



HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 321

CRUISE 322

CRUISE 323

IN OCTOBER 2014

IN NOVEMBER 2014

IN DECEMBER 2014

1. Cruise Itinerary

Cruise 321

Departure from Hakodate	Oct.	6, 2014
Arrival at and departure from Hakodate		6
Start hydrographic research (US14505)		7
Sampling by squid jigging		7
Arrival at Hakodate		8
Departure from Hakodate		9
Sampling by trawl net		9
Arrival at Usujiri		9
Departure from Usujiri		11
Retrieval ADCP mooring system		12
Setting ADCP mooring system		12
Finish hydrographic research (US14532)		12
Arrival at and departure from Usujiri		12
Return to Hakodate		13
Total coverage 405.6 miles		

Cruise 322

Departure from Hakodate	Nov.	25, 2014
Sampling by trawl net		25
Start hydrographic research (US14533)		25
Arrival at Muroran		26
Departure from MUroran		27
Sampling by trawl net		27
Sampling by trawl net		28
Arrival at Hakodate		29
Departure from Hakodate		30
Finish hydrographic research (US14545)		30
Return to Hakodate		30
Total coverage 386.7 miles		

Cruise 323

Departure from Hakodate	Dec.	13, 2014
Start hydrographic research (US14546)		13
Arrival at Usujiri		13
Departure from and arrival at Usujiri		14
Departure from Usujiri		15
Arrival at Hakodate		16
Departure from Hakodate		19
Finish hydrographic research (US14566)		19
Return to Hakodate		19
Total coverage 265.4 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).

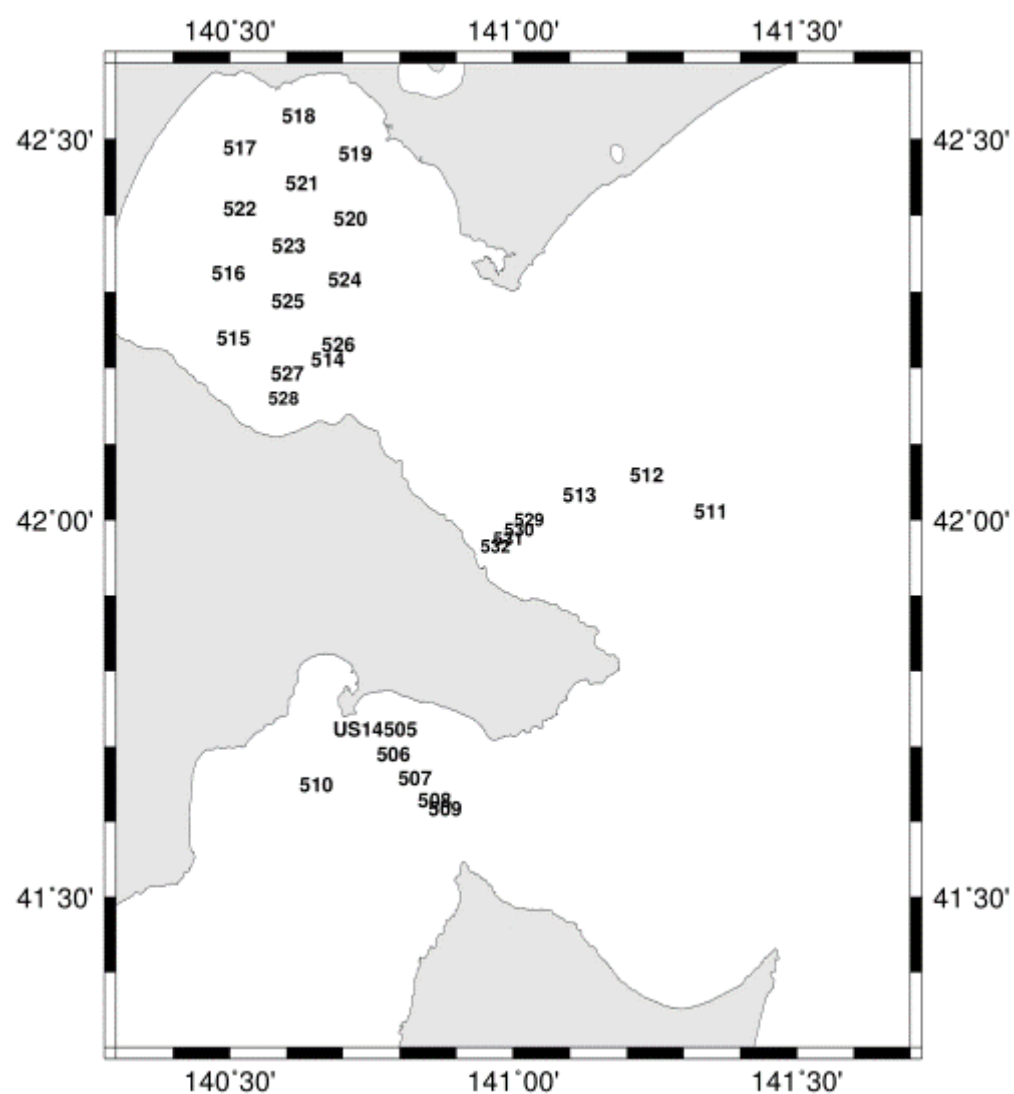


Figure 1. Oceanographic stations (Cruise 321)

