



HOKKAIDO UNIVERSITY

Title	9. The "Ushio Maru" Cruise 239, 240 and 241 in October - November 2011
Citation	海洋調査漁業試験要報, 55, 207-213
Issue Date	2013-03-29
Doc URL	https://hdl.handle.net/2115/77426
Type	dataset
File Information	Data.Rec.Oceanogr.Obs.Expl.Fish.55.207.pdf



THE " USHIO MARU "

CRUISE 239

CRUISE 240

CRUISE 241

IN OCTOBER - NOVEMBER 2011

1. Cruise Itinerary

Cruise 239

Departure from Hakodate	Oct. 24, 2011
Arrival at and departure from Usujiri	24
Hydrographic research (US11683 - US11688)	24
Retrieval mooring ADCP system	24
Arrival at Muroran (anchorage)	24
Departure from Muroran	25
Set mooring ADCP system	25
Arrival at and departure from Usujiri	25
Return to Hakodate	26
Total coverage 201.6 miles	

Cruise 240

Departure from Hakodate	Oct. 27, 2011
Sampling by vertical long-line	27
Start hydrographic research (US11689)	27
Start sampling by tuna long-line	28
Finish hydrographic research (US11700) and tuna long-line sampling	29
Return to Hakodate	30
Total coverage 315.9 miles	

Cruise 241

Departure from Hakodate	Nov. 7, 2011
Start hydrographic research (US11701)	7
Arrival at Aomori	7
Departure from Aomori	8
Finish hydrographic research (US11721)	8
Return to Hakodate	9
Total coverage 185.4 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 SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

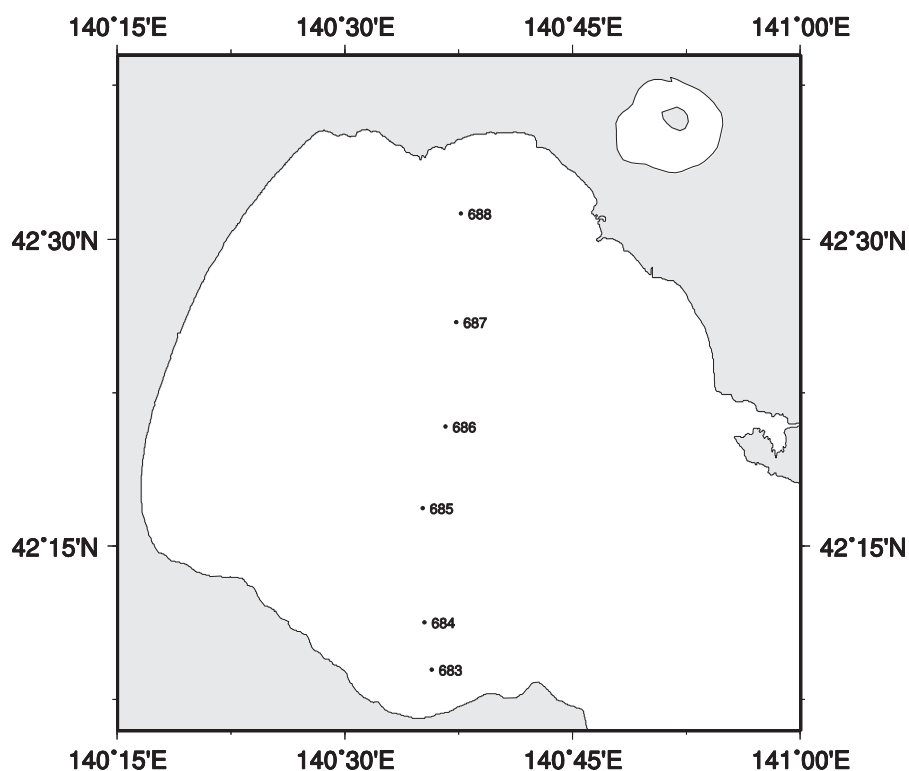


Figure 1. Oceanographic stations (Cruise 239)

