HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 315
CRUISE 316
CRUISE 317

IN JULY 2014
IN AUGUST 2014

1. Cruise Itinerary

Cruise 315		
Departure from Hakodate	Jul.	22, 2014
Sampling by frame trawl net		22
Arrival at Usujiri		22
Departure from Usujiri		23
Start hydrographic research (US14334)		23
Sampling by frame trawl net		23
Arrival at and departure from Usujiri		23
Sampling by frame trawl net		24
Arrival at Usujiri		25
Departure from Usujiri		26
Arrival at Hakodate		26
Departure from Hakodate		28
Setting mooring ADCP system		28
Arrival at Hakodate		28
Departure from Hakodate		29
Arrival at Aomori		29
Departure from Aomori		30
Finish hydrographic research (US14368)		30
Return to Hakodate		31
Total coverage 605.4 miles		

Cruise 316		
Departure from Hakodate	Aug.	4, 2014
Sampling by trawl net		4
Start hydrographic research (US14369)		4
Sampling by squid jigging		4
Arrival at Hakodate		5
Departure from Hakodate		6
Sampling by sledge net		6
Arrival and departure from Hakodate		6
Sampling by squid jigging		7
Retrieval ADCP mooring system		7
Sampling by squid jigging		7
Finish hydrographic research (US14395)		8
Return to Hakodate		9
Total coverage 397.3 miles		

Cruise 317		
Departure from Hakodate	Aug.	21, 2014
Start hydrographic research (US14396)		22
Observation by echo sounder		22
Finish hydrographic research (US14398)		24
Return to Hakodate		25
Total coverage 649.4 miles		

2. Data on Temperature, Salinity and Pressure

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19).

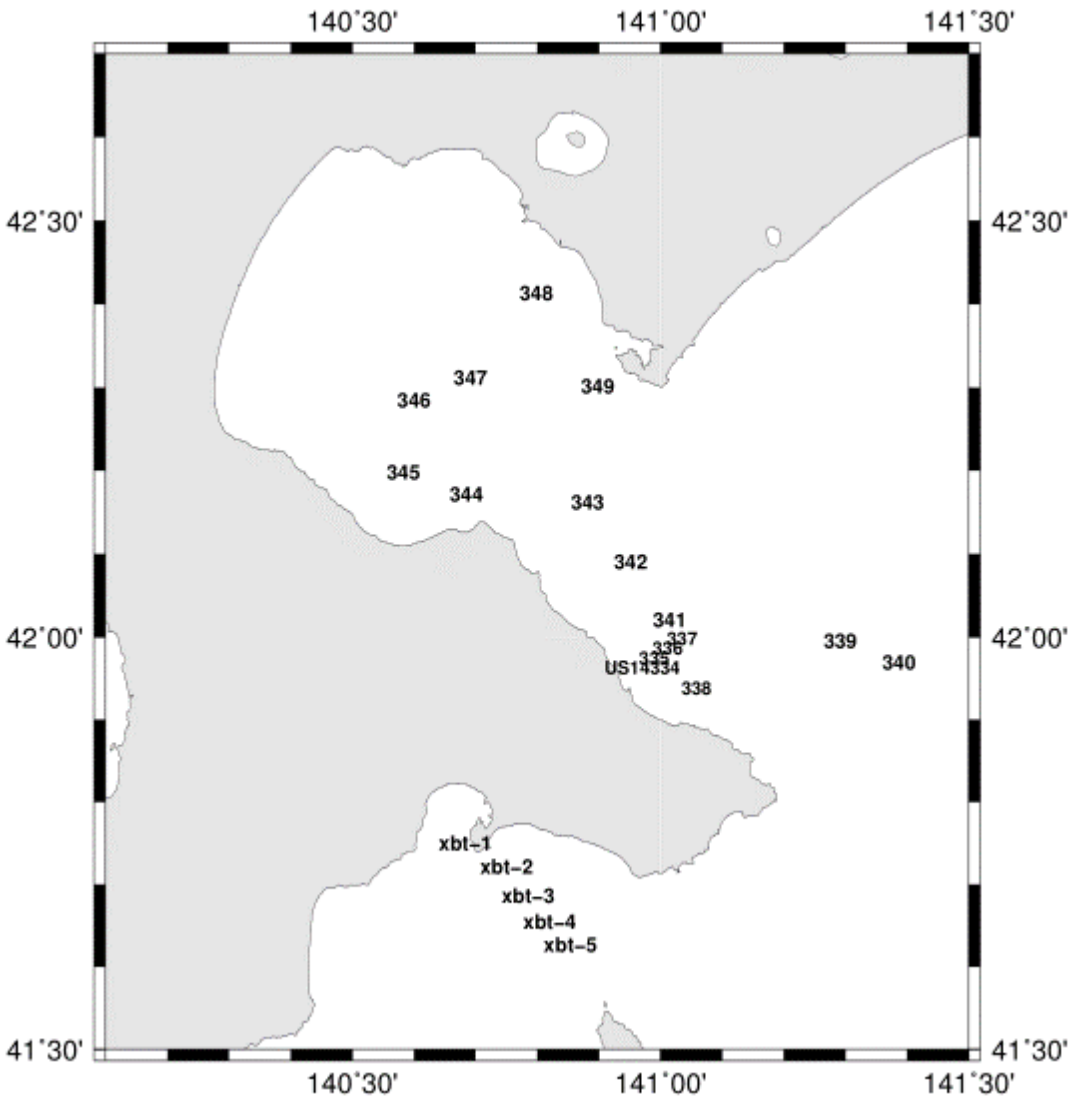

Figure 1. Oceanographic stations (Cruise 315)

