



HOKKAIDO UNIVERSITY

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PART I

OSHOROMARU CRUISE FROM JANUARY TO DECEMBER IN 2011

I . Crew's List

Captain :		Shogo Takagi
Crew :	First Officer	Yoshihiko Kamei (- Cruise 226)
	Second Officer	Keiichiro Sakaoka Naoki Hoshi Takuzo Abe (Cruise 227 -)
	Third Officer	Takuzo Abe (-Cruise 226) Maki Ohwada (Cruise 227 -)
	Science Officer	Keiri Imai
	Chief Engineer	Jyunichi Kimura
	First Engineer	Fumio Fujimoto
	Second Engineer	Kazuya Sawanaka (- Cruise229) Jumpei Shimura (Cruise 230 -)
	Third Engineer	Kenichi Shindo
	Chief Radio Officer	Satoshi Ishigaki
	Boatswain	Yoshiharu Matsui (- Cruise 226) Yoshitaka Yoshida (Cruise 227 -)
	Jr. Boatswain	Toshiharu Yosoe
	Quartermaster	Sen Sunakoma (- Cruise 226) Yoshihiro Onodera Yutaka Takeda Tadashi Mishima Daisuke Sasaki Shota Hagiwara Taishi Hama Fumihito Tashiro (Cruise 227 -)
	Sailor	Shuiti Hasegawa
	No.1 Oiler	Kohya Nakamura
	Junior No.1 Oiler	Takuya Takano
	Oiler	Tohru Murakami Akira Sugihara (Cruise 230 -)
	Fireman	Keisuke Shindo (- Cruise 229) Takaaki Arakawa
	Chief Steward	Kazuhiro Ikeda (- Cruise 226) Tsutomu Takahashi (Cruise 227-)
	Jr. Chief Steward	Hajime Morihiro
	Head Steward	Hiroshi Nakamura Tsutomu Takizawa

II . Particulars

Length (o.a.)	72.85m
Length (p.p.)	66.00 m
Breadth (mid)	12.60 m
Depth (mid) Upper DK	5.70 m
Gross Tonnage (Domestic)	1,396.00 tons
International Gross Tonnage	1,792.00 tons
Main engine	2353 kw
Call Sign	JDVA

**THE "OSHO RO MARU" CRUISE 225
TO WEST OF THE TSUGARU STRAIT**

IN FEBRUARY 2011

1. Cruise Itinerary

Cruise 225

Departure from Hakodate	Feb.	21	2011
Start hydrographic research (OS11001)		21	
Start drift gillnet research		22	
Finish drift gillnet research		23	
Finish hydrographic research (OS11027)		24	
Return to Hakodate		25	

Total coverage 565.6 miles

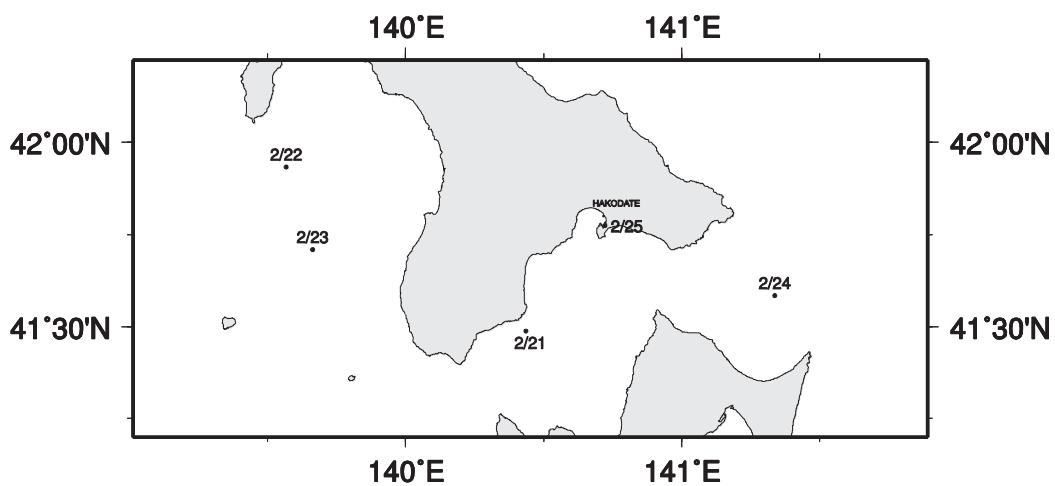


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Associate Professor	Keiichiro Sakaoka
	Second Officer	Instructor	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 24 men		

Cruise 225

Research Staff:	Associate Professor	(Laboratory of Satellite Oceanography)	Toru Hirawake
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	Yoko Mitani
	Associate Professor	(Graduate School of Environmental Science)	Yutaka Watanabe
	Researcher	(National Museum of Nature and Science)	Manami Makara
	Veterinarian	(Toba Aquarium)	Masahiko Kasamatsu
	Researcher	(Japan Agency for Marine-Earth Science and Technology)	Yoshiyuki Tanaka
	Technical assistant	(Japan Agency for Marine-Earth Science and Technology)	Hideki Yamamoto
	Technical assistant	(Marine Work Japan)	Satoshi Ozawa
Graduate Students	10 persons		
Under Graduate Students	6 persons		
	Total 55 persons		

3. Items of Research

Hydrographic observations:	Fig. 2, Table 1, 2
Biological research for fur seal caught by drift gillnet:	Fig. 3, Table 3
Water sampling by CTD/RMS and underwater tug plane:	

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”.

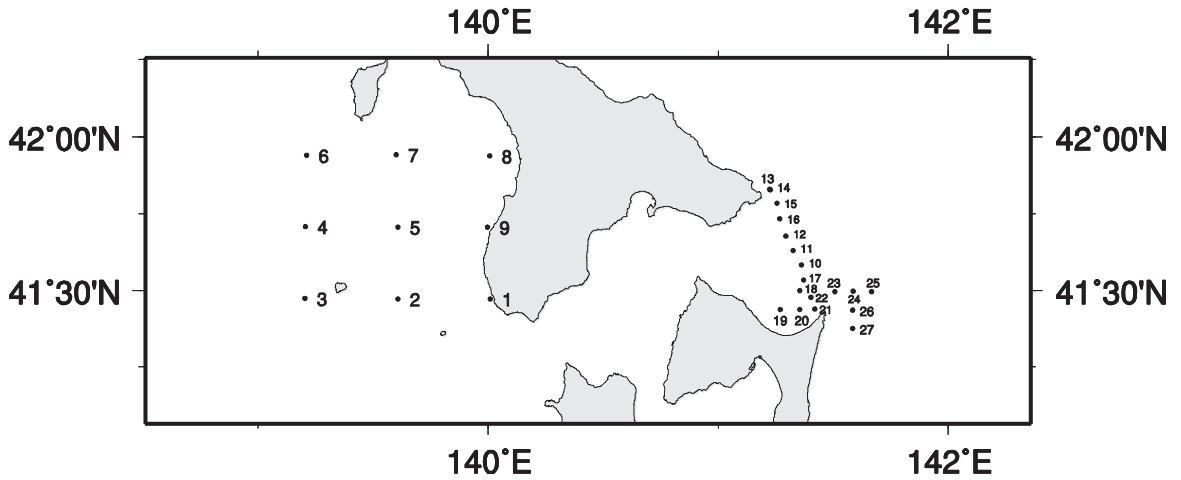


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11001	41-28.5N	144-00.2E	2/21	0534	9	82	3	17	8.6	bc	19Plus-4636
OS11002	41-28.6N	139-36.1E	2/21	0731	9	1257	3	20	20	bc	19Plus-4636
OS11003	41-28.7N	139-12.0E	2/21	1045	9	1135	-	-	8.6	bc	19Plus-4636
OS11004	41-42.7N	139-12.1E	2/21	1216	9	1950	-	-	8.5	bc	19Plus-4636
OS11005	41-42.6N	139-36.2E	2/21	1400	9	800	-	-	7.1	bc	19Plus-4636
OS11006	41-56.7N	139-12.3E	2/21	1619	9	3010	-	-	7.6	bc	19Plus-4636
OS11007	41-56.8N	139-35.7E	2/21	1812	9	515	-	-	7.6	bc	19Plus-4636
OS11008	41-56.5N	140-00.2E	2/21	2130	9	911	-	-	8.3	bc	19Plus-4636
OS11009	41-42.6N	139-59.6E	2/22	0433	9	80	4	16	8.9	bc	19Plus-4636
OS11010	41-35.2N	141-21.4E	2/23	1757	9	327	-	-	8.9	-	9Plus-0769
OS11011	41-38.1N	141-19.3E	2/23	1855	9	215	-	-	8.4	-	9Plus-0769
OS11012	41-40.9N	141-17.4E	2/23	1954	9	226	-	-	8.2	-	9Plus-0769
OS11013	41-49.9N	141-13.3E	2/23	2152	9	187	-	-	2.5	-	9Plus-0769
OS11014	41-49.9N	141-13.1E	2/23	2306	9	185	-	9	1.8	-	9Plus-0769
OS11015	41-47.3N	141-15.0E	2/24	0014	9	208	5	8.2	2.4	bc	9Plus-0769
OS11016	41-44.2N	141-15.7E	2/24	0107	9	222	4	12	2.9	bc	9Plus-0769
OS11017	41-32.3N	141-21.9E	2/24	0323	9	220	3	22	8.8	bc	9Plus-0769
OS11018	41-30.2N	141-20.9E	2/24	0504	9	258	3	23	9.3	bc	9Plus-0769
OS11019	41-26.5N	141-15.8E	2/24	0619	9	230	3	22	9.1	bc	9Plus-0769
OS11020	41-26.5N	141-20.9E	2/24	0718	9	82	3	20	9.2	bc	9Plus-0769
OS11021	41-26.5N	141-24.9E	2/24	0757	9	66	3	19	9.2	c	9Plus-0769
OS11022	41-28.9N	141-23.8E	2/24	0836	9	37	-	-	9.1	c	9Plus-0769
OS11023	41-30.0N	141-30.1E	2/24	0925	9	82	-	-	8.9	-	19Plus-4636
OS11024	41-30.0N	141-34.9E	2/24	1002	9	60	-	-	9.0	-	19Plus-4636
OS11025	41-29.9E	141-39.7E	2/24	1041	9	111	-	-	8.9	-	19Plus-4636
OS11026	41-26.4N	141-34.8E	2/24	1149	9	325	-	-	8.9	-	19Plus-4636
OS11027	41-22.8N	141-34.8E	2/24	1234	9	467	-	-	8.7	-	19Plus-4636

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11001 Latitude 41-28.5 N Longitude 140-00.2 E Depth(m) 82				Station OS11002 Latitude 41-28.6 N Longitude 139-36.1 E Depth(m) 1257				Station OS11003 Latitude 41-28.7 N Longitude 139-12.0 E Depth(m) 1135				Station OS11004 Latitude 41-42.7 N Longitude 139-12.1 E Depth(m) 1950			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	8.164	33.924	26.404	5	9.402	33.880	26.176	5	9.404	33.893	26.186	5	9.062	33.899	26.246
10	8.143	33.925	26.408	10	9.391	33.881	26.179	10	9.400	33.893	26.187	10	9.056	33.897	26.246
20	8.098	33.939	26.426	20	9.369	33.880	26.183	20	9.408	33.893	26.186	20	9.049	33.927	26.269
30	8.052	33.946	26.439	30	9.319	33.878	26.188	30	9.411	33.893	26.185	30	8.827	33.950	26.323
40	7.996	33.949	26.449	40	9.314	33.877	26.189	40	9.410	33.893	26.185	40	8.688	33.954	26.348
50	7.895	33.947	26.462	50	9.312	33.878	26.189	50	9.408	33.893	26.186	50	8.381	33.965	26.403
				75	9.313	33.879	26.190	75	9.255	33.927	26.236	75	7.100	34.008	26.622
				100	9.314	33.893	26.201	100	7.886	34.020	26.517	100	5.451	34.023	26.847
				125	8.638	33.990	26.383	125	6.537	34.019	26.708	125	4.050	34.008	26.992
				150	7.432	34.036	26.598	150	6.073	34.018	26.761	150	2.696	34.014	27.124
				175	5.913	34.004	26.771	175	5.541	34.007	26.824	175	2.403	34.021	27.155

Station OS11005 Latitude 41-42.6 N Longitude 139-36.2 E Depth(m) 800				Station OS11006 Latitude 41-56.7 N Longitude 139-12.3 E Depth(m) 3010				Station OS11007 Latitude 41-56.8 N Longitude 139-35.7 E Depth(m) 515				Station OS11008 Latitude 41-56.5 N Longitude 140-00.2 E Depth(m) 911			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	7.063	33.978	26.605	5	7.557	33.976	26.534	5	7.397	33.946	26.533	5	8.496	33.917	26.349
10	7.038	33.977	26.607	10	7.554	33.978	26.536	10	7.396	33.945	26.533	10	8.503	33.917	26.348
20	6.773	33.971	26.637	20	7.558	33.978	26.535	20	7.091	33.939	26.570	20	8.502	33.917	26.348
30	6.647	33.978	26.661	30	7.403	33.980	26.558	30	6.979	33.948	26.592	30	8.499	33.918	26.349
40	6.409	33.988	26.700	40	6.919	33.982	26.626	40	6.665	33.983	26.661	40	8.439	33.925	26.364
50	5.910	34.014	26.784	50	6.222	33.989	26.724	50	6.164	34.004	26.743	50	8.232	33.966	26.427
75	4.509	34.013	26.946	75	4.685	33.990	26.907	75	5.210	34.017	26.871	75	7.820	33.984	26.501
100	3.453	34.032	27.070	100	3.526	34.025	27.057	100	4.354	34.031	26.978	100	6.685	34.003	26.674
125	2.969	34.043	27.122	125	3.034	34.047	27.121	125	3.839	34.040	27.038	125	5.505	34.022	26.840
150	2.174	34.063	27.206	150	2.472	34.067	27.186	150	3.121	34.057	27.121	150	4.307	34.025	26.978
175	1.778	34.070	27.243	175	1.900	34.061	27.226	175	2.568	34.063	27.174	175	3.532	34.036	27.064
				200	1.587	34.069	27.257	200	2.067	34.068	27.219	200	2.802	34.061	27.153

Station OS11009 Latitude 41-42.6 N Longitude 139-59.6 E Depth(m) 80				Station OS11010 Latitude 41-35.2 N Longitude 141-21.4 E Depth(m) 327				Station OS11011 Latitude 41-38.1 N Longitude 141-19.3 E Depth(m) 215				Station OS11012 Latitude 41-40.9 N Longitude 141-17.4 E Depth(m) 226			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	8.579	33.917	26.331	5	8.812	33.897	26.284	5	8.296	33.890	26.358	5	8.155	33.864	26.359
10	8.470	33.933	26.365	10	8.773	33.897	26.290	10	8.293	33.890	26.358	10	8.157	33.864	26.358
20	8.328	33.939	26.392	20	8.620	33.882	26.303	20	8.304	33.888	26.355	20	8.007	33.841	26.363
30	8.191	33.925	26.401	30	8.546	33.880	26.312	30	8.275	33.884	26.356	30	7.921	33.832	26.368
40	8.189	33.930	26.405	40	8.447	33.872	26.321	40	8.184	33.872	26.361	40	7.871	33.824	26.369
50	8.211	33.946	26.414	50	8.344	33.861	26.328	50	8.154	33.869	26.362	50	7.774	33.812	26.374
75	8.101	33.952	26.436	75	7.971	33.815	26.347	75	7.105	33.742	26.413	75	7.460	33.764	26.381
				100	7.484	33.744	26.362	100	6.017	33.612	26.454	100	7.343	33.747	26.384
				125	6.964	33.691	26.392	125	5.611	33.570	26.470	125	6.505	33.619	26.397
				150	7.057	33.733	26.413	150	4.577	33.466	26.506	150	5.367	33.449	26.403
				175	5.819	33.542	26.423	175	4.451	33.458	26.513	175	4.974	33.394	26.405
				200	5.288	33.480	26.437					200	4.827	33.382	26.412
				250	4.951	33.455	26.456								
				300	4.182	33.463	26.545								

Station OS11013 Latitude 41-49.9 N Longitude 141-13.3 E Depth(m) 187				Station OS11014 Latitude 41-49.9 N Longitude 141-13.1 E Depth(m) 185				Station OS11015 Latitude 41-47.3 N Longitude 141-15.0 E Depth(m) 208				Station OS11016 Latitude 41-44.2 N Longitude 141-15.7 E Depth(m) 222			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	1.675	32.811	26.242	5	1.697	32.811	26.240	5	1.592	32.796	26.235	5	2.332	32.920	26.280
10	1.719	32.817	26.243	10	1.668	32.812	26.243	10	1.582	32.796	26.236	10	2.276	32.922	26.286
20	1.947	32.865	26.265	20	1.804	32.834	26.251	20	1.606	32.802	26.239	20	2.331	32.934	26.292
30	2.404	32.956	26.303	30	2.033	32.883	26.274	30	1.740	32.820	26.244	30	2.459	32.965	26.306
40	2.568	33.009	26.332	40	2.438	32.965	26.308	40	1.902	32.855	26.261	40	2.683	33.013	26.326
50	2.653	33.034	26.345	50	2.639	33.020	26.336	50	2.312	32.943	26.300	50	2.795	33.037	26.336
75	2.800	33.062	26.355	75	2.772	33.049	26.347	75	3.353	33.148	26.375	75	2.966	33.078	26.354
100	3.018	33.126	26.388	100	3.030	33.122	26.384	100	5.954	33.590	26.444	100	3.415	33.157	26.377
125	3.112	33.176	26.419	125	3.106	33.173	26.417	125	5.062	33.455	26.444	125	4.228	33.319	26.426
150	3.143	33.197	26.433	150	3.149	33.190	26.427	150	4.651	33.405	26.449	150	3.121	33.228	26.460
								175	4.868	33.476	26.482	175	3.076	33.291	26.514
												200	2.876	33.306	26.543

Station	OS11017		
Latitude	41-32.3 N		
Longitude	141-21.9 E		
Depth(m)	258		
Press.	Temp.	Sal.	SIG-T
5	8.745	33.913	26.307
10	8.718	33.914	26.312
20	8.577	33.919	26.338
30	8.592	33.918	26.335
40	8.602	33.917	26.332
50	8.601	33.918	26.334
75	8.598	33.915	26.331
100	8.621	33.917	26.329
125	8.604	33.917	26.332
150	8.604	33.918	26.333
175	8.566	33.919	26.340
200	8.429	33.917	26.359

Station	OS11018		
Latitude	41-30.2 N		
Longitude	141-20.9 E		
Depth(m)	230		
Press.	Temp.	Sal.	SIG-T
5	8.907	33.909	26.278
10	8.872	33.908	26.284
20	8.748	33.912	26.306
30	8.741	33.913	26.307
40	8.735	33.914	26.309
50	8.731	33.914	26.310
75	8.726	33.915	26.311
100	8.698	33.914	26.315
125	8.607	33.913	26.328
150	8.582	33.914	26.333
175	8.556	33.917	26.340
200	8.476	33.908	26.345

Station	OS11019		
Latitude	41-26.5 N		
Longitude	141-15.8 E		
Depth(m)	82		
Press.	Temp.	Sal.	SIG-T
5	8.804	33.918	26.301
10	8.833	33.917	26.297
20	8.721	33.915	26.313
30	8.687	33.915	26.318
40	8.657	33.914	26.322
50	8.621	33.913	26.326

Station	OS11020		
Latitude	41-26.5 N		
Longitude	141-20.9 E		
Depth(m)	66		
Press.	Temp.	Sal.	SIG-T
5	8.876	33.916	26.289
10	8.778	33.914	26.303
20	8.751	33.916	26.308
30	8.734	33.916	26.311
40	8.709	33.917	26.316

Station	OS11021		
Latitude	41-26.5 N		
Longitude	141-24.9 E		
Depth(m)	37		
Press.	Temp.	Sal.	SIG-T
5	8.762	33.917	26.308
10	8.743	33.916	26.310
20	8.617	33.914	26.328
30	8.604	33.914	26.329

Station	OS11022		
Latitude	41-28.9 N		
Longitude	141-23.8 E		
Depth(m)	82		
Press.	Temp.	Sal.	SIG-T
5	8.807	33.909	26.295
10	8.771	33.909	26.300
20	8.725	33.913	26.310
30	8.706	33.915	26.315
40	8.698	33.917	26.318
50	8.678	33.918	26.321

Station	OS11023		
Latitude	41-30.0 N		
Longitude	141-30.1 E		
Depth(m)	60		
Press.	Temp.	Sal.	SIG-T
5	8.784	33.910	26.298
10	8.777	33.905	26.295
20	8.740	33.911	26.306
30	8.717	33.912	26.310
40	8.703	33.912	26.312

Station	OS11024		
Latitude	41-30.0 N		
Longitude	141-34.9 E		
Depth(m)	111		
Press.	Temp.	Sal.	SIG-T
5	8.814	33.916	26.298
10	8.815	33.916	26.298
20	8.815	33.916	26.298
30	8.816	33.916	26.298
40	8.817	33.915	26.297
50	8.820	33.915	26.297
75	8.669	33.916	26.321

Station	OS11025		
Latitude	41-29.9 E		
Longitude	141-39.7 E		
Depth(m)	610		
Press.	Temp.	Sal.	SIG-T
5	8.712	33.884	26.290
10	8.699	33.884	26.291
20	8.572	33.833	26.267
30	7.735	33.775	26.348
40	7.693	33.783	26.364
50	7.493	33.759	26.373
75	7.513	33.760	26.370
100	7.326	33.723	26.366
125	6.920	33.681	26.391
150	6.168	33.568	26.400
175	5.729	33.511	26.411
200	5.641	33.496	26.407
250	3.161	33.201	26.432
300	3.623	33.424	26.575
400	2.492	33.510	26.739
500	2.826	33.710	26.871

Station	OS11026		
Latitude	41-26.4 N		
Longitude	141-34.8 E		
Depth(m)	325		
Press.	Temp.	Sal.	SIG-T
5	8.661	33.911	26.319
10	8.660	33.912	26.319
20	8.663	33.911	26.318
30	8.663	33.911	26.318
40	8.664	33.911	26.318
50	8.665	33.911	26.318
75	8.660	33.910	26.318
100	8.642	33.906	26.318
125	8.635	33.908	26.320
150	8.605	33.904	26.322
175	8.333	33.872	26.338
200	7.115	33.688	26.359
250	6.763	33.668	26.402

Station	OS11027		
Latitude	41-22.8 N		
Longitude	141-34.8 E		
Depth(m)	467		
Press.	Temp.	Sal.	SIG-T
5	8.618	33.905	26.321
10	8.618	33.906	26.321
20	8.631	33.908	26.321
30	8.629	33.908	26.321
40	8.633	33.909	26.321
50	8.629	33.908	26.321
75	8.627	33.908	26.322
100	8.623	33.907	26.322
125	8.616	33.902	26.318
150	8.643	33.909	26.320
175	8.645	33.909	26.320
200	8.646	33.908	26.318
250	7.040	33.699	26.388
300	6.415	33.652	26.434

5. Drift Gillnet Research

Biological research for fur seal caught by drift gillnet were conducted. Although five gillnet researches were performed during this cruise, there were no catch of fur seal.

The operations were supervised by the captain, and were conducted by deck officers, crews and research staff.

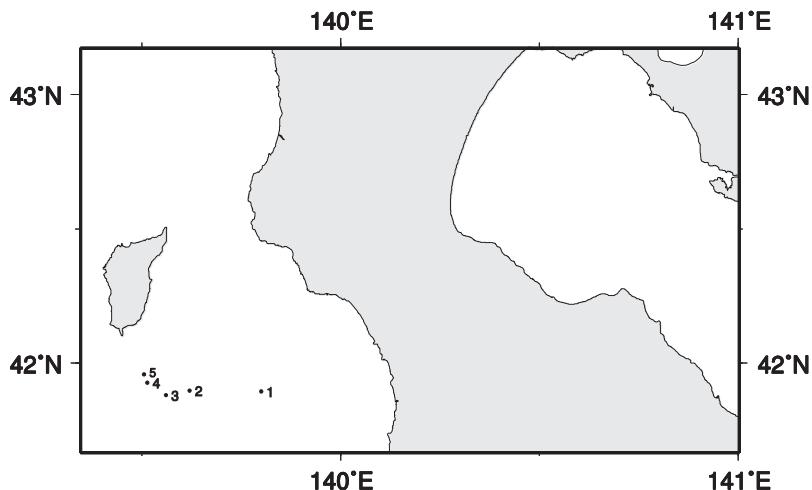


Figure 3. Locations of drift gillnet research

Table 3. Data on drift gillnet research

No. of research	Date and Time (S.M.T.)				Position		Wr	Wind	S.T. (°C)
	Net set		Net haul		Lat.(N)	Long. (E)			
1	22-Feb	0815-0819	22-Feb	0848-0855	41-56.9	139-47.9	c	ESE-2	8.6
2	22-Feb	0955-0958	22-Feb	1028-1040	41-57.0	139-37.1	c	East-1	8.7
3	22-Feb	1106-1110	22-Feb	1216-1222	41-56.5	139-33.5	bc	ESE-3	8.8
4	22-Feb	1515-1518	22-Feb	1612-1617	41-57.9	139-30.7	bc	ESE-2	8.3
5	23-Feb	0647-0650	23-Feb	0755-0800	41-58.8	139-30.2	bc	East-5	7.9

Wr.: Weather (bc:25-75% clouded, c: 75-99% clouded) S.T. : Surface temperature

**THE "OSHO RO MARU" CRUISE 226
TO EAST OF THE TSUGARU STRAIT**

IN MARCH 2011

1. Cruise Itinerary

Cruise 226

Departure from Hakodate	Mar.	7	2011
Start hydrographic research (OS11028)		8	
Start Bottom Trawl research (OST-1101)		8	
Finish Bottom Trawl research (OST-1102)		8	
Arrival at Aomori		9	
Departure from Aomori		10	
Arrival at Hakodate and change cadets		11	
Departure from Hakodate		11	
Finish hydrographic research (OS11041)		12	
Return to Hakodate		14	

Total coverage 629.3 miles

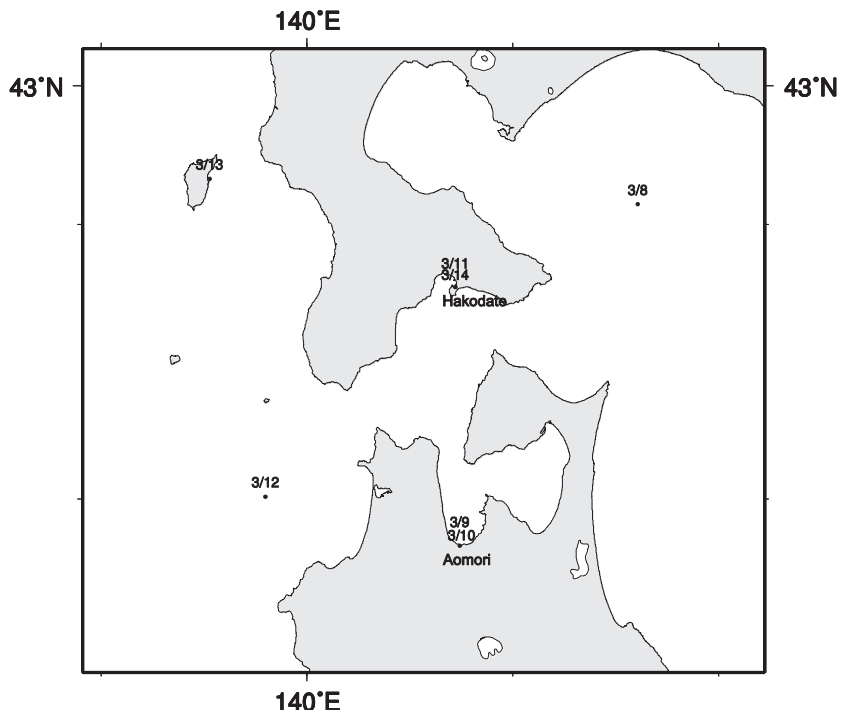


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Associate Professor	Keiichiro Sakaoka
	Chief Second Officer	Instructor	Naoki Hoshi
	Jr. Second Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		

Cruise 226

Research Staff:	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	Yasuzumi Fujimori
	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	Tohru Hirawake
	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	Tohru Mukai
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	Jun Yamamoto

Teaching Assistant: 6 persons

Under Graduate Students: 49 persons

Total 89 persons

3. Items of Research

Hydrographic observations:	Fig. 2, Table 1, 2
Bottom trawl observations:	Fig. 3, Table 3, 4

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”.

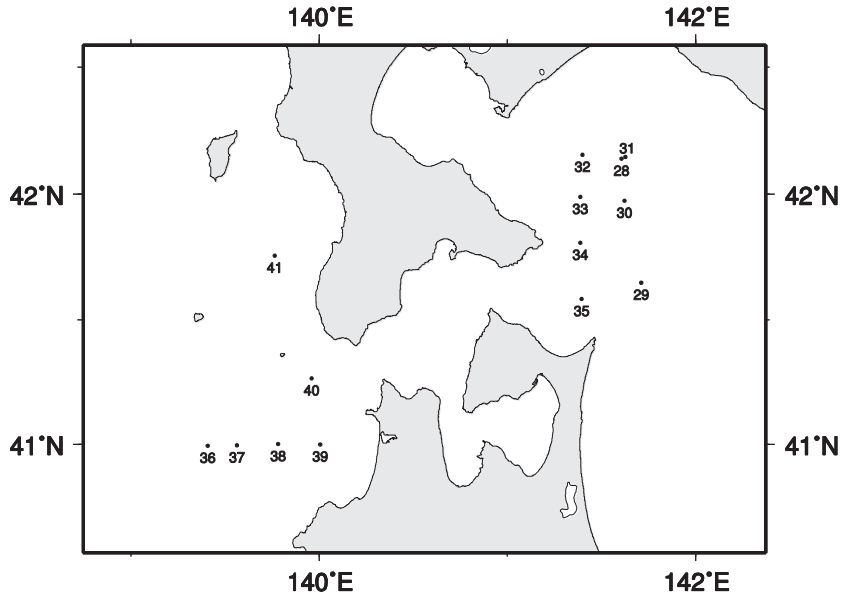


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11028	42-08.6N	141-36.1E	3/7	2128	9	683	-	-	-	bc	XBT
OS11029	41-39.1N	141-42.4E	3/8	0105	9	865	-	-	-	bc	XBT
OS11030	41-58.6N	141-37.1E	3/8	0130	9	775	-	-	-	bc	XBT
OS11031	42-09.1N	141-37.3E	3/8	0501	9	703	-	-	-	bc	XBT
OS11032	42-09.6N	141-23.6E	3/8	0649	9	428	5	7.8	1.7	s	9Plus-0769
OS11033	41-59.5N	141-22.9E	3/8	0817	9	353	-	-	1.8	s	9Plus-0769
OS11034	41-48.6N	141-22.9E	3/8	1004	9	297	-	-	2.4	s	9Plus-0769
OS11035	41-35.2N	141-23.4E	3/8	1154	9	278	-	-	5.4	s	9Plus-0769
OS11036	40-60.0N	139-24.2E	3/11	2304	9	2080	4	9.1	8.6	bc	19Plus-4636
OS11037	40-60.0N	139-33.5E	3/12	0034	9	2200	3	12	8.6	bc	19Plus-4636
OS11038	41-00.3N	139-46.7E	3/12	0220	9	1935	3	12	8.6	bc	19Plus-4636
OS11039	41-00.2N	140-00.1E	3/12	0403	9	500	2	17	8.6	bc	19Plus-4636
OS11040	41-16.1N	139-57.2E	3/12	0604	9	125	-	-	-	bc	XBT
OS11041	41-45.5N	139-45.6E	3/12	0900	9	1419	-	-	-	bc	XBT

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11028				Station OS11029				Station OS11030				Station OS11031			
Latitude 42-08.6 N				Latitude 41-39.1 N				Latitude 41-58.6 N				Latitude 42-09.1 N			
Longitude 141-36.1 E				Longitude 141-42.4 E				Longitude 141-37.1 E				Longitude 141-37.3 E			
Depth(m) 683				Depth(m) 865				Depth(m) 775				Depth(m) 703			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	1.798	-	-	5	1.769	-	-	5	8.164	-	-	5	1.181	-	-
10	1.879	-	-	10	1.730	-	-	10	8.143	-	-	10	1.150	-	-
20	1.903	-	-	20	1.710	-	-	20	8.098	-	-	20	1.290	-	-
30	2.022	-	-	30	1.714	-	-	30	8.052	-	-	30	1.356	-	-
40	2.188	-	-	40	1.798	-	-	40	7.996	-	-	40	2.115	-	-
50	2.678	-	-	50	2.040	-	-	50	7.895	-	-	50	2.248	-	-
75	4.272	-	-	75	2.901	-	-	75	4.439	-	-	75	3.561	-	-
100	5.273	-	-	100	5.273	-	-	100	4.059	-	-	100	4.217	-	-
125	5.900	-	-	125	5.460	-	-	125	3.252	-	-	125	3.490	-	-
150	5.558	-	-	150	4.998	-	-	150	3.185	-	-	150	3.868	-	-
175	4.784	-	-	175	4.370	-	-	175	2.999	-	-	175	3.440	-	-
200	3.251	-	-	200	3.104	-	-	200	2.946	-	-	200	3.689	-	-
250	2.601	-	-	250	2.860	-	-	250	2.863	-	-	250	2.529	-	-
300	2.610	-	-	300	2.507	-	-	300	3.506	-	-	300	2.420	-	-
400	3.000	-	-	400	2.756	-	-	400	3.330	-	-	400	2.936	-	-
500	3.241	-	-	500	3.133	-	-	500	3.178	-	-	500	3.135	-	-
600	3.409	-	-	600	3.402	-	-	600	3.032	-	-	600	3.359	-	-
				700	3.366	-	-	700	3.020	-	-	700	3.302	-	-

Station OS11032				Station OS11033				Station OS011034				Station OS11035			
Latitude 42-09.6 N				Latitude 41-59.5 N				Latitude 41-48.6 N				Latitude 41-35.2 N			
Longitude 141-23.6 E				Longitude 141-22.9 E				Longitude 141-22.9 E				Longitude 141-23.4 E			
Depth(m) 428				Depth(m) 353				Depth(m) 297				Depth(m) 278			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	1.442	32.809	26.256	5	1.736	32.879	26.292	5	2.340	32.962	26.313	5	5.710	33.592	26.475
10	1.437	32.810	26.257	10	1.737	32.880	26.292	10	2.346	32.965	26.315	10	5.752	33.629	26.500
20	1.653	32.876	26.295	20	1.699	32.878	26.294	20	2.348	32.964	26.314	20	5.878	33.648	26.500
30	1.695	32.885	26.299	30	1.737	32.890	26.300	30	2.369	32.984	26.328	30	6.075	33.682	26.502
40	1.717	32.888	26.301	40	1.929	32.934	26.322	40	2.385	32.986	26.329	40	6.774	33.818	26.518
50	1.987	32.944	26.325	50	2.153	32.985	26.346	50	2.504	33.008	26.337	50	6.847	33.832	26.520
75	4.047	33.320	26.445	75	3.403	33.189	26.403	75	4.000	33.259	26.402	75	7.182	33.905	26.531
100	5.176	33.501	26.467	100	2.374	33.136	26.449	100	4.514	33.344	26.416	100	7.229	33.923	26.539
125	5.421	33.568	26.491	125	2.276	33.172	26.486	125	5.214	33.479	26.445	125	7.222	33.937	26.551
150	5.526	33.648	26.542	150	2.425	33.240	26.529	150	4.952	33.457	26.458	150	7.165	33.947	26.566
175	5.065	33.623	26.576	175	2.360	33.304	26.585	175	3.997	33.379	26.497	175	6.709	33.935	26.619
200	4.185	33.557	26.620	200	2.352	33.345	26.618	200	3.321	33.421	26.596	200	6.840	33.962	26.623
250	2.526	33.443	26.683	250	2.373	33.447	26.698	250	2.673	33.463	26.686				
300	2.542	33.544	26.762	300	2.525	33.525	26.748								

Station OS11036				Station OS11037				Station OS11038				Station OS11039			
Latitude 40-60.0 N				Latitude 40-60.0 N				Latitude 41-00.3 N				Latitude 41-00.2 N			
Longitude 139-24.2 E				Longitude 139-33.5 E				Longitude 139-46.7 E				Longitude 140-00.1 E			
Depth(m) 2080				Depth(m) 2200				Depth(m) 1935				Depth(m) 500			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	8.640	33.965	26.364	5	3.588	33.940	26.332	5	8.776	33.938	26.322	5	8.825	33.955	26.327
10	8.643	33.966	26.364	10	3.588	33.940	26.333	10	8.774	33.938	26.322	10	8.821	33.956	26.329
20	8.644	33.965	26.364	20	3.588	33.940	26.332	20	8.775	33.939	26.323	20	8.792	33.957	26.334
30	8.639	33.965	26.365	30	3.589	33.939	26.332	30	8.771	33.939	26.323	30	8.781	33.957	26.336
40	8.647	33.984	26.378	40	3.589	33.939	26.332	40	8.772	33.940	26.324	40	8.777	33.958	26.337
50	8.473	34.013	26.427	50	3.590	33.939	26.332	50	8.775	33.941	26.324	50	8.776	33.958	26.338
75	8.344	34.042	26.470	75	3.594	33.944	26.332	75	8.784	33.949	26.330	75	8.773	33.959	26.339
100	7.832	34.034	26.538	100	3.590	33.986	26.380	100	8.856	33.988	26.349	100	8.761	33.961	26.342
125	6.819	34.054	26.699	125	3.558	34.014	26.461	125	8.804	34.007	26.371	125	8.772	33.965	26.344
150	5.368	34.053	26.877	150	3.454	34.042	26.656	150	8.586	34.015	26.410	150	8.648	34.007	26.395
175	3.991	34.054	27.032	175	3.284	34.061	26.915	175	7.666	34.040	26.567	175	7.935	34.024	26.517
200	2.982	34.042	27.122	200	3.156	34.036	27.050	200	5.872	34.040	26.807	200	7.351	34.039	26.611
250	1.909	34.059	27.224	250	3.045	34.028	27.161	250	3.636	34.028	27.048	250	4.016	34.037	27.018
300	1.418	34.067	27.267	300	2.994	34.054	27.234	300	2.088	34.031	27.188	300	1.837	34.061	27.231
400	0.979	34.069	27.298	400	2.943	34.070	27.292	400	1.214	34.070	27.284	400	0.999	34.071	27.298
								500	1.007	33.600	26.919				

Station OS11040				Station OS11041			
Latitude 41-16.1 N				Latitude 41-45.5 N			
Longitude 139-57.2 E				Longitude 139-45.6E			
Depth(m) 125				Depth(m) 1419			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	8.789	-	-	5	8.140	-	-
10	8.761	-	-	10	8.131	-	-
20	8.740	-	-	20	8.127	-	-
30	8.730	-	-	30	8.010	-	-
40	8.620	-	-	40	7.994	-	-
50	8.580	-	-	50	8.006	-	-
75	8.190	-	-	75	7.869	-	-
100	7.596	-	-	100	7.162	-	-
125	7.530	-	-	125	6.140	-	-
				150	4.990	-	-
				175	3.179	-	-
				200	2.719	-	-
				250	1.777	-	-
				300	1.413	-	-
				400	0.874	-	-
				500	0.679	-	-
				600	0.549	-	-
				700	0.440	-	-

5. Data on bottom trawl research

Two operations of the stern otter trawl were carried out. These operation were supervised by the captain, Deck officer, crew, research staff, and cadets were engaged in the work.

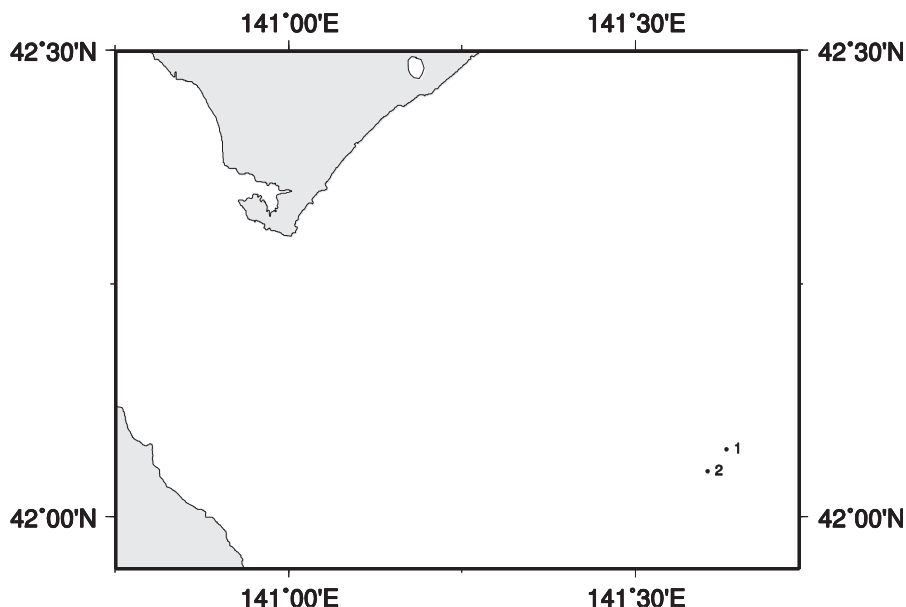


Figure 3. Locations of bottom trawl research

Table 3. Data on bottom trawl research during the“Oshoro Maru” Cruise #226

No. of research	Date and time of net tow (S.M.T.)		Position		Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
			Lat.(N)	Long.(E)					
OST1101	8-Mar	0740-0840	42-04.4	141-37.8	155	3.0	765	o	North-2
OST1102	8-Mar	1131-1240	42-03.0	141-36.2	000	3.3	753	bc	WNW-5

Wr.: Weather (bc: 25-75% clouded, o: 100% clouded)

Table 4. Data on catches by bottom trawl research

Japanese name	Scientific Name	OST1101		OST1102	
		Number	Weight (kg)	Number	Weight (kg)
Itohikidara	<i>Laemonema longipes</i>	10	7.5	24	16.5
Genge-rui	<i>Zoarcidae</i> spp.	65	18.5	97	39.5
Karafutosokodara	<i>Coryphaenoides cinereus</i>	782	200.5	163	34.0
Kanadadara	<i>Antimora microlepis</i>	18	7.0	12	1.6
Irakoanago	<i>Synaphobranchus kaupi</i>	14	7.0	49	36.0
Yukihoraanago	<i>Ilyophis nygeli</i>	5	0.2	3	0.1
Kichiji	<i>Sebastolobus macrochir</i>	239	47.4	242	56.7
Nezumiginpo	<i>Lumpenella longirostris</i>	5	0.3	17	0.8
Mamehadaka	<i>Lampanyctus jordani</i>	6	0.2	22	0.4
Munedara	<i>Coryphaenoides pectoralis</i>	135	164.0	1	1.4
Aburagarei	<i>Atheresthes evermanni</i>	9	20.0	14	21.0
Kurosokogisu	<i>Notacanthus chemnitzii</i>	4	2.0	2	1.2
Sokogangiei-sui	<i>Bathyraja</i> spp.	—	—	4	2.0
Suketodara	<i>Theragra chalcogramma</i>	—	—	4	1.1
Kobushikajika	<i>Malacocottus zonurus</i>	1	0.2	1	0.1
Houaieso	<i>Chauliodus sloani</i>	1	0.1	—	—
Yokoeso	<i>Sigmops gracile</i>	1	0.1	—	—
Benizuwaigani	<i>Chionoecetes japonicus</i>	8	6.0	10	3.0
Dosuika	<i>Berryteuthis magister</i>	35	16.5	40	19.4
Yanagidako	<i>Octopus conispadiceus</i>	4	1.5	20	9.5

**THE "OSHORO MARU" CRUISE 227
TO THE JAPAN SEA**

IN APRIL 2011

1. Cruise Itinerary

Cruise 227

Departure from Hakodate	Apr. 19,	2011
Conduct hydrographic research (OS11042)	21	
Recovery of current meter	21	
Arrival at Fukui	22	
Departure from Fukui	23	
Arrival at Tsuruga	24	
Departure from Tsuruga	25	
Return to Hakodate	28	

Total coverage 1203.4 miles

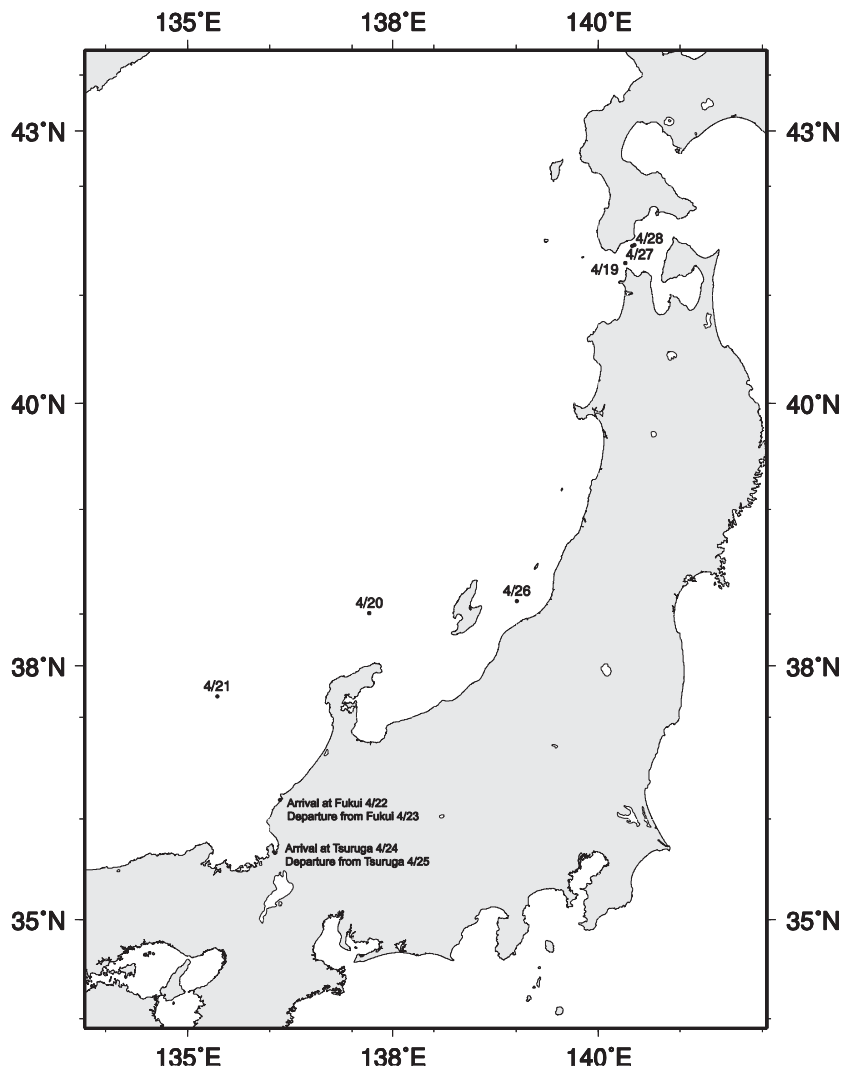


Figure 1. Noon position

2. Vessel Personnel			
Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Keiichiro Sakaoka
	Chief Second Officer	Instructor	Naoki Hoshi
	Jr. Second Officer	Technical official	Takuzo Abe
	Third Officer	Technical official	Maki Owada
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 24 men		
Cruise 227			
Research Staff:			
	Associate Professor	(Research Institute for Applied Mechanics, Kyushu University)	Tomoharu Senjyu
	Professor	(Department of Atmospheric Science, Kongju National University)	Hong-Ryeol Shin
	Professor	(Laboratory of Marine Environment engineering, Fukui Prefectural University)	Masabumi Seto
	Associate Professor	(Laboratory of Microbial Ecology, Fukui Prefectural University)	Ryuji Kondo
	Lecturer	(Laboratory of Marine Environment engineering, Fukui Prefectural University)	Atsushi Kaneda
	Instructor	(Laboratory of Microbial Ecology, Fukui Prefectural University)	Yoshitake Takao
Graduate Students:		1 person	
		Total 38 persons	

3. Items of Research

Hydrographic observations:

Fig. 2, Table 1, 2

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”.

