

**Oceanographic Data of the 37th Japanese Antarctic Research Expedition
from November 1995 to March 1996**

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The results of oceanographic observations on board the icebreaker "Shirase" and tidal observations at Syowa Station, Antarctica, are presented in this report. The oceanographic observations were carried out by the summer party of the 37th Japanese Antarctic Research Expedition (JARE-37) during the austral summer of 1995/1996. The tidal observations were carried out by the winter party of JARE-36 from February 1995 to January 1996.

1. Oceanographic Observations

The track of the icebreaker "Shirase" and the sites of oceanographic stations are shown in Fig. 1. Surface water was sampled during the cruise using a plastic bucket (10L). XBT (expendable bathythermograph) and serial observations were taken in the Southern Ocean. Two surface drifting buoys were deployed and four XCP (expendable current profiler) observations were taken in the Antarctic Circumpolar Current.

(1) Surface water sampling

Surface water was sampled twice or three times a day at 61 stations for chemical analysis. The results are given in Table 1.

(2) Monitoring of marine pollution

Surface water was sampled at 25 stations in the Southern Ocean and the Indonesian Archipelago for monitoring of marine pollution. Items and methods of analyses are given in the following section of (5).

(3) XBT observations

XBT observations were carried out at 88 stations in the Southern Ocean from Fremantle to Antarctica and back to Sydney. The results are listed in Table 2. Vertical profiles of water temperature are shown in Figs. 2 and 3.

(4) Serial observations

Serial observations with Rosette sampler, equipped with twenty three Niskin bottles of 2.5L capacity, and CTD (Conductivity, Temperature and Depth profiling system: Falmouth Scientific FSI TRITON ICTD) were carried out at 17 stations. The results including interpolated and calculated values of temperature, practical salinity, sigma-t and

dynamic depth anomaly at each standard depth together with meteorological data are given in Table 3.

(5) Chemical analysis of sampled water

Chemical analysis of seawater collected with a bucket (10L) for surface observation or Niskin bottle (2.5L) for serial observation was done with the following methods. Chemical analyses for the item (a) was calculated from conductivity using the 1978 practical salinity scale (UNESCO, 1981). Items (b), (d) and (h) were carried out with the method described by Strickland and Parsons (1972). Item (c) was analyzed by the Winkler method as modified by Carpenter (1965) for more precision. Item (e) was analyzed with the method in Motomizu and Korechika (1988). Items (f) and (g) were analyzed with the method in Bergamin *et al.* (1978), Andersson (1979) and Gine *et al.* (1980). Items (i), (j) and (k) were analyzed with the method in Hydrographic Department (1995).

(a) Practical salinity	: Conductive salinometer (Guildline Autosal salinometer model 8400B).
(b) pH	: Glass electrode method (Horiba digital pH meter F-16).
(c) Dissolved oxygen	: Carpenter method (Metrohom model E41520S titrator).
(d) Phosphate-P	: Molybdenum blue method (Shimadzu model UV-120A spectrophotometer).
(e) Silicate-Si	: Molybdenum yellow method (Shimadzu model UV-120A spectrophotometer).
(f) Nitrite-N	: Naphthylethylenediamine method (Shimadzu model UV-120A spectrophotometer).
(g) Nitrate-N	: Cadmium (Cd) – copper (Cu) reduction column, Naphthylethylenediamine method (Shimadzu model UV-120A spectrophotometer).
(h) Ammonium-N	: Indophenol blue method (Shimadzu model UV-120A spectrophotometer).
(i) Petroleum oil	: n-hexane extraction – fluorophotometric analysis.
(j) Cadmium (Cd)	: Solvent extraction – atomic absorption spectrophotometry.
(k) Mercury (Hg)	: Cold vapor atomic absorption spectrophotometry.

The results of analytical items (a) to (h) are given in Tables 1 and 3. The results of monitoring of marine pollution items (i) to (k) are given in Table 4.

(6) Current observations with two surface drifting buoys

The first surface drifting buoy was deployed at 57°34'S, 94°33'E on December 9, 1995. It was operated until December 7, 1996. The second was deployed at 62°02'S, 142°01'E on March 14, 1996. It was operated until March 11, 1997. The trajectories are shown in Fig. 4.

(7) Current profile observations with XCP

XCP (Sippican Inc. U.S.A.) observations were completed at the following 4 stations.

December 5, 1995	08:00 (UT)	42°03.2' S, 108°51.4' E (St.1)
December 8, 1995	10:45 (UT)	55°24.0' S, 99°38.8' E (St.2)
February 28, 1996	11:33 (UT)	62°54.3' S, 62°19.5' E (St.4)
March 1, 1996	09:32 (UT)	63°03.2' S, 80°38.5' E (St.5)

The results are given in Fig. 5.

2. Tidal Observations at Syowa Station

Tidal observations at Syowa Station have been carried out since 1965. The tide gauge (QWP-8-303D, Meisei Denki Co.) was set on the sea bottom of about 15 m below the sea surface at Nisi-no-ura Cove, East Ongul Island by JARE-36 members on February 2, 1995. Results obtained from February 1995 to January 1996 are described in this report. The methodology of tidal observations is described by Odamaki *et al.* (1991). In this system, the relative water pressure compensated for atmospheric pressure is measured with a quartz oscillator. The range of the sensor is 0–50 m and its accuracy is 0.01% to full scale, *i.e.* 0.005 m. The data sampled 5 times per second are averaged over one minute and recorded on solid IC memory every 10 min. The gauge was maintained by Mr. T. Tanaka, a member of the JARE-36 winter party, through the year. Hourly sea level was recorded. Daily and monthly mean sea levels were calculated from the hourly data. The results are given in Table 5.

Acknowledgments

The authors would like to express their sincere thanks to Prof. Y. Fujii, the leader of JARE-37, Prof. Y. Ageta, the leader of JARE-36, Prof. H. Kanda, the summer party leader of JARE-37, Mr. S. Meshida, the winter party leader of JARE-36, and to all the members of JARE-36 and JARE-37 for their helpful support and valuable advice. The authors also express their sincere thanks to Mr. T. Tanaka, the member of the JARE-36 winter party, who maintained the tide gauge throughout the whole year.

The authors also express their thanks to Captain T. Kato, the officers and crew of the icebreaker “Shirase”.

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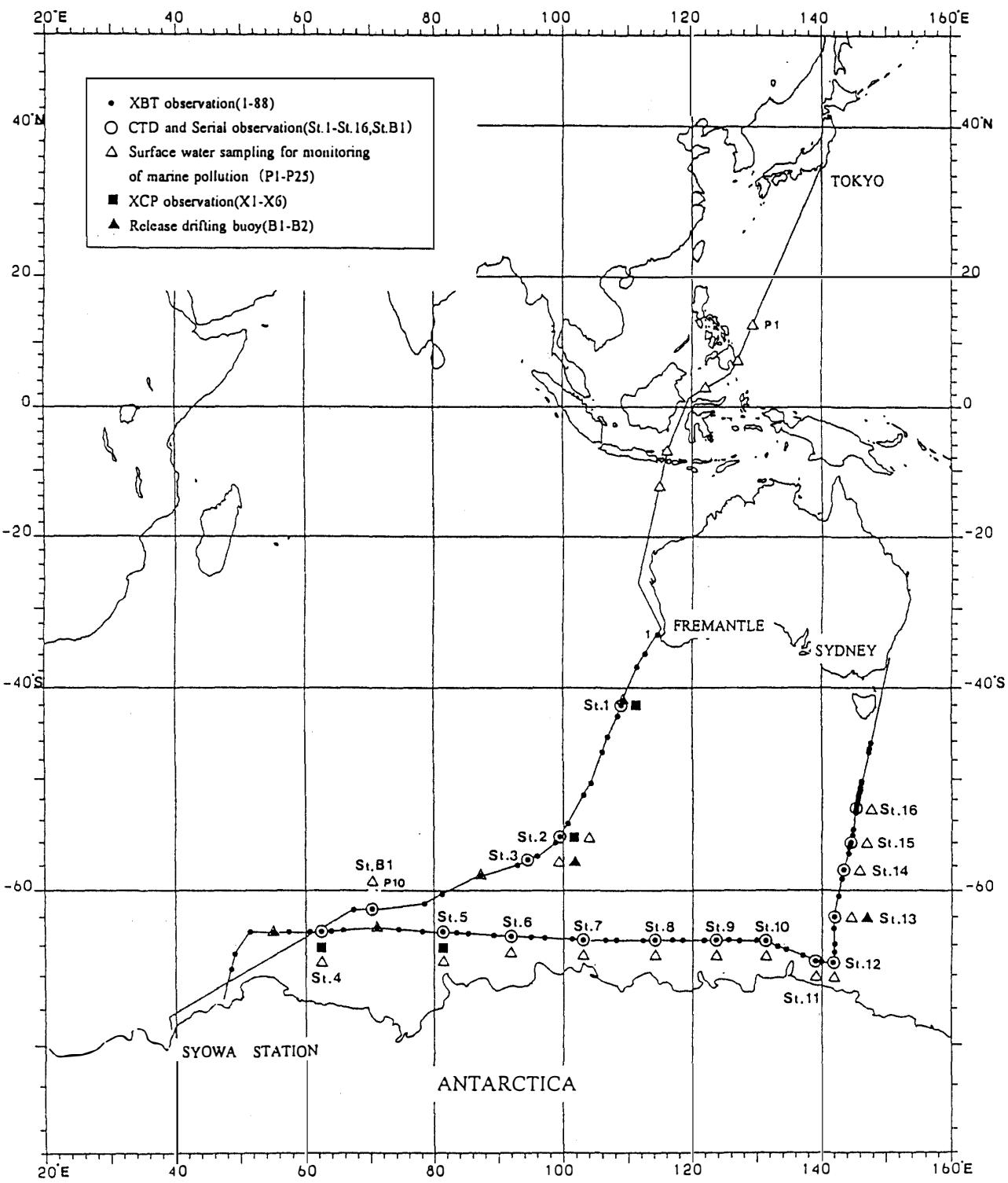


Fig. 1. The track of the icebreaker "Shirase" and the sites of oceanographic stations.

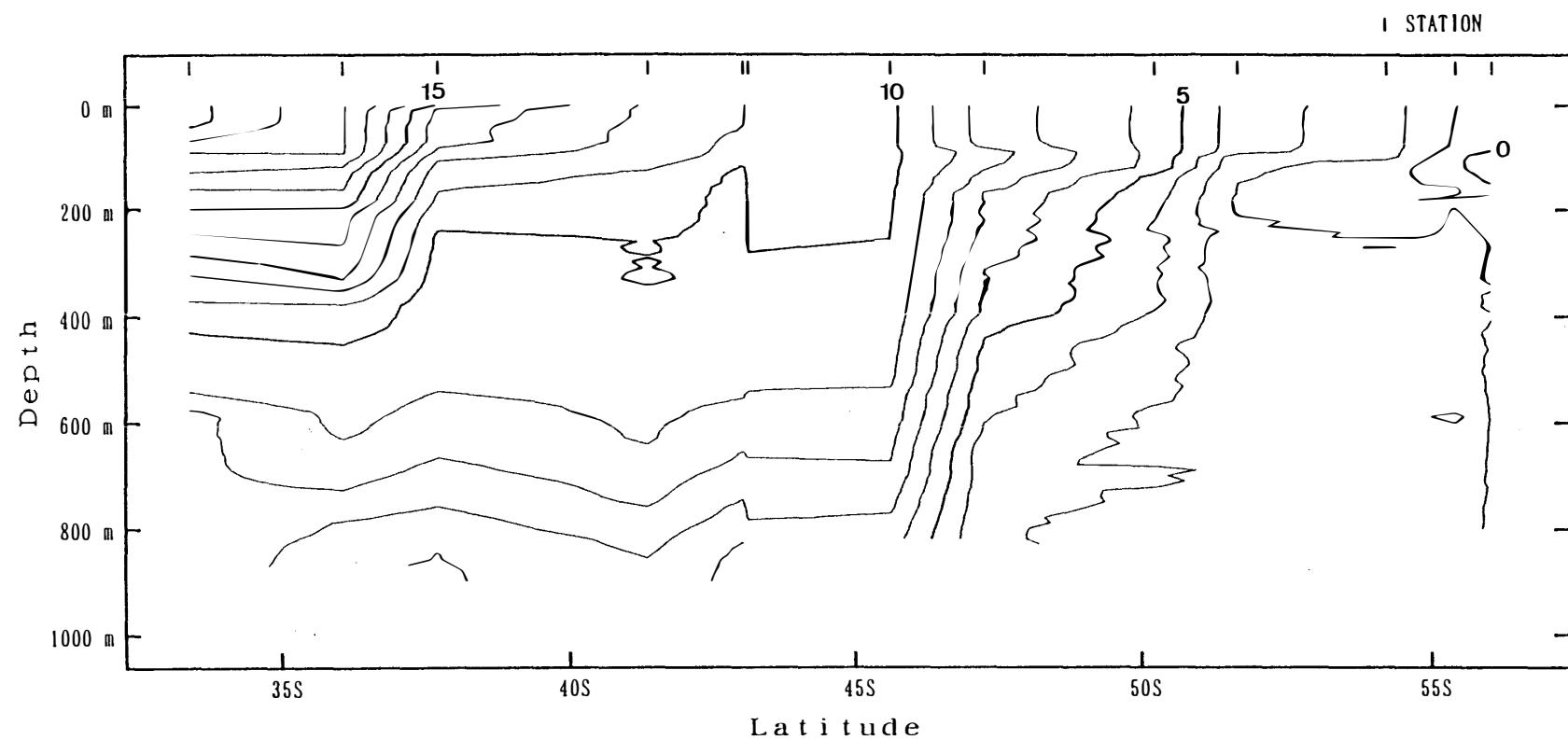


Fig. 2. The vertical profile of water temperature ($^{\circ}$ C) observed along 110°E. Vertical bars on the top of the profile indicate sites of XBT observations.

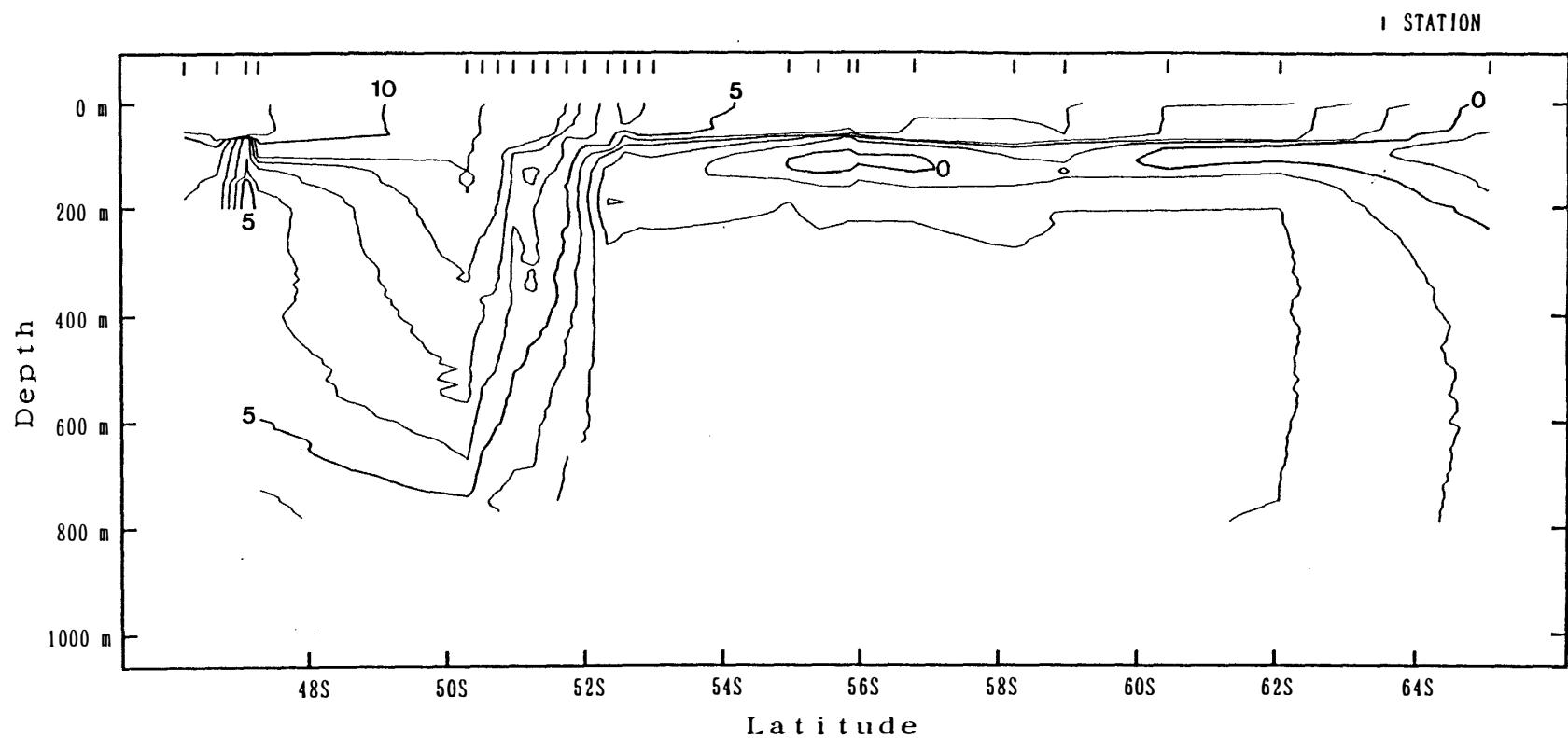


Fig. 3. The vertical profile of water temperature ($^{\circ}$ C) observed along 145 $^{\circ}$ S. Vertical bars on the top of the profile indicate sites of XBT observations.

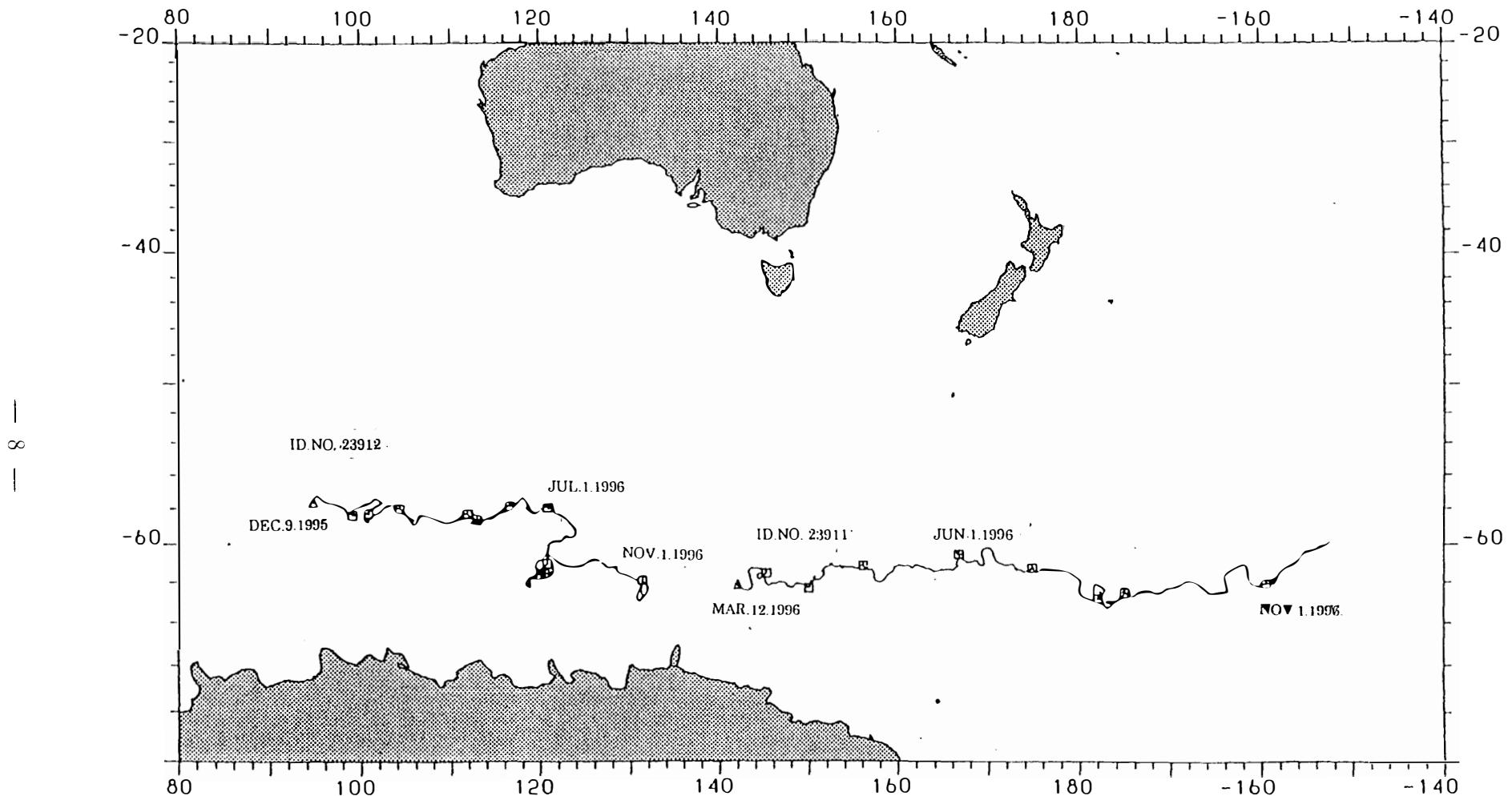


Fig. 4. Trajectories of surface drifting buoy. Triangles mark the deployment location. Squares mark the location on the first day of every month for the first buoy (ID. No. 23912) and for the second buoy (ID. No. 23911).

