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DATA RECORD OF OCEANOGRAPHIC OBSERVATIONS AND EXPLORATORY FISHING

No. 52

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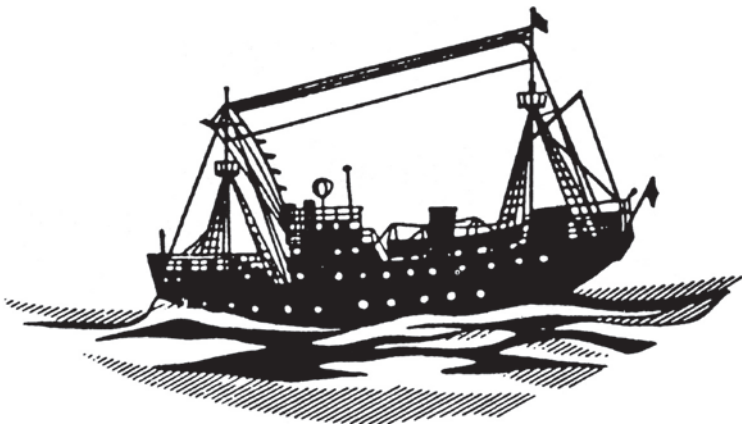
第 52 号



FACULTY OF FISHERIES SCIENCES,
GRADUATE SCHOOL OF FISHERIES SCIENCES,
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Hakodate, Japan
July 2009

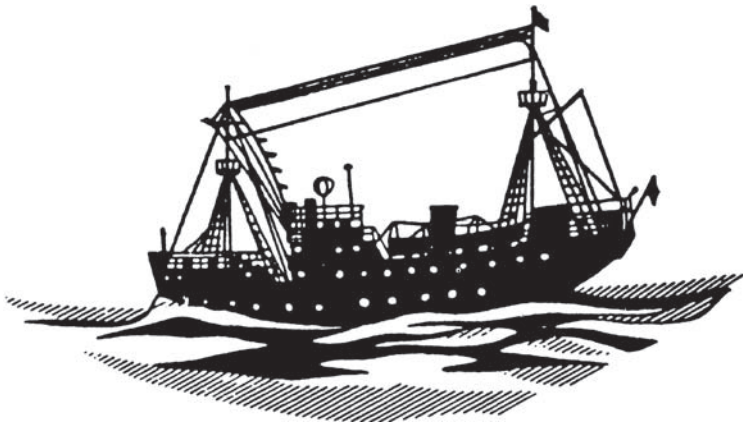
北海道大学大学院水産科学研究院・大学院水産科学院・水産学部
函 館 市
平成21年７月

DATA RECORD
OF
OCEANOGRAPHIC OBSERVATIONS AND
EXPLORATORY FISHING

No. 52

海 洋 調 査 漁 業 試 験 要 報

第 52 号



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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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1

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 numberals by G.M.T
TIME	Hour and tens of hour in G.M.T
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
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. DRY,WET	Air temperatures recorded from dry and wet bulb thermometers in °C
BAR.	Barometric pressure in hectopascal to the tenth of degree
WEATHER	Water in WMO Code 4501
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)

2

SCIENTIFIC NAME AND COMMON NAME

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

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 mackeral	Kurotachikamasu
Reptilia		
Cheloniidae	Turtles	(Umigame)

PART I

OSHORO MARU CRUISES

FROM JANUARY TO DECEMBER 2008

I. Crew List

Captain:		Toshimi Meguro
Crew:	Chief Officer	Yoshiyuki Kajiwara
	First Officer	Shogo Takagi
	Second Officer	Yoshihiko Kamei
	Jr.Second Officer	Keiichiro Sakaoka
	Chief Engineer	Junichi Kimura
	First Engineer	Fumio Fujimoto
	Jr. First Engineer	Tetsuo Tsuchiya
	Second Engineer	Kazuya Sawanaka
	Jr. Second Engineer	Jumpei Shimura
	Chief Radio Officer	Akio Kamijo
	Second Radio Officer	Satoshi Ishigaki
	Boatswain	Yoshiharu Matsui
	Jr. Boatswain	Toshiharu Yosoe
	Quartermaster	Sen Sunakoma
	Quartermaster	Yoshihiro Onodera
	Quartermaster	Naoyuki Eda
	Quartermaster	Tadashi Mishima
	Sailor	Shota Hagiwara
	Sailor	Takahiro Kanazawa
	Sailor	Shunpei Komatsu
	No.1 Oiler	Shuiti Hasegawa
	Junior No.1 Oiler	Kohya Nakamura
	Oiler	Takuya Takano
	Oiler	Tohru Murakami
	Fireman	Keisuke Shindo
	Fireman	Takaaki Arakawa
	Chief Steward	Yoshinori Sawada
	Jr. Chief Steward	Kazuhiro Ikeda
	Head Steward	Kazuo Ishikawa
	Steward	Hiroshi Nakamura

II. Particulars

Length (o.a.)	72.85 m
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	2,353 kW
Call sign	JDVA

1

THE “OSHORO MARU” CRUISE 186
TO THE OFF HIYAMA AREA

IN JANUARY 2008

1. Cruise Itinerary

Cruise 186			
Departure from Hakodate	Jan.	15	, 2008
Start hydrographic research (OS08001)		16	
Finish hydrographic research (OS08020)		17	
Return to Hakodate		19	
Total coverage 291.0 miles			

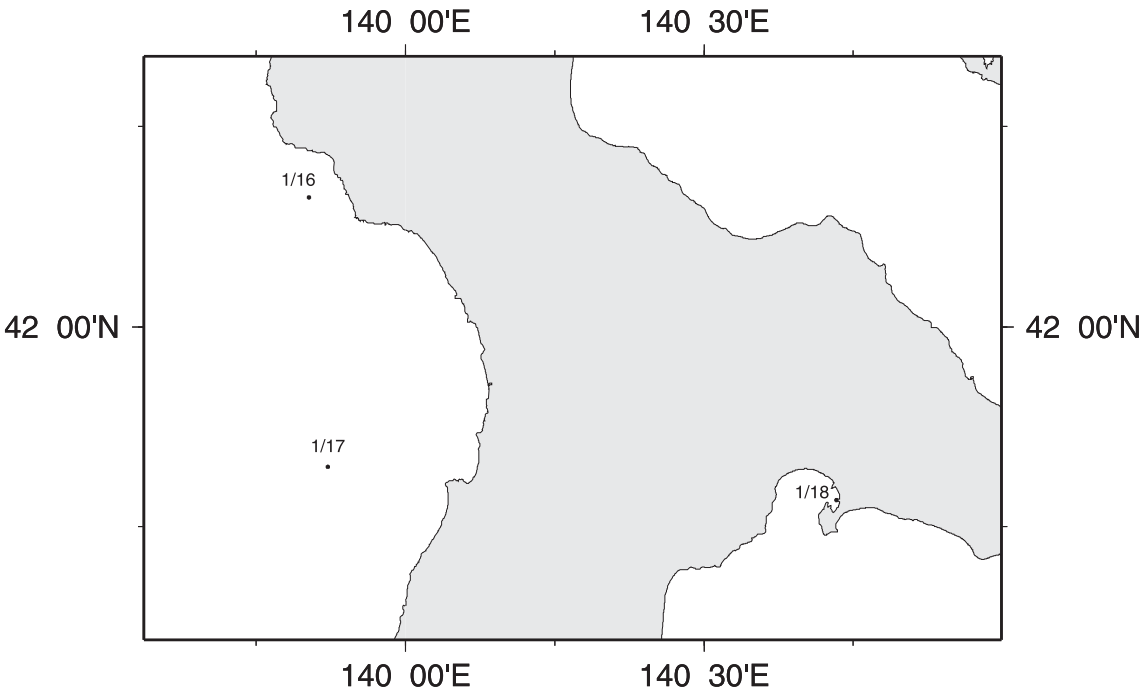

Figure 1: Noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 25 men		

Cruise 186

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science) Toshikuni Nakatani
Guest Scientist	Scientist	(Hokkaido Hakodate Fisheries Experimental Station) Masamichi Watanobe
Under Graduate Students:	1 person	
	Total 33 persons	

3. Items of Research

Hydrographic observations: Fig. 2 Table 1, 2

Studies on relation between eggs and larvae distribution and environment

Early life of walleye Pollock off Hiyama of northern Japan Sea

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

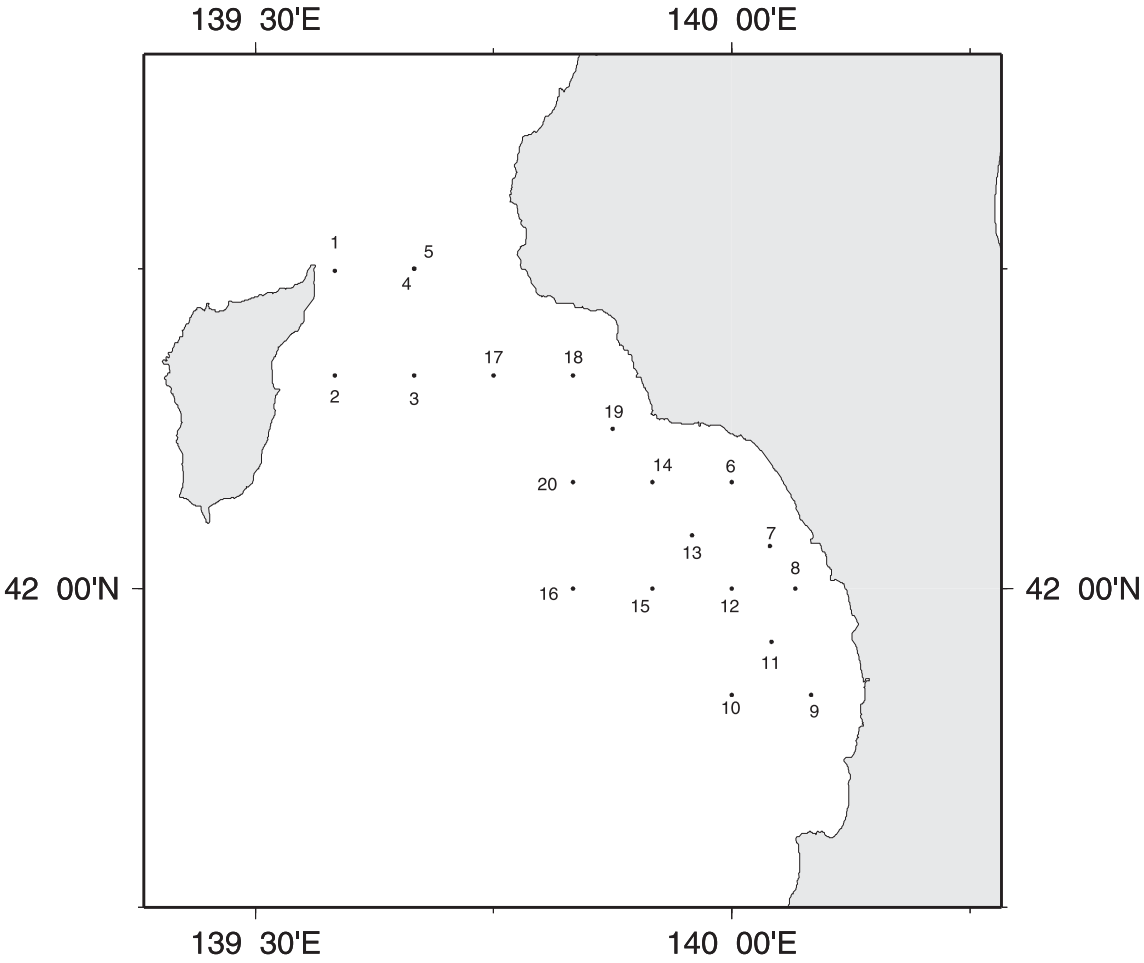

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08001	42-14.9N	139-35.0E	1/16	0735	9	382	-	-	7.3	o	SBE-19plus
OS08002	42-10.0N	139-35.0E	1/16	0835	9	488	-	-	8.5	o	SBE-19plus

(*):Fixed position by Global Positioning system

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08003	42-10.0N	139-40.0E	1/16	0920	9	697	-	-	7.9	o	SBE-19plus
OS08004	42-15.0N	139-40.0E	1/16	1025	9	445	-	-	8.4	o	SBE-19plus
OS08005	42-15.0N	139-40.0E	1/16	1110	9	93	-	-	8.8	o	SBE-19plus
OS08006	42-05.0N	140-00.0E	1/16	1300	9	91	-	-	8.2	o	SBE-19plus
OS08007	42-02.0N	140-02.4E	1/16	1345	9	186	-	-	8.7	o	SBE-19plus
OS08008	42-00.0N	140-04.0E	1/16	1415	9	90	-	-	8.4	o	SBE-19plus
OS08009	41-55.0N	140-05.0E	1/16	1510	9	53	-	-	9.1	o	SBE-19plus
OS08010	41-55.0N	140-00.0E	1/16	1600	9	769	-	-	9.4	o	SBE-19plus
OS08011	41-57.5N	140-02.5E	1/16	1640	9	125	-	-	9.1	o	SBE-19plus
OS08012	42-00.0N	140-00.0E	1/16	1730	9	718	-	-	8.4	o	SBE-19plus
OS08013	42-02.5N	139-57.5E	1/16	1820	9	360	-	-	8.4	o	SBE-19plus
OS08014	42-05.0N	139-55.0E	1/16	1900	9	123	-	-	7.7	s	SBE-19plus
OS08015	42-00.0N	139-55.0E	1/16	2000	9	985	-	-	8.7	o	SBE-19plus
OS08016	42-00.0N	139-50.0E	1/16	2100	9	1107	-	-	8.9	o	SBE-19plus
OS08017	42-10.0N	139-45.0E	1/17	0745	9	340	-	-	8.1	bc	SBE-19plus
OS08018	42-10.0N	139-50.0E	1/17	0840	9	510	-	-	7.7	bc	SBE-19plus
OS08019	42-07.5N	139-52.5E	1/17	0925	9	260	-	-	8.2	bc	SBE-19plus
OS08020	42-05.0N	139-50.0E	1/17	1015	9	780	-	-	8.1	bc	SBE-19plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS08001
Longitude	42-14.9N
Latitude	139-35.0E
Depth(m)	382

Press.	Temp.	Sal.	SIG-T
5	7.572	34.146	26.666
10	7.571	34.146	26.666
20	7.405	34.138	26.684
30	7.172	34.132	26.712
40	7.158	34.135	26.715
50	7.087	34.131	26.723
75	6.942	34.126	26.738
100	6.876	34.123	26.745
125	6.699	34.119	26.766
150	6.472	34.123	26.799

Station	OS08002
Longitude	42-10.0N
Latitude	139-35.0E
Depth(m)	488

Press.	Temp.	Sal.	SIG-T
5	8.943	34.024	26.363
10	8.873	34.152	26.474
20	7.937	34.128	26.599
30	7.606	34.139	26.656
40	7.449	34.140	26.679
50	7.331	34.139	26.695
75	7.311	34.140	26.698
100	7.275	34.140	26.703
125	6.480	34.112	26.790
150	5.674	34.091	26.875

Station	OS08003
Longitude	42-10.0N
Latitude	139-40.0E
Depth(m)	697

Press.	Temp.	Sal.	SIG-T
5	8.100	34.146	26.589
10	8.092	34.147	26.590
20	8.123	34.148	26.586
30	8.121	34.147	26.586
40	7.705	34.137	26.640
50	7.567	34.134	26.657
75	7.398	34.134	26.681
100	6.813	34.106	26.740
125	6.115	34.099	26.826
150	3.934	34.053	27.040

Station	OS08004
Longitude	42-15.0N
Latitude	139-40.0E
Depth(m)	445

Press.	Temp.	Sal.	SIG-T
5	8.802	34.142	26.478
10	8.807	34.142	26.477
20	8.810	34.142	26.477
30	8.285	34.144	26.559
40	7.537	34.145	26.670
50	7.465	34.146	26.681
75	6.968	34.116	26.727
100	6.211	34.089	26.806
125	5.952	34.093	26.842
150	4.415	34.059	26.994

Station	OS08005
Longitude	42-15.0N
Latitude	139-40.0E
Depth(m)	93

Press.	Temp.	Sal.	SIG-T
5	8.687	34.141	26.495
10	8.704	34.142	26.493
20	8.706	34.142	26.493
30	8.702	34.141	26.493
40	8.687	34.141	26.495
50	7.780	34.094	26.595
75	4.030	34.062	27.037

Station	OS08006
Longitude	42-05.0N
Latitude	140-00.0E
Depth(m)	91

Press.	Temp.	Sal.	SIG-T
5	8.591	34.140	26.509
10	8.583	34.140	26.511
20	8.542	34.133	26.511
30	8.478	34.130	26.518
40	8.204	34.114	26.548
50	7.957	34.111	26.582
75	7.285	34.095	26.666

Station	OS08007
Longitude	42-02.0N
Latitude	140-02.4E
Depth(m)	186

Press.	Temp.	Sal.	SIG-T
5	8.992	34.147	26.452
10	8.994	34.147	26.451
20	9.018	34.148	26.448
30	9.010	34.147	26.449
40	8.979	34.145	26.453
50	8.515	34.119	26.505
75	7.242	34.091	26.669
100	5.396	34.066	26.889
125	3.993	34.069	27.046

Station	OS08008
Longitude	42-00.0N
Latitude	140-04.0E
Depth(m)	90

Press.	Temp.	Sal.	SIG-T
5	8.793	34.141	26.479
10	8.801	34.141	26.477
20	8.796	34.141	26.478
30	8.800	34.142	26.478
40	8.784	34.141	26.480
50	8.730	34.140	26.488
75	8.710	34.140	26.491

Station	OS08009
Longitude	41-55.0N
Latitude	140-05.0E
Depth(m)	53

Press.	Temp.	Sal.	SIG-T
5	9.457	34.156	26.384
10	9.482	34.158	26.382
20	9.366	34.152	26.396
30	9.256	34.153	26.414
40	9.073	34.148	26.440
50	8.927	34.148	26.463

Station OS08010
Longitude 41-55.0N
Latitude 140-00.0E
Depth(m) 769

Press.	Temp.	Sal.	SIG-T
5	9.786	34.166	26.337
10	9.787	34.166	26.337
20	9.796	34.166	26.335
30	9.799	34.165	26.334
40	9.797	34.165	26.334
50	9.351	34.154	26.399
75	7.543	34.082	26.619
100	5.827	34.061	26.832
125	4.494	34.072	26.996
150	2.578	34.063	27.174

Station OS08011
Longitude 41-57.5N
Latitude 140-02.5E
Depth(m) 125

Press.	Temp.	Sal.	SIG-T
5	9.587	34.161	26.366
10	9.593	34.162	26.366
20	9.591	34.162	26.367
30	9.577	34.162	26.369
40	9.551	34.161	26.372
50	9.250	34.138	26.404
75	6.752	34.073	26.723
100	4.758	34.056	26.954

Station OS08012
Longitude 42-00.0N
Latitude 140-00.0E
Depth(m) 718

Press.	Temp.	Sal.	SIG-T
5	8.819	34.141	26.474
10	8.823	34.141	26.474
20	8.816	34.140	26.474
30	8.631	34.137	26.501
40	8.578	34.137	26.509
50	8.477	34.132	26.521
75	6.724	34.074	26.727
100	4.759	34.053	26.952
125	3.527	34.042	27.071
150	2.494	34.062	27.180

Station OS08013
Longitude 42-02.5N
Latitude 139-57.5E
Depth(m) 360

Press.	Temp.	Sal.	SIG-T
5	8.782	34.150	26.487
10	8.783	34.151	26.487
20	8.739	34.147	26.492
30	8.511	34.141	26.522
40	8.498	34.142	26.525
50	8.035	34.119	26.577
75	6.723	34.090	26.740
100	4.192	34.050	27.011
125	2.810	34.049	27.143
150	2.330	34.064	27.195

Station OS08014
Longitude 42-05.0N
Latitude 139-55.0E
Depth(m) 123

Press.	Temp.	Sal.	SIG-T
5	8.140	34.134	26.573
10	8.124	34.134	26.575
20	8.133	34.133	26.574
30	8.044	34.126	26.581
40	7.773	34.111	26.609
50	7.036	34.099	26.704
75	5.134	34.063	26.917
100	4.537	34.071	26.990

Station OS08015
Longitude 42-00.0N
Latitude 139-55.0E
Depth(m) 985

Press.	Temp.	Sal.	SIG-T
5	9.186	34.157	26.428
10	9.194	34.157	26.427
20	9.183	34.157	26.430
30	9.211	34.158	26.425
40	9.214	34.157	26.424
50	9.176	34.151	26.425
75	7.792	34.094	26.593
100	5.614	34.051	26.851
125	3.587	34.047	27.070
150	2.816	34.052	27.144

Station OS08016
Longitude 42-00.0N
Latitude 139-50.0E
Depth(m) 1107

Press.	Temp.	Sal.	SIG-T
5	9.243	34.158	26.420
10	9.257	34.158	26.418
20	9.271	34.157	26.415
30	9.271	34.158	26.415
40	9.259	34.158	26.417
50	9.237	34.157	26.421
75	8.259	34.141	26.561
100	6.230	34.067	26.786
125	5.057	34.063	26.926
150	3.451	34.053	27.087

Station OS08017
Longitude 42-10.0N
Latitude 139-45.0E
Depth(m) 340

Press.	Temp.	Sal.	SIG-T
5	8.283	34.141	26.557
10	8.287	34.141	26.556
20	8.282	34.141	26.557
30	8.249	34.137	26.559
40	8.058	34.126	26.579
50	7.932	34.122	26.595
75	5.526	34.066	26.873
100	4.473	34.066	26.993
125	3.235	34.065	27.117
150	2.373	34.059	27.188

Station OS08018
Longitude 42-10.0N
Latitude 139-50.0E
Depth(m) 510

Press.	Temp.	Sal.	SIG-T
5	7.961	34.109	26.580
10	7.983	34.113	26.580
20	8.031	34.123	26.581
30	8.027	34.123	26.582
40	7.578	34.107	26.635
50	5.933	34.065	26.822
75	3.713	34.061	27.068
100	3.027	34.063	27.135
125	2.370	34.063	27.192
150	2.059	34.066	27.219

Station	OS08019
Longitude	42-07.5N
Latitude	139-52.5E
Depth(m)	260

Press.	Temp.	Sal.	SIG-T
5	8.578	34.147	26.517
10	8.590	34.147	26.515
20	8.594	34.147	26.514
30	8.599	34.148	26.514
40	8.578	34.147	26.516
50	7.527	34.107	26.641
75	6.099	34.059	26.797
100	3.559	34.059	27.082
125	2.857	34.063	27.150
150	2.285	34.063	27.198

Station	OS08020
Longitude	42-05.0N
Latitude	139-50.0E
Depth(m)	780

Press.	Temp.	Sal.	SIG-T
5	8.530	34.150	26.526
10	8.541	34.149	26.524
20	8.546	34.149	26.523
30	8.549	34.150	26.523
40	7.788	34.137	26.628
50	7.354	34.143	26.695
75	6.918	34.112	26.730
100	6.181	34.081	26.803
125	4.573	34.061	26.978
150	2.515	34.058	27.176

2

THE “OSHORO MARU” CRUISE 187
TO THE OFF HIYAMA AREA

IN FEBRARY - MARCH 2008

1. Cruise Itinerary

Cruise 187			
Departure from Hakodate	Feb.	29	, 2008
Start hydrographic research (OS08021)	Mar.	1	
Finish hydrographic research (OS08030)		2	
Return to Hakodate		3	
Total coverage 250.9 miles			

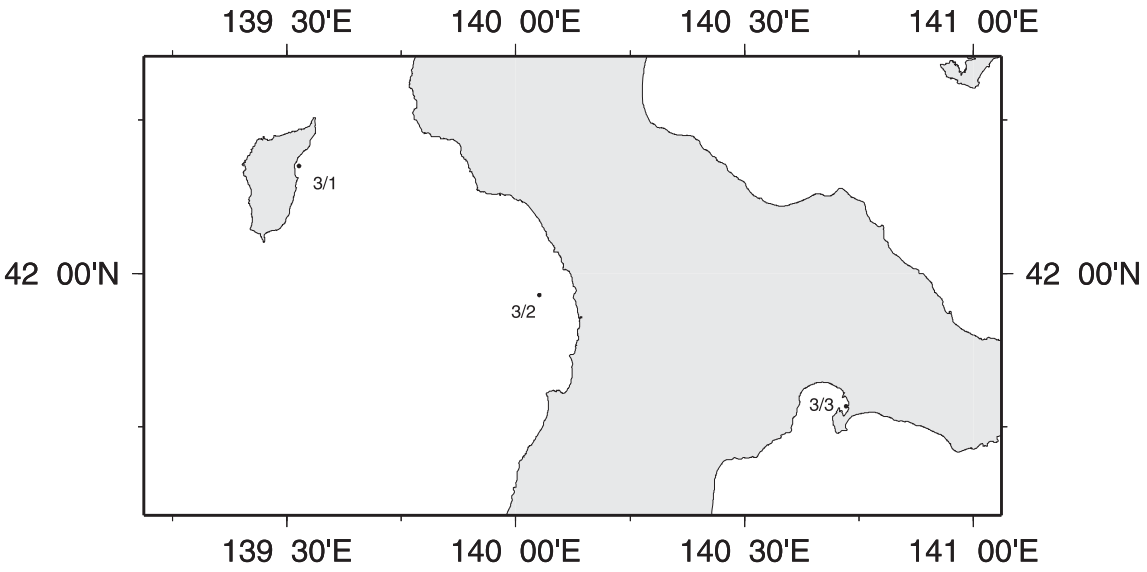

Figure 1: Noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 25 men		

Cruise 187

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science) Toshikuni Nakatani
Graduate Students:	1 person	
	Total 32 persons	

3. Items of Research

Hydrographic observations: Fig. 2 Table 1, 2

Studies on relation between eggs and larvae distribution and environment

Early life of walleye Pollock off Hiyama of northern Japan Sea

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

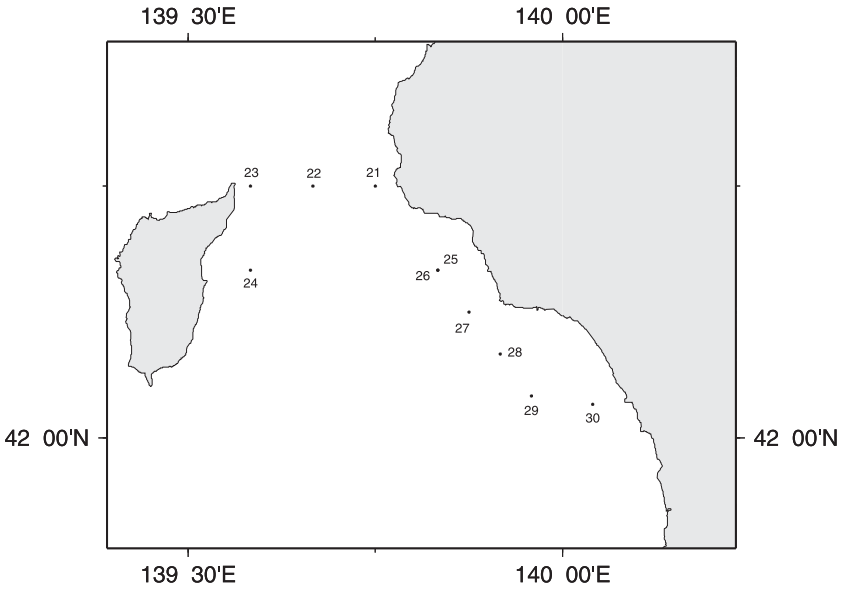

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08021	42-15.0N	139-45.0E	3/1	0630	9	95	-	-	7.4	o	SBE-19plus
OS08022	42-15.0N	139-40.0E	3/1	0715	9	435	-	-	6.2	c	SBE-19plus
OS08023	42-15.0N	139-35.0E	3/1	0825	9	562	-	-	6.1	s	SBE-19plus
OS08024	42-10.0N	139-35.0E	3/1	0920	9	512	-	-	6	s	SBE-19plus
OS08025	42-10.0N	139-50.0E	3/1	1010	9	691	-	-	6.2	s	SBE-19plus
OS08026	42-10.0N	139-50.0E	3/2	0720	9	492	-	-	6.4	o	SBE-19plus
OS08027	42-07.5N	139-52.5E	3/2	0805	9	295	-	-	5.5	o	SBE-19plus
OS08028	42-05.0N	139-55.0E	3/2	0925	9	123	-	-	6	o	SBE-19plus
OS08029	42-02.5N	139-57.5E	3/2	1005	9	370	-	-	6.2	o	SBE-19plus
OS08030	42-02.0N	140-02.4E	3/2	1055	9	200	-	-	5.8	o	SBE-19plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station OS08021
Longitude 42-15.0N
Latitude 139-45.0E
Depth(m) 95

Press.	Temp.	Sal.	SIG-T
5	6.091	34.147	26.867
10	6.087	34.147	26.868
20	6.084	34.147	26.868
30	6.031	34.145	26.873
40	5.961	34.144	26.881
50	5.916	34.144	26.887
75	5.355	34.132	26.946

Station OS08022
Longitude 42-15.0N
Latitude 139-40.0E
Depth(m) 435

Press.	Temp.	Sal.	SIG-T
5	6.150	34.149	26.861
10	6.154	34.150	26.861
20	6.072	34.145	26.868
30	6.058	34.146	26.871
40	6.032	34.145	26.874
50	6.017	34.145	26.875
75	5.754	34.135	26.900
100	4.678	34.102	26.999
125	2.920	34.055	27.138
150	2.571	34.060	27.172

Station OS08023
Longitude 42-15.0N
Latitude 139-35.0E
Depth(m) 562

Press.	Temp.	Sal.	SIG-T
5	6.280	34.146	26.842
10	6.287	34.147	26.842
20	6.296	34.147	26.841
30	6.191	34.148	26.855
40	6.171	34.148	26.858
50	6.141	34.147	26.861
75	4.784	34.103	26.989
100	3.808	34.084	27.077
125	3.247	34.071	27.121

Station OS08024
Longitude 42-10.0N
Latitude 139-35.0E
Depth(m) 512

Press.	Temp.	Sal.	SIG-T
5	6.406	34.147	26.827
10	6.404	34.147	26.827
20	6.416	34.150	26.827
30	6.392	34.150	26.831
40	6.163	34.144	26.856
50	5.875	34.135	26.885
75	4.321	34.077	27.018
100	3.167	34.060	27.119
125	2.680	34.061	27.164
150	2.195	34.064	27.206

Station OS08025
Longitude 42-10.0N
Latitude 139-50.0E
Depth(m) 691

Press.	Temp.	Sal.	SIG-T
5	6.635	34.051	26.721
10	6.683	34.149	26.792
20	6.696	34.148	26.789
30	6.696	34.148	26.789
40	6.698	34.148	26.789
50	6.663	34.147	26.792
75	4.840	34.121	26.997
100	3.913	34.082	27.065
125	2.902	34.083	27.162
150	2.246	34.072	27.209

Station OS08026
Longitude 42-10.0N
Latitude 139-50.0E
Depth(m) 492

Press.	Temp.	Sal.	SIG-T
5	6.062	34.144	26.869
10	6.047	34.144	26.870
20	6.040	34.143	26.871
30	5.999	34.141	26.874
40	5.933	34.139	26.881
50	5.931	34.139	26.881

Station OS08027
Longitude 42-07.5N
Latitude 139-52.5E
Depth(m) 295

Press.	Temp.	Sal.	SIG-T
5	5.720	34.129	26.900
10	5.734	34.130	26.898
20	5.697	34.128	26.902
30	5.684	34.128	26.903
40	5.666	34.129	26.906
50	5.670	34.130	26.907
75	5.527	34.127	26.921
100	5.372	34.123	26.937
125	5.421	34.125	26.933
150	5.484	34.126	26.926

Station OS08028
Longitude 42-05.0N
Latitude 139-55.0E
Depth(m) 123

Press.	Temp.	Sal.	SIG-T
5	6.217	34.146	26.851
10	6.227	34.146	26.849
20	6.232	34.146	26.849
30	6.220	34.145	26.850
40	6.165	34.144	26.855
50	6.025	34.139	26.870
75	5.647	34.130	26.909
100	4.986	34.115	26.975

Station OS08029
Longitude 42-02.5N
Latitude 139-57.5E
Depth(m) 370

Press.	Temp.	Sal.	SIG-T
5	6.331	34.020	26.736
10	6.416	34.145	26.824
20	6.397	34.144	26.826
30	6.395	34.145	26.826
40	6.359	34.143	26.830
50	6.278	34.141	26.839
75	6.080	34.133	26.858
100	5.071	34.103	26.956
125	4.565	34.106	27.015
150	4.285	34.102	27.043

Station		OS08030	
Longitude		42-02.0N	
Latitude		140-02.4E	
Depth(m)		200	
Press.	Temp.	Sal.	SIG-T
5	6.187	34.079	26.801
10	6.214	34.142	26.848
20	6.213	34.142	26.848
30	6.213	34.143	26.848
40	6.218	34.142	26.847
50	6.209	34.142	26.848
75	5.798	34.130	26.890
100	5.390	34.121	26.933
125	4.777	34.105	26.991
150	4.002	34.094	27.065

3

THE “OSHORO MARU” CRUISE 188
TO THE OFF HIYAMA AREA

IN MARCH 2008

1. Cruise Itinerary

Cruise 188			
Departure from Hakodate	Mar.	18	, 2008
Start Mid-water Trawl research (OSMT0801)		19	
Start hydrographic research (OS08031)		19	
Arrival at Okushiri		21	
Departure from Okushiri		22	
Arrival at Hakodate		23	
Departure from Hakodate		23	
Finish hydrographic research (OS08042)		24	
Arrival at Okushiri		26	
Departure from Okushiri		27	
Finish Mid-water Trawl research (OSMT0803)		27	
Return to Hakodate		28	
Total coverage 830.2 miles			

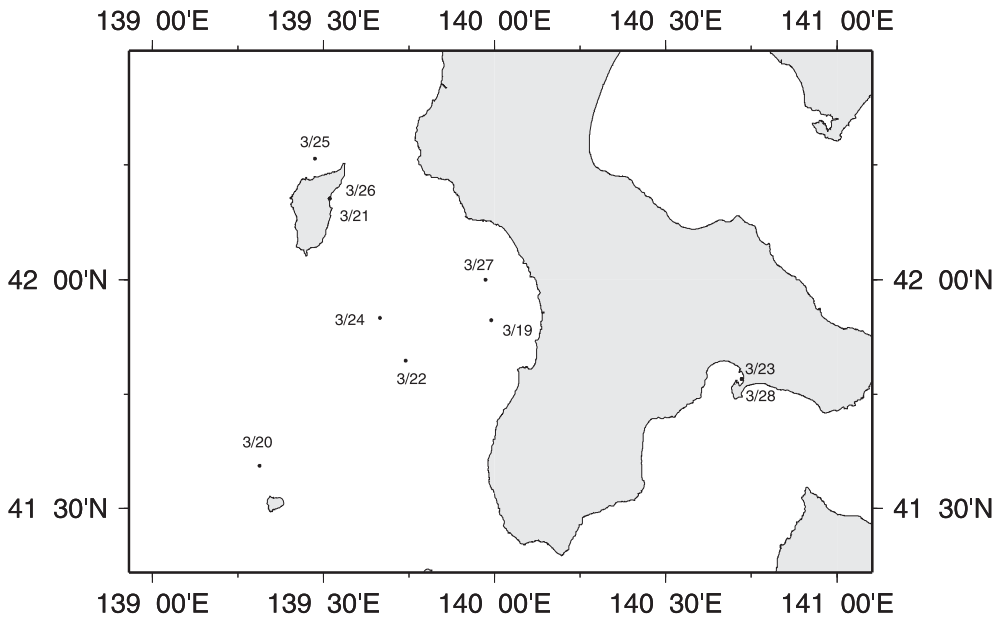

Figure 1: Noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 26 men		

Cruise 188

Research Staff:	Professor	(Laboratory of Marine Industrial Science and Technology) Yasuo Yoshimura
	Associate Professor	(Laboratory of Marine Industrial Science and Technology) Shunji Jyanuma
Teaching Assistant:	2 persons	
Under Graduate Students:	47 persons	
	Total 83 persons	

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2
Mid water trawl observations:	Fig. 3	Table 3

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08031	42-00.2N	140-00.1E	3/19	1355	9	671	-	-	8	c	SBE-9plus
OS08032	41-15.0N	140-00.0E	3/20	0610	9	125	4	10	8	b	SBE-9plus
OS08033	41-22.5N	139-44.9E	3/20	0755	9	454	4	17.5	7.9	b	SBE-9plus
OS08034	41-30.1N	139-29.3E	3/20	0845	9	1671	3	13.8	7.9	b	SBE-9plus
OS08035	41-37.5N	139-15.1E	3/20	1310	9	1648	3	12.5	7.5	b	SBE-9plus
OS08036	41-44.7N	139-29.0E	3/20	1505	9	1366	3	13.4	6.5	b	SBE-9plus
OS08037	41-52.5N	139-44.9E	3/20	1745	9	1357	-	-	8	bc	SBE-9plus
OS08038	41-54.9N	139-54.8E	3/24	0900	9	1213	5	7.8	7.8	c	SBE-9plus
OS08039	41-55.0N	139-39.7E	3/24	1200	9	1163	4	12	6.7	c	SBE-9plus
OS08040	41-51.0N	139-24.8E	3/24	1500	9	1715	5	12	7.8	c	SBE-9plus
OS08041	41-55.0N	139-32.4E	3/24	1800	9	122	-	-	7.3	c	SBE-9plus
OS08042	41-55.0N	139-47.4E	3/24	2100	9	1324	-	-	7.1	c	SBE-9plus

(*):Fixed position by Global Positioning system

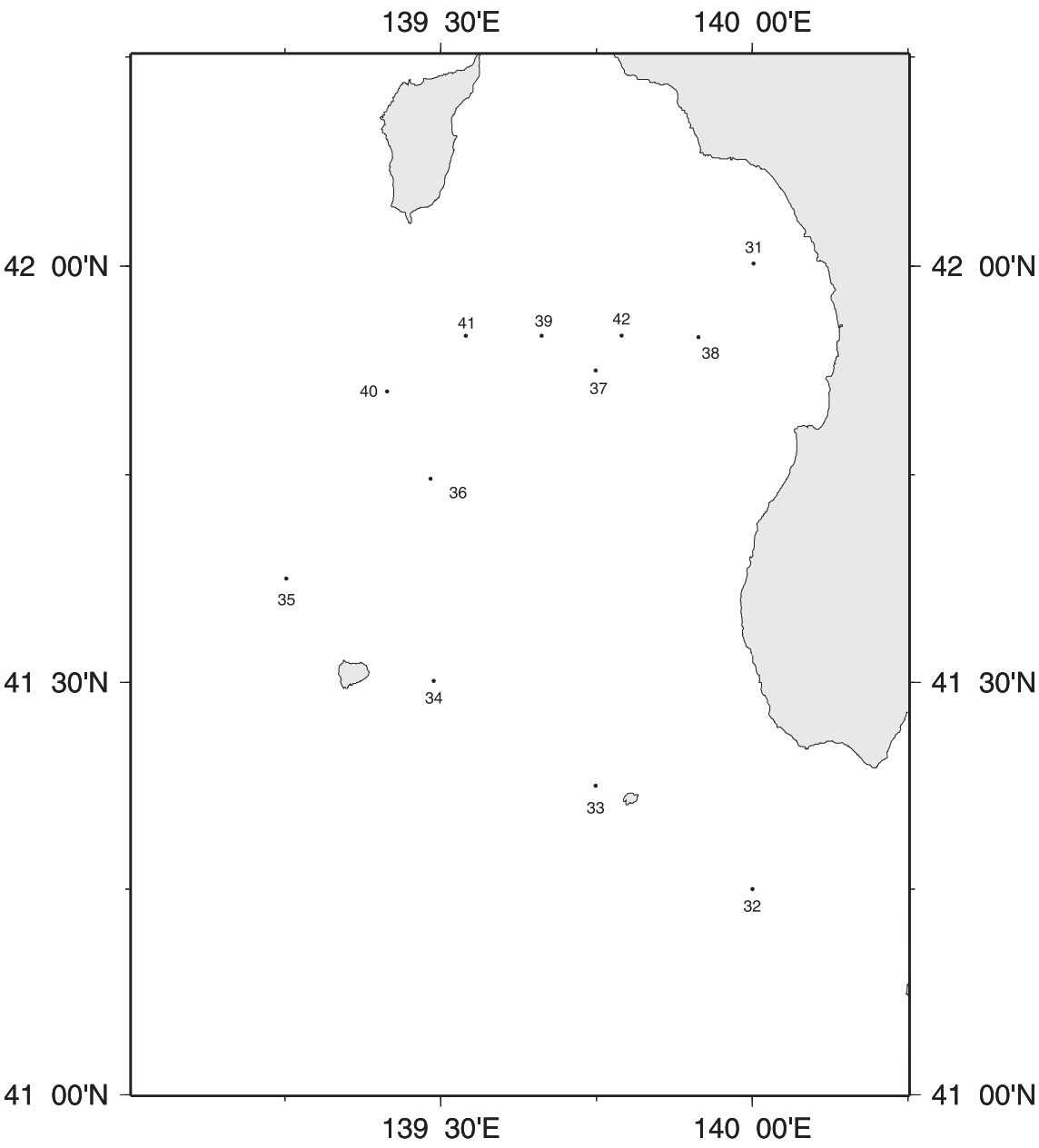

Figure 2: Oceanographic stations

Table 2: Oceanographic data

Station	OS08031
Longitude	42-00.2N
Latitude	140-00.1E
Depth(m)	671

Press.	Temp.	Sal.	SIG-T
5	7.533	34.075	26.616
10	7.531	34.075	26.616
20	7.332	34.072	26.642
30	7.235	34.078	26.660
40	7.071	34.085	26.688
50	6.491	34.087	26.769
75	5.655	34.084	26.872
100	5.479	34.085	26.894
125	5.082	34.087	26.942
150	4.068	34.076	27.044
200	2.533	34.060	27.175
250	1.747	34.055	27.234
300	1.079	34.054	27.279
400	0.681	34.055	27.306
500	0.560	34.056	27.313
600	0.485	34.056	27.318

Station	OS08032
Longitude	41-15.0N
Latitude	140-00.0E
Depth(m)	125

Press.	Temp.	Sal.	SIG-T
5	7.384	34.137	26.686
10	7.461	34.132	26.670
20	6.951	34.132	26.742
30	6.927	34.131	26.744
40	6.832	34.130	26.757
50	6.405	34.122	26.807
75	4.713	34.091	26.987
100	3.756	34.074	27.074

Station	OS08033
Longitude	41-22.5N
Latitude	139-44.9E
Depth(m)	454

Press.	Temp.	Sal.	SIG-T
5	8.001	34.137	26.596
10	7.986	34.137	26.598
20	7.445	34.126	26.668
30	6.943	34.125	26.737
40	6.650	34.116	26.770
50	6.403	34.109	26.797
75	5.050	34.094	26.952
100	4.177	34.082	27.038
125	3.669	34.073	27.082
150	2.788	34.061	27.155
200	1.839	34.053	27.225
250	1.630	34.052	27.240
300	1.507	34.051	27.248
400	0.774	34.056	27.300

Station	OS08034
Longitude	41-30.1N
Latitude	139-29.3E
Depth(m)	1671

Press.	Temp.	Sal.	SIG-T
5	7.883	34.149	26.623
10	7.880	34.149	26.624
20	7.877	34.149	26.624
30	7.849	34.148	26.628
40	7.135	34.120	26.708
50	5.719	34.093	26.871
75	5.143	34.098	26.943
100	4.291	34.094	27.035
125	3.141	34.057	27.119
150	2.168	34.045	27.193
200	1.327	34.048	27.258
250	1.085	34.052	27.278
300	0.961	34.054	27.287
400	0.728	34.056	27.304
500	0.578	34.057	27.313
600	0.501	34.058	27.318
700	0.423	34.057	27.322
800	0.361	34.056	27.325
900	0.324	34.056	27.327
1000	0.294	34.055	27.328
1200	0.246	34.055	27.330
1500	0.211	34.055	27.332

Station	OS08035
Longitude	41-37.5N
Latitude	139-15.1E
Depth(m)	1648

Press.	Temp.	Sal.	SIG-T
10	7.249	34.124	26.695
20	6.901	34.121	26.740
30	6.009	34.098	26.839
40	5.041	34.096	26.954
50	4.393	34.094	27.024
75	3.713	34.089	27.090
100	2.978	34.075	27.149
125	1.997	34.050	27.211
150	1.450	34.048	27.250
200	1.163	34.051	27.272
250	0.968	34.054	27.287
300	0.836	34.055	27.296
400	0.681	34.057	27.307
500	0.549	34.058	27.315
600	0.459	34.057	27.320
700	0.395	34.056	27.323
800	0.348	34.056	27.325
900	0.297	34.055	27.328
1000	0.267	34.055	27.329
1200	0.226	34.055	27.331
1500	0.209	34.055	27.332

Station	OS08036
Longitude	41-44.7N
Latitude	139-29.0E
Depth(m)	1366

Press.	Temp.	Sal.	SIG-T
5	6.533	34.112	26.782
10	6.468	34.111	26.790
20	6.343	34.110	26.806
30	6.356	34.110	26.804
40	6.101	34.107	26.834
50	6.064	34.105	26.837
75	4.574	34.097	27.007
100	3.906	34.094	27.075
125	3.525	34.086	27.106
150	3.193	34.076	27.130
200	1.527	34.049	27.245
250	1.166	34.052	27.272
300	0.954	34.054	27.288
400	0.720	34.055	27.303
500	0.605	34.057	27.312
600	0.513	34.057	27.317
700	0.431	34.056	27.321
800	0.384	34.056	27.323
900	0.338	34.056	27.326
1000	0.292	34.055	27.328
1200	0.236	34.055	27.331

Station	OS08037
Longitude	41-52.5N
Latitude	139-44.9E
Depth(m)	1357

Press.	Temp.	Sal.	SIG-T
5	7.988	34.136	26.598
10	7.983	34.137	26.599
20	7.684	34.121	26.630
30	6.988	34.110	26.720
40	6.141	34.113	26.834
50	5.598	34.106	26.896
75	5.025	34.105	26.963
100	3.720	34.077	27.080
125	2.929	34.056	27.138
150	2.383	34.048	27.178
200	1.694	34.049	27.233
250	1.270	34.051	27.265
300	1.064	34.053	27.280
400	0.747	34.055	27.301
500	0.638	34.056	27.309
600	0.517	34.057	27.316
700	0.414	34.056	27.322
800	0.348	34.056	27.325
900	0.299	34.055	27.328
1000	0.269	34.055	27.329
1200	0.229	34.055	27.331

Station	OS08038
Longitude	41-54.9N
Latitude	139-54.8E
Depth(m)	1213

Press.	Temp.	Sal.	SIG-T
5	7.868	34.120	26.603
10	7.870	34.120	26.602
20	7.840	34.119	26.606
30	7.823	34.119	26.608
40	7.604	34.120	26.641
50	6.024	34.108	26.845
75	4.598	34.093	27.001
100	3.939	34.074	27.056
125	3.007	34.056	27.131
150	2.218	34.053	27.196
200	1.427	34.049	27.252
250	1.132	34.051	27.274
300	0.968	34.053	27.286
400	0.726	34.054	27.302
500	0.568	34.055	27.312

Station	OS08039
Longitude	41-55.0N
Latitude	139-39.7E
Depth(m)	1163

Press.	Temp.	Sal.	SIG-T
5	6.667	34.113	26.765
10	6.670	34.113	26.765
20	6.660	34.113	26.766
30	6.625	34.112	26.770
40	6.579	34.112	26.776
50	6.318	34.108	26.807
75	4.987	34.091	26.956
100	3.946	34.078	27.059
125	3.288	34.065	27.112
150	2.327	34.048	27.183
200	1.445	34.049	27.251
250	1.226	34.051	27.268
300	1.010	34.054	27.284
400	0.722	34.055	27.303
500	0.560	34.056	27.313

Station	OS08040
Longitude	41-51.0N
Latitude	139-24.8E
Depth(m)	1715

Press.	Temp.	Sal.	SIG-T
5	7.865	34.144	26.622
10	7.864	34.143	26.621
20	7.865	34.143	26.621
30	6.871	34.117	26.741
40	5.085	34.095	26.948
50	4.647	34.095	26.997
75	4.070	34.096	27.060
100	3.621	34.089	27.100
125	3.027	34.079	27.147
150	2.251	34.058	27.197
200	1.578	34.047	27.240
250	1.169	34.051	27.271
300	0.973	34.053	27.286
400	0.683	34.054	27.305
500	0.560	34.055	27.312

Station	OS08041
Longitude	41-55.0N
Latitude	139-32.4E
Depth(m)	122

Press.	Temp.	Sal.	SIG-T
5	7.208	34.101	26.682
10	7.178	34.102	26.687
20	7.100	34.105	26.700
30	6.479	34.110	26.788
40	5.201	34.105	26.942
50	5.003	34.101	26.962
75	4.404	34.093	27.023
100	3.252	34.066	27.116

Station	OS08042
Longitude	41-55.0N
Latitude	139-47.4E
Depth(m)	1324

Press.	Temp.	Sal.	SIG-T
5	6.992	34.109	26.718
10	6.994	34.109	26.718
20	6.967	34.111	26.723
30	6.858	34.112	26.739
40	5.707	34.100	26.878
50	5.096	34.094	26.946
75	4.133	34.078	27.039
100	3.415	34.064	27.100
125	2.693	34.050	27.154
150	2.096	34.047	27.200
200	1.400	34.048	27.254
250	1.070	34.052	27.278
300	0.925	34.053	27.289
400	0.727	34.055	27.302
500	0.577	34.055	27.311

5. Data on mid-water Trawl Research

Three operations of the stern otter trawl 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 catch were recorded by the deck officers and research staff.

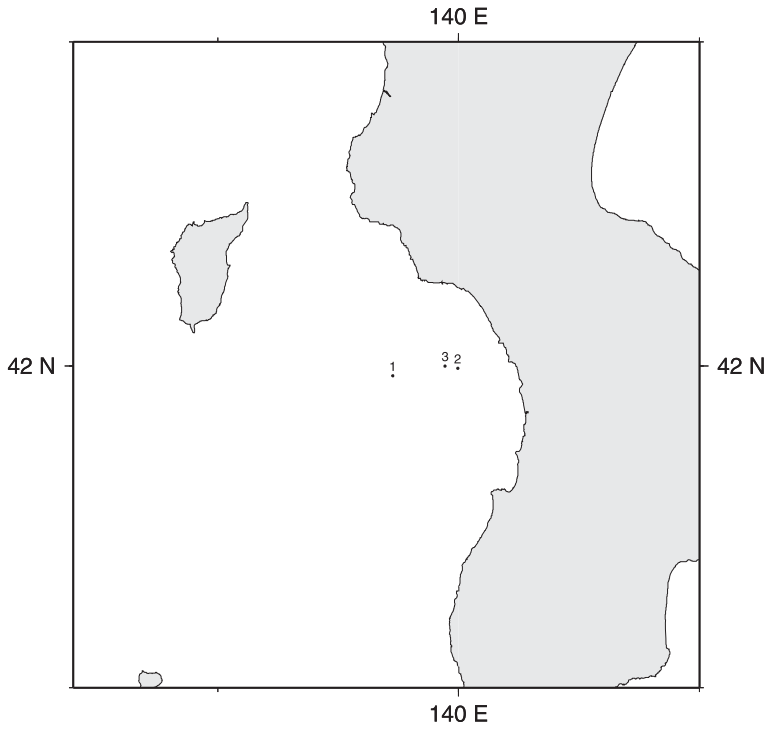

Figure 3: Location of mid-water trawl research

Table 3: Data on mid-watar trawl research

No. of research	Date and time of net tow (S.M.T.)		Position Lat.(N)	Position Long.(E)	Direction of tow	Wr	Wind	Catch number and weight of Teragra chalcogramma (Pallas) Number	Weight(kg)
OSMT0801	Mar.19	0830-1015	41-59.1	139-51.8	090	o	East-4	48	22.7
OSMT0802	19	1110-1210	41-59.8	139-59.9	180	o	ESE-3	20	9.7
OSMT0803	27	1242-1342	42-00.0	139-58.3	180	o	WSW-3	12	6.3

S.T. : Surface temperature
Wr : Weather

4

THE “OSHORO MARU” CRUISE 189
TO THE NORTHWEST PACIFIC OCEAN

IN MAY 2008

1. Cruise Itinerary

Cruise 189			
Departure from Hakodate	May	7	, 2008
Start hydrographic research (OS08043)		8	
Start Gillnet research (OSG0801)		10	
Finish Gillnet research (OSG0804)		16	
Finish hydrographic research (OS08052)		18	
Return to Hakodate		20	
Total coverage 1941.1 miles			

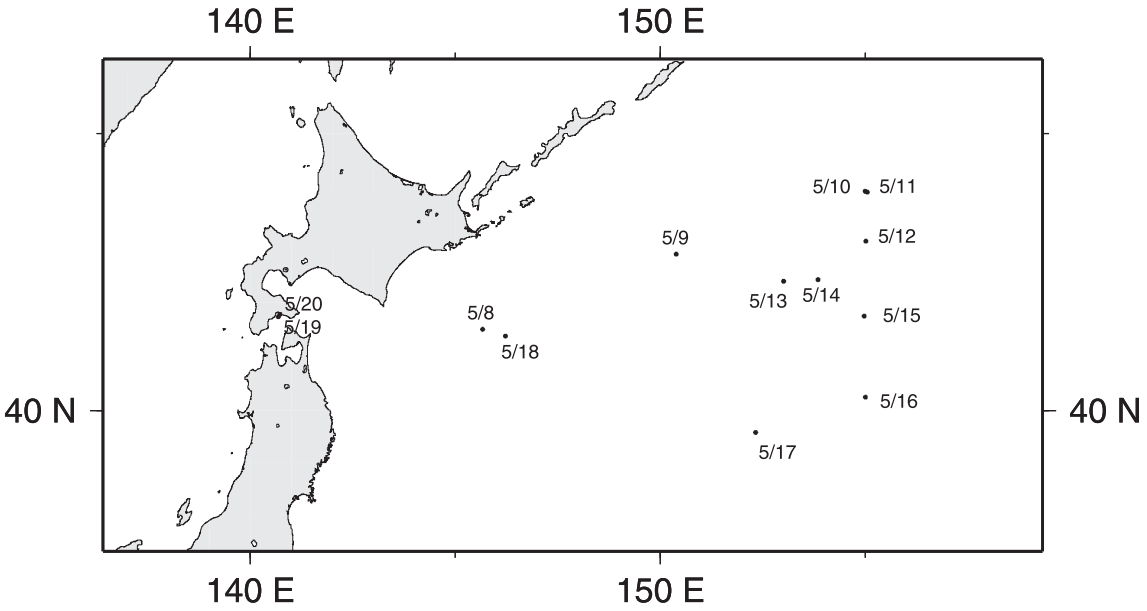

Figure 1: Noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 26 men		

Cruise 189

Research Staff:	Associate Professor	(Laboratory of Strategic Studies on Marine Bioresource Conservation and Management) Hideaki Kudo
	Associate Professor	(Laboratory of Marine and Atmospheric Geochemistry, Graduate School of Environmental Earth Science) Yutaka Watanabe
Guest Staff:	Scientist	(Japan Atomic energy research institute) Shigeyosi Otosaka

Teaching Assistant:	1 persons
Graduate Students:	2 persons
Under Graduate Students:	8 persons
	Total 46 persons

3. Items of Research

Hydrographic observation by CTD, XCTD, XBT and:	Fig. 2	Table 1, 2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	Table 3-8
Data on plankton collected by vertical hauls with a twin NORPAC-net:	Fig. 2	Table 9, 10

Plankton samplings by NORPAC-net, Closing-net,

Studies on life history of dominant zooplankton at Site H off Kushiro

Study on food habit of pink salmon in North Pacific

Studies on biogeochemical cycles in the northern north Pacific

Study for the change in biogenic fluxes in the settling particle

Comparative study on relationship between long-term climate change and feeding ecology and trophic dynamics of Oncorhyncus spp. In the North Pacific

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

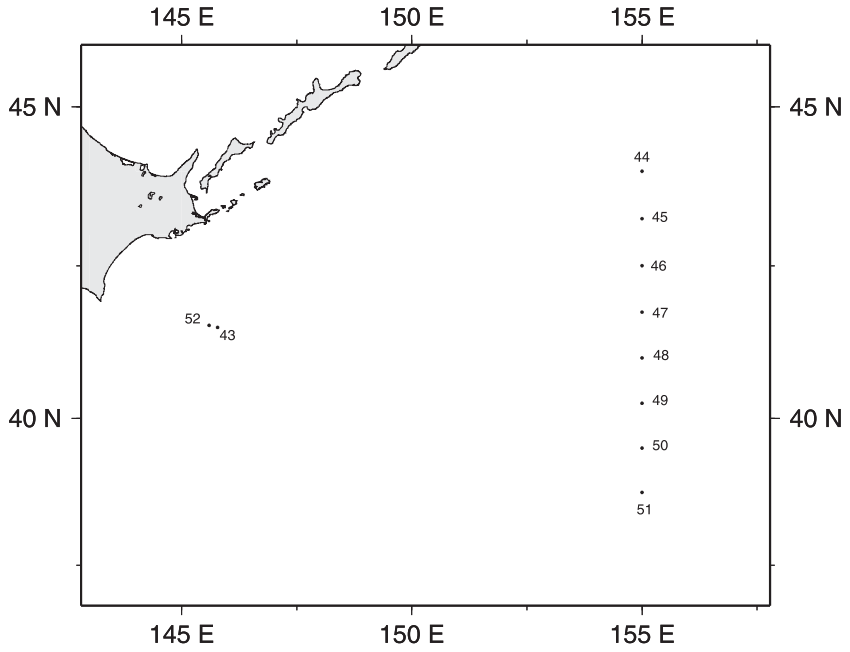

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08043	41-30.0N	145-47.0E	5/8	1239	9	6905	6	4.4	8.1	bc	SBE-9plus
OS08044	44-00.0N	155-00.0E	5/10	1105	10	5298	4	13.9	5.4	o	SBE-9plus
OS08045	43-15.0N	155-00.0E	5/12	0942	10	5482	4	11.4	8.1	bc	SBE-9plus
OS08046	42-30.0N	155-00.0E	5/14	1900	10	5263	-	-	8.5	bc	SBE-9plus
OS08047	41-45.0N	155-00.0E	5/15	0950	10	5550	4	18	8.6	o	SBE-9plus
OS08048	41-00.0N	155-00.0E	5/15	1825	10	5570	-	-	9	o	SBE-9plus
OS08049	40-15.0N	155-00.0E	5/16	1054	10	5550	4	13.2	11.6	o	SBE-9plus
OS08050	39-30.0N	155-00.0E	5/16	1637	10	5613	3	17.7	13.5	o	SBE-9plus
OS08051	38-45.0N	155-00.0E	5/16	2230	10	5767	-	-	15.3	c	SBE-9plus
OS08052	41-32.0N	145-35.9E	5/18	1418	9	7070	-	-	10	o	SBE-9plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station OS08043
Longitude 41-30.0N
Latitude 145-47.0E
Depth(m) 6905

Press.	Temp.	Sal.	SIG-T
5	5.609	33.065	26.071
10	4.622	33.089	26.202
20	4.401	33.123	26.252
30	4.176	33.172	26.314
40	5.296	33.465	26.424
50	6.581	33.777	26.512
75	4.944	33.588	26.562
100	2.313	33.284	26.573
125	2.994	33.414	26.620
150	3.860	33.576	26.668
200	2.734	33.526	26.731
250	2.529	33.561	26.777
300	2.797	33.666	26.838
400	3.027	33.820	26.940
500	3.175	33.958	27.037
600	3.165	34.063	27.122
700	3.259	34.184	27.210
800	3.000	34.229	27.270
900	2.912	34.281	27.319
1000	2.786	34.330	27.370
1200	2.531	34.415	27.460
1500	2.324	34.498	27.543

Station OS08044
Longitude 44-00.0N
Latitude 155-00.0E
Depth(m) 5298

Press.	Temp.	Sal.	SIG-T
5	5.621	33.251	26.217
10	5.599	33.250	26.219
20	5.447	33.282	26.262
30	5.405	33.295	26.277
40	4.984	33.407	26.414
50	4.944	33.462	26.462
75	5.034	33.578	26.544
100	4.561	33.574	26.593
125	4.061	33.550	26.626
150	3.260	33.519	26.680
200	3.474	33.699	26.803
250	3.109	33.738	26.868
300	3.135	33.827	26.937
400	3.321	33.988	27.048
500	3.349	34.117	27.148
600	3.189	34.200	27.229
700	3.034	34.286	27.312
800	2.841	34.333	27.367
900	2.686	34.373	27.412
1000	2.597	34.410	27.450
1200	2.395	34.456	27.504
1500	2.177	34.516	27.570
2000	1.858	34.592	27.656
2500	1.654	34.629	27.701
3000	1.538	34.651	27.727

Station OS08045
Longitude 43-15.0N
Latitude 155-00.0E
Depth(m) 5482

Press.	Temp.	Sal.	SIG-T
5	8.110	33.889	26.385
10	8.108	33.889	26.386
20	8.102	33.889	26.386
30	8.096	33.888	26.386
40	8.083	33.886	26.387
50	8.017	33.877	26.389
75	7.488	33.920	26.500
100	7.115	33.870	26.513
125	5.863	33.729	26.566
150	5.156	33.674	26.606
200	4.651	33.730	26.707
250	4.123	33.754	26.783
300	4.133	33.872	26.875
400	3.605	33.953	26.993
500	3.595	34.085	27.099
600	3.269	34.158	27.189
700	3.115	34.228	27.259
800	2.960	34.278	27.312
900	2.929	34.340	27.365
1000	2.741	34.371	27.406
1200	2.552	34.445	27.482
1500	2.225	34.502	27.555

Station OS08046
Longitude 42-30.0N
Latitude 155-00.0E
Depth(m) 5263

Press.	Temp.	Sal.	SIG-T
5	8.467	33.700	26.183
10	7.844	33.843	26.388
20	7.765	33.843	26.400
30	7.719	33.841	26.405
40	7.696	33.840	26.408
50	7.689	33.840	26.408
75	7.109	33.879	26.521
100	7.001	33.879	26.536
125	6.700	33.850	26.553
150	6.374	33.850	26.597
200	6.314	33.857	26.609
250	6.293	33.858	26.613
300	5.840	33.811	26.633
400	3.947	33.823	26.856
500	3.921	33.971	26.976
600	3.678	34.091	27.095
700	3.616	34.182	27.174
800	3.225	34.223	27.244
900	3.164	34.301	27.312
1000	3.114	34.357	27.361
1200	2.656	34.410	27.445
1500	2.337	34.491	27.536

Station OS08047
Longitude 41-45.0N
Latitude 155-00.0E
Depth(m) 5550

Press.	Temp.	Sal.	SIG-T
5	8.451	33.876	26.323
10	8.441	33.877	26.326
20	8.286	33.890	26.360
30	8.241	33.891	26.367
40	8.223	33.891	26.370
50	8.198	33.891	26.374
75	7.325	33.887	26.497
100	6.807	33.829	26.523
125	6.114	33.770	26.566
150	5.628	33.732	26.596
200	5.508	33.751	26.626
250	4.377	33.719	26.728
300	3.957	33.772	26.813
400	3.507	33.847	26.918
500	3.583	33.989	27.024
600	3.695	34.133	27.128
700	3.473	34.206	27.207
800	3.401	34.289	27.280
900	3.127	34.324	27.334
1000	2.899	34.358	27.381
1200	2.621	34.421	27.457
1500	2.314	34.500	27.546

Station OS08048
Longitude 41-00.0N
Latitude 155-00.0E
Depth(m) 5570

Press.	Temp.	Sal.	SIG-T
5	9.283	33.839	26.164
10	9.258	33.835	26.165
20	9.087	33.809	26.172
30	9.056	33.808	26.176
40	8.951	33.804	26.190
50	8.713	33.807	26.229
75	7.102	33.781	26.445
100	6.690	33.784	26.503
125	5.985	33.756	26.572
150	5.652	33.741	26.601
200	4.868	33.720	26.676
250	4.276	33.762	26.773
300	3.942	33.785	26.825
400	4.126	33.958	26.944
500	3.824	34.078	27.071
600	3.693	34.171	27.158
700	3.515	34.252	27.240
800	3.316	34.300	27.297
900	3.109	34.340	27.348
1000	2.918	34.374	27.393
1200	2.599	34.438	27.473
1500	2.277	34.499	27.548

Station	OS08049
Longitude	40-15.0N
Latitude	155-00.0E
Depth(m)	5550

Press.	Temp.	Sal.	SIG-T
5	11.459	34.252	26.110
10	11.417	34.250	26.116
20	11.383	34.260	26.130
30	11.367	34.263	26.136
40	10.963	34.188	26.151
50	10.175	34.064	26.192
75	8.057	33.933	26.427
100	7.468	33.903	26.490
125	6.248	33.808	26.579
150	5.779	33.776	26.613
200	5.141	33.785	26.696
250	4.334	33.770	26.773
300	4.046	33.828	26.849
400	4.039	33.955	26.951
500	3.773	34.060	27.062
600	3.637	34.156	27.151
700	3.412	34.216	27.221
800	3.165	34.272	27.289
900	3.018	34.329	27.348
1000	2.822	34.359	27.390
1200	2.599	34.426	27.463
1500	2.324	34.501	27.545

Station	OS08050
Longitude	39-30.0N
Latitude	155-00.0E
Depth(m)	5613

Press.	Temp.	Sal.	SIG-T
5	13.587	34.469	25.863
10	13.575	34.469	25.866
20	13.439	34.473	25.897
30	13.364	34.474	25.912
40	13.276	34.467	25.925
50	12.761	34.437	26.004
75	11.294	34.341	26.209
100	10.822	34.319	26.277
125	9.960	34.210	26.342
150	9.177	34.130	26.409
200	6.909	33.869	26.540
250	5.793	33.772	26.608
300	5.526	33.833	26.689
400	4.503	33.922	26.876
500	4.484	34.087	27.009
600	4.226	34.176	27.107
700	3.222	34.146	27.183
800	3.182	34.238	27.260
900	3.210	34.324	27.326
1000	3.064	34.380	27.384
1200	2.612	34.428	27.463
1500	2.297	34.508	27.553

Station	OS08051
Longitude	38-45.0N
Latitude	155-00.0E
Depth(m)	5767

Press.	Temp.	Sal.	SIG-T
5	15.577	34.526	25.480
10	15.579	34.526	25.479
20	15.560	34.523	25.481
30	15.184	34.501	25.548
40	14.352	34.478	25.710
50	13.637	34.476	25.858
75	13.442	34.485	25.905
100	13.042	34.455	25.963
125	12.376	34.402	26.053
150	11.650	34.349	26.150
200	10.807	34.284	26.253
250	10.037	34.230	26.345
300	8.888	34.117	26.445
400	6.554	34.018	26.705
500	5.189	34.017	26.874
600	4.564	34.102	27.012
700	4.200	34.194	27.124
800	3.842	34.257	27.211
900	3.380	34.309	27.298
1000	3.151	34.352	27.354
1200	2.824	34.424	27.442
1500	2.407	34.499	27.537

Station	OS08052
Longitude	41-32.0N
Latitude	145-35.9E
Depth(m)	7070

Press.	Temp.	Sal.	SIG-T
5	9.367	33.564	25.936
10	9.640	33.579	25.902
20	8.768	33.538	26.010
30	7.011	33.516	26.248
40	5.774	33.460	26.363
50	4.201	33.303	26.416
75	3.891	33.429	26.548
100	3.251	33.403	26.588
125	2.398	33.359	26.626
150	2.516	33.442	26.683
200	2.812	33.567	26.758
250	3.077	33.656	26.805
300	4.038	33.857	26.873
400	3.289	33.887	26.971
500	3.618	34.041	27.061
600	3.440	34.143	27.160
700	3.326	34.235	27.244
800	2.866	34.281	27.323
900	2.666	34.317	27.370
1000	2.603	34.343	27.395
1200	2.507	34.377	27.431

5. Data on Drift Gillnet Research

Four gillnet research were performed during this cruise.
The operations were supervised by the captain, Deck officers, crew and research staff were engaged in the work.

