



HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 267

CRUISE 268

CRUISE 269

IN OCTOBER 2012

1. Cruise Itinerary

Cruise 267

Departure from Hakodate	Oct.	2,	2012
Start hydrographic research (US12651)		3	
Sampling by tuna long-line and vertical line		3	
Finish hydrographic research (US12655)		4	
Return to Hakodate		5	
Total coverage 245.1 miles			

Cruise 268

Departure from Hakodate	Oct.	10,	2012
Arrival at Shiraoi		10	
Departure from Shiraoi		12	
Start hydrographic research (US12656)		13	
Arrival at Shiraoi		14	
Departure from Shiraoi		16	
Finish hydrographic research (US12669)		16	
Return to Hakodate		17	
Total coverage 653.6 miles			

Cruise 269

Departure from Hakodate	Oct.	24,	2012
Start hydrographic research (US12670)		24	
Retrieval mooring ADCP system and research by trawl net		24	
Set mooring ADCP system		26	
Arrival at Hakodate		26	
Departure from Hakodate		27	
Arrival at Esashi		28	
Departure from Esashi		30	
Finish hydrographic research (US12691)		30	
Sampling by tuna long-line		30	
Return to Hakodate		31	
Total coverage 463.5 miles			

2. Data on Temperature, Salinity and Computed Dynamic Depth Anomaly

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). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

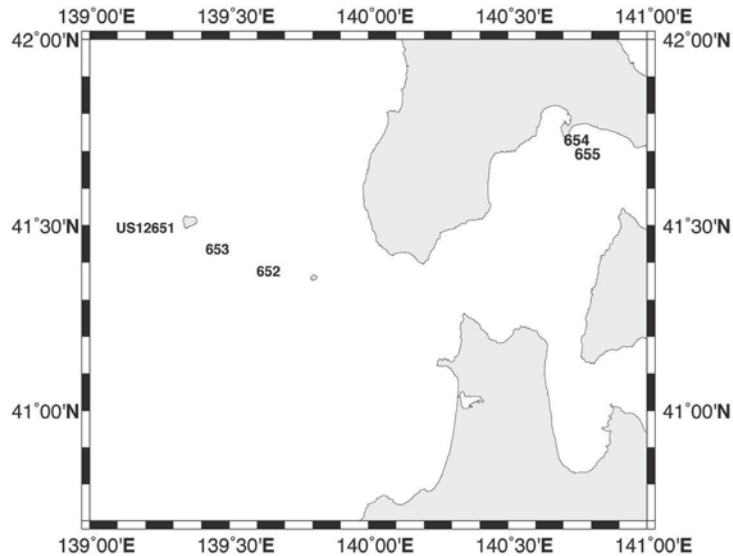


Figure 1. Oceanographic stations (Cruise 267)