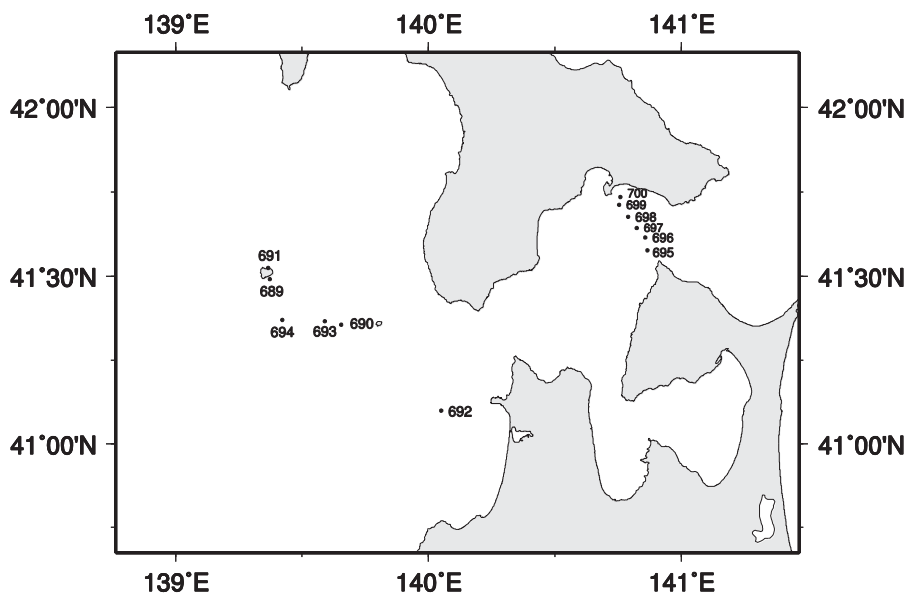


Figure 2. Oceanographic stations (Cruise 240)

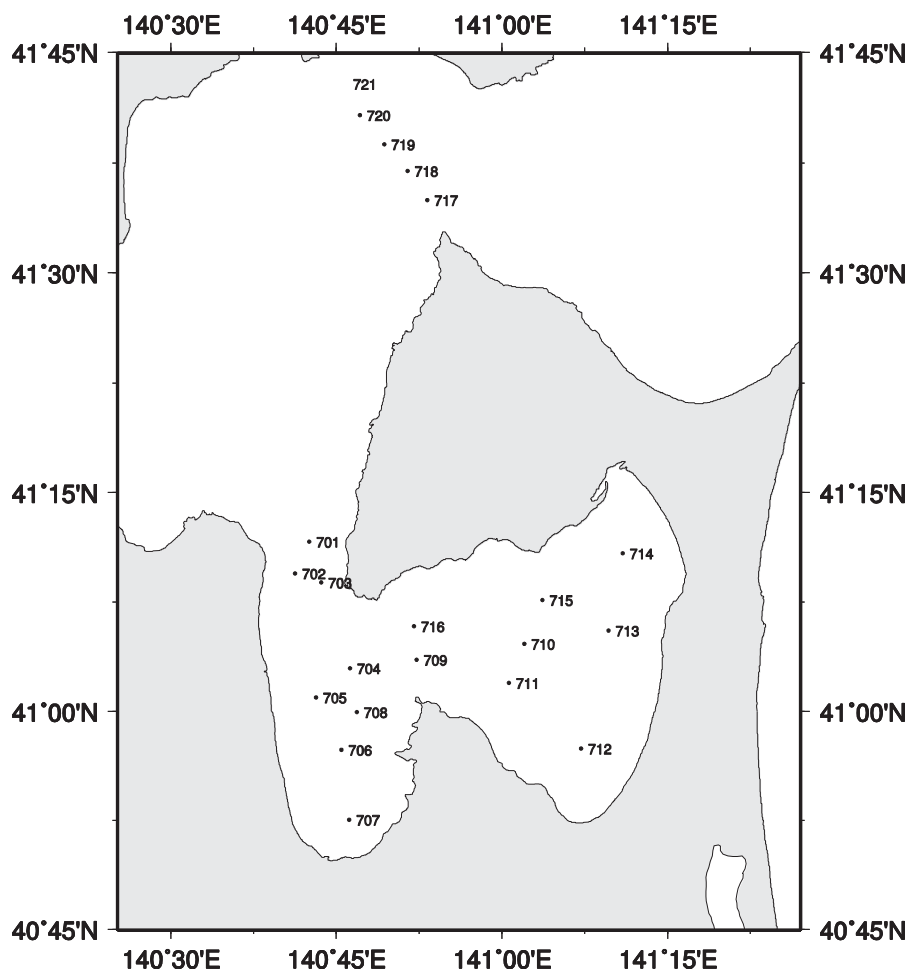


Figure 3. Oceanographic stations (Cruise 241)