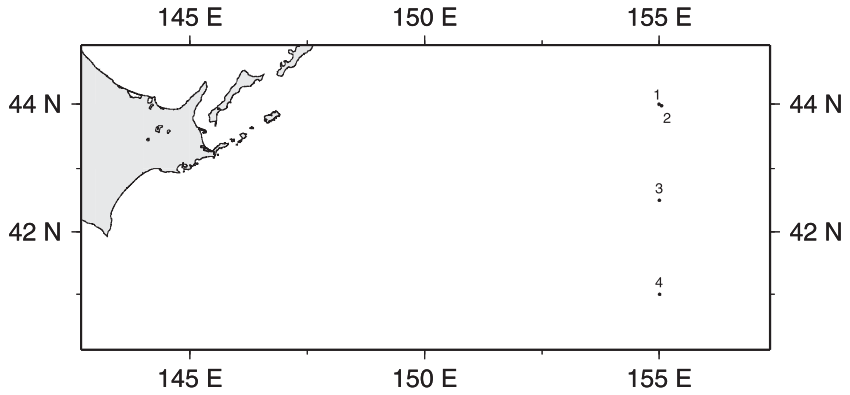

Figure 3: Locations of drift gillnet research

Table 3: Data on drift gillnet research

No. of research	Date and Time (S.M.T.) Net set		Net haul		Position Lat.(N)	Long.(E)	D.D.	Bottom depth(m)	Wr	Wind	S.T. (°C)	Tr
OSG0801	May 10	1755-1824	May 11	0425-0535	43-59.8	154-59.6	220	5296	o	WNW-4	5.6	13.9
OSG0802	May 11	1755-1825	May 12	0420-0525	43-58.5	155-02.9	140	5350	c	WSW-5	5.7	13.9
OSG0803	May 14	1750-1818	May 15	0425-0525	42-30.0	155-00.1	230	5135	c	Calm	8.5	-
OSG0804	May 15	1751-1817	May 16	0505-0612	41-00.0	155-00.4	000	5480	o	SSE-4	11.5	-

D.D : Direction of Drift toward S.T. : Surface temperature Wr. : Weather Tr : Transparency

Table 4: Amount of net cast (Tan)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	6	6	49
OSG0802	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	6	6	49
OSG0803	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	6	6	49
OSG0804	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	6	6	49

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

Sockeye (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0802	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chum (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	2	1	1	6	14	8	2	39	34	107
OSG0802	0	0	0	0	0	0	0	0	0	0	0	1	1	10	3	1	1	29	25	71
OSG0803	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4	0	0	4	9	22
OSG0804	0	0	0	0	0	0	0	0	0	0	0	0	6	7	10	6	0	21	18	68

Pink (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	7	53	24	8	0	0	0	4	0	96
OSG0802	0	0	0	0	0	0	0	0	1	0	11	41	45	14	0	0	0	0	1	113
OSG0803	0	0	0	0	0	0	0	0	3	8	72	126	63	4	2	0	0	1	3	282
OSG0804	0	0	0	0	0	0	0	0	0	2	28	53	46	19	0	0	0	0	2	150

Coho (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0802	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chinook (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0802	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Steelhead (catch number)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0802	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG0804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6: Biological characteristics of salmonids caught by drift gillnet

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	A115	500	1560	M	5	G01	C121	604	2869	F	170	G02	A121	590	2250	F	21
G01	A115	571	2172	F	42	G01	C121	576	2400	M	6	G02	A121	540	1682	F	34
G01	A115	572	2374	F	20	G01	C121	574	2122	M	7	G02	A121	510	1931	M	4
G01	A115	552	1831	F	18	G01	C121	560	2030	M	5	G02	A121	506	1541	F	26
G01	A115	584	2739	F	31	G01	C121	549	1994	F	23	G02	A121	530	1945	F	43
G01	A115	544	1878	F	37	G01	C121	592	2700	M	3	G02	A121	598	2439	M	2
G01	A115	606	2763	M	4	G01	C121	563	2365	M	3	G02	A121	650	3506	M	6
G01	A115	576	2143	F	20	G01	C121	558	2087	F	22	G02	C082	567	2400	M	12
G01	A115	576	2032	F	45	G01	C121	600	2850	M	4	G02	C093	540	1757	M	4
G01	A115	562	2106	M	2	G01	C121	608	2973	M	3	G02	C106	534	1623	F	15
G01	A115	516	1648	F	16	G01	C121	589	2470	F	23	G02	C106	556	2277	M	7
G01	A115	526	1753	F	22	G01	C121	518	1460	F	15	G02	C106	570	2331	F	24
G01	A115	559	2239	M	30	G01	C121	559	2637	M	16	G02	C106	530	2052	F	41
G01	A115	561	2261	M	5	G01	C121	517	1807	M	6	G02	C106	500	1419	F	14
G01	A115	589	2411	M	5	G01	C138	562	2196	M	4	G02	C106	584	2391	M	8
G01	A115	537	2000	F	26	G01	C138	576	2667	F	66	G02	C106	538	1801	F	22
G01	A115	560	2707	M	24	G01	C138	610	2902	M	4	G02	C106	520	1661	M	1
G01	A115	576	2400	M	13	G01	C138	578	2353	F	35	G02	C106	530	1648	F	35
G01	A115	574	2246	M	5	G01	C138	584	2557	M	2	G02	C106	580	2495	M	12
G01	A115	558	2075	F	18	G01	C138	603	2600	M	5	G02	C121	580	2418	F	25
G01	A115	576	2528	M	59	G01	C138	628	3160	F	31	G02	C121	564	2321	F	31
G01	A115	584	2573	F	28	G01	C138	610	2891	M	3	G02	C121	530	1689	M	10
G01	A115	562	2081	F	17	G01	C157	622	2984	M	5	G02	C138	616	2900	M	12
G01	A115	537	1889	M	3	G01	C157	624	3188	M	6	G02	C157	636	3346	M	7
G01	A115	515	1612	F	30	G02	A115	560	2496	F	31	G03	A115	540	2224	M	8
G01	A115	597	2529	M	2	G02	A115	600	2848	M	3	G03	A115	528	1724	M	12
G01	A115	591	2891	M	2	G02	A115	510	1476	F	21	G03	A115	582	2614	F	140
G01	A115	558	2193	F	30	G02	A115	590	2540	M	4	G03	A115	500	1555	M	7
G01	A115	520	1957	F	54	G02	A115	540	1969	M	2	G03	A121	520	1934	F	40
G01	A115	615	2888	M	6	G02	A115	510	1469	M	5	G03	A121	518	1862	M	10
G01	A121	568	2425	M	2	G02	A115	556	1951	F	25	G03	A121	530	1980	M	5
G01	A121	589	2467	M	4	G02	A115	510	1586	M	7	G03	A121	572	2576	F	75
G01	A121	569	2167	F	19	G02	A115	530	2035	M	7	G03	A121	566	1247	M	14
G01	A121	637	2701	M	4	G02	A115	510	1555	F	28	G03	A121	558	2371	F	70
G01	A121	546	1835	M	3	G02	A115	520	1780	M	9	G03	A121	630	2897	M	2
G01	A121	584	2516	F	67	G02	A115	566	2232	M	4	G03	A121	574	2074	F	22
G01	A121	528	1691	M	7	G02	A115	560	2353	M	4	G03	A121	564	1882	M	1
G01	A121	537	1946	M	6	G02	A115	540	1875	F	18	G03	C093	570	2150	M	5
G01	A121	600	2676	M	4	G02	A115	520	1547	F	16	G03	C106	536	1731	F	20
G01	A121	591	2178	F	30	G02	A115	540	1952	F	49	G03	C106	502	1522	F	17
G01	A121	552	2291			G02	A115	552	2100	M	4	G03	C106	492	1409	M	5
G01	A121	577	2662	F	26	G02	A115	590	2420	M	3	G03	C106	518	1622	F	15
G01	A121	568	2168	F	23	G02	A115	474	1297	F	17	G03	C121	584	2616	M	4
G01	A121	608	2631	M	4	G02	A115	588	2540	M	4	G03	C121	638	3380	M	5
G01	A121	579	2245	F	25	G02	A115	570	2160	F	20	G03	C121	600	2625	F	22
G01	A121	603	2439	M	5	G02	A115	520	1564	F	12	G03	C121	588	2620	F	182
G01	A121	524	1893	F	44	G02	A115	514	1766	F	40	G04	A115	550	2350	F	58
G01	A121	577	2650	F	63	G02	A115	564	2072	M	3	G04	A115	560	2650	F	61
G01	A121	586	2517	F	33	G02	A115	524	1759	M	4	G04	A115	480	1932	F	31
G01	A121	566	2351	M	2	G02	A115	530	1699	M	1	G04	A115	523	2155	F	45
G01	A121	633	3362	M	20	G02	A115	574	2220	M	4	G04	A115	531	2207	M	7
G01	A121	519	1750	F	29	G02	A115	532	1795	F	45	G04	A115	541	2183	F	19
G01	A121	588	2694	M	8	G02	A121	530	1742	F	17	G04	A115	554	2060	M	4
G01	A121	568	2269	M	3	G02	A121	550	2376	F	67	G04	A115	546	2025	M	22
G01	A121	568	2191	F	22	G02	A121	574	2115	F	21	G04	A115	496	1654	F	21
G01	A121	562	2341	F	18	G02	A121	500	1684	M	15	G04	A115	550	2288	M	10
G01	A121	584	2528	F	51	G02	A121	530	1660	F	25	G04	A115	582	2300	F	18
G01	A121	583	2390	F	27	G02	A121	600	3174	M	30	G04	A115	542	2162	M	3
G01	A121	590	2876	F	67	G02	A121	518	1770	F	36	G04	A115	540	2066	F	43
G01	A121	562	2308	M	10	G02	A121	500	1407	M	10	G04	A115	542	2070	F	20
G01	C072	610	2948	M	9	G02	A121	574	2258	F	23	G04	A115	561	2354	M	12
G01	C072	589	2632	M	5	G02	A121	512	1730	F	28	G04	A115	510	2163	M	14
G01	C082	584	2388	F	3	G02	A121	570	1930	F	19	G04	A115	510	1986	M	11
G01	C093	518	1668	F	30	G02	A121	530	1678	F	15	G04	A115	553	2472	F	60
G01	C106	522	1730	M	4	G02	A121	580	2331	F	46	G04	A115	524	1993	M	4
G01	C106	504	1527	F	15	G02	A121	554	1945	F	21	G04	A115	554	2467	M	22
G01	C106	529	1973	F	42	G02	A121	492	1496	F	29	G04	A121	570	2347	M	7
G01	C106	496	1618	F	42	G02	A121	570	1595	M	1	G04	A121	539	2082	M	8
G01	C106	533	1869	F	43	G02	A121	570	2259	F	23	G04	A121	523	1863	F	43
G01	C106	516	1540	M	4	G02	A121	540	1916	F	18	G04	A121	518	1834	M	10

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

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)
G04	A121	564	2073	M	1	G04	C093	529	1564	M	1	G04	C121	589	2744	M	13
G04	A121	533	1985	F	60	G04	C093	516	1840	F	38	G04	C121	526	1908	M	13
G04	A121	571	2154	F	26	G04	C093	558	2560	M	20	G04	C121	502	1743	M	9
G04	A121	566	2247	F	64	G04	C093	522	2060	F	62	G04	C121	490	1521	M	17
G04	A121	548	1887	F	22	G04	C093	548	2122	F	55	G04	C121	580	2543	M	21
G04	A121	528	2044	M	7	G04	C093	534	1925	F	60	G04	C121	546	2596	M	10
G04	A121	550	2190	M	8	G04	C106	568	2546	M	5	G04	C121	552	1900	M	3
G04	A121	530	1957	F	50	G04	C106	510	1697	F	34	G04	C121	594	2831	F	34
G04	A121	572	2121	F	34	G04	C106	542	2176	F	43	G04	C138	562	2571	M	9
G04	A121	554	2212	F	60	G04	C106	546	2244	M	12	G04	C138	634	2886	M	5
G04	A121	543	2170	F	50	G04	C106	570	2622	M	7	G04	C138	560	2391	F	44
G04	A121	524	2065	M	10	G04	C106	526	2013	F	52	G04	C138	579	2433	M	3
G04	A121	530	2027	M	10	G04	C121	548	2083	F	30	G04	C138	604	3010	F	96
G04	A121	617	3072	M	50	G04	C121	512	1730	M	3	G04	C138	520	1909	F	43

PINK SALMON

G01	A115	470	1224	M	6	G01	C093	376	648	M	3	G02	C082	400	660	M	2
G01	A115	449	1099	M	5	G01	C093	389	752	M	2	G02	C082	440	986	M	3
G01	A115	443	967	M	4	G01	C093	406	728	F	22	G02	C082	384	690	M	2
G01	A115	422	988	M	4	G01	C093	414	834	M	4	G02	C093	406	770	F	10
G01	C072	397	673	M	2	G01	C093	416	768	M	2	G02	C093	416	775	M	4
G01	C072	368	537	M	1	G01	C093	389	667	M	1	G02	C093	420	822	F	12
G01	C072	414	777	F	15	G01	C106	428	870	M	10	G02	C093	420	831	F	13
G01	C072	396	731	F	8	G01	C106	438	924	M		G02	C093	412	846	M	2
G01	C072	388	647	M	6	G01	C106	484	1162	M	3	G02	C093	422	880	M	4
G01	C072	399	719	F	22	G01	C106	450	865	M	4	G02	C093	422	830	M	3
G01	C082	412	723	M	2	G01	C106	446	921	M	2	G02	C093	410	804	F	13
G01	C082	412	807	F	25	G01	C106	395	725	F	6	G02	C093	398	779	M	4
G01	C082	420	788	M	2	G01	C106	426	961	M	3	G02	C093	464	1110	M	3
G01	C082	368	571	M	1	G01	C106	408	802	M	3	G02	C093	434	777	M	3
G01	C082	400	760	F	15	G02	A121	494	1342	M	2	G02	C093	394	714	F	7
G01	C082	373	582	M	2	G02	C055	420	802	M	1	G02	C093	378	602	M	1
G01	C082	404	728	M	5	G02	C072	404	700	F	12	G02	C093	400	700	F	8
G01	C082	419	581	F	15	G02	C072	380	617	F	8	G02	C093	414	870	F	30
G01	C082	401	729	F	15	G02	C072	390		M	4	G02	C093	420	832	M	5
G01	C082	408	752	F	8	G02	C072	372	569	F	6	G02	C093	410	843	F	19
G01	C082	400	711	M	2	G02	C072	384	688	F	19	G02	C093	440	924	M	5
G01	C082	380	622	M	4	G02	C072	400	718	M	3	G02	C093	400	777	F	20
G01	C082	396	683	F	11	G02	C072	402	695	M	4	G02	C093	410	769	F	25
G01	C082	420	749	M	1	G02	C072	380	611	M	2	G02	C093	436	867	M	3
G01	C082	412	813	F	14	G02	C072	390	599	M	3	G02	C093	420	846	F	6
G01	C082	390	639	M	1	G02	C072	370	595	M	5	G02	C093	430	881	M	1
G01	C082	402	830	F	25	G02	C082	426	850	F	5	G02	C093	408	795	F	26
G01	C082	384	713	M	1	G02	C082	420	802	M	2	G02	C093	450	1027	M	5
G01	C082	398	703	M	2	G02	C082	408	757	M	2	G02	C093	404	730	F	8
G01	C082	358	560	M	2	G02	C082	400	745	F	7	G02	C093	410	750	F	19
G01	C082	430	1022	M	5	G02	C082	390	725	F	6	G02	C093	412	718	M	4
G01	C082	368	623	M	2	G02	C082	410	765	F	11	G02	C093	430	874	M	4
G01	C082	423	763	M	4	G02	C082	390	678	M	2	G02	C093	420	840	M	6
G01	C082	404	775	M	2	G02	C082	410	780	F	14	G02	C093	414	832	F	12
G01	C082	390	663	F	5	G02	C082	430	903	M	4	G02	C093	424	903	F	29
G01	C082	364	676	F	20	G02	C082	400	688	M	4	G02	C093	418	800	M	8
G01	C082	370	567	M	2	G02	C082	400	679	F	6	G02	C093	410	714	F	5
G01	C093	422	810	F	10	G02	C082	326	466	F	28	G02	C093	454	1002	M	4
G01	C093	395	713	M	3	G02	C082	418	796	M	2	G02	C093	424	855	M	6
G01	C093	391	746	F	16	G02	C082			M	1	G02	C093	400	829	F	36
G01	C093	439	1011	M	3	G02	C082	418	845	M	4	G02	C093	444	990	M	6
G01	C093	430	890	F	18	G02	C082	438	948	M	4	G02	C093	412	825	F	22
G01	C093	424	800	M	2	G02	C082	400	680	M	2	G02	C093	400	744	F	12
G01	C093	402	730	M	2	G02	C082	380		M	1	G02	C093	434	943	M	4
G01	C093	393	708	F	20	G02	C082	400	632	M	3	G02	C093	394	733	M	4
G01	C093	388	662	F	18	G02	C082	388	617	M	3	G02	C106	444	925	M	3
G01	C093	410	797	F	15	G02	C082	380	573	M	3	G02	C106	408	770	F	13
G01	C093	397	728	F	8	G02	C082	414	781	M	3	G02	C106	430	905	M	4
G01	C093	437	887	F	28	G02	C082	370	558	F	4	G02	C106	432	902	M	2
G01	C093	405	772	F	22	G02	C082	410	723	F	14	G02	C106	450	1034	M	3
G01	C093	388	696	M	2	G02	C082	380	604	M	3	G02	C106	430	905	M	3
G01	C093	384	768	F	10	G02	C082	400	655	M	3	G02	C106	428	921	M	3
G01	C093	391	694	F	7	G02	C082	414	772	F	10	G02	C106	408	844	M	3

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

PINK SALMON

St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)
G02	C106	424	953	M	3	G03	C072	366	575	M	4	G03	C093	420	788	M	3
G02	C106	380	698	F	16	G03	C072	426	784	F	17	G03	C093	394	692	F	12
G02	C106	450	1013	M	4	G03	C072	404	725	M	4	G03	C093	418	800	M	3
G02	C106	444	940	M	3	G03	C072	384	733	M	2	G03	C093	428	870	F	15
G02	C106	450	1007	M	5	G03	C072	404	736	F	15	G03	C093	430	843	M	4
G03	A115	392	701	M	5	G03	C072	426	797	M	3	G03	C093	384	635	M	2
G03	A121	486	1255	M	3	G03	C072	394	649	M	1	G03	C093	404	722	F	15
G03	A121	432	901	F	20	G03	C072	400	679	M	3	G03	C093	418	783	M	3
G03	A121	486	1186	M	3	G03	C072	418	822	F	18	G03	C093	416	744	F	16
G03	C055	406	706	F	13	G03	C072	366	552	M	1	G03	C093	422	742	M	4
G03	C055	422	785	F	11	G03	C082	394	609	F	4	G03	C093	408	782	M	3
G03	C055	410	691	F	15	G03	C082	392	621	F	7	G03	C093	388	670	M	2
G03	C063	368	513	F	5	G03	C082	400	680	F	8	G03	C093	414	752	M	4
G03	C063	376	540	M	1	G03	C082	386	572	F	8	G03	C093	406	708	M	1
G03	C063	378	605	F	5	G03	C082	370	645	M	3	G03	C093	386	664	F	9
G03	C063	376	580	F	8	G03	C082	414	704	M	1	G03	C093	388	650	M	3
G03	C063	378	563	F	7	G03	C082	406	710	F	13	G03	C093	400	694	F	13
G03	C063	304	286	F	4	G03	C082	396	604	M	1	G03	C093	412	775	M	5
G03	C063	350	466	M	1	G03	C082	372	570	M	1	G03	C093	402	703	M	2
G03	C063	384	611	M	2	G03	C082	388	638	M	3	G03	C093	414	766	M	2
G03	C072	382	614	F	8	G03	C082	308	690	F	6	G03	C093	438	836	M	2
G03	C072	386	638	F	6	G03	C082	390	648	F	12	G03	C093	416	810	F	20
G03	C072	406	683	F	13	G03	C082	416	761	F	18	G03	C093	430	835	F	10
G03	C072	432	841	M	2	G03	C082	394	685	F	5	G03	C093	394	681	M	4
G03	C072	358	505	M	2	G03	C082	418	809	F	13	G03	C093	406	744	F	14
G03	C072	396	655	F	5	G03	C082	392	607	M	2	G03	C093	416	746	F	13
G03	C072	410	781	M	3	G03	C082	382	599	M	1	G03	C093	404	700	M	2
G03	C072	420	770	F	12	G03	C082	398	696	F	5	G03	C093	406	717	M	2
G03	C072	396	650	F	6	G03	C082	414	719	F	17	G03	C093	396	685	M	1
G03	C072	392	630	M	1	G03	C082	432	884	M	3	G03	C093	386	696	F	18
G03	C072	394	649	F	13	G03	C082	408	814	F	19	G03	C093	400	675	F	9
G03	C072	366	508	F	5	G03	C082	384	672	F	13	G03	C093	430	882	M	3
G03	C072	364	481	F	7	G03	C082	400	594	M	1	G03	C093	414	740	M	4
G03	C072	306	655	F	6	G03	C082	410	710	F	22	G03	C093	424	826	F	23
G03	C072	396	648	F	6	G03	C082	386	642	F	12	G03	C093	390	759	M	3
G03	C072	390	690	F	10	G03	C082	410	787	F	10	G03	C093	408	710	M	2
G03	C072	384	655	F	15	G03	C082	380	572	F	6	G03	C093	402	694	M	2
G03	C072	400	680	M	2	G03	C082	400	714	F	6	G03	C093	410	756	F	15
G03	C072	386	635	F	6	G03	C082	382	603	M	1	G03	C093	406	697	F	6
G03	C072	412	754	M	2	G03	C082	400	731	F	16	G03	C093	394	685	M	2
G03	C072	398	687	F	18	G03	C082	396	705	F	12	G03	C093	390	634	M	2
G03	C072	402	743	F	17	G03	C082	412	761	F	14	G03	C093	404	717	M	3
G03	C072	388	694	F	15	G03	C082	400	681	M	4	G03	C093	392	684	M	4
G03	C072	394	649	F	10	G03	C082	424	852	M	2	G03	C093	424	804	F	23
G03	C072	398	650	M	2	G03	C082	410	720	F	13	G03	C093	420	746	F	19
G03	C072	420	813	F	17	G03	C082	388	620	F	13	G03	C093	396	732	M	2
G03	C072	372	553	M	4	G03	C082	384	584	F	5	G03	C093	420	739	M	2
G03	C072	384	599	F	7	G03	C082	394	655	F	5	G03	C093	410	744	F	6
G03	C072	376	554	F	5	G03	C082	396	619	M	1	G03	C093	426	805	M	3
G03	C072	396	606	F	6	G03	C082	400	686	F	11	G03	C093	414	795	M	3
G03	C072	416	802	F	12	G03	C082	386	676	F	5	G03	C093	400	707	F	9
G03	C072	428	770	F	14	G03	C082	394	623	F	5	G03	C093	402	734	F	16
G03	C072	394	730	F	13	G03	C082	392	661	M	1	G03	C093	400	767	F	16
G03	C072	390	589	M	1	G03	C082	402	758	F	12	G03	C106	430	829	M	6
G03	C072	376	600	F	7	G03	C082	406	706	F	10	G03	C106	450	883	M	4
G03	C072	400	709	F	10	G03	C082	396	636	F	13	G03	C106	410	786	F	17
G03	C072	366	477	F	5	G03	C082	414	776	F	10	G03	C106	460	1026	M	4
G03	C072	414	806	F	18	G03	C082	384	682	M	1	G03	C121	412	728	F	12
G03	C072	362	500	M	1	G03	C082	478	1090	M	5	G03	C121	414	765	M	2
G03	C072	410	721	F	13	G03	C082	400	718	F	13	G04	A121	530	1787	M	4
G03	C072	376	517	M	1	G03	C082	414	804	M	3	G04	A121	446	986	F	21
G03	C072	370	560	M	3	G03	C082	422	776	F	15	G04	C063	431	781	M	2
G03	C072	402	721	F	8	G03	C082	392	693	F	7	G04	C063	440	954	F	13
G03	C072	400	662	F	6	G03	C082	392	643	F	6	G04	C072	398	679	F	10
G03	C072	406	681	F	5	G03	C082	396	665	F	10	G04	C072	410	814	F	22
G03	C072	396	682	F	7	G03	C082	404	669	F	7	G04	C072	384	573	F	6
G03	C072	376	545	F	8	G03	C082	394	681	F	10	G04	C072	410	664	F	16
G03	C072	380	611	M	2	G03	C082	350	522	F	5	G04	C072	408	685	F	5
G03	C072	384	600	F	5	G03	C082	412	698	M	4	G04	C072	440	918	F	19
G03	C072	410	695	M	1	G03	C082	410	750	F	10	G04	C072	419	829	F	8

Table 6. Biological characteristics of salmonids caught by drift gillnet (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)
G04	C072	412	740	F	20	G04	C082	402	711	F	8	G04	C093	400	692	F	8
G04	C072	405	681	F	10	G04	C082	418	848	F	12	G04	C093	463	1004	M	2
G04	C072	402	636	F	8	G04	C082	392	602	F	5	G04	C093	414	812	F	14
G04	C072	381	636	F	10	G04	C082	382	626	F	8	G04	C093	422	848	F	26
G04	C072	403	730	M	3	G04	C082	421	767	F	7	G04	C093	391	615	F	13
G04	C072	386	555	F	8	G04	C082	416	781	F	6	G04	C093	428	856	F	15
G04	C072	412	786	F	16	G04	C082	405	714	F	10	G04	C093	421	899	M	6
G04	C072	402	657	F	7	G04	C082	416	814	F	10	G04	C093	411	761	F	14
G04	C072	385	589	F	9	G04	C082	420	791	F	15	G04	C093	426	816	F	13
G04	C072	406	690	F	6	G04	C082	419	749	F	8	G04	C093	420	793	F	16
G04	C072	500	1632	M	8	G04	C082	414	782	M	1	G04	C093	410	745	F	16
G04	C072	420	787	F	10	G04	C082	425	829	F	12	G04	C093	484	1316	M	5
G04	C072	410	813	F	9	G04	C082	406	796	F	8	G04	C093	440	973	M	2
G04	C072	416	500	M	2	G04	C082	421	847	F	30	G04	C093	444	1030	M	2
G04	C072	408	719	F	7	G04	C082	427	859	F	20	G04	C093	446	974	F	30
G04	C072	390	685	M	3	G04	C082	394	689	F	9	G04	C093	402	777	F	28
G04	C082	406	818	F	38	G04	C082	424	893	F	16	G04	C093	421	824	F	18
G04	C082	409	760	M	2	G04	C082	418	827	F	18	G04	C093	410	760	F	22
G04	C082	434	926	F	43	G04	C082	384	578	F	5	G04	C093	418	773	F	12
G04	C082	489	647	F	8	G04	C082	404	708	F	7	G04	C093	419	790	F	9
G04	C082	390	638	M	1	G04	C082	423	842	M	2	G04	C093	424	858	F	18
G04	C082	410	797	M	1	G04	C082	410	718	M	2	G04	C093	416	730	F	9
G04	C082	409	749	F	9	G04	C082	415	807	F	20	G04	C106	441	987	F	12
G04	C082	444	892	M	4	G04	C082	405	817	F	8	G04	C106	455	1042		
G04	C082	394	684	F	12	G04	C093	486	1319	M	5	G04	C106	479	1247	M	4
G04	C082	417	787	F	16	G04	C093	417	799	F	25	G04	C106	470	1222	M	3
G04	C082	424	813	M	3	G04	C093	415	779	M	2	G04	C106	453	1035	M	6
G04	C082	394	692	M	2	G04	C093	411	791	F	46	G04	C106	441	1018	M	4
G04	C082	446	949	F	28	G04	C093	402	756	M	2	G04	C106	444	1032	F	30
G04	C082	403	793	F	11	G04	C093	422	911	F	10	G04	C106	451	980	F	29
G04	C082	395	624	F	9	G04	C093	450	964	F	10	G04	C106	440	962	M	2
G04	C082	395	690	F	10	G04	C093	410	752	F	19	G04	C106	454	1063	M	4
G04	C082	406	794	M	2	G04	C093	404	784	M	2	G04	C106	440	966	M	9
G04	C082	435	933	F	30	G04	C093	417	765	F	6	G04	C106	464	1186	F	37
G04	C082	428	962	F	26	G04	C093	420	790	F	8	G04	C106	440	973	M	4
G04	C082	404	780	F	14	G04	C093	418	745	M	1	G04	C106	444	942	F	26
G04	C082	374	642	F	6	G04	C093	414	823	F	25	G04	C106	436	976	F	28
G04	C082	416	783	F	22	G04	C093	437	860	F	30	G04	C106	450	1096	M	6
G04	C082	400	737	F	8	G04	C093	484	1280	M	4						
G04	C082	426	853	M	2	G04	C093	423	867	F	12						

Table 7: Data on number of organisms except salmonids caught by drift gillnet

Scientific Name	Species	OSG0801	OSG0802	OSG0803	OSG0804	Total
Onychoteuthis borealijaponic	Boreal clubhook squid	-	-	7	5	12
Gonatopsis borealis	Eight-armed squid	3	6	2	-	11
Squalus acanthias Linnaeus	Spiny dogfish	-	-	1	-	1
Synodontidae	paperbone	1	-	-	-	1
Myctophidae	Lantern fishes	-	3	-	3	6
Engraulis japonica	Japanese anchovy	-	-	-	9	9
Scomber japonicus	Chub mackerel	-	-	-	4	4
Brama japonica	Pacific pomfret	-	-	4	11	15
Fulmarus glacialis	Northern Fulmar	-	1	-	-	1
Fratercula cirrhata	Tufted puffin	1	1	-	1	3
Puffinus tenuirostris	Short-tailed shearwater	-	-	-	6	6

Table 8: Biological characteristics of fishes caught by drift gillnet

				PACIFIC POMFRET							
St.	Gear	S.L. (mm)	B.W. (gr)	St.	Gear	S.L. (mm)	B.W. (gr)	St.	Gear	S.L. (mm)	B.W. (gr)
G03	A121	433	1120	G04	C093	404	1196	G04	C138	424	1236
G03	C093	450	1600	G04	C093	417	1261	G04	C157	436	1312
G03	C138	460	1400	G04	C138	425	1407	G04	C157	427	1260
G03	C138	425	1920	G04	C138	396	1025	G04	C157	434	1228
G04	A121	446	1540	G04	C138	420	1272	G04	C157	418	1224

6. Data on Plankton Collected by Vertical Hauls of a 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, H.S. Kim, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, Y. Hanamiya and T. Homma (Laboratory of Marine Biology).

Table 9: Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position Lat. (N)	Lon.	S.M.T. Date	Hour	Length of wire (m)	Angle of wire (^{o})	Depth estimated by wire angle (m)	Kind of cloth	Flowmeter No.	Reading	Estimated volume of water filtered (m^3)	Wet weight (g) per haul	per 1000 m^3		Sample no.
OS08043	41	145 E	8 May	14:00	150	2	150	GG54	2555	1140	21.53	41.81	1941.43	1)	08001
(Site H)								XX13	2176	1070	18.45				08002
				14:31	150	1	150	GG54	2555	1195	22.57	40.59	1798.02	1)	08003
								XX13	2176	1000	17.24				08004
				14:49	501	4	500	GG54	2555	3555	67.15	46.75	696.13	1)	08005
								XX13	2176	3531	60.88				08006
OS08044	44	155 E	10 May	14:49	152	9	150	GG54	2555	1232	23.27	15.57	668.86		08007
(St. KNOT)								XX13	2176	1221	21.05				08008
OS08045	43	155 E	12 May	10:46	150	6	149	GG54	2555	1179	22.27	15.99	717.79		08009
								XX13	2176	1213	20.91				08010
OS08046a	42	155 E	12 May	16:20	154	13	150	GG54	2555	1668	31.51	16.47	522.59		08011
								XX13	2176	1635	28.19				08012
OS08046	42	155 E	14 May	20:00	150	2	150	GG54	2555	1090	20.59	18.15	881.31		08013
								XX13	2176	1144	19.72				08014
OS08047	41	155 E	15 May	11:25	153	11	150	GG54	2555	1700	32.11	24.87	774.35		08015
								XX13	2176	1590	27.41				08016
OS08048	41	155 E	15 May	20:09	162	21	151	GG54	2555	1885	35.61	16.11	452.32		08017
								XX13	2176	1755	30.26				08018
OS08049	40	155 E	16 May	12:22	151	8	150	GG54	2555	1303	24.61	10.77	437.39		08019
								XX13	2176	1322	22.79				08020
OS08050	39	155 E	16 May	18:10	153	12	150	GG54	2555	1288	24.33	11.11	456.46		08021
								XX13	2176	1269	21.88				08022
OS08051	38	155 E	17 May	00:14	152	10	150	GG54	2555	1196	22.59	3.47	153.38		08023
								XX13	2176	1133	19.53				08024
OS08052	41	145 E	18 May	15:23	150	5	149	GG54	2555	1108	20.93	12.97	619.72		08025
(Site H)								XX13	2176	1185	20.43				08026
				15:35	508	10	500	GG54	2555	3891	73.50	17.09	232.53		08027
								XX13	2176	3908	67.38				08028

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Salpida abundant.
6) Chaetognaths abundant.

7. Data on Calibration of Flowmeters

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

Table 10: Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets

50-m wire out at St. OS08052 in 158 May 2008.

Flowmeter No.	Wire length (m)	Revolution 1	2	3	4	5	6	Mean
RG2176	50	490*	460	456	452*	466	463	461
RG2555	50	448*	415	415	412*	426	428	421
RG2562	50	536*	495	500	493*	503	511	502
RG3023	50	540*	511*	515	512	526	511	516
RG3024	50	577*	560	528	505*	559	546	548

*: omitted from calculation

5

THE “OSHORO MARU” CRUISE 190
TO THE NORTHWEST PACIFIC OCEAN, THE BERING SEA AND CHUKTCH SEA

IN JUNE - JULY 2008

1. Cruise Itinerary

Cruise 190		
Departure from Hakodate	June	2, 2008
Start hydrographic research (OS08053)		3
Start Gillnet research (OSG0805)		8
Start salmon hook and line research (OSHL0801)		9
Start salmon long line research (OSSL0801)		10
Date change, repeat June 13		13
Arrival at Dutch Harbor and change research staff		21
Departure from Dutch Harbor		24
Start bottom trawl research (OST0801)		25
Finish salmon hook and line research (OSHL0820)		28
Arrival at Nome and change research staff	July	4
Departure from Nome		6
Finish salmon long line research (OSSL0808)		13
Finish bottom trawl research (OST0823)		13
Arrival at Dutch Harbor and change research staff		17
Departure from Dutch Harbor		20
Date change, skip July 24		23
Finish hydrographic research (OS08184)		28
Return to Hakodate	July	31, 2008

Total coverage 10041.8 miles 51days at sea and 9days in port

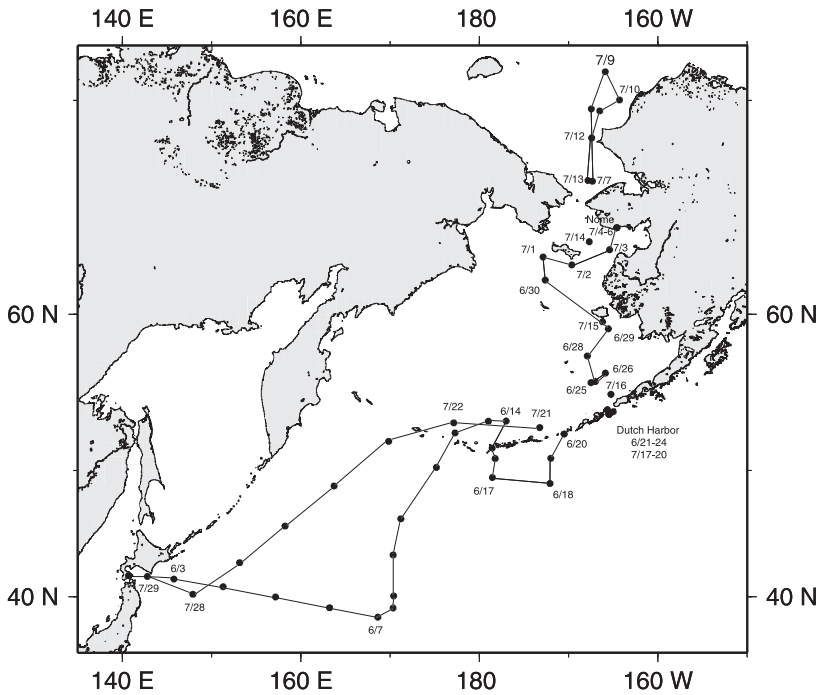

Figure 1: Track and noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 26 men		

Cruise 190

Research Staff:	Professor	(Laboratory of Marine Environmental Science)	
		Hakodate-Dutch Harbor (2nd call)	Kensi Kuma
	Professor	(Laboratory of Marine Environmental Science)	
		Hakodate-Dutch Harbor (1st call)	Mitsuru Yanada
	Professor	(Laboratory of Marine Environment and Resource Sensing)	
		Dutch Harbor (1st call)-Nome	Seiichi Saito
	Associate Professor	(Laboratory of Marine Environmental Science)	
		Hakodate-Dutch Harbor (1st call)	Yutaka Isoda
	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	
		Nome-Dutch Harbor (2nd call)	Toru Hirawake
	Instructor	(Laboratory of Marine Environmental Science)	
		Hakodate-Dutch Harbor (1st call)	Hiroji Onishi
	Associate Professor	(College of Bioresource Sciences, Nihon University)	
		Hakodate-Nome	Takahito Kojima
	Associate Professor	(Tokyo University of Marine Science and Technology)	
		Nome-Dutch Harbor (2nd call)	Koji Shimada
	Lecturer	(Institute of Low Temperature Science, Hokkaido University)	
		Hakodate-Dutch Harbor (1st call)	Tomohiro Nakamura
	Post Doctor		2 persons
	Graduate Students		14 persons
	Under Graduate Students		15 persons

Foreign Scientists:	(Pacific Aquaculture and Coastal Resources Center, University of Hawaii at Hiro)	
	Hakodate-Hakodate	Keiko Sekiguchi
	(Institute Marine Science, University of Alaska Fairbanks)	
	Dutch Harbor (1st call)-Dutch Harbor (2nd call)	Natalie Monacci
	(Kent State University)	
	Nome-Dutch Harbor (2nd call)	Robin Green
	(School of Fisheries and Ocean Sciences, University of Alaska Fairbanks)	
	Nome-Dutch Harbor (2nd call)	Luke Nolan Corrothers
	(School of Fisheries and Ocean Sciences, University of Alaska Fairbanks)	
	Nome-Dutch Harbor (2nd call)	Kirsten Baltz
	(School of Fisheries and Ocean Sciences, University of Alaska Fairbanks)	
	Dutch Harbor (1st call)-Nome	Grant Humphries
	(Institute Marine Science, University of Alaska Fairbanks)	
	Nome-Dutch Harbor (2nd call)	Jonathan Ricker
	(Institute Marine Science, University of Alaska Fairbanks)	
	Nome-Dutch Harbor (2nd call)	Brenda A.Holladay
	(International Arctic Research Center, University of Alaska Fairbanks)	
	Nome-Dutch Harbor (2nd call)	Jia Wang
Total		81 persons

3. Items and Objects of Research

Items

Hydrographic observation by CTD, XCTD, XBT and XCP casts:	Fig. 2	Table 1, 2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	Table 3 - 7
Salmon longline and hook-and-line research:	Fig. 4	Table 8 - 11
Biological research for fishes caught by bottom trawl observations:	Fig. 5	Table 12, 13
Plankton samplings by NORPAC-net, MTD-net, Closing-net, Bongo-net, SCOR-net, and CalVET-net:		Table 14, 15
Water samplings by Niskin bottles, Data on Nutrient:		Table 16

Objects

Ecological studies on dominant zooplankton in the North Pacific and Bering Sea.
Studies on DVM of zooplankton in North Pacific.
Study on the distribution of cetacean species and the its relationship to the oceanographic conditions by the observation from the upper bridge or the bridge.
Research of growth, feeding ecology and trophic dynamics of Pacific salmon in the North Pacific, Bering, and Chukchi Sea.
Research of microbes that can degrade biodegradable plastic (PLA, PCL) in the Bering and the Chukchi sea.
Physical environmental survey in the North Pacific subarctic circulation.
Research on vertical and geographical distribtion of diatom.
Research on geographical distribtion of radiolarian assemblages.
Annual variation of sinking particle flux in the sub arctic Pacific, the Bering and the Chukchi Sea.
Observation of Seabird distribution in the Bering Sea
Microstructure measurements near the Emperor Seamounts and the Aleutian Ridge
Bio-optical measurement for ocean color remote sensing in the Bering Sea and the Chukchi Sea.
Study on fish physiological impacts when fish chased and restrained by fishing gear.
Study on the distribution and abundance of small demersal fishes and of epibenthic invertebrates.

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 “Oshoro Maru”.
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 “Oshoro Maru”.
Water and Plankton samplings were also carried out at almost hydrographic stations.

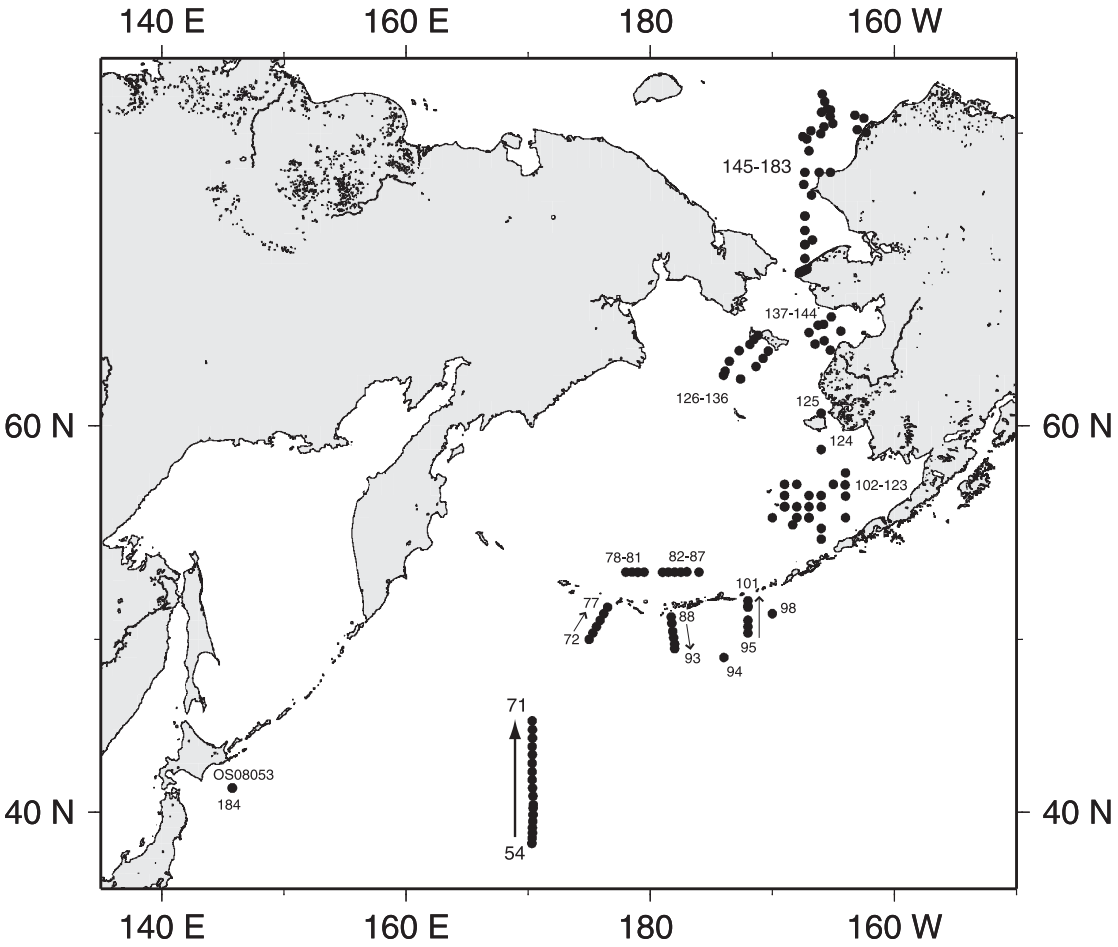

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08053	41-30.1N	145-45.6E	6/3	1232	9	6856	4	8.9	8.9	c	SBE-9plus
OS08054	37-59.8N	170-18.2E	6/7	2132	11	1024	-	-	15.2	bc	SBE-9plus
OS08055	38-20.0N	170-19.5E	6/8	0504	11	4970	-	-	-	b	XCTD2
OS08056	38-40.0N	170-21.4E	6/8	0701	11	6293	-	-	-	b	XCTD2

Table 1 cont.

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08057	39-00.9N	170-20.5E	6/8	1042	11	6250	2	32.9	14.8	b	SBE-9plus
OS08058	39-25.0N	170-22.5E	6/9	0813	11	6189	-	-	-	bc	XCTD2
OS08059	39-50.0N	170-24.0E	6/9	1038	11	6290	-	-	-	bc	XCTD2
OS08060	40-15.4N	170-24.6E	6/9	1312	11	3022	-	-	-	bc	XCTD2
OS08061	40-27.5N	170-25.0E	6/9	1555	11	1501	4	19.9	12.3	c	SBE-9plus
OS08062	41-00.0N	170-23.9E	6/9	2004	11	1244	-	-	-	c	XCTD2
OS08063	41-29.9N	170-21.9E	6/9	2246	11	3180	-	-	-	c	XCTD2
OS08064	42-00.4N	170-19.9E	6/10	0211	11	2770	-	-	13.1	c	SBE-9plus
OS08065	42-30.0N	170-20.0E	6/10	0623	11	1687	-	-	-	c	XCTD2
OS08066	43-00.6N	170-20.1E	6/10	0910	11	1642	-	-	-	c	XCTD2
OS08067	43-31.3N	170-20.9E	6/10	1409	11	4300	5	15.2	8.7	o	SBE-9plus
OS08068	43-59.9N	170-20.2E	6/10	2118	11	4351	-	-	-	o	XCTD2
OS08069	44-29.8N	170-21.1E	6/10	2356	11	1168	-	-	-	r	XCTD2
OS08070	44-59.8N	170-21.4E	6/11	0238	11	3207	-	-	-	d	XCTD2
OS08071	45-30.0N	170-19.9E	6/11	0557	11	5330	-	-	-	o	XCTD2
OS08072	49-59.8N	174-59.6E	6/12	1017	11	4706	-	-	-	o	XCTD2
OS08073	50-20.0N	175-18.1E	6/12	1250	11	4666	5	11.3	7	o	SBE-9plus
OS08074	50-39.7N	175-35.8E	6/12	1805	11	5590	-	-	-	o	XCTD2
OS08075	51-00.0N	175-54.0E	6/12	2020	11	7190	-	-	6.9	o	SBE-9plus
OS08076	51-20.1N	176-11.9E	6/13	0155	11	5020	-	-	-	o	XCTD2
OS08077	51-39.9N	176-30.1E	6/13	0416	11	3921	-	-	5.7	r	SBE-19plus
OS08078	53-25.0N	178-00.1E	6/13	1632	11	3893	5	11.4	5.9	o	SBE-19plus
OS08079	53-25.1N	178-29.9E	6/13	2043	11	3190	-	-	-	o	XCTD2
OS08080	53-24.8N	178-59.7E	6/13	0232	-12	2891	-	-	5.9	d	SBE-9plus
OS08081	53-25.0N	179-29.8E	6/13	0642	-12	2763	-	-	-	m	XCTD2
OS08082	53-25.0N	179-59.9W	6/13	0832	-12	827	-	-	-	o	XCTD
OS08083	53-24.9N	179-30.0W	6/13	1008	-12	1322	-	-	-	o	XCTD2
OS08084	53-24.7N	179-00.9W	6/13	1240	-12	3740	5	11.2	6.4	o	SBE-9plus
OS08085	53-25.0N	178-30.1W	6/13	1707	-12	3802	-	-	-	o	XCTD2
OS08086	53-25.0N	177-59.8W	6/13	1852	-12	3787	5	14.1	6.3	r	SBE-9plus
OS08087	53-26.1N	177-00.2W	6/14	1215	-12	3780	5	11.6	5.6	c	SBE-9plus
OS08088	51-10.1N	179-43.1W	6/16	0615	-12	3667	5	19.5	6.4	c	SBE-9plus
OS08089	50-50.4N	179-46.1W	6/16	1115	-12	5450	4	20.3	6.4	c	SBE-9plus
OS08090	50-25.1N	179-50.0W	6/16	1815	-12	6505	6	8.6	7.5	f	SBE-9plus
OS08091	50-05.0N	179-55.0W	6/16	2343	-12	5979	-	-	7.3	d	SBE-9plus
OS08092	49-44.9N	179-59.9W	6/17	0538	-11	5161	-	-	-	r	XCTD2
OS08093	49-30.2N	179-59.8W	6/17	0712	-11	4965	4	14.2	7.8	r	SBE-9plus
OS08094	49-01.9N	174-02.0W	6/18	0725	-11	5335	4	20	7.8	o	SBE-9plus
OS08095	50-19.9N	172-00.1W	6/19	0205	-10	5475	-	-	7.6	r	SBE-9plus
OS08096	50-40.1N	172-00.0W	6/19	0832	-10	5820	5	14.9	7.6	r	SBE-9plus
OS08097	51-00.1N	172-00.1W	6/19	1251	-10	6953	5	7.4	7.6	d	SBE-9plus
OS08098	51-20.0N	171-59.9W	6/19	1906	-10	4420	5	11.5	7.8	f	SBE-19plus
OS08099	51-40.0N	172-00.0W	6/19	2333	-10	3626	-	-	7	c	SBE-9plus
OS08100	51-44.3N	172-00.2W	6/20	0440	-9	3513	-	-	-	c	XCTD2
OS08101	51-59.8N	172-00.1W	6/20	0804	-9	157	-	-	-	c	XCTD1
OS08102	54-59.9N	166-00.2W	6/24	1623	-8	135	6	7.6	6.5	o	SBE-9plus
OS08103	55-30.0N	166-00.4W	6/24	2045	-8	120	6	9.6	6.7	o	SBE-9plus

(*):Fixed position by Global Positioning system

Table 1 cont.