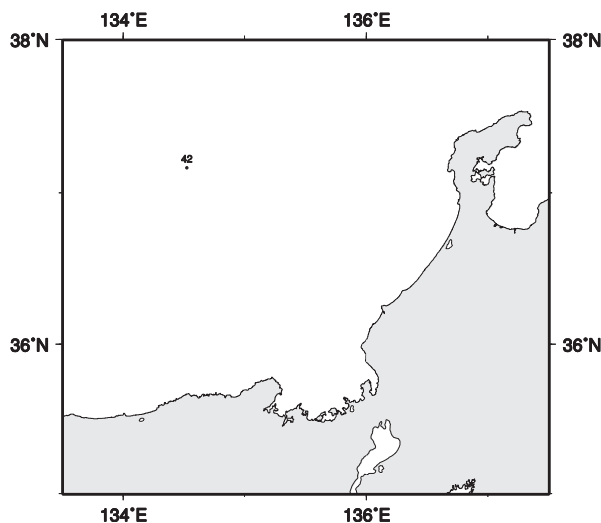


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11042	37-10.0N	134-31.2E	4/20	1529	9	2385	-	-	-	-	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station	OS11042			
Latitude	37-10.0 N			
Longitude	134-31.2 E			
Depth(m)	2385			
Press.	Temp.	Sal.	SIG-T	
5	11.054	34.226	26.163	
10	11.128	34.247	26.166	
20	11.209	34.279	26.176	
30	11.132	34.271	26.184	
40	11.118	34.268	26.184	
50	11.039	34.250	26.184	
75	8.955	34.089	26.412	
100	8.227	34.081	26.518	
125	7.564	34.071	26.607	
150	5.118	34.040	26.901	
175	3.820	34.039	27.040	
200	2.824	34.046	27.139	
250	1.692	34.055	27.238	
300	1.144	34.055	27.276	
400	0.717	34.058	27.306	
500	0.571	34.060	27.316	
600	0.448	34.060	27.323	
700	0.392	34.061	27.327	
800	0.349	34.061	27.330	
900	0.315	34.061	27.331	
1000	0.285	34.060	27.333	
1200	0.246	34.060	27.334	
1500	0.221	34.060	27.336	
2000	0.220	34.060	27.336	

**THE "OSHO RO MARU" CRUISE 228
TO THE NORTHWEST PACIFIC OCEAN**

IN MAY 2011

1. Cruise Itinerary

Cruise 228

Departure from Hakodate	May 12,	2011
Start hydrographic research (OS11043)	14	
Start Gillnet research (OSG1101)	16	
Finish Gillnet research (OSG1104)	17	
Finish hydrographic research (OS11054)	20	
Return to Hakodate	24	

Total coverage 1916.8 miles

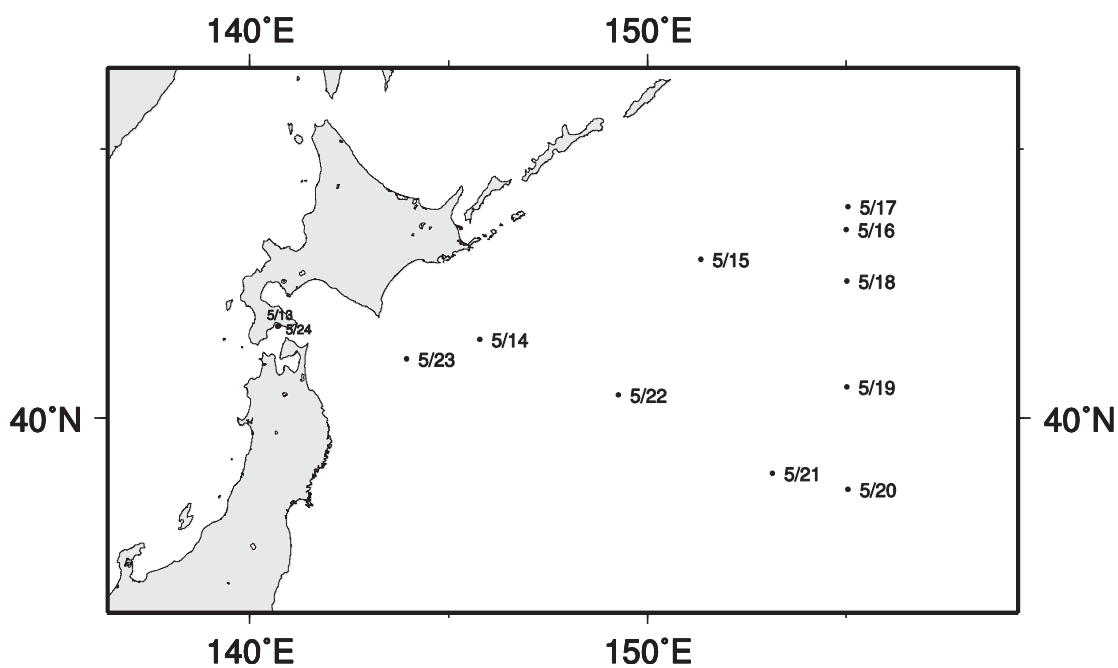


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Instructor	Naoki Hoshi
	Second Officer	Technical official	Takuzo Abe
	Chief Engineer	Instructor	Jyunichi Kimura
	And 25 men		

Cruise 228

Research Staff:

Associate Professor	(Laboratory of Strategic Studies on Marine Bioresource Conservation and Management)	Hideaki Kudo
Research Fellow	(Graduate School of Information and Technology GCOE)	Toshiro Iwamori
Technical assistant	(Field Science Center for Northern Biosphere, Hokkaido University)	Yuya Miyazima

Teaching Assistant:	2 person
Graduate Students:	6 person
Under Graduate Students:	37 persons
	Total 48 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1,2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	Table 3-8
Salmon hook-and-line research:	Fig. 4	Table 9-11
Plankton Sampling		Table 12, 13

4. 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 “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and XCTD2). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

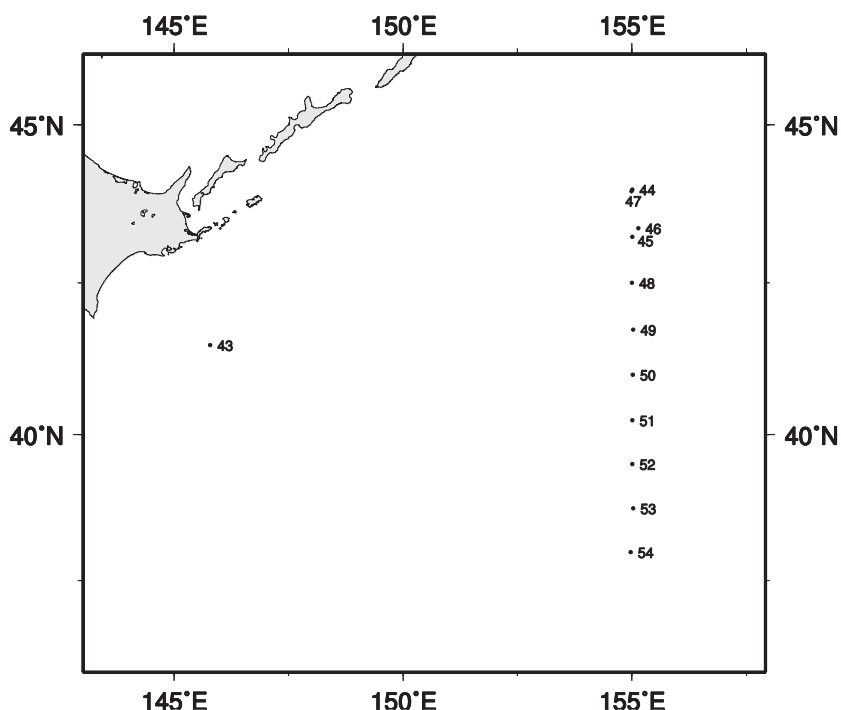


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11043	41-29.9N	145-46.3E	5/14	0053	9	6932	4	9	5.7	c	9Plus-0769
OS11044	44-00.1N	155-02.7E	5/15	1951	10	5315	-	-	-	-	9Plus-0769
OS11045	43-15.0N	155-00.1E	5/16	0346	10	5490	-	-	9.5	c	9Plus-0769
OS11046	43-23.2N	155-08.0E	5/16	1108	10	5547	3	14.6	5.6	bc	19Plus-4636
OS11047	43-58.4N	154-58.6E	5/17	0833	10	5330	-	-	4.6	c	19Plus-4636
OS11048	42-30.4N	154-59.7E	5/18	0308	10	5186	-	-	-	c	XCTD
OS11049	41-45.6N	155-01.6E	5/18	1019	10	5516	-	-	9.7	c	9Plus-0769
OS11050	41-00.4N	155-00.3E	5/18	2346	10	5511	-	-	-	bc	XCTD
OS11051	40-15.2N	155-00.1E	5/19	0356	10	5550	-	-	-	bc	XCTD
OS11052	39-31.3N	154-59.2E	5/19	1045	10	5615	-	-	13.8	c	9Plus-0769
OS11053	38-45.7N	155-00.9E	5/20	0004	10	5765	4	9	16.2	c	19Plus-4636
OS11054	38-00.6N	154-57.1E	5/20	0709	10	5860	3	11.8	15	c	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11043				Station OS11044				Station OS11045				Station OS11046			
Latitude 41-29.9N				Latitude 44-00.1 N				Latitude 43-15.0 N				Latitude 43-23.2 N			
Longitude 145-46.3E				Longitude 155-02.7 E				Longitude 155-00.1 E				Longitude 155-08.0 E			
Depth(m) 6932				Depth(m) 5315				Depth(m) 5490				Depth(m) 5547			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	5.231	32.948	26.023	5	3.727	32.954	26.186	5	9.620	34.113	26.323	5	5.436	33.232	26.224
10	5.106	32.950	26.039	10	3.725	32.954	26.186	10	9.616	34.113	26.324	10	5.426	33.233	26.226
20	4.969	32.945	26.050	20	3.725	32.954	26.186	20	9.611	34.114	26.325	20	6.215	33.407	26.273
30	4.830	32.958	26.075	30	3.723	32.955	26.187	30	9.611	34.114	26.325	30	7.514	33.698	26.328
40	4.037	32.994	26.187	40	3.662	32.956	26.193	40	9.610	34.114	26.325	40	7.833	33.746	26.314
50	3.649	33.056	26.274	50	3.506	32.961	26.212	50	9.604	34.113	26.325	50	7.853	33.754	26.317
75	2.166	33.121	26.454	75	2.538	33.130	26.432	75	9.516	34.103	26.332	75	7.896	33.849	26.386
100	1.847	33.169	26.516	100	1.825	33.124	26.481	100	9.389	34.091	26.343	100	6.920	33.828	26.504
125	2.033	33.317	26.621	125	2.014	33.286	26.598	125	8.018	33.958	26.453	125	6.525	33.768	26.509
150	2.239	33.447	26.709	150	2.330	33.458	26.710	150	7.356	33.915	26.515	150	5.943	33.815	26.623
175	2.559	33.546	26.762	175	2.633	33.581	26.784	175	6.844	33.907	26.579	175	4.627	33.744	26.722
200	2.614	33.601	26.802	200	2.965	33.690	26.842	200	6.159	33.841	26.617	200	4.797	33.767	26.719
250	2.903	33.724	26.876	250	3.134	33.817	26.929	250	5.377	33.843	26.715	250	3.951	33.768	26.810
300	2.990	33.827	26.950	300	3.178	33.898	26.989	300	4.626	33.868	26.820	300	3.723	33.791	26.850
400	3.222	33.976	27.047	400	3.257	34.034	27.091	400	4.150	33.976	26.956	400	4.271	34.077	27.026
500	3.308	34.119	27.154	500	3.209	34.144	27.183	500	3.865	34.080	27.068	500	3.949	34.140	27.108
600	3.261	34.209	27.230	600	3.013	34.223	27.263	600	3.765	34.201	27.174	600	3.454	34.174	27.184
700	3.053	34.269	27.297	700	2.877	34.277	27.319	700	3.465	34.261	27.252	700	3.430	34.269	27.261
800	2.907	34.324	27.354	800	2.755	34.325	27.369	800	3.226	34.308	27.312	800	3.141	34.320	27.329
900	2.791	34.360	27.393	900	2.685	34.371	27.411	900	2.999	34.353	27.369	900	2.965	34.369	27.384
1000	2.615	34.394	27.435	1000	2.584	34.413	27.453	1000	2.837	34.390	27.413	1000	2.810	34.405	27.427
1200	2.446	34.458	27.501	1200	2.346	34.470	27.519	1200	2.570	34.447	27.482	1200	2.494	34.458	27.497
1500	2.256	34.524	27.570	1500	2.149	34.529	27.582	1500	2.261	34.511	27.559	1500	2.213	34.517	27.568
				2000	1.858	34.597	27.660	2000	1.931	34.585	27.645				
				2500	1.646	34.636	27.707	2500	1.703	34.628	27.697				
				3000	1.532	34.657	27.733	3000	1.565	34.653	27.727				

Station OS11047				Station OS11048				Station OS11049				Station OS11050			
Latitude 43-58.4 N				Latitude 42-30.4 N				Latitude 41-45.6 N				Latitude 41-00.4 N			
Longitude 154-58.6 E				Longitude 154-59.7E				Longitude 155-01.6 E				Longitude 155-00.3E			
Depth(m) 5330				Depth(m) 5186				Depth(m) 5516				Depth(m) 5511			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	4.151	32.947	26.138	5	9.634	-	-	5	9.690	34.016	26.236	5	8.843	-	-
10	4.136	32.948	26.141	10	9.568	-	-	10	9.675	34.018	26.240	10	8.795	-	-
20	3.993	32.940	26.147	20	9.344	-	-	20	9.593	34.039	26.270	20	8.481	-	-
30	3.837	32.948	26.170	30	9.130	-	-	30	9.570	34.060	26.290	30	8.010	-	-
40	3.783	32.945	26.173	40	8.987	-	-	40	9.560	34.061	26.292	40	8.032	-	-
50	3.773	32.945	26.174	50	8.968	-	-	50	9.551	34.060	26.293	50	8.414	-	-
75	2.840	32.993	26.296	75	8.248	-	-	75	9.436	34.053	26.306	75	8.462	-	-
100	1.860	33.098	26.459	100	7.887	-	-	100	8.960	34.007	26.347	100	8.223	-	-
125	1.646	33.170	26.532	125	7.829	-	-	125	7.953	33.910	26.425	125	7.841	-	-
150	2.136	33.382	26.666	150	7.800	-	-	150	7.755	33.918	26.460	150	7.783	-	-
175	2.578	33.565	26.777	175	7.791	-	-	175	7.516	33.907	26.486	175	7.351	-	-
200	2.857	33.676	26.841	200	7.752	-	-	200	7.126	33.859	26.503	200	6.815	-	-
250	3.091	33.814	26.930	250	7.535	-	-	250	5.506	33.756	26.630	250	5.565	-	-
300	3.265	33.917	26.996	300	6.077	-	-	300	4.859	33.781	26.725	300	5.177	-	-
400	3.283	34.066	27.113	400	4.453	-	-	400	4.287	33.905	26.886	400	4.428	-	-
500	3.096	34.161	27.206	500	4.064	-	-	500	4.073	34.023	27.001	500	4.161	-	-
600	2.952	34.224	27.270	600	4.068	-	-	600	3.843	34.119	27.101	600	3.783	-	-
700	2.848	34.286	27.329	700	3.715	-	-	700	3.579	34.200	27.192	700	3.423	-	-
800	2.728	34.331	27.375	800	3.435	-	-	800	3.410	34.263	27.259	800	3.190	-	-
900	2.650	34.377	27.419	900	3.203	-	-	900	3.173	34.313	27.321	900	3.042	-	-
1000	2.581	34.423	27.462	1000	3.011	-	-	1000	3.026	34.365	27.376	1000	2.881	-	-
1200	2.364	34.477	27.523	1200	2.657	-	-	1200	2.727	34.420	27.446	1200	2.689	-	-
1500	2.143	34.541	27.593	1500	2.331	-	-	1500	2.349	34.498	27.541	1500	2.304	-	-
								2000	2.000	34.576	27.632				
								2500	1.741	34.624	27.690				
								3000	1.597	34.649	27.721				

Station OS11051				Station OS11052				Station OS11053				Station OS11054			
Latitude 40-15.2 N				Latitude 39-31.3 N				Latitude 38-45.7 N				Latitude 38-00.6 N			
Longitude 155-00.1 E				Longitude 154-59.2 E				Longitude 155-00.9 E				Longitude 154-57.1 E			
Depth(m) 5550				Depth(m) 5615				Depth(m) 5765				Depth(m) 5860			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	12.545	-	-	5	13.581	34.447	25.847	5	16.086	34.595	25.416	5	14.814	34.506	25.632
10	12.437	-	-	10	13.579	34.447	25.847	10	16.087	34.596	25.417	10	14.807	34.506	25.633
20	12.376	-	-	20	13.579	34.447	25.847	20	16.070	34.596	25.421	20	14.511	34.472	25.671
30	11.651	-	-	30	13.570	34.446	25.848	30	16.044	34.592	25.423	30	13.857	34.427	25.774
40	11.182	-	-	40	13.487	34.439	25.860	40	15.581	34.584	25.522	40	13.661	34.418	25.808
50	10.816	-	-	50	13.328	34.429	25.885	50	15.401	34.570	25.549	50	13.638	34.419	25.814
75	10.485	-	-	75	13.140	34.425	25.919	75	14.705	34.517	25.660	75	13.461	34.430	25.858
100	10.031	-	-	100	12.613	34.386	25.994	100	14.140	34.502	25.772	100	13.237	34.430	25.904
125	8.940	-	-	125	12.321	34.369	26.038	125	13.474	34.461	25.877	125	12.464	34.382	26.020
150	8.225	-	-	150	11.730	34.306	26.101	150	12.534	34.384	26.004	150	12.035	34.345	26.073
175	7.485	-	-	175	11.015	34.241	26.182	175	11.753	34.307	26.094	175	11.543	34.305	26.135
200	7.497	-	-	200	10.225	34.170	26.265	200	11.287	34.293	26.173	200	11.422	34.294	26.149
250	6.338	-	-	250	9.161	34.129	26.410	250	10.234	34.183	26.273	250	10.287	34.180	26.263
300	5.847	-	-	300	7.775	34.033	26.547	300	7.889	33.905	26.426	300	8.914	34.088	26.418
400	4.550	-	-	400	5.668	33.974	26.783	400	6.747	33.997	26.662	400	6.406	33.976	26.692
500	4.222	-	-	500	4.727	34.013	26.924	500	5.160	34.008	26.870	500	5.109	34.008	26.876
600	3.976	-	-	600	4.509	34.115	27.028	600	4.649	34.096	26.998	600	4.551	34.103	27.015
700	3.752	-	-	700	4.259	34.187	27.113	700	4.231	34.194	27.121	700	4.116	34.194	27.133
800	3.456	-	-	800	3.846	34.253	27.207	800	3.832	34.255	27.210	800	3.767	34.261	27.222
900	3.192	-	-												

5. Data on drift Gillnet Research

Four gillnet researches were performed during this cruise. The operations were supervised by the captain, and were conducted by deck officers, crews and research staff.

Note: The *Oshoro maru* Cruise #229 gillnet research data are also included.

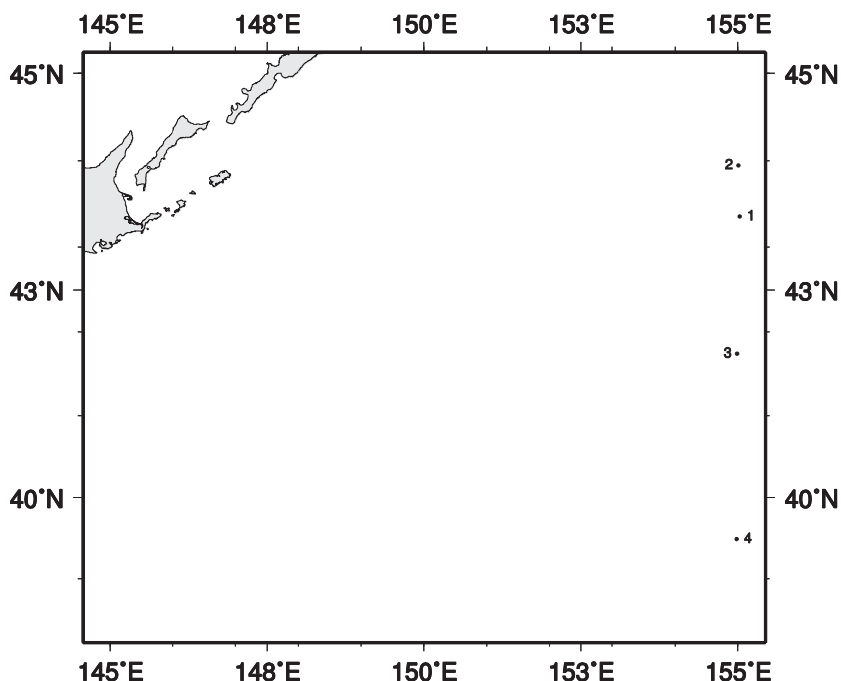


Figure 3. Locations of drift gillnet research

Table 3. Position and research conditions of surface drift gillnet sampling at each station during the *Oshoro maru* Cruise #228 and #229, 2011.

Station	Date and Time (S.M.T.*1)			T.D.*2	Set Position		D.S.*3	Wr*4	Wind (Force)	
	Net set		Net haul		Lat.	Long.				
Cruise #228										
OSG 1101	May 16	17:55-18:22	May 17	04:39-05:30	+10h	43-22.1 N	155-01.3 E	070	bc	West-5
OSG 1102	May 17	17:55-18:25	May 18	04:24-05:02	+10h	43-57.3 N	155-00.2 E	310	o	South-5
OSG 1103	May 18	17:50-18:17	May 19	04:25-05:12	+10h	41-45.0 N	154-59.0 E	090	c	West-5
OSG 1104	May 19	18:00-18:25	May 20	04:30-05:38	+10h	39-30.2 N	154-58.4 E	080	bc	West-6
Cruise #229										
OSG 1105	July 28	19:50-20:15	July 29	04:53-05:43	+10h	40-15.0 N	155-02.9 E	150	c	NNW-5
OSG 1106	July 29	18:28-18:51	July 30	04:37-05:25	+10h	41-44.7 N	154-59.8 E	230	o	WSW-3
OSG 1107	July 30	17:52-18:25	July 31	04:34-05:32	+10h	43-14.3 N	155-01.3 E	270	o	NE-3
OSG 1108	July 31	18:24-18:47	August 1	04:30-05:24	+10h	43-43.4 N	154-06.2 E	130	d	NE-4

*1 S.M.T. : Ship's Mean Time.

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of net set.

*4 Wr : Weather (bc: 25-75% clouded, o: 100% clouded, d: drizzling rain, c: 75-99% clouded).

Table 4. Net information

Drift Gillnet Sampling

One set of drift gillnet was used to collect salmonids and other epipelagic fishes [Figs.1-(1),(2) and Table 1].

Details about each operation are shown in Table 2. The gillnet configuration is as follows:

Stations	net	A-Gear				C-gear										F-Gear								Total
	Mesh size (mm)	112	115	118	121	48	55	63	72	82	93	106	121	138	157	19	22	25	29	33	37	42		
OSG1101-2	Number	3	3	3	3	3	3	3	6	5	5	3	3	3	3	-	-	-	-	-	-	-	49	
OSG1103-8	of tan	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49	

The net comprised of total 49 tans of A-Gear gillnet (non-selective varied research mesh, Takagi, 1975), C-Gear gillnet (commercial mesh), and F-Gear gillnet (spetal mesh). Each tan was 50m long. Gillnet gear was set in the evening, allowed to soak overnight, and retrieved in the following morning. The number of organisms caught was counted by species for mesh size. Catch per unit effort (CPUE) values were calculated as the number of fish caught by C-gear gillnet per tan.

Table 5. Data on catch number of salmonids by drift gillnet research

Chum (catch number)

No. of research		Mesh size (mm)																				Total
		A-Gear				C-gear										F-Gear						
112	115	118	121	48	55	63	72	82	93	106	121	138	157	19	22	25	29	33	37	42		
OSG1101	6	3	1	3	0	0	1	0	0	5	2	2	1	0	-	-	-	-	-	-	-	24
OSG1102	0	1	3	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	4
OSG1103	2	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6
OSG1104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pink (catch number)

No. of research		Mesh size (mm)																				Total
		A-Gear				C-gear										F-Gear						
112	115	118	121	48	55	63	72	82	93	106	121	138	157	19	22	25	29	33	37	42		
OSG1101	0	1	0	0	0	3	3	142	289	65	2	0	0	0	-	-	-	-	-	-	-	505
OSG1102	0	0	0	0	0	0	0	14	46	26	2	0	0	0	-	-	-	-	-	-	-	88
OSG1103	1	0	0	0	0	1	6	46	49	11	2	0	0	0	0	0	0	0	0	0	0	116
OSG1104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1108	1	1	2	1	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	9

Note: Sockeye, Coho, Chinook, Cherry and Steelhead salmon did not catch by the drift gillnet research.

Table 6. Biological characteristics of salmonids caught by drift gillnet research

CHUM SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G01	A112	510	1630	M	1	G01	A121	603	2633	F	24	G02	A115	503	1483	F	10
G01	A112	556	1775	M	3	G01	C63	620	2418	M	1	G02	A118	534	1598	-	-
G01	A112	546	1638	F	17	G01	C93	496	1462	M	5	G02	A118	530	1571	-	-
G01	A112	558	2370	M	2	G01	C93	514	1612	F	33	G02	A118	576	2183	M	1
G01	A112	542	1976	F	16	G01	C93	538	1784	F	14	G03	A112	488	1586	F	22
G01	A112	496	1543	M	1	G01	C93	484	1514	M	5	G03	A112	498	1619	M	3
G01	A115	-	1178	M	2	G01	C93	506	1507	M	3	G03	A115	545	1894	M	42
G01	A115	482	1315	F	8	G01	C106	510	1765	F	41	G03	A115	520	1950	M	12
G01	A115	531	2054	M	17	G01	C106	550	1785	F	19	G03	C63	332	417	M	1
G01	A118	494	1367	M	1	G01	C121	566	1765	M	1	G03	C93	479	1372	F	12
G01	A121	521	1615	F	30	G01	C121	524	1468	M	3						
G01	A121	532	1897	M	4	G01	C138	578	2364	F	29						

PINK SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G01	A115	480	1328	M	15	G01	C72	390	673	F	7	G01	C82	380	634	F	13
G01	C55	372	502	F	7	G01	C72	362	536	F	27	G01	C82	370	591	F	10
G01	C55	370	552	M	9	G01	C72	384	645	F	7	G01	C82	390	685	M	5
G01	C55	-	245	F	2	G01	C72	376	552	M	2	G01	C82	380	630	M	6
G01	C63	328	372	M	1	G01	C72	376	538	F	12	G01	C82	392	617	M	8
G01	C63	358	519	M	2	G01	C72	400	622	F	6	G01	C82	358	491	F	12
G01	C63	332	454	M	1	G01	C72	390	596	M	4	G01	C82	370	580	F	7
G01	C72	400	621	M	1	G01	C72	388	551	F	17	G01	C82	390	649	F	16
G01	C72	390	660	F	6	G01	C72	368	513	M	2	G01	C82	370	601	M	5
G01	C72	382	563	F	5	G01	C72	400	676	F	5	G01	C82	414	825	M	3
G01	C72	376	575	F	5	G01	C72	391	653	F	14	G01	C82	410	708	M	5
G01	C72	376	554	M	1	G01	C72	396	577	M	2	G01	C82	422	867	M	6
G01	C72	364	530	F	6	G01	C72	388	609	M	2	G01	C82	362	557	M	4
G01	C72	350	450	M	2	G01	C72	366	540	F	10	G01	C82	392	658	F	10
G01	C72	448	474	F	9	G01	C72	372	520	F	7	G01	C82	371	551	F	13
G01	C72	368	518	M	1	G01	C72	342	453	F	7	G01	C82	431	854	M	7
G01	C72	342	440	F	5	G01	C72	410	697	M	4	G01	C82	383	625	M	3
G01	C72	370	533	F	5	G01	C72	363	504	M	3	G01	C82	374	570	F	9
G01	C72	362	540	M	1	G01	C72	406	712	M	2	G01	C82	383	719	M	5
G01	C72	372	538	M	2	G01	C72	367	535	F	20	G01	C82	371	591	M	3
G01	C72	382	626	F	5	G01	C72	383	560	F	12	G01	C82	363	519	M	3
G01	C72	342	421	F	16	G01	C72	353	482	M	2	G01	C82	370	482	M	3
G01	C72	360	447	M	2	G01	C72	374	557	F	12	G01	C82	371	572	M	3
G01	C72	408	691	F	6	G01	C72	378	541	F	9	G01	C82	380	609	F	9
G01	C72	360	451	M	4	G01	C82	352	520	F	9	G01	C82	410	782	M	3
G01	C72	376	560	M	3	G01	C82	356	497	F	9	G01	C82	380	558	M	3
G01	C72	368	540	F	7	G01	C82	370	559	M	2	G01	C82	359	509	M	5
G01	C72	340	453	M	1	G01	C82	424	889	F	9	G01	C82	370	567	M	4
G01	C72	394	628	M	2	G01	C82	380	628	F	3	G01	C82	400	722	M	4
G01	C72	342	434	F	17	G01	C82	400	734	M	3	G01	C82	342	516	M	6
G01	C72	372	543	M	1	G01	C82	366	594	M	2	G01	C82	390	644	F	12
G01	C72	380	544	M	3	G01	C82	372	500	F	32	G01	C82	364	557	M	4
G01	C72	374	598	F	4	G01	C82	341	490	M	3	G01	C82	384	548	M	5
G01	C72	338	419	M	1	G01	C82	390	653	F	15	G01	C82	362	525	M	8
G01	C72	390	667	F	4	G01	C82	359	512	F	20	G01	C82	432	795	F	18
G01	C72	360	455	F	17	G01	C82	370	580	F	11	G01	C82	396	595	M	2
G01	C72	368	534	M	1	G01	C82	392	689	F	12	G01	C82	364	508	M	2
G01	C72	398	717	F	16	G01	C82	394	657	M	3	G01	C82	398	611	F	7
G01	C72	360	567	F	20	G01	C82	390	650	M	5	G01	C82	344	477	M	2
G01	C72	340	460	M	8	G01	C82	370	599	M	5	G01	C82	372	551	M	2
G01	C72	380	571	M	3	G01	C82	382	564	M	4	G01	C93	413	866	F	23
G01	C72	378	573	M	3	G01	C82	350	522	M	5	G01	C93	410	785	M	3
G01	C72	370	551	M	3	G01	C82	402	738	M	4	G01	C93	402	725	M	4

Table 6. Biological characteristics of salmonids caught by drift gillnet research (continued)

PINK SALMON

St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G01	C93	406	735	F	13	G01	C106	450	1017	M	2	G02	C93	393	711	F	8
G01	C93	388	682	M	6	G02	C72	402	685	M	3	G02	C93	404	845	F	21
G01	C93	420	827	M	6	G02	C72	400	793	M	6	G02	C93	404	781	M	3
G01	C93	408	898	F	39	G02	C72	374	592	F	10	G02	C93	400	745	M	2
G01	C93	405	723	F	20	G02	C72	380	697	F	27	G02	C93	408	754	M	4
G01	C93	412	860	M	8	G02	C72	386	700	F	8	G02	C93	395	745	M	4
G01	C93	404	653	M	11	G02	C72	390	655	F	7	G02	C93	400	703	F	14
G01	C93	447	936	F	27	G02	C72	—	652	F	24	G02	C93	410	762	F	8
G01	C93	389	820	M	2	G02	C72	—	602	F	14	G02	C93	394	653	F	9
G01	C93	410	729	M	2	G02	C72	424	904	—	—	G02	C93	400	770	F	23
G01	C93	378	607	M	1	G02	C72	412	734	—	—	G02	C93	426	850	F	36
G01	C93	412	730	F	20	G02	C72	388	712	—	—	G02	C93	404	790	F	15
G01	C93	408	829	F	7	G02	C72	400	768	—	—	G02	C93	420	749	F	28
G01	C93	434	963	M	6	G02	C72	380	985	—	—	G02	C93	466	1252	M	7
G01	C93	402	691	F	13	G02	C72	—	643	—	—	G02	C93	414	836	M	14
G01	C93	388	607	M	1	G02	C82	404	722	F	18	G02	C93	414	818	M	4
G01	C93	400	695	F	11	G02	C82	396	704	M	4	G02	C93	414	863	F	18
G01	C93	395	700	M	4	G02	C82	388	684	M	2	G02	C93	398	776	F	31
G01	C93	403	752	M	1	G02	C82	388	646	F	17	G02	C93	424	1022	F	10
G01	C93	382	619	M	1	G02	C82	408	735	M	2	G02	C93	402	834	M	6
G01	C93	402	723	F	10	G02	C82	396	684	F	24	G02	C93	470	1246	M	7
G01	C93	388	745	F	10	G02	C82	392	714	F	8	G02	C93	434	922	M	3
G01	C93	388	709	M	1	G02	C82	388	660	F	9	G02	C93	402	698	M	4
G01	C93	407	732	F	11	G02	C82	406	786	M	3	G02	C93	390	731	F	11
G01	C93	420	826	F	21	G02	C82	390	697	M	2	G02	C106	430	854	M	6
G01	C93	419	786	F	17	G02	C82	388	641	F	26	G02	C106	400	799	M	6
G01	C93	423	871	M	4	G02	C82	412	803	F	24	G03	A112	462	1188	M	4
G01	C93	384	675	F	19	G02	C82	386	680	F	14	G03	C55	372	510	M	1
G01	C93	394	667	F	16	G02	C82	410	804	M	3	G03	C63	371	522	M	10
G01	C93	406	776	F	13	G02	C82	388	724	M	3	G03	C63	360	546	F	10
G01	C93	393	709	F	19	G02	C82	400	736	M	2	G03	C63	388	674	F	10
G01	C93	403	754	F	15	G02	C82	382	694	M	3	G03	C63	359	585	M	7
G01	C93	407	764	F	7	G02	C82	—	701	F	22	G03	C63	345	451	F	12
G01	C93	396	675	F	13	G02	C82	420	918	F	15	G03	C63	365	505	F	5
G01	C93	400	694	F	9	G02	C82	374	638	M	3	G03	C72	408	709	M	1
G01	C93	432	860	M	1	G02	C82	382	652	F	20	G03	C72	376	594	F	8
G01	C93	406	726	F	7	G02	C82	372	505	M	2	G03	C72	383	626	M	1
G01	C93	412	803	M	3	G02	C82	390	654	F	13	G03	C72	395	668	M	2
G01	C93	391	683	M	2	G02	C82	402	768	M	2	G03	C72	369	616	F	5
G01	C93	412	791	F	17	G02	C82	378	666	M	4	G03	C72	389	585	M	2
G01	C93	417	720	F	24	G02	C82	370	588	F	15	G03	C72	372	633	F	14
G01	C93	378	605	M	1	G02	C82	394	719	F	14	G03	C72	367	557	M	1
G01	C93	392	714	M	4	G02	C82	382	646	F	19	G03	C72	399	562	M	3
G01	C93	384	639	M	4	G02	C82	390	683	F	8	G03	C72	343	468	M	1
G01	C93	440	881	M	5	G02	C82	392	608	F	14	G03	C72	382	631	F	6
G01	C93	444	1080	M	6	G02	C82	420	824	F	15	G03	C72	374	578	M	2
G01	C93	388	657	M	7	G02	C82	380	622	F	6	G03	C72	363	544	F	4
G01	C93	398	665	M	2	G02	C82	386	618	M	1	G03	C72	349	455	F	5
G01	C93	372	717	F	21	G02	C82	410	814	M	4	G03	C72	383	641	M	2
G01	C93	382	637	M	4	G02	C82	376	600	F	18	G03	C72	359	544	M	2
G01	C93	374	656	F	12	G02	C82	412	686	M	1	G03	C72	398	703	M	2
G01	C93	456	1102	M	3	G02	C82	392	727	M	3	G03	C72	354	517	M	1
G01	C93	414	911	F	33	G02	C82	403	821	F	10	G03	C72	396	687	F	10
G01	C93	398	740	F	8	G02	C82	373	613	M	4	G03	C72	406	668	F	6
G01	C93	372	657	F	10	G02	C82	410	834	F	26	G03	C72	342	453	F	7
G01	C93	392	691	M	1	G02	C82	390	714	F	14	G03	C72	348	433	M	1
G01	C93	408	795	F	30	G02	C93	410	757	M	3	G03	C72	365	548	F	3
G01	C106	350	417	M	1	G02	C93	423	893	M	4	G03	C72	333	402	M	1

Table 6. Biological characteristics of salmonids caught by drift gillnet research (continued)

PINK SALMON

St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
G03	C72	367	546	M	1	G03	C82	408	756	F	10	G03	C82	392	646	F	10
G03	C72	338	400	F	3	G03	C82	378	589	F	5	G03	C82	375	564	F	8
G03	C72	393	679	F	10	G03	C82	375	598	F	7	G03	C82	368	501	M	1
G03	C72	382	575	M	1	G03	C82	362	560	F	7	G03	C82	423	784	F	5
G03	C72	384	636	M	1	G03	C82	405	775	M	3	G03	C82	370	562	M	1
G03	C72	342	415	M	1	G03	C82	388	698	M	2	G03	C82	373	520	F	2
G03	C72	403	668	F	6	G03	C82	389	677	M	4	G03	C93	398	765	F	11
G03	C72	344	459	M	1	G03	C82	403	736	M	1	G03	C93	412	734	F	2
G03	C72	360	490	M	1	G03	C82	382	634	F	4	G03	C93	402	735	F	3
G03	C72	347	528	F	3	G03	C82	403	725	F	10	G03	C93	430	849	M	4
G03	C72	399	671	F	1	G03	C82	399	673	M	1	G03	C93	410	749	M	1
G03	C72	370	568	M	12	G03	C82	388	652	M	1	G03	C93	398	712	M	2
G03	C72	408	773	M	17	G03	C82	365	561	F	12	G03	C93	442	1054	M	2
G03	C72	341	512	M	3	G03	C82	387	621	M	3	G03	C93	408	756	M	1
G03	C72	392	623	F	7	G03	C82	390	610	F	10	G03	C93	403	812	F	13
G03	C72	336	452	F	1	G03	C82	379	613	M	2	G03	C93	403	756	F	13
G03	C82	382	670	M	4	G03	C82	373	625	F	10	G03	C106	423	923	F	47
G03	C82	393	671	F	9	G03	C82	400	715	F	9	G03	C106	453	1029	M	3
G03	C82	406	710	F	18	G03	C82	373	576	F	12	G08	A112	468	1360	M	37
G03	C82	388	607	M	1	G03	C82	410	780	M	2	G08	A118	478	1570	F	99
G03	C82	392	664	M	2	G03	C82	398	748	M	3	G08	A118	492	1539	M	64
G03	C82	406	699	M	1	G03	C82	410	739	F	10	G08	A121	488	1780	F	70
G03	C82	388	640	M	1	G03	C82	350	500	F	6	G08	A115	520	1769	M	89
G03	C82	392	702	F	20	G03	C82	390	701	M	1	G08	C93	433	1128	F	59
G03	C82	393	710	F	13	G03	C82	388	580	F	14	G08	C93	489	1592	F	59
G03	C82	390	610	F	6	G03	C82	387	595	F	7	G08	C106	477	1362	F	94
G03	C82	374	535	F	6	G03	C82	389	614	F	12	G08	C121	485	1587	M	62
G03	C82	428	830	M	5	G03	C82	376	620	F	7						

Table 7-1. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 228, 2011. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name / Scientific name		OSG 1101					OSG 1102					OSG 1103					OSG 1104				
		C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total
Sockeye salmon	<i>Oncorhynchus nerka</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chum salmon	<i>Oncorhynchus keta</i>	11	0.3 (2.1)	13	0	24	0	0.0 (0.0)	4	0	4	2	0.1 (1.5)	4	0	6	0	0.0 (0.0)	0	0	0
Pink salmon	<i>Oncorhynchus gorbuscha</i>	504	13.6 (95.6)	1	0	505	88	2.4 (95.7)	0	0	88	115	3.8 (87.8)	1	0	116	0	0.0 (0.0)	0	0	0
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Japanese common squid	<i>Todarodes pacificus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	4	4
Boreal clubhook squid	<i>Ommatophis borealijaponicus</i>	9	0.2 (1.7)	0	0	9	0	0.0 (0.0)	0	0	0	13	0.4 (9.9)	0	0	13	21	0.7 (38.9)	0	2	23
Eight-armed squid	<i>Gonatopsis borealis</i>	1	0.0 (0.2)	0	0	1	3	0.1 (3.3)	0	0	3	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Flying squid	<i>Ommastrephes bartramii</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	1	0	1
Salmon shark	<i>Lamna ditropis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (1.9)	1	0	2
Spiny dogfish	<i>Squalus acanthias</i>	1	0.0 (0.2)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Longnose lancetfish	<i>Alopius superus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (0.8)	0	0	1	0	0.0 (0.0)	0	0	0
Lantern fishes	Mycetophidae	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	3	3	0	0.0 (0.0)	0	0	0
Pacific saury	<i>Cololabis saira</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	389	389
Pacific pomfret	<i>Brama japonica</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	26	0.9 (48.1)	6	1	33
Smalleye squaretail	<i>Tetragonus atlanticus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	5	0.2 (9.3)	0	0	5
Short-tailed shearwater	<i>Puffinus tenuirostris</i>	0	0.0 (0.0)	0	0	0	1	0.0 (1.1)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Tufted Puffin	<i>Fratercula cirrhata</i>	1	0.0 (0.2)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Pacific white-sided dolphin	<i>Leptorhynchus obliquidens</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (1.9)	0	0	1

Table 7-2. The number of organisms caught by drift gillnet during the Oshoro maru Cruise #229, 2011. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name / Scientific name		OSG 1105					OSG 1106					OSG 1107					OSG 1108				
		C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total	C	CPUE (%)	A	F	Total
Sockeye salmon	<i>Oncorhynchus nerka</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chum salmon	<i>Oncorhynchus keta</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Pink salmon	<i>Oncorhynchus gorbuscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	4	0.1 (1.3)	5	0	9
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Japanese common squid	<i>Todarodes pacificus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	14	14	130	4.3 (36.4)	0	30	160	142	4.7 (47.8)	0	32	174
Boreal clubhook squid	<i>Ommatophis borealijaponicus</i>	0	0.0 (0.0)	0	1	1	6	0.2 (10.5)	0	35	41	90	3.0 (25.2)	0	82	172	43	1.4 (14.5)	0	15	58
Eight-armed squid	<i>Gonatopsis borealis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Flying squid	<i>Ommastrephes bartramii</i>	416	13.9 (91.4)	2	6	424	44	1.5 (77.2)	10	0	54	2	0.1 (0.6)	0	0	2	0	0.0 (0.0)	0	0	0
Football octopus	<i>Ocythoe tuberculata</i>	1	0.0 (0.2)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Shortfin mako shark	<i>Isurus paucus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	2	0.1 (0.6)	0	0	2	0	0.0 (0.0)	0	0	0
Blue shark	<i>Prionace glauca</i>	4	0.1 (0.9)	2	0	6	1	0.0 (1.8)	0	0	1	1	0.0 (0.3)	1	0	2	0	0.0 (0.0)	1	0	1
Salmon shark	<i>Lamna ditropis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (0.3)	2	0	3	0	0.0 (0.0)	0	0	0
Japanese anchovy	<i>Engraulis japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	1	1	0	0.0 (0.0)	0	0	0
Lantern fishes	Mycetophidae	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	5	5	0	0.0 (0.0)	0	16	16	0	0.0 (0.0)	0	3	3
Pacific saury	<i>Cololabis saira</i>	3	0.1 (0.9)	0	44	48	0	0.0 (0.0)	0	13	13	0	0.0 (0.0)	0	35	35	0	0.0 (0.0)	0	0	0
Japanese amberjack	<i>Seriola quinqueradiata</i>	8	0.3 (1.8)	0	0	8	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Flotfish	<i>Nauclerus ductor</i>	1	0.0 (0.2)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Pacific pomfret	<i>Brama japonica</i>	7	0.2 (1.5)	0	0	7	2	0.1 (3.5)	1	0	3	131	4.4 (36.7)	44	5	180	106	3.5 (35.7)	29	6	141
Chub mackerel	<i>Scomber japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	1	1	1	0.0 (0.3)	0	0	1
Smalleye squaretail	<i>Tetragonus atlanticus</i>	0	0.0 (0.0)	0	0	0	2	0.1 (3.5)	0	0	2	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Medusa fish	<i>Ichthyos loquax</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (0.3)	0	0	1
Pacific barrelfish	<i>Hyperoglyphe japonica</i>	14	0.5 (3.1)	1	0	15	2	0.1 (3.5)	0	0	2	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Bluefin driftfish	<i>Pseudocyttus bellidus</i>	0	0.0 (0.0)	1	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0

Table 8. Biological characteristics of fishes caught by drift gillnet

NEON FLYING SQUID											
St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G04	A115	360	—	G05	C72	220	264	G05	F42	196	226
G05	A112	498	4700	G05	C72	206	224	G05	F42	194	150
G05	C55	188	330	G05	C72	203	254	G05	C106	201	236
G05	C55	205	278	G05	C72	200	219	G05	A115	437	2500
G05	C55	208	240	G05	C72	194	186	G06	A121	415	2419
G05	C55	220	289	G05	C72	241	388	G06	A115	412	2360
G05	C55	222	337	G05	C72	212	264	G06	C93	432	2655
G05	C55	211	290	G05	C72	219	266	G06	C63	201	255
G05	C55	209	252	G05	C72	188	210	G06	C63	228	380
G05	C55	202	224	G05	C72	204	230	G06	C63	242	426
G05	C55	215	271	G05	C72	215	268	G06	C63	250	433
G05	C55	192	211	G05	C72	220	266	G06	C63	251	486
G05	C55	219	308	G05	C72	169	218	G06	C63	238	372
G05	C55	214	246	G05	C72	207	241	G06	C63	240	407
G05	C55	201	214	G05	C48	194	199	G06	C63	247	394
G05	C55	210	252	G05	C48	202	222	G06	C63	238	404
G05	C55	204	215	G05	C48	198	266	G06	C63	246	443
G05	C55	203	204	G05	C48	205	241	G06	C63	256	448
G05	C55	206	236	G05	C48	196	191	G06	C63	243	406
G05	C55	202	241	G05	C48	198	225	G06	C63	239	313
G05	C55	222	317	G05	C48	213	300	G06	C63	252	452
G05	C55	219	247	G05	C48	202	204	G06	C63	221	411
G05	C55	206	236	G05	C48	218	288	G06	C63	217	277
G05	C55	211	282	G05	C48	220	316	G06	C72	239	414
G05	C55	198	213	G05	C48	214	277	G06	C72	250	414
G05	C55	236	351	G05	C48	202	259	G06	C72	243	443
G05	C55	205	230	G05	C48	222	288	G06	C72	227	299
G05	C55	219	290	G05	C48	195	215	G06	C72	256	518
G05	C55	202	231	G05	C48	208	266	G06	C138	462	3274
G05	C55	216	282	G05	C48	201	245	G06	C82	301	832
G05	C55	200	222	G05	C48	202	233	G06	C82	261	525
G05	C55	204	200	G05	C48	198	230	G06	C82	255	485
G05	C72	224	327	G05	C48	198	225	G06	C82	258	464
G05	C72	215	270	G05	C48	210	241	G06	C82	227	323
G05	C72	210	264	G05	C48	203	252	G06	C55	221	268
G05	C72	213	307	G05	C48	218	274	G06	C55	207	277
G05	C72	209	234	G05	C48	201	240	G06	C55	249	291
G05	C72	235	415	G05	C48	209	250	G06	C55	229	334
G05	C72	210	254	G05	C48	214	266	G06	C55	214	292
G05	C72	275	687	G05	C48	209	210	G06	A112	433	2606
G05	C72	251	453	G05	C48	200	247	G06	A118	458	2574
G05	C72	211	278	G05	C48	204	247	G06	A118	455	2655
G05	C72	199	430	G05	C48	203	251	G06	A118	423	2588
G05	C72	198	215	G05	C48	205	257	G06	A118	486	3626
G05	C72	222	307	G05	F42	194	225	G06	A118	425	2294
G05	C72	208	260	G05	F42	202	269	G06	A118	424	2192
G05	C72	218	320	G05	F42	203	243	G07	C106	406	2052
G05	C72	197	221	G05	F42	197	181	G07	C106	404	2269

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

BOREAL CLUBHOOK SQUID											
St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G01	C72	296	520	G06	F22	74	12	G07	F42	142	66
G01	C72	276	470	G06	F22	72	12	G07	F42	184	111
G01	C72	296	500	G06	F22	86	19	G07	F42	148	69
G01	C72	270	450	G06	F22	84	18	G07	F42	161	94
G01	C72	265	440	G06	F19	72	12	G07	F42	165	33
G01	C82	391	555	G06	F19	87	21	G07	F42	177	100
G01	C82	380	610	G06	F19	72	14	G07	F42	180	101
G03	C63	288	449	G06	F19	87	20	G07	F42	184	134
G03	C72	254	393	G06	F19	83	19	G07	F42	115	31
G03	C72	256	376	G06	F19	84	19	G07	F42	180	116
G03	C72	268	442	G06	F19	111	33	G07	F42	140	61
G03	C72	276	488	G06	C48	187	136	G07	F42	113	116
G03	C72	262	444	G06	C48	180	116	G07	F42	165	89
G03	C72	282	472	G06	C48	178	119	G07	F33	182	125
G03	C82	293	573	G06	C48	167	104	G07	F33	148	61
G03	C82	283	527	G06	C48	180	121	G07	F33	127	46
G03	C82	296	535	G06	C48	204	172	G07	F33	112	31
G03	C82	288	553	G06	F25	96	26	G07	F33	119	45
G03	C82	288	576	G06	F25	91	23	G07	F33	97	18
G03	C82	303	562	G06	F25	76	16	G07	F33	92	22
G04	C48	211	201	G06	F25	89	21	G07	F33	122	39
G04	C48	184	137	G06	F25	77	17	G07	F33	141	67
G04	C48	182	122	G06	F25	97	27	G07	F33	87	18
G04	C48	178	128	G06	F29	104	31	G07	F22	119	46
G04	C48	221	223	G06	F29	125	45	G07	F22	73	16
G04	C48	198	175	G06	F29	96	23	G07	F22	76	19
G04	C48	184	136	G06	F37	162	91	G07	F22	107	35
G04	C48	184	152	G06	F37	148	70	G07	F22	86	23
G04	C48	192	143	G06	F37	174	102	G07	F22	92	25
G04	C48	186	150	G06	F37	94	23	G07	F22	81	18
G04	C48	184	137	G06	F37	129	57	G07	C48	168	83
G04	C48	181	126	G07	F42	166	110	G07	C48	175	110
G04	C48	188	130	G07	F42	172	131	G07	C48	200	137
G04	C48	164	112	G07	F42	166	99	G07	C48	181	120
G04	C48	180	123	G07	F42	172	108	G07	C48	182	131
G04	C48	162	128	G07	F42	171	114	G07	C48	203	185
G04	C48	170	116	G07	F42	163	86	G07	C48	201	135
G04	C48	185	152	G07	F42	165	80	G07	C48	184	134
G04	C48	178	143	G07	F42	145	76	G07	C48	176	111
G04	F42	188	142	G07	F42	184	141	G07	C48	175	111
G04	F42	184	135	G07	F42	167	98	G07	C48	183	126
G05	F22	73	17	G07	F42	155	84	G07	C48	169	117
G06	F42	171	114	G07	F42	194	150	G07	C48	204	186
G06	F22	67	42	G07	F42	168	118	G07	C48	175	123
G06	F22	91	20	G07	F42	175	102	G07	C48	188	141
G06	F22	89	16	G07	F42	163	91	G07	C48	193	146
G06	F22	92	16	G07	F42	155	79	G07	C48	195	167
G06	F22	94	15	G07	F42	162	92	G07	C48	189	135

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

BOREAL CLUBHOOK SQUID											
St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G07	C48	177	127	G07	F29	95	25	G08	C82	285	475
G07	C48	167	198	G07	F29	100	34	G08	C82	310	591
G07	C48	178	116	G07	F29	106	42	G08	C72	285	473
G07	C48	187	155	G07	F29	102	33	G08	C72	316	596
G07	C48	194	159	G07	F29	116	39	G08	C72	298	478
G07	C48	182	118	G07	F37	160	81	G08	C63	250	297
G07	C48	212	170	G07	F37	168	108	G08	C63	248	305
G07	C48	181	128	G07	F37	160	81	G08	C63	240	240
G07	C48	182	123	G07	F37	168	108	G08	C63	239	245
G07	C48	191	136	G07	F37	170	106	G08	C63	234	236
G07	C48	176	112	G07	F37	150	83	G08	C63	244	292
G07	C48	183	123	G07	F37	166	92	G08	C48	203	155
G07	F19	87	17	G07	F37	126	61	G08	C48	187	133
G07	F19	81	18	G07	F37	170	101	G08	C48	195	149
G07	C55	194	167	G07	F37	166	92	G08	C48	170	115
G07	C55	190	150	G07	F37	152	90	G08	C48	174	116
G07	C55	219	185	G07	F37	142	83	G08	C48	175	239
G07	C55	202	176	G07	F37	164	102	G08	C48	174	118
G07	C55	200	189	G07	F37	176	121	G08	C48	165	107
G07	C55	188	139	G07	F37	142	78	G08	C48	215	172
G07	C55	204	176	G08	F37	148	87	G08	C48	209	181
G07	C55	208	178	G08	F37	178	105	G08	C48	174	110
G07	C55	201	173	G08	F37	150	83	G08	C48	202	165
G07	C55	201	177	G08	F29	149	72	G08	C48	191	149
G07	C55	199	178	G08	F29	164	96	G08	C48	178	117
G07	C55	230	228	G08	F25	120	46	G08	C48	186	134
G07	C55	205	182	G08	C55	89	21	G08	C48	180	125
G07	C55	196	183	G08	C55	159	87	G08	C48	192	129
G07	C55	210	165	G08	C55	189	127	G08	C48	173	112
G07	C63	237	252	G08	C55	219	196	G08	C48	178	117
G07	C63	239	287	G08	C55	248	280	G08	C48	171	114
G07	F25	82	21	G08	C55	203	176	G08	C48	183	129
G07	F25	80	18	G08	C55	205	192	G08	F42	160	80
G07	F25	76	21	G08	C82	303	552	G08	F42	187	128
G07	F25	70	16	G08	C82	302	564	G08	F42	165	104
G07	F25	90	27	G08	C82	303	616	G08	F42	193	138
G07	F25	88	22	G08	C82	281	473	G08	F42	176	114
G07	F29	90	24	G08	C82	304	566	G08	F33	102	28

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

PACIFIC SAURY											
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G04	F29	284	99	G04	F33	280	95	G05	F37	328	142
G04	F29	296	115	G04	F37	290	108	G05	F37	348	120
G04	F29	285	102	G04	F37	290	106	G05	F37	332	103
G04	F29	306	120	G04	F37	300	113	G05	F37	318	152
G04	F29	288	83	G04	F37	308	124	G05	F37	305	122
G04	F29	308	115	G04	F37	284	104	G05	F37	308	144
G04	F29	284	86	G04	F37	274	95	G05	F37	316	166
G04	F29	283	98	G04	F37	282	103	G05	F37	304	158
G04	F29	301	120	G04	F37	281	101	G05	F37	311	175
G04	F29	297	104	G04	F37	293	128	G05	F37	298	144
G04	F29	290	107	G04	F37	278	98	G05	F37	321	170
G04	F29	282	77	G04	F37	296	115	G05	F37	286	127
G04	F29	286	95	G04	F37	290	105	G06	F42	305	154
G04	F29	282	114	G04	F37	274	103	G06	F33	243	66
G04	F29	321	144	G04	F37	300	121	G06	F22	150	16
G04	F29	287	119	G04	F37	304	136	G06	F22	161	21
G04	F29	291	97	G04	F37	324	155	G06	F19	145	14
G04	F29	276	95	G04	F37	300	149	G06	F19	139	12
G04	F29	286	90	G04	F37	196	149	G06	F29	248	75
G04	F29	289	82	G04	F37	286	101	G06	F29	237	78
G04	F29	289	109	G04	F37	286	117	G06	F37	296	141
G04	F29	300	145	G04	F37	310	120	G06	F37	249	83
G04	F29	280	100	G04	F37	300	113	G06	F37	249	91
G04	F29	300	107	G04	F37	313	108	G06	F37	279	113
G04	F29	292	94	G04	F37	280	85	G07	F19	165	18
G04	F29	288	108	G04	F37	280	115	G07	F19	162	22
G04	F29	306	132	G04	F37	294	103	G07	F19	160	23
G04	F29	300	84	G04	F37	276	85	G07	F19	148	20
G04	F29	280	88	G04	F37	293	109	G07	F19	163	22
G04	F29	290	66	G04	F37	303	109	G07	F19	178	22
G04	F33	332	142	G04	F37	283	106	G07	F19	160	11
G04	F33	283	100	G05	F29	300	118	G07	F19	162	20
G04	F33	315	165	G05	F29	309	148	G07	F19	152	19
G04	F33	278	124	G05	F29	311	157	G07	F19	157	18
G04	F33	286	111	G05	F29	299	128	G07	F19	167	21
G04	F33	308	121	G05	F29	293	129	G07	F19	156	20
G04	F33	292	101	G05	F42	324	148	G07	F19	159	20
G04	F33	280	127	G05	F42	305	152	G07	F19	160	19
G04	F33	276	89	G05	F42	306	138	G07	F19	157	18
G04	F33	292	109	G05	F42	322	157	G07	F19	165	10
G04	F33	296	76	G05	F42	315	183	G07	F19	156	19
G04	F33	290	112	G05	F42	307	137	G07	F19	155	10
G04	F33	310	120	G05	F33	305	142	G07	F19	166	19
G04	F33	292	82	G05	F33	307	131	G07	F19	158	18
G04	F33	284	126	G05	F33	297	130	G07	F19	154	14
G04	F33	298	94	G05	F33	296	130	G07	F19	150	12
G04	F33	304	94	G05	F33	302	129	G07	F19	169	20
G04	F33	276	80	G05	F33	301	120	G07	F19	165	18
G04	F33	272	123	G05	F33	298	127	G07	F19	167	21
G04	F33	304	103	G05	F33	301	120	G07	F19	171	18
G04	F33	290	82	G05	F33	299	115	G07	F19	164	23
G04	F33	266	92	G05	F33	179	81	G07	F19	159	11
G04	F33	276	82	G05	F33	305	130	G07	F19	159	19
G04	F33	272	87	G05	F33	295	108	G07	F19	155	11
G04	F33	276	87	G05	F33	311	117	G07	F29	242	75
G04	F33	272	115	G05	F33	306	120	G07	F29	246	79
G04	F33	282	81	G05	F33	289	105	G07	F29	254	74
G04	F33	280	92	G05	F37	334	160				

