Oceanographic Data in Lützow-Holm Bay from July 1998 to December 1998 (JARE-39)

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1. Introduction

To investigate characteristics of intraseasonal to interannual variations in Lützow-Holm Bay, oceanographic observations were conducted from winter to early summer in 1998 under the auspices of the 39th Japanese Antarctic Research Expedition (JARE-39). Vertical profiles of temperature, salinity, and current velocity field were observed, and continuous moorings with sensors for those variables were conducted.

In this report, we present the vertical profiles of temperature and salinity obtained with a Conductivity-Temperature-Depth (CTD) profiler and expendable CTD (XCTD) system. The profiles of current velocity obtained with a current meter are also given. We also present information on observational sites and sea ice conditions.

2. Study Area

In Lützow-Holm Bay, observations were conducted mainly in three regions: Ongul Strait, the eastern boundary region of Lützow-Holm Bay, and Hovdebukta (Fig. 1). The sea ice condition in Lützow-Holm Bay was fairly unstable. Around the Ongul Islands, open water surface prevailed in the summer of 1997-1998, and growth of fast ice was delayed. South and west of the Ongul Islands, fast ice began to grow from April, but it became detached again in June. Hence, operations were started in late July. Details on the sea ice condition are described in National Institute of Polar Research (1999).

Observational sites and the depths there are listed in Table 1. In Ongul Strait, an observation point OS5 was placed at almost the center of the strait, and another point OS2 on the western slope of the strait. Observations were conducted almost once a month from July 22 to December 8 at OS5 and from July 23 to September 11 at OS2. Ice thickness and snow depth at the points are listed in Table 2. At the eastern boundary of Lützow-Holm Bay, west of the Ongul Islands, two

points (OW8 and OW28) were placed with a 10 km distance on the same latitudinal line. The fast ice in the center of the Bay became detached again in July, so the operations were restricted on the eastern side. Observations were conducted four times from August 20 to November 24. In Hovdebukta, CTD (XCTD) observation was conducted in October (September) at a point about 75m off from the edge of Langhovde Glacier.

3. Methods

Vertical profiles of temperature and salinity were obtained with a CTD profiler (Seabird SBE-19). Accuracy given by the manufacturer is 0.01 ℃ in temperature and 0.01 mmho/cm in conductivity. Salinity observations have significant uncertainty due to logistic difficulties. Results of salinity calibration suggest that the CTD output indicated a value 0.018 psu lower on average than that obtained with bottles. However, water used for calibration was obtained under severe field conditions and the values obtained have significant randomness, so it is ambiguous whether we can apply this simple correction for the CTD data. Thus, the raw data obtained are presented in Table 3.

Vertical profiles of temperature and salinity were also obtained with a XCTD system (Tsurumi-Seiki T.S.K. XCTD system). Accuracy in temperature is 0.02 ℃, and that in conductivity is 0.03 mmho/cm. Depth accuracy is 5 m or 2% of the value indicated. The data are listed in Table 4.

Current profiles were measured with an electromagnetic current meter (ALEC Electronics ACM8M). Accuracy in current speed is 1 cm/s or 2% of the value obtained, and that in direction is 2° . An attached thermistor sensor provides the temperature to 0.05℃ accuracy. Observations were usually conducted at 25 m depth intervals. The results are listed in Table 5.

Acknowledgments

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Reference

National Institute of Polar Research (1999): Nihon Nankyoku Chiiki Kansokutai Dai -39-ji-tai Hôkoku 1997-1999 (Report of the 39th Japanese Antarctic Research Expedition 1997-1999). Tokyo, 326p. (in Japanese).

