

Oceanographic Data of the 34th Japanese  
Antarctic Research Expedition  
from November 1992 to March 1993

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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 34th Japanese Antarctic Research Expedition (JARE-34) during the austral summer of 1992/1993. The tidal observations were carried out by the winter party of JARE-33 from February 1992 to January 1993.

## 1. Oceanographic Observations

The track of the icebreaker "Shirase" and the sites of oceanographic stations are shown in Figs. 1 and 2.

Surface water was sampled during the cruise. XBT (expendable bathythermograph) and serial observations were taken in the Southern Ocean.

Two surface drifting buoys were deployed and three XCP (Expendable Current Profiler) observations were taken in the Antarctic Circumpolar Current.

### (1) Surface water sampling

Surface water was sampled twice or three times a day. The results are given in Table 1.

### (2) XBT observations

XBT observations were carried out at 128 stations in the Southern Ocean from Fremantle to Antarctica and back to Sydney. The results are listed in Table 2. S.L. (M) in Table 2 indicates surface layer depth in meters. Vertical profiles of water temperature are shown in Figs. 3 and 4.

### (3) Serial observations

Serial observations were carried out at 32 stations. Among them, 9 stations in Fig. 2 were in the coastal fast ice around Syowa Station. The results including interpolated and calculated values of temperature, practical salinity, sigma-t and dynamic depth anomaly at each standard depth together with meteorological data are given in Table 3.

#### (4) Chemical analysis of sampled water

Chemical analysis of sea water collected with a bucket (10L) for surface observation or Nansen sampler (2L) for serial observation was done by the use of the following methods. Chemical analyses for the following (b) - (h) and (l) - (m) are carried out with the methods described by Strickland and Parsons (1972) and Hydrographic Department (1995), respectively.

- (a) Practical salinity : Practical salinity on “the practical salinity scale, 1978”. Conductive salinometer (Guildline Autosol salinometer model 8400A).
- (b) Ph :Glass electrode method (Horiba digital pH meter F-16).
- (c) Dissolved oxygen :Winkler method (Metrohm Model E41520S Titrator).
- (d) Phosphate-P :Molybdenum blue method (Shimadzu Model UV-120A Spectrophotometer).
- (e) Silicate-Si :Molybdenum yellow method (Shimadzu Model UV-120A Spectrophotometer).
- (f) Nitrite-N :Naphthylethylenediamine method (Shimadzu Model UV-120A Spectrophotometer).
- (g) Nitrate-N :Cadmium (Cd) – copper (Cu) reduction column, Naphthylethylenediamine method (Shimadzu Model UV-120A Spectrophotometer).
- (h) Ammonium-N :Indophenol blue method (Shimadzu Model UV-120A Spectrophotometer).
- (i) Petroleum oil :n-hexane extraction – fluorophotometric analysis.
- (j) Cadmium (Cd) :Solvent extraction – atomic absorption spectrophotometry.
- (k) Copper (Cu) :Solvent extraction – atomic absorption spectrophotometry.
- (l) Zinc (Zn) :Solvent extraction – atomic absorption spectrophotometry.
- (m) Mercury (Hg) :Cold vapor atomic absorption spectrophotometry.

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

#### (5) Current observations with two surface drifting buoys

The first surface drifting buoy was deployed at 62° 58'S, 91° 00'E on March 6, 1993; the second was deployed at 62° 59'S, 113° 14'E on March 9, 1993. The trajectories are shown in Fig. 5.

#### (6) Vertical current observations with XCP

XCP (Sippican Inc. U.S.A.) observations were carried out at the following 3 stations.

December 7, 1992	05:13 (UT)	50° 18' S, 109° 35' E
December 9, 1992	09:11 (UT)	59° 30' S, 104° 30' E

March 7, 1993 09:02 (UT) 63° 07' S, 97° 00' E

The results are given in Fig. 6. The XCP data for December 9, 1992 are not shown in this report because they are not available.

#### (7) Ocean current observations

Ocean current observations were carried out for 10 days (from January 2 to February 11) at 69° 00.6'S, 39° 38.1'E in the coastal fast ice in Ongul Strait near Syowa Station, with an electromagnetic current meter (ACM8M, ALEC ELECTRONICS Co.), 50 m below the sea surface. The results are given in Fig. 7. Figure 7 also includes change of sea level observed with a tide gauge at Syowa Station.

## 2. Tidal Observations

#### (1) 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.) set on the sea bottom of about 15m below the sea surface at Nisi-no-ura Cove, East Ongul Island by JARE-31 members on January 22, 1990, continued operating through the period from February 1992 to January 1993, which this paper describes. Methodology of tidal observations is described by Odamaki *et al.* (1991). In this system, the relative water pressure compensated for atmospheric pressure is measured with a quartz oscillator. The range of the sensor is 0-50 m and its accuracy is 0.01 % to full scale, i.e. 0.005 m. The data sampled 5 times per second are averaged over one minute and record on solid IC memory every 10 minutes. The gauge was maintained by Mr. M. Kanao, a member of the winter party of JARE-33, through the year. Hourly sea level was recorded on the hour. Daily and monthly mean sea levels were calculated from the hourly data. The results are given in Table 5.

#### (2) Tidal observations at southern Langhovde

Tidal observations at southern Langhovde were carried out for 8 days (from January 11 to February 18) with a pressure gauge (WLR-7, AANDERAA INSTRUMENTS). The sensor was placed at the sea bottom about 3 m below the sea surface. In this system pressure is measured with a quartz oscillator. The range of the sensor is 0-60 m and its accuracy is 0.01 % to full scale, i.e. 0.006 m. The pressure averaged over 40 seconds is recorded in an EEPROM memory every 10 minutes. The data were corrected for atmospheric pressure. Hourly sea level was recorded on the hour. Daily mean sea levels were calculated from the hourly data. The results are given in Table 6 and Fig. 8. Figure 8 also includes sea level data at Syowa Station.

## Acknowledgments

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The authors also express their thanks to Captain T. Hisamatu, the officers and crew of the icebreaker "Shirase".

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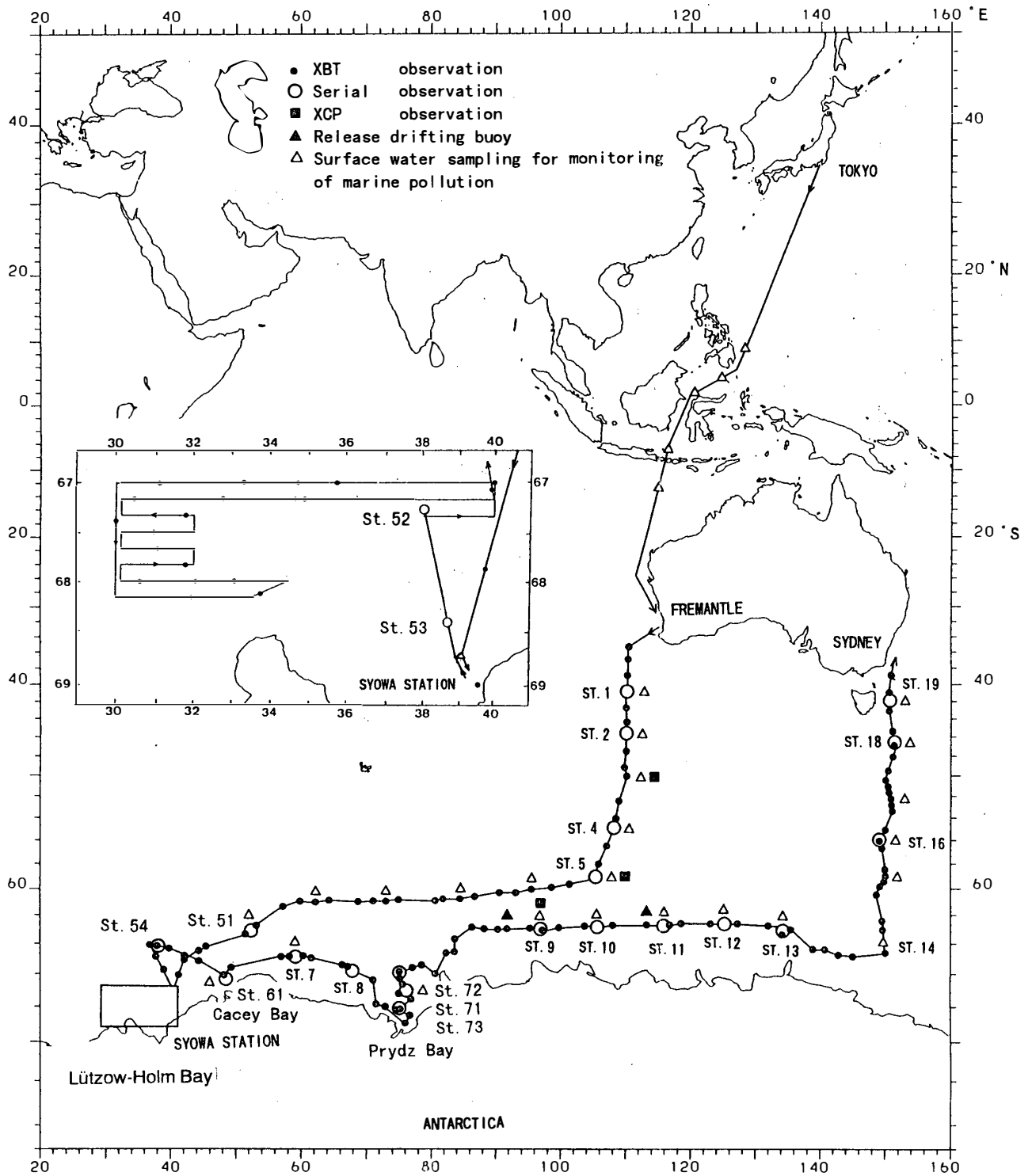


Fig. 1. The track of the icebreaker "Shirase" and the sites of oceanographic stations.

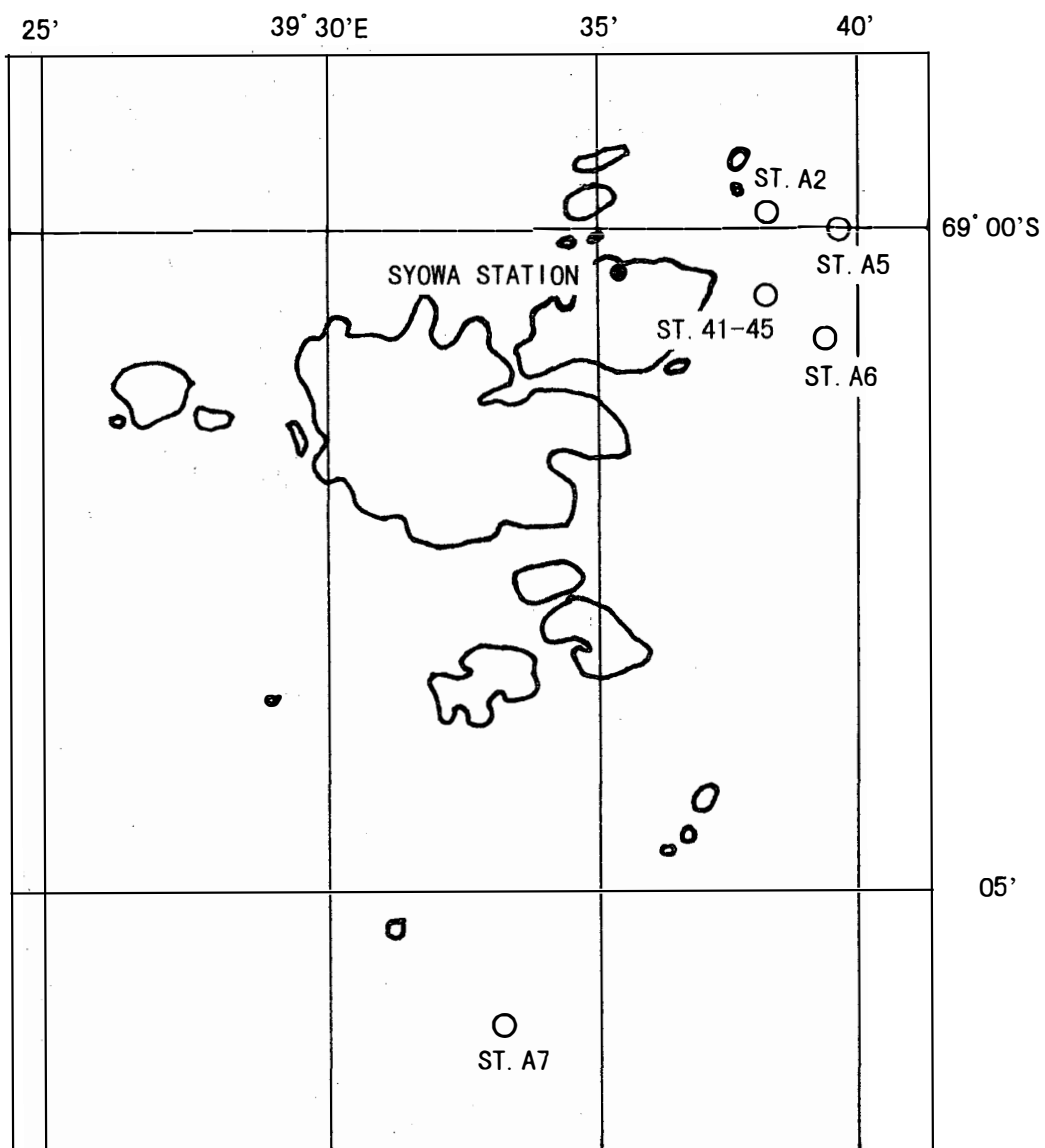


Fig. 2. The sites of oceanographic stations in the coastal fast ice area around Syowa Station.

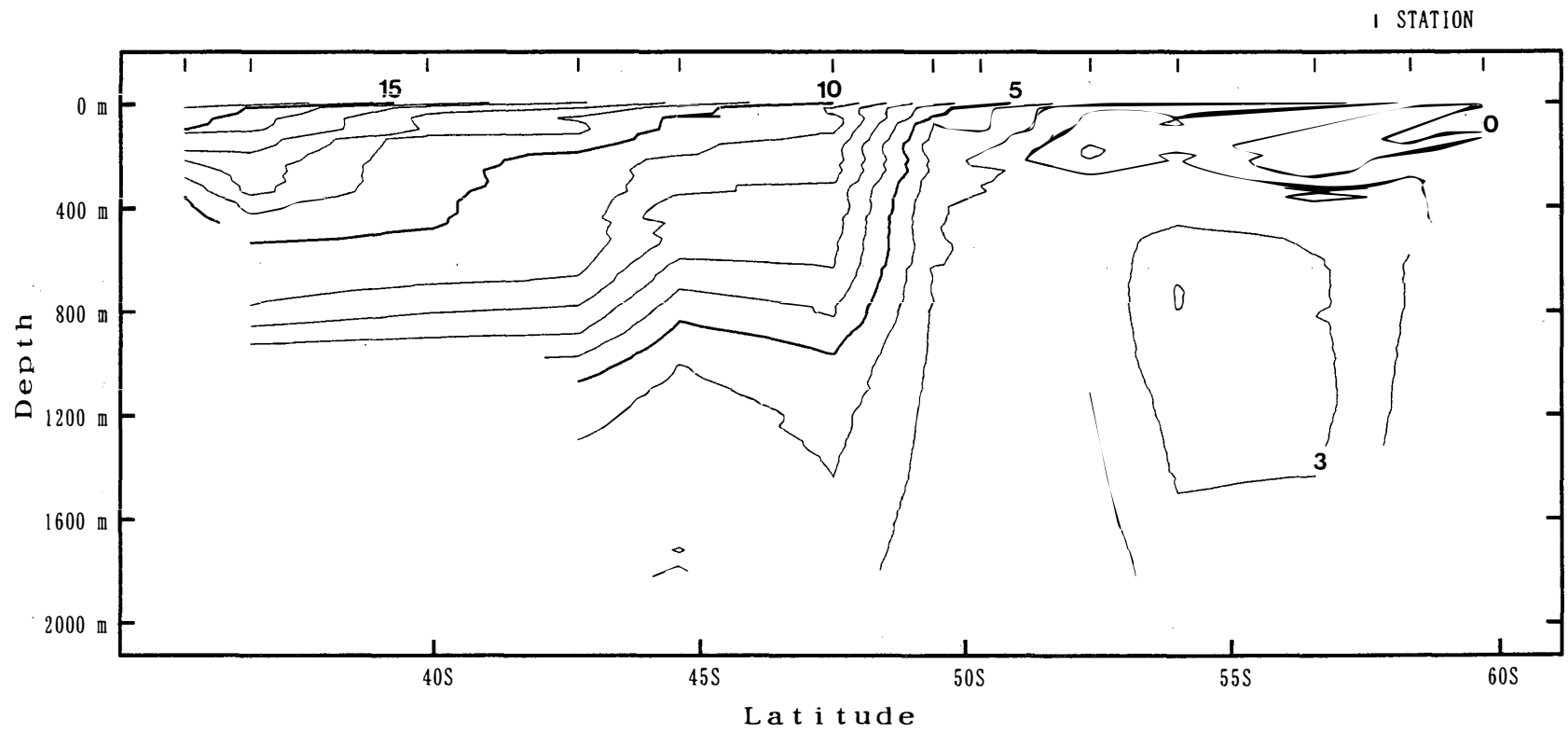


Fig. 3. Vertical profile of water temperature ( $^{\circ}$  C) observed with XBT along  $110^{\circ}$  E.

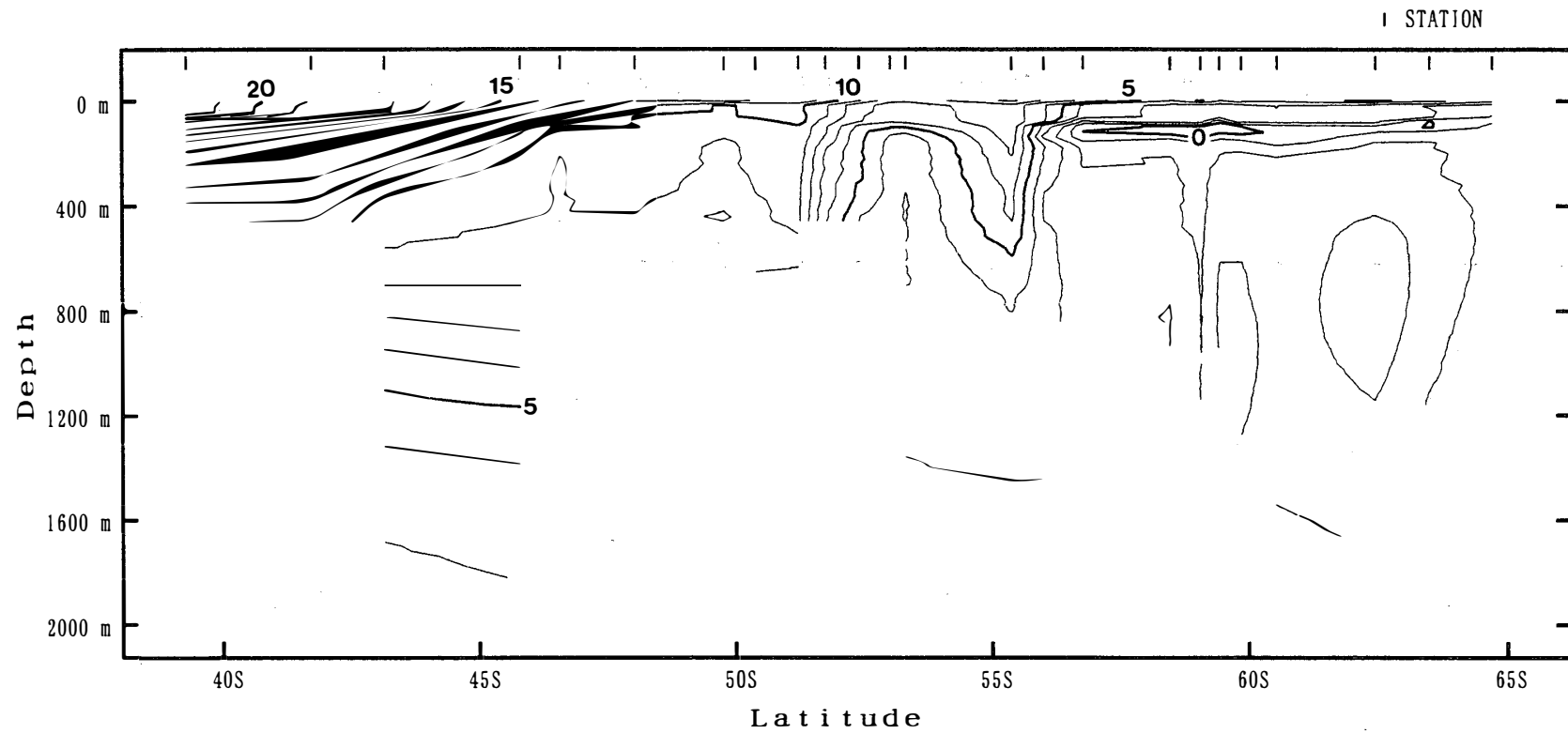


Fig. 4. Vertical profile of water temperature ( $^{\circ}$  C) observed with XBT along  $150^{\circ}$  E.



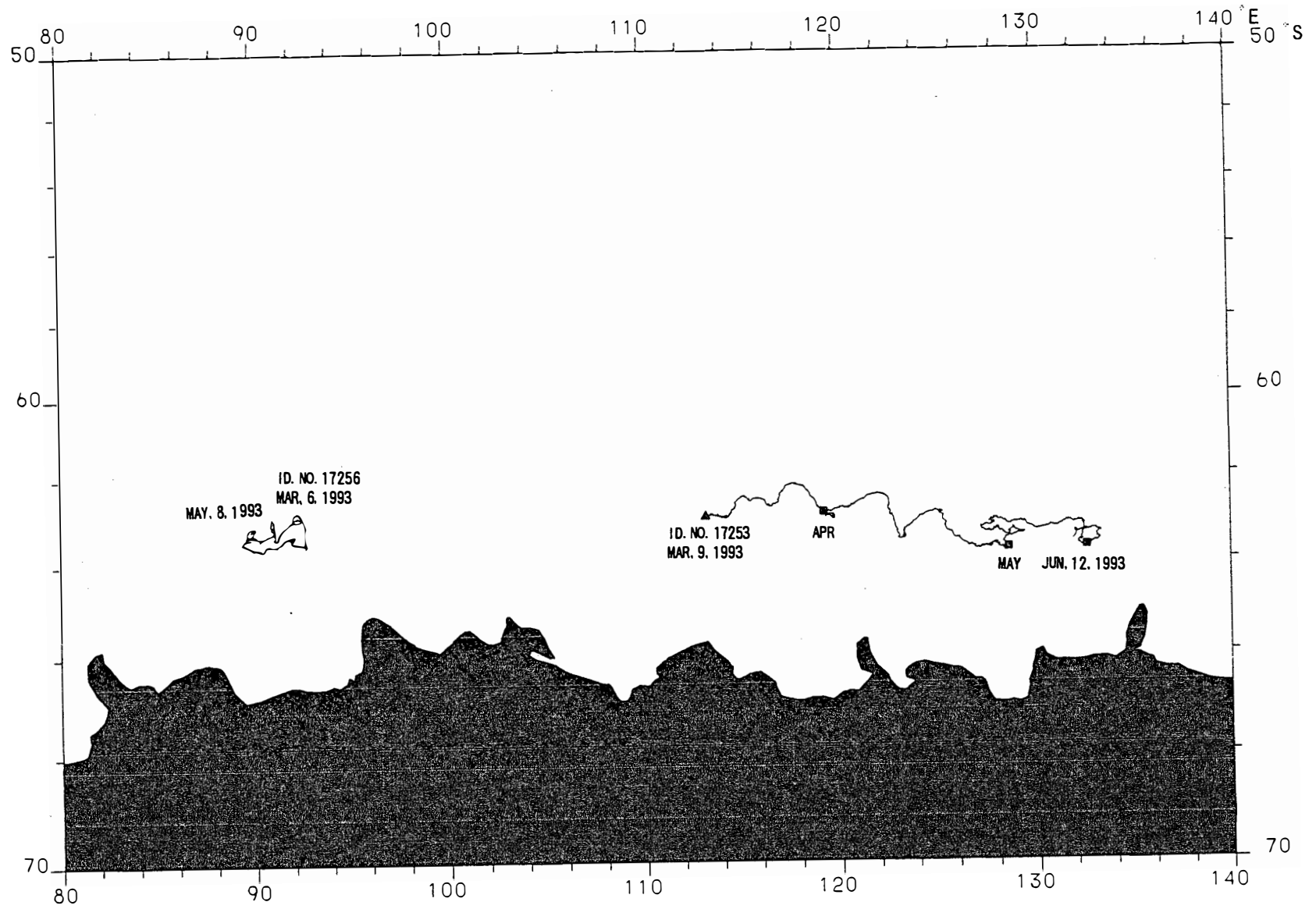


Fig. 5. Trajectories of surface drifting buoys.

1992.12.07  
05:13 (UT)  
LAT. 50-17.9S  
LONG. 109-35.2E

1993.03.07  
09:02(UT)  
LAT. 63-07.1S  
LONG. 96-59.7E

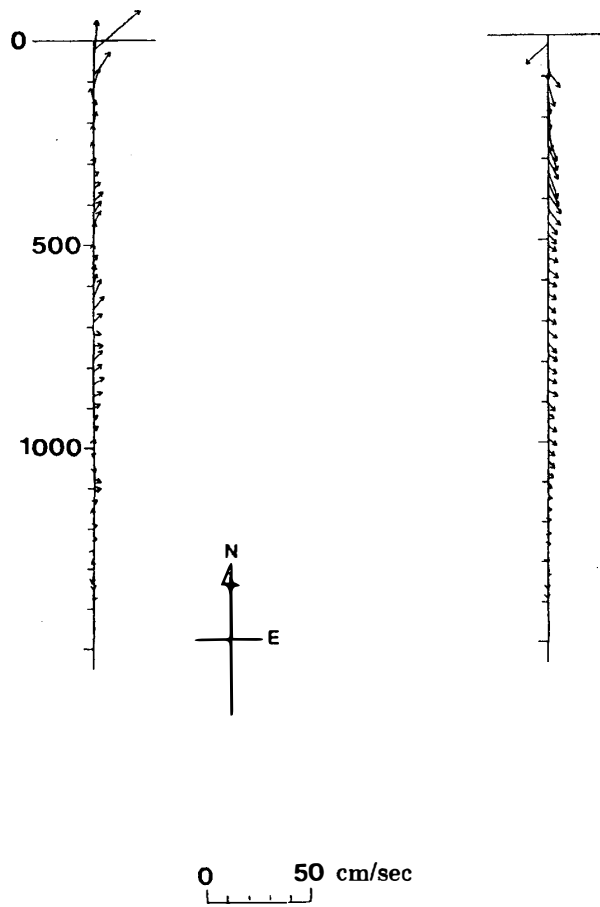


Fig. 6. Vertical profile of current velocity measured by XCP.