Table 1: List of oceanographic stations

Cruise 239

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11683	42-09.0	140-35.7	10/24	1507-1511	65	East-2	East-1	East-4	15.3	14.8	o	1015.1
US11684	42-11.3	140-35.2	10/24	1530-1535	79	East-1	East-1	East-3	14.8	14.9	o	1015.1
US11685	42-16.9	140-35.1	10/24	1627-1634	90	ESE-2	East-1	ESE-4	15.1	15.4	o	1015.1
US11686	42-20.9	140-36.6	10/24	1728-1732	85	SE -3	East-1	SE -5	15.1	15.4	o	1014.6
US11687	42-26.0	140-37.3	10/24	1808-1814	81	ESE-3	East-1	ESE-5	14.6	15.3	o	1014.6
US11688	42-31.3	140-37.6	10/24	1910-1914	59	ESE-3	SE-1	ESE-6	13.9	15.1	o	1014.1

Cruise 240

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11689	41-29.6	139-22.3	10/27	1605-1613	250	West-1	WSW-1	West-2	11.2	17.4	bc	1030
US11690	41-21.5	139-39.2	10/28	0533-0540	250	ESE-1	WNW-1	ESE-2	13.1	18.7	bc	1029.8
US11691	41-31.6	139-21.8	10/28	1322-1329	210	SW -1	West-1	SW -2	16.1	17.2	bc	1026.7
US11692	41-06.1	140-02.9	10/29	0033-0037	94	East-1	WSW-1	East-3	14.5	18.8	o	1025.6
US11693	41-22.1	139-35.3	10/29	0338-0347	310	NW -1	WSW-1	NW -3	14	18.8	bc	1025.1
US11694	41-22.3	139-25.2	10/29	0533-0540	2431	NNW-1	SW -1	NNW-2	13.9	19	bc	1025.6
US11695	41-34.7	140-51.8	10/29	1426-1429	56	Calm	NE -1	Calm	16.8	17.4	bc	1024.7
US11696	41-37.0	140-51.3	10/29	1444-1448	94	Calm	NE -1	Calm	16.1	17.3	bc	1024.7
US11697	41-38.7	140-49.3	10/29	1503-1514	344	Calm	NE -1	Calm	15.8	16.5	bc	1024.7
US11698	41-40.7	140-47.2	10/29	1531-1540	226	Calm	SSW-1	Calm	15.8	16	bc	1024.7
US11699	41-42.8	140-45.1	10/29	1559-1603	84	Calm	SSW-1	Calm	16	17.6	bc	1024.7
US11700	41-44.2	140-45.4	10/29	1614-1618	63	SSE-1	SSW-1	SSE-2	15.5	17	bc	1024.7

