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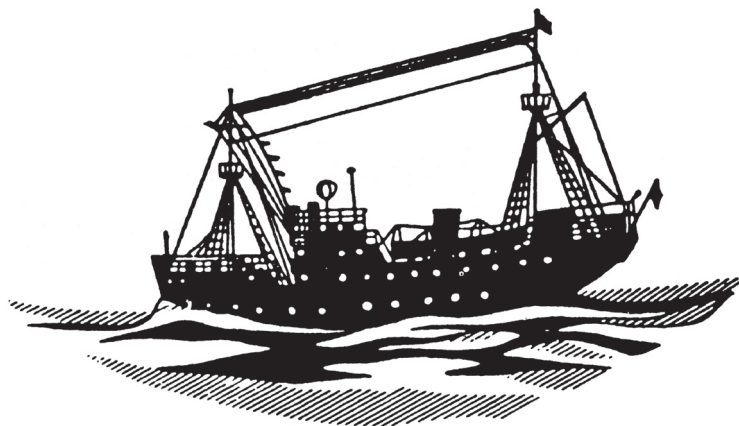
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DATA RECORD
OF
OCEANOGRAPHIC OBSERVATIONS AND
EXPLORATORY FISHING

No. 55

海 洋 調 査 漁 業 試 験 要 報

第 55 号



FACULTY OF FISHERIES SCIENCES,
GRADUATE SCHOOL OF FISHERIES SCIENCES,
SCHOOL OF FISHERIES SCIENCES, HOKKAIDO UNIVERSITY

Hakodate, Japan
March 2013

北海道大学大学院水産科学研究院・大学院水産科学院・水産学部

函 館 市

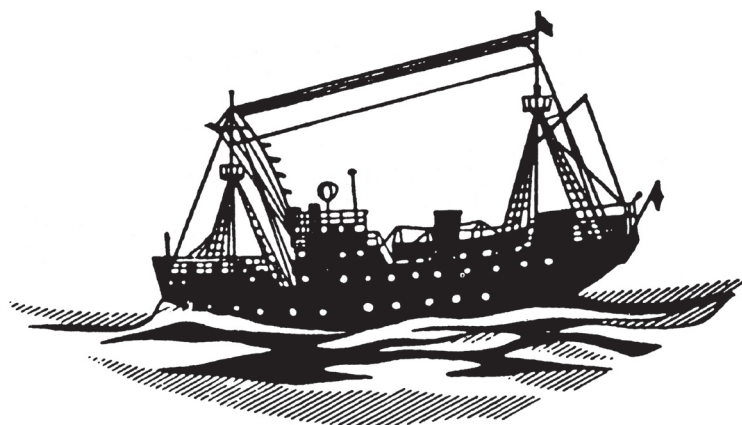
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NOTICE

This publication is being undertaken for the sake of making available to interested persons, as soon as possible, some preliminary data derived from oceanographic, biological or exploratory fishing researchers carried out on the regular or occasional cruises of the training ships of the Faculty of Fisheries, Hokkaido University.

The priority of these data belongs to the research scientists and officers on board. Please ask for permission to the Chief Editor of this Volume, when you quote the data from this "Data Record".

本学部練習船を用いて行われた海洋観測，生物調査，漁業試験の結果が，各研究担当者によって研究論文として纏められ，印刷公表されるまでにはかなりの時日を要し，且研究論文には個々の測定値が表示されない場合が多いことを考慮し，練習船の調査航海毎に調査成果を本要報として逐次刊行し，各方面の参考に供することとした。

本要報のデータは乗船研究者並びに士官に帰属している。本報に掲載されたデータを引用する場合は編集委員長に許可を求められたい。

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EXPLANATION OF HEADINGS

1. Oceanographic data

The Practical Salinity scale, 1978 and the new International Equation of State of Seawater, 1980 have been used in oceanographic data processing.

DATA	Year shown in tens and units only, month and day in numerals by G.M.T
TIME	Hour and tens of hour in G.M.T
S.M.T	Ship's mean time
DEPTH	Depth to the bottom by echosounder but reading only without correction
COL.	Water color in Forel-Ule scale
TR.	Transparency in meters with Secchi disc
S.T.	Surface temperature
T.D.	Time Difference between Greenwich Mean Time (G.M.T.) and S.M.T.
SEA	Wave direction in a scale of 36 points and sea state in WMO Code 3700
SWELL	Direction in 36 points and amount in JMA Code for swell (Douglas scale)
WIND	Direction in 36 points and wind force in Beaufort scale
AIR TEMP.	Air temperatures recorded from dry and wet bulb thermometers in °C
BAR.	Barometric pressure in hectopascal to the tenth of degree
WEATHER	Weather in WMO Code 4501 r: rain d: drizzling rain f: fog o: 100% clouded c: 75-99% clouded bc: 25-75% clouded b: 0-25% clouded
SIG-T	Sigma-t is defined as $\sigma_t = \rho_{s,t,0} - 1,000$ [kg/m ³]

2. Biological Characteristics of Fishes

No	Number of research operation
Mesh	Mesh size of net used in stretched mesh
B	Research remarks for surface long-line fishing
SPECIES	Fish species
F.L.	Fork length
B.L.	Body length
M.L.	Mantle length
B.W.	Body weight
SEX	F:Female, M:Male, B:Bisexual
G.W.	Gonad weight
AGE	Designation according to Gilbert - Rich's formula (Koo, 1962)

SCIENTIFIC NAME AND COMMON NAME

1. Drift gillnet research

Scientific name	English name	Japanese name
Mollusca		
COLEOIDEA		(Ika)
<i>Todarodes pacificus</i> Steenstrup	Japanese common squid	Surumeika
<i>Onychoteuthis borealijaponica</i> Okada	Boreal clubhook squid	Tsumeika
<i>Gonatopsis borealis</i> Sasaki	Eight-armed squid	Takoika
<i>Ommastrephes bartrami</i> (Lesueur)	Flying squid	Akaika
<i>Symplectoteuthis luminosa</i> Sasaki	Luminous flying squid	Sujiika
Pisces		
<i>Prionace glauca</i> (Linnaeus)	Blue shark	Yoshikirizame
<i>Isurus oxyrinchus</i> Rafinesque	Atlantic mako shark	Aozame
<i>Lamna ditropis</i> Hubbs et Follett	Salmon shark	Nezumizame
<i>Squalus acanthias</i> Linnaeus	Spiny dogfish	Aburatsuno zame
<i>Isistius brasiliensis</i> (Quoy et Gaimard)	Cigar shark	Darumazame
<i>Echeneis naucratus</i> Linnaeus	Sharksucker	Kobanzame
<i>Sardinops melanostictus</i> (Temminck et Schlegel)	Japanese scaled sardine	Maiwashi
<i>Engraulis japonica</i> (Houttuyn)	Japanese anchovy	Katakuti iwashi
<i>Oncorhynchus gorbuscha</i> (Walbaum)	Pink salmon	Karafutomasu
<i>Oncorhynchus kisutch</i> (Walbaum)	Coho salmon	Ginzake
<i>Oncorhynchus keta</i> (Walbaum)	Chum salmon	Shirozake
<i>Oncorhynchus tshawytscha</i> (Walbaum)	Chinook salmon	Masunosuke
<i>Diaphus watasei</i> Jordan et Starks	Lantern fishes	Hadakaiwashi
<i>Anotopterus pharao</i> Zugmayer	Daggertooth	Mizu uodamashi
<i>Alepisaurus ferox</i> Lowe	Pacific lancetfish	Mizuuo
<i>Cololabis saira</i> (Brevoort)	Pacific saury	Sanma
Exocoetidae	Flyingfishes	(Tobiuo)
<i>Pleurogrammus monopterygius</i> (Pallas)	Atka mackerel	Kitanohokke
Caranginae	Carangidae	(Aji)
<i>Naucratus ductor</i> (Linnaeus)	Pilotfish	Burimodoki
<i>Seriola lalandi</i> Valenciennes	Yellowtail	Hiramasa
<i>Seriola dumerili</i> (RissO)	Amberjack	Kanpati
<i>Pseudocaranx dentex</i> (Bloch et Schneider)	Striped jack	Shimaaji
<i>Coryphaena equiselis</i> Linnaeus	Pompano dolphin	Ebisusiira
<i>Coryphaena hippurus</i> Linnaeus	Dolphinfish	Siira
<i>Brama japonica</i> Hilgendorf	Pacific pomfret	Shimagatsuo
Taractes	Taractes sp.	(Manzauiuo)
<i>Tetrapturus audax</i> (Philippi)	Striped marlin	Makajiki
<i>Tetrapturus angustirostris</i> Tanaka	Shortbill spearfish	Fuuraikajiki
<i>Xiphias gladius</i> Linnaeus	Swordfish	Mekajiki
<i>Scomber japonicus</i> Houttuyn	Chub mackerel	Masaba
<i>Scomber australasicus</i> Cuvier	Slimy mackerel	Gomasaba
Auxis	Auxis sp.	(Soudagatsuo)
<i>Katsuwonus pelamis</i> (Linnaeus)	Skipjack tuna	Katsuo
<i>Thunnus alalunga</i> (Bonnaterre)	Albacore	Bintyou
<i>Gempylus serpens</i> Cuvier	Snake mackerel	Kurotatikamasu
<i>Tetragonurus cuvieri</i> Risso	Smalleye squaretail	Dokuuroko
<i>Icichthys lockingtoni</i> Jordan et Gilbert	Black ruffe	Kuromedai
<i>Hyperoglyphe japonica</i> (Doderlein)	Japanese butterfish	Medai
<i>Icosteus aenigmaticus</i> Lockington	Ragfish	Irezumikonnyakuaji
<i>Aluterus monoceros</i> (Linnaeus)	Unicorn filefish	Usubahagi
<i>Aluterus scriptus</i> Osbeck	Figured scriptus	Soushihagi
<i>Gasterosteus aculeatus</i> Linnaeus	Three-spined stickleback	Itoyo
<i>Mola mola</i> (Linnaeus)	Southern sunfish	Manbou
Aves		
<i>Oceanodroma leucorhoa</i>	Leach's Fork-tailed Petrel	Shijiroumitsubame
<i>Brachyramphus brevirostris</i>	Kittlitz's Murrelet	Kobashiumisuzume
<i>Puffinus tenuirostris</i>	Short-tailed shearwater	Hashibosomizunagi
<i>Puffinus griseus</i>	Grey Fork-tailed Petrel	Hairomizunagidori
<i>Fratercula corniculata</i>	Horned puffin	Tsunomedori
<i>Lunda cirrhata</i>	Tufted puffin	Etopirika
Mammalia		
<i>Delphinus delphis</i> Linnaeus	Common dolophin	Mairuka
<i>Phocoenoides dalli</i> True	Dall's porpoise	Ishiiruka

2. Longline research

Scientific name	English name	Japanese name
Mollusca		
Octopoda	Octopus	(Tako)
Pisces		
Lamniformes	Sharks	(Same)
Alepisaurus ferox Lowe	Longnose lancetfish	Mizuuo
Rajiformes	Rays	(Ei)
Coryphaenidae	Dolphins	(Shiira)
Taractichthys steindachneri (Döderlein)	Sickle pomfret	Hirejiromanzaiuo
Tetrapturus audax (Philippi)	Striped marlin	Makajiki
Makaira mazara (Jordan et Snyder)	Black marlin	Kurokajiki
Xiphias gladius Linnaeus	Swordfish	Mekajiki
Acanthocybium solandri (Cuvier)	Wahoo	Kamasusawara
Euthynnus pelamis (Linnaeus)	Skipjack tuna	Katsuo
Thunnus albacares (Bonnaterre)	Yellowfin tuna	Kihada
Thunnus obesus (Lowe)	Bigeye tuna	Mebachi
Gempylus serpens Cuvier	Snake mackerel	Kurotachikamasu
Reptilia		
Cheloniidae	Turtles	(Umigame)

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

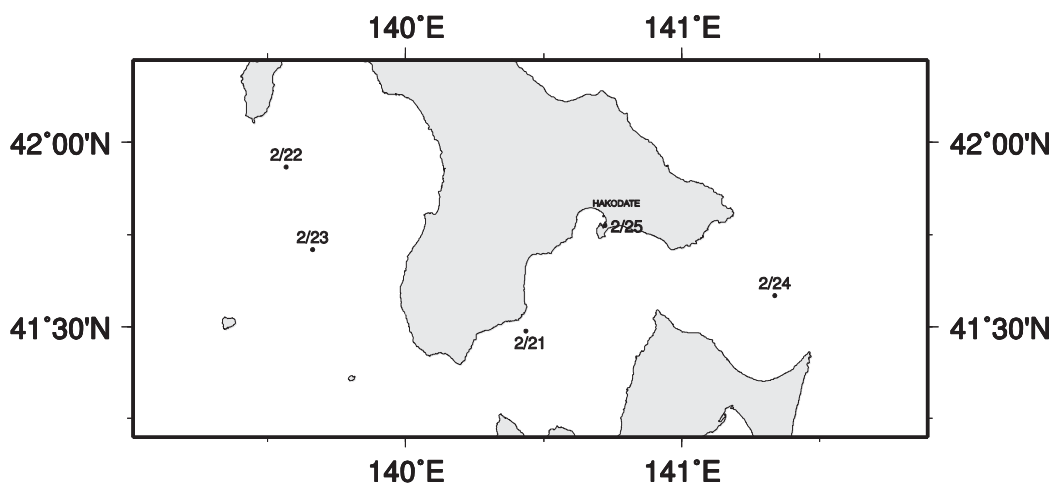


Figure 1. Noon position

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*”.

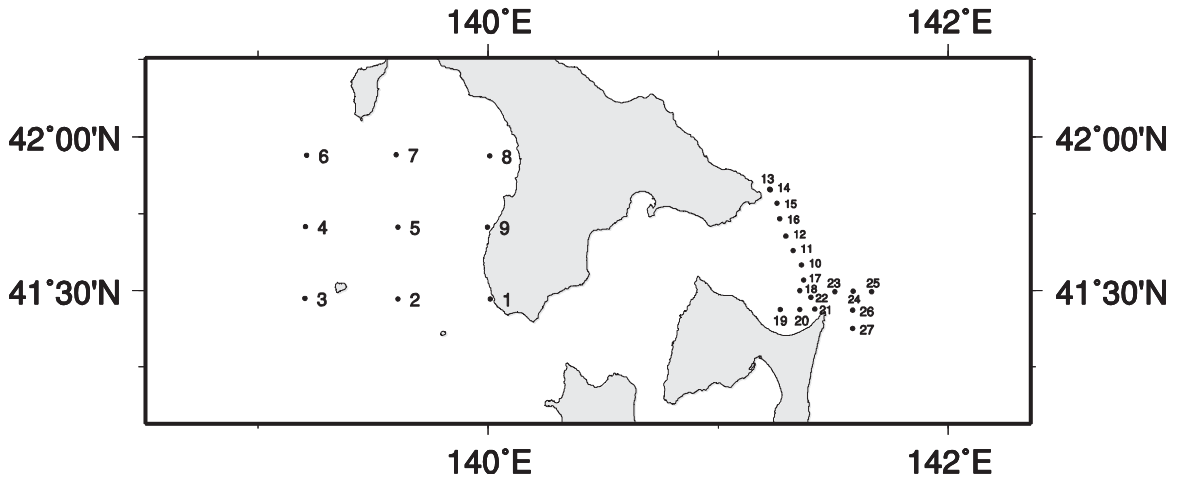


Figure 2. Oceanographic stations

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.

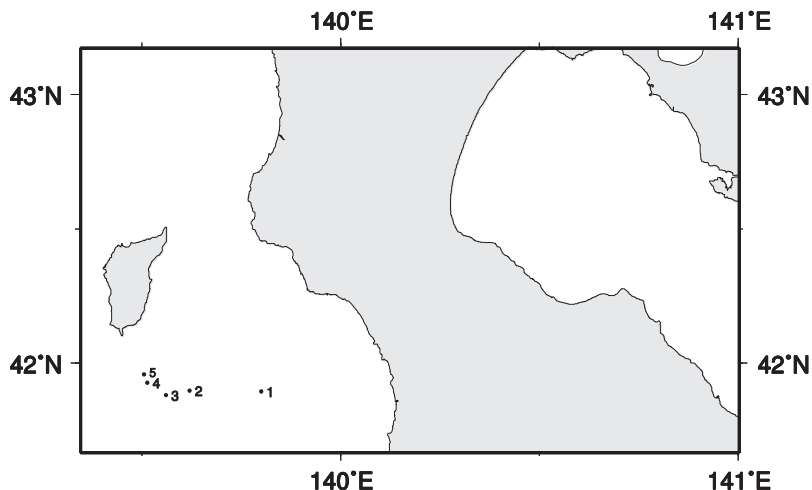


Figure 3. Locations of drift gillnet research

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

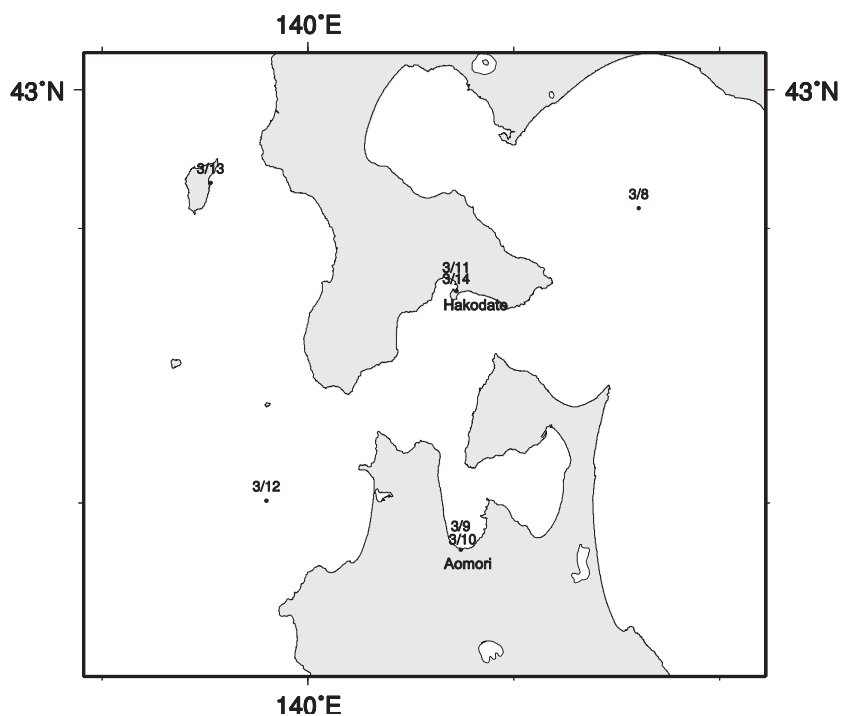


Figure 1. Noon position

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*”.

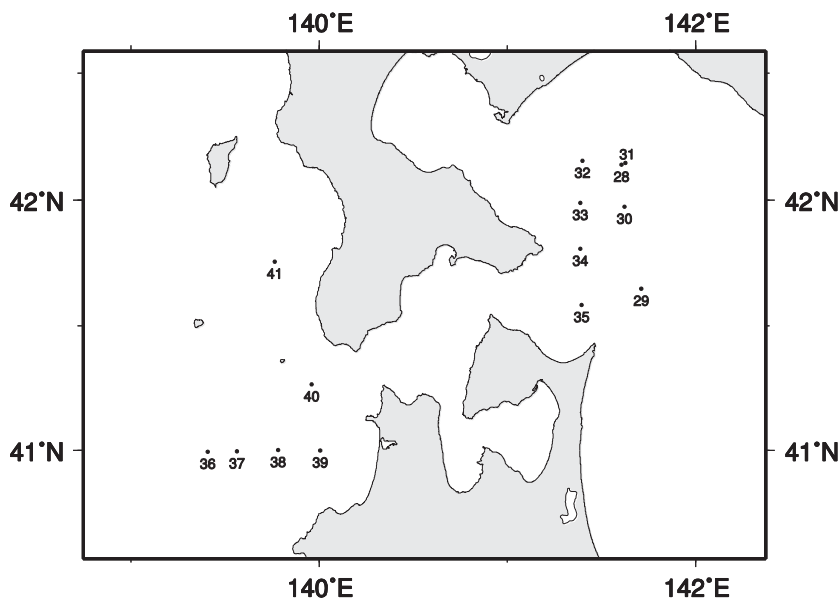


Figure 2. Oceanographic stations

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.

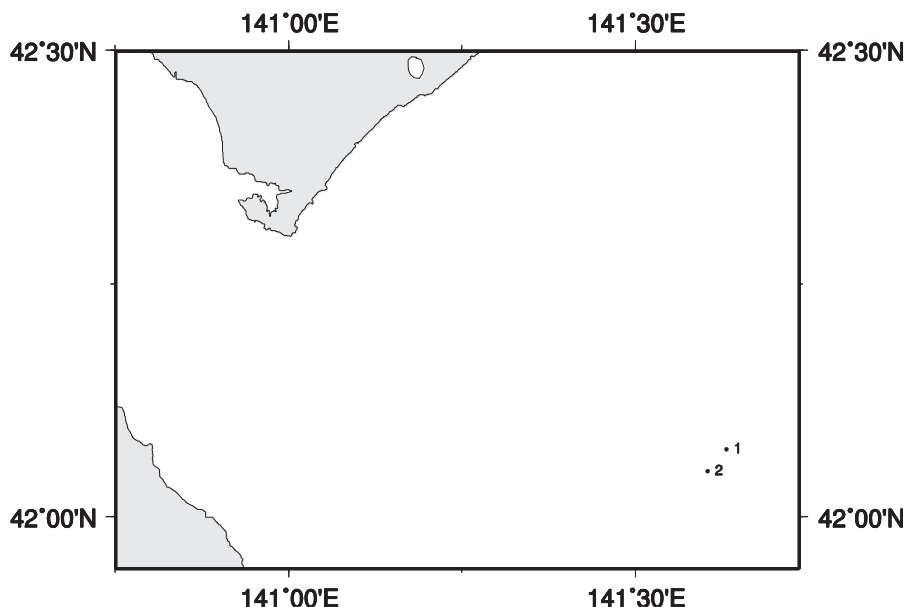


Figure 3. Locations of bottom trawl research

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 "OSHO RO 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

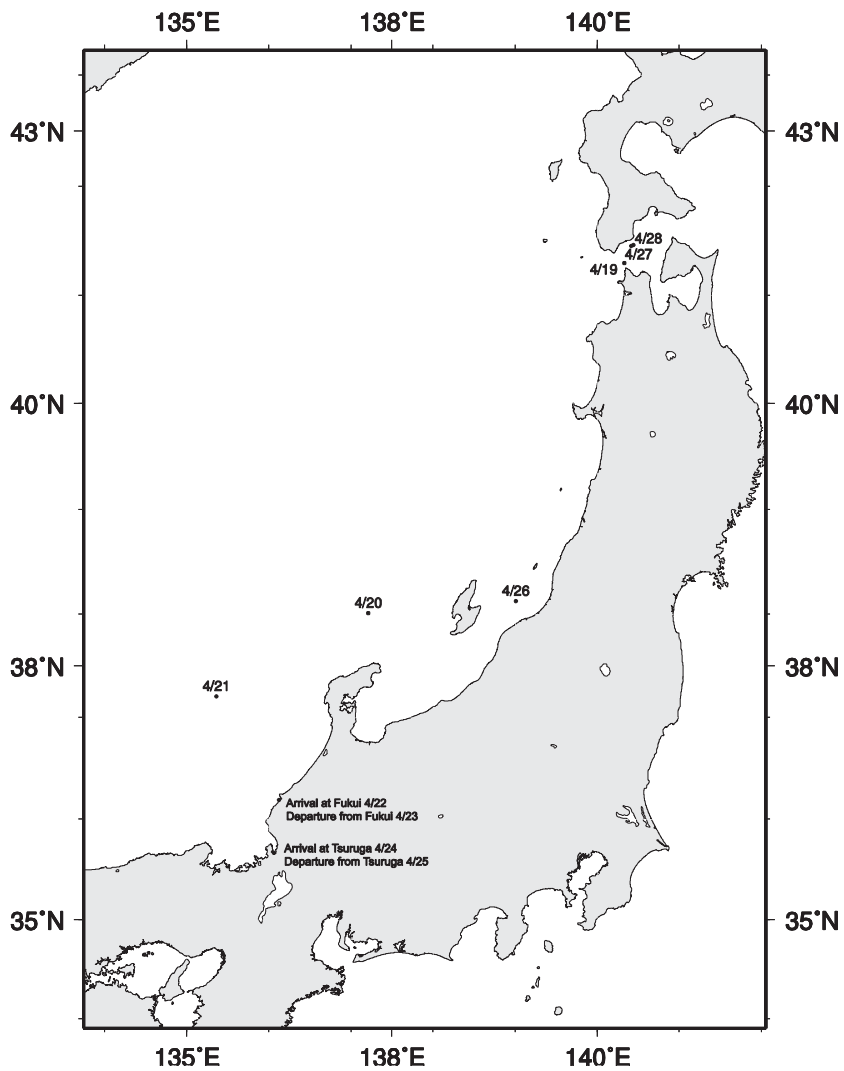


Figure 1. Noon position

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*”.

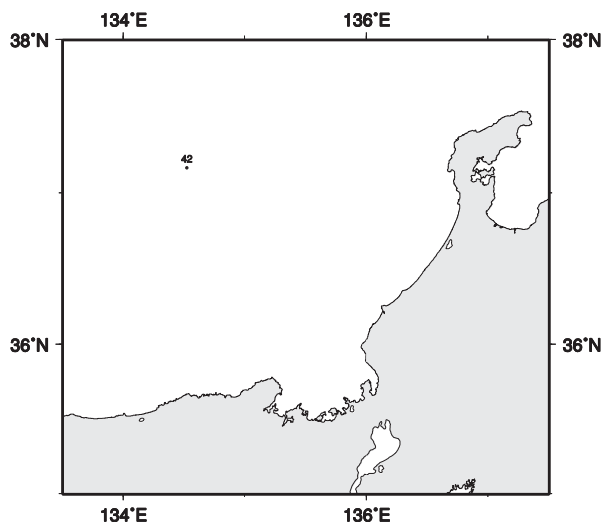


Figure 2. Oceanographic stations

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

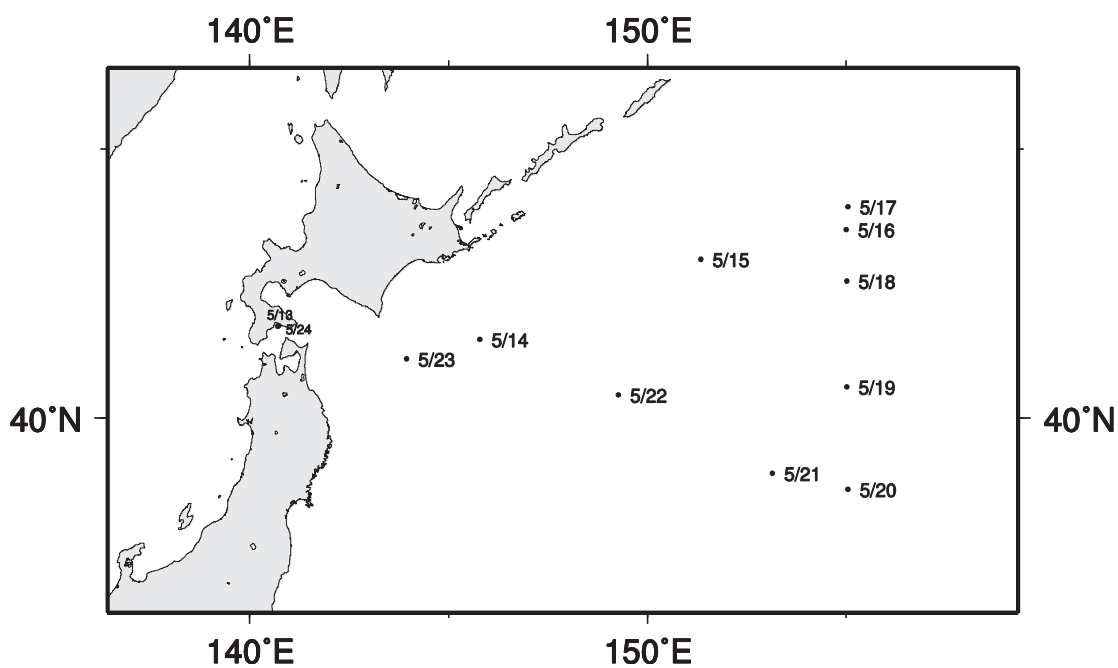


Figure 1. Noon position

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.

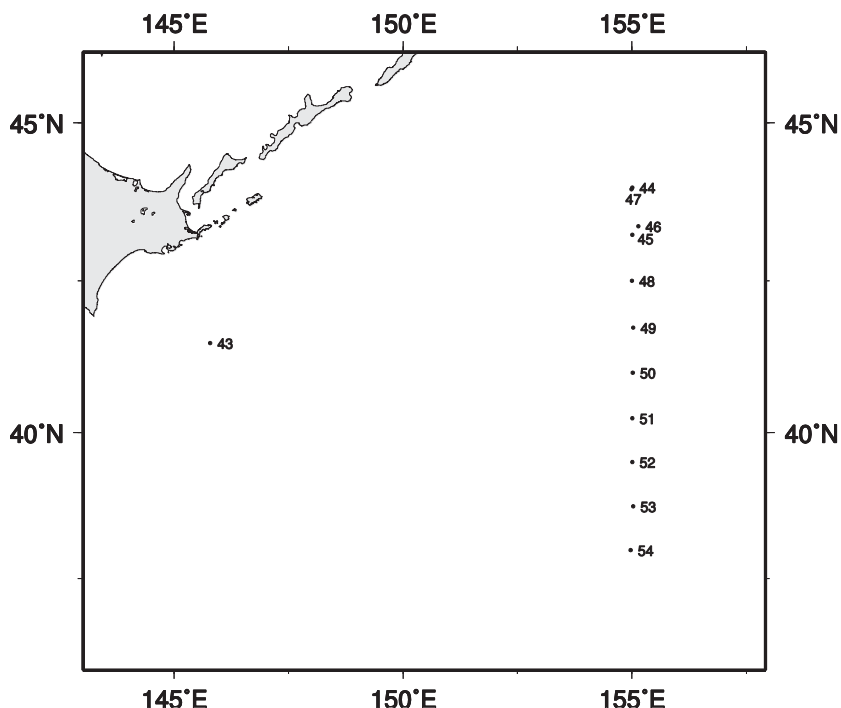


Figure 2. Oceanographic stations

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 41-29.9 N				Latitude 44-00.1 N				Latitude 43-15.0 N				Latitude 43-23.2 N			
Longitude 145-46.3 E				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 154-59.7 E				Longitude 155-01.6 E				Longitude 155-00.3 E			
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	5.547	-	-	300	7.775	34.033	26.547	300	7.889	33.905	26.426	300	8.914	34.088	26.418
400	4.450	-	-	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.

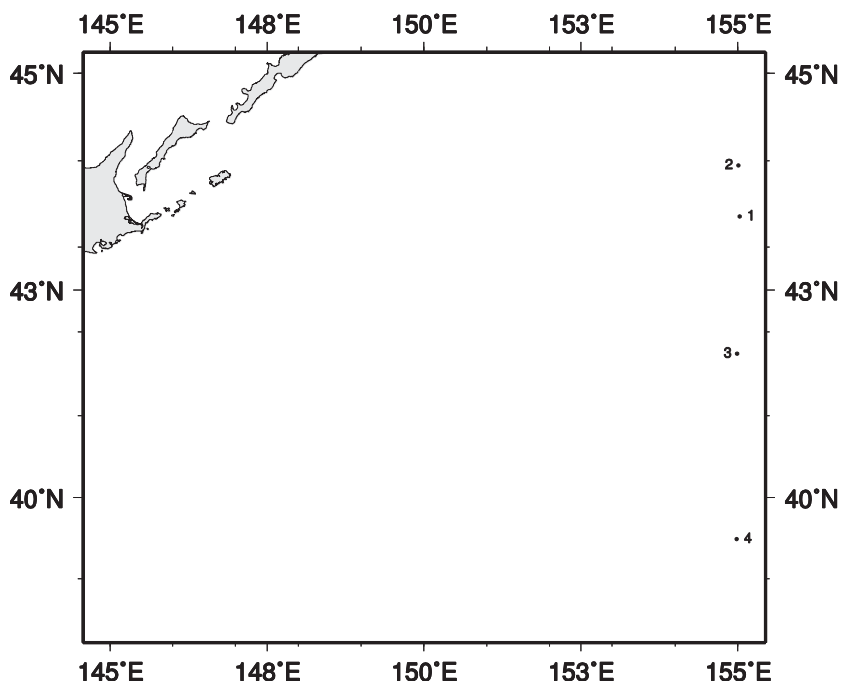


Figure 3. Locations of drift gillnet research

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		A-Gear				Mesh size (mm)										F-Gear								Total
		112	115	118	121	C-gear																		
						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		A-Gear				Mesh size (mm) C-gear										F-Gear								Total
		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	0	3	3	142	289	65	2	0	0	0	-	-	-	-	-	-	-	505	
OSG1102	0	0	0	0	0	0	0	0	14	46	26	2	0	0	0	-	-	-	-	-	-	-	88	
OSG1103	1	0	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	0	
OSG1105	0	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	0	
OSG1107	0	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	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>Gonatosia 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>Gonatosia 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
Pilotfish	<i>Naucrates 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>Pseus 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.

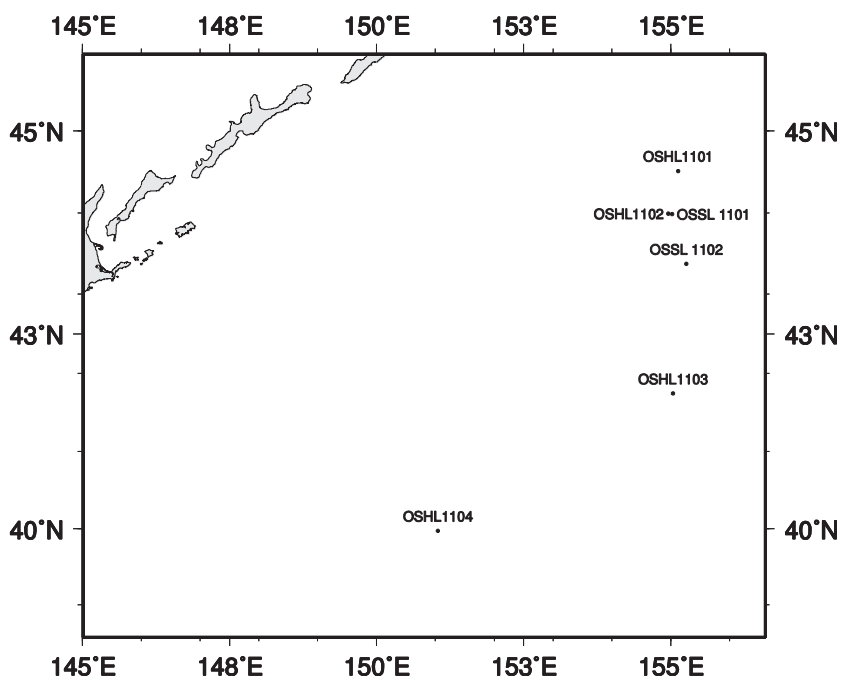


Figure 4. Locations of salmon hook-and-line and surface longline research

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

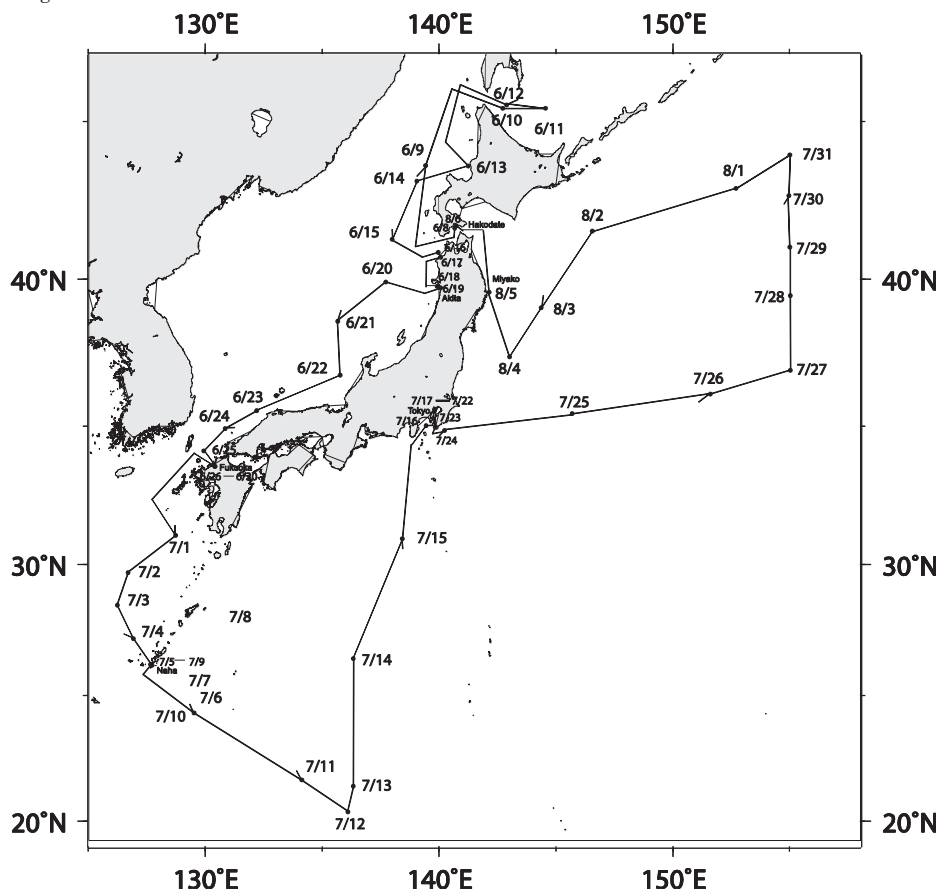


Figure 1. Track and Noon position

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)
Graduate Students	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)
Under Graduate Students	Naha - Tokyo	Osamu Numamoto
	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.

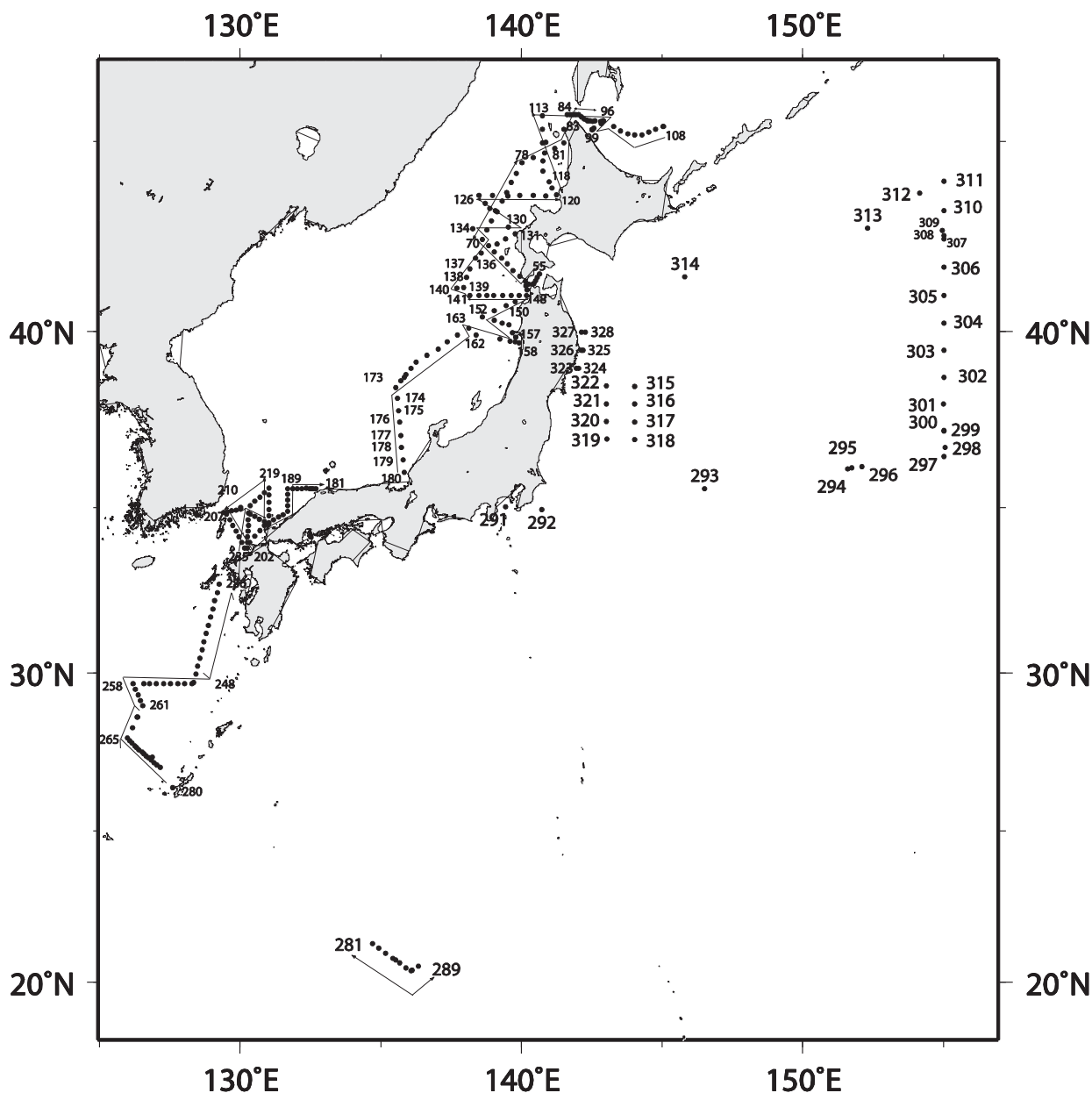


Figure 2. Oceanographic stations

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 43-50.2N			
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	10.045	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 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

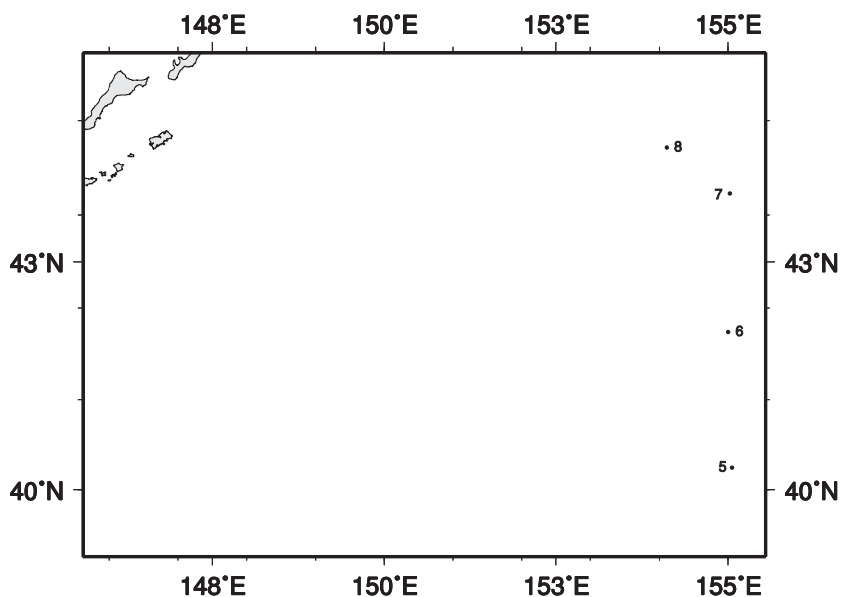


Figure 3. Locations of drift gillnet research

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

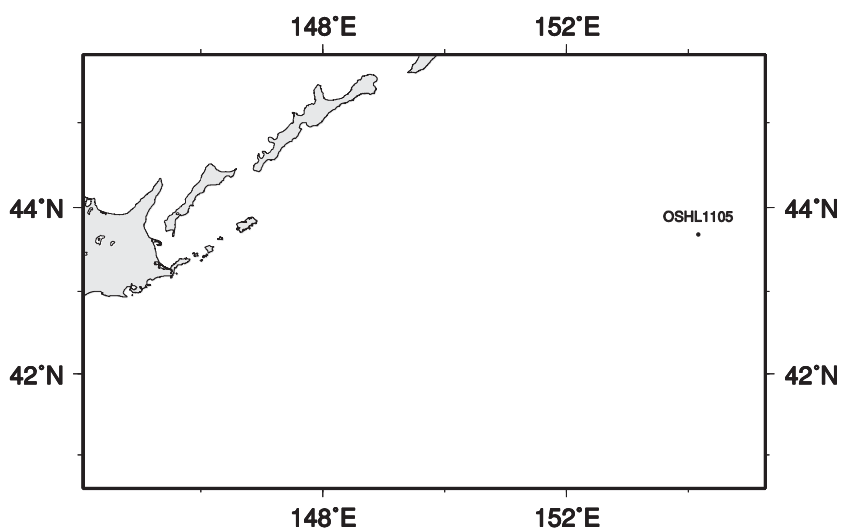


Figure 4. Locations of hook-and-line research

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.

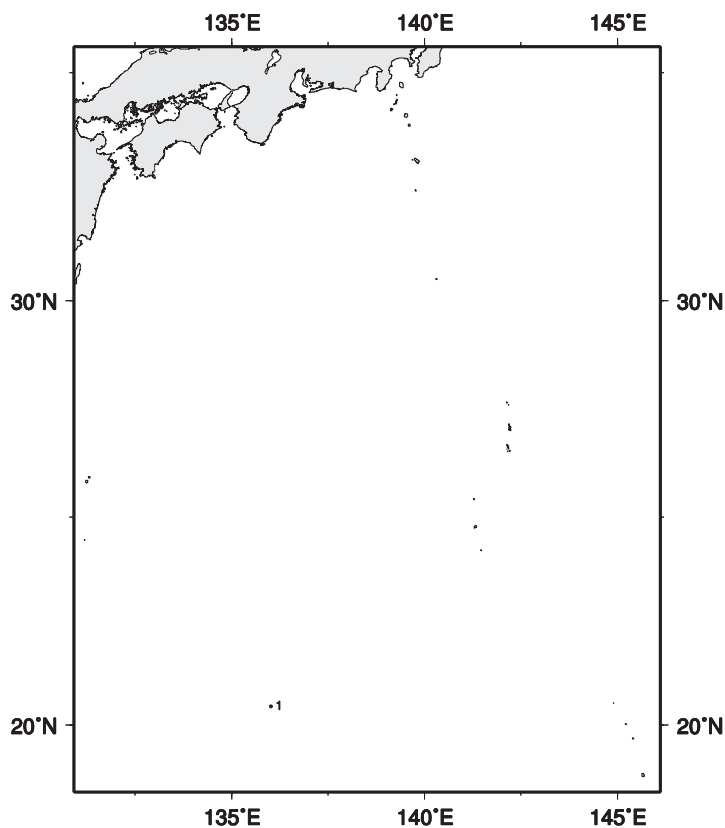


Figure 5. Location of mid-water trawl research

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 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	
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

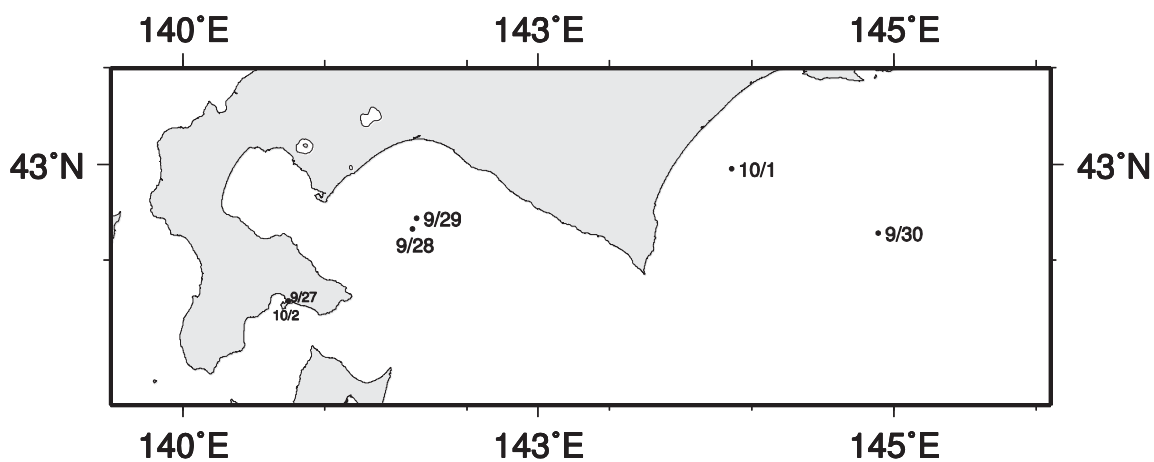


Figure 1. Noon position

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.

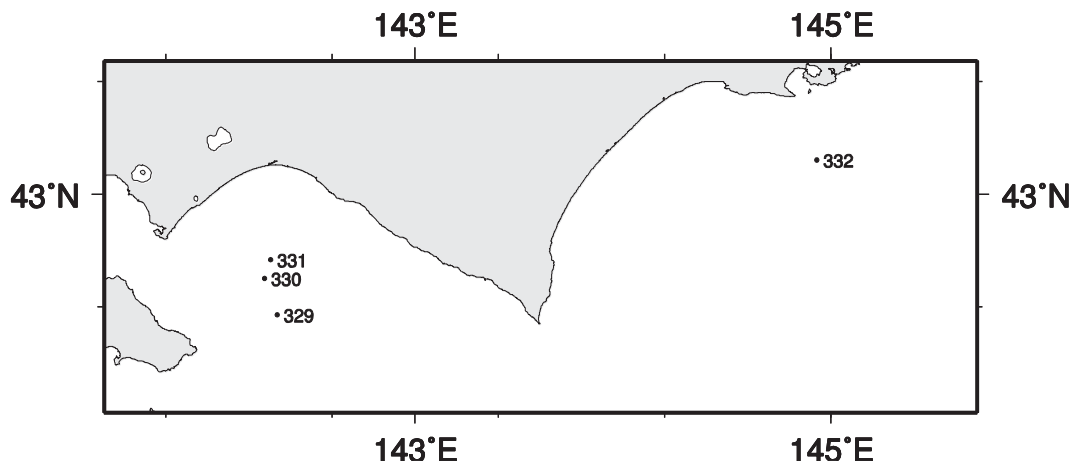


Figure 2. Oceanographic stations

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.

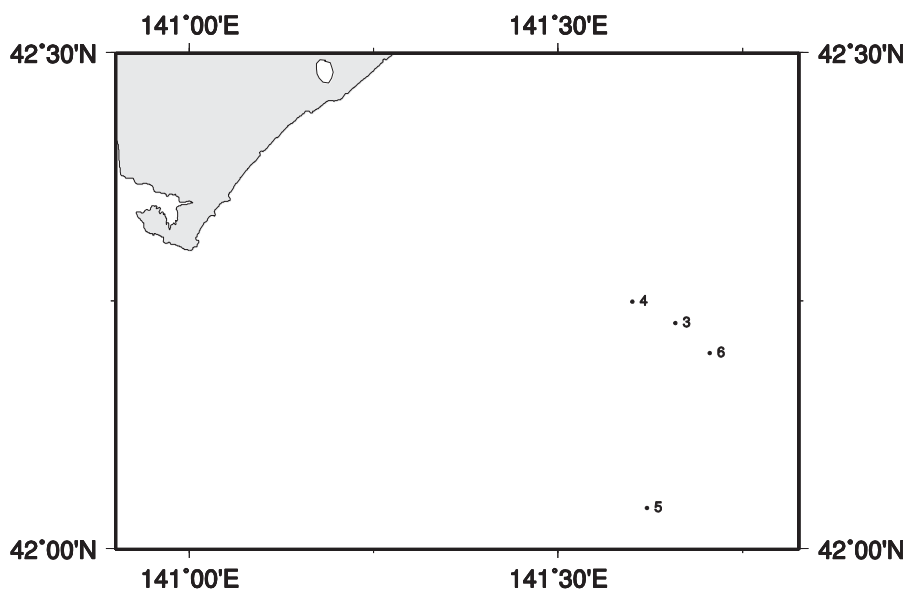


Figure 3. Locations of bottom trawl research

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>Synphobranchius 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	<i>Trichiuridae</i> 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	<i>Buccinidae</i> 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.

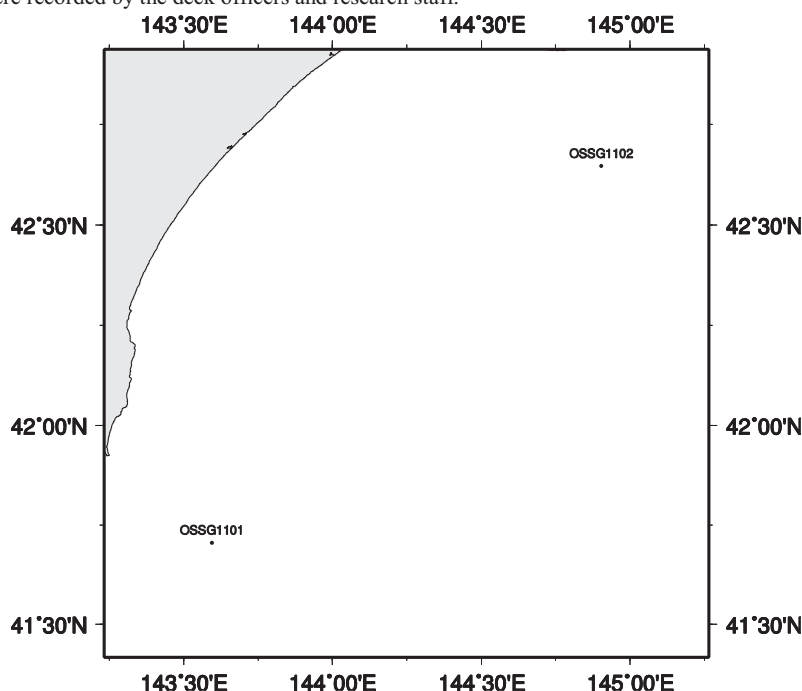


Figure 4. Locations of floating gillnet research

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.

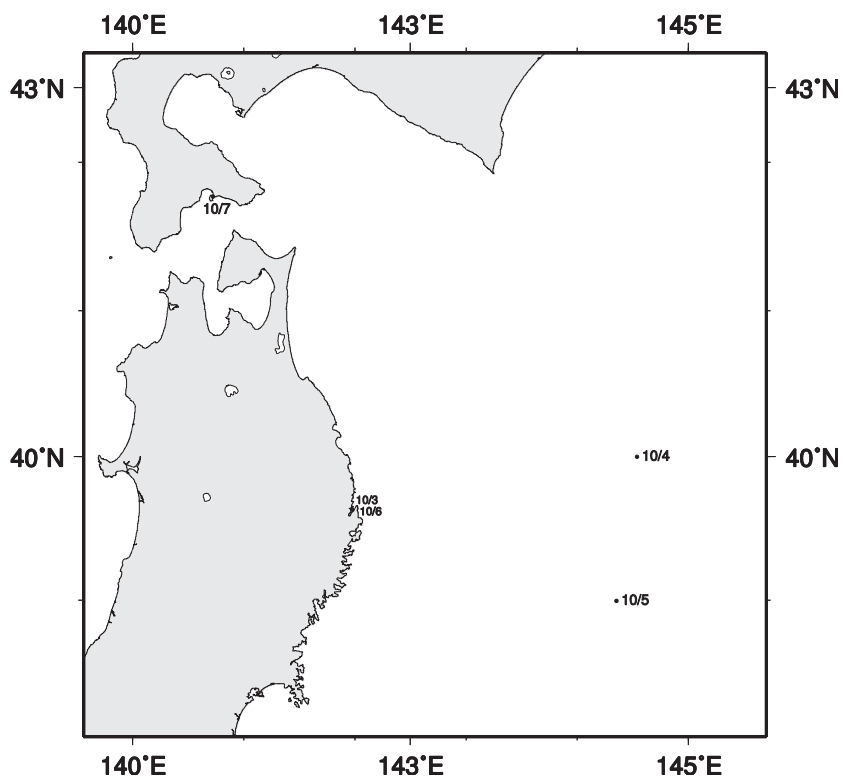


Figure 1. Noon position

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.

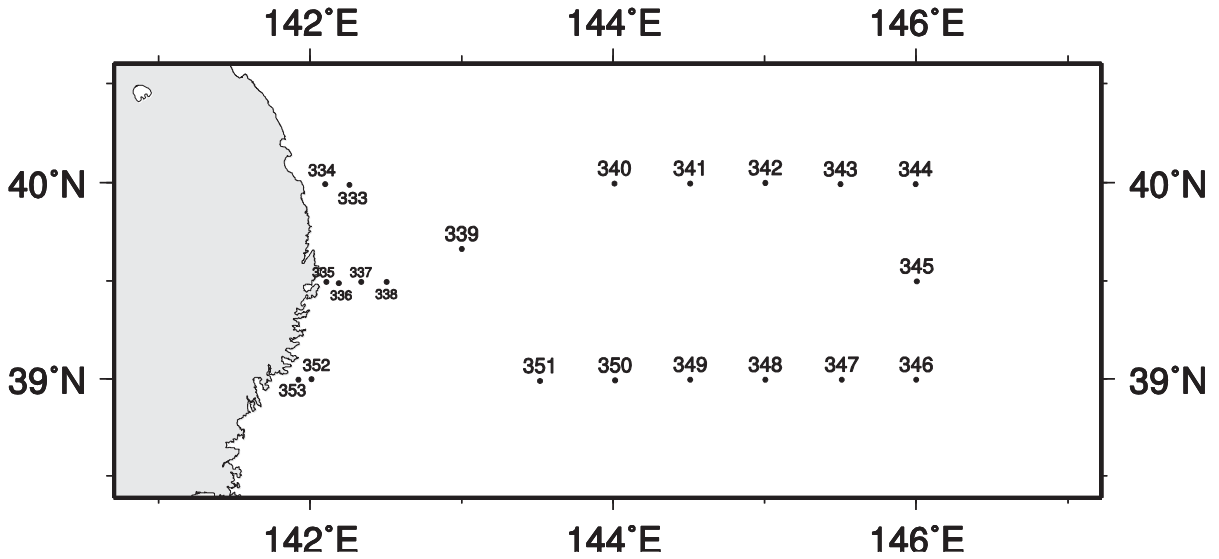


Figure 2. Oceanographic stations

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

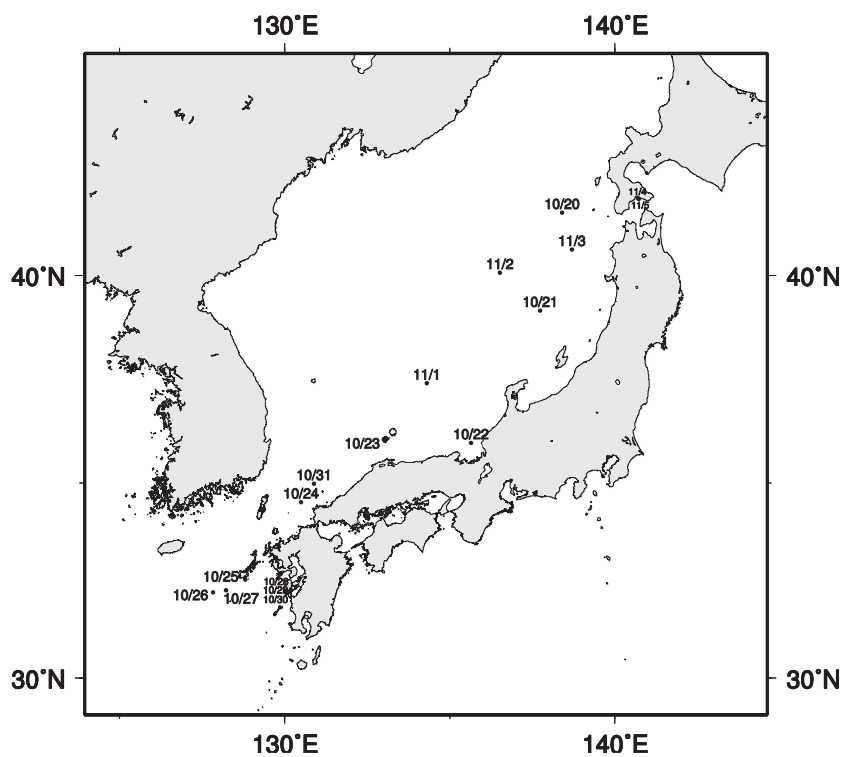


Figure 1. Noon position

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.

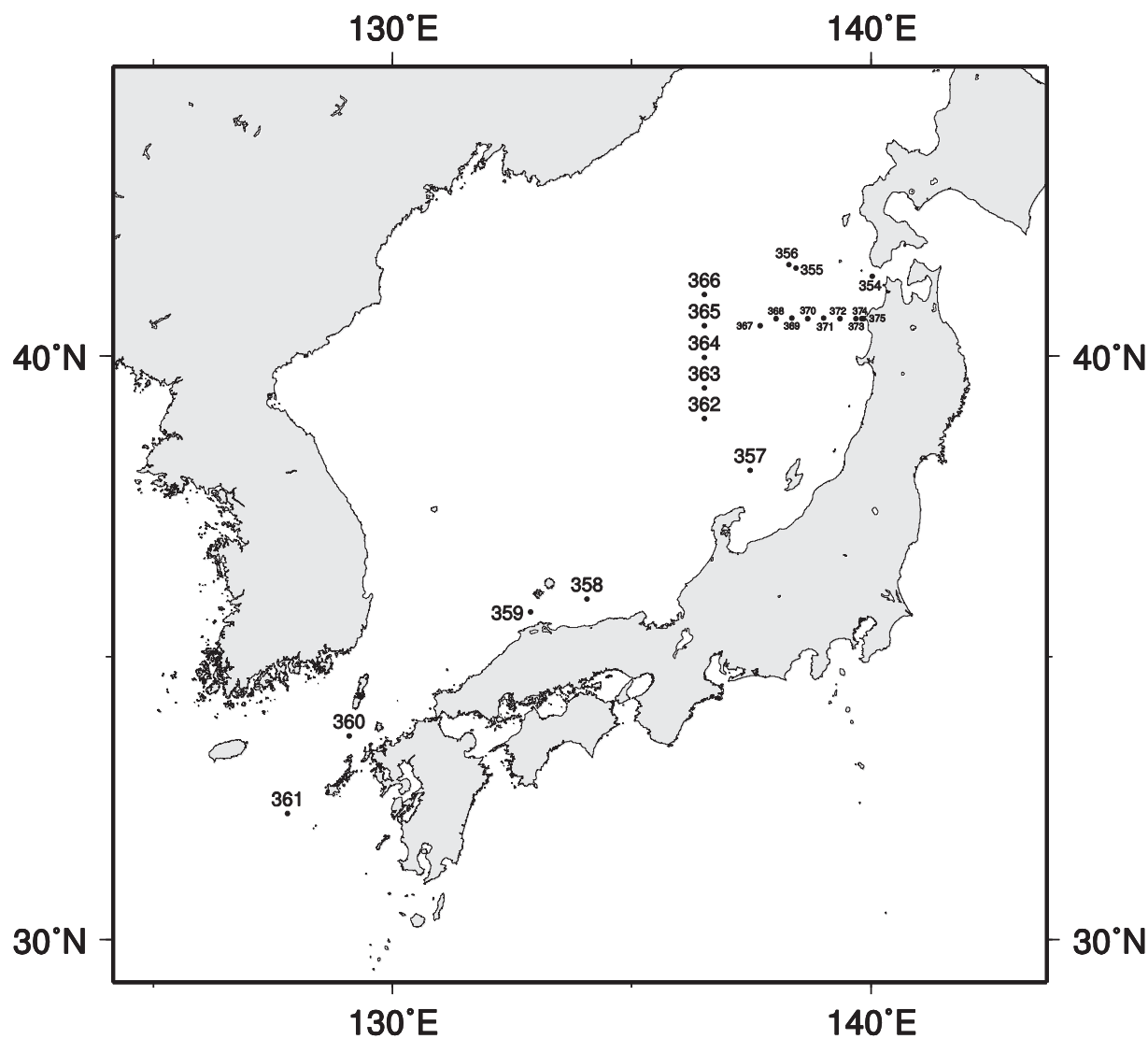


Figure 2. Oceanographic stations

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			OS11375
Latitude			40-37.3 N
Longitude			139-00.1 E
Depth(m)			3259
Press.	Temp.	Sal.	SIG-T
5	18.359	33.342	23.915
10	18.362	33.342	23.914
20	18.308	33.350	23.933
30	18.245	33.361	23.957
40	18.085	33.490	24.095
50	16.510	34.304	25.095
75	14.835	34.444	25.579
100	12.785	34.372	25.949
125	11.075	34.290	26.209
150	10.252	34.252	26.325
175	9.311	34.204	26.445
200	7.241	34.103	26.679
250	3.324	34.032	27.082
300	1.909	34.033	27.204
400	1.223	34.050	27.290
500	0.882	34.059	27.296
600	0.692	34.062	27.310
700	0.556	34.062	27.319
800	0.472	34.063	27.324
900	0.417	34.063	27.327
1000	0.367	34.063	27.330

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.

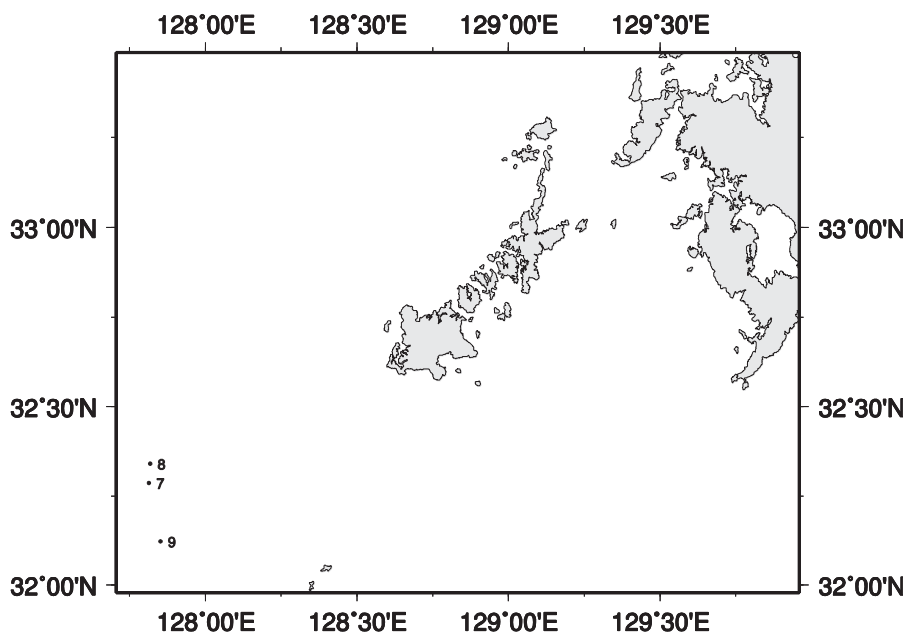


Figure 3. Locations of bottom trawl research

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

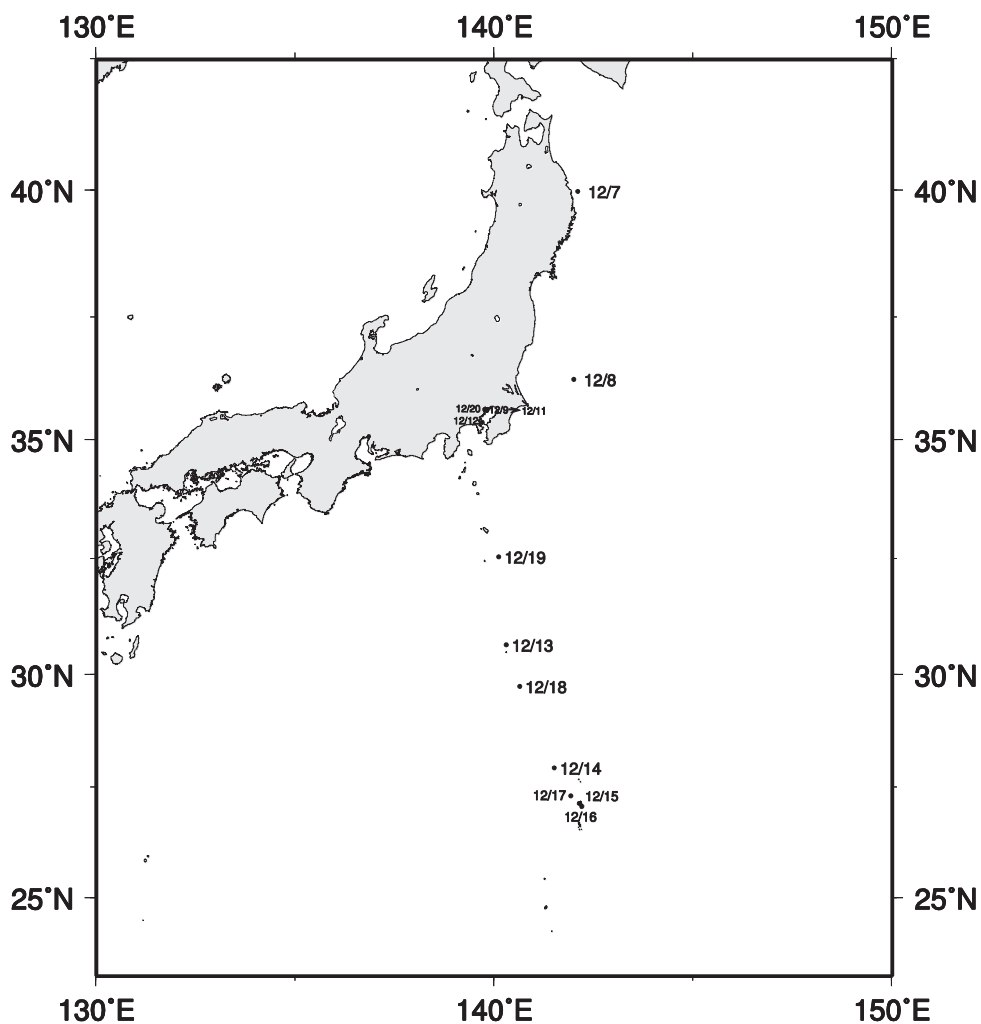


Figure 1. Noon position

		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.

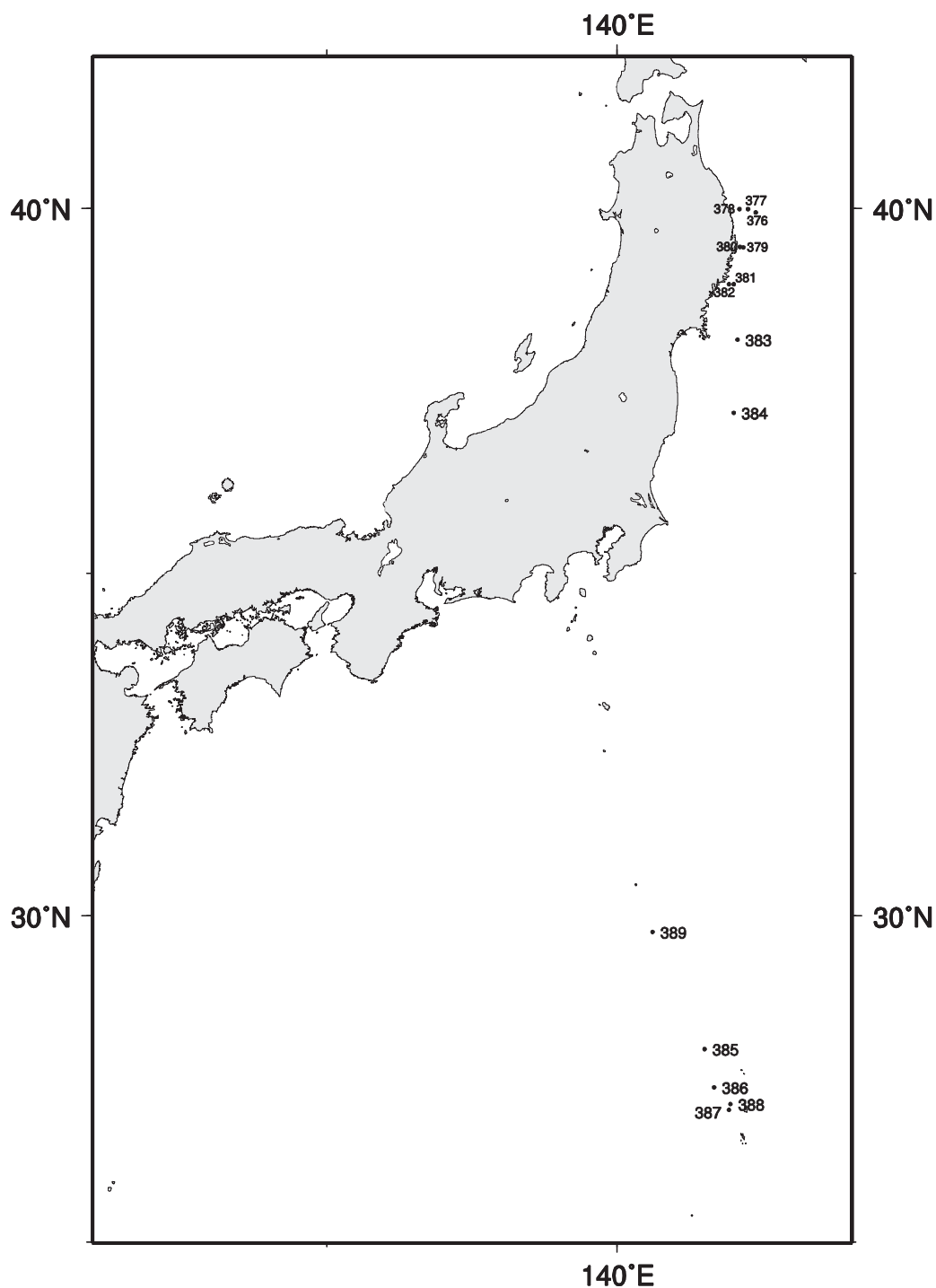


Figure 2. Oceanographic stations

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	

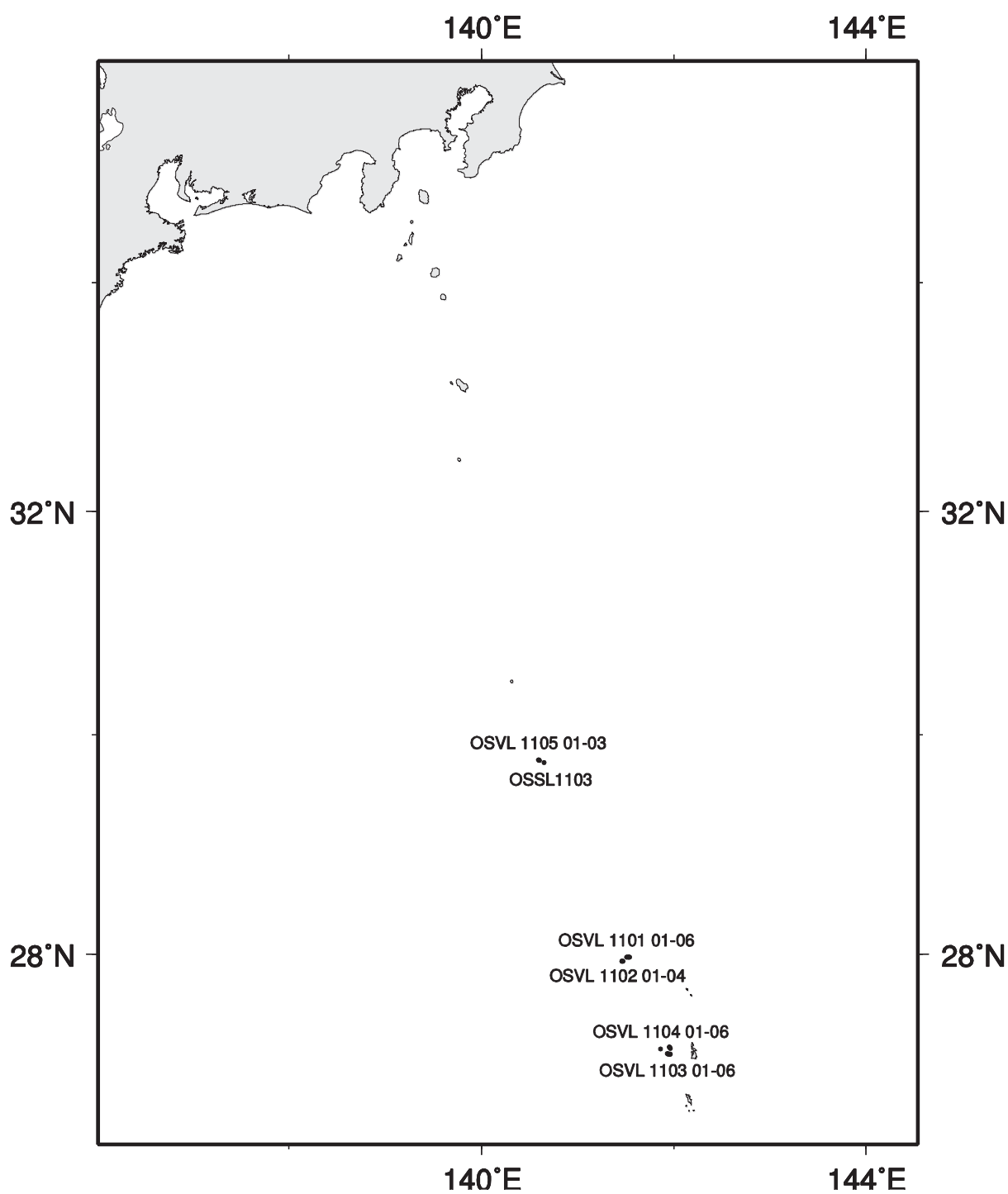


Figure 3. Locations of long-line research

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.