Time (LMT) : 1993/01/02 15:30 - 1993/01/11 03:00  
Lat. : 69° 00. 6'S  
Long. : 39° 38. 1'E  
Depth : 230 m  
Obs. Depth : -50 m

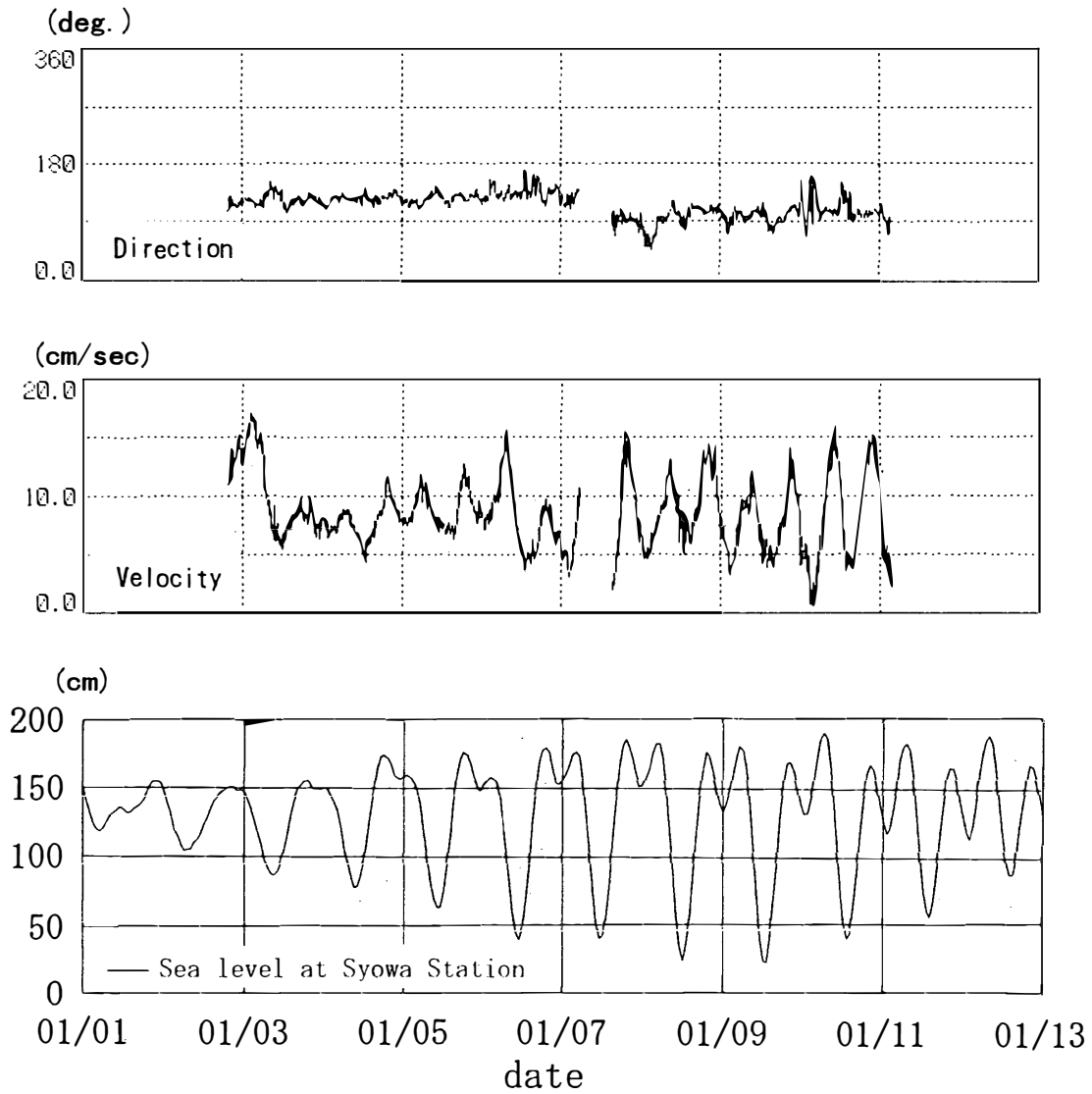


Fig. 7. The ocean current observed in Ongul Strait (Time is LMT(UT+3 hours)).

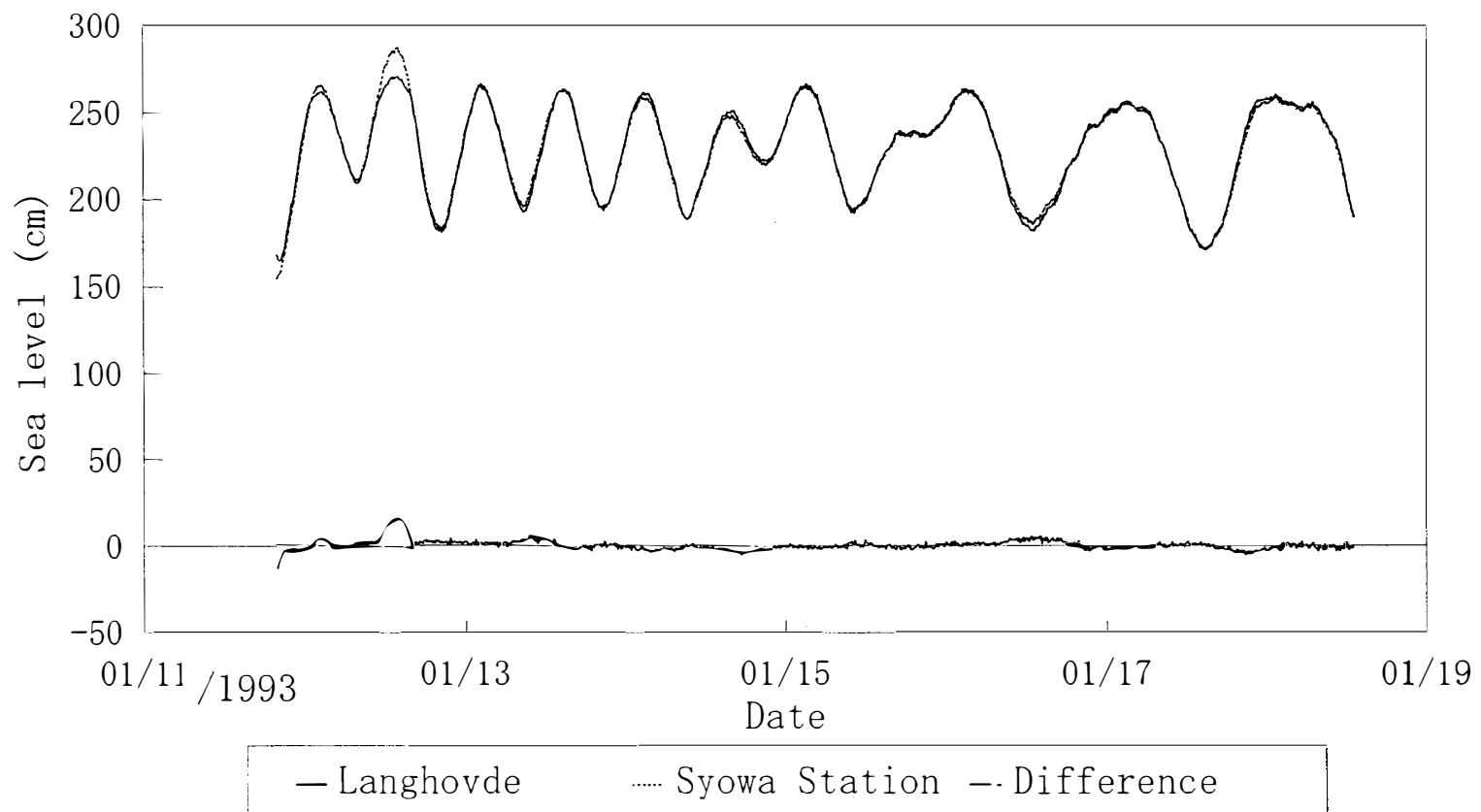


Fig. 8. Sea level at Langhovde and Syowa Station.

Table 1. Data of surface water observations on board the icebreaker "Shirase" in 1992-93.

Date	Time	Position		Air Temp.	Water Temp.	S	pH	DO	P04-	Si03-	N02-	N03-	NH4-
		Lat.	Long.	Temp. (°C)					P	Si	N	N	N
								(ml/l)	(μmol/l)				
1992													
Nov. 15	23:02	25-44.9N	135-30.8E	23.7	23.8	34.669	—	—	0.00	0	—	—	—
16	08:02	23-41.8N	134-35.7E	25.4	26.3	34.656	—	4.70	0.00	0	—	—	—
	22:57	20-10.3N	133-05.3E	25.4	27.1	34.623	—	4.61	0.00	0	—	—	—
17	08:38	17-56.1N	132-05.9E	26.8	27.8	34.593	—	4.55	0.00	0	—	—	—
	22:57	14-34.1N	130-47.0E	28.0	28.3	34.386	—	4.57	0.00	0	0.00	0.0	—
18	05:51	13-04.2N	130-07.2E	28.5	29.0	34.350	—	4.63	0.01	0	0.00	0.0	—
	22:58	9-07.4N	128-31.6E	28.5	28.8	34.252	—	4.59	0.01	0	0.01	0.0	—
19	07:58	7-09.4N	127-25.5E	27.9	29.1	34.287	—	4.55	0.03	0	0.00	0.0	—
	22:57	4-17.6N	124-22.9E	27.8	28.5	34.357	—	4.66	0.00	0	0.01	0.0	—
20	06:58	2-56.3N	122-23.5E	28.1	29.4	34.308	8.19	4.55	0.00	0	0.01	0.0	—
	22:57	0-28.5N	119-35.5E	27.8	28.8	33.909	—	4.60	0.00	0	0.01	0.0	—
21	07:53	1-41.1S	118-48.7E	28.3	29.8	33.611	8.22	4.59	0.00	4	0.01	0.0	—
	23:06	5-02.4S	117-26.6E	28.8	30.0	34.374	8.22	4.58	0.00	1	0.00	0.0	—
22	08:03	7-06.2S	116-34.1E	30.1	31.7	34.372	8.20	4.50	0.00	3	0.01	0.0	—
	23:00	10-29.4S	115-20.8E	27.6	28.8	34.444	8.23	4.59	0.06	1	0.01	0.0	—
23	08:02	12-28.8S	114-54.2E	27.3	29.2	34.619	8.21	4.56	0.12	1	0.01	0.0	—
	22:54	16-00.8S	114-07.7E	24.9	27.5	34.763	8.23	4.61	0.07	1	0.01	0.1	—
24	08:01	18-01.2S	113-42.3E	25.6	26.2	34.732	8.24	4.69	0.04	1	0.05	0.0	—
	22:55	21-13.7S	112-59.3E	23.5	25.3	35.057	8.24	4.73	0.09	3	0.01	0.4	—
25	07:55	23-08.7S	112-31.4E	22.3	23.5	35.312	8.25	4.88	0.06	3	0.01	0.1	—
	22:57	26-16.2S	112-17.1E	18.9	21.0	35.525	8.27	5.04	0.01	3	0.00	0.1	—
26	07:55	28-15.9S	113-09.1E	19.3	20.3	35.704	8.29	5.27	0.01	1	0.01	0.0	—
Dec. 03	22:58	34-40.3S	110-34.7E	16.1	16.0	35.745	8.29	5.77	0.13	1	0.01	0.0	0.2
4	07:50	36-33.6S	110-00.0E	16.3	16.2	35.560	8.25	5.83	0.17	1	0.03	0.3	0.3

Date	Time (UT)	Position		Air Temp.	Water Temp.	S	pH	DO (ml/l)	P04- P	Si03- Si	N02- N	N03- N	NH4- N
		Lat.	Long.	(*C)					(μmol/l)				
Dec. 10	04:50	60-02.6S	95-37.5E	-0.2	0.0	33.884	8.16	8.34	1.61	34	0.26	25.9	0.1
	09:51	60-09.9S	93-23.5E	0.2	0.2	33.723	8.18	8.29	1.47	37	0.27	26.2	0.1
11	01:20	60-33.0S	86-25.4E	-0.2	0.0	33.951	8.18	8.31	1.58	50	0.24	26.0	0.1
	05:50	60-43.4S	84-26.8E	0.5	-0.1	33.717	8.18	8.21	1.50	46	0.24	24.6	0.0
12	10:52	60-52.2S	82-09.8E	0.1	-0.1	33.784	8.16	8.13	1.82	51	0.28	28.1	0.1
	02:15	61-00.4S	75-03.8E	0.3	-0.2	33.813	8.17	8.23	1.66	33	0.35	25.6	0.0
13	06:51	60-59.4S	73-05.4E	0.5	-0.4	33.801	8.18	8.27	1.68	31	0.33	25.2	0.0
	11:49	61-00.0S	70-54.6E	0.5	-0.3	33.797	8.15	8.24	1.61	33	0.34	25.5	0.0
	02:16	60-59.9S	64-20.0E	0.5	-0.3	33.777	8.18	8.24	1.74	30	0.32	25.6	0.2
14	06:50	61-00.3S	62-14.1E	0.1	-0.2	33.779	8.19	8.22	1.60	33	0.34	25.0	0.0
	11:51	60-59.6S	59-48.0E	0.4	-0.2	33.706	8.17	8.18	1.63	34	0.33	25.2	0.1
	03:21	62-46.7S	53-05.0E	-1.4	-0.8	33.812	8.14	8.14	1.80	43	0.29	25.8	0.2
15	04:21	64-06.9S	45-48.9E	-0.9	-1.3	33.905	8.09	7.92	1.87	57	0.25	28.0	0.0
	08:48	65-11.0S	42-09.2E	-1.1	-1.4	33.848	8.12	8.02	1.84	57	0.23	27.5	0.0
16	13:44	65-14.3S	42-07.7E	-1.5	-1.5	33.875	8.14	7.89	1.89	57	0.25	28.1	0.1
	09:30	68-40.0S	38-49.0E	-1.9	-1.4	33.831	8.12	7.91	1.93	57	0.05	27.8	0.1
1993													
Feb. 14	04:09	66-59.9S	35-38.9E	0.2	0.6	33.615	8.09	8.10	1.64	50	0.17	24.8	0.2
	08:50	67-00.2S	33-24.3E	0.8	0.8	33.894	8.07	7.86	1.76	61	0.19	26.5	0.3
15	13:50	66-59.7S	31-00.7E	1.0	1.2	33.894	8.10	7.95	1.68	59	0.19	26.3	0.2
	04:35	68-07.3S	33-46.1E	0.6	-0.1	33.597	8.13	8.11	1.61	52	0.17	24.4	0.3
	08:50	67-59.9S	33-06.5E	0.3	-0.6	33.482	8.13	8.29	1.60	55	0.13	24.6	0.1
16	13:50	67-59.8S	30-31.6E	0.8	0.8	33.933	8.10	8.09	1.51	57	0.14	24.8	0.5
	04:34	67-19.6S	31-53.1E	-0.1	0.4	33.899	8.06	8.06	1.73	59	0.10	25.0	0.3
	09:03	67-09.8S	30-21.9E	1.0	1.0	33.885	8.08	7.86	1.71	59	0.23	26.1	0.1

Date	Time	Position		Air	Water	S	pH	DO	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N
		Temp.	Temp.	(°C)									
	(UT)	Lat.	Long.										
Feb. 16	13:51	67-10.1S	32-52.7E	0.0	0.0	33.493	8.17	8.28	1.57	54	0.12	22.8	1.3
17	04:04	67-05.3S	39-58.8E	-0.1	-0.2	33.435	8.08	8.01	1.68	53	0.26	25.9	0.4
	08:49	66-01.8S	39-15.4E	0.9	1.3	33.860	8.06	7.69	1.83	53	0.34	26.8	0.5
	14:04	64-42.3S	38-24.4E	1.2	1.5	33.799	8.08	7.65	1.84	50	0.36	26.7	0.6
	09:09	64-17.7S	39-45.7E	1.6	1.4	33.825	8.05	7.64	1.83	52	0.35	26.8	0.9
18	13:57	64-49.0S	42-07.0E	0.7	1.3	33.876	8.07	7.68	1.70	50	0.32	26.7	0.6
	09:57	66-17.9S	48-10.6E	-3.1	-0.8	33.507	8.13	8.10	1.42	40	0.21	23.3	0.9
26	13:48	65-39.6S	49-13.7E	-0.3	-0.8	33.466	8.13	8.33	1.41	36	0.21	22.6	0.8
	04:01	64-59.3S	56-48.8E	-2.2	0.4	33.913	8.12	7.72	1.64	40	0.27	24.4	0.5
27	14:05	64-59.4S	60-00.7E	-2.4	0.4	33.835	8.14	7.68	1.57	30	0.29	24.1	0.7
	03:33	65-25.2S	66-26.4E	-1.6	0.4	33.917	8.08	7.64	1.70	45	0.19	26.1	0.5
Mar. 1	02:05	68-03.9S	71-00.7E	-8.7	-1.4	33.893	8.20	8.12	1.19	41	0.25	18.9	0.6
2	06:48	68-24.9S	72-32.8E	-10.3	-1.6	33.998	8.14	8.32	1.17	40	0.26	20.1	0.1
	11:57	68-54.9S	75-58.5E	-1.5	-1.5	34.010	8.28	8.25	0.72	23	0.26	14.7	0.1
	02:01	68-05.4S	74-51.3E	-3.2	-0.8	33.716	8.22	8.43	0.98	30	0.24	18.8	0.1
3	02:02	67-06.7S	75-19.8E	-2.4	-0.8	33.743	8.12	8.01	1.60	53	0.19	25.5	0.0
	08:35	66-53.0S	75-53.5E	-3.5	-1.5	34.973	8.14	8.19	1.45	48	0.21	23.7	0.4
4	12:05	65-54.5S	76-44.8E	-4.1	-0.1	33.339	8.11	7.97	1.49	46	0.21	24.3	0.1
5	02:34	66-07.4S	81-24.0E	-3.0	-1.4	34.653	8.13	7.91	1.60	41	0.23	24.5	0.5
	12:03	64-30.9S	83-20.1E	-0.9	0.8	33.795	8.08	7.73	1.68	40	0.26	25.9	0.0
6	01:34	62-59.6S	86-02.7E	-0.2	0.4	33.415	8.08	7.75	1.60	36	0.21	25.0	0.5
	05:49	62-58.9S	87-57.2E	0.1	0.3	33.489	8.10	7.82	1.41	39	0.28	23.2	0.4
	10:50	62-59.5S	90-05.2E	0.1	0.8	33.908	8.10	7.66	1.42	33	0.19	22.9	0.1
7	01:36	63-01.7S	95-38.5E	0.9	1.0	33.968	8.16	7.70	1.45	33	0.24	22.2	0.1
	10:51	63-00.4S	97-41.8E	0.9	1.3	33.839	8.17	7.69	1.38	22	0.30	22.8	0.1

Date	Time	Position		Air Temp.	Water Temp.	S	pH	DO	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N
		Lat.	Long.	(°C)									
Mar. 8	00:04	62-57.4S	103-30.3E	0.8	1.2	33.806	8.10	7.69	1.41	27	0.31	23.2	0.1
	23:49	62-59.9S	113-14.9E	-0.3	1.2	33.770	8.14	7.67	1.58	39	0.26	25.7	0.1
9	10:03	63-04.7S	116-32.8E	-0.8	1.4	33.882	8.12	7.61	1.61	40	0.24	25.3	0.1
	23:07	63-02.8S	118-25.0E	0.7	1.6	33.770	8.11	7.57	1.77	40	0.29	26.8	0.1
10	23:05	63-18.4S	131-55.2E	2.3	2.3	33.834	8.12	7.52	1.64	26	0.30	26.2	0.1
11	08:48	63-37.3S	134-12.3E	1.6	1.4	33.867	8.10	7.61	1.74	48	0.26	27.3	0.1
	22:51	64-31.7S	138-43.4E	-0.7	1.2	33.978	8.09	7.60	1.83	49	0.24	28.1	0.3
12	02:51	64-42.6S	140-26.4E	-3.4	0.5	34.038	8.06	7.68	1.89	55	0.21	28.5	0.3
	07:49	64-47.7S	143-01.0E	-4.4	0.4	34.074	8.06	7.63	1.93	58	0.21	28.7	0.3
13	02:49	63-57.2S	149-51.2E	-0.5	1.4	34.059	8.08	7.27	1.82	49	0.24	28.1	0.3
	06:49	63-29.5S	149-36.9E	1.7	2.0	33.979	8.09	7.56	1.51	23	0.24	26.0	0.3
	21:34	60-33.1S	148-49.4E	2.1	3.0	33.936	8.12	7.39	1.73	10	0.25	26.5	0.4
14	01:49	59-52.2S	149-50.7E	4.4	2.8	33.992	8.12	7.47	1.64	13	0.24	26.5	0.4
	07:00	59-03.5S	149-35.1E	4.5	2.7	34.008	8.00	7.46	1.67	14	0.24	24.2	0.5
	21:03	56-47.2S	148-57.1E	4.0	3.9	33.978	8.09	7.37	1.71	15	0.28	26.9	0.5
15	06:50	56-01.8S	149-13.0E	5.2	6.1	33.775	8.10	7.12	1.52	1	0.26	23.4	0.4
	21:03	53-20.0S	150-43.4E	6.9	6.6	33.765	8.11	6.89	1.46	0	0.22	22.5	0.4
16	01:48	52-24.6S	150-10.8E	6.9	7.6	33.874	8.12	6.78	1.39	3	0.23	21.5	0.3
	06:48	51-14.4S	149-55.5E	6.6	10.1	34.324	8.16	6.38	0.86	1	0.17	12.8	0.2
	21:15	48-02.2S	151-30.4E	9.7	11.3	34.306	8.19	6.30	0.78	0	0.13	11.3	0.3
17	07:32	43-09.0S	150-23.2E	14.2	12.8	33.648	8.30	5.37	0.07	1	0.00	7.7	0.3



Table 2. XBT observation data.

NUMBER	DATE TIME UT	POSITION		TEMPERATURE (°C)														S. L. (M)	AIR TEMP. (°C)														
		LAT.	LONG.	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															
				1500	1600	1700	1800																										
SP92001	92-12-04 02.9	35-19S	109-59E	16.2	16.1	15.9	15.8	15.8	15.4	15.0	13.7	13.4	12.7	11.6	10.8	10.1	9.8	9.5	20	16.1													
SP92002	92-12-04 07.8	36-32S	110-00E	15.5	15.4	14.9	14.8	14.5	14.3	14.2	13.7	13.6	12.9	12.5	12.5	12.1	11.2	10.7	18	17.0													
				10.3	9.9	9.8	9.6	9.5	9.1	8.8	8.0	7.3	6.6	6.0	4.9	4.5	4.1	3.8															
				3.6	3.5	3.5	-																										
SP92003	92-12-04 21.8	39-52S	110-01E	13.6	13.5	12.6	12.4	11.8	11.8	11.9	10.8	10.2	10.2	10.2	10.1	10.1	10.1	11	13.3														
				9.9	9.8	9.7	9.3	9.0	8.5	8.1	7.5	7.0	6.5	-	-	-	-	-															
SP92004	92-12-05 15.9	42-43S	109-58E	12.2	12.2	12.1	11.7	11.0	11.0	11.2	11.1	10.7	9.9	9.8	9.8	9.7	9.7	9.6	24	11.4													
				9.6	9.5	9.4	9.1	8.7	8.3	7.8	7.4	6.8	6.3	5.7	4.9	4.4	4.0	3.7															
				3.5	3.5	3.3	3.2																										
SP92005	92-12-05 23.9	44-37S	110-02E	10.8	10.7	10.4	10.3	10.0	9.8	9.7	9.3	9.1	9.1	8.2	8.3	8.1	7.4	7.2	18	10.6													
				7.4	7.5	7.0	6.5	6.1	5.8	5.3	5.0	4.6	4.3	4.0	3.7	3.3	3.3	3.3	3.2														
				3.1	3.1	3.0	3.0																										
SP92006	92-12-06 15.8	47-31S	110-02E	9.0	9.0	8.9	9.1	9.3	9.6	9.2	8.9	8.6	8.4	8.6	8.2	7.6	7.8	7.5	45	9.6													
				7.4	7.2	7.1	6.9	6.6	6.3	6.1	5.7	5.3	5.1	4.8	4.7	4.3	4.2	4.0															
				3.9	3.8	3.6	3.5																										
SP92007	92-12-06 23.8	49-25S	109-59E	5.6	5.5	5.4	5.4	4.9	4.1	3.9	3.8	3.6	3.6	3.7	3.3	3.3	3.1	3.1	40	7.6													
				3.1	3.2	3.2	2.8	2.9	3.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7														
				2.6	2.6	2.5	2.4																										
SP92008	92-12-07 05.3	50-19S	109-32E	4.5	4.4	4.3	4.3	4.2	4.2	4.2	3.6	3.6	3.0	3.3	3.1	3.0	2.7	2.7	110	6.1													
				2.6	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.4	-	-	-	-															
SP92009	92-12-07 15.9	52-22S	109-00E	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.1	1.1	0.8	1.7	2.0	2.1	2.2	2.2	89	2.8													
				2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.9	1.8															
				1.7	1.6	1.5	1.4																										
SP92010	92-12-07 23.8	54-00S	108-03E	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.4	1.6	2.3	2.4	2.6	2.5	2.6	2.9	87	2.2													
				3.3	3.7	3.9	3.9	4.0	4.1	4.0	3.9	3.9	3.8	3.7	3.5	3.4	3.2	3.1															
				3.0	2.9	2.7	2.5																										
SP92011	92-12-08 15.8	56-34S	106-33E	2.2	2.1	2.1	2.0	1.4	1.2	1.1	0.9	0.7	0.3	0.1	1.5	2.1	2.1	2.4	24	2.0													
				2.7	2.9	3.1	3.2	3.2	3.2	3.1	3.2	3.3	3.3	3.3	3.4	3.3	3.2	3.0															
				2.9	2.7	-	-																										
SP92012	92-12-08 23.8	58-22S	105-27E	1.0	0.8	0.8	0.8	0.7	0.4	-0.0	-0.2	-0.3	1.2	1.9	2.1	2.1	2.1	2.1	65	1.8													
				2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.6	1.5	-															
SP92013	92-12-09 15.8	59-42S	101-33E	-0.1	-0.1	-0.2	-0.2	-0.9	-1.1	-0.7	0.7	1.2	1.6	1.7	1.8	1.8	1.7	1.8	35	-1.0													
SP92014	92-12-09 22.8	59-54S	98-24E	-0.1	-0.2	-0.2	-0.2	-0.7	-1.1	-0.8	0.0	1.2	2.0	2.0	2.1	2.2	2.2	2.2	37	-0.8													
SP92015	92-12-10 04.8	60-02S	95-40E	-0.0	-0.1	-0.2	-0.2	-1.2	-1.2	-1.1	0.2	1.0	1.6	1.9	1.9	1.9	1.9	1.8	29	-0.2													
SP92016	92-12-10 09.8	60-10S	93-24E	0.3	0.2	-0.1	-0.1	-1.1	-1.3	-1.3	1.4	1.9	1.9	1.8	2.0	1.9	1.9	2.1	34	0.3													
				2.2	2.3	2.4	2.4	2.6	2.7	2.8	2.9	2.9	2.9	2.8	2.7	2.6	2.5	2.3															
				2.2	2.1	2.0	1.9																										
SP92017	92-12-10 13.7	60-17S	91-37E	1.0	0.7	0.6	0.4	0.2	0.2	-0.0	0.4	1.4	2.4	2.8	2.9	2.9	3.0	3.0	7	-0.4													
SP92018	92-12-11 01.3	60-33S	86-25E	0.1	0.0	-0.1	-0.3	-1.2	-1.5	-1.3	-0.8	-0.4	0.3	0.9	1.2	1.3	1.4	1.4	27	0.1													
SP92019	92-12-11 05.8	60-43S	84-27E	-0.0	-0.1	-0.2	-0.6	-1.4	-1.0	0.4	1.2	1.5	1.8	1.9	1.9	2.0	2.1	2.3	19	0.5													
				3.1	3.8	4.3	4.7	5.0	5.2	5.2	5.1	4.9	4.7	4.6	4.2	3.9	3.6	3.3															
				3.1	2.9	2.6	2.5																										