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

PACIFIC POMFRET											
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G04	F29	468	1530	G07	A115	383	1099	G07	C157	426	1653
G04	F33	434	1460	G07	A115	452	1923	G07	C157	435	1468
G04	C82	451	1533	G07	A115	412	1275	G07	C157	449	1548
G04	C93	452	1518	G07	A115	440	1312	G07	C82	464	1750
G04	C106	470	1562	G07	A115	448	1656	G07	C82	487	1804
G04	C138	464	1863	G07	A115	409	1253	G07	C82	449	1485
G04	C138	426	1360	G07	A115	414	1322	G07	C82	474	1920
G04	C138	460	1801	G07	A115	454	1617	G07	C82	463	1890
G04	C138	412	1367	G07	A115	471	2011	G07	C82	438	1520
G04	C138	450	1610	G07	A115	414	1310	G07	C82	475	2177
G04	C138	434	1600	G07	A115	460	1729	G07	C82	444	1615
G04	C138	426	1394	G07	A115	480	1881	G07	C82	449	1669
G04	C138	474	1773	G07	A115	438	1482	G07	C82	454	1880
G04	C157	481	1910	G07	F42	433	1418	G07	C138	436	1643
G04	C157	440	1565	G07	C48	468	1773	G07	C138	450	1729
G04	C157	420	1345	G07	C48	425	1498	G07	C138	458	1825
G04	C157	452	1603	G07	C48	426	1287	G07	C138	466	1806
G04	C157	464	1725	G07	C93	462	1715	G07	C138	424	1258
G04	C157	442	1290	G07	C93	455	1719	G07	C138	436	1650
G04	C157	388	1101	G07	C93	481	1721	G07	C138	464	1923
G04	C157	430	1423	G07	C93	453	1797	G07	C138	441	1590
G04	C157	383	951	G07	C93	438	1590	G07	C138	472	1675
G04	C157	440	1333	G07	C93	463	1610	G07	C138	458	1982
G04	C157	442	1561	G07	C93	450	1666	G07	C138	414	1240
G04	C157	406	1160	G07	C93	452	1578	G07	C138	440	1563
G04	C157	434	1360	G07	C93	449	1574	G07	C138	462	1853
G04	C157	456	1756	G07	C93	451	1484	G07	C138	470	1692
G04	C157	433	1326	G07	C157	461	1635	G07	C138	450	1690
G04	A112	391	1020	G07	C157	353	1593	G07	C138	486	1847
G04	A112	414	1256	G07	C157	425	1587	G07	C138	420	1471
G04	A112	418	1180	G07	C157	451	1874	G07	C138	447	1507
G04	A115	452	1587	G07	C157	411	1330	G07	C138	470	1647
G04	A115	419	1203	G07	C157	453	1623	G07	C138	446	1463
G04	A115	424	1075	G07	C157	454	1777	G07	C138	442	1663
G05	C55	181	68	G07	C157	435	1370	G07	C138	465	1875
G05	C72	173	88	G07	C157	455	1832	G07	C138	429	1290
G05	C72	169	86	G07	C157	488	1794	G07	C138	460	1534
G05	C72	168	74	G07	C157	437	1547	G07	C138	493	1427
G05	C157	419	1070	G07	C157	421	1244	G07	C138	443	1693
G05	C157	448	1430	G07	C157	465	1865	G07	C138	465	1600
G05	C157	422	1106	G07	C157	452	1750	G07	C138	440	1483
G06	C138	456	1823	G07	C157	449	1490	G07	C138	433	1437
G06	C138	471	2083	G07	C157	447	1650	G07	C138	450	1663
G06	A121	444	1308	G07	C157	472	1871	G07	C121	468	1588
G07	A121	475	1918	G07	C157	449	1610	G07	C121	462	1812
G07	A121	466	1690	G07	C157	464	1884	G07	C121	453	1879
G07	A121	470	1648	G07	C157	456	2102	G07	C121	415	1359
G07	A121	429	1303	G07	C157	469	1944	G07	C121	438	1601
G07	A121	442	1614	G07	C157	455	1660	G07	C121	446	1379
G07	A121	468	1659	G07	C157	462	1765	G07	C121	445	1556
G07	A121	485	1988	G07	C157	442	1480	G07	C121	421	1249
G07	A121	424	1363	G07	C157	466	1735	G07	C121	431	1811
G07	A121	452	1575	G07	C157	462	1802	G07	C121	418	1278
G07	A121	412	1130	G07	C157	443	1788	G07	C121	456	1670

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

PACIFIC POMFRET											
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
G07	C121	439	1387	G08	C55	442	1704	G08	C157	442	1522
G07	C121	447	1408	G08	C82	437	1581	G08	C157	434	1338
G07	C121	449	1040	G08	C82	420	1386	G08	C157	436	1720
G07	C121	450	1460	G08	C82	468	1607	G08	C157	459	1690
G07	C121	448	1458	G08	C138	464	1960	G08	C157	481	1830
G07	C55	464	1735	G08	C138	479	1927	G08	C157	469	2082
G07	C55	476	1738	G08	C138	459	1635	G08	C157	431	1347
G07	C55	468	1846	G08	C138	468	1744	G08	C157	452	1687
G07	C55	455	1765	G08	C138	446	1433	G08	C157	462	1653
G07	C55	440	1674	G08	C138	453	1672	G08	C157	448	1537
G07	A118	423	1167	G08	C138	445	1612	G08	C157	467	1594
G07	A118	472	1833	G08	C138	463	1866	G08	C157	445	1542
G07	A118	464	1740	G08	C138	432	1402	G08	C157	449	1700
G07	A118	474	1648	G08	C138	441	1454	G08	C157	470	1700
G07	A118	412	1194	G08	C138	470	1899	G08	C157	459	1663
G07	A118	458	1855	G08	C138	449	2005	G08	C157	451	1756
G07	A118	469	1721	G08	C138	470	1910	G08	C157	453	1733
G07	A118	431	1410	G08	C138	455	1576	G08	C157	438	1392
G07	A118	412	1277	G08	C138	441	1586	G08	C157	495	1567
G07	A118	473	192	G08	C138	428	1380	G08	C157	462	1739
G07	A118	444	1539	G08	C138	430	1513	G08	C157	448	1613
G07	A118	424	1436	G08	C138	411	1404	G08	C157	425	1534
G07	A112	429	1231	G08	C138	461	1429	G08	C157	432	1652
G07	A112	437	1523	G08	C138	468	2052	G08	C157	467	1635
G07	A112	462	1703	G08	C138	465	1589	G08	C157	443	1420
G07	A112	459	1669	G08	C138	434	1505	G08	C157	467	1881
G07	A112	461	1630	G08	C138	451	1868	G08	C157	466	1860
G07	A112	417	1420	G08	C138	469	1900	G08	C157	443	1536
G07	A112	476	1561	G08	C138	460	1831	G08	C93	461	1653
G07	A112	448	1762	G08	C138	466	1893	G08	C93	449	1586
G07	A112	418	1562	G08	C138	466	1872	G08	C93	438	1463
G07	C72	469	1906	G08	C138	439	1733	G08	C48	450	1696
G07	C72	463	1634	G08	C138	461	1721	G08	C48	453	1472
G07	C106	458	2031	G08	C138	452	1517	G08	F42	459	1736
G07	C106	480	1776	G08	C72	443	1412	G08	A115	434	1855
G07	C106	449	1711	G08	C72	460	1499	G08	A115	462	1811
G07	C106	470	1822	G08	C72	455	1655	G08	A115	428	1292
G07	C106	419	1310	G08	C121	458	1611	G08	A115	444	1582
G07	C106	480	1961	G08	C121	468	1800	G08	A115	459	1750
G07	C63	473	1847	G08	C121	446	1636	G08	A115	462	1980
G07	C63	451	1679	G08	C121	448	1630	G08	F33	465	1709
G07	C63	455	1737	G08	C121	421	1519	G08	F33	485	2149
G07	C63	434	1470	G08	C121	440	1431	G08	F33	469	2138
G07	F37	455	1760	G08	C121	441	1753	G08	F22	471	1720
G07	F37	469	1860	G08	C121	453	1648	G08	F22	432	1422
G07	F37	470	1800	G08	C121	429	1362	G08	A121	430	1280
G07	F37	449	1740	G08	C121	425	1397	G08	A121	430	1500
G08	A118	480	2120	G08	C121	425	1269	G08	A121	429	1430
G08	A118	444	1545	G08	C121	410	1420	G08	A121	432	1480
G08	A118	455	1781	G08	C121	438	1348	G08	A121	450	1640
G08	A118	467	1764	G08	C121	478	1947	G08	A121	440	1720
G08	A118	457	1764	G08	C121	461	1702	G08	A121	438	1700
G08	A112	399	1252	G08	C63	465	1720	G08	A121	420	1530
G08	A112	474	1870	G08	C63	488	1835	G08	A121	435	1510
G08	A112	483	1900	G08	C63	465	1751	G08	A121	450	1620
G08	A112	485	2286	G08	C63	415	1222	G08	A121	462	1700
G08	A112	460	1674	G08	C63	477	1824	G08	A121	428	1500
G08	C55	419	1437	G08	C106	453	1581	G08	A121	408	1120
G08	C55	466	1675	G08	C157	461	1731				
G08	C55	443	1419	G08	C157	440	1435				
ALBACORE											
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
G03	A112	630	5482	G03	C106	610	4760	G03	C63	500	2612
G03	A121	485	2394	G03	C121	630	5590	G03	C72	618	5342
G03	C106	625	5544	G03	C138	495	2511	G03	C72	512	2900
G03	C106	618	4824	G03	C138	636	5250	G03	C72	500	2619
								G03	C72	698	6315

6. Salmon Hook-and-Line and surface longline Research

[Hook-and-Line and surface longline Sampling]

To collect salmon, hook-and-line gears and surface longline were used along 155° E line in the Central North Pacific during Cruise #228. Five to ten anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

Note: Table 10, 11 includes the *Oshoro maru* Cruise #229 hook-and-line research data.

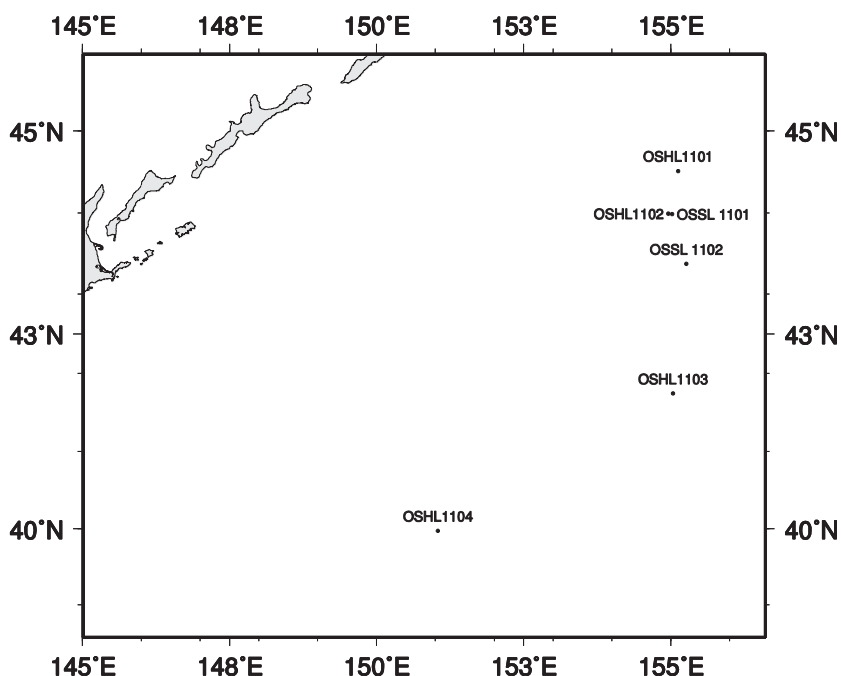


Figure 4. Locations of salmon hook-and-line and surface longline research

Table 9. Position and research conditions of surface longline sampling at each station during the *Oshoro maru* Cruise #228, 2011.

Station	Date and Time (S.M.T.*1)				T.D.*2	Set Position		D.S.*3	Number of baskets	Wr*4	Wind (Force)
	Line set		Line haul			Lat.	Long.				
Cruise #228											
OSSL 1101	May 16	04:55-05:40	May 16	08:39-09:46	+10h	43-59.8N	155-01.0E	080	20	o	West-5
OSHL1101	May 16	21:00	May 17	02:00	+10h	04-31.2N	155-07.0E	-	-	bc	WSW-5
OSSL 1102	May 17	03:55-04:20	May 17	06:25-06:54	+10h	43-22.8N	155-15.3E	253	20	b	WSW-4
OSHL1102	May 17	21:00	May 18	03:15	+10h	44-00.0N	154-57.0E	-	-	o	SSE-4
OSHL1103	May 18	21:00	May 19	03:00	+10h	41-45.2N	155-02.0E	-	-	c	West-5
OSHL1104	May 21	23:00	May 22	03:30	+9h	39-59.0N	151-02.0E	-	-	f	SW-6

*1 S.M.T. : Ship's Mean Time.

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of line set.

*4 Wr. : Weather (b: 1-25% clouded, bc: 25-75% clouded, c: over 75-99% clouded, o: 100% clouded, f: fog).

Table 10. The catch number of each salmonid at each station where salmonids were collected by hook-and-line gear, surface longline in the Oshoro maru Cruise # 228 and #229, 2011.

Station Name	Sampling gear	Species name						Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	
Cruise #228								
OSSL1101	Surface longline	0	16	8	0	0	0	24
OSSL1102	Surface longline	0	2	32	0	0	0	34
OSHL1101	Hook-and-line	0	1	119	0	0	0	120
OSHL1102	Hook-and-line	0	1	30	0	0	0	31
OSHL1103	Hook-and-line	0	1	56	0	0	0	57
OSHL1104	Hook-and-line	0	61	3	0	0	0	64
Subtotal		0	82	248	0	0	0	330
Cruise #229								
OSHL1105	Hook-and-line	0	0	5	0	0	0	5
Subtotal		0	0	5	0	0	0	5
Total		0	82	253	0	0	0	335

Table 11. Biological characteristics of salmonids caught by hook-and-line research

CHUM SALMON									
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
SL01	550	2040	F	56	SL01	556	2060	F	32
SL01	530	1770	M	4	SL01	524	1680	M	1
SL01	610	1619	M	3	SL01	520	1970	M	8
SL01	522	1650	M	2	SL01	554	1910	M	7
SL01	503	1753	M	10	SL01	530	1850	M	5
SL01	594	2400	M	3	SL01	558	2230	M	2
SL01	533	1950	F	42	SL01	590	2440	M	2
SL01	554	2300	M	12	SL01	523	1680	F	14
PINK SALMON									
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
SL01	400	756	M	3	SL02	392	563	F	5
SL01	410	800	M	2	SL02	396	633	F	9
SL01	450	960	M	4	SL02	414	702	M	2
SL01	380	630	F	8	SL02	392	660	M	2
SL01	493	1450	M	9	SL02	378	572	M	2
SL01	423	910	M	2	SL02	394	610	M	3
SL01	390	730	M	1	SL02	360	500	F	5
SL01	364	585	F	3	SL02	376	521	M	3
SL02	360	459	M	1	HL01	482	1325	F	34
SL02	397	474	M	1	HL01	378	530	M	4
SL02	390	563	M	2	HL01	378	600	F	10
SL02	305	753	M	2	HL01	362	510	M	3
SL02	395	581	F	3	HL01	401	730	F	12
SL02	367	545	M	1	HL01	380	509	M	4
SL02	395	663	F	6	HL01	356	560	M	7
SL02	373	538	M	1	HL01	363	530	M	3
SL02	389	655	F	8	HL01	381	700	F	9
SL02	393	666	F	19	HL01	373	700	M	12
SL02	382	631	M	2	HL01	372	570	M	15
SL02	374	540	M	1	HL01	399	760	M	5
SL02	406	660	M	3	HL01	368	590	F	12
SL02	386	567	F	6	HL01	392	790	F	17
SL02	378	604	F	8	HL01	361	630	F	12
SL02	386	576	M	2	HL01	389	700	M	2
SL02	370	501	M	1	HL01	361	600	M	5
SL02	370	520	M	1	HL01	402	800	M	4
SL02	386	607	F	6	HL01	382	680	F	12
SL02	392	627	F	10	HL01	370	680	M	5
SL02	376	554	M	1	HL01	381	650	F	9
SL02	422	882	M	2	HL01	370	620	M	4
SL02	374	482	F	8	HL01	394	690	F	15
SL02	390	626	F	10	HL01	388	630	F	11
HL01	329	500	M	4	HL01	370	590	F	9
HL01	396	700	F	10					
HL01	388	660	F	11					
HL01	381	610	M	4					
HL01	384	700	M	6					
HL01	382	650	F	15					
HL01	393	700	F	10					
HL01	388	660	F	9					
HL01	392	710	F	6					
HL01	458	1210	M	7					
HL01	393	770	M	1					
HL01	384	510	M	2					
HL01	386	650	M	2					
HL01	371	510	M	2					
HL01	392	690	F	9					
HL01	396	715	M	3					
HL01	374	610	F	13					
HL01	384	710	M	2					
HL01	400	690	M	3					
HL01	370	560	M	3					
HL01	410	810	F	20					
HL01	373	560	F	8					
HL01	395	660	F	16					
HL01	393	640	M	1					
HL01	392	650	M	3					
HL01	392	710	M	3					
HL01	381	640	M	2					
HL01	376	590	M	1					
HL01	358	540	F	6					
HL01	373	540	F	6					
HL01	374	615	F	8					
HL01	370	590	F	9					

Table 11. Biological characteristics of salmonids caught by hook-and-line research (continued)

PINK SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL01	392	720	M	3	HL03	376	590	—	—	HL04	431	880	M	6
HL01	383	665	F	8	HL03	400	710	—	—	HL04	408	860	F	24
HL01	380	630	M	4	HL03	430	920	—	—	HL04	414	840	F	14
HL01	380	660	F	5	HL03	382	830	—	—	HL04	392	780	F	16
HL01	392	665	F	11	HL03	370	495	—	—	HL04	390	780	F	12
HL02	388	730	F	35	HL03	388	720	—	—	HL04	400	860	F	22
HL02	384	680	M	10	HL03	360	670	—	—	HL04	440	1030	M	3
HL02	398	800	F	15	HL03	365	560	—	—	HL04	445	1250	F	88
HL02	364	600	M	8	HL03	380	710	—	—	HL04	396	880	M	5
HL02	432	960	M	10	HL03	364	670	—	—	HL04	388	770	F	21
HL02	390	750	M	7	HL03	380	510	—	—	HL04	370	730	F	10
HL02	398	700	M	7	HL03	404	640	—	—	HL04	378	730	F	13
HL02	418	940	F	20	HL03	378	640	—	—	HL04	400	820	F	23
HL02	418	840	M	15	HL03	404	910	M	12	HL04	398	800	F	20
HL02	416	760	M	10	HL03	378	700	F	31	HL04	434	860	M	14
HL02	394	740	M	4	HL03	357	560	F	19	HL04	382	810	M	6
HL02	382	600	F	10	HL03	386	640	F	40	HL04	396	850	F	14
HL02	396	720	F	28	HL03	366	640	M	10	HL04	432	980	M	10
HL02	381	640	M	4	HL03	380	630	M	9	HL04	413	940	M	3
HL02	372	580	M	4	HL03	389	640	F	19	HL04	400	880	F	20
HL02	390	580	M	5	HL03	381	700	F	28	HL04	432	930	F	23
HL02	382	700	F	11	HL03	348	500	F	34	HL04	420	820	F	18
HL02	390	640	F	12	HL03	376	580	F	32	HL04	418	870	M	3
HL02	390	680	F	11	HL03	372	640	F	12	HL04	395	720	F	18
HL02	396	720	F	23	HL03	386	540	F	16	HL04	430	750	F	24
HL02	421	860	M	8	HL03	358	580	F	13	HL04	420	800	F	17
HL02	419	840	M	7	HL03	390	620	M	6	HL04	402	920	F	20
HL02	442	840	M	8	HL03	364	550	M	5	HL04	405	850	F	22
HL02	400	660	F	18	HL03	414	740	M	6	HL04	406	850	M	3
HL02	441	660	M	12	HL03	386	720	F	16	HL04	432	960	F	22
HL02	433	780	F	39	HL03	392	670	M	7	HL04	442	920	M	3
HL02	411	780	M	7	HL03	386	660	M	6	HL04	410	900	M	2
HL02	381	560	F	22	HL03	400	670	F	15	HL04	432	940	F	23
HL02	390	620	F	15	HL03	356	560	M	10	HL04	376	740	F	12
HL03	392	700	—	—	HL03	407	640	M	7	HL04	420	980	M	5
HL03	378	560	—	—	HL03	392	750	F	13	HL04	410	920	F	17
HL03	384	640	—	—	HL03	398	750	F	16	HL04	430	1180	F	23
HL03	386	650	—	—	HL03	398	640	M	6	HL04	402	780	F	17
HL03	368	630	—	—	HL04	436	1200	M	7	HL04	448	1020	M	5
HL03	402	680	—	—	HL04	419	940	F	16	HL04	470	1100	F	22
HL03	396	680	—	—	HL04	434	960	M	2	HL04	420	940	M	3
HL03	398	680	—	—	HL04	456	1100	F	18	HL04	400	840	F	12
HL03	384	660	—	—	HL04	417	980	F	11	HL04	402	800	F	22
HL03	374	640	—	—	HL04	395	840	M	5	HL04	432	940	F	20
HL03	370	680	—	—	HL04	424	940	F	15	HL04	412	860	M	3
HL03	421	800	—	—	HL04	389	730	F	8	HL04	440	920	M	4
HL03	375	680	—	—	HL04	437	930	M	7	HL05	556	2200	M	54
HL03	370	620	—	—	HL04	406	800	F	16	HL05	568	2400	M	36
HL03	330	395	—	—	HL04	566	1350	M	14	HL05	466	1350	M	18
HL03	382	640	—	—	HL04	394	830	F	18	HL05	510	1620	M	54
HL03	374	610	—	—	HL04	408	890	F	15	HL05	450	1200	M	48

7. Data on Plankton Collected by Vertical Hauls with a single or twin NORPAC Net.

Vertical hauls with a twin-NORPAC net were made at hydrographic stations. This net was composed of 45 cm mouth diameter and 180 cm long conical one which was made of GG54 and XX13 having 0.33 mm and 0.10 mm mesh, respectively. The net was lowered to the estimated depth of 150 m, 500 m or near the bottom when the bottom depth was shallower than 150 m, and immediately hauled to the surface at a speed about 1 m s⁻¹. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by research staffs and measurement of wet weight of the samples were made by A. Yamaguchi, K. Matsuno, R. Saito, R. Ohashi, Y. Abe, T. Shiota, K. Chikugo (Laboratory of Marine Biology).

Table 12. Data on plankton collected by vertical hauls with a single or twin NORPAC net.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS11043 (Site H)	41-30	145-47	14 May	11:27	530	19	501	GG54	1479	5472	88.51	107.0	1208	1) 11001
								XX13	1630	5188	87.78			11002
				11:58	155	14	150	GG54	1479	1678	27.14	76.0	2801	1) 11003
								XX13	1630	1682	28.46			11004
OS11044 (St. KNOT)	44-00	155-00	16 May	4:28	155	15	150	GG54	1479	1542	24.94	8.4	336	11005
								XX13	1630	1442	24.40			11006
OS11045	43-15	155-00	16 May	15:56	150	4	150	GG54	1479	1380	22.32	4.8	214	11007
								XX13	1630	1535	25.97			11008
OS11048	42-30	155-00	18 May	12:35	150	5	149	GG54	1479	1462	23.65	5.9	247	11009
								XX13	1630	1462	24.74			11010
OS11049	41-45	155-00	18 May	19:13	152	10	150	GG54	1479	1355	21.92	15.7	718	11011
								XX13	1630	1415	23.94			11012
OS11052	39-30	155-00	19 May	19:46	152	10	150	GG54	1479	1411	22.82	2.0	86	11013
								XX13	1630	1323	22.38			11014
OS11053	38-45	155-00	20 May	9:37	155	14	150	GG54	1479	1412	22.84	6.2	270	11015
								XX13	1630	1162	19.66			11016
OS11054	38-00	155-00	20 May	15:50	150	4	150	GG54	1479	1342	21.71	7.5	343	11017
								XX13	1630	1148	19.42			11018

1) Phytoplankton abundant

2) Including some fragments of medusae

3) *Neocalanus* abundant

4) Gelatinous zooplankton abundant

5) Doliolids abundant

8. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in the cruise.

Table 13. Calibration data on flowmeters used for a twin NORPAC net and other kind of nets.
100-m wire out at off Aomori in 23 May 2011.

Flowmeter No.	Wire length (m)	Revolution								Mean
		1	2	3	4	5	6	7	8	
RG1479	100	990	1005	968	950*	1045*	947*	1079*	970	983
RG1630	100	910*	1000	930	915	1245*	915	1130*	912*	940
RG3556	100	1128*	1082	1100	1098	1005*	1119	910*	1152*	1100

*: omitted from calculation

**THE "OSHO RO MARU" CRUISE 229
TO AROUND JAPAN AND THE NORTHWEST PACIFIC OCEAN**

IN JUNE - AUGUST 2011

1. Cruise Itinerary

Cruise 229

Departure from Hakodate and start hydrographic research (OS11055)	Jun.	8,	2011
Arrival at Akita and change research staff		18	
Departure from Akita		19	
Arrival at Hakata and change research staff		26	
Departure from Hakata		30	
Recovery of current meter	Jul.	2, 3	
Arrival at Naha and change research staff		6	
Departure from Naha		9	
Start Mid water trawl research (OSMT1101)		12	
Finish the Mid water trawl research		13	
Arrival at Tokyo and change research staff		17	
Departure from Tokyo		22	
Start Gillnet research (OSG1105)		28	
Start Hook and line(OSHL1105)		31	
Finish Gillnet and Hook and Line research (OSG1108,OSHL1105)	Aug.	1	
Finish hydrographic research (OS11328)		5	
Return to Hakodate		6	

Total coverage 7958.7 miles

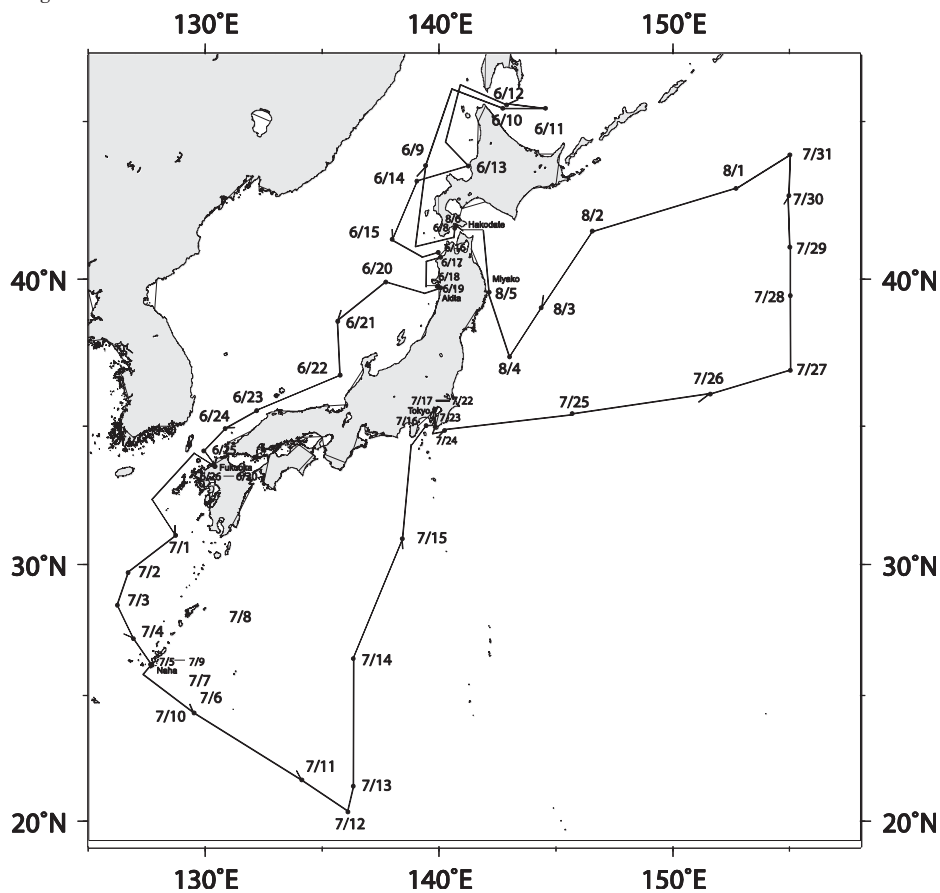


Figure 1. Track and Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Instructor	Naoki Hoshi
	Second Officer	Technical official	Takuzo Abe
	Third Officer	Technical official	Ohwada Maki
	Chief Engineer	Instructor	Jyunichi Kimura
	And 26 men		

Cruise 229

Research Staff:	Associate Professor	(Laboratory of Marine Environmental Science)	
	Hakodate – Naha		Yutaka Isoda
	Lecturer	(Fukui Prefectural University)	
	Akita - Hakata		Atusi Kaneda
	Instructor	(Fukui Prefectural University)	
	Akita - Naha		Yoshitake Takao
	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	
	Hakodate - Naha		Toru Hirawake
	Professor	(Laboratory of Marine Environmental Science)	
	Hakodate - Naha		Kenshi Kuma
	Associate Professor	(Laboratory of Marine Environmental Science)	
	Akita - Naha		Isao Kudo
	Associate Professor	(Laboratory of Marine Biodiversity)	
	Hakodate - Hakodate		Atsushi Yamaguchi
	Instructor	(Field Science Center for Northern Biospher, Hokkaido University)	
	Naha - Tokyo		Jun Yamamoto
	Research Fellow	(Graduate School of Information and Technology GCOE)	
	Naha - Tokyo		Toshiro Iwamori
	Senior Researcher	(National Institute for Environmental Studies)	
	Hakodate - Hakata		Takafumi Aramaki
	Research Associate	(National Institute for Environmental Studies)	
	Hakodate - Hakata		Shinichi Tanaka
	Researcher	(Korea Ocean Research and Development Institute)	
	Hakodate - Hakata		Chang-Joon Kim
	Technical assistant	(Korea Ocean Research and Development Institute)	
	Hakodate - Hakata		Kyu-Young, Ha
	Associate Professor	(Bio-Physical Oceanography, Nagoya University)	
	Akita - Naha		Akihiko Morimoto
	Lecturer	(National Fisheries University)	
	Hakata - Naha		Tetutarou Takikawa
	Associate Professor	(Institute of Low Temperature Science, Hokkaido University)	
	Hakodate - Akita		Jun Nishioka
	Lecturer	(Institute of Low Temperature Science, Hokkaido University)	
	Hakodate - Akita		Tomohiro Nakamura
	Associate Professor	(Research Institute for Applied Mechanics, Kyushu University)	
	Akita - Hakata		Tomoharu Senjyu
	Instructor	(Kanazawa University)	
	Hakodate - Hakata		Mutsuo Inoue
	Researcher	(Kanazawa University)	

Technical staff	Akita - Naha	Chun-Sang Hong
	Researcher	(National Institute of Advanced Industrial Science and Technology)
	Tokyo - Hakodate	Nobuo Tsurushima
	Instructor	(Graduate School of Science, Tokyo University)
	Hakata - Tokyo	Yoshihiro Niwa
	Chief Researcher	(Plant Research Department, National Museum of Nature and Science)
	Hakata - Tokyo	Akihiro Tuji
	Special Research Student	(Plant Research Department, National Museum of Nature and Science)
	Hakata - Hakodate	Kaoru Ogane
	Instructor	(Tohoku University)
	Naha - Tokyo	Noritoshi Suzuki
	Associate Professor	(Yamanashi University)
	Hakata - Naha	Hiroshi Kobayashi
	Associate	(Atmosphere Ocean Research Institute , University of Tokyo)
	Naha - Tokyo	Hidekazu Tokuyama
	Associate Professor	(TEIKYO University of Science & Technology)
	Naha - Tokyo	Kyoichi Mori
	Contract Associate Professor	(Mie University)
	Hakata - Tokyo	Noriko Funasaka
	Associate Professor	(Tokai University)
Hakodate - Akita	Hiroshi Oizumi	
Researcher	(International Christian University)	
Hakodate - Hakodate	Keiko Sekiguchi	
Technical assistant	(Hydro Systems Development, Inc.)	
Hakata - Naha	Tadashi Kato	
Technical assistant	(KAIYO DENSHI KOGYO K.K.)	
Hakata - Naha	Yasuyuki Murakami	
Technical assistant	(KOWA Corporation)	
Naha - Tokyo	Osamu Numamoto	
Graduate Students	29 persons	
Under Graduate Students	11 persons	
Total 74 persons		

3. Items of Research

Hydrographic observations by CTD, X-CTD, X-BT, and VMP-5500 casts:	Fig. 2	Table 1, 2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	
Salmon hook-and-line research:	Fig. 4	Table 3
Biological research for fishes caught by mid-water trawl observations:	Fig. 5	Table 4, 5
Biological research for squid caught by jigging		
Plankton sampling by NORPAC-net, MTD-net, Bongo-net, and VMPS-net		Table 6, 7
Sediment sampling and observation by ROV and Smith-McIntyre Grab:		
Water samplings by Niskin bottles and underwater tug plane:		

Objects

Research of growth, feeding ecology and trophic dynamics of Pacific salmon in the North Pacific .

Investigation of ell.

Distribution of larval fishes, in Japan Sea, East China Sea and the North Pacific.

Physical environmental survey in Japan Sea, East China Sea and Okinotorishima atolls.

Study on metal or chemical compositional movement in the Sea of Okhotsk, Japan Sea and East China Sea.

Fundamental study for the development of the bio-optical algorithm for satellite ocean color remote sensing.

Geographical distribution of plankton, Labyrinthulea, diatom and radiolarian assemblages in Japan Sea, East China Sea and the North Pacific.

Observation on the seafloor and sediment sampling by the ROV and sediment sampler.

Measurements current shear etc., using VMP5500 in area of the Okinawa Island and Ogasawara shallower than 1500m.

Observation environmental of nutritional matter using underwater tug plane in the Sea of Okhotsk.

4. 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 “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus, SBE-19Plus and XCTD1 or 2). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

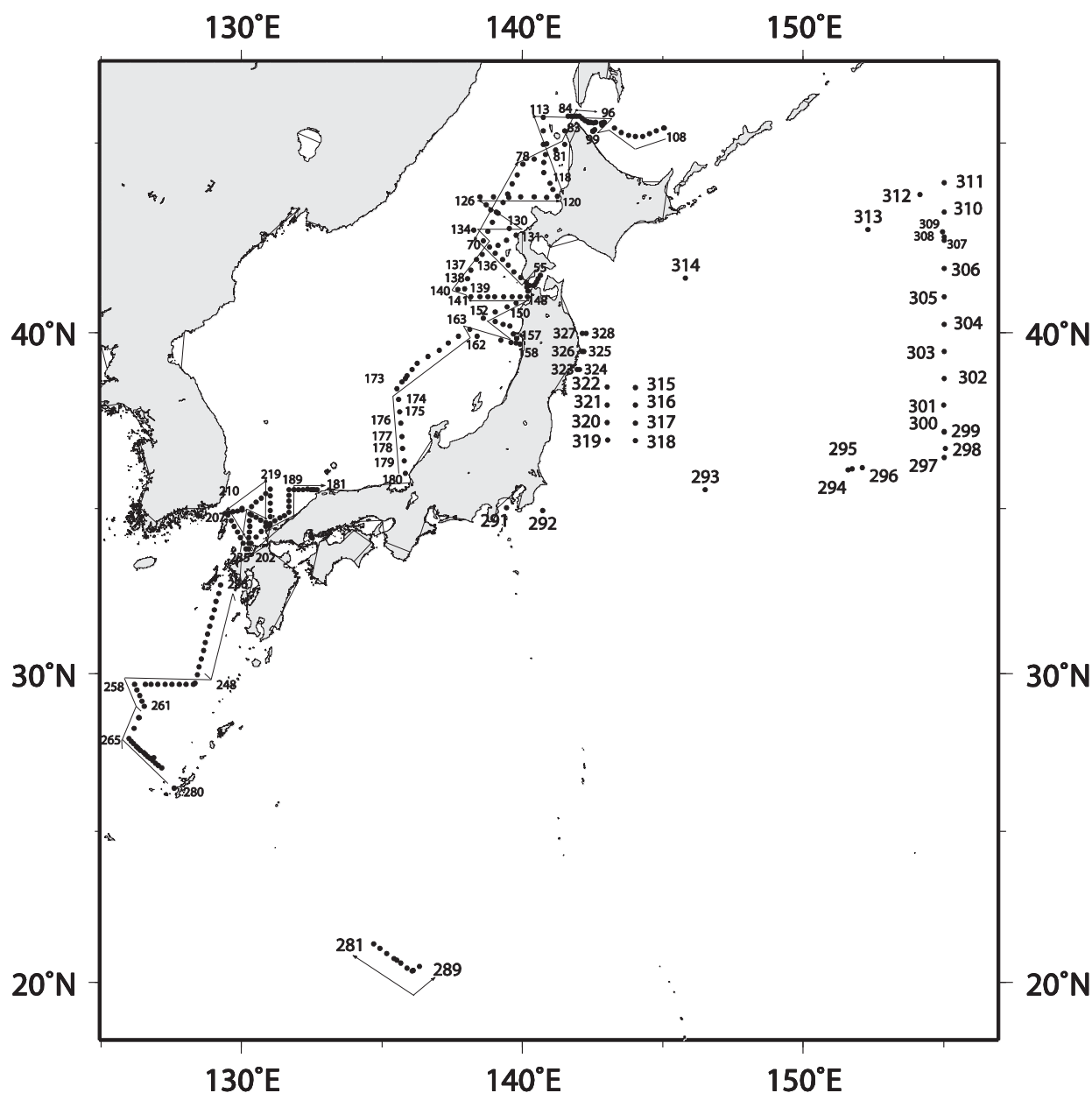


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11055	41-34.1N	140-37.1E	6/8	0337	9	125	-	-	-	bc	XBT
OS11056	41-29.4N	140-32.2E	6/8	0417	9	179	-	-	-	bc	XBT
OS11057	41-23.4N	140-29.0E	6/8	0455	9	240	-	-	-	c	XBT
OS11058	41-19.0N	140-24.7E	6/8	0543	9	180	-	-	-	c	9Plus-0769
OS11059	41-17.7N	140-22.0E	6/8	0642	9	120	-	-	-	c	XBT
OS11060	41-17.7N	140-14.0E	6/8	-	9	77	-	-	-	c	XBT
OS11061	41-09.3N	140-11.0E	6/8	0807	9	94	-	-	15.1	bc	9Plus-0769
OS11062	41-15.7N	140-07.9E	6/8	0855	9	350	-	-	-	bc	XBT
OS11063	41-22.2N	140-86.5E	6/8	0937	9	117	-	-	14.3	bc	9Plus-0769
OS11064	41-30.4N	139-55.2E	6/8	1123	9	152	-	-	13.9	-	9Plus-0769
OS11065	41-40.1N	139-40.5E	6/8	1309	9	1424	-	-	13.8	-	9Plus-0769
OS11066	41-51.0N	139-28.7E	6/8	1500	9	925	-	-	13.6	-	9Plus-0769
OS11067	41-59.4N	139-15.9E	6/8	1640	9	2390	-	-	14.1	-	9Plus-0769
OS11068	42-10.1N	138-59.9E	6/8	1837	9	3720	-	-	-	-	XBT
OS11069	42-19.6N	138-48.7E	6/8	1938	9	3610	-	-	-	c	XBT
OS11070	42-29.1N	138-35.7E	6/8	2040	9	3650	-	-	-	c	XBT
OS11071	42-44.6N	138-45.3E	6/8	2201	9	3661	-	-	-	c	XBT
OS11072	42-58.9N	138-55.0E	6/8	2316	9	3565	-	-	-	c	XBT
OS11073	43-13.3N	139-06.3E	6/9	0034	9	-	-	-	-	c	XBT
OS11074	43-29.9N	139-17.7E	6/9	0203	9	2794	-	-	-	c	XBT
OS11075	43-42.8N	139-27.3E	6/9	0315	9	2590	-	-	-	c	XBT
OS11076	43-58.5N	139-37.0E	6/9	0440	9	1490	-	-	-	c	XBT
OS11077	44-12.8N	139-47.0E	6/9	0610	9	1310	-	-	-	c	XBT
OS11078	44-29.4N	139-60.0E	6/9	0758	9	590	-	-	11.4	c	9Plus-0769
OS11079	44-36.5N	140-24.1E	6/9	0440	9	140	-	-	-	c	XBT
OS11080	44-43.6N	140-48.3E	6/9	0441	9	220	-	-	12.4	-	9Plus-0769
OS11081	44-50.8N	141-09.5E	6/9	0442	9	99	-	-	-	-	XBT
OS11082	44-59.1N	141-28.8E	6/9	0443	9	617	-	-	12.4	-	9Plus-0769
OS11083	45-19.4N	141-28.8E	6/9	0444	9	60	-	-	-	-	XBT
OS11084	45-41.5N	141-35.9E	6/9	0445	9	91	-	-	-	c	XBT
OS11085	45-41.5N	141-42.0E	6/9	0446	9	73	-	-	-	c	XBT
OS11086	45-41.5N	141-48.0E	6/9	0447	9	67	-	-	-	c	XBT
OS11087	45-41.5N	141-54.0E	6/9	0448	9	59	-	-	-	c	XBT
OS11088	45-41.2N	142-00.0E	6/9	0449	9	62	-	-	-	c	XBT
OS11089	45-38.2N	142-06.0E	6/9	0450	9	53	-	-	-	c	XBT
OS11090	45-35.2N	142-12.0E	6/9	0451	9	50	-	-	-	c	XBT
OS11091	45-33.5N	142-18.0E	6/9	0452	9	56	-	-	-	c	XBT
OS11092	45-32.2N	142-24.0E	6/9	0453	9	83	-	-	-	c	XBT
OS11093	45-31.7N	142-30.0E	6/9	0454	9	79	-	-	-	c	XBT
OS11094	45-32.0N	142-36.0E	6/9	0455	9	89	-	-	-	c	XBT
OS11095	45-32.0N	142-20.0E	6/9	0456	9	102	-	-	-	c	XBT
OS11096	45-31.8N	142-48.0E	6/9	0457	9	112	-	-	-	c	XBT
OS11097	45-32.0N	142-54.0E	6/9	0458	9	115	-	-	-	c	XBT
OS11098	45-28.0N	142-48.2E	6/10	0459	9	116	-	-	7.0	c	9Plus-0769
OS11099	45-19.5N	142-28.9E	6/10	0460	9	61	-	-	9.4	bc	9Plus-0769
OS11100	45-18.7N	142-29.4E	6/10	0461	9	63	-	-	-	bc	9Plus-0769
OS11101	45-21.0N	142-32.4E	6/10	0462	9	78	-	-	6.9	c	9Plus-0769
OS11102	45-23.7N	143-15.0E	6/10	0463	9	131	-	-	-	bc	XCTD
OS11103	45-17.3N	143-30.0E	6/10	0464	9	158	-	-	-	c	XCTD
OS11104	45-12.6N	143-45.0E	6/10	0465	9	214	-	-	-	c	XCTD
OS11105	45-11.0N	144-00.4E	6/10	0466	9	650	-	-	-	-	XCTD
OS11106	45-11.1N	144-15.0E	6/10	0467	9	900	-	-	-	-	XCTD
OS11107	45-15.2N	144-30.0E	6/10	0468	9	988	-	-	-	-	XCTD
OS11108	45-19.4N	144-45.0E	6/10	0469	9	1590	-	-	-	-	XCTD
OS11109	45-23.6N	145-00.2E	6/10	0470	9	3020	-	-	-	-	XCTD
OS11110	45-23.7N	145-01.3E	6/10	0471	9	3027	-	-	-	-	9Plus-0769
OS11111	45-32.2N	142-52.4E	6/11	0472	9	118	-	-	-	-	XCTD

Table 1. List of Oceanographic Station (continued)

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11112	45-00.1N	140-50.0E	6/11	0473	9	747	-	-	-	-	XCTD
OS11113	45-39.9N	140-43.6E	6/12	0474	9	748	-	-	11.5	-	9Plus-0769
OS11114	45-19.6N	140-43.4E	6/12	0475	9	521	-	-	-	-	XBT
OS11115	44-59.2N	140-43.6E	6/12	0476	9	324	-	-	-	-	XBT
OS11116	44-31.8N	140-43.9E	6/12	0477	9	155	-	-	-	c	XBT
OS11117	44-16.3N	140-43.7E	6/12	0478	9	255	-	-	-	bc	XBT
OS11118	43-59.0N	140-58.2E	6/13	0479	9	444	-	-	-	bc	XBT
OS11119	43-50.2N	141-03.1E	6/13	0480	9	330	-	-	13.6	bc	9Plus-0769
OS11120	43-38.9N	141-13.6E	6/13	0481	9	70	-	-	14.1	c	9Plus-0769
OS11121	43-38.0N	140-50.1E	6/13	0482	9	575	-	-	13.6	c	9Plus-0769
OS11122	43-37.9N	140-23.7E	6/13	0483	9	816	-	-	-	-	9Plus-0769
OS11123	43-38.1N	139-55.2E	6/13	0484	9	1512	-	-	12.8	c	9Plus-0769
OS11124	43-37.1N	139-29.3E	6/13	0485	9	1650	-	-	12.7	-	9Plus-0769
OS11125	43-38.2N	138-56.7E	6/13	0486	9	3475	-	-	12.9	-	9Plus-0769
OS11126	43-37.3N	138-27.5E	6/13	0487	9	3500	-	-	-	-	9Plus-0769
OS11127	43-26.1N	138-41.0E	6/13	0488	9	3395	-	-	-	c	XBT
OS11128	43-18.6N	138-51.3E	6/14	0489	9	3000	-	-	-	c	9Plus-0769
OS11129	43-14.4N	139-02.4E	6/14	0490	9	3050	-	-	-	c	XBT
OS11130	42-49.2N	139-30.8E	6/14	0491	9	3375	-	-	-	c	XBT
OS11131	42-38.4N	139-45.7E	6/14	0492	9	1445	-	-	-	c	XBT
OS11132	42-30.3N	139-24.1E	6/14	0493	9	2980	-	-	-	c	XBT
OS11133	42-21.8N	139-06.3E	6/14	0494	9	3510	-	-	-	c	XBT
OS11134	42-46.6N	138-14.9E	6/14	0495	9	3666	-	-	-	-	XBT
OS11135	42-07.7N	138-32.4E	6/14	0496	9	3694	-	-	-	-	XBT
OS11136	42-00.1N	138-20.5E	6/14	0497	9	3686	-	-	13.4	-	9Plus-0769
OS11137	41-42.7N	138-08.1E	6/14	0498	9	3691	-	-	-	c	XBT
OS11138	41-29.3N	138-01.9E	6/15	0499	9	3689	-	-	12.9	c	9Plus-0769
OS11139	41-12.8N	137-55.2E	6/15	0500	9	3690	-	-	-	c	XBT
OS11140	41-11.6N	137-41.1E	6/15	0501	9	3682	-	-	-	c	9Plus-0769
OS11141	40-59.8N	138-08.2E	6/15	0502	9	3663	-	-	-	-	XBT
OS11142	40-59.9N	138-27.6E	6/15	0503	9	3414	-	-	-	-	XBT
OS11143	40-59.8N	138-45.3E	6/15	0504	9	3404	-	-	-	-	XBT
OS11144	40-59.9N	138-59.3E	6/15	0505	9	3351	-	-	15.6	-	9Plus-0769
OS11145	N40-59. N	139-19.1E	6/15	0506	9	2790	-	-	16.4	-	9Plus-0769
OS11146	40-59.7N	139-37.3E	6/15	0507	9	1800	-	-	16.7	bc	9Plus-0769
OS11147	40-59.7N	139-53.6E	6/15	0508	9	796	-	-	17.1	bc	9Plus-0769
OS11148	41-00.1N	140-09.0E	6/16	0509	9	124	-	-	15.9	b	9Plus-0769
OS11149	40-50.2N	139-45.4E	6/16	0510	9	1820	-	-	-	b	XBT
OS11150	40-43.1N	139-25.7E	6/16	0511	9	1805	-	-	-	b	XBT
OS11151	40-34.7N	138-59.9E	6/16	0512	9	3255	-	-	-	b	XBT
OS11152	40-25.2N	138-35.6E	6/16	0513	9	2732	-	-	-	-	XBT
OS11153	40-19.3N	138-59.9E	6/16	0514	9	2656	-	-	-	-	XBT
OS11154	40-15.0N	139-17.6E	6/16	0515	9	2193	-	-	-	-	XBT
OS11155	40-11.6N	139-32.2E	6/16	0516	9	1116	-	-	-	-	XBT
OS11156	39-58.6N	139-38.6E	6/16	0517	9	124	-	-	-	-	XBT
OS11157	39-44.0N	139-45.4E	6/16	0518	9	110	-	-	-	-	XBT
OS11158	39-42.1N	139-54.2E	6/19	0519	9	62	-	-	20.7	b	9Plus-0769
OS11159	39-44.8N	139-33.9E	6/19	0520	9	231	-	-	20.0	b	9Plus-0769
OS11160	39-48.6N	139-12.6E	6/19	0521	9	1499	-	-	-	-	9Plus-0769
OS11161	39-51.4N	139-46.8E	6/19	0522	9	2206	-	-	17.6	-	9Plus-0769
OS11162	39-55.6N	138-22.0E	6/19	0523	9	2630	-	-	16.8	-	9Plus-0769
OS11163	40-06.0N	138-06.9E	6/19	0524	9	2709	-	-	-	b	9Plus-0769
OS11164	39-55.6N	137-41.9E	6/20	0525	9	2644	-	-	20.2	bc	9Plus-0769
OS11165	39-43.7N	137-19.9E	6/20	0526	9	2590	-	-	19.3	b	9Plus-0769
OS11166	39-32.3N	137-00.5E	6/20	0527	9	2592	-	-	17.7	c	9Plus-0769
OS11167	39-21.5N	136-37.2E	6/20	0528	9	2669	-	-	18.9	c	9Plus-0769
OS11168	39-10.5N	136-14.0E	6/20	0529	9	2665	-	-	16.7	c	9Plus-0769

Table 1. List of Oceanographic Station (continued)

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11169	39-00.2N	136-02.9E	6/20	0530	9	2693	-	-	-	c	XCTD
OS11170	38-49.4N	135-52.0E	6/21	0531	9	2542	-	-	-	c	XCTD
OS11171	38-45.4N	135-47.9E	6/21	0532	9	2325	-	-	19.8	bc	9Plus-0769
OS11172	38-39.7N	135-41.0E	6/21	0533	9	2993	-	-	-	c	XCTD
OS11173	38-28.2N	135-30.2E	6/21	0534	9	3000	-	-	21.1	bc	9Plus-0769
OS11174	38-09.9N	135-35.3E	6/21	0535	9	2951	-	-	19.6	c	9Plus-0769
OS11175	37-49.2N	135-35.9E	6/21	0536	9	2890	-	-	19.2	c	9Plus-0769
OS11176	37-29.5N	135-39.6E	6/21	0537	9	2783	-	-	19.5	-	9Plus-0769
OS11177	37-06.2N	135-41.3E	6/21	0538	9	1573	-	-	20.5	bc	9Plus-0769
OS11178	36-47.2N	135-44.0E	6/22	0539	9	1028	-	-	21.1	c	9Plus-0769
OS11179	36-24.6N	135-46.3E	6/22	0540	9	388	-	-	21.3	b	9Plus-0769
OS11180	36-03.3N	135-48.0E	6/22	0541	9	265	-	-	21.7	b	9Plus-0769
OS11181	35-34.3N	132-34.3E	6/22	0542	9	105	-	-	-	bc	XBT
OS11182	35-34.2N	132-40.0E	6/23	0543	9	130	-	-	-	bc	XBT
OS11183	35-34.6N	132-30.0E	6/23	0544	9	158	-	-	-	bc	XBT
OS11184	35-34.7N	132-27.0E	6/23	0545	9	163	-	-	21.4	bc	9Plus-0769
OS11185	35-35.1N	132-20.0E	6/23	0546	9	174	-	-	-	bc	XBT
OS11186	35-35.1N	132-10.0E	6/23	0547	9	189	-	-	-	bc	XBT
OS11187	35-35.0N	131-60.0E	6/23	0548	9	189	-	-	-	bc	XBT
OS11188	35-35.0N	131-50.0E	6/23	0549	9	177	-	-	-	bc	XBT
OS11189	35-35.0N	131-40.0E	6/23	0550	9	159	-	-	-	-	XBT
OS11190	35-25.0N	131-39.9E	6/23	0551	9	147	-	-	-	-	XBT
OS11191	35-15.0N	131-40.3E	6/23	0552	9	138	-	-	-	bc	XBT
OS11192	35-05.0N	131-40.0E	6/23	0553	9	132	-	-	-	bc	XBT
OS11193	34-55.0N	131-40.0E	6/23	0554	9	118	-	-	-	bc	XBT
OS11194	39-49.3N	131-30.0E	6/23	0555	9	94	-	-	-	bc	XBT
OS11195	34-44.6N	131-20.0E	6/23	0556	9	105	-	-	-	-	XBT
OS11196	34-39.8N	131-10.0E	6/23	0557	9	99	-	-	-	-	XBT
OS11197	34-34.9N	131-00.0E	6/23	0558	9	97	-	-	-	-	XBT
OS11198	34-29.8N	130-50.0E	6/23	0559	9	96	-	-	-	-	XBT
OS11199	34-20.6N	130-40.0E	6/23	0560	9	96	-	-	-	-	XBT
OS11200	34-11.3N	130-30.0E	6/23	0561	9	89	-	-	-	-	XBT
OS11201	34-00.0N	130-18.7E	6/23	0562	9	61	-	-	-	-	XBT
OS11202	33-50.2N	130-08.2E	6/23	0563	9	53	-	-	21.5	bc	9Plus-0769
OS11203	34-00.1N	130-02.4E	6/24	0564	9	78	-	-	21.8	bc	9Plus-0769
OS11204	34-10.2N	129-55.7E	6/24	0565	9	104	-	-	22.1	b	9Plus-0769
OS11205	34-20.2N	129-49.4E	6/24	0566	9	111	-	-	22.0	bc	9Plus-0769
OS11206	34-29.9N	129-42.5E	6/24	0567	9	103	-	-	21.3	bc	9Plus-0769
OS11207	34-40.1N	129-36.0E	6/24	0568	9	89	-	-	21.3	bc	9Plus-0769
OS11208	34-50.3N	129-29.8E	6/24	0569	9	100	-	-	21.5	c	9Plus-0769
OS11209	34-53.2N	129-23.4E	6/24	0570	9	227	-	-	20.8	c	9Plus-0769
OS11210	34-54.2N	129-30.0E	6/24	0571	9	141	-	-	-	-	XBT
OS11211	34-55.6N	129-40.0E	6/24	0572	9	105	-	-	-	-	XBT
OS11212	34-57.0N	129-50.0E	6/24	0573	9	126	-	-	-	-	XBT
OS11213	34-58.6N	130-00.0E	6/24	0574	9	129	-	-	-	-	XBT
OS11214	35-01.7N	130-00.0E	6/24	0575	9	126	-	-	-	-	XBT
OS11215	35-05.0N	130-20.0E	6/24	0576	9	125	-	-	-	-	XBT
OS11216	35-12.5N	130-30.0E	6/24	0577	9	131	-	-	-	-	XBT
OS11217	35-20.1N	130-40.0E	6/24	0578	9	144	-	-	-	-	XBT
OS11218	35-27.6N	130-50.0E	6/24	0579	9	156	-	-	-	-	XBT
OS11219	35-35.1N	130-60.0E	6/24	0580	9	184	-	-	-	-	XBT
OS11220	35-24.2N	131-00.0E	6/24	0581	9	145	-	-	-	-	XBT
OS11221	35-10.6N	130-59.9E	6/24	0582	9	137	-	-	-	-	XBT
OS11222	34-58.3N	131-00.1E	6/25	0583	9	112	-	-	-	-	XBT
OS11223	34-46.7N	130-60.0E	6/25	0584	9	121	-	-	-	-	XBT
OS11224	34-32.1N	130-58.8E	6/25	0585	9	96	-	-	-	-	XBT
OS11225	34-36.7N	130-50.1E	6/25	0586	9	118	-	-	-	-	XBT
OS11226	34-41.5N	130-39.9E	6/25	0587	9	119	-	-	-	-	XBT
OS11227	34-46.0N	130-30.0E	6/25	0588	9	133	-	-	-	-	XBT
OS11228	34-50.5N	130-19.9E	6/25	0589	9	127	-	-	-	-	XBT
OS11229	34-52.1N	130-16.2E	6/25	0590	9	125	-	-	-	-	XBT