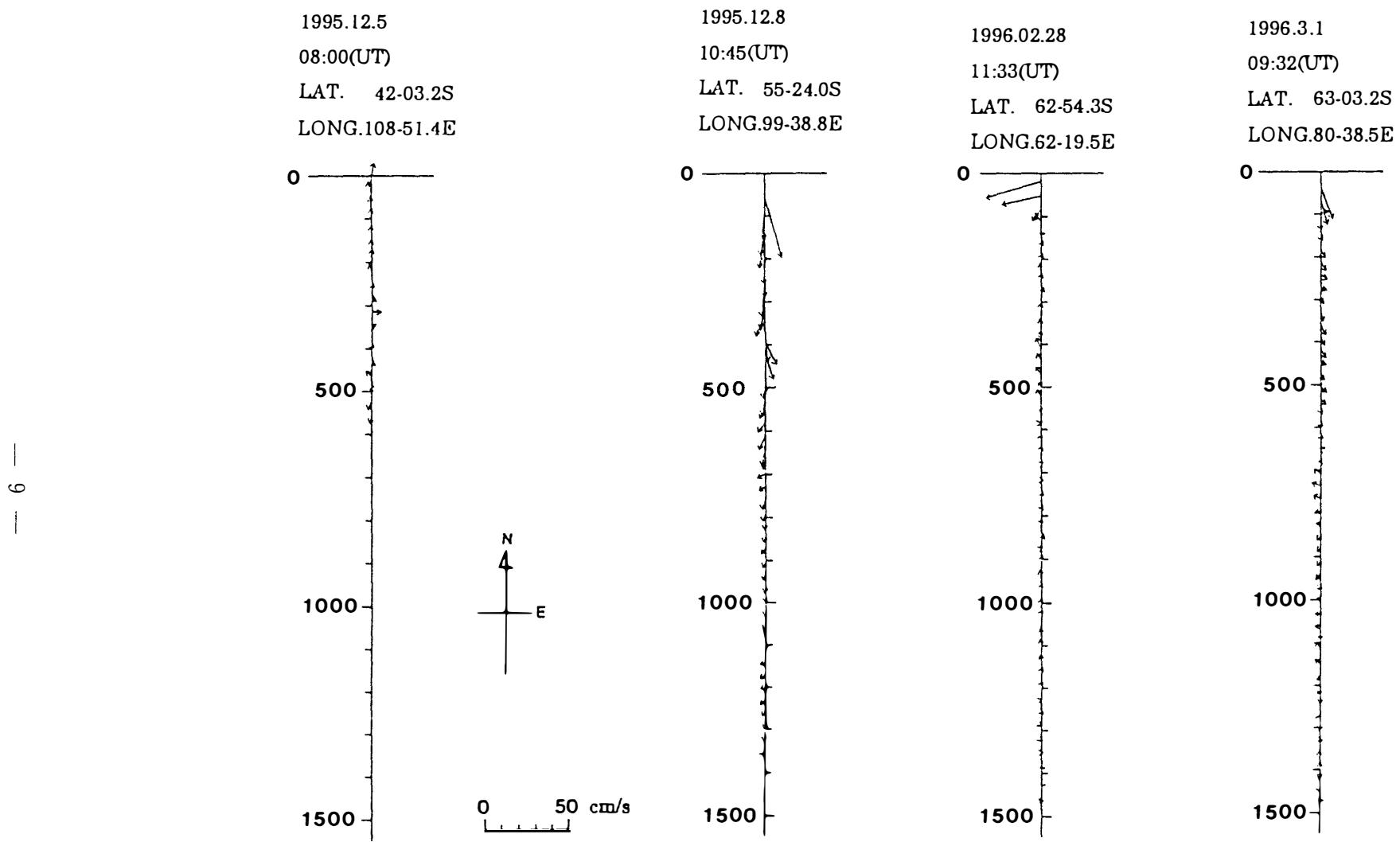


Fig. 5. Vertical profiles of current relative to the deepest layer measured with XCP. Length of arrows indicates current speed and direction of arrows indicates horizontal direction (see legends).

Table 1. Data of surface water observations on board the icebreaker "Shirase" in 1995-96.

Date	Time		Position		Air Temp	Water Temp	S	pH	D02	P04-	SiO3-	N02-	N03-	NH4-		
	UT	LMT	lat.	long.	°C					P	Si	N	N	N		
1995																
Nov 14			left Tokyo													
	15	2300	*	0800	31-18 N	137-29 E	21.1	23.7	34.877	8.22	219	0.04	3	0.05	0	0.2
	15	0700		1600	29-33	137-00	22.5	24.2	34.698	8.22	218	0.04	3	0.01	0	0.2
	16	2300	*	0800	25-50	135-15	23.8	25.8	34.844	7.87	212	0.00	5	0.03	0	0.5
	16	0700		1600	23-56	134-24	26.1	26.1	34.760	7.89	212	0.00	4	0.01	0	0.4
	17	2300	*	0800	20-04	132-36	28.5	28.3	34.559	7.93	208	0.00	3	0.01	0	0.3
	17	0700		1600	18-12	131-51	29.0	29.3	34.395	7.93	204	0.00	3	0.00	0	0.6
	18	2300	*	0800	14-21	130-13	29.5	29.2	34.111	7.59	205	0.00	3	0.00	0	0.3
	18	0700		1600	12-41	129-25	29.5	29.4	34.098	7.60	201	0.00	3	0.00	0	0.2
	19	2300	*	0800	8-51	127-48	30.1	29.4	33.551	7.74	201	0.00	3	0.00	0	0.1
	19	0700		1600	7-00	127-01	27.6	29.5	33.866	7.77	201	0.00	3	0.01	0	0.2
	20	2300	*	0800	3-54	123-52	29.8	29.5	33.778	7.74	208	0.00	3	0.00	0	0.1
	20	0700		1600	2-45	122-07	27.2	29.2	33.388	7.80	205	0.00	4	0.01	0	0.3
	21	2300	*	0800	0-02 S	119-15	27.1	30.1	33.366	7.77	206	0.00	4	0.01	0	0.1
	21	0700		1600	1-47	118-50	25.9	29.6	32.895	7.80	210	0.00	7	0.00	0	0.6
	22	2300	*	0800	5-23	117-09	28.7	29.9	33.910	7.77	203	0.00	5	0.00	0	0.2
	22	0700		1600	7-15	116-19	30.3	30.1	33.580	7.78	203	0.00	4	0.01	0	0.2
	23	2300	*	0800	10-46	115-20	28.2	29.1	33.831	7.77	202	0.01	4	0.01	0	0.2
	23	0700		1600	12-29	115-01	29.2	29.6	34.447	7.75	202	0.00	4	0.01	0	0.3
	24	2300	*	0800	16-22	114-21	27.1	27.6	34.671	7.76	214	0.03	4	0.00	0	0.2
	24	0700		1600	18-02	114-03	27.7	27.2	34.933	7.78	209	0.03	5	0.00	0	0.2
	25	2300	*	0800	21-34	113-22	23.8	25.3	35.109	7.82	215	0.04	4	0.00	0	0.4
	25	0700		1600	23-20	113-00	23.5	24.3	35.226	7.84	219	0.09	4	0.00	0	0.4
Nov 28			Arrived in Fremantle													
Dec 3			Left Fremantle													
	4	0000		0800	36-04	112-42	14.3	18.0	35.930	7.88	243	0.01	4	0.00	0	0.7
	4	0800		1600	37-43	111-35	14.6	14.6	35.273	7.87	269	0.28	3	0.08	2	0.5
	5	0100		0800	41-22	109-15	11.7	12.0	34.963	7.92	279	0.31	0	0.06	4	0.3
	5	0500		1200	42-03	108-51	11.3	11.3	34.797	7.93	284	0.74	3	0.18	11	0.2

* The time of the date of the preceding day.

Date	Time		Position		Air Temp	Water Temp	S	pH	D02	P04-	SiO3-	N02-	N03-	NH4-	
	UT	LMT	lat.	long.	°C				D02	P	Si	N	N	N	
Dec 1996	7 0300	0800	50-15 S	104-12 E	4.4	5.9	34.124	7.80	312	1.43	11	0.22	21	0.3	
	7 0900	1600	51-39	103-12	3.4	3.7	33.957	7.83	334	1.62	7	0.21	22	0.3	
	8 0100	0800	54-13	100-48	1.5	2.6	33.968	7.67	342	1.53	13	0.19	25	0.4	
	8 0800	1500	55-24	99-39	1.9	0.9	34.015	7.73	---	1.75	32	0.26	23	0.4	
	9 0100	0800	57-21	96-07	1.2	1.0	34.003	7.88	354	1.54	23	0.29	25	0.8	
	9 0500	1200	57-34	94-34	2.0	0.2	33.897	7.90	362	1.66	32	0.25	25	0.3	
	10 0200	0800	58-49	87-20	0.1	1.5	33.974	7.69	348	1.57	20	0.16	25	0.2	
	10 1000	1600	59-18	84-47	-0.8	-0.9	33.908	7.68	341	1.93	62	0.20	27	0.2	
	12 0730	1230	61-29	70-13	0.0	-1.0	33.794	7.86	365	1.82	48	0.23	23	0.8	
	Arrived at the ice edge off SYOWA station														
1996	Left at the ice edge off SYOWA stat														
	Feb 27	0500	0800	62-59	51-26	0.8	1.3	33.879	7.89	347	1.21	27	0.33	19	1.5
	27	1300	1600	63-00	55-01	0.4	1.2	33.814	7.90	347	1.45	22	0.27	21	0.6
	28	0400	0800	62-58	60-32	0.3	0.7	33.785	7.86	347	1.71	28	0.30	24	1.2
	28	0830	1230	62-54	62-20	1.5	0.5	33.747	7.85	347	1.77	33	0.30	32	1.5
	29	1200	1600	62-27	70-53	-0.4	0.3	33.719	7.79	344	1.80	41	0.26	26	0.1
	Mar 1	0300	0800	63-06	78-21	0.7	0.2	33.796	7.79	341	1.85	47	0.23	26	0.4
	1	0700	1200	63-03	80-39	1.0	0.4	33.816	7.80	342	1.88	55	0.27	27	0.5
	2	0200	0800	63-30	89-43	-0.1	0.7	33.924	7.82	345	1.59	34	0.20	25	0.8
	2	0630	1230	63-27	92-06	1.8	0.6	33.822	7.86	359	1.40	36	0.18	23	0.2
1996	3 0200	0800	63-30	101-25	0.5	-0.1	33.943	7.89	362	1.45	47	0.22	23	0.9	
	3 0600	1200	63-27	103-22	1.1	0.9	33.939	7.87	345	1.56	39	0.23	23	0.9	
	4 0100	0800	63-30	112-21	1.3	1.0	33.971	7.72	346	1.78	47	0.28	25	0.4	
	4 0500	1200	63-35	114-10	1.8	0.7	33.976	7.74	346	1.84	48	0.26	26	0.5	
	5 0000	0800	63-30	121-52	1.6	2.0	33.816	7.67	349	1.55	28	0.36	23	0.3	
	5 0400	1200	63-28	123-42	3.1	1.9	33.912	7.87	351	1.59	31	0.37	24	0.4	
	6 0000	0800	63-31	130-06	1.0	1.7	33.912	7.89	340	1.71	25	0.31	24	0.5	
	6 0400	1200	63-44	131-25	2.2	1.7	33.923	7.90	348	1.62	32	0.33	23	0.5	
	7 2300 *	0800	64-41	137-20	0.3	0.6	33.794	7.87	349	1.53	33	0.25	22	0.4	
	7 0330	1230	64-55	138-54	0.0	0.3	33.970	7.89	351	1.62	38	0.25	23	0.3	

* The time of the date of the preceding day.

Date	Time		Position		Air Temp	Water Temp	S	pH	D02	P0·1-P	SiO3-Si	NO2-N	NO3-N	NH4-N	
	UT	LMT	lat.	long.	°C					μ mol/l					
Mar 11	0500	1400	65-06 S	141-50 E	-2.0	0.2	33.992	7.97	347	1.69	38	0.23	22	0.4	
	12	2300 *	0800	62-39	141-46	1.4	1.6	33.846	8.02	339	1.64	31	0.33	22	0.2
	12	0300	1200	62-03	142-01	3.1	2.8	33.872	8.02	332	1.74	14	0.33	22	0.4
	13	2200 *	0800	58-57	143-23	3.9	4.1	33.812	7.97	320	1.61	3	0.32	20	0.1
	13	0200	1200	58-14	143-36	3.9	4.3	33.826	7.98	321	1.65	3	0.31	21	0.3
	14	0300	1300	55-55	144-27	3.8	4.4	34.425	7.89	326	1.47	1	0.24	20	0.2
	15	2300 *	0900	52-47	145-32	7.5	6.0	33.785	7.96	313	1.47	3	0.31	19	0.2

* The time of the date of the preceding day.

Table 2. XBT observation data. "S.L." indicates surface layer depth in meters.

NUMBER	POSITION			TEMPERATURE (°C)												S. L. AIR DEPTH (M) TEMP. (M) (°C)				
	DATE	TIME	LAT.	LONG	0	10	20	30	50	75	100	125	150	200	250	300	350	400	450	
					500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400	
					1500	1600	1700	1800												
SP95001	95-12-03	11.0	33-24S	114-30E	20.3	20.4	20.4	20.3	19.7	18.8	17.8	17.1	16.6	15.0	13.9	12.5	11.3	10.4	9.7	97 16.2
					9.4	8.9	7.7	7.8	7.8	7.9	7.9	7.9	7.9	7.9	-	-	-	-	-	
SP95002	95-12-04	00.0	36-04S	112-42E	18.1	18.1	18.1	18.1	18.1	18.1	17.9	16.6	16.2	14.9	14.2	13.6	12.1	10.8	10.0	0 14.4
					9.7	9.4	9.2	8.9	8.4	7.5	6.8	6.3	-	-	-	-	-	-		
SP95003	95-12-04	08.0	37-43S	111-35E	13.9	13.9	13.8	13.7	13.4	13.4	12.3	11.6	11.2	10.5	9.9	9.6	9.5	9.4	9.3	65 14.6
					9.2	8.9	8.6	8.1	7.6	7.1	6.6	6.0	5.9	-	-	-	-	-		
SP95004	95-12-05	01.0	41-22S	109-15E	11.9	11.8	11.8	11.8	11.7	11.6	11.5	11.0	10.7	10.3	10.1	10.0	10.0	9.8	9.6	0 11.7
					9.4	9.2	9.1	8.9	8.5	8.1	7.5	7.1	6.9	-	-	-	-	-		
SP95005	95-12-05	07.5	42-03S	108-51E	11.2	11.2	11.1	11.1	11.0	10.7	10.6	9.9	9.8	9.8	9.8	9.8	9.8	9.8	9.6	111 11.4
					9.4	9.0	8.7	8.1	7.5	7.0	6.3	5.8	5.6	-	-	-	-	-		
SP95006	95-12-05	13.0	43-08S	108-19E	10.5	10.5	10.5	10.5	10.4	10.4	10.3	10.2	10.2	10.1	10.1	10.0	10.0	9.8	9.8	0 9.7
					9.4	8.9	8.7	8.2	8.0	7.4	6.7	-	-	-	-	-	-	-		
SP95007	95-12-06	01.0	45-37S	106-56E	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.0	9.9	9.9	9.7	9.4	0 8.5
					9.3	8.8	8.5	8.2	7.8	7.3	6.7	-	-	-	-	-	-	-		
SP95008	95-12-06	10.0	47-15S	106-00E	7.6	7.6	7.6	7.6	7.6	7.7	8.4	7.9	7.5	6.8	6.7	6.2	6.0	5.7	4.9	63 6.8
					4.7	4.2	4.0	3.4	3.4	3.3	3.1	-	-	-	-	-	-	-		
SP95009	95-12-07	01.0	50-14S	104-12E	5.8	5.8	5.7	5.7	5.7	5.8	5.8	5.6	4.6	4.1	4.3	4.2	4.1	3.9	3.3	125 4.4
					3.3	3.2	2.9	2.8	3.1	2.9	2.6	-	-	-	-	-	-	-		
SP95010	95-12-07	09.0	51-39S	103-12E	3.5	3.5	3.5	3.5	3.5	3.5	2.4	2.2	2.0	1.9	2.3	2.3	2.5	2.4	2.4	93 3.3
					2.4	2.5	2.4	2.4	2.3	2.3	-	-	-	-	-	-	-	-		
SP95011	95-12-08	01.0	54-13S	100-48E	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.4	1.3	1.4	1.8	2.3	2.3	2.4	2.2	108 1.7
					2.4	2.3	2.3	2.3	2.3	2.3	-	-	-	-	-	-	-	-		
SP95012	95-12-08	10.7	55-24S	99-39E	1.0	1.0	1.0	1.0	0.9	0.9	0.2	0.2	0.7	2.1	2.1	2.3	2.4	2.3	2.7	0 1.7
					2.5	2.4	3.1	2.8	2.5	2.8	2.6	-	-	-	-	-	-	-		
SP95013	95-12-08	14.0	56-00S	99-08E	0.8	0.8	0.8	0.7	0.6	0.6	-0.3	-0.4	-0.1	1.7	2.0	1.9	2.1	2.0	1.9	80 1.7
					1.9	2.0	2.0	1.9	1.9	1.8	1.8	0.0	50.0	100.0	150.0	250.0	350.0	450.0	-	
SP95014	95-12-09	01.0	57-21S	96-07E	0.8	0.8	0.8	0.7	0.6	0.6	-0.3	-0.4	-0.1	1.7	2.0	1.9	2.1	2.0	1.9	84 1.0
					1.9	2.0	2.0	1.9	1.9	1.8	1.8	-	-	-	-	-	-	-		
SP95015	95-12-09	07.7	57-34S	94-34E	0.3	0.3	0.3	0.1	1.4	1.1	1.7	2.1	2.6	3.7	3.2	2.7	2.7	2.9	2.8	40 2.1
					3.0	2.9	2.7	2.6	2.7	2.8	2.8	-	-	-	-	-	-	-		

