0.08	1	0.00	0.9	0.0	347	0.9 <sup>kt</sup>	BT. 22
	1800	1000	29-47.0	113-54.5	25.0	23.4	35.54	8.29	—	0.05	1	0.00	—	0.3	57	0.9	BT. 23
16			Arrive in	Fremantle													
22			Leave	Fremantle													
	2100	1300	32-30.2	114-28.8	19.6	20.5	33.69	8.26	5.12	0.13	1	0.05	0.6	0.7	—	—	BT. 24
23	0900	0200	34-11.5	112-16.3	17.6	18.4	35.81	8.29	5.35	0.08	1	0.02	0.6	0.6	190	0.4	BT. 25
	1500	0800	35-15.0	111-35.0	17.3	18.9	35.83	8.28	5.27	0.08	1	0.01	—	0.4	—	—	BT. 26
	2100	1400	36-16.6	110-48.6	16.4	17.9	35.84	8.22	5.32	0.09	0	0.00	0.6	0.7	278	0.3	BT. 27
24	0900	0200	38-16.5	109-19.0	12.2	15.3	35.25	8.22	5.72	0.36	0	0.04	2	1.3	148	0.3	BT. 28
	1500	0800	39-12.8	108-40.0	12.4	14.2	35.02	8.22	6.07	0.39	0	0.08	—	0.9	—	—	BT. 29
	2000	1300	39-55.6	108-12.0	12.7	13.3	34.89	8.19	6.11	0.55	1	0.13	6	1.1	20	0.8	BT. 30
25	0800	0100	41-51.4	106-46.1	12.6	12.2	34.80	8.19	6.15	0.62	1	0.17	8	0.6	183	0.5	BT. 31
	1400	0700	42-46.0	106-04.2	10.0	11.1	34.67	8.18	6.17	0.71	1	0.17	—	0.8	—	—	BT. 32
	2000	1300	43-35.0	105-27.0	7.1	10.8	34.69	8.18	6.21	0.78	1	0.13	11	1.1	—	—	BT. 33
26	0700	0000	45-04.2	104-16.5	6.1	9.1	34.41	8.18	6.51	0.97	1	0.18	13	0.2	30	0.1	St.1, BT.34
	1400	0700	45-33.0	103-51.9	7.8	8.4	34.23	8.21	6.66	1.09	1	0.20	—	0.5	—	—	
	2000	1300	46-22.4	103-14.3	6.7	9.9	34.63	8.18	6.27	0.86	1	0.18	14	0.5	—	—	BT. 35
27	0800	0200	48-24.2	101-36.3	5.0	5.3	33.98	8.17	6.97	1.28	1	0.22	23	0.4	304	1.1	BT. 36
	1400	0800	49-08.1	101-00.0	4.0	5.3	33.94	8.17	7.06	1.32	0	0.24	—	—	—	—	BT. 37
	2000	1400	49-49.4	100-26.3	3.1	5.2	33.95	8.17	7.04	1.38	1	0.22	22	0.6	—	—	BT. 38
28	0800	0200	50-45.4	99-40.7	3.0	3.6	33.95	8.15	7.24	1.42	2	0.24	24	0.8	—	—	
	1400	0800	51-17.0	99-22.5	2.9	3.8	33.93	8.19	7.29	1.38	0	0.21	—	—	—	—	
	1500	0900	51-25.0	99-21.9	2.9	3.7	—	—	—	—	—	—	—	—	—	—	BT. 39
	2000	1400	52-03.2	99-17.0	2.0	3.9	33.93	8.19	7.20	1.37	2	0.20	22	1.3	—	—	BT. 40

Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>3</sub>	Phos-phate-P	Sili-cate-Si	Nitrite-N	Ni-trate-N	Ammo-nia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
Dec. 29	0800	0200	54°19' 2 S	98°58' 0 E	1.3	2.5	33.96	8.18	7.54	1.44	6	0.24	26	1.8	—	—	BT. 41
	1300	0700	55-19.7	98-49.0	1.3	2.2	33.99	8.16	7.44	1.72	10	0.19	25	0.8	301	0.4	St.2,BT.42
	2000	1400	55-54.6	98-52.0	2.1	1.9	33.98	8.20	7.59	1.63	8	0.22	26	1.1	—	—	
30	0800	0200	58-24.2	98-52.0	1.2	0.4	33.99	8.17	7.85	1.54	23	0.24	28	0.3	350	0.5	BT. 43
	1400	0800	59-30.3	98-14.3	2.5	0.6	—	8.03	7.78	1.56	24	0.25	—	—	—	—	BT. 44
	2000	1400	60-18.4	96-23.0	1.0	-0.2	33.95	8.18	8.02	1.41	25	0.22	25	1.0	—	—	BT. 45
31	0800	0300	61-52.2	92-12.1	0.1	0.1	33.84	8.20	8.03	1.46	27	0.19	29	0.9	—	—	BT. 46
	1400	0900	62-14.8	89-52.0	0.7	0.1	33.93	8.16	7.86	1.65	29	0.21	—	—	—	—	BT. 47
	2000	1500	62-26.0	87-14.5	0.4	-0.1	33.89	8.13	7.94	1.71	37	0.19	25	0.5	228	0.4	BT. 48
1967																	
Jan.1	0800	0300	62-10.7	83-04.0	1.2	0.0	33.58	8.20	7.99	1.57	24	0.20	26	1.8	—	—	BT. 49
	1400	0900	62-24.2	80-23.0	2.9	0.3	33.62	8.19	7.85	1.66	22	0.28	—	—	—	—	BT. 50
	2000	1500	62-38.0	77-45.6	0.4	-0.2	33.62	8.15	7.80	1.87	30	0.24	27	0.9	230	0.8	BT. 51
2	0800	0300	63-05.0	72-22.4	0.3	-0.4	33.50	8.15	7.88	1.90	30	0.25	28	0.7	288	0.4	BT. 52
	1400	0900	63-18.1	69-30.5	1.6	1.0	33.56	8.17	7.83	1.72	22	0.25	—	—	—	—	BT. 53
	2000	1500	63-31.7	66-44.1	0.7	0.3	33.67	8.22	7.87	1.73	24	0.25	28	0.6	348	0.8	BT. 54
3	0800	0400	64-01.0	60-40.0	0.0	-0.6	33.87	8.18	7.79	1.85	32	0.25	28	0.5	220	0.2	BT. 55
	1400	1000	64-28.7	58-21.0	1.0	-0.6	33.78	8.16	7.90	1.95	34	0.26	—	—	—	—	BT. 56
	2000	1600	64-57.0	55-27.5	0.0	-1.1	33.71	8.14	7.75	1.87	35	0.25	28	0.5	—	—	BT. 57
4	0800	0400	65-18.7	50-04.7	-0.8	-1.3	33.87	8.15	7.77	1.98	38	0.22	28	1.2	—	—	
	2000	1600	66-05.5	48-24.0	0.2	-1.6	33.83	8.15	7.78	2.00	42	0.19	27	1.1	—	—	
5	0800	0400	66-21.9	46-10.0	-0.8	-1.8	34.08	8.11	7.38	1.95	46	0.13	31	1.1	—	—	
	1400	1000	66-41.1	44-32.0	0.0	-1.7	34.13	8.11	7.13	2.17	47	0.10	—	—	—	—	
6	0830	0530	67-26.2	43-47.0	-2.0	-1.1	33.92	8.12	7.68	2.03	46	0.11	28	0.8	—	—	BT. 58
	1945	1645	67-37.5	42-25.8	-0.7	-1.4	33.89	8.10	7.58	2.01	45	0.09	28	1.2	—	—	Dredge 1
7	0600	0300	67-50.6	41-41.6	-6.0	-1.6	34.04	8.12	7.45	2.08	44	0.07	35	5.3	—	—	St. 3

Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>2</sub>	Phos-phate-P	Sili-cate-Si	Nitrite-N	Ni-trate-N	Ammo-nia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
Feb.6	2045	1745	69°10'6 S	39°36'5 E	-2.9	-0.9	too low	8.86	9.18	0.10	21	0.07	—	3.6	—	—	kt
7	0800	0500	69-02.6	39-19.1	-3.9	-1.5	32.15	8.44	9.87	0.84	47	0.13	13	2.6	—	—	
	1400	1100	68-44.8	48-48.0	-4.1	-1.7	33.74	8.19	7.45	1.76	54	0.05	—	—	—	—	
	2000	1700	68-27.0	38-46.0	-5.2	-1.8	33.51	8.15	7.53	1.84	51	0.10	28	1.4	—	—	
8	1100	0800	68-25.3	38-45.5	-4.2	-1.8	33.39	8.16	7.48	1.77	49	0.11	29	0.8	—	—	
10	1015	0715	68-25.4	38-46.1	-4.5	-1.6	32.81	8.17	7.67	2.62	55	0.17	27	1.0	—	—	St. 4
11	1000	0700	68-18.6	39-20.0	-7.5	-1.6	33.45	8.18	7.90	1.89	40	0.12	25	0.7	—	—	St. 5
12	1810	1510	68-02.2	41-12.1	-4.9	-1.4	32.37	8.25	8.29	1.56	36	0.12	24	0.6	—	—	Dredge 2
13	1440	1140	67-59.3	40-44.5	-4.8	-1.7	33.17	8.26	8.34	1.49	37	0.08	23	1.3	—	—	St. 6
14	1500	1200	67-26.3	39-28.3	-3.8	-0.7	33.58	8.21	7.92	1.59	39	0.13	28	1.2	—	—	St. 7
15	0445	0145	66-29.8	33-44.6	-4.3	-1.6	33.41	8.17	7.60	1.96	41	0.18	31	0.8	—	—	St.8,BT.59
	1800	1500	67-44.2	29-33.0	-3.6	-1.7	33.42	8.17	7.53	1.77	44	0.22	22	1.1	—	—	BT. 60
16	0200	0000	67-59.4	24-41.9	-3.8	-1.6	33.32	8.15	7.80	1.94	46	0.28	32	0.7	300	1.6	St.9,BT.61
	2200	2000	68-46.0	20-25.0	-3.3	-1.3	33.72	8.15	7.80	1.84	47	0.24	—	1.0	—	—	BT. 62
17	0730	0530	68-42.4	15-02.4	-7.7	-1.7	33.75	8.17	7.85	1.86	43	0.19	29	0.4	—	—	St. 10, BT. 63
	2000	1800	68-11.9	9-48.5	-5.8	-1.2	34.03	8.23	7.84	1.84	52	0.09	—	1.0	180	0.2	BT. 64
18	0430	0230	69-10.5	4-52.2	-2.5	-1.7	33.59	8.17	7.72	1.93	53	0.13	32	1.2	197	0.2	St. 11, BT. 65
		off	SANAE	Coast													
23	0430	0230	68-05.3	3-07.8W	-0.3	-0.2	34.09	8.16	7.70	1.88	59	0.19	30	1.2	314	0.1	St. 12, BT. 66
	1900	1700	66-00.0	3-19.0	1.0	0.4	33.97	—	—	—	—	—	—	—	20	0.6	BT. 67
24	0430	0230	64-04.2	3-05.0	0.3	1.2	33.87	8.22	7.29	1.55	34	0.19	24	1.2	356	0.2	St. 13, BT. 68
	1500	1300	62-45.9	2-50.5	0.7	0.6	33.97	—	—	—	—	—	—	—	—	—	BT. 69
	2200	2000	61-17.6	2-53.8	0.5	0.6	34.01	—	—	—	—	—	—	—	—	—	BT. 70
25	0700	0500	59-36.1	2-50.5	0.2	1.1	34.00	8.13	7.29	1.67	48	0.41	33	0.7	—	—	BT. 71
	2000	1800	58-02.2	0-06.3 E	1.5	1.2	33.92	8.15	7.27	1.71	46	0.34	27	0.7	—	—	BT. 72

Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>2</sub>	Phos- phate-P	Sili- cate-Si	Nitrite -N	Ni- trate-N	Ammo- nia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
Feb. 26	1900	1700	55°55' 3 S	0°32' 9 E	1.2	1.2	33.94	8.17	7.53	1.72	42	0.30	31	1.6	295	0.3	St. 14, BT. 73
Mar. 1	2200	2000	54-04.2	1-20.0W	1.1	1.7	33.93	—	—	—	—	—	—	—	40	0.5	BT. 74
2	0800	0600	52-02.9	0-00.0	2.1	2.9	33.88	8.18	7.27	1.53	9	0.33	25	0.5	—	—	BT. 75
	1100	0900	51-28.9	0-27.8 E	3.0	3.5	33.88	8.18	7.24	1.40	6	0.21	—	—	—	—	
	1400	1200	50-57.5	0-57.4	3.1	3.7	33.87	8.20	7.10	1.23	2	0.21	—	—	—	—	
	1700	1500	50-30.6	1-31.0	5.0	3.9	33.88	8.20	7.08	1.32	4	0.25	—	—	—	—	
	1800	1600	50-14.2	1-42.2	5.5	3.9	33.88	8.21	7.01	1.38	4	0.25	24	1.7	11	0.4	St. 15, BT. 76
3	1000	0800	48-20.9	3-05.0	5.5	5.5	33.87	8.19	6.69	1.35	2	0.25	—	—	—	—	BT. 77
	2100	1900	46-26.3	4-51.3	6.7	6.9	33.90	8.20	6.67	1.39	1	0.25	18	1.6	—	—	BT. 78
4	0300	0100	45-29.8	5-42.8	6.6	6.1	33.85	8.21	6.80	1.45	2	0.23	22	0.9	—	—	St. 16, BT. 79
	1800	1600	43-36.8	7-25.2	11.1	8.4	34.06	8.25	6.42	1.13	2	0.21	18	0.9	—	—	BT. 80
5	1700	1500	40-00.0	11-42.6	16.4	15.7	34.75	8.24	5.52	0.48	1	0.10	1	0.5	—	0	St. 17, BT. 81
6	1000	0800	37-56.5	13-41.0	15.5	15.9	34.87	8.25	5.66	0.33	1	0.10	—	—	0	1.0	BT. 82
	1500	1300	37-02.8	14-29.5	19.8	22.0	35.44	8.28	5.03	0.14	1	0.00	0	1.0	23	1.1	St. 18, BT. 83
7	0700	0500	34-34.8	16-33.0	20.6	19.6	—	—	—	—	—	—	—	—	—	—	
	1000	0800	34-10.0	17-10.4	20.9	21.0	—	—	—	—	—	—	—	—	—	—	
	1300	1100	33-51.0	17-54.7	16.0	14.3	34.94	8.22	6.13	0.47	4	0.27	—	1.9	—	—	
8			Arrive	Cape Town													
14	1400	1200	Leave	Cape Town													
15	0800	0600	34-59.2	21-28.5 E	19.4	19.6	35.25	8.31	5.30	0.12	1	0.03	0.3	1.7	—	—	
	1800	1600	34-37.6	24-01.7	20.6	20.5	35.25	8.30	5.39	0.14	0	0.02	0.3	0.9	—	—	
16	0800	0600	33-53.2	27-10.2	23.1	23.3	35.13	8.31	4.78	0.17	0	0.01	0.2	0.6	220	1.8	BT. 84
	1800	1600	33-11.5	28-41.6	24.1	25.8	35.17	8.27	4.56	0.17	1	0.01	0.1	0.5	—	—	BT. 85
17	0800	0600	31-54.5	31-19.6	24.0	25.7	35.35	8.27	4.67	0.17	1	0.01	0.1	0.4	296	0.2	BT. 86
	1800	1600	31-12.7	33-34.0	25.1	26.0	35.38	8.28	4.62	0.15	1	0.00	0.0	0.9	276	0.7	BT. 87



Date	Time		Position		Air temp.	Water temp.	S	pH	O <sub>2</sub>	Phos-phate-P	Sili-cate-Si	Nitrite-N	Ni-trate-N	Ammn-ia-N	Current		Remarks
	LMT	GMT	Lat.	Long.	°C	°C	‰		cc/L	μg-atoms/L					Dir.	Speed	
Mar. 18	0800	0500	30°03' 2 E	36°23' 6 E	24.6	25.9	35.26	8.27	4.61	0.17	1	0.00	0.2	0.2	328	0.6 <sup>kt</sup>	BT. 88
	1800	1500	29-05.0	38-30.7	25.4	26.4	35.19	8.29	4.56	0.19	1	0.00	0.1	—	273	0.9	BT. 89
19	0800	0500	27-38.2	41-33.0	25.1	25.1	35.40	8.27	4.68	0.15	1	0.00	0.1	0.1	—	—	BT. 90
	1800	1500	26-50.4	43-37.9	26.2	26.3	35.35	8.27	4.62	0.12	1	0.00	0.1	0.7	186	0.6	BT. 91
20	0800	0500	25-33.5	46-32.0	27.2	27.4	35.15	8.30	4.51	0.14	1	0.00	0.2	0.5	32	0.7	
	1800	1500	24-32.3	48-33.8	28.1	28.9	35.03	8.28	4.49	0.15	1	0.00	0.2	0.5	14	1.2	BT. 92
21	0800	0500	23-12.0	51-33.1	27.5	28.7	34.83	8.26	4.47	0.17	1	0.00	0.3	0.3	54	0.4	BT. 93
	1800	1500	22-22.5	53-41.5	27.5	29.0	35.07	8.27	4.48	0.14	1	0.00	0.1	0.4	300	0.5	BT. 94
22	0800	0400	21-18.0	56-22.0	27.6	28.1	35.10	8.26	4.49	0.15	1	0.00	0.1	0.3	30	0.6	BT. 95
	1800	1400	20-13.3	58-19.6	27.6	28.7	34.81	8.27	4.63	0.20	1	0.00	0.2	0.3	7	0.9	BT. 96
23	0800	0400	18-12.0	60-37.9	27.8	28.2	34.94	8.27	4.53	0.20	1	0.00	0.2	0.2	335	0.8	BT. 97
	1800	1400	16-52.5	62-10.0	26.2	28.3	34.35	8.28	4.62	0.22	1	0.00	0.1	0.4	310	0.5	BT. 98
24	0800	0400	14-53.5	64-34.2	27.1	28.4	34.29	8.27	4.52	0.18	1	0.00	0.1	0.4	15	0.9	BT. 99
	1800	1400	13-25.5	66-14.0	28.2	28.8	34.20	8.27	4.45	0.18	1	0.01	0.1	0.4	295	0.2	BT. 100
25	0800	0300	11-36.5	68-11.6	27.6	28.7	34.05	8.27	4.53	0.14	1	0.01	0.1	0.3	272	0.8	BT. 101
	1800	1300	10-20.3	69-41.0	25.6	28.6	33.90	8.25	4.53	0.21	1	0.00	0.1	0.2	320	0.2	BT. 102
26	0800	0300	8-26.8	71-56.0	27.1	28.8	34.06	8.26	4.61	0.21	1	0.00	0.2	0.3	50	1.0	BT. 103
	1800	1300	6-44.0	73-18.8	28.6	29.9	34.00	8.26	4.45	0.19	1	0.00	0.1	0.2	15	1.1	BT. 104
27	0800	0300	4-00.0	74-47.6	29.1	29.5	34.96	8.25	4.53	0.29	2	0.00	0.1	0.5	—	—	BT. 105
	1800	1300	2-03.0	75-37.1	29.1	29.5	34.77	8.24	4.40	0.28	1	0.00	0.1	0.6	—	—	BT. 106
28	0800	0300	0-41.0 N	76-31.0	28.4	29.1	34.77	8.26	4.53	0.28	1	0.00	0.1	0.2	—	—	BT. 107
	1800	1300	2-35.1	77-28.0	28.9	29.6	34.83	8.25	4.50	0.28	0	0.00	0.2	0.6	—	—	BT. 108
29	0800	0230	5-05.8	79.02.3	27.2	28.8	34.01	8.25	4.55	0.21	0	0.00	0.2	0.7	—	—	BT. 109
			Arrive in Leave	Colombo Colombo													



Table 2. Bathythermograph observation data.

St. No.	Date			Time GMT	Time Merid- ian	Latitude	Longitude	Temperature (°C) at indicated depth (m)										
	Day	Mo.	Yr.					0	10	20	30	50	75	100	125	150	200	250
1	3	Dec.	1966	0000	0900	27°-54'5 N	135°-50'0 E	23.1	23.1	23.1	23.2	23.2	22.2	20.3	19.3	18.7	—	—
2	3			0900	1800	26°-12'5	135°-01'0	24.2	24.2	24.2	24.2	24.2	21.3	20.0	19.3	19.0	—	—
3	4			0000	0900	23°-22'4	133°-30'0	24.9	24.9	24.9	24.9	24.9	22.0	21.0	19.7	19.1	—	—
4	4			0900	1800	21°-41'2	132°-39'0	26.3	26.3	26.3	26.3	26.3	21.6	20.4	19.0	18.6	17.5	—
5	5			0000	0900	18°-53'0	131°-21'0	27.5	27.5	27.5	27.5	27.5	25.0	23.6	—	—	—	—
6	6			0000	0900	14°-18'5	129°-26'0	28.1	28.1	28.1	28.1	28.1	28.1	26.5	24.9	23.7	—	—
7	6			0900	1800	12°-30'5	128°-48'2	28.4	28.4	28.4	28.4	28.4	26.9	25.7	24.2	22.3	17.9	—
8	7			0000	0900	9°-26'0	127°-40'0	28.6	28.6	28.6	28.6	28.4	26.6	23.1	19.4	17.5	13.0	—
9	7			0900	1800	7°-27'5	126°-46'0	28.6	28.7	28.7	28.7	27.4	25.7	23.3	20.0	18.7	—	—
10	8			0100	0900	4°-23'0	124°-20'8	28.7	28.6	28.4	28.2	25.8	25.6	22.3	19.4	—	—	—
11	8			1000	1800	3°-03'6	122°-41'2	29.5	29.2	29.2	29.1	28.9	25.7	24.1	23.1	21.2	—	—
12	9			0100	0900	1°-19'5	120°-16'2	28.6	28.8	29.0	27.5	27.4	25.3	24.2	22.0	19.6	16.3	—
13	9			1000	1800	0°-18'6 S	119°-13'0	28.9	29.1	29.3	28.6	27.6	27.3	24.4	23.3	20.9	16.7	—
14	10			0100	0900	3°-21'0	118°-33'8	29.1	29.1	29.1	29.1	29.0	28.3	26.4	24.5	20.5	15.7	—
15	11			0100	0900	7°-57'4	116°-07'6	29.5	29.4	29.0	28.6	27.2	25.5	23.5	19.5	16.9	13.3	—
16	11			1000	1800	9°-37'0	115°-34'0	29.4	28.8	28.7	28.7	27.0	24.8	22.7	19.7	18.2	13.9	—
17	12			0100	0900	12°-43'5	114°-54'0	28.9	28.9	28.7	28.7	27.5	25.6	24.3	22.6	20.2	16.5	—
18	12			1000	1800	14°-38'0	114°-34'0	28.8	28.8	28.8	28.7	28.2	26.1	24.6	23.3	22.1	18.7	—
19	13			0100	0900	17°-40'0	113°-59'0	28.0	28.0	28.0	27.4	24.8	23.7	23.0	22.0	21.3	18.6	—
20	13			1000	1800	19°-29'0	113°-36'0	28.3	26.8	26.0	25.0	24.0	23.0	22.5	21.9	20.8	18.6	—
21	14			0100	0900	22°-42'8	113°-03'4	24.5	24.5	24.4	24.4	23.7	22.5	22.0	21.6	21.0	—	—
22	15			0100	0900	27°-54'5	113°-02'4	22.5	22.3	22.2	22.2	22.2	20.6	19.8	19.4	18.9	—	—
23	15			1000	1800	29°-47'0	113°-54'5	23.4	23.3	23.2	22.7	21.5	21.1	20.4	19.4	18.9	17.8	—
24	22			1300	2100	32°-30'2	114°-28'8	20.5	20.4	20.4	20.4	20.2	20.1	19.6	19.1	18.7	17.6	—
25	23			0200	0900	34°-11'5	112°-16'3	18.4	18.4	18.3	16.3	14.9	14.4	14.2	13.7	13.4	12.5	—