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		
SP92020	92-12-11 10.8	60-52S	82-10E	-0.0	-0.1	-0.1	-0.1	-1.4	-1.4	-0.7	0.8	1.6	2.1	2.1	2.1	2.2	2.2	2.4	25	0.1
				2.6	2.8	3.2	3.6	4.1	4.4	4.4	4.3	4.3	4.2	4.0	3.7	3.5	3.3	3.2		
				3.1	3.0	2.9	2.9													
SP92021	92-12-11 14.9	60-58S	80-16E	-0.3	-0.3	-0.4	-0.4	-1.6	-1.2	0.2	1.4	1.7	1.8	1.9	1.9	1.9	2.0	1.9	30	-0.5
SP92022	92-12-12 02.2	61-00S	75-06E	-0.1	-0.2	-0.2	-0.3	-0.6	-1.5	-1.6	-0.2	1.2	1.8	1.9	1.9	2.0	2.1	2.0	43	0.3
SP92023	92-12-12 06.8	60-59S	73-07E	-0.4	-0.4	-0.5	-0.5	-0.9	-1.3	-1.5	-1.6	0.8	1.6	1.8	2.0	2.0	2.1	2.3	34	0.5
				2.6	2.9	3.6	4.5	5.0	5.3	5.5	5.5	5.3	5.0	4.8	4.4	3.8	3.4	3.0		
				2.7	2.5	2.3	2.1													
SP92024	92-12-12 11.8	61-00S	70-55E	-0.1	-0.2	-0.3	-0.3	-1.2	-1.5	-1.6	-1.1	0.8	1.9	2.1	2.2	2.3	2.3	2.4	34	0.5
				2.5	2.7	3.0	3.4	4.0	4.6	4.8	4.7	4.5	4.3	4.2	3.8	3.6	3.6	3.6		
				3.5	3.4	3.4	3.4													
SP92025	92-12-12 15.7	61-00S	69-12E	0.2	0.2	0.1	-0.0	-0.4	-1.2	-1.3	-0.7	1.3	1.8	1.9	2.0	2.1	2.1	2.1	16	0.3
SP92026	92-12-13 02.2	61-00S	64-24E	-0.3	-0.3	-0.4	-0.1	0.3	-0.6	-0.6	-0.3	1.3	3.5	3.8	4.3	4.6	-	-	21	-0.1
SP92027	92-12-13 06.8	61-00S	62-12E	-0.1	-0.2	-0.3	-0.4	-1.0	-1.6	-1.1	0.1	1.1	1.7	1.9	2.0	2.1	2.1	2.2	25	0.2
				2.2	2.3	2.5	2.6	2.9	3.1	3.1	3.1	3.1	3.0	3.0	2.8	2.6	2.4	2.2		
				2.1	2.0	1.8	1.7													
SP92028	92-12-13 11.8	60-59S	59-51E	-0.1	-0.2	-0.3	-0.4	-0.8	-1.3	-1.0	-1.0	-0.2	1.6	1.9	2.1	2.1	2.2	2.3	27	0.4
				2.7	4.5	5.2	5.3	5.2	5.0	4.7	4.4	4.1	3.9	3.8	-	-	-	-		
SP92029	92-12-13 16.0	61-13S	57-54E	-0.4	-0.5	-0.5	-0.6	-0.9	-1.7	-1.6	0.1	1.6	1.7	1.8	1.9	1.9	1.9	2.0	27	-0.7
SP92030	92-12-14 03.3	62-45S	53-09E	-0.5	-0.6	-0.7	-1.2	-1.7	-1.7	-1.5	0.0	1.2	1.6	1.9	1.9	1.9	1.9	1.8	17	-1.6
				1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.4	1.3		
				1.2	1.1	-	-													
SP92031	92-12-14 16.6	63-42S	51-41E	-0.8	-0.8	-0.8	-0.8	-1.7	-1.3	0.5	1.2	1.4	1.6	1.8	1.8	1.7	1.7	1.7	42	-0.5
				1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SP92032	92-12-15 04.3	64-07S	45-48E	-1.0	-1.2	-1.3	-1.4	-1.7	-1.8	0.6	1.5	1.6	1.7	1.7	1.7	1.6	1.6	1.6	39	-0.9
				1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.2	1.1	1.1	1.0	0.9	0.8	0.8		
				0.9	0.9	0.8	0.8													
SP92033	92-12-15 08.8	64-34S	44-01E	-1.4	-1.5	-1.5	-1.5	-1.7	0.3	1.4	1.6	1.6	1.7	1.7	1.7	1.6	1.6	1.6	33	-1.0
SP92034	92-12-15 13.7	65-11S	42-09E	-1.5	-1.5	-1.6	-1.6	-1.8	-1.3	0.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.5	28	-1.5
SP92035	92-12-15 18.2	65-54S	41-07E	-1.6	-1.6	-1.7	-1.7	-1.7	-1.1	1.2	1.6	1.6	1.6	1.7	1.6	1.6	1.6	1.6	53	-1.6
SP92036	92-12-16 04.4	67-50S	39-49E	-1.6	-1.6	-1.5	0.3	4.9	10.8	11.3	11.4	11.5	11.8	-	-	-	-	-	16	-2.0
SP92037	93-02-13 19.0	67-00S	39-59E	-0.2	-0.3	-0.6	-1.1	-1.7	-1.7	-1.8	-1.7	-1.5	1.2	1.5	1.6	1.6	1.5	1.5	9	0.4
SP92038	93-02-14 04.1	67-00S	35-39E	0.5	0.5	0.4	-0.3	-1.5	-1.6	-1.0	-0.1	0.7	1.2	1.4	1.4	1.4	1.4	1.4	18	0.3
SP92039	93-02-14 08.8	67-00S	33-24E	0.8	0.8	0.7	0.4	-0.4	-1.3	-1.7	-1.7	-1.5	-1.4	-0.5	-0.2	0.1	0.2	0.4	22	0.0
SP92040	93-02-14 13.8	67-00S	31-01E	1.1	1.1	1.0	0.8	-1.5	-1.5	-1.3	-0.4	0.1	1.1	1.2	1.4	1.4	1.5	1.5	18	1.1
SP92041	93-02-14 17.7	67-23S	29-59E	1.0	1.0	0.9	0.7	-1.2	-1.6	-1.6	-1.2	-0.7	0.4	1.0	1.0	1.0	0.8	0.9	18	0.8
SP92042	93-02-15 04.5	68-07S	33-46E	-0.2	-0.2	-0.1	-0.2	-1.3	-1.3	-1.4	-1.7	-1.6	-0.9	0.3	0.7	1.0	0.9	0.7	11	-0.9
SP92043	93-02-15 08.8	68-00S	33-07E	-0.7	-0.7	-1.3	-1.3	-1.2	-1.3	-1.3	-1.2	-1.2	-0.6	0.6	1.5	1.9	-	-	14	0.3
SP92044	93-02-15 13.8	68-00S	30-32E	0.8	0.8	0.7	0.4	-1.4	-1.5	-1.4	-1.2	-0.7	0.7	0.9	1.2	1.3	1.3	1.4	23	1.1
SP92045	93-02-15 18.6	37-51S	31-56E	-0.2	-0.2	-0.3	-1.1	-1.6	-1.8	-1.8	-1.8	-1.8	-1.4	-1.1	-0.0	0.2	0.5	0.6	19	0.4

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						
SP92046	93-02-16 04.5	67-20S	31-53E	0.5	0.5	0.4	0.1	-1.6	-1.8	-1.7	-1.7	-1.5	-1.4	-0.4	0.0	0.8	0.9	1.0	24	-0.4
SP92047	93-02-16 09.0	67-10S	30-22E	1.0	0.9	0.9	0.5	-1.6	-1.8	-1.7	-0.7	0.1	0.9	1.1	1.3	1.2	1.2	1.2	19	1.3
SP92048	93-02-16 13.8	67-10S	32-53E	-0.1	-0.1	-0.3	-0.1	-0.1	-1.4	-1.5	-1.3	-0.9	-0.6	-0.2	0.1	0.3	0.4	0.4	28	0.9
SP92049	93-02-15 17.9	67-10S	34-58E	0.7	0.7	0.4	0.1	-1.3	-1.5	-1.2	0.2	1.6	2.2	2.2	2.4	2.4	2.4	2.4	18	0.6
SP92050	93-02-17 04.0	67-05S	39-59E	-0.2	-0.3	-0.5	-0.5	-1.5	-1.8	-1.6	-1.3	-0.6	1.1	1.1	1.1	1.6	1.6	1.6	15	-0.5
SP92051	93-02-17 08.8	66-02S	39-15E	1.2	1.2	1.2	1.2	-1.2	-1.0	1.2	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.4	35	0.8
SP92052	93-02-17 14.0	64-42S	38-24E	1.4	1.4	1.4	1.4	-1.4	-1.6	0.9	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.5	40	0.8
SP92053	93-02-17 17.8	64-05S	37-48E	1.5	1.4	1.4	1.3	-1.4	-1.5	-1.2	0.6	1.3	1.4	1.5	1.5	1.5	1.5	1.4	39	1.0
SP92054	93-02-18 05.5	64-00S	38-22E	1.5	1.4	1.4	1.4	1.4	-1.5	-1.5	-0.3	0.9	1.4	1.5	1.5	1.5	1.4	1.4	50	1.2
				1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.6	0.6		
				0.5	0.4	0.4	0.3													
SP92055	93-02-18 09.1	64-18S	39-46E	1.3	1.3	1.3	1.3	-1.4	-1.6	0.7	1.4	1.6	1.7	1.7	1.6	1.6	1.5	1.5	36	1.5
SP92056	93-02-18 13.9	64-49S	42-07E	1.2	1.2	1.2	1.2	-0.7	1.2	1.6	1.6	1.7	1.7	1.7	2.2	2.2	2.1	2.0	37	0.9
SP92057	93-02-18 17.7	65-15S	44-03E	0.9	0.8	0.8	0.7	0.3	-1.7	-1.6	-1.7	-1.2	1.6	1.7	1.5	1.6	1.5	1.4	51	0.6
SP92058	93-02-26 09.9	66-18S	48-11E	-0.6	-0.7	-0.5	-0.4	-0.3	-1.1	-1.5	-1.6	-1.6	-1.7	-1.6	-1.3	0.0	0.6	0.6	16	-3.0
SP92059	93-02-26 13.8	65-40S	49-14E	-0.9	-0.9	-0.9	-0.9	-0.6	-0.2	-0.1	-0.3	-1.0	-1.2	-1.1	-1.2	-1.1	-0.8	-0.6	47	-0.4
				-0.1	-0.0	0.2	0.4	0.5	0.9	1.2	1.6	1.7	2.3	-	-	-	-	-		
SP92060	93-02-27 04.0	64-59S	56-49E	0.5	0.5	0.4	0.4	0.4	-0.1	0.4	0.8	0.8	1.4	1.5	1.6	1.7	1.6	1.7	55	-2.2
				1.7	1.9	2.5	2.7	2.7	2.6	2.6	2.5	2.6	2.5	2.4	2.3	2.3	2.2	1.9		
SP92061	93-02-27 07.1	64-59S	58-19E	0.5	0.6	0.7	0.7	0.6	0.4	1.7	1.8	2.0	2.0	2.2	2.2	2.3	2.4	2.3	45	-2.3
SP92062	93-02-27 14.0	64-59S	60-01E	0.7	0.6	0.5	0.5	0.3	-0.2	1.3	1.6	1.7	2.0	2.0	2.1	2.2	2.5	3.0	55	-2.4
				3.5	3.8	4.0	3.9	3.7	3.6	3.4	3.3	2.8	3.0	2.9	2.6	2.4	2.2	2.1		
				1.9	1.8	1.7	-													
SP92063	93-02-27 17.7	65-06S	61-47E	0.7	0.6	0.6	0.6	0.5	0.2	1.4	1.7	1.8	2.0	1.9	2.0	1.9	2.0	2.1	50	-1.0
				2.3	2.4	2.7	2.9	3.2	3.3	3.4	3.4	3.3	3.2	3.1	2.9	2.7	2.5	2.2		
				2.1	2.1	1.9	1.8													
SP92064	93-02-28 03.5	65-25S	66-26E	0.5	0.5	0.4	0.4	0.3	-1.2	-0.9	-0.2	0.7	1.1	0.9	0.8	1.1	1.2	2.2	49	-0.7
				2.3	2.5	2.7	3.2	3.7	4.1	4.2	4.4	4.4	4.3	4.0	3.6	3.4	3.3	3.4		
				3.4	3.3	3.2	-													
SP92065	93-02-28 06.1	65-34S	67-41E	0.6	0.5	0.5	0.5	0.1	-1.6	-1.6	-1.4	-1.2	-1.1	-0.7	0.0	0.2	0.3	0.5	52	-2.0
SP92066	93-02-28 16.7	66-38S	71-01E	-0.0	-0.1	-0.1	0.1	-0.9	-1.0	-1.0	-0.6	-0.3	0.2	0.7	1.4	1.7	1.8	1.9	44	-4.9
SP92067	93-03-01 02.0	68-04S	71-01E	-0.8	-0.9	-0.9	-0.9	-1.1	-1.4	-1.8	-1.8	-1.8	-1.8	-1.9	-1.9	-1.8	-1.8	-1.8	85	-8.8
SP92068	93-03-01 06.8	68-25S	72-33E	-1.5	-1.5	-1.6	-1.6	-1.8	-1.8	-1.9	-1.9	-1.9	-1.9	-1.9	-1.8	-1.8	-1.6	-1.5	32	-9.4
SP92069	93-03-01 11.9	68-55S	75-59E	-0.1	-0.2	-0.3	-0.6	-1.3	-1.4	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.4	20	-3.0	
SP92070	93-03-01 15.7	68-29S	76-40E	-1.6	-1.6	-1.5	-1.5	-1.6	-1.0	-1.4	-1.6	-1.8	-1.9	-1.9	-1.9	-1.8	-1.8	-1.7	65	-2.2
SP92071	93-03-02 02.0	68-05S	74-51E	-0.8	-0.8	-0.8	-1.6	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.8	-1.7	-1.7	-1.8	-1.8	22	-3.6
SP92072	93-03-02 07.7	68-07S	74-51E	-0.8	-0.9	-0.9	-1.0	-1.7	-1.8	-1.8	-1.8	-1.8	-1.8	-1.7	-1.6	-1.4	-1.4	-1.4	28	-3.5
SP92073	93-03-02 14.8	67-30S	76-36E	-1.0	-1.1	-0.8	-1.3	-1.7	-1.7	-1.7	-1.5	-1.4	-1.6	-1.5	-1.7	-1.7	-1.7	-1.7	24	-3.8

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			
SP92074	93-03-03 02.0	67-07S	75-20E	-0.8	-0.8	-0.8	-1.0	-1.6	-1.5	-1.3	-1.3	-1.5	-1.7	-1.5	-1.3	-1.6	-1.6	-1.5	26	-2.4	
SP92075	93-03-03 08.5	66-52S	75-55E	-1.4	-1.4	-1.4	-1.3	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.7	-1.2	-0.6	-0.4	30	-3.5	
SP92076	93-03-03 16.0	66-20S	74-56E	-0.1	-0.1	-0.1	-0.1	-1.3	-1.7	-1.6	-1.5	-1.4	-1.2	-0.7	-0.7	0.1	0.4	0.5	30	-3.0	
SP92077	93-03-04 02.1	66-01S	75-10E	0.0	0.0	0.0	0.0	-1.0	-1.7	-1.7	-1.5	-1.4	-1.3	-0.6	-0.0	0.3	0.3	0.4	45	-3.2	
SP92078	93-03-04 12.0	65-54S	76-45E	-0.0	0.0	0.0	0.2	-0.6	-1.6	-1.6	-1.5	-1.4	-1.1	-0.9	-0.1	0.0	0.2	0.7	35	-4.4	
				1.2	1.8	2.3	2.9	3.4	3.8	4.0	4.0	4.0	3.9	3.8	3.6	3.3	3.1	3.0			
				2.8	2.7	2.7	-														
SP92079	93-03-04 15.0	65-38S	78-20E	-1.2	-1.2	-1.0	0.6	-1.2	-1.4	-1.3	-0.8	-1.0	-1.2	0.3	0.8	1.1	1.0	1.3	22	-4.5	
SP92080	93-03-05 02.5	66-07S	81-24E	-1.6	-1.7	-1.5	0.2	-0.3	-1.4	-1.2	-0.4	0.2	0.6	0.8	0.8	1.0	1.1	1.1	22	-3.7	
SP92081	93-03-05 07.7	64-36S	82-48E	-1.5	-1.5	-1.4	-0.9	0.2	-0.8	-0.0	0.9	1.3	1.5	1.5	1.7	1.5	1.7	1.6	37	-0.8	
				1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.4	1.6	2.2	2.5	2.5			
				2.5	2.4	2.3	2.2														
SP92082	93-03-05 12.0	64-31S	83-20E	0.8	0.8	0.7	0.7	0.6	-0.8	0.1	1.0	1.0	1.3	1.5	1.7	1.7	1.7	1.8	51	-0.8	
				1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5			
				1.4	1.3	1.2	1.1														
SP92083	93-03-05 15.8	63-49S	83-31E	1.0	0.9	0.8	0.8	0.6	0.6	1.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	48	-1.0	
				2.0	2.0	2.0	1.8	1.8	1.9	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.5			
				1.5	1.4	1.4	1.3														
SP92084	93-03-06 01.5	63-00S	86-03E	0.2	0.2	0.2	0.2	-0.1	-0.9	-0.0	1.1	0.9	0.9	1.2	1.5	1.7	1.7	1.7	42	-0.2	
				1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.3	1.3	1.3	1.4	1.5	1.6			
				1.6	1.6	1.7	1.6														
SP92085	93-03-06 05.8	62-59S	87-57E	0.4	0.3	0.4	0.4	0.3	-1.1	-1.5	-1.3	-1.3	-0.7	0.1	0.8	1.0	1.0	1.1	52	0.0	
				1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7			
				0.7	0.7	0.7	0.7														
SP92086	93-03-06 10.8	62-59S	90-05E	0.8	0.7	0.6	0.6	0.5	-1.0	-1.0	-1.0	-0.6	0.1	0.7	1.1	1.3	1.4	1.6	47	0.1	
				1.7	1.8	2.0	2.3	2.5	2.6	2.6	2.5	2.5	2.4	2.3	2.2	2.2	2.1	1.9			
				1.9	1.8	1.7	1.6														
SP92087	93-03-06 14.8	62-58S	91-46E	1.1	1.0	0.9	0.9	0.5	-1.2	-1.4	-0.7	-0.0	0.9	1.3	1.5	1.7	2.0	2.5	37	0.6	
				3.9	5.0	5.8	6.0	5.8	5.4	5.1	4.8	4.5	4.2	4.0	3.6	3.3	3.0	2.7			
				2.5	2.3	2.1	1.9														
SP92088	93-03-07 01.6	63-02S	95-39E	1.0	1.0	1.0	0.9	0.4	-1.5	-1.4	-0.9	-0.5	0.6	1.0	1.1	1.2	1.2	1.2	47	0.6	
				1.3	1.3	1.4	1.5	1.5	1.7	1.7	1.8	1.9	2.0	2.2	2.6	3.1	3.0	2.7			
				2.5	-	-	-														
SP92089	93-03-07 10.8	63-00S	97-42E	1.3	1.3	1.3	1.2	0.6	-1.4	-1.3	-1.0	-0.7	0.5	1.0	1.4	1.5	1.6	1.7	48	1.0	
				1.8	1.8	1.9	1.9	2.0	2.2	2.4	2.6	2.7	2.8	3.0	3.0	2.9	2.7	2.5			
				2.3	2.3	-	-														
SP92090	93-03-07 14.8	62-56S	99-32E	1.3	1.3	1.2	1.2	0.3	-1.1	-0.8	-0.1	0.3	0.9	1.1	1.2	1.2	1.2	1.2	45	0.2	
				1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.6			
				0.5	-	-	-														
SP92091	93-03-08 00.0	62-57S	103-30E	1.3	1.2	1.2	1.1	-0.0	-1.1	-0.9	-0.6	-0.1	0.8	1.2	1.3	1.4	1.4	1.7	39	1.0	
				2.7	4.7	5.9	6.7	7.0	6.7	6.2	5.7	5.3	4.9	4.6	4.2	3.8	3.4	3.1			
				2.7	2.4	2.1	1.9														
SP92092	93-03-08 13.9	62-59S	107-59E	1.2	1.2	1.1	1.1	-0.7	-1.1	-0.5	0.2	0.7	1.3	1.5	1.6	1.7	1.7	1.7	43	0.8	
				1.7	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP92093	93-03-08 23.8	63-00S	113-15E	1.2	1.1	1.1	1.1	0.9	-0.4	-0.4	0.3	1.2	1.4	1.7	1.8	1.8	1.8	1.8	49	-0.1	
				1.8	1.9	1.9	2.0	2.1	2.5	2.7	2.7	2.6	2.6	-	-	-	-	-			

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			
				1500	1600	1700	1800														
SP92094	93-03-09 10.0	63-05S	116-33E	1.4	1.4	1.3	1.3	1.0	-0.5	0.5	1.1	1.3	1.4	1.5	1.5	1.4	1.4	1.3	44	-1.9	
				1.4	1.5	1.9	2.2	2.9	3.0	2.9	2.6	2.5	2.3	2.2	1.9	1.8	1.6	1.5			
				1.3	1.2	1.2	1.1														
SP92095	93-03-09 13.8	63-03S	118-25E	1.6	1.5	1.5	1.4	1.2	-0.4	0.6	1.2	1.4	1.5	1.5	1.6	1.6	1.5	1.6	50	-0.8	
				1.9	3.4	4.8	5.9	6.0	5.4	4.8	4.2	3.9	3.5	3.2	2.8	2.5	2.2	2.0			
				1.8	1.6	1.5	1.4														
SP92096	93-03-09 23.1	62-59S	122-59E	1.7	1.7	1.6	1.6	1.5	-0.5	0.4	1.2	1.7	2.0	2.1	2.1	2.1	2.0	2.0	48	0.5	
				2.0	2.0	2.0	2.1	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6			
				1.6	1.6	1.6	1.6														
SP92097	93-03-10 12.8	63-00S	127-36E	1.7	1.7	1.6	1.6	1.6	-0.5	0.2	1.1	1.5	1.8	1.8	1.9	1.8	1.8	1.8	56	1.5	
				1.8	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4			
				2.5	2.6	2.6	2.4														
SP92098	93-03-10 23.0	63-18S	131-55E	2.3	2.3	2.3	2.3	2.3	0.1	-0.4	0.2	1.0	1.9	2.1	2.2	2.2	2.2	2.3	0	2.3	
				2.5	2.5	2.6	2.5	2.6	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.2	2.1	2.0			
SP92099	93-03-11 08.8	63-37S	134-12E	1.6	1.5	1.5	1.5	1.7	0.5	0.1	0.6	0.6	2.2	3.5	4.8	5.3	6.5	6.8	55	1.2	
				6.6	6.5	6.5	6.6	6.4	6.2	6.0	5.8	5.7	5.5	5.3	-	-	-	-			
SP92100	93-03-11 12.8	63-56S	135-49E	1.7	1.7	1.7	1.6	1.6	-0.4	0.8	1.4	1.5	1.6	1.5	1.6	1.6	1.7	1.6	50	0.7	
				1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	0.9	0.9			
				0.8	0.7	0.7	-														
SP92101	93-03-11 22.8	64-32S	138-43E	1.1	1.1	1.1	1.1	1.1	-0.8	-1.0	-0.4	0.4	1.0	1.3	1.5	1.4	1.4	1.5	58	-0.7	
SP92102	93-03-12 02.8	64-43S	140-26E	0.6	0.5	0.5	0.5	-0.0	-1.1	-1.2	-1.0	-0.9	0.3	0.4	0.8	1.0	1.2	1.3	44	-3.3	
				1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.8			
				0.7	0.6	0.6	0.5														
SP92103	93-03-12 07.8	64-48S	143-01E	0.7	0.7	0.6	0.6	0.5	-0.3	0.1	0.6	1.1	1.3	1.3	1.4	1.4	1.4	1.4	51	-4.4	
				1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.6			
				0.5	0.4	0.4	0.3														
SP92104	93-03-12 11.7	64-51S	145-09E	1.4	1.4	1.3	1.3	1.2	0.7	1.4	1.7	1.8	1.9	1.9	1.9	1.9	1.8	1.7	50	-3.6	
				1.7	1.6	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.1	1.0			
				0.9	0.9	0.8	0.7														
SP92105	93-03-12 21.5	64-42S	150-01E	1.3	1.3	1.2	1.2	1.2	0.9	1.3	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	52	-3.0	
				1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4			
				1.3	1.3	1.2	1.2														
SP92106	93-03-13 06.8	63-29S	149-37E	2.0	2.0	2.0	2.1	2.1	1.1	-0.1	1.5	2.0	2.2	2.1	2.1	2.2	2.4	2.5	67	1.6	
				2.6	2.6	2.6	2.6	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	-	-	-			
SP92107	93-03-13 11.7	62-28S	149-07E	2.5	2.4	2.4	2.4	2.4	2.3	0.6	1.2	1.9	2.3	2.3	2.5	2.8	2.8	3.1	78	2.0	
				3.4	3.6	3.6	3.8	3.8	3.8	3.8	3.7	3.7	3.5	3.4	3.1	2.9	2.7	2.5			
				2.3	2.1	2.0	-														
SP92108	93-03-13 21.5	60-33S	148-49E	3.1	3.0	3.0	3.0	3.0	3.0	0.4	0.0	0.2	1.9	2.0	2.1	2.2	2.2	2.3	77	2.2	
				2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.2			
				2.0	1.9	-	-														
SP92109	93-03-14 01.8	59-52S	149-51E	2.8	2.7	2.7	2.6	2.6	2.6	-0.0	-0.1	1.0	2.0	2.2	2.3	2.4	2.4	2.4	80	4.3	
				2.6	2.8	3.0	3.1	3.1	3.2	3.3	3.5	3.5	3.5	3.5	3.3	3.1	3.0	2.8			
SP92110	93-03-14 04.5	59-26S	149-44E	2.6	2.5	2.5	2.5	2.5	1.9	-0.4	-0.0	1.2	2.0	2.1	2.2	2.2	2.3	2.5	69	4.5	
				2.7	2.8	3.0	3.1	3.1	3.2	3.2	3.2	3.1	-	-	-	-	-	-			
SP92111	93-03-14 07.0	59-03S	149-35E	2.8	2.7	2.6	2.6	2.6	2.5	-0.1	-0.7	0.7	1.7	1.8	1.9	1.9	1.9	1.9	76	4.5	
				1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
				2.1	2.1	1.9	1.8														

NUMBER	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					
SP92112	93-03-14	10.7	58-28S	149-31E	2.7	2.7	2.6	2.6	2.7	2.7	-0.1	-0.2	1.3	1.9	2.0	2.1	2.1	2.1	2.1	2.1	85	4.5	
					2.2	2.6	2.7	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	2.9	-	-	-	-	-		
SP92113	93-03-14	21.0	56-47S	148-57E	4.0	3.9	3.8	3.7	3.7	2.3	0.3	0.0	0.7	1.9	2.0	2.0	2.1	2.1	2.1	2.1	63	4.1	
					2.1	2.1	2.2	2.2	2.3	2.3	2.4	-	-	-	-	-	-	-	-	-	-		
SP92114	93-03-15	06.8	56-02S	149-13E	6.2	6.1	6.1	6.1	6.1	6.1	3.7	3.3	3.0	3.9	3.7	3.4	2.9	2.9	2.9	2.9	86	5.2	
					3.3	3.4	3.4	3.5	3.6	3.5	3.5	3.4	3.4	3.5	3.4	3.4	3.3	3.2	3.0				
					2.9	2.8	2.8	2.7															
SP92115	93-03-15	10.8	55-23S	150-21E	7.7	7.7	7.6	7.6	7.5	7.6	7.6	7.6	7.5	7.1	6.8	6.5	6.2	6.2	6.1	101	5.4		
					5.7	5.3	5.0	4.6	4.4	4.1	4.0	3.8	3.7	3.5	3.5	3.1	3.2	3.1	3.1				
					3.0	2.9	2.8	-															
SP92116	93-03-15	21.0	53-20S	150-43E	6.6	6.5	6.6	6.5	6.5	6.4	5.2	4.0	3.2	3.1	3.0	3.1	3.0	2.9	3.0	91	6.9		
					3.0	3.0	3.0	2.9	3.0	3.2	3.2	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.0				
					2.9	2.7	2.6	-															
SP92117	93-03-15	22.6	53-01S	150-34E	6.7	6.7	6.7	6.7	6.6	6.2	5.3	4.1	3.9	3.7	3.6	3.6	3.7	3.4	3.2	0	7.0		
SP92118	93-03-16	01.8	52-25S	150-11E	7.5	7.4	7.3	7.3	7.2	7.1	5.7	5.3	5.3	5.2	5.2	5.1	4.8	4.6	4.0	86	6.5		
					3.9	3.8	3.5	3.5	3.5	3.4	3.2	3.3	3.3	3.1	3.2	3.2	3.1	3.1	3.1				
					3.0	3.0	2.9	2.8															
SP92119	93-03-16	04.3	51-46S	150-07E	9.2	9.2	9.2	9.2	9.1	8.9	8.2	8.1	7.7	6.9	7.0	6.5	6.3	6.3	6.0	70	7.1		
SP92120	93-03-16	06.8	51-14S	149-56E	10.3	10.3	10.2	10.2	10.3	10.5	9.9	9.8	9.7	9.6	9.4	9.3	9.3	9.2	9.2	87	7.3		
					9.0	8.8	8.3	7.9	7.3	-	-	-	-	-	-	-	-	-	-				
SP92121	93-03-16	10.8	50-24S	150-16E	10.4	10.4	10.4	10.3	10.3	9.9	9.3	9.3	9.2	9.3	9.3	9.1	9.0	8.9	8.9	69	7.1		
					8.7	8.5	8.3	8.0	7.7	7.2	6.8	6.3	6.0	5.5	5.0	4.2	3.8	3.5	3.4				
					3.2	3.1	2.9	-															
SP92122	93-03-16	13.5	49-47S	150-36E	9.8	9.8	9.8	9.8	9.8	9.8	9.1	9.1	9.0	8.7	8.8	8.5	8.5	8.2	7.8	77	8.2		
SP92123	93-03-16	21.2	48-02S	151-30E	11.4	11.4	11.4	11.4	10.7	9.6	10.1	9.7	10.0	9.8	9.6	9.6	9.4	9.1	8.8	43	9.2		
SP92124	93-03-17	07.5	46-35S	151-03E	12.8	12.8	12.8	12.7	12.7	12.4	9.7	9.4	9.3	9.0	8.9	8.9	9.0	9.0	9.0	75	10.7		
SP92125	93-03-17	10.8	45-48S	150-46E	13.9	13.9	13.9	13.3	13.3	12.4	11.2	11.2	10.5	10.1	9.5	9.2	9.1	9.1	9.0	33	11.0		
					8.9	8.7	8.6	8.6	8.0	7.7	7.5	7.1	6.8	6.4	6.2	5.6	4.6	4.1	4.0				
					3.7	3.4	3.2	3.1															
SP92126	93-03-17	21.6	43-09S	150-23E	18.4	18.3	18.3	18.3	17.8	15.6	14.9	14.4	13.8	13.0	11.9	11.3	10.0	9.5	9.3	44	13.8		
					9.2	9.1	8.6	8.4	8.1	7.7	7.2	6.8	6.3	5.9	5.6	5.0	4.5	4.1	3.7				
					3.4	3.2	3.0	2.9															
SP92127	93-03-18	08.0	41-44S	150-35E	18.6	18.6	18.6	18.6	18.5	16.9	16.3	15.8	15.0	14.3	13.5	13.0	12.4	11.8	11.1	49	16.3		
SP92128	93-03-18	20.8	39-18S	151-04E	21.8	21.8	21.8	21.8	20.7	19.6	18.4	17.1	16.1	14.8	14.0	13.4	12.6	11.8	11.2	44	18.4		
					10.5	10.0	9.3	8.9	8.4	7.9	7.4	7.1	6.7	6.4	5.9	5.2	4.6	4.1	3.6				
					3.3	3.1	2.9	2.7															

Table 3. Serial observation data.