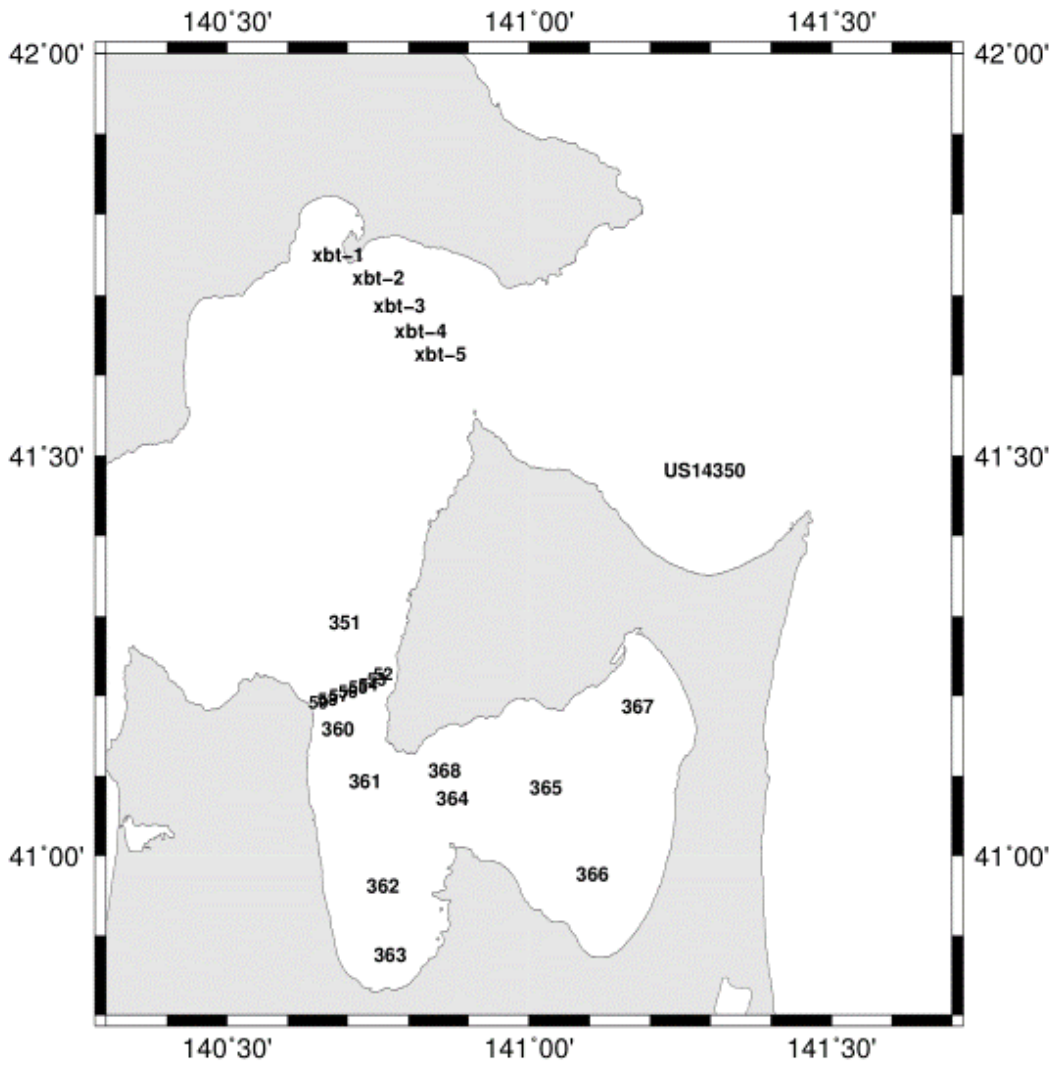

Figure 2. Oceanographic stations (Cruise 315)

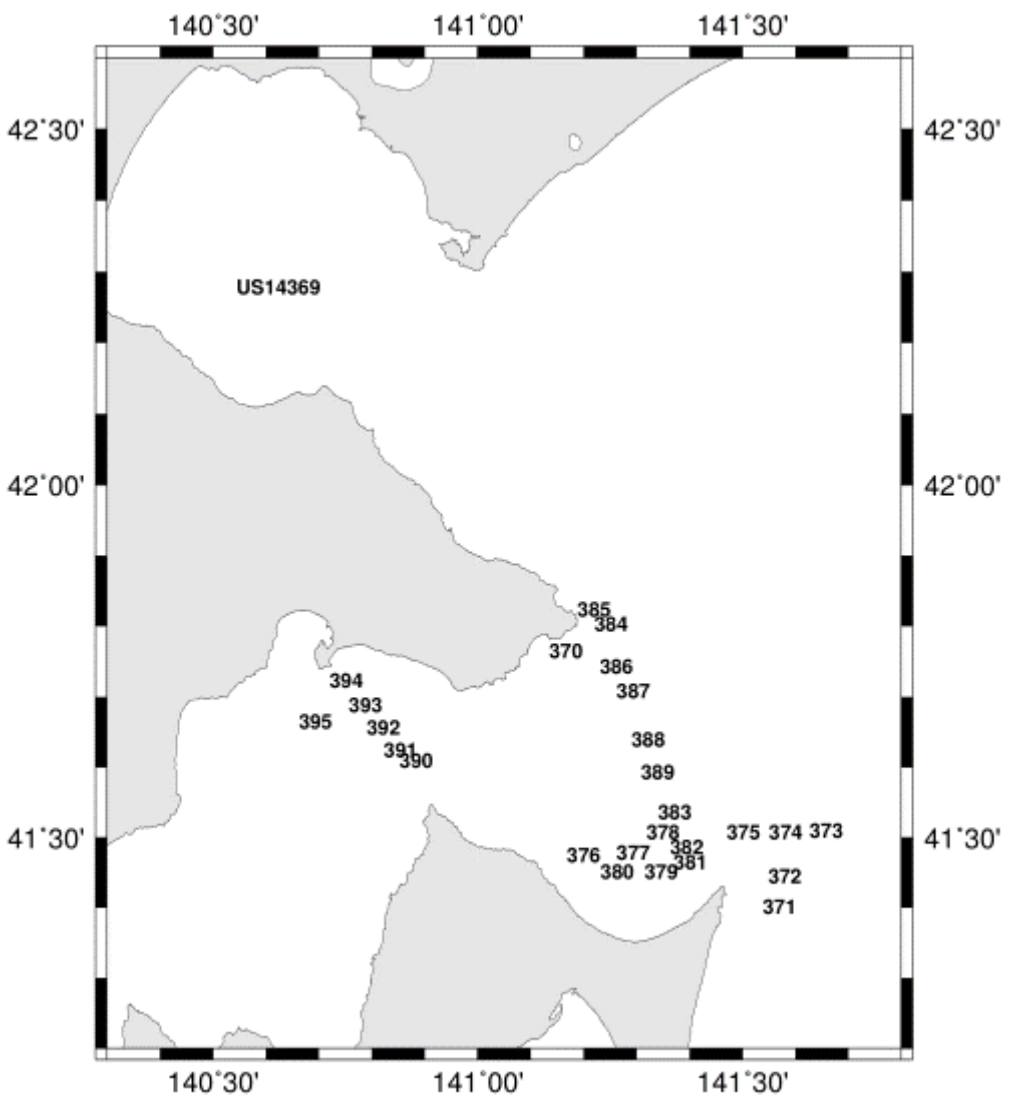

Figure 3. Oceanographic stations (Cruise 316)