St. No.	Date			Time GMT	Time Merid- ian	Latitude	Longitude	Temperature (°C) at indicated depth (m)										
	Day	Mo.	Yr.					0	10	20	30	50	75	100	125	150	200	250
26	23	Dec.	1966	0800	1500	35°-15'0S	111°-35'0E	18.9	18.3	18.2	17.7	16.1	15.0	14.2	13.4	13.1	12.0	—
27	23			1400	2100	36°-16'6	110°-48'6	17.9	17.6	17.5	17.5	16.5	15.0	14.7	14.4	13.7	12.7	—
28	24			0200	0900	38°-16'5	109°-19'0	15.3	15.3	15.3	15.3	12.8	12.7	11.6	11.4	11.2	10.9	10.8
29	24			0800	1500	39°-12'8	108°-40'0	14.3	14.1	14.1	14.1	12.5	12.1	11.7	11.5	11.5	11.3	—
30	24			1300	2000	39°-55'6	108°-12'0	13.3	13.3	13.3	13.3	12.1	11.8	11.6	11.4	11.2	11.0	10.9
31	25			0100	0800	41°-51'4	106°-46'7	12.2	12.2	12.2	12.2	11.1	11.1	10.8	10.8	10.5	10.5	—
32	25			0700	1400	42°-46'0	106°-04'2	11.1	11.1	11.1	11.1	11.1	9.9	9.9	9.9	9.5	9.4	9.6
33	25			1300	2000	43°-35'0	105°-27'0	10.8	10.8	10.8	10.8	10.8	9.9	9.9	9.9	9.9	9.6	9.7
34	26			0000	0700	45°-09'2	104°-16'5	9.1	9.2	9.2	9.2	9.2	9.2	9.2	8.5	8.3	8.4	8.5
35	26			1300	2000	46°-22'4	103°-14'3	9.9	9.9	9.9	9.9	10.0	10.0	10.0	10.0	9.5	9.6	—
36	27			0200	0800	48°-24'2	101°-36'3	5.3	5.3	5.3	5.3	5.3	5.3	5.0	4.8	4.5	3.5	3.1
37	27			0800	1400	49°-08'1	101°-00'0	5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.0	4.3	3.8	3.8
38	27			1400	2000	49°-49'4	100°-26'3	5.2	5.2	5.2	5.2	5.2	5.2	5.2	4.1	3.9	3.5	3.1
39	28			0900	1500	51°-25'0	99°-21'9	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.9	2.5	2.6	3.0
40	28			1400	2000	52°-03'2	99°-17'0	3.9	3.9	3.9	3.8	3.5	2.4	2.4	2.0	2.0	1.5	—
41	29			0200	0800	54°-19'2	98°-58'0	2.5	2.5	2.5	2.4	2.1	2.0	1.5	0.7	0.5	0.7	—
42	29			0700	1300	55°-19'7	98°-49'0	2.2	2.2	2.2	2.2	1.9	1.8	1.2	1.3	1.4	2.0	—
43	30			0200	0800	58°-24'2	98°-52'0	0.4	0.4	0.3	0.3	0.3	-0.2	-0.3	-0.3	0.4	—	—
44	30			0800	1400	59°-30'3	98°-14'3	0.6	0.6	0.5	0.4	0.2	-0.7	-0.8	-0.7	0.2	1.9	—
45	30			1400	2000	60°-18'4	96°-23'0	0.2	0.1	-0.2	0.0	-0.3	-0.5	-0.2	0.3	1.0	1.8	—
46	31			0300	0800	61°-52'2	92°-12'1	0.1	0.1	0.0	-0.1	-1.1	-1.2	-1.0	-0.4	0.0	—	—
47	31			0900	1400	62°-14'8	89°-52'0	0.1	0.0	-0.1	-0.2	-0.9	-1.3	-1.1	-0.7	-0.2	0.7	—
48	31			1500	2000	62°-26'0	87°-14'5	0.1	0.1	0.1	0.1	-1.2	-1.2	-0.9	-0.1	0.6	—	—
49	1	Jan.	1967	0300	0800	62°-10'7	83°-04'0	0.0	0.0	0.0	-0.1	-1.3	-1.1	0.5	1.1	1.6	—	—
50	1			0900	1400	62°-24'2	80°-23'0	0.3	0.2	0.2	0.2	-1.0	-1.0	0.1	1.6	1.9	1.9	—

St. No.	Date			Time GMT	Time Merid- ian	Latitude	Longitude	Temperature (°C) at indicated depth (m)										
	Day	Mo.	Yr.					0	10	20	30	50	75	100	125	150	200	250
51	1	Jan.	1967	1500	2000	62°-38'0 S	77°-45'6 E	-0.2	-0.2	-0.2	-0.2	-1.4	-1.3	1.1	1.4	1.8	—	—
52	2			0300	0800	63°-05'0	72°-22'4	-0.4	-0.4	-0.4	-0.4	-1.4	-1.4	-1.3	-0.2	-0.2	1.1	—
53	2			0900	1400	63°-18'1	69°-30'5	0.2	0.1	0.0	-0.1	-1.2	-0.3	1.7	2.1	2.2	2.3	—
54	2			1500	2000	63°-31'7	66°-44'1	0.3	0.0	-0.1	-0.1	-1.2	-1.2	0.5	1.2	1.6	1.8	—
55	3			0400	0800	64°-01'0	60°-40'0	-0.6	-0.6	-0.6	-0.6	-1.5	-1.5	0.0	0.8	1.3	1.8	—
56	3			1000	1400	64°-28'7	58°-21'0	-0.6	-0.6	-0.5	-0.3	-1.2	-1.2	-0.5	0.6	1.4	2.1	—
57	3			1600	2000	64°-57'0	55°-27'5	-1.1	-1.1	-1.2	-1.4	-1.5	-1.6	-1.4	-1.3	-1.1	0.2	—
58	6			0530	0830	67°-26'2	43°-47'0	-1.1	-1.1	-1.2	-1.2	-1.2	-1.6	-1.6	-1.6	-1.6	-1.5	—
59	15	Feb.		0145	0445	66°-29'8	33°-44'6	-1.6	-1.6	-1.1	-1.4	-1.9	-2.0	-2.0	-2.0	-2.0	-1.3	0.0
60	15			1500	1800	67°-44'2	29°-33'0	-1.7	-1.8	-1.8	-1.8	-1.8	-1.9	-1.9	-1.9	-1.9	-1.4	—
61	16			0000	0200	67°-59'4	24°-41'9	-1.6	-1.4	-1.8	-1.8	-1.8	-1.8	-0.1	0.8	0.9	1.0	—
62	16			2000	2200	68°-46'0	20°-25'0	-1.3	-1.3	-1.3	-1.6	-1.7	-1.7	-1.7	-1.7	-1.6	-0.4	0.7
63	17			0530	0730	68°-42'4	15°-02'4	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.8	-1.8	-1.7	-1.5	—
64	17			1800	2000	68°-11'9	9°-48'5	-1.2	-1.2	-1.2	-1.3	-1.8	-1.4	-1.3	-0.9	-0.6	—	—
65	18			0230	0430	69°-10'5	4°-52'2	-1.7	-1.7	-1.6	-1.5	-1.6	-1.6	-1.3	-1.3	-1.2	-0.3	—
66	23			0230	0430	68°-05'3	3°-07'8W	-0.2	-0.2	-0.2	-0.2	-0.2	-1.5	-1.3	-0.8	-0.4	0.3	0.6
67	23			1700	1900	66°-00'0	3°-19'0	1.1	1.1	1.0	0.9	-1.6	-1.7	-1.7	-1.5	-0.2	1.1	1.2
68	24			0230	0430	64°-04'2	3°-05'0	1.2	1.2	1.2	1.2	-1.7	-1.7	-1.6	-1.2	0.0	1.0	1.0
69	24			1300	1500	62°-45'9	2°-50'5	0.6	0.4	0.2	0.1	-1.1	-1.8	-1.8	-1.7	-0.9	—	—
70	24			2000	2200	61°-17'6	2°-53'8	<b>0.6</b>	<b>0.6</b>	0.6	0.6	-0.9	-1.5	-1.4	0.9	0.0	—	—
71	25			0500	0700	59°-36'1	2°-50'5	1.1	1.1	1.1	1.1	-1.1	-1.5	-1.5	-0.9	-0.2	0.7	—
72	25			1800	2000	58°-02'2	0°-06'3 E	1.2	1.2	1.2	1.2	1.2	-1.1	-0.9	-0.6	0.2	1.3	—
73	26			1700	1900	55°-55'3	0°-32'9	1.2	1.2	1.2	1.2	1.2	0.9	-1.0	-1.1	-1.0	-0.4	—
74	1	Mar.		2000	2200	54°-04'2	1°-20'0W	1.7	1.7	1.7	1.7	1.8	1.3	0.6	-0.2	0.0	0.7	—
75	2			0600	0800	52°-02'9	0°-00'0	2.9	2.8	2.8	2.8	2.9	2.5	0.9	0.5	0.7	1.2	—

St. No.	Date			Time GMT	Time Merid- ian	Latitude	Longitude	Temperature (°C) at indicated depth (m)										
	Day	Mo.	Yr.					0	10	20	30	50	75	100	125	150	200	250
76	2	Mar.	1967	1600	1800	50°-14'2 S	1°-42'2 E	3.9	3.9	3.9	3.9	3.9	3.7	2.8	2.3	1.4	1.1	—
77	3			0800	1000	48°-20'9	3°-05'0	5.5	5.5	5.5	5.5	5.5	5.2	4.5	4.2	3.9	3.5	—
78	3			1900	2100	46°-26'3	4°-51'3	6.9	6.7	6.7	6.7	6.6	6.5	6.2	5.0	4.5	4.2	—
79	4			0400	0600	45°-29'8	5°-42'8	6.1	6.1	6.1	6.1	6.1	6.0	5.3	4.6	4.0	3.9	3.9
80	4			1600	1800	43°-36'8	7°-25'2	8.4	8.4	8.4	8.3	7.9	7.3	7.0	7.2	6.9	6.1	5.6
81	5			1530	1730	40°-00'0	11°-42'6	15.7	15.3	15.3	15.3	15.1	14.3	12.9	12.1	11.8	10.7	—
82	6			0800	1000	37°-56'5	13°-41'0	15.9	15.8	15.4	15.2	15.0	15.4	13.6	13.1	12.1	—	—
83	6			1300	1500	37°-02'8	14°-29'5	22.0	19.6	19.3	19.1	19.0	17.2	15.0	13.5	12.5	11.4	10.5
84	16			0600	0800	33°-53'2	27°-10'2	23.3	23.2	21.1	20.5	18.9	17.2	16.0	14.5	—	—	—
85	16			1600	1800	33°-11'5	28°-41'6	25.8	25.8	25.8	25.8	23.3	20.5	19.1	18.2	17.2	—	—
86	17			0600	0800	31°-54'5	31°-19'6	25.7	25.7	25.7	25.7	25.6	24.9	21.9	20.3	19.4	17.9	—
87	17			1600	1800	31°-12'7	33°-34'0	26.0	25.7	25.7	25.7	25.7	22.9	21.1	19.9	19.2	17.8	—
88	18			0500	0800	30°-03'2	36°-23'6	25.9	25.9	25.9	25.9	25.9	25.9	24.9	22.2	20.9	18.4	—
89	18			1500	1800	29°-05'0	38°-30'7	26.4	26.4	26.4	26.3	26.2	24.7	22.8	21.4	20.4	18.5	—
90	19			0500	0800	27°-38'2	41°-33'0	25.1	25.1	25.1	24.9	23.9	22.1	20.6	19.4	18.4	17.0	—
91	19			1500	1800	26°-50'4	43°-37'9	26.3	26.3	26.1	25.1	22.6	20.5	19.2	18.3	17.6	16.4	—
92	20			1500	1800	24°-32'3	48°-33'8	28.9	28.9	28.8	28.6	26.3	24.7	23.8	22.9	21.4	—	—
93	21			0500	0800	23°-12'0	51°-33'1	28.7	28.7	28.7	27.8	25.8	24.2	23.3	22.8	22.2	20.2	—
94	21			1500	1800	22°-22'5	53°-41'5	29.0	28.8	28.8	28.5	25.8	24.6	24.0	23.4	22.7	20.4	—
95	22			0400	0800	21°-18'0	56°-22'0	28.1	28.1	28.0	27.9	26.7	23.1	22.1	20.8	19.4	17.3	—
96	22			1400	1800	20°-13'3	58°-19'6	28.7	28.5	28.3	27.7	26.0	24.2	22.8	21.7	20.3	18.3	—
97	23			0400	0800	18°-12'0	60°-37'9	28.2	28.2	28.1	27.8	25.3	23.4	22.3	22.1	21.7	19.9	—
98	23			1400	1800	16°-52'5	62°-10'0	28.3	28.3	28.2	28.2	27.5	25.6	23.7	22.6	21.6	19.8	—
99	24			0400	0800	14°-53'5	64°-34'2	28.4	28.4	28.4	28.4	26.7	24.9	22.8	21.9	20.8	18.9	—
100	24			1400	1800	13°-25'5	66°-14'0	28.8	28.8	28.7	28.6	25.7	23.4	21.2	19.2	16.3	15.0	14.4