Table 1. List of Oceanographic Station (continued)

Table 1. List of Oceanographic Station (continued)

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11230	34-40.0N	130-15.6E	6/25	0591	9	123	-	-	-	-	XBT
OS11231	34-30.0N	130-15.9E	6/25	0592	9	114	-	-	-	-	XBT
OS11232	34-20.0N	130-14.7E	6/25	0593	9	106	-	-	-	-	XBT
OS11233	34-10.0N	130-14.3E	6/25	0594	9	83	-	-	-	-	XBT
OS11234	34-10.0N	130-13.8E	6/25	0595	9	65	-	-	-	-	XBT
OS11235	33-50.0N	130-13.4E	6/25	0596	9	45	-	-	-	-	XBT
OS11236	32-45.0N	129-13.3E	6/30	0597	9	125	-	-	-	-	XBT
OS11237	32-30.0N	129-10.5E	6/30	0598	9	237	-	-	-	-	XBT
OS11238	32-15.0N	129-04.2E	6/30	0599	9	422	-	-	-	-	XBT
OS11239	32-00.0N	128-59.8E	6/30	0600	9	788	-	-	-	-	XBT
OS11240	31-45.0N	128-55.3E	6/30	0601	9	850	-	-	-	-	XBT
OS11241	31-30.0N	128-50.6E	7/1	0602	9	689	-	-	-	c	XBT
OS11242	31-15.0N	128-46.0E	7/1	0603	9	699	-	-	-	c	XBT
OS11243	30-59.5N	128-41.5E	7/1	0604	9	685	-	-	-	c	XBT
OS11244	30-45.0N	128-37.2E	7/1	0605	9	708	-	-	-	c	XBT
OS11245	30-29.6N	128-32.6E	7/1	0606	9	818	-	-	-	c	XBT
OS11246	30-15.0N	128-28.2E	7/1	0607	9	878	-	-	-	c	XBT
OS11247	30-00.0N	128-24.2E	7/1	0608	9	305	-	-	-	bc	XBT
OS11248	29-44.9N	128-19.6E	7/1	0609	9	945	-	-	-	bc	XBT
OS11249	29-43.5N	128-16.8E	7/1	0610	9	961	-	-	26.9	bc	9Plus-0769
OS11250	29-42.7N	128-00.1E	7/1	0611	9	717	-	-	26.5	-	9Plus-0769
OS11251	29-43.3N	127-45.6E	7/1	0612	9	532	-	-	26.4	-	9Plus-0769
OS11252	29-42.5N	127-30.0E	7/1	0613	9	203	-	-	26.0	-	9Plus-0769
OS11253	29-43.0N	127-15.3E	7/1	0614	9	123	-	-	26.2	c	9Plus-0769
OS11254	29-42.7N	126-59.9E	7/1	0615	9	108	-	-	26.1	c	9Plus-0769
OS11255	29-42.4N	126-09.6E	7/2	0616	9	86	-	-	26.1	c	9Plus-0769
OS11256	29-42.8N	126-33.2E	7/2	0617	9	94	-	-	-	-	XCTD
OS11257	29-42.6N	126-44.7E	7/2	0618	9	102	-	-	26.0	bc	9Plus-0769
OS11258	29-32.4N	126-14.9E	7/2	0619	9	103	-	-	26.4	-	9Plus-0769
OS11259	29-21.8N	126-20.4E	7/2	0620	9	108	-	-	26.6	-	9Plus-0769
OS11260	29-11.2N	126-15.6E	7/2	0621	9	116	-	-	26.7	-	9Plus-0769
OS11261	29-00.8N	126-31.0E	7/2	0622	9	114	-	-	26.7	-	9Plus-0769
OS11262	28-40.0N	126-19.4E	7/3	0623	9	122	-	-	-	bc	XBT
OS11263	28-39.9N	126-18.8E	7/3	0624	9	121	-	-	26.5	bc	9Plus-0769
OS11264	28-20.0 N	126-08.4E	7/3	0625	9	116	-	-	-	b	XBT
OS11265	27-59.8 N	125-57.7E	7/3	0626	9	116	-	-	26.9	bc	9Plus-0769
OS11266	27-55.3N	126-02.6E	7/3	0627	9	120	-	-	-	bc	XCTD
OS11267	27-50.9N	126-07.8E	7/3	0628	9	133	-	-	-	bc	9Plus-0769
OS11268	27-45.8N	126-13.2E	7/3	0629	9	236	-	-	-	b	XCTD
OS11269	27-43.2N	126-17.7E	7/3	0630	9	1093	-	-	28.0	bc	9Plus-0769
OS11270	27-37.7N	126-22.7E	7/3	0631	9	1258	-	-	-	-	XCTD
OS11271	27-33.8N	126-28.9E	7/3	0632	9	1404	-	-	28.2	bc	9Plus-0769
OS11272	27-29.9N	126-33.3E	7/3	0633	9	1514	-	-	-	-	XCTD
OS11273	27-27.0N	126-38.1E	7/3	0634	9	1621	-	-	28.2	-	9Plus-0769
OS11274	27-22.3N	126-43.0E	7/3	0635	9	1671	-	-	-	-	XCTD
OS11275	27-18.4N	126-48.3E	7/3	0636	9	1615	-	-	28.2	bc	9Plus-0769
OS11276	27-23.8N	126-51.6E	7/4	0637	9	1526	-	-	28.2	bc	9Plus-0769
OS11277	27-13.4N	126-54.2E	7/4	0638	9	1638	-	-	-	-	XCTD
OS11278	27-09.3N	127-00.3E	7/4	0639	9	1535	-	-	28.4	bc	9Plus-0769
OS11279	27-04.0N	127-07.9E	7/4	0640	9	920	-	-	-	bc	XCTD
OS11280	26-25.2N	127-35.0E	7/9	0641	9	648	-	-	28.1	c	19Plus-4636
OS11281	21-19.5N	134-40.8E	7/11	0642	9	5729	-	-	-	c	XCTD
OS11282	21-09.9N	134-53.7E	7/11	0643	9	5734	-	-	-	c	XCTD
OS11283	21-00.0N	135-09.1E	7/11	0644	9	5732	-	-	-	c	XCTD
OS11284	20-50.1N	135-24.3E	7/11	0645	9	5685	-	-	-	c	XCTD
OS11285	20-45.8N	135-30.3E	7/11	0646	9	5646	-	-	29.2	c	9Plus-0769
OS11286	20-40.1N	135-38.4E	7/11	0647	9	5554	-	-	-	c	XCTD
OS11287	20-30.1N	135-52.3E	7/11	0648	9	4450	-	-	-	bc	XCTD
OS11288	20-25.2N	136-05.3E	7/11	0649	9	-	-	-	-	-	19Plus-4636
OS11289	20-25.1N	136-03.0E	7/12	0650	9	1266	-	-	-	-	XCTD
OS11290	20-33.4N	136-18.8E	7/12	0651	9	4067	-	-	-	-	XBT

Table 1. List of Oceanographic Station (continued)

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11291	35-03.2N	139-25.2E	7/16	0652	9	1226	-	-	25.0	bc	9Plus-0769
OS11292	34-57.6N	140-42.4E	7/24	0653	9	1188	-	-	-	b	XBT
OS11293	35-35.0N	146-29.5E	7/25	0654	9	5882	-	-	-	bc	XBT
OS11294	36-09.3N	151-34.7E	7/26	0655	9	5976	-	-	-	bc	XBT
OS11295	36-10.6N	151-43.9E	7/26	0656	9	5930	-	-	-	bc	XBT
OS11296	36-12.6N	152-05.5E	7/26	0657	9	5785	-	-	-	bc	XBT
OS11297	36-30.5N	155-01.2E	7/26	0658	9	5672	-	-	23.7	bc	9Plus-0769
OS11298	36-45.9N	155-03.2E	7/27	0659	9	5742	-	-	-	bc	XBT
OS11299	37-14.0N	155-00.1E	7/27	0660	9	5755	-	-	-	c	XBT
OS11300	37-14.9N	155-00.0E	7/27	0661	9	5745	-	-	23.9	c	9Plus-0769
OS11301	38-00.1N	154-59.9E	7/27	0662	9	5972	-	-	21.9	-	9Plus-0769
OS11302	38-44.5N	155-00.2E	7/27	0663	9	5760	-	-	20.1	-	9Plus-0769
OS11303	39-29.9N	155-00.0E	7/28	0664	9	5616	-	-	19.4	-	9Plus-0769
OS11304	40-14.8N	155-00.1E	7/28	0665	9	5560	-	-	17.9	c	9Plus-0769
OS11305	40-59.9N	155-00.0E	7/29	0666	9	5485	-	-	16.8	c	9Plus-0769
OS11306	41-45.0N	154-60.0E	7/29	0667	9	5540	-	-	15.9	c	9Plus-0769
OS11307	42-29.9N	155-00.0E	7/29	0668	9	5170	-	-	16.5	f	9Plus-0769
OS11308	42-35.2N	155-00.0E	7/30	0669	9	5220	-	-	-	c	XBT
OS11309	42-44.0N	154-57.2E	7/30	0670	9	5205	-	-	-	c	XBT
OS11310	43-15.0N	155-00.2E	7/30	0671	9	5485	-	-	14.5	c	9Plus-0769
OS11311	43-59.8N	154-60.0E	7/31	0672	9	5300	-	-	12.6	c	9Plus-0769
OS11312	43-42.1N	154-09.1E	7/31	0673	9	5443	-	-	12.5	f	9Plus-0769
OS11313	42-47.2N	152-17.5E	8/1	0674	9	5130	-	-	-	c	XBT
OS11314	41-29.9N	145-47.0E	8/2	0675	9	6870	-	-	20.5	c	9Plus-0769
OS11315	38-30.1N	144-00.5E	8/3	0676	9	7135	-	-	24.6	c	9Plus-0769
OS11316	38-00.0N	144-00.1E	8/3	0677	9	7445	-	-	25.1	c	9Plus-0769
OS11317	37-29.9N	143-59.9E	8/3	0678	9	6742	-	-	25.2	c	9Plus-0769
OS11318	36-60.0N	143-59.9E	8/3	0679	9	6113	-	-	23.3	c	9Plus-0769
OS11319	37-00.2N	143-00.2E	8/3	0680	9	5151	-	-	24.7	c	9Plus-0769
OS11320	37-30.1N	142-60.0E	8/4	0681	9	3321	-	-	25.0	bc	9Plus-0769
OS11321	38-00.0N	143-00.1E	8/4	0682	9	1856	-	-	24.6	bc	9Plus-0769
OS11322	38-30.3N	143-00.1E	8/4	0683	9	1804	-	-	21.3	bc	9Plus-0769
OS11323	38-59.8N	142-00.3E	8/4	0684	9	208	-	-	18.1	c	9Plus-0769
OS11324	39-00.0N	141-55.2E	8/4	0685	9	140	-	-	17.9	-	9Plus-0769
OS11325	39-29.9N	142-09.9E	8/5	0686	9	197	-	-	18.4	-	9Plus-0769
OS11326	39-29.9N	142-06.4E	8/5	0687	9	144	-	-	17.9	bc	9Plus-0769
OS11327	39-59.9N	142-14.9E	8/5	0688	9	217	-	-	21.9	bc	9Plus-0769
OS11328	39-59.8N	142-06.2E	8/5	0689	9	123	-	-	20.8	-	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11055				Station OS11056				Station OS11057				Station OS11058			
Latitude 41-34.1 N				Latitude 41-29.4 N				Latitude 41-23.4 N				Latitude 41-19.0 N			
Longitude 140-37.1 E				Longitude 140-32.2 E				Longitude 140-29.0 E				Longitude 140-24.7 E			
Depth(m) 125				Depth(m) 179				Depth(m) 240				Depth(m) 180			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	11.424	-	-	5	11.795	-	-	5	11.911	-	-	5	13.131	33.256	25.016
10	11.073	-	-	10	11.710	-	-	10	11.818	-	-	10	12.6934	33.378	25.197
20	10.749	-	-	20	11.614	-	-	20	11.680	-	-	20	11.863	33.581	25.513
30	10.340	-	-	30	11.263	-	-	30	11.553	-	-	30	11.523	33.659	25.636
40	9.865	-	-	40	11.148	-	-	40	11.340	-	-	40	10.523	33.810	25.933
50	9.489	-	-	50	10.847	-	-	50	11.131	-	-	50	10.319	33.846	25.997
75	8.540	-	-	75	9.609	-	-	75	9.860	-	-	75	9.916	33.909	26.114
100	8.472	-	-	100	8.878	-	-	100	9.433	-	-	100	9.435	33.991	26.258
125	8.490	-	-	125	8.605	-	-	125	9.170	-	-	125	9.442	33.991	26.257
				150	8.449	-	-	150	8.890	-	-				
				175	7.470	-	-	175	8.810	-	-				
								200	8.481	-	-				

Station OS11059				Station OS11060				Station OS11061				Station OS11062			
Latitude 41-17.7 N				Latitude 41-17.7 N				Latitude 41-09.3 N				Latitude 41-15.7 N			
Longitude 140-22.0 E				Longitude 140-14.0 E				Longitude 140-11.0 E				Longitude 140-07.9 E			
Depth(m) 120				Depth(m) 77				Depth(m) 94				Depth(m) 350			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	12.773	-	-	5	13.781	-	-	5	13.417	33.187	24.905	5	12.648	-	-
10	12.495	-	-	10	13.380	-	-	10	12.857	33.317	25.118	10	12.510	-	-
20	11.271	-	-	20	13.110	-	-	20	12.382	33.462	25.322	20	11.870	-	-
30	10.804	-	-	30	12.763	-	-	30	11.956	33.561	25.480	30	10.556	-	-
40	10.853	-	-	40	11.500	-	-	40	11.033	33.716	25.770	40	10.428	-	-
50	10.800	-	-	50	11.080	-	-	50	10.657	33.877	25.962	50	10.319	-	-
75	10.050	-	-	75	10.670	-	-	75	9.734	33.977	26.198	75	9.910	-	-
100	9.927	-	-									100	9.880	-	-
												125	8.920	-	-
												150	8.760	-	-
												175	8.749	-	-
												200	8.620	-	-
												250	8.294	-	-

Station OS11063				Station OS11064				Station OS11065				Station OS11066			
Latitude 41-22.2 N				Latitude 41-30.4 N				Latitude 41-40.1 N				Latitude 41-51.0 N			
Longitude 140-86.5 E				Longitude 139-55.2 E				Longitude 139-40.5 E				Longitude 139-28.7 E			
Depth(m) 117				Depth(m) 152				Depth(m) 1424				Depth(m) 925			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	14.353	33.287	24.790	5	13.117	33.481	25.193	5	13.562	33.267	24.938	5	12.917	34.006	25.639
10	12.995	33.477	25.214	10	12.515	33.622	25.420	10	13.345	33.312	25.017	10	12.955	34.004	25.630
20	10.453	33.990	26.085	20	13.045	33.958	25.577	20	13.222	33.417	25.123	20	11.803	34.045	25.884
30	9.782	34.019	26.223	30	10.488	33.871	25.987	30	12.165	33.668	25.523	30	11.677	34.066	25.925
40	9.444	34.028	26.285	40	9.605	33.899	26.158	40	11.645	33.713	25.656	40	11.118	34.102	26.055
50	8.846	34.058	26.405	50	9.498	33.984	26.242	50	10.643	33.803	25.907	50	9.803	34.008	26.211
75	8.685	34.058	26.430	75	9.137	34.060	26.360	75	9.815	34.028	26.224	75	10.118	34.227	26.328
100	8.215	34.054	26.499	100	7.456	34.050	26.607	100	8.987	34.067	26.390	100	9.130	34.158	26.438
				125	5.801	34.041	26.820	125	7.544	34.045	26.590	125	7.775	34.097	26.598
								150	5.588	34.042	26.847	150	6.031	34.048	26.797
								175	4.335	34.036	26.984	175	4.571	34.041	26.963
								200	3.341	34.040	27.087	200	3.114	34.037	27.106
								250	2.090	34.048	27.202	250	1.897	34.046	27.215
								300	1.407	34.049	27.253	300	1.458	34.048	27.249

Station OS11067				Station OS11068				Station OS11069				Station OS11070			
Latitude 41-59.4 N				Latitude 42-10.1 N				Latitude 42-19.6 N				Latitude 42-29.1 N			
Longitude 139-15.9 E				Longitude 138-59.9 E				Longitude 138-48.7 E				Longitude 138-35.7 E			
Depth(m) 2390				Depth(m) 3720				Depth(m) 3610				Depth(m) 3650			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	13.268	34.116	25.655	5	13.965	-	-	5	13.963	-	-	5	12.138	-	-
10	13.076	34.138	25.710	10	13.508	-	-	10	13.053	-	-	10	10.493	-	-
20	12.916	34.129	25.735	20	12.661	-	-	20	12.310	-	-	20	8.372	-	-
30	12.164	34.182	25.923	30	10.871	-	-	30	9.561	-	-	30	6.759	-	-
40	10.802	34.157	26.154	40	10.040	-	-	40	8.198	-	-	40	6.095	-	-
50	8.691	34.026	26.404	50	9.252	-	-	50	7.266	-	-	50	5.619	-	-
75	7.597	34.060	26.594	75	7.880	-	-	75	6.169	-	-	75	3.870	-	-
100	6.251	34.054	26.773	100	6.480	-	-	100	4.817	-	-	100	3.257	-	-
125	4.847	34.041	26.932	125	4.945	-	-	125	3.475	-	-	125	2.800	-	-
150	3.869	34.041	27.037	150	3.798	-	-	150	2.650	-	-	150	2.409	-	-
175	2.945	34.040	27.123	175	2.681	-	-	175	1.950	-	-	175	1.880	-	-
200	2.452	34.042	27.168	200	2.080	-	-	200	1.669	-	-	200	1.630	-	-
250	1.630	34.042	27.232	250	1.450	-	-	250	1.404	-	-	250	1.496	-	-
300	1.370	34.050	27.257												

Station OS11071			
Latitude 42-44.6 N			
Longitude 138-45.3 E			
Depth(m) 3661			
Press.	Temp.	Sal.	SIG-T
5	11.825	-	-
10	11.098	-	-
20	9.844	-	-
30	7.624	-	-
40	6.333	-	-
50	5.541	-	-
75	3.790	-	-
100	2.780	-	-
125	2.205	-	-
150	1.840	-	-
175	1.620	-	-
200	1.469	-	-
250	1.166	-	-

Station OS11072			
Latitude 42-58.9 N			
Longitude 138-55.0 E			
Depth(m) 3565			
Press.	Temp.	Sal.	SIG-T
5	13.140	-	-
10	12.205	-	-
20	10.391	-	-
30	9.406	-	-
40	8.348	-	-
50	7.260	-	-
75	5.550	-	-
100	4.298	-	-
125	3.070	-	-
150	2.349	-	-
175	1.969	-	-
200	1.803	-	-
250	1.400	-	-

Station OS11073			
Latitude 43-13.3 N			
Longitude 139-06.3 E			
Depth(m)			
Press.	Temp.	Sal.	SIG-T
5	12.969	-	-
10	12.878	-	-
20	10.900	-	-
30	10.056	-	-
40	9.215	-	-
50	8.597	-	-
75	7.069	-	-
100	5.610	-	-
125	4.725	-	-
150	3.659	-	-
175	2.650	-	-
200	2.121	-	-
250	1.548	-	-

Station OS11074			
Latitude 43-29.9 N			
Longitude 139-17.7 E			
Depth(m) 2794			
Press.	Temp.	Sal.	SIG-T
5	12.900	-	-
10	12.653	-	-
20	9.481	-	-
30	8.601	-	-
40	8.130	-	-
50	7.941	-	-
75	7.530	-	-
100	6.127	-	-
125	5.030	-	-
150	3.770	-	-
175	3.091	-	-
200	2.601	-	-
250	1.724	-	-

Station OS11075			
Latitude 43-42.8 N			
Longitude 139-27.3 E			
Depth(m) 2590			
Press.	Temp.	Sal.	SIG-T
5	12.469	-	-
10	12.410	-	-
20	10.462	-	-
30	8.659	-	-
40	8.128	-	-
50	7.750	-	-
75	7.049	-	-
100	5.910	-	-
125	5.440	-	-
150	4.740	-	-
175	4.034	-	-
200	3.080	-	-
250	1.980	-	-

Station OS11076			
Latitude 43-58.5 N			
Longitude 139-37.0 E			
Depth(m) 1490			
Press.	Temp.	Sal.	SIG-T
5	11.695	-	-
10	10.600	-	-
20	9.969	-	-
30	8.361	-	-
40	6.905	-	-
50	6.347	-	-
75	4.829	-	-
100	3.347	-	-
125	2.435	-	-
150	2.021	-	-
175	1.740	-	-
200	1.580	-	-
250	1.300	-	-

Station OS11077			
Latitude 44-12.8 N			
Longitude 139-47.0 E			
Depth(m) 1310			
Press.	Temp.	Sal.	SIG-T
5	10.795	-	-
10	9.655	-	-
20	7.944	-	-
30	6.720	-	-
40	5.845	-	-
50	4.766	-	-
75	3.249	-	-
100	2.478	-	-
125	2.055	-	-
150	1.799	-	-
175	1.559	-	-
200	1.351	-	-
250	1.080	-	-

Station OS11078			
Latitude 44-29.4 N			
Longitude 139-60.0 E			
Depth(m) 590			
Press.	Temp.	Sal.	SIG-T
5	11.133	33.906	25.900
10	10.349	33.917	26.047
20	9.592	33.924	26.180
30	8.060	33.945	26.436
40	7.537	33.969	26.532
50	7.041	33.977	26.608
75	5.128	34.039	26.899
100	4.032	34.020	27.003
125	3.215	34.031	27.092
150	2.412	34.044	27.173
175	2.034	34.045	27.204
200	1.800	34.048	27.224
250	1.505	34.057	27.253
300	1.178	34.059	27.277
400	0.852	34.060	27.299
500	0.649	34.061	27.312

Station OS11079			
Latitude 44-36.5 N			
Longitude 140-24.1 E			
Depth(m) 140			
Press.	Temp.	Sal.	SIG-T
5	11.254	-	-
10	10.680	-	-
20	9.575	-	-
30	9.096	-	-
40	8.993	-	-
50	8.641	-	-
75	7.370	-	-
100	6.480	-	-
125	5.590	-	-

Station OS11080			
Latitude 44-43.6 N			
Longitude 140-48.3 E			
Depth(m) 220			
Press.	Temp.	Sal.	SIG-T
5	12.463	33.741	25.523
10	11.929	33.738	25.622
20	8.870	33.913	26.287
30	7.809	33.963	26.488
40	7.543	33.965	26.527
50	7.312	33.986	26.577
75	6.098	33.999	26.749
100	5.450	34.017	26.843
125	5.044	34.021	26.894
150	4.761	34.024	26.928
175	4.368	34.025	26.972
200	3.607	34.030	27.054

Station OS11081			
Latitude 44-50.8 N			
Longitude 141-09.5 E			
Depth(m) 99			
Press.	Temp.	Sal.	SIG-T
5	11.113	-	-
10	10.670	-	-
20	10.530	-	-
30	9.235	-	-
40	7.678	-	-
50	7.283	-	-
75	6.530	-	-

Station OS11082			
Latitude 44-59.1 N			
Longitude 141-28.8 E			
Depth(m) 67			
Press.	Temp.	Sal.	SIG-T
5	11.146	33.652	25.700
10	10.587	33.684	25.824
20	9.599	33.753	26.045
30	8.297	33.916	26.378
40	7.957	33.916	26.429
50	7.691	33.922	26.473

Station OS11083			
Latitude 45-19.4 N			
Longitude 141-28.8 E			
Depth(m) 60			
Press.	Temp.	Sal.	SIG-T
5	11.354	-	-
10	10.345	-	-
20	9.243	-	-
30	8.260	-	-
40	8.223	-	-
50	8.220	-	-

Station OS11084			
Latitude 45-41.5 N			
Longitude 141-35.9 E			
Depth(m) 91			
Press.	Temp.	Sal.	SIG-T
5	9.891	-	-
10	9.890	-	-
20	8.150	-	-
30	6.913	-	-
40	6.188	-	-
50	5.850	-	-
75	5.110	-	-

Station OS11085			
Latitude 45-41.5 N			
Longitude 141-42.0 E			
Depth(m) 73			
Press.	Temp.	Sal.	SIG-T
5	9.961	-	-
10	9.945	-	-
20	8.882	-	-
30	7.659	-	-
40	7.378	-	-
50	6.910	-	-

Station OS11086			
Latitude 45-41.5 N			
Longitude 141-48.0 E			
Depth(m) 67			
Press.	Temp.	Sal.	SIG-T
5	10.850	-	-
10	10.520	-	-
20	8.045	-	-
30	7.283	-	-
40	6.948	-	-
50	6.526	-	-

Station OS11087			
Latitude 45-41.5 N			
Longitude 141-54.0 E			
Depth(m) 59			
Press.	Temp.	Sal.	SIG-T
5	10.940	-	-
10	10.595	-	-
20	7.112	-	-
30	6.386	-	-
40	5.608	-	-
50	5.550	-	-

Station OS11088			
Latitude 45-41.2 N			
Longitude 142-00.0 E			
Depth(m) 62			
Press.	Temp.	Sal.	SIG-T
5	11.189	-	-
10	10.285	-	-
20	8.365	-	-
30	6.078	-	-
40	5.595	-	-
50	5.580	-	-

Station OS11089			
Latitude 45-38.2 N			
Longitude 142-06.0 E			
Depth(m) 53			
Press.	Temp.	Sal.	SIG-T
5	10.630	-	-
10	10.538	-	-
20	8.904	-	-
30	6.259	-	-
40	6.203	-	-
50	6.200	-	-

Station OS11090			
Latitude 45-35.2 N			
Longitude 142-12.0 E			
Depth(m) 50			
Press.	Temp.	Sal.	SIG-T
5	9.061	-	-
10	9.070	-	-
20	8.775	-	-
30	6.693	-	-
40	6.613	-	-
50	6.670	-	-

Station		OS11091	
Latitude		45-33.5 N	
Longitude		142-18.0 E	
Depth(m)		56	
Press.	Temp.	Sal.	SIG-T
5	8.550	-	-
10	8.577	-	-
20	6.449	-	-
30	6.390	-	-
40	6.398	-	-
50	6.399	-	-

Station		OS11095	
Latitude		45-32.0 N	
Longitude		142-20.0 E	
Depth(m)		102	
Press.	Temp.	Sal.	SIG-T
5	5.443	-	-
10	3.813	-	-
20	2.412	-	-
30	0.629	-	-
40	0.293	-	-
50	-0.008	-	-
75	-1.220	-	-
100	3.618	-	-

Station		OS11096	
Latitude		45-31.8 N	
Longitude		142-48.0 E	
Depth(m)		112	
Press.	Temp.	Sal.	SIG-T
5	7.045	-	-
10	6.375	-	-
20	3.065	-	-
30	2.965	-	-
40	1.993	-	-
50	0.139	-	-
75	-1.010	-	-
100	-1.082	-	-

Station		OS11097	
Latitude		45-32.0 N	
Longitude		142-54.0 E	
Depth(m)		115	
Press.	Temp.	Sal.	SIG-T
5	5.593	-	-
10	3.865	-	-
20	2.929	-	-
30	2.646	-	-
40	2.245	-	-
50	1.485	-	-
75	-0.451	-	-
100	-1.250	-	-

Station		OS11098	
Latitude		45-28.0 N	
Longitude		142-48.2 E	
Depth(m)		116	
Press.	Temp.	Sal.	SIG-T
5	6.430	32.308	25.373
10	6.382	32.308	25.379
20	3.143	32.369	25.773
30	0.844	32.407	25.970
40	0.408	32.448	26.027
50	0.339	32.567	26.126
75	-0.997	32.863	26.421
100	-1.179	33.031	26.563

Station		OS11099	
Latitude		45-19.5 N	
Longitude		142-28.9 E	
Depth(m)		61	
Press.	Temp.	Sal.	SIG-T
5	8.832	33.842	26.238
10	8.123	33.892	26.385
20	7.310	33.934	26.536
30	7.045	33.937	26.575
40	6.984	33.942	26.587
50	6.937	33.942	26.594

Station		OS11100	
Latitude		45-18.7 N	
Longitude		142-29.4 E	
Depth(m)		63	
Press.	Temp.	Sal.	SIG-T
5	8.874	33.832	26.223
10	7.730	33.916	26.462
20	7.295	33.933	26.538
30	7.116	33.938	26.566
40	7.101	33.938	26.568
50	7.094	33.938	26.570

Station		OS11101	
Latitude		45-21.0 N	
Longitude		142-32.4 E	
Depth(m)		78	
Press.	Temp.	Sal.	SIG-T
5	6.291	33.636	26.438
10	6.265	33.678	26.474
20	4.866	33.727	26.681
30	5.374	33.902	26.762
40	5.539	33.941	26.772
50	5.561	33.947	26.775

Station		OS11102	
Latitude		45-23.7 N	
Longitude		143-15.0 E	
Depth(m)		131	
Press.	Temp.	Sal.	SIG-T
5	5.890	-	-
10	3.353	-	-
20	1.011	-	-
30	0.489	-	-
40	-0.116	-	-
50	-0.794	-	-
75	-1.409	-	-
100	-1.582	-	-
125	2.503	-	-

Station		OS11103	
Latitude		45-17.3 N	
Longitude		143-30.0 E	
Depth(m)		158	
Press.	Temp.	Sal.	SIG-T
5	7.619	-	-
10	5.313	-	-
20	2.917	-	-
30	0.855	-	-
40	-0.900	-	-
50	-1.212	-	-
75	-1.266	-	-
100	-1.322	-	-
125	-1.330	-	-
150	-1.330	-	-

Station		OS11104	
Latitude		45-12.6 N	
Longitude		144-45.0 E	
Depth(m)		214	
Press.	Temp.	Sal.	SIG-T
5	6.332	-	-
10	4.672	-	-
20	1.351	-	-
30	0.125	-	-
40	-0.907	-	-
50	-1.057	-	-
75	-1.176	-	-
100	-0.907	-	-
125	-1.272	-	-
150	-1.305	-	-
175	-1.154	-	-
200	-1.036	-	-

Station		OS11105	
Latitude		45-11.0 N	
Longitude		144-00.4 E	
Depth(m)		650	
Press.	Temp.	Sal.	SIG-T
5	7.056	-	-
10	5.743	-	-
20	2.484	-	-
30	1.148	-	-
40	-0.186	-	-
50	-0.882	-	-
75	-1.112	-	-
100	-1.001	-	-
125	-0.768	-	-
150	-0.725	-	-
175	-0.703	-	-
200	-0.431	-	-
250	-0.137	-	-
300	0.220	-	-
400	0.966	-	-
500	1.249	-	-
600	1.699	-	-

Station		OS11106	
Latitude		45-11.1 N	
Longitude		144-15.0 E	
Depth(m)		900	
Press.	Temp.	Sal.	SIG-T
5	6.488	-	-
10	4.719	-	-
20	1.264	-	-
30	0.663	-	-
40	-0.194	-	-
50	-1.249	-	-
75	-1.205	-	-
100	-1.152	-	-
125	-1.530	-	-
150	-1.432	-	-
175	-1.313	-	-
200	-1.238	-	-
250	-0.230	-	-
300	0.011	-	-
400	0.975	-	-
500	1.399	-	-
600	1.835	-	-
700	2.066	-	-
800	2.199	-	-
900	2.475	-	-

Station		OS11107	
Latitude		45-15.2 N	
Longitude		144-30.0 E	
Depth(m)		988	
Press.	Temp.	Sal.	SIG-T
5	7.186	-	-
10	4.560	-	-
20	2.472	-	-
30	1.633	-	-
40	-0.159	-	-
50	-0.790	-	-
75	-1.063	-	-
100	-0.947	-	-
125	-0.870	-	-
150	-0.559	-	-
175	-0.314	-	-
200	1.342	-	-
250	-0.126	-	-
300	0.321	-	-
400	0.646	-	-
500	1.426	-	-
600	1.838	-	-
700	2.044	-	-
800	2.228	-	-
900	2.309	-	-

Station		OS11108	
Latitude		45-19.4 N	
Longitude		144-45.0 E	
Depth(m)		1590	
Press.	Temp.	Sal.	SIG-T
5	7.791	-	-
10	7.179	-	-
20	2.147	-	-
30	0.621	-	-
40	-0.404	-	-
50	-0.368	-	-
75	0.414	-	-
100	-0.010	-	-
125	0.365	-	-
150	-0.336	-	-
175	0.382	-	-
200	0.592	-	-
250	0.477	-	-
300	0.267	-	-
400	0.843	-	-
500	1.285	-	-
600	1.703	-	-
700	2.052	-	-
800	2.216	-	-
900	2.267	-	-
1000	2.297	-	-

Station		OS11109	
Latitude		45-23.6 N	
Longitude		145-00.2 E	
Depth(m)		3020	
Press.	Temp.	Sal.	SIG-T
5	7.993	-	-
10	6.274	-	-
20	2.208	-	-
30	2.089	-	-
40	-0.529	-	-
50	-0.978	-	-
75	-0.946	-	-
100	-0.968	-	-
125	-0.476	-	-
150	1.102	-	-
175	-0.156	-	-
200	-0.261	-	-
250	0.034	-	-
300	0.472	-	-
400	0.978	-	-
500	1.413	-	-
600	1.784	-	-
700	1.928	-	-
800	2.134	-	-
900	2.275	-	-
1000	2.326	-	-

Station		OS11110	
Latitude		45-23.7 N	
Longitude		145-01.3 E	
Depth(m)		3027	
Press.	Temp.	Sal.	SIG-T
5	8.173	32.586	25.353
10	6.745	32.806	25.725
20	3.085	32.811	26.131
30	1.595	32.857	26.284
40	0.685	32.957	26.421
50	0.255	33.022	26.497
75	-1.051	33.066	26.588
100	-1.345	33.318	26.670
125	1.286	33.339	26.691
150	0.763	33.323	26.711
175	0.126	33.292	26.721
200	-0.276	33.275	26.726
250	0.106	33.329	26.752
300	0.386	33.377	26.776
400	1.014	33.503	26.841
500	1.477	33.656	26.933
600	1.797	33.783	27.012
700	1.912	33.854	27.060
800	2.138	33.990	27.152
900	2.257	34.129	27.254
1000	2.330	34.218	27.319
1200	2.287	34.380	27.452
1500	2.144	34.477	27.541
2000	2.009	34.533	27.597
2500	1.901	34.574	27.638

Station OS11111			
Latitude 45-32.2 N			
Longitude 142-52.4 E			
Depth(m) 118			
Press.	Temp.	Sal.	SIG-T
5	6.009	-	-
10	4.078	-	-
20	3.117	-	-
30	2.646	-	-
40	2.044	-	-
50	1.098	-	-
75	-0.412	-	-
100	-1.249	-	-

Station OS11112			
Latitude 45-00.1 N			
Longitude 140-50.0 E			
Depth(m) 747			
Press.	Temp.	Sal.	SIG-T
5	11.829	-	-
10	11.537	-	-
20	9.948	-	-
30	8.821	-	-
40	8.112	-	-
50	7.684	-	-
75	6.135	-	-
100	5.297	-	-
125	4.694	-	-
150	4.197	-	-
175	3.798	-	-
200	3.145	-	-
250	1.987	-	-
300	1.328	-	-
400	1.006	-	-
500	0.735	-	-
600	0.533	-	-
700	0.444	-	-

Station OS11113			
Latitude 45-39.9 N			
Longitude 140-43.6 E			
Depth(m) 748			
Press.	Temp.	Sal.	SIG-T
5	11.683	33.847	25.753
10	11.371	33.856	25.818
20	8.733	33.953	26.340
30	8.016	34.009	26.493
40	7.584	34.034	26.576
50	7.067	34.013	26.632
75	5.658	34.045	26.840
100	4.377	34.023	26.970
125	3.953	34.029	27.019
150	3.400	34.032	27.075
175	2.798	34.038	27.135
200	2.319	34.046	27.182
250	1.615	34.051	27.241
300	1.351	34.057	27.263
400	0.980	34.059	27.290
500	0.686	34.061	27.310
600	0.518	34.061	27.320
700	0.374	34.060	27.327

Station OS11114			
Latitude 45-19.6 N			
Longitude 140-43.4 E			
Depth(m) 521			
Press.	Temp.	Sal.	SIG-T
5	11.740	-	-
10	11.713	-	-
20	9.855	-	-
30	8.549	-	-
40	7.795	-	-
50	7.527	-	-
75	6.590	-	-
100	5.297	-	-
125	4.630	-	-
150	3.710	-	-
175	3.140	-	-
200	2.820	-	-
250	1.990	-	-

Station OS11115			
Latitude 44-59.2 N			
Longitude 140-43.6 E			
Depth(m) 324			
Press.	Temp.	Sal.	SIG-T
5	12.461	-	-
10	12.133	-	-
20	10.203	-	-
30	9.543	-	-
40	9.148	-	-
50	8.496	-	-
75	7.549	-	-
100	6.560	-	-
125	5.970	-	-
150	5.340	-	-
175	4.871	-	-
200	3.760	-	-
250	1.804	-	-

Station OS11116			
Latitude 44-31.8 N			
Longitude 140-43.9 E			
Depth(m) 155			
Press.	Temp.	Sal.	SIG-T
5	13.048	-	-
10	12.420	-	-
20	10.973	-	-
30	9.555	-	-
40	8.983	-	-
50	8.709	-	-
75	6.980	-	-
100	6.118	-	-
125	5.380	-	-
150	4.960	-	-

Station OS11117			
Latitude 44-16.3 N			
Longitude 140-43.7 E			
Depth(m) 255			
Press.	Temp.	Sal.	SIG-T
5	13.111	-	-
10	12.783	-	-
20	11.943	-	-
30	10.236	-	-
40	9.518	-	-
50	8.840	-	-
75	7.489	-	-
100	6.404	-	-
125	5.380	-	-
150	4.827	-	-
175	4.439	-	-
200	3.701	-	-
250	1.920	-	-

Station OS11118			
Latitude 43-37.9 N			
Longitude 140-58.2 E			
Depth(m) 444			
Press.	Temp.	Sal.	SIG-T
5	13.603	-	-
10	13.308	-	-
20	12.215	-	-
30	11.295	-	-
40	9.990	-	-
50	9.569	-	-
75	8.820	-	-
100	8.095	-	-
125	7.205	-	-
150	6.380	-	-
175	5.053	-	-
200	4.273	-	-
250	2.540	-	-

Station OS11119			
Latitude 43-50.2 N			
Longitude 141-03.1 E			
Depth(m) 330			
Press.	Temp.	Sal.	SIG-T
5	13.324	33.889	25.468
10	13.145	33.887	25.501
20	11.489	33.757	25.719
30	11.207	33.879	25.865
40	10.227	33.922	26.072
50	9.238	33.950	26.258
75	8.202	33.960	26.427
100	7.427	33.963	26.542
125	6.805	34.027	26.679
150	5.745	34.032	26.819
175	4.798	34.038	26.935
200	3.928	34.032	27.023
250	2.570	34.043	27.159

Station OS11120			
Latitude 43-38.9 N			
Longitude 141-13.6 E			
Depth(m) 70			
Press.	Temp.	Sal.	SIG-T
5	13.765	33.183	24.831
10	13.081	33.578	25.275
20	10.493	33.830	25.954
30	9.688	33.883	26.132
40	9.425	33.868	26.163
50	9.332	33.865	26.176

Station OS11121			
Latitude 43-38.0 N			
Longitude 140-50.1 E			
Depth(m) 575			
Press.	Temp.	Sal.	SIG-T
5	13.347	33.753	25.358
10	13.455	33.754	25.336
20	11.859	33.766	25.657
30	10.800	33.869	25.930
40	10.117	33.878	26.056
50	9.523	33.876	26.154
75	9.162	33.947	26.268
100	8.545	33.993	26.400
125	7.135	34.012	26.622
150	6.081	34.034	26.779
175	4.624	34.026	26.945
200	3.394	34.031	27.075
250	2.293	34.042	27.181
300	1.782	34.052	27.229

Station OS11122			
Latitude 43-37.9 N			
Longitude 140-23.7 E			
Depth(m) 816			
Press.	Temp.	Sal.	SIG-T
5	13.880	33.180	24.806
10	13.347	33.760	25.363
20	11.930	33.748	25.630
30	11.168	33.784	25.799
40	10.399	33.833	25.972
50	9.712	33.861	26.111
75	8.942	33.949	26.304
100	7.887	34.021	26.522
125	6.688	34.031	26.697
150	5.703	34.027	26.821
175	4.027	34.026	27.009
200	2.838	34.034	27.128
250	2.100	34.041	27.196
300	1.531	34.050	27.245

Station OS11123			
Latitude 43-38.1 N			
Longitude 139-55.2 E			
Depth(m) 1512			
Press.	Temp.	Sal.	SIG-T
5	12.677	33.812	25.537
10	11.798	33.888	25.763
20	8.301	33.932	26.390
30	6.731	33.963	26.638
40	6.239	33.985	26.720
50	5.501	33.990	26.816
75	4.081	34.029	27.006
100	2.870	34.033	27.125
125	2.346	34.033	27.169
150	1.900	34.035	27.206
175	1.626	34.041	27.231
200	1.493	34.044	27.243
250	1.275	34.050	27.263
300	1.080	34.055	27.280

Station OS11124			
Latitude 43-37.1 N			
Longitude 139-29.3 E			
Depth(m) 1650			
Press.	Temp.	Sal.	SIG-T
5	12.531	33.872	25.611
10	12.197	33.879	25.681
20	10.222	33.940	26.086
30	9.522	33.976	26.232
40	9.294	34.031	26.313
50	8.623	34.017	26.408
75	6.911	34.027	26.664
100	5.537	34.024	26.839
125	4.846	34.022	26.918
150	4.007	34.026	27.010
175	3.324	34.037	27.087
200	2.575	34.031	27.149
250	1.757	34.044	27.224
300	1.344	34.053	27.261

Station OS11125			
Latitude 43-38.2 N			
Longitude 138-56.7 E			
Depth(m) 3475			
Press.	Temp.	Sal.	SIG-T
5	12.957	33.876	25.530
10	12.955	33.875	25.530
20	12.032	33.906	25.734
30	9.501	33.931	26.201
40	9.163	34.028	26.331
50	8.564	34.033	26.429
75	7.261	34.035	26.622
100	5.638	34.017	26.821
125	4.591	34.025	26.948
150	3.600	34.027	27.052
175	2.979	34.028	27.111
200	2.516	34.033	27.155
250	1.797	34.046	27.223
300	1.462	34.052	27.252

	Station	OS11126	
	Latitude	43-37.3 N	
	Longitude	138-27.5 E	
	Depth(m)	3500	
Press.	Temp.	Sal.	SIG-T
5	11.059	33.874	25.888
10	11.072	33.873	25.885
20	9.212	33.908	26.229
30	6.471	33.954	26.665
40	5.672	33.985	26.791
50	5.289	33.999	26.848
75	3.507	34.019	27.055
100	2.890	34.033	27.123
125	2.122	34.035	27.189
150	1.816	34.046	27.221
175	1.578	34.050	27.242
200	1.375	34.052	27.258
250	1.147	34.057	27.277
300	1.023	34.059	27.287
400	0.809	34.061	27.303
500	0.659	34.062	27.313
600	0.543	34.062	27.320
700	0.462	34.062	27.324
800	0.411	34.061	27.326
900	0.371	34.061	27.328
1000	0.335	34.061	27.330
1200	0.272	34.060	27.333
1500	0.234	34.059	27.335
2000	0.221	34.060	27.335
2500	0.236	34.060	27.335
3000	0.276	34.061	27.333

Station		OS11127	
Latitude		43-26.1 N	
Longitude		138-41.0 E	
Depth(m)		3395	
Press.	Temp.	Sal.	SIG-T
5	13.159	-	-
10	11.548	-	-
20	10.438	-	-
30	9.700	-	-
40	9.190	-	-
50	8.160	-	-
75	6.679	-	-
100	5.257	-	-
125	3.730	-	-
150	2.859	-	-
175	2.921	-	-
200	1.920	-	-
250	1.534	-	-

Station		OS11128	
Latitude		43-18.6 N	
Longitude		138-51.3 E	
Depth(m)		3000	
Press.	Temp.	Sal.	SIG-T
5	14.233	33.292	24.819
10	14.156	33.395	24.914
20	12.561	33.772	25.527
30	11.598	33.995	25.884
40	9.135	34.016	26.326
50	8.394	34.048	26.467
75	7.228	34.052	26.640
100	6.036	34.044	26.793
125	5.023	34.041	26.912
150	3.921	34.033	27.025
175	2.857	34.036	27.129
200	2.238	34.035	27.180
250	1.585	34.049	27.241
300	1.227	34.054	27.270

Station		OS11129	
Latitude		43-14.4 N	
Longitude		139-02.4 E	
Depth(m)		3050	
Press.	Temp.	Sal.	SIG-T
5	14.409	-	-
10	14.225	-	-
20	12.546	-	-
30	10.475	-	-
40	9.747	-	-
50	9.200	-	-
75	7.919	-	-
100	6.400	-	-
125	5.280	-	-
150	4.480	-	-
175	3.581	-	-
200	2.881	-	-
250	1.904	-	-

Station		OS11130	
Latitude		42-49.2 N	
Longitude		139-30.8 E	
Depth(m)		3375	
Press.	Temp.	Sal.	SIG-T
5	13.690	-	-
10	13.238	-	-
20	12.124	-	-
30	10.924	-	-
40	9.755	-	-
50	9.558	-	-
75	8.520	-	-
100	7.300	-	-
125	5.970	-	-
150	4.899	-	-
175	3.970	-	-
200	3.030	-	-
250	1.984	-	-

Station		OS11131	
Latitude		42-38.4 N	
Longitude		139-45.7 E	
Depth(m)		1445	
Press.	Temp.	Sal.	SIG-T
5	14.381	-	-
10	14.063	-	-
20	14.022	-	-
30	12.833	-	-
40	11.840	-	-
50	10.060	-	-
75	8.832	-	-
100	8.088	-	-
125	6.715	-	-
150	5.369	-	-
175	4.443	-	-

Station		OS11132	
Latitude		42-30.3 N	
Longitude		139-24.1 E	
Depth(m)		2980	
Press.	Temp.	Sal.	SIG-T
5	14.990	-	-
10	14.745	-	-
20	13.355	-	-
30	12.018	-	-
40	11.208	-	-
50	10.569	-	-
75	9.208	-	-
100	8.298	-	-
125	6.830	-	-
150	5.159	-	-
175	3.971	-	-
200	2.831	-	-
250	1.710	-	-

Station		OS11133	
Latitude		42-21.8 N	
Longitude		139-06.3 E	
Depth(m)		3510	
Press.	Temp.	Sal.	SIG-T
5	15.009	-	-
10	15.000	-	-
20	13.624	-	-
30	11.053	-	-
40	9.940	-	-
50	8.920	-	-
75	7.510	-	-
100	6.050	-	-
125	4.391	-	-
150	3.209	-	-
175	2.279	-	-
200	1.791	-	-
250	1.310	-	-

Station		OS11134	
Latitude		42-46.6 N	
Longitude		138-14.9 E	
Depth(m)		3666	
Press.	Temp.	Sal.	SIG-T
5	14.628	-	-
10	13.735	-	-
20	11.161	-	-
30	9.085	-	-
40	7.727	-	-
50	7.207	-	-
75	5.660	-	-
100	3.854	-	-
125	2.945	-	-
150	2.329	-	-
175	1.880	-	-
200	1.530	-	-
250	1.144	-	-

Station		OS11135	
Latitude		42-07.7 N	
Longitude		138-32.4 E	
Depth(m)		3694	
Press.	Temp.	Sal.	SIG-T
5	14.070	-	-
10	14.060	-	-
20	9.777	-	-
30	8.740	-	-
40	7.048	-	-
50	6.005	-	-
75	4.088	-	-
100	2.728	-	-
125	1.915	-	-
150	1.629	-	-
175	1.450	-	-
200	1.359	-	-
250	1.140	-	-

Station		OS11136	
Latitude		42-00.1 N	
Longitude		138-20.5 E	
Depth(m)		3686	
Press.	Temp.	Sal.	SIG-T
5	13.357	33.796	25.389
10	12.920	33.796	25.476
20	8.685	33.918	26.320
30	6.909	33.961	26.613
40	6.471	34.040	26.733
50	5.789	34.003	26.791
75	3.917	34.018	27.013
100	2.902	34.034	27.123
125	2.304	34.037	27.176
150	1.849	34.039	27.213
175	1.624	34.038	27.230
200	1.482	34.042	27.242
250	1.265	34.049	27.263
300	1.142	34.057	27.278
400	0.899	34.061	27.297
500	0.704	34.062	27.310
600	0.596	34.063	27.317
700	0.502	34.063	27.322
800	0.436	34.062	27.326
900	0.386	34.061	27.328
1000	0.340	34.061	27.330
1200	0.281	34.060	27.332
1500	0.237	34.059	27.334
2000	0.223	34.059	27.335
2500	0.235	34.060	27.335
3000	0.275	34.061	27.334
3500	0.321	34.061	27.331

Station		OS11137	
Latitude		41-42.7 N	
Longitude		138-08.1 E	
Depth(m)		3691	
Press.	Temp.	Sal.	SIG-T
5	12.463	-	-
10	12.170	-	-
20	8.422	-	-
30	5.645	-	-
40	4.945	-	-
50	4.487	-	-
75	2.020	-	-
100	1.580	-	-
125	1.450	-	-
150	1.389	-	-
175	1.279	-	-
200	1.220	-	-
250	1.120	-	-

Station		OS11138	
Latitude		41-29.3 N	
Longitude		138-01.9 E	
Depth(m)		3689	
Press.	Temp.	Sal.	SIG-T
5	12.775	33.877	25.567
10	10.541	33.867	25.974
20	8.909	33.916	26.283
30	6.510	33.949	26.657
40	5.609	33.978	26.793
50	4.170	34.015	26.985
75	2.902	34.033	27.122
100	2.421	34.041	27.170
125	1.946	34.043	27.209
150	1.804	34.050	27.225
175	1.566	34.044	27.238
200	1.460	34.050	27.251
250	1.211	34.054	27.271
300	1.019	34.058	27.286

Station		OS11139	
Latitude		41-12.8 N	
Longitude		137-55.2 E	
Depth(m)		3690	
Press.	Temp.	Sal.	SIG-T
5	12.054	-	-
10	11.628	-	-
20	7.316	-	-
30	5.699	-	-
40	4.438	-	-
50	3.646	-	-
75	3.130	-	-
100	3.080	-	-
125	2.795	-	-
150	2.280	-	-
175	1.920	-	-
200	1.741	-	-
250	1.390	-	-