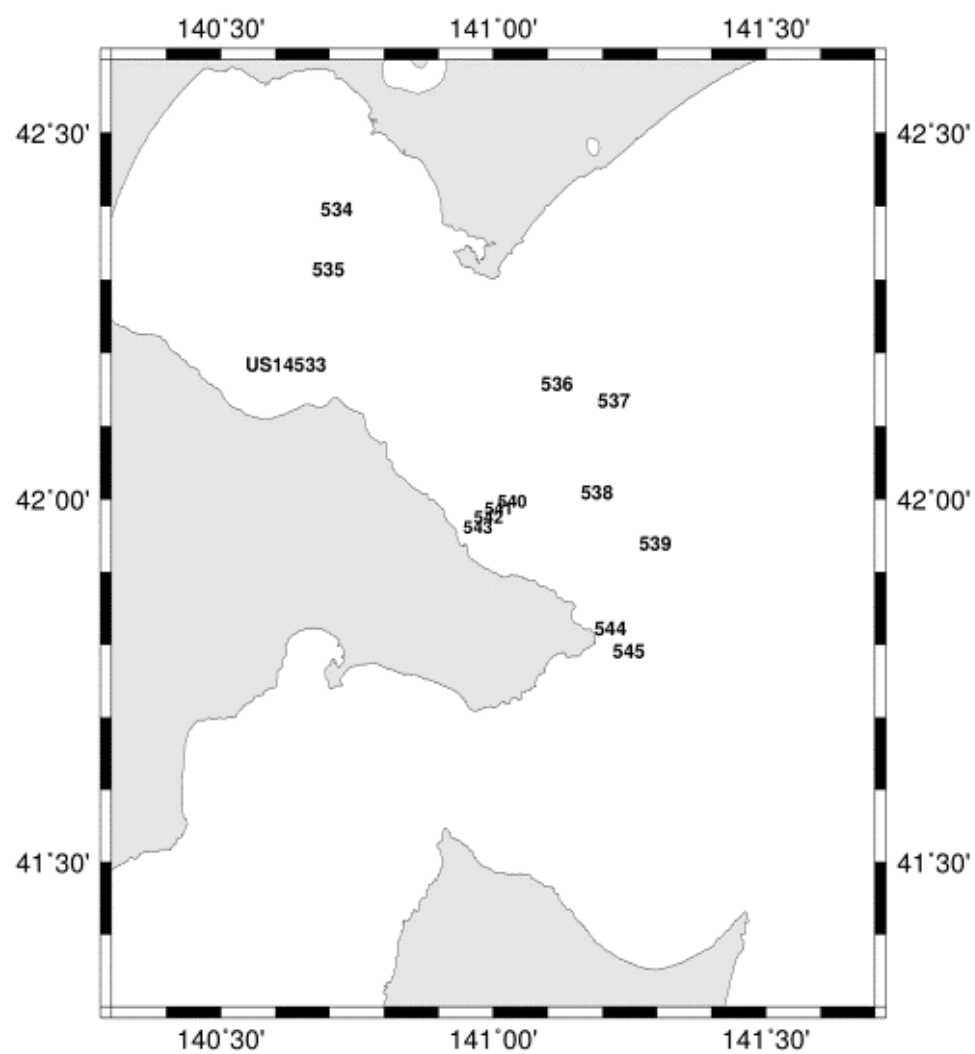


Figure 2. Oceanographic stations (Cruise 322)

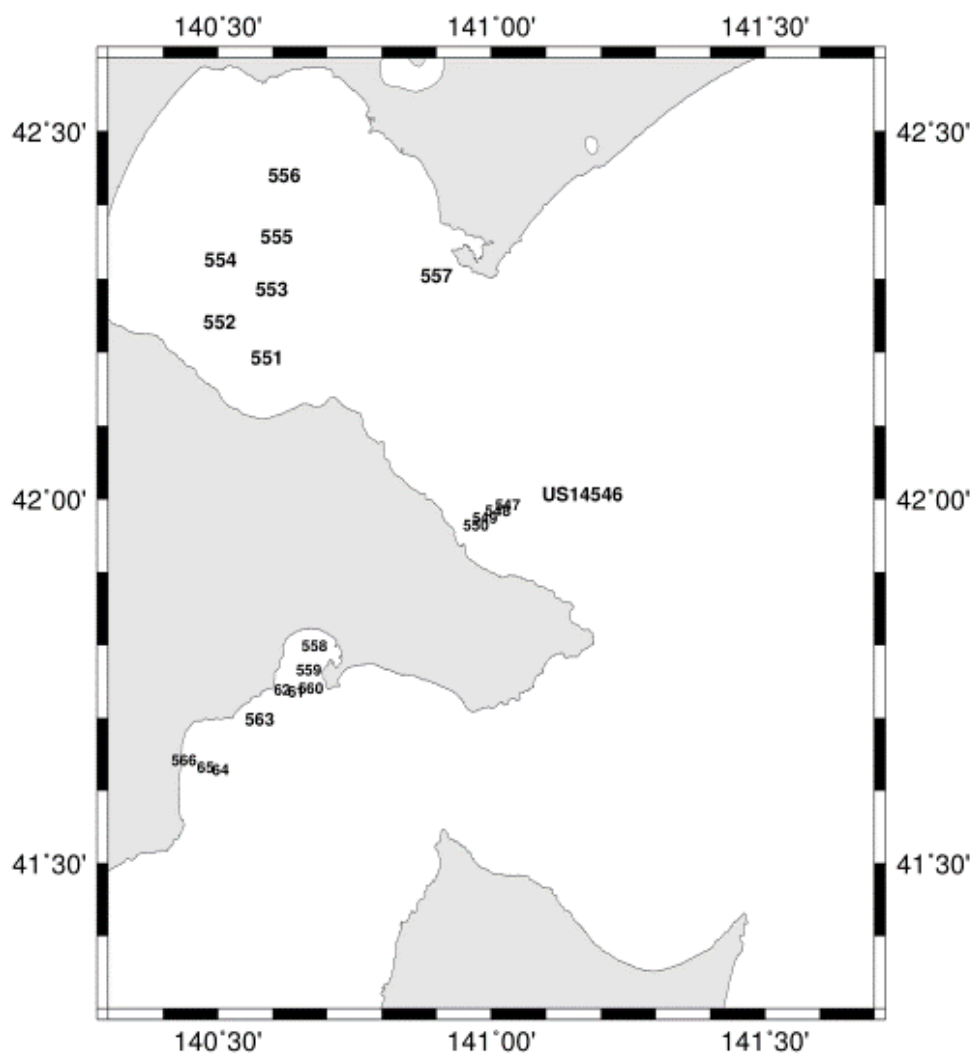


Figure 3. Oceanographic stations (Cruise 323)

