Oceanographic Data of the 48th Japanese Antarctic Research Expedition from December 2006 to March 2007

Eiichi SUZUKI and Aya SUGIMOTO

Hydrographic and Oceanographic Department, Japan Coast Guard,
3–1, Tsukiji 5-chome, Chuo-ku, Tokyo 104-0045
E-mail:ph_ocean@jodc.go.jp

The result of oceanographic observations on board the icebreaker "*Shirase*" and tidal observations at Syowa Station, Antarctic are presented in this report. The oceanographic observations were carried out by the summer party of the 48th Japanese Antarctic Research Expedition (JARE-48) during the austral summer of 2006/2007. The tidal observations were carried out by the winter party of JARE-47 from February 2006 to January 2007.

1. Oceanographic Observations

The track of the icebreaker "*Shirase*" and the sites of oceanographic stations are shown in Fig. 1.
Surface water samplings were carried out using a plastic bucket of 10-ℓ capacity.
XCTD (Expendable Conductivity, Temperature and Depth profiler), XBT (Expendable Bathy-Thermograph), CTD (Conductivity, Temperature and Depth profiling system) and serial observations were made in the Southern Ocean. Three surface drifting buoys were deployed and LADCP (Lowered Acoustic Current Profiler) observations were made at three sites in the Antarctic Circumpolar Current region. These observations were carried out in the Southern Ocean from Fremantle to Antarctica and on the way back to Sydney, and each observation and analytical method are summarized below.

(1) Surface water samplings

Surface water samplings were carried out at 49 stations and the results are given in Table 1.

(2) Monitoring of marine pollution

Surface water sampling for monitoring of marine pollution were made at 15 stations. Items and method of analysis are given in the following section of (5).

(3) XCTD and XBT observations

XCTD and XBT observations were carried out at 104 stations (XCTD: 69 stations, XBT: 35 stations). The results are listed in Table 2 and Table 3. The vertical profiles of water temperature and salinity are shown in Fig. 2 to Fig. 7.

(4) CTD and serial observations

CTD (Falmouth Scientific Inc. TRITON ICTD) and serial observations with Rosette sampler (2.5-ℓ Niskin sampler × 23) were carried out 20 stations. The result including chemical analysis of sampled water and measured value of temperature and salinity with CTD at each standard depth together with meteorological data are given in Table 4.

(5) Chemical analysis of sampled water

Chemical analysis of seawater sampled with a bucket (10-ℓ) for surface observation and Niskin bottles (2.5-ℓ) for serial observation was made according to the following methods. The item(a) was calculated from conductivity using the 1987 practical salinity scales (UNESCO, 1981). The items (b) and (d) were carried out with the method described by Strickland and Parsons(1972). The item (c) was analyzed by the winker method as modified by Carpenter (1965) for more precision. The item (e) was analyzed with the method in Motomizu and Korechika (1988). The items (f) and (g) were analyzed with the method in Anderson (1979). The items (h), (i) and (j) were analyzed with the method in Hydrographic Department (2005).

(a) Practical salinity: Conductive salinometer (Guidline Autosal salinometer model 8400B).
(b) pH: Glass electrode method (Horiba digital pH meter F-24).
(c) Dissolved oxygen: Carpenter method (Sensoren Instrument System dissolved oxygen analyzer).
(d) Phosphate: Molybdenum blue method (BRAN+LUEBBE model TRAACS 800 auto analyzer).
(e) Silicate: Molybdenum blue method (BRAN+LUEBBE model TRAACS 800 auto analyzer).
(f) Nitrite: Molybdenum blue method (BRAN+LUEBBE model TRAACS 800 auto analyzer).
(g) Nitrate: Cadmium(Cd)-copper(Cu) reduction column, Naphthylethylenediamine method (BRAN+LUEBBE model TRAACS 800 auto analyzer).
(h) Petroleum oil: N-hexane extraction-fluorophotometric analysis.
(i) Cadmium (Cd): Solvent extraction-atomic absorption spectrophotometry.
(j) Mercury (Hg): Cold vapor atomic absorption spectrometry.

The results of items (a) to (g) are given in Tables 1 and 4. The results of items (h) to (j) are given in Table 5.

(6) Current observation with three surface drifters

Each surface drifter comprises from a spherical buoy of 35 cm in diameter with a drogue of 1 m in diameter, 7 m in length and 15 m in depth (MetOcean Co. Model WOCE/SVP Drifting buoy). Signal transmitted from the drifter are sent to CLS (Data Processing Center in CNES) via NOAA satellites, and the CLS distributes drifter's positions. The first buoy (ID No. 61025) was deployed at 45°03.0′S, 109°59.7′E on December 6, 2006. It continued transmitting data until December 6, 2007. The second one (ID No. 61024) was deployed at 54°51.6′S, 110°00.7′E on December 8, 2006. It continued transmitting data until December 8, 2007. The third one (ID No. 61023) was deployed at 63°29.8′S, 110°44.3′E on March 6, 2007. It continued transmitting data until March 6, 2008. The trajectories are shown in Fig. 8.

(7) Current observation with LADCP

LADCP (RD Instruments Co. 300KHz WH-ADCP) observations were carried out at 14 stations and the results are given in Fig. 9. The current data observed at St.14–St.15 were excepted, because the compass mounted on LADCP has large error of direction with an accuracy of about 5 degrees or more

where horizontal magnetic intensity is below 3,000 nT (Kikuchi *et al.* 2004).

2. Tidal observations at Syowa Station

Tidal observations have been continued at Syowa Station since 1965. The tide gauge (QWP-8-303D, Meisei Denki Co.) was installed on the sea bottom, about 15 m water depth, Nisino-ura Cove, East Ongle Island by the JARE-36 member on February 2, 1995, and has been continuing observation. The result obtained from February 2006 to January 2007 are described in this report. The methodology of tidal observations is followed Odamaki *et al*. (1991). In this system, the relative water pressure compensated for atmospheric pressure is measured with a quartz oscillator. The range of this system is 0–50 m and its precision is 0.01 m. The data sampled once per 2 s are averaged over 30 s on hard disk of recording PC. The gauge was maintained by a member of the winter party of JARE-47, through the year. Hourly sea level was recorded on the hour. Daily and monthly mean sea levels were calculated from the hourly data. The results are given in Table 6. The least squares method was employed to the harmonic analysis for one year. The harmonic constants, characteristics of the tide and other details are given in Table 7.

On the zero level of the tide gauge: Every summer, the zero level of the tide gauge has been routinely checked. And, since February 1, 2001, the level of 500 cm below the bench mark No. 1040 was adopted as the reference of the tide levels.

Acknowledgments

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The authors also express their thanks to Captain M. Koume, the officers and all crew of the icebreaker "*Shirase*".

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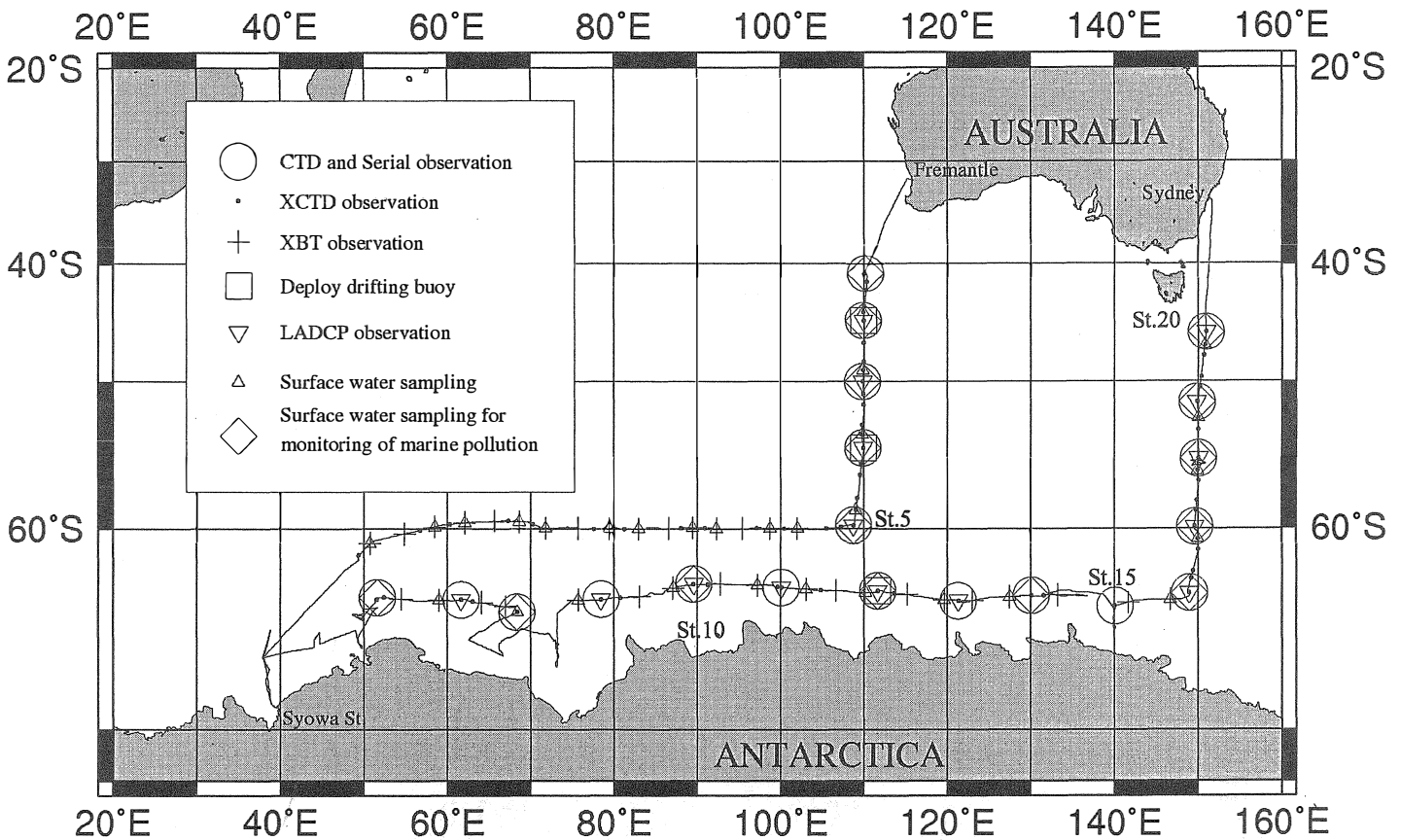

Fig. 1. The track of the icebreaker *Shirase* and the site of oceanographic stations.

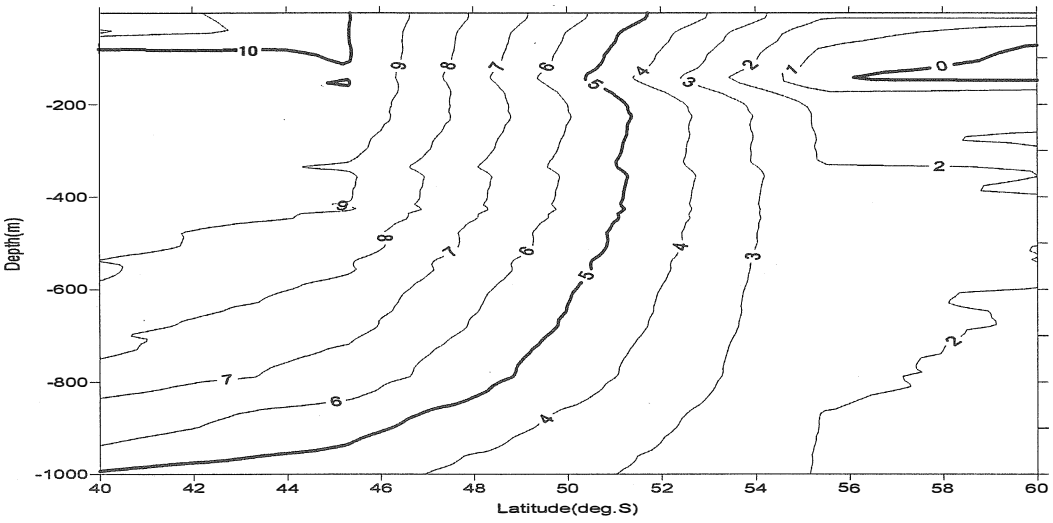

Fig. 2. Vertical profile of water temperature (℃) observed with XCTD along 110°E.

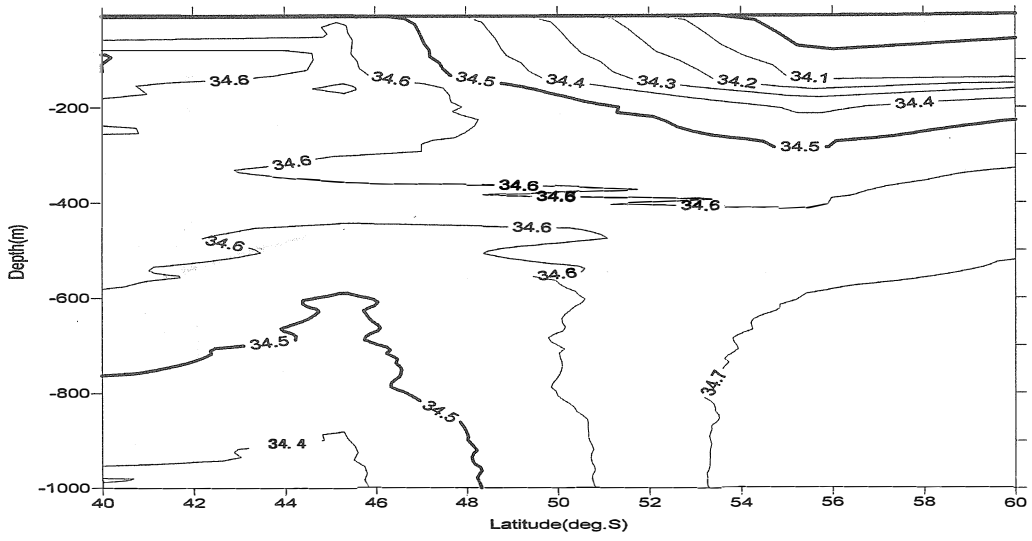

Fig. 3. Vertical profile of water salinity observed with XCTD along 110°E.

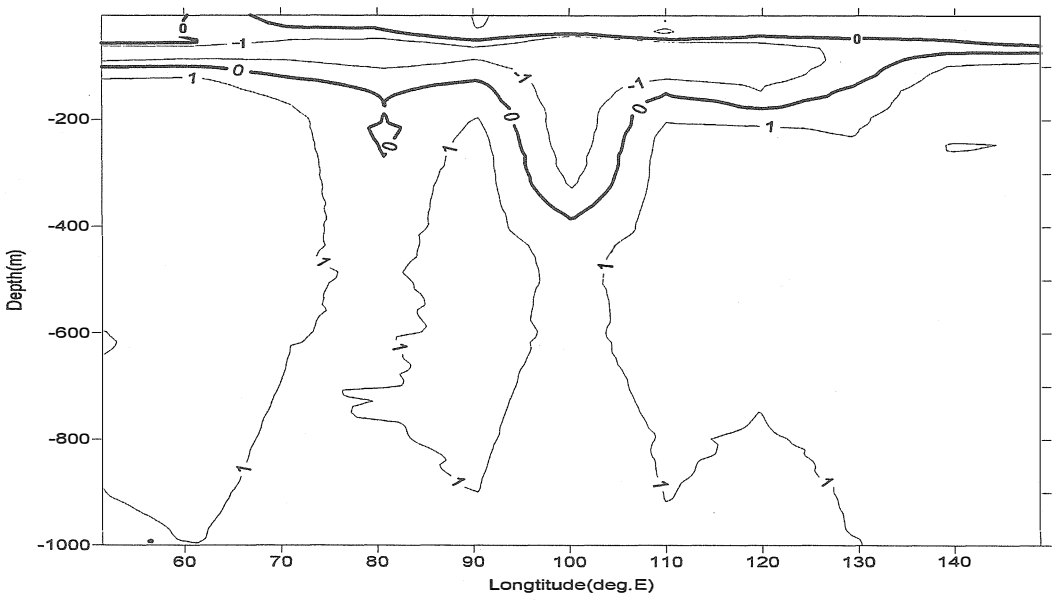

Fig. 4. Vertical profile of water temperature (℃) observed with XCTD along 64°S.

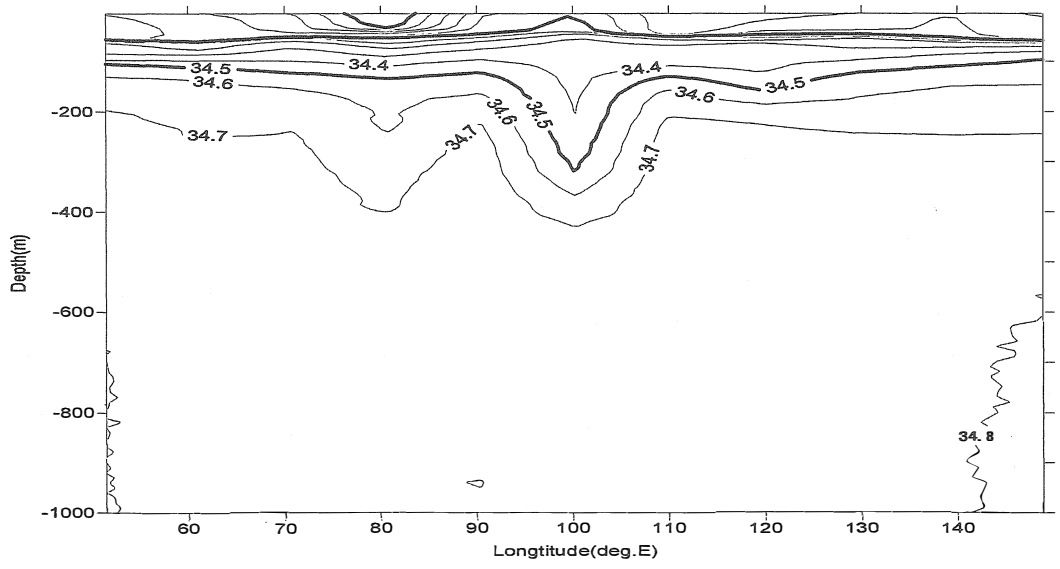

Fig. 5. Vertical profile of water salinity observed with XCTD along 64°S.

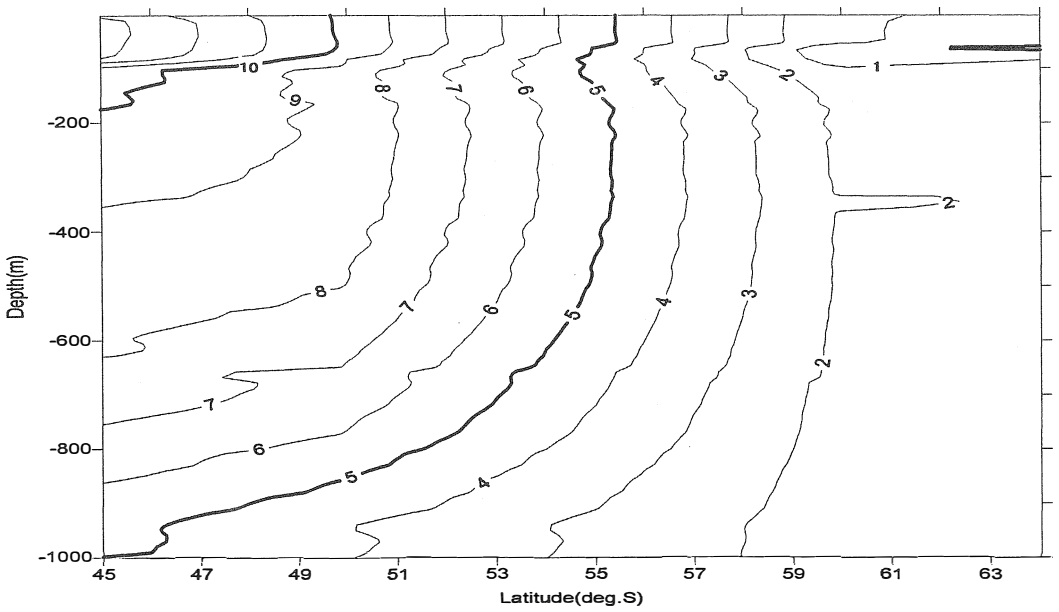

Fig. 6. Vertical profile of water temperature (℃) observed with XCTD along 150°E.

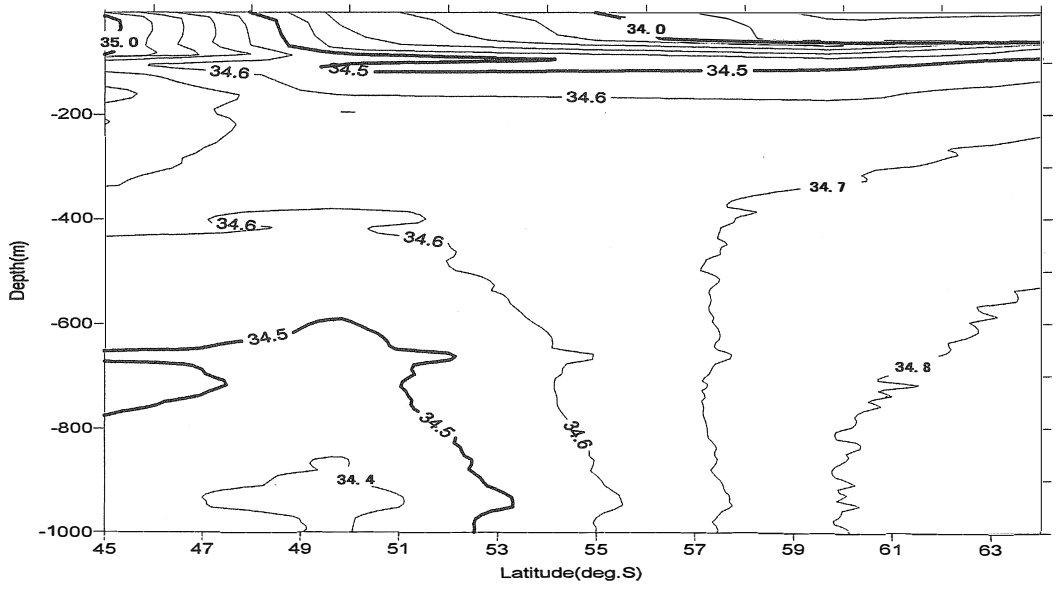

Fig. 7. Vertical profile of water salinity observed with XCTD along 150°E.

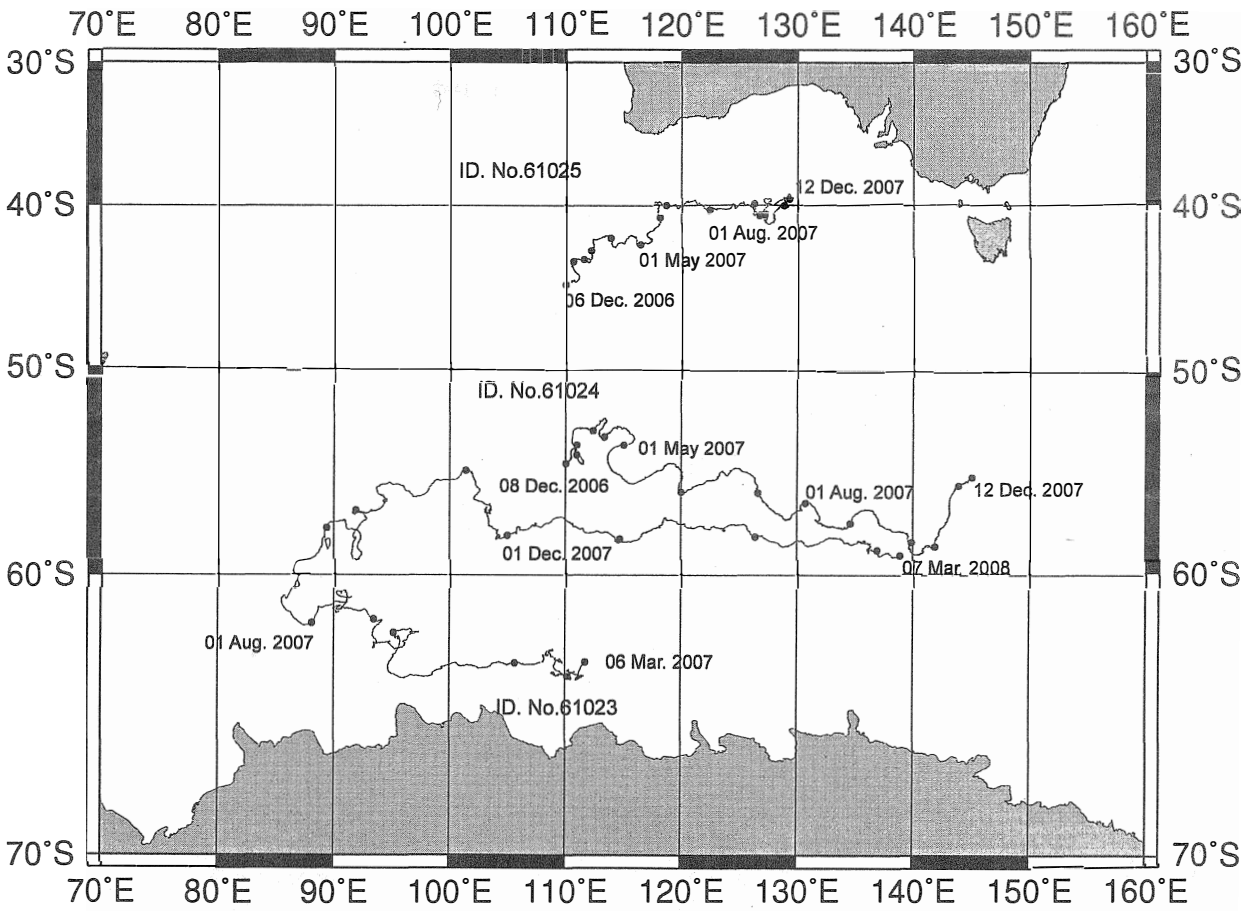

Fig. 8. Trajectories of three surface drifting buoys. Solid circles denote the deployment location and the location on the first day of every month.