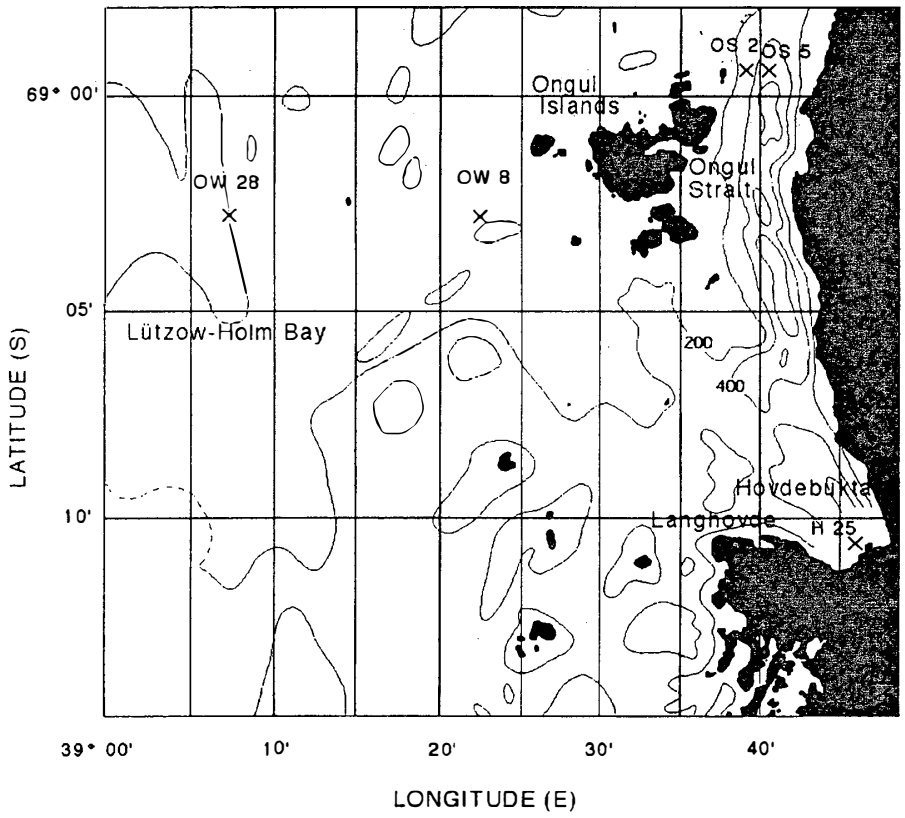

Fig. 1. Locations of oceanographic stations.

Table 1. Locations of oceanographic stations.

Station	Position		Depth
	Latitude (°S)	Longitude (°E)	(m)
Ongul Strait			
OS5	68° 59.43'S	39° 39.72'E	549
OS2	68° 59.52'S	39° 37.87'E	317
Lützow-Holm Bay			
OW8	69° 02.33'S	39° 22.28'E	197
OW28	69° 02.27'S	39° 06.92'E	147
Hovdebukta			
H25	69° 10.97'S	39° 47.43'E	602
NPO	69° 07.02'S	39° 35.15'E	150

Table 2. Ice thickness and snow depth at the observational sites.

Station	Date		ice thickness	snow depth	freeboard
	Month	Day	(cm)	(cm)	(cm)
OS5	7	20	60	29	-
	8	11	69	23	-
	10	12	84	25	-3
	11	20	109	-	-
	12	8	90	20	5
OS2	7	23	-	-	-
	8	12	75	25	-
	9	11	90	32	-
	11	20	121	27	0
OW8	8	21	72	27	0
	10	7	102	24	2
	10	23	93.5	39	-6.5
	11	24	105	27	-2
OW28	8	20	70	26	-
	10	6	96	36	-4
	10	22	108	37	-6
	11	23	103	47	-7
	11	30	103	31	-
H25	9	2	110	5	8
	10	5	126	1.5	11

Table 3. CTD observation data.