St. No.	Date			Time	Time	Latitude	Longitude	Temperature (°C) at indicated depth (m)										
	Day	Mo.	Yr.	GMT	Meridian			0	10	20	30	50	75	100	125	150	200	
101	25	Mar.	1967	0300	0800	11°-36'5 S	68°-11'6 E	28.7	28.7	28.2	27.0	24.3	22.7	21.5	18.0	15.6	13.2	—
102	25			1300	1800	10°-20'3	69°-41'0	28.6	28.7	28.2	25.6	23.3	20.8	19.4	17.2	15.4	12.9	—
103	26			0300	0800	8°-26'8	71°-56'0	28.8	28.8	27.5	26.5	22.1	19.0	17.2	16.5	14.6	13.3	—
104	26			1300	1800	6°-44'0	73°-18'8	29.2	29.2	28.9	28.4	23.3	19.1	18.1	16.8	15.2	14.5	—
105	27			0300	0800	4°-00'0	74°-47'6	29.5	29.5	29.5	29.4	28.7	23.1	19.8	18.5	17.6	14.3	—
106	27			1300	1800	2°-03'0	75°-37'1	29.5	29.2	29.1	28.7	28.0	25.6	22.1	19.8	16.5	14.2	—
107	28			0300	0800	0°-41'0N	76°-31'0	29.1	29.1	29.0	28.9	26.9	21.9	21.0	19.4	18.0	14.0	—
108	28			1300	1800	2°-35'1	77°-28'0	29.6	29.6	29.6	29.6	28.0	24.1	18.5	17.4	16.8	13.9	—
109	29			0230	0800	5°-05'8	79°-02'3	28.8	28.8	28.8	28.8	27.2	23.5	20.4	17.8	16.3	13.5	—
110	4	Apr.		0230	0800	5°-56'8	82°-43'2	29.2	29.2	29.0	28.7	28.6	26.6	23.7	20.2	16.7	14.2	12.9
111	4			1230	1800	5°-59'4	84°-46'0	29.3	29.3	29.2	28.5	28.3	26.0	22.9	19.6	17.2	14.4	—
112	5			0200	0800	6°-09'5	87°-34'3	29.2	29.2	29.1	28.7	26.2	23.8	19.9	17.5	15.5	13.2	—
113	5			1200	1800	6°-14'2	89°-47'0	30.2	30.1	30.0	30.0	29.2	26.0	23.1	19.6	17.4	15.0	—
114	6			0200	0800	6°-14'0	92°-49'1	29.4	29.4	29.3	29.3	28.7	24.1	19.2	16.6	14.9	—	—
115	6			1200	1800	6°-12'1	94°-47'2	30.0	29.9	29.4	28.7	27.1	24.6	18.3	15.5	14.9	—	—
116	11			0100	0800	6°-21'8	114°-57'4	28.4	28.4	27.7	26.0	23.7	21.8	19.9	18.7	17.4	14.9	—
117	11			1100	1800	7°-55'5	116°-12'0	28.0	27.8	26.8	27.1	25.2	22.4	20.3	18.4	17.2	14.8	—
118	12			0000	0800	10°-17'3	117°-48'0	28.0	28.1	27.5	27.0	25.0	21.9	19.6	17.8	16.9	15.3	—
119	13			0000	0800	15°-16'1	119°-45'3	27.6	27.6	26.7	26.5	25.5	23.8	22.6	20.5	17.7	—	—
120	13			2300	Apr. 14 0800	19°-57'0	121°-38'9	26.4	26.4	25.9	25.9	25.4	24.8	24.5	23.6	21.5	18.7	—
121	14			0900	1800	21°-34'0	123°-24'5	26.4	26.4	26.3	26.3	25.8	25.1	24.6	23.4	22.5	20.0	—
122	14			2300	Apr. 15 0800	24°-04'0	125°-57'0	25.4	25.4	25.1	24.6	23.9	22.5	22.1	21.5	20.8	19.4	—
123	15			0900	1800	25°-58'2	127°-47'6	24.2	23.3	22.8	22.8	22.7	22.2	22.1	21.4	21.2	20.2	—
124	15			2300	Apr. 16 0800	28°-12'5	130°-22'2	22.8	22.8	22.1	21.7	20.7	20.5	20.2	20.2	19.5	18.4	—

Table 3. Vertical observation data.

## Station 1

## Meteorological observation

Date : 25 Dec., 1966  
 Time(GMT): 2330-0310  
 (LMT): 0630-1010  
 Lat. : 45°04'2 S  
 Long. : 104°16'5 E

Time(GMT): 2305  
 (LMT): 0605  
 Weather : Cloudy (broken)  
 Air temp. : 6.1 °C  
 Atm. press. : 1003.8 mb

Wind dir.: S  
 vel.: 30 kt  
 Humidity: 68%  
 Sea : 4  
 Swell : SSW 6

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	9.1	34.405	8.18	6.51	0.97	1	0.18	13	0.2	0	9.10	34.405	26.66	0.000
8	9.26	34.419	8.20	6.50	1.00	1	0.41	14	0.4	10	9.27	34.420	26.64	0.014
16	9.30	34.419	8.21	6.50	0.99	1	0.35	14	2.0	20	9.29	34.415	26.63	0.028
27	9.26	34.408	8.21	6.48	1.03	1	0.35	16	0.2	30	9.25	34.408	26.63	0.042
45	9.26	34.414	8.21	6.54	1.02	1	0.24	15	0.7	50	9.26	34.413	26.64	0.071
67	9.28	34.407	8.22	6.54	1.02	1	0.25	15	0.6	75	9.29	34.406	26.63	0.106
89	9.29	34.411	8.22	6.50	1.05	1	0.26	15	0.7	100	9.15	34.433	26.67	0.142
133	8.71	34.508	8.20	6.36	1.12	2	0.29	16	0.7	125	8.82	34.488	26.77	0.176
176	8.70	34.543	8.18	6.20	1.14	3	0.08	17	0.8	150	8.67	34.527	26.82	0.208
265	8.37	34.511	8.18	6.17	1.18	3	0.05	17	0.6	200	8.63	34.543	26.84	0.271
335	8.02	34.467	8.18	6.21	1.30	3	0.04	20	1.0	250	8.44	34.522	26.85	0.334
363	7.84	34.445	8.18	6.09	1.24	3	0.03	20	0.3	300	8.20	34.491	26.86	0.397
403	7.21	34.357	8.17	6.12	1.30	4	0.05	22	0.3	400	7.26	34.364	26.90	0.520
533	6.80	34.424	8.09	5.02	1.71	8	0.03	28	0.0	500	6.82	34.388	26.98	0.639
672	5.39	34.350	8.06	4.98	1.86	14	0.05	32	0.2	600	6.16	34.395	27.08	0.751
849	4.08	34.326	8.02	4.77	2.03	21	0.00	32	0.2	700	5.14	34.341	27.16	0.855
1030	3.52	34.373	7.99	4.53	2.24	31	0.00	37	0.1	800	4.37	34.325	27.23	0.951
1443	2.63	34.536	7.94	4.06	2.33	48	0.00	39	0.0	1000	3.58	34.362	27.34	1.126
1891	2.40	34.688	7.96	4.17	2.10	55	0.00	36	0.0	1200	3.08	34.437	27.45	1.280
										1500	2.55	34.557	27.59	1.477



**Station 2**

Meteorological observation

Date : 29 Dec., 1966  
 Time (GMT): 0630-1100  
 (LMT): 1230-1700  
 Lat. : 55°19'7 S  
 Long. : 98°49'0 E

Time (GMT): 0700  
 (LMT): 1300  
 Weather : Cloudy (overcast)  
 Air temp. : 1.3 °C  
 Atm. press. : 994.0 mb

Wind dir.: W  
 vel.: 5 kt  
 Humidity: 65%  
 Sea : 2  
 Swell : S 3

Depth (m)	Observed									Interpolated				
	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
	$\mu\text{g-atoms/L}$													
0	2.2	33.990	8.15	7.44	1.72	10	0.19	25	0.8	0	2.20	33.990	27.17	0.000
10	1.91	34.012	8.19	7.61	1.84	10	0.26	26	0.5	10	1.91	34.012	27.21	0.009
20	1.84	34.010	8.20	7.52	1.82	11	0.25	27	1.1	20	1.84	34.010	27.21	0.018
29	1.80	34.006	8.20	7.52	1.81	10	0.26	27	0.9	30	1.80	34.006	27.21	0.026
49	1.79	34.006	8.20	7.48	1.85	11	0.24	27	2.1	50	1.78	34.006	27.21	0.044
73	1.57	34.021	8.20	7.54	1.87	13	0.24	27	1.6	75	1.51	34.022	27.25	0.065
98	0.90	34.038	8.15	7.02	2.11	24	0.16	30	1.3	100	0.88	34.041	27.30	0.085
146	1.02	34.131	8.10	6.52	2.16	28	0.13	32	0.0	125	0.82	34.084	27.34	0.104
194	1.63	34.245	8.05	5.49	2.32	33	0.06	33	1.2	150	1.06	34.140	27.37	0.122
285	2.24	34.425	7.99	4.30	2.46	45	0.00	35	0.3	200	1.68	34.259	27.42	0.157
373	2.33	34.522	7.98	4.01	2.40	50	0.00	34	0.6	250	2.07	34.363	27.48	0.189
474	2.28	34.569	7.98	3.99	2.39	52	0.00	35	0.1	300	2.27	34.446	27.53	0.220
571	2.21	34.612	7.98	4.00	2.27	55	0.00	36	0.1	400	2.32	34.538	27.60	0.275
768	2.00	34.672	7.98	4.18	2.29	59	0.00	34	0.2	500	2.26	34.581	27.64	0.325
964	1.99	34.717	8.00	4.31	2.19	60	0.00	32	0.3	600	2.17	34.622	27.68	0.372
1158	1.76	34.729	8.01	4.44	2.11	64	0.00	31	0.2	700	2.06	34.654	27.71	0.416
1390	1.66	34.740	8.02	4.56	2.09	66	0.00	31	0.3	800	1.99	34.681	27.74	0.458
1861	1.22	34.725	8.00	4.61	2.11	78	0.00	33	0.4	1000	1.95	34.721	27.77	0.536
2333	0.93	34.707	7.99	4.66	2.12	83	0.00	33	0.1	1200	1.73	34.732	27.80	0.609
2806	0.46	34.681	7.99	4.89	2.20	91	0.00	33	0.2	1500	1.56	34.739	27.82	0.714
3282	0.29	34.668	7.97	5.02	2.43	94	0.00	34	0.3	2000	1.13	34.719	27.83	0.880
3757	0.16	34.666	7.95	5.15	2.08	93	0.00	34	0.5	2500	0.75	34.695	27.84	1.037
4055	0.03	34.665	7.96	5.22	2.24	92	0.00	34	1.3	3000	0.37	34.674	27.84	1.183
										3500	0.23	34.666	27.84	1.320
										4000	0.05	34.665	27.85	1.448