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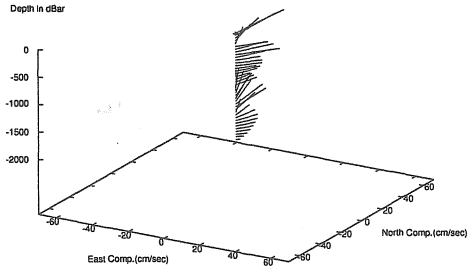

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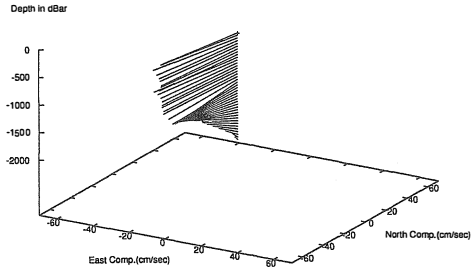

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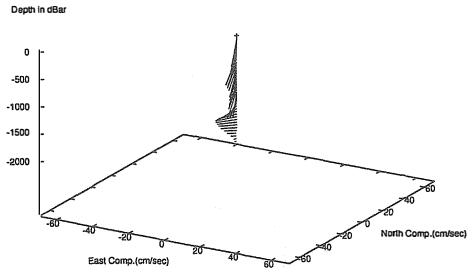

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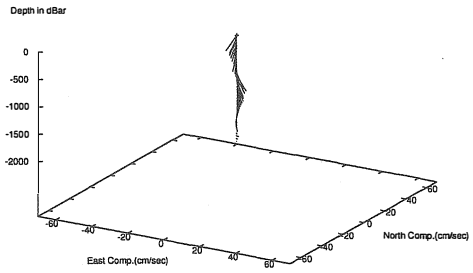

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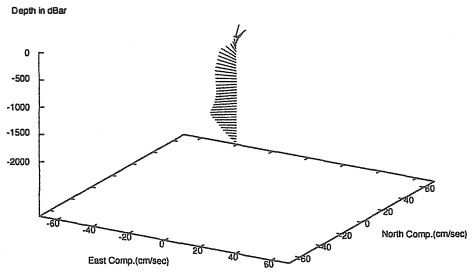

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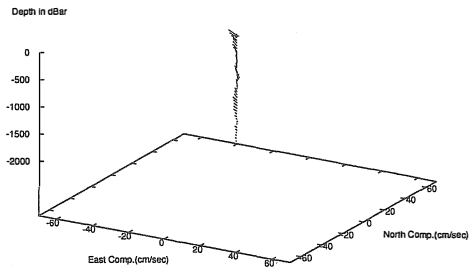

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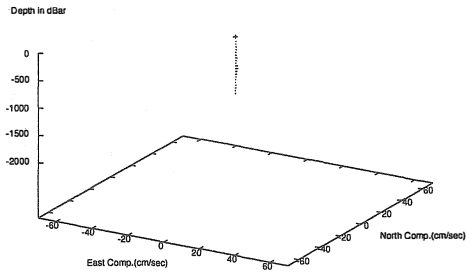

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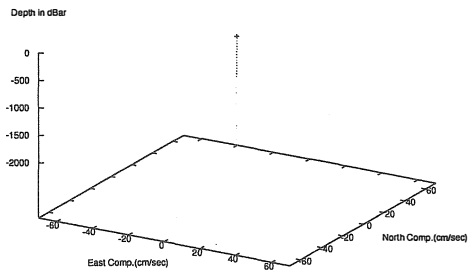
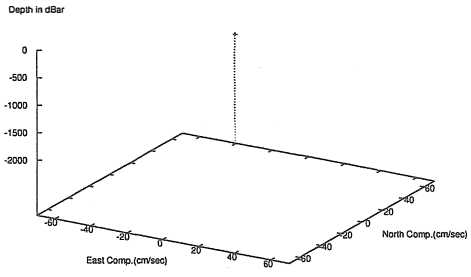


Fig. 9. Vertical profile of current observed with LADCP.

St.13 : reference 2,000dBar.



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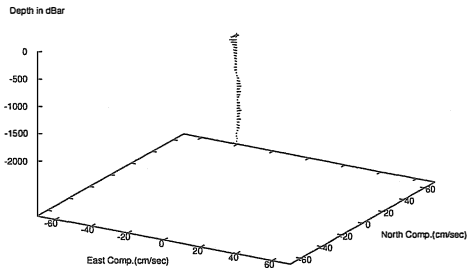

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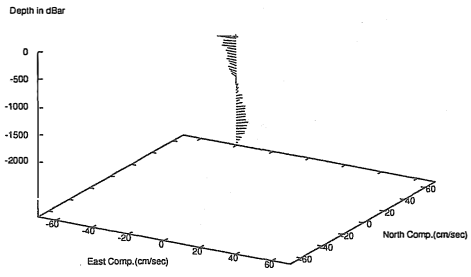

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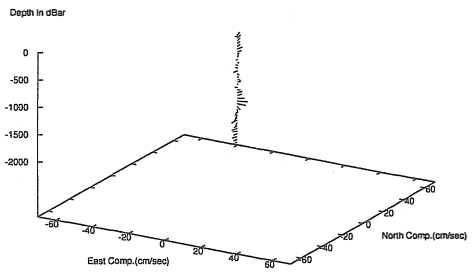

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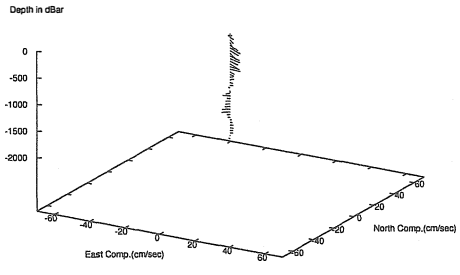

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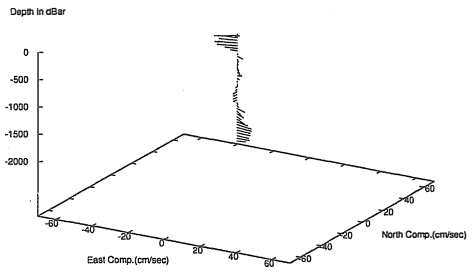

Fig. 9. continued

Table 1. Data of surface water observations on board the icebreaker "*Shirase*" in 2006–2007.

Date	Time	Position		Station N.o.	Air Temp	Water Temp	Salinity	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate
(UT)		Lat.	Long.		(℃)				(μ mol/L)				
2006		Left Fremantle											
Dec. 5	7:52	40-52.9S	110-08.2E	St.1		12.4	–	8.54	284.58	0.872	1.068	0.262	10.602
6	2:06	44-20.4S	109-55.4E		5.0	10.8	34.644	8.38	287.14	0.994	0.885	0.168	9.803
6	7:18	45-04.2S	109-56.9E	St.2		10.6	34.655	8.56	286.79	0.979	0.860	0.298	9.345
7	2:07	49-07.8S	109-52.0E		0.5	5.7	33.942	8.59	–	1.616	6.032	0.294	24.693
7	7:26	49-59.3S	109-51.6E	St.3		4.8	33.883	8.35	328.28	1.674	4.988	0.276	25.584
8	2:06	53-54.6S	109-47.6E		-1.9	2.8	33.903	8.44	347.67	1.815	16.196	0.293	28.570
8	7:31	54-51.5S	109-56.6E	St.4		2.4	33.901	8.30	349.40	1.803	17.902	0.282	28.868
9	2:07	58-53.0S	109-01.1E		-3.3	1.8	33.936	8.45	–	1.992	39.447	0.313	31.001
9	7:29	95-49.7S	108-47.6E	St.5		2.2	33.972	8.32	353.92	1.916	28.289	0.324	30.604
10	1:07	59-59.3S	102-00.5E		-0.2	0.3	33.984	8.42	370.03	1.947	49.949	0.272	34.452
10	9:05	59-58.2S	98-42.3E		-1.4	0.4	33.872	8.43	368.55	1.730	32.565	0.294	28.892
11	1:02	59-59.8S	92-17.5E		-2.9	0.2	33.944	8.48	371.65	1.803	43.847	0.233	29.236
11	9:00	59-56.2S	89-26.5E		-3.0	-0.1	33.931	8.48	372.13	1.828	40.470	0.252	29.626
12	2:00	60-00.6S	82-58.3E		-3.2	-0.3	34.034	8.54	364.92	2.059	58.852	0.253	31.576
12	10:00	60-00.1S	79-26.1E		-2.4	-0.6	33.728	8.51	370.79	1.884	44.914	0.209	29.057
13	3:00	59-59.1S	71-48.4E		0.4	-0.8	33.680	8.50	373.07	1.831	36.333	0.252	28.413
13	11:05	59-35.2S	68-39.1E		3.4	-0.6	33.672	8.49	373.33	1.858	36.073	0.232	28.707
14	3:01	59-39.8S	62-04.6E		-3.2	-0.4	33.710	8.51	369.99	2.005	41.539	0.281	30.325
14	11:03	59-54.3S	58-29.7E		-6.1	0.0	33.641	8.49	367.30	1.973	39.696	0.312	30.026
15	4:00	60-53.1S	50-43.3E		-2.9	0.0	33.534	8.58	363.56	2.009	47.429	0.331	30.144
		Arrived at the ice edge of SYOWA station											
2007		Left at the ice edge of SYOWA station											
Feb. 23	12:48	63-57.8S	51-30.5E	St.6		0.2	33.918	8.12	355.76	1.913	51.815	0.303	29.361
24	5:00	64-00.1S	58-58.9E		-3.9	0.5	33.758	8.04	358.41	1.907	50.314	0.297	29.101
24	11:40	63-57.2S	61-45.6E	St.7		0.1	33.822	8.05	–	1.925	49.596	0.284	29.774
25	4:00	64-37.4S	68-23.3E		-3.4	0.5	33.776	8.06	365.50	1.955	46.961	0.336	29.160
25	10:44	64-37.3S	68-28.5E	St.8		0.0	33.682	8.12	363.21	1.838	39.547	0.257	29.016
Mar. 2	3:02	63-59.7S	75-43.2E		-2.1	0.7	33.743	8.07	377.27	1.634	35.348	0.296	26.307
2	9:07	63-58.1S	78-27.4E	St.9		0.6	33.725	7.98	364.37	1.617	27.558	0.286	25.288
3	3:05	63-22.0S	87-07.0E		-2.4	0.4	33.742	8.16	383.17	1.329	28.920	0.072	20.743
3	9:09	63-08.7S	89-31.7E	St.10		1.2	33.783	8.11	358.33	1.448	26.882	0.135	22.569
4	2:00	63-13.0S	97-11.5E		-7.4	0.9	34.074	8.06	370.02	1.759	42.029	0.178	26.718
5	1:33	63-18.9S	100-05.5E	St.11		0.8	34.048	8.08	365.27	1.633	34.760	0.240	25.795
5	9:00	63-25.1S	103-03.4E		-8.0	0.7	33.853	8.08	361.22	1.478	35.495	0.155	23.310
6	1:00	63-36.0S	110-11.1E		-8.9	0.9	33.745	8.06	367.46	1.395	25.524	0.126	22.277
6	9:32	63-30.5S	111-41.2E	St.12		1.0	33.706	8.04	358.87	1.474	29.575	0.219	24.375
7	0:00	63-59.0S	119-37.8E		-4.8	0.7	33.792	8.10	361.42	–	–	–	–
7	12:55	64-03.6S	121-21.4E	St.13		0.8	33.804	8.07	362.66	1.402	23.663	0.146	21.487
8	0:00	63-49.8S	127-28.1E		-0.3	1.5	33.724	8.04	357.89	–	–	–	–
8	6:27	63-46.9S	130-03.9E	St.14		0.8	33.841	8.04	358.74	1.675	25.559	0.226	26.172
11	10:40	64-20.2S	139-57.6E	St.15		0.2	33.906	8.01	360.32	1.531	23.399	0.170	21.283
11	23:00	63-58.9S	146-41.2E		-6.9	0.4	33.906	7.99	367.27	1.812	27.530	0.224	28.689
12	5:28	63-37.9S	148-52.0E	St.16		0.8	33.798	8.00	360.07	1.727	23.380	0.257	27.523
12	23:00	60-37.9S	149-59.3E		-2.0	1.0	33.798	7.99	370.81	–	–	–	–
13	4:50	59-49.7S	149-34.9E	St.17		1.3	33.790	7.98	351.11	1.907	0.121	0.271	28.174
13	23:00	56-23.1S	149-59.4E		-2.0	5.6	33.853	8.14	326.95	1.738	0.814	0.275	28.027
14	5:09	55-33.4S	150-06.7E	St.18		5.6	33.884	8.17	320.80	1.605	0.318	0.361	24.729
15	23:00	52-45.6S	150-00.5E		4.9	9.3	34.327	8.15	301.00	1.030	1.281	0.317	15.287
16	4:32	51-32.2S	150-02.9E	St.19		7.4	33.922	8.12	314.20	1.392	0.507	0.365	22.475
16	23:00	47-08.8S	150-49.1E		3.0	12.2	34.721	8.19	282.66	0.616	0.134	0.260	7.367
17	4:23	46-00.8S	150-58.4E	St.20	3.0	14.1	35.150	8.22	267.30	0.255	0.000	0.218	2.767
		Arrived Sydney											

Table 2. XCTD observation data.

Station	JA48001		JA48002		JA48003		JA48004		JA48005		JA48006		JA48007		JA48008	
Date	2006/12/5		2006/12/5		2006/12/5		2006/12/5		2006/12/6		2006/12/6		2006/12/6		2006/12/6	
Time(UT)	7:00		14:00		17:00		23:02		1:56		6:40		17:00		22:55	
Latitude	40-54.0S		41-40.4S		42-23.3S		43-48.1S		44-20.4S		45-04.2S		46-55.4S		48-27.1S	
Longitude	110-02.8E		110-18.5E		110-15.3E		110-01.7E		109-55.4E		109-56.9E		109-58.6E		109-58.9E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	12.29	34.59	11.98	34.59	9.77	34.72	11.12	34.61	10.79	34.57	10.30	34.58	8.12	34.16	5.42	33.84
10	12.28	34.60	11.98	34.65	9.71	34.71	11.12	34.63	10.79	34.60	10.26	34.61	8.18	34.23	5.40	33.87
20	12.28	34.61	11.98	34.66	9.68	34.70	11.12	34.63	10.79	34.61	10.25	34.64	8.15	34.25	5.25	33.89
30	12.28	34.62	11.97	34.66	9.64	34.70	11.11	34.65	10.78	34.61	10.24	34.64	8.13	34.26	5.22	33.91
50	11.57	34.56	10.79	34.78	9.61	34.69	11.12	34.65	10.78	34.62	10.23	34.64	8.10	34.26	5.14	33.93
75	10.48	34.72	10.89	34.83	9.65	34.70	10.26	34.64	10.57	34.62	10.23	34.65	8.08	34.26	4.74	33.99
100	9.85	34.61	10.81	34.82	9.73	34.72	10.02	34.66	10.15	34.72	10.24	34.66	7.83	34.25	4.22	34.02
125	9.80	34.62	10.63	34.78	9.93	34.80	10.06	34.68	10.08	34.72	10.24	34.66	7.19	34.25	4.08	34.03
150	9.81	34.62	10.07	34.68	9.93	34.82	9.89	34.65	10.04	34.71	10.26	34.74	7.27	34.31	3.85	34.01
200	9.85	34.64	9.86	34.64	9.97	34.84	9.93	34.68	9.89	34.69	10.04	34.72	6.75	34.26	3.35	34.00
250	9.78	34.64	9.81	34.63	9.84	34.82	9.93	34.72	9.77	34.67	9.83	34.69	6.79	34.32	3.51	34.07
300	9.86	34.69	9.75	34.64	9.64	34.79	10.00	34.76	9.78	34.68	9.54	34.63	6.63	34.35	3.60	34.13
400	9.89	34.75	9.96	34.75	9.15	34.73	9.77	34.74	9.94	34.75	9.44	34.65	5.68	34.31	3.25	34.19
500	9.56	34.71	9.62	34.72	8.43	34.65	9.37	34.69	9.18	34.63	8.95	34.62	4.83	34.29	3.00	34.25
600	9.11	34.66	9.24	34.67	7.48	34.58	8.82	34.61	8.63	34.57	8.18	34.51	4.43	34.34	2.88	34.33
700	8.43	34.57	8.66	34.60	6.44	34.51	7.97	34.53	8.05	34.54	7.58	34.50	3.73	34.33	2.78	34.40
800	7.55	34.50	7.56	34.50	5.35	34.45	6.92	34.45	6.94	34.46	6.77	34.46	3.58	34.39	2.60	34.46
900	6.33	34.43	6.28	34.42	4.52	34.42	5.78	34.38	5.85	34.39	5.57	34.40	3.31	34.43	2.50	34.52
1000	5.31	34.39	5.26	34.38	-	-	4.80	34.33	4.77	34.34	4.58	34.37	3.13	34.47	2.40	34.57

Station	JA480009		JA480010		JA480011		JA480012		JA480013		JA480014		JA480015		JA480016	
Date	2006/12/7		2006/12/7		2006/12/7		2006/12/7		2006/12/7		2006/12/8		2006/12/8		2006/12/8	
Time(UT)	1:57		6:50		13:56		17:00		23:03		1:56		6:43		14:01	
Latitude	49-07.8S		50-00.0S		51-00.0S		51-45.4S		53-13.7S		53-54.6S		54-51.2S		55-56.3S	
Longitude	109-52.0E		109-51.0E		109-55.0E		109-56.6E		109-48.5E		109-47.6E		109-54.7E		109-45.3E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	5.45	33.89	4.68	33.81	4.29	33.85	3.41	33.84	3.08	33.82	2.35	33.85	2.08	33.89	2.17	33.88
10	5.43	33.92	4.67	33.83	4.28	33.87	3.40	33.87	3.04	33.88	2.35	33.88	2.09	33.91	2.17	33.92
20	5.34	33.94	4.60	33.85	4.26	33.88	3.40	33.88	2.94	33.90	2.27	33.89	2.02	33.93	1.83	33.93
30	5.15	33.94	4.43	33.86	4.22	33.88	3.12	33.89	2.72	33.93	1.94	33.89	1.90	33.93	1.46	33.95
50	5.10	33.95	4.33	33.87	4.02	33.89	2.89	33.90	2.58	33.95	1.79	33.91	1.79	33.94	0.86	34.00
75	4.96	33.97	3.61	33.87	3.97	33.89	2.83	33.90	1.97	33.97	0.97	33.92	1.41	33.97	0.66	34.01
100	3.52	33.99	2.89	33.92	3.24	33.91	1.90	33.92	1.63	33.99	0.64	33.93	0.93	33.99	0.52	34.07
125	3.13	33.97	2.80	33.92	2.95	33.92	1.73	33.94	1.47	34.02	0.29	33.95	0.63	34.02	0.44	34.11
150	3.26	34.02	2.51	33.93	2.53	33.93	1.65	33.96	1.48	34.07	-0.04	33.98	0.40	34.10	-0.09	34.11
200	2.87	34.03	2.46	34.02	2.05	33.97	1.58	34.01	2.14	34.21	1.47	34.22	1.46	34.34	1.83	34.37
250	3.12	34.14	2.52	34.08	2.27	34.10	2.02	34.12	2.25	34.30	2.29	34.38	1.77	34.43	1.95	34.44
300	3.10	34.19	2.80	34.17	2.51	34.20	2.25	34.22	2.40	34.39	2.33	34.46	1.92	34.50	1.96	34.50
400	2.97	34.29	2.56	34.11	2.42	34.31	2.45	34.37	2.36	34.49	2.21	34.52	2.09	34.59	2.11	34.58
500	2.89	34.39	2.48	33.50	2.35	34.41	2.27	34.43	2.36	34.59	2.25	34.59	2.13	34.66	2.19	34.65
600	2.59	34.45	2.40	33.70	2.44	34.53	2.24	34.54	2.33	34.65	2.32	34.63	2.09	34.71	2.11	34.69
700	2.50	34.51	2.42	33.46	2.34	34.58	2.34	34.62	2.27	34.71	2.20	34.66	2.08	34.74	2.09	34.73
800	2.48	34.58	2.40	34.73	2.34	34.64	2.28	34.66	2.26	34.76	2.16	34.69	2.07	34.77	2.05	34.75
900	2.45	34.66	-	-	2.33	34.68	2.24	34.69	2.15	34.77	2.12	34.71	2.00	34.79	1.99	34.77
1000	2.38	34.71	-	-	2.29	34.72	2.19	34.73	2.10	34.80	1.94	34.71	1.95	34.80	1.93	34.77

*Adoption for "Depth 0" for a numerical value of 4m.

Table 2. Continued.