Station		OS11140	
Latitude		41-11.6 N	
Longitude		137-41.1 E	
Depth(m)		3682	
Press.	Temp.	Sal.	SIG-T
5	13.110	33.870	25.495
10	10.990	33.865	25.894
20	8.669	33.901	26.310
30	6.550	33.945	26.648
40	5.782	33.974	26.769
50	4.753	34.015	26.922
75	3.033	34.025	27.104
100	1.834	34.033	27.209
125	1.690	34.047	27.231
150	1.566	34.047	27.241
175	1.332	34.037	27.249
200	1.357	34.051	27.258
250	1.151	34.054	27.275
300	0.971	34.054	27.286
400	0.780	34.059	27.303
500	0.678	34.062	27.311
600	0.581	34.063	27.318
700	0.499	34.062	27.322
800	0.435	34.062	27.326
900	0.373	34.061	27.328
1000	0.336	34.061	27.330
1200	0.278	34.060	27.333
1500	0.234	34.059	27.334
2000	0.222	34.060	27.335
2500	0.234	34.060	27.335
3000	0.275	34.061	27.333
3500	0.321	34.061	27.331

	Station	OS11141		
	Latitude	40-59.8 N		
	Longitude	138-08.2 E		
	Depth(m)	3663		
Press.	Temp	Sal	SIG-T	
5	12.244	-	-	
10	10.258	-	-	
20	7.817	-	-	
30	5.885	-	-	
40	4.555	-	-	
50	3.846	-	-	
75	2.690	-	-	
100	2.117	-	-	
125	1.810	-	-	
150	1.649	-	-	
175	1.529	-	-	
200	1.347	-	-	
250	1.166	-	-	

Station OS11143			
Latitude 40-59.8 N			
Longitude 138-45.3 E			
Depth(m) 3404			
Press.	Temp.	Sal.	SIG-T
5	14.841	-	-
10	12.540	-	-
20	10.124	-	-
30	8.985	-	-
40	7.248	-	-
50	5.574	-	-
75	3.620	-	-
100	2.367	-	-
125	1.845	-	-
150	1.599	-	-
175	1.399	-	-
200	1.191	-	-
250	1.060	-	-

Station OS11144			
Latitude 40-59.9 N			
Longitude 138-59.3 E			
Depth(m) 3351			
Press.	Temp.	Sal.	SIG-T
5	15.401	33.912	25.044
10	13.237	34.095	25.644
20	11.345	33.994	25.930
30	9.526	34.002	26.252
40	8.430	34.043	26.458
50	7.253	34.038	26.626
75	5.416	34.043	26.868
100	4.052	34.036	27.014
125	3.281	34.036	27.090
150	2.501	34.042	27.164
175	1.885	34.035	27.207
200	1.695	34.045	27.230
250	1.389	34.049	27.254
300	1.260	34.054	27.268

Station OS11145			
Latitude N40-59.7 N			
Longitude 139-19.1 E			
Depth(m) 2790			
Press.	Temp.	Sal.	SIG-T
5	16.476	33.535	24.512
10	14.648	33.978	25.260
20	13.280	34.083	25.626
30	11.538	34.220	26.070
40	10.491	34.177	26.225
50	10.280	34.244	26.314
75	9.473	34.191	26.409
100	8.888	34.158	26.476
125	8.439	34.122	26.518
150	6.493	34.042	26.732
175	5.044	34.044	26.912
200	3.761	34.034	27.042
250	2.303	34.045	27.183
300	1.604	34.054	27.244

Station OS11146			
Latitude 40-59.7 N			
Longitude 139-37.3 E			
Depth(m) 1800			
Press.	Temp.	Sal.	SIG-T
5	17.405	32.696	23.651
10	17.071	32.996	23.960
20	13.892	33.973	25.416
30	12.433	34.116	25.820
40	11.538	34.151	26.016
50	11.026	34.185	26.136
75	10.202	34.204	26.296
100	9.835	34.217	26.368
125	9.325	34.182	26.425
150	8.595	34.145	26.512
175	7.844	34.114	26.601
200	5.758	34.040	26.824
250	3.210	34.037	27.098
300	1.906	34.049	27.217

Station OS11147			
Latitude 40-59.7 N			
Longitude 139-53.6 E			
Depth(m) 796			
Press.	Temp.	Sal.	SIG-T
5	16.746	32.986	24.028
10	15.481	33.307	24.562
20	14.902	33.783	25.055
30	13.649	33.998	25.486
40	12.308	34.034	25.780
50	11.523	34.068	25.954
75	9.920	33.924	26.125
100	10.618	34.196	26.217
125	10.876	34.302	26.254
150	10.180	34.272	26.353
175	8.884	34.092	26.426
200	8.905	34.158	26.474
250	5.264	34.036	26.880
300	2.328	34.042	27.178

Station OS11148			
Latitude 41-00.1 N			
Longitude 140-09.0 E			
Depth(m) 124			
Press.	Temp.	Sal.	SIG-T
5	15.804	32.623	23.964
10	15.749	32.623	23.976
20	14.153	33.426	24.939
30	13.989	33.910	25.347
40	12.597	34.027	25.719
50	12.001	34.058	25.858
75	9.899	33.907	26.115
100	9.899	34.002	26.189

Station OS11149			
Latitude 40-50.2 N			
Longitude 139-45.4 E			
Depth(m) 1820			
Press.	Temp.	Sal.	SIG-T
5	17.043	-	-
10	15.705	-	-
20	13.945	-	-
30	13.430	-	-
40	12.480	-	-
50	11.929	-	-
75	11.280	-	-
100	11.040	-	-
125	10.840	-	-
150	10.759	-	-
175	9.820	-	-
200	8.740	-	-
250	5.468	-	-

Station OS11150			
Latitude 40-43.1 N			
Longitude 139-25.7 E			
Depth(m) 1805			
Press.	Temp.	Sal.	SIG-T
5	17.319	-	-
10	16.460	-	-
20	13.485	-	-
30	13.243	-	-
40	11.615	-	-
50	11.580	-	-
75	10.259	-	-
100	8.198	-	-
125	7.340	-	-
150	5.979	-	-
175	5.870	-	-
200	3.791	-	-
250	2.424	-	-

Station OS11151			
Latitude 40-34.7 N			
Longitude 138-59.9 E			
Depth(m) 3255			
Press.	Temp.	Sal.	SIG-T
5	15.314	-	-
10	14.403	-	-
20	13.289	-	-
30	9.311	-	-
40	7.220	-	-
50	5.647	-	-
75	4.190	-	-
100	3.127	-	-
125	2.340	-	-
150	1.911	-	-
175	1.541	-	-
200	1.339	-	-
250	1.130	-	-

Station OS11152			
Latitude 40-25.2 N			
Longitude 138-35.6 E			
Depth(m) 2732			
Press.	Temp.	Sal.	SIG-T
5	14.055	-	-
10	13.428	-	-
20	11.652	-	-
30	8.211	-	-
40	6.525	-	-
50	5.097	-	-
75	3.239	-	-
100	2.238	-	-
125	1.630	-	-
150	1.340	-	-
175	1.230	-	-
200	1.110	-	-
250	0.994	-	-

Station OS11153			
Latitude 40-19.3 N			
Longitude 138-59.9 E			
Depth(m) 2656			
Press.	Temp.	Sal.	SIG-T
5	15.845	-	-
10	14.458	-	-
20	12.808	-	-
30	10.143	-	-
40	8.860	-	-
50	7.822	-	-
75	5.840	-	-
100	4.318	-	-
125	3.270	-	-
150	2.329	-	-
175	1.850	-	-
200	1.420	-	-
250	1.160	-	-

Station OS11154			
Latitude 40-15.0 N			
Longitude 139-17.6 E			
Depth(m) 2193			
Press.	Temp.	Sal.	SIG-T
5	16.116	-	-
10	16.098	-	-
20	14.811	-	-
30	12.229	-	-
40	11.258	-	-
50	10.405	-	-
75	8.540	-	-
100	7.125	-	-
125	5.310	-	-
150	3.960	-	-
175	2.971	-	-
200	2.321	-	-
250	1.700	-	-

Station OS11155			
Latitude 40-11.6 N			
Longitude 139-32.2 E			
Depth(m) 1116			
Press.	Temp.	Sal.	SIG-T
5	18.614	-	-
10	16.890	-	-
20	14.254	-	-
30	13.586	-	-
40	12.243	-	-
50	11.677	-	-
75	10.790	-	-
100	10.085	-	-
125	9.260	-	-
150	8.389	-	-
175	7.464	-	-
200	5.321	-	-
250	2.740	-	-

Station OS11156			
Latitude 39-58.6 N			
Longitude 139-38.6 E			
Depth(m) 124			
Press.	Temp.	Sal.	SIG-T
5	18.445	-	-
10	16.135	-	-
20	14.594	-	-
30	13.596	-	-
40	12.223	-	-
50	10.886	-	-
75	10.900	-	-
100	10.428	-	-

Station OS11157			
Latitude 39-44.0 N			
Longitude 139-45.4 E			
Depth(m) 110			
Press.	Temp.	Sal.	SIG-T
5	17.321	-	-
10	13.935	-	-
20	12.524	-	-
30	11.510	-	-
40	11.073	-	-
50	10.490	-	-
75	10.391	-	-
100	10.243	-	-

Station OS11158			
Latitude 39-42.1 N			
Longitude 139-54.2 E			
Depth(m) 62			
Press.	Temp.	Sal.	SIG-T
5	18.791	32.537	23.191
10	16.633	33.482	24.435
20	14.156	33.598	25.071
30	12.324	33.811	25.604
40	12.030	33.872	25.707
50	11.649	33.951	25.840

Station OS11159			
Latitude 39-44.8 N			
Longitude 139-33.9 E			
Depth(m) 231			
Press.	Temp.	Sal.	SIG-T
5	16.167	34.030	24.963
10	14.671	33.973	25.252
20	13.982	34.119	25.510
30	13.192	34.103	25.659
40	11.735	33.967	25.837
50	11.171	34.155	26.087
75	10.416	34.174	26.236
100	10.475	34.260	26.292
125	9.912	34.240	26.373
150	9.047	34.171	26.461
175	7.805	34.106	26.600
200	6.461	34.063	26.753

		Station OS11163	
		Latitude 40-06.0 N	
		Longitude 138-06.9 E	
		Depth(m) 2709	
Press.	Temp.	Sal.	SIG-T
5	18.090	34.160	24.607
10	15.686	34.211	25.212
20	14.147	34.271	25.592
30	12.455	34.334	25.984
40	11.238	34.273	26.166
50	10.682	34.230	26.233
75	10.121	34.251	26.347
100	8.459	34.084	26.485
125	7.427	34.073	26.629
150	5.949	34.043	26.803
175	4.444	34.023	26.963
200	3.368	34.002	27.054
250	2.454	33.994	27.130
300	2.269	33.997	27.147
400	1.668	34.025	27.216
500	1.086	34.053	27.279
600	0.771	34.060	27.304
700	0.631	34.063	27.315
800	0.517	34.063	27.322
900	0.419	34.062	27.327
1000	0.345	34.061	27.330
1200	0.282	34.061	27.333
1500	0.243	34.061	27.335
2000	0.224	34.061	27.336
2500	0.238	34.061	27.336

		Station OS11164	
		Latitude 39-55.6 N	
		Longitude 137-41.9 E	
		Depth(m) 2644	
Press.	Temp.	Sal.	SIG-T
5	19.347	34.354	24.437
10	16.884	34.366	25.055
20	15.359	34.371	25.408
30	13.707	34.208	25.636
40	12.752	34.358	25.945
50	11.911	34.408	26.146
75	10.149	34.297	26.377
100	8.509	34.152	26.531
125	6.101	34.057	26.795
150	4.724	34.039	26.945
175	3.519	34.046	27.075
200	2.850	34.041	27.133
250	1.782	34.033	27.213
300	1.387	34.044	27.250
400	0.967	34.057	27.289
500	0.700	34.061	27.309
600	0.582	34.062	27.317
700	0.491	34.062	27.322
800	0.424	34.062	27.326
900	0.387	34.062	27.328
1000	0.332	34.061	27.331
1200	0.269	34.061	27.334
1500	0.231	34.060	27.336
2000	0.217	34.061	27.336
2500	0.237	34.061	27.336

		Station OS11165	
		Latitude 39-43.7 N	
		Longitude 137-19.9 E	
		Depth(m) 2590	
Press.	Temp.	Sal.	SIG-T
5	17.439	34.122	24.734
10	13.560	34.085	25.571
20	12.250	34.067	25.817
30	10.979	34.241	26.188
40	9.709	34.255	26.419
50	9.270	34.217	26.462
75	6.906	34.049	26.683
100	5.135	34.049	26.906
125	3.832	34.036	27.036
150	2.933	34.042	27.127
175	2.169	34.041	27.190
200	1.711	34.039	27.224
250	1.332	34.054	27.262
300	1.074	34.056	27.281
400	0.766	34.059	27.303
500	0.587	34.061	27.316
600	0.480	34.061	27.322
700	0.412	34.061	27.326
800	0.362	34.061	27.329
900	0.317	34.061	27.331
1000	0.283	34.060	27.333
1200	0.249	34.060	27.334
1500	0.216	34.060	27.336
2000	0.220	34.060	27.336
2500	0.240	34.061	27.336

		Station OS11166	
		Latitude 39-32.3 N	
		Longitude 137-00.5 E	
		Depth(m) 2592	
Press.	Temp.	Sal.	SIG-T
5	16.016	34.077	25.034
10	15.017	34.087	25.264
20	12.612	34.031	25.719
30	10.028	34.106	26.249
40	9.590	34.220	26.412
50	8.373	34.132	26.536
75	6.233	34.054	26.775
100	4.502	34.033	26.964
125	3.292	34.030	27.084
150	2.516	34.051	27.170
175	2.054	34.053	27.209
200	1.724	34.047	27.229
250	1.192	34.053	27.271
300	0.942	34.057	27.291
400	0.693	34.060	27.309
500	0.567	34.061	27.317
600	0.454	34.062	27.324
700	0.398	34.062	27.327
800	0.355	34.062	27.330
900	0.315	34.061	27.331
1000	0.286	34.061	27.333
1200	0.244	34.060	27.335
1500	0.217	34.060	27.336
2000	0.218	34.061	27.336
2500	0.239	34.061	27.336

		Station OS11167	
		Latitude 39-21.5 N	
		Longitude 136-37.2 E	
		Depth(m) 2669	
Press.	Temp.	Sal.	SIG-T
5	16.997	34.216	24.913
10	16.080	34.170	25.091
20	14.152	34.150	25.498
30	11.699	34.151	25.986
40	10.967	34.165	26.131
50	10.760	34.201	26.197
75	10.591	34.279	26.287
100	9.490	34.199	26.411
125	8.303	34.122	26.539
150	6.664	34.066	26.728
175	5.085	34.042	26.906
200	3.852	34.036	27.034
250	2.172	34.037	27.187
300	1.432	34.050	27.252
400	0.877	34.057	27.295
500	0.673	34.060	27.310
600	0.546	34.061	27.318
700	0.461	34.061	27.323
800	0.397	34.061	27.327
900	0.340	34.061	27.330
1000	0.304	34.061	27.332
1200	0.254	34.060	27.334
1500	0.228	34.060	27.336
2000	0.220	34.061	27.336
2500	0.247	34.061	27.335

		Station OS11168	
		Latitude 39-10.5 N	
		Longitude 136-14.0 E	
		Depth(m) 2665	
Press.	Temp.	Sal.	SIG-T
5	16.850	34.145	24.894
10	14.442	34.134	25.424
20	13.220	34.154	25.693
30	11.410	34.160	26.047
40	11.026	34.160	26.116
50	10.843	34.168	26.155
75	10.678	34.245	26.245
100	10.240	34.238	26.316
125	9.562	34.193	26.395
150	8.597	34.134	26.503
175	7.776	34.099	26.599
200	6.661	34.064	26.727
250	4.067	34.037	27.014
300	2.245	34.036	27.180
400	1.022	34.055	27.284
500	0.718	34.058	27.306
600	0.580	34.060	27.316
700	0.481	34.061	27.322
800	0.416	34.061	27.326
900	0.370	34.061	27.328
1000	0.335	34.061	27.330
1200	0.276	34.060	27.333
1500	0.234	34.060	27.335
2000	0.230	34.061	27.336
2500	0.251	34.061	27.335

		Station OS11169	
		Latitude 39-00.2 N	
		Longitude 136-02.9 E	
		Depth(m) 2693	
Press.	Temp.	Sal.	SIG-T
5	18.409	-	-
10	16.705	-	-
20	13.815	-	-
30	11.508	-	-
40	11.002	-	-
50	10.765	-	-
75	10.214	-	-
100	9.165	-	-
125	8.039	-	-
150	6.823	-	-
175	5.217	-	-
200	3.850	-	-
250	2.182	-	-
300	1.413	-	-
400	0.854	-	-
500	0.614	-	-
600	0.468	-	-
700	0.395	-	-
800	0.332	-	-
900	0.311	-	-
1000	0.268	-	-

		Station OS11170	
		Latitude 38-49.4 N	
		Longitude 135-52.0 E	
		Depth(m) 2542	
Press.	Temp.	Sal.	SIG-T
5	17.712	-	-
10	16.451	-	-
20	14.363	-	-
30	12.314	-	-
40	9.820	-	-
50	8.758	-	-
75	5.579	-	-
100	4.100	-	-
125	2.938	-	-
150	2.279	-	-
175	1.829	-	-
200	1.542	-	-
250	1.125	-	-
300	0.900	-	-
400	0.650	-	-
500	0.494	-	-
600	0.419	-	-
700	0.347	-	-
800	0.305	-	-
900	0.284	-	-
1000	0.253	-	-

		Station OS11171	
		Latitude 38-45.4 N	
		Longitude 135-47.9 E	
		Depth(m) 2325	
Press.	Temp.	Sal.	SIG-T
5	19.582	34.275	24.317
10	17.824	34.296	24.776
20	15.103	34.287	25.400
30	12.386	34.033	25.764
40	9.286	34.013	26.299
50	7.906	34.062	26.551
75	5.557	34.017	26.831
100	3.945	34.028	27.019
125	2.909	34.039	27.126
150	2.198	34.033	27.181
175	1.844	34.038	27.213
200	1.577	34.046	27.239
250	1.130	34.055	27.277
300	0.936	34.057	27.292

	Station	OS11172	
	Latitude	38-39.7 N	
	Longitude	135-41.0 E	
	Depth(m)	2993	
Press.	Temp.	Sal.	SIG-T
5	18.621	-	-
10	16.816	-	-
20	15.282	-	-
30	14.107	-	-
40	11.146	-	-
50	8.688	-	-
75	5.616	-	-
100	3.871	-	-
125	2.986	-	-
150	2.093	-	-
175	1.766	-	-
200	1.581	-	-
250	1.188	-	-
300	0.929	-	-
400	0.690	-	-
500	0.575	-	-
600	0.470	-	-
700	0.398	-	-
800	0.344	-	-
900	0.302	-	-
1000	0.271	-	-

Station OS11175			
Latitude 37-49.2 N			
Longitude 135-35.9 E			
Depth(m) 2890			
Press.	Temp.	Sal.	SIG-T
5	19.130	33.928	24.169
10	19.080	33.928	24.182
20	14.895	33.918	25.161
30	11.971	33.968	25.793
40	11.188	33.968	25.938
50	10.795	33.996	26.031
75	10.149	34.026	26.166
100	9.906	34.025	26.206
125	9.838	34.021	26.215
150	9.872	34.038	26.222
175	9.945	34.078	26.242
200	9.941	34.104	26.262
250	9.716	34.135	26.324
300	7.778	34.076	26.581

Station OS11176			
Latitude 37-29.5 N			
Longitude 135-39.6 E			
Depth(m) 2783			
Press.	Temp.	Sal.	SIG-T
5	-	-	-
10	19.384	34.041	24.190
20	16.364	34.336	25.154
30	14.474	34.146	25.427
40	13.034	34.301	25.844
50	12.660	34.440	26.027
75	11.675	34.357	26.151
100	10.323	34.150	26.233
125	10.190	34.155	26.260
150	10.384	34.230	26.284
175	10.383	34.252	26.302
200	10.074	34.228	26.337
250	8.025	34.091	26.556
300	4.320	34.029	26.980

Station OS11177			
Latitude 37-06.2 N			
Longitude 135-41.3 E			
Depth(m) 1573			
Press.	Temp.	Sal.	SIG-T
5	20.431	34.306	24.118
10	18.253	34.219	24.611
20	16.960	34.312	24.996
30	16.071	34.300	25.193
40	15.634	34.490	25.438
50	15.305	34.597	25.494
75	13.605	34.518	25.897
100	11.984	34.472	26.182
125	10.787	34.384	26.334
150	9.674	34.276	26.442
175	7.080	34.139	26.729
200	3.926	34.040	27.030
250	1.795	34.047	27.224
300	1.216	34.054	27.271

Station OS11178			
Latitude 36-47.2 N			
Longitude 135-44.0 E			
Depth(m) 1028			
Press.	Temp.	Sal.	SIG-T
5	20.937	34.346	24.013
10	17.892	34.312	24.771
20	16.590	34.389	25.142
30	15.850	34.497	25.395
40	15.067	34.600	25.649
50	14.805	34.635	25.733
75	14.654	34.647	25.775
100	14.539	34.647	25.800
125	14.346	34.639	25.835
150	12.649	34.510	26.083
175	10.880	34.390	26.322
200	8.502	34.194	26.565
250	3.344	34.052	27.097
300	1.688	34.049	27.233

Station OS11179			
Latitude 36-24.6 N			
Longitude 135-46.3 E			
Depth(m) 388			
Press.	Temp.	Sal.	SIG-T
5	20.902	34.304	23.991
10	19.496	34.417	24.449
20	17.767	34.482	24.932
30	16.788	34.507	25.185
40	16.296	34.519	25.310
50	15.746	34.527	25.442
75	15.098	34.607	25.648
100	14.558	34.584	25.747
125	13.550	34.509	25.901
150	12.464	34.505	26.115
175	10.229	34.336	26.394
200	7.211	34.147	26.718
250	3.353	34.072	27.111
300	1.718	34.052	27.233

Station OS11180			
Latitude 36-03.3 N			
Longitude 135-48.0 E			
Depth(m) 265			
Press.	Temp.	Sal.	SIG-T
5	20.539	33.872	23.759
10	19.983	34.201	24.156
20	17.888	34.442	24.872
30	17.208	34.431	25.028
40	16.590	34.461	25.197
50	16.219	34.547	25.349
75	15.533	34.630	25.568
100	14.808	34.611	25.714
125	14.007	34.601	25.877
150	12.464	34.507	26.117
175	11.098	34.411	26.299
200	9.631	34.288	26.458
250	2.726	34.060	27.159

Station OS11181			
Latitude 35-34.3 N			
Longitude 132-34.3 E			
Depth(m) 105			
Press.	Temp.	Sal.	SIG-T
5	20.931	-	-
10	20.873	-	-
20	20.799	-	-
30	20.249	-	-
40	18.410	-	-
50	18.310	-	-
75	17.830	-	-
100	17.277	-	-

Station OS11182			
Latitude 35-34.2 N			
Longitude 132-40.0 E			
Depth(m) 130			
Press.	Temp.	Sal.	SIG-T
5	21.161	-	-
10	20.633	-	-
20	20.064	-	-
30	18.626	-	-
40	17.763	-	-
50	17.399	-	-
75	17.280	-	-
100	17.210	-	-
125	16.930	-	-

Station OS11183			
Latitude 35-34.6 N			
Longitude 132-30.0 E			
Depth(m) 158			
Press.	Temp.	Sal.	SIG-T
5	20.951	-	-
10	20.843	-	-
20	20.399	-	-
30	18.294	-	-
40	17.685	-	-
50	17.379	-	-
75	16.660	-	-
100	15.867	-	-
125	15.375	-	-
150	11.176	-	-

Station OS11184			
Latitude 35-34.7 N			
Longitude 132-27.0 E			
Depth(m) 163			
Press.	Temp.	Sal.	SIG-T
5	20.840	34.350	24.043
10	20.779	34.352	24.060
20	20.514	34.379	24.152
30	18.278	34.484	24.809
40	17.668	34.505	24.974
50	17.283	34.517	25.077
75	16.220	34.596	25.386
100	15.529	34.623	25.564
125	15.323	34.607	25.597
150	12.580	34.420	26.027

Station OS11185			
Latitude 35-35.1 N			
Longitude 132-20.0 E			
Depth(m) 174			
Press.	Temp.	Sal.	SIG-T
5	20.694	-	-
10	19.583	-	-
20	18.382	-	-
30	17.776	-	-
40	17.138	-	-
50	16.279	-	-
75	15.790	-	-
100	15.198	-	-
125	14.345	-	-
150	7.816	-	-

Station OS11186			
Latitude 35-35.1 N			
Longitude 132-10.0 E			
Depth(m) 189			
Press.	Temp.	Sal.	SIG-T
5	20.540	-	-
10	19.410	-	-
20	18.465	-	-
30	17.836	-	-
40	17.300	-	-
50	16.697	-	-
75	15.650	-	-
100	14.455	-	-
125	11.331	-	-
150	6.360	-	-
175	5.582	-	-

Station OS11187			
Latitude 35-15.0 N			
Longitude 131-60.0 E			
Depth(m) 189			
Press.	Temp.	Sal.	SIG-T
5	20.131	-	-
10	19.978	-	-
20	19.760	-	-
30	17.836	-	-
40	15.278	-	-
50	15.141	-	-
75	14.479	-	-
100	13.540	-	-
125	10.317	-	-
150	4.844	-	-
175	4.226	-	-

Station OS11188			
Latitude 35-35.0 N			
Longitude 131-50.0 E			
Depth(m) 177			
Press.	Temp.	Sal.	SIG-T
5	20.090	-	-
10	19.793	-	-
20	17.948	-	-
30	16.519	-	-
40	15.790	-	-
50	15.159	-	-
75	14.430	-	-
100	13.498	-	-
125	6.834	-	-
150	5.240	-	-
175	5.240	-	-

Station OS11189			
Latitude 35-35.0 N			
Longitude 131-40.0 E			
Depth(m) 159			
Press.	Temp.	Sal.	SIG-T
5	19.929	-	-
10	19.938	-	-
20	19.333	-	-
30	17.244	-	-
40	15.578	-	-
50	14.957	-	-
75	14.299	-	-
100	13.027	-	-
125	6.382	-	-
150	5.419	-	-

Station OS11190			
Latitude 35-25.0 N			
Longitude 131-39.9 E			
Depth(m) 147			
Press.	Temp.	Sal.	SIG-T
5	20.391	-	-
10	20.323	-	-
20	19.328	-	-
30	17.349	-	-
40	16.408	-	-
50	15.727	-	-
75	14.659	-	-
100	13.365	-	-
125	8.946	-	-

Station OS11191			
Latitude 35-15.0 N			
Longitude 131-40.3 E			
Depth(m) 138			
Press.	Temp.	Sal.	SIG-T
5	21.004	-	-
10	20.848	-	-
20	20.131	-	-
30	18.073	-	-
40	17.600	-	-
50	17.429	-	-
75	16.140	-	-
100	14.842	-	-
125	14.375	-	-

Station OS11192			
Latitude 35-05.0 N			

Station OS11199			
Latitude 34-20.6 N			
Longitude 130-40.0 E			
Depth(m) 96			
Press.	Temp.	Sal.	SIG-T
5	21.701	-	-
10	20.995	-	-
20	20.349	-	-
30	19.010	-	-
40	18.620	-	-
50	18.580	-	-
75	18.010	-	-

Station OS11200			
Latitude 34-11.3 N			
Longitude 130-30.0 E			
Depth(m) 89			
Press.	Temp.	Sal.	SIG-T
5	21.840	-	-
10	21.758	-	-
20	20.239	-	-
30	19.413	-	-
40	19.058	-	-
50	18.730	-	-
75	18.550	-	-

Station OS11201			
Latitude 34-00.0 N			
Longitude 130-18.7 E			
Depth(m) 61			
Press.	Temp.	Sal.	SIG-T
5	21.121	-	-
10	20.760	-	-
20	20.029	-	-
30	19.976	-	-
40	19.785	-	-
50	19.550	-	-

Station OS11202			
Latitude 33-50.2 N			
Longitude 130-08.2 E			
Depth(m) 53			
Press.	Temp.	Sal.	SIG-T
5	21.303	34.074	23.707
10	20.358	34.152	24.021
20	19.920	34.205	24.177
30	19.856	34.200	24.189
40	19.845	34.209	24.199

Station OS11203			
Latitude 34-00.1 N			
Longitude 130-02.4 E			
Depth(m) 78			
Press.	Temp.	Sal.	SIG-T
5	21.661	33.415	23.108
10	21.206	33.686	23.438
20	20.610	33.893	23.756
30	20.146	34.128	24.058
40	19.742	34.236	24.247
50	19.343	34.361	24.446

Station OS11204			
Latitude 34-10.2 N			
Longitude 129-55.7 E			
Depth(m) 104			
Press.	Temp.	Sal.	SIG-T
5	21.919	33.281	22.935
10	21.696	33.282	22.997
20	19.816	34.042	24.079
30	19.123	34.234	24.404
40	18.598	34.332	24.612
50	18.340	34.417	24.742
75	16.750	34.493	25.184
100	16.467	34.610	25.340

Station OS11205			
Latitude 34-20.2 N			
Longitude 129-49.4 E			
Depth(m) 111			
Press.	Temp.	Sal.	SIG-T
5	21.662	33.086	22.858
10	21.043	33.167	23.087
20	16.917	33.693	24.531
30	17.196	34.202	24.855
40	17.077	34.439	25.066
50	16.940	34.604	25.224
75	15.986	34.609	25.450
100	15.794	34.613	25.497

Station OS11206			
Latitude 34-29.9 N			
Longitude 129-42.5 E			
Depth(m) 103			
Press.	Temp.	Sal.	SIG-T
5	21.017	33.954	23.693
10	20.818	33.985	23.770
20	19.389	34.391	24.457
30	18.121	34.468	24.835
40	17.920	34.514	24.919
50	17.410	34.500	25.033
75	15.934	34.530	25.401

Station OS11207			
Latitude 34-40.1 N			
Longitude 129-36.0 E			
Depth(m) 89			
Press.	Temp.	Sal.	SIG-T
5	21.162	33.235	23.108
10	21.108	33.233	23.121
20	19.783	34.200	24.209
30	18.130	34.189	24.619
40	17.793	34.217	24.723
50	17.786	34.222	24.729
75	17.122	34.517	25.114

Station OS11208			
Latitude 34-50.3 N			
Longitude 129-29.8 E			
Depth(m) 100			
Press.	Temp.	Sal.	SIG-T
5	21.236	33.131	23.008
10	21.211	33.158	23.035
20	20.732	33.320	23.288
30	18.983	33.662	24.003
40	16.750	34.167	24.934
50	16.443	34.258	25.075
75	15.397	34.437	25.451

Station OS11209			
Latitude 34-53.2 N			
Longitude 129-23.4 E			
Depth(m) 227			
Press.	Temp.	Sal.	SIG-T
5	20.840	33.162	23.138
10	20.792	33.163	23.152
20	18.893	33.310	23.757
30	16.349	33.673	24.647
40	16.005	34.190	25.124
50	14.892	34.170	25.356
75	15.133	34.539	25.588
100	15.002	34.542	25.619
125	14.726	34.506	25.651
150	7.185	34.175	26.743
175	3.430	34.033	27.073
200	3.400	34.030	27.073

Station OS11210			
Latitude 34-54.2 N			
Longitude 129-30.0 E			
Depth(m) 141			
Press.	Temp.	Sal.	SIG-T
5	20.831	-	-
10	20.805	-	-
20	19.440	-	-
30	17.409	-	-
40	15.963	-	-
50	15.677	-	-
75	15.490	-	-
100	15.290	-	-
125	15.000	-	-

Station OS11211			
Latitude 34-55.6 N			
Longitude 129-40.0 E			
Depth(m) 105			
Press.	Temp.	Sal.	SIG-T
5	20.851	-	-
10	20.743	-	-
20	20.685	-	-
30	20.178	-	-
40	19.925	-	-
50	17.630	-	-
75	15.770	-	-
100	15.152	-	-

Station OS11212			
Latitude 34-57.0 N			
Longitude 129-50.0 E			
Depth(m) 126			
Press.	Temp.	Sal.	SIG-T
5	20.808	-	-
10	20.385	-	-
20	19.760	-	-
30	19.710	-	-
40	18.653	-	-
50	18.060	-	-
75	16.420	-	-
100	15.510	-	-
125	14.175	-	-

Station OS11213			
Latitude 34-58.6 N			
Longitude 130-00.0 E			
Depth(m) 129			
Press.	Temp.	Sal.	SIG-T
5	19.701	-	-
10	19.690	-	-
20	18.778	-	-
30	18.126	-	-
40	17.283	-	-
50	16.689	-	-
75	15.980	-	-
100	15.592	-	-
125	14.632	-	-

Station OS11214			
Latitude 35-01.7 N			
Longitude 130-00.0 E			
Depth(m) 126			
Press.	Temp.	Sal.	SIG-T
5	21.159	-	-
10	21.140	-	-
20	19.283	-	-
30	17.994	-	-
40	16.943	-	-
50	16.137	-	-
75	15.520	-	-
100	15.420	-	-
125	15.154	-	-

Station OS11215			
Latitude 35-05.0 N			
Longitude 130-20.0 E			
Depth(m) 125			
Press.	Temp.	Sal.	SIG-T
5	20.959	-	-
10	20.923	-	-
20	18.486	-	-
30	17.753	-	-
40	17.225	-	-
50	16.626	-	-
75	15.859	-	-
100	15.598	-	-
125	15.605	-	-

Station OS11216			
Latitude 35-12.5 N			
Longitude 130-30.0 E			
Depth(m) 131			
Press.	Temp.	Sal.	SIG-T
5	20.741	-	-
10	20.723	-	-
20	19.495	-	-
30	17.826	-	-
40	17.540	-	-
50	16.805	-	-
75	15.990	-	-
100	15.808	-	-
125	15.800	-	-

Station OS11217			
Latitude 35-20.1 N			
Longitude 130-40.0 E			
Depth(m) 144			
Press.	Temp.	Sal.	SIG-T
5	20.860	-	-
10	20.788	-	-
20	19.773	-	-
30	17.933	-	-
40	17.528	-	-
50	16.529	-	-
75	15.710	-	-
100	15.670	-	-
125	13.266	-	-

Station OS11218			
Latitude 35-27.6 N			
Longitude 130-50.0 E			
Depth(m) 156			
Press.	Temp.	Sal.	SIG-T
5	20.420	-	-
10	20.365	-	-
20	19.894	-	-
30	17.993	-	-
40	16.983	-	-
50	16.769	-	-
75	15.680	-	-
100	15.318	-	-
125	13.300	-	-
150	3.291	-	-

Station OS11219			
Latitude 35-35.1 N			
Longitude 130-60.0 E			
Depth(m) 184			
Press.	Temp.	Sal.	SIG-T
5	20.979	-	-
10	20.958	-	-
20	20.835	-	-
30	18.381	-	-
40	17.208	-	-
50	16.759	-	-
75	14.500	-	-
100	13.740	-	-
125	9.478	-	-
150	2.949	-	-
175	1.890	-	-

Station		OS11220	
Latitude		35-24.2 N	
Longitude		131-00.0 E	
Depth(m)		145	
Press.	Temp.	Sal.	SIG-T
5	21.071	-	-
10	20.763	-	-
20	20.524	-	-
30	18.556	-	-
40	18.048	-	-
50	17.539	-	-
75	16.000	-	-
100	15.337	-	-
125	14.620	-	-

Station OS11223			
Latitude 34-46.7 N			
Longitude 130-60.0 E			
Depth(m) 121			
Press.	Temp.	Sal.	SIG-T
5	22.093	-	-
10	22.020	-	-
20	19.973	-	-
30	19.430	-	-
40	19.210	-	-
50	19.061	-	-
75	18.339	-	-
100	17.558	-	-

Station OS11224			
Latitude 34-32.1 N			
Longitude 130-58.8 E			
Depth(m) 96			
Press.	Temp.	Sal.	SIG-T
5	21.819	-	-
10	21.280	-	-
20	20.539	-	-
30	20.103	-	-
40	19.550	-	-
50	19.369	-	-
75	18.860	-	-

Station OS11225			
Latitude 34-36.7 N			
Longitude 130-50.1 E			
Depth(m) 118			
Press.	Temp.	Sal.	SIG-T
5	22.330	-	-
10	22.075	-	-
20	20.467	-	-
30	19.500	-	-
40	18.670	-	-
50	18.520	-	-
75	18.150	-	-
100	17.100	-	-

Station OS11226			
Latitude 34-41.5 N			
Longitude 130-39.9 E			
Depth(m) 119			
Press.	Temp.	Sal.	SIG-T
5	21.481	-	-
10	21.280	-	-
20	19.451	-	-
30	17.994	-	-
40	17.533	-	-
50	17.330	-	-
75	16.930	-	-
100	16.880	-	-

Station OS11227			
Latitude 34-46.0 N			
Longitude 130-30.0 E			
Depth(m) 133			
Press.	Temp.	Sal.	SIG-T
5	21.611	-	-
10	21.593	-	-
20	20.582	-	-
30	18.865	-	-
40	17.775	-	-
50	16.939	-	-
75	16.430	-	-
100	15.730	-	-
125	15.680	-	-

Station OS11228			
Latitude 34-50.5 N			
Longitude 130-19.9 E			
Depth(m) 127			
Press.	Temp.	Sal.	SIG-T
5	21.430	-	-
10	21.393	-	-
20	20.738	-	-
30	18.069	-	-
40	17.245	-	-
50	16.760	-	-
75	15.850	-	-
100	15.748	-	-
125	15.771	-	-

Station OS11229			
Latitude 34-52.1 N			
Longitude 130-16.2 E			
Depth(m) 125			
Press.	Temp.	Sal.	SIG-T
5	21.329	-	-
10	21.293	-	-
20	18.149	-	-
30	17.866	-	-
40	17.218	-	-
50	16.431	-	-
75	15.960	-	-
100	15.800	-	-
125	15.685	-	-

Station OS11230			
Latitude 34-40.0 N			
Longitude 130-15.6 E			
Depth(m) 123			
Press.	Temp.	Sal.	SIG-T
5	21.523	-	-
10	21.435	-	-
20	19.672	-	-
30	18.949	-	-
40	18.108	-	-
50	17.309	-	-
75	15.990	-	-
100	15.850	-	-

Station OS11231			
Latitude 34-30.0 N			
Longitude 130-15.9 E			
Depth(m) 114			
Press.	Temp.	Sal.	SIG-T
5	21.300	-	-
10	20.965	-	-
20	20.375	-	-
30	19.766	-	-
40	18.523	-	-
50	16.259	-	-
75	15.860	-	-
100	15.587	-	-

Station OS11232			
Latitude 34-20.0 N			
Longitude 130-14.7 E			
Depth(m) 106			
Press.	Temp.	Sal.	SIG-T
5	22.100	-	-
10	22.013	-	-
20	20.820	-	-
30	19.219	-	-
40	17.670	-	-
50	17.670	-	-
75	16.740	-	-
100	16.070	-	-

Station OS11233			
Latitude 34-10.0 N			
Longitude 130-14.3 E			
Depth(m) 83			
Press.	Temp.	Sal.	SIG-T
5	22.499	-	-
10	22.560	-	-
20	20.624	-	-
30	19.899	-	-
40	19.610	-	-
50	18.025	-	-
75	17.334	-	-

Station OS11234			
Latitude 34-10.0 N			
Longitude 130-13.8 E			
Depth(m) 65			
Press.	Temp.	Sal.	SIG-T
5	22.004	-	-
10	21.868	-	-
20	20.291	-	-
30	20.060	-	-
40	19.878	-	-
50	19.383	-	-

Station OS11235			
Latitude 33-50.0 N			
Longitude 130-13.4 E			
Depth(m) 45			
Press.	Temp.	Sal.	SIG-T
5	21.664	-	-
10	20.315	-	-
20	20.125	-	-
30	20.076	-	-
40	20.043	-	-

Station OS11236			
Latitude 32-45.0 N			
Longitude 129-13.3 E			
Depth(m) 125			
Press.	Temp.	Sal.	SIG-T
5	24.000	-	-
10	23.848	-	-
20	22.105	-	-
30	20.746	-	-
40	20.255	-	-
50	19.174	-	-
75	17.779	-	-
100	16.590	-	-
125	16.080	-	-

Station OS11237			
Latitude 32-30.0 N			
Longitude 129-10.5 E			
Depth(m) 237			
Press.	Temp.	Sal.	SIG-T
5	24.600	-	-
10	24.550	-	-
20	23.569	-	-
30	21.255	-	-
40	20.125	-	-
50	18.719	-	-
75	17.410	-	-
100	16.798	-	-
125	16.165	-	-
150	15.679	-	-
175	14.801	-	-
200	13.825	-	-

Station OS11238			
Latitude 32-15.0 N			
Longitude 129-04.2 E			
Depth(m) 422			
Press.	Temp.	Sal.	SIG-T
5	25.059	-	-
10	24.185	-	-
20	23.570	-	-
30	23.043	-	-
40	20.933	-	-
50	19.207	-	-
75	17.730	-	-
100	16.533	-	-
125	15.735	-	-
150	15.039	-	-
175	14.450	-	-
200	13.611	-	-
250	12.354	-	-

Station OS11239			
Latitude 32-00.0 N			
Longitude 128-59.8 E			
Depth(m) 788			
Press.	Temp.	Sal.	SIG-T
5	25.033	-	-
10	24.168	-	-
20	23.454	-	-
30	22.210	-	-
40	22.798	-	-
50	21.636	-	-
75	19.310	-	-
100	17.938	-	-
125	17.180	-	-
150	16.017	-	-
175	15.170	-	-
200	14.310	-	-
250	12.664	-	-

Station OS11240			
Latitude 31-45.0 N			
Longitude 128-55.3 E			
Depth(m) 850			
Press.	Temp.	Sal.	SIG-T
5	25.899	-	-
10	25.900	-	-
20	25.860	-	-
30	25.650	-	-
40	24.063	-	-
50	22.755	-	-
75	20.249	-	-
100	18.887	-	-
125	17.610	-	-
150	16.589	-	-
175	15.553	-	-
200	14.611	-	-
250	12.418	-	-

Station OS11241			
Latitude 31-30.0 N			
Longitude 128-50.6 E			
Depth(m) 689			
Press.	Temp.	Sal.	SIG-T
5	26.121	-	-
10	26.005	-	-
20	24.413	-	-
30	23.246	-	-
40	22.300	-	-
50	21.319	-	-
75	19.529	-	-
100	18.184	-	-
125	17.300	-	-
150	16.628	-	-
175	16.090	-	-
200	15.570	-	-
250	13.590	-	-

Station OS11242			
Latitude 31-15.0 N			
Longitude 128-46.0 E			
Depth(m) 699			
Press.	Temp.	Sal.	SIG-T
5	26.018	-	-
10	25.878	-	-
20	23.985	-	-
30	23.043	-	-
40	22.168	-	-
50	21.435	-	-
75	18.649	-	-
100	17.448	-	-
125	16.940	-	-
150	16.541	-	-
175	16.421	-	-
200	16.073	-	-
250	14.834	-	-

	Station	OS11243	
	Latitude	30-59.5 N	
	Longitude	128-41.5 E	
	Depth(m)	685	
Press.	Temp.	Sal.	SIG-T
5	25.501	-	-
10	25.490	-	-
20	25.205	-	-
30	24.364	-	-
40	23.940	-	-
50	21.955	-	-
75	19.170	-	-
100	18.195	-	-
125	17.005	-	-
150	16.661	-	-
175	16.371	-	-
200	15.791	-	-
250	14.600	-	-

Station OS11247				
Latitude 30-00.0 N				
Longitude 128-24.2 E				
Depth(m) 305				
Press.	Temp.	Sal.	SIG-T	
5	26.710	-	-	-
10	26.300	-	-	-
20	26.129	-	-	-
30	25.926	-	-	-
40	24.350	-	-	-
50	23.091	-	-	-
75	21.708	-	-	-
100	21.070	-	-	-
125	17.981	-	-	-
150	14.829	-	-	-
175	13.421	-	-	-
200	13.250	-	-	-
250	11.084	-	-	-

Station OS11248				
Latitude 29-44.9 N				
Longitude 128-19.6 E				
Depth(m) 945				
Press.	Temp.	Sal.	SIG-T	
5	26.569	-	-	-
10	26.503	-	-	-
20	25.435	-	-	-
30	25.100	-	-	-
40	24.920	-	-	-
50	24.799	-	-	-
75	22.227	-	-	-
100	20.667	-	-	-
125	18.475	-	-	-
150	17.188	-	-	-
175	14.971	-	-	-
200	13.713	-	-	-
250	12.430	-	-	-

Station OS11249				
Latitude 29-43.5 N				
Longitude 128-16.8 E				
Depth(m) 961				
Press.	Temp.	Sal.	SIG-T	
5	26.925	34.055	22.030	
10	26.919	34.057	22.033	
20	26.365	34.147	22.276	
30	25.622	34.132	22.495	
40	25.666	34.262	22.580	
50	25.546	34.303	22.648	
75	21.393	34.282	23.840	
100	20.874	34.594	24.219	
125	19.594	34.651	24.601	
150	18.101	34.640	24.971	
175	15.751	34.567	25.471	
200	13.896	34.506	25.827	
250	12.294	34.427	26.088	
300	10.863	34.365	26.306	

Station OS11250				
Latitude 29-42.7 N				
Longitude 128-00.1 E				
Depth(m) 717				
Press.	Temp.	Sal.	SIG-T	
5	26.450	33.938	22.092	
10	26.119	33.973	22.222	
20	25.590	34.072	22.460	
30	25.519	34.123	22.520	
40	25.103	34.128	22.651	
50	24.882	34.403	22.926	
75	19.961	34.135	24.112	
100	19.759	34.614	24.530	
125	18.093	34.648	24.979	
150	15.674	34.575	25.494	
175	14.463	34.539	25.733	
200	13.525	34.487	25.889	
250	11.218	34.388	26.259	
300	10.383	34.354	26.382	

Station OS11251				
Latitude 29-43.3 N				
Longitude 127-45.6 E				
Depth(m) 532				
Press.	Temp.	Sal.	SIG-T	
5	26.364	33.824	22.033	
10	25.375	33.902	22.398	
20	24.817	33.853	22.530	
30	24.552	33.925	22.664	
40	24.477	33.947	22.703	
50	23.414	34.138	23.161	
75	20.747	34.291	24.022	
100	19.724	34.653	24.569	
125	17.741	34.612	25.038	
150	14.718	34.525	25.667	
175	13.329	34.480	25.923	
200	12.847	34.454	26.000	
250	11.731	34.406	26.178	
300	10.281	34.355	26.400	

Station OS11252				
Latitude 29-42.5 N				
Longitude 127-30.0 E				
Depth(m) 203				
Press.	Temp.	Sal.	SIG-T	
5	25.841	33.716	22.114	
10	25.835	33.714	22.114	
20	24.660	33.718	22.475	
30	24.183	33.896	22.752	
40	23.780	33.952	22.913	
50	21.755	34.236	23.705	
75	18.461	34.411	24.707	
100	17.892	34.523	24.933	
125	16.287	34.582	25.360	
150	15.518	34.555	25.514	
175	14.753	34.537	25.668	

Station OS11253				
Latitude 29-43.0 N				
Longitude 127-15.3 E				
Depth(m) 123				
Press.	Temp.	Sal.	SIG-T	
5	26.196	33.993	22.213	
10	26.178	33.992	22.218	
20	25.129	33.982	22.533	
30	24.414	33.981	22.747	
40	23.258	34.135	23.203	
50	21.484	34.287	23.819	
75	18.602	34.358	24.631	
100	18.095	34.533	24.891	

Station OS11254				
Latitude 29-42.7 N				
Longitude 126-59.9 E				
Depth(m) 108				
Press.	Temp.	Sal.	SIG-T	
5	26.067	33.978	22.242	
10	26.053	33.977	22.245	
20	24.840	33.788	22.474	
30	24.040	33.783	22.709	
40	22.200	34.130	23.501	
50	20.148	34.367	24.240	
75	18.164	34.484	24.836	
100	17.793	34.517	24.953	

Station OS11255				
Latitude 29-42.4 N				
Longitude 126-09.6 E				
Depth(m) 86				
Press.	Temp.	Sal.	SIG-T	
5	26.002	33.636	22.004	
10	25.874	33.636	22.043	
20	24.291	33.824	22.666	
30	23.670	33.853	22.870	
40	22.995	34.105	23.257	
50	19.240	34.301	24.426	
75	18.502	34.495	24.761	

Station OS11256				
Latitude 29-42.8 N				
Longitude 126-33.2 E				
Depth(m) 94				
Press.	Temp.	Sal.	SIG-T	
5	26.090	-	-	
10	25.467	-	-	
20	24.265	-	-	
30	23.889	-	-	
40	23.291	-	-	
50	19.789	-	-	
75	18.122	-	-	

Station OS11257				
Latitude 29-42.6 N				
Longitude 126-44.7 E				
Depth(m) 102				
Press.	Temp.	Sal.	SIG-T	
5	25.984	33.445	21.865	
10	25.740	33.721	22.149	
20	24.246	33.655	22.551	
30	24.014	33.722	22.670	
40	21.439	33.954	23.578	
50	18.460	34.507	24.780	
75	18.328	34.533	24.833	

Station OS11258				
Latitude 29-32.4 N				
Longitude 126-14.9 E				
Depth(m) 103				
Press.	Temp.	Sal.	SIG-T	
5	26.295	33.829	22.058	
10	26.300	33.829	22.056	
20	25.309	33.997	22.489	
30	24.602	34.089	22.773	
40	23.610	34.150	23.113	
50	22.399	34.245	23.533	
75	19.068	34.564	24.671	

Station OS11259				
Latitude 29-21.8 N				
Longitude 126-20.4 E				
Depth(m) 108				
Press.	Temp.	Sal.	SIG-T	
5	26.589	34.043	22.128	
10	26.586	34.044	22.129	
20	26.379	34.046	22.195	
30	25.626	34.048	22.431	
40	24.970	34.068	22.646	
50	24.125	34.129	22.945	
75	19.369	34.551	24.584	

Station		OS11260	
Latitude		29-11.2 N	
Longitude		126-15.6 E	
Depth(m)		116	
Press.	Temp.	Sal.	SIG-T
5	26.411	33.975	22.132
10	25.605	33.926	22.345
20	25.157	33.925	22.482
30	24.943	34.010	22.610
40	23.864	34.147	23.036
50	22.611	34.259	23.483
75	19.453	34.525	24.542
100	19.082	34.550	24.656

Station OS11267			
Latitude 27-50.9 N			
Longitude 126-07.8 E			
Depth(m) 133			
Press.	Temp.	Sal.	SIG-T
5	27.292	33.942	21.828
10	27.126	33.993	21.920
20	25.224	33.993	22.513
30	25.111	34.162	22.674
40	24.935	34.283	22.819
50	24.828	34.308	22.871
75	22.145	34.511	23.806
100	19.451	34.712	24.685
125	17.941	34.638	25.009

Station OS11268			
Latitude 27-45.8 N			
Longitude 126-13.2 E			
Depth(m) 236			
Press.	Temp.	Sal.	SIG-T
5	25.677	-	-
10	25.468	-	-
20	24.855	-	-
30	24.590	-	-
40	24.546	-	-
50	23.381	-	-
75	21.219	-	-
100	19.529	-	-
125	17.484	-	-
150	16.674	-	-
175	14.920	-	-
200	12.928	-	-

Station OS11269			
Latitude 27-43.2 N			
Longitude 126-17.7 E			
Depth(m) 1082			
Press.	Temp.	Sal.	SIG-T
5	28.037	34.053	21.671
10	28.038	34.053	21.671
20	28.167	34.339	21.843
30	27.525	34.293	22.017
40	25.801	34.103	22.418
50	25.164	34.111	22.620
75	23.680	34.404	23.284
100	22.266	34.653	23.880
125	19.861	34.645	24.528
150	18.866	34.665	24.799
175	18.423	34.664	24.910
200	15.863	34.581	25.457
250	12.563	34.457	26.058
300	10.494	34.357	26.364

Station OS11270			
Latitude 27-37.7 N			
Longitude 126-22.7 E			
Depth(m) 1258			
Press.	Temp.	Sal.	SIG-T
5	28.387	-	-
10	28.397	-	-
20	28.129	-	-
30	27.648	-	-
40	27.432	-	-
50	26.769	-	-
75	25.400	-	-
100	24.198	-	-
125	22.855	-	-
150	21.505	-	-
175	20.405	-	-
200	18.885	-	-
250	15.864	-	-
300	11.654	-	-
400	8.706	-	-
500	7.021	-	-
600	6.062	-	-
700	5.584	-	-
800	4.986	-	-
900	4.661	-	-
1000	4.374	-	-

Station OS11271			
Latitude 27-33.8 N			
Longitude 126-28.9 E			
Depth(m) 1404			
Press.	Temp.	Sal.	SIG-T
5	28.369	34.284	21.736
10	28.369	34.285	21.736
20	27.832	34.331	21.947
30	27.528	34.380	22.082
40	27.319	34.412	22.173
50	26.507	34.519	22.512
75	25.698	34.736	22.928
100	24.176	34.809	23.445
125	23.068	34.801	23.763
150	22.142	34.773	24.005
175	21.408	34.803	24.232
200	19.901	34.775	24.616
250	17.580	34.684	25.132
300	15.417	34.566	25.545