Stn. OS5
Date: Jul. 22,1998 Time: 14:07 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.855	33.852
10	−1.854	33.860
20	−1.851	33.867
30	−1.847	33.874
50	−1.828	33.908
75	−1.831	33.915
100	−1.805	33.936
125	−1.687	33.994
150	−1.618	34.052
200	−1.558	34.093
250	−1.472	34.167
300	−1.456	34.179
400	−1.445	34.197
500	−1.460	34.249
521	−1.456	34.302

Stn. OS5
Date: Aug. 11,1998 Time: 13:33 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.840	33.985
10	−1.841	33.984
20	−1.837	33.980
30	−1.826	33.986
50	−1.798	33.994
75	−1.766	34.010
100	−1.666	34.060
125	−1.615	34.099
150	−1.536	34.157
200	−1.493	34.186
250	−1.475	34.209
300	−1.444	34.225
400	−1.431	34.238
500	−1.441	34.281
514	−1.437	34.295

Stn. OS5
Date: Sep. 12,1998 Time: 10:17 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.824	33.963
10	−1.828	33.966
20	−1.808	33.975
30	−1.799	33.979
50	−1.768	33.994
75	−1.778	34.003
100	−1.706	34.033
125	−1.625	34.086
150	−1.568	34.127
200	−1.475	34.204
250	−1.440	34.236
300	−1.422	34.250
400	−1.388	34.267
500	−1.380	34.275
506	−1.381	34.275

Stn. OS5
Date: Oct. 12,1998 Time: 10:03 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.846	34.019
10	−1.847	34.018
20	−1.843	34.015
30	−1.842	34.015
50	−1.813	34.024
75	−1.744	34.039
100	−1.633	34.093
125	−1.527	34.152
150	−1.518	34.178
200	−1.430	34.240
250	−1.391	34.268
300	−1.354	34.281
400	−1.412	34.281
492	−1.458	34.284

Table 3. CTD observation data.

Stn. OS5
Date: Nov. 14,1998 Time: 09:53 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.815	34.049
10	−1.812	34.045
20	−1.809	34.041
30	−1.802	34.038
50	−1.767	34.044
75	−1.648	34.095
100	−1.566	34.150
125	−1.490	34.192
150	−1.460	34.224
200	−1.461	34.260
250	−1.437	34.292
300	−1.427	34.305
400	−1.459	34.310
491	−1.461	34.317

Stn. OS5
Date: Dec. 08,1998 Time: 09:45 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.622	34.000
10	−1.649	34.002
20	−1.676	34.004
30	−1.702	34.028
50	−1.612	34.079
75	−1.592	34.135
100	−1.520	34.187
125	−1.490	34.197
150	−1.406	34.246
200	−1.322	34.288
250	−1.324	34.301
300	−1.319	34.314
400	−1.466	34.313
500	−1.458	34.319
505	−1.459	34.319

Stn. OS2
Date: Jul. 23,1998 Time: 11:32 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.834	33.945
10	−1.833	33.946
20	−1.820	33.949
30	−1.820	33.948
50	−1.819	33.949
75	−1.765	33.979
100	−1.707	34.002
125	−1.699	34.006
150	−1.605	34.059
200	−1.523	34.115
250	−1.486	34.146
296	−1.467	34.162

Stn. OS2
Date: Aug. 13,1998 Time: 11:10 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.817	33.962
10	−1.816	33.960
20	−1.820	33.963
30	−1.818	33.963
50	−1.803	33.972
75	−1.753	33.995
100	−1.653	34.059
125	−1.617	34.078
150	−1.542	34.138
200	−1.511	34.163
250	−1.483	34.201
300	−1.467	34.209
301	−1.467	34.210

Table 3. CTD observation data.

Stn. OS2
Date: Sep. 11,1998 Time: 11:08 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.813	33.990
10	−1.820	33.990
20	−1.800	33.992
30	−1.794	33.995
50	−1.781	33.999
75	−1.763	34.007
100	−1.734	34.024
125	−1.650	34.056
150	−1.581	34.114
200	−1.462	34.219
250	−1.424	34.249
288	−1.408	34.262

Stn. OS2
Date: Nov. 14,1998 Time: 09:53 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.815	34.049
10	−1.812	34.045
20	−1.809	34.041
30	−1.802	34.038
50	−1.767	34.044
75	−1.648	34.095
100	−1.566	34.150
125	−1.490	34.192
150	−1.460	34.224
200	−1.461	34.260
250	−1.437	34.292
300	−1.427	34.305
400	−1.459	34.310
491	−1.461	34.317