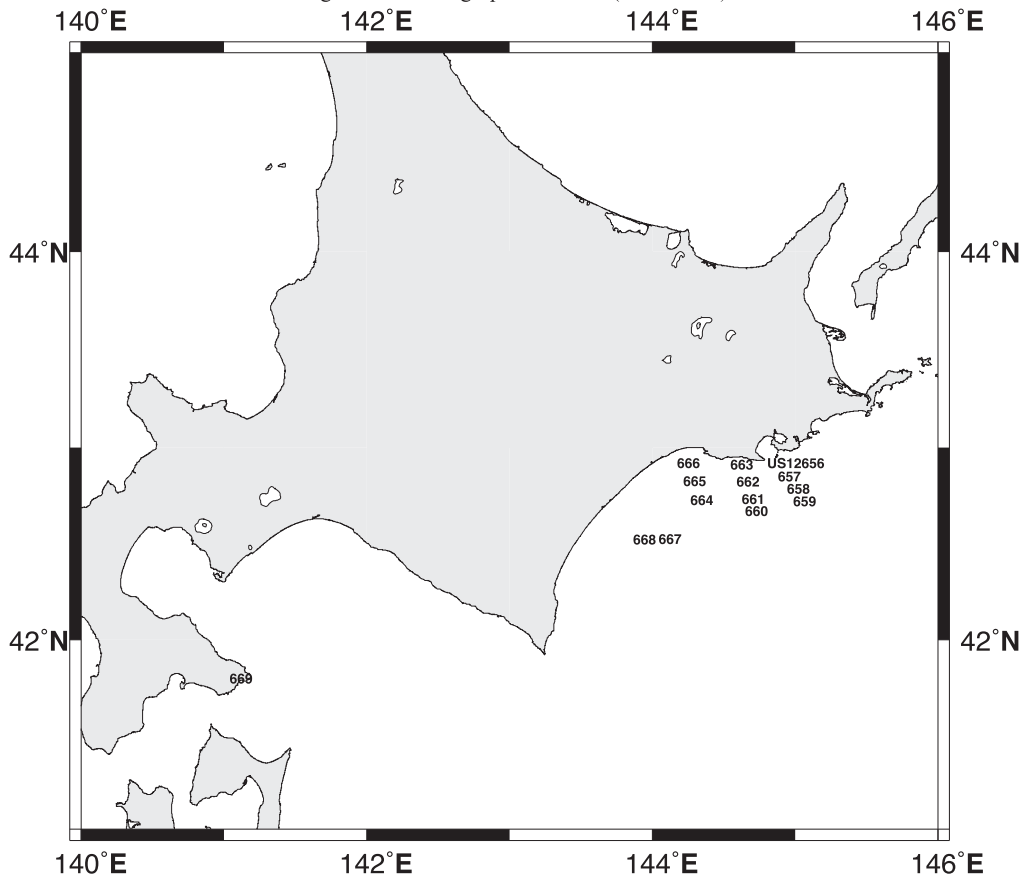


Figure 2. Oceanographic stations (Cruise 268)

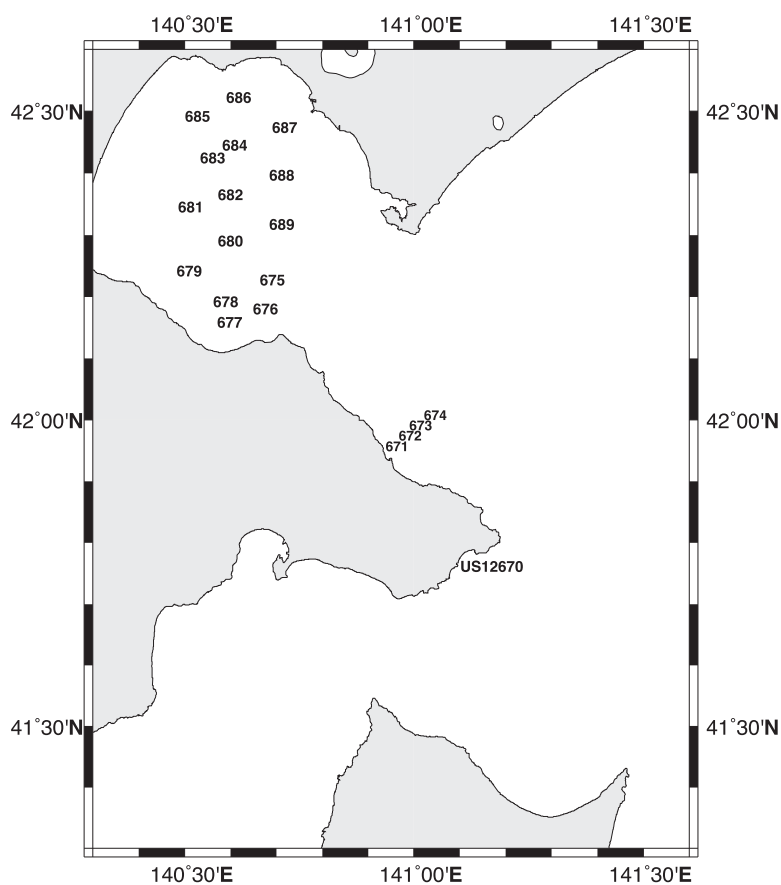


Figure 3. Oceanographic stations (Cruise 269-1)

