



Title	3. The "Ushio Maru" Cruise 191, 192 and 193 in March - April 2010
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THE " USHIO MARU "

CRUISE 191

CRUISE 192

CRUISE 193

IN MARCH - APRIL 2010

1. Cruise Itinerary

Cruise 191

Departure from Hakodate	Mar.	8 , 2010
Arrival at Usujiri		8
Departure from Usujiri		9
Hydrographic research (US10116)		9
Sampling by Frame trawl net		9
Arrival at Usujiri		9
Departure from Usujiri		14
Return to Hakodate		14

Total coverage 149.2 miles

Cruise 192

Departure from Hakodate	Mar.	23 , 2010
Start hydrographic research (US10117)		23
Anchorage at Muroran		23
Departure from Muroran		24
Finish hydrographic research (US10139)		25
Return to Hakodate		25

Total coverage 224.4 miles

Cruise 193

Departure from Hakodate	Apr.	5 , 2010
Arrival at Esashi		5
Departure from Esashi		6
Start hydrographic research (US10140)		6
Arrival at Okushiri		6
Departure from Okushiri		8
Arrival at Fukushima		8
Departure from Fukushima		9
Arrival at Fukushima		9
Departure from Fukushima		10
Finish hydrographic research (US10155)		10
Return to Hakodate		11

Total coverage 400.7 miles

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew:	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 191

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
Graduate Students:	Chair of Marine Bioresource and environment Sensing:		6 persons
	Chair of Marine Bioresource Science:		3 persons
Under Graduate Students:	Department of Applied Marine Science:		1 person
	Department of Marine Biological Science:		1 person
	Department of Applied Marine Science (Third grade):		1 person

Cruise 192

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
Graduate Students:	Chair of Marine Bioresource Science:		3 persons
Under Graduate Students:	Department of Marine Biological Science:		2 persons

Cruise 193

Graduate Students:	Chair of Marine Bioresource Science:		1 person
	Chair of Marine Bioresource and Environment Sensing:		1 person
	Graduate School of Environmental Science:		2 persons
Under Graduate Students:	Department of Marine Biology:		1 person
	Department of Applied Marine Science:		3 persons

3. 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 SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

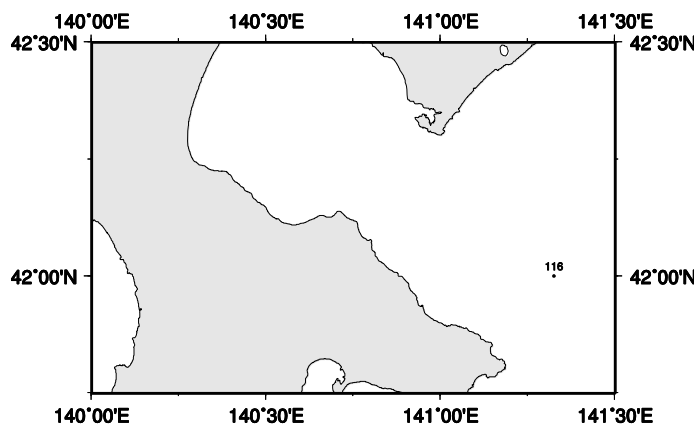


Figure 1: Oceanographic stations (Cruise 191)