Table 1. List of Oceanographic Station

Cruise 321

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14505	41-42.8	140-45.4	10/7	1202-1211	83	NW-2	East-2	NW-2	16.7	20.4	bc
US14506	41-40.8	140-47.3	10/7	1228-1246	219	Calm	ESE-2	Calm	17.3	20.5	bc
US14507	41-38.9	140-49.6	10/7	1304-1317	302	Calm	ESE-2	Calm	16.5	20.4	bc
US14508	41-37.2	140-51.7	10/7	1330-1338	150	Calm	ESE-2	Calm	17.2	19.7	bc
US14509	41-36.5	140-52.8	10/7	1347-1351	63	SSW-2	East-2	SSW-2	17.0	20.3	bc
US14510	41-38.4	140-39.2	10/7	1838-1844	117	NW-2	East-1	NW-4	15.5	17.8	bc
US14511	42-00.1	141-20.9	10/9	1228-1241	323	Calm	ESE-1	Calm	17.3	17.7	bc
US14512	42-03.0	141-14.1	10/9	1418-1427	203	SSE-2	ESE-1	SSE-3	18.3	17.6	bc
US14513	42-01.4	141-07.0	10/9	1550-1555	119	ESE-2	ESE-1	SSE-3	18.1	17.1	bc
US14514	42-12.1	140-40.4	10/11	0810-0814	89	WNW-4	WNW-1	WNW-6	13.1	16.6	bc
US14515	42-13.8	140-30.4	10/11	0910-0914	77	NW-4	NW-1	NW-6	13.0	16.5	bc
US14516	42-18.9	140-29.9	10/11	0950-0954	90	NNW-4	NW-1	NNW-6	13.6	16.6	bc
US14517	42-28.8	140-31.1	10/11	1101-1104	74	NW-3	NW-1	NW-5	14.3	16.3	bc
US14518	42-31.3	140-37.3	10/11	1143-1148	59	NNW-4	NNW-1	NNW-6	15.7	16.8	bc
US14519	42-28.3	140-43.3	10/11	1225-1229	58	North-3	North-1	North-5	15.9	16.8	bc
US14520	42-23.2	140-42.8	10/12	0235-0238	58	NNE-2	NW-1	NNE-3	11.8	16.4	bc
US14521	42-26.0	140-37.7	10/12	0312-0320	80	NNE-2	NW-1	NNE-2	11.9	16.5	bc
US14522	42-24.0	140-31.1	10/12	0409-0413	94	WNW-2	NW-1	WNW-2	11.9	16.3	b
US14523	42-21.1	140-36.3	10/12	0446-0455	87	SW-2	NW-1	SW-2	12.1	16.4	b
US14524	42-18.4	140-42.2	10/12	0535-0537	63	SW-2	NW-1	SW-2	12.1	16.2	b
US14525	42-16.7	140-36.2	10/12	0626-0635	90	South-1	NW-1	South-2	12.4	16.5	bc
US14526	42-13.3	140-41.5	10/12	0714-0717	88	NE-1	ENE-1	Calm	12.6	16.7	b
US14527	42-11.0	140-36.1	10/12	0826-0832	79	SE-1	SSW-1	SE-2	13.0	16.4	b
US14528	42-09.1	140-35.7	10/12	0850-0855	66	East-1	SSE-1	East-2	15.1	16.5	b
US14529	41-59.5	141-01.7	10/12	1217-1221	97	NE-2	ESE-1	NE-2	16.3	17.8	bc
US14530	41-58.7	141-00.6	10/12	1230-1234	92	NE-2	East-1	NE-2	18.5	16.4	bc
US14531	41-58.0	140-59.5	10/12	1242-1246	85	NE-2	ESE-1	ENE-2	18.2	16.5	bc
US14532	41-57.4	140-58.1	10/12	1255-1258	75	East-2	East-1	East-2	18.0	16.4	bc

Table 1 (Continued)

