

**Oceanographic Data of the 39th Japanese Antarctic Research Expedition
from November 1997 to March 1998**

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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 39th Japanese Antarctic Research Expedition (JARE-39) during the austral summer of 1997/1998. The tidal observations were carried out by the winter party of JARE-38 from February 1997 to January 1998.

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 of 10 liter capacity. XBT (expendable bathythermograph), XCTD (expendable CTD) and serial observations were taken in the Southern Ocean. Three surface drifting buoys were deployed in the Antarctic Circumpolar Current.

(1) Surface water sampling

Surface water was sampled one or two times a day at 44 stations for chemical analysis. The results are given in Table 1.

(2) Monitoring of marine pollution

Surface water was sampled at 10 stations in the Southern Ocean for monitoring of marine pollution. Items and methods of analysis are given in the following section (6).

(3) XBT observations

XBT observations were carried out at 215 stations in the Southern Ocean from Fremantle to Antarctica, from Antarctica to Cape Town, from Cape Town to Antarctica and back to Sydney. The results are listed in Table 2.

(4) XCTD observations

XCTD observations were carried out at 100 stations along the same route as XBT observations. The results are listed in Table 3. Salinity is not calibrated.

Vertical sections of water temperature with XBT and XCTD observations are shown in Figs. 2, 3, 4 and 5.

(5) Serial observations

Serial observations with the Rosette sampler, equipped with twenty three Niskin bottles of 2.5 liter capacity, and CTD (Conductivity, Temperature and Depth profiling system: Falmouth Scientific FSI TRITON ICTD) were carried out at 14 stations. The results of serial observation and meteorological data are given in Table 4.

(6) Chemical analysis of sampled water

Chemical analysis of seawater collected with the bucket or the Niskin bottle was done by the following methods. Item (a) was calculated from conductivity using the 1978 practical salinity scale (UNESCO, 1981). Items (b), (d) and (h) were carried out with the methods 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 Autosol salinometer model 8400B). |
| (b) pH: | Glass electrode method (Horiba digital pH meter F-16). |
| (c) Dissolved oxygen: | Carpenter method (Hirama model ART-3 DO-1). |
| (d) Phosphate-P: | Molybdenum blue method (Shimadzu model UV-1600 spectrophotometer). |

- (e) Silicate-Si: Molybdenum yellow method (Shimadzu model UV-1600 spectrophotometer).
- (f) Nitrite-N: Naphthylethylenediamine method (Shimadzu model UV-1600 spectrophotometer).
- (g) Nitrate-N: Cadmium (Cd) - copper (Cu) reduction column, Naphthylethylenediamine method (Sanuki FI-3000 Flow Injection Analysis system).
- (h) Ammonium-N: Indophenol blue method (Shimadzu model UV-1600 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 analysis of items (a) to (h) are given in Tables 1 and 4. The results of monitoring of marine pollution items (i) to (k) are given in Table 5.

(7) Current observation with surface drifting buoys

Each surface drifting buoy is a spherical buoy of 35 cm diameter, from which hangs a drogue of 1 m diameter, 8 m length (C-2340, TOYOCOM Co.). Buoy data from each drift buoy were transmitted to the data processing center through the NOAA satellite, and the Argos system offered buoy position and surface water temperatures to each user.

The first surface drifting buoy was deployed at 60°51'S, 149°56'E on March 14, 1998. It was operated until March 13, 1999. The second was deployed at 56°28'S, 150°22'E on March 15, 1998. It was operated until February 24, 1999. The third was deployed at 51°54'S, 149°49'E on March 16, 1998. It was operated until March 15, 1999. The trajectories of the three buoys are shown in Fig. 6.

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 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 1997 to January 1998 are described in this report. The gauge was maintained by Dr. M. Kanao, a member of the JARE-38 winter party, through the year. The methodology of tidal observation 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. Hourly sea level was recorded on the hour. Daily and monthly mean sea levels were calculated from the hourly data. The results are given in Table 6.

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References

Andersson, L. (1979): Simultaneous spectrophotometric determination of nitrite and nitrate by flow injection analysis. *Anal. Chim. Acta*, **110**, 123.

- Bergamin, H., Reis, B.F. and Zagatto, E.A.G. (1978): A new device for improving sensitivity and stabilization in flow injection analysis. *Anal. Chim. Acta*, **97**, 427.
- Carpenter, J.H. (1965): The accuracy of the Winkler method for dissolved oxygen. *Limnol. Oceanogr.*, **10**, 135-140.
- Gine, M.F., Bergamin, H., Zagatto, E.A.G. and Reis, B.F. (1980): Simultaneous determination of nitrite and nitrate by flow injection analysis. *Anal. Chim. Acta*, **114**, 191.
- Hydrographic Department, Maritime Safety Agency, Japan (1995): Results of surveys in 1993. *Rep. Mar. Pollut. Surv.*, **21**, 70-74 (in Japanese).
- Motomizu, S. and Korechika, K. (1988): FIA for trace amounts of silicon based on spectrophotometric determination of molybdosilicic acid. *Bunseki Kagaku*, **37**, T115-T119.
- Odamaki, M., Michida, Y., Noguchi, I., Iwanaga, Y., Ikeda, S. and Iwamoto, K. (1991): Mean sea-level observed at Syowa Station, East Antarctica. *Proc. NIPR Symp. Antarct. Geosci.*, **5**, 20-28.
- Strickland, J.D.H. and Parsons, T.R. (1972): Practical handbook of seawater analysis. *Bull. Fish. Res. Board Can.*, 2nd ed., **167**, 311 p.
- UNESCO (1981): Tenth Report of the Joint Panel in Oceanographic Tables and Standards. *UNESCO Technical Papers in Marine Science*, 36.

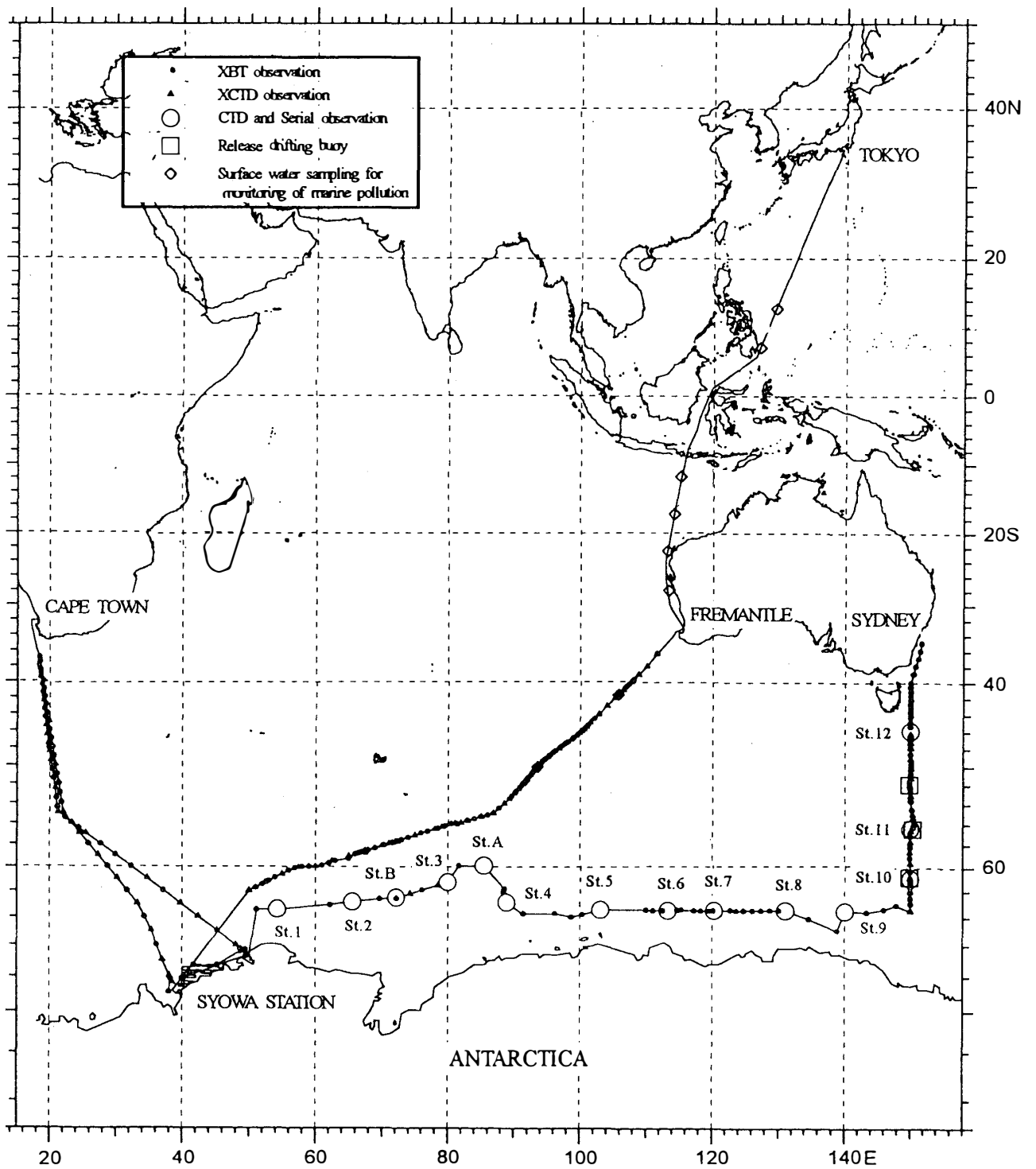


Fig. 1. The track of the icebreaker "Shirase" and sites of oceanographic stations.

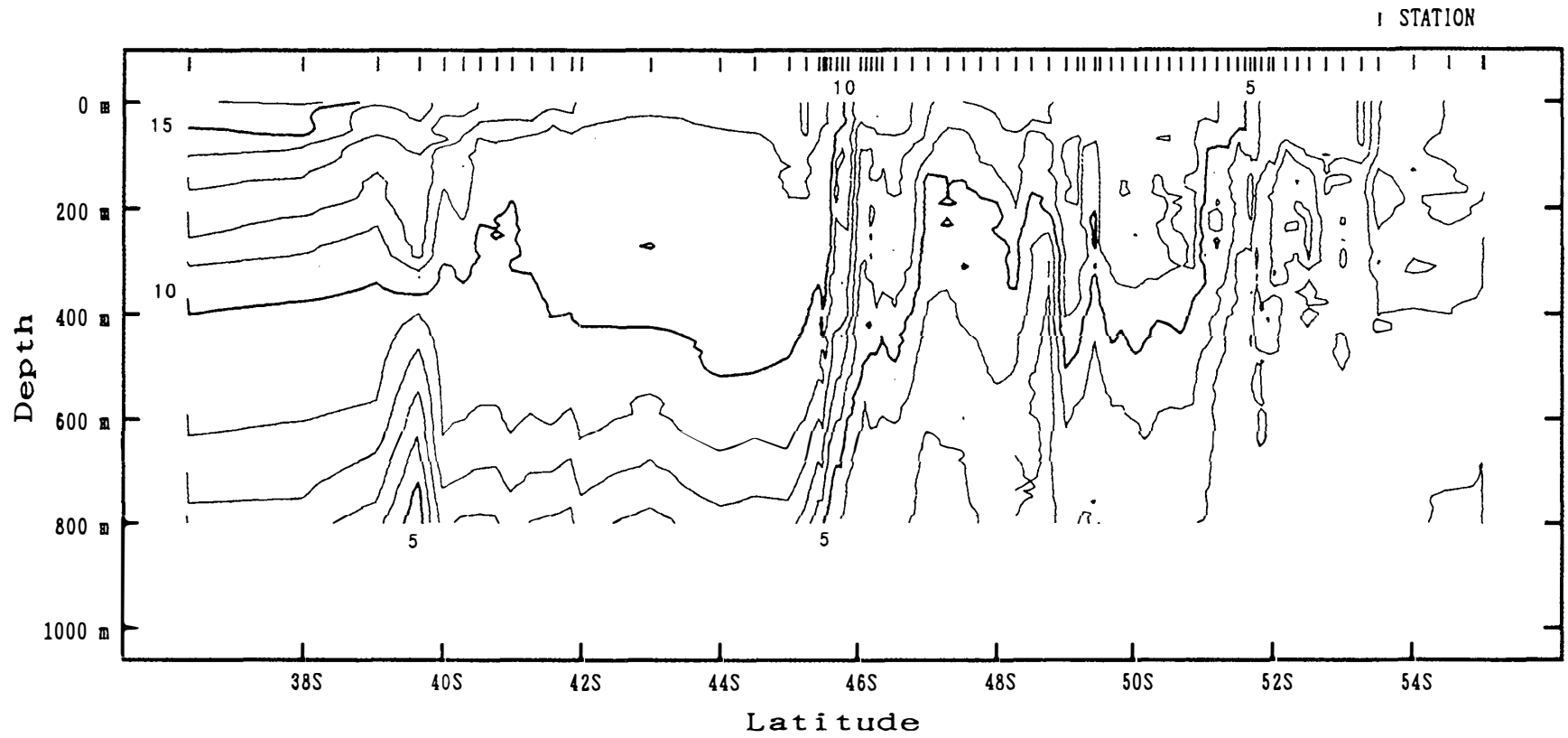


Fig. 2. Vertical profile of water temperature(°C) observed with XBT and XCTD from Fremantle to Antarctica. Vertical bars on the top of the profile indicate sites of XBT and XCTD observations.

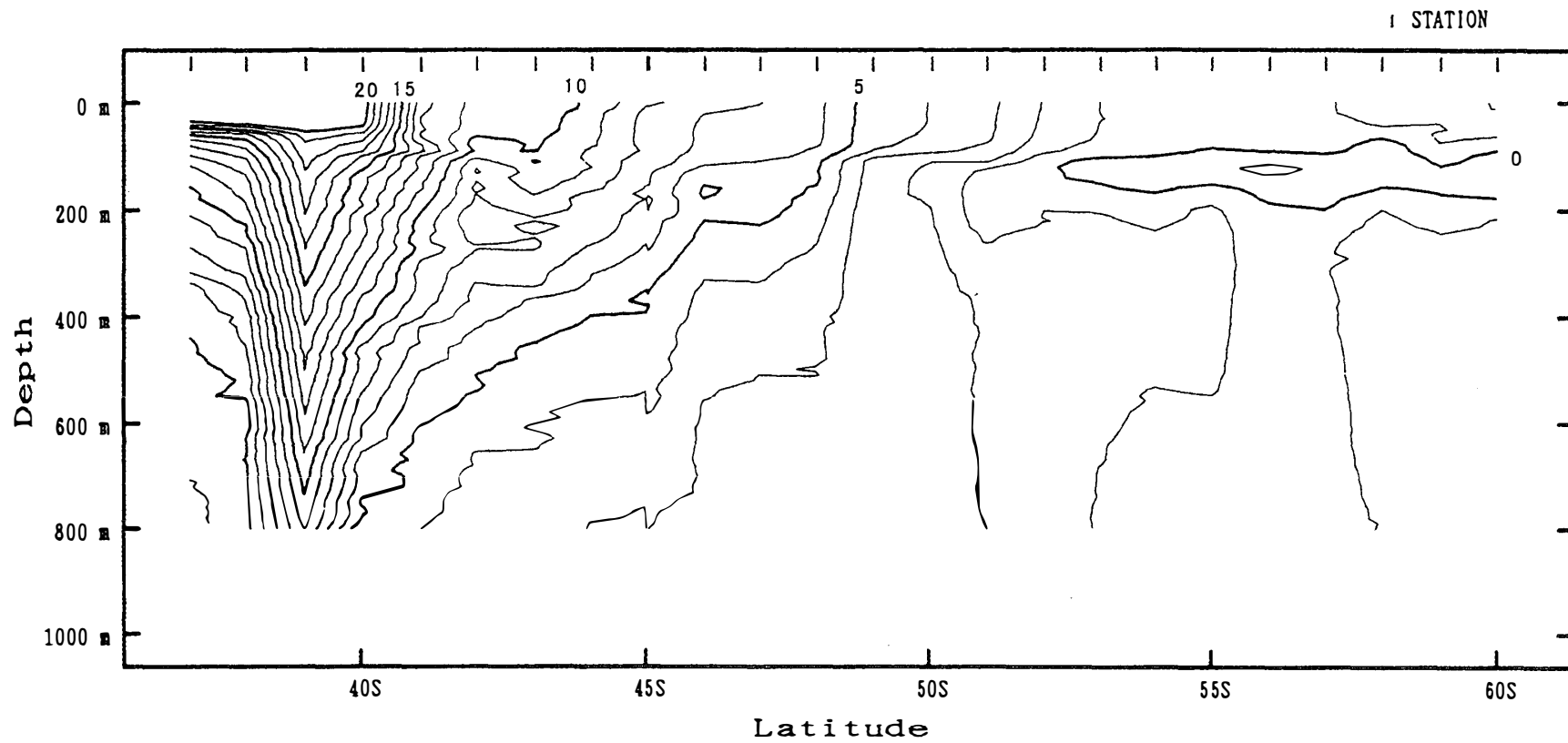


Fig. 3. Vertical profile of water temperature ($^{\circ}\text{C}$) observed with XBT and XCTD from Antarctica to Cape Town. Vertical bars as in Fig. 2.

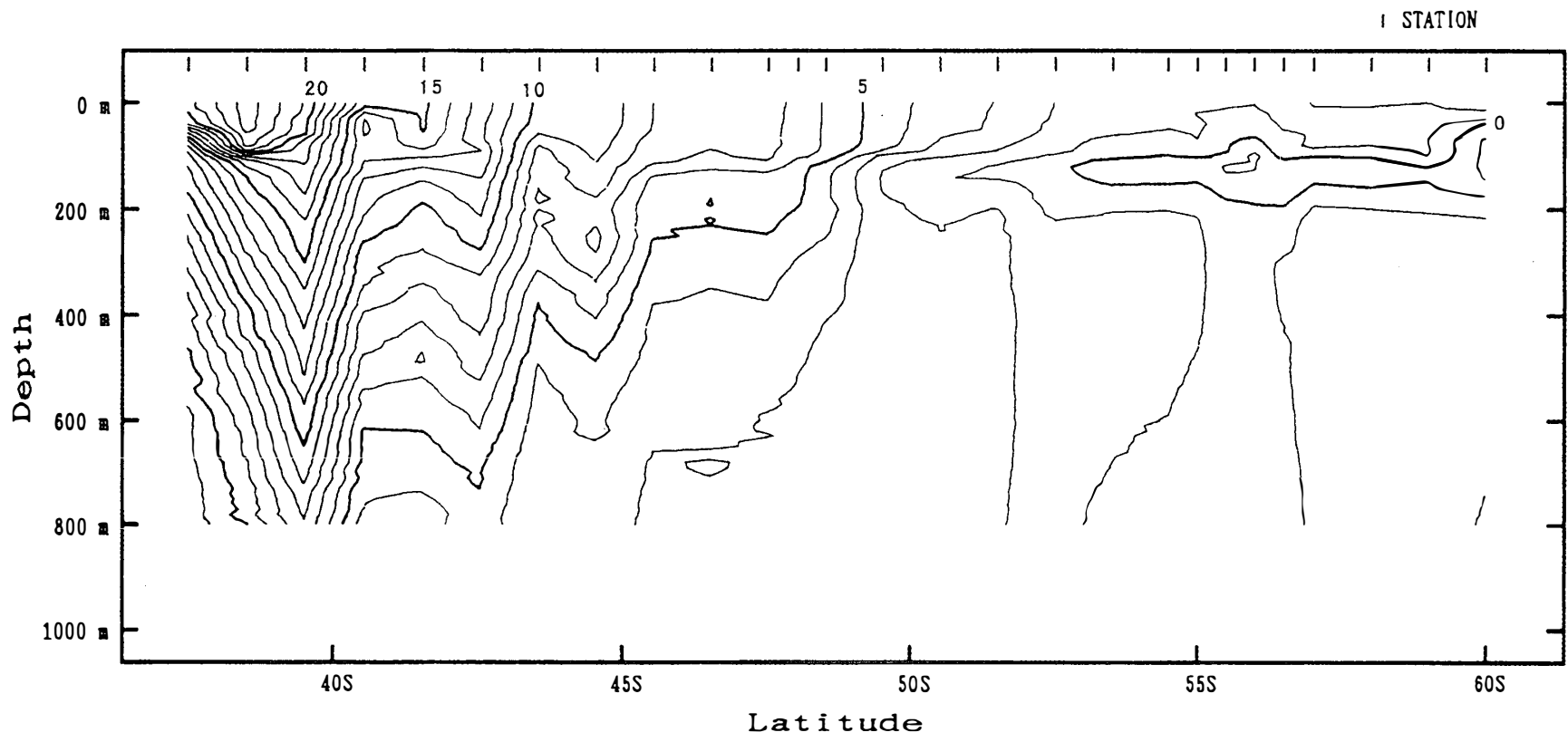


Fig. 4. Vertical profile of water temperature ($^{\circ}\text{C}$) observed with XBT and XCTD from Cape Town to Antarctica. Vertical bars as in Fig. 2.

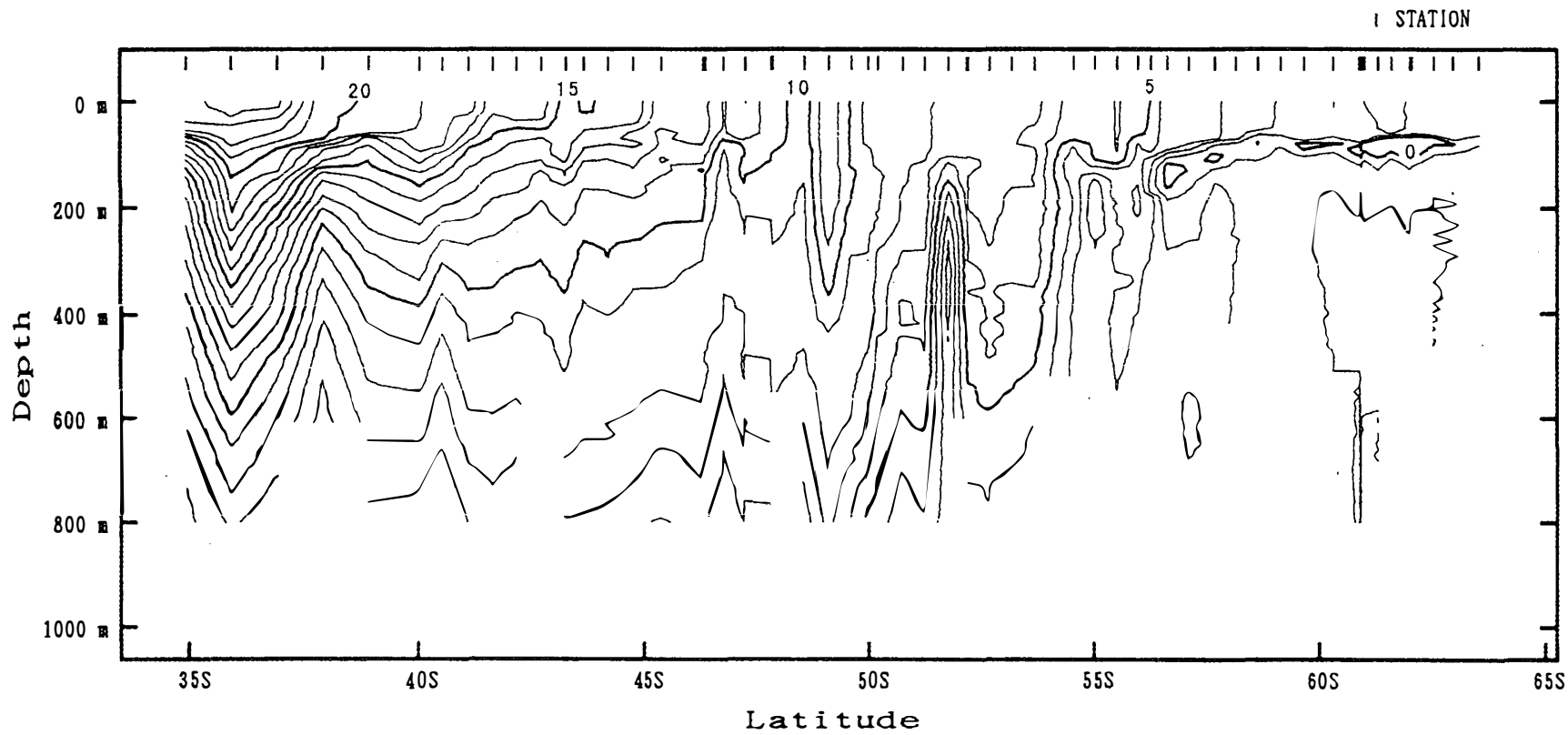


Fig. 5. Vertical profile of water temperature ($^{\circ}\text{C}$) observed with XBT and XCTD from Antarctica to Sydney. Vertical bars as in Fig. 2.

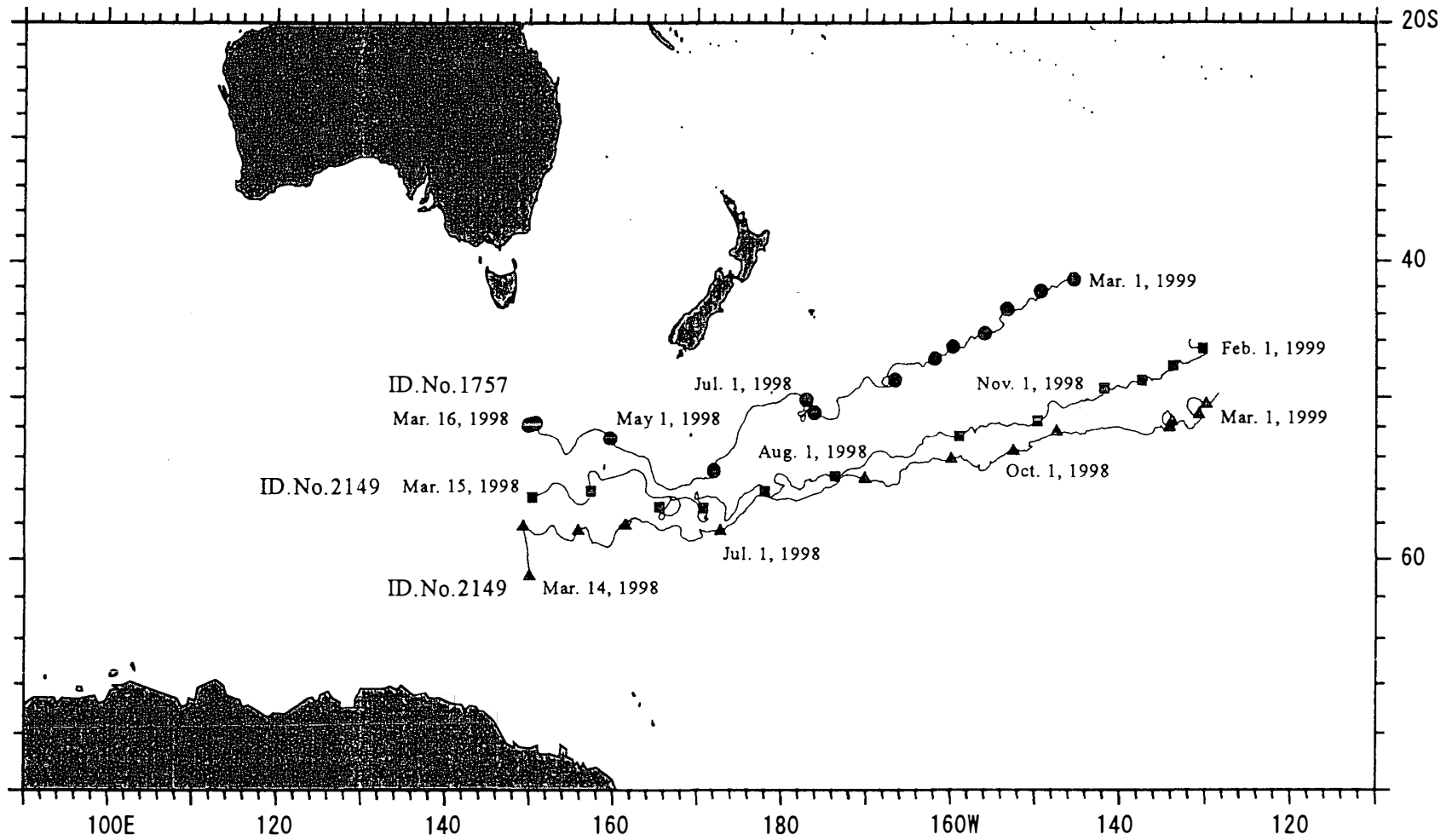


Fig. 6. Trajectories of three surface drifting buoys. Solid triangles mark the deployment location and the location on the first day of every month for the first buoy (ID. No. 2149). Solid squares mark the second buoy (ID. No. 2149). Solid circles mark the third buoy (ID. No. 1757).

Table 1. Data of surface water observations on board the icebreaker "Shirase" in 1997-98.