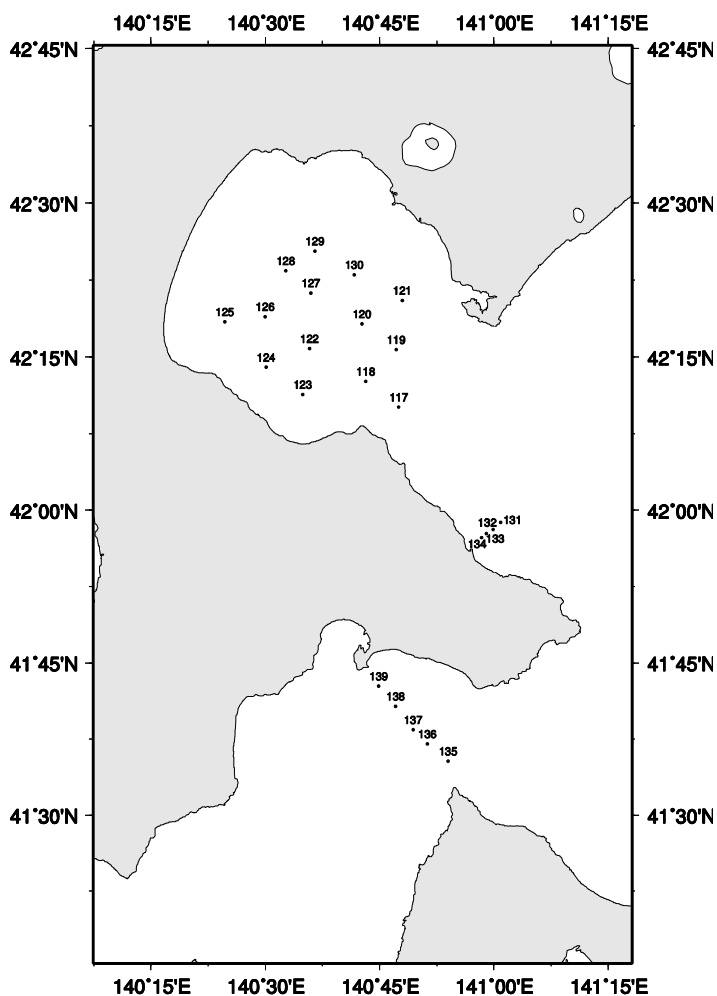


Figure 2: Oceanographic stations (Cruise 192)

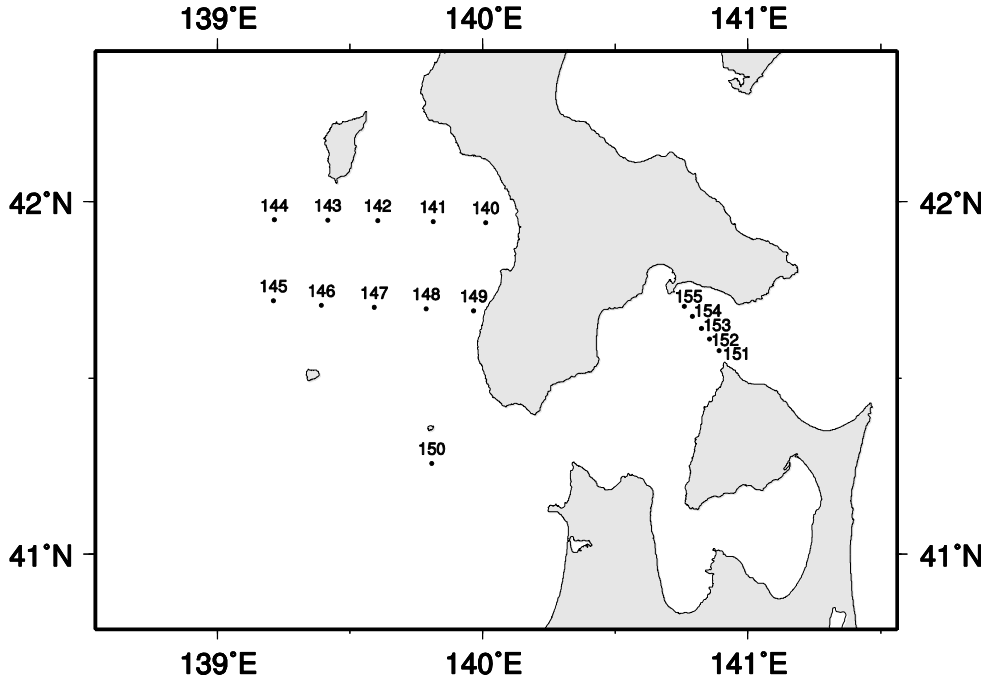


Figure 3: Oceanographic stations (Cruise 193)