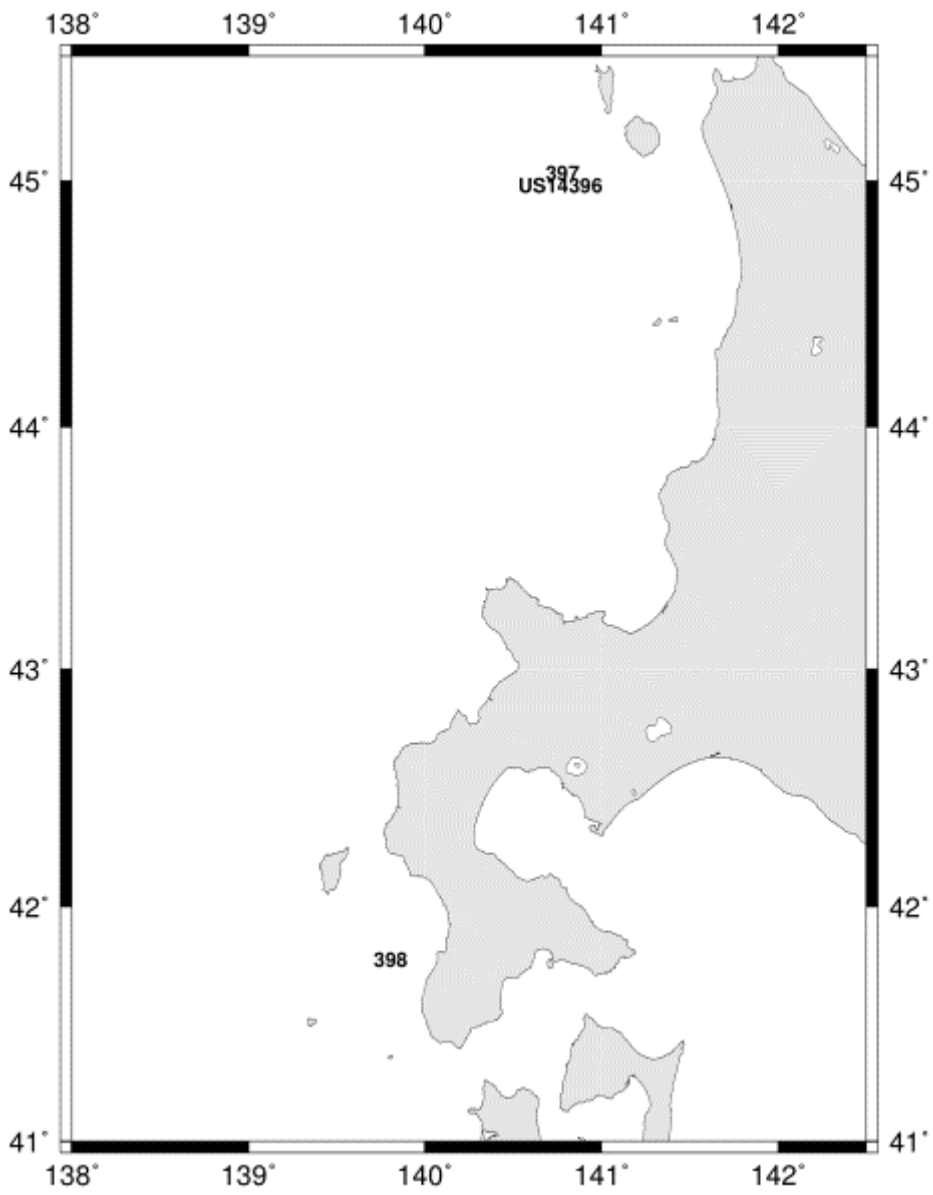

Figure 4. Oceanographic stations (Cruise 317)

Table 1. List of Oceanographic Station

Cruise 315

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14334	41-57.3	140-58.2	7/23	0512-0516	76	NE -1	East-1	NE -2	20.6	18.2	r
US14335	41-58.0	140-59.4	7/23	0524-0529	85	NE -1	East-1	NE -3	21.0	18.5	r
US14336	41-58.7	141-00.7	7/23	0537-0541	93	East-1	East-1	East-3	21.2	18.6	r
US14337	41-59.4	141-02.1	7/23	0551-0557	100	East-1	East-1	East-2	21.7	18.6	r
US14338	41-55.8	141-03.5	7/23	0927-0933	109	WSW-2	East-1	WSW-4	22.9	18.3	r
US14338-2	41-54.0	141-08.3	7/23	1207-1212	117						
US14338-3	41-56.6	140-59.4	7/23	1910-1916	78						
US14338-4	41-55.8	141-03.7	7/23	2205-2211	110						
US14338-5	41-55.3	141-05.2	7/24	0030-0036	111						
US14339	41-59.2	141-17.5	7/24	0723-0733	269	Calm	ESE-1	Calm	20.8	18.5	bc
US14340	41-57.6	141-23.2	7/24	0925-0938	340	Calm	ESE-1	Calm	24.0	18.8	bc
US14339-2	42-00.0	141-17.5	7/24	1902-1913	268						
US14340-2	41-57.6	141-23.5	7/24	2110-2124	340						
US14341	42-00.7	141-00.9	7/26	0428-0433	91	South-1	SE -1	South-3	23.9	20.0	c
US14342	42-04.9	140-57.1	7/26	0537-0541	82	West-1	SE -1	West-3	22.4	29.8	c
US14343	42-09.2	140-52.9	7/26	0626-0630	76	Calm	SE -1	Calm	23.8	20.3	c
US14344	42-09.8	140-41.1	7/26	0745-0750	78	NE -1	SE -1	NE -3	22.0	19.8	o
US14345	42-11.4	140-35.0	7/26	0845-0849	79	East-1	SE -1	East-3	20.9	19.8	o
US14346	42-16.6	140-36.0	7/26	0922-0930	89	SE -1	SE -1	SE -3	21.3	19.5	o
US14347	42-18.2	140-41.5	7/26	1104-1107	70	East-2	SE -1	East-4	21.7	19.6	o
US14348	42-24.3	140-47.9	7/26	1206-1210	44	East-2	SE -1	East-4	20.8	19.9	r
US14349	42-17.6	140-53.9	7/26	1312-1315	56	East-3	SE -1	East-5	21.1	19.3	r
XBT-1	41-44.5	140-41.0	7/28	0700-0701	54						
XBT-2	41-42.8	140-45.0	7/28	0721-0722	84						
XBT-3	41-40.7	140-47.1	7/28	0735-0736	224						
XBT-4	41-38.8	140-49.2	7/28	0749-0750	347						
XBT-5	41-37.1	140-51.2	7/28	0802-0803	98						
XBT-6	41-28.4	141-52.8	7/28	0810-0811	40						
US14350	41-28.4	141-17.4	7/28	1054-1104	221	NW -2	East-1	NW -4	24.0	18.9	bc
US14351	41-17.0	140-41.7	7/29	1012-1021	144	Calm	West-1	Calm	25.4	22.3	bc
US14352	41-13.2	140-45.5	7/29	1051-1056	65	Calm	West-1	Calm	25.7	22.3	bc
US14353	41-12.8	140-44.9	7/29	1103-1107	66	NE -1	West-1	NE -2	25.9	22.1	bc
US14354	41-12.4	140-44.0	7/29	1119-1124	69	NE -1	West-1	NE -2	25.4	22.9	bc
US14355	41-12.2	140-43.0	7/29	1131-1136	71	NE -1	West-1	NE -3	25.8	22.8	bc
US14356	41-11.9	140-42.0	7/29	1144-1149	73	North-1	East-1	North-3	25.9	22.5	bc
US14357	41-11.6	140-41.1	7/29	1157-1202	68	NW -2	East-1	NW -3	25.2	23.1	bc
US14358	41-11.3	140-40.0	7/29	1210-1214	52	NNW-2	East-1	NNW-3	25.1	22.4	bc
US14359	41-11.1	140-39.1	7/29	1219-1222	32	Calm	North-1	Calm	25.8	21.8	bc
US14360	41-09.0	140-41.0	7/29	1239-1243	43	NE -1	East-1	NE -3	26.4	21.2	bc
US14361	41-05.1	140-43.7	7/29	1311-1316	60	NE -2	NE -1	NE -3	27.1	23.3	bc
US14362	40-57.2	140-45.5	7/29	1402-1405	50	North-1	North-1	North-3	27.8	23.7	bc
US14363	40-52.0	140-46.2	7/29	1437-1440	28	NE -1	North-1	NE -3	28.5	23.5	bc
US14364	41-03.8	140-52.4	7/30	0613-0621	51	Calm	North-1	Calm	22.2	23.1	bc
US14365	41-04.6	141-01.7	7/30	0700-0708	47	North-1	North-1	North-1	22.8	22.0	bc
US14366	40-58.1	141-06.3	7/30	0843-0847	39	Calm	North-1	Calm	23.4	22.3	m
US14367	41-10.7	141-10.8	7/30	1003-1007	29	Calm	South-1	Calm	23.8	23.2	m
US14368	41-05.9	140-51.6	7/30	1138-1143	51	Calm	South-1	Calm	25.2	23.0	bc