Station	JA480017		JA480018		JA480019		JA480020		JA480021		JA480022		JA480023		JA480024	
Date	2006/12/8		2006/12/8		2006/12/9		2006/12/9		2006/12/9		2006/12/9		2006/12/10		2006/12/10	
Time(UT)	16:57		22:56		1:56		6:25		13:05		17:09		4:54		12:56	
Latitude	56-39.1S		58-09.4S		58-53.0S		59-49.5S		59-54.5S		59-59.3S		59-28.4S		59-58.0S	
Longitude	109-35.3E		109-13.5E		109-01.1E		108-45.9E		107-15.4E		105-28.1E		100-21.8E		97-07.7E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	2.40	33.89	2.13	33.94	1.26	33.90	1.86	33.93	0.72	33.94	0.62	33.93	0.01	33.91	0.13	33.85
10	2.24	33.92	2.12	33.96	1.25	33.96	1.85	33.95	0.70	33.97	0.62	33.94	-0.02	33.96	0.13	33.87
20	2.02	33.94	2.10	33.97	0.85	33.98	1.42	33.95	0.70	33.98	0.60	33.95	-0.04	33.98	0.13	33.88
30	1.82	33.95	1.90	33.97	0.47	34.00	0.57	33.99	-0.11	33.98	-0.08	33.94	-0.07	33.99	0.12	33.88
50	1.74	33.96	1.45	33.98	0.17	34.02	0.23	34.02	-0.62	34.00	-0.87	33.99	-1.16	34.05	-0.41	33.91
75	1.17	33.99	1.12	34.00	-0.03	34.02	-0.40	34.03	-0.90	34.04	-1.22	34.04	-1.39	34.09	-0.80	33.95
100	0.90	34.01	0.30	34.04	-0.33	34.03	-0.69	34.05	-1.03	34.05	-1.18	34.05	-1.14	34.23	-0.71	34.08
125	0.77	34.04	-0.02	34.10	-0.36	34.04	-0.96	34.06	-1.13	34.15	-0.49	34.20	-0.58	34.34	1.01	34.25
150	0.72	34.08	0.19	34.17	-0.55	34.07	-0.13	34.20	0.57	34.37	0.82	34.40	0.44	34.48	1.59	34.36
200	1.09	34.17	1.09	34.34	1.33	34.41	1.57	34.47	1.48	34.54	1.64	34.56	1.27	34.61	1.07	34.40
250	1.83	34.31	1.43	34.43	1.64	34.50	1.86	34.56	1.69	34.62	1.79	34.63	1.59	34.67	1.40	34.50
300	2.08	34.39	1.84	34.53	1.90	34.59	1.96	34.61	1.72	34.66	1.84	34.68	1.67	34.70	1.75	34.59
400	2.12	34.51	2.11	34.64	1.85	34.64	1.95	34.68	1.83	34.71	1.88	34.71	1.76	34.75	1.99	34.67
500	2.25	34.61	2.13	34.70	1.94	34.70	1.94	34.71	1.83	34.74	1.84	34.74	1.72	34.77	1.94	34.71
600	2.30	34.67	2.13	34.74	1.87	34.73	1.93	34.74	1.81	34.76	1.79	34.77	1.67	34.78	1.87	34.73
700	2.22	34.71	2.08	34.77	1.84	34.75	1.89	34.76	1.76	34.78	1.74	34.78	1.59	34.80	1.84	34.74
800	2.15	34.73	2.03	34.79	1.79	34.76	1.84	34.77	1.69	34.79	1.66	34.78	1.50	34.79	1.78	34.76
900	2.13	34.77	1.97	34.80	1.75	34.77	1.74	34.78	1.65	34.80	1.57	34.78	1.41	34.79	1.71	34.77
1000	2.03	34.78	1.88	34.81	1.65	34.78	1.68	34.79	1.57	34.80	1.47	34.78	1.30	34.79	1.64	34.77

Station	JA480025		JA480026		JA480027		JA480028		JA480029		JA480030		JA480031		JA480032	
Date	2006/12/11		2006/12/11		2006/12/12		2006/12/12		2006/12/13		2006/12/13		2006/12/14		2006/12/14	
Time(UT)	4:56		12:59		5:55		13:56		6:59		14:55		6:54		14:55	
Latitude	59-57.8S		59-58.0S		60-01.4S		60-00.7S		59-44.4S		59-32.1S		59-45.6S		60-06.9S	
Longitude	90-53.4E		109-56.8E		81-14.9E		77-36.5E		70-15.9E		67-17.8E		60-17.6E		56-43.1E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	-0.34	33.88	0.36	33.94	-0.78	33.96	-0.69	33.80	-1.03	33.57	-0.79	33.62	-0.21	33.75	-0.56	33.56
10	-0.36	33.90	0.36	33.96	-0.78	34.00	-0.70	33.82	-1.08	33.60	-0.79	33.63	-0.21	33.76	-0.65	33.57
20	-0.36	33.92	0.35	33.97	-0.84	34.01	-0.70	33.84	-1.10	33.63	-0.80	33.64	-0.33	33.79	-0.72	33.58
30	-0.37	33.92	0.35	33.98	-0.84	34.02	-0.71	33.84	-1.11	33.64	-0.80	33.65	-0.53	33.79	-0.81	33.59
50	-0.37	33.93	0.34	33.99	-0.86	34.03	-0.72	33.86	-1.23	33.66	-0.82	33.65	-1.40	33.94	-1.60	33.87
75	-0.52	33.94	0.24	34.00	-0.91	34.05	-0.38	34.18	-1.27	33.67	-1.02	33.68	-1.38	33.99	-1.74	33.98
100	-0.98	34.06	-0.02	34.08	-0.60	34.29	1.01	34.39	-1.52	33.92	-1.47	33.85	-1.23	34.07	-1.12	34.12
125	-0.46	34.23	0.28	34.17	0.45	34.49	1.56	34.50	-0.43	34.08	-0.62	33.98	0.34	34.35	1.00	34.46
150	0.12	34.35	0.90	34.26	1.51	34.66	1.76	34.54	0.61	34.25	-0.18	34.05	1.50	34.55	1.49	34.55
200	0.35	34.43	1.48	34.38	1.80	34.71	1.92	34.59	1.71	34.45	1.50	34.35	1.84	34.68	1.70	34.60
250	1.02	34.53	1.93	34.50	1.83	34.73	1.98	34.62	1.92	34.53	1.94	34.48	1.94	34.75	1.80	34.65
300	1.39	34.60	2.11	34.57	1.82	34.74	1.97	34.66	1.99	34.57	2.05	34.52	2.01	34.81	1.81	34.68
400	1.70	34.68	1.85	34.62	1.77	34.76	1.98	34.69	2.03	34.63	2.13	34.61	1.99	34.89	1.82	34.74
500	1.67	34.70	2.09	34.70	1.69	34.77	1.95	34.72	2.03	34.69	2.15	34.66	2.01	34.97	1.76	34.77
600	1.74	34.74	2.04	34.74	1.62	34.78	1.89	34.74	2.02	34.72	2.10	34.70	1.94	35.02	1.74	34.80
700	1.63	34.74	1.88	34.76	1.55	34.78	1.82	34.75	1.98	34.75	2.04	34.72	1.89	35.10	1.67	34.80
800	1.61	34.76	1.88	34.77	1.40	34.78	1.75	34.76	1.93	34.77	2.04	34.75	1.83	35.18	1.58	34.82
900	1.52	34.76	1.84	34.79	1.30	34.78	1.66	34.77	1.85	34.77	1.98	34.78	-	-	1.47	34.83
1000	1.43	34.77	1.74	34.79	1.20	34.78	1.58	34.77	1.77	34.78	1.95	34.79	-	-	1.39	34.83

*Adoption for "Depth 0" for a numerical value of 4m.

Table 2. Continued.

Station	JA480033		JA480034		JA480035		JA480036		JA480037		JA480038		JA480039		JA480040	
Date	2006/12/15		2007/2/23		2007/2/23		2007/2/24		2007/2/24		2007/2/25		2007/3/2		2007/3/2	
Time(UT)	7:54		11:45		17:00		10:27		16:58		10:04		8:29		14:54	
Latitude	61-34.1S		63-58.5S		63-51.0S		63-58.2S		64-04.4S		64-37.4S		63-57.6S		63-52.6S	
Longitude	49-23.1E		51-29.9E		52-24.0E		61-40.0E		63-02.1E		68-23.3E		78-27.2E		80-46.2E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	-0.05	33.60	0.44	33.89	0.35	33.86	-0.05	33.81	0.04	33.81	-0.20	33.67	0.65	33.66	0.23	33.34
10	-0.06	33.62	0.44	33.91	0.35	33.89	-0.05	33.83	0.03	33.82	-0.20	33.70	0.64	33.69	0.20	33.36
20	-0.15	33.64	0.44	33.93	0.34	33.91	-0.06	33.85	0.02	33.83	-0.20	33.70	0.62	33.71	0.09	33.41
30	-1.40	33.88	0.43	33.93	0.34	33.91	-0.06	33.87	0.02	33.84	-0.24	33.71	0.59	33.72	-0.11	33.46
50	-1.67	34.01	0.41	33.95	0.32	33.92	-0.09	33.88	-0.06	33.85	-0.57	33.82	-1.35	34.10	-1.26	33.96
75	-1.82	34.06	-1.50	34.25	-1.32	34.24	-1.49	34.22	-0.30	34.46	-1.65	34.30	0.08	34.35	-1.61	34.21
100	-1.80	34.11	-0.06	34.44	-0.80	34.37	0.22	34.45	0.86	34.58	-1.34	34.38	1.21	34.52	-1.13	34.36
125	-0.11	34.33	1.03	34.58	0.74	34.54	1.18	34.58	1.31	34.65	-0.42	34.49	1.62	34.60	-0.56	34.47
150	1.06	34.49	1.29	34.64	1.07	34.60	1.47	34.63	1.42	34.67	0.32	34.59	1.69	34.63	-0.14	34.54
200	1.48	34.59	1.47	34.70	1.28	34.66	1.63	34.68	1.47	34.70	0.82	34.66	1.81	34.67	-0.08	34.59
250	1.64	34.65	1.50	34.73	1.01	34.66	1.65	34.71	1.63	34.74	0.98	34.70	1.80	34.70	-0.13	34.61
300	1.67	34.68	1.52	34.76	1.44	34.73	1.65	34.73	1.60	34.76	0.99	34.71	1.83	34.72	0.20	34.64
400	1.65	34.71	1.24	34.76	1.46	34.75	1.60	34.75	1.58	34.81	0.90	34.73	1.79	34.75	0.59	34.70
500	1.65	34.75	1.33	34.79	1.40	34.77	1.53	34.77	1.50	34.69	0.88	34.74	1.75	34.76	0.86	34.74
600	1.60	34.77	0.96	34.77	1.30	34.77	-	-	1.42	34.68	0.85	34.75	1.57	34.77	0.83	34.77
700	1.46	34.78	1.16	34.80	1.20	34.78	-	-	1.31	34.67	0.76	34.74	1.53	34.79	0.97	34.78
800	1.36	34.78	1.07	34.80	1.11	34.78	-	-	1.21	34.48	0.67	34.74	1.41	34.79	0.95	34.79
900	1.33	34.79	0.99	34.80	1.00	34.78	-	-	1.07	34.25	0.62	34.75	1.35	34.79	0.92	34.79
1000	1.19	34.78	0.88	34.81	0.88	34.78	-	-	0.97	34.04	0.57	34.75	1.20	34.79	0.87	34.79

Station	JA480041		JA480042		JA480043		JA480044		JA480045		JA480046		JA480047		JA480048	
Date	2007/3/3		2007/3/3		2007/3/5		2007/3/5		2007/3/6		2007/3/6		2007/3/7		2007/3/8	
Time(UT)	8:23		14:55		1:15		12:54		6:22		13:17		9:43		5:17	
Latitude	63-08.8S		63-10.4S		63-19.5S		63-26.8S		63-31.2S		63-38.3S		64-03.0S		63-46.0S	
Longitude	89-30.5E		91-14.6E		100-04.8E		104-49.7E		111-39.7E		113-36.0E		121-19.6E		130-03.5E	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	1.05	33.75	1.05	33.98	0.60	33.99	1.17	33.92	0.89	33.66	0.74	33.76	0.67	33.75	0.82	33.80
10	1.03	33.77	1.05	33.99	0.60	34.01	1.16	33.95	0.88	33.70	0.73	33.77	0.64	33.78	0.76	33.83
20	1.00	33.79	1.04	34.01	0.59	34.03	1.13	33.97	0.87	33.71	0.73	33.78	0.60	33.79	0.74	33.85
30	0.96	33.79	1.03	34.03	0.58	34.04	1.05	33.98	0.87	33.71	0.73	33.79	0.53	33.82	0.74	33.86
50	-0.36	34.03	0.21	34.14	-1.70	34.30	0.29	34.03	-1.20	34.13	-1.56	34.32	-0.30	33.95	-0.40	34.14
75	-1.09	34.28	-1.19	34.32	-1.83	34.33	-1.68	34.31	-1.49	34.35	-1.58	34.40	-1.78	34.30	-0.69	34.31
100	-0.48	34.42	-0.75	34.43	-1.85	34.36	-1.73	34.37	-1.43	34.40	-1.04	34.47	-1.79	34.35	-0.53	34.43
125	0.16	34.50	-0.19	34.51	-1.83	34.36	-1.78	34.40	-0.57	34.50	-0.32	34.55	-1.55	34.37	-0.03	34.52
150	0.60	34.57	0.32	34.58	-1.85	34.38	-1.72	34.41	0.56	34.63	0.56	34.64	-1.22	34.43	0.44	34.58
200	1.07	34.66	1.03	34.68	-1.81	34.39	-0.31	34.54	1.20	34.71	1.16	34.72	0.64	34.64	0.89	34.66
250	1.42	34.71	1.40	34.74	-1.70	34.43	0.75	34.66	1.37	34.74	1.38	34.75	1.25	34.70	1.18	34.70
300	1.53	34.73	1.49	34.76	-1.32	34.48	1.13	34.71	1.41	34.76	1.41	34.76	1.25	34.71	1.29	34.73
400	1.50	34.76	1.37	34.78	0.04	34.65	1.35	34.75	1.38	34.77	1.37	34.77	1.26	34.73	1.38	34.76
500	1.42	34.77	1.30	34.79	0.80	34.74	1.32	34.77	1.30	34.77	1.15	34.76	1.13	34.72	1.37	34.77
600	1.32	34.78	1.23	34.80	0.83	34.75	1.31	34.78	1.20	34.78	1.09	34.76	1.05	34.73	1.32	34.78
700	1.22	34.77	1.16	34.82	0.71	34.75	1.23	34.79	1.12	34.77	1.04	34.77	1.04	34.73	1.23	34.78
800	1.12	34.78	1.09	34.81	0.55	34.75	1.13	34.79	0.98	34.77	0.91	34.76	0.97	34.73	1.17	34.79
900	1.01	34.77	0.98	34.81	0.46	34.75	1.02	34.78	0.92	34.77	0.75	34.76	0.92	34.73	1.07	34.79
1000	0.93	34.77	0.90	34.81	0.30	34.74	0.98	34.78	0.77	34.77	0.69	34.75	0.75	34.72	0.99	34.78

*Adoption for "Depth 0" for a numerical value of 4m.

Table 2. Continued.

Station	JA480049		JA480050		JA480051		JA480052		JA480053		JA480054		JA480055		JA480056	
Date	2007/3/8		2007/3/11		2007/3/12		2007/3/12		2007/3/12		2007/3/12		2007/3/12		2007/3/13	
Time(UT)	11:58		10:26		4:26		11:54		13:52		19:54		22:52		3:39	
Latitude	63-46.2S		64-19.5S		63-38.253		62-51.624		62-27.853		61-15.654		60-37.861		59-52.728	
Longitude	131-31.6E		140-01.8E		148-57.170		149-10.783		149-23.898		150-00.123		149-59.253		149-35.600	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	0.80	33.81	0.65	33.66	0.64	33.77	1.02	33.72	1.05	33.69	0.83	33.78	0.93	33.79	1.11	33.75
10	0.78	33.83	0.55	33.67	0.63	33.80	1.01	33.75	1.04	33.72	0.82	33.80	0.92	33.82	1.11	33.78
20	0.77	33.85	0.51	33.69	0.62	33.82	0.98	33.75	0.92	33.74	0.81	33.81	0.91	33.82	1.10	33.80
30	0.75	33.85	0.50	33.69	0.62	33.81	0.94	33.78	0.86	33.75	0.81	33.81	0.91	33.83	1.09	33.80
50	0.38	33.94	-1.32	34.15	0.61	33.83	0.93	33.79	0.80	33.77	0.80	33.82	0.90	33.83	1.10	33.81
75	-1.15	34.32	-1.36	34.30	0.12	34.36	0.39	34.00	-0.42	34.16	0.23	33.90	0.81	33.85	0.04	34.29
100	-0.63	34.45	-1.11	34.38	1.22	34.51	0.74	34.45	0.77	34.38	-0.21	34.22	0.66	34.42	1.05	34.45
125	0.51	34.57	-0.84	34.44	1.60	34.57	1.31	34.54	1.48	34.47	1.16	34.40	1.22	34.50	1.51	34.53
150	0.84	34.61	-0.35	34.51	1.68	34.61	1.51	34.57	1.67	34.52	1.69	34.48	1.52	34.55	1.74	34.57
200	1.18	34.67	0.22	34.59	1.90	34.67	1.85	34.64	1.79	34.58	1.99	34.55	1.75	34.62	1.87	34.62
250	1.50	34.72	0.51	34.63	1.98	34.70	1.91	34.67	1.91	34.62	2.16	34.60	1.91	34.66	1.93	34.65
300	1.38	34.72	0.94	34.68	1.95	34.72	1.90	34.68	1.93	34.64	2.04	34.63	1.95	34.69	1.92	34.68
400	1.60	34.76	0.97	34.70	1.90	34.76	1.88	34.71	1.92	34.68	2.03	34.68	1.96	34.74	2.00	34.73
500	1.43	34.76	0.87	34.70	1.85	34.78	1.86	34.74	1.89	34.70	2.07	34.73	1.90	34.76	1.96	34.76
600	1.33	34.77	0.85	34.71	1.82	34.81	1.82	34.75	1.85	34.73	2.02	34.75	1.86	34.78	1.91	34.77
700	1.37	34.78	0.79	34.71	1.76	34.82	1.75	34.76	1.79	34.73	1.96	34.76	1.81	34.80	-	-
800	1.27	34.78	0.69	34.70	1.68	34.82	1.71	34.78	1.73	34.73	1.92	34.78	1.79	34.82	-	-
900	1.19	34.78	0.62	34.70	1.59	34.83	1.64	34.77	1.65	34.74	1.86	34.78	1.69	34.82	-	-
1000	1.10	34.78	0.55	34.70	1.49	34.83	1.55	34.78	1.58	34.74	1.76	34.79	1.62	34.83	-	-

Station	JA480057		JA480058		JA480059		JA480060		JA480061		JA480062		JA480063		JA480064	
Date	2007/3/13		2007/3/13		2007/3/13		2007/3/13		2007/3/14		2007/3/15		2007/3/16		2007/3/16	
Time(UT)	10:53		13:53		19:56		22:53		3:44		19:55		22:54		3:34	
Latitude	58-56.249		58-17.965		57-03.366		56-23.132		55-33.678		53-35.605		52-45.595		51-35.980	
Longitude	149-45.964		149-50.168		150-02.990		149-59.369		150-04.165		150-00.110		150-00.479		149-54.045	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	1.40	33.83	1.37	33.77	3.80	33.79	5.41	33.83	5.96	33.86	7.55	33.95	9.07	34.29	7.34	33.86
10	1.40	33.85	1.37	33.77	3.79	33.81	5.40	33.85	5.96	33.88	7.54	33.96	9.05	34.30	7.30	33.88
20	1.39	33.86	1.36	33.79	3.79	33.81	5.39	33.86	5.95	33.89	7.53	33.98	9.04	34.31	7.23	33.91
30	1.39	33.86	1.35	33.80	3.72	33.82	5.36	33.86	5.94	33.89	7.52	33.98	9.04	34.33	7.21	33.92
50	1.39	33.87	1.35	33.80	2.73	33.85	5.29	33.87	5.92	33.89	7.52	34.00	9.04	34.33	7.07	33.91
75	1.37	33.88	1.35	33.81	0.73	33.96	5.13	33.86	5.78	33.91	7.51	34.02	9.03	34.34	7.04	33.91
100	1.10	34.46	0.69	34.22	0.70	34.01	3.58	33.87	4.81	33.99	7.50	34.02	9.01	34.35	6.51	34.07
125	1.36	34.56	1.34	34.54	0.90	34.09	2.20	33.91	5.19	34.13	7.43	34.09	8.82	34.47	6.01	34.09
150	1.61	34.61	1.79	34.62	1.62	34.22	1.57	33.94	5.50	34.22	7.31	34.24	8.51	34.48	5.88	34.13
200	1.76	34.65	1.91	34.66	2.05	34.32	1.47	34.02	5.14	34.23	7.59	34.33	8.46	34.51	5.72	34.14
250	1.79	34.68	1.97	34.69	2.26	34.40	1.91	34.12	4.82	34.26	6.84	34.25	8.60	34.56	5.79	34.19
300	1.83	34.70	1.93	34.70	2.35	34.47	2.24	34.22	3.79	34.18	6.66	34.26	8.68	34.59	5.80	34.23
400	1.81	34.73	1.91	34.73	2.33	34.56	2.06	34.32	3.09	34.24	6.53	34.31	8.68	34.60	5.15	34.24
500	1.79	34.75	1.87	34.76	2.33	34.63	2.36	34.46	3.04	34.34	5.89	34.31	8.48	34.58	5.01	34.30
600	1.74	34.75	1.81	34.78	2.29	34.68	2.63	34.58	2.81	34.40	5.11	34.26	8.14	34.54	3.99	34.24
700	1.68	34.76	1.73	34.78	2.26	34.72	2.52	34.62	2.75	34.49	4.35	34.26	7.19	34.42	3.82	34.30
800	1.58	34.76	1.67	34.79	2.22	34.74	2.47	34.66	2.62	34.55	3.49	34.24	6.74	34.45	3.65	34.38
900	1.51	34.76	1.60	34.79	2.18	34.76	2.40	34.68	2.44	34.58	3.56	34.34	6.09	34.43	3.26	34.39
1000	1.41	34.76	1.51	34.80	2.10	34.78	2.34	34.72	2.41	34.64	3.34	34.40	5.41	34.41	3.03	34.44

*Adoption for "Depth 0" for a numerical value of 4m.

Table 2. Continued.

Station	JA480065		JA480066		JA480067		JA480068		JA480069	
Date	2007/3/16		2007/3/16		2007/3/16		2007/3/16		2007/3/17	
Time(UT)	10:55		13:53		19:55		22:52		03:26	
Latitude	50-29.380		49-39.888		47-59.384		47-08.771		46-02.885	
Longitude	150-13.753		150-22.643		150-39.701		150-49.119		150-57.499	
Depth(m)	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity	Temp.	Salinity
0	9.54	34.13	9.98	34.28	10.00	34.15	11.86	34.64	14.02	35.13
10	9.53	34.16	9.98	34.30	9.99	34.19	11.85	34.66	14.02	35.15
20	9.55	34.18	9.98	34.32	9.93	34.19	11.85	34.67	14.01	35.15
30	9.57	34.19	9.98	34.32	9.70	34.18	11.85	34.67	14.03	35.15
50	9.89	34.29	9.98	34.33	9.67	34.19	11.91	34.72	13.92	35.13
75	9.07	34.22	10.02	34.44	8.94	34.34	11.99	34.76	13.72	35.13
100	8.07	34.30	8.91	34.56	8.90	34.49	11.01	34.96	11.38	34.75
125	8.38	34.41	8.69	34.56	9.04	34.55	9.95	34.81	10.96	34.85
150	8.56	34.49	8.62	34.56	8.92	34.56	9.67	34.77	10.52	34.89
200	8.37	34.48	8.80	34.62	8.33	34.47	9.32	34.74	9.93	34.81
250	8.52	34.54	8.79	34.63	8.29	34.48	9.04	34.70	9.66	34.77
300	8.57	34.57	8.74	34.63	8.35	34.50	8.73	34.64	9.28	34.71
400	7.87	34.48	8.44	34.59	8.33	34.56	8.42	34.60	8.71	34.63
500	7.04	34.42	8.22	34.57	7.66	34.50	8.17	34.58	8.38	34.58
600	6.57	34.44	7.54	34.50	6.78	34.44	7.55	34.53	8.02	34.55
700	5.55	34.38	6.82	34.47	5.94	34.39	7.02	34.52	7.57	34.55
800	4.83	34.36	5.87	34.44	5.19	34.40	6.20	34.47	6.72	34.50
900	4.24	34.38	4.73	34.38	4.59	34.39	5.56	34.48	5.88	34.48
1000	3.79	34.43	4.13	34.38	4.07	34.40	4.70	34.43	5.39	34.49

*Adoption for "Depth 0" for a numerical value of 4m.

Table 3. XBT observation data.

NUMBER	DATE	TIME (UT)	POSITION		TEMPERATURE(degC) DEPTH(m)															S.L. (m)	AIR TEMP. (degC)
			LAT.	LONG.	0	10	20	30	50	75	100	125	150	200	250	300	350	400	450		
					500	550	600	650	700	750											
JA480001B	2006/12/10	00:55	59-59.3S	102-00.5E	0.2	0.2	0.2	0.2	0.1	-1.2	-1.3	-0.8	0.4	1.5	1.8	1.9	1.8	1.9	1.9	55	-0.1
					1.9	1.9	1.8	1.8	1.7	1.8											
JA480002B	2006/12/10	08:55	59-58.2S	098-42.3E	0.4	0.4	0.3	0.3	-0.8	-0.9	-1.1	0.0	0.4	1.2	2.0	1.9	1.9	2.0	1.9	41	-1.0
					1.9	2.0	1.9	1.9	2.0	1.9											
JA480003B	2006/12/10	16:56	59-59.6S	095-25.1E	-0.3	-0.3	-0.3	-0.4	-0.9	-1.1	-1.2	-1.0	0.0	1.5	1.8	1.9	1.9	2.0	1.9	45	-0.6
					1.8	1.9	1.8	1.8	1.8	1.7											
JA480004B	2006/12/11	00:55	59-59.8S	092-17.5E	-0.2	-0.3	-0.3	-0.3	-0.9	-1.2	-1.1	-0.8	-0.1	0.8	1.6	1.8	1.8	1.8	1.9	45	-0.9
					1.8	1.7	1.7	1.7	1.7	1.6											
JA480005B	2006/12/11	08:54	59-56.2S	089-26.5E	-0.3	-0.3	-0.3	-0.4	-0.4	-0.9	-1.0	-0.2	0.8	1.0	1.6	1.8	1.7	1.8	1.7	62	-0.4
					1.7	1.7	1.6	1.7	1.6	1.6											
JA480006B	2006/12/11	16:56	59-59.6S	086-37.3E	-0.5	-0.6	-0.6	-0.6	-0.6	-0.6	-1.1	-0.9	-0.1	0.9	1.4	1.4	1.6	1.7	1.7	83	-1.2
					1.6	1.6	1.7	1.7	1.5	1.5											
JA480007B	2006/12/12	01:55	60-00.6S	082-58.3E	-0.6	-0.7	-0.7	-0.7	-0.7	-0.9	0.6	1.5	1.7	1.9	1.9	1.9	1.8	1.8	1.8	70	-0.9
					1.8	1.7	1.7	1.7	1.6	1.5											
JA480008B	2006/12/12	09:54	60-00.1S	079-26.1E	-0.9	-0.9	-1.0	-1.1	-1.1	-1.2	0.4	1.4	1.8	2.0	1.9	2.0	2.0	2.0	2.0	54	-1.0
					1.9	2.0	1.8	1.9	1.9	1.7											
JA480009B	2006/12/12	17:56	60-00.1S	075-44.5E	-0.6	-0.6	-0.6	-0.6	-0.7	-0.9	-0.4	1.3	1.7	1.9	1.9	2.0	2.0	2.0	2.0	70	-0.9
					1.9	2.0	1.9	1.9	1.8	1.8											
JA480010B	2006/12/13	02:55	59-59.1S	071-48.4E	-1.1	-1.0	-1.1	-1.1	-1.1	-1.4	-1.1	0.3	0.8	1.6	1.9	2.0	2.0	2.1	2.1	79	-1.3
					2.1	2.1	2.0	2.0	2.0	2.0											
JA480011B	2006/12/13	10:54	59-35.2S	068-39.1E	-0.9	-1.0	-1.0	-1.0	-1.0	-1.4	-1.5	-0.3	1.3	1.8	2.0	2.0	2.1	2.1	2.0	74	-1.9
					2.1	2.0	2.0	2.0	2.0	2.0											
JA480012B	2006/12/13	18:55	59-33.9S	065-36.8E	-1.1	-1.1	-1.1	-1.1	-1.2	-1.8	-1.6	-0.4	0.3	1.5	1.8	2.1	2.2	2.2	2.1	62	-2.2
					2.0	2.0	2.0	2.0	2.0	1.9											
JA480013B	2006/12/14	00:54	59-39.8S	062-04.6E	-0.5	-0.4	-0.4	-0.5	-0.6	-0.8	-1.2	-1.0	0.0	1.4	1.7	1.9	1.9	2.0	2.0	80	-1.5
					1.9	1.9	2.0	1.9	1.9	1.9											
JA480014B	2006/12/14	10:53	59-54.3S	058-29.7E	-0.3	-0.3	-0.3	-0.4	-0.6	-1.1	-1.4	-1.4	-0.9	1.5	1.8	1.8	1.9	1.9	1.9	39	-1.7
					2.0	2.0	1.9	1.9	1.9	1.9											
JA480015B	2006/12/14	18:57	60-19.3S	054-52.6E	-0.3	-0.3	-0.6	-0.7	-1.6	-1.7	-1.7	0.3	1.3	1.7	1.8	1.9	1.9	1.9	1.9	31	-0.7
					1.9	1.9	1.8	1.8	1.8	1.7											

Table 3. Continued.