NUMBER	POSITION						TEMPERATURE (°C)												S. L. AIR TEMP.		
	DATE TIME				DEPTH (M)																
	UT	LAT.	LONG.	0	10	20	30	50	75	100	125	150	200	250	300	350	400	450	(M)	(°C)	
				500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400			
				1500	1600	1700	1800														
SP95016	95-12-09 13.0	57-55S	92-41E	0.7	0.7	0.7	0.7	0.6	-0.4	-0.5	-0.3	-0.1	0.7	1.6	2.0	1.9	2.0	2.0	66	1.6	
				2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	-	-	-	-	-	-	-			
SP95017	95-12-10 02.0	58-49S	87-20E	1.2	1.2	1.2	1.2	1.2	0.2	0.1	0.1	1.0	1.6	1.9	2.0	2.1	2.2	84	0.1		
				2.3	2.2	2.1	2.2	2.1	2.1	2.1	-	-	-	-	-	-	-	-			
SP95018	95-12-11 02.0	60-20S	81-25E	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.7	-0.3	0.6	1.8	1.9	1.9	1.9	1.9	1.9	100	1.0	
				1.9	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	-	-	-	-	-	-			
SP95019	95-12-11 10.0	60-56S	78-33E	-0.9	-1.0	-1.0	-1.0	-1.0	-1.0	-1.1	0.5	1.5	1.8	1.9	2.0	2.0	2.0	2.0	99	0.4	
				2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	-	-	-	-	-	-			
SP95020	95-12-12 09.0	61-28S	70-13E	-1.1	-1.2	-1.2	-1.2	-1.3	-1.5	-1.0	0.3	1.1	1.8	1.9	2.0	2.0	2.0	2.0	95	0.2	
				2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	-	-	-	-	-	-			
SP95021	95-12-12 15.0	61-30S	67-31E	-0.9	-1.0	-1.0	-1.0	-1.1	-1.4	-0.7	1.2	1.6	1.8	1.9	2.0	2.0	2.0	2.0	84	-0.3	
				2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	-	-	-	-	-	-			
SP95022	96-02-26 12.7	65-38S	48-44E	0.1	0.0	0.0	-0.0	-0.8	-1.6	-1.8	-1.7	-1.7	-1.7	-1.6	-1.5	-1.0	-0.5	-0.2	46	0.4	
				-0.1	0.1	-0.0	0.1	0.3	0.3	0.2	0.3	0.2	0.2	-	-	-	-	-			
SP95023	96-02-26 18.8	64-28S	49-20E	1.2	1.2	1.2	1.2	0.9	-1.6	-1.6	-1.0	-0.7	-0.4	-0.1	0.3	0.7	0.0	0.0	50	-0.5	
				0.2	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-	-	-	-	-			
SP95024	96-02-27 05.0	63-00S	51-26E	1.3	1.3	1.3	1.3	1.3	-1.2	-1.5	-0.4	0.7	1.4	1.6	1.7	1.7	1.7	1.6	58	0.8	
				1.6	1.6	1.5	1.5	1.4	1.4	1.3	-	-	-	-	-	-	-	-			
SP95025	96-02-27 13.0	63-00S	55-09E	1.2	1.2	1.2	1.2	1.2	-1.7	-1.0	0.9	1.3	1.7	1.8	1.8	2.0	1.9	1.9	58	0.4	
				1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.6	-	-	-	-	-	-	-			
SP95026	96-02-27 20.0	63-00S	57-34E	0.9	0.9	0.9	0.9	0.9	-1.0	0.6	1.2	1.5	1.7	1.7	1.7	1.8	1.8	1.7	58	-0.4	
				1.7	1.7	1.6	1.5	1.5	1.4	1.4	-	-	-	-	-	-	-	-			
SP95027	96-02-28 04.0	62-58S	60-32E	0.5	0.6	0.5	0.5	0.5	-1.1	-0.6	0.9	1.5	1.8	1.9	1.9	1.9	1.9	1.9	66	0.3	
				1.8	1.9	1.8	1.8	1.9	1.8	1.8	1.8	-	-	-	-	-	-	-			
SP95028	96-02-28 11.7	62-54S	62-20E	0.5	0.4	0.4	0.4	0.3	-1.1	-0.2	0.8	1.5	1.7	1.8	1.9	1.9	1.9	1.9	52	1.1	
				2.2	2.4	2.3	2.3	2.2	2.0	1.9	-	-	-	-	-	-	-	-			
SP95029	96-02-28 16.0	62-49S	63-51E	0.4	0.4	0.4	0.4	0.3	-1.1	-0.5	0.7	1.3	1.8	1.9	2.0	2.0	2.0	2.0	49	0.6	
				2.0	1.9	1.9	1.9	1.8	1.8	1.7	-	-	-	-	-	-	-	-			
SP95030	96-02-28 20.0	62-40S	65-51E	0.3	0.3	0.3	0.3	0.2	-0.7	0.0	1.2	1.5	1.8	1.8	1.9	2.0	2.0	2.0	48	0.1	
				2.1	2.1	2.1	2.0	1.9	1.8	1.8	1.8	-	-	-	-	-	-	-			
SP95031	96-02-29 12.0	62-27S	70-53E	0.3	0.3	0.3	0.3	0.3	-1.1	0.3	1.1	1.5	1.9	1.9	2.0	2.0	2.0	2.0	57	-0.6	
				1.9	1.9	1.9	1.9	1.8	1.8	1.8	2.1	-	-	-	-	-	-	-			

NUMBER	POSITION			TEMPERATURE (°C)															S. L. AIR TEMP.		
	DATE TIME		LAT.	LONG.	DEPTH (M)															(M)	(°C)
	UT				0	10	20	30	50	75	100	125	150	200	250	300	350	400	450		
					500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400		
					1500	1600	1700	1800													
SP95032	96-02-29	19.0	62-39S	74-16E	0.4	0.4	0.4	0.4	3.1	6.1	5.9	6.8	7.3	7.2	7.3	7.3	7.4	5.5	5.2	0	1.4
					5.1	5.1	4.7	4.5	4.4	4.1	4.7	-	-	-	-	-	-	-	-		
SP95034	96-03-01	11.0	63-03S	80-39E	0.1	0.1	0.1	0.1	0.1	0.0	1.4	1.6	1.7	1.8	1.9	1.9	1.9	1.9	1.8	50	0.6
					1.8	1.8	1.7	1.7	1.7	1.7	1.6	-	-	-	-	-	-	-	-		
SP95036	96-03-01	18.0	63-17S	85-29E	0.1	0.2	0.2	0.2	0.1	0.2	1.1	1.4	1.3	1.6	2.0	2.0	2.0	1.9	1.8	48	0.6
					1.8	1.7	1.7	1.7	1.6	1.6	1.5	-	-	-	-	-	-	-	-		
SP95037	96-03-02	02.0	63-30S	89-43E	0.6	0.6	0.6	0.6	0.5	-1.0	-0.7	-0.4	0.1	0.9	1.0	1.2	1.3	1.3	1.3	50	-0.1
					1.4	1.4	1.3	1.2	1.2	1.2	1.1	-	-	-	-	-	-	-	-		
SP95038	96-03-02	08.8	63-27S	92-06E	0.4	0.4	0.3	0.3	-0.8	-0.6	-0.2	0.0	0.5	1.1	1.3	1.3	1.3	1.3	1.2	38	1.3
					1.2	1.2	1.2	1.1	1.0	1.0	1.0	-	-	-	-	-	-	-	-		
SP95039	96-03-02	14.0	63-29S	94-58E	0.4	0.4	0.4	0.3	-0.7	-0.9	-0.8	-0.4	-0.4	1.1	0.9	1.1	1.2	1.2	1.2	40	0.9
					1.2	1.1	1.1	1.0	1.0	0.9	0.9	-	-	-	-	-	-	-	-		
SP95041	96-03-02	18.0	63-30S	101-25E	-0.2	-0.2	-0.3	-0.3	-0.9	-1.5	-1.6	-1.5	-1.4	-0.7	-0.2	0.1	0.4	0.5	0.4	46	0.7
					0.4	0.5	0.3	0.3	0.2	0.2	0.1	0.1	-	-	-	-	-	-	-		
SP95042	96-03-03	08.3	63-27S	103-22E	0.9	0.8	0.7	0.6	-0.4	-0.6	0.5	0.9	1.0	1.3	1.4	1.3	1.5	1.5	1.5	38	1.4
					1.5	1.5	1.4	1.2	1.1	1.1	0.9	-	-	-	-	-	-	-	-		
SP95043	96-03-03	14.0	63-30S	106-22E	-0.1	-0.2	-0.6	-0.9	-1.4	-1.7	-1.6	-1.4	-0.9	0.1	0.8	1.2	1.3	1.3	1.3	0	-0.2
					1.2	1.2	1.2	1.1	1.1	1.0	-	-	-	-	-	-	-	-	-		
SP95044	96-03-03	17.0	63-27S	108-02E	-0.2	-0.2	-0.2	-0.3	-1.3	-1.4	-1.1	-0.3	0.3	1.0	1.2	1.2	1.2	1.2	1.2	31	-0.2
					1.1	1.1	1.0	1.0	1.0	0.9	-	-	-	-	-	-	-	-	-		
SP95045	96-03-04	01.0	63-30S	112-21E	0.7	0.7	0.7	0.7	-0.1	0.9	1.2	1.2	1.3	1.5	1.5	1.5	1.5	1.5	1.4	39	0.9
					1.4	1.4	1.4	1.3	1.3	1.2	-	-	-	-	-	-	-	-	-		
SP95046	96-03-04	07.3	63-35S	114-10E	0.2	0.1	0.1	0.1	-0.5	0.3	0.9	1.1	1.2	1.3	1.3	1.3	1.3	1.2	1.2	34	2.4
					1.1	1.1	1.0	1.0	0.9	0.9	-	-	-	-	-	-	-	-	-		
SP95047	96-03-04	13.0	63-29S	116-50E	0.8	0.8	0.5	-0.6	-0.9	-0.3	0.4	1.0	1.3	1.4	1.4	1.4	1.3	1.3	1.2	20	1.2
					1.2	1.2	1.1	1.1	1.0	1.0	-	-	-	-	-	-	-	-	-		
SP95048	96-03-04	16.0	63-29S	118-13E	1.0	1.1	1.1	0.2	-1.1	-0.6	0.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	28	0.7
					1.2	1.2	1.1	1.1	1.0	1.0	-	-	-	-	-	-	-	-	-		
SP95049	96-03-05	00.0	63-30S	121-52E	1.8	1.8	1.8	1.6	-0.2	0.4	1.1	1.4	1.5	1.5	1.6	1.7	1.7	1.7	1.8	29	1.6
					1.7	1.6	1.6	1.6	1.5	1.5	-	-	-	-	-	-	-	-	-		
SP95050	96-03-05	06.9	63-27S	123-42E	1.9	1.9	1.8	1.8	-0.0	-0.2	0.9	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	35	2.1
					1.5	1.5	1.4	1.4	1.3	1.3	-	-	-	-	-	-	-	-	-		

NUMBER	POSITION			TEMPERATURE (°C)															S. L. AIR TEMP.			
	DATE	TIME	LAT.	LONG.	DEPTH (M)															(M)	(°C)	
					0	10	20	30	50	75	100	125	150	200	250	300	350	400	450			
SP95051	96-03-05	12.0	63-30S	125-42E	1.8	1.8	1.8	1.5	-0.2	-0.0	0.8	1.2	1.3	1.4	1.5	1.6	3.5	3.5	2.2	21	1.5	
					1.9	2.1	2.2	2.3	2.5	2.4	-	-	-	-	-	-	-	-	-			
SP95052	96-03-05	16.0	63-31S	127-15E	1.9	1.9	1.9	1.8	0.2	-0.3	0.7	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.5	42	1.7	
					1.5	1.5	1.5	1.5	1.4	1.4	-	-	-	-	-	-	-	-	-			
SP95053	96-03-06	00.0	63-31S	130-06E	1.6	1.5	1.5	1.5	0.3	-0.4	1.0	1.6	1.8	1.9	2.0	1.8	1.9	1.7	2.0	45	1.0	
					2.0	2.0	1.9	1.9	1.8	1.7	-	-	-	-	-	-	-	-	-			
SP95054	96-03-06	06.5	63-44S	131-25E	1.5	1.5	1.4	1.4	-0.4	0.8	1.3	1.4	1.5	1.6	1.6	1.7	1.6	1.7	1.7	34	1.9	
					1.6	1.6	1.5	1.5	1.4	1.4	-	-	-	-	-	-	-	-	-			
SP95060	96-03-11	01.5	65-03S	141-45E	-0.4	-0.4	-0.4	-0.5	-0.6	-1.5	-1.6	-1.5	-1.5	-1.2	-0.4	0.2	0.4	0.6	0.7	0.7	51	0.7
					0.8	0.7	0.8	0.8	0.8	0.7	-	-	-	-	-	-	-	-	-			
SP95064	96-03-12	06.0	62-04S	142-08E	2.6	2.5	2.5	2.5	2.5	1.8	-0.4	0.7	1.5	2.0	2.1	2.1	2.2	2.1	2.1	72	3.3	
					2.1	2.1	2.1	2.0	2.0	2.0	-	-	-	-	-	-	-	-	-			
SP95065	96-03-12	14.0	60-27S	142-47E	3.0	2.9	2.9	3.0	2.9	0.9	-0.3	-0.1	1.3	2.0	2.1	2.2	2.2	2.2	2.3	67	3.2	
					2.3	2.2	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-	-			
SP95066	96-03-12	22.0	58-57S	143-23E	4.0	4.0	4.0	4.0	4.0	1.9	1.1	1.0	1.0	1.9	2.1	2.3	2.3	2.5	2.7	94	3.9	
					2.8	2.5	2.5	2.5	2.5	2.5	-	-	-	-	-	-	-	-	-			
SP95067	96-03-13	04.4	58-14S	143-36E	4.1	4.1	4.0	4.0	3.9	3.8	1.2	0.8	0.9	1.8	1.9	2.2	2.2	2.2	2.2	71	5.9	
					2.3	2.3	2.3	2.3	2.3	2.2	2.2	-	-	-	-	-	-	-	-			
SP95068	96-03-13	10.0	56-47S	144-10E	4.2	4.2	4.0	4.0	3.9	3.4	0.1	-0.2	0.4	1.7	2.1	2.2	2.2	2.2	2.3	72	4.8	
					2.4	2.4	2.3	2.3	2.3	2.2	-	-	-	-	-	-	-	-	-			
SP95069	96-03-13	14.0	55-59S	144-29E	4.6	4.6	4.5	4.5	4.3	1.0	0.0	0.1	1.0	1.8	2.1	2.2	2.2	2.2	2.3	61	4.5	
					2.3	2.2	2.2	2.2	2.2	2.1	-	-	-	-	-	-	-	-	-			
SP95070	96-03-14	05.0	55-52S	144-29E	4.2	4.2	4.2	4.2	4.2	0.7	-0.1	-0.2	0.4	1.8	2.1	2.2	2.2	2.3	59	3.6		
					2.3	2.2	2.2	2.2	2.2	2.1	-	-	-	-	-	-	-	-	-			
SP95071	96-03-14	10.0	55-25S	144-44E	4.2	4.2	4.2	4.2	4.2	1.0	-0.1	-0.3	0.3	1.7	2.0	2.4	2.4	2.4	2.3	60	3.7	
					2.4	2.3	2.3	2.2	2.2	2.3	2.3	-	-	-	-	-	-	-	-			
SP95072	96-03-14	14.0	55-00S	144-44E	4.6	4.6	4.6	4.6	4.6	1.7	0.2	0.0	1.0	2.1	2.2	2.2	2.3	2.4	2.5	59	4.0	
					2.4	2.3	2.2	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-			
SP95073	96-03-14	22.0	53-01S	145-24E	5.6	5.6	5.5	5.3	5.3	3.7	2.3	1.6	1.3	1.3	2.1	2.2	2.4	2.4	2.5	67	6.7	
					2.5	2.5	2.6	2.6	2.6	2.7	2.6	2.6	-	-	-	-	-	-	-			
SP95074	96-03-15	01.0	52-48S	145-32E	6.1	6.1	6.1	6.0	5.5	3.8	2.1	1.3	1.2	1.4	2.1	2.2	2.3	2.3	2.4	32	7.3	
					2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	-	-	-	-	-	-	-			

NUMBER	POSITION			TEMPERATURE (C C)															S. L. AIR TEMP.		
	DATE	TIME	LAT.	LONG.	DEPTH (M)															(M)	(C C)
					0	10	20	30	50	75	100	125	150	200	250	300	350	400	450		
SP95075	96-03-15	02.0	52-36S	145-36E	6.2	6.2	6.2	6.2	5.6	3.5	1.8	1.5	1.3	1.1	2.0	2.3	2.3	2.4	2.4	46	7.7
					2.5	2.3	2.4	2.4	2.5	2.5	-	-	-	-	-	-	-	-	-		
SP95076	96-03-15	03.0	52-21S	145-40E	5.7	5.7	5.6	5.5	5.4	5.4	3.0	2.0	1.4	1.1	1.8	2.1	2.3	2.4	2.4	80	8.1
					2.4	2.4	2.4	2.4	2.4	2.4	2.4	-	-	-	-	-	-	-	-		
SP95077	96-03-15	04.0	52-01S	145-45E	6.5	6.5	6.6	6.5	6.6	5.5	4.4	3.7	3.5	3.4	3.8	3.6	3.5	3.3	3.4	67	8.3
					3.2	3.1	3.1	-	-	-	-	-	-	-	-	-	-	-	-		
SP95078	96-03-15	05.0	51-46S	145-50E	7.9	7.9	7.9	7.3	7.0	5.7	5.8	5.4	5.1	5.1	4.9	4.6	4.5	4.2	3.9	24	8.5
					3.9	3.4	3.3	3.1	2.9	2.8	-	-	-	-	-	-	-	-	-		
SP95079	96-03-15	06.0	51-29S	145-53E	8.8	8.8	8.8	8.8	8.8	7.2	6.9	6.5	5.8	5.2	5.1	5.4	5.4	5.1	4.5	62	8.6
					4.4	4.1	3.9	3.6	3.4	3.2	-	-	-	-	-	-	-	-	-		
SP95080	96-03-15	07.0	51-16S	146-04E	8.9	8.6	8.6	8.6	8.6	9.0	6.8	6.7	7.1	6.1	6.3	6.3	6.2	5.4	5.1	71	8.2
					4.8	4.4	4.2	4.1	4.0	3.7	-	-	-	-	-	-	-	-	-		
SP95081	96-03-15	08.0	50-59S	146-08E	8.9	8.9	8.9	8.9	9.0	9.0	6.9	6.7	6.8	6.4	5.9	5.8	5.7	5.7	5.4	81	8.3
					5.1	4.8	4.6	4.2	4.0	3.8	-	-	-	-	-	-	-	-	-		
SP95082	96-03-15	09.0	50-45S	146-11E	8.8	8.8	8.8	8.8	8.8	8.7	8.5	8.7	8.5	7.9	7.8	7.3	7.0	6.5	6.3	57	8.8
					6.0	5.5	5.1	4.6	4.3	3.8	-	-	-	-	-	-	-	-	-		
SP95083	96-03-15	10.0	50-32S	146-14E	9.0	9.0	9.0	9.0	9.0	8.7	8.6	8.6	8.9	8.5	8.0	7.5	7.2	7.1	6.5	60	9.0
					6.4	5.9	5.4	5.1	4.6	4.1	-	-	-	-	-	-	-	-	-		
SP95084	96-03-15	11.0	50-19S	146-18E	9.3	9.3	9.3	9.3	9.3	9.1	9.0	9.0	9.1	8.8	8.5	8.2	7.9	7.6	7.4	60	9.4
					7.1	7.2	6.6	6.1	5.6	4.8	-	-	-	-	-	-	-	-	-		
SP95085	96-03-16	08.0	47-19S	147-08E	11.1	11.1	11.1	11.1	11.2	10.0	9.4	7.0	6.5	5.5	5.6	5.6	5.6	5.8	5.7	62	12.7
					5.4	5.3	4.9	4.7	4.3	3.9	3.7	-	-	-	-	-	-	-	-		
SP95086	96-03-16	09.0	47-09S	147-12E	11.2	11.2	11.2	11.2	11.2	6.2	6.0	5.9	4.4	4.1	-	-	-	-	-	69	12.6
SP95087	96-03-16	11.0	46-44S	147-23E	11.2	11.2	11.2	11.2	11.0	9.5	9.1	8.9	8.7	8.5	8.7	8.6	8.0	7.7	76	12.4	
					7.6	7.1	6.8	6.6	6.2	5.7	5.1	-	-	-	-	-	-	-			
SP95088	96-03-16	13.0	46-15S	147-31E	11.6	11.6	11.6	11.6	11.5	9.3	9.3	9.3	9.1	9.0	8.9	8.8	8.8	8.6	8.4	53	12.0
					7.7	7.7	7.4	6.7	6.4	6.1	5.7	-	-	-	-	-	-	-			

Table 3. Serial observation data.