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08104	56-00.0N	165-59.8W	6/24	2358	-8	113	-	-	6.9	r	SBE-9plus
OS08105	55-59.9N	167-00.0W	6/25	0406	-8	133	-	-	6.7	r	SBE-9plus
OS08106	56-00.2N	168-00.4W	6/25	0757	-8	137	6	11.6	6.8	o	SBE-9plus
OS08107	55-59.9N	170-00.3W	6/25	1640	-8	203	5	9	6.5	d	SBE-19plus
OS08108	56-30.1N	169-00.7W	6/25	2332	-8	101	4	7.7	5.9	c	SBE-19plus
OS08109	56-29.9N	168-00.1W	6/26	0445	-8	115	-	-	5.3	c	SBE-19plus
OS08110	56-30.0N	167-00.1W	6/26	0835	-8	103	4	10.2	5.5	c	SBE-19plus
OS08111	56-29.9N	166-00.0W	6/26	1445	-8	85	5	11.2	6	bc	SBE-9plus
OS08112	56-58.4N	165-59.9W	6/26	1935	-8	70	5	12	4.9	bc	SBE-9plus
OS08113	57-00.0N	167-00.0W	6/27	0024	-8	72	-	-	4.6	f	SBE-9plus
OS08114	57-00.0N	167-59.9W	6/27	0402	-8	77	-	-	4.6	d	SBE-9plus
OS08115	55-59.7N	168-59.6W	6/27	1204	-8	1254	5	10.3	5.9	c	XCTD2
OS08116	55-40.0N	169-39.8W	6/27	1551	-8	2670	4	12.6	7.6	c	SBE-9plus
OS08117	56-29.9N	169-00.0W	6/28	0003	-8	102	-	-	5.8	o	SBE-9plus
OS08118	57-00.0N	169-00.0W	6/28	0427	-8	77	-	-	4.8	c	SBE-9plus
OS08119	57-30.0N	169-00.1W	6/28	0820	-8	68	5	11.3	4.4	c	SBE-9plus
OS08120	57-30.1N	168-00.1W	6/28	1348	-8	68	6	9.1	4.4	d	SBE-9plus
OS08121	57-30.0N	166-59.9W	6/28	1704	-8	68	6	11.6	4.3	bc	SBE-9plus
OS08122	57-28.6N	165-57.8W	6/28	2120	-8	65	6	9.7	5.4	f	SBE-9plus
OS08123	58-00.1N	165-59.8W	6/29	0325	-8	55	-	-	3.9	c	SBE-9plus
OS08124	59-00.0N	166-00.0W	6/29	0938	-8	26	6	8.8	3.8	m	SBE-9plus
OS08125	60-30.0N	167-59.9W	6/29	1951	-8	27	5	8.6	4.1	o	SBE-9plus
OS08126	61-51.4N	173-23.7W	6/30	1210	-8	63	3	17.2	5.2	c	SBE-9plus
OS08127	62-00.0N	174-00.1W	6/30	1410	-8	64	3	24.5	5.3	c	SBE-9plus
OS08128	62-09.3N	174-08.1W	6/30	1715	-8	64	3	18.9	5.3	o	SBE-9plus
OS08129	62-31.9N	174-28.7W	6/30	1938	-8	69	4	16.4	5.3	o	SBE-9plus
OS08130	62-20.0N	172-39.9W	7/1	0043	-8	55	-	-	6	o	SBE-9plus
OS08131	62-56.0N	173-17.2W	7/1	0655	-8	67	3	13.6	5.6	c	SBE-9plus
OS08132	63-30.1N	172-50.0W	7/1	1525	-8	59	4	11.1	5.2	d	SBE-9plus
OS08133	63-21.1N	172-29.9W	7/1	1814	-8	60	4	16.1	5.6	o	SBE-9plus
OS08134	63-10.1N	172-10.0W	7/1	2003	-8	58	4	15.3	5.6	o	SBE-9plus
OS08135	62-55.1N	171-40.0W	7/1	2218	-8	48	4	14.6	5.7	c	SBE-9plus
OS08136	62-38.4N	171-14.8W	7/2	0635	-8	43	4	16	5.8	o	SBE-9plus
OS08137	62-57.0N	166-45.0W	7/2	2027	-8	24	8	7.6	11.4	c	SBE-9plus
OS08138	63-10.5N	167-30.0W	7/2	2331	-8	32	6	11.6	8.6	c	SBE-9plus
OS08139	63-52.0N	167-44.8W	7/3	0436	-8	32	-	-	4.8	bc	SBE-9plus
OS08140	63-36.0N	167-00.1W	7/3	0932	-8	25	10	8	11.7	c	SBE-9plus
OS08141	63-17.9N	166-15.0W	7/3	1305	-8	21	10	7.8	9.9	c	SBE-9plus
OS08142	63-39.2N	165-36.4W	7/3	1655	-8	20	9	3.8	9.7	bc	SBE-9plus
OS08143	63-54.0N	166-11.9W	7/3	1935	-8	25	9	6.3	9.7	bc	SBE-9plus
OS08144	64-10.0N	166-49.8W	7/3	2246	-8	28	8	9.2	11.3	bc	SBE-9plus
OS08145	65-42.4N	168-15.2W	7/7	0037	-8	42	-	-	8	bc	SBE-9plus
OS08146	65-43.1N	168-19.8W	7/7	0105	-8	50	-	-	8.3	bc	SBE-9plus
OS08147	65-45.2N	168-29.9W	7/7	0145	-8	54	-	-	7.3	bc	SBE-9plus
OS08148	65-47.3N	168-40.2W	7/7	0225	-8	50	-	-	6.7	bc	SBE-9plus
OS08149	65-49.1N	168-49.5W	7/7	0303	-8	47	-	-	3.4	bc	SBE-9plus
OS08150	66-10.5N	168-40.0W	7/7	0530	-8	52	6	8.3	5.3	c	SBE-9plus
OS08151	66-37.9N	168-40.1W	7/7	1058	-8	41	4	12.2	7.5	bc	SBE-9plus

(*):Fixed position by Global Positioning system

Table 1 cont.

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08152	67-05.2N	168-39.8W	7/7	1500	-8	43	6	13.6	4.6	bc	SBE-9plus
OS08153	67-32.4N	168-40.1W	7/7	1803	-8	47	5	9.8	4.5	c	SBE-9plus
OS08154	69-54.2N	168-29.8W	7/8	1520	-8	40	7	4	0.2	c	SBE-9plus
OS08155	69-59.1N	167-58.0W	7/8	1752	-8	46	6	6.7	-0.2	o	SBE-9plus
OS08156	70-04.0N	167-09.9W	7/8	2036	-8	44	5	13.3	4.8	bc	SBE-9plus
OS08157	70-16.1N	166-57.1W	7/8	2320	-8	43	6	9.5	2.6	c	SBE-9plus
OS08158	70-28.1N	166-44.0W	7/9	0125	-8	46	5	9.7	3.4	bc	SBE-9plus
OS08159	70-40.0N	166-31.0W	7/9	0414	-8	40	6	8.3	3.8	bc	SBE-9plus
OS08160	70-52.0N	166-17.8W	7/9	0557	-8	41	6	10.6	4.1	bc	SBE-9plus
OS08161	71-04.0N	166-05.1W	7/9	0820	-8	41	6	11	1.1	c	SBE-9plus
OS08162	70-38.3N	166-46.3W	7/9	2025	-8	45	5	8.9	2.7	c	SBE-9plus
OS08163	70-34.8N	166-02.0W	7/9	2245	-8	41	4	13.4	5	c	SBE-9plus
OS08164	70-29.8N	164-45.7W	7/10	0339	-8	43	6	10.7	4.2	bc	SBE-9plus
OS08165	70-24.8N	163-29.6W	7/10	0638	-8	32	5	13.6	3.8	bc	SBE-9plus
OS08166	70-00.9N	163-41.6W	7/10	1126	-8	25	5	16	7.5	c	SBE-9plus
OS08167	70-05.8N	164-57.6W	7/10	1555	-8	39	5	13	5.5	c	SBE-9plus
OS08168	70-10.7N	166-14.0W	7/10	1935	-8	43	4	13.6	5.6	bc	SBE-9plus
OS08169	69-50.1N	168-49.5W	7/11	0812	-8	45	4	9.7	4.2	c	SBE-9plus
OS08170	69-30.0N	167-00.1W	7/11	1430	-8	45	5	12.2	5.1	c	SBE-9plus
OS08171	68-52.3N	166-45.4W	7/12	0212	-8	43	5	9.4	5.5	c	SBE-9plus
OS08172	68-52.3N	167-50.0W	7/12	0453	-8	48	4	14	6.2	bc	SBE-9plus
OS08173	68-52.3N	168-40.1W	7/12	0728	-8	50	4	19.5	5.3	bc	SBE-9plus
OS08174	68-30.7N	168-34.5W	7/12	1400	-8	51	4	18.1	4.3	r	SBE-9plus
OS08175	68-11.4N	167-12.8W	7/12	1830	-8	44	4	13.3	4.7	r	SBE-9plus
OS08176	67-32.6N	168-39.7W	7/13	0005	-8	48	6	3.4	2.9	bc	SBE-9plus
OS08177	66-46.9N	167-16.8W	7/13	0644	-8	32	6	13.7	6.4	f	SBE-9plus
OS08178	66-37.9N	168-39.9W	7/13	1502	-8	42	5	11.8	5.8	f	SBE-9plus
OS08179	65-49.1N	168-49.7W	7/13	2059	-8	47	-	-	4.7	o	SBE-9plus
OS08180	65-47.5N	168-40.4W	7/13	2142	-8	50	-	-	5.1	c	SBE-9plus
OS08181	65-45.3N	168-30.1W	7/13	2229	-8	53	-	-	6.6	c	SBE-9plus
OS08182	65-43.3N	168-19.7W	7/13	2322	-8	50	-	-	5.3	d	SBE-9plus
OS08183	65-42.4N	168-15.2W	7/13	2356	-8	42	-	-	7.3	r	SBE-9plus
OS08184	41-30.0N	145-46.9E	7/28	2233	10	6800	-	-	16.2	c	SBE-9plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS08053
Longitude	41-30.1N
Latitude	145-45.6E
Depth(m)	6856

Press.	Temp.	Sal.	SIG-T
5	6.774	33.074	25.932
10	6.526	33.078	25.967
20	6.127	33.094	26.031
30	5.256	33.042	26.094
40	3.606	33.047	26.271
50	2.284	33.146	26.464
75	3.191	33.364	26.563
100	3.248	33.402	26.587
125	2.702	33.365	26.606
150	2.494	33.418	26.666
200	1.840	33.429	26.725
250	2.115	33.517	26.774
300	2.487	33.627	26.833
400	2.987	33.820	26.945
500	3.320	33.984	27.045
600	3.308	34.088	27.129
700	3.223	34.195	27.222
800	3.077	34.251	27.280
900	2.946	34.297	27.329
1000	2.808	34.356	27.388
1200	2.620	34.430	27.464
1500	2.336	34.498	27.542
2000	1.998	34.572	27.629
2500	1.744	34.619	27.687
3000	1.625	34.642	27.714

Station	OS08054
Longitude	37-59.8N
Latitude	170-18.2E
Depth(m)	1024

Press.	Temp.	Sal.	SIG-T
5	15.159	34.175	25.302
10	15.126	34.030	25.197
20	15.207	34.378	25.448
30	15.024	34.359	25.474
40	14.977	34.355	25.481
50	14.874	34.353	25.502
75	13.650	34.411	25.805
100	12.926	34.410	25.951
125	12.447	34.385	26.026
150	12.370	34.379	26.036
200	11.906	34.352	26.105
250	10.981	34.272	26.213
300	9.847	34.173	26.332
400	7.529	33.999	26.556
500	5.392	33.951	26.798
600	4.934	34.019	26.905
700	4.291	34.145	27.076
800	3.770	34.238	27.203
900	3.548	34.278	27.257

Station	OS08055
Longitude	38-20.0N
Latitude	170-19.5E
Depth(m)	4970

Press.	Temp.	Sal.	SIG-T
5	15.038	34.304	25.428
10	15.038	34.316	25.437
20	15.038	34.326	25.445
30	14.786	34.311	25.488
40	14.437	34.312	25.564
50	13.859	34.334	25.702
75	13.028	34.374	25.903
100	12.500	34.361	25.997
125	12.134	34.342	26.053
150	11.758	34.311	26.100
200	11.448	34.291	26.142
250	10.703	34.226	26.226
300	9.810	34.150	26.321
400	7.946	34.014	26.508
500	6.031	33.929	26.703
600	4.942	33.991	26.882
700	4.319	34.123	27.055
800	3.904	34.212	27.169
900	3.589	34.282	27.256
1000	3.439	34.314	27.296
1200	3.167	34.367	27.364
1500	2.452	34.487	27.524

Station	OS08056
Longitude	38-40.0N
Latitude	170-21.4E
Depth(m)	6293

Press.	Temp.	Sal.	SIG-T
5	14.187	34.362	25.655
10	14.186	34.375	25.666
20	14.179	34.383	25.673
30	14.158	34.384	25.679
40	13.940	34.364	25.709
50	13.696	34.357	25.754
75	13.321	34.352	25.827
100	12.618	34.371	25.982
125	12.374	34.373	26.031
150	12.082	34.350	26.069
200	11.706	34.334	26.128
250	11.367	34.308	26.170
300	10.946	34.274	26.220
400	9.513	34.148	26.368
500	6.672	33.985	26.664
600	5.219	33.985	26.845
700	4.643	34.066	26.975
800	4.286	34.166	27.093
900	3.897	34.253	27.203
1000	3.597	34.310	27.278
1200	3.043	34.405	27.406
1500	2.495	34.503	27.533

Station	OS08057
Longitude	39-00.9N
Latitude	170-20.5E
Depth(m)	6250

Press.	Temp.	Sal.	SIG-T
5	15.127	34.372	25.461
10	14.931	34.371	25.503
20	14.841	34.367	25.520
30	14.294	34.361	25.632
40	14.001	34.345	25.682
50	13.735	34.341	25.733
75	13.377	34.350	25.814
100	13.244	34.421	25.896
125	12.479	34.360	26.000
150	12.112	34.340	26.056
200	11.641	34.303	26.116
250	10.980	34.252	26.197
300	10.440	34.217	26.266
400	8.867	34.073	26.414
500	6.893	33.971	26.623
600	5.431	33.970	26.808
700	4.777	34.035	26.936
800	4.313	34.129	27.060
900	3.977	34.200	27.152
1000	3.565	34.277	27.255
1200	3.056	34.369	27.376
1500	2.568	34.457	27.490
2000	2.061	34.555	27.611
2500	1.764	34.611	27.679
3000	1.595	34.642	27.716

Station	OS08058
Longitude	39-25.0N
Latitude	170-22.5E
Depth(m)	6189

Press.	Temp.	Sal.	SIG-T
5	14.089	34.361	25.675
10	14.070	34.370	25.686
20	13.841	34.365	25.730
30	13.809	34.370	25.741
40	13.781	34.364	25.742
50	13.603	34.354	25.771
75	13.142	34.359	25.868
100	12.574	34.366	25.987
125	12.228	34.362	26.051
150	11.946	34.341	26.088
200	11.655	34.326	26.131
250	11.195	34.288	26.186
300	10.404	34.219	26.273
400	8.343	34.064	26.488
500	6.282	33.978	26.709
600	5.217	34.016	26.870
700	4.535	34.115	27.026
800	4.059	34.221	27.160
900	3.730	34.280	27.241
1000	3.429	34.346	27.323
1200	2.947	34.417	27.425
1500	2.498	34.517	27.544

Station OS08059
Longitude 39-50.0N
Latitude 170-24.0E
Depth(m) 6290

Press.	Temp.	Sal.	SIG-T
5	14.161	34.393	25.685
10	14.123	34.409	25.705
20	13.936	34.447	25.774
30	13.824	34.460	25.807
40	13.758	34.462	25.822
50	12.887	34.442	25.984
75	12.021	34.368	26.095
100	11.508	34.343	26.172
125	11.280	34.332	26.205
150	9.797	34.093	26.278
200	8.865	34.037	26.386
250	8.368	34.017	26.447
300	7.812	33.991	26.509
400	5.581	33.907	26.741
500	4.823	34.001	26.903
600	4.241	34.099	27.044
700	4.009	34.207	27.154
800	3.769	34.263	27.223
900	3.478	34.322	27.299
1000	3.217	34.374	27.365
1200	2.711	34.469	27.487
1500	2.356	34.540	27.574

Station OS08060
Longitude 40-15.4N
Latitude 170-24.6E
Depth(m) 3022

Press.	Temp.	Sal.	SIG-T
5	10.317	34.033	26.143
10	9.964	34.043	26.211
20	9.707	34.064	26.271
30	9.641	34.078	26.292
40	9.498	34.080	26.318
50	9.413	34.072	26.325
75	9.080	34.055	26.366
100	8.765	34.039	26.403
125	8.583	34.024	26.419
150	8.488	34.027	26.436
200	8.373	34.031	26.457
250	7.960	34.015	26.506
300	6.974	33.971	26.612
400	5.466	33.959	26.796
500	4.607	34.023	26.945
600	4.120	34.138	27.088
700	4.020	34.221	27.165
800	3.740	34.285	27.244
900	3.349	34.364	27.345
1000	2.955	34.435	27.438
1200	2.671	34.490	27.507
1500	2.337	34.556	27.589

Station OS08061
Longitude 40-27.5N
Latitude 170-25.0E
Depth(m) 1501

Press.	Temp.	Sal.	SIG-T
5	12.127	34.062	25.837
10	11.790	34.052	25.893
20	10.391	33.983	26.091
30	9.914	33.973	26.165
40	9.748	33.991	26.207
50	9.653	34.023	26.247
75	9.355	34.025	26.298
100	8.859	33.994	26.353
125	8.655	33.975	26.370
150	8.583	33.976	26.382
200	8.440	33.977	26.404
250	8.390	33.993	26.424
300	7.800	33.968	26.493
400	6.067	33.883	26.662
500	4.981	33.931	26.830
600	4.409	34.052	26.989
700	4.061	34.159	27.111
800	3.767	34.221	27.190
900	3.546	34.273	27.253
1000	3.208	34.332	27.333
1200	2.835	34.403	27.423

Station OS08062
Longitude 40-60.0N
Latitude 170-23.9E
Depth(m) 1244

Press.	Temp.	Sal.	SIG-T
5	11.007	33.970	25.973
10	10.366	33.995	26.105
20	10.068	33.988	26.151
30	9.893	34.012	26.199
40	9.788	34.029	26.230
50	9.731	34.036	26.245
75	9.380	34.035	26.302
100	8.885	34.001	26.354
125	8.625	33.985	26.382
150	8.580	33.988	26.392
200	8.433	33.993	26.418
250	8.389	34.011	26.439
300	7.938	33.992	26.492
400	6.168	33.924	26.681
500	5.002	33.959	26.850
600	4.421	34.070	27.002
700	4.052	34.178	27.127
800	3.791	34.255	27.215
900	3.470	34.319	27.297
1000	3.229	34.355	27.349
1200	2.804	34.443	27.458

Station OS08063
Longitude 41-29.9N
Latitude 170-21.9E
Depth(m) 3180

Press.	Temp.	Sal.	SIG-T
5	12.229	34.326	26.022
10	12.169	34.342	26.046
20	12.110	34.347	26.061
30	12.054	34.343	26.069
40	11.809	34.315	26.094
50	11.584	34.299	26.123
75	10.213	34.081	26.198
100	10.528	34.229	26.259
125	10.045	34.189	26.311
150	9.772	34.181	26.351
200	8.488	34.006	26.420
250	8.279	34.020	26.463
300	7.638	33.987	26.531
400	5.671	33.933	26.750
500	4.844	33.989	26.892
600	4.429	34.081	27.010
700	4.101	34.177	27.121
800	3.861	34.248	27.202
900	3.571	34.315	27.284
1000	3.270	34.375	27.361
1200	2.866	34.438	27.449
1500	2.438	34.528	27.558

Station OS08064
Longitude 42-00.4N
Latitude 170-19.9E
Depth(m) 2770

Press.	Temp.	Sal.	SIG-T
5	13.397	34.367	25.823
10	13.352	34.359	25.826
20	12.850	34.297	25.879
30	12.459	34.313	25.968
40	12.570	34.364	25.986
50	12.371	34.351	26.014
75	11.945	34.341	26.088
100	11.210	34.279	26.177
125	10.860	34.260	26.224
150	10.376	34.217	26.277
200	9.097	34.092	26.392
250	7.978	33.967	26.466
300	7.061	33.950	26.583
400	5.745	33.948	26.753
500	4.614	33.965	26.898
600	4.329	34.052	26.998
700	4.091	34.150	27.101
800	3.787	34.224	27.190
900	3.494	34.285	27.268
1000	3.253	34.330	27.327
1200	2.856	34.400	27.419
1500	2.435	34.477	27.518
2000	2.042	34.556	27.613
2500	1.772	34.610	27.677

Station OS08065
Longitude 42-30.0N
Latitude 170-20.0E
Depth(m) 1687

Press.	Temp.	Sal.	SIG-T
5	12.026	34.276	26.022
10	11.674	34.205	26.033
20	10.878	34.092	26.091
30	11.339	34.283	26.156
40	11.198	34.304	26.198
50	10.963	34.269	26.213
75	10.188	34.196	26.292
100	9.858	34.175	26.332
125	9.334	34.133	26.386
150	8.612	34.056	26.440
200	7.750	33.975	26.506
250	7.154	33.974	26.590
300	5.731	33.889	26.708
400	4.659	33.949	26.880
500	4.381	34.096	27.027
600	4.053	34.201	27.145
700	3.762	34.258	27.220
800	3.522	34.325	27.297
900	3.271	34.371	27.358
1000	3.059	34.403	27.403
1200	2.746	34.458	27.475
1500	2.400	34.522	27.556

Station OS08066
Longitude 43-00.6N
Latitude 170-20.1E
Depth(m) 1642

Press.	Temp.	Sal.	SIG-T
5	9.969	33.709	25.950
10	9.884	33.777	26.017
20	9.858	33.864	26.089
30	9.865	33.932	26.141
40	9.581	33.959	26.209
50	9.298	33.990	26.280
75	8.669	34.013	26.398
100	7.367	33.838	26.453
125	6.775	33.812	26.514
150	6.736	33.829	26.532
200	5.276	33.788	26.683
250	4.947	33.860	26.778
300	4.539	33.910	26.862
400	4.482	34.042	26.973
500	4.283	34.180	27.104
600	3.935	34.254	27.199
700	3.555	34.327	27.296
800	3.372	34.362	27.341
900	3.062	34.409	27.408
1000	2.839	34.462	27.470
1200	2.555	34.517	27.539
1500	2.250	34.557	27.597

Station OS08067
Longitude 43-31.3N
Latitude 170-20.9E
Depth(m) 4300

Press.	Temp.	Sal.	SIG-T
5	7.958	32.941	25.664
10	7.266	32.939	25.760
20	6.199	32.935	25.896
30	4.984	32.937	26.042
40	4.132	32.938	26.133
50	3.487	32.957	26.210
75	2.632	32.978	26.302
100	2.299	32.998	26.345
125	2.233	33.117	26.446
150	2.925	33.466	26.667
200	3.176	33.676	26.813
250	3.441	33.831	26.912
300	3.519	33.914	26.970
400	3.514	34.046	27.076
500	3.437	34.137	27.156
600	3.259	34.203	27.225
700	3.168	34.240	27.263
800	3.043	34.297	27.320
900	2.849	34.353	27.382
1000	2.682	34.396	27.431
1200	2.382	34.467	27.514
1500	2.114	34.531	27.587
2000	2.000	34.563	27.621
2500	1.678	34.623	27.695
3000	1.565	34.647	27.722

Station OS08068
Longitude 43-59.9N
Latitude 170-20.2E
Depth(m) 4351

Press.	Temp.	Sal.	SIG-T
5	7.341	32.860	25.687
10	7.170	32.867	25.716
20	5.350	32.894	25.966
30	4.864	32.909	26.033
40	4.342	32.922	26.099
50	3.664	32.916	26.161
75	2.767	32.972	26.286
100	2.431	33.028	26.359
125	2.645	33.302	26.560
150	3.110	33.634	26.785
200	3.299	33.774	26.879
250	3.428	33.879	26.951
300	3.483	33.965	27.014
400	3.443	34.120	27.141
500	3.332	34.209	27.223
600	3.231	34.251	27.266
700	3.050	34.310	27.330
800	2.888	34.362	27.386
900	2.726	34.406	27.435
1000	2.584	34.450	27.483
1200	2.360	34.500	27.542
1500	2.064	34.575	27.626

Station OS08069
Longitude 44-29.8N
Latitude 170-21.1E
Depth(m) 1168

Press.	Temp.	Sal.	SIG-T
5	4.065	32.962	26.159
10	3.942	32.978	26.184
20	3.673	32.984	26.215
30	3.292	33.028	26.285
40	3.030	33.096	26.363
50	2.979	33.117	26.384
75	2.925	33.395	26.611
100	2.999	33.527	26.709
125	3.161	33.704	26.836
150	3.281	33.807	26.907
200	3.455	33.950	27.005
250	3.492	34.061	27.090
300	3.492	34.079	27.104
400	3.400	34.192	27.203
500	3.281	34.262	27.270
600	3.050	34.344	27.357
700	2.807	34.424	27.443
800	2.524	34.485	27.516
900	2.422	34.519	27.552
1000	2.419	34.514	27.548

Station OS08070
Longitude 44-59.8N
Latitude 170-21.4E
Depth(m) 3207

Press.	Temp.	Sal.	SIG-T
5	6.534	32.882	25.812
10	6.288	32.896	25.855
20	5.195	32.912	25.998
30	4.845	32.924	26.047
40	4.627	32.930	26.075
50	4.270	32.946	26.125
75	3.260	33.111	26.354
100	3.170	33.326	26.534
125	3.049	33.484	26.671
150	3.039	33.612	26.774
200	3.258	33.786	26.893
250	3.431	33.898	26.966
300	3.506	33.979	27.023
400	3.472	34.093	27.117
500	3.361	34.209	27.220
600	3.180	34.279	27.293
700	3.019	34.333	27.351
800	2.861	34.377	27.400
900	2.703	34.420	27.449
1000	2.553	34.466	27.498
1200	2.370	34.510	27.549
1500	2.087	34.589	27.636

Station OS08071
Longitude 45-30.0N
Latitude 170-19.9E
Depth(m) 5330

Press.	Temp.	Sal.	SIG-T
5	6.937	32.872	25.751
10	6.923	32.882	25.761
20	6.346	32.893	25.845
30	5.614	32.917	25.954
40	5.220	32.914	25.997
50	4.621	32.924	26.071
75	3.319	32.989	26.252
100	2.699	33.111	26.403
125	2.811	33.273	26.523
150	2.932	33.460	26.662
200	3.113	33.648	26.796
250	3.365	33.815	26.906
300	3.475	33.925	26.983
400	3.485	34.076	27.102
500	3.404	34.164	27.180
600	3.224	34.241	27.259
700	3.061	34.302	27.322
800	2.871	34.357	27.383
900	2.721	34.390	27.423
1000	2.588	34.425	27.463
1200	2.334	34.476	27.525
1500	2.119	34.537	27.591

Station OS08072
Longitude 49-59.8N
Latitude 174-59.6E
Depth(m) 4706

Press.	Temp.	Sal.	SIG-T
5	6.438	32.687	25.671
10	6.288	32.708	25.706
20	5.673	32.775	25.834
30	4.933	32.829	25.962
40	4.317	32.873	26.062
50	3.978	32.894	26.113
75	3.387	32.957	26.220
100	3.477	33.065	26.298
125	3.635	33.622	26.726
150	3.749	33.769	26.832
200	3.759	33.902	26.937
250	3.568	33.939	26.985
300	3.759	34.042	27.048
400	3.537	34.138	27.147
500	3.367	34.230	27.236
600	3.166	34.285	27.299
700	3.025	34.340	27.356
800	2.893	34.382	27.401
900	2.731	34.429	27.453
1000	2.599	34.464	27.493
1200	2.364	34.523	27.560
1500	2.089	34.596	27.641

Station OS08073
Longitude 50-20.0N
Latitude 175-18.1E
Depth(m) 4666

Press.	Temp.	Sal.	SIG-T
5	6.449	32.555	25.565
10	6.406	32.555	25.571
20	5.261	32.786	25.891
30	5.011	32.899	26.009
40	3.504	32.843	26.118
50	3.467	32.925	26.187
75	3.338	32.981	26.244
100	2.853	33.163	26.432
125	3.896	33.650	26.723
150	4.018	33.781	26.815
200	3.554	33.831	26.901
250	3.567	33.893	26.948
300	3.739	34.019	27.032
400	3.689	34.115	27.113
500	3.508	34.192	27.193
600	3.287	34.245	27.256
700	3.094	34.299	27.317
800	2.922	34.338	27.364
900	2.783	34.377	27.407
1000	2.633	34.412	27.448
1200	2.382	34.468	27.514
1500	2.100	34.530	27.587
2000	1.800	34.593	27.661
2500	1.635	34.630	27.704
3000	1.542	34.650	27.726

Station OS08074
Longitude 50-39.7N
Latitude 175-35.8E
Depth(m) 5590

Press.	Temp.	Sal.	SIG-T
5	6.277	32.642	25.656
10	6.267	32.658	25.669
20	5.178	32.719	25.847
30	4.088	32.822	26.045
40	3.665	32.907	26.154
50	3.846	33.087	26.280
75	4.046	33.397	26.507
100	4.094	33.573	26.642
125	4.155	33.701	26.737
150	4.076	33.775	26.804
200	4.016	33.899	26.909
250	3.951	33.976	26.977
300	3.906	34.048	27.039
400	3.577	34.116	27.125
500	3.376	34.209	27.219
600	3.208	34.276	27.288
700	3.093	34.313	27.328
800	2.933	34.363	27.383
900	2.772	34.396	27.423
1000	2.630	34.435	27.467
1200	2.346	34.497	27.541
1500	2.101	34.561	27.612

Station OS08075
Longitude 50-60.0N
Latitude 175-54.0E
Depth(m) 7190

Press.	Temp.	Sal.	SIG-T
5	6.695	32.596	25.566
10	6.695	32.596	25.566
20	5.905	32.797	25.824
30	4.346	32.893	26.075
40	3.781	32.912	26.147
50	3.680	32.920	26.163
75	3.879	33.075	26.267
100	3.861	33.276	26.428
125	4.183	33.530	26.598
150	3.988	33.691	26.746
200	4.176	33.879	26.877
250	3.636	33.901	26.948
300	3.687	33.981	27.007
400	3.586	34.087	27.101
500	3.560	34.184	27.181
600	3.234	34.238	27.255
700	3.171	34.297	27.308
800	2.940	34.334	27.359
900	2.823	34.366	27.395
1000	2.691	34.399	27.433
1200	2.442	34.456	27.500
1500	2.140	34.523	27.579
2000	1.837	34.587	27.654
2500	1.659	34.624	27.696
3000	1.550	34.646	27.722

Station OS08076
Longitude 51-20.1N
Latitude 176-11.9E
Depth(m) 5020

Press.	Temp.	Sal.	SIG-T
5	5.847	32.833	25.859
10	5.847	32.845	25.869
20	5.092	32.941	26.033
30	4.122	33.097	26.260
40	4.029	33.156	26.317
50	3.970	33.187	26.347
75	3.910	33.244	26.398
100	3.780	33.289	26.447
125	3.750	33.308	26.465
150	3.683	33.334	26.492
200	3.770	33.474	26.595
250	3.810	33.581	26.676
300	3.863	33.662	26.736
400	3.870	33.890	26.916
500	3.810	34.045	27.046
600	3.630	34.128	27.130
700	3.479	34.198	27.200
800	3.370	34.254	27.255
900	3.077	34.292	27.313
1000	3.006	34.342	27.359
1200	2.712	34.407	27.437
1500	2.171	34.527	27.579

Station	OS08077
Longitude	51-39.9N
Latitude	176-30.1E
Depth(m)	3921

Press.	Temp.	Sal.	SIG-T
5	5.341	32.978	26.034
10	5.274	32.989	26.050
20	4.337	33.114	26.252
30	4.028	33.157	26.317
40	3.949	33.186	26.349
50	3.874	33.209	26.374
75	3.814	33.259	26.420
100	3.762	33.300	26.457
125	3.833	33.362	26.500
150	3.828	33.384	26.518
200	3.831	33.426	26.551
250	3.827	33.514	26.621
300	4.012	33.626	26.692
400	3.897	33.776	26.823
500	3.844	33.896	26.924
600	3.808	34.026	27.031
700	3.599	34.145	27.146
800	3.377	34.218	27.226
900	3.151	34.287	27.302
1000	3.023	34.326	27.345
1200	2.753	34.397	27.426
1500	2.303	34.501	27.547
2000	1.908	34.586	27.647
2500	1.704	34.626	27.695
3000	1.561	34.658	27.731

Station	OS08078
Longitude	53-25.0N
Latitude	178-00.1E
Depth(m)	3893

Press.	Temp.	Sal.	SIG-T
5	5.482	33.052	26.076
10	5.464	33.051	26.077
20	5.088	33.028	26.103
30	4.057	33.046	26.227
40	3.331	33.064	26.310
50	3.198	33.088	26.341
75	3.033	33.165	26.417
100	2.816	33.246	26.501
125	2.940	33.319	26.549
150	3.307	33.431	26.605
200	3.930	33.686	26.748
250	3.959	33.806	26.841
300	3.886	33.892	26.916
400	3.744	34.025	27.036
500	3.630	34.105	27.111
600	3.479	34.172	27.180
700	3.316	34.240	27.249
800	3.162	34.285	27.299
900	3.004	34.327	27.347
1000	2.871	34.360	27.386
1200	2.622	34.420	27.456
1500	2.266	34.500	27.550
2000	1.906	34.581	27.643

Station	OS08079
Longitude	53-25.1N
Latitude	178-29.9E
Depth(m)	3190

Press.	Temp.	Sal.	SIG-T
5	5.557	33.073	26.084
10	5.557	33.073	26.084
20	5.154	33.095	26.148
30	4.658	33.102	26.208
40	3.462	33.140	26.359
50	3.191	33.211	26.440
75	2.766	33.249	26.508
100	2.694	33.284	26.542
125	2.553	33.308	26.573
150	3.181	33.441	26.625
200	3.934	33.731	26.783
250	3.884	33.862	26.893
300	3.814	33.964	26.981
400	3.674	34.093	27.097
500	3.513	34.180	27.183
600	3.392	34.243	27.244
700	3.292	34.282	27.285
800	3.171	34.329	27.334
900	2.999	34.380	27.390
1000	2.847	34.420	27.436
1200	2.553	34.493	27.520
1500	2.216	34.580	27.618

Station	OS08080
Longitude	53-24.8N
Latitude	178-59.7E
Depth(m)	2891

Press.	Temp.	Sal.	SIG-T
5	5.547	33.075	26.087
10	5.548	33.075	26.087
20	4.908	33.075	26.160
30	4.782	33.092	26.187
40	4.045	33.124	26.290
50	3.328	33.173	26.397
75	2.693	33.227	26.496
100	2.659	33.258	26.524
125	2.745	33.298	26.548
150	3.180	33.400	26.592
200	3.948	33.658	26.724
250	3.953	33.770	26.813
300	3.903	33.867	26.895
400	3.766	33.990	27.007
500	3.628	34.089	27.099
600	3.490	34.147	27.158
700	3.359	34.209	27.221
800	3.211	34.259	27.274
900	3.062	34.298	27.319
1000	2.928	34.336	27.361
1200	2.669	34.398	27.434
1500	2.285	34.485	27.536
2000	1.886	34.573	27.638
2500	1.692	34.618	27.689

Station	OS08081
Longitude	53-25.0N
Latitude	179-29.8E
Depth(m)	2763

Press.	Temp.	Sal.	SIG-T
5	5.547	33.126	26.127
10	5.537	33.132	26.133
20	5.489	33.141	26.146
30	4.263	33.142	26.282
40	3.566	33.199	26.396
50	3.807	33.267	26.427
75	3.417	33.287	26.480
100	3.286	33.333	26.529
125	3.288	33.369	26.557
150	2.843	33.339	26.573
200	3.715	33.605	26.705
250	3.895	33.751	26.803
300	3.847	33.994	27.001
400	3.807	34.644	27.523
500	3.627	34.818	27.680
600	3.527	34.645	27.552
700	3.397	34.447	27.407
800	3.268	34.507	27.467
900	3.135	34.556	27.518
1000	3.023	34.569	27.539
1200	2.762	34.818	27.762
1500	2.121	34.798	27.800

Station	OS08082
Longitude	53-25.0N
Latitude	179-59.9W
Depth(m)	827

Press.	Temp.	Sal.	SIG-T
5	5.795	33.009	26.005
10	5.785	33.021	26.015
20	5.707	33.041	26.041
30	5.185	33.089	26.140
40	4.402	33.167	26.287
50	3.696	33.206	26.389
75	3.381	33.271	26.471
100	3.393	33.330	26.517
125	2.834	33.317	26.556
150	3.512	33.437	26.591
200	3.557	33.521	26.653
250	3.723	33.617	26.714
300	3.888	33.796	26.840
400	3.803	33.975	26.991
500	3.682	34.083	27.089
600	3.542	34.157	27.161
700	3.381	34.228	27.233
800	3.282	24.305	19.341

Station OS08083
Longitude 53-24.9N
Latitude 179-30.0W
Depth(m) 1322

Press.	Temp.	Sal.	SIG-T
5	5.422	33.063	26.092
10	5.422	33.069	26.096
20	5.274	33.076	26.119
30	4.151	33.092	26.253
40	3.492	33.171	26.381
50	3.282	33.186	26.412
75	2.795	33.225	26.486
100	2.683	33.264	26.527
125	2.490	33.277	26.553
150	2.592	33.301	26.564
200	3.734	33.574	26.678
250	3.839	33.661	26.737
300	3.904	33.788	26.832
400	3.743	33.979	27.000
500	3.613	34.093	27.103
600	3.462	34.161	27.172
700	3.341	34.232	27.240
800	3.099	34.304	27.320
900	2.978	34.344	27.363
1000	2.815	34.387	27.412
1200	2.631	34.428	27.461

Station OS08084
Longitude 53-24.7N
Latitude 179-00.9W
Depth(m) 3740

Press.	Temp.	Sal.	SIG-T
5	5.521	33.109	26.117
10	5.520	33.109	26.117
20	5.466	33.111	26.124
30	4.590	33.134	26.241
40	4.337	33.153	26.283
50	3.689	33.180	26.369
75	3.015	33.235	26.475
100	2.749	33.268	26.524
125	2.878	33.314	26.550
150	3.202	33.384	26.577
200	3.728	33.574	26.679
250	3.723	33.694	26.775
300	3.814	33.808	26.857
400	3.777	33.965	26.986
500	3.634	34.068	27.082
600	3.521	34.129	27.141
700	3.360	34.196	27.210
800	3.211	34.244	27.262
900	3.070	34.293	27.315
1000	2.918	34.332	27.359
1200	2.663	34.394	27.431
1500	2.337	34.472	27.522
2000	1.916	34.567	27.631

Station OS08085
Longitude 53-25.0N
Latitude 178-30.1W
Depth(m) 3802

Press.	Temp.	Sal.	SIG-T
5	5.930	32.984	25.969
10	5.911	33.013	25.994
20	5.137	33.034	26.102
30	4.139	33.117	26.275
40	3.625	33.134	26.339
50	3.364	33.188	26.406
75	3.444	33.281	26.473
100	3.385	33.338	26.524
125	3.444	33.383	26.554
150	3.484	33.424	26.583
200	3.585	33.501	26.635
250	3.735	33.598	26.697
300	3.855	33.753	26.809
400	3.826	33.930	26.953
500	3.665	34.039	27.055
600	3.524	34.131	27.142
700	3.374	34.216	27.225
800	3.200	34.270	27.284
900	3.031	34.316	27.336
1000	2.899	34.368	27.390
1200	2.646	34.433	27.464
1500	2.320	34.526	27.566

Station OS08086
Longitude 53-25.0N
Latitude 177-59.8W
Depth(m) 3787

Press.	Temp.	Sal.	SIG-T
5	6.046	33.138	26.076
10	6.043	33.138	26.076
20	5.205	33.145	26.181
30	4.221	33.157	26.298
40	3.811	33.168	26.348
50	3.606	33.193	26.388
75	2.823	33.202	26.465
100	3.144	33.271	26.492
125	2.492	33.236	26.520
150	2.500	33.245	26.527
200	3.725	33.487	26.610
250	3.712	33.579	26.684
300	3.817	33.701	26.771
400	3.664	33.867	26.918
500	3.643	34.008	27.033
600	3.516	34.093	27.113
700	3.394	34.166	27.182
800	3.270	34.217	27.235
900	3.106	34.270	27.293
1000	2.966	34.308	27.336
1200	2.724	34.374	27.410
1500	2.380	34.462	27.510
2000	1.938	34.563	27.626

Station OS08087
Longitude 53-26.1N
Latitude 177-00.2W
Depth(m) 3780

Press.	Temp.	Sal.	SIG-T
5	5.497	33.173	26.170
10	5.497	33.173	26.170
20	5.485	33.174	26.172
30	4.840	33.187	26.256
40	4.315	33.199	26.322
50	3.283	33.215	26.435
75	2.725	33.216	26.485
100	2.466	33.214	26.504
125	2.338	33.219	26.519
150	2.314	33.231	26.531
200	3.022	33.381	26.591
250	3.887	33.611	26.693
300	3.933	33.751	26.799
400	3.786	33.931	26.957
500	3.652	34.047	27.063
600	3.514	34.132	27.144
700	3.360	34.191	27.206
800	3.225	34.245	27.261
900	3.076	34.288	27.310
1000	2.953	34.322	27.348
1200	2.684	34.389	27.426
1500	2.332	34.472	27.522
2000	1.916	34.566	27.630
2500	1.719	34.613	27.683
3000	1.623	34.638	27.711

Station OS08088
Longitude 51-10.1N
Latitude 179-43.1W
Depth(m) 3667

Press.	Temp.	Sal.	SIG-T
5	6.395	32.611	25.616
10	6.366	32.613	25.622
20	6.059	32.658	25.696
30	5.515	32.735	25.821
40	5.102	32.779	25.903
50	4.466	32.864	26.040
75	4.544	33.107	26.224
100	4.341	33.258	26.366
125	4.325	33.385	26.468
150	4.798	33.526	26.530
200	4.124	33.593	26.655
250	4.321	33.727	26.741
300	4.139	33.794	26.813
400	4.145	33.947	26.934
500	4.007	34.016	27.002
600	3.740	34.107	27.102
700	3.605	34.179	27.173
800	3.430	34.239	27.238
900	3.269	34.281	27.286
1000	3.071	34.328	27.342
1200	2.731	34.400	27.430
1500	2.395	34.471	27.516
2000	1.987	34.559	27.620
2500	1.739	34.610	27.680
3000	1.591	34.639	27.714

Station OS08089
Longitude 50-50.4N
Latitude 179-46.1W
Depth(m) 5450

Press.	Temp.	Sal.	SIG-T
5	5.882	32.638	25.701
10	5.627	32.621	25.719
20	5.459	32.696	25.797
30	4.477	32.722	25.926
40	4.112	32.825	26.045
50	4.120	32.913	26.115
75	4.307	33.121	26.261
100	4.610	33.411	26.458
125	4.711	33.504	26.521
150	4.779	33.611	26.599
200	4.276	33.693	26.718
250	4.339	33.784	26.784
300	4.237	33.858	26.853
400	4.012	33.993	26.984
500	3.804	34.076	27.071
600	3.663	34.158	27.150
700	3.459	34.218	27.218
800	3.264	34.262	27.272
900	3.076	34.309	27.327
1000	2.937	34.344	27.367
1200	2.661	34.414	27.448
1500	2.349	34.481	27.528
2000	1.936	34.569	27.631
2500	1.721	34.614	27.684
3000	1.584	34.641	27.716

Station OS08090
Longitude 50-25.1N
Latitude 179-50.0W
Depth(m) 6505

Press.	Temp.	Sal.	SIG-T
5	7.217	32.632	25.525
10	7.087	32.633	25.543
20	6.728	32.637	25.594
30	6.701	32.638	25.598
40	4.578	32.691	25.891
50	3.841	32.770	26.028
75	3.338	32.941	26.212
100	3.727	33.223	26.400
125	4.146	33.567	26.632
150	4.190	33.715	26.745
200	3.910	33.829	26.864
250	3.912	33.928	26.943
300	3.928	34.007	27.004
400	3.633	34.096	27.104
500	3.532	34.180	27.180
600	3.339	34.248	27.254
700	3.139	34.296	27.310
800	2.969	34.337	27.359
900	2.823	34.370	27.398
1000	2.700	34.398	27.431
1200	2.425	34.459	27.504
1500	2.150	34.521	27.576
2000	1.851	34.585	27.651
2500	1.645	34.626	27.699
3000	1.546	34.646	27.723

Station OS08091
Longitude 50-05.0N
Latitude 179-55.0W
Depth(m) 5979

Press.	Temp.	Sal.	SIG-T
5	7.029	32.636	25.553
10	6.553	32.651	25.628
20	6.266	32.658	25.670
30	6.191	32.660	25.680
40	4.618	32.724	25.913
50	3.909	32.778	26.028
75	3.407	33.015	26.264
100	3.906	33.400	26.523
125	4.127	33.604	26.663
150	4.172	33.759	26.781
200	4.035	33.855	26.872
250	3.934	33.942	26.951
300	3.872	33.998	27.002
400	3.653	34.106	27.110
500	3.506	34.172	27.177
600	3.324	34.250	27.256
700	3.094	34.308	27.324
800	2.896	34.354	27.379
900	2.747	34.387	27.418
1000	2.597	34.420	27.458
1200	2.348	34.475	27.523
1500	2.086	34.533	27.591
2000	1.804	34.593	27.661
2500	1.630	34.629	27.703
3000	1.531	34.649	27.727

Station OS08092
Longitude 49-44.9N
Latitude 179-59.9W
Depth(m) 5161

Press.	Temp.	Sal.	SIG-T
5	6.723	32.594	25.561
10	6.716	32.617	25.580
20	6.316	32.665	25.669
30	6.347	32.743	25.726
40	4.143	32.646	25.900
50	3.263	32.713	26.037
75	3.567	33.150	26.357
100	4.173	33.580	26.639
125	4.143	33.710	26.745
150	4.183	33.826	26.834
200	4.063	33.940	26.937
250	4.004	34.008	26.997
300	3.844	34.059	27.054
400	3.704	34.158	27.146
500	3.524	34.240	27.229
600	3.263	34.287	27.292
700	3.083	34.344	27.354
800	2.920	34.384	27.401
900	2.748	34.431	27.454
1000	2.616	34.463	27.491
1200	2.370	34.528	27.564
1500	2.087	34.592	27.638

Station OS08093
Longitude 49-30.2N
Latitude 179-59.8W
Depth(m) 4965

Press.	Temp.	Sal.	SIG-T
5	7.532	32.674	25.514
10	6.920	32.700	25.618
20	6.696	32.697	25.646
30	5.254	32.763	25.874
40	4.052	32.862	26.080
50	3.530	32.877	26.143
75	3.466	32.996	26.244
100	3.685	33.324	26.484
125	3.831	33.509	26.617
150	3.858	33.643	26.721
200	3.404	33.749	26.850
250	3.497	33.848	26.920
300	3.537	33.915	26.969
400	3.560	34.054	27.077
500	3.480	34.144	27.157
600	3.316	34.226	27.238
700	3.114	34.286	27.305
800	2.983	34.323	27.346
900	2.826	34.364	27.393
1000	2.684	34.398	27.433
1200	2.449	34.453	27.496
1500	2.169	34.517	27.572
2000	1.865	34.584	27.649
2500	1.673	34.622	27.694
3000	1.558	34.646	27.722

Station OS08094
Longitude 49-01.9N
Latitude 174-02.0W
Depth(m) 5335

Press.	Temp.	Sal.	SIG-T
5	7.687	32.788	25.582
10	7.685	32.788	25.583
20	7.680	32.789	25.584
30	6.345	32.815	25.784
40	4.803	32.837	25.983
50	4.462	32.844	26.024
75	3.964	32.867	26.093
100	3.642	32.912	26.161
125	3.290	33.150	26.383
150	3.185	33.539	26.702
200	3.295	33.723	26.839
250	3.468	33.835	26.912
300	3.550	33.909	26.963
400	3.604	34.043	27.064
500	3.502	34.138	27.150
600	3.373	34.206	27.217
700	3.241	34.264	27.275
800	3.052	34.312	27.331
900	2.899	34.349	27.374
1000	2.769	34.381	27.412
1200	2.535	34.437	27.476
1500	2.256	34.499	27.550
2000	1.900	34.577	27.641

Station OS08095
Longitude 50-19.9N
Latitude 172-00.1W
Depth(m) 5475

Press.	Temp.	Sal.	SIG-T
5	7.415	32.490	25.386
10	7.412	32.491	25.387
20	7.399	32.491	25.389
30	7.012	32.517	25.462
40	4.047	32.741	25.985
50	4.010	32.805	26.039
75	3.291	32.901	26.184
100	4.198	33.585	26.640
125	4.321	33.767	26.772
150	4.280	33.871	26.859
200	4.145	33.932	26.922
250	4.069	33.994	26.979
300	3.983	34.038	27.023
400	3.732	34.129	27.121
500	3.479	34.186	27.190
600	3.349	34.242	27.248
700	3.186	34.294	27.305
800	3.023	34.332	27.350
900	2.860	34.367	27.393
1000	2.703	34.400	27.433
1200	2.449	34.456	27.499
1500	2.138	34.523	27.579
2000	1.823	34.590	27.657
2500	1.654	34.625	27.698
3000	1.542	34.647	27.724

Station OS08096
Longitude 50-40.1N
Latitude 171-60.0W
Depth(m) 5820

Press.	Temp.	Sal.	SIG-T
5	7.312	32.524	25.427
10	7.266	32.590	25.485
20	6.382	32.606	25.614
30	3.954	32.674	25.941
40	3.429	32.702	26.013
50	3.206	32.746	26.068
75	3.100	32.928	26.222
100	3.941	33.478	26.582
125	4.210	33.726	26.751
150	4.220	33.855	26.853
200	4.105	33.947	26.938
250	4.014	34.000	26.989
300	3.918	34.056	27.043
400	3.734	34.138	27.127
500	3.599	34.185	27.179
600	3.407	34.242	27.242
700	3.183	34.295	27.306
800	2.991	34.340	27.359
900	2.818	34.377	27.404
1000	2.645	34.414	27.449
1200	2.375	34.468	27.515
1500	2.135	34.524	27.580
2000	1.836	34.587	27.654
2500	1.635	34.626	27.700
3000	1.525	34.649	27.727

Station OS08097
Longitude 51-00.1N
Latitude 172-00.1W
Depth(m) 6953

Press.	Temp.	Sal.	SIG-T
5	7.370	32.484	25.387
10	7.346	32.486	25.393
20	7.244	32.519	25.432
30	5.990	32.572	25.636
40	3.889	32.656	25.933
50	3.342	32.715	26.031
75	3.262	32.956	26.231
100	3.928	33.402	26.522
125	4.245	33.690	26.719
150	4.264	33.848	26.843
200	4.061	33.931	26.930
250	4.015	34.004	26.992
300	3.911	34.057	27.045
400	3.738	34.134	27.124
500	3.539	34.197	27.193
600	3.338	34.252	27.257
700	3.140	34.305	27.317
800	2.985	34.341	27.360
900	2.852	34.371	27.396
1000	2.683	34.407	27.440
1200	2.412	34.464	27.508
1500	2.125	34.526	27.582
2000	1.820	34.588	27.655
2500	1.646	34.624	27.698
3000	1.529	34.648	27.726

Station OS08098
Longitude 51-20.0N
Latitude 171-59.9W
Depth(m) 4420

Press.	Temp.	Sal.	SIG-T
5	7.596	32.526	25.389
10	7.570	32.528	25.394
20	7.232	32.564	25.469
30	5.531	32.597	25.711
40	4.168	32.628	25.883
50	3.581	32.671	25.974
75	3.227	32.864	26.160
100	3.876	33.420	26.542
125	4.250	33.815	26.818
150	4.207	33.884	26.878
200	4.110	33.971	26.956
250	3.970	34.036	27.023
300	3.884	34.079	27.066
400	3.675	34.160	27.151
500	3.493	34.228	27.222
600	3.331	34.273	27.274
700	3.178	34.310	27.318
800	3.003	34.349	27.365
900	2.862	34.380	27.403
1000	2.725	34.410	27.439
1200	2.468	34.465	27.504
1500	2.185	34.526	27.577
2000	1.851	34.597	27.661
2500	1.649	34.639	27.709
3000	1.530	34.665	27.739

Station OS08099
Longitude 51-40.0N
Latitude 172-00.0W
Depth(m) 3626

Press.	Temp.	Sal.	SIG-T
5	6.831	32.107	25.163
10	6.767	32.132	25.191
20	5.259	32.575	25.724
30	5.013	32.667	25.825
40	4.691	32.700	25.886
50	4.389	32.725	25.937
75	3.681	33.013	26.237
100	4.119	33.639	26.692
125	4.172	33.828	26.836
150	4.223	33.892	26.882
200	4.053	33.935	26.933
250	4.079	34.013	26.993
300	3.937	34.038	27.028
400	3.748	34.130	27.120
500	3.562	34.205	27.198
600	3.416	34.242	27.241
700	3.292	34.274	27.278
800	3.073	34.321	27.337
900	2.885	34.364	27.387
1000	2.757	34.390	27.420
1200	2.523	34.442	27.482
1500	2.220	34.507	27.559
2000	1.911	34.574	27.638
2500	1.713	34.615	27.686
3000	1.585	34.641	27.716

Station OS08100
Longitude 51-44.3N
Latitude 172-00.2W
Depth(m) 3513

Press.	Temp.	Sal.	SIG-T
5	6.750	32.170	25.223
10	6.598	32.201	25.267
20	5.637	32.442	25.575
30	4.510	32.728	25.927
40	3.793	32.772	26.034
50	4.212	33.088	26.244
75	4.678	33.264	26.335
100	4.510	33.460	26.508
125	4.786	33.761	26.717
150	4.619	33.875	26.826
200	4.292	33.937	26.910
250	4.113	33.971	26.956
300	4.053	34.026	27.006
400	3.844	34.118	27.100
500	3.684	34.170	27.158
600	3.494	34.237	27.230
700	3.323	34.263	27.267
800	3.062	34.326	27.341
900	3.001	34.353	27.369
1000	2.870	34.383	27.404
1200	2.607	34.444	27.476
1500	2.250	34.531	27.576

Station	OS08101
Longitude	51-59.8N
Latitude	172-00.1W
Depth(m)	157

Press.	Temp.	Sal.	SIG-T
5	4.145	33.395	26.495
10	4.140	33.404	26.503
20	4.130	33.420	26.516
30	4.132	33.422	26.518
40	4.124	33.456	26.546
50	4.130	33.452	26.542
75	4.120	33.516	26.594
100	4.120	33.582	26.646
125	4.111	33.618	26.676
150	4.120	33.661	26.709

Station	OS08102
Longitude	54-59.9N
Latitude	166-00.2W
Depth(m)	135

Press.	Temp.	Sal.	SIG-T
5	6.265	32.336	25.415
10	5.847	32.393	25.512
20	5.874	32.575	25.652
30	6.066	32.776	25.787
40	5.389	32.805	25.891
50	4.085	32.672	25.926
75	3.822	32.846	26.090
100	3.489	32.968	26.219
125	3.420	33.109	26.338

Station	OS08103
Longitude	55-30.0N
Latitude	166-00.4W
Depth(m)	120

Press.	Temp.	Sal.	SIG-T
5	6.665	31.973	25.079
10	6.657	31.973	25.080
20	4.707	31.999	25.328
30	4.162	32.133	25.491
40	4.122	32.232	25.573
50	4.274	32.291	25.604
75	3.872	32.446	25.768
100	3.302	32.778	26.085

Station	OS08104
Longitude	56-00.0N
Latitude	165-59.8W
Depth(m)	113

Press.	Temp.	Sal.	SIG-T
5	6.705	31.834	24.964
10	6.693	31.836	24.968
20	4.469	31.898	25.273
30	3.906	31.967	25.384
40	3.876	32.078	25.474
50	3.050	32.230	25.670
75	2.935	32.556	25.940
100	3.015	32.713	26.058

Station	OS08105
Longitude	55-59.9N
Latitude	167-00.0W
Depth(m)	133

Press.	Temp.	Sal.	SIG-T
5	6.563	31.807	24.961
10	6.563	31.808	24.962
20	4.464	31.905	25.279
30	3.802	31.963	25.390
40	3.562	32.091	25.514
50	3.521	32.246	25.641
75	3.304	32.523	25.881
100	3.121	32.755	26.083

Station	OS08106
Longitude	56-00.2N
Latitude	168-00.4W
Depth(m)	137

Press.	Temp.	Sal.	SIG-T
5	6.578	31.869	25.008
10	6.567	31.870	25.010
20	4.209	31.986	25.369
30	3.864	32.047	25.451
40	2.547	32.302	25.769
50	2.551	32.428	25.870
75	3.363	32.816	26.110
100	3.360	32.819	26.112
125	3.358	32.824	26.116

Station	OS08107
Longitude	55-59.9N
Latitude	170-00.3W
Depth(m)	203

Press.	Temp.	Sal.	SIG-T
5	6.261	32.726	25.724
10	6.256	32.726	25.725
20	5.308	32.741	25.850
30	3.547	32.987	26.229
40	3.411	33.084	26.319
50	3.345	33.126	26.359
75	3.279	33.196	26.420
100	3.285	33.236	26.452
125	3.273	33.251	26.465
150	3.267	33.258	26.471

Station	OS08108
Longitude	56-30.1N
Latitude	169-00.7W
Depth(m)	101

Press.	Temp.	Sal.	SIG-T
5	6.117	32.369	25.460
10	5.615	31.814	25.081
20	5.506	31.826	25.104
30	4.478	31.994	25.348
40	4.019	32.034	25.426
50	3.017	32.090	25.562
75	2.559	32.472	25.904

Station	OS08109
Longitude	56-29.9N
Latitude	168-00.1W
Depth(m)	115

Press.	Temp.	Sal.	SIG-T
5	5.087	31.773	25.108
10	5.072	31.772	25.109
20	4.433	31.783	25.185
30	2.950	31.823	25.354
40	2.783	31.839	25.380
50	2.133	31.869	25.454
75	2.598	32.440	25.875
100	2.996	32.631	25.995

Station	OS08110
Longitude	56-30.0N
Latitude	167-00.1W
Depth(m)	103

Press.	Temp.	Sal.	SIG-T
5	4.933	31.728	25.089
10	4.924	31.728	25.090
20	4.793	31.739	25.113
30	2.961	31.806	25.340
40	2.693	31.817	25.370
50	1.365	31.903	25.534
75	2.564	32.447	25.883
100	2.573	32.447	25.882

Station	OS08111
Longitude	56-29.9N
Latitude	166-00.0W
Depth(m)	85

Press.	Temp.	Sal.	SIG-T
5	5.431	31.721	25.029
10	5.391	31.721	25.034
20	3.107	31.747	25.280
30	2.529	31.753	25.332
40	1.709	31.723	25.367
50	1.106	32.175	25.768
75	1.542	32.236	25.789

Station	OS08112
Longitude	56-58.4N
Latitude	165-59.9W
Depth(m)	70

Press.	Temp.	Sal.	SIG-T
5	4.272	31.592	25.050
10	4.122	31.594	25.066
20	3.548	31.622	25.142
30	0.268	31.733	25.457
40	0.243	31.736	25.461
50	0.233	31.735	25.461

Station	OS08113
Longitude	57-00.0N
Latitude	167-00.0W
Depth(m)	72

Press.	Temp.	Sal.	SIG-T
5	4.409	31.692	25.115
10	4.410	31.692	25.115
20	2.441	31.743	25.330
30	0.826	31.827	25.504
40	0.804	31.828	25.506
50	0.791	31.828	25.507

Station	OS08114
Longitude	57-00.0N
Latitude	167-59.9W
Depth(m)	77

Press.	Temp.	Sal.	SIG-T
5	4.399	31.692	25.117
10	4.383	31.692	25.118
20	4.327	31.693	25.125
30	2.362	31.762	25.352
40	0.577	32.005	25.661
50	0.475	32.026	25.683

Station	OS08115
Longitude	55-59.7N
Latitude	168-59.6W
Depth(m)	1254

Press.	Temp.	Sal.	SIG-T
5	6.150	32.467	25.533
10	6.143	32.481	25.545
20	5.892	32.504	25.594
30	4.964	32.567	25.751
40	3.983	32.789	26.029
50	3.982	32.879	26.101
75	3.942	33.009	26.208
100	3.842	33.077	26.272
125	3.652	33.123	26.327
150	3.471	33.162	26.375
200	3.056	33.231	26.468
250	3.290	33.359	26.549
300	3.572	33.481	26.620
400	3.772	33.692	26.769
500	3.712	33.897	26.938
600	3.433	34.043	27.081
700	3.210	34.168	27.202
800	3.119	34.214	27.247
900	2.955	34.282	27.316
1000	2.796	34.329	27.368
1200	2.440	34.439	27.486

Station	OS08116
Longitude	55-40.0N
Latitude	169-39.8W
Depth(m)	2670

Press.	Temp.	Sal.	SIG-T
5	6.593	32.530	25.527
10	6.584	32.531	25.529
20	6.564	32.532	25.532
30	5.382	32.654	25.772
40	4.461	32.845	26.025
50	4.215	32.962	26.144
75	3.540	33.106	26.324
100	3.065	33.168	26.417
125	2.916	33.225	26.475
150	2.918	33.257	26.501
200	3.113	33.335	26.546

Station	OS08117
Longitude	56-29.9N
Latitude	168-60.0W
Depth(m)	102

Press.	Temp.	Sal.	SIG-T
5	5.737	31.824	25.075
10	5.740	31.824	25.075
20	5.069	31.868	25.186
30	3.542	31.938	25.394
40	4.194	32.115	25.473
50	2.239	32.200	25.711
75	2.592	32.461	25.892

Station	OS08118
Longitude	56-60.0N
Latitude	168-60.0W
Depth(m)	77

Press.	Temp.	Sal.	SIG-T
5	4.569	31.716	25.118
10	4.561	31.716	25.119
20	4.561	31.716	25.119
30	1.784	31.824	25.443
40	0.639	32.005	25.657
50	0.620	32.015	25.667

Station	OS08119
Longitude	57-30.0N
Latitude	169-00.1W
Depth(m)	68

Press.	Temp.	Sal.	SIG-T
5	4.168	31.617	25.080
10	4.151	31.617	25.082
20	0.332	31.569	25.322
30	-0.155	31.658	25.415
40	0.274	31.773	25.490
50	0.395	31.818	25.519

Station	OS08120
Longitude	57-30.1N
Latitude	168-00.1W
Depth(m)	68

Press.	Temp.	Sal.	SIG-T
5	4.004	31.704	25.165
10	3.991	31.708	25.169
20	2.684	31.755	25.322
30	0.587	31.866	25.548
40	0.524	31.872	25.556
50	0.511	31.871	25.556

Station	OS08121
Longitude	57-30.0N
Latitude	166-59.9W
Depth(m)	68

Press.	Temp.	Sal.	SIG-T
5	3.525	31.647	25.164
10	3.554	31.647	25.161
20	2.411	31.677	25.280
30	0.888	31.720	25.415
40	0.757	31.755	25.450
50	0.755	31.755	25.450