Stn. OW8
Date: Aug. 21,1998 Time: 11:00 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.837	7.833
10	−1.837	8.732
20	−1.836	11.738
30	−1.835	13.086
50	−1.834	15.877
75	−1.828	16.579
100	−1.742	17.492
125	−1.724	19.429
150	−1.717	32.868
189	−1.710	30.692

Stn. OW8
Date: Oct. 07,1998 Time: 11:52 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	—	—
10	—	—
20	—	—
30	—	—
50	−1.819	33.968
75	−1.751	33.997
100	−1.704	34.032
125	−1.693	34.044
150	−1.686	34.053
175	−1.681	34.063

Table 3. CTD observation data.

Stn. OW8
Date: Nov. 24,1998 Time: 09:42 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.794	34.043
10	−1.793	34.044
20	−1.778	34.051
30	−1.732	34.056
50	−1.694	34.074
75	−1.663	34.101
100	−1.605	34.127
125	−1.599	34.131
150	−1.591	34.135
188	−1.582	34.138

Stn. OW28
Date: Aug. 20,1998 Time: 14:51 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.829	33.865
10	−1.824	33.878
20	−1.824	33.897
30	−1.821	33.907
50	−1.820	33.923
75	−1.822	33.946
100	−1.747	33.991
125	−1.688	34.049
135	−1.682	34.057

Stn. OW28
Date: Oct. 06,1998 Time: 13:57 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.843	—
10	−1.844	—
20	−1.862	7.062
30	−1.852	7.776
50	−1.807	21.987
75	−1.736	27.330
100	−1.626	34.062
116	−1.584	34.124

Stn. OW28
Date: Oct. 22, 1998 Time: 13:19 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
5	−1.830	33.990
10	−1.832	33.992
20	−1.826	34.003
30	−1.824	34.008
50	−1.810	34.011
75	−1.699	34.071
100	−1.625	34.121
125	−1.560	34.154

Table 3. CTD observation data.

Stn. OW28
Date: Nov. 23,1998 Time: 11:29 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.852	34.077
10	−1.851	34.076
20	−1.814	34.074
30	−1.819	34.078
50	−1.802	34.071
75	−1.654	34.128
100	−1.611	34.168
125	−1.549	34.211
138	−1.531	34.216

Stn. H25
Date: Oct. 05,1998 Time: 15:30 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
5	−1.840	34.035
10	−1.839	34.035
20	−1.841	34.029
30	−1.840	34.026
50	−1.838	34.023
75	−1.829	34.027
100	−1.623	34.105
125	−1.549	34.169
150	−1.555	34.196
200	−1.480	34.234
250	−1.418	34.257
300	−1.400	34.273
400	−1.362	34.286
500	−1.316	34.335
573	−1.253	34.352

Table 4. XCTD observation data.

Stn. H25
Date: Sep. 02,1998 Time: 15:00 (LT)

PRESS (dB)	TEMP (℃)	SAL (PSU)
2	-1.865	32.498
10	-1.854	33.798
20	-1.854	34.022
30	-1.854	34.092
40	-1.854	34.115
50	-1.854	34.123
60	-1.854	34.132
70	-1.854	34.134
80	-1.854	34.145
90	-1.854	34.149
100	-1.734	34.180
110	-1.668	34.220
120	-1.625	34.234
130	-1.625	34.251
140	-1.592	34.267
150	-1.538	34.282
160	-1.538	34.291
170	-1.582	34.299
180	-1.560	34.315
190	-1.549	34.314
200	-1.538	34.316
210	-1.549	34.326
220	-1.527	34.334
230	-1.495	34.336
240	-1.506	34.343
250	-1.462	34.347
260	-1.451	34.348
270	-1.451	34.361
280	-1.451	34.362
290	-1.451	34.365
300	-1.440	34.364
310	-1.440	34.366
320	-1.440	34.379
330	-1.429	34.375
340	-1.429	34.376
350	-1.429	34.381
360	-1.429	34.381
370	-1.429	34.377
380	-1.419	34.378
390	-1.419	34.389
400	-1.419	34.386
410	-1.419	34.386
420	-1.408	34.383
430	-1.429	34.389
440	-1.419	34.392
450	-1.419	34.397
460	-1.386	34.418
470	-1.365	34.429
480	-1.343	34.443
490	-1.321	34.448
500	-1.311	34.447
510	-1.300	34.448
520	-1.289	34.454
530	-1.278	34.458
540	-1.267	34.458
550	-1.256	34.461
560	-1.246	34.465
570	-1.235	34.469
580	-1.224	34.471
590	-1.224	34.474
600	-1.213	34.476

Table 4. XCTD observation data.