Station 1

## Meteorological observation

Date : December 05, 1992      Weather time (UT) : 6:00      Wind direction : NNW  
 Time (UT) : 5:20      Weather : bc      Wind speed : 10 m/s  
 Latitude : 41°03.2' S      Air temperature(dry) : 14.0 °C      Humidity : 86 %  
 Longitude : 109°55.2' E      (wet) : 12.9 °C      Wave : NNW / 3  
 Depth : 4330 m      Atmospheric pressure : 1015.0 hPa      Swell : WSW / 7  
 Visibility : 30 km

Depth (m)	Observed									Interpolated				
	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					( $\mu\text{mol/l}$ )									
0	12.800	34.814	8.17	6.26	0.64	0	0.20	8.7	0.0	0	12.800	34.814	26.31	0.000
10	12.710	34.826	8.17	6.25	0.71	0	0.20	9.3	0.1	10	12.710	34.826	26.33	0.017
19	12.670	34.831	8.18	6.28	0.73	0	0.20	9.2	0.2	20	12.621	34.832	26.36	0.034
29	12.180	34.848	8.18	6.26	0.71	0	0.20	9.0	0.1	30	12.131	34.847	26.46	0.050
48	11.250	34.835	8.18	6.51	0.73	0	0.14	9.4	0.2	50	11.164	34.834	26.64	0.080
71	10.960	34.819	8.18	6.39	0.76	1	0.15	9.9	0.2	75	10.925	34.816	26.66	0.116
92	10.800	34.807	8.18	6.35	0.80	1	0.16	10.3	0.2	100	10.523	34.792	26.72	0.150
115	9.910	34.758	8.16	6.25	0.91	0	0.54	12.4	0.2	125	9.953	34.770	26.80	0.183
137	10.020	34.787	8.15	6.18	0.90	0	0.13	12.4	0.2	150	9.976	34.781	26.80	0.215
183	9.870	34.764	8.15	6.16	0.89	1	0.01	12.8	0.3	200	9.831	34.761	26.81	0.280
239	9.750	34.753	8.14	5.94	0.96	1	0.01	14.1	0.1	250	9.733	34.750	26.82	0.344
276	9.700	34.744	8.13	5.90	1.03	3	0.00	14.9	0.1	300	9.678	34.741	26.82	0.409
370	9.620	34.735	8.14	6.13	0.94	1	0.00	14.2	0.2	400	9.601	34.732	26.83	0.539
467	9.561	34.722	8.14	6.05	0.94	1	0.00	14.7	0.3	500	9.475	34.710	26.83	0.671
554	9.181	34.670	8.11	5.66	1.07	4	0.01	17.4	0.2	600	8.879	34.625	26.86	0.803
653	8.467	34.575	8.08	5.31	1.31	7	0.02	20.8	0.2	700	8.049	34.538	26.92	0.931
745	7.599	34.504	8.04	4.92	1.55	12	0.01	24.3	0.1	800	6.995	34.465	27.02	1.053
842	6.524	34.436	8.03	4.79	1.64	18	0.00	26.9	0.1	1000	4.685	34.368	27.23	1.265
938	5.417	34.373	7.99	4.87	1.95	23	0.08	29.1	0.4	1200	3.473	34.383	27.37	1.441
1120	3.681	34.358	7.95	4.72	2.08	43	0.13	32.4	0.2	1500	2.957	34.506	27.52	1.663
1403	3.129	34.460	7.92	4.20	2.24	62	0.00	34.0	0.3	2000	2.467	34.680	27.70	1.960
1647	2.738	34.575	7.90	3.92	2.15	77	0.01	33.9	0.6	2500	2.098	34.739	27.78	2.200
1888	2.546	34.655	7.91	4.01	2.19	84	0.05	33.0	0.2	3000	1.643	34.742	27.81	2.412
2369	2.205	34.732	7.92	4.28	2.06	92	0.00	31.7	0.2	3500	1.172	34.725	27.83	2.602
2854	1.782	34.745		4.53	2.09	100	0.00	31.0	0.2					
3369	1.289	34.731	7.92	4.72	2.00	114	0.05	31.6	0.2					
3876	0.857	34.705	7.91	4.87	2.15	126	0.01	31.9	0.4					

Station 2

Meteorological observation

Date : December 06, 1992  
 Time (UT) : 4:55  
 Latitude : 45° 43.6' S  
 Longitude : 110° 00.7' E  
 Depth : 4057 m

Weather time (UT) : 5:00  
 Weather : bc  
 Air temperature(dry) : 11.9 °C  
 (wet) : 8.9 °C  
 Atmospheric pressure : 1020.3 hPa

Wind direction : NNW  
 Wind speed : 16 m/s  
 Humidity : 67 %  
 Wave : NNW / 4  
 Swell : SW / 4  
 Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
0	10.700	34.763	8.16	6.48	0.81	4	0.22	12.1	0.0	0	10.700	34.763	26.66	0.000
8	10.490	34.760	8.16	6.46	0.86	4	0.22	12.0	0.2	10	10.474	34.759	26.70	0.014
16	10.460	34.756	8.17	6.48	0.84	4	0.22	11.9	0.2	20	10.345	34.751	26.72	0.027
24	10.240	34.746	8.17	6.52	0.86	3	0.21	12.0	0.3	30	10.183	34.745	26.74	0.040
39	10.130	34.745	8.17	6.50	0.84	3	0.20	12.0	0.3	50	10.104	34.743	26.75	0.067
60	10.080	34.741	8.16	6.44	0.84	3	0.20	12.1	0.3	75	9.978	34.733	26.77	0.099
81	9.920	34.729	8.16	6.44	0.90	3	0.21	12.5	0.5	100	9.395	34.644	26.80	0.132
102	9.370	34.640	8.16	6.44	0.94	4	0.21	13.9	0.5	125	9.563	34.701	26.81	0.164
121	9.590	34.705	8.16	6.25	0.96	4	0.09	14.1	0.2	150	9.330	34.664	26.82	0.195
164	9.240	34.650	8.14	6.21	1.00	4	0.11	15.1	0.2	200	9.129	34.639	26.83	0.259
209	9.100	34.635	8.14	6.15	1.05	4	0.16	15.3	0.1	250	8.954	34.606	26.84	0.322
256	8.930	34.600	8.10	6.25	1.05	5	0.17	15.8	0.1	300	8.252	34.484	26.85	0.385
350	7.380	34.352	8.11	6.22	1.32	5	0.02	20.1	0.1	400	7.100	34.347	26.91	0.509
447	6.917	34.343	8.08	6.41	1.42	11	0.02	22.6	0.2	500	6.844	34.387	26.98	0.628
529	6.747	34.399	8.04	5.25	1.52	15	0.01	25.2	0.2	600	5.822	34.332	27.07	0.740
623	5.552	34.317	8.03	5.28	1.68	19	0.00	27.5	0.2	700	4.934	34.309	27.16	0.843
710	4.872	34.308	8.01	5.25	1.90	24	0.00	28.9	0.2	800	4.408	34.320	27.22	0.940
800	4.408	34.320	8.01	5.12	1.93	30	0.00	30.3	0.1	1000	3.180	34.333	27.36	1.112
892	3.745	34.291	7.99	5.22	2.13	37	0.03	31.5	0.2	1200	2.944	34.431	27.46	1.263
1064	3.008	34.363	7.97	4.72	2.16	51	0.01	33.4	0.2	1500	2.655	34.576	27.60	1.457
1337	2.889	34.499	7.93	4.20	2.25	69	0.00	34.0	0.2	2000	2.280	34.718	27.74	1.720
1572	2.573	34.607	7.89	4.07	2.16	77	0.00	33.5	0.6	2500	1.878	34.748	27.80	1.939
1803	2.393	34.674	7.90	4.22	2.16	80	0.00	32.4	0.2	3000	1.392	34.737	27.83	2.134
2270	2.117	34.749	7.93	4.55	1.97	88	0.00	30.8	0.3					
2745	1.609	34.743	7.94	4.67	2.03	104	0.00	31.2	0.1					
3269	1.196	34.730	7.92	4.78	2.02	119	0.00	32.0	0.2					



Station 4

Meteorological observation

Date : December 08. 1992      Weather time (UT) : 5:00      Wind direction : NW  
 Time (UT) : 5:00      Weather : bc      Wind speed : 17 m/s  
 Latitude : 55° 00. 2' S      Air temperature(dry) : 3.0 °C      Humidity : 80 %  
 Longitude : 107° 25. 0' E      (wet) : 1.9 °C      Wave : NW / 4  
 Depth : 3572 m      Atmospheric pressure : 994.3 hPa      Swell : W / 6  
 Visibility : 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
					(μmol/l)									
0	2.200	33.956	8.15	7.68	1.64	19	0.24	26.3	0.4	0	2.200	33.956	27.14	0.000
8	2.180	33.955	8.15	7.67	1.47	20	0.24	25.8	0.4	10	2.179	33.954	27.14	0.009
16	2.170	33.952	8.14	7.71	1.70	19	0.24	25.8	0.3	20	2.127	33.952	27.15	0.019
25	2.060	33.952	8.15	7.75	1.66	19	0.24	25.7	0.7	30	1.994	33.959	27.16	0.028
41	1.850	33.982	8.13	7.78	1.68	23	0.24	26.0	0.3	50	1.793	33.987	27.20	0.046
61	1.750	33.993	8.14	7.82	1.71	24	0.24	26.5	0.4	75	1.557	34.002	27.23	0.067
84	1.430	34.009	8.13	7.75	1.80	28	0.24	27.0	0.9	100	1.382	34.030	27.26	0.088
115	1.360	34.053	8.08	7.08	2.02	35	0.16	29.4	0.6	125	1.014	34.045	27.30	0.108
129	0.950	34.042	8.09	7.64	1.83	35	0.22	28.9	1.0	150	1.293	34.110	27.33	0.128
175	1.780	34.199	8.00	5.97	2.21	47	0.06	32.1	0.3	200	2.039	34.260	27.40	0.164
221	2.160	34.303	7.96	5.16	2.29	57	0.02	33.2	0.2	250	2.117	34.349	27.46	0.197
269	2.100	34.377	7.94	4.76	2.40	66	0.01	34.0	0.2	300	2.168	34.422	27.52	0.228
366	2.310	34.498	7.93	4.32	2.40	73	0.01	34.1	0.2	400	2.305	34.518	27.58	0.284
633	2.054	34.657	7.92	4.20	2.25	88	0.01	33.0	0.3	500	2.181	34.578	27.64	0.335
692	2.129	34.692	7.94	4.26	2.16	87	0.01	32.2	0.3	600	2.059	34.637	27.70	0.381
770	2.035	34.696	7.95	4.24	2.12	89	0.02	32.3	0.3	700	2.121	34.696	27.74	0.423
830	1.980	34.710	7.93	4.38	2.15	91	0.01	31.8	0.2	800	2.005	34.703	27.76	0.462
901	1.986	34.730	7.95	4.45	2.13	91	0.01	31.5	0.2	1000	1.909	34.734	27.79	0.538
971	1.934	34.730	7.96		2.16	92	0.01	31.7	0.2	1200	1.817	34.754	27.81	0.609
1092	1.828	34.750	7.96	4.58	2.02	95	0.02	30.5	0.3	1500	1.554	34.751	27.83	0.712
1316	1.798	34.755	7.96	4.64	2.06	100	0.01	31.0	0.3	2000	1.113	34.732	27.84	0.874
1511	1.542	34.751	7.95	4.69	2.06	106	0.01	30.4	0.2	2500	0.687	34.709	27.85	1.025
1701	1.351	34.744	7.96	4.71	2.06	110	0.02	30.6	0.2					
2104	1.027	34.727	7.95	4.84	2.08	121	0.01	31.3	0.2					
2564	0.630	34.706	7.93	4.93	2.18	131	0.01	31.8	0.2					

Station 5

Meteorological observation

Date : December 09, 1992      Weather time (UT) : 5:00      Wind direction : SE  
 Time (UT) : 4:57      Weather : bc      Wind speed : 7 m/s  
 Latitude : 59° 27.4' S      Air temperature(dry) : 0.9 °C      Humidity : 95 %  
 Longitude : 104° 38.1' E      (wet) : 0.6 °C      Wave : SE / 4  
 Depth : 4432 m      Atmospheric pressure : 969.6 hPa      Swell : NNW / 3  
 Visibility : 7 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N (μmol/l)	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
9	0.290	33.969	8.09	8.01	1.87	45	0.27	28.6	0.4	10	0.261	33.969	27.28	0.008
19	0.090	33.972	8.10	8.07	1.89	43	0.27	28.4	0.4	20	0.084	33.972	27.29	0.016
29	0.030	33.973	8.10	8.06	1.89	43	0.26	28.4	0.4	30	0.024	33.973	27.30	0.024
48	0.090	33.982	8.10	8.08	1.90	43	0.25	28.6	0.4	50	0.108	33.983	27.31	0.039
72	0.520	33.987	8.10	8.11	1.90	46	0.23	29.1	0.5	75	0.567	33.988	27.34	0.058
95	0.820	33.998	8.09	7.99	1.95	49	0.22	29.5	0.6	100	0.785	34.001	27.36	0.077
118	0.660	34.036	8.09	7.82	2.00		0.22	29.4	0.7	125	0.386	34.087	27.41	0.094
142	0.450	34.275	8.00	6.18	2.21	61	0.14	32.8	0.3	150	0.745	34.330	27.54	0.110
189	1.800	34.525	7.92	4.33	2.38	81	0.01	34.8	0.3	200	1.847	34.545	27.64	0.135
237	1.920	34.594	7.91	4.22	2.34	84	0.01	34.1	0.2	250	1.931	34.606	27.68	0.158
284	1.950	34.633	7.92	4.16	2.31	88	0.01		0.2	300	1.947	34.642	27.71	0.179
379	1.920	34.675	7.94	4.22	2.24	89	0.00	33.1	0.2	400	1.909	34.679	27.74	0.218
467	1.871	34.690	7.96	4.33	2.19	91	0.01	33.1	0.3	500	1.842	34.696	27.76	0.255
554	1.794	34.706	7.97	4.37	2.12	92	0.01	32.6	0.3	600	1.787	34.715	27.78	0.291
656	1.785	34.726	7.99	4.44	2.06	95	0.01	31.9	0.3	700	1.770	34.732	27.80	0.326
744	1.746	34.735	7.98	4.60		96	0.02	31.8	0.3	800	1.701	34.736	27.80	0.359
841	1.668	34.736	7.98	4.61	2.06	96	0.01	31.8	0.3	1000	1.528	34.735	27.82	0.426
936	1.598	34.735	7.97	4.64		100	0.07	31.6	0.2	1200	1.331	34.733	27.83	0.490
1121	1.375	34.734	7.97	4.70	2.03	107	0.14	31.5	0.4	1500	1.142	34.726	27.84	0.584
1397	1.263	34.729	7.97	4.69	2.08	112	0.01	32.0	0.3	2000	0.702	34.705	27.85	0.734
1640	0.976	34.721	7.95	4.75	2.08	121	0.00	32.3	0.2	2500	0.383	34.689	27.85	0.873
1873	0.788	34.709	7.95	4.86	2.16	126	0.01	32.2	0.3	3000	0.145	34.676	27.86	1.003
2346	0.479	34.694	7.94	4.94	2.15	133	0.01	32.8	0.3	3500	0.007	34.673	27.86	1.124
2823	0.210	34.679	7.94	5.14	2.21	137	0.01	32.9	0.1					
3326	0.053	34.675	7.93	4.68		137	0.01	33.0	0.3					
3828	0.073	34.670	7.92	5.43	2.19	137	0.01	33.0	0.2					

Station 7

Meteorological observation

Date : February 27, 1993      Weather time (UT) : 9:00      Wind direction : SSW  
 Time (UT) : 8:50      Weather : bc      Wind speed : 12 m/s  
 Latitude : 64° 58.2' S      Air temperature(dry) : -1.8 °C      Humidity : 70 %  
 Longitude : 59° 19.8' E      (wet) : -3.5 °C      Wave : SSW / 5  
 Depth : 3689 m      Atmospheric pressure : 984.0 hPa      Swell : NW / 6  
 Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
0	0.400	33.860	8.09	7.70	1.60	36	0.26	24.6	0.7	0	0.400	33.860	27.19	0.000
8		33.863	8.11	7.68	1.65	36	0.24	24.5	0.9	10	0.435	33.863	27.19	0.009
15	0.450	33.863	8.10	7.69	1.67	36	0.24	24.6	0.8	20	0.452	33.862	27.19	0.018
22		33.861	8.10	7.72	1.49	36	0.24	24.5	0.8	30	0.457	33.863	27.19	0.027
38	0.460	33.864	8.11	7.69	1.65	36	0.25	24.7	0.8	50	0.602	34.059	27.40	0.043
56	0.940	34.163	8.03	7.02	2.09	59	0.15	29.0	0.8	75	0.670	34.334	27.62	0.057
75	0.670	34.334	7.98	6.28	2.23	68	0.13	31.2	0.5	100	0.342	34.438	27.69	0.068
94	0.300	34.429	7.96	5.88	2.27	73	0.08	32.0	0.2	125	0.357	34.490	27.73	0.078
112	0.540	34.452	7.97	5.70	2.28	76	0.07	32.2	0.1	150	0.018	34.565	27.77	0.087
150		34.565	7.94	4.77	2.30	85	0.03	32.6	0.1	200	0.853	34.589	27.75	0.104
189	0.650	34.565	7.93	4.69	2.28	82	0.01	32.5	0.0	250	1.338	34.665	27.77	0.122
225	1.280	34.648	7.92	4.63	2.28	90	0.00	32.5	0.1	300	1.454	34.689	27.79	0.139
316	1.491	34.693	7.93	4.48	2.28	93	0.00	32.1	0.0	400	1.415	34.705	27.80	0.171
401	1.414	34.705	7.94	4.54	2.05	95	0.00	31.9	0.2	500	1.357	34.715	27.81	0.203
478	1.376	34.713	7.94	4.62	1.93	97	0.07	31.7	0.3	600	1.272	34.719	27.82	0.234
567	1.300	34.718	7.95	4.64	1.82	98	0.13	31.5	0.4	700	1.171	34.717	27.83	0.264
645	1.234	34.720	7.96	4.70		100	0.01	31.5	0.2	800	1.063	34.718	27.84	0.294
734	1.131	34.716	7.95	4.75	1.90	102	0.00	31.5	0.2	1000	0.836	34.708	27.84	0.352
814	1.049	34.718	7.95	4.78		106	0.05	31.7	0.3	1200	0.711	34.698	27.84	0.409
1024	0.810	34.707	7.95	4.86	2.01	111	0.10	31.8	0.5	1500	0.405	34.685	27.85	0.492
1235	0.686	34.696	7.95	4.92	2.14	116	0.07	32.2	0.3	2000	0.145	34.679	27.86	0.621
1456	0.436	34.686	7.95	4.93		121	0.00	32.4	0.3	2500	0.095	34.671	27.86	0.746
1682	0.297	34.682	7.93	5.04	2.12	124	0.07	32.5	0.2	3000	0.155	34.666	27.87	0.863
2133	0.092	34.677	7.92	5.14	2.09	129	0.02	32.7	0.1					
2596	0.096	34.670	7.94	5.25	2.12	131	0.00	32.6	0.1					
3086	0.239	34.666	7.93	5.59	1.93	124	0.07	32.1	0.2					

Station 8

Meteorological observation

Date	: February 28, 1993	Weather time (UT)	: 8:00	Wind direction	: SW
Time (UT)	: 7:48	Weather	: bc	Wind speed	: 16 m/s
Latitude	: 65° 48.7' S	Air temperature(dry)	: -0.7 °C	Humidity	: 67 %
Longitude	: 68° 25.5' E	(wet)	: -2.0 °C	Wave	: SW / 3
Depth	: 2686 m	Atmospheric pressure	: 978.6 hPa	Swell	: WNW / 1
				Visibility	: 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
0	0.400	33.967	8.10	7.71	1.68	48	0.19	26.0	0.6	0	0.400	33.967	27.27	0.000
14	0.280	33.983	8.10	7.65	1.77	49	0.21	26.3	0.6	10	0.306	33.980	27.29	0.008
21		33.983	8.10	7.69	1.65	49	0.21	26.2	0.5	20	0.250	33.983	27.29	0.016
36	0.180	33.994	8.10	7.70	1.80	50	0.21	26.4	0.5	30	0.206	33.989	27.30	0.024
54	0.120	34.016	8.09	7.64	1.79	50	0.21	26.5	0.5	50	0.136	34.009	27.32	0.039
72	-1.370	34.310	8.04	7.07	2.06	62	0.14	29.5	0.3	75	-1.458	34.330	27.65	0.054
89	-1.640	34.392	8.02	6.71	2.15	68	0.09	31.0	0.0	100	-1.573	34.407	27.71	0.065
107	-1.500	34.417	8.01	6.61	2.17	71	0.07	31.0	0.0	125	-1.177	34.449	27.73	0.074
143	0.880	34.479	7.99	5.97	2.18	77	0.02	31.4	0.0	150	0.902	34.486	27.75	0.083
178	0.990	34.496			2.18	79	0.01	31.1	0.0	200	0.664	34.526	27.78	0.100
213	0.490	34.542	7.98	5.92	2.18	84	0.01	31.4	0.0	250	0.134	34.581	27.80	0.116
285	0.102	34.609	7.98	5.44	2.21	93	0.00	31.4	0.0	300	0.155	34.616	27.81	0.131
364	0.344	34.644	7.97	5.23	2.12	99	0.00	31.5	0.0	400	0.518	34.665	27.83	0.161
436	0.652	34.681	7.97	4.95	2.11	106	0.00	31.6	0.1	500	0.698	34.691	27.84	0.189
518	0.703	34.693	7.96	4.88	2.06	109	0.01	31.7	0.2	600	0.712	34.703	27.85	0.217
587	0.717	34.702	7.96	4.87		113	0.00	31.8	0.1	700	0.643	34.702	27.85	0.244
668	0.667	34.704	7.96	4.84	2.12	116	0.00	31.8	0.1	800	0.559	34.698	27.85	0.271
745		34.700	7.95	4.88		118	0.00	32.0	0.2	1000	0.424	34.691	27.85	0.324
947	0.441	34.692	7.96	4.93	2.18	124	0.01	32.1	0.2	1200	0.361	34.687	27.85	0.376
1139	0.418	34.688	7.95	4.91	2.21	128	0.00	32.4	0.2	1500	0.113	34.681	27.86	0.453
1353	0.196									2000	0.081	34.673	27.87	0.572
1574	0.079	34.679	7.95	5.11	2.23	130	0.00	32.4	0.2					
2042	0.093	34.672	7.94		2.14	129	0.00	32.9	0.2					

Station 9

Meteorological observation

Date : March 07, 1993	Weather time (UT) : 6:00	Wind direction : E
Time (UT) : 5:50	Weather : c	Wind speed : 15 m/s
Latitude : 63°06.1'S	Air temperature(dry) : 1.0 °C	Humidity : 95 %
Longitude : 97°06.5'E	(wet) : 0.8 °C	Wave : E / 4
Depth : 2150 m	Atmospheric pressure : 968.3 hPa	Swell : NW / 4
		Visibility : 3 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
0	1.200	33.858	8.17	7.76	1.38	28	0.27	22.5	0.1	0	1.200	33.858	27.14	0.000
6		33.861	8.17	7.70	1.39	28	0.26	22.5	0.0	10	1.105	33.861	27.15	0.009
13	1.090	33.861	8.16	7.76	1.39	28	0.26	22.5	0.0	20	1.094	33.860	27.15	0.019
19		33.860	8.17	7.72	1.41	28	0.26	22.5	0.0	30	1.099	33.862	27.15	0.028
32	1.100	33.862	8.17	7.72	1.41	28	0.26	22.5	0.0	50	0.857	34.186	27.42	0.044
48	0.970	34.161	8.16	7.70	1.46	31	0.26	22.9	0.3	75	-1.523	34.404	27.71	0.057
64	-1.240	34.333	8.06	8.06	2.12	62	0.17	28.6	1.1	100	-1.496	34.460	27.75	0.066
81	-1.570	34.428	8.04	6.81	2.14	66	0.19	30.3	0.3	125	-1.006	34.554	27.81	0.074
97	-1.540	34.451	8.03	6.76	2.15	68	0.18	30.5	0.1	150	0.788	34.565	27.81	0.082
129	0.950	34.564	8.01	6.08	2.17	75	0.04	30.9	0.0	200	0.045	34.654	27.85	0.096
161	0.680	34.565	8.01	6.10	2.18	79	0.03	31.5	0.1	250	0.455	34.690	27.85	0.109
193	0.130	34.647	7.98	5.61	2.21	85	0.01	31.6	0.0	300	0.801	34.701	27.84	0.122
257	0.509	34.692	7.97	5.10	2.23	95	0.00	31.8	0.0	400	0.974	34.712	27.84	0.150
324	0.896	34.705	7.97	4.74	2.01	102	0.00	31.9	0.0	500	0.926	34.718	27.84	0.178
397	0.975	34.712	7.98	4.71	2.03	104	0.11	31.9	0.0	600	0.739	34.717	27.86	0.205
474	0.947	34.717	7.97	4.67	1.99	106	0.01	32.0	0.0	700	0.468	34.717	27.87	0.231
539	0.876	34.720	7.97	4.74		109	0.01	31.9	0.0	800	0.399	34.708	27.87	0.255
615	0.700	34.716	7.97	4.76	1.96	112	0.03	32.1	0.0	1000	0.282	34.699	27.87	0.305
688	0.479	34.718	7.97	4.84		115	0.04	32.3	0.0	1200	0.165	34.690	27.87	0.354
832	0.381	34.706	7.98	4.93	2.08	118	0.03	32.0	0.2	1500	0.004	34.683	27.87	0.426
1088		34.695	7.98	4.98	2.12	122	0.00	32.4	0.1					
1319	0.099	34.685	7.97	5.14		124	0.00	32.4	0.1					
1564	0.028	34.682	7.96	5.26	2.18	125	0.01	32.2	0.1					