Station OS08122
Longitude 57-28.6N
Latitude 165-57.8W
Depth(m) 65

Press.	Temp.	Sal.	SIG-T
5	4.557	31.440	24.900
10	3.113	31.506	25.087
20	2.877	31.516	25.115
30	0.827	31.581	25.306
40	0.792	31.585	25.312
50	0.783	31.586	25.313

Station OS08123
Longitude 58-00.1N
Latitude 165-59.8W
Depth(m) 55

Press.	Temp.	Sal.	SIG-T
5	3.425	31.382	24.962
10	2.843	31.400	25.025
20	2.225	31.410	25.080
30	1.444	31.434	25.152
40	1.384	31.434	25.156

Station OS08124
Longitude 58-60.0N
Latitude 165-60.0W
Depth(m) 26

Press.	Temp.	Sal.	SIG-T
5	3.314	31.214	24.837
10	3.307	31.214	24.838
20	3.307	31.214	24.838

Station OS08125
Longitude 60-30.0N
Latitude 167-59.9W
Depth(m) 27

Press.	Temp.	Sal.	SIG-T
5	3.622	31.111	24.728
10	3.454	31.179	24.797
20	3.545	31.266	24.859

Station OS08126
Longitude 61-51.4N
Latitude 173-23.7W
Depth(m) 63

Press.	Temp.	Sal.	SIG-T
5	5.590	31.114	24.531
10	5.589	31.118	24.534
20	0.234	31.774	25.492
30	-1.297	32.045	25.767
40	-1.628	32.124	25.839
50	-1.620	32.214	25.912

Station OS08127
Longitude 62-00.0N
Latitude 174-00.1W
Depth(m) 64

Press.	Temp.	Sal.	SIG-T
5	5.150	30.831	24.356
10	5.130	30.831	24.358
20	0.104	31.555	25.322
30	-1.629	32.107	25.825
40	-1.640	32.115	25.832
50	-1.641	32.114	25.831

Station OS08128
Longitude 62-09.3N
Latitude 174-08.1W
Depth(m) 64

Press.	Temp.	Sal.	SIG-T
5	4.947	30.937	24.461
10	4.910	30.938	24.466
20	-0.554	31.909	25.634
30	-1.610	32.145	25.856
40	-1.611	32.140	25.851
50	-1.612	32.138	25.850

Station OS08129
Longitude 62-31.9N
Latitude 174-28.7W
Depth(m) 69

Press.	Temp.	Sal.	SIG-T
5	5.109	31.910	25.215
10	5.108	31.911	25.215
20	1.271	32.093	25.692
30	-1.151	32.234	25.916
40	-1.350	32.341	26.008
50	-1.520	32.462	26.111

Station OS08130
Longitude 62-20.0N
Latitude 172-39.9W
Depth(m) 55

Press.	Temp.	Sal.	SIG-T
5	5.892	31.605	24.884
10	5.892	31.607	24.885
20	1.568	31.943	25.552
30	-0.713	32.081	25.779
40	-1.317	32.192	25.887
50	-1.452	32.474	26.119

Station OS08131
Longitude 62-56.0N
Latitude 173-17.2W
Depth(m) 67

Press.	Temp.	Sal.	SIG-T
5	5.263	31.956	25.234
10	5.260	31.958	25.236
20	1.187	32.193	25.777
30	-1.291	32.390	26.047
40	-1.668	32.567	26.200
50	-1.707	32.751	26.350

Station OS08132
Longitude 63-30.1N
Latitude 172-50.0W
Depth(m) 59

Press.	Temp.	Sal.	SIG-T
5	4.937	32.303	25.545
10	4.915	32.349	25.584
20	0.335	32.274	25.890
30	-0.994	32.530	26.151
40	-1.444	32.649	26.261
50	-1.480	32.754	26.347

Station OS08133
Longitude 63-21.1N
Latitude 172-29.9W
Depth(m) 60

Press.	Temp.	Sal.	SIG-T
5	5.307	31.771	25.083
10	5.206	31.771	25.094
20	0.998	31.937	25.583
30	-0.935	32.329	25.987
40	-1.542	32.612	26.233
50	-1.573	32.715	26.318

Station OS08134
Longitude 63-10.1N
Latitude 172-10.0W
Depth(m) 58

Press.	Temp.	Sal.	SIG-T
5	5.465	31.744	25.043
10	5.207	31.778	25.099
20	1.693	32.203	25.752
30	-1.112	32.358	26.016
40	-1.669	32.703	26.310
50	-1.684	32.726	26.330

Station OS08135
Longitude 62-55.1N
Latitude 171-40.0W
Depth(m) 48

Press.	Temp.	Sal.	SIG-T
5	5.446	31.919	25.184
10	5.414	31.917	25.186
20	0.488	32.085	25.730
30	-0.200	32.151	25.815
40	-0.931	32.196	25.879

Station OS08136
Longitude 62-38.4N
Latitude 171-14.8W
Depth(m) 43

Press.	Temp.	Sal.	SIG-T
5	5.698	32.059	25.266
10	5.692	32.060	25.267
20	1.118	32.130	25.731
30	0.589	32.207	25.823

Station	OS08137
Longitude	62-57.0N
Latitude	166-45.0W
Depth(m)	24

Press.	Temp.	Sal.	SIG-T
5	8.494	29.478	22.872
10	6.204	31.050	24.409
20	2.590	31.482	25.111

Station	OS08138
Longitude	63-10.5N
Latitude	167-30.0W
Depth(m)	32

Press.	Temp.	Sal.	SIG-T
5	6.023	32.006	25.185
10	3.289	32.325	25.725
20	1.583	32.441	25.951

Station	OS08139
Longitude	63-52.0N
Latitude	167-44.8W
Depth(m)	32

Press.	Temp.	Sal.	SIG-T
5	4.183	32.077	25.444
10	3.792	32.259	25.626
20	0.539	32.513	26.072

Station	OS08140
Longitude	63-36.0N
Latitude	167-00.1W
Depth(m)	25

Press.	Temp.	Sal.	SIG-T
5	5.833	31.360	24.698
10	3.730	32.104	25.509
20	0.484	32.324	25.923

Station	OS08141
Longitude	63-17.9N
Latitude	166-15.0W
Depth(m)	21

Press.	Temp.	Sal.	SIG-T
5	9.700	26.336	20.242
10	1.566	31.287	25.027

Station	OS08142
Longitude	63-39.2N
Latitude	165-36.4W
Depth(m)	20

Press.	Temp.	Sal.	SIG-T
5	2.764	29.984	23.901
10	0.502	31.509	25.266

Station	OS08143
Longitude	63-54.0N
Latitude	166-11.9W
Depth(m)	25

Press.	Temp.	Sal.	SIG-T
5	7.529	27.336	21.323
10	3.906	29.369	23.318
20	-0.612	32.273	25.930

Station	OS08144
Longitude	64-10.0N
Latitude	166-49.8W
Depth(m)	28

Press.	Temp.	Sal.	SIG-T
5	8.476	30.284	23.505
10	7.707	30.657	23.906
20	-0.474	32.521	26.126

Station	OS08145
Longitude	65-42.4N
Latitude	168-15.2W
Depth(m)	42

Press.	Temp.	Sal.	SIG-T
5	7.476	30.173	23.557
10	5.189	31.449	24.841
20	1.151	32.492	26.020
30	1.093	32.491	26.023

Station	OS08146
Longitude	65-43.1N
Latitude	168-19.8W
Depth(m)	50

Press.	Temp.	Sal.	SIG-T
5	7.898	31.364	24.435
10	6.811	31.667	24.819
20	1.464	32.409	25.933
30	1.094	32.470	26.005
40	1.093	32.468	26.004

Station	OS08147
Longitude	65-45.2N
Latitude	168-29.9W
Depth(m)	54

Press.	Temp.	Sal.	SIG-T
5	6.518	31.925	25.059
10	6.087	31.940	25.125
20	1.334	32.411	25.944
30	1.148	32.420	25.962
40	1.144	32.419	25.961
50	1.133	32.419	25.962

Station	OS08148
Longitude	65-47.3N
Latitude	168-40.2W
Depth(m)	50

Press.	Temp.	Sal.	SIG-T
5	5.725	32.131	25.319
10	3.708	32.371	25.723
20	1.145	32.400	25.947
30	1.108	32.396	25.945
40	1.064	32.395	25.947

Station	OS08149
Longitude	65-49.1N
Latitude	168-49.5W
Depth(m)	47

Press.	Temp.	Sal.	SIG-T
5	2.337	32.518	25.959
10	2.435	32.522	25.953
20	2.034	32.516	25.979
30	1.532	32.504	26.005
40	1.518	32.505	26.006

Station	OS08150
Longitude	66-10.5N
Latitude	168-40.0W
Depth(m)	52

Press.	Temp.	Sal.	SIG-T
5	5.323	32.514	25.669
10	4.390	32.604	25.842
20	1.821	32.522	26.000
30	1.623	32.552	26.037
40	1.558	32.544	26.036

Station	OS08151
Longitude	66-37.9N
Latitude	168-40.1W
Depth(m)	41

Press.	Temp.	Sal.	SIG-T
5	7.564	30.602	23.882
10	3.407	32.261	25.663
20	1.124	32.431	25.972
30	1.104	32.428	25.972

Station	OS08152
Longitude	67-05.2N
Latitude	168-39.8W
Depth(m)	43

Press.	Temp.	Sal.	SIG-T
5	4.159	32.101	25.465
10	3.990	32.097	25.479
20	1.819	32.308	25.828
30	1.774	32.312	25.835
40	1.561	32.353	25.882

Station	OS08153
Longitude	67-32.4N
Latitude	168-40.1W
Depth(m)	47

Press.	Temp.	Sal.	SIG-T
5	4.095	32.588	25.859
10	4.078	32.589	25.861
20	1.667	32.677	26.135
30	1.543	32.705	26.166
40	1.548	32.706	26.166

Station	OS08154
Longitude	69-54.2N
Latitude	168-29.8W
Depth(m)	40

Press.	Temp.	Sal.	SIG-T
5	-0.278	30.176	24.224
10	-1.332	31.966	25.704
20	-1.690	32.733	26.335
30	-1.718	33.157	26.681

Station	OS08155
Longitude	69-59.1N
Latitude	167-58.0W
Depth(m)	46

Press.	Temp.	Sal.	SIG-T
5	-1.060	30.388	24.418
10	-1.420	31.931	25.678
20	-1.491	32.467	26.115
30	-1.441	32.673	26.281
40	-1.457	32.676	26.284

Station	OS08156
Longitude	70-04.0N
Latitude	167-09.9W
Depth(m)	44

Press.	Temp.	Sal.	SIG-T
5	4.416	30.661	24.297
10	4.377	30.656	24.296
20	-0.213	32.260	25.904
30	-0.788	32.370	26.015
40	-1.084	32.538	26.161

Station	OS08157
Longitude	70-16.1N
Latitude	166-57.1W
Depth(m)	43

Press.	Temp.	Sal.	SIG-T
5	2.764	30.257	24.119
10	0.524	32.290	25.893
20	-1.114	32.496	26.127
30	-1.153	32.512	26.142

Station	OS08158
Longitude	70-28.1N
Latitude	166-44.0W
Depth(m)	46

Press.	Temp.	Sal.	SIG-T
5	2.705	29.701	23.680
10	1.877	30.500	24.376
20	-0.705	32.462	26.086
30	-1.377	32.657	26.266
40	-1.383	32.674	26.280

Station	OS08159
Longitude	70-40.0N
Latitude	166-31.0W
Depth(m)	40

Press.	Temp.	Sal.	SIG-T
5	3.392	29.969	23.840
10	-0.634	31.675	25.447
20	-1.194	32.556	26.178
30	-1.562	32.801	26.388

Station	OS08160
Longitude	70-52.0N
Latitude	166-17.8W
Depth(m)	41

Press.	Temp.	Sal.	SIG-T
5	3.627	30.145	23.959
10	3.004	30.375	24.194
20	-1.510	32.560	26.191
30	-1.702	32.922	26.489

Station	OS08161
Longitude	71-04.0N
Latitude	166-05.1W
Depth(m)	41

Press.	Temp.	Sal.	SIG-T
5	0.313	29.583	23.723
10	-0.424	30.603	24.573
20	-1.693	32.810	26.398
30	-1.710	32.983	26.539

Station	OS08162
Longitude	70-38.3N
Latitude	166-46.3W
Depth(m)	45

Press.	Temp.	Sal.	SIG-T
5	2.200	29.748	23.753
10	1.030	32.267	25.846
20	-1.242	32.630	26.240
30	-1.288	32.663	26.268
40	-1.300	32.669	26.273

Station	OS08163
Longitude	70-34.8N
Latitude	166-02.0W
Depth(m)	41

Press.	Temp.	Sal.	SIG-T
5	4.667	30.229	23.929
10	0.806	32.084	25.712
20	-1.352	32.618	26.233
30	-1.349	32.648	26.258

Station	OS08164
Longitude	70-29.8N
Latitude	164-45.7W
Depth(m)	43

Press.	Temp.	Sal.	SIG-T
5	3.713	29.719	23.613
10	2.900	29.791	23.737
20	2.554	32.365	25.819
30	-1.108	32.486	26.119

Station	OS08165
Longitude	70-24.8N
Latitude	163-29.6W
Depth(m)	32

Press.	Temp.	Sal.	SIG-T
5	1.580	31.595	25.273
10	0.469	32.511	26.074
20	-0.331	32.953	26.469

Station	OS08166
Longitude	70-00.9N
Latitude	163-41.6W
Depth(m)	25

Press.	Temp.	Sal.	SIG-T
5	5.850	31.084	24.478
10	6.269	30.991	24.354
20	2.814	32.442	25.859

Station OS08167
Longitude 70-05.8N
Latitude 164-57.6W
Depth(m) 39

Press.	Temp.	Sal.	SIG-T
5	4.046	30.029	23.830
10	1.087	30.905	24.749
20	-0.496	32.363	25.999
30	-0.243	32.859	26.389

Station OS08168
Longitude 70-10.7N
Latitude 166-14.0W
Depth(m) 43

Press.	Temp.	Sal.	SIG-T
5	4.970	31.140	24.619
10	4.130	31.258	24.798
20	-0.615	32.109	25.798
30	-0.696	32.139	25.825
40	-0.711	32.143	25.829

Station OS08169
Longitude 69-50.1N
Latitude 168-49.5W
Depth(m) 45

Press.	Temp.	Sal.	SIG-T
5	3.641	30.794	24.475
10	-0.275	31.525	25.313
20	-0.938	32.539	26.157
30	-1.175	32.674	26.274
40	-1.258	32.682	26.282

Station OS08170
Longitude 69-30.0N
Latitude 167-00.1W
Depth(m) 45

Press.	Temp.	Sal.	SIG-T
5	4.718	29.898	23.662
10	2.381	31.358	25.028
20	2.288	32.060	25.596
30	1.385	32.128	25.713
40	1.493	32.175	25.743

Station OS08171
Longitude 68-52.3N
Latitude 166-45.4W
Depth(m) 43

Press.	Temp.	Sal.	SIG-T
5	5.318	30.727	24.255
10	3.209	30.909	24.604
20	1.515	31.191	24.953
30	2.979	31.575	25.154

Station OS08172
Longitude 68-52.3N
Latitude 167-50.0W
Depth(m) 48

Press.	Temp.	Sal.	SIG-T
5	6.066	31.694	24.933
10	5.572	32.006	25.238
20	2.383	32.254	25.744
30	2.669	32.324	25.777
40	2.770	32.343	25.784

Station OS08173
Longitude 68-52.3N
Latitude 168-40.1W
Depth(m) 50

Press.	Temp.	Sal.	SIG-T
5	5.018	32.386	25.601
10	4.763	32.404	25.643
20	2.618	32.416	25.855
30	2.398	32.423	25.878
40	2.127	32.448	25.918

Station OS08174
Longitude 68-30.7N
Latitude 168-34.5W
Depth(m) 51

Press.	Temp.	Sal.	SIG-T
5	4.005	32.526	25.818
10	3.910	32.532	25.832
20	3.013	32.567	25.942
30	1.524	32.587	26.072
40	1.527	32.591	26.075

Station OS08175
Longitude 68-11.4N
Latitude 167-12.8W
Depth(m) 44

Press.	Temp.	Sal.	SIG-T
5	5.311	32.325	25.521
10	3.479	32.277	25.670
20	3.192	32.268	25.688
30	3.122	32.266	25.693
40	2.928	32.276	25.717

Station OS08176
Longitude 67-32.6N
Latitude 168-39.7W
Depth(m) 48

Press.	Temp.	Sal.	SIG-T
5	3.385	32.603	25.938
10	2.202	32.682	26.100

Station OS08177
Longitude 66-46.9N
Latitude 167-16.8W
Depth(m) 32

Press.	Temp.	Sal.	SIG-T
5	6.372	31.534	24.769
10	5.919	31.843	25.068
20	4.410	31.953	25.322

Station OS08178
Longitude 66-37.9N
Latitude 168-39.9W
Depth(m) 42

Press.	Temp.	Sal.	SIG-T
5	5.180	31.954	25.242
10	5.317	31.983	25.249
20	4.576	32.196	25.498
30	3.974	32.253	25.604
40	3.550	32.304	25.685

Station OS08179
Longitude 65-49.1N
Latitude 168-49.7W
Depth(m) 47

Press.	Temp.	Sal.	SIG-T
5	3.844	32.295	25.650
10	3.234	32.329	25.733
20	1.610	32.397	25.914
30	1.466	32.406	25.931
40	1.465	32.406	25.930

Station OS08180
Longitude 65-47.5N
Latitude 168-40.4W
Depth(m) 50

Press.	Temp.	Sal.	SIG-T
5	5.427	32.155	25.373
10	5.039	32.173	25.430
20	1.329	32.425	25.955
30	1.183	32.426	25.965
40	1.185	32.425	25.964

Station OS08181
Longitude 65-45.3N
Latitude 168-30.1W
Depth(m) 53

Press.	Temp.	Sal.	SIG-T
5	6.375	29.885	23.469
10	6.389	30.808	24.196
20	3.765	32.041	25.456
30	3.724	32.057	25.472
40	3.719	32.068	25.481

Station	OS08182
Longitude	65-43.3N
Latitude	168-19.7W
Depth(m)	50

Press.	Temp.	Sal.	SIG-T
5	4.949	30.337	23.986
10	4.933	30.380	24.021
20	4.963	30.649	24.231
30	5.015	30.794	24.341
40	5.057	30.844	24.376

Station	OS08183
Longitude	65-42.4N
Latitude	168-15.2W
Depth(m)	42

Press.	Temp.	Sal.	SIG-T
5	7.699	28.958	22.574
10	6.961	29.175	22.839
20	5.662	29.811	23.493
30	5.203	30.311	23.939

Station	OS08184
Longitude	41-30.0N
Latitude	145-46.9E
Depth(m)	6800

Press.	Temp.	Sal.	SIG-T
5	16.204	32.699	23.933
10	16.092	32.700	23.960
20	9.135	32.959	25.499
30	4.970	33.051	26.134
40	3.593	33.082	26.300
50	2.797	33.113	26.396
75	1.842	33.157	26.507
100	1.559	33.224	26.581
125	1.670	33.310	26.642
150	1.815	33.390	26.696
200	1.845	33.483	26.768
250	2.472	33.620	26.829
300	2.671	33.719	26.891
400	3.017	33.888	26.996
500	3.151	34.031	27.098
600	3.153	34.148	27.191
700	3.258	34.246	27.259
800	3.089	34.310	27.326
900	2.859	34.338	27.369
1000	2.699	34.382	27.418
1200	2.588	34.458	27.489
1500	2.262	34.517	27.564
2000	1.924	34.586	27.646
2500	1.688	34.627	27.697
3000	1.571	34.648	27.723

5. Data on Drift Gillnet Research

The only one gillnet research was peformed during this cruise.
The operation was supervised by the captain, Deck officers, crew and research staff were engaged in the work.

Table 3: Data on drift gillnet research

No. of	Date and Time (S.M.T.)				Position		Bottom					
							D.D.	depth(m)	Wr	Wind	S.T.	Tr
research	Net set		Net haul		Lat.(N)	Long.(E)				(Force)	(°C)	
OSG0805	June 8	1752-1820	June 9	0430-0535	39-00.4	170-20.4	310	6230	bc	ESE-2	14.8	13.6

D.D:Direction of Drift toward, S.T.:Surface temperature, Wr.:Weather (bc:25-75% clouded), Tr:Transparency

Table 4: Amount of net cast (Tan)

No. of research	Mesh size (mm)																		
	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	6	6	49

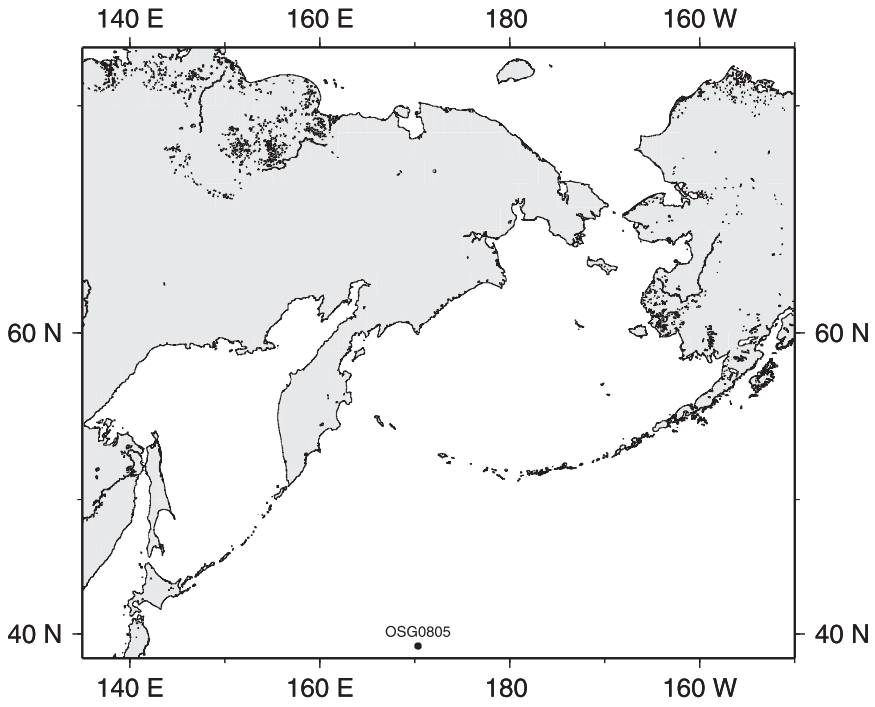

Figure 3: Location of gillnet research

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

Sockeye (catch number)

No. of	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chum (catch number)

No. of	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	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	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Coho (catch number)

No. of	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chinook (catch number)

No. of	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Steelhead (catch number)

No. of	Mesh size (mm)																			
research	19	22	25	29	33	37	42	48	55	63	72	82	93	106	121	138	157	115	121	Total
OSG0805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6: Data on number of organisms except salmonids caught by drift gillnet

Scientific Name	Species	OSG0805	Total
Ommastrephes bartrami	Flying squid	1	1
Prionace glauca	Blue shark	13	13
Cololabis saira	Pacific saury	1	1
Tetragonurus cuvieri	Smalleye squaretail	1	1

Table 7: Biological characteristics of fishes caught by drift gillnet research

NEON FLYING SQUID

St.	Gear	S.L.	B.W.	St.	Gear	S.L.	B.W.	St.	Gear	S.L.	B.W.
	(mm)	(mm)	(gr)		(mm)	(mm)	(gr)		(mm)	(mm)	(gr)
G05	A115	458	3400	G05	A115	372		G05	C093	352	
G05	A115	408	2440	G05	A115	376	1670				
G05	A115	368		G05	C063	206	285				

PACIFIC POMFRET

G05	A115	453	1540	G05	C063	164	74	G05	C138	404	1175
G05	A121	444	1409	G05	C072	186	113	G05	C138	430	1293
G05	A121	437	1260	G05	C072	187	107	G05	C138	416	1210
G05	C048	430	1320	G05	C072	425	1450	G05	C138	429	1308
G05	C055	190	120	G05	C072	436	1566	G05	C138	428	1406
G05	C055	181	105	G05	C072	436	1370	G05	C138	422	1264
G05	C055	168	80	G05	C072	456	1637	G05	C138	440	1481
G05	C055	160	75	G05	C072	173	102	G05	C157	420	1260
G05	C055	163	85	G05	C072	170	87	G05	C157	463	1631
G05	C055	184	120	G05	C072	188	107	G05	C157	404	1249
G05	C055	182	130	G05	C072	180	114	G05	C157	432	1428
G05	C055	168	85	G05	C072	212	169	G05	C157	435	1511
G05	C055	168	105	G05	C072	186	110	G05	C157	422	1284
G05	C055	192	130	G05	C072	194	112	G05	C157	420	1340
G05	C055	178	70	G05	C082	460	1825	G05	C157	430	1430
G05	C063	167	83	G05	C106	400	1260	G05	C157	434	1360
G05	C063	178	105	G05	C106	420	1480	G05	C157	430	1360
G05	C063	184	117	G05	C106	450	1650	G05	C157	393	1140
G05	C063	177	106	G05	C121	444	1279	G05	C157	406	1380
G05	C063	186	120	G05	C121	418	1306	G05	C157	450	1440
G05	C063	166	91	G05	C121	419	1260	G05	C157	428	1223
G05	C063	170	94	G05	C138	425	1366	G05	C157	455	1520
G05	C063	166	96	G05	C138	449	1444				
G05	C063	167	92	G05	C138	428	1241				

PACIFIC SAURY

G05	F33	300	123

6.Data on Salmon Longline and Hook-and-Line Research

[Longline Sampling]
Eleven operations using a salmon longline were performed.
Ten or five baskets (hachi) of salmon longline were used in each operation. Each basket was composed of 127 meters of main line with 34 branch lines. The branch lines, each with a hook, were attached to a main line at an interval of 3 meters. The hooks hung to about 2 meters depth.
These operations were supervised by the captain, Deck officers, crew, cadets and research staff were engaged in the work.

[Hook-and-Line Sampling]
To collect salmonids, hook-and-line gears were used along 44 ^{o}N line in the Central North Pacific, in the Bering Sea, and in the Chukuchi Sea during Cruise #190-Leg 1, 2.
Five to ten anglers were engaged in the work. These samplings were mainly conducted with other observations when ship was under drifting.

Table 8: List of hook-and-line sampling station during the *Oshoro maru* Cruise # 190

Station	Date and Time (S.M.T.)					Set Position		D.S.	No. of hooks	Wr.	Wind (Force)	Oceanographic Station No.
	Line set		Line haul		T.D.	Lat.	Long.					
OSHL 0801	June 10	01:35	June 10	04:00	+11h	42-00.0N	170-20.0E	-	-	bc	SSE-3	OS 08064
OSHL 0802	June 10	12:30	June 10	18:30	+11h	43-30.0N	170-20.0E	-	-	o	SE-3	OS 08067
OSHL 0803	June 12	12:45	June 12	15:45	+11h	50-20.0N	175-18.0E	-	-	o	ESE-5	OS 08073
OSHL 0804	June 12	20:25	June 12	23:00	+11h	51-00.0N	175-54.0E	-	-	m	SE-6	OS 08075
OSHL 0805	June 13	04:30	June 13	06:30	+11h	51-40.0N	176-30.0E	-	-	r	SE-6	OS 08077
OSHL 0806	June 13	16:40	June 13	18:40	+11h	53-25.0N	178-00.0E	-	-	m	SSE-6	OS 08078
OSHL 0807	June 13	22:30	June 13	03:30(-12h)	+11h	53-25.0N	179-00.0E	-	-	d	SE-6	OS 08080
OSHL 0808	June 13	18:50	June 13	20:25	-12h	53-25.0N	178-00.0W	-	-	d	SSW-5	OS 08086
OSHL 0809	June 14	01:00	June 14	02:45	-12h	53-27.6N	177-00.8W	-	-	d	South-4	OS 08087
OSHL 0810	June 16	23:45	June 17	03:00(-11h)	-12h	50-05.0N	179-55.0W	-	-	d	SSW-4	OS 08091
OSHL 0811	June 17	07:20	June 17	09:50	-11h	49-30.0N	180-00.0	-	-	r	SW-4	OS 08093
OSHL 0812	June 19	02:05	June 19	04:35	-10h	50-20.0N	172-00.0W	-	-	d	South-3	OS 08095
OSHL 0813	June 19	19:05	June 19	21:35	-10h	51-20.0N	172-00.0W	-	-	f	NE-2	OS 08098
OSHL 0814	June 19	23:30	June 20	03:00(-9h)	-10h	51-40.0N	172-00.0W	-	-	f	NNE-4	OS 08099
OSHL 0815	June 20	04:35	June 20	05:20	-9h	51-45.0N	172-00.0W	-	-	f	NNE-3	OS 08100
OSHL 0816	June 24	16:20	June 24	17:20	-8h	55-00.0N	166-00.0W	-	-	r	ENE-3	OS 08102
OSHL 0817	June 25	04:05	June 25	04:30	-8h	56-00.0N	167-00.0W	-	-	r	NNE-4	OS 08105
OSHL 0818	June 27	04:00	June 27	05:20	-8h	57-00.0N	168-00.0W	-	-	d	North-3	OS 08114
OSHL 0819	June 28	00:00	June 28	01:00	-8h	56-30.0N	169-00.0W	-	-	d	NW-3	OS 08117
OSHL 0820	June 28	04:25	June 28	05:10	-8h	57-00.0N	169-00.0W	-	-	f	NW-4	OS 08118

S.M.T. : Ship's Mean Time T.D.: Time Difference between Greenwich Mean Time (G.M.T.) and S.M.T.
D.S. : Direction in which line was set Wr.: Weather (r: rain, o: 100% clouded, d: drizzling rain, f: fog, bc: 25-75% clouded, c: 80-98% clouded, m: mist)

Table 9: Position and research conditions of surface longline sampling at each station during the *Oshoro maru* Cruise #190, 2008

Station	Date and Time (S.M.T.*1) Line set		T.D.*2	Set Position Lat.	Long.	Number of baskets	Wr*4	Wind (Force)	Scientific name and number of caught			
Cruise #190 - Leg 1												
OSSL 0801	June 9	04:10-06:07	+11h	39-00.9N	170-20.5E	10	c	SE-2	*Prionace glauca*	1		
OSSL 0802	June 14	00:30-05:00	-12h	53-26.1N	177-00.5W	10	d	South-4	*Oncorhynchus nerka*	1	*Oncorhynchus keta*	1
OSSL 0803	June 16	18:50-20:34	-12h	50-25.0N	179-50.0W	5	f	South-4				
OSSL 0804	June 19	01:55-06:30	-10h	50-20.0N	172-00.0W	5	d	South-3	*Squalus acanthias Linnaeus*	1		
OSSL 0805	June 20	04:22-05:53	-9h	51-45.0N	172-00.0W	10	f	NE-3				
Cruise #190 - Leg 2												
OSSL 0806	June 26	19:20-21:06	-8h	56-59.0N	166-00.0W	10	c	NNW-4	*Oncorhynchus keta*	1	*Limanda aspera*	3
OSSL 0807	June 28	20:46-23:58		57-28.6N	165-57.8W	10	f	WNW-2	*Trichodon trichodon*	1	*Limanda aspera*	28
OSSL 0808	July 1	06:48-10:51		62-56.0N	173-17.3W	10	f	SE-4				
OSSL 0809	July 3	04:18-06:52		63-52.0N	167-44.8W	10	o	NNE-3				
Cruise #190 - Leg 3												
OSSL 0810	July 7	05:08-08:17	-8h	66-10.0N	168-40.0W	10	c	SSE-4	*Myoxocephalus* sp.	1		
OSSL 0811	July 13	05:08-08:17		66-46.9N	167-16.8W	10	d	North-3				

*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 (r: rain, o: 100% clouded, bc: 25-75% clouded).

*5 F: Fixed to the ship

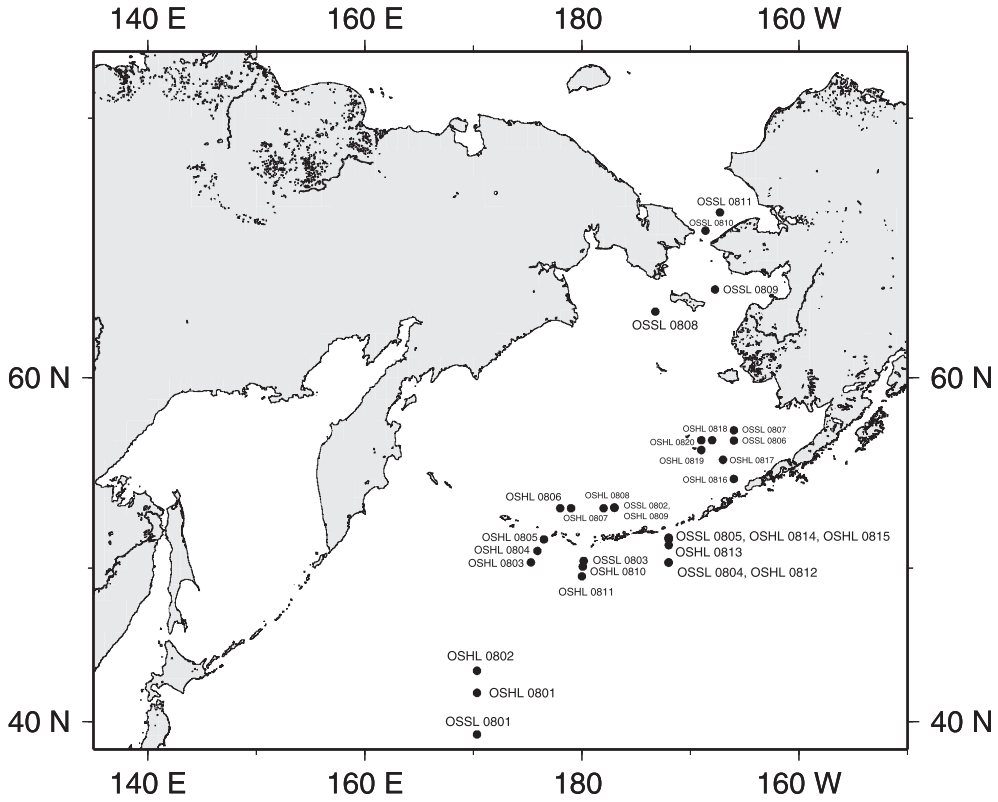

Figure 4: Locations of salmon longline (OSSL 08XX) and hook-and-line (OSHL 08XX) research

Table 10: The catch number of each salmonid at each station where salmonids were collected by hook-and-line gear in the *Oshoro maru* Cruise #190-Leg1 and Leg2, 2008

	Station Name	Species name				Total
		Sockeye	Chum	Pink	Coho	
Cruise #190 Leg 1	OSHL 0801	0	0	2	7	9
	OSHL 0802	0	0	5	2	7
	OSHL 0803	1	0	0	0	1
	OSHL 0804	5	9	3	0	17
	OSHL 0805	0	1	0	0	1
	OSHL 0806	0	0	1	0	1
	OSHL 0807	16	0	4	0	20
	OSHL 0808	0	2	1	0	3
	OSHL 0809	30	4	6	0	40
	OSHL 0810	2	2	2	0	6
	OSHL 0811	0	2	0	0	2
	OSHL 0812	3	10	2	0	15
	OSHL 0813	1	1	0	0	2
	OSHL 0814	3	1	6	0	10
	OSHL 0815	3	0	0	0	3
	Subtotal	65	33	32	9	139
#190 Leg 2	OSHL 0816	0	1	0	0	1
	OSHL 0817	0	0	2	0	2
	OSHL 0818	1	2	0	0	3
	OSHL 0819	0	0	2	0	2
	OSHL 0820	4	0	5	0	9
	Subtotal	5	4	9	0	18
	Total	70	37	41	9	157

Table 11: Biological characteristics of salmonids caught by salmon longline and hook-and-line research

SOCKEYE 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)
HL03	596	2860	F	40	HL09	580	2740	M	50	HL09	561	2100	F	150
HL04	570	2650	F	55	HL09	598	2950	F	110	HL09	615	3200	M	47
HL04	470	1200	F	11	HL09	562	2500	M	28	HL09	532	1950	F	70
HL04	544	2100	F	190	HL09	580	2800	M	32	HL09	606	3300	M	37
HL04	590	2710	M	11	HL09	554	2450	M	61	HL10	446	990	F	11
HL04	556	2150	F	12	HL09	612	3250	M	67	HL10	412	820	F	11
HL07	576	3150	M	42	HL09	622	3600	M	47	HL12	468	1050	F	13
HL07	582	3050	M	37	HL09	580	1720	M	31	HL12	438	890	F	9
HL07	560	2460	M	50	HL09	559	2520	M	24	HL12	587	3120	F	110
HL07	498	1540	M	1	HL09	606	3150	M	54	HL13	624	3800	M	15
HL07	592	3050	M	30	HL09	560	2250	M	35	HL14	595	3350	F	130
HL07	580	2900	F	68	HL09	574	2400	F	68	HL14	427	880	F	9
HL07	534	2200	M	40	HL09	555	2320	F	85	HL14	562	2440	M	62
HL07	600	3100	M	27	HL09	538	2160	F	100	HL15	474	1480	F	2
HL07	594	2800	M	23	HL09	591	2650	M	67	HL15	530	1900	F	65
HL07	570	2340	F	66	HL09	639	3400	M	45	HL15	658	4100	M	92
HL07	634	3900	M	48	HL09	601	3100	F	125	HL18	514	1420	F	68
HL07	632	3800	M	50	HL09	542	2000	M	23	HL20	626	3120	M	78
HL07	612	3300	M	24	HL09	628	3850	M	65	HL20	570	2650	F	120
HL07	572	2600	M	28	HL09	621	3500	M	63	HL20	652	4300	M	45
HL07	636	3300	M	45	HL09	663	3480	M	59	HL20	626	3160	M	105
HL07	640	3300	M	23	HL09	619	3700	M	32	L02	550	2420	M	44
HL09	566	2540	F	105	HL09	570	2500	F	135					
HL09	568	2540	F	62	HL09	530	1950	M	33					

CHUM SALMON

HL04	533	2150	F	25	HL09	662	2160	M	1	HL12	578	2200	M	13
HL04	568	2200	F	110	HL09	494	1200	F	22	HL12	436	820	M	1
HL04	518	1600	M	2	HL09	564	2040	F	28	HL12	464	1040	M	1
HL04	466	1200	F	41	HL10	550	1720	F	40	HL12	420	820	F	13
HL04	518	1680	F	22	HL10	535	1510	F	30	HL13	380	580	F	7
HL04	498	1520	M	1	HL11	503	1440	M	1	HL14	642	3650	M	21
HL04	476	1200	F	15	HL11	503	1340	F	27	HL16	562	2100	M	2
HL04	554	1850	M	1	HL12	446	950	F	9	HL18	603	2265	M	2
HL04	480	1290	M	2	HL12	412	690	F	7	HL18	583	2090	F	58
HL05	504	1650	F	22	HL12	490	1220	F	33	L02	584	2290	F	33
HL08	558	2200	M	1	HL12	448	990	M	2	L06	616	3400	M	275
HL08	554	2040	F	35	HL12	428	820	M	1					
HL09	554	2000	M	2	HL12	440	1000	M	1					

PINK SALMON

HL01	470	1160	F	36	HL07	446	1000	M	30	HL14	452	1040	F	75
HL01	464	1120	F	46	HL08	472	1160	M	24	HL14	442	1080	F	76
HL02	458	1100	F	42	HL09	422	890	F	61	HL14	437	1050	F	69
HL02	476	1200	F	50	HL09	458	1200	M	75	HL14	414	830	F	85
HL02	426	860	M	7	HL09	450	1080	F	100	HL17	467	1100	M	40
HL02	461	1210	F	50	HL09	481	1360	M	70	HL17	432	1020	M	76
HL02	454	1220	F	40	HL09	428	890	M	32	HL19	428	920	M	78
HL04	498	1400	M	78	HL09	481	1220	M	47	HL19	440	950	F	93
HL04	445	1080	F	77	HL10	430	1130	F	86	HL20	428	920	M	44
HL04	484	1480	M	1	HL10	544	1920	M	30	HL20	418	820	F	120
HL06	448	1060	F	60	HL12	420	890	F	57	HL20	434	980	F	100
HL07	445	1100	M	35	HL12	460	1040	F	78	HL20	446	1140	F	105
HL07	434	990	F	80	HL14	424	860	F	80	HL20	454	1100	F	110
HL07	432	960	F	70	HL14	442	1110	F	82					

COHO SALMON

HL01	462	1540	M	5	HL01	520	1340	M	3	HL01	500	1300	F	18
HL01	512	1690	M	3	HL01	500	1420	F	30	HL02	516	1330	F	26
HL01	522	1560	M	10	HL01	510	1300	M	3	HL02	481	1230	F	25

7. Data on Bottom Trawl Research

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

Table 12: Data on bottom trawl research during the *Oshoro maru* Cruise # 190

No. of research	Date and time of net tow (S.M.T.)		Position Lat.(N)	Position Long.(W)	Direction of tow	Speed of tow(K't)	Bottom depth(m)	Wr	Wind (Force)
OST0801	June 25	1002-1022	55-58.9	168-02.6	210	3.9	140	o	North-3
OST0802	26	1256-1326	56-31.1	166-04.9	180	3.4	86	o	North-5
OST0803	28	1245-1305	57-33.8	168-06.2	150	3.1	65	r	NNW-3
OST0804	30	1130-1140	61-49.1	173-16.1	300	4.2	63	o	SSE-4
OST0805	30	1630-1640	62-04.7	174-04.6	338	4.4	64	o	SE-3
OST0806	July 1	0938-0948	62-56.5	173-16.3	310	4.1	66	o	ESE-3
OST0807	1	1433-1443	63-24.6	172-53.3	015	3.5	63	o	ESE-4
OST0808	2	0924-0934	62-38.6	171-15.4	120	4.3	42	o	NNE-2
OST0809	8	1427-1437	69-53.9	168-40.0	170	4.0	42	o	South-5
OST0810	9	1418-1428	70-44.2	166-35.9	170	3.7	41	bc	South-4
OST0811	10	0821-0836	70-24.1	163-27.1	030	3.1	31	f	SW-2
OST0812	10	1457-1512	70-05.8	164-57.8	270	3.7	37	c	SE-2
OST0813	11	1322-1337	69-30.1	167-02.7	118	3.6	44	c	SSE-2
OST0814	12	1244-1259	68-30.8	168-32.7	085	4.0	50	r	East-4
OST0815	13	1315-1330	66-39.5	168-28.2	180	3.6	35	f	North-2

S.T. : Surface temperature
Wr : Weather (r: rain, o: 100% clouded, f: fog, bc: 25-75% clouded, c: 80-98% clouded)

9. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in each leg (leg 1-4).

Table 15: Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets

50-m wire out at OS08099 (51-40N, 172-00W) in 20 June 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG1333	50	530	518	530	540*	492*	502	520
RG2374	50	468*	468	485	514*	478	498	482
RG2562	50	535*	515	528	528	474*	492	516
RG2856	50	649	645	685*	679	592	550*	641
RG3023	50	569	658*	578	605	548*	560	578

*: omitted from mean value calculation.

50-m wire out at OS08122 (57-28N, 165-57W) in 28 June 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG2374	50	460*	451	460	450*	459	460	458
RG2555	50	400*	386	396	388	396	385*	392
RG3006	50	430*	416	420	413	408*	422	418

*: omitted from mean value calculation.

10-m wire out at OS08144 (64-10N, 166-49W) in 2 July 2008.

Flowmeter	Wire length	Revolution										
No.	(m)	1	2	3	4	5	6	7	8	9	10	Mean
RG895	10	150*	145	131	134	127	118	121	120*	125	129	129
RG1333	10	135*	120	113	120	105	105	113	105	100*	116	112
RG2562	10	140*	135	125	128	115	110*	119	118	113	119	122
RG2856	10	162*	140	140	142	134	130	125	150	125*	149	139
RG3023	10	138*	128	120	122	120	112*	122	112	115	120	120
RG3024	10	165*	125	192*	130	128	123	143	105*	128	131	130

*: omitted from mean value calculation.

10-m wire out at OS08178 (66-38N, 168-40W) in 13 July 2008.

Flowmeter	Wire length	Revolution										
No.	(m)	1	2	3	4	5	6	7	8	9	10	Mean
RG895	10	118	120	113	107*	110	111	110	123	110	206*	114
RG1333	10	100*	98	98	89*	90	98	97	99	92	90	95
RG2562	10	111	111	110	102	105	110	113*	113	107	99*	109
RG2856	10	156	141	157	76*	133	150	132	162*	158	138	146
RG3024	10	156	156	138*	151	190	250*	143	160	150	120	153

*: omitted from mean value calculation.

50-m wire out at OS08184 (41-30N, 145-47E) in 28 July 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG1333	50	530*	505	511	518	490*	510	511
RG2562	50	552	542*	549	563*	544	543	547

*: omitted from mean value calculation.

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. Nutrients were analyzed in the laboratory with Technicon Auto-analyzer. The analyses of nutrients were conducted by K.Toya.

Table 13: Data on catches by bottom trawl research

Species		OST 0801		OST 0802		OST 0803	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* spp.	2	10	11	15.5	3	3.5
Nishin	*Clupea pallasii*	-	-	-	-	-	-
Karafutoshisyamo	*Mallotus villosus*	-	-	-	-	-	-
Suketoudara	*Theragra chalcogramma*	89	90	70	80.5	12	9.1
Komai	*Eleginus gracilis*	-	-	-	-	-	-
Madara	*Gadus macrocephalus*	16	10	8	25.5	3	1.3
Hokkyokudara	*Boreogadus saida*	-	-	-	-	-	-
Kitanohokke	*Pleurogrammus monopterygius*	1	1.1	-	-	-	-
Hokkyokukajika	*Triglops pingeli*	-	-	-	-	-	-
Nameyokosujikajika	*Hemilepidotus jordani*	-	-	-	-	3	2.55
Shiberiatsumagurokajika	*Gymnocanthus tricuspis*	-	-	-	-	-	-
Gisukajika-rui1	*Myoxocephalus scorpius*	-	-	-	-	-	-
Gisukajika-rui2	*Myoxocephalus* sp.	-	-	-	-	-	-
Kourikajika-rui	*Icelus uncinalis*	-	-	-	-	-	-
Okikajika-rui	*Artediellus scaber*	-	-	-	-	-	-
Hokakeanahaze	*Blepsias bilobus*	-	-	-	-	-	-
Okozekajika	*Nautichthys pribilovius*	-	-	-	-	-	-
Tsunosyachiuo	*Hypsagonus quadricornis*	-	-	-	-	-	-
Kitanotokubire	*Podothecus accipenserinus*	-	-	1	0.02	3	0.2
Onagatokubire	*Podothecus veternus*	-	-	-	-	-	-
Fujiitokubire	*Ulsina olrikii*	-	-	-	-	-	-
Tatetokubire	*Aspidophoroides monopterygius*	-	-	-	-	-	-
Kusauo-rui	*Liparis* spp.	-	-	-	-	-	-
Mayugaji-rui	*Lycodes* spp.	-	-	-	-	-	-
Togeginpo	*Eumesogrammus praecisus*	-	-	-	-	-	-
Yaseginpo	*Leptoclinus maculatus*	1	0.01	-	-	-	-
Unagigaji	*Lumpenus sagitta*	-	-	-	-	-	-
Nisemedamaginpo	*Anisarchus medius*	-	-	-	-	-	-
Kitaikanago	*Ammodytes hexapterus*	-	-	-	-	-	-
Ohyo	*Hippoglossus stenolepis*	1	3.8	10	32.5	-	-
Arasukaaburagarei	*Atheresthes stomias*	126	56.5	348	110.62	2	0.8
Akagarei-rui	*Hippooglossoides* spp.	20	3.5	1325	480.45	10	4.55
Numagarei	*Platichthys stellatus*	-	-	-	-	-	-
Syumusyugarei	*Lepidopsetta bilineata*	2	1.6	61	18.05	25	5.5
Koganegarei	*Limanda aspera*	-	-	5	1.97	126	52.7
Karafutogarei	*Limanda sakhalinensis*	-	-	-	-	-	-
Tsunogarei	*Pleuronectes quadrituberculatus*	-	-	-	-	12	12.5
Hirenaganameta	*Glyptocephalus zachirus*	25	26.5	-	-	-	-
Tako-rui	Octopuses	-	-	-	-	-	-
Ika-rui	Squids	-	-	-	-	-	-
Aburagani	*Paralithodes platypus*	-	-	-	-	-	-
Zuwaigani	*Chionoecetes opilio*	-	-	3	1	13	5.3
Ozuwaigani	*Chionoecetes bairdi*	13	3.7	14	6.4	225	4.54
Hikiganirui	*Hyas* spp.	-	-	23	9.2	19	0.65
Yadokarirui	Hermit crabs	2	0.1	64	5.09	58	4.35
Tarabaebi-rui	*Pandalus* spp.	4	0.05	-	-	3	0.03
Jyakoebi-rui	Crangonidae spp.	-	-	-	-	2	0.05
Hizaragai-rui	Chitons	-	-	-	-	-	-
Ezobai-rui	Neptune whelks	5	0.4	74	6.41	118	10.5
Makigai-rui	Conches	-	-	-	-	-	-
Nimaigai-rui	Bivalves	-	-	-	-	5	0.12
Uni-rui	Echinoids	48	2.9	7	2.14	-	-
Kashipan-rui	Sand dollars	-	-	-	-	Uncountable	Unmeasurable
Hitode-rui	Starfishes	1	0.6	69	7.56	Uncountable	Unmeasurable
Kumohitode-rui	Ophiuroids	-	-	-	-	Uncountable	Unmeasurable
Tezurumozuru-rui	Basket fishes	13	2.8	Uncountable	Unmeasurable	Uncountable	Unmeasurable
Isoginchaku-rui	Actiniae	6	2.8	Uncountable	Unmeasurable	-	-
Kurage-rui	Jellyfishes	1	1.5	Uncountable	Unmeasurable	-	-
Namako-rui	Sea cucumbers	-	-	-	-	-	-
Umiushi-rui	Sea slug	-	-	-	-	-	-
Hoya-rui	Sea squirts	-	-	-	-	184	74
Kaimen-rui	Sea cucumbers	-	-	-	-	-	-

Table 13: Data on catches by bottom trawl research (continued)

Species		OST 0804		OST 0805		OST 0806	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* spp.	-	-	-	-	-	-
Nishin	*Clupea pallasii*	141	1.6	188	2.75	49	0.8
Karafutoshisyamo	*Mallotus villosus*	15	0.3	4	0.1	6	0.1
Suketoudara	*Theragra chalcogramma*	10	0.07	5	0.3	69	0.44
Komai	*Eleginus gracilis*	-	-	-	-	-	-
Madara	*Gadus macrocephalus*	-	-	-	-	-	-
Hokkyokudara	*Boreogadus saida*	17	Unmeasurable	89	6.252	13	Unmeasurable
Kitanohokke	*Pleurogrammus monopterygius*	-	-	-	-	-	-
Hokkyokukajika	*Triglops pingeli*	-	-	-	-	-	-
Nameyokosujikajika	*Hemilepidotus jordani*	-	-	-	-	-	-
Shiberiatsumagurokajika	*Gymnocanthus tricuspis*	-	-	-	-	-	-
Gisukajika-rui1	*Myoxocephalus scorpius*	1	0.66	-	-	-	-
Gisukajika-rui2	*Myoxocephalus* sp.	-	-	-	-	-	-
Kourikajika-rui	*Icelus uncinalis*	-	-	1	0.01	-	-
Okikajika-rui	*Artediellus scaber*	-	-	-	-	-	-
Hokakeanahaze	*Blepsias bilobus*	-	-	-	-	-	-
Okozekajika	*Nautichthys pribilovius*	-	-	-	-	-	-
Tsunosyachiuo	*Hypsagonus quadricornis*	-	-	-	-	-	-
Kitanotokubire	*Podothecus accipenserinus*	-	-	-	-	-	-
Onagatokubire	*Podothecus veternus*	-	-	-	-	-	-
Fujiitokubire	*Ulsina olrikii*	-	-	3	0.03	-	-
Tatetokubire	*Aspidophoroides monopterygius*	-	-	-	-	-	-
Kusauo-rui	*Liparis* spp.	9	0.36	11	2	3	0.1
Mayugaji-rui	*Lycodes* spp.	2	0.28	6	1	2	0.01
Togeginpo	*Eumesogrammus praecisus*	-	-	-	-	-	-
Yaseginpo	*Leptoclinus maculatus*	-	-	-	-	1	0.02
Unagigaji	*Lumpenus sagitta*	-	-	-	-	-	-
Nisemedamaginpo	*Anisarchus medius*	-	-	2	0.1	1	0.02
Kitaikanago	*Ammodytes hexapterus*	-	-	-	-	-	-
Ohyo	*Hippoglossus stenolepis*	-	-	-	-	-	-
Arasukaaburagarei	*Atheresthes stomias*	-	-	-	-	-	-
Akagarei-rui	*Hippooglossoides* spp.	13	0.68	26	1.85	21	0.25
Numagarei	*Platichthys stellatus*	-	-	-	-	-	-
Syumusyugarei	*Lepidopsetta bilineata*	-	-	-	-	-	-
Koganegarei	*Limanda aspera*	-	-	-	-	-	-
Karafutogarei	*Limanda sakhalinensis*	3	0.1	1	0.2	-	-
Tsunogarei	*Pleuronectes quadrituberculatus*	2	2.7	3	1.2	1	0.2
Hirenaganameta	*Glyptocephalus zachirus*	-	-	-	-	-	-
Tako-rui	Octopuses	-	-	-	-	-	-
Ika-rui	Squids	1	0.01	-	-	-	-
Aburagani	*Paralithodes platypus*	-	-	-	-	-	-
Zuwaigani	*Chionoecetes opilio*	28	2.1	207	13.43	206	8.72
Ozuwaigani	*Chionoecetes bairdi*	-	-	-	-	-	-
Hikiganirui	*Hyas* spp.	2	0.1	-	-	-	-
Yadokarirui	Hermit crabs	18	0.18	Uncountable	Unmeasurable	-	-
Tarabaebi-rui	*Pandalus* spp.	8	0.1	195	0.26	223	0.26
Jyakoebi-rui	Crangonidae spp.	10	0.1	77	0.3	249	1.36
Hizaragai-rui	Chitons	-	-	-	-	-	-
Ezobai-rui	Neptune whelks	21	1.2	23	1.7	-	-
Makigai-rui	Conches	338	1.4	-	-	Uncountable	Unmeasurable
Nimaigai-rui	Bivalves	2	0.02	-	-	Uncountable	Unmeasurable
Uni-rui	Echinoids	-	-	-	-	-	-
Kashipan-rui	Sand dollars	-	-	-	-	-	-
Hitode-rui	Starfishes	-	-	-	-	Uncountable	Unmeasurable
Kumohitode-rui	Ophiuroids	Uncountable	Unmeasurable	Uncountable	Unmeasurable	2240	7.7
Tezurumozuru-rui	Basket fishes	Uncountable	Unmeasurable	-	-	-	-
Isoginchaku-rui	Actiniae	-	-	-	-	-	-
Kurage-rui	Jellyfishes	Uncountable	Unmeasurable	-	-	-	-
Namako-rui	Sea cucumbers	-	-	-	-	-	-
Umiushi-rui	Sea slug	-	-	-	-	-	-
Hoya-rui	Sea squirts	Uncountable	Unmeasurable	-	-	-	-
Kaimen-rui	Sea cucumbers	-	-	-	-	-	-

Table 13: Data on catches by bottom trawl research (continued)

Species		OST 0807		OST 0808		OST 0809	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* spp.	-	-	-	-	-	-
Nishin	*Clupea pallasii*	130	3.65	11	0.5	-	-
Karafutoshisyamo	*Mallotus villosus*	72	2.051	-	-	-	-
Suketoudara	*Theragra chalcogramma*	49	0.3	10	0.08	-	-
Komai	*Eleginus gracilis*	-	-	-	-	-	-
Madara	*Gadus macrocephalus*	-	-	-	-	-	-
Hokkyokudara	*Boreogadus saida*	13	Unmeasurable	1	0.03	35	Unmeasurable
Kitanohokke	*Pleurogrammus monopterygius*	-	-	-	-	-	-
Hokkyokukajika	*Triglops pingeli*	-	-	-	-	-	-
Nameyokosujikajika	*Hemilepidotus jordani*	-	-	-	-	-	-
Shiberiatsumagurokajika	*Gymnocanthus tricuspis*	-	-	-	-	-	-
Gisukajika-rui1	*Myoxocephalus scorpius*	-	-	-	-	18	0.96
Gisukajika-rui2	*Myoxocephalus* sp.	-	-	-	-	3	0.06
Kourikajika-rui	*Icelus uncinalis*	-	-	-	-	-	-
Okikajika-rui	*Artediellus scaber*	-	-	-	-	1	0.02
Hokakeanahaze	*Blepsias bilobus*	-	-	-	-	-	-
Okozekajika	*Nautichthys pribilovius*	-	-	-	-	3	0.03
Tsunosyachiuo	*Hypsagonus quadricornis*	-	-	-	-	3	0.05
Kitanotokubire	*Podothecus accipenserinus*	-	-	-	-	-	-
Onagatokubire	*Podothecus veternus*	-	-	-	-	-	-
Fujiitokubire	*Ulsina olrikii*	2	0.05	-	-	-	-
Tatetokubire	*Aspidophoroides monopterygius*	-	-	-	-	-	-
Kusauo-rui	*Liparis* spp.	3	0.08	1	0.03	-	-
Mayugaji-rui	*Lycodes* spp.	2	0.72	-	-	1	0.03
Togeginpo	*Eumesogrammus praecisus*	-	-	-	-	1	0.02
Yaseginpo	*Leptoclinus maculatus*	-	-	-	-	-	-
Unagigaji	*Lumpenus sagitta*	-	-	-	-	-	-
Nisemedamaginpo	*Anisarchus medius*	-	-	-	-	-	-
Kitaikanago	*Ammodytes hexapterus*	-	-	-	-	-	-
Ohyo	*Hippoglossus stenolepis*	-	-	-	-	-	-
Arasukaaburagarei	*Atheresthes stomias*	-	-	-	-	-	-
Akagarei-rui	*Hippooglossoides* spp.	51	0.46	9	0.5	-	-
Numagarei	*Platichthys stellatus*	-	-	-	-	-	-
Syumusyugarei	*Lepidopsetta bilineata*	-	-	-	-	-	-
Koganegarei	*Limanda aspera*	-	-	-	-	-	-
Karafutogarei	*Limanda sakhalinensis*	-	-	-	-	-	-
Tsunogarei	*Pleuronectes quadrituberculatus*	3	0.78	1	0.2	-	-
Hirenaganameta	*Glyptocephalus zachirus*	-	-	-	-	-	-
Tako-rui	Octopuses	-	-	-	-	1	0.01
Ika-rui	Squids	-	-	-	-	-	-
Aburagani	*Paralithodes platypus*	-	-	-	-	-	-
Zuwaigani	*Chionoecetes opilio*	368	13.5	707	3.4	29	0.47
Ozuwaigani	*Chionoecetes bairdi*	-	-	-	-	-	-
Hikiganirui	*Hyas* spp.	1	0.1	2	0.07	419	2.3
Yadokarirui	Hermit crabs	30	0.28	15	0.2	8	0.2
Tarabaebi-rui	*Pandalus* spp.	136	0.38	9	0.02	297	0.43
Jyakoebi-rui	Crangonidae spp.	-	-	76	0.4	38	0.46
Hizaragai-rui	Chitons	-	-	-	-	4	0.04
Ezobai-rui	Neptune whelks	94	1.26	41	0.75	4	0.5
Makigai-rui	Conches	22	0.25	34	0.84	-	-
Nimaigai-rui	Bivalves	-	-	1	0.02	10	0.41
Uni-rui	Echinoids	-	-	-	-	2592	39.96
Kashipan-rui	Sand dollars	-	-	-	-	-	-
Hitode-rui	Starfishes	Uncountable	Unmeasurable	Uncountable	Unmeasurable	2	0.03
Kumohitode-rui	Ophiuroids	-	-	-	-	-	-
Tezurumozuru-rui	Basket fishes	Uncountable	Unmeasurable	Uncountable	Unmeasurable	-	-
Isoginchaku-rui	Actiniae	-	-	-	-	-	-
Kurage-rui	Jellyfishes	-	-	Uncountable	Unmeasurable	-	-
Namako-rui	Sea cucumbers	-	-	-	-	6	0.37
Umiushi-rui	Sea slug	-	-	-	-	-	-
Hoya-rui	Sea squirts	-	-	-	-	774	37.41
Kaimen-rui	Sea cucumbers	-	-	-	-	Uncountable	0.2

Table 13: Data on catches by bottom trawl research (continued)