PART II

USHIO MARU CRUISE FROM JANUARY TO DECEMBER IN 2011

I . Crew's List

Captain :		Toshimi Meguro (Cruise 215 – 223)
		Yoshihiko Kamei (Cruise 224 -)
Crew :	Chief Officer	Osamu Kimura
	Second Officer	Naoto Kobayashi
	Chief Engineer	Hideo Ito
	First Engineer	Senetsu Nakai
	Second Engineer	Junpei Shimura (Cruise 215 - 232)
		Kazuya Sawanaka (Cruise 233 -)
	Chief Radio Officer	Nagahide Yamane
	Boatswain	Yoshitaka Yoshida (Cruise 215 – 223)
		Sen Sunakoma (Cruise 224 -)
	Jr. Boatswain	Yukio Tabata
	Quartermaster	Naoyuki Eda
	Sailor	Takahiro Kanazawa
	No.1 Oiler	Nobuyuki Sawada
	No.2 Oiler	Konichi Tomosugi
	Oiler	Akira Sugihara (Cruise 215 - 232)
		Keisuke Shindo (Cruise 233 -)
	Chief Steward	Tsutomu Takahashi (Cruise 215 – 223)
		Kazuhiro Ikeda (Cruise 224 -)
	Head Steward	Kazuo Ishikawa

II . Particulars

Length (R.L.)	33.74 m
Length (O.L.)	39.39 m
Breadth (mid)	6.50 m
Depth (mid)	3.00 m
Gross Tonnage (Domestic)	179 tons
International Gross Tonnage	286 tons
Main engine	735 kw
Call Sign	JD2672

THE " USHIO MARU "

CRUISE 215

CRUISE 216

CRUISE 217

IN JANUARY 2011

1. Cruise Itinerary

Cruise 215

Departure from Hakodate	Jan.	5,	2011
Hydrographic research (US11001 - US11008)		5	
Arrival at Usujiri		5	
Departure from Usujiri		5	
Return to Hakodate		5	
Total coverage 156.7 miles			

Cruise 216

Departure from Hakodate	Jan.	11,	2011
Arrival at Fukushima		11	
Departure from and arrival at Fukushima		12	
Departure from Fukushima		14	
Hydrographic research (US11009 - US11013)		14	
Start gill net sampling (for catching fur seal)		14	
Finish gill net sampling (for catching fur seal)		15	
Return to Hakodate		16	
Total coverage 272.9 miles			

Cruise 217

Departure from Hakodate	Jan.	21,	2011
Arrival at Usujiri		21	
Departure from Usujiri		22	
Start hydrographic research (US11014)		22	
Anchorage at Muroran		22	
Departure from Muroran		23	
Finish hydrographic research (US11027)		23	
Return to Hakodate		23	
Total coverage 215.5 miles			

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

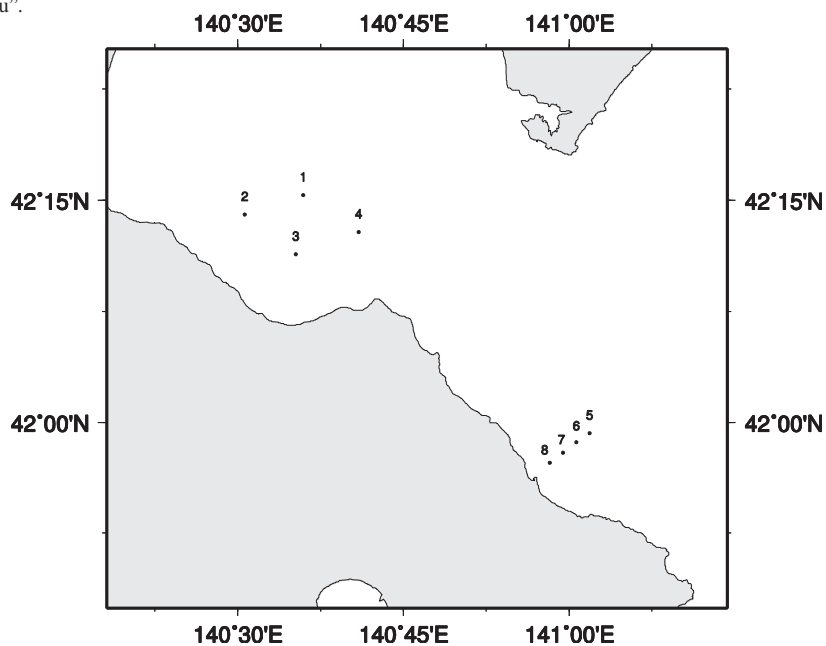


Figure 1. Oceanographic stations (Cruise 215)

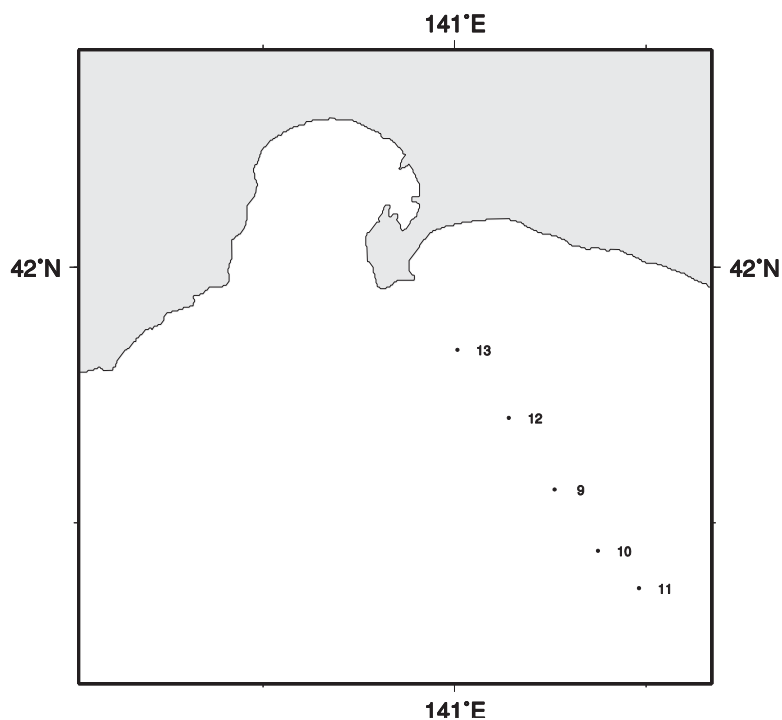


Figure 2. Oceanographic stations (Cruise 216)

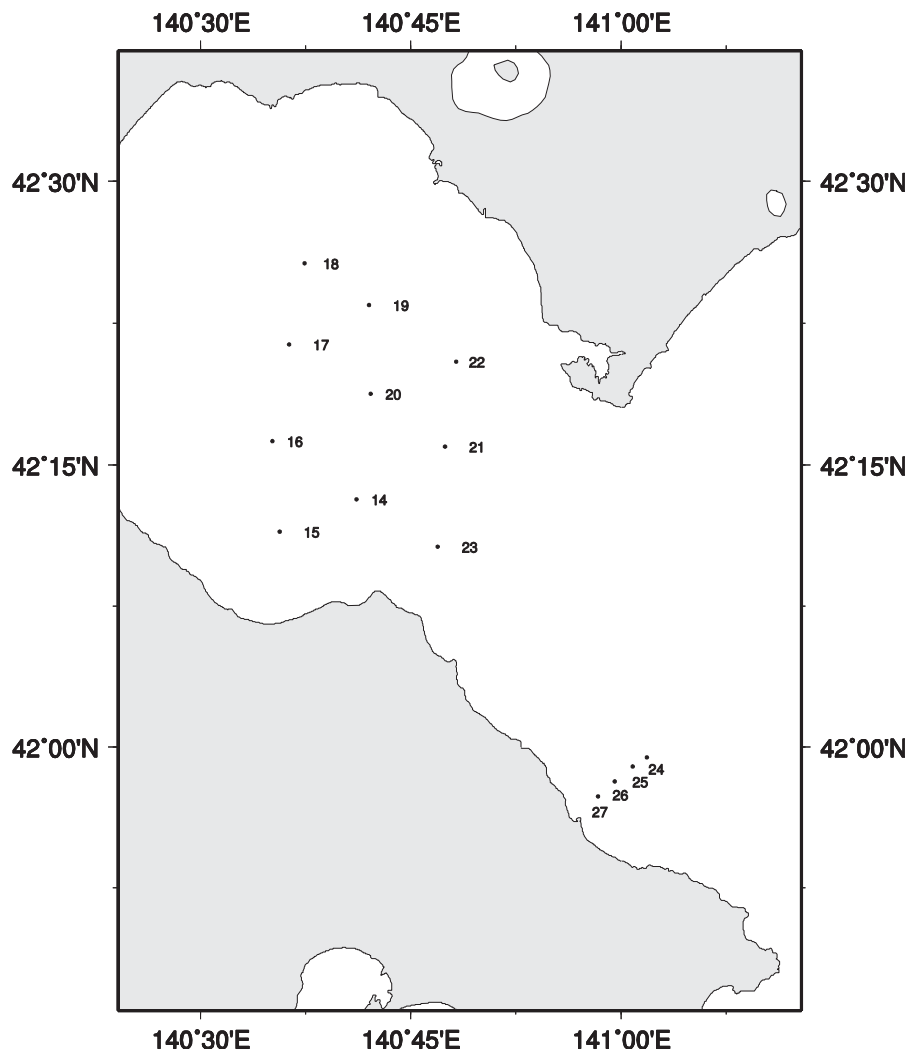


Figure 3. Oceanographic stations (Cruise 217)

Table 1: List of oceanographic stations

Cruise 215

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11001	42-15.4	140-35.9	1/5	1510-1514	93	West-3	West-1	West-5	0.3	6.3	c	1006.5
US11002	42-14.1	140-30.6	1/5	1610-1614	84	West-2	West-1	West-4	0.0	6.3	c	1006.2
US11003	42-11.4	140-35.2	1/5	1656-1700	82	SW -1	West-1	SW -2	0.1	6.4	c	1006.1
US11004	42-12.9	140-40.9	1/5	1729-1734	91	NW -1	WNW-1	NW -2	0.1	6.4	s	1005.6
US11005	41-59.3	141-01.8	1/5	1935-1939	101	NW -1	NW -1	NW -3	0.5	5.5	bc	1004.6
US11006	41-58.7	141-00.6	1/5	1947-1951	94	NW -2	NW -1	NW -4	0.7	5.5	bc	1004.5
US11007	41-58.0	140-59.4	1/5	1959-2008	87	NW -1	NW -1	NW -3	0.7	6.3	bc	1004.2
US11008	41-57.3	140-58.2	1/5	2011-2015	78	NW -1	NW -1	NW -3	0.3	6.3	bc	1004.1

Cruise 216

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11009	41-38.5	140-48.9	1/14	1025-1037	340	West-3	WSW-1	West-6	-3.2	10.2	bc	1018.7
US11010	41-36.7	140-50.6	1/14	1050-1054	84	NW -3	WSW-1	NW -6	-3.3	10.3	s	1018.7
US11011	41-35.6	140-52.2	1/14	1106-1109	54	NW -3	WSW-1	NW -5	-3.6	10.4	s	1018.7
US11012	41-40.6	140-47.1	1/14	1150-1200	236	WNW-3	WSW-1	WNW-6	-4.4	9.7	bc	1017.7
US11013	41-42.6	140-45.1	1/14	1218-1222	89	West-3	WSW-1	West-6	-4.1	9.4	bc	1017.1

Cruise 217

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11014	42-13.1	140-41.1	1/22	0826-0830	90	West-3	WNW-1	West-6	-1.8	4.3	bc	1012.5
US11015	42-11.4	140-35.6	1/22	0944-0948	83	WNW-3	WNW-1	WNW-5	-2.9	4.6	bc	1013.1
US11016	42-16.2	140-35.1	1/22	1108-1112	93	West-3	West-1	West-5	-2.2	4.6	bc	1013.2
US11017	42-21.3	140-36.3	1/22	1214-1218	90	West-3	West-1	West-5	-1.9	4.7	bc	1012.5
US11018	42-25.6	140-37.4	1/22	1300-1304	85	West-3	West-1	West-5	-0.7	4.5	s	1012.2
US11019	42-23.4	140-42.0	1/22	1340-1343	66	NW -3	West-1	NW -5	-1.5	4.3	bc	1012.2
US11020	42-18.7	140-42.1	1/22	1425-1429	71	West-3	West-1	West-5	-1.4	4.3	bc	1012.1
US11021	42-15.9	140-47.4	1/22	1511-1515	72	WNW-3	WNW-1	WNW-5	-1.4	4.0	c	1012.6
US11022	42-20.4	140-48.2	1/22	1554-1557	57	West-3	West-1	West-5	-1.1	4.1	bc	1012.6
US11023	42-10.6	140-46.9	1/23	0716-0720	95	WNW-3	WNW-1	WNW-5	-0.3	4.4	bc	1016.6
US11024	41-59.4	141-01.8	1/23	0917-0922	102	West-3	NW -1	West-5	-0.1	4.6	bc	1017.2
US11025	41-58.9	141-00.8	1/23	0929-0933	96	WNW-3	NW -1	WNW-5	0.2	4.7	bc	1017.5
US11026	41-58.1	140-59.5	1/23	0943-0947	88	WNW-3	NW -1	WNW-5	0.4	4.7	bc	1017.6
US11027	41-57.3	140-58.3	1/23	0954-0958	80	WNW-2	NW -1	WNW-4	0.5	4.7	bc	1017.6

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11001				STATION US11002				STATION US11003			
LATITUDE 42-15.4 N				LATITUDE 42-14.1 N				LATITUDE 42-11.4 N			
LONGITUDE 140-35.9 E				LONGITUDE 140-30.6 E				LONGITUDE 140-35.2 E			
DEPTH (m) 93				DEPTH (m) 84				DEPTH (m) 82			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	6.657	33.553	26.325	5	6.564	33.571	26.351	5	6.756	33.586	26.337
10	6.656	33.555	26.326	10	6.564	33.570	26.351	10	6.758	33.585	26.336
20	6.665	33.551	26.323	20	6.570	33.570	26.350	20	6.759	33.584	26.336
30	6.664	33.555	26.325	30	6.571	33.571	26.350	30	6.760	33.583	26.335
40	6.664	33.556	26.326	40	6.573	33.570	26.349	40	6.761	33.583	26.335
50	6.663	33.556	26.326	50	6.570	33.569	26.349	50	6.757	33.583	26.335
75	6.617	33.557	26.333	75	6.484	33.552	26.347	75	6.721	33.579	26.337

STATION US11004				STATION US11005				STATION US11006			
LATITUDE 42-12.9 N				LATITUDE 41-59.3 N				LATITUDE 41-58.7 N			
LONGITUDE 140-40.9 E				LONGITUDE 141-01.8 E				LONGITUDE 141-00.6 E			
DEPTH (m) 91				DEPTH (m) 101				DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	6.685	33.576	26.340	5	5.878	33.234	26.173	5	5.972	33.284	26.200
10	6.686	33.576	26.339	10	5.879	33.233	26.171	10	6.000	33.283	26.196
20	6.686	33.577	26.340	20	5.878	33.232	26.170	20	6.407	33.414	26.248
30	6.686	33.577	26.340	30	5.884	33.233	26.171	30	6.674	33.443	26.236
40	6.691	33.578	26.340	40	5.889	33.234	26.171	40	6.690	33.445	26.236
50	6.679	33.574	26.339	50	5.886	33.235	26.172	50	6.816	33.469	26.238
75	6.642	33.570	26.340	75	6.542	33.409	26.227	75	6.834	33.474	26.239
				100	6.914	33.552	26.290				

STATION US11007			
LATITUDE 41-58.0 N			
LONGITUDE 140-59.4 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	6.717	33.454	26.239
10	6.719	33.454	26.239
20	6.729	33.453	26.237
30	6.729	33.455	26.238
40	6.734	33.455	26.237
50	6.739	33.456	26.238
75	6.793	33.470	26.241

STATION US11008			
LATITUDE 41-57.3 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	6.609	33.427	26.232
10	6.601	33.426	26.233
20	6.614	33.426	26.231
30	6.626	33.427	26.230
40	6.655	33.433	26.230
50	6.751	33.456	26.236
75	6.868	33.553	26.297

STATION US11009			
LATITUDE 41-38.5 N			
LONGITUDE 140-48.9 E			
DEPTH (m) 340			
Press.	Temp.	Salinity	Sigma-T
5	10.574	33.787	25.906
10	10.588	33.789	25.905
20	10.585	33.796	25.911
30	10.592	33.804	25.917
40	10.584	33.815	25.926
50	10.339	33.804	25.960
75	9.965	33.835	26.049
100	9.714	33.879	26.125
125	9.058	33.921	26.264
150	8.998	33.925	26.277
175	8.923	33.932	26.294
200	8.805	33.940	26.319
250	8.695	33.950	26.344
300	8.637	33.957	26.358

STATION US11010			
LATITUDE 41-36.7 N			
LONGITUDE 140-50.6 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	10.682	33.789	25.889
10	10.688	33.788	25.887
20	10.694	33.792	25.889
30	10.696	33.793	25.890
40	10.724	33.810	25.898
50	10.683	33.833	25.923
75	10.422	33.855	25.985

STATION US11011			
LATITUDE 41-35.6 N			
LONGITUDE 140-52.2 E			
DEPTH (m) 54			
Press.	Temp.	Salinity	Sigma-T
5	10.682	33.745	25.855
10	10.685	33.746	25.855
20	10.694	33.748	25.855
30	10.696	33.747	25.854
40	10.706	33.747	25.852
50	10.702	33.747	25.853

STATION US11012			
LATITUDE 41-40.6 N			
LONGITUDE 140-47.1 E			
DEPTH (m) 236			
Press.	Temp.	Salinity	Sigma-T
5	10.099	33.752	25.960
10	10.109	33.837	26.025
20	10.110	33.837	26.025
30	10.106	33.838	26.027
40	10.120	33.838	26.025
50	10.115	33.840	26.026
75	10.077	33.882	26.066
100	9.816	33.887	26.114
125	9.598	33.906	26.165
150	9.392	33.914	26.205
175	9.086	33.937	26.272
200	8.580	33.955	26.365

STATION US11013			
LATITUDE 41-42.6 N			
LONGITUDE 140-45.1 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	9.708	33.823	26.082
10	9.719	33.825	26.081
20	9.726	33.825	26.081
30	9.722	33.823	26.080
40	9.723	33.824	26.080
50	9.721	33.829	26.084
75	9.592	33.853	26.124

STATION US11014			
LATITUDE 42-13.1 N			
LONGITUDE 140-41.1 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	4.781	33.526	26.531
10	4.782	33.523	26.529
20	4.779	33.521	26.527
30	4.783	33.521	26.527
40	4.785	33.522	26.528
50	4.786	33.523	26.528
75	4.793	33.527	26.531

STATION US11015			
LATITUDE 42-11.4 N			
LONGITUDE 140-35.6 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	4.857	33.538	26.532
10	4.860	33.564	26.553
20	4.856	33.560	26.550
30	4.857	33.558	26.548
40	4.857	33.557	26.547
50	4.846	33.558	26.549
75	4.737	33.548	26.554

STATION US11016			
LATITUDE 42-16.2 N			
LONGITUDE 140-35.1 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	4.932	33.567	26.547
10	4.935	33.567	26.547
20	4.936	33.565	26.545
30	4.933	33.565	26.545
40	4.935	33.563	26.543
50	4.935	33.564	26.544
75	4.935	33.563	26.544

STATION US11017			
LATITUDE 42-21.3 N			
LONGITUDE 140-36.3 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	4.960	33.545	26.527
10	4.962	33.566	26.543
20	4.967	33.566	26.542
30	4.969	33.565	26.541
40	4.970	33.565	26.541
50	4.967	33.565	26.541
75	4.968	33.564	26.541

STATION US11018			
LATITUDE 42-25.6 N			
LONGITUDE 140-37.4 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	4.905	33.533	26.523
10	4.908	33.564	26.547
20	4.911	33.567	26.550
30	4.907	33.566	26.549
40	4.905	33.564	26.547
50	4.903	33.564	26.547
75	4.903	33.562	26.546

STATION US11019			
LATITUDE 42-23.4 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	4.739	33.446	26.472
10	4.739	33.503	26.517
20	4.740	33.502	26.517
30	4.724	33.501	26.517
40	4.702	33.499	26.518
50	4.662	33.499	26.522

STATION US11020			
LATITUDE 42-18.7 N			
LONGITUDE 140-42.1 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	4.602	33.510	26.538
10	4.573	33.506	26.538
20	4.607	33.514	26.541
30	4.704	33.542	26.552
40	4.749	33.542	26.547
50	4.749	33.543	26.548

STATION US11021			
LATITUDE 42-15.9 N			
LONGITUDE 140-47.4 E			
DEPTH (m) 72			
Press.	Temp.	Salinity	Sigma-T
5	4.411	33.396	26.468
10	4.411	33.395	26.467
20	4.414	33.394	26.466
30	4.416	33.392	26.465
40	4.419	33.393	26.465
50	4.426	33.395	26.465

STATION		US11022	
LATITUDE		42-20.4	N
LONGITUDE		140-48.2	E
DEPTH (m)		57	
Press.	Temp.	Salinity	Sigma-T
5	4.495	33.312	26.392
10	4.494	33.315	26.395
20	4.498	33.323	26.401
30	4.667	33.461	26.492
40	4.887	33.529	26.522
50	4.919	33.528	26.518

STATION		US11023	
LATITUDE		42-10.6	N
LONGITUDE		140-46.9	E
DEPTH (m)		95	
Press.	Temp.	Salinity	Sigma-T
5	4.698	33.335	26.388
10	4.705	33.334	26.388
20	4.702	33.326	26.381
30	4.717	33.320	26.375
40	4.707	33.319	26.375
50	4.541	33.310	26.386
75	4.828	33.511	26.514

STATION		US11024	
LATITUDE		41-59.4	N
LONGITUDE		141-01.8	E
DEPTH (m)		102	
Press.	Temp.	Salinity	Sigma-T
5	5.050	33.299	26.321
10	5.047	33.299	26.321
20	5.048	33.299	26.322
30	5.043	33.298	26.321
40	5.026	33.296	26.322
50	5.010	33.297	26.324
75	4.840	33.303	26.348
100	4.762	33.399	26.432

STATION		US11025	
LATITUDE		41-58.9	N
LONGITUDE		141-00.8	E
DEPTH (m)		96	
Press.	Temp.	Salinity	Sigma-T
5	5.100	33.298	26.315
10	5.100	33.297	26.314
20	5.102	33.297	26.314
30	5.095	33.297	26.314
40	5.088	33.295	26.313
50	5.068	33.292	26.313
75	4.824	33.299	26.346

STATION		US11026	
LATITUDE		41-58.1	N
LONGITUDE		140-59.5	E
DEPTH (m)		88	
Press.	Temp.	Salinity	Sigma-T
5	5.115	33.274	26.294
10	5.116	33.291	26.307
20	5.117	33.299	26.313
30	5.112	33.298	26.313
40	5.113	33.300	26.315
50	5.057	33.292	26.315
75	4.774	33.332	26.378

STATION		US11027	
LATITUDE		41-57.3	N
LONGITUDE		140-58.3	E
DEPTH (m)		80	
Press.	Temp.	Salinity	Sigma-T
5	4.973	33.295	26.327
10	4.971	33.293	26.325
20	4.960	33.291	26.325
30	4.958	33.291	26.325
40	4.951	33.291	26.326
50	4.926	33.305	26.340
75	4.764	33.325	26.373

THE " USHIO MARU "

CRUISE 218

CRUISE 219

CRUISE 220

IN JANUARY - FEBRUARY 2011

1. Cruise Itinerary

Cruise 218

Departure from Hakodate	Jan. 27, 2011
Start hydrographic research (US11028)	27
Arrival at Fukushima	27
Departure from Fukushima	28
Finish hydrographic research (US11051)	28
Return to Hakodate	29
Total coverage 118.4 miles	

Cruise 219

Departure from Hakodate	Feb. 1, 2011
Arrival at Usujiri	1
Departure from Usujiri	2
Start hydrographic research (US11052)	2
Arrival at Usujiri	2
Departure from Usujiri	3
Retrieval mooring ADCP system	3
Arrival at Usujiri	3
Departure from Usujiri	4
Set mooring ADCP system	4
Arrival at Muroran	4
Departure from Muroran and arrival at Usujiri	5
Departure from Usujiri	6
Finish hydrographic research (US11082)	6
Arrival at Usujiri	6
Departure from Usujiri	7
Return to Hakodate	8
Total coverage 380.9 miles	

Cruise 220

Departure from Hakodate	Feb. 14, 2011
Start hydrographic research (US11083)	14
Arrival at Fukushima	14
Departure from Fukushima	15
Finish hydrographic research (US11111)	15
Return to Hakodate	16
Total coverage 140.0 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

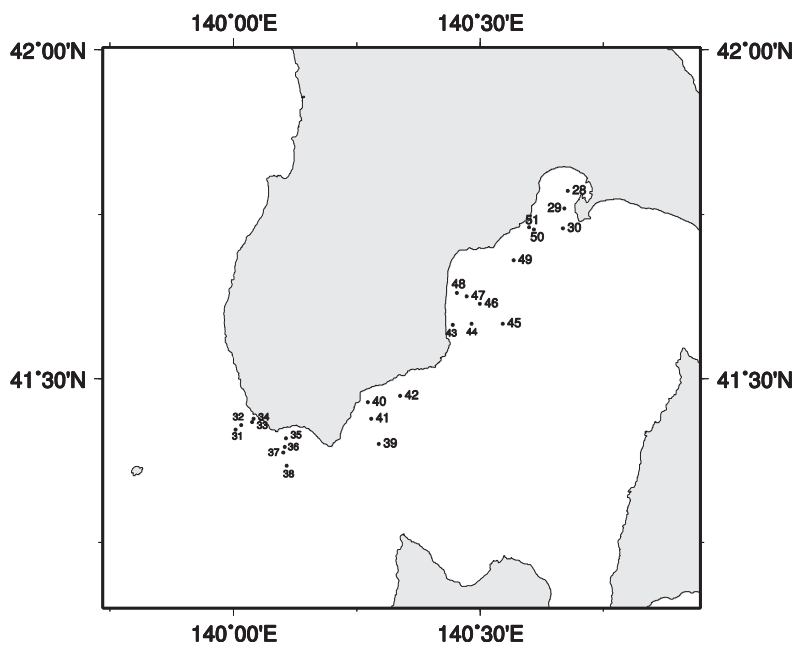


Figure 1. Oceanographic stations (Cruise 218)

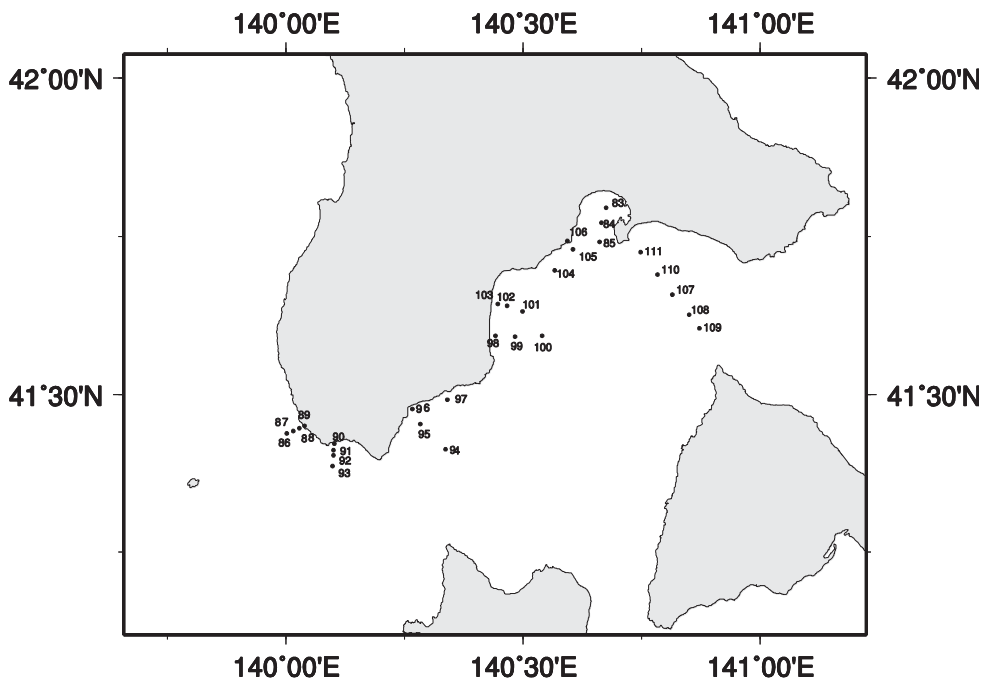


Figure 2. Oceanographic stations (Cruise 220)

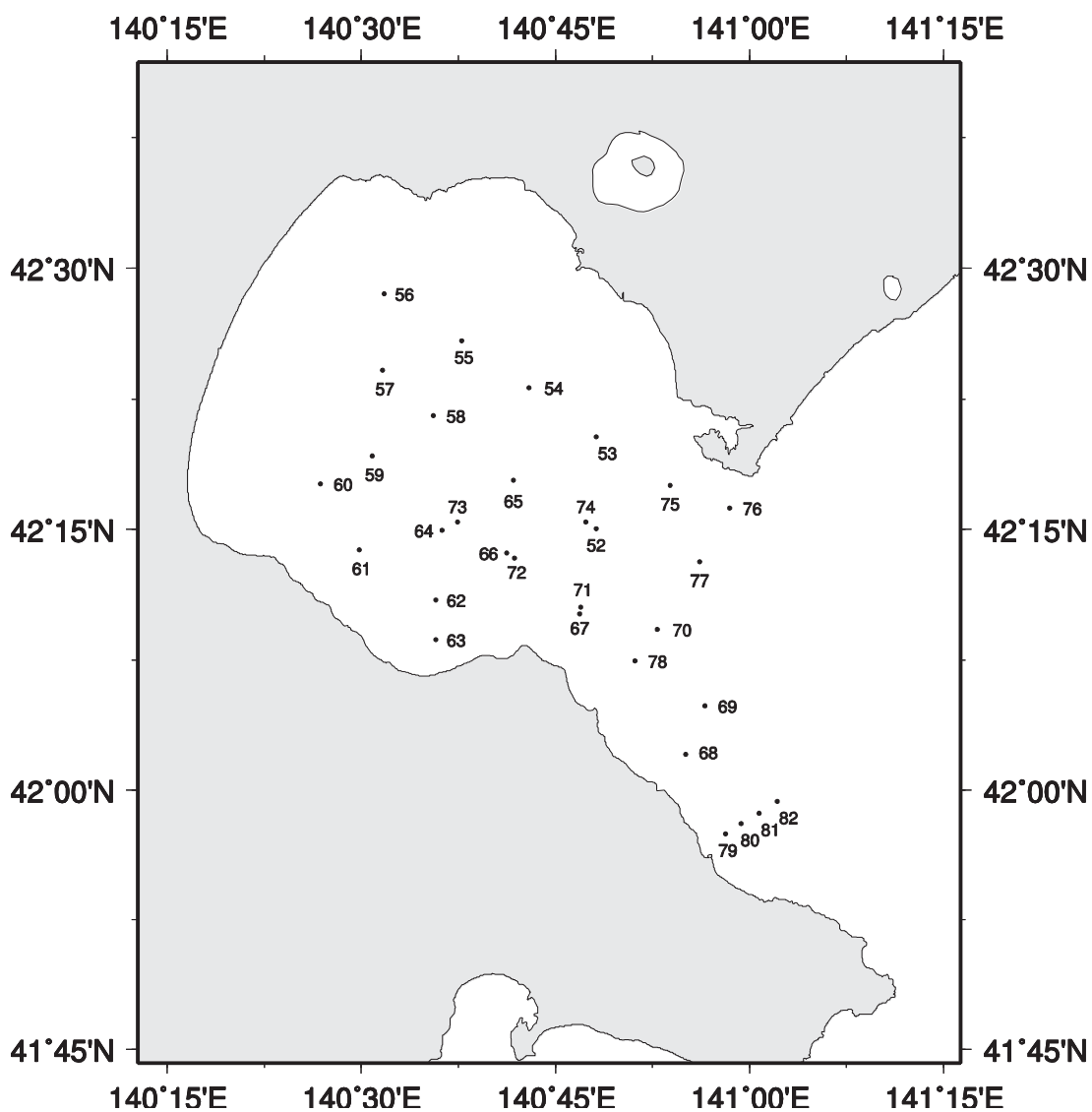


Figure 3. Oceanographic stations (Cruise 219)

Table 1: List of oceanographic stations

Cruise 218

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11028	41-47.2	140-40.6	1/27	0858-0901	20	NNE-1	SSW-1	NNE-2	-3.2	7.5	bc	1023.6
US11029	41-45.6	140-40.2	1/27	0918-0921	35	North-1	SSW-1	North-2	-1.2	8.9	bc	1023.6
US11030	41-43.8	140-40.0	1/27	0940-0943	64	North-1	SSW-1	North-2	0.1	9.2	bc	1023.6
US11031	41-25.4	140-00.2	1/27	1309-1314	104	Calm	WNW-1	Calm	3.0	9.6	bc	1021.6
US11032	41-25.8	140-00.9	1/27	1327-1331	95	Calm	WNW-1	Calm	3.0	9.3	bc	1021.2
US11033	41-26.1	140-02.2	1/27	1349-1352	45	Calm	WNW-1	Calm	3.3	8.2	bc	1021.1
US11034	41-26.4	140-02.4	1/27	1354-1357	31	East-1	WNW-1	East-2	2.8	8.6	bc	1021.0
US11035	41-24.6	140-06.3	1/27	1434-1437	51	Calm	WNW-1	Calm	2.2	10.0	bc	1020.6
US11036	41-23.8	140-06.2	1/27	1451-1455	87	SE -1	WNW-1	SE -3	3.3	10.0	bc	1020.6
US11037	41-23.3	140-06.0	1/27	1508-1513	102	East-1	WNW-1	East-3	3.6	10.0	bc	1020.6
US11038	41-22.1	140-06.4	1/27	1530-1534	119	East-2	WNW-1	East-4	3.0	10.0	c	1020.6
US11039	41-24.1	140-17.6	1/27	1636-1640	95	East-1	West-1	East-2	1.7	9.3	c	1020.6
US11040	41-27.9	140-16.3	1/28	0741-0743	28	NW -1	South-1	NW -3	-2.0	8.0	s	1015.2
US11041	41-26.4	140-16.7	1/28	0801-0804	59	NW -1	South-1	NW -3	-1.6	8.4	s	1014.9
US11042	41-28.5	140-20.2	1/28	0838-0842	61	ENE-1	SSW-1	ENE-3	-0.5	8.9	c	1014.6
US11043	41-35.0	140-26.6	1/28	0947-0949	14	ENE-2	SSE-1	ENE-4	-0.2	8.0	s	1014.5
US11044	41-35.1	140-28.9	1/28	1010-1012	31	East-1	SSE-1	East-3	-0.2	8.8	o	1014.5
US11045	41-35.1	140-32.7	1/28	1042-1045	57	East-1	South-1	East-3	0.4	9.0	s	1014.2
US11046	41-36.9	140-29.9	1/28	1110-1113	33	NE -1	ENE-1	NE -3	0.8	8.9	c	1014.1
US11047	41-37.6	140-28.3	1/28	1137-1139	23	North-2	East-1	North-4	1.2	8.8	c	1013.8
US11048	41-37.9	140-27.1	1/28	1154-1155	17	North-2	East-1	North-4	1.2	8.6	c	1013.8
US11049	41-40.9	140-34.0	1/28	1248-1251	42	NW -1	East-1	NW -3	1.2	9.1	s	1013.5
US11050	41-43.7	140-36.5	1/28	1321-1324	35	NW -1	ESE-1	NW -3	0.9	8.8	s	1013.5
US11051	41-43.9	140-35.9	1/28	1331-1333	16	North-1	ESE-1	North-2	0.5	8.4	c	1013.5

Cruise 219

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11052	42-15.1	140-48.1	2/2	0651-0655	71	West-1	West-1	West-3	-0.6	3.4	bc	1021
US11053	42-20.4	140-48.1	2/2	0739-0743	56	Calm	West-1	Calm	-1.5	3.5	c	1021.2
US11054	42-23.2	140-42.9	2/2	0819-0823	61	NE -1	West-1	NE -2	-1.3	4	c	1021.2
US11055	42-25.9	140-37.7	2/2	0900-0904	83	East-1	West-1	East-2	-1	3.9	c	1022.5
US11056	42-28.6	140-31.7	2/2	0944-0948	79	East-1	South-1	East-2	-0.6	4	c	1021.4
US11057	42-24.2	140-31.6	2/2	1025-1029	96	West-1	South-1	West-3	0.4	3.3	c	1021.4
US11058	42-21.6	140-35.5	2/2	1102-1107	92	NW -1	SW -1	NW -3	1	3.6	c	1021.2
US11059	42-19.3	140-30.8	2/2	1158-1202	95	SW -1	WSW-1	SW -3	2.3	3.5	bc	1021
US11060	42-17.7	140-26.8	2/2	1303-1307	77	WSW-2	WSW-1	WSW-4	2.8	3.6	bc	1020.2
US11061	42-13.9	140-29.8	2/2	1412-1416	78	West-2	West-1	West-4	2.8	3.3	bc	1020.1
US11062	42-11.0	140-35.7	2/2	1529-1533	82	SW -2	West-1	SW -4	3.1	3.3	bc	1020
US11063	42-08.7	140-35.7	2/2	1609-1613	65	WSW-2	West-1	WSW-4	2.5	3.1	bc	1020.1
US11064	42-15.0	140-36.2	2/3	0805-0810	92	NW -2	NW -1	NW -4	3.8	3.5	bc	1018.1
US11065	42-17.9	140-41.7	2/3	0918-0922	67	NW -2	NW -1	NW -4	4.3	4.1	bc	1018.6
US11066	42-13.7	140-41.2	2/3	1018-1022	89	NW -1	NW -1	NW -3	4.5	3.3	bc	1018.6
US11067	42-10.2	140-46.8	2/3	1120-1125	96	NW -1	NW -1	NW -2	4.9	3.7	bc	1018.2
US11068	42-02.1	140-55.0	2/6	0659-0703	79	Calm	ESE-1	Calm	-2	3.3	bc	1019.8
US11069	42-04.9	140-56.5	2/6	0756-0806	86	Calm	ESE-1	Calm	-1.3	3.3	bc	1020.1
US11070	42-09.3	140-52.8	2/6	0907-0911	79	SE -1	ESE-1	SE -3	0.5	3.2	c	1019.6
US11071	42-10.6	140-46.9	2/6	0939-0943	94	SE -2	ESE-1	SE -4	0.6	3.2	c	1019.1
US11072	42-13.4	140-41.8	2/6	1012-1016	89	SE -2	ESE-1	SE -4	1.2	3.4	c	1018.3
US11073	42-15.5	140-37.4	2/6	1057-1106	90	SE -2	ESE-1	SE -5	1.4	3.2	bc	1017.8
US11074	42-15.5	140-47.3	2/6	1210-1214	73	ESE-2	ESE-1	ESE-5	1.6	3.2	c	1016
US11075	42-17.6	140-53.8	2/6	1300-1310	58	SE -3	ESE-1	SE -5	1.5	3.2	c	1015.6
US11076	42-16.3	140-58.4	2/6	1355-1358	63	SE -3	ESE-1	SE -5	2.1	3.1	bc	1014.6
US11077	42-13.2	140-56.1	2/6	1420-1423	69	SE -3	ESE-1	SE -5	2.5	3.3	bc	1013.6
US11078	42-07.5	140-51.1	2/6	1503-1507	85	ESE-3	ESE-1	ESE-5	2.9	3.4	c	1012.4
US11079	41-57.5	140-58.1	2/6	1616-1620	80	SE -2	ESE-1	SE -4	3.2	3.3	c	1011.6
US11080	41-58.1	140-59.3	2/6	1627-1631	87	SE -3	ESE-1	SE -5	3.2	3.4	c	1011.6
US11081	41-58.7	141-00.7	2/6	1639-1643	96	SE -3	ESE-1	SE -5	3.2	3.4	o	1011.6
US11082	41-59.4	141-02.1	2/6	1651-1656	104	SE -3	ESE-1	SE -5	3.5	3.5	o	1011.4

Cruise 220

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11083	41-47.0	140-40.7	2/14	0834-0836	21	North-1	SSW-1	North-2	-3.3	6.5	bc	1023.2
US11084	41-45.6	140-40.1	2/14	0855-0857	37	Calm	SSW-1	Calm	-0.6	6.7	bc	1023.2
US11085	41-43.8	140-39.9	2/14	0918-0921	64	SW -1	SSW-1	SW -2	-0.7	7.6	bc	1023.2
US11086	41-25.6	140-00.3	2/14	1255-1300	104	West-1	WNW-1	West-3	2	9	c	1021.6
US11087	41-25.8	140-01.1	2/14	1313-1317	89	NW -2	WNW-1	NW -4	2.3	9.1	c	1021.6
US11088	41-26.1	140-01.9	2/14	1330-1334	53	NW -2	WNW-1	NW -4	1.6	9.1	c	1021.6
US11089	41-26.3	140-02.5	2/14	1347-1350	29	NNW-1	WNW-1	NNW-3	2.4	9	c	1021.5
US11090	41-24.6	140-06.3	2/14	1421-1424	49	West-2	WNW-1	West-5	2	8.9	s	1021.2
US11091	41-24.0	140-06.2	2/14	1437-1441	81	West-2	WNW-1	West-4	1.1	9	s	1021.3
US11092	41-23.5	140-06.2	2/14	1454-1459	95	West-2	WNW-1	West-5	-0.1	9.2	s	1021.2
US11093	41-22.5	140-06.1	2/14	1515-1520	116	West-2	WNW-1	West-5	0.9	9	s	1021.1
US11094	41-24.1	140-20.4	2/14	1628-1632	95	SW -1	West-1	SW -3	0.5	8.9	s	1021.6
US11095	41-27.9	140-16.2	2/15	0634-0636	25	NW -2	SSE-1	NW -4	-4.2	7.1	bc	1020.6
US11096	41-26.5	140-17.2	2/15	0655-0659	63	NW -2	SSE-1	NW -5	-1.9	7.9	bc	1020.6
US11097	41-28.8	140-20.6	2/15	0735-0739	62	NNW-3	SSW-1	NNW-5	0	8	bc	1020.6
US11098	41-34.9	140-26.7	2/15	0841-0843	16	NW -1	South-1	NW -3	-0.7	7.2	bc	1021.2
US11099	41-34.8	140-29.2	2/15	0905-0907	33	NNW-1	South-1	NNW-3	0.3	7.4	bc	1021.6
US11100	41-34.9	140-32.6	2/15	0933-0936	58	NW -1	SE -1	NW -3	0.7	7.7	bc	1021.6
US11101	41-37.2	140-30.1	2/15	1005-1008	32	WNW-1	SE -1	WNW-3	-0.9	7.7	bc	1021.6
US11102	41-37.7	140-28.2	2/15	1026-1028	23	West-1	SE -1	West-2	0.2	7.5	bc	1021.6
US11103	41-37.9	140-27.0	2/15	1043-1045	17	NW -1	SE -1	NW -2	0.6	7.3	bc	1021.6
US11104	41-41.1	140-34.2	2/15	1139-1143	43	SW -1	SSE-1	SW -2	3	7.7	bc	1021.2
US11105	41-43.1	140-36.5	2/15	1213-1216	51	NW -1	South-1	NW -3	3.0	7.6	bc	1020.6
US11106	41-43.9	140-35.8	2/15	1224-1226	16	NNW-2	South-1	NNW-4	2.4	7.6	bc	1020.6
US11107	41-38.8	140-49.1	2/15	1343-1354	349	West-2	WNW-1	West-4	2.8	8.6	bc	1019.8
US11108	41-36.9	140-51.2	2/15	1412-1417	94	West-3	WNW-1	West-5	2.7	8.6	bc	1019.7
US11109	41-35.6	140-52.5	2/15	1427-1430	35	WNW-3	WNW-1	WNW-5	2.8	8.6	bc	1020.1
US11110	41-40.7	140-47.2	2/15	1510-1518	227	West-3	West-1	West-5	2.0	8.5	bc	1020.1
US11111	41-42.8	140-45.1	2/15	1537-1541	86	West-3	West-1	West-5	2.2	8.4	bc	1020.2

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION		US11028	
LATITUDE		41-47.2	N
LONGITUDE		140-40.6	E
DEPTH (m)		20	
Press.	Temp.	Salinity	Sigma-T
5	8.764	33.821	26.232
10	8.703	33.804	26.228

STATION		US11029	
LATITUDE		41-45.6	N
LONGITUDE		140-40.2	E
DEPTH (m)		35	
Press.	Temp.	Salinity	Sigma-T
5	9.421	33.909	26.196
10	9.424	33.904	26.192
20	9.110	33.863	26.210
30	9.049	33.865	26.222

STATION		US11030	
LATITUDE		41-43.8	N
LONGITUDE		140-40.0	E
DEPTH (m)		64	
Press.	Temp.	Salinity	Sigma-T
5	9.557	33.914	26.178
10	9.562	33.913	26.176
20	9.527	33.908	26.178
30	9.414	33.895	26.186
40	9.306	33.884	26.195
50	9.042	33.832	26.197

STATION		US11031	
LATITUDE		41-25.4	N
LONGITUDE		140-00.2	E
DEPTH (m)		104	
Press.	Temp.	Salinity	Sigma-T
5	9.381	33.946	26.232
10	9.296	33.942	26.242
20	9.058	33.947	26.285
30	8.921	33.948	26.307
40	8.753	33.960	26.343
50	8.705	33.978	26.364
75	8.665	33.966	26.361
100	7.752	33.974	26.505

STATION		US11032	
LATITUDE		41-25.8	N
LONGITUDE		140-00.9	E
DEPTH (m)		95	
Press.	Temp.	Salinity	Sigma-T
5	9.584	33.925	26.182
10	9.248	33.896	26.214
20	8.926	33.941	26.301
30	8.724	33.943	26.334
40	8.372	33.947	26.391
50	8.146	33.967	26.441
75	7.870	33.960	26.476

STATION		US11033	
LATITUDE		41-26.1	N
LONGITUDE		140-02.2	E
DEPTH (m)		45	
Press.	Temp.	Salinity	Sigma-T
5	8.324	33.946	26.397
10	8.307	33.956	26.408
20	8.259	33.955	26.414
30	8.258	33.956	26.415
40	8.299	33.957	26.410

STATION		US11034	
LATITUDE		41-26.4	N
LONGITUDE		140-02.4	E
DEPTH (m)		31	
Press.	Temp.	Salinity	Sigma-T
5	8.728	33.927	26.321
10	8.704	33.946	26.339
20	8.729	33.941	26.331
30	8.732	33.944	26.334

STATION		US11035	
LATITUDE		41-24.6	N
LONGITUDE		140-06.3	E
DEPTH (m)		51	
Press.	Temp.	Salinity	Sigma-T
5	10.260	33.918	26.063
10	10.143	33.918	26.083
20	9.553	33.891	26.160
30	9.278	33.910	26.220
40	9.196	33.916	26.238
50	8.934	33.869	26.243

STATION		US11036	
LATITUDE		41-23.8	N
LONGITUDE		140-06.2	E
DEPTH (m)		87	
Press.	Temp.	Salinity	Sigma-T
5	10.293	33.922	26.060
10	10.275	33.920	26.062
20	10.099	33.921	26.093
30	9.973	33.916	26.110
40	9.858	33.912	26.127
50	9.664	33.910	26.157
75	9.113	33.911	26.247

STATION		US11037	
LATITUDE		41-23.3	N
LONGITUDE		140-06.0	E
DEPTH (m)		102	
Press.	Temp.	Salinity	Sigma-T
5	10.295	33.921	26.059
10	10.300	33.924	26.061
20	10.160	33.921	26.083
30	10.096	33.920	26.093
40	10.013	33.921	26.107
50	9.987	33.920	26.111
75	9.508	33.895	26.171
100	9.278	33.905	26.216

STATION		US11038	
LATITUDE		41-22.1	N
LONGITUDE		140-06.4	E
DEPTH (m)		119	
Press.	Temp.	Salinity	Sigma-T
5	10.307	33.892	26.035
10	10.310	33.923	26.058
20	10.311	33.922	26.057
30	10.244	33.919	26.066
40	9.794	33.900	26.128
50	9.538	33.911	26.179
75	9.435	33.914	26.198
100	9.146	33.910	26.241

STATION		US11039	
LATITUDE		41-24.1	N
LONGITUDE		140-17.6	E
DEPTH (m)		95	
Press.	Temp.	Salinity	Sigma-T
5	9.755	33.831	26.080
10	9.736	33.881	26.123
20	9.518	33.911	26.181
30	9.483	33.915	26.191
40	9.409	33.912	26.200
50	9.305	33.912	26.217
75	9.052	33.912	26.258

STATION		US11040	
LATITUDE		41-27.9	N
LONGITUDE		140-16.3	E
DEPTH (m)		28	
Press.	Temp.	Salinity	Sigma-T
5	8.959	33.981	26.327
10	9.116	33.979	26.300
20	9.117	33.972	26.295

STATION		US11041	
LATITUDE		41-26.4	N
LONGITUDE		140-16.7	E
DEPTH (m)		59	
Press.	Temp.	Salinity	Sigma-T
5	9.266	33.926	26.235
10	9.257	33.925	26.235
20	9.240	33.924	26.237
30	9.187	33.927	26.248
40	9.187	33.918	26.241
50	9.146	33.923	26.251

STATION		US11042	
LATITUDE		41-28.5	N
LONGITUDE		140-20.2	E
DEPTH (m)		61	
Press.	Temp.	Salinity	Sigma-T
5	9.257	33.914	26.227
10	9.257	33.915	26.227
20	9.306	33.929	26.231
30	9.279	33.922	26.230
40	9.081	33.928	26.266
50	9.063	33.935	26.274

STATION		US11043	
LATITUDE		41-35.0	N
LONGITUDE		140-26.6	E
DEPTH (m)		14	
Press.	Temp.	Salinity	Sigma-T
5	7.838	33.692	26.270
10	7.848	33.754	26.318

STATION		US11044	
LATITUDE		41-35.1	N
LONGITUDE		140-28.9	E
DEPTH (m)		31	
Press.	Temp.	Salinity	Sigma-T
5	9.019	33.879	26.237
10	9.015	33.881	26.240
20	9.019	33.880	26.238

STATION		US11045	
LATITUDE		41-35.1	N
LONGITUDE		140-32.7	E
DEPTH (m)		57	
Press.	Temp.	Salinity	Sigma-T
5	9.377	33.916	26.209
10	9.380	33.916	26.208
20	9.360	33.912	26.208
30	9.351	33.916	26.213
40	9.323	33.913	26.216
50	9.319	33.913	26.216

STATION US11046			
LATITUDE 41-36.9 N			
LONGITUDE 140-29.9 E			
DEPTH (m) 33			
Press.	Temp.	Salinity	Sigma-T
5	9.181	33.899	26.227
10	9.185	33.903	26.230
20	9.166	33.902	26.232
30	9.165	33.902	26.232

STATION US11049			
LATITUDE 41-40.9 N			
LONGITUDE 140-34.0 E			
DEPTH (m) 42			
Press.	Temp.	Salinity	Sigma-T
5	9.213	33.893	26.217
10	9.175	33.891	26.222
20	9.102	33.866	26.214
30	9.022	33.869	26.229
40	9.003	33.864	26.228

STATION US11052			
LATITUDE 42-15.1 N			
LONGITUDE 140-48.1 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	3.719	33.191	26.375
10	3.724	33.199	26.381
20	3.731	33.201	26.381
30	3.799	33.226	26.395
40	4.017	33.344	26.468
50	3.998	33.459	26.560

STATION US11055			
LATITUDE 42-25.9 N			
LONGITUDE 140-37.7 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	4.047	33.488	26.579
10	4.047	33.486	26.577
20	4.318	33.543	26.594
40	4.338	33.536	26.587
50	4.342	33.540	26.589
75	4.367	33.556	26.599

STATION US11058			
LATITUDE 42-21.6 N			
LONGITUDE 140-35.5 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	3.901	33.388	26.514
10	3.899	33.396	26.520
20	3.914	33.401	26.523
30	3.982	33.413	26.525
40	4.037	33.428	26.532
50	4.391	33.496	26.550
75	4.232	33.515	26.581

STATION US11061			
LATITUDE 42-13.9 N			
LONGITUDE 140-29.8 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	3.494	33.197	26.401
10	3.496	33.204	26.406
20	3.474	33.207	26.411
30	3.945	33.418	26.533
40	4.390	33.519	26.568
50	4.498	33.533	26.567
75	4.413	33.533	26.576

STATION US11047			
LATITUDE 41-37.6 N			
LONGITUDE 140-28.3 E			
DEPTH (m) 23			
Press.	Temp.	Salinity	Sigma-T
5	9.016	33.883	26.241
10	9.022	33.883	26.240
20	9.016	33.884	26.242

STATION US11050			
LATITUDE 41-43.7 N			
LONGITUDE 140-36.5 E			
DEPTH (m) 35			
Press.	Temp.	Salinity	Sigma-T
5	9.172	33.896	26.226
10	8.955	33.867	26.238
20	9.069	33.920	26.262
30	9.074	33.930	26.269

STATION US11053			
LATITUDE 42-20.4 N			
LONGITUDE 140-48.1 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	3.911	33.478	26.584
10	3.945	33.486	26.587
20	3.984	33.492	26.589
30	4.079	33.509	26.593
40	4.135	33.531	26.604
50	4.150	33.534	26.605

STATION US11056			
LATITUDE 42-28.6 N			
LONGITUDE 140-31.7 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	4.354	33.566	26.609
10	4.358	33.566	26.609
20	4.362	33.567	26.609
30	4.362	33.566	26.608
40	4.364	33.567	26.609
50	4.366	33.567	26.609
75	4.373	33.568	26.609

STATION US11059			
LATITUDE 42-19.3 N			
LONGITUDE 140-30.8 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	3.635	33.326	26.490
10	3.664	33.337	26.496
20	3.774	33.385	26.524
30	3.950	33.436	26.547
40	4.017	33.454	26.555
50	4.054	33.458	26.554
75	4.243	33.503	26.570

STATION US11062			
LATITUDE 42-11.0 N			
LONGITUDE 140-35.7 E			
DEPTH (m) 82			
Press.	Temp.	Salinity	Sigma-T
5	3.710	33.267	26.436
10	3.746	33.293	26.453
20	3.795	33.352	26.496
30	4.012	33.474	26.571
40	4.190	33.549	26.612
50	4.193	33.547	26.611
75	4.189	33.546	26.610

STATION US11048			
LATITUDE 41-37.9 N			
LONGITUDE 140-27.1 E			
DEPTH (m) 17			
Press.	Temp.	Salinity	Sigma-T
5	8.643	33.827	26.255
10	8.647	33.842	26.267

STATION US11051			
LATITUDE 41-43.9 N			
LONGITUDE 140-35.9 E			
DEPTH (m) 16			
Press.	Temp.	Salinity	Sigma-T
5	9.048	33.852	26.212
10	9.092	33.860	26.211

STATION US11054			
LATITUDE 42-23.2 N			
LONGITUDE 140-42.9 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	4.301	33.558	26.608
10	4.308	33.570	26.617
20	4.306	33.570	26.617
30	4.310	33.570	26.617
40	4.310	33.570	26.616
50	4.309	33.568	26.615

STATION US11057			
LATITUDE 42-24.2 N			
LONGITUDE 140-31.6 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	3.682	33.310	26.473
10	3.681	33.344	26.500
20	4.223	33.501	26.571
30	4.376	33.552	26.596
40	4.386	33.556	26.598
50	4.289	33.543	26.598
75	4.290	33.553	26.605

STATION US11060			
LATITUDE 42-17.7 N			
LONGITUDE 140-26.8 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	3.872	33.515	26.618
10	3.875	33.538	26.636
20	3.945	33.559	26.645
30	3.970	33.555	26.640
40	3.970	33.555	26.640
50	3.971	33.556	26.641
75	3.969	33.558	26.642

STATION US11063			
LATITUDE 42-08.7 N			
LONGITUDE 140-35.7 E			
DEPTH (m) 65			
Press.	Temp.	Salinity	Sigma-T
5	3.434	33.246	26.446
10	3.432	33.255	26.453
20	3.437	33.257	26.454
30	3.467	33.277	26.467
40	3.848	33.367	26.502
50	4.500	33.544	26.576

STATION US11064			
LATITUDE 42-15.0 N			
LONGITUDE 140-36.2 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	3.866	33.385	26.515
10	4.036	33.465	26.561
20	4.115	33.478	26.564
30	4.139	33.488	26.569
40	4.162	33.509	26.584
50	4.246	33.540	26.600
75	4.279	33.546	26.601

STATION US11067			
LATITUDE 42-10.2 N			
LONGITUDE 140-46.8 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	3.634	33.217	26.404
10	3.587	33.208	26.401
20	3.722	33.260	26.429
30	4.266	33.422	26.504
40	4.393	33.475	26.532
50	4.011	33.438	26.543
75	4.121	33.527	26.602

STATION US11070			
LATITUDE 42-09.3 N			
LONGITUDE 140-52.8 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	3.501	33.228	26.425
10	3.507	33.229	26.426
20	3.510	33.229	26.425
30	3.512	33.230	26.426
40	3.525	33.232	26.426
50	3.530	33.233	26.426
75	3.973	33.339	26.467

STATION US11073			
LATITUDE 42-15.5 N			
LONGITUDE 140-37.4 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	3.882	33.424	26.544
10	3.880	33.423	26.544
20	3.877	33.423	26.544
30	3.878	33.425	26.545
40	3.880	33.426	26.546
50	3.994	33.453	26.556
75	4.282	33.553	26.606

STATION US11076			
LATITUDE 42-16.3 N			
LONGITUDE 140-58.4 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	3.476	33.211	26.414
10	3.471	33.224	26.425
20	3.449	33.229	26.431
30	3.421	33.229	26.433
40	3.418	33.228	26.433
50	3.385	33.224	26.433

STATION US11079			
LATITUDE 41-57.5 N			
LONGITUDE 140-58.1 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	3.708	33.208	26.390
10	3.711	33.208	26.389
20	3.707	33.210	26.391
30	3.685	33.208	26.391
40	3.684	33.210	26.394
50	3.698	33.214	26.396
75	3.885	33.341	26.478

STATION US11065			
LATITUDE 42-17.9 N			
LONGITUDE 140-41.7 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	4.265	33.567	26.619
10	4.262	33.565	26.618
20	4.250	33.562	26.616
30	4.238	33.560	26.617
40	4.246	33.561	26.617
50	4.253	33.562	26.616

STATION US11068			
LATITUDE 42-02.1 N			
LONGITUDE 140-55.0 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	3.600	33.219	26.409
10	3.602	33.220	26.409
20	3.604	33.215	26.405
30	3.622	33.213	26.402
40	3.620	33.209	26.398
50	3.614	33.205	26.396
75	3.821	33.322	26.469

STATION US11071			
LATITUDE 42-10.6 N			
LONGITUDE 140-46.9 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	3.478	33.192	26.399
10	3.474	33.191	26.398
20	3.625	33.288	26.462
30	3.878	33.333	26.472
40	4.156	33.441	26.530
50	4.526	33.515	26.550
75	4.165	33.529	26.600

STATION US11074			
LATITUDE 42-15.5 N			
LONGITUDE 140-47.3 E			
DEPTH (m) 73			
Press.	Temp.	Salinity	Sigma-T
5	3.607	33.222	26.410
10	3.602	33.223	26.411
20	3.603	33.221	26.410
30	3.648	33.247	26.426
40	4.467	33.496	26.541
50	4.407	33.480	26.535

STATION US11077			
LATITUDE 42-13.2 N			
LONGITUDE 140-56.1 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	3.626	33.241	26.424
10	3.622	33.242	26.425
20	3.619	33.243	26.426
30	3.620	33.244	26.426
40	3.712	33.272	26.440
50	3.744	33.279	26.442

STATION US11080			
LATITUDE 41-58.1 N			
LONGITUDE 140-59.3 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	3.732	33.208	26.387
10	3.732	33.207	26.386
20	3.718	33.205	26.386
30	3.686	33.206	26.390
40	3.679	33.208	26.392
50	3.674	33.208	26.393
75	3.709	33.217	26.397

STATION US11066			
LATITUDE 42-13.7 N			
LONGITUDE 140-41.2 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	3.663	33.208	26.394
10	3.641	33.206	26.395
20	3.847	33.307	26.455
30	4.191	33.409	26.501
40	4.015	33.444	26.547
50	4.030	33.498	26.588
75	4.067	33.532	26.611

STATION US11069			
LATITUDE 42-04.9 N			
LONGITUDE 140-56.5 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	3.608	33.225	26.412
10	3.615	33.223	26.410
20	3.639	33.227	26.411
30	3.645	33.229	26.412
40	3.689	33.238	26.415
50	3.693	33.240	26.417
75	3.809	33.305	26.457

STATION US11072			
LATITUDE 42-13.4 N			
LONGITUDE 140-41.8 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	3.733	33.375	26.520
10	3.729	33.374	26.519
20	3.739	33.374	26.519
30	4.134	33.524	26.599
40	4.290	33.569	26.618
50	4.309	33.569	26.616
75	4.331	33.572	26.616

STATION US11075			
LATITUDE 42-17.6 N			
LONGITUDE 140-53.8 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	3.604	33.280	26.457
10	3.623	33.284	26.458
20	3.652	33.290	26.461
30	3.729	33.325	26.480
40	3.718	33.328	26.484
50	3.995	33.413	26.524

STATION US11078			
LATITUDE 42-07.5 N			
LONGITUDE 140-51.1 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	3.703	33.047	26.261
10	3.707	33.216	26.396
20	3.701	33.218	26.398
30	3.663	33.229	26.410
40	3.655	33.231	26.413
50	3.817	33.297	26.450
75	4.169	33.539	26.607

STATION US11081			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.7 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	3.839	33.208	26.377
10	3.842	33.214	26.381
20	3.813	33.211	26.382
30	3.726	33.209	26.388
40	3.705	33.211	26.392
50	3.683	33.211	26.394
75	3.671	33.212	26.396

STATION	US11082		
LATITUDE	41-59.4	N	
LONGITUDE	141-02.1	E	
DEPTH (m)	104		
Press.	Temp.	Salinity	Sigma-T
5	3.832	33.211	26.380
10	3.812	33.216	26.386
20	3.683	33.216	26.398
30	3.669	33.218	26.401
40	3.649	33.223	26.407
50	3.654	33.229	26.411
75	3.659	33.230	26.412
100	3.780	33.282	26.441

STATION	US11085		
LATITUDE	41-43.8	N	
LONGITUDE	140-39.9	E	
DEPTH (m)	64		
Press.	Temp.	Salinity	Sigma-T
5	8.081	33.918	26.412
10	8.084	33.916	26.410
20	8.081	33.912	26.407
30	7.972	33.900	26.414
40	7.863	33.912	26.439
50	7.859	33.913	26.441

STATION	US11088		
LATITUDE	41-26.1	N	
LONGITUDE	140-01.9	E	
DEPTH (m)	53		
Press.	Temp.	Salinity	Sigma-T
5	9.272	33.850	26.174
10	9.271	33.850	26.175
20	9.190	33.846	26.184
30	9.106	33.847	26.198
40	9.006	33.853	26.219
50	8.798	33.858	26.255

STATION	US11091		
LATITUDE	41-24.0	N	
LONGITUDE	140-06.2	E	
DEPTH (m)	81		
Press.	Temp.	Salinity	Sigma-T
5	9.376	33.857	26.163
10	9.370	33.857	26.164
20	9.322	33.853	26.168
30	9.318	33.853	26.169
40	9.314	33.853	26.170
50	9.314	33.852	26.169
75	9.016	33.868	26.229

STATION	US11094		
LATITUDE	41-24.1	N	
LONGITUDE	140-20.4	E	
DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T
5	9.264	33.797	26.134
10	9.273	33.865	26.185
20	9.286	33.863	26.182
30	9.283	33.863	26.183
40	9.279	33.864	26.184
50	9.247	33.859	26.185
75	8.421	33.906	26.352

STATION	US11097		
LATITUDE	41-28.8	N	
LONGITUDE	140-20.6	E	
DEPTH (m)	62		
Press.	Temp.	Salinity	Sigma-T
5	8.265	33.917	26.384
10	8.265	33.921	26.387
20	8.117	33.931	26.417
30	7.991	33.933	26.437
40	7.821	33.940	26.468
50	7.543	33.959	26.523

STATION	US11083		
LATITUDE	41-47.0	N	
LONGITUDE	140-40.7	E	
DEPTH (m)	21		
Press.	Temp.	Salinity	Sigma-T
5	6.952	33.685	26.390
10	6.984	33.747	26.434

STATION	US11086		
LATITUDE	41-25.6	N	
LONGITUDE	140-00.3	E	
DEPTH (m)	104		
Press.	Temp.	Salinity	Sigma-T
5	9.299	33.841	26.163
10	9.286	33.837	26.162
20	9.077	33.858	26.212
30	8.966	33.862	26.232
40	8.908	33.866	26.245
50	8.874	33.866	26.250
75	8.621	33.880	26.300
100	8.194	33.921	26.397

STATION	US11089		
LATITUDE	41-26.3	N	
LONGITUDE	140-02.5	E	
DEPTH (m)	29		
Press.	Temp.	Salinity	Sigma-T
5	9.146	33.840	26.187
10	9.151	33.852	26.195
20	8.991	33.854	26.222

STATION	US11092		
LATITUDE	41-23.5	N	
LONGITUDE	140-06.2	E	
DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T
5	9.346	33.860	26.170
10	9.356	33.859	26.168
20	9.339	33.858	26.170
30	9.255	33.859	26.184
40	9.194	33.869	26.201
50	9.185	33.870	26.204
75	9.106	33.873	26.219

STATION	US11095		
LATITUDE	41-27.9	N	
LONGITUDE	140-16.2	E	
DEPTH (m)	25		
Press.	Temp.	Salinity	Sigma-T
5	7.653	33.958	26.506
10	7.660	33.958	26.505
20	7.670	33.952	26.499

STATION	US11098		
LATITUDE	41-34.9	N	
LONGITUDE	140-26.7	E	
DEPTH (m)	16		
Press.	Temp.	Salinity	Sigma-T
10	7.571	33.851	26.434

STATION	US11084		
LATITUDE	41-45.6	N	
LONGITUDE	140-40.1	E	
DEPTH (m)	37		
Press.	Temp.	Salinity	Sigma-T
5	7.182	33.781	26.434
10	7.181	33.823	26.467
20	7.491	33.876	26.465
30	7.490	33.872	26.462

STATION	US11087		
LATITUDE	41-25.8	N	
LONGITUDE	140-01.1	E	
DEPTH (m)	89		
Press.	Temp.	Salinity	Sigma-T
5	9.292	33.836	26.160
10	9.272	33.847	26.172
20	9.192	33.853	26.189
30	9.165	33.855	26.195
40	9.155	33.855	26.197
50	9.115	33.846	26.196
75	8.723	33.878	26.283

STATION	US11090		
LATITUDE	41-24.6	N	
LONGITUDE	140-06.3	E	
DEPTH (m)	49		
Press.	Temp.	Salinity	Sigma-T
5	9.277	33.840	26.166
10	9.279	33.841	26.166
20	9.231	33.848	26.179
30	9.167	33.847	26.189
40	9.023	33.856	26.219
50	8.863	33.868	26.254

STATION	US11093		
LATITUDE	41-22.5	N	
LONGITUDE	140-06.1	E	
DEPTH (m)	116		
Press.	Temp.	Salinity	Sigma-T
5	9.000	33.872	26.235
10	9.007	33.876	26.237
20	9.030	33.875	26.233
30	9.034	33.875	26.232
40	9.038	33.875	26.231
50	9.049	33.879	26.232
75	8.544	33.899	26.327
100	8.418	33.907	26.352

STATION	US11096		
LATITUDE	41-26.5	N	
LONGITUDE	140-17.2	E	
DEPTH (m)	63		
Press.	Temp.	Salinity	Sigma-T
5	8.547	33.900	26.327
10	8.395	33.890	26.343
20	7.888	33.936	26.455
30	7.881	33.940	26.459
40	7.833	33.943	26.468
50	7.821	33.943	26.470

STATION	US11099		
LATITUDE	41-34.8	N	
LONGITUDE	140-29.2	E	
DEPTH (m)	33		
Press.	Temp.	Salinity	Sigma-T
5	7.746	33.913	26.457
10	7.741	33.925	26.468
20	7.736	33.927	26.470
30	7.724	33.925	26.470

STATION US11100			
LATITUDE 41-34.9 N			
LONGITUDE 140-32.6 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	7.917	33.899	26.421
10	7.918	33.916	26.435
20	7.921	33.917	26.435
30	7.910	33.916	26.435
40	7.802	33.916	26.452
50	7.709	33.917	26.466

STATION US11103			
LATITUDE 41-37.9 N			
LONGITUDE 140-27.0 E			
DEPTH (m) 17			
Press.	Temp.	Salinity	Sigma-T
5	7.497	33.916	26.496
10	7.493	33.917	26.497

STATION US11106			
LATITUDE 41-43.9 N			
LONGITUDE 140-35.8 E			
DEPTH (m) 16			
Press.	Temp.	Salinity	Sigma-T
5	6.654	33.666	26.415
10	7.297	33.850	26.472

STATION US11109			
LATITUDE 41-35.6 N			
LONGITUDE 140-52.5 E			
DEPTH (m) 35			
Press.	Temp.	Salinity	Sigma-T
5	8.789	33.848	26.249
10	8.730	33.870	26.276
20	8.711	33.880	26.286
30	8.574	33.891	26.316

STATION US11101			
LATITUDE 41-37.2 N			
LONGITUDE 140-30.1 E			
DEPTH (m) 32			
Press.	Temp.	Salinity	Sigma-T
5	7.792	33.935	26.468
10	7.788	33.935	26.468
20	7.777	33.936	26.471
30	7.778	33.936	26.471

STATION US11104			
LATITUDE 41-41.1 N			
LONGITUDE 140-34.2 E			
DEPTH (m) 43			
Press.	Temp.	Salinity	Sigma-T
5	7.967	33.913	26.425
10	7.959	33.912	26.426
20	7.923	33.913	26.432
30	7.845	33.915	26.444
40	7.835	33.917	26.448