Table 1: List of oceanographic stations

Cruise 191													
Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)	
US10116	42-00.1	141-19.5	3/9	0406-0419	309	NW -2	NW -1	NW -3	-3.4	0.3	bc	1030.5	
Cruise 192													
Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)	
US10117	42-10.2	140-47.4	3/23	1310-1314	94	NNE-2	NNW-1	NNE-4	1.8	1.9	o	1012.1	
US10118	42-12.7	140-43.1	3/23	1404-1410	92	NNE-1	NNE-1	NNE-3	1.6	1.4	s	1012.0	
US10119	42-15.8	140-47.1	3/23	1508-1512	72	NNE-1	NNE-1	NNE-3	1.2	1.7	s	1011.7	
US10120	42-18.3	140-42.6	3/23	1545-1549	64	NE -1	NNW-1	NE -3	0.8	1.5	s	1011.9	
US10121	42-20.6	140-47.9	3/23	1653-1656	55	Calm	East-1	Calm	1.1	1.5	s	1011.7	
US10122	42-15.9	140-35.7	3/24	0816-0820	94	West-2	East-1	West-4	1.7	1.5	bc	1012.3	
US10123	42-11.4	140-34.8	3/24	1001-1005	84	WNW-1	East-1	WNW-3	2.5	1.4	bc	1022.6	
US10124	42-14.1	140-30.0	3/24	1112-1116	81	Calm	East-1	Calm	4.3	1.7	bc	1022.6	
US10125	42-18.5	140-24.6	3/24	1234-1238	63	Calm	West-1	Calm	4.9	2.0	bc	1022.5	
US10126	42-19.0	140-29.9	3/24	1342-1346	93	SE -1	West-1	SE -2	4.3	2.4	bc	1021.6	
US10127	42-21.3	140-35.9	3/24	1500-1504	90	Calm	West-1	Calm	5.3	2.7	bc	1021.6	
US10128	42-23.5	140-32.6	3/24	1357-1602	97	West-2	West-1	West-4	4.4	2.0	c	1021.0	
US10129	42-25.4	140-36.4	3/24	1656-1701	88	WNW-1	West-1	WNW-3	4.1	1.7	o	1021.1	
US10130	42-23.1	140-41.6	3/24	1734-1738	68	WNW-1	West-1	WNW-2	3.3	2.1	o	1021.1	
US10131	41-58.9	141-00.8	3/24	2035-2040	96	Calm	East-1	Calm	2.3	1.1	o	1021.6	
US10132	41-58.2	140-59.8	3/24	2047-2051	90	Calm	East-1	Calm	2.7	1.2	o	1021.6	
US10133	41-57.8	140-58.9	3/24	2057-2101	85	Calm	East-1	Calm	2.4	1.3	o	1021.6	
US10134	41-57.4	140-58.3	3/24	2106-2110	80	Calm	East-1	Calm	2.4	1.5	o	1021.6	
US10135	41-35.4	140-53.9	3/25	0027-0030	59	ENE-1	WSW-1	ENE-2	4.7	7.9	c	1020.1	
US10136	41-37.1	140-51.2	3/25	0055-0059	100	NE -1	WSW-1	NE -2	4.8	8.3	c	1020.1	
US10137	41-38.5	140-49.3	3/25	0116-0127	340	NE -1	WSW-1	NE -2	4.8	8.0	c	1019.7	
US10138	41-40.8	140-47.0	3/25	0149-0157	223	North-1	WSW-1	North-3	4.3	7.9	c	1019.1	
US10139	41-42.8	140-44.8	3/25	0215-0219	88	North-1	WSW-1	North-3	3.4	8.2	c	1018.6	