Table 1 (Continued)

Cruise 316

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14369	42-16.1	140-37.4	8/4	1510-1517	88	NE -1	East-1	NE -2	25.1	23.1	r
US14370	41-45.3	141-10.0	8/4	2307-2313	117	Calm	East-1	Calm	23.1	20.2	f
US14371	41-23.5	141-34.2	8/6	2033-2047	160	South-2	SE -1	South-4	23.4	22.5	o
US14372	41-26.1	141-34.8	8/6	2109-2132	396	South-1	Sout-1	South-3	23.8	22.5	m
US14373	41-30.0	141-39.5	8/6	2202-2234	609	South-1	SE -1	South-3	23.9	22.4	r
US14374	41-29.9	141-34.9	8/6	2303-2314	149	South-1	SE -1	South-3	23.0	22.4	r
US14375	41-29.9	141-30.1	8/6	2344-2351	62	South-2	SE -1	South-4	23.2	22.2	o
US14376	41-27.9	141-12.0	8/7	0125-0130	91	WSW-1	WNW-1	WSW-2	24.5	23.1	o
US14377	41-28.1	141-17.6	8/7	0646-0658	203	Calm	WNW-1	Calm	24.4	21.9	o
US14378	41-29.9	141-21.0	8/7	0723-0738	223	West-1	WNW-1	West-3	24.4	21.0	o
US14379	41-26.5	141-20.8	8/7	0801-0808	70	West-2	East-1	West-4	23.3	21.5	r
US14380	41-26.5	141-15.8	8/7	0831-0838	82	NW -2	East-1	NW -4	22.9	21.9	r
US14380-2	41-26.3	141-16.0	8/7	0855-0903	79						
US14381	41-27.3	141-24.1	8/7	0945-0950	47	SE -1	East-1	SE -3	22.6	21.5	r
US14382	41-28.6	141-23.7	8/7	1005-1015	78	SE -1	East-1	SE -3	23.0	22.1	r
US14383	41-31.6	141-22.3	8/7	1046-1103	238	NE -1	East-1	NE -3	23.4	22.9	c
US14383-2	41-31.3	141-22.7	8/7	1126-1136	215						
US14384	41-47.6	141-15.1	8/7	1342-1356	213	SSE-1	East-1	SSE -3	24.2	20.5	c
US14385	41-48.8	141-13.2	8/7	1413-1425	161	SSE-1	SSE-1	SSE -2	22.5	18.5	c
US14385	41-48.8	141-12.9	8/7	1438-1449	130						
US14386	41-44.0	141-15.7	8/7	1527-1543	225	SSE-2	SSE-1	SSE-4	22.0	19.9	c
US14387	41-41.9	141-17.6	8/7	1611-1627	230	SSE-2	ESE-1	SSE-3	22.4	18.9	o
US14388	41-37.8	141-19.3	8/7	1700-1717	216	SE -3	ESE-1	SE -4	23.1	23.3	o
US14389	41-35.0	141-20.4	8/7	1742-1800	311	SE -2	ESE-1	SE -3	22.4	21.4	o
US14390	41-36.0	140-53.0	8/8	0423-0430	53	East-2	ENE-1	East-3	22.1	22.8	r
US14391	41-36.9	140-51.3	8/8	0450-0458	93	NE-2	NE-1	NE-3	22.6	22.5	r
US14392	41-38.8	140-49.3	8/8	0518-0538	346	NE-2	NE-1	NE-3	22.3	21.6	r
US14393	41-40.7	140-47.3	8/8	0557-0615	231	NE-1	NE-1	NE-3	22.5	22.4	r
US14394	41-42.8	140-45.1	8/8	0631-0642	83	East-1	SSW-1	East-2	22.4	22.7	r
US14395	41-39.3	140-41.6	8/8	1807-1813	132	East-1	ESE-1	East-3	23.9	23.2	c

Cruise 317

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14396	44-57.2	140-46.0	8/22	1301-1312	185	SSE-2	SE-1	SSE-3	24.5	22.8	bc
US14397	45-00.2	140-46.7	8/22	1535-1545	159	SSE-2	SSE-1	SSE-2	24.0	23.3	bc
US14398	41-44.8	139-48.3	8/24	1841-1913	1427	WNW-2	WNW-1	WNW-4	22.1	23.1	c