Cruise 241

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11701	41-11.7	140-42.5	11/7	1208-1217	72	South-1	NW -1	South-2	14	16.9	c	1013.7
US11702	41-09.5	140-41.2	11/7	1246-1252	53	South-1	NW -1	South-3	14.5	17.4	bc	1013.2
US11703	41-08.9	140-43.6	11/7	1311-1316	59	South-1	ESE-1	South-2	14.3	16.8	bc	1013.2
US11704	41-03.0	140-46.2	11/7	1359-1405	52	West-2	ENE-1	West-4	15.1	16.8	bc	1013.1
US11705	41-01.0	140-43.1	11/7	1427-1435	55	West-2	West-1	West-5	14.2	16.5	bc	1013
US11706	40-57.4	140-45.4	11/7	1502-1506	50	West-2	West-1	West-5	14.1	16.7	bc	1013.1
US11707	40-52.6	140-46.1	11/7	1926-1635	31	West-3	NW -1	West-5	12.9	16.5	bc	1013.4
US11708	41-00.0	140-46.8	11/8	0720-0728	51	WNW-2	NNW-1	WNW-4	10.6	16.5	bc	1016.5
US11709	41-03.6	140-52.2	11/8	0803-0808	49	West-2	NW -1	West-4	11.9	16.4	bc	1016.5
US11710	41-04.7	141-02.0	11/8	0856-0901	47	West-2	WNW-1	West-4	13.2	16.5	bc	1016.5
US11711	41-02.0	141-00.6	11/8	1007-1013	48	West-3	West-1	West-5	11.9	16.4	c	1016.1
US11712	40-57.5	141-07.1	11/8	1052-1057	37	West-3	West-1	West-5	12.6	16.4	bc	1015.9
US11713	41-05.6	141-09.6	11/8	1150-1154	33	NW -3	West-1	NW -5	13.1	16.4	bc	1015.1
US11714	41-10.9	141-10.9	11/8	1229-1233	29	NW -3	West-1	NW -5	13.5	16.5	bc	1014.7
US11715	41-07.7	141-03.6	11/8	1315-1320	38	NW -3	West-1	NW -5	12.9	16.4	bc	1014.6
US11716	41-05.9	140-52.0	11/8	1415-1419	51	West-3	West-1	West-5	12.3	16.5	bc	1015
US11717	41-35.0	140-53.2	11/8	1752-1755	35	NW -3	WNW-1	NW -5	11.5	17.8	c	1016.6
US11718	41-37.0	140-51.4	11/8	1817-1821	96	NW -3	WNW-1	NW -5	11.2	17.7	c	1016.8
US11719	41-38.8	140-49.3	11/8	1843-1854	322	NW -2	WNW-1	NW -4	10.8	17.4	c	1017.2
US11720	41-40.8	140-47.1	11/8	1915-1925	225	NW -2	West-1	NW -4	10.3	16.4	c	1017.6
US11721	41-43.3	140-45.0	11/8	1946-1950	78	NW -1	West-1	NW -3	10.2	15.9	c	1017.6

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11683				STATION US11684				STATION US11685			
LATITUDE		42-09.0	N	LATITUDE		42-11.3	N	LATITUDE		42-16.9	N
LONGITUDE		140-35.7	E	LONGITUDE		140-35.2	E	LONGITUDE		140-35.1	E
DEPTH (m)		65		DEPTH (m)		79		DEPTH (m)		90	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	14.829	32.926	24.410	5	15.002	33.580	24.877	5	15.654	33.470	24.648
20	14.681	33.607	24.967	10	14.988	33.583	24.883	10	15.655	33.469	24.648
30	12.354	33.837	25.619	20	14.465	33.633	25.033	20	15.659	33.469	24.647
40	11.349	33.754	25.742	30	12.907	33.741	25.436	30	15.657	33.470	24.648
50	10.092	33.714	25.933	40	11.588	33.961	25.859	40	14.225	33.658	25.103
				50	10.167	33.816	25.999	50	12.827	33.833	25.523
				75	7.056	33.571	26.285	75	8.431	33.785	26.254

STATION US11686				STATION US11687				STATION US11688			
LATITUDE		42-20.9	N	LATITUDE		42-26.0	N	LATITUDE		42-31.3	N
LONGITUDE		140-36.6	E	LONGITUDE		140-37.3	E	LONGITUDE		140-37.6	E
DEPTH (m)		85		DEPTH (m)		81		DEPTH (m)		59	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	15.618	33.449	24.641	5	15.445	33.419	24.656	5	15.048	33.469	24.781
10	15.620	33.450	24.641	10	15.462	33.436	24.665	10	15.041	33.470	24.783
20	15.620	33.449	24.640	20	15.468	33.435	24.663	20	14.774	33.589	24.933
30	15.619	33.450	24.641	30	15.457	33.459	24.684	30	13.996	33.817	25.274
40	14.832	33.596	24.926	40	13.688	33.796	25.322	40	12.011	33.833	25.681
50	12.721	33.943	25.629	50	12.553	33.861	25.598	50	10.396	33.763	25.919
75	8.696	33.721	26.164	75	9.089	33.828	26.186				

STATION US11689			
LATITUDE 41-29.6 N			
LONGITUDE 139-22.3 E			
DEPTH (m) 250			
Press.	Temp.	Salinity	Sigma-T
5	17.659	33.634	24.309
10	17.664	33.630	24.304
20	17.607	33.626	24.315
30	17.350	33.636	24.385
40	16.911	33.813	24.625
50	16.535	33.990	24.848
75	13.254	34.327	25.820
100	10.201	34.234	26.319
125	7.119	34.105	26.697
150	5.583	34.063	26.864
175	4.496	34.023	26.957
200	3.670	34.032	27.049