NUMBER	DATE	TIME (UT)	POSITION		TEMPERATURE(degC) DEPTH(m)																S.L.	AIR TEMP.
			LAT.	LONG.	0	10	20	30	50	75	100	125	150	200	250	300	350	400	450	500	(m)	(degC)
					550	600	650	700	750													
JA480016B	2006/12/15	03:55	60-53.1S	050-43.3E	-0.2	-0.2	-0.6	-1.5	-1.6	-1.7	-0.1	1.5	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	22	-0.2
					1.8	1.8	1.7	1.8	1.7													
JA480017B	2007/02/23	21:00	63-56.4S	054-29.0E	0.5	0.5	0.5	0.5	-1.3	0.9	1.4	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.6	1.6	39	-1.0
					1.6	1.5	1.5	1.4	1.4													
JA480018B	2007/02/24	04:54	64-00.1S	058-58.9E	0.4	0.4	0.4	0.4	0.4	-1.2	0.0	1.0	1.4	1.6	1.6	1.7	1.7	1.7	1.6	1.6	53	0.5
					1.5	1.5	1.5	1.4	1.4													
JA480019B	2007/02/25	00:00	64-07.6S	064-05.7E	0.4	0.3	0.3	0.3	0.2	-1.3	-0.1	1.0	1.3	1.7	1.8	1.8	1.8	1.8	1.8	1.7	51	0.3
					1.6	1.7	1.6	1.6	1.5													
JA480020B	2007/02/25	03:55	64-20.1S	066-57.5E	0.2	0.2	0.2	0.2	0.1	-1.5	0.2	1.2	1.6	1.7	1.8	1.8	1.8	1.7	1.6	1.6	65	0.0
					1.6	1.5	1.5	1.4	1.4													
JA480021B	2007/03/02	02:57	63-59.7S	075-43.2E	0.6	0.6	0.6	0.6	-0.3	-1.6	-1.0	-0.2	0.7	1.2	1.3	1.5	1.5	1.5	1.5	1.5	53	-1.0
					1.5	1.5	1.5	1.4	1.4	1.3												
JA480022B	2007/03/02	18:00	63-49.0S	083-02.2E	0.8	0.7	0.7	0.7	-0.4	0.5	0.9	1.1	1.4	1.7	1.8	1.7	1.5	1.9	1.8	1.8	47	-1.7
					1.8	1.8	1.7	1.6	1.6	1.6												
JA480023B	2007/03/03	02:55	63-22.0S	087-07.0E	0.2	0.2	0.3	0.0	-1.5	-1.6	-1.6	-1.5	-1.1	0.4	0.8	1.2	1.6	1.6	1.2	1.2	35	-0.4
					1.5	1.4	1.3	1.4	1.5													
JA480024B	2007/03/03	18:00	63-08.3S	092-48.2E	1.1	1.1	1.1	1.1	0.8	-1.0	-0.8	-0.2	0.2	0.9	1.3	1.5	1.5	1.5	1.4	1.4	53	-1.2
					1.4	1.3	1.3	1.2	1.2													
JA480025B	2007/03/04	01:54	63-13.0S	097-11.5E	0.9	0.9	0.9	0.9	0.9	-0.9	-1.4	-0.9	-0.5	0.1	0.6	0.8	1.1	1.1	1.0	1.0	59	-2.0
					1.0	0.9	0.9	0.8	0.8													
JA480026B	2007/03/05	06:08	63-25.1S	103-03.4E	0.5	0.5	0.4	0.5	-1.5	-1.8	-1.8	-1.8	-1.8	-1.6	-1.6	-0.9	-0.1	0.3	0.3	1.0	41	-3.9
					1.0	1.0	1.0	1.0	0.9	0.8												
JA480027B	2007/03/05	16:58	63-29.9S	106-39.3E	1.0	1.0	1.0	1.0	-1.4	-1.6	-1.7	-1.8	-1.6	-0.4	0.6	1.0	1.4	1.4	1.2	1.1	41	-2.7
					1.2	1.2	1.0	1.0	0.9													
JA480028B	2007/03/06	00:55	63-36.0S	110-11.1E	0.9	0.8	0.9	0.9	-1.5	-1.5	-1.7	-1.6	-0.7	0.6	1.2	1.4	1.5	1.5	1.4	1.4	38	-1.0
					1.4	1.3	1.3	1.2	1.2													
JA480029B	2007/03/06	15:55	63-41.9S	115-12.1E	0.8	0.7	0.8	0.8	-1.7	-1.7	-1.7	-1.4	-0.8	0.9	1.3	1.3	1.3	1.3	1.2	1.2	34	1.6
					1.2	1.1	1.1	1.0	0.9													
JA480030B	2007/03/06	23:57	63-59.0S	119-37.8E	0.6	0.6	0.3	0.2	-1.8	-1.8	-1.8	-1.8	-1.8	-1.6	-1.1	0.4	1.1	0.9	1.1	1.0	33	-0.7
					1.0	1.1	1.1	1.1	1.0	1.0												

Table 3. Continued.

NUMBER	DATE	TIME (UT)	POSITION		TEMPERATURE(degC) DEPTH(m)															S.L. (m)	AIR TEMP. (degC)
			LAT.	LONG.	0	10	20	30	50	75	100	125	150	200	250	300	350	400	450		
					500	550	600	650	700	750											
JA480031B	2007/03/07	15:54	64-02.3S	123-01.0E	1.0	1.0	1.0	1.0	-1.2	-1.6	-1.3	-0.7	0.3	1.1	1.4	1.4	1.3	1.3	1.3	40	0.2
					1.2	1.2	1.2	1.1	1.1	1.1											
JA480032B	2007/03/07	23:55	63-49.8S	127-28.1E	1.4	1.4	1.4	1.4	-1.2	-0.4	0.9	1.1	1.6	1.8	1.8	1.9	1.9	1.9	1.8	36	0.1
					1.8	1.7	1.7	1.7	1.6	1.5											
JA480033B	2007/03/08	14:54	63-43.8S	133-11.3E	1.1	1.1	1.1	0.9	-0.9	-0.7	0.0	0.0	0.8	1.4	1.4	1.6	1.7	1.6	1.5	42	-1.0
					1.5	1.6	1.6	1.6	1.5	1.5											
JA480034B	2007/03/11	14:53	64-08.7S	141-40.3E	0.5	0.5	0.5	0.5	0.4	-0.2	0.9	1.5	1.7	1.7	1.6	2.0	1.9	1.9	1.8	57	-1.3
					1.9	1.8	1.7	1.8	1.8	1.7											
JA480035B	2007/03/11	22:53	63-58.9S	146-41.2E	0.3	0.3	0.3	0.3	0.3	0.5	1.4	1.7	1.8	1.9	1.9	1.9	1.9	1.8	1.7	70	-1.4
					1.8	1.8	1.7	1.8	1.7	1.7											

Table 4. Serial and CTD observation data.

Station 1

Beginning of cast

Date	: December 5, 2006	Time(UT)	: 06:00	Wind direction	: WNW
Time(UT)	: 06:17	Weather	: c	Velocity	: 27(kn)
Latitude	: 40-52.5S	Air temperature(dry)	: 12.1(degC)	Wave	: 4
Longitude	: 110-10.1E	Humidity	: 71(%)	Swell	: WSW/6
Depth	: 2,302(m)	Atmospheric Pressure	: 1013.2(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	12.4	—	8.54	284.6	0.87	1.1	0.26	10.60	—	10	12.224	34.638
49	12.685	—	8.33	-	0.52	0.2	0.17	8.06	—	20	12.185	34.638
76	10.678	—	8.34	291.6	0.58	1.3	0.26	10.12	—	30	12.212	34.638
102	10.410	—	8.35	286.7	0.66	1.7	0.30	10.83	—	50	12.048	34.643
127	10.035	34.660	8.35	286.2	0.73	2.0	0.43	11.88	—	75	10.147	34.670
152	9.833	34.645	8.36	284.9	0.86	1.7	0.56	12.55	—	100	9.875	34.640
203	9.802	34.645	8.36	284.6	0.77	2.3	0.30	12.94	—	125	9.878	34.652
254	9.830	34.661	8.36	281.6	0.78	2.7	0.02	13.60	—	150	9.867	34.658
303	10.082	34.770	8.36	271.7	0.83	3.6	0.04	14.19	—	200	9.847	34.660
402	9.862	34.752	8.35	268.5	1.26	3.9	0.02	14.60	—	250	9.830	34.666
504	9.503	34.706	8.36	265.5	0.95	4.9	0.04	16.70	—	300	9.990	34.731
605	9.141	34.661	8.37	260.7	1.23	4.6	0.04	18.01	—	400	9.855	34.753
705	8.513	34.576	8.39	248.2	1.25	7.7	0.04	21.10	—	500	9.600	34.724
804	7.630	—	8.41	235.7	1.44	13.3	0.01	24.62	—	600	9.098	34.658
907	6.574	34.392	—	-	-	-	-	-	—	700	8.437	34.579
1005	5.537	34.392	8.44	225.1	1.87	25.5	0.03	30.57	—	800	7.537	34.506
1254	3.751	34.600	—	-	-	-	-	-	—	900	6.456	34.437
1505	3.049	34.492	8.50	194.2	2.18	69.5	0.00	33.43	—	1000	5.318	34.389
1983	2.550	34.660	8.53	198.1	2.29	84.5	0.02	35.19	—	1250	3.670	34.400
										1500	3.070	34.511
										2000	2.531	34.671

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 2

Beginning of cast

Date	: December 6, 2006	Time(UT)	: 06:00	Wind direction	: ENE
Time(UT)	: 06:08	Weather	: c	Velocity	: 5(kn)
Latitude	: 45-04.5S	Air temperature(dry)	: 8.5(degC)	Wave	: 2
Longitude	: 109-56.1E	Humidity	: 71(%)	Swell	: W/6
Depth	: 4,159(m)	Atmospheric Pressure	: 999.3(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	10.6	34.655	8.56	286.8	0.98	0.9	0.30	9.34	-	10	10.332	34.655
49	10.275	34.660	8.38	287.4	0.80	0.6	0.31	11.12	-	20	10.299	34.657
73	10.275	34.661	8.38	287.7	0.82	0.5	0.29	11.13	-	30	10.251	34.660
99	10.279	34.663	8.37	286.3	0.86	0.3	0.32	11.13	-	50	10.244	34.660
126	10.309	34.677	8.36	287.3	0.87	0.7	0.32	11.21	-	75	10.249	34.660
148	10.311	34.721	-	-	-	-	-	-	-	100	10.253	34.662
197	10.212	34.742	8.38	280.4	0.90	3.1	0.02	12.70	-	125	10.252	34.661
245	9.991	34.698	8.38	279.7	0.94	2.8	0.00	13.85	-	150	10.232	34.696
298	9.597	34.334	-	-	-	-	-	-	-	200	10.078	34.723
395	9.772	34.710	8.39	267.5	1.03	3.5	0.00	15.33	-	250	9.917	34.701
499	9.095	34.608	8.40	266.6	1.16	4.4	0.00	17.40	-	300	9.664	34.657
597	8.414	34.536	8.40	253.3	1.36	6.5	0.00	20.49	-	400	9.634	34.689
698	7.544	34.443	8.42	244.5	1.53	9.5	0.00	23.37	-	500	8.879	34.575
796	6.902	34.449	8.42	222.8	1.78	16.0	0.01	27.18	-	600	8.292	34.515
897	5.741	34.370	8.43	217.2	1.94	21.1	0.00	29.74	-	700	7.771	34.498
995	4.796	34.332	8.46	-	2.12	27.3	0.00	31.73	-	800	6.999	34.459
1250	3.413	34.347	8.47	223.7	2.34	45.8	0.00	35.00	-	900	5.684	34.372
1499	2.968	34.486	8.50	189.6	2.42	65.4	0.00	36.63	-	1000	4.769	34.336
1999	2.482	34.666	8.50	195.6	2.30	79.5	0.00	34.76	-	1250	3.365	34.349
2501	2.148	34.749	8.51	205.5	2.14	87.8	0.00	32.83	-	1500	2.941	34.485
3000	1.595	34.744	-	213.5	2.18	106.7	0.00	33.43	-	2000	2.486	34.666
3497	1.201	34.725	8.58	218.3	2.25	121.9	0.00	34.03	-	2500	2.163	34.747
										3000	1.593	34.739
										3500	1.201	34.720

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 3

Beginning of cast

Date	: December 7, 2006	Time(UT)	: 06:00	Wind direction	: W
Time(UT)	: 06:18	Weather	: bc	Velocity	: 21(kn)
Latitude	: 50-00.7S	Air temperature(dry)	: 3.6(degC)	Wave	: 4
Longitude	: 109-50.3E	Humidity	: 71(%)	Swell	: WSW/6
Depth	: 3,296(m)	Atmospheric Pressure	: 986.3(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	4.8	33.883	8.35	328.3	1.67	5.0	0.28	25.58	-	10	4.718	33.868
49	4.268	33.870	8.35	331.3	1.92	5.4	0.23	25.65	-	20	4.653	33.869
75	3.458	33.881	8.37	333.1	1.70	6.6	0.22	26.03	-	30	4.436	33.873
100	2.892	33.905	8.37	335.2	1.82	12.2	0.21	27.12	-	50	4.363	33.868
124	2.751	33.907	8.36	333.1	1.84	13.7	0.19	27.67	-	75	4.035	33.892
150	2.504	33.917	8.37	332.9	1.89	15.9	0.21	28.63	-	100	2.944	33.908
199	2.354	33.976	8.37	312.8	1.99	21.9	0.09	30.84	-	125	2.863	33.907
251	2.717	34.085	8.35	282.1	2.14	28.1	0.05	32.77	-	150	2.723	33.913
299	2.814	34.164	8.35	260.9	2.20	34.1	0.02	33.71	-	200	2.469	33.984
401	2.549	34.250	8.36	236.3	2.33	45.8	0.01	35.58	-	250	2.509	34.054
503	2.525	34.345	8.37	213.1	2.44	56.4	0.04	36.92	-	300	2.754	34.163
601	2.446	34.416	8.38	199.3	2.48	64.9	0.00	37.33	-	400	2.619	34.237
701	2.460	34.489	8.41	189.7	2.50	71.0	0.03	37.15	-	500	2.485	34.328
800	2.472	34.564	8.41	185.5	2.44	75.7	0.03	36.68	-	600	2.470	34.415
903	2.406	34.610	8.43	185.6	2.45	79.7	0.06	36.80	-	700	2.460	34.488
1002	2.389	34.642	8.44	189.5	2.37	80.2	0.06	35.83	-	800	2.494	34.560
1251	2.253	34.707	8.45	195.3	2.36	83.1	0.02	33.77	-	900	2.436	34.601
1502	2.077	34.737	8.47	337.9	2.18	87.6	0.01	32.99	-	1000	2.390	34.641
1998	1.643	34.747	8.49	211.1	2.21	101.1	0.03	33.31	-	1250	2.262	34.707
2497	1.130	34.727	8.52	216.2	2.24	118.2	0.01	33.99	-	1500	2.111	34.740
2994	0.704	34.703	8.54	224.5	2.33	133.1	0.03	34.77	-	2000	1.640	34.746
										2500	1.149	34.724
										3000	0.704	34.701

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 4

Beginning of cast

Date	: December 8, 2006	Time(UT)	: 06:00	Wind direction	: WNW
Time(UT)	: 06:14	Weather	: c	Velocity	: 20(kn)
Latitude	: 54-51.2S	Air temperature(dry)	: 1.1(degC)	Wave	: 4
Longitude	: 109-53.9E	Humidity	: 79(%)	Swell	: WNW/3
Depth	: 3,983(m)	Atmospheric Pressure	: 979.1(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	2.4	33.901	8.30	349.4	1.80	17.9	0.28	28.87	-	10	2.104	29.991
49	1.892	33.908	8.31	354.0	1.85	18.1	0.27	28.93	-	20	2.093	29.986
76	1.809	33.906	8.31	351.5	1.86	18.4	0.26	28.91	-	30	1.951	29.874
97	1.246	33.932	8.30	352.9	1.99	23.3	0.26	29.86	-	50	1.838	29.784
125	0.746	33.971	8.29	347.4	2.12	29.1	0.25	30.74	-	75	1.589	29.592
148	0.487	34.042	8.29	331.7	2.20	38.8	0.16	33.22	-	100	1.086	29.201
200	1.251	34.237	8.28	259.6	2.43	56.6	0.00	36.62	-	125	0.726	28.923
250	1.859	34.390	8.26	211.3	2.55	69.6	0.00	38.22	-	150	0.444	28.747
300	2.010	34.456	8.27	196.8	2.56	74.9	0.00	38.21	-	200	1.518	29.867
402	2.142	34.558	8.27	188.4	2.54	81.7	0.00	37.89	-	250	1.815	30.227
502	2.207	34.617	8.28	185.6	2.44	84.4	0.00	37.20	-	300	1.957	30.424
603	2.202	34.658	8.29	187.5	2.41	85.3	0.00	36.18	-	400	2.134	30.698
699	2.130	34.681	8.29	195.3	2.38	87.3	0.00	35.81	-	500	2.140	30.797
801	2.081	34.705	8.29	192.7	2.33	88.9	0.00	35.07	-	600	2.136	30.882
902	2.030	34.726	8.29	193.9	2.28	90.4	0.00	34.46	-	700	2.123	30.940
1004	1.973	34.734	8.30	202.7	2.27	92.2	0.00	34.20	-	800	2.096	30.980
1253	1.799	34.746	8.31	207.1	2.24	96.9	0.00	33.81	-	900	2.037	30.982
1503	1.576	34.747	8.32	202.5	2.25	103.4	0.00	33.57	-	1000	2.002	31.005
2001	1.156	34.729	8.32	215.3	2.31	117.6	0.00	34.66	-	1250	1.821	30.962
2499	0.752	34.707	8.34	218.9	2.37	130.3	0.01	35.42	-	1500	1.595	30.871
2998	0.408	34.691	8.35	227.9	2.41	139.4	0.01	36.01	-	2000	1.168	30.693
3501	0.205	34.681	8.35	234.5	2.40	144.9	0.00	35.70	-	2500	0.765	30.527
										3000	0.402	30.391
										3500	0.203	30.397

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 5

Beginning of cast

Date	: December 9, 2006	Time(UT)	: 06:00	Wind direction	: SSW
Time(UT)	: 06:10	Weather	: c	Velocity	: 13(kn)
Latitude	: 59-49.7S	Air temperature(dry)	: -0.1(degC)	Wave	: 4
Longitude	: 108-45.7E	Humidity	: 78(%)	Swell	: NE/3
Depth	: 4,443(m)	Atmospheric Pressure	: 990.2(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	2.2	33.972	8.32	353.9	1.92	28.3	0.32	30.60	-	10	1.635	33.959
49	-0.082	34.005	8.34	368.0	2.08	35.7	0.22	31.15	-	20	1.430	33.970
74	-0.437	34.014	8.33	364.3	2.12	39.2	0.23	31.93	-	30	0.571	33.986
100	-0.660	34.022	8.34	363.5	2.14	41.4	0.22	32.30	-	50	0.224	34.000
123	-0.886	34.040	8.34	359.3	2.17	44.6	0.21	32.81	-	75	-0.310	34.010
149	-0.229	34.130	8.32	313.9	2.30	51.2	0.12	34.60	-	100	-0.716	34.021
199	1.515	34.401	8.28	217.5	2.54	71.0	0.00	38.38	-	125	-0.954	34.033
249	1.773	34.508	8.27	196.7	2.54	79.1	0.00	38.59	-	150	-0.181	34.161
300	2.000	34.581	8.27	187.2	2.52	82.8	0.00	37.93	-	200	1.561	34.426
502	1.957	34.676	8.30	190.3	2.41	88.6	0.00	36.72	-	250	1.872	34.516
708	1.927	34.720	8.30	196.1	2.34	91.4	0.00	35.46	-	300	2.001	34.574
801	1.865	34.728	8.28	199.4	2.32	95.0	0.00	35.60	-	400	1.962	34.634
902	1.788	34.736	8.29	202.2	2.29	95.0	0.00	34.49	-	500	1.996	34.676
1002	1.727	34.742	8.30	204.0	2.30	96.8	0.00	34.18	-	600	1.979	34.703
1250	1.512	34.738	8.30	210.3	2.26	102.9	0.00	34.09	-	700	1.935	34.723
1501	1.296	34.736	8.29	213.0	2.31	110.3	0.00	34.37	-	800	1.890	34.731
2003	0.922	34.715	8.27	219.5	2.34	122.5	0.00	35.22	-	900	1.808	34.736
2501	0.574	34.699	8.31	224.9	2.38	132.6	0.00	35.80	-	1000	1.720	34.738
2995	0.300	34.686	8.30	232.5	2.40	139.3	0.00	36.23	-	1250	1.534	34.740
3999	0.045	34.673	8.33	241.2	2.41	147.2	0.00	36.40	-	1500	1.310	34.733
										2000	0.921	34.712
										2500	0.586	34.695
										3000	0.298	34.682
										3500	0.153	34.675
										4000	0.044	34.668