STATION US11107			
LATITUDE 41-38.8 N			
LONGITUDE 140-49.1 E			
DEPTH (m) 349			
Press.	Temp.	Salinity	Sigma-T
5	8.810	33.884	26.274
10	8.814	33.885	26.274
20	8.816	33.884	26.273
30	8.816	33.883	26.273
40	8.804	33.884	26.275
50	8.802	33.884	26.275
75	8.818	33.882	26.272
100	8.797	33.883	26.275
125	8.766	33.882	26.280
150	8.708	33.888	26.293
175	8.714	33.884	26.289
200	8.579	33.900	26.322
250	8.556	33.902	26.328
300	8.465	33.905	26.344

STATION US11110			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.2 E			
DEPTH (m) 227			
Press.	Temp.	Salinity	Sigma-T
5	8.874	33.876	26.258
10	8.851	33.870	26.257
20	8.712	33.883	26.288
30	8.603	33.896	26.315
40	8.582	33.899	26.321
50	8.544	33.901	26.329
75	8.537	33.903	26.331
100	8.496	33.906	26.340
125	8.457	33.909	26.348
150	8.413	33.911	26.357
175	8.271	33.911	26.378
200	8.145	33.920	26.404

STATION US11102			
LATITUDE 41-37.7 N			
LONGITUDE 140-28.2 E			
DEPTH (m) 23			
Press.	Temp.	Salinity	Sigma-T
5	7.512	33.907	26.486
10	7.457	33.906	26.493
20	7.460	33.921	26.504

STATION US11105			
LATITUDE 41-43.1 N			
LONGITUDE 140-36.5 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	8.009	33.902	26.411
10	8.006	33.902	26.411
20	7.977	33.899	26.413
30	7.957	33.900	26.417
40	7.913	33.899	26.422
50	7.803	33.897	26.436

STATION US11108			
LATITUDE 41-36.9 N			
LONGITUDE 140-51.2 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	8.969	33.868	26.236
10	8.962	33.868	26.238
20	8.960	33.869	26.239
30	8.953	33.867	26.239
40	8.953	33.869	26.240
50	8.957	33.867	26.238
75	8.883	33.870	26.252

STATION US11111			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.1 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	8.549	33.894	26.322
10	8.550	33.894	26.323
20	8.484	33.899	26.336
30	8.437	33.906	26.349
40	8.392	33.909	26.358
50	8.371	33.910	26.362
75	8.291	33.911	26.375

THE " USHIO MARU "

CRUISE 221

CRUISE 222

CRUISE 223

IN FEBRUARY - MARCH 2011

1. Cruise Itinerary

Cruise 221

Departure from Hakodate	Feb. 21, 2011
Arrival at and departure from Usujiri	21
Start hydrographic research (US11112)	21
Arrival at Murooran	22
Departure from Murooran	23
Finish hydrographic research (US11130)	23
Arrival at and departure from Usujiri	23
Return to Hakodate	23
Total coverage 219.9 miles	

Cruise 222

Departure from Hakodate	Mar. 6, 2011
Start hydrographic research (US11131)	6
Arrival at and departure from Usujiri	6
Set mooring omnidirectional microphone system	6
Retrieval mooring omnidirectional microphone system	8
Arrival at Usujiri	8
Departure from Usujiri	9
Finish hydrographic research (US11157)	9
Arrival at Usujiri	9
Departure from Usujiri	10
Return to Hakodate	11
Total coverage 469.4 miles	

Cruise 223

Departure from Hakodate	Mar. 22, 2011
Start hydrographic research (US11158)	22
Finish hydrographic research (US11176)	23
Arrival at and departure from Usujiri	23
Return to Hakodate	24
Total coverage 200.0 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

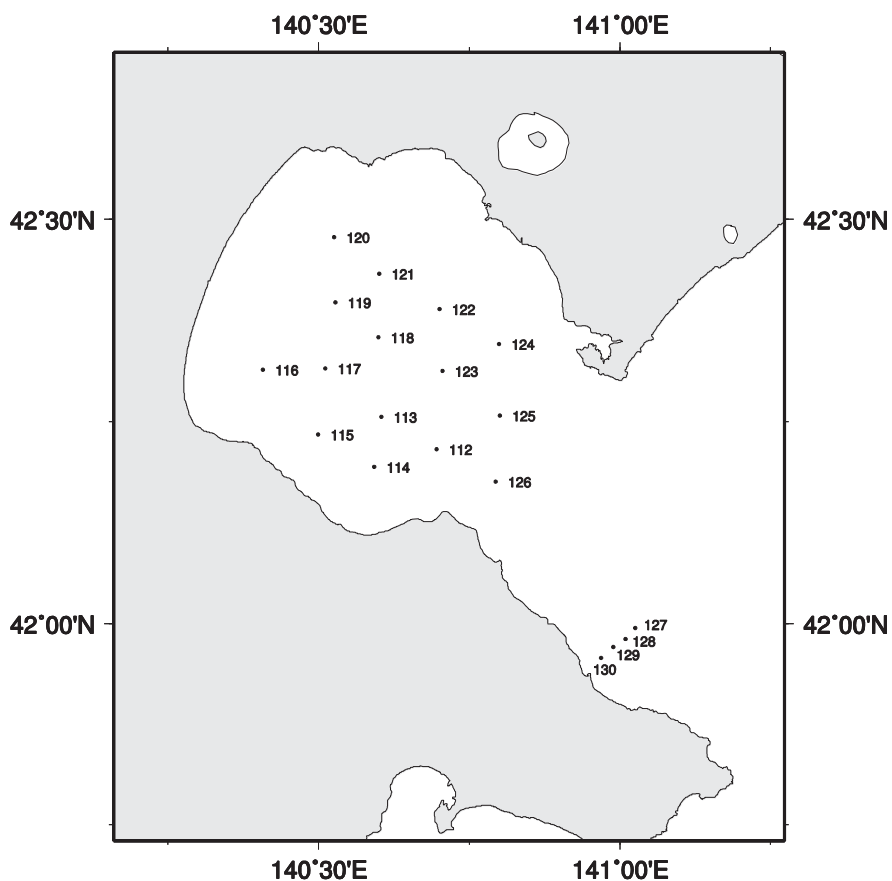


Figure 1. Oceanographic stations (Cruise 221)

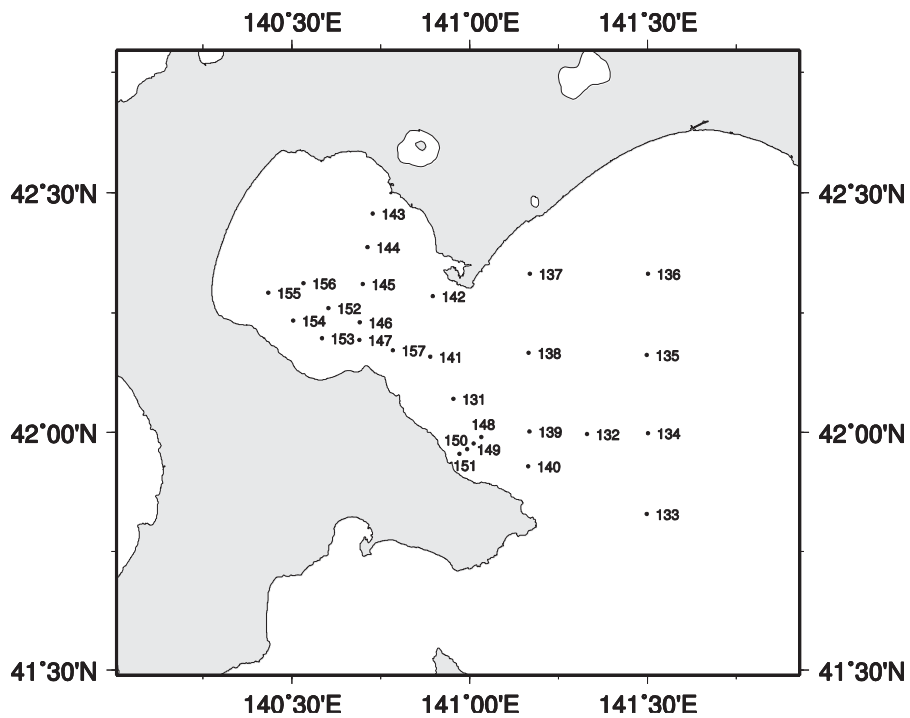


Figure 2. Oceanographic stations (Cruise 222)

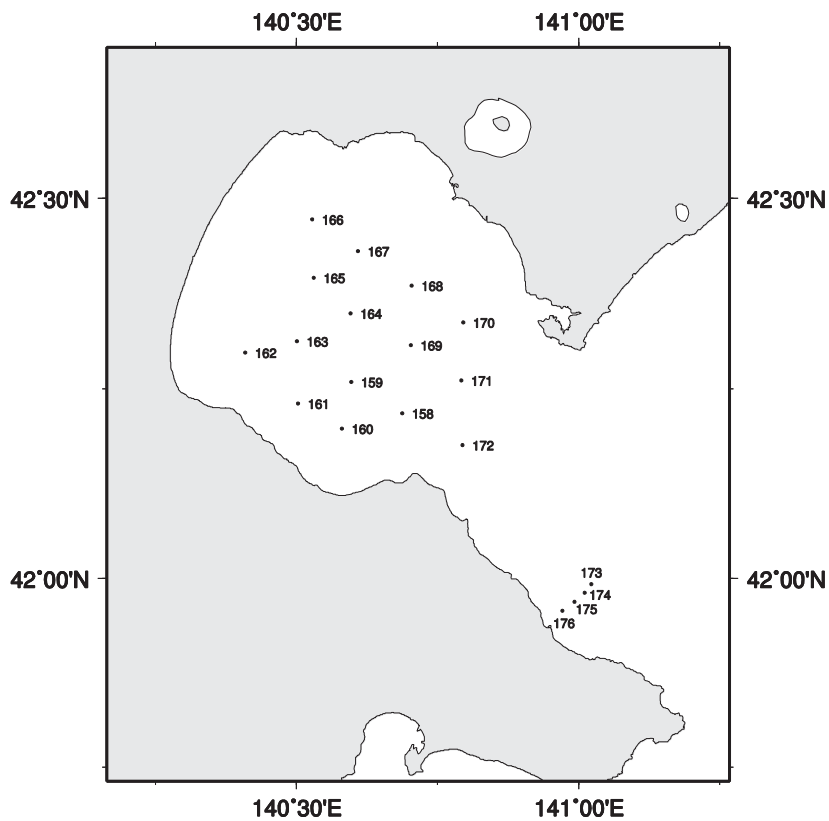


Figure 3. Oceanographic stations (Cruise 223)

Table 1: List of oceanographic stations

Cruise 221

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11112	42-13.0	140-41.7	2/21	1446-1450	91	NW -1	NW -1	NW -3	4.0	3.4	bc	1026.2
US11113	42-15.4	140-36.2	2/21	1603-1607	93	NW -2	NW -1	NW -4	4.5	3.2	bc	1026.2
US11114	42-11.7	140-35.5	2/21	1710-1714	86	NW -1	NW -1	NW -3	3.7	3.2	bc	1026.2
US11115	42-14.1	140-29.9	2/22	0647-0651	80	West-1	ESE-1	West-2	0.1	3.5	bc	1028.6
US11116	42-18.9	140-24.4	2/22	0842-0846	63	Calm	ESE-1	Calm	1.4	3.3	bc	1029.6
US11117	42-19.0	140-30.6	2/22	1002-1006	94	Calm	ESE-1	Calm	2.6	3.4	bc	1030.1
US11118	42-21.3	140-35.9	2/22	1059-1104	90	Calm	ESE-1	Calm	3.2	3.5	bc	1030.0
US11119	42-23.9	140-31.6	2/22	1139-1144	96	Calm	ESE-1	Calm	3.1	3.5	bc	1030.1
US11120	42-28.7	140-31.5	2/22	1223-1226	77	Calm	ESE-1	Calm	3.7	3.9	bc	1029.8
US11121	42-26.0	140-36.0	2/22	1305-1309	86	Calm	ESE-1	Calm	4.6	3.6	bc	1029.6
US11122	42-23.4	140-42.0	2/22	1348-1352	64	Calm	ESE-1	Calm	3.7	3.5	bc	1029.5
US11123	42-18.8	140-42.3	2/22	1428-1432	69	East-1	ESE-1	East-3	4.3	3.1	bc	1029.1
US11124	42-20.8	140-47.9	2/22	1520-1524	53	SE -2	ESE-1	SE -4	2.9	3.0	bc	1029.1
US11125	42-15.5	140-48.0	2/23	0629-0633	71	East-3	ESE-1	East-5	2.5	2.5	o	1028.5
US11126	42-10.6	140-47.6	2/23	0714-0718	93	East-3	ESE-1	East-5	2.3	2.6	o	1028.0
US11127	41-59.7	141-01.5	2/23	0856-0900	98	East-3	ESE-1	East-5	2.4	1.9	c	1027.6
US11128	41-58.9	141-00.5	2/23	0908-0912	94	East-3	ESE-1	East-5	2.5	1.9	c	1028.1
US11129	41-58.3	140-59.3	2/23	0920-0924	87	East-3	ESE-1	East-5	2.6	1.9	c	1028.1
US11130	41-57.5	140-58.1	2/23	0932-0936	78	East-2	ESE-1	East-4	3.0	2.3	c	1028.1

Cruise 222

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11131	42-04.3	140-57.2	3/6	1308-1316	85	West-1	NW -1	West-3	4.5	2.3	bc	1007
US11132	41-59.9	141-19.7	3/6	2030-2043	305	West-2	West-1	West-4	2.3	1.8	bc	1008.2
US11133	41-49.8	141-29.8	3/6	2345-0003	360	West-2	West-1	West-4	2.1	1.8	bc	1008.7
US11134	42-00.0	141-30.0	3/7	0126-0141	479	WNW-3	WNW-1	WNW-5	1.4	1.2	bc	1008.1
US11135	42-09.8	141-29.8	3/7	0324-0342	546	West-2	WNW-1	West-4	1.2	1.4	bc	1007.9
US11136	42-20.0	141-30.0	3/7	0459-0514	436	west-3	WNW-1	West-5	0.6	0.8	bc	1008.1
US11137	42-20.0	141-10.1	3/7	0722-0725	75	West-2	WSW-1	West-3	-0.4	1.6	bc	1009
US11138	42-10.1	141-09.9	3/7	0840-0845	123	NW -2	WSW-1	NW -3	0.1	1.8	bc	1009
US11139	42-00.2	141-10.0	3/7	1003-1009	135	NNW-2	WNW-1	NNW-3	1.3	1.8	c	1008.7
US11140	41-55.8	141-09.8	3/7	1052-1100	179	NW -2	WNW-1	NW -4	0.9	1.8	s	1008.5
US11141	42-09.6	140-53.3	3/7	1346-1350	78	NW -2	NW -1	NW -4	0.7	1.8	bc	1006.8
US11142	42-17.2	140-53.7	3/7	1447-1451	60	NW -3	NW -1	NW -5	1	1.8	bc	1006.7
US11143	42-27.5	140-43.6	3/7	1625-1628	61	NW -2	NW -1	NW -4	0.6	2	bc	1006.7
US11144	42-23.3	140-42.7	3/7	1713-1716	63	NW -2	NW -1	NW -4	0	2.1	bc	1007
US11145	42-18.7	140-41.9	3/7	1804-1807	69	NW -2	NW -1	NW -5	-0.6	1.9	bc	1007.1
US11146	42-13.9	140-41.4	3/7	1901-1905	88	NNW-2	NW -1	NNW-5	-0.9	1.8	bc	1007.5
US11147	42-11.7	140-41.3	3/7	1930-1934	92	NW -2	NW -1	NW -4	-0.7	2.1	bc	1007.6
US11148	41-59.5	141-01.9	3/8	0753-0757	101	West-2	NW -1	West-4	-1.6	1.9	bc	1008.9
US11149	41-58.7	141-00.6	3/8	0806-0810	94	West-2	NW -1	West-4	-1.8	1.8	bc	1008.8
US11150	41-58.0	140-59.5	3/8	0818-0822	87	WNW-2	NW -1	WNW-4	-1.3	2.1	bc	1008.8
US11151	41-57.4	140-58.2	3/8	0829-0833	79	NW-2	NW -1	NW-4	-1.3	1.9	bc	1009.1
US11152	42-15.7	140-36.1	3/9	0916-0920	91	West-3	West-1	West-5	-3.5	1.8	bc	1012.2
US11153	42-11.9	140-35.0	3/9	1024-1028	82	NNW-2	West-1	WNW-5	-2.7	2.3	bc	1012.1
US11154	42-14.1	140-30.2	3/9	1141-1145	79	West-3	West-1	West-5	-2.6	2.2	bc	1012.1
US11155	42-17.6	140-26.0	3/9	1302-1306	68	West-3	West-1	West-5	-3.9	2.5	s	1011.1
US11156	42-18.8	140-31.9	3/9	1418-1423	95	West-3	West-1	West-6	-3.1	2.1	bc	1011.1
US11157	42-10.4	140-47.0	3/9	1628-1632	94	WNW-3	West-1	WNW-5	-2	2	bc	1011.1

Cruise 223

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11158	42-13.1	140-41.2	3/22	1419-1423	91	NW -3	NW -1	NW -5	1.3	2.2	bc	1013.7
US11159	42-15.6	140-35.8	3/22	1534-1538	92	NW -3	NW -1	NW -5	1.5	2.5	bc	1013.6
US11160	42-11.9	140-34.8	3/22	1629-1633	85	NW -3	NW -1	NW -5	1.1	2.5	bc	1014.1
US11161	42-13.9	140-30.1	3/22	1802-0806	79	NW -3	NW -1	NW -5	-0.1	2.7	bc	1014.6
US11162	42-17.9	140-24.5	3/23	0547-0551	61	West-2	NW -1	West-4	-1.5	2.8	s	1016.5
US11163	42-18.8	140-30.0	3/23	0750-0755	93	WSW-2	West-1	WSW-4	-0.4	2.5	bc	1017.1
US11164	42-21.0	140-35.7	3/23	0843-0848	91	West-1	West-1	West-3	1.1	2.4	bc	1017.1
US11165	42-23.8	140-31.8	3/23	0924-0929	95	Calm	WSW-1	Calm	0.2	2.5	bc	1017.1
US11166	42-28.4	140-31.6	3/23	1009-1013	78	NW -1	WSW-1	NW -3	1.6	2.5	bc	1017.1
US11167	42-25.9	140-36.5	3/23	1049-1054	86	NW -2	NW -1	NW -5	1.5	2.5	bc	1017.1
US11168	42-23.2	140-42.2	3/23	1132-1136	64	WNW-2	NW -1	WNW-4	1.2	2.5	bc	1017.1
US11169	42-18.5	140-42.1	3/23	1219-1222	67	WNW-1	NW -1	WNW-3	0.5	2.7	bc	1017.1
US11170	42-20.3	140-47.7	3/23	1300-1304	57	WNW-2	NW -1	WNW-4	2.6	2.4	bc	1017.1
US11171	42-15.7	140-47.5	3/23	1339-1343	71	NW -2	NW -1	NW -4	0.1	2.3	bc	1017.1
US11172	42-10.6	140-47.6	3/23	1425-1430	94	WNW-3	NW -1	WNW-6	1	2.2	bc	1016.7
US11173	41-59.6	141-01.3	3/23	1603-1608	98	WNW-3	NW -1	WNW-5	0.8	1.5	bc	1016.8
US11174	41-58.9	141-00.6	3/23	1614-1618	95	WNW-3	NW -1	WNW-5	1.2	1.5	bc	1016.6
US11175	41-58.2	140-59.5	3/23	1625-1629	88	WNW-3	NW -1	WNW-5	1.3	1.5	bc	1016.6
US11176	41-57.5	140-58.2	3/23	1637-1641	80	WNW-3	NW -1	WNW-5	1.2	1.4	bc	1016.6

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11112			
LATITUDE 42-13.0 N			
LONGITUDE 140-41.7 E			
DEPTH (m) 91			
Press.	Temp.	Salinity	Sigma-T
5	3.501	33.392	26.556
10	3.413	33.410	26.579
20	3.415	33.411	26.579
30	3.424	33.414	26.581
40	3.432	33.415	26.581
50	3.480	33.429	26.587
75	3.599	33.462	26.603

STATION US11115			
LATITUDE 42-14.1 N			
LONGITUDE 140-29.9 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	3.536	33.478	26.621
10	3.529	33.481	26.624
20	3.521	33.486	26.629
30	3.418	33.480	26.634
40	3.440	33.486	26.637
50	3.472	33.491	26.637
75	3.359	33.497	26.653

STATION US11118			
LATITUDE 42-21.3 N			
LONGITUDE 140-35.9 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	3.685	33.477	26.606
10	3.618	33.484	26.618
20	3.646	33.494	26.624
30	3.658	33.495	26.623
40	3.659	33.494	26.622
50	3.664	33.496	26.623
75	3.665	33.496	26.623

STATION US11121			
LATITUDE 42-26.0 N			
LONGITUDE 140-36.0 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	3.595	33.413	26.564
10	3.567	33.445	26.592
20	3.613	33.469	26.607
30	3.659	33.484	26.614
40	3.662	33.486	26.615
50	3.662	33.486	26.615
75	3.720	33.497	26.618

STATION US11124			
LATITUDE 42-20.8 N			
LONGITUDE 140-47.9 E			
DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T
5	3.257	33.191	26.418
10	3.030	33.186	26.434
20	3.010	33.194	26.443
30	3.007	33.196	26.445
40	3.014	33.198	26.445
50	3.033	33.202	26.447

STATION US11127			
LATITUDE 41-59.7 N			
LONGITUDE 141-01.5 E			
DEPTH (m) 98			
Press.	Temp.	Salinity	Sigma-T
5	2.251	32.903	26.273
10	2.245	32.902	26.272
20	2.247	32.904	26.274
30	2.442	32.965	26.307
40	2.429	32.960	26.304
50	2.252	32.963	26.320
75	3.246	33.145	26.382

STATION US11113			
LATITUDE 42-15.4 N			
LONGITUDE 140-36.2 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	3.266	33.308	26.511
10	3.240	33.318	26.521
20	3.198	33.316	26.524
30	3.276	33.354	26.546
40	3.542	33.444	26.594
50	3.746	33.506	26.623
75	3.872	33.532	26.631

STATION US11116			
LATITUDE 42-18.9 N			
LONGITUDE 140-24.4 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	3.598	33.486	26.621
10	3.594	33.487	26.622
20	3.585	33.485	26.622
30	3.584	33.484	26.622
40	3.584	33.484	26.621
50	3.585	33.483	26.620

STATION US11119			
LATITUDE 42-23.9 N			
LONGITUDE 140-31.6 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	3.724	33.461	26.589
10	3.621	33.485	26.619
20	3.641	33.489	26.620
30	3.661	33.496	26.623
40	3.660	33.495	26.622
50	3.658	33.495	26.623
75	3.665	33.498	26.625

STATION US11122			
LATITUDE 42-23.4 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 64			
Press.	Temp.	Salinity	Sigma-T
5	3.129	33.290	26.509
10	3.065	33.243	26.477
20	3.075	33.259	26.489
30	3.250	33.317	26.519
40	3.315	33.344	26.535
50	3.477	33.416	26.577

STATION US11125			
LATITUDE 42-15.5 N			
LONGITUDE 140-48.0 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	2.832	33.107	26.389
10	2.831	33.107	26.389
20	2.832	33.108	26.389
30	2.850	33.101	26.382
40	2.925	33.141	26.408
50	3.095	33.203	26.442

STATION US11128			
LATITUDE 41-58.9 N			
LONGITUDE 141-00.5 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	2.277	32.909	26.275
10	2.272	32.908	26.275
20	2.268	32.910	26.277
30	2.339	32.948	26.302
40	2.613	33.023	26.340
50	2.901	33.076	26.358
75	3.226	33.134	26.376

STATION US11114			
LATITUDE 42-11.7 N			
LONGITUDE 140-35.5 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	3.355	33.353	26.538
10	3.327	33.351	26.540
20	3.422	33.418	26.584
30	3.438	33.423	26.586
40	3.468	33.435	26.593
50	3.498	33.447	26.600
75	3.747	33.510	26.626

STATION US11117			
LATITUDE 42-19.0 N			
LONGITUDE 140-30.6 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	3.591	33.459	26.601
10	3.572	33.464	26.606
20	3.581	33.469	26.610
30	3.583	33.469	26.609
40	3.642	33.480	26.613
50	3.649	33.484	26.615
75	3.732	33.500	26.620

STATION US11120			
LATITUDE 42-28.7 N			
LONGITUDE 140-31.5 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	3.717	33.397	26.539
10	3.460	33.415	26.578
20	3.467	33.420	26.581
30	3.625	33.464	26.601
40	3.685	33.486	26.613
50	3.698	33.492	26.617
75	3.760	33.502	26.618

STATION US11123			
LATITUDE 42-18.8 N			
LONGITUDE 140-42.3 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	3.418	33.145	26.367
10	3.046	33.178	26.427
20	3.013	33.189	26.439
30	3.012	33.194	26.442
40	3.273	33.297	26.501
50	3.864	33.527	26.628

STATION US11126			
LATITUDE 42-10.6 N			
LONGITUDE 140-47.6 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	2.973	33.161	26.420
10	2.975	33.163	26.421
20	2.990	33.170	26.425
30	3.207	33.316	26.522
40	3.479	33.421	26.581
50	3.514	33.426	26.582
75	3.564	33.469	26.611

STATION US11129			
LATITUDE 41-58.3 N			
LONGITUDE 140-59.3 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	2.529	32.982	26.314
10	2.524	32.981	26.313
20	2.569	32.998	26.323
30	2.878	33.100	26.379
40	2.946	33.100	26.374
50	2.922	33.117	26.389
75	2.912	33.168	26.431

STATION	US11130		
LATITUDE	41-57.5	N	
LONGITUDE	140-58.1	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	2.803	33.071	26.363
10	2.841	33.087	26.372
20	2.920	33.117	26.389
30	2.901	33.122	26.395
40	2.904	33.129	26.400
50	2.866	33.132	26.405
75	3.423	33.360	26.538

STATION	US11131		
LATITUDE	42-04.3	N	
LONGITUDE	140-57.2	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	2.683	33.041	26.349
10	2.318	33.051	26.386
20	2.328	33.074	26.403
30	2.594	33.154	26.446
40	2.753	33.202	26.471
50	2.939	33.258	26.500
75	3.055	33.329	26.547

STATION	US11132		
LATITUDE	41-59.9	N	
LONGITUDE	141-19.7	E	
DEPTH (m)	305		
Press.	Temp.	Salinity	Sigma-T
5	1.900	32.882	26.283
10	1.911	32.881	26.281
20	1.897	32.874	26.276
30	1.809	32.864	26.275
40	1.737	32.865	26.280
50	1.759	32.882	26.293
75	4.415	33.492	26.543
100	3.974	33.317	26.450
125	3.090	33.240	26.472
150	2.842	33.297	26.539
175	2.879	33.340	26.571
200	2.643	33.400	26.638
250	2.445	33.443	26.689

STATION	US11133		
LATITUDE	41-49.8	N	
LONGITUDE	141-29.8	E	
DEPTH (m)	360		
Press.	Temp.	Salinity	Sigma-T
5	2.133	32.948	26.318
10	2.139	32.948	26.318
20	2.149	32.958	26.324
30	2.197	32.989	26.346
40	2.193	33.005	26.359
50	2.212	33.011	26.362
75	2.235	33.018	26.366
100	4.201	33.373	26.471
125	4.496	33.339	26.414
150	4.767	33.469	26.487
175	4.010	33.411	26.521
200	3.301	33.373	26.559
250	2.488	33.372	26.629
300	2.513	33.510	26.737

STATION	US11134		
LATITUDE	42-00.0	N	
LONGITUDE	141-30.0	E	
DEPTH (m)	479		
Press.	Temp.	Salinity	Sigma-T
5	1.604	32.857	26.284
10	1.607	32.857	26.283
20	1.603	32.858	26.284
30	1.605	32.857	26.283
40	1.726	32.882	26.295
50	2.223	33.033	26.379
75	2.955	33.179	26.435
100	3.105	33.241	26.472
125	4.175	33.504	26.579
150	3.366	33.359	26.542
175	2.711	33.342	26.587
200	2.581	33.393	26.638
250	2.549	33.472	26.704
300	2.536	33.549	26.766
400	2.895	33.701	26.857

STATION	US11135		
LATITUDE	42-09.8	N	
LONGITUDE	141-29.8	E	
DEPTH (m)	546		
Press.	Temp.	Salinity	Sigma-T
5	1.276	32.803	26.262
10	1.287	32.803	26.261
20	1.441	32.866	26.302
30	1.961	32.937	26.322
40	2.094	32.972	26.340
50	2.569	33.070	26.381
75	4.223	33.342	26.445
100	4.829	33.449	26.465
125	5.193	33.515	26.476
150	5.975	33.685	26.517
175	5.640	33.666	26.543
200	4.160	33.516	26.589
250	2.522	33.455	26.693
300	2.378	33.485	26.729
400	2.867	33.697	26.856
500	3.255	33.887	26.973

STATION	US11136		
LATITUDE	42-20.0	N	
LONGITUDE	141-30.0	E	
DEPTH (m)	436		
Press.	Temp.	Salinity	Sigma-T
5	1.312	32.821	26.274
10	1.345	32.831	26.280
20	1.404	32.846	26.288
30	1.435	32.840	26.281
40	1.446	32.842	26.282
50	1.444	32.842	26.282
75	2.622	33.091	26.394
100	3.513	33.236	26.431
125	3.106	33.193	26.434
150	2.600	33.169	26.457
175	2.521	33.217	26.502
200	2.151	33.256	26.563
250	2.380	33.354	26.624
300	2.439	33.451	26.696

STATION	US11137		
LATITUDE	42-20.0	N	
LONGITUDE	141-10.1	E	
DEPTH (m)	75		
Press.	Temp.	Salinity	Sigma-T
5	1.985	32.948	26.329
10	1.978	32.853	26.253
20	1.975	32.833	26.238
30	1.987	32.834	26.237
40	1.974	32.834	26.238
50	2.606	33.052	26.363

STATION	US11138		
LATITUDE	42-10.1	N	
LONGITUDE	141-09.9	E	
DEPTH (m)	123		
Press.	Temp.	Salinity	Sigma-T
5	2.114	32.943	26.315
10	2.108	32.944	26.317
20	2.103	32.942	26.315
30	2.102	32.939	26.313
40	2.104	32.940	26.314
50	2.081	32.943	26.318
75	3.211	33.191	26.423
100	3.837	33.241	26.403

STATION	US11139		
LATITUDE	42-00.2	N	
LONGITUDE	141-10.0	E	
DEPTH (m)	135		
Press.	Temp.	Salinity	Sigma-T
5	2.194	32.981	26.340
10	2.178	32.966	26.329
20	2.175	32.966	26.329
30	2.170	32.964	26.328
40	2.168	32.963	26.327
50	2.167	32.960	26.325
75	2.160	32.960	26.325
100	2.235	32.974	26.331
125	3.483	33.234	26.432

STATION	US11140		
LATITUDE	41-55.8	N	
LONGITUDE	141-09.8	E	
DEPTH (m)	179		
Press.	Temp.	Salinity	Sigma-T
5	2.232	32.948	26.310
10	2.211	32.955	26.317
20	2.167	32.953	26.320
30	2.167	32.953	26.319
40	2.202	32.961	26.323
50	2.259	32.974	26.329
75	2.475	33.024	26.352
100	2.858	33.090	26.373
125	3.188	33.256	26.476
150	3.426	33.340	26.521

STATION	US11141		
LATITUDE	42-09.6	N	
LONGITUDE	140-53.3	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	2.199	32.907	26.280
10	2.141	32.902	26.281
20	2.067	32.901	26.285
30	2.066	32.907	26.290
40	2.151	32.964	26.329
50	2.256	32.987	26.340

STATION US11142			
LATITUDE 42-17.2 N			
LONGITUDE 140-53.7 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	2.206	32.920	26.290
10	2.199	32.918	26.289
20	2.184	32.950	26.316
30	2.184	32.955	26.319
40	2.183	32.955	26.319
50	2.186	32.962	26.325

STATION US11145			
LATITUDE 42-18.7 N			
LONGITUDE 140-41.9 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	2.290	33.014	26.359
10	2.292	33.015	26.359
20	2.292	33.013	26.358
30	2.286	33.012	26.357
40	2.993	33.420	26.625
50	3.550	33.484	26.625

STATION US11148			
LATITUDE 41-59.5 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 101			
Press.	Temp.	Salinity	Sigma-T
5	2.169	32.973	26.335
10	2.168	32.970	26.333
20	2.190	32.968	26.329
30	2.375	33.030	26.364
40	2.478	33.096	26.409
50	2.722	33.183	26.459
75	2.928	33.261	26.504

STATION US11151			
LATITUDE 41-57.4 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	2.169	33.010	26.364
10	2.166	33.012	26.366
20	2.226	33.023	26.371
30	2.462	33.090	26.406
40	2.512	33.158	26.456
50	2.600	33.192	26.476
75	2.726	33.233	26.498

STATION US11154			
LATITUDE 42-14.1 N			
LONGITUDE 140-30.2 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	2.680	33.172	26.453
10	2.674	33.183	26.462
20	2.671	33.187	26.466
30	2.915	33.283	26.522
40	3.071	33.282	26.508
50	3.354	33.372	26.554
75	3.769	33.513	26.626

STATION US11157			
LATITUDE 42-10.4 N			
LONGITUDE 140-47.0 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	2.111	32.980	26.345
10	2.119	32.988	26.351
20	2.150	33.005	26.362
30	2.577	33.222	26.502
40	2.708	33.258	26.520
50	2.873	33.304	26.542
75	3.101	33.364	26.571

STATION US11143			
LATITUDE 42-27.5 N			
LONGITUDE 140-43.6 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	2.384	33.021	26.357
10	2.372	33.017	26.354
20	2.335	33.014	26.355
30	2.283	33.013	26.358
40	2.961	33.288	26.522
50	3.695	33.506	26.628

STATION US11146			
LATITUDE 42-13.9 N			
LONGITUDE 140-41.4 E			
DEPTH (m) 88			
Press.	Temp.	Salinity	Sigma-T
5	2.139	32.957	26.325
10	2.141	32.959	26.326
20	2.493	33.190	26.483
30	2.978	33.323	26.548
40	3.019	33.338	26.556
50	3.130	33.371	26.573
75	3.248	33.406	26.590

STATION US11149			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.6 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	2.223	32.987	26.343
10	2.270	33.007	26.354
20	2.580	33.109	26.411
30	2.652	33.153	26.441
40	2.654	33.168	26.452
50	2.841	33.228	26.485
75	2.993	33.295	26.525

STATION US11152			
LATITUDE 42-15.7 N			
LONGITUDE 140-36.1 E			
DEPTH (m) 91			
Press.	Temp.	Salinity	Sigma-T
5	2.204	33.048	26.392
10	2.202	33.055	26.398
20	2.210	33.058	26.400
30	2.944	33.338	26.563
40	3.161	33.392	26.587
50	3.271	33.415	26.596
75	3.355	33.440	26.608

STATION US11155			
LATITUDE 42-17.6 N			
LONGITUDE 140-26.0 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	2.847	33.212	26.471
10	2.851	33.215	26.473
20	2.856	33.217	26.474
30	2.863	33.222	26.478
40	3.007	33.260	26.496
50	3.472	33.398	26.564

STATION US11158			
LATITUDE 42-13.1 N			
LONGITUDE 140-41.2 E			
DEPTH (m) 91			
Press.	Temp.	Salinity	Sigma-T
5	2.603	33.045	26.358
10	2.599	33.044	26.358
20	2.577	33.040	26.357
30	2.560	33.051	26.366
40	2.691	33.164	26.446
50	2.964	33.269	26.506
75	3.466	33.453	26.608

STATION US11144			
LATITUDE 42-23.3 N			
LONGITUDE 140-42.7 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	2.421	33.031	26.362
10	2.421	33.032	26.362
20	2.426	33.029	26.360
30	2.413	33.026	26.358
40	2.409	33.059	26.385
50	3.533	33.528	26.661

STATION US11147			
LATITUDE 42-11.7 N			
LONGITUDE 140-41.3 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	2.426	33.097	26.414
10	2.483	33.105	26.416
20	2.918	33.347	26.573
30	3.033	33.355	26.569
40	3.121	33.385	26.585
50	3.257	33.415	26.597
75	3.274	33.421	26.600

STATION US11150			
LATITUDE 41-58.0 N			
LONGITUDE 140-59.5 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	2.305	33.050	26.386
10	2.277	33.042	26.382
20	2.389	33.065	26.391
30	2.490	33.146	26.448
40	2.544	33.168	26.462
50	2.717	33.226	26.493
75	3.021	33.311	26.535

STATION US11153			
LATITUDE 42-11.9 N			
LONGITUDE 140-35.0 E			
DEPTH (m) 82			
Press.	Temp.	Salinity	Sigma-T
5	2.674	33.228	26.499
10	2.669	33.231	26.502
20	2.667	33.230	26.501
30	2.681	33.242	26.509
40	2.743	33.254	26.513
50	2.902	33.303	26.539
75	3.172	33.416	26.606

STATION US11156			
LATITUDE 42-18.8 N			
LONGITUDE 140-31.9 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	2.500	33.154	26.454
10	2.500	33.163	26.461
20	2.499	33.164	26.462
30	2.501	33.163	26.461
40	3.097	33.382	26.585
50	3.258	33.409	26.592
75	3.523	33.469	26.615

STATION US11159			
LATITUDE 42-15.6 N			
LONGITUDE 140-35.8 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	2.901	33.176	26.438
10	2.901	33.190	26.449
20	2.883	33.189	26.449
30	2.858	33.194	26.456
40	2.847	33.198	26.460
50	2.840	33.200	26.462
75	3.467	33.460	26.613

STATION		US11160	
LATITUDE		42-11.9	N
LONGITUDE		140-34.8	E
DEPTH (m)		85	
Press.	Temp.	Salinity	Sigma-T
5	2.914	33.162	26.426
10	2.914	33.183	26.442
20	2.915	33.183	26.442
30	2.898	33.175	26.437
40	2.850	33.187	26.451
50	2.805	33.200	26.465
75	2.942	33.301	26.534

STATION		US11163	
LATITUDE		42-18.8	N
LONGITUDE		140-30.0	E
DEPTH (m)		93	
Press.	Temp.	Salinity	Sigma-T
5	2.672	33.108	26.403
10	2.666	33.106	26.402
20	2.674	33.108	26.402
30	2.716	33.118	26.407
40	3.221	33.364	26.559
50	3.579	33.484	26.622
75	3.678	33.496	26.622

STATION		US11166	
LATITUDE		42-28.4	N
LONGITUDE		140-31.6	E
DEPTH (m)		78	
Press.	Temp.	Salinity	Sigma-T
5	2.860	33.074	26.360
10	2.714	33.060	26.361
20	2.718	33.074	26.372
30	3.029	33.299	26.525
40	3.238	33.422	26.604
50	3.387	33.452	26.614
75	3.588	33.484	26.620

STATION		US11169	
LATITUDE		42-18.5	N
LONGITUDE		140-42.1	E
DEPTH (m)		67	
Press.	Temp.	Salinity	Sigma-T
5	2.816	33.071	26.362
10	2.641	33.047	26.357
20	2.566	33.083	26.392
30	2.615	33.094	26.397
40	2.799	33.234	26.493
50	2.911	33.285	26.524

STATION		US11172	
LATITUDE		42-10.6	N
LONGITUDE		140-47.6	E
DEPTH (m)		94	
Press.	Temp.	Salinity	Sigma-T
5	2.561	33.024	26.345
10	2.552	33.025	26.346
20	2.525	33.026	26.349
30	2.451	33.026	26.355
40	2.721	33.174	26.451
50	2.733	33.181	26.456
75	3.038	33.344	26.560

STATION		US11175	
LATITUDE		41-58.2	N
LONGITUDE		140-59.5	E
DEPTH (m)		88	
Press.	Temp.	Salinity	Sigma-T
5	1.789	32.811	26.233
10	1.793	32.822	26.242
20	1.769	32.828	26.249
30	1.754	32.822	26.245
40	1.697	32.830	26.255
50	1.720	32.865	26.282
75	4.158	33.343	26.452

STATION		US11161	
LATITUDE		42-13.9	N
LONGITUDE		140-30.1	E
DEPTH (m)		79	
Press.	Temp.	Salinity	Sigma-T
5	2.915	33.162	26.425
10	2.915	33.174	26.435
20	2.930	33.176	26.435
30	2.937	33.180	26.438
40	2.918	33.183	26.442
50	2.842	33.193	26.457
75	3.524	33.488	26.630

STATION		US11164	
LATITUDE		42-21.0	N
LONGITUDE		140-35.7	E
DEPTH (m)		91	
Press.	Temp.	Salinity	Sigma-T
5	2.828	33.163	26.434
10	2.773	33.148	26.426
20	2.769	33.153	26.430
30	2.806	33.163	26.435
40	2.814	33.179	26.448
50	3.081	33.334	26.548
75	3.579	33.481	26.619

STATION		US11167	
LATITUDE		42-25.9	N
LONGITUDE		140-36.5	E
DEPTH (m)		86	
Press.	Temp.	Salinity	Sigma-T
5	2.947	33.071	26.350
10	2.712	33.064	26.364
20	2.710	33.077	26.375
30	2.691	33.164	26.446
40	3.146	33.361	26.564
50	3.437	33.460	26.616
75	3.601	33.485	26.620

STATION		US11170	
LATITUDE		42-20.3	N
LONGITUDE		140-47.7	E
DEPTH (m)		57	
Press.	Temp.	Salinity	Sigma-T
5	2.849	33.030	26.326
10	2.769	33.014	26.320
20	2.575	33.033	26.351
30	2.573	33.037	26.354
40	2.703	33.180	26.458
50	2.937	33.241	26.486

STATION		US11173	
LATITUDE		41-59.6	N
LONGITUDE		141-01.3	E
DEPTH (m)		98	
Press.	Temp.	Salinity	Sigma-T
5	1.902	32.989	26.368
10	1.897	32.879	26.280
20	1.897	32.846	26.254
30	1.884	32.846	26.255
40	1.895	32.857	26.263
50	1.987	32.900	26.290
75	3.021	33.165	26.419

STATION		US11176	
LATITUDE		41-57.5	N
LONGITUDE		140-58.2	E
DEPTH (m)		80	
Press.	Temp.	Salinity	Sigma-T
5	1.784	32.801	26.226
10	1.786	32.814	26.236
20	1.786	32.814	26.236
30	1.786	32.813	26.235
40	1.801	32.819	26.239
50	3.077	33.198	26.440
75	3.344	33.293	26.491

STATION		US11162	
LATITUDE		42-17.9	N
LONGITUDE		140-24.5	E
DEPTH (m)		61	
Press.	Temp.	Salinity	Sigma-T
5	2.919	33.041	26.329
10	2.919	33.135	26.403
20	2.921	33.161	26.424
30	2.935	33.173	26.432
40	2.973	33.287	26.520
50	3.596	33.496	26.630

STATION		US11165	
LATITUDE		42-23.8	N
LONGITUDE		140-31.8	E
DEPTH (m)		95	
Press.	Temp.	Salinity	Sigma-T
5	2.716	33.083	26.379
10	2.711	33.083	26.380
20	2.756	33.102	26.391
30	2.761	33.133	26.415
40	3.361	33.448	26.614
50	3.508	33.472	26.618
75	3.553	33.481	26.622

STATION		US11168	
LATITUDE		42-23.2	N
LONGITUDE		140-42.2	E
DEPTH (m)		64	
Press.	Temp.	Salinity	Sigma-T
5	2.860	33.048	26.339
10	2.680	33.039	26.347
20	2.691	33.063	26.365
30	2.682	33.152	26.437
40	2.759	33.202	26.470
50	3.347	33.458	26.622

STATION		US11171	
LATITUDE		42-15.7	N
LONGITUDE		140-47.5	E
DEPTH (m)		71	
Press.	Temp.	Salinity	Sigma-T
5	2.675	33.024	26.336
10	2.642	33.018	26.334
20	2.526	33.037	26.358
30	2.503	33.039	26.362
40	2.566	33.080	26.389
50	2.877	33.199	26.458

STATION		US11174	
LATITUDE		41-58.9	N
LONGITUDE		141-00.6	E
DEPTH (m)		95	
Press.	Temp.	Salinity	Sigma-T
5	1.890	32.858	26.264
10	1.888	32.859	26.265
20	1.879	32.866	26.271
30	1.878	32.866	26.272
40	1.879	32.871	26.275
50	1.894	32.889	26.288
75	3.847	33.327	26.471

THE " USHIO MARU "

CRUISE 224

CRUISE 225

CRUISE 226

IN APRIL 2011

1. Cruise Itinerary

Cruise 224

Departure from Hakodate	Apr. 2, 2011
Arrival at Fukushima	2
Departure from Fukushima	3
Start hydrographic research (US11177)	3
Arrival at Aomori	3
Departure from Aomori	4
Finish hydrographic research (US11197)	4
Return to Hakodate	5
Total coverage 206.4 miles	

Cruise 225

Departure from Hakodate	Apr. 9, 2011
Arrival at and departure from Usujiri	9
Start hydrographic research (US11198)	9
Sampling by frame trawl net	9
Retrieval mooring ADCP system	11
Arrival at Usujiri	11
Departure from Usujiri	12
Set mooring ADCP system	12
Arrival at Mori	12
Departure from Mori	13
Finish hydrographic research (US11239)	13
Arrival at and departure from Usujiri	13
Return to Hakodate	14
Total coverage 495.9 miles	

Cruise 226

Departure from Hakodate	Apr. 18, 2011
Arrival at Esashi	18
Departure from and arrival at Esashi	19
Departure from Esashi	20
Sampling by gill net (for catching fur seal)	20
Return to Hakodate	21
Total coverage 243.8 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

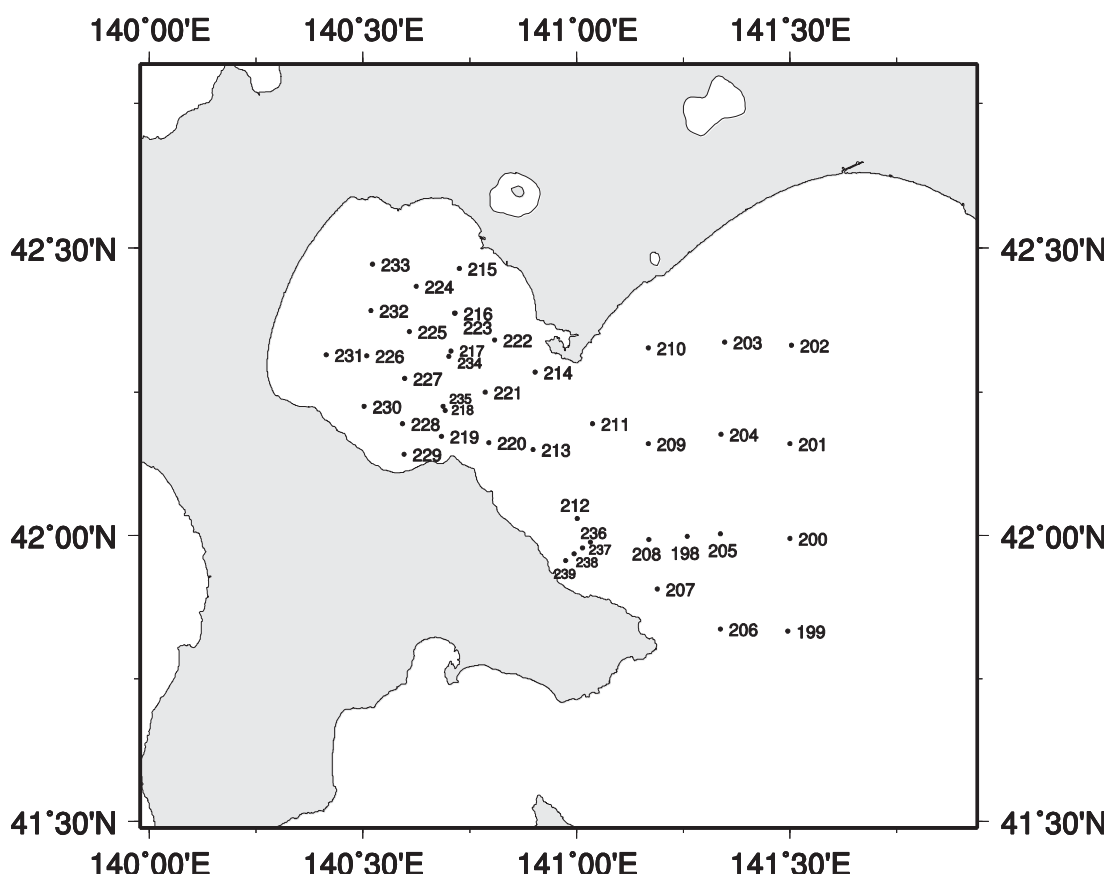


Figure 1. Oceanographic stations (Cruise 225)

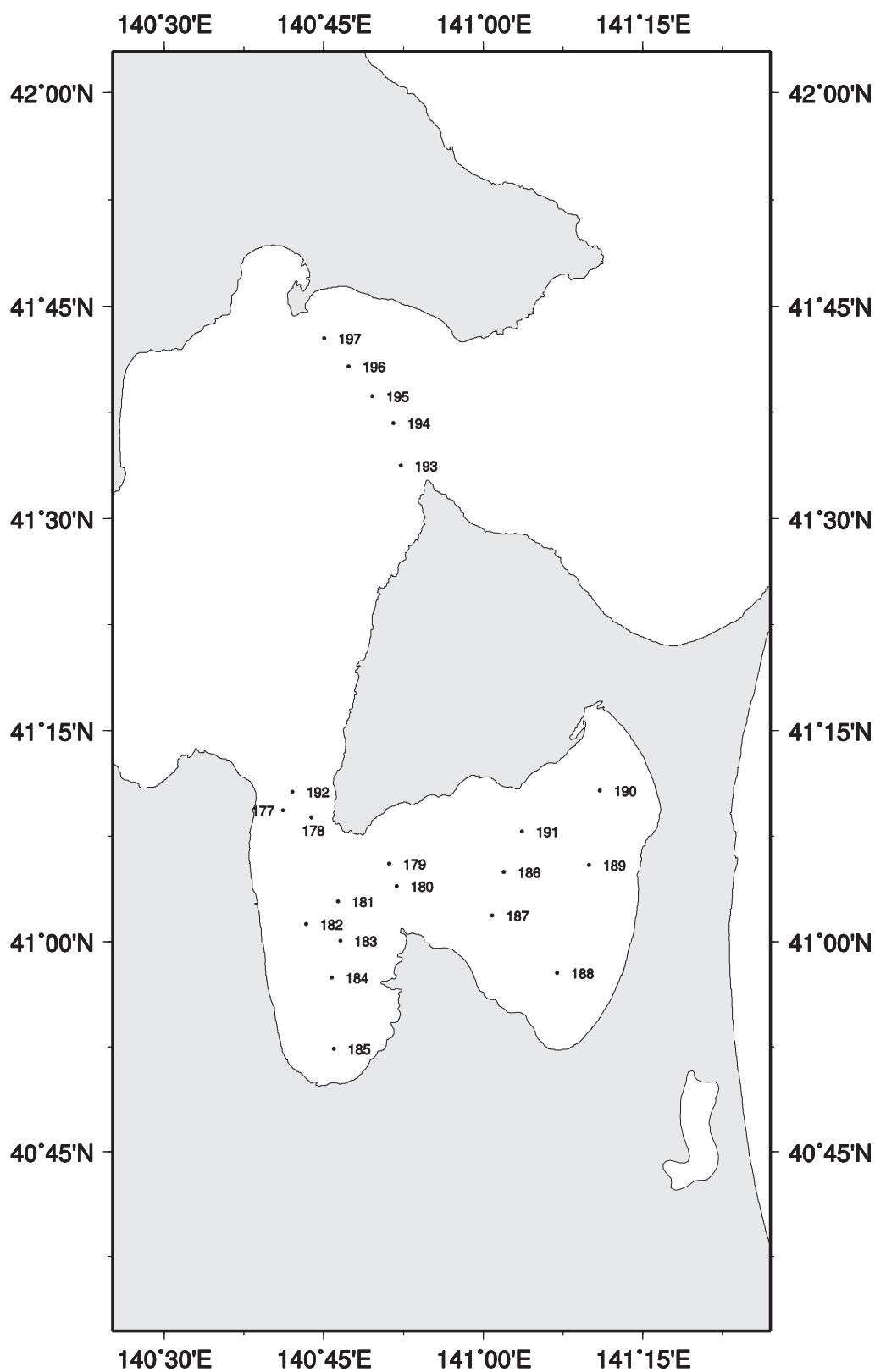


Figure 2. Oceanographic stations (Cruise 224)

Table 1: List of oceanographic stations

Cruise 224

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11177	41-09.4	140-41.1	4/3	0930-0938	56	NW -3	NW -1	NW -5	2.8	7.8	c	1017.2
US11178	41-08.9	140-43.8	4/3	1005-1011	61	West-2	NW -1	West-4	3.8	6.4	c	1017.5
US11179	41-05.6	140-51.1	4/3	1058-1105	54	West-2	West-1	West-4	3.5	3.9	c	1017.2
US11180	41-04.0	140-51.8	4/3	1122-1129	52	West-3	West-1	West-5	2.5	3.7	o	1017.2
US11181	41-02.9	140-46.3	4/3	1201-1207	58	West-3	West-1	West-5	3.0	4.1	c	1017.2
US11182	41-01.3	140-43.3	4/3	1232-1238	57	West-3	West-1	West-5	2.3	4.1	bc	1017.2
US11183	41-00.1	140-46.5	4/3	1300-1307	53	West-3	West-1	West-5	2.7	4.1	c	1017.5
US11184	40-57.5	140-45.7	4/3	1353-1358	51	West-3	West-1	West-5	3.2	4.1	c	1017.1
US11185	40-52.4	140-45.9	4/3	1536-1541	31	West-3	West-1	West-5	3.1	4.2	o	1017.5
US11186	41-05.0	141-01.9	4/4	0834-0840	48	NW -1	NNE-1	NW -2	2.2	3.5	bc	1023.2
US11187	41-01.9	141-00.8	4/4	1000-1008	49	SSW-1	NNE-1	SSW-2	2.8	3.9	bc	1023.6
US11188	40-57.8	141-06.9	4/4	1049-1054	39	Calm	NNE-1	Calm	3.8	3.8	bc	1023.6
US11189	41-05.5	141-09.9	4/4	1147-1152	39	South-1	North-1	South-2	4.3	4.0	bc	1023.6
US11190	41-10.8	141-10.9	4/4	1227-1231	31	South-1	South-1	South-3	4.0	4.6	bc	1023.2
US11191	41-07.9	141-03.6	4/4	1316-1322	38	WNW-2	West-1	WNW-5	4.6	3.9	bc	1022.5
US11192	41-10.7	140-42.0	4/4	1507-1514	67	WNW-3	WNW-1	WNW-5	5.5	7.9	bc	1022.1
US11193	41-33.8	140-52.2	4/4	1731-1734	57	WSW-3	West-1	WSW-5	5.8	8.2	bc	1022.1
US11194	41-36.8	140-51.5	4/4	1756-1800	84	WNW-3	West-1	WNW-5	5.5	8.3	bc	1022.1
US11195	41-38.7	140-49.5	4/4	1818-1830	328	WNW-3	West-1	WNW-5	4.9	8.6	bc	1022.1
US11196	41-40.8	140-47.3	4/4	1850-1858	226	WNW-3	West-1	WNW-5	4.8	8.1	bc	1022.1
US11197	41-42.8	140-45.0	4/4	1916-1920	84	West-3	West-1	West-5	4.7	7.8	bc	1022.2

Cruise 225

Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11198	42-00.0	141-15.5	4/9	1540-1550	244	ESE-2	SE -1	ESE-4	3.1	2.4	o	1019.2
US11199	41-50.1	141-29.6	4/10	0215-0226	357	NW -2	SE -1	NW -4	2.6	2	bc	1018.5
US11200	41-59.8	141-29.9	4/10	0351-0407	473	WNW-2	SE -1	WNW-3	2.6	2.1	bc	1018.5
US11201	42-09.7	141-29.9	4/10	0530-0545	548	West-2	SE -1	West-3	2.9	2.6	bc	1018.3
US11202	42-20.0	141-30.1	4/10	0708-0725	436	Calm	SE -1	Calm	2.2	2.5	f	1018.3
US11203	42-20.3	141-20.7	4/10	0830-0841	268	Calm	South-1	Calm	2.1	3.8	f	1018.7
US11204	42-10.7	141-20.2	4/10	0957-1010	368	Calm	SE -1	Calm	2.9	3.1	f	1017.1
US11205	42-00.3	141-20.1	4/10	1130-1140	307	South-2	SE -1	South-4	5.1	2.7	bc	1015.5
US11206	41-50.3	141-20.1	4/10	1258-1308	286	SSW-3	SE -1	SSW-5	6.3	3	bc	1014.6
US11207	41-54.5	141-11.3	4/10	1407-1415	202	Calm	SE -1	Calm	9.6	4.5	bc	1013.6
US11208	41-59.7	141-10.1	4/10	1513-1518	138	South-1	SE -1	South-3	9.9	3.8	bc	1012.5
US11209	42-09.7	141-10.0	4/10	1628-1633	124	SE -1	SE -1	SE -3	7.1	3.6	bc	1011.6
US11210	42-19.7	141-10.0	4/10	1744-1750	75	NNE -1	SE -1	NNE-3	4.4	3.1	bc	1011.6
US11211	42-11.8	141-02.2	4/10	1857-1902	81	NNE-1	ESE-1	NNE-3	4	3.4	c	1011.1
US11212	42-01.9	141-00.0	4/10	2019-2052	86	SE -3	SE -1	SE -3	7.3	3.3	c	1010.7
US11213	42-09.1	140-53.8	4/10	2200-2203	78	SSW-3	SE -1	SSW-4	9.4	4.1	o	1010.2
US11214	42-17.2	140-54.1	4/10	2325-2328	59	West-4	SE -1	West-5	6.6	4.1	r	1009.2
US11215	42-28.0	140-43.5	4/11	0120-0123	60	West-1	SE -1	West-2	5.7	4	o	1008.7
US11216	42-23.3	140-42.9	4/11	0242-0245	61	WNW-3	ESE-1	WNW-5	5.5	4	o	1009.1
US11217	42-19.4	140-42.3	4/11	0340-0344	70	WNW-1	ESE-1	WNW-3	5.3	4	o	1009.1
US11218	42-13.2	140-41.5	4/11	0452-0456	90	West-2	ESE-1	West-4	5.1	4	o	1009.1
US11219	42-10.5	140-41.0	4/11	0544-0548	88	West-2	ESE-1	West-4	5.2	3.9	o	1010
US11220	42-09.8	140-47.6	4/12	0729-0733	94	West-3	SE -1	West-5	4.1	3.2	bc	1013.6
US11221	42-15.1	140-47.1	4/12	0822-0826	74	West-2	SE -1	West-4	4.6	3.2	bc	1013.7
US11222	42-20.5	140-48.4	4/12	0911-0915	55	WNW-1	SE -1	WNW-3	5.2	3.4	bc	1013.7
US11223	42-23.3	140-42.8	4/12	1002-1006	61	WNW-1	SE -1	WNW-2	5	4.2	bc	1013.7
US11224	42-26.1	140-37.4	4/12	1045-1051	83	Calm	SE -1	Calm	6.6	4.5	bc	1013.6
US11225	42-21.4	140-36.5	4/12	1203-1207	89	SE -3	SW -1	SE -2	6.2	5.3	bc	1013.1
US11226	42-18.9	140-30.5	4/12	1300-1305	92	West-3	SE -1	West-5	7.6	4.8	bc	1012.6
US11227	42-16.5	140-35.8	4/12	1300-1305	91	West-3	SE -1	West-3	7.5	4.9	bc	1012.1
US11228	42-11.8	140-35.5	4/12	1635-1639	84	West-2	SE -1	West-4	7.2	4.7	bc	1011.6
US11229	42-08.6	140-35.7	4/12	1714-1718	62	West-2	West-1	West-4	7.3	4.2	bc	1011.6
US11230	42-13.6	140-30.1	4/13	0655-0659	77	East-1	SE -1	East-3	6.1	5.1	r	1004.8
US11231	42-19.0	140-24.8	4/13	0803-0807	66	East-2	ESE-1	East-4	5.3	4.6	r	1003.9
US11232	42-23.6	140-31.1	4/13	0913-0917	97	East-3	ESE-1	East-5	5.2	4.4	o	1003.9
US11233	42-28.4	140-31.3	4/13	1000-1004	79	East-1	ESE-1	East-3	5.1	4.4	o	1004.6
US11234	42-18.8	140-42.0	4/13	1129-1133	71	SE -1	SE -1	SE -2	6	3.7	bc	1005
US11235	42-13.6	140-41.2	4/13	1222-1226	89	ESE-1	SE -1	ESE-3	6.2	3.7	bc	1005.5
US11236	41-59.4	141-01.9	4/13	1504-1509	101	ENE-1	SE -1	ENE-2	4.9	4.2	bc	1006.1
US11237	41-58.8	141-00.8	4/13	1515-1519	95	ESE-1	SE -1	ESE-2	5.8	4	bc	1006.6
US11238	41-58.2	140-59.6	4/13	1525-1529	87	Calm	SE -1	Calm	6.4	4.2	bc	1006.6
US11239	41-57.5	140-58.4	4/13	1536-1540	80	Calm	SE -1	Calm	6.4	4.4	bc	1006.6

Cruise 226

No data

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11177			
LATITUDE 41-09.4 N			
LONGITUDE 140-41.1 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	8.030	33.727	26.270
10	8.074	33.800	26.320
20	8.067	33.804	26.325
30	8.050	33.804	26.327
40	8.016	33.806	26.334

STATION US11180			
LATITUDE 41-04.0 N			
LONGITUDE 140-51.8 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	3.777	32.768	26.032
10	3.775	32.795	26.054
20	3.812	32.840	26.086
30	4.002	32.882	26.101
40	4.248	33.028	26.192

STATION US11183			
LATITUDE 41-00.1 N			
LONGITUDE 140-46.5 E			
DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T
5	4.468	32.900	26.068
10	4.495	32.989	26.136
20	4.481	32.989	26.137
30	4.453	32.986	26.138
40	4.619	33.165	26.263

STATION US11186			
LATITUDE 41-05.0 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 48			
Press.	Temp.	Salinity	Sigma-T
5	3.838	32.740	26.004
10	3.826	32.788	26.043
20	3.819	32.790	26.046
30	3.783	32.793	26.052
40	3.729	32.802	26.064

STATION US11189			
LATITUDE 41-05.5 N			
LONGITUDE 141-09.9 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	4.179	32.838	26.049
10	3.930	32.798	26.042
20	3.702	32.776	26.046
30	3.674	32.782	26.053

STATION US11192			
LATITUDE 41-10.7 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	8.402	33.663	26.164
10	8.445	33.780	26.249
20	8.378	33.850	26.314
30	8.277	33.851	26.330
40	8.271	33.852	26.332
50	8.254	33.852	26.335

STATION US11178			
LATITUDE 41-08.9 N			
LONGITUDE 140-43.8 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	5.515	33.297	26.266
10	5.658	33.360	26.299
20	5.960	33.427	26.315
30	6.224	33.492	26.333
40	7.662	33.819	26.395
50	8.046	33.892	26.397

STATION US11181			
LATITUDE 41-02.9 N			
LONGITUDE 140-46.3 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	4.357	32.981	26.144
10	4.364	33.007	26.164
20	4.380	33.013	26.167
30	4.448	33.035	26.178
40	4.462	33.061	26.196

STATION US11184			
LATITUDE 40-57.5 N			
LONGITUDE 140-45.7 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	4.460	32.946	26.105
10	4.469	32.985	26.136
20	4.484	33.020	26.162
30	4.484	33.027	26.168
40	5.651	33.450	26.371

STATION US11187			
LATITUDE 41-01.9 N			
LONGITUDE 141-00.8 E			
DEPTH (m) 49			
Press.	Temp.	Salinity	Sigma-T
5	3.877	32.813	26.059
10	3.802	32.813	26.066
20	3.781	32.805	26.062
30	3.776	32.807	26.064
40	3.770	32.808	26.065

STATION US11190			
LATITUDE 41-10.8 N			
LONGITUDE 141-10.9 E			
DEPTH (m) 31			
Press.	Temp.	Salinity	Sigma-T
5	4.942	32.522	25.718
10	4.561	32.607	25.826
20	3.979	32.728	25.981

STATION US11193			
LATITUDE 41-33.8 N			
LONGITUDE 140-52.2 E			
DEPTH (m) 57			
Press.	Temp.	Salinity	Sigma-T
5	8.511	33.909	26.340
10	8.512	33.912	26.342
20	8.464	33.910	26.348
30	8.431	33.911	26.354
40	8.422	33.912	26.356
50	8.424	33.913	26.356

STATION US11179			
LATITUDE 41-05.6 N			
LONGITUDE 140-51.1 E			
DEPTH (m) 54			
Press.	Temp.	Salinity	Sigma-T
5	4.091	32.876	26.088
10	4.089	32.897	26.104
20	4.081	32.897	26.105
30	4.345	33.005	26.164
40	4.924	33.240	26.288
50	7.354	33.784	26.412

STATION US11182			
LATITUDE 41-01.3 N			
LONGITUDE 140-43.3 E			
DEPTH (m) 57			
Press.	Temp.	Salinity	Sigma-T
5	4.575	33.004	26.139
10	4.564	33.005	26.141
20	4.520	33.011	26.151
30	4.574	33.113	26.226
40	6.621	33.673	26.424
50	7.223	33.761	26.412

STATION US11185			
LATITUDE 40-52.4 N			
LONGITUDE 140-45.9 E			
DEPTH (m) 31			
Press.	Temp.	Salinity	Sigma-T
5	4.666	32.902	26.049
10	4.673	32.930	26.070
20	4.654	32.973	26.106

STATION US11188			
LATITUDE 40-57.8 N			
LONGITUDE 141-06.9 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	3.986	32.798	26.036
10	3.904	32.803	26.048
20	3.883	32.808	26.054
30	3.882	32.809	26.055

STATION US11191			
LATITUDE 41-07.9 N			
LONGITUDE 141-03.6 E			
DEPTH (m) 38			
Press.	Temp.	Salinity	Sigma-T
5	3.926	32.782	26.029
10	3.658	32.821	26.086
20	3.594	32.875	26.135
30	3.604	32.903	26.157

STATION US11194			
LATITUDE 41-36.8 N			
LONGITUDE 140-51.5 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	8.626	33.897	26.313
10	8.565	33.900	26.324
20	8.434	33.920	26.361
30	8.444	33.921	26.359
40	8.404	33.924	26.368
50	8.387	33.924	26.371
75	8.397	33.924	26.369

	STATION	US11195		
	LATITUDE	41-38.7	N	
	LONGITUDE	140-49.5	E	
	DEPTH (m)	328		
Press.	Temp.	Salinity	Sigma-T	
5	8.308	33.930	26.388	
10	8.315	33.928	26.385	
20	8.264	33.937	26.399	
30	8.163	33.949	26.425	
40	8.180	33.949	26.422	
50	8.190	33.947	26.418	
75	8.158	33.951	26.427	
100	8.136	33.953	26.432	
125	8.111	33.956	26.437	
150	8.051	33.960	26.449	
175	8.009	33.963	26.458	
200	8.021	33.963	26.456	
250	7.993	33.966	26.463	
300	7.592	33.989	26.539	

	STATION	US11198		
	LATITUDE	42-00.0	N	
	LONGITUDE	141-15.5	E	
	DEPTH (m)	244		
Press.	Temp.	Salinity	Sigma-T	
5	2.713	32.665	26.046	
10	2.688	32.670	26.052	
20	2.457	32.763	26.144	
30	2.347	33.018	26.357	
40	2.810	33.129	26.408	
50	3.695	33.280	26.448	
75	4.138	33.345	26.456	
100	4.689	33.481	26.506	
125	3.074	33.297	26.519	
150	3.279	33.373	26.561	
175	3.143	33.382	26.581	
200	2.834	33.390	26.615	

	STATION	US11201		
	LATITUDE	42-09.7	N	
	LONGITUDE	141-29.9	E	
	DEPTH (m)	548		
Press.	Temp.	Salinity	Sigma-T	
5	2.730	32.709	26.079	
10	2.730	32.710	26.081	
20	2.597	32.718	26.097	
30	2.113	32.829	26.224	
40	4.816	33.445	26.463	
50	5.665	33.568	26.462	
75	5.678	33.560	26.454	
100	5.679	33.560	26.454	
125	5.675	33.559	26.454	
150	5.589	33.554	26.460	
175	4.872	33.483	26.487	
200	4.567	33.514	26.545	
250	2.817	33.351	26.584	
300	2.352	33.380	26.646	
400	2.410	33.570	26.794	

	STATION	US11204		
	LATITUDE	42-10.7	N	
	LONGITUDE	141-20.2	E	
	DEPTH (m)	368		
Press.	Temp.	Salinity	Sigma-T	
5	2.972	32.722	26.069	
10	2.910	32.728	26.079	
20	2.871	32.735	26.088	
30	2.459	32.817	26.188	
40	3.035	33.139	26.397	
50	3.612	33.235	26.420	
75	5.195	33.496	26.461	
100	5.011	33.462	26.455	
125	3.862	33.328	26.470	
150	3.882	33.386	26.514	
175	4.133	33.484	26.567	
200	3.812	33.463	26.582	
250	2.352	33.358	26.629	
300	2.442	33.479	26.718	

	STATION	US11196		
	LATITUDE	41-40.8	N	
	LONGITUDE	140-47.3	E	
	DEPTH (m)	226		
Press.	Temp.	Salinity	Sigma-T	
5	7.978	33.911	26.421	
10	7.971	33.909	26.421	
20	7.973	33.912	26.423	
30	8.055	33.929	26.424	
40	8.061	33.931	26.426	
50	8.023	33.937	26.435	
75	7.779	33.928	26.464	
100	7.731	33.929	26.472	
125	7.657	33.937	26.489	
150	7.501	33.975	26.541	
175	7.432	33.984	26.559	
200	7.340	33.995	26.580	

	STATION	US11199		
	LATITUDE	41-50.1	N	
	LONGITUDE	141-29.6	E	
	DEPTH (m)	357		
Press.	Temp.	Salinity	Sigma-T	
5	2.375	32.550	25.981	
10	2.378	32.552	25.982	
20	2.515	32.662	26.060	
30	2.383	32.755	26.144	
40	2.955	33.139	26.403	
50	3.309	33.250	26.460	
75	3.153	33.248	26.473	
100	3.045	33.287	26.514	
125	2.800	33.312	26.555	
150	2.624	33.334	26.587	
175	2.496	33.365	26.623	
200	2.491	33.407	26.657	
250	2.449	33.466	26.707	
300	2.325	33.520	26.761	

	STATION	US11202		
	LATITUDE	42-20.0	N	
	LONGITUDE	141-30.1	E	
	DEPTH (m)	436		
Press.	Temp.	Salinity	Sigma-T	
5	2.897	32.676	26.039	
10	2.871	32.676	26.041	
20	2.055	32.690	26.117	
30	2.321	32.762	26.155	
40	2.050	32.864	26.257	
50	1.852	32.891	26.293	
75	3.587	33.267	26.448	
100	4.039	33.339	26.461	
125	3.378	33.287	26.484	
150	3.170	33.291	26.506	
175	2.981	33.316	26.543	
200	2.799	33.330	26.570	
250	2.413	33.377	26.639	
300	2.440	33.474	26.714	
400	2.831	33.694	26.858	

	STATION	US11205		
	LATITUDE	42-00.3	N	
	LONGITUDE	141-20.1	E	
	DEPTH (m)	307		
Press.	Temp.	Salinity	Sigma-T	
5	2.945	32.650	26.014	
10	2.767	32.664	26.040	
20	2.767	32.717	26.083	
30	2.064	32.816	26.217	
40	2.321	32.983	26.331	
50	3.407	33.202	26.413	
75	5.167	33.490	26.459	
100	4.415	33.417	26.484	
125	3.955	33.393	26.513	
150	4.885	33.577	26.560	
175	5.074	33.627	26.579	
200	4.594	33.595	26.607	
250	2.383	33.389	26.651	

	STATION	US11197		
	LATITUDE	41-42.8	N	
	LONGITUDE	140-45.0	E	
	DEPTH (m)	84		
Press.	Temp.	Salinity	Sigma-T	
5	8.160	32.261	25.100	
10	8.157	32.272	25.109	
20	8.046	32.373	25.204	
30	7.940	33.957	26.464	
40	7.812	33.964	26.488	
50	7.808	33.967	26.491	
75	7.579	33.981	26.535	

	STATION	US11200		
	LATITUDE	41-59.8	N	
	LONGITUDE	141-29.9	E	
	DEPTH (m)	473		
Press.	Temp.	Salinity	Sigma-T	
5	2.424	32.641	26.049	
10	2.502	32.659	26.058	
20	2.581	32.753	26.126	
30	2.322	32.780	26.169	
40	2.236	32.838	26.222	
50	2.808	33.104	26.388	
75	4.667	33.432	26.469	
100	4.160	33.380	26.481	
125	3.628	33.336	26.499	
150	3.092	33.322	26.537	
175	2.727	33.325	26.572	
200	2.219	33.292	26.587	
250	2.462	33.379	26.637	
300	2.486	33.466	26.704	
400	2.418	33.606	26.822	

	STATION	US11203		
	LATITUDE	42-20.3	N	
	LONGITUDE	141-20.7	E	
	DEPTH (m)	268		
Press.	Temp.	Salinity	Sigma-T	
5	3.574	32.871	26.134	
10	3.695	32.931	26.171	
20	3.297	32.930	26.206	
30	2.870	32.955	26.264	
40	2.807	32.991	26.298	
50	2.970	33.117	26.385	
75	4.752	33.441	26.467	
100	3.468	33.271	26.463	
125	3.237	33.292	26.500	
150	3.124	33.353	26.560	
175	3.007	33.378	26.590	
200	2.566	33.383	26.631	
250	2.491	33.467	26.705	