Cruise 322											
Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14533	42-10.5	140-37.2	11/25	1548-1552	79	NNW-3	NNW-1	NW-2	5.8	10.0	b
US14534	42-23.2	140-42.8	11/27	1106-1110	59	NW-3	SE-1	NW-3	7.8	10.6	o
US14535	42-18.3	140-41.9	11/27	1210-1214	66	NE-1	SE-2	NE-2	8.2	10.6	c
US14536	42-08.9	141-07.0	11/28	0739-0745	103	West-1	ESE-2	West-3	8.6	10.4	bc
US14537	42-07.5	141-13.3	11/28	0932-0939	172	West-3	ESE-2	West-4	9.5	11.4	bc
US14538	42-00.0	141-11.4	11/28	0952-0958	170	NW-1	East-3	NW-2	10.8	11.8	b
US14539	41-55.8	141-17.8	11/28	1240-1253	292	NW-1	East-3	NW-2	11.2	11.9	b
US14540	41-59.3	141-02.1	11/28	1407-1411	101	NW-1	East-2	NW-2	10.6	12.1	bc
US14541	41-58.7	141-00.6	11/28	1422-1427	92	NW-1	East-2	NW-2	10.6	11.9	bc
US14542	41-58.0	140-59.5	11/28	1435-1440	85	NW-1	East-2	NW-2	10.4	11.6	bc
US14543	41-57.2	140-58.3	11/28	1452-1456	77	Calm	East-2	Calm	10.1	10.3	bc
US14544-1	41-48.8	141-12.9	11/30	1035-1049	133	NNW-2	ESE-2	NNW-4	9.1	11.5	o
US14544-2	41-48.8	141-12.9	11/30	1059-1110	125	NNW-2	ESE-2	NNW-4	9.1	11.5	o
US14545	41-46.9	141-14.9	11/30	1135-1150	206	North-2	ESE-2	North-3	9.8	11.9	o
Cruise 323											
Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth(m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.
US14546	41-59.8	141-10.0	12/13	1238-1234	136	NW-3	NW-2	NW-5	-1.2	9.7	c
US14547	41-59.1	141-01.8	12/13	1425-1430	99	WNW-3	NW-2	WNW-3	-2.6	10.2	c
US14548	41-58.6	141-00.7	12/13	1451-1455	93	West-2	NW-1	West-3	-2.7	10.2	c
US14549	41-58.0	140-59.3	12/13	1504-1509	84	West-2	NW-1	West-4	-2.4	10.4	s
US14550	41-57.4	140-58.3	12/13	1516-0520	78	WNW-2	NW-1	WNW-4	-2.9	10.3	s
US14551	42-11.0	140-35.4	12/15	1213-1220	79	NW-3	WNW-2	NW-5	0.8	7.8	bc
US14552	42-13.9	140-30.2	12/15	1255-1259	77	WNW-3	WNW-1	WNW-5	1.3	7.7	bc
US14553	42-16.6	140-35.9	12/15	1343-1352	90	WNW-3	WNW-1	WNW-4	3.0	8.0	bc
US14554	42-19.0	140-30.3	12/15	1443-1447	92	NW-3	WNW-1	NNW-5	1.3	7.3	bc
US14555	42-20.9	140-36.5	12/15	1530-1541	86	NW-3	NW-1	NW-4	2.2	7.7	bc
US14556	42-25.9	140-37.3	12/15	1627-1635	82	NW-3	NW-1	NW-5	0.7	7.7	c
US14557	42-17.7	140-54.0	12/15	1820-1824	55	NW-2	NW-1	NW-4	0.6	7.4	bc
US14558	41-47.5	140-40.6	12/19	0720-0722	17	West-1	SSE-1	West-3	1.6	9.1	c
US14559	41-45.5	140-40.0	12/19	0747-0750	40	West-1	SSW-1	West-3	2.2	11.6	c
US14560	41-44.0	140-40.2	12/19	0810-0814	60	West-1	SSW-1	West-3	2.2	11.8	c
US14561	41-43.7	140-38.6	12/19	0845-0848	57	West-3	SW-1	West-3	2.8	11.9	o
US14562	41-43.9	140-37.1	12/19	0903-0906	42	WSW-3	SW-1	WSW-4	2.5	11.9	o
US14563	41-41.4	140-34.6	12/19	0947-0950	42	WSW-4	SSW-1	West-5	2.7	12.1	o
US14564	41-37.3	140-30.3	12/19	1041-1043	32	West-4	SSW-1	West-4	2.4	12.0	c
US14565	41-37.5	140-28.7	12/19	1115-1118	23	West-4	SSW-1	West-4	2.4	12.0	c
US14566	41-38.1	140-26.3	12/19	1132-1134	12	WNW-1	SSE-1	WNW-3	2.5	11.4	bc

(*): Fixed position by Global Positioning System

S.M.T.: Ship's mean time

Wr.: Weather in WMO Code 4501

Table 2. Oceanographic data

STATION US14505			
LATITUDE	41-42.8	N	
LONGITUI	140-45.4	E	
DEPTH (m)	83		
Press.	Temp.	Salinity	Sigma-T
5	20.523	33.774	23.689
10	20.506	33.751	23.676
20	19.636	33.784	23.929
30	19.404	33.819	24.016
40	18.885	33.864	24.182
50	18.484	33.920	24.326
75	14.481	34.135	25.416

STATION US14506			
LATITUDE	41-40.8	N	
LONGITUI	140-47.3	E	
DEPTH (m)	219		
Press.	Temp.	Salinity	Sigma-T
5	20.484	33.794	23.715
10	20.405	33.810	23.748
20	20.276	33.830	23.797
30	20.026	33.865	23.890
40	19.710	33.920	24.013
50	18.592	33.947	24.320
75	14.826	34.219	25.408
100	13.306	34.170	25.688
125	10.840	34.139	26.134
150	10.246	34.188	26.276
175	10.126	34.196	26.303
200	9.991	34.193	26.323

STATION US14507			
LATITUDE	41-38.9	N	
LONGITUI	140-49.6	E	
DEPTH (m)	302		
Press.	Temp.	Salinity	Sigma-T
5	19.915	33.904	23.948
10	19.854	33.912	23.970
20	19.829	33.916	23.980
30	19.732	33.930	24.015
40	19.370	33.976	24.144
50	17.730	34.187	24.715
75	15.892	34.345	25.268
100	14.366	34.335	25.596
125	12.702	34.283	25.897
150	12.474	34.290	25.946
175	10.947	34.285	26.228
200	10.387	34.292	26.332
250	10.094	34.208	26.317