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 6

Beginning of cast

Date	: February 23, 2007	Time(UT)	: 11:00	Wind direction	: SW
Time(UT)	: 11:03	Weather	: c	Velocity	: 22(kn)
Latitude	: 63-59.9S	Air temperature(dry)	: -1.3(degC)	Wave	: 3
Longitude	: 51-28.1E	Humidity	: 71(%)	Swell	: E/3
Depth	: 4,572(m)	Atmospheric Pressure	: 979.4(hPa)	Visibility	: 10(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.2	33.918	8.12	355.8	1.91	51.8	0.30	29.36	-	10	0.371	33.892
47	0.529	33.841	8.05	355.9	1.90	49.5	0.28	29.37	-	20	0.368	33.892
73	-1.444	34.173	8.17	341.5	2.05	59.7	0.13	31.13	-	30	0.369	33.893
97	0.053	34.361	8.07	265.3	2.33	77.1	0.14	35.00	-	50	0.362	33.894
126	1.196	34.511	8.01	212.7	2.45	89.3	0.00	37.39	-	75	-1.475	34.184
152	1.434	34.576	7.98	203.2	2.46	93.2	0.00	37.29	-	100	-0.163	34.361
202	1.547	34.623	7.96	199.8	2.45	95.8	0.00	37.04	-	125	1.170	34.515
253	1.553	34.651	7.95	198.7	2.42	98.4	0.00	36.17	-	150	1.384	34.569
305	1.566	34.676	7.94	199.8	2.35	99.4	0.00	35.65	-	200	1.472	34.629
406	1.515	34.700	7.94	202.6	2.31	101.5	0.00	35.05	-	250	1.515	34.653
510	1.439	34.715	7.93	207.1	2.30	104.1	0.00	34.87	-	300	1.522	34.678
605	1.357	34.720	7.93	213.3	2.25	106.4	0.00	34.70	-	400	1.376	34.686
707	1.255	34.718	7.92	214.6	2.26	109.4	0.00	34.34	-	500	1.305	34.698
805	1.158	34.719	7.93	217.4	2.28	111.4	0.00	34.53	-	600	0.897	34.669
908	1.072	34.720	7.93	217.2	2.49	114.8	0.00	34.70	-	700	1.222	34.714
1006	0.973	34.714	7.93	220.0	2.46	125.1	0.00	35.48	-	800	1.139	34.715
1254	0.751	34.706	7.93	222.9	2.77	124.9	0.00	35.77	-	900	1.051	34.712
1508	0.609	34.699	7.93	226.5	2.36	130.4	0.00	35.47	-	1000	0.956	34.709
2002	0.358	34.686	7.92	232.6	2.35	137.2	0.00	35.88	-	1250	0.752	34.700
2492	0.170	34.677	7.90	236.0	2.34	140.2	0.00	36.19	-	1500	0.596	34.692
2984	0.008	34.668	7.89	245.3	2.31	141.4	0.00	35.54	-	2000	0.354	34.680
										2500	0.166	34.670
										3000	0.004	34.663

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 7

Beginning of cast

Date	: February 24, 2007	Time(UT)	: 10:00	Wind direction	: WNW
Time(UT)	: 10:02	Weather	: bc	Velocity	: 21(kn)
Latitude	: 63-58.7S	Air temperature(dry)	: 0.5(degC)	Wave	: 4
Longitude	: 61-37.9E	Humidity	: 76(%)	Swell	: W/3
Depth	: 4,215(m)	Atmospheric Pressure	: 981.7(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
						(μmol/l)						
0	0.1	33.822	8.05	-	1.92	49.6	0.28	29.77	-	10	0.277	33.799
50	-0.137	33.853	8.06	-	1.92	50.2	0.24	30.16	-	20	0.237	33.813
73	-1.279	34.209	8.05	314.9	2.16	63.3	0.17	33.16	-	30	0.198	33.818
102	0.495	34.441	7.99	240.8	2.38	82.0	0.17	36.11	-	50	-0.002	33.850
122	1.293	34.604	7.96	203.8	2.46	92.3	0.04	37.31	-	75	-1.524	34.161
150	1.440	34.604	7.95	200.9	2.45	94.3	0.00	37.16	-	100	-0.457	34.299
203	1.676	34.659	7.95	194.4	2.41	96.2	0.00	36.80	-	125	1.037	34.500
250	1.687	34.673	7.94	197.0	2.37	96.2	0.00	36.28	-	150	1.405	34.568
300	1.677	34.689	7.94	-	2.35	97.3	0.00	35.84	-	200	1.660	34.630
404	1.628	34.711	7.95	209.3	2.32	98.5	0.00	35.49	-	250	1.704	34.660
503	1.557	34.723	7.96	205.8	2.28	100.5	0.00	34.63	-	300	1.681	34.678
606	1.480	34.728	7.96	211.0	2.26	102.0	0.00	34.45	-	400	1.657	34.703
709	1.392	34.729	7.95	211.3	2.25	104.3	0.00	34.22	-	500	1.572	34.717
805	1.303	34.729	7.95	215.2	2.26	107.0	0.00	34.16	-	600	1.514	34.726
905	1.215	34.730	7.96	220.2	2.26	109.5	0.00	34.40	-	700	1.428	34.730
1006	1.121	34.727	7.96	220.3	2.26	112.0	0.00	34.28	-	800	1.336	34.728
1255	0.907	34.715	7.95	-	2.28	118.6	0.00	34.86	-	900	1.233	34.727
1507	0.713	34.704	7.95	230.9	2.33	124.9	0.00	35.16	-	1000	1.148	34.724
2007	0.433	34.687	7.95	231.3	2.35	133.5	0.00	35.70	-	1250	0.912	34.710
2499	0.238	34.680	7.94	235.4	2.39	138.6	0.00	36.43	-	1500	0.717	34.700
2989	0.063	34.672	7.91	243.1	2.38	141.1	0.00	36.05	-	2000	0.440	34.685
										2500	0.229	34.675
										3000	0.056	34.666

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 8

Beginning of cast

Date	: February 25, 2007	Time(UT)	: 09:00	Wind direction	: W
Time(UT)	: 09:30	Weather	: s	Velocity	: 14(kn)
Latitude	: 64-37.6S	Air temperature(dry)	: 0.0(degC)	Wave	: 4
Longitude	: 68-21.7E	Humidity	: 74(%)	Swell	: W/3
Depth	: 3,150(m)	Atmospheric Pressure	: 988.3(hPa)	Visibility	: 3(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.0	33.682	8.12	363.2	1.84	39.5	0.26	29.02		10	-0.182	33.674
51	-0.632	33.808	8.11	357.4	1.95	43.6	0.20	29.44		20	-0.203	33.676
78	-1.609	34.249	8.09	316.4	2.26	66.6	0.13	33.21		30	-0.224	33.679
104	-1.377	34.312	8.07	299.9	2.33	74.6	0.26	33.67		50	-1.185	34.048
127	-0.725	34.407	8.04	275.4	2.35	81.0	0.12	34.99		75	-1.644	34.257
153	0.008	34.501	8.02	255.1	2.38	87.4	0.04	35.33		100	-1.308	34.330
202	0.716	34.602	8.01	232.1	2.37	95.0	0.03	35.07		125	-0.528	34.425
251	0.836	34.638	7.99	225.9	2.38	98.0	0.04	35.17		150	0.278	34.526
303	0.865	34.657	7.99	225.9	2.33	100.2	0.04	34.74		200	0.846	34.619
403	0.832	34.679	7.99	225.3	2.34	105.3	0.05	34.52		250	0.998	34.657
505	0.820	34.690	7.99	225.1	2.34	109.7	0.03	34.82		300	1.090	34.679
606	0.848	34.701	7.99	223.1	2.34	113.4	0.04	34.68		400	0.909	34.681
704	0.805	34.701	7.98	222.9	2.35	116.7	0.05	35.05		500	0.860	34.690
804	0.718	34.698	7.98	225.1	2.35	119.7	0.04	34.67		600	0.886	34.700
905	0.667	34.696	7.99	223.5	2.36	123.3	0.03	35.13		700	0.804	34.700
1004	0.602	34.693	7.98	225.4	2.39	126.2	0.04	35.79		800	0.683	34.693
1252	0.445	34.690	7.97	228.1	2.40	132.0	0.03	35.39		900	0.677	34.697
1503	0.330	34.684	7.97	228.8	2.43	137.6	0.04	35.81		1000	0.580	34.693
2000	0.113	34.677	7.97	238.5	2.42	138.5	0.03	35.94		1250	0.458	34.688
2500	-0.027	34.671	7.95	255.3	2.41	137.5	0.04	36.75		1500	0.322	34.683
										2000	0.106	34.673
										2500	-0.027	34.668

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 9

Beginning of cast

Date	: March 2, 2007	Time(UT)	: 08:00	Wind direction	: ENE
Time(UT)	: 07:59	Weather	: s	Velocity	: 12(kn)
Latitude	: 63-57.2S	Air temperature(dry)	: -0.9(degC)	Wave	: 3
Longitude	: 78-27.0E	Humidity	: 93(%)	Swell	: NW/3
Depth	: 3,675(m)	Atmospheric Pressure	: 992.7(hPa)	Visibility	: 2(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.6	33.725	7.98	364.4	1.62	27.6	0.29	25.29	-	10	0.647	33.715
48	-1.004	34.197	7.89	287.1	2.32	67.4	0.19	34.29	-	20	0.641	33.718
75	0.801	34.433	7.83	218.0	2.48	82.5	0.12	37.23	-	30	0.616	33.723
99	1.464	34.536	7.83	196.5	2.43	82.6	0.04	35.86	-	50	-0.766	33.993
125	1.605	34.558	7.84	193.2	2.50	90.1	0.01	38.09	-	75	0.899	34.424
151	1.716	34.588	7.86	189.1	2.47	92.3	0.00	37.95	-	100	1.556	34.548
201	1.817	34.638	7.87	187.3	2.43	94.2	0.00	37.42	-	125	1.696	34.586
252	1.857	34.670	7.87	189.5	2.36	94.4	0.00	36.43	-	150	1.746	34.605
301	1.857	34.695	7.89	192.5	2.31	95.0	0.00	35.58	-	200	1.813	34.637
402	1.833	34.713	7.89	196.6	2.24	95.2	0.00	35.13	-	250	1.857	34.659
500	1.776	34.730	7.91	202.6	2.21	96.2	0.00	34.48	-	300	1.867	34.681
600	1.705	34.739	7.92	208.9	2.17	97.2	0.00	34.00	-	400	1.851	34.711
701	1.599	34.744	7.91	211.4	2.13	98.5	0.00	33.84	-	500	1.748	34.726
799	1.478	34.739	7.92	216.1	2.14	102.4	0.02	34.11	-	600	1.677	34.734
902	1.361	34.738	7.93	-	2.14	105.8	0.00	34.01	-	700	1.541	34.733
1001	1.259	34.735	7.93	217.5	1.87	92.9	0.00	29.02	-	800	1.475	34.734
1251	1.019	34.722	7.91	221.6	1.93	101.0	0.00	30.24	-	900	1.401	34.735
1502	0.827	34.713	7.91	223.6	1.95	106.4	0.00	30.48	-	1000	1.268	34.727
2000	0.464	34.693	7.91	227.8	2.25	132.8	0.02	35.81	-	1250	1.054	34.719
2500	0.214	34.680	7.90	239.8	1.96	119.7	0.00	31.54	-	1500	0.827	34.707
2999	0.035	34.672	7.88	238.8	2.31	138.0	0.01	35.36	-	2000	0.486	34.688
										2500	0.237	34.675
										3000	0.043	34.666

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 10

Beginning of cast

Date	: March 3, 2007	Time(UT)	: 08:00	Wind direction	: W
Time(UT)	: 08:03	Weather	: c	Velocity	: 8(kn)
Latitude	: 63-08.6S	Air temperature(dry)	: -0.4(degC)	Wave	: 1
Longitude	: 89-30.0E	Humidity	: 61(%)	Swell	: NW/1
Depth	: 3,883(m)	Atmospheric Pressure	: 986.6(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	1.2	33.783	8.11	358.3	1.45	26.9	0.14	22.57	-	10	1.028	33.772
50	-0.822	34.084	8.01	317.4	2.20	60.3	0.06	30.13	-	20	1.017	33.776
74	-0.765	34.328	7.97	275.2	2.33	74.6	0.07	34.45	-	30	0.852	33.795
99	-0.206	34.414	7.95	256.8	2.34	79.0	0.06	35.08	-	50	-0.978	34.133
126	0.371	34.483	7.94	237.0	2.36	83.1	0.08	35.82	-	75	-0.992	34.276
151	0.759	34.542	7.93	225.1	2.37	86.7	0.03	35.72	-	100	-0.388	34.386
201	1.210	34.616	7.93	208.5	2.37	90.1	0.00	35.52	-	125	0.215	34.469
251	1.442	34.662	7.91	204.6	2.32	92.5	0.00	35.05	-	150	0.625	34.529
299	1.526	34.688	7.92	209.6	2.29	93.6	0.00	34.83	-	200	1.061	34.604
401	1.556	34.717	7.94	206.7	2.24	95.7	0.00	33.94	-	250	1.448	34.665
500	1.476	34.728	7.95	208.8	2.24	98.6	0.00	33.75	-	300	1.548	34.692
600	1.383	34.731	7.95	215.9	2.21	101.8	0.00	33.55	-	400	1.543	34.716
697	1.283	34.729	7.93	216.8	2.22	104.8	0.00	33.62	-	500	1.464	34.724
800	1.162	34.723	7.94	222.5	2.22	107.3	0.00	33.86	-	600	1.366	34.728
901	1.074	34.719	7.94	220.0	2.23	110.4	0.00	33.99	-	700	1.259	34.724
999	0.995	34.718	7.94	224.2	2.25	113.8	0.00	34.21	-	800	1.174	34.722
1250	0.789	34.709	7.93	223.6	2.28	120.1	0.00	34.55	-	900	1.060	34.718
1500	0.591	34.699	7.92	226.3	2.31	126.5	0.00	34.92	-	1000	0.979	34.714
1999	0.300	34.679	7.91	236.0	2.33	133.3	0.00	35.28	-	1250	0.774	34.704
2500	0.103	34.685	7.90	240.7	2.33	134.8	0.00	35.08	-	1500	0.592	34.694
3000	-0.028	34.688	7.89	249.8	2.32	133.5	0.00	35.02	-	2000	0.292	34.680
3500	-0.088	34.668	7.88	253.8	2.32	134.5	0.00	35.00	-	2500	0.103	34.673
										3000	-0.032	34.665
										3500	-0.088	34.660

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 11

Beginning of cast

Date	: March 5, 2007	Time(UT)	: 01:00	Wind direction	: SW
Time(UT)	: 01:00	Weather	: bc	Velocity	: 17(kn)
Latitude	: 63-20.0S	Air temperature(dry)	: -4.9(degC)	Wave	: 3
Longitude	: 100-04.3E	Humidity	: 68(%)	Swell	: WSW/1
Depth	: 1,315(m)	Atmospheric Pressure	: 988.0(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.8	34.048	8.08	365.3	1.63	34.8	0.24	25.80	-	10	0.611	34.020
50	-0.458	34.115	8.03	348.3	2.01	50.9	0.16	28.44	-	20	0.614	34.022
72	-1.779	34.296	7.97	336.4	2.29	68.9	0.15	32.88	-	30	0.614	34.021
99	-1.791	34.324	7.96	339.5	2.26	69.3	0.13	33.42	-	50	-1.607	34.268
125	-1.827	34.335	7.97	337.4	2.24	68.9	0.06	33.50	-	75	-1.831	34.311
149	-1.770	34.348	7.96	333.5	2.24	70.0	0.06	33.54	-	100	-1.838	34.318
200	-1.823	34.358	7.96	336.0	2.24	69.9	0.04	33.83	-	125	-1.837	34.324
251	-1.726	34.379	7.94	333.2	2.23	71.5	0.01	33.70	-	150	-1.829	34.330
301	-1.365	34.429	7.94	319.1	2.50	75.7	0.00	33.84	-	200	-1.778	34.345
402	0.381	34.622	7.89	246.7	2.52	95.4	0.01	34.65	-	250	-1.693	34.375
502	0.739	34.679	7.89	233.6	2.30	104.2	0.00	34.80	-	300	-1.448	34.415
602	0.786	34.697	7.89	223.7	2.35	110.5	0.01	35.10	-	400	0.216	34.597
702	0.688	34.695	7.88	225.1	2.33	116.5	0.01	34.80	-	500	0.826	34.676
800	0.582	34.697	7.88	226.3	2.41	120.8	0.00	35.77	-	600	0.796	34.683
899	0.451	34.684	7.89	230.3	2.26	123.1	0.03	34.85	-	700	0.741	34.690
998	0.348	34.688	7.89	233.2	2.30	126.1	0.00	35.26	-	800	0.603	34.687
										900	0.502	34.683
										1000	0.351	34.678

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 12

Beginning of cast

Date	: March 6, 2007	Time(UT)	: 06:00	Wind direction	: WSW
Time(UT)	: 05:59	Weather	: c	Velocity	: 12(kn)
Latitude	: 63-31.2S	Air temperature(dry)	: -1.0(degC)	Wave	: 1
Longitude	: 111-39.2E	Humidity	: 67(%)	Swell	: NW/1
Depth	: 3,314(m)	Atmospheric Pressure	: 987.2(hPa)	Visibility	: 30(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	1.0	33.706	8.04	358.9	1.47	29.6	0.22	24.38	-	10	0.900	33.692
51	-1.158	34.165	7.96	321.8	2.20	61.7	0.14	30.50	-	20	0.896	33.696
77	-1.220	34.357	7.92	298.9	2.28	72.8	0.24	32.84	-	30	0.894	33.696
100	-0.397	34.567	7.89	268.9	2.30	79.1	0.22	33.59	-	50	-1.173	34.162
126	0.399	34.471	7.88	236.8	2.31	84.7	0.03	34.14	-	75	-1.417	34.321
151	1.010	34.637	7.87	218.3	2.31	89.2	0.01	34.18	-	100	-1.379	34.362
199	1.281	34.684	7.86	209.8	2.29	92.5	0.01	33.97	-	125	-0.728	34.448
251	1.434	34.709	7.85	205.3	2.29	95.1	0.01	33.76	-	150	0.284	34.547
300	1.458	34.722	7.86	207.1	2.28	96.4	0.00	33.84	-	200	1.231	34.671
400	1.423	34.731	7.86	213.5	2.26	98.6	0.00	33.64	-	250	1.417	34.702
499	1.345	34.727	7.87	213.4	2.24	101.0	0.00	33.35	-	300	1.456	34.716
598	1.242	34.728	7.86	216.8	2.23	103.9	0.00	33.27	-	400	1.429	34.726
699	1.149	34.726	7.85	215.9	2.25	106.6	0.00	33.23	-	500	1.341	34.729
799	1.054	34.722	7.87	219.4	2.25	109.5	0.00	33.34	-	600	1.262	34.729
899	0.977	34.720	7.86	217.4	2.27	112.6	0.00	33.62	-	700	1.161	34.724
1003	0.864	34.713	7.87	220.6	2.28	115.0	0.00	33.74	-	800	1.044	34.718
1252	0.606	34.697	7.85	226.2	2.30	119.7	0.00	34.07	-	900	0.978	34.718
1501	0.443	34.688	7.84	229.0	2.31	125.9	0.00	34.41	-	1000	0.835	34.707
2000	0.137	34.679	7.83	244.4	2.32	128.3	0.00	34.24	-	1250	0.614	34.695
2502	-0.027	34.676	7.84	238.9	2.44	132.5	0.00	34.29	-	1500	0.428	34.688
3000	-0.164	34.665	7.82	251.1	2.23	128.4	0.00	33.78	-	2000	0.141	34.677
										2500	-0.021	34.672
										3000	-0.178	34.660

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 13

Beginning of cast

Date	: March 7, 2007	Time(UT)	: 09:00	Wind direction	: N
Time(UT)	: 09:30	Weather	: s	Velocity	: 9(kn)
Latitude	: 64-02.9S	Air temperature(dry)	: -0.2(degC)	Wave	: 2
Longitude	: 121-19.2E	Humidity	: 92(%)	Swell	: WNW/3
Depth	: 3,445(m)	Atmospheric Pressure	: 992.0(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.8	33.804	8.07	362.7	1.40	23.7	0.15	21.49	-	10	0.656	33.783
49	-0.878	34.101	7.99	338.9	2.06	55.0	0.08	27.86	-	20	0.630	33.785
76	-1.757	34.285	7.92	329.5	2.25	68.1	0.09	32.14	-	30	0.550	33.813
102	-1.777	34.307	7.92	331.4	2.24	67.8	0.12	32.30	-	50	-0.495	33.996
126	-1.772	34.323	7.93	331.2	2.23	68.6	0.15	32.81	-	75	-1.755	34.286
151	-1.650	34.345	7.93	325.0	2.24	71.4	0.12	33.04	-	100	-1.733	34.311
198	-0.656	34.472	7.89	285.6	2.29	81.6	0.11	33.91	-	125	-1.240	34.364
251	0.522	34.612	7.85	237.9	2.29	92.2	0.04	34.14	-	150	-1.036	34.405
302	0.885	34.658	7.85	225.6	2.27	96.0	0.04	34.03	-	200	0.537	34.592
400	0.891	34.673	7.85	228.8	2.25	100.5	0.01	33.60	-	250	1.264	34.675
499	1.048	34.702	7.86	220.5	2.24	105.2	0.00	33.59	-	300	1.241	34.683
603	0.965	34.704	7.87	226.2	2.24	107.6	0.00	33.44	-	400	1.288	34.700
702	0.863	34.703	7.85	222.9	2.25	111.1	0.01	33.45	-	500	1.150	34.697
802	0.902	34.711	7.85	-	2.26	115.9	0.00	33.49	-	600	1.090	34.701
899	0.845	34.709	7.85	221.2	2.28	119.7	0.00	33.73	-	700	1.065	34.706
999	0.738	34.703	7.85	223.5	2.28	119.9	0.00	33.65	-	800	1.006	34.704
1250	0.558	34.695	7.84	226.0	2.30	126.2	0.00	34.15	-	900	0.956	34.705
1501	0.377	34.687	7.84	229.6	2.32	131.5	0.00	34.40	-	1000	0.784	34.691
2000	0.127	34.676	7.82	238.4	2.32	134.7	0.00	34.25	-	1250	0.594	34.684
2500	-0.060	34.666	7.81	248.5	2.31	131.4	0.00	34.17	-	1500	0.381	34.671
2997	-0.197	34.662	7.80	254.4	2.30	130.2	0.00	33.87	-	2000	0.126	34.661
										2500	-0.055	34.653
										3000	-0.073	41.798
										3500	-0.085	49.464

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 14

Beginning of cast

Date	: March 8, 2007	Time(UT)	: 05:00	Wind direction	: NNE
Time(UT)	: 05:01	Weather	: s	Velocity	: 12(kn)
Latitude	: 63-45.8S	Air temperature(dry)	: 0.0(degC)	Wave	: 2
Longitude	: 130-03.0E	Humidity	: 98(%)	Swell	: WNW/3
Depth	: 3,919(m)	Atmospheric Pressure	: 992.6(hPa)	Visibility	: 10(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
						(μmol/l)						
0	0.8	33.841	8.04	358.7	1.68	25.6	0.23	26.17	-	10	0.806	33.839
78	-0.561	34.214	7.94	317.0	2.24	61.8	0.16	31.96	-	20	0.758	33.841
102	-0.569	34.331	7.92	300.1	2.31	70.6	0.11	33.42	-	30	0.759	33.843
128	-0.167	34.454	7.89	270.4	2.37	79.6	0.05	34.83	-	50	-0.186	34.066
153	-0.057	34.475	7.88	265.1	2.41	82.2	0.11	34.73	-	75	-0.726	34.258
202	0.519	34.567	7.88	240.0	2.37	88.0	0.05	34.97	-	100	-0.602	34.352
251	1.071	34.636	7.83	218.6	2.36	93.3	0.06	35.04	-	125	-0.140	34.449
306	1.350	34.686	7.84	211.4	2.34	97.8	0.06	34.64	-	150	0.346	34.511
405	1.400	34.702	7.84	212.6	2.33	99.6	0.05	34.32	-	200	0.870	34.597
501	1.417	34.717	7.84	218.4	2.30	102.0	0.05	34.01	-	250	1.216	34.655
703	1.254	34.721	7.85	204.3	2.30	107.6	0.04	33.85	-	300	1.318	34.674
804	1.203	34.721	7.85	216.6	2.28	109.7	0.03	33.91	-	400	1.418	34.702
903	1.088	34.718	7.85	222.2	2.31	113.8	0.01	34.03	-	500	1.413	34.714
1006	1.024	34.716	7.86	218.7	2.31	116.4	0.00	34.50	-	600	1.364	34.719
1253	0.750	34.703	7.84	226.8	2.35	123.8	0.00	34.55	-	700	1.283	34.720
1503	0.515	34.689	7.81	228.5	2.37	128.5	0.00	34.97	-	800	1.221	34.720
2003	0.255	34.674	7.82	236.1	2.39	132.5	0.00	35.25	-	900	1.147	34.720
2502	0.050	34.674	7.80	242.1	2.40	137.4	0.00	35.01	-	1000	1.068	34.713
3000	-0.097	34.667	7.79	250.0	2.39	137.2	0.00	35.42	-	1250	0.797	34.698
3503	-0.281	34.651	7.79	261.6	2.37	128.6	0.00	34.81	-	1500	0.548	34.689
										2000	0.229	34.670
										2500	0.073	34.669
										3000	-0.080	34.659
										3500	-0.276	34.641

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 15

Beginning of cast

Date	: March 11, 2007	Time(UT)	: 10:00	Wind direction	: E
Time(UT)	: 10:02	Weather	: o	Velocity	: 24(kn)
Latitude	: 64-18.9S	Air temperature(dry)	: -2.2(degC)	Wave	: 4
Longitude	: 140-05.6E	Humidity	: 94(%)	Swell	: E/3
Depth	: 3,557(m)	Atmospheric Pressure	: 993.5(hPa)	Visibility	: 15(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.2	33.906	8.01	360.3	1.53	23.4	0.17	21.28	-	10	0.134	33.903
80	1.338	34.456	7.88	214.8	1.98	50.5	0.02	25.39	-	20	0.132	33.902
98	1.461	34.479	7.84	208.3	2.49	77.3	0.03	37.24	-	30	0.127	33.906
152	1.841	34.583	7.81	191.8	2.53	85.1	0.00	37.84	-	50	-0.205	34.231
392	1.944	34.711	7.82	193.4	-	-	-	-	-	75	1.330	34.425
										100	1.715	34.503
										125	1.689	34.530
										150	1.848	34.575
										200	1.939	34.621
										250	2.012	34.668
										300	1.995	34.688