	STATION	US11206		
	LATITUDE	41-50.3	N	
	LONGITUDE	141-20.1	E	
	DEPTH (m)	286		
Press.	Temp.	Salinity	Sigma-T	
5	3.164	32.678	26.017	
10	3.065	32.679	26.027	
20	2.852	32.694	26.058	
30	2.440	32.805	26.180	
40	2.546	33.051	26.368	
50	3.001	33.155	26.412	
75	4.178	33.364	26.467	
100	4.636	33.477	26.508	
125	4.404	33.491	26.544	
150	4.728	33.577	26.578	
175	4.352	33.548	26.595	
200	3.105	33.449	26.637	
250	2.305	33.436	26.695	

STATION	US11207		
LATITUDE	41-54.5	N	
LONGITUDE	141-11.3	E	
DEPTH (m)	202		
Press.	Temp.	Salinity	Sigma-T
5	3.324	32.690	26.013
10	3.122	32.698	26.037
20	2.355	32.731	26.127
30	2.022	32.817	26.221
40	2.576	33.049	26.364
50	3.410	33.209	26.418
75	4.274	33.373	26.464
100	3.827	33.343	26.485
125	3.216	33.308	26.516
150	2.830	33.323	26.561
175	2.586	33.346	26.600

STATION	US11210		
LATITUDE	42-19.7	N	
LONGITUDE	141-10.0	E	
DEPTH (m)	75		
Press.	Temp.	Salinity	Sigma-T
5	3.973	32.918	26.133
10	3.861	32.929	26.152
20	3.235	32.923	26.207
30	3.137	33.003	26.279
40	3.326	33.080	26.323
50	2.899	33.141	26.410

STATION	US11213		
LATITUDE	42-09.1	N	
LONGITUDE	140-53.8	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	3.768	32.804	26.062
10	3.638	32.805	26.075
20	3.432	32.832	26.116
30	2.762	33.002	26.311
40	3.159	33.333	26.540
50	3.216	33.348	26.547

STATION	US11216		
LATITUDE	42-23.3	N	
LONGITUDE	140-42.9	E	
DEPTH (m)	61		
Press.	Temp.	Salinity	Sigma-T
5	4.456	33.003	26.151
10	4.333	33.005	26.166
20	2.683	32.894	26.231
30	2.870	32.992	26.294
40	2.904	33.139	26.408
50	3.021	33.231	26.471

STATION	US11219		
LATITUDE	42-10.5	N	
LONGITUDE	140-41.0	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	4.020	32.822	26.052
10	4.000	32.837	26.066
20	3.608	33.057	26.279
30	3.268	33.138	26.375
40	3.014	33.193	26.442
50	3.048	33.245	26.480
75	3.510	33.459	26.608

STATION	US11208		
LATITUDE	41-59.7	N	
LONGITUDE	141-10.1	E	
DEPTH (m)	138		
Press.	Temp.	Salinity	Sigma-T
5	3.624	32.697	25.990
10	2.993	32.678	26.033
20	2.413	32.671	26.074
30	2.056	32.699	26.124
40	2.070	32.848	26.243
50	2.659	33.093	26.392
75	4.736	33.433	26.462
100	3.894	33.352	26.486
125	3.162	33.332	26.539

STATION	US11211		
LATITUDE	42-11.8	N	
LONGITUDE	141-02.2	E	
DEPTH (m)	81		
Press.	Temp.	Salinity	Sigma-T
5	3.808	32.879	26.118
10	3.728	32.886	26.131
20	3.570	32.895	26.154
30	3.271	32.922	26.203
40	2.895	32.943	26.252
50	2.844	32.966	26.275

STATION	US11214		
LATITUDE	42-17.2	N	
LONGITUDE	140-54.1	E	
DEPTH (m)	59		
Press.	Temp.	Salinity	Sigma-T
5	4.020	32.930	26.138
10	4.014	32.936	26.143
20	3.864	32.955	26.173
30	3.734	33.024	26.240
40	3.215	33.062	26.319
50	2.936	33.196	26.450

STATION	US11217		
LATITUDE	42-19.4	N	
LONGITUDE	140-42.3	E	
DEPTH (m)	70		
Press.	Temp.	Salinity	Sigma-T
5	4.296	32.928	26.108
10	4.293	32.929	26.109
20	4.294	32.930	26.110
30	2.558	32.866	26.219
40	2.669	32.993	26.311
50	3.082	33.228	26.463

STATION	US11220		
LATITUDE	42-09.8	N	
LONGITUDE	140-47.6	E	
DEPTH (m)	94		
Press.	Temp.	Salinity	Sigma-T
5	3.495	32.775	26.065
10	3.491	32.775	26.065
20	3.628	32.987	26.221
30	3.325	33.061	26.308
40	2.929	33.133	26.401
50	3.294	33.355	26.546
75	3.629	33.471	26.607

STATION	US11209		
LATITUDE	42-09.7	N	
LONGITUDE	141-10.0	E	
DEPTH (m)	124		
Press.	Temp.	Salinity	Sigma-T
5	3.471	32.700	26.008
10	3.346	32.768	26.073
20	3.334	32.845	26.135
30	2.716	32.899	26.232
40	2.753	32.932	26.255
50	2.703	32.945	26.270
75	2.723	33.077	26.374
100	3.327	33.248	26.457

STATION	US11212		
LATITUDE	42-01.9	N	
LONGITUDE	141-00.0	E	
DEPTH (m)	86		
Press.	Temp.	Salinity	Sigma-T
5	3.245	32.754	26.071
10	3.242	32.760	26.076
20	2.884	32.883	26.205
30	2.625	32.884	26.227
40	2.497	32.939	26.282
50	2.640	33.067	26.373
75	3.182	33.297	26.510

STATION	US11215		
LATITUDE	42-28.0	N	
LONGITUDE	140-43.5	E	
DEPTH (m)	60		
Press.	Temp.	Salinity	Sigma-T
5	4.225	32.975	26.153
10	4.170	32.976	26.159
20	3.840	32.977	26.193
30	3.134	33.026	26.298
40	2.911	33.187	26.445
50	2.927	33.232	26.480

STATION	US11218		
LATITUDE	42-13.2	N	
LONGITUDE	140-41.5	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	3.955	32.837	26.071
10	3.945	32.839	26.073
20	3.376	32.907	26.181
30	3.634	33.078	26.293
40	3.341	33.104	26.341
50	3.096	33.250	26.480
75	3.660	33.486	26.616

STATION	US11221		
LATITUDE	42-15.1	N	
LONGITUDE	140-47.1	E	
DEPTH (m)	74		
Press.	Temp.	Salinity	Sigma-T
5	3.676	32.853	26.110
10	3.630	32.854	26.115
20	2.908	32.895	26.213
30	2.531	32.952	26.290
40	2.516	32.990	26.321
50	2.682	33.071	26.372

STATION US11222			
LATITUDE 42-20.5 N			
LONGITUDE 140-48.4 E			
DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T
5	3.739	32.760	26.030
10	3.641	32.764	26.042
20	3.512	32.869	26.138
30	2.984	32.897	26.208
40	3.107	33.021	26.296
50	2.980	33.153	26.413

STATION US11225			
LATITUDE 42-21.4 N			
LONGITUDE 140-36.5 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	4.666	32.957	26.092
10	4.552	32.983	26.125
20	4.377	33.001	26.158
30	3.460	33.075	26.307
40	3.110	33.261	26.487
50	3.420	33.441	26.603
75	3.577	33.478	26.618

STATION US11228			
LATITUDE 42-11.8 N			
LONGITUDE 140-35.5 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	5.023	32.814	25.940
10	4.911	32.806	25.946
20	3.577	32.990	26.228
30	3.340	33.108	26.344
40	3.177	33.310	26.520
50	3.398	33.377	26.554
75	3.586	33.456	26.599

STATION US11231			
LATITUDE 42-19.0 N			
LONGITUDE 140-24.8 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	4.844	32.593	25.785
10	4.508	32.868	26.038
20	3.627	33.037	26.261
30	3.040	33.169	26.420
40	3.004	33.272	26.505
50	3.149	33.330	26.539

STATION US11234			
LATITUDE 42-18.8 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	3.945	32.783	26.029
10	3.885	32.790	26.040
20	3.238	32.796	26.105
30	2.292	32.933	26.293
40	2.789	33.097	26.384
50	3.211	33.317	26.523

STATION US11237			
LATITUDE 41-58.8 N			
LONGITUDE 141-00.8 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	3.443	32.685	25.998
10	3.306	32.708	26.029
20	3.121	32.713	26.049
30	2.275	32.775	26.168
40	2.168	32.912	26.287
50	2.610	33.049	26.361
75	3.139	33.256	26.481

STATION US11223			
LATITUDE 42-23.3 N			
LONGITUDE 140-42.8 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	4.606	32.978	26.116
10	4.483	32.975	26.126
20	3.894	33.047	26.243
30	3.655	33.107	26.314
40	3.108	33.189	26.430
50	3.169	33.260	26.481

STATION US11226			
LATITUDE 42-18.9 N			
LONGITUDE 140-30.5 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	4.881	32.953	26.065
10	4.656	32.951	26.088
20	3.972	32.994	26.194
30	3.085	33.152	26.403
40	3.324	33.394	26.574
50	3.473	33.455	26.609
75	3.624	33.486	26.619

STATION US11229			
LATITUDE 42-08.6 N			
LONGITUDE 140-35.7 E			
DEPTH (m) 62			
Press.	Temp.	Salinity	Sigma-T
5	5.266	32.198	25.425
10	5.120	32.333	25.548
20	4.042	32.960	26.159
30	3.455	33.100	26.327
40	3.196	33.325	26.531
50	3.359	33.363	26.546

STATION US11232			
LATITUDE 42-23.6 N			
LONGITUDE 140-31.1 E			
DEPTH (m) 97			
Press.	Temp.	Salinity	Sigma-T
5	4.747	32.954	26.081
10	4.716	32.976	26.102
20	3.556	33.045	26.274
30	3.001	33.188	26.439
40	3.168	33.317	26.527
50	3.411	33.434	26.598
75	3.575	33.479	26.618

STATION US11235			
LATITUDE 42-13.6 N			
LONGITUDE 140-41.2 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	4.044	32.764	26.003
10	3.951	32.762	26.011
20	3.309	32.867	26.155
30	2.597	32.906	26.247
40	3.228	33.121	26.365
50	2.927	33.213	26.465
75	3.601	33.481	26.617

STATION US11238			
LATITUDE 41-58.2 N			
LONGITUDE 140-59.6 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	4.262	32.660	25.899
10	3.475	32.673	25.986
20	3.242	32.691	26.021
30	2.367	32.770	26.158
40	2.262	32.956	26.314
50	2.681	33.069	26.371
75	3.170	33.327	26.535

STATION US11224			
LATITUDE 42-26.1 N			
LONGITUDE 140-37.4 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	4.467	33.015	26.160
10	4.400	33.024	26.174
20	3.807	33.030	26.238
30	3.554	33.123	26.336
40	3.069	33.164	26.413
50	3.083	33.272	26.499
75	3.581	33.476	26.615

STATION US11227			
LATITUDE 42-16.5 N			
LONGITUDE 140-35.8 E			
DEPTH (m) 91			
Press.	Temp.	Salinity	Sigma-T
5	5.178	32.894	25.985
10	4.728	32.888	26.031
20	3.700	33.048	26.263
30	3.385	33.130	26.358
40	3.132	33.317	26.530
50	3.406	33.437	26.600
75	3.629	33.480	26.613

STATION US11230			
LATITUDE 42-13.6 N			
LONGITUDE 140-30.1 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	5.409	32.341	25.522
10	4.562	32.772	25.956
20	3.757	33.019	26.234
30	3.205	33.100	26.351
40	3.179	33.292	26.506
50	3.282	33.382	26.568

STATION US11233			
LATITUDE 42-28.4 N			
LONGITUDE 140-31.3 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	4.795	32.953	26.075
10	4.784	32.957	26.080
20	4.063	33.061	26.237
30	3.679	33.101	26.307
40	3.420	33.141	26.363
50	3.071	33.282	26.508

STATION US11236			
LATITUDE 41-59.4 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 101			
Press.	Temp.	Salinity	Sigma-T
5	3.878	32.860	26.096
10	3.402	32.734	26.041
20	3.343	32.790	26.091
30	2.587	32.802	26.165
40	2.267	32.927	26.291
50	2.672	33.062	26.366
75	3.066	33.225	26.462

STATION US11239			
LATITUDE 41-57.5 N			
LONGITUDE 140-58.4 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	3.691	32.674	25.966
10	3.485	32.692	26.000
20	3.123	32.687	26.028
30	2.929	32.903	26.217
40	2.672	33.076	26.377
50	2.878	33.142	26.413
75	3.192	33.334	26.538

THE " USHIO MARU "

CRUISE 227

CRUISE 228

CRUISE 229

IN APRIL - MAY 2011

1. Cruise Itinerary

Cruise 227

Departure from Hakodate	Apr. 25, 2011
Arrival at and departure from Shiraoi	25
Start hydrographic research (US11240)	26
Finish hydrographic research (US11245)	27
Arrival at and departure from Muroran	28
Arrival at Usujiri	28
Departure from Usujiri	29
Return to Hakodate	29
Total coverage 741.4 miles	

Cruise 228

Departure from Hakodate	May 7, 2011
Arrival at Usujiri	7
Departure from Usujiri	8
Research by bottom long line	8
Start hydrographic research (US11246)	8
Arrival at Usujiri	8
Departure from Usujiri	9
Start frame trawl net sampling	10
Finish frame trawl net sampling	11
Arrival at Usujiri	12
Departure from Usujiri	14
Anchorage at Muroran	14
Departure from Muroran	15
Finish hydrographic research (US11306)	15
Return to Hakodate	16
Total coverage 692.2 miles	

Cruise 229

Departure from Hakodate	May 20, 2011
Arrival at and departure from Usujiri	20
Start hydrographic research (US11307) and frame trawl net sampling	20
Arrival at Usujiri	23
Departure from Usujiri	25
Finish frame trawl net sampling	25
Start sledge net sampling	25
Arrival at Muroran	25
Departure from Muroran	26
Finish sledge net sampling	26
Arrival at Usujiri	26
Departure from Usujiri	27
Finish hydrographic research (US11358)	27
Return to Hakodate	28
Total coverage 745.8 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

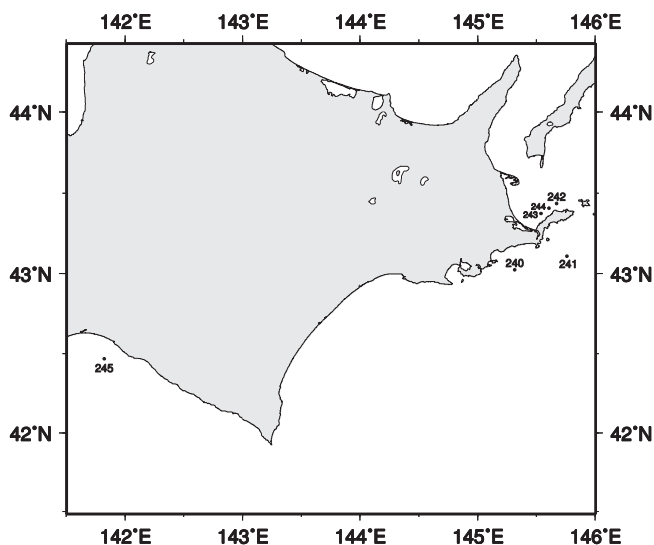


Figure 1. Oceanographic stations (Cruise 227)

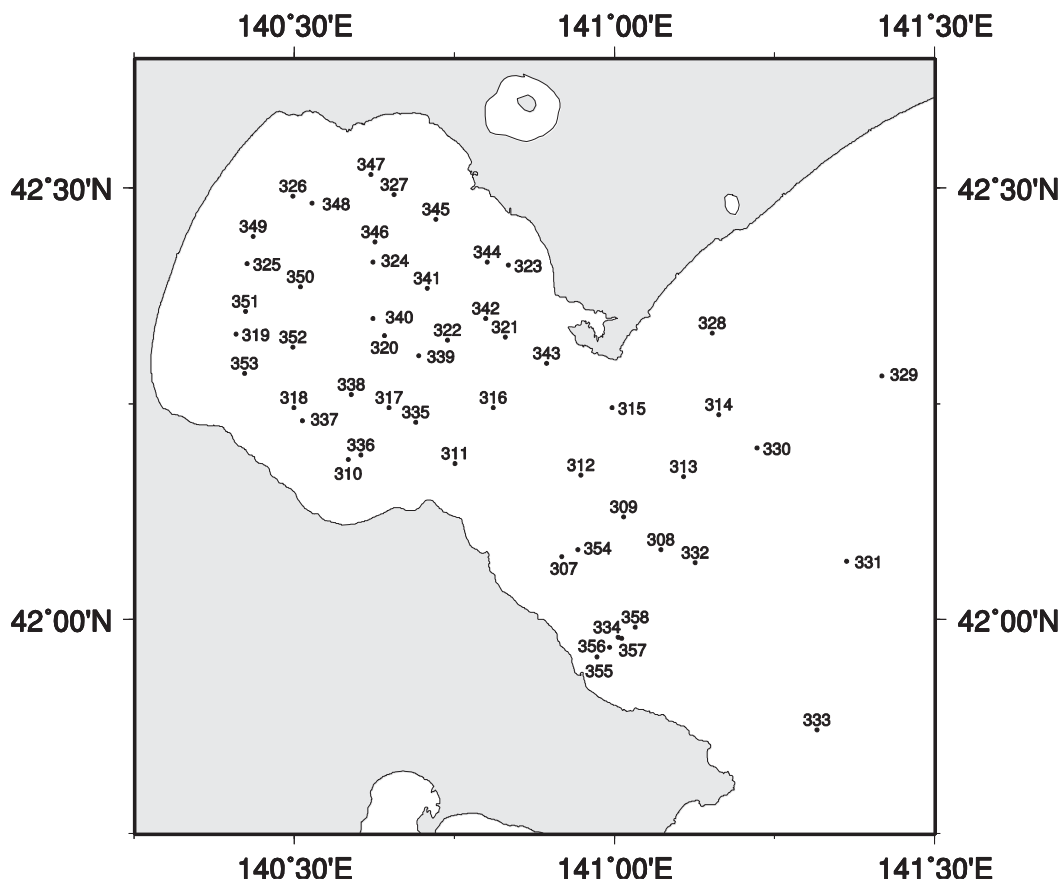


Figure 2. Oceanographic stations (Cruise 229)

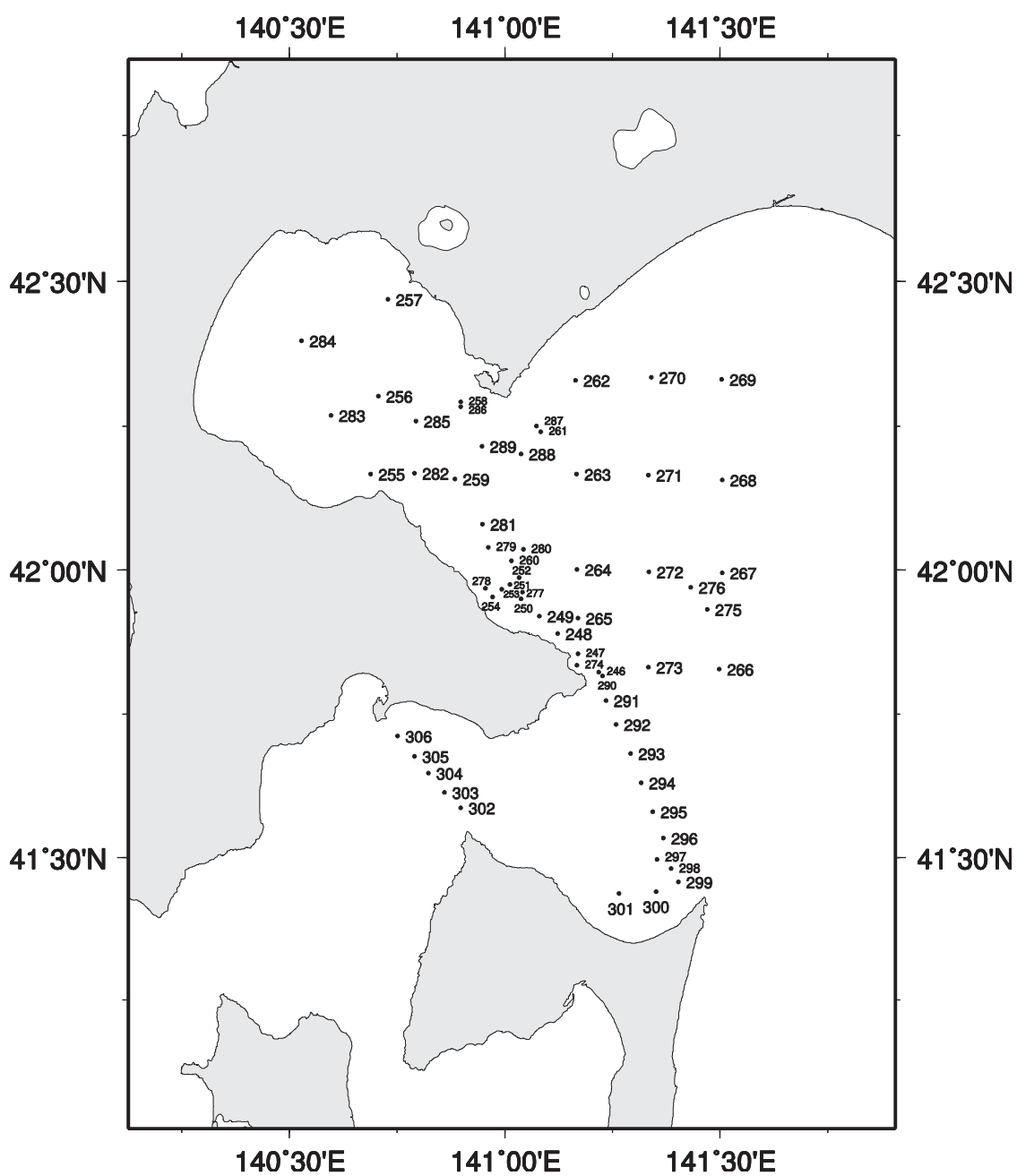


Figure 3. Oceanographic stations (Cruise 228)

Table 1: List of oceanographic stations

Cruise 227

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11240	43-01.7	145-18.7	4/26	1208-1211	46	SW -3	SSW -2	SW -5	7.2	2.9	bc	1008.5
US11241	43-06.7	145-45.4	4/26	1515-1519	95	SW -2	South-2	SW -4	5.2	1.4	bc	1008.8
US11242	43-26.4	145-40.2	4/26	1803-1809	29	West-2	SSW-1	West-4	8.0	2.8	bc	1009.8
US11243	43-22.6	145-32.1	4/26	1908-1911	18	SSW-2	SSW-1	SSW-4	6.6	4.3	bc	1010.1
US11244	43-24.6	145-36.2	4/26	1749-1752	25	SW -1	SSW-1	SW -3	6.6	4.4	bc	1010.6
US11245	42-28.2	141-49.2	4/27	1802-1804	38	SSW-1	SE -1	SSW-3	6.5	4.3	r	1007.6

Cruise 228

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11246	41-49.5	141-13.0	5/8	0730-0737	165	SW -2	SE -1	SW -4	10.2	5	bc	1004.6
US11247	41-51.4	141-10.1	5/8	0758-0802	107	SW -3	SE -1	SW -5	9.9	5	c	1004.3
US11248	41-53.5	141-07.3	5/8	0825-0830	95	NW -3	SE -1	NW -5	9.4	5.5	c	1004.5
US11249	41-55.3	141-04.7	5/8	1000-1004	110	NNW-2	SE -1	NNW-4	7.7	6.2	c	1005.2
US11250	41-57.1	141-02.2	5/8	1022-1026	104	NW -1	SE -1	NW -2	8	5.4	c	1005.2
US11251	41-58.6	141-00.6	5/8	1045-1049	93	NW -1	SE -1	NW -3	10.3	5.3	c	1005.2
US11252	41-59.3	141-01.9	5/8	1058-1102	100	West-1	SE -1	West-3	9.9	5.3	c	1005.1
US11253	41-58.1	140-59.5	5/8	1116-1120	85	NW -3	SE -1	NW -5	9.5	5.3	bc	1004.7
US11254	41-57.3	140-58.2	5/8	1128-1132	77	West-1	SE -1	West-3	9.5	5.6	bc	1004.8
US11255	42-10.1	140-41.2	5/9	0756-0800	85	SW -3	West-1	SW -5	10.7	5.5	bc	1011.2
US11256	42-18.2	140-42.3	5/9	0903-0907	64	WNW-2	SE -1	WNW-4	10.1	5.6	bc	1011.5
US11257	42-28.2	140-43.6	5/9	1013-1017	59	WSW-1	SE -1	WSW-3	11.4	7.8	bc	1011.6
US11258	42-17.6	140-53.8	5/9	1135-1138	56	Calm	SSE-1	Calm	12.1	7.2	bc	1011
US11259	42-09.6	140-53.0	5/9	1234-1238	77	SSW-1	SE -1	SSW-3	10.3	6.7	bc	1010.5
US11260	42-01.1	141-00.8	5/9	1347-1351	90	South-1	SE -1	South-2	10.9	6.6	bc	1010.6
US11261	42-14.5	141-04.9	5/9	1518-1522	80	West-2	SE -1	West-4	11.5	6.8	o	1009.2
US11262	42-19.8	141-09.8	5/9	1610-1614	72	Calm	SE -1	Calm	9	6.4	o	1009.4
US11263	42-10.1	141-09.9	5/9	1723-1728	123	West-1	SE -1	West-3	8.9	6.2	o	1010
US11264	42-00.2	141-10.0	5/9	1840-1846	136	SW -2	SE -1	SW -4	9.3	6.1	o	1009.6
US11265	41-55.1	141-10.1	5/9	1932-1939	188	SW -1	SSE-1	SW -3	9.7	5.9	o	1009.4
US11266	41-49.8	141-29.8	5/9	2125-2137	363	South-1	SSE-1	Sputh-3	9.1	5.2	r	1007.8
US11267	41-59.8	141-30.2	5/9	2300-2312	497	South-1	SSE-1	South-3	8.4	5.5	o	1006.7
US11268	42-09.5	141-30.2	5/10	0029-0039	569	South-1	SSE-1	South-3	7.8	6.5	r	1003.1
US11269	42-19.9	141-30.1	5/10	0155-0207	448	SE -1	SSE-1	SE -2	7.3	5.6	r	1001.3
US11270	42-20.1	141-20.3	5/10	0308-0318	269	NE -1	SSE-1	NE -2	7	5.6	r	1000.6
US11271	42-10.0	141-19.9	5/10	0440-0450	359	North-1	SSE-1	North-2	7.2	5.7	r	1000.1
US11272	41-59.9	141-20.0	5/10	0610-0621	308	North-2	SE -1	North-3	7.3	6.4	r	1000.1
US11273	41-50.0	141-19.9	5/10	0738-0748	279	NNW-2	SE -1	NNW-3	7.1	6.6	o	1000.9
US11274	41-50.2	141-10.0	5/10	0915-0918	78	North-2	East-1	North-4	8.3	6.1	c	1001
US11275	41-56.0	141-28.1	5/10	2310-2320	372	West-2	East-1	West-4	7.4	6.9	bc	1008.2
US11276	41-58.3	141-25.8	5/11	1043-1055	355	NNE -1	North-1	NNE-2	8.6	7	bc	1011.6
US11277	41-57.8	141-02.4	5/11	1423-1427	105	SE -1	East-1	SE -2	10.2	7.8	bc	1011.1
US11278	41-58.2	140-57.2	5/11	1504-1508	71	SSE-1	East-1	SSE-2	10	7.4	bc	1010.6
US11279	42-02.5	140-57.6	5/11	1554-1558	79	SE -1	East-1	SE -2	8.6	7.3	bc	1010.5
US11280	42-02.3	141-02.5	5/11	1638-1643	97	SE -1	East-1	SE -2	9.2	7.3	bc	1010.5
US11281	42-04.9	140-56.8	5/14	0707-0717	83	NW -3	East-1	NW -5	6.1	5.2	c	995
US11282	42-10.2	140-47.3	5/14	0835-0839	95	NW -1	East-1	NW -3	6.2	5.1	r	996.1
US11283	42-16.2	140-35.7	5/14	0959-1008	92	West-3	East-1	West-5	6.6	5.3	r	996.6
US11284	42-23.9	140-31.6	5/14	1142-1146	96	West-3	SE -1	West-5	8.3	6	bc	997
US11285	42-15.6	140-47.5	5/14	1324-1328	72	WNW-3	SE -1	WNW-5	7.6	5.6	bc	998.1
US11286	42-17.1	140-53.8	5/14	1415-1422	58	WNW-3	SE -1	WNW-5	8.8	5.8	bc	998.8
US11287	42-15.1	141-04.3	5/14	1535-1539	78	WNW-3	ESE-1	WNW-5	7.4	5.8	bc	1000.1
US11288	42-12.2	141-02.2	5/14	1603-1607	80	WNW-3	ESE-1	WNW-6	7.3	6	bc	1000.8
US11289	42-13.0	140-56.7	5/14	1636-1640	70	WNW-4	WNW-1	WNW-6	7	5.6	bc	1001.2
US11290	41-49.1	141-13.5	5/15	0834-0847	178	NW -3	NW -1	NW -5	6.6	5.3	bc	1013.6
US11291	41-46.5	141-14.0	5/15	1012-1025	187	NW -3	NW -1	NW -5	6.9	6.4	bc	1015.5
US11292	41-44.0	141-15.4	5/15	1046-1102	224	NNW-3	NW -1	NNW-5	7.9	7.5	c	1016.1
US11293	41-41.0	141-17.4	5/15	1126-1140	233	West-3	NW -1	West-5	8.6	7.4	bc	1016.1
US11294	41-37.9	141-18.9	5/15	1204-1218	214	West-3	East-1	West-5	9.1	8.1	bc	1016
US11295	41-34.9	141-20.5	5/15	1239-1257	320	West-3	East-1	West-5	9.5	8.8	bc	1016
US11296	41-32.1	141-22.0	5/15	1315-1331	257	West-3	East-1	West-5	10.2	9.1	bc	1016.1
US11297	41-29.9	141-21.1	5/15	1352-1405	222	West-2	East-1	West-4	10.5	9.5	bc	1016
US11298	41-28.9	141-23.1	5/15	14191426	100	West-2	ESE-1	West-3	13.6	9.3	bc	1016.1
US11299	41-27.5	141-24.1	5/15	1439-1446	50	WNW-1	ESE-1	WNW-3	11.6	9	bc	1016.1
US11300	41-26.5	141-21.0	5/15	1504-1511	71	NW -1	ESE-1	NW -3	10.6	9.2	bc	1016.2
US11301	41-26.3	141-15.8	5/15	1541-1549	80	NW -2	NW -1	NW -4	10.7	9.3	bc	1016.2
US11302	41-35.3	140-53.8	5/15	1738-1741	55	SW -3	West-1	SW -5	9.3	9.9	bc	1017.1
US11303	41-36.9	140-51.5	5/15	1800-1804	93	South-2	WSW-1	South-3	9.2	9.8	bc	1016.5
US11304	41-38.9	140-49.3	5/15	1823-1834	306	SSW-1	WSW-1	SSW-3	9.4	9.8	bc	1016.8
US11305	41-40.7	140-47.3	5/15	1851-1900	223	Calm	East-1	Calm	9.7	9.8	c	1017.1
US11306	41-42.8	140-45.0	5/15	1918-1922	85	SW -1	SW -1	SW -2	10	9.7	c	1017.2

Cruise 229

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11307	42-04.4	140-55.0	5/20	1443-1447	76	West-2	ESE-1	West-4	14.7	7.4	r	1010.1
US11308	42-04.9	141-04.3	5/20	1534-1538	100	WNW-2	ESE-1	WNW-3	13.7	7.5	o	1009.5
US11309	42-07.2	141-00.8	5/20	1740-1744	87	Calm	ESE-1	Calm	13.4	8.4	o	1009.6
US11310	42-11.2	140-35.0	5/21	0549-0553	81	Calm	East-1	Calm	11.2	9	r	1007
US11311	42-10.9	140-45.0	5/21	0641-0646	96	Calm	East-1	Calm	11.5	8.4	f	1007.3
US11312	42-10.1	140-56.8	5/21	0745-0748	78	Calm	East-1	Calm	11.3	9.3	f	1007.3
US11313	42-10.0	141-06.4	5/21	0840-0844	95	Calm	ESE-1	Calm	10.7	8.6	f	1007.1
US11314	42-14.3	141-09.7	5/21	1115-1119	96	Calm	ESE-1	Calm	11.2	8.7	m	1006.7
US11315	42-14.8	140-59.7	5/21	1204-1207	68	Calm	ESE-1	Calm	11.9	8.5	f	1006.6
US11316	42-14.8	140-48.6	5/21	1300-1303	70	Calm	ESE-1	Calm	12.6	8.9	o	1006.7
US11317	42-14.8	140-38.8	5/21	1349-1353	88	WNW-1	ESE-1	WNW-3	12.4	9.2	o	1006.7
US11318	42-14.8	140-29.9	5/21	1605-1609	82	SW -1	ESE-1	SW -3	12.9	9.5	o	1007.5
US11319	42-19.9	140-24.5	5/22	0554-0556	66	West-1	ESE-1	West-1	10	8.5	o	1011.1
US11320	42-19.8	140-38.4	5/22	0700-0705	82	West-1	ESE-1	West-3	10.8	8.4	o	1011.6
US11321	42-19.7	140-49.7	5/22	0800-0802	47	West-1	SE -1	West-3	10.6	8.8	o	1011.6
US11322	42-19.5	140-44.3	5/22	0830-0833	60	West-1	ESE-1	West-3	10.2	8	o	1011.7
US11323	42-24.7	140-50.0	5/22	1029-1032	40	Calm	SW-1	Calm	11.3	9.2	c	1012.1
US11324	42-24.9	140-37.3	5/22	1132-1135	86	Calm	West-1	Calm	12.7	8.3	c	1012.2
US11325	42-24.8	140-25.5	5/22	1231-1234	70	West-2	West-1	West-3	13.8	9	bc	1011.9
US11326	42-29.5	140-29.8	5/22	1310-1313	68	WSW-2	WSW-1	WSW-4	14.5	8.8	bc	1011.7
US11327	42-29.6	140-39.3	5/22	1357-1400	66	WSW-2	WSW-1	WSW-5	13.2	9	bc	1011.6
US11328	42-20.0	141-09.1	5/23	0525-0527	69	Calm	SW-1	Calm	8.4	7.9	bc	1017.1
US11329	42-17.0	141-25.0	5/23	0644-0652	477	Calm	SW-1	Calm	8.4	8	bc	1017.3
US11330	42-12.0	141-13.3	5/23	0758-0803	152	West-2	SW-1	West-5	9.1	8.5	bc	1018.2
US11331	42-04.1	141-21.7	5/23	0904-0912	346	NW -2	West-1	NW -4	9.7	8.6	bc	1018.4
US11332	42-04.0	141-07.5	5/23	1021-1026	118	NW -2	West-1	NW -4	9.2	8.3	c	1019
US11333	41-52.3	141-18.9	5/23	1149-1157	284	West-1	SE -1	West-2	10	8.9	bc	1019.6
US11334	41-58.8	141-00.3	5/23	1334-1338	91	NW -1	SE -1	NW -2	11.5	9.6	bc	1019.5
US11335	42-13.8	140-41.3	5/25	0849-0854	88	ESE-1	ESE-1	ESE-1	10.5	9.2	c	1019.1
US11336	42-11.5	140-36.2	5/25	0953-0959	82	SSW-1	ESE-1	SSW-1	12.2	9.6	bc	1019.1
US11337	42-13.9	140-30.7	5/25	1058-1103	81	SE -1	East-1	SE -2	13.5	10.6	bc	1019.5
US11338	42-15.7	140-35.3	5/25	1143-1148	91	SE -1	East-1	SE -3	11.5	9.6	bc	1019.5
US11339	42-18.4	140-41.6	5/25	1317-1321	71	SE -1	East-1	SE -3	10.2	10.2	bc	1019.7
US11340	42-21.0	140-37.3	5/25	1422-1426	84	SE -1	East-1	SE -3	14	9.7	bc	1020
US11341	42-23.1	140-42.4	5/25	1523-1526	61	SE -1	East-1	SE -3	10.6	9.6	bc	1020.1
US11342	42-21.0	140-47.9	5/25	1558-1600	51	SE -1	ESE-1	SE -3	10.8	9.5	bc	1020.1
US11343	42-17.9	140-53.6	5/25	1638-1641	55	SE -1	ESE-1	SE -3	11.8	9.8	bc	1020.1
US11344	42-24.9	140-48.0	5/26	0703-0708	45	Calm	SE -1	Calm	7.7	9.3	f	1024.2
US11345	42-27.9	140-43.2	5/26	0739-0745	59	Calm	SE -1	Calm	7.8	9.7	f	1024.2
US11346	42-26.3	140-37.5	5/26	0817-0823	81	Calm	SE -1	Calm	7.9	9.8	f	1024.2
US11347	42-31.0	140-37.1	5/26	0856-0900	63	Calm	SE -1	Calm	8.3	9.6	f	1024.1
US11348	42-29.0	140-31.6	5/26	0934-0938	75	Calm	SE -1	Calm	8.7	10	f	1024.1
US11349	42-26.7	140-26.1	5/26	1011-1015	68	Calm	SE -1	Calm	8.8	10	f	1024
US11350	42-23.2	140-30.5	5/26	1103-1108	95	Calm	SE -1	Calm	9.1	10	f	1023.6
US11351	42-21.5	140-25.4	5/26	1159-1203	73	Calm	SE -1	Calm	9.6	10.9	f	1023.5
US11352	42-19.0	140-29.8	5/26	1243-1249	92	Calm	SE -1	Calm	9.6	10.5	f	1023.2
US11353	42-17.2	140-25.3	5/26	1333-1337	63	Calm	East-1	Calm	10	11	f	1023.1
US11354	42-04.9	140-56.5	5/26	1644-1649	85	East-1	ESE-1	East-3	9.8	10	f	1022.6
US11355	41-57.4	140-58.3	5/27	1005-1009	80	Calm	East-1	Calm	9.6	9.3	f	1027.1
US11356	41-58.1	140-59.5	5/27	1016-1020	87	Calm	East-1	Calm	9.3	9.5	f	1022.1
US11357	41-58.7	141-00.6	5/27	1028-1032	94	NE -1	ESE-1	NE -3	9.4	9.4	f	1021.9
US11358	41-59.5	141-01.9	5/27	1042-1047	101	NE -1	ESE-1	NE -3	9.4	9.6	f	1021.8

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11240				STATION US11241				STATION US11242			
LATITUDE 43-01.7 N				LATITUDE 43-06.7 N				LATITUDE 43-26.4 N			
LONGITUDE 145-18.7 E				LONGITUDE 145-45.4 E				LONGITUDE 145-40.2 E			
DEPTH (m) 46				DEPTH (m) 95				DEPTH (m) 29			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	3.241	32.268	25.684	5	1.874	32.580	26.042	5	2.264	32.341	25.822
10	2.460	32.354	25.818	10	1.622	32.566	26.049	10	1.533	32.438	25.952
20	1.645	32.442	25.948	20	0.935	32.603	26.122	20	1.387	32.475	25.991
30	1.423	32.635	26.117	30	0.968	32.684	26.185				
40	1.732	32.775	26.208	40	0.969	32.729	26.222				
				50	1.114	32.782	26.255				
				75	0.951	32.957	26.405				

STATION US11243				STATION US11244				STATION US11245			
LATITUDE 43-22.6 N				LATITUDE 43-24.6 N				LATITUDE 42-28.2 N			
LONGITUDE 145-32.1 E				LONGITUDE 145-36.2 E				LONGITUDE 141-49.2 E			
DEPTH (m) 18				DEPTH (m) 25				DEPTH (m) 38			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	4.075	31.797	25.232	5	4.444	31.853	25.240	5	4.218	32.669	25.910
10	2.960	32.148	25.613	10	2.162	32.269	25.772	10	3.912	32.664	25.937
				20	1.578	32.386	25.907	20	3.574	32.677	25.980
								30	3.546	32.684	25.987

STATION	US11246		
LATITUDE	41-49.5	N	
LONGITUDE	141-13.0	E	
DEPTH (m)	165		
Press.	Temp.	Salinity	Sigma-T
5	5.296	32.627	25.761
10	5.685	32.835	25.880
20	7.864	33.659	26.241
30	8.130	33.767	26.286
40	8.134	33.793	26.306
50	8.218	33.828	26.321
75	7.215	33.713	26.375
100	4.716	33.474	26.497
125	4.679	33.488	26.512
150	4.681	33.490	26.514

STATION	US11249		
LATITUDE	41-55.3	N	
LONGITUDE	141-04.7	E	
DEPTH (m)	110		
Press.	Temp.	Salinity	Sigma-T
5	5.834	32.431	25.543
10	6.227	32.772	25.764
20	7.948	33.608	26.188
30	8.220	33.708	26.227
40	6.240	33.404	26.261
50	5.751	33.390	26.311
75	6.377	33.633	26.425
100	3.182	33.375	26.572

STATION	US11252		
LATITUDE	41-59.3	N	
LONGITUDE	141-01.9	E	
DEPTH (m)	100		
Press.	Temp.	Salinity	Sigma-T
5	5.670	32.576	25.677
10	5.628	32.588	25.692
20	4.901	32.929	26.044
30	5.271	33.043	26.093
40	5.681	33.151	26.130
50	8.032	33.684	26.236
75	3.428	33.365	26.541

STATION	US11255		
LATITUDE	42-10.1	N	
LONGITUDE	140-41.2	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	5.754	32.044	25.247
10	5.767	32.468	25.581
20	5.053	32.604	25.770
30	4.608	32.720	25.910
40	4.197	32.840	26.048
50	3.453	33.018	26.263
75	3.303	33.323	26.519

STATION	US11258		
LATITUDE	42-17.6	N	
LONGITUDE	140-53.8	E	
DEPTH (m)	56		
Press.	Temp.	Salinity	Sigma-T
5	6.328	32.310	25.387
10	5.536	32.528	25.655
20	5.330	32.565	25.708
30	4.788	32.683	25.862
40	3.636	32.939	26.182
50	3.268	33.058	26.311

STATION	US11247		
LATITUDE	41-51.4	N	
LONGITUDE	141-10.1	E	
DEPTH (m)	107		
Press.	Temp.	Salinity	Sigma-T
5	5.458	32.633	25.747
10	5.276	32.780	25.884
20	6.260	33.198	26.096
30	6.502	33.447	26.262
40	6.937	33.617	26.338
50	7.182	33.700	26.370
75	5.925	33.594	26.451
100	5.724	33.576	26.461

STATION	US11250		
LATITUDE	41-57.1	N	
LONGITUDE	141-02.2	E	
DEPTH (m)	104		
Press.	Temp.	Salinity	Sigma-T
5	5.710	32.446	25.570
10	5.666	32.505	25.622
20	5.692	32.784	25.839
30	5.667	33.122	26.109
40	7.796	33.604	26.207
50	7.782	33.673	26.263
75	3.468	33.276	26.467

STATION	US11253		
LATITUDE	41-58.1	N	
LONGITUDE	140-59.5	E	
DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T
5	5.652	32.622	25.715
10	5.644	32.622	25.717
20	5.251	32.718	25.838
30	5.148	33.034	26.100
40	5.145	33.097	26.151
50	4.917	33.197	26.256
75	3.363	33.330	26.520

STATION	US11256		
LATITUDE	42-18.2	N	
LONGITUDE	140-42.3	E	
DEPTH (m)	64		
Press.	Temp.	Salinity	Sigma-T
5	5.712	32.446	25.570
10	5.557	32.459	25.598
20	5.411	32.459	25.615
30	4.933	32.700	25.859
40	4.042	32.847	26.070
50	3.017	33.131	26.392

STATION	US11259		
LATITUDE	42-09.6	N	
LONGITUDE	140-53.0	E	
DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T
5	5.933	31.660	24.922
10	5.381	32.327	25.514
20	5.087	32.698	25.841
30	4.285	32.865	26.059
40	3.733	32.934	26.169
50	3.905	33.303	26.446

STATION	US11248		
LATITUDE	41-53.5	N	
LONGITUDE	141-07.3	E	
DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T
5	5.795	32.519	25.618
10	5.927	32.805	25.828
20	6.221	33.200	26.103
30	6.292	33.257	26.139
40	7.788	33.764	26.334
50	7.925	33.789	26.334
75	6.595	33.684	26.436

STATION	US11251		
LATITUDE	41-58.6	N	
LONGITUDE	141-00.6	E	
DEPTH (m)	93		
Press.	Temp.	Salinity	Sigma-T
5	5.590	32.619	25.720
10	5.526	32.631	25.738
20	4.679	32.724	25.906
30	5.501	33.084	26.099
40	6.023	33.239	26.158
50	5.704	33.231	26.191
75	3.350	33.357	26.542

STATION	US11254		
LATITUDE	41-57.3	N	
LONGITUDE	140-58.2	E	
DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T
5	5.631	32.561	25.670
10	5.513	32.584	25.702
20	4.767	32.710	25.886
30	4.454	32.791	25.983
40	5.187	33.104	26.151
50	3.742	33.090	26.292

STATION	US11257		
LATITUDE	42-28.2	N	
LONGITUDE	140-43.6	E	
DEPTH (m)	59		
Press.	Temp.	Salinity	Sigma-T
5	6.985	31.934	25.007
10	5.865	32.527	25.615
20	5.525	32.574	25.693
30	5.379	32.583	25.716
40	4.593	32.652	25.858
50	3.682	32.945	26.183

STATION	US11260		
LATITUDE	42-01.1	N	
LONGITUDE	141-00.8	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	5.718	32.647	25.728
10	5.545	32.696	25.787
20	5.414	32.745	25.841
30	5.653	32.972	25.992
40	6.144	33.298	26.190
50	7.320	33.731	26.375
75	3.981	33.384	26.503

STATION	US11261		
LATITUDE	42-14.5	N	
LONGITUDE	141-04.9	E	
DEPTH (m)	80		
Press.	Temp.	Salinity	Sigma-T
5	6.641	31.958	25.070
10	5.506	32.183	25.386
20	3.412	32.919	26.187
30	3.127	33.085	26.345
40	3.187	33.157	26.398
50	3.261	33.226	26.446

STATION	US11264		
LATITUDE	42-00.2	N	
LONGITUDE	141-10.0	E	
DEPTH (m)	136		
Press.	Temp.	Salinity	Sigma-T
5	5.396	32.731	25.832
10	5.320	32.755	25.860
20	4.668	32.835	25.995
30	4.210	32.850	26.055
40	3.823	32.925	26.153
50	3.812	33.041	26.247
75	3.499	33.281	26.468
100	3.439	33.345	26.525
125	3.454	33.427	26.588

STATION	US11267		
LATITUDE	41-59.8	N	
LONGITUDE	141-30.2	E	
DEPTH (m)	497		
Press.	Temp.	Salinity	Sigma-T
5	5.734	32.862	25.896
10	5.276	32.929	26.002
20	7.372	33.496	26.183
30	8.466	33.772	26.240
40	8.519	33.811	26.262
50	8.221	33.819	26.314
75	7.782	33.809	26.371
100	5.126	33.516	26.485
125	5.410	33.597	26.516
150	5.181	33.595	26.541
175	5.155	33.614	26.559
200	4.381	33.537	26.583
250	3.067	33.473	26.660
300	2.486	33.501	26.732

STATION	US11270		
LATITUDE	42-20.1	N	
LONGITUDE	141-20.3	E	
DEPTH (m)	269		
Press.	Temp.	Salinity	Sigma-T
5	5.801	32.633	25.707
10	5.393	32.628	25.751
20	4.347	32.804	26.004
30	4.599	32.886	26.043
40	3.718	32.864	26.114
50	3.504	32.953	26.206
75	3.633	33.343	26.504
100	3.382	33.336	26.522
125	3.829	33.424	26.550
150	3.520	33.422	26.578
175	3.745	33.480	26.603
200	3.197	33.434	26.617
250	2.553	33.425	26.666

STATION	US11262		
LATITUDE	42-19.8	N	
LONGITUDE	141-09.8	E	
DEPTH (m)	72		
Press.	Temp.	Salinity	Sigma-T
5	5.580	32.370	25.525
10	5.203	32.597	25.748
20	4.203	32.773	25.995
30	3.758	32.897	26.137
40	3.563	32.981	26.222
50	3.191	33.122	26.369

STATION	US11265		
LATITUDE	41-55.1	N	
LONGITUDE	141-10.1	E	
DEPTH (m)	188		
Press.	Temp.	Salinity	Sigma-T
5	5.343	32.721	25.830
10	4.793	32.727	25.896
20	4.155	32.806	26.025
30	4.205	32.940	26.127
40	4.136	33.037	26.211
50	4.100	33.132	26.290
75	3.923	33.367	26.495
100	4.191	33.433	26.520
125	3.866	33.444	26.562
150	3.041	33.396	26.601
175	2.779	33.421	26.644

STATION	US11268		
LATITUDE	42-09.5	N	
LONGITUDE	141-30.2	E	
DEPTH (m)	569		
Press.	Temp.	Salinity	Sigma-T
5	6.576	32.989	25.891
10	5.971	32.986	25.965
20	5.302	33.151	26.175
30	5.623	33.284	26.242
40	5.976	33.432	26.317
50	6.474	33.614	26.397
75	6.779	33.806	26.508
100	5.726	33.691	26.552
125	5.043	33.625	26.580
150	4.605	33.594	26.604
175	3.341	33.452	26.618
200	2.938	33.440	26.645
250	2.697	33.494	26.709
300	2.516	33.553	26.771

STATION	US11271		
LATITUDE	42-10.0	N	
LONGITUDE	141-19.9	E	
DEPTH (m)	359		
Press.	Temp.	Salinity	Sigma-T
5	5.280	32.635	25.769
10	5.033	32.699	25.848
20	4.083	32.850	26.068
30	4.051	32.954	26.154
40	5.360	33.255	26.251
50	6.038	33.402	26.285
75	6.084	33.643	26.470
100	5.327	33.570	26.504
125	4.229	33.451	26.530
150	4.210	33.497	26.569
175	3.877	33.478	26.588
200	3.391	33.448	26.611
250	2.483	33.435	26.680

STATION	US11263		
LATITUDE	42-10.1	N	
LONGITUDE	141-09.9	E	
DEPTH (m)	123		
Press.	Temp.	Salinity	Sigma-T
5	5.500	32.735	25.823
10	5.274	32.751	25.862
20	5.086	32.967	26.054
30	4.884	33.026	26.123
40	4.786	33.050	26.153
50	4.408	33.055	26.197
75	3.201	33.190	26.422
100	3.319	33.294	26.494

STATION	US11266		
LATITUDE	41-49.8	N	
LONGITUDE	141-29.8	E	
DEPTH (m)	363		
Press.	Temp.	Salinity	Sigma-T
5	7.313	33.325	26.057
10	8.509	33.638	26.127
20	8.539	33.749	26.210
30	8.220	33.762	26.269
40	8.104	33.775	26.297
50	8.002	33.768	26.306
75	7.797	33.798	26.360
100	7.110	33.752	26.420
125	6.709	33.761	26.482
150	5.663	33.669	26.543
175	5.112	33.638	26.583
200	4.320	33.579	26.623
250	3.019	33.492	26.679
300	2.465	33.541	26.766

STATION	US11269		
LATITUDE	42-19.9	N	
LONGITUDE	141-30.1	E	
DEPTH (m)	448		
Press.	Temp.	Salinity	Sigma-T
5	5.750	32.571	25.664
10	4.324	32.688	25.915
20	6.165	33.383	26.254
30	7.250	33.593	26.276
40	6.917	33.574	26.306
50	7.589	33.570	26.352
75	5.947	33.603	26.455
100	5.156	33.557	26.513
125	4.223	33.451	26.531
150	3.591	33.419	26.569
175	3.444	33.434	26.594
200	2.802	33.390	26.617
250	2.449	33.427	26.676
300	2.399	33.504	26.742

STATION	US11272		
LATITUDE	41-59.9	N	
LONGITUDE	141-20.0	E	
DEPTH (m)	308		
Press.	Temp.	Salinity	Sigma-T
5	5.746	32.855	25.889
10	5.417	32.873	25.941
20	5.040	32.883	25.993
30	4.075	32.870	26.085
40	3.902	32.967	26.179
50	4.332	33.176	26.301
75	4.864	33.479	26.485
100	5.458	33.607	26.517
125	4.737	33.532	26.541
150	4.238	33.490	26.561
175	4.226	33.521	26.587
200	3.718	33.485	26.609
250	2.989	33.468	26.663

STATION	US11273		
LATITUDE	41-50.0	N	
LONGITUDE	141-19.9	E	
DEPTH (m)	279		
Press.	Temp.	Salinity	Sigma-T
5	7.095	33.240	26.020
10	7.589	33.356	26.042
20	7.928	33.596	26.182
30	8.397	33.812	26.282
40	8.449	33.851	26.304
50	8.425	33.855	26.311
75	7.850	33.807	26.359
100	6.300	33.631	26.433
125	5.009	33.484	26.473
150	5.166	33.581	26.531
175	4.906	33.575	26.556
200	4.474	33.538	26.574
250	2.806	33.439	26.656

STATION	US11276		
LATITUDE	41-58.3	N	
LONGITUDE	141-25.8	E	
DEPTH (m)	355		
Press.	Temp.	Salinity	Sigma-T
5	5.951	32.942	25.932
10	5.662	32.826	25.876
20	4.225	32.809	26.021
30	4.361	32.981	26.144
40	5.254	33.188	26.210
50	4.802	33.252	26.311
75	4.286	33.314	26.416
100	4.933	33.503	26.496
125	4.754	33.524	26.532
150	4.260	33.475	26.547
175	4.524	33.544	26.573
200	4.299	33.532	26.587
250	2.851	33.453	26.663
300	2.494	33.510	26.739

STATION	US11279		
LATITUDE	42-02.5	N	
LONGITUDE	140-57.6	E	
DEPTH (m)	79		
Press.	Temp.	Salinity	Sigma-T
5	6.087	32.335	25.437
10	5.678	32.496	25.613
20	4.811	32.632	25.819
30	4.432	32.741	25.946
40	4.386	32.957	26.122
50	5.179	33.366	26.360

STATION	US11282		
LATITUDE	42-10.2	N	
LONGITUDE	140-47.3	E	
DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T
5	5.460	32.595	25.717
10	5.412	32.605	25.731
20	4.919	32.777	25.922
30	5.088	32.937	26.030
40	6.755	33.455	26.234
50	5.857	33.438	26.336
75	3.388	33.377	26.555

STATION	US11285		
LATITUDE	42-15.6	N	
LONGITUDE	140-47.5	E	
DEPTH (m)	72		
Press.	Temp.	Salinity	Sigma-T
5	6.060	32.489	25.562
10	6.043	32.500	25.572
20	5.880	32.503	25.594
30	5.154	32.578	25.738
40	4.410	32.789	25.986
50	3.602	33.156	26.358

STATION	US11274		
LATITUDE	41-50.2	N	
LONGITUDE	141-10.0	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	6.127	32.538	25.592
10	5.643	32.599	25.698
20	5.186	32.706	25.836
30	4.842	32.856	25.993
40	5.617	33.182	26.163
50	5.808	33.472	26.369

STATION	US11277		
LATITUDE	41-57.8	N	
LONGITUDE	141-02.4	E	
DEPTH (m)	105		
Press.	Temp.	Salinity	Sigma-T
5	5.983	32.466	25.552
10	5.940	32.524	25.604
20	5.725	32.738	25.799
30	4.749	32.798	25.958
40	7.515	33.747	26.360
50	7.384	33.789	26.411
75	3.923	33.392	26.515

STATION	US11280		
LATITUDE	42-02.3	N	
LONGITUDE	141-02.5	E	
DEPTH (m)	97		
Press.	Temp.	Salinity	Sigma-T
5	6.915	32.622	25.557
10	5.597	32.543	25.660
20	4.888	32.673	25.843
30	4.662	32.751	25.930
40	6.509	33.368	26.198
50	7.613	33.710	26.317
75	3.366	33.289	26.486

STATION	US11283		
LATITUDE	42-16.2	N	
LONGITUDE	140-35.7	E	
DEPTH (m)	92		
Press.	Temp.	Salinity	Sigma-T
5	5.856	32.524	25.614
10	5.840	32.536	25.625
20	5.780	32.542	25.638
30	5.525	32.572	25.691
40	4.207	32.883	26.081
50	3.424	33.031	26.276
75	3.386	33.402	26.575

STATION	US11286		
LATITUDE	42-17.1	N	
LONGITUDE	140-53.8	E	
DEPTH (m)	58		
Press.	Temp.	Salinity	Sigma-T
5	6.297	32.430	25.486
10	5.892	32.497	25.589
20	5.477	32.534	25.667
30	4.664	32.747	25.926
40	3.289	33.032	26.288
50	3.153	33.170	26.411

STATION	US11275		
LATITUDE	41-56.0	N	
LONGITUDE	141-28.1	E	
DEPTH (m)	372		
Press.	Temp.	Salinity	Sigma-T
5	6.729	33.049	25.918
10	8.556	33.664	26.141
20	8.562	33.752	26.209
30	7.857	33.697	26.272
40	7.679	33.704	26.303
50	7.673	33.708	26.307
75	7.685	33.749	26.338
100	7.308	33.775	26.412
125	6.675	33.751	26.479
150	6.000	33.693	26.520
175	5.253	33.601	26.537
200	5.164	33.654	26.589
250	3.248	33.483	26.652

STATION	US11278		
LATITUDE	41-58.2	N	
LONGITUDE	140-57.2	E	
DEPTH (m)	71		
Press.	Temp.	Salinity	Sigma-T
5	7.877	32.158	25.060
10	6.572	32.205	25.273
20	6.366	32.327	25.395
30	5.767	32.486	25.594
40	3.911	33.073	26.262
50	3.459	33.269	26.462

STATION	US11281		
LATITUDE	42-04.9	N	
LONGITUDE	140-56.8	E	
DEPTH (m)	83		
Press.	Temp.	Salinity	Sigma-T
5	5.722	32.528	25.633
10	5.711	32.532	25.637
20	5.270	32.684	25.809
30	4.644	32.969	26.104
40	4.731	33.185	26.266
50	4.246	33.308	26.415
75	3.481	33.375	26.544

STATION	US11284		
LATITUDE	42-23.9	N	
LONGITUDE	140-31.6	E	
DEPTH (m)	96		
Press.	Temp.	Salinity	Sigma-T
5	6.350	32.441	25.487
10	6.319	32.442	25.493
20	6.191	32.461	25.523
30	5.321	32.595	25.733
40	3.768	32.912	26.148
50	3.386	33.072	26.311
75	3.432	33.416	26.581

STATION	US11287		
LATITUDE	42-15.1	N	
LONGITUDE	141-04.3	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	5.975	32.568	25.634
10	5.972	32.573	25.638
20	5.259	32.655	25.788
30	3.996	33.040	26.228
40	3.338	33.076	26.319
50	3.240	33.204	26.430

STATION	US11288		
LATITUDE	42-12.2	N	
LONGITUDE	141-02.2	E	
DEPTH (m)	80		
Press.	Temp.	Salinity	Sigma-T
5	6.295	32.501	25.542
10	5.924	32.542	25.620
20	5.466	32.683	25.786
30	4.728	32.844	25.996
40	3.757	32.900	26.140
50	4.379	33.236	26.344

STATION	US11289		
LATITUDE	42-13.0	N	
LONGITUDE	140-56.7	E	
DEPTH (m)	70		
Press.	Temp.	Salinity	Sigma-T
5	5.908	32.582	25.654
10	5.908	32.601	25.668
20	5.829	32.612	25.687
30	4.382	32.883	26.064
40	4.414	32.990	26.145
50	5.415	33.284	26.267

STATION	US11290		
LATITUDE	41-49.1	N	
LONGITUDE	141-13.5	E	
DEPTH (m)	178		
Press.	Temp.	Salinity	Sigma-T
5	6.637	32.753	25.697
10	6.642	32.759	25.701
20	6.097	32.918	25.895
30	5.048	32.958	26.051
40	5.395	33.289	26.273
50	4.277	33.188	26.317
75	4.161	33.211	26.347
100	6.210	33.617	26.433
125	4.610	33.444	26.485
150	4.058	33.432	26.533
175	4.054	33.454	26.551

STATION	US11291		
LATITUDE	41-46.5	N	
LONGITUDE	141-14.0	E	
DEPTH (m)	187		
Press.	Temp.	Salinity	Sigma-T
5	6.758	32.898	25.795
10	6.787	32.974	25.851
20	7.276	33.364	26.092
30	7.334	33.440	26.144
40	6.371	33.367	26.215
50	6.144	33.467	26.324
75	5.749	33.561	26.447
100	4.601	33.448	26.489
125	4.167	33.451	26.537
150	4.127	33.450	26.540
175	4.110	33.450	26.542

STATION	US11292		
LATITUDE	41-44.0	N	
LONGITUDE	141-15.4	E	
DEPTH (m)	224		
Press.	Temp.	Salinity	Sigma-T
5	8.286	33.691	26.203
10	8.295	33.711	26.218
20	8.271	33.742	26.245
30	8.277	33.751	26.251
40	8.117	33.740	26.267
50	7.987	33.766	26.307
75	7.698	33.795	26.372
100	6.667	33.695	26.435
125	6.738	33.765	26.481
150	5.821	33.667	26.521
175	4.871	33.560	26.548
200	4.305	33.530	26.585

STATION	US11293		
LATITUDE	41-41.0	N	
LONGITUDE	141-17.4	E	
DEPTH (m)	233		
Press.	Temp.	Salinity	Sigma-T
5	7.726	33.478	26.118
10	7.678	33.478	26.125
20	7.246	33.520	26.219
30	7.799	33.692	26.276
40	8.231	33.802	26.298
50	8.230	33.799	26.297
75	8.095	33.803	26.319
100	7.012	33.767	26.446
125	6.814	33.765	26.471
150	6.310	33.735	26.513
175	4.794	33.572	26.566
200	3.670	33.470	26.602

STATION	US11294		
LATITUDE	41-37.9	N	
LONGITUDE	141-18.9	E	
DEPTH (m)	214		
Press.	Temp.	Salinity	Sigma-T
5	8.996	33.806	26.184
10	9.047	33.836	26.199
20	9.070	33.854	26.210
30	8.943	33.850	26.227
40	8.818	33.839	26.237
50	8.765	33.849	26.253
75	8.556	33.856	26.291
100	8.343	33.831	26.305
125	8.243	33.824	26.314
150	6.909	33.741	26.439
175	6.337	33.716	26.495
200	4.270	33.543	26.599

STATION	US11295		
LATITUDE	41-34.9	N	
LONGITUDE	141-20.5	E	
DEPTH (m)	320		
Press.	Temp.	Salinity	Sigma-T
5	9.089	33.821	26.180
10	9.098	33.821	26.179
20	9.062	33.820	26.184
30	9.061	33.820	26.185
40	9.022	33.822	26.193
50	9.016	33.824	26.195
75	8.997	33.827	26.200
100	8.983	33.830	26.205
125	8.977	33.834	26.209
150	8.974	33.838	26.212
175	8.981	33.841	26.213
200	8.988	33.841	26.213
250	8.874	33.888	26.267
300	7.733	34.008	26.534

STATION	US11296		
LATITUDE	41-32.1	N	
LONGITUDE	141-22.0	E	
DEPTH (m)	257		
Press.	Temp.	Salinity	Sigma-T
5	9.348	33.784	26.110
10	9.297	33.794	26.126
20	9.295	33.795	26.128
30	9.294	33.795	26.128
40	9.261	33.805	26.141
50	9.263	33.805	26.141
75	9.193	33.824	26.167
100	9.088	33.847	26.202
125	8.974	33.868	26.236
150	8.970	33.872	26.239
175	8.930	33.884	26.255
200	8.587	33.939	26.352

STATION	US11297		
LATITUDE	41-29.9	N	
LONGITUDE	141-21.1	E	
DEPTH (m)	222		
Press.	Temp.	Salinity	Sigma-T
5	9.732	33.723	25.999
10	9.441	33.764	26.079
20	9.390	33.775	26.096
30	9.282	33.800	26.133
40	9.246	33.807	26.145
50	9.221	33.812	26.153
75	9.202	33.817	26.159
100	9.216	33.815	26.156
125	9.191	33.820	26.164
150	9.164	33.827	26.173
175	9.071	33.845	26.202
200	9.027	33.854	26.217

STATION	US11298		
LATITUDE	41-28.9	N	
LONGITUDE	141-23.1	E	
DEPTH (m)	100		
Press.	Temp.	Salinity	Sigma-T
5	9.516	33.763	26.066
10	9.503	33.764	26.070
20	9.441	33.775	26.088
30	9.430	33.779	26.093
40	9.323	33.796	26.124
50	9.304	33.800	26.130
75	9.207	33.813	26.156

STATION	US11299		
LATITUDE	41-27.5	N	
LONGITUDE	141-24.1	E	
DEPTH (m)	50		
Press.	Temp.	Salinity	Sigma-T
5	9.325	33.804	26.130
10	9.279	33.803	26.137
20	9.263	33.803	26.139
30	9.250	33.805	26.142
40	9.227	33.806	26.147

STATION US11300			
LATITUDE 41-26.5 N			
LONGITUDE 141-21.0 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	9.428	33.776	26.091
10	9.396	33.777	26.097
20	9.366	33.780	26.104
30	9.351	33.783	26.109
40	9.332	33.788	26.116
50	9.311	33.792	26.122

STATION US11303			
LATITUDE 41-36.9 N			
LONGITUDE 140-51.5 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	10.034	33.523	25.793
10	10.058	33.526	25.791
20	9.969	33.559	25.832
30	9.850	33.638	25.914
40	9.694	33.736	26.016
50	9.665	33.753	26.034
75	9.612	33.781	26.065

STATION US11306			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.0 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	9.361	33.711	26.051
10	9.093	33.749	26.124
20	8.895	33.795	26.191
30	8.713	33.868	26.277
40	8.632	33.896	26.311
50	8.574	33.901	26.324
75	8.196	33.950	26.420

STATION US11309			
LATITUDE 42-07.2 N			
LONGITUDE 141-00.8 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	8.246	32.194	25.035
10	6.262	32.396	25.463
20	5.086	32.651	25.804
30	4.521	32.947	26.100
40	5.729	33.342	26.275
50	4.607	33.323	26.389
75	3.659	33.332	26.493

STATION US11312			
LATITUDE 42-10.1 N			
LONGITUDE 140-56.8 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	8.332	31.811	24.722
10	7.418	32.019	25.015
20	5.436	32.609	25.731
30	5.358	33.218	26.222
40	4.793	33.197	26.269
50	3.306	33.167	26.395

STATION US11301			
LATITUDE 41-26.3 N			
LONGITUDE 141-15.8 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	9.584	33.758	26.051
10	9.504	33.757	26.064
20	9.460	33.761	26.074
30	9.435	33.763	26.080
40	9.411	33.768	26.088
50	9.376	33.777	26.100

STATION US11304			
LATITUDE 41-38.9 N			
LONGITUDE 140-49.3 E			
DEPTH (m) 306			
Press.	Temp.	Salinity	Sigma-T
5	9.980	33.636	25.890
10	9.921	33.644	25.907
20	9.699	33.698	25.986
30	9.666	33.744	26.027
40	9.480	33.853	26.142
50	9.389	33.884	26.182
75	8.927	33.996	26.343
100	8.788	34.000	26.368
125	8.669	34.012	26.396
150	8.673	34.017	26.400
175	8.473	34.018	26.431
200	8.351	34.014	26.447
250	8.370	34.014	26.444

STATION US11307			
LATITUDE 42-04.4 N			
LONGITUDE 140-55.0 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	7.657	32.445	25.317
10	6.673	32.498	25.491
20	5.679	32.567	25.669
30	5.013	32.699	25.850
40	4.633	32.812	25.980
50	3.555	33.026	26.259

STATION US11310			
LATITUDE 42-11.2 N			
LONGITUDE 140-35.0 E			
DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T
5	8.027	32.227	25.093
10	6.643	32.410	25.426
20	5.812	32.497	25.598
30	4.834	32.716	25.883
40	4.404	32.804	25.998
50	3.666	32.990	26.220
75	3.242	33.306	26.511

STATION US11313			
LATITUDE 42-10.0 N			
LONGITUDE 141-06.4 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	6.741	32.406	25.410
10	5.636	32.555	25.665
20	5.302	32.928	25.998
30	4.503	33.031	26.169
40	4.365	33.126	26.259
50	4.220	33.284	26.399
75	4.239	33.439	26.520

STATION US11302			
LATITUDE 41-35.3 N			
LONGITUDE 140-53.8 E			
DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T
5	10.172	33.420	25.690
10	10.172	33.423	25.692
20	10.173	33.426	25.694
30	10.175	33.425	25.693
40	10.175	33.426	25.693
50	10.177	33.426	25.693

STATION US11305			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.3 E			
DEPTH (m) 223			
Press.	Temp.	Salinity	Sigma-T
5	10.044	33.642	25.884
10	10.075	33.705	25.928
20	9.777	33.828	26.074
30	9.526	33.867	26.146
40	9.480	33.896	26.176
50	9.397	33.916	26.206
75	9.016	33.956	26.298
100	8.582	33.957	26.367
125	8.427	33.953	26.388
150	8.323	33.953	26.404
175	8.409	33.956	26.392
200	8.070	33.966	26.451

STATION US11308			
LATITUDE 42-04.9 N			
LONGITUDE 141-04.3 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	7.689	32.498	25.354
10	7.143	32.528	25.452
20	6.341	32.588	25.604
30	6.013	32.673	25.713
40	6.039	32.923	25.907
50	7.430	33.587	26.246
75	3.463	33.282	26.472

STATION US11311			
LATITUDE 42-10.9 N			
LONGITUDE 140-45.0 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	8.433	32.207	25.018
10	7.856	32.270	25.151
20	6.464	32.433	25.467
30	5.477	32.574	25.698
40	4.390	32.828	26.019
50	3.947	33.130	26.304
75	3.358	33.378	26.558

STATION US11314			
LATITUDE 42-14.3 N			
LONGITUDE 141-09.7 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	8.790	32.189	24.950
10	7.237	32.390	25.332
20	5.741	32.615	25.700
30	4.169	32.813	26.030
40	4.255	33.069	26.224
50	5.473	33.323	26.291
75	6.735	33.694	26.426

STATION		US11315	
LATITUDE		42-14.8	N
LONGITUDE		140-59.7	E
DEPTH (m)		68	
Press.	Temp.	Salinity	Sigma-T
5	7.403	31.989	24.994
10	6.823	32.367	25.368
20	6.508	32.844	25.786
30	5.028	32.875	25.987
40	5.336	33.069	26.106
50	3.442	32.968	26.224

STATION		US11318	
LATITUDE		42-14.8	N
LONGITUDE		140-29.9	E
DEPTH (m)		82	
Press.	Temp.	Salinity	Sigma-T
5	8.844	32.040	24.825
10	7.596	32.428	25.312
20	6.248	32.514	25.558
30	5.221	32.611	25.757
40	4.585	32.745	25.932
50	3.404	33.052	26.294
75	3.364	33.372	26.553

STATION		US11321	
LATITUDE		42-19.7	N
LONGITUDE		140-49.7	E
DEPTH (m)		47	
Press.	Temp.	Salinity	Sigma-T
5	8.878	32.139	24.897
10	6.930	32.325	25.322
20	5.887	32.498	25.590
30	4.872	32.693	25.860
40	4.018	32.923	26.133

STATION		US11324	
LATITUDE		42-24.9	N
LONGITUDE		140-37.3	E
DEPTH (m)		86	
Press.	Temp.	Salinity	Sigma-T
5	7.401	32.284	25.226
10	7.069	32.438	25.391
20	6.321	32.500	25.538
30	5.383	32.578	25.712
40	4.718	32.789	25.954
50	3.816	33.077	26.275
75	3.333	33.315	26.510

STATION		US11327	
LATITUDE		42-29.6	N
LONGITUDE		140-39.3	E
DEPTH (m)		66	
Press.	Temp.	Salinity	Sigma-T
5	8.528	32.285	25.064
10	6.630	32.444	25.454
20	5.952	32.492	25.577
30	5.487	32.552	25.679
40	4.232	32.815	26.025
50	3.724	32.988	26.213

STATION		US11316	
LATITUDE		42-14.8	N
LONGITUDE		140-48.6	E
DEPTH (m)		70	
Press.	Temp.	Salinity	Sigma-T
5	8.325	31.794	24.710
10	7.174	31.911	24.963
20	5.827	32.379	25.503
30	4.379	32.651	25.879
40	3.672	32.847	26.106
50	4.055	33.097	26.267

STATION		US11319	
LATITUDE		42-19.9	N
LONGITUDE		140-24.5	E
DEPTH (m)		66	
Press.	Temp.	Salinity	Sigma-T
5	8.024	31.865	24.809
10	6.917	32.246	25.261
20	6.275	32.458	25.510
30	5.525	32.554	25.677
40	4.304	32.804	26.008
50	3.249	33.108	26.353

STATION		US11322	
LATITUDE		42-19.5	N
LONGITUDE		140-44.3	E
DEPTH (m)		60	
Press.	Temp.	Salinity	Sigma-T
5	8.217	32.318	25.136
10	7.569	32.338	25.245
20	6.440	32.431	25.469
30	5.912	32.499	25.588
40	4.715	32.732	25.908
50	3.365	33.115	26.348

STATION		US11325	
LATITUDE		42-24.8	N
LONGITUDE		140-25.5	E
DEPTH (m)		70	
Press.	Temp.	Salinity	Sigma-T
5	8.662	32.131	24.924
10	7.916	32.207	25.093
20	6.212	32.466	25.524
30	4.728	32.686	25.871
40	3.542	33.000	26.240
50	3.225	33.125	26.368

STATION		US11328	
LATITUDE		42-20.0	N
LONGITUDE		141-09.1	E
DEPTH (m)		69	
Press.	Temp.	Salinity	Sigma-T
5	7.389	32.019	25.019
10	7.083	32.361	25.329
20	5.325	32.683	25.802
30	5.525	32.984	26.017
40	4.578	32.865	26.028
50	4.625	33.021	26.147