Station 10

Meteorological observation

Date : March 08, 1993  
 Time (UT) : 4:51  
 Latitude : 62° 56.3' S  
 Longitude : 105° 40.7' E  
 Depth : 4041 m

Weather time (UT) : 5:00  
 Weather : bc  
 Air temperature (dry) : 1.7 °C  
 (wet) : 1.2 °C  
 Atmospheric pressure : 975.7 hPa

Wind direction : E  
 Wind speed : 13 m/s  
 Humidity : 89 %  
 Wave : E / 4  
 Swell : ESE / 4  
 Visibility : 15 km

Depth (m)	Observed									Interpolated				
	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
										(μmol/l)				
0	1.400	33.773	8.11	7.65	1.57	27	0.30	25.2	0.1	0	1.400	33.773	27.06	0.000
9		33.770	8.12	7.59	1.58	28	0.29	25.2	0.1	10	1.391	33.770	27.05	0.010
17	1.380	33.771	8.14	7.63	1.60	27	0.28	25.0	0.1	20	1.377	33.771	27.06	0.020
26		33.771	8.14	7.62	1.61	28	0.29	25.2	0.1	30	1.366	33.773	27.06	0.030
43	1.270	33.781	8.14	7.58	1.63	28	0.29	25.3	0.1	50	1.050	33.818	27.11	0.050
65	0.280	33.973	8.10	7.29	1.70	44	0.23	27.1	0.9	75	0.199	34.093	27.41	0.071
86	0.460	34.216	8.02	6.39	2.20	64	0.17	30.7	0.5	100	0.123	34.313	27.58	0.086
108	0.100	34.355	7.99	5.63	2.27	72	0.13	32.3	0.1	125	0.478	34.432	27.64	0.098
129	0.560	34.447	7.96	5.08	2.33	76	0.07	33.1	0.0	150	0.938	34.513	27.68	0.109
172	1.200	34.564	7.94	4.44	2.30	84	0.01	33.2	0.1	200	1.398	34.608	27.72	0.129
215	1.500	34.628	7.94	4.37	2.31	88	0.00	33.0	0.0	250	1.734	34.672	27.75	0.148
258	1.780	34.677	7.95	4.28	2.27	88	0.00	32.6	0.0	300	1.718	34.683	27.76	0.166
338	1.571	34.685	7.95	4.41	2.24	90	0.00	32.1	0.1	400	1.634	34.703	27.78	0.201
429	1.639	34.709	7.98	4.38	2.02	93	0.00	31.7	0.0	500	1.527	34.714	27.80	0.234
509	1.521	34.715	8.00	4.49	2.05	94	0.07	31.5	0.0	600	1.528	34.727	27.81	0.267
602	1.528	34.727	7.98	4.49	1.99	97	0.00	31.2	0.1	700	1.450	34.735	27.82	0.298
681	1.460	34.733	7.99	4.57		98	0.00	31.3	0.0	800	1.385	34.740	27.83	0.329
770	1.413	34.740	7.99	4.60	1.96	102	0.00	30.9	0.0	1000	1.195	34.731	27.84	0.389
857	1.330	34.737	7.98	4.66		104	0.00	31.1	0.1	1200	1.097	34.725	27.84	0.449
1068	1.131	34.729	8.00	4.68	2.09	109	0.00	31.2	0.0	1500	0.793	34.714	27.85	0.537
1282	1.069	34.722	7.96	4.70	2.06	115	0.00	31.6	0.3	2000	0.447	34.697	27.86	0.675
1505	0.789	34.714	7.97	4.75	2.18	120	0.00	32.0	0.1	2500	0.160	34.687	27.87	0.803
1728	0.627	34.706	7.97	4.81	2.15	125	0.00	32.3	0.1	3000	0.003	34.685	27.87	0.920
2176	0.336	34.692	8.00	4.82	2.05	131	0.00	32.2	0.2	3500	0.129	34.679	27.87	1.029
2633	0.107	34.686	7.97	4.83	1.95	133	0.00	32.1	0.3					
3119	0.034	34.684	7.97		2.01	133	0.01	32.1	0.2					
3616	0.156	34.677		5.06	2.17	129	0.03	32.0	0.4					

Station 11

Meteorological observation

Date : March 09, 1993      Weather time (UT) : 6:00      Wind direction : SE  
 Time (UT) : 5:02      Weather : c      Wind speed : 9 m/s  
 Latitude : 63° 08.5' S      Air temperature(dry) : -3.0 °C      Humidity : 85 %  
 Longitude : 115° 48.9' E      (wet) : -3.8 °C      Wave : SE / 4  
 Depth : 3529 m      Atmospheric pressure : 987.0 hPa      Swell : NNW / 4  
 Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	(μmol/l)			Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
							NO2-N	NO3-N	NH4-N					
0	1.300	33.857	8.13	7.62	1.63	40	0.26	25.5	0.3	0	1.300	33.857	27.13	0.000
10		33.850	8.13	7.56	1.64	39	0.24	25.3	0.1	10	1.289	33.850	27.12	0.009
20	1.240	33.851	8.12	7.57	1.65	39	0.24	25.4	0.1	20	1.240	33.851	27.13	0.019
30		33.851	8.12	7.59	1.64	39	0.24	25.4	0.1	30	1.150	33.851	27.13	0.028
49	0.880	33.943	8.12	7.42	1.77	44	0.23	26.0	0.1	50	0.862	33.953	27.23	0.046
74	0.000	34.464	7.97	5.43	2.33	82	0.18	31.4	0.6	75	0.005	34.472	27.70	0.062
99	0.900	34.605	7.94	4.73	2.33	89	0.10	32.4	0.0	100	0.918	34.608	27.76	0.071
124	1.280	34.669	7.95	4.50	2.30	91	0.02	32.3	0.0	125	1.285	34.670	27.78	0.080
148	1.380	34.689	7.94	4.47	2.28	93	0.00	32.1	0.1	150	1.386	34.690	27.79	0.088
198	1.500	34.710	7.95	4.30	2.20	94	0.00	31.7	0.0	200	1.500	34.710	27.80	0.104
246	1.440	34.716	7.95	4.49	2.24	95	0.00	31.8	0.0	250	1.439	34.716	27.81	0.120
296	1.430	34.721	7.96	4.54	2.24	97	0.00	31.4	0.1	300	1.428	34.721	27.81	0.135
391	1.373	34.730	7.96	4.54	2.23	100	0.00	31.2	0.1	400	1.367	34.731	27.83	0.165
493	1.298	34.733	7.98	4.53	2.05	103	0.00	31.3	0.1	500	1.293	34.733	27.83	0.195
583	1.226	34.731	7.97	4.59	2.08	106	0.00	31.5	0.0	600	1.211	34.731	27.84	0.224
688	1.130	34.729	7.98	4.60	2.08	108	0.00	31.5	0.0	700	1.118	34.729	27.84	0.253
781	1.037	34.725	7.97	4.66		111	0.00	31.5	0.0	800	1.018	34.724	27.84	0.281
885	0.940	34.722	7.97	4.69	2.06	115	0.00	31.7	0.1	1000	0.854	34.717	27.85	0.338
980	0.870	34.718	7.96	4.75		116	0.00	31.7	0.0	1200	0.685	34.708	27.85	0.393
1223	0.667	34.707	7.96	4.75	2.23	121	0.00	32.3	0.1	1500	0.550	34.698	27.85	0.476
1464	0.581	34.699	7.96	4.84	2.20	126	0.00	32.0	0.1	2000	0.160	34.688	27.87	0.605
1714	0.308	34.692	7.95	4.95	2.25	128	0.00	32.1	0.1	2500	0.017	34.685	27.87	0.723
1963	0.173	34.688	7.94	5.04	2.20	130	0.00	32.1	0.1					
2453	0.001	34.686	7.94	5.27	2.17	133	0.00	32.2	0.0					
2945	0.186	34.676	7.96	5.31	2.03	122	0.00	31.9	0.1					

Station 12

Meteorological observation

Date : March 10, 1993      Weather time (UT) : 4:00      Wind direction : W  
 Time (UT) : 3:52      Weather : bc      Wind speed : 2 m/s  
 Latitude : 62° 59.4' S      Air temperature(dry) : 1.7 °C      Humidity : 78 %  
 Longitude : 125° 17.3' E      (wet) : 0.6 °C      Wave : W / 2  
 Depth : 4148 m      Atmospheric pressure : 985.4 hPa      Swell : NW / 3  
 Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
					(μmol/l)									
0	1.400	33.738	8.09	7.64	1.71	40	0.29	26.5	0.1	0	1.400	33.738	27.03	0.000
10		33.745	8.10	7.56	1.70	40	0.29	26.4	0.1	10	1.370	33.745	27.03	0.010
20	1.340	33.745	8.10	7.59	1.70	40	0.27	26.2	0.1	20	1.340	33.745	27.04	0.021
30		33.744	8.11	7.64	1.71	40	0.27	26.2	0.1	30	1.203	33.744	27.05	0.031
49	0.820	33.802	8.10	7.59	1.79	41	0.25	26.9	0.1	50	0.796	33.809	27.12	0.051
74	0.014	34.217	7.99	6.32	2.01	62	0.18	31.1	0.2	75	0.010	34.226	27.50	0.070
99	0.074	34.391	7.94	5.13	2.36	72	0.28	33.1	0.0	100	0.101	34.395	27.63	0.083
124	1.180	34.479	7.91	4.65	2.40	77	0.09	33.7	0.0	125	1.193	34.482	27.64	0.095
148	1.420	34.538	7.91	4.39	2.43	81	0.02	34.2	0.0	150	1.434	34.542	27.67	0.106
198	1.750	34.608	7.90	4.03	2.40	85	0.01	33.7	0.0	200	1.753	34.610	27.70	0.127
246	1.800	34.647	7.89	4.20	2.37	88	0.00	33.1	0.0	250	1.803	34.649	27.73	0.147
296	1.830	34.673	7.92	4.22	2.33	89	0.00	32.8	0.0	300	1.830	34.674	27.75	0.166
391	1.721	34.697	7.93	4.30	2.27	90	0.00	32.3	0.0	400	1.718	34.699	27.77	0.202
492	1.696	34.717	7.94	4.40	2.09	93	0.00	31.7	0.0	500	1.694	34.718	27.79	0.237
589	1.663	34.728	7.94	4.45	2.08	94	0.00	31.3	0.0	600	1.657	34.729	27.80	0.270
695	1.581	34.735	7.96	4.53	2.02	97	0.00	31.2	0.1	700	1.576	34.735	27.81	0.303
784	1.489	34.737	7.96	4.57	98	0.00	30.9	0.0	0.0	800	1.478	34.737	27.82	0.334
889	1.426	34.735	7.95	4.60	2.02	100	0.00	31.1	0.1	1000	1.369	34.737	27.83	0.397
982	1.380	34.737	7.95	4.63	103	0.00	31.2	0.0	0.0	1200	1.179	34.733	27.84	0.458
1227	1.158	34.732	7.96	4.68	2.06	111	0.00	31.1	0.0	1500	1.027	34.722	27.84	0.549
1472	1.052	34.723	7.96	4.69	2.09	117	0.00	31.7	0.0	2000	0.573	34.702	27.85	0.694
1714	0.790	34.715	7.93	4.77	2.21	121	0.00	32.1	0.0	2500	0.247	34.688	27.86	0.826
1961	0.601	34.703	7.93	4.81	2.18	126	0.00	32.4	0.0	3000	0.045	34.680	27.87	0.948
2446	0.277	34.689	7.93	5.01	2.14	133	0.00	32.3	0.1					
2934	0.066	34.681	7.95	5.07	2.05	134	0.00	32.3	0.1					
3436	0.086	34.677	7.93	5.38	2.06	128	0.00	32.1	0.0					



Station 13

Meteorological observation

Date	: March 11, 1993	Weather time (UT)	: 4:00	Wind direction	: ENE
Time (UT)	: 3:54	Weather	: bc	Wind speed	: 16 m/s
Latitude	: 63° 30.7' S	Air temperature(dry)	: 1.2 °C	Humidity	: 83 %
Longitude	: 133° 52.0' E	(wet)	: 0.4 °C	Wave	: ENE / 4
Depth	: 3994 m	Atmospheric pressure	: 975.4 hPa	Swell	: ESE / 4
				Visibility	: 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
					(μmol/l)									
0	2.300	33.794	8.10	7.57	1.70	40	0.30	26.6	0.1	0	2.300	33.794	27.01	0.000
4		33.796	8.11	7.49	1.70	37	0.31	26.3	0.1	10	1.934	33.796	27.04	0.010
9	1.960	33.796	8.11	7.55	1.71	37	0.30	26.3	0.1	20	1.871	33.806	27.05	0.021
13		33.795	8.11	7.50	1.71	37	0.30	26.3	0.1	30	1.072	33.886	27.17	0.030
22	1.780	33.812	8.11	7.49	1.76	40	0.29	26.5	0.1	50	0.204	34.233	27.52	0.045
33	0.770	33.930	8.11	7.58	1.79	45	0.23	27.2	0.1	75	0.774			
44	0.410	34.157	8.04	6.95	2.14	57	0.16	30.0	0.2					
56	0.040	34.275	8.01	5.98	2.24	64	0.20	31.6	0.1					
89	1.320		7.98	4.42	2.43	79	0.11	33.5	0.0					

Station 16

Meteorological observation

Date : March 15, 1993	Weather time (UT) : 2:00	Wind direction : W
Time (UT) : 1:48	Weather : bc	Wind speed : 13 m/s
Latitude : 56° 55. 9' S	Air temperature(dry) : 4. 3 °C	Humidity : 91 %
Longitude : 148° 40. 3' E	(wet) : 3. 7 °C	Wave : W / 5
Depth : 4040 m	Atmospheric pressure : 990. 6 hPa	Swell : NW / 7
		Visibility : 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
					(μmol/l)									
0	4. 800	33. 904	8. 10	7. 26	1. 63	8	0. 27	26. 3	0. 3	0	4. 800	33. 904	26. 85	0. 000
4		33. 897	8. 10	7. 20	1. 65	8	0. 27	26. 2	0. 3	10	4. 600	33. 896	26. 87	0. 012
8	4. 670	33. 895	8. 10	7. 22	1. 68	6	0. 27	26. 1	0. 4	20	4. 149	33. 904	26. 92	0. 024
13		33. 898	8. 10	7. 26	1. 65	8	0. 27	26. 2	0. 4	30	4. 124	33. 903	26. 92	0. 035
21	4. 140	33. 904	8. 10	7. 26	1. 57	8	0. 27	26. 1	0. 3	50	4. 092	33. 905	26. 93	0. 058
32	4. 120	33. 903	8. 10	7. 26	1. 67	8	0. 27	26. 1	0. 3	75	3. 446	33. 998	27. 07	0. 085
42	4. 100	33. 904	8. 10	7. 27	1. 67	8	0. 27	26. 2	0. 3	100	1. 584	34. 065	27. 28	0. 107
53	4. 090	33. 905	8. 10	7. 26	1. 67	8	0. 27	26. 3	0. 4	125	0. 320	34. 475	27. 69	0. 123
63	4. 060	33. 958	8. 08	7. 24	1. 80	14	0. 23	26. 7	0. 4					
85	2. 680	34. 029	8. 06	7. 65	1. 98	24	0. 20	28. 0	0. 7					
106	1. 170	34. 081	8. 03	7. 46	2. 14	37	0. 20	29. 4	1. 1					
127	0. 260	34. 538	7. 92	3. 99	2. 42	79	0. 00	35. 5	0. 0					

## Station 18

## Meteorological observation

Date : March 17, 1993      Weather time (UT) : 2:00      Wind direction : SSW  
 Time (UT) : 1:52      Weather : c      Wind speed : 12 m/s  
 Latitude : 46° 58. 8' S      Air temperature(dry) : 11.2 °C      Humidity : 52 %  
 Longitude : 151° 03. 1' E      (wet) : 7.3 °C      Wave : SSW / 4  
 Depth : 4847 m      Atmospheric pressure : 1028.9 hPa      Swell : SW / 8  
 Visibility : 30 km

Depth (m)	Observed									Interpolated				
	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si (μmol/l)	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
0	12.700	34.593	8.19	6.16	0.45	0	0.11	6.8	0.3	0	12.700	34.593	26.16	0.000
6		34.599	8.19	6.13	0.44	0	0.14	6.9	0.1	10	12.782	34.598	26.14	0.019
11	12.790	34.598	8.19	6.14	0.45	0	0.11	6.9	0.2	20	12.752	34.598	26.15	0.038
17		34.598	8.19	6.15	0.44	0	0.11	7.0	0.1	30	12.717	34.598	26.16	0.056
28	12.720	34.598	8.20	6.17	0.45	0	0.11	7.0	0.1	50	12.700	34.597	26.16	0.094
42	12.700	34.596	8.20	6.13	0.45	0	0.11	7.0	0.2	75	12.078	34.621	26.30	0.139
56	12.700	34.600	8.20	6.11	0.42	0	0.11	7.0	0.1	100	9.800	34.634	26.72	0.178
70	12.470	34.615	8.18	5.99	0.42	0	0.14	7.6	0.4	125	9.045	34.636	26.85	0.210
84	11.140	34.632	8.14	5.93	0.81	1	0.55	10.6	0.8	150	8.985	34.631	26.85	0.241
112	9.200	34.636	8.12	5.76	1.14	3	0.08		0.2	200	8.908	34.624	26.86	0.303
140	9.000	34.634	8.12	5.47	1.10	4	0.04	15.9	0.0	250	8.907	34.627	26.86	0.365
168		34.625	8.08	6.06	1.08	4	0.03	15.9	0.0	300	8.931	34.633	26.86	0.428
225	8.898	34.624	8.12	6.12	1.05	4	0.01	15.6	0.1	400	8.961	34.642	26.86	0.554
288	8.924	34.632	8.16	6.05		4	0.01	15.4	0.0	500	9.015	34.648	26.86	0.683
341	8.957	34.637	8.15	6.00	0.97	4	0.01	15.4		600	8.804	34.609	26.86	0.813
405	8.963	34.642	8.16	6.03	0.97	4	0.01	15.2	0.0	700	8.215	34.529	26.89	0.944
478	9.004	34.646	8.13	6.11	0.98	4	0.00	15.1	0.0	800	7.748	34.493	26.93	1.071
542	9.020	34.650	8.13	6.12	0.95	4	0.01	15.1	0.1	1000	6.238	34.415	27.08	1.310
599	8.810	34.610	8.11	6.07	1.07	4	0.00	16.1	0.0	1200	4.502	34.363	27.25	1.518
700	8.215	34.529	8.10	5.70	1.22	6	0.00	19.4	0.1	1500	3.025	34.449	27.47	1.769
849	7.458	34.477	8.07	4.91	1.41	14	0.00	24.1	0.1	2000	2.652	34.652	27.66	2.089
1073	5.615	34.386	7.98	4.73	1.90	26	0.00	28.5	0.0	2500	2.122	34.731	27.77	2.343
1246	4.119	34.355	7.96	4.71	2.03	39	0.00	31.2	0.1	3000	1.712			
1602	2.904	34.490		4.11	2.23	68	0.00	33.8	0.1					
1960	2.699	34.638				82	0.09	33.0	0.0					
2334	2.250	34.713	7.93	4.20	2.18	89	0.00	31.9	0.1					
2712	1.957	34.742	7.93	4.35	2.06	98	0.00	31.2	0.0					
3116	1.610		7.92	4.95	1.76	107	0.00	31.2	0.1					

Station 19

Meteorological observation

Date : March 18, 1993  
 Time (UT) : 2:51  
 Latitude : 42° 08.9' S  
 Longitude : 150° 33.0' E  
 Depth : 4428 m

Weather time (UT) : 3:00  
 Weather : c  
 Air temperature(dry) : 16.4 °C  
 (wet) : 12.8 °C  
 Atmospheric pressure : 1029.4 hPa

Wind direction : E  
 Wind speed : 10 m/s  
 Humidity : 62 %  
 Wave : E / 3  
 Swell : SW / 4  
 Visibility : 30 km

Depth (m)	Observed										Interpolated			
	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
0	18.600	35.640	8.24	5.42	0.07	0	0.00	0.0	0.4	0	18.600	35.640	25.63	0.000
8		35.646	8.24	5.33	0.07	1	0.00	0.0	0.0	10	18.746	35.646	25.60	0.024
17	18.800	35.646	8.23	5.40	0.09	0	0.00	0.0	0.0	20	18.790	35.645	25.59	0.048
25		35.644	8.23	5.39	0.07	0	0.01	0.0	0.0	30	18.758	35.643	25.59	0.072
42	18.720	35.639	8.24	5.39	0.09	0	0.01	0.0	0.0	50	18.604	35.627	25.62	0.120
62	18.250	35.592	8.22	5.08	0.18	1	0.20	0.0	0.0	75	17.010	35.528	25.93	0.176
83	16.440	35.496	8.18	4.78	0.44	3	0.04	1.4	0.1	100	16.288	35.500	26.08	0.227
104	16.240	35.501	8.19	5.01	0.38	3	0.03	6.0	0.1	125	15.900	35.464	26.14	0.276
124	15.920	35.466	8.17	4.83	0.47	3	0.03	5.5	0.0	150	15.115	35.392	26.27	0.322
166	14.720	35.355	8.15	4.48	0.63	3	0.03	6.7	0.0	200	14.309	35.327	26.39	0.410
208	14.210	35.325	8.14	4.72	0.66	4	0.02	9.4	0.0	250	13.678	35.325	26.52	0.492
249	13.690	35.325	8.14	4.99	0.63	4	0.01	9.4	0.0	300	13.156	35.284	26.60	0.570
327	12.860	35.242	8.13	5.17	0.70	4	0.01	9.9	0.0	400	11.947	35.096	26.69	0.720
411	11.806	35.075	8.11	4.86	0.82	5	0.01	9.4	0.0	500	10.654	34.907	26.78	0.862
505	10.590	34.898	8.09	4.79	1.02	6	0.01	9.3	0.0	600	9.483	34.725	26.84	0.998
585	9.630	34.748			1.05	6	0.01	10.4	0.0	700	8.705	34.654	26.91	1.129
677	8.986	34.671	8.06	4.78	1.24	10	0.01	13.7	0.0	800	7.714	34.581	27.01	1.252
761	7.860	34.609	8.03	4.64	1.51	13	0.00	16.9	0.0	1000	6.248	34.474	27.13	1.480
854	7.563	34.544	8.06	4.43	1.54	18	0.00	20.8	0.0	1200	4.939	34.464	27.28	1.682
1071	5.698	34.461	7.98	4.28	1.83	37	0.01	23.2	0.0	1500	3.476	34.538	27.49	1.929
1296	4.429	34.483	7.98	3.94	2.05	61	0.00	25.4	0.0	2000	2.438	34.667	27.69	2.238
1528	3.363	34.546	7.91	3.72	2.37	82	0.00	30.1	0.0	2500	2.026	34.726	27.77	2.479
1761	2.718	34.614	7.92	3.76	2.27		0.00	32.5	0.0	3000	1.659	34.733	27.81	2.693
2231	2.229	34.700	7.92	4.15	2.11	95	0.00	34.5	0.0	3500	1.301	34.727	27.83	2.890
2705	1.874	34.734				104	0.00	32.7	0.1					
3200	1.515	34.733	7.92	4.53	2.15	113	0.01	32.1	0.0					
3698	1.161	34.721	7.92	4.61	2.15	122	0.00	32.2	0.0					

Station A2-1

Meteorological observation

Date	: January 03, 1993	Weather time (UT)	: 12:00	Wind direction	: N
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 10 m/s
Latitude	: 68° 59.8' S	Air temperature(dry)	: -0.1 °C	Humidity	: 61 %
Longitude	: 39° 38.1' E	(wet)	: -2.2 °C	Wave	: - / -
Depth	: 150 m	Atmospheric pressure	: 998.1 hPa	Swell	: - / -
				Visibility	: 30 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
24	-1.776	33.798		7.79						30	-1.767	33.847	27.26	
32	-1.758	33.864		7.47						50	-1.655	34.011	27.39	
42	-1.682	33.953		7.15						75	-1.619	34.075	27.44	
62	-1.631	34.058		6.94						100	-1.598	34.112	27.47	
87	-1.609	34.090		6.84						125	-1.589	34.141	27.50	
111	-1.590	34.129		6.81						150	-1.582	34.171	27.52	
136	-1.589	34.151		6.80										
161	-1.574	34.190		6.79										

Station A2-2

Meteorological observation

Date	: January 09.1993	Weather time (UT)	: 12:00	Wind direction	: E
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 9 m/s
Latitude	: 68°59.8'S	Air temperature(dry)	: 1.3 °C	Humidity	: 68 %
Longitude	: 39°38.1'E	(wet)	: -0.5 °C	Wave	: - / -
Depth	: 150 m	Atmospheric pressure	: 997.7 hPa	Swell	: - / -
				Visibility	: 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si (µmol/l)	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
22	-1.750	33.812		7.90						30	-1.754	33.837	27.25	
33	-1.755	33.857		7.70						50	-1.686	34.012	27.39	
41	-1.706	33.935		7.30						75	-1.627	34.105	27.47	
63	-1.656	34.088		7.03						100	-1.580	34.148	27.50	
86	-1.602	34.119		6.86						125	-1.567	34.199	27.54	
111		34.171		6.86						150	-1.564	34.216	27.56	
135	-1.565	34.218		6.89										
160	-1.564	34.196		6.90										

Station A5

Meteorological observation

Date	: January 02, 1993	Weather time (UT)	: 12:00	Wind direction	: ENE
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 14 m/s
Latitude	: 69° 00. 0' S	Air temperature(dry)	: 0.2 °C	Humidity	: 65 %
Longitude	: 39° 39. 6' E	(wet)	: -1.8 °C	Wave	: - / -
Depth	: 600 m	Atmospheric pressure	: 996.4 hPa	Swell	: - / -
				Visibility	: 30 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
28	-1.764	33.756		7.30						30	-1.765	33.767	27.20	
36	-1.769	33.809		7.69						50	-1.678	33.933	27.33	
47	-1.696	33.907		7.37						75	-1.570	34.083	27.45	
65	-1.595	34.048		6.95						100	-1.564	34.128	27.48	
88	-1.562	34.107		6.80						125	-1.548	34.163	27.51	
111	-1.566	34.145		6.88						150	-1.559	34.182	27.53	
134	-1.538	34.173		6.79										
162	-1.598	34.183		6.99										

Station A6

Meteorological observation

Date	: January 24, 1993	Weather time (UT)	: 12:00	Wind direction	: NNE
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 6 m/s
Latitude	: 69° 00. 9' S	Air temperature(dry)	: -0.9 °C	Humidity	: 68 %
Longitude	: 39° 39. 1' E	(wet)	: -2.7 °C	Wave	: - / -
Depth	: - m	Atmospheric pressure	: 1000. 0 hPa	Swell	: - / -
				Visibility	: 15 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
0	0.600	14.494		11.38						0	0.600	14.494	11.63	0.000
16	-1.694	33.806		8.08						10	-1.444	30.226	24.32	0.097
26	-1.776	33.849		7.72						20	-1.752	33.824	27.24	0.120
34	-1.746	33.892		7.53						30	-1.765	33.870	27.28	0.128
44	-1.651	34.024		7.11						50	-1.642	34.061	27.43	0.142
54	-1.638	34.074		7.03						75	-1.615	34.110	27.47	0.158
78		34.115		6.94						100	-1.595	34.153	27.51	0.173
100	-1.595	34.153		6.86						125	-1.613	34.166	27.52	0.188
127	-1.616	34.167		6.88						150	-1.654	34.187	27.54	0.202
149	-1.653	34.186		7.00										
188	-1.677	34.217		7.14										



Station A7

Meteorological observation

Date	: January 25, 1993	Weather time (UT)	: 12:00	Wind direction	: N
Time (UT)	: 12:00	Weather	: b	Wind speed	: 2 m/s
Latitude	: 69° 06.1' S	Air temperature(dry)	: -1.5 °C	Humidity	: 75 %
Longitude	: 39° 33.2' E	(wet)	: -3.0 °C	Wave	: - / -
Depth	: 250 m	Atmospheric pressure	: 998.2 hPa	Swell	: - / -
				Visibility	: 15 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					(μmol/l)									
0	0.200	34.322		10.35						0	0.200	34.322	27.59	0.000
13	-1.421	33.645		9.25						10	-1.159	33.659	27.09	0.007
17	-1.707	33.807		8.26						20	-1.822	33.819	27.24	0.017
21	-1.828	33.822		7.82						30	-1.758	33.886	27.29	0.025
25	-1.804	33.835		7.78						50	-1.706	34.017	27.40	0.039
35	-1.723	33.942		7.36										
44	-1.717	33.980		7.27										
54	-1.696	34.046		7.15										