Date	Time (UT)	Position		Air Temp.	Water Temp.	Salinity	pH	DO2	PO4-	Sio3-	NO2-	NO3-	NH4-					
		Lat.	Long.	°C					P	Si	N	N	N					
														(μ mol/l)				
1997																		
Nov. 14		Left Tokyo																
15	22:50	25-51.0 N	135-18.0 E	23.8	24.5	34.760	8.29	239	0.05	4	0.04	0	-					
16	06:50	23-59.1	134-24.9	25.9	27.3	34.689	8.23	220	0.04	6	0.02	0	-					
16	22:50	20-11.6	132-43.2	27.1	27.0	34.679	8.29	220	0.21	0	0.03	1	0.2					
17	06:50	18-21.5	131-56.9	27.8	28.0	34.586	8.28	217	0.22	1	0.03	1	0.2					
17	22:50	14-40.3	130-20.1	28.5	28.4	34.386	8.27	235	0.04	0	0.02	0	0.2					
18	06:50	12-47.0	129-32.1	28.9	29.3	34.305	8.27	222	0.02	-	0.04	0	0.2					
18	22:50	9-05.8	127-58.1	28.7	29.4	34.084	8.26	236	0.00	0	0.01	0	0.3					
19	06:50	7-06.4	127-08.3	29.3	30.2	34.050	8.26	227	0.01	4	0.04	1	0.2					
22	22:50	11-42.1 S	115-07.5	28.3	29.2	34.687	8.24	245	0.07	1	0.04	1	0.1					
23	06:50	13-28.9	114-52.2	29.3	29.3	34.682	8.24	241	0.08	0	0.02	0	0.3					
23	22:50	17-08.5	114-09.6	27.0	26.3	34.853	8.29	250	0.07	2	0.03	1	-					
24	06:50	18-56.6	113-50.7	26.8	26.5	34.769	8.28	219	0.09	4	0.01	0	0.1					
24	22:50	22-27.6	113-11.9	23.5	23.7	35.464	8.23	267	0.08	0	0.03	1	0.1					
25	07:00	24-21.1	112-48.6	23.7	22.8	35.515	8.26	267	0.08	2	0.03	0	0.0					
25	22:50	27-53.1	113-20.9	22.0	22.0	35.679	8.26	275	0.11	13	0.01	1	0.1					
28		Arrived in Fremantle																
Dec. 3		Left Fremantle																
4	00:00	36-22.7	111-35.5	15.5	16.0	35.555	8.18	277	0.27	3	0.06	0	0.2					
4	09:55	38-28.4	109-27.7	15.2	15.2	34.935	8.14	285	0.67	3	0.17	6	0.1					
5	00:55	41-31.8	105-45.2	13.0	12.5	34.768	8.12	355	0.85	3	0.22	7	0.2					
5	10:50	43-26.5	103-28.7	12.7	11.8	34.657	8.13	369	0.81	-	0.24	8	0.1					
6	00:50	46-01.8	100-10.7	10.5	8.8	34.112	8.08	364	1.52	0	0.34	15	0.3					
6	10:50	47-42.3	97-16.3	8.1	7.3	34.060	8.14	361	1.57	6	0.31	17	0.2					
7	01:50	50-04.5	93-31.5	6.2	7.0	34.114	8.12	357	1.58	1	0.28	16	0.1					
7	11:50	51-34.1	91-47.3	4.2	5.1	33.934	8.13	365	1.88	11	0.29	20	0.1					

Date	Time (UT)	Position		Air Temp.	Water Temp.	Salinity	pH	DO2	PO4-	Sio3-	NO2-	NO3-	NH4-		
		Lat.	Long.						P	Si	N	N	N		
									(μ mol/l)						
	8	01:50	53-42.1 S	89-01.5 E	1.7	2.5	34.026	8.10	392	2.98	13	0.27	25	0.3	
	8	11:50	55-07.6	86-14.6	1.0	1.4	34.024	8.05	403	2.21	33	0.31	25	-	
	9	01:50	56-03.1	81-13.4	0.3	0.0	34.081	8.06	424	2.31	48	0.27	29	0.4	
	9	11:50	56-49.0	76-53.5	1.9	-0.4	33.916	8.08	390	2.43	40	0.27	30	0.3	
	10	02:50	58-07.2	70-15.6	1.1	0.7	33.839	8.09	380	2.21	19	0.26	28	0.4	
	10	12:50	58-57.0	65-48.3	1.7	0.4	33.551	8.12	386	2.03	26	0.27	27	0.3	
	11	02:50	59-59.3	58-54.0	0.8	-0.6	33.663	8.10	385	2.38	37	0.32	29	0.3	
	11	12:50	60-53.3	54-10.8	0.7	-0.6	33.467	8.08	383	2.30	36	0.33	28	0.4	
	12	02:50	62-59.7	47-24.0	-1.0	-0.8	33.733	8.09	381	2.20	48	0.27	28	0.1	
Arrived at the ice edge off SYOWA station															
Left the ice edge off SYOWA station															
1998	Mar.	1	05:00	63-28.5	51-24.6	1.7	1.3	33.816	8.10	358	1.82	40	0.40	27	0.5
		2	04:00	63-04.5	62-48.0	1.2	1.8	33.587	7.99	356	1.80	31	0.42	27	0.4
		6	02:00	62-09.9	88-14.7	-2.2	1.5	33.820	8.08	355	1.87	53	0.33	23	0.5
		7	02:00	93-44.6	96-47.4	-3.7	-0.5	33.376	8.10	369	1.81	55	0.28	23	0.1
		9	01:00	63-29.3	110-26.5	-1.7	0.7	33.841	8.05	355	1.93	45	0.31	24	0.3
		10	00:00	63-30.0	118-16.7	-0.5	1.4	34.015	8.08	352	1.81	50	0.32	30	0.2
		11	00:00	63-28.4	128-27.5	0.3	2.0	33.912	8.06	349	1.79	19	0.38	27	0.2
		13	22:00	61-47.7	150-00.2	2.0	2.3	33.863	8.09	348	1.72	11	0.33	27	0.3
		14	22:00	57-04.4	149-59.1	1.4	3.4	33.904	8.11	343	1.55	2	0.27	26	0.7
		15	22:05	53-07.6	150-01.5	6.7	7.3	33.953	8.13	314	1.39	0	0.30	21	0.2
		16	03:25	51-53.7	149-48.2	8.2	8.3	33.976	8.15	309	1.30	0	0.23	20	0.3
		16	22:05	47-02.6	150-00.0	11.3	11.0	34.340	8.17	294	0.87	-	0.16	11	0.4

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

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)														S. L. (M)	AIR TEMP. (°C)
					DEPTH (M)															
	UT	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													
SP97001	97-12-03 23.8	36-21S	111-38E	15.9	15.9	15.8	15.8	15.0	14.6	14.2	13.3	12.9	12.3	11.6	11.0	10.2	9.8	9.5	38	0.0
				9.3	9.2	9.0	8.6	8.0	7.4	6.8	-	-	-	-	-	-	-	-		
SP97002	97-12-04 15.5	39-38S	108-06E	14.6	14.6	14.3	14.2	13.8	13.6	12.9	12.9	12.7	12.7	12.6	11.5	10.4	9.0	8.2	14	0.0
				7.6	6.9	6.3	5.8	5.2	4.6	4.4	-	-	-	-	-	-	-	-		
SP97003	97-12-04 18.6	40-15S	107-20E	13.7	13.8	13.2	12.9	12.4	11.7	11.1	12.0	11.8	11.4	10.6	10.2	9.9	9.7	9.6	11	12.8
				9.5	9.3	9.0	8.7	8.1	7.6	6.8	-	-	-	-	-	-	-	-		
SP97004	97-12-04 19.8	40-30S	107-01E	12.9	12.9	12.4	12.2	11.6	10.8	10.7	10.4	10.3	10.3	9.9	10.0	9.7	9.6	9.5	14	12.8
				9.3	9.1	8.9	8.5	8.0	7.3	6.8	-	-	-	-	-	-	-	-		
SP97005	97-12-04 21.1	40-45S	106-43E	12.7	12.7	12.5	12.2	11.5	11.0	10.5	10.3	10.3	10.1	10.1	9.8	9.6	9.6	9.4	16	12.7
				9.3	9.1	8.9	8.4	7.9	7.4	6.8	-	-	-	-	-	-	-	-		
SP97006	97-12-04 23.6	41-15S	106-06E	12.5	12.5	12.5	12.1	11.4	10.6	10.6	10.5	10.2	10.1	10.2	10.1	9.9	9.6	9.5	20	0.0
				9.4	9.2	8.9	8.5	8.0	7.5	7.0	-	-	-	-	-	-	-	-		
SP97007	97-12-05 01.1	41-33S	105-44E	12.1	12.1	11.5	11.4	10.9	10.4	10.3	10.2	10.2	10.2	10.1	10.3	10.3	10.0	9.8	15	0.0
				9.7	9.5	9.1	8.5	8.0	7.4	6.8	-	-	-	-	-	-	-	-		
SP97008	97-12-05 02.5	41-50S	105-23E	12.0	12.0	12.0	11.5	11.2	10.4	10.3	10.2	10.2	10.1	10.1	10.2	10.2	10.0	9.8	18	0.0
				9.6	9.2	8.8	8.3	7.8	7.2	6.7	-	-	-	-	-	-	-	-		
SP97009	97-12-05 16.4	44-29S	102-07E	11.4	11.4	11.4	11.4	11.3	10.8	10.7	10.6	10.6	10.4	10.5	10.4	10.4	10.4	10.3	44	0.0
				10.1	9.7	9.3	8.9	8.5	8.0	7.5	-	-	-	-	-	-	-	-		
SP97010	97-12-05 20.5	45-14S	101-13E	12.1	12.1	12.1	12.1	12.1	11.7	11.1	11.1	11.0	10.8	10.6	10.5	10.3	10.1	9.9	57	12.4
				9.7	9.4	9.0	8.4	7.8	7.3	6.5	-	-	-	-	-	-	-	-		
SP97011	97-12-05 21.5	45-25S	101-01E	11.2	11.2	11.2	11.2	11.2	10.8	10.6	10.9	10.8	10.6	10.6	10.4	9.9	9.5	9.2	47	0.0
				9.3	8.8	8.0	7.3	6.8	6.1	5.5	-	-	-	-	-	-	-	-		
SP97012	97-12-05 22.0	45-31S	100-54E	11.1	11.1	11.1	11.1	10.5	10.4	10.6	10.8	10.8	10.6	10.2	10.2	10.0	9.7	9.4	39	0.0
				8.7	8.1	7.5	6.9	6.1	5.4	5.0	-	-	-	-	-	-	-	-		
SP97013	97-12-05 22.4	45-35S	100-49E	10.6	10.5	10.6	10.6	10.8	10.5	10.5	10.4	9.9	10.0	10.1	9.7	8.8	8.5	8.5	38	11.6
				8.2	7.6	6.8	5.9	5.6	5.1	4.7	-	-	-	-	-	-	-	-		
SP97014	97-12-05 22.8	45-40S	100-42E	10.7	10.7	10.7	10.7	10.4	9.9	9.3	8.8	8.9	9.2	8.8	8.7	8.5	8.5	7.4	45	11.5
				7.3	6.8	6.1	5.5	4.8	4.5	4.1	-	-	-	-	-	-	-	-		
SP97015	97-12-05 23.8	45-50S	100-28E	9.3	9.3	9.3	9.8	9.8	9.2	9.6	9.8	9.6	9.1	8.8	8.4	7.9	8.0	7.0	24	10.9
				6.3	5.4	5.0	4.8	4.2	3.9	-	-	-	-	-	-	-	-	-		
SP97016	97-12-06 01.1	46-05S	100-06E	8.6	8.6	8.7	8.6	7.4	7.2	6.7	6.4	6.2	6.1	6.3	6.0	5.6	5.2	5.4	39	10.5
				4.7	4.2	3.7	3.7	3.4	3.1	-	-	-	-	-	-	-	-	-		
SP97017	97-12-06 01.6	46-10S	99-57E	8.7	8.7	8.7	8.7	7.6	7.2	6.9	7.1	6.8	7.2	7.1	6.9	5.8	5.3	5.3	40	10.5
				4.9	4.6	4.2	3.7	3.4	3.2	3.2	-	-	-	-	-	-	-	-		

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)																S. L.	AIR TEMP. (°C)
					DEPTH (M)																	
					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			
SP97018	97-12-06	02.6	46-20S	99-41E	8.6	8.6	8.6	8.6	8.4	7.7	7.2	7.0	6.9	6.8	6.5	6.3	6.0	5.5	5.0	41	10.4	
					4.6	4.4	4.0	3.6	3.4	3.3	3.1	-	-	-	-	-	-	-	-			
SP97019	97-12-06	05.0	46-45S	99-02E	8.0	8.0	8.0	7.9	7.9	7.4	6.9	6.5	6.4	6.4	6.4	6.0	5.7	4.9	4.6	47	7.8	
					4.2	3.9	3.6	3.4	3.2	3.1	3.0	-	-	-	-	-	-	-	-			
SP97020	97-12-06	08.0	47-15S	98-09E	6.5	6.4	6.4	6.4	6.0	5.4	5.4	5.2	5.0	4.5	4.5	4.5	4.1	3.6	3.4	31	7.8	
					3.5	3.4	3.3	3.1	2.9	2.8	2.8	-	-	-	-	-	-	-	-			
SP97021	97-12-06	09.5	47-30S	97-42E	6.9	6.6	6.6	6.6	6.1	5.3	5.2	5.1	5.0	4.7	4.3	5.0	4.8	4.3	3.7	9	8.4	
					3.5	3.4	3.0	3.0	3.0	2.9	2.8	-	-	-	-	-	-	-	-			
SP97022	97-12-06	11.2	47-45S	97-11E	7.2	7.0	6.7	6.7	6.7	6.4	6.1	5.6	5.3	4.9	4.9	4.7	4.9	4.5	4.1	14	8.1	
					3.9	3.7	3.6	3.3	3.2	3.1	3.0	-	-	-	-	-	-	-	-			
SP97023	97-12-06	14.1	48-16S	96-17E	7.8	7.8	7.7	7.6	7.5	6.5	6.3	6.1	6.4	6.0	5.4	5.3	5.0	4.7	4.1	48	7.7	
					4.0	3.6	3.3	3.1	2.9	3.0	3.0	-	-	-	-	-	-	-	-			
SP97024	97-12-06	15.4	48-30S	95-55E	7.2	7.2	7.2	7.1	6.4	5.6	5.7	5.5	5.2	4.5	4.2	4.0	3.9	3.7	3.4	25	7.7	
					3.1	3.1	3.3	3.2	3.1	3.0	2.8	-	-	-	-	-	-	-	-			
SP97025	97-12-06	16.8	48-45S	95-30E	7.0	7.0	7.0	7.0	6.8	6.1	5.7	6.3	5.3	5.3	3.9	3.0	3.0	2.9	2.7	44	7.4	
					2.6	2.5	2.5	2.9	2.9	2.9	2.7	-	-	-	-	-	-	-	-			
SP97026	97-12-06	19.4	49-10S	94-47E	6.7	6.7	6.7	6.7	6.7	7.2	7.3	7.1	7.1	7.0	6.4	6.3	6.3	5.8	5.2	59	6.8	
					4.7	4.2	3.7	3.8	3.4	3.3	3.1	-	-	-	-	-	-	-	-			
SP97027	97-12-06	20.0	49-15S	94-39E	6.8	6.8	6.8	6.8	6.7	6.5	5.7	5.6	5.6	5.5	6.7	6.2	5.4	5.2	4.8	74	6.8	
					4.4	4.0	3.7	3.3	3.4	3.1	2.9	-	-	-	-	-	-	-	-			
SP97028	97-12-06	21.2	49-25S	94-23E	6.5	6.5	6.5	6.5	6.5	5.9	5.7	5.6	5.3	5.1	4.7	5.1	4.7	4.4	4.0	49	6.4	
					3.7	3.3	3.2	3.3	3.2	3.0	3.1	-	-	-	-	-	-	-	-			
SP97029	97-12-06	21.8	49-30S	94-17E	6.7	6.7	6.7	6.7	6.8	6.5	6.4	6.3	6.1	6.2	6.3	5.8	5.3	4.7	4.5	0	6.5	
					4.0	3.8	3.5	3.3	3.2	3.1	3.0	-	-	-	-	-	-	-	-			
SP97030	97-12-06	23.0	49-40S	94-03E	6.9	6.9	6.9	6.9	6.9	6.7	6.3	6.3	6.2	6.2	6.0	6.2	5.8	5.6	5.1	63	6.8	
					4.7	4.2	3.9	3.7	3.6	3.4	3.3	-	-	-	-	-	-	-	-			
SP97031	97-12-07	00.2	49-50S	93-50E	6.9	6.9	6.9	6.9	6.9	6.4	6.2	6.1	6.0	6.0	6.1	6.4	5.9	5.2	4.9	51	6.8	
					4.5	4.1	3.8	3.7	3.4	3.3	3.1	-	-	-	-	-	-	-	-			
SP97032	97-12-07	02.6	50-10S	93-24E	7.0	7.0	7.0	6.9	6.9	6.9	6.3	6.2	6.2	6.2	6.2	6.4	5.9	5.3	5.0	72	6.1	
					4.6	4.4	4.3	4.0	3.6	3.3	3.3	-	-	-	-	-	-	-	-			
SP97033	97-12-07	03.7	50-20S	93-12E	6.9	6.9	6.9	6.9	6.9	7.0	6.2	6.2	5.9	6.2	6.1	6.3	5.8	5.2	4.9	65	6.2	
					4.4	4.2	4.0	3.8	3.6	3.2	3.1	-	-	-	-	-	-	-	-			
SP97034	97-12-07	06.0	50-40S	92-48E	6.5	6.5	6.5	6.5	6.4	6.4	6.8	6.3	6.3	6.0	5.9	5.8	5.4	5.3	5.0	85	5.9	
					4.6	4.1	3.9	3.5	3.6	3.6	3.2	-	-	-	-	-	-	-	-			
SP97035	97-12-07	07.0	50-50S	92-38E	6.3	6.3	6.2	6.2	6.2	6.2	6.6	6.8	5.3	6.5	6.5	6.2	5.4	4.8	4.4	88	5.4	
					4.3	4.0	3.6	3.4	3.2	3.3	3.1	-	-	-	-	-	-	-	-			

NUMBER	DATE TIME UT	POSITION LAT. LONG.		TEMPERATURE (°C)																S. L. (M)	AIR TEMP. (°C)
				DEPTH (M)																	
				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			
SP97036	97-12-07 09.3	51-11S	92-14E	6.1	6.1	6.1	6.1	5.5	5.4	4.4	4.4	4.5	4.1	4.8	4.8	4.1	3.9	3.7	41	5.5	
				3.0	2.9	2.8	2.9	2.8	2.6	2.5	-	-	-	-	-	-	-	-			
SP97037	97-12-07 10.3	51-20S	92-04E	5.2	5.2	5.2	5.2	5.2	5.2	4.6	4.0	4.4	4.7	4.7	4.0	3.7	3.2	2.8	85	5.1	
				2.8	2.9	2.7	2.6	2.7	2.6	2.5	-	-	-	-	-	-	-	-			
SP97038	97-12-07 12.0	51-35S	91-46E	5.0	5.0	5.0	5.0	5.0	5.0	3.9	3.7	3.6	3.3	3.5	2.5	2.3	2.0	2.6	87	4.2	
				2.2	2.3	2.2	2.3	2.5	2.5	2.4	-	-	-	-	-	-	-	-			
SP97039	97-12-07 13.0	51-45S	91-35E	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.9	3.2	2.6	2.1	1.9	2.0	1.6	1.8	124	4.4	
				1.8	1.8	2.4	2.3	2.4	2.3	2.4	-	-	-	-	-	-	-	-			
SP97040	97-12-07 14.1	51-56S	91-22E	3.8	3.8	3.8	3.8	3.8	3.8	3.3	2.7	2.3	2.5	2.4	2.5	2.2	1.4	1.9	79	3.7	
				2.2	2.2	2.2	2.2	2.3	2.2	2.3	-	-	-	-	-	-	-	-			
SP97041	97-12-07 15.5	52-10S	91-06E	3.6	3.6	3.6	3.7	3.6	3.0	1.8	1.4	1.6	1.7	2.0	2.0	2.1	2.2	2.2	61	2.9	
				2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP97042	97-12-07 16.7	52-20S	90-52E	3.7	3.7	3.7	3.7	3.7	3.7	2.2	1.8	2.1	0.7	1.8	2.0	2.3	2.3	2.2	76	3.1	
				2.3	2.3	2.2	2.3	2.3	2.4	2.3	-	-	-	-	-	-	-	-			
SP97043	97-12-07 19.6	52-45S	90-18E	3.6	3.6	3.6	3.6	3.6	3.5	2.9	3.1	3.1	2.8	2.6	2.5	2.3	2.2	2.3	72	3.0	
				2.3	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP97044	97-12-07 23.0	53-16S	89-39E	4.3	4.3	4.3	4.3	4.3	4.2	3.7	2.9	2.5	2.8	2.8	2.9	2.5	2.7	2.6	73	2.8	
				2.5	2.5	2.5	2.4	2.4	2.3	2.3	-	-	-	-	-	-	-	-			
SP97045	97-12-08 00.4	53-30S	89-23E	2.0	2.0	2.0	2.0	2.0	2.0	1.8	1.0	0.4	0.5	1.1	0.9	1.9	2.0	2.1	80	2.3	
				2.1	2.1	2.1	2.1	2.1	2.1	2.0	-	-	-	-	-	-	-	-			
SP97046	97-12-08 07.0	54-31S	87-42E	0.9	0.9	0.9	0.9	0.9	0.8	0.4	1.3	1.2	0.5	1.5	1.8	1.9	2.0	2.1	61	1.4	
				2.1	2.1	2.2	2.1	2.2	1.9	1.9	-	-	-	-	-	-	-	-			
SP97047	97-12-08 10.2	55-01S	86-50E	0.9	0.9	1.0	1.0	1.0	1.0	0.3	0.3	0.6	1.5	2.0	2.1	2.2	2.2	2.2	80	1.2	
				2.2	2.3	2.2	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-			
SP97048	97-12-08 12.6	55-11S	85-57E	1.3	1.3	1.3	1.3	1.3	1.2	0.4	0.3	0.8	1.6	1.8	1.8	2.0	2.0	2.0	69	1.4	
				2.1	2.1	2.1	2.1	2.0	2.0	2.0	-	-	-	-	-	-	-	-			
SP97049	97-12-08 15.4	55-22S	84-57E	1.4	1.4	1.3	1.3	1.3	1.3	1.2	0.7	0.5	1.1	1.5	1.8	1.0	1.4	2.2	109	1.0	
				2.2	2.2	2.2	2.1	2.1	2.1	2.1	-	-	-	-	-	-	-	-			
SP97050	97-12-08 18.2	55-33S	83-59E	1.4	1.4	1.4	1.4	1.4	1.2	0.5	0.9	1.1	1.8	2.1	2.1	2.1	2.1	2.1	81	0.6	
				2.2	2.2	2.2	2.2	2.1	2.2	2.1	-	-	-	-	-	-	-	-			
SP97051	97-12-08 21.2	55-44S	82-59E	2.5	2.5	2.4	2.4	2.3	1.2	0.7	1.3	0.9	0.9	1.5	1.8	2.0	2.1	2.0	67	1.2	
				2.1	2.2	2.3	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-			
SP97052	97-12-09 01.3	56-04S	81-25E	-0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.9	-0.3	0.9	1.6	1.8	1.8	1.8	1.8	1.8	72	0.4	
				1.7	1.7	1.7	1.6	1.6	1.6	1.6	-	-	-	-	-	-	-	-			
SP97053	97-12-09 03.5	56-03S	80-30E	-0.1	-0.1	-0.1	-0.2	-0.2	-0.5	-0.6	0.6	1.2	1.6	1.8	1.8	1.8	1.8	1.7	68	0.5	
				1.7	1.7	1.6	1.6	1.5	1.5	1.4	-	-	-	-	-	-	-	-			

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)														S. L. (M)	AIR TEMP. (°C)	
					DEPTH (M)																
					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
SP97054	97-12-09	05.9	56-16S	79-30E	0.1	0.1	-0.0	-0.0	0.0	-0.5	-0.3	0.3	0.7	1.5	2.0	1.8	1.8	1.8	1.8	62	0.8
					1.8	1.8	1.7	1.7	1.7	1.6	1.5	-	-	-	-	-	-	-	-		
SP97055	97-12-09	08.2	56-30S	78-29E	-0.1	-0.2	-0.3	-0.4	-0.4	-0.8	-0.7	-0.2	1.1	1.9	1.9	1.9	1.9	1.8	1.8	58	1.4
					1.8	1.7	1.7	1.7	1.7	1.6	1.6	-	-	-	-	-	-	-	-		
SP97056	97-12-09	11.6	56-48S	77-00E	-0.5	-0.5	-0.5	-0.6	-0.7	-1.5	-1.4	-0.7	0.2	1.7	1.9	1.9	1.9	1.9	1.9	57	1.5
					1.9	1.9	1.8	1.8	1.8	1.7	1.6	-	-	-	-	-	-	-	-		
SP97057	97-12-09	13.9	56-58S	76-01E	0.1	0.1	0.1	0.1	0.0	-0.3	-0.6	-0.4	0.2	1.9	1.9	2.1	2.1	2.2	2.2	53	1.7
					2.2	2.2	2.2	2.2	-	-	-	-	-	-	-	-	-	-	-		
SP97058	97-12-09	18.3	57-23S	74-00E	-0.1	-0.2	-0.2	-0.2	-0.8	-0.8	-0.8	-1.0	-0.4	1.5	1.9	1.9	2.1	2.1	2.1	38	0.5
					2.2	2.1	2.1	2.2	2.2	2.2	2.1	-	-	-	-	-	-	-	-		
SP97059	97-12-09	20.7	57-36S	72-57E	-0.4	-0.4	-0.5	-0.5	-0.7	-1.1	-1.2	-1.1	-0.3	1.7	2.0	2.1	2.2	2.2	2.2	51	0.4
					2.2	2.2	2.3	2.2	2.3	2.2	2.1	-	-	-	-	-	-	-	-		
SP97060	97-12-09	21.7	57-43S	72-30E	-0.4	-0.4	-0.5	-1.0	-1.2	-1.7	-1.3	-1.1	0.2	1.7	1.9	2.0	2.0	2.0	2.0	18	0.6
					2.1	2.1	2.1	2.1	2.1	2.1	2.0	-	-	-	-	-	-	-	-		
SP97061	97-12-09	22.3	57-44S	72-14E	-0.4	-0.5	-0.7	-0.7	-1.2	-1.3	-1.1	-0.9	-0.2	1.4	1.7	1.9	1.9	2.0	2.1	41	0.4
					2.1	2.1	2.1	2.1	2.1	2.1	2.1	-	-	-	-	-	-	-	-		
SP97062	97-12-09	22.9	57-48S	71-58E	-0.3	-0.3	-0.4	-0.6	-1.3	-1.4	-1.2	-0.8	0.3	1.7	1.8	1.8	2.0	2.0	2.1	25	0.7
					2.1	2.1	2.1	2.1	2.1	2.1	2.1	-	-	-	-	-	-	-	-		
SP97063	97-12-09	23.5	57-51S	71-43E	-0.7	-0.7	-0.8	-0.9	-1.2	-1.5	-1.2	-0.6	0.1	1.8	1.9	2.1	2.2	2.3	2.3	40	0.8
					2.3	2.3	2.3	2.2	2.2	2.2	2.2	-	-	-	-	-	-	-	-		
SP97064	97-12-10	00.6	57-56S	71-15E	-0.5	-0.5	-0.5	-0.9	-1.4	-1.6	-1.7	-1.4	-0.5	1.4	1.8	1.8	1.9	2.0	2.1	20	0.7
					2.1	2.1	2.1	2.1	2.1	2.1	2.1	-	-	-	-	-	-	-	-		
SP97065	97-12-10	02.7	58-06S	70-20E	0.4	0.3	0.3	0.4	0.3	-0.2	-0.2	-0.2	-0.2	0.5	1.8	1.9	2.1	2.1	2.2	42	1.0
					2.2	2.2	2.2	2.2	2.2	2.2	2.2	-	-	-	-	-	-	-	-		
SP97066	97-12-10	05.8	58-23S	68-56E	1.0	1.0	0.9	0.9	0.6	0.3	0.3	0.3	0.3	1.0	1.8	2.0	2.1	2.1	2.2	43	1.1
					2.2	2.2	2.2	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-		
SP97067	97-12-10	08.0	58-33S	67-57E	0.2	0.2	0.1	-0.0	0.2	0.0	0.3	0.2	0.0	1.2	1.8	1.9	2.0	2.1	2.1	29	1.7
					2.2	2.2	2.2	2.2	2.2	2.1	2.1	-	-	-	-	-	-	-	-		
SP97068	97-12-10	09.3	58-38S	67-23E	-0.2	-0.3	-0.4	-0.5	-1.4	-1.3	-1.0	-1.0	0.8	1.6	1.7	1.9	1.9	2.0	2.0	31	1.7
					2.1	2.1	2.2	2.1	2.1	-	-	-	-	-	-	-	-	-	-		
SP97069	97-12-10	09.6	58-40S	67-16E	-0.1	-0.1	-0.1	-0.3	-0.9	-1.3	-1.3	-1.0	0.2	1.7	1.8	2.0	1.9	2.0	2.0	35	1.7
					2.1	2.1	2.0	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-	-		
SP97070	97-12-10	09.9	58-42S	67-07E	0.0	0.0	0.1	0.0	-0.4	-1.1	-1.2	-1.3	-1.1	0.8	1.6	1.8	2.0	2.0	2.0	44	1.7
					2.0	2.0	2.0	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-	-		
SP97071	97-12-10	10.2	58-43S	67-01E	-0.0	0.0	-0.0	-0.1	-1.0	-1.0	-1.2	-1.0	-0.5	1.3	1.7	1.8	2.0	2.0	2.0	29	1.7
					2.0	2.0	2.1	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-	-		