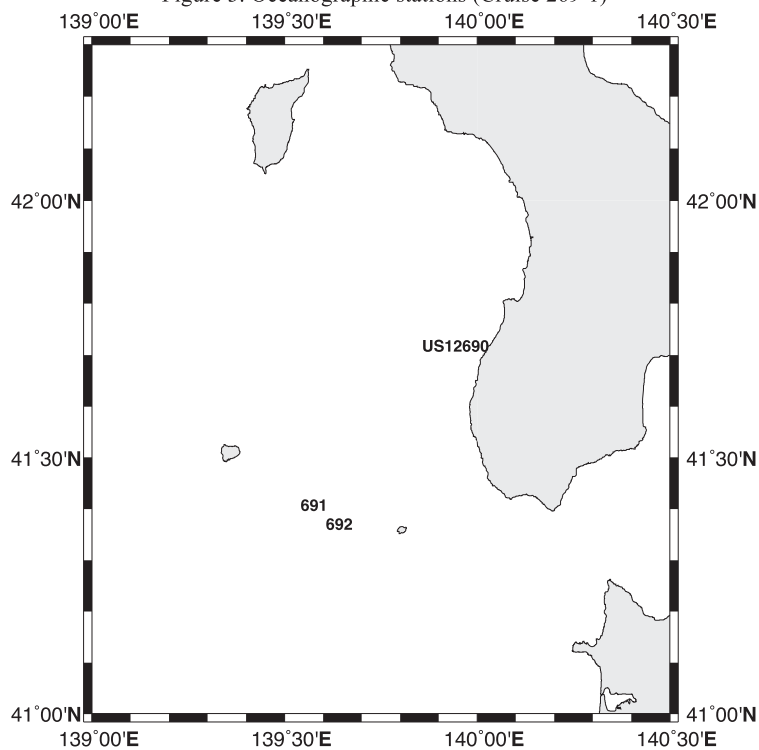


Figure 4. Oceanographic stations (Cruise 269-2)

Table 1. List of Oceanographic Station

Cruise 267												
Station	Lat. (N) [*]	Long. (E) [*]	Date	S.M.T.	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US12651	41-28.8	139-12.0	10/3	0040-0115	1145	ESE-1	North-1	ESE-3	21.1	22.6	bc	1016.6
US12652	41-21.8	139-38.5	10/3	0326-0334	228	East-2	NE -1	East-4	21.4	23.4	r	1016.1
US12653	41-25.4	139-27.5	10/3	0526-0533	2157	East-2	NE -1	East-4	21.2	23.2	bc	1015.6
US12654	41-42.9	140-44.9	10/4	0936-0940	82	NE -2	East-1	NE -4	20.3	22.9	bc	1010.6
US12655	41-40.7	140-47.2	10/4	0957-1005	227	East-2	East-1	East-4	20.7	22.6	bc	1010.1
Cruise 268												
Station	Lat. (N) [*]	Long. (E) [*]	Date	S.M.T.	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US12656	42-54.2	144-53.5	10/13	0755-0758	60	NNW-1	East-1	NNW-2	12.3	14.7	r	1007.0
US12657	42-50.1	144-57.6	10/13	0831-0835	102	NW -1	East-1	NW -3	13.5	13.7	c	1007.5
US12658	42-46.2	145-01.4	10/13	0909-0914	145	NW -2	East-1	NW -4	13.3	14.0	r	1007.0
US12659	42-43.6	145-04.0	10/13	0940-0950	284	NNW-2	East-1	NNW-4	13.0	13.8	c	1007.0
US12660	42-38.8	144-43.8	10/13	1112-1128	594	NW -2	East-1	NW -4	13.4	13.4	c	1007.6
US12661	42-41.9	144-42.4	10/13	1153-1200	186	NW -2	East-1	NW -4	13.4	13.9	bc	1007.6
US12662	42-47.8	144-40.2	10/13	1240-1244	109	NW -2	East-1	NW -4	15.3	14.3	bc	1008.2
US12663	42-53.8	144-37.7	10/13	1323-1326	47	NW -1	East-1	NW -3	14.1	14.7	bc	1008.4
US12664	42-42.1	144-20.8	10/13	1502-1519	699	North-2	NW -1	North-4	13.6	14.4	c	1010.4
US12665	42-48.0	144-17.9	10/13	1557-1610	508	North-2	East-1	North-5	13.8	13.9	c	1011.5
US12666	42-53.6	144-15.1	10/13	1352-1655	60	North-2	East-1	North-4	13.6	14.1	c	1012.1
US12667	42-30.0	144-05.8	10/14	0546-0607	718	SE -1	East-1	SE -2	12.8	13.9	bc	1018.1
US12668	42-29.8	143-58.3	10/14	0648-0703	434	SE -1	East-1	SE -3	13.7	14.9	bc	1018.6
US12669	41-46.2	141-07.2	10/16	1755-1758	40	West-1	SW -1	West-2	15.3	18.6	bc	1021.6
Cruise 269												
Station	Lat. (N) [*]	Long. (E) [*]	Date	S.M.T.	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US12670	41-45.9	141-07.1	10/25	0049-0052	50	NW -1	WSW-1	NW -3	6.4	16.0	bc	1020.5
US12671	41-57.4	140-58.2	10/25	0246-0250	77	SSW-2	NW -1	SSW-4	9.7	16.7	bc	1020.6
US12672	41-58.0	140-59.5	10/25	0258-0302	85	SSW-1	NW -1	SSW-3	9.3	16.6	bc	1020.6
US12673	41-58.7	141-00.7	10/25	0309-0313	93	SSW-1	NW -1	SSW-3	9.6	16.2	bc	1020.6
US12674	41-59.4	141-02.0	10/25	0320-0325	99	SSW-1	NW -1	SSW-3	9.5	16.1	bc	1020.6
US12675	42-13.1	140-41.5	10/25	0523-0528	88	SW -2	West-1	SW -4	10.4	17.0	bc	1021.0
US12676	42-10.3	140-40.6	10/25	0548-0552	83	SW -2	West-1	SW -4	10.3	16.9	bc	1021.1
US12677	42-09.0	140-35.9	10/25	0622-0626	65	SSW-2	West-1	SSW-4	8.5	16.5	bc	1021.1
US12678	42-11.0	140-35.4	10/25	0651-0655	78	South-2	West-1	South-4	9.1	16.5	bc	1021.1
US12679	42-14.0	140-30.6	10/25	0728-0736	79	SSE-1	West-1	SSE-3	11.8	16.1	bc	1021.1
US12680	42-16.9	140-36.0	10/25	0807-0812	89	South-1	SE -1	South-3	12.1	17.0	bc	1021.2
US12681	42-20.2	140-30.8	10/25	1036-1042	93	SSE-1	SE -1	SSE-3	13.8	16.5	bc	1021.1
US12682	42-21.4	140-36.0	10/25	1144-1149	88	SE -1	SE -1	SE -3	14.4	17.1	bc	1020.5
US12683	42-25.1	140-33.9	10/25	1253-1257	90	ESE-2	SE -1	ESE-4	14.2	17.0	bc	1019.6
US12684	42-26.2	140-36.6	10/25	1322-1328	83	SE -2	SE -1	SE -4	13.7	16.8	c	1018.8
US12685	42-29.0	140-31.7	10/25	1420-1424	74	SE -2	SE -1	SE -4	13.3	16.2	r	1019.1
US12686	42-30.8	140-37.1	10/25	1452-1454	63	SSE-2	SE -1	SSE-4	12.1	16.4	r	1019.5
US12687	42-27.9	140-43.1	10/25	1528-1532	60	ESE-2	SE -1	ESE-4	12.1	16.3	o	1019.1
US12688	42-23.3	140-42.7	10/25	1604-1609	59	SSE-2	SE -1	SSE-3	12.4	16.4	r	1019.1
US12689	42-18.5	140-42.7	10/25	1651-1654	61	South-1	SE -1	South-3	11.8	16.8	r	1018.6
US12690	41-42.4	139-56.6	10/27	1935-1946	559	East-2	East-1	East-4	15.6	17.3	bc	1027.1
US12691	41-23.8	139-34.6	10/30	1211-1222	942	NW -1	NW -2	NW -3	12.2	15.8	c	1010.2
US12692	41-21.6	139-38.5	10/30	1315-1323	228	NW -2	NW -2	NW -4	10.9	16.2	o	1009.7