Stn. NPO
Date: Oct. 27,1998 Time: 12:00 (LT)

PRESS (dB)	TEMP (°C)	SAL (PSU)
2	−1.819	32.375
10	−1.830	33.025
20	−1.808	33.609
30	−1.819	33.729
40	−1.819	33.817
50	−1.786	34.190
60	−1.819	34.199
70	−1.764	34.204
80	−1.634	34.245
90	−1.612	34.273
100	−1.558	34.309
110	−1.526	34.321
120	−1.515	34.333
130	−1.482	34.348
140	−1.471	34.362
150	−1.471	34.392

Table 5. Vertical current profile data.

Stn. OS5
Date: Jul. 22,1998 Time: 14:50–15:20 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	0.98	-1.17	-1.87
25	18.25	-2.23	-1.86
50	11.92	-8.02	-1.85
75	-1.18	-0.60	-1.85
100	9.12	-10.30	-1.86
125	7.21	-4.84	-1.78
150	2.20	8.10	-1.66
175	3.24	-3.66	-1.60
200	1.77	0.98	-1.58
250	-4.31	-2.15	-1.49
300	-1.77	-3.70	-1.46
350	-4.33	0.13	-1.45
400	-0.30	-2.21	-1.45
450	-1.12	-0.55	-1.46
500	-4.97	-0.54	-1.46

Stn. OS5
Date: Aug. 12,1998 Time: 10:25–11:10 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-12.09	2.53	
25	-7.22	12.54	
50	6.69	-1.32	
75	-6.62	12.91	
100	-6.03	12.59	
125	2.93	1.58	
150	2.22	0.36	
175	1.40	1.41	
200	1.57	0.97	
225	1.59	-0.03	
250	0.38	-0.32	
275	0.61	0.23	
300	0.30	0.52	
325	-0.38	0.51	
350	-0.30	0.86	
375	0.77	0.03	
400	-0.12	0.11	
425	0.56	0.21	
450	0.80	0.34	
475	1.63	0.43	
500	0.89	0.14	

Table 5. Vertical current profile data.

Stn. OS5
Date: Sep. 12,1998 Time: 11:15–12:10 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	−0.80	0.88	−1.87
20	11.50	6.46	−1.85
40	0.21	4.30	−1.80
60	−1.75	−10.75	−1.82
80	−2.75	1.68	−1.80
100	6.71	4.10	−1.72
120	−4.91	−0.69	−1.65
140	−4.45	−0.23	−1.60
160	2.09	−2.33	−1.58
180	−2.71	−4.51	−1.52
200	0.19	2.16	−1.48
220	−4.56	−1.67	−1.46
240	0.50	−0.47	−1.46
260	1.45	−0.99	−1.45
280	1.11	2.26	−1.44
300	−2.53	0.29	−1.43
320	−0.73	−1.18	−1.42
340	2.22	−1.33	−1.40
360	0.37	−2.19	−1.40
380	−0.84	2.14	−1.40
400	2.15	1.40	−1.40
420	−1.35	−0.90	−1.41
440	0.21	−2.15	−1.40
460	0.70	1.77	−1.40
480	3.18	0.96	−1.40
500	−0.01	−0.65	−1.39