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)																	S. L. (M)	AIR TEMP. (°C)
					DEPTH (M)																		
					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				
SP97072	97-12-10	10.5	58-45S	66-52E	0.0	0.0	0.0	-0.1	-1.1	-1.2	-1.1	-1.0	-0.2	1.4	1.8	1.9	2.0	2.0	2.1	31	1.7		
					2.0	2.1	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-				
SP97073	97-12-10	10.7	58-46S	66-45E	-0.2	-0.2	-0.2	-0.2	-1.0	-1.2	-1.3	-1.1	-0.7	1.3	1.8	1.9	2.0	2.0	2.0	31	1.7		
SP97074	97-12-10	11.0	58-48S	67-37E	-0.1	-0.1	-0.1	-0.2	-0.4	-1.2	-1.3	-1.2	-0.8	1.0	1.7	1.9	1.9	2.0	2.0	51	1.7		
					2.0	2.0	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-				
SP97075	97-12-10	11.3	58-49S	66-29E	-0.2	-0.2	-0.2	-0.2	-0.6	-1.2	-1.3	-1.1	-0.4	1.6	1.8	1.9	2.0	2.0	2.0	39	1.7		
					2.0	2.0	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-	-	-				
SP97076	97-12-10	11.6	58-51S	66-22E	-0.3	-0.3	-0.5	-1.2	-1.4	-1.5	-1.5	-1.1	-0.5	0.9	1.5	1.8	1.8	1.9	2.0	17	1.7		
					2.0	2.0	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-				
SP97077	97-12-10	11.8	58-52S	66-15E	-0.2	-0.3	-0.3	-0.3	-1.2	-1.6	-1.5	-0.6	-0.2	1.6	1.8	1.9	2.0	2.1	2.1	39	1.7		
					2.2	2.1	2.1	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-				
SP97078	97-12-10	12.4	58-55S	66-00E	-0.1	-0.2	-0.2	-0.3	-1.4	-1.4	-1.3	-1.2	-0.1	1.0	1.7	1.9	2.0	2.0	2.0	26	1.7		
					2.0	2.0	2.0	2.0	1.9	2.0	1.9	-	-	-	-	-	-	-	-				
SP97079	97-12-10	16.8	59-18S	65-00E	0.4	0.4	0.4	0.4	0.8	0.3	-0.4	-0.4	-0.2	0.9	1.6	1.8	1.9	2.0	2.0	28	1.9		
					2.0	2.0	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-				
SP97080	97-12-10	19.0	59-30S	62-58E	0.0	0.0	0.0	0.0	-0.2	-0.8	-1.2	-1.0	-0.8	1.1	1.7	1.8	1.9	2.0	2.0	46	1.5		
					2.0	2.0	2.0	2.0	1.9	2.0	1.9	-	-	-	-	-	-	-	-				
SP97081	97-12-10	21.1	59-42S	62-00E	-0.2	-0.2	-0.1	-0.4	-0.4	-0.6	-0.7	-0.9	0.3	1.9	2.1	2.1	2.2	2.2	2.2	0	1.4		
					2.2	2.2	2.2	2.2	2.2	2.2	2.1	-	-	-	-	-	-	-	-				
SP97082	97-12-10	23.4	59-54S	60-58E	-0.9	-1.0	-1.0	-1.4	-1.5	-1.7	-1.7	-1.1	0.1	1.6	1.8	1.9	2.0	1.9	2.0	0	0.7		
					2.0	2.0	1.9	1.9	1.8	1.8	1.8	-	-	-	-	-	-	-	-				
SP97083	97-12-11	03.6	60-00S	59-00E	-0.8	-0.8	-0.9	-0.9	-1.4	-1.6	-1.7	-0.2	1.2	1.7	1.8	1.9	1.9	1.9	1.9	37	0.6		
					1.9	1.9	1.9	1.8	1.8	1.8	1.7	-	-	-	-	-	-	-	-				
SP97084	97-12-11	05.8	60-01S	57-59E	-0.4	-0.5	-0.5	-0.7	-1.1	-1.5	-1.4	-1.3	0.8	1.7	1.8	1.9	1.9	1.9	1.9	0	1.1		
					1.9	1.9	1.9	1.9	1.8	1.8	1.7	-	-	-	-	-	-	-	-				
SP97085	97-12-11	08.0	60-08S	56-54E	-1.2	-1.2	-1.3	-1.4	-1.7	-1.7	-1.6	-0.6	0.7	1.7	1.8	1.9	1.9	1.9	1.9	16	0.6		
					1.9	1.9	1.9	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-				
SP97086	97-12-11	10.0	60-21S	56-00E	-1.1	-1.2	-1.3	-1.5	-1.7	-1.7	-1.6	-0.4	1.2	1.8	1.9	2.0	2.0	2.0	2.0	0	0.4		
					2.0	2.0	2.0	2.0	1.9	1.9	-	-	-	-	-	-	-	-	-				
SP97087	97-12-11	14.3	60-57S	53-57E	-1.2	-1.3	-1.3	-1.6	-1.7	-1.8	-1.2	0.8	1.5	1.7	1.8	1.9	1.9	1.9	1.9	0	0.4		
					1.9	1.8	1.8	1.8	1.7	1.7	1.7	-	-	-	-	-	-	-	-				
SP97088	97-12-11	16.2	61-13S	53-00E	-1.0	-1.2	-1.3	-1.4	-1.6	-1.8	-1.7	-1.2	0.7	1.6	1.8	1.8	1.9	1.9	1.9	0	0.6		
					1.9	1.9	1.9	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-				
SP97089	97-12-11	18.3	61-30S	51-59E	-1.1	-1.2	-1.3	-1.5	-1.7	-1.7	-1.7	-0.5	1.4	1.7	1.9	1.9	1.9	1.9	1.9	25	0.7		
					1.9	1.9	1.8	1.8	1.7	1.7	1.6	-	-	-	-	-	-	-	-				

NUMBER	DATE TIME UT	POSITION LAT. LONG.		TEMPERATURE (°C)																S. L. (M)	AIR TEMP. (°C)
				DEPTH (M)																	
				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			
SP97090	97-12-11 20.2	61-46S	51-00E	-0.9	-1.0	-1.1	-1.4	-1.6	-1.7	-0.7	1.2	1.6	1.7	1.8	1.8	1.8	1.8	1.8	0	-0.1	
				1.8	1.8	1.8	1.7	-	-	-	-	-	-	-	-	-	-	-			
SP97091	98-01-08 15.2	68-58S	38-03E	2.2	1.9	-0.9	-0.8	-1.7	-1.7	-1.7	-1.7	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	0	1.1		
				-1.6	-1.6	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP97092	98-01-08 18.7	68-10S	38-17E	-0.1	-0.3	-0.9	-1.3	-1.6	-1.8	-1.8	-1.7	-1.6	-0.8	-0.0	0.4	0.4	0.5	0	1.5		
				0.3	0.4	0.5	0.5	0.4	0.4	0.4	-	-	-	-	-	-	-				
SP97093	98-01-09 02.9	66-01S	36-11E	0.7	0.7	0.2	0.1	-1.2	-1.5	-0.5	0.2	0.9	1.2	1.2	1.4	1.3	1.3	1.2	14	0.2	
				1.2	1.1	1.1	1.0	1.0	0.9	0.9	-	-	-	-	-	-	-				
SP97094	98-01-09 10.4	64-01S	34-20E	0.5	0.5	0.5	-0.1	-1.5	-1.6	0.3	1.0	1.3	1.4	1.6	1.5	1.5	1.5	23	0.0		
				1.4	1.3	1.3	1.2	1.1	1.1	1.0	-	-	-	-	-	-	-				
SP97095	98-01-09 18.6	62-01S	31-42E	1.0	1.0	0.9	0.3	-1.5	-1.7	-1.8	-0.7	0.7	1.2	1.3	1.4	1.4	1.3	1.3	17	1.0	
				1.2	1.2	1.1	1.0	1.0	1.0	0.9	-	-	-	-	-	-	-				
SP97096	98-01-10 03.2	60-00S	28-48E	2.1	2.0	1.6	1.4	1.2	0.6	-0.3	-0.7	-0.8	0.5	1.2	1.6	1.6	1.5	1.5	13	1.4	
				1.6	1.6	1.5	1.5	1.4	1.3	1.3	-	-	-	-	-	-	-				
SP97097	98-01-10 12.1	58-00S	25-56E	1.5	1.5	1.4	1.2	0.9	-0.4	-0.7	-0.6	-0.2	1.0	1.5	1.6	1.6	1.7	1.5	18	1.4	
				1.5	1.5	1.4	1.4	1.3	1.2	1.1	-	-	-	-	-	-	-				
SP97098	98-01-10 21.2	56-01S	23-18E	0.4	0.4	0.4	0.4	0.2	0.1	-0.5	-1.1	-0.6	0.2	0.4	0.5	0.5	0.5	0.5	38	0.7	
				0.5	0.4	0.4	0.4	0.4	-	-	-	-	-	-	-	-	-				
SP97099	98-01-11 05.0	53-59S	21-51E	0.7	0.7	0.7	0.7	0.7	0.4	-0.0	-0.6	-0.4	0.7	1.1	1.2	1.1	1.2	1.1	45	1.5	
				1.0	0.9	0.9	0.8	0.8	0.7	0.7	-	-	-	-	-	-	-				
SP97100	98-01-11 08.6	53-01S	21-37E	1.0	1.0	1.0	1.0	1.0	0.8	0.1	-0.4	-0.0	0.9	1.3	1.4	1.4	1.4	1.3	59	1.8	
				1.3	1.2	1.1	1.0	1.0	0.9	0.9	-	-	-	-	-	-	-				
SP97101	98-01-11 12.2	52-01S	21-26E	2.0	1.9	1.9	1.9	1.8	1.5	0.7	0.1	0.3	1.0	1.5	1.8	1.9	1.8	1.8	57	2.7	
				1.8	1.8	1.7	1.7	1.6	1.6	1.6	-	-	-	-	-	-	-				
SP97102	98-01-11 16.5	51-00S	21-09E	3.3	3.3	3.2	3.2	3.2	3.1	2.5	0.9	0.5	0.3	0.9	1.4	1.7	1.9	1.9	74	3.9	
				1.9	1.9	1.9	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-				
SP97103	98-01-12 01.3	49-00S	20-41E	4.4	4.4	4.4	4.4	4.3	4.3	3.1	2.5	2.4	2.3	2.3	2.3	2.3	2.4	2.5	83	5.5	
				2.5	2.4	2.4	2.3	2.3	2.3	2.3	-	-	-	-	-	-	-				
SP97104	98-01-12 05.4	48-00S	20-31E	6.2	6.2	6.2	6.2	6.2	6.1	5.5	5.1	5.1	4.5	4.1	3.8	3.6	3.2	3.1	80	7.4	
				3.0	2.9	2.8	2.8	2.8	2.8	2.7	-	-	-	-	-	-	-				
SP97105	98-01-12 09.5	47-00S	20-18E	7.0	7.0	6.9	6.8	6.8	6.8	6.5	5.8	5.2	5.4	4.7	4.2	3.9	3.7	3.4	85	8.5	
				3.0	2.9	2.9	2.8	2.8	2.8	2.8	-	-	-	-	-	-	-				
SP97106	98-01-12 13.7	46-01S	20-04E	7.3	7.1	7.0	6.9	6.8	6.8	6.6	5.6	5.1	5.2	4.7	4.2	3.9	3.6	3.4	95	9.2	
				3.2	3.0	2.9	2.9	2.9	2.9	2.8	-	-	-	-	-	-	-				
SP97107	98-01-12 17.8	44-59S	19-53E	8.2	7.9	7.8	7.7	7.6	7.6	7.6	7.0	7.1	6.8	6.2	5.6	5.0	4.9	4.3	0	9.2	
				4.3	4.0	3.6	3.5	3.6	3.0	2.9	-	-	-	-	-	-	-				

NUMBER	DATE TIME UT	POSITION LAT. LONG.		TEMPERATURE (°C)																S. L. (M)	AIR TEMP. (°C)
				DEPTH (M)																	
				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			
SP97108	98-01-12 21.8	44-01S	19-41E	9.7	9.7	9.4	9.3	9.3	9.2	8.9	9.0	8.4	7.6	7.4	6.4	5.7	5.0	4.6	0	9.9	
				4.2	4.1	3.7	3.6	3.4	3.2	3.0	-	-	-	-	-	-	-	-			
SP97109	98-01-13 02.9	43-01S	19-28E	10.8	10.8	10.8	10.6	10.6	10.1	9.5	9.4	9.5	8.5	8.0	7.7	6.7	5.6	5.0	0	9.2	
				4.7	4.3	4.0	4.0	3.8	3.9	3.4	-	-	-	-	-	-	-	-			
SP97110	98-01-13 07.9	42-00S	19-17E	10.6	10.6	10.6	10.6	10.5	9.5	9.4	8.0	8.0	7.4	7.7	7.7	6.8	6.3	5.7	48	10.9	
				5.1	4.9	4.5	4.1	3.7	3.6	3.4	-	-	-	-	-	-	-	-			
SP97111	98-01-13 13.2	41-01S	19-10E	12.3	12.3	12.1	12.0	12.2	12.7	11.9	11.7	11.1	10.1	9.3	8.9	8.8	8.1	7.0	0	12.2	
				6.1	5.5	5.1	4.7	4.8	4.3	4.0	-	-	-	-	-	-	-	-			
SP97112	98-01-14 00.2	39-01S	18-42E	20.4	20.4	20.4	20.4	20.4	19.0	18.5	18.0	17.6	17.1	16.3	15.7	14.8	14.3	13.6	48	16.9	
				13.0	12.4	11.8	11.1	10.5	9.8	9.1	-	-	-	-	-	-	-	-			
SP97113	98-01-14 05.2	38-00S	18-25E	20.2	20.2	20.1	20.1	18.1	14.6	13.1	12.4	11.6	10.6	9.8	8.6	7.4	6.2	6.1	41	17.8	
				5.4	5.1	4.5	4.8	4.7	4.6	4.6	-	-	-	-	-	-	-	-			
SP97114	98-01-14 10.4	37-01S	18-29E	20.2	20.2	20.1	20.1	17.2	13.6	11.9	10.8	10.2	9.2	8.2	7.5	5.6	5.2	4.9	39	19.1	
				4.6	4.9	4.4	4.2	4.3	3.7	-	-	-	-	-	-	-	-	-			
SP97115	98-01-16 20.7	37-31S	18-35E	20.6	20.6	19.9	19.6	17.4	13.7	11.5	10.8	10.5	9.2	8.0	7.3	6.2	5.2	5.3	12	18.2	
				4.7	4.6	3.7	3.8	3.6	3.5	3.4	-	-	-	-	-	-	-	-			
SP97116	98-01-17 00.2	38-31S	18-36E	23.5	23.5	23.5	23.5	23.5	22.6	18.8	15.8	14.9	13.6	12.7	11.6	10.7	9.6	8.8	53	17.7	
				8.0	7.3	6.6	6.2	5.8	5.4	5.0	-	-	-	-	-	-	-	-			
SP97117	98-01-17 03.7	39-30S	18-38E	20.8	20.8	20.7	20.3	20.2	18.6	18.3	17.7	17.4	16.5	15.7	15.0	14.0	13.3	12.7	22	15.7	
				12.2	11.3	10.7	10.0	9.4	8.4	7.9	-	-	-	-	-	-	-	-			
SP97118	98-01-17 07.2	40-30S	18-52E	15.2	14.9	13.9	13.0	12.8	13.3	13.0	12.7	11.8	11.1	10.2	9.3	8.9	7.9	7.4	0	14.8	
				6.6	5.7	5.2	4.9	4.4	4.1	3.5	-	-	-	-	-	-	-	-			
SP97119	98-01-17 10.9	41-30S	19-00E	15.2	15.2	15.2	15.1	15.1	14.5	13.1	11.8	10.9	9.8	9.3	8.6	7.7	7.1	6.4	54	14.2	
				6.3	5.7	5.2	4.8	4.5	3.8	3.6	-	-	-	-	-	-	-	-			
SP97120	98-01-17 18.9	43-30S	19-16E	9.7	9.7	9.6	9.6	9.2	8.3	7.5	7.2	7.2	7.0	6.6	6.2	5.3	4.8	4.6	35	11.7	
				3.9	3.8	3.6	3.4	3.2	3.1	3.1	-	-	-	-	-	-	-	-			
SP97121	98-01-17 22.8	44-31S	19-22E	9.9	9.9	9.9	9.8	9.7	9.6	9.2	8.8	8.7	7.7	8.3	7.7	6.7	6.1	5.4	0	10.3	
				4.9	4.3	4.2	3.9	3.7	3.5	3.4	-	-	-	-	-	-	-	-			
SP97122	98-01-18 12.5	48-02S	19-58E	6.9	6.8	6.8	6.8	6.8	6.8	6.2	5.4	5.3	5.0	4.3	3.9	3.7	3.4	3.2	78	6.1	
				3.0	2.9	2.9	2.8	3.0	2.8	2.9	-	-	-	-	-	-	-	-			
SP97123	98-01-18 22.4	50-30S	20-27E	3.5	3.5	3.4	3.4	3.3	2.8	2.1	1.2	1.0	1.8	2.1	2.2	2.3	2.3	2.3	33	2.9	
				2.3	2.3	2.3	2.3	2.3	2.3	2.3	-	-	-	-	-	-	-	-			
SP97124	98-01-19 02.4	51-30S	20-40E	2.9	2.9	2.9	2.9	2.9	2.4	1.3	0.8	1.3	2.0	2.2	2.2	2.2	2.3	2.3	46	2.3	
				2.3	2.3	2.3	2.3	2.2	2.2	2.2	-	-	-	-	-	-	-	-			
SP97125	98-01-19 10.0	53-31S	21-02E	1.7	1.6	1.5	1.4	1.4	0.7	0.3	-0.4	-0.1	0.9	1.4	1.5	1.5	1.5	1.3	50	1.7	
				1.3	1.2	1.1	1.0	1.0	0.9	0.9	-	-	-	-	-	-	-	-			

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)															S. L. (M)	AIR TEMP. (°C)
					DEPTH (M)																
					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		
SP97126	98-01-19	13.8	54-30S	21-11E	1.8	1.6	1.4	1.3	1.0	0.7	-0.1	-0.6	-0.1	1.0	1.3	1.3	1.3	1.3	1.2	0	1.7
					1.1	1.1	1.0	0.9	0.8	0.8	0.7	-	-	-	-	-	-	-	-		
SP97127	98-01-19	18.6	55-30S	22-22E	1.6	1.0	0.9	0.8	0.6	0.1	-0.3	-1.0	-0.8	0.2	0.4	0.5	0.5	0.5	0.5	10	1.2
					0.5	0.4	0.4	0.4	0.4	0.3	0.3	-	-	-	-	-	-	-	-		
SP97128	98-01-20	00.5	56-30S	24-25E	1.6	1.5	1.3	1.2	1.0	0.8	0.3	-0.6	-0.7	0.1	0.6	1.2	1.2	1.1	0.8	0	1.0
					0.8	0.8	0.7	0.7	0.6	0.6	0.5	-	-	-	-	-	-	-	-		
SP97129	98-01-20	09.1	58-00S	27-44E	2.1	2.0	1.7	1.6	1.3	1.2	0.2	-0.1	-0.3	1.0	1.5	1.6	1.6	1.6	1.6	76	1.1
					1.5	1.5	1.5	1.4	1.4	1.4	1.3	-	-	-	-	-	-	-	-		
SP97130	98-01-20	14.9	59-00S	30-00E	2.2	2.0	1.6	1.6	1.4	1.3	1.1	-0.1	0.2	1.2	1.7	1.8	1.6	1.5	1.5	0	2.6
SP97131	98-01-20	21.0	60-00S	32-23E	2.4	2.4	1.6	1.0	-0.6	-1.2	-1.2	-1.1	-0.9	0.6	1.4	1.6	1.6	1.5	1.4	12	1.4
					1.3	1.2	1.2	1.2	1.1	1.0	0.9	-	-	-	-	-	-	-	-		
SP97132	98-01-21	08.9	62-00S	37-11E	2.1	2.1	1.4	0.7	-0.9	-1.4	-1.4	-1.2	-0.7	1.0	1.4	1.6	1.6	1.5	1.5	17	1.5
					1.4	1.4	1.3	1.3	1.2	1.2	1.1	-	-	-	-	-	-	-	-		
SP97133	98-01-22	10.5	66-15S	48-46E	-0.4	-0.5	-0.5	-0.5	-0.6	-0.9	-1.5	-1.6	-1.7	-1.6	-1.4	-0.9	-0.8	-0.3	-	60	-0.5
SP97134	98-01-22	13.5	66-19S	49-31E	-1.1	-1.0	-1.1	-1.2	-1.2	-0.8	-1.1	-1.2	-1.5	-1.5	-1.5	-1.5	-1.2	-	-	0	-0.3
SP97135	98-01-22	16.3	66-40S	49-44E	-1.2	-1.3	-1.6	-1.6	-1.6	-1.5	-1.5	-1.5	-1.6	-1.6	-1.4	-1.4	-1.3	-1.3	-1.2	12	-0.5
					-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-	-	-	-	-	-	-	-		
SP97136	98-01-25	10.8	66-44S	49-39E	-1.2	-1.3	-1.6	-1.7	-1.1	-1.1	-1.2	-1.5	-1.5	-1.5	-1.4	-1.3	-1.2	-1.3	-1.3	8	1.9
					-1.3	-1.3	-1.2	-1.2	-1.5	-1.2	-1.2	-	-	-	-	-	-	-	-		
SP97137	98-01-26	01.1	68-09S	40-00E	0.2	0.2	0.1	0.1	-0.4	-1.6	-1.7	-1.7	-1.7	-1.7	-1.7	-1.6	-1.2	0.3	0.2	40	0.2
					0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-		
SP97138	98-02-15	17.5	67-20S	41-44E	0.5	0.4	0.4	0.4	0.3	-1.4	-1.7	-1.3	-0.9	0.5	0.9	1.2	1.2	1.2	1.2	49	-1.3
					1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.8	-	-	-	-	-	-	-		
SP97139	98-02-19	07.0	67-19S	45-18E	-0.3	-0.4	-0.3	-0.2	-0.5	-0.6	-0.9	-1.4	-0.2	-0.2	-0.2	0.4	-0.3	-0.2	-0.4	0	-0.4
					-0.2	0.7	0.7	-	-	-	-	-	-	-	-	-	-	-	-		
SP97140	98-03-01	04.1	63-29S	51-08E	1.3	1.3	1.3	1.3	-1.4	-1.5	1.0	1.5	1.6	1.7	1.7	1.7	1.8	1.7	1.7	41	1.7
					1.6	1.6	1.5	1.4	1.4	1.3	1.3	-	-	-	-	-	-	-	-		
SP97141	98-03-02	03.0	63-06S	62-12E	1.4	1.4	1.4	1.4	-1.2	-1.3	-0.9	0.8	1.3	1.8	1.9	2.0	2.0	2.0	1.9	30	0.0
					1.9	2.0	1.9	1.9	1.8	1.8	1.7	-	-	-	-	-	-	-	-		
SP97142	98-03-02	19.0	62-39S	69-37E	1.4	1.3	1.3	1.2	-1.2	-1.1	-0.8	0.7	1.4	1.7	1.9	1.9	1.9	1.9	1.9	33	1.5
					1.9	1.9	1.8	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-		
SP97143	98-03-03	03.2	62-36S	72-09E	1.2	1.2	1.2	1.0	-1.2	-1.0	0.3	1.2	1.6	1.9	2.0	2.0	2.0	2.0	2.0	26	1.4
					2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SP97144	98-03-03	19.1	61-57S	76-10E	1.8	1.8	1.8	1.8	-0.6	-1.4	-1.3	-0.6	1.1	1.7	2.0	2.0	2.1	2.1	2.1	35	1.9
					2.1	2.1	2.1	2.1	2.0	2.0	2.0	-	-	-	-	-	-	-	-		

NUMBER	DATE TIME	POSITION		TEMPERATURE (° C)														S. L. (M)	AIR TEMP. (° C)		
		LAT.	LONG.	DEPTH (M)																	
	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														
SP97145	98-03-04 17.3	59-55S	81-43E	1.8	1.8	1.8	1.8	0.7	-0.4	-0.1	1.1	1.5	1.9	1.9	2.0	2.0	1.9	1.9	37	1.5	
				1.9	1.9	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-	-			
SP97146	98-03-05 18.4	61-50S	88-36E	1.7	1.7	1.6	1.6	-1.2	-1.1	-0.5	0.3	1.0	1.3	1.4	1.5	1.6	1.5	1.5	31	-2.9	
				1.5	1.4	1.3	1.3	1.2	1.2	1.2	-	-	-	-	-	-	-	-			
SP97147	98-03-06 01.1	62-06S	88-28E	1.3	1.3	1.5	1.5	-0.8	-1.3	-0.8	-0.1	0.4	0.5	0.8	0.9	1.1	1.1	1.2	33	-2.0	
				1.3	1.2	1.2	1.2	1.2	1.1	1.0	-	-	-	-	-	-	-	-			
SP97148	98-03-06 17.0	63-46S	91-27E	0.2	0.2	0.4	0.7	-1.4	-1.4	-0.6	0.0	0.5	1.0	1.2	1.3	1.4	1.4	1.3	18	-3.5	
				1.3	1.2	1.2	1.2	1.1	1.1	1.0	-	-	-	-	-	-	-	-			
SP97149	98-03-07 01.0	63-44S	96-13E	-0.3	-0.3	0.1	0.3	-1.5	-1.5	-1.4	-1.0	-0.2	0.5	0.8	1.0	1.1	1.1	1.1	11	-4.0	
				1.0	1.0	0.9	0.9	0.8	0.7	-	-	-	-	-	-	-	-	-			
SP97150	98-03-07 16.9	64-00S	98-41E	-0.3	-0.3	-0.3	-0.5	-1.3	-1.5	-1.4	-1.4	-1.4	-0.6	0.1	0.5	0.3	0.9	1.0	23	-8.3	
				0.9	0.9	0.9	0.8	0.7	0.6	0.6	-	-	-	-	-	-	-	-			
SP97151	98-03-07 23.9	63-49S	100-20E	-0.3	-0.3	-0.3	-0.3	-0.6	-1.7	-1.7	-1.7	-1.7	-1.6	-1.5	-1.2	-0.7	-0.1	0.4	43	-6.6	
				0.6	0.7	0.7	0.7	0.7	0.7	-	-	-	-	-	-	-	-	-			
SP97152	98-03-09 00.2	63-28S	110-01E	0.3	0.3	0.2	0.2	-0.3	-0.8	0.0	0.9	1.3	1.7	2.0	2.1	2.2	2.2	2.1	45	-1.6	
				2.0	2.0	1.9	1.8	1.7	1.6	1.6	-	-	-	-	-	-	-	-			
SP97153	98-03-09 02.2	63-30S	111-05E	0.6	0.5	0.5	0.5	-1.1	-0.8	0.4	1.0	1.4	1.5	1.5	1.5	1.5	1.5	1.5	38	-1.2	
				1.4	1.4	1.3	1.3	1.3	1.2	-	-	-	-	-	-	-	-	-			
SP97154	98-03-09 04.5	63-30S	112-31E	0.8	0.8	0.8	0.8	-0.8	-0.1	0.9	1.2	1.3	1.4	1.5	1.5	1.5	1.4	1.4	42	1.4	
				1.4	1.4	1.3	1.3	1.2	1.2	1.1	-	-	-	-	-	-	-	-			
SP97155	98-03-09 10.8	63-27S	114-45E	1.0	1.0	1.0	1.2	0.2	0.9	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.3	1.3	41	-0.2	
				1.2	1.2	1.1	1.1	1.0	1.0	-	-	-	-	-	-	-	-	-			
SP97156	98-03-09 12.8	63-27S	115-20E	1.2	1.2	1.2	1.2	0.0	0.7	1.2	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.2	44	-0.8	
				1.2	1.2	1.1	1.1	1.0	1.0	0.9	-	-	-	-	-	-	-	-			
SP97157	98-03-09 22.4	63-29S	117-19E	0.6	0.6	0.6	0.6	-1.6	-1.8	-1.8	-1.8	-1.7	-0.2	1.2	1.4	1.4	1.4	1.3	39	-0.5	
				1.3	1.2	1.1	1.1	1.0	-	-	-	-	-	-	-	-	-	-			
SP97158	98-03-10 00.2	63-30S	118-20E	1.2	1.3	1.3	1.3	-0.2	0.6	1.1	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.3	32	0.8	
				1.3	1.2	1.2	1.2	1.1	1.0	1.0	-	-	-	-	-	-	-	-			
SP97159	98-03-10 02.3	63-30S	119-37E	1.5	1.5	1.5	1.5	-0.2	0.9	1.2	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.4	36	0.8	
				1.4	1.3	1.3	1.2	1.2	1.1	1.1	-	-	-	-	-	-	-	-			
SP97160	98-03-10 04.3	63-30S	120-09E	1.7	1.7	1.7	1.6	-0.2	0.9	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.5	1.5	39	-0.2	
				1.5	1.4	1.4	1.3	1.3	1.2	1.2	-	-	-	-	-	-	-	-			
SP97161	98-03-10 12.2	63-28S	122-47E	1.5	1.5	1.4	-0.2	0.2	1.5	1.7	1.4	1.6	1.8	1.6	1.7	1.7	1.7	1.7	22	-0.5	
				1.6	1.6	1.6	1.6	1.5	1.4	1.4	-	-	-	-	-	-	-	-			
SP97162	98-03-10 16.3	63-30S	123-40E	1.6	1.6	1.6	1.6	0.3	0.4	1.1	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	38	-0.7	
				1.5	2.0	1.9	1.9	1.8	1.9	1.9	-	-	-	-	-	-	-	-			

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)																S. L.	AIR TEMP.
					DEPTH (M)																	
					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			
SP97163	98-03-10	18.1	63-29S	124-48E	1.7	1.7	1.7	1.8	-0.9	0.3	1.3	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	38	-0.9	
					1.6	1.6	1.5	1.5	1.5	1.5	1.4	-	-	-	-	-	-	-	-			
SP97164	98-03-10	20.1	63-30S	126-07E	1.2	1.2	1.2	1.2	-1.0	-0.4	1.2	1.7	1.7	1.9	1.9	1.9	1.9	1.9	1.9	34	-0.2	
					1.8	1.8	1.8	1.8	1.7	-	-	-	-	-	-	-	-	-	-			
SP97165	98-03-10	22.1	63-30S	127-24E	1.9	1.9	2.0	1.9	-1.0	-0.7	1.1	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	27	0.2	
					1.8	1.8	1.8	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-			
SP97166	98-03-11	00.6	63-28S	128-45E	1.8	1.8	1.8	1.8	-0.7	0.3	1.4	1.7	1.8	1.9	1.9	1.9	1.8	1.8	1.8	36	0.4	
					1.8	1.8	1.7	1.7	1.7	1.6	1.6	-	-	-	-	-	-	-	-			
SP97167	98-03-11	03.1	63-28S	130-03E	1.8	1.8	1.8	1.8	-0.9	-0.1	1.6	1.8	1.9	2.0	1.9	1.9	1.9	1.9	1.9	31	1.3	
					1.9	1.8	1.8	-	-	-	-	-	-	-	-	-	-	-	-			
SP97168	98-03-11	15.0	64-06S	134-39E	1.3	1.3	1.3	1.3	-0.6	0.0	0.9	1.4	1.5	1.6	1.7	1.7	1.7	1.6	1.6	40	1.3	
					1.6	1.6	1.5	1.5	1.4	1.3	-	-	-	-	-	-	-	-	-			
SP97169	98-03-11	22.2	64-57S	138-54E	0.3	0.3	0.3	0.2	0.2	-0.9	-1.6	-1.5	-1.1	-0.1	0.3	0.5	0.8	0.8	0.9	64	-3.7	
					0.9	0.8	0.8	0.8	0.7	0.7	-	-	-	-	-	-	-	-	-			
SP97170	98-03-12	14.0	63-36S	143-22E	1.3	1.2	1.2	1.2	-0.6	1.1	1.7	1.8	1.8	2.0	2.0	2.0	2.0	1.9	1.9	39	0.8	
SP97171	98-03-12	22.0	63-24S	145-57E	1.6	1.6	1.6	1.5	1.5	0.0	1.7	1.9	2.0	2.0	2.0	-	-	-	-	48	0.0	
SP97172	98-03-13	06.3	63-06S	147-53E	1.7	1.6	1.6	1.6	1.6	0.2	1.5	1.8	1.9	1.9	2.0	1.9	2.0	2.0	1.9	63	1.4	
					1.9	1.9	1.8	1.8	1.8	1.7	1.7	-	-	-	-	-	-	-	-			
SP97173	98-03-13	12.8	63-31S	150-00E	1.5	1.5	1.4	1.6	1.7	1.0	1.9	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	23	1.2	
					2.1	2.0	1.9	1.9	1.9	1.8	1.8	-	-	-	-	-	-	-	-			
SP97174	98-03-13	15.9	62-58S	150-01E	1.6	1.6	1.6	1.6	1.6	-0.2	1.2	1.8	2.0	2.0	2.0	2.0	2.0	2.0	1.9	64	1.5	
					1.9	1.9	1.9	1.8	1.8	1.8	1.7	-	-	-	-	-	-	-	-			
SP97175	98-03-13	18.1	62-32S	150-00E	1.7	1.7	1.7	1.7	1.6	-0.5	1.0	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	55	1.5	
					1.9	1.9	1.9	1.9	1.9	1.8	1.8	-	-	-	-	-	-	-	-			
SP97176	98-03-13	20.7	62-02S	149-59E	1.9	1.9	1.9	1.9	1.9	-0.8	-0.5	1.2	1.6	2.0	2.1	2.1	2.1	-	-	47	1.9	
SP97177	98-03-13	23.5	61-36S	150-01E	2.1	2.1	2.1	2.1	2.1	-0.7	0.4	1.7	1.8	2.0	2.1	2.1	2.1	2.1	2.0	60	2.3	
SP97178	98-03-14	01.1	61-18S	150-01E	2.1	2.1	2.1	2.0	2.0	-1.0	-0.5	0.9	1.5	2.0	2.0	2.0	2.1	2.1	2.1	58	4.6	
					2.1	2.1	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-			
SP97179	98-03-14	02.4	61-00S	150-00E	2.0	2.0	2.0	1.9	1.9	0.0	0.5	1.5	1.8	2.0	2.0	2.1	2.1	2.0	2.0	59	4.3	
					2.0	2.0	2.0	2.0	2.0	1.9	1.9	-	-	-	-	-	-	-	-			
SP97180	98-03-14	03.6	60-56S	149-59E	2.0	1.9	1.9	1.9	1.9	1.5	0.1	1.5	1.9	2.0	2.1	2.1	2.1	2.1	2.1	70	2.0	
					2.1	2.0	2.0	2.0	2.0	1.9	-	-	-	-	-	-	-	-	-			