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 16

Beginning of cast

Date	: March 12, 2007	Time(UT)	: 04:00	Wind direction	: SE
Time(UT)	: 04:01	Weather	: s	Velocity	: 19(kn)
Latitude	: 63-38.3S	Air temperature(dry)	: -0.6(degC)	Wave	: 4
Longitude	: 148-59.1E	Humidity	: 99(%)	Swell	: ESE/3
Depth	: 3,796(m)	Atmospheric Pressure	: 987.9(hPa)	Visibility	: 10(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	0.8	33.798	8.00	360.1	1.73	23.4	0.26	27.52	-	10	0.651	33.793
53	0.729	33.794	8.00	347.1	1.68	21.7	0.24	27.13	-	20	0.653	33.794
78	0.387	34.316	7.84	258.9	2.50	66.5	0.29	36.77	-	30	0.648	33.794
104	1.442	34.466	7.79	207.4	2.54	77.0	0.08	38.56	-	50	0.639	33.795
130	1.571	34.500	7.79	200.9	2.58	79.5	0.05	38.54	-	75	0.018	34.290
154	1.667	34.534	7.80	195.6	2.55	81.3	0.03	38.29	-	100	1.075	34.433
205	1.840	34.590	7.79	190.3	2.54	84.9	0.02	38.09	-	125	1.422	34.494
256	2.051	34.637	7.79	184.5	2.48	86.7	0.02	37.29	-	150	1.703	34.551
305	1.999	34.654	7.80	191.6	2.44	87.8	0.02	36.66	-	200	1.924	34.610
406	1.998	34.688	7.81	192.4	2.38	89.5	0.01	36.21	-	250	2.000	34.642
505	1.914	34.705	7.82	195.5	2.34	90.8	0.01	35.79	-	300	2.001	34.663
605	1.916	34.729	7.82	199.1	2.28	91.8	0.00	34.59	-	400	1.955	34.694
704	1.840	34.733	7.83	202.5	2.24	94.0	0.00	34.24	-	500	1.901	34.714
807	1.735	34.740	7.84	208.7	2.23	96.6	0.00	34.44	-	600	1.876	34.728
906	1.644	34.742	7.84	215.9	2.23	99.3	0.00	34.29	-	700	1.828	34.740
1005	1.562	34.742	7.84	214.7	2.23	101.4	0.00	34.24	-	800	1.734	34.743
1256	1.342	34.738	7.84	217.8	2.24	108.7	0.00	34.72	-	900	1.647	34.744
1506	1.120	34.728	7.84	220.6	2.27	116.2	0.00	34.56	-	1000	1.559	34.745
2006	0.709	34.706	7.81	230.1	2.32	128.1	0.00	35.19	-	1250	1.343	34.739
2504	0.368	34.689	7.81	234.9	2.31	135.9	0.00	35.69	-	1500	1.123	34.728
2974	0.183	34.683	7.80	244.9	2.34	139.6	0.00	35.99	-	2000	0.709	34.706
										2500	0.369	34.689
										3000	0.181	34.979

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 17

Beginning of cast

Date	: March 13, 2007	Time(UT)	: 03:00	Wind direction	: SSW
Time(UT)	: 03:12	Weather	: o	Velocity	: 29(kn)
Latitude	: 59-54.0S	Air temperature(dry)	: 0.0(degC)	Wave	: 4
Longitude	: 149-36.0E	Humidity	: 74(%)	Swell	: WSW/3
Depth	: 3,500(m)	Atmospheric Pressure	: 987.1(hPa)	Visibility	: 15(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	1.3	33.790	7.98	351.1	1.91	0.1	0.27	28.17	-	10	1.102	29.057
52	1.113	33.798	7.98	350.4	1.89	0.1	0.24	27.92	-	20	1.106	29.063
75	0.476	34.013	7.94	313.4	2.20	0.4	0.23	31.43	-	30	1.105	29.067
99	0.899	34.399	7.82	224.0	2.64	8.2	0.32	37.74	-	50	1.106	29.077
127	1.340	34.486	7.81	204.5	2.63	9.7	0.11	38.46	-	75	0.156	28.652
154	1.643	34.540	7.79	209.3	2.64	11.5	0.03	38.49	-	100	1.182	29.667
203	1.780	34.586	7.78	189.2	2.62	16.7	0.02	38.10	-	125	1.549	30.039
252	1.925	34.632	7.79	185.8	2.47	20.3	0.01	36.52	-	150	1.793	30.301
302	2.038	34.671	7.81	192.2	2.48	24.2	0.00	36.66	-	200	1.885	30.437
406	2.021	34.693	7.82	191.4	2.41	32.4	0.00	35.92	-	250	1.954	30.550
506	1.948	34.713	7.83	196.0	2.46	44.0	0.01	35.37	-	300	1.943	30.581
603	1.900	34.726	7.83	200.7	2.40	56.8	0.01	35.50	-	400	2.028	30.736
705	1.817	34.735	7.83	204.9	2.33	64.8	0.01	34.67	-	500	2.002	30.778
805	1.764	34.742	7.83	212.6	2.31	71.1	0.02	34.30	-	600	1.932	30.769
903	1.689	-	-	-	-	-	-	-	-	700	1.857	30.757
1007	1.604	34.745	7.85	216.4	2.29	80.0	0.01	33.98	-	800	1.773	30.733
1256	1.374	34.740	7.83	218.1	2.30	86.5	0.01	34.38	-	900	1.698	30.713
1504	1.182	34.727	7.84	221.3	2.32	91.3	0.01	34.46	-	1000	1.626	30.695
1998	0.792	34.727	7.82	227.1	2.39	104.3	0.01	35.70	-	1250	1.377	30.582
2496	0.441	34.694	7.81	234.6	2.40	104.8	0.00	36.12	-	1500	1.182	30.513
										2000	0.789	30.362
										2500	0.438	30.245

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 18

Beginning of cast

Date	: March 14, 2007	Time(UT)	: 03:00	Wind direction	: NW
Time(UT)	: 03:24	Weather	: o	Velocity	: 22(kn)
Latitude	: 55-34.8S	Air temperature(dry)	: 3.0(degC)	Wave	: 4
Longitude	: 150-04.3E	Humidity	: 93(%)	Swell	: W/3
Depth	: 3,840(m)	Atmospheric Pressure	: 997.1(hPa)	Visibility	: 10(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	5.6	33.884	8.17	320.8	1.60	0.3	0.36	24.73	-	10	5.991	33.892
53	5.705	33.876	8.15	322.2	1.64	0.3	0.36	25.14	-	20	5.989	33.892
74	5.710	33.881	8.15	322.7	1.67	0.6	0.38	25.01	-	30	5.982	33.893
106	4.765	33.970	8.11	317.6	1.79	8.4	0.11	27.49	-	50	5.968	33.892
127	5.415	34.103	8.09	293.2	1.77	9.9	0.00	27.47	-	75	5.635	33.930
153	5.230	34.126	8.08	-	1.81	11.6	0.01	28.40	-	100	4.800	33.982
204	5.091	34.212	8.05	262.9	1.94	16.9	0.00	30.36	-	125	4.907	34.051
253	4.812	34.233	8.02	258.5	2.06	20.4	0.00	31.72	-	150	5.519	34.195
304	4.521	34.253	8.01	251.1	2.24	24.3	0.00	32.76	-	200	5.163	34.219
403	3.132	34.177	8.00	264.4	2.28	32.5	0.00	35.20	-	250	4.807	34.241
506	3.065	34.276	7.97	233.7	2.41	44.1	0.00	37.07	-	300	3.639	34.150
603	2.917	34.373	7.96	211.8	2.59	56.9	0.01	38.72	-	400	3.102	34.208
706	2.757	34.426	7.94	-	2.61	64.9	0.01	39.32	-	500	3.062	34.297
803	2.664	34.486	7.94	201.0	2.65	71.2	0.01	39.30	-	600	2.839	34.362
905	2.538	34.544	7.94	188.4	2.57	76.8	0.00	38.87	-	700	2.836	34.442
1004	2.467	34.584	-	-	2.55	80.1	0.02	38.72	-	800	2.662	34.494
1258	2.306	34.665	-	191.5	2.47	86.6	0.00	37.73	-	900	2.466	34.531
1502	2.173	34.724	7.96	201.4	2.35	91.4	0.01	36.00	-	1000	2.481	34.595
2006	1.774	34.744	7.97	214.7	2.35	104.4	0.01	35.52	-	1250	2.341	34.679
2501	1.242	34.728	7.95	215.5	2.33	104.8	0.01	35.39	-	1500	2.186	34.725
3001	1.031	34.719	7.95	220.5	2.31	105.0	0.01	35.42	-	2000	1.784	34.747
										2500	1.242	34.731
										3000	1.035	34.720

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 19

Beginning of cast

Date	: March 16, 2007	Time(UT)	: 03:00	Wind direction	: W
Time(UT)	: 03:10	Weather	: bc	Velocity	: 15(kn)
Latitude	: 51-36.5S	Air temperature(dry)	: 7.5(degC)	Wave	: 4
Longitude	: 149-53.1E	Humidity	: 81(%)	Swell	: W/3
Depth	: 4,084(m)	Atmospheric Pressure	: 991.7(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	7.4	33.922	8.12	314.2	1.39	0.5	0.37	22.48	-	10	7.325	33.915
53	7.189	33.917	8.12	315.1	1.40	0.7	0.35	22.25	-	20	7.241	33.920
75	7.205	33.925	8.12	315.1	1.43	1.0	0.35	22.63	-	30	7.233	33.922
101	6.484	34.069	8.10	311.0	1.51	4.7	0.71	22.42	-	50	7.172	33.919
126	6.020	34.061	8.09	310.6	1.56	6.2	0.74	24.20	-	75	7.124	33.918
153	5.884	34.111	8.10	307.6	1.60	7.4	0.04	24.98	-	100	6.419	34.078
199	5.742	34.114	8.07	303.8	1.61	8.2	0.04	25.46	-	125	6.044	34.079
251	5.757	34.168	8.05	293.5	1.65	9.9	0.03	26.15	-	150	5.904	34.104
302	5.681	34.194	8.04	283.8	1.69	11.6	0.01	26.82	-	200	5.766	34.120
400	5.071	34.211	8.02	269.1	1.84	16.7	0.03	29.43	-	250	5.830	34.162
504	4.790	34.268	7.99	248.4	1.98	23.3	0.02	31.67	-	300	5.840	34.203
603	4.374	34.291	7.98	238.4	2.14	29.8	0.01	33.07	-	400	5.317	34.230
702	3.584	34.259	7.96	244.5	2.22	35.3	0.00	34.41	-	500	5.077	34.275
803	3.593	34.337	7.94	221.5	2.34	44.4	0.01	35.91	-	600	4.059	34.193
906	3.227	34.367	7.93	216.3	2.41	52.3	0.00	36.85	-	700	3.873	34.262
1002	3.066	34.419	7.92	206.3	2.48	60.3	0.01	37.60	-	800	3.724	34.334
1252	2.655	34.502	7.90	200.1	2.51	72.3	0.01	38.13	-	900	3.324	34.347
1503	2.540	34.595	7.90	193.9	2.46	79.9	0.00	37.64	-	1000	3.226	34.408
2002	2.233	34.719	7.93	203.4	2.30	89.8	0.00	34.98	-	1250	2.752	34.502
2499	1.886	34.746	7.93	212.9	2.26	101.2	0.00	34.19	-	1500	2.562	34.601
2977	1.489	34.736	7.93	217.3	2.31	118.3	0.01	35.38	-	2000	2.243	34.719
										2500	1.893	34.749

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 4. Continued.

Station 20

Beginning of cast

Date	: March 17, 2007	Time(UT)	: 03:00	Wind direction	: SW
Time(UT)	: 03:08	Weather	: bc	Velocity	: 27(kn)
Latitude	: 46-03.6S	Air temperature(dry)	: 10.1(degC)	Wave	: 4
Longitude	: 150-57.4E	Humidity	: 65(%)	Swell	: WSW/3
Depth	: 4,780(m)	Atmospheric Pressure	: 1006.9(hPa)	Visibility	: 20(km)

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)	pH	Dissolved Oxygen	Phosphate	Silicate	Nitrite	Nitrate	Ammonium	Pressure (dbar)	Temperature (ITS-90)	Salinity (PSS78)
				(μmol/l)								
0	14.1	35.150	8.22	267.3	0.25	0.0	0.22	2.77	-	10	14.077	35.153
54	13.434	34.925	8.21	278.3	0.34	0.0	0.20	3.83	-	20	14.063	35.153
80	13.095	35.040	8.17	259.4	0.53	0.5	0.22	7.54	-	30	14.065	35.152
107	12.425	35.175	8.13	242.5	0.74	3.7	0.04	11.93	-	50	13.837	35.142
131	11.563	35.068	8.12	247.5	0.85	2.8	0.07	13.23	-	75	13.704	35.119
155	10.963	34.972	8.10	251.4	0.97	3.6	0.07	14.98	-	100	11.982	34.838
206	10.084	34.830	8.10	262.0	1.03	4.2	0.00	16.20	-	125	11.598	34.940
256	9.486	34.724	8.10	272.8	1.09	3.5	0.00	16.86	-	150	10.659	34.866
305	9.120	34.665	8.09	274.0	1.15	4.2	0.00	17.92	-	200	10.059	34.817
406	8.612	34.580	8.10	283.2	1.21	4.1	0.00	18.89	-	250	9.733	34.775
507	8.327	34.546	8.08	276.2	1.29	5.6	0.00	20.28	-	300	9.327	34.708
606	7.827	34.493	8.05	252.5	1.52	10.1	0.00	23.79	-	400	8.708	34.605
705	7.315	34.485	8.00	225.5	1.75	15.2	0.00	27.63	-	500	8.397	34.561
807	6.781	34.475	7.97	222.1	1.89	22.0	0.00	29.69	-	600	8.028	34.522
908	5.934	34.427	7.96	216.0	2.17	35.9	0.00	33.66	-	700	7.596	34.521
1009	5.354	34.425	7.96	215.0	2.16	36.5	0.00	33.47	-	800	6.719	34.464
1253	3.652	34.400	7.94	217.7	2.43	54.1	0.01	36.93	-	900	6.017	34.445
1509	2.927	34.500	7.91	194.0	2.56	73.6	0.00	38.56	-	1000	5.459	34.445
2003	2.422	34.660	7.90	193.5	2.45	92.7	0.00	37.50	-	1250	3.714	34.403
2500	2.036	34.728	7.92	206.1	2.38	105.0	0.00	36.41	-	1500	2.936	34.494
										2000	2.412	34.664
										2500	2.033	34.729

ITS-90 : International Temperture Scale of 1990.
PSS78 : Practical Salinity Scale of 1978.

Table 5. Petroleum oil, Cadmium and Mercury concentration in the surface water.

Station No.	Date (UT)	Time	Position		Air Temp (°C)	Water Temp (°C)	Petroleum Oil (μg/L)	Cadmium (μg/L)	Mercury (μg/L)
	2006								
1	Dec. 5	6:40	40-54.1S	110-02.5N	7.0	12.4	0.13	0.013	-
2	6	6:15	45-04.2S	109-56.9N	3.6	10.6	0.15	0.025	0.0136
3	7	6:40	49-59.3S	109-51.6N	-1.2	4.8	0.13	0.058	0.0137
4	8	6:14	54-51.5S	109-56.6N	-2.1	2.4	0.06	0.064	0.0095
5	9	6:40	59-49.5S	108-45.9N	-3.4	2.2	0.10	0.070	0.0038
	2007								
6	Feb. 23	11:30	63-58.1S	51-30.3N	-7.0	0.4	<0.05	0.070	0.0096
8	25	9:45	64-37.3S	68-23.4N	-3.3	0.0	<0.05	0.072	0.0053
10	Mar. 3	8:20	63-08.7S	89-30.9N	-7.0	1.2	0.14	0.049	0.0021
12	6	6:05	63-31.2S	111-39.7N	-6.3	1.0	0.05	0.052	0.0018
14	8	5:05	63-46.1S	130-03.5N	-0.3	1.0	<0.05	0.051	0.0030
16	12	4:10	63-38.3S	148-57.2N	-0.8	0.8	<0.05	0.059	0.0022
17	13	3:20	59-52.5S	149-35.6N	-4.0	1.3	<0.05	0.053	0.0227
18	14	3:25	55-33.7S	150-04.2N	1.9	5.6	0.05	0.050	0.0057
19	16	3:20	51-36.0S	149-54.0N	4.4	7.4	<0.05	0.046	0.0122
20	17	3:10	46-02.9S	150-57.5N	3.9	14.1	<0.05	0.008	0.0048

Chrysen was used as the standard material to measure the levels of Petroleum Oil concentratio

Table 6. Hourly tidal observation at Syowa Station from February 2006 to January 2007

(time is LMT (UT + 3 hours).

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : FEB. 1, - FEB. 28, 2006
UNIT : CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	226	216	220	233	255	278	294	302	299	283	256	226	196	176	170	178	197	220	242	261	268	267	255	237	5755	240	5975	239
2	220	205	200	206	226	252	273	287	294	291	274	252	230	212	199	200	213	229	250	264	273	272	259	240	5821	243	6046	242
3	225	206	193	193	205	225	246	262	274	280	277	264	249	237	228	225	233	247	263	275	281	282	271	255	5896	246	6135	245
4	239	221	204	196	199	211	226	243	254	261	265	263	257	250	247	246	250	260	270	280	286	284	278	266	5956	248	6203	248
5	247	232	216	204	198	203	210	218	229	237	243	246	246	247	251	256	260	268	276	283	285	284	277	269	5885	245	6142	246
6	257	244	230	218	208	205	203	203	208	214	219	226	233	240	252	264	272	279	285	290	290	287	283	276	5886	245	6155	246
7	269	259	248	238	228	220	213	205	202	201	203	209	218	232	246	262	278	288	291	295	296	290	287	281	5959	248	6236	249
8	277	275	267	262	254	246	234	221	209	202	200	202	210	227	245	265	284	298	306	308	303	298	291	287	6171	257	6456	258
9	285	284	284	283	279	272	257	240	221	208	197	194	201	216	237	261	282	297	306	308	305	295	285	279	6276	262	6554	262
10	278	281	285	289	288	283	270	250	227	207	189	181	186	197	218	245	269	287	299	303	297	287	277	269	6162	257	6429	257
11	267	270	278	285	290	290	280	261	238	213	190	176	174	184	206	230	261	279	294	302	298	286	273	265	6090	254	6350	254
12	260	266	276	289	299	304	299	283	260	234	206	185	178	182	201	227	255	276	294	298	294	281	267	255	6169	257	6418	257
13	249	253	262	279	294	306	305	292	270	244	215	191	177	176	190	216	243	266	283	290	286	272	257	244	6060	253	6294	252
14	234	234	245	262	280	297	302	296	280	252	223	200	181	174	186	208	234	257	275	284	283	270	252	235	5944	248	6166	247
15	222	221	226	243	267	284	295	294	285	264	236	211	189	181	187	204	229	253	270	280	279	267	251	233	5871	245	6090	244
16	219	212	215	228	252	271	286	294	289	275	252	226	206	193	194	207	228	249	268	279	280	272	254	233	5882	245	6102	244
17	220	207	206	218	235	258	276	288	292	282	266	245	226	212	209	219	234	254	271	284	287	278	261	242	5970	249	6193	248
18	223	210	202	207	222	242	259	273	280	279	268	256	238	227	224	229	242	257	271	284	284	280	267	246	5970	249	6199	248
19	229	213	203	203	211	226	244	258	269	273	268	260	251	244	242	245	254	266	279	289	290	286	277	258	6038	252	6278	251
20	240	223	212	207	211	221	234	247	257	265	268	267	265	263	263	266	275	284	293	300	304	299	292	278	6234	260	6497	260
21	263	248	237	228	227	230	232	237	245	249	257	262	265	270	275	282	287	294	299	304	303	297	289	280	6360	265	6627	265
22	267	254	243	236	229	223	222	220	222	230	237	245	255	268	283	293	303	309	313	316	314	307	300	293	6382	266	6667	267
23	284	274	265	255	244	237	225	215	209	208	209	220	232	248	269	287	304	312	315	316	311	301	293	288	6321	263	6606	264
24	285	279	276	271	264	252	236	218	201	191	186	189	203	224	251	276	299	311	317	315	306	297	286	278	6211	259	6491	260
25	280	280	281	283	279	270	254	228	202	182	167	164	173	192	222	253	282	301	312	311	302	291	278	270	6057	252	6328	253
26	271	275	284	293	299	293	278	254	223	194	169	157	154	171	200	232	264	288	304	307	298	282	266	257	6013	251	6268	251
27	255	262	275	293	309	313	305	286	255	221	187	164	156	163	183	213	247	273	291	295	287	268	248	232	5981	249	6207	248
28	226	231	248	269	291	305	309	299	274	238	203	173	153	152	167	193	225	250	269	277	269	250	230	209	5710	238	5710	228

MONTHLY MEAN 251.5 cm

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00′28″S
LONGITUDE : 39°34′13″E
DURATION : MAR. 1, – MAR. 31, 2006
UNIT : CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	196	198	217	241	267	295	310	307	295	272	237	206	185	174	182	202	226	252	271	279	273	254	228	203	5770	240	5954	238
2	184	178	186	211	243	272	295	308	305	292	267	239	216	203	203	220	242	262	281	291	285	270	244	219	5916	247	6113	245
3	197	182	185	205	234	264	293	311	318	316	304	284	267	255	252	264	281	299	314	324	321	305	285	255	6515	271	6744	270
4	229	209	201	208	225	253	275	294	306	310	305	293	282	274	270	275	287	303	317	323	321	309	289	262	6620	276	6857	274
5	237	216	203	199	207	226	244	259	270	280	280	274	269	269	267	273	282	294	305	315	312	304	289	269	6343	264	6589	264
6	246	227	211	203	205	213	223	235	241	249	255	257	258	261	269	278	285	298	306	310	312	304	293	279	6218	259	6479	259
7	261	246	234	227	223	222	224	228	233	235	241	248	253	262	276	287	299	307	314	317	316	310	300	289	6352	265	6632	265
8	280	270	262	255	249	244	237	233	229	225	228	232	239	252	268	285	300	308	313	314	311	303	297	290	6424	268	6706	268
9	282	278	273	269	265	256	246	235	225	217	215	220	230	247	266	285	303	313	319	318	313	302	295	290	6462	269	6747	270
10	285	286	287	286	288	281	266	250	236	222	212	213	221	236	257	280	299	312	317	315	306	296	284	278	6513	271	6791	272
11	278	281	287	292	295	291	281	262	240	222	209	202	207	221	244	266	289	304	310	308	299	285	275	270	6418	267	6689	268
12	271	277	288	300	309	309	300	284	260	236	218	208	209	223	244	271	292	309	317	311	301	285	270	261	6553	273	6814	273
13	261	266	283	300	313	320	314	298	275	249	223	210	206	216	236	262	284	301	310	308	294	275	255	244	6503	271	6742	270
14	239	249	265	286	306	319	320	309	287	260	237	217	210	216	234	260	284	302	311	311	300	275	256	240	6493	271	6726	269
15	233	238	255	278	302	319	327	322	304	279	254	232	222	223	238	264	286	306	318	318	306	286	264	244	6618	276	6854	274
16	236	235	250	276	302	325	339	339	325	307	281	258	242	238	249	270	292	313	325	325	315	294	268	246	6850	285	7081	283
17	231	229	239	262	289	316	335	341	335	320	296	275	258	249	256	272	293	310	321	325	315	291	265	241	6864	286	7089	284
18	225	213	218	238	262	287	309	319	321	310	296	277	262	254	254	267	283	301	314	317	309	293	268	243	6640	277	6861	274
19	221	206	206	217	237	262	284	299	306	304	293	280	269	260	261	269	281	298	310	314	307	293	270	245	6492	271	6716	269
20	224	211	202	207	224	247	267	284	296	301	300	295	286	282	283	290	302	314	324	328	322	311	293	269	6662	278	6910	276
21	248	230	220	218	225	239	255	270	282	291	296	292	290	293	297	301	310	319	325	327	325	314	299	281	6747	281	7008	280
22	261	243	233	225	224	231	239	246	255	265	274	278	285	293	300	308	316	321	328	329	324	316	303	291	6688	279	6968	279
23	274	260	251	241	234	233	231	232	234	241	249	258	268	282	297	310	317	322	326	324	320	311	299	291	6605	275	6885	275
24	280	271	266	256	247	241	228	219	216	213	218	229	246	264	285	306	317	324	325	323	314	303	297	293	6481	270	6768	271
25	287	288	289	285	278	269	254	238	225	213	213	221	237	258	284	310	328	338	339	330	320	308	296	292	6700	279	6994	280
26	294	299	306	308	306	300	280	256	233	213	200	200	211	231	258	287	308	321	323	312	297	282	270	265	6560	273	6830	273
27	270	282	299	312	319	319	310	287	255	229	209	200	206	225	251	281	307	323	327	318	299	280	261	254	6623	276	6879	275
28	256	270	294	317	334	343	338	319	289	257	231	211	209	221	243	270	295	312	316	308	286	259	236	222	6636	277	6857	274
29	221	237	263	290	317	339	343	333	312	281	251	228	216	218	238	261	284	301	306	298	276	246	218	196	6473	270	6662	266
30	189	198	226	257	290	318	335	334	322	300	274	249	235	234	246	268	288	302	309	303	282	253	222	196	6430	268	6609	264
31	179	181	199	228	263	293	316	326	325	312	292	271	256	252	259	277	298	311	317	317	301	272	240	210	6495	271	6495	260
																								MONTHLY MEAN		271.1 cm		