Stn. OS5
Date: Oct. 12,1998 Time: 10:40–11:20 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	−5.90	−0.62	−1.81
25	15.77	−0.10	−1.85
50	14.90	1.74	−1.82
75	13.31	3.33	−1.78
100	4.10	−0.76	−1.65
125	−1.97	−1.89	−1.53
150	−0.45	1.30	−1.51
175	1.96	1.68	−1.46
200	−0.35	1.68	−1.44
225	2.65	3.29	−1.42
250	1.62	3.26	−1.41
275	3.43	−1.41	−1.39
300	1.04	−1.83	−1.35
325	−2.22	2.41	−1.35
350	−0.61	−0.29	−1.35
375	−2.04	−1.14	−1.37
400	5.67	−2.32	−1.45
425	−1.77	0.54	−1.46
450	2.49	0.55	−1.47
475	−2.20	3.06	−1.46
500	0.86	−0.95	−1.43

Table 5. Vertical current profile data.

Stn. OS5
Date: Nov. 14,1998 Time: 10:35–11:35 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	8.56	3.87	-1.82
25	3.69	-3.61	-1.81
50	-1.75	1.61	-1.79
75	0.83	0.72	-1.66
100	0.60	-0.37	-1.60
125	1.33	1.13	-1.52
150	-0.73	0.22	-1.47
175	0.19	-0.64	-1.45
200	0.44	-1.27	-1.47
225	0.74	-1.19	-1.47
250	0.06	-0.09	-1.45
275	-0.13	0.33	-1.42
300	0.46	0.25	-1.36
325	0.74	-0.48	-1.45
350	-0.24	-0.19	-1.46
375	0.09	-0.04	-1.44
400	0.39	0.10	-1.45
425	0.53	-0.03	-1.46
450	0.13	-0.25	-1.47
475	0.15	-0.03	-1.46
500	0.44	-0.24	-1.46

Stn. OS5
Date: Dec. 08,1998 Time: 10:20–11:05 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
0	-4.53	4.93	-1.30
25	2.44	-0.90	-1.66
50	4.54	-7.66	-1.61
75	-6.12	6.28	-1.60
100	3.77	2.23	-1.52
125	2.72	-2.55	-1.48
150	-1.82	2.21	-1.40
175	-0.03	1.77	-1.34
200	0.92	-1.58	-1.32
225	-2.97	0.05	-1.31
250	2.08	6.69	-1.33
275	1.13	-1.43	-1.37
300	2.85	-0.68	-1.33
325	1.80	-1.99	-1.32
350	-0.30	4.34	-1.44
375	-0.08	-0.84	-1.46
400	8.98	4.03	-1.46
425	-3.29	2.66	-1.45
450	-2.54	3.17	-1.46
475	-2.20	3.70	-1.46
500	-0.55	-0.54	-1.46

Table 5. Vertical current profile data.

Stn. OS2
Date: Jul. 23,1998 Time: 12:50–13:15 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-5.72	6.66	-1.85
25	-0.15	-4.40	-1.84
50	3.03	6.47	-1.84
75	-1.25	-8.35	-1.79
100	-4.50	-1.51	-1.75
125	-1.82	-2.36	-1.69
150	1.46	-1.63	-1.63
175	0.27	-3.49	-1.59
200	-2.38	3.72	-1.54
225	3.96	-0.06	-1.52
250	3.96	-0.06	-1.50
275	-1.28	2.24	-1.49
300	-0.25	-1.68	-1.48

Stn. OS2
Date: Aug. 13,1998 Time: 11:50–12:15 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-5.22	-1.78	
25	7.16	-0.26	
50	2.28	2.44	
75	3.11	-3.30	
100	-0.07	-0.68	
125	-1.69	-0.36	
150	2.64	-1.22	
175	-0.62	-0.65	
200	-0.61	-0.90	
225	-1.92	1.49	
250	-2.50	-2.97	
275	-1.29	-0.66	
300	-1.54	-0.97	

Stn. OS2
Date: Sep. 11,1998 Time: 13:20–13:55 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	6.31	-1.09	-1.88
20	4.33	-7.34	-1.83
40	-1.21	-1.66	-1.80
60	-2.99	-6.09	-1.80
80	3.89	-7.35	-1.78
100	1.00	-6.59	-1.77
120	1.53	5.61	-1.72
140	5.93	-2.41	-1.63
160	1.78	-2.79	-1.58
180	0.88	-2.20	-1.52
200	-2.67	-1.26	-1.49
220	2.04	1.23	-1.47
240	2.45	0.92	-1.45
260	-1.29	-0.54	-1.44
280	-1.76	-0.92	-1.43