STATION		US11317	
LATITUDE		42-14.8	N
LONGITUDE		140-38.8	E
DEPTH (m)		88	
Press.	Temp.	Salinity	Sigma-T
5	8.584	31.718	24.612
10	7.661	31.864	24.860
20	5.924	32.460	25.555
30	4.889	32.721	25.881
40	4.024	32.889	26.105
50	3.693	33.029	26.248
75	3.453	33.355	26.531

STATION		US11320	
LATITUDE		42-19.8	N
LONGITUDE		140-38.4	E
DEPTH (m)		82	
Press.	Temp.	Salinity	Sigma-T
5	8.537	32.228	25.019
10	7.334	32.344	25.282
20	6.600	32.411	25.432
30	6.064	32.463	25.540
40	5.009	32.660	25.820
50	3.898	33.045	26.241
75	3.508	33.311	26.490

STATION		US11323	
LATITUDE		42-24.7	N
LONGITUDE		140-50.0	E
DEPTH (m)		40	
Press.	Temp.	Salinity	Sigma-T
5	7.685	32.289	25.190
10	7.004	32.353	25.333
20	5.967	32.424	25.522
30	4.692	32.623	25.824

STATION		US11326	
LATITUDE		42-29.5	N
LONGITUDE		140-29.8	E
DEPTH (m)		68	
Press.	Temp.	Salinity	Sigma-T
5	8.867	32.296	25.022
10	7.600	32.323	25.229
20	6.299	32.500	25.541
30	5.475	32.563	25.690
40	4.186	32.891	26.090
50	3.299	33.133	26.368

STATION		US11329	
LATITUDE		42-17.0	N
LONGITUDE		141-25.0	E
DEPTH (m)		477	
Press.	Temp.	Salinity	Sigma-T
5	8.068	32.068	24.962
10	7.167	32.923	25.760
20	6.757	32.998	25.875
30	5.929	32.977	25.963
40	5.406	33.173	26.180
50	6.121	33.415	26.285
75	5.722	33.506	26.406
100	5.613	33.580	26.478
125	6.047	33.694	26.515
150	4.912	33.550	26.536
175	3.997	33.465	26.566
200	4.010	33.486	26.581

STATION	US11330		
LATITUDE	42-12.0	N	
LONGITUDE	141-13.3	E	
DEPTH (m)	152		
Press.	Temp.	Salinity	Sigma-T
5	8.561	31.906	24.763
10	8.099	32.311	25.148
20	5.183	32.823	25.929
30	4.970	32.954	26.057
40	6.463	33.379	26.213
50	7.369	33.563	26.236
75	7.473	33.756	26.373

STATION	US11333		
LATITUDE	41-52.3	N	
LONGITUDE	141-18.9	E	
DEPTH (m)	284		
Press.	Temp.	Salinity	Sigma-T
5	9.136	33.404	25.847
10	9.185	33.389	25.828
20	8.876	33.629	26.064
30	8.412	33.686	26.180
40	8.305	33.753	26.249
50	8.407	33.822	26.287
75	7.959	33.808	26.343
100	7.102	33.766	26.432
125	6.367	33.730	26.503
150	4.827	33.558	26.552
175	3.112	33.401	26.599
200	2.809	33.440	26.656

STATION	US11336		
LATITUDE	42-11.5	N	
LONGITUDE	140-36.2	E	
DEPTH (m)	82		
Press.	Temp.	Salinity	Sigma-T
5	9.111	31.977	24.735
10	7.710	32.264	25.167
20	5.820	32.458	25.566
30	4.727	32.741	25.915
40	4.881	33.220	26.278
50	3.153	33.159	26.402
75	3.352	33.373	26.555

STATION	US11339		
LATITUDE	42-18.4	N	
LONGITUDE	140-41.6	E	
DEPTH (m)	71		
Press.	Temp.	Salinity	Sigma-T
5	8.360	32.266	25.075
10	7.740	32.342	25.224
20	6.347	32.455	25.499
30	6.048	32.495	25.568
40	5.175	32.639	25.784
50	4.027	32.910	26.122

STATION	US11342		
LATITUDE	42-21.0	N	
LONGITUDE	140-47.9	E	
DEPTH (m)	51		
Press.	Temp.	Salinity	Sigma-T
5	9.388	32.301	24.944
10	8.809	32.237	24.984
20	6.494	32.429	25.460
30	4.954	32.697	25.855
40	4.228	32.975	26.152

STATION	US11331		
LATITUDE	42-04.1	N	
LONGITUDE	141-21.7	E	
DEPTH (m)	346		
Press.	Temp.	Salinity	Sigma-T
5	8.797	33.378	25.880
10	8.579	33.346	25.889
20	8.727	33.450	25.947
30	8.353	33.482	26.029
40	7.124	33.413	26.152
50	6.040	33.346	26.241
75	4.683	33.413	26.452
100	4.956	33.508	26.498
125	4.872	33.520	26.516
150	4.306	33.475	26.541
175	3.580	33.418	26.569

STATION	US11334		
LATITUDE	41-58.8	N	
LONGITUDE	141-00.3	E	
DEPTH (m)	91		
Press.	Temp.	Salinity	Sigma-T
5	9.528	31.835	24.558
10	7.709	31.945	24.917
20	6.690	32.187	25.244
30	6.184	32.514	25.566
40	4.778	32.724	25.895
50	3.746	32.984	26.207

STATION	US11337		
LATITUDE	42-13.9	N	
LONGITUDE	140-30.7	E	
DEPTH (m)	81		
Press.	Temp.	Salinity	Sigma-T
5	9.403	32.045	24.742
10	8.149	32.306	25.137
20	6.326	32.350	25.418
30	5.548	32.640	25.742
40	4.388	32.884	26.064
50	3.703	33.047	26.262
75	3.293	33.337	26.531

STATION	US11340		
LATITUDE	42-21.0	N	
LONGITUDE	140-37.3	E	
DEPTH (m)	84		
Press.	Temp.	Salinity	Sigma-T
5	9.890	32.149	24.745
10	9.031	32.230	24.945
20	6.867	32.406	25.394
30	6.004	32.522	25.595
40	4.438	32.761	25.961
50	3.490	33.047	26.282
75	3.426	33.384	26.557

STATION	US11343		
LATITUDE	42-17.9	N	
LONGITUDE	140-53.6	E	
DEPTH (m)	55		
Press.	Temp.	Salinity	Sigma-T
5	9.449	31.414	24.242
10	8.127	31.847	24.780
20	7.766	32.227	25.130
30	5.946	32.491	25.577
40	4.691	32.714	25.897
50	4.415	32.990	26.145

STATION	US11332		
LATITUDE	42-04.0	N	
LONGITUDE	141-07.5	E	
DEPTH (m)	118		
Press.	Temp.	Salinity	Sigma-T
5	8.584	32.273	25.047
10	8.493	32.279	25.065
20	5.571	32.610	25.715
30	5.095	32.830	25.945
40	6.655	33.430	26.228
50	4.217	33.216	26.345
75	3.450	33.314	26.499

STATION	US11335		
LATITUDE	42-13.8	N	
LONGITUDE	140-41.3	E	
DEPTH (m)	88		
Press.	Temp.	Salinity	Sigma-T
5	9.569	31.918	24.617
10	8.229	32.226	25.062
20	6.036	32.311	25.424
30	5.075	32.664	25.815
40	4.422	32.923	26.091
50	4.671	33.213	26.295
75	3.490	33.287	26.473

STATION	US11338		
LATITUDE	42-15.7	N	
LONGITUDE	140-35.3	E	
DEPTH (m)	91		
Press.	Temp.	Salinity	Sigma-T
5	9.375	32.037	24.740
10	7.713	32.335	25.223
20	6.501	32.421	25.453
30	5.148	32.568	25.731
40	4.442	32.910	26.079
50	3.705	33.056	26.269
75	3.332	33.363	26.549

STATION	US11341		
LATITUDE	42-23.1	N	
LONGITUDE	140-42.4	E	
DEPTH (m)	61		
Press.	Temp.	Salinity	Sigma-T
5	9.405	32.231	24.887
10	9.304	32.230	24.902
20	6.160	32.425	25.498
30	5.986	32.535	25.607
40	4.902	32.675	25.843
50	3.993	32.915	26.128

STATION	US11344		
LATITUDE	42-24.9	N	
LONGITUDE	140-48.0	E	
DEPTH (m)	45		
Press.	Temp.	Salinity	Sigma-T
5	9.546	32.205	24.844
10	8.674	32.292	25.048
20	6.299	32.444	25.497
30	5.553	32.715	25.801
40	4.296	32.827	26.028

STATION US11345			
LATITUDE 42-27.9 N			
LONGITUDE 140-43.2 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	9.493	32.168	24.823
10	8.715	32.184	24.957
20	6.360	32.323	25.393
30	5.462	32.564	25.692
40	4.449	32.806	25.995
50	4.369	33.026	26.179

STATION US11346			
LATITUDE 42-26.3 N			
LONGITUDE 140-37.5 E			
DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T
5	9.839	32.068	24.690
10	8.352	32.208	25.031
20	6.393	32.432	25.475
30	5.725	32.527	25.632
40	4.802	32.693	25.868
50	3.596	33.023	26.253
75	3.352	33.339	26.527

STATION US11347			
LATITUDE 42-31.0 N			
LONGITUDE 140-37.1 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	9.499	32.038	24.721
10	8.849	32.156	24.915
20	6.204	32.467	25.526
30	5.768	32.524	25.625
40	4.915	32.678	25.844
50	4.000	32.911	26.124

STATION US11348			
LATITUDE 42-29.0 N			
LONGITUDE 140-31.6 E			
DEPTH (m) 75			
Press.	Temp.	Salinity	Sigma-T
5	9.545	32.144	24.796
10	8.957	32.204	24.936
20	6.473	32.481	25.504
30	5.744	32.557	25.654
40	4.470	32.766	25.961
50	3.812	33.022	26.231

STATION US11349			
LATITUDE 42-26.7 N			
LONGITUDE 140-26.1 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	9.860	32.031	24.658
10	8.243	32.272	25.097
20	6.325	32.467	25.511
30	5.835	32.521	25.614
40	4.602	32.768	25.949
50	3.854	32.936	26.159

STATION US11350			
LATITUDE 42-23.2 N			
LONGITUDE 140-30.5 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	10.064	32.137	24.706
10	9.259	32.221	24.902
20	6.774	32.382	25.386
30	5.260	32.583	25.730
40	3.770	32.938	26.169
50	3.207	33.134	26.377
75	3.388	33.401	26.574

STATION US11351			
LATITUDE 42-21.5 N			
LONGITUDE 140-25.4 E			
DEPTH (m) 73			
Press.	Temp.	Salinity	Sigma-T
5	10.547	31.700	24.285
10	8.441	32.247	25.048
20	6.535	32.410	25.439
30	5.443	32.555	25.687
40	4.586	32.746	25.933
50	3.907	32.989	26.196

STATION US11352			
LATITUDE 42-19.0 N			
LONGITUDE 140-29.8 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	9.592	32.065	24.727
10	9.045	32.182	24.905
20	6.734	32.369	25.382
30	5.517	32.575	25.694
40	4.749	32.704	25.883
50	3.713	32.964	26.195
75	3.270	33.309	26.511

STATION US11353			
LATITUDE 42-17.2 N			
LONGITUDE 140-25.3 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	10.911	31.870	24.355
10	8.048	32.287	25.137
20	6.102	32.422	25.503
30	5.197	32.614	25.762
40	4.557	32.752	25.941
50	3.622	33.008	26.239

STATION US11354			
LATITUDE 42-04.9 N			
LONGITUDE 140-56.5 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	9.511	32.003	24.691
10	7.432	32.617	25.483
20	5.018	32.722	25.867
30	4.579	32.902	26.058
40	4.530	33.004	26.144
50	4.013	33.153	26.316
75	3.425	33.374	26.549

STATION US11355			
LATITUDE 41-57.4 N			
LONGITUDE 140-58.3 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	8.222	31.991	24.879
10	6.890	32.273	25.286
20	5.594	32.550	25.666
30	4.997	32.824	25.951
40	5.130	33.017	26.088
50	4.063	33.015	26.201
75	3.369	33.214	26.426

STATION US11356			
LATITUDE 41-58.1 N			
LONGITUDE 140-59.5 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	8.734	31.955	24.775
10	6.539	32.323	25.371
20	5.237	32.688	25.816
30	5.758	32.990	25.994
40	4.570	32.986	26.126
50	5.216	33.235	26.252
75	3.354	33.297	26.494

STATION US11357			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.6 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	10.007	31.817	24.466
10	8.438	32.052	24.895
20	5.695	32.619	25.708
30	5.363	32.819	25.905
40	5.219	33.015	26.077
50	4.416	33.040	26.185
75	3.641	33.224	26.408

STATION US11358			
LATITUDE 41-59.5 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 101			
Press.	Temp.	Salinity	Sigma-T
5	9.368	32.305	24.951
10	7.889	32.487	25.316
20	5.669	32.860	25.902
30	5.721	33.021	26.023
40	4.452	33.018	26.164
50	4.127	33.090	26.254
75	4.992	33.379	26.391

THE " USHIO MARU "

CRUISE 230

CRUISE 231

CRUISE 232

IN JUNE - AUGUST 2011

1. Cruise Itinerary

Cruise 230

Departure from Hakodate	Jun.	1,	2011
Start hydrographic research (US11359) and trawl net research		1	
Arrival at Aomori		1	
Departure from Aomori		2	
Arrival at Noheji		2	
Departure from Noheji		3	
Arrival at Ominato		3	
Departure from Ominato		4	
Finish trawl net research and hydrographic research (US11386)		4	
Return to Hakodate		5	
Total coverage 302.9 miles			

Cruise 231

Departure from Hakodate	Jun.	9,	2011
Arrival at and departure from Usujiri		9	
Set mooring omnidirectional microphone system		9	
Start hydrographic research (US11387) and frame trawl net sampling		9	
Arrival at and departure from Usujiri		9	
Retrieval mooring omnidirectional microphone system		12	
Arrival at Usujiri		13	
Departure from Usujiri		14	
Retrieval mooring ADCP system		14	
Arrival at Muroran		14	
Departure from Muroran		15	
Set mooring ADCP system		15	
Arrival at Usujiri		15	
Departure from Usujiri		16	
Finish hydrographic research (US11457) and frame trawl net sampling		19	
Return to Hakodate		20	
Total coverage 1165.8 miles			

Cruise 232

Departure from Hakodate	Jul.	27,	2011
Start hydrographic research (US11458)		27	
Arrival at and departure from Hakodate		28	
Start practical training in scuba		29	
Finish practical training in scuba		30	
Arrival at Hakodate		31	
Departure from Hakodate	Aug.	1	
Arrival at Aomori		1	
Departure from Aomori		2	
Arrival at Hakodate		3	
Departure from Hakodate		4	
Start trawl net research		4	
Arrival at Aomori		4	
Departure from Aomori		5	
Finish trawl net research		5	
Arrival at Hakodate		6	
Departure from Hakodate		7	
Arrival at Matsumae		8	
Departure from Matsumae		9	
Finish hydrographic research (US11529)		9	
Return to Hakodate		10	
Total coverage 1154.2 miles			

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

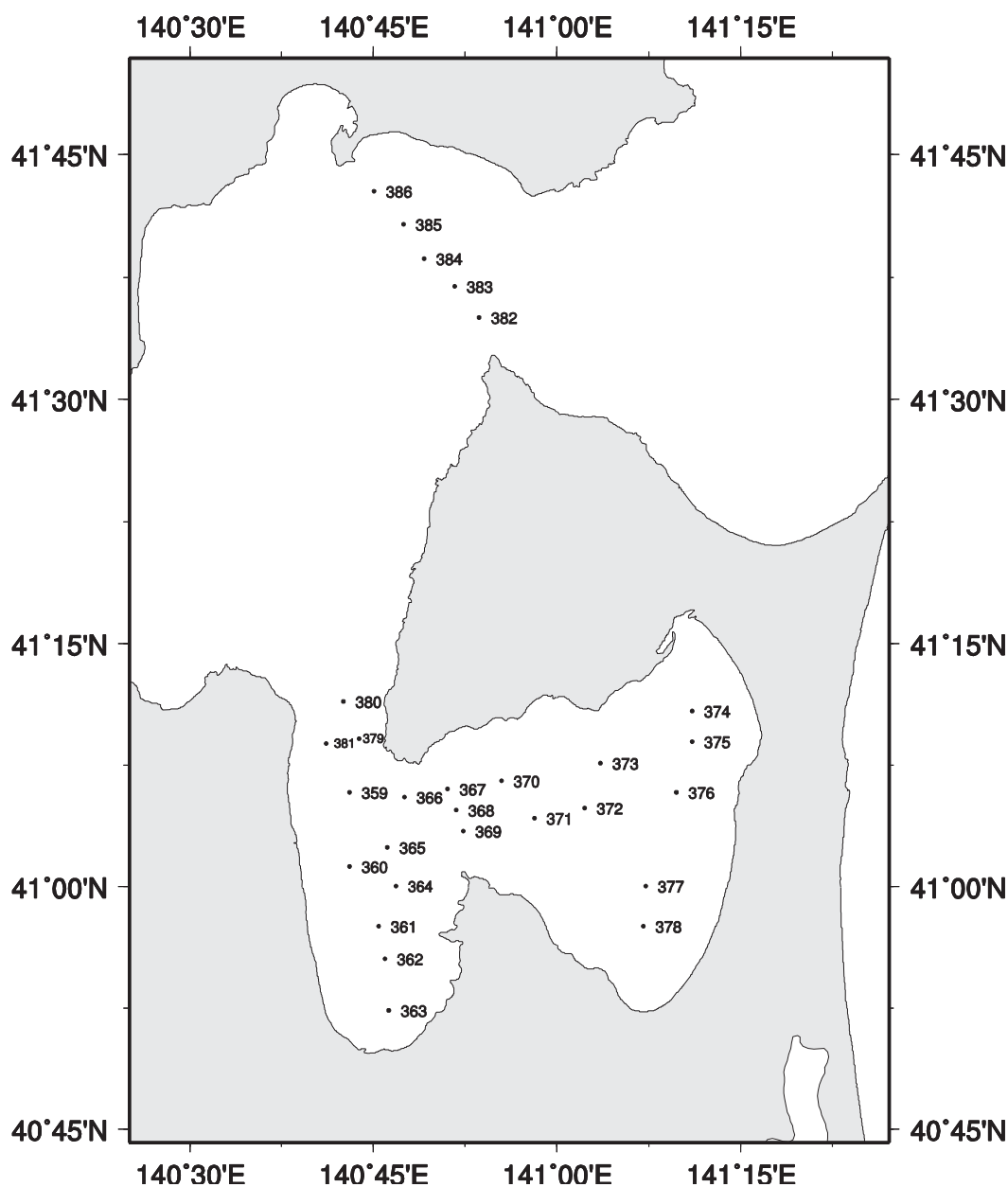


Figure 1. Oceanographic stations (Cruise 230)

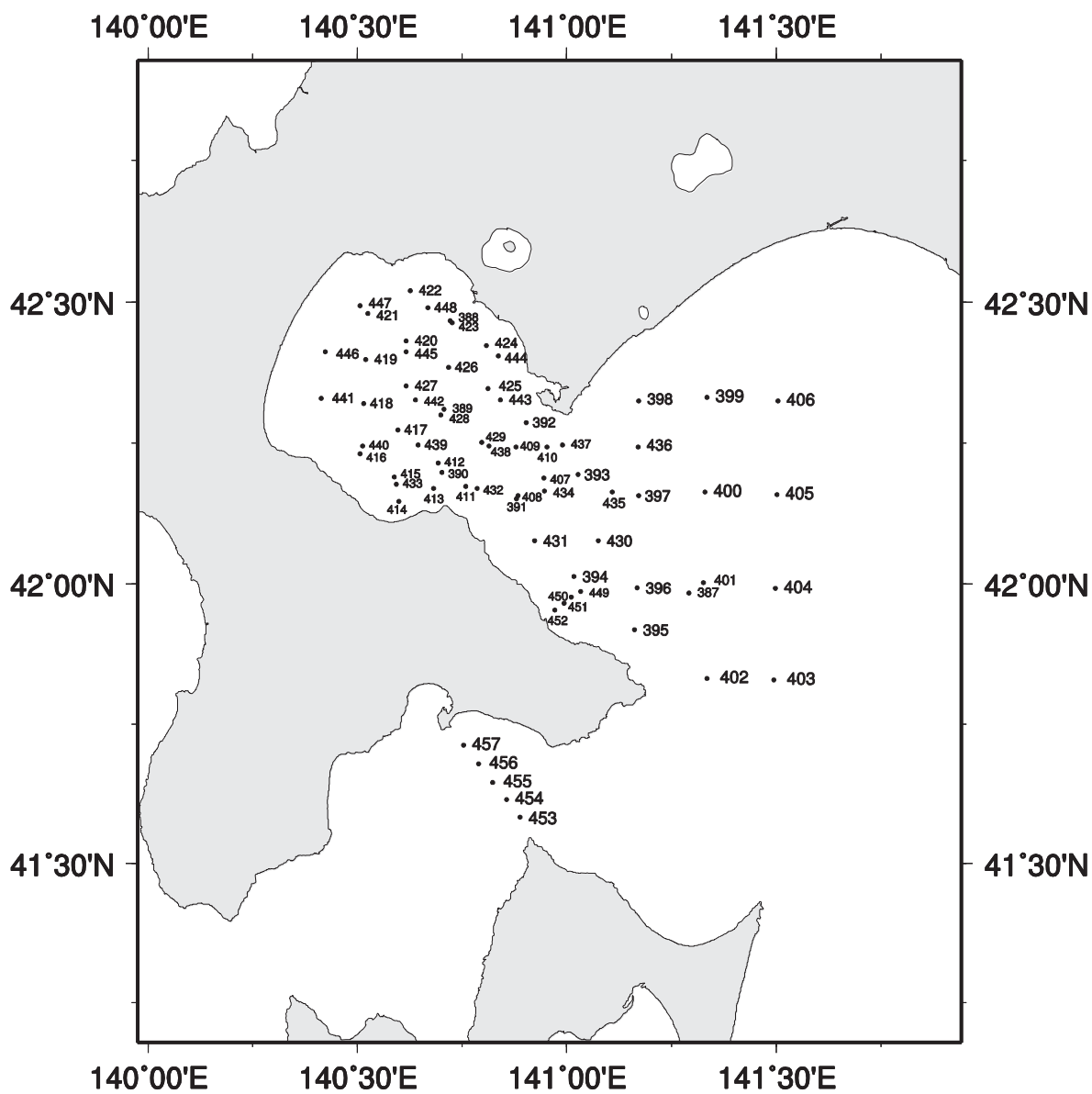


Figure 2. Oceanographic stations (Cruise 231)

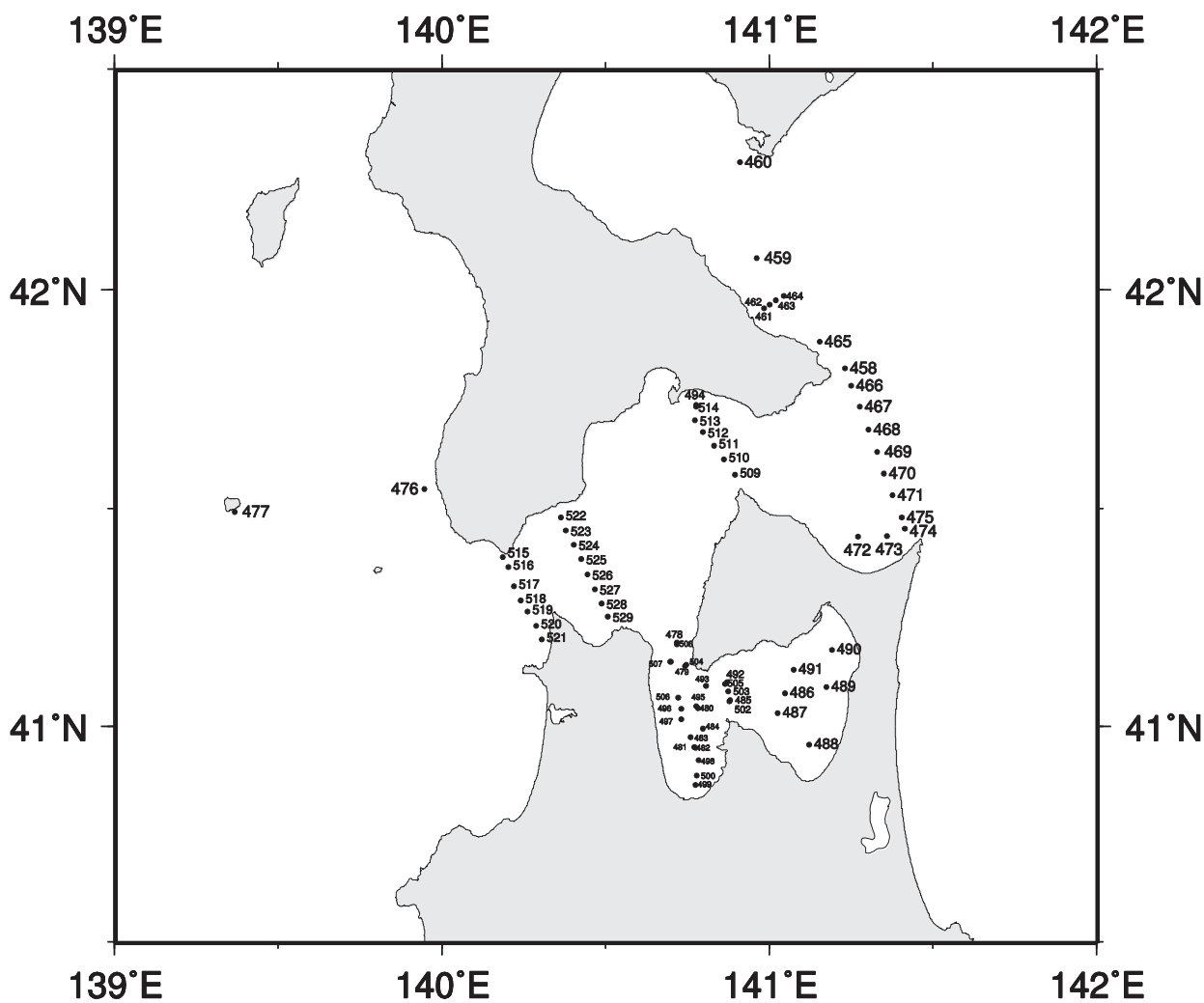


Figure 3. Oceanographic stations (Cruise 232)

Table 1: List of oceanographic stations

Cruise 230													
Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)	
US11359	41-05.9	140-43.0	6/1	1340-1343	64	West-3	East-1	East-5	10.7	11.5	c	1019.1	
US11360	41-01.3	140-43.0	6/1	1440-1443	56	ENE-3	East-1	ENE-5	11.3	10.4	bc	1018.1	
US11361	40-57.6	140-45.4	6/1	1516-1519	53	ENE-3	NE-1	ENE-5	11.6	10.8	bc	1017.6	
US11362	40-55.6	140-45.9	6/1	1539-1542	43	NE-2	NE-1	NE-4	13.0	11.5	bc	1017.6	
US11363	40-52.4	140-46.2	6/1	1621-1623	30	NE-3	NE-1	NE-5	13.4	11.5	bc	1017.2	
US11364	41-00.1	140-46.8	6/2	0724-0727	52	NE-1	NNE-1	NE-3	10.4	10.6	o	1018.1	
US11365	41-02.5	140-46.1	6/2	0803-0806	52	NE-1	NNE-1	NE-3	10.7	10.5	c	1018.1	
US11366	41-05.6	140-47.5	6/2	0832-0836	59	ENE-1	NE-1	ENE-3	11.1	10.6	c	1018.1	
US11367	41-06.1	140-51.0	6/2	0901-0904	52	NE-1	East-1	NE-3	12.5	10.6	c	1018.0	
US11368	41-04.8	140-51.7	6/2	0919-0922	52	ENE-1	East-1	ENE-2	12.1	10.4	c	1017.8	
US11369	41-03.5	140-52.3	6/2	0953-0956	50	NE-1	East-1	NE-3	13.4	10.6	bc	1017.6	
US11370	41-06.6	140-55.4	6/2	1023-1026	46	NE-1	NE-1	NE-3	12.5	10.2	bc	1017.6	
US11371	41-04.3	140-58.1	6/2	1050-1053	49	NE-1	NE-1	NE-3	14.2	10.8	c	1017.2	
US11372	41-04.9	141-02.2	6/2	1133-1136	47	NE-1	NE-1	NE-3	13.6	11.0	bc	1017.0	
US11373	41-07.7	141-03.5	6/2	1214-1217	38	NE-1	NE-1	NE-2	14.1	11.0	bc	1016.6	
US11374	41-10.9	141-11.0	6/2	1315-1318	30	NNE-2	NE-1	NNE-4	15.3	11.8	bc	1015.6	
US11375	41-09.0	141-11.0	6/2	1351-1354	34	North-2	North-1	North-4	15.3	11.7	bc	1015.1	
US11376	41-05.9	141-09.7	6/2	1417-1420	39	North-2	North-1	North-4	15.1	11.9	bc	1015.1	
US11377	41-00.1	141-07.2	6/2	1514-1517	43	NNE-1	East-1	NNE-2	16.0	11.7	c	1014.7	
US11378	40-57.6	141-07.0	6/2	1553-1556	38	East-2	East-1	East-4	14.2	11.9	c	1014.6	
US11379	41-09.2	140-43.8	6/3	0745-0748	60	SE-1	NW-1	SE-3	11.7	11.7	o	1013.6	
US11380	41-11.5	140-42.5	6/3	0809-0812	71	SE-1	NNW-1	SE-3	12.3	11.9	o	1013.6	
US11381	41-08.9	140-41.1	6/3	0838-0841	46	South-1	NNW-1	South-2	13.0	11.9	o	1013.6	
US11382	41-35.1	140-53.6	6/4	1321-1323	45	NE-1	NE-1	NE-3	12.2	11.1	bc	1006.1	
US11383	41-37.0	140-51.6	6/4	1358-1403	99	NE-1	East-1	NE-1	13.1	11.9	c	1006.2	
US11384	41-38.7	140-49.1	6/4	1443-1455	327	ESE-1	East-1	ESE-3	12.3	10.9	o	1005.7	
US11385	41-40.8	140-47.4	6/4	1520-1528	224	East-1	East-1	East-3	13.7	11.4	c	1005.2	
US11386	41-42.8	140-45.0	6/4	1606-1610	86	East-1	SE-1	East-2	12.1	11.9	c	1004.6	
Cruise 231													
Station	Lat. (N)*	Long. (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)	
US11387	41-59.1	141-17.4	6/9	1922-1942	277	North-1	East-1	North-1	12.4	12.3	r	1005.7	
US11388	42-27.9	140-43.5	6/10	1941-1945	60	Calm	NE-1	West-2	15.4	14.8	o	1005.1	
US11389	42-18.7	140-42.3	6/10	2055-2059	69	Calm	East-1	Calm	13.8	12.7	o	1005.7	
US11390	42-12.0	140-42.0	6/10	2156-2200	94	SE-1	East-1	SE-2	13.1	12	c	1006	
US11391	42-09.2	140-52.7	6/10	2314-2318	78	NE-1	East-1	NE-2	12.9	12.8	c	1005.6	
US11392	42-17.3	140-54.1	6/11	0020-0024	58	Calm	ESE-1	Calm	14.1	14.6	m	1004.7	
US11393	42-11.8	141-01.5	6/11	0119-0123	79	Calm	ESE-1	Calm	13	12.2	f	1004.6	
US11394	42-00.9	141-00.9	6/11	0241-0245	91	Calm	ESE-1	Calm	13.5	13.3	f	1004.7	
US11395	41-55.2	141-09.6	6/11	0350-0357	175	Calm	ESE-1	Calm	13.1	12.1	o	1004.6	
US11396	41-59.7	141-10.0	6/11	0448-0453	136	Calm	ESE-1	Calm	14	13	bc	1004.6	
US11397	42-09.5	141-10.2	6/11	0613-0617	124	Calm	ESE-1	Calm	14.1	12.8	bc	1004.4	
US11398	42-19.6	141-10.2	6/11	0734-0738	76	NE-1	ESE-1	NE-2	13.1	12.1	f	1004.6	
US11399	42-20.0	141-20.0	6/11	0834-0842	248	Calm	ESE-1	Calm	13.2	11.5	f	1004.1	
US11400	42-09.9	141-19.7	6/11	1003-1019	352	Calm	ESE-1	Calm	14.5	12.7	m	1003.9	
US11401	42-00.2	141-19.5	6/11	1143-1154	299	Calm	ESE-1	Calm	14.8	12.5	f	1003.3	
US11402	41-50.0	141-20.0	6/11	1322-1333	280	Calm	ESE-1	Calm	15.5	12.6	f	1002.1	
US11403	41-49.8	141-29.6	6/11	1433-1445	352	Calm	ESE-1	Calm	15.2	11.9	f	1001.6	
US11404	41-59.6	141-29.8	6/11	1606-1616	466	Calm	ESE-1	Calm	14.4	10.9	f	1001.6	
US11405	42-09.6	141-30.0	6/11	1738-1749	548	SSW-1	ESE-1	SSW-2	14.5	12.1	f	1001.6	
US11406	42-19.6	141-30.2	6/11	1913-1924	440	SW-1	SE-1	SW-2	13.5	13.2	f	1002.2	
US11407	42-11.4	140-56.6	6/12	1353-1357	74	Calm	ESE-1	Calm	18.6	13.8	bc	1006.5	
US11408	42-09.5	140-52.9	6/12	1420-1424	77	Calm	ESE-1	Calm	18	14.7	bc	1007.2	
US11409	42-14.7	140-52.6	6/12	1457-1500	61	SSW-1	ESE-1	SSW-2	19.3	16	bc	1006.1	
US11410	42-14.7	140-57.1	6/12	1523-1526	66	SSW-1	ESE-1	SSW-2	17.3	15.7	bc	1006.1	
US11411	42-10.3	140-47.1	6/14	0802-0806	94	West-1	ESE-1	West-3	14.6	14	c	1005.8	
US11412	42-13.0	140-41.5	6/14	0837-0841	89	WNW-2	ESE-1	WNW-4	15.3	13.3	c	1006.1	
US11413	42-10.3	140-40.8	6/14	0900-0904	85	WNW-2	ESE-1	WNW-4	14.6	14.4	c	1006.1	
US11414	42-08.9	140-35.9	6/14	0929-0933	63	WNW-1	East-1	WNW-3	14.9	14.3	c	1006.2	
US11415	42-11.5	140-35.2	6/14	0956-1000	80	NW-1	ESE-1	NW-3	15	13.7	c	1006.2	
US11416	42-14.0	140-30.3	6/14	1027-1031	80	WNW-1	ESE-1	WNW-3	15.9	13.7	c	1006.6	
US11417	42-16.5	140-35.7	6/14	1101-1105	90	NW-1	East-1	NW-3	16.3	13.9	c	1006.6	
US11418	42-19.3	140-30.8	6/14	1153-1157	94	Calm	NW-1	Calm	15.3	14	bc	1006.6	
US11419	42-24.0	140-31.1	6/14	1226-1230	95	NW-2	ESE-1	NW-4	15.9	14.5	bc	1006.4	
US11420	42-26.0	140-36.9	6/14	1302-1306	84	NW-1	ESE-1	NW-3	16.9	15.4	bc	1006.3	
US11421	42-28.9	140-31.4	6/14	1345-1349	76	NW-2	ESE-1	NW-4	15.1	15.2	bc	1006.5	
US11422	42-31.3	140-37.5	6/14	1421-1425	61	NW-2	West-1	NW-4	15.3	14.1	bc	1006.5	
US11423	42-28.1	140-43.2	6/14	1454-1458	61	NW-2	West-1	NW-4	15.1	14.5	bc	1006.6	
US11424	42-25.5	140-48.4	6/14	1526-1530	45	NW-2	West-1	NW-4	15.4	14.1	bc	1006.6	
US11425	42-20.9	140-48.6	6/15	0719-0722	51	WNW-2	WNW-1	WNW-4	13.3	14.3	bc	1011.6	
US11426	42-23.2	140-43.0	6/15	0753-0757	58	WNW-2	West-1	WNW-4	13.5	13.3	bc	1011.7	
US11427	42-21.2	140-36.9	6/15	0827-0831	85	NW-2	NW-1	NW-4	13.4	13.5	c	1011.8	
US11428	42-18.1	140-41.9	6/15	0936-0939	64	NW-1	NW-1	NW-3	15.7	13.3	bc	1012.1	
US11429	42-15.2	140-47.7	6/15	1010-1014	70	NW-1	NW-1	NW-3	17.2	13.7	bc	1012.2	
US11430	42-04.7	141-04.4	6/16	0723-0728	101	Calm	WNW-1	Calm	14.3	11.3	bc	1016.6	
US11431	42-04.7	140-55.3	6/16	0812-0816	84	Calm	ESE-1	Calm	13.7	12.3	bc	1016.3	
US11432	42-10.5	140-45.4	6/16	0918-0922	94	Calm	ESE-1	Calm	14.5	14.2	bc	1016.2	
US11433	42-10.7	140-35.5	6/16	1008-1012	77	NE-1	East-1	NE-1	14.9	14.5	bc	1016.1	
US11434	42-10.0	140-56.7	6/16	1151-1155	77	ESE-1	ESE-1	ESE-2	13.9	12.1	bc	1016.1	
US11435	42-09.9	141-06.4	6/16	1243-1246	95	SE-1	ESE-1	SE-2	13.8	11.6	bc	1016.2	
US11436	42-14.7	141-10.1	6/17	0654-0658	98	NNE-1	ESE-1	NNE-3	12.6	11.1	o	1014.1	
US11437	42-14.9	140-59.3	6/17	0750-0753	67	ENE-1	ESE-1	ENE-3	14.9	14	o	1014	
US11438	42-14.8	140-48.8	6/17	0843-0847	69	SSE-1	SE-1	SSE-3	14.4	11.7	o	1014	
US11439	42-14.9	140-38.6	6/17	0935-0939	87	SSE-1	ESE-1	SSE-2	14.6	13.7	o	1013.7	
US11440	42-14.8	140-30.7	6/17	1018-1022	84	ESE-1	ESE-1	ESE-2	16	14.3	o	1013.6	
US11441	42-19.9	140-24.7	6/17	1105-1108	77	Calm	East-1	Calm	14.6	14.5	o	1013.2	
US11442	42-19.7	140-38.2	6/17	1209-1213	81	Calm	East-1	Calm	16.5	14	o	1012.6	
US11443	42-19.7	140-50.4	6/17	1311-1314	45	SE-2	ESE-1	SE-4	15.2	15.7	bc	1012	
US11444	42-24.4	140-50.1	6/18	0653-0655	39	NNE-1	ESE-1	NNE-3	13.7	14.7	bc	1009.1	
US11445	42-24.8	140-36.9	6/18	0800-0805	86	Calm	ESE-1	Calm	15.2	14.6	c	1009.2	
US11446	42-24.8	140-25.3	6/18	0859-0903	68	SE-1	ESE-1	SE-2	15.8	15.8	bc	1008.6	
US11447	42-29.7	140-30.3	6/18	0942-0946	68	Calm	ESE-1	Calm	14.9	15.3	bc	1008.6	
US11448	42-29.5	140-40.0	6/18	1034-1038	65	Calm	SE-1</						

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Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11458	41-49.4	141-13.2	7/27	1137-1152	177	ESE-1	SE -1	ESE-2	22.4	17.4	c	1016.1
US11459	42-04.4	140-57.1	7/27	1427-1437	84	East-1	ESE-1	East-2	23.1	21.3	bc	1015.1
US11460	42-17.5	140-54.0	7/27	1631-1639	56	ESE-1	East-1	ESE-3	22.1	21.3	bc	1014.6
US11461	41-57.6	140-58.4	7/27	1854-1858	80	Calm	ESE-1	Calm	22.7	21.4	bc	1014.7
US11462	41-58.1	140-59.4	7/27	1905-1909	86	NE -1	ESE-1	NE -3	22.9	20.7	c	1014.6
US11463	41-58.7	141-00.6	7/27	1918-1922	93	NNE-1	ESE-1	NNE-2	22.5	21.4	c	1014.6
US11464	41-59.3	141-02.0	7/27	1931-1935	100	NE -1	ESE-1	NE -2	23	21.2	c	1014.6
US11465	41-53.0	141-08.6	7/27	2250-2255	100	Calm	ESE-1	Calm	22.5	20.4	c	1014.7
US11466	41-47.0	141-14.4	7/28	0034-0049	197	East-1	ESE-1	East-3	20.7	20.6	bc	1014
US11467	41-44.1	141-16.0	7/28	0113-0130	229	Calm	ESE-1	Calm	20.8	20.6	c	1013.7
US11468	41-41.0	141-17.6	7/28	0153-0210	233	Calm	ESE-1	Calm	20.6	18.5	m	1013.5
US11469	41-37.9	141-19.1	7/28	0235-0251	215	Calm	ESE-1	Calm	20	16.3	f	1013.1
US11470	41-35.0	141-20.4	7/28	0319-0341	311	Calm	ESE-1	Calm	19.5	17	f	1013
US11471	41-32.0	141-22.0	7/28	0406-0427	254	Calm	ESE-1	Calm	19.8	18.1	f	1013
US11472	41-26.3	141-15.6	7/28	0515-0526	78	Calm	East-1	Calm	19.2	17.6	f	1013
US11473	41-26.4	141-20.9	7/28	0559-0610	66	East-1	East-1	East-1	18.9	17.6	f	1013
US11474	41-27.4	141-24.2	7/28	0633-0639	48	ESE-2	East-1	ESE-3	19.8	17.2	f	1013
US11475	41-28.9	141-23.7	7/28	0654-0704	86	SE -1	East-1	SE -2	19.6	17.4	m	1012.9
US11476	41-32.8	139-56.2	7/29	0258-0304	136	Calm	SW -1	Calm	23	23.1	c	1007.7
US11477	41-29.7	139-21.4	7/30	0547-0551	107	NE -2	SSW-1	NE -4	25.1	23.6	bc	1006.6
US11478	41-11.7	140-42.5	8/1	1120-1127	68	ESE-3	SE -1	ESE-5	22.2	20.8	bc	1014.7
US11479	41-09.0	140-41.2	8/1	1146-1152	47	ESE-3	SE -1	ESE-5	22.4	20.9	bc	1014.7
US11480	41-02.5	140-43.2	8/1	1240-1247	57	East-3	SE -1	East-5	21.3	19.7	bc	1014.6
US11481	40-57.1	140-45.8	8/1	1323-1329	48	East-3	ESE-1	East-5	22	19.8	c	1014
US11482	40-53.3	140-46.1	8/1	1500-1507	35	East-3	NE -1	East-5	22.6	21.6	bc	1013.7
US11483	40-59.8	140-47.2	8/2	0659-0706	50	East-2	ENE-1	East-4	20.5	19.8	c	1015.7
US11484	41-02.6	140-46.3	8/2	0725-0731	51	East-3	ENE-1	East-5	20.3	19.9	c	1016.1
US11485	41-03.7	140-52.2	8/2	0804-0810	50	East-3	East-1	East-5	20.7	19.1	c	1016.1
US11486	41-04.7	141-02.3	8/2	0901-0907	46	East-2	East-1	East-4	21.1	20.6	c	1016.6
US11487	41-01.9	141-00.9	8/2	1025-1031	47	East-2	East-1	East-4	21.8	20.7	c	1016.7
US11488	40-57.6	141-06.7	8/2	1109-1114	37	ESE-3	East-1	ESE-5	20.9	20.7	c	1016.7
US11489	41-05.5	141-09.9	8/2	1204-1210	38	ESE-2	East-1	ESE-4	20.9	20.8	c	1016.6
US11490	41-10.7	141-10.9	8/2	1243-1247	31	East-1	East-1	East-3	21.1	21.3	c	1016.7
US11491	41-07.9	141-03.8	8/2	1327-1332	37	East-1	ESE-1	East-3	22.1	20.5	o	1016.7
US11492	41-06.2	140-51.6	8/2	1430-1435	50	East-2	ESE-1	East-4	21.7	19.3	c	1016.6
US11493	41-08.4	140-43.9	8/2	1515-1522	60	East-3	ESE-1	East-5	21	20.7	bc	1016.2
US11494	41-44.4	140-46.0	8/3	0555-0559	56	NE -1	East-1	NE -3	20.4	21	c	1017.7
US11495	41-04.1	140-42.7	8/4	1302-1308	59	NNW-1	SE -1	NNW-3	26.6	21.2	bc	1014.5
US11496	41-02.9	140-46.0	8/4	1440-1443	51	North-1	SE -1	North-2	25.5	21.5	bc	1014.1
US11497	41-01.1	140-43.2	8/4	1508-1512	55	North-1	SE -1	North-3	24.2	21	bc	1014.1
US11498	40-58.6	140-44.9	8/4	1555-1559	54	NE -2	NE -1	NE -4	25.1	20.7	bc	1013.7
US11499	40-52.0	140-45.8	8/5	0642-0645	27	Calm	NE -1	Calm	22.3	22	o	1013.7
US11500	40-55.4	140-46.4	8/5	0724-0727	41	NE -1	NE -1	NE -2	21.9	21.4	o	1013.7
US11501	40-57.2	140-45.6	8/5	0800-0803	49	NE -1	NE -1	NE -2	21.8	21.6	o	1013.7
US11502	41-03.6	140-52.1	8/5	1011-1014	50	Calm	NE -1	Calm	23.6	21.8	c	1013.2
US11503	41-04.9	140-51.8	8/5	1026-1030	52	East-1	NE -1	East-1	23.7	21.6	c	1013.2
US11504	41-06.0	140-51.3	8/5	1058-1102	51	Calm	NE -1	Calm	24.6	20.8	c	1013.1
US11505	41-05.7	140-47.8	8/5	1153-1157	50	Calm	NE -1	Calm	27.9	22.4	c	1012.7
US11506	41-08.6	140-44.1	8/5	1236-1240	58	NNW-1	NNW-1	NNW-2	24.4	21.8	bc	1012.6
US11507	41-09.0	140-41.3	8/5	1300-1304	51	NNW-1	NNW-1	NNW-2	24.1	21	bc	1012.6
US11508	41-11.4	140-42.5	8/5	1331-1335	68	North-1	NNW-1	North-2	25.3	21.9	bc	1012.5
US11509	41-34.8	140-53.1	8/5	1605-1608	31	East-1	ESE-1	East-4	21	19.8	o	1012
US11510	41-36.9	140-51.1	8/5	1628-1632	84	East-1	ESE-1	East-4	21.6	20.8	bc	1012.2
US11511	41-38.8	140-49.3	8/5	1650-1703	331	East-2	ESE-1	East-4	21.8	21.4	bc	1012
US11512	41-40.7	140-47.2	8/5	1721-1731	223	East-2	ESE-1	East-4	22	22.5	bc	1012
US11513	41-42.3	140-45.7	8/5	1746-1750	93	East-2	ESE-1	East-4	22.1	22.8	bc	1011.9
US11514	41-44.1	140-46.0	8/6	0542-0546	63	Calm	East-1	Calm	22.4	21.9	f	1012.2
US11515	41-23.5	140-10.5	8/9	0654-0657	39	East-1	SE -1	East-3	22.8	19.8	bc	1012.1
US11516	41-22.1	140-11.6	8/9	0710-0716	73	East-1	SE -1	East-3	22.5	19.6	bc	1012.4
US11517	41-19.5	140-12.6	8/9	0735-0743	183	ENE-1	NE -1	ENE-3	23.7	25.2	bc	1012.2
US11518	41-17.5	140-13.8	8/9	0800-0808	242	ENE-1	NE -1	ENE-3	25.2	25.8	bc	1012.1
US11519	41-16.0	140-15.0	8/9	0823-0830	169	East-1	NE -1	East-3	25.7	26.1	bc	1012.1
US11520	41-14.0	140-16.6	8/9	0845-0853	85	NE -1	NE -1	NE -3	25.7	25.8	bc	1012.1
US11521	41-12.1	140-17.7	8/9	0912-0914	54	NE -1	NE -1	NE -3	25.4	25.2	bc	1012.1
US11522	41-28.9	140-21.2	8/9	1124-1128	63	Calm	NE -1	Calm	24.7	20.2	bc	1012.1
US11523	41-27.1	140-22.1	8/9	1143-1148	85	Calm	NE -1	Calm	26	20.2	bc	1011.8
US11524	41-25.2	140-23.5	8/9	1208-1218	234	Calm	NE -1	Calm	26.8	19.1	bc	1011.7
US11525	41-23.2	140-24.9	8/9	1243-1254	259	Calm	NE -1	Calm	28.2	25.7	bc	1011.5
US11526	41-21.1	140-26.0	8/9	1320-1328	199	SW -1	NE -1	SW -3	28	25.9	bc	1011.5
US11527	41-19.0	140-27.4	8/9	1347-1355	112	SW -2	NE -1	SW -4	26.7	22.2	bc	1011.2
US11528	41-17.1	140-28.6	8/9	1414-1420	156	SW -2	NE -1	SW -4	25	21.4	bc	1011.1
US11529	41-15.3	140-29.8	8/9	1442-1446	94	West-2	NE -1	West-4	25.6	21.7	bc	1011.1

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION		US11359	
LATITUDE		41-05.9	N
LONGITUDE		140-43.0	E
DEPTH (m)		64	
Press.	Temp.	Salinity	Sigma-T
5	11.242	32.515	24.798
10	11.246	32.530	24.809
20	11.057	32.619	24.912
30	10.877	32.740	25.037
40	10.710	33.571	25.714
50	9.849	33.935	26.146

STATION		US11362	
LATITUDE		40-55.6	N
LONGITUDE		140-45.9	E
DEPTH (m)		43	
Press.	Temp.	Salinity	Sigma-T
5	11.631	32.525	24.735
10	10.342	32.877	25.237
20	9.686	33.037	25.471
30	9.076	33.200	25.696
40	9.055	33.499	25.934

STATION		US11365	
LATITUDE		41-02.5	N
LONGITUDE		140-46.1	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	10.698	32.559	24.928
10	10.505	32.646	25.029
20	10.346	32.785	25.164
30	10.168	33.222	25.536
40	9.640	33.947	26.190
50	9.632	33.980	26.217

STATION		US11368	
LATITUDE		41-04.8	N
LONGITUDE		140-51.7	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	10.473	32.812	25.164
10	9.777	32.876	25.331
20	9.543	32.986	25.455
30	9.574	33.043	25.494
40	9.796	33.933	26.153
50	9.679	33.943	26.181

STATION		US11371	
LATITUDE		41-04.3	N
LONGITUDE		140-58.1	E
DEPTH (m)		49	
Press.	Temp.	Salinity	Sigma-T
5	10.970	32.397	24.755
10	9.527	32.494	25.073
20	9.115	32.603	25.224
30	8.876	32.770	25.392
40	9.655	33.798	26.071

STATION		US11374	
LATITUDE		41-10.9	N
LONGITUDE		141-11.0	E
DEPTH (m)		30	
Press.	Temp.	Salinity	Sigma-T
5	11.428	32.386	24.664
10	10.489	32.435	24.868
20	8.314	32.684	25.409

STATION		US11360	
LATITUDE		41-01.3	N
LONGITUDE		140-43.0	E
DEPTH (m)		56	
Press.	Temp.	Salinity	Sigma-T
5	10.998	32.776	25.044
10	10.960	32.789	25.061
20	10.314	33.039	25.368
30	10.508	33.504	25.697
40	9.901	33.849	26.070
50	9.761	33.939	26.164

STATION		US11363	
LATITUDE		40-52.4	N
LONGITUDE		140-46.2	E
DEPTH (m)		30	
Press.	Temp.	Salinity	Sigma-T
5	11.619	32.551	24.758
10	10.997	32.690	24.978
20	9.745	33.020	25.449

STATION		US11366	
LATITUDE		41-05.6	N
LONGITUDE		140-47.5	E
DEPTH (m)		59	
Press.	Temp.	Salinity	Sigma-T
5	10.674	32.609	24.971
10	10.431	32.635	25.033
20	10.213	32.973	25.333
30	9.653	33.824	26.092
40	9.632	33.935	26.182
50	9.648	33.987	26.220

STATION		US11369	
LATITUDE		41-03.5	N
LONGITUDE		140-52.3	E
DEPTH (m)		50	
Press.	Temp.	Salinity	Sigma-T
5	10.722	32.839	25.142
10	9.997	33.038	25.421
20	10.191	33.209	25.521
30	9.638	33.394	25.758
40	8.885	33.529	25.984

STATION		US11372	
LATITUDE		41-04.9	N
LONGITUDE		141-02.2	E
DEPTH (m)		47	
Press.	Temp.	Salinity	Sigma-T
5	11.270	32.504	24.784
10	10.407	32.413	24.864
20	9.532	32.517	25.090
30	9.377	32.558	25.147
40	9.362	33.609	25.971

STATION		US11375	
LATITUDE		41-09.0	N
LONGITUDE		141-11.0	E
DEPTH (m)		34	
Press.	Temp.	Salinity	Sigma-T
5	11.033	32.396	24.743
10	10.032	32.475	24.975
20	9.405	32.547	25.134
30	8.187	33.239	25.863

STATION		US11361	
LATITUDE		40-57.6	N
LONGITUDE		140-45.4	E
DEPTH (m)		53	
Press.	Temp.	Salinity	Sigma-T
5	10.859	32.715	25.022
10	10.852	32.714	25.022
20	9.312	33.148	25.619
30	9.038	33.264	25.753
40	9.024	33.566	25.992
50	9.260	33.670	26.035

STATION		US11364	
LATITUDE		41-00.1	N
LONGITUDE		140-46.8	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	10.760	32.868	25.158
10	10.608	32.877	25.191
20	9.438	33.035	25.510
30	8.935	33.194	25.714
40	10.102	33.762	25.968
50	9.805	33.930	26.150

STATION		US11367	
LATITUDE		41-06.1	N
LONGITUDE		140-51.0	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	9.702	32.683	25.192
10	9.676	32.748	25.247
20	10.214	32.994	25.350
30	9.634	32.987	25.441
40	9.755	33.935	26.161
50	9.624	33.952	26.197

STATION		US11370	
LATITUDE		41-06.6	N
LONGITUDE		140-55.4	E
DEPTH (m)		46	
Press.	Temp.	Salinity	Sigma-T
5	9.816	32.616	25.121
10	9.448	32.662	25.217
20	9.447	32.715	25.259
30	9.633	32.896	25.370
40	9.572	33.902	26.166

STATION		US11373	
LATITUDE		41-07.7	N
LONGITUDE		141-03.5	E
DEPTH (m)		38	
Press.	Temp.	Salinity	Sigma-T
5	10.505	32.435	24.865
10	10.020	32.495	24.993
20	9.572	32.614	25.159
30	9.417	32.657	25.218

STATION		US11376	
LATITUDE		41-05.9	N
LONGITUDE		141-09.7	E
DEPTH (m)		39	
Press.	Temp.	Salinity	Sigma-T
5	10.647	32.392	24.807
10	10.237	32.453	24.924
20	9.838	32.574	25.084
30	9.374	32.849	25.375

STATION US11377			
LATITUDE 41-00.1 N			
LONGITUDE 141-07.2 E			
DEPTH (m) 43			
Press.	Temp.	Salinity	Sigma-T
5	11.670	32.397	24.629
10	10.787	32.395	24.785
20	9.474	32.468	25.061
30	8.097	33.201	25.847
40	8.788	33.533	26.003

STATION US11378			
LATITUDE 40-57.6 N			
LONGITUDE 141-07.0 E			
DEPTH (m) 38			
Press.	Temp.	Salinity	Sigma-T
5	11.418	32.394	24.672
10	10.325	32.407	24.873
20	8.263	32.766	25.481
30	9.134	33.503	25.925

STATION US11379			
LATITUDE 41-09.2 N			
LONGITUDE 140-43.8 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	12.051	32.546	24.674
10	11.506	32.633	24.842
20	11.399	32.679	24.897
30	11.195	32.758	24.995
40	9.925	33.932	26.131
50	9.660	34.003	26.231

STATION US11380			
LATITUDE 41-11.5 N			
LONGITUDE 140-42.5 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	12.074	32.523	24.652
10	11.926	32.552	24.703
20	11.191	32.682	24.937
30	11.650	33.279	25.318
40	10.614	33.789	25.901
50	10.179	33.928	26.084

STATION US11381			
LATITUDE 41-08.9 N			
LONGITUDE 140-41.1 E			
DEPTH (m) 46			
Press.	Temp.	Salinity	Sigma-T
5	12.021	32.528	24.666
10	11.142	32.595	24.878
20	10.855	32.836	25.116
30	10.998	33.696	25.761
40	10.528	33.830	25.948

STATION US11382			
LATITUDE 41-35.1 N			
LONGITUDE 140-53.6 E			
DEPTH (m) 45			
Press.	Temp.	Salinity	Sigma-T
5	11.104	33.729	25.767
10	11.097	33.708	25.752
20	11.044	33.694	25.751
30	11.022	33.699	25.758
40	11.017	33.699	25.760

STATION US11383			
LATITUDE 41-37.0 N			
LONGITUDE 140-51.6 E			
DEPTH (m) 99			
Press.	Temp.	Salinity	Sigma-T
5	11.196	33.635	25.677
10	10.575	33.775	25.897
20	10.355	33.831	25.979
30	10.044	33.878	26.068
40	9.827	33.910	26.130
50	9.828	33.914	26.133
75	9.882	33.911	26.121

STATION US11384			
LATITUDE 41-38.7 N			
LONGITUDE 140-49.1 E			
DEPTH (m) 327			
Press.	Temp.	Salinity	Sigma-T
5	10.603	33.833	25.937
10	10.136	33.864	26.042
20	9.954	33.899	26.100
30	9.671	33.935	26.175
40	9.695	33.934	26.170
50	9.483	33.952	26.220
75	9.180	33.977	26.289
100	9.054	33.990	26.319
125	8.669	34.007	26.393
150	8.561	34.012	26.413
175	8.529	34.009	26.416
200	8.639	34.007	26.397
250	8.805	33.999	26.365

STATION US11385			
LATITUDE 41-40.8 N			
LONGITUDE 140-47.4 E			
DEPTH (m) 224			
Press.	Temp.	Salinity	Sigma-T
5	11.169	33.628	25.677
10	11.002	33.656	25.728
20	10.518	33.736	25.876
30	10.171	33.805	25.990
40	10.128	33.825	26.013
50	10.110	33.855	26.039
75	10.045	33.895	26.082
100	9.964	33.909	26.106
125	9.658	33.922	26.168
150	9.471	33.938	26.211
175	9.184	33.954	26.269

STATION US11386			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.0 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	11.965	33.614	25.519
10	11.451	33.643	25.637
20	11.114	33.700	25.742
30	10.760	33.757	25.850
40	10.430	33.798	25.939
50	10.135	33.826	26.013
75	9.116	33.797	26.158

STATION US11387			
LATITUDE 41-59.1 N			
LONGITUDE 141-17.4 E			
DEPTH (m) 277			
Press.	Temp.	Salinity	Sigma-T
5	11.403	32.956	25.112
10	10.154	33.136	25.471
20	8.293	33.267	25.869
30	8.846	33.637	26.075
40	8.542	33.795	26.246
50	8.412	33.834	26.296
75	6.773	33.750	26.465
100	6.229	33.718	26.510
125	5.312	33.659	26.576
150	4.686	33.617	26.614
175	4.144	33.611	26.667
200	3.588	33.594	26.708
250	3.083	33.612	26.769

STATION US11388			
LATITUDE 42-27.9 N			
LONGITUDE 140-43.5 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	13.245	31.662	23.760
10	10.880	31.933	24.409
20	8.160	32.250	25.092
30	6.795	32.648	25.593
40	5.768	32.710	25.771
50	4.882	32.957	26.069

STATION US11389			
LATITUDE 42-18.7 N			
LONGITUDE 140-42.3 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	11.494	31.724	24.138
10	11.274	31.754	24.201
20	9.882	31.852	24.515
30	8.287	32.255	25.077
40	6.229	32.476	25.530
50	5.032	32.685	25.836

STATION US11390			
LATITUDE 42-12.0 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	12.076	31.741	24.045
10	9.783	31.850	24.529
20	8.303	32.274	25.090
30	7.490	32.436	25.333
40	7.043	32.594	25.518
50	6.552	32.944	25.859
75	3.206	33.193	26.424

STATION US11391			
LATITUDE 42-09.2 N			
LONGITUDE 140-52.7 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	12.181	31.797	24.069
10	8.308	32.227	25.052
20	6.246	32.581	25.611
30	6.731	33.011	25.888
40	5.751	32.987	25.993
50	6.177	33.252	26.149

		STATION	US11392	
		LATITUDE	42-17.3	N
		LONGITUDE	140-54.1	E
		DEPTH (m)	58	
Press.	Temp.	Salinity	Sigma-T	
5	12.680	31.744	23.934	
10	11.239	31.819	24.257	
20	8.479	32.210	25.013	
30	5.596	32.726	25.805	
40	5.401	32.902	25.967	

		STATION	US11395	
		LATITUDE	41-55.2	N
		LONGITUDE	141-09.6	E
		DEPTH (m)	175	
Press.	Temp.	Salinity	Sigma-T	
5	11.839	32.448	24.637	
10	9.592	32.723	25.241	
20	8.546	33.148	25.738	
30	5.143	32.911	26.003	
40	7.703	33.639	26.248	
50	7.559	33.691	26.310	
75	5.520	33.506	26.431	
100	5.243	33.554	26.501	
125	4.571	33.534	26.561	
150	4.267	33.525	26.585	

		STATION	US11398	
		LATITUDE	42-19.6	N
		LONGITUDE	141-10.2	E
		DEPTH (m)	76	
Press.	Temp.	Salinity	Sigma-T	
5	11.086	31.657	24.158	
10	7.420	32.337	25.264	
20	5.899	32.425	25.531	
30	5.814	32.969	25.970	
40	4.099	32.800	26.026	
50	5.748	33.235	26.189	

		STATION	US11401	
		LATITUDE	42-00.2	N
		LONGITUDE	141-19.5	E
		DEPTH (m)	299	
Press.	Temp.	Salinity	Sigma-T	
5	11.995	32.796	24.879	
10	10.014	32.903	25.313	
20	6.599	33.096	25.972	
30	7.219	33.432	26.154	
40	7.781	33.642	26.239	
50	8.018	33.731	26.274	
75	7.595	33.764	26.362	
100	7.017	33.749	26.431	
125	6.179	33.706	26.508	
150	5.340	33.651	26.567	
175	4.578	33.618	26.626	
200	3.853	33.595	26.683	
250	3.081	33.590	26.752	
300	2.997	33.654	26.811	

		STATION	US11393	
		LATITUDE	42-11.8	N
		LONGITUDE	141-01.5	E
		DEPTH (m)	79	
Press.	Temp.	Salinity	Sigma-T	
5	12.002	32.608	24.731	
10	8.552	32.566	25.281	
20	5.668	32.628	25.719	
30	4.895	32.671	25.841	
40	4.875	32.765	25.917	
50	6.971	33.389	26.153	

		STATION	US11396	
		LATITUDE	41-59.7	N
		LONGITUDE	141-10.0	E
		DEPTH (m)	136	
Press.	Temp.	Salinity	Sigma-T	
5	11.588	32.620	24.817	
10	9.908	32.828	25.270	
20	8.041	33.348	25.971	
30	6.620	33.339	26.161	
40	7.107	33.602	26.303	
50	7.097	33.669	26.357	
75	6.548	33.671	26.432	
100	5.755	33.648	26.515	
125	4.557	33.532	26.560	

		STATION	US11399	
		LATITUDE	42-20.0	N
		LONGITUDE	141-20.0	E
		DEPTH (m)	248	
Press.	Temp.	Salinity	Sigma-T	
5	10.458	32.884	25.223	
10	10.417	33.045	25.355	
20	7.874	33.038	25.752	
30	8.286	33.614	26.143	
40	6.964	33.485	26.230	
50	7.037	33.555	26.276	
75	6.175	33.541	26.378	
100	5.215	33.495	26.458	
125	5.314	33.587	26.519	
150	4.624	33.533	26.554	
175	3.963	33.500	26.596	
200	3.381	33.469	26.629	

		STATION	US11402	
		LATITUDE	41-50.0	N
		LONGITUDE	141-20.0	E
		DEPTH (m)	280	
Press.	Temp.	Salinity	Sigma-T	
5	12.346	32.838	24.845	
10	9.556	33.139	25.572	
20	8.192	33.451	26.029	
30	8.674	33.750	26.190	
40	8.352	33.751	26.240	
50	7.652	33.697	26.301	
75	7.451	33.761	26.380	
100	6.677	33.713	26.449	
125	5.996	33.685	26.514	
150	4.848	33.593	26.577	
175	4.715	33.629	26.620	
200	3.822	33.553	26.653	
250	3.004	33.535	26.716	

		STATION	US11394	
		LATITUDE	42-00.9	N
		LONGITUDE	141-00.9	E
		DEPTH (m)	91	
Press.	Temp.	Salinity	Sigma-T	
5	11.061	32.732	24.999	
10	9.519	32.817	25.327	
20	8.715	33.070	25.651	
30	5.850	32.810	25.841	
40	6.707	33.367	26.172	
50	4.767	33.187	26.264	
75	5.001	33.451	26.447	

		STATION	US11397	
		LATITUDE	42-09.5	N
		LONGITUDE	141-10.2	E
		DEPTH (m)	124	
Press.	Temp.	Salinity	Sigma-T	
5	10.512	32.887	25.216	
10	9.211	32.993	25.514	
20	6.635	33.097	25.969	
30	5.935	33.257	26.183	
40	5.442	33.242	26.231	
50	6.527	33.492	26.294	
75	5.940	33.469	26.351	
100	5.885	33.609	26.468	

		STATION	US11400	
		LATITUDE	42-09.9	N
		LONGITUDE	141-19.7	E
		DEPTH (m)	352	
Press.	Temp.	Salinity	Sigma-T	
5	11.624	32.977	25.088	
10	8.905	33.180	25.708	
20	8.775	33.667	26.109	
30	8.818	33.771	26.184	
40	8.817	33.825	26.227	
50	8.873	33.854	26.241	
75	6.425	33.494	26.309	
100	6.844	33.674	26.396	
125	5.047	33.457	26.446	
150	5.548	33.609	26.509	
175	4.811	33.538	26.538	
200	4.053	33.487	26.577	
250	3.387	33.519	26.668	
300	2.977	33.544	26.725	

		STATION	US11403	
		LATITUDE	41-49.8	N
		LONGITUDE	141-29.6	E
		DEPTH (m)	352	
Press.	Temp.	Salinity	Sigma-T	
5	10.997	32.595	24.903	
10	9.063	32.881	25.449	
20	5.794	32.929	25.942	
30	4.751	33.017	26.131	
40	4.584	33.104	26.218	
50	4.904	33.314	26.349	
75	5.151	33.460	26.437	
100	6.345	33.728	26.504	
125	4.431	33.460	26.516	
150	4.402	33.515	26.564	
175	2.869	33.348	26.578	
200	2.402	33.331	26.604	
250	2.532	33.431	26.672	

STATION US11404			
LATITUDE 41-59.6 N			
LONGITUDE 141-29.8 E			
DEPTH (m) 466			
Press.	Temp.	Salinity	Sigma-T
5	10.407	32.704	25.091
10	7.356	32.716	25.572
20	5.946	32.772	25.799
30	4.226	32.690	25.927
40	3.965	32.747	25.998
50	6.553	33.353	26.181
75	5.918	33.434	26.325
100	7.436	33.792	26.406
125	4.063	33.322	26.445
150	3.750	33.380	26.522
175	4.165	33.497	26.574
200	3.737	33.452	26.581
250	3.337	33.485	26.645
300	2.838	33.523	26.720

STATION US11405			
LATITUDE 42-09.6 N			
LONGITUDE 141-30.0 E			
DEPTH (m) 548			
Press.	Temp.	Salinity	Sigma-T
5	13.119	32.640	24.541
10	11.060	33.269	25.417
20	9.224	33.508	25.914
30	8.708	33.659	26.114
40	8.614	33.802	26.241
50	8.561	33.836	26.275
75	5.442	33.385	26.344
100	7.333	33.791	26.420
125	5.649	33.545	26.446
150	5.741	33.632	26.503
175	5.050	33.548	26.519
200	4.809	33.557	26.553
250	3.744	33.481	26.603
300	3.040	33.496	26.681

STATION US11406			
LATITUDE 42-19.6 N			
LONGITUDE 141-30.2 E			
DEPTH (m) 440			
Press.	Temp.	Salinity	Sigma-T
5	12.430	32.599	24.644
10	9.964	32.578	25.067
20	6.954	32.619	25.549
30	4.622	32.869	26.027
40	5.603	33.237	26.208
50	5.739	33.404	26.324
75	6.145	33.504	26.353
100	5.349	33.479	26.430
125	5.072	33.498	26.477
150	5.422	33.615	26.528
175	4.614	33.513	26.539
200	4.417	33.547	26.587
250	3.009	33.461	26.656
300	2.656	33.511	26.727

STATION US11407			
LATITUDE 42-11.4 N			
LONGITUDE 140-56.6 E			
DEPTH (m) 74			
Press.	Temp.	Salinity	Sigma-T
5	12.498	32.165	24.294
10	8.373	32.434	25.205
20	6.906	32.642	25.574
30	6.526	32.787	25.738
40	5.336	32.885	25.961
50	5.229	33.000	26.064

STATION US11408			
LATITUDE 42-09.5 N			
LONGITUDE 140-52.9 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	12.429	32.066	24.231
10	11.208	32.375	24.695
20	8.236	32.602	25.356
30	5.938	32.562	25.634
40	5.630	32.822	25.877
50	5.695	33.154	26.131

STATION US11409			
LATITUDE 42-14.7 N			
LONGITUDE 140-52.6 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	16.036	31.766	23.253
10	13.364	31.634	23.715
20	8.090	32.242	25.096
30	5.646	32.664	25.750
40	4.975	32.790	25.926
50	6.425	33.254	26.119

STATION US11410			
LATITUDE 42-14.7 N			
LONGITUDE 140-57.1 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	13.878	31.046	23.158
10	11.267	31.893	24.310
20	8.461	32.326	25.107
30	5.523	32.671	25.769
40	4.674	32.819	25.982
50	5.686	33.207	26.174

STATION US11411			
LATITUDE 42-10.3 N			
LONGITUDE 140-47.1 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	13.752	31.736	23.717
10	12.397	31.764	24.003
20	8.450	32.211	25.018
30	6.490	32.518	25.531
40	5.508	32.752	25.836
50	5.771	33.204	26.162
75	5.304	33.472	26.429

STATION US11412			
LATITUDE 42-13.0 N			
LONGITUDE 140-41.5 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	13.480	31.710	23.751
10	12.983	31.732	23.865
20	9.083	31.999	24.756
30	7.794	32.327	25.204
40	6.547	32.673	25.646
50	5.543	32.995	26.024
75	3.238	33.252	26.469

STATION US11413			
LATITUDE 42-10.3 N			
LONGITUDE 140-40.8 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	14.564	31.731	23.545
10	13.321	31.764	23.823
20	8.429	32.400	25.170
30	6.811	32.539	25.505
40	6.181	32.682	25.699
50	4.937	32.911	26.027
75	3.430	33.324	26.508

STATION US11414			
LATITUDE 42-08.9 N			
LONGITUDE 140-35.9 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	13.243	31.897	23.943
10	10.452	31.977	24.516
20	8.075	32.271	25.120
30	6.101	32.493	25.559
40	5.107	32.643	25.795
50	4.180	32.870	26.074

STATION US11415			
LATITUDE 42-11.5 N			
LONGITUDE 140-35.2 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	14.087	31.730	23.644
10	9.860	32.036	24.661
20	7.669	32.383	25.266
30	6.960	32.544	25.490
40	5.223	32.609	25.755
50	4.208	32.890	26.087
75	3.259	33.313	26.515

STATION US11416			
LATITUDE 42-14.0 N			
LONGITUDE 140-30.3 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	13.707	31.756	23.741
10	10.741	31.937	24.436
20	7.930	32.314	25.175
30	6.101	32.502	25.567
40	5.208	32.627	25.771
50	3.988	32.931	26.142
75	3.402	33.370	26.547

STATION US11417			
LATITUDE 42-16.5 N			
LONGITUDE 140-35.7 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	13.470	31.732	23.770
10	12.566	31.734	23.947
20	9.203	32.068	24.791
30	8.177	32.352	25.169
40	5.825	32.596	25.675
50	4.559	32.824	25.999
75	3.215	33.255	26.473

STATION US11418			
LATITUDE 42-19.3 N			
LONGITUDE 140-30.8 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	13.780	31.803	23.763
10	10.879	32.090	24.532
20	8.209	32.424	25.221
30	7.773	32.742	25.534
40	5.292	32.616	25.753
50	4.068	32.893	26.104
75	3.279	33.293	26.497

	STATION	US11419		
	LATITUDE	42-24.0	N	
	LONGITUDE	140-31.1	E	
	DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T	
5	14.153	31.792	23.678	
10	9.728	31.952	24.617	
20	7.827	32.311	25.188	
30	6.373	32.477	25.513	
40	5.223	32.620	25.764	
50	4.408	32.815	26.007	
75	3.247	33.251	26.467	

	STATION	US11422		
	LATITUDE	42-31.3	N	
	LONGITUDE	140-37.5	E	
	DEPTH (m)	61		
Press.	Temp.	Salinity	Sigma-T	
5	11.498	31.846	24.232	
10	10.071	32.000	24.599	
20	7.478	32.370	25.283	
30	6.048	32.535	25.599	
40	5.072	32.722	25.862	
50	4.130	33.009	26.189	

	STATION	US11425		
	LATITUDE	42-20.9	N	
	LONGITUDE	140-48.6	E	
	DEPTH (m)	51		
Press.	Temp.	Salinity	Sigma-T	
5	14.497	31.745	23.570	
10	9.281	32.092	24.798	
20	7.313	32.472	25.386	
30	6.713	32.730	25.669	
40	4.988	32.836	25.962	