Station 1

Meteorological observation

Date : December 5, 1995	Weather	Time(UT) : 05:00	Wind Direction : SW
Time(UT) : 05:00	Weather	: b	Velocity : 10m/s
Latitude : 42°03.2S	Air Temperature (dry)	: 11.2°C	Humidity : 62 %
Longitude : 108°51.4E	Air Temperature (wet)	: 4.3°C	Wave : SW /3
Depth : 4300m	Atmospheric Pressure	: 1013.1hPa	Swell : SW /3

Visibility : 30km

Depth (m)	T (°C)	S	pH	Observed					Interpolated					
				D02	PO4-P	SiO3-Si (μmol/l)	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	11.30	34.797	7.93	284	0.74	3	0.18	11	0.2	0	11.30	34.796	26.580	0.000
19	11.13	34.787	7.92	284	0.79	5	0.19	10	--	10	11.21	34.792	26.590	0.015
29	11.04	34.782	7.91	291	0.78	5	0.18	10	0.3	20	11.12	34.786	26.610	0.029
48	10.98	34.784	7.90	309	0.76	5	0.18	11	--	30	11.03	34.781	26.620	0.043
75	10.79	34.791	7.89	304	0.78	5	0.20	10	0.4	50	10.96	34.783	26.630	0.072
100	10.66	34.807	7.86	289	0.79	5	0.22	11	0.4	75	10.79	34.790	26.670	0.107
124	10.22	34.779	7.88	288	0.88	5	0.32	11	0.4	100	10.66	34.807	26.710	0.142
152	9.79	34.758	7.85	285	0.87	5	0.04	14	0.3	125	10.18	34.776	26.770	0.176
197	9.78	34.761	7.83	--	0.93	7	0.01	14	0.3	150	9.80	34.758	26.820	0.208
250	9.75	34.751	7.82	286	0.94	7	0.01	13	0.4	200	9.77	34.760	26.820	0.272
303	9.77	34.755	7.83	285	0.91	5	0.01	12	--	250	9.75	34.751	26.820	0.336
400	9.78	34.763	7.82	282	1.00	5	0.00	14	--	300	9.77	34.754	26.820	0.401
499	9.46	34.714	7.82	279	1.04	5	0.00	15	0.2	400	9.78	34.762	26.820	0.532
602	8.86	34.623	7.78	258	1.28	8	0.00	18	0.3	500	9.44	34.711	26.840	0.664
703	7.91	34.526	7.71	233	1.54	13	0.01	23	0.3	600	8.84	34.621	26.870	0.795
801	6.83	34.449	7.72	230	1.78	19	0.01	24	--	700	7.90	34.525	26.940	0.923
904	5.71	34.391	7.68	226	2.00	25	0.00	28	--	800	6.79	34.445	27.030	1.043
1002	4.75	34.344	7.68	--	--	--	--	--	0.2	1000	4.72	34.345	27.210	1.255
1253	3.41	34.382	7.66	217	2.29	50	0.00	33	--	1200	3.55	34.374	27.360	1.435
1503	2.90	34.489	7.63	--	--	--	--	--	--	1500	2.89	34.490	27.510	1.660
2999	1.62	34.749	7.56	215	2.22	107	0.00	31	--	2000	2.32	34.619	27.660	1.964

Station 2

Meteorological observation

Date	:	December 8, 1995	Weather	Time(UT)	:	08:00	Wind Direction	:	W
Time(UT)	:	08:00	Weather	:	c	Velocity	:	8m/s	
Latitude	:	55-24.0S	Air Temperature (dry)	:	1.8°C	Humidity	:	82 %	
Longitude	:	99-38.8E	Air Temperature (wet)	:	-1.3°C	Wave	:	W /4	
Depth	:	3700m	Atmospheric Pressure	:	1004.0hPa	Swell	:	WSW/6	

Visibility : 30km

Depth (m)	Observed								Interpolated					
	T (°C)	S	pH	D02	P04-P	SI03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.90	34.015	7.73	---	1.76	--	0.25	24	0.4	0	0.90	34.014	27.280	0.000
20	1.02	33.987	7.79	---	1.71	25	0.25	26	0.3	10	0.99	33.994	27.260	0.008
32	0.98	33.990	7.78	---	1.72	26	0.25	27	0.4	20	1.02	33.986	27.250	0.016
53	0.92	33.991	7.78	359	1.72	26	0.24	25	0.4	30	0.99	33.989	27.260	0.025
78	0.87	33.994	7.78	358	1.75	28	0.24	20	0.3	50	0.93	33.990	27.260	0.041
104	-0.19	34.018	7.75	347	2.07	41	0.22	28	--	75	0.88	33.992	27.260	0.062
127	-0.05	34.045	7.74	339	2.13	42	0.22	22	--	100	0.12	34.015	27.340	0.081
153	-0.39	34.068	7.73	348	2.15	46	0.22	22	--	125	0.06	34.043	27.360	0.099
205	1.05	34.271	7.66	267	2.35	61	0.05	31	0.4	150	0.36	34.065	27.390	0.117
252	2.09	34.426	7.62	208	2.50	70	0.01	29	0.4	200	0.95	34.256	27.470	0.150
305	2.15	34.492	7.61	199	2.47	75	0.01	32	0.2	250	2.08	34.424	27.530	0.180
406	2.16	34.579	7.62	193	2.45	81	0.01	33	0.3	300	2.15	34.489	27.570	0.208
506	2.11	34.635	7.62	191	2.40	83	0.00	31	0.3	400	2.16	34.575	27.640	0.259
605	1.86	34.671	7.62	200	2.34	--	0.00	30	--	500	2.11	34.633	27.690	0.305
703	1.96	34.696	7.62	197	2.31	90	0.01	--	--	600	1.87	34.670	27.740	0.346
805	1.85	34.711	7.63	200	2.29	93	0.00	--	0.4	700	1.95	34.696	27.750	0.385
904	1.78	34.726	7.62	207	2.26	94	0.00	31	0.4	800	1.85	34.710	27.770	0.423
1006	1.70	34.735	7.62	211	2.25	96	0.00	31	0.3	1000	1.70	34.734	27.800	0.494
1255	1.60	34.751	7.61	212	2.21	100	0.00	--	--	1200	1.63	34.749	27.820	0.562
1504	1.34	34.741	7.61	218	2.23	108	0.00	31	0.3	1500	1.33	34.741	27.500	0.660
2003	0.94	34.722	7.59	218	2.26	120	0.01	32	0.3	2000	0.93	34.720	26.500	0.815
2997	0.27	34.691	7.57	231	2.34	--	0.00	28	--	2500	0.57	34.703	25.700	0.961
3261	0.15	34.687	7.57	239	2.34	136	0.00	--	--	3000	0.24	34.689	25.000	1.094

Station 3

Meteorological observation

Date	: December 9, 1995	Weather	Time(UT)	: 03:00	Wind	Direction	: NW
Time(UT)	: 05:00	Weather		: r	Velocity		: 10m/s
Latitude	: 57-34. 0S	Air Temperature (dry)		: 1. 9°C	Humidity		: 95 %
Longitude	: 94-33. 5E	Air Temperature (wet)		: 1. 2°C	Wave		: NW /3
Depth	: 4200m	Atmospheric Pressure		: 986. 4hPa	Swell		: W /4
					Visibility		: 15km

Depth (m)	Observed							Interpolated						
	T (°C)	S	pH	D02	P04-P	SI03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.20	33.897	7.90	363	1.66	32	0.24	25	0.3	0	0.20	33.896	27.230	0.000
20	0.21	33.899	7.88	363	1.65	28	0.23	26	0.5	10	0.21	33.897	27.230	0.009
32	0.19	33.901	7.88	362	1.65	28	0.24	26	0.3	20	0.21	33.899	27.230	0.017
52	-0.02	33.931	7.88	365	1.62	26	0.27	24	0.4	30	0.20	33.901	27.230	0.026
77	-0.19	33.932	7.87	360	1.78	32	0.26	--	0.4	50	0.01	33.930	27.260	0.042
102	-0.93	33.985	7.83	344	2.15	46	0.21	28	--	75	0.18	33.931	27.270	0.062
128	-0.52	34.070	7.79	321	2.22	52	0.17	28	--	100	0.92	33.979	27.340	0.082
153	0.15	34.186	7.75	286	2.32	58	0.09	32	0.4	125	0.60	34.058	27.390	0.100
206	1.39	34.404	7.71	221	2.45	70	0.01	34	0.4	150	0.10	34.177	27.460	0.116
254	1.70	34.490	7.70	205	2.45	78	0.00	34	--	200	1.31	34.389	27.560	0.145
305	1.71	34.561	7.69	194	2.44	81	0.00	34	0.3	250	1.70	34.484	27.600	0.172
407	1.77	34.617	7.70	196	2.38	85	0.00	34	0.3	300	1.70	34.558	27.660	0.196
504	1.83	34.672	7.70	194	2.34	86	0.00	31	0.3	400	1.77	34.613	27.700	0.239
605	1.80	34.690	7.71	196	2.29	--	0.00	--	0.2	500	1.83	34.672	27.740	0.279
704	1.78	34.713	7.70	197	2.25	--	0.00	--	--	600	1.80	34.689	27.760	0.317
804	1.73	34.727	7.70	202	2.23	90	0.00	30	--	700	1.78	34.712	27.780	0.353
905	1.70	34.734	7.72	205	2.22	93	0.00	31	0.3	800	1.73	34.726	27.790	0.388
1004	1.66	34.744	7.71	207	2.19	95	0.00	31	--	1000	1.66	34.744	27.810	0.456
1259	1.45	34.742	7.71	213	2.18	100	0.00	31	0.4	1200	1.50	34.742	27.820	0.522
1508	1.19	34.729	7.69	215	2.23	110	0.00	31	--	1500	1.18	34.728	27.840	0.618
2003	0.79	34.708	7.67	217	2.29	120	0.00	32	0.4	2000	0.78	34.707	27.850	0.770
2501	0.48	34.693	7.66	229	2.31	128	0.00	32	0.4	2500	0.47	34.692	27.850	0.913
3000	0.21	34.687	7.65	231	2.32	132	0.00	28	--	3000	0.20	34.685	27.860	1.045
3271	0.13	34.681	7.64	233	2.34	133	0.00	32	--					

Station B1

Meteorological observation

Date : December 12, 1995	Weather	Time(UT) : 04:00	Wind Direction : W
Time(UT) : 07:00	Weather	: c	Velocity : 12m/s
Latitude : 61°28.5S	Air Temperature (dry)	: 0.0°C	Humidity : 93 %
Longitude : 70°13.1E	Air Temperature (wet)	: -1.0°C	Wave : W /4
Depth : 4223m	Atmospheric Pressure	: 993.3hPa	Swell : NW /3
			Visibility : 15km

Observed									Interpolated					
Depth (m)	T (°C)	S	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
				(μmol/l)										
0	-1.00	33.793	7.86	365	1.82	44	0.23	23	--	0	-1.00	33.793	27.200	0.000
9	-1.13	33.794	7.86	360	1.88	43	0.22	21	--	10	-1.13	33.792	27.200	0.009
21	-1.14	33.785	7.86	367	1.88	44	0.22	--	--	20	-1.13	33.786	27.190	0.018
30	-1.15	33.793	7.85	360	1.91	44	0.21	20	--	30	-1.15	33.793	27.200	0.026
51	-1.21	33.812	7.84	361	1.93	43	0.21	20	--	50	-1.21	33.811	27.220	0.044
75	-1.38	33.998	7.81	333	2.07	52	0.17	--	--	75	-1.36	34.004	27.380	0.063
101	-0.72	34.148	7.76	287	2.32	60	0.14	25	--	100	0.72	34.147	27.470	0.080
129	0.57	34.336	7.70	231	2.41	72	0.07	30	--	125	0.45	34.316	27.550	0.094
150	1.17	34.436	7.68	209	2.47	77	0.03	34	--	150	1.19	34.438	27.600	0.107
202	1.79	34.526	7.66	184	2.48	83	0.01	--	--	200	1.79	34.525	27.630	0.132
255	1.91	34.572	7.67	183	2.45	86	0.01	--	--	250	1.90	34.569	27.660	0.155
301	1.96	34.603	7.66	179	2.43	87	0.01	30	--	300	1.96	34.603	27.680	0.177
402	2.00	34.659	7.66	182	2.37	88	0.00	31	--	400	2.00	34.659	27.720	0.219
502	1.99	34.692	7.66	185	2.29	90	0.00	--	--	500	1.99	34.692	27.750	0.259
603	1.96	34.712	7.67	191	2.23	90	0.00	30	--	600	1.96	34.712	27.770	0.296
700	1.91	34.727	7.67	190	2.22	91	0.00	30	--	700	1.91	34.728	27.780	0.333
802	1.84	34.737	7.67	--	2.19	93	0.00	31	--	800	1.84	34.737	27.800	0.368
902	1.77	34.745	7.66	198	2.15	94	0.00	31	--	1000	1.69	34.739	27.810	0.436
999	1.69	34.740	7.66	--	2.15	96	0.00	--	--	1200	1.50	34.743	27.830	0.503
1250	1.47	34.745	7.65	207	2.15	102	0.00	--	--					
1291	1.43	34.745	7.64	208	2.16	104	0.00	--	--					

Station 4

Meteorological observation

Date	:	February 28, 1996	Weather	Time (UT)	:	09:00	Wind	Direction	:	E
Time (UT)	:	08:00	Weather		:	s	Velocity		:	8m/s
Latitude	:	62-54.3S	Air Temperature (dry)		:	1.5°C	Humidity		:	91 %
Longitude	:	62-19.5E	Air Temperature (wet)		:	0.1°C	Wave		:	E /3
Depth	:	4450m	Atmospheric Pressure		:	967.5hPa	Swell		:	ESE/3
							Visibility		:	20km

Depth (m)	Observed								Interpolated					
	T (°C)	S	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.50	33.746	7.85	348	1.77	31	0.28	26	--	0	0.5	33.75	27.090	0.000
31	0.43	33.734	7.86	358	1.77	31	0.32	26	--	10	0.477	33.74	27.090	0.010
52	0.40	33.798	7.85	346	1.85	34	0.25	27	--	20	0.455	33.74	27.090	0.020
76	-0.03	34.148	7.78	305	2.31	60	0.24	32	--	30	0.434	33.73	27.080	0.030
103	-0.63	34.324	7.75	244	2.44	70	0.10	34	0.3	50	0.404	33.79	27.130	0.049
125	0.44	34.456	7.72	219	2.47	78	0.00	35	0.4	75	0.027	34.15	27.440	0.069
152	1.16	34.547	7.70	204	2.51	83	0.03	36	0.4	100	0.584	34.31	27.590	0.083
204	1.67	---	7.68	197	2.48	83	0.01	35	0.4	125	0.439	34.46	27.660	0.095
254	1.82	34.624	7.68	195	2.44	85	0.00	--	0.3	150	1.146	34.55	27.690	0.106
405	1.95	34.701	7.71	200	2.31	--	0.00	33	--	200	1.658	34.55	27.660	0.127
506	1.91	34.722	7.72	206	2.26	--	0.00	33	0.3	250	1.812	34.62	27.710	0.149
705	1.81	34.737	7.72	214	2.20	90	0.00	31	0.3	300	1.857	34.65	27.730	0.169
804	1.70	34.743	7.73	214	2.19	93	0.00	32	0.3	400	1.945	34.70	27.760	0.207
905	1.63	34.742	7.72	219	2.18	94	0.01	32	--	500	1.911	34.72	27.780	0.243
1254	1.37	34.727	7.72	227	2.20	107	0.01	32	0.3	600	1.863	34.73	27.790	0.278
1503	1.14	34.704	7.71	226	2.28	--	0.00	33	--	700	1.805	34.74	27.800	0.312
2501	0.45	34.689	7.68	229	2.32	126	0.00	33	--	800	1.703	34.74	27.810	0.346
3001	0.22	34.681	7.68	232	2.32	127	0.00	32	0.3	1000	1.559	34.74	27.820	0.411
3497	0.04	34.670	7.66	242	2.32	132	0.00	33	--	1200	1.404	34.73	27.820	0.477
3832	-0.06	34.671	7.66	248	2.32	134	0.00	32	0.4	1500	1.127	34.70	27.820	0.575

Station 5

Meteorological observation

Date : March 1, 1996	Weather Time(UT) : 07:00	Wind Direction : NW
Time(UT) : 07:00	Weather : c	Velocity : 13m/s
Latitude : 63°03'.2S	Air Temperature (dry) : 0.3°C	Humidity : 80 %
Longitude : 80°38'.5E	Air Temperature (wet) : -2.8°C	Wave : NW /4
Depth : 3420m	Atmospheric Pressure : 965.1hPa	Swell : NW /3
		Visibility : 25km

Depth (m)	Observed									Interpolated				
	T (°C)	S	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.40	33.816	7.80	342	1.88	46	0.27	27	0.5	0	0.40	33.815	27.150	0.000
11	0.22	33.802	7.81	346	1.88	47	0.25	28	0.4	10	0.23	33.802	27.150	0.009
22	0.22	33.805	7.83	346	1.88	46	0.26	27	0.5	20	0.22	33.804	27.150	0.018
35	0.22	33.801	7.82	349	1.88	46	0.25	28	0.5	30	0.22	33.802	27.150	0.028
53	0.22	33.996	7.79	311	2.09	57	0.23	29	0.5	50	0.22	33.958	27.280	0.045
80	-0.10	34.324	7.74	248	2.37	74	0.17	33	0.3	75	0.08	34.268	27.540	0.062
103	0.22	34.450	7.72	218	2.44	81	0.12	34	0.3	100	0.18	34.445	27.670	0.074
133	0.87	34.507	7.71	206	2.45	84	0.05	34	0.4	125	0.70	34.490	27.680	0.085
155	1.25	34.578	7.70	194	2.44	87	0.02	34	0.3	150	1.20	34.566	27.700	0.095
205	1.63	---	---	--	--	--	--	--	--	200	1.61	34.508	27.630	0.117
255	1.93	34.643	7.70	193	2.37	89	0.01	33	0.3	250	1.91	34.636	27.710	0.140
301	1.80	34.684	7.72	194	2.31	90	0.01	32	0.3	300	1.80	34.682	27.750	0.159
404	1.79	34.715	7.72	199	2.25	90	0.01	32	0.3	400	1.79	34.715	27.780	0.194
504	1.84	34.727	7.73	203	2.20	93	0.00	31	0.3	500	1.84	34.727	27.790	0.229
603	1.75	34.730	7.73	207	2.20	94	0.01	31	0.3	600	1.75	34.729	27.800	0.263
704	1.64	34.745	7.73	208	2.16	95	0.01	31	0.4	700	1.64	34.745	27.820	0.295
806	1.63	34.744	7.73	211	2.15	97	0.01	31	--	800	1.63	34.744	27.820	0.328
907	1.58	34.740	7.71	212	2.18	99	0.01	31	0.3	1000	1.46	34.733	27.820	0.392
1005	1.46	34.733	7.72	216	2.18	106	0.00	31	0.4	1200	1.27	34.726	27.830	0.456
1254	1.23	34.725	7.69	222	2.28	123	0.00	32	--					