Species		OST 0810		OST 0811		OST 0812	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* spp.	-	-	-	-	-	-
Nishin	*Clupea pallasii*	-	-	-	-	-	-
Karafutoshisyamo	*Mallotus villosus*	1	0.03	1	0.05	-	-
Suketoudara	*Theragra chalcogramma*	-	-	-	-	-	-
Komai	*Eleginus gracilis*	1	0.07	-	-	2	0.06
Madara	*Gadus macrocephalus*	-	-	-	-	-	-
Hokkyokudara	*Boreogadus saida*	22	Unmeasurable	252	Unmeasurable	79	Unmeasurable
Kitanohokke	*Pleurogrammus monopterygius*	-	-	-	-	-	-
Hokkyokukajika	*Triglops pingeli*	1	0.1	1	0.05	-	-
Nameyokosujikajika	*Hemilepidotus jordani*	-	-	-	-	-	-
Shiberiatsumagurokajika	*Gymnocanthus tricuspis*	6	0.1	43	0.23	-	-
Gisukajika-rui1	*Myoxocephalus scorpius*	4	0.08	11	0.07	3	0.03
Gisukajika-rui2	*Myoxocephalus* sp.	-	-	-	-	-	-
Kourikajika-rui	*Icelus uncinalis*	-	-	-	-	-	-
Okikajika-rui	*Artediellus scaber*	14	0.07	-	-	-	-
Hokakeanahaze	*Blepsias bilobus*	-	-	1	0.2	-	-
Okozekajika	*Nautichthys pribilovius*	-	-	-	-	-	-
Tsunosyachiuo	*Hypsagonus quadricornis*	-	-	-	-	-	-
Kitanotokubire	*Podothecus accipenserinus*	-	-	-	-	-	-
Onagatokubire	*Podothecus veternus*	-	-	-	-	-	-
Fujiitokubire	*Ulsina olrikii*	-	-	-	-	-	-
Tatetokubire	*Aspidophoroides monopterygius*	-	-	-	-	-	-
Kusauo-rui	*Liparis* spp.	1	0.04	2	0.05	1	0.03
Mayugaji-rui	*Lycodes* spp.	-	-	-	-	-	-
Togeginpo	*Eumesogrammus praecisus*	-	-	-	-	-	-
Yaseginpo	*Leptoclinus maculatus*	-	-	-	-	-	-
Unagigaji	*Lumpenus sagitta*	2	0.01	1	0.02	-	-
Nisemedamaginpo	*Anisarchus medius*	-	-	-	-	-	-
Kitaikanago	*Ammodytes hexapterus*	-	-	-	-	-	-
Ohyo	*Hippoglossus stenolepis*	-	-	-	-	-	-
Arasukaaburagarei	*Atheresthes stomias*	-	-	-	-	-	-
Akagarei-rui	*Hippooglossoides* spp.	-	-	-	-	-	-
Numagarei	*Platichthys stellatus*	-	-	-	-	-	-
Syumusyugarei	*Lepidopsetta bilineata*	-	-	-	-	-	-
Koganegarei	*Limanda aspera*	-	-	-	-	-	-
Karafutogarei	*Limanda sakhalinensis*	-	-	-	-	-	-
Tsunogarei	*Pleuronectes quadrituberculatus*	-	-	-	-	-	-
Hirenaganameta	*Glyptocephalus zachirus*	-	-	-	-	-	-
Tako-rui	Octopuses	-	-	-	-	-	-
Ika-rui	Squids	-	-	-	-	-	-
Aburagani	*Paralithodes platypus*	-	-	2	0.9	-	-
Zuwaigani	*Chionoecetes opilio*	974	6.3	41	1.4	11	0.35
Ozuwaigani	*Chionoecetes bairdi*	-	-	-	-	-	-
Hikiganirui	*Hyas* spp.	229	3.05	49	2.3	32	0.95
Yadokarirui	Hermit crabs	62	0.55	85	2.6	195	3.85
Tarabaebi-rui	*Pandalus* spp.	689	0.8	369	0.4	312	0.3
Jyakoebi-rui	Crangonidae spp.	228	1.05	203	1.3	122	0.4
Hizaragai-rui	Chitons	-	-	1	0.05	-	-
Ezobai-rui	Neptune whelks	36	0.55	3	0.6	16	0.9
Makigai-rui	Conches	-	-	1	0.02	-	-
Nimaigai-rui	Bivalves	11	0.6	-	-	-	-
Uni-rui	Echinoids	7	0.7	-	-	-	-
Kashipan-rui	Sand dollars	-	-	78	0.3	-	-
Hitode-rui	Starfishes	34	2.9	60	5.7	52	3.4
Kumohitode-rui	Ophiuroids	-	-	-	-	51	0.4
Tezurumozuru-rui	Basket fishes	-	-	60	7.5	28	1.9
Isoginchaku-rui	Actiniae	34	2.05	4	0.2	14	0.5
Kurage-rui	Jellyfishes	-	-	-	-	1	2.6
Namako-rui	Sea cucumbers	755	41.83	-	-	-	-
Umiushi-rui	Sea slug	-	-	1	0.1	-	-
Hoya-rui	Sea squirts	275	25.02	236	28.18	Uncountable	2.02
Kaimen-rui	Sea cucumbers	-	-	-	-	-	-

Table 13: Data on catches by bottom trawl research (continued)

Species		OST 0813		OST 0814		OST 0815	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* spp.	-	-	-	-	-	-
Nishin	*Clupea pallasii*	1	0.03	4	0.1	1349	131.5
Karafutoshisyamo	*Mallotus villosus*	15	0.06	9	0.6	12	0.09
Suketoudara	*Theragra chalcogramma*	-	-	-	-	-	-
Komai	*Eleginus gracilis*	6	0.02	6	0.02	10	0.19
Madara	*Gadus macrocephalus*	-	-	-	-	-	-
Hokkyokudara	*Boreogadus saida*	80	0.51	150	1.5	3	0.04
Kitanohokke	*Pleurogrammus monopterygius*	-	-	-	-	-	-
Hokkyokukajika	*Triglops pingeli*	-	-	-	-	-	-
Nameyokosujikajika	*Hemilepidotus jordani*	-	-	-	-	-	-
Shiberiatsumagurokajika	*Gymnocanthus tricuspis*	1	0.03	3	0.07	28	0.54
Gisukajika-rui1	*Myoxocephalus scorpius*	1	0.15	3	0.13	24	0.87
Gisukajika-rui2	*Myoxocephalus* sp.	-	-	-	-	-	-
Kourikajika-rui	*Icelus uncinalis*	-	-	-	-	-	-
Okikajika-rui	*Artediellus scaber*	1	0.03	-	-	-	-
Hokakeanahaze	*Blepsias bilobus*	-	-	-	-	-	-
Okozekajika	*Nautichthys pribilovius*	1	0.02	-	-	2	0.08
Tsunosyachiuo	*Hypsagonus quadricornis*	-	-	-	-	-	-
Kitanotokubire	*Podothecus accipenserinus*	-	-	-	-	-	-
Onagatokubire	*Podothecus veternus*	-	-	1	0.03	-	-
Fujiitokubire	*Ulsina olrikii*	1	0.01	-	-	-	-
Tatetokubire	*Aspidophoroides monopterygius*	-	-	1	0.01	-	-
Kusauo-rui	*Liparis* spp.	-	-	1	0.05	-	-
Mayugaji-rui	*Lycodes* spp.	5	0.04	2	0.04	2	0.07
Togeginpo	*Eumesogrammus praecisus*	-	-	-	-	-	-
Yaseginpo	*Leptoclinus maculatus*	-	-	1	0.01	-	-
Unagigaji	*Lumpenus sagitta*	6	0.06	272	1.6	220	3.03
Nisemedamaginpo	*Anisarchus medius*	-	-	4	0.08	-	-
Kitaikanago	*Ammodytes hexapterus*	-	-	-	-	12	0.09
Ohyo	*Hippoglossus stenolepis*	-	-	-	-	-	-
Arasukaaburagarei	*Atheresthes stomias*	-	-	-	-	-	-
Akagarei-rui	*Hippooglossoides* spp.	5	0.07	79	3.3	41	0.86
Numagarei	*Platichthys stellatus*	-	-	-	-	3	6.4
Syumusyugarei	*Lepidopsetta bilineata*	-	-	-	-	-	-
Koganegarei	*Limanda aspera*	2	0.09	1	0.15	11	0.64
Karafutogarei	*Limanda sakhalinensis*	-	-	-	-	-	-
Tsunogarei	*Pleuronectes quadrituberculatus*	-	-	-	-	-	-
Hirenaganameta	*Glyptocephalus zachirus*	-	-	-	-	-	-
Tako-rui	Octopuses	-	-	-	-	-	-
Ika-rui	Squids	-	-	-	-	-	-
Aburagani	*Paralithodes platypus*	-	-	-	-	1	0.9
Zuwaigani	*Chionoecetes opilio*	2160	15.93	1080	36.72	4103	46.5
Ozuwaigani	*Chionoecetes bairdi*	-	-	-	-	-	-
Hikiganirui	*Hyas* spp.	192	4	-	-	-	-
Yadokarirui	Hermit crabs	333	9	36	0.9	652	17.5
Tarabaebi-rui	*Pandalus* spp.	284	0.35	8	0.06	7	0.02
Jyakoebi-rui	Crangonidae spp.	251	1.2	188	1	131	0.6
Hizaragai-rui	Chitons	7	0.13	-	-	-	-
Ezobai-rui	Neptune whelks	99	3.7	56	2	1682	92.5
Makigai-rui	Conches	-	-	-	-	-	-
Nimaigai-rui	Bivalves	-	-	1	0.05	4	0.42
Uni-rui	Echinoids	-	-	-	-	293	20.5
Kashipan-rui	Sand dollars	-	-	-	-	-	-
Hitode-rui	Starfishes	128	7.7	52	6.4	439	46.5
Kumohitode-rui	Ophiuroids	-	-	-	-	-	-
Tezurumozuru-rui	Basket fishes	34	2.2	-	-	71	7
Isoginchaku-rui	Actiniae	21	0.75	47	1.6	583	14
Kurage-rui	Jellyfishes	-	-	-	-	-	-
Namako-rui	Sea cucumbers	-	-	-	-	13	0.07
Umiushi-rui	Sea slug	2	0.04	-	-	-	-
Hoya-rui	Sea squirts	Uncountable	10.2	-	-	-	-
Kaimen-rui	Sea cucumbers	-	-	-	-	-	-

8. Data on Plankton Colledted by Vertical Hauls of a 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, H.S. Kim, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, Y. Hanamiya and T. Homma (Laboratory of Marine Biology).

Table 14: Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (^{o})	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.	Date	Hour					No.	Reading		per haul	per 1000 m^3	
OS08053 (Site H)	41	145 E	3 June	10:44	151	8	150	GG54	1333	1542	23.58	16.39	694.83	08101
								XX13	2562	1382	21.31			08102
				11:24	504	7	500	GG54	1333	4538	69.40	23.41	337.26	08103
								XX13	2562	3946	60.84			08104
Extra	40	153 E	4 June	22:10	150	4	150	GG54	1333	1321	20.20	3.37	166.57	08105
								XX13	2562	1414	21.80			08106
Extra	38	165 E	5 June	22:09	151	9	149	GG54	1333	1546	23.64	80.85	3419.50 5)	08107
								XX13	2562	1482	22.85			08108
OS08054	38	170 E	7 June	20:41	152	10	150	GG54	1333	1754	26.82	52.23	1947.01 5)	08109
								XX13	2562	1315	20.28			08110
OS08057	39	170 E	8 June	10:03	155	14	150	GG54	1333	1928	29.48	62.59	2122.67 5)	08111
								XX13	2562	1559	24.04			08112
				10:13	511	13	498	GG54	1333	5159	78.89	73.65	933.46 5)	08113
								XX13	2562	3315	51.11			08114
OS08061	40	170 E	9 June	15:15	154	13	150	GG54	1333	1362	20.83	8.35	400.65	08115
								XX13	2562	1061	16.36			08116
OS08064	42	170 E	10 June	01:57	152	9	150	GG54	1333	1405	21.49	12.55	583.87	08117
								XX13	2562	1232	19.00			08118
OS08067	43	170 E	10 June	13:07	155	14	150	GG54	1333	1506	23.03	9.87	428.34	08119
								XX13	2562	1221	18.83			08120
				13:20	526	18	500	GG54	1333	4670	71.42	18.95	265.27	08121
								XX13	2562	3629	55.95			08122
OS08071	45	170 E	11 June	06:10	152	10	150	GG54	1333	1322	20.22	9.49	469.16	08123
								XX13	2562	1163	17.93			08124
				06:18	526	18	500	GG54	1333	4723	72.23	19.83	274.48	08125
								XX13	2562	3906	60.23			08126
OS08073	50	175 E	12 June	15:37	158	18	150	GG54	1333	1702	26.03	20.59	790.88	08127
								XX13	2562	1212	18.69			08128
OS08075	51	175 E	12 June	22:36	151	8	150	GG54	1333	1322	20.22	10.75	531.49	08129
								XX13	2562	1579	24.35			08130
OS08078	53	178 E	13 June	18:12	150	6	149	GG54	1333	1279	19.56	16.95	866.34	08131
								XX13	2562	1069	16.48			08132
				18:23	515	14	500	GG54	1333	4535	69.35	25.05	361.13	08133
								XX13	2562	3682	56.77			08134
OS08080	53	179 E	13 June	23:36	153	12	150	GG54	1333	1430	21.87	13.47	615.73	08135
								XX13	2562	1080	16.65			08136
OS08084	53	179 W	13 June	14:31	151	6	150	GG54	1333	1332	20.37	21.73	1066.53	08137
								XX13	2562	1059	16.33			08138
OS08086	53	177 W	13 June	20:23	150	2	150	GG54	1333	1289	19.71	7.71	390.88	08139
								XX13	2562	960	14.80			08140
OS08087	53	177 W	14 June	01:20	150	3	150	GG54	1333	1221	18.67	17.39	931.06	08141
								XX13	2562	1055	16.27			08142
OS08088	51	179 W	16 June	08:42	150	2	150	GG54	1333	1225	18.73	11.73	625.89	08143
								XX13	2562	1053	16.24			08144

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Salpida abundant.
6) Chaetognaths abundant.

Table 14: Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (^{o})	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.	Date	Hour					No.	Reading		per haul	per 1000 m^3	
OS08089	50	179 W	16 June	13:36	151	6	150	GG54	1333	1330	20.34	9.17	450.61	08145
								XX13	2562	1130	17.42			08146
OS08090	50	179 W	16 June	20:51	155	14	150	GG54	1333	1419	21.70	20.13	927.41	08147
								XX13	2562	1092	16.84			08148
OS08091	50	179 W	17 June	03:13	158	17	151	GG54	1333	1406	21.50	12.19	566.71	08149
								XX13	2562	1005	15.50			08150
OS08093	49	179 W	17 June	10:05	154	13	150	GG54	1333	1500	22.94	15.53	676.80	08151
								XX13	2562	1240	19.12			08152
OS08094	49	174 W	18 June	09:48	156	15	151	GG54	1333	1413	21.61	6.77	313.07	08153
								XX13	2562	1264	19.49			08154
OS08095	50	172 W	19 June	04:23	152	11	149	GG54	1333	1458	22.30	13.15	589.55	08155
								XX13	2562	1166	17.98			08156
OS08096	50	171 W	19 June	10:45	152	10	150	GG54	1333	1342	20.52	11.85	577.17	08157
								XX13	2562	1100	16.96			08158
OS08097	51	172 W	19 June	15:07	151	8	150	GG54	1333	1300	19.88	8.79	441.89	08159
								XX13	2562	850	13.11			08160
OS08099	51	172 W	20 June	02:50	153	12	150	GG54	1333	1240	18.96	12.89	679.49	08161
								XX13	2562	670	10.33			08162
OS08102	55	166 W	24 June	16:37	131	0	131	GG54	2562	1240	16.23	17.49	1077.22	08163
								XX13	2374	985	15.67			08164
OS08103	55	166 W	24 June	20:58	118	13	115	GG54	2562	1268	16.60	25.49	1535.42	08165
								XX13	2374	770	12.25			08166
OS08104	56	166 W	25 June	00:28	113	15	109	GG54	2562	1338	17.51	10.65	607.79	08167
								XX13	2374	596	9.48			08168
OS08105	56	167 W	25 June	04:23	136	21	127	GG54	2562	1437	18.81	22.03	1170.90	08169
								XX13	2374	606	9.64			08170
OS08106	56	168 W	25 June	08:18	138	16	133	GG54	2562	1281	16.77	3.87	230.50	08171
								XX13	2374	435	6.92			08172
OS08109	56	168 W	26 June	04:54	112	13	109	GG54	2562	1168	15.29	15.99	1045.52	08173
								XX13	2374	260	4.14			08174
OS08110	56	167 W	26 June	08:47	100	13	97	GG54	2562	930	12.17	9.53	782.43	08175
								XX13	2374	303	4.82			08176
OS08111	56	166 W	26 June	15:02	82	10	81	GG54	2562	828	10.84	13.41	1236.80	6) 08177
								XX13	2555	193	3.92			08178
OS08112	57	166 W	26 June	19:52	65	8	64	GG54	2562	589	7.71	6.95	900.78	6) 08179
								XX13	2555	138	2.80			08180
OS08113	57	167 W	27 June	00:37	68	10	67	GG54	2562	506	6.62	1.11	166.83	08181
								XX13	3006	128	2.04			08182
OS08114	57	168 W	27 June	04:28	73	8	72	GG54	2562	679	8.89	2.97	333.59	08183
								XX13	3006	203	3.23			08184
OS08115	56	169 W	27 June	11:42	153	11	150	GG54	2562	1577	20.64	7.21	349.03	08185
								XX13	3006	1623	21.07			08186
OS08116	55	169 W	27 June	16:13	155	14	150	GG54	2562	1413	18.50	10.21	551.74	08187
								XX13	3006	516	6.75			08188
OS08117	56	169 W	28 June	00:38	100	14	97	GG54	2562	1120	14.66	15.29	1042.58	08189
								XX13	1333	356	5.05			08190
OS08118	57	169 W	28 June	04:46	76	18	72	GG54	2562	738	9.66	21.71	2246.80	08191
								XX13	1333	348	4.94			08192
OS08119	57	169 W	28 June	08:32	63	7	63	GG54	2562	575	7.53	9.29	1233.60	1) 08193
								XX13	1333	342	4.85			08194
OS08120	57	168 W	28 June	14:00	63	7	63	GG54	2562	541	7.08	9.77	1378.91	08195
								XX13	1333	220	3.12			08196
OS08121	57	167 W	28 June	17:15	63	4	63	GG54	1333	536	7.60	5.75	1891.75	1) 08197
								XX13	2562	232	3.04			08198
OS08122	57	165 W	28 June	21:42	60	5	60	GG54	1333	478	6.78	5.59	2666.64	08199
								XX13	2562	160	2.09			08200
OS08123	58	166 W	29 June	04:09	50	0	50	GG54	1333	409	5.80	2.51	2305.64	08201
								XX13	2562	83	1.09			08202
OS08124	59	166 W	29 June	09:59	21	2	21	GG54	1333	180	2.55	2.29	3117.16	08203
								XX13	2562	56	0.73			08204
OS08125	60	168 W	29 June	20:02	22	2	22	GG54	1333	185	2.62	0.91	864.21	08205

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Salpida abundant.
6) Chaetognaths abundant.

Table 14: Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (^{o})	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.	Date	Hour					No.	Reading		per haul	per 1000 m^3	
								XX13	2562	80	1.05			08206
OS08126	61	173 W	30 June	12:24	60	0	60	GG54	1333	337	4.78	3.77	2025.53	08207
								XX13	2562	142	1.86			08208
OS08127	62	174 W	30 June	14:23	60	11	59	GG54	1333	545	7.73	2.93	1354.26	08209
								XX13	2562	165	2.16			08210
OS08128	62	174 W	30 June	17:24	59	9	58	GG54	1333	567	8.04	2.35	861.27	08211
								XX13	2562	208	2.72			08212
OS08129	62	174 W	30 June	20:05	64	9	63	GG54	1333	649	9.21	1.57	459.84	08213
								XX13	2562	260	3.40			08214
OS08130	62	172 W	1 July	01:13	51	9	50	GG54	1333	383	5.43	3.17	1196.97	08215
								XX13	2562	202	2.64			08216
OS08131	62	173 W	1 July	07:08	62	6	62	GG54	1333	570	8.09	1.75	493.73	08217
								XX13	2562	270	3.53			08218
OS08132	63	172 W	1 July	15:38	54	7	54	GG54	1333	542	7.69	3.19	1158.65	08219
								XX13	2562	210	2.75			08220
OS08133	63	172 W	1 July	18:23	55	6	55	GG54	1333	488	6.92	1.67	510.83	08221
								XX13	2562	249	3.26			08222
OS08134	63	172 W	1 July	20:13	54	11	53	GG54	1333	528	7.49	1.57	446.11	08223
								XX13	2562	268	3.51			08224
OS08135	62	171 W	1 July	22:27	44	10	43	GG54	1333	400	5.67	2.31	1017.86	08225
								XX13	2562	173	2.26			08226
OS08136	62	171 W	2 July	06:53	39	11	38	GG54	1333	356	5.05	3.39	1175.43	08227
								XX13	2562	220	2.88			08228
OS08137	63	166 W	2 July	20:34	19	6	19	GG54	1333	182	2.58	1.55	922.10	08229
								XX13	2562	128	1.68			08230
OS08138	63	167 W	2 July	23:39	27	4	27	GG54	1333	243	3.45	2.31	1479.74	08231
								XX13	2562	119	1.56			08232
OS08139	63	167 W	3 July	04:46	27	2	27	GG54	1333	250	3.55	3.05	1817.35	08233
								XX13	2562	128	1.68			08234
OS08140	63	167 W	3 July	09:48	20	6	20	GG54	1333	193	2.74	1.65	1064.99	08235
								XX13	2562	118	1.54			08236
OS08141	63	166 W	3 July	13:42	16	4	16	GG54	1333	168	2.38	1.85	1532.04	08237
								XX13	2562	92	1.20			08238
OS08142	63	165 W	3 July	17:00	15	2	15	GG54	1333	146	2.07	1.09	828.88	6) 08239
								XX13	2562	100	1.31			08240
OS08143	63	166 W	3 July	19:45	20	4	20	GG54	1333	192	2.72	2.15	1260.51	08241
								XX13	2562	130	1.70			08242
OS08144	64	166 W	3 July	22:53	23	4	23	GG54	1333	216	3.06	2.07	1204.23	08243
								XX13	2562	131	1.71			08244
OS08150	66	168 W	7 July	06:09	47	6	47	GG54	1333	423	7.06	5.47	2574.17	1) 08245
								XX13	2562	145	2.12			08246
OS08151	66	168 W	7 July	11:32	36	7	36	GG54	1333	398	6.65	3.93	1150.53	08247
								XX13	2562	233	3.41			08248
OS08152	67	168 W	7 July	15:35	39	16	37	GG54	1333	529	8.83	2.93	537.03	08249
								XX13	2562	372	5.45			08250
OS08153	67	168 W	7 July	18:45	42	6	42	GG54	1333	310	5.18	4.09	1835.54	1) 08251
								XX13	2562	152	2.23			08252
OS08154	69	168 W	8 July	15:48	35	2	35	GG54	1333	323	5.39	1.17	239.66	08253
								XX13	2562	332	4.86			08254
OS08155	70	168 W	8 July	18:06	41	6	41	GG54	1333	380	6.35	4.81	914.14	08255
								XX13	2562	359	5.26			08256
OS08156	70	167 W	8 July	21:12	39	3	39	GG54	1333	480	8.01	5.59	1017.20	08257
								XX13	2562	375	5.49			08258
OS08157	70	166 W	8 July	23:29	38	5	38	GG54	1333	342	5.71	4.13	866.87	08259
								XX13	2562	325	4.76			08260
OS08158	70	166 W	9 July	01:57	41	11	40	GG54	1333	395	6.60	3.33	594.49	08261
								XX13	2562	382	5.59			08262
OS08159	70	166 W	9 July	04:21	35	7	35	GG54	1333	312	5.21	5.03	1056.01	08263
								XX13	2562	325	4.76			08264
OS08160	70	166 W	9 July	06:36	37	14	36	GG54	1333	425	7.10	2.59	681.67	08265
								XX13	2562	259	3.79			08266

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Salpida abundant.
6) Chaetognaths abundant.

Table 14: Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (^{o})	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.	Date	Hour					No.	Reading		per haul	per 1000 m^3	
OS08161	71	166 W	9 July	08:49	36	8	36	GG54	1333	340	5.68	2.13	556.07 1)	08267
								XX13	2562	261	3.82			08268
OS08162	70	166 W	9 July	20:34	40	2	40	GG54	1333	358	5.98	2.63	597.62	08269
								XX13	2562	300	4.39			08270
OS08163	70	166 W	9 July	22:49	36	3	36	GG54	1333	311	5.19	3.55	786.10	08271
								XX13	2562	308	4.51			08272
OS08164	70	164 W	10 July	03:47	38	7	38	GG54	1333	333	5.56	3.67	740.58	08273
								XX13	2562	338	4.95			08274
OS08165	70	163 W	10 July	06:45	27	4	27	GG54	1333	251	4.19	1.77	446.47	08275
								XX13	2562	270	3.95			08276
OS08166	70	163 W	10 July	11:42	20	11	20	GG54	1333	205	3.42	1.49	492.35	08277
								XX13	2562	206	3.02			08278
OS08167	70	164 W	10 July	16:07	34	2	34	GG54	1333	312	5.21	4.97	1149.51	08279
								XX13	2562	295	4.32			08280
OS08168	70	166 W	10 July	20:03	38	2	38	GG54	1333	311	5.19	2.27	797.41	08281
								XX13	2562	194	2.84			08282
OS08169	69	168 W	11 July	08:29	40	9	40	GG54	1333	340	5.68	3.39	1055.67	08283
								XX13	2562	219	3.21			08284
OS08170	69	167 W	11 July	14:45	40	3	40	GG54	1333	337	5.63	3.65	797.92	08285
								XX13	2562	312	4.57			08286
OS08171	68	166 W	12 July	02:26	38	7	38	GG54	1333	349	5.83	4.25	850.23	08287
								XX13	2562	341	4.99			08288
OS08172	68	167 W	12 July	05:01	43	8	43	GG54	1333	360	6.01	1.49	266.91	08289
								XX13	2562	380	5.56			08290
OS08173	68	168 W	12 July	08:02	45	8	45	GG54	1333	392	6.55	3.01	566.96	08291
								XX13	2562	362	5.30			08292
OS08174	68	168 W	12 July	14:32	46	3	46	GG54	1333	395	6.60	3.69	772.03	08293
								XX13	2562	326	4.77			08294
OS08175	68	167 W	12 July	18:39	39	8	39	GG54	1333	342	5.71	2.41	476.11	08295
								XX13	2562	345	5.05			08296
OS08176	67	168 W	12 July	23:53	42	4	42	GG54	1333	358	5.98	9.83	4385.87 1)	08297
								XX13	2562	153	2.24			08298
OS08177	66	167 W	13 July	06:37	27	10	27	GG54	1333	230	3.84	1.75	480.57	08299
								XX13	2562	248	3.63			08300
OS08178	66	168 W	13 July	15:14	38	15	37	GG54	1333	356	5.94	3.79	764.83	08301
								XX13	2562	338	4.95			08302
Extra	50	166 E	25 July	00:00	150	6	149	GG54	1333	1250	19.45	3.85	205.34	08303
								XX13	2562	1288	18.72			08304
Extra	47	161 E	25 July	21:57	152	10	150	GG54	1333	1421	22.11	7.11	321.53	08305
								XX13	2562	1520	22.10			08306
Extra	44	156 E	26 July	21:15	153	12	150	GG54	1333	1765	27.47	9.09	299.29	08307
								XX13	2562	2088	30.35			08308
Extra	41	151 E	27 July	22:06	150	4	150	GG54	1333	1261	19.62	3.39	177.47	08309
								XX13	2562	1312	19.07			08310
OS08184	41	145 E	28 July	23:43	164	24	150	GG54	1333	1904	29.63	9.93	348.32	08311
								XX13	2562	1960	28.49			08312
				23:56	556	26	500	GG54	1333	6038	93.96	28.77	327.05	08313
								XX13	2562	6050	87.95			08314

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Salpida abundant.
6) Chaetognaths abundant.

9. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in each leg (leg 1-4).

Table 15: Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets

50-m wire out at OS08099 (51-40N, 172-00W) in 20 June 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG1333	50	530	518	530	540*	492*	502	520
RG2374	50	468*	468	485	514*	478	498	482
RG2562	50	535*	515	528	528	474*	492	516
RG2856	50	649	645	685*	679	592	550*	641
RG3023	50	569	658*	578	605	548*	560	578

*: omitted from mean value calculation.

50-m wire out at OS08122 (57-28N, 165-57W) in 28 June 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG2374	50	460*	451	460	450*	459	460	458
RG2555	50	400*	386	396	388	396	385*	392
RG3006	50	430*	416	420	413	408*	422	418

*: omitted from mean value calculation.

10-m wire out at OS08144 (64-10N, 166-49W) in 2 July 2008.

Flowmeter	Wire length	Revolution										
No.	(m)	1	2	3	4	5	6	7	8	9	10	Mean
RG895	10	150*	145	131	134	127	118	121	120*	125	129	129
RG1333	10	135*	120	113	120	105	105	113	105	100*	116	112
RG2562	10	140*	135	125	128	115	110*	119	118	113	119	122
RG2856	10	162*	140	140	142	134	130	125	150	125*	149	139
RG3023	10	138*	128	120	122	120	112*	122	112	115	120	120
RG3024	10	165*	125	192*	130	128	123	143	105*	128	131	130

*: omitted from mean value calculation.

10-m wire out at OS08178 (66-38N, 168-40W) in 13 July 2008.

Flowmeter	Wire length	Revolution										
No.	(m)	1	2	3	4	5	6	7	8	9	10	Mean
RG895	10	118	120	113	107*	110	111	110	123	110	206*	114
RG1333	10	100*	98	98	89*	90	98	97	99	92	90	95
RG2562	10	111	111	110	102	105	110	113*	113	107	99*	109
RG2856	10	156	141	157	76*	133	150	132	162*	158	138	146
RG3024	10	156	156	138*	151	190	250*	143	160	150	120	153

*: omitted from mean value calculation.

50-m wire out at OS08184 (41-30N, 145-47E) in 28 July 2008.

Flowmeter	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
RG1333	50	530*	505	511	518	490*	510	511
RG2562	50	552	542*	549	563*	544	543	547

*: omitted from mean value calculation.

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. Nutrients were analyzed in the laboratory with Technicon Auto-analyzer. The analyses of nutrients were conducted by K.Toya.

Table 16: Data on Nutrients

OS08053 (Site.H)

Depth (m) 6856

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.28	18.49	0.00	14.93
5	1.55	17.44	0.06	14.24
10	1.59	18.11	0.01	15.56
20	1.49	16.30	0.24	14.48
30	1.64	15.63	0.24	16.77
40	2.08	23.98	0.01	30.07
50	2.44	31.49	0.02	41.48
75	2.29	30.60	0.16	40.19
100	2.47	33.10	0.20	46.03
125	2.52	36.80	0.15	53.31
150	2.98	41.44	0.14	63.07
200	2.82	40.65	0.11	63.11
300	3.76	47.60	0.11	77.12

OS08054

Depth (m) 1024

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.40	3.06	0.15	11.62
5	0.45	3.14	0.16	12.80
10	0.41	2.95	0.15	11.95
20	0.41	2.96	0.15	11.72
30	0.42	3.23	0.16	12.56
40	0.49	4.30	0.22	13.40
50	0.47	4.22	0.21	12.98
75	0.69	8.83	0.27	12.86
100	0.57	12.65	0.15	17.19
125	0.98	13.87	0.11	18.45
150	0.99	13.71	0.11	18.50
200	1.02	14.55	0.10	19.17
300	1.42	22.39	0.09	29.34

OS08057

Depth (m) 6250

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.37	2.30	0.10	8.23
5	0.34	1.96	0.10	8.45
10	0.35	2.13	0.10	8.63
20	0.37	2.58	0.11	9.26
30	0.41	3.28	0.14	10.07
50	0.45	4.07	0.17	10.59
75	0.58	6.56	0.35	10.82
100	0.61	6.84	0.32	11.28
150	0.70	9.00	0.06	12.84
200	0.77	9.87	0.05	13.82
300	1.10	14.83	0.04	21.49
400	1.30	18.14	0.04	27.84
500	1.85	26.16	0.04	45.38
750	2.79	39.07	0.03	90.47
1000	2.97	42.94	0.03	118.78
1250	3.04	43.98	0.03	131.64
1500	3.07	44.39	0.03	147.67
1750	3.06	44.04	0.03	153.51
2000	3.03	43.80	0.03	154.61
2500	2.82	41.43	0.03	154.95
3000	2.66	39.48	0.03	152.61
3500	2.50	38.50	0.03	146.49
4000	2.58	38.07	0.04	145.94
4500	2.52	37.58	0.03	147.66
5000	2.50	37.60	0.03	145.94

OS08061

Depth (m) 1501

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.86	10.81	0.22	17.94
5	0.94	11.78	0.23	20.61
10	1.05	12.77	0.22	13.44
20	0.91	11.52	0.21	20.26
30	0.94	12.28	0.22	21.57
40	1.05	12.63	0.23	20.97
50	1.04	12.59	0.27	20.30
75	1.23	15.66	0.28	14.59
100	1.19	16.09	0.10	23.27
125	1.21	15.78	0.09	21.99
150	1.28	16.77	0.09	23.13
200	1.22	16.87	0.08	14.10
300	1.76	25.76	0.08	35.73

OS08064

Depth (m) 2770

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.59	7.40	0.19	8.73
5	0.47	5.29	0.18	11.78
10	0.51	5.84	0.19	13.16
20	0.63	7.50	0.19	15.20
30	0.68	8.24	0.20	16.22
40	0.65	8.22	0.26	15.08
50	0.68	8.61	0.22	16.10
75	0.77	9.80	0.18	15.98
100	0.78	11.22	0.11	16.34
125	0.84	12.31	0.11	17.55
150	0.89	13.18	0.09	19.11
200	1.06	15.21	0.09	21.18
300	1.61	25.16	0.08	40.17

OS08067

Depth (m) 4300

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.45	15.35	0.18	22.66
5	1.51	15.94	0.18	22.12
10	1.46	15.65	0.17	22.41
20	1.50	16.98	0.21	22.35
30	1.49	16.85	0.18	23.16
50	1.58	18.70	0.24	25.01
75	1.76	21.26	0.38	29.80
100	1.81	22.16	0.39	32.56
150	2.17	30.16	0.04	48.21
200	2.85	41.67	0.04	76.45
300	3.13	46.51	0.04	90.19
400	3.16	47.29	0.04	100.88
500	3.10	46.25	0.03	109.68
750	3.20	48.30	0.03	130.06
1000	3.17	48.37	0.03	140.24
1250	3.11	48.29	0.03	144.57
1500	3.04	46.94	0.03	151.38
1750	3.00	47.63	0.03	156.54
2000	2.96	45.91	0.03	155.37
2250	2.89	45.14	0.03	155.37
2500	2.70	43.41	0.04	146.97
2750	2.73	42.75	0.04	151.24
3000	2.72	42.29	0.03	146.49
3500	2.65	41.34	0.04	141.95
4000	2.48	40.57	0.03	144.50

OS08071a

Depth (m) 5346

Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.66	16.16	0.23	25.86
5	1.61	16.15	0.22	25.60
10	1.58	15.94	0.21	25.38
20	1.60	15.89	0.21	24.98
30	1.72	16.13	0.21	24.82
40	1.67	17.18	0.24	25.71
50	1.85	18.48	0.26	27.22
75	2.06	22.32	0.17	34.06
100	2.20	24.61	0.08	38.98
125	2.46	28.50	0.07	48.16
150	3.14	34.72	0.09	62.73
200	3.45	40.35	0.07	76.55
300	3.77	44.13	0.07	86.50

OS08080

Depth (m)	2891			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.73	22.81	0.22	26.53
5	1.70	22.55	0.21	26.22
10	1.77	23.37	0.22	27.37
20	1.79	23.27	0.24	27.43
30	2.03	27.44	0.30	34.88
40	1.91	18.50	0.26	34.93
50	2.23	31.65	0.45	47.68
75	2.26	32.39	0.07	52.24
100	2.33	34.60	0.06	55.32
125	2.34	35.02	0.06	58.34
150	2.56	37.89	0.05	61.04
200	2.88	45.02	0.05	77.69
300	3.03	45.03	0.10	88.32
400	3.14	46.80	0.09	101.76
500	3.19	47.43	0.10	101.32
600	3.17	47.44	0.10	118.95
750	3.20	47.46	0.09	119.81
1000	3.22	47.55	0.10	132.74
1250	3.21	47.13	0.09	153.77
1500	3.18	46.55	0.09	150.58
1750	3.10	47.94	0.05	167.27
2000	3.12	46.48	0.05	173.54
2250	3.07	46.30	0.05	177.32
2500	3.13	45.93	0.05	188.48
2750	2.94	43.50	0.05	190.05

OS08087 (TrapB)

Depth (m)	3780			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.91	27.30	0.29	43.33
5	1.98	27.45	0.28	45.20
10	1.83	25.00	0.26	42.19
20	2.03	28.27	0.02	45.48
30	1.98	27.75	0.27	44.96
50	2.07	29.30	0.36	49.70
75	2.14	31.26	0.54	51.80
100	2.24	33.10	0.21	53.62
150	2.11	31.36	0.04	53.94
200	2.63	40.25	0.04	69.15
300	2.89	46.64	0.03	86.17
400	3.09	47.20	0.03	100.06
500	2.91	47.74	0.03	106.03
750	3.10	48.69	0.03	128.96
1000	3.22	47.41	0.09	136.27
1250	3.23	47.56	0.03	148.56
1500	3.11	46.99	0.02	159.44
1750	3.16	45.76	0.03	172.51
2000	3.10	44.77	0.02	175.05
2250	3.11	44.57	0.02	182.49
2500	2.98	43.03	0.02	188.88
2750	3.03	42.44	0.02	189.09
3000	3.00	41.82	0.02	182.96
3250	2.91	41.42	0.02	203.21
3500	2.93	41.15	0.02	194.10

OS08094 (TrapA)

Depth (m)	5335			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.94	15.27	0.23	26.08
5	1.79	15.19	0.23	25.94
10	1.78	15.22	0.23	26.10
20	1.80	15.24	0.23	25.82
30	1.87	15.97	0.22	27.28
40	1.98	18.06	0.28	28.74
50	1.99	18.56	0.33	29.01
75	2.03	19.88	0.51	30.69
100	2.07	20.68	0.30	31.93
125	2.33	26.26	0.08	42.35
150	3.22	35.67	0.07	61.94
200	3.73	40.76	0.07	78.70
300	4.11	44.25	0.07	89.26

OS08102

Depth (m)	135			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	1.29	6.33	0.18	27.42
10	1.26	7.16	0.20	32.04
20	1.20	7.02	0.20	32.93
30	1.63	12.22	0.22	36.29
50	2.16	19.22	0.28	40.21
70	2.43	23.88	0.33	45.59
100	2.80	29.37	0.24	54.93
125	2.88	30.39	0.26	59.40

OS08104

Depth (m)	113			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.61	0.04	0.06	14.26
10	0.53	0.06	0.06	11.05
20	0.76	1.87	0.12	9.82
30	1.14	4.77	0.15	13.29
50	3.58	18.82	0.40	31.95
70	2.63	24.60	0.20	44.53
100	2.87	27.36	0.19	51.79

OS08103

Depth (m)	120			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.75	3.09	0.13	11.89
10	0.94	4.23	0.14	13.91
20	1.49	9.82	0.21	20.63
30	1.66	11.71	0.23	23.31
50	1.86	14.90	0.24	29.69
70	2.25	17.62	0.30	34.39
100	2.95	26.00	0.25	49.85
110	2.93	26.06	0.25	50.31

OS08106

Depth (m)	137			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.42	0.06	0.07	6.75
10	0.39	0.06	0.07	6.91
20	0.66	1.54	0.11	9.32
30	1.45	4.51	0.18	12.73
50	2.57	23.22	0.25	38.73
70	2.97	29.37	0.18	56.59
100	2.86	29.27	0.13	57.25
130	2.90	29.36	0.14	56.45

OS08105

Depth (m)	133			
Depth (m)	$PO_4(\mu M)$	$NO_3(\mu M)$	$NO_2(\mu M)$	$SiO_4(\mu M)$
0	0.54	0.06	0.07	10.39
10	0.55	0.06	0.07	12.00
20	0.72	1.10	0.09	12.67
30	0.81	1.79	0.11	9.65
50	1.90	13.33	0.30	24.27
70	2.25	17.29	0.36	32.77
100	2.95	28.17	0.11	55.43
120	3.03	28.21	0.11	55.53

OS08112

Depth (m)	70			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.34	0.14	0.08	0.60
10	0.43	0.13	0.08	0.53
20	1.15	4.37	0.13	8.04
30	1.44	6.14	0.16	11.11
40	1.42	6.20	0.15	11.50
50	1.48	6.33	0.17	11.44
60	1.53	6.25	0.15	11.61

OS08111

Depth (m)	85			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.46	0.11	0.07	3.33
10	0.44	0.07	0.08	2.60
20	0.46	0.07	0.08	0.64
30	0.56	0.32	0.08	0.64
50	2.65	20.66	0.22	34.20
70	2.66	22.27	0.21	35.73
75	2.68	22.09	0.21	35.34

OS08114

Depth (m)	77			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.35	0.07	0.09	0.63
10	0.39	0.07	0.08	0.58
20	0.43	0.11	0.09	0.64
30	0.65	0.89	0.1	1.48
50	2.15	15.51	0.15	24.51
60	2.11	15.52	0.16	24.2
67	1.97	15.37	0.15	24.2

OS08113

Depth (m)	72			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.40	0.11	0.09	1.08
10	0.45	0.43	0.09	1.31
20	0.38	0.14	0.09	1.14
30	2.01	6.08	0.14	9.55
40	1.30	6.29	0.14	10.16
50	2.06	6.44	0.15	10.32
60	1.33	6.66	0.15	10.71

OS08116

Depth (m)	2670			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	1.31	2.65	0.13	21.60
10	1.24	2.66	0.12	21.57
20	0.79	3.05	0.13	22.52
30	2.55	10.28	0.21	31.38
50	2.60	23.37	0.28	47.28
70	2.72	25.42	0.38	47.15
100	2.74	29.69	0.29	52.22
125	3.20	31.72	0.20	57.07
150	3.28	32.05	0.12	57.55
200	3.26	33.59	0.11	61.43

OS08115a

Depth (m)	1255			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.97	4.98	0.17	22.91
10	1.52	5.09	0.17	23.25
20	1.24	7.96	0.20	28.46
30	3.53	20.30	0.33	41.85
50	3.84	23.67	0.31	48.33
70	2.62	26.35	0.32	53.14
100	2.84	27.92	0.32	54.55
125	2.85	28.68	0.27	57.13
150	3.00	29.74	0.23	58.23
200	4.72	30.81	0.15	59.58

OS08118

Depth (m)	77			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.33	0.16	0.07	3.22
10	0.40	0.09	0.09	3.35
20	0.25	3.84	0.10	5.62
30	1.07	8.44	0.13	9.61
50	1.28	13.41	0.13	17.83
60	2.04	13.98	0.13	18.77
67	2.73	13.46	0.13	17.93

OS08117

Depth (m)	102			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.32	0.15	0.08	5.12
10	0.37	0.11	0.07	5.40
20	0.63	1.23	0.10	6.01
30	0.94	3.56	0.15	8.76
50	2.54	23.07	0.19	39.91
70	3.03	26.97	0.18	45.92
80	2.91	28.23	0.18	47.15
90	2.87	26.91	0.18	46.53

OS08120

Depth (m)	68			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.34	0.55	0.09	1.42
10	1.07	6.04	0.12	6.40
20	0.67	3.11	0.11	3.55
30	1.42	5.61	0.12	5.79
50	1.04	5.98	0.12	6.34
60	1.00	6.84	0.12	7.13

OS08119

Depth (m)	68			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.06	0.14	0.08	0.51
10	0.43	0.31	0.08	1.03
20	1.34	4.33	0.11	6.80
30	1.47	5.47	0.12	8.70
50	0.95	6.87	0.12	7.35
60	1.07	7.17	0.11	7.02

OS08122

Depth (m)	65			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.33	0.39	0.09	1.86
10	0.98	0.82	0.10	2.26
20	1.04	1.29	0.11	2.43
30	1.61	3.06	0.14	3.83
40	1.59	2.99	0.14	3.89
50	1.63	3.24	0.15	4.00
60	1.52	3.01	0.14	3.72

OS08121

Depth (m)	68			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.94	1.26	0.11	3.32
10	1.16	2.90	0.12	5.18
20	0.61	1.78	0.12	4.32
30	1.89	5.96	0.15	10.02
40	2.13	7.20	0.17	12.06
50	1.84	6.07	0.16	10.15
55	0.99	5.94	0.16	10.03

OS08124

Depth (m)	26			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.92	0.06	0.08	1.20
5	0.90	0.10	0.08	1.26
10	0.91	0.08	0.08	1.37
15	1.24	0.08	0.08	1.26
20	0.91	0.07	0.08	1.37
23	0.92	0.10	0.08	1.37

OS08123

Depth (m)	55			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.88	0.11	0.07	0.86
10	0.89	0.09	0.08	0.92
20	0.98	0.11	0.08	1.14
30	1.14	0.21	0.08	1.20
40	0.97	0.08	0.08	1.20
45	1.20	0.12	0.08	1.20

OS08126

Depth (m)	63			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.50	0.13	0.10	4.38
10	0.59	0.10	0.09	4.80
20	0.70	0.17	0.09	5.03
30	1.26	5.87	0.13	16.33
50	1.66	10.55	0.18	33.98
55	1.71	10.42	0.19	36.11

OS08125

Depth (m)	27			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.53	0.12	0.08	1.00
5	0.55	0.10	0.08	1.06
10	0.55	0.10	0.08	1.12
15	0.54	0.14	0.08	0.94
20	0.53	0.10	0.08	1.00
25	0.53	0.09	0.08	0.89

OS08129

Depth (m)	69			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.49	0.06	0.08	10.68
10	0.52	0.05	0.08	11.04
20	0.69	0.46	0.10	15.77
30	1.51	2.64	0.12	23.02
40	1.60	8.15	0.14	18.79
50	2.07	17.31	0.13	42.59
60	2.03	16.72	0.13	41.66

OS08127

Depth (m)	64			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.59	0.08	0.08	3.46
10	0.60	0.09	0.08	3.85
20	1.00	2.77	0.10	9.27
30	1.72	11.55	0.15	25.48
40	1.77	12.11	0.15	27.17
50	1.75	12.01	0.15	27.17
55	1.75	11.93	0.15	28.03

OS08131

Depth (m)	67			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.58	0.06	0.07	9.65
10	0.61	0.07	0.07	9.84
20	0.91	1.28	0.09	15.77
30	1.55	7.43	0.13	22.22
40	2.03	16.01	0.13	28.26
50	2.09	16.96	0.15	46.06
57	2.11	16.89	0.16	46.22

OS08130

Depth (m)	55			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.08	0.07	6.50
10	0.53	0.07	0.07	5.79
20	0.67	0.07	0.07	6.70
30	0.69	0.20	0.07	4.31
40	1.70	8.92	0.20	25.77
50	1.79	9.03	0.19	33.34

OS08133

Depth (m)	60			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.69	0.03	0.07	11.42
10	0.69	0.04	0.07	11.38
20	0.90	0.50	0.07	13.61
30	1.55	7.95	0.14	14.80
40	1.99	14.16	0.17	33.80
50	2.03	14.52	0.19	44.29
55	2.06	14.48	0.19	43.77

OS08132

Depth (m)	59			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.73	0.07	0.07	6.96
10	0.74	0.08	0.07	7.56
20	0.78	0.94	0.09	12.24
30	1.43	9.26	0.18	22.45
40	1.83	12.96	0.21	39.16
50	1.93	12.79	0.22	41.32
55	1.96	12.58	0.22	41.88

OS08135

Depth (m)	48			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.04	0.08	5.53
10	0.54	0.03	0.08	5.56
20	0.81	0.11	0.08	8.70
30	1.27	4.07	0.14	14.41
40	1.55	7.01	0.17	19.42
43	1.60	6.74	0.17	18.79

OS08134

Depth (m)	58			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.65	0.04	0.07	12.89
10	0.71	0.04	0.08	12.41
20	1.03	1.48	0.10	15.54
30	1.33	4.36	0.12	19.02
40	1.98	16.35	0.17	44.36
50	1.97	16.43	0.17	44.56
53	1.96	16.33	0.17	45.88

OS08137

Depth (m)	24			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.57	0.08	0.08	8.02
5	0.62	0.26	0.10	3.96
10	0.69	0.04	0.08	4.14
15	0.69	0.73	0.10	3.34
20	0.68	0.34	0.10	3.63

OS08136

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.65	0.02	0.08	5.67
5	0.64	0.37	0.08	5.68
10	0.63	< 0.01	0.08	5.34
20	0.86	< 0.01	0.08	6.25
30	1.12	1.31	0.11	11.84
35	1.14	1.55	0.11	12.92

OS08140

Depth (m)	25			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.55	0.03	0.09	7.38
5	0.57	0.01	0.08	4.93
10	0.66	0.05	0.09	2.54
15	0.68	0.08	0.09	1.97
20	0.67	0.05	0.09	2.09

OS08139

Depth (m)	32			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.81	0.57	0.10	9.16
5	0.87	0.60	0.11	9.50
10	1.01	1.37	0.13	10.92
15	1.07	1.76	0.13	12.24
20	1.08	1.93	0.14	12.29
25	1.08	1.64	0.14	12.18

OS08142

Depth (m)	20			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.62	0.18	0.10	10.64
5	0.81	0.34	0.11	8.58
10	0.74	0.27	0.11	7.16
17	0.83	0.33	0.11	7.39

OS08141

Depth (m)	21			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.39	0.01	0.08	11.90
5	0.44	0.08	0.09	10.41
10	0.65	0.20	0.10	3.79
15	0.75	0.22	0.10	3.68
18	0.75	0.27	0.11	3.80

OS08143

Depth (m)	25			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.48	0.01	0.08	13.04
5	0.58	0.11	0.09	11.44
10	0.84	0.26	0.10	8.64
15	0.94	0.40	0.11	8.19
20	0.93	0.42	0.11	8.19

OS08144

Depth (m)	28			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.48	0.02	0.09	7.44
5	0.55	0.04	0.08	5.50
10	0.68	0.04	0.08	3.51
15	0.74	0.04	0.09	2.31
20	0.75	0.05	0.09	2.43
25	0.74	0.05	0.08	2.60

OS08150

Depth (m)	52			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.44	0.67	0.10	5.00
5	0.59	1.67	0.11	4.08
10	0.62	1.96	0.12	3.74
20	0.77	3.07	0.15	2.08
30	0.82	2.72	0.13	2.20
40	0.85	2.66	0.13	2.48

OS08151

Depth (m)	41			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.49	0.03	0.08	7.73
5	0.47	0.04	0.08	6.59
10	0.66	0.09	0.08	3.28
20	0.78	0.20	0.10	5.79
30	0.77	0.25	0.10	5.87
35	0.73	0.20	0.09	5.85

OS08152

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.08	0.08	3.45
5	0.50	0.04	0.08	3.57
10	0.51	0.03	0.08	3.62
20	0.60	0.08	0.09	3.34
30	0.62	0.12	0.09	3.45
40	0.78	0.50	0.10	3.68

OS08153

Depth (m)	47			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.39	0.08	0.08	1.11
5	0.39	0.14	0.09	1.12
10	0.51	0.47	0.10	1.17
20	0.93	5.36	0.16	2.54
30	1.17	7.30	0.19	3.34
40	1.19	7.28	0.21	3.40
44	1.05	6.60	0.19	3.00

OS08154

Depth (m)	40			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.73	1.82	0.10	22.66
5	0.87	3.39	0.13	27.61
10	1.13	6.40	0.18	34.84
15	1.30	9.61	0.23	40.16
20	1.56	13.25	0.25	41.52
30	1.94	16.04	0.21	48.97
35	1.92	15.94	0.21	48.59

OS08155

Depth (m)	46			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	1.11	5.90	0.15	29.84
5	1.13	6.38	0.17	32.17
10	1.29	7.86	0.20	35.76
20	1.17	5.11	0.14	27.93
30	1.34	7.73	0.19	29.29
40	1.36	8.03	0.19	29.78
43	1.32	8.13	0.19	29.02

OS08156

Depth (m)	44			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.45	0.19	0.07	9.62
5	0.43	0.22	0.07	9.72
10	0.61	0.78	0.09	11.41
15	0.77	1.33	0.10	10.00
20	0.90	2.17	0.12	12.44
30	1.04	3.26	0.13	16.95
40	1.06	3.93	0.14	19.02

OS08157

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.58	1.22	0.09	15.98
5	0.57	0.86	0.09	14.56
10	0.82	1.07	0.09	12.61
15	1.07	3.38	0.14	18.31
20	1.14	4.18	0.15	20.70
30	1.16	4.24	0.15	21.36
38	1.19	4.26	0.15	21.30

OS08158

Depth (m)	46			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.45	0.28	0.08	13.31
5	0.47	0.40	0.08	14.13
10	0.64	0.66	0.09	16.57
15	0.75	0.68	0.09	16.90
20	0.94	2.46	0.11	18.64
30	1.27	6.57	0.17	25.65
40	1.29	6.27	0.19	24.45

OS08159

Depth (m)	40			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.47	0.30	0.08	13.64
5	0.51	0.53	0.09	14.40
10	0.68	0.78	0.09	16.14
20	0.93	1.88	0.11	15.11
30	1.62	10.98	0.24	33.75
35	1.63	10.89	0.24	33.48

OS08160

Depth (m)	41			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.16	0.08	16.52
5	0.59	0.50	0.08	17.33
10	0.56	0.22	0.08	17.82
15	0.57	0.37	0.09	16.14
20	1.34	8.30	0.20	30.54
30	1.73	13.75	0.29	42.17
35	1.78	13.83	0.29	42.17

OS08161

Depth (m)	41			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.54	0.16	0.08	17.06
5	0.57	0.21	0.08	17.06
10	0.60	0.36	0.08	17.17
15	1.05	4.85	0.15	24.24
20	1.70	14.20	0.24	32.50
30	1.75	15.02	0.25	37.99
35	1.82	15.16	0.25	38.21

OS08162

Depth (m)	45			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.69	1.95	0.11	17.50
5	0.69	1.87	0.11	16.84
10	0.95	3.87	0.14	21.57
15	1.08	5.05	0.15	24.73
20	1.13	5.43	0.16	23.86
30	1.19	5.61	0.17	23.20
40	1.22	5.79	0.18	22.39

OS08163

Depth (m)	41			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.66	1.50	0.10	13.37
5	0.86	2.11	0.11	17.93
10	1.00	3.15	0.13	19.51
15	1.03	3.64	0.14	19.18
20	1.28	6.36	0.18	24.29
30	1.31	6.88	0.19	25.22
35	1.31	6.71	0.18	25.16

OS08164

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.53	0.13	0.08	11.68
5	0.53	0.14	0.08	12.71
10	0.64	0.38	0.09	16.08
15	0.73	0.49	0.09	16.14
20	0.90	1.44	0.11	16.30
30	1.25	4.62	0.17	21.79
38	1.25	4.31	0.16	22.23

OS08165

Depth (m)	32			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.56	0.12	0.09	5.70
5	0.61	0.12	0.09	7.01
10	0.67	0.18	0.09	8.26
15	0.68	0.23	0.09	7.93
20	0.84	0.53	0.10	12.93
25	0.88	0.63	0.10	12.44

OS08166

Depth (m)	25			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.58	0.09	0.08	7.93
5	0.63	0.12	0.09	10.97
10	0.63	0.17	0.09	10.92
15	0.65	0.27	0.11	10.65
20	0.69	0.41	0.10	10.87

OS08167

Depth (m)	39			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.53	0.23	0.09	8.69
5	0.58	0.52	0.10	10.70
10	0.65	0.37	0.10	13.69
15	0.73	0.58	0.10	16.14
20	1.03	4.02	0.16	19.13
30	0.98	4.39	0.17	15.32

OS08168

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.32	0.17	0.09	3.53
5	0.32	0.22	0.09	3.91
10	0.39	0.23	0.10	6.41
15	0.46	0.15	0.09	9.07
20	0.88	1.88	0.13	15.32
30	0.97	2.23	0.14	15.92
40	0.98	2.22	0.14	15.87

OS08169

Depth (m)	45			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.60	1.64	0.11	16.08
5	0.68	2.18	0.12	17.39
10	0.56	0.77	0.10	10.70
15	0.74	1.42	0.12	15.98
20	0.93	2.78	0.14	23.10
30	1.13	4.63	0.16	21.79
40	1.14	4.75	0.16	22.33

OS08170

Depth (m)	45			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.58	0.11	0.09	10.87
5	0.65	0.40	0.10	10.16
10	0.69	0.40	0.10	10.21
15	0.72	0.67	0.11	9.51
20	0.69	0.74	0.11	8.96
30	0.76	1.19	0.12	8.91
40	0.74	1.06	0.11	8.42

OS08171

Depth (m)	43			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.56	0.07	0.08	8.15
5	0.56	0.09	0.09	8.15
10	0.67	0.14	0.09	11.57
15	0.53	0.19	0.07	6.14
20	0.66	0.19	0.10	10.92
30	0.67	0.25	0.10	10.49
38	0.66	0.25	0.10	10.21

OS08172

Depth (m)	48			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.56	0.13	0.09	5.05
5	0.53	0.08	0.08	4.72
10	0.61	0.22	0.09	6.03
20	0.68	0.35	0.10	6.52
30	0.66	0.30	0.09	5.43
40	0.65	0.28	0.10	5.05
43	0.66	0.30	0.11	5.10

OS08173

Depth (m)	50			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.55	0.17	0.10	1.95
5	0.57	0.12	0.09	2.00
10	0.60	0.15	0.08	2.33
20	0.78	0.28	0.08	4.29
30	0.82	0.34	0.09	4.51
40	0.84	0.34	0.10	4.67
45	0.84	0.31	0.11	4.56

OS08174

Depth (m)	51			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.60	0.17	0.10	1.08
5	0.63	0.30	0.09	1.46
10	0.58	0.18	0.10	1.25
20	0.76	0.74	0.09	1.63
30	0.88	0.99	0.12	1.90
40	0.91	1.08	0.12	1.95
45	0.91	1.33	0.13	1.90

OS08175

Depth (m)	44			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.11	0.14	2.60
5	0.54	0.19	0.09	3.80
10	0.57	0.25	0.10	4.62
15	0.58	0.28	0.10	5.05
20	0.59	0.30	0.10	5.16
30	0.69	0.30	0.10	5.32
40	0.60	0.30	0.10	5.38

OS08177

Depth (m)	32			
Depth (m)	PO_4(μM)	NO_3(μM)	NO_2(μM)	SiO_4(μM)
0	0.52	0.09	0.09	6.68
5	0.48	0.18	0.10	5.70
10	0.51	0.12	0.09	5.49
15	0.59	0.12	0.09	6.25
20	0.64	0.48	0.10	6.52
25	0.65	0.15	0.10	6.30
27	0.64	0.14	0.09	6.30

6

THE “OSHORO MARU” CRUISE 193
TO EAST OF TSUGARU STRAIT

IN SEPTEMBER-OCTOBER 2008

1. Cruise Itinerary

Cruise 193			
Departure from Hakodate	Sep.	25	, 2008
Start bottom trawl research (OST0816)		26	
Start hydrographic research (OS08185)		26	
Arrival at Hakodate and change cadets		30	
Departure from Hakodate		30	
Finish bottom trawl research (OST0820)	Oct.	2	
Finish hydrographic research (OS08192)		3	
Return to Hakodate		5	