Cruise 193

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US10140	41-56.6	140-00.5	4/6	0720-0732	771	East-1	West-1	East-3	5.4	7.0	o	1013.7
US10141	41-56.8	139-48.6	4/6	0828-0838	1294	East-1	West-1	East-3	7.7	7.5	o	1013.1
US10142	41-56.9	139-36.1	4/6	0938-0948	592	SE -1	West-1	SE -3	9.1	7.7	o	1012.8
US10143	41-57.0	139-24.8	4/6	1041-1050	1194	South-1	WSW-1	South-2	8.5	8.0	o	1012.5
US10144	41-57.1	139-12.7	4/9	1149-1158	2794	South-1	WSW-1	South-3	9.3	8.3	o	1011.6
US10145	41-43.4	139-12.5	4/8	0848-0859	607	NW -1	NNW-1	NW -3	4.5	7.3	bc	1026.1
US10146	41-42.6	139-23.3	4/8	0954-1003	785	NW -1	NNW-1	NW -2	6.0	7.4	bc	1026.2
US10147	41-42.3	139-35.3	4/8	1103-1112	742	NW -1	NNW-1	NW -2	5.8	7.6	bc	1026.2
US10148	41-42.0	139-47.0	4/8	1208-1217	1431	West-1	NNW-1	West-1	6.9	7.6	bc	1026.2
US10149	41-41.7	139-57.7	4/8	1307-1311	123	NW -1	NW -1	NW -2	6.4	8.0	bc	1026.2
US10150	41-15.7	139-48.3	4/9	0825-0835	1190	SSE-2	South-1	SSE-4	7.7	7.1	bc	1025.5
US10151	41-34.9	140-53.2	4/10	0934-0936	35	SSW-3	East-1	SSW-5	9.4	8.5	r	1018.1
US10152	41-36.9	140-51.1	4/10	0955-0958	85	SSW-3	East-1	SSW-5	9.6	8.5	r	1017.6
US10153	41-38.7	140-49.2	4/10	1015-1028	353	SW -3	SW -1	SW -5	9.8	8.4	r	1017.6
US10154	41-40.7	140-47.2	4/10	1046-1054	230	SW -3	SW -1	SW -5	9.5	8.6	o	1017.2
US10155	41-42.4	140-45.4	4/10	1110-1115	91	SW -3	SW -1	SW -5	9.6	8.1	o	1016.6

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US10116				STATION US10117				STATION US10118			
LATITUDE 42-00.1 N				LATITUDE 42-10.2 N				LATITUDE 42-12.7 N			
LONGITUDE 141-19.5 E				LONGITUDE 140-47.4 E				LONGITUDE 140-43.1 E			
DEPTH (m) 309				DEPTH (m) 94				DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	0.725	32.571	26.109	5	2.209	32.849	26.233	5	1.863	32.743	26.174
10	0.728	32.564	26.103	10	2.157	32.865	26.250	10	1.871	32.800	26.219
20	0.731	32.559	26.098	20	2.190	32.884	26.262	20	2.230	32.903	26.274
30	0.760	32.560	26.098	30	2.202	32.889	26.266	30	2.266	32.908	26.275
40	0.781	32.559	26.096	40	2.221	32.894	26.268	40	2.309	32.917	26.280
50	0.993	32.663	26.167	50	2.427	32.953	26.299	50	2.442	32.953	26.298
75	1.763	32.926	26.327	75	3.839	33.451	26.570				
100	2.295	33.041	26.380								
125	3.044	33.188	26.435								
150	4.075	33.407	26.511								
175	4.041	33.453	26.552								
200	3.926	33.463	26.571								
250	3.524	33.470	26.616								
STATION US10119				STATION US10120				STATION US10121			
LATITUDE 42-15.8 N				LATITUDE 42-18.3 N				LATITUDE 42-20.6 N			
LONGITUDE 140-47.1 E				LONGITUDE 140-42.6 E				LONGITUDE 140-47.9 E			
DEPTH (m) 72				DEPTH (m) 64				DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	2.113	32.753	26.163	5	1.862	32.373	25.877	5	1.900	32.760	26.185
10	2.293	32.885	26.255	10	1.783	32.497	25.982	10	1.809	32.790	26.215
20	2.562	32.968	26.300	20	1.791	32.632	26.089	20	1.813	32.744	26.178
30	2.663	32.990	26.310	30	1.923	32.784	26.202	30	1.847	32.759	26.188
40	2.735	33.007	26.317	40	2.184	32.877	26.257	40	1.916	32.800	26.216
50	3.006	33.081	26.353	50	2.722	33.043	26.347	50	2.409	33.015	26.350
STATION US10122				STATION US10123				STATION US10124			
LATITUDE 42-15.9 N				LATITUDE 42-11.4 N				LATITUDE 42-14.1 N			
LONGITUDE 140-35.7 E				LONGITUDE 140-34.8 E				LONGITUDE 140-30.0 E			
DEPTH (m) 94				DEPTH (m) 84				DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	1.853	32.805	26.224	5	1.898	32.753	26.179	5	1.890	32.736	26.166
10	1.851	32.808	26.227	10	1.819	32.754	26.185	10	1.781	32.738	26.176
20	1.904	32.836	26.245	20	1.856	32.792	26.213	20	1.711	32.746	26.186
30	1.952	32.851	26.254	30	1.869	32.801	26.220	30	1.729	32.758	26.195
				40	1.908	32.828	26.239	40	1.765	32.773	26.204
				50	1.920	32.845	26.251	50	1.850	32.795	26.216
				75	3.771	33.351	26.497	75	3.952	33.417	26.532
STATION US10125				STATION US10126				STATION US10127			
LATITUDE 42-18.5 N				LATITUDE 42-19.0 N				LATITUDE 42-21.3 N			
LONGITUDE 140-24.6 E				LONGITUDE 140-29.9 E				LONGITUDE 140-35.9 E			
DEPTH (m) 63				DEPTH (m) 93				DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	1.988	32.612	26.060	5	2.022	32.708	26.134	5	2.516	32.787	26.159
10	1.800	32.692	26.137	10	1.896	32.719	26.152	10	1.921	32.761	26.184
20	1.749	32.747	26.185	20	1.713	32.731	26.175	20	1.922	32.797	26.213
30	1.776	32.758	26.192	30	1.715	32.737	26.179	30	1.983	32.826	26.232
40	1.817	32.773	26.201	40	1.749	32.744	26.182	40	1.992	32.830	26.234
50	2.591	33.044	26.358	50	2.169	32.893	26.271	50	2.107	32.877	26.263
				75	2.923	33.163	26.426	75	3.888	33.465	26.577