**Station 3**

Meteorological observation

Date : 7 Jan., 1967  
 Time (GMT): 0300-0630  
 (LMT): 0600-0930  
 Lat. : 67°50'6 S  
 Long. : 41°41'6 E

Time (GMT): 0300  
 (LMT): 0600  
 Weather : Cloudy (broken)  
 Air temp. : -3.0 °C  
 Atm. press. : 995.8 mb

Wind dir.: —  
 vel.: 0  
 Humidity: 80%  
 Sea : 0  
 Swell : 0

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	-1.6	34.036	8.11	7.45	2.08	44	0.07	35	5.3	0	-1.59	34.036	27.41	0.000
10	-1.64	34.046	8.13	7.43	2.08	46	0.14	35	0.3	10	-1.63	34.046	27.42	0.007
20	-1.72	34.062	8.14	7.44	2.12	46	0.14	35	0.3	20	-1.71	34.062	27.44	0.013
29	-1.73	34.063	8.15	7.20	2.03	47	0.08	34	0.2	30	-1.73	34.063	27.44	0.020
49	-1.80	34.079	8.15	7.28	2.08	46	0.10	35	0.8	50	-1.80	34.081	27.45	0.033
72	-1.82	34.118	8.15	7.22	1.98	46	0.09	34	1.0	75	-1.81	34.119	27.48	0.048
96	-1.80	34.120	8.15	7.22	2.14	45	0.07	33	0.5	100	-1.80	34.121	27.49	0.063
145	-1.82	34.134	8.15	7.39	1.91	46	0.11	33	0.1	125	-1.80	34.127	27.49	0.078
195	-1.80	34.154	8.15	7.32	2.01	46	0.09	33	0.8	150	-1.81	34.136	27.50	0.093

**Station 4**

Meteorological observation

Date : 10 Feb., 1967  
 Time(GMT): 0715-0810  
 (LMT): 1015-1110  
 Lat. : 68°25'4 S  
 Long. : 38°46'1 E

Time(GMT): 0600  
 (LMT): 0900  
 Weather : Cloudy (overcast)  
 Air temp. : -4.5 °C  
 Atm. press. : 997.1 mb

Wind dir.: ESE  
 vel.: 2 kt  
 Humidity: 71%  
 Sea : —  
 Swell : —

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
0	-1.6	32.807	8.15	7.67	2.62	55	0.17	27	1.0	0	-1.59	32.807	26.42	0.000
10	-1.66	33.771	8.16	7.40	1.99	54	0.11	29	1.3	10	-1.65	33.771	27.20	0.012
20	-1.60	33.996	8.15	7.16	1.96	53	0.08	30	0.5	20	-1.59	33.996	27.38	0.020
30	-1.72	34.069	8.15	7.27	2.06	49	0.06	31	0.4	30	-1.71	34.069	27.44	0.027
50	-1.79	34.113	8.15	7.30	2.03	48	0.06	31	0.2	50	-1.78	34.113	27.48	0.040
74	-1.78	34.122	8.15	7.37	2.06	46	0.04	32	0.2	75	-1.78	34.122	27.49	0.055
99	-1.82	34.130	8.15	7.30	2.02	46	0.05	32	0.1	100	-1.81	34.130	27.49	0.070
159	-1.80	34.154	8.15	7.32	2.02	45	0.02	31	0.1	125	-1.82	34.140	27.50	0.085
199	-1.79	34.165	8.15	7.26	2.13	46	0.03	31	0.1	150	-1.80	34.150	27.51	0.099

No. 31, 1968]

Ryuzo WATANABE, Masaru SHIROZAKI and Yukio SUZUMURA

**Station 5**

Meteorological observation

Date : 11 Feb., 1967  
 Time (GMT): 0700-0740  
 (LMT): 1000-1040  
 Lat. : 68°18'6 S  
 Long. : 39°20'0 E

Time (GMT): 0600  
 (LMT): 0900  
 Weather : Fine (scattered)  
 Air temp. : -7.5 °C  
 Atm. press. : 998.0 mb

Wind dir.: SE  
 vel.: 6 kt  
 Humidity: 68%  
 Sea : —  
 Swell : —

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	-1.6	33.448	8.16	7.90	1.89	40	0.12	25	0.7	0	-1.59	33.448	26.93	0.000
10	-1.77	33.814	8.16	7.70	2.03	42	0.11	29	0.3	10	-1.76	33.814	27.24	0.010
20	-1.75	33.867	8.16	7.65	1.96	44	0.11	29	0.5	20	-1.74	33.867	27.28	0.018
30	-1.77	33.944	8.15	7.63	1.98	45	0.11	32	0.2	30	-1.76	33.944	27.34	0.026
49	-1.77	34.085	8.14	7.49	2.02	44	0.09	33	0.2	50	-1.76	34.089	27.46	0.040
74	-1.77	34.148	8.14	7.44	2.06	43	0.08	29	0.1	75	-1.77	34.149	27.51	0.055
98	-1.84	34.167	8.14	7.35	2.10	45	0.04	31	0.1	100	-1.84	34.168	27.52	0.069
147	-1.82	34.184	8.14	7.41	2.07	44	0.03	31	0.1	125	-1.84	34.178	27.53	0.083
194	-1.79	34.198	8.14	7.42	2.04	45	0.03	32	0.3	150	-1.81	34.185	27.54	0.097
292	-1.69	34.201	8.13	7.31	2.07	46	0.11	33	0.3	200	-1.81	34.197	27.55	0.124
390	-0.40	34.298	8.09	6.65	2.22	51	0.03	30	0.5	250	-1.80	34.196	27.55	0.150
										300	-1.62	34.205	27.55	0.177

**Station 6**

Meteorological observation

Date : 12 Feb., 1967  
 Time(GMT): 1510-1555  
 (LMT): 1810-1855  
 Lat. : 68°02'2 S  
 Long. : 41°12'1 E

Time(GMT): 1500  
 (LMT): 1800  
 Weather : Fine (scattered)  
 Air temp. : -4.9 °C  
 Atm. press. : 996.7 mb

Wind dir.: ENE  
 vel.: 0  
 Humidity: 74%  
 Sea : 1  
 Swell : —

No. 31, 1968]

Ryuzo WATANABE, Masaru SHIOZAKI and Yukio SUGIMURA

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	-1.4	32.368	8.23	8.29	1.56	36	0.12	24	0.6	0	-1.39	32.368	26.06	0.000
10	-1.50	33.551	8.24	8.35	1.67	41	0.13	27	0.6	10	-1.49	33.551	27.02	0.015
20	-1.54	33.603	8.24	8.27	1.72	41	0.14	27	0.7	20	-1.53	33.603	27.06	0.025
30	-1.62	33.679	8.24	8.09	1.77	41	0.13	27	0.6	30	-1.61	33.679	27.12	0.035
50	-1.74	34.107	8.17	7.42	1.96	45	0.10	32	0.4	50	-1.73	34.107	27.47	0.051
75	-1.79	34.126	8.15	7.37	2.03	45	0.11	30	0.1	75	-1.78	34.126	27.49	0.066
100	-1.80	34.149	8.15	7.34	2.00	45	0.11	29	0.2	100	-1.79	34.149	27.51	0.081
150	-1.81	34.162	8.15	7.45	2.01	45	0.13	31	0.0	125	-1.80	34.158	27.52	0.095
200	-1.83	34.178	8.15	7.38	2.00	46	0.03	31	0.0	150	-1.80	34.162	27.52	0.109
280	-1.77	—	8.13	7.37	1.97	46	0.07	32	0.1	200	-1.82	34.178	27.53	0.137
										250	-1.80			

**Station 7**

Meteorological observation

Date : 13 Feb., 1967  
 Time (GMT): 1140-1210  
 (LMT): 1440-1510  
 Lat. : 67°59'3 S  
 Long. : 40°44'5 E

Time (GMT): 1200  
 (LMT): 1500  
 Weather : Snow  
 Air temp. : -4.8 °C  
 Atm. press. : 995.3 mb

Wind dir.: ESE  
 vel.: 14 kt  
 Humidity: 80%  
 Sea : 1  
 Swell : —

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	-1.7	33.174	8.24	8.34	1.49	37	0.08	23	1.3	0	-1.69	33.174	26.72	0.000
10	-1.80	33.209	8.26	8.38	1.53	38	0.10	23	1.2	10	-1.79	33.209	26.75	0.013
20	-1.66	33.328	8.25	8.14	1.61	39	0.09	24	0.9	20	-1.65	33.328	26.84	0.026
29	-1.69	33.589	8.24	7.87	1.83	41	0.09	27	0.9	30	-1.69	33.619	27.08	0.037
49	-1.77	34.059	8.17	7.38	1.96	45	0.08	31	0.3	50	-1.77	34.068	27.44	0.053
73	-1.80	34.130	8.16	7.27	2.03	45	0.08	30	0.0	75	-1.80	34.132	27.49	0.069
97	-1.83	34.142	8.15	7.27	2.00	44	0.06	31	0.0	100	-1.83	34.143	27.50	0.083
145	-1.83	34.173	8.15	7.38	2.01	46	0.03	32	0.0	125	-1.83	34.148	27.51	0.098
192	-1.81	34.160	8.16	7.33	1.96	44	0.03	32	0.1	150	-1.82	34.153	27.51	0.112
287	-1.79	34.207	8.14	7.10	2.00	46	0.01	32	0.0	200	-1.81	34.163	27.52	0.141
384	-1.36	34.293	8.11	6.59	2.13	52	0.02	31	0.0	250	-1.81	34.185	27.54	0.168
483	0.42	34.564	8.07	4.97	2.21	71	0.08	34	0.5	300	-1.78	34.212	27.56	0.195
										400	-1.16	34.324	27.63	0.243

**Station 8**

Meteorological observation

Date : 15 Feb., 1967  
 Time(GMT): 0145-0305  
 (LMT): 0445-0605  
 Lat. : 66°29'8 S  
 Long. : 33°44'6 E

Time(GMT): 0130  
 (LMT): 0430  
 Weather : Cloudy (broken)  
 Air temp. : -4.3 °C  
 Atm. press. : 990.0 mb