STATION US14508			
LATITUDE	41-37.2	N	
LONGITUI	140-51.7	E	
DEPTH (m)	150		
Press.	Temp.	Salinity	Sigma-T
5	20.315	33.831	23.788
10	20.240	33.838	23.813
20	20.141	33.879	23.870
30	20.141	33.885	23.874
40	20.079	33.887	23.892
50	19.003	33.974	24.236
75	13.305	34.302	25.791
100	12.853	34.319	25.895
125	11.613	34.264	26.091

STATION US14509			
LATITUDE	41-36.5	N	
LONGITUI	140-52.8	E	
DEPTH (m)	63		
Press.	Temp.	Salinity	Sigma-T
5	20.336	33.812	23.768
10	20.292	33.817	23.782
20	20.097	33.861	23.868
30	19.628	33.962	24.067
40	18.110	34.115	24.567
50	17.728	34.153	24.690

STATION US14510			
LATITUDE	41-38.4	N	
LONGITUI	140-39.2	E	
DEPTH (m)	117		
Press.	Temp.	Salinity	Sigma-T
5	18.458	33.729	24.186
10	18.174	33.738	24.263
20	17.563	33.788	24.450
30	15.352	33.959	25.092
40	14.743	34.125	25.353
50	14.226	34.187	25.511
75	11.942	34.199	25.978
100	11.021	34.226	26.169

STATION US14511			
LATITUDE	42-00.1	N	
LONGITUI	141-20.9	E	
DEPTH (m)	323		
Press.	Temp.	Salinity	Sigma-T
5	17.388	33.766	24.475
10	17.374	33.817	24.517
20	17.365	33.832	24.531
30	16.854	33.946	24.739
40	15.270	34.082	25.205
50	14.345	34.149	25.457
75	12.753	34.119	25.759
100	11.487	34.033	25.934
125	8.968	33.830	26.207
150	6.327	33.615	26.417
175	4.582	33.487	26.522
200	3.444	33.508	26.653
250	2.827	33.537	26.732
300	2.849	33.616	26.794

STATION US14512			
LATITUDE	42-03.0	N	
LONGITUI	141-14.1	E	
DEPTH (m)	203		
Press.	Temp.	Salinity	Sigma-T
5	17.387	33.787	24.491
10	17.315	33.782	24.505
20	16.691	33.886	24.732
30	14.781	34.174	25.383
40	14.175	34.231	25.556
50	13.721	34.224	25.646
75	12.180	34.104	25.859
100	10.810	34.046	26.067
125	9.387	33.921	26.211
150	7.537	33.714	26.331
175	5.181	33.467	26.439

STATION US14513			
LATITUDE	42-01.4	N	
LONGITUI	141-07.0	E	
DEPTH (m)	119		
Press.	Temp.	Salinity	Sigma-T
5	16.945	32.791	23.832
10	16.949	33.184	24.133
20	17.298	33.801	24.524
30	16.759	33.907	24.732
40	14.177	34.148	25.492
50	13.473	34.172	25.656
75	11.846	34.116	25.932
100	10.976	34.058	26.047

STATION US14514			
LATITUDE	42-12.1	N	
LONGITUI	140-40.4	E	
DEPTH (m)	89		
Press.	Temp.	Salinity	Sigma-T
5	16.784	32.934	23.979
10	16.786	32.935	23.980
20	16.787	32.935	23.980
30	16.691	32.963	24.024
40	11.729	33.204	25.245
50	10.734	33.699	25.810
75	8.083	33.531	26.108

STATION US14515			
LATITUDE	42-13.8	N	
LONGITUI	140-30.4	E	
DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T
5	16.658	32.640	23.783
10	16.664	32.641	23.782
20	16.100	32.978	24.170
30	15.331	33.675	24.878
40	14.723	33.913	25.194
50	13.201	33.900	25.501

STATION US14516			
LATITUDE	42-18.9	N	
LONGITUI	140-29.9	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	16.686	32.741	23.854
10	16.690	32.739	23.852
20	16.765	33.078	24.095
30	14.710	33.958	25.231
40	12.833	33.958	25.618
50	11.603	33.818	25.745
75	9.113	33.660	26.051

STATION US14517			
LATITUDE	42-28.8	N	
LONGITUI	140-31.1	E	
DEPTH (m)	74		
Press.	Temp.	Salinity	Sigma-T
5	16.657	32.794	23.902
10	16.636	32.803	23.914
20	14.416	33.298	24.784
30	12.265	33.731	25.553
40	12.564	34.016	25.716
50	12.115	33.979	25.774

STATION US14518			
LATITUDE	42-31.3	N	
LONGITUI	140-37.3	E	
DEPTH (m)	59		
Press.	Temp.	Salinity	Sigma-T
5	16.897	32.668	23.749
10	16.916	32.683	23.756
20	16.295	33.251	24.335
30	10.953	32.927	25.170
40	13.265	34.035	25.592
50	12.672	34.026	25.703

STATION US14519			
LATITUDE	42-28.3	N	
LONGITUI	140-43.3	E	
DEPTH (m)	58		
Press.	Temp.	Salinity	Sigma-T
5	16.880	32.801	23.855
10	16.999	33.103	24.059
20	16.938	33.699	24.531
30	13.240	33.476	25.164
40	12.987	34.013	25.631
50	12.792	34.046	25.695

Table 2. (Continued)

STATION US14520			
LATITUDE 42-23.2 N			
LONGITUI 140-42.8 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	16.541	33.323	24.335
10	16.554	33.333	24.339
20	16.598	33.486	24.446
30	15.769	33.466	24.620
40	14.368	33.767	25.157
50	13.447	34.012	25.538