STATION		US10128	
LATITUDE	42-23.5	N	
LONGITUDE	140-32.6	E	
DEPTH (m)	97		
Press.	Temp.	Salinity	Sigma-T
5	2.060	32.790	26.197
10	1.906	32.803	26.219
20	1.929	32.829	26.238
30	1.956	32.855	26.256
40	1.979	32.867	26.265
50	2.164	32.927	26.299
75	3.482	33.316	26.497

STATION		US10131	
LATITUDE	41-58.9	N	
LONGITUDE	141-00.8	E	
DEPTH (m)	96		
Press.	Temp.	Salinity	Sigma-T
5	1.535	32.617	26.096
10	1.334	32.614	26.106
20	1.613	32.729	26.180
30	1.714	32.753	26.192
40	2.492	32.954	26.294
50	3.631	33.232	26.416
75	4.973	33.569	26.544

STATION		US10134	
LATITUDE	41-57.4	N	
LONGITUDE	140-58.3	E	
DEPTH (m)	80		
Press.	Temp.	Salinity	Sigma-T
5	1.662	32.647	26.111
10	1.663	32.656	26.118
20	1.843	32.696	26.137
30	1.796	32.729	26.167
40	2.176	32.860	26.244
50	3.798	33.313	26.464
75	3.588	33.515	26.646

STATION		US10137	
LATITUDE	41-38.5	N	
LONGITUDE	140-49.3	E	
DEPTH (m)	340		
Press.	Temp.	Salinity	Sigma-T
5	8.266	34.069	26.503
10	8.271	34.066	26.500
20	8.270	34.065	26.499
30	8.277	34.064	26.497
40	8.288	34.063	26.495
50	8.283	34.063	26.495
75	8.290	34.063	26.495
100	8.043	34.070	26.537
125	8.057	34.073	26.537
150	7.990	34.076	26.550
175	8.050	34.075	26.540
200	7.964	34.077	26.554
250	8.037	34.075	26.542
300	7.954	34.077	26.556