Total coverage 1237.5 miles

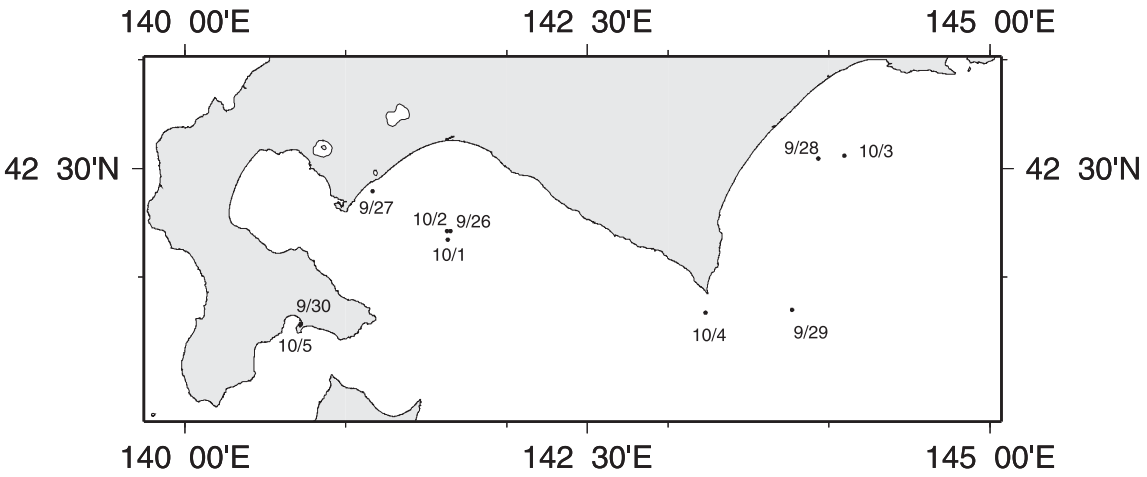

Figure 1: Noon position

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 25 men		

Cruise 193

Research Staff:	Professor	(Laboratory of Marine Biodiversity)	Kazuhiro Nakaya
	Professor	(Laboratory of Marine Bio-resources Ecology)	Toyomi Takahashi
	Professor	(Laboratory of Marine Biodiversity)	Mamoru Yabe
	Associate Professor	(Laboratory of Marine Bio-resources Ecology)	Yutaka Watanuki
	Associate Professor	(Laboratory of Marine Bio-resources Ecology)	Isao Kudo
	Associate Professor	(Laboratory of Marine Bio-resources Ecology)	Takashi Matsuishi
	Associate Professor	(Laboratory of Marine Bio-resources Ecology)	Tetsuya Takatsu
	Associate Professor	(Laboratory of Marine Bio-resources Ecology)	Atsushi Yamaguchi
Teaching Assistant:	15 persons		
Cadets:	86 Cadets		
	Total 140 persons		

3. Items of 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
Plankton samplings by MTD-net :		Table 5, 6

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

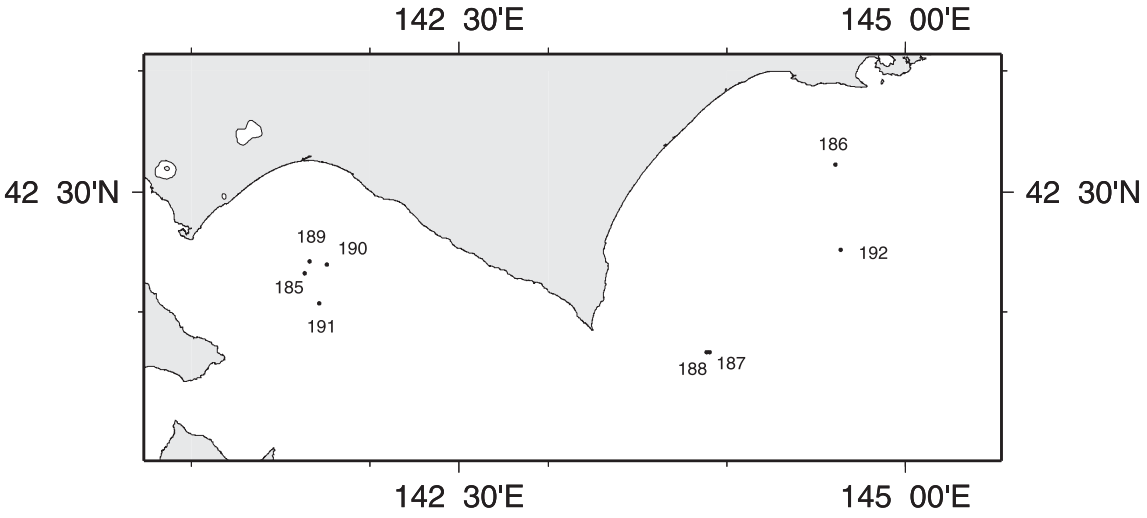

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08185	42-09.7N	141-38.2E	9/26	1336	9	710	4	11.5	17.2	bc	SBE-9plus
OS08186	42-36.8N	144-36.6E	9/28	0600	9	785	6	6.1	13.4	bc	SBE-9plus
OS08187	41-50.0N	143-54.3E	9/28	2000	9	925	-	-	13.6	bc	SBE-9plus
OS08188	41-50.0N	143-53.3E	9/29	0740	9	857	4	13	14.3	bc	SBE-9plus
OS08189	42-12.7N	141-39.8E	10/1	1420	9	685	4	12.4	16.8	bc	SBE-9plus
OS08190	42-11.9N	141-45.6E	10/1	1900	9	770	-	-	16.8	bc	SBE-9plus
OS08191	42-02.2N	141-43.0E	10/2	1900	9	887	-	-	16.8	bc	SBE-9plus
OS08192	42-15.6N	144-38.3E	10/3	1900	9	3800	-	-	13.4	c	SBE-9plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS08185
Longitude	42-09.7N
Latitude	141-38.2E
Depth(m)	710

Press.	Temp.	Sal.	SIG-T
5	17.218	33.908	24.626
10	17.214	33.908	24.627
20	17.195	33.908	24.631
30	17.026	33.910	24.672
40	15.969	34.030	25.010
50	14.114	34.292	25.617
75	12.132	34.131	25.889
100	9.969	33.943	26.132
125	9.599	33.986	26.228
150	8.264	33.887	26.361
200	5.632	33.687	26.561
250	3.633	33.517	26.643
300	2.427	33.459	26.704
400	2.930	33.681	26.839
500	3.225	33.900	26.987

Station	OS08186
Longitude	42-36.8N
Latitude	144-36.6E
Depth(m)	785

Press.	Temp.	Sal.	SIG-T
5	13.421	33.525	25.167
10	13.423	33.525	25.166
20	13.422	33.526	25.167
30	13.170	33.507	25.204
40	6.842	33.392	26.173
50	6.548	33.368	26.194
75	4.557	33.282	26.362
100	2.747	33.242	26.504
125	2.301	33.313	26.597
150	2.246	33.336	26.620
200	2.122	33.352	26.642
250	1.917	33.404	26.699
300	1.913	33.444	26.732
400	2.185	33.575	26.816
500	2.760	33.863	26.998

Station	OS08187
Longitude	41-50.0N
Latitude	143-54.3E
Depth(m)	925

Press.	Temp.	Sal.	SIG-T
5	13.276	33.000	24.790
10	13.021	32.998	24.839
20	5.604	33.032	26.046
30	3.468	33.094	26.322
40	2.793	33.133	26.413
50	2.335	33.134	26.451
75	1.817	33.186	26.532
100	1.706	33.255	26.595
125	1.831	33.337	26.652
150	2.029	33.423	26.707
200	2.292	33.556	26.792
250	2.564	33.676	26.866
300	2.532	33.735	26.916
400	2.597	33.824	26.982
500	2.853	33.957	27.066

Station	OS08188
Longitude	41-50.0N
Latitude	143-53.3E
Depth(m)	857

Press.	Temp.	Sal.	SIG-T
5	14.385	32.983	24.549
10	14.384	32.983	24.550
20	14.239	32.982	24.579
30	7.408	33.030	25.812
40	3.278	33.065	26.316
50	2.437	33.120	26.432
75	2.038	33.240	26.559
100	1.945	33.330	26.638
125	2.038	33.413	26.698
150	2.088	33.468	26.738
200	2.292	33.578	26.810
250	2.459	33.689	26.885
300	2.572	33.752	26.926
400	2.747	33.858	26.996
500	2.798	33.966	27.078
600	2.940	34.081	27.157
700	2.940	34.145	27.208

Station	OS08189
Longitude	42-12.7N
Latitude	141-39.8E
Depth(m)	685

Press.	Temp.	Sal.	SIG-T
5	16.769	33.715	24.583
10	16.729	33.718	24.595
20	16.732	33.726	24.600
30	16.582	33.880	24.753
40	15.769	34.053	25.072
50	14.159	34.208	25.542
75	12.488	34.238	25.904
100	11.300	34.208	26.105
125	9.210	34.072	26.359
150	9.167	34.092	26.381
200	6.108	33.748	26.550
250	3.792	33.531	26.639
300	2.527	33.495	26.724
400	2.906	33.710	26.864
500	3.183	33.898	26.989

Station	OS08190
Longitude	42-11.9N
Latitude	141-45.6E
Depth(m)	770

Press.	Temp.	Sal.	SIG-T
5	17.150	33.231	24.123
10	17.164	33.243	24.128
20	17.303	33.428	24.237
30	17.477	33.867	24.532
40	14.752	34.037	25.284
50	12.973	34.183	25.766
75	10.745	34.084	26.108
100	9.380	33.970	26.251
125	8.675	33.925	26.328
150	7.793	33.871	26.418
200	6.592	33.812	26.538
250	2.562	33.404	26.648
300	2.573	33.507	26.730
400	2.698	33.666	26.846
500	3.156	33.843	26.947

Station	OS08191
Longitude	42-02.2N
Latitude	141-43.0E
Depth(m)	887

Press.	Temp.	Sal.	SIG-T
5	17.051	33.376	24.257
10	17.066	33.376	24.254
20	17.066	33.387	24.262
30	16.572	33.910	24.779
40	15.709	34.062	25.093
50	14.385	34.222	25.506
75	12.221	34.134	25.875
100	10.453	34.034	26.121
125	9.195	33.967	26.278
150	8.420	33.912	26.356
200	5.939	33.658	26.500
250	2.132	33.395	26.676
300	2.007	33.465	26.741
400	2.800	33.697	26.863
500	3.217	33.888	26.977

Station	OS08192
Longitude	42-15.6N
Latitude	144-38.3E
Depth(m)	3800

Press.	Temp.	Sal.	SIG-T
5	13.556	32.823	24.596
10	13.448	32.824	24.619
20	13.352	32.835	24.647
30	5.728	33.022	26.023
40	3.685	33.070	26.282
50	2.871	33.096	26.377
75	2.452	33.207	26.500
100	2.169	33.288	26.587
125	1.929	33.325	26.635
150	1.906	33.371	26.674
200	2.044	33.472	26.744
250	2.255	33.575	26.810
300	2.315	33.648	26.864
400	2.805	33.855	26.988

5. Data on bottom trawl research

Five operations of the starn otter trawl were carried out.

These operation 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.

Table 3: Data on bottom trawl research

No. of research	Date and time of net tow (S.M.T.)		Position Lat.(N)	Position Long.(E)	Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
OST0816	Sep. 26	0747-0847	42-07.6	141-36.0	060	3.4	750	c	NW-4
OST0817	26	1130-1210	42-14.6	141-45.9	260	3.1	730	bc	West-6
OST0818	Oct. 1	0738-0838	42-15.0	141-42.4	210	3.0	715	bc	SSW-3
OST0819	1	1139-1239	42-04.4	141-36.2	000	3.2	715	r	West-4
OST0820	2	1227-1327	42-15.6	141-37.5	175	3.5	710	b	North-5

S.T. : Surface temperature
Wr : Weather

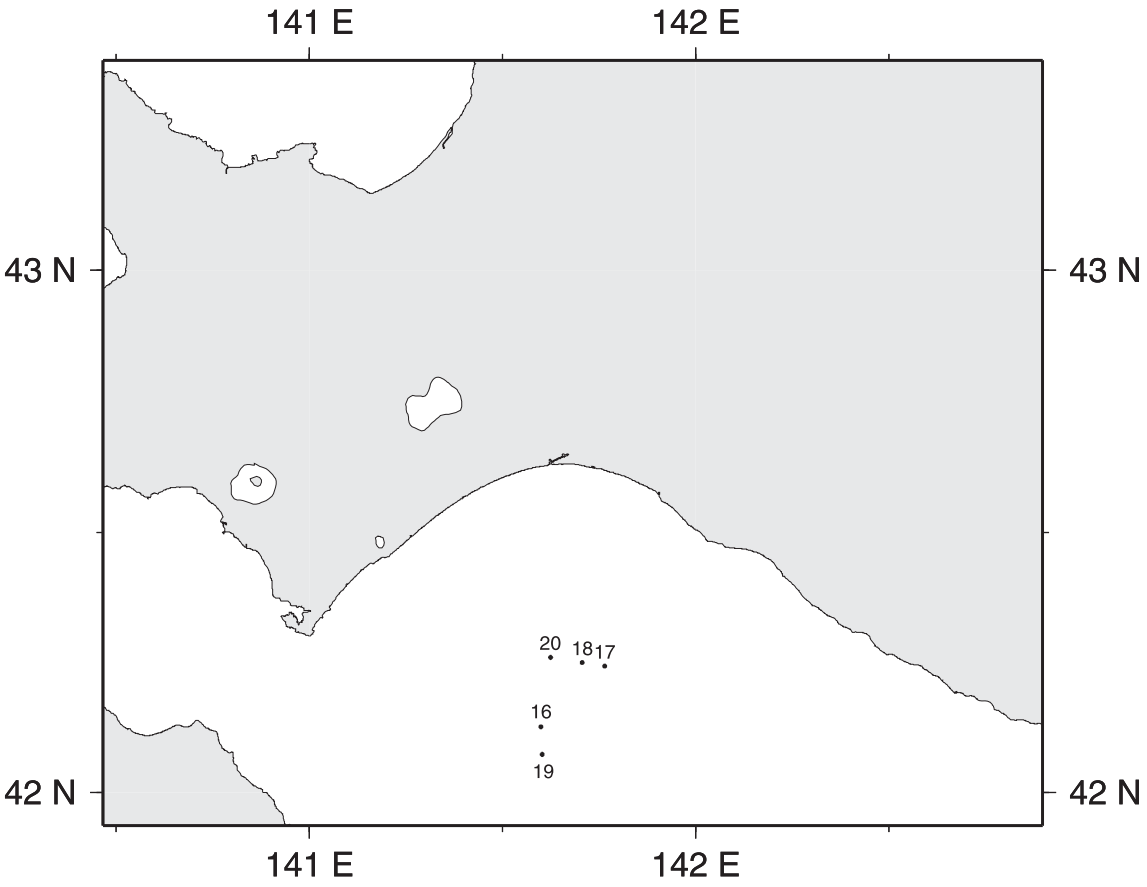

Figure 3: Locations of bottom trawl research

Table 4: Data on catches by bottom trawl research

Species		OST 0816		OST 0817		OST 0818		OST 0819		OST 0820	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Kasumizame	*Centroscyllium ritteri*	-	-	-	-	-	-	1	0.72	-	-
Ribonkasube	*Bathyraja diplotaenia*	-	-	-	-	5	1.32	1	0.2	6	1.13
Charenjakasube	*Bathyraja isotrachys*	-	-	-	-	1	7.2	-	-	-	-
Sokogangiei-rui A	*Bathyraja* sp. A	-	-	1	0.74	-	-	-	-	-	-
Sokogangiei-rui B	*Bathyraja* sp. B	-	-	1	0.36	-	-	-	-	-	-
Sokogangiei-rui C	*Bathyraja* sp. C	-	-	-	-	1	0.1	-	-	-	-
Kurosokogisu	*Notacanthus chemnitzi*	2	1.02	2	1.1	1	0.18	2	1.4	2	1.38
Irakoanago	*Synaphobranchus kaupii*	11	8.5	25	16.28	14	9.5	18	13.6	23	18.8
Kongouanago	*Simenchelys parasiticus*	-	-	-	-	1	0.03	-	-	3	0.27
Ryukyuhoraanago	*Ilyophis brunneus*	2	0.05	-	-	2	0.05	8	0.48	2	0.92
Togariichimonjiiwashi	*Leuroglossus schmidti*	-	-	-	-	-	-	1	0.01	1	0.01
Kurosokoiwashi	*Pseudobathylagus milleri*	-	-	-	-	8	0.15	2	0.3	8	0.84
Yokoeso	*Gonostoma gracile*	-	-	-	-	-	-	-	-	2	0.01
Houraieso	*Chauliodus sloani*	-	-	-	-	-	-	2	0.09	-	-
Hoteieso	*Photonectes albipennis*	1	0.1	-	-	1	0.03	-	-	-	-
Hoteieso-rui	Melanostomiidae sp.	-	-	1	0.1	-	-	-	-	-	-
Tsumaridemeeso	*Benthalbella dentata*	-	-	-	-	-	-	1	0.3	-	-
Yasehadakaeso	*Lestidiops sphyraenopsis*	1	0.1	-	-	-	-	-	-	-	-
Hadakaeso-rui	Paralepididae sp.	-	-	-	-	1	0.36	-	-	-	-
Mizuuo	*Alepisaurus ferox*	-	-	-	-	-	-	-	-	1	2.1
Mamehadaka	*Lampanyctus jordani*	14	0.34	11	0.26	59	0.73	48	2.09	22	0.74
Mikadohadaka	*Nannobrachium regale*	-	-	-	-	2	0.1	-	-	1	0.12
Hadakaiwashi-rui	Myctophidae sp.	-	-	-	-	-	-	1	0.01	-	-
Munedara	*Coryphaenoides pectoralis*	557	1383.5	1	2.4	66	106	39	46.5	8	17.7
Ibarahige	*Coryphaenoides acrolepis*	-	-	-	-	1	0.04	-	-	8	0.4
Karafutosokodara	*Coryphaenoides cinereus*	178	39.5	52	11.5	-	-	135	46.5	74	18.5
Karasudara	*Halargyreus johnsonii*	2	0.9	-	-	6	0.4	1	0.55	1	0.56
Kanadadara	*Antimora microlepis*	11	2.65	44	8.4	63	10	62	13.2	45	8.4
Itohikidara	*Laemonema longipes*	782	431.1	79	48.5	464	266	122	67.5	92	57.9
Togerakudaankou	*Oneirodes thompsoni*	1	0.4	-	-	1	0.1	-	-	-	-
Onikinme	*Anoplogaster cornuta*	-	-	-	-	1	0.1	-	-	-	-
Osaga	*Sebastes iracundus*	1	2.05	-	-	-	-	74	238	-	-
kichiji	*Sebastolobus macrochir*	183	37.5	213	41.5	326	58	322	54	307	55.1
Kobushikajika	*Malacocottus zonurus*	-	-	1	0.16	-	-	-	-	-	-
Ganko	*Dasycottus setiger*	1	0.1	11	0.62	-	-	18	1.24	10	1.05
Akadonko	*Ebinania vermiculata*	1	1.24	-	-	-	-	-	-	-	-
Nyudoukajika	*Psychrolutes phrictus*	1	1.36	-	-	-	-	-	-	1	0.82
Hirainkiuo	*Paraliparis grandis*	-	-	1	0.34	-	-	1	0.65	1	0.64
Kusauo-rui	Liparidae sp.	1	0.1	-	-	1	0.1	-	-	-	-
Shirogenge	*Bothrocana molle*	71	46.5	65	21.5	87	41.5	78	44	137	59.5
Kantengenge	*Bothrocara tanakae*	7	2	16	3.5	9	3.4	8	5	10	3.9
Nezumiginpo	*Lumpenella longirostris*	-	-	8	0.36	26	0.96	33	1.4	25	2.34
Kuromedai	*Icichthys lockingtoni*	-	-	-	-	-	-	-	-	1	1.18
Aburagarei	*Atheresthes evermanni*	8	37.5	1	2.4	-	-	-	-	1	4.5
Samegarei	*Clidoderma asperrimum*	1	1.4	-	-	-	-	-	-	-	-
Benizuwaigani	*Chionoecetes japonicus*	39	18.5	27	12.2	92	46.5	88	41	108	51.5
Ezobai-rui	Buccinidae spp.	5	0.38	20	1.41	-	-	-	-	21	1.3
Tako-rui	Octopuses	6	3	12	4.4	20	9.1	26	13.05	11	6.1
Ika-rui	Squids	6	2.65	2	0.7	14	5.45	20	8.9	20	8.1

6. Data on Plankton Collected by MTD Horizontal Net

Simultaneous horizontal tows with a series of multiple MTD net were made at hydrographic stations in the western North Pacific. This net was composed of 56 cm mouth diameter and 200 cm long conical one which was made of GG54 having 0.33 mm mesh. The nets were attached to a wire cable at appropriate intervals, and they were towed horizontally, keeping the wire angle about 45^o for ca. 20 minutes. After the towing was completed, a messenger was deployed to close sweeping nets. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by A. Yamaguchi and R. Saito, and measurement of wet weight of the samples were made by A. Yamaguchi, H.S. Kim, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, Y. Hanamiya and T. Homma (Laboratory of Marine Biology).

Table 5: Data on plankton collected by vertical hauls with a MTD horizontal net

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position Lat. (N)	Lon.	S.M.T. Date	Hour	Length of wire (m)	Angle estimated wire (^{o})	Depth of by wire angle (m)	Flowmeter No.	Reading	Estimated volume of water filtered (m^3)	Wet weight (g) per haul	per 1000 m^3		Sample no.
OS08187	41	143 E	28 Sep.	19:12	0	40-50	0	3006	5551	119.04	6.50	54.60		OS08101 M-1
(Night)				-19:30	14	(45)	10	2374	11820	304.05	64.86	213.32		OS08102 M-2
					28		20	1632	13210	324.88	34.10	104.96		OS08103 M-3
					42		30	1858	14221	306.85	54.72	178.33		OS08104 M-4
					70		50	1562	1500	250.26	35.32	141.13		OS08105 M-5
					105		75	1333	7588	193.67	31.64	163.37	2)	OS08106 M-6
					140		100	2560	8852	213.44	41.96	196.59	2)	OS08107 M-7
			28 Sep.	21:37	210	35-45	150	1858	4795	103.46	33.70	325.73		OS08108 M-8
				-21:52	280	(40)	200	2374	3900	100.32	42.82	426.83		OS08109 M-9
					350		250	1632	6138	150.95	42.38	280.75		OS08110 M-10
					420		300	1333	3892	99.34	35.78	360.19		OS08111 M-11
					560		400	1562	250	85.96	7.58	88.18		OS08112 M-12
					700		500	2560	3010	72.58	18.06	248.84		OS08113 M-13
OS08188	41	143 E	29 Sep.	06:22	0	40-50	0	3006	5050	108.30	60.62	559.74		OS08114 M-14
(Day)				-6:37	14	(45)	10	2560	1980	112.23	57.36	511.10	3)	OS08115 M-15
					28		20	1562	589	116.16	58.34	502.25	3)	OS08116 M-16
					42		30	1333	4705	120.09	27.82	231.66		OS08117 M-17
					70		50	1632	6892	169.50	18.70	110.33		OS08118 M-18
					105		75	2374	6480	166.69	31.34	188.02	7)	OS08119 M-19
					140		100	1858	7018	151.43	35.34	233.38	7)	OS08120 M-20
			28 Sep.	09:30	210	35-45	150	3006	6945	148.94	46.34	311.14	7)	OS08121 M-21
				-9:46	280	(40)	200	2560	7641	184.24	51.68	280.51		OS08122 M-22
					350		250	1333	5610	143.19	47.36	330.76		OS08123 M-23
					420		300	1632	6148	151.20	72.42	478.97		OS08124 M-24
					560		400	2374	5080	130.67	56.38	431.45		OS08125 M-25
					700		500	1858	4025	86.85	83.02	955.93		OS08126 M-26
OS08189	42	141 E	1 Oct.	15:50	0	40-50	0	3006	7082	151.88	17.44	114.83		OS08127 M-27
(Day)				-16:06	14	(45)	10	1333	6385	162.97	7.96	48.84		OS08128 M-28
					28		20	1632	4095	100.71	42.62	423.20		OS08129 M-29
					42		30	1562	5231	127.31	36.52	286.85		OS08130 M-30
					70		50	1858	8349	180.15	11.84	65.72		OS08131 M-31
					105		75	2374	5125	131.83	7.46	56.59		OS08132 M-32
					140		100	2560	5698	137.39	4.06	29.55		OS08133 M-33
OS08191	42	141 E	2 Oct.	16:10	210	35-45	150	3006	9170	196.65	18.10	92.04	4)	OS08134 M-34
(Day)				-16:26	280	(40)	200	1333	9640	246.05	78.38	318.56	4)	OS08135 M-35
					350		250	1632	8002	196.79	46.22	234.86		OS08136 M-36
					420		300	1858	6080	131.19	36.76	280.21		OS08137 M-37
					560		400	2374	3002	77.22	17.30	224.03		OS08138 M-38
					700		500	2560	4742	114.34	25.50	223.02		OS08139 M-39
OS08190	42	141 E	1 Oct.	20:23	0	40-50	0	2560	7425	179.03	82.42	460.37		OS08140 M-40

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Doliolids abundant.
6) Salps abundant.
7) Sagitta elegans abundant.

Table 5: Data on plankton collected by vertical hauls with a MTD horizontal net

GG54:0.33mm mesh, XX13:0.10mm mesh.

Station no.	Position Lat. (N)	Lon.	S.M.T. Date	Hour	Length of wire (m)	Angle estimated wire (^{o})	Depth of by wire angle (m)	Flowmeter No.	Reading	Estimated volume of water filtered (m^3)	Wet weight (g) per haul	per 1000 m^3		Sample no.
(Night)				-20:39	14	(45)	10	2374	6125	157.56	43.08	273.43		OS08141 M-41
					28		20	1858	4075	87.93	35.06	398.74		OS08142 M-42
					42		30	1562	1505	108.34	41.26	380.85	4)	OS08143 M-43
					70		50	1632	5235	128.75	47.18	366.46	4)	OS08144 M-44
					105		75	1333	5305	135.40	19.18	141.65	4)	OS08145 M-45
					140		100	3006	6430	137.89	19.24	139.53		OS08146 M-46
OS08191	42	141 E	2 Oct.	20:45	210	35-45	150	2560	8050	194.10	14.62	75.32		OS08147 M-47
(Night)				-21:01	280	(40)	200	2374	5079	130.65	21.22	162.42		OS08148 M-48
					350		250	1858	5898	127.26	22.06	173.34		OS08149 M-49
					420		300	1632	5860	144.12	27.98	194.15		OS08150 M-50
					560		400	1333	4550	116.13	25.70	221.30		OS08151 M-51
					700		500	3006	2976	63.82	24.06	376.99		OS08152 M-52

1) Exclusively phytoplankton
2) Including some fragments of medusae.
3) *Neocalanus* abundant.
4) Gelatinous zooplankton abundant.
5) Doliolids abundant.
6) Salps abundant.
7) Sagitta elegans abundant.

7. Data on Calibration of Flowmeters

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

Table 6: Calibration data on flowmeters used for a MTD nets

50-m wire out at 42-15N, 144-38E in 3 October 2008.

Flowmeter No.	Wire length (m)	Revolution 1	2	3	4	5	6	7	8	Mean
RG1333	50	491	471	465*	492*	395*	598*	484	484	483
RG1562	50	435*	510	501	558*	590*	520	491	482*	506
RG1632	50	522*	495	470*	484*	500	524*	519	489	501
RG1858	50	590*	576	546*	568	571	596*	568	559*	571
RG2374	50	478	489	460*	496*	524*	480	464*	468	479
RG2560	50	488*	530	511	535*	568*	500*	502	500	511
RG3006	50	572	568	555	602	518*	675*	618*	546*	574

*: omitted from calculation

7

THE “OSHORO MARU” CRUISE 194
TO WATERS EAST OF HONSHU AND TO THE OGASAWARA ISLANDS

IN OCTOBER-NOVEMBER 2008

1. Cruise Itinerary

Cruise 194

Departure from Hakodate	Oct.	19	, 2008
Start Tuna Long-line research (OSL0801)		23	
Start hydrographic research (OS08193)		23	
Finish Tuna Long-line research (OSL0803)		25	
Arrival at Futami		26	
Departure from Futami		29	
Finish hydrographic research (OS08210)		31	
Return to Hakodate	Nov.	2	

Total coverage 1844.1miles

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 24 men		

Cruise 194

Research Staff:	Instructor	(Laboratory of Marine Environmental Science) Hiroji Onishi
Guest Scientist:	Post Doctor	(Department of Earth and Planetary Science, University of Tokyo) Maki Nagasawa

Teaching Assistant:	3 Persons
Graduate Students:	1 Person
Under Graduate Students:	29 Persons

Total 65 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2
Tuna long-line research	Fig. 3	Table 3

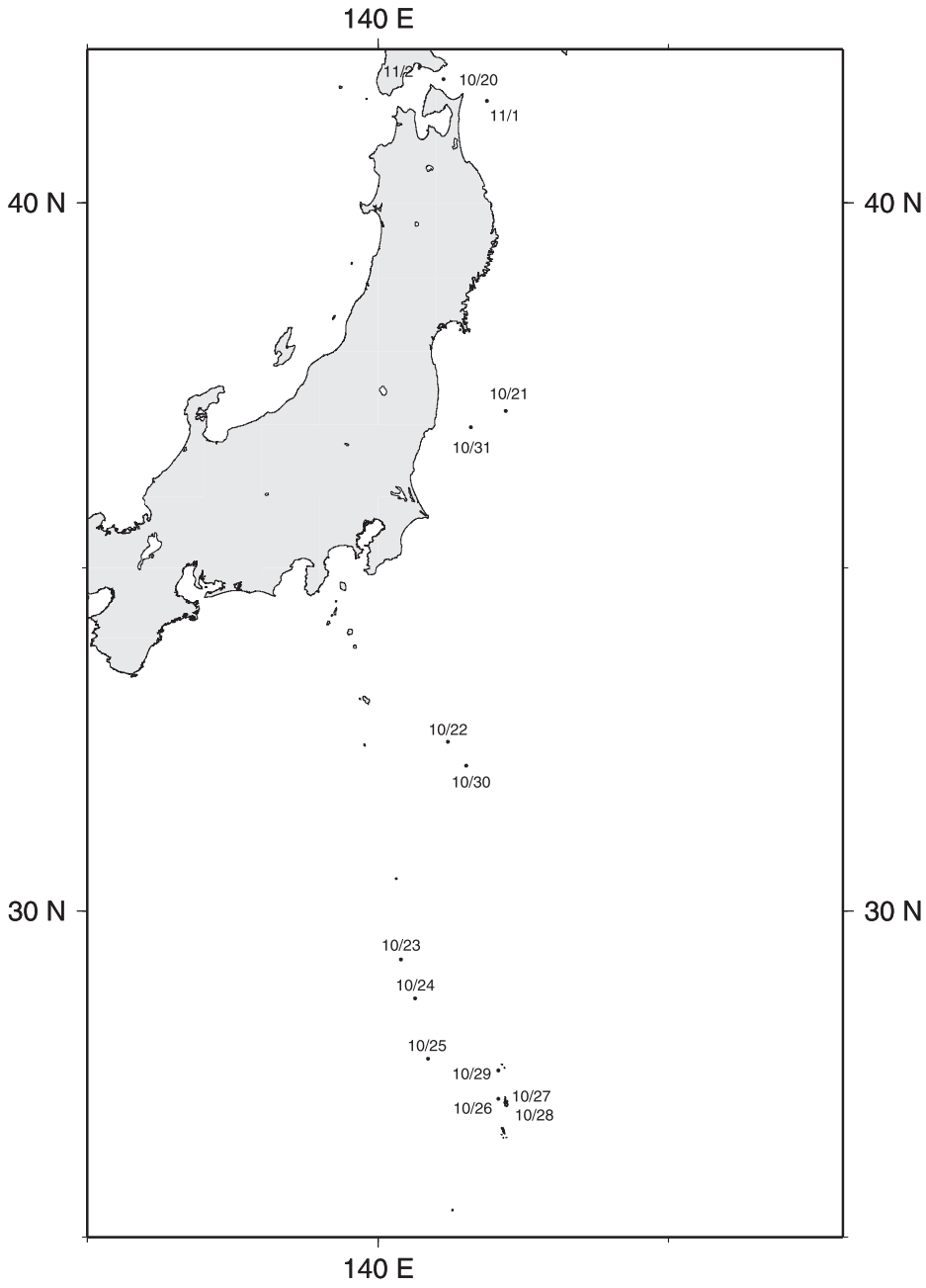

Figure 1: Noon position

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

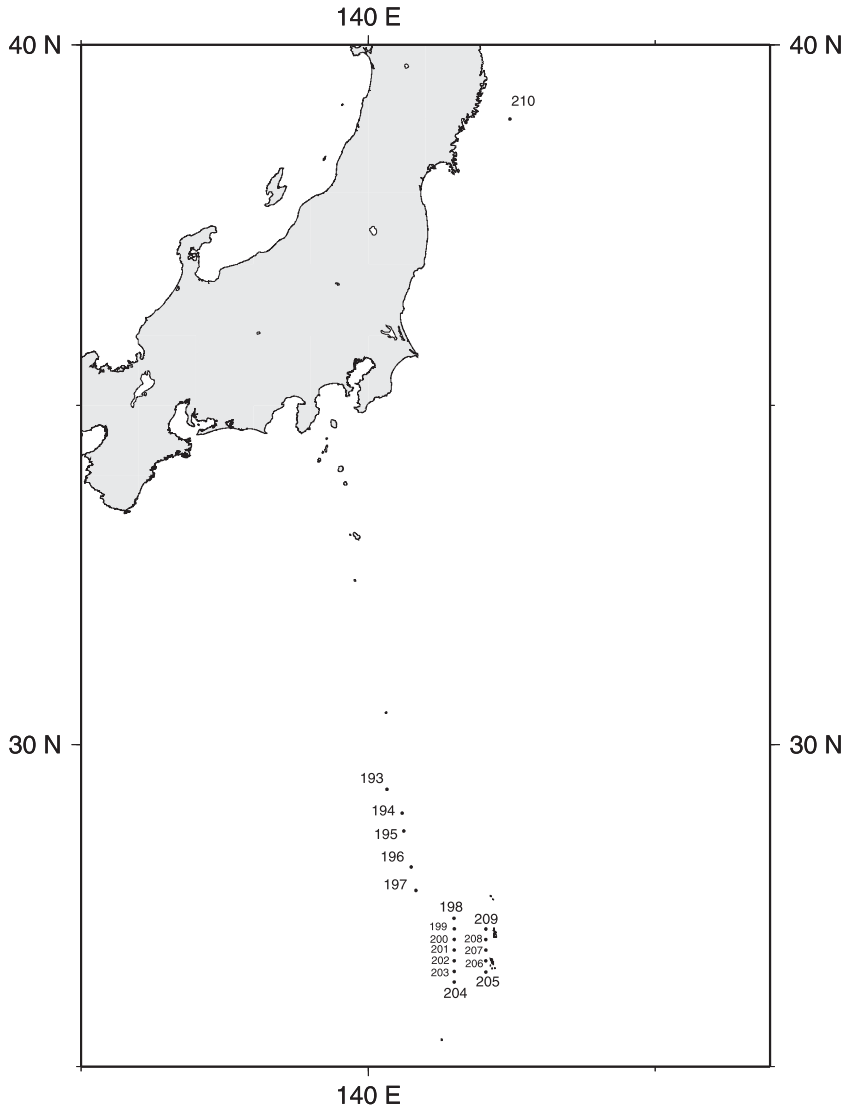

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08193	29-19.1N	140-19.6E	10/23	0915	9	2910	3	22.4	26.5	o	SBE-9plus
OS08194	28-57.2N	140-35.6E	10/23	1630	9	3445	3	22.2	26.7	bc	SBE-9plus
OS08195	28-40.8N	140-37.2E	10/24	0807	9	2905	3	23.7	26.8	bc	SBE-9plus
OS08196	28-07.5N	140-45.0E	10/24	1730	9	2748	-	-	27.4	bc	SBE-9plus
OS08197	27-45.8N	140-49.9E	10/25	0800	9	2555	2	33.1	27.6	c	SBE-9plus
OS08198	27-19.9N	141-29.7E	10/25	1813	9	4055	-	-	27.4	bc	SBE-9plus
OS08199	27-10.0N	141-30.1E	10/25	2051	9	4004	-	-	27.1	bc	XBT
OS08200	27-00.1N	141-30.0E	10/25	2137	9	3916	-	-	27	bc	XBT
OS08201	26-50.1N	141-30.0E	10/25	2226	9	3747	-	-	27	bc	XCTD
OS08202	26-40.0N	141-30.0E	10/25	2330	9	3643	-	-	27	bc	XBT
OS08203	26-30.0N	141-30.0E	10/26	0025	9	3560	-	-	27.1	bc	XBT
OS08204	26-20.1N	141-30.0E	10/26	0121	9	3488	-	-	27.1	bc	XCTD
OS08205	26-29.5N	142-03.0E	10/26	0710	9	1315	-	-	26.8	bc	XCTD
OS08206	26-40.0N	142-03.0E	10/26	0816	9	789	-	-	27.1	bc	XBT
OS08207	26-50.0N	142-03.1E	10/26	0918	9	190	3	44.1	27.7	bc	SBE-9plus
OS08208	27-00.0N	142-03.0E	10/26	1043	9	890	-	-	27	bc	XBT
OS08209	27-09.8N	142-03.0E	10/26	1145	9	889	-	-	27.1	bc	XCTD
OS08210	39-00.1N	142-28.1E	10/31	2238	9	1155	-	-	15.6	-	SBE-9plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS08193
Longitude	29-19.1N
Latitude	140-19.6E
Depth(m)	2910

Press.	Temp.	Sal.	SIG-T
5	26.596	33.952	22.058
10	26.590	33.952	22.060
20	26.593	33.954	22.061
30	26.595	33.954	22.060
40	26.597	33.958	22.063
50	26.500	34.137	22.228
75	24.053	34.625	23.343
100	22.298	34.728	23.929
125	20.799	34.759	24.366
150	19.640	34.794	24.700
200	18.354	34.785	25.021
250	17.803	34.779	25.152
300	16.946	34.736	25.326
400	15.231	34.612	25.623
500	11.659	34.364	26.160

Station	OS08194
Longitude	28-57.2N
Latitude	140-35.6E
Depth(m)	3445

Press.	Temp.	Sal.	SIG-T
5	26.851	34.035	22.040
10	26.851	34.034	22.040
20	26.846	34.035	22.042
30	26.854	34.035	22.039
40	26.860	34.036	22.038
50	26.868	34.040	22.039
75	26.516	34.066	22.169
100	25.090	34.548	22.975
125	22.575	34.678	23.813
150	20.607	34.751	24.412
200	18.591	34.800	24.973
250	17.730	34.776	25.168
300	16.582	34.708	25.389
400	14.084	34.537	25.813
500	9.931	34.310	26.425
600	7.330	34.246	26.779
700	5.909	34.258	26.978
800	4.840	34.253	27.101
900	4.059	34.310	27.231
1000	3.526	34.368	27.331
1200	2.949	34.453	27.453
1500	2.353	34.532	27.568
2000	1.838	34.613	27.674

Station	OS08195
Longitude	28-40.8N
Latitude	140-37.2E
Depth(m)	2905

Press.	Temp.	Sal.	SIG-T
5	26.642	33.918	22.018
10	26.642	33.917	22.018
20	26.642	33.917	22.018
30	26.645	33.917	22.017
40	26.653	33.922	22.018
50	26.650	33.920	22.018
75	26.099	34.363	22.524
100	24.254	34.615	23.277
125	23.257	34.679	23.618
150	21.888	34.716	24.035
200	19.681	34.779	24.678
250	18.717	34.775	24.922
300	16.123	34.664	25.462
400	12.739	34.456	26.024
500	10.314	34.319	26.366

Station	OS08196
Longitude	28-07.5N
Latitude	140-45.0E
Depth(m)	2748

Press.	Temp.	Sal.	SIG-T
5	27.341	34.465	22.208
10	27.343	34.465	22.207
20	27.276	34.457	22.223
30	27.251	34.452	22.227
40	26.770	34.518	22.430
50	24.278	34.728	23.354
75	22.411	34.764	23.924
100	20.083	34.814	24.599
125	19.176	34.818	24.839
150	18.675	34.811	24.960
200	17.862	34.784	25.142
250	17.281	34.760	25.264
300	16.706	34.721	25.370
400	14.850	34.588	25.688
500	11.429	34.357	26.197
600	7.618	34.147	26.660
700	6.075	34.121	26.849
800	4.728	34.191	27.064
900	4.217	34.253	27.170
1000	3.628	34.340	27.298
1200	3.133	34.414	27.406
1500	2.534	34.509	27.535
2000	1.911	34.604	27.661

Station	OS08197
Longitude	27-45.8N
Latitude	140-49.9E
Depth(m)	2555

Press.	Temp.	Sal.	SIG-T
5	27.594	34.459	22.122
10	27.600	34.464	22.124
20	27.530	34.558	22.217
30	27.512	34.586	22.244
40	26.860	34.562	22.435
50	23.698	34.621	23.445
75	22.306	34.697	23.903
100	20.432	34.774	24.476
125	19.681	34.799	24.693
150	18.986	34.806	24.877
200	18.194	34.794	25.068
250	17.488	34.766	25.219
300	16.687	34.720	25.374
400	14.503	34.561	25.742
500	11.804	34.379	26.144

Station	OS08198
Longitude	27-19.9N
Latitude	141-29.7E
Depth(m)	4055

Press.	Temp.	Sal.	SIG-T
5	27.466	34.628	22.290
10	27.400	34.634	22.316
20	27.108	34.666	22.434
30	26.968	34.672	22.483
40	26.390	34.684	22.675
50	25.143	34.700	23.073
75	22.175	34.818	24.032
100	19.498	34.812	24.750
125	18.672	34.808	24.959
150	18.387	34.802	25.026
200	17.796	34.785	25.159
250	17.343	34.765	25.253
300	16.921	34.742	25.336
400	14.417	34.557	25.757
500	11.845	34.374	26.133
600	9.005	34.200	26.491
700	6.812	34.125	26.755
800	5.235	34.124	26.954
900	4.603	34.184	27.073
1000	4.139	34.233	27.162
1200	3.386	34.379	27.353
1500	2.522	34.509	27.535
2000	1.875	34.609	27.669

Station OS08199
Longitude 27-10.0N
Latitude 141-30.1E
Depth(m) 4004

Press.	Temp.	Sal.	SIG-T
5	27.502	-	-
10	27.400	-	-
20	27.367	-	-
30	27.307	-	-
40	26.632	-	-
50	25.324	-	-
75	22.789	-	-
100	20.687	-	-
125	18.930	-	-
150	18.398	-	-
200	17.791	-	-
250	17.288	-	-
300	16.803	-	-
400	15.286	-	-
500	12.158	-	-
600	9.859	-	-
700	6.920	-	-

Station OS08200
Longitude 27-00.1N
Latitude 141-30.0E
Depth(m) 3916

Press.	Temp.	Sal.	SIG-T
5	27.592	-	-
10	27.489	-	-
20	27.332	-	-
30	27.122	-	-
40	26.555	-	-
50	25.084	-	-
75	20.968	-	-
100	19.970	-	-
125	19.150	-	-
150	18.354	-	-
200	17.779	-	-
250	17.151	-	-
300	16.783	-	-
400	15.543	-	-
500	12.595	-	-
600	9.389	-	-
700	7.017	-	-

Station OS08201
Longitude 26-50.1N
Latitude 141-30.0E
Depth(m) 3747

Press.	Temp.	Sal.	SIG-T
5	27.107	34.500	22.309
10	27.023	34.531	22.359
20	26.972	34.539	22.382
30	26.802	34.518	22.420
40	25.849	34.547	22.740
50	24.638	34.637	23.178
75	21.207	34.766	24.261
100	19.728	34.770	24.659
125	19.067	34.767	24.827
150	18.536	34.765	24.960
200	17.824	34.753	25.127
250	17.360	34.736	25.227
300	16.807	34.703	25.333
400	15.047	34.572	25.632
500	12.495	34.390	26.021
600	9.563	34.201	26.402
700	6.305	34.065	26.775
800	5.178	34.119	26.956
900	4.460	34.199	27.101
1000	3.943	34.292	27.229
1200	3.152	34.419	27.407
1500	2.434	34.540	27.568

Station OS08202
Longitude 26-40.0N
Latitude 141-30.0E
Depth(m) 3643

Press.	Temp.	Sal.	SIG-T
5	27.500	-	-
10	27.262	-	-
20	27.193	-	-
30	26.845	-	-
40	25.120	-	-
50	23.992	-	-
75	21.509	-	-
100	20.534	-	-
125	19.610	-	-
150	18.792	-	-
200	18.090	-	-
250	17.410	-	-
300	16.677	-	-
400	14.993	-	-
500	11.536	-	-
600	8.320	-	-
700	6.457	-	-

Station OS08203
Longitude 26-30.0N
Latitude 141-30.0E
Depth(m) 3560

Press.	Temp.	Sal.	SIG-T
5	27.520	-	-
10	27.479	-	-
20	27.283	-	-
30	26.982	-	-
40	26.542	-	-
50	24.477	-	-
75	23.219	-	-
100	20.824	-	-
125	19.440	-	-
150	18.822	-	-
200	17.931	-	-
250	17.271	-	-
300	16.657	-	-
400	14.247	-	-
500	12.199	-	-
600	8.351	-	-
700	6.334	-	-

Station OS08204
Longitude 26-20.1N
Latitude 141-30.0E
Depth(m) 3488

Press.	Temp.	Sal.	SIG-T
5	27.628	34.278	21.975
10	27.586	34.288	21.996
20	27.421	34.320	22.073
30	25.630	34.501	22.773
40	24.886	34.534	23.025
50	23.728	34.559	23.389
75	21.434	34.692	24.142
100	19.899	34.708	24.567
125	19.073	34.722	24.791
150	18.536	34.721	24.926
200	17.814	34.720	25.104
250	17.375	34.699	25.195
300	16.388	34.644	25.385
400	13.839	34.452	25.798
500	10.609	34.251	26.262
600	8.214	34.126	26.556
700	6.464	34.105	26.786
800	5.040	34.161	27.006
900	4.166	34.258	27.179
1000	3.716	34.320	27.274
1200	3.070	34.430	27.424
1500	2.492	34.523	27.549

Station OS08205
Longitude 26-29.5N
Latitude 142-03.0E
Depth(m) 1315

Press.	Temp.	Sal.	SIG-T
5	27.528	34.324	22.042
10	26.953	34.369	22.260
20	26.627	34.392	22.380
30	24.713	34.509	23.059
40	23.760	34.550	23.373
50	22.536	34.597	23.762
75	19.860	34.701	24.572
100	18.877	34.735	24.851
125	18.613	34.734	24.917
150	18.483	34.735	24.950
200	17.751	34.721	25.120
250	17.350	34.713	25.211
300	16.630	34.674	25.352
400	14.426	34.509	25.718

Station OS08206
Longitude 26-40.0N
Latitude 142-03.0E
Depth(m) 789

Press.	Temp.	Sal.	SIG-T
5	27.250	-	-
10	27.209	-	-
20	27.050	-	-
30	26.790	-	-
40	23.583	-	-
50	21.890	-	-
75	20.469	-	-
100	19.636	-	-
125	18.970	-	-
150	18.532	-	-
200	18.251	-	-
250	17.732	-	-
300	16.893	-	-
400	14.709	-	-
500	12.153	-	-
600	12.601	-	-
700	12.640	-	-

Station OS08207
Longitude 26-50.0N
Latitude 142-03.1E
Depth(m) 190

Press.	Temp.	Sal.	SIG-T
5	27.548	34.345	22.051
10	27.538	34.345	22.054
20	27.530	34.344	22.056
30	27.430	34.359	22.099
40	25.085	34.624	23.033
50	23.648	34.642	23.475
75	20.862	34.744	24.338
100	19.838	34.775	24.633
125	18.946	34.785	24.872
150	18.041	34.775	25.091

Station OS08208
Longitude 27-00.0N
Latitude 142-03.0E
Depth(m) 890

Press.	Temp.	Sal.	SIG-T
5	27.110	-	-
10	26.981	-	-
20	26.673	-	-
30	26.162	-	-
40	25.673	-	-
50	24.194	-	-
75	22.319	-	-
100	19.646	-	-
125	19.320	-	-
150	19.062	-	-
200	18.521	-	-
250	17.742	-	-
300	16.947	-	-
400	14.769	-	-
500	12.126	-	-
600	8.560	-	-
700	5.894	-	-

Station OS08209
Longitude 27-09.8N
Latitude 142-03.0E
Depth(m) 889

Press.	Temp.	Sal.	SIG-T
5	27.221	34.391	22.191
10	27.072	34.419	22.259
20	26.521	34.499	22.494
30	25.743	34.561	22.784
40	25.266	34.579	22.944
50	23.799	34.629	23.421
75	22.297	34.684	23.896
100	20.358	34.736	24.467
125	19.380	34.741	24.727
150	18.729	34.753	24.902
200	18.298	34.739	25.000
250	18.125	34.736	25.040
300	17.109	34.711	25.267
400	14.972	34.562	25.641
500	11.842	34.360	26.122
600	7.780	34.151	26.640
700	6.280	34.130	26.830
800	5.056	34.203	27.037

Station OS08210
Longitude 39-00.1N
Latitude 142-28.1E
Depth(m) 1155

Press.	Temp.	Sal.	SIG-T
5	15.132	33.762	24.990
10	15.132	33.762	24.990
20	15.134	33.766	24.992
30	15.156	33.796	25.010
40	15.033	33.854	25.082
50	13.569	34.119	25.596
75	9.668	33.883	26.136
100	7.404	33.751	26.379
125	6.779	33.806	26.508
150	6.741	33.894	26.583
200	4.523	33.656	26.662
250	3.385	33.608	26.739
300	4.508	33.844	26.813
400	4.316	33.979	26.941
500	4.421	34.152	27.068
600	4.135	34.221	27.153
700	3.603	34.236	27.219
800	3.308	34.280	27.282
900	3.084	34.308	27.325
1000	2.949	34.373	27.389

5. Data on Tuna Longline Research

The research gear was divided into 2 groups according to the number of baskets (hachi) used and the length of the float line.

A detailed explanation of each group of tuna longline is as follow:

Group		A	B	C
Main line	(m)	500	500	500
Branch line	(m)	11.5	11.5	11.5
Sekiyama	(m)	8	8	8
Kanayama	(m)	2	2	2
Float line	(m)	20	40	60

Frozen Japanese common squid were used as bait. The operation of tuna longline was supervised by the captain and deck officers, and all crews and cadets were engaged in the work.

Biological measurements of fishes captured were carried out on board by deck officers immediately after fishing.

Table 3: Data on tuna longline research

No. of research		OSL0801	OSL0802	OSL0803
Date		23, Oct.	24, Oct.	25, Oct.
posision of	Lat. (N)	29-22.6	28-36.3	27-40.9
line set	Long. (E)	140-29.5	140-42.7	140-58.6
Time	Line set	0457-0621	0418-0505	0420-0505
(S. M. T.)	Line haul	1255-1446	1252-1445	1248-1455
Direction of line set		270	320	340
No. of baskets used		30	30	30
Surface temp. (°C)		26.5	27.4	27.2
Weather		o	bc	bc
Wind		East-6	SE-4	SSE-4
Thresher shark				1
Blue Shark				2
Daggertooth				1
Pacific lancetfish			1	
Albacore			1	
Skipjack tuna		1		

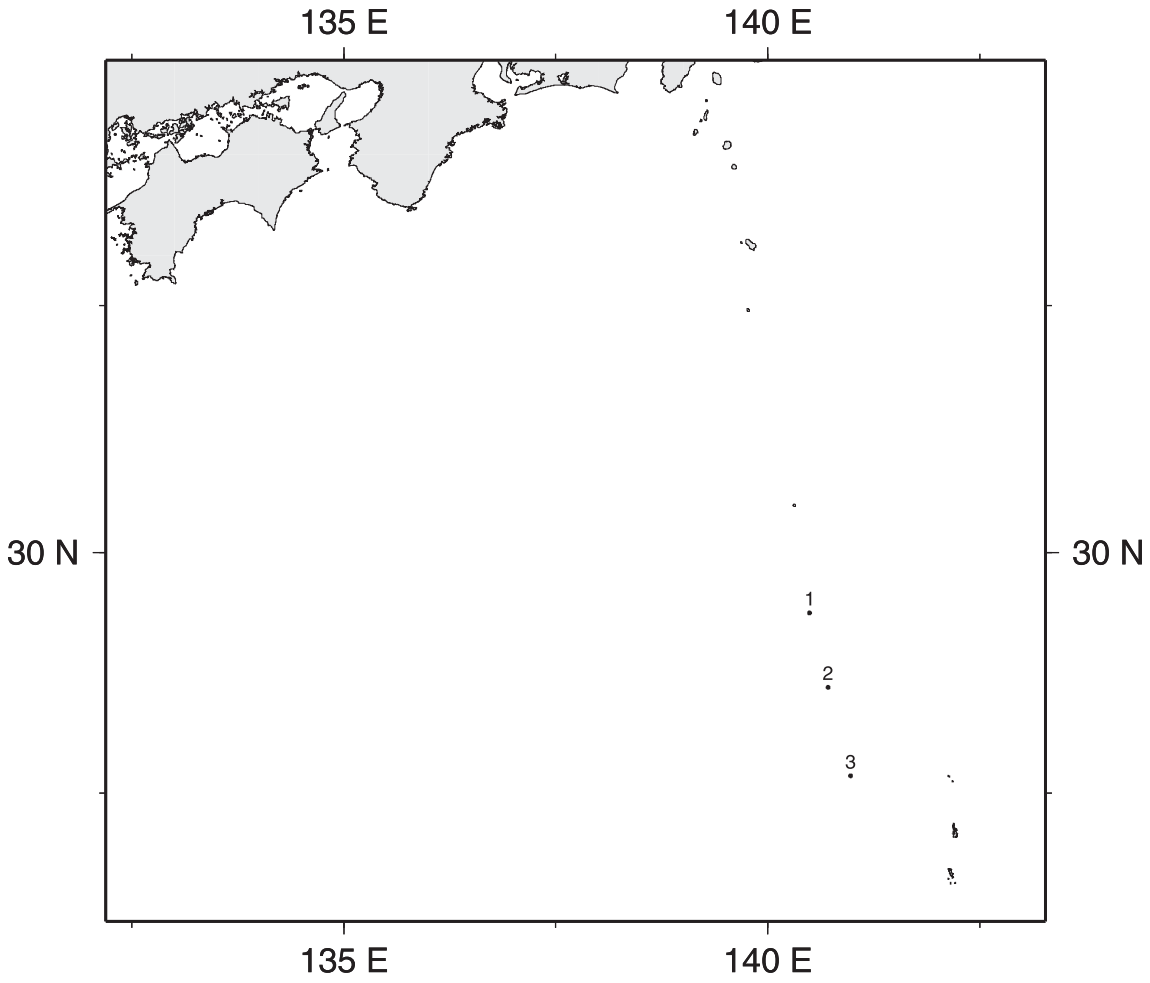

Figure 3: Locations of tuna longline research

8

THE “OSHORO MARU” CRUISE 195
TO WATERS EAST OF HONSHU AND TO THE OGASAWARA ISLANDS

IN NOVEMBER 2008

1. Cruise Itinerary

Cruise 195

Departure from Hakodate	Nov.	13	,2008
Start hydrographic research (OS08211)		14	
Arrival at Futami		20	
Departure from Futami		23	
Finish hydrographic research (OS08222)		23	
Return to Hakodate		28	

Total coverage 2324.6miles

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 24 men		

Cruise 195

Research Staff:	Professor	(Laboratory of Marine Bio-resources Ecology) Kenshi Kuma
	Associate Professor	(Laboratory of Marine Environmental Science) Yutaka Isoda
Guest Scientist:	Affiliated Professor	(Pacific Aquaculture and Coastal Resources Center University of Hawaii) Keiko Sekiguchi
	Scientist	(National Institute for Environmental Studies) Takafumi Aramaki
	Scientist	(Ogasawara Whale Watching Association) Kyouichi Mori
	Post Doctor	(Department of Earth and Planetary Science, University of Tokyo) Maki Nagasawa

Graduate Students:	6 Persons
Under Graduate Students:	10 Persons
	Total 51 persons

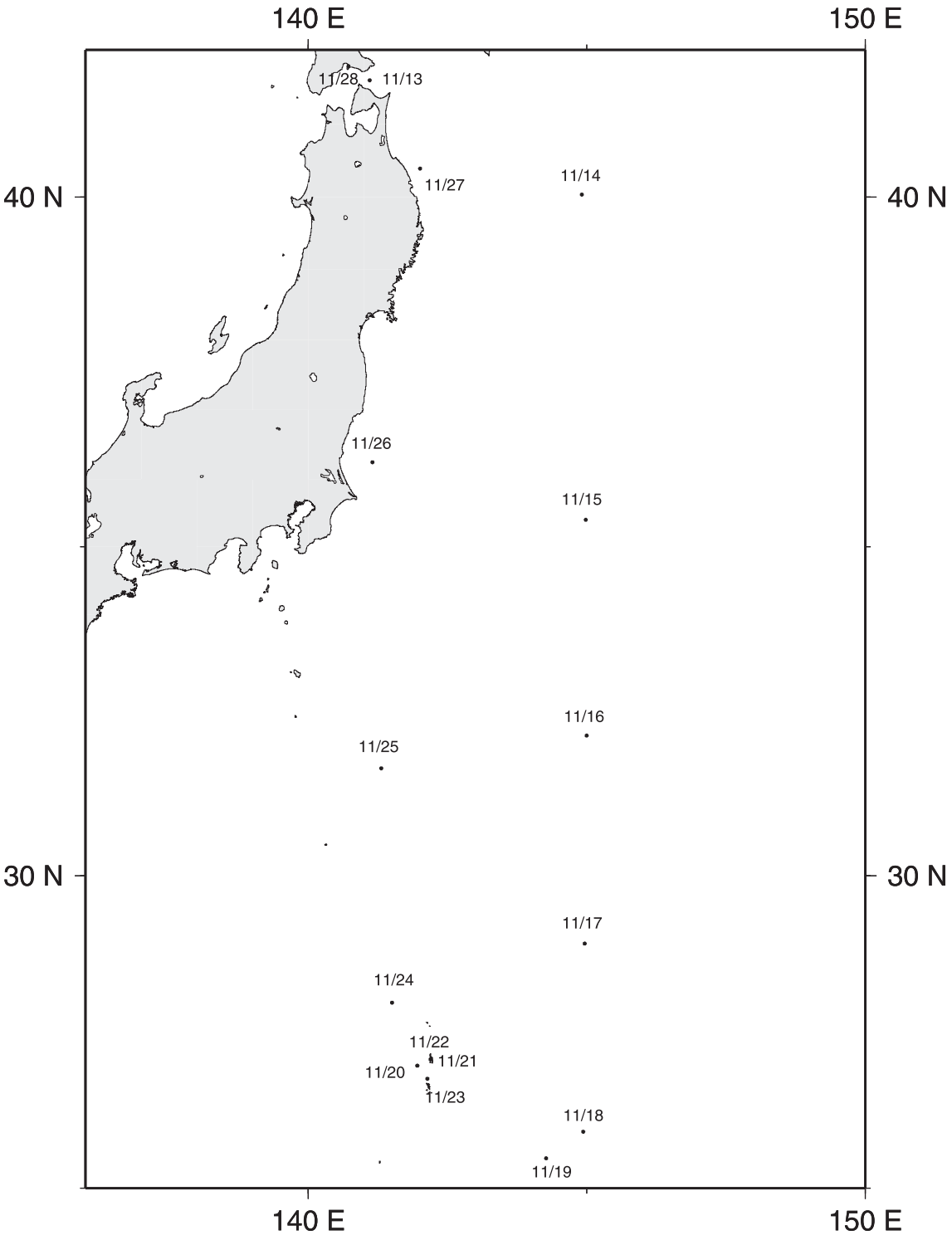

Figure 1: Noon position

3. Items of Research

Hydrographic observations: Fig. 2 Table 1, 2

Behavior of trace metals in the North Pacific Ocean

Investigation for behavior of aluminum in the North Pacific Ocean

Behavior of dissolved organic radiocarbon in the North Pacific Ocean

Flow and mixing in the intermediate and abyssal layers in the North Pacific Ocean

Dynamics of primary production process in the North Pacific Ocean

The relation between micro-scale and fine scale current shear in deep Ocean, measurements using VMP5500 and XCP

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 "Oshoro Maru".

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

Dynamic computations were made using a desk-top computer aboard the "Oshoro Maru".