(*): Fixed position by Global Positioning System

S.M.T.: Ship’s mean time

Wr.: Weather in WMO Code 4501

Table 2. Oceanographic data

STATION US14334
LATITUDE 41-57.3 N
LONGITUI 140-58.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	17.211	31.992	23.158
10	15.169	31.894	23.542
20	13.216	32.061	24.075
30	12.309	31.992	24.196
40	10.487	32.099	24.606
50	7.937	32.292	25.157

STATION US14335
LATITUDE 41-58.0 N
LONGITUI 140-59.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	18.569	32.000	22.837
10	15.991	31.809	23.296
20	13.231	32.103	24.104
30	10.291	32.375	24.854
40	7.708	32.399	25.273
50	7.379	33.045	25.827
75	5.081	33.305	26.322

STATION US14336
LATITUDE 41-58.7 N
LONGITUI 141-00.7 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	18.390	32.001	22.882
10	16.477	31.871	23.234
20	12.794	32.144	24.221
30	8.514	32.274	25.058
40	6.757	32.619	25.576
50	6.847	33.108	25.949
75	5.424	33.296	26.276

STATION US14337
LATITUDE 41-59.4 N
LONGITUI 141-02.1 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	18.546	31.993	22.837
10	17.025	31.901	23.131
20	12.342	32.090	24.266
30	9.741	32.925	25.374
40	6.817	32.781	25.696
50	6.776	33.104	25.955
75	7.149	33.616	26.308

STATION US14338
LATITUDE 41-55.8 N
LONGITUI 141-03.5 E
DEPTH (m) 109

Press.	Temp.	Salinity	Sigma-T
5	16.924	31.942	23.186
10	14.673	31.960	23.699
20	12.156	32.105	24.312
30	9.153	32.347	25.017
40	7.996	32.744	25.503
50	4.260	32.756	25.976
75	6.028	33.355	26.249
100	5.456	33.515	26.446

STATION US14339
LATITUDE 41-59.2 N
LONGITUI 141-17.5 E
DEPTH (m) 269

Press.	Temp.	Salinity	Sigma-T
5	18.527	31.708	22.624
10	14.284	31.878	23.717
20	10.213	32.324	24.827
30	9.601	32.943	25.412
40	7.894	33.247	25.913
50	6.170	33.216	26.122
75	4.788	33.325	26.371
100	5.351	33.486	26.435
125	4.520	33.392	26.453
150	4.359	33.467	26.529
175	3.883	33.477	26.586
200	3.694	33.505	26.627
250	2.875	33.523	26.717

STATION US14340
LATITUDE 41-57.6 N
LONGITUI 141-23.2 E
DEPTH (m) 340

Press.	Temp.	Salinity	Sigma-T
5	17.803	32.054	23.064
10	14.695	32.252	23.919
20	11.658	32.459	24.679
30	8.214	32.822	25.533
40	6.448	33.027	25.937
50	5.173	33.123	26.168
75	4.567	33.278	26.357
100	6.005	33.586	26.434
125	5.083	33.500	26.477
150	4.301	33.450	26.523
175	3.843	33.478	26.591
200	3.333	33.508	26.664
250	3.072	33.551	26.722
300	2.919	33.616	26.787

STATION US14341
LATITUDE 42-00.7 N
LONGITUI 141-00.9 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	20.070	31.620	22.168
10	18.243	31.614	22.622
20	15.038	31.950	23.613
30	8.913	32.290	25.010
40	5.824	32.504	25.602
50	6.283	33.094	26.011
75	6.356	33.514	26.334

STATION US14342
LATITUDE 42-04.9 N
LONGITUI 140-57.1 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	19.008	31.664	22.472
10	16.517	31.833	23.197
20	14.090	32.153	23.970
30	10.843	32.299	24.701
40	7.411	32.459	25.362
50	5.613	33.247	26.215
75	5.778	33.514	26.406

STATION US14343
LATITUDE 42-09.2 N
LONGITUI 140-52.9 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	19.261	31.573	22.338
10	16.911	31.802	23.081
20	10.360	32.017	24.563
30	10.301	32.644	25.062
40	6.658	32.694	25.648
50	5.416	32.919	25.978

STATION US14344
LATITUDE 42-09.8 N
LONGITUI 140-41.1 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	19.881	31.515	22.137
10	19.685	31.538	22.204
20	17.609	31.723	22.858
30	10.590	32.120	24.604
40	5.375	32.228	25.436
50	6.324	32.830	25.798

STATION US14345
LATITUDE 42-11.4 N
LONGITUI 140-35.0 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	19.861	31.478	22.113
10	19.292	31.501	22.276
20	16.353	31.682	23.116
30	10.449	32.045	24.571
40	5.726	32.294	25.448
50	4.645	32.585	25.800
75	3.338	33.022	26.276

STATION US14346
LATITUDE 42-16.6 N
LONGITUI 140-36.0 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	19.631	31.469	22.166
10	19.505	31.467	22.196
20	18.504	31.575	22.528
30	12.586	31.772	23.973
40	6.550	32.077	25.175
50	4.132	32.318	25.640
75	3.182	32.983	26.259

STATION US14347
LATITUDE 42-18.2 N
LONGITUI 140-41.5 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	19.756	31.466	22.131
10	19.638	31.468	22.163
20	17.380	31.541	22.772
30	13.037	31.898	23.983
40	6.731	32.014	25.102
50	4.518	32.575	25.804

STATION US14348
LATITUDE 42-24.3 N
LONGITUI 140-47.9 E
DEPTH (m) 44

Press.	Temp.	Salinity	Sigma-T
5	20.208	31.469	22.017
10	19.753	31.528	22.179
20	14.256	31.799	23.661
30	8.583	32.360	25.115
40	4.657	32.278	25.555

Table 2. (Continued)

STATION US14349
LATITUDE 42-17.6 N
LONGITUI 140-53.9 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	19.213	31.786	22.513
10	17.073	31.942	23.151
20	11.684	31.931	24.264
30	6.258	32.134	25.257
40	5.341	32.572	25.712
50	6.443	33.229	26.097

STATION US14350
LATITUDE 41-28.4 N
LONGITUI 141-17.4 E
DEPTH (m) 221

Press.	Temp.	Salinity	Sigma-T
5	19.719	33.729	23.866
10	20.197	34.027	23.968
20	20.076	34.045	24.014
30	19.892	34.043	24.060
40	19.307	34.001	24.180
50	18.901	33.996	24.279
75	13.776	34.133	25.563
100	12.451	34.220	25.896
125	11.495	34.226	26.083
150	10.969	34.200	26.158
175	10.918	34.204	26.170