STATION		US10140	
LATITUDE	41-56.6	N	
LONGITUDE	140-00.5	E	
DEPTH (m)	771		
Press.	Temp.	Salinity	Sigma-T
5	7.469	33.860	26.456
10	7.372	33.901	26.502
20	7.008	33.988	26.621
30	6.361	34.031	26.741
40	5.973	34.050	26.806
50	5.858	34.058	26.826
75	5.301	34.071	26.904
100	4.522	34.072	26.993
125	3.886	34.063	27.052
150	3.367	34.072	27.111
175	2.943	34.072	27.149
200	2.583	34.072	27.181

STATION		US10129	
LATITUDE	42-25.4	N	
LONGITUDE	140-36.4	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	2.076	32.651	26.084
10	1.591	32.643	26.112
20	1.900	32.805	26.221
30	1.932	32.822	26.232
40	1.936	32.829	26.237
50	1.973	32.858	26.258
75	4.269	33.512	26.575

STATION		US10132	
LATITUDE	41-58.2	N	
LONGITUDE	140-59.8	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	1.501	32.615	26.096
10	1.373	32.615	26.104
20	1.486	32.684	26.152
30	1.906	32.803	26.219
40	2.307	32.902	26.268
50	3.743	33.282	26.445
75	4.639	33.571	26.583

STATION		US10135	
LATITUDE	41-35.4	N	
LONGITUDE	140-53.9	E	
DEPTH (m)	59		
Press.	Temp.	Salinity	Sigma-T
5	8.259	34.069	26.504
10	8.269	34.069	26.502
20	8.279	34.068	26.500
30	8.272	34.069	26.502
40	8.270	34.068	26.502
50	8.265	34.068	26.503

STATION		US10138	
LATITUDE	41-40.8	N	
LONGITUDE	140-47.0	E	
DEPTH (m)	223		
Press.	Temp.	Salinity	Sigma-T
5	8.232	34.071	26.510
10	8.202	34.066	26.511
20	8.146	34.065	26.518
30	8.109	34.065	26.524
40	8.084	34.065	26.527
50	8.091	34.066	26.527
75	7.810	34.064	26.567
100	7.678	34.064	26.586
125	7.698	34.065	26.584
150	7.660	34.063	26.588
175	7.667	34.063	26.587
200	7.606	34.062	26.595

STATION		US10141	
LATITUDE	41-56.8	N	
LONGITUDE	139-48.6	E	
DEPTH (m)	1294		
Press.	Temp.	Salinity	Sigma-T
5	7.861	34.081	26.573
10	7.843	34.080	26.575
20	7.844	34.081	26.575
30	7.702	34.080	26.595
40	7.609	34.084	26.612
50	7.546	34.087	26.623
75	7.333	34.088	26.654
100	6.986	34.090	26.704
125	6.782	34.089	26.731
150	5.075	34.061	26.923
175	3.050	34.072	27.139
200	2.583	34.076	27.184

STATION		US10130	
LATITUDE	42-23.1	N	
LONGITUDE	140-41.6	E	
DEPTH (m)	68		
Press.	Temp.	Salinity	Sigma-T
5	2.112	32.703	26.123
10	2.020	32.707	26.133
20	1.847	32.706	26.145
30	1.818	32.725	26.162
40	1.877	32.803	26.221
50	2.027	32.874	26.267

STATION		US10133	
LATITUDE	41-57.8	N	
LONGITUDE	140-58.9	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	1.581	32.614	26.090
10	1.514	32.626	26.104
20	1.590	32.686	26.147
30	1.793	32.777	26.206
40	2.154	32.863	26.248
50	3.977	33.316	26.449
75	4.136	33.545	26.618

STATION		US10136	
LATITUDE	41-37.1	N	
LONGITUDE	140-51.2	E	
DEPTH (m)	100		
Press.	Temp.	Salinity	Sigma-T
5	8.592	34.010	26.407
10	8.580	34.020	26.416
20	8.489	34.042	26.448
30	8.473	34.054	26.459
40	8.159	34.070	26.520
50	8.071	34.075	26.537
75	8.004	34.080	26.550