	STATION	US11428		
	LATITUDE	42-18.1	N	
	LONGITUDE	140-41.9	E	
	DEPTH (m)	64		
Press.	Temp.	Salinity	Sigma-T	
5	12.943	31.727	23.870	
10	10.846	31.760	24.280	
20	9.600	31.861	24.567	
30	8.268	32.271	25.093	
40	6.474	32.605	25.601	
50	5.636	32.971	25.994	

	STATION	US11431		
	LATITUDE	42-04.7	N	
	LONGITUDE	140-55.3	E	
	DEPTH (m)	84		
Press.	Temp.	Salinity	Sigma-T	
5	12.350	31.717	23.975	
10	12.060	31.761	24.063	
20	9.266	32.809	25.361	
30	8.168	32.931	25.625	
40	5.952	32.939	25.930	
50	6.786	33.484	26.253	
75	5.466	33.507	26.438	

	STATION	US11434		
	LATITUDE	42-10.0	N	
	LONGITUDE	140-56.7	E	
	DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T	
5	11.142	31.922	24.355	
10	8.085	32.303	25.144	
20	5.907	32.517	25.602	
30	5.028	32.743	25.883	
40	5.822	33.032	26.020	
50	7.572	33.561	26.206	

	STATION	US11420		
	LATITUDE	42-26.0	N	
	LONGITUDE	140-36.9	E	
	DEPTH (m)	84		
Press.	Temp.	Salinity	Sigma-T	
5	14.954	31.653	23.403	
10	10.674	31.899	24.418	
20	8.232	32.267	25.094	
30	6.542	32.444	25.465	
40	5.541	32.571	25.688	
50	4.224	32.862	26.064	
75	3.418	33.346	26.527	

	STATION	US11423		
	LATITUDE	42-28.1	N	
	LONGITUDE	140-43.2	E	
	DEPTH (m)	61		
Press.	Temp.	Salinity	Sigma-T	
5	12.850	31.977	24.080	
10	9.002	32.020	24.785	
20	7.498	32.353	25.266	
30	6.466	32.682	25.663	
40	5.162	32.783	25.899	
50	4.408	33.025	26.174	

	STATION	US11426		
	LATITUDE	42-23.2	N	
	LONGITUDE	140-43.0	E	
	DEPTH (m)	58		
Press.	Temp.	Salinity	Sigma-T	
5	13.204	31.784	23.863	
10	10.206	31.957	24.542	
20	8.514	32.301	25.080	
30	6.413	32.480	25.510	
40	5.446	32.620	25.738	
50	4.018	32.972	26.171	

	STATION	US11429		
	LATITUDE	42-15.2	N	
	LONGITUDE	140-47.7	E	
	DEPTH (m)	70		
Press.	Temp.	Salinity	Sigma-T	
5	13.992	31.837	23.746	
10	10.120	31.959	24.559	
20	8.256	32.288	25.107	
30	6.243	32.470	25.524	
40	5.445	32.677	25.784	
50	6.080	33.135	26.069	

	STATION	US11432		
	LATITUDE	42-10.5	N	
	LONGITUDE	140-45.4	E	
	DEPTH (m)	94		
Press.	Temp.	Salinity	Sigma-T	
5	14.226	31.824	23.688	
10	13.158	31.847	23.920	
20	8.934	32.094	24.854	
30	7.027	32.497	25.444	
40	5.560	32.748	25.827	
50	5.955	33.082	26.043	
75	5.480	33.503	26.433	

	STATION	US11435		
	LATITUDE	42-09.9	N	
	LONGITUDE	141-06.4	E	
	DEPTH (m)	95		
Press.	Temp.	Salinity	Sigma-T	
5	9.146	32.417	25.073	
10	8.623	33.036	25.639	
20	8.036	33.316	25.946	
30	6.702	33.324	26.138	
40	7.265	33.545	26.236	
50	7.163	33.568	26.269	
75	5.675	33.452	26.369	

	STATION	US11421		
	LATITUDE	42-28.9	N	
	LONGITUDE	140-31.4	E	
	DEPTH (m)	76		
Press.	Temp.	Salinity	Sigma-T	
5	15.356	31.611	23.284	
10	13.025	31.738	23.861	
20	8.433	32.206	25.017	
30	6.278	32.472	25.521	
40	4.601	32.754	25.938	
50	3.721	32.985	26.211	

	STATION	US11424		
	LATITUDE	42-25.5	N	
	LONGITUDE	140-48.4	E	
	DEPTH (m)	45		
Press.	Temp.	Salinity	Sigma-T	
5	15.140	31.678	23.383	
10	10.722	32.185	24.632	
20	8.341	32.621	25.356	
30	5.892	32.621	25.686	
40	5.178	32.802	25.913	

	STATION	US11427		
	LATITUDE	42-21.2	N	
	LONGITUDE	140-36.9	E	
	DEPTH (m)	85		
Press.	Temp.	Salinity	Sigma-T	
5	13.554	31.742	23.761	
10	12.344	31.769	24.016	
20	9.042	32.105	24.845	
30	7.622	32.339	25.238	
40	6.367	32.483	25.519	
50	4.752	32.717	25.893	
75	3.493	33.357	26.528	

	STATION	US11430		
	LATITUDE	42-04.7	N	
	LONGITUDE	141-04.4	E	
	DEPTH (m)	101		
Press.	Temp.	Salinity	Sigma-T	
5	11.262	32.225	24.569	
10	10.120	32.748	25.173	
20	6.264	32.778	25.764	
30	5.710	33.074	26.067	
40	7.566	33.585	26.225	
50	7.266	33.540	26.232	
75	5.815	33.461	26.359	

	STATION	US11433		
	LATITUDE	42-10.7	N	
	LONGITUDE	140-35.5	E	
	DEPTH (m)	77		
Press.	Temp.	Salinity	Sigma-T	
5	13.818	31.708	23.682	
10	13.520	31.714	23.746	
20	9.378	32.040	24.742	
30	7.375	32.756	25.600	
40	5.012	32.639	25.802	
50	4.039	32.914	26.123	

	STATION	US11436		
	LATITUDE	42-14.7	N	
	LONGITUDE	141-10.1	E	
	DEPTH (m)	98		
Press.	Temp.	Salinity	Sigma-T	
5	10.374	32.517	24.951	
10	7.221	32.554	25.463	
20	7.421	33.108	25.871	
30	5.609	33.038	26.050	
40	8.279	33.664	26.183	
50	8.243	33.675	26.197	
75	5.828	33.430	26.334	

STATION US11437			
LATITUDE 42-14.9 N			
LONGITUDE 140-59.3 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	13.982	32.875	24.549
10	9.410	32.636	25.202
20	8.027	32.759	25.510
30	6.053	32.830	25.832
40	5.597	32.998	26.019
50	6.059	33.433	26.307

STATION US11440			
LATITUDE 42-14.8 N			
LONGITUDE 140-30.7 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	14.136	31.811	23.696
10	11.126	31.776	24.244
20	8.563	32.212	25.002
30	6.674	32.640	25.603
40	4.777	32.722	25.894
50	3.935	32.939	26.153
75	3.333	33.343	26.533

STATION US11443			
LATITUDE 42-19.7 N			
LONGITUDE 140-50.4 E			
DEPTH (m) 45			
Press.	Temp.	Salinity	Sigma-T
5	14.192	31.897	23.751
10	12.908	31.987	24.078
20	8.151	32.371	25.188
30	6.563	32.779	25.727
40	5.278	33.009	26.065

STATION US11446			
LATITUDE 42-24.8 N			
LONGITUDE 140-25.3 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	14.827	31.780	23.528
10	9.618	32.032	24.697
20	7.365	32.492	25.394
30	5.878	32.543	25.626
40	4.921	32.704	25.864
50	4.320	32.888	26.074

STATION US11449			
LATITUDE 41-59.3 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 101			
Press.	Temp.	Salinity	Sigma-T
5	12.264	31.925	24.153
10	10.845	32.069	24.520
20	5.855	32.510	25.603
30	5.448	32.791	25.873
40	5.663	33.028	26.036
50	6.254	33.234	26.125
75	5.973	33.525	26.391

STATION US11452			
LATITUDE 41-57.3 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	12.815	31.829	23.973
10	9.157	32.147	24.861
20	9.213	32.905	25.445
30	5.939	32.759	25.789
40	6.102	33.020	25.976
50	6.501	33.452	26.265

STATION US11438			
LATITUDE 42-14.8 N			
LONGITUDE 140-48.8 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	13.061	31.849	23.941
10	10.177	31.990	24.573
20	7.907	32.356	25.211
30	6.132	32.509	25.568
40	5.278	32.748	25.859
50	5.140	33.072	26.131

STATION US11441			
LATITUDE 42-19.9 N			
LONGITUDE 140-24.7 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	13.944	31.697	23.647
10	10.227	31.984	24.560
20	7.291	32.371	25.309
30	5.887	32.525	25.611
40	4.802	32.731	25.898
50	3.931	32.939	26.154

STATION US11444			
LATITUDE 42-24.4 N			
LONGITUDE 140-50.1 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	12.773	31.783	23.946
10	8.966	32.146	24.889
20	7.887	32.637	25.435
30	6.322	32.716	25.708

STATION US11447			
LATITUDE 42-29.7 N			
LONGITUDE 140-30.3 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	14.884	31.799	23.530
10	10.020	32.081	24.670
20	7.436	32.349	25.272
30	5.895	32.527	25.612
40	4.863	32.788	25.937
50	4.431	33.019	26.167

STATION US11450			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.6 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	10.811	32.079	24.534
10	7.599	32.345	25.246
20	5.935	32.561	25.634
30	5.369	32.807	25.895
40	6.224	33.187	26.092
50	7.658	33.649	26.262
75	5.657	33.501	26.410

STATION US11453			
LATITUDE 41-35.1 N			
LONGITUDE 140-53.2 E			
DEPTH (m) 36			
Press.	Temp.	Salinity	Sigma-T
5	12.678	33.920	25.620
10	12.164	33.964	25.753
20	11.770	34.005	25.860
30	11.745	34.013	25.870

STATION US11439			
LATITUDE 42-14.9 N			
LONGITUDE 140-38.6 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	13.822	31.763	23.723
10	13.015	31.761	23.881
20	9.651	31.921	24.605
30	7.844	32.300	25.176
40	5.876	32.559	25.639
50	4.967	32.921	26.031
75	3.334	33.271	26.475

STATION US11442			
LATITUDE 42-19.7 N			
LONGITUDE 140-38.2 E			
DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T
5	13.883	31.739	23.692
10	13.628	31.744	23.747
20	10.271	31.915	24.498
30	7.426	32.427	25.334
40	5.938	32.629	25.687
50	4.343	32.841	26.034

STATION US11445			
LATITUDE 42-24.8 N			
LONGITUDE 140-36.9 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	14.817	31.667	23.443
10	11.058	31.870	24.327
20	7.878	32.309	25.178
30	7.158	32.600	25.507
40	5.652	32.652	25.739
50	4.455	33.028	26.171
75	3.412	33.381	26.555

STATION US11448			
LATITUDE 42-29.5 N			
LONGITUDE 140-40.0 E			
DEPTH (m) 65			
Press.	Temp.	Salinity	Sigma-T
5	14.706	31.820	23.584
10	10.756	31.782	24.313
20	8.014	32.381	25.216
30	6.280	32.490	25.535
40	5.125	32.640	25.791
50	4.540	32.937	26.090

STATION US11451			
LATITUDE 41-58.0 N			
LONGITUDE 140-59.5 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	14.836	31.727	23.485
10	9.376	32.147	24.826
20	7.583	32.704	25.531
30	5.477	32.699	25.797
40	5.788	33.007	26.004
50	7.320	33.573	26.250
75	6.214	33.558	26.386

STATION US11454			
LATITUDE 41-37.0 N			
LONGITUDE 140-51.3 E			
DEPTH (m) 98			
Press.	Temp.	Salinity	Sigma-T
5	12.468	33.934	25.672
10	11.948	33.963	25.793
20	11.594	34.004	25.892
30	11.459	34.025	25.933
40	11.145	34.051	26.010
50	10.867	34.075	26.079
75	10.784	34.088	26.104

		STATION	US11455	
		LATITUDE	41-38.8	N
		LONGITUDE	140-49.3	E
		DEPTH (m)	339	
Press.	Temp.	Salinity	Sigma-T	
5	13.279	33.945	25.520	
10	12.925	33.965	25.606	
20	12.819	33.979	25.638	
30	12.314	33.996	25.750	
40	11.426	34.052	25.960	
50	10.951	34.072	26.061	
75	10.744	34.101	26.121	
100	10.545	34.112	26.164	
125	10.161	34.132	26.247	
150	9.997	34.140	26.281	
175	9.736	34.149	26.332	
200	9.696	34.150	26.339	
250	9.473	34.147	26.374	
300	9.247	34.144	26.408	

		STATION	US11456	
		LATITUDE	41-40.8	N
		LONGITUDE	140-47.3	E
		DEPTH (m)	225	
Press.	Temp.	Salinity	Sigma-T	
5	14.365	33.970	25.314	
10	13.475	33.996	25.520	
20	12.404	34.048	25.772	
30	12.070	34.062	25.847	
40	11.693	34.072	25.926	
50	11.017	34.072	26.050	
75	10.670	34.104	26.137	
100	10.273	34.124	26.221	
125	9.921	34.130	26.286	
150	9.620	34.135	26.340	
175	9.170	34.142	26.419	
200	9.133	34.143	26.426	

		STATION	US11457	
		LATITUDE	41-42.8	N
		LONGITUDE	140-45.1	E
		DEPTH (m)	84	
Press.	Temp.	Salinity	Sigma-T	
5	13.742	33.291	24.920	
10	13.680	33.369	24.993	
20	10.882	33.960	25.987	
30	10.325	34.004	26.119	
40	9.995	34.053	26.214	
50	9.688	34.101	26.303	
75	9.422	34.112	26.355	

		STATION	US11458	
		LATITUDE	41-49.4	N
		LONGITUDE	141-13.2	E
		DEPTH (m)	177	
Press.	Temp.	Salinity	Sigma-T	
5	17.414	31.967	23.091	
10	16.492	32.030	23.353	
20	13.692	32.200	24.087	
30	8.031	32.758	25.509	
40	7.152	33.002	25.824	
50	6.288	33.272	26.151	
75	5.989	33.426	26.310	
100	5.854	33.483	26.372	
125	5.369	33.542	26.477	
150	4.035	33.475	26.569	

		STATION	US11459	
		LATITUDE	42-04.4	N
		LONGITUDE	140-57.1	E
		DEPTH (m)	84	
Press.	Temp.	Salinity	Sigma-T	
5	18.970	32.214	22.900	
10	17.414	32.265	23.319	
20	13.645	32.738	24.512	
30	7.165	32.455	25.392	
40	6.538	32.861	25.795	
50	5.625	32.874	25.918	
75	4.303	33.146	26.281	

		STATION	US11460	
		LATITUDE	42-17.5	N
		LONGITUDE	140-54.0	E
		DEPTH (m)	56	
Press.	Temp.	Salinity	Sigma-T	
5	18.138	31.415	22.495	
10	17.069	31.882	23.107	
20	14.334	32.516	24.199	
30	9.371	32.798	25.336	
40	7.378	32.845	25.670	
50	6.047	32.963	25.938	

		STATION	US11461	
		LATITUDE	41-57.6	N
		LONGITUDE	140-58.4	E
		DEPTH (m)	80	
Press.	Temp.	Salinity	Sigma-T	
5	19.413	31.319	22.107	
10	18.090	31.408	22.501	
20	14.123	32.034	23.871	
30	8.916	32.327	25.039	
40	7.279	32.868	25.702	
50	6.430	33.165	26.049	
75	4.906	33.363	26.388	

		STATION	US11462	
		LATITUDE	41-58.1	N
		LONGITUDE	140-59.4	E
		DEPTH (m)	86	
Press.	Temp.	Salinity	Sigma-T	
5	18.546	31.529	22.483	
10	17.738	31.470	22.633	
20	13.283	32.084	24.079	
30	8.029	32.445	25.264	
40	6.772	33.036	25.903	
50	6.601	33.341	26.165	
75	5.522	33.386	26.336	

		STATION	US11463	
		LATITUDE	41-58.7	N
		LONGITUDE	141-00.6	E
		DEPTH (m)	93	
Press.	Temp.	Salinity	Sigma-T	
5	19.129	31.368	22.215	
10	17.608	32.032	23.095	
20	11.272	32.220	24.563	
30	7.889	32.892	25.634	
40	5.303	32.936	26.005	
50	5.567	33.118	26.118	
75	5.432	33.302	26.280	

		STATION	US11464	
		LATITUDE	41-59.3	N
		LONGITUDE	141-02.0	E
		DEPTH (m)	100	
Press.	Temp.	Salinity	Sigma-T	
5	20.479	31.631	22.069	
10	16.683	31.988	23.277	
20	13.668	32.840	24.586	
30	6.710	32.839	25.755	
40	5.318	32.911	25.983	
50	5.319	33.042	26.087	
75	5.380	33.252	26.246	

		STATION	US11465	
		LATITUDE	41-53.0	N
		LONGITUDE	141-08.6	E
		DEPTH (m)	100	
Press.	Temp.	Salinity	Sigma-T	
5	18.132	31.506	22.566	
10	17.496	31.765	22.917	
20	13.831	32.067	23.956	
30	10.446	32.946	25.273	
40	6.201	33.120	26.042	
50	6.375	33.364	26.212	
75	5.932	33.507	26.381	

		STATION	US11466	
		LATITUDE	41-47.0	N
		LONGITUDE	141-14.4	E
		DEPTH (m)	197	
Press.	Temp.	Salinity	Sigma-T	
5	17.882	32.001	23.005	
10	16.447	32.429	23.670	
20	10.517	32.808	25.153	
30	6.279	32.967	25.912	
40	5.983	33.155	26.097	
50	6.141	33.334	26.219	
75	6.251	33.546	26.372	
100	5.372	33.483	26.429	
125	4.959	33.495	26.487	
150	4.353	33.513	26.567	
175	3.861	33.494	26.602	

STATION		US11467	
LATITUDE		41-44.1 N	
LONGITUDE		141-16.0 E	
DEPTH (m)		229	
Press.	Temp.	Salinity	Sigma-T
5	18.804	32.077	22.838
10	16.915	32.583	23.680
20	14.876	32.679	24.210
30	9.788	32.905	25.352
40	11.404	34.041	25.955
50	8.653	33.606	26.081
75	6.428	33.537	26.342
100	5.918	33.599	26.456
125	4.561	33.476	26.516
150	3.291	33.375	26.562
175	2.772	33.376	26.609
200	2.676	33.422	26.654

STATION		US11468	
LATITUDE		41-41.0 N	
LONGITUDE		141-17.6 E	
DEPTH (m)		233	
Press.	Temp.	Salinity	Sigma-T
5	14.985	33.584	24.883
10	12.546	33.981	25.693
20	11.932	34.122	25.920
30	11.598	34.121	25.982
40	11.238	34.088	26.022
50	10.315	33.975	26.098
75	9.096	34.089	26.389
100	7.758	33.915	26.457
125	6.724	33.847	26.548
150	4.623	33.578	26.590
175	2.808	33.473	26.683
200	2.734	33.516	26.724

STATION		US11469	
LATITUDE		41-37.9 N	
LONGITUDE		141-19.1 E	
DEPTH (m)		215	
Press.	Temp.	Salinity	Sigma-T
5	16.034	33.771	24.795
10	15.864	33.779	24.839
20	14.394	33.873	25.233
30	13.756	33.926	25.408
40	13.421	33.952	25.496
50	13.143	33.993	25.584
75	10.668	34.037	26.085
100	8.545	33.911	26.336
125	7.752	33.931	26.470
150	7.793	33.980	26.503
175	6.265	33.855	26.614
200	3.477	33.703	26.806

STATION		US11470	
LATITUDE		41-35.0 N	
LONGITUDE		141-20.4 E	
DEPTH (m)		311	
Press.	Temp.	Salinity	Sigma-T
5	17.976	33.865	24.408
10	17.823	33.864	24.445
20	16.369	33.851	24.780
30	15.425	33.938	25.060
40	15.116	34.017	25.189
50	14.565	34.062	25.343
75	14.148	34.084	25.448
100	14.043	34.079	25.466
125	13.446	34.046	25.564
150	10.616	34.029	26.088
175	10.098	34.047	26.191
200	9.352	34.003	26.281
250	6.644	33.774	26.501
300	6.291	33.762	26.537

STATION		US11471	
LATITUDE		41-32.0 N	
LONGITUDE		141-22.0 E	
DEPTH (m)		254	
Press.	Temp.	Salinity	Sigma-T
5	18.345	33.862	24.316
10	18.169	33.875	24.369
20	16.702	33.947	24.776
30	15.740	34.033	25.063
40	15.627	34.045	25.097
50	13.984	34.070	25.471
75	12.548	34.138	25.815
100	11.521	34.172	26.036
125	10.981	34.169	26.132
150	10.228	34.176	26.269
175	10.170	34.177	26.280
200	10.007	34.175	26.306

STATION		US11472	
LATITUDE		41-26.3 N	
LONGITUDE		141-15.6 E	
DEPTH (m)		78	
Press.	Temp.	Salinity	Sigma-T
5	17.615	33.886	24.513
10	16.833	33.976	24.768
20	16.448	34.015	24.887
30	16.398	34.019	24.902
40	13.093	34.084	25.665
50	11.510	34.178	26.042

STATION		US11473	
LATITUDE		41-26.4 N	
LONGITUDE		141-20.9 E	
DEPTH (m)		66	
Press.	Temp.	Salinity	Sigma-T
5	17.603	33.908	24.532
10	17.448	33.937	24.592
20	17.238	33.955	24.656
30	16.655	33.978	24.810
40	10.730	34.164	26.173
50	10.455	34.187	26.239

STATION		US11474	
LATITUDE		41-27.4 N	
LONGITUDE		141-24.2 E	
DEPTH (m)		48	
Press.	Temp.	Salinity	Sigma-T
5	17.288	33.870	24.579
10	17.239	33.886	24.603
20	17.114	33.953	24.684
30	11.966	34.092	25.890

STATION		US11475	
LATITUDE		41-28.9 N	
LONGITUDE		141-23.7 E	
DEPTH (m)		86	
Press.	Temp.	Salinity	Sigma-T
5	18.158	33.850	24.353
10	18.076	33.833	24.359
20	17.791	33.842	24.436
30	17.190	33.942	24.658
40	14.836	34.005	25.239
50	11.373	34.170	26.062
75	10.665	34.202	26.214

STATION		US11476	
LATITUDE		41-32.8 N	
LONGITUDE		139-56.2 E	
DEPTH (m)		136	
Press.	Temp.	Salinity	Sigma-T
5	23.126	33.796	22.984
10	23.054	33.816	23.021
20	22.027	33.887	23.365
30	19.551	33.877	24.022
40	14.791	34.055	25.289
50	11.771	34.109	25.940
75	8.682	34.115	26.475
100	7.627	34.091	26.615
125	5.104	34.041	26.903

STATION		US11477	
LATITUDE		41-29.7 N	
LONGITUDE		139-21.4 E	
DEPTH (m)		107	
Press.	Temp.	Salinity	Sigma-T
5	23.059	33.742	22.963
10	22.494	33.753	23.132
20	21.148	33.789	23.532
30	20.260	33.809	23.785
40	11.583	33.870	25.790
50	9.136	33.943	26.269
75	4.947	34.004	26.891

STATION		US11478	
LATITUDE		41-11.7 N	
LONGITUDE		140-42.5 E	
DEPTH (m)		68	
Press.	Temp.	Salinity	Sigma-T
5	21.051	32.891	22.875
10	20.840	32.913	22.949
20	20.246	33.532	23.578
30	17.912	33.866	24.425
40	15.383	34.061	25.164
50	14.630	34.100	25.358

STATION		US11479	
LATITUDE		41-09.0 N	
LONGITUDE		140-41.2 E	
DEPTH (m)		47	
Press.	Temp.	Salinity	Sigma-T
5	21.057	32.936	22.908
10	20.926	32.908	22.922
20	20.357	33.533	23.549
30	18.268	33.772	24.266
40	15.932	33.976	24.975

STATION		US11480	
LATITUDE		41-02.5 N	
LONGITUDE		140-43.2 E	
DEPTH (m)		57	
Press.	Temp.	Salinity	Sigma-T
5	20.009	32.933	23.184
10	19.938	32.908	23.183
20	19.704	33.784	23.911
30	19.111	33.841	24.107
40	17.125	33.961	24.688
50	13.704	34.112	25.562

STATION		US11481	
LATITUDE		40-57.1 N	
LONGITUDE		140-45.8 E	
DEPTH (m)		48	
Press.	Temp.	Salinity	Sigma-T
5	19.865	33.072	23.327
10	19.972	33.327	23.494
20	19.363	33.762	23.983
30	18.648	33.874	24.249
40	14.777	33.670	24.995

		STATION	US11482	
		LATITUDE	40-53.3	N
		LONGITUDE	140-46.1	E
		DEPTH (m)	35	
Press.	Temp.	Salinity	Sigma-T	
5	21.327	32.772	22.710	
10	20.148	33.845	23.842	
20	19.432	33.855	24.036	
30	17.128	33.845	24.597	

		STATION	US11485	
		LATITUDE	41-03.7	N
		LONGITUDE	140-52.2	E
		DEPTH (m)	50	
Press.	Temp.	Salinity	Sigma-T	
5	18.236	32.941	23.638	
10	18.120	32.989	23.703	
20	18.236	33.352	23.952	
30	18.193	33.617	24.166	
40	15.829	33.847	24.899	

		STATION	US11488	
		LATITUDE	40-57.6	N
		LONGITUDE	141-06.7	E
		DEPTH (m)	37	
Press.	Temp.	Salinity	Sigma-T	
5	21.000	32.616	22.680	
10	20.995	32.658	22.713	
20	17.083	33.006	23.965	
30	15.779	33.609	24.728	

		STATION	US11491	
		LATITUDE	41-07.9	N
		LONGITUDE	141-03.8	E
		DEPTH (m)	37	
Press.	Temp.	Salinity	Sigma-T	
5	20.679	32.668	22.805	
10	20.310	32.706	22.932	
20	19.254	32.828	23.297	
30	14.127	33.378	24.908	

		STATION	US11494	
		LATITUDE	41-44.4	N
		LONGITUDE	140-46.0	E
		DEPTH (m)	56	
Press.	Temp.	Salinity	Sigma-T	
5	33.389	23.176		
10	33.484	23.354		
20	33.848	24.029		
30	34.080	24.722		
40	34.167	25.269		
50	34.200	25.695		

		STATION	US11497	
		LATITUDE	41-01.1	N
		LONGITUDE	140-43.2	E
		DEPTH (m)	55	
Press.	Temp.	Salinity	Sigma-T	
5	20.546	33.086	23.159	
10	20.292	33.084	23.225	
20	19.384	33.605	23.858	
30	18.148	33.831	24.341	
40	16.744	33.944	24.764	
50	14.287	34.128	25.453	

		STATION	US11500	
		LATITUDE	40-55.4	N
		LONGITUDE	140-46.4	E
		DEPTH (m)	41	
Press.	Temp.	Salinity	Sigma-T	
5	20.622	33.071	23.127	
10	20.169	33.141	23.300	
20	19.951	33.814	23.870	
30	18.270	33.694	24.206	
40	15.802	34.022	25.041	

		STATION	US11483	
		LATITUDE	40-59.8	N
		LONGITUDE	140-47.2	E
		DEPTH (m)	50	
Press.	Temp.	Salinity	Sigma-T	
5	19.764	33.023	23.316	
10	19.752	33.025	23.321	
20	18.786	33.643	24.038	
30	16.877	33.767	24.597	
40	14.423	33.640	25.047	

		STATION	US11486	
		LATITUDE	41-04.7	N
		LONGITUDE	141-02.3	E
		DEPTH (m)	46	
Press.	Temp.	Salinity	Sigma-T	
5	20.811	32.637	22.746	
10	20.740	32.643	22.770	
20	20.058	32.714	23.004	
30	16.989	33.339	24.243	
40	12.870	33.603	25.336	

		STATION	US11489	
		LATITUDE	41-05.5	N
		LONGITUDE	141-09.9	E
		DEPTH (m)	38	
Press.	Temp.	Salinity	Sigma-T	
5	20.630	32.680	22.827	
10	20.358	32.701	22.915	
20	17.327	32.984	23.890	
30	13.885	33.278	24.881	

		STATION	US11492	
		LATITUDE	41-06.2	N
		LONGITUDE	140-51.6	E
		DEPTH (m)	50	
Press.	Temp.	Salinity	Sigma-T	
5	18.909	32.958	23.484	
10	18.562	33.039	23.633	
20	18.396	33.276	23.855	
30	18.483	33.683	24.145	
40	15.457	33.811	24.955	

		STATION	US11495	
		LATITUDE	41-04.1	N
		LONGITUDE	140-42.7	E
		DEPTH (m)	59	
Press.	Temp.	Salinity	Sigma-T	
5	20.599	33.075	23.136	
10	20.454	33.085	23.182	
20	19.281	33.506	23.808	
30	17.554	33.788	24.452	
40	15.561	33.916	25.012	
50	14.385	34.109	25.417	

		STATION	US11498	
		LATITUDE	40-58.6	N
		LONGITUDE	140-44.9	E
		DEPTH (m)	54	
Press.	Temp.	Salinity	Sigma-T	
5	20.533	33.107	23.178	
10	20.294	33.153	23.276	
20	19.157	33.607	23.917	
30	18.253	33.829	24.313	
40	16.227	34.002	24.928	
50	13.550	34.134	25.611	

		STATION	US11501	
		LATITUDE	40-57.2	N
		LONGITUDE	140-45.6	E
		DEPTH (m)	49	
Press.	Temp.	Salinity	Sigma-T	
5	21.039	33.077	23.020	
10	20.364	33.160	23.263	
20	19.711	33.496	23.690	
30	17.977	33.835	24.386	

		STATION	US11484	
		LATITUDE	41-02.6	N
		LONGITUDE	140-46.3	E
		DEPTH (m)	51	
Press.	Temp.	Salinity	Sigma-T	
5	20.003	33.165	23.362	
10	19.933	33.158	23.375	
20	18.923	33.464	23.867	
30	16.940	33.930	24.707	
40	13.962	33.682	25.177	

		STATION	US11487	
		LATITUDE	41-01.9	N
		LONGITUDE	141-00.9	E
		DEPTH (m)	47	
Press.	Temp.	Salinity	Sigma-T	
5	20.817	32.641	22.748	
10	20.808	32.638	22.748	
20	19.211	32.788	23.278	
30	15.978	33.446	24.557	
40	13.161	33.565	25.249	

		STATION	US11490	
		LATITUDE	41-10.7	N
		LONGITUDE	141-10.9	E
		DEPTH (m)	31	
Press.	Temp.	Salinity	Sigma-T	
5	21.435	32.630	22.573	
10	18.907	32.771	23.342	
20	15.452	32.991	24.325	

		STATION	US11493	
		LATITUDE	41-08.4	N
		LONGITUDE	140-43.9	E
		DEPTH (m)	60	
Press.	Temp.	Salinity	Sigma-T	
5	20.822	32.857	22.911	
10	20.655	32.878	22.971	
20	19.830	33.254	23.475	
30	19.566	33.572	23.785	
40	17.993	33.847	24.391	
50	13.520	33.935	25.463	

		STATION	US11496	
		LATITUDE	41-02.9	N
		LONGITUDE	140-46.0	E
		DEPTH (m)	51	
Press.	Temp.	Salinity	Sigma-T	
5	21.231	33.049	22.947	
10	20.683	33.057	23.101	
20	19.654	33.357	23.599	
30	17.494	33.838	24.505	
40	14.586	34.000	25.290	
50	12.823	34.197	25.806	

		STATION	US11499	
		LATITUDE	40-52.0	N
		LONGITUDE	140-45.8	E
		DEPTH (m)	27	
Press.	Temp.	Salinity	Sigma-T	
5	21.514	33.052	22.872	
10	20.634	33.114	23.157	
20	19.230	33.463	23.788	

		STATION	US11502	
		LATITUDE	41-03.6	N
		LONGITUDE	140-52.1	E
		DEPTH (m)	50	
Press.	Temp.	Salinity	Sigma-T	
5	22.032	33.010	22.698	
10	20.001	33.176	23.371	
20	19.262	33.671	23.939	
30	17.883	33.648	24.265	
40	15.854	34.016	25.024	

STATION US11503			
LATITUDE 41-04.9 N			
LONGITUDE 140-51.8 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	20.878	33.130	23.104
10	19.914	33.594	23.712
20	18.812	33.644	24.032
30	17.820	33.685	24.309
40	14.806	33.760	25.058
50	11.911	34.158	25.952

STATION US11506			
LATITUDE 41-08.6 N			
LONGITUDE 140-44.1 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	20.886	33.099	23.078
10	19.276	33.546	23.840
20	18.708	33.737	24.130
30	16.583	33.735	24.641
40	14.757	33.756	25.065
50	13.078	33.856	25.491

STATION US11509			
LATITUDE 41-34.8 N			
LONGITUDE 140-53.1 E			
DEPTH (m) 31			
Press.	Temp.	Salinity	Sigma-T
5	19.956	33.691	23.775
10	19.333	33.777	24.002
20	15.423	34.082	25.171

STATION US11512			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.2 E			
DEPTH (m) 223			
Press.	Temp.	Salinity	Sigma-T
5	22.619	33.571	22.958
10	22.588	33.627	23.010
20	19.332	33.908	24.102
30	18.098	34.008	24.488
40	15.984	34.186	25.125
50	13.845	34.164	25.573
75	12.212	34.311	26.014
100	11.234	34.263	26.159
125	10.634	34.251	26.258
150	10.381	34.255	26.305
175	10.045	34.245	26.355
200	9.997	34.243	26.362

STATION US11515			
LATITUDE 41-23.5 N			
LONGITUDE 140-10.5 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	17.911	34.084	24.592
10	17.463	34.125	24.733
20	14.301	34.248	25.543

STATION US11504			
LATITUDE 41-06.0 N			
LONGITUDE 140-51.3 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	20.435	33.018	23.136
10	19.554	33.475	23.715
20	18.693	33.615	24.041
30	17.753	33.836	24.441
40	13.987	33.665	25.158

STATION US11507			
LATITUDE 41-09.0 N			
LONGITUDE 140-41.3 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	20.492	32.965	23.081
10	20.024	32.997	23.228
20	20.090	33.429	23.540
30	18.783	33.735	24.109
40	17.212	33.899	24.619

STATION US11510			
LATITUDE 41-36.9 N			
LONGITUDE 140-51.1 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	21.051	33.573	23.394
10	21.027	33.572	23.400
20	18.577	33.754	24.175
30	15.992	34.054	25.022
40	14.374	34.190	25.482
50	13.138	34.251	25.785
75	12.232	34.304	26.005

STATION US11513			
LATITUDE 41-42.3 N			
LONGITUDE 140-45.7 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	22.760	33.659	22.985
10	22.317	33.751	23.180
20	21.443	33.754	23.425
30	18.712	33.899	24.253
40	16.206	34.075	24.989
50	12.804	34.238	25.841
75	11.348	34.231	26.114

STATION US11516			
LATITUDE 41-22.1 N			
LONGITUDE 140-11.6 E			
DEPTH (m) 73			
Press.	Temp.	Salinity	Sigma-T
5	25.078	33.870	22.464
10	21.650	33.889	23.470
20	16.480	34.183	25.009
30	12.808	34.304	25.892
40	10.611	34.240	26.253
50	10.046	34.244	26.353

STATION US11505			
LATITUDE 41-05.7 N			
LONGITUDE 140-47.8 E			
DEPTH (m) 50			
Press.	Temp.	Salinity	Sigma-T
5	21.668	33.026	22.811
10	20.359	33.121	23.235
20	19.651	33.774	23.918
30	16.840	33.807	24.637
40	13.034	33.531	25.248

STATION US11508			
LATITUDE 41-11.4 N			
LONGITUDE 140-42.5 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	20.320	32.933	23.102
10	20.284	33.320	23.407
20	19.766	33.626	23.775
30	19.146	33.706	23.995
40	17.630	33.857	24.487
50	15.591	34.011	25.079

STATION US11511			
LATITUDE 41-38.8 N			
LONGITUDE 140-49.3 E			
DEPTH (m) 331			
Press.	Temp.	Salinity	Sigma-T
5	21.437	33.496	23.231
10	21.264	33.521	23.297
20	20.815	33.609	23.485
30	20.093	33.725	23.765
40	18.736	33.925	24.266
50	17.563	34.012	24.622
75	12.915	34.268	25.843
100	12.142	34.281	26.004
125	11.867	34.289	26.062
150	11.626	34.289	26.107
175	11.387	34.283	26.147
200	10.886	34.275	26.231
250	10.640	34.264	26.266
300	10.248	34.249	26.323

STATION US11514			
LATITUDE 41-44.1 N			
LONGITUDE 140-46.0 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	21.936	33.678	23.231
10	21.257	33.787	23.501
20	17.883	33.972	24.514
30	16.128	34.112	25.035
40	15.502	34.156	25.211
50	13.340	34.207	25.710

STATION US11517			
LATITUDE 41-19.5 N			
LONGITUDE 140-12.6 E			
DEPTH (m) 183			
Press.	Temp.	Salinity	Sigma-T
5	25.240	33.315	21.996
10	20.916	33.861	23.648
20	15.715	34.293	25.268
30	12.854	34.294	25.875
40	11.061	34.228	26.163
50	9.747	34.217	26.383
75	9.083	34.198	26.477
100	8.877	34.192	26.505
125	8.758	34.184	26.517
150	8.730	34.184	26.522
175	8.751	34.185	26.519

STATION US11518			
LATITUDE 41-17.5 N			
LONGITUDE 140-13.8 E			
DEPTH (m) 242			
Press.	Temp.	Salinity	Sigma-T
5	24.496	33.301	22.209
10	23.994	33.431	22.456
20	20.741	33.746	23.609
30	18.765	33.992	24.310
40	18.613	34.040	24.385
50	17.951	34.113	24.604
75	14.771	34.394	25.554
100	13.444	34.390	25.831
125	11.517	34.312	26.146
150	10.737	34.282	26.263
175	10.366	34.260	26.312
200	10.298	34.265	26.327

STATION US11519			
LATITUDE 41-16.0 N			
LONGITUDE 140-15.0 E			
DEPTH (m) 169			
Press.	Temp.	Salinity	Sigma-T
5	25.917	32.523	21.191
10	21.909	33.321	22.967
20	21.024	33.599	23.421
30	20.827	33.747	23.587
40	20.569	33.823	23.714
50	20.044	33.869	23.888
75	15.419	34.148	25.223
100	13.027	34.361	25.893
125	12.996	34.367	25.904
150	12.000	34.360	26.092

STATION US11520			
LATITUDE 41-14.0 N			
LONGITUDE 140-16.6 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	25.455	32.927	21.638
10	24.654	33.041	21.965
20	22.228	33.704	23.170
30	20.631	33.824	23.698
40	19.445	33.923	24.085
50	16.760	33.919	24.741
75	15.646	34.099	25.135

STATION US11521			
LATITUDE 41-12.1 N			
LONGITUDE 140-17.7 E			
DEPTH (m) 54			
Press.	Temp.	Salinity	Sigma-T
5	24.484	33.111	22.069
10	23.135	33.122	22.471
20	22.203	33.619	23.112
30	21.615	33.751	23.376
40	20.254	33.823	23.798

STATION US11522			
LATITUDE 41-28.9 N			
LONGITUDE 140-21.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	19.777	34.148	24.170
10	17.188	33.946	24.661
20	14.648	34.123	25.372
30	12.788	34.177	25.797
40	10.744	34.195	26.195
50	10.221	34.215	26.301

STATION US11523			
LATITUDE 41-27.1 N			
LONGITUDE 140-22.1 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	19.035	34.078	24.308
10	18.017	34.070	24.556
20	15.874	34.097	25.081
30	12.408	34.149	25.850
40	12.118	34.197	25.943
50	11.710	34.204	26.025
75	10.529	34.234	26.263

STATION US11524			
LATITUDE 41-25.2 N			
LONGITUDE 140-23.5 E			
DEPTH (m) 234			
Press.	Temp.	Salinity	Sigma-T
5	18.842	34.107	24.379
10	16.640	34.283	25.049
20	15.738	34.128	25.136
30	13.680	34.148	25.595
40	11.178	34.209	26.127
50	10.612	34.216	26.234
75	9.976	34.215	26.343
100	9.724	34.214	26.385
125	9.692	34.217	26.392
150	9.606	34.211	26.402
175	9.587	34.213	26.407
200	9.622	34.217	26.404

STATION US11525			
LATITUDE 41-23.2 N			
LONGITUDE 140-24.9 E			
DEPTH (m) 259			
Press.	Temp.	Salinity	Sigma-T
5	25.522	32.482	21.282
10	24.810	32.925	21.831
20	23.069	33.517	22.790
30	22.782	33.504	22.862
40	22.348	33.555	23.023
50	20.062	33.803	23.832
75	15.917	34.222	25.168
100	13.895	34.287	25.658
125	11.904	34.234	26.013
150	10.763	34.228	26.216
175	10.393	34.248	26.297
200	10.237	34.237	26.316
250	10.135	34.234	26.331

STATION US11526			
LATITUDE 41-21.1 N			
LONGITUDE 140-26.0 E			
DEPTH (m) 199			
Press.	Temp.	Salinity	Sigma-T
5	23.493	33.220	22.442
10	22.063	33.518	23.074
20	19.897	33.674	23.777
30	16.864	33.935	24.729
40	15.320	34.100	25.208
50	15.211	34.132	25.257
75	13.346	34.318	25.795
100	12.949	34.356	25.904
125	12.929	34.352	25.905
150	12.849	34.339	25.911
175	12.394	34.329	25.992

STATION US11527			
LATITUDE 41-19.0 N			
LONGITUDE 140-27.4 E			
DEPTH (m) 112			
Press.	Temp.	Salinity	Sigma-T
5	21.174	33.676	23.439
10	20.709	33.716	23.595
20	20.241	33.711	23.715
30	19.767	33.758	23.875
40	19.610	33.777	23.931
50	18.956	33.836	24.143
75	13.918	34.237	25.614
100	12.843	34.289	25.873

STATION US11528			
LATITUDE 41-17.1 N			
LONGITUDE 140-28.6 E			
DEPTH (m) 156			
Press.	Temp.	Salinity	Sigma-T
5	21.054	33.881	23.627
10	18.750	34.045	24.355
20	17.709	33.930	24.523
30	16.019	34.078	25.035
40	14.523	34.183	25.445
50	13.884	34.185	25.581
75	12.980	34.301	25.855
100	12.406	34.324	25.986
125	12.304	34.334	26.013

STATION US11529			
LATITUDE 41-15.3 N			
LONGITUDE 140-29.8 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	22.118	32.363	22.183
10	20.426	33.766	23.708
20	18.849	33.824	24.161
30	16.734	33.924	24.751
40	14.281	34.119	25.447
50	13.096	34.203	25.756
75	12.499	34.279	25.933

THE " USHIO MARU "

CRUISE 233

CRUISE 234

CRUISE 235

IN AUGUST - SEPTEMBER 2011

1. Cruise Itinerary

Cruise 233

Departure from Hakodate	Aug. 17, 2011
Arrival at and departure from Usujiri	17
Start hydrographic research (US11530)	17
Retrieval mooring ADCP system	18
Arrival at and departure from Mori	18
Set mooring ADCP system	18
Arrival at Mori	18
Departure from Mori	19
Start trawl net research	19
Arrival at Mori	19
Departure from and arrival at Mori	20
Departure from Mori	21
Finish trawl net research	21
Arrival at Muroran	21
Departure from and arrival at Muroran	22
Departure from Muroran	23
Arrival at and departure from Usujiri	23
Finish hydrographic research (US11567)	24
Return to Hakodate	24
Total coverage 540.5 miles	

Cruise 234

Departure from Hakodate	Aug. 28, 2011
Start hydrographic research (US11568) and whales watching research	29
Arrival at Akkeshi	29
Departure from Akkwshi	30
Finish whales watching research	31
Arrival at Usujiri	31
Departure from Usujiri	Sep. 7
Finish hydrographic research (US11577)	7
Return to Hakodate	7
Total coverage 602.2 miles	

Cruise 235

Departure from Hakodate	Sep. 10, 2011
Sampling by vertical long line	10
Start hydrographic research (US11578)	10
Sampling by Tuna long line	11
Finish hydrographic research (US11586)	13
Return to Hakodate	13
Total coverage 209.2 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

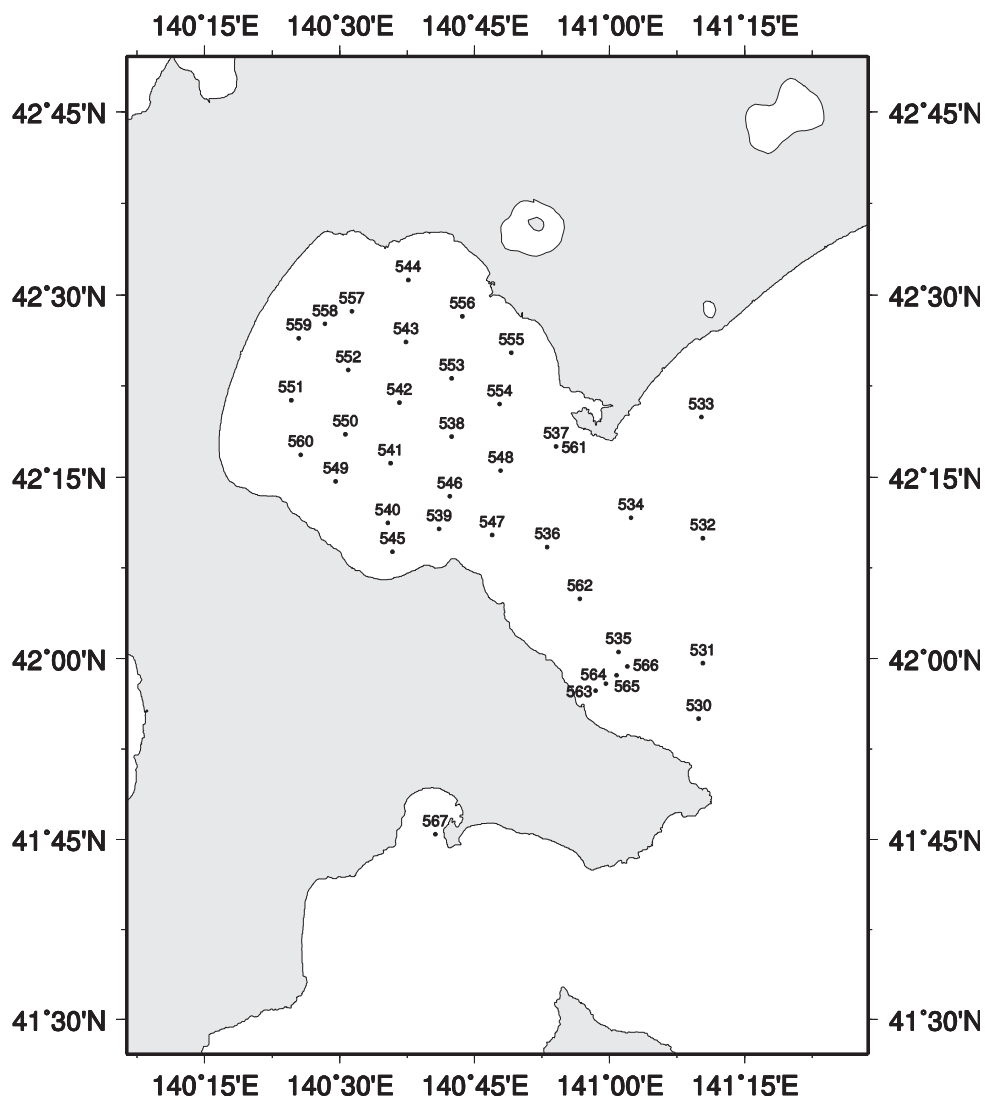


Figure 1. Oceanographic stations (Cruise 233)

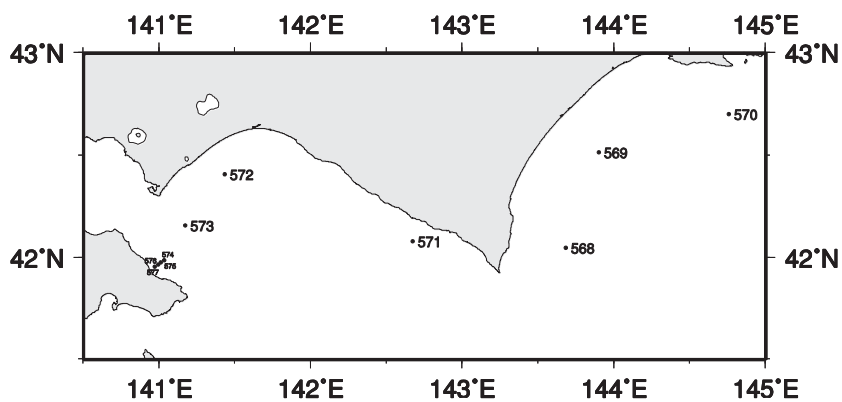


Figure 2. Oceanographic stations (Cruise 234)

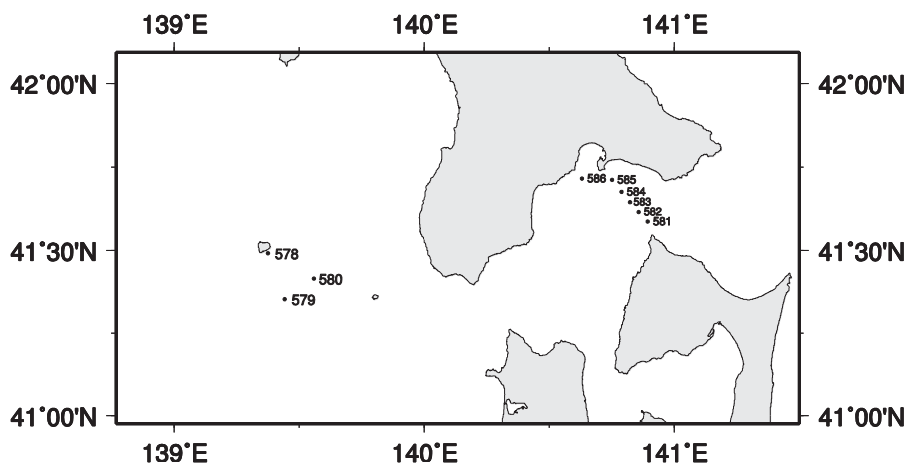


Figure 3. Oceanographic stations (Cruise 235)

Table 1: List of oceanographic stations

Cruise 233

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11530	41-55.1	141-09.8	8/17	1439-1447	178	Calm	East-1	Calm	22.3	20.6	c	1003.2
US11531	41-59.7	141-10.3	8/17	1535-1541	140	Calm	NW -1	Calm	23.9	21.3	bc	1003.6
US11532	42-10.0	141-10.3	8/17	1657-1705	123	Calm	WNW-1	Calm	22.5	21.3	bc	1004.0
US11533	42-20.0	141-10.1	8/17	1814-1818	73	East-1	WNW-1	East-1	22.6	21.9	c	1003.8
US11534	42-11.7	141-02.3	8/17	1931-1934	80	NE -1	WNW-1	NE -1	22.6	21.6	c	1004.1
US11535	42-00.6	141-00.9	8/17	2054-2100	91	SE -1	WNW-1	SE -2	21.9	20.2	c	1005.2
US11536	42-09.3	140-53.0	8/17	2219-2224	77	Calm	WNW-1	Calm	21.7	21.9	o	1005.2
US11537	42-17.6	140-54.0	8/17	2325-2328	56	SE -2	WNW-1	SE -3	21.6	21.5	o	1005.0
US11538	42-18.4	140-42.4	8/18	0027-0031	63	East-1	WNW-1	East-3	22.1	22.2	o	1004.6
US11539	42-10.8	140-41.0	8/18	0129-0133	87	SE -2	ESE-1	SE -4	20.7	22.1	o	1004.8
US11540	42-11.3	140-35.3	8/18	0757-0801	79	Calm	East-1	Calm	23.0	21.8	bc	1005.6
US11541	42-16.2	140-35.6	8/18	0832-0839	91	Calm	ESE-1	Calm	23.7	22.3	bc	1005.6
US11542	42-21.2	140-36.6	8/18	0939-0943	87	Calm	ESE-1	Calm	25.3	22.7	bc	1005.7
US11543	42-26.2	140-37.3	8/18	1015-1021	82	Calm	ESE-1	Calm	23.8	22.8	bc	1005.6
US11544	42-31.3	140-37.6	8/18	1119-1122	60	South-1	ESE-1	South-2	27.4	22.8	bc	1005.1
US11545	42-08.9	140-35.8	8/18	1443-1447	66	ESE-2	ESE-1	ESE-4	23.7	23.0	c	1004.0
US11546	42-13.5	140-42.2	8/19	1131-1135	87	Calm	ESE-1	Calm	24.7	23.1	bc	1011.0
US11547	42-10.3	140-46.9	8/19	1241-1245	94	SE -1	ESE-1	SE -2	23.9	23.6	bc	1011.0
US11548	42-15.6	140-47.8	8/19	1326-1330	70	SE -1	ESE-1	SE -2	24.7	23.4	bc	1011.0
US11549	42-14.7	140-29.5	8/20	0842-0849	78	East-1	ESE-1	East-3	24.6	22.5	bc	1012.1
US11550	42-18.6	140-30.6	8/21	0741-0748	93	Calm	ESE-1	Calm	21.3	22.5	bc	1014.0
US11551	42-21.4	140-24.6	8/21	0925-0931	67	Calm	ESE-1	Calm	24.7	22.6	bc	1014.1
US11552	42-23.9	140-30.9	8/21	1054-1100	95	SE -2	ESE-1	SE -4	23.1	22.7	bc	1014.0
US11553	42-23.2	140-42.4	8/21	1418-1422	61	ESE-3	ESE-1	ESE-6	22.4	22.9	bc	1013.1
US11554	42-21.1	140-47.7	8/21	1455-1500	51	ESE-3	ESE-1	ESE-5	22.9	23.0	bc	1013.2
US11555	42-25.3	140-49.0	8/22	0808-0811	41	SE -2	SE -1	SE -4	22.4	20.3	bc	1016.1
US11556	42-28.3	140-43.6	8/22	0846-0852	58	SE -2	SE -1	SE -4	23.0	22.5	bc	1016.1
US11557	42-28.7	140-31.3	8/22	1053-1057	76	SE -2	SE -1	SE -4	23.6	21.9	bc	1016.5
US11558	42-27.7	140-28.3	8/22	1124-1132	76	SE -2	ESE-1	SE -5	23.6	23.0	bc	1016.5
US11559	42-26.5	140-25.4	8/22	1153-1157	63	SE -2	ESE-1	SE -5	23.7	21.6	bc	1016.2
US11560	42-16.9	140-25.6	8/22	1322-1325	62	East-3	ESE-1	East-5	22.0	21.5	bc	1015.6
US11561	42-17.6	140-54.0	8/23	0642-0653	55	East-3	East-1	East-5	19.7	21.1	r	1014.2
US11562	42-05.0	140-56.6	8/23	0817-0823	83	East-3	East-1	East-5	19.3	19.7	r	1015.1
US11563	41-57.4	140-58.4	8/23	1018-1022	79	ESE-2	ESE-1	ESE-4	17.1	16.3	r	1014.5
US11564	41-58.0	140-59.5	8/23	1028-1032	84	SE -2	ESE-1	SE -4	17.5	16.5	r	1014.2
US11565	41-58.7	141-00.7	8/23	1039-1043	94	ESE-3	ESE-1	ESE-5	18.2	17.1	r	1014.2
US11566	41-59.4	141-01.9	8/23	1051-1055	100	ESE-3	ESE-1	ESE-5	18.5	17.5	r	1014.2
US11567	41-45.5	140-40.6	8/24	0700-0703	32	NNE-1	SE -1	NNE-2	20.4	24.3	o	1015.6

Cruise 234

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11568	42-03.0	143-40.8	8/29	0345-0358	312	North-1	SE -1	North-3	15.6	15.3	f	1017.1
US11569	42-31.0	143-54.0	8/29	0728-0734	172	North-1	SSE-1	North-3	16.4	17.2	f	1018.1
US11570	42-42.2	144-45.4	8/29	1328-1335	185	South-1	South-1	South-2	18	15.8	m	1017.7
US11571	42-05.0	142-40.3	8/31	0423-0429	119	East-2	South-1	East-3	21.5	21.3	o	1013.3
US11572	42-24.6	141-25.8	8/31	1016-1021	118	ESE-1	SE -1	ESE-3	23.9	22.1	o	1012.1
US11573	42-09.6	141-10.3	8/31	1207-1212	124	East-2	SE -1	East-4	23.6	22.5	o	1011
US11574	41-59.4	141-02.0	8/31	1321-1325	100	ESE-2	ESE-1	ESE-4	23.8	22.4	o	1010.1
US11575	41-58.8	141-00.6	8/31	1334-1338	93	ESE-2	ESE-1	ESE-4	24.1	22.4	o	1010.1
US11576	41-58.1	140-59.5	8/31	1345-1349	85	East-2	ESE-1	East-4	24.2	22.2	c	1010.1
US11577	41-57.5	140-58.2	8/31	1356-1400	78	East-2	ESE-1	East-4	24.2	21.8	c	1010

Cruise 235

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11578	41-29.6	139-22.4	9/10	1618-1627	246	Calm	WSW-1	Calm	21.6	23.4	c	1024.1
US11579	41-21.3	139-26.4	9/11	0502-0509	2437	NE -1	NW -1	NE -3	21.1	22.7	o	1025.1
US11580	41-25.0	139-33.4	9/11	0937-0948	1543	East-3	NW -1	East-5	21	23.3	o	1024.9
US11581	41-35.3	140-53.5	9/12	1404-1407	50	Calm	NE -1	Calm	22.2	23.8	r	1017.1
US11582	41-37.0	140-51.4	9/12	1425-1429	97	Calm	NE -1	Calm	22.1	23.6	r	1017.1
US11583	41-38.8	140-49.3	9/12	1446-1457	324	Calm	NE -1	Calm	21.8	22.8	r	1016.6
US11584	41-40.7	140-47.2	9/12	1516-1523	227	Calm	ENE-1	Calm	21.5	21.5	r	1016.6
US11585	41-42.8	140-45.0	9/12	1542-1546	84	West-1	ESE-1	West-2	21.5	21.6	r	1016.6
US11586	41-43.1	140-37.7	9/13	0615-0618	60	North-1	SSE-1	North-3	21	21.3	o	1016.5

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION		US11530	
LATITUDE		41-55.1	N
LONGITUDE		141-09.8	E
DEPTH (m)		178	
Press.	Temp.	Salinity	Sigma-T
5	18.677	31.921	22.750
10	16.332	32.156	23.486
20	12.942	33.009	24.862
30	9.573	33.204	25.621
40	9.024	33.482	25.926
50	9.645	33.879	26.136
75	9.730	34.053	26.258
100	8.385	33.861	26.322
125	7.449	33.759	26.379
150	5.809	33.603	26.472

STATION		US11531	
LATITUDE		41-59.7	N
LONGITUDE		141-10.3	E
DEPTH (m)		140	
Press.	Temp.	Salinity	Sigma-T
5	21.068	32.414	22.508
10	17.799	32.872	23.691
20	14.735	33.888	25.172
30	12.913	34.075	25.693
40	11.944	34.075	25.881
50	11.495	34.131	26.009
75	9.576	33.929	26.186
100	8.510	33.874	26.313
125	7.555	33.760	26.364

STATION		US11532	
LATITUDE		42-10.0	N
LONGITUDE		141-10.3	E
DEPTH (m)		123	
Press.	Temp.	Salinity	Sigma-T
5	21.324	32.428	22.450
10	17.188	32.875	23.840
20	12.375	33.249	25.158
30	13.300	34.051	25.598
40	12.687	34.039	25.710
50	12.165	34.117	25.872
75	10.008	33.933	26.117
100	7.579	33.695	26.310

STATION		US11533	
LATITUDE		42-20.0	N
LONGITUDE		141-10.1	E
DEPTH (m)		73	
Press.	Temp.	Salinity	Sigma-T
5	21.114	32.127	22.278
10	18.077	32.499	23.339
20	13.034	33.140	24.945
30	9.578	33.186	25.605
40	8.564	33.249	25.814
50	7.798	33.333	25.994

STATION		US11534	
LATITUDE		42-11.7	N
LONGITUDE		141-02.3	E
DEPTH (m)		80	
Press.	Temp.	Salinity	Sigma-T
5	21.426	32.317	22.338
10	19.289	32.869	23.320
20	13.817	33.217	24.847
30	12.007	33.629	25.523
40	10.146	33.748	25.949
50	9.196	33.754	26.111

STATION		US11535	
LATITUDE		42-00.6	N
LONGITUDE		141-00.9	E
DEPTH (m)		91	
Press.	Temp.	Salinity	Sigma-T
5	17.904	31.982	22.984
10	12.730	32.643	24.620
20	11.268	33.182	25.312
30	8.524	33.133	25.730
40	7.576	33.336	26.028
50	6.180	33.230	26.132
75	6.127	33.508	26.358

STATION		US11536	
LATITUDE		42-09.3	N
LONGITUDE		140-53.0	E
DEPTH (m)		77	
Press.	Temp.	Salinity	Sigma-T
5	21.851	32.604	22.440
10	17.617	33.025	23.853
20	13.620	33.609	25.191
30	10.494	33.432	25.643
40	7.792	33.228	25.913
50	8.018	33.529	26.116

STATION		US11537	
LATITUDE		42-17.6	N
LONGITUDE		140-54.0	E
DEPTH (m)		56	
Press.	Temp.	Salinity	Sigma-T
5	21.078	31.809	22.046
10	17.662	32.628	23.537
20	13.291	32.955	24.751
30	9.905	33.139	25.515
40	8.828	33.158	25.703

STATION		US11538	
LATITUDE		42-18.4	N
LONGITUDE		140-42.4	E
DEPTH (m)		63	
Press.	Temp.	Salinity	Sigma-T
5	22.530	31.354	21.303
10	21.331	31.447	21.703
20	17.037	31.970	23.181
30	10.003	32.467	24.974
40	7.474	32.907	25.705
50	5.497	32.978	26.016

STATION		US11539	
LATITUDE		42-10.8	N
LONGITUDE		140-41.0	E
DEPTH (m)		87	
Press.	Temp.	Salinity	Sigma-T
5	22.275	31.333	21.359
10	20.592	31.564	21.989
20	13.326	32.513	24.402
30	8.853	32.836	25.447
40	7.071	33.012	25.843
50	5.349	32.947	26.008
75	3.818	33.243	26.406

STATION		US11540	
LATITUDE		42-11.3	N
LONGITUDE		140-35.3	E
DEPTH (m)		79	
Press.	Temp.	Salinity	Sigma-T
5	22.110	31.352	21.418
10	19.418	31.700	22.396
20	12.608	32.512	24.542
30	7.720	32.593	25.424
40	5.829	32.775	25.815
50	5.039	33.002	26.087
75	3.769	33.216	26.390

STATION		US11541	
LATITUDE		42-16.2	N
LONGITUDE		140-35.6	E
DEPTH (m)		91	
Press.	Temp.	Salinity	Sigma-T
5	22.259	31.348	21.374
10	21.670	31.417	21.588
20	16.707	31.947	23.240
30	9.022	32.521	25.173
40	6.120	32.761	25.769
50	7.693	33.399	26.061
75	5.773	33.452	26.358

STATION		US11542	
LATITUDE		42-21.2	N
LONGITUDE		140-36.6	E
DEPTH (m)		87	
Press.	Temp.	Salinity	Sigma-T
5	22.632	31.321	21.250
10	22.347	31.340	21.343
20	16.928	31.951	23.192
30	8.650	32.393	25.131
40	6.876	32.870	25.757
50	6.822	33.328	26.126
75	6.062	33.362	26.251

STATION		US11543	
LATITUDE		42-26.2	N
LONGITUDE		140-37.3	E
DEPTH (m)		82	
Press.	Temp.	Salinity	Sigma-T
5	22.507	31.301	21.270
10	22.387	31.300	21.302
20	15.360	32.113	23.668
30	7.429	32.435	25.340
40	5.910	32.776	25.806
50	5.075	32.899	26.001
75	3.875	33.191	26.359

STATION		US11544	
LATITUDE		42-31.3	N
LONGITUDE		140-37.6	E
DEPTH (m)		60	
Press.	Temp.	Salinity	Sigma-T
5	22.003	31.198	21.331
10	18.793	31.783	22.616
20	10.770	32.661	24.995
30	6.571	32.583	25.572
40	5.679	32.819	25.868
50	5.437	33.006	26.045

STATION		US11545	
LATITUDE		42-08.9	N
LONGITUDE		140-35.8	E
DEPTH (m)		66	
Press.	Temp.	Salinity	Sigma-T
5	22.033	31.530	21.574
10	18.536	32.108	22.926
20	10.879	32.581	24.914
30	6.480	32.497	25.515
40	5.612	32.839	25.892
50	5.183	33.006	26.074

STATION		US11546	
LATITUDE		42-13.5	N
LONGITUDE		140-42.2	E
DEPTH (m)		87	
Press.	Temp.	Salinity	Sigma-T
5	22.620	31.324	21.255
10	21.001	31.506	21.835
20	15.791	32.145	23.599
30	9.029	32.653	25.275
40	9.571	33.476	25.833
50	7.360	33.354	26.073
75	6.014	33.415	26.299

STATION		US11547	
LATITUDE		42-10.3	N
LONGITUDE		140-46.9	E
DEPTH (m)		94	
Press.	Temp.	Salinity	Sigma-T
5	22.044	31.396	21.470
10	17.029	32.142	23.315
20	14.629	32.946	24.468
30	8.634	32.855	25.495
40	7.446	33.079	25.845
50	4.992	32.946	26.048
75	3.711	33.148	26.341

STATION US11548			
LATITUDE 42-15.6 N			
LONGITUDE 140-47.8 E			
DEPTH (m) 70			
Press.	Temp.	Salinity	Sigma-T
5	22.674	31.303	21.224
10	22.412	31.363	21.343
20	14.911	32.235	23.860
30	12.588	33.063	24.973
40	8.949	33.153	25.680
50	7.735	33.349	26.016

STATION US11549			
LATITUDE 42-14.7 N			
LONGITUDE 140-29.5 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	22.485	31.336	21.302
10	21.517	32.041	22.103
20	12.370	32.406	24.505
30	7.386	32.537	25.426
40	5.929	32.806	25.828
50	4.985	32.898	26.011

STATION US11550			
LATITUDE 42-18.6 N			
LONGITUDE 140-30.6 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	22.435	31.390	21.357
10	20.523	31.445	21.917
20	14.378	32.324	24.041
30	8.555	32.564	25.279
40	6.167	32.692	25.709
50	4.864	32.930	26.050
75	3.987	33.212	26.365

STATION US11551			
LATITUDE 42-21.4 N			
LONGITUDE 140-24.6 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	19.141	31.748	22.502
10	16.687	32.147	23.398
20	11.089	32.578	24.874
30	8.401	32.695	25.405
40	6.095	32.743	25.758
50	5.280	32.958	26.025

STATION US11552			
LATITUDE 42-23.9 N			
LONGITUDE 140-30.9 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	22.331	31.517	21.482
10	20.751	31.569	21.950
20	14.372	32.446	24.137
30	7.842	32.432	25.281
40	6.044	32.724	25.749
50	5.304	32.964	26.027
75	3.826	33.191	26.365

STATION US11553			
LATITUDE 42-23.2 N			
LONGITUDE 140-42.4 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	22.956	31.362	21.189
10	20.879	31.492	21.858
20	16.395	32.351	23.621
30	8.978	32.660	25.289
40	6.922	32.915	25.787
50	7.204	33.233	26.000

STATION US11554			
LATITUDE 42-21.1 N			
LONGITUDE 140-47.7 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	22.838	31.342	21.208
10	19.242	31.875	22.573
20	13.738	33.234	24.876
30	9.765	33.195	25.582
40	8.680	33.229	25.781

STATION US11555			
LATITUDE 42-25.3 N			
LONGITUDE 140-49.0 E			
DEPTH (m) 41			
Press.	Temp.	Salinity	Sigma-T
5	22.320	31.365	21.370
10	21.108	32.326	22.431
20	14.747	32.750	24.292
30	10.253	33.117	25.439

STATION US11556			
LATITUDE 42-28.3 N			
LONGITUDE 140-43.6 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	22.512	31.431	21.366
10	22.439	31.439	21.393
20	15.482	32.768	24.146
30	10.071	32.884	25.288
40	9.187	33.208	25.686
50	6.924	33.144	25.967

STATION US11557			
LATITUDE 42-28.7 N			
LONGITUDE 140-31.3 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	22.203	31.490	21.497
10	22.099	31.503	21.536
20	16.182	32.268	23.606
30	8.767	32.478	25.180
40	6.554	32.640	25.619
50	5.734	32.893	25.920

STATION US11558			
LATITUDE 42-27.7 N			
LONGITUDE 140-28.3 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	21.670	31.453	21.616
10	21.449	31.587	21.778
20	13.377	32.353	24.268
30	8.460	32.476	25.224
40	6.791	32.717	25.648
50	7.227	33.172	25.948

STATION US11559			
LATITUDE 42-26.5 N			
LONGITUDE 140-25.4 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	21.678	31.510	21.656
10	21.526	31.602	21.768
20	12.967	32.467	24.438
30	10.382	32.812	25.179
40	6.136	32.618	25.654
50	6.446	33.063	25.966

STATION US11560			
LATITUDE 42-16.9 N			
LONGITUDE 140-25.6 E			
DEPTH (m) 62			
Press.	Temp.	Salinity	Sigma-T
5	21.627	31.510	21.670
10	20.121	31.828	22.310
20	11.915	32.523	24.682
30	9.851	32.708	25.187
40	7.228	32.774	25.635
50	5.976	32.896	25.893

STATION US11561			
LATITUDE 42-17.6 N			
LONGITUDE 140-54.0 E			
DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T
5	21.299	32.248	22.320
10	21.303	32.249	22.320
20	14.437	33.076	24.609
30	12.631	33.450	25.265
40	10.745	33.444	25.609

STATION US11562			
LATITUDE 42-05.0 N			
LONGITUDE 140-56.6 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	19.444	32.146	22.729
10	18.839	32.447	23.111
20	13.423	33.114	24.848
30	9.534	33.192	25.618
40	8.664	33.432	25.943
50	8.486	33.506	26.028

STATION US11563			
LATITUDE 41-57.4 N			
LONGITUDE 140-58.4 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	16.079	32.765	24.011
10	14.195	33.032	24.626
20	10.393	32.787	25.158
30	6.755	32.663	25.611
40	5.700	32.805	25.854
50	5.428	32.920	25.978

STATION US11564			
LATITUDE 41-58.0 N			
LONGITUDE 140-59.5 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	16.987	32.533	23.625
10	14.441	33.040	24.580
20	11.942	33.209	25.209
30	11.389	33.665	25.666
40	10.861	33.858	25.911
50	10.664	33.912	25.988
75	5.058	33.121	26.179

STATION US11565			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.7 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	17.392	32.507	23.510
10	14.706	33.017	24.507
20	11.910	33.238	25.237
30	9.602	33.200	25.613
40	8.702	33.411	25.920
50	10.361	33.958	26.077
75	7.045	33.459	26.199

STATION US11566			
LATITUDE 41-59.4 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	17.947	32.430	23.317
10	15.261	33.005	24.377
20	12.089	33.046	25.055
30	9.854	33.227	25.592
40	7.880	33.152	25.840
50	7.795	33.332	25.994
75	8.141	33.671	26.210

STATION US11567			
LATITUDE 41-45.5 N			
LONGITUDE 140-40.6 E			
DEPTH (m) 32			
Press.	Temp.	Salinity	Sigma-T
5	24.331	33.455	22.374
10	24.346	33.456	22.371
20	24.219	33.462	22.413

STATION US11568			
LATITUDE 42-03.0 N			
LONGITUDE 143-40.8 E			
DEPTH (m) 312			
Press.	Temp.	Salinity	Sigma-T
5	14.815	33.001	24.471
10	12.027	33.252	25.227
20	9.871	33.425	25.743
30	8.149	33.360	25.964
40	6.512	33.186	26.055
50	6.907	33.370	26.147
75	5.954	33.340	26.247
100	4.235	33.244	26.366
125	3.764	33.245	26.413
150	2.184	33.247	26.553
175	2.033	33.309	26.615
200	1.866	33.365	26.672
250	2.099	33.472	26.740
300	2.376	33.569	26.795

STATION US11569			
LATITUDE 42-31.0 N			
LONGITUDE 143-54.0 E			
DEPTH (m) 172			
Press.	Temp.	Salinity	Sigma-T
5	16.105	32.749	23.993
10	12.971	32.760	24.664
20	11.438	33.288	25.364
30	7.772	33.076	25.796
40	6.771	33.211	26.040
50	6.413	33.269	26.133
75	4.811	33.210	26.277
100	4.130	33.255	26.385
125	2.882	33.217	26.472
150	2.725	33.257	26.517

STATION US11570			
LATITUDE 42-42.2 N			
LONGITUDE 144-45.4 E			
DEPTH (m) 185			
Press.	Temp.	Salinity	Sigma-T
5	15.437	32.831	24.205
10	13.168	32.951	24.773
20	11.658	33.345	25.368
30	9.787	33.399	25.737
40	8.968	33.424	25.889
50	8.353	33.444	26.000
75	8.141	33.471	26.053
100	7.267	33.443	26.156
125	5.396	33.276	26.263
150	3.184	33.247	26.470
175	2.325	33.291	26.577

STATION US11571			
LATITUDE 42-05.0 N			
LONGITUDE 142-40.3 E			
DEPTH (m) 119			
Press.	Temp.	Salinity	Sigma-T
5	21.410	32.929	22.807
10	20.226	33.725	23.730
20	18.036	33.969	24.474
30	16.951	34.032	24.783
40	14.832	34.063	25.286
50	14.614	34.202	25.440
75	11.528	34.103	25.981
100	9.699	33.993	26.216