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08211	40-00.0N	145-00.0E	11/14	0821	9	5611	7	5.1	-	b	SBE-9plus
OS08212	35-00.0N	145-00.0E	11/15	1646	9	5747	-	-	-	c	SBE-9plus
OS08213	30-00.0N	145-00.0E	11/17	0103	9	5910	-	-	24.6	bc	SBE-9plus
OS08214	25-55.3N	144-56.1E	11/18	0312	9	4931	-	-	-	r	XCTD2
OS08215	25-50.0N	145-00.0E	11/18	2200	9	5016	-	-	-	o	SBE-9plus
OS08216	25-13.1N	144-37.4E	11/19	0612	9		-	-	-	c	XCTD1
OS08217	25-29.3N	144-16.7E	11/19	1220	9		-	-	-	c	XCTD1
OS08218	26-58.5N	141-57.4E	11/20	1155	9		-	-	-	b	XCTD1
OS08219	26-59.9N	141-57.8E	11/20	1251	9		-	-	-	b	XCTD1
OS08220	26-45.0N	142-00.0E	11/23	1105	9	903	-	-	-	b	XCTD1
OS08221	26-51.3N	142-20.3E	11/23	1420	9	1460	-	-	-	b	XCTD1
OS08222	27-10.5N	142-24.6E	11/23	2034	9	960	-	-	-	b	XCTD1

(*):Fixed position by Global Positioning system

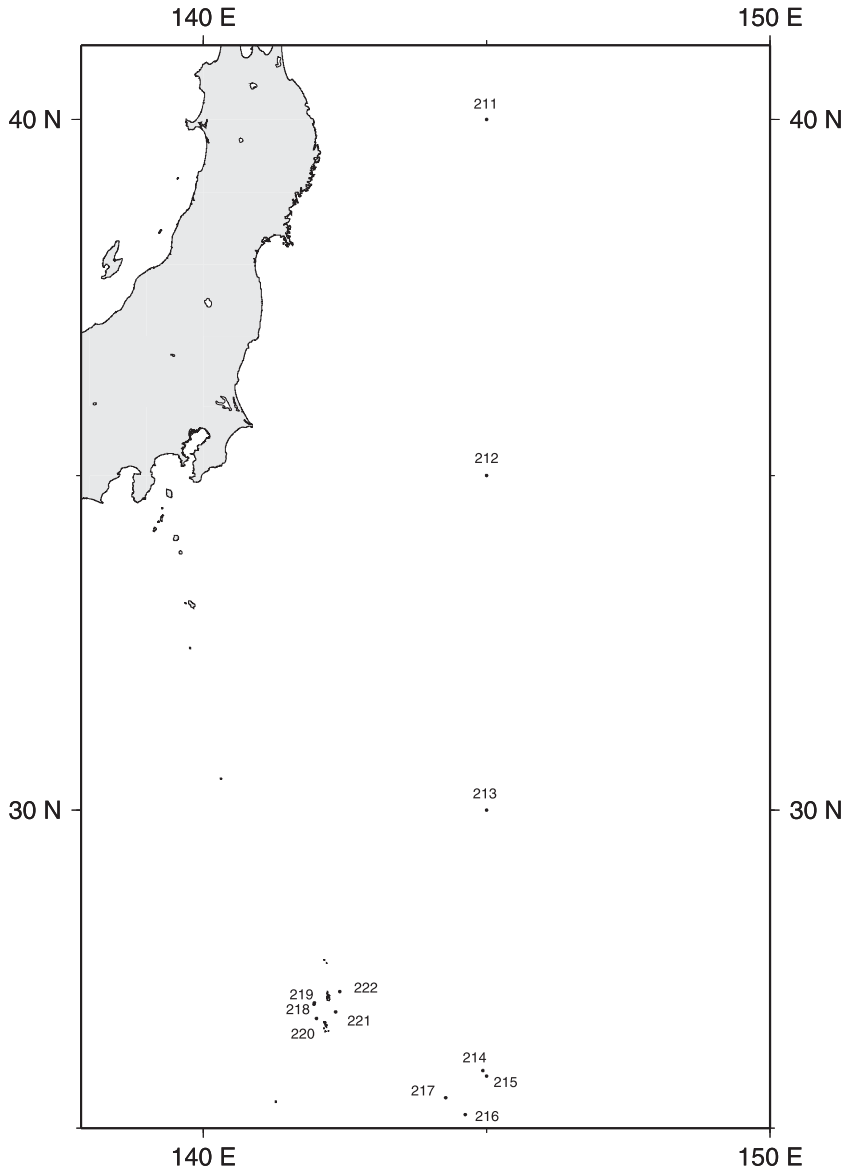

Figure 2: Oceanographic stations

Table 2: Oceanographic data

Station		OS08211	
Longitude		40-00.0N	
Latitude		145-00.0E	
Depth(m)		5611	
Press.	Temp.	Sal.	SIG-T
5	9.745	33.103	25.514
10	9.713	33.106	25.521
20	9.613	33.120	25.549
30	9.566	33.120	25.556
40	8.495	33.084	25.696
50	7.768	33.072	25.794
75	3.923	33.213	26.372
100	3.405	33.312	26.501
125	2.736	33.321	26.567
150	2.318	33.343	26.620
200	2.350	33.427	26.684
250	2.377	33.526	26.761
300	2.405	33.602	26.820
400	2.953	33.799	26.931
500	3.102	33.937	27.028
600	3.111	34.060	27.125
700	3.160	34.174	27.211
800	3.022	34.249	27.284
900	3.108	34.344	27.352
1000	3.037	34.395	27.399
1200	2.632	34.437	27.468
1500	2.355	34.509	27.550
2000	1.981	34.590	27.645
2500	1.723	34.635	27.700
3000	1.578	34.660	27.732

Station		OS08212	
Longitude		35-00.0N	
Latitude		145-00.0E	
Depth(m)		5747	
Press.	Temp.	Sal.	SIG-T
5	23.399	34.328	23.311
10	23.405	34.329	23.309
20	23.407	34.328	23.308
30	23.409	34.328	23.307
40	23.413	34.328	23.306
50	23.414	34.335	23.312
75	23.417	34.397	23.357
100	21.863	34.697	24.027
125	21.093	34.781	24.303
150	20.116	34.800	24.580
200	18.854	34.818	24.920
250	18.320	34.795	25.037
300	17.783	34.782	25.159
400	16.252	34.685	25.448
500	13.397	34.490	25.919
600	9.679	34.332	26.485
700	7.308	34.228	26.768
800	5.779	34.239	26.979
900	4.588	34.204	27.091
1000	3.899	34.263	27.210
1200	3.350	34.371	27.350
1500	2.610	34.476	27.502
2000	2.086	34.575	27.624
2500	1.781	34.629	27.691
3000	1.613	34.657	27.727

Station		OS08213	
Longitude		30-00.0N	
Latitude		145-00.0E	
Depth(m)		5910	
Press.	Temp.	Sal.	SIG-T
5	24.843	34.389	22.929
10	24.851	34.389	22.926
20	24.852	34.389	22.926
30	24.852	34.389	22.927
40	24.245	34.487	23.182
50	22.214	34.725	23.950
75	19.328	34.786	24.775
100	18.323	34.787	25.030
125	17.850	34.777	25.139
150	17.504	34.766	25.215
200	16.981	34.742	25.322
250	16.361	34.701	25.435
300	15.228	34.614	25.625
400	12.841	34.448	25.998
500	9.628	34.215	26.401
600	6.882	34.008	26.654
700	5.669	34.070	26.859
800	4.590	34.168	27.061
900	4.072	34.250	27.182
1000	3.665	34.321	27.280
1200	3.084	34.425	27.418
1500	2.482	34.517	27.545
2000	1.936	34.601	27.657
2500	1.703	34.639	27.705
3000	1.568	34.660	27.733

Station OS08214
Longitude 25-55.3N
Latitude 144-56.1E
Depth(m) 4931

Press.	Temp.	Sal.	SIG-T
5	26.563	34.287	22.321
10	26.563	34.304	22.334
20	26.573	34.318	22.341
30	26.553	34.331	22.358
40	26.572	34.374	22.384
50	23.600	34.627	23.478
75	20.821	34.752	24.355
100	19.594	34.752	24.680
125	18.931	34.753	24.851
150	18.497	34.749	24.958
200	17.887	34.740	25.102
250	17.432	34.719	25.196
300	16.617	34.668	25.351
400	13.527	34.440	25.853
500	11.157	34.267	26.177
600	8.224	34.092	26.528
700	5.703	34.045	26.835
800	4.859	34.110	26.986
900	4.065	34.234	27.170
1000	3.686	34.314	27.272
1200	3.084	34.412	27.408
1500	2.414	34.512	27.547

Station OS08215
Longitude 25-50.0N
Latitude 145-00.0E
Depth(m) 5016

Press.	Temp.	Sal.	SIG-T
5	26.590	34.423	22.415
10	26.596	34.428	22.417
20	26.562	34.477	22.465
30	26.329	34.538	22.584
40	25.546	34.643	22.906
50	24.034	34.716	23.418
75	20.726	34.799	24.416
100	19.147	34.800	24.832
125	18.843	34.803	24.912
150	18.255	34.804	25.060
200	17.621	34.778	25.196
250	17.019	34.746	25.315
300	16.044	34.675	25.488
400	13.291	34.475	25.928
500	10.941	34.303	26.244
600	7.960	34.120	26.589
700	5.708	34.076	26.859
800	4.797	34.155	27.029
900	4.270	34.234	27.149
1000	3.753	34.326	27.275
1200	3.128	34.428	27.417
1500	2.451	34.527	27.556
2000	1.890	34.611	27.669
2500	1.654	34.649	27.717
3000	1.554	34.667	27.739

Station OS08216
Longitude 25-13.1N
Latitude 144-37.4E
Depth(m) -

Press.	Temp.	Sal.	SIG-T
5	27.361	34.562	22.274
10	27.361	34.576	22.285
20	27.351	34.580	22.291
30	26.863	34.480	22.372
40	26.512	34.657	22.616
50	26.051	34.678	22.776
75	22.891	34.761	23.785
100	20.511	34.797	24.473
125	18.916	34.799	24.890
150	18.245	34.790	25.052
200	17.637	34.765	25.182
250	17.022	34.732	25.304
300	16.141	34.670	25.462
400	13.569	34.469	25.867
500	10.343	34.257	26.313
600	7.608	34.127	26.646
700	5.631	34.129	26.910
800	4.635	34.215	27.094
900	4.019	34.326	27.248
1000	3.589	34.394	27.346

Station OS08217
Longitude 25-29.3N
Latitude 144-16.7E
Depth(m) -

Press.	Temp.	Sal.	SIG-T
5	28.196	34.592	22.026
10	28.103	34.636	22.089
20	28.052	34.654	22.120
30	27.744	34.591	22.173
40	27.268	34.500	22.258
50	26.595	34.331	22.344
75	25.314	34.345	22.753
100	21.682	34.700	24.080
125	19.748	34.781	24.662
150	18.843	34.784	24.897
200	17.912	34.757	25.109
250	17.259	34.733	25.249
300	16.556	34.683	25.376
400	14.274	34.517	25.757
500	11.689	34.329	26.127
600	8.576	34.136	26.508
700	6.645	34.074	26.738
800	5.346	34.104	26.925
900	4.389	34.210	27.117
1000	3.762	34.318	27.268

Station OS08218
Longitude 26-58.5N
Latitude 141-57.4E
Depth(m) -

Press.	Temp.	Sal.	SIG-T
5	25.603	34.434	22.731
10	25.583	34.453	22.752
20	25.563	34.464	22.766
30	25.283	34.441	22.835
40	24.830	34.442	22.973
50	24.587	34.476	23.072
75	23.612	34.572	23.433
100	22.708	34.636	23.743
125	21.484	34.677	24.117
150	20.084	34.721	24.528
200	18.442	34.771	24.988
250	17.858	34.755	25.120
300	16.894	34.730	25.333
400	15.202	34.604	25.623
500	11.395	34.358	26.204
600	7.900	34.169	26.636
700	5.692	34.168	26.934
800	4.854	34.212	27.067
900	4.090	34.286	27.209
1000	3.680	34.345	27.298

Station OS08219
Longitude 26-59.9N
Latitude 141-57.8E
Depth(m) -

Press.	Temp.	Sal.	SIG-T
5	25.684	34.495	22.752
10	25.655	34.504	22.768
20	25.197	34.482	22.892
30	24.908	34.468	22.969
40	24.841	34.482	23.000
50	24.684	34.496	23.058
75	23.245	34.604	23.564
100	21.785	34.688	24.042
125	20.990	34.716	24.282
150	19.752	34.764	24.648
200	18.504	34.791	24.988
250	17.582	34.781	25.207
300	16.929	34.744	25.336
400	14.511	34.571	25.748
500	11.199	34.360	26.242
600	7.568	34.171	26.686
700	5.844	34.164	26.912
800	4.694	34.232	27.101
900	3.999	34.306	27.234
1000	3.639	34.355	27.310

Station	OS08220
Longitude	26-45.0N
Latitude	142-00.0E
Depth(m)	903

Press.	Temp.	Sal.	SIG-T
5	25.002	34.480	22.950
10	24.642	34.492	23.067
20	24.506	34.502	23.116
30	24.328	34.513	23.177
40	24.172	34.532	23.238
50	24.019	34.550	23.297
75	22.521	34.674	23.825
100	20.257	34.763	24.514
125	19.224	34.774	24.792
150	18.653	34.779	24.941
200	17.934	34.772	25.115
250	17.431	34.760	25.228
300	16.837	34.719	25.338
400	14.539	34.565	25.737
500	10.728	34.310	26.287
600	8.190	34.189	26.609
700	5.842	34.164	26.912
800	4.801	34.230	27.088
900	4.266	34.281	27.186

Station	OS08221
Longitude	26-51.3N
Latitude	142-20.3E
Depth(m)	1460

Press.	Temp.	Sal.	SIG-T
5	25.845	34.539	22.736
10	25.845	34.547	22.742
20	25.806	34.550	22.756
30	25.439	34.521	22.847
40	23.869	34.683	23.442
50	22.036	34.705	23.985
75	20.351	34.755	24.483
100	19.289	34.779	24.779
125	18.714	34.775	24.923
150	18.280	34.768	25.026
200	17.716	34.755	25.155
250	17.294	34.741	25.246
300	16.854	34.709	25.326
400	13.330	34.452	25.902
500	10.626	34.260	26.266
600	7.920	34.112	26.589
700	5.820	34.094	26.859
800	4.651	34.176	27.061
900	4.165	34.250	27.172
1000	3.616	34.324	27.287

Station	OS08222
Longitude	27-10.5N
Latitude	142-24.6E
Depth(m)	960

Press.	Temp.	Sal.	SIG-T
5	25.636	34.366	22.670
10	25.636	34.395	22.692
20	25.436	34.380	22.742
30	25.048	34.333	22.825
40	24.675	34.317	22.925
50	24.478	34.280	22.956
75	22.693	34.525	23.663
100	21.164	34.687	24.212
125	20.210	34.715	24.490
150	19.191	34.709	24.751
200	18.251	34.728	25.003
250	17.592	34.714	25.154
300	16.705	34.664	25.327
400	15.239	34.564	25.584
500	11.716	34.333	26.125
600	8.250	34.134	26.557
700	6.025	34.087	26.828
800	5.005	34.145	26.997
900	4.292	34.226	27.140

9

THE “OSHORO MARU” CRUISE 196 TO THE OYASHIO REGION

IN DECEMBER 2008

1. Cruise Itinerary

Cruise 196

Departure from Hakodate	Dec.	10	, 2008
Hydrographic research (OS08223)		11	
Return to Hakodate		15	

Total coverage 486.7 miles 6 days at sea

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 24 men		

Cruise 196

Research Staff:	Associate Professor	(Laboratory of Marine Bioresources Ecology) Atsushi Yamaguchi
	Scientist	(Advanced Industrial Science and Tecnology) Yasuhiro Takenaka

Graduate Students:	2 Persons
Under Graduate Students:	18 Persons
	Total 39 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2

The life cycle of zooplankton in the Oyashio region

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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

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

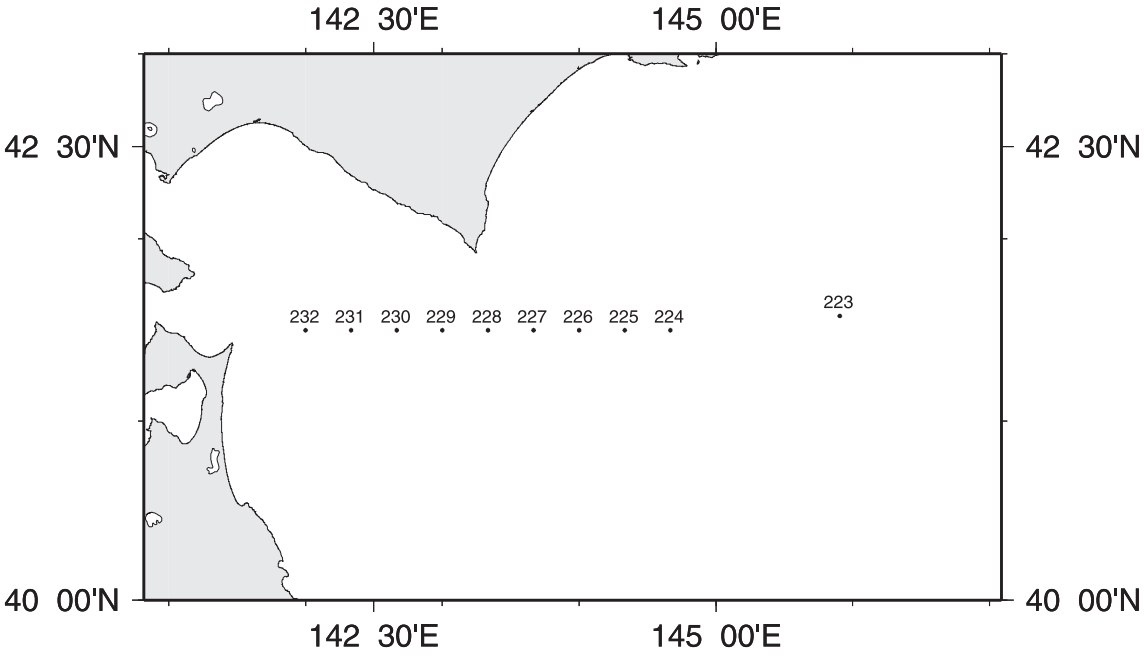

Figure 1: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08223	41-34.7N	145-54.3E	12/16	1430	9	6918	-	-	10.3	c	
OS08224	41-30.0N	144-40.0E	12/18	0910	9	4300	-	-	-	-	T-7
OS08225	41-30.0N	144-20.0E	12/18	1045	9	2735	-	-	-	-	XCTD1
OS08226	41-30.0N	144-00.0E	12/18	1205	9	1755	-	-	-	-	T-7
OS08227	41-30.0N	143-40.0E	12/18	1318	9	1490	-	-	-	-	T-7
OS08228	41-30.0N	143-20.0E	12/18	1432	9	1330	-	-	-	-	XCTD1
OS08229	41-30.0N	143-00.0E	12/18	1548	9	1152	-	-	-	-	T-7
OS08230	41-30.0N	142-40.0E	12/18	1703	9	1204	-	-	-	-	T-7
OS08231	41-30.0N	142-20.0E	12/18	1830	9	1234	-	-	-	-	XCTD1
OS08232	41-30.0N	142-00.0E	12/18	2001	9	1094	-	-	-	-	T-7

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station OS08223
Longitude 41-34.7N
Latitude 145-54.3E
Depth(m) 6918

Press.	Temp.	Sal.	SIG-T
5	10.499	34.087	26.154
10	10.500	34.087	26.153
20	10.479	34.088	26.158
30	10.468	34.089	26.161
40	10.448	34.092	26.166
50	10.441	34.096	26.170
75	10.431	34.106	26.180
100	10.226	34.250	26.328
125	10.181	34.248	26.334
150	10.120	34.240	26.339
200	9.672	34.174	26.362
250	8.401	34.007	26.434
300	6.343	33.778	26.544
400	3.251	33.534	26.692
500	2.994	33.652	26.810
600	3.180	33.812	26.921
700	3.601	34.020	27.046
800	3.428	34.136	27.155
900	3.452	34.216	27.217
1000	3.123	34.262	27.285
1200	2.813	34.368	27.397
1500	2.513	34.485	27.517
2000	2.090	34.574	27.623
2500	1.802	34.626	27.688
3000	1.635	34.655	27.723

Station OS08224
Longitude 41-30.0N
Latitude 144-40.0E
Depth(m) 4300

Press.	Temp.	Sal.	SIG-T
5	10.220	-	-
10	10.281	-	-
20	10.260	-	-
30	10.270	-	-
40	10.192	-	-
50	10.032	-	-
75	7.758	-	-
100	7.303	-	-
125	6.010	-	-
150	3.812	-	-
200	4.360	-	-
250	4.513	-	-
300	3.483	-	-
400	3.280	-	-
500	3.633	-	-
600	3.460	-	-
700	3.280	-	-

Station OS08225
Longitude 41-30.0N
Latitude 144-20.0E
Depth(m) 2735

Press.	Temp.	Sal.	SIG-T
5	8.970	33.544	25.983
10	8.789	33.616	26.068
20	7.817	33.506	26.128
30	5.947	33.299	26.215
40	5.281	33.245	26.252
50	4.841	33.210	26.274
75	4.640	33.202	26.290
100	3.709	33.301	26.463
125	2.296	33.314	26.598
150	2.046	33.352	26.648
200	2.242	33.484	26.738
250	2.543	33.623	26.825
300	2.368	33.674	26.880
400	2.564	33.805	26.969
500	2.874	33.952	27.060
600	3.086	34.116	27.172
700	3.347	34.305	27.298
800	3.176	34.322	27.328
900	2.995	34.393	27.401
1000	2.844	34.488	27.491

Station OS08226
Longitude 41-30.0N
Latitude 144-00.0E
Depth(m) 1755

Press.	Temp.	Sal.	SIG-T
5	5.588	-	-
10	5.568	-	-
20	5.483	-	-
30	5.467	-	-
40	5.446	-	-
50	5.450	-	-
75	4.200	-	-
100	3.363	-	-
125	2.660	-	-
150	2.496	-	-
200	2.269	-	-
250	2.151	-	-
300	2.300	-	-
400	2.834	-	-
500	3.081	-	-
600	3.010	-	-
700	3.104	-	-

Station OS08227
Longitude 41-30.0N
Latitude 143-40.0E
Depth(m) 1490

Press.	Temp.	Sal.	SIG-T
5	5.620	-	-
10	5.531	-	-
20	5.348	-	-
30	5.262	-	-
40	5.102	-	-
50	5.138	-	-
75	3.901	-	-
100	3.354	-	-
125	3.080	-	-
150	2.692	-	-
200	2.571	-	-
250	2.169	-	-
300	2.253	-	-
400	2.654	-	-
500	2.880	-	-
600	3.159	-	-
700	3.150	-	-

Station OS08228
Longitude 41-30.0N
Latitude 143-20.0E
Depth(m) 1330

Press.	Temp.	Sal.	SIG-T
5	5.483	33.229	26.216
10	5.405	33.242	26.235
20	5.287	33.254	26.259
30	5.287	33.280	26.279
40	5.258	33.286	26.287
50	4.992	33.269	26.304
75	4.765	33.299	26.353
100	2.718	33.341	26.585
125	2.268	33.393	26.664
150	2.248	33.432	26.696
200	2.156	33.486	26.747
250	2.023	33.524	26.787
300	2.100	33.594	26.838
400	2.675	33.751	26.916
500	3.049	33.880	26.987
600	3.096	33.995	27.074
700	3.200	34.130	27.172
800	3.150	34.247	27.270
900	3.059	34.326	27.342
1000	2.888	34.384	27.404

Station	OS08229
Longitude	41-30.0N
Latitude	143-00.0E
Depth(m)	1152

Press.	Temp.	Sal.	SIG-T
5	6.341	-	-
10	6.174	-	-
20	6.004	-	-
30	5.943	-	-
40	5.963	-	-
50	5.888	-	-
75	5.669	-	-
100	5.050	-	-
125	4.430	-	-
150	3.828	-	-
200	2.739	-	-
250	2.238	-	-
300	2.300	-	-
400	2.711	-	-
500	2.920	-	-
600	3.172	-	-
700	3.310	-	-

Station	OS08230
Longitude	41-30.0N
Latitude	142-40.0E
Depth(m)	1204

Press.	Temp.	Sal.	SIG-T
5	12.041	-	-
10	11.901	-	-
20	11.727	-	-
30	11.368	-	-
40	11.286	-	-
50	11.178	-	-
75	10.690	-	-
100	9.996	-	-
125	9.480	-	-
150	6.442	-	-
200	4.569	-	-
250	3.081	-	-
300	2.713	-	-
400	2.923	-	-
500	3.051	-	-
600	3.239	-	-
700	3.274	-	-

Station	OS08231
Longitude	41-30.0N
Latitude	142-20.0E
Depth(m)	1234

Press.	Temp.	Sal.	SIG-T
5	12.875	33.785	25.477
10	12.876	33.818	25.502
20	12.134	33.807	25.638
30	10.639	33.791	25.898
40	10.709	33.980	26.033
50	10.573	34.037	26.102
75	10.573	34.061	26.120
100	9.961	33.974	26.158
125	9.163	33.909	26.238
150	5.465	33.464	26.404
200	4.904	33.601	26.577
250	3.489	33.563	26.693
300	2.832	33.593	26.777
400	2.876	33.776	26.919
500	3.085	33.945	27.035
600	3.279	34.118	27.155
700	3.276	34.210	27.229
800	3.125	34.297	27.313
900	2.974	34.386	27.397
1000	2.782	34.425	27.446

Station	OS08232
Longitude	41-30.0N
Latitude	142-00.0E
Depth(m)	1094

Press.	Temp.	Sal.	SIG-T
5	13.390	-	-
10	13.410	-	-
20	13.382	-	-
30	13.228	-	-
40	12.675	-	-
50	12.269	-	-
75	11.109	-	-
100	10.687	-	-
125	9.650	-	-
150	8.686	-	-
200	5.587	-	-
250	3.023	-	-
300	2.610	-	-
400	2.869	-	-
500	3.227	-	-
600	3.323	-	-
700	3.310	-	-

PART II

USHIO MARU CRUISES

FROM JANUARY TO DECEMBER 2008

I. Crew List

Captain:		Hidekazu Yamaguchi
Crew:	Chief Officer	Osamu Kimura
	Second Officer	Naoto Kobayashi
	Chief Engineer	Hideo Ito
	First Engineer	Senetsu Nakai
	Second Engineer	Kenichi Shindo
	Chief Radio Officer	Yoshiki Suzuki
	Boatswain	Noriyasu Takahashi (Cruise 139 - 145) Yoshitaka Yoshida (Cruise 146 -)
	Jr. Boatswain	Yoshitaka Yoshida (Cruise 139 - 145) Yukio Tabata (Cruise 146 -)
	Quartermaster	Yutaka Takeda
	Sailor	Daisuke Sasaki
	No.1 Oiler	Syuichi Hasegawa (Cruise 139 - 145) Nobuyuki Sawada (Cruise 146 -)
	No.2 Oiler	Nobuyuki Sawada (Cruise 139 - 145) Konichi Tomosugi (Cruise 146 -)
	Oiler	Konichi Tomosugi (Cruise 139 - 145) Akira Sugihara (Cruise 146 -)
	Chief Steward	Tsutomu Takahashi
	Head Steward	Hajime Morihiro

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

1

THE “USHIO MARU”

CRUISE 139
CRUISE 140
CRUISE 141

IN JANUARY-FEBRUARY 2008

1. Cruise Itinerary

Cruise 139			
Departure from Hakodate	Jan.	9	, 2008
Return to Hakodate		10	
Total coverage 6.3 miles			
Cruise 140			
Departure from Hakodate	Jan.	21	, 2008
Arrival at and departure from Usujiri		21	
Start hydrographic research (US08001) and larvae net sampling		21	
Sampling by Frame Trawl net		21	
Arrival at Usujiri		22	
Departure from Usujiri		23	
Finish hydrographic research (US08013) and larvae net sampling		23	
Departure from Usujiri		26	
Return to Hakodate		26	
Total coverage 255.9 miles			
Cruise 141			
Departure from Hakodate	Feb.	4	, 2008
Start hydrographic research (US08014) and larvae net sampling		4	
Finish hydrographic research (US08028) and larvae net sampling		5	
Return to Hakodate		6	
Total coverage 197.7 miles			

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 139

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
Graduate Students:	Laboratory of Marine Bioresource Science :		1 person
Under Graduate Students:	Department of Marine Biological Science :		3 persons

Cruise 140

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
Graduate Students :	Laboratory of Marine Bioresource Science :		2 persons
	Laboratory of Marine Bioresource and Environment Sensing :		1 person
Under Graduate Students :	Department of Marine Biological Science :		3 persons
	Department of Marine Production System Science :		3 persons

Cruise 141

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
Graduate Students :	Laboratory of Marine Bioresource Science :		1 person
Under Graduate Students :	Department of Marine Biological Science :		3 persons

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

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

Figure 1: Oceanographic stations (Cruise 140)

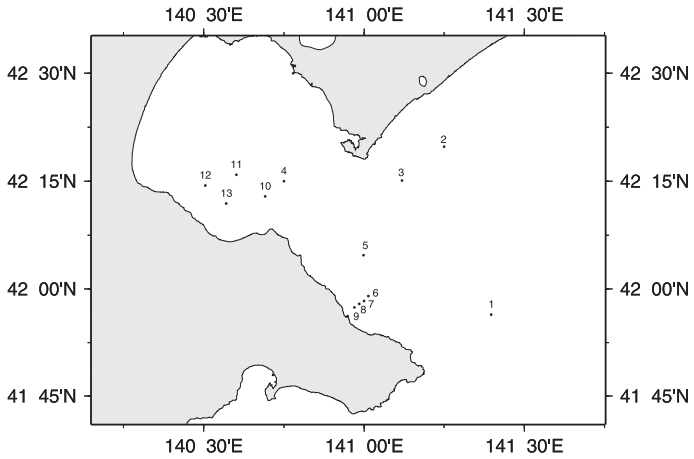

Figure 2: Oceanographic stations (Cruise 141)

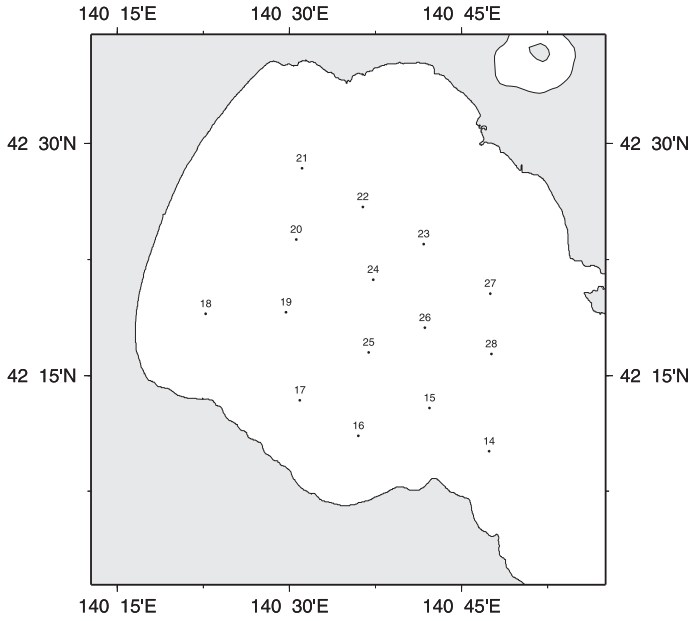

Table 1: List of oceanographic stations

Cruise 139 No Data

Cruise 140

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08001	41-56.4	141-23.8	1/21	1755-1803	355	NW-2	NW -1	NW -4	-2.2	8.0	s	1023.7
US08002	42-19.8	141-15.0	1/21	2315-2320	97	North-1	NW -2	North-3	-3.8	7.5	o	1023.8
US08003	42-15.1	141-07.1	1/22	0039-0043	83	NW -2	NW -1	NW -4	-2.9	7.4	s	1024.0
US08004	42-15.0	140-45.0	1/22	0245-0249	78	WNW-2	WNW-1	WNW-4	-2.4	7.0	c	1024.0
US08005	42-04.7	140-59.9	1/22	0445-0450	82	West-1	NNW-1	West-3	-2.6	7.9	c	1024.2
US08006	41-59.0	141-00.8	1/22	0547-0552	95	West-1	NW -1	West-3	-2.1	7.9	s	1024.1
US08007	41-58.3	141-00.0	1/22	0604-0609	90	WNW-1	NW -1	WNW-3	-2.6	7.7	s	1024.1
US08008	41-57.9	140-59.1	1/22	0620-0625	85	NW -1	NW -1	NW -3	-2.5	7.7	c	1024.1
US08009	41-57.4	140-58.2	1/22	0635-0640	79	West-1	NW -1	West-3	-2.4	7.9	s	1024.1
US08010	42-12.9	140-41.5	1/23	1314-1320	91	Calm	ESE-1	Calm	0.7	6.4	c	1019.2
US08011	42-15.9	140-36.1	1/23	1421-1427	92	Calm	ESE-1	Calm	-0.1	5.2	o	1018.5
US08012	42-14.4	140-30.3	1/23	1529-1534	81	Calm	ESE-1	Calm	0.0	5.2	c	1018.0
US08013	42-11.9	140-34.2	1/23	1625-1629	83	Calm	ESE-1	Calm	-0.1	5.1	c	1017.1

Cruise 141

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08014	42-10.1	140-47.4	2/4	1426-1430	95	NW -1	ESE-1	NW -2	-0.8	4.5	bc	1013.9
US08015	42-12.9	140-42.2	2/4	1512-1517	91	WNW-2	ESE-1	WNW-3	-0.7	5.1	s	1014.2
US08016	42-11.1	140-36.0	2/4	1611-1615	82	NW -2	ESE-1	NW -4	-0.6	4.9	bc	1014.6
US08017	42-13.4	140-30.9	2/4	1710-1714	81	WNW-3	ESE-1	WNW-5	-0.8	4.8	c	1014.8
US08018	42-19.0	140-22.7	2/5	0717-0721	53	WSW-1	ESE-1	WSW-3	-2.7	4.8	s	1014.1
US08019	42-19.1	140-29.7	2/5	0822-0826	92	WSW-2	East-1	WSW-4	-2.1	5.1	o	1014.1
US08020	42-23.8	140-30.6	2/5	0919-0923	76	West-1	ESE-1	West-3	-2.0	5.2	bc	1014.1
US08021	42-28.4	140-31.1	2/5	1002-1006	78	West-1	ESE-1	West-2	-1.3	5.3	bc	1014.2
US08022	42-25.9	140-36.4	2/5	1042-1046	86	West-1	ESE-1	West-2	0.0	5.1	bc	1014.3
US08023	42-23.5	140-41.7	2/5	1123-1126	68	West-2	ESE-1	West-3	0.2	4.9	bc	1014.1
US08024	42-21.2	140-37.3	2/5	1200-1204	86	WNW-3	West-1	WNW-5	-0.7	5.5	s	1013.6
US08025	42-16.5	140-36.9	2/5	1251-1254	91	West-3	West-1	West-5	-0.3	5.0	bc	1013.4
US08026	42-18.1	140-41.8	2/5	1339-1342	67	West-3	West-1	West-5	-0.1	4.7	bc	1013.0
US08027	42-20.3	140-47.5	2/5	1425-1427	58	West-3	West-1	West-5	0.2	4.1	bc	1013.1
US08028	42-16.4	140-47.6	2/5	1500-1503	70	West-3	West-1	West-6	-0.1	4.5	bc	1013.0

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08001
LATITUDE 41-56.4 N
LONGITUDE 141-23.8 E
DEPTH (m) 355

Press.	Temp.	Salinity	Sigma-T
5	8.325	33.883	26.348
10	8.317	33.884	26.350
20	8.332	33.890	26.353
30	8.330	33.894	26.356
40	8.330	33.898	26.359
50	8.330	33.900	26.361
75	8.335	33.909	26.367
100	8.316	33.905	26.366
125	8.277	33.902	26.370

STATION US08002
LATITUDE 42-19.8 N
LONGITUDE 141-15.0 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	7.652	33.899	26.460
10	7.649	33.899	26.460
20	7.721	33.915	26.463
30	7.734	33.916	26.462
40	7.736	33.914	26.460
50	7.735	33.912	26.458
75	7.712	33.914	26.463

STATION US08003
LATITUDE 42-15.1 N
LONGITUDE 141-07.1 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	7.865	33.917	26.443
10	7.877	33.918	26.442
20	7.882	33.916	26.440
30	7.874	33.913	26.438
40	7.904	33.935	26.452
50	7.842	33.933	26.459
75	7.798	33.934	26.466

STATION US08004
LATITUDE 42-15.0 N
LONGITUDE 140-45.0 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	7.432	33.946	26.528
10	7.440	33.945	26.526
20	7.440	33.940	26.523
30	7.420	33.937	26.523
40	5.961	33.894	26.684
50	5.896	33.917	26.710

STATION US08005
LATITUDE 42-04.7 N
LONGITUDE 140-59.9 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	8.320	33.927	26.383
10	8.307	33.926	26.385
20	8.319	33.923	26.380
30	8.326	33.924	26.380
40	8.328	33.924	26.380

STATION US08006
LATITUDE 41-59.0 N
LONGITUDE 141-00.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	8.194	33.948	26.419
10	8.192	33.946	26.418
20	8.193	33.947	26.418
30	8.152	33.938	26.417
40	7.879	33.918	26.442
50	7.798	33.910	26.447
75	7.680	33.893	26.452

STATION US08007
LATITUDE 41-58.3 N
LONGITUDE 141-00.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	8.153	33.949	26.426
10	8.155	33.950	26.427
20	8.153	33.950	26.426
30	8.150	33.948	26.425
40	7.813	33.901	26.438
50	7.762	33.904	26.448
75	7.528	33.874	26.458

STATION US08008
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	8.277	33.940	26.400
10	8.209	33.940	26.410
20	8.117	33.942	26.426
30	8.070	33.937	26.428
40	7.678	33.859	26.425
50	7.596	33.880	26.454
75	6.001	33.875	26.663

STATION US08009
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	8.308	33.941	26.396
10	8.253	33.923	26.390
20	8.034	33.942	26.438
30	7.901	33.941	26.457
40	7.685	33.933	26.482
50	7.483	33.914	26.496
75	6.172	33.883	26.648

STATION US08010
LATITUDE 42-12.9 N
LONGITUDE 140-41.5 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	6.232	33.932	26.679
10	6.021	33.908	26.687
20	5.800	33.901	26.709
30	5.751	33.902	26.716
40	5.694	33.896	26.718
50	5.693	33.897	26.719
75	5.583	33.887	26.725

STATION US08011
LATITUDE 42-15.9 N
LONGITUDE 140-36.1 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	5.642	33.869	26.703
10	5.650	33.909	26.734
20	5.650	33.908	26.733
30	5.650	33.909	26.734
40	5.652	33.910	26.735
50	5.649	33.910	26.735
75	5.648	33.911	26.736

STATION US08012
LATITUDE 42-14.4 N
LONGITUDE 140-30.3 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	5.672	33.899	26.723
10	5.682	33.911	26.731
20	5.677	33.909	26.731
30	5.671	33.909	26.731
40	5.661	33.908	26.732
50	5.662	33.908	26.731
75	5.623	33.911	26.738

STATION US08013
LATITUDE 42-11.9 N
LONGITUDE 140-34.2 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	5.495	33.821	26.683
10	5.534	33.896	26.738
20	5.521	33.895	26.738
30	5.510	33.895	26.739
40	5.510	33.895	26.739
50	5.505	33.895	26.740
75	5.480	33.896	26.744

STATION US08014
LATITUDE 42-10.1 N
LONGITUDE 140-47.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	5.128	33.721	26.647
10	5.211	33.886	26.767
20	5.198	33.890	26.773
30	5.169	33.890	26.776
40	5.141	33.889	26.778
50	5.116	33.889	26.781
75	4.875	33.870	26.794

STATION US08015
LATITUDE 42-12.9 N
LONGITUDE 140-42.2 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	5.212	33.796	26.697
10	5.192	33.846	26.738
20	5.185	33.897	26.780
30	5.163	33.895	26.781
40	4.705	33.842	26.790
50	4.382	33.816	26.805
75	4.739	33.898	26.831

STATION	US08016	
LATITUDE	42-11.1	N
LONGITUDE	140-36.0	E
DEPTH (m)	82	

Press.	Temp.	Salinity	Sigma-T
5	4.749	33.666	26.646
10	4.767	33.745	26.707
20	4.780	33.893	26.823
30	4.777	33.895	26.824
40	4.771	33.894	26.824
50	4.767	33.894	26.824
75	4.759	33.894	26.825

STATION	US08017	
LATITUDE	42-13.4	N
LONGITUDE	140-30.9	E
DEPTH (m)	81	

Press.	Temp.	Salinity	Sigma-T
5	4.699	33.787	26.747
10	4.754	33.891	26.823
20	4.762	33.896	26.827
30	4.762	33.895	26.826
40	4.752	33.894	26.826
50	4.744	33.894	26.827
75	4.730	33.893	26.828

STATION	US08018	
LATITUDE	42-19.0	N
LONGITUDE	140-22.7	E
DEPTH (m)	53	

Press.	Temp.	Salinity	Sigma-T
5	4.599	33.762	26.739
10	4.678	33.898	26.837
20	4.677	33.895	26.835
30	4.685	33.894	26.833
40	4.687	33.895	26.834
50	4.688	33.894	26.833

STATION	US08019	
LATITUDE	42-19.1	N
LONGITUDE	140-29.7	E
DEPTH (m)	92	

Press.	Temp.	Salinity	Sigma-T
5	5.015	33.881	26.786
10	5.054	33.915	26.809
20	5.061	33.913	26.807
30	5.058	33.913	26.807
40	5.061	33.913	26.806
50	5.043	33.909	26.806
75	5.008	33.909	26.809

STATION	US08020	
LATITUDE	42-23.8	N
LONGITUDE	140-30.6	E
DEPTH (m)	76	

Press.	Temp.	Salinity	Sigma-T
5	5.073	33.756	26.681
10	5.106	33.837	26.741
20	5.127	33.912	26.798
30	5.107	33.911	26.800
40	5.064	33.907	26.802
50	5.033	33.903	26.802
75	4.852	33.886	26.809

STATION	US08021	
LATITUDE	42-28.4	N
LONGITUDE	140-31.1	E
DEPTH (m)	78	

Press.	Temp.	Salinity	Sigma-T
5	5.184	33.844	26.738
10	5.203	33.890	26.772
20	5.212	33.910	26.787
30	5.210	33.910	26.787
40	5.210	33.910	26.787
50	5.210	33.910	26.787
75	5.101	33.913	26.802

STATION	US08022	
LATITUDE	42-25.9	N
LONGITUDE	140-36.4	E
DEPTH (m)	86	

Press.	Temp.	Salinity	Sigma-T
5	4.971	33.851	26.768
10	4.986	33.870	26.781
20	4.994	33.904	26.807
30	4.987	33.903	26.807
40	4.978	33.902	26.807
50	4.944	33.900	26.809
75	4.901	33.897	26.812

STATION	US08023	
LATITUDE	42-23.5	N
LONGITUDE	140-41.7	E
DEPTH (m)	68	

Press.	Temp.	Salinity	Sigma-T
5	4.732	33.576	26.576
10	5.152	33.663	26.598
20	5.512	33.897	26.741
30	5.506	33.901	26.745
40	5.513	33.911	26.752
50	5.462	33.911	26.758

STATION	US08024	
LATITUDE	42-21.2	N
LONGITUDE	140-37.3	E
DEPTH (m)	86	

Press.	Temp.	Salinity	Sigma-T
5	5.391	33.863	26.728
10	5.408	33.920	26.772
20	5.382	33.915	26.770
30	5.361	33.914	26.772
40	5.346	33.914	26.774
50	5.266	33.912	26.782
75	4.941	33.893	26.804

STATION	US08025	
LATITUDE	42-16.5	N
LONGITUDE	140-36.9	E
DEPTH (m)	91	

Press.	Temp.	Salinity	Sigma-T
5	4.726	33.893	26.829
10	4.727	33.889	26.825
20	4.734	33.885	26.821
30	4.736	33.885	26.821
40	4.734	33.885	26.821
50	4.736	33.884	26.820
75	4.750	33.887	26.821

STATION	US08026	
LATITUDE	42-18.1	N
LONGITUDE	140-41.8	E
DEPTH (m)	67	

Press.	Temp.	Salinity	Sigma-T
5	4.604	33.507	26.536
10	4.818	33.623	26.604
20	5.421	33.921	26.771
30	5.320	33.910	26.774
40	5.235	33.907	26.781
50	5.180	33.907	26.788

STATION	US08027	
LATITUDE	42-20.3	N
LONGITUDE	140-47.5	E
DEPTH (m)	58	

Press.	Temp.	Salinity	Sigma-T
5	3.952	33.279	26.422
10	3.959	33.296	26.435
20	4.567	33.458	26.501
30	4.553	33.451	26.496
40	4.376	33.433	26.501
50	4.377	33.437	26.504

STATION	US08028	
LATITUDE	42-16.4	N
LONGITUDE	140-47.6	E
DEPTH (m)	70	

Press.	Temp.	Salinity	Sigma-T
5	4.418	33.420	26.486
10	4.420	33.427	26.492
20	5.392	33.718	26.613
30	5.471	33.720	26.606
40	5.536	33.730	26.606
50	5.604	33.822	26.671

2

THE “USHIO MARU”

CRUISE 142
CRUISE 143
CRUISE 144

IN FEBRUARY-MARCH 2008

1. Cruise Itinerary

Cruise 142

Departure from Hakodate	Feb.	19	, 2008
Arrival at and departure from Usujiri		19	
Start hydrographic research (US08029) and larvae net sampling		19	
Sampling by Frame trawl net		19	
Arrival at Usujiri		20	
Departure from Usujiri		22	
Retrieval mooring sea temperature meter system		22	
Set Sediment trap system		22	
Arrival at Usujiri		22	
Departure from Usujiri		25	
Research by tawl net		25	
Finish hydrographic research (US08043) and larvae net sampling		25	
Return to Hakodate		26	

Total coverage 325.6 miles

Cruise 143

Departure from Hakodate	Mar.	4	, 2008
Start hydrographic research (US08044) and larvae net sampling		5	
Start trawl net research		5	
Finish hudrographic research (US08058) and larvae net sampling		6	
Finish trawl net research		6	
Return to Hakodate		7	

Total coverage 211.0 miles

Cruise 144

Departure from Hakodate	Mar.	11	, 2008
Start hydrographic research (US08059) and larvae net sampling		11	
Arrival at Fukushima		11	
Departure from Fukushima		12	
Fisnish hydrographic research (US08074) and larvae net sampling		12	
Returen toHakodate		13	

Return to Hakodate 81.4 miles

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 142

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Susumu Shimizu

Graduate Students :	Laboratory of Marine Bioresource Science :	2 persons
	Laboratory of Marine Bioresource and Environment Sensing :	4 persons
	Laboratory of Marine Environmental Science :	1 person
Under Graduate Students :	Department of Marine Biological Science :	3 persons
	Department of Marine Production System Science :	7 persons
	Department of Fisheries Oceanography and Marine Science :	5 persons

Cruise 143

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students :	Laboratory of Marine Bioresource Science :	1 person
Under Graduate Students :	Department of Marine Biological Science :	3 persons
	Department of Marine Biological Science (Third grade) :	3 persons

Cruise 144

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students :	Laboratory of Marine Bioresource Science :	2 persons
Under Graduate Students :	Department of Marine Biological Science (Third grade) :	2 persons

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

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

Figure 1: Oceanographic stations (Cruise 142)

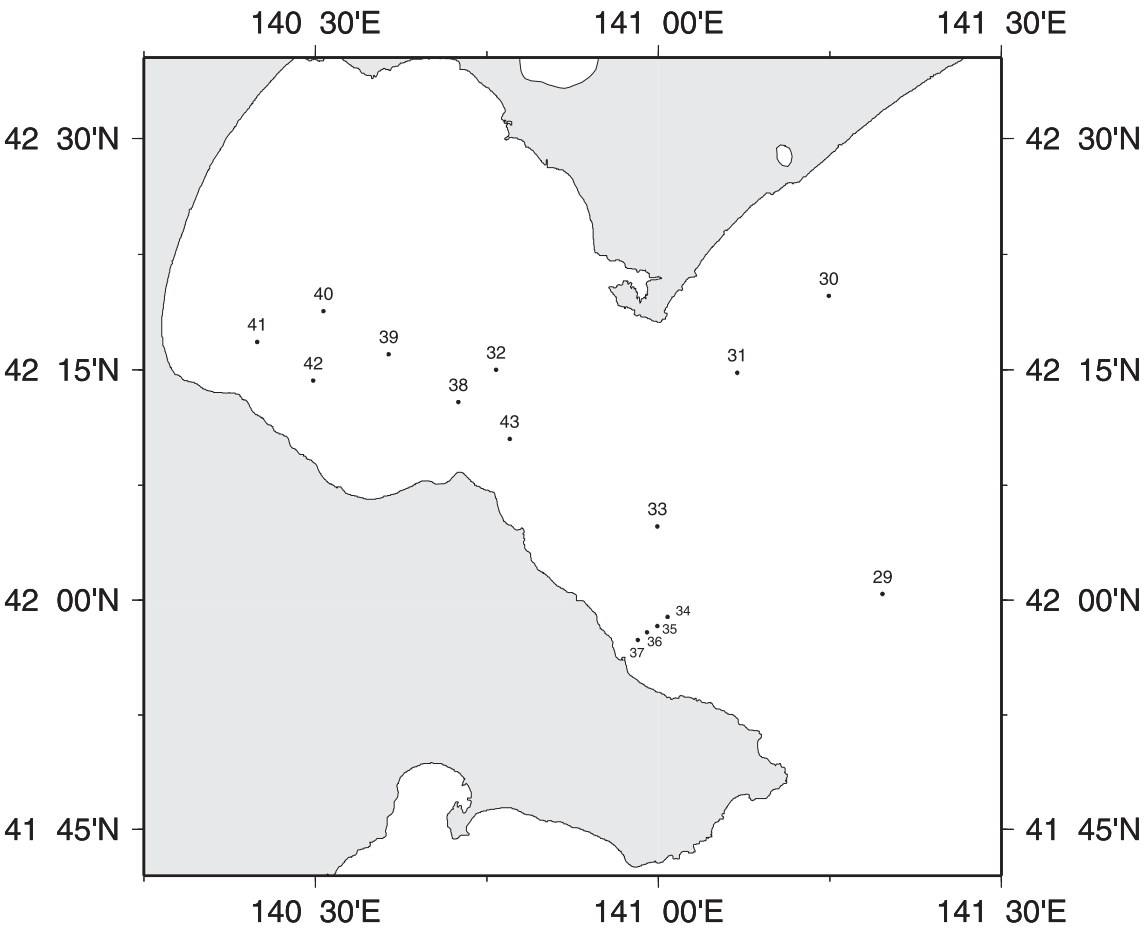

Figure 2: Oceanographic stations (Cruise 143)

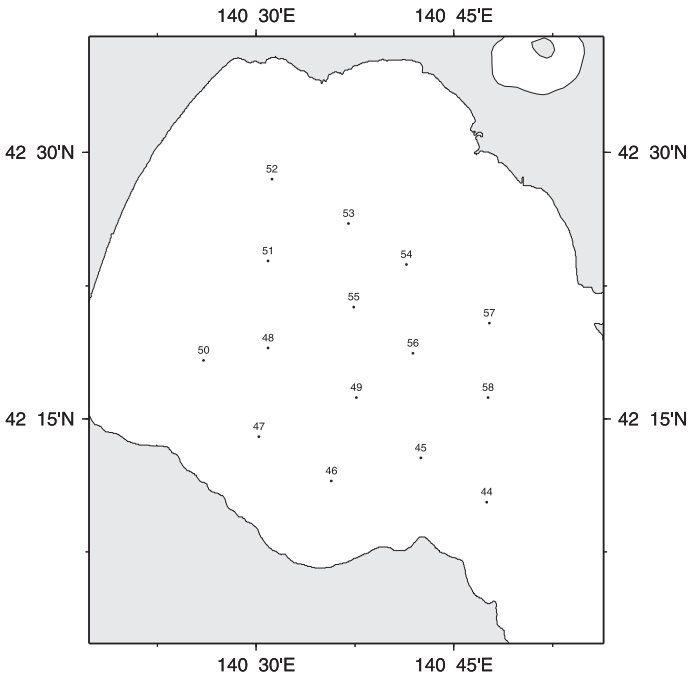

Figure 3: Oceanographic stations (Cruise 144)

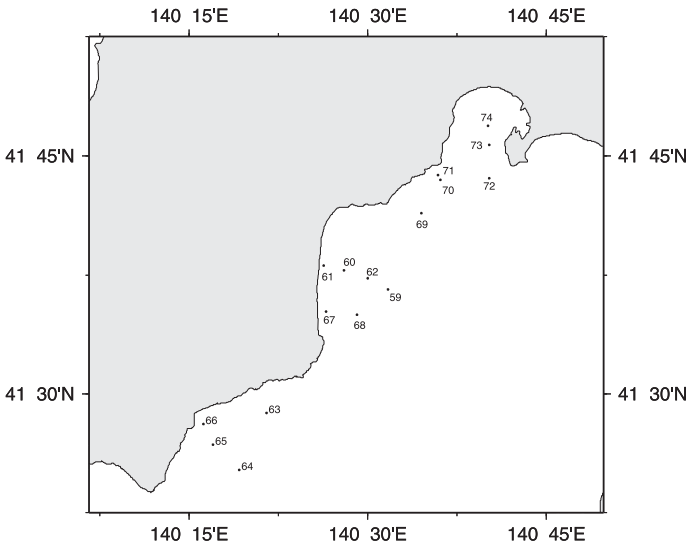

Table 1: List of oceanographic stations

Cruise 142

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08029	42-00.4	141-19.6	2/19	1829-1843	307	SE -1	NNW-1	SE -2	0.0	2.7	bc	1020.1
US08030	42-19.8	141-14.9	2/19	2340-2345	97	West-1	West-1	West-4	1.9	3.2	bc	1017.6
US08031	42-14.8	141-06.9	2/20	0209-0213	86	West-2	West-1	West-4	1.4	3.0	bc	1017.1
US08032	42-15.0	140-45.8	2/20	0410-0414	78	West-1	West-1	West-3	0.8	3.5	bc	1016.5
US08033	42-04.8	140-59.9	2/20	0611-0615	83	West-1	West-1	West-2	1.1	3.2	b	1016.1
US08034	41-58.9	141-00.8	2/20	0650-0655	96	Calm	NW -1	Calm	1.2	2.9	b	1015.6
US08035	41-58.3	140-59.9	2/20	0702-0707	90	South-1	NW -1	South-2	1.0	2.9	b	1015.7
US08036	41-57.9	140-59.0	2/20	0713-0717	86	Calm	NW -1	Calm	1.3	2.8	b	1015.7
US08037	41-57.4	140-58.2	2/20	0722-0727	80	Calm	NW -1	Calm	0.6	2.8	b	1015.8
US08038	42-12.9	140-42.5	2/22	0820-0824	91	ESE-2	East-1	ESE-4	0.1	3.5	s	1018.2
US08039	42-16.0	140-36.4	2/22	0918-0927	91	SE -2	East-1	SE -4	-0.2	3.5	s	1018.0
US08040	42-18.8	140-30.7	2/22	1110-1118	94	SE -2	East-1	SE -4	1.1	3.5	o	1016.0
US08041	42-16.8	140-24.9	2/22	1212-1216	58	SE -2	East-1	SE -4	1.7	3.6	o	1014.4
US08042	42-14.3	140-29.8	2/22	1331-1335	79	SE -3	East-1	SE -5	2.3	3.6	r	1013.1
US08043	42-10.5	140-47.0	2/22	1545-1550	94	Calm	East-1	Calm	3.4	3.6	o	1011.6

Cruise 143

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08044	42-10.3	140-47.5	3/5	1008-1012	93	NE -1	East-1	NE -3	0.9	3.2	c	1017.6
US08045	42-12.8	140-42.5	3/5	1050-1055	92	NE -1	East-1	NE -3	0.8	3.3	c	1017.7
US08046	42-11.5	140-35.7	3/5	1211-1215	84	NE -1	East-1	NE -3	2.2	3.4	c	1017.6
US08047	42-14.0	140-30.2	3/5	1339-1343	80	ENE-1	East-1	ENE-3	1.7	3.3	bc	1017.2
US08048	42-19.0	140-30.9	3/5	1424-1428	95	NE -1	East-1	NE -2	1.3	3.7	bc	1017.1
US08049	42-16.2	140-37.6	3/5	1550-1555	90	SE -1	East-1	SE -2	1.6	3.4	bc	1017.2
US08050	42-18.3	140-26.0	3/6	0600-0604	72	NNW-3	ESE-1	NNW-5	0.3	3.5	c	1019.6
US08051	42-23.9	140-30.9	3/6	0732-0737	96	NNW-2	ESE-1	NNW-4	1.3	3.3	bc	1020.2
US08052	42-28.5	140-31.2	3/6	0822-0827	79	NW -2	ESE-1	NW -4	0.9	3.5	bc	1020.5
US08053	42-26.0	140-37.0	3/6	0907-0911	85	NW -1	ESE-1	NW -3	2.7	3.4	bc	1020.6
US08054	42-23.7	140-41.4	3/6	0945-0949	70	NNW-1	ESE-1	NNW-3	2.7	3.2	bc	1020.6
US08055	42-21.3	140-37.4	3/6	1022-1026	86	NW -1	ESE-1	NW -3	2.5	3.1	bc	1020.6
US08056	42-18.7	140-41.9	3/6	1102-1105	71	NW -1	ESE-1	NW -3	3.2	3.2	c	1020.6
US08057	42-20.4	140-47.7	3/6	1145-1148	58	West-1	ESE-1	West-3	3.8	2.8	bc	1020.5
US08058	42-16.2	140-47.6	3/6	1224-1228	71	West-1	ESE-1	West-3	3.2	2.5	bc	1020.0

Cruise 144

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08059	41-36.6	140-31.7	3/11	1007-1010	42	NW -2	SW -1	NW -4	6.6	7.3	r	1011.1
US08060	41-37.8	140-28.0	3/11	1126-1129	19	WNW-3	SW -1	WNW-5	6.5	6.3	c	1011.1
US08061	41-38.1	140-26.3	3/11	1110-1113	12	WNW-2	SW -1	WNW-5	6.0	6.1	c	1011.1
US08062	41-37.3	140-30.0	3/11	1148-1151	32	WNW-3	SW -1	WNW-5	6.4	7.0	c	1011.5
US08063	41-28.8	140-21.5	3/11	1313-1317	74	WNW-1	SW -1	WNW-3	6.0	7.7	c	1011.7
US08064	41-25.2	140-19.2	3/11	1416-1420	85	NW -3	SW -1	NW -5	6.7	7.7	c	1013.5
US08065	41-26.8	140-17.0	3/11	1451-1455	59	NW -3	SW -1	NW -5	5.7	7.4	c	1014.1
US08066	41-28.1	140-16.2	3/11	1533-1536	23	West-1	SW -1	West-3	6.2	7.7	c	1014.6
US08067	41-35.2	140-26.5	3/12	0734-0738	13	WNW-1	SSE-1	WNW-2	2.5	5.7	bc	1029.6
US08068	41-35.0	140-29.1	3/12	0801-0804	32	West-1	SSE-1	West-2	3.7	7.7	bc	1029.6
US08069	41-41.4	140-34.5	3/12	0924-0927	43	Calm	SE -1	Calm	4.7	7.2	bc	1030.1
US08070	41-43.5	140-36.1	3/12	1005-1008	30	NNE-1	SE -1	NNE-3	5.1	6.6	bc	1030.1
US08071	41-43.8	140-35.9	3/12	1020-1023	17	NNE-1	SE -1	NNE-3	5.6	6.6	bc	1030.1
US08072	41-43.6	140-40.2	3/12	1053-1057	67	East-1	SW -1	East-2	5.1	7.4	bc	1030.2
US08073	41-45.7	140-40.2	3/12	1132-1135	33	SE -1	SW -1	SE -3	5.1	6.9	bc	1030.5
US08074	41-46.9	140-40.1	3/12	1155-1158	21	SSE-2	SW -1	SSE-3	4.7	6.6	bc	1030.5

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08029
LATITUDE 42-00.4 N
LONGITUDE 141-19.6 E
DEPTH (m) 307

Press.	Temp.	Salinity	Sigma-T
5	3.033	33.174	26.425
10	3.008	33.173	26.426
20	2.930	33.184	26.442
30	2.977	33.193	26.444
40	2.996	33.190	26.441
50	3.074	33.205	26.446
75	4.229	33.389	26.482
100	4.643	33.450	26.486
125	4.906	33.522	26.514
150	5.913	33.692	26.530
175	4.158	33.463	26.548
200	3.980	33.619	26.690
250	3.940	33.739	26.789

STATION US08030
LATITUDE 42-19.8 N
LONGITUDE 141-14.9 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	3.693	33.311	26.473
10	3.699	33.310	26.471
20	3.709	33.308	26.469
30	4.476	33.445	26.500
40	3.812	33.340	26.484
50	3.810	33.337	26.482
75	4.396	33.466	26.525