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)															S. L. (M)	AIR TEMP. (°C)				
					DEPTH (M)																				
					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						
		UT	LAT.	LONG.	1500	1600	1700	1800																	
SP97181	98-03-14	04.3	60-55S	149-59E	2.0	2.0	1.9	1.9	1.9	1.9	-0.5	1.1	1.7	2.1	2.1	2.2	2.1	2.2	2.2	82	2.3				
					2.4	2.1	2.1	2.0	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.7	1.6	-						
SP97182	98-03-14	08.6	60-19S	149-59E	2.0	2.0	2.0	2.0	2.0	-0.3	1.3	1.8	2.0	2.0	2.1	2.1	2.0	2.0	2.0	61	2.5				
					2.0	2.0	2.0	1.9	1.9	1.9	1.8	-	-	-	-	-	-	-	-						
SP97183	98-03-14	13.3	59-08S	149-56E	1.9	1.9	1.9	1.9	1.9	0.3	1.4	1.6	1.9	2.0	2.0	1.9	1.9	1.9	1.9	48	1.7				
					1.9	1.8	1.8	1.8	1.7	1.7	1.7	-	-	-	-	-	-	-	-						
SP97184	98-03-14	17.4	58-09S	149-59E	2.3	2.3	2.3	2.3	2.3	1.5	0.3	1.5	1.7	2.0	2.0	2.0	2.0	2.0	-	66	1.3				
SP97185	98-03-14	21.8	57-06S	149-59E	3.3	3.3	3.3	3.3	3.3	3.2	0.8	0.1	0.7	1.7	2.0	2.0	2.1	2.1	2.0	66	1.2				
					2.0	2.0	2.0	2.0	-	-	-	-	-	-	-	-	-	-	-						
SP97186	98-03-15	07.8	56-15S	150-27E	5.0	5.0	4.9	4.9	4.8	4.6	3.8	2.1	1.7	3.5	3.2	2.9	2.4	2.4	2.4	82	5.8				
					2.4	2.3	2.4	2.5	2.4	2.5	-	-	-	-	-	-	-	-	-						
SP97187	98-03-15	11.5	55-30S	150-24E	6.1	6.1	6.1	6.1	6.1	6.1	5.9	4.2	3.5	3.2	2.6	3.2	2.9	3.2	3.3	109	6.2				
					3.1	3.0	2.8	2.7	2.6	2.6	2.6	-	-	-	-	-	-	-	-						
SP97188	98-03-15	16.2	54-31S	150-11E	5.4	5.4	5.4	5.4	5.4	4.7	3.6	3.0	3.5	4.0	3.7	3.2	3.0	2.9	2.9	66	7.1				
					2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
SP97189	98-03-15	20.0	53-39S	150-02E	7.4	7.4	7.3	7.3	7.0	6.7	7.2	7.1	7.0	7.0	6.4	6.6	6.0	5.6	5.4	40	6.2				
					5.0	4.5	4.2	3.8	3.9	3.7	3.5	-	-	-	-	-	-	-	-						
SP97190	98-03-16	00.1	52-38S	150-01E	7.8	7.8	7.8	7.8	7.8	7.8	7.4	7.4	7.5	7.6	7.2	6.8	6.1	6.1	6.1	67	7.4				
					5.8	5.1	4.8	4.5	4.3	4.0	3.9	-	-	-	-	-	-	-	-						
SP97191	98-03-16	02.3	52-08S	149-52E	7.8	7.8	7.8	7.8	7.8	7.7	7.3	6.4	6.7	6.0	5.8	5.5	5.6	5.4	5.0	96	7.5				
					4.9	4.6	4.2	-	-	-	-	-	-	-	-	-	-	-	-						
SP97192	98-03-16	04.1	51-44S	149-50E	7.9	7.9	7.9	7.9	7.9	7.8	7.2	5.6	5.0	3.2	2.1	1.8	1.5	1.7	2.0	90	6.7				
					2.2	2.3	2.3	2.3	2.3	2.4	2.4	-	-	-	-	-	-	-	-						
SP97193	98-03-16	08.0	50-43S	150-03E	8.3	8.3	8.3	8.3	8.3	8.2	8.2	8.2	8.2	7.9	7.5	6.9	6.4	5.8	5.8	0	8.3				
					5.6	5.1	4.9	4.5	4.0	3.7	3.5	-	-	-	-	-	-	-	-						
SP97194	98-03-16	10.9	49-58S	150-05E	8.5	8.5	8.5	8.5	8.5	8.7	9.7	9.3	9.2	9.1	9.1	9.0	8.8	8.5	8.3	84	8.5				
					7.8	7.3	7.1	6.6	6.1	5.3	-	-	-	-	-	-	-	-	-						
SP97195	98-03-16	12.3	49-35S	150-05E	9.8	9.8	9.9	9.8	9.8	9.8	9.8	9.9	10.2	9.7	9.4	8.9	8.7	8.6	8.5	121	8.8				
					8.4	8.2	8.0	7.4	6.8	6.2	6.0	-	-	-	-	-	-	-	-						
SP97196	98-03-16	16.5	48-31S	150-00E	9.5	9.5	9.5	9.5	9.5	9.5	9.2	9.1	9.0	8.9	8.8	8.5	8.4	8.4	8.2	82	9.9				
					7.9	7.4	7.1	6.7	6.2	5.8	5.4	-	-	-	-	-	-	-	-						
SP97197	98-03-16	19.2	47-48S	150-00E	10.3	10.3	10.3	10.3	10.3	10.1	10.0	9.8	9.5	9.2	8.9	8.7	8.5	8.4	8.2	0	10.6				
					8.0	7.8	7.4	7.0	6.7	6.2	5.5	-	-	-	-	-	-	-	-						
SP97198	98-03-16	21.3	47-14S	150-00E	12.0	12.0	12.0	12.0	12.0	10.7	10.2	10.3	9.8	9.2	8.9	8.6	8.3	8.2	8.2	65	11.3				
					7.8	7.6	7.0	6.8	6.4	6.2	5.5	-	-	-	-	-	-	-	-						

NUMBER	DATE TIME		POSITION		TEMPERATURE (°C)																S.L. (M)	AIR TEMP. (°C)
					DEPTH (M)																	
					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			
SP97199	98-03-16	23.6	46-46S	150-01E	10.9	10.9	10.9	10.9	10.9	9.8	8.9	8.7	8.6	8.2	8.1	8.1	8.1	7.8	7.4	58	11.7	
					7.2	6.8	6.6	6.1	5.8	5.3	5.0	-	-	-	-	-	-	-	-			
SP97200	98-03-17	01.3	46-21S	150-01E	12.2	12.1	12.2	12.3	12.3	11.8	11.0	10.5	10.0	9.7	9.1	8.7	8.5	8.3	8.1	59	11.9	
					8.1	7.9	7.6	7.3	6.8	6.5	-	-	-	-	-	-	-	-	-			
SP97201	98-03-17	08.7	45-22S	149-59E	12.1	12.1	12.1	12.1	12.0	11.8	11.1	11.5	10.3	10.3	9.9	9.4	9.0	8.7	8.6	49	12.9	
					8.3	8.0	7.5	7.3	6.7	6.4	5.9	-	-	-	-	-	-	-	-			
SP97202	98-03-17	13.0	44-10S	150-00E	14.8	14.8	14.8	14.7	14.1	13.2	12.3	11.5	11.2	10.6	10.2	10.0	9.5	9.1	8.7	30	14.0	
					8.6	8.4	8.1	7.9	7.5	7.2	6.7	-	-	-	-	-	-	-	-			
SP97203	98-03-17	15.0	43-37S	149-58E	15.2	15.2	15.2	14.5	14.1	13.3	12.7	11.7	11.2	10.6	10.1	9.7	9.3	8.9	8.7	20	14.8	
					8.6	8.4	8.3	8.0	7.8	7.3	6.9	-	-	-	-	-	-	-	-			
SP97204	98-03-18	04.0	43-13S	150-00E	14.3	14.4	14.2	14.2	14.3	14.3	14.4	13.2	12.7	11.5	10.6	10.6	10.1	9.5	9.1	40	16.8	
					9.1	8.8	8.4	8.2	7.7	7.3	6.9	-	-	-	-	-	-	-	-			
SP97205	98-03-18	06.0	42-41S	149-57E	16.5	16.5	16.3	16.4	15.3	13.9	13.7	12.7	11.5	10.8	10.2	10.0	9.4	9.1	8.9	30	17.1	
					8.6	8.5	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP97206	98-03-18	08.0	42-09S	150-02E	16.8	16.8	16.7	16.2	15.1	13.9	13.3	12.9	12.6	11.4	10.7	10.2	9.6	9.0	8.7	23	17.5	
					8.5	8.2	7.8	7.4	6.9	6.4	6.0	-	-	-	-	-	-	-	-			
SP97207	98-03-18	10.0	41-38S	150-01E	16.1	16.1	16.1	15.8	15.2	14.6	14.0	13.3	12.7	11.6	11.1	10.5	10.0	9.4	8.9	24	17.2	
					8.6	8.3	8.0	7.6	7.3	6.8	6.3	-	-	-	-	-	-	-	-			
SP97208	98-03-18	12.0	41-06S	150-01E	18.6	18.6	18.4	17.6	17.0	15.9	14.7	14.0	13.5	12.6	11.2	10.7	10.1	9.5	9.1	14	17.8	
					8.8	8.3	7.9	7.3	6.9	6.4	6.0	-	-	-	-	-	-	-	-			
SP97209	98-03-18	14.0	40-31S	149-58E	18.3	18.3	18.3	18.3	18.3	18.3	16.6	15.5	14.5	12.9	11.3	10.0	9.2	8.5	7.9	78	17.7	
					7.4	6.8	6.4	6.1	5.6	5.4	5.1	-	-	-	-	-	-	-	-			
SP97210	98-03-18	15.8	40-02S	150-00E	19.0	19.1	19.0	19.0	18.9	18.7	17.6	16.7	15.2	13.8	12.7	11.6	10.8	9.9	9.2	62	17.6	
					8.6	8.0	7.6	6.9	6.3	6.0	5.6	-	-	-	-	-	-	-	-			
SP97211	98-03-18	20.2	38-54S	150-24E	19.9	19.9	19.9	19.7	19.7	16.4	15.4	14.7	13.9	12.7	11.8	10.7	10.0	9.3	8.7	54	19.9	
					8.2	7.8	7.4	6.9	6.5	6.1	5.8	-	-	-	-	-	-	-	-			
SP97212	98-03-19	00.0	37-54S	150-43E	20.2	20.2	20.2	20.2	20.2	20.1	16.8	15.1	13.0	11.1	9.5	8.6	7.8	7.1	6.6	74	18.9	
					6.2	5.8	5.7	-	-	-	-	-	-	-	-	-	-	-	-			
SP97213	98-03-19	04.4	36-56S	151-10E	24.3	24.2	23.5	23.1	22.3	21.1	19.6	19.2	17.8	15.7	14.0	12.9	11.7	11.3	10.4	15	23.4	
					9.4	8.7	8.0	7.5	7.1	6.6	6.2	-	-	-	-	-	-	-	-			
SP97214	98-03-19	09.5	35-57S	151-26E	24.1	24.1	24.2	24.0	22.8	22.4	21.3	20.4	19.9	19.1	17.8	16.6	15.0	13.7	12.6	33	22.9	
					11.4	10.7	9.9	9.1	8.5	7.9	7.2	-	-	-	-	-	-	-	-			
SP97215	98-03-19	15.0	34-57S	151-40E	23.9	23.9	23.3	23.2	22.4	19.0	16.9	15.1	13.6	12.6	11.8	11.0	10.1	9.4	8.7	14	23.7	
					8.2	7.8	7.3	6.7	6.3	6.0	5.7	-	-	-	-	-	-	-	-			

Table 3. XCTD observations.

station	JA390001	JA390002	JA390003	JA390004	JA390005	JA390006	JA390007	JA390008								
date	1997/12/4	1997/12/4	1997/12/4	1997/12/4	1997/12/4	1997/12/5	1997/12/5	1997/12/5								
time(UT)	00:01	7:27	12:39	17:20	22:14	3:23	8:27	13:49								
latitude	36-22.0S	37-58.2S	39-01.8S	39-59.4S	40-58.2S	41-59.0S	42-58.6S	43-58.9S								
longitude	111-36.4E	110-04.4E	108-49.4E	107-39.4E	106-27.4E	105-13.1E	104-03.2E	102-45.9E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity		
0	15.8	35.45	16.3	35.40	14.4	34.90	13.3	34.88	12.5	34.65	11.8	34.72	11.4	34.60	11.4	34.73
10	15.8	35.48	15.3	35.34	13.6	34.97	13.3	34.89	12.5	34.69	11.8	34.74	11.4	34.62	11.4	34.75
20	15.8	35.51	15.2	35.36	13.3	34.99	13.3	34.90	12.1	34.72	11.8	34.75	11.4	34.63	11.4	34.77
30	15.7	35.51	15.1	35.37	13.3	35.05	12.7	34.80	12.0	34.74	11.5	34.76	10.6	34.63	11.4	34.78
50	14.8	35.51	15.2	35.49	13.3	35.21	12.0	34.86	11.5	34.76	10.9	34.76	10.3	34.64	10.9	34.81
75	14.6	35.51	14.3	35.47	12.4	35.11	13.4	35.30	10.8	34.77	10.5	34.78	10.3	34.75	10.8	34.81
100	13.9	35.40	13.7	35.39	12.3	35.20	11.0	34.84	10.5	34.77	10.2	34.78	10.6	34.88	10.8	34.82
125	13.5	35.36	13.2	35.30	12.1	35.16	11.3	34.98	10.2	34.77	10.2	34.78	10.7	34.90	10.6	34.81
150	13.1	35.31	12.8	35.25	11.7	35.11	11.3	34.99	10.2	34.78	10.2	34.80	10.5	34.86	10.7	34.86
200	12.6	35.24	12.1	35.14	11.5	35.07	10.5	34.84	9.9	34.75	10.1	34.77	10.2	34.81	10.6	34.84
250	12.0	35.15	11.4	35.02	10.8	34.93	10.2	34.80	9.9	34.76	10.1	34.77	10.0	34.78	10.5	34.85
300	11.1	34.98	10.7	34.92	10.2	34.84	10.0	34.80	10.0	34.80	10.1	34.80	10.0	34.79	10.4	34.85
400	10.0	34.80	9.7	34.76	9.6	34.74	9.5	34.73	9.7	34.77	10.0	34.82	10.1	34.84	10.3	34.82
500	9.4	34.74	9.3	34.70	9.3	34.69	9.3	34.69	9.5	34.75	9.7	34.76	9.5	34.73	10.1	34.81
600	9.1	34.69	9.0	34.63	8.7	34.62	9.1	34.66	9.1	34.69	9.2	34.69	8.7	34.63	9.5	34.73
700	8.5	34.62	8.3	34.51	7.6	34.49	8.3	34.56	8.4	34.60	8.3	34.57	7.7	34.51	8.7	34.60
800	7.5	34.52	7.5	34.44	6.3	34.43	7.2	34.46	7.4	34.50	7.3	34.49	6.6	34.45	7.6	34.51
900	-	-	-	-	5.1	34.37	-	-	6.3	34.45	6.2	34.43	5.5	34.38	6.3	34.42
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

station	JA390009	JA390010	JA390011	JA390012	JA390013	JA390014	JA390015	JA390016								
date	1997/12/5	1997/12/5	1997/12/5	1997/12/6	1997/12/6	1997/12/6	1997/12/6	1997/12/6								
time(UT)	19:13	19:13	23:20	00:48	2:07	3:38	6:23	12:41								
latitude	44-58.7S	44-58.7S	45-45.1S	46-01.1S	46-14.8S	46-31.0S	46-59.4S	48-00.0S								
longitude	101-31.4E	101-31.4E	100-35.0E	100-11.9E	99-50.3E	099-24.2E	98-39.1E	96-44.8E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity		
0	11.8	34.75	11.8	34.75	10.3	34.43	8.4	34.05	8.6	34.17	8.6	34.26	7.0	34.00	7.3	34.09
10	11.8	34.78	11.8	34.78	10.3	34.46	8.4	34.07	8.6	34.20	8.6	34.26	7.0	34.02	7.3	34.11
20	11.8	34.80	11.8	34.80	10.3	34.47	8.4	34.08	8.6	34.21	8.6	34.26	7.0	34.02	7.0	34.10
30	11.8	34.81	11.8	34.81	10.3	34.48	8.4	34.08	8.6	34.20	8.6	34.26	6.9	34.02	7.0	34.11
50	11.8	34.82	11.8	34.82	9.5	34.43	7.2	34.06	8.3	34.20	8.6	34.27	6.7	34.03	6.8	34.10
75	11.2	34.85	11.2	34.85	9.2	34.41	7.1	34.07	7.5	34.22	7.5	34.27	6.4	34.03	6.0	34.11
100	11.1	34.85	11.1	34.85	8.6	34.39	6.7	34.10	7.3	34.26	7.1	34.22	6.0	34.05	6.1	34.12
125	11.0	34.93	11.0	34.93	9.3	34.55	6.7	34.12	7.2	34.26	7.2	34.26	5.3	34.03	6.0	34.11
150	11.0	34.95	11.0	34.95	9.8	34.65	6.6	34.11	6.9	34.26	7.1	34.28	4.5	34.01	5.7	34.09
200	10.7	34.92	10.7	34.92	9.5	34.61	6.1	34.10	6.7	34.27	6.8	34.26	4.5	34.07	4.8	34.03
250	10.4	34.88	10.4	34.88	8.8	34.49	6.1	34.15	6.5	34.27	6.5	34.25	4.4	34.13	5.0	34.09
300	10.5	34.90	10.5	34.90	8.5	34.45	6.0	34.21	6.2	34.28	6.7	34.35	4.1	34.15	4.7	34.12
400	10.2	34.88	10.2	34.88	8.5	34.53	5.4	34.29	5.9	34.37	5.9	34.37	3.9	34.23	4.7	34.27
500	9.9	34.81	9.9	34.81	7.1	34.40	5.3	34.36	4.7	34.32	4.8	34.33	3.4	34.26	4.1	34.28
600	9.4	34.74	9.4	34.74	5.9	34.33	4.3	34.27	4.0	34.32	4.1	34.32	3.0	34.31	3.6	34.30
700	8.6	34.63	8.6	34.63	4.8	34.29	3.4	34.24	3.5	34.34	3.6	34.34	2.7	34.37	-	-
800	7.5	34.53	7.5	34.53	4.1	34.27	3.1	34.27	3.1	34.37	3.2	34.39	2.6	34.44	-	-
900	6.3	34.46	6.3	34.46	3.6	34.29	3.0	34.35	2.8	34.41	3.0	34.44	2.6	34.50	-	-
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

station	JA390017	JA390018	JA390019	JA390020	JA390021	JA390022	JA390023	JA390024								
date	1997/12/6	1997/12/7	1997/12/7	1997/12/7	1997/12/7	1997/12/7	1997/12/7	1997/12/7								
time(UT)	18:22	1:33	4:49	8:08	11:21	12:30	13:27	14:29								
latitude	48-59.6S	50-01.4S	50-29.8S	50-59.6S	51-29.3S	51-40.1S	51-49.3S	51-59.6S								
longitude	95-04.8E	93-35.6E	93-00.8E	92-26.7E	91-53.0E	91-40.3E	91-29.6E	91-17.9E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity						
0	6.8	34.07	6.7	34.06	6.9	34.01	6.2	33.86	5.0	33.86	4.1	33.94	3.9	33.89	3.8	33.92
10	6.8	34.09	6.7	34.08	6.9	34.04	6.2	33.89	5.0	33.88	4.1	33.96	3.9	33.91	3.8	33.94
20	6.8	34.10	6.7	34.09	6.9	34.05	6.2	33.90	5.0	33.89	4.1	33.97	3.9	33.92	3.8	33.95
30	6.8	34.10	6.7	34.10	6.9	34.07	6.0	33.90	5.0	33.90	4.1	33.97	3.9	33.93	3.8	33.96
50	6.9	34.15	6.7	34.09	6.9	34.07	5.6	33.97	5.0	33.90	4.1	33.97	3.9	33.94	3.8	33.97
75	7.2	34.30	6.5	34.07	7.0	34.11	5.1	33.97	3.8	33.89	4.0	33.97	3.9	33.95	3.7	33.97
100	7.5	34.38	6.2	34.07	6.2	34.06	5.1	34.00	3.7	33.91	4.0	33.97	3.8	33.95	3.5	33.98
125	7.0	34.31	6.1	34.08	6.2	34.08	5.1	34.00	3.7	33.94	3.7	33.97	3.2	33.97	2.5	34.00
150	6.9	34.30	6.1	34.09	6.1	34.10	5.0	34.02	3.4	33.95	4.5	34.15	2.8	33.99	2.0	34.03
200	6.9	34.31	6.1	34.14	5.9	34.13	4.4	34.01	3.6	34.08	4.6	34.24	2.5	34.03	1.6	34.06
250	6.5	34.27	5.9	34.15	5.5	34.14	4.6	34.12	3.3	34.11	3.2	34.15	2.6	34.11	1.2	34.13
300	6.4	34.32	6.2	34.27	6.0	34.27	4.4	34.22	2.7	34.10	2.9	34.18	2.5	34.17	1.5	34.23
400	6.1	34.41	5.4	34.30	5.2	34.31	4.6	34.33	2.8	34.21	2.6	34.24	1.7	34.17	1.7	34.37
500	5.0	34.36	4.8	34.31	4.6	34.33	3.5	34.28	2.1	34.22	2.9	34.38	2.0	34.32	2.2	34.53
600	4.1	34.34	4.0	34.29	3.7	34.30	3.3	34.34	2.6	34.38	2.5	34.44	1.6	34.36	2.3	34.60
700	3.5	34.35	3.6	34.31	3.2	34.34	3.1	34.39	2.6	34.45	2.5	34.51	2.2	34.51	2.2	34.64
800	3.3	34.40	3.2	34.36	3.0	34.40	2.9	34.43	2.4	34.50	2.4	34.58	2.4	34.58	2.3	34.69
900	2.9	34.42	3.0	34.41	2.9	34.46	2.9	34.49	2.3	34.56	2.4	34.62	2.3	34.63	2.2	34.73
1000	2.6	34.48	2.9	34.46	2.9	34.51	2.7	34.55	2.5	34.63	2.2	34.66	2.2	34.65	2.2	34.77

station	JA390025	JA390026	JA390027	JA390028	JA390029	JA390030	JA390031	JA390032								
date	1997/12/7	1997/12/7	1997/12/8	1997/12/8	1997/12/8	1997/12/8	1997/12/8	1997/12/9								
time(UT)	17:52	21:20	3:50	10:12	15:19	21:07	23:54	2:23								
latitude	52-30.0S	52-59.8S	53-59.8S	55-00.4S	55-21.4S	55-44.6S	55-57.8S	56-00.3S								
longitude	90-38.8E	89-59.1E	88-32.4E	86-52.0E	85-01.0E	82-58.5E	81-59.2E	81-00.3E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity						
0	3.4	33.92	3.2	33.93	1.4	33.87	0.8	34.00	1.2	34.03	2.2	33.93	0.9	34.13	-0.2	34.06
10	3.4	33.93	3.2	33.96	1.4	33.90	0.8	34.01	1.2	34.05	2.2	33.95	0.9	34.16	-0.2	34.07
20	3.4	33.94	3.2	33.95	1.4	33.93	0.8	34.01	1.2	34.06	2.2	33.96	0.9	34.16	-0.2	34.08
30	3.4	33.95	3.2	33.98	1.4	33.93	0.8	34.01	1.2	34.07	2.2	33.96	0.9	34.17	-0.2	34.09
50	3.4	33.95	3.2	33.99	1.4	33.94	0.8	34.01	1.2	34.06	2.2	33.96	0.8	34.17	-0.2	34.09
75	3.4	33.96	3.2	33.98	1.2	33.94	0.8	34.01	1.2	34.06	1.6	33.96	0.6	34.19	-0.4	34.09
100	3.2	33.97	3.2	33.98	1.4	33.99	0.2	34.04	1.2	34.07	0.4	34.04	0.1	34.23	-0.7	34.16
125	2.0	34.00	2.4	34.00	1.9	34.06	0.1	34.12	0.8	34.07	0.3	34.05	-0.1	34.27	-0.5	34.32
150	1.4	34.02	3.4	34.13	1.6	34.06	0.4	34.21	0.6	34.09	1.0	34.17	0.0	34.39	0.7	34.52
200	1.1	34.06	2.5	34.10	1.5	34.19	1.3	34.35	1.0	34.20	0.7	34.22	0.9	34.59	1.5	34.65
250	0.7	34.11	2.3	34.12	1.7	34.28	1.6	34.43	1.2	34.31	1.2	34.34	1.5	34.71	1.6	34.70
300	1.0	34.23	1.8	34.12	2.0	34.38	1.9	34.51	1.3	34.37	1.7	34.46	1.6	34.76	1.7	34.75
400	1.7	34.41	2.3	34.28	2.1	34.52	2.0	34.59	1.3	34.50	1.9	34.56	1.7	34.81	1.7	34.76
500	2.1	34.54	1.9	34.35	2.0	34.59	2.0	34.65	2.1	34.66	2.0	34.67	1.7	34.83	1.6	34.79
600	2.2	34.61	2.3	34.48	2.1	34.66	2.0	34.69	2.1	34.71	2.2	34.73	1.7	34.85	1.5	34.79
700	2.2	34.67	2.4	34.55	2.1	34.70	1.9	34.70	-	-	2.1	34.76	1.6	34.85	1.4	34.78
800	2.2	34.72	2.3	34.59	2.0	34.73	1.9	34.72	-	-	2.0	34.78	1.6	34.85	-	-
900	2.2	34.75	2.3	34.63	2.0	34.75	1.8	34.73	-	-	2.0	34.80	1.5	34.85	-	-
1000	2.2	34.78	2.2	34.67	1.9	34.77	1.8	34.74	-	-	1.9	34.82	1.4	34.85	-	-

station	JA390033	JA390034	JA390035	JA390036	JA390037	JA390038	JA390039	JA390040
date	1997/12/9	1997/12/9	1997/12/9	1997/12/9	1997/12/9	1997/12/10	1997/12/10	1997/12/10
time(UT)	4:44	7:05	9:23	16:10	22:52	0:02	1:12	3:29
latitude	56-09.1S	56-21.8S	56-36.1S	57-10.7S	57-47.5S	57-53.4S	57-58.1S	58-10.4S
longitude	80-01.5E	79-00.5E	78-01.5E	75-00.3E	72-00.0E	71-29.6E	70-59.8E	69-59.3E
depth	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity
0	-0.1 34.05	0.0 34.08	-0.2 34.07	-0.5 33.80	-0.4 33.70	-0.7 33.65	-0.7 33.61	0.3 33.81
10	-0.1 34.07	-0.2 34.10	-0.2 34.09	-0.5 33.82	-0.4 33.72	-0.7 33.66	-0.7 33.64	0.3 33.83
20	-0.1 34.08	-0.3 34.13	-0.3 34.12	-0.4 33.82	-0.4 33.74	-0.7 33.67	-0.7 33.65	0.3 33.83
30	-0.1 34.08	-0.3 34.12	-0.3 34.13	-0.4 33.84	-0.5 33.77	-0.9 33.69	-0.8 33.66	0.3 33.85
50	-0.1 34.09	-0.3 34.13	-0.3 34.13	-0.3 33.86	-1.0 33.80	-1.5 33.82	-1.7 33.78	0.0 33.86
75	-0.3 34.09	-0.5 34.14	-0.5 34.15	-0.7 33.85	-1.2 33.85	-1.7 33.84	-1.7 33.82	-0.2 33.89
100	-0.8 34.15	-0.5 34.26	-0.9 34.18	-0.9 33.95	-1.1 33.92	-1.8 33.88	-1.7 33.86	-0.2 33.90
125	0.4 34.44	1.3 34.55	-0.4 34.29	-1.3 33.96	-0.5 34.03	-1.7 33.94	-1.3 33.95	-0.3 33.94
150	1.0 34.56	1.7 34.61	1.2 34.55	-1.0 34.03	0.2 34.12	-0.6 34.06	-1.5 33.98	-0.2 33.97
200	1.6 34.65	1.9 34.66	1.7 34.64	-0.3 34.23	1.5 34.34	1.3 34.33	0.7 34.26	0.7 34.11
250	1.6 34.68	1.8 34.67	1.8 34.66	0.8 34.41	1.7 34.44	1.6 34.45	1.5 34.42	1.7 34.32
300	1.7 34.70	1.9 34.70	1.8 34.69	1.7 34.55	1.8 34.49	1.8 34.53	1.8 34.50	1.9 34.39
400	1.7 34.73	1.8 34.73	1.8 34.70	2.0 34.64	2.0 34.60	2.0 34.62	1.9 34.59	2.0 34.49
500	1.6 34.75	1.8 34.75	1.8 34.72	2.0 34.68	2.0 34.66	2.0 34.68	2.0 34.64	2.1 34.57
600	1.6 34.75	1.7 34.77	1.7 34.73	2.0 34.73	2.0 34.71	2.1 34.72	2.0 34.70	2.2 34.62
700	1.5 34.75	1.6 34.77	1.7 34.74	2.0 34.76	2.0 34.74	2.0 34.74	2.0 34.74	2.2 34.68
800	1.4 34.76	1.6 34.78	1.6 34.74	1.9 34.79	2.0 34.76	2.0 34.77	2.0 34.77	2.2 34.70
900	1.2 34.74	-	1.5 34.74	1.9 34.80	2.0 34.78	2.0 34.79	2.0 34.78	2.1 34.73
1000	-	-	-	-	-	-	2.0 34.80	-