Station 6

Meteorological observation

Date : March 2, 1996	Weather	Time (UT) : 07:00	Wind Direction : WNW
Time (UT) : 06:00	Weather		Velocity : 6m/s
Latitude : 63°26.9S	Air Temperature (dry)	: 1.5°C	Humidity : 91%
Longitude : 92°06.0E	Air Temperature (wet)	: 0.1°C	Wave : WNW/2
Depth : 3460m	Atmospheric Pressure	: 973.6hPa	Swell : N/1
			Visibility : 25km

Depth (m)	Observed							Depth (m)	Interpolated					
	T (°C)	S	pH	D02	P04-P	SI03-Si (μmol/l)	N02-N	N03-N	NH4-N					
0	0.60	33.821	7.86	352	1.40	33	0.18	23	0.2	0	0.60	33.821	27.140	0.000
20	0.38	33.820	7.88	353	1.40	37	0.17	23	0.2	10	0.47	33.821	27.150	0.009
30	0.38	33.826	7.87	356	1.43	38	0.18	23	0.1	20	0.38	33.820	27.160	0.018
55	-0.52	33.991	7.85	337	1.78	51	0.16	26	0.1	30	0.38	33.825	27.160	0.028
78	-0.74	34.407	7.75	279	2.28	75	0.18	31	0.3	50	0.36	33.942	27.290	0.045
105	-0.02	34.493	7.74	256	2.29	79	0.10	32	0.2	75	0.71	34.383	27.660	0.060
128	0.49	34.572	7.73	235	2.31	84	0.05	32	0.1	100	0.12	34.480	27.710	0.070
152	0.80	34.609	7.72	221	2.31	85	0.03	32	0.2	125	0.46	34.564	27.750	0.080
204	0.94	---	---	---	---	---	---	---	---	150	0.79	34.608	27.770	0.088
253	1.24	34.679	7.72	210	2.28	89	0.02	32	0.3	200	0.93	34.628	27.770	0.106
301	1.28	34.695	7.73	211	2.23	90	0.01	31	0.3	250	1.24	34.678	27.790	0.122
403	1.30	34.719	7.73	212	2.22	94	0.01	31	0.4	300	1.28	34.695	27.800	0.138
506	1.20	34.720	7.73	214	2.22	98	0.01	31	0.3	400	1.30	34.718	27.820	0.169
604	1.17	34.726	7.73	212	2.22	102	0.00	31	0.3	500	1.20	34.720	27.830	0.199
704	1.06	34.721	7.73	214	2.23	104	0.01	31	0.3	600	1.17	34.726	27.840	0.228
803	0.98	34.722	7.73	215	2.25	108	0.01	31	0.3	700	1.06	34.721	27.840	0.257
901	0.91	34.719	7.73	216	2.26	111	0.01	31	0.3	800	0.98	34.722	27.840	0.286
1004	0.81	34.715	7.73	220	2.28	115	0.00	31	0.3	1000	0.81	34.715	27.850	0.342
1252	0.61	34.703	7.72	219	2.31	120	0.00	32	---	1200	0.64	34.704	27.850	0.397
1499	0.44	34.696	7.71	222	2.32	123	0.02	32	0.4	1500	0.44	34.696	27.860	0.478
2003	0.16	34.683	7.70	230	2.32	127	0.00	32	0.4	2000	0.15	34.683	27.860	0.606
2501	-0.03	34.681	7.69	241	2.31	--	0.01	32	0.3	2500	0.03	34.680	27.870	0.724
3002	-0.12	34.677	7.68	242	2.31	125	0.00	32	0.4	3000	0.13	34.678	27.870	0.835
3043	-0.13	34.680	7.68	243	2.31	125	0.03	31	0.4					

Station 7

Meteorological observation

Date : March 3, 1996	Weather	Time (UT) : 06:00	Wind Direction : W
Time (UT) : 06:00	Weather	: S	Velocity : 2m/s
Latitude : 63°27.3'S	Air Temperature (dry)	: 0.6°C	Humidity : 89 %
Longitude : 103°21.9'E	Air Temperature (wet)	: -1.0°C	Wave : W /2
Depth : 3533m	Atmospheric Pressure	: 972.4hPa	Swell : ESE/3
			Visibility : 25km

Depth (m)	Observed								Depth (m)	Interpolated				
	T (°C)	S	pH	D02	P04-P	SiO3-Si (μmol/l)	N02-N	N03-N	NH4-N	T (°C)	S	σt	ΔD	
0	0.90	33.938	7.87	346	1.56	37	0.23	23	--	0	0.90	33.938	27.220	0.000
20	0.44	33.925	7.89	350	1.52	37	0.21	23	--	10	0.61	33.926	27.230	0.009
32	0.44	33.936	7.89	351	1.55	38	0.20	23	--	20	0.44	33.925	27.240	0.017
52	0.08	33.965	7.89	354	1.55	41	0.20	23	--	30	0.44	33.935	27.250	0.025
76	-0.79	34.209	7.81	309	2.19	65	0.17	29	--	50	0.12	33.961	27.280	0.042
105	-0.26	34.405	7.76	270	2.28	75	0.18	31	0.3	75	0.75	34.200	27.520	0.059
126	0.18	34.498	7.76	248	2.29	79	0.02	23	0.3	100	0.36	34.374	27.640	0.072
151	0.54	34.547	7.74	232	2.29	81	0.01	23	0.4	125	0.18	34.498	27.710	0.082
204	1.08	34.625	7.73	216	2.28	87	0.01	23	0.3	150	0.53	34.544	27.730	0.092
253	1.24	-----	7.74	212	2.26	88	0.01	23	0.4	200	1.05	34.620	27.760	0.110
301	1.21	34.674	7.74	213	2.23	90	0.01	23	0.3	250	1.24	99.679	82.780	1.103
403	1.47	34.726	7.75	208	2.19	95	0.00	23	0.3	300	1.22	34.674	27.790	2.317
504	1.21	34.725	-----	--	--	--	--	--	--	400	1.47	34.725	27.810	2.285
601	1.09	34.710	7.75	215	2.20	101	0.00	23	0.4	500	1.21	34.724	27.830	2.255
700	0.80	34.691	7.76	222	2.22	103	0.00	23	0.4	600	1.09	34.709	27.830	2.225
801	0.87	34.708	7.76	217	2.23	108	0.00	23	0.3	700	0.80	34.691	27.830	2.196
901	0.70	34.693	7.76	224	2.25	--	0.00	23	0.4	800	0.86	34.707	27.840	2.167
1000	0.75	34.708	7.76	221	2.25	116	0.00	23	0.4	1000	0.75	34.707	27.850	2.110
1252	0.56	34.697	7.75	224	2.28	121	0.00	23	0.5	1200	0.59	34.698	27.850	2.055
1501	0.38	34.687	7.75	226	2.26	123	0.00	23	0.3	1500	0.37	34.686	27.850	1.974
2003	0.11	34.683	7.74	233	2.28	129	0.00	23	0.4	2000	0.10	34.682	27.860	1.847
3476	-0.26	34.658	7.70	251	2.25	121	0.00	23	0.4	2500	0.08	34.674	27.870	1.730

Station 8

Meteorological observation

Date : March 4, 1996	Weather	Time(UT) : 05:00	Wind Direction : WNW
Time(UT) : 05:00	Weather	: s	Velocity : 8m/s
Latitude : 63°35.4S	Air Temperature (dry)	: 1.3°C	Humidity : 76 %
Longitude : 114°09.7E	Air Temperature (wet)	: -2.5°C	Wave : WNW/2
Depth : 3140m	Atmospheric Pressure	: 985.2hPa	Swell : NW /1
			Visibility : 25km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	D02	P04-P	SiO ₃ -Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
				(μmol/l)										
0	0.70	33.976	7.74	346	1.84	47	0.26	26	0.5	0	0.70	33.975	27.260	0.000
20	0.27	33.983	7.75	346	1.84	47	0.24	25	0.6	10	0.45	33.981	27.280	0.008
30	0.26	33.969	7.76	350	1.81	47	0.24	25	0.5	20	0.27	33.982	27.290	0.016
51	-0.60	34.248	7.73	311	2.07	65	0.17	28	0.6	30	0.26	33.969	27.280	0.024
77	-0.05	34.503	7.69	255	2.25	81	0.29	30	0.3	50	0.60	34.236	27.540	0.038
99	0.75	34.627	7.67	224	2.28	90	0.05	31	0.3	75	0.11	34.487	27.720	0.049
126	1.09	34.675	7.66	216	2.28	93	0.01	31	0.2	100	0.77	34.630	27.780	0.058
150	1.21	34.688	7.66	209	2.26	94	0.01	30	0.2	125	1.09	34.675	27.800	0.066
203	1.33	34.712	7.73	209	2.25	97	0.00	30	0.2	150	1.21	34.687	27.800	0.074
252	1.35	34.719	7.73	205	2.23	99	0.00	30	0.2	200	1.33	34.710	27.810	0.089
302	1.35	34.725	7.74	207	2.23	99	0.00	30	0.2	250	1.35	34.719	27.820	0.104
404	1.27	34.727	7.74	208	2.22	103	0.00	30	0.2	300	1.35	34.725	27.820	0.119
504	1.19	34.727	7.74	210	2.23	106	0.01	30	0.2	400	1.27	34.727	27.830	0.149
604	1.10	34.722	7.74	211	2.23	108	0.01	30	0.2	500	1.19	34.727	27.830	0.178
703	1.02	34.718	7.74	216	2.23	111	0.00	30	0.2	600	1.10	34.722	27.840	0.207
804	0.94	34.712	7.74	214	2.25	113	0.00	30	0.2	700	1.01	34.718	27.840	0.236
904	0.85	34.715	7.74	216	2.26	116	0.01	30	0.2	800	0.94	34.712	27.840	0.265
1003	0.77	34.706	7.74	---	2.26	117	0.00	31	0.3	1000	0.76	34.705	27.850	0.321
1253	0.54	34.696	7.74	219	2.28	122	0.00	31	0.2	1200	0.58	34.697	27.850	0.377
1502	0.36	34.685	7.73	226	2.29	125	0.00	31	0.3	1500	0.35	34.684	27.850	0.458
2004	0.08	34.678	7.72	233	2.29	127	0.00	31	0.2	2000	0.07	34.677	27.860	0.585
2499	-0.12	34.671	7.72	---	2.26	122	0.01	31	0.3	2500	0.13	34.671	27.870	0.702
3002	-0.21	34.672	7.71	246	2.26	120	0.00	30	0.3	3000	0.22	34.671	27.870	0.810
3104	-0.25	34.668	7.71	248	2.28	122	0.02	30	0.3					

Station 9

Meteorological observation

Date : March 5, 1996	Weather Time(UT) : 04:00	Wind Direction : NW
Time(UT) : 04:00	Weather : bc	Velocity : 8m/s
Latitude : 63°27.5S	Air Temperature (dry) : 3.1°C	Humidity : 74 %
Longitude : 123°41.6E	Air Temperature (wet) : -1.0°C	Wave : NW /3
Depth : 3875m	Atmospheric Pressure : 991.0hPa	Swell : NW /1
		Visibility : 30km

Depth (m)	T (°C)	S	pH	Observed						Interpolated				
				D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
(μmol/l)														
0	1.90	33.911	7.87	352	1.59	28	0.37	24	0.4	0	1.90	33.911	27.130	0.000
31	1.74	33.866	7.85	354	1.59	31	0.31	23	0.4	10	1.85	33.896	27.120	0.009
53	-0.24	34.177	7.81	337	2.03	50	0.18	27	--	20	1.80	33.882	27.110	0.019
77	-0.02	34.343	7.75	278	2.29	66	0.20	30	--	30	1.75	33.867	27.110	0.029
102	0.79	34.532	7.71	220	2.39	79	0.20	32	0.1	50	0.18	34.159	27.460	0.045
129	1.28	34.621	7.69	205	2.35	85	0.01	32	0.2	75	0.08	34.329	27.590	0.059
153	1.38	34.646	7.70	203	2.34	87	0.00	31	0.2	100	0.76	34.525	27.700	0.070
204	1.44	34.669	7.70	201	2.31	88	0.02	31	0.2	125	1.26	34.616	27.740	0.080
253	1.48	34.687	7.70	204	2.28	89	0.01	31	0.3	150	1.38	34.644	27.750	0.089
304	1.52	34.702	7.70	203	2.26	90	0.00	30	0.2	200	1.44	34.667	27.770	0.107
404	1.58	34.725	7.71	203	2.22	92	0.01	30	0.2	250	1.48	34.685	27.780	0.124
503	1.54	34.733	7.71	205	2.20	94	0.00	30	--	300	1.51	34.700	27.790	0.140
603	1.43	34.732	7.71	210	2.20	97	0.01	30	0.4	400	1.58	34.724	27.800	0.173
702	1.36	34.733	7.71	209	2.20	99	0.00	30	0.3	500	1.54	34.732	27.810	0.204
803	1.28	34.729	7.72	210	2.22	103	0.02	30	0.3	600	1.43	34.731	27.820	0.235
903	1.19	34.729	7.71	211	2.22	106	0.00	30	0.4	700	1.36	34.732	27.830	0.266
1004	1.11	34.725	7.71	213	2.23	107	0.01	30	0.3	800	1.28	34.728	27.830	0.297
1252	0.91	34.717	7.72	218	2.26	113	0.00	30	0.2	1000	1.11	34.724	27.840	0.357
1502	0.75	34.708	7.71	217	2.28	118	0.01	31	0.3	1200	0.95	34.718	27.840	0.416
2003	0.39	34.692	7.69	226	2.31	126	0.00	31	--	1500	0.74	34.708	27.850	0.502
2502	0.15	34.684	7.68	230	2.32	130	0.00	31	0.4	2000	0.38	34.692	27.860	0.639
3002	-0.02	34.676	7.67	242	2.31	129	0.00	31	0.3	2500	0.14	34.684	27.860	0.766
3501	-0.16	34.673	7.65	247	2.29	122	0.01	31	0.3	3000	0.03	34.675	27.870	0.885
3874	-0.28	34.676	7.65	252	2.28	117	0.01	30	0.3	3500	0.17	34.672	27.870	0.994

Station 10

Meteorological observation

Date : March 6, 1996	Weather	Time(UT) : 04:00	Wind Direction : N
Time(UT) : 04:00	Weather	: c	Velocity : 10m/s
Latitude : 63°44.1S	Air Temperature (dry)	: 2.1°C	Humidity : 75 %
Longitude : 131°25.2E	Air Temperature (wet)	: -1.9°C	Wave : N /3
Depth : 3660m	Atmospheric Pressure	: 985.3hPa	Swell : NW /3
			Visibility : 30km

Depth (m)	Observed							Interpolated						
	T (°C)	S	pH	D02	P04-P	SI03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	1.70	33.922	7.89	348	1.62	29	0.33	23	0.5	0	1.70	33.921	27.150	0.000
10	1.26	----	7.90	349	1.65	29	0.31	23	0.4	10	1.31	90.782	74.710	0.206
20	1.24	----	7.90	350	1.64	31	0.31	23	0.5	20	1.25	99.999	83.070	0.664
33	1.33	33.923	7.91	351	1.69	32	0.29	23	--	30	1.24	99.999	83.070	1.157
52	-0.29	34.125	7.86	324	2.16	52	0.22	27	--	50	0.96	33.965	27.240	1.641
76	0.97	34.459	7.75	218	2.47	74	0.12	32	0.3	75	0.28	34.302	27.550	1.624
103	1.67	34.580	7.73	190	2.45	81	0.01	32	0.3	100	1.39	34.538	27.670	1.612
127	1.76	34.620	7.73	189	2.41	84	0.01	31	0.2	125	1.73	34.601	27.690	1.601
154	1.76	34.643	7.73	191	2.37	84	0.01	31	0.2	150	1.76	34.631	27.720	1.591
204	1.63	34.668	7.74	195	2.31	87	0.00	30	0.3	200	1.66	34.660	27.750	1.572
255	1.75	34.692	7.74	195	2.29	88	0.00	30	0.2	250	1.73	34.685	27.760	1.554
305	1.61	----	----	--	--	--	--	--	--	300	1.64	34.693	27.770	1.537
405	1.71	34.724	7.75	200	2.22	90	0.01	29	0.3	400	1.69	34.720	27.790	1.503
503	1.64	34.732	7.76	203	2.20	95	0.01	28	--	600	1.57	34.735	27.810	1.438
605	1.56	34.736	7.77	204	2.19	95	0.00	29	0.2	700	1.44	34.735	27.820	1.407
703	1.43	34.736	7.75	208	2.20	98	0.00	29	0.3	800	1.36	34.733	27.830	1.376
803	1.36	34.734	7.77	211	2.19	101	0.00	28	0.3	1000	1.17	34.726	27.830	1.315
904	1.26	34.733	7.76	214	2.20	103	0.01	29	0.2	1200	1.00	34.722	27.840	1.255
1004	1.17	34.727	7.76	213	2.20	106	0.00	29	--	1500	0.75	34.708	27.850	1.169
1255	0.95	34.720	7.76	215	2.23	113	0.01	29	0.3	2000	0.38	34.690	27.860	1.031
1503	0.75	34.708	7.76	216	2.26	118	0.00	29	0.3	2500	0.12	34.681	27.860	0.904
2001	0.38	34.691	7.74	227	2.29	126	0.00	30	0.3					
2500	0.13	34.682	7.74	234	2.31	130	0.00	29	--					
2801	0.02	34.678	7.73	238	2.29	129	0.01	29	0.2					

Station 11

Meteorological observation

Date : March 7, 1996	Weather Time(UT) : 04:00	Wind Direction : N
Time(UT) : 03:00	Weather : c	Velocity : 3m/s
Latitude : 64°54.8S	Air Temperature (dry) : 0.0°C	Humidity : 74 %
Longitude : 138°53.7E	Air Temperature (wet) : -4.0°C	Wave : N /2
Depth : 2570m	Atmospheric Pressure : 991.4hPa	Swell : WNW/1
		Visibility : 30km