Station 41

Meteorological observation

Date	: January 03, 1993	Weather time (UT)	: 12:00	Wind direction	: N
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 10 m/s
Latitude	: 69°00.6'S	Air temperature(dry)	: -0.1 °C	Humidity	: 61 %
Longitude	: 39°38.1'E	(wet)	: -2.2 °C	Wave	: - / -
Depth	: 230 m	Atmospheric pressure	: 998.1 hPa	Swell	: - / -
				Visibility	: 30 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
22	-1.785	33.801		8.07						30	-1.785	33.809	27.23	
33	-1.772	33.832		7.58						50	-1.674	33.983	27.37	
40	-1.710	33.946		7.19						75	-1.625	34.061	27.43	
64	-1.640	34.028		7.02						100	-1.593	34.110	27.47	
86	-1.610	34.090		6.88						125	-1.570	34.155	27.51	
110	-1.581	34.123		6.77						150	-1.568	34.186	27.53	
134	-1.567	34.172		6.91										
157	-1.568	34.187		6.88										

Station 42

Meteorological observation

Date : January 10, 1993      Weather time (UT) : 12:00      Wind direction : ENE  
 Time (UT) : 12:00      Weather : bc      Wind speed : 12 m/s  
 Latitude : 69°00.6'S      Air temperature(dry) : 3.7 °C      Humidity : 57 %  
 Longitude : 39°38.1'E      (wet) : 1.2 °C      Wave : - / -  
 Depth : 230 m      Atmospheric pressure : 991.2 hPa      Swell : - / -  
 Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
					(μmol/l)									
22	-1.738	33.825	8.25	8.54	1.92	60	0.06	28.2	0.6	30	-1.735	33.851	27.26	
36	-1.734	33.870	8.25	7.70	1.99	63	0.06	28.9	0.8	50	-1.662	34.046	27.42	
40	-1.735	33.957	8.22	7.29	2.08	70	0.06	29.6	0.4	75	-1.639	34.098	27.46	
51	-1.658	34.050	8.20	7.13	2.13	74	0.03	30.3	0.2	100	-1.606	34.143	27.50	
61	-1.640	34.076	8.20	7.05	2.13	75	0.03	30.5	0.2	125	-1.548	34.181	27.53	
89	-1.638	34.121	8.20	7.02	2.16	75	0.02	30.6	0.1	150	-1.553	34.205	27.55	
112	-1.568	34.166	8.18	6.82	2.18	78	0.02	30.9	0.0	200	-1.559	34.218	27.56	
134	-1.544	34.190	8.18	6.82	2.18	78	0.01	31.0	0.1					
162	-1.558	34.214	8.18	6.87	2.15	77	0.01	31.0	0.0					
212	-1.559	34.219	8.18	6.89	2.18	77	0.01	31.0	0.2					

Station 43

Meteorological observation

Date	: January 15, 1993	Weather time (UT)	: 12:00	Wind direction	: ENE
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 10 m/s
Latitude	: 69° 00. 6' S	Air temperature(dry)	: 2.8 °C	Humidity	: 56 %
Longitude	: 39° 38. 1' E	(wet)	: 0.3 °C	Wave	: - / -
Depth	: 230 m	Atmospheric pressure	: 991. 4 hPa	Swell	: - / -
				Visibility	: 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					(μmol/l)									
26	-1.739	33.803		7.90						30	-1.752	33.822	27.24	
34	-1.755	33.840		7.77						50	-1.718	33.920	27.32	
47	-1.729	33.898		7.58						75	-1.667	34.064	27.44	
54	-1.703	33.955		7.32						100	-1.632	34.120	27.48	
65	-1.675	34.039		7.13						125	-1.597	34.154	27.51	
87	-1.660	34.090		7.06						150	-1.572	34.174	27.52	
110	-1.613	34.142		6.89										
136	-1.586	34.158		6.86										
158	-1.565	34.186		6.83										

Station 44

Meteorological observation

Date : January 19, 1993	Weather time (UT) : 12:00	Wind direction : NE
Time (UT) : 12:00	Weather : bc	Wind speed : 10 m/s
Latitude : 69° 00. 6' S	Air temperature(dry) : 1.0 °C	Humidity : 66 %
Longitude : 39° 38. 1' E	(wet) : -1.0 °C	Wave : - / -
Depth : 230 m	Atmospheric pressure : 1003.0 hPa	Swell : - / -
		Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
0	2.400									0	2.400	33.618	26.86	0.000
1	1.311									10	-1.755	33.823	27.24	0.010
5	-1.659	33.618								20	-1.756	33.820	27.24	0.019
10	-1.755	33.823	8.22	7.88	1.93	60	0.04	28.2	0.0	30	-1.712	33.818	27.24	0.027
20	-1.756	33.820	8.23	7.65	1.95	62	0.03	28.9	0.0	50	-1.675	33.819	27.24	0.044
30	-1.712	33.818	8.22	7.39	2.06	66	0.03	29.5	0.0	75	-1.673	33.967	27.36	0.063
43	-1.682	33.824	8.18	7.25	2.09	70	0.04	29.9	0.0	100	-1.630	34.053	27.43	0.081
54	-1.672	33.819	8.19	7.10	2.12	73	0.03	30.4	0.0	125	-1.596	34.128	27.49	0.096
77	-1.673	33.976	8.18	7.06	2.15	75	0.02	30.5	0.0	150	-1.575	34.432	27.73	0.108
102	-1.627	34.059	8.17	6.90	2.16	77	0.01	30.7	0.0					
126	-1.595	34.131	8.17	6.86	2.19	79	0.02	31.0	0.0					
150		34.432		6.82	2.18	81	0.02	31.1	0.0					
189	-1.559	34.535	8.16	6.83	2.19	79	0.02	31.2	0.0					

Station 45

Meteorological observation

Date	: January 23, 1993	Weather time (UT)	: 12:00	Wind direction	: E
Time (UT)	: 12:00	Weather	: bc	Wind speed	: 9 m/s
Latitude	: 69°00.6'S	Air temperature(dry)	: 0.2 °C	Humidity	: 65 %
Longitude	: 39°38.1'E	(wet)	: -1.8 °C	Wave	: - / -
Depth	: 230 m	Atmospheric pressure	: 997.6 hPa	Swell	: - / -
				Visibility	: 30 km

Observed					Interpolated									
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					(μmol/l)									
20	-1.734	33.809		7.73						20	-1.734	33.809	27.23	
30	-1.744	33.851		7.70						30	-1.744	33.851	27.26	
45	-1.717	33.902		7.49						50	-1.690	33.951	27.34	
54	-1.673	33.995		7.11						75	-1.647	34.095	27.46	
62	-1.662	34.050		7.06						100	-1.621	34.130	27.49	
88	-1.633	34.120		6.93						125	-1.608	34.153	27.51	
111	-1.611	34.140		6.83						150	-1.614	34.177	27.53	
135	-1.605	34.163		6.87										
160	-1.626	34.187		6.93										

Station 51

Meteorological observation

Date : December 14, 1992	Weather time (UT) : 12:00	Wind direction : W
Time (UT) : 11:15	Weather : c	Wind speed : 17 m/s
Latitude : 63°38.0'S	Air temperature(dry) : -0.7 °C	Humidity : 86 %
Longitude : 51°21.6'E	(wet) : -1.5 °C	Wave : W / 5
Depth : 4842 m	Atmospheric pressure : 995.8 hPa	Swell : WSW / 6
		Visibility : 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	N02-N	N03-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
					(μmol/l)									
0	0.900	33.825	8.14	8.17	1.68	42	0.29	25.6	0.3	0	0.900	33.825	27.22	0.000
7	0.950	33.822	8.17	8.17	1.71	43	0.30	25.5	0.2	10	0.984	33.821	27.22	0.009
13	-1.010	33.820	8.17	8.15	1.70	42	0.31	25.5	0.3	20	-1.020	33.826	27.22	0.017
20	-1.020	33.826	8.18	8.16	1.70	42	0.29	25.5	0.3	30	-1.026	33.822	27.22	0.026
34	-1.030	33.820	8.18	8.19	1.74	42	0.30	25.6	0.3	50	-1.541	33.954	27.34	0.042
53	-1.620	33.977	8.15	7.90	1.87	46	0.27	27.0	0.3	75	-1.742	34.095	27.46	0.059
67	-1.760	34.061	8.12	7.57	1.97	50	0.27	28.1	0.4	100	0.957	34.426	27.61	0.073
84	-1.540	34.132	8.09	7.20	2.05	53	0.27	29.0	0.3	125	1.593	34.517	27.64	0.085
101	1.010	34.433	7.97	4.78	2.44	80	0.08	34.3	0.0	150	1.735	34.560	27.66	0.096
135	1.680	34.536	7.95	4.07	2.50	87	0.03	35.0	0.0	200	1.850	34.612	27.69	0.118
172	1.800	34.589	7.94	4.13	2.47	89	0.03	34.6	0.1	250	1.856	34.641	27.72	0.138
209	1.860	34.618	7.95	4.10	2.44	92	0.01	34.3	0.0	300	1.850	34.665	27.74	0.157
303	1.850	34.666	7.96	4.19	2.35	93	0.02	33.3	0.0					

Station 52

Meteorological observation

Date : February 13, 1993      Weather time (UT) : 10:00      Wind direction : NNW  
 Time (UT) : 9:39      Weather : c      Wind speed : 9 m/s  
 Latitude : 67° 16. 0' S      Air temperature(dry) : 0. 4 °C      Humidity : 98 %  
 Longitude : 38° 12. 0' E      (wet) : 0. 3 °C      Wave : NNW / 3  
 Depth : 4314 m      Atmospheric pressure : 987. 4 hPa      Swell : NNW / 1  
 Visibility : 3 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
0	0.200	33.663	8.06	7.96	1.77	53	0.26	26.6	0.3	0	0.200	33.663	27.04	0.000
9		33.679	8.08	7.93	1.77	53	0.24	26.7	0.4	10	0.063	33.680	27.06	0.010
17	0.070	33.684	8.11	7.96		53	0.25	26.5	0.3	20	0.136	33.743	27.12	0.020
26		33.916	8.10	7.87	1.86	52	0.26	26.9	0.3	30	0.394	33.917	27.27	0.029
43	0.780	33.920	8.10	7.84	1.87	54	0.20	27.3	0.4	50	-1.083	33.960	27.33	0.044
65	-1.680	34.040	8.09	7.57	1.99	58	0.15	28.4	0.4	75	-1.730	34.076	27.45	0.062
87	-1.760	34.115	8.08	7.34	2.06	58	0.17	29.2	0.4	100	-1.791	34.151	27.51	0.077
108	-1.800	34.172	8.06	7.26	2.08	59	0.15	29.9	0.3	125		34.209		
130	-1.120	34.220	8.02	7.20	2.08	59	0.11	30.0	0.3	150		34.273		
173	-1.040	34.344	8.04	6.48	2.18	68	0.00	30.9	0.2	200		34.481		
216	0.700	34.555	7.97	5.05	2.31	86	0.02	32.9	0.3	250		34.631		
259	1.380	34.642	7.94	4.42	2.33	93	0.00	33.1	0.2	300		34.676		
356	1.477	34.685	7.93	4.41	2.30	95	0.00	32.4	0.1					



Station 53

Meteorological observation

Date : February 11, 1993	Weather time (UT) : 5:00	Wind direction : ESE
Time (UT) : 4:57	Weather : bc	Wind speed : 6 m/s
Latitude : 68° 22.0' S	Air temperature(dry) : -6.2 °C	Humidity : 77 %
Longitude : 38° 38.6' E	(wet) : -7.0 °C	Wave : - / -
Depth : 1560 m	Atmospheric pressure : 985.5 hPa	Swell : - / -
		Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
										(μmol/l)				
0	-1.800	33.604	8.13	7.75	1.93	54	0.20	27.3	0.4	0	-1.800	33.604	27.07	0.000
10		33.598	8.13	7.82	1.93	54	0.19	27.1	0.3	10	-1.800	33.598	27.06	0.010
19	-1.800	33.600	8.13	7.83	1.95	54	0.18	27.0	0.5	20	-1.799	33.601	27.06	0.020
29		33.620	8.13	7.83	1.95	54	0.17	27.1	0.4	30	-1.783	33.622	27.08	0.030
49	-1.750	33.672	8.14	7.77	1.98	55	0.13	27.6	0.5	50	-1.749	33.676	27.12	0.049
73	-1.740	33.963	8.11	7.66	2.11	58	0.13	28.6	0.5	75	-1.741	33.972	27.36	0.070
97	-1.750	34.045	8.09	7.60	2.11	58	0.15	29.1	0.3	100	-1.755	34.051	27.43	0.087
122	-1.810	34.096	8.09	7.60	2.09	59	0.09	29.5	0.1	125	-1.816	34.101	27.47	0.103
146	-1.840	34.138	8.09	7.51	2.11	59	0.00	29.8	0.1	150	-1.840	34.144	27.50	0.118
195	-1.780	34.197	8.08	7.19	2.09	59	0.00	29.8	0.1	200	-1.780	34.200	27.55	0.146
242	-1.800	34.215	8.07		2.12	61	0.00	30.2	0.1	250	-1.797	34.219	27.56	0.172
291	-1.760	34.243	8.08	6.85	2.14	62	0.00	30.3	0.1					

Station 54

Meteorological observation

Date	: February 18, 1993	Weather time (UT)	: 5:00	Wind direction	: W
Time (UT)	: 4:56	Weather	: bc	Wind speed	: 22 m/s
Latitude	: 64°00.0'S	Air temperature(dry)	: 1.2 °C	Humidity	: 72 %
Longitude	: 38°20.6'E	(wet)	: -0.2 °C	Wave	: W / 5
Depth	: 4926 m	Atmospheric pressure	: 978.6 hPa	Swell	: W / 3
				Visibility	: 15 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					(μmol/l)									
0	1.400	33.818	8.05	7.65	1.80	52	0.38	26.6	0.7	0	1.400	33.818	27.09	0.000
5		33.811	8.06	7.62	1.87	53	0.38	26.8	0.8	10	1.362	33.811	27.09	0.010
11	1.360	33.811	8.05	7.63	1.76	53	0.37	26.8	0.7	20	1.355	33.811	27.09	0.020
16			8.06	7.64	1.87	53	0.37	26.9	0.7	30	1.340	33.812	27.09	0.029
27	1.350	33.811	8.04	7.64	1.87	53	0.38	26.8	0.8	50	1.340	34.126	27.34	0.047
30	1.340	33.812	8.04	7.68	1.89	53	0.38	26.7	0.8	75	0.496	34.196	27.50	0.063
54	1.340	34.160	8.01	7.63	1.93	55	0.18	27.6	0.5	100	-1.540	34.486	27.77	0.075
68	0.680	34.175	8.02	7.58	1.92	57	0.19	27.8	0.5					
81	-1.540	34.224	8.01	7.22	2.03	58	0.31	29.0	0.4					
108	-1.540	34.654	7.93	4.17	2.34	95	0.00	33.2	0.0					

Station 61

Meteorological observation

Date : February 20, 1993	Weather time (UT) : 14:00	Wind direction : WSW
Time (UT) : 13:32	Weather : b	Wind speed : 8 m/s
Latitude : 66°28.6' S	Air temperature(dry) : -5.8 °C	Humidity : 67 %
Longitude : 48°20.4' E	(wet) : -7.0 °C	Wave : WSW / 2
Depth : 578 m	Atmospheric pressure : 970.4 hPa	Swell : N / 1
		Visibility : 50 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ <sub>t</sub>	ΔD
0	-1.100	33.300	8.14	8.41	1.36	40	0.21	22.5	0.4	0	-1.100	33.300	26.80	0.000
10		33.259	8.13	8.38	1.41	40	0.20	22.3	0.3	10	0.616	33.259	26.75	0.013
20	0.390	33.668	8.10	8.36	1.41	37	0.19	22.7	0.4	20	0.390	33.668	27.07	0.024
30		33.697	8.10	8.30	1.51	39	0.19	23.0	0.0	30	0.445	33.697	27.10	0.034
51	0.560	33.825	8.09	8.07	1.71	44	0.17	23.9	1.7	50	0.555	33.821	27.20	0.053
100	-1.460	34.025	8.03	7.79	1.99	57	0.09	26.4	1.9	75	-1.013	33.923	27.30	0.073
125	-1.740	34.137	8.00	7.59	2.06	61	0.10	27.9	1.5	100	-1.460	34.025	27.40	0.092
150	-1.760	34.178	7.99	7.48	2.09	61	0.10	28.7	0.9	125	-1.740	34.137	27.50	0.107
200	-1.720	34.215	7.98	7.13	2.11	63	0.09	29.2	0.4	150	-1.760	34.178	27.53	0.122
249	-1.750	34.244	7.98	7.35	2.11	63	0.07	29.6	0.1	200	-1.720	34.215	27.56	0.149
300	-1.590	34.294	7.96	7.11	2.15	68	0.08	29.9	0.0	250	-1.747	34.245	27.58	0.174
397	0.389	34.515	7.94	5.96	2.21	85	0.03	30.8	0.1	300	-1.590	34.294	27.62	0.198

Station 71

Meteorological observation

Date : March 3, 1993  
 Time (UT) : 11:04  
 Latitude : 66° 54. 7' S  
 Longitude : 75° 57. 4' E  
 Depth : 616 m

Weather time (UT) : 11:00  
 Weather : c  
 Air temperature(dry) : -3. 4 °C  
 (wet) : -3. 8 °C  
 Atmospheric pressure : 974. 8 hPa

Wind direction : SE  
 Wind speed : 8 m/s  
 Humidity : 90 %  
 Wave : SE / 5  
 Swell : E / 3  
 Visibility : 3 km

Depth (m)	O b s e r v e d									I n t e r p o l a t e d				
	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
	( $\mu$ mol/l )													
0	-1.200	33.156	8.12	8.15	1.43	46	0.20	23.4	0.3	0	-1.200	33.156	26.69	0.000
8		33.058	8.12	8.16	1.43	46	0.19	23.2	0.2	10	-1.420	33.058	26.61	0.014
15	-1.470	33.060	8.12	8.17	1.45	46	0.20	23.2	0.2	20	-1.468	33.062	26.62	0.028
23		33.064	8.13	8.18	1.46	46	0.20	23.2	0.0	30	-1.383	33.396	26.89	0.041
38	-1.370	33.842	8.07	7.65	1.68	55	0.12	26.6	0.4	50	-1.538	33.973	27.36	0.060
62	-1.680		8.02	7.28	2.05	63	0.11	28.5	0.3	75	-1.706	34.193	27.54	0.076
92	-1.740		8.01	7.25	2.08	64	0.12	29.2	0.3	100	-1.770	34.323	27.65	0.089
113	-1.810	34.349	8.01	7.27	2.08	67	0.09	29.5	0.3	125	-1.804	34.358	27.68	0.099
133		34.363	8.01	7.29	2.09	67	0.08	29.4	0.4	150	-1.791	34.370	27.69	0.110
171	-1.780	34.378	8.00		2.08	67	0.03	29.5	0.1	200	-1.796	34.388	27.70	0.130
208	-1.800	34.391	8.01	7.31	2.09	68	0.01	29.5	0.1	250	-1.771	34.402	27.71	0.149
245	-1.790	34.400	8.01	7.24	2.09	70	0.00	29.6	0.1	300	0.372	34.421	27.68	0.169
337	1.486	34.439	7.97	6.98	2.14	73	0.00	30.1	0.0					

Station 72

Meteorological observation

Date	: March 4.1993	Weather time (UT)	: 7:00	Wind direction	: SW
Time (UT)	: 6:54	Weather	: bc	Wind speed	: 12 m/s
Latitude	: 66° 01.2' S	Air temperature(dry)	: -5.0 °C	Humidity	: 66 %
Longitude	: 75° 10.0' E	(wet)	: -6.3 °C	Wave	: SW / 4
Depth	: 616 m	Atmospheric pressure	: 975.1 hPa	Swell	: SW / 3
				Visibility	: 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	P04-P	Si03-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	$\sigma_t$	$\Delta D$
					(μmol/l)									
0	0.000	33.659	8.10	7.83	1.58	50	0.18	25.3	0.2	0	0.000	33.659	27.05	0.000
9		33.651	8.08	7.80	1.64	50	0.18	25.3	0.2	10	0.034	33.651	27.04	0.010
19	0.050	33.652	8.10	7.82	1.63	50	0.18	25.2	0.2	20	0.047	33.656	27.05	0.021
28		33.693	8.11	7.72	1.64	50	0.18	25.4	0.0	30	0.015	33.702	27.08	0.031
47	0.040	33.780	8.09	7.83	1.68	50	0.17	25.8	0.3	50	0.030	33.795	27.16	0.050
70	-1.420		8.02	7.18	1.87	61	0.11	28.9	0.3	75	-1.444	34.004	27.38	0.070
117	-1.650	34.310	8.01	6.93	2.17	66	0.08	30.4	0.0	100	-1.567	34.233	27.57	0.085
141	-1.500	34.338	8.00	6.83	2.12	68	0.03	30.6	0.0	125	-1.600	34.320	27.64	0.097
188	-1.200	34.390	7.99	6.45	2.14	72	0.00	30.8	0.1	150	-1.443	34.348	27.66	0.108
233	-1.760	34.421	7.99		2.15	73	0.00	30.5	0.0	200	-1.275	34.400	27.70	0.129
280	0.490	34.487	7.97	6.08	2.20	80	0.00	31.4	0.1	250	-1.387	34.444	27.74	0.148
374	0.290	34.602	7.95	5.44	2.20	90	0.00	31.5	0.0	300	0.218	34.512	27.74	0.166

Station 73

Meteorological observation

Date : March 2, 1993	Weather time (UT) : 8:00	Wind direction : SSE
Time (UT) : 8:06	Weather : b	Wind speed : 9 m/s
Latitude : 68° 06. 0' S	Air temperature(dry) : -3. 8 °C	Humidity : 59 %
Longitude : 74° 50. 9' E	(wet) : -5. 6 °C	Wave : SSE / 3
Depth : 558 m	Atmospheric pressure : 977. 9 hPa	Swell : NW / 1
		Visibility : 30 km

Observed										Interpolated				
Depth (m)	T (°C)	S	pH	DO (ml/l)	PO4-P	SiO3-Si	NO2-N	NO3-N	NH4-N	Depth (m)	T (°C)	S	σ t	Δ D
0	0. 700	33. 674	8. 23	8. 49	0. 94	28	0. 24	18. 9	0. 0	0	0. 700	33. 674	27. 09	0. 000
10		33. 664	8. 23	8. 50	0. 98	30	0. 24	18. 9	0. 1	10	0. 724	33. 664	27. 08	0. 010
20	0. 840	33. 677	8. 23	8. 49	1. 00	28	0. 24	18. 8	0. 1	20	0. 840	33. 677	27. 10	0. 020
30		33. 729	8. 24	8. 38	0. 95	28	0. 23	18. 8	0. 1	30	-1. 083	33. 729	27. 15	0. 029
50	-1. 600	34. 369	8. 05	7. 37	2. 15	67	0. 16	29. 0	1. 2	50	-1. 600	34. 369	27. 68	0. 043
55	-1. 640	34. 435	8. 03	7. 36	2. 15	71	0. 28	29. 9	0. 2	75	-1. 681	34. 443	27. 74	0. 052
99	-1. 720	34. 452	8. 03	7. 31	2. 12	72	0. 13	30. 1	0. 1	100	-1. 721	34. 453	27. 75	0. 061
124	-1. 750	34. 465	8. 03	7. 37	2. 12	72	0. 11	30. 1	0. 0	125	-1. 751	34. 466	27. 76	0. 070
149	-1. 780	34. 481	8. 03	7. 29	2. 12	72	0. 01	30. 2	0. 0	150	-1. 779	34. 482	27. 78	0. 078
198	-1. 740	34. 521	8. 01	6. 84	2. 17	79	0. 00	30. 6	0. 1					

Table 4. Petroleum oil, Cd, Cu, Zn and Hg concentrations in the surface water.

Station No.	Date	Time	Position		Air Temp.	Water Temp.	Petroleum Oil	Cadmium	Copper	Zinc	Mercury
			(UT)	Lat.	Long.	(°C)			(µg/l)		
	1992										
P - 1	Nov. 18	22:58	9-07N	128-32E	28.5	28.8	1.5	0.072	0.61	2.8	0.006
2	19	22:57	4-18N	124-23E	27.8	28.5	1.1	0.044	0.42	1.6	0.004
3	20	22:57	0-29N	119-36E	27.8	28.8	0.9	1.255	0.35	1.0	0.002
4	22	08:03	7-06S	116-34E	30.1	31.7	1.2	0.029	0.32	0.9	0.003
5	23	08:02	12-29S	114-54E	27.3	29.2	0.6	0.012	0.34	0.8	0.002
6	Dec. 5	05:20	41-03S	109-55E	14.0	12.8	1.0	0.065	0.52	1.4	0.002
7	6	04:55	45-44S	110-01E	11.9	10.7	0.6	0.254	0.77	1.7	0.003
8	7	05:20	50-19S	109-32E	6.1	4.5	1.7	0.066	0.16	0.7	0.007
9	8	05:00	55-00S	107-25E	3.0	2.2	0.8	0.083	0.44	< 0.3	0.003
10	9	04:57	59-27S	104-38E	0.9	0.7	1.0	0.064	0.49	< 0.3	0.003
11	10	04:50	60-03S	95-38E	-0.2	0.0	0.8	—	—	—	—
12	11	05:50	60-43S	84-27E	0.5	-0.1	0.8	—	—	—	—
13	12	06:51	60-59S	73-05E	0.5	-0.4	0.5	—	—	—	—
14	13	06:50	61-00S	62-14E	0.1	-0.2	0.9	—	—	—	—
15	14	11:15	63-38S	51-22E	-0.7	0.9	0.4	—	—	—	—
16	16	09:30	68-40S	38-49E	-1.9	-1.4	1.2	—	—	—	—
	1993										
17	Feb. 26	09:57	66-18S	48-11E	-3.1	-0.8	1.9	—	—	—	—
18	27	08:50	64-58S	59-20E	-1.8	0.4	3.2	0.038	0.53	0.4	0.002
19	Mar. 3	11:04	66-55S	75-57E	-3.4	-1.2	1.5	—	—	—	—
20	7	05:50	63-06S	97-07E	1.0	1.2	6.1	0.067	0.30	1.6	0.002
21	8	04:51	62-56S	105-41E	1.7	1.4	2.3	—	—	—	—
22	9	05:02	63-09S	115-49E	-3.0	1.3	1.4	0.074	0.52	2.0	0.002
23	10	03:52	62-59S	125-17E	1.7	1.4	0.9	—	—	—	—
24	11	03:54	63-31S	133-52E	1.2	2.3	0.9	0.057	0.45	1.2	0.004
25	13	02:49	63-57S	149-51E	-0.5	1.4	1.6	0.072	0.41	1.2	0.016
26	14	07:00	59-04S	149-35E	4.5	2.7	1.3	0.077	0.58	1.5	0.009
27	15	01:48	56-56S	148-40E	4.3	4.8	1.0	0.050	0.27	0.8	0.040
28	16	01:48	52-25S	150-11E	6.9	7.6	1.1	0.029	0.45	2.2	0.005
29	17	01:52	46-59S	151-03E	11.2	12.7	1.6	0.010	0.20	1.1	0.438
30	18	02:51	42-09S	150-33E	16.4	18.6	1.0	0.006	0.20	1.3	0.003

Table 5. Hourly tidal observation data at Syowa Station from February 1992 to January 1993 (Time is LMT(UT+3 hours)).