STATION US14351
LATITUDE 41-17.0 N
LONGITUI 140-41.7 E
DEPTH (m) 144

Press.	Temp.	Salinity	Sigma-T
5	21.522	33.897	23.512
10	20.613	33.900	23.761
20	19.110	33.880	24.138
30	18.353	33.969	24.396
40	14.942	33.802	25.061
50	14.781	33.949	25.210
75	14.020	33.949	25.371
100	13.212	34.285	25.797
125	12.049	34.270	26.013

STATION US14352
LATITUDE 41-13.2 N
LONGITUI 140-45.5 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	21.475	33.852	23.491
10	21.591	33.831	23.443
20	20.706	33.815	23.671
30	18.506	33.583	24.063
40	16.492	33.406	24.410
50	14.186	33.356	24.878

STATION US14353
LATITUDE 41-12.8 N
LONGITUI 140-44.9 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	21.992	33.275	22.910
10	21.704	33.856	23.431
20	21.114	33.857	23.593
30	19.620	33.728	23.890
40	16.864	33.434	24.345
50	14.973	33.298	24.666

STATION US14354
LATITUDE 41-12.4 N
LONGITUI 140-44.0 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	22.241	33.883	23.302
10	22.042	33.948	23.407
20	21.153	33.872	23.594
30	19.880	33.790	23.870
40	15.466	33.246	24.518
50	14.152	33.346	24.878

STATION US14355
LATITUDE 41-12.2 N
LONGITUI 140-43.0 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	22.316	33.814	23.229
10	22.180	33.940	23.362
20	21.877	33.971	23.471
30	20.433	33.911	23.817
40	18.102	33.745	24.286
50	13.905	33.339	24.923

STATION US14356
LATITUDE 41-11.9 N
LONGITUI 140-42.0 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	22.413	33.782	23.177
10	21.904	33.794	23.328
20	21.790	33.928	23.462
30	20.039	33.871	23.890
40	17.039	33.816	24.596
50	14.635	33.692	25.043

STATION US14357
LATITUDE 41-11.6 N
LONGITUI 140-41.1 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	21.972	33.804	23.317
10	21.685	33.831	23.417
20	21.563	33.850	23.465
30	20.917	33.908	23.685
40	19.984	33.922	23.944
50	15.052	33.725	24.977

STATION US14358
LATITUDE 41-11.3 N
LONGITUI 140-40.0 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	21.581	33.827	23.443
10	21.483	33.857	23.492
20	20.156	33.923	23.899
30	19.217	33.967	24.177
40	18.842	33.942	24.253

STATION US14359
LATITUDE 41-11.1 N
LONGITUI 140-39.1 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	21.676	33.777	23.378
10	21.311	33.829	23.518
20	21.048	33.877	23.626

STATION US14360
LATITUDE 41-09.0 N
LONGITUI 140-41.0 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	22.154	33.817	23.276
10	21.971	33.795	23.310
20	21.858	33.877	23.404
30	21.180	33.877	23.591
40	19.253	33.948	24.153

STATION US14361
LATITUDE 41-05.1 N
LONGITUI 140-43.7 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	20.956	32.740	22.786
10	21.229	33.755	23.484
20	20.823	33.791	23.621
30	19.349	33.681	23.925
40	16.459	33.641	24.598
50	14.687	33.765	25.087

STATION US14362
LATITUDE 40-57.2 N
LONGITUI 140-45.5 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	22.061	33.435	23.012
10	21.648	33.465	23.149
20	21.250	33.619	23.375
30	21.004	33.678	23.487
40	19.263	33.628	23.906

STATION US14363
LATITUDE 40-52.0 N
LONGITUI 140-46.2 E
DEPTH (m) 28

Press.	Temp.	Salinity	Sigma-T
5	23.167	33.407	22.678
10	22.361	33.413	22.911
20	21.780	33.433	23.089

STATION US14364
LATITUDE 41-03.8 N
LONGITUI 140-52.4 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	22.150	33.465	23.010
10	22.075	33.493	23.052
20	18.847	33.112	23.618
30	19.622	33.659	23.837
40	16.445	33.595	24.566

STATION US14365
LATITUDE 41-04.6 N
LONGITUI 141-01.7 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	21.351	33.114	22.964
10	21.280	33.328	23.146
20	20.342	33.230	23.323
30	16.254	33.216	24.318
40	15.370	33.363	24.629

STATION US14366
LATITUDE 40-58.1 N
LONGITUI 141-06.3 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	22.150	32.536	22.306
10	21.888	32.625	22.445
20	21.537	33.502	23.208
30	20.532	33.535	23.504

Table 2. (Continued)

STATION US14367
LATITUDE 41-10.7 N
LONGITUI 141-10.8 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	23.013	32.265	21.857
10	22.490	32.396	22.104
20	21.377	33.153	22.986

STATION US14368
LATITUDE 41-05.9 N
LONGITUI 140-51.6 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	22.598	32.366	22.051
10	21.235	32.531	22.552
20	20.419	33.604	23.587
30	16.948	33.111	24.077
40	14.739	33.217	24.654

STATION US14369
LATITUDE 42-16.1 N
LONGITUI 140-37.4 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	22.730	31.537	21.386
10	20.187	31.480	22.030
20	15.658	31.719	23.301
30	9.108	32.036	24.781
40	7.682	32.599	25.434
50	6.291	32.848	25.816
75	5.487	33.477	26.412

STATION US14370
LATITUDE 41-45.3 N
LONGITUI 141-10.0 E
DEPTH (m) 117

Press.	Temp.	Salinity	Sigma-T
5	17.919	31.790	22.835
10	14.772	32.005	23.713
20	12.786	32.480	24.483
30	11.970	33.092	25.113
40	10.210	33.348	25.627
50	9.807	33.453	25.777
75	7.182	33.233	26.002
100	7.205	33.523	26.227

STATION US14371
LATITUDE 41-23.5 N
LONGITUI 141-34.2 E
DEPTH (m) 160

Press.	Temp.	Salinity	Sigma-T
5	22.208	33.702	23.174
10	21.836	33.888	23.419
20	20.603	33.701	23.612
30	20.763	33.965	23.770
40	19.767	33.989	24.052
50	18.910	34.032	24.304
75	16.573	33.862	24.741
100	15.931	33.897	24.915
125	15.008	33.870	25.099
150	14.590	33.929	25.235