STATION US14523			
LATITUDE 42-21.1 N			
LONGITUI 140-36.3 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	16.364	33.241	24.312
10	16.595	33.382	24.367
20	16.556	33.378	24.373
30	14.840	33.303	24.698
40	11.654	33.429	25.433
50	12.450	33.977	25.709
75	7.551	33.473	26.140

STATION US14526			
LATITUDE 42-13.3 N			
LONGITUI 140-41.5 E			
DEPTH (m) 88			
Press.	Temp.	Salinity	Sigma-T
5	16.683	32.768	23.875
10	16.685	32.767	23.875
20	16.691	32.768	23.873
30	16.153	33.377	24.465
40	11.877	33.205	25.218
50	11.205	33.751	25.766
75	9.121	33.661	26.050

STATION US14529			
LATITUDE 41-59.5 N			
LONGITUI 141-01.7 E			
DEPTH (m) 97			
Press.	Temp.	Salinity	Sigma-T
5	16.112	33.795	24.795
10	16.123	33.838	24.826
20	16.029	33.819	24.833
30	16.058	33.839	24.841
40	15.329	33.865	25.024
50	14.031	34.024	25.426
75	10.566	33.907	26.001

STATION US14532			
LATITUDE 41-57.4 N			
LONGITUI 140-58.1 E			
DEPTH (m) 75			
Press.	Temp.	Salinity	Sigma-T
5	16.363	32.864	24.023
10	16.348	32.899	24.053
20	16.497	33.452	24.444
30	16.426	33.645	24.608
40	16.421	33.682	24.637
50	13.555	33.543	25.153

STATION US14521			
LATITUDE 42-26.0 N			
LONGITUI 140-37.7 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	16.614	33.080	24.131
10	16.626	33.075	24.125
20	16.639	33.090	24.133
30	14.422	33.324	24.804
40	12.103	33.754	25.602
50	12.355	34.018	25.758
75	9.500	33.731	26.044

STATION US14524			
LATITUDE 42-18.4 N			
LONGITUI 140-42.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	16.320	33.096	24.211
10	16.351	33.140	24.237
20	16.366	33.228	24.302
30	13.979	33.234	24.827
40	10.240	33.225	25.526
50	9.240	33.407	25.833

STATION US14527			
LATITUDE 42-11.0 N			
LONGITUI 140-36.1 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	16.538	32.691	23.850
10	16.574	32.726	23.868
20	16.575	32.727	23.869
30	15.520	33.601	24.779
40	14.674	33.936	25.222
50	12.684	33.843	25.559
75	8.165	33.486	26.061

STATION US14530			
LATITUDE 41-58.7 N			
LONGITUI 141-00.6 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	16.427	33.273	24.323
10	16.205	33.672	24.679
20	16.135	33.756	24.760
30	15.916	33.760	24.813
40	15.035	33.914	25.127
50	12.951	33.818	25.487
75	10.240	33.817	25.987

STATION US14533			
LATITUDE 42-10.5 N			
LONGITUI 140-37.2 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	10.225	33.824	25.996
10	10.234	33.824	25.994
20	10.206	33.821	25.996
30	9.605	33.782	26.066
40	9.260	33.795	26.133
50	8.134	33.757	26.278
75	5.288	33.516	26.465

STATION US14522			
LATITUDE 42-24.0 N			
LONGITUI 140-31.1 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	16.408	32.709	23.893
10	16.456	32.731	23.899
20	16.240	33.572	24.595
30	12.461	33.404	25.262
40	11.528	33.788	25.736
50	11.510	33.928	25.848
75	9.973	33.802	26.021

STATION US14525			
LATITUDE 42-16.7 N			
LONGITUI 140-36.2 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	16.639	32.875	23.968
10	16.634	33.176	24.200
20	16.483	33.258	24.298
30	14.161	33.248	24.800
40	11.765	33.425	25.410
50	8.660	33.269	25.816
75	5.464	33.242	26.228

STATION US14528			
LATITUDE 42-09.1 N			
LONGITUI 140-35.7 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	16.619	32.722	23.855
10	16.617	32.727	23.859
20	16.579	32.771	23.902
30	15.452	33.795	24.943
40	12.454	33.451	25.299
50	12.153	33.729	25.573

STATION US14531			
LATITUDE 41-58.0 N			
LONGITUI 140-59.5 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	16.546	33.159	24.207
10	16.534	33.216	24.254
20	16.321	33.683	24.662
30	16.385	33.776	24.718
40	15.989	33.848	24.864
50	11.656	33.583	25.553
75	9.988	33.770	25.994

STATION US14534			
LATITUDE 42-23.2 N			
LONGITUI 140-42.8 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	10.858	33.860	25.913
10	10.856	33.860	25.914
20	10.851	33.862	25.916
30	10.848	33.863	25.917
40	10.840	33.863	25.919
50	10.812	33.860	25.921

Table 2. (Continued)

STATION US14535			
LATITUDE 42-18.3 N			
LONGITUI 140-41.9 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	10.851	33.853	25.909
10	10.837	33.853	25.911
20	10.802	33.856	25.920
30	10.758	33.858	25.929
40	10.049	33.787	25.996
50	9.648	33.771	26.051

STATION US14536			
LATITUDE 42-08.9 N			
LONGITUI 141-07.0 E			
DEPTH (m) 103			
Press.	Temp.	Salinity	Sigma-T
5	11.108	33.981	25.962
10	11.110	33.981	25.962
20	11.105	33.981	25.963
30	11.031	33.970	25.968
40	10.951	33.962	25.976
50	10.812	33.954	25.994
75	10.528	33.922	26.019