station	JA390041	JA390042	JA390043	JA390044	JA390045	JA390046	JA390047	JA390048
date	1997/12/10	1997/12/10	1997/12/10	1997/12/11	1997/12/11	1997/12/11	1997/12/11	1997/12/11
time(UT)	9:02	14:35	20:03	1:33	6:48	12:11	17:27	22:10
latitude	58-37.0S	59-06.3S	59-31.0S	60-00.1S	60-04.5S	60-39.0S	61-23.0S	62-01.8S
longitude	67-30.4E	65-01.0E	62-30.5E	59-59.6E	57-29.9E	55-00.5E	52-25.2E	50-00.0E
depth	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity	temp. salinity
0	-0.5 33.75	-0.3 33.62	0.0 33.90	-1.0 33.71	-1.1 33.41	-1.2 33.49	-1.2 33.54	-0.8 33.75
10	-0.5 33.77	-0.3 33.63	0.0 33.92	-1.0 33.74	-1.1 33.45	-1.3 33.51	-1.2 33.60	-0.8 33.77
20	-0.5 33.78	-0.3 33.65	0.0 33.93	-1.0 33.76	-1.1 33.52	-1.3 33.53	-1.2 33.60	-1.0 33.79
30	-0.5 33.79	-0.5 33.71	0.0 33.94	-1.0 33.76	-1.2 33.62	-1.6 33.80	-1.4 33.68	-1.0 33.80
50	-0.8 33.78	0.0 33.91	-0.7 33.96	-1.5 33.82	-1.6 33.88	-1.7 33.93	-1.7 33.88	-1.6 33.92
75	-1.4 33.85	-0.2 33.98	-1.3 33.98	-1.7 33.93	-1.7 34.04	-1.8 34.01	-1.8 34.00	-1.8 34.05
100	-1.4 33.90	-1.1 33.97	-1.3 33.99	-1.8 34.00	-1.6 34.13	-1.6 34.11	-1.8 34.00	-1.8 34.09
125	-1.2 33.94	-1.0 34.01	-0.9 34.09	-1.0 34.13	-1.5 34.18	0.1 34.33	-1.5 34.10	-0.6 34.27
150	-1.0 34.01	-1.2 34.03	0.0 34.25	0.1 34.29	0.0 34.36	1.4 34.54	0.9 34.42	1.0 34.47
200	1.3 34.37	1.5 34.40	1.5 34.51	1.6 34.55	1.5 34.59	1.6 34.61	1.6 34.55	1.5 34.59
250	1.7 34.47	1.8 34.50	1.7 34.59	1.8 34.61	1.7 34.65	1.7 34.65	1.8 34.62	1.7 34.65
300	1.7 34.53	1.9 34.56	1.8 34.63	1.8 34.66	1.8 34.70	1.8 34.69	1.8 34.65	1.8 34.69
400	2.0 34.64	2.0 34.65	1.9 34.70	1.9 34.72	1.9 34.74	1.9 34.75	1.8 34.69	1.8 34.73
500	2.0 34.70	1.9 34.71	1.9 34.74	1.9 34.75	1.9 34.78	1.9 34.78	1.8 34.73	1.8 34.77
600	2.0 34.75	2.0 34.75	2.0 34.77	1.9 34.78	1.8 34.80	1.8 34.79	1.8 34.75	1.7 34.78
700	2.0 34.79	2.0 34.77	1.9 34.79	1.8 34.80	1.8 34.81	1.8 34.81	1.7 34.76	1.6 34.79
800	2.0 34.81	1.9 34.79	1.9 34.81	1.8 34.81	1.7 34.82	1.7 34.82	1.6 34.78	1.5 34.78
900	1.9 34.84	1.9 34.80	1.8 34.81	1.7 34.82	1.6 34.82	1.6 34.82	-	-
1000	-	-	-	1.6 34.81	1.5 34.82	-	-	-

station	JA390049	JA390050	JA390051	JA390052	JA390053	JA390054	JA390055	JA390056								
date	1998/1/8	1998/1/8	1998/1/8	1998/1/9	1998/1/9	1998/1/9	1998/1/10	1998/1/10								
time(UT)	17:51	19:19	23:08	6:35	14:15	22:55	7:40	16:44								
latitude	68-22.5S	68-00.2S	67-00.8S	65-00.6S	63-00.6S	61-00.4S	59-00.9S	57-00.3S								
longitude	38-33.8E	38-04.2E	37-01.9E	35-20.1E	33-16.0E	30-12.5E	27-20.8E	24-34.7E								
depth	temp	salinity	temp	salinity	temp	salinity	temp	salinity	temp	salinity	temp	salinity				
0	-0.2	33.51	0.3	33.84	0.6	33.80	0.0	33.83	1.0	33.77	1.1	33.35	1.5	33.89	0.9	33.97
10	-0.5	33.58	0.1	33.86	0.4	33.84	0.0	33.85	1.0	33.80	0.7	33.38	1.4	33.92	0.9	33.99
20	-0.9	33.73	-0.1	33.92	0.0	33.87	-0.1	33.93	0.8	33.81	0.3	33.48	1.3	33.94	0.8	34.00
30	-1.1	33.84	0.0	33.97	-0.1	33.89	-0.3	34.03	0.3	33.81	-1.1	33.82	1.0	33.94	0.8	34.01
50	-1.6	34.24	-1.3	34.21	-1.1	34.20	-1.3	34.28	-1.4	34.00	-1.4	34.05	0.9	33.96	0.7	34.02
75	-1.8	34.36	-1.8	34.40	-1.7	34.41	-1.7	34.41	-1.7	34.10	-1.7	34.12	0.9	33.99	0.6	34.03
100	-1.8	34.39	-1.8	34.43	-1.7	34.43	-1.7	34.42	-1.4	34.16	-1.7	34.16	0.3	34.12	-0.3	34.08
125	-1.8	34.41	-1.8	34.45	-1.4	34.48	-1.6	34.46	-0.8	34.30	-1.5	34.21	-0.1	34.17	-0.9	34.13
150	-1.8	34.41	-1.8	34.47	0.3	34.62	0.1	34.59	0.1	34.43	-0.3	34.39	-0.2	34.20	-0.9	34.23
200	-1.8	34.41	-1.5	34.52	1.2	34.72	1.2	34.71	1.3	34.66	1.1	34.62	0.3	34.37	0.0	34.53
250	-1.7	34.42	-0.4	34.61	1.4	34.75	0.6	34.67	1.4	34.71	1.3	34.70	1.0	34.56	0.7	34.70
300	-1.7	34.44	1.0	34.75	1.4	34.77	1.1	34.72	1.4	34.73	1.3	34.73	1.3	34.68	0.8	34.75
400	-0.2	34.61	1.1	34.77	1.3	34.77	1.2	34.76	1.3	34.76	1.3	34.76	1.5	34.75	0.8	34.76
500	0.5	34.69	1.2	34.79	1.3	34.77	1.3	34.60	1.3	34.78	1.2	34.78	1.4	34.76	0.7	34.76
600	0.7	34.72	1.1	34.80	1.1	34.77	1.2	34.61	1.2	34.77	1.1	34.78	1.4	34.77	0.6	34.77
700	0.6	34.71	1.0	34.80	1.0	34.77	1.1	34.62	1.0	34.76	1.0	34.78	1.2	34.78	0.6	34.76
800	0.6	34.71	0.8	34.79	0.9	34.76	1.0	34.63	0.9	34.76	0.9	34.78	1.1	34.77	0.4	34.76
900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	34.76
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

station	JA390057	JA390058	JA390059	JA390060	JA390061	JA390062	JA390063	JA390064								
date	1998/1/11	1998/1/11	1998/1/12	1998/1/13	1998/1/17	1998/1/18	1998/1/18	1998/1/18								
time(UT)	1:30	20:54	17:43	18:42	14:58	2:44	6:38	10:27								
latitude	55-00.4S	50-00.7S	45-00.7S	40-00.7S	42-30.0S	45-30.1S	46-29.9S	47-30.2S								
longitude	22-04.8E	20-54.2E	19-53.1E	19-07.0E	19-08.0E	19-33.5E	19-42.9E	19-52.7E								
depth	temp	salinity	temp	salinity	temp	salinity	temp	salinity	temp	salinity	temp	salinity				
0	0.4	#####	3.9	#####	8.1	33.98	20.6	35.49	12.5	34.85	7.9	33.99	7.3	33.94	7.1	33.91
10	0.4	#####	3.9	#####	7.9	34.01	20.6	35.50	12.5	34.86	7.9	34.01	7.3	33.96	7.1	33.93
20	0.4	#####	3.9	#####	7.8	34.03	20.5	35.50	12.4	34.86	7.9	34.02	7.3	33.97	7.1	33.93
30	0.4	#####	3.9	#####	7.7	34.04	20.5	35.50	12.3	34.84	7.9	34.02	7.3	33.98	7.1	33.94
50	0.2	#####	3.9	#####	7.7	34.05	19.6	35.42	12.2	34.84	7.9	34.02	7.3	33.99	7.1	33.94
75	0.3	#####	3.6	#####	7.7	34.05	17.6	35.41	12.3	34.87	7.4	34.03	7.2	33.98	7.1	33.95
100	-0.4	#####	2.3	#####	7.5	34.14	15.8	35.28	12.8	35.10	7.1	34.03	6.8	33.99	7.1	33.99
125	-0.8	#####	1.8	#####	7.2	34.24	15.0	35.35	12.4	35.03	6.6	34.05	6.2	34.01	6.3	34.04
150	-0.2	#####	1.7	#####	7.0	34.27	14.2	35.24	11.7	34.90	5.6	34.13	5.3	34.03	5.8	34.14
200	1.1	#####	2.0	#####	7.0	34.35	13.7	35.20	11.1	34.90	5.2	34.15	5.0	34.14	5.4	34.18
250	1.3	#####	2.1	#####	6.2	34.32	13.1	35.19	10.4	34.81	5.1	34.29	4.8	34.24	4.9	34.25
300	1.3	#####	2.2	#####	5.6	34.30	12.1	35.08	9.5	34.68	4.6	34.27	4.3	34.22	4.3	34.21
400	1.2	#####	2.3	#####	4.9	34.28	10.4	34.86	8.5	34.63	3.9	34.26	3.8	34.22	3.8	34.22
500	1.1	#####	2.3	#####	4.6	34.31	8.7	34.67	7.3	34.54	3.5	34.28	3.3	34.23	3.4	34.23
600	0.9	#####	2.3	#####	3.8	34.26	7.0	34.52	6.1	34.48	3.2	34.30	3.2	34.25	2.9	34.25
700	0.7	#####	2.3	#####	3.7	34.33	5.6	34.41	5.0	34.41	2.9	34.35	3.0	34.29	2.9	34.28
800	0.6	#####	2.3	#####	3.0	34.30	4.1	34.31	4.6	34.43	2.8	34.41	2.8	34.36	2.8	34.30
900	-	-	2.3	#####	3.2	34.40	3.4	34.33	4.0	34.43	2.7	34.48	-	-	2.8	34.36
1000	-	-	2.3	#####	2.8	34.40	3.7	34.47	-	-	-	-	-	-	-	-

station	JA390065	JA390066	JA390067	JA390068	JA390069	JA390070	JA390071	JA390072								
date	1998/1/18	1998/1/18	1998/1/19	1998/1/19	1998/1/19	1998/1/20	1998/1/20	1998/1/21								
time(UT)	14:19	18:20	6:11	15:37	21:33	3:27	14:56	2:57								
latitude	48-30.0S	49-30.0S	52-30.9S	55-00.0S	56-00.3S	57-01.0S	58-59.9S	61-00.0S								
longitude	20-03.2E	20-14.8E	20-51.8E	21-16.4E	23-23.5E	25-31.7E	29-59.2E	34-46.2E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity						
0	5.8	33.80	4.5	33.78	1.9	34.00	1.5	34.03	1.0	33.82	2.0	33.92	2.0	33.84	1.8	33.68
10	5.8	33.82	4.5	33.78	1.9	34.01	1.4	34.05	0.9	33.84	1.9	33.93	1.8	33.86	1.4	33.71
20	5.8	33.83	4.5	33.80	1.9	34.04	0.9	34.06	0.7	33.86	1.7	33.96	1.5	33.89	1.2	33.77
30	5.8	33.84	4.5	33.80	1.8	34.04	1.0	34.09	0.7	33.87	1.7	33.96	1.4	33.90	1.1	33.79
50	5.8	33.84	4.5	33.80	1.7	34.05	1.0	34.11	0.3	33.91	1.3	33.96	1.3	33.93	-0.7	33.89
75	5.8	33.85	4.4	33.81	1.3	34.06	0.9	34.13	-0.5	33.97	1.1	33.97	1.0	33.97	-1.2	34.00
100	5.6	33.91	2.7	33.87	0.9	34.09	0.2	34.13	-1.3	34.08	0.0	34.01	0.9	33.97	-0.8	34.08
125	4.3	33.95	2.0	33.90	0.1	34.23	-0.6	34.35	-1.0	34.19	-0.3	34.10	-0.3	34.07	-0.8	34.12
150	4.2	33.98	1.9	33.96	0.3	34.32	0.0	34.48	-0.8	34.32	-0.1	34.18	0.0	34.16	-0.4	34.19
200	4.5	34.19	2.1	34.15	0.7	34.43	0.7	34.62	0.1	34.61	1.1	34.47	0.8	34.35	1.2	34.50
250	4.0	34.19	2.2	34.25	1.2	34.58	1.1	34.71	0.3	34.69	1.6	34.63	1.5	34.54	1.5	34.60
300	3.6	34.19	2.2	34.30	1.1	34.62	1.1	34.74	0.5	34.74	1.7	34.67	1.8	34.63	1.6	34.67
400	3.0	34.20	2.4	34.42	1.3	34.72	1.1	34.76	0.5	34.75	1.7	34.74	1.5	34.67	1.6	34.74
500	2.8	34.23	2.4	34.50	1.4	34.77	0.9	34.76	0.4	34.76	1.5	34.75	1.4	34.70	1.6	34.77
600	2.7	34.31	2.4	34.58	1.3	34.79	0.8	34.75	0.4	34.77	1.4	34.76	1.5	34.73	1.5	34.79
700	2.7	34.39	2.4	34.62	1.2	34.80	0.7	34.75	0.3	34.76	1.2	34.76	1.5	34.75	1.4	34.81
800	2.7	34.45	2.3	34.68	1.1	34.80	0.6	34.75	0.3	34.77	1.1	34.77	1.4	34.77	1.2	34.81
900	-	-	2.3	34.71	1.0	34.80	0.5	34.75	0.2	34.76	1.0	34.78	1.3	34.77	1.1	34.81
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

station	JA390073	JA390074	JA390075	JA390076	JA390077	JA390078	JA390079	JA390080								
date	1998/1/21	1998/1/21	1998/1/22	1998/1/22	1998/1/22	1998/2/12	1998/3/3	1998/3/3								
time(UT)	15:02	21:10	3:29	9:12	10:57	17:40	15:46	23:06								
latitude	63-00.2S	63-59.6S	65-00.0S	66-00.2S	66-22.2S	69-00.6S	62-15.3S	61-33.9S								
longitude	39-44.4E	42-21.7E	45-12.5E	48-06.7E	48-57.8E	39-36.9E	74-14.2E	78-31.1E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity						
0	1.4	33.63	1.3	33.65	0.6	33.66	-0.4	33.94	-0.8	33.72	-1.4	31.93	1.5	33.56	1.6	33.61
10	1.4	33.65	1.3	33.66	0.6	33.67	-0.4	33.96	-0.8	33.73	-1.3	32.50	1.5	33.59	1.6	33.62
20	1.4	33.69	0.6	33.73	0.3	33.68	-0.4	33.98	-0.9	33.79	-1.0	32.84	1.5	33.61	1.6	33.63
30	0.8	33.73	0.4	33.78	-0.7	33.84	-0.4	33.98	-1.0	33.84	-1.0	32.95	1.5	33.61	1.6	33.63
50	-1.5	34.06	-1.5	34.19	-1.7	34.19	-0.5	34.01	-0.8	33.88	-0.8	33.39	-0.4	33.87	-0.5	33.85
75	-1.7	34.14	-1.6	34.28	-1.7	34.26	-1.4	34.18	-0.8	33.90	-1.4	33.99	-1.5	34.10	-1.5	34.05
100	-1.6	34.20	-0.7	34.44	-1.5	34.34	-1.7	34.32	-0.8	33.93	-1.7	34.21	-0.9	34.21	-0.7	34.19
125	-0.8	34.34	1.1	34.63	-1.2	34.42	-1.7	34.36	-1.2	33.99	-1.7	34.24	0.3	34.38	0.3	34.32
150	0.5	34.52	1.4	34.67	-0.5	34.50	-1.7	34.39	-1.5	34.18	-1.6	34.30	1.3	34.54	1.3	34.45
200	1.3	34.65	1.5	34.71	1.0	34.64	-1.7	34.41	-1.7	34.39	-1.6	34.34	1.7	34.62	1.7	34.55
250	1.4	34.73	1.5	34.72	1.0	34.66	-1.3	34.47	-1.5	34.43	-	-	1.8	34.65	1.8	34.60
300	1.4	34.76	1.4	34.74	1.2	34.69	-0.6	34.55	-1.8	34.44	-	-	1.9	34.70	1.9	34.64
400	1.4	34.79	1.3	34.75	1.1	34.71	-0.4	34.61	-1.7	34.46	-	-	1.9	34.74	2.0	34.68
500	1.3	34.79	1.3	34.76	0.9	34.71	-0.2	34.65	-1.0	34.53	-	-	1.9	34.78	2.0	34.71
600	1.2	34.80	1.2	34.75	0.9	34.62	-0.4	34.65	-0.4	34.58	-	-	1.9	34.79	1.9	34.75
700	1.1	34.81	1.0	34.76	0.9	34.59	0.1	34.69	-0.1	34.58	-	-	1.8	34.79	1.9	34.76
800	1.0	34.81	1.0	34.76	0.9	34.60	0.2	34.71	0.0	34.55	-	-	1.8	34.80	1.9	34.77
900	0.9	34.79	0.8	34.76	0.8	34.63	-	-	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

station	JA390081	JA390082	JA390083	JA390084	JA390085	JA390086	JA390087	JA390088								
date	1998/3/13	1998/3/13	1998/3/14	1998/3/14	1998/3/14	1998/3/14	1998/3/14	1998/3/15								
time(UT)	12:52	20:43	4:35	5:17	11:13	15:19	19:23	1:57								
latitude	63-31.6S	62-00.2S	60-54.0S	60-52.7S	59-38.8S	58-38.2S	57-40.9S	56-36.9S								
longitude	150-01.4E	149-58.0E	149-58.1E	149-57.2E	149-58.6E	149-55.1E	149-59.0E	150-03.6E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity		
0	1.3	33.93	1.9	33.89	1.8	33.90	1.9	33.91	1.8	33.90	2.3	33.93	3.2	33.86	3.3	33.81
10	1.3	33.97	1.9	33.90	1.8	33.91	1.9	33.92	1.8	33.92	2.3	33.95	3.2	33.89	3.3	33.82
20	1.3	33.98	1.9	33.91	1.8	33.92	1.9	33.92	1.8	33.93	2.3	33.95	3.2	33.90	3.3	33.84
30	1.3	33.98	1.9	33.91	1.8	33.92	1.9	33.91	1.8	33.93	2.3	33.94	3.2	33.91	3.3	33.84
50	1.3	33.99	1.9	33.92	1.8	33.93	1.9	33.91	1.8	33.94	2.3	33.96	3.2	33.92	3.3	33.84
75	0.4	34.44	-0.9	34.06	1.8	33.93	1.7	33.93	-0.2	34.14	-0.1	34.30	2.1	33.96	3.3	33.84
100	1.4	34.61	-0.5	34.17	-0.1	34.27	-0.1	34.23	0.8	34.46	0.5	34.45	-0.3	34.13	1.6	33.87
125	1.7	34.67	0.9	34.38	1.3	34.45	1.2	34.43	1.6	34.60	1.4	34.60	0.6	34.30	-0.5	33.98
150	1.8	34.69	1.4	34.47	1.7	34.52	1.7	34.51	1.9	34.65	1.8	34.67	1.9	34.47	-0.4	34.04
200	1.9	34.74	1.8	34.57	1.9	34.60	1.9	34.58	1.9	34.68	1.8	34.71	2.2	34.54	1.3	34.31
250	1.9	34.76	2.0	34.61	2.0	34.64	2.0	34.63	1.9	34.72	1.9	34.75	2.0	34.59	1.7	34.40
300	1.9	34.77	2.0	34.64	2.0	34.67	2.0	34.66	1.9	34.74	1.9	34.76	2.1	34.62	2.0	34.47
400	1.8	34.79	2.0	34.70	2.0	34.73	2.0	34.70	1.8	34.77	1.8	34.78	2.1	34.70	2.1	34.55
500	1.8	34.81	2.0	34.73	2.0	34.75	2.0	34.73	1.8	34.80	1.8	34.78	2.1	34.75	2.1	34.59
600	1.8	34.83	1.9	34.83	1.9	34.72	2.0	34.69	1.8	34.76	1.8	34.74	2.0	34.77	2.1	34.63
700	1.7	34.82	1.8	34.90	1.9	34.71	2.0	34.63	1.8	34.76	1.8	34.70	2.0	34.78	2.1	34.67
800	1.6	34.83	1.8	34.88	1.9	34.69	2.0	34.57	1.7	34.77	-	-	1.9	34.80	2.0	34.68
900	1.6	34.84	1.7	34.86	1.8	34.70	1.9	34.56	1.6	34.76	-	-	-	-	2.0	34.69
1000	1.5	34.85	1.7	34.86	1.7	34.71	1.9	34.57	-	-	-	-	-	-	-	-

station	JA390089	JA390090	JA390091	JA390092	JA390093	JA390094	JA390095	JA390096								
date	1998/3/15	1998/3/15	1998/3/15	1998/3/16	1998/3/16	1998/3/16	1998/3/16	1998/3/16								
time(UT)	9:09	14:01	21:59	2:02	6:00	10:01	14:15	18:59								
latitude	55-58.0S	54-59.7S	53-08.4S	52-09.7S	51-12.6S	50-10.7S	49-04.7S	47-50.7S								
longitude	150-28.3E	150-16.2E	150-01.3E	149-52.7E	150-01.4E	150-04.2E	150-01.0E	150-00.3E								
depth	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity	temp.	salinity		
0	5.4	33.83	5.2	33.79	7.0	33.90	7.9	33.98	8.0	34.01	8.1	34.03	11.8	34.92	10.4	34.38
10	5.4	33.85	5.2	33.80	7.0	33.92	7.9	34.00	8.0	34.03	8.1	34.06	11.8	34.93	10.4	34.40
20	5.3	33.88	5.2	33.81	7.0	33.92	7.9	34.01	8.0	34.04	8.1	34.07	11.8	34.94	10.4	34.28
30	5.3	33.89	5.2	33.82	7.0	33.93	7.9	34.02	8.0	34.05	8.1	34.08	11.8	34.95	10.4	34.30
50	5.3	33.90	5.2	33.83	7.0	33.93	7.9	34.03	8.0	34.05	8.1	34.08	11.8	34.95	10.3	34.31
75	4.0	34.00	5.2	33.83	7.0	33.92	7.8	34.03	8.0	34.06	8.1	34.09	11.8	34.96	10.3	34.33
100	3.7	34.03	5.1	33.83	7.0	34.10	7.3	33.97	8.0	34.07	8.2	34.13	11.8	34.96	9.9	34.54
125	3.5	34.03	3.5	33.87	7.2	34.24	6.5	34.08	7.5	34.25	8.6	34.50	11.8	34.96	9.7	34.59
150	3.8	34.10	1.8	33.94	7.1	34.25	7.1	34.30	7.4	34.34	9.1	34.64	11.9	34.97	9.6	34.62
200	4.1	34.21	1.2	34.03	6.6	34.22	7.0	34.31	7.4	34.36	9.0	34.66	11.6	35.08	9.2	34.56
250	3.8	34.23	1.5	34.15	6.4	34.24	6.2	34.24	7.3	34.36	8.7	34.61	11.3	35.03	9.0	34.53
300	3.8	34.26	2.0	34.27	6.4	34.29	6.0	34.22	6.8	34.30	7.7	34.45	10.7	34.93	8.8	34.51
400	3.0	34.28	2.2	34.39	5.9	34.31	5.6	34.27	6.1	34.28	7.6	34.48	9.5	34.72	8.5	34.44
500	2.7	34.36	2.3	34.49	5.5	34.36	5.1	34.30	5.9	34.32	6.6	34.39	8.6	34.56	8.3	34.43
600	2.3	34.40	2.3	34.56	4.6	34.33	4.7	34.28	5.2	34.31	6.0	34.38	8.4	34.53	-	-
700	2.5	34.51	2.3	34.61	3.9	34.30	4.1	34.28	4.5	34.30	5.1	34.37	7.9	34.50	-	-
800	-	-	-	-	3.4	34.32	3.7	34.30	3.7	34.29	4.3	34.34	7.3	34.46	-	-
900	-	-	-	-	3.1	34.34	3.2	34.34	3.3	34.35	3.9	34.36	6.7	34.42	-	-
1000	-	-	-	-	3.0	34.40	3.0	34.37	-	-	-	-	-	-	-	-

station	JA390097		JA390098		JA390099		JA390100	
date	1998/3/16		1998/3/16		1998/3/17		1998/3/17	
time(UT)	21:22		23:38		1:27		10:56	
latitude	47-12.6S		46-44.8S		46-17.0S		44-43.7S	
longitude	150-00.1E		150-00.7E		150-00.7E		149-59.6E	
depth	temp	salinity	temp	salinity	temp	salinity	temp	salinity
0	11.8	34.57	10.9	34.28	12.3	34.72	14.8	35.01
10	11.8	34.58	10.9	34.28	12.3	34.75	14.8	35.06
20	11.8	34.60	10.9	34.30	12.3	34.77	14.8	35.08
30	11.8	34.60	10.9	34.30	12.3	34.78	14.5	35.05
50	11.8	34.61	10.9	34.30	12.3	34.80	13.4	34.92
75	11.0	34.53	9.7	34.35	12.3	34.80	12.9	34.91
100	9.9	34.64	8.8	34.42	11.5	34.80	12.6	35.16
125	10.4	34.88	8.6	34.50	9.9	34.63	12.0	35.09
150	10.1	34.85	8.4	34.52	10.8	34.95	11.7	35.07
200	9.2	34.70	8.3	34.52	10.3	34.90	10.5	34.87
250	9.0	34.66	8.1	34.51	9.6	34.79	10.1	34.83
300	8.5	34.58	8.1	34.52	9.0	34.69	9.3	34.70
400	7.9	34.50	8.0	34.51	8.5	34.63	8.8	34.62
500	8.1	34.53	7.4	34.46	8.2	34.61	8.6	34.63
600	7.3	34.47	6.8	34.43	7.8	34.66	7.9	34.56
700	6.5	34.44	6.0	34.41	7.1	34.64	7.2	34.52
800	5.9	34.46	5.4	34.40	6.4	34.58	6.2	34.45
900	4.9	34.39	4.7	34.38	5.6	34.51	-	-
1000	-	-	-	-	-	-	-	-

Table 4. Serial observation data.