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00' 28"S
LONGITUDE : 39°34' 13"E
DURATION : APR. 1, - APR. 30, 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	188	181	190	213	244	275	302	318	324	320	309	295	283	277	281	295	311	324	334	331	319	294	263	234	6705	279	6912	276
2	207	191	189	201	222	249	270	289	299	301	297	291	283	279	281	292	306	318	327	328	318	300	274	247	6559	273	6782	271
3	223	204	196	198	208	226	243	260	269	275	279	276	276	278	282	291	302	314	322	324	317	304	286	263	6416	267	6657	266
4	241	225	215	209	214	222	235	247	256	265	270	274	276	285	293	299	309	319	323	326	320	309	297	279	6508	271	6770	271
5	262	251	239	232	229	231	236	240	243	249	256	262	268	278	290	299	305	313	317	317	313	303	296	287	6516	272	6795	272
6	279	270	265	260	255	252	251	248	248	249	257	264	272	286	299	313	321	326	328	325	318	307	299	292	6784	283	7069	283
7	285	281	277	273	267	260	251	241	231	228	228	234	243	258	276	289	299	304	305	298	286	277	269	263	6423	268	6687	267
8	264	264	267	269	268	263	249	235	224	215	212	214	226	241	260	276	289	295	295	289	278	264	256	254	6167	257	6425	257
9	258	267	277	284	287	286	276	260	244	229	222	223	232	248	269	285	301	310	307	298	286	271	261	258	6439	268	6700	268
10	261	273	287	301	311	310	302	287	268	248	236	235	243	258	276	298	313	322	318	306	292	271	259	249	6724	280	6977	279
11	253	266	283	303	313	318	312	296	272	252	234	227	229	242	261	280	294	301	298	285	264	241	224	215	6463	269	6679	267
12	216	231	254	276	296	308	308	295	272	251	232	219	217	226	245	267	284	293	291	282	261	235	216	205	6180	258	6385	255
13	205	222	245	273	299	320	328	321	305	284	262	249	243	249	265	287	302	313	312	301	279	249	225	208	6546	273	6748	270
14	202	211	235	265	294	316	331	332	323	303	283	267	258	261	273	292	308	318	321	312	290	260	231	210	6696	279	6893	276
15	197	199	216	246	272	299	318	326	318	303	287	270	257	258	267	281	298	310	312	305	285	257	228	200	6509	271	6692	268
16	183	180	193	215	244	274	294	309	312	302	292	277	266	263	270	283	299	312	317	311	297	271	241	215	6420	268	6613	265
17	193	183	189	203	227	256	280	298	307	308	303	294	288	287	287	299	313	325	330	328	316	291	265	239	6609	275	6825	273
18	216	202	196	203	221	243	264	280	293	300	299	298	294	293	296	302	311	322	327	326	316	297	277	250	6626	276	6853	274
19	227	211	201	200	208	223	238	255	267	280	285	289	293	297	300	308	314	323	328	329	322	310	296	274	6578	274	6833	273
20	255	242	230	222	223	226	235	245	255	265	276	284	289	298	308	312	315	320	322	321	315	306	293	281	6638	277	6904	276
21	266	253	243	233	227	223	221	224	226	230	246	257	269	282	294	299	306	308	306	303	297	289	283	276	6361	265	6630	265
22	269	263	255	248	240	229	220	213	210	213	220	232	249	268	286	296	303	301	299	294	285	276	274	275	6218	259	6477	259
23	278	280	283	282	276	264	248	233	221	213	212	222	238	257	276	292	298	297	289	279	265	254	248	249	6254	261	6513	261
24	259	272	284	290	290	284	267	245	225	211	205	209	224	242	265	283	293	293	284	267	250	235	229	230	6136	256	6381	255
25	245	263	283	301	313	311	298	279	259	237	224	224	230	249	269	286	298	300	291	271	247	225	212	211	6326	264	6548	262
26	222	246	273	300	319	327	325	308	283	262	243	232	236	249	267	284	294	295	286	266	236	208	189	182	6332	264	6519	261
27	187	210	238	270	298	318	324	315	299	278	257	246	241	252	267	281	296	299	291	274	242	210	187	169	6249	260	6415	257
28	166	183	212	246	278	303	318	319	310	295	278	265	260	264	278	294	308	312	308	294	265	232	201	177	6366	265	6537	261
29	171	174	196	226	260	288	309	320	319	311	298	285	278	280	291	306	318	325	324	311	287	257	224	193	6551	273	6727	269
30	176	173	182	206	234	261	283	298	306	301	294	288	282	279	286	298	309	317	317	310	292	267	235	206	6400	267	6400	256

MONTHLY MEAN 269.0 cm

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : MAY 1, - MAY 31, 2006
UNIT : CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	184	173	172	186	211	232	254	272	282	286	287	285	282	280	284	297	309	322	328	324	314	295	270	246	6375	266	6601	264
2	226	211	206	213	227	244	264	280	293	303	304	306	309	311	313	322	331	339	342	342	334	318	299	278	6915	288	7175	287
3	260	243	231	228	233	243	254	264	275	284	289	293	299	302	304	311	317	323	325	326	320	311	299	280	6814	284	7079	283
4	265	255	244	238	240	241	246	251	261	266	275	280	286	289	297	301	304	309	310	305	303	293	283	274	6616	276	6881	275
5	265	255	247	242	233	232	230	232	236	239	245	254	261	268	276	282	285	286	286	280	274	270	265	260	6203	258	6459	258
6	256	256	253	249	243	237	233	227	229	231	237	244	256	266	273	281	286	284	279	273	268	262	259	261	6143	256	6407	256
7	264	265	271	275	272	266	259	253	245	243	249	255	265	279	288	296	301	294	288	277	266	255	253	255	6434	268	6694	268
8	260	266	278	283	285	283	274	263	251	247	249	257	268	282	297	306	308	307	298	282	270	258	252	254	6578	274	6839	274
9	261	278	292	301	307	304	296	280	266	255	247	251	258	271	283	292	296	293	281	264	248	231	223	224	6502	271	6736	269
10	234	253	271	291	304	309	302	289	277	262	255	255	263	278	293	305	313	310	300	284	264	244	232	229	6617	276	6857	274
11	240	260	285	311	330	339	339	327	312	296	283	279	283	292	304	314	319	316	303	285	258	233	214	205	6927	289	7138	286
12	211	229	255	282	305	320	325	320	304	288	274	263	263	269	285	296	304	306	295	278	251	222	200	187	6532	272	6718	269
13	186	200	227	257	286	306	319	323	312	298	286	274	270	276	288	303	313	316	308	292	263	233	206	185	6527	272	6705	268
14	178	183	204	235	263	288	308	315	312	303	289	279	272	274	283	296	306	312	308	295	269	239	208	184	6403	267	6574	263
15	171	169	183	208	238	265	289	306	309	306	301	292	284	282	290	300	312	318	318	308	286	259	230	200	6424	268	6604	264
16	180	171	175	192	217	242	269	287	301	305	302	298	295	292	294	304	315	324	327	320	306	283	257	229	6485	270	6690	268
17	205	192	185	193	209	229	252	270	284	295	297	297	295	293	295	300	309	319	322	320	313	299	278	254	6505	271	6740	270
18	235	216	207	207	213	226	244	261	276	288	297	304	306	306	305	304	310	316	317	317	309	298	283	264	6609	275	6853	274
19	244	226	210	202	198	202	210	220	233	245	258	266	272	277	278	278	280	282	283	286	282	277	272	262	6043	252	6292	252
20	249	238	227	218	210	206	206	211	217	229	241	257	267	275	280	280	278	276	274	273	270	272	271	270	5995	250	6265	251
21	270	267	263	255	246	239	232	225	225	232	242	252	265	275	283	287	283	277	271	264	262	262	262	269	6208	259	6489	260
22	281	283	287	287	279	268	257	244	237	237	240	250	262	273	278	284	279	268	255	243	232	226	228	236	6214	259	6435	257
23	251	268	279	286	289	281	270	255	243	236	232	238	250	258	268	273	268	260	244	224	207	196	195	206	5977	249	6198	248
24	221	244	267	285	295	298	293	279	266	255	249	253	261	271	281	285	283	274	256	234	213	193	186	189	6131	255	6337	253
25	206	230	256	282	303	312	312	304	289	276	265	266	270	280	289	295	295	287	269	247	218	194	178	173	6296	262	6483	259
26	187	208	235	266	291	308	316	314	305	293	279	277	279	285	297	306	308	306	292	268	235	207	186	171	6419	267	6595	264
27	176	192	218	249	279	302	319	323	322	314	304	300	300	304	315	328	333	329	320	301	273	241	212	193	6747	281	6931	277
28	184	189	209	237	265	288	310	319	322	317	310	305	299	302	314	323	329	330	326	309	284	256	222	196	6745	281	6929	277
29	184	178	187	210	234	258	281	294	301	303	298	295	291	289	296	304	315	321	321	312	294	269	241	214	6490	270	6684	267
30	194	185	184	199	222	243	266	284	293	297	297	297	295	292	296	304	314	322	328	322	308	291	267	239	6539	272	6760	270
31	221	205	201	208	223	239	260	277	290	296	299	302	302	297	298	301	306	315	322	320	311	297	278	256	6624	276	6624	265
																								MONTHLY MEAN		268.9 cm		

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : JUNE 1, - JUNE 30, 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	240	224	213	214	219	230	248	261	273	283	287	290	287	288	287	288	293	297	303	306	300	290	281	263	6465	269	6708	268
2	243	235	222	217	217	224	235	245	257	263	274	277	276	281	280	277	279	285	289	290	289	286	278	267	6286	262	6545	262
3	259	248	239	235	229	230	237	242	249	257	263	268	271	272	271	271	269	267	268	268	269	268	265	262	6177	257	6436	257
4	259	252	247	246	242	236	239	241	249	253	263	268	274	275	278	278	277	274	269	269	268	270	271	274	6272	261	6551	262
5	279	282	284	284	281	277	276	274	274	281	287	296	300	307	307	304	301	293	286	279	269	268	267	274	6830	285	7112	284
6	282	286	292	294	292	288	280	273	272	271	276	281	286	293	294	292	289	277	265	253	242	241	242	244	6605	275	6867	275
7	262	270	285	294	296	295	291	283	276	273	273	282	284	291	295	294	290	281	265	249	234	226	221	230	6540	273	6785	271
8	245	257	276	290	301	303	300	291	282	272	269	272	274	280	286	287	284	274	256	236	213	201	193	194	6336	264	6544	262
9	208	229	253	272	291	298	299	292	281	272	264	263	266	272	278	282	280	271	255	233	210	187	176	173	6105	254	6288	252
10	183	203	228	256	281	299	308	306	299	287	280	278	280	287	297	304	304	300	286	264	236	214	189	180	6349	265	6534	261
11	185	199	225	254	282	306	318	322	319	310	301	294	292	296	302	311	313	309	297	277	248	219	192	172	6543	273	6704	268
12	161	172	194	221	249	277	297	308	308	304	295	287	282	283	292	302	309	311	305	286	261	231	198	174	6307	263	6465	259
13	158	156	169	193	223	250	275	293	301	300	296	289	285	284	288	300	310	313	313	306	284	258	224	194	6262	261	6433	257
14	171	163	163	180	204	234	257	277	293	297	296	293	286	282	286	291	301	308	312	308	293	274	247	218	6234	260	6427	257
15	193	175	167	173	191	211	232	253	272	280	284	284	277	273	271	276	283	293	300	304	297	284	263	241	6077	253	6294	252
16	217	196	182	180	188	204	220	240	257	272	279	280	278	273	267	266	270	278	288	294	295	291	282	265	6062	253	6310	252
17	248	229	215	207	205	211	222	237	251	263	273	276	277	271	264	260	256	260	268	272	277	278	277	271	6068	253	6330	253
18	262	249	238	226	220	222	223	230	242	253	260	268	269	267	258	253	243	241	243	249	254	261	265	271	5967	249	6239	250
19	272	269	264	258	252	247	243	245	250	256	263	272	270	270	263	255	243	232	227	226	226	235	244	251	6033	251	6296	252
20	263	270	272	272	270	265	258	256	256	258	263	266	268	270	266	257	245	231	217	210	205	207	215	225	5985	249	6223	249
21	238	253	264	277	282	279	274	267	265	263	264	267	270	272	269	263	253	234	218	199	188	185	188	198	5930	247	6143	246
22	213	231	254	269	279	284	283	276	272	269	266	266	269	273	272	269	260	249	228	204	186	174	169	172	5887	245	6064	243
23	184	207	229	258	276	291	294	294	287	278	275	273	278	282	287	286	279	267	249	228	202	184	170	164	6022	251	6199	248
24	177	193	215	245	269	289	299	301	300	292	287	283	284	290	292	297	296	287	274	254	223	197	173	162	6179	257	6339	254
25	160	172	196	218	243	268	282	287	287	284	275	270	271	274	282	290	294	293	287	270	244	215	189	171	6022	251	6187	247
26	165	168	188	213	239	266	286	296	301	298	291	285	277	278	287	297	300	302	300	286	261	234	203	178	6199	258	6363	255
27	164	163	174	193	220	247	272	287	294	296	296	289	285	288	293	304	320	325	325	319	301	279	251	223	6408	267	6611	264
28	203	192	192	208	230	252	274	292	300	300	299	293	287	285	285	294	308	316	323	320	307	288	263	238	6549	273	6767	271
29	218	203	200	211	229	252	274	290	301	307	302	300	295	288	287	293	302	312	320	323	316	306	286	265	6680	278	6925	277
30	245	229	225	224	236	255	273	288	299	306	305	299	295	287	283	284	289	300	310	317	315	305	292	272	6733	281	6733	269

MONTHLY MEAN 261.3 cm

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : JULY 1, - JULY 31, 2006
UNIT : CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	255	239	230	225	227	243	259	269	281	289	288	282	275	270	262	258	262	270	277	284	286	286	279	265	6361	265	6616	265
2	255	241	233	230	230	237	248	261	270	277	278	278	269	266	258	252	251	251	260	264	271	272	270	266	6188	258	6446	258
3	258	251	245	242	242	244	251	260	267	273	274	275	270	263	256	248	240	241	239	243	248	252	253	256	6091	254	6348	254
4	257	255	253	252	248	248	249	255	264	267	269	274	271	266	260	252	242	239	237	237	241	242	252	258	6088	254	6350	254
5	262	267	274	277	279	280	280	278	282	285	289	287	287	285	276	267	258	247	236	231	228	228	231	239	6353	265	6600	264
6	247	259	269	275	282	280	279	275	274	272	273	274	275	268	267	257	246	237	223	210	203	198	198	207	6048	252	6268	251
7	220	238	255	268	279	286	287	283	281	274	270	275	274	271	272	268	259	245	229	212	196	188	183	189	6002	250	6205	248
8	203	221	247	267	286	295	299	296	289	288	280	279	282	283	286	287	279	266	250	231	205	187	178	176	6160	257	6347	254
9	187	208	233	264	289	306	316	315	308	302	295	295	297	300	303	306	302	290	282	256	228	199	182	169	6432	268	6608	264
10	176	185	210	241	269	296	312	317	315	306	295	294	293	293	300	308	310	306	297	278	249	219	192	180	6441	268	6612	264
11	171	182	207	237	271	302	324	339	341	336	328	318	314	320	324	334	333	334	330	307	276	242	208	177	6855	286	7019	281
12	164	160	167	194	222	252	282	297	304	304	295	284	278	272	278	292	305	313	318	310	292	262	230	200	6275	261	6451	258
13	176	167	172	189	215	242	271	293	305	309	305	297	285	278	280	291	301	314	326	325	316	297	271	240	6465	269	6676	267
14	211	193	186	193	213	236	260	281	296	301	302	292	276	267	264	268	281	297	312	319	319	310	289	264	6430	268	6673	267
15	243	220	207	206	216	237	251	271	285	289	288	282	268	253	244	242	251	264	281	290	300	303	293	277	6261	261	6520	261
16	259	241	227	218	222	235	245	261	276	280	280	275	261	245	235	227	224	235	249	261	274	280	281	274	6065	253	6329	253
17	264	255	246	238	237	240	252	262	269	275	278	271	258	244	232	220	211	211	222	233	245	255	260	264	5942	248	6209	248
18	267	261	260	269	271	266	270	271	275	281	286	284	270	260	245	236	220	215	212	221	223	235	246	250	6094	254	6353	254
19	259	264	272	275	280	281	281	289	293	292	294	292	284	274	261	255	240	226	216	213	212	215	218	233	6219	259	6462	258
20	243	253	271	277	286	290	292	293	293	291	291	285	285	279	272	261	249	237	226	213	205	207	203	216	6218	259	6449	258
21	231	247	271	291	304	319	324	324	326	323	325	323	326	321	317	311	308	291	272	253	234	223	216	220	6900	288	7124	285
22	224	239	260	283	300	313	322	321	316	310	311	303	299	302	299	301	298	287	273	251	222	204	189	180	6607	275	6781	271
23	188	206	226	250	277	294	307	310	309	302	296	293	293	295	299	302	304	296	285	266	238	213	188	177	6414	267	6588	264
24	174	187	207	231	257	281	293	297	300	291	279	273	272	274	287	291	293	293	288	270	250	220	191	170	6169	257	6331	253
25	162	165	185	209	232	261	278	286	290	286	282	273	271	276	283	299	311	318	315	304	282	258	227	202	6255	261	6445	258
26	190	188	200	225	249	276	295	306	309	302	293	285	273	270	276	287	299	310	314	304	288	264	229	205	6437	268	6621	265
27	184	174	183	199	221	248	267	281	284	277	268	256	246	238	244	255	272	283	291	295	283	261	235	209	5954	248	6142	246
28	188	177	178	191	214	240	258	272	275	276	267	254	243	239	234	245	267	280	291	303	300	283	263	243	5981	249	6202	248
29	221	211	208	216	232	257	274	286	290	291	280	267	256	245	235	241	255	268	283	292	293	279	263	243	6186	258	6413	257
30	227	208	203	207	217	235	252	263	272	266	263	249	232	221	214	216	222	238	254	263	273	270	258	245	5768	240	6003	240
31	235	224	218	216	227	242	253	266	274	275	270	256	241	228	218	215	216	226	236	252	261	259	254	248	5810	242	5810	232
																									MONTHLY MEAN		260.0 cm	

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : AUG. 1, - AUG. 31, 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	237	229	224	220	223	231	246	258	262	261	259	246	233	219	206	201	198	199	212	222	227	234	239	242	5528	230	5762	230
2	234	231	231	229	231	241	248	248	257	257	255	246	234	222	212	203	197	193	195	200	207	214	218	224	5427	226	5655	226
3	228	234	237	240	248	249	251	260	261	260	256	251	243	232	222	210	200	197	192	191	192	198	201	211	5464	228	5686	227
4	222	231	243	251	256	265	268	268	268	268	266	262	255	249	241	234	221	210	200	195	190	189	194	201	5647	235	5866	235
5	219	233	250	265	280	287	290	290	284	284	280	273	270	268	260	253	244	233	212	198	187	176	169	176	5881	245	6071	243
6	190	209	231	257	274	285	290	289	281	276	272	267	265	265	267	263	255	245	229	207	184	166	156	152	5775	241	5942	238
7	167	181	209	237	263	284	291	291	285	274	265	261	258	261	265	269	266	258	244	220	193	165	143	135	5685	237	5826	233
8	141	156	184	215	247	273	294	293	291	282	267	257	257	261	272	280	285	282	270	257	225	196	166	144	5795	241	5935	237
9	140	144	169	201	234	263	285	292	289	275	266	254	247	252	262	276	290	293	291	277	252	215	181	153	5801	242	5939	238
10	138	136	153	178	209	242	263	275	280	267	254	242	225	223	239	261	276	291	297	292	273	248	212	177	5651	235	5810	232
11	159	148	148	177	199	225	250	262	266	257	240	224	208	198	212	227	249	277	290	297	286	271	237	207	5514	230	5696	228
12	182	165	162	176	192	223	243	255	258	256	236	216	195	184	187	198	220	240	267	279	278	273	255	222	5362	223	5573	223
13	211	194	181	188	205	222	245	256	253	253	241	216	198	181	170	178	195	218	239	257	272	273	265	251	5362	223	5596	224
14	234	224	219	217	229	243	263	272	277	277	263	245	225	205	191	190	200	216	234	256	273	281	281	276	5791	241	6059	242
15	268	264	259	257	260	268	277	286	287	284	274	255	235	214	198	187	185	187	200	214	226	235	237	241	5798	242	6043	242
16	245	243	247	249	255	262	274	281	283	282	271	260	241	224	211	203	189	187	190	198	203	211	222	223	5654	236	5887	235
17	233	240	248	258	267	271	278	284	288	287	280	271	258	248	238	225	218	207	202	200	198	197	205	209	5810	242	6031	241
18	221	234	252	262	274	285	292	294	291	289	283	277	271	265	256	252	240	227	212	201	192	186	183	186	5925	247	6121	245
19	196	210	232	251	267	280	283	283	284	279	275	272	269	266	266	265	261	247	234	217	203	186	178	177	5881	245	6072	243
20	191	207	226	251	270	286	294	291	287	281	273	271	267	270	276	276	276	268	256	236	213	193	177	172	6008	250	6189	248
21	181	192	215	241	264	280	290	291	286	279	268	266	264	272	279	287	294	294	284	267	244	219	199	190	6146	256	6337	253
22	191	199	226	254	278	297	310	314	307	300	287	282	278	286	297	309	319	317	313	295	270	240	211	191	6571	274	6755	270
23	184	191	212	234	260	281	294	294	288	275	261	252	248	252	264	280	297	304	302	297	272	240	215	195	6192	258	6376	255
24	184	188	204	228	255	277	294	293	287	275	262	248	238	241	256	275	295	306	312	307	290	263	237	212	6227	259	6425	257
25	198	197	211	231	256	278	294	297	294	280	261	244	232	230	240	258	279	297	307	306	294	273	244	219	6220	259	6425	257
26	205	200	208	227	251	276	292	299	298	282	267	251	236	233	244	259	282	302	318	325	322	306	283	258	6424	268	6664	267
27	240	229	225	237	254	272	286	292	287	271	255	232	215	206	206	217	238	259	274	286	287	276	255	236	6035	251	6254	250
28	219	209	207	217	233	251	265	272	268	258	246	222	201	194	192	197	219	239	261	277	284	279	272	258	5740	239	5988	240
29	248	237	237	247	259	277	290	298	298	290	275	254	235	222	219	218	232	248	266	281	288	290	286	277	6272	261	6538	262
30	266	258	260	262	273	284	296	298	299	290	277	259	235	223	209	207	208	218	231	247	257	262	262	260	6141	256	6399	256
31	258	254	255	263	268	278	289	292	292	286	278	264	245	234	220	215	212	216	223	233	241	247	253	258	6074	253	6074	243
																									MONTHLY MEAN		244.4 cm	