STATION US14537			
LATITUDE 42-07.5 N			
LONGITUI 141-13.3 E			
DEPTH (m) 172			
Press.	Temp.	Salinity	Sigma-T
5	11.518	33.983	25.889
10	11.508	33.982	25.891
20	11.364	33.977	25.913
30	11.163	33.967	25.941
40	11.001	33.960	25.965
50	10.956	33.960	25.973
75	10.681	33.934	26.002
100	10.304	33.883	26.028
125	10.089	33.922	26.095
150	9.643	33.886	26.142

STATION US14538			
LATITUDE 42-00.0 N			
LONGITUI 141-11.4 E			
DEPTH (m) 170			
Press.	Temp.	Salinity	Sigma-T
5	12.043	34.004	25.807
10	12.033	34.004	25.809
20	11.962	33.995	25.816
30	11.853	33.988	25.831
40	11.839	33.991	25.836
50	11.826	33.994	25.841
75	11.568	33.974	25.873
100	11.261	33.958	25.917
125	10.225	33.890	26.047
150	9.332	33.843	26.159

STATION US14539			
LATITUDE 41-55.8 N			
LONGITUI 141-17.8 E			
DEPTH (m) 292			
Press.	Temp.	Salinity	Sigma-T
5	12.298	33.996	25.752
10	12.221	33.989	25.762
20	12.105	33.981	25.778
30	12.016	33.968	25.785
40	11.861	33.957	25.805
50	11.297	33.869	25.841
75	10.338	33.740	25.910
100	9.577	33.697	26.005
125	8.634	33.775	26.216
150	6.726	33.592	26.347
175	4.886	33.468	26.474
200	4.301	33.443	26.517
250	3.029	33.409	26.613

STATION US14540			
LATITUDE 41-59.3 N			
LONGITUI 141-02.1 E			
DEPTH (m) 101			
Press.	Temp.	Salinity	Sigma-T
5	12.433	34.000	25.730
10	12.430	33.998	25.729
20	12.183	33.980	25.762
30	10.836	33.764	25.842
40	11.390	33.964	25.898
50	11.171	33.941	25.920
75	10.516	33.896	26.001

STATION US14541			
LATITUDE 41-58.7 N			
LONGITUI 141-00.6 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	12.138	33.986	25.775
10	11.879	33.970	25.812
20	11.540	33.963	25.869
30	11.151	33.942	25.925
40	10.986	33.938	25.951
50	10.792	33.921	25.973
75	10.083	33.885	26.068

STATION US14542			
LATITUDE 41-58.0 N			
LONGITUI 140-59.5 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	11.737	33.960	25.831
10	11.216	33.936	25.908
20	10.733	33.915	25.978
30	10.622	33.918	26.000
40	10.486	33.909	26.016
50	10.388	33.905	26.030
75	9.737	33.869	26.113

STATION US14543			
LATITUDE 41-57.2 N			
LONGITUI 140-58.3 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	10.741	33.928	25.987
10	10.503	33.907	26.013
20	10.372	33.902	26.031
30	10.283	33.900	26.045
40	10.040	33.874	26.066
50	9.780	33.851	26.091

STATION US14544			
LATITUDE 41-48.8 N			
LONGITUI 141-12.9 E			
DEPTH (m) 133			
Press.	Temp.	Salinity	Sigma-T
5	11.893	33.900	25.755
10	11.911	33.996	25.826
20	11.892	33.992	25.826
30	11.735	33.982	25.848
40	11.293	33.947	25.903
50	11.107	33.940	25.931
75	10.535	33.907	26.006
100	10.311	33.893	26.034

STATION US14545			
LATITUDE 41-46.9 N			
LONGITUI 141-14.9 E			
DEPTH (m) 206			
Press.	Temp.	Salinity	Sigma-T
5	11.877	33.906	25.763
10	12.158	34.011	25.791
20	12.108	34.002	25.793
30	11.967	33.992	25.813
40	11.880	33.985	25.824
50	11.718	33.966	25.839
75	10.959	33.903	25.928
100	10.245	33.891	26.044
125	9.835	33.863	26.092
150	9.610	33.848	26.118
175	8.142	33.734	26.258

STATION US14546			
LATITUDE 41-59.8 N			
LONGITUI 141-10.0 E			
DEPTH (m) 136			
Press.	Temp.	Salinity	Sigma-T
5	9.938	33.931	26.128
10	9.930	33.931	26.129
20	9.929	33.930	26.129
30	9.912	33.929	26.130
40	9.906	33.929	26.131
50	9.899	33.929	26.133
75	8.313	33.752	26.247
100	7.579	33.704	26.317
125	7.256	33.685	26.348

Table 2 (Continued)

STATION US14547			
LATITUDE 41-59.1 N			
LONGITUI 141-01.8 E			
DEPTH (m) 99			
Press.	Temp.	Salinity	Sigma-T
5	10.505	33.970	26.061
10	10.507	33.968	26.059
20	10.513	33.966	26.056
30	10.522	33.966	26.055
40	10.524	33.965	26.054
50	10.501	33.963	26.056
75	9.449	33.913	26.195

STATION US14550			
LATITUDE 41-57.4 N			
LONGITUI 140-58.3 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	10.628	34.012	26.072
10	10.619	34.002	26.066
20	10.618	33.997	26.062
30	10.626	33.994	26.059
40	10.578	33.985	26.060
50	10.034	33.920	26.103

STATION US14553			
LATITUDE 42-16.6 N			
LONGITUI 140-35.9 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	8.274	33.866	26.342
10	8.276	33.865	26.341
20	8.276	33.864	26.341
30	8.265	33.863	26.342
40	8.261	33.863	26.342
50	8.258	33.863	26.342
75	8.258	33.862	26.342