STATION US11572			
LATITUDE 42-24.6 N			
LONGITUDE 141-25.8 E			
DEPTH (m) 118			
Press.	Temp.	Salinity	Sigma-T
5	22.223	33.184	22.777
10	21.214	33.130	23.013
20	16.385	33.622	24.600
30	12.732	33.671	25.416
40	11.916	33.928	25.772
50	11.762	33.997	25.855
75	9.584	33.971	26.218
100	8.112	33.837	26.344

STATION US11573			
LATITUDE 42-09.6 N			
LONGITUDE 141-10.3 E			
DEPTH (m) 124			
Press.	Temp.	Salinity	Sigma-T
5	22.469	32.125	21.904
10	20.402	33.479	23.496
20	14.863	33.654	24.964
30	11.573	33.709	25.666
40	10.182	33.590	25.820
50	10.201	33.674	25.882
75	10.523	34.011	26.090
100	9.108	33.898	26.238

STATION US11574			
LATITUDE 41-59.4 N			
LONGITUDE 141-02.0 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	22.411	31.601	21.524
10	20.362	32.763	22.962
20	16.194	33.521	24.566
30	13.072	33.551	25.256
40	12.111	33.695	25.555
50	11.281	33.787	25.780
75	10.737	33.997	26.042

STATION US11575			
LATITUDE 41-58.8 N			
LONGITUDE 141-00.6 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	21.658	31.866	21.932
10	19.936	32.447	22.832
20	16.226	33.350	24.427
30	12.560	33.322	25.179
40	11.823	33.668	25.588
50	9.927	33.463	25.764
75	6.575	33.339	26.167

STATION US11576			
LATITUDE 41-58.1 N			
LONGITUDE 140-59.5 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	21.152	31.993	22.165
10	19.555	32.470	22.948
20	15.414	32.982	24.326
30	12.763	33.438	25.229
40	10.323	33.491	25.719
50	10.376	33.596	25.790
75	6.422	33.146	26.034

STATION US11577			
LATITUDE 41-57.5 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T
5	20.952	31.909	22.156
10	18.116	32.198	23.099
20	14.957	32.920	24.378
30	12.638	33.396	25.221
40	11.470	33.487	25.513
50	9.873	33.408	25.730
75	9.402	33.541	25.912

STATION US11578			
LATITUDE 41-29.6 N			
LONGITUDE 139-22.4 E			
DEPTH (m) 246			
Press.	Temp.	Salinity	Sigma-T
5	23.466	33.524	22.681
10	23.468	33.524	22.680
20	19.592	33.690	23.868
30	15.239	34.099	25.225
40	12.952	34.197	25.780
50	12.641	34.378	25.982
75	8.744	34.134	26.480
100	7.110	34.080	26.679
125	4.216	34.022	26.986
150	3.128	34.031	27.100
175	2.660	34.045	27.152
200	1.967	34.045	27.209

STATION US11579			
LATITUDE 41-21.3 N			
LONGITUDE 139-26.4 E			
DEPTH (m) 2437			
Press.	Temp.	Salinity	Sigma-T
5	22.748	33.531	22.892
10	22.769	33.572	22.917
20	21.763	33.642	23.251
30	14.928	34.182	25.357
40	13.337	34.348	25.820
50	12.174	34.323	26.030
75	9.348	34.191	26.428
100	6.948	34.074	26.697
125	3.244	33.991	27.057
150	2.614	34.005	27.125
175	2.324	34.007	27.150
200	2.222	34.015	27.165

STATION US11580			
LATITUDE 41-25.0 N			
LONGITUDE 139-33.4 E			
DEPTH (m) 1543			
Press.	Temp.	Salinity	Sigma-T
5	23.398	33.620	22.773
10	23.315	33.605	22.785
20	17.807	33.958	24.521
30	15.853	34.366	25.293
40	15.534	34.421	25.408
50	14.415	34.389	25.627
75	11.957	34.363	26.103
100	9.910	34.231	26.366
125	8.101	34.134	26.579
150	5.779	34.061	26.838
175	3.402	34.039	27.081
200	2.420	34.028	27.160

STATION US11581			
LATITUDE 41-35.3 N			
LONGITUDE 140-53.5 E			
DEPTH (m) 50			
Press.	Temp.	Salinity	Sigma-T
5	23.830	33.527	22.576
10	22.691	33.617	22.973
20	19.934	33.856	23.906
30	19.882	33.897	23.951
40	19.190	33.945	24.167

STATION US11582			
LATITUDE 41-37.0 N			
LONGITUDE 140-51.4 E			
DEPTH (m) 97			
Press.	Temp.	Salinity	Sigma-T
5	23.422	33.541	22.706
10	23.367	33.556	22.733
20	21.976	33.740	23.267
30	19.683	33.959	24.050
40	16.481	34.115	24.957
50	14.214	34.225	25.543
75	13.441	34.286	25.751

STATION US11583			
LATITUDE 41-38.8 N			
LONGITUDE 140-49.3 E			
DEPTH (m) 324			
Press.	Temp.	Salinity	Sigma-T
5	22.482	33.520	22.959
10	21.603	33.699	23.339
20	17.881	33.953	24.499
30	15.501	34.117	25.181
40	13.343	34.227	25.725
50	13.272	34.269	25.772
75	12.963	34.291	25.851
100	12.751	34.297	25.898
125	12.365	34.288	25.966
150	12.038	34.277	26.020
175	11.785	34.283	26.073
200	11.476	34.275	26.124
250	10.984	34.257	26.200
300	10.924	34.258	26.212

STATION US11584			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.2 E			
DEPTH (m) 227			
Press.	Temp.	Salinity	Sigma-T
5	21.496	33.634	23.319
10	20.956	33.730	23.539
20	18.034	33.967	24.473
30	15.435	34.105	25.186
40	14.639	34.155	25.399
50	13.327	34.178	25.690
75	12.550	34.241	25.894
100	11.939	34.265	26.030
125	11.526	34.257	26.101
150	11.170	34.254	26.163
175	11.077	34.253	26.180
200	10.876	34.246	26.210

STATION US11585			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.0 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	21.578	33.631	23.295
10	21.160	33.763	23.510
20	20.404	33.823	23.758
30	17.954	33.961	24.488
40	14.734	34.071	25.313
50	13.672	34.185	25.625
75	12.299	34.247	25.947

STATION US11586			
LATITUDE 41-43.1 N			
LONGITUDE 140-37.7 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	21.357	33.645	23.365
10	20.756	33.773	23.626
20	19.749	33.885	23.977
30	18.346	33.965	24.394
40	16.950	34.064	24.808
50	16.425	34.114	24.969

THE " USHIO MARU "

CRUISE 236

CRUISE 237

CRUISE 238

IN SEPTEMBER - OCTOBER 2011

1. Cruise Itinerary

Cruise 236

Departure from Hakodate	Sep. 19, 2011
Start hydrographic research (US11587) and trawl net research	19
Arrival at Aomori	19
Departure from Aomori	20
Finish trawl net research	20
Finish hydrographic research (US11615)	21
Return to Hakodate	21
Total coverage 197.4 miles	

Cruise 237

Departure from Hakodate	Sep. 27, 2011
Start hydrographic research (US11616)	27
Finish hydrographic research (US11635)	28
Return to Hakodate	29
Total coverage 269.7 miles	

Cruise 238

Departure from Hakodate	Oct. 3, 2011
Start hydrographic research (US11636)	4
Arrival at Nemuro	4
Departure from Nemuro	5
Arrival at and departure from Nemuro	6
Arrival at Kushiro	7
Departure from Kushiro	8
Arrival at Usujiri	9
Departure from Usujiri	10
Finish hydrographic research (US11682)	10
Return to Hakodate	11
Total coverage 1015.3 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

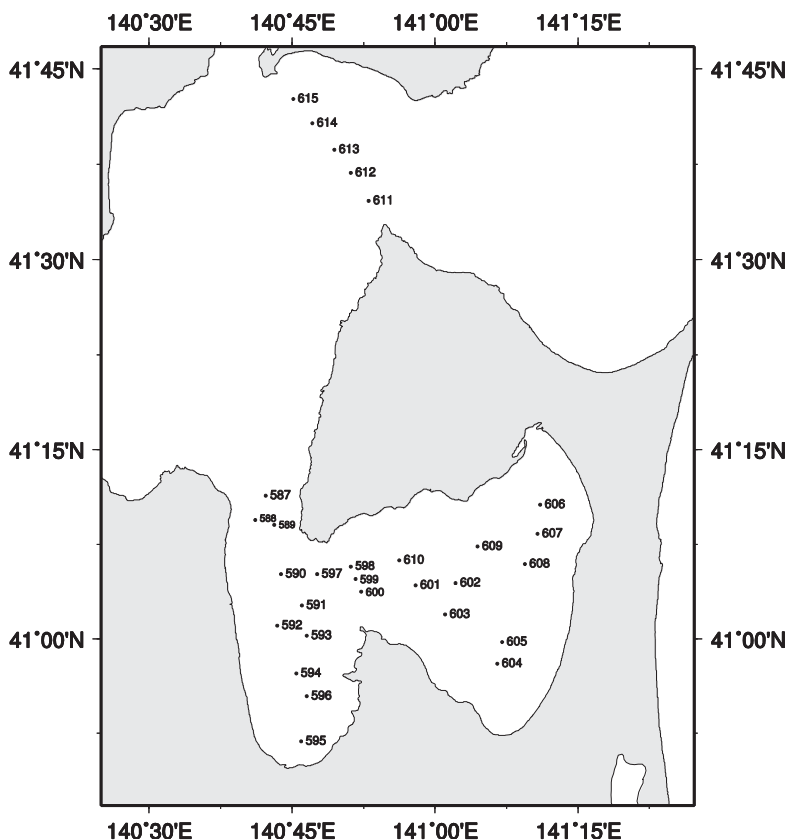


Figure 1. Oceanographic stations (Cruise 236)

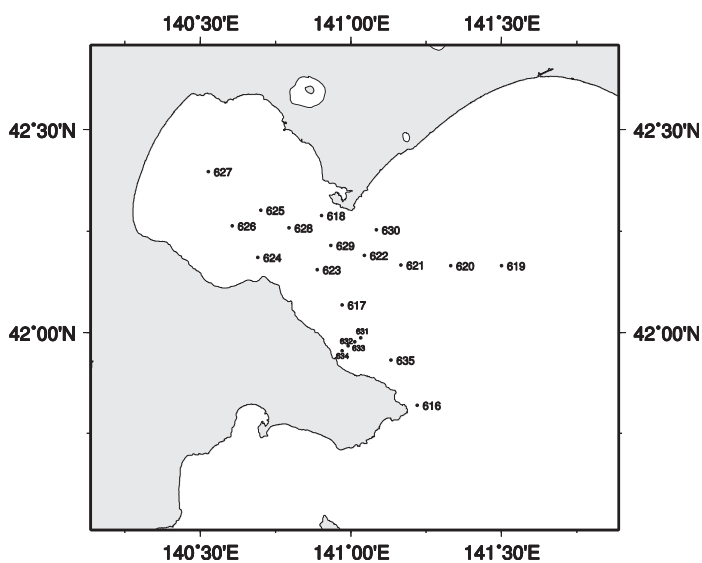


Figure 2. Oceanographic stations (Cruise 237)

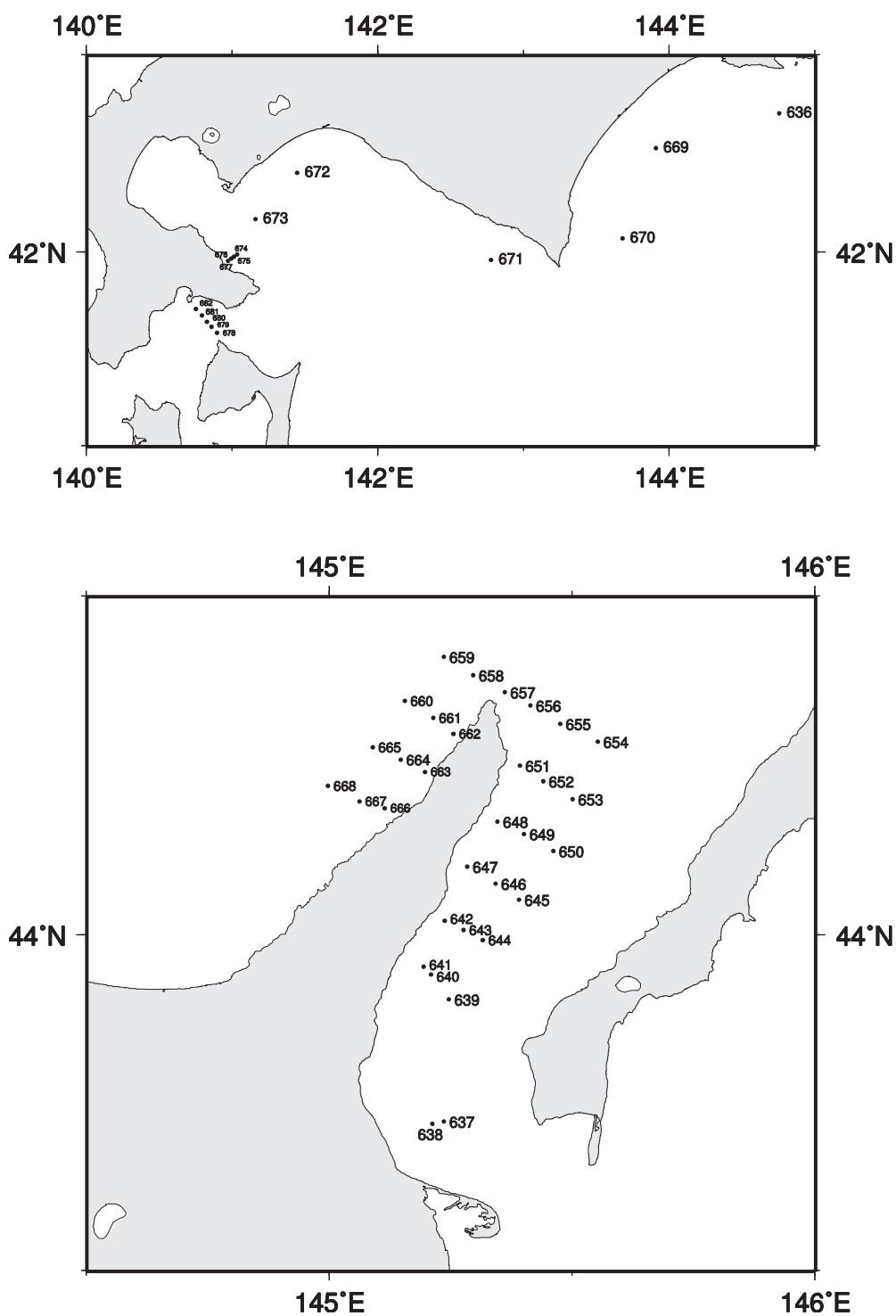


Figure 3. Oceanographic stations (Cruise 238; 2 maps)

Table 1: List of oceanographic stations

Cruise 236

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11587	41-11.4	140-42.2	9/19	1121-1129	69	North-1	North-1	North-2	18.7	22.5	c	1016.1
US11588	41-09.5	140-41.1	9/19	1147-1153	53	Calm	North-1	Calm	18.8	22.5	o	1016.0
US11589	41-09.1	140-43.1	9/19	1211-1220	73	SE -1	North-1	SE -3	18.6	22.0	o	1016.0
US11590	41-05.2	140-43.8	9/19	1250-1256	60	East-1	North-1	East-3	18.5	21.7	o	1015.6
US11591	41-02.7	140-46.0	9/19	1408-1414	52	ENE-2	NE -1	ENE-5	18.1	22.3	r	1015.6
US11592	41-01.1	140-43.4	9/19	1435-1443	55	NE -2	NE -1	NE -4	17.6	22.3	r	1016.1
US11593	41-00.3	140-46.5	9/19	1500-1507	51	ENE-2	NE -1	ENE-5	17.3	22.4	r	1015.9
US11594	40-57.3	140-45.4	9/19	1610-1617	49	East-2	NE -1	East-4	17.0	22.7	r	1016.0
US11595	40-51.9	140-45.9	9/20	0547-0553	26	SSE-1	NE -1	SSE-2	14.8	22.4	r	1016.6
US11596	40-55.5	140-46.5	9/20	0629-0636	41	SE -1	NE -1	SE -2	20.9	15.3	r	1016.2
US11597	41-05.2	140-47.6	9/20	0751-0757	55	SE -1	NW -1	SE -3	15.5	20.5	r	1016.8
US11598	41-05.8	140-51.1	9/20	0814-0820	52	SSE-2	NW -1	SSE-4	15.2	21.9	r	1016.8
US11599	41-04.8	140-51.6	9/20	0828-0832	52	SSE-2	NW -1	SSE-4	14.9	21.1	r	1016.7
US11600	41-03.8	140-52.2	9/20	1856-0901	50	SSE-1	NW -1	SSE-2	15.1	20.7	r	1016.6
US11601	41-04.3	140-57.9	9/20	1013-1017	49	SSW-1	SE -1	SSW-2	15.3	22.1	r	1016.7
US11602	41-04.5	141-02.1	9/20	1054-1059	47	SSW-1	SE -1	SSW-2	15.5	22.0	r	1016.6
US11603	41-02.0	141-01.0	9/20	1303-1308	47	SW -1	South-1	SW -2	15.8	22.0	o	1015.6
US11604	40-58.1	141-06.5	9/20	1344-1351	39	Calm	South-1	Calm	15.8	22.3	o	1015.5
US11605	40-59.8	141-07.0	9/20	1420-1427	42	Calm	South-1	Calm	15.9	22.3	o	1015.0
US11606	41-10.7	141-11.0	9/20	1619-1625	30	SSE-1	SSE-1	SSE-3	16.9	22.3	o	1014.7
US11607	41-08.4	141-10.7	9/20	1730-1734	34	SE -1	SE -1	SE -3	16.8	22.3	o	1015.1
US11608	41-06.0	141-09.4	9/20	1753-1758	38	SE -2	South-1	SE -4	16.6	22.0	o	1015.1
US11609	41-07.4	141-04.4	9/20	1842-1847	40	SE -2	South-1	SE -4	16.7	22.2	o	1015.4
US11610	41-06.3	140-56.2	9/20	1943-1949	47	SE -2	South-1	SE -4	16.6	22.2	o	1015.1
US11611	41-34.7	140-53.0	9/20	2318-2321	36	East-1	South-1	East-3	17.2	22.4	o	1013.6
US11612	41-36.9	140-51.1	9/20	2338-2342	83	East-2	East-1	East-4	17.7	22.7	o	1013.6
US11613	41-38.7	140-49.4	9/20	2357-0010	332	East-2	East-1	East-3	17.8	23.0	o	1013.6
US11614	41-40.8	140-47.1	9/21	0028-0035	219	NE -2	East-1	NE -4	17.8	23.3	o	1013.6
US11615	41-42.7	140-45.1	9/21	0051-0055	84	NE -2	East-1	NE -4	17.4	22.2	o	1013.6

Cruise 237

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11616	41-49.3	141-13.1	9/27	1147-1159	166	Calm	SE -1	Calm	21.3	19.5	bc	1022
US11617	42-04.2	140-58.2	9/27	1444-1451	80	NW -2	ESE-1	NW -4	21.3	19.7	bc	1020.6
US11618	42-17.4	140-54.1	9/27	1648-1655	56	WNW-2	ESE-1	WNW-4	20.9	18.9	bc	1020.7
US11619	42-10.0	141-29.9	9/27	2045-2125	544	NNE-3	ESE-1	NNE-5	19.2	20	bc	1022.2
US11620	42-10.0	141-19.8	9/27	2204-2248	351	North-3	ESE-1	North-4	19	19	bc	1022.1
US11621	42-10.1	141-09.9	9/27	2330-2335	119	West-2	ESE-1	West-3	18.4	18.9	bc	1022.6
US11622	42-11.5	141-02.6	9/28	0022-0026	80	West-2	ESE-1	West-3	18.1	18.9	bc	1022.2
US11623	42-09.4	140-53.2	9/28	0117-0121	76	Calm	ESE-1	Calm	17.6	19.1	bc	1022.6
US11624	42-11.2	140-41.4	9/28	0227-0231	89	West-1	ESE-1	West-3	15.9	19.7	bc	1022.6
US11625	42-18.2	140-42.0	9/28	0319-0322	63	West-1	ESE-1	West-2	16.8	19.5	bc	1022.6
US11626	42-15.9	140-36.3	9/28	0612-0618	89	SW -1	ESE-1	SW -1	16	19.9	bc	1022.1
US11627	42-23.9	140-31.5	9/28	1008-1012	93	Calm	ESE-1	Calm	19.4	20.5	bc	1023.6
US11628	42-15.6	140-47.6	9/28	1152-1156	69	East-2	ESE-1	East-3	19.5	19.9	bc	1022.4
US11629	42-13.0	140-55.9	9/28	1340-1343	67	East-2	ESE-1	East-4	20.8	19.2	bc	1021.1
US11630	42-15.3	141-05.0	9/28	1440-1444	77	East-2	ESE-1	East-3	21.2	19.2	bc	1021
US11631	41-59.3	141-01.9	9/28	1637-1642	99	SE -3	ESE-1	SE -5	20.1	19.3	bc	1020.5
US11632	41-58.7	141-00.7	9/28	1652-1657	93	SE -3	ESE-1	SE -5	20.1	19.2	bc	1020.6
US11633	41-58.1	140-59.4	9/28	1707-1711	85	SE -3	ESE-1	SE -5	20	19.5	bc	1020.6
US11634	41-57.4	140-58.2	9/28	1719-1723	76	SE -3	ESE-1	SE -5	20	19.8	bc	1020.6
US11635	41-56.0	141-07.9	9/28	1808-1815	145	SE -3	ESE-1	SE -4	19.5	19.2	bc	1021.2

Cruise 238

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11636	42-42.6	144-45.1	10/4	0800-0808	176	WSW-2	SSE-1	WSW-3	11.3	14.6	bc	1020.6
US11637	43-43.4	145-14.1	10/5	0835-0836	17	SW -2	WSW-1	SW -4	15.4	16	bc	1019.6
US11638	43-43.2	145-12.7	10/5	0845-0846	16	SW -2	WSW-1	SW -4	15.6	16	bc	1019.5
US11639	43-54.3	145-14.7	10/5	0949-0953	72	South-2	North-1	South-4	19.1	16	bc	1019.5
US11640	43-56.5	145-12.5	10/5	1009-1013	82	South-1	North-1	South-3	18.3	16	bc	1019.4
US11641	43-57.2	145-11.6	10/5	1019-1023	87	South-1	North-1	South-3	18.1	16	bc	1019.2
US11642	44-01.3	145-14.2	10/5	1048-1059	334	SSE-1	North-1	SSE-3	18.2	16.1	bc	1019
US11643	44-00.5	145-16.5	10/5	1113-1126	428	SE -1	North-1	SE -3	17.9	16.1	bc	1018.6
US11644	43-59.6	145-18.9	10/5	1139-1146	278	South-1	South-1	South-3	17.8	16.1	bc	1018.4
US11645	44-03.2	145-23.4	10/5	1221-1235	517	South-1	South-1	South-3	17.2	16	bc	1018
US11646	44-04.6	145-20.5	10/5	1253-1308	1097	South-1	South-1	South-3	18.8	16	bc	1017.6
US11647	44-06.1	145-17.0	10/5	1328-1341	490	SE -1	NNE-1	SE -3	19.2	16	bc	1017.6
US11648	44-10.1	145-20.7	10/5	1413-1420	274	SE -1	NNE-1	SE -3	18.1	16	bc	1017.5
US11649	44-09.0	145-24.0	10/5	1438-1453	1450	South-2	North-1	South-3	17.9	16	bc	1017.5
US11650	44-07.5	145-27.6	10/5	1513-1528	1255	South-2	North-1	South-3	17.7	16.1	bc	1017.5
US11651	44-15.1	145-23.5	10/5	1625-1637	301	SW -2	NNE-1	SW -2	17.3	15.5	bc	1017.6
US11652	44-13.7	145-26.4	10/5	1655-1712	1603	SW -1	NNE-1	SW -2	16.6	15.8	bc	1017.6
US11653	44-12.1	145-30.0	10/5	1733-1750	2081	SW -1	NNE-1	SW -3	16.3	15.2	bc	1017.8
US11654	44-17.2	145-33.1	10/5	1827-1845	2084	SSW-1	NNE-1	SSW-2	15.8	15	bc	1018.1
US11655	44-18.8	145-28.5	10/5	1903-1920	1865	South-1	NNE-1	South-2	15.7	14.9	bc	1018.1
US11656	44-20.4	145-24.8	10/5	1940-1958	1011	SSW-1	NNE-1	SSW-2	16.1	15.8	bc	1018
US11657	44-21.6	145-21.6	10/5	2015-2017	73	Calm	NNE-1	Calm	15.8	15.1	bc	1018
US11658	44-23.1	145-17.7	10/5	2038-2055	708	Calm	NNE-1	Calm	15.6	13.8	bc	1018
US11659	44-24.7	145-14.1	10/5	2115-2135	1436	SSE-1	NNE-1	SSE-2	14.5	12.3	bc	1018
US11660	44-20.8	145-09.3	10/5	2215-2230	1200	SE -1	NNE-1	SE -2	14.4	12.6	bc	1017.8
US11661	44-19.3	145-12.8	10/5	2248-2304	745	SE -1	NNE-1	SE -3	14.5	12.7	bc	1017.5
US11662	44-17.9	145-15.3	10/5	2320-2325	117	SE -1	NNE-1	SE -3	15.3	13.8	bc	1017.5
US11663	44-14.5	145-11.8	10/5	2355-0001	160	SSW-1	NNE-1	SSW-3	14.2	14.7	bc	1017
US11664	44-15.6	145-08.8	10/6	0018-0033	620	SSE-1	NNE-1	SSE-2	14.1	13.3	bc	1016.7
US11665	44-16.7	145-05.3	10/6	0054-0109	850	Calm	NNE-1	Calm	13.6	12.7	bc	1016.6
US11666	44-11.3	145-06.8	10/6	0153-0201	290	Calm	NNE-1	Calm	13.8	14.6	bc	1016.2
US11667	44-11.9	145-03.7	10/6	0202-0234	440	Calm	NNE-1	Calm	14.2	14.6	bc	1015.8
US11668	44-13.3	144-59.8	10/6	0300-0315	670	Calm	NNE-1	Calm	13.2	12.8	bc	1015.6
US11669	42-32.0	143-54.4	10/8	1040-1045	144	Calm	East-1	Calm	15.1	14.4	bc	1019.7
US11670	42-04.4	143-40.5	10/8	1413-1424	316	South-3	East-1	South-5	15.6	14.7	bc	1019
US11671	41-57.7	142-46.5	10/8	2230-2241	280	NNE-1	ESE-1	NNE-2	14.8	16.6	bc	1023.1
US11672	42-24.4	141-26.6	10/9	0610-0616	175	West-2	West-2	West-3	14.7	17.3	bc	1024.6
US11673	42-10.3	141-09.4	10/9	0902-0906	114	WSW-2	West-1	WSW-4	16	17.3	bc	1025
US11674	41-59.5	141-01.9	10/9	1121-1125	99	East-1	ESE-1	East-2	18.2	17.6	bc	1024.8
US11675	41-58.7	141-00.6	10/9	1133-1137	92	East-1	ESE-1	East-2	18.7	17.7	bc	1024.6
US11676	41-58.1	140-59.4	10/9	1141-1145	85	NE -1	ESE-1	NE -2	18.7	17.6	bc	1024.6
US11677	41-57.4	140-58.2	10/9	1155-1159	77	SW -1	ESE-1	SW -3	18.9	17.7	bc	1024.5
US11678	41-35.3	140-53.6	10/10	0834-0836	50	SSW-3	SW -1	SSW-5	18.4	19.6	c	1019.1
US11679	41-37.1	140-51.4	10/10	0856-0900	97	SSW-3	SW -1	SSW-5	18.8	19.6	c	1018.7
US11680	41-38.7	140-49.4	10/10	0917-0927	309	SSW-3	SW -1	SSW-5	18.9	18.9	c	1018.5
US11681	41-40.7	140-47.3	10/10	0946-0954	225	SSW-3	SW -1	SSW-5	19.2	17.9	c	1017.8
US11682	41-42.7	140-45.0	10/10	1012-1016	85	SSW-3	SW -1	SSW-5	19.5	15.9	c	1017.1

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11587				STATION US11588				STATION US11589			
LATITUDE 41-11.4 N				LATITUDE 41-09.5 N				LATITUDE 41-09.1 N			
LONGITUDE 140-42.2 E				LONGITUDE 140-41.1 E				LONGITUDE 140-43.1 E			
DEPTH (m) 69				DEPTH (m) 53				DEPTH (m) 73			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	22.635	32.576	22.200	5	22.608	32.550	22.187	5	22.549	32.336	22.042
10	22.735	32.907	22.423	10	22.692	32.982	22.491	10	22.667	32.565	22.182
20	22.730	33.240	22.676	20	22.855	33.307	22.692	20	23.259	33.310	22.578
30	21.857	33.460	23.088	30	22.613	33.469	22.883	30	22.888	33.505	22.832
40	21.181	33.638	23.409	40	21.874	33.570	23.167	40	21.933	33.607	23.178
50	19.855	33.790	23.877					50	18.770	33.869	24.215

STATION US11590				STATION US11591				STATION US11592			
LATITUDE 41-05.2 N				LATITUDE 41-02.7 N				LATITUDE 41-01.1 N			
LONGITUDE 140-43.8 E				LONGITUDE 140-46.0 E				LONGITUDE 140-43.4 E			
DEPTH (m) 60				DEPTH (m) 52				DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	22.516	32.597	22.249	5	22.589	32.727	22.327	5	22.458	32.478	22.175
10	22.534	32.610	22.254	10	22.885	33.191	22.595	10	22.537	32.536	22.197
20	22.841	33.469	22.819	20	22.189	33.557	23.069	20	23.206	33.594	22.809
30	22.553	33.604	23.003	30	20.919	33.502	23.376	30	22.567	33.630	23.018
40	20.196	33.753	23.759	40	19.826	33.518	23.677	40	18.995	33.614	23.964
50	18.195	33.909	24.389					50	16.200	34.028	24.954

STATION US11593			
LATITUDE 41-00.3 N			
LONGITUDE 140-46.5 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	22.408	31.632	21.548
10	22.748	32.982	22.476
20	22.844	33.579	22.901
30	22.023	33.599	23.147
40	20.223	33.510	23.567

STATION US11596			
LATITUDE 40-55.5 N			
LONGITUDE 140-46.5 E			
DEPTH (m) 41			
Press.	Temp.	Salinity	Sigma-T
5	23.064	32.082	21.704
10	23.357	33.070	22.368
20	23.207	33.538	22.765
30	22.732	33.545	22.907

STATION US11599			
LATITUDE 41-04.8 N			
LONGITUDE 140-51.6 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	22.485	32.511	22.192
10	22.714	32.900	22.423
20	22.942	33.550	22.851
30	22.105	33.583	23.112
40	20.067	33.566	23.651

STATION US11602			
LATITUDE 41-04.5 N			
LONGITUDE 141-02.1 E			
DEPTH (m) 47			
Press.	Temp.	Salinity	Sigma-T
5	22.261	32.094	21.939
10	22.507	32.334	22.053
20	22.921	32.777	22.271
30	22.510	33.320	22.799
40	19.450	33.361	23.654

STATION US11605			
LATITUDE 40-59.8 N			
LONGITUDE 141-07.0 E			
DEPTH (m) 42			
Press.	Temp.	Salinity	Sigma-T
5	22.504	32.319	22.042
10	22.551	32.427	22.110
20	22.893	32.992	22.442
30	21.280	33.140	23.003
40	19.233	33.701	23.969

STATION US11608			
LATITUDE 41-06.0 N			
LONGITUDE 141-09.4 E			
DEPTH (m) 38			
Press.	Temp.	Salinity	Sigma-T
5	22.277	32.147	21.975
10	22.542	32.425	22.111
20	22.829	33.005	22.470
30	21.764	33.267	22.967

STATION US11594			
LATITUDE 40-57.3 N			
LONGITUDE 140-45.4 E			
DEPTH (m) 49			
Press.	Temp.	Salinity	Sigma-T
5	22.841	32.093	21.775
10	22.892	32.838	22.325
20	23.345	33.492	22.691
30	22.432	33.603	23.036
40	19.487	33.619	23.842

STATION US11597			
LATITUDE 41-05.2 N			
LONGITUDE 140-47.6 E			
DEPTH (m) 55			
Press.	Temp.	Salinity	Sigma-T
5	22.459	32.602	22.269
10	22.597	32.760	22.350
20	22.993	33.620	22.890
30	22.313	33.564	23.039
40	20.149	33.760	23.777
50	18.002	33.830	24.375

STATION US11600			
LATITUDE 41-03.8 N			
LONGITUDE 140-52.2 E			
DEPTH (m) 50			
Press.	Temp.	Salinity	Sigma-T
5	22.317	32.277	22.063
10	22.876	32.987	22.443
20	22.939	33.609	22.896
30	21.758	33.545	23.180
40	19.767	33.587	23.745

STATION US11603			
LATITUDE 41-02.0 N			
LONGITUDE 141-01.0 E			
DEPTH (m) 47			
Press.	Temp.	Salinity	Sigma-T
5	22.282	32.142	21.970
10	22.545	32.308	22.022
20	22.980	32.741	22.227
30	21.970	33.344	22.969
40	20.610	33.585	23.521

STATION US11606			
LATITUDE 41-10.7 N			
LONGITUDE 141-11.0 E			
DEPTH (m) 30			
Press.	Temp.	Salinity	Sigma-T
5	22.323	32.283	22.065
10	22.374	32.387	22.130
20	22.664	32.979	22.497

STATION US11609			
LATITUDE 41-07.4 N			
LONGITUDE 141-04.4 E			
DEPTH (m) 40			
Press.	Temp.	Salinity	Sigma-T
5	22.426	32.435	22.152
10	22.431	32.431	22.147
20	23.028	32.885	22.323
30	21.081	33.179	23.086

STATION US11595			
LATITUDE 40-51.9 N			
LONGITUDE 140-45.9 E			
DEPTH (m) 26			
Press.	Temp.	Salinity	Sigma-T
5	23.099	31.970	21.609
10	23.642	32.728	22.027
20	23.059	33.423	22.721

STATION US11598			
LATITUDE 41-05.8 N			
LONGITUDE 140-51.1 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	22.444	32.516	22.208
10	22.497	32.531	22.204
20	23.059	33.527	22.800
30	22.570	33.582	22.981
40	20.916	33.482	23.361

STATION US11601			
LATITUDE 41-04.3 N			
LONGITUDE 140-57.9 E			
DEPTH (m) 49			
Press.	Temp.	Salinity	Sigma-T
5	22.106	31.957	21.879
10	22.610	32.403	22.076
20	22.721	32.997	22.494
30	22.392	33.558	23.013
40	20.586	33.561	23.510

STATION US11604			
LATITUDE 40-58.1 N			
LONGITUDE 141-06.5 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	22.320	32.467	22.206
10	22.410	32.549	22.242
20	22.915	32.986	22.431
30	21.192	33.128	23.018

STATION US11607			
LATITUDE 41-08.4 N			
LONGITUDE 141-10.7 E			
DEPTH (m) 34			
Press.	Temp.	Salinity	Sigma-T
5	22.422	32.406	22.131
10	22.427	32.406	22.129
20	22.835	32.954	22.430
30	21.009	33.114	23.056

STATION US11610			
LATITUDE 41-06.3 N			
LONGITUDE 140-56.2 E			
DEPTH (m) 47			
Press.	Temp.	Salinity	Sigma-T
5	22.039	31.969	21.906
10	22.619	32.419	22.085
20	22.738	33.056	22.535
30	22.064	33.496	23.057
40	20.153	33.624	23.673

STATION US11611			
LATITUDE 41-34.7 N			
LONGITUDE 140-53.0 E			
DEPTH (m) 36			
Press.	Temp.	Salinity	Sigma-T
5	21.930	33.442	23.054
10	21.483	33.507	23.227
20	21.314	33.541	23.299
30	20.773	33.601	23.490

STATION US11614			
LATITUDE 41-40.8 N			
LONGITUDE 140-47.1 E			
DEPTH (m) 219			
Press.	Temp.	Salinity	Sigma-T
5	22.525	33.301	22.781
10	22.523	33.294	22.776
20	22.061	33.257	22.877
30	21.531	33.497	23.206
40	19.810	33.742	23.852
50	18.326	33.949	24.387
75	14.245	34.266	25.568
100	13.035	34.330	25.867
125	11.686	34.274	26.085
150	11.518	34.274	26.115
175	11.015	34.241	26.182
200	10.734	34.239	26.231

STATION US11617			
LATITUDE 42-04.2 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	19.513	32.705	23.138
10	19.013	33.020	23.505
20	18.675	33.457	23.924
30	17.693	33.618	24.289
40	15.597	33.743	24.872
50	13.419	33.828	25.401
75	9.081	33.500	25.931

STATION US11620			
LATITUDE 42-10.0 N			
LONGITUDE 141-19.8 E			
DEPTH (m) 351			
Press.	Temp.	Salinity	Sigma-T
5	18.944	33.334	23.763
10	18.949	33.334	23.761
20	18.763	33.336	23.809
30	16.476	33.866	24.767
40	14.663	34.061	25.321
50	13.650	34.117	25.578
75	12.004	34.132	25.914
100	11.072	34.095	26.058
125	10.251	34.020	26.144
150	9.533	33.961	26.218
175	8.343	33.857	26.325
200	6.706	33.691	26.427
250	3.435	33.494	26.643

STATION US11623			
LATITUDE 42-09.4 N			
LONGITUDE 140-53.2 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	19.384	32.753	23.207
10	19.384	32.801	23.244
20	18.627	33.504	23.972
30	18.263	33.660	24.182
40	16.059	33.931	24.912
50	14.356	34.036	25.367

STATION US11612			
LATITUDE 41-36.9 N			
LONGITUDE 140-51.1 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	23.119	33.249	22.573
10	22.845	33.351	22.728
20	22.249	33.500	23.009
30	21.990	33.549	23.118
40	21.363	33.558	23.298
50	20.654	33.647	23.558
75	14.554	34.043	25.330

STATION US11615			
LATITUDE 41-42.7 N			
LONGITUDE 140-45.1 E			
DEPTH (m) 84			
Press.	Temp.	Salinity	Sigma-T
5	21.951	33.464	23.065
10	21.954	33.464	23.064
20	21.539	33.544	23.239
30	19.488	33.776	23.961
40	18.818	33.873	24.206
50	17.410	34.028	24.670
75	13.746	34.199	25.621

STATION US11618			
LATITUDE 42-17.4 N			
LONGITUDE 140-54.1 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	18.767	33.201	23.705
10	18.691	33.316	23.812
20	18.076	33.370	24.005
30	16.910	33.453	24.348
40	16.313	33.642	24.632

STATION US11621			
LATITUDE 42-10.1 N			
LONGITUDE 141-09.9 E			
DEPTH (m) 119			
Press.	Temp.	Salinity	Sigma-T
5	19.128	32.986	23.450
10	18.911	33.076	23.574
20	17.311	33.610	24.374
30	15.674	33.909	24.982
40	14.809	34.068	25.295
50	13.257	34.012	25.576
75	12.934	34.051	25.671
100	12.690	34.082	25.743

STATION US11624			
LATITUDE 42-11.2 N			
LONGITUDE 140-41.4 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	19.898	32.498	22.881
10	19.883	32.665	23.012
20	19.938	32.732	23.049
30	17.776	33.525	24.197
40	14.557	33.591	24.981
50	11.006	33.446	25.564
75	10.765	33.856	25.926

STATION US11613			
LATITUDE 41-38.7 N			
LONGITUDE 140-49.4 E			
DEPTH (m) 332			
Press.	Temp.	Salinity	Sigma-T
5	23.530	33.107	22.346
10	23.550	33.102	22.337
20	23.038	33.397	22.708
30	22.717	33.612	22.962
40	21.676	33.684	23.308
50	18.656	33.951	24.306
75	14.797	34.121	25.339
100	12.998	34.282	25.837
125	12.373	34.277	25.956
150	11.628	34.249	26.075
175	11.414	34.253	26.119
200	11.190	34.250	26.157
250	10.918	34.246	26.203
300	10.536	34.250	26.274

STATION US11616			
LATITUDE 41-49.3 N			
LONGITUDE 141-13.1 E			
DEPTH (m) 166			
Press.	Temp.	Salinity	Sigma-T
5	19.450	33.419	23.699
10	18.863	33.465	23.883
20	16.815	33.466	24.381
30	16.061	33.556	24.624
40	13.714	33.661	25.212
50	13.104	33.744	25.399
75	11.990	33.854	25.701
100	10.493	33.884	25.996
125	9.541	33.835	26.119
150	8.644	33.806	26.239

STATION US11619			
LATITUDE 42-10.0 N			
LONGITUDE 141-29.9 E			
DEPTH (m) 544			
Press.	Temp.	Salinity	Sigma-T
5	20.116	33.413	23.521
10	19.843	33.409	23.589
20	17.307	33.868	24.573
30	16.263	33.978	24.902
40	14.417	34.038	25.356
50	13.082	34.110	25.687
75	12.195	34.119	25.868
100	11.497	34.087	25.974
125	11.290	34.136	26.050
150	10.060	34.035	26.188
175	8.461	33.876	26.322
200	6.642	33.694	26.438
250	3.972	33.496	26.592

STATION US11622			
LATITUDE 42-11.5 N			
LONGITUDE 141-02.6 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	19.141	32.959	23.426
10	19.121	32.988	23.454
20	18.338	33.187	23.801
30	18.129	33.676	24.227
40	16.815	33.784	24.624
50	14.765	33.848	25.135

STATION US11625			
LATITUDE 42-18.2 N			
LONGITUDE 140-42.0 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	19.661	32.720	23.111
10	19.639	32.795	23.174
20	18.649	33.531	23.987
30	17.615	33.690	24.362
40	15.422	33.851	24.994
50	13.801	34.076	25.514

STATION US11626			
LATITUDE 42-15.9 N			
LONGITUDE 140-36.3 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	20.032	32.442	22.803
10	20.024	32.497	22.847
20	18.935	33.292	23.733
30	18.245	33.592	24.134
40	15.658	33.916	24.991
50	9.640	33.232	25.631
75	8.326	33.491	26.041

STATION US11627			
LATITUDE 42-23.9 N			
LONGITUDE 140-31.5 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	20.425	32.460	22.714
10	20.393	32.458	22.721
20	20.112	32.571	22.881
30	15.930	33.341	24.487
40	13.358	33.632	25.261
50	10.581	33.475	25.662
75	8.784	33.640	26.087

STATION US11628			
LATITUDE 42-15.6 N			
LONGITUDE 140-47.6 E			
DEPTH (m) 69			
Press.	Temp.	Salinity	Sigma-T
5	19.559	32.782	23.185
10	19.192	32.979	23.429
20	18.577	33.297	23.826
30	17.714	33.635	24.296
40	16.182	33.942	24.892
50	14.384	34.027	25.354

STATION US11629			
LATITUDE 42-13.0 N			
LONGITUDE 140-55.9 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	19.198	33.072	23.498
10	19.118	33.348	23.729
20	18.187	33.593	24.149
30	17.364	33.786	24.496
40	15.935	33.869	24.892
50	15.207	34.022	25.173

STATION US11630			
LATITUDE 42-15.3 N			
LONGITUDE 141-05.0 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	19.110	33.120	23.557
10	18.902	33.451	23.863
20	16.989	33.466	24.339
30	16.441	33.564	24.542
40	16.277	33.947	24.874
50	15.239	33.981	25.134

STATION US11631			
LATITUDE 41-59.3 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 99			
Press.	Temp.	Salinity	Sigma-T
5	19.430	33.003	23.387
10	19.198	32.989	23.435
20	19.146	33.565	23.888
30	17.945	33.514	24.148
40	15.950	33.955	24.955
50	13.569	33.868	25.401
75	11.831	34.037	25.873

STATION US11632			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.7 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	19.804	32.975	23.269
10	19.289	33.047	23.456
20	18.880	33.368	23.805
30	18.566	33.568	24.036
40	15.794	33.958	24.993
50	14.180	33.970	25.354
75	12.054	34.027	25.823

STATION US11633			
LATITUDE 41-58.1 N			
LONGITUDE 140-59.4 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	20.055	32.586	22.907
10	19.783	32.597	22.986
20	18.822	33.233	23.716
30	18.574	33.525	24.001
40	16.251	33.850	24.806
50	12.724	33.400	25.207
75	12.178	33.971	25.756

STATION US11634			
LATITUDE 41-57.4 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 76			
Press.	Temp.	Salinity	Sigma-T
5	20.035	32.444	22.804
10	19.948	32.514	22.880
20	19.601	32.994	23.335
30	16.985	33.291	24.206
40	13.645	33.364	24.996
50	11.582	33.323	25.364
75	12.220	34.003	25.773

STATION US11635			
LATITUDE 41-56.0 N			
LONGITUDE 141-07.9 E			
DEPTH (m) 145			
Press.	Temp.	Salinity	Sigma-T
5	19.382	33.061	23.443
10	19.127	33.040	23.491
20	18.832	33.479	23.902
30	17.796	33.668	24.302
40	15.011	33.592	24.884
50	12.980	33.781	25.453
75	12.351	33.947	25.704
100	10.673	33.882	25.963
125	9.025	33.917	26.266

STATION US11636			
LATITUDE 42-42.6 N			
LONGITUDE 144-45.1 E			
DEPTH (m) 176			
Press.	Temp.	Salinity	Sigma-T
5	14.823	33.340	24.730
10	14.823	33.337	24.728
20	14.823	33.335	24.726
30	14.820	33.333	24.726
40	14.767	33.327	24.733
50	14.386	33.292	24.787
75	11.205	33.299	25.415
100	6.996	33.279	26.063
125	6.895	33.643	26.364
150	4.464	33.401	26.466
175	3.400	33.272	26.470

STATION US11637			
LATITUDE 43-43.4 N			
LONGITUDE 145-14.1 E			
DEPTH (m) 17			
Press.	Temp.	Salinity	Sigma-T
5	16.202	33.506	24.553
10	16.194	33.506	24.554

STATION US11638			
LATITUDE 43-43.2 N			
LONGITUDE 145-12.7 E			
DEPTH (m) 16			
Press.	Temp.	Salinity	Sigma-T
5	16.145	33.504	24.564
10	16.147	33.502	24.562

STATION US11639			
LATITUDE 43-54.3 N			
LONGITUDE 145-14.7 E			
DEPTH (m) 72			
Press.	Temp.	Salinity	Sigma-T
5	16.202	33.508	24.554
10	16.167	33.508	24.562
20	16.159	33.509	24.565
30	16.020	33.537	24.618
40	15.893	33.556	24.661
50	15.822	33.565	24.684

STATION US11640			
LATITUDE 43-56.5 N			
LONGITUDE 145-12.5 E			
DEPTH (m) 82			
Press.	Temp.	Salinity	Sigma-T
5	16.158	33.485	24.547
10	16.097	33.508	24.578
20	16.030	33.518	24.601
30	15.862	33.552	24.665
40	15.717	33.566	24.709
50	15.011	33.600	24.891
75	10.795	33.764	25.850

STATION US11641			
LATITUDE 43-57.2 N			
LONGITUDE 145-11.6 E			
DEPTH (m) 87			
Press.	Temp.	Salinity	Sigma-T
5	16.169	33.506	24.560
10	16.117	33.506	24.572
20	16.056	33.515	24.593
30	15.965	33.522	24.619
40	15.512	33.592	24.775
50	14.395	33.643	25.056
75	9.256	33.775	26.118

STATION US11642			
LATITUDE 44-01.3 N			
LONGITUDE 145-14.2 E			
DEPTH (m) 334			
Press.	Temp.	Salinity	Sigma-T
5	16.296	33.487	24.516
10	15.843	33.419	24.567
20	15.847	33.488	24.619
30	15.715	33.564	24.707
40	15.595	33.610	24.770
50	13.695	33.661	25.215
75	9.543	33.798	26.089
100	8.642	33.794	26.230
125	7.635	33.743	26.340
150	7.000	33.718	26.409
175	6.135	33.674	26.488
200	5.088	33.613	26.565
250	3.139	33.457	26.641

STATION US11643			
LATITUDE 44-00.5 N			
LONGITUDE 145-16.5 E			
DEPTH (m) 428			
Press.	Temp.	Salinity	Sigma-T
5	16.317	33.506	24.526
10	16.229	33.500	24.542
20	16.168	33.505	24.560
30	15.878	33.552	24.661
40	15.550	33.610	24.780
50	14.300	33.655	25.085
75	10.712	33.811	25.900
100	9.099	33.799	26.162
125	7.650	33.744	26.338
150	7.018	33.712	26.402
175	5.931	33.619	26.470
200	4.908	33.575	26.556
250	2.727	33.424	26.651
300	1.680	33.388	26.704
400	1.165	33.443	26.783

STATION US11644			
LATITUDE 43-59.6 N			
LONGITUDE 145-18.9 E			
DEPTH (m) 278			
Press.	Temp.	Salinity	Sigma-T
5	16.332	33.506	24.523
10	16.224	33.505	24.547
20	16.175	33.507	24.559
30	16.115	33.511	24.576
40	15.707	33.571	24.715
50	13.776	33.662	25.200
75	11.243	33.798	25.795
100	9.462	33.816	26.116
125	8.301	33.780	26.271
150	6.791	33.683	26.409
175	5.751	33.612	26.487
200	4.534	33.555	26.581
250	2.278	33.399	26.668

STATION US11645			
LATITUDE 44-03.2 N			
LONGITUDE 145-23.4 E			
DEPTH (m) 517			
Press.	Temp.	Salinity	Sigma-T
5	16.103	33.472	24.549
10	15.973	33.484	24.587
20	15.953	33.495	24.601
30	15.864	33.536	24.652
40	15.214	33.591	24.839
50	14.525	33.648	25.032
75	11.812	33.774	25.672
100	9.839	33.790	26.034
125	8.435	33.779	26.250
150	6.977	33.703	26.400
175	5.405	33.589	26.510
200	3.966	33.491	26.589
250	1.828	33.392	26.697
300	1.582	33.425	26.740
400	1.262	33.459	26.789

STATION US11646			
LATITUDE 44-04.6 N			
LONGITUDE 145-20.5 E			
DEPTH (m) 1097			
Press.	Temp.	Salinity	Sigma-T
5	16.210	33.516	24.558
10	16.096	33.512	24.581
20	15.985	33.511	24.606
30	15.969	33.512	24.610
40	15.890	33.522	24.636
50	14.559	33.626	25.007
75	11.807	33.748	25.653
100	9.881	33.806	26.040
125	9.202	33.806	26.151
150	8.386	33.774	26.253
175	5.224	33.537	26.490
200	4.000	33.518	26.607
250	2.762	33.446	26.666
300	1.481	33.377	26.709
400	1.634	33.501	26.798
500	1.359	33.554	26.859

STATION US11647			
LATITUDE 44-06.1 N			
LONGITUDE 145-17.0 E			
DEPTH (m) 490			
Press.	Temp.	Salinity	Sigma-T
5	16.104	33.481	24.556
10	15.997	33.477	24.577
20	15.967	33.473	24.581
30	16.004	33.505	24.597
40	15.889	33.526	24.639
50	15.147	33.591	24.853
75	12.143	33.741	25.584
100	10.433	33.803	25.943
125	9.043	33.818	26.186
150	8.255	33.781	26.279
175	7.151	33.714	26.385
200	5.801	33.607	26.476
250	3.465	33.477	26.627
300	2.176	33.439	26.707
400	1.225	33.447	26.782

STATION US11648			
LATITUDE 44-10.1 N			
LONGITUDE 145-20.7 E			
DEPTH (m) 274			
Press.	Temp.	Salinity	Sigma-T
5	16.160	33.474	24.538
10	15.895	33.489	24.609
20	15.720	33.535	24.684
30	15.602	33.558	24.728
40	15.361	33.581	24.799
50	14.814	33.617	24.946
75	12.928	33.733	25.426
100	10.317	33.793	25.956
125	8.850	33.800	26.202
150	7.745	33.756	26.334
175	6.791	33.698	26.421
200	5.406	33.608	26.524
250	4.324	33.557	26.605

STATION US11649			
LATITUDE 44-09.0 N			
LONGITUDE 145-24.0 E			
DEPTH (m) 1450			
Press.	Temp.	Salinity	Sigma-T
5	16.171	32.620	23.879
10	16.149	33.116	24.265
20	15.932	33.393	24.527
30	15.858	33.456	24.592
40	15.005	33.772	25.025
50	13.775	33.958	25.429
75	11.833	33.998	25.842
100	10.408	34.008	26.108
125	8.503	34.078	26.474
150	7.740	33.859	26.416
175	7.028	33.862	26.519
200	6.312	33.823	26.583
250	3.527	33.675	26.779
300	1.934	33.548	26.814
400	1.513	33.525	26.826
500	1.335	33.559	26.865

		STATION	US11650	
		LATITUDE	44-07.5	N
		LONGITUDE	145-27.6	E
		DEPTH (m)	1255	
Press.	Temp.	Salinity	Sigma-T	
5	16.242	33.519	24.554	
10	16.138	33.515	24.574	
20	15.841	33.530	24.653	
30	15.607	33.565	24.732	
40	14.065	33.673	25.148	
50	13.569	33.700	25.272	
75	10.755	33.776	25.866	
100	9.066	33.779	26.151	
125	8.120	33.772	26.292	
150	7.141	33.730	26.399	
175	6.455	33.712	26.477	
200	5.238	33.601	26.539	
250	2.383	33.390	26.652	
300	1.750	33.411	26.717	
400	1.395	33.500	26.813	
500	1.402	33.600	26.894	

		STATION	US11651	
		LATITUDE	44-15.1	N
		LONGITUDE	145-23.5	E
		DEPTH (m)	301	
Press.	Temp.	Salinity	Sigma-T	
5	15.376	33.536	24.761	
10	15.317	33.545	24.781	
20	15.227	33.557	24.810	
30	15.116	33.549	24.828	
40	15.157	33.575	24.839	
50	14.891	33.622	24.934	
75	14.041	33.682	25.160	
100	11.656	33.756	25.688	
125	9.814	33.781	26.031	
150	7.167	33.722	26.389	
175	5.611	33.630	26.518	
200	5.256	33.616	26.549	
250	3.639	33.519	26.644	

		STATION	US11652	
		LATITUDE	44-13.7	N
		LONGITUDE	145-26.4	E
		DEPTH (m)	1603	
Press.	Temp.	Salinity	Sigma-T	
5	15.941	33.550	24.646	
10	15.621	33.593	24.751	
20	15.446	33.608	24.801	
30	15.336	33.627	24.840	
40	14.888	33.675	24.975	
50	14.867	33.682	24.985	
75	13.335	33.719	25.334	
100	10.786	33.754	25.843	
125	9.058	33.794	26.164	
150	7.212	33.706	26.370	
175	6.102	33.683	26.499	
200	4.959	33.599	26.569	
250	3.584	33.522	26.652	
300	1.743	33.419	26.724	
400	1.884	33.530	26.803	
500	1.401	33.583	26.880	

		STATION	US11653	
		LATITUDE	44-12.1	N
		LONGITUDE	145-30.0	E
		DEPTH (m)	2081	
Press.	Temp.	Salinity	Sigma-T	
5	15.501	33.492	24.700	
10	15.508	33.492	24.698	
20	15.279	33.539	24.784	
30	14.240	33.634	25.081	
40	13.768	33.679	25.214	
50	13.148	33.728	25.378	
75	12.023	33.778	25.636	
100	10.069	33.799	26.003	
125	8.240	33.772	26.274	
150	7.608	33.750	26.349	
175	5.851	33.644	26.500	
200	4.934	33.599	26.572	
250	2.895	33.477	26.679	
300	2.071	33.433	26.711	
400	1.593	33.506	26.805	
500	1.437	33.618	26.905	

		STATION	US11654	
		LATITUDE	44-17.2	N
		LONGITUDE	145-33.1	E
		DEPTH (m)	2084	
Press.	Temp.	Salinity	Sigma-T	
5	15.265	33.545	24.793	
10	15.269	33.546	24.792	
20	15.264	33.546	24.793	
30	15.250	33.544	24.795	
40	15.109	33.536	24.819	
50	14.652	33.576	24.949	
75	14.066	33.681	25.154	
100	12.050	33.699	25.569	
125	10.514	33.783	25.914	
150	8.399	33.833	26.297	
175	6.972	33.704	26.402	
200	6.022	33.665	26.495	
250	1.938	33.383	26.681	
300	1.570	33.420	26.737	
400	1.467	33.517	26.822	

		STATION	US11655	
		LATITUDE	44-18.8	N
		LONGITUDE	145-28.5	E
		DEPTH (m)	1865	
Press.	Temp.	Salinity	Sigma-T	
5	15.176	33.462	24.748	
10	15.174	33.466	24.752	
20	15.224	33.591	24.837	
30	15.250	33.634	24.864	
40	15.272	33.640	24.864	
50	15.108	33.645	24.904	
75	14.330	33.684	25.101	
100	13.102	33.724	25.384	
125	9.685	33.883	26.132	
150	8.302	33.820	26.303	
175	6.971	33.735	26.426	
200	5.815	33.696	26.545	
250	2.477	33.428	26.675	
300	1.512	33.420	26.741	
400	1.474	33.502	26.810	

		STATION	US11656	
		LATITUDE	44-20.4	N
		LONGITUDE	145-24.8	E
		DEPTH (m)	1011	
Press.	Temp.	Salinity	Sigma-T	
5	15.974	33.535	24.627	
10	15.684	33.570	24.719	
20	15.296	33.590	24.820	
30	15.357	33.668	24.867	
40	15.090	33.653	24.914	
50	14.819	33.647	24.968	
75	13.095	33.686	25.356	
100	10.309	33.856	26.006	
125	8.044	33.741	26.279	
150	7.277	33.730	26.380	
175	5.411	33.662	26.567	
200	3.906	33.502	26.604	
250	3.128	33.448	26.635	
300	1.606	33.409	26.725	
400	3.435	33.703	26.810	

		STATION	US11657	
		LATITUDE	44-21.6	N
		LONGITUDE	145-21.6	E
		DEPTH (m)	73	
Press.	Temp.	Salinity	Sigma-T	
5	15.493	33.575	24.765	
10	15.416	33.579	24.785	
20	15.367	33.580	24.797	
30	15.288	33.587	24.820	
40	15.125	33.606	24.870	
50	13.876	33.694	25.204	

		STATION	US11658	
		LATITUDE	44-23.1	N
		LONGITUDE	145-17.7	E
		DEPTH (m)	708	
Press.	Temp.	Salinity	Sigma-T	
5	14.764	33.343	24.745	
10	14.932	33.451	24.792	
20	14.854	33.443	24.803	
30	14.609	33.466	24.874	
40	12.992	33.631	25.334	
50	12.819	33.648	25.381	
75	7.521	33.536	26.194	
100	5.798	33.583	26.458	
125	5.431	33.613	26.526	
150	3.519	33.488	26.631	
175	4.469	33.610	26.632	
200	4.738	33.676	26.655	
250	2.067	33.392	26.679	
300	2.587	33.494	26.719	
400	2.123	33.472	26.738	
500	1.906	33.631	26.882	

STATION US11659			
LATITUDE 44-24.7 N			
LONGITUDE 145-14.1 E			
DEPTH (m) 1436			
Press.	Temp.	Salinity	Sigma-T
5	12.511	32.198	24.317
10	12.770	32.422	24.441
20	12.004	32.663	24.774
30	14.048	33.615	25.107
40	13.448	33.500	25.141
50	8.368	32.859	25.538
75	3.599	33.333	26.499
100	1.789	33.287	26.615
125	3.045	33.459	26.651
150	1.855	33.376	26.681
175	1.479	33.397	26.725
200	2.572	33.517	26.738
250	2.236	33.484	26.739
300	2.068	33.496	26.762
400	2.660	33.608	26.803

STATION US11662			
LATITUDE 44-17.9 N			
LONGITUDE 145-15.3 E			
DEPTH (m) 117			
Press.	Temp.	Salinity	Sigma-T
5	14.653	33.123	24.599
10	14.715	33.153	24.609
20	14.748	33.231	24.663
30	15.120	33.409	24.720
40	15.067	33.406	24.729
50	14.860	33.413	24.779
75	9.292	33.731	26.078
100	8.309	33.731	26.231

STATION US11665			
LATITUDE 44-16.7 N			
LONGITUDE 145-05.3 E			
DEPTH (m) 850			
Press.	Temp.	Salinity	Sigma-T
5	12.723	32.001	24.125
10	12.639	32.005	24.143
20	12.827	32.258	24.303
30	12.188	32.441	24.567
40	11.678	33.372	25.385
50	9.064	33.475	25.914
75	1.831	32.769	26.196
100	6.387	33.775	26.536
125	4.787	33.624	26.609
150	5.010	33.712	26.653
175	4.086	33.578	26.647
200	3.952	33.627	26.699
250	2.774	33.505	26.711
300	2.313	33.481	26.730
400	2.246	33.540	26.783

STATION US11668			
LATITUDE 44-13.3 N			
LONGITUDE 144-59.8 E			
DEPTH (m) 670			
Press.	Temp.	Salinity	Sigma-T
5	12.807	32.010	24.115
10	13.008	32.107	24.151
20	12.953	32.208	24.240
30	11.836	32.396	24.598
40	10.574	32.798	25.136
50	5.640	32.820	25.873
75	3.095	33.135	26.388
100	0.542	33.049	26.503
125	0.727	33.135	26.562
150	-0.135	33.145	26.615
175	1.053	33.324	26.695
200	1.135	33.338	26.701
250	1.479	33.395	26.723
300	1.323	33.409	26.745
400	2.296	33.561	26.796
500	2.067	33.640	26.877

STATION US11660			
LATITUDE 44-20.8 N			
LONGITUDE 145-09.3 E			
DEPTH (m) 1200			
Press.	Temp.	Salinity	Sigma-T
5	12.703	32.339	24.390
10	14.487	33.230	24.718
20	15.114	33.541	24.822
30	14.439	33.567	24.987
40	13.953	33.552	25.078
50	10.867	33.623	25.727
75	5.752	33.131	26.106
100	4.950	33.618	26.586
125	5.487	33.719	26.603
150	5.058	33.679	26.621
175	4.414	33.612	26.639
200	4.034	33.628	26.692
250	2.755	33.498	26.708
300	2.469	33.525	26.753
400	1.932	33.537	26.805

STATION US11663			
LATITUDE 44-14.5 N			
LONGITUDE 145-11.8 E			
DEPTH (m) 160			
Press.	Temp.	Salinity	Sigma-T
5	15.041	33.288	24.644
10	15.065	33.322	24.664
20	15.081	33.384	24.709
30	15.068	33.389	24.716
40	15.055	33.392	24.720
50	15.020	33.395	24.730
75	14.990	33.397	24.738
100	7.472	33.705	26.333
125	7.316	33.768	26.404

STATION US11666			
LATITUDE 44-11.3 N			
LONGITUDE 145-06.8 E			
DEPTH (m) 290			
Press.	Temp.	Salinity	Sigma-T
5	15.140	33.261	24.601
10	15.179	33.274	24.603
20	15.320	33.348	24.629
30	15.413	33.401	24.649
40	15.369	33.453	24.699
50	14.657	33.402	24.814
75	14.293	33.488	24.958
100	9.118	33.600	26.003
125	7.147	33.716	26.387
150	6.717	33.704	26.436
175	5.719	33.562	26.451
200	5.489	33.575	26.489

STATION US11669			
LATITUDE 42-32.0 N			
LONGITUDE 143-54.4 E			
DEPTH (m) 144			
Press.	Temp.	Salinity	Sigma-T
5	14.419	33.198	24.708
10	14.379	33.198	24.716
20	14.101	33.242	24.808
30	13.848	33.235	24.854
40	12.509	33.170	25.071
50	11.118	33.158	25.320
75	6.739	33.185	26.023
100	3.216	33.215	26.441
125	3.187	33.334	26.539

STATION US11661			
LATITUDE 44-19.3 N			
LONGITUDE 145-12.8 E			
DEPTH (m) 745			
Press.	Temp.	Salinity	Sigma-T
5	15.025	33.418	24.747
10	15.175	33.463	24.749
20	15.275	33.542	24.788
30	15.091	33.509	24.803
40	14.828	33.463	24.825
50	11.104	33.670	25.721
75	9.820	33.754	26.010
100	7.496	33.774	26.384
125	5.505	33.622	26.524
150	4.620	33.561	26.577
175	4.189	33.532	26.600
200	4.697	33.658	26.645
250	4.322	33.661	26.688
300	3.404	33.608	26.737
400	2.099	33.479	26.746

STATION US11664			
LATITUDE 44-15.6 N			
LONGITUDE 145-08.8 E			
DEPTH (m) 620			
Press.	Temp.	Salinity	Sigma-T
5	14.186	32.818	24.463
10	15.080	33.398	24.719
20	15.052	33.400	24.727
30	15.050	33.397	24.726
40	14.971	33.401	24.746
50	14.929	33.406	24.759
75	9.683	33.560	25.880
100	7.931	33.748	26.301
125	6.620	33.646	26.403
150	6.659	33.779	26.503
175	5.844	33.710	26.553
200	5.393	33.689	26.591
250	4.267	33.661	26.693
300	3.122	33.555	26.721
400	2.141	33.505	26.763

STATION US11667			
LATITUDE 44-11.9 N			
LONGITUDE 145-03.7 E			
DEPTH (m) 440			
Press.	Temp.	Salinity	Sigma-T
5	14.715	32.975	24.472
10	14.743	32.990	24.478
20	14.936	33.097	24.519
30	15.589	33.410	24.617
40	15.510	33.383	24.614
50	15.517	33.396	24.622
75	9.230	33.430	25.853
100	7.438	33.764	26.385
125	6.498	33.709	26.469
150	6.337	33.691	26.476
175	5.523	33.617	26.518
200	4.167	33.487	26.566
250	4.193	33.585	26.641
300	3.281	33.558	26.708
400	2.255	33.498	26.749

STATION US11670			
LATITUDE 42-04.4 N			
LONGITUDE 143-40.5 E			
DEPTH (m) 316			
Press.	Temp.	Salinity	Sigma-T
5	14.888	33.234	24.635
10	14.765	33.227	24.656
20	14.620	33.232	24.691
30	14.594	33.234	24.698
40	14.570	33.236	24.705
50	14.538	33.238	24.713
75	11.186	33.321	25.435
100	8.388	33.400	25.960
125	9.304	33.993	26.281
150	7.404	33.722	26.356
175	5.737	33.530	26.424
200	2.823	33.313	26.554
250	2.280	33.383	26.655
300	2.428	33.456	26.701

STATION US11671			
LATITUDE 41-57.7 N			
LONGITUDE 142-46.5 E			
DEPTH (m) 280			
Press.	Temp.	Salinity	Sigma-T
5	16.762	33.567	24.470
10	16.726	33.584	24.492
20	16.445	33.602	24.571
30	14.991	33.914	25.137
40	14.270	33.945	25.315
50	13.791	34.023	25.476
75	12.756	34.095	25.741
100	10.936	34.054	26.050
125	9.583	33.973	26.220
150	7.659	33.674	26.282
175	7.690	33.695	26.294
200	6.980	33.611	26.328
250	5.243	33.526	26.479

STATION US11674			
LATITUDE 41-59.5 N			
LONGITUDE 141-01.9 E			
DEPTH (m) 99			
Press.	Temp.	Salinity	Sigma-T
5	17.547	33.172	23.982
10	17.429	33.175	24.013
20	17.397	33.191	24.032
30	17.178	33.324	24.187
40	13.840	33.931	25.394
50	12.289	34.054	25.799
75	8.852	33.891	26.273

STATION US11677			
LATITUDE 41-57.4 N			
LONGITUDE 140-58.2 E			
DEPTH (m) 77			
Press.	Temp.	Salinity	Sigma-T
5	17.512	33.018	23.873
10	17.459	33.026	23.891
20	16.980	33.392	24.285
30	14.502	33.637	25.028
40	14.135	33.949	25.347
50	9.883	33.589	25.870

STATION US11680			
LATITUDE 41-38.7 N			
LONGITUDE 140-49.4 E			
DEPTH (m) 309			
Press.	Temp.	Salinity	Sigma-T
5	18.642	33.488	23.956
10	18.370	33.538	24.062
20	17.464	33.833	24.508
30	15.859	34.039	25.040
40	15.305	34.243	25.322
50	14.766	34.293	25.477
75	12.055	34.249	25.995
100	10.542	34.185	26.222
125	9.904	34.177	26.325
150	9.468	34.184	26.403
175	9.332	34.183	26.425
200	9.084	34.182	26.464
250	8.595	34.163	26.526

STATION US11672			
LATITUDE 42-24.4 N			
LONGITUDE 141-26.6 E			
DEPTH (m) 175			
Press.	Temp.	Salinity	Sigma-T
5	17.455	33.515	24.267
10	17.456	33.517	24.268
20	17.329	33.564	24.335
30	17.085	33.564	24.393
40	16.189	33.775	24.762
50	14.497	34.064	25.359
75	11.656	34.072	25.933
100	10.613	34.008	26.072
125	10.093	34.014	26.166
150	8.579	33.919	26.338

STATION US11675			
LATITUDE 41-58.7 N			
LONGITUDE 141-00.6 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	17.800	33.172	23.921
10	17.554	33.178	23.985
20	17.375	33.183	24.032
30	16.357	33.518	24.526
40	13.102	33.700	25.365
50	11.716	34.050	25.905
75	8.711	33.843	26.258

STATION US11678			
LATITUDE 41-35.3 N			
LONGITUDE 140-53.6 E			
DEPTH (m) 50			
Press.	Temp.	Salinity	Sigma-T
5	19.280	33.462	23.775
10	19.702	33.415	23.631
20	18.548	33.596	24.062
30	18.464	33.620	24.101
40	17.807	33.723	24.341

STATION US11681			
LATITUDE 41-40.7 N			
LONGITUDE 140-47.3 E			
DEPTH (m) 225			
Press.	Temp.	Salinity	Sigma-T
5	17.908	33.566	24.196
10	17.773	33.571	24.233
20	17.430	33.597	24.336
30	15.882	33.743	24.807
40	14.754	33.846	25.136
50	13.823	33.983	25.438
75	11.955	34.070	25.875
100	10.948	34.153	26.125
125	9.949	34.200	26.336
150	9.574	34.194	26.394
175	8.908	34.158	26.473
200	8.725	34.164	26.507

STATION US11673			
LATITUDE 42-10.3 N			
LONGITUDE 141-09.4 E			
DEPTH (m) 114			
Press.	Temp.	Salinity	Sigma-T
5	17.562	33.181	23.986
10	17.561	33.176	23.982
20	17.556	33.174	23.981
30	16.865	33.589	24.463
40	14.843	33.924	25.177
50	13.542	34.023	25.526
75	11.317	34.066	25.991
100	9.522	33.968	26.226

STATION US11676			
LATITUDE 41-58.1 N			
LONGITUDE 140-59.4 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	17.578	33.007	23.848
10	17.555	33.064	23.897
20	17.424	33.204	24.036
30	15.865	33.587	24.692
40	13.176	33.704	25.354
50	11.210	34.016	25.971
75	9.157	33.906	26.236

STATION US11679			
LATITUDE 41-37.1 N			
LONGITUDE 140-51.4 E			
DEPTH (m) 97			
Press.	Temp.	Salinity	Sigma-T
5	19.610	33.354	23.608
10	19.254	33.467	23.785
20	18.405	33.652	24.141
30	17.669	33.775	24.414
40	16.177	34.018	24.952
50	14.199	34.251	25.566
75	12.888	34.282	25.859

STATION US11682			
LATITUDE 41-42.7 N			
LONGITUDE 140-45.0 E			
DEPTH (m) 85			
Press.	Temp.	Salinity	Sigma-T
5	16.050	33.713	24.746
10	16.040	33.714	24.750
20	15.351	33.775	24.951
30	14.127	33.898	25.309
40	13.162	33.970	25.563
50	12.136	34.054	25.828
75	10.884	34.165	26.146

THE " USHIO MARU "

CRUISE 239

CRUISE 240

CRUISE 241

IN OCTOBER - NOVEMBER 2011

1. Cruise Itinerary

Cruise 239

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

Cruise 240

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

Cruise 241

Departure from Hakodate	Nov. 7, 2011
Start hydrographic research (US11701)	7
Arrival at Aomori	7
Departure from Aomori	8
Finish hydrographic research (US11721)	8
Return to Hakodate	9
Total coverage 185.4 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

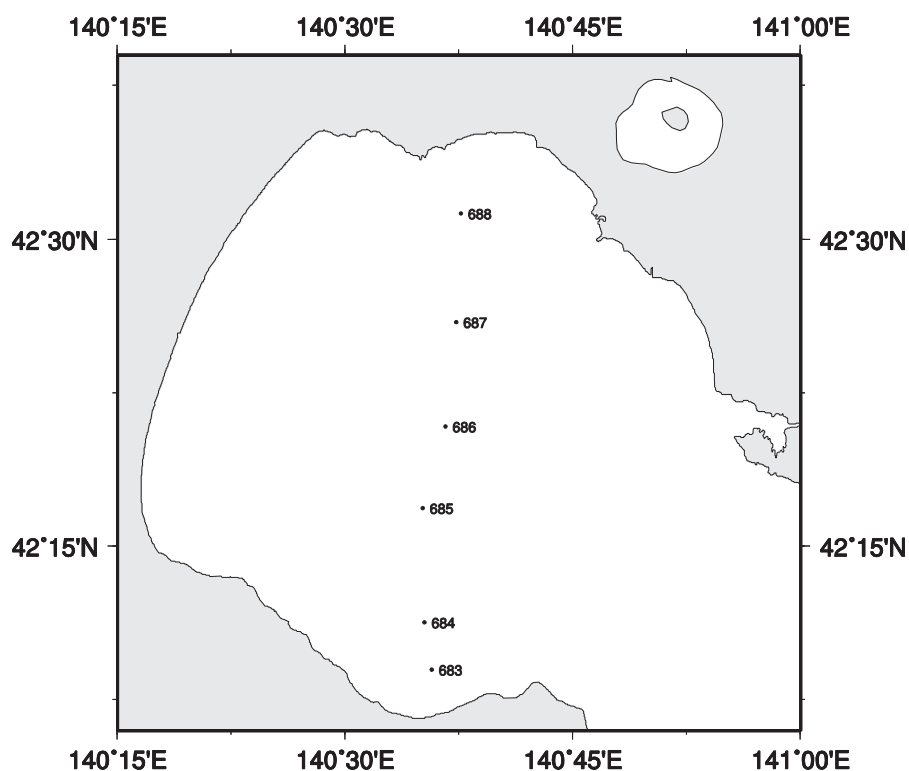


Figure 1. Oceanographic stations (Cruise 239)