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : SEP. 1, - SEP. 30, 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	264	270	274	279	286	295	301	303	302	298	291	276	263	253	241	236	229	224	224	229	233	234	243	251	6299	262	6561	262
2	262	273	286	298	308	316	320	321	318	314	307	298	288	281	273	264	253	245	235	230	227	225	229	239	6610	275	6862	274
3	252	268	287	304	314	321	322	318	310	304	297	290	284	279	275	267	258	249	236	217	208	197	194	203	6454	269	6672	267
4	218	237	263	286	303	316	319	314	305	295	291	287	282	284	287	287	283	273	253	230	213	192	182	184	6384	266	6578	263
5	194	215	244	274	295	312	319	313	303	290	281	277	275	280	291	297	299	291	272	246	219	189	167	156	6299	262	6459	258
6	160	178	206	234	262	284	291	287	276	258	244	237	238	246	264	281	290	294	286	264	234	202	171	155	5842	243	5994	240
7	152	164	188	222	252	275	288	284	272	254	233	222	216	228	249	267	288	302	296	286	260	223	188	164	5773	241	5921	237
8	148	155	173	202	230	252	266	265	251	232	209	191	183	188	212	242	265	289	301	300	285	252	221	195	5507	229	5685	227
9	178	176	192	214	243	264	282	283	273	249	226	204	189	192	210	242	272	298	320	327	321	302	276	249	5982	249	6211	248
10	229	221	229	246	266	283	296	297	284	259	233	205	179	169	177	200	230	256	280	297	301	292	275	253	5957	248	6197	248
11	240	230	228	242	264	277	288	294	284	265	239	211	187	169	169	181	205	234	256	277	289	288	280	268	5865	244	6125	245
12	260	254	257	263	278	296	308	312	306	293	270	241	214	196	183	186	199	219	235	255	266	271	270	266	6098	254	6360	254
13	262	260	262	268	280	294	302	304	300	291	273	248	227	209	194	190	191	201	216	227	238	247	252	256	5992	250	6250	250
14	258	265	272	280	291	301	306	311	306	299	289	271	252	239	226	219	214	213	218	224	229	233	236	246	6198	258	6451	258
15	253	263	274	285	296	305	310	312	307	302	295	284	270	259	249	243	233	226	220	218	215	216	217	225	6277	262	6513	261
16	236	247	262	279	288	294	299	298	291	286	280	274	266	263	258	254	245	233	226	213	204	197	195	202	6090	254	6301	252
17	211	229	248	267	281	290	291	288	281	272	266	264	258	259	263	265	257	249	238	223	206	193	187	191	5977	249	6177	247
18	200	217	238	260	277	287	290	283	274	267	257	252	254	261	265	274	274	266	255	240	219	202	193	186	5991	250	6188	248
19	197	214	238	258	280	292	293	287	277	267	259	252	256	268	277	290	296	294	282	262	238	214	196	188	6175	257	6367	255
20	192	207	228	252	270	283	285	277	262	246	234	225	226	237	256	273	285	289	280	265	239	214	191	179	5895	246	6076	243
21	181	192	214	238	260	273	275	269	251	231	218	205	207	219	238	256	276	288	284	270	251	221	199	185	5701	238	5883	235
22	182	190	209	233	253	269	276	268	251	231	211	199	191	202	227	252	276	293	298	290	272	246	221	206	5746	239	5958	238
23	195	201	221	243	267	283	290	282	265	243	220	202	197	202	220	248	275	293	305	302	292	267	243	226	5982	249	6194	248
24	212	215	229	248	268	285	288	287	271	249	225	205	192	193	209	231	258	282	300	304	298	282	259	242	6032	251	6261	250
25	229	222	233	250	270	285	292	286	273	249	223	198	184	179	184	206	233	257	278	288	290	278	261	247	5895	246	6132	245
26	237	230	236	251	265	281	288	288	276	256	230	206	187	177	180	195	218	240	261	276	281	277	263	253	5852	244	6097	244
27	245	242	243	254	273	286	289	293	282	265	242	220	200	186	185	196	209	232	256	270	277	282	275	269	5971	249	6236	249
28	265	263	262	270	284	293	301	301	293	276	259	233	210	200	190	192	202	214	229	245	253	261	263	261	6020	251	6281	251
29	261	262	268	273	282	291	296	299	291	280	264	244	226	210	199	194	195	202	210	217	228	235	239	248	5914	246	6167	247
30	253	257	268	273	282	289	292	290	283	276	266	250	235	225	213	205	202	198	199	200	206	210	217	229	5818	242	5818	233

MONTHLY MEAN 250.8 cm

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : OCT. 1 , – OCT. 31 , 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	240	251	266	277	284	288	291	287	280	273	265	253	245	238	231	221	213	206	201	194	188	191	200	210	5793	241	6020	241
2	227	245	264	279	288	294	291	286	281	271	265	260	259	259	255	251	243	231	219	202	193	185	186	199	5933	247	6146	246
3	213	237	259	279	293	299	294	286	274	265	260	255	262	266	273	277	272	262	242	223	203	186	180	183	6043	252	6242	250
4	199	220	247	270	288	298	292	279	265	252	244	245	251	267	283	295	300	297	283	257	233	211	197	194	6167	257	6370	255
5	203	224	254	275	297	305	298	286	266	244	231	226	235	254	274	296	308	309	301	277	248	220	195	182	6208	259	6392	256
6	184	200	223	245	265	276	273	257	231	206	189	176	182	202	232	260	284	299	299	286	260	234	204	187	5654	236	5840	234
7	186	195	215	236	256	268	265	249	226	196	171	154	153	170	199	236	264	290	304	301	284	258	238	219	5533	231	5745	230
8	212	220	242	262	286	293	295	287	260	226	193	171	157	154	189	222	259	285	305	319	308	295	277	262	5979	249	6233	249
9	254	255	273	295	317	332	333	323	301	270	239	208	190	186	198	224	255	280	301	314	317	305	288	277	6535	272	6798	272
10	263	261	271	285	299	309	311	303	285	256	221	192	167	155	160	177	201	227	249	268	279	274	272	267	5952	248	6214	249
11	262	260	267	280	293	309	312	310	294	278	250	219	196	180	174	183	195	215	236	250	260	266	268	267	6024	251	6291	252
12	267	273	275	286	301	310	315	312	306	289	269	246	224	206	193	190	195	203	216	224	235	243	247	249	6074	253	6331	253
13	257	261	269	278	288	296	300	299	294	285	269	253	236	225	214	209	205	208	212	218	222	225	236	241	6000	250	6251	250
14	251	261	273	282	291	297	297	299	295	287	279	269	257	252	247	240	235	227	226	225	223	226	232	242	6213	259	6463	259
15	250	262	278	288	297	300	299	292	288	281	273	268	262	260	259	255	249	241	231	226	217	217	217	226	6236	260	6472	259
16	236	252	267	280	289	291	287	280	272	263	256	256	259	259	262	265	263	255	243	231	219	212	212	219	6128	255	6357	254
17	229	248	264	278	289	293	288	276	267	260	253	253	261	271	281	291	296	290	278	263	249	236	233	234	6381	266	6625	265
18	244	262	281	295	307	310	301	288	272	260	251	246	255	269	283	297	303	299	289	272	253	235	226	225	6523	272	6757	270
19	234	250	269	285	295	296	286	270	252	235	225	221	229	247	268	285	299	303	296	281	262	240	226	223	6277	262	6507	260
20	230	244	262	279	291	295	288	269	246	227	209	205	210	228	250	277	295	301	301	290	268	247	228	220	6160	257	6383	255
21	223	234	253	272	284	288	283	263	241	217	196	188	189	205	234	261	286	299	306	299	283	258	243	229	6034	251	6259	250
22	225	235	256	272	286	290	285	271	246	218	196	179	178	192	218	248	275	294	308	306	291	272	256	243	6040	252	6285	251
23	238	245	260	276	292	300	296	280	257	229	203	184	177	184	204	235	264	287	303	309	300	283	269	254	6129	255	6374	255
24	245	250	261	276	292	299	297	285	264	235	207	182	168	170	183	210	239	262	283	295	295	284	270	260	6012	251	6264	251
25	252	255	261	273	290	299	299	290	273	244	218	192	175	169	178	199	223	251	274	289	298	296	289	284	6071	253	6351	254
26	280	278	285	300	313	322	324	319	305	282	256	232	211	197	197	209	228	247	267	282	292	295	290	285	6496	271	6779	271
27	283	283	285	290	302	310	310	306	296	279	251	228	208	190	186	191	200	216	230	247	257	266	270	267	6151	256	6423	257
28	272	275	277	280	290	297	296	293	286	272	251	232	213	197	189	187	189	195	206	217	228	238	246	253	5879	245	6139	246
29	260	268	274	280	285	291	291	288	284	276	263	252	237	225	217	209	206	204	206	210	215	227	236	246	5950	248	6209	248
30	259	269	279	284	288	290	289	283	279	273	266	262	255	245	239	233	225	215	209	207	204	209	220	231	6013	251	6259	250
31	246	261	275	281	282	282	276	267	263	257	250	253	255	253	254	252	244	231	219	208	198	194	203	213	5917	247	5917	237
																									MONTHLY MEAN		253.4	cm

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : NOV. 1, - NOV. 30, 2006
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	227	246	261	272	276	272	260	247	240	230	228	235	244	251	264	269	268	257	242	224	204	196	195	202	5810	242	6027	241
2	217	236	254	268	272	270	257	239	229	216	212	221	237	254	275	291	297	293	279	261	236	221	213	213	5961	248	6184	247
3	223	241	258	271	279	274	258	237	214	198	189	194	210	233	259	284	302	306	299	282	259	242	228	220	5960	248	6189	248
4	229	245	260	273	280	277	261	236	207	184	167	165	179	204	235	267	295	309	310	299	281	263	246	233	5905	246	6141	246
5	236	248	261	274	284	280	265	240	208	175	151	140	143	164	195	228	260	282	294	294	282	264	249	237	5654	236	5888	236
6	234	243	257	271	279	282	270	247	217	185	154	135	130	143	172	207	241	270	288	298	294	284	277	267	5645	235	5908	236
7	263	271	285	301	314	317	311	294	267	234	202	178	164	165	185	213	242	271	293	308	310	309	302	294	6293	262	6581	263
8	288	289	299	313	325	331	325	313	291	261	227	199	176	166	172	190	213	237	257	275	285	285	283	283	6283	262	6560	262
9	277	276	283	293	304	313	315	307	292	270	242	215	193	179	175	182	199	216	235	255	264	272	276	275	6108	255	6388	256
10	280	283	286	296	308	315	321	317	311	297	274	251	232	217	208	207	215	223	237	251	261	269	273	275	6407	267	6687	267
11	280	282	284	289	294	301	303	301	296	283	270	254	237	223	214	209	207	211	218	226	231	241	247	251	6152	256	6409	256
12	257	262	266	267	272	276	275	274	271	264	256	249	235	227	221	215	210	209	209	212	215	220	229	235	5826	243	6068	243
13	242	248	255	259	258	258	254	250	249	245	239	237	234	233	231	228	222	218	215	211	212	216	222	231	5667	236	5909	236
14	242	249	255	262	264	260	256	249	245	242	240	242	247	248	252	257	253	248	239	231	226	225	227	239	5898	246	6144	246
15	246	255	263	269	268	263	255	242	236	228	227	232	239	250	260	264	267	260	252	242	233	227	229	233	5940	248	6182	247
16	242	255	265	269	273	267	255	241	230	222	216	222	233	248	261	275	282	282	270	259	245	236	236	240	6024	251	6272	251
17	248	259	270	276	279	271	255	236	219	205	201	206	214	233	260	275	288	293	287	276	264	249	241	243	6048	252	6301	252
18	253	262	275	285	284	279	265	243	221	204	191	192	204	224	252	277	294	303	301	289	276	263	252	249	6138	256	6395	256
19	257	270	278	289	292	289	273	251	226	203	187	181	189	210	236	266	288	300	304	297	285	268	257	250	6146	256	6397	256
20	251	260	273	284	288	285	270	247	218	192	169	157	159	179	203	232	260	280	290	289	281	267	256	247	5837	243	6082	243
21	245	254	270	279	285	286	276	257	227	199	173	158	154	166	189	217	248	275	290	300	297	286	276	268	5875	245	6139	246
22	264	268	279	291	299	302	296	277	252	221	190	169	156	158	175	199	229	257	277	289	289	284	277	269	5967	249	6237	249
23	262	262	273	283	291	297	295	281	261	232	200	173	159	152	161	182	208	232	256	275	283	284	280	274	5856	244	6126	245
24	270	269	273	281	292	302	300	291	277	252	222	194	174	163	161	174	195	216	239	260	272	278	278	276	5909	246	6182	247
25	273	271	275	282	292	301	305	300	290	272	248	224	202	187	180	182	194	211	228	245	260	271	278	277	6048	252	6329	253
26	281	279	278	282	289	295	300	300	292	283	267	246	227	211	202	197	200	207	219	233	246	261	269	274	6138	256	6419	257
27	281	284	284	281	284	290	291	292	291	284	275	263	247	235	224	213	209	210	215	221	230	242	253	260	6159	257	6426	257
28	267	272	269	268	265	265	263	263	263	261	260	258	252	246	239	231	223	217	212	215	216	225	235	243	5928	247	6182	247
29	254	258	260	256	251	247	241	235	238	238	239	247	252	254	254	252	248	238	228	225	222	223	231	239	5830	243	6079	243
30	249	257	261	261	252	242	233	220	217	217	222	233	247	259	268	276	276	265	257	245	235	233	234	240	5899	246	5899	236
																								MONTHLY MEAN		249.0	cm	

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : DEC.1,-DEC.31,2006
UNIT : CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	247	257	259	260	252	237	219	204	194	188	191	203	222	241	261	277	285	283	275	267	254	247	243	246	5812	242	6066	243
2	254	265	267	265	260	245	225	202	183	171	168	179	195	219	247	272	288	293	292	286	270	260	255	254	5815	242	6074	243
3	259	266	274	279	273	260	237	211	185	162	150	154	167	192	220	251	275	288	294	292	282	268	261	259	5759	240	6020	241
4	261	269	276	283	283	273	254	225	195	165	145	137	142	164	190	221	252	273	287	291	286	278	270	262	5682	237	5945	238
5	263	273	281	288	293	288	273	250	219	186	160	140	137	148	173	203	233	263	285	293	294	294	286	280	5803	242	6084	243
6	281	286	297	307	314	316	305	288	263	230	200	175	159	162	176	201	230	256	277	291	297	296	292	287	6186	258	6468	259
7	282	285	292	302	312	317	314	303	282	253	222	194	170	161	167	184	207	234	253	271	282	282	282	279	6130	255	6405	256
8	275	272	279	287	300	310	310	304	293	269	244	217	193	180	177	187	205	223	244	263	276	281	282	282	6153	256	6432	257
9	279	276	274	282	292	302	308	305	297	282	263	241	219	201	196	198	207	223	239	252	268	277	277	277	6235	260	6511	260
10	276	274	273	273	280	287	294	296	294	286	271	254	236	222	211	208	209	221	233	245	255	265	268	268	6199	258	6468	259
11	269	267	263	262	264	269	272	273	277	275	267	255	243	234	226	219	219	224	229	239	249	253	260	263	6071	253	6334	253
12	263	260	260	255	252	254	255	258	258	257	257	253	248	245	239	238	235	235	237	239	246	252	257	261	6014	251	6279	251
13	265	262	259	257	251	247	244	242	242	243	244	246	247	249	249	249	246	243	244	245	246	250	253	258	5981	249	6242	250
14	261	260	258	257	249	241	233	227	225	222	225	230	236	244	251	255	255	253	247	244	245	246	246	249	5859	244	6113	245
15	254	256	257	253	247	237	224	215	209	204	207	217	226	239	253	261	269	270	266	260	257	257	256	258	5852	244	6115	245
16	263	268	268	266	261	249	235	221	209	200	199	205	219	236	256	272	282	287	286	277	270	266	262	264	6021	251	6292	252
17	271	274	275	276	271	258	240	221	203	188	184	187	199	218	241	264	280	290	290	287	276	268	261	261	5983	249	6248	250
18	265	270	275	276	274	265	247	225	203	184	170	170	183	203	227	257	280	296	302	300	292	283	275	270	5992	250	6266	251
19	274	278	286	290	289	280	266	242	215	190	170	161	165	182	208	238	267	287	301	304	297	288	280	273	6031	251	6307	252
20	276	279	286	294	297	294	281	259	231	200	174	157	155	165	187	218	247	275	295	302	301	295	285	277	6030	251	6304	252
21	274	279	285	295	300	301	292	273	247	215	186	161	147	152	167	191	222	250	274	290	295	290	283	276	5945	248	6214	249
22	269	269	277	289	298	305	303	293	271	240	208	179	160	156	162	182	211	240	265	284	293	295	288	280	6017	251	6295	252
23	274	271	275	285	297	307	307	301	287	263	233	204	181	167	165	178	199	222	246	269	285	289	287	284	6076	253	6354	254
24	278	273	271	279	291	301	308	309	302	286	263	236	213	194	184	187	200	219	240	258	275	285	285	284	6221	259	6499	260
25	278	270	267	269	278	289	297	303	305	296	283	261	237	220	209	202	206	219	231	247	260	268	273	272	6240	260	6507	260
26	267	259	252	245	247	253	265	272	276	276	271	259	245	231	220	212	210	214	223	234	246	257	261	261	5956	248	6215	249
27	259	249	242	231	228	231	236	243	251	259	263	261	256	251	245	238	236	235	235	244	253	259	266	266	5937	247	6200	248
28	263	256	246	236	227	221	221	224	231	239	245	251	257	262	260	259	258	254	254	255	258	259	263	263	5962	248	6226	249
29	264	257	250	237	224	215	205	201	201	207	213	226	238	250	259	267	269	270	268	265	264	264	262	265	5841	243	6106	244
30	265	263	257	249	235	219	204	193	189	187	191	203	218	237	255	269	281	286	286	285	279	277	273	274	5875	245	6151	246
31	276	274	270	264	252	238	219	199	182	175	173	175	191	214	239	264	281	294	299	297	295	288	283	284	5926	247	5926	237
																									MONTHLY MEAN		249.5 cm	

Table 6. Continued.

STATION : SYOWA STATION
LATITUDE : 69°00'28"S
LONGITUDE : 39°34'13"E
DURATION : JAN. 1, - JAN. 31, 2007
UNIT CENTIMETRE

The zero of the tide gauge: 500cm below the bench mark No.1040

Date	Time 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	(24H) SUM	(24H) MEAN	(25H) SUM	(25H) MEAN
1	286	288	288	285	280	267	246	224	201	180	168	168	179	197	222	250	276	294	303	306	302	297	289	290	6086	254	6376	255
2	290	294	298	301	297	288	272	247	219	191	173	159	165	180	205	233	261	283	298	307	306	298	291	284	6140	256	6423	257
3	283	289	295	301	305	302	287	267	241	207	179	161	155	161	181	209	238	262	283	294	295	292	285	274	6046	252	6318	253
4	272	276	284	294	302	304	296	281	257	225	194	168	153	153	169	192	221	250	273	286	294	289	284	275	5992	250	6262	250
5	270	271	278	290	302	309	309	299	280	253	219	190	170	161	169	188	213	240	263	278	285	284	276	269	6066	253	6329	253
6	263	255	259	270	285	296	301	298	290	265	238	209	183	172	172	182	205	227	249	265	275	276	270	264	5969	249	6225	249
7	256	248	245	255	269	282	290	295	287	273	250	224	202	189	182	187	204	225	245	262	272	274	269	262	5947	248	6202	248
8	255	245	240	245	256	268	280	288	287	281	267	246	228	214	204	207	214	233	249	262	273	277	271	265	6055	252	6311	252
9	256	245	238	235	241	252	261	270	276	273	264	250	234	223	215	213	218	229	245	255	264	269	267	259	5952	248	6204	248
10	252	243	231	227	229	234	243	249	256	257	255	246	236	230	224	221	224	229	239	249	258	260	258	251	5801	242	6046	242
11	245	236	226	217	214	217	219	227	232	236	235	236	233	231	229	232	234	238	245	249	258	259	260	258	5666	236	5918	237
12	252	243	233	227	220	217	215	218	221	224	231	236	237	242	247	250	255	257	260	266	269	269	268	266	5823	243	6086	243
13	263	258	248	241	234	225	221	216	213	218	222	229	238	247	256	266	275	276	279	282	282	281	278	275	6023	251	6299	252
14	276	271	263	255	246	238	225	215	210	205	204	211	222	238	250	267	279	284	286	286	283	279	274	275	6042	252	6316	253
15	274	273	269	262	256	246	230	217	202	192	193	192	206	226	245	267	286	297	301	300	295	289	282	280	6080	253	6358	254
16	278	282	283	278	273	266	247	225	207	188	175	174	182	201	225	250	275	293	300	299	296	285	277	274	6033	251	6305	252
17	272	273	276	278	275	268	252	227	202	179	159	147	155	171	194	225	255	278	293	296	294	287	276	267	5799	242	6068	243
18	269	272	278	284	288	288	274	252	225	196	169	150	149	157	178	210	245	274	291	304	304	292	281	273	5903	246	6171	247
19	268	271	281	290	298	302	295	277	249	218	185	158	143	145	161	188	220	250	273	288	290	281	269	256	5856	244	6105	244
20	249	247	257	270	282	289	292	282	260	228	196	163	142	133	143	165	194	225	250	269	277	275	263	250	5601	233	5842	234
21	241	235	242	255	272	288	297	296	284	260	230	200	171	158	157	171	196	225	252	272	283	284	273	260	5802	242	6050	242
22	248	240	241	248	267	287	301	307	304	290	266	237	212	192	183	192	208	229	252	269	279	281	273	260	6066	253	6303	252
23	243	231	223	228	242	262	279	289	297	293	278	257	233	213	204	203	213	228	248	263	271	273	267	252	5990	250	6227	249
24	237	221	208	206	212	231	248	264	275	278	276	265	251	239	230	226	231	242	256	270	276	277	272	258	5949	248	6192	248
25	243	228	212	199	202	210	223	237	249	257	263	260	254	249	244	243	247	253	262	274	280	282	276	267	5914	246	6167	247
26	253	239	224	211	203	204	208	219	229	237	246	253	255	258	262	268	272	276	282	287	293	292	289	282	6042	252	6313	253
27	271	258	245	231	220	210	206	208	211	216	223	231	241	251	262	273	283	286	290	293	294	292	289	282	6066	253	6341	254
28	275	265	255	243	231	218	204	195	191	189	189	195	208	223	239	258	275	283	288	291	291	288	283	279	5856	244	6132	245
29	276	270	265	259	249	237	222	204	191	182	177	178	188	206	231	253	275	291	297	302	300	295	288	286	5922	247	6205	248
30	283	282	284	282	278	269	250	230	209	191	178	173	180	196	218	246	272	292	303	307	303	296	288	281	6091	254	6371	255
31	280	281	286	289	290	286	270	248	223	196	177	163	161	174	197	224	253	275	289	294	292	285	272	265	5970	249	5970	239
																									MONTHLY MEAN		248.0	cm

Table 7. Harmonic constants at Syowa Station.

(1) POSITION
LAT. 69-00-28S
LONG. 39-34-13E

(2) EPOCH & DURATION OF ANALYSIS
EPOCH 2006/02/01
CENTRAL DATE 2006/08/02

(3) MEAN SEA LEVEL
S_0 256.5 cm

(4) SPECIAL REMARKS
Obser.-Pre. Max. 42.1 cm
Obser.-Pre. S.D. 9.4 cm

	H(cm)	κ (deg)		H(cm)	κ (deg)
SA	10.27	37.92	M_2	24.95	160.04
SSA	5.67	60.38	MKS_2	0.13	189.16
MM	3.83	173.14	LAM_2	0.26	121.06
MSF	0.78	100.98	L_2	0.38	245.23
MF	2.66	200.56	T_2	1.17	167.07
$2Q_1$	1.01	331.46	S_2	20.20	176.10
SIG_1	1.08	329.92	R_2	0.13	143.08
Q_1	6.13	343.93	K_2	5.80	174.19
RHO_1	1.00	341.65	MSN_2	0.01	177.31
O_1	24.38	350.14	KJ_2	0.47	14.14
MP_1	0.42	54.57	$2SM_2$	0.19	119.25
M_1	1.07	336.27	MO_3	0.05	34.83
CHI_1	0.31	347.67	M_3	0.29	270.92
PI_1	0.36	348.79	SO_3	0.03	342.60
P_1	7.33	355.79	MK_3	0.02	270.42
S_1	0.37	93.16	SK_3	0.38	343.17
K_1	22.20	356.74	MN_4	0.24	56.38
PSI_1	0.13	272.56	M_4	0.45	111.50
PHI_1	0.33	25.99	SN_4	0.10	128.79
THE_1	0.24	0.19	MS_4	0.18	173.39
J_1	0.93	340.92	MK_4	0.08	159.55
SO_1	0.29	352.37	S_4	0.12	212.81
OO_1	0.56	329.13	SK_4	0.05	175.72
OQ_2	0.05	131.43	$2MN_6$	0.04	4.71
MNS_2	0.10	350.09	M_6	0.14	81.26
$2N_2$	0.18	131.51	MSN_6	0.08	144.47
MU_2	0.50	107.04	$2MS_6$	0.33	187.82
N_2	3.95	162.50	$2MK_6$	0.07	195.80
NU_2	0.85	161.77	$2SM_6$	0.09	242.59
OP_2	0.06	81.94	MSK_6	0.07	266.78