Depth (m)	T (°C)	S	pH	Observed					Interpolated					
				D02	P04-P	SI03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.30	33.969	7.89	351	1.62	37	0.25	23	0.3	0	0.30	33.969	27.280	0.000
10	-0.20	33.959	7.89	352	1.61	36	0.22	23	--	10	0.20	33.958	27.300	0.008
20	-0.22	33.960	7.90	351	1.62	36	0.22	23	--	20	0.22	33.960	27.300	0.016
33	-0.22	34.008	7.91	356	1.61	37	0.22	24	0.3	30	0.22	33.997	27.330	0.023
51	-0.53	34.057	7.91	356	1.65	39	0.20	24	0.3	50	0.50	34.053	27.390	0.038
76	-1.69	34.339	7.84	327	2.13	66	0.17	28	0.2	75	1.67	34.337	27.660	0.052
101	-1.79	34.346	7.84	328	2.13	66	0.06	28	0.2	100	1.79	34.346	27.670	0.063
128	-1.76	34.355	7.83	321	2.13	69	0.03	28	0.2	125	1.76	34.354	27.670	0.074
152	-1.69	34.385	7.84	316	2.15	73	0.01	28	0.2	150	1.69	34.383	27.700	0.084
201	-1.48	34.429	7.84	303	2.19	76	0.01	28	0.2	250	1.21	34.467	27.750	0.121
252	-1.20	34.469	7.83	290	2.19	79	0.02	28	0.3	300	0.41	34.554	27.790	0.138
303	-0.40	34.555	7.81	262	2.22	85	0.00	29	0.3	400	0.61	34.665	27.820	0.168
402	0.61	34.664	7.80	226	2.20	98	0.01	29	0.2	500	0.87	34.702	27.840	0.197
503	0.87	34.702	7.80	217	2.22	103	0.01	29	0.2	600	0.88	34.709	27.840	0.225
602	0.88	34.709	7.80	214	2.22	108	0.01	29	0.2	700	0.74	34.702	27.840	0.253
701	0.74	34.702	7.78	217	2.23	112	0.01	29	0.2	800	0.64	34.703	27.850	0.280
802	0.64	34.704	7.79	218	2.25	115	0.02	29	0.2	1000	0.49	34.697	27.850	0.334
903	0.61	34.700	7.79	219	2.26	117	0.01	29	0.3	1200	0.34	34.691	27.860	0.386
1001	0.50	34.698	7.80	222	2.26	120	0.01	29	0.3	1500	0.09	34.682	27.870	0.461
1250	0.30	34.691	7.79	223	2.26	122	0.00	29	0.3	2000	0.16	34.672	27.870	0.578
1504	0.09	34.682	7.78	231	2.26	118	0.00	29	0.3	2500	0.40	34.652	27.870	0.686
2002	-0.15	34.673	7.77	245	2.23	112	0.01	29	0.3					
2503	-0.39	34.654	7.78	253	2.23	106	0.03	29	--					
2573	-0.40	34.646	7.77	255	2.23	106	0.03	29	0.3					

Station 12

Meteorological observation

Date	: March 11, 1996	Weather	Time(UT)	: 05:00	Wind	Direction	: SW
Time(UT)	: 05:00	Weather		: c	Velocity		: 11m/s
Latitude	: 65°05'.9S	Air Temperature (dry)		: -2.0°C	Humidity		: 85 %
Longitude	: 141°49'.8E	Air Temperature (wet)		: -4.2°C	Wave		: SW /4
Depth	: 2790m	Atmospheric Pressure		: 970.4hPa	Swell		: WNW/3
					Visibility		: 20km

Depth (m)	T (°C)	S	O b s e r v e d						I n t e r p o l a t e d					
			pH	D02	P04-P	SI03-Si (μmol/l)	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	0.20	33.992	7.97	348	1.69	37	0.23	22	0.4	0	0.20	33.991	27.300	0.000
10	-0.03	33.984	7.99	347	1.69	37	0.22	22	0.2	10	0.03	33.984	27.310	0.008
20	-0.01	33.981	7.99	350	1.71	37	0.22	22	0.4	20	0.01	33.981	27.310	0.016
34	-0.05	33.987	8.00	350	1.71	37	0.22	22	--	30	0.03	33.982	27.310	0.023
58	-1.07	34.242	7.97	334	2.04	53	0.14	25	0.4	50	0.79	34.162	27.490	0.037
80	-1.33	34.374	7.93	308	2.26	66	0.22	27	0.2	75	1.33	34.360	27.670	0.050
104	-1.19	34.412	7.92	295	2.29	71	0.15	27	0.2	100	1.23	34.405	27.700	0.060
129	-0.74	34.468	7.90	277	2.31	73	0.02	27	0.3	125	0.78	34.461	27.730	0.070
154	-0.57	34.499	7.89	267	2.31	80	0.01	27	0.1	150	0.60	34.494	27.750	0.079
204	0.19	34.595	7.88	236	2.32	85	0.01	27	0.3	200	0.16	34.591	27.790	0.096
257	0.47	34.613	7.86	232	2.29	88	0.01	27	0.4	250	0.43	34.609	27.790	0.112
304	0.90	34.664	7.87	220	2.28	92	0.01	27	0.2	300	0.90	34.663	27.800	0.128
405	0.94	34.685	7.87	219	2.26	95	0.03	27	0.3	400	0.94	34.684	27.820	0.159
504	0.96	34.706	7.86	219	2.25	101	0.01	27	0.3	500	0.96	34.706	27.830	0.188
605	0.85	34.695	7.87	218	2.28	103	0.01	27	0.4	600	0.85	34.695	27.830	0.217
701	0.86	34.708	7.87	218	2.28	107	0.03	27	0.4	700	0.86	34.707	27.840	0.246
803	0.80	34.704	7.86	222	2.28	--	0.01	27	--	800	0.80	34.704	27.840	0.274
903	0.70	34.701	7.86	223	2.29	113	0.00	27	--	1000	0.62	34.699	27.850	0.329
1002	0.62	34.699	7.86	--	2.29	116	0.01	27	0.2	1200	0.48	34.696	27.850	0.383
1253	0.45	34.695	7.86	223	2.29	122	0.01	27	0.2	1500	0.25	34.685	27.860	0.461
1501	0.25	34.686	7.85	226	2.31	122	0.00	27	0.3	2000	0.01	34.680	27.870	0.584
1999	0.02	34.681	7.85	241	2.31	120	0.00	27	0.3	2500	0.20	34.679	27.880	0.695
2505	-0.19	34.680	7.84	245	2.28	111	0.00	27	--					
2749	-0.20	34.689	7.83	246	2.29	104	0.01	27	0.4					

Station 13

Meteorological observation

Date : March 12, 1996	Weather	Time(UT) : 03:00	Wind Direction : ENE
Time(UT) : 03:00	Weather	: s	Velocity : 2m/s
Latitude : 62°02.9S	Air Temperature (dry)	: 3.1°C	Humidity : 86 %
Longitude : 142°01.1E	Air Temperature (wet)	: 1.0°C	Wave : ENE/2
Depth : 4250m	Atmospheric Pressure	: 990.3hPa	Swell : W/3
			Visibility : 25km

Depth (m)	Observed								Interpolated					
	T (°C)	S	pH	D02	P04-P	S103-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	2.80	33.871	8.02	332	1.74	13	0.34	22	0.4	0	2.80	33.870	27.020	0.000
49	2.49	33.854	8.03	333	1.74	13	0.32	22	--	10	2.74	33.867	27.030	0.010
73	1.60	33.890	8.03	343	1.85	17	0.29	23	--	20	2.67	33.863	27.030	0.021
101	-0.38	33.994	8.00	334	2.18	36	0.23	26	--	30	2.61	33.860	27.030	0.031
119	0.69	34.175	7.94	266	2.35	48	0.13	29	0.1	50	2.46	33.854	27.040	0.052
150	1.61	34.349	7.90	203	2.50	62	0.04	31	0.1	75	1.43	33.896	27.150	0.076
192	1.95	34.441	7.87	181	2.54	71	0.02	31	0.1	100	0.38	33.993	27.330	0.097
249	2.03	34.503	7.86	182	2.53	75	0.01	31	0.1	125	0.94	34.224	27.450	0.115
298	2.09	34.550	7.86	183	2.48	79	0.03	31	0.1	150	1.62	34.351	27.500	0.130
400	2.08	34.605	7.87	--	2.44	81	0.00	30	0.1	200	1.96	34.451	27.560	0.159
500	2.08	34.649	7.86	176	2.38	84	0.01	29	0.1	250	2.03	34.505	27.590	0.185
598	2.07	34.683	7.88	--	2.29	85	0.01	28	0.2	300	2.09	34.551	27.630	0.210
698	2.01	34.710	7.89	191	2.28	87	0.01	28	0.1	400	2.08	34.606	27.670	0.257
797	1.95	34.719	7.89	191	2.23	--	0.01	28	0.2	500	2.08	34.650	27.710	0.301
900	1.89	34.729	7.90	195	2.20	--	0.00	27	0.1	600	2.07	34.685	27.740	0.342
998	1.83	34.735	7.90	--	2.19	89	0.01	27	0.1	700	2.00	34.710	27.760	0.381
1251	1.62	34.737	7.91	204	2.18	95	0.01	27	0.1	800	1.95	34.719	27.770	0.418
1500	1.41	34.737	7.91	209	2.19	102	0.02	27	0.1	1000	1.82	34.735	27.800	0.491
2002	1.01	34.718	7.90	211	2.23	115	0.01	28	0.2	1200	1.66	34.737	27.810	0.561
2500	0.63	34.699	7.89	218	2.26	125	0.01	28	0.2	1500	1.40	34.736	27.830	0.662
3000	0.31	34.684	7.88	--	2.29	130	0.01	28	0.3	2000	0.99	34.717	27.840	0.822
3499	0.11	34.680	7.87	235	2.28	130	0.01	28	0.2	2500	0.61	34.698	27.850	0.973
4000	-0.08	34.675	7.86	--	2.26	122	0.01	28	0.2	3000	0.30	34.684	27.860	1.111
4262	-0.26	34.666	7.86	246	2.26	120	0.03	28	0.2	3500	0.09	34.680	27.860	1.236

Station 14

Meteorological observation

Date	:	March 13, 1996	Weather	Time(UT)	:	02:00	Wind Direction	:	NW
Time(UT)	:	02:00	Weather		:	c	Velocity	:	11m/s
Latitude	:	58°13'.7S	Air Temperature (dry)		:	3.9°C	Humidity	:	89 %
Longitude	:	143°35'.8E	Air Temperature (wet)		:	2.1°C	Wave	:	NW /2
Depth	:	3650m	Atmospheric Pressure		:	983.2hPa	Swell	:	NNW/3

Depth (m)	Observed							Interpolated						
	T (°C)	S	pH	D02	P04-P	SiO3-Si (μmol/l)	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	4.30	33.825	7.97	322	1.65	0	0.30	21	0.3	0	4.30	33.825	26.840	0.000
30	4.08	33.814	7.97	321	1.62	0	0.27	21	0.3	10	4.21	33.818	26.850	0.012
52	3.99	33.824	7.98	325	1.64	0	0.27	21	0.3	20	4.14	33.813	26.850	0.024
76	3.89	33.828	7.98	322	1.64	0	0.29	21	0.3	30	4.08	33.813	26.860	0.036
103	1.54	33.900	7.98	332	2.09	11	0.27	22	--	50	3.99	33.823	26.870	0.060
125	0.87	33.915	7.97	332	2.06	22	0.33	24	--	75	3.89	33.827	26.890	0.090
151	0.78	33.972	7.95	319	2.09	27	0.20	25	0.2	100	1.65	33.895	27.140	0.116
200	1.51	34.130	7.91	274	2.25	38	0.00	27	0.1	125	0.86	33.916	27.210	0.139
249	1.89	34.241	7.88	241	2.37	48	0.05	28	0.1	150	0.78	33.971	27.250	0.160
291	1.86	34.344	7.85	214	2.44	57	0.03	29	0.1	200	1.52	34.132	27.330	0.200
404	2.19	34.445	7.82	197	2.47	67	0.01	30	0.1	250	1.89	34.245	27.400	0.236
499	2.28	34.532	7.82	190	2.47	74	0.00	30	0.2	300	1.88	34.356	27.490	0.269
601	2.32	34.588	7.83	185	2.41	76	0.00	29	0.2	400	2.18	34.442	27.530	0.329
701	2.27	34.628	7.84	188	2.38	79	0.02	29	0.2	500	2.28	34.534	27.600	0.384
802	2.22	34.657	7.84	189	2.34	80	0.00	28	0.2	600	2.32	34.588	27.640	0.436
903	2.17	34.693	7.85	--	2.29	81	0.01	28	0.3	700	2.27	34.628	27.670	0.483
999	2.14	34.708	7.85	193	2.23	83	--	27	0.2	800	2.22	34.658	27.700	0.529
1247	1.98	34.746	7.86	203	2.18	87	0.00	26	0.2	1000	2.14	34.708	27.750	0.614
1502	1.80	34.749	7.87	207	2.15	90	0.00	26	0.3	1200	2.01	34.739	27.780	0.692
2001	1.37	34.740	7.86	213	2.18	104	0.00	26	0.3	1500	1.79	34.749	27.810	0.804
2495	0.97	34.719	7.85	215	2.23	116	0.00	27	0.2	2000	1.36	34.739	27.830	0.978
2999	0.60	34.705	7.84	224	2.29	126	0.00	27	0.2	2500	0.94	34.718	27.840	1.141
3498	0.33	34.692	7.83	229	2.31	136	--	27	--	3000	0.58	34.704	27.860	1.291

Station 15

Meteorological observation

Date	:	March 14, 1996	Weather	Time (UT)	:	03:00	Wind	Direction	:	SSW
Time(UT)	:	03:00	Weather		:	c	Velocity		:	10m/s
Latitude	:	55°55.1S	Air Temperature (dry)		:	3.8°C	Humidity		:	66 %
Longitude	:	144°27.4E	Air Temperature (wet)		:	-2.0°C	Wave		:	SSW/3
Depth	:	3130m	Atmospheric Pressure		:	1006.6hPa	Swell		:	SSW/3
							Visibility		:	30km

Depth (m)	Observed								Interpolated					
	T (°C)	S	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σt	ΔD
0	4.40	—	7.89	326	1.47	0	0.25	20	0.2	0	4.40	34.423	27.310	0.000
20	4.23	33.815	7.91	325	1.47	0	0.22	20	0.4	10	4.29	34.005	26.990	0.009
32	4.23	33.813	7.91	325	1.47	0	0.22	20	0.3	20	4.23	33.814	26.840	0.021
50	4.20	33.817	7.91	326	1.47	0	0.22	20	0.4	30	4.23	33.813	26.840	0.033
80	0.33	33.916	7.89	348	2.15	22	0.30	24	--	50	4.20	33.817	26.850	0.057
105	-0.04	33.964	7.88	339	2.12	29	0.26	25	--	75	0.68	33.902	27.200	0.083
124	-0.21	34.007	7.87	330	2.19	34	0.26	26	--	100	0.02	33.953	27.280	0.104
155	0.48	34.135	7.82	283	2.35	45	0.04	28	0.1	125	0.18	34.014	27.340	0.124
204	1.71	34.331	7.76	215	2.56	60	0.01	30	0.1	150	0.38	34.118	27.400	0.141
254	2.02	34.419	7.74	194	2.56	67	0.01	31	0.1	200	1.66	34.320	27.480	0.174
304	2.17	34.487	7.73	183	2.54	73	0.01	31	0.1	250	2.02	34.415	27.520	0.204
403	2.24	34.561	7.74	179	2.48	76	0.01	30	0.1	300	2.17	34.485	27.570	0.233
507	2.23	34.609	7.74	178	2.44	79	0.02	29	0.1	400	2.24	34.561	27.620	0.285
603	2.19	34.657	7.75	181	2.37	81	0.03	29	0.1	500	2.23	34.606	27.660	0.333
702	2.12	34.685	7.76	188	2.26	84	0.00	27	0.1	600	2.19	34.656	27.700	0.378
805	2.09	34.706	7.76	193	2.26	84	0.03	27	0.1	700	2.12	34.685	27.730	0.420
901	2.05	34.721	7.78	195	2.23	84	0.01	27	0.1	800	2.09	34.705	27.750	0.460
1005	1.97	34.731	7.78	197	2.20	87	0.01	27	0.2	1000	1.97	34.731	27.780	0.537
1255	1.79	34.748	7.78	204	2.18	90	0.01	26	0.2	1200	1.82	34.746	27.800	0.610
1500	1.55	34.745	7.78	205	2.19	98	0.01	27	0.2	1500	1.54	34.744	27.820	0.714
2001	1.11	34.725	7.77	213	2.23	111	0.01	27	0.2	2000	1.10	34.724	27.840	0.878
2498	0.74	34.707	7.76	214	2.29	121	0.00	28	0.2	2500	0.72	34.706	27.850	1.031
2688	0.59	34.701	7.75	221	2.31	126	0.01	28	0.2					

Station 16

Meteorological observation

Date : March 15, 1996	Weather Time(UT) : 23:00 *	Wind Direction : N
Time(UT) : 23:00 *	Weather : c	Velocity : 12m/s
Latitude : 52-47. 1S	Air Temperature (dry) : 7.5°C	Humidity : 84 %
Longitude : 145-31. 8E	Air Temperature (wet) : 5.0°C	Wave : N /3
Depth : 3200m	Atmospheric Pressure : 1011.2hPa	Swell : SSE/3
		Visibility : 30km

Observed									Interpolated					
Depth (m)	T (°C)	S	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σ_t	ΔD
				(μmol/l)										
0	6.00	33.784	7.96	314	1.47	1	0.31	19	0.2	0	6.00	33.784	26.610	0.000
2498	0.99	34.719	7.81	219	2.22	118	0.01	26	0.2	2500	0.97	34.719	27.840	9.999
2998	0.80	34.710	7.79	216	2.26	126	0.00	27	0.4	3000	0.80	34.709	27.850	9.999
3324	0.80	34.707	7.78	216	2.28	127	0.01	26	0.2					

Table 4. Petroleum oil, cadmium and mercury concentration in surface sea water.

Station No.	Date	Time (UT)	Position				Air. Temp. (°C)	Water. Temp.	Petroleum Oil (μ g/l)	Cadmium	Mercury
			Latitude	Longitude							
1995											
P-1	11 18	0700	12 - 41 N	129 - 25 E			29.5	29.4	0.7	0.018	0.0013
2	19	0700	7 - 0 N	127 - 1 E			27.6	29.5	0.6	0.009	0.0004
3	20	0700	2 - 45 N	122 - 7 E			27.2	29.2	0.7	0.011	0.0004
4	22	0700	7 - 15 S	116 - 19 E			30.3	30.1	0.4	0.004	0.0005
5	23	0700	12 - 29 S	115 - 1 E			29.2	29.6	0.6	0.005	0.0003
6	12 5	0300	41 - 22 S	109 - 15 E			11.7	12	2.5	0.005	0.0006
7	8	1000	55 - 24 S	99 - 39 E			1.9	0.9	0.9	0.091	0.0003
8	9	0500	57 - 34 S	94 - 34 E			2.0	0.2	0.8	0.078	0.0006
9	10	0200	58 - 49 S	87 - 20 E			0.1	1.5	2.2	0.071	<0.0001
10	12	0700	61 - 29 S	70 - 13 E			0.0	-1.0	1.0	0.079	0.0007
1996											
11	2 27	1300	63 - 0 S	55 - 1 E			0.4	1.2	2.6	0.043	0.0003
12	28	0800	62 - 54 S	62 - 20 E			1.5	0.5	1.9	0.055	0.0003
13	29	1200	62 - 27 S	70 - 53 E			-0.4	0.3	1.7	0.063	<0.0001
14	3 1	0700	63 - 3 S	80 - 39 E			1.0	0.4	2.5	0.076	<0.0001
15	2	0600	63 - 27 S	92 - 6 E			1.8	0.6	1.8	0.034	0.0011
16	3	0600	63 - 27 S	103 - 22 E			1.1	0.9	2.1	0.038	0.0001
17	4	0500	63 - 35 S	114 - 10 E			1.8	0.7	1.2	0.059	0.0001
18	5	0400	63 - 28 S	123 - 42 E			3.1	1.9	1.2	0.050	0.0005
19	6	0400	63 - 44 S	131 - 25 E			2.2	1.7	1.6	0.051	0.0011
20	7	0300	64 - 55 S	138 - 54 E			0.0	0.3	2.7	0.034	0.0080
21	11	0500	65 - 6 S	141 - 50 E			-2.0	0.2	2.2	0.035	<0.0001
22	12	0300	62 - 3 S	142 - 1 E			3.1	2.8	2.5	0.023	0.0002
23	13	0200	58 - 14 S	143 - 36 E			3.9	4.3	2.4	0.006	<0.0001
24	14	0300	55 - 55 S	144 - 27 E			3.8	4.4	2.5	0.021	0.0004
25	15	2300*	52 - 47 S	145 - 32 E			7.5	6.0	2.5	0.015	0.0005

Table 5. Hourly tidal observation at Syowa Station from February 1995 to January 1996 (time is LMT(UT+3 hours)).