STATION		US10139	
LATITUDE	41-42.8	N	
LONGITUDE	140-44.8	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	8.313	34.025	26.461
10	8.280	34.050	26.486
20	8.139	34.040	26.500
30	8.077	34.045	26.512
40	8.070	34.049	26.516
50	8.039	34.051	26.523
75	7.532	34.042	26.590

STATION		US10142	
LATITUDE	41-56.9	N	
LONGITUDE	139-36.1	E	
DEPTH (m)	592		
Press.	Temp.	Salinity	Sigma-T
5	8.039	34.075	26.542
10	7.877	34.071	26.562
20	7.865	34.074	26.566
30	7.865	34.075	26.567
40	7.860	34.076	26.568
50	7.819	34.076	26.575
75	7.648	34.075	26.599
100	7.448	34.070	26.624
125	6.878	34.068	26.702
150	5.513	34.068	26.876
175	4.413	34.076	27.008
200	3.347	34.074	27.114

STATION		US10143	
LATITUDE	41-57.0	N	
LONGITUDE	139-24.8	E	
DEPTH (m)	1194		
Press.	Temp.	Salinity	Sigma-T
5	8.113	34.068	26.525
10	8.066	34.069	26.533
20	8.040	34.071	26.538
30	8.009	34.070	26.542
40	7.972	34.070	26.548
50	7.950	34.071	26.552
75	7.786	34.073	26.577
100	7.594	34.074	26.606
125	7.310	34.074	26.646
150	6.647	34.076	26.739
175	5.998	34.084	26.829
200	3.848	34.076	27.066

STATION		US10144	
LATITUDE	41-57.1	N	
LONGITUDE	139-12.7	E	
DEPTH (m)	2794		
Press.	Temp.	Salinity	Sigma-T
5	8.393	34.063	26.479
10	8.329	34.063	26.488
20	8.180	34.062	26.511
30	8.125	34.063	26.520
40	8.107	34.065	26.523
50	8.101	34.065	26.525
75	7.935	34.071	26.554
100	7.915	34.074	26.559
125	7.907	34.075	26.561
150	7.781	34.069	26.575
175	6.889	34.075	26.705
200	5.593	34.075	26.872

STATION		US10145	
LATITUDE	41-43.4	N	
LONGITUDE	139-12.5	E	
DEPTH (m)	607		
Press.	Temp.	Salinity	Sigma-T
5	7.691	34.052	26.575
10	7.651	34.060	26.587
20	7.637	34.064	26.592
30	7.636	34.065	26.593
40	7.636	34.066	26.594
50	7.421	34.082	26.636
75	6.472	34.060	26.749
100	5.815	34.080	26.849
125	5.127	34.080	26.931
150	4.102	34.077	27.041
175	3.453	34.073	27.103
200	2.509	34.068	27.184

STATION		US10146	
LATITUDE	41-42.6	N	
LONGITUDE	139-23.3	E	
DEPTH (m)	785		
Press.	Temp.	Salinity	Sigma-T
5	7.650	34.065	26.591
10	7.396	34.055	26.619
20	7.308	34.059	26.635
30	7.293	34.061	26.638
40	7.283	34.060	26.639
50	6.708	34.068	26.724
75	6.453	34.075	26.763
100	5.252	34.071	26.909
125	4.274	34.074	27.021
150	3.545	34.074	27.095
175	3.202	34.075	27.128
200	2.670	34.069	27.171

STATION		US10147	
LATITUDE	41-42.3	N	
LONGITUDE	139-35.3	E	
DEPTH (m)	742		
Press.	Temp.	Salinity	Sigma-T
5	7.625	34.035	26.571
10	7.578	34.044	26.584
20	7.564	34.049	26.591
30	7.581	34.060	26.597
40	7.565	34.060	26.599
50	7.572	34.063	26.600
75	7.332	34.065	26.636
100	6.704	34.081	26.735
125	5.746	34.073	26.852
150	4.689	34.073	26.976
175	4.217	34.077	27.029
200	3.102	34.069	27.132