Station 1

Beginning of cast

Meteorological observation

Date : March 1, 1998
 Time (UT) : 10:03
 Latitude : 63-28.1S
 Longitude : 54-19.4E
 Depth : 4856 m

Time (UT) : 10:00
 Weather : o
 Air temperature(dry) : 1.4 °C
 Humidity : 92 %
 Atmospheric pressure : 990.9 hPa

Wind direction : N
 Velocity : 10 m/s
 Wave : N / 1
 Swell : N / 1
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.100	33.726	8.11	357	1.92	36	0.38	27.0	0.7	10	0.916	33.706
50	-0.036	---	---	---	---	---	---	---	---	20	0.879	33.707
76	-1.346	34.218	8.06	300	2.32	57	0.26	32.0	0.6	30	0.860	33.717
100	-0.465	34.217	8.04	303	2.37	57	0.26	32.0	0.5	50	0.788	33.757
125	0.907	34.388	7.98	236	1.94	67	0.30	36.0	0.7	75	-1.388	34.020
151	1.515	34.506	7.95	204	2.36	84	0.05	37.0	0.5	100	-1.049	34.112
200	1.738	---	---	---	---	---	---	---	---	125	0.183	34.278
250	1.804	34.623	7.94	192	2.20	86	0.03	36.0	0.7	150	1.239	34.444
299	1.833	34.649	7.95	194	2.08	89	0.03	36.0	0.3	200	1.509	34.533
400	1.809	---	---	---	---	---	---	---	---	250	1.687	34.596
501	1.768	34.710	7.96	204	2.72	92	0.03	34.0	0.5	300	1.754	34.626
602	1.700	---	---	---	---	---	---	---	---	400	1.780	34.668
699	1.621	34.736	7.97	211	2.67	96	0.03	33.0	0.5	500	1.721	34.691
801	1.569	34.741	7.98	219	2.35	98	0.03	33.0	0.6	600	1.651	34.707
901	1.406	34.736	7.98	220	2.69	102	0.02	33.0	0.5	700	1.607	34.719
1002	1.329	34.735	7.98	217	-2.77	104	0.03	33.0	0.5	800	1.611	34.734
1251	1.026	34.719	7.97	222	2.39	115	0.05	34.0	---	1000	1.394	34.728
1500	0.815	34.709	7.97	222	2.48	122	0.04	34.0	0.4	1200	1.101	34.710
2001	0.479	34.690	7.95	232	2.36	133	0.04	35.0	0.5	1500	0.868	34.701
2501	0.250	---	---	---	---	---	---	---	---	2000	0.488	34.678
2999	0.068	34.671	7.92	243	2.36	145	0.02	35.0	0.4	2500	0.258	34.666
3501	-0.067	---	---	---	---	---	---	---	---	3000	0.073	34.656
4001	-0.153	---	---	---	---	---	---	---	---	3500	-0.062	34.648
4564	-0.242	---	---	---	---	---	---	---	---	4000	-0.154	34.643
										4500	-0.232	34.637

Station 2

Beginning of cast

Meteorological observation

Date : March 2, 1998
 Time (UT) : 09:01
 Latitude : 62-53.1S
 Longitude : 65-34.7E
 Depth : 4289 m

Time (UT) : 09:00
 Weather : c
 Air temperature(dry) : 3.8 °C
 Humidity : 83 %
 Atmospheric pressure : 997.4 hPa

Wind direction : SW
 Velocity : 2m/s
 Wave : SW / 1
 Swell : NNW / 1
 Visibility : 30 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.800	33.617	8.10	355	1.83	31	0.37	27.0	0.8	10	1.424	33.588
30	1.321	33.590	8.10	356	1.83	36	0.33	27.0	0.7	20	1.413	33.589
50	-0.644	33.855	8.11	370	1.90	38	0.23	27.0	0.5	30	1.355	33.592
76	-1.703	34.001	8.10	351	2.00	47	0.24	29.0	0.5	50	1.176	33.585
100	-0.656	34.113	8.06	324	2.13	56	0.26	31.0	0.4	75	-1.150	33.940
125	0.425	34.271	8.01	265	2.37	72	0.26	34.0	0.8	100	-0.680	34.073
150	1.048	34.383	7.98	229	2.25	81	0.11	35.0	0.3	125	0.298	34.243
200	1.639	34.491	7.95	201	2.24	89	0.02	36.0	0.2	150	1.200	34.381
250	1.778	34.553	7.93	192	2.30	96	0.04	36.0	0.5	200	1.716	34.506
300	1.856	34.596	7.93	188	2.35	98	0.04	36.0	0.3	250	1.823	34.559
399	1.910	34.651	7.94	191	2.30	101	0.06	35.0	0.5	300	1.897	34.595
501	1.921	34.691	7.95	195	2.22	102	0.03	34.0	0.4	400	1.942	34.653
602	1.879	34.713	7.95	202	2.20	104	0.04	33.0	0.3	500	1.944	34.685
698	1.864	34.734	7.97	209	2.16	104	0.04	32.0	0.2	600	1.928	34.710
800	1.783	34.739	7.96	212	2.16	103	0.04	32.0	0.3	700	1.869	34.722
900	1.706	34.744	7.98	215	2.14	105	0.04	31.0	0.3	800	1.813	34.733
1000	1.618	34.746	7.99	214	2.14	110	0.04	31.0	0.2	1000	1.623	34.737
1249	1.374	34.740	7.98	220	2.04	118	0.01	31.0	0.3	1200	1.419	34.733
1501	1.142	34.730	7.97	224	2.10	124	0.01	32.0	0.6	1500	1.129	34.718
2000	0.713	34.704	7.96	227	2.19	141	0.01	33.0	0.3	2000	0.723	34.693
2498	0.413	34.687	7.93	229	2.31	149	0.01	34.0	0.5	2500	0.419	34.676
2997	0.195	34.676	7.92	236	2.27	159	0.02	34.0	0.6	3000	0.191	34.663
3500	----	34.669	----	---	2.22	159	0.01	34.0	0.6	3500	0.011	34.655

Station B

Beginning of cast

Meteorological observation

Date : March 3, 1998
 Time (UT) : 09:01
 Latitude : 62-34.7S
 Longitude : 72-09.0E
 Depth : 4249 m

Time (UT) : 09:00
 Weather : c
 Air temperature(dry) : 1.0 °C
 Humidity : 87 %
 Atmospheric pressure : 1000.3 hPa

Wind direction : WSW
 Velocity : 7 m/s
 Wave : WSW / 2
 Swell : WSW / 1
 Visibility : 30 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.400	33.522	8.12	355	1.74	26	0.36	27.0	0.5	10	1.280	33.504
49	-1.133	33.947	8.12	355	2.03	34	0.22	30.0	0.0	20	1.266	33.504
74	-1.276	34.054	8.09	333	2.13	35	0.21	32.0	0.6	30	1.201	33.508
100	-0.436	34.183	8.05	286	2.13	52	0.22	35.0	0.4	50	-0.839	33.918
124	0.620	34.329	8.00	241	2.28	65	0.14	38.0	0.4	75	-1.294	34.049
148	1.341	34.450	7.96	210	2.91	73	0.05	40.0	0.3	100	-0.330	34.192
200	1.751	34.543	7.94	194	2.60	81	0.01	40.0	0.4	125	0.827	34.357
250	1.900	34.597	7.94	188	2.60	83	0.00	39.0	0.2	150	1.270	34.434
304	1.949	34.631	7.94	190	2.33	84	0.00	39.0	0.2	200	1.790	34.549
402	1.960	34.677	7.94	192	2.39	85	0.00	38.0	0.2	250	1.894	34.589
501	1.940	34.700	7.95	198	2.45	86	0.00	37.0	0.3	300	1.948	34.623
602	1.900	34.720	7.96	201	2.08	88	0.00	37.0	0.0	400	1.969	34.671
701	1.836	34.734	7.97	205	2.07	91	0.00	36.0	0.4	500	1.931	34.697
801	1.771	34.740	7.97	213	2.08	92	0.00	35.0	0.4	600	1.893	34.716
900	1.695	34.745	7.98	215	2.07	96	0.00	35.0	0.3	700	1.849	34.727
1000	1.607	34.746	7.98	215	2.09	97	0.00	35.0	0.0	800	1.771	34.736
1250	1.377	34.740	7.98	221	2.10	104	0.00	35.0	0.3	1000	1.612	34.741
1501	1.153	34.730	7.97	221	2.37	113	0.00	35.0	0.3	1200	1.438	34.736
2000	0.758	34.708	7.96	225	2.46	127	0.00	36.0	0.3	1500	1.157	34.722
2499	0.439	34.689	7.96	229	2.20	139	0.00	37.0	0.4	2000	0.748	34.699
3000	0.206	34.677	7.94	235	2.36	144	0.01	37.0	0.3	2500	0.430	34.679
3458	----	34.672	----	--	2.22	150	0.00	37.0	--	3000	0.201	34.666

Station 3

Beginning of cast

Meteorological observation

Date : March 4, 1998
 Time (UT) : 02:55
 Latitude : 61-18.5S
 Longitude : 79-59.2E
 Depth : 2709 m

Time (UT) : 03:00
 Weather : s
 Air temperature(dry) : 0.2 °C
 Humidity : 78 %
 Atmospheric pressure : 997.1 hPa

Wind direction : SW
 Velocity : 11 m/s
 Wave : SW / 2
 Swell : SW / 3
 Visibility : 15 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.600	33.628	8.10	352	1.69	20	0.35	28.0	—	10	1.517	33.610
28	1.456	33.621	8.12	354	1.73	24	0.34	28.0	—	20	1.513	33.611
50	-1.038	33.886	8.13	357	1.95	24	0.23	30.0	—	30	1.497	33.613
75	-1.260	34.020	8.10	330	2.12	33	0.19	33.0	0.5	50	-1.377	33.944
100	-0.525	34.135	8.04	291	2.23	48	0.20	36.0	0.2	75	-1.228	34.010
124	0.662	34.277	8.00	251	2.42	57	0.13	39.0	—	100	0.149	34.205
149	1.162	34.397	7.98	218	2.39	64	0.08	40.0	0.2	125	0.609	34.302
201	1.689	34.508	7.95	196	2.39	71	0.03	41.0	0.3	150	1.371	34.431
251	1.884	34.571	7.94	186	2.41	76	0.02	41.0	0.2	200	1.790	34.526
301	1.975	34.611	7.94	187	2.40	79	0.02	40.0	0.2	250	1.929	34.583
401	2.015	34.660	7.95	190	2.30	82	0.04	39.0	0.2	300	1.984	34.616
502	2.009	34.660	7.97	196	2.26	80	0.03	38.0	0.3	400	2.026	34.661
600	1.996	34.715	7.97	199	2.20	82	0.03	37.0	0.3	500	2.011	34.692
702	1.947	34.732	7.98	204	2.20	85	0.03	36.0	0.2	600	1.984	34.713
799	1.886	34.741	7.98	209	2.18	88	0.03	36.0	0.3	700	1.943	34.729
901	1.814	34.749	7.99	212	2.17	90	0.04	35.0	0.2	800	1.881	34.737
1001	1.732	34.752	7.99	211	2.22	91	0.03	35.0	0.2	1000	1.735	34.746
1250	1.509	34.748	7.99	216	2.13	100	0.04	35.0	0.2	1200	1.553	34.744
1500	1.283	34.737	7.98	218	2.20	107	0.03	36.0	0.3	1500	1.272	34.731
1975	0.883	34.715	7.98	222	2.40	116	0.04	37.0	0.2			

Station A

Beginning of cast

Meteorological observation

Date : March 5, 1998
 Time (UT) : 03:03
 Latitude : 59-56.2S
 Longitude : 85-28.6E
 Depth : 3696 m

Time (UT) : 03:00
 Weather : o
 Air temperature(dry) : 0.5 °C
 Humidity : 85 %
 Atmospheric pressure : 991.8 hPa

Wind direction : S
 Velocity : 7 m/s
 Wave : S / 1
 Swell : SW / 3
 Visibility : 15 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.800	33.486	8.10	357	1.79	48	0.35	23.0	0.3	10	1.696	33.477
30	1.858	33.722	8.10	359	1.76	10	0.33	23.0	0.3	20	1.873	33.598
51	-0.108	34.026	8.10	334	2.00	65	0.19	24.0	0.6	30	1.901	33.707
75	-1.267	34.222	8.09	323	2.10	73	0.12	25.0	0.4	50	-0.232	34.006
99	-0.949	34.326	8.05	292	2.22	81	0.18	27.0	0.3	75	-1.306	34.218
125	-0.681	34.383	8.04	277	2.28	84	0.15	28.0	0.3	100	-1.331	34.292
150	-0.151	34.448	8.01	256	2.30	88	0.07	28.0	0.2	125	-1.235	34.323
201	0.320	34.517	8.00	244	2.39	89	0.04	28.0	0.3	150	-0.740	34.388
249	0.767	34.585	7.99	230	2.31	95	0.04	28.0	0.2	200	0.112	34.499
299	1.007	34.626	7.99	225	2.55	99	0.02	28.0	0.3	250	0.570	34.561
399	1.284	34.682	7.98	217	2.53	101	0.03	28.0	0.4	300	0.937	34.618
500	1.293	34.701	7.98	218	2.24	104	0.01	25.0	0.4	400	1.130	34.663
601	1.390	34.726	7.99	216	2.25	107	0.02	25.0	0.2	500	1.249	34.694
700	1.271	34.727	7.99	218	2.32	110	0.04	25.0	0.3	600	1.224	34.708
800	1.224	34.729	7.99	220	2.38	114	0.01	25.0	0.3	700	1.124	34.712
900	1.071	34.719	7.98	222	2.44	118	0.03	25.0	0.2	800	1.058	34.710
1000	0.953	34.714	7.98	223	3.03	119	0.04	25.0	0.4	1000	0.909	34.705
1251	0.687	34.699	7.98	227	3.16	127	0.04	25.0	0.4	1200	0.788	34.701
1499	0.558	34.696	7.97	225	2.44	137	0.04	26.0	0.3	1500	0.508	34.686
2001	0.254	34.681	7.96	234	2.39	144	0.05	26.0	0.4	2000	0.239	34.673
2501	0.051	34.676	7.95	240	2.62	145	0.06	26.0	0.4	2500	0.063	34.667
2997	-0.071	34.675	7.94	246	2.38	144	0.07	26.0	0.5	3000	-0.072	34.664

Station 4

Beginning of cast

Meteorological observation

Date : March 6, 1998
 Time (UT) : 06:58
 Latitude : 62-54.3S
 Longitude : 88-54.4.7E
 Depth : 3926 m

Time (UT) : 07:00
 Weather : o
 Air temperature(dry) : -1.4 °C
 Humidity : 61 %
 Atmospheric pressure : 978.1 hPa

Wind direction : N
 Velocity : 6 m/s
 Wave : N / 1
 Swell : W / 1
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	0.900	33.752	8.06	359	1.83	51	0.32	24.0	0.2	10	0.808	33.733
29	0.802	33.751	8.09	359	1.82	52	0.30	24.0	0.4	20	0.790	33.732
49	-1.109	34.161	8.11	338	1.97	57	0.09	25.0	0.2	30	0.793	33.761
76	-1.387	34.273	8.09	319	2.11	63	0.11	26.0	0.2	50	-1.073	34.152
100	-1.407	34.321	8.08	308	2.18	68	0.12	27.0	0.2	75	-1.400	34.273
149	-0.410	34.426	8.05	275	2.27	72	0.08	28.0	0.3	100	-1.444	34.298
201	0.145	34.512	8.03	253	2.29	78	0.05	29.0	0.2	125	-1.352	34.338
250	-0.103	34.521	8.02	264	2.26	82	0.04	28.0	0.3	150	-1.039	34.374
300	0.046	34.562	8.03	262	2.25	84	0.04	28.0	0.2	200	-0.286	34.468
399	0.750	34.649	8.02	240	2.22	91	0.03	28.0	0.2	250	-0.287	34.507
498	1.020	34.695	8.01	226	2.26	99	0.03	28.0	0.4	300	0.001	34.554
600	1.028	34.708	8.01	227	2.24	103	0.02	28.0	0.2	400	0.558	34.635
699	0.986	34.710	8.01	226	2.35	109	0.03	28.0	0.1	500	0.892	34.681
799	0.948	34.715	8.01	223	2.35	112	0.03	28.0	0.3	600	0.908	34.693
900	0.881	34.712	8.01	226	2.35	117	0.03	28.0	0.2	700	0.891	34.697
1000	0.802	34.710	8.00	227	2.38	122	0.04	28.0	0.2	800	0.874	34.700
1249	0.618	34.699	8.00	226	2.40	129	0.04	28.0	0.2	1000	0.750	34.697
1500	0.458	34.693	7.99	229	2.43	132	0.05	29.0	0.3	1200	0.641	34.693
2000	0.218	34.683	7.98	236	2.45	139	0.05	29.0	0.3	1500	0.449	34.684
2498	0.041	34.680	7.97	243	2.43	144	0.06	29.0	0.4	2000	0.221	34.674
3000	-0.071	34.676	7.96	248	2.44	144	0.05	29.0	0.4	2500	0.043	34.670
3498	-0.120	34.674	7.95	252	2.43	139	0.06	29.0	0.2	3000	-0.073	34.665

Station 5

Beginning of cast

Meteorological observation

Date : March 8, 1998
 Time (UT) : 05:54
 Latitude : 63-27.6S
 Longitude : 103-01.9E
 Depth : 3373 m

Time (UT) : 06:00
 Weather : s
 Air temperature(dry) : -3.1 °C
 Humidity : 75 %
 Atmospheric pressure : 975.6 hPa

Wind direction : SW
 Velocity : 7 m/s
 Wave : SW / 2
 Swell : WNW / 3
 Visibility : 15 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	0.300	33.966	8.07	356	1.94	50	0.27	24.0	0.4	10	0.269	33.955
29	0.222	33.967	8.09	355	1.92	49	0.28	24.0	0.5	20	0.269	33.955
50	0.219	33.966	8.09	357	1.94	49	0.29	24.0	0.5	30	0.271	33.955
75	-1.465	34.319	8.08	335	2.12	59	0.16	25.0	0.4	50	0.262	33.956
100	-1.341	34.384	8.06	315	2.20	63	0.20	26.0	0.2	75	-1.360	34.343
124	-1.621	34.393	8.06	320	2.20	64	0.11	26.0	0.1	100	-1.723	34.375
151	-1.653	34.407	8.05	325	2.22	64	0.06	27.0	0.2	125	-1.665	34.391
200	-1.162	34.450	8.04	306	2.22	66	0.05	27.0	0.2	150	-1.404	34.414
251	-0.875	34.486	8.03	297	2.25	72	0.07	27.0	0.1	200	-0.950	34.479
301	0.447	34.613	8.00	246	2.28	85	0.07	27.0	0.2	250	-0.246	34.529
403	0.944	34.678	7.99	228	2.24	93	0.00	28.0	0.1	300	0.768	34.633
502	1.173	34.714	7.99	218	2.26	100	0.00	27.0	0.0	400	1.112	34.694
601	1.129	34.718	7.98	222	2.25	106	0.00	27.0	0.1	500	1.156	34.710
700	0.907	34.701	7.98	223	2.27	108	0.01	28.0	0.1	600	1.150	34.721
802	0.846	34.706	7.98	222	2.29	116	0.02	28.0	0.1	700	1.051	34.718
901	0.636	34.688	7.98	229	2.29	115	0.02	28.0	0.1	800	0.945	34.714
1002	0.737	34.702	7.97	222	2.33	123	0.01	28.0	0.0	1000	0.766	34.705
1251	0.512	34.696	7.97	225	2.36	132	0.01	28.0	0.2	1200	0.588	34.694
1498	0.315	34.687	7.96	230	2.39	135	0.01	29.0	0.1	1500	0.320	34.681
1975	0.064	34.679	7.95		2.49	140	0.02	28.0	0.1			

Station 6

Beginning of cast

Meteorological observation

Date : March 9, 1998
 Time (UT) : 05:57
 Latitude : 62-29.9S
 Longitude : 113-22.0E
 Depth : 3407 m

Time (UT) : 06:00
 Weather : c
 Air temperature(dry) : -0.7 °C
 Humidity : 63 %
 Atmospheric pressure : 968.6 hPa

Wind direction : WSW
 Velocity : 10 m/s
 Wave : WSW / 3
 Swell : WNW / 1
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	0.900	33.946	8.11	356	1.85	56	0.29	23.0	0.3	10	0.741	33.931
30	0.841	33.971	8.10	353	1.83	55	0.28	23.0	0.2	20	0.739	33.931
50	0.033	34.279	8.10	329	1.98	61	0.17	24.0	0.3	30	0.739	33.931
76	0.671	----	----	---	---	---	---	---	---	50	0.155	34.138
100	1.170	34.660	8.02	217	2.26	85	0.12	27.0	0.3	75	0.514	34.534
126	1.339	----	----	---	---	---	---	---	---	100	1.148	34.652
150	1.378	34.693	8.00	209	2.25	88	0.02	27.0	0.2	125	1.297	34.679
200	1.435	34.711	8.00	211	2.24	91	0.03	27.0	0.3	150	1.362	34.692
249	1.457	34.721	8.00	211	2.24	93	0.01	27.0	0.2	200	1.404	34.707
301	1.438	34.725	7.99	210	2.22	97	0.06	27.0	0.2	250	1.420	34.716
402	1.353	34.730	7.99	214	2.24	98	0.02	27.0	0.2	300	1.409	34.720
503	1.301	34.732	7.98	218	2.29	105	0.03	27.0	0.2	400	1.355	34.725
601	1.226	34.730	8.00	215	2.24	109	0.02	27.0	0.3	500	1.284	34.726
702	1.149	34.727	7.99	217	2.24	114	0.00	27.0	0.3	600	1.221	34.726
804	1.055	34.723	7.99	220	2.26	115	0.00	27.0	0.2	700	1.133	34.723
903	0.976	34.720	7.98	---	2.28	119	0.01	27.0	0.2	800	1.039	34.717
1001	0.891	34.715	7.98	223	2.30	121	0.00	27.0	0.3	1000	0.893	34.711
1251	0.673	34.703	7.98	224	2.29	128	0.00	28.0	0.3	1200	0.721	34.700
1500	0.481	34.694	7.97	228	2.30	133	0.01	28.0	0.3	1500	0.479	34.689
1997	0.172	34.682	7.96	239	2.33	139	0.01	28.0	0.3	2000	0.167	34.675
2300	0.029	34.678	7.95	244	2.32	142	0.02	28.0	0.3			

Station 7

Beginning of cast

Meteorological observation

Date : March 10, 1998
 Time (UT) : 04:50
 Latitude : 63-30.2S
 Longitude : 120-21.1E
 Depth : 3623 m

Time (UT) : 05:00
 Weather : bc
 Air temperature (dry) : 0.5 °C
 Humidity : 66 %
 Atmospheric pressure : 968.8 hPa

Wind direction : W
 Velocity : 4 m/s
 Wave : W / 2
 Swell : WNW / 1
 Visibility : 15 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.800	34.036	8.11	352	1.79	49	0.10	30.0	0.1	10	1.632	34.021
30	1.637	34.022	8.11	352	1.86	44	0.10	30.0	0.3	20	1.623	34.022
50	-0.212	34.229	8.10	354	2.01	52	0.15	30.0	0.3	30	1.617	34.023
75	0.513	34.518	8.03	255	2.19	74	0.12	33.0	0.5	50	1.028	34.114
100	1.327	34.639	7.98	212	2.27	83	0.22	35.0	0.4	75	0.167	34.457
125	1.470	34.668	7.97	207	2.29	85	0.05	36.0	0.3	100	1.112	34.599
149	1.525	34.679	7.96	207	2.27	88	0.03	36.0	0.3	125	1.427	34.655
202	1.562	34.696	7.97	207	2.26	89	0.06	35.0	0.3	150	1.491	34.669
250	1.574	34.708	7.97	212	2.24	90	0.09	35.0	0.4	200	1.549	34.687
299	1.568	34.716	7.97	211	2.21	95	0.02	35.0	0.4	250	1.574	34.703
408	1.524	34.725	7.98	212	2.27	96	0.05	34.0	0.5	300	1.566	34.713
500	1.456	34.729	7.97	217	2.33	101	0.03	34.0	0.4	400	1.529	34.722
602	1.393	34.731	7.97	217	2.19	104	0.04	34.0	0.4	500	1.461	34.728
703	1.313	34.731	7.98	217	2.21	107	0.03	34.0	0.4	600	1.382	34.728
802	1.207	34.727	7.97	220	2.21	113	0.03	34.0	0.4	700	1.322	34.729
900	1.129	34.725	7.97	222	2.22	118	0.02	35.0	0.4	800	1.222	34.725
1002	1.044	34.723	7.97	221	2.23	121	0.02	35.0	0.4	1000	1.027	34.716
1250	0.847	34.712	7.96	225	2.27	127	0.02	35.0	0.4	1200	0.838	34.705
1497	0.638	34.702	7.96	229	2.30	134	0.02	36.0	0.3	1500	0.618	34.695
1998	0.292	---	---	---	---	---	---	---	---	2000	0.275	34.680
2495	0.056	34.678	7.93	247	2.32	147	0.02	36.0	0.4	2500	0.050	34.672
2989	-0.105	34.672	7.92	252	2.30	148	0.04	36.0	0.4			

Station 8

Beginning of cast

Meteorological observation

Date : March 11, 1998
 Time (UT) : 04:55
 Latitude : 63-29.8S
 Longitude : 131-04.8E
 Depth : 3849 m

Time (UT) : 05:00
 Weather : bc
 Air temperature(dry) : 2.6 °C
 Humidity : 59 %
 Atmospheric pressure : 973.0 hPa

Wind direction : W
 Velocity : 10 m/s
 Wave : W / 3
 Swell : ESE / 3
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.900	33.934	8.12	351	1.70	27	0.32	28.0	0.1	10	1.619	33.904
33	1.527	33.906	8.13	359	1.64	24	0.30	28.0	0.1	20	1.611	33.905
49	-0.830	34.125	8.09	333	2.23	49	0.16	32.0	0.5	30	1.606	33.906
77	0.455	34.355	8.02	261	2.46	64	0.22	35.0	0.6	50	-0.273	34.142
99	1.322	34.489	7.98	214	2.43	75	0.15	37.0	0.3	75	0.709	34.385
127	1.646	34.549	7.96	203	2.51	79	0.05	37.0	0.2	100	1.175	34.475
148	1.749	34.580	7.95	201	2.46	83	0.03	37.0	0.3	125	1.591	34.547
202	1.856	34.630	7.95	197	2.44	85	0.03	37.0	0.2	150	1.676	34.575
251	1.798	34.645	7.96	202	2.41	92	0.03	36.0	0.1	200	1.737	34.620
296	1.768	34.662	7.96	203	2.36	90	0.02	36.0	0.3	250	1.799	34.652
402	1.763	34.693	7.97	208	2.32	91	0.03	35.0	0.3	300	1.756	34.667
500	1.766	34.716	7.97	209	2.32	94	0.01	35.0	0.3	400	1.820	34.700
600	1.736	34.731	7.98	209	2.27	100	0.01	34.0	0.1	500	1.751	34.715
701	1.672	34.736	7.98	215	2.26	101	0.02	34.0	0.3	600	1.692	34.723
800	1.596	34.738	7.99	216	2.25	105	0.01	34.0	0.2	700	1.630	34.729
901	1.513	34.741	7.99	217	2.33	108	0.01	34.0	0.2	800	1.576	34.733
1000	1.430	34.736	7.99	217	2.34	115	0.01	34.0	0.2	1000	1.400	34.731
1253	1.214	34.728	7.98	225	2.34	121	0.01	34.0	0.3	1200	1.233	34.724
1495	1.007	34.717	7.97	225	2.31	130	0.02	35.0	0.2	1500	0.997	34.713
1998	0.635	34.700	7.96	233	2.36	140	0.02	35.0	0.3	2000	0.627	34.694
2502	0.292	34.683	7.95	241	2.40	149	0.02	36.0	0.2	2500	0.253	34.672
2988	0.088	34.679	7.94	248	2.42	151	0.03	36.0	0.4	3000	0.083	34.671

Station 9

Beginning of cast

Meteorological observation

Date : March 12, 1998
 Time (UT) : 04:25
 Latitude : 63-31.3S
 Longitude : 140-05.5E
 Depth : 3796 m

Time (UT) : 05:00
 Weather : r
 Air temperature (dry) : 1.6 °C
 Humidity : 95 %
 Atmospheric pressure : 976.5 hPa

Wind direction : WNW
 Velocity : 13 m/s
 Wave : WNW / 3
 Swell : WNW / 3
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	1.100	33.912	8.10	358	1.74	23	0.31	29.0	0.7	10	0.841	33.893
31	1.159	33.910	8.11	355	1.74	22	0.17	28.0	0.6	20	0.786	33.893
51	-0.305	34.217	8.07	316	2.27	53	0.16	32.0	0.6	30	0.538	33.911
75	0.770	34.415	8.00	243	2.46	69	0.30	35.0	0.4	50	-0.688	34.074
101	1.457	34.527	7.96	208	2.51	75	0.11	36.0	0.2	75	1.352	34.391
125	1.687	34.571	7.95	200	2.50	77	0.04	37.0	0.2	100	1.849	34.496
151	1.728	34.603	7.94	199	2.49	80	0.04	37.0	0.3	125	1.928	34.547
201	7.733	34.632	7.95	199	2.50	80	0.04	36.0	0.1	150	1.910	34.573
250	1.767	34.661	7.95	201	2.36	82	0.05	35.0	0.2	200	1.922	34.618
302	1.827	34.681	7.95	204	2.31	83	0.07	35.0	0.3	250	1.988	34.658
401	1.829	34.707	7.96	202	2.28	86	0.10	34.0	0.5	300	1.989	34.678
500	1.757	34.719	7.96	210	2.27	88	0.03	34.0	0.4	400	1.985	34.712
602	1.709	34.728	7.97	213	2.24	90	0.05	34.0	0.3	500	1.922	34.725
702	1.634	34.734	7.97	214	2.25	92	0.03	33.0	0.4	600	1.844	34.735
802	1.484	34.728	7.97	217	2.26	96	0.02	34.0	0.4	700	1.749	34.739
904	1.480	34.737	7.97	221	2.26	101	0.03	33.0	0.3	800	1.669	34.740
1002	1.421	34.738	7.98	220	2.26	102	0.05	33.0	0.3	1000	1.464	34.735
1252	1.222	34.732	7.97	224	2.27	109	0.05	34.0	0.3	1200	1.290	34.729
1502	1.030	34.722	7.97	226	2.30	117	0.07	34.0	0.3	1500	1.043	34.718
1997	0.647	---	---	---	---	---	---	---	---	2000	0.644	34.697
2349	0.398	34.689	7.95	237	2.40	130	0.07	34.0	0.5			

Station 10

Beginning of cast

Meteorological observation

Date : March 14, 1998
 Time (UT) : 02:56
 Latitude : 60-57.2S
 Longitude : 149-59.8E
 Depth : 3549 m

Time (UT) : 03:00
 Weather : c
 Air temperature (dry) : 3.0 °C
 Humidity : 79 %
 Atmospheric pressure : 966.0 hPa

Wind direction : S
 Velocity : 9 m/s
 Wave : S / 3
 Swell : NW / 3
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	2.100	33.905	8.11	349	1.79	18	0.29	28.0	0.9	10	1.913	33.887
31	1.959	33.879	8.12	348	1.74	16	0.29	28.0	0.8	20	1.899	33.888
53	1.954	33.880	8.13	351	1.75	15	0.30	28.0	0.8	30	1.891	33.888
75	1.807	33.896	8.12	351	1.81	16	0.29	28.0	0.9	50	1.869	33.890
99	-0.214	34.171	8.06	306	2.36	53	0.29	33.0	0.9	75	1.723	33.906
126	1.175	34.355	8.00	238	2.53	66	0.31	36.0	0.2	100	-0.083	34.178
154	1.807	34.483	7.96	200	2.53	75	0.05	37.0	0.2	125	1.296	34.387
201	1.976	34.539	7.95	194	2.57	78	0.05	37.0	0.3	150	1.773	34.473
251	2.034	34.587	7.95	190	2.48	82	0.03	37.0	0.3	200	1.949	34.540
303	2.120	34.627	7.95	187	2.41	85	0.07	36.0	0.2	250	1.999	34.581
401	2.061	34.666	7.95	193	2.39	86	0.01	36.0	0.2	300	2.065	34.616
502	2.026	34.693	7.96	197	2.35	90	0.01	35.0	0.4	400	2.041	34.654
601	1.957	34.707	7.96	201	2.31	92	0.01	34.0	0.2	500	2.034	34.684
699	1.915	34.723	7.97	204	2.30	93	0.00	34.0	0.3	600	1.961	34.703
801	1.849	34.734	7.98	207	2.24	99	0.01	34.0	0.2	700	1.916	34.717
902	1.800	34.740	7.98	207	2.20	102	0.02	33.0	0.2	800	1.857	34.725
1003	1.719	34.743	7.98	214	2.23	103	0.02	33.0	0.2	1000	1.724	34.736
1251	1.512	34.742	7.98	213	2.22	111	0.02	33.0	0.4	1200	1.567	34.738
1500	1.322	34.737	7.98	217	2.22	117	0.04	33.0	0.2	1500	1.327	34.730
1993	0.940	34.721	7.97	227	2.23	134	0.01	34.0	0.2	2000	0.922	34.710
2430	0.613	34.701	7.95	229	2.30	142	0.01	34.0	0.3			

Station 11

Beginning of cast

Meteorological observation

Date : March 15, 1998
 Time (UT) : 02:59
 Latitude : 56-25.3S
 Longitude : 150-00.6E
 Depth : 3616 m

Time (UT) : 03:00
 Weather : r
 Air temperature(dry) : 3.7 °C
 Humidity : 84 %
 Atmospheric pressure : 991.6 hPa