STATION US14556			
LATITUDE 42-25.9 N			
LONGITUI 140-37.3 E			
DEPTH (m) 82			
Press.	Temp.	Salinity	Sigma-T
5	8.053	33.835	26.351
10	8.077	33.832	26.345
20	8.085	33.827	26.340
30	8.093	33.827	26.338
40	8.097	33.826	26.338
50	8.099	33.826	26.337
75	8.106	33.827	26.337

STATION US14559			
LATITUDE 41-45.5 N			
LONGITUI 140-40.0 E			
DEPTH (m) 40			
Press.	Temp.	Salinity	Sigma-T
5	11.837	33.948	25.803
10	11.853	33.951	25.802
20	12.011	34.005	25.814
30	12.047	34.018	25.817

STATION US14548			
LATITUDE 41-58.6 N			
LONGITUI 141-00.7 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	10.531	33.984	26.067
10	10.545	33.979	26.061
20	10.552	33.975	26.057
30	10.552	33.973	26.055
40	10.551	33.972	26.055
50	10.356	33.950	26.071
75	9.148	33.881	26.218

STATION US14551			
LATITUDE 42-11.0 N			
LONGITUI 140-35.4 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	8.008	33.837	26.359
10	8.011	33.837	26.359
20	8.016	33.836	26.358
30	8.019	33.836	26.357
40	8.018	33.836	26.357
50	8.019	33.836	26.357
75	7.996	33.839	26.363

STATION US14554			
LATITUDE 42-19.0 N			
LONGITUI 140-30.3 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	7.632	33.775	26.365
10	7.615	33.770	26.363
20	7.605	33.768	26.364
30	7.555	33.762	26.366
40	7.552	33.762	26.367
50	7.528	33.759	26.368
75	7.511	33.758	26.369

STATION US14557			
LATITUDE 42-17.7 N			
LONGITUI 140-54.0 E			
DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T
5	7.641	33.783	26.370
10	7.640	33.783	26.370
20	7.636	33.781	26.369
30	7.625	33.777	26.368
40	7.626	33.777	26.368
50	7.637	33.779	26.367

STATION US14560			
LATITUDE 41-44.0 N			
LONGITUI 140-40.2 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	11.811	33.926	25.790
10	11.848	33.933	25.789
20	11.798	33.923	25.791
30	11.798	33.920	25.788
40	11.806	33.943	25.805
50	11.922	33.985	25.816

STATION US14549			
LATITUDE 41-58.0 N			
LONGITUI 140-59.3 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	10.553	33.991	26.069
10	10.568	33.989	26.065
20	10.567	33.988	26.064
30	10.576	33.988	26.062
40	10.575	33.987	26.062
50	10.568	33.986	26.062
75	8.355	33.753	26.242

STATION US14552			
LATITUDE 42-13.9 N			
LONGITUI 140-30.2 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	7.594	33.687	26.302
10	7.602	33.734	26.337
20	7.572	33.727	26.336
30	7.506	33.719	26.339
40	7.459	33.713	26.341
50	7.429	33.708	26.342
75	7.409	33.748	26.376

STATION US14555			
LATITUDE 42-20.9 N			
LONGITUI 140-36.5 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	7.860	33.638	26.225
10	8.005	33.838	26.361
20	8.010	33.837	26.359
30	8.010	33.836	26.358
40	8.017	33.837	26.358
50	8.019	33.837	26.357
75	8.019	33.836	26.357

STATION US14558			
LATITUDE 41-47.5 N			
LONGITUI 140-40.6 E			
DEPTH (m) 17			
Press.	Temp.	Salinity	Sigma-T
5	10.228	33.134	25.457
10	11.423	33.800	25.765

STATION US14561			
LATITUDE 41-43.7 N			
LONGITUI 140-38.6 E			
DEPTH (m) 57			
Press.	Temp.	Salinity	Sigma-T
5	11.930	33.958	25.793
10	11.922	33.954	25.791
20	11.939	33.952	25.787
30	11.877	33.935	25.785
40	11.672	33.877	25.778
50	11.879	33.964	25.807

Table 2 (Continued)

STATION US14562			
LATITUDE 41-43.9 N			
LONGITUI 140-37.1 E			
DEPTH (m) 42			
Press.	Temp.	Salinity	Sigma-T
5	12.238	34.047	25.803
10	12.238	34.045	25.802
20	12.218	34.040	25.802
30	12.074	34.017	25.812
40	12.047	34.028	25.825

STATION US14565			
LATITUDE 41-37.5 N			
LONGITUI 140-28.7 E			
DEPTH (m) 23			
Press.	Temp.	Salinity	Sigma-T
5	11.848	34.024	25.859
10	11.851	34.020	25.856
20	11.854	34.018	25.854

STATION US14563			
LATITUDE 41-41.4 N			
LONGITUI 140-34.6 E			
DEPTH (m) 42			
Press.	Temp.	Salinity	Sigma-T
5	12.316	34.043	25.786
10	12.328	34.042	25.783
20	12.329	34.041	25.782
30	12.123	34.037	25.817
40	12.108	34.040	25.823

STATION US14566			
LATITUDE 41-38.1 N			
LONGITUI 140-26.3 E			
DEPTH (m) 12			
Press.	Temp.	Salinity	Sigma-T
5	11.549	33.883	25.806
10	11.551	33.882	25.805

STATION US14564			
LATITUDE 41-37.3 N			
LONGITUI 140-30.3 E			
DEPTH (m) 32			
Press.	Temp.	Salinity	Sigma-T
5	12.144	34.057	25.829
10	12.133	34.056	25.831
20	12.107	34.046	25.828
30	11.931	34.016	25.838