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

STATION US12651				STATION US12652				STATION US12653			
LATITUDE		41-28.8	N	LATITUDE		41-21.8	N	LATITUDE		41-25.4	N
LONGITUD		139-12.0	E	LONGITUD		139-38.5	E	LONGITUD		139-27.5	E
DEPTH (m)		1145		DEPTH (m)		228		DEPTH (m)		2157	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	22.711	33.395	22.799	5	23.779	32.877	22.100	5	23.338	33.397	22.621
10	22.712	33.394	22.798	10	24.053	33.157	22.231	10	23.336	33.396	22.621
20	20.142	33.670	23.709	20	23.543	33.352	22.528	20	23.269	33.430	22.666
30	14.345	34.144	25.453	30	23.138	33.396	22.678	30	16.450	33.985	24.863
40	12.623	34.209	25.855	40	14.435	34.007	25.328	40	12.261	34.204	25.921
50	10.554	34.244	26.266	50	11.470	34.131	26.013	50	11.230	34.274	26.169
75	7.979	34.157	26.615	75	8.821	34.172	26.498	75	8.881	34.201	26.511
100	5.263	34.063	26.902	100	6.629	34.121	26.777	100	6.632	34.107	26.765
125	3.295	34.031	27.085	125	5.043	34.047	26.915	125	4.913	34.062	26.941
150	2.601	34.038	27.152	150	3.912	34.045	27.035	150	2.917	34.030	27.119
175	2.073	34.041	27.198	175	2.385	34.028	27.162	175	1.593	34.039	27.233
200	1.757	34.047	27.227								
250	1.260	34.054	27.267								
300	1.017	34.059	27.288								
400	0.733	34.064	27.309								
500	0.598	34.065	27.318								
600	0.499	34.065	27.324								
700	0.438	34.065	27.328								
800	0.363	34.064	27.331								
900	0.312	34.063	27.333								
1000	0.261	34.063	27.336								