STATION US11690			
LATITUDE 41-21.5 N			
LONGITUDE 139-39.2 E			
DEPTH (m) 250			
Press.	Temp.	Salinity	Sigma-T
5	18.866	33.321	23.772
10	18.865	33.322	23.773
20	18.861	33.321	23.773
30	18.865	33.321	23.773
40	18.449	34.163	24.520
50	16.544	34.324	25.103
75	13.550	34.386	25.806
100	11.673	34.302	26.108
125	10.699	34.263	26.255
150	10.024	34.240	26.354
175	8.452	34.158	26.545
200	6.110	34.071	26.805

STATION US11691			
LATITUDE 41-31.6 N			
LONGITUDE 139-21.8 E			
DEPTH (m) 210			
Press.	Temp.	Salinity	Sigma-T
5	17.299	33.537	24.321
10	17.301	33.540	24.323
20	17.299	33.550	24.331
30	16.774	33.650	24.531
40	16.247	33.908	24.851
50	15.563	34.312	25.317
75	12.131	34.308	26.027
100	10.090	34.235	26.339
125	6.762	34.090	26.735
150	6.039	34.071	26.813

STATION US11692			
LATITUDE 41-06.1 N			
LONGITUDE 140-02.9 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	18.877	33.321	23.769
10	18.889	33.320	23.766
20	18.903	33.323	23.765
30	18.906	33.325	23.765
40	18.914	33.332	23.769
50	18.942	33.359	23.782
75	15.248	34.445	25.490

STATION US11693			
LATITUDE 41-22.1 N			
LONGITUDE 139-35.3 E			
DEPTH (m) 310			
Press.	Temp.	Salinity	Sigma-T
5	19.040	33.187	23.626
10	19.047	33.186	23.623
20	19.117	33.229	23.638
30	18.876	33.314	23.764
40	18.867	33.882	24.201
50	16.942	34.301	24.992
75	14.828	34.421	25.563
100	12.811	34.368	25.941
125	10.729	34.262	26.249
150	10.088	34.245	26.347
175	8.596	34.158	26.522
200	6.911	34.096	26.718

STATION US11694			
LATITUDE 41-22.3 N			
LONGITUDE 139-25.2 E			
DEPTH (m) 2431			
Press.	Temp.	Salinity	Sigma-T
5	19.068	33.249	23.666
10	19.070	33.248	23.665
20	19.084	33.249	23.662
30	19.065	33.354	23.747
40	18.834	33.359	23.809
50	18.786	33.870	24.212
75	15.054	34.424	25.516
100	13.374	34.399	25.852
125	11.251	34.283	26.172
150	10.316	34.257	26.317
175	8.875	34.172	26.489
200	6.949	34.090	26.709

STATION US11695			
LATITUDE 41-34.7 N			
LONGITUDE 140-51.8 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	17.535	33.640	24.344
10	17.467	33.636	24.356
20	17.350	33.639	24.387
30	17.217	33.654	24.430
40	17.014	33.672	24.492
50	16.744	33.740	24.607

STATION US11696			
LATITUDE 41-37.0 N			
LONGITUDE 140-51.3 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	17.016	33.697	24.510
10	16.892	33.697	24.539
20	16.724	33.705	24.585
30	16.490	33.731	24.659
40	16.162	33.780	24.773
50	15.256	33.963	25.116
75	13.782	34.168	25.590

STATION US11697			
LATITUDE 41-38.7 N			
LONGITUDE 140-49.3 E			
DEPTH (m) 344			
Press.	Temp.	Salinity	Sigma-T
5	15.943	33.813	24.848
10	15.851	33.825	24.878
20	15.654	33.844	24.937
30	15.513	33.927	25.032
40	14.668	34.053	25.314
50	14.278	34.148	25.470
75	14.068	34.175	25.535
100	13.088	34.224	25.774
125	13.069	34.230	25.783
150	13.083	34.229	25.779
175	12.560	34.242	25.893
200	12.238	34.250	25.961
250	12.216	34.251	25.966
300	12.045	34.252	26.000