Station OS11272			
Latitude 27-29.9 N			
Longitude 126-33.3 E			
Depth(m) 1514			
Press.	Temp.	Sal.	SIG-T
5	28.307	-	-
10	28.307	-	-
20	28.287	-	-
30	27.814	-	-
40	27.541	-	-
50	27.311	-	-
75	25.520	-	-
100	23.575	-	-
125	22.779	-	-
150	21.852	-	-
175	20.806	-	-
200	19.602	-	-
250	17.894	-	-
300	16.599	-	-
400	12.767	-	-
500	8.535	-	-
600	6.718	-	-
700	5.785	-	-
800	5.363	-	-
900	4.733	-	-
1000	4.337	-	-

Station OS11273			
Latitude 27-27.0 N			
Longitude 126-38.1 E			
Depth(m) 1621			
Press.	Temp.	Sal.	SIG-T
5	28.321	34.187	21.679
10	28.320	34.187	21.679
20	28.314	34.187	21.681
30	27.881	34.330	21.930
40	27.408	34.397	22.133
50	26.941	34.398	22.283
75	26.022	34.585	22.713
100	23.982	34.733	23.445
125	23.096	34.835	23.781
150	21.744	34.809	24.144
175	21.148	34.801	24.302
200	20.511	34.787	24.464
250	18.671	34.743	24.908
300	17.010	34.692	25.275

Station OS11274			
Latitude 27-22.3 N			
Longitude 126-43.0 E			
Depth(m) 1671			
Press.	Temp.	Sal.	SIG-T
5	28.261	-	-
10	28.251	-	-
20	27.780	-	-
30	27.759	-	-
40	27.389	-	-
50	26.968	-	-
75	25.048	-	-
100	23.948	-	-
125	22.289	-	-
150	22.000	-	-
175	20.942	-	-
200	20.251	-	-
250	18.699	-	-
300	17.455	-	-
400	13.005	-	-
500	10.307	-	-
600	7.699	-	-
700	6.484	-	-
800	5.927	-	-
900	4.831	-	-
1000	4.544	-	-

Station OS11275			
Latitude 27-18.4 N			
Longitude 126-48.3 E			
Depth(m) 1615			
Press.	Temp.	Sal.	SIG-T
5	28.214	34.165	21.697
10	28.213	34.165	21.697
20	28.196	34.166	21.703
30	27.700	34.248	21.927
40	26.927	34.463	22.337
50	26.100	34.517	22.638
75	24.758	34.681	23.174
100	23.503	34.780	23.621
125	22.255	34.797	23.992
150	21.118	34.799	24.309
175	20.754	34.795	24.405
200	19.816	34.777	24.640
250	18.481	34.742	24.955
300	17.609	34.720	25.153

Station OS11276			
Latitude 27-23.8 N			
Longitude 126-51.6 E			
Depth(m) 1526			
Press.	Temp.	Sal.	SIG-T
5	28.193	34.169	21.707
10	28.186	34.170	21.710
20	28.150	34.170	21.722
30	28.129	34.168	21.727
40	28.019	34.158	21.756
50	27.735	34.296	21.952
75	24.915	34.641	23.096

Station OS11277			
Latitude 27-13.4 N			
Longitude 126-54.2 E			
Depth(m) 1638			
Press.	Temp.	Sal.	SIG-T
5	28.369	-	-
10	28.369	-	-
20	28.225	-	-
30	27.713	-	-
40	27.317	-	-
50	27.084	-	-
75	25.024	-	-
100	23.272	-	-
125	22.102	-	-
150	21.172	-	-
175	20.492	-	-
200	19.961	-	-
250	18.582	-	-
300	17.679	-	-
400	15.527	-	-
500	12.213	-	-
600	9.536	-	-
700	7.021	-	-
800	5.591	-	-
900	5.127	-	-
1000	4.647	-	-

Station OS11278			
Latitude 27-09.3 N			
Longitude 127-00.3 E			
Depth(m) 1535			
Press.	Temp.	Sal.	SIG-T
5	28.383	34.282	21.729
10	28.375	34.281	21.731
20	28.248	34.294	21.783
30	27.986	34.344	21.906
40	27.604	34.333	22.021
50	26.920	34.371	22.269
75	24.172	34.657	23.331
100	22.612	34.766	23.867
125	21.741	34.816	24.150
150	20.495	34.786	24.467
175	20.060	34.782	24.580
200	19.728	34.777	24.663
250	18.276	34.738	25.003
300	17.561	34.717	25.162

Station OS11279				Station OS11280				Station OS11281				Station OS11282			
Latitude 27-04.0 N				Latitude 26-25.2 N				Latitude 21-19.5 N				Latitude 21-09.9 N			
Longitude 127-07.9 E				Longitude 127-35.0 E				Longitude 134-40.8 E				Longitude 134-53.7 E			
Depth(m) 920				Depth(m) 648				Depth(m) 5729				Depth(m) 5734			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	28.442	-	-	5	27.868	34.326	21.935	5	29.256	-	-	5	29.170	-	-
10	28.421	-	-	10	27.547	34.331	22.036	10	29.277	-	-	10	29.170	-	-
20	28.276	-	-	20	27.270	34.383	22.165	20	29.328	-	-	20	29.074	-	-
30	27.550	-	-	30	27.082	34.402	22.233	30	28.015	-	-	30	25.358	-	-
40	26.860	-	-	40	26.663	34.433	22.390	40	25.980	-	-	40	24.520	-	-
50	26.258	-	-	50	25.824	34.558	22.753	50	24.625	-	-	50	24.062	-	-
75	23.449	-	-	75	23.070	34.697	23.681	75	23.002	-	-	75	22.331	-	-
100	22.212	-	-	100	22.161	34.752	23.978	100	21.222	-	-	100	21.332	-	-
125	21.435	-	-	125	21.509	34.779	24.181	125	19.848	-	-	125	20.303	-	-
150	20.439	-	-	150	20.645	34.776	24.416	150	19.137	-	-	150	19.285	-	-
175	19.844	-	-	175	20.330	34.785	24.510	175	18.586	-	-	175	18.798	-	-
200	19.296	-	-	200	19.712	34.773	24.663	200	18.146	-	-	200	18.274	-	-
250	18.522	-	-	250	18.283	34.724	24.990	250	17.224	-	-	250	17.330	-	-
300	16.898	-	-	300	17.395	34.695	25.186	300	16.296	-	-	300	15.925	-	-
400	14.442	-	-	400	14.562	34.548	25.718	400	13.291	-	-	400	12.419	-	-
500	11.744	-	-	500	11.886	34.411	26.150	500	10.411	-	-	500	9.482	-	-
600	9.348	-	-	600	9.638	34.349	26.504	600	7.710	-	-	600	7.558	-	-
700	7.235	-	-					700	6.416	-	-	700	5.922	-	-
800	6.200	-	-					800	5.243	-	-	800	5.049	-	-
900	4.957	-	-					900	4.562	-	-	900	4.407	-	-
								1000	3.816	-	-	1000	3.799	-	-

Station OS11283				Station OS11284				Station OS11285				Station OS11286			
Latitude 21-00.0 N				Latitude 20-50.1 N				Latitude 20-45.8 N				Latitude 20-40.1 N			
Longitude 135-09.1 E				Longitude 135-24.3 E				Longitude 135-30.3 E				Longitude 135-38.4 E			
Depth(m) 5732				Depth(m) 5685				Depth(m) 5646				Depth(m) 5554			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	29.244	-	-	5	29.253	-	-	5	29.343	34.813	21.809	5	24.486	-	-
10	29.254	-	-	10	29.243	-	-	10	29.346	34.813	21.807	10	24.339	-	-
20	29.244	-	-	20	29.253	-	-	20	29.313	34.837	21.837	20	23.829	-	-
30	29.202	-	-	30	29.222	-	-	30	26.532	34.815	22.727	30	23.265	-	-
40	25.177	-	-	40	26.821	-	-	40	24.980	34.802	23.198	40	22.704	-	-
50	23.317	-	-	50	24.209	-	-	50	24.032	34.856	23.523	50	22.136	-	-
75	21.762	-	-	75	22.504	-	-	75	23.042	34.967	23.897	75	20.954	-	-
100	20.519	-	-	100	20.970	-	-	100	21.603	34.899	24.252	100	19.853	-	-
125	19.940	-	-	125	20.178	-	-	125	20.569	34.845	24.492	125	19.018	-	-
150	19.282	-	-	150	19.306	-	-	150	19.963	34.801	24.620	150	18.537	-	-
175	18.517	-	-	175	18.796	-	-	175	19.296	34.771	24.770	175	18.245	-	-
200	17.922	-	-	200	18.240	-	-	200	18.741	34.758	24.902	200	17.690	-	-
250	17.014	-	-	250	17.365	-	-	250	17.828	34.725	25.103	250	16.695	-	-
300	16.065	-	-	300	15.978	-	-	300	16.732	34.676	25.329	300	15.759	-	-
400	13.473	-	-	400	13.284	-	-	400	13.751	34.484	25.840	400	12.513	-	-
500	10.352	-	-	500	10.040	-	-	500	10.434	34.251	26.293	500	9.142	-	-
600	7.407	-	-	600	7.377	-	-	600	7.614	34.141	26.656	600	6.709	-	-
700	5.651	-	-	700	5.795	-	-	700	5.942	34.170	26.904	700	5.275	-	-
800	4.874	-	-	800	4.743	-	-	800	4.829	34.264	27.112	800	4.526	-	-
900	4.090	-	-	900	4.118	-	-	900	4.186	34.338	27.240	900	4.019	-	-
1000	3.631	-	-	1000	3.709	-	-	1000	3.659	34.413	27.354				
								1200	3.058	34.494	27.476				
								1500	2.554	34.569	27.581				
								2000	2.020	34.623	27.668				
								2500	1.776	34.647	27.706				
								3000	1.654	34.661	27.726				

Station OS11287				Station OS11288				Station OS11289				Station OS11290			
Latitude 20-30.1 N				Latitude 20-25.2 N				Latitude 20-25.1 N				Latitude 20-33.4 N			
Longitude 135-52.3 E				Longitude 136-05.3 E				Longitude 136-03.0 E				Longitude 136-18.8 E			
Depth(m) 4450				Depth(m) -				Depth(m) 1266				Depth(m) 4067			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	29.270	-	-	5	29.483	-	-	5	29.483	-	-	5	29.350	-	-
10	29.280	-	-	10	29.410	-	-	10	29.410	-	-	10	29.360	-	-
20	29.291	-	-	20	29.399	-	-	20	29.399	-	-	20	29.430	-	-
30	29.439	-	-	30	29.431	-	-	30	29.431	-	-	30	29.400	-	-
40	28.650	-	-	40	29.170	-	-	40	29.170	-	-	40	29.350	-	-
50	27.291	-	-	50	27.701	-	-	50	27.701	-	-	50	29.310	-	-
75	24.513	-	-	75	25.166	-	-	75	25.166	-	-	75	25.618	-	-
100	23.286	-	-	100	24.228	-	-	100	24.228	-	-	100	23.450	-	-
125	22.400	-	-	125	22.353	-	-	125	22.353	-	-	125	22.280	-	-
150	20.856	-	-	150	20.846	-	-	150	20.846	-	-	150	21.160	-	-
175	19.838	-	-	175	19.851	-	-	175	19.851	-	-	175	20.351	-	-
200	19.161	-	-	200	19.201	-	-	200	19.201	-	-	200	19.683	-	-
250	18.203	-	-	250	18.509	-	-	250	18.509	-	-	250	18.665	-	-
300	17.141	-	-	300	17.053	-	-	300	17.053	-	-				
400	14.295	-	-	400	13.863	-	-	400	13.863	-	-				
500	10.631	-	-	500	10.262	-	-	500	10.262	-	-				
600	7.386	-	-	600	7.349	-	-	600	7.349	-	-				
700	5.873	-	-	700	6.060	-	-	700	6.060	-	-				
800	4.871	-	-	800	4.883	-	-	800	4.883	-	-				
900	4.117	-	-	900	4.209	-	-	900	4.209	-	-				
1000	3.648	-	-	1000	3.770	-	-	1000	3.770	-	-				
								1200	3.218	-	-				
								1500	3.016	-	-				

Station OS11291				Station OS11292				Station OS11293				Station OS11294			
Latitude 35-03.2 N				Latitude 34-57.6 N				Latitude 35-35.0 N				Latitude 36-09.3 N			
Longitude 139-25.2 E				Longitude 140-42.4 E				Longitude 146-29.5 E				Longitude 151-34.7 E			
Depth(m) 1226				Depth(m) 1188				Depth(m) 5882				Depth(m) 5976			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	24.555	33.980	22.705	5	26.331	-	-	5	23.398	-	-	5	23.900	-	-
10	23.437	34.074	23.105	10	26.178	-	-	10	23.185	-	-	10	23.860	-	-
20	20.154	34.409	24.271	20	26.080	-	-	20	23.105	-	-	20	23.545	-	-
30	17.594	34.501	24.989	30	26.066	-	-	30	19.280	-	-	30	23.476	-	-
40	16.492	34.527	25.271	40	25.753	-	-	40	18.560	-	-	40	23.440	-	-
50	15.941	34.532	25.401	50	22.907	-	-	50	17.747	-	-	50	22.207	-	-
75	14.449	34.515	25.717	75	22.159	-	-	75	16.450	-	-	75	18.148	-	-
100	13.570	34.491	25.883	100	20.902	-	-	100	15.575	-	-	100	16.437	-	-
125	12.168	34.429	26.113	125	19.630	-	-	125	14.655	-	-	125	13.850	-	-
150	11.583	34.406	26.206	150	18.510	-	-	150	13.579	-	-	150	11.749	-	-
175	10.906	34.381	26.310	175	18.035	-	-	175	12.601	-	-	175	10.620	-	-
200	10.865	34.381	26.317	200	16.874	-	-	200	11.761	-	-	200	10.143	-	-
250	9.611	34.328	26.492	250	14.424	-	-	250	10.060	-	-	250	9.678	-	-
300	8.921	34.303	26.585												
400	8.084	34.280	26.696												
500	6.677	34.255	26.876												
600	5.198	34.231	27.042												
700	4.373	34.293	27.184												
800	3.825	34.351	27.288												
900	3.488	34.382	27.346												
1000	3.019	34.434	27.431												

Station OS11295			
Latitude 36°10.6 N			
Longitude 151°43.9 E			
Depth(m) 5930			
Press.	Temp.	Sal.	SIG-T
5	24.571	-	-
10	24.480	-	-
20	24.180	-	-
30	24.176	-	-
40	24.143	-	-
50	24.100	-	-
75	21.847	-	-
100	17.808	-	-
125	14.395	-	-
150	12.569	-	-
175	11.445	-	-
200	11.051	-	-
250	9.880	-	-

Station OS11296			
Latitude 36°12.6 N			
Longitude 152°05.5 E			
Depth(m) 5785			
Press.	Temp.	Sal.	SIG-T
5	25.100	-	-
10	25.053	-	-
20	25.030	-	-
30	24.359	-	-
40	23.643	-	-
50	22.652	-	-
75	20.920	-	-
100	20.235	-	-
125	19.115	-	-
150	18.090	-	-
175	16.910	-	-
200	15.931	-	-
250	14.314	-	-

Station OS11297			
Latitude 36°30.5 N			
Longitude 155°01.2 E			
Depth(m) 5672			
Press.	Temp.	Sal.	SIG-T
5	22.958	34.074	23.243
10	22.671	34.068	23.321
20	22.466	34.093	23.398
30	20.017	34.245	24.181
40	17.262	34.433	25.016
50	16.280	34.517	25.312
75	14.795	34.483	25.618
100	12.801	34.385	25.956
125	11.761	34.311	26.099
150	10.836	34.241	26.214
175	9.808	34.120	26.297
200	8.800	34.030	26.390
250	7.808	34.017	26.530
300	7.078	34.031	26.645
400	5.388	33.971	26.814
500	4.334	33.983	26.942
600	4.484	34.159	27.066
700	4.089	34.225	27.160
800	3.715	34.285	27.246
900	3.377	34.336	27.320
1000	3.146	34.379	27.376
1200	2.771	34.442	27.460
1500	2.326	34.519	27.560
2000	1.923	34.595	27.653
2500	1.671	34.639	27.708
3000	1.542	34.662	27.736
3500	1.481	34.675	27.751
4000	1.460	34.682	27.758
4500	1.472	34.687	27.761
5000	1.502	34.689	27.761

Station OS11298			
Latitude 36°45.9 N			
Longitude 155°03.2 E			
Depth(m) 5742			
Press.	Temp.	Sal.	SIG-T
5	23.760	-	-
10	23.598	-	-
20	22.973	-	-
30	19.074	-	-
40	16.920	-	-
50	15.536	-	-
75	12.272	-	-
100	11.388	-	-
125	10.475	-	-
150	9.499	-	-
175	8.443	-	-
200	7.773	-	-
250	6.730	-	-

Station OS11299			
Latitude 37°14.0 N			
Longitude 155°00.1 E			
Depth(m) 5755			
Press.	Temp.	Sal.	SIG-T
5	23.830	-	-
10	23.158	-	-
20	20.835	-	-
30	18.628	-	-
40	17.078	-	-
50	15.876	-	-
75	12.419	-	-
100	11.935	-	-
125	10.555	-	-
150	9.689	-	-
175	8.940	-	-
200	7.991	-	-
250	7.054	-	-

Station OS11300			
Latitude 37°14.9 N			
Longitude 155°00.0 E			
Depth(m) 5745			
Press.	Temp.	Sal.	SIG-T
5	23.796	33.859	22.838
10	23.279	33.918	23.033
20	20.418	34.249	24.079
30	17.618	34.374	24.886
40	16.885	34.394	25.077
50	15.580	34.375	25.361
75	12.481	34.189	25.866
100	11.935	34.319	26.072
125	10.387	34.142	26.216
150	9.760	34.123	26.307
175	8.846	34.045	26.395
200	7.965	33.940	26.447
250	7.035	33.962	26.596
300	6.029	33.946	26.716
400	5.277	34.040	26.882
500	4.638	34.084	26.990
600	4.295	34.170	27.095
700	3.906	34.240	27.191
800	3.522	34.293	27.271
900	3.299	34.349	27.338
1000	3.104	34.387	27.386
1200	2.661	34.459	27.483
1500	2.299	34.526	27.567

Station OS11301			
Latitude 38°00.1 N			
Longitude 154°59.9 E			
Depth(m) 5972			
Press.	Temp.	Sal.	SIG-T
5	21.862	34.389	23.792
10	21.854	34.389	23.794
20	20.449	34.461	24.231
30	18.111	34.573	24.917
40	17.137	34.605	25.179
50	16.749	34.604	25.270
75	15.512	34.535	25.500
100	14.414	34.518	25.727
125	13.411	34.447	25.882
150	12.595	34.402	26.010
175	11.945	34.361	26.103
200	11.209	34.290	26.184
250	9.447	34.100	26.341
300	7.895	33.932	26.451
400	5.896	33.930	26.720
500	5.109	34.043	26.904
600	4.458	34.115	27.034
700	4.109	34.194	27.134
800	3.774	34.266	27.225
900	3.452	34.315	27.296
1000	3.220	34.360	27.354
1200	2.800	34.433	27.450
1500	2.388	34.509	27.547
2000	1.953	34.581	27.648
2500	1.705	34.635	27.702
3000	1.570	34.659	27.731
3500	1.495	34.673	27.755
4000	1.476	34.680	27.759
4500	1.483	34.685	27.759
5000	1.511	34.688	27.759

Station OS11302			
Latitude 38°44.5 N			
Longitude 155°00.2 E			
Depth(m) 5760			
Press.	Temp.	Sal.	SIG-T
5	20.229	34.315	24.179
10	20.225	34.315	24.180
20	19.883	34.309	24.265
30	17.922	34.395	24.828
40	16.396	34.441	25.227
50	15.406	34.453	25.460
75	14.228	34.451	25.715
100	13.559	34.447	25.851
125	12.940	34.413	25.950
150	12.319	34.361	26.032
175	11.762	34.310	26.098
200	11.374	34.289	26.154
250	10.390	34.198	26.258
300	9.009	34.044	26.368
400	6.577	33.941	26.641
500	4.781	33.890	26.820
600	4.484	34.033	26.966
700	4.276	34.167	27.095
800	3.930	34.235	27.185
900	3.600	34.295	27.265
1000	3.325	34.342	27.330
1200	2.888	34.420	27.432
1500	2.448	34.493	27.529

Station OS11303			
Latitude 39°29.9 N			
Longitude 155°00.0 E			
Depth(m) 5616			
Press.	Temp.	Sal.	SIG-T
5	19.378	34.332	24.414
10	19.361	34.333	24.420
20	19.225	34.331	24.452
30	18.164	34.365	24.746
40	16.421	34.428	25.211
50	15.260	34.443	25.485
75	14.104	34.460	25.748
100	13.391	34.445	25.884
125	12.899	34.412	25.957
150	12.386	34.373	26.028
175	11.715	34.310	26.107
200	10.942	34.245	26.198
250	10.047	34.156	26.285
300	8.354	33.984	26.423
400	6.042	33.883	26.665
500	5.186	33.996	26.858
600	4.684	34.103	27.000
700	4.261	34.172	27.100
800	3.824	34.238	27.198
900	3.529	34.302	27.278
1000	3.249	34.345	27.339
1200	2.819	34.415	27.435
1500	2.453	34.496	27.531

Station OS11304			
Latitude 40°14.8 N			
Longitude 155°00.1 E			
Depth(m) 5560			
Press.	Temp.	Sal.	SIG-T
5	17.988	34.120	24.601
10	17.992	34.120	24.600
20	17.953	34.119	24.609
30	17.282	34.112	24.766
40	13.993	34.215	25.581
50	13.036	34.199	25.765
75	10.776	34.097	26.112
100	10.063	34.124	26.252
125	9.350	34.055	26.321
150	8.623	33.999	26.393
175	7.860	33.948	26.468
200	7.170	33.905	26.533
250	6.446	33.929	26.649
300	5.504	33.903	26.747
400	4.747	33.980	26.895
500	4.410	34.062	26.997
600	4.261	34.175	27.103
700	3.787	34.228	27.194
800	3.554	34.290	27.266
900	3.289	34.344	27.334
1000	3.023	34.375	27.384
1200	2.735	34.440	27.461
1500	2.334	34.503	27.547
2000	1.976	34.583	27.640
2500	1.712	34.633	27.700
3000	1.578	34.657	27.729
3500	1.507	34.671	27.746
4000	1.475	34.680	27.755
4500	1.483	34.685	27.758
5000	1.517	34.681	27.758

	Station	OS11305	
	Latitude	40°59.9 N	
	Longitude	155°00.0 E	
	Depth(m)	5485	
Press.	Temp.	Sal.	SIG-T
5	16.668	34.053	24.866
10	16.661	34.054	24.868
20	16.660	34.054	24.868
30	16.341	34.045	24.935
40	12.401	34.087	25.803
50	11.449	34.066	25.967
75	10.330	34.052	26.155
100	10.039	34.126	26.262
125	9.381	34.062	26.323
150	8.333	33.946	26.396
175	7.928	33.921	26.437
200	7.754	33.928	26.468
250	6.880	33.885	26.557
300	5.651	33.839	26.679
400	4.609	33.919	26.862
500	4.229	34.009	26.974
600	4.323	34.160	27.084
700	3.945	34.224	27.174
800	3.621	34.294	27.263
900	3.352	34.336	27.323
1000	3.107	34.380	27.380
1200	2.731	34.444	27.465
1500	2.360	34.510	27.550

Station OS11307			
Latitude 42-29.9 N			
Longitude 155-00.0 E			
Depth(m) 5170			
Press.	Temp.	Sal.	SIG-T
5	16.403	33.759	24.701
10	16.385	33.759	24.705
20	15.968	33.708	24.761
30	15.910	33.704	24.771
40	13.651	33.904	25.412
50	11.450	34.022	25.932
75	10.244	34.090	26.200
100	9.156	33.986	26.299
125	8.500	33.960	26.382
150	7.905	33.907	26.429
175	7.006	33.804	26.476
200	6.026	33.724	26.541
250	5.561	33.792	26.652
300	5.247	33.860	26.743
400	4.254	33.883	26.872
500	3.714	33.958	26.986
600	3.780	34.108	27.099
700	3.635	34.205	27.190
800	3.399	34.271	27.266
900	3.169	34.316	27.324
1000	2.990	34.359	27.374
1200	2.659	34.423	27.455
1500	2.330	34.503	27.547

Station OS11311			
Latitude 43-59.8 N			
Longitude 154-60.0 E			
Depth(m) 5300			
Press.	Temp.	Sal.	SIG-T
5	12.733	32.706	24.668
10	11.768	32.706	24.851
20	11.480	32.717	24.912
30	5.438	32.904	25.964
40	3.773	32.950	26.178
50	3.198	32.977	26.253
75	1.683	33.048	26.431
100	1.564	33.127	26.502
125	1.875	33.279	26.602
150	2.360	33.461	26.711
175	2.828	33.604	26.786
200	3.041	33.695	26.840
250	3.338	33.831	26.921
300	3.369	33.929	26.996
400	3.377	34.049	27.091
500	3.290	34.149	27.179
600	3.147	34.228	27.255
700	3.028	34.292	27.318
800	2.859	34.337	27.368
900	2.699	34.382	27.419
1000	2.562	34.419	27.460
1200	2.353	34.472	27.520
1500	2.140	34.530	27.584
2000	1.863	34.599	27.661
2500	1.660	34.637	27.707
3000	1.539	34.659	27.734
3500	1.482	34.672	27.748
4000	1.464	34.680	27.756
4500	1.480	34.684	27.758
5000	1.519	34.686	27.757

Station OS11315			
Latitude 38-30.1 N			
Longitude 144-00.5 E			
Depth(m) 7135			
Press.	Temp.	Sal.	SIG-T
5	24.731	34.300	22.893
10	24.565	34.286	22.933
20	22.103	34.322	23.674
30	18.961	34.499	24.648
40	17.866	34.567	24.974
50	17.032	34.581	25.185
75	14.628	34.529	25.690
100	13.407	34.478	25.906
125	12.481	34.437	26.059
150	10.259	34.113	26.215
175	10.057	34.126	26.260
200	9.237	34.036	26.325
250	8.019	33.954	26.450
300	5.984	33.781	26.592
400	6.269	34.114	26.818
500	5.630	34.195	26.962
600	4.362	34.157	27.077
700	4.075	34.240	27.174
800	3.617	34.284	27.255
900	3.495	34.346	27.317
1000	3.214	34.378	27.368
1200	2.706	34.424	27.452
1500	2.396	34.511	27.548

Station OS11308			
Latitude 42-35.2 N			
Longitude 155-00.0 E			
Depth(m) 5220			
Press.	Temp.	Sal.	SIG-T
5	16.280	-	-
10	16.220	-	-
20	16.150	-	-
30	16.130	-	-
40	15.750	-	-
50	12.826	-	-
75	10.609	-	-
100	9.637	-	-
125	7.975	-	-
150	7.399	-	-
175	7.126	-	-
200	6.124	-	-
250	5.080	-	-

Station OS11312			
Latitude 43-42.1 N			
Longitude 154-09.1 E			
Depth(m) 5443			
Press.	Temp.	Sal.	SIG-T
5	12.008	32.692	24.795
10	11.057	32.683	24.961
20	8.426	32.777	25.466
30	3.777	32.937	26.167
40	3.091	32.976	26.262
50	2.680	32.997	26.314
75	1.852	33.073	26.439
100	1.745	33.215	26.561
125	1.835	33.417	26.716
150	1.828	33.478	26.765
175	1.906	33.514	26.788
200	2.019	33.545	26.805
250	2.448	33.644	26.850
300	3.171	33.829	26.935
400	3.380	34.035	27.080
500	3.242	34.144	27.179
600	3.047	34.220	27.258
700	3.057	34.303	27.324
800	3.019	34.367	27.378
900	2.760	34.390	27.420
1000	2.541	34.416	27.459
1200	2.356	34.470	27.518
1500	2.151	34.531	27.584
2000	1.859	34.600	27.662
2500	1.647	34.639	27.710
3000	1.534	34.660	27.735

Station OS11316			
Latitude 38-00.0 N			
Longitude 144-00.1 E			
Depth(m) 7445			
Press.	Temp.	Sal.	SIG-T
5	24.844	34.379	22.920
10	24.339	34.298	23.009
20	20.467	34.470	24.234
30	18.506	34.652	24.880
40	17.271	34.617	25.156
50	16.390	34.541	25.305
75	11.810	34.059	25.894
100	9.566	34.001	26.245
125	9.411	34.009	26.276
150	9.389	34.008	26.279
175	9.362	34.008	26.283
200	9.319	34.004	26.287
250	9.234	33.995	26.294
300	8.944	33.951	26.306
400	6.850	33.658	26.382
500	3.756	33.503	26.619
600	3.021	33.575	26.746
700	3.586	33.827	26.894
800	3.783	34.024	27.032
900	3.604	34.137	27.139
1000	3.381	34.227	27.232
1200	2.983	34.363	27.378
1500	2.530	34.466	27.500

Station OS11309			
Latitude 42-44.0 N			
Longitude 154-57.2 E			
Depth(m) 5205			
Press.	Temp.	Sal.	SIG-T
5	16.190	-	-
10	16.093	-	-
20	16.030	-	-
30	14.076	-	-
40	13.298	-	-
50	12.616	-	-
75	10.660	-	-
100	9.467	-	-
125	8.550	-	-
150	7.590	-	-
175	7.130	-	-
200	6.620	-	-
250	5.684	-	-

Station OS11313			
Latitude 42-47.2 N			
Longitude 152-17.5 E			
Depth(m) 5130			
Press.	Temp.	Sal.	SIG-T
5	12.971	-	-
10	12.490	-	-
20	9.569	-	-
30	6.079	-	-
40	3.578	-	-
50	2.930	-	-
75	1.970	-	-
100	1.638	-	-
125	1.785	-	-
150	2.521	-	-
175	3.129	-	-
200	3.429	-	-
250	3.664	-	-

Station OS11317			
Latitude 37-29.9 N			
Longitude 143-59.9 E			
Depth(m) 6742			
Press.	Temp.	Sal.	SIG-T
5	25.184	34.379	22.816
10	25.118	34.364	22.825
20	23.513	34.160	23.148
30	20.736	34.205	23.960
40	18.271	34.264	24.642
50	15.075	34.267	25.390
75	10.046	34.007	26.169
100	9.418	34.009	26.275
125	9.401	34.009	26.278
150	9.387	34.009	26.280
175	9.358	34.008	26.284
200	9.316	34.004	26.288
250	9.207	33.991	26.295
300	8.800	33.933	26.314
400	6.266	33.590	26.405
500	2.885	33.415	26.630
600	3.007	33.601	26.768
700	3.808	33.870	26.907
800	3.834	34.041	27.040
900	3.538	34.144	27.151
1000	3.796	34.319	27.266
1200	2.994	34.384	27.394
1500	2.571	34.475	27.504

Station OS11310			
Latitude 43-15.0 N			
Longitude 155-00.2 E			
Depth(m) 5485			
Press.	Temp.	Sal.	SIG-T
5	13.835	32.848	24.559
10	13.637	32.836	24.590
20	13.485	32.829	24.615
30	10.799	33.089	25.322
40	6.525	33.194	26.059
50	4.904	33.155	26.223
75	2.929	33.213	26.465
100	3.149	33.335	26.542
125	2.332	33.348	26.622
150	2.855	33.484	26.688
175	2.679	33.515	26.727
200	3.309	33.639	26.770
250	3.126	33.687	26.825
300	3.262	33.803	26.906
400	3.504	33.977	27.021
500	3.311	34.083	27.124
600	3.325	34.182	27.202
700	3.181	34.247	27.267
800	2.924	34.304	27.336
900	2.747	34.339	27.380
1000	2.650	34.379	27.421
1200	2.528	34.462	27.498
1500	2.199	34.515	27.567
2000	1.909	34.592	27.652
2500	1.679	34.636	27.705
3000	1.560	34.658	27.731
3500	1.506	34.670	27.745
4000	1.480	34.678	27.753
4500	1.487	34.683	27.757
5000	1.522	34.686	27.756

Station		OS11314	
Latitude		41-29.9 N	
Longitude		145-47.0 E	
Depth(m)		6870	
Press.	Temp.	Sig-T	
5	20.505	34.089	23.934
10	20.450	34.083	23.944
20	20.1621	34.278	25.187
30	14.140	34.235	25.567
40	13.271	34.191	25.712
50	12.764	34.196	25.817
75	10.434	33.976	26.078
100	9.804	34.035	26.231
125	9.656	34.068	26.282
150	9.182	34.005	26.310
175	7.902	33.817	26.359
200	7.104	33.715	26.392
250	6.383	33.689	26.468
300	4.713	33.553	26.560
400	2.733	33.514	26.722
500	3.810	33.795	26.847
600	3.350	33.842	26.929
700	3.419	33.996	27.045
800	3.793	34.174	27.150
900	3.489	34.225	27.220
1000	3.452	34.319	27.299
1200	3.004	34.390	27.398
1500	2.444	34.473	27.513
2000	2.078	34.567	27.619
2500	1.792	34.621	27.684
3000	1.629	34.650	27.719

Station OS11319			
Latitude 37-00.2 N			
Longitude 143-00.2 E			
Depth(m) 5151			
Press.	Temp.	Sal.	SIG-T
5	24.302	34.297	23.019
10	23.559	34.326	23.260
20	21.483	34.562	24.029
30	19.751	34.540	24.476
40	17.933	34.596	24.979
50	16.803	34.610	25.261
75	15.478	34.567	25.532
100	14.191	34.516	25.773
125	12.862	34.438	25.985
150	10.698	34.111	26.137
175	9.922	34.050	26.223
200	9.912	34.177	26.324
250	6.348	33.637	26.432
300	5.412	33.648	26.555
400	4.466	33.763	26.754
500	3.498	33.813	26.892
600	3.705	33.977	27.002
700	3.792	34.124	27.110
800	3.423	34.203	27.209
900	3.550	34.328	27.297
1000	3.267	34.372	27.359
1200	2.848	34.425	27.440
1500	2.414	34.501	27.538

Station OS11320			
Latitude 37-30.1 N			
Longitude 142-00.0 E			
Depth(m) 3321			
Press.	Temp.	Sal.	SIG-T
5	24.813	34.301	22.870
10	24.499	34.269	22.940
20	22.185	34.389	23.701
30	19.648	34.474	24.453
40	18.460	34.478	24.758
50	16.571	34.456	25.197
75	13.077	34.151	25.720
100	11.695	34.152	25.988
125	11.029	34.250	26.186
150	10.122	34.163	26.278
175	9.986	34.145	26.287
200	9.733	34.099	26.293
250	7.783	33.800	26.364
300	6.205	33.591	26.413
400	4.154	33.575	26.637
500	5.091	33.946	26.829
600	5.427	34.221	27.007
700	4.281	34.185	27.109
800	3.756	34.235	27.203
900	3.450	34.297	27.282
1000	3.361	34.375	27.353
1200	2.881	34.432	27.443
1500	2.411	34.500	27.537

Station OS11321			
Latitude 38-00.0 N			
Longitude 143-00.1 E			
Depth(m) 1856			
Press.	Temp.	Sal.	SIG-T
5	24.213	34.008	22.828
10	24.082	34.005	22.864
20	20.247	33.933	23.883
30	17.079	33.986	24.717
40	15.210	34.259	25.355
50	14.539	34.311	25.540
75	13.276	34.460	25.919
100	11.987	34.394	26.121
125	11.144	34.354	26.247
150	10.495	34.318	26.334
175	10.013	34.310	26.411
200	9.076	34.213	26.490
250	7.151	34.003	26.612
300	7.605	34.229	26.726
400	5.286	34.101	26.929
500	4.992	34.225	27.062
600	4.272	34.228	27.143
700	3.818	34.293	27.242
800	3.441	34.329	27.308
900	3.186	34.365	27.361
1000	2.905	34.394	27.410
1200	2.645	34.438	27.468
1500	2.349	34.507	27.549

Station OS11322			
Latitude 38-30.3 N			
Longitude 143-00.1 E			
Depth(m) 1804			
Press.	Temp.	Sal.	SIG-T
5	19.345	32.936	23.357
10	18.984	33.047	23.533
20	15.695	33.093	24.349
30	8.962	33.123	25.654
40	7.130	33.189	25.974
50	6.674	33.350	26.162
75	6.556	33.577	26.357
100	4.887	33.456	26.464
125	3.872	33.411	26.535
150	3.948	33.488	26.589
175	3.365	33.474	26.634
200	3.233	33.538	26.697
250	3.130	33.629	26.779
300	3.037	33.694	26.839
400	4.003	33.993	26.985
500	3.995	34.107	27.076
600	3.340	34.143	27.169
700	3.385	34.243	27.245
800	3.292	34.316	27.312
900	3.031	34.354	27.366
1000	2.837	34.395	27.417
1200	2.570	34.456	27.489
1500	2.275	34.522	27.567

Station OS11323			
Latitude 38-59.8 N			
Longitude 142-00.3 E			
Depth(m) 208			
Press.	Temp.	Sal.	SIG-T
5	17.217	33.645	24.423
10	16.485	33.692	24.631
20	15.060	33.801	25.034
30	14.007	33.888	25.326
40	13.580	33.908	25.430
50	13.430	33.916	25.467
75	12.487	34.016	25.731
100	11.615	34.031	25.909
125	10.808	34.006	26.035
150	9.366	33.894	26.193
175	7.329	33.676	26.330

Station OS11324			
Latitude 39-00.0 N			
Longitude 141-55.2 E			
Depth(m) 140			
Press.	Temp.	Sal.	SIG-T
5	17.314	33.630	24.389
10	17.350	33.629	24.379
20	15.911	33.717	24.781
30	15.119	33.786	25.010
40	15.008	33.803	25.048
50	14.816	33.816	25.099
75	13.353	33.925	25.489
100	12.827	33.994	25.648

Station OS11325			
Latitude 39-29.9 N			
Longitude 142-09.9 E			
Depth(m) 197			
Press.	Temp.	Sal.	SIG-T
5	18.230	33.549	24.105
10	18.149	33.540	24.118
20	15.416	33.348	24.608
30	13.144	34.031	25.613
40	13.039	34.023	25.629
50	12.584	34.036	25.728
75	10.316	33.957	26.083
100	10.200	33.971	26.114
125	8.876	33.856	26.242
150	6.811	33.635	26.369
175	5.299	33.494	26.447

Station OS11326			
Latitude 39-29.9 N			
Longitude 142-06.4 E			
Depth(m) 144			
Press.	Temp.	Sal.	SIG-T
5	17.603	33.656	24.339
10	17.066	33.685	24.490
20	14.589	33.917	25.226
30	13.791	33.978	25.441
40	13.554	33.994	25.502
50	13.474	34.003	25.525
75	12.870	34.013	25.654
100	11.968	34.011	25.827

Station OS11327			
Latitude 39-59.9 N			
Longitude 142-14.9 E			
Depth(m) 217			
Press.	Temp.	Sal.	SIG-T
5	21.701	33.674	23.293
10	21.614	33.687	23.327
20	16.008	34.111	25.062
30	14.635	34.179	25.418
40	12.291	34.157	25.879
50	6.620	33.343	26.164
75	6.582	33.695	26.447
100	5.953	33.630	26.476
125	3.698	33.409	26.550
150	3.694	33.418	26.558
175	3.598	33.424	26.572

Station OS11328			
Latitude 39-59.8 N			
Longitude 142-06.2 E			
Depth(m) 123			
Press.	Temp.	Sal.	SIG-T
5	20.650	33.406	23.375
10	19.625	33.797	23.941
20	17.214	34.136	24.800
30	14.740	34.074	25.315
40	12.176	34.066	25.831
50	11.597	34.043	25.921
75	11.200	34.038	25.990
100	10.769	34.039	26.068

5. Drift Gillnet Research

Four gillnet researches were performed during this cruise. The operations were supervised by the captain, and were conducted by deck officers, crews and research staff.

<<ATTENTION>>

Except for the following location map, the Oshoro maru Cruise #229 gillnet research data can be shown by the following section.

4. The “Oshoro Maru” Cruise 228 to the Northwest Pacific Ocean in May 2011

5) Data on drift gillnet research

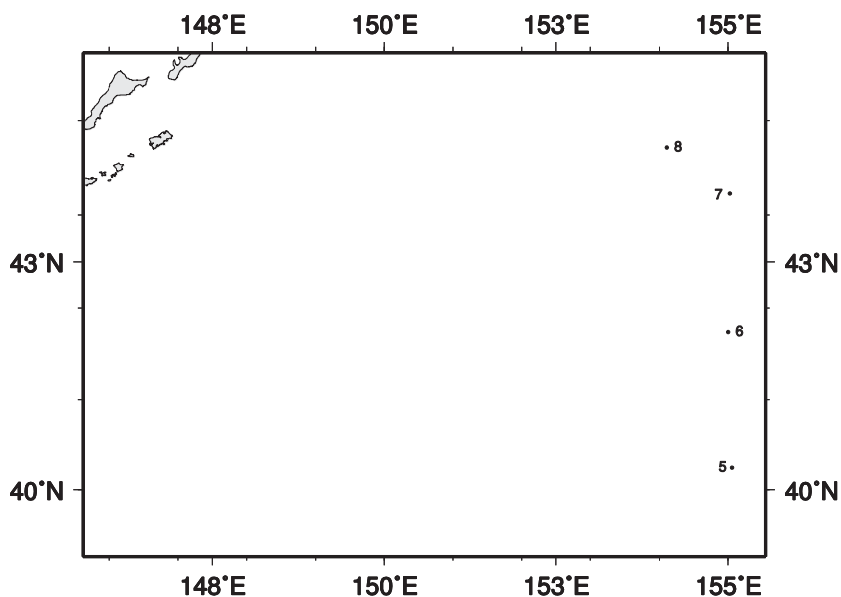


Figure 3. Locations of drift gillnet research

6. Hook-and-Line Research

[Hook-and-Line Sampling]

To collect salmon, hook-and-line gears were used 43° 40'N, 154° 07'E in the western North Pacific during Cruise #229-Leg5. Five to ten anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

<<ATTENTION>>

Please see the following section to get data on the catch number and the biological characteristics of each salmonid by hook-and-line research in this Cruise.

4. The “Oshoro Maru” Cruise 228 to the Northwest Pacific Ocean in May 2011

6) Salmon hook-and-line and surface longline research; Table 10, 11

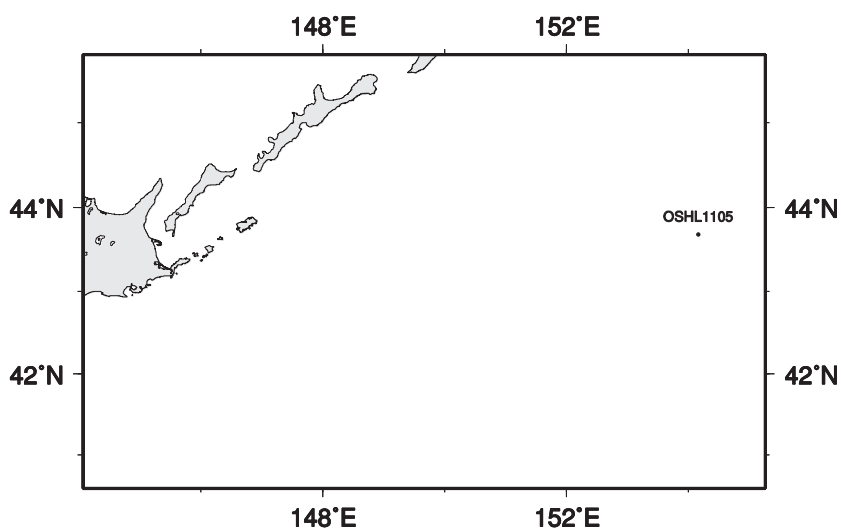


Figure 4. Locations of hook-and-line research

Table 3. Position and research conditions of surface longline sampling at each station during the *Oshoro maru* Cruise #229, 2011.

Station	Date and Time (S.M.T.*1)				T.D.*2	Set Position		D.S.*3	Number of baskets	Wr*4	Wind (Force)
	Line set		Line haul			Lat.	Long.				
Cruise #228											
OSHL1105	July 31	22:00	August 1	03:15	+10h	43-41.5 N	154-09.2 E	-	-	d	NE-4

*1 S.M.T. : Ship's Mean Time.

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of line set.

*4 Wr. : Weather (d: drizzling rain).

7. Data on mid-water trawl research

One operation of the stern otter mid-water trawl was carried out. This operation was supervised by the captain, and was conducted by deck officer, crew, research staff and cadets.

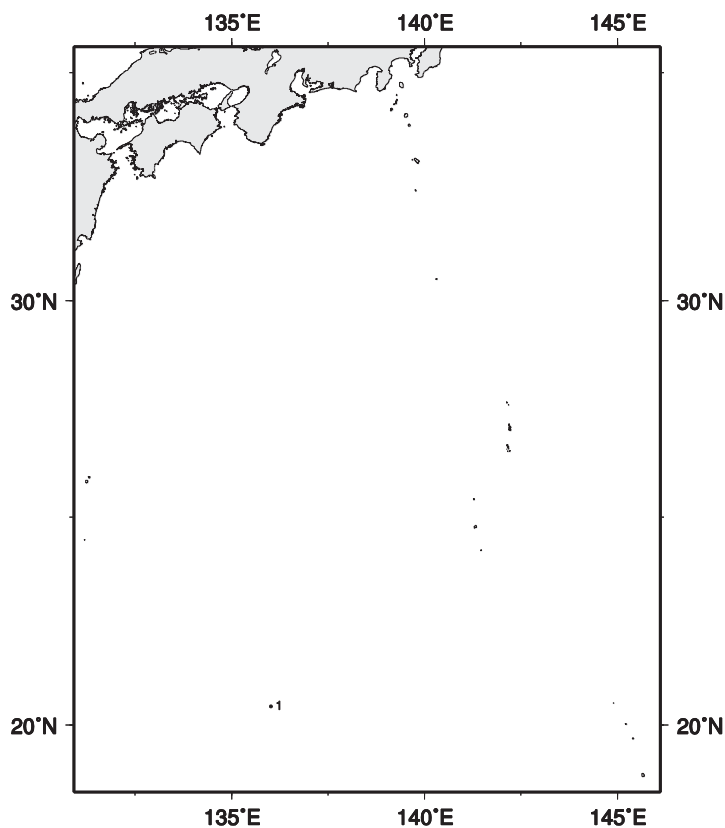


Figure 5. Location of mid-water trawl research

Table 4. Data on mid-water trawl research

No. of research	Date and time of net tow (S.M.T.)	Position		Direction of tow	Speed of tow (K't)	Bottom depth (m)	Wr	Wind
		Lat.(N)	Long.(E)					
OSMT1101	12-13 Jul. 2139-0525	20-27.9	136-00.2	280	3.0	1450-2300	bc	NE-3

Wr : Weather (bc: 25-75% clouded)

Table 5. Data on catches by mid-water trawl research

Japanese name	Scientific Name	OSMT 1101	
		Number	Weight (kg)
Darumazame	<i>Isistius brasiliensis</i>	1	0.4
Other fishes	Actinopterygii spp.	3750	8.2
Ebi-rui	Decapoda spp.	1090	0.8
Tosoku-rui	Cephalopoda spp.	116	2.5

8. Data on Plankton Collected by Vertical Hauls with a Single or Twin-NORPAC Net

Vertical hauls with a twin-NORPAC net were made at hydrographic stations. This net was composed of 45 cm mouth diameter and 180 cm long conical one which was made of GG54 and XX13 having 0.33 mm and 0.10 mm mesh, respectively. The net was lowered to the estimated depth of 150 m, 500 m or near the bottom when the bottom depth was shallower than 150 m, and immediately hauled to the surface at a speed about 1 m s⁻¹. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by research staffs and measurement of wet weight of the samples were made by A. Yamaguchi, K. Matsuno, R. Saito, R. Ohashi, Y. Abe, T. Shiota, K. Chikugo (Laboratory of Marine Biology).