STATION US12654				STATION US12655				STATION US12656			
LATITUDE		41-42.9	N	LATITUDE		41-40.7	N	LATITUDE		42-54.2	N
LONGITUD		140-44.9	E	LONGITUD		140-47.2	E	LONGITUD		144-53.5	E
DEPTH (m)		82		DEPTH (m)		227		DEPTH (m)		60	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	23.170	33.325	22.615	5	22.692	33.391	22.802	5	14.898	33.152	24.569
10	23.168	33.326	22.616	10	22.577	33.403	22.843	10	14.857	33.154	24.580
20	23.169	33.325	22.615	20	22.232	33.468	22.990	20	14.794	33.159	24.597
30	22.539	33.458	22.896	30	21.902	33.535	23.132	30	14.632	33.175	24.644
40	18.854	33.856	24.184	40	19.432	33.793	23.989	40	14.424	33.267	24.759
50	15.987	34.058	25.026	50	17.943	33.952	24.483	50	14.312	33.308	24.815
75	11.843	34.235	26.025	75	13.564	34.234	25.685				
				100	12.301	34.189	25.902				
				125	11.515	34.205	26.063				
				150	11.310	34.223	26.115				
				175	10.358	34.217	26.279				
				200	9.880	34.218	26.362				

STATION US12657				STATION US12658				STATION US12659			
LATITUDE		42-50.1	N	LATITUDE		42-46.2	N	LATITUDE		42-43.6	N
LONGITUD		144-57.6	E	LONGITUD		145-01.4	E	LONGITUD		145-04.0	E
DEPTH (m)		102		DEPTH (m)		145		DEPTH (m)		284	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	13.873	33.284	24.888	5	13.334	32.797	24.620	5	13.933	32.646	24.382
10	13.724	33.278	24.913	10	13.329	32.807	24.630	10	13.881	32.664	24.407
20	13.400	33.302	24.998	20	13.006	32.965	24.815	20	13.007	33.050	24.881
30	13.161	33.309	25.051	30	11.307	32.969	25.139	30	11.784	33.042	25.109
40	12.309	33.297	25.208	40	11.047	33.177	25.348	40	8.232	32.876	25.572
50	11.437	33.278	25.356	50	10.524	33.306	25.540	50	3.463	32.930	26.191
75	10.651	33.257	25.479	75	3.961	33.078	26.262	75	2.083	33.145	26.480
				100	2.771	33.094	26.384	100	1.743	33.198	26.547
				125	4.318	33.391	26.473	125	1.891	33.227	26.559
								150	1.895	33.256	26.582
								175	1.745	33.270	26.605
								200	1.768	33.286	26.615
								250	1.814	33.359	26.671

STATION US12660			
LATITUDE 42-38.8 N			
LONGITUD 144-43.8 E			
DEPTH (m) 594			
Press.	Temp.	Salinity	Sigma-T
5	13.755	33.267	24.899
10	13.696	33.268	24.911
20	13.658	33.279	24.928
30	13.178	33.273	25.020
40	12.586	33.256	25.123
50	11.912	33.237	25.237
75	9.813	33.210	25.586
100	7.014	33.310	26.085
125	6.130	33.480	26.335
150	4.105	33.390	26.495
175	3.014	33.362	26.576
200	1.943	33.328	26.636
250	1.765	33.411	26.716
300	1.889	33.491	26.771
400	2.647	33.699	26.877

STATION US12661			
LATITUDE 42-41.9 N			
LONGITUD 144-42.4 E			
DEPTH (m) 186			
Press.	Temp.	Salinity	Sigma-T
5	14.245	33.318	24.836
10	14.078	33.317	24.871
20	14.040	33.320	24.881
30	14.007	33.317	24.885
40	13.652	33.318	24.959
50	13.054	33.275	25.046
75	12.153	33.242	25.195
100	9.571	33.264	25.668
125	5.512	33.199	26.188
150	3.033	33.296	26.522