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Feb. 1-Feb. 29 1992  
 Unit : CENTIMETER

The zero level of the tide gauge  
 relative to the bench mark No.1040:  
 -3.908m Jan.18 1992  
 -3.908m Jan.20 1993

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	158	163	168	176	179	177	166	144	121	98	79	69	70	82	104	129	157	175	183	185	178	166	154	148	3427	143	3575	143			
2	148	152	162	172	181	183	172	154	131	104	79	62	57	68	90	116	143	165	181	184	177	166	152	140	3338	139	3476	139			
3	138	144	153	168	181	188	184	168	147	118	90	69	59	63	82	109	135	160	176	182	176	164	145	133	3333	139	3460	138			
4	127	129	142	159	174	187	190	181	163	134	105	81	64	63	77	101	129	152	170	177	172	160	142	125	3304	138	3422	137			
5	117	117	127	146	165	181	191	188	173	149	122	97	76	72	82	100	128	152	171	181	179	168	149	130	3359	140	3480	139			
6	120	114	118	136	158	177	190	192	187	165	139	116	94	81	86	101	125	146	163	175	177	164	144	122	3391	141	3499	140			
7	108	97	99	109	132	154	169	174	172	159	139	115	96	82	84	93	114	136	152	165	167	162	141	121	3139	131	3244	130			
8	105	92	90	96	115	137	155	167	173	167	152	133	116	106	103	110	127	144	162	174	177	172	155	135	3262	136	3380	135			
9	118	103	94	96	107	128	144	158	165	165	160	149	134	126	125	130	142	157	173	185	190	189	177	159	3474	145	3618	145			
10	143	130	116	116	122	132	150	161	169	176	175	167	157	152	148	151	154	166	176	184	184	180	171	153	3732	156	3869	155			
11	137	119	105	95	94	99	107	116	127	137	139	141	140	141	146	150	159	170	179	186	189	190	183	176	3423	143	3587	143			
12	164	150	139	128	123	124	124	127	135	138	144	152	157	164	177	181	188	195	197	201	198	194	188	182	3871	161	4040	162			
13	169	157	145	131	120	112	104	98	94	95	102	108	117	128	146	160	171	178	182	180	179	174	165	161	3376	141	3534	141			
14	158	150	142	136	126	115	102	86	74	69	69	74	86	106	127	150	169	182	186	184	181	175	165	162	3173	132	3333	133			
15	161	161	159	157	152	141	123	99	80	67	53	57	64	84	110	139	163	180	186	187	181	167	158	152	3179	132	3334	133			
16	156	158	164	170	170	164	147	124	97	70	52	45	47	63	93	123	152	172	184	185	175	162	147	138	3160	132	3302	132			
17	142	150	162	177	186	187	179	155	126	92	61	45	40	51	74	105	135	159	173	174	164	148	131	118	3134	131	3250	130			
18	116	127	141	163	180	192	190	175	149	114	81	55	40	43	65	95	122	148	165	167	159	140	118	102	3046	127	3141	126			
19	95	96	113	137	162	182	193	189	169	141	108	78	57	51	64	90	117	141	160	165	160	140	115	97	3020	126	3102	124			
20	81	76	89	115	141	167	185	193	185	167	138	109	86	73	77	98	120	144	160	168	166	148	122	96	3102	129	3178	127			
21	76	64	69	85	111	139	161	173	179	170	149	127	104	91	91	103	122	143	159	172	169	156	136	111	3062	128	3149	126			
22	86	69	63	72	91	116	141	158	166	168	159	140	125	116	113	117	132	150	165	176	176	167	148	122	3135	131	3236	129			
23	101	83	66	65	77	97	115	129	143	149	148	141	131	126	123	127	137	150	163	171	173	168	154	135	3074	128	3189	128			
24	116	97	84	77	79	91	103	113	124	135	137	134	131	135	133	137	145	156	168	174	176	172	163	148	3128	130	3261	130			
25	133	117	103	94	89	90	95	100	107	113	118	121	126	131	138	147	156	162	169	178	178	174	169	160	3169	132	3318	133			
26	149	139	128	120	113	109	105	103	104	107	110	117	124	132	145	158	165	172	179	180	177	176	170	165	3349	140	3509	140			
27	160	153	146	139	135	127	116	110	103	97	98	104	111	124	138	154	164	172	173	174	168	162	156	153	3335	139	3488	140			
28	153	150	147	149	143	137	124	110	97	90	88	86	95	114	131	146	166	175	176	176	169	162	154	150	3289	137	3440	138			
29	151	152	158	162	161	155	148	129	109	95	86	82	90	106	126	146	168	179	182	179	168	159	149	145	3387	141	3534	141			
1	147																														
MONTHLY MEAN																														136.7cm	



Station : SYOWA STATION  
 Latitude : 69° 00' 28' S  
 Longitude : 39° 34' 13' E  
 Duration : Mar. 1-Mar. 31 1992  
 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	147	153	162	171	176	173	164	147	123	103	90	82	86	102	125	148	168	180	176	180	169	154	140	133	3453	144	3588	144		
2	135	143	156	169	179	179	172	155	128	104	83	70	70	81	103	128	151	166	172	167	155	138	121	112	3237	135	3350	134		
3	112	122	141	161	176	185	182	169	146	121	97	83	78	88	110	135	160	177	185	182	169	148	130	120	3378	141	3492	140		
4	114	123	143	165	183	197	200	190	168	142	116	96	87	91	107	131	157	175	183	181	166	144	121	104	3485	145	3579	143		
5	94	97	114	137	161	181	186	181	166	142	114	92	77	76	87	109	132	151	163	162	148	128	101	81	3079	128	3149	126		
6	70	68	82	105	133	160	173	174	166	148	124	102	85	80	90	110	131	153	166	167	157	139	113	91	2990	125	3067	123		
7	77	74	82	103	133	161	178	190	190	176	157	140	123	115	121	136	154	172	186	188	181	162	143	109	3452	144	3539	142		
8	87	76	78	92	115	142	162	174	178	171	158	142	127	121	121	133	150	167	178	182	176	161	134	113	3337	139	3428	137		
9	91	74	69	76	92	116	135	151	160	160	152	143	133	127	129	136	151	166	177	184	181	170	151	126	3247	135	3353	134		
10	105	90	81	79	93	113	130	146	160	167	168	163	160	160	161	168	178	188	201	205	202	195	180	159	3650	152	3789	152		
11	139	124	109	103	108	116	125	138	146	154	161	162	163	167	171	178	187	196	204	205	203	195	182	168	3803	158	3954	158		
12	151	135	121	113	107	107	110	114	119	126	134	139	146	155	165	174	182	189	192	193	191	185	178	171	3598	150	3759	150		
13	160	150	141	131	122	117	111	108	105	107	115	123	135	149	165	178	188	193	197	194	190	185	176	173	3615	151	3785	151		
14	170	166	162	156	149	138	123	112	101	95	98	107	121	141	161	179	191	195	194	190	179	169	163	160	3622	151	3783	151		
15	161	164	166	165	160	147	126	106	87	73	69	73	87	109	134	156	172	179	175	167	154	140	133	131	3233	135	3367	135		
16	134	142	158	168	173	170	156	132	106	85	72	69	77	94	122	152	174	186	193	185	172	153	141	136	3346	139	3486	139		
17	140	154	176	192	208	212	202	180	154	122	97	82	81	92	115	142	163	176	180	170	148	125	105	91	3507	146	3596	144		
18	89	106	128	152	176	189	187	175	147	116	88	68	61	70	89	117	141	156	163	155	133	108	84	66	2962	123	3021	121		
19	59	73	98	128	160	184	197	196	179	153	127	104	93	96	113	139	161	177	187	183	162	135	109	85	3300	138	3372	135		
20	72	75	95	125	158	185	207	214	206	189	167	146	130	126	137	158	177	192	203	201	184	157	127	100	3732	155	3812	152		
21	80	74	83	107	139	170	195	209	214	204	190	172	156	149	157	170	193	210	221	222	212	190	162	135	4012	167	4124	165		
22	111	97	95	113	138	164	186	205	215	213	204	192	178	170	172	182	197	215	225	227	219	202	175	149	4246	177	4373	175		
23	127	106	96	100	115	137	158	173	182	188	187	178	171	168	165	173	184	196	205	211	207	195	176	152	3952	165	4085	163		
24	132	113	101	97	104	116	132	146	155	163	166	164	164	165	166	171	179	189	199	202	200	191	179	163	3757	157	3901	156		
25	144	130	117	110	110	114	120	130	137	144	151	153	157	162	167	173	179	187	192	196	195	186	177	167	3699	154	3852	154		
26	153	141	133	125	120	119	118	121	123	128	133	137	144	151	161	169	174	177	180	180	177	172	164	154	3555	148	3705	148		
27	150	143	138	135	129	123	119	115	112	114	116	123	134	144	156	169	176	178	180	177	172	166	160	155	3484	145	3636	145		
28	152	152	151	149	146	138	129	118	109	103	104	108	117	130	147	159	170	173	171	165	159	150	142	140	3382	141	3524	141		
29	142	145	150	153	153	147	135	124	110	96	91	95	102	118	137	152	161	167	163	154	142	130	122	121	3209	134	3333	133		
30	124	135	150	157	162	162	151	137	119	101	94	92	100	115	131	149	160	165	161	146	131	115	102	99	3157	132	3262	130		
31	104	116	133	147	159	162	155	140	120	100	87	81	86	101	119	140	155	161	158	144	126	106	92	87	2982	124	3075	123		
1	93																													
MONTHLY MEAN																													144.4cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Apr. 1-Apr. 30 1992  
 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	93	110	132	153	170	178	174	162	143	121	104	97	98	111	132	154	169	178	177	164	143	123	105	94	3286	137	3383	135	
2	97	113	134	160	182	196	199	191	173	150	130	116	112	123	141	162	179	191	192	178	158	132	109	94	3612	150	3703	148	
3	91	103	124	152	177	195	205	199	184	163	141	124	116	120	135	155	170	183	185	174	155	129	100	81	3560	148	3634	145	
4	74	80	102	132	160	186	202	207	198	181	162	147	135	133	145	163	179	192	195	184	164	136	105	82	3646	152	3710	148	
5	65	61	76	103	131	158	178	188	186	178	161	144	133	131	138	152	169	183	188	183	168	142	110	86	3411	142	3476	139	
6	65	56	65	84	109	137	160	176	179	177	169	158	148	144	148	160	174	189	197	196	182	161	133	108	3473	145	3558	142	
7	85	71	73	86	107	130	154	174	184	187	185	180	175	174	178	183	198	210	218	215	208	189	163	137	3863	161	3975	159	
8	111	92	78	79	93	109	125	141	150	159	161	159	156	157	160	164	175	182	187	191	185	175	158	136	3481	145	3598	144	
9	116	100	88	84	89	98	111	123	135	147	156	163	167	176	182	186	195	204	213	217	212	206	197	179	3743	156	3907	156	
10	165	150	138	130	127	124	129	135	143	149	159	167	176	185	192	200	204	207	211	215	212	204	200	193	4114	171	4298	172	
11	184	177	169	161	149	144	136	136	134	137	145	154	166	178	190	197	202	202	200	195	188	183	178	174	4080	170	4256	170	
12	176	175	175	169	160	150	138	126	118	117	117	127	142	155	170	185	189	191	186	177	168	160	157	159	3790	158	3957	158	
13	167	174	182	188	184	176	161	145	129	119	116	120	133	151	167	181	188	190	182	168	152	138	132	134	3775	157	3919	157	
14	145	160	172	188	192	189	176	156	133	116	109	104	113	128	148	164	173	177	169	155	135	116	103	103	3524	147	3641	146	
15	117	137	162	187	204	207	204	186	164	143	128	120	124	138	161	177	188	192	182	162	138	109	89	84	3704	154	3793	152	
16	88	108	136	164	188	206	210	201	181	163	145	138	138	153	172	189	202	207	201	186	160	128	102	87	3853	161	3939	158	
17	85	100	124	149	174	196	206	201	184	162	142	126	117	127	140	157	170	177	175	160	133	102	71	49	3428	143	3467	139	
18	39	48	69	100	131	158	177	184	177	163	148	135	125	127	141	160	177	188	190	181	158	131	100	75	3284	137	3343	134	
19	59	58	73	101	131	159	184	197	198	191	181	170	157	156	164	177	194	205	210	206	189	161	131	106	3760	157	3843	154	
20	84	73	81	97	122	150	171	189	197	197	192	184	176	172	179	188	203	217	221	221	210	190	160	136	4008	167	4121	165	
21	113	96	93	102	118	138	159	174	184	190	186	179	176	173	170	177	188	198	205	203	196	181	159	134	3891	162	4005	160	
22	114	96	87	87	96	109	125	142	150	158	161	159	157	156	157	160	165	177	183	184	180	170	156	135	3464	144	3580	143	
23	116	104	91	86	91	99	109	121	131	141	147	151	152	156	159	163	167	174	180	183	182	177	168	160	3408	142	3558	142	
24	150	140	133	130	130	136	139	148	156	163	171	178	182	188	193	195	196	196	198	200	196	191	185	175	4069	170	4236	169	
25	167	161	154	145	142	140	138	133	134	140	145	149	159	165	169	170	173	170	168	164	159	155	153	148	3702	154	3850	154	
26	147	146	145	146	140	132	131	128	123	122	128	140	146	157	167	172	174	172	165	159	153	147	147	148	3534	147	3685	147	
27	150	156	162	161	160	154	147	137	130	124	126	134	142	154	164	171	175	172	163	155	145	136	133	138	3589	150	3736	149	
28	147	156	169	178	181	178	168	155	147	134	132	138	145	155	167	177	182	173	164	150	132	119	116	119	3683	153	3811	152	
29	128	141	160	172	184	182	174	163	149	134	130	130	134	148	162	171	177	172	160	144	123	103	96	91	3526	147	3632	145	
30	106	124	144	162	177	184	178	168	151	134	122	120	125	135	150	162	168	167	155	138	114	93	79	74	3328	139	3412	136	
1	84																												
MONTHLY MEAN																										152.2cm			

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : May 1-May 31 1992  
 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	84	103	129	154	174	188	192	185	169	152	139	134	134	144	159	170	178	181	172	151	124	99	77	65	3458	144	3528	141		
2	69	85	111	141	166	185	197	193	180	165	150	138	134	142	155	164	177	181	171	153	125	95	66	49	3392	141	3435	137		
3	44	56	78	108	136	161	177	184	178	165	152	141	135	139	152	165	179	185	181	169	143	113	82	60	3280	137	3333	133		
4	52	51	72	100	129	157	181	191	196	190	178	169	161	161	170	183	193	202	204	192	173	144	112	85	3647	152	3712	148		
5	66	59	68	87	114	143	170	185	191	192	188	179	172	173	174	187	199	206	209	202	189	162	133	101	3747	156	3826	153		
6	80	67	64	76	98	122	145	165	177	184	184	180	176	176	174	185	192	203	210	209	196	179	156	127	3726	155	3831	153		
7	105	87	75	77	87	105	120	139	156	165	169	171	169	169	170	172	180	192	197	200	197	186	169	151	3605	150	3735	149		
8	129	112	99	92	91	105	117	130	146	157	166	173	176	176	177	178	183	189	194	197	194	191	183	172	3729	155	3889	156		
9	160	145	132	128	120	123	128	135	147	158	169	177	183	187	190	190	189	189	190	188	187	187	182	178	3962	165	4135	165		
10	173	166	156	146	138	131	125	123	128	133	141	153	161	169	173	171	170	164	161	158	153	155	156	159	3660	153	3826	153		
11	165	168	166	165	158	146	139	131	128	130	138	147	156	165	172	173	169	160	153	144	134	129	135	143	3615	151	3771	151		
12	156	164	174	183	181	176	164	150	143	141	138	146	156	161	173	174	169	159	146	128	111	102	103	112	3611	150	3733	149		
13	122	139	159	173	177	176	168	153	139	130	126	127	137	146	158	164	162	150	135	113	90	74	66	69	3251	135	3336	133		
14	85	104	131	151	165	174	166	156	144	127	116	120	125	135	144	152	154	145	130	109	84	61	48	44	2971	124	3026	121		
15	55	74	101	132	153	169	174	170	156	145	130	129	133	142	159	170	173	173	161	140	113	89	64	54	3159	132	3221	129		
16	62	79	105	136	164	185	198	198	190	178	166	158	155	165	178	190	198	200	188	168	143	109	81	62	3656	152	3709	148		
17	53	63	84	111	138	162	179	184	180	168	157	148	141	148	157	167	180	185	181	169	144	114	85	63	3359	140	3408	136		
18	48	51	68	93	121	147	170	186	185	182	172	165	157	154	165	177	187	197	197	187	169	142	114	86	3520	147	3590	144		
19	69	64	68	88	114	138	160	175	186	183	180	171	166	161	165	176	189	198	205	201	186	167	140	111	3660	152	3753	150		
20	93	77	75	88	105	126	147	163	175	179	176	169	165	160	159	168	178	188	194	195	187	171	148	125	3610	150	3715	149		
21	105	89	82	86	98	118	135	149	164	170	172	169	163	160	158	161	169	176	184	188	184	171	157	137	3543	148	3663	147		
22	120	102	94	94	98	111	128	140	153	161	166	166	161	157	154	152	155	162	168	174	173	168	157	146	3459	144	3592	144		
23	133	119	112	109	109	118	127	138	150	159	165	170	171	173	174	174	176	179	185	190	192	189	184	179	3772	157	3944	158		
24	172	161	154	148	145	144	149	156	160	166	175	177	178	179	176	173	166	163	162	159	158	159	156	153	3891	162	4040	162		
25	149	144	141	135	131	129	127	128	131	135	140	146	152	150	152	147	141	138	132	130	129	128	129	133	3297	137	3435	137		
26	138	138	137	138	140	134	127	127	124	130	135	142	147	153	152	148	145	135	126	121	117	111	113	118	3195	133	3324	133		
27	129	141	146	152	156	151	144	141	136	134	135	141	145	152	154	157	152	143	132	121	113	106	109	116	3305	138	3438	138		
28	133	147	165	178	186	188	184	175	167	161	159	166	170	179	185	185	176	172	154	134	117	107	105	109	3800	158	3921	157		
29	121	141	161	179	193	198	197	192	180	175	166	168	174	178	186	190	188	175	160	136	114	96	86	87	3838	160	3939	158		
30	100	120	145	167	190	202	208	201	190	183	172	169	172	179	191	195	195	186	170	149	120	94	80	77	3857	161	3935	157		
31	78	100	127	152	182	203	212	210	200	190	180	174	175	179	188	199	200	200	189	167	139	107	85	68	3905	163	3970	159		
1	64																													
MONTHLY MEAN																													148.5cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Jun. 1-Jun. 30 1992  
 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	64	85	107	133	164	190	207	208	210	201	194	183	183	184	190	201	210	205	198	183	151	123	90	65	3930	164	3985	159		
2	55	60	77	102	131	160	181	194	197	192	179	172	165	163	174	184	191	193	193	183	154	124	91	61	3572	149	3616	145		
3	44	36	42	64	91	118	145	164	176	177	172	169	162	159	166	176	188	200	202	203	185	161	133	103	3434	143	3514	141		
4	80	68	64	77	98	126	151	172	186	194	191	189	183	177	178	185	197	206	215	219	212	195	172	145	3881	162	4002	160		
5	121	100	93	91	102	121	142	162	176	186	187	185	178	173	169	170	177	184	194	201	199	191	180	156	3838	160	3975	159		
6	137	117	99	94	98	107	120	137	150	160	167	166	161	153	150	142	142	149	156	164	170	169	164	154	3425	143	3568	143		
7	143	128	115	105	102	109	112	129	138	146	154	160	155	151	149	140	132	134	137	144	148	154	157	158	3302	138	3460	138		
8	158	152	142	133	126	122	122	130	136	142	150	156	157	154	150	142	130	124	122	122	125	132	135	144	3308	138	3458	138		
9	151	154	155	151	146	141	137	132	137	144	146	152	155	155	150	143	129	119	107	101	99	97	103	115	3215	134	3342	134		
10	127	138	149	155	156	155	148	144	141	143	149	155	160	163	162	160	150	140	127	110	101	102	103	111	3349	140	3479	139		
11	130	146	161	178	188	190	185	177	172	167	166	167	169	176	173	170	165	147	129	108	88	77	70	74	3574	149	3667	147		
12	93	106	131	150	165	176	176	171	163	155	151	155	159	167	174	175	171	163	148	126	106	86	72	73	3411	142	3494	140		
13	83	104	129	157	178	191	198	200	190	181	177	174	178	183	192	197	196	189	177	154	126	100	80	70	3803	158	3880	155		
14	77	92	113	143	170	189	203	201	197	189	179	176	176	182	190	199	202	196	191	174	146	118	92	75	3873	161	3946	158		
15	74	81	101	126	156	179	193	201	198	191	183	176	173	177	186	197	208	211	204	190	163	134	107	82	3891	162	3963	159		
16	72	73	87	111	138	163	180	191	190	182	173	163	159	158	168	176	185	195	191	181	163	137	107	85	3628	151	3697	148		
17	69	64	72	89	121	146	164	180	186	181	176	171	162	157	163	177	186	197	203	194	184	164	138	110	3653	152	3744	150		
18	91	82	80	93	113	140	159	180	185	183	179	166	160	154	153	161	171	185	195	194	187	171	148	121	3652	152	3753	150		
19	101	88	82	86	100	122	140	158	162	167	164	156	148	143	139	146	156	165	174	179	180	169	148	130	3401	142	3513	141		
20	112	95	91	91	97	116	132	149	156	162	160	152	145	138	131	129	137	148	157	166	167	160	148	134	3271	136	3392	136		
21	121	112	96	98	102	115	126	143	153	155	158	153	147	138	131	126	128	134	144	151	156	155	153	143	3239	135	3369	135		
22	130	124	112	111	116	118	131	141	147	159	161	160	151	149	135	131	127	130	134	143	146	149	144	144	3290	137	3427	137		
23	137	135	131	128	128	132	135	146	153	158	161	165	157	149	143	133	132	124	125	133	134	136	141	142	3357	140	3502	140		
24	145	147	146	146	145	146	150	152	155	158	162	165	164	154	148	142	132	123	118	114	114	120	122	128	3396	141	3531	141		
25	136	142	147	153	155	157	154	157	152	155	154	157	156	153	146	139	131	119	106	98	99	96	95	108	3265	136	3383	135		
26	119	128	142	155	162	165	161	157	155	148	148	147	149	146	145	139	131	116	100	88	76	69	67	73	3086	129	3178	127		
27	92	109	128	147	162	170	170	169	162	160	155	156	162	163	163	161	154	139	123	103	84	67	62	70	3230	135	3310	132		
28	80	99	125	151	170	183	192	192	184	176	172	171	173	175	180	183	178	169	152	128	103	81	65	61	3541	148	3611	144		
29	71	87	115	141	171	191	199	202	197	186	183	180	176	180	186	194	192	183	169	146	118	88	63	50	3666	153	3715	149		
30	49	60	84	114	144	171	189	197	197	187	177	175	169	172	182	192	197	197	192	174	145	113	81	58	3617	151	3667	147		
1	50																													
MONTHLY MEAN																													146.0cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Jul. 1-Jul. 31 1992  
 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	50	54	72	98	130	160	182	196	196	194	183	174	168	171	178	191	200	208	208	197	174	141	107	76	3707	154	3764	151		
2	57	51	56	78	106	132	157	174	180	179	170	161	152	148	152	165	179	190	199	198	185	162	132	103	3469	145	3546	142		
3	77	59	60	69	92	122	143	164	176	177	172	161	149	141	135	144	159	173	186	193	189	172	152	127	3391	141	3489	140		
4	97	81	72	71	89	112	130	150	164	169	164	156	146	134	125	129	137	155	171	184	189	187	176	159	3349	140	3484	139		
5	135	119	105	102	109	126	144	158	170	177	176	169	159	143	132	126	127	137	157	168	176	179	179	169	3541	148	3696	148		
6	155	144	130	125	130	131	143	159	166	173	176	169	158	148	134	123	119	124	131	143	155	163	165	168	3531	147	3697	148		
7	166	162	153	149	148	153	158	169	178	181	188	184	175	167	154	142	130	124	128	133	138	149	154	166	3747	156	3918	157		
8	170	172	175	177	174	177	178	181	185	186	191	192	188	176	168	158	142	130	123	123	120	126	131	139	3883	162	4034	161		
9	151	162	171	176	182	185	182	180	186	184	183	183	181	181	171	159	150	136	120	112	102	99	99	106	3741	156	3863	155		
10	122	138	151	169	176	181	184	182	178	175	171	173	173	173	171	166	157	146	131	111	100	86	81	89	3584	149	3683	147		
11	99	118	139	157	175	187	192	189	185	178	177	179	181	178	183	186	175	170	156	134	112	95	80	76	3700	154	3784	151		
12	84	101	119	146	167	177	187	188	179	168	163	164	158	163	171	173	175	166	154	132	106	84	64	56	3444	143	3503	140		
13	59	71	93	118	143	160	173	179	173	164	157	154	155	160	169	177	183	183	175	158	133	106	82	70	3396	141	3464	139		
14	68	76	99	125	151	173	191	194	193	181	172	164	164	168	179	192	201	202	199	184	159	133	105	86	3761	157	3837	153		
15	75	81	96	120	147	174	191	202	200	187	177	171	165	167	175	193	205	210	212	203	182	157	127	106	3923	163	4017	161		
16	93	91	103	122	150	175	193	204	205	197	186	176	168	164	175	190	203	214	224	219	204	180	152	127	4115	171	4226	169		
17	111	103	106	123	146	172	189	201	206	198	184	172	157	153	155	165	182	198	207	211	201	178	158	137	4012	167	4125	165		
18	113	103	103	116	132	155	175	189	195	193	181	166	152	143	142	147	160	178	190	197	195	182	159	138	3802	158	3923	157		
19	121	108	101	109	131	145	166	178	184	181	170	157	146	134	127	129	144	157	170	179	183	174	163	146	3605	150	3736	149		
20	131	113	109	110	123	138	154	167	174	173	168	156	140	127	118	118	123	135	154	160	169	170	162	151	3444	143	3585	143		
21	142	128	122	126	135	146	160	171	179	180	172	164	148	137	128	121	120	131	146	156	163	164	164	161	3561	148	3714	149		
22	152	146	145	144	149	155	165	177	182	182	181	174	158	147	132	121	119	123	125	135	146	150	148	154	3610	150	3764	151		
23	154	151	151	152	157	161	165	173	178	177	175	171	159	146	133	125	115	112	113	117	124	130	134	144	3518	147	3670	147		
24	152	158	164	170	174	183	185	191	193	193	196	190	185	176	167	161	150	140	139	136	133	132	138	145	3954	165	4108	164		
25	154	162	178	190	201	204	205	203	203	198	195	191	185	180	175	164	150	135	124	112	103	98	95	101	3907	163	4022	161		
26	115	133	150	168	184	193	196	195	187	183	178	176	173	172	172	163	156	142	119	107	92	77	66	70	3568	149	3650	146		
27	82	104	130	153	175	189	196	196	191	184	177	173	173	179	183	182	178	167	149	127	103	82	65	59	3598	150	3668	147		
28	70	88	114	145	172	191	205	205	201	191	184	181	180	185	193	200	203	199	184	159	133	102	79	64	3827	159	3892	156		
29	66	81	102	134	166	192	208	213	206	194	185	174	172	178	188	204	211	214	207	189	162	129	93	72	3939	164	4000	160		
30	61	66	88	115	146	172	191	203	197	187	173	160	155	156	167	183	202	212	214	208	185	155	119	91	3806	159	3875	155		
31	69	68	79	102	133	160	183	196	196	187	171	155	146	143	150	167	192	212	222	226	216	191	157	124	3844	160	3946	158		
1	102																													
MONTHLY MEAN																													153.6cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Aug. 1-Aug. 31 1992  
 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	102	87	86	105	129	154	170	187	190	177	161	140	119	114	112	126	146	170	186	198	196	181	157	131	3525	147	3633	145		
2	108	88	85	95	112	134	153	168	172	168	153	130	112	99	92	100	116	140	162	177	185	187	171	154	3259	136	3394	136		
3	135	117	108	112	127	149	167	176	185	183	170	150	130	109	96	94	101	115	138	154	166	173	170	159	3385	141	3533	141		
4	148	138	131	130	138	150	168	178	183	182	176	161	140	124	109	97	94	104	117	131	143	151	156	156	3405	142	3555	142		
5	150	149	148	147	151	158	168	178	184	182	179	170	155	140	127	121	109	109	111	118	127	131	136	144	3493	146	3641	146		
6	148	153	160	165	167	177	182	186	189	191	189	184	170	160	148	138	125	118	113	112	113	115	126	135	3665	153	3810	152		
7	145	154	169	178	183	191	193	198	202	199	202	204	194	188	180	172	161	148	138	129	122	120	126	127	4023	168	4162	166		
8	139	154	167	185	197	202	199	200	198	196	193	192	190	185	183	179	169	156	147	128	113	99	94	97	3963	165	4070	163		
9	107	123	141	152	172	182	188	182	176	169	163	163	163	165	165	165	161	152	140	119	101	83	71	71	3474	145	3553	142		
10	79	96	116	141	163	175	182	182	172	165	161	157	161	170	176	184	187	181	171	151	130	106	94	82	3581	149	3672	147		
11	91	102	124	150	171	187	197	197	184	172	161	159	159	167	179	190	197	200	191	172	153	129	103	90	3825	159	3920	157		
12	95	107	129	156	183	203	213	214	204	191	175	168	166	170	184	197	208	210	203	190	163	133	105	87	4053	169	4135	165		
13	82	84	102	128	153	174	186	186	177	163	148	138	131	138	151	169	186	193	197	187	169	138	113	89	3583	149	3663	147		
14	80	82	97	124	148	170	184	187	178	166	151	136	127	132	142	161	183	201	206	205	190	165	138	114	3667	153	3767	151		
15	101	95	106	129	152	171	188	196	187	170	152	131	119	117	123	140	165	180	193	195	185	165	137	114	3610	150	3711	148		
16	101	91	98	118	139	161	176	184	182	169	150	132	119	114	117	136	160	182	195	205	203	190	169	147	3635	151	3767	151		
17	132	122	122	137	154	176	190	196	193	184	163	142	124	113	113	124	141	161	178	191	191	183	167	149	3747	156	3883	155		
18	136	126	125	130	145	167	180	187	187	180	164	140	121	108	104	106	122	139	153	170	180	176	167	156	3571	149	3714	149		
19	143	137	134	140	151	166	180	189	185	183	171	150	132	118	108	105	116	129	143	158	167	171	167	160	3604	150	3758	150		
20	154	150	152	154	160	173	182	189	191	189	176	158	142	125	114	106	105	116	124	133	142	148	152	153	3588	150	3739	150		
21	151	150	155	157	166	176	183	190	187	185	178	168	151	135	125	112	107	108	113	120	128	129	135	140	3549	148	3695	148		
22	146	156	163	166	174	180	184	191	189	184	179	168	157	148	136	124	117	108	105	102	102	103	106	115	3502	146	3629	145		
23	127	136	150	163	173	176	180	182	180	176	171	167	161	157	151	144	137	124	107	101	92	89	89	94	3426	143	3541	142		
24	115	133	150	169	187	196	195	196	186	181	179	177	170	173	171	167	161	146	131	109	93	80	75	79	3619	151	3711	148		
25	92	116	137	162	181	193	193	193	185	174	167	164	165	172	181	184	181	170	154	129	104	80	68	63	3611	150	3686	147		
26	75	98	122	151	175	192	197	194	183	173	160	156	158	165	176	191	199	196	183	160	132	100	78	66	3678	153	3746	150		
27	68	84	109	141	167	186	200	196	183	167	153	145	144	152	175	195	210	218	218	199	167	137	106	84	3806	159	3881	155		
28	76	85	105	132	160	184	191	189	178	155	136	120	112	125	145	167	193	211	219	213	193	163	134	108	3692	154	3791	152		
29	98	102	122	152	181	203	212	214	199	176	154	128	115	115	131	157	181	201	220	219	209	184	150	123	3944	164	4046	162		
30	101	96	105	125	146	168	181	182	174	152	127	103	82	77	84	107	134	160	185	199	202	185	167	142	3384	141	3509	140		
31	125	117	117	135	152	174	186	197	188	170	149	117	95	77	76	86	107	134	156	173	180	176	162	145	3395	141	3528	141		
1	134																													
MONTHLY MEAN																													150.9cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28' S  
 Longitude : 39° 34' 13' E  
 Duration : Sep. 1-Sep. 30 1992  
 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	134	118	116	124	138	155	170	175	170	161	141	112	87	70	60	60	77	97	117	136	149	153	147	139	3006	125	3137	125		
2	131	123	121	124	136	153	164	170	170	162	144	122	101	83	69	64	69	80	93	113	120	125	129	129	2895	121	3020	121		
3	125	122	127	132	137	150	160	167	167	167	156	138	121	107	93	85	84	87	96	104	114	121	129	132	3023	126	3162	126		
4	139	147	152	161	168	174	187	191	194	191	184	176	162	152	139	132	123	119	114	119	119	118	123	130	3615	151	3755	150		
5	139	148	160	169	176	176	177	180	180	171	168	162	157	148	144	137	126	117	108	104	100	101	101	107	3457	144	3572	143		
6	115	131	149	160	169	179	176	178	175	169	163	162	158	158	162	156	152	142	126	115	105	95	91	93	3482	145	3588	144		
7	106	119	137	154	166	171	170	165	155	149	145	141	142	146	152	155	150	144	131	111	96	81	71	72	3228	134	3310	132		
8	82	98	119	142	156	163	165	157	143	138	129	125	133	141	151	159	161	159	147	129	108	90	74	73	3142	131	3220	129		
9	78	92	118	138	156	165	166	160	144	132	124	119	124	136	148	163	172	169	164	147	125	103	85	77	3206	134	3290	132		
10	84	98	118	144	163	178	179	171	154	142	127	120	125	140	157	174	188	195	190	176	151	126	104	93	3495	146	3585	143		
11	91	99	121	142	162	176	180	168	151	132	115	105	105	115	139	162	181	194	193	185	167	139	116	100	3437	143	3531	141		
12	94	101	121	145	166	181	185	178	159	138	120	102	99	108	128	155	174	190	197	195	178	151	130	110	3503	146	3605	144		
13	102	106	119	143	162	179	185	180	162	140	120	100	89	93	111	135	157	180	192	194	181	160	139	121	3448	144	3556	142		
14	109	108	118	138	160	177	184	182	168	147	124	100	87	85	97	121	147	169	190	194	191	177	157	138	3469	145	3597	144		
15	129	121	128	146	167	184	189	190	178	159	133	109	90	85	88	105	133	157	172	185	185	177	164	150	3523	147	3658	146		
16	135	130	131	145	163	179	188	188	179	167	140	118	98	84	86	96	115	139	154	172	176	174	167	156	3480	145	3628	145		
17	148	144	145	151	165	179	186	187	179	167	147	121	99	84	79	81	94	113	129	144	153	158	156	151	3358	140	3505	140		
18	147	147	148	155	168	178	187	188	183	174	156	138	118	106	96	91	97	107	118	132	142	150	152	151	3428	143	3577	143		
19	150	158	159	164	175	183	188	189	185	178	163	150	135	119	106	99	100	99	100	110	116	121	125	133	3402	142	3544	142		
20	141	147	157	166	173	180	182	181	177	173	165	154	142	134	124	115	106	99	98	97	97	101	109	119	3337	139	3466	139		
21	129	144	155	169	176	177	180	174	170	165	161	152	152	148	140	135	124	110	101	94	86	81	83	97	3302	138	3415	137		
22	113	132	148	165	178	180	179	174	168	162	157	157	159	164	167	168	161	146	131	117	96	87	82	89	3482	145	3584	143		
23	102	123	143	164	176	180	177	171	158	148	142	141	144	158	169	176	178	172	155	130	109	90	77	81	3468	145	3557	142		
24	88	112	136	158	177	185	179	168	149	136	124	121	127	145	163	181	194	195	178	157	128	103	80	75	3461	144	3539	142		
25	78	96	124	146	165	179	176	162	142	124	109	104	108	130	155	183	207	219	215	201	177	146	122	110	3580	149	3689	148		
26	109	123	144	167	190	203	198	185	160	129	108	96	98	112	141	172	200	219	225	219	196	167	142	121	3826	159	3937	157		
27	111	117	141	157	179	191	193	179	160	130	98	80	70	80	106	136	166	194	211	214	204	180	156	137	3589	150	3716	149		
28	127	126	140	161	181	196	198	190	170	141	109	81	67	62	78	105	135	163	188	200	199	186	167	149	3520	147	3657	146		
29	137	135	141	157	177	189	195	193	176	150	121	94	69	58	63	83	108	134	157	173	182	176	164	152	3382	141	3525	141		
30	143	137	140	153	172	182	191	190	180	159	134	105	81	65	62	71	87	109	129	144	157	161	153	148	3253	136	3396	136		
1	143																													
MONTHLY MEAN																													141.4cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Oct. 1-Oct. 31 1992  
 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	143	141	140	149	165	180	187	189	184	171	151	127	109	91	80	80	89	102	120	133	144	150	153	153	3334	139	3486	139			
2	152	156	158	161	170	183	189	193	189	183	168	149	132	119	109	100	100	106	115	127	135	140	147	152	3535	147	3688	148			
3	153	160	165	168	174	179	186	186	184	180	172	158	148	137	130	124	119	118	117	123	127	132	137	144	3622	151	3774	151			
4	151	160	168	176	178	179	185	181	179	175	169	163	156	151	145	139	134	128	119	118	117	117	118	127	3631	151	3768	151			
5	137	149	160	169	172	175	171	170	164	160	157	155	152	155	153	150	151	139	130	122	113	107	110	117	3538	147	3668	147			
6	130	140	157	168	175	171	171	163	155	150	151	150	153	161	166	168	169	160	148	132	120	109	104	116	3585	149	3708	148			
7	122	138	157	167	174	178	170	160	149	140	137	137	142	153	167	174	175	172	159	145	129	115	106	109	3577	149	3697	148			
8	120	134	152	167	177	178	171	158	143	130	124	124	132	146	165	178	186	184	178	161	141	127	114	110	3600	150	3718	149			
9	118	133	152	167	176	178	172	155	135	115	102	103	110	127	149	167	182	186	182	166	147	124	109	101	3454	144	3559	142			
10	105	119	138	156	167	169	162	147	124	102	87	79	85	101	128	152	171	180	181	174	153	131	114	105	3228	135	3333	133			
11	105	116	135	156	167	174	169	152	128	107	88	73	78	92	116	145	171	187	193	186	170	150	132	117	3305	138	3420	137			
12	115	124	141	159	174	184	180	163	139	111	87	71	66	76	99	130	157	177	190	189	179	160	142	128	3338	139	3457	138			
13	119	122	135	155	168	178	176	161	141	113	85	63	53	56	77	106	131	155	176	183	177	165	151	139	3183	133	3311	132			
14	128	129	143	157	177	185	185	177	159	134	103	81	64	60	75	99	125	150	171	184	185	176	167	155	3369	140	3516	141			
15	147	145	153	165	181	193	196	190	176	152	125	99	80	69	75	87	108	131	149	164	172	171	165	158	3452	144	3606	144			
16	154	150	154	165	177	187	190	185	178	158	129	107	84	68	67	74	87	105	125	139	150	154	153	149	3289	137	3436	137			
17	146	145	147	155	161	168	177	174	163	151	130	109	88	72	62	60	67	77	95	106	116	128	130	133	2959	123	3098	124			
18	138	144	146	149	158	165	170	170	165	161	148	130	116	102	91	84	82	83	89	98	110	116	126	134	3078	128	3218	129			
19	140	148	154	158	162	166	169	166	166	160	153	146	135	127	119	111	102	97	95	95	98	106	113	123	3209	134	3341	134			
20	132	142	152	156	160	160	156	151	150	145	142	141	139	137	136	132	120	110	103	94	89	89	97	106	3139	131	3257	130			
21	117	132	148	153	156	155	146	137	130	127	124	128	135	144	151	153	151	137	125	111	100	93	92	102	3148	131	3267	131			
22	118	133	149	161	164	161	149	134	122	112	112	116	128	143	159	171	176	167	151	135	117	100	96	100	3271	136	3382	135			
23	112	130	145	159	167	164	149	127	107	94	85	89	104	123	150	173	182	183	173	153	130	112	101	99	3210	134	3317	133			
24	106	120	138	154	162	161	145	121	97	75	60	58	71	93	125	154	174	185	184	171	148	128	112	104	3046	127	3156	126			
25	110	123	141	156	170	169	154	130	104	77	54	42	50	72	101	135	164	186	193	190	173	154	137	123	3107	129	3230	129			
26	123	134	152	169	179	183	176	155	126	95	67	50	44	57	85	119	149	175	190	194	184	167	153	137	3261	136	3392	136			
27	131	136	153	168	181	189	186	171	145	111	82	59	43	46	68	98	126	154	175	188	185	175	162	150	3280	137	3423	137			
28	143	142	152	170	183	194	195	184	162	134	102	72	53	47	54	78	103	125	151	167	170	168	160	150	3260	136	3404	136			
29	143	141	144	157	174	185	187	180	168	144	113	87	65	50	52	64	81	104	126	144	153	158	156	149	3124	130	3269	131			
30	145	143	144	153	168	177	184	184	177	161	138	116	95	80	74	81	91	108	127	143	156	164	162	161	3336	139	3496	140			
31	160	161	161	166	178	187	195	196	193	184	167	149	134	120	116	113	119	128	140	153	162	169	175	176	3802	158	3981	159			
1	179																														
MONTHLY MEAN																														138.8cm	