STATION US11698			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.2 E			
DEPTH (m) 226			
Press.	Temp.	Salinity	Sigma-T
5	15.800	33.861	24.917
10	15.455	33.899	25.023
20	14.994	33.965	25.175
30	14.786	34.005	25.251
40	14.657	34.027	25.296
50	14.541	34.065	25.350
75	14.552	34.120	25.390
100	14.068	34.184	25.542
125	13.591	34.206	25.658
150	12.337	34.235	25.930
175	11.983	34.240	26.002
200	11.759	34.236	26.041

STATION US11699			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.1 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	17.174	33.605	24.403
10	16.582	33.641	24.569
20	15.619	33.793	24.905
30	15.278	33.833	25.011
40	14.870	33.908	25.158
50	14.699	33.989	25.258
75	13.808	34.054	25.496

STATION US11700			
LATITUDE 41-44.2 N			
LONGITUDE 140-45.4 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	16.938	33.627	24.475
10	16.182	33.726	24.726
20	15.272	33.834	25.014
30	14.687	33.949	25.229
40	14.513	34.003	25.309
50	14.143	34.047	25.421

STATION US11701			
LATITUDE 41-11.7 N			
LONGITUDE 140-42.5 E			
DEPTH (m) 72			
Press.	Temp.	Salinity	Sigma-T
5	17.610	33.534	24.244
10	17.611	33.534	24.244
20	17.599	33.537	24.249
30	17.187	33.623	24.414
40	17.068	33.617	24.437
50	17.057	33.618	24.441

STATION US11702			
LATITUDE 41-09.5 N			
LONGITUDE 140-41.2 E			
DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T
5	17.007	33.389	24.276
10	17.005	33.387	24.276
20	17.039	33.405	24.281
30	17.144	33.446	24.288
40	17.270	33.606	24.381

STATION US11703			
LATITUDE 41-08.9 N			
LONGITUDE 140-43.6 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	17.114	33.404	24.263
10	17.128	33.417	24.270
20	17.232	33.476	24.290
30	17.214	33.508	24.319
40	17.220	33.591	24.381
50	17.177	33.608	24.404

STATION		US11704	
LATITUDE		41-03.0	N
LONGITUDE		140-46.2	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	16.916	33.318	24.243
10	16.855	33.329	24.266
20	16.858	33.346	24.278
30	16.865	33.356	24.285
40	17.241	33.690	24.452

STATION		US11707	
LATITUDE		40-52.6	N
LONGITUDE		140-46.1	E
DEPTH (m)		31	
Press.	Temp.	Salinity	Sigma-T
5	16.625	33.087	24.134
10	16.661	33.121	24.151
20	16.813	33.243	24.210

STATION		US11710	
LATITUDE		41-04.7	N
LONGITUDE		141-02.0	E
DEPTH (m)		47	
Press.	Temp.	Salinity	Sigma-T
5	16.742	33.213	24.203
10	16.745	33.211	24.201
20	16.747	33.211	24.200
30	16.749	33.210	24.200
40	16.755	33.215	24.202

STATION		US11713	
LATITUDE		41-05.6	N
LONGITUDE		141-09.6	E
DEPTH (m)		33	
Press.	Temp.	Salinity	Sigma-T
5	16.608	33.138	24.177
10	16.614	33.137	24.175
20	16.623	33.140	24.175
30	16.625	33.140	24.174

US11716		US11716	
41-05.9		41-05.9	
140-52.0		140-52.0	
51		51	
Press.	Temp.	Salinity	Sigma-T
5	16.753	33.203	24.193
10	16.778	33.244	24.219
20	16.805	33.289	24.247
30	16.809	33.288	24.245
40	16.812	33.289	24.245

US11716		US11719	
41-05.9		41-38.8	
140-52.0		140-49.3	
51		322	
Press.	Temp.	Salinity	Sigma-T
5	16.705	33.639	24.539
10	16.178	33.695	24.703
20	15.907	33.729	24.791
30	15.573	33.778	24.904
40	15.207	33.829	25.024
50	14.943	33.954	25.178
75	11.490	34.223	26.081
100	11.189	34.245	26.153
125	11.054	34.243	26.176
150	10.992	34.245	26.189
175	11.015	34.248	26.187
200	11.009	34.247	26.188
250	11.014	34.245	26.185
300	10.757	34.238	26.226

STATION		US11705	
LATITUDE		41-01.0	N
LONGITUDE		140-43.1	E
DEPTH (m)		55	
Press.	Temp.	Salinity	Sigma-T
5	16.941	33.278	24.207
10	16.947	33.336	24.250
20	16.910	33.335	24.258
30	16.884	33.339	24.267
40	17.221	33.541	24.343
50	16.395	33.769	24.710