STATION US12662			
LATITUDE 42-47.8 N			
LONGITUD 144-40.2 E			
DEPTH (m) 109			
Press.	Temp.	Salinity	Sigma-T
5	14.480	33.196	24.693
10	14.454	33.206	24.706
20	14.399	33.222	24.730
30	14.350	33.217	24.737
40	13.827	33.205	24.836
50	13.356	33.222	24.944
75	11.754	33.218	25.251
100	9.166	33.227	25.704

STATION US12663			
LATITUDE 42-53.8 N			
LONGITUD 144-37.7 E			
DEPTH (m) 47			
Press.	Temp.	Salinity	Sigma-T
5	15.166	32.977	24.377
10	14.786	33.132	24.578
20	14.762	33.147	24.595
30	14.765	33.147	24.594
40	14.770	33.147	24.593

STATION US12664			
LATITUDE 42-42.1 N			
LONGITUD 144-20.8 E			
DEPTH (m) 699			
Press.	Temp.	Salinity	Sigma-T
5	14.489	33.127	24.637
10	14.488	33.126	24.637
20	14.490	33.129	24.639
30	14.442	33.134	24.653
40	14.266	33.144	24.698
50	13.017	33.172	24.973
75	9.585	33.203	25.618
100	6.823	33.230	26.048
125	5.702	33.501	26.405
150	3.793	33.369	26.509
175	3.133	33.361	26.565
200	2.788	33.383	26.613
250	2.418	33.399	26.656
300	2.241	33.462	26.721
400	2.523	33.623	26.827

STATION US12665			
LATITUDE 42-48.0 N			
LONGITUD 144-17.9 E			
DEPTH (m) 508			
Press.	Temp.	Salinity	Sigma-T
5	14.117	32.922	24.558
10	14.115	32.921	24.557
20	14.042	32.927	24.577
30	13.949	32.992	24.646
40	13.981	33.168	24.775
50	13.314	33.257	24.980
75	11.642	33.195	25.254
100	8.156	33.166	25.811
125	6.315	33.176	26.072
150	6.512	33.539	26.333
175	4.794	33.434	26.457
200	3.990	33.455	26.558
250	2.459	33.373	26.632
300	2.250	33.433	26.697

STATION US12666			
LATITUDE 42-53.6 N			
LONGITUD 144-15.1 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	14.161	32.897	24.529
10	14.150	32.905	24.537
20	14.032	32.955	24.601
30	14.017	32.985	24.627
40	13.930	33.029	24.679
50	13.877	33.135	24.771

STATION US12667			
LATITUDE 42-30.0 N			
LONGITUD 144-05.8 E			
DEPTH (m) 718			
Press.	Temp.	Salinity	Sigma-T
5	14.201	32.873	24.502
10	13.963	32.915	24.584
20	13.853	32.973	24.651
30	13.741	32.999	24.695
40	12.949	33.138	24.961
50	12.913	33.265	25.066
75	9.592	33.357	25.737
100	7.089	33.652	26.345
125	5.755	33.606	26.481
150	3.799	33.412	26.543
175	2.930	33.361	26.583
200	2.975	33.403	26.613
250	2.463	33.421	26.670
300	2.155	33.472	26.736
400	2.781	33.717	26.880
500	3.142	33.886	26.983

STATION US12668			
LATITUDE 42-29.8 N			
LONGITUD 143-58.3 E			
DEPTH (m) 434			
Press.	Temp.	Salinity	Sigma-T
5	15.137	32.989	24.392
10	15.074	32.986	24.403
20	14.818	32.978	24.452
30	14.496	32.928	24.482
40	14.496	33.070	24.593
50	13.608	33.143	24.832
75	11.126	33.261	25.399
100	8.718	33.394	25.905
125	6.121	33.495	26.348
150	4.878	33.499	26.499
175	4.143	33.453	26.541
200	3.454	33.415	26.578
250	2.250	33.426	26.691
300	2.118	33.463	26.732
400	2.556	33.628	26.828

STATION US12669			
LATITUDE	41-46.2	N	
LONGITUD	141-07.2	E	
DEPTH (m)	40		
Press.	Temp.	Salinity	Sigma-T
5	18.670	33.451	23.921
10	18.464	33.503	24.011
20	17.043	33.672	24.485
30	13.898	33.835	25.308