Station : SYOWA STATION
Latitude : 69° 00' 28" S
Longitude : 39° 34' 13" E
Duration : Feb. 1-Feb. 28 1995
Unit : CENTIMETER

The zero level of the tide gauge
relative to the bench mark No. 1040;
-4. 644m Feb. 3 1995
-4. 651m Jan. 19 1996

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Mar. 1-Mar. 31 1995
 Unit : CENTIMETER

Date	Time																								(24H)		(25H)			
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	MEAN	SUM	MEAN	
1	170	180	203	225	246	262	264	252	230	202	173	150	140	147	166	192	219	238	251	250	235	214	190	174	4971	207	5135	205		
2	165	170	190	212	238	259	267	263	246	221	193	169	153	150	165	187	213	232	245	248	236	214	192	171	4998	208	5155	206		
3	157	153	166	192	218	241	255	258	250	231	206	182	164	155	163	184	207	228	242	248	241	220	199	175	4937	206	5093	204		
4	156	149	155	172	201	225	242	251	250	238	216	196	178	167	171	189	208	225	239	247	242	225	204	176	4923	205	5081	203		
5	158	145	143	153	176	202	220	234	240	232	218	202	187	178	176	185	205	222	236	243	241	229	209	186	4821	201	4988	200		
6	167	150	144	147	166	188	207	220	226	228	219	208	200	192	192	197	210	228	242	250	248	241	227	205	4903	204	5087	203		
7	184	170	157	155	165	179	193	207	212	215	214	205	199	196	196	199	208	219	231	238	238	231	220	205	4836	201	5023	201		
8	187	175	165	159	164	174	185	196	206	207	211	209	208	210	215	221	230	237	248	256	256	254	249	238	5061	211	5289	212		
9	228	223	212	204	205	207	207	213	218	219	223	225	224	227	235	241	247	252	257	261	263	260	250	243	5544	231	5777	231		
10	234	222	215	208	204	200	201	201	198	201	203	207	213	219	227	238	245	247	251	251	247	243	237	232	5342	223	5570	223		
11	228	220	216	213	207	202	195	187	180	179	179	184	195	206	217	231	239	244	242	240	238	228	222	221	5115	213	5332	213		
12	217	217	219	216	212	207	195	181	170	162	158	161	171	187	204	218	230	237	238	232	225	213	206	204	4877	203	5085	203		
13	207	212	218	223	224	219	208	190	173	160	152	150	162	178	197	220	236	243	245	237	225	212	201	199	4892	204	5095	204		
14	203	211	226	237	242	241	232	212	190	172	157	151	158	176	199	222	242	256	256	249	237	217	205	199	5090	212	5291	212		
15	202	212	231	248	262	267	260	239	216	189	168	156	158	172	194	219	241	257	260	251	235	214	195	185	5230	218	5415	217		
16	184	195	216	239	258	272	270	255	231	206	178	161	156	166	186	211	235	249	257	252	233	208	183	168	5170	215	5332	213		
17	162	169	191	216	242	261	269	262	243	215	188	166	153	156	174	198	220	240	250	245	230	205	175	155	4985	208	5129	205		
18	143	144	162	188	218	243	259	265	254	233	209	185	170	167	180	203	228	248	260	262	252	227	200	175	5074	211	5231	209		
19	157	147	160	186	215	243	267	278	276	264	242	218	200	193	195	209	231	249	262	265	259	238	208	180	5344	223	5501	220		
20	157	142	144	160	184	211	237	253	259	256	243	226	209	197	196	206	221	238	251	257	253	238	211	185	5134	214	5296	212		
21	162	141	132	140	157	177	203	220	230	236	233	222	212	205	201	207	220	235	247	255	255	244	227	203	4961	207	5141	206		
22	180	158	145	143	150	163	182	200	212	224	231	228	224	222	221	224	232	241	253	261	255	244	226	206	5080	212	5287	211		
23	207	189	175	163	163	167	176	188	197	207	219	220	225	228	233	233	238	244	250	257	257	253	247	239	5175	216	5402	216		
24	227	215	205	193	187	182	182	185	190	198	207	219	228	237	246	254	256	259	263	263	262	258	252	247	5415	226	5658	226		
25	243	236	231	222	211	202	194	184	179	180	183	197	206	219	235	245	251	252	248	243	238	235	230	231	5294	221	5524	221		
26	230	231	233	232	228	216	203	190	175	168	172	175	186	208	227	243	253	256	252	245	235	225	219	220	5222	218	5447	218		
27	225	235	243	248	248	243	228	207	186	175	165	164	174	191	210	231	242	248	244	231	217	203	192	192	5142	214	5339	214		
28	197	210	229	241	250	251	238	219	197	176	162	154	161	177	199	220	237	244	241	229	210	189	177	172	4982	208	5159	206		
29	176	194	215	236	252	261	254	239	213	189	171	158	159	173	191	213	233	241	241	229	207	185	166	156	4953	206	5112	204		
30	159	173	198	223	246	263	266	255	238	214	194	178	175	183	206	227	245	259	263	253	232	204	181	167	5201	217	5362	214		
31	161	173	197	222	248	270	275	273	258	235	211	194	183	186	203	223	240	254	260	252	232	206	181	158	5294	221	5443	218		
1	148																													

MONTHLY MEAN

212.3cm

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Apr. 1-Apr. 30 1995
 Unit : CENTIMETER

Date	Time																								(24H)		(25H)			
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	MEAN	SUM	MEAN	
1	148	153	172	198	226	249	264	265	254	239	219	199	187	186	197	216	236	251	259	252	237	211	181	159	5158	215	5302	212		
2	144	140	153	176	205	230	249	255	253	240	224	210	197	192	200	215	235	249	259	258	245	221	195	171	5116	213	5269	211		
3	152	144	149	169	192	217	238	247	252	244	230	218	206	200	202	215	232	245	255	257	246	229	203	177	5119	213	5278	211		
4	159	144	144	155	175	199	217	231	238	237	230	219	212	206	207	217	231	245	257	261	255	241	221	199	5100	212	5280	211		
5	180	167	162	169	181	201	219	233	241	246	244	239	232	231	232	237	247	259	270	273	269	259	242	223	5456	227	5660	226		
6	205	190	181	181	190	202	215	227	234	240	242	239	235	234	235	241	245	253	262	265	263	255	242	225	5501	229	5713	229		
7	211	199	188	185	187	193	202	209	215	222	228	229	228	230	234	237	240	245	250	251	247	240	231	220	5323	222	5530	221		
8	208	198	192	184	180	182	186	187	192	197	203	208	211	219	226	234	237	240	241	242	240	236	230	225	5098	212	5318	213		
9	220	215	212	208	203	199	197	193	193	194	199	205	212	223	233	240	241	243	241	240	232	225	220	219	5207	217	5425	217		
10	217	220	220	219	215	207	198	191	185	181	186	194	203	212	228	240	242	240	238	230	219	210	206	207	5109	213	5320	213		
11	211	216	223	228	227	221	209	198	184	175	173	177	189	203	222	235	243	246	239	227	214	202	194	197	5053	211	5258	210		
12	205	216	232	242	248	249	237	220	201	186	182	182	191	209	228	246	258	261	255	240	222	206	193	191	5301	221	5500	220		
13	200	216	236	255	271	274	268	249	227	207	194	188	190	208	226	245	257	262	256	239	218	193	175	168	5420	226	5592	224		
14	173	189	212	239	261	275	272	262	238	215	197	186	188	202	221	243	262	270	270	257	230	207	182	170	5419	226	5592	224		
15	174	187	215	246	275	294	304	299	278	256	234	215	208	215	231	248	268	278	277	263	239	208	179	158	5749	240	5898	236		
16	149	159	180	211	244	270	287	293	280	262	242	221	208	210	221	240	259	270	272	264	239	209	176	149	5517	230	5651	226		
17	134	134	147	176	210	240	265	281	281	270	256	240	224	220	228	243	263	277	284	281	267	238	206	177	5543	231	5697	228		
18	154	143	147	167	195	223	249	268	276	275	269	253	242	238	237	249	266	276	285	285	273	254	225	196	5646	235	5814	233		
19	168	147	143	151	167	191	214	234	247	255	254	242	235	229	224	231	242	254	263	265	261	247	227	199	5290	220	5466	219		
20	176	155	143	142	150	166	185	205	219	232	240	239	238	236	236	238	244	257	266	271	273	268	252	237	5265	219	5485	219		
21	220	200	187	179	176	181	191	202	211	223	236	241	240	244	246	246	246	252	257	263	264	260	252	243	5462	228	5695	228		
22	233	223	211	200	192	190	190	194	201	209	220	230	237	246	249	250	247	248	247	246	244	242	240	239	5429	226	5666	227		
23	237	231	226	219	209	204	198	192	194	199	206	216	227	236	246	251	253	251	248	244	240	239	239	242	5447	227	5696	228		
24	249	250	254	256	252	243	236	225	216	214	216	223	234	246	256	264	267	263	250	240	234	223	220	224	5755	240	5988	240		
25	233	241	253	261	260	256	243	228	213	203	201	201	210	223	235	242	246	241	229	214	199	185	176	183	5378	224	5570	223		
26	192	208	225	240	248	251	243	230	211	200	192	190	202	215	228	241	250	247	241	224	206	187	177	176	5226	218	5414	217		
27	188	204	225	246	260	269	267	253	236	218	205	202	206	216	235	248	257	258	249	233	209	187	171	165	5405	225	5575	223		
28	170	190	213	239	256	272	274	263	250	233	216	210	214	221	239	254	266	271	264	248	223	198	175	163	5522	230	5686	227		
29	165	176	198	225	248	266	274	269	256	239	222	208	206	211	223	237	250	253	248	235	209	180	155	140	5293	221	5426	217		
30	133	140	162	187	213	236	249	250	242	228	214	202	195	197	208	225	239	248	247	236	214	189	161	143	4957	207	5088	204		
1	131																													

MONTHLY MEAN

222.6cm

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : May. 1-May. 31 1995
 Unit : CENTIMETER

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Jun. 1-Jun. 30 1995
 Unit : CENTIMETER

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Jul. 1-Jul. 31 1995
 Unit : CENTIMETER

Date	Time																								(24H) SUM		(25H) SUM		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN	MEAN	MEAN	MEAN
1	145	134	135	149	172	197	216	230	241	238	231	219	209	204	203	210	225	236	246	250	242	231	209	184	4954	206	5120	205	
2	166	155	150	158	173	199	217	230	241	246	238	230	217	209	206	206	214	227	241	246	247	237	223	202	5078	212	5262	210	
3	183	171	163	164	171	190	205	220	230	237	236	226	213	207	197	195	197	206	217	229	227	223	216	201	4925	205	5113	205	
4	188	174	166	162	168	176	193	206	216	220	223	219	208	201	194	187	185	191	202	208	215	221	220	217	4762	198	4971	199	
5	209	199	191	190	190	196	204	215	224	232	236	236	228	218	210	200	194	193	195	200	208	213	215	216	5012	209	5231	209	
6	218	215	213	210	207	207	209	215	222	230	231	233	229	221	213	208	193	183	183	182	183	184	189	196	201	4993	208	5210	208
7	217	220	224	224	220	220	221	220	227	226	225	233	237	228	223	213	199	188	181	165	166	171	174	183	5008	209	5205	208	
8	198	212	222	238	242	241	240	234	232	238	237	247	249	253	246	246	235	216	206	183	174	171	168	176	5303	221	5500	220	
9	197	216	235	251	264	266	261	256	251	246	241	244	253	251	253	256	244	229	213	187	164	149	142	145	5415	226	5575	223	
10	160	179	211	232	254	265	271	264	251	243	233	232	238	245	249	255	251	246	228	205	172	149	131	123	5287	220	5424	217	
11	137	160	189	219	247	270	279	283	277	260	249	246	249	258	265	276	279	277	263	241	211	176	148	129	5587	233	5714	229	
12	127	138	160	191	220	249	264	269	265	252	237	226	223	231	242	257	264	269	266	248	220	188	154	128	5290	220	5406	216	
13	116	119	143	167	197	231	254	264	266	257	245	232	225	228	238	259	273	281	286	279	259	228	193	165	5405	225	5547	222	
14	142	135	139	163	192	217	241	254	259	251	238	220	206	198	204	220	236	249	259	261	250	229	198	164	5126	214	5266	211	
15	140	126	124	138	160	186	209	226	232	227	217	203	184	177	176	183	203	219	234	246	243	231	210	181	4674	195	4831	193	
16	157	141	131	136	151	175	198	210	222	227	219	204	193	175	167	175	186	204	221	233	237	237	226	209	4533	193	4827	193	
17	194	177	164	167	179	189	209	225	238	242	240	228	214	203	191	183	188	203	215	232	240	241	235	227	5023	203	5238	210	
18	215	204	192	193	192	209	222	227	238	246	248	234	222	211	202	190	190	195	200	215	221	227	227	226	5148	215	5369	215	
19	220	214	212	210	213	215	226	238	238	246	242	243	232	214	209	203	194	191	190	199	202	207	208	214	5179	216	5396	216	
20	216	215	220	218	222	228	233	233	240	241	246	242	237	229	222	211	198	192	189	189	190	189	190	197	5189	216	5390	216	
21	201	211	212	220	224	224	229	230	231	230	229	233	228	224	217	212	201	192	186	176	172	170	172	175	4998	208	5188	208	
22	190	196	210	224	231	235	239	237	232	232	233	236	231	230	232	226	219	208	195	181	170	165	158	167	5076	212	5250	210	
23	174	187	201	217	228	236	238	231	228	224	219	220	220	221	227	222	219	210	195	179	162	149	144	141	4893	204	5047	202	
24	154	168	183	206	220	232	236	233	226	219	214	213	215	221	227	231	228	221	212	192	172	154	140	137	4856	202	5001	200	
25	145	157	179	204	221	240	245	244	240	230	220	219	220	226	236	244	249	245	234	218	193	169	152	139	5068	211	5210	208	
26	143	156	177	200	225	242	251	252	246	236	225	219	217	222	236	249	255	256	251	236	211	185	163	147	5202	217	5346	214	
27	145	154	178	202	226	249	263	265	260	248	236	227	223	229	240	257	274	275	273	263	236	211	182	168	5483	228	5640	226	
28	157	162	181	206	234	257	275	280	276	265	251	239	232	237	247	264	279	293	293	289	269	240	212	186	5823	243	5996	240	
29	174	171	181	203	229	254	270	282	275	259	247	230	218	215	217	236	250	265	270	269	255	233	205	178	5587	233	5747	230	
30	160	153	159	173	200	223	241	253	257	247	234	219	205	196	199	211	228	246	258	264	256	241	217	193	5234	218	5404	216	
31	171	159	159	172	191	213	233	249	251	246	234	217	202	189	190	194	210	231	246	255	257	247	230	208	5155	215	5348	214	
1	193																												

MONTHLY MEAN

214. 2cm

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Aug. 1-Aug. 31 1995
 Unit : CENTIMETER

Date	Time																								(24H) SUM		(25H) SUM		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN	MEAN	MEAN	MEAN
1	193	177	174	178	190	214	232	243	251	249	237	220	204	192	178	177	187	201	214	228	232	230	219	206	5025	209	5216	209	
2	190	177	168	165	178	193	204	216	225	226	215	205	187	171	159	153	153	166	180	192	204	205	204	195	4532	189	4720	189	
3	187	182	177	174	176	188	202	212	216	221	222	213	200	189	177	165	161	165	175	185	195	202	207	215	4607	192	4820	193	
4	214	212	211	213	211	219	224	231	236	237	234	231	220	208	196	183	179	171	172	177	182	190	195	204	4949	206	5156	206	
5	208	216	223	225	225	228	233	236	232	236	238	231	226	224	212	202	189	180	167	166	167	167	174	183	4988	208	5186	207	
6	198	214	228	241	247	246	248	248	247	244	245	245	246	243	242	229	218	204	187	174	163	156	153	164	5226	218	5408	216	
7	182	199	217	235	247	253	249	246	237	232	229	228	229	230	236	230	221	209	185	167	144	128	120	124	4978	207	5118	205	
8	141	160	186	210	229	242	247	242	229	220	215	216	218	224	234	241	239	232	216	192	163	142	126	118	4883	203	5010	200	
9	127	149	174	204	230	248	256	253	242	229	218	213	214	223	237	248	253	255	245	220	192	158	135	118	5041	210	5158	206	
10	117	132	158	184	215	238	251	248	239	222	207	196	196	203	220	237	252	259	258	243	214	181	149	126	4946	206	5065	203	
11	119	126	142	171	202	226	244	248	240	226	207	191	182	187	206	225	248	264	266	260	241	209	175	150	4955	206	5085	203	
12	130	127	139	164	186	211	229	239	233	215	194	176	162	157	169	190	212	233	245	248	238	217	186	157	4657	194	4797	192	
13	140	129	134	153	179	199	219	232	232	223	202	185	170	161	165	183	211	233	250	262	261	250	225	205	4805	200	4988	200	
14	183	172	172	183	205	228	244	254	260	252	234	215	195	180	176	183	203	221	244	254	260	252	238	218	5228	218	5430	217	
15	202	192	185	191	208	225	237	254	260	252	240	221	199	187	180	180	186	204	221	238	246	243	241	226	5218	217	5434	217	
16	215	201	196	202	211	224	239	249	253	251	244	225	203	187	179	172	173	188	199	211	222	229	224	220	5118	213	5334	213	
17	215	212	204	211	218	231	238	252	252	256	252	240	230	215	201	196	196	198	205	217	226	229	230	234	5360	223	5592	224	
18	232	231	234	235	242	244	255	262	261	261	255	252	237	225	215	205	196	193	194	195	201	200	202	206	5434	226	5643	226	
19	209	213	218	225	229	234	239	240	242	239	238	232	221	217	210	198	191	185	181	179	171	174	176	178	5037	210	5224	209	
20	187	198	207	218	226	230	236	236	231	230	230	226	223	218	215	208	206	195	186	176	167	164	163	167	4945	206	5123	205	
21	179	191	206	218	229	235	240	238	232	228	223	223	225	227	228	231	225	216	204	192	178	166	161	162	5058	211	5232	209	
22	174	187	205	223	237	248	249	242	237	230	223	223	223	227	238	237	233	228	216	202	179	163	153	154	5132	214	5294	212	
23	162	176	195	217	235	247	248	245	232	224	217	213	213	223	230	241	242	238	230	212	187	167	150	147	5090	212	5242	210	
24	151	169	186	215	237	250	254	252	241	226	218	209	213	219	235	244	251	256	248	228	204	178	150	143	5179	216	5323	213	
25	145	153	173	201	222	238	244	243	230	213	197	187	182	193	209	227	239	249	248	234	211	183	160	143	4922	205	5058	202	
26	136	144	165	188	212	232	243	238	227	214	192	179	173	182	197	217	240	254	258	256	237	210	185	166	4945	206	5104	204	
27	159	163	182	209	233	253	268	271	255	237	215	201	185	184	200	219	243	260	273	273	258	232	203	178	5355	223	5515	221	
28	160	156	162	183	207	227	245	248	240	220	203	181	165	160	167	187	214	235	249	261	254	233	211	184	4952	206	5120	205	
29	168	158	162	178	201	225	242	248	244	229	213	188	170	159	159	175	197	219	239	252	253	246	225	207	4957	207	5148	206	
30	190	177	175	183	201	221	236	245	243	233	215	189	171	155	149	154	174	192	214	229	238	237	225	216	4862	203	5066	203	
31	204	189	187	192	205	222	238	249	251	244	235	215	195	181	169	164	179	191	210	228	239	248	245	241	5121	213	5357	214	
1	236																												