Stn. OS2
Date: Nov. 20,1998 Time: 13:55–14:25 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-5.13	-2.05	-1.41
25	-6.72	1.80	-1.76
50	-0.48	7.70	-1.68
75	-3.56	-2.09	-1.61
100	7.36	-6.12	-1.54
125	3.05	5.16	-1.51
150	6.52	0.70	-1.48
175	-1.92	10.03	-1.45
200	2.93	-4.80	-1.39
225	-1.80	6.39	-1.38
250	3.32	-4.86	-1.36
275	0.89	-6.73	-1.38
300	0.80	5.16	-1.38

Table 5. Vertical current profile data.

Stn. OW8
Date: Aug. 21,1998 Time: 11:30-11:50 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	-5.55	-0.03	
2	-5.74	0.00	
2	-5.57	0.63	
25	2.95	-8.98	
50	-4.27	-6.68	
75	-2.63	6.40	
100	-3.31	-3.62	
125	1.05	4.53	
150	-0.59	-4.19	
175	-4.65	2.38	

Stn. OW8
Date: Oct. 07,1998 Time: 13:40-14:00 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	5.49	-1.35	-1.88
25	2.34	0.46	-1.85
50	-2.48	-7.62	-1.85
75	-0.15	-7.56	-1.84
100	3.37	-5.45	-1.75
125	1.36	-6.27	-1.72
150	-0.92	-1.38	-1.71
175	-2.50	-1.83	-1.70

Stn. OW8
Date: Oct. 23,1998 Time: 13:20-13:35 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	-3.54	1.34	-1.82
25	-2.73	-2.22	-1.82
50	-0.07	-1.31	-1.80
75	-1.41	-0.92	-1.73
100	2.52	-0.93	-1.66
125	1.55	-0.30	-1.64
150	0.79	0.36	-1.64
175	0.87	-0.66	-1.62

Stn. OW8
Date: Nov. 24,1998 Time: 10:00-10:15 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (°C)
2	6.65	-0.64	-1.39
25	-5.22	-1.23	-1.73
50	6.95	-0.73	-1.68
75	0.91	-0.96	-1.66
100	-1.28	1.32	-1.60
125	1.52	-1.13	-1.60
150	0.34	-1.94	-1.59
175	-0.57	1.28	-1.59

Table 5. Vertical current profile data.

Stn. OW28
Date: Aug. 20,1998 Time: 15:10–15:30 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	2.57	-4.79	
2	2.71	-5.01	
2	2.74	-5.00	
25	-6.24	0.43	
50	9.70	-2.45	
75	8.83	-4.37	
100	0.52	-7.95	
125	-2.00	1.28	

Stn. OW28
Date: Oct. 06,1998 Time: 14:15–14:25 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-3.15	-4.03	-1.86
25	-4.24	-4.44	-1.85
50	-0.13	-7.49	-1.82
75	-2.46	2.31	-1.75
100	1.49	0.54	-1.64
125	-1.77	2.48	-1.55

Stn. OW28
Date: Oct. 22,1998 Time: 13:35–13:50 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	-2.43	5.49	-1.78
25	-9.70	0.93	-1.83
25	-10.02	0.92	-1.84
50	1.16	-13.33	-1.84
75	-1.42	3.29	-1.74
100	-3.88	-2.75	-1.64
125	-0.63	0.79	-1.57

Stn. OW28
Date: Nov. 23,1998 Time: 11:40–11:55 (LT)

DEPTH (m)	N-COMP (cm/s)	E-COMP (cm/s)	TEMP (℃)
2	11.36	3.68	-1.82
25	-3.70	1.42	-1.78
50	-3.82	-0.27	-1.77
75	-0.96	1.16	-1.65
100	2.62	0.21	-1.60
125	3.10	0.72	-1.54