STATION US12670			
LATITUDE	41-45.9	N	
LONGITUD	141-07.1	E	
DEPTH (m)	50		
Press.	Temp.	Salinity	Sigma-T
5	16.183	33.671	24.684
10	16.217	33.767	24.750
20	16.172	33.773	24.764
30	15.643	33.809	24.912
40	14.435	33.883	25.233

STATION US12671			
LATITUDE	41-57.4	N	
LONGITUD	140-58.2	E	
DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T
5	16.947	33.523	24.394
10	16.951	33.514	24.386
20	16.816	33.654	24.524
30	16.609	33.711	24.616
40	12.915	33.585	25.314
50	10.936	33.547	25.656

STATION US12672			
LATITUDE	41-58.0	N	
LONGITUD	140-59.5	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	16.841	33.504	24.404
10	16.843	33.505	24.404
20	16.620	33.638	24.558
30	16.062	33.708	24.740
40	14.301	33.690	25.112
50	10.253	33.879	26.033
75	9.167	34.029	26.331

STATION US12673			
LATITUDE	41-58.7	N	
LONGITUD	141-00.7	E	
DEPTH (m)	93		
Press.	Temp.	Salinity	Sigma-T
5	16.335	33.702	24.673
10	16.338	33.689	24.662
20	16.344	33.682	24.656
30	16.179	33.743	24.740
40	11.822	33.800	25.690
50	9.885	33.976	26.172
75	9.474	34.049	26.297

STATION US12674			
LATITUDE	41-59.4	N	
LONGITUD	141-02.0	E	
DEPTH (m)	99		
Press.	Temp.	Salinity	Sigma-T
5	16.374	33.688	24.653
10	16.377	33.681	24.647
20	16.375	33.679	24.646
30	16.157	33.742	24.745
40	11.461	33.596	25.599
50	9.112	33.701	26.083
75	9.762	34.077	26.271

STATION US12675			
LATITUDE	42-13.1	N	
LONGITUD	140-41.5	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	17.271	33.179	24.053
10	17.282	33.178	24.050
20	17.283	33.179	24.050
30	17.194	33.227	24.108
40	12.634	33.493	25.298
50	10.286	33.581	25.795
75	8.369	33.958	26.400

STATION US12676			
LATITUDE	42-10.3	N	
LONGITUD	140-40.6	E	
DEPTH (m)	83		
Press.	Temp.	Salinity	Sigma-T
5	17.053	33.258	24.165
10	17.058	33.257	24.164
20	17.061	33.260	24.165
30	14.404	33.389	24.858
40	13.320	33.757	25.366
50	11.220	33.699	25.723
75	6.495	33.371	26.203

STATION US12677			
LATITUDE	42-09.0	N	
LONGITUD	140-35.9	E	
DEPTH (m)	65		
Press.	Temp.	Salinity	Sigma-T
5	16.482	32.951	24.063
10	16.589	33.085	24.141
20	16.666	33.315	24.299
30	13.726	33.740	25.270
40	12.639	33.730	25.480
50	11.616	33.773	25.708

STATION US12678			
LATITUDE	42-11.0	N	
LONGITUD	140-35.4	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	16.775	33.306	24.267
10	16.780	33.306	24.266
20	16.783	33.309	24.268
30	14.159	33.761	25.196
40	13.289	33.944	25.517
50	11.328	33.701	25.705
75	7.497	33.458	26.135

STATION US12679			
LATITUDE	42-14.0	N	
LONGITUD	140-30.6	E	
DEPTH (m)	79		
Press.	Temp.	Salinity	Sigma-T
5	16.067	33.010	24.202
10	16.100	33.019	24.201
20	14.721	33.755	25.072
30	13.712	33.925	25.416
40	12.933	33.870	25.531
50	11.651	33.710	25.653
75	7.438	33.485	26.165

STATION US12680			
LATITUDE	42-16.9	N	
LONGITUD	140-36.0	E	
DEPTH (m)	89		
Press.	Temp.	Salinity	Sigma-T
5	17.003	32.728	23.770
10	17.201	33.134	24.035
20	17.240	33.218	24.090
30	14.514	33.615	25.009
40	11.980	33.579	25.489
50	9.464	33.541	25.901
75	5.365	33.299	26.285

STATION US12681			
LATITUDE	42-20.2	N	
LONGITUD	140-30.8	E	
DEPTH (m)	93		
Press.	Temp.	Salinity	Sigma-T
5	16.819	33.286	24.241
10	16.815	33.286	24.243
20	16.827	33.295	24.246
30	13.492	33.639	25.240
40	12.735	34.017	25.684
50	10.578	33.745	25.873
75	5.328	33.292	26.284