Table 6. Data on plankton collected by vertical hauls with a single or twin NORPAC net.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS11063 (S3)	41-22	140-06	8 June	18:50	101	8	100	GG54	1479	835	16.07	0.9	56	11101
								XX13	1630	812	14.94			11102
OS11065 (S5)	41-40	139-40	8 June	22:31	155	14	150	GG54	1479	1428	27.48	3.0	109	4) 11103
								XX13	1630	1453	26.73			11104
OS11067 (S7)	41-59	139-16	9 June	2:09	151	8	150	GG54	1479	1228	23.63	3.5	147	4) 11105
								XX13	1630	1195	21.98			11106
OS11082 (S9)	44-59	141-29	10 June	0:31	50	0	50	GG54	1479	400	7.70	7.5	975	3) 11107
								XX13	1630	393	7.23			11108
OS11098 (S10)	45-28	142-48	10 June	9:28	108	10	106	GG54	1479	858	16.51	1.5	89	11109
								XX13	1630	784	14.42			11110
OS11099 (S13)	45-19	142-29	10 June	13:12	50	0	50	GG54	1479	418	8.04	3.5	441	11111
								XX13	1630	395	7.27			11112
OS11101 (S12)	45-21	142-32	10 June	14:36	70	0	70	GG54	1479	569	10.95	1.5	141	11113
								XX13	1630	529	9.73			11114
OS11110 (D2)	45-24	145-02	11 June	5:49	152	10	150	GG54	1479	1260	24.25	2.0	84	11115
								XX13	1630	1145	21.06			11116
OS11120 (S19)	43-39	141-14	13 June	12:19	70	0	70	GG54	1479	545	10.49	4.2	399	11117
								XX13	1630	472	8.68			11118
OS11123 (S22)	43-38	139-55	13 June	20:04	160	20	150	GG54	1479	1510	29.06	4.1	141	4) 11119
								XX13	1630	1522	28.00			11120
OS11124 (S23)	43-38	139-29	13 June	22:38	156	16	150	GG54	1479	1470	28.29	7.6	267	11121
								XX13	1630	1531	28.17			11122
OS11125 (S24)	43-38	138-57	14 June	1:55	155	14	150	GG54	1479 -		27.50	5.0	181	4) 11123
								XX13	1630	1469	27.03			11124
OS11126 (D4)	43-38	138-28	14 June	4:35	156	16	150	GG54	1479	1498	28.83	3.3	114	11125
								XX13	1630	1548	28.48			11126
OS11136 (D5)	42-00	138-21	15 June	2:37	156	16	150	GG54	1479	1322	25.44	5.1	200	11127
								XX13	1630	1360	25.02			11128

1) Phytoplankton abundant

2) Including some fragments of medusae

3) *Neocalanus* abundant

4) *Themisto* abundant

5) Salps abundant

6) Doliolids abundant

Table 6. Data on plankton collected by vertical hauls with a single or twin NORPAC net. (continued)

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS11140 (D6)	41-12	137-41	15 June	14:05	150	0	150	GG54	1479	1335	25.69	1.1	41	11129
								XX13	1630	1122	20.64			11130
OS11144 (S25)	41-00	138-59	16 June	0:16	150	0	150	GG54	1479	1268	24.40	2.4	99	11131
								XX13	1630	1133	20.84			11132
OS11145 (S26)	41-00	139-19	16 June	2:42	155	14	150	GG54	1479	1360	26.17	1.9	74	11133
								XX13	1630	1313	24.16			11134
OS11146 (S27)	41-00	139-37	16 June	5:07	150	3	150	GG54	1479	1168	22.48	1.2	55	11135
								XX13	1630	1059	19.48			11136
OS11147 (S28)	41-00	139-54	16 June	7:35	151	6	150	GG54	1479	1239	23.84	2.7	114	11137
								XX13	1630	1040	19.13			11138
OS11148 (S29)	41-00	140-09	16 June	9:22	115	0	115	GG54	1479	924	17.78	1.2	68	11139
								XX13	1630	785	14.44			11140
OS11158 (S30)	39-42	139-54	19 June	15:15	55	0	55	GG54	1479	614	8.73	0.9	104	1) 11141
								XX13	1630	518	7.54			11142
OS11161 (S33)	39-51	139-47	19 June	23:49	160	20	150	GG54	1479	1886	26.81	4.0	151	11143
								XX13	1630	1772	25.80			11144
OS11163 (D7)	40-06	138-06	20 June	5:33	151	6	150	GG54	1479	1604	22.80	1.5	68	11145
								XX13	1630	1394	20.29			11146
OS11165 (D9)	39-44	137-20	20 June	15:25	150	0	150	GG54	1479	1523	21.65	2.9	136	3) 11147
								XX13	1630	1365	19.87			11148
OS11167 (D11)	39-21	136-37	21 June	0:14	151	6	150	GG54	1479	1569	22.31	2.4	108	11149
								XX13	1630	1385	20.16			11150
OS11173 (D18)	38-28	135-30	21 June	15:42	151	6	150	GG54	1479	1734	24.65	2.5	102	11151
								XX13	1630	1540	22.42			11152
OS11177 (S45)	37-06	135-41	22 June	7:51	150	0	150	GG54	1479	1556	22.12	1.5	67	11153
								XX13	1630	1398	20.35			11154
OS11180 (S48)	36-03	135-48	22 June	17:16	150	3	150	GG54	1479	1569	22.31	2.4	110	2) 11155
								XX13	1630	1332	19.39			11156
OS11202 (S71)	33-50	130-08	24 June	7:12	45	5	45	GG54	1479	515	7.32	1.2	159	11157
								XX13	1630	465	6.77			11158
OS11205 (S68)	34-20	129-49	24 June	14:14	107	12	105	GG54	1479	1220	17.34	10.7	617	2) 11159
								XX13	1630	1025	14.92			11160
OS11209 (S64)	34-53	129-23	24 June	19:53	155	15	150	GG54	1479	1953	27.76	2.2	80	11161
								XX13	1630	1570	22.86			11162
OS11249 (S76)	29-43	128-15	1 July	20:06	160	20	150	GG54	1479	2080	29.02	5.0	174	11163
								XX13	1630	1879	26.44			11164
OS11250 (S77)	29-43	128-00	1 July	23:22	153	12	150	GG54	1479	1652	23.05	4.9	214	11165
								XX13	1630	1440	20.26			11166
OS11251 (S78)	29-43	127-45	2 July	1:35	158	18	150	GG54	1479	1948	27.18	4.2	154	11167
								XX13	1630	1616	22.74			11168
OS11252 (S79)	29-43	127-30	2 July	4:34	155	14	150	GG54	1479	1658	23.13	2.3	99	11169
								XX13	1630	1402	19.73			11170
OS11253 (S80)	29-42	127-15	2 July	6:22	118	14	114	GG54	1479	1552	21.65	2.7	127	11171
								XX13	1630	1370	19.28			11172
OS11254 (S81)	29-43	127-00	2 July	9:03	108	27	96	GG54	1479	1410	19.67	1.9	99	11173
								XX13	1630	1232	17.34			11174
OS11255 (S82)	29-43	126-45	2 July	11:10	93	13	91	GG54	1479	1064	14.84	3.8	258	1) 11175
								XX13	1630	794	11.17			11176
OS11265 (S86)	28-00	125-57	3 July	15:45	110	3	110	GG54	1479	1309	18.26	6.7	365	11177
								XX13	1630	1168	16.44			11178
OS11269 (S88)	27-42	126-17	3 July	20:04	158	18	150	GG54	1479	2151	30.01	7.4	246	11179
								XX13	1630	1839	25.88			11180

1) Phytoplankton abundant

2) Including some fragments of medusae

3) *Neocalanus* abundant4) *Themisto* abundant

5) Salps abundant

6) Doliolids abundant

Table 6. Data on plankton collected by vertical hauls with a single or twin NORPAC net. (continued)

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS11275 (S91)	27-18	126-48	4 July	6:01	151	8	150	GG54	1479	1734	24.19	2.5	105	11181
								XX13	1630	1512	21.28			11182
Extra (T2)	26-50	127-26	4 July	19:42	151	6	150	GG54	1479	1781	24.85	2.8	115	11183
								XX13	1630	1422	20.01			11184
OS11280	26-25	127-35	9 July	15:30	150	0	150	GG54	1479	1584	21.08	1.1	52	11185
								XX13	1630	1400	19.02			11186
OS11285	20-46	135-30	11 July	22:39	151	8	150	GG54	1479	1558	20.73	1.2	58	11187
								XX13	1630	1373	18.65			11188
OS11289	20-26	136-03	12 July	20:20	151	8	150	GG54	1479	1632	21.72	1.3	60	11189
								XX13	1630	1577	21.42			11190
OS11291	35-03	139-25	16 July	20:51	156	16	150	GG54	1479	1761	23.43	5.0	212	1) 11191
								XX13	1630	1432	19.45			11192
Extra	35-44	147-52	25 July	20:35	30	0	30	GG54	1479	350	5.06	2.4	467	6) 11193
								XX13	1630	334	4.90			11194
				20:38	151	6	150	GG54	1479	1663	24.06	45.5	1893	5) 11195
								XX13	1630	1334	19.57			11196
OS11297	36-30	155-00	27 July	1:38	30	0	30	GG54	1479	323	4.67	2.7	575	11197
								XX13	1630	312	4.58			11198
				1:46	151	5	150	GG54	1479	1632	23.61	4.0	170	11199
								XX13	1630	1363	19.99			11200
OS11300	37-15	155-00	27 July	14:52	30	5	30	GG54	1479	430	6.22	1.3	203	11201
								XX13	1630	378	5.54			11202
				14:56	155	14	150	GG54	1479	1715	24.81	2.8	112	11203
								XX13	1630	1689	24.78			11204
OS11301	38-00	155-00	27 July	20:14	30	0	30	GG54	1479	362	5.24	0.4	81	11205
								XX13	1630	350	5.13			11206
				20:19	150	3	150	GG54	1479	1605	23.22	1.3	54	11207
								XX13	1630	1432	21.01			11208
OS11302	38-45	155-00	28 July	5:49	31	12	30	GG54	1479	455	6.58	0.7	107	11209
								XX13	1630	432	6.34			11210
				5:56	155	14	150	GG54	1479	1840	26.62	0.7	27	11211
								XX13	1630	1641	24.07			11212
OS11303	39-30	155-00	28 July	12:01	31	14	30	GG54	1479	350	5.06	0.3	60	11213
								XX13	1630	328	4.81			11214
				12:05	155	14	150	GG54	1479	1743	25.22	0.9	35	11215
								XX13	1630	1565	22.96			11216
OS11304	40-15	155-00	28 July	21:46	30	0	30	GG54	1479	380	5.50	3.3	594	6) 11217
								XX13	1630	382	5.60			11218
				22:00	156	16	150	GG54	1479	1815	26.26	3.3	124	6) 11219
								XX13	1630	1768	25.93			11220
OS11305	41-00	155-00	29 July	11:18	30	0	30	GG54	1479	338	4.89	2.6	525	11221
								XX13	1630	342	5.02			11222
				11:24	150	2	150	GG54	1479	1530	22.14	8.7	391	2) 11223
								XX13	1630	1242	18.22			11224
OS11306	41-45	155-00	29 July	20:24	30	5	30	GG54	1479	360	5.21	33.2	6367	2) 11225
								XX13	1630	355	5.21			11226
				20:38	160	20	150	GG54	1479	2030	29.37	5.9	202	11227
								XX13	1630	1740	25.52			11228
OS11307	42-30	155-00	30 July	10:31	30	5	30	GG54	1479	377	5.45	2.2	397	11229
								XX13	1630	321	4.71			11230
				10:38	153	12	150	GG54	1479	1680	24.31	4.1	167	11231
								XX13	1630	1379	20.23			11232

1) Phytoplankton abundant

2) Including some fragments of medusae

3) *Neocalanus* abundant4) *Themisto* abundant

5) Salps abundant

6) Doliolids abundant

Table 6. Data on plankton collected by vertical hauls with a single or twin NORPAC net. (continued)

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire angle (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS11310	43-15	155-00	30 July	20:23	30	0	30	GG54	1479	365	5.28	3.9	747	5) 11233
								XX13	1630	350	5.13			11234
				20:35	153	12	150	GG54	1479	1608	23.27	7.5	323	5) 11235
								XX13	1630	1389	20.37			11236
OS11311 (St. KNOT)	44-00	155-00	31 July	10:19	30	0	30	GG54	1479	389	5.63	5.6	992	3) 11237
								XX13	1630	300	4.40			11238
				10:25	151	6	150	GG54	1479	1545	22.35	7.7	346	3) 11239
								XX13	1630	1231	18.06			11240
OS11312	43-41	154-09	31 July	21:51	30	0	30	GG54	1479	4962	71.79	24.5	341	3) 11241
								XX13	1630	4975	72.98			11242
								GG54	1479	372	5.38	5.1	945	3) 11243
				22:05	152	10	150	GG54	1479	1639	23.71	11.8	497	3) 11245
OS11314 (Site H)	41-30	145-47	2 Aug.	17:15	30	0	30	XX13	1630	1480	21.71			11246
								GG54	1479	340	4.92	4.2	851	11247
				17:19	151	6	150	XX13	1630	325	4.77			11248
								GG54	1479	1495	21.63	7.9	365	11249
				17:33	508	10	500	XX13	1630	1362	19.98			11250
								GG54	1479	5061	73.22	11.1	152	11251
								XX13	1630	4448	65.25			11252

1) Phytoplankton abundant

2) Including some fragments of medusae

3) *Neocalanus* abundant4) *Themisto* abundant

5) Salps abundant

6) Doliolids abundant

9. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in the cruise.

Table 7. Calibration data on flowmeters used for a twin NORPAC net and other kind of nets.

100-m wire out at St. OS11148 in 16 June 2011.

Flowmeter No.	Wire length (m)	Revolution						Mean
		1	2	3	4	5	6	
RG1479	100	858*	848	820	815*	820	818	827
RG1630	100	861	869	850*	859	870*	869	865

*: omitted from calculation

100-m wire out at St. OS11209 in 24 June 2011.

Flowmeter No.	Wire length (m)	Revolution						Mean
		1	2	3	4	5	6	
RG1479	100	1192*	1258*	1115	1150	1129	1081	1119
RG1630	100	1136*	1149*	1098	1112	1100	1060	1093

*: omitted from calculation

100-m wire out at 26°49'N, 127°26'E in 4 July 2011.

Flowmeter No.	Wire length (m)	Revolution						Mean
		1	2	3	4	5	6	
RG1479	100	1195*	1151	1132	1141	1136	1128*	1140
RG1630	100	1180*	1140	1109*	1129	1132	1120	1130

*: omitted from calculation

100-m wire out at St. OS11291 in 16 July 2011.

Flowmeter No.	Wire length (m)	Revolution						Mean
		1	2	3	4	5	6	
RG1479	100	1092	1135*	1100	1110	1095	1085*	1099
RG1630	100	1080	1118*	1088	1091	1078	1068*	1084
RG2856	100	1178	1222*	1205	1188	1180	1170*	1188

*: omitted from calculation

THE " OSHORO MARU " CRUISE 234 EAST OF TSUGARU STRAIT

IN SEPTEMBER - OCTOBER 2011

1. Cruise Itinerary

Cruise 234

Departure from Hakodate

Sep. 27, 2011

Start bottom trawl research (OST1103)

28

Start hydrographic research (OS11239)

28

Finish bottom trawl research (OST1106)

29

Finish hydrographic research (OS11332)

30

Return to Hakodate

Oct. 2

Total coverage 608.8 miles

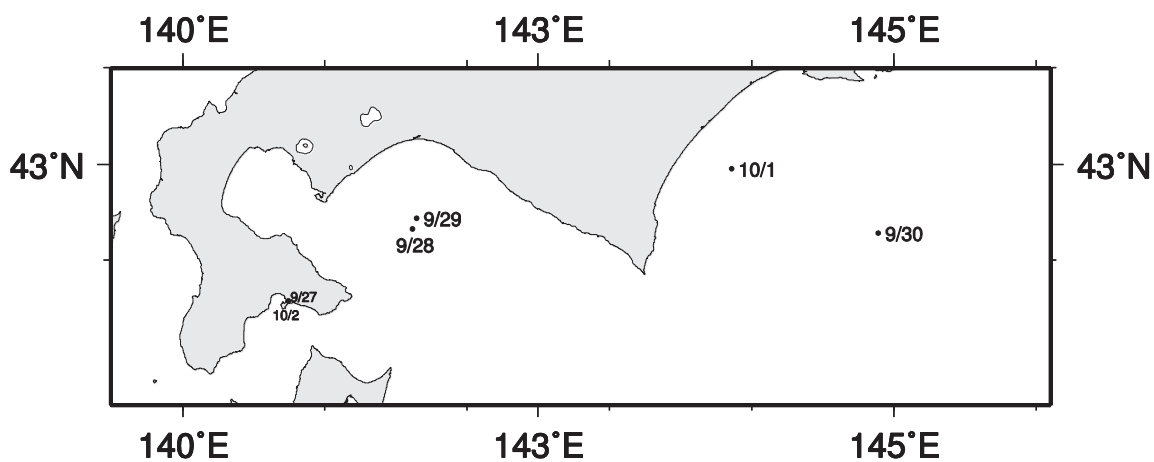


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		

Cruise 234

Research Staff:

Professor	(Laboratory of Marine Environmental Science)
	Kenshi Kuma
Professor	(Laboratory of Marine Bio-resources Science)
	Tetsuya Takatsu
Associate Professor	(Laboratory of Marine Ecology)
	Yutaka Watanuki
Associate Professor	(Laboratory of Marine Bio-resources Ecology)
	Takashi Matsuishi
Associate Professor	(Laboratory of Marine Biology and Biodiversity)
	Hisashi Imamura
Associate Professor	(Laboratory of Marine Biodiversity)
	Atsushi Yamaguchi
Associate Professor	(Laboratory of Marine Environmental Science)
	Atsushi Ooki

Teaching Assistant: 8 persons

Under Graduate Students: 52 persons

Total 67 persons

3. Items of Training and Research

A short cruise to conduct shipboard training in hydrographic observations, plankton samplings, sighting survey of marine mammals, and biological processing of trawl catch for undergraduate students in the Department of Marine Biological Science.

Hydrographic observations :	Fig. 2, Table 1,2
Bottom trawl observations :	Fig. 3, Table 3,4
Floating gillnet observations:	Fig. 4, Table 5

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

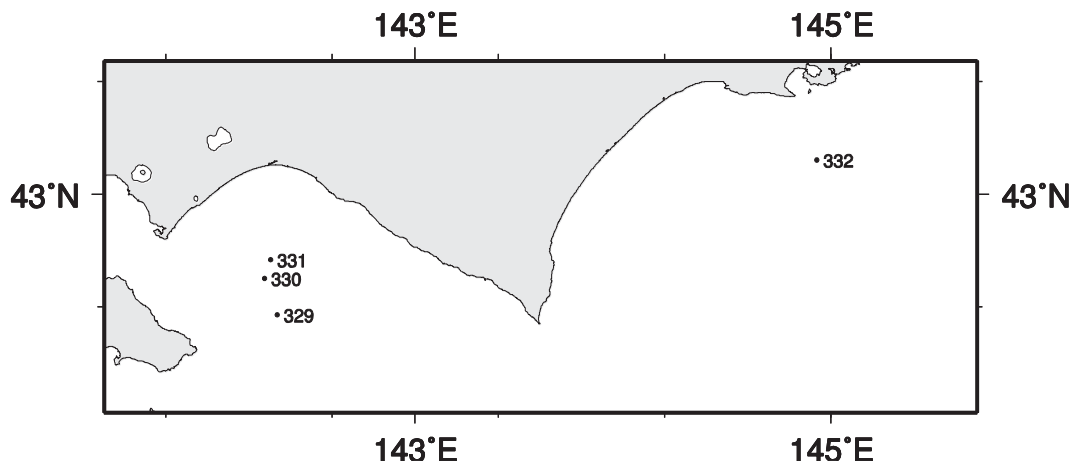


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11329	41-58.1N	141-40.0E	9/28	0759	9	837	-	-	19.3	bc	9Plus-0769
OS11330	42-07.9N	141-35.5E	9/28	1130	9	688	-	-	20.2	bc	9Plus-0769
OS11331	42-12.9N	141-37.7E	9/29	0200	9	650	-	-	20.3	bc	9Plus-0769
OS11332	42-39.4N	144-54.7E	9/30	0902	9	725	-	-	17.1	c	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11329				Station OS11330				Station OS11331				Station OS11332			
Latitude 41-58.1 N				Latitude 42-07.9 N				Latitude 42-12.9 N				Latitude 42-39.4 N			
Longitude 141-40.0 E				Longitude 141-35.5 E				Longitude 141-37.7 E				Longitude 144-54.7 E			
Depth(m) 837				Depth(m) 688				Depth(m) 650				Depth(m) 725			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	19.286	33.438	23.755	5	20.097	33.342	23.472	5	20.397	33.450	23.476	5	15.938	33.117	24.314
10	19.004	33.434	23.823	10	20.106	33.342	23.470	10	20.373	33.447	23.479	10	15.905	33.117	24.321
20	18.920	33.440	23.849	20	19.575	33.486	23.717	20	20.265	33.427	23.492	20	15.319	33.218	24.529
30	18.601	33.541	24.007	30	17.718	33.843	24.455	30	19.198	33.590	23.894	30	14.563	33.242	24.711
40	15.819	33.979	25.003	40	14.884	34.082	25.290	40	17.257	33.851	24.571	40	13.302	33.251	24.978
50	14.434	34.102	25.401	50	14.216	34.116	25.459	50	14.880	34.083	25.291	50	10.286	33.293	25.571
75	12.122	34.083	25.853	75	13.059	34.132	25.708	75	12.918	34.134	25.738	75	6.527	33.264	26.114
100	10.786	34.060	26.082	100	11.568	34.120	25.987	100	12.035	34.119	25.898	100	4.679	33.323	26.381
125	9.784	34.009	26.215	125	9.518	33.973	26.230	125	11.105	34.076	26.037	125	3.955	33.398	26.516
150	8.459	33.888	26.332	150	8.534	33.900	26.329	150	10.277	34.013	26.134	150	3.114	33.370	26.574
175	5.774	33.629	26.498	175	6.587	33.690	26.443	175	8.091	33.835	26.346	175	2.382	33.360	26.628
200	3.784	33.477	26.597	200	5.697	33.608	26.490	200	5.979	33.627	26.471	200	2.087	33.367	26.657
250	2.809	33.541	26.737	250	3.626	33.479	26.613	250	3.166	33.492	26.666	250	2.236	33.465	26.724
300	3.000	33.660	26.815	300	2.872	33.541	26.732	300	2.864	33.561	26.748	300	2.410	33.564	26.789
400	3.284	33.851	26.942	400	3.177	33.745	26.867	400	3.186	33.755	26.874	400	3.082	33.779	26.903
500	3.393	34.002	27.052	500	3.466	33.946	27.000	500	3.473	33.949	27.003	500	3.378	33.967	27.026

5. Data on bottom trawl research

Four operations of the stern otter bottom trawl were carried out. These operations were supervised by the captain, Deck officer, Science officer, crew, research staff, and cadets were engaged in the work.

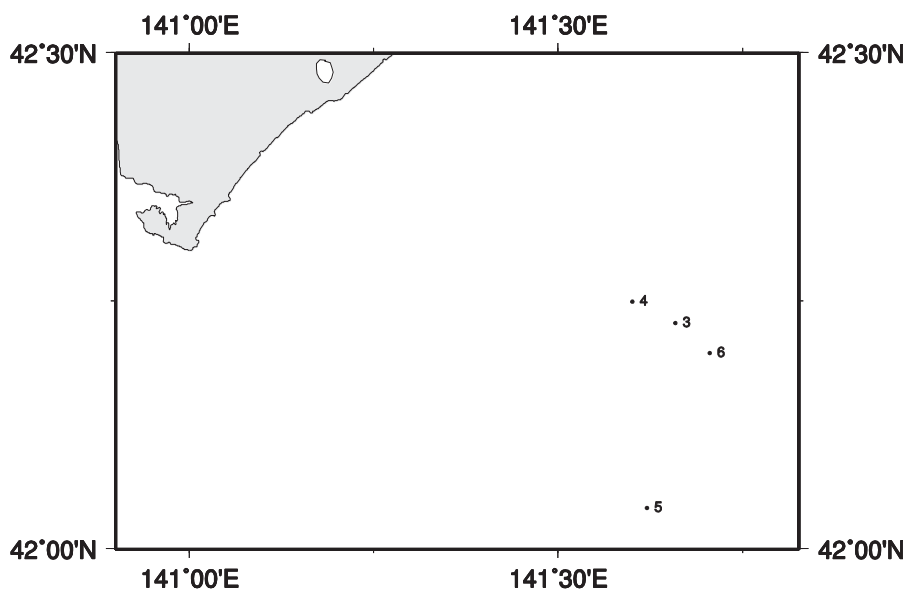


Figure 3. Locations of bottom trawl research

Table 3. Data on bottom trawl research during the "Oshoro Maru" Cruise #234

No. of research	Date and time of net tow (S.M.T.)	Position		Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
		Lat.(N)	Long.(E)					
OST1103	28-Sep 0735-0835	42-13.7	141-39.5	-	-	775	bc	SE-4
OST1104	28-Sep 1110-1210	42-15.0	141-36.0	-	-	646-682	bc	SE-4
OST1105	28-Sep 1440-1540	42-02.5	141-37.2	160	3.0	751-811	bc	SE-3
OST1106	29-Sep 0730-0830	42-11.9	141-42.3	280	3.3	813	bc	ESE-3

S.T. : Surface temperature

Wr.: Weather (r: rain, o: 100% clouded, c:75-99%clouded, bc: 25-75% clouded)

Table 4. Data on catches by bottom trawl research

Japanese name	Scientific Name	OST1103		OST1104		OST1105		OST1106	
		Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Itohikidara	<i>Laemonema longipes</i>	307	143.5	232	140.03	117	68.55	145	79.0
Shirogenge	<i>Bathrocara molle</i>	158	72.5	104	54.8	107	50.4	212	89.5
Kantengenge	<i>Bathrocara tanakae</i>	27	13	28	12.5	1	0.4	7	3.5
Karafutosokodara	<i>Coryphaenoides cinereus</i>	89	19.5	66	15.0	6	1.5	257	62.1
Kanadatara	<i>Antimora microlepis</i>	24	5.885	36	9.97	16	3.3	22	3.55
Irakoanago	<i>Synaphobranchus kaupi</i>	27	13.02	16	8.5	4	2.59	31	15.5
Yukihoraanago	<i>Ilyophis nigeli</i>	2	0.17	—	—	—	—	1	0.07
Kongouanago	<i>Simenchelys parasiticus</i>	1	0.18	—	—	—	—	—	—
Kuroshigiunagi	<i>Avocattina infans</i>	1	0.02	—	—	—	—	—	—
Kichiji	<i>Sebastolobus macrochir</i>	136	27.5	114	25.7	93	17.0	133	26.5
Nezumiginpo	<i>Lumpenella longirostris</i>	23	1.3	7	0.7	19	1.2	33	2.09
Mamehadaka	<i>Lampanyctus jordani</i>	10	0.25	5	0.03	27	0.6	4	0.2
Nagahadaka	<i>Symbolophorus californiensis</i>	1	0.03	1	0.03	—	—	—	—
Mikadohadaka	<i>Nannobrachium regale</i>	1	0.07	—	—	3	0.2	—	—
Kohirehadaka	<i>Stenobrachius leucopsarus</i>	—	—	—	—	1	0.03	—	—
Futasujimamehadaka	<i>Lestrolepis intermedia</i>	—	—	—	—	1	0.08	—	—
Munedara	<i>Coryphaenoides pectoralis</i>	1	4	—	—	3	3.7	12	14.0
Aburagarei	<i>Atheresthes evermanni</i>	1	1.32	1	3.9	—	—	1	1.92
Samegarei	<i>Clidoderma asperillum</i>	2	1.35	—	—	—	—	1	0.71
Houraieso-zoku	<i>Chauliodus</i> sp.	1	0.03	—	—	—	—	—	—
Houraieso	<i>Chauliodus sloani</i>	—	—	—	—	—	—	1	0.2
Kusabiurokoeso	<i>Paralepis atlantica</i>	1	0.8	—	—	—	—	—	—
Yokoeso	<i>Gonostoma gracile</i>	—	—	—	—	—	—	1	0.01
Hadakahoteieso	<i>Tactostoma macropus</i>	—	—	—	—	—	—	1	0.2
Tachiuo-ka	Trichiuridae spp.	—	—	1	0.03	1	0.03	—	—
Kurosokogisu	<i>Noracanthus chemnitzii</i>	—	—	2	1.5	—	—	—	—
Yaegisu	<i>Platyberyx macropus</i>	—	—	—	—	1	0.7	—	—
Sokogankiei-zoku	<i>Bathyraxia</i> spp.	8	0.9	8	1.31	9	1.4	1	0.08
Akadonko	<i>Ebinania vermiculata</i>	—	—	2	3.9	—	—	—	—
Suketoudara	<i>Theragra chalcogramma</i>	—	—	—	—	1	0.5	—	—
Ganko	<i>Dasyctotus setiger</i>	19	1.9	12	1.18	4	0.5	4	0.42
Yumeankou-zoku	<i>Oneirodes</i> spp.	1	0.3	1	0.35	—	—	—	—
Kobushikajika	<i>Malacocottus zonurus</i>	—	—	—	—	1	0.07	—	—
Kurosokoiwashi	<i>Pseudobathylagus milleri</i>	—	—	1	0.05	4	0.3	—	—
Yasesokoiwashi	<i>Bathylagus pacificus</i>	—	—	1	0.04	—	—	—	—
Sokoiwashi-zoku	<i>Lipolagus</i> sp.	—	—	1	0.79	—	—	—	—
Hadakaiwashi	<i>Diaphus watasei</i>	—	—	—	—	1	0.025	—	—
Togariichimonjiwashi	<i>Leuroglossus schmidtii</i>	—	—	4	0.08	3	0.07	6	0.1
Ookuchiwashi	<i>Notoscotelus japonicus</i>	—	—	—	—	1	0.03	2	0.11
Hirainkio	<i>Paraliparis grandis</i>	4	1.3	1	0.79	—	—	—	—
Hiregurokonnyakuuo	<i>Careproctus marginatus</i>	1	0.2	1	0.44	—	—	—	—
Benizuwaigani	<i>Chionoecetes japonicus</i>	16	6.5	14	6.6	5	1.5	5	1.73
Ika-rui	Squids	18	6.9	3	0.4	12	3.55	13	4.2
Yanagidako	<i>Octopus conispadiceus</i>	39	26.7	28	7.5	34	13.0	43	13.95
Ezobaigai-rui	Buccinidae spp.	33	1.8	15	1.9	65	2.8	23	1.5
Sonota	Others	—	12.6	—	8.4	—	22.5	—	2.82

6. Data on floating gillnet research

14 operations of the floating gill net were carried out.

These operations were supervised by the captain, and deck officers, crew, research staff and cadets were engaged in the work. The data of catches were recorded by the deck officers and research staff.

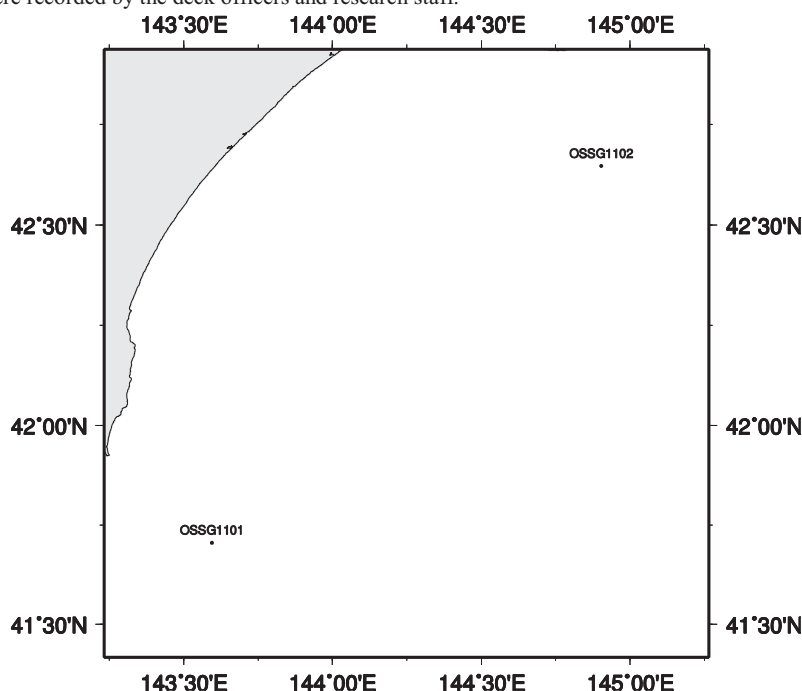


Figure 4. Locations of floating gillnet research

Table 5. Data on floating gillnet research

No. of research		OSSG 1101-01	OSSG 1101-02	OSSG 1101-03	OSSG 1101-04	OSSG 1101-05	OSSG 1101-06	OSSG 1101-07	OSSG 1101-08
Date		29-Sep	29-Sep	29-Sep	30-Sep	30-Sep	30-Sep	30-Sep	30-Sep
position of	Lat. (N)	41-42.4	41-42.4	41-42.4	41-42.4	41-42.4	41-42.4	41-42.4	41-42.4
net set	Long. (E)	143-35.6	143-35.6	143-35.6	143-35.6	143-35.6	143-35.6	143-35.6	143-35.6
Time(S.M.T.)	net set	2225	2305	2330	0000	0015	0115	0305	0345
Mesh size(mm)		37	37	37	37	37	37	37	37
Surface temp. (°C)		18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Weather		c	c	c	c	c	c	c	c
Wind (force)		SE-3	SE-3	SE-3	SE-3	SE-3	SE-3	SE-3	SE-3
Pacific saury		-	-	-	-	-	-	-	-
Japanese sardine		98	21	28	48	20	3	120	80
Mackerels		18	22	42	58	20	10	20	10

S.T. : Surface temperature

Wr.: Weather (r: rain, o: 100% clouded, c:75-99%clouded, bc: 25-75% clouded)

No. of research		OSSG 1101-09	OSSG 1101-10	OSSG 1102-01	OSSG 1102-02	OSSG 1102-03	OSSG 1102-04
Date		30-Sep	30-Sep	30-Sep	30-Sep	30-Sep	30-Sep
position of	Lat. (N)	41-42.4	41-42.4	42-38.9	42-38.9	42-38.9	42-38.9
net set	Long. (E)	143-35.6	143-35.6	144-54.1	144-54.1	144-54.1	144-54.1
Time(S.M.T.)	net set	0420	0500	2040	0245	0315	0335
Mesh size(mm)		37	37	37	37	37	37
Surface temp. (°C)		18.0	18.0	16.0	17.2	17.2	17.2
Weather		c	c	bc	bc	bc	bc
Wind (force)		SE-3	SE-3	SSW-4	SSW-4	SSW-4	SSW-4
Pacific saury		-	-	11	1150	1100	1950
Japanese sardine		42	-	35	-	-	-
Mackerels		18	-	5	-	-	-

THE " OSHORO MARU " CRUISE 235 TO THE WATERS EAST OF HONSHU

IN OCTOBER 2011

1. Cruise Itinerary

Cruise 235

Departure from Hakodate

Oct. 2, 2011

Start hydrographic research (OS11333)

3

Arrival at Miyako

3

Departure from Miyako

3

Finish hydrographic research (OS11353)

6

Return to Hakodate

7

Total coverage 859.3miles 6 days at sea.

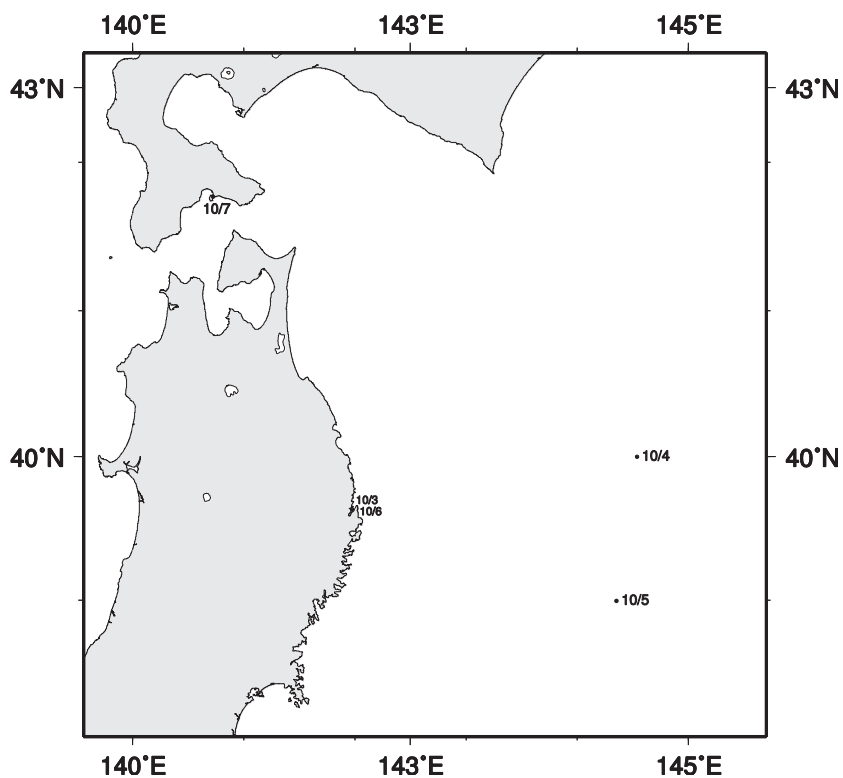


Figure 1. Noon position

Captain:		2. Vessel Personnel	
Crew:	Chief Officer	Associate Professor	Shogo Takagi
	Chief Second Officer	Associate Professor	Keiichiro Sakaoka
	Jr. Second Officer	Instructor	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Maki Ohwada
	Chief Engineer	Instructor	Keiri Imai
	And 23 men		Jyunichi Kimura

Cruise 235

There are no researchers in this Cruise.

3. Items of Research

Hydrographic observations:
Water samplings by Niskin bottles:

Fig. 2 Table 1,2

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

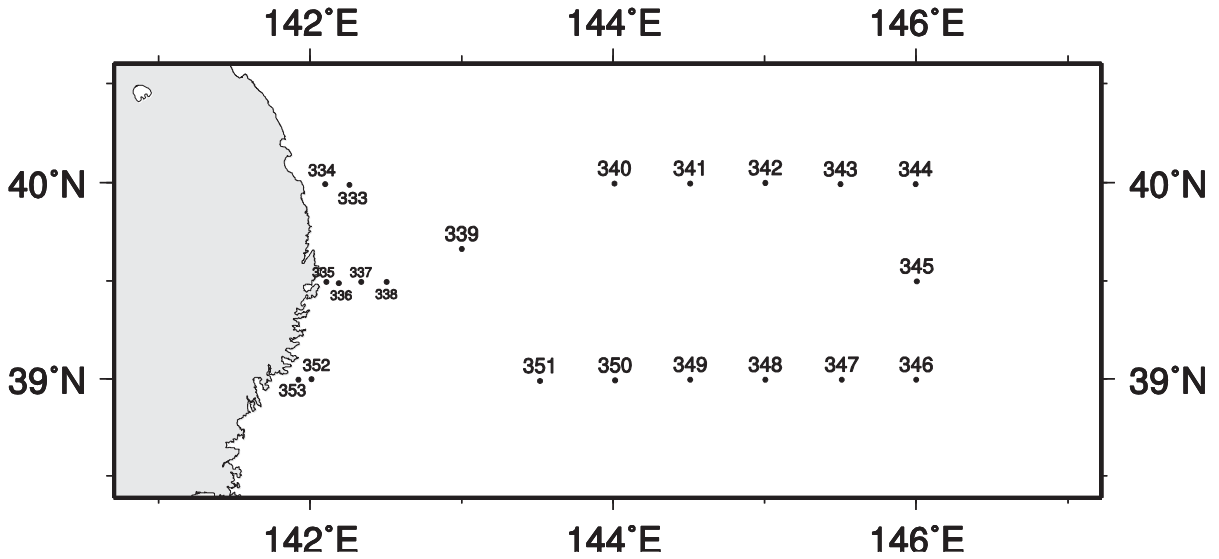


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11333	39-59.7N	142-15.3E	10/2	1936	9	244	-	-	18.2	bc	9Plus-0769
OS11334	39-59.9N	142-05.6E	10/2	2051	9	123	-	-	18.3	bc	9Plus-0769
OS11335	39-29.9N	142-06.2E	10/3	0727	9	147	-	-	19.1	bc	9Plus-0769
OS11336	39-29.7N	142-11.0E	10/3	0812	9	236	-	-	18.9	bc	9Plus-0769
OS11337	39-30.0N	142-20.0E	10/3	0917	9	690	-	-	17.6	bc	9Plus-0769
OS11338	39-30.0N	142-30.0E	10/3	1416	9	970	-	-	16.7	bc	9Plus-0769
OS11339	39-40.0N	142-59.6E	10/3	1722	9	1539	-	-	15.4	bc	9Plus-0769
OS11340	40-00.0N	144-00.1E	10/3	2337	9	4280	4	19.6	14.1	bc	9Plus-0769
OS11341	40-00.0N	144-30.0E	10/4	0217	9	7000	3	10.9	15.3	bc	9Plus-0769
OS11342	40-00.2N	144-59.9E	10/4	0450	9	5591	3	12.3	17.5	bc	9Plus-0769
OS11343	39-59.8N	145-29.7E	10/4	0744	9	5170	-	-	17.5	bc	9Plus-0769
OS11344	39-59.9N	145-59.4E	10/4	1016	9	5115	-	-	16	bc	9Plus-0769
OS11345	39-30.1N	145-59.9E	10/4	1337	9	5185	-	-	21.3	bc	9Plus-0769
OS11346	39-00.1N	145-59.7E	10/4	1707	9	5268	-	-	22.6	bc	9Plus-0769
OS11347	39-00.1N	145-30.1E	10/4	1953	9	5260	-	-	18.6	bc	9Plus-0769
OS11348	39-00.0N	144-60.0E	10/4	2241	9	5520	3	12.6	17.6	c	9Plus-0769
OS11349	38-59.9N	144-30.2E	10/5	0130	9	6240	3	14.2	17.5	c	9Plus-0769
OS11350	38-59.7N	144-00.3E	10/5	0438	9	5728	3	13.5	18.5	c	9Plus-0769
OS11351	38-59.7N	143-30.7E	10/5	0809	9	2500	-	-	17.4	c	9Plus-0769
OS11352	39-00.2N	142-00.2E	10/5	1829	9	201	-	-	19.8	r	9Plus-0769
OS11353	39-00.0N	141-55.0E	10/5	1926	9	138	-	-	19.7	r	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11333				Station OS11334				Station OS11335				Station OS11336			
Latitude 39-59.7 N				Latitude 39-59.9 N				Latitude 39-29.9 N				Latitude 39-29.7 N			
Longitude 142-15.3 E				Longitude 142-05.6 E				Longitude 142-06.2 E				Longitude 142-11.0 E			
Depth(m) 244				Depth(m) 123				Depth(m) 147				Depth(m) 236			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	18.338	33.537	24.069	5	18.550	33.602	24.066	5	19.137	33.436	23.792	5	18.959	33.584	23.950
10	18.341	33.538	24.069	10	18.549	33.602	24.066	10	19.140	33.437	23.791	10	18.965	33.584	23.948
20	18.344	33.537	24.068	20	18.553	33.602	24.065	20	19.117	33.477	23.828	20	18.902	33.574	23.956
30	18.350	33.538	24.066	30	18.543	33.602	24.068	30	18.966	33.492	23.877	30	18.855	33.565	23.962
40	18.350	33.538	24.066	40	18.520	33.604	24.075	40	18.825	33.493	23.914	40	18.751	33.540	23.968
50	16.523	33.510	24.482	50	15.219	33.775	24.979	50	18.305	33.500	24.049	50	15.948	33.882	24.899
75	6.002	33.390	26.281	75	12.695	34.137	25.785	75	17.250	33.569	24.357	75	12.192	33.734	25.569
100	4.666	33.425	26.464	100	11.377	33.918	25.865	100	13.674	33.723	25.268	100	8.101	33.437	26.031
125	4.237	33.460	26.537									125	7.349	33.467	26.163
150	4.034	33.450	26.549									150	7.254	33.471	26.180
175	2.813	33.354	26.588									175	7.306	33.559	26.242
200	2.713	33.384	26.620									200	7.089	33.548	26.263

Station OS11337				Station OS11338				Station OS11339				Station OS11340			
Latitude 39-30.0 N				Latitude 39-30.0 N				Latitude 39-40.0 N				Latitude 40-00.0 N			
Longitude 142-20.0 E				Longitude 142-30.0 E				Longitude 142-59.6 E				Longitude 144-00.1 E			
Depth(m) 690				Depth(m) 970				Depth(m) 1539				Depth(m) 4280			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	17.701	33.255	24.009	5	16.749	33.104	24.118	5	15.465	33.019	24.343	5	15.061	33.340	24.679
10	17.704	33.255	24.007	10	16.750	33.103	24.117	10	15.452	33.020	24.347	10	15.056	33.340	24.680
20	17.708	33.254	24.006	20	14.798	33.069	24.527	20	15.367	33.032	24.376	20	15.045	33.342	24.684
30	17.708	33.256	24.008	30	10.835	33.158	25.370	30	13.175	33.117	24.900	30	11.977	33.674	25.564
40	15.400	33.058	24.388	40	8.611	33.520	26.019	40	8.939	33.077	25.622	40	10.198	33.769	25.957
50	11.617	32.941	25.061	50	9.919	33.991	26.178	50	5.279	33.247	26.253	50	9.165	33.754	26.116
75	7.254	33.524	26.217	75	7.698	33.752	26.338	75	4.428	33.279	26.373	75	8.316	33.845	26.319
100	7.193	33.713	26.379	100	6.126	33.593	26.425	100	3.553	33.347	26.515	100	6.998	33.722	26.413
125	5.892	33.642	26.493	125	4.504	33.454	26.504	125	2.680	33.345	26.592	125	5.645	33.609	26.497
150	3.776	33.457	26.581	150	4.220	33.544	26.605	150	2.826	33.456	26.668	150	4.077	33.487	26.575
175	3.996	33.543	26.627	175	3.652	33.536	26.656	175	2.576	33.495	26.721	175	3.146	33.453	26.637
200	3.076	33.489	26.672	200	4.075	33.676	26.726	200	2.522	33.546	26.766	200	2.972	33.493	26.684
250	2.471	33.498	26.731	250	3.194	33.647	26.787	250	2.718	33.653	26.835	250	2.927	33.576	26.755
300	2.268	33.536	26.778	300	3.142	33.736	26.863	300	3.026	33.757	26.890	300	3.225	33.716	26.840
400	3.118	33.767	26.890	400	3.972	33.988	26.984	400	3.422	33.963	27.018	400	3.546	33.916	26.969
500	3.478	33.979	27.026	500	3.397	34.041	27.083	500	3.464	34.093	27.118	500	3.443	34.035	27.074
600	3.505	34.089	27.110	600	3.425	34.150	27.167	600	3.231	34.172	27.203				
				700	3.177	34.231	27.255	700	3.392	34.285	27.278				
				800	3.022	34.304	27.327	800	3.037	34.316	27.336				
				900	2.925	34.345	27.369	900	2.903	34.359	27.382				
								1000	2.754	34.397	27.425				

Station OS11341				Station OS11342				Station OS11343				Station OS11344			
Latitude 40-00.0 N				Latitude 40-00.2 N				Latitude 39-59.8 N				Latitude 39-59.9 N			
Longitude 144-30.0 E				Longitude 144-59.9 E				Longitude 145-29.7 E				Longitude 145-59.4 E			
Depth(m) 7000				Depth(m) 5591				Depth(m) 5170				Depth(m) 5115			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	15.164	33.224	24.567	5	17.432	33.022	23.894	5	17.522	33.144	23.966	5	15.766	33.230	24.439
10	15.129	33.225	24.576	10	17.417	33.021	23.898	10	17.519	33.145	23.968	10	15.785	33.236	24.439
20	15.102	33.227	24.583	20	17.353	33.019	23.911	20	17.471	33.173	24.001	20	15.820	33.250	24.443
30	14.941	33.240	24.628	30	12.276	33.219	25.154	30	13.229	33.325	25.050	30	12.327	33.149	25.090
40	11.735	33.325	25.338	40	9.088	33.327	25.794	40	9.995	33.389	25.695	40	9.752	33.384	25.732
50	9.872	33.541	25.834	50	5.862	33.303	26.229	50	6.513	33.350	26.183	50	7.725	33.537	26.165
75	7.237	33.666	26.336	75	4.105	33.279	26.407	75	5.476	33.480	26.416	75	5.857	33.497	26.383
100	6.058	33.610	26.447	100	3.178	33.303	26.515	100	4.899	33.505	26.501	100	4.823	33.456	26.471
125	5.613	33.648	26.532	125	3.827	33.464	26.582	125	4.267	33.506	26.570	125	3.632	33.380	26.534
150	3.397	33.437	26.601	150	3.358	33.486	26.644	150	4.278	33.599	26.643	150	3.624	33.445	26.586
175	3.272	33.467	26.637	175	4.357	33.687	26.705	175	3.951	33.619	26.693	175	3.912	33.562	26.652
200	3.111	33.500	26.678	200	3.882	33.684	26.751	200	3.390	33.606	26.737	200	3.309	33.546	26.696
250	3.337	33.647	26.774	250	3.869	33.763	26.815	250	3.594	33.725	26.812	250	2.766	33.589	26.779
300	3.916	33.822	26.857	300	3.450	33.784	26.873	300	3.486	33.791	26.875	300	3.588	33.793	26.867
400	4.063	33.986	26.973	400	3.435	33.922	26.984	400	3.831	33.983	26.994	400	3.427	33.921	26.984
500	3.927	34.092	27.071	500	3.713	34.094	27.094	500	3.686	34.089	27.093	500	3.918	34.112	27.088

Station OS11345			
Latitude 39-30.1 N			
Longitude 145-59.9 E			
Depth(m) 5185			
Press.	Temp.	Sal.	SIG-T
5	21.472	34.026	23.624
10	21.473	34.026	23.624
20	21.470	34.026	23.624
30	21.466	34.026	23.626
40	16.871	34.374	25.064
50	14.585	34.374	25.579
75	12.045	34.236	25.987
100	10.924	34.208	26.172
125	9.978	34.107	26.258
150	8.961	34.031	26.366
175	7.783	33.920	26.457
200	7.242	33.928	26.541
250	5.421	33.810	26.683
300	5.615	33.938	26.761
400	4.593	34.015	26.940
500	3.875	34.062	27.052

Station OS11346			
Latitude 39-00.1 N			
Longitude 145-59.7 E			
Depth(m) 5268			
Press.	Temp.	Sal.	SIG-T
5	21.431	33.844	23.497
10	21.439	33.845	23.495
20	21.444	33.844	23.493
30	21.413	33.844	23.502
40	15.917	34.450	25.344
50	15.025	34.462	25.551
75	13.083	34.409	25.918
100	11.938	34.331	26.081
125	9.774	34.088	26.278
150	8.955	33.992	26.336
175	8.024	33.903	26.408
200	7.635	33.919	26.478
250	6.424	33.908	26.636
300	5.676	33.936	26.752
400	4.954	34.011	26.896
500	4.480	34.101	27.020

Station OS11347			
Latitude 39-00.1 N			
Longitude 145-30.1 E			
Depth(m) 5260			
Press.	Temp.	Sal.	SIG-T
5	18.156	33.213	23.866
10	18.173	33.214	23.863
20	18.174	33.213	23.862
30	18.099	33.490	24.092
40	14.323	33.785	25.180
50	13.082	33.935	25.551
75	12.094	34.076	25.853
100	8.338	33.594	26.120
125	9.498	34.051	26.295
150	7.956	33.851	26.378
175	5.869	33.597	26.460
200	3.657	33.408	26.554
250	4.115	33.600	26.661
300	3.048	33.567	26.737
400	3.176	33.761	26.880
500	3.913	34.024	27.019

Station OS11348			
Latitude 39-00.0 N			
Longitude 144-00.0 E			
Depth(m) 5520			
Press.	Temp.	Sal.	SIG-T
5	17.555	33.119	23.940
10	17.556	33.121	23.940
20	17.492	33.104	23.943
30	12.432	33.688	25.488
40	11.888	33.805	25.682
50	11.907	34.006	25.835
75	10.021	34.004	26.170
100	9.299	33.931	26.233
125	7.927	33.756	26.307
150	7.113	33.765	26.430
175	6.469	33.749	26.504
200	5.366	33.657	26.568
250	4.786	33.714	26.680
300	3.784	33.692	26.767
400	3.898	33.871	26.898
500	3.829	33.992	27.002

Station OS11349			
Latitude 38-59.9 N			
Longitude 144-30.2 E			
Depth(m) 6240			
Press.	Temp.	Sal.	SIG-T
5	17.169	33.013	23.950
10	17.160	33.011	23.951
20	17.138	33.016	23.959
30	17.094	33.051	23.997
40	11.595	33.251	25.306
50	8.988	33.410	25.875
75	6.978	33.559	26.287
100	5.704	33.503	26.406
125	5.059	33.548	26.517
150	3.699	33.455	26.587
175	3.168	33.435	26.621
200	2.605	33.434	26.669
250	2.733	33.533	26.737
300	2.847	33.610	26.789
400	2.930	33.784	26.921
500	3.566	33.999	27.033

Station OS11350			
Latitude 38-59.7 N			
Longitude 144-00.3 E			
Depth(m) 5728			
Press.	Temp.	Sal.	SIG-T
5	18.400	33.397	23.947
10	18.401	33.397	23.946
20	18.385	33.397	23.950
30	18.209	33.359	23.964
40	16.358	33.072	24.184
50	13.070	32.952	24.793
75	9.894	33.536	25.827
100	8.675	33.773	26.208
125	6.485	33.585	26.373
150	2.358	33.188	26.493
175	2.029	33.235	26.555
200	3.033	33.425	26.625
250	2.748	33.540	26.741
300	2.807	33.601	26.786
400	3.249	33.834	26.931
500	3.423	33.971	27.025

Station OS11351			
Latitude 38-59.7 N			
Longitude 143-30.7 E			
Depth(m) 2500			
Press.	Temp.	Sal.	SIG-T
5	17.461	33.189	24.016
10	17.461	33.189	24.015
20	17.436	33.185	24.019
30	17.547	33.253	24.044
40	17.070	33.295	24.189
50	11.538	33.115	25.211
75	7.535	33.484	26.150
100	6.785	33.665	26.396
125	4.547	33.469	26.512
150	3.758	33.436	26.566
175	3.365	33.453	26.617
200	2.804	33.456	26.670
250	2.352	33.470	26.719
300	4.013	33.759	26.797
400	3.241	33.795	26.901
500	3.297	33.921	26.997

Station OS11352			
Latitude 39-00.2 N			
Longitude 142-00.2 E			
Depth(m) 201			
Press.	Temp.	Sal.	SIG-T
5	19.756	33.267	23.504
10	19.766	33.273	23.506
20	19.831	33.348	23.546
30	19.839	33.371	23.561
40	19.711	33.487	23.683
50	18.046	33.491	24.105
75	15.021	33.873	25.098
100	12.438	33.905	25.655
125	11.079	33.883	25.891
150	8.874	33.603	26.044
175	7.612	33.573	26.210

Station OS11353			
Latitude 39-00.0 N			
Longitude 141-55.0 E			
Depth(m) 138			
Press.	Temp.	Sal.	SIG-T
5	19.673	33.223	23.492
10	19.685	33.232	23.495
20	19.769	33.335	23.552
30	19.800	33.348	23.554
40	19.775	33.406	23.605
50	18.830	33.713	24.080
75	15.188	33.938	25.112
100	11.673	33.960	25.843

THE " OSHORO MARU " CRUISE 236 TO THE JAPAN SEA

IN OCTOBER-NOVEMBER 2011

1. Cruise Itinerary

Cruise 236

Departure from Hakodate

Oct. 19, 2011

Start hydrographic research (OS11354)

20

Start mid-water trawl research (OSMT1107)

26

Finish mid-water trawl research (OSMT1109)

27

Arrival at Nagasaki

28

Departure from Nagasaki

30

Finish hydrographic research (OS11375)

Nov. 4

Return to Hakodate

5

Total coverage 2201.3miles 17days at sea and one day at port

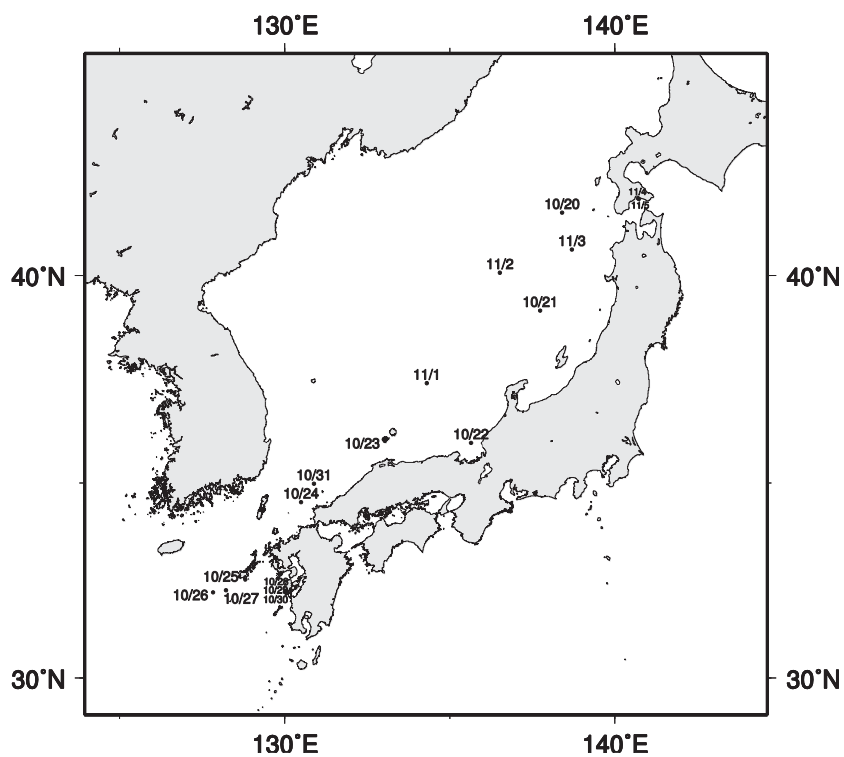


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Keiichiro Sakaoka
	Chief Second Officer	Instructor	Naoki Hoshi
	Jr. Second Officer	Technical official	Takuzo Abe
	Third Officer	Technical official	Maki Ohwada
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		

Cruise 236

Under Graduate instructor:	Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Yasuzumi Fujimori
	Associate Professor	(Laboratory of Marine Bioresource and EnvironmentSensing)	Toru Mukai
	Assistant Professor	(Laboratory of Marine Environmental Science)	Hiroji Onishi
	Associate Professor	(Laboratory of Marine Industrial Science and Technology)	Hiroki Yasuma
	Assistant Professor	(Laboratory of Marine Environmental Science)	Hiromichi Ueno
	Assistant Professor	(Field Science Center for Northern Biosphere, Hokkaido University)	Jun Yamamoto
	Research Fellow	(Graduate School of Information and Technology GCOE)	Toshiro Iwamori