Station : SYOWA STATION  
 Latitude : 69° 00' 28' S  
 Longitude : 39° 34' 13' E  
 Duration : Nov. 1-Nov. 30 1992  
 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	179	181	180	182	191	194	197	198	197	189	179	165	153	143	134	129	130	127	132	145	150	154	162	164	3960	165	4128	165		
2	168	173	175	175	177	180	180	180	180	174	168	163	153	147	143	139	134	130	128	132	133	136	143	148	3759	157	3914	157		
3	155	160	164	166	164	164	160	155	151	150	146	144	145	146	143	143	142	136	129	127	126	126	130	139	3510	146	3655	146		
4	145	152	161	164	163	159	150	144	139	134	136	137	140	148	153	154	155	149	141	135	128	124	129	133	3472	145	3614	145		
5	142	153	159	163	166	159	147	136	126	120	119	125	134	145	156	166	166	161	154	143	131	126	126	129	3451	144	3589	144		
6	138	148	158	165	165	159	145	130	118	108	105	112	122	141	159	171	177	178	170	159	143	134	129	129	3461	144	3599	144		
7	137	150	159	169	169	162	147	128	109	94	87	91	102	121	144	166	179	185	179	168	153	141	134	131	3406	142	3544	142		
8	138	150	163	172	178	172	154	135	116	91	78	75	86	108	134	159	178	186	188	179	164	150	140	135	3429	143	3569	143		
9	140	151	164	176	183	182	167	147	121	97	77	70	81	100	125	156	184	196	204	198	188	174	160	152	3590	150	3744	150		
10	153	161	174	188	195	192	185	161	133	104	79	69	66	80	108	136	164	186	197	201	190	178	168	155	3623	151	3775	151		
11	153	160	173	186	196	200	190	172	147	115	86	67	58	64	85	114	143	167	185	196	191	180	171	160	3559	148	3716	149		
12	157	160	168	182	192	198	196	180	158	127	97	71	56	56	70	96	124	150	169	186	189	186	179	170	3518	147	3681	147		
13	163	162	170	180	192	202	203	192	175	150	119	90	70	60	65	80	104	126	149	166	175	178	173	167	3512	146	3675	147		
14	163	160	162	173	182	192	197	190	177	158	129	104	79	64	60	66	82	100	121	138	149	158	156	153	3312	138	3463	139		
15	151	148	148	153	163	174	178	176	174	159	139	120	96	82	72	69	79	89	104	123	133	142	147	148	3165	132	3315	133		
16	150	150	146	148	153	160	163	163	166	156	147	133	117	104	90	84	83	89	96	107	119	129	138	142	3133	131	3281	131		
17	148	150	147	147	148	151	153	154	159	155	156	151	143	136	129	122	116	116	119	124	126	139	146	154	3390	141	3551	142		
18	161	163	163	161	157	153	146	147	146	146	148	152	154	157	153	147	144	130	127	123	122	127	131	138	3499	146	3647	146		
19	148	154	155	154	149	141	127	123	118	113	121	129	134	147	158	160	158	150	141	134	130	129	134	146	3355	140	3514	141		
20	159	168	174	179	171	160	145	129	118	110	111	117	130	149	164	176	181	175	164	152	143	137	132	134	3577	149	3721	149		
21	144	152	159	162	155	146	128	102	86	75	70	78	96	119	145	167	180	185	181	168	157	146	138	140	3278	137	3424	137		
22	147	156	166	173	172	161	141	117	92	69	59	62	74	98	127	154	176	186	188	178	166	151	140	138	3291	137	3436	137		
23	145	155	166	175	178	173	152	128	100	71	54	49	54	76	107	137	166	187	196	196	184	174	159	153	3336	139	3492	140		
24	156	165	179	189	196	196	183	158	130	97	69	53	49	63	89	118	148	172	187	192	185	173	160	151	3457	144	3606	144		
25	149	155	167	178	187	189	181	164	135	101	72	47	37	43	62	89	117	144	164	174	174	167	156	145	3198	133	3339	134		
26	141	144	153	167	179	185	186	172	151	119	91	65	48	45	55	79	106	131	156	171	175	173	166	158	3216	134	3366	135		
27	150	147	155	167	180	189	192	185	171	146	117	93	69	59	62	76	100	121	142	159	170	169	165	156	3339	139	3488	140		
28	149	145	145	155	166	177	184	182	171	157	135	108	85	71	69	75	90	111	132	146	157	163	159	155	3289	137	3439	138		
29	151	145	142	148	157	167	173	175	172	161	144	121	103	88	80	82	88	102	116	132	141	150	151	148	3237	135	3382	135		
30	145	139	137	135	141	150	156	160	161	156	145	131	117	107	99	95	101	108	119	132	140	150	154	152	3231	135	3381	135		
1	150																													
MONTHLY MEAN																													142.4cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Dec. 1-Dec. 31 1992  
 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	150	146	142	139	139	143	149	151	154	150	145	138	127	120	115	111	109	112	118	127	135	141	146	148	3257	136	3403	136			
2	146	145	141	136	134	134	134	135	135	135	136	134	130	127	125	124	123	122	124	127	132	137	141	145	3202	133	3347	134			
3	145	145	142	138	133	129	124	120	121	121	122	125	129	133	136	138	138	136	136	135	135	136	141	145	3202	133	3350	134			
4	148	151	150	147	142	136	125	119	117	115	119	125	131	142	153	158	159	157	154	151	147	145	146	148	3385	141	3538	142			
5	153	155	157	152	144	134	121	107	97	93	96	103	114	128	144	157	164	164	162	155	149	145	143	146	3285	137	3438	138			
6	154	158	160	160	155	143	127	111	96	86	83	89	101	120	141	159	169	177	175	167	160	150	145	146	3329	139	3481	139			
7	152	156	163	163	160	147	128	109	90	72	63	65	79	98	122	146	165	174	178	175	165	152	148	146	3215	134	3365	135			
8	149	156	163	166	166	160	139	116	90	67	53	48	56	77	104	130	157	175	183	182	176	164	155	150	3183	133	3335	133			
9	152	159	168	175	179	174	159	135	107	79	57	43	44	61	84	114	144	166	181	184	180	171	159	150	3226	134	3376	135			
10	149	157	166	175	180	182	170	149	120	88	61	41	33	43	65	93	124	151	171	182	182	176	168	158	3182	133	3337	133			
11	154	157	167	177	188	193	186	173	150	115	84	58	41	40	54	80	109	133	160	176	182	178	169	161	3284	137	3439	138			
12	155	153	161	171	183	193	193	185	168	140	108	79	54	44	46	65	88	116	139	160	170	169	164	157	3262	136	3410	136			
13	149	143	147	155	169	179	185	184	174	154	126	96	71	56	47	55	77	96	117	137	151	154	154	150	3126	130	3266	131			
14	140	132	130	133	145	156	165	170	170	160	145	119	97	81	72	69	80	95	111	128	141	148	149	143	3079	128	3214	129			
15	136	127	119	115	122	130	138	148	150	148	140	125	110	95	85	79	81	91	102	116	130	137	141	142	2907	121	3043	122			
16	136	130	122	114	114	120	125	136	141	145	147	143	137	132	122	118	117	120	127	135	144	154	158	160	3196	133	3353	134			
17	157	152	145	138	128	126	125	127	131	139	143	151	154	152	150	147	144	140	139	140	145	150	152	156	3431	143	3586	143			
18	156	151	144	135	123	113	103	103	102	106	114	123	133	144	151	157	157	154	149	149	148	149	151	156	3270	136	3428	137			
19	157	157	155	146	136	122	107	96	91	90	92	103	120	136	151	165	174	174	172	167	164	162	162	166	3364	140	3532	141			
20	168	170	169	164	156	141	122	103	89	78	78	84	99	120	144	164	179	186	186	181	175	168	164	165	3453	144	3622	145			
21	170	174	177	176	172	159	137	115	90	73	64	61	74	95	121	148	170	182	188	185	177	168	160	160	3393	141	3558	142			
22	164	169	175	179	179	172	154	129	102	78	58	50	57	74	101	130	158	177	187	187	183	171	161	156	3352	140	3512	140			
23	160	165	176	184	188	185	174	150	121	92	69	53	52	65	89	116	147	171	184	193	187	177	166	159	3422	143	3580	143			
24	158	162	172	186	193	193	189	170	143	110	82	58	52	54	71	100	130	156	174	183	183	176	166	154	3416	142	3563	143			
25	146	147	159	172	183	192	188	175	153	124	93	68	49	43	56	78	108	133	155	166	169	164	150	139	3211	134	3343	134			
26	131	128	137	148	163	176	180	175	162	136	108	78	62	52	58	77	103	128	148	165	173	169	158	148	3163	132	3301	132			
27	138	132	135	148	164	177	186	186	179	161	136	108	88	76	73	85	106	128	150	166	175	173	166	156	3392	141	3536	141			
28	145	136	132	140	154	168	179	182	178	167	146	123	104	92	88	93	106	124	142	154	164	164	158	150	3387	141	3526	141			
29	138	129	123	122	134	146	154	162	163	155	143	125	110	97	90	91	102	116	130	144	153	157	152	146	3183	133	3317	133			
30	134	125	119	116	120	132	142	149	152	151	145	134	121	113	107	114	124	134	148	156	160	159	152	146	3214	134	3358	134			
31	144	134	124	119	118	124	132	137	143	143	140	137	131	124	121	120	125	131	136	147	154	156	158	156	3257	136	3408	136			
1	151																														
MONTHLY MEAN																														136.1cm	

Station : SYOWA STATION  
 Latitude : 69° 00' 28" S  
 Longitude : 39° 34' 13" E  
 Duration : Jan. 1-Jan. 31 1993  
 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	151	141	133	124	121	119	122	126	131	133	135	137	135	133	133	136	137	139	142	147	153	155	155	154	3289	137	3437	137		
2	148	139	132	120	116	109	105	106	106	111	113	117	124	129	135	141	144	147	148	150	151	151	148	149	3140	131	3288	132		
3	148	142	135	127	118	109	99	92	88	87	90	97	107	118	131	141	149	152	155	156	152	149	150	149	3041	127	3191	128		
4	150	150	145	140	134	121	106	96	86	78	79	87	99	115	133	149	164	173	174	172	168	160	158	157	3192	133	3351	134		
5	159	160	158	155	150	137	119	100	82	70	64	64	75	94	116	141	159	171	176	174	168	159	152	148	3151	131	3303	132		
6	152	155	158	157	155	145	126	103	80	58	45	40	49	70	95	125	150	169	177	179	176	164	155	153	3035	126	3191	128		
7	156	160	167	174	176	173	157	130	103	75	51	41	43	56	81	112	141	165	180	185	179	171	160	152	3188	133	3340	134		
8	152	157	164	175	182	182	171	148	119	87	55	34	25	37	57	86	118	145	163	176	173	162	150	139	3057	127	3190	128		
9	133	139	148	159	173	180	177	163	138	104	71	41	25	24	41	69	98	128	153	168	169	163	152	140	2959	123	3091	124		
10	132	132	141	155	173	185	190	186	167	140	107	75	51	41	45	66	92	117	143	161	167	164	153	139	3122	130	3249	130		
11	127	117	121	133	150	170	180	182	177	159	131	101	76	61	57	70	90	113	137	157	165	165	157	142	3138	131	3268	131		
12	130	118	113	122	138	157	175	184	188	182	164	141	116	96	88	88	100	121	139	154	167	166	157	145	3350	140	3480	139		
13	131	114	102	98	110	127	141	153	164	166	159	142	125	111	99	99	105	118	132	149	157	160	157	146	3165	132	3296	132		
14	132	117	102	93	96	104	115	128	140	148	149	146	139	132	125	123	125	133	143	155	164	167	164	158	3195	133	3340	134		
15	145	131	116	105	97	99	103	111	121	127	133	140	138	138	140	140	140	144	151	157	162	166	164	160	3228	134	3381	135		
16	153	141	129	115	102	95	92	88	94	100	102	111	120	126	132	141	145	146	150	152	154	157	156	153	3055	127	3208	128		
17	153	146	135	125	114	102	91	83	76	76	81	86	98	113	128	142	153	157	157	161	160	157	156	155	3005	125	3161	126		
18	155	154	149	143	136	123	105	91	79	67	67	73	83	102	122	141	157	167	168	167	164	158	154	152	3079	128	3234	129		
19	155	157	156	156	151	139	122	103	81	64	55	54	61	81	103	127	149	163	167	166	160	151	146	142	3009	125	3152	126		
20	143	149	156	159	160	154	138	115	92	69	51	44	48	64	87	116	140	159	169	170	165	153	143	139	2983	124	3125	125		
21	142	146	157	167	172	173	163	141	116	87	65	49	49	62	85	110	137	159	173	174	168	157	143	133	3126	130	3261	130		
22	135	140	152	163	174	178	173	155	130	102	72	52	42	50	69	93	123	145	161	168	164	154	140	127	3060	128	3182	127		
23	122	127	140	155	168	180	179	167	146	118	89	65	47	51	64	88	116	142	159	168	165	154	139	124	3072	128	3186	127		
24	114	113	125	140	156	170	176	171	156	129	100	74	56	50	59	77	105	130	148	161	162	148	135	120	2975	124	3081	123		
25	107	102	108	125	143	160	171	172	163	143	116	92	72	60	63	79	103	127	146	158	160	152	135	120	2976	124	3083	123		
26	107	98	99	112	130	148	163	168	167	154	129	109	90	76	75	87	106	126	146	160	162	159	143	126	3041	127	3152	126		
27	111	100	94	99	117	135	150	163	163	156	139	121	102	92	87	94	111	130	146	160	165	163	151	133	3084	128	3202	128		
28	118	109	100	99	113	131	146	161	164	163	155	140	125	120	114	115	129	144	158	167	175	172	162	147	3326	139	3457	138		
29	130	115	106	99	105	119	130	139	149	151	147	140	127	117	118	119	123	136	150	161	164	165	162	149	3223	134	3357	134		
30	133	120	109	105	104	113	122	134	141	146	148	144	141	141	142	145	150	157	166	173	177	175	170	160	3416	142	3563	143		
31	148	133	120	110	105	104	105	108	113	117	121	120	123	127	130	138	149	150	156	162	164	160	157	151	3171	132	3311	132		
1	140																													
MONTHLY MEAN																													130.2cm	

Table 6. Hourly tidal observation data at Langhovde from January 11 to January 18, 1993 (Time is LMT(UT+3 hours)).

Station : Southern Langhovde  
 Latitude : 69° 14.64 S  
 Longitude : 39° 42.83 E  
 Duration : Jan.11-Jan.18 1993  
 Unit : CENTIMETER

The zero level of the pressure gauge  
 relative to the fixed point.  
 -7.238m Jan.12 1993

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	169	171	191	214	-	-	-	-
12	238	256	260	261	256	240	229	215	210	218	233	253	262	269	270	266	261	237	211	192	184	184	197	217	5619	234	5853	234
13	234	250	263	263	255	241	226	209	198	193	203	221	235	250	261	263	258	241	225	209	196	197	203	216	5510	230	5742	230
14	232	248	258	260	258	246	231	218	202	190	192	204	215	228	241	248	250	248	241	231	225	222	224	231	5543	231	5785	231
15	242	253	261	265	264	256	243	230	216	202	193	197	199	209	220	227	232	238	238	238	239	235	240	241	5578	232	5824	233
16	246	253	260	264	261	258	250	237	226	211	197	191	185	183	186	193	198	204	217	222	231	239	242	244	5398	225	5647	226
17	249	252	252	256	254	253	252	245	234	224	211	201	186	179	174	172	180	186	197	213	229	243	253	257	5352	223	5610	224
18	258	259	256	254	254	250	255	253	247	240	235	222	202	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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