STATION US14372
LATITUDE 41-26.1 N
LONGITUI 141-34.8 E
DEPTH (m) 396

Press.	Temp.	Salinity	Sigma-T
5	22.293	33.448	22.957
10	22.218	33.762	23.217
20	20.863	33.652	23.505
30	19.982	33.563	23.671
40	20.506	33.972	23.844
50	19.564	33.996	24.110
75	17.242	33.925	24.632
100	16.095	33.850	24.841
125	15.290	34.010	25.145
150	14.560	34.061	25.344
175	12.391	33.917	25.673
200	9.545	33.767	26.065
250	5.919	33.689	26.527
300	3.490	33.544	26.678

STATION US14373
LATITUDE 41-30.0 N
LONGITUI 141-39.5 E
DEPTH (m) 609

Press.	Temp.	Salinity	Sigma-T
5	22.507	33.634	23.038
10	22.439	33.749	23.145
20	21.964	33.925	23.412
30	20.447	33.511	23.509
40	20.956	33.966	23.719
50	20.036	33.948	23.950
75	18.225	34.022	24.468
100	16.066	33.823	24.828
125	13.527	33.810	25.365
150	12.736	34.003	25.673
175	11.809	34.094	25.922
200	9.677	33.818	26.083
250	6.343	33.459	26.291
300	3.198	33.422	26.608
400	2.993	33.729	26.871
500	3.284	33.930	27.005

STATION US14374
LATITUDE 41-29.9 N
LONGITUI 141-34.9 E
DEPTH (m) 149

Press.	Temp.	Salinity	Sigma-T
5	22.423	33.446	22.919
10	22.302	33.716	23.158
20	21.651	33.802	23.405
30	20.385	33.490	23.509
40	20.056	33.759	23.801
50	19.089	33.791	24.074
75	17.231	33.771	24.516
100	15.274	34.126	25.238
125	14.303	34.175	25.486

STATION US14375
LATITUDE 41-29.9 N
LONGITUI 141-30.1 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	21.163	33.274	23.137
10	20.937	33.619	23.460
20	20.644	33.875	23.733
30	20.288	33.923	23.865
40	19.814	33.821	23.911
50	19.255	33.840	24.070

STATION US14376
LATITUDE 41-27.9 N
LONGITUI 141-12.0 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	21.827	33.798	23.353
10	21.572	33.842	23.457
20	21.486	33.856	23.491
30	21.462	33.861	23.501
40	20.737	33.889	23.719
50	19.746	33.915	24.000
75	13.079	34.217	25.771

STATION US14377
LATITUDE 41-28.1 N
LONGITUI 141-17.6 E
DEPTH (m) 203

Press.	Temp.	Salinity	Sigma-T
5	21.860	33.785	23.334
10	21.584	33.819	23.436
20	20.941	33.908	23.679
30	20.602	33.939	23.793
40	19.183	33.965	24.184
50	16.598	34.028	24.862
75	12.821	34.247	25.845
100	11.884	34.248	26.027
125	11.494	34.239	26.093
150	11.343	34.230	26.114
175	10.957	34.213	26.171

STATION US14378
LATITUDE 41-29.9 N
LONGITUI 141-21.0 E
DEPTH (m) 223

Press.	Temp.	Salinity	Sigma-T
5	21.110	33.844	23.585
10	20.997	33.858	23.626
20	20.426	33.916	23.822
30	19.841	34.009	24.047
40	19.414	34.039	24.181
50	17.442	34.082	24.705
75	15.081	34.224	25.356
100	13.102	34.290	25.823
125	12.526	34.263	25.915
150	12.069	34.227	25.975
175	11.484	34.221	26.080
200	11.465	34.230	26.092

Table 2 (Continued)

STATION US14379
LATITUDE 41-26.5 N
LONGITUI 141-20.8 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	21.867	33.808	23.349
10	21.787	33.816	23.378
20	19.853	33.818	23.898
30	19.731	33.811	23.925
40	19.155	33.867	24.116
50	15.413	34.087	25.177

STATION US14380
LATITUDE 41-26.5 N
LONGITUI 141-15.8 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	21.020	33.709	23.506
10	20.860	33.753	23.583
20	20.890	33.792	23.605
30	20.671	33.823	23.686
40	20.184	33.887	23.864
50	18.722	33.947	24.287

STATION US14381
LATITUDE 41-27.3 N
LONGITUI 141-24.1 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	21.835	33.755	23.318
10	21.820	33.759	23.325
20	21.703	33.779	23.373
30	21.521	33.809	23.446

STATION US14382
LATITUDE 41-28.6 N
LONGITUI 141-23.7 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	22.481	33.686	23.085
10	22.305	33.714	23.156
20	21.953	33.743	23.276
30	21.481	33.791	23.443
40	21.135	33.839	23.574
50	20.648	33.894	23.747

STATION US14383
LATITUDE 41-31.6 N
LONGITUI 141-22.3 E
DEPTH (m) 238

Press.	Temp.	Salinity	Sigma-T
5	22.429	33.749	23.147
10	22.087	33.785	23.271
20	21.328	33.851	23.530
30	20.768	33.891	23.712
40	20.472	33.925	23.817
50	19.960	33.963	23.982
75	14.745	34.062	25.304
100	13.974	34.249	25.612
125	12.954	34.292	25.853
150	12.215	34.221	25.943
175	11.717	34.230	26.044
200	11.445	34.226	26.091

STATION US14384
LATITUDE 41-47.6 N
LONGITUI 141-15.1 E
DEPTH (m) 213

Press.	Temp.	Salinity	Sigma-T
5	18.502	32.720	23.404
10	17.294	32.783	23.744
20	8.387	32.998	25.644
30	7.165	32.988	25.812
40	6.343	32.959	25.897
50	5.843	33.048	26.030
75	5.222	33.212	26.233
100	4.877	33.214	26.273
125	5.357	33.389	26.357
150	4.966	33.369	26.386
175	5.180	33.435	26.414
200	4.255	33.396	26.484

STATION US14385
LATITUDE 41-48.8 N
LONGITUI 141-13.2 E
DEPTH (m) 161

Press.	Temp.	Salinity	Sigma-T
5	17.844	32.038	23.043
10	16.368	32.247	23.547
20	6.667	32.307	25.341
30	4.330	32.478	25.748
40	7.715	33.359	26.026
50	5.238	33.009	26.070
75	6.112	33.338	26.225
100	5.080	33.202	26.241
125	4.682	33.236	26.312

STATION US14386
LATITUDE 41-44.0 N
LONGITUI 141-15.7 E
DEPTH (m) 225

Press.	Temp.	Salinity	Sigma-T
5	19.657	34.122	24.181
10	17.681	34.132	24.685
20	15.766	34.183	25.172
30	13.097	34.031	25.623
40	11.327	33.794	25.777
50	7.919	33.252	25.913
75	5.583	33.108	26.109
100	6.007	33.346	26.245
125	8.117	33.806	26.319
150	7.231	33.727	26.385
175	4.627	33.414	26.459
200	4.047	33.416	26.521