MONTHLY MEAN

209. 0cm

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Sep. 1-Sep. 30 1995
 Unit : CENTIMETER

Date	Time																								(24H) SUM		(25H) SUM		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN	MEAN	MEAN	MEAN
1	236	226	226	230	234	248	260	270	269	268	257	239	219	205	187	181	179	183	191	204	217	225	228	232	5414	226	5646	226	
2	232	233	236	236	241	250	254	262	267	262	256	247	233	219	206	193	186	183	185	189	199	205	215	223	5413	226	5642	226	
3	229	239	248	249	250	256	259	260	261	257	253	250	240	231	224	212	199	190	180	178	175	179	185	193	5396	225	5605	224	
4	209	222	235	247	253	251	253	249	245	246	243	242	238	239	234	227	217	203	189	177	166	161	163	171	5279	220	5463	219	
5	184	208	227	244	255	258	255	251	245	239	235	236	240	245	250	248	242	228	215	191	172	158	149	153	5328	222	5495	220	
6	167	184	209	234	248	252	254	243	229	218	212	211	217	224	237	243	249	244	227	204	179	154	139	135	5112	213	5257	210	
7	145	163	187	216	238	251	251	240	225	208	197	193	199	213	230	250	260	260	251	231	202	174	152	141	5076	212	5219	209	
8	143	156	183	208	233	248	251	240	225	206	189	177	179	195	217	240	257	267	264	252	225	198	172	157	5083	212	5230	209	
9	148	161	183	209	234	254	260	255	240	216	195	179	173	183	207	229	253	269	276	269	249	221	194	170	5226	218	5384	215	
10	158	159	174	198	224	242	253	250	233	213	186	168	157	158	176	206	230	252	265	267	254	232	206	182	5044	210	5212	208	
11	168	164	176	195	218	241	252	249	239	223	196	171	158	150	163	184	211	236	257	266	262	245	225	205	5055	211	5242	210	
12	187	178	187	203	224	244	259	259	256	236	214	189	171	159	164	180	200	228	246	258	263	252	236	220	5215	217	5420	217	
13	205	197	198	208	223	242	254	256	251	239	215	193	172	156	154	161	178	198	217	231	241	236	225	216	5067	211	5275	211	
14	208	205	207	217	228	246	262	270	269	264	246	225	207	194	187	185	195	212	228	241	247	250	240	237	5468	228	5702	228	
15	234	232	229	235	244	252	260	269	263	258	247	228	210	197	187	182	185	190	203	214	217	223	223	221	5405	225	5621	225	
16	216	220	220	226	233	240	249	252	251	246	241	228	214	201	196	189	185	190	199	203	209	216	220	223	5267	219	5491	220	
17	223	230	239	244	249	255	261	262	263	256	251	245	237	225	221	215	207	205	205	204	207	207	209	216	5535	231	5755	230	
18	219	229	235	244	251	253	252	254	249	245	240	234	227	225	223	219	210	206	201	192	189	189	189	191	5369	224	5571	223	
19	202	216	227	235	246	249	247	246	237	233	230	226	228	227	227	230	228	218	207	195	188	180	180	186	5288	220	5484	219	
20	196	213	227	239	251	256	255	247	234	227	223	222	230	238	242	243	233	220	208	191	179	172	177	177	5347	223	5530	221	
21	184	203	223	239	252	258	254	246	233	221	215	214	217	228	243	251	253	252	241	222	203	184	173	173	5383	224	5565	223	
22	183	198	220	241	257	266	264	251	234	220	208	203	209	218	237	254	262	264	252	236	211	187	168	162	5406	225	5573	223	
23	167	180	201	226	244	252	251	244	221	203	186	177	184	196	216	238	254	264	259	245	224	196	174	162	5164	215	5325	213	
24	160	174	194	217	242	253	258	245	222	204	184	168	168	177	201	231	251	268	272	263	244	217	189	173	5175	216	5340	214	
25	165	170	191	216	239	254	258	252	231	206	184	163	156	164	184	213	238	259	271	272	260	236	209	189	5181	216	5360	214	
26	179	178	193	216	238	253	262	257	239	217	192	168	156	154	173	200	227	255	274	279	279	257	236	217	5299	221	5501	220	
27	202	199	212	226	249	270	276	275	262	240	211	184	168	159	161	182	208	232	254	269	272	262	246	228	5445	227	5656	226	
28	211	206	207	220	240	256	264	263	253	238	213	184	159	146	146	156	173	197	220	239	250	251	240	232	5163	215	5386	215	
29	222	214	212	219	231	245	257	261	254	243	223	197	177	155	147	148	157	175	193	210	223	234	231	225	5054	211	5275	211	
30	221	217	217	218	228	240	249	251	249	245	226	208	186	169	156	149	149	157	171	184	196	206	211	214	4916	205	5134	205	
1	218																												
					</td																								

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Oct. 1-Oct. 31 1995
 Unit : CENTIMETER

Date	Time																								(24H)		(25H)		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	MEAN	SUM	MEAN
1	219	217	221	222	225	234	240	244	245	242	235	224	209	197	186	181	174	176	182	186	196	201	216	226	5098	212	5328	213	
2	230	239	245	250	253	253	254	255	253	249	245	238	234	225	218	209	197	189	187	181	183	185	193	205	5369	224	5584	223	
3	216	226	240	247	250	250	244	238	234	231	227	225	226	228	225	222	216	202	188	176	168	162	163	175	5179	216	5368	215	
4	188	206	220	234	241	241	232	222	216	210	210	208	217	228	235	239	239	227	212	194	177	165	161	168	5090	212	5269	211	
5	179	197	216	233	243	245	234	220	207	193	190	191	202	218	233	244	249	242	231	210	186	167	156	155	5041	210	5206	208	
6	164	181	200	219	232	236	229	210	187	171	160	157	165	186	205	224	235	237	229	212	188	163	150	145	4687	195	4835	193	
7	148	166	188	208	224	232	224	207	188	169	149	144	155	175	200	227	247	257	258	245	221	196	178	165	4772	199	4939	198	
8	167	179	200	219	238	249	241	227	203	180	160	146	146	165	191	218	243	257	263	259	240	215	196	180	4981	208	5156	206	
9	175	185	204	222	242	253	252	241	217	190	165	146	139	150	175	203	231	253	265	267	254	234	215	201	5078	212	5269	211	
10	190	194	210	229	246	261	263	253	233	206	179	155	142	144	161	188	215	237	253	261	254	239	221	206	5142	214	5339	214	
11	196	195	203	222	239	255	257	250	234	212	184	158	141	138	146	166	193	218	237	246	248	240	222	211	5010	209	5213	209	
12	203	199	202	218	234	249	255	254	242	221	200	174	158	150	154	172	194	219	241	255	266	269	263	259	5252	219	5505	220	
13	253	247	252	266	277	290	297	301	290	272	255	232	211	202	198	204	219	239	257	271	280	282	273	265	6132	256	6395	256	
14	263	262	258	262	273	283	288	287	284	269	252	231	214	199	190	192	197	211	222	234	241	244	245	241	5843	243	6082	243	
15	240	237	238	240	248	255	259	257	255	248	235	219	205	189	185	183	184	186	196	208	216	218	221	225	5347	223	5573	223	
16	225	230	232	236	244	247	249	251	247	244	236	225	216	208	200	200	196	196	201	208	213	216	221	224	5364	223	5595	224	
17	231	240	244	248	252	252	250	248	245	239	233	229	223	219	216	211	206	202	200	198	198	199	205	212	5398	225	5616	225	
18	219	225	234	237	243	239	231	228	223	219	215	214	213	217	218	219	211	205	200	189	185	185	189	193	5148	215	5354	214	
19	206	220	232	238	243	241	234	223	217	211	206	209	215	220	228	233	231	223	213	202	190	182	182	186	5185	216	5384	215	
20	199	215	229	237	245	243	232	220	207	193	188	187	199	210	224	235	237	231	221	205	189	173	167	169	5057	211	5237	209	
21	180	194	211	224	232	229	219	199	183	170	156	159	171	186	208	227	237	237	230	213	192	176	163	162	4759	198	4932	197	
22	173	191	209	225	239	243	234	219	198	177	164	163	172	191	216	242	257	263	259	247	223	201	185	175	5066	211	5245	210	
23	180	195	214	229	245	248	237	217	190	164	142	132	137	155	182	213	237	250	255	247	227	207	186	171	4859	202	5032	201	
24	173	186	201	221	238	245	241	223	195	166	138	123	119	136	161	193	223	248	262	262	249	229	210	191	4835	201	5020	201	
25	185	193	208	225	244	253	251	239	211	181	150	125	114	118	139	170	202	227	250	258	254	240	224	206	4867	203	5064	203	
26	197	199	210	225	242	256	257	249	227	199	167	140	118	114	123	146	176	204	227	244	246	237	225	211	4839	202	5038	202	
27	199	195	199	211	226	239	242	239	221	199	168	141	118	103	103	118	140	167	189	211	222	222	219	213	4506	188	4711	188	
28	205	200	201	212	226	240	247	248	241	227	204	178	156	138	131	135	148	166	185	203	219	224	227	226	4788	199	5010	200	
29	222	217	218	220	230	239	246	249	244	238	221	202	184	165	155	151	152	162	175	188	201	212	219	222	4932	205	5154	206	
30	222	225	223	224	228	234	239	241	245	241	236	224	211	200	189	182	178	178	183	189	197	206	217	222	5135	214	5364	215	
31	229	234	236	236	233	234	234	233	231	229	226	223	219	211	204	194	185	179	175	175	176	180	198	5064	211	5272	211		
	1	208																											

MONTHLY MEAN

212.1cm

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Nov. 1-Nov. 30 1995
 Unit : CENTIMETER

Date	Time																								(24H)		(25H)	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	MEAN	SUM
1	208	217	221	225	225	219	214	213	210	210	214	212	217	221	221	217	210	203	194	187	184	182	187	197	5005	209	5213	209
2	208	221	229	234	232	226	214	207	199	198	198	202	214	225	234	240	238	231	218	206	197	189	191	195	5148	214	5354	214
3	207	223	235	242	241	236	221	202	188	180	179	185	196	212	228	242	251	246	231	220	203	190	187	187	5131	214	5328	213
4	197	212	224	235	238	232	220	196	178	163	157	159	171	192	217	237	253	255	249	237	219	204	195	195	5035	210	5238	210
5	203	217	232	248	252	250	237	215	192	170	156	154	165	186	212	236	257	264	263	254	237	219	203	198	5219	217	5422	217
6	203	213	229	245	253	251	241	219	190	163	145	135	140	159	185	212	236	253	258	252	239	223	207	198	5047	210	5246	210
7	198	209	226	241	250	253	247	225	202	171	147	132	129	144	170	197	224	246	255	256	246	230	217	205	5020	209	5223	209
8	203	210	222	239	253	256	251	239	211	182	156	136	127	134	153	181	209	230	246	251	247	235	221	207	4998	208	5203	208
9	205	207	216	231	246	255	255	244	223	195	168	148	132	132	147	170	197	221	241	253	251	243	231	221	5031	210	5243	210
10	212	208	219	233	244	255	256	248	232	210	179	155	137	130	138	154	178	199	219	233	238	233	221	215	4945	206	5153	206
11	208	203	207	219	230	241	246	241	232	216	188	167	146	139	136	149	167	188	204	219	230	230	226	219	4850	202	5068	203
12	218	214	216	223	232	248	253	252	245	229	210	189	171	160	155	161	176	189	205	221	228	233	233	227	5089	212	5316	213
13	226	223	221	225	232	242	248	247	244	237	221	206	189	178	170	172	179	187	201	214	221	227	229	228	5169	215	5397	216
14	228	226	225	224	226	236	238	239	237	231	222	211	198	191	184	182	182	187	194	202	211	219	221	224	5140	214	5369	215
15	229	230	231	230	230	233	233	234	233	229	224	218	209	205	198	194	191	190	192	198	202	208	215	220	5179	216	5404	216
16	225	230	232	231	228	226	222	218	214	212	210	209	206	210	209	205	203	199	195	192	194	197	203	210	5081	212	5302	212
17	221	224	229	230	226	221	213	204	199	192	194	200	205	213	219	221	220	213	204	200	195	193	196	204	5036	210	5251	210
18	215	226	231	235	232	224	212	198	188	180	182	188	196	211	225	232	234	228	218	205	194	189	188	192	5026	209	5231	209
19	205	216	225	233	227	219	205	187	169	157	154	160	174	194	215	233	244	245	235	224	209	200	195	197	4923	205	5133	205
20	210	222	235	244	247	241	223	201	180	162	153	156	172	191	218	244	264	271	265	255	235	220	209	206	5224	218	5436	217
21	212	225	237	247	252	249	230	204	176	152	134	127	137	158	186	219	247	262	266	259	244	225	209	203	5059	211	5267	211
22	208	217	229	244	252	253	239	214	184	152	125	110	113	129	159	193	224	251	265	266	257	243	227	216	4969	207	5182	207
23	213	218	235	248	260	264	257	238	208	175	144	119	108	118	140	169	202	230	252	261	259	249	232	221	5018	209	5231	209
24	213	213	224	242	255	260	260	249	222	189	156	128	107	107	119	142	173	203	228	246	253	249	237	222	4898	204	5113	205
25	215	211	217	230	242	255	258	253	238	213	180	150	126	114	114	129	156	180	204	226	240	242	237	231	4859	202	5080	203
26	221	212	214	225	236	247	254	256	248	229	205	179	153	132	123	127	142	162	184	201	215	223	220	219	4826	201	5039	202
27	213	203	199	199	209	221	227	232	231	221	208	186	164	148	133	128	133	144	160	176	189	202	207	204	4538	189	4744	190
28	206	200	194	188	192	203	208	216	219	217	213	203	190	178	166	157	156	159	167	180	190	201	210	214	4628	193	4843	194
29	216	212	208	203	198	199	203	206	209	211	212	210	203	199	194	186	180	175	175	179	182	191	198	205	4752	198	4960	198
30	208	209	206	200	193	187	179	179	182	183	185	190	194	198	200	201	196	191	187	187	188	190	195	203	4632	193	4842	194
1	210																								MONTHLY MEAN	207.6cm		

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Dec. 1-Dec. 31 1995
 Unit : CENTIMETER

Date	Time	(24H)																							(25H)				
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	MEAN	SUM	MEAN
1	210	215	215	213	206	197	187	179	174	171	177	185	193	202	212	218	219	213	208	203	194	193	196	200	4779	199	4987	199	
2	208	217	219	218	213	204	187	172	163	160	159	165	177	193	211	223	229	232	224	216	209	205	202	207	4814	201	5031	201	
3	218	228	235	238	238	229	211	194	179	167	164	171	183	203	224	247	258	263	263	252	243	233	227	228	5298	221	5536	221	
4	237	246	255	260	258	253	235	214	190	170	160	160	170	189	213	236	257	266	265	260	250	235	227	225	5434	226	5667	227	
5	232	242	252	260	261	257	244	219	193	170	153	145	152	169	194	220	242	257	261	258	248	235	225	221	5310	221	5534	221	
6	223	232	246	255	259	261	249	226	200	174	152	139	141	155	177	206	231	249	261	262	254	243	231	223	5250	219	5470	219	
7	221	226	240	252	259	261	255	234	209	180	154	136	130	138	157	187	213	231	247	252	246	237	224	215	5104	213	5315	213	
8	211	213	223	234	248	256	248	236	213	182	157	134	120	124	140	163	190	215	231	243	243	232	223	214	4894	204	5101	204	
9	207	207	216	228	241	251	252	241	225	200	173	150	133	130	140	157	184	207	228	243	246	243	233	225	4960	207	5178	207	
10	218	216	221	231	246	257	261	257	246	224	200	176	157	150	154	168	189	214	234	248	255	256	248	239	5263	219	5498	220	
11	234	227	228	236	247	258	265	263	257	239	218	194	172	161	160	166	184	203	220	236	246	250	244	237	5346	223	5576	223	
12	230	223	221	223	231	245	252	257	252	239	223	201	183	171	162	165	176	190	208	223	233	242	239	234	5224	218	5454	218	
13	230	223	220	219	224	232	240	243	242	236	227	213	197	186	180	178	183	192	205	219	227	232	235	234	5218	217	5447	218	
14	229	224	218	215	216	218	221	224	227	223	220	213	202	194	188	184	185	189	197	207	213	221	226	226	5080	212	5304	212	
15	224	222	217	210	205	205	204	206	207	207	208	205	206	204	200	198	197	198	201	206	211	217	223	226	5007	209	5236	209	
16	229	227	225	220	213	207	200	196	195	197	203	206	212	217	221	225	223	220	214	215	217	219	222	229	5151	215	5384	215	
17	233	235	234	227	220	209	196	189	183	181	187	193	203	217	227	236	240	237	231	227	223	220	222	225	5194	216	5427	217	
18	232	238	241	239	232	218	202	185	171	166	166	169	187	206	223	242	251	251	245	245	235	227	219	216	5179	216	5402	216	
19	223	231	237	237	231	217	197	176	154	137	131	133	149	169	195	222	237	247	244	236	223	210	204	203	4843	202	5054	202	
20	211	218	226	230	227	220	201	173	146	122	104	117	139	168	201	228	247	253	251	238	225	212	210	4673	195	4885	195		
21	212	223	235	245	249	245	228	203	172	140	115	101	105	122	151	185	218	242	258	260	256	242	229	221	4856	202	5077	203	
22	221	227	242	256	265	267	260	239	211	175	143	121	112	120	143	176	210	240	263	272	270	258	245	231	5168	215	5391	216	
23	223	223	234	250	260	266	264	253	224	189	152	124	101	96	112	135	164	197	220	236	244	236	225	213	4842	202	5043	202	
24	201	198	206	220	236	251	253	250	234	208	176	145	116	104	105	125	150	178	201	224	236	234	226	218	4694	196	4901	196	
25	207	199	201	212	228	246	257	257	251	233	208	178	152	132	124	133	151	172	192	211	224	230	224	215	4837	202	5040	202	
26	203	189	186	189	200	220	231	238	243	235	218	198	176	160	151	148	158	175	193	211	225	232	232	227	4840	202	5057	202	
27	218	206	197	191	197	209	221	231	236	236	231	220	201	189	178	171	173	182	192	207	218	225	227	223	4981	208	5198	208	
28	218	208	198	189	187	189	196	204	212	215	217	214	206	202	194	189	190	191	198	209	218	223	226	229	4921	205	5144	206	
29	223	216	209	195	187	185	184	185	191	194	198	202	201	203	202	202	199	201	202	205	210	214	215	220	4842	202	5059	202	
30	218	213	209	198	187	179	172	168	168	169	174	180	188	194	201	205	211	212	211	213	213	214	216	220	4730	197	4952	198	
31	222	221	215	212	205	191	181	172	166	164	164	172	182	194	210	221	227	233	231	229	228	226	226	231	4924	205	5158	206	
1	233																												

MONTHLY MEAN

209. 2cm

Station : SYOWA STATION
Latitude : 69° 00' 28" S
Longitude : 39° 34' 13" E
Duration : Jan. 1-Jan. 31 1996
Unit : CENTIMETER