STATION		US11708	
LATITUDE		41-00.0	N
LONGITUDE		140-46.8	E
DEPTH (m)		51	
Press.	Temp.	Salinity	Sigma-T
5	16.755	33.357	24.311
10	16.765	33.353	24.305
20	16.770	33.351	24.302
30	16.782	33.353	24.301
40	16.824	33.388	24.319

STATION		US11711	
LATITUDE		41-02.0	N
LONGITUDE		141-00.6	E
DEPTH (m)		48	
Press.	Temp.	Salinity	Sigma-T
5	16.692	33.173	24.184
10	16.689	33.170	24.183
20	16.683	33.170	24.184
30	16.698	33.169	24.180
40	16.721	33.178	24.182

STATION		US11714	
LATITUDE		41-10.9	N
LONGITUDE		141-10.9	E
DEPTH (m)		29	
Press.	Temp.	Salinity	Sigma-T
5	16.633	33.098	24.140
10	16.613	33.093	24.141
20	16.553	33.080	24.145

STATION		US11717	
LATITUDE		41-35.0	N
LONGITUDE		140-53.2	E
DEPTH (m)		35	
Press.	Temp.	Salinity	Sigma-T
5	17.816	33.340	24.046
10	17.789	33.487	24.165
20	17.581	33.563	24.273
30	17.465	33.601	24.330

STATION		US11720	
LATITUDE		41-40.8	N
LONGITUDE		140-47.1	E
DEPTH (m)		225	
Press.	Temp.	Salinity	Sigma-T
5	16.691	33.704	24.592
10	16.547	33.733	24.647
20	15.645	33.734	24.876
30	15.337	33.773	24.952
40	14.976	33.815	25.064
50	14.072	33.963	25.371
75	12.515	34.095	25.787
100	11.524	34.168	26.032
125	10.957	34.208	26.167
150	10.880	34.227	26.195
175	10.625	34.222	26.237
200	10.424	34.216	26.267

STATION		US11706	
LATITUDE		40-57.4	N
LONGITUDE		140-45.4	E
DEPTH (m)		50	
Press.	Temp.	Salinity	Sigma-T
5	16.875	33.297	24.237
10	16.878	33.296	24.235
20	16.866	33.300	24.241
30	16.987	33.369	24.266
40	17.253	33.641	24.412

STATION		US11709	
LATITUDE		41-03.6	N
LONGITUDE		140-52.2	E
DEPTH (m)		49	
Press.	Temp.	Salinity	Sigma-T
5	16.841	33.289	24.239
10	16.844	33.290	24.239
20	16.846	33.290	24.238
30	16.849	33.292	24.239
40	16.857	33.299	24.243

STATION		US11712	
LATITUDE		40-57.5	N
LONGITUDE		141-07.1	E
DEPTH (m)		37	
Press.	Temp.	Salinity	Sigma-T
5	16.503	33.110	24.179
10	16.510	33.107	24.176
20	16.510	33.104	24.173
30	16.512	33.104	24.173

STATION		US11715	
LATITUDE		41-07.7	N
LONGITUDE		141-03.6	E
DEPTH (m)		38	
Press.	Temp.	Salinity	Sigma-T
5	16.554	33.125	24.180
10	16.565	33.147	24.194
20	16.665	33.215	24.223
30	16.715	33.228	24.221

STATION		US11718	
LATITUDE		41-37.0	N
LONGITUDE		140-51.4	E
DEPTH (m)		96	
Press.	Temp.	Salinity	Sigma-T
5	17.962	33.420	24.071
10	17.960	33.421	24.073
20	17.524	33.516	24.251
30	17.113	33.633	24.439
40	16.931	33.700	24.533
50	16.790	33.756	24.609
75	14.731	34.079	25.320

STATION		US11721	
LATITUDE		41-43.3	N
LONGITUDE		140-45.0	E
DEPTH (m)		78	
Press.	Temp.	Salinity	Sigma-T
5	15.627	33.724	24.850
10	15.620	33.720	24.849
20	14.873	33.803	25.077
30	14.494	33.866	25.207
40	13.624	33.982	25.478
50	12.772	34.081	25.726
75	12.609	34.162	25.821