STATION		US10148	
LATITUDE	41-42.0	N	
LONGITUDE	139-47.0	E	
DEPTH (m)	1431		
Press.	Temp.	Salinity	Sigma-T
5	7.333	34.018	26.599
10	7.199	34.032	26.628
20	7.065	34.047	26.659
30	6.970	34.054	26.678
40	6.456	34.058	26.750
50	5.825	34.054	26.827
75	4.989	34.069	26.939
100	4.072	34.073	27.041
125	3.375	34.071	27.109
150	3.083	34.074	27.138
175	2.496	34.064	27.182
200	1.696	34.070	27.249

STATION		US10149	
LATITUDE	41-41.7	N	
LONGITUDE	139-57.7	E	
DEPTH (m)	123		
Press.	Temp.	Salinity	Sigma-T
5	7.491	33.894	26.479
10	7.307	33.962	26.559
20	7.140	34.012	26.621
30	7.029	34.022	26.644
40	6.875	34.050	26.687
50	6.444	34.066	26.757
75	5.121	34.067	26.922
100	2.204	34.056	27.199

STATION		US10150	
LATITUDE	41-15.7	N	
LONGITUDE	139-48.3	E	
DEPTH (m)	1190		
Press.	Temp.	Salinity	Sigma-T
5	7.394	34.076	26.636
10	7.359	34.077	26.641
20	6.996	34.072	26.688
30	6.745	34.075	26.725
40	5.872	34.067	26.831
50	5.415	34.082	26.899
75	5.096	34.084	26.938
100	4.205	34.078	27.032
125	3.520	34.070	27.094
150	2.966	34.070	27.146
175	2.171	34.067	27.211
200	1.875	34.070	27.236

STATION		US10151	
LATITUDE	41-34.9	N	
LONGITUDE	140-53.2	E	
DEPTH (m)	35		
Press.	Temp.	Salinity	Sigma-T
5	8.810	33.913	26.296
10	8.723	33.927	26.322
20	8.454	33.960	26.388
30	8.458	33.963	26.390

STATION		US10152	
LATITUDE	41-36.9	N	
LONGITUDE	140-51.1	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	8.780	33.912	26.301
10	8.658	33.956	26.354
20	8.445	33.972	26.400
30	8.154	33.984	26.453
40	8.148	33.986	26.456
50	8.144	33.986	26.456
75	8.141	33.986	26.457

STATION		US10153	
LATITUDE	41-38.7	N	
LONGITUDE	140-49.2	E	
DEPTH (m)	353		
Press.	Temp.	Salinity	Sigma-T
5	8.750	33.950	26.335
10	8.736	33.950	26.337
20	8.592	33.947	26.357
30	8.393	33.984	26.417
40	8.385	34.001	26.431
50	8.389	34.021	26.446
75	8.128	34.018	26.483
100	7.867	34.030	26.532
125	7.626	34.048	26.581
150	7.479	34.058	26.610
175	7.404	34.063	26.625
200	7.413	34.063	26.623
250	6.949	34.070	26.693
300	6.746	34.075	26.725

STATION		US10154	
LATITUDE	41-40.7	N	
LONGITUDE	140-47.2	E	
DEPTH (m)	230		
Press.	Temp.	Salinity	Sigma-T
5	8.744	34.009	26.383
10	8.733	34.010	26.385
20	8.561	34.016	26.416
30	8.543	34.021	26.423
40	8.417	34.030	26.450
50	8.299	34.032	26.469
75	8.183	34.025	26.481
100	8.063	34.026	26.499
125	7.605	34.038	26.576
150	7.542	34.047	26.592
175	7.464	34.066	26.618
200	6.961	34.070	26.692

STATION		US10155	
LATITUDE	41-42.4	N	
LONGITUDE	140-45.4	E	
DEPTH (m)	91		
Press.	Temp.	Salinity	Sigma-T
5	8.315	34.012	26.451
10	8.310	34.013	26.452
20	8.198	34.012	26.468
30	8.100	34.015	26.486
40	7.940	34.023	26.516
50	7.806	34.029	26.540
75	7.253	34.056	26.640