STATION US08031
LATITUDE 42-14.8 N
LONGITUDE 141-06.9 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.371	33.371	26.551
10	3.366	33.372	26.552
20	3.373	33.367	26.548
30	3.381	33.378	26.556
40	3.589	33.426	26.574
50	3.803	33.499	26.612
75	3.926	33.534	26.627

STATION US08032
LATITUDE 42-15.0 N
LONGITUDE 140-45.8 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	4.082	33.444	26.540
10	4.039	33.449	26.548
20	3.668	33.484	26.613
30	3.645	33.504	26.631
40	3.577	33.559	26.681
50	3.968	33.657	26.721

STATION US08033
LATITUDE 42-04.8 N
LONGITUDE 140-59.9 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	3.700	33.311	26.473
10	3.702	33.311	26.472
20	3.743	33.317	26.472
30	3.780	33.326	26.476
40	3.742	33.348	26.498
50	3.742	33.385	26.527
75	4.031	33.700	26.749

STATION US08034
LATITUDE 41-58.9 N
LONGITUDE 141-00.8 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.416	33.266	26.463
10	3.429	33.272	26.467
20	3.520	33.288	26.471
30	3.528	33.282	26.465
40	3.655	33.303	26.470
50	3.729	33.335	26.489
75	3.985	33.658	26.720

STATION US08035
LATITUDE 41-58.3 N
LONGITUDE 140-59.9 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	3.346	33.254	26.460
10	3.344	33.251	26.458
20	3.469	33.291	26.479
30	3.770	33.371	26.513
40	3.833	33.427	26.552
50	3.821	33.412	26.540
75	3.976	33.685	26.743

STATION US08036
LATITUDE 41-57.9 N
LONGITUDE 140-59.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.299	33.272	26.479
10	3.295	33.274	26.481
20	3.888	33.417	26.538
30	4.070	33.461	26.555
40	3.987	33.446	26.551
50	3.801	33.455	26.577
75	3.900	33.677	26.744

STATION US08037
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	3.455	33.324	26.506
10	3.520	33.349	26.520
20	3.688	33.381	26.529
30	3.422	33.410	26.578
40	3.673	33.479	26.609
50	3.656	33.466	26.600
75	3.936	33.683	26.745

STATION US08038
LATITUDE 42-12.9 N
LONGITUDE 140-42.5 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	3.534	33.563	26.689
10	3.515	33.557	26.686
20	3.521	33.561	26.689
30	3.626	33.590	26.701
40	3.785	33.627	26.715
50	4.187	33.743	26.767
75	4.608	33.895	26.843

STATION US08039
LATITUDE 42-16.0 N
LONGITUDE 140-36.4 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	3.504	33.482	26.627
10	3.510	33.483	26.627
20	3.530	33.487	26.628
30	3.629	33.527	26.651
40	4.062	33.692	26.740
50	4.111	33.709	26.748
75	4.783	33.864	26.799

STATION US08040
LATITUDE 42-18.8 N
LONGITUDE 140-30.7 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	3.415	33.513	26.660
10	3.426	33.518	26.663
20	3.540	33.574	26.697
30	3.624	33.606	26.714
40	3.689	33.619	26.719
50	3.712	33.625	26.721
75	4.446	33.808	26.791

STATION US08041
LATITUDE 42-16.8 N
LONGITUDE 140-24.9 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	3.488	33.556	26.688
10	3.481	33.562	26.693
20	3.484	33.564	26.694
30	3.583	33.593	26.708
40	4.793	33.895	26.822
50	4.855	33.890	26.811

STATION US08042
LATITUDE 42-14.3 N
LONGITUDE 140-29.8 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	3.532	33.569	26.694
10	3.613	33.595	26.707
20	3.670	33.608	26.711
30	3.676	33.609	26.712
40	3.665	33.610	26.714
50	4.263	33.768	26.779
75	4.603	33.860	26.816

STATION US08043
LATITUDE 42-10.5 N
LONGITUDE 140-47.0 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	3.543	33.528	26.661
10	3.553	33.532	26.662
20	3.557	33.555	26.680
30	3.532	33.554	26.682
40	3.552	33.559	26.684
50	3.584	33.566	26.686
75	4.057	33.583	26.653

STATION US08044
LATITUDE 42-10.3 N
LONGITUDE 140-47.5 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	3.147	33.426	26.615
10	3.099	33.412	26.608
20	3.107	33.440	26.630
30	3.159	33.474	26.653
40	3.379	33.545	26.689
50	3.416	33.567	26.703
75	4.244	33.708	26.733

STATION US08045
LATITUDE 42-12.8 N
LONGITUDE 140-42.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	3.213	33.430	26.613
10	3.191	33.488	26.661
20	3.200	33.492	26.663
30	3.251	33.510	26.673
40	3.273	33.520	26.679
50	3.466	33.575	26.705
75	4.455	33.810	26.792

STATION US08046
LATITUDE 42-11.5 N
LONGITUDE 140-35.7 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	3.293	33.488	26.652
10	3.300	33.518	26.675
20	3.297	33.538	26.691
30	3.303	33.542	26.693
40	3.372	33.557	26.700
50	3.443	33.577	26.708
75	4.404	33.769	26.765

STATION US08047
LATITUDE 42-14.0 N
LONGITUDE 140-30.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	3.296	33.407	26.587
10	3.132	33.418	26.610
20	3.558	33.573	26.694
30	3.696	33.615	26.715
40	3.812	33.645	26.727
50	3.909	33.666	26.734
75	4.424	33.801	26.788

STATION US08048
LATITUDE 42-19.0 N
LONGITUDE 140-30.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	3.315	33.398	26.578
10	3.243	33.439	26.618
20	3.229	33.460	26.635
30	3.272	33.477	26.645
40	3.272	33.492	26.657
50	3.408	33.534	26.678
75	4.296	33.777	26.783

STATION US08049
LATITUDE 42-16.2 N
LONGITUDE 140-37.6 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	3.131	33.342	26.550
10	3.026	33.359	26.573
20	3.016	33.373	26.585
30	3.303	33.484	26.648
40	3.330	33.503	26.660
50	3.439	33.533	26.674
75	4.668	33.881	26.826

STATION US08050
LATITUDE 42-18.3 N
LONGITUDE 140-26.0 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	3.391	33.557	26.698
10	3.266	33.551	26.705
20	3.311	33.576	26.720
30	3.407	33.593	26.725
40	3.186	33.569	26.726
50	3.206	33.590	26.741

STATION US08051
LATITUDE 42-23.9 N
LONGITUDE 140-30.9 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.222	33.423	26.606
10	3.225	33.426	26.609
20	3.237	33.433	26.613
30	3.367	33.542	26.688
40	3.430	33.578	26.710
50	3.473	33.600	26.724
75	4.114	33.747	26.778

STATION US08052
LATITUDE 42-28.5 N
LONGITUDE 140-31.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	3.376	33.443	26.608
10	3.374	33.442	26.608
20	3.313	33.471	26.636
30	3.361	33.508	26.662
40	3.559	33.573	26.694
50	4.172	33.734	26.762
75	4.581	33.871	26.827

STATION US08053
LATITUDE 42-26.0 N
LONGITUDE 140-37.0 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	3.288	33.446	26.619
10	3.260	33.444	26.620
20	3.275	33.452	26.625
30	3.294	33.480	26.645
40	3.282	33.485	26.650
50	3.329	33.499	26.657
75	3.747	33.587	26.687

STATION US08054
LATITUDE 42-23.7 N
LONGITUDE 140-41.4 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	2.992	33.290	26.521
10	2.950	33.289	26.524
20	3.063	33.314	26.534
30	3.184	33.340	26.544
40	3.230	33.350	26.547
50	3.197	33.376	26.571

STATION US08055
LATITUDE 42-21.3 N
LONGITUDE 140-37.4 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.020	33.264	26.498
10	3.018	33.315	26.539
20	2.983	33.318	26.544
30	3.090	33.391	26.593
40	3.339	33.502	26.658
50	3.476	33.543	26.678
75	3.893	33.647	26.721

STATION US08056
LATITUDE 42-18.7 N
LONGITUDE 140-41.9 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	3.095	33.207	26.446
10	3.067	33.293	26.517
20	3.107	33.329	26.542
30	3.156	33.354	26.557
40	3.222	33.400	26.588
50	3.391	33.488	26.642

STATION US08057
LATITUDE 42-20.4 N
LONGITUDE 140-47.7 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	2.717	33.204	26.476
10	2.997	33.271	26.505
20	2.920	33.281	26.520
30	2.935	33.290	26.526
40	2.950	33.315	26.544
50	3.059	33.350	26.563

STATION US08058
LATITUDE 42-16.2 N
LONGITUDE 140-47.6 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	2.393	33.079	26.402
10	2.332	33.080	26.408
20	2.857	33.207	26.467
30	2.991	33.255	26.493
40	2.932	33.260	26.502
50	2.924	33.264	26.506

STATION US08059
LATITUDE 41-36.6 N
LONGITUDE 140-31.7 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	7.976	34.070	26.547
10	7.982	34.078	26.552
20	7.744	34.031	26.551
30	7.540	34.054	26.598

STATION US08060
LATITUDE 41-37.8 N
LONGITUDE 140-28.0 E
DEPTH (m) 19

Press.	Temp.	Salinity	Sigma-T
5	7.403	34.108	26.660
10	7.480	34.037	26.593

STATION US08061
LATITUDE 41-38.1 N
LONGITUDE 140-26.3 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	6.367	33.846	26.594

STATION US08062
LATITUDE 41-37.3 N
LONGITUDE 140-30.0 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	7.654	33.974	26.519
10	7.769	34.059	26.569
20	7.858	34.087	26.578

STATION US08063
LATITUDE 41-28.8 N
LONGITUDE 140-21.5 E
DEPTH (m) 74

Press.	Temp.	Salinity	Sigma-T
5	8.108	34.061	26.521
10	8.094	34.083	26.540
20	8.074	34.091	26.549
30	8.058	34.092	26.552
40	8.045	34.093	26.555
50	8.047	34.095	26.556

STATION US08064
LATITUDE 41-25.2 N
LONGITUDE 140-19.2 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	8.123	34.146	26.585
10	8.126	34.145	26.584
20	8.129	34.143	26.581
30	8.115	34.145	26.585
40	8.119	34.145	26.585
50	8.121	34.141	26.581
75	8.100	34.143	26.586

STATION US08065
LATITUDE 41-26.8 N
LONGITUDE 140-17.0 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	8.118	34.129	26.572
10	8.060	34.129	26.581
20	7.939	34.133	26.602
30	7.867	34.136	26.615
40	7.835	34.142	26.624
50	7.825	34.141	26.625

STATION US08066
LATITUDE 41-28.1 N
LONGITUDE 140-16.2 E
DEPTH (m) 23

Press.	Temp.	Salinity	Sigma-T
5	8.177	34.029	26.485
10	8.167	34.108	26.549

STATION US08067
LATITUDE 41-35.2 N
LONGITUDE 140-26.5 E
DEPTH (m) 13

Press.	Temp.	Salinity	Sigma-T
5	7.585	33.967	26.523

STATION US08068
LATITUDE 41-35.0 N
LONGITUDE 140-29.1 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	8.159	34.106	26.548
10	8.159	34.108	26.550
20	8.160	34.108	26.549

STATION US08069
LATITUDE 41-41.4 N
LONGITUDE 140-34.5 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	7.408	33.954	26.538
10	7.470	33.997	26.563
20	7.558	34.062	26.602
30	7.487	34.054	26.606

STATION US08070
LATITUDE 41-43.5 N
LONGITUDE 140-36.1 E
DEPTH (m) 30

Press.	Temp.	Salinity	Sigma-T
5	7.449	33.826	26.431
10	7.640	34.038	26.571
20	7.725	34.077	26.589

STATION US08071
LATITUDE 41-43.8 N
LONGITUDE 140-35.9 E
DEPTH (m) 17

Press.	Temp.	Salinity	Sigma-T
5	7.242	33.640	26.314
10	7.542	34.013	26.565

STATION US08072
LATITUDE 41-43.6 N
LONGITUDE 140-40.2 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	7.924	34.083	26.565
10	7.921	34.096	26.575
20	7.950	34.115	26.586
30	7.961	34.119	26.588
40	7.926	34.113	26.588
50	7.901	34.110	26.590

STATION US08073
LATITUDE 41-45.7 N
LONGITUDE 140-40.2 E
DEPTH (m) 33

Press.	Temp.	Salinity	Sigma-T
5	7.359	33.974	26.561
10	7.652	34.060	26.587
20	7.636	34.056	26.586

STATION US08074
LATITUDE 41-46.9 N
LONGITUDE 140-40.1 E
DEPTH (m) 21

Press.	Temp.	Salinity	Sigma-T
5	7.158	33.690	26.366
10	7.438	34.016	26.582

3

THE “USHIO MARU”

CRUISE 145
CRUISE 146
CRUISE 147

IN MARCH-MAY 2008

1. Cruise Itinerary

Cruise 145

Departure from Hakodate	Mar.	17	, 2008
Arrival at and departure from Usujiri		17	
Start hydrographic research (US08075) and larvae net sampling		17	
Arrival at Usujiri		18	
Departure from Usujiri		19	
Finish hydrographic research (US08094) and larvae net sampling		19	
Arrival at Usujiri		19	
Departure from Usujiri		20	
Return to Hakodate		20	

Total coverage 300.4 miles

Cruise 146

Departure from Hakodate	Apr.	14	, 2008
Arrival at Usujiri		14	
Departure from Usujiri		15	
Start hydrographic research (US08095) and larvae net sampling		15	
Retrieval Sediment trap system		15	
Arrival at and departure from Mori		15	
Set Sediment trap system		16	
Arrival at Usujiri		16	
Departure from Usujiri		17	
Sampling by frame trawl net		17	
Arrival at Usujiri		17	
Departure from Usujiri		19	
Arrival at Muroran		19	
Departure from Muroran		20	
Arrival at and departure from Muroran		21	
Arrival at Usujiri		21	
Departure from Usujiri		22	
Start frame trawl net samling		22	
Finish frame trawl net sampling		23	
Finish hydrographic research (US08131) and larvae net sampling		23	
Return to Hakodate		24	

Total coverage 651.2 miles

Cruise 147

Departure from Hakodate	May	7	, 2008
Arrival at Muroran		7	
Departure from Muroran		8	
Start hydrographic research (US08132) and larvae net sampling		8	
Arrival at Muroran		8	
Departure from Muroran		9	
Arrival at Usujiri		9	
Departure from Usujiri		10	
Sampling by bottom long line		10	
Arrival at Usujiri		10	
Departure from Usujiri		11	
Sampling by frame trawl net		11	
Arrival at Usujiri		12	
Departure from Usujiri		13	
Start trawl net research		13	
Arrival at Muroran		13	
Ddeparture from Muroran		15	
Finish trawl net research		15	
Arrival at Usujiri		15	
Departure from Usujiri		16	
Start frame trawl net sampling		16	
Arrival at Usujiri		16	
Departure from Usujiri		17	
Finish hydrographic research (US08170) and larvae net sampling		17	
Finish frame trawl net sampling		17	
Arrival at and departure from Usujiri		17	
Return to Hakodate		18	

Total coverage 682.4 miles

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 145

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
	Assistant Professor	(Field Science Center for Northern Biosphere)	Jun Yamamoto

Graduate Students :	Laboratory of Marine Bioresource Science :	2 persons
	Laboratory of Marine Bioresource and Environment Sensing :	1 person
Under Graduate Students :	Department of Marine Biological Science :	1 person
	Department of Marine Production System Science :	3 persons
	Department of Marine Biological Science (Third grade) :	4 persons

Cruise 146

Research Staff :	Professor	(Laboratory of Marine Environmental Science)	Mitsuru Yanada
	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students :	Chair of Marine Environmental Science :	1 person
	Chair of Marine Bioresource and Environment Sensing :	3 persons
	Chair of of Marine Bioresource Science :	4 persons
	Graduate School of Environmental Science :	7 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	7 persons
	Department of Marine Production System Science :	7 persons
	Department of Marine Biological Science :	2 persons

Cruise 147

Research Staff :	Professor	(Laboratory of Marine Bioresource Science)	Toyomi Takahashi
	Professor	(Laboratory of Marine Environmental Science)	Shigeru Montani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Susumu Shimizu

Graduate Students :	Chair of of Marine Bioresource Science :	3 persons
	Chair of Marine Bioresource and Environment Sensing :	4 persons
	Graduate School of the Fisheries Sciences :	1 person
	Graduate School of Environmental Science :	7 persons
Under Graduate Students :	Department of Marine Biological Science :	5 persons
	Department of Fisheries Oceanography and Marine Science :	2 persons
	Department of Marine Production System Science :	8 persons
	Department of Marine Production System Science (Third grade) :	3 persons
	Department of Applied Marine Science (Third grade) :	3 persons

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

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

Figure 1: Oceanographic stations (Cruise 145)

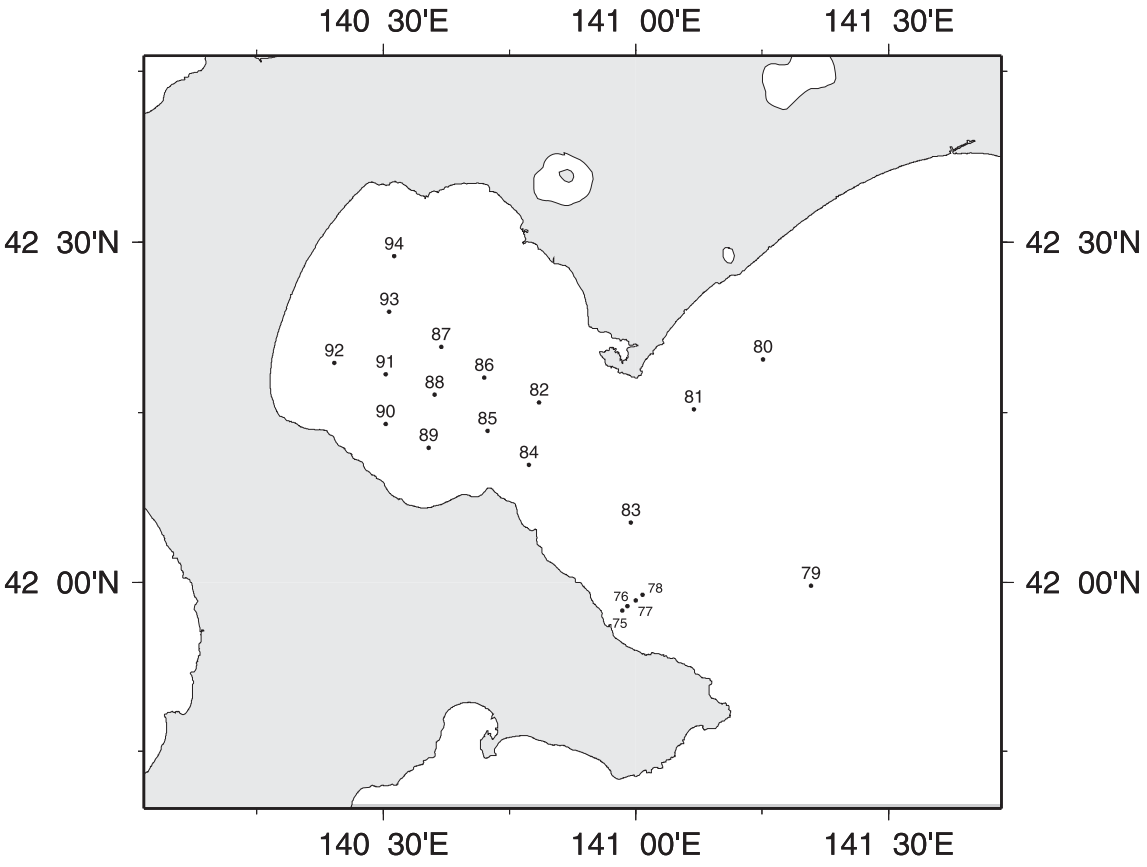

Figure 2: Oceanographic stations (Cruise 146)

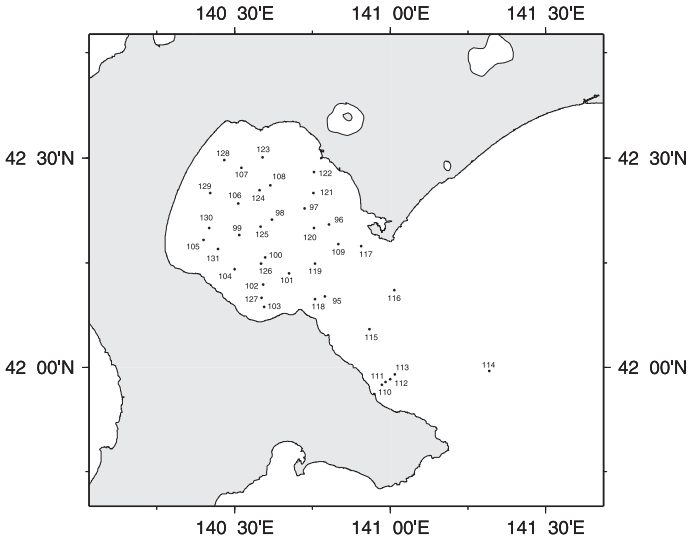

Figure 3: Oceanographic stations (Cruise 147)

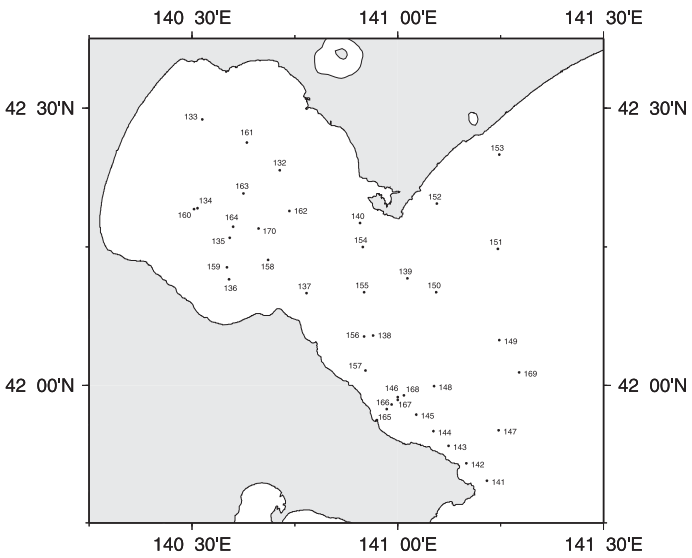

Table 1: List of oceanographic stations

Cruise 145

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08075	41-57.5	140-58.4	3/17	1440-1444	81	North-1	East-1	North-3	5.3	2.3	c	1016.2
US08076	41-57.9	140-59.0	3/17	1449-1453	86	North-1	East-1	North-3	5.0	2.6	c	1016.2
US08077	41-58.4	141-00.0	3/17	1500-1504	90	NNW-2	East-1	NNW-4	5.2	2.8	c	1016.3
US08078	41-58.9	141-00.8	3/17	1511-1515	96	NNW-2	East-1	NNW-4	5.2	2.4	c	1016.4
US08079	41-59.7	141-20.8	3/17	1901-1915	327	NW -1	East-1	NW -2	3.2	3.4	c	1018.1
US08080	42-19.7	141-15.1	3/17	2300-2307	100	West-1	East-1	West-3	3.7	1.5	bc	1019.0
US08081	42-15.3	141-06.9	3/17	2356-2400	84	WSW-1	East-1	WSW-3	3.3	1.5	bc	1019.4
US08082	42-15.9	140-48.5	3/18	0220-0224	70	West-1	East-1	West-3	3.3	2.3	bc	1020.1
US08083	42-05.3	140-59.4	3/18	0344-0348	84	West-1	East-1	West-2	2.8	1.6	o	1020.6
US08084	42-10.4	140-47.3	3/19	0731-0736	93	ENE-2	East-1	ENE-4	3.4	3.1	bc	1021.1
US08085	42-13.4	140-42.4	3/19	0830-0835	90	ENE-2	East-1	ENE-4	3.0	2.7	bc	1021.1
US08086	42-18.1	140-42.0	3/19	0926-0929	66	East-2	East-1	East-4	3.7	2.9	c	1021.1
US08087	42-20.8	140-36.9	3/19	1008-1012	88	ESE-2	East-1	ESE-4	4.7	3.2	c	1021.5
US08088	42-16.6	140-36.1	3/19	1048-1052	92	East-2	East-1	East-4	5.2	2.9	c	1021.6
US08089	42-11.9	140-35.4	3/19	1202-1206	85	East-3	East-1	East-5	4.4	3.9	c	1020.4
US08090	42-14.0	140-30.3	3/19	1304-1308	81	East-2	East-1	East-4	4.0	4.5	c	1020.4
US08091	42-18.4	140-30.3	3/19	1353-1358	93	ESE-2	East-1	ESE-4	3.9	4.4	c	1020.5
US08092	42-19.4	140-24.2	3/19	1457-1501	63	SE -1	East-1	SE -3	5.1	4.2	c	1020.6
US08093	42-23.9	140-30.7	3/19	1559-1604	96	SSE-1	East-1	SSE-3	4.1	3.7	c	1020.6
US08094	42-28.8	140-31.3	3/19	1644-1648	77	SSW-1	East-1	SSW-2	4.4	4.3	c	1020.6

Cruise 146

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08095	42-10.2	140-47.4	4/15	0805-0810	95	West-2	East-1	West-4	3.5	3.5	f	1019.1
US08096	42-20.5	140-48.2	4/15	0922-0926	55	West-2	East-1	West-4	4.3	3.0	f	1019.4
US08097	42-22.8	140-43.5	4/15	1003-1008	58	West-2	East-1	West-4	5.2	4.8	bc	1019.1
US08098	42-21.2	140-37.2	4/15	1050-1055	87	NW -1	East-1	NW -3	6.1	5.4	bc	1019.1
US08099	42-19.0	140-30.9	4/15	11560-1159	95	Calm	East-1	Calm	8.6	6.1	bc	1018.7
US08100	42-15.8	140-35.9	4/15	1407-1415	93	Calm	East-1	Calm	11.3	4.7	bc	1018.5
US08101	42-13.5	140-40.5	4/15	1518-1522	90	SSE-1	East-2	SSE-3	8.9	6.7	bc	1017.0
US08102	42-11.9	140-35.5	4/15	1629-1633	84	Calm	East-2	Calm	10.3	7.0	bc	1017.0
US08103	42-08.7	140-35.7	4/15	1716-1720	64	Calm	East-1	Calm	10.2	5.8	bc	1017.0
US08104	42-14.1	140-30.0	4/16	0722-0727	79	SW -3	East-1	SW -5	10.4	4.2	bc	1017.0
US08105	42-18.3	140-24.0	4/16	0827-0831	59	WSW-3	East-1	WSW-5	10.7	6.0	bc	1017.1
US08106	42-23.5	140-30.7	4/16	0945-0952	97	SW -2	East-1	SW -4	10.8	5.5	bc	1017.8
US08107	42-28.6	140-31.3	4/16	1046-1050	79	WSW-2	East-1	WSW-3	11.3	6.0	bc	1018.0
US08108	42-26.1	140-36.9	4/16	1135-1139	85	SW -1	East-1	SW -3	10.1	5.9	bc	1017.6
US08109	42-17.7	140-50.0	4/16	1323-1326	70	West-2	East-1	West-4	12.7	5.7	bc	1017.2
US08110	41-57.5	140-58.4	4/17	1202-1207	82	Calm	NE-1	Calm	7.9	4.8	f	1023.2
US08111	41-57.9	140-59.1	4/17	1214-1218	86	Calm	NE-1	Calm	5.9	4.6	f	1023.0
US08112	41-58.3	141-00.0	4/17	1225-1229	91	Calm	NE-1	Calm	5.7	3.9	c	1023.0
US08113	41-59.0	141-00.9	4/17	1237-1242	97	East-1	NE-1	Calm	6.0	4.1	f	1023.0
US08114	41-59.5	141-19.1	4/17	1454-1505	304	SE -2	East-1	SE -4	3.4	3.4	f	1022.1
US08115	42-05.5	140-56.0	4/21	0910-0917	86	Calm	East-1	Calm	7.2	4.8	c	1023.2
US08116	42-11.1	141-00.8	4/21	0958-1005	79	East-1	East-1	East-3	7.0	5.0	c	1023.6
US08117	42-17.4	140-54.4	4/21	1052-1057	57	ENE-1	East-1	ENE-3	7.8	4.6	c	1023.6
US08118	42-09.8	140-45.5	4/22	0926-0931	89	East-1	ESE-1	East-2	7.4	7.2	c	1021.1
US08119	42-14.9	140-45.5	4/22	1014-1018	80	East-1	ESE-1	East-3	7.6	6.5	c	1021.1
US08120	42-20.0	140-45.3	4/22	1055-1059	60	SE -1	ESE-1	SE -2	7.0	5.0	c	1020.6
US08121	42-25.0	140-45.2	4/22	1132-1136	56	Calm	ESE-1	Calm	9.0	6.4	c	1020.3
US08122	42-28.0	140-45.3	4/22	1226-1229	54	Calm	ESE-1	Calm	10.4	8.3	c	1019.6
US08123	42-30.1	140-35.4	4/22	1322-1326	71	Calm	ESE-1	Calm	9.5	8.3	c	1019.1
US08124	42-25.4	140-34.8	4/22	1400-1404	91	Calm	ESE-1	Calm	9.8	8.2	c	1019.0
US08125	42-20.2	140-35.0	4/22	1540-1544	94	ESE-1	ESE-1	ESE-2	8.3	7.1	c	1018.6
US08126	42-14.9	140-35.1	4/22	1624-1628	93	Calm	ESE-1	Calm	8.2	6.9	c	1018.4
US08127	42-10.0	140-35.2	4/22	1703-1707	76	East-1	ESE-1	East-2	8.2	6.7	c	1018.3
US08128	42-29.7	140-28.0	4/23	0535-0538	64	Calm	SE -1	Calm	6.3	7.5	c	1018.6
US08129	42-25.0	140-25.3	4/23	0615-0618	70	SSE-1	SE -1	SSE-3	7.3	8.6	c	1018.1
US08130	42-20.0	140-25.1	4/23	0655-0659	71	SSE-1	SE -1	SSE-3	7.4	7.5	c	1018.0
US08131	42-17.0	140-26.8	4/23	0829-0833	73	ESE-1	SE -1	ESE-2	7.8	6.3	c	1018.0

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Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08132	42-23.3	140-42.8	5/8	0707-0714	61	Calm	East-1	Calm	8.8	7.2	bc	1009.1
US08133	42-28.8	140-31.5	5/8	0818-0824	76	Calm	East-1	Calm	8.3	7.0	bc	1009.6
US08134	42-19.2	140-30.8	5/8	0932-0940	94	Calm	ESE-1	Calm	10.7	7.2	bc	1009.6
US08135	42-16.0	140-35.5	5/8	1014-1024	91	ENE-1	ESE-1	ENE-2	10.1	7.9	bc	1009.6
US08136	42-11.5	140-35.4	5/8	1111-1118	82	Calm	ESE-1	Calm	11.4	8.0	bc	1009.6
US08137	42-10.0	140-46.7	5/8	1213-1221	96	Calm	ESE-1	Calm	12.1	7.9	bc	1009.1
US08138	42-05.4	140-56.4	5/8	1314-1320	85	SSE-1	ESE-1	SSE-2	9.7	6.1	bc	1008.8
US08139	42-11.6	141-01.4	5/8	1403-1409	79	Calm	ESE-1	Calm	10.7	6.7	bc	1008.7
US08140	42-17.6	140-54.5	5/8	1451-1503	57	Calm	ESE-1	Calm	13.1	9.9	bc	1008.2
US08141	41-49.6	141-13.0	5/10	0733-0740	173	NE -3	NE -1	NE -4	5.6	7.0	c	1023.5
US08142	41-51.5	141-10.0	5/10	0802-0806	107	NE -2	NE -1	NE -4	5.5	6.0	bc	1023.5
US08143	41-53.4	141-07.4	5/10	0826-0830	96	NNW-1	NE -1	NNW-2	5.8	5.7	bc	1023.3
US08144	41-55.0	141-05.2	5/10	1220-1226	111	Calm	NE -1	Calm	7.3	6.4	bc	1022.2
US08145	41-56.8	141-02.7	5/10	1244-1249	106	ESE-1	NE -1	ESE-2	8.6	6.4	bc	1022.0
US08146	41-58.7	141-00.0	5/10	1307-1313	88	Calm	NE -1	Calm	9.2	6.5	bc	1021.7
US08147	41-55.1	141-14.7	5/11	0715-0725	244	Calm	NE -1	Calm	6.7	6.6	bc	1019.9
US08148	41-59.9	141-05.3	5/11	0826-0830	118	NE -1	NE -1	NE -3	6.5	5.9	c	1020.1
US08149	42-04.9	141-14.8	5/11	1038-1046	222	East-1	NE -1	East-3	6.3	6.8	bc	1020.1
US08150	42-10.1	141-05.6	5/11	1144-1148	94	SE -1	NE -1	SE -3	9.8	6.4	bc	1020.0
US08151	42-14.8	141-14.6	5/11	1242-1248	164	SSE-1	NE -1	SSE-3	7.1	6.8	bc	1019.6
US08152	42-19.7	141-05.7	5/11	1346-1349	55	South-1	NE -1	South-3	8.8	6.4	bc	1019.5
US08153	42-25.0	141-14.8	5/11	1532-1536	69	SSW-2	South-1	SSW-3	7.7	6.9	bc	1019.1
US08154	42-15.0	140-54.9	5/12	0527-0530	63	NW -1	East-1	NW -2	5.7	5.2	bc	1023.5
US08155	42-10.1	140-55.1	5/12	0605-0608	77	West-2	East-1	West-3	7.1	6.3	bc	1023.7
US08156	42-05.3	140-55.1	5/12	0644-0648	88	West-1	East-1	West-2	7.3	6.7	bc	1024.0
US08157	42-01.6	140-55.3	5/12	0715-0719	80	West-1	East-1	West-2	7.6	7.3	bc	1024.0
US08158	42-13.6	140-41.1	5/13	0725-0730	90	East-3	East-1	East-5	7.5	7.4	c	1024.8
US08159	42-12.8	140-35.1	5/13	0922-0927	87	East-3	East-1	East-5	8.0	7.2	bc	1024.5
US08160	42-19.1	140-30.3	5/13	1058-1104	94	East-3	East-1	East-5	7.7	7.3	bc	1024.2
US08161	42-26.3	140-38.0	5/13	1301-1305	82	ESE-3	East-1	ESE-5	7.1	7.4	bc	1023.8
US08162	42-18.9	140-44.2	5/15	0802-0806	62	ESE-1	ESE-2	ESE-2	7.7	7.6	c	1012.1
US08163	42-20.8	140-37.5	5/15	0924-0929	86	Calm	ESE-2	Calm	8.0	7.0	f	1012.2
US08164	42-17.2	140-36.0	5/15	1049-1054	92	Calm	ESE-1	Calm	8.8	7.3	o	1012.6
US08165	41-57.4	140-58.4	5/16	1233-1237	81	Calm	ESE-1	Calm	13.1	7.7	bc	1015.2
US08166	41-57.9	140-59.1	5/16	1243-1247	86	Calm	ESE-1	Calm	12.6	8.3	bc	1015.1
US08167	41-58.4	141-00.0	5/16	1254-1258	91	Calm	ESE-1	Calm	13.2	7.9	bc	1015.1
US08168	41-58.9	141-00.9	5/16	1305-1310	97	ESE-1	ESE-1	ESE-2	12.7	8.0	bc	1015.1
US08169	42-01.4	141-17.7	5/16	1506-1515	262	Calm	SSE-1	Calm	14.8	7.5	bc	1014.1
US08170	42-17.0	140-39.7	5/17	1144-1148	84	SE -1	ESE-1	SE -2	11.9	10.1	bc	1013.1

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08075
LATITUDE 41-57.5 N
LONGITUDE 140-58.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	1.924	32.927	26.317
10	1.875	32.997	26.376
20	2.456	33.185	26.482
30	2.521	33.187	26.478
40	2.614	33.233	26.507
50	3.097	33.365	26.571
75	3.498	33.574	26.701

STATION US08076
LATITUDE 41-57.9 N
LONGITUDE 140-59.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	2.911	32.988	26.287
10	2.785	32.994	26.302
20	2.723	33.090	26.384
30	2.934	33.226	26.475
40	3.345	33.325	26.517
50	3.282	33.388	26.573
75	3.676	33.612	26.714

STATION US08077
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	2.895	33.017	26.311
10	2.803	33.041	26.338
20	3.142	33.208	26.442
30	3.083	33.265	26.493
40	3.145	33.273	26.494
50	3.194	33.345	26.547
75	3.653	33.583	26.694

STATION US08078
LATITUDE 41-58.9 N
LONGITUDE 141-00.8 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	2.414	32.873	26.236
10	3.012	32.999	26.287
20	3.126	33.111	26.366
30	3.155	33.208	26.441
40	3.256	33.257	26.471
50	3.375	33.346	26.531
75	3.474	33.521	26.661

STATION US08079
LATITUDE 41-59.7 N
LONGITUDE 141-20.8 E
DEPTH (m) 327

Press.	Temp.	Salinity	Sigma-T
5	1.265	32.809	26.267
10	1.136	32.882	26.334
20	1.475	32.952	26.368
30	1.576	32.975	26.380
40	1.584	32.983	26.386
50	1.601	32.987	26.388
75	1.977	33.075	26.431
100	2.829	33.261	26.511
125	3.516	33.375	26.541
150	3.344	33.358	26.543
175	3.235	33.394	26.582
200	2.818	33.368	26.599
250	2.548	33.382	26.632
300	3.194	33.567	26.724

STATION US08080
LATITUDE 42-19.7 N
LONGITUDE 141-15.1 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	1.964	32.813	26.222
10	1.972	32.812	26.221
20	1.949	32.805	26.217
30	1.790	32.833	26.251
40	1.580	32.895	26.316
50	1.457	32.908	26.334
75	1.776	33.041	26.419

STATION US08081
LATITUDE 42-15.3 N
LONGITUDE 141-06.9 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	2.047	32.836	26.234
10	1.992	32.859	26.257
20	1.887	32.893	26.292
30	1.880	32.929	26.322
40	2.021	33.069	26.423
50	2.424	33.127	26.438
75	2.539	33.142	26.441

STATION US08082
LATITUDE 42-15.9 N
LONGITUDE 140-48.5 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	2.677	32.920	26.253
10	2.675	32.922	26.254
20	2.016	32.956	26.333
30	1.933	33.032	26.400
40	2.182	33.092	26.429
50	2.601	33.184	26.469

STATION US08083
LATITUDE 42-05.3 N
LONGITUDE 140-59.4 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	1.897	32.903	26.299
10	1.901	32.906	26.301
20	1.914	32.904	26.299
30	1.913	32.923	26.314
40	1.611	32.973	26.375
50	1.990	33.083	26.436

STATION US08084
LATITUDE 42-10.4 N
LONGITUDE 140-47.3 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	3.159	32.962	26.244
10	3.092	33.079	26.343
20	3.053	33.254	26.487
30	3.287	33.327	26.524
40	3.312	33.477	26.641
50	3.420	33.570	26.705
75	4.565	33.802	26.774

STATION US08085
LATITUDE 42-13.4 N
LONGITUDE 140-42.4 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	2.590	32.894	26.239
10	2.585	32.899	26.243
20	2.585	33.133	26.430
30	2.994	33.233	26.475
40	3.062	33.280	26.507
50	3.406	33.480	26.635
75	4.041	33.695	26.744

STATION US08086
LATITUDE 42-18.1 N
LONGITUDE 140-42.0 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	2.819	32.875	26.204
10	2.498	32.892	26.245
20	1.753	32.948	26.345
30	2.010	33.033	26.395
40	2.289	33.107	26.433
50	2.679	33.192	26.469

STATION US08087
LATITUDE 42-20.8 N
LONGITUDE 140-36.9 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	2.943	32.975	26.274
10	2.829	32.949	26.263
20	2.903	33.147	26.415
30	2.936	33.195	26.450
40	3.036	33.229	26.468
50	3.104	33.316	26.532
75	3.941	33.678	26.741

STATION US08088
LATITUDE 42-16.6 N
LONGITUDE 140-36.1 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	2.791	32.948	26.265
10	2.753	32.951	26.270
20	2.446	33.094	26.410
30	3.039	33.269	26.500
40	3.330	33.336	26.527
50	3.521	33.397	26.558
75	4.020	33.669	26.725

STATION US08089
LATITUDE 42-11.9 N
LONGITUDE 140-35.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	3.930	33.128	26.304
10	3.846	33.160	26.338
20	3.651	33.350	26.508
30	3.604	33.395	26.549
40	3.529	33.435	26.587
50	3.372	33.508	26.660
75	3.780	33.622	26.712

STATION US08090
LATITUDE 42-14.0 N
LONGITUDE 140-30.3 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	3.970	33.153	26.320
10	3.716	33.233	26.409
20	3.339	33.347	26.535
30	3.416	33.384	26.557
40	3.427	33.418	26.584
50	3.413	33.453	26.613
75	3.480	33.507	26.649

STATION US08091
LATITUDE 42-18.4 N
LONGITUDE 140-30.3 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	4.263	33.194	26.323
10	3.877	33.181	26.352
20	3.752	33.313	26.469
30	3.363	33.363	26.546
40	3.499	33.495	26.638
50	3.490	33.529	26.666
75	3.924	33.672	26.737

STATION US08092
LATITUDE 42-19.4 N
LONGITUDE 140-24.2 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	4.079	33.166	26.319
10	3.842	33.221	26.387
20	3.664	33.364	26.518
30	3.539	33.396	26.555
40	3.496	33.421	26.579
50	3.368	33.461	26.623

STATION US08093
LATITUDE 42-23.9 N
LONGITUDE 140-30.7 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.676	33.029	26.250
10	3.044	33.062	26.334
20	2.737	33.119	26.406
30	2.881	33.182	26.445
40	3.167	33.272	26.491
50	3.311	33.398	26.579
75	3.431	33.566	26.701

STATION US08094
LATITUDE 42-28.8 N
LONGITUDE 140-31.3 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	4.140	33.076	26.242
10	3.785	33.146	26.333
20	3.351	33.226	26.437
30	3.281	33.252	26.465
40	3.299	33.307	26.507
50	3.331	33.317	26.512

STATION US08095
LATITUDE 42-10.2 N
LONGITUDE 140-47.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	3.437	32.506	25.856
10	3.191	32.541	25.906
20	2.674	32.577	25.979
30	1.795	32.759	26.191
40	2.021	32.968	26.342
50	2.091	33.111	26.452
75	3.753	33.604	26.700

STATION US08096
LATITUDE 42-20.5 N
LONGITUDE 140-48.2 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	2.870	32.557	25.946
10	2.437	32.528	25.958
20	2.352	32.549	25.982
30	2.741	32.832	26.177
40	3.338	33.054	26.301
50	1.826	33.033	26.409

STATION US08097
LATITUDE 42-22.8 N
LONGITUDE 140-43.5 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	4.601	32.619	25.831
10	4.437	32.642	25.867
20	4.030	32.680	25.938
30	2.780	32.942	26.261
40	2.607	33.041	26.355
50	2.951	33.216	26.466

STATION US08098
LATITUDE 42-21.2 N
LONGITUDE 140-37.2 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	4.512	32.571	25.802
10	4.466	32.590	25.822
20	3.322	32.824	26.120
30	3.080	32.958	26.248
40	3.025	33.000	26.286
50	2.452	32.988	26.325
75	2.905	33.217	26.470

STATION US08099
LATITUDE 42-19.0 N
LONGITUDE 140-30.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	4.621	32.595	25.810
10	4.364	32.632	25.866
20	3.777	32.681	25.963
30	1.479	32.713	26.176
40	0.770	32.788	26.281
50	2.053	33.028	26.388
75	3.437	33.498	26.646

STATION US08100
LATITUDE 42-15.8 N
LONGITUDE 140-35.9 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	4.491	32.608	25.834
10	4.326	32.618	25.859
20	2.708	32.754	26.117
30	2.898	32.887	26.207
40	2.724	32.928	26.255
50	2.109	32.925	26.301
75	3.365	33.420	26.591

STATION US08101
LATITUDE 42-13.5 N
LONGITUDE 140-40.5 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	4.532	32.632	25.848
10	4.449	32.641	25.865
20	4.148	32.658	25.909
30	2.877	32.833	26.166
40	2.388	32.931	26.284
50	2.468	33.006	26.338
75	3.532	33.520	26.655

STATION US08102
LATITUDE 42-11.9 N
LONGITUDE 140-35.5 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	4.310	32.467	25.741
10	3.210	32.502	25.873
20	2.443	32.797	26.173
30	2.708	32.889	26.225
40	2.356	32.882	26.248
50	2.333	33.012	26.354
75	3.434	33.470	26.624

STATION US08103
LATITUDE 42-08.7 N
LONGITUDE 140-35.7 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	2.938	32.602	25.976
10	2.144	32.710	26.126
20	1.848	32.796	26.217
30	1.723	32.842	26.263
40	2.786	33.082	26.373
50	3.199	33.277	26.492

STATION US08104
LATITUDE 42-14.1 N
LONGITUDE 140-30.0 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	3.857	32.501	25.812
10	3.364	32.559	25.904
20	2.440	32.846	26.212
30	3.133	32.932	26.223
40	2.603	32.951	26.283
50	2.478	33.046	26.369
75	3.750	33.634	26.725

STATION US08105
LATITUDE 42-18.3 N
LONGITUDE 140-24.0 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	5.910	32.264	25.402
10	5.464	32.305	25.487
20	2.736	32.743	26.106
30	2.335	32.846	26.221
40	2.837	33.007	26.308
50	2.902	33.143	26.411

STATION US08106
LATITUDE 42-23.5 N
LONGITUDE 140-30.7 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	5.522	32.466	25.608
10	4.355	32.521	25.779
20	3.543	32.709	26.008
30	2.628	32.865	26.213
40	1.896	32.822	26.235
50	2.389	33.053	26.382
75	3.713	33.613	26.712

STATION US08107
LATITUDE 42-28.6 N
LONGITUDE 140-31.3 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	5.200	32.727	25.851
10	4.852	32.657	25.835
20	3.811	32.781	26.040
30	3.415	32.994	26.247
40	3.166	33.186	26.422
50	3.203	33.303	26.513
75	3.958	33.679	26.740

STATION US08108
LATITUDE 42-26.1 N
LONGITUDE 140-36.9 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	5.188	32.337	25.543
10	4.504	32.553	25.789
20	3.998	32.659	25.924
30	3.888	32.682	25.953
40	3.150	32.920	26.212
50	3.186	33.029	26.295
75	3.529	33.506	26.644

STATION US08109
LATITUDE 42-17.7 N
LONGITUDE 140-50.0 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	5.464	32.601	25.721
10	5.148	32.603	25.759
20	4.037	32.663	25.924
30	2.822	32.884	26.211
40	2.656	32.960	26.286
50	2.629	33.072	26.378

STATION US08110
LATITUDE 41-57.5 N
LONGITUDE 140-58.4 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	3.495	32.517	25.860
10	3.186	32.560	25.922
20	2.433	32.587	26.006
30	1.986	32.776	26.191
40	1.939	32.887	26.283
50	1.483	32.939	26.357
75	2.355	33.178	26.485

STATION US08111
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.306	32.514	25.874
10	2.999	32.532	25.915
20	2.421	32.523	25.956
30	1.054	32.712	26.203
40	0.918	32.804	26.284
50	1.299	32.918	26.352
75	3.065	33.347	26.560

STATION US08112
LATITUDE 41-58.3 N
LONGITUDE 141-00.0 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	3.537	32.543	25.876
10	2.722	32.532	25.938
20	1.804	32.481	25.968
30	0.755	32.677	26.192
40	1.107	32.900	26.350
50	1.252	32.915	26.353
75	2.043	33.159	26.493

STATION US08113
LATITUDE 41-59.0 N
LONGITUDE 141-00.9 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	2.767	32.502	25.911
10	2.648	32.531	25.944
20	2.069	32.544	26.000
30	1.115	32.607	26.114
40	0.735	32.697	26.209
50	0.755	32.751	26.251
75	1.038	32.942	26.389

STATION US08114
LATITUDE 41-59.5 N
LONGITUDE 141-19.1 E
DEPTH (m) 304

Press.	Temp.	Salinity	Sigma-T
5	3.065	32.558	25.930
10	2.286	32.724	26.127
20	2.763	32.844	26.185
30	1.068	32.758	26.238
40	0.985	32.867	26.331
50	1.191	32.922	26.362
75	1.670	33.173	26.532
100	2.701	33.282	26.540
125	3.690	33.445	26.580
150	3.470	33.417	26.579
175	3.577	33.462	26.605
200	3.980	33.714	26.765
250	3.157	33.497	26.672

STATION US08115
LATITUDE 42-05.5 N
LONGITUDE 140-56.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	5.087	32.527	25.705
10	4.825	32.529	25.736
20	2.783	32.478	25.890
30	2.767	32.857	26.195
40	2.814	32.939	26.256
50	2.565	32.978	26.308
75	3.212	33.335	26.537

STATION US08116
LATITUDE 42-11.1 N
LONGITUDE 141-00.8 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	5.362	32.577	25.714
10	5.089	32.590	25.755
20	1.733	32.520	26.004
30	1.198	32.747	26.221
40	1.630	32.875	26.296
50	0.954	32.828	26.302
75	1.454	33.004	26.412

STATION US08117
LATITUDE 42-17.4 N
LONGITUDE 140-54.4 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	4.760	32.430	25.665
10	4.423	32.444	25.710
20	2.697	32.627	26.016
30	2.103	32.772	26.179
40	1.600	32.817	26.251
50	1.688	32.843	26.266

STATION US08118
LATITUDE 42-09.8 N
LONGITUDE 140-45.5 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	4.730	32.514	25.734
10	3.482	32.557	25.892
20	2.956	32.828	26.155
30	2.597	32.828	26.186
40	2.650	33.003	26.321
50	2.723	33.038	26.343
75	3.122	33.341	26.550

STATION US08119
LATITUDE 42-14.9 N
LONGITUDE 140-45.5 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	5.263	32.568	25.718
10	4.866	32.554	25.751
20	3.155	32.665	26.008
30	2.681	32.858	26.202
40	2.685	32.964	26.286
50	2.806	33.089	26.377

STATION US08120
LATITUDE 42-20.0 N
LONGITUDE 140-45.3 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	5.067	32.460	25.655
10	4.905	32.448	25.663
20	3.598	32.423	25.775
30	1.576	32.654	26.122
40	1.314	32.756	26.221

STATION US08121
LATITUDE 42-25.0 N
LONGITUDE 140-45.2 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	6.181	32.582	25.620
10	5.687	32.546	25.652
20	4.176	32.577	25.842
30	3.421	32.500	25.853
40	2.797	32.848	26.184

STATION US08122
LATITUDE 42-28.0 N
LONGITUDE 140-45.3 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	6.000	32.538	25.608
10	5.336	32.561	25.704
20	4.434	32.627	25.855
30	2.407	32.780	26.162
40	2.755	32.926	26.251

STATION US08123
LATITUDE 42-30.1 N
LONGITUDE 140-35.4 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	6.393	32.570	25.584
10	5.652	32.517	25.633
20	4.211	32.636	25.885
30	3.205	32.840	26.143
40	2.791	32.961	26.276
50	2.888	33.125	26.398

STATION US08124
LATITUDE 42-25.4 N
LONGITUDE 140-34.8 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	7.592	32.475	25.349
10	5.785	32.529	25.626
20	3.764	32.537	25.850
30	3.158	32.809	26.122
40	2.807	32.940	26.257
50	2.609	33.053	26.364
75	3.476	33.524	26.663

STATION US08125
LATITUDE 42-20.2 N
LONGITUDE 140-35.0 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	6.335	32.659	25.661
10	6.009	32.547	25.614
20	5.036	32.489	25.681
30	2.441	32.681	26.080
40	2.532	32.884	26.236
50	2.641	32.990	26.311
75	3.234	33.368	26.561

STATION US08126
LATITUDE 42-14.9 N
LONGITUDE 140-35.1 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	5.937	32.511	25.594
10	4.856	32.471	25.687
20	3.358	32.589	25.930
30	2.686	32.707	26.081
40	2.908	32.941	26.249
50	2.673	32.978	26.299
75	3.274	33.369	26.558

STATION US08127
LATITUDE 42-10.0 N
LONGITUDE 140-35.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	7.608	32.385	25.276
10	5.555	32.480	25.615
20	4.125	32.637	25.895
30	2.782	32.828	26.170
40	2.654	32.896	26.235
50	2.524	32.952	26.291

STATION US08128
LATITUDE 42-29.7 N
LONGITUDE 140-28.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	4.385	32.464	25.731
10	4.059	32.535	25.820
20	2.757	32.580	25.974
30	2.944	32.872	26.191
40	2.685	32.941	26.268
50	2.587	33.077	26.385

STATION US08129
LATITUDE 42-25.0 N
LONGITUDE 140-25.3 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	5.787	32.560	25.651
10	5.284	32.613	25.751
20	3.047	32.346	25.763
30	3.113	32.755	26.083
40	2.538	32.944	26.283
50	2.511	32.999	26.329

STATION US08130
LATITUDE 42-20.0 N
LONGITUDE 140-25.1 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	5.772	32.490	25.597
10	5.265	32.547	25.702
20	4.195	32.682	25.923
30	2.795	32.811	26.155
40	2.769	32.950	26.269
50	2.570	33.025	26.345

STATION US08131
LATITUDE 42-17.0 N
LONGITUDE 140-26.8 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	8.044	31.881	24.818
10	4.932	32.420	25.638
20	3.754	32.625	25.921
30	3.253	32.893	26.181
40	2.609	32.889	26.233
50	2.616	32.988	26.312

STATION US08132
LATITUDE 42-23.3 N
LONGITUDE 140-42.8 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	7.320	32.353	25.291
10	6.733	32.419	25.421
20	5.996	32.442	25.532
30	4.433	32.545	25.790
40	2.734	32.824	26.171
50	2.802	32.986	26.294

STATION US08133
LATITUDE 42-28.8 N
LONGITUDE 140-31.5 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	7.320	32.413	25.338
10	7.286	32.413	25.343
20	6.794	32.421	25.415
30	5.672	32.484	25.604
40	3.013	32.632	25.994
50	2.292	32.811	26.196

STATION US08134
LATITUDE 42-19.2 N
LONGITUDE 140-30.8 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	6.963	32.432	25.401
10	6.154	32.447	25.517
20	5.574	32.491	25.622
30	4.968	32.543	25.732
40	2.735	32.685	26.059
50	2.314	32.868	26.240
75	3.356	33.401	26.577

STATION US08135
LATITUDE 42-16.0 N
LONGITUDE 140-35.5 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	7.851	32.375	25.234
10	7.557	32.382	25.281
20	5.552	32.454	25.595
30	4.098	32.627	25.889
40	3.307	32.771	26.079
50	2.697	32.954	26.277
75	3.271	33.370	26.560

STATION US08136
LATITUDE 42-11.5 N
LONGITUDE 140-35.4 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	6.417	32.460	25.495
10	5.833	32.488	25.588
20	4.794	32.570	25.771
30	2.488	32.711	26.101
40	2.916	32.918	26.230
50	1.837	32.860	26.269
75	3.388	33.417	26.586

STATION US08137
LATITUDE 42-10.0 N
LONGITUDE 140-46.7 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	7.714	32.407	25.279
10	7.513	32.409	25.309
20	5.329	32.481	25.642
30	2.161	32.626	26.058
40	1.665	32.834	26.260
50	2.022	32.980	26.352
75	2.680	33.271	26.532

STATION US08138
LATITUDE 42-05.4 N
LONGITUDE 140-56.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	6.080	32.596	25.643
10	5.085	32.605	25.768
20	4.051	32.699	25.951
30	3.845	32.724	25.991
40	2.578	32.892	26.238
50	2.509	33.084	26.397
75	3.346	33.430	26.601

STATION US08139
LATITUDE 42-11.6 N
LONGITUDE 141-01.4 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	6.366	32.396	25.450
10	5.960	32.408	25.510
20	5.497	32.423	25.576
30	2.516	32.551	25.971
40	1.341	32.798	26.253
50	2.297	33.007	26.352
75	2.247	33.182	26.497

STATION US08140
LATITUDE 42-17.6 N
LONGITUDE 140-54.5 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	8.859	32.193	24.943
10	6.990	32.337	25.323
20	3.210	32.580	25.935
30	2.136	32.842	26.232
40	1.706	32.946	26.348
50	1.815	33.005	26.387

STATION US08141
LATITUDE 41-49.6 N
LONGITUDE 141-13.0 E
DEPTH (m) 173

Press.	Temp.	Salinity	Sigma-T
5	6.292	32.576	25.601
10	6.285	32.642	25.655
20	4.686	32.729	25.910
30	5.267	33.204	26.221
40	5.523	33.547	26.463
50	6.204	33.752	26.541
75	4.953	33.630	26.595
100	5.052	33.670	26.615
125	4.585	33.633	26.638
150	4.319	33.611	26.649

STATION US08142
LATITUDE 41-51.5 N
LONGITUDE 141-10.0 E
DEPTH (m) 107

Press.	Temp.	Salinity	Sigma-T
5	6.051	32.598	25.649
10	6.053	32.598	25.648
20	6.055	32.625	25.669
30	5.679	32.650	25.735
40	4.227	32.685	25.922
50	3.964	33.053	26.241
75	5.429	33.642	26.549
100	4.877	33.616	26.592

STATION US08143
LATITUDE 41-53.4 N
LONGITUDE 141-07.4 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	6.051	32.618	25.664
10	6.003	32.621	25.673
20	5.982	32.624	25.678
30	5.638	32.621	25.717
40	4.963	32.741	25.889
50	3.860	33.049	26.248
75	3.496	33.331	26.508

STATION US08144
LATITUDE 41-55.0 N
LONGITUDE 141-05.2 E
DEPTH (m) 111

Press.	Temp.	Salinity	Sigma-T
5	6.386	32.483	25.517
10	6.219	32.496	25.548
20	5.845	32.526	25.617
30	5.702	32.587	25.682
40	5.248	32.743	25.858
50	3.909	32.888	26.115
75	4.456	33.559	26.593
100	4.602	33.599	26.609

STATION US08145
LATITUDE 41-56.8 N
LONGITUDE 141-02.7 E
DEPTH (m) 106

Press.	Temp.	Salinity	Sigma-T
5	5.837	32.581	25.661
10	5.793	32.597	25.679
20	5.708	32.611	25.700
30	5.301	32.666	25.792
40	4.940	32.835	25.966
50	2.745	33.021	26.327
75	4.598	33.565	26.582

STATION US08146
LATITUDE 41-58.7 N
LONGITUDE 141-00.0 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	5.872	32.540	25.625
10	5.759	32.569	25.661
20	5.724	32.604	25.693
30	4.997	32.572	25.751
40	3.618	32.790	26.065
50	3.434	33.021	26.266
75	5.097	33.695	26.629

STATION US08147
LATITUDE 41-55.1 N
LONGITUDE 141-14.7 E
DEPTH (m) 244

Press.	Temp.	Salinity	Sigma-T
5	7.556	32.877	25.671
10	7.367	32.980	25.778
20	5.300	32.741	25.850
30	3.444	32.873	26.147
40	2.369	33.252	26.543
50	3.921	33.455	26.565
75	5.969	33.701	26.530
100	4.402	33.544	26.586
125	4.406	33.587	26.620
150	4.354	33.594	26.631
175	4.347	33.609	26.644
200	3.915	33.572	26.658

STATION US08148
LATITUDE 41-59.9 N
LONGITUDE 141-05.3 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	6.213	32.560	25.599
10	6.210	32.562	25.600
20	5.224	32.575	25.728
30	3.202	32.736	26.060
40	4.001	33.059	26.242
50	3.376	33.198	26.413
75	5.388	33.692	26.593
100	4.341	33.611	26.646

STATION US08149
LATITUDE 42-04.9 N
LONGITUDE 141-14.8 E
DEPTH (m) 222

Press.	Temp.	Salinity	Sigma-T
5	7.198	32.735	25.608
10	7.119	33.012	25.837
20	6.499	33.384	26.212
30	6.995	33.764	26.446
40	6.849	33.822	26.511
50	6.563	33.809	26.539
75	7.231	33.968	26.574
100	6.168	33.804	26.586
125	5.724	33.752	26.601
150	5.514	33.762	26.634
175	5.527	33.788	26.653
200	5.595	33.809	26.661

STATION US08150
LATITUDE 42-10.1 N
LONGITUDE 141-05.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	6.867	32.431	25.414
10	6.781	32.383	25.386
20	5.626	32.382	25.529
30	1.968	32.554	26.015
40	1.096	32.795	26.267
50	1.035	32.906	26.360
75	2.324	33.183	26.492

STATION US08151
LATITUDE 42-14.8 N
LONGITUDE 141-14.6 E
DEPTH (m) 164