Wind direction : NNW
 Velocity : 11 m/s
 Wave : NNW / 3
 Swell : NW / 3
 Visibility : 15 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	5.100	33.819	8.10	331	1.60	0	0.27	25.0	0.3	10	4.927	33.801
29	4.010	33.821	8.11	337	1.66	0	0.27	26.0	0.6	20	4.918	33.800
49	3.664	33.835	8.11	344	1.67	1	0.27	26.0	0.5	30	4.915	33.800
73	2.439	33.865	8.10	345	2.01	10	0.32	27.0	0.0	50	4.911	33.801
100	1.333	33.905	8.09	348	2.09	16	0.31	29.0	0.9	75	4.217	33.819
125	0.962	33.930	8.08	348	2.12	24	0.33	30.0	0.6	100	1.918	33.900
151	1.038	33.996	8.06	326	2.16	28	0.13	31.0	0.1	125	1.796	33.942
200	1.900	34.189	8.00	260	2.35	42	0.02	34.0	0.1	150	2.068	34.024
250	2.065	34.257	7.98	240	2.41	49	0.07	36.0	0.0	200	2.289	34.139
300	2.122	34.324	7.96	224	2.48	57	0.02	37.0	0.1	250	2.310	34.213
399	2.272	34.432	7.94	205	2.49	68	0.01	37.0	0.4	300	2.313	34.276
500	2.368	34.528	7.93	193	2.47	76	0.00	37.0	0.3	400	2.691	34.427
601	2.373	34.585	7.93	192	2.44	80	0.00	37.0	0.4	500	2.429	34.474
702	2.302	34.620	7.93	192	2.43	87	0.01	36.0	0.2	600	2.443	34.543
802	2.294	34.658	7.94	194	2.36	87	0.01	36.0	0.2	700	2.364	34.588
899	2.237	34.681	7.94	200	2.33	94	0.01	35.0	0.2	800	2.384	34.630
1000	2.180	34.701	7.95	197	2.32	95	0.02	35.0	0.2	1000	2.216	34.695
1250	1.991	34.733	7.95	208	2.24	103	0.02	34.0	0.2	1200	2.023	34.721
1498	1.818	---	---	---	---	---	---	---	---	1500	1.826	34.742
1897	1.350	34.408	7.91	204	2.51	77	0.02	37.0	0.3			

Station 12

Beginning of cast

Meteorological observation

Date : March 17, 1998
 Time (UT) : 03:00
 Latitude : 45-56.8S
 Longitude : 150-01.0E
 Depth : 4630 m

Time (UT) : 03:00
 Weather : bc
 Air temperature(dry) : 12.8 °C
 Humidity : 82 %
 Atmospheric pressure : 1010.3 hPa

Wind direction : W
 Velocity : 7 m/s
 Wave : W / 3
 Swell : W / 1
 Visibility : 20 km

Water Sampling by Niskin bottles										Observed by CTD		
Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)	pH	D02	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Pressure (dbar)	Temperature (IPTS68)	Salinity (PSS78)
				(μmol/l)								
0	12.500	34.747	8.20	286	0.54	—	0.16	4.0	0.0	10	12.319	34.736
31	12.240	34.723	8.20	289	0.58	—	0.17	1.0	0.1	20	12.292	34.735
51	12.212	34.713	8.21	289	0.64	—	0.17	6.0	0.5	30	12.222	34.728
77	11.609	34.734	8.20	283	0.73	—	0.25	6.0	—	50	12.207	34.725
101	11.055	34.742	8.18	277	0.85	—	0.34	7.0	0.4	75	11.849	34.838
126	11.139	34.902	8.16	266	0.88	—	0.05	8.0	0.3	100	11.509	34.988
152	9.980	34.715	8.16	281	1.01	1	0.06	9.0	0.4	125	11.191	34.995
201	10.087	34.806	8.15	269	0.98	1	0.04	11.0	0.2	150	10.767	34.925
250	9.670	34.747	8.15	275	1.02	2	0.04	14.0	0.2	200	10.016	34.808
303	9.107	34.651	8.14	280	1.22	1	0.04	12.0	0.1	250	9.550	34.727
403	8.648	34.575	8.14	281	1.13	5	0.06	12.0	0.5	300	9.113	34.649
501	8.446	34.563	8.12	271	1.26	8	0.02	14.0	0.3	400	8.563	34.557
603	8.117	34.532	8.10	253	1.38	14	0.02	17.0	0.3	500	8.458	34.556
702	7.277	34.452	8.07	242	1.60	19	0.02	19.0	0.1	600	7.812	34.472
801	6.578	34.418	8.04	231	1.80	28	0.02	24.0	0.1	700	7.201	34.434
900	6.052	34.440	8.02	213	1.95	35	0.02	29.0	0.0	800	6.638	34.421
1001	5.410	34.431	8.01	207	2.06	45	0.03	30.0	0.2	1000	5.002	34.381
1251	3.742	34.413	7.99	208	2.40	61	0.01	33.0	0.1	1200	4.062	34.406
1500	3.197	34.522	7.96	183	2.44	86	0.01	35.0	0.1	1500	3.205	34.506
1997	2.389	34.665	7.95	194	2.32	98	0.01	33.0	0.0	2000	2.378	34.663
2496	2.033	34.730	7.96	210	2.23	107	0.00	33.0	0.2	2500	2.027	34.724
2786	1.845	34.343	7.95	207	2.26	116	0.01	33.0	0.2			

Table 5. Petroleum oil, cadmium and mercury concentration in the surface water.

Station No.	Date	Time		Position		Air. Temp.	Water. Temp.	Petroleum Oil	Cadmium	Mercury
		UT	LMT	Latitude	Longitude	C		$(\mu\text{g/l})$		
	1997									
1	11 18	0645	1545	12 - 47 N	129 - 32 E	28.9	29.3	0.15	0.01	0.00
2	19	0650	1550	7 - 06 N	127 - 08 E	29.3	30.2	0.08	0.008	0.0014
3	23	2350*	0750	11 - 42 S	115 - 08 E	28.3	29.2	0.10	0.008	0.0006
4	24	2350*	0750	17 - 09 S	114 - 10 E	27.0	26.3	0.05	<0.003	0.0006
5	25	2350*	0750	22 - 28 S	113 - 12 E	23.5	23.7	0.10	0.007	0.0006
6	26	2350*	0750	27 - 53 S	113 - 21 E	20.9	22.0	0.10	0.020	0.0008
7	12 5	0050	0750	41 - 32 S	105 - 45 E	13.0	12.5	0.09	0.010	0.0008
8	7	0145	0745	50 - 05 S	93 - 32 E	6.2	7.0	0.35	0.040	0.0008

* The time of the date of the preceding day.

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

Table 6. Hourly tidal observation at Syowa Station from February 1997 to January 1998 (time is LMT (UT+3 hours)).

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Feb. 1-Feb. 28 1997
 Unit : CENTIMETER

The zero of the tide gauge relative to the bench mark No. 1040:
 -4.651m Feb. 2 1997
 -4.638m Jan. 25 1998

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	223	211	202	192	182	180	180	180	185	187	190	196	199	202	205	210	211	212	215	216	219	222	220	220	4861	203	5078	203		
2	216	209	204	194	187	181	174	172	176	177	179	188	201	212	223	234	243	243	245	246	245	243	243	243	5074	211	5313	213		
3	240	241	237	229	221	211	196	183	176	170	168	178	187	205	221	238	247	250	247	245	239	233	229	227	5216	217	5445	218		
4	229	232	231	229	225	214	195	178	161	147	140	142	154	176	201	225	244	255	256	249	239	230	222	219	4992	208	5216	209		
5	224	230	238	241	242	236	218	195	170	148	134	131	140	159	189	217	244	263	268	264	255	241	231	226	5103	213	5331	213		
6	228	235	245	256	265	265	251	226	197	167	143	130	128	144	172	201	233	254	266	269	257	241	226	213	5211	217	5423	217		
7	212	221	235	250	264	272	267	245	216	183	150	126	117	124	145	178	209	235	256	260	252	238	217	200	5073	211	5268	211		
8	195	201	216	239	260	275	279	268	247	214	180	151	133	130	147	172	200	232	252	264	261	245	227	206	5194	216	5387	215		
9	193	192	202	223	245	267	278	278	264	239	205	175	148	136	142	161	185	212	235	246	247	237	217	195	5121	213	5299	212		
10	178	167	171	188	212	234	253	262	261	245	220	190	166	149	148	159	179	203	221	236	241	233	215	194	4925	205	5099	204		
11	174	159	153	162	181	208	226	244	247	242	227	207	183	166	160	165	179	199	215	230	234	233	221	198	4813	201	4992	200		
12	180	162	147	149	160	180	198	212	227	229	223	212	197	186	179	180	189	205	221	235	242	245	236	218	4812	200	5015	201		
13	204	186	174	164	167	180	192	205	219	224	226	223	214	209	207	206	212	218	230	241	245	246	240	230	5060	211	5278	211		
14	218	204	190	180	174	177	183	191	198	204	211	212	210	212	215	217	222	226	231	239	244	242	237	235	5069	211	5295	212		
15	226	213	206	195	185	181	180	180	183	187	191	199	203	208	218	228	235	237	242	245	245	243	242	239	5111	213	5345	214		
16	235	229	223	214	206	199	189	181	178	176	176	182	191	200	214	227	237	241	243	243	239	236	234	230	5121	213	5352	214		
17	231	230	226	226	220	211	198	185	173	166	161	164	173	186	203	220	234	242	244	239	235	228	221	218	5033	210	5254	210		
18	221	223	227	229	229	223	210	193	177	164	155	154	160	175	195	213	233	244	245	244	237	225	216	213	5006	209	5221	209		
19	215	222	231	237	243	241	229	212	190	171	156	150	156	168	190	213	236	248	254	252	245	231	220	214	5125	214	5342	214		
20	216	224	237	247	256	259	249	233	211	187	166	154	155	167	190	217	239	256	264	263	252	236	222	212	5313	221	5523	221		
21	210	215	228	244	255	264	260	244	221	192	170	152	147	155	176	201	227	244	254	257	245	229	213	198	5201	217	5394	216		
22	193	197	212	231	249	262	264	252	231	207	179	159	149	151	170	195	221	243	255	260	252	236	218	203	5189	216	5384	215		
23	195	199	212	231	252	270	276	270	254	230	205	180	166	166	179	201	227	248	264	271	262	246	227	207	5436	226	5631	225		
24	195	192	201	220	241	261	271	272	260	239	213	188	169	162	172	187	212	232	249	255	249	234	213	191	5278	220	5457	218		
25	179	170	172	189	211	233	249	255	249	235	211	187	170	159	162	175	196	218	236	245	244	233	212	192	4980	207	5156	206		
26	177	162	162	173	192	215	233	243	245	237	218	200	180	168	171	178	195	215	230	240	243	232	213	194	4915	205	5090	204		
27	176	162	155	160	177	197	214	227	233	232	223	207	192	181	178	183	196	212	228	239	242	236	219	202	4871	203	5054	202		
28	183	170	159	157	167	182	199	212	222	227	224	216	208	199	199	203	209	223	239	246	251	250	240	225	5012	209	5221	209		
1	210																													
MONTHLY MEAN																													211.5cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Mar. 1-Mar. 31 1997
 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	209	197	186	179	182	193	204	215	225	230	234	232	227	---	222	225	228	235	244	252	252	251	246	236	---	---	---	---	
2	220	208	197	185	181	183	186	194	201	207	216	220	221	225	230	234	239	242	247	251	252	249	245	241	5275	220	5506	220	
3	231	220	213	203	194	191	187	183	186	190	193	203	210	218	229	239	241	241	241	240	238	235	229	224	5178	216	5399	216	
4	221	217	212	205	198	187	177	166	160	157	162	170	185	203	220	237	247	252	252	249	246	240	235	234	5031	210	5268	211	
5	237	242	245	243	240	228	214	196	180	170	166	171	184	204	226	248	263	271	268	259	247	236	226	225	5388	225	5615	225	
6	227	234	241	246	245	240	222	198	175	154	142	142	151	172	199	228	251	263	265	257	242	226	215	211	5145	214	5359	214	
7	214	227	241	255	268	267	253	232	203	172	151	140	144	161	189	219	246	264	272	264	247	228	209	199	5264	219	5465	219	
8	201	212	233	252	272	279	273	254	227	191	164	145	137	148	174	202	228	252	263	258	241	218	195	178	5197	217	5371	215	
9	174	181	203	228	254	273	276	269	245	213	183	159	144	145	164	191	218	241	254	256	241	217	190	170	5090	212	5246	210	
10	156	159	178	207	235	261	276	277	267	241	213	184	165	159	171	192	219	241	257	263	251	228	200	175	5176	216	5329	213	
11	153	148	160	183	212	241	263	273	271	254	230	206	184	173	174	191	215	239	254	262	256	236	211	185	5174	216	5334	213	
12	160	145	145	160	188	215	239	253	261	256	241	222	203	193	193	202	219	239	254	263	261	246	223	200	5181	216	5356	214	
13	176	159	150	155	174	196	220	237	247	252	246	233	222	213	209	212	226	242	258	265	267	259	242	222	5283	220	5484	219	
14	201	184	171	168	178	192	210	226	239	244	245	240	234	231	229	232	240	249	261	268	268	263	253	237	5461	228	5677	227	
15	216	203	189	180	182	187	197	208	215	223	230	229	229	230	234	238	244	250	258	264	264	260	254	242	5426	226	5655	226	
16	229	217	208	199	195	192	194	198	202	208	212	218	221	227	236	242	247	252	256	257	256	251	246	242	5406	225	5639	226	
17	234	227	222	213	209	205	197	193	192	192	196	203	209	218	229	241	248	252	253	251	246	241	235	231	5336	222	5565	223	
18	229	228	226	222	219	216	204	194	185	182	183	185	196	208	224	239	249	256	253	249	243	236	227	226	5280	220	5509	220	
19	230	233	237	240	238	235	221	208	193	182	177	178	186	202	220	237	248	256	256	247	238	228	217	215	5320	222	5540	222	
20	219	225	235	242	244	243	234	215	197	181	172	169	176	191	210	232	246	255	257	248	237	221	209	206	5264	219	5472	219	
21	208	218	232	244	253	255	246	230	207	186	173	166	170	184	207	229	249	257	259	251	237	219	205	198	5282	220	5481	219	
22	200	210	228	246	260	269	263	247	224	201	182	170	171	183	203	225	245	259	263	255	239	216	197	186	5342	223	5526	221	
23	184	195	216	240	258	271	273	260	238	214	193	176	171	178	199	223	245	259	269	262	243	220	199	182	5367	224	5545	222	
24	178	183	205	231	254	273	279	273	255	232	208	188	178	183	201	225	250	266	273	272	254	230	206	185	5482	228	5659	226	
25	177	177	195	220	247	268	279	280	269	245	222	200	187	187	196	217	241	260	270	268	255	230	204	183	5477	228	5644	226	
26	167	163	177	200	225	251	269	274	271	245	234	212	197	191	200	215	236	256	268	270	261	240	211	189	5420	226	5591	224	
27	171	160	166	185	210	236	257	269	269	260	243	226	210	202	205	216	235	254	267	269	264	246	220	195	5434	226	5608	224	
28	175	160	157	168	192	215	236	253	259	256	246	235	219	209	209	219	231	245	262	265	262	251	227	203	5354	223	5538	222	
29	183	166	158	162	177	198	218	235	246	251	246	238	230	223	222	226	235	247	256	262	261	252	244	217	5354	223	5551	222	
30	197	180	171	165	172	185	199	216	228	235	239	238	235	233	235	235	238	248	257	261	260	255	242	228	5349	223	5561	222	
31	211	195	183	174	173	178	184	193	203	211	219	226	229	232	237	240	241	247	251	254	254	248	243	237	5264	219	5490	220	
1	226																												
															MONTHLY MEAN										220.8cm				

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Apr. 1-Apr. 30 1997
 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	226	215	205	195	189	186	184	186	190	197	204	211	221	231	239	245	246	246	247	246	242	240	235	231	5258	219	5487	219		
2	229	225	221	215	207	201	192	185	180	181	187	197	209	225	240	251	255	254	250	244	237	230	224	224	5265	219	5492	220		
3	227	229	232	230	226	215	202	187	174	165	166	173	188	205	225	239	248	250	244	233	218	207	202	202	5085	212	5291	212		
4	206	217	227	234	236	229	210	191	170	153	145	145	153	175	199	219	233	238	234	216	202	183	172	172	4757	198	4938	198		
5	181	199	215	234	245	247	237	219	195	173	158	152	159	179	205	229	246	256	255	241	221	203	185	178	5013	209	5201	208		
6	188	207	232	261	283	294	292	281	255	230	213	199	201	211	236	256	275	286	284	269	242	214	189	174	5772	240	5944	238		
7	173	190	213	241	268	287	293	284	266	240	212	193	183	189	207	230	250	265	270	260	238	207	180	162	5501	229	5652	226		
8	151	163	187	218	249	275	295	298	284	266	245	223	209	212	225	246	267	280	289	282	264	237	206	179	5750	240	5914	237		
9	164	164	179	207	239	268	289	301	297	282	265	245	231	223	232	250	268	283	290	294	275	248	219	190	5903	246	6069	243		
10	167	157	162	180	210	237	257	274	276	270	258	244	229	221	223	237	253	269	275	279	270	249	222	194	5613	234	5782	231		
11	170	154	150	161	182	207	228	244	253	253	249	239	229	225	224	231	242	258	269	271	267	254	231	208	5398	225	5588	224		
12	189	170	161	162	174	192	210	227	236	241	243	241	235	232	233	235	244	256	268	272	271	262	247	229	5429	226	5642	226		
13	213	200	186	184	189	198	211	223	233	239	246	244	244	247	248	248	253	262	268	270	270	264	254	240	5635	235	5864	235		
14	229	217	207	201	200	203	206	214	221	226	234	236	238	244	248	252	254	258	260	262	262	255	247	240	5612	234	5845	234		
15	234	226	220	217	211	207	207	207	208	211	217	222	229	237	242	249	250	253	253	249	245	240	235	232	5502	229	5732	229		
16	230	227	228	228	222	215	210	207	203	203	207	214	222	234	245	253	256	259	255	249	243	235	230	229	5503	229	5734	229		
17	231	235	238	239	240	236	226	215	207	202	201	207	214	226	240	248	253	256	249	239	229	218	209	210	5467	228	5682	227		
18	214	220	230	239	240	238	229	215	202	191	188	190	197	211	227	239	248	250	244	231	216	204	194	190	5247	219	5445	218		
19	198	209	223	239	244	241	237	222	203	187	181	181	188	205	221	237	245	250	247	235	218	202	188	186	5187	216	5383	215		
20	196	210	230	249	266	270	263	252	232	209	198	192	195	208	227	241	253	257	251	236	215	189	175	166	5379	224	5549	222		
21	170	185	208	230	248	259	259	249	232	213	196	187	185	200	219	239	256	263	263	250	229	207	186	175	5307	221	5488	220		
22	180	204	219	247	274	294	297	292	274	256	235	223	218	227	244	262	278	290	287	274	251	224	198	179	5928	247	6100	244		
23	173	179	202	229	254	278	291	289	276	260	239	222	216	217	230	248	267	274	277	268	246	218	189	165	5707	238	5857	234		
24	150	153	169	196	222	249	268	273	269	253	238	221	209	208	217	235	253	268	277	272	254	230	203	179	5466	228	5629	225		
25	163	161	172	195	225	254	278	295	299	289	277	261	248	239	243	255	272	284	292	290	275	252	223	196	5938	247	6114	245		
26	175	161	162	174	197	221	243	260	266	268	258	246	236	230	230	237	251	266	277	278	273	259	239	219	5625	234	5827	233		
27	202	186	179	187	206	224	248	268	280	288	285	277	273	269	262	269	277	280	299	301	297	282	260	236	6133	256	6346	254		
28	212	195	182	177	180	190	205	220	228	237	239	238	234	230	229	234	241	247	251	251	242	232	218	5351	223	5554	222			
29	203	189	176	172	171	176	185	196	207	221	233	239	243	246	248	247	250	256	260	263	265	263	257	251	5418	226	5662	226		
30	244	235	226	219	215	213	215	218	226	235	245	258	265	272	277	276	272	271	268	266	263	258	255	252	5945	248	6195	248		
1	250																													
MONTHLY MEAN																													229.3cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : May. 1-May. 31 1997
 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	250	246	238	235	226	214	209	204	203	205	211	225	235	245	255	259	258	253	248	241	236	232	231	232	5590	233	5829	233	
2	239	245	247	249	245	234	223	212	200	197	199	209	222	236	249	255	257	253	238	224	213	205	203	205	5459	227	5676	227	
3	217	229	243	251	251	247	235	217	202	189	185	190	200	216	232	241	248	243	230	214	194	178	174	175	5201	217	5388	216	
4	187	207	227	247	258	260	252	236	216	201	191	189	201	216	234	246	255	254	241	224	198	178	167	162	5246	219	5421	217	
5	175	198	221	248	268	278	278	266	247	230	213	207	210	222	241	256	265	270	259	240	213	184	163	156	5510	230	5668	227	
6	159	176	204	232	258	275	282	276	260	240	222	209	207	217	232	248	261	265	261	246	218	185	159	142	5434	226	5571	223	
7	137	149	174	205	236	259	274	275	265	251	233	217	212	217	231	246	260	268	268	254	231	198	166	143	5368	224	5499	220	
8	131	133	154	181	212	239	265	275	275	268	256	246	238	237	247	261	276	287	291	284	264	235	205	178	5637	235	5795	232	
9	158	153	161	182	208	237	256	269	276	269	259	251	238	234	237	250	265	275	281	280	267	244	215	190	5658	236	5827	233	
10	170	155	154	169	189	214	237	250	260	260	256	251	242	234	234	239	254	265	268	271	263	245	220	195	5494	229	5669	227	
11	175	158	151	154	170	189	206	223	236	240	239	237	232	229	227	231	238	249	259	263	256	246	232	212	5252	219	5446	218	
12	194	178	171	168	174	187	203	215	225	234	235	235	234	232	233	231	234	240	249	253	251	241	232	219	5264	219	5469	219	
13	205	191	182	178	178	186	196	206	214	222	230	232	231	233	231	233	234	235	237	241	239	237	230	223	5224	218	5439	218	
14	215	208	201	198	194	197	201	204	213	219	225	232	237	238	241	241	240	242	240	239	238	233	232	225	5353	223	5577	223	
15	224	219	218	213	210	207	205	204	205	213	218	225	234	237	243	244	242	237	235	228	224	218	219	219	5343	223	5565	223	
16	222	222	225	224	220	219	215	207	205	205	210	218	228	233	240	244	242	238	231	222	212	207	206	208	5306	221	5521	221	
17	215	223	232	238	237	236	230	218	211	209	210	217	227	234	242	249	251	247	237	225	213	202	198	200	5401	225	5609	224	
18	208	222	236	244	250	251	244	233	220	212	212	216	225	236	249	257	259	255	244	230	213	198	190	192	5496	229	5699	228	
19	204	219	237	257	265	268	267	250	237	226	215	213	220	230	242	253	254	249	239	217	196	175	162	155	5449	227	5615	225	
20	166	185	205	229	246	260	259	248	241	228	216	218	225	237	253	270	278	279	271	250	227	205	188	177	5563	232	5747	230	
21	184	201	224	251	272	285	292	286	272	256	238	231	231	237	252	263	270	273	264	244	217	188	163	148	5742	239	5889	236	
22	146	159	182	211	239	260	276	278	267	254	237	230	226	229	240	256	268	274	270	256	232	202	174	150	5517	230	5660	226	
23	142	150	168	195	222	247	269	277	271	262	247	237	227	227	236	252	267	276	280	271	252	224	196	170	5566	232	5721	229	
24	155	154	167	187	218	248	269	284	288	283	270	257	245	237	243	255	268	277	280	276	257	234	205	174	5732	239	5886	235	
25	153	141	142	157	181	206	232	249	260	260	253	241	234	227	225	231	246	254	261	262	252	233	209	181	5289	220	5447	218	
26	158	138	135	140	155	179	201	219	237	242	239	236	227	221	218	221	232	241	248	254	248	237	218	198	5040	210	5218	209	
27	177	160	148	147	154	170	188	205	223	233	239	240	237	231	227	225	227	237	245	250	250	247	239	225	5125	214	5334	213	
28	209	198	182	176	176	183	198	209	224	237	246	253	253	251	248	245	241	242	249	254	253	253	249	242	5475	228	5706	228	
29	232	223	213	202	196	196	196	203	212	222	230	240	245	248	241	238	234	230	225	227	228	230	233	234	5376	224	5608	224	
30	233	233	225	220	211	208	204	200	205	207	216	229	236	241	243	242	236	226	219	217	213	213	221	226	5323	222	5557	222	
31	234	245	250	249	244	239	230	222	218	219	221	233	241	247	253	252	245	233	218	208	197	194	202	209	5504	229	5721	229	
1	217																												
MONTHLY MEAN																										225.7cm			

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Jun. 1-Jun. 30 1997
 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	217	232	243	253	254	252	242	229	222	215	216	221	231	238	244	249	242	231	213	195	176	167	164	169	5314	221	5499	220	
2	185	203	221	240	250	253	246	235	222	210	208	210	213	227	237	242	246	236	221	201	175	159	150	153	5146	214	5311	212	
3	166	187	210	234	256	265	265	255	241	229	220	219	224	235	249	256	259	255	241	220	191	167	149	143	5335	222	5488	220	
4	153	171	194	224	248	268	276	272	261	247	233	228	229	236	249	261	266	266	258	237	206	178	152	135	5449	227	5583	223	
5	134	150	174	202	232	252	268	270	269	255	242	235	234	240	254	267	275	281	277	259	232	204	175	153	5536	231	5679	227	
6	142	147	166	191	220	247	263	271	270	262	252	241	235	238	249	262	273	279	282	273	252	224	198	172	5610	234	5768	231	
7	158	155	167	188	214	237	260	271	276	271	264	255	245	244	247	264	275	283	288	282	266	242	213	186	5752	240	5921	237	
8	169	158	159	172	194	217	239	253	262	260	254	246	239	232	229	237	250	261	267	267	258	239	214	191	5466	228	5637	225	
9	171	156	153	163	180	202	225	241	253	254	252	247	243	238	234	235	251	262	271	276	268	262	242	217	5496	229	5697	228	
10	201	187	178	181	190	208	224	239	253	257	258	254	249	242	237	238	241	253	263	266	262	259	245	226	5611	234	5822	233	
11	211	197	188	184	186	199	211	223	235	241	242	243	238	235	229	227	228	230	236	242	240	237	231	220	5355	223	5563	223	
12	208	199	188	185	183	192	198	207	215	222	230	229	225	224	218	213	218	215	220	229	225	233	233	229	5136	214	5362	214	
13	226	222	222	214	215	215	221	225	232	238	244	248	251	248	243	238	230	225	223	219	216	215	213	209	5453	227	5664	227	
14	211	207	207	205	198	197	195	198	204	204	211	220	224	223	224	222	217	207	202	198	193	192	194	198	4950	206	5156	206	
15	206	215	217	220	223	221	215	213	216	213	220	230	238	241	243	243	238	230	218	208	199	194	191	196	5249	219	5455	218	
16	205	219	229	232	233	235	225	216	210	207	204	213	218	222	223	224	221	207	199	179	165	158	152	154	4951	206	5119	205	
17	169	184	204	218	228	227	223	215	208	201	200	204	211	219	226	232	232	223	208	192	171	157	153	156	4859	202	5027	201	
18	169	189	215	240	254	266	265	257	244	236	229	232	235	249	255	260	261	252	236	210	179	156	136	129	5353	223	5493	220	
19	140	155	179	205	228	245	247	245	233	217	209	204	206	216	228	235	241	235	225	204	178	152	134	122	4885	204	5013	201	
20	128	143	172	203	233	255	267	270	257	243	232	222	219	225	236	248	254	258	248	233	204	173	142	123	5188	216	5305	212	
21	116	123	142	173	204	232	250	256	255	247	235	223	216	219	228	243	255	263	262	246	224	191	160	133	5095	212	5213	209	
22	117	117	132	156	185	215	237	253	259	250	239	226	218	214	220	233	245	255	260	253	237	211	179	151	5063	211	5192	208	
23	129	120	126	141	166	197	220	238	249	248	239	230	220	212	209	225	236	249	261	262	252	235	208	180	5054	211	5213	209	
24	159	145	138	143	161	186	211	230	243	249	246	238	227	214	210	214	224	238	251	255	253	244	227	204	5111	213	5291	212	
25	180	160	151	147	157	175	195	211	227	237	238	234	229	217	209	207	209	219	233	242	244	245	236	225	5029	210	5236	209	
26	206	188	176	170	172	181	195	208	222	232	237	239	235	223	213	209	203	209	217	220	224	235	235	228	5079	212	5296	212	
27	217	211	197	188	186	188	193	203	210	222	226	232	229	221	211	203	196	187	196	199	204	207	216	219	4959	207	5178	207	
28	219	211	214	205	201	196	199	204	205	209	218	223	226	223	217	205	194	183	177	181	177	182	190	195	4855	202	5064	203	
29	209	216	218	220	222	216	218	214	216	219	225	234	235	235	234	225	215	204	188	177	175	172	176	183	5047	210	5245	210	
30	199	212	225	234	237	236	235	227	223	222	225	228	235	234	235	232	220	209	192	176	162	152	150	156	5055	211	5228	209	
1	173																												
MONTHLY MEAN																											217.3cm		