Wind dir.: ESE  
 vel.: 13 kt  
 Humidity: 84%  
 Sea : 2  
 Swell : NE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	-1.6	33.408	8.15	7.60	1.96	41	0.18	31	0.8	0	-1.59	33.408	26.90	0.000
10	-1.48	33.390	8.18	7.78	1.87	43	0.19	32	0.6	10	-1.47	33.390	26.88	0.012
19	-1.20	33.504	8.18	7.73	1.90	44	0.19	33	0.6	20	-1.19	33.514	26.98	0.023
29	-1.27	33.629	8.18	7.60	1.92	44	0.18	30	0.5	30	-1.29	33.657	27.10	0.033
49	-1.71	34.168	8.16	7.17	2.00	46	0.11	29	0.1	50	-1.71	34.176	27.53	0.049
73	-1.76	34.204	8.16	7.13	2.03	47	0.14	34	0.0	75	-1.76	34.206	27.55	0.062
98	-1.82	34.230	8.16	7.03	2.07	47	0.10	34	0.0	100	-1.82	34.231	27.58	0.076
147	-1.77	34.250	8.16	7.10	2.10	46	0.03	37	0.0	125	-1.84	34.245	27.59	0.088
196	-1.11	34.241	8.15	7.09	2.01	45	0.09	—	0.1	150	-1.73	34.248	27.59	0.101
308	0.49	34.584	8.06	4.94	2.21	72	0.09	36	0.0	200	-1.03	34.252	27.57	0.126
402	0.42	34.628	8.06	4.91	2.21	80	0.03	39	0.0	250	-0.23	34.394	27.65	0.151
498	0.56	34.662	8.05	4.68	2.21	85	0.04	42	0.1	300	0.40	34.556	27.75	0.171
594	0.65	34.675	8.04	4.60	2.27	88	0.03	39	0.1	400	0.42	34.628	27.80	0.204
790	0.48	34.674	8.03	4.71	2.25	90	0.02	37	0.2	500	0.56	34.662	27.82	0.234
1037	0.19	34.670	8.04	4.87	2.25	94	0.02	34	0.1	600	0.64	34.675	27.83	0.263
										700	0.59	34.677	27.83	0.292
										800	0.47	34.674	27.84	0.320
										1000	0.23	34.671	27.85	0.375

No. 31, 1968]

Ryuzo WATANABE, Masaru SHIOZAKI and Yukio SUGIMURA

Station 9

Meteorological observation

Date : 16 Feb., 1967  
 Time (GMT): 0000-0315  
 (LMT): 0200-0515  
 Lat. : 67°59'4 S  
 Long. : 24°41'9 E

Time (GMT): 0010  
 (LMT): 0210  
 Weather : Cloudy (broken)  
 Air temp. : -3.8 °C  
 Atm. press. : 993.7 mb

Wind dir.: Calm  
 vel.: 0  
 Humidity: 64%  
 Sea : 0  
 Swell : ENE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	-1.6	33.321	8.13	7.80	1.94	46	0.28	32	0.7	0	-1.59	33.321	26.83	0.000
10	-1.40	33.284	8.16	7.84	1.93	46	0.29	32	0.3	10	-1.39	33.284	26.80	0.012
20	-1.40	33.287	8.18	7.80	1.96	45	0.28	32	0.3	20	-1.39	33.287	26.80	0.025
29	-1.58	33.676	8.16	7.36	1.98	46	0.21	31	0.4	30	-1.58	33.718	27.15	0.036
49	-1.63	34.306	8.14	6.98	2.07	48	0.13	33	0.1	50	-1.64	34.315	27.64	0.050
73	-1.69	34.358	8.14	6.75	2.04	49	0.20	33	0.0	75	-1.63	34.364	27.68	0.061
97	-0.88	34.445	8.10	6.05	2.16	54	0.04	34	0.0	100	-0.75	34.459	27.73	0.071
146	0.90	34.641	8.03	4.52	2.31	71	0.00	37	0.0	125	0.22	34.566	27.76	0.080
195	1.12	34.665	8.03	4.40	2.30	73	0.00	36	0.1	150	0.95	34.646	27.79	0.088
293	1.16	34.697	8.02	4.37	2.28	75	0.00	36	0.0	200	1.12	34.667	27.79	0.104
389	1.13	34.703	8.03	4.43	2.28	76	0.03	36	0.0	250	1.18	34.686	27.80	0.120
486	1.06	34.705	8.03	4.46	2.27	79	0.03	35	0.0	300	1.16	34.698	27.81	0.135
582	0.97	34.706	8.03	4.51	2.28	83	0.01	35	0.1	400	1.12	34.703	27.82	0.166
777	0.75	34.689	8.01	4.53	2.28	86	0.00	36	0.0	500	1.04	34.705	27.83	0.195
971	0.56	34.684	8.02	4.59	2.31	88	0.00	36	0.0	600	0.95	34.705	27.83	0.225
1202	0.44	34.679	8.01	4.66	2.31	94	0.00	37	0.2	700	0.83	34.696	27.83	0.254
1443	0.28	34.678	8.01	4.73	2.25	95	0.00	36	0.1	800	0.72	34.688	27.83	0.282
1923	0.03	34.667	7.99	4.97	2.33	94	0.00	36	0.1	1000	0.54	34.683	27.84	0.339
2405	-0.08	34.672	7.99	4.99	2.33	93	0.00	37	0.0	1200	0.44	34.679	27.84	0.395
2886	-0.20	34.654	8.00	5.30	2.30	92	0.00	36	0.1	1500	0.24	34.677	27.85	0.475
3463	-0.21	34.652	8.00	5.48	2.39	92	0.00	36	0.5	2000	0.00	34.665	27.86	0.601
										2500	-0.10	34.658	27.86	0.722
										3000	-0.21	34.653	27.86	0.837



Station 10

Meteorological observation

Date : 17 Feb., 1967  
 Time(GMT): 0530-0820  
 (LMT): 0730-1020  
 Lat. : 68°42'4 S  
 Long. : 15°02'4 E

Time(GMT): 0550  
 (LMT): 0750  
 Weather : Cloudy (broken)  
 Air temp. : -7.7 °C  
 Atm. press. : 100

Wind dir.: SSE  
 vel.: 4 kt  
 Humidity : 83%  
 Sea : 0  
 Swell : ENE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	-1.7	33.745	8.15	7.85	1.86	43	0.19	29	0.4	0	-1.69	33.745	27.18	0.000
9	-1.68	33.744	8.17	7.86	1.83	44	0.21	30	0.3	10	-1.67	33.739	27.17	0.009
18	-1.69	33.754	8.18	7.74	1.86	45	0.18	30	0.1	20	-1.70	33.805	27.23	0.018
27	-1.75	34.003	8.17	7.42	1.94	45	0.10	31	0.4	30	-1.75	34.038	27.42	0.025
45	-1.75	34.097	8.16	7.24	1.93	45	0.11	31	0.4	50	-1.75	34.121	27.48	0.038
67	-1.78	34.187	8.14	6.77	1.97	45	0.13	31	0.1	75	-1.79	34.203	27.55	0.052
90	-1.83	34.221	8.14	6.61	2.00	46	0.12	32	0.0	100	-1.82	34.232	27.58	0.066
134	-1.77	34.260	8.14	7.06	2.01	46	0.05	33	0.0	125	-1.79	34.254	27.59	0.078
179	-1.71	34.293	8.14	6.84	2.05	48	0.03	32	0.0	150	-1.74	34.272	27.61	0.091
268	-1.54	34.367	8.12	6.49	2.06	49	0.01	33	0.0	200	-1.70	34.309	27.63	0.114
357	-0.74	34.472	8.09	5.84	2.10	55	0.02	35	0.0	250	-1.60	34.350	27.67	0.136
447	0.80	34.647	8.03	4.45	2.18	71	0.03	36	0.0	300	-1.32	34.399	27.70	0.156
536	1.01	34.690	8.02	4.24	2.22	74	0.03	36	0.0	400	0.03	34.560	27.77	0.193
719	0.78	34.692	8.01	4.55	2.18	80	0.01	36	0.0	500	1.01	34.682	27.81	0.225
911	0.60	34.690	8.01	4.54	2.20	84	0.02	36	0.2	600	0.97	34.697	27.83	0.255
1128	0.46	34.684	8.03	4.62	2.22	88	0.03	35	0.0	700	0.82	34.695	27.83	0.285
1356	0.27	34.680	8.02	4.73	2.24	88	0.01	35	0.0	800	0.69	34.692	27.84	0.313
1819	0.10	34.669	7.99	4.74	2.13	90	0.02	36	0.0	1000	0.54	34.688	27.84	0.369
2285	-0.05	34.674	8.00	4.67	2.18	90	0.00	36	0.0	1200	0.39	34.683	27.85	0.424
2761	-0.15	34.664	8.00	5.25	2.20	90	0.01	35	0.0	1500	0.20	34.676	27.85	0.502
										2000	0.03	34.666	27.86	0.629
										2500	-0.10	34.663	27.86	0.749

Station 11

Meteorological observation

Date : 18 Feb., 1967  
 Time (GMT): 0230-0420  
 (LMT): 0430-0620  
 Lat. : 69°10'5 S  
 Long. : 4°52'5 E

Time (GMT): 0200  
 (LMT): 0400  
 Weather : Cloudy (broken)  
 Air temp. : -2.5 °C  
 Atm. press. : 1002.0 mb

Wind dir.: ENE  
 vel.: 28 kt  
 Humidity: 69%  
 Sea : 3  
 Swell : ENE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	$\sigma_t$	$\Delta D$
					$\mu\text{g-atoms/L}$									
0	-1.7	33.589	8.15	7.72	1.93	53	0.13	32	1.2	0	-1.69	33.589	27.05	0.000
9	-1.64	33.571	8.18	7.78	1.96	54	0.14	32	0.7	10	-1.64	33.568	27.03	0.010
17	-1.64	33.559	8.18	7.76	1.97	55	0.15	32	0.7	20	-1.61	33.573	27.04	0.021
26	-1.55	33.624	8.18	7.69	1.97	54	0.14	31	1.0	30	-1.47	33.671	27.11	0.031
43	-1.29	33.877	8.16	7.48	1.97	55	0.15	33	0.7	50	-1.40	34.045	27.41	0.047
65	-1.70	34.356	8.12	6.38	2.18	55	0.11	36	0.2	75	-1.69	34.399	27.71	0.060
86	-1.64	34.391	8.12	6.46	2.10	56	0.10	35	0.2	100	-1.61	34.408	27.71	0.070
130	-1.45	34.443	8.11	6.24	2.19	57	0.09	37	0.0	125	-1.48	34.437	27.73	0.079
173	-0.79	34.515	8.10	5.74	2.24	63	0.03	37	0.1	150	-1.16	34.477	27.75	0.088
214	-0.30	34.563	8.06	5.39	2.18	65	0.01	36	0.0	200	-0.45	34.548	27.78	0.105
278	0.41	34.635	8.05	4.79	2.24	72	0.03	37	0.0	250	0.13	34.606	27.80	0.120
342	0.66	34.663	8.05	4.63	2.27	75	0.03	38	0.0	300	0.52	34.648	27.81	0.136
404	0.83	34.682	8.04	4.53	2.36	77	0.03	38	0.0	400	0.82	34.681	27.82	0.165
533	0.72	34.689	8.03	4.57	2.22	83	0.04	38	0.0	500	0.78	34.690	27.83	0.194
661	0.56	34.688	8.03	4.62	2.18	86	0.03	37	0.0	600	0.63	34.689	27.84	0.223
835	0.46	34.683	8.03	4.66	2.36	89	0.03	38	0.0	700	0.53	34.687	27.84	0.250
1026	0.31	34.679	8.02	4.73	2.33	91	0.03	37	0.0	800	0.47	34.684	27.85	0.277
1437	0.09	34.669	8.02	4.91	2.39	93	0.03	37	0.0	1000	0.33	34.679	27.85	0.331
										1200	0.20	34.675	27.85	0.383

Station 12

Meteorological observation

Date : 23 Feb., 1967  
 Time(GMT): 0250-0640  
 (LMT): 0450-0840  
 Lat. : 68°05'3 S  
 Long. : 3°07'8 W

Time(GMT): 0250  
 (LMT): 0450  
 Weather : Cloudy (broken)  
 Air temp. : -0.3 °C  
 Atm. press. : 983.9 mb