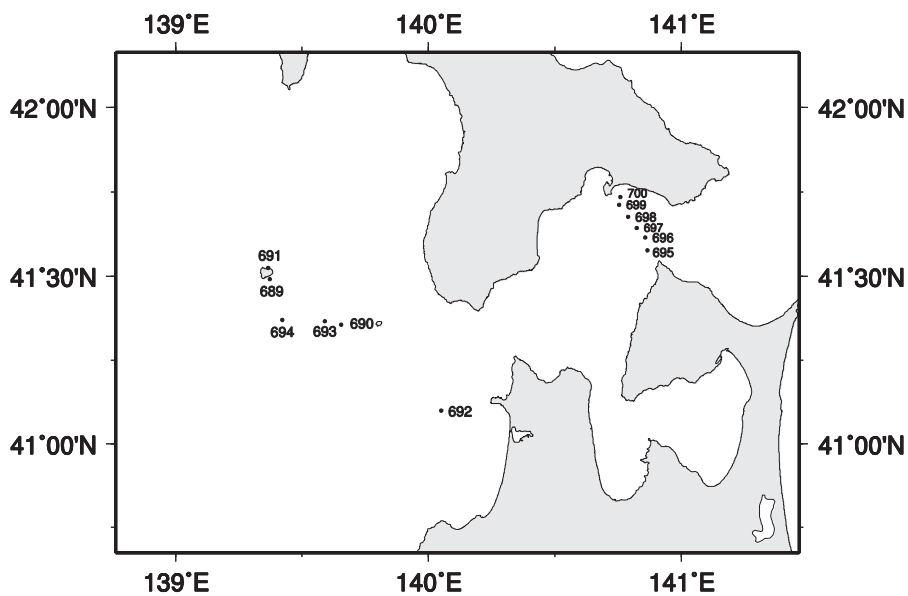


Figure 2. Oceanographic stations (Cruise 240)

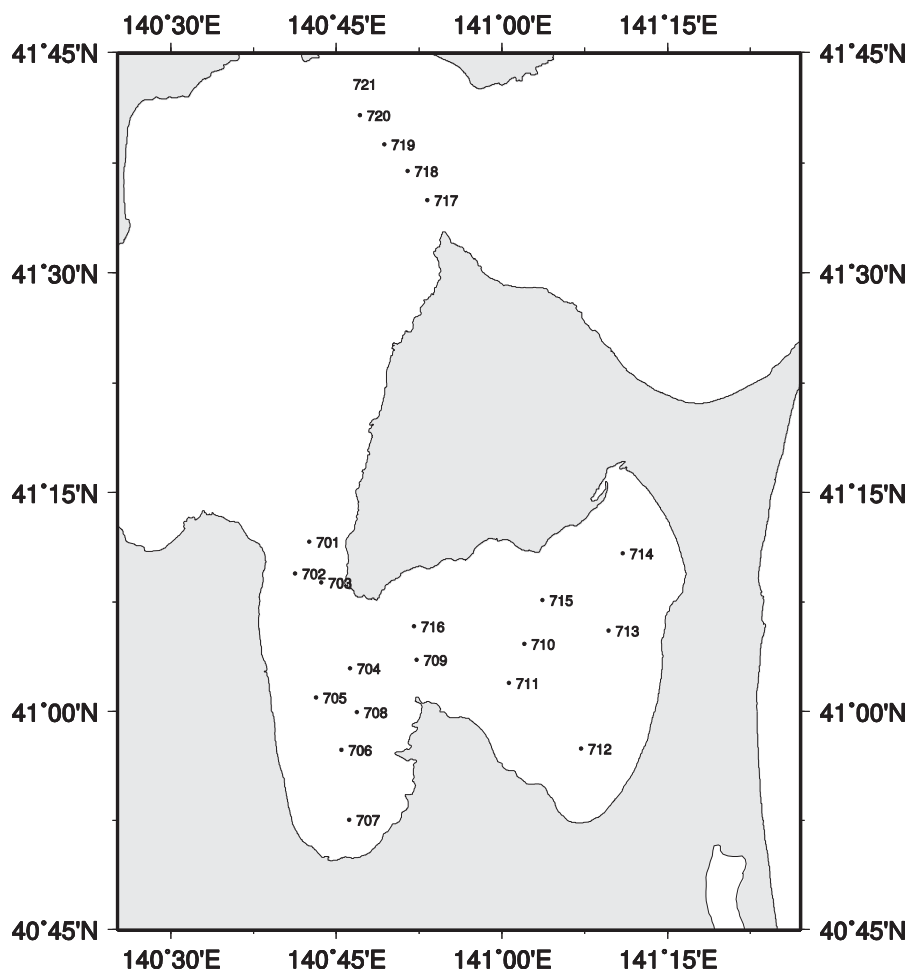


Figure 3. Oceanographic stations (Cruise 241)

Table 1: List of oceanographic stations

Cruise 239

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

Cruise 240

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

Cruise 241

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

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

THE " USHIO MARU "

CRUISE 242

CRUISE 243

CRUISE 244

CRUISE 245

IN NOVEMBER - DECEMBER 2011

1. Cruise Itinerary

Cruise 242

Departure from Hakodate	Nov. 14, 2011
Start hydrographic research (US11722)	14
Arrival at Hakodate	16
Departure from Hakodate	17
Finish hydrographic research (US11745)	18
Return to Hakodate	19
Total coverage 344.8 miles	

Cruise 243

Departure from Hakodate	Nov. 28, 2011
Start hydrographic research (US11746)	28
Arrival at Fukushima	28
Departure from Fukushima	29
Finish hydrographic research (US11769)	29
Return to Hakodate	29
Total coverage 121.1 miles	

Cruise 244

Departure from Hakodate	Dec. 12, 2011
Start hydrographic research (US11770)	13
Arrival at Usujiri	13
Departure from Usujiri	14
Retrieval mooring ADCP system	14
Arrival at and departure from Mori	14
Arrival at Muroran (anchorage)	14
Departure from Muroran	15
Set mooring ADCP system	15
Arrival at and departure from Usujiri	15
Finish hydrographic research (US11788)	15
Return to Hakodate	16
Total coverage 346.3 miles	

Cruise 245

Departure from Hakodate	Dec. 20, 2011
Start hydrographic research (US11789)	20
Arrival at Fukushima	20
Departure from Fukushima	21
Finish hydrographic research (US11818)	21
Return to Hakodate	22
Total coverage 147.8 miles	

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

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

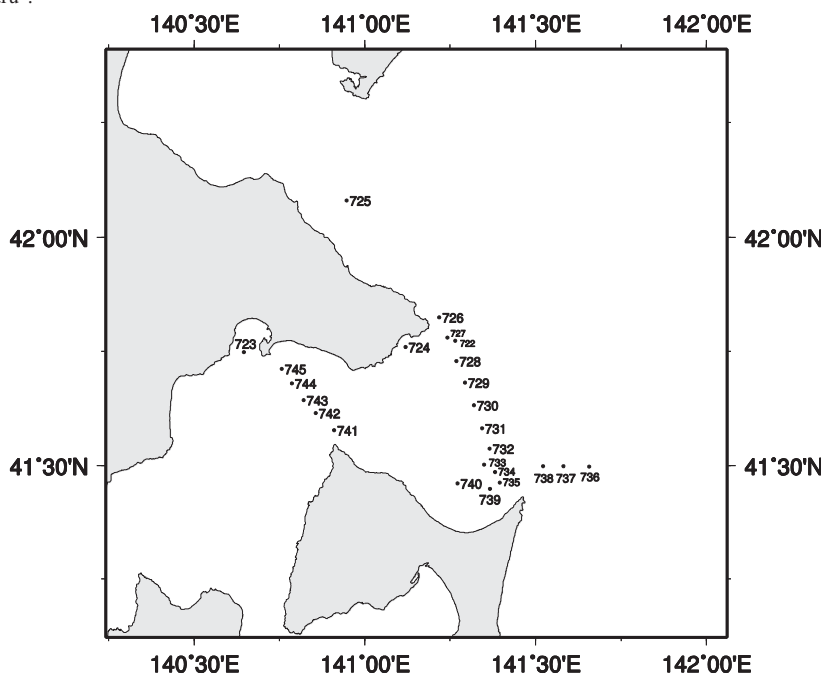


Figure 1. Oceanographic stations (Cruise 242)

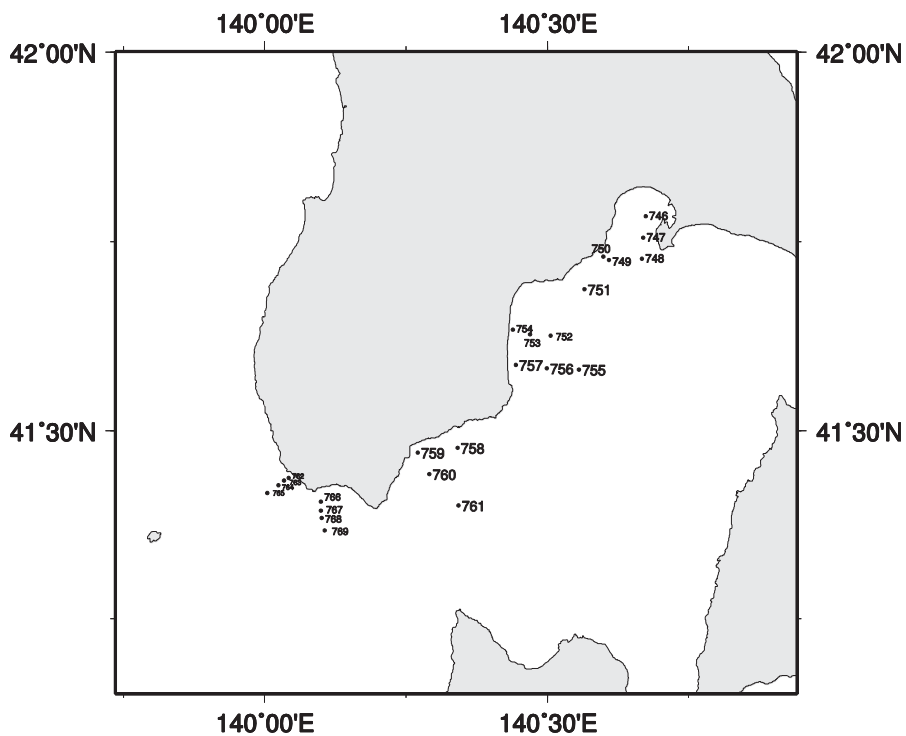


Figure 2. Oceanographic stations (Cruise 243)

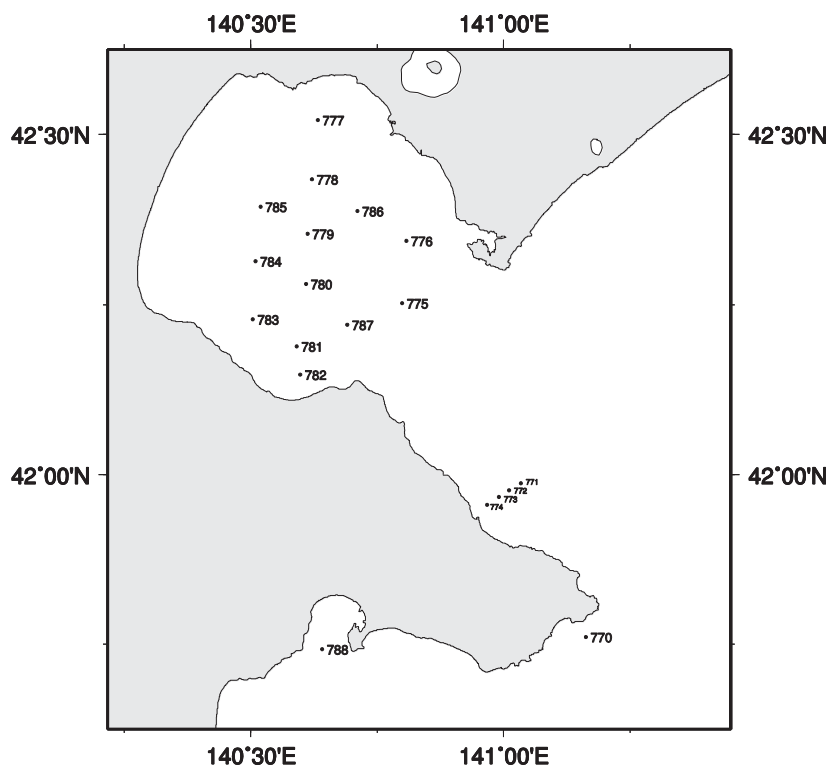


Figure 3. Oceanographic stations (Cruise 244)

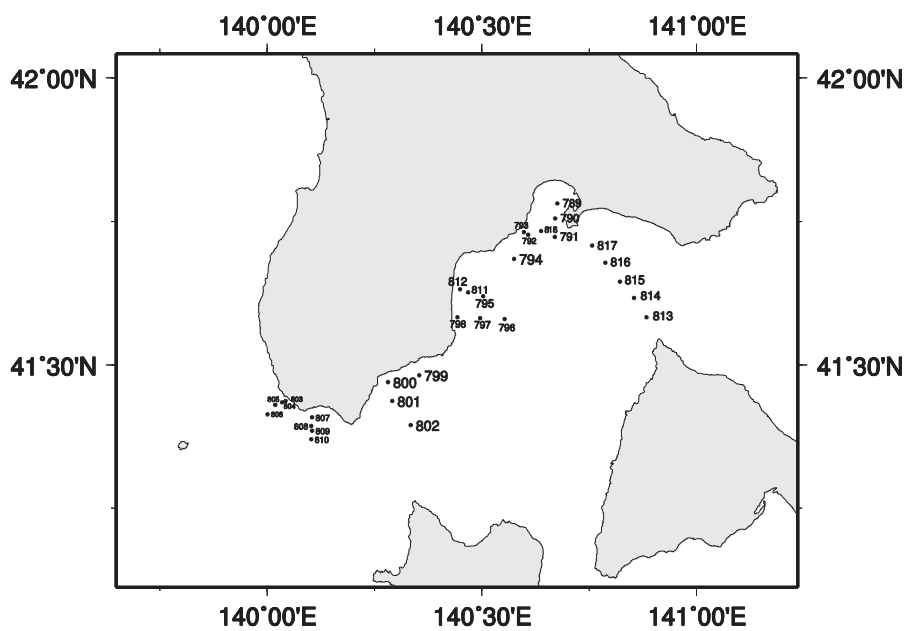


Figure 4. Oceanographic stations (Cruise 245)

Table 1: List of oceanographic stations

Cruise 242

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11722	41-46.5	141-15.8	11/14	1849-1855	211	West-3	NW -1	West-5	6.6	13.7	bc	1018.1
US11723	41-45.0	140-38.7	11/16	0549-0552	48	WNW-1	SW -1	WNW-3	2.3	14.3	s	1024.1
US11724	41-45.7	141-07.1	11/18	0347-0350	53	NW -1	WSW-1	NW -3	3.6	13.3	bc	1027.6
US11725	42-04.9	140-56.7	11/18	0639-0647	81	SW -1	SW -1	SW -3	6.8	12.8	bc	1026.0
US11726	41-49.6	141-13.0	11/18	0901-0915	171	SE -1	SE -1	SE -3	9.4	13.1	bc	1024.2
US11727	41-46.9	141-14.4	11/18	1023-1037	193	SSW-3	SW -1	SSW-5	10.2	12.8	c	1023.1
US11728	41-43.8	141-16.0	11/18	1100-1115	228	SW -3	SW -1	SW -5	10.4	12.9	c	1023.0
US11729	41-41.0	141-47.5	11/18	1155-1210	232	SW -2	SW -1	SW -4	11.1	12.6	c	1022.1
US11730	41-38.0	141-19.1	11/18	1238-1251	215	SW -3	SW -1	SW -5	11.6	12.8	c	1021.4
US11731	41-35.0	141-20.5	11/18	1331-1349	313	SW -3	SW -1	SW -5	12.2	13.8	c	1020.6
US11732	41-32.3	141-21.8	11/18	1411-1425	260	SW -2	SW -1	SW -4	12.8	14.8	c	1020.6
US11733	41-30.2	141-20.9	11/18	1444-1453	230	SW -2	SW -1	SW -4	12.9	14.7	c	1020.6
US11734	41-29.2	141-22.8	11/18	1505-1515	129	SW -2	SW -1	SW -4	13.2	14.7	c	1020.6
US11735	41-27.8	141-23.6	11/18	1527-1533	61	SSW-2	SW -1	SSW-4	13.0	14.6	bc	1020.1
US11736	41-29.9	141-39.3	11/18	1644-1706	607	SSW-3	South-1	SSW-5	12.6	15.2	bc	1020.3
US11737	41-30.0	141-34.8	11/18	1732-1737	108	SSW-3	SSW-1	SSW-5	12.7	15.0	bc	1019.1
US11738	41-30.0	141-31.2	11/18	1758-1802	67	SSW-3	SSW-1	SSW-5	12.6	15.2	c	1019.1
US11739	41-27.0	141-21.9	11/18	1852-1856	71	South-3	SSW-1	South-5	12.2	14.7	c	1018.6
US11740	41-27.7	141-16.2	11/18	1922-1928	154	South-2	SSW-1	South-4	12.5	14.7	c	1018.6
US11741	41-34.7	140-54.5	11/18	2108-2112	52	SSW-2	SSW-1	SSW-4	12.7	14.8	c	1017.6
US11742	41-37.0	140-51.3	11/18	2133-2137	95	SSW-2	SSW-1	SSW-4	13.3	14.9	c	1017.1
US11743	41-38.7	140-49.2	11/18	2153-2204	340	SSW-2	SSW-1	SSW-4	13.4	13.8	c	1016.7
US11744	41-40.9	140-47.1	11/18	2220-2227	212	SSW-2	SSW-1	SSW-4	13.3	13.1	c	1016.1
US11745	41-42.8	140-45.3	11/18	2244-2250	83	SSW-2	SSW-1	SSW-4	13.2	13.0	c	1016.1

Cruise 243

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11746	41-47.1	140-40.4	11/28	0849-0851	19	North-1	SW -1	North-2	3.8	10.4	bc	1027.2
US11747	41-45.4	140-40.1	11/28	0911-0913	39	North-1	South-1	North-2	5.5	13.3	bc	1027.2
US11748	41-43.7	140-40.0	11/28	0939-0936	63	NNW-1	South-1	NNW-3	6.7	13.5	bc	1027.2
US11749	41-43.6	140-36.5	11/28	1002-1004	36	North-1	South-1	North-2	7.2	13.5	bc	1027.6
US11750	41-43.9	140-35.9	11/28	1009-1011	11	NNW-1	South-1	NNW-3	7	11.3	bc	1027.6
US11751	41-41.3	140-33.9	11/28	1045-1047	36	NNE-1	South-1	NNE-3	8.3	11.9	c	1027.5
US11752	41-37.6	140-30.3	11/28	1122-1124	30	Calm	South-1	Calm	8	12.7	c	1026.8
US11753	41-37.7	140-28.1	11/28	1143-1144	19	Calm	South-1	Calm	8.3	12.1	c	1026.5
US11754	41-38.1	140-26.3	11/28	1201-1202	12	Calm	South-1	Calm	8.5	11.9	o	1026.2
US11755	41-34.9	140-33.3	11/28	1249-1251	59	Calm	South-1	Calm	9.1	12.5	o	1026.1
US11756	41-35.0	140-29.9	11/28	1328-1331	45	NW -1	South-1	NW -2	8.9	12.6	o	1025.6
US11757	41-35.3	140-26.6	11/28	1404-1415	12	Calm	South-1	Calm	8.7	11.6	o	1025.1
US11758	41-28.7	140-20.4	11/28	1515-1518	60	NE -1	South-1	NE -2	10.7	13.5	o	1025
US11759	41-28.3	140-16.2	11/29	0632-0633	11	NW -1	South-1	NW -3	11	14.3	o	1021.1
US11760	41-26.6	140-17.4	11/29	0657-0659	63	Calm	SW -1	Calm	11.6	14	o	1022.1
US11761	41-24.1	140-20.5	11/29	0740-0744	93	Calm	SW -1	Calm	12.8	13.6	o	1022.1
US11762	41-26.3	140-02.5	11/29	0925-0926	26	NW -3	West-1	NW -5	11.3	14.3	o	1022.6
US11763	41-26.1	140-02.0	11/29	0940-0943	45	NW -3	West-1	NW -5	11.6	14.4	o	1022.6
US11764	41-25.7	140-01.4	11/29	0956-1000	83	NW -3	West-1	NW -5	11.5	14.8	o	1022.7
US11765	41-25.1	140-00.2	11/29	1017-1022	104	NNW-3	NW -1	NNW-5	11.2	15.2	o	1022.7
US11766	41-24.4	140-05.9	11/29	1104-1106	56	WNW-2	NW -1	WNW-4	11.3	13.8	o	1022.1
US11767	41-23.7	140-05.9	11/29	1119-1123	93	NW -2	NW -1	NW -4	11.8	13.9	o	1022.1
US11768	41-23.1	140-06.0	11/29	1136-1141	105	NW -3	NW -1	NW -5	11.7	13.6	o	1022.1
US11769	41-22.1	140-06.3	11/29	1156-1201	118	NW -3	NW -1	NW -5	11.7	13.8	o	1021.6

Cruise 244

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11770	41-45.7	141-09.7	12/12	0647-0653	113	West-2	SW -2	West-3	-0.8	8.8	bc	1023.5
US11771	41-59.3	141-02.0	12/13	1132-1136	101	West-3	NW -1	West-5	1.4	7.6	bc	1024.5
US11772	41-58.7	141-00.6	12/13	1144-1148	93	West-3	NW -1	West-5	1.3	7.7	bc	1024.5
US11773	41-58.1	140-59.4	12/13	1155-1159	85	WNW-3	NW -1	WNW-5	1.1	8	s	1024.2
US11774	41-57.4	140-58.0	12/13	1207-1210	75	NW -3	NW -1	NW -5	1.1	8.6	bc	1024.6
US11775	42-15.2	140-47.9	12/14	0815-0818	70	SSW-1	West-1	SSW-2	3.4	8.7	bc	1022.2
US11776	42-20.7	140-48.4	12/14	0909-0912	52	East-1	West-1	East-2	3.4	8.6	bc	1022.1
US11777	42-31.3	140-37.9	12/14	1038-1042	59	Calm	NW -1	Calm	2.7	8.6	c	1021.5
US11778	42-26.1	140-37.2	12/14	1129-1134	82	SE -1	NW -1	SE -3	4.2	8.8	bc	1020.5
US11779	42-21.3	140-36.7	12/14	1239-1243	86	South-1	NW -1	South-1	4.9	8.8	c	1019.6
US11780	42-16.9	140-36.5	12/14	1318-1223	89	South-1	NW -1	South-2	4.9	8.7	c	1018.6
US11781	42-11.4	140-35.4	12/14	1449-1453	81	South-2	NW -1	South-4	5.3	8.6	c	1017.1
US11782	42-08.9	140-35.8	12/14	1519-1523	65	South-2	South-1	South-4	4.4	8.6	c	1016.7
US11783	42-13.8	140-30.2	12/14	1655-1658	78	SSE-2	NW -1	SSE-4	4.3	8.6	r	1015.5
US11784	42-18.9	140-30.5	12/14	1737-1742	92	East-2	NW -1	East-4	4.1	8.7	r	1014.1
US11785	42-23.7	140-31.1	12/14	1815-1820	94	SE -2	ESE-1	SE -4	5.6	8.9	r	1014
US11786	42-23.3	140-42.6	12/14	1913-1916	61	SSE-3	SE -1	SSE-5	4.3	8.8	r	1013.6
US11787	42-13.3	140-41.4	12/15	0646-0650	89	West-4	West-1	West-6	4	8.6	o	1010
US11788	41-44.6	140-38.4	12/15	1424-1427	49	NW -3	West-1	NW -5	0.7	11.2	s	1011.1

Cruise 245

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11789	41-47.0	140-40.5	12/20	0840-0842	20	NW -1	SW -1	NW -2	-4.1	8.8	bc	1020.6
US11790	41-45.4	140-40.2	12/20	0900-0902	39	West-1	SW -1	West-3	-3.6	10.2	bc	1020.7
US11791	41-43.5	140-40.1	12/20	0922-0925	66	West-2	SW -1	West-4	-3	10.5	bc	1020.8
US11792	41-43.7	140-36.4	12/20	0952-0954	31	West-1	SW -1	West-2	-3.5	10.5	bc	1021.1
US11793	41-44.0	140-35.8	12/20	0958-0959	12	NW -1	SW -1	NW -3	-3.4	9.8	bc	1021.2
US11794	41-41.2	140-34.4	12/20	1036-1039	41	NW -1	SW -1	NW -3	-3	10.4	s	1021.2
US11795	41-37.3	140-30.1	12/20	1117-1120	32	WNW-3	SW -1	WNW-5	-2.3	10	s	1021
US11796	41-34.9	140-33.1	12/20	1208-1211	59	WNW-3	SW -1	WNW-5	-2.6	10.4	s	1020.7
US11797	41-35.0	140-29.7	12/20	1243-1245	43	NW -3	SSW-1	NW -5	-2.4	10.4	s	1020.6
US11798	41-35.1	140-26.5	12/20	1317-1318	12	NNW-1	SSE-1	NNW-3	-2.8	9.7	s	1020.6
US11799	41-29.0	140-21.2	12/20	1420-1423	63	West-3	SSW-1	West-3	-2.5	9.8	s	1020.8
US11800	41-28.3	140-16.8	12/20	1501-1503	27	NW -2	South-1	NW -4	-2.3	10.3	s	1021
US11801	41-26.3	140-17.4	12/21	0722-0725	68	NW -1	SSW-1	NW -2	-2.9	10	o	1024.3
US11802	41-23.8	140-20.0	12/21	0753-0757	97	NW -1	SW -1	NW -2	-2.1	9	s	1024.2
US11803	41-26.3	140-02.5	12/21	0933-0935	31	NW -2	WNW-1	NW -3	0.2	9.7	bc	1024.2
US11804	41-26.2	140-02.0	12/21	0949-0952	44	NW -2	WNW-1	NW -3	0.2	9.6	bc	1024.2
US11805	41-25.9	140-01.1	12/21	1007-1011	83	NW -2	West-1	NW -4	0.7	9.8	bc	1024.2
US11806	41-24.9	140-00.0	12/21	1028-1033	112	West-2	West-1	West-4	0.8	9.6	bc	1024.1
US11807	41-24.6	140-06.2	12/21	1117-1120	48	West-2	WSW-1	West-3	0.9	10.5	c	1023.6
US11808	41-23.7	140-06.1	12/21	1135-1139	90	WNW-2	West-1	WNW-4	1.1	10.5	bc	1023.4
US11809	41-23.2	140-06.2	12/21	1151-1155	100	West-2	West-1	West-1	1.6	10	bc	1024.1
US11810	41-22.3	140-06.1	12/21	1213-1218	118	West-1	West-1	West-2	1.6	11.5	bc	1023
US11811	41-37.7	140-28.0	12/21	1507-1508	18	NW -1	SE -1	NW -2	0.9	10.2	bc	1022.1
US11812	41-38.0	140-26.9	12/21	1522-1523	16	NW -1	SE -1	NW -3	0.6	10.1	bc	1022.2
US11813	41-35.1	140-52.9	12/21	1713-1715	36	Calm	NW -1	Calm	1.4	11.5	bc	1022.2
US11814	41-37.1	140-51.2	12/21	1736-1740	98	Calm	NW -1	Calm	1.2	11.4	c	1022.1
US11815	41-38.8	140-49.2	12/21	1756-1809	339	NNE-1	NW -1	NNE-3	1.9	11.3	s	1022.1
US11816	41-40.8	140-47.2	12/21	1825-1834	223	North-1	NW -1	North-3	1.3	11.2	s	1022.1
US11817	41-42.6	140-45.3	12/21	1852-1856	86	North-1	WNW-1	North-3	1.3	11.5	o	1022.1
US11818	41-44.1	140-38.2	12/21	1955-1958	53	North-1	SW -1	North-3	0.1	10.8	s	1022.2

(*) : Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11722				STATION US11723				STATION US11724			
LATITUDE 41-46.5 N				LATITUDE 41-45.0 N				LATITUDE 41-45.7 N			
LONGITUDE 141-15.8 E				LONGITUDE 140-38.7 E				LONGITUDE 141-07.1 E			
DEPTH (m) 211				DEPTH (m) 48				DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	13.734	33.767	25.290	5	14.495	33.933	25.258	5	13.460	33.839	25.401
10	13.722	33.767	25.292	10	14.497	33.926	25.252	10	13.462	33.839	25.401
20	13.712	33.769	25.295	20	14.539	33.950	25.262	20	13.356	33.834	25.418
30	13.632	33.778	25.319	30	14.527	33.984	25.290	30	13.255	33.830	25.436
40	12.356	33.531	25.380	40	14.253	34.058	25.406	40	13.197	33.838	25.454
50	12.669	34.012	25.693					50	13.144	33.844	25.469
75	10.189	33.731	25.929								
100	9.915	33.838	26.059								
125	8.769	33.869	26.269								
150	7.909	33.849	26.384								
STATION US11725				STATION US11726				STATION US11727			
LATITUDE 42-04.9 N				LATITUDE 41-49.6 N				LATITUDE 41-46.9 N			
LONGITUDE 140-56.7 E				LONGITUDE 141-13.0 E				LONGITUDE 141-14.4 E			
DEPTH (m) 81				DEPTH (m) 171				DEPTH (m) 193			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	13.011	33.820	25.476	5	13.100	33.667	25.341	5	13.089	33.859	25.492
10	13.021	33.820	25.474	10	13.181	33.835	25.455	10	13.092	33.859	25.491
20	13.016	33.818	25.474	20	13.039	33.843	25.489	20	13.088	33.858	25.491
30	13.002	33.813	25.473	30	13.036	33.849	25.494	30	13.082	33.858	25.492
40	13.009	33.815	25.473	40	13.019	33.851	25.499	40	13.068	33.858	25.495
50	13.018	33.817	25.473	50	12.782	33.857	25.550	50	12.994	33.877	25.524
75	12.806	33.814	25.513	75	9.592	33.959	26.207	75	11.032	34.070	26.045
				100	8.487	33.840	26.290	100	10.012	34.013	26.179
				125	7.429	33.794	26.410	125	7.642	33.833	26.409
				150	7.207	33.777	26.427	150	6.772	33.762	26.475
								175	4.700	33.587	26.588
STATION US11728				STATION US11729				STATION US11730			
LATITUDE 41-43.8 N				LATITUDE 41-41.0 N				LATITUDE 41-38.0 N			
LONGITUDE 141-16.0 E				LONGITUDE 141-47.5 E				LONGITUDE 141-19.1 E			
DEPTH (m) 228				DEPTH (m) 232				DEPTH (m) 215			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	14.286	33.924	25.296	5	12.990	33.985	25.608	5	13.020	33.966	25.588
10	14.289	33.922	25.293	10	12.658	34.006	25.691	10	13.040	34.003	25.613
20	14.160	33.942	25.336	20	12.500	34.019	25.731	20	12.994	34.003	25.622
30	13.995	33.954	25.380	30	12.397	34.025	25.756	30	12.995	34.004	25.622
40	13.514	33.964	25.487	40	12.295	34.026	25.777	40	12.852	34.005	25.652
50	12.449	33.962	25.697	50	12.233	34.027	25.789	50	12.699	34.007	25.683
75	10.489	33.918	26.023	75	11.692	34.007	25.876	75	12.359	33.994	25.739
100	9.169	33.890	26.222	100	10.139	33.930	26.093	100	9.626	33.863	26.127
125	7.501	33.817	26.417	125	8.180	33.839	26.335	125	7.486	33.810	26.414
150	5.982	33.681	26.513	150	6.845	33.778	26.477	150	7.276	33.809	26.443
175	4.842	33.607	26.589	175	5.647	33.724	26.588	175	7.224	33.810	26.450
200	3.311	33.526	26.680	200	3.996	33.643	26.707	200	6.370	33.771	26.535

STATION US11731			
LATITUDE 41-35.0 N			
LONGITUDE 141-20.5 E			
DEPTH (m) 313			
Press.	Temp.	Salinity	Sigma-T
5	14.771	33.875	25.154
10	14.756	33.885	25.165
20	14.747	33.890	25.171
30	14.748	33.895	25.175
40	14.571	33.964	25.266
50	14.486	33.966	25.286
75	14.042	33.958	25.373
100	13.896	34.000	25.436
125	13.795	34.008	25.463
150	12.875	34.061	25.690
175	9.961	33.969	26.153
200	8.892	33.961	26.321
250	8.974	33.999	26.339
300	4.838	33.712	26.672

STATION US11734			
LATITUDE 41-29.2 N			
LONGITUDE 141-22.8 E			
DEPTH (m) 129			
Press.	Temp.	Salinity	Sigma-T
5	14.983	33.861	25.098
10	14.979	33.859	25.097
20	14.970	33.859	25.099
30	14.906	33.865	25.118
40	14.875	33.869	25.127
50	14.856	33.871	25.133
75	14.125	33.944	25.345
100	12.357	34.118	25.836

STATION US11737			
LATITUDE 41-30.0 N			
LONGITUDE 141-34.8 E			
DEPTH (m) 108			
Press.	Temp.	Salinity	Sigma-T
5	15.427	33.799	24.953
10	15.393	33.806	24.965
20	15.187	33.839	25.036
30	15.114	33.846	25.057
40	15.020	33.855	25.085
50	14.952	33.860	25.104
75	14.789	33.875	25.151
100	14.553	33.877	25.203

STATION US11740			
LATITUDE 41-27.7 N			
LONGITUDE 141-16.2 E			
DEPTH (m) 154			
Press.	Temp.	Salinity	Sigma-T
5	14.877	33.851	25.113
10	14.886	33.850	25.110
20	14.881	33.852	25.113
30	14.832	33.862	25.131
40	14.779	33.872	25.150
50	14.486	33.911	25.243
75	13.412	34.026	25.556
100	12.638	34.122	25.784
125	12.164	34.151	25.899

STATION US11743			
LATITUDE 41-38.7 N			
LONGITUDE 140-49.2 E			
DEPTH (m) 340			
Press.	Temp.	Salinity	Sigma-T
5	13.683	33.904	25.406
10	13.685	33.908	25.409
20	13.666	33.915	25.417
30	12.635	34.116	25.780
40	12.084	34.187	25.941
50	11.377	34.207	26.089
75	11.391	34.215	26.093
100	11.229	34.225	26.131
125	11.254	34.225	26.126
150	11.247	34.238	26.137
175	11.282	34.249	26.140
200	11.190	34.252	26.158
250	10.109	34.201	26.310
300	9.485	34.175	26.394

STATION US11732			
LATITUDE 41-32.3 N			
LONGITUDE 141-21.8 E			
DEPTH (m) 260			
Press.	Temp.	Salinity	Sigma-T
5	14.972	33.875	25.111
10	14.982	33.873	25.107
20	14.949	33.875	25.116
30	14.952	33.876	25.115
40	14.794	33.890	25.161
50	14.796	33.891	25.161
75	14.643	33.905	25.205
100	13.668	34.011	25.492
125	13.236	34.071	25.626
150	12.996	34.082	25.683
175	12.804	34.070	25.711
200	12.435	34.136	25.835

STATION US11735			
LATITUDE 41-27.8 N			
LONGITUDE 141-23.6 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	15.238	33.815	25.007
10	15.182	33.821	25.023
20	14.958	33.840	25.087
30	14.857	33.854	25.120
40	14.720	33.879	25.168
50	14.699	33.884	25.177

STATION US11738			
LATITUDE 41-30.0 N			
LONGITUDE 141-31.2 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	15.392	33.804	24.963
10	15.256	33.822	25.008
20	15.160	33.839	25.042
30	15.065	33.844	25.067
40	14.977	33.852	25.092
50	14.834	33.867	25.135

STATION US11741			
LATITUDE 41-34.7 N			
LONGITUDE 140-54.5 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	15.110	33.808	25.029
10	15.105	33.808	25.030
20	15.111	33.808	25.029
30	15.139	33.806	25.021
40	15.128	33.808	25.025

STATION US11744			
LATITUDE 41-40.9 N			
LONGITUDE 140-47.1 E			
DEPTH (m) 212			
Press.	Temp.	Salinity	Sigma-T
5	13.167	33.927	25.528
10	13.174	33.927	25.527
20	13.149	33.929	25.534
30	13.098	33.935	25.548
40	12.255	33.986	25.753
50	12.069	34.065	25.850
75	12.219	34.053	25.812
100	11.918	34.110	25.913
125	11.341	34.224	26.109
150	11.269	34.231	26.128
175	10.997	34.224	26.172
200	9.406	34.145	26.383

STATION US11733			
LATITUDE 41-30.2 N			
LONGITUDE 141-20.9 E			
DEPTH (m) 230			
Press.	Temp.	Salinity	Sigma-T
5	14.954	33.846	25.092
10	14.953	33.846	25.093
20	14.959	33.845	25.090
30	14.934	33.853	25.102
40	14.895	33.862	25.117
50	14.829	33.875	25.142
75	14.660	33.901	25.198
100	13.167	34.059	25.630
125	12.692	34.104	25.760
150	12.392	34.140	25.846
175	12.357	34.157	25.866
200	11.288	34.170	26.077

STATION US11736			
LATITUDE 41-29.9 N			
LONGITUDE 141-39.3 E			
DEPTH (m) 607			
Press.	Temp.	Salinity	Sigma-T
5	15.335	33.810	24.981
10	15.286	33.817	24.998
20	15.194	33.831	25.028
30	15.138	33.840	25.048
40	15.130	33.842	25.051
50	15.117	33.843	25.055
75	15.003	33.858	25.091
100	14.973	33.859	25.098
125	14.908	33.864	25.116
150	14.879	33.867	25.125
175	14.425	33.921	25.264
200	13.411	33.958	25.503
250	5.241	33.590	26.530
300	2.395	33.521	26.755
400	2.831	33.711	26.871
500	3.455	33.973	27.023

STATION US11739			
LATITUDE 41-27.0 N			
LONGITUDE 141-21.9 E			
DEPTH (m) 71			
Press.	Temp.	Salinity	Sigma-T
5	14.914	33.857	25.110
10	14.915	33.859	25.111
20	14.843	33.869	25.134
30	14.324	33.913	25.279
40	12.965	34.063	25.674
50	13.124	34.062	25.642

STATION US11742			
LATITUDE 41-37.0 N			
LONGITUDE 140-51.3 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	14.703	33.819	25.126
10	14.673	33.821	25.134
20	14.508	33.851	25.192
30	14.474	33.862	25.208
40	14.484	33.861	25.205
50	14.487	33.863	25.206
75	13.607	33.973	25.475

STATION US11745			
LATITUDE 41-42.8 N			
LONGITUDE 140-45.3 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	12.978	33.964	25.595
10	12.957	33.975	25.607
20	12.941	33.986	25.619
30	12.921	33.994	25.630
40	12.910	33.999	25.635
50	12.915	34.005	25.639
75	12.709	34.038	25.705

STATION US11746			
LATITUDE 41-47.1 N			
LONGITUDE 140-40.4 E			
DEPTH (m) 19			
Press.	Temp.	Salinity	Sigma-T
5	13.447	33.523	25.159
10	13.978	33.755	25.230

STATION US11749			
LATITUDE 41-43.6 N			
LONGITUDE 140-36.5 E			
DEPTH (m) 36			
Press.	Temp.	Salinity	Sigma-T
5	12.920	33.371	25.147
10	13.384	33.760	25.356
20	13.330	33.771	25.375
30	13.032	33.720	25.395

STATION US11752			
LATITUDE 41-37.6 N			
LONGITUDE 140-30.3 E			
DEPTH (m) 30			
Press.	Temp.	Salinity	Sigma-T
5	12.963	33.815	25.482
10	12.899	33.815	25.495
20	12.643	33.802	25.535
30	12.623	33.800	25.538

STATION US11755			
LATITUDE 41-34.9 N			
LONGITUDE 140-33.3 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	12.942	33.734	25.423
10	13.112	33.798	25.439
20	13.099	33.839	25.473
30	12.964	33.860	25.517
40	12.586	33.939	25.652
50	12.072	34.036	25.826

STATION US11758			
LATITUDE 41-28.7 N			
LONGITUDE 140-20.4 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	13.517	33.874	25.417
10	13.469	33.881	25.432
20	13.049	33.927	25.552
30	12.912	33.948	25.596
40	12.855	33.956	25.613
50	12.720	33.978	25.656

STATION US11761			
LATITUDE 41-24.1 N			
LONGITUDE 140-20.5 E			
DEPTH (m) 93			
Press.	Temp.	Salinity	Sigma-T
5	13.635	33.895	25.409
10	12.875	33.996	25.640
20	12.605	34.034	25.722
30	12.453	34.042	25.759
40	12.287	34.051	25.798
50	12.053	34.065	25.853
75	11.035	34.139	26.099

STATION US11764			
LATITUDE 41-25.7 N			
LONGITUDE 140-01.4 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	15.363	33.653	24.854
10	15.379	33.652	24.850
20	15.382	33.651	24.848
30	15.381	33.652	24.850
40	14.582	34.104	25.371
50	12.084	34.143	25.907
75	10.910	34.259	26.214

STATION US11747			
LATITUDE 41-45.4 N			
LONGITUDE 140-40.1 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	13.645	33.837	25.362
10	13.637	33.834	25.361
20	13.633	33.831	25.359
30	13.554	33.840	25.382

STATION US11750			
LATITUDE 41-43.9 N			
LONGITUDE 140-35.9 E			
DEPTH (m) 11			
Press.	Temp.	Salinity	Sigma-T
5	11.673	33.131	25.199
10	13.127	33.660	25.329

STATION US11753			
LATITUDE 41-37.7 N			
LONGITUDE 140-28.1 E			
DEPTH (m) 19			
Press.	Temp.	Salinity	Sigma-T
5	12.363	33.738	25.540
10	12.301	33.746	25.558

STATION US11756			
LATITUDE 41-35.0 N			
LONGITUDE 140-29.9 E			
DEPTH (m) 45			
Press.	Temp.	Salinity	Sigma-T
5	12.926	33.739	25.431
10	12.927	33.749	25.438
20	12.879	33.776	25.469
30	12.694	33.774	25.504
40	12.598	33.840	25.574

STATION US11759			
LATITUDE 41-28.3 N			
LONGITUDE 140-16.2 E			
DEPTH (m) 11			
Press.	Temp.	Salinity	Sigma-T
5	14.646	33.657	25.013
10	14.655	33.657	25.011

STATION US11762			
LATITUDE 41-26.3 N			
LONGITUDE 140-02.5 E			
DEPTH (m) 26			
Press.	Temp.	Salinity	Sigma-T
5	14.467	33.592	25.001
10	14.139	33.690	25.146
20	13.838	33.755	25.259

STATION US11765			
LATITUDE 41-25.1 N			
LONGITUDE 140-00.2 E			
DEPTH (m) 104			
Press.	Temp.	Salinity	Sigma-T
5	15.430	33.635	24.826
10	15.441	33.636	24.824
20	15.444	33.646	24.831
30	15.343	33.693	24.889
40	15.105	33.785	25.012
50	14.568	34.402	25.604
75	10.771	34.256	26.237

STATION US11748			
LATITUDE 41-43.7 N			
LONGITUDE 140-40.0 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	13.775	33.850	25.345
10	13.783	33.848	25.342
20	13.778	33.847	25.342
30	13.770	33.847	25.344
40	13.545	33.848	25.390
50	13.371	33.891	25.459

STATION US11751			
LATITUDE 41-41.3 N			
LONGITUDE 140-33.9 E			
DEPTH (m) 36			
Press.	Temp.	Salinity	Sigma-T
5	13.419	33.835	25.406
10	13.171	33.809	25.437
20	12.939	33.780	25.460
30	12.762	33.755	25.475

STATION US11754			
LATITUDE 41-38.1 N			
LONGITUDE 140-26.3 E			
DEPTH (m) 12			
Press.	Temp.	Salinity	Sigma-T
5	12.054	33.556	25.457
10	11.954	33.713	25.598

STATION US11757			
LATITUDE 41-35.3 N			
LONGITUDE 140-26.6 E			
DEPTH (m) 12			
Press.	Temp.	Salinity	Sigma-T
5	12.815	33.429	25.212
10	12.727	33.715	25.451

STATION US11760			
LATITUDE 41-26.6 N			
LONGITUDE 140-17.4 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	14.254	33.757	25.173
10	14.212	33.764	25.188
20	13.987	33.798	25.261
30	13.840	33.840	25.324
40	13.616	33.934	25.443
50	13.125	34.067	25.645

STATION US11763			
LATITUDE 41-26.1 N			
LONGITUDE 140-02.0 E			
DEPTH (m) 45			
Press.	Temp.	Salinity	Sigma-T
5	14.794	33.624	24.956
10	14.586	33.668	25.034
20	14.070	33.749	25.206
30	13.577	33.818	25.361
40	13.168	33.891	25.500

STATION US11766			
LATITUDE 41-24.4 N			
LONGITUDE 140-05.9 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	13.828	33.743	25.252
10	12.631	33.997	25.689
20	12.105	34.147	25.907
30	11.836	34.239	26.029
40	11.604	34.267	26.094
50	11.521	34.275	26.116

STATION		US11767	
LATITUDE		41-23.7	N
LONGITUDE		140-05.9	E
DEPTH (m)		93	
Press.	Temp.	Salinity	Sigma-T
5	13.829	33.796	25.293
10	13.257	33.888	25.480
20	11.702	34.138	25.975
30	11.290	34.241	26.132
40	11.238	34.282	26.174
50	11.072	34.280	26.202
75	10.606	34.270	26.277

STATION		US11768	
LATITUDE		41-23.1	N
LONGITUDE		140-06.0	E
DEPTH (m)		105	
Press.	Temp.	Salinity	Sigma-T
5	13.843	33.776	25.274
10	13.850	33.773	25.270
20	13.842	33.767	25.267
30	13.160	33.884	25.497
40	12.235	34.045	25.803
50	11.476	34.157	26.032
75	10.451	34.263	26.299
100	10.374	34.261	26.311

STATION		US11769	
LATITUDE		41-22.1	N
LONGITUDE		140-06.3	E
DEPTH (m)		118	
Press.	Temp.	Salinity	Sigma-T
5	14.080	33.799	25.243
10	13.493	33.864	25.414
20	12.807	34.013	25.667
30	12.765	34.071	25.720
40	12.339	34.176	25.884
50	11.649	34.218	26.048
75	10.653	34.239	26.245
100	10.401	34.252	26.299

STATION		US11770	
LATITUDE		41-45.7	N
LONGITUDE		141-09.7	E
DEPTH (m)		113	
Press.	Temp.	Salinity	Sigma-T
5	8.969	33.643	26.061
10	9.329	33.744	26.082
20	9.547	33.783	26.077
30	9.657	33.807	26.078
40	9.680	33.812	26.078
50	9.681	33.811	26.077
75	9.505	33.798	26.095
100	9.146	33.764	26.127

STATION		US11771	
LATITUDE		41-59.3	N
LONGITUDE		141-02.0	E
DEPTH (m)		101	
Press.	Temp.	Salinity	Sigma-T
5	8.033	33.378	25.995
10	8.061	33.382	25.994
20	8.140	33.401	25.997
30	8.217	33.419	26.000
40	8.400	33.468	26.011
50	8.477	33.486	26.013
75	8.657	33.555	26.040

STATION		US11772	
LATITUDE		41-58.7	N
LONGITUDE		141-00.6	E
DEPTH (m)		93	
Press.	Temp.	Salinity	Sigma-T
5	8.166	33.415	26.004
10	8.171	33.413	26.002
20	8.183	33.413	26.001
30	8.167	33.408	25.999
40	8.488	33.480	26.007
50	8.903	33.581	26.022
75	8.379	33.586	26.107

STATION		US11773	
LATITUDE		41-58.1	N
LONGITUDE		140-59.4	E
DEPTH (m)		85	
Press.	Temp.	Salinity	Sigma-T
5	8.386	33.459	26.006
10	8.389	33.458	26.005
20	8.371	33.451	26.002
30	8.403	33.457	26.002
40	8.627	33.517	26.015
50	8.827	33.563	26.020
75	7.656	33.573	26.203

STATION		US11774	
LATITUDE		41-57.4	N
LONGITUDE		140-58.0	E
DEPTH (m)		75	
Press.	Temp.	Salinity	Sigma-T
5	8.663	33.548	26.034
10	8.666	33.548	26.033
20	8.667	33.548	26.033
30	8.682	33.551	26.033
40	8.743	33.568	26.037
50	9.064	33.661	26.059

STATION		US11775	
LATITUDE		42-15.2	N
LONGITUDE		140-47.9	E
DEPTH (m)		70	
Press.	Temp.	Salinity	Sigma-T
5	8.706	33.795	26.221
10	8.709	33.794	26.219
20	8.713	33.792	26.217
30	8.716	33.792	26.217
40	8.716	33.791	26.216
50	8.729	33.795	26.217

STATION		US11776	
LATITUDE		42-20.7	N
LONGITUDE		140-48.4	E
DEPTH (m)		52	
Press.	Temp.	Salinity	Sigma-T
5	8.847	33.748	26.162
10	8.903	33.810	26.202
20	8.900	33.809	26.201
30	8.904	33.808	26.200
40	8.907	33.808	26.199

STATION		US11777	
LATITUDE		42-31.3	N
LONGITUDE		140-37.9	E
DEPTH (m)		59	
Press.	Temp.	Salinity	Sigma-T
5	8.870	33.770	26.176
10	8.883	33.766	26.170
20	8.876	33.763	26.169
30	8.851	33.758	26.169
40	8.779	33.743	26.169
50	8.720	33.740	26.175

STATION		US11778	
LATITUDE		42-26.1	N
LONGITUDE		140-37.2	E
DEPTH (m)		82	
Press.	Temp.	Salinity	Sigma-T
5	8.911	33.745	26.149
10	8.918	33.772	26.170
20	8.885	33.805	26.200
30	8.844	33.805	26.207
40	8.812	33.807	26.213
50	8.802	33.808	26.216
75	8.382	33.796	26.271

STATION		US11779	
LATITUDE		42-21.3	N
LONGITUDE		140-36.7	E
DEPTH (m)		86	
Press.	Temp.	Salinity	Sigma-T
5	8.801	33.739	26.162
10	8.838	33.775	26.184
20	8.839	33.795	26.200
30	8.838	33.794	26.200
40	8.833	33.794	26.200
50	8.825	33.794	26.201
75	8.824	33.797	26.204

STATION		US11780	
LATITUDE		42-16.9	N
LONGITUDE		140-36.5	E
DEPTH (m)		89	
Press.	Temp.	Salinity	Sigma-T
5	8.964	33.737	26.135
10	8.994	33.786	26.168
20	8.994	33.805	26.183
30	8.995	33.805	26.183
40	8.989	33.805	26.184
50	8.980	33.805	26.186
75	8.948	33.805	26.191

STATION		US11781	
LATITUDE		42-11.4	N
LONGITUDE		140-35.4	E
DEPTH (m)		81	
Press.	Temp.	Salinity	Sigma-T
5	8.856	33.780	26.185
10	8.871	33.797	26.196
20	8.887	33.795	26.192
30	8.893	33.796	26.192
40	8.899	33.798	26.193
50	8.907	33.800	26.193
75	8.916	33.803	26.194

STATION		US11782	
LATITUDE		42-08.9	N
LONGITUDE		140-35.8	E
DEPTH (m)		65	
Press.	Temp.	Salinity	Sigma-T
5	8.564	33.649	26.128
10	8.807	33.751	26.170
20	8.910	33.783	26.179
30	8.919	33.784	26.179
40	8.937	33.798	26.187
50	8.929	33.799	26.189

STATION		US11783	
LATITUDE		42-13.8	N
LONGITUDE		140-30.2	E
DEPTH (m)		78	
Press.	Temp.	Salinity	Sigma-T
5	8.211	33.473	26.044
10	8.686	33.666	26.123
20	8.910	33.742	26.147
30	8.949	33.756	26.152
40	8.971	33.776	26.164
50	8.966	33.781	26.169

STATION		US11784	
LATITUDE		42-18.9	N
LONGITUDE		140-30.5	E
DEPTH (m)		92	
Press.	Temp.	Salinity	Sigma-T
5	9.054	33.811	26.178
10	9.061	33.808	26.175
20	9.069	33.804	26.171
30	9.071	33.803	26.170
40	9.084	33.805	26.169
50	9.072	33.803	26.170
75	9.028	33.803	26.176

STATION US11785			
LATITUDE 42-23.7 N			
LONGITUDE 140-31.1 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	9.190	33.807	26.153
10	9.193	33.805	26.151
20	9.189	33.802	26.150
30	9.195	33.804	26.151
40	9.193	33.805	26.152
50	9.189	33.806	26.153
75	9.175	33.806	26.155

STATION US11788			
LATITUDE 41-44.6 N			
LONGITUDE 140-38.4 E			
DEPTH (m) 49			
Press.	Temp.	Salinity	Sigma-T
5	11.520	33.941	25.857
10	11.518	33.942	25.858
20	11.508	33.940	25.858
30	11.505	33.939	25.858
40	11.562	33.966	25.868

STATION US11791			
LATITUDE 41-43.5 N			
LONGITUDE 140-40.1 E			
DEPTH (m) 66			
Press.	Temp.	Salinity	Sigma-T
5	10.696	33.980	26.035
10	10.709	33.971	26.026
20	10.719	33.964	26.018
30	10.793	33.991	26.027
40	10.778	33.976	26.017
50	10.807	34.012	26.040

STATION US11794			
LATITUDE 41-41.2 N			
LONGITUDE 140-34.4 E			
DEPTH (m) 41			
Press.	Temp.	Salinity	Sigma-T
5	10.744	34.004	26.045
10	10.742	33.994	26.038
20	10.727	33.991	26.038
30	10.714	33.990	26.040
40	10.700	33.991	26.043

STATION US11797			
LATITUDE 41-35.0 N			
LONGITUDE 140-29.7 E			
DEPTH (m) 43			
Press.	Temp.	Salinity	Sigma-T
5	10.450	33.955	26.059
10	10.451	33.952	26.056
20	10.468	33.951	26.053
30	10.487	33.952	26.050
40	10.491	33.952	26.050

STATION US11800			
LATITUDE 41-28.3 N			
LONGITUDE 140-16.8 E			
DEPTH (m) 27			
Press.	Temp.	Salinity	Sigma-T
5	10.247	33.926	26.071
10	10.329	33.962	26.085
20	10.354	33.961	26.080

STATION US11803			
LATITUDE 41-26.3 N			
LONGITUDE 140-02.5 E			
DEPTH (m) 31			
Press.	Temp.	Salinity	Sigma-T
5	9.782	33.983	26.194
10	9.255	34.019	26.309
20	9.236	34.030	26.321
30	8.889	34.042	26.386

STATION US11786			
LATITUDE 42-23.3 N			
LONGITUDE 140-42.6 E			
DEPTH (m) 61			
Press.	Temp.	Salinity	Sigma-T
5	8.876	33.809	26.205
10	8.887	33.804	26.200
20	8.890	33.803	26.198
30	8.893	33.802	26.197
40	8.886	33.801	26.198
50	8.883	33.803	26.199

STATION US11789			
LATITUDE 41-47.0 N			
LONGITUDE 140-40.5 E			
DEPTH (m) 20			
Press.	Temp.	Salinity	Sigma-T
5	9.383	33.608	25.967
10	9.838	33.772	26.020

STATION US11792			
LATITUDE 41-43.7 N			
LONGITUDE 140-36.4 E			
DEPTH (m) 31			
Press.	Temp.	Salinity	Sigma-T
5	10.868	33.997	26.018
10	10.311	33.904	26.043
20	10.433	33.946	26.054

STATION US11795			
LATITUDE 41-37.3 N			
LONGITUDE 140-30.1 E			
DEPTH (m) 32			
Press.	Temp.	Salinity	Sigma-T
5	10.477	33.952	26.052
10	10.500	33.962	26.056
20	10.509	33.959	26.051
30	10.529	33.962	26.051

STATION US11798			
LATITUDE 41-35.1 N			
LONGITUDE 140-26.5 E			
DEPTH (m) 12			
Press.	Temp.	Salinity	Sigma-T
5	8.900	33.432	25.906
10	9.025	33.765	26.147

STATION US11801			
LATITUDE 41-26.3 N			
LONGITUDE 140-17.4 E			
DEPTH (m) 68			
Press.	Temp.	Salinity	Sigma-T
5	10.263	33.973	26.105
10	10.267	33.970	26.102
20	10.182	33.971	26.117
30	9.807	34.008	26.210
40	9.622	34.031	26.258
50	9.623	34.032	26.259

STATION US11804			
LATITUDE 41-26.2 N			
LONGITUDE 140-02.0 E			
DEPTH (m) 44			
Press.	Temp.	Salinity	Sigma-T
5	9.952	33.995	26.175
10	9.784	34.006	26.212
20	9.563	34.019	26.259
30	9.482	34.022	26.275
40	8.861	34.046	26.393

STATION US11787			
LATITUDE 42-13.3 N			
LONGITUDE 140-41.4 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	8.829	33.805	26.209
10	8.808	33.800	26.209
20	8.820	33.803	26.209
30	8.823	33.803	26.209
40	8.826	33.803	26.208
50	8.826	33.803	26.208
75	8.821	33.803	26.209

STATION US11790			
LATITUDE 41-45.4 N			
LONGITUDE 140-40.2 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	10.899	33.992	26.009
10	10.900	33.985	26.003
20	10.802	33.977	26.015
30	10.654	33.973	26.038

STATION US11793			
LATITUDE 41-44.0 N			
LONGITUDE 140-35.8 E			
DEPTH (m) 12			
Press.	Temp.	Salinity	Sigma-T
5	9.833	33.832	26.068
10	9.837	33.826	26.063

STATION US11796			
LATITUDE 41-34.9 N			
LONGITUDE 140-33.1 E			
DEPTH (m) 59			
Press.	Temp.	Salinity	Sigma-T
5	10.634	34.007	26.067
10	10.662	34.009	26.064
20	10.618	34.011	26.073
30	10.457	34.013	26.103
40	10.398	34.023	26.121
50	10.355	34.029	26.133

STATION US11799			
LATITUDE 41-29.0 N			
LONGITUDE 140-21.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	10.209	33.924	26.076
10	10.219	33.926	26.076
20	10.225	33.926	26.075
30	10.270	33.936	26.075
40	10.269	33.935	26.075
50	10.291	33.939	26.074

STATION US11802			
LATITUDE 41-23.8 N			
LONGITUDE 140-20.0 E			
DEPTH (m) 97			
Press.	Temp.	Salinity	Sigma-T
5	9.653	34.038	26.259
10	9.657	34.033	26.255
20	9.659	34.031	26.252
30	9.653	34.031	26.253
40	9.332	34.043	26.315
50	9.060	34.050	26.364
75	8.736	34.067	26.429

STATION US11805			
LATITUDE 41-25.9 N			
LONGITUDE 140-01.1 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	9.979	34.003	26.177
10	9.976	34.002	26.177
20	9.988	34.001	26.174
30	9.795	34.005	26.210
40	9.775	34.008	26.215
50	9.661	34.015	26.239
75	7.770	34.101	26.602

STATION US11806			
LATITUDE 41-24.9 N			
LONGITUDE 140-00.0 E			
DEPTH (m) 112			
Press.	Temp.	Salinity	Sigma-T
5	9.764	33.961	26.181
10	9.796	34.031	26.230
20	9.792	34.032	26.231
30	9.796	34.040	26.236
40	9.582	34.040	26.272
50	9.112	34.040	26.349
75	8.778	34.086	26.437
100	4.361	34.024	26.972

STATION US11809			
LATITUDE 41-23.2 N			
LONGITUDE 140-06.2 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	10.683	33.982	26.039
10	10.687	33.976	26.034
20	10.308	34.001	26.119
30	10.292	34.006	26.126
40	10.303	34.009	26.126
50	10.320	34.011	26.125
75	10.251	34.018	26.142

STATION US11812			
LATITUDE 41-38.0 N			
LONGITUDE 140-26.9 E			
DEPTH (m) 16			
Press.	Temp.	Salinity	Sigma-T
5	9.531	33.858	26.138
10	9.516	33.854	26.138

STATION US11815			
LATITUDE 41-38.8 N			
LONGITUDE 140-49.2 E			
DEPTH (m) 339			
Press.	Temp.	Salinity	Sigma-T
5	11.256	33.848	25.832
10	11.299	33.943	25.899
20	11.228	33.950	25.917
30	11.210	33.952	25.921
40	11.288	33.951	25.907
50	11.271	33.951	25.910
75	11.280	33.955	25.911
100	11.126	33.966	25.948
125	11.030	33.971	25.969
150	10.712	33.984	26.036
175	10.518	33.989	26.074
200	10.030	34.027	26.187
250	9.535	34.060	26.296
300	9.539	34.061	26.296

STATION US11818			
LATITUDE 41-44.1 N			
LONGITUDE 140-38.2 E			
DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T
5	11.050	33.989	25.979
10	10.969	33.977	25.985
20	10.859	33.971	26.000
30	10.860	33.971	25.999
40	10.826	33.971	26.005
50	10.628	33.985	26.051

STATION US11807			
LATITUDE 41-24.6 N			
LONGITUDE 140-06.2 E			
DEPTH (m) 48			
Press.	Temp.	Salinity	Sigma-T
5	11.113	33.960	25.945
10	11.125	33.955	25.939
20	11.056	33.955	25.952
30	10.991	33.959	25.967
40	10.955	33.961	25.975

STATION US11810			
LATITUDE 41-22.3 N			
LONGITUDE 140-06.1 E			
DEPTH (m) 118			
Press.	Temp.	Salinity	Sigma-T
5	11.792	33.888	25.765
10	11.502	33.907	25.833
20	11.310	33.936	25.891
30	10.843	33.951	25.986
40	10.286	33.996	26.119
50	10.301	34.006	26.125
75	10.221	34.017	26.147
100	10.228	34.023	26.150

STATION US11813			
LATITUDE 41-35.1 N			
LONGITUDE 140-52.9 E			
DEPTH (m) 36			
Press.	Temp.	Salinity	Sigma-T
5	11.928	33.897	25.746
10	11.931	33.897	25.746
20	11.905	33.901	25.753
30	11.905	33.901	25.753

STATION US11816			
LATITUDE 41-40.8 N			
LONGITUDE 140-47.2 E			
DEPTH (m) 223			
Press.	Temp.	Salinity	Sigma-T
5	11.715	33.941	25.820
10	11.728	33.933	25.812
20	11.734	33.929	25.807
30	11.737	33.928	25.806
40	11.709	33.932	25.815
50	11.417	33.959	25.889
75	11.354	33.977	25.915
100	11.292	33.983	25.930
125	11.256	33.989	25.942
150	10.369	34.026	26.128
175	10.418	34.034	26.126
200	10.410	34.034	26.127

STATION US11808			
LATITUDE 41-23.7 N			
LONGITUDE 140-06.1 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	10.363	33.874	26.011
10	10.418	34.005	26.103
20	10.407	34.001	26.103
30	10.481	33.999	26.088
40	10.495	33.999	26.085
50	10.462	34.000	26.092
75	10.431	34.003	26.100

STATION US11811			
LATITUDE 41-37.7 N			
LONGITUDE 140-28.0 E			
DEPTH (m) 18			
Press.	Temp.	Salinity	Sigma-T
5	10.449	33.805	25.942
10	10.424	33.974	26.078

STATION US11814			
LATITUDE 41-37.1 N			
LONGITUDE 140-51.2 E			
DEPTH (m) 98			
Press.	Temp.	Salinity	Sigma-T
5	11.633	33.925	25.823
10	11.632	33.919	25.819
20	11.616	33.919	25.822
30	11.533	33.927	25.843
40	11.247	33.951	25.914
50	11.244	33.953	25.916
75	10.841	33.990	26.017

STATION US11817			
LATITUDE 41-42.6 N			
LONGITUDE 140-45.3 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	11.811	33.903	25.773
10	11.824	33.906	25.773
20	11.765	33.912	25.788
30	11.736	33.916	25.797
40	11.610	33.928	25.830
50	11.595	33.930	25.834
75	11.524	33.936	25.852

PART III

SUPPLEMENT

Corrigendum

Correction to: “Data Record of Oceanographic Observations and Exploratory Fishing” (2010), No.54

The data in Table 16 (page 71) include several errors. The correct data are shown here.

10. Data on nutrients

Seawater samples were collected with Niskin bottles on the CTD system. The samples for nutrient analysis were stored in polythylene bottles and kept in a freezer at -20°C. Nutrients were analyzed in the laboratory with Technicon Auto-analyzer.

Table 16. Data on nutrients

OS10123				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	0.1	2.7	0.01	0.09
20	0.5	3.5	0.06	0.14
50	2.9	4.6	0.32	0.28
100	9.3	12.6	0.03	0.66
150	12.4	17.6	0.02	0.88
200	13.4	20.1	0.02	0.97
300	21.4	36.1	0.01	1.53
400	27.7	53.1	0.01	1.98
500	33.6	73.4	0.01	2.42
600	37.8	89.8	0.01	2.73
800	41.9	113.9	0.00	2.99
1000	43.1	129.7	0.00	3.02
1250	44.0	141.5	0.00	3.10
1500	43.9	153.9	0.00	3.00
1750	43.2	159.4	0.00	3.03
2000	42.4	156.1	0.00	2.91
2500	40.4	155.1	0.00	2.72
3000	38.9	158.8	0.00	2.73

OS10125				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	1.1	6.0	0.05	0.20
20	1.3	6.1	0.05	0.22
50	3.6	7.7	0.13	0.37
100	9.9	13.6	0.09	0.74
150	12.2	16.8	0.02	0.90
200	11.3	15.7	0.02	0.86
300	13.8	20.0	0.02	1.04
400	20.0	32.4	0.02	1.50
500	28.9	55.3	0.01	2.11
600	35.2	77.2	0.01	2.59
800	40.8	96.6	0.01	2.93
1000	42.9	124.5	0.01	3.06
1250	43.8	143.6	0.00	3.14
1500	41.2	147.8	0.00	3.03
1750	43.5	154.4	0.01	3.10
2000	42.6	163.9	0.00	3.06
2500	40.8	163.1	0.00	2.91
3000	39.1	153.4	0.01	2.77

OS10127				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	12.7	24.2	0.18	1.15
20	13.5	25.2	0.18	1.25
50	15.4	26.2	0.24	1.34
100	19.7	31.3	0.03	1.55
150	21.2	34.1	0.01	1.61
200	27.8	50.4	0.00	2.01
300	37.8	81.4	0.00	2.75
400	40.4	96.1	0.00	2.93
500	42.3	106.5	0.00	3.04
600	43.1	118.7	0.00	3.10
800	43.9	132.0	0.00	3.15
1000	43.8	145.3	0.00	3.13
1250	43.9	155.7	0.00	3.14
1500	44.2	159.9	0.00	3.16
1750	43.1	158.5	0.00	3.05
2000	42.2	164.2	0.00	3.01
2500	40.5	159.6	0.00	2.78
3000	39.0	155.2	0.00	2.74

OS10129				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	12.8	23.8	0.20	1.22
20	12.9	23.6	0.19	1.23
50	14.9	24.8	0.36	1.33
100	17.0	25.5	0.01	1.39
150	17.2	26.8	0.00	1.38
200	17.8	28.6	0.01	1.40
300	31.2	64.1	0.00	2.33
400	37.2	84.3	0.00	2.74
500	40.3	101.5	0.00	2.95
600	41.7	113.6	0.00	3.05
800	43.0	124.7	0.00	3.14
1000	43.6	143.2	0.00	3.18
1250	44.0	158.2	0.00	3.20
1500	43.8	166.3	0.00	3.17
1750	42.3	168.5	0.00	3.09
2000	42.5	171.2	0.00	3.07
2500	40.7	167.6	0.00	2.92
3000	38.5	165.8	0.00	2.82

OS10131				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	18.0	35.3	0.21	1.61
20				
50	19.2	35.7	0.26	1.70
100	22.1	38.4	0.08	1.82
150	27.3	52.6	0.01	2.14
200	32.5	74.3	0.00	2.55
300	42.1	99.3	0.01	3.11
400	43.4	111.0	0.01	3.20
500	43.0	120.6	0.01	3.17
600	43.9	131.6	0.00	3.23
800	44.0	145.7	0.01	3.26
1000	44.5	158.4	0.01	3.27
1250	44.2	161.1	0.00	3.24
1500	43.9	175.5	0.01	3.22
1750	42.7	177.6	0.01	3.15
2000	42.2	176.8	0.01	3.09
2500	40.2	171.5	0.00	2.94
3000	38.9	168.2	0.00	2.82

OS10140				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	15.5	23.2	0.19	1.41
20	17.2	26.9	0.23	1.48
50	25.8	42.4	0.41	2.00
100	29.2	53.0	0.02	2.19
200	33.4	66.3	0.01	2.44
300	38.3	77.6	0.00	2.71
500	44.1	102.6	0.01	3.10
750	44.9	122.5	0.00	3.17
1000	45.1	136.2	0.00	3.19
1500	45.2	159.8	0.00	3.18
2000	41.9	171.0	0.01	3.01

OS10141				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	15.6	22.4	0.21	1.40
20	16.0	23.3	0.21	1.42
50	24.3	40.0	0.56	1.94
100	28.4	50.3	0.01	2.13
200	34.5	69.5	0.01	2.51
300	36.0	79.5	0.01	2.65
400	42.0	90.9	0.01	2.96
500	43.6	98.5	0.00	3.06
750	45.0	116.2	0.00	3.17
1000	44.6	129.7	0.00	3.17
1500	45.1	154.7	0.00	3.18
2000	43.9	171.5	0.00	3.08

OS10142				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	15.5	24.2	0.20	1.42
20	16.0	25.5	0.21	1.44
50	25.2	43.6	0.65	1.96
100	28.9	52.0	0.03	2.15
200	34.6	70.5	0.02	2.50
300	38.1	83.6	0.01	2.76
400	42.6	94.6	0.02	3.00
500	44.5	105.5	0.01	3.13
750	44.9	127.7	0.01	3.17
1000	45.2	143.4	0.01	3.19
1500	44.8	167.6	0.01	3.15
2000	43.4	177.3	0.01	3.02

OS10143				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	13.1	25.6	0.16	1.27
20	14.7	28.7	0.20	1.38
50	20.1	37.1	0.33	1.74
100	29.4	59.1	0.26	2.22
200	35.4	74.0	0.02	2.55
300	41.2	87.7	0.03	2.91
400	44.5	102.6	0.01	3.13
500	45.2	112.7	0.00	3.18
750	45.1	139.1	0.00	3.19
1000	45.1	151.4	0.00	3.19
1500	44.2	174.3	0.01	3.12
2000	42.5	178.0	0.00	2.98

OS10144				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	10.6	22.9	0.13	1.15
20	12.2	25.0	0.15	1.25
50	21.0	33.0	0.52	1.76
100	32.3	56.9	0.04	2.36
200	40.7	87.2	0.03	2.89
300	43.6	100.2	0.01	3.07
400	44.4	106.1	0.01	3.14
500	44.7	119.3	0.01	3.17
750	45.1	144.7	0.00	3.20
1000	45.2	158.1	0.00	3.20
1500	44.1	173.4	0.00	3.10
2000	42.1	176.3	0.01	2.94

OS10145				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	15.6	28.4	0.22	1.53
20	18.3	34.1	0.27	1.69
50	25.5	48.6	0.28	2.13
100	29.0	57.9	0.24	2.33
200	34.6	72.7	0.04	2.65
300	41.8	91.1	0.02	3.11
400	44.6	111.0	0.01	3.29
500	43.6	122.2	0.01	3.23
750	44.8	142.0	0.01	3.32
1000	45.1	155.0	0.00	3.34
1500	44.1	174.3	0.00	3.25
2000	42.5	178.7	0.00	3.12

OS10147				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	17.5	28.2	0.23	1.68
20	22.8	40.6	0.27	1.98
50	26.6	44.4	0.07	2.19
100	32.8	62.6	0.06	2.56
200	41.3	86.8	0.02	3.08
300	42.8	102.8	0.02	3.16
400	44.1	112.2	0.00	3.33
500	45.0	118.1	0.00	3.36
750	45.2	138.8	0.00	3.39
1000	45.2	153.8	0.00	3.37
1500	41.6	166.9	0.00	3.20
2000	42.3	170.6	0.00	3.14

OS10148				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	12.4	16.8	0.16	1.33
20	15.6	22.4	0.22	1.51
50	23.7	44.5	0.29	2.01
100	27.4	54.9	0.28	2.22
200	39.5	82.8	0.04	2.90
300	41.7	104.4	0.03	3.06
400	44.2	112.4	0.01	3.21
500	44.8	121.7	0.00	3.27
750	45.0	141.0	0.00	3.29
1000	44.1	154.1	0.00	3.26
1500	43.8	171.2	0.00	3.18
2000	42.2	174.2	0.00	3.06

OS10149				
Depth (m)	NO ₃ (μmol/L)	Si (μmol/L)	NO ₂ (μmol/L)	P (μmol/L)
10	14.8	31.4	0.16	1.50
20	16.4	33.5	0.18	1.60
50	25.4	48.8	0.25	2.13
100	30.2	60.3	0.21	2.39
200	38.0	78.0	0.10	2.85
300	43.8	95.8	0.01	3.22
400	44.7	105.5	0.00	3.37
500	44.8	118.9	0.00	3.37
750	44.9	136.2	0.00	3.12
1000	44.9	147.5	0.00	3.11
1500	43.9	169.3	0.00	3.02
2000	42.0	172.6	0.00	2.88

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