Teaching Assistant:	5 person
Graduate Students:	1 person
Under Graduate Students:	22 persons
	Total 35 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2
Bottom trawl observations:	Fig. 3	Table 3, 4
Biological research for squid caught by jigging:		
Plankton and jellyfish samplings by NORPAC-net, FMT-net and Bongo-net:		
Sediment sampling and observation by Smith-McIntyre Grab:		
Water samplings by Niskin bottles:		

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

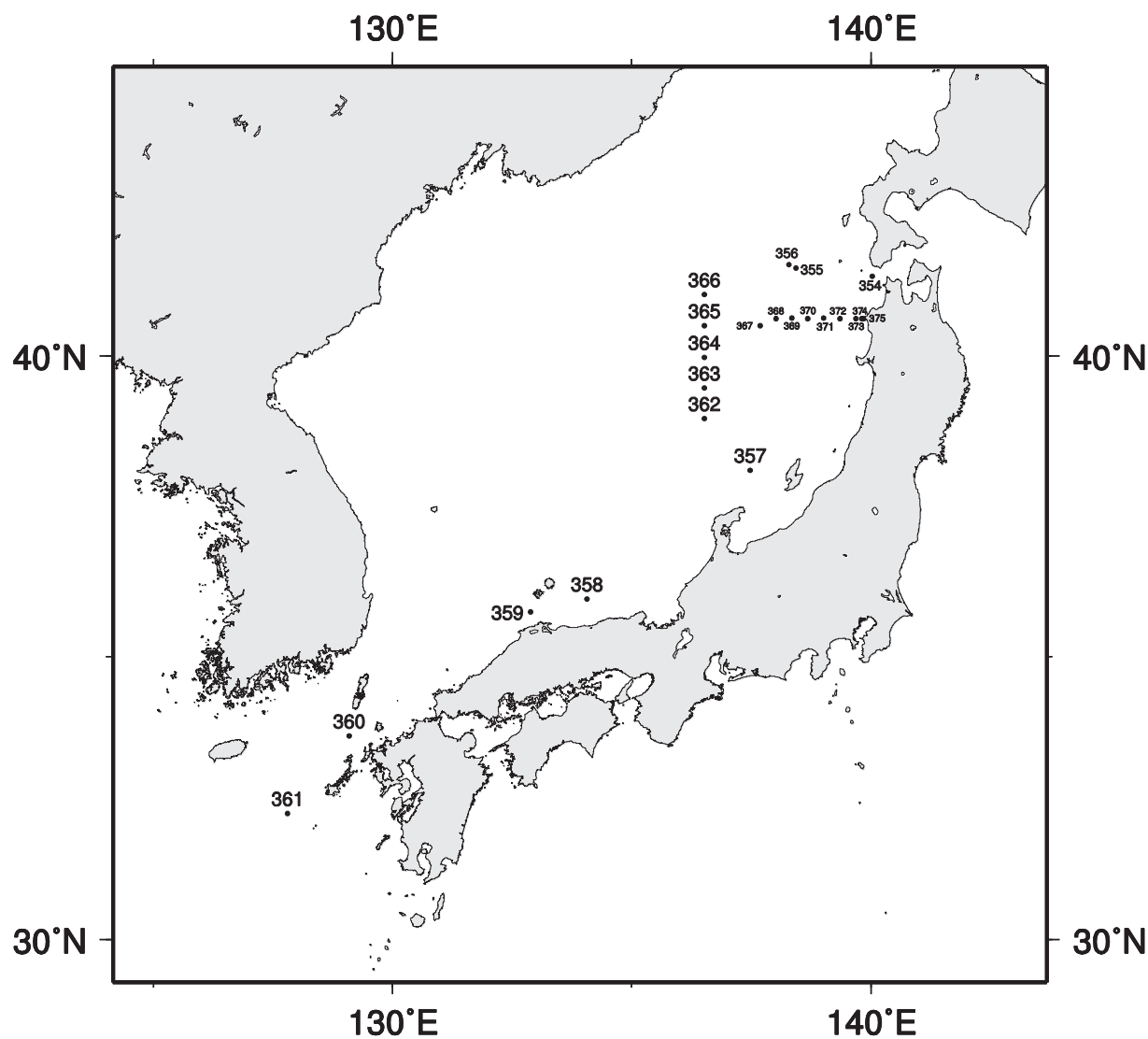


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11354	41-17.0N	140-01.0E	10/19	-	9	223	-	-	17.8	c	19Plus-4636
OS11355	41-25.1N	138-24.9E	10/20	0600	9	3700	-	-	16.2	bc	19Plus-4636
OS11356	41-28.2N	138-16.4E	10/20	0857	9	3695	-	-	15.0	bc	19Plus-4636
OS11357	38-09.6N	137-27.9E	10/21	1100	9	1507	-	-	20.2	bc	19Plus-4636
OS11358	36-00.0N	134-03.1E	10/22	1100	9	353	-	-	22.5	o	19Plus-4636
OS11359	35-46.8N	132-52.1E	10/23	1054	9	114	-	-	22.8	bc	19Plus-4636
OS11360	33-38.5N	129-04.4E	10/24	1029	9	129	-	-	23.6	r	19Plus-4636
OS11361	32-16.5N	127-47.3E	10/26	0759	9	148	-	-	24.4	bc	19Plus-4636
OS11362	39-00.1N	136-30.2E	11/1	1638	9	2705	-	-	18.3	b	9Plus-0769
OS11363	39-30.0N	136-30.0E	11/1	2107	9	2678	3	18.0	17.7	bc	9Plus-0769
OS11364	39-59.8N	136-30.3E	11/2	0118	9	1919	3	17.5	18.2	bc	9Plus-0769
OS11365	40-30.0N	136-29.9E	11/2	0538	9	3390	2	19.9	17.4	c	9Plus-0769
OS11366	40-59.9N	136-30.1E	11/2	0935	9	3355	-	-	13.9	bc	9Plus-0769
OS11367	40-30.0N	137-40.1E	11/2	1732	9	3105	-	-	14.8	bc	9Plus-0769
OS11368	40-37.1N	138-00.2E	11/2	2049	9	3422	-	-	17.0	bc	9Plus-0769
OS11369	40-37.6N	138-20.2E	11/2	2321	9	3283	3	13.5	18.0	bc	9Plus-0769
OS11370	40-37.0N	138-40.0E	11/3	0202	9	3357	3	22.3	18.2	bc	9Plus-0769
OS11371	40-37.0N	139-50.1E	11/3	0735	9	106	-	-	18.7	bc	9Plus-0769
OS11372	40-37.1N	139-47.9E	11/3	0811	9	442	-	-	19.0	bc	9Plus-0769
OS11373	40-37.0N	139-40.0E	11/3	0924	9	1073	-	-	18.9	bc	9Plus-0769
OS11374	40-37.1N	139-20.2E	11/3	1216	9	2414	-	-	18.9	bc	9Plus-0769
OS11375	40-37.3N	139-00.1E	11/3	1455	9	3259	-	-	18.1	bc	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11354				Station OS11355				Station OS11356				Station OS11357			
Latitude 41-17.0 N				Latitude 41-25.1 N				Latitude 41-28.2 N				Latitude 38-09.6 N			
Longitude 140-01.0 E				Longitude 138-24.9 E				Longitude 138-16.4 E				Longitude 137-27.9 E			
Depth(m) 223				Depth(m) 3700				Depth(m) 3695				Depth(m) 1507			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	17.908	33.592	24.217	5	16.039	33.637	24.690	5	14.779	33.749	25.055	5	20.029	33.343	23.490
10	17.892	33.602	24.228	10	15.949	33.634	24.709	10	14.743	33.748	25.063	10	20.005	33.344	23.498
20	17.537	33.859	24.510	20	15.914	33.636	24.718	20	14.610	33.747	25.090	20	19.819	33.358	23.557
30	16.395	34.347	25.155	30	15.776	33.643	24.754	30	14.594	33.748	25.094	30	19.803	33.391	23.586
40	15.851	34.314	25.254	40	6.424	33.961	26.677	40	7.479	33.979	26.548	40	19.447	33.744	23.947
50	15.332	34.359	25.404	50	5.111	33.992	26.863	50	5.819	34.021	26.802	50	17.705	34.336	24.836
75	12.425	34.342	25.996	75	3.344	34.025	27.075	75	3.617	34.042	27.063	75	15.824	34.428	25.348
100	11.291	34.289	26.169	100	2.379	34.055	27.184	100	2.692	34.050	27.154	100	14.093	34.475	25.762
125	10.377	34.259	26.308	125	1.790	34.040	27.219	125	1.997	34.050	27.211	125	12.341	34.393	26.052
150	9.727	34.232	26.399	150	1.615	34.044	27.234	150	1.765	34.056	27.233	150	11.033	34.282	26.211
175	9.367	34.216	26.445	175	1.510	34.052	27.249	175	1.603	34.057	27.246	175	10.528	34.266	26.287
				200	1.327	34.053	27.262	200	1.469	34.061	27.258	200	9.280	34.207	26.452

Station OS11358				Station OS11359				Station OS11360				Station OS11361			
Latitude 36-00.0 N				Latitude 35-46.8 N				Latitude 33-38.5 N				Latitude 32-16.5 N			
Longitude 134-03.1 E				Longitude 132-52.1 E				Longitude 129-04.4 E				Longitude 127-47.3 E			
Depth(m) 353				Depth(m) 114				Depth(m) 129				Depth(m) 148			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	22.405	33.712	23.126	5	22.767	33.837	23.118	5	23.649	34.108	23.069	5	24.530	34.130	22.825
10	22.388	33.707	23.128	10	22.774	33.836	23.116	10	23.641	34.110	23.073	10	24.554	34.130	22.819
20	22.038	33.616	23.156	20	22.788	33.841	23.116	20	23.644	34.110	23.073	20	24.557	34.130	22.817
30	22.048	33.624	23.159	30	22.837	33.869	23.123	30	23.691	34.136	23.079	30	24.360	34.088	22.844
40	22.072	33.637	23.163	40	22.847	33.894	23.139	40	23.688	34.137	23.080	40	24.100	34.043	22.888
50	22.062	33.649	23.175	50	22.753	33.867	23.145	50	23.557	34.110	23.098	50	24.108	34.057	22.896
75	19.092	34.033	24.259	75	22.668	33.861	23.165	75	21.327	34.445	23.982	75	19.653	34.527	24.492
100	16.863	34.283	24.996	100	19.031	34.084	24.313	100	19.321	34.493	24.551	100	17.102	34.596	25.180
125	15.172	34.365	25.444									125	16.731	34.595	25.267
150	11.638	34.375	26.172												
175	6.785	34.122	26.756												

Station OS11362				
Latitude 39-00.1 N				
Longitude 136-30.2 E				
Depth(m) 2705				
Press.	Temp.	Sal.	SIG-T	
5	18.391	33.424	23.970	
10	18.289	33.417	23.989	
20	17.655	33.467	24.182	
30	17.698	33.479	24.202	
40	16.903	33.636	24.490	
50	16.473	33.763	24.688	
75	10.050	34.204	26.322	
100	6.383	34.036	26.742	
125	4.417	34.009	26.954	
150	3.090	34.004	27.082	
175	2.272	34.036	27.178	
200	1.659	34.038	27.226	
250	1.164	34.052	27.273	
300	0.933	34.056	27.291	
400	0.766	34.061	27.305	
500	0.600	34.063	27.316	
600	0.483	34.063	27.324	
700	0.407	34.063	27.328	
800	0.350	34.063	27.331	
900	0.311	34.062	27.333	
1000	0.283	34.062	27.334	
1200	0.245	34.062	27.336	
1500	0.222	34.062	27.337	
2000	0.222	34.062	27.337	

Station OS11366				
Latitude 40-59.0 N				
Longitude 136-30.1 E				
Depth(m) 3355				
Press.	Temp.	Sal.	SIG-T	
5	13.715	33.762	25.289	
10	13.528	33.760	25.326	
20	13.491	33.760	25.334	
30	13.464	33.760	25.339	
40	6.194	33.881	26.644	
50	4.428	33.952	26.908	
75	2.709	33.978	27.095	
100	1.995	34.006	27.176	
125	1.708	34.018	27.207	
150	1.457	34.024	27.230	
175	1.339	34.030	27.243	
200	1.282	34.039	27.254	
250	1.068	34.049	27.276	
300	0.917	34.056	27.291	
400	0.740	34.060	27.306	
500	0.641	34.064	27.315	
600	0.548	34.065	27.321	
700	0.473	34.064	27.325	
800	0.406	34.064	27.329	
900	0.353	34.063	27.331	
1000	0.311	34.063	27.333	
1200	0.261	34.062	27.335	
1500	0.226	34.062	27.337	
2000	0.218	34.062	27.338	

Station OS11370				
Latitude 40-37.0 N				
Longitude 138-40.0 E				
Depth(m) 3357				
Press.	Temp.	Sal.	SIG-T	
5	18.223	33.398	23.991	
10	18.196	33.397	23.997	
20	18.119	33.399	24.017	
30	18.019	33.405	24.046	
40	17.759	34.282	24.781	
50	16.493	34.361	25.143	
75	14.083	34.429	25.729	
100	11.828	34.329	26.101	
125	10.546	34.247	26.269	
150	9.587	34.217	26.410	
175	8.168	34.149	26.581	
200	6.268	34.080	26.792	
250	3.260	34.033	27.090	
300	1.901	34.045	27.214	
400	1.048	34.058	27.285	
500	0.743	34.062	27.307	
600	0.596	34.064	27.317	
700	0.510	34.064	27.323	
800	0.439	34.064	27.327	
900	0.384	34.063	27.330	
1000	0.342	34.063	27.332	

Station OS11374				
Latitude 40-37.1 N				
Longitude 139-20.2 E				
Depth(m) 2414				
Press.	Temp.	Sal.	SIG-T	
5	19.090	33.248	23.660	
10	19.092	33.247	23.659	
20	19.097	33.247	23.658	
30	18.951	33.288	23.725	
40	18.565	33.386	23.897	
50	18.392	33.396	23.948	
75	16.078	34.410	25.276	
100	14.210	34.434	25.706	
125	12.116	34.339	26.053	
150	10.626	34.264	26.269	
175	9.536	34.215	26.417	
200	8.051	34.133	26.585	
250	2.858	34.035	27.127	
300	2.040	34.033	27.193	
400	1.063	34.051	27.278	
500	0.724	34.060	27.307	
600	0.524	34.061	27.320	
700	0.416	34.062	27.326	
800	0.346	34.062	27.330	
900	0.305	34.061	27.332	
1000	0.264	34.061	27.334	

Station OS11363				
Latitude 39-30.0 N				
Longitude 136-30.0 E				
Depth(m) 2678				
Press.	Temp.	Sal.	SIG-T	
5	17.671	33.399	24.126	
10	17.667	33.399	24.127	
20	17.678	33.399	24.124	
30	17.678	33.399	24.125	
40	17.679	33.400	24.125	
50	12.915	34.250	25.828	
75	9.588	34.214	26.407	
100	6.011	34.053	26.803	
125	3.843	34.021	27.023	
150	2.869	34.029	27.121	
175	2.094	34.041	27.196	
200	1.713	34.043	27.227	
250	1.285	34.052	27.264	
300	1.019	34.057	27.286	
400	0.742	34.060	27.306	
500	0.595	34.062	27.316	
600	0.489	34.063	27.323	
700	0.416	34.063	27.328	
800	0.367	34.063	27.330	
900	0.327	34.063	27.332	
1000	0.288	34.062	27.334	

Station OS11367				
Latitude 40-30.0 N				
Longitude 137-40.1 E				
Depth(m) 3105				
Press.	Temp.	Sal.	SIG-T	
5	14.716	33.685	25.020	
10	14.719	33.685	25.019	
20	14.512	33.695	25.071	
30	14.226	33.707	25.141	
40	13.590	33.673	25.246	
50	4.883	33.927	26.838	
75	2.652	33.984	27.105	
100	2.000	34.019	27.186	
125	1.739	34.031	27.215	
150	1.560	34.039	27.234	
175	1.331	34.044	27.254	
200	1.172	34.047	27.268	
250	0.972	34.054	27.287	
300	0.868	34.059	27.297	
400	0.689	34.062	27.311	
500	0.568	34.064	27.320	
600	0.484	34.064	27.324	
700	0.411	34.064	27.328	
800	0.361	34.063	27.331	
900	0.319	34.062	27.332	
1000	0.291	34.062	27.334	
1200	0.249	34.062	27.336	
1500	0.219	34.062	27.337	
2000	0.217	34.062	27.338	

Station OS11371				
Latitude 139-50.1 E				
Depth(m) 106				
Press.	Temp.	Sal.	SIG-T	
5	18.749	32.846	23.438	
10	18.753	33.037	23.583	
20	18.803	33.083	23.606	
30	18.695	33.085	23.635	
40	18.747	33.115	23.645	
50	18.852	33.184	23.671	
75	18.401	33.652	24.141	

Station				OS11364
Latitude				39-59.8 N
Longitude				136-30.3 E
Depth(m)				1919
Press.	Temp.	Sal.	SIG-T	
5	18.048	33.399	24.035	
10	18.031	33.399	24.039	
20	18.019	33.399	24.041	
30	18.018	33.399	24.042	
40	17.214	33.663	24.438	
50	13.879	34.328	25.693	
75	10.127	34.254	26.348	
100	7.084	34.104	26.701	
125	4.462	34.001	26.943	
150	3.246	34.009	27.071	
175	2.629	34.036	27.148	
200	2.056	34.041	27.199	
250	1.367	34.042	27.250	
300	1.137	34.057	27.278	
400	0.791	34.061	27.303	
500	0.617	34.064	27.316	
600	0.531	34.064	27.322	
700	0.446	34.064	27.326	
800	0.379	34.063	27.330	
900	0.334	34.063	27.332	
1000	0.296	34.062	27.334	

5. Data on bottom trawl research

Three operations of the stern otter bottom trawl were carried out. These operations were supervised by the captain, Deck officer, Science officer, crew, research staff, and cadets were engaged in the work.

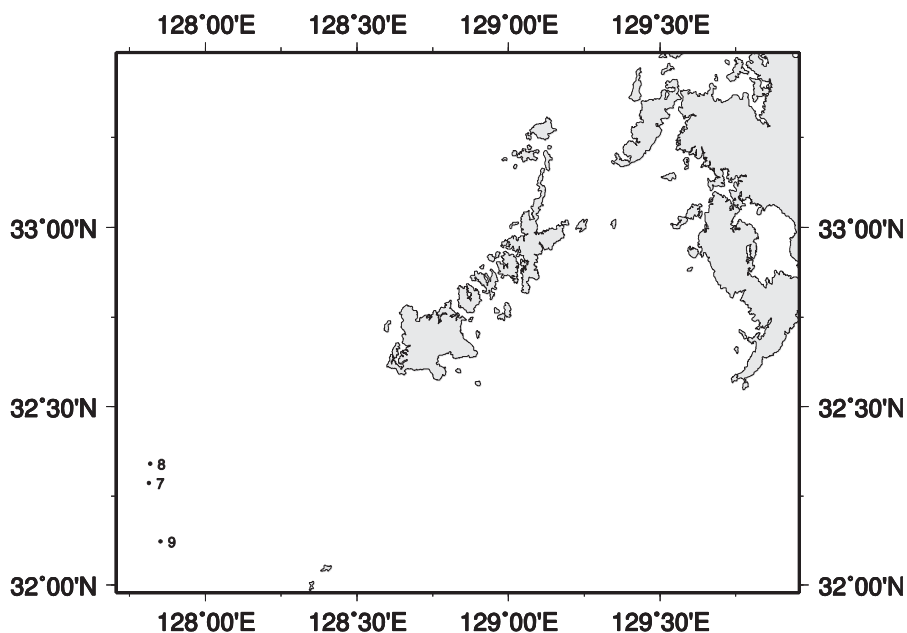


Figure 3. Locations of bottom trawl research

Table 3. Data on bottom trawl research during the "Oshoro Maru" Cruise #236

No. of research	Date and time of net tow (S.M.T.)		Position		Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
			Lat.(N)	Long.(E)					
OST1107	26-Oct	1243-1345	32-17.3	127-48.7	005	3.0	145	bc	NNW-5
OST1108	26-Oct	1510-1610	32-20.6	127-49.0	183	3.5	145	bc	NE-5
OST1109	27-Oct	0725-0825	32-07.5	127-51.0	350	3.0	150	bc	NE-2

S.T. : Surface temperature

Wr.: Weather (r: rain, o: 100% clouded, d: drizzling rain, f: fog, bc: 25-75% clouded)

Table 4. Date on catches by bottom trawl research

Japanese name	Scientific Name	OST1107		OST1108		OST1109	
		Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
akamutu	<i>Peristedion orientale</i>	-	-	-	-	1	0.27
anko	<i>Lophiomus setigerus</i>	-	-	1	17	2	2.27
izukasago	<i>Scorpaena neglecta</i>	1	0.2	-	-	-	-
umazurahagi	<i>Thamnaconus modestus</i>	12	8.3	2	1.4	16	8.5
kaiwari	<i>Synagrops japonicus</i>	5	1.28	14	4.5	26	3.3
kagamidai	<i>Psenopsis anomala</i>	-	-	-	-	1	0.85
kagokakidai	<i>Scorpaena onaria</i>	-	-	-	-	3	1.21
kasago	<i>Sebastiscus marmoratus</i>	-	-	1	0.16	-	-
kasago-amoku	<i>Sepia esculenta</i>	-	-	-	-	6	1.69
kanado	<i>Loligo edulis</i>	22	4	12	1.3	-	-
kidai	<i>Lepidotrigla microptera</i>	87	24	73	22	112	34
chikamekintoki	<i>Helicolenus hilgendorfi</i>	1	0.2	4	0.33	5	3.3
shikishimahanadai	<i>Malakichtys wakiyae</i>	302	80	2	0.42	52	15.5
nigisu	<i>Ateleopus japonicus</i>	1	0.03	-	-	-	-
hime	<i>Monocetrus japonica</i>	8	1.36	8	1.3	10	1.53
beniteguri	<i>Rexea prometheoides</i>	4	1.13	3	0.36	-	-
hobo	<i>Chelidonichthys spinosus</i>	-	-	-	-	47	7.5
hata	<i>Epinephelinae</i>	-	-	-	-	20	24.2
madai	<i>Hoplosebastes armatus</i>	2	2.05	4	6	29	35
maaji	<i>Antigonia capros</i>	10	1.25	18	2.25	9	1.6
maeso	<i>Saurida macrolepis</i>	-	-	1	0.5	-	-
masaba	<i>Pleuronichthys comutas</i>	1	0.28	1	0.23	-	-
matodai	<i>Histiogaster typus</i>	19	9	10	1.8	19	10.5
uchiwaebi	<i>Ibacus ciliatus</i>	4	1.24	6	0.54	2	0.1
hiratumeigani	<i>Rajidae</i>	-	-	2	0.17	-	-
taiwangazami	<i>Coelorrhynchus multispinulosus</i>	-	-	-	-	1	0.15
kensakiika	<i>Loligo edulis edulis Hoyle</i>	53	8.89	-	-	118	23
surumeika	<i>Todarodes pacificus Steenstrup</i>	11	6.5	19	4.1	17	5
kouika	<i>Sepia (Platysepia) esculenta</i>	-	-	1	0.11	1	0.11
tosoku-rui	<i>Cephalopoda</i>	-	-	55	7	-	23
gangiei	<i>Dipturus kwangtungensis</i>	9	13	9	11	-	-
komonnkasube sp.	<i>Okamejei kenojei sp.</i>	-	-	-	-	7	10.5
nekozame	<i>Heterodontus japonicus</i>	-	-	-	-	3	1.64
nanukazame	<i>Gnathagnus elongatus</i>	1	0.35	-	-	-	-

THE " OSHORO MARU " CRUISE 238 TO WATERS EAST OF HONSHU
AND TO THE OGASAWARA ISLANDS

IN DECEMBER 2011

1. Cruise Itinerary

Cruise 238

Departure from Hakodate	Dec. 6, 2011
Start hydrographic research (OS11376)	6
Operating ROV	7
Sampling by HR Type Core Sampler	7
Arrival at Tokyo	9
Departure from Tokyo	12
Start vertical long-line research (OSVL1101)	14
Arrival at Futami	15
Departure from Futami	17
Finish vertical long-line research (OSVL1105)	18
Finish hydrographic research (OS11389)	19
Arrival at Tokyo	20

Total coverage 1815.3miles 12days at sea and three days in port

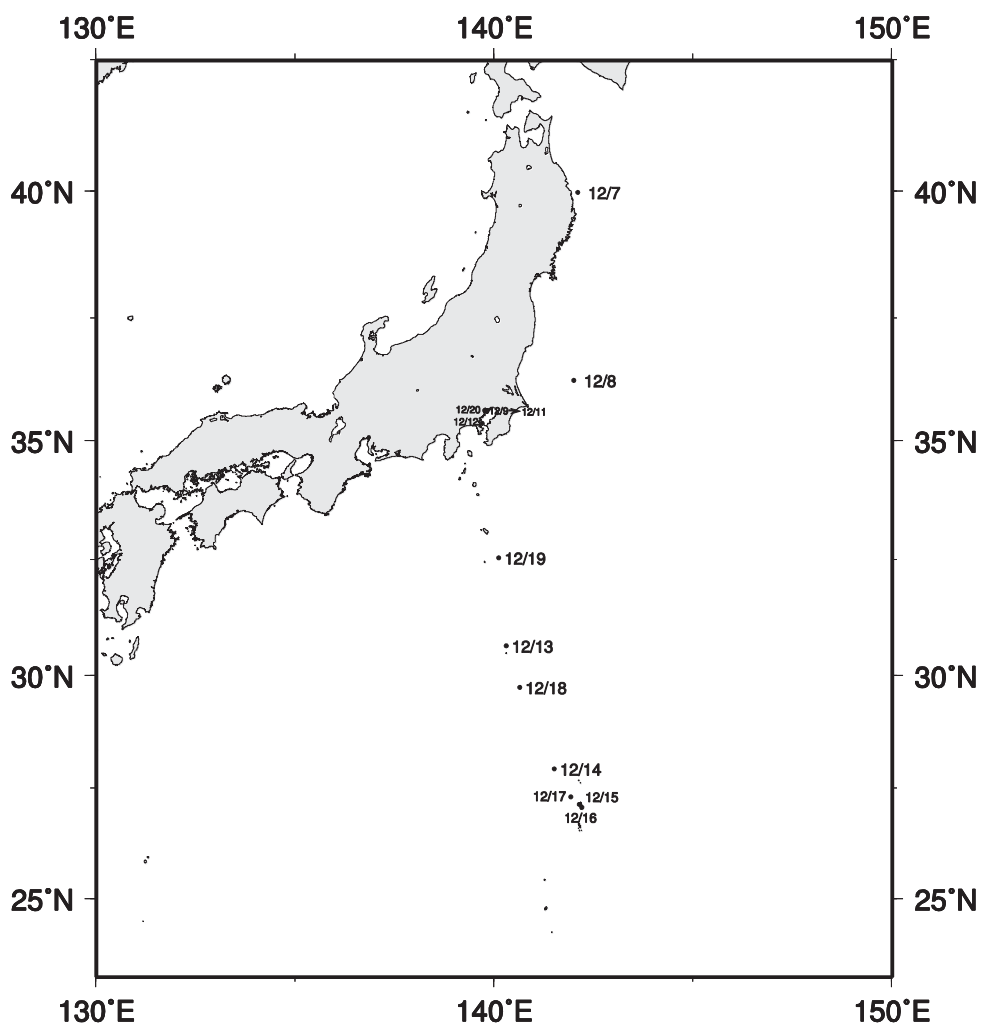


Figure 1. Noon position

		2. Vessel Personnel	
Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Keiichiro Sakaoka
	Chief Second Officer	Instructor	Naoki Hoshi
	Jr. Second Officer	Technical official	Takuzo Abe
	Third Officer	Technical official	Maki Ohwada
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		

		Cruise 238	
Under Graduate instructor:	Associate Professor	(Department of Marine Science and Resources,Nihon University)	
	Tokyo - Tokyo		Takahito Kojima
	Associate Professor	(Teikyo University of Science and Technology)	
	Tokyo - Tokyo		Kyoichi Mori
	Technical official	(Department of Marine Science and Resources,Nihon University)	
	Tokyo - Tokyo		Yuya Makiguchi
Guest Scientist:	Professor	(Graduate School of Information Science and Technology, Bioengineering and Bioinformatics, Bioinformatics, Hokkaido University)	
	Hakodate - Tokyo		Hidemi Watanabe
	Professor	(Graduate School of Information Science and Technology, Computer Science, Knowledge Software Science, Hokkaido University)	
	Hakodate - Tokyo		Hiroki Arimura
	Professor	(Graduate School of Information Science and Technology, Electronics for Informatics, Advanced Electronics, Hokkaido University)	
	Hakodate - Tokyo		Kazuhisa Sueoka
	Professor	(Atmospheric and Oceanic Science Group, Tokyo University)	
	Tokyo-Tokyo		Toshiyuki Hibiya
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	
	Hakodate - Tokyo		Jun Yamamoto
	Research Fellow	(Graduate School of Information and Technology GCOE)	
	Hakodate - Tokyo		Toshiro Iwamori
Teaching Assistant:	2 person		
Graduate Students:	4 persons		
Under Graduate Students:	22 persons		
	(Department of Marine Science and Resources, Nihon University)		16 Persons
	(Teikyo University of Science and Technology)		5 Persons
	(Tokyo University)		1 Person
	Total 37 persons		

3. Items of Research

Hydrographic observations by CTD ,XCTDand VMP-5500 casts:	Fig. 2	Table 1, 2
Biological research for fishes caught by vertical long-line and surface Long-Line:	Fig. 3	Table 3
Sediment sampling and observation by ROV and HR Type Core Sampler:		

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

Hydrographic work on deck and the data processing were made by the deck officers, science officer, crews, research staff and cadets of the “*Oshoromaru*”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus, SBE-19Plus and XCTD). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water and Plankton sampling were also carried out at almost hydrographic stations.

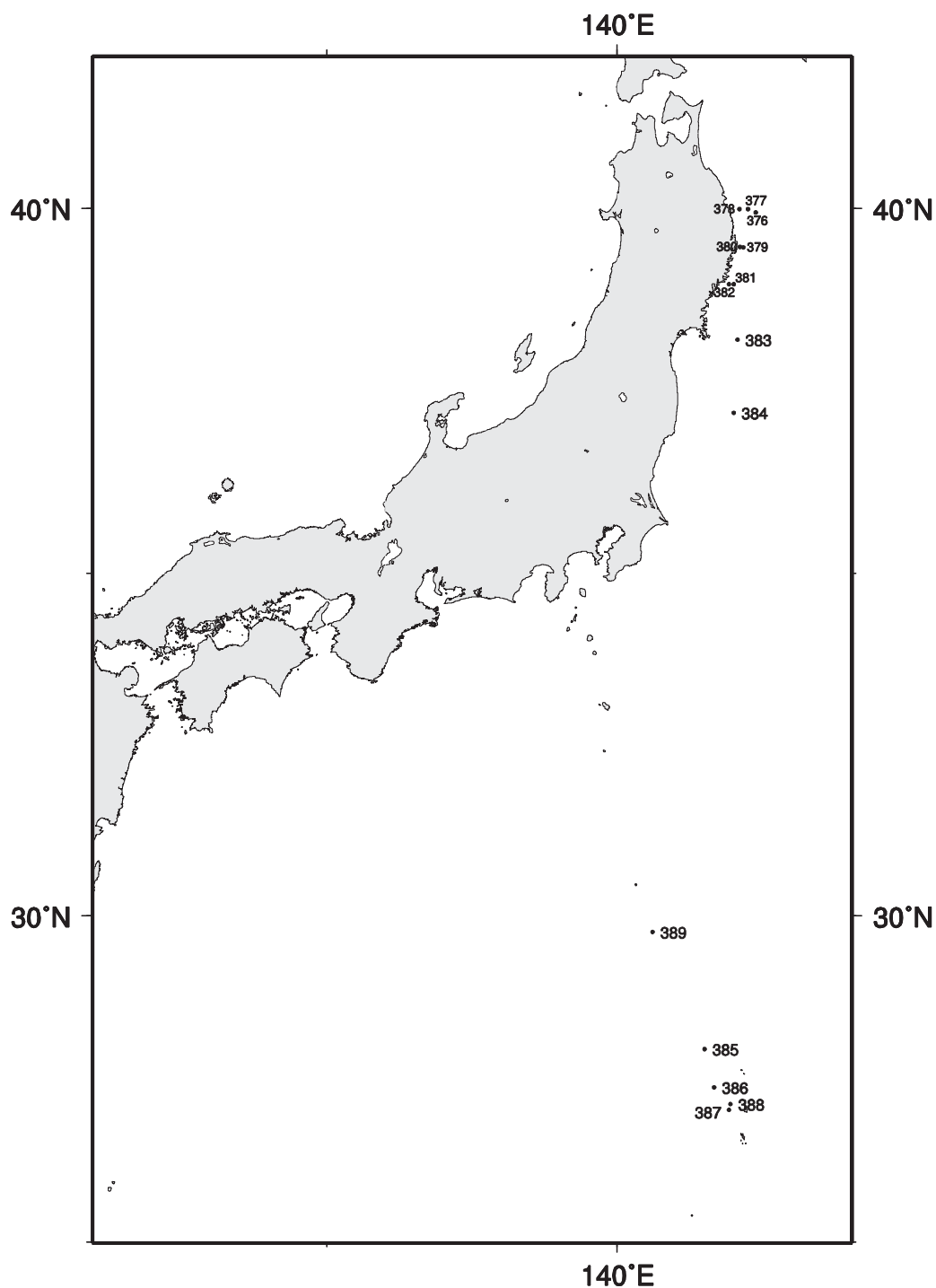


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS11376	39-57.5N	142-22.8E	12/6	2108	9	616	-	-	12.5	bc	19Plus-4636
OS11377	40-00.3N	142-15.0E	12/7	0101	9	238	3	26.0	12.0	bc	9Plus-0769
OS11378	40-00.0N	142-05.9E	12/7	0223	9	125	3	25.0	13.1	bc	9Plus-0769
OS11379	39-29.7N	142-09.9E	12/7	0544	9	202	3	19.9	12.1	c	9Plus-0769
OS11380	39-29.9N	142-06.6E	12/7	0632	9	151	-	-	12.6	c	9Plus-0769
OS11381	39-00.0N	142-00.1E	12/7	0939	9	199	-	-	13.6	bc	9Plus-0769
OS11382	38-60.0N	141-55.1E	12/7	1033	9	139	-	-	13.6	bc	9Plus-0769
OS11383	38-15.1N	142-04.0E	12/7	1535	9	375	-	-	14.9	c	9Plus-0769
OS11384	37-15.3N	141-59.9E	12/7	2102	9	843	-	-	15.6	o	9Plus-0769
OS11385	27-59.8N	141-30.1E	12/13	2231	9	4150	2	23.8	23.1	r	9Plus-0769
OS11386	27-25.0N	141-39.7E	12/14	1036	9	4080	-	-	22.7	r	9Plus-0769
OS11387	27-04.0N	141-55.3E	12/14	2225	9	2530	2	27.3	23.5	o	9Plus-0769
OS11388	27-09.2N	141-56.5E	12/17	0242	9	2021	-	-	-	o	XCTD-2
OS11389	29-46.6N	140-36.1E	12/18	0232	9	2870	-	-	-	bc	XCTD-2

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS11376				Station OS11377				Station OS11378				Station OS11379			
Latitude 39-57.5 N				Latitude 40-00.3 N				Latitude 40-00.0 N				Latitude 39-29.7 N			
Longitude 142-22.8 E				Longitude 142-15.0 E				Longitude 142-05.9 E				Longitude 142-09.9 E			
Depth(m) 616				Depth(m) 238				Depth(m) 125				Depth(m) 202			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	12.185	33.809	25.629	5	11.930	33.849	25.708	5	13.038	33.812	25.465	5	12.008	33.780	25.640
10	12.189	33.810	25.629	10	11.885	33.850	25.718	10	13.033	33.812	25.466	10	12.004	33.780	25.640
20	12.187	33.809	25.629	20	11.832	33.853	25.730	20	13.003	33.814	25.474	20	11.985	33.778	25.643
30	12.185	33.809	25.629	30	11.811	33.856	25.736	30	12.984	33.815	25.478	30	11.956	33.777	25.647
40	12.191	33.809	25.628	40	11.797	33.858	25.740	40	12.971	33.816	25.481	40	11.875	33.769	25.657
50	11.975	33.773	25.641	50	11.789	33.862	25.745	50	12.862	33.826	25.511	50	11.847	33.767	25.660
75	10.976	33.665	25.740	75	11.508	33.852	25.789	75	12.589	33.818	25.558	75	11.838	33.768	25.663
100	9.269	33.515	25.913	100	10.436	33.776	25.922	100	12.426	33.813	25.586	100	11.816	33.769	25.668
125	7.183	33.385	26.121	125	7.503	33.579	26.230					125	11.140	33.786	25.805
150	4.914	33.318	26.351	150	7.077	33.523	26.245					150	10.913	33.768	25.832
175	3.466	33.316	26.499	175	5.841	33.424	26.327					175	10.125	33.655	25.881
200	2.128	33.286	26.589	200	3.005	33.346	26.564								
250	2.176	33.399	26.676												
300	2.203	33.489	26.746												
400	2.895	33.691	26.850												
500	3.317	33.911	26.987												
600	3.363	33.967	27.027												

Station OS11380				Station OS11381				Station OS11382				Station OS11383			
Latitude 39-29.9 N				Latitude 39-00.0 N				Latitude 38-60.0 N				Latitude 38-15.1 N			
Longitude 142-06.6 E				Longitude 142-00.1 E				Longitude 141-55.1 E				Longitude 142-04.0 E			
Depth(m) 151				Depth(m) 199				Depth(m) 139				Depth(m) 375			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	12.549	33.808	25.558	5	13.597	33.823	25.361	5	13.595	33.848	25.381	5	14.924	34.165	25.345
10	12.563	33.822	25.566	10	13.600	33.823	25.360	10	13.605	33.852	25.382	10	14.920	34.165	25.345
20	12.608	33.835	25.567	20	13.610	33.824	25.359	20	13.604	33.851	25.381	20	14.923	34.164	25.344
30	12.601	33.836	25.570	30	13.608	33.823	25.359	30	13.615	33.851	25.379	30	14.924	34.163	25.343
40	12.531	33.827	25.577	40	13.614	33.824	25.358	40	13.627	33.855	25.379	40	14.921	34.163	25.344
50	12.475	33.824	25.585	50	13.606	33.822	25.358	50	13.622	33.853	25.379	50	14.915	34.164	25.346
75	12.234	33.805	25.616	75	13.607	33.822	25.358	75	13.612	33.850	25.378	75	14.895	34.166	25.352
100	11.958	33.776	25.647	100	13.610	33.823	25.358	100	13.631	33.853	25.377	100	12.864	34.334	25.904
125	11.870	33.774	25.661	125	13.633	33.830	25.359					125	11.650	34.277	26.093
				150	13.023	33.836	25.487					150	10.580	34.188	26.218
				175	10.753	33.636	25.757					175	10.133	34.164	26.276
												200	9.242	34.062	26.345
												250	7.069	33.883	26.529
												300	5.192	33.728	26.645

Station OS11384				Station OS11385				Station OS11386				Station OS11387			
37-15.3 N				27-59.8 N				27-25.0 N				27-04.0 N			
141-59.9 E				141-30.1 E				141-39.7 E				141-55.3 E			
843				4150				4080				2530			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	15.627	34.184	25.204	5	23.314	34.698	23.614	5	22.771	34.696	23.768	5	23.542	34.693	23.543
10	15.645	34.186	25.201	10	23.313	34.697	23.613	10	22.673	34.697	23.798	10	23.543	34.693	23.543
20	15.653	34.185	25.199	20	23.311	34.695	23.613	20	22.527	34.711	23.850	20	23.545	34.693	23.543
30	15.651	34.185	25.199	30	23.313	34.695	23.612	30	22.486	34.712	23.862	30	23.546	34.693	23.542
40	15.652	34.184	25.199	40	23.318	34.696	23.612	40	22.441	34.712	23.875	40	23.548	34.693	23.542
50	15.655	34.185	25.198	50	23.314	34.694	23.611	50	22.377	34.706	23.889	50	23.548	34.693	23.542
75	15.549	34.192	25.228	75	23.147	34.702	23.665	75	22.092	34.713	23.974	75	23.490	34.675	23.545
100	13.520	34.371	25.801	100	20.443	34.768	24.467	100	21.148	34.732	24.249	100	21.373	34.736	24.191
125	11.945	34.379	26.117	125	19.802	34.767	24.636	125	20.138	34.764	24.545	125	19.490	34.789	24.734
150	11.012	34.317	26.241	150	18.804	34.763	24.890	150	19.218	34.751	24.775	150	18.882	34.755	24.864
175	10.046	34.230	26.343	175	18.233	34.739	25.015	175	18.732	34.739	24.890	175	18.515	34.752	24.954
200	9.354	34.265	26.485	200	17.828	34.725	25.104	200	18.232	34.741	25.017	200	18.034	34.736	25.061
250	6.143	33.849	26.625	250	17.286	34.712	25.225	250	17.585	34.720	25.159	250	17.508	34.717	25.175
300	5.057	33.796	26.714	300	16.949	34.695	25.292	300	17.239	34.710	25.234	300	17.118	34.710	25.263
400	4.345	33.892	26.869	400	15.245	34.569	25.585	400	15.456	34.586	25.552	400	15.456	34.597	25.560
500	4.292	34.018	26.975	500	13.391	34.458	25.894	500	11.762	34.353	26.132	500	13.019	34.434	25.951
600	4.181	34.150	27.091	600	9.782	34.230	26.387	600	9.505	34.235	26.438	600	10.114	34.260	26.355
700	3.709	34.206	27.184	700	6.808	34.109	26.743	700	6.461	34.150	26.822	700	7.231	34.160	26.725
				800	5.285	34.150	26.968	800	5.889	34.169	26.910	800	5.779	34.176	26.929
				900	4.478	34.214	27.110	900	4.836	34.221	27.076	900	4.643	34.236	27.110
				1000	3.909	34.294	27.234	1000	4.099	34.287	27.209	1000	3.959	34.305	27.238
								1200	3.253	34.392	27.376				
								1500	2.481	34.506	27.537				
								2000	1.912	34.600	27.658				
								2500	1.673	34.639	27.708				
								3000	1.554	34.657	27.731				

Station OS11388				Station OS11389			
27-09.2 N				29-46.6 N			
141-56.5 E				140-36.1 E			
2021				2870			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	23.462	-	-	5	22.448	-	-
10	23.462	-	-	10	22.448	-	-
20	23.462	-	-	20	22.448	-	-
30	23.462	-	-	30	22.448	-	-
40	23.462	-	-	40	22.448	-	-
50	23.471	-	-	50	22.457	-	-
75	23.443	-	-	75	22.448	-	-
100	20.430	-	-	100	20.907	-	-
125	19.073	-	-	125	19.987	-	-
150	18.641	-	-	150	19.138	-	-
175	18.280	-	-	175	18.548	-	-
200	17.866	-	-	200	18.114	-	-
250	17.452	-	-	250	17.519	-	-
300	17.091	-	-	300	17.180	-	-
400	15.106	-	-	400	16.494	-	-
500	11.951	-	-	500	14.278	-	-
600	8.378	-	-	600	11.012	-	-
700	6.521	-	-	700	8.399	-	-
800	5.052	-	-	800	5.883	-	-
900	4.222	-	-	900	4.820	-	-
1000	3.743	-	-	1000	4.362	-	-
1200	3.001	-	-	1200	3.481	-	-
1500	2.329	-	-	1500	2.693	-	-

5. Long-line Research

[Long-line Sampling]

Five operations using a vertical long-line were performed. The gear comprised by three types of main line (500,600m) with a weight attached to one end, a buoy attached to the other end, and six branch lines (18m-for tuna and 4m-for squid) attached to the main line. One operation using a surface long-line was performed. But the catch was nothing.

These operations were supervised by the captain, and deck officers, science officer, crew, cadets and research staffs were engaged in the work.

Group		A	B	C
Main line	(m)	500	600	500
Three branch line(for tuna)	(m)	18	18	
Six branch line(for tuna)	(m)			18
Three branch line(for squid)	(m)	4	4	

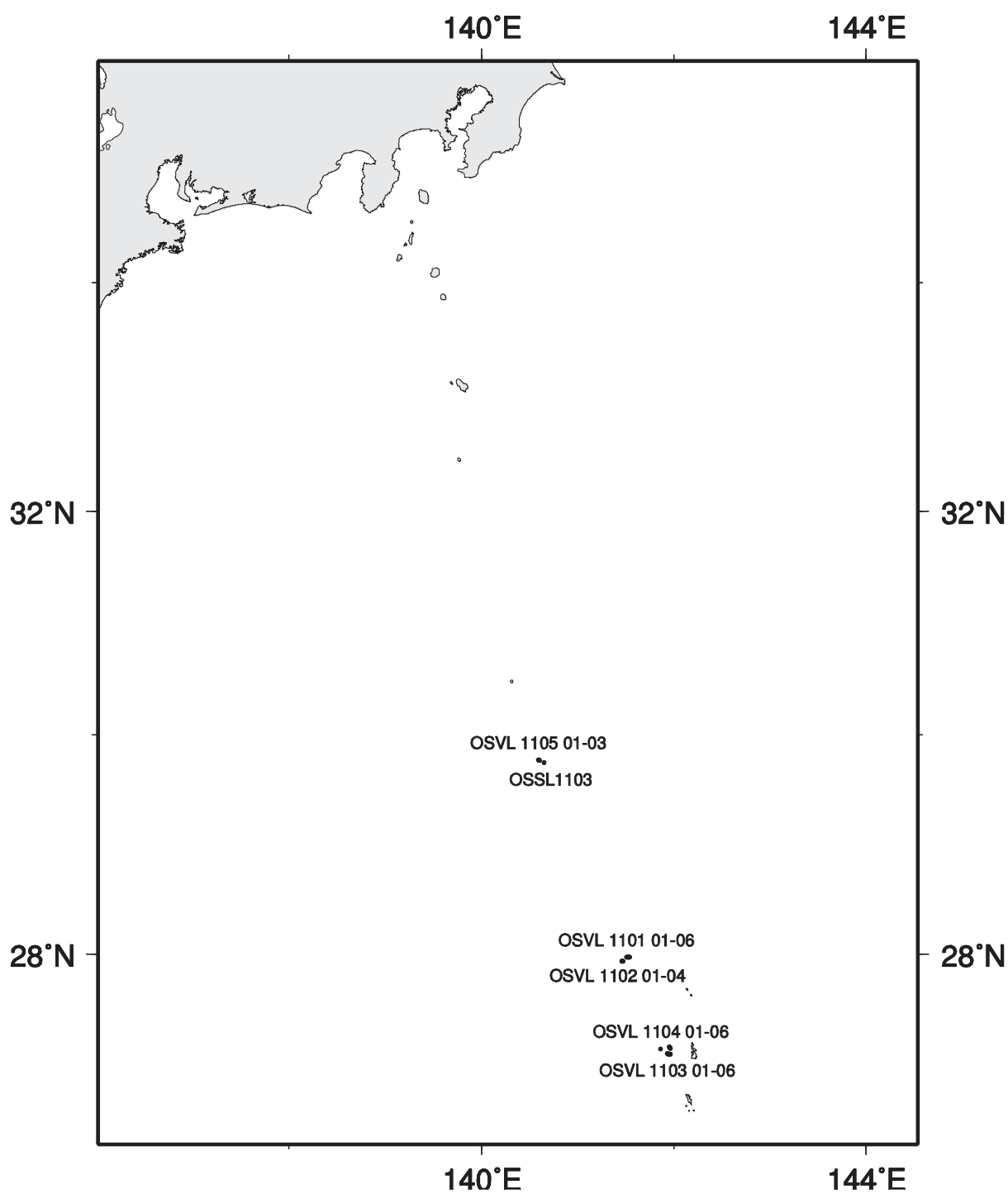


Figure 3. Locations of long-line research

Table 3. Data on vertical long-line and surface long-line research

No. of research		OSVL 1101-01	OSVL 1101-02	OSVL 1101-03	OSVL 1101-04	OSVL 1101-05	OSVL 1101-06
Date				14-Dec			
position of	Lat. (N)	27-58.8	27-58.9	27-58.9	27-58.9	27-58.9	27-58.9
line set	Long. (E)	141-30.2	141-30.6	141-31.0	141-31.4	141-31.7	141-32.0
Time	Line set	0627	0633	0639	0646	0653	0659
(S.M.T.)	Line haul			1031-1220			
Length of main line(m)		500	500	600	600	500	500
Depth(m)				4150			
Surface temp. (°C)				23.2			
Wether				r			
Wind				East-4			
Flying squid		2					1
Sickle pomfret						5	

No. of research		OSVL 1102-01	OSVL 1102-02	OSVL 1102-03	OSVL 1102-04
Date				14-Dec	
position of	Lat. (N)	27-56.4	27-56.4	27-56.4	27-56.4
line set	Long. (E)	141-27.2	141-27.5	141-27.8	141-27.3
Time	Line set	1300	1307	1313	1318
(S.M.T.)	Line haul		1451-1623		
Length of main line(m)		500	500	500	500
Depth(m)			4160		
Surface temp. (°C)			23.2		
Wether			c		
Wind			NE-3		
Flying squid		2		1	
Sickle pomfret					1

No. of research		OSVL 1103-01	OSVL 1103-02	OSVL 1103-03	OSVL 1103-04	OSVL 1103-05	OSVL 1103-06
Date				15-Dec			
position of	Lat. (N)	27-05.1	27-05.1	27-05.0	27-04.9	27-04.8	27-04.8
line set	Long. (E)	141-55.6	141-56.0	141-56.3	141-56.7	141-57.0	141-57.3
Time	Line set	0622	0627	0639	0639	0645	0651
(S.M.T.)	Line haul			0900-1102			
Length of main line(m)		500	500	600	600	500	500
Depth(m)				1984			
Surface temp. (°C)				23.4			
Wether				d			
Wind				SSE-2			
Sickle pomfret				2			

No. of research		OSVL 1104-01	OSVL 1104-02	OSVL 1104-03	OSVL 1104-04	OSVL 1104-05	OSVL 1104-06
Date				17-Dec			
position of	Lat. (N)	27-07.8	27-08.0	27-08.3	27-08.5	27-08.7	27-08.9
line set	Long. (E)	141-51.3	141-57.3	141-57.2	141-57.1	141-57.0	141-56.9
Time	Line set	1057	1105	1110	1117	1125	1131
(S.M.T.)	Line haul			0855-1047			
Length of main line(m)		500	500	600	600	500	500
Depth(m)				1554			
Surface temp. (°C)				23.1			
Wether				c			
Wind				NNW-6			
Flying squid			1				
Bigeye tuna							1
Blue shark		1					
Thresher shark	1	1					
Longnose lancetfish							1

No. of research		OSVL 1105-01	OSVL 1105-02	OSVL 1105-03	OSSL 1103
Date				18-Dec	
position of	Lat. (N)	29-46.8	29-46.8	29-46.7	29-45.6
line set	Long. (E)	140-35.1	140-35.4	140-35.7	140-38.7
Time	Line set	1115	1119	1125	1220
(S.M.T.)	Line haul		1545-1630		1410
Length of main line(m)		500	500	500	
Depth(m)			2803		3030
Surface temp. (°C)			22.4		22.3
Wether			c		bc
Wind			NW-3		NW-4
Blue shark		1			
Bigeye tuna				1	
Sickle pomfret		1	1		

S.T. : Surface temperature

Wr: Weather (r: rain, o: 100% clouded, c: 75-99% clouded, d: drizzling rain, bc: 25-75% clouded)

APPENDIX

A. List of salmon research stations, positions and date during the *Oshoro maru* Cruise #228 and #229

Oceanographic stations are adopted as the positons.

Station Name				Position		Date	
Oceano-graphic	Gillnet	Hook-and-Line	Surface longline	Latitude	Longitude	*S.M.T.	**T.D.
Cruise #228							
OS 11044			OSSL 1101	44-00N	155-02E	May 16	+10h
OS 11045				43-15N	155-00E	May 16	
OS 11046	OSG 1101	OSHL 1101	OSSL 1102	43-23N	155-08E	May16-17	
OS 11047	OSG 1102	OSHL 1102		43-58N	154-59E	May17-18	
OS 11048				42-30N	155-00E	May 18	
OS 11049	OSG 1103	OSHL 1103		41-45N	155-01E	May18-19	
OS 11050				41-01N	155-00E	May 18	
OS 11051				40-15N	155-00E	May 19	
OS 11052	OSG 1104			39-31N	154-59E	May19-20	
OS 11053				38-46N	155-01E	May 20	
		OSHL 1104		39-59N	151-02E	May21-22	+9h
Cruise #229-Leg5							
OS 11299				37-14N	155-00E	Jul 27	+10h
OS 11300				37-15N	155-00E	Jul 27	
OS 11301				38-00N	155-00E	Jul 27	
OS 11302				38-45N	155-02E	Jul 27	
OS 11303				39-30N	155-00E	Jul 28	
OS 11304	OSG 1105			40-15N	155-00E	Jul 28-29	
OS 11305				41-00N	155-00E	Jul 29	
OS 11306	OSG 1106			41-45N	155-00E	Jul 29-30	
OS 11307				42-30N	155-00E	Jul 30	
OS 11308				42-35N	155-00E	Jul 30	
OS 11309				42-44N	154-57E	Jul 30	
OS 11310	OSG 1107			43-15N	155-00E	Jul 30-31	
OS 11311				44-00N	155-00E	Jul 31	
OS 11312	OSG 1108	OSHL 1105		43-42N	154-09E	Jul 31-Aug 1	

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

**T.D.: Time difference between Greenwich mean time and Ship's mean time.