Wind dir.: ENE  
 vel.: 18  
 Humidity: 80%  
 Sea : 3  
 Swell : NE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
0	-0.2	34.087	8.15	7.70	1.88	59	0.19	30	1.2	0	-0.19	34.087	27.40	0.000
10	-0.18	34.087	8.16	7.65	1.92	60	0.22	30	0.8	10	-0.17	34.087	27.40	0.007
20	-0.19	34.084	8.17	7.59	2.06	60	0.21	28	0.7	20	-0.18	34.084	27.40	0.014
29	-0.20	34.086	8.17	7.57	1.94	59	0.22	25	0.2	30	-0.19	34.085	27.40	0.021
48	-0.44	34.131	8.19	7.33	1.97	62	0.20	27	0.3	50	-0.54	34.157	27.47	0.034
67	-1.39	34.386	8.13	5.95	2.15	64	0.13	33	0.2	75	-1.47	34.419	27.72	0.046
95	-1.31	34.435	8.10	5.85	2.17	67	0.14	32	0.2	100	-1.24	34.447	27.73	0.056
141	-0.52	34.543	8.10	5.31	2.17	69	0.04	32	0.1	125	-0.83	34.505	27.77	0.064
188	0.14	34.617	8.06	4.84	2.28	73	0.03	33	0.1	150	-0.37	34.560	27.79	0.073
284	0.76	34.681	8.02	4.45	2.32	78	0.02	33	0.4	200	0.26	34.629	27.81	0.088
377	0.82	34.697	8.03	4.38	2.28	81	0.03	36	0.2	250	0.62	34.668	27.82	0.103
471	0.77	34.697	8.04	4.44	2.30	83	0.02	35	0.1	300	0.79	34.686	27.83	0.117
567	0.73	34.696	8.01	4.48	2.35	86	0.02	32	0.1	400	0.81	34.698	27.84	0.145
770	0.59	34.690	8.00	4.48	2.30	88	0.03	33	0.0	500	0.75	34.697	27.84	0.173
865	0.47	34.688	8.00	4.52	2.36	90	0.04	33	0.1	600	0.71	34.695	27.84	0.201
1081	0.40	34.685	8.04	4.60	2.33	93	0.02	33	0.1	700	0.65	34.692	27.84	0.229
1302	0.25	34.677	7.99	4.68	2.33	94	0.02	28	0.0	800	0.55	34.689	27.85	0.257
1753	0.06	34.674	8.00	4.89	2.30	95	0.02	32	0.1	1000	0.41	34.686	27.85	0.311
2206	-0.06	34.664	8.02	5.10	2.28	94	0.02	34	0.1	1200	0.32	34.681	27.85	0.364
2674	-0.19	34.660	8.02	5.23	2.32	91	0.03	33	0.0	1500	0.15	34.675	27.86	0.442
3189	-0.20	34.657	7.96	5.30	2.28	93	0.03	33	0.0	2000	0.00	34.669	27.86	0.566
3710	-0.30	34.654	7.95	5.39	2.35	91	0.03	32	0.2	2500	-0.14	34.661	27.86	0.683
										3000	-0.21	34.658	27.86	0.794
										3500	—	34.655	—	—

Station 13

Meteorological observation

Date : 24 Feb., 1967  
 Time(GMT): 0230-0615  
 (LMT): 0430-0815  
 Lat. : 64°04'2 S  
 Long. : 3°05'0 W

Time(GMT): 0225  
 (LMT): 0425  
 Weather : Snow  
 Air temp. : 0.3 °C  
 Atm. press. : 985.6 mb

Wind dir.: NNE  
 vel.: 6 kt  
 Humidity: 75%  
 Sea : 2  
 Swell : SE 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	1.2	33.872	8.22	7.29	1.55	34	0.19	24	1.2	0	1.20	33.872	27.15	0.000
10	1.12	33.865	8.22	7.25	1.60	36	0.20	25	1.3	10	1.12	33.865	27.15	0.009
20	1.11	33.851	8.23	7.21	1.61	36	0.20	26	1.3	20	1.11	33.851	27.14	0.019
29	1.11	33.851	8.22	7.15	1.57	36	0.20	25	1.3	30	0.98	33.871	27.16	0.028
49	-1.70	34.316	8.13	6.92	2.07	50	0.33	31	0.5	50	-1.73	34.323	27.65	0.041
73	-1.75	34.350	8.12	6.53	2.14	54	0.30	36	0.3	75	-1.75	34.351	27.67	0.052
97	-1.74	34.372	8.12	6.67	2.12	56	0.18	36	0.0	100	-1.68	34.378	27.69	0.063
145	-0.52	34.499	8.06	5.50	2.30	65	0.05	39	0.0	125	-1.12	34.437	27.72	0.073
194	0.75	34.663	8.01	4.33	2.33	78	0.05	41	0.3	150	-0.37	34.517	27.76	0.082
289	0.69	34.683	8.00	4.27	2.39	84	0.05	40	0.2	200	0.79	34.670	27.81	0.098
386	0.63	34.683	8.01	4.29	2.41	86	0.03	40	0.1	250	0.91	34.700	27.83	0.112
481	0.58	34.688	8.01	4.28	2.42	90	0.03	41	0.1	300	0.68	34.683	27.83	0.127
577	0.55	34.681	7.99	4.33	2.42	92	0.03	42	0.1	400	0.62	34.683	27.84	0.155
769	0.41	34.680	7.98	4.38	2.42	93	0.03	41	0.2	500	0.57	34.682	27.84	0.183
962	0.28	34.678	8.00	4.47	2.39	95	0.03	40	0.3	600	0.53	34.681	27.84	0.210
1214	0.22	34.671	8.01	4.66	2.37	96	0.03	40	0.2	700	0.46	34.680	27.84	0.238
1455	0.09	34.667	7.99	4.72	2.35	95	0.03	39	0.2	800	0.38	34.680	27.85	0.265
1936	-0.10	34.658	7.99	4.97	2.32	93	0.04	38	0.2	1000	0.26	34.677	27.85	0.318
2418	-0.19	34.654	7.99	5.17	2.32	94	0.03	39	0.3	1200	0.22	34.671	27.85	0.370
2899	-0.28	34.650	8.00	5.26	2.30	93	0.03	37	0.1	1500	0.06	34.666	27.85	0.448
3381	-0.28	34.646	7.97	5.40	2.32	92	0.04	39	0.2	2000	-0.11	34.657	27.86	0.571
3862	-0.38	34.646	7.97	5.42	2.28	95	0.03	39	0.3	2500	-0.20	34.653	27.86	0.688
4344	-0.43	34.645	7.98	5.42	2.08	92	0.07	41	0.4	3000	-0.27	34.649	27.86	0.799
4826	-0.46	—	—	—	—	—	0.06	38	0.9	3500	-0.30	34.646	27.86	0.907
										4000	-0.39	34.646	27.86	1.008
										4500	-0.44	—	—	—

Station 14

Meteorological observation

Date : 26 Feb., 1967  
 Time (GMT): 1715-2025  
 (LMT): 1915-2225  
 Lat. : 55°55'3 S  
 Long. : 0°32'9 E

Time (GMT): 1700  
 (LMT): 1900  
 Weather : Cloudy (broken)  
 Air temp. : 1.2 °C  
 Atm. press. : 990.8 mb

Wind dir.: SW  
 vel.: 18 kt  
 Humidity: 71%  
 Sea : 4  
 Swell : WNW 3

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	1.2	33.937	8.15	7.53	1.72	42	0.30	31	1.6	0	1.20	33.937	27.20	0.000
10	1.15	33.929	8.17	7.55	1.78	43	0.32	31	0.8	10	1.15	33.929	27.20	0.009
19	1.15	33.917	8.17	7.48	1.81	43	0.31	29	1.0	20	1.15	33.917	27.19	0.018
27	1.15	33.918	8.18	7.44	1.77	43	0.31	30	0.8	30	1.15	33.918	27.19	0.027
44	1.12	33.916	8.18	7.46	1.77	43	0.31	28	0.8	50	1.12	33.905	27.18	0.044
67	0.78	33.925	8.18	7.36	1.81	43	0.30	31	0.6	75	0.13	34.009	27.32	0.065
88	-0.97	34.162	8.17	7.24	2.02	49	0.24	34	0.6	100	-1.29	34.224	27.55	0.081
131	-1.25	34.288	8.14	6.82	2.12	54	0.25	35	0.5	125	-1.36	34.286	27.61	0.094
175	-0.97	34.368	8.12	6.34	2.15	59	0.16	36	—	150	-1.17	34.324	27.63	0.106
261	0.33	34.575	8.05	4.98	2.35	72	0.05	37	0.4	200	-0.59	34.430	27.69	0.128
347	0.68	—	8.02	4.57	2.36	79	0.06	40	0.2	250	0.16	34.549	27.75	0.146
433	0.92	34.697	8.04	4.51	2.36	81	0.07	40	0.1	300	0.55	34.620	27.79	0.163
527	0.72	34.696	8.02	4.59	2.39	84	0.06	40	0.0	400	0.85	34.695	27.83	0.193
726	0.60	34.692	8.01	4.58	2.39	88	0.07	38	0.1	500	0.79	34.699	27.84	0.222
789	0.56	34.692	8.01	4.52	2.41	88	0.05	39	0.2	600	0.65	34.694	27.84	0.250
996	0.53	34.693	8.01	4.47	2.41	91	0.05	39	0.4	700	0.60	34.692	27.84	0.277
1206	0.38	34.687	8.01	4.60	2.36	92	0.05	38	0.2	800	0.55	34.692	27.85	0.305
1624	0.18	34.676	8.00	4.76	2.37	94	0.05	38	0.0	1000	0.52	34.693	27.85	0.359
2065	0.04	34.670	8.02	5.04	2.35	94	0.06	39	0.1	1200	0.38	34.687	27.85	0.412
2521	-0.13	34.660	8.02	5.12	2.39	95	0.05	37	0.1	1500	0.22	34.679	27.86	0.491
2983	-0.18	34.656	8.00	5.27	2.37	95	0.05	37	0.1	2000	0.05	34.671	27.86	0.617
3361	-0.26	34.655	7.99	5.30	2.36	93	0.05	38	0.2	2500	-0.12	34.660	27.86	0.736
										3000	-0.18	34.656	27.86	0.850

No. 31, 1968]

Ryuzo WATANABE, Masaru SHICZAKI and Yukio SUGIMURA

Station 15

Meteorological observation

Date : 2 Mar., 1967  
 Time(GMT): 1620-1945  
 (LMT): 1820-2145  
 Lat. : 50°14'2 S  
 Long. : 1°42'2 E

Time(GMT): 1600  
 (LMT): 1800  
 Weather : Cloudy (overcast)  
 Air temp. : 5.5 °C  
 Atm. press. : 1000.5 mb

Wind dir.: N  
 vel.: 26 kt  
 Humidity: 82%  
 Sea : 4  
 Swell : NW, S, 3

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	3.9	33.876	8.20	7.01	1.38	4	0.25	24	1.7	0	3.90	33.876	26.93	0.000
9	3.79	33.882	8.22	7.19	1.43	5	0.27	25	1.2	10	3.78	33.882	26.94	0.011
26	3.74	33.873	8.23	7.16	1.43	5	0.25	25	0.8	20	3.74	33.877	26.94	0.023
43	3.71	33.875	8.22	7.09	1.45	5	0.25	25	0.9	30	3.73	33.873	26.94	0.034
64	3.74	33.876	8.22	7.05	1.47	5	0.26	25	0.8	50	3.75	33.873	26.94	0.056
83	3.11	33.908	8.23	7.05	1.50	7	0.25	26	1.7	75	3.41	33.893	26.99	0.084
126	1.59	33.972	8.19	6.98	2.12	17	0.25	30	2.3	100	2.47	33.934	27.10	0.110
171	0.79	34.039	8.14	6.84	2.11	23	0.12	33	0.8	125	1.62	33.971	27.20	0.133
259	1.15	34.203	8.07	5.68	2.36	34	0.05	35	0.3	150	1.07	34.007	27.26	0.153
348	1.71	34.398	8.00	4.42	2.52	46	0.03	38	0.3	200	0.75	34.089	27.35	0.193
439	1.96	34.506	7.99	3.99	2.53	53	0.02	38	0.3	250	1.05	34.185	27.41	0.229
527	2.06	34.570	7.99	3.84	2.52	57	0.03	38	0.2	300	1.41	34.296	27.47	0.261
704	2.22	34.659	8.00	3.90	2.41	58	0.02	37	0.2	400	1.88	34.468	27.58	0.320
757	2.16	34.673	8.01	4.04	2.33	58	0.02	36	0.3	500	2.03	34.553	27.63	0.371
898	2.14	34.701	8.01	4.05	2.25	58	0.02	35	0.2	600	2.16	34.614	27.67	0.419
927	2.24	34.712	8.01	4.13	2.24	58	0.02	35	0.4	700	2.22	34.658	27.70	0.464
1298	1.97	34.748	8.02	4.34	2.14	60	0.02	34	0.3	800	2.09	34.680	27.73	0.506
1699	1.51	34.714	8.01	4.30	2.21	60	0.01	35	0.3	1000	2.30	34.728	27.75	0.588
2112	1.22	34.725	8.04	4.51	2.21	76	0.00	35	0.2	1200	2.18	34.749	27.78	0.668
2531	0.96	34.705	8.00	4.67	2.24	82	0.00	35	0.2	1500	1.73	34.750	27.81	0.782
2980	0.64	34.689	7.99	4.74	2.33	88	0.00	36	0.3	2000	1.28	34.733	27.83	0.957
										2500	0.97	34.706	27.83	1.123