STATION US12682			
LATITUDE	42-21.4	N	
LONGITUD	140-36.0	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	17.293	33.195	24.060
10	17.289	33.195	24.061
20	17.252	33.195	24.070
30	14.848	33.598	24.924
40	11.471	33.578	25.583
50	8.680	33.405	25.919
75	9.081	33.966	26.296

STATION US12683			
LATITUDE	42-25.1	N	
LONGITUD	140-33.9	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	17.127	33.254	24.145
10	17.122	33.254	24.146
20	16.912	33.267	24.205
30	12.865	33.500	25.257
40	11.049	33.744	25.789
50	8.541	33.447	25.973
75	6.027	33.436	26.314

STATION US12684			
LATITUDE 42-26.2 N			
LONGITUD 140-36.6 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	16.612	33.104	24.150
10	16.567	33.134	24.183
20	16.535	33.191	24.235
30	11.927	33.471	25.415
40	11.377	33.964	25.901
50	9.857	33.918	26.131
75	9.371	33.976	26.257

STATION US12687			
LATITUDE 42-27.9 N			
LONGITUD 140-43.1 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	16.544	33.195	24.236
10	16.549	33.196	24.235
20	13.061	33.968	25.582
30	10.571	34.041	26.105
40	10.553	34.075	26.134
50	10.556	34.087	26.143

STATION US12690			
LATITUDE 41-42.4 N			
LONGITUD 139-56.6 E			
DEPTH (m) 559			
Press.	Temp.	Salinity	Sigma-T
5	17.556	33.617	24.321
10	17.535	33.631	24.337
20	17.308	33.704	24.447
30	16.977	33.784	24.587
40	16.728	33.800	24.657
50	16.002	34.225	25.151
75	11.968	34.280	26.036
100	9.865	34.243	26.384
125	8.119	34.163	26.599
150	6.774	34.130	26.764
175	5.359	34.082	26.905
200	4.323	34.060	27.005

STATION US12685			
LATITUDE 42-29.0 N			
LONGITUD 140-31.7 E			
DEPTH (m) 74			
Press.	Temp.	Salinity	Sigma-T
5	16.427	33.175	24.247
10	16.423	33.175	24.248
20	14.545	33.424	24.855
30	11.068	33.564	25.645
40	10.309	33.908	26.047
50	9.626	33.813	26.088

STATION US12688			
LATITUDE 42-23.3 N			
LONGITUD 140-42.7 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	16.713	33.146	24.159
10	16.754	33.164	24.163
20	16.710	33.169	24.177
30	13.696	33.443	25.047
40	9.995	34.002	26.174
50	9.653	34.033	26.255

STATION US12691			
LATITUDE 41-23.8 N			
LONGITUD 139-34.6 E			
DEPTH (m) 942			
Press.	Temp.	Salinity	Sigma-T
5	15.984	33.775	24.809
10	15.983	33.774	24.808
20	15.983	33.773	24.808
30	15.980	33.774	24.809
40	15.958	33.777	24.817
50	15.449	33.800	24.948
75	7.265	34.077	26.655
100	5.238	34.071	26.911
125	3.402	34.032	27.075
150	2.782	34.027	27.128
175	2.343	34.032	27.169

STATION US12686			
LATITUDE 42-30.8 N			
LONGITUD 140-37.1 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	16.635	33.174	24.198
10	16.591	33.186	24.218
20	12.760	33.502	25.280
30	11.167	33.994	25.962
40	10.653	34.008	26.065
50	10.374	34.034	26.134

STATION US12689			
LATITUDE 42-18.5 N			
LONGITUD 140-42.7 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	17.124	33.232	24.128
10	17.163	33.248	24.132
20	17.147	33.246	24.134
30	17.137	33.252	24.141
40	12.196	33.764	25.592
50	9.343	33.985	26.269

STATION US12692			
LATITUDE 41-21.6 N			
LONGITUD 139-38.5 E			
DEPTH (m) 228			
Press.	Temp.	Salinity	Sigma-T
5	16.885	33.661	24.514
10	16.885	33.659	24.512
20	16.874	33.667	24.521
30	16.645	33.712	24.609
40	15.863	33.836	24.883
50	15.397	33.890	25.029
75	10.221	34.257	26.334
100	6.782	34.107	26.745
125	4.965	34.057	26.931
150	3.356	34.032	27.080
175	2.206	34.026	27.175