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Jul. 1-Jul. 31 1997
 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	173	188	207	224	235	239	235	233	225	215	216	217	221	228	233	236	233	219	208	188	165	151	143	143	4977	207	5136	205		
2	159	178	198	221	240	253	257	252	244	234	227	228	233	241	246	254	254	246	233	211	181	159	146	238	5333	222	5477	219		
3	143	255	188	213	238	254	260	261	254	248	236	232	234	246	256	262	266	265	256	236	207	179	157	153	5500	229	5643	226		
4	143	157	177	202	231	249	260	266	260	249	238	230	229	233	246	256	267	267	263	248	217	193	163	140	5384	224	5520	221		
5	137	142	160	183	210	236	252	259	257	249	237	228	219	221	230	244	257	264	262	250	232	202	169	148	5246	219	5383	215		
6	137	133	146	170	193	224	241	254	256	249	237	225	219	217	223	238	252	263	270	262	250	223	194	171	5245	219	5397	216		
7	152	143	151	171	196	221	239	255	261	255	248	240	226	224	227	240	253	265	277	278	266	251	225	200	5463	228	5642	226		
8	179	170	168	177	201	227	241	258	265	264	256	247	233	225	223	231	243	257	268	271	265	253	231	208	5561	232	5749	230		
9	188	173	170	173	190	209	228	242	252	253	250	242	230	223	215	216	222	235	250	256	257	250	233	217	5373	224	5573	223		
10	200	188	179	178	191	205	219	238	248	249	246	241	233	223	216	214	216	227	236	244	245	245	236	223	5341	223	5547	222		
11	206	196	186	184	192	197	209	225	235	240	243	239	232	220	212	209	207	213	227	233	239	241	238	234	5260	219	5483	219		
12	224	220	214	212	213	221	228	237	249	255	261	257	250	240	233	230	221	217	226	231	232	237	237	237	5580	233	5818	233		
13	237	236	233	233	233	234	236	243	250	253	258	259	255	247	240	233	226	218	215	214	216	217	217	223	5627	234	5855	234		
14	229	233	237	234	234	233	229	229	233	233	236	242	239	235	233	224	213	204	192	182	183	184	188	194	5274	220	5475	219		
15	201	210	220	227	233	227	226	219	221	217	222	223	227	229	227	224	212	202	192	176	167	164	166	168	4996	208	5180	207		
16	184	202	216	228	244	241	247	240	236	227	232	234	233	243	248	240	231	224	210	192	173	167	162	162	5217	217	5393	216		
17	176	201	223	240	249	265	263	253	246	235	235	232	234	240	249	251	248	239	216	197	172	153	139	137	5294	221	5443	218		
18	149	170	196	219	243	258	263	256	247	236	230	226	226	233	244	254	253	248	233	210	180	156	133	121	5182	216	5309	212		
19	127	143	168	199	228	250	265	268	256	242	232	223	222	229	241	253	262	260	255	236	204	171	143	122	5199	217	5314	213		
20	115	128	150	180	212	243	261	268	264	251	236	225	219	224	236	248	267	274	272	263	239	203	170	143	5293	221	5419	217		
21	127	124	141	171	202	232	255	268	269	260	248	231	222	217	227	244	259	273	278	280	260	232	202	168	5387	224	5534	221		
22	147	135	140	157	186	214	238	256	264	257	243	228	210	203	205	221	240	253	269	272	262	246	217	184	5247	219	5410	216		
23	163	145	235	251	172	195	221	237	252	247	239	222	202	194	188	195	209	231	245	255	256	247	228	205	5234	218	5419	217		
24	184	163	154	156	169	189	212	225	236	238	233	219	203	189	177	176	187	202	217	233	241	238	231	217	4889	204	5091	204		
25	202	180	172	169	173	188	202	218	229	232	230	222	209	193	178	171	169	174	190	202	212	221	219	214	4769	199	4974	199		
26	204	196	187	182	184	189	202	209	221	227	229	226	215	203	188	180	174	174	179	190	196	205	211	215	4787	199	5004	200		
27	217	213	210	209	209	212	218	226	232	234	238	236	233	225	212	203	193	182	184	184	189	197	204	210	5073	211	5289	212		
28	216	225	232	235	234	236	236	237	240	239	242	244	242	235	226	218	205	193	180	176	171	267	176	184	5294	221	5488	220		
29	195	207	219	226	235	240	236	234	235	234	236	239	235	242	233	230	222	209	195	183	171	165	162	171	5158	215	5341	214		
30	183	198	215	233	249	256	257	255	249	249	250	252	254	257	258	258	260	244	228	209	186	177	165	171	5511	230	5689	228		
31	178	199	217	240	258	263	264	265	255	244	240	238	234	240	247	251	250	244	228	206	183	163	148	141	5398	225	5554	222		
1	156																													
MONTHLY MEAN																													219.2cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Aug. 1-Aug. 31 1997
 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	156	171	192	216	238	254	261	260	251	240	232	229	228	236	243	255	258	255	243	227	201	175	155	144	5319	222	5461	218		
2	141	156	180	204	228	247	261	262	253	241	233	225	224	231	243	256	268	269	265	253	227	199	177	159	5402	225	5554	222		
3	152	161	182	203	232	253	266	271	269	256	241	232	228	233	243	262	275	287	288	274	255	226	197	175	5662	236	5827	233		
4	165	166	175	200	223	243	258	267	260	245	232	216	207	202	213	231	245	256	261	256	241	214	185	159	5318	222	5462	218		
5	143	142	149	169	196	219	237	244	245	234	219	204	195	190	195	211	231	245	258	259	249	231	206	179	5051	210	5218	209		
6	167	159	169	185	210	236	254	264	267	256	240	225	213	203	200	211	226	242	258	262	253	240	218	196	5353	223	5531	221		
7	178	167	166	175	198	214	231	242	248	243	232	216	205	198	195	201	222	236	252	264	263	257	240	220	5263	219	5469	219		
8	206	198	189	197	208	228	244	258	263	262	250	234	220	207	199	200	208	220	233	245	249	242	230	214	5405	225	5607	224		
9	202	188	182	183	191	203	221	230	235	237	230	214	199	188	180	174	177	189	201	209	218	218	213	204	4887	204	5080	203		
10	193	184	181	177	185	194	205	218	224	227	224	217	201	190	183	179	176	185	197	205	212	216	218	215	4806	200	5018	201		
11	212	209	208	209	208	216	221	230	236	237	235	229	219	205	198	189	181	180	181	190	192	197	204	207	4994	208	5206	208		
12	212	216	218	223	226	229	232	235	234	237	240	236	231	222	213	207	195	188	180	180	179	179	184	189	5087	212	5285	211		
13	199	206	215	220	225	226	228	230	227	229	224	227	226	224	217	210	204	194	181	172	169	166	166	176	4957	207	5150	206		
14	193	206	219	238	246	249	244	241	237	235	237	236	236	237	241	238	231	219	203	186	174	164	157	166	5248	219	5426	217		
15	178	200	223	245	257	267	265	258	253	246	239	239	241	248	252	253	251	239	223	203	179	161	149	149	5418	226	5582	223		
16	164	181	207	234	257	270	272	263	251	238	230	226	226	237	244	252	255	250	233	211	185	156	138	127	5307	221	5439	218		
17	133	150	171	206	235	254	262	259	244	233	221	209	209	219	234	245	255	260	251	229	202	169	139	122	5110	213	5226	209		
18	116	130	154	180	210	238	249	247	241	224	208	195	188	199	214	233	251	261	261	248	225	187	158	132	4947	206	5069	203		
19	122	126	141	169	197	225	245	251	244	229	211	188	178	185	196	220	241	261	269	268	252	224	194	166	5001	208	5148	206		
20	147	141	152	175	200	230	253	261	262	249	229	209	194	188	192	218	241	260	278	285	279	258	231	201	5331	222	5507	220		
21	176	167	167	177	199	224	244	252	254	242	224	200	179	166	165	177	200	223	241	256	261	251	232	209	5084	212	5273	211		
22	189	172	169	173	191	210	229	242	243	237	225	203	182	167	156	160	177	200	217	236	247	246	238	225	4934	206	5144	206		
23	210	198	193	196	205	221	237	249	254	252	240	224	202	184	176	168	174	189	205	222	231	235	234	230	5129	214	5350	214		
24	221	213	208	207	211	221	231	239	243	243	235	222	205	190	174	165	160	161	173	186	194	200	203	208	4915	205	5122	205		
25	206	205	208	207	213	220	231	234	241	241	240	231	222	208	200	190	182	177	185	190	193	200	207	211	5043	210	5262	210		
26	219	227	234	241	246	247	253	254	255	256	250	248	238	231	221	212	203	193	185	180	173	173	176	185	5300	221	5495	220		
27	195	203	215	227	235	237	239	241	236	234	232	229	227	231	227	222	218	206	193	186	181	174	177	183	5150	215	5343	214		
28	193	212	229	243	256	265	262	260	251	247	245	242	241	246	249	250	246	238	225	207	192	178	173	177	5527	230	5711	228		
29	184	199	219	237	254	263	263	257	250	244	236	231	236	244	250	257	260	253	242	225	203	188	177	173	5546	231	5726	229		
30	180	195	216	241	259	269	275	266	253	245	233	230	229	238	249	257	263	261	250	234	212	188	169	160	5571	232	5736	229		
31	165	177	200	224	242	257	262	257	247	234	219	211	211	223	236	247	264	268	262	246	227	201	175	165	5420	226	5586	223		
1	166																													
MONTHLY MEAN																													217.0cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Sep. 1-Sep. 30 1997
 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	166	174	191	217	241	256	263	261	250	233	220	205	205	211	225	245	261	271	270	261	239	208	185	168	5428	226	5587	223		
2	159	163	184	209	233	250	259	259	246	227	211	197	187	193	208	227	251	263	268	263	244	218	193	174	5284	220	5445	218		
3	161	161	176	201	225	245	260	260	250	234	219	198	186	188	199	217	239	259	267	265	252	229	203	181	5274	220	5437	217		
4	163	161	168	188	209	229	242	244	237	220	198	179	165	159	168	184	207	227	241	245	240	220	199	175	4865	203	5023	201		
5	158	152	155	170	192	209	225	231	225	212	193	172	155	146	150	162	184	206	223	235	235	224	207	188	4609	192	4785	191		
6	176	167	168	178	197	217	231	238	238	230	211	192	176	166	162	171	188	209	225	237	242	236	225	209	4889	204	5085	203		
7	196	189	187	190	203	222	238	241	243	234	221	202	185	170	166	166	178	194	207	224	232	234	226	216	4964	207	5172	207		
8	208	203	198	199	210	221	233	241	241	236	228	210	193	180	172	168	170	184	199	206	219	226	226	225	4996	208	5219	209		
9	223	216	215	219	227	232	243	249	246	247	244	230	212	200	193	183	177	181	187	195	199	205	209	211	5144	214	5356	214		
10	212	211	216	221	221	225	229	233	231	231	225	218	209	197	190	179	172	168	165	168	170	173	180	190	4835	201	5029	201		
11	195	204	214	218	222	222	224	224	223	219	217	215	209	204	198	192	185	172	165	160	155	157	161	169	4721	197	4903	196		
12	182	198	214	225	231	233	231	227	222	214	214	212	212	217	214	210	206	195	176	166	154	146	146	154	4799	200	4968	199		
13	169	188	212	231	243	248	245	235	223	219	216	213	215	223	232	238	232	224	206	189	171	154	144	149	5021	209	5186	207		
14	166	183	212	237	255	262	262	252	237	225	217	213	221	230	242	257	261	255	241	219	188	164	144	140	5283	220	5431	217		
15	148	167	191	219	239	252	250	241	221	201	185	179	181	197	214	232	247	247	242	223	190	163	138	123	4889	204	5012	200		
16	123	137	161	191	215	231	235	230	209	188	168	155	154	169	188	217	239	252	253	241	216	183	155	135	4645	194	4773	191		
17	128	133	152	181	206	231	242	238	223	200	177	160	154	166	186	216	244	265	278	274	259	231	199	176	4920	205	5079	203		
18	159	158	175	198	220	243	253	252	241	215	190	166	150	150	166	192	221	246	267	273	266	249	223	198	5068	211	5250	210		
19	182	171	177	196	217	234	245	250	240	215	191	163	140	131	136	157	182	210	229	243	248	237	219	198	4810	200	4990	200		
20	180	170	171	181	200	217	237	239	229	217	193	168	144	129	128	137	157	184	205	223	231	231	222	212	4606	192	4804	192		
21	198	190	188	194	208	226	236	239	239	228	208	186	162	142	134	136	146	162	182	199	210	217	215	212	4655	194	4862	194		
22	207	204	204	208	218	231	242	246	246	241	232	212	197	179	166	162	163	169	181	194	203	209	212	212	4939	206	5150	206		
23	211	217	218	219	224	231	241	244	244	239	232	221	205	194	185	174	171	172	175	179	186	192	197	203	4975	207	5184	207		
24	209	216	225	231	236	238	242	244	240	237	237	230	222	214	208	201	195	190	186	182	186	187	190	195	5142	214	5345	214		
25	203	213	227	232	237	237	237	234	229	224	222	217	213	215	209	207	200	192	182	173	167	164	162	168	4965	207	5145	206		
26	179	191	206	217	229	231	229	224	220	211	208	207	211	214	219	225	221	212	201	191	178	169	165	171	4929	205	5112	204		
27	183	198	215	230	242	247	243	233	222	212	205	204	210	215	225	229	231	229	218	199	181	168	160	159	5058	211	5225	209		
28	167	182	203	219	233	241	234	223	210	197	190	187	192	202	217	229	234	234	226	206	186	168	155	151	4885	204	5044	202		
29	159	173	195	214	231	241	235	230	210	196	186	177	181	197	213	232	248	248	243	226	204	184	163	157	4943	206	5102	204		
30	159	171	193	213	232	240	238	229	212	191	173	168	169	184	206	228	244	254	255	241	220	199	175	165	4958	207	5121	205		
1	164																													
MONTHLY MEAN																									206.2cm					

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Oct. 1-Oct. 31 1997
 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	164	174	196	218	237	251	252	241	223	202	182	168	166	177	197	223	245	258	263	258	238	216	192	175	5116	213	5283	211		
2	167	177	194	217	236	249	252	245	227	204	180	163	155	162	182	208	233	254	263	261	249	224	203	185	5088	212	5262	210		
3	174	176	191	210	231	246	253	247	231	206	183	164	150	149	166	189	216	237	253	258	253	233	213	197	5024	209	5208	208		
4	184	181	194	209	230	246	256	251	238	217	192	169	152	147	159	178	204	227	248	256	256	244	227	211	5075	211	5270	211		
5	196	190	195	215	231	243	255	255	243	226	199	175	161	152	154	167	188	213	230	245	251	245	231	220	5078	212	5285	211		
6	206	198	201	210	227	239	249	250	245	230	208	185	167	151	147	157	172	195	211	227	238	241	231	223	5008	209	5225	209		
7	217	213	211	216	230	244	250	254	251	239	225	205	189	177	169	170	179	192	210	223	231	240	241	239	5215	217	5452	218		
8	237	234	234	236	244	248	258	258	258	251	237	219	202	190	181	174	173	182	189	197	207	215	222	222	5267	219	5493	220		
9	226	228	231	233	236	240	245	244	242	236	230	221	207	197	193	182	178	174	177	182	188	195	199	210	5096	212	5316	213		
10	220	227	233	237	238	239	240	234	230	228	224	218	210	207	201	194	187	179	170	167	167	168	174	187	4982	208	5180	207		
11	198	214	226	235	238	236	230	226	220	217	213	213	215	218	218	218	211	199	187	176	168	161	164	176	4977	207	5166	207		
12	190	210	227	241	249	244	236	226	214	206	204	205	212	225	230	237	233	225	210	192	174	163	155	163	5071	211	5249	210		
13	178	197	218	239	251	252	242	227	212	199	190	193	201	220	233	250	256	251	237	219	194	172	158	159	5146	214	5314	213		
14	167	189	211	230	246	251	238	223	198	177	166	163	172	192	219	238	254	259	251	233	204	178	160	153	4972	207	5128	205		
15	156	172	195	217	233	242	237	218	193	167	148	139	144	164	192	222	245	261	265	255	229	206	184	167	4851	202	5019	201		
16	168	181	199	219	240	250	246	231	206	177	150	136	133	146	172	203	234	255	265	262	246	224	199	181	4924	205	5097	204		
17	172	176	192	211	229	245	242	227	206	177	145	122	113	118	140	170	199	227	247	256	250	232	214	197	4709	196	4893	196		
18	185	183	197	215	232	248	250	243	226	199	167	140	121	117	131	155	183	210	234	249	252	242	227	212	4818	201	5017	201		
19	199	194	200	218	234	250	258	253	240	220	192	164	141	129	133	147	169	195	217	234	243	244	234	227	4933	206	5152	206		
20	219	212	214	227	241	257	263	265	257	243	220	192	170	156	149	155	169	190	210	226	235	241	239	233	5182	216	5412	216		
21	230	227	227	233	243	253	260	262	257	247	231	208	188	172	163	161	167	173	190	201	211	219	221	219	5163	215	5380	215		
22	218	219	217	221	226	233	240	239	234	230	221	204	188	178	169	166	166	167	173	185	191	197	205	206	4893	204	5103	204		
23	210	217	221	225	228	232	234	232	234	232	225	217	211	204	199	197	191	190	192	196	200	204	208	217	5117	213	5340	214		
24	223	231	238	243	247	244	244	238	236	232	229	224	224	224	222	220	216	208	203	201	197	199	205	211	5359	223	5580	223		
25	221	232	242	248	252	249	242	236	227	222	218	218	220	226	229	231	231	220	213	204	194	191	192	197	5353	223	5560	222		
26	207	218	228	239	245	244	236	222	214	207	202	202	208	216	229	235	238	233	221	208	196	189	188	191	5217	217	5415	217		
27	198	214	228	237	244	245	233	219	207	194	186	188	197	208	226	237	242	240	230	216	200	187	181	183	5140	214	5329	213		
28	189	204	219	231	242	243	231	215	199	184	171	171	179	195	216	234	246	251	244	232	214	194	186	181	5072	211	5260	210		
29	189	205	223	240	252	253	245	228	207	188	175	171	179	198	226	248	267	275	274	261	243	220	204	200	5372	224	5577	223		
30	205	216	231	253	262	268	259	239	220	194	173	164	167	183	207	231	256	269	269	265	245	224	208	195	5404	225	5597	224		
31	194	203	220	239	252	261	255	238	215	186	163	147	145	159	183	211	236	255	264	262	247	230	210	196	5170	215	5362	214		
1	192																													
MONTHLY MEAN																													212.1cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Nov. 1-Nov. 30 1997
 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	192	198	212	232	247	255	256	242	218	192	163	145	135	137	160	191	217	241	256	262	253	238	222	206	5069	211	5266	211	
2	196	197	209	225	242	251	252	242	222	194	165	142	130	130	142	167	195	220	239	253	253	241	225	214	4944	206	5147	206	
3	202	201	207	225	242	254	258	253	241	218	190	167	151	144	150	171	195	221	241	255	262	256	244	233	5183	216	5408	216	
4	225	219	220	230	245	257	259	258	249	226	199	175	155	139	138	149	166	187	209	224	234	235	229	221	5051	210	5265	211	
5	214	209	207	212	222	230	237	234	228	213	191	168	148	134	126	129	140	156	173	192	203	212	215	211	4604	192	4814	193	
6	210	208	204	208	215	222	227	227	227	217	202	189	170	156	149	143	149	156	170	183	194	202	215	216	4660	194	4876	195	
7	216	219	218	216	221	227	229	234	228	225	219	206	192	185	172	166	163	161	163	172	176	186	196	203	4794	200	5004	200	
8	210	215	216	219	215	215	212	209	207	206	202	199	192	188	183	176	168	164	159	159	161	166	177	188	4605	192	4805	192	
9	200	209	215	219	217	211	205	198	195	193	194	197	201	203	207	205	197	189	179	171	165	164	169	181	4686	195	4878	195	
10	192	205	216	222	221	211	198	189	177	171	169	177	186	199	208	213	213	205	191	175	164	153	152	161	4567	190	4741	190	
11	174	191	203	213	215	208	193	172	160	145	144	149	162	182	205	221	227	225	214	199	181	164	158	163	4467	186	4640	186	
12	172	187	203	216	222	215	199	176	155	135	128	128	143	166	194	219	235	240	233	222	201	181	170	167	4507	188	4684	187	
13	177	192	210	223	229	229	212	188	162	137	116	112	124	148	176	206	231	247	247	237	220	199	183	173	4579	191	4754	190	
14	175	185	202	218	226	228	216	195	167	134	107	95	97	115	144	178	207	226	240	237	225	207	192	177	4395	183	4572	183	
15	177	183	197	215	227	233	225	209	181	147	120	98	90	102	126	158	189	215	235	244	240	228	214	203	4456	186	4652	186	
16	196	202	216	233	247	258	257	246	225	194	162	136	121	119	134	161	190	216	239	252	255	249	237	227	4972	207	5188	208	
17	217	217	224	237	253	262	264	258	241	213	182	154	130	119	122	140	163	188	208	225	231	228	222	212	4909	205	5111	204	
18	202	198	198	210	222	232	238	235	223	206	178	152	131	118	113	121	139	160	181	197	208	212	210	205	4491	187	4694	188	
19	203	198	198	204	212	226	231	232	228	220	200	178	160	146	136	139	150	162	178	195	204	212	215	212	4642	193	4854	194	
20	212	208	208	208	213	222	225	227	225	217	205	190	174	164	152	150	157	160	171	184	193	201	207	209	4682	195	4893	196	
21	211	210	210	209	211	214	215	217	217	211	204	195	184	178	171	166	165	166	169	176	183	190	195	199	4669	195	4871	195	
22	202	205	208	209	206	205	203	201	199	199	194	193	188	186	184	182	178	176	177	180	179	186	190	196	4627	193	4828	193	
23	201	205	209	213	208	206	197	195	191	187	183	184	188	191	192	191	192	187	184	177	178	177	183	190	4607	192	4805	192	
24	198	207	210	214	214	207	196	189	182	177	177	176	183	193	201	206	206	202	197	190	183	178	178	186	4651	194	4847	194	
25	195	202	211	214	213	211	195	181	169	160	160	163	169	186	200	210	216	215	205	195	186	180	176	181	4594	191	4785	191	
26	191	199	211	216	216	209	196	179	164	151	144	145	157	173	193	210	225	223	216	208	196	183	178	181	4563	190	4753	190	
27	190	200	212	223	224	223	208	187	163	148	139	136	148	169	192	217	231	245	239	229	216	204	195	192	4729	197	4929	197	
28	200	213	226	237	244	242	225	205	181	157	140	136	141	161	188	215	236	251	252	247	233	218	203	199	4951	206	5155	206	
29	204	212	229	241	250	251	240	221	193	165	144	135	133	151	180	208	237	258	265	265	256	240	226	220	5124	213	5343	214	
30	220	226	243	256	268	269	262	243	216	186	160	138	135	145	166	195	226	253	265	271	264	251	236	227	5323	222	5542	222	
1	219																												
MONTHLY MEAN																								197.4cm					

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Dec. 1-Dec. 31 1997
 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	223	235	250	261	267	264	251	225	197	167	143	130	133	148	173	201	230	251	262	261	253	239	226	5209	217	5427	217		
2	218	215	223	237	248	258	258	250	230	204	172	145	128	122	128	149	176	202	226	243	251	247	238	227	4994	208	5214	209		
3	220	215	218	228	242	254	257	252	242	219	190	163	140	127	127	140	162	183	207	228	239	244	239	232	4966	207	5193	208		
4	226	219	218	224	237	247	253	254	249	235	212	186	165	147	139	144	160	174	196	215	230	238	236	234	5040	210	5269	211		
5	229	223	220	221	227	236	243	248	246	239	224	203	185	167	155	155	159	166	182	195	208	219	224	224	4995	208	5218	209		
6	223	217	211	209	210	214	220	224	224	223	217	205	194	183	172	164	164	165	172	182	194	202	212	219	4817	201	5035	201		
7	218	217	215	209	202	203	205	206	209	210	210	207	203	200	195	187	183	180	178	183	189	195	203	213	4820	201	5039	202		
8	219	218	219	215	207	201	196	193	191	194	198	201	208	214	215	217	213	206	201	200	199	200	209	218	4952	206	5177	207		
9	225	232	235	233	224	215	202	192	186	184	188	194	206	221	229	236	235	231	221	213	206	203	203	212	5127	214	5345	214		
10	218	224	228	230	224	211	192	176	164	156	155	162	177	196	215	229	237	238	232	222	210	206	202	208	4912	205	5130	205		
11	218	226	234	238	238	226	210	188	166	153	149	152	166	192	214	237	254	261	259	250	236	225	219	218	5130	214	5354	214		
12	224	233	244	251	249	242	224	196	172	150	134	131	141	164	192	219	242	256	261	257	245	232	221	216	5096	212	5317	213		
13	221	229	241	248	254	253	235	211	183	153	130	119	122	139	164	196	224	243	255	256	248	235	224	213	4996	208	5210	208		
14	214	223	232	248	256	256	247	226	201	168	138	118	115	123	146	174	205	229	248	254	251	240	227	220	4961	207	5174	207		
15	214	216	228	243	253	261	256	241	218	187	155	130	116	116	134	157	185	213	234	247	250	244	234	224	4955	206	5173	207		
16	219	216	226	240	254	261	266	256	238	213	182	153	134	127	133	149	177	201	221	238	245	243	234	224	5050	210	5265	211		
17	216	212	214	224	237	249	252	249	241	219	193	165	145	133	133	145	165	188	211	228	241	242	237	233	4969	207	5195	208		
18	225	222	220	226	238	251	257	260	256	243	223	199	179	164	159	164	176	194	212	228	239	244	242	236	5257	219	5484	219		
19	227	222	219	216	225	235	243	248	247	236	224	205	188	171	164	163	168	182	199	211	222	229	226	225	5096	212	5319	213		
20	223	217	209	207	208	216	223	227	228	224	218	205	194	180	172	169	173	181	190	199	210	217	221	221	4931	205	5146	206		
21	216	213	208	205	204	205	209	213	217	215	211	206	202	194	191	190	189	192	200	206	213	219	224	225	4966	207	5190	208		
22	224	221	220	215	209	207	205	204	207	207	205	204	203	202	202	203	201	198	201	204	208	211	217	222	5000	208	5223	209		
23	223	220	222	217	208	201	199	193	190	188	188	191	198	201	205	207	209	209	203	203	202	202	206	210	4894	204	5106	204		
24	212	216	216	215	208	201	190	177	172	170	168	173	185	195	207	216	221	223	218	213	210	208	210	214	4837	202	5056	202		
25	220	226	227	226	225	215	201	186	174	165	163	166	178	192	208	222	232	235	230	223	215	210	208	210	4958	207	5173	207		
26	215	223	226	229	226	218	200	183	164	148	140	143	154	172	195	214	230	240	238	232	222	212	207	209	4842	202	5055	202		
27	214	222	231	236	237	231	215	192	170	150	134	131	141	161	184	211	233	245	248	244	235	223	212	210	4908	205	5122	205		
28	214	221	231	240	243	242	225	207	181	153	132	122	124	140	169	195	224	245	255	255	247	235	221	213	4934	206	5147	206		
29	214	219	232	244	251	254	245	224	198	166	138	121	119	130	154	183	217	241	256	266	260	248	235	222	5037	210	5256	210		
30	219	223	232	246	257	264	260	246	223	190	160	134	120	123	142	169	197	228	252	260	261	253	240	224	5123	213	5341	214		
31	218	219	226	242	258	266	269	261	242	214	181	151	134	128	136	160	187	216	242	260	268	264	253	244	5237	218	5471	219		
1	233																													
MONTHLY MEAN																													208.3cm	

Station : SYOWA STATION
 Latitude : 69° 00' 28" S
 Longitude : 39° 34' 13" E
 Duration : Jan. 1-Jan. 31 1998
 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	233	225	232	243	257	270	278	277	264	238	211	179	155	142	143	157	178	205	229	250	263	262	254	245	5390	225	5623	225		
2	233	222	219	225	243	255	261	266	262	245	222	188	172	153	144	153	165	182	206	229	241	246	245	238	5215	217	5445	218		
3	230	217	207	210	221	236	247	251	258	252	239	219	197	180	168	168	173	187	204	222	236	243	244	239	5249	219	5479	219		
4	230	219	209	201	205	216	223	233	238	242	236	223	209	197	190	182	182	189	201	212	223	232	234	232	5159	215	5386	215		
5	227	218	206	196	192	194	199	206	212	216	219	216	212	206	200	196	193	193	198	206	214	221	224	226	4991	208	5214	209		
6	222	217	208	197	187	182	180	182	188	192	196	205	207	210	214	215	212	210	211	210	216	220	222	225	4926	205	5153	206		
7	226	223	217	212	198	187	176	169	168	171	174	184	194	204	213	221	223	222	218	216	216	214	214	218	4878	203	5101	204		
8	222	222	219	215	205	191	175	159	151	148	149	158	169	187	204	219	228	229	228	222	218	215	213	215	4760	198	4979	199		
9	219	223	226	224	220	208	191	171	154	142	136	140	153	172	194	218	234	243	245	242	234	226	223	224	4864	203	5091	204		
10	227	233	240	244	243	236	221	196	171	153	140	136	145	165	187	215	239	253	259	256	250	236	226	223	5096	212	5323	213		
11	227	231	240	249	252	248	235	213	183	158	136	124	127	141	164	192	222	238	253	256	247	238	225	220	5020	209	5239	210		
12	219	223	236	249	258	260	250	229	203	173	148	128	121	133	152	179	209	232	247	253	252	239	227	218	5039	210	5251	210		
13	213	218	229	243	254	261	256	245	222	191	161	138	126	128	145	170	199	226	244	254	255	246	233	222	5079	212	5295	212		
14	216	213	222	237	254	268	271	261	245	219	187	162	142	136	147	167	193	222	239	251	257	249	236	227	5221	218	5440	218		
15	219	211	215	231	247	260	266	266	253	232	203	178	153	143	145	160	184	208	227	243	251	247	236	222	5199	217	5413	217		
16	214	204	203	213	229	243	253	258	250	236	213	188	168	154	151	161	181	203	222	236	247	246	237	224	5132	214	5348	214		
17	216	207	202	206	217	233	245	250	250	240	223	202	185	168	160	166	179	196	216	228	239	240	234	224	5126	214	5340	214		
18	214	206	198	195	205	218	228	236	238	235	226	209	193	183	175	176	186	195	210	222	232	237	234	224	5077	212	5294	212		
19	217	208	198	193	195	201	213	222	225	227	222	214	201	194	190	188	191	200	210	222	228	236	236	229	5062	211	5284	211		
20	222	214	207	199	196	201	203	210	216	217	216	214	209	207	205	204	206	211	218	225	234	235	235	235	5139	214	5368	215		
21	228	222	217	208	203	202	199	199	203	204	208	210	212	213	214	217	221	222	224	229	231	235	234	235	5191	216	5422	217		
22	231	226	222	216	206	201	193	190	189	191	191	197	202	211	220	225	231	229	230	231	231	230	229	229	5152	215	5384	215		
23	232	227	227	220	209	204	192	181	175	169	171	177	187	203	215	226	238	240	240	236	231	230	227	228	5086	212	5317	213		
24	231	232	234	232	227	216	200	186	172	163	160	163	174	192	213	230	245	255	256	249	244	239	232	231	5177	216	5412	216		
25	235	240	245	246	244	236	219	198	177	160	149	146	155	172	197	222	244	256	260	255	247	235	226	222	5186	216	5411	216		
26	225	232	240	249	251	248	232	210	184	162	143	134	138	156	182	211	239	258	267	266	258	244	231	223	5184	216	5407	216		
27	223	232	243	251	261	263	252	232	206	175	148	133	130	140	166	198	229	255	268	274	266	252	237	226	5263	219	5487	219		
28	223	228	240	254	269	278	270	255	228	195	162	137	126	127	147	175	208	235	257	267	262	251	232	218	5245	219	5453	218		
29	208	209	221	239	255	270	273	265	244	213	181	152	130	125	134	160	190	218	239	252	256	246	228	213	5119	213	5318	213		
30	199	192	200	217	237	255	266	267	255	230	201	171	147	133	134	151	178	205	226	246	252	245	230	215	5055	211	5251	210		
31	196	184	185	195	215	236	252	259	261	248	222	192	168	151	145	152	169	192	216	233	242	242	231	215	5003	208	5199	208		
1	196																													
MONTHLY MEAN																													212.7cm	