Station 16

Meteorological observation

Date : 4 Mar., 1967  
 Time(GMT): 0100-0435  
 (LMT): 0300-0635  
 Lat. : 45°29'8 S  
 Long. : 5°42'8 E

Time(GMT): 0400  
 (LMT): 0600  
 Weather : Fog  
 Air temp. : 6.6 °C  
 Atm. press. : 1003.1 mb

Wind dir.: NW  
 vel.: 14 kt  
 Humidity: 76%  
 Sea : 4  
 Swell : NNW 3

Observed										Interpolatde				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	6.1	33.847	8.20	6.80	1.45	2	0.23	22	0.9	0	6.10	33.847	26.65	0.000
9	6.51	33.865	8.22	6.72	1.51	2	0.23	22	0.3	10	6.52	33.864	26.61	0.014
18	6.54	33.854	8.22	6.70	1.51	2	0.25	22	1.0	20	6.51	33.853	26.60	0.029
27	6.42	33.853	8.24	6.62	1.53	2	0.25	22	0.5	30	6.40	33.853	26.62	0.043
45	6.33	33.853	8.23	6.61	1.54	2	0.25	22	0.5	50	6.26	33.855	26.64	0.072
69	5.96	33.866	8.23	6.67	1.60	2	0.25	23	0.5	75	5.86	33.871	26.70	0.106
92	5.53	33.891	8.23	6.40	1.64	3	0.27	23	0.8	100	5.28	33.904	26.80	0.139
137	4.17	33.977	8.21	6.59	1.86	6	0.20	25	0.1	125	4.52	33.951	26.92	0.169
183	3.68	34.071	8.18	6.47	1.95	8	0.04	27	0.2	150	3.97	34.005	27.02	0.197
273	3.50	34.154	8.11	5.96	2.10	12	0.02	29	0.5	200	3.61	34.094	27.13	0.248
366	2.97	34.180	8.10	5.74	2.26	17	0.02	32	0.3	250	3.51	34.142	27.17	0.295
457	2.66	34.215	8.09	5.38	2.17	22	0.00	30	0.3	300	3.35	34.164	27.21	0.340
547	2.51	34.240	8.06	5.24	2.42	24	0.01	31	0.0	400	2.83	34.193	27.28	0.426
736	2.42	34.344	8.01	4.74	2.58	35	0.01	33	0.0	500	2.57	34.227	27.33	0.506
923	2.39	34.471	7.99	4.16	2.61	46	0.00	35	0.3	600	2.46	34.264	27.37	0.583
1002	2.43	34.527	7.98	4.02	2.57	49	0.02	35	0.4	700	2.42	34.321	27.42	0.656
1190	2.48	34.615	7.97	3.92	2.50	53	0.00	34	0.1	800	2.39	34.386	27.47	0.724
1598	2.44	34.745	8.02	4.22	2.21	51	0.00	30	0.1	1000	2.42	34.526	27.58	0.848
2020	2.22	34.785	8.04	4.47	2.12	53	0.00	30	0.1	1200	2.48	34.619	27.65	0.956
2461	1.79	34.771	8.02	4.62	2.21	62	0.00	29	0.2	1500	2.46	34.722	27.73	1.103
2907	1.49	34.747	8.01	4.56	2.27	71	0.00	31	0.2	2000	2.23	34.785	27.80	1.322
3357	1.17	34.732	8.00	4.60	2.37	78	0.01	31	0.5	2500	1.76	34.769	27.83	1.519
3632	0.99	34.721	8.00	4.65	2.32	83	0.02	32	0.2	3000	1.42	34.744	27.83	1.705
										3500	1.07	34.726	27.84	1.884

No. 31, 1968]

Ryuzo WATANABE, Masaru SHIOZAKI and Yukio SUGIMURA

Station 17

Meteorological observation

Date : 5 Mar., 1967  
 Time(GMT): 1535-2000  
 (LMT): 1735-2200  
 Lat. : 40°00'0 S  
 Long. : 11°42'6 E

Time(GMT): 1530  
 (LMT): 1730  
 Weather : Cloudy (broken)  
 Air temp. : 16.4 °C  
 Atm. press. : 1015.0 mb

Wind dir.: W  
 vel.: 14 kt  
 Humidity: 87%  
 Sea : 3  
 Swell : NW 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	15.7	34.748	8.24	5.52	0.48	1	0.10	1	0.5	0	15.70	34.748	25.64	0.000
9	15.59	34.759	8.26	5.65	0.51	1	0.10	2	1.2	10	15.58	34.759	25.67	0.023
18	15.50	34.753	8.26	5.65	0.51	1	0.12	2	0.7	20	15.43	34.751	25.70	0.047
26	15.26	34.745	8.27	5.62	0.54	1	0.10	2	0.6	30	15.23	34.741	25.74	0.069
41	15.25	34.737	8.27	5.63	0.51	1	0.12	2	0.6	50	15.29	34.754	25.74	0.115
59	15.14	34.751	8.27	5.56	0.54	1	0.12	2	0.5	75	13.95	34.634	25.93	0.170
73	14.08	34.638	8.28	5.58	0.68	1	0.29	5	0.7	100	12.63	34.637	26.20	0.219
118	12.03	34.700	8.26	5.57	0.75	1	0.17	5	0.2	125	11.87	34.708	26.40	0.263
157	11.48	34.746	8.23	5.58	0.90	1	0.03	8	0.4	150	11.52	34.737	26.49	0.303
234	11.20	34.909	8.19	5.02	1.07	3	0.02	14	0.4	200	11.30	34.848	26.62	0.380
311	10.12	34.803	8.17	5.14	1.14	3	0.02	15	0.4	250	11.01	34.899	26.71	0.452
387	8.95	34.665	8.15	4.96	1.33	4	0.00	17	0.3	300	10.30	34.827	26.78	0.520
473	7.75	34.541	8.11	4.91	1.65	6	0.00	23	0.2	400	8.76	34.644	26.90	0.649
661	5.52	34.378	8.07	4.90	2.05	13	0.02	29	0.2	500	7.38	34.509	27.00	0.768
853	4.26	34.329	8.04	4.84	2.27	20	0.02	32	0.2	600	6.16	34.416	27.09	0.878
951	4.09	34.367	8.04	4.53	2.32	25	0.02	34	0.2	700	5.17	34.357	27.17	0.981
1258	3.17	34.479	7.99	4.00	2.51	40	0.02	36	0.2	800	4.49	34.328	27.22	1.077
1574	2.76	34.488	8.03	4.23	2.33	43	0.03	33	0.2	1000	3.96	34.389	27.33	1.255
1930	2.69	34.743	8.01	4.42	2.18	43	0.02	31	0.4	1200	3.49	34.462	27.43	1.415
2304	2.64	34.806	8.04	4.73	1.98	41	0.03	29	0.2	1500	2.88	34.482	27.50	1.631
2682	2.46	34.834	8.06	4.97	1.82	39	0.01	27	0.3	2000	2.68	34.764	27.75	1.922
3114	2.22	—	—	—	—	39	0.01	—	0.3	2500	2.55	34.825	27.81	2.151
										3000	2.28	—	—	—



Station 18

Meteorological observation

Date : 6 Mar., 1967  
 Time(GMT): 1315-1550  
 (LMT): 1515-1750  
 Lat. : 37°02'8 S  
 Long. : 14°29'5 E

Time(GMT): 1300  
 (LMT): 1500  
 Weather : Drizzle  
 Air temp. : 19.8 °C  
 Atm. press. : 1014.5 mb

Wind dir.: SW  
 vel.: 2 kt  
 Humidity: 77%  
 Sea : 1  
 Swell : W 1

Observed										Interpolated				
Depth (m)	T(°C)	S (‰)	pH	O <sub>2</sub> (cc/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>3</sub> -N	Depth(m)	T(°C)	S (‰)	σ <sub>t</sub>	ΔD
					μg-atoms/L									
0	22.0	35.437	8.28	5.03	0.14	1	0.00	0	1.0	0	22.00	35.437	24.57	0.000
9	21.37	35.445	8.31	5.03	0.20	1	0.00	0	0.8	10	21.17	35.454	24.81	0.033
18	19.68	35.520	8.32	5.20	0.23	1	0.00	0	0.8	20	19.54	35.522	25.30	0.062
27	19.38	35.513	8.33	5.24	0.25	1	0.00	0	0.8	30	19.34	35.517	25.35	0.089
44	19.14	35.506	8.33	5.23	0.23	1	0.00	0	0.5	50	18.88	35.448	25.41	0.141
65	17.99	35.295	8.32	5.26	0.26	1	0.01	0	0.6	75	17.23	35.270	25.68	0.203
85	16.41	35.264	8.27	4.65	0.60	2	0.08	4	0.4	100	14.98	35.22	26.17	0.255
124	12.97	—	—	—	—	—	—	—	—	125	12.92	35.15	26.54	0.298
163	11.70	35.027	8.20	4.50	1.19	5	0.03	14	0.3	150	11.98	35.072	26.67	0.335
239	10.16	34.826	8.18	4.84	1.32	5	0.03	16	0.4	200	10.84	34.921	26.76	0.404
315	9.06	34.722	8.14	4.62	1.58	7	0.03	20	0.3	250	10.00	34.810	26.82	0.470
395	7.38	34.537	8.14	4.71	1.64	8	0.00	21	0.5	300	9.27	34.741	26.89	0.533
460	6.44	34.463	8.11	4.82	1.83	8	0.01	24	0.4	400	7.29	34.530	27.03	0.650
622	5.25	34.405	8.08	4.70	2.19	17	0.02	28	0.3	500	6.05	34.436	27.12	0.756
769	4.45	34.440	8.03	4.25	2.29	27	0.02	33	0.5	600	5.35	34.405	27.18	0.855
928	3.44	34.430	8.01	4.24	2.42	33	0.02	34	0.1	700	4.81	34.421	27.26	0.948
1124	3.23	34.546	7.99	3.84	2.50	43	0.02	36	0.1	800	4.22	34.436	27.34	1.034
1320	2.89	34.615	7.98	3.90	2.38	45	0.01	35	0.1	1000	3.30	34.467	27.45	1.187
1735	2.81	34.774	8.02	4.49	2.08	36	0.01	30	0.1	1200	3.09	34.575	27.56	1.319
2179	2.70	34.834	8.04	4.88	1.91	34	0.02	27	0.2	1500	2.80	34.689	27.68	1.491
2669	2.44	34.850	8.04	5.08	1.87	36	0.02	26	0.6	2000	2.75	34.819	27.78	1.740
										2500	2.54	34.850	27.83	1.964

No. 31, 1968]

Ryuzo WATANABE, Masaru SHIOZAKI and Yukio SUGIMURA