STATION US14387
LATITUDE 41-41.9 N
LONGITUI 141-17.6 E
DEPTH (m) 230

Press.	Temp.	Salinity	Sigma-T
5	19.784	33.946	24.014
10	19.713	33.949	24.035
20	17.507	33.950	24.587
30	16.352	33.993	24.893
40	16.037	34.084	25.035
50	15.680	34.178	25.187
75	9.496	33.809	26.106
100	8.632	33.692	26.151
125	7.838	33.589	26.190
150	7.754	33.674	26.269
175	7.523	33.717	26.335
200	5.907	33.623	26.476

STATION US14388
LATITUDE 41-37.8 N
LONGITUI 141-19.3 E
DEPTH (m) 216

Press.	Temp.	Salinity	Sigma-T
5	22.599	33.670	23.040
10	21.938	33.725	23.267
20	21.745	33.752	23.341
30	21.254	33.794	23.507
40	20.375	33.887	23.814
50	19.895	33.960	23.996
75	19.491	34.006	24.136
100	15.836	33.956	24.982
125	9.727	33.876	26.120
150	9.255	33.870	26.192
175	9.121	33.872	26.215
200	8.537	33.843	26.284

STATION US14389
LATITUDE 41-35.0 N
LONGITUI 141-20.4 E
DEPTH (m) 311

Press.	Temp.	Salinity	Sigma-T
5	21.143	33.853	23.582
10	21.017	33.864	23.625
20	20.859	33.879	23.679
30	20.750	33.878	23.707
40	18.611	33.960	24.325
50	17.260	34.073	24.741
75	16.450	34.120	24.967
100	15.115	34.189	25.321
125	14.044	34.158	25.527
150	12.722	34.193	25.822
175	12.722	34.233	25.854
200	9.761	34.013	26.221
250	5.552	33.628	26.523
300	3.725	33.655	26.744

STATION US14390
LATITUDE 41-36.0 N
LONGITUI 140-53.0 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	22.873	33.538	22.862
10	22.863	33.542	22.867
20	19.370	33.985	24.151
30	18.049	34.157	24.614
40	17.716	34.203	24.731

Table 2 (Continued)

STATION US14391
LATITUDE 41-36.9 N
LONGITUI 140-51.3 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	22.081	33.691	23.201
10	21.813	33.765	23.332
20	19.779	34.036	24.084
30	16.385	34.219	25.058
40	16.045	34.266	25.173
50	15.966	34.276	25.199
75	15.994	34.278	25.193

STATION US14392
LATITUDE 41-38.8 N
LONGITUI 140-49.3 E
DEPTH (m) 346

Press.	Temp.	Salinity	Sigma-T
5	21.106	33.780	23.537
10	20.734	33.816	23.665
20	19.761	33.941	24.016
30	17.144	34.124	24.808
40	15.849	34.218	25.180
50	15.316	34.265	25.335
75	14.436	34.316	25.566
100	14.223	34.320	25.615
125	14.081	34.324	25.647
150	13.617	34.298	25.724
175	12.509	34.282	25.934
200	11.535	34.250	26.094
250	11.126	34.235	26.157
300	10.885	34.228	26.195

STATION US14393
LATITUDE 41-40.7 N
LONGITUI 140-47.3 E
DEPTH (m) 231

Press.	Temp.	Salinity	Sigma-T
5	22.660	33.531	22.917
10	22.633	33.556	22.943
20	21.643	33.798	23.404
30	16.799	34.209	24.955
40	15.245	34.274	25.358
50	14.778	34.326	25.501
75	14.373	34.326	25.588
100	13.945	34.324	25.676
125	13.705	34.318	25.722
150	13.552	34.317	25.752
175	13.364	34.314	25.788
200	12.663	34.290	25.910

STATION US14394
LATITUDE 41-42.8 N
LONGITUI 140-45.1 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	22.561	33.581	22.982
10	22.071	33.675	23.191
20	21.159	33.845	23.572
30	18.015	34.176	24.638
40	16.497	34.243	25.051
50	15.292	34.300	25.368
75	12.649	34.287	25.910

STATION US14395
LATITUDE 41-39.3 N
LONGITUI 140-41.6 E
DEPTH (m) 132

Press.	Temp.	Salinity	Sigma-T
5	22.684	33.918	23.204
10	22.127	34.058	23.467
20	21.078	34.123	23.805
30	19.673	34.191	24.230
40	18.652	34.237	24.526
50	16.413	34.199	25.037
75	12.327	34.246	25.941
100	11.779	34.246	26.045

STATION US14396
LATITUDE 44-57.2 N
LONGITUI 140-46.0 E
DEPTH (m) 185

Press.	Temp.	Salinity	Sigma-T
5	22.776	33.521	22.876
10	21.821	33.676	23.262
20	21.085	33.786	23.547
30	16.247	33.919	24.860
40	12.661	34.074	25.742
50	10.703	33.987	26.039
75	8.275	34.031	26.472
100	6.604	34.018	26.698
125	4.862	34.000	26.898
150	4.017	34.015	27.001
175	2.682	34.024	27.134

STATION US14397
LATITUDE 45-00.2 N
LONGITUI 140-46.7 E
DEPTH (m) 159

Press.	Temp.	Salinity	Sigma-T
5	22.786	33.360	22.751
10	21.437	33.750	23.424
20	20.640	33.775	23.658
30	16.709	33.867	24.713
40	13.060	33.991	25.599
50	11.639	33.998	25.879
75	8.962	34.066	26.393
100	6.809	34.007	26.663
125	4.820	34.001	26.904
150	4.613	34.013	26.936

STATION US14398
LATITUDE 41-44.8 N
LONGITUI 139-48.3 E
DEPTH (m) 1427

Press.	Temp.	Salinity	Sigma-T
5	23.571	33.770	22.836
10	22.865	33.930	23.161
20	21.693	33.979	23.528
30	17.888	34.264	24.736
40	16.046	34.318	25.213
50	15.424	34.380	25.401
75	12.394	34.280	25.955
100	9.809	34.173	26.339
125	8.216	34.115	26.546
150	5.900	34.046	26.811
175	4.703	34.034	26.943
200	3.484	34.062	27.092
250	2.190	34.067	27.209
300	1.450	34.065	27.263
400	0.883	34.059	27.297
500	0.673	34.069	27.317
600	0.557	34.067	27.322
700	0.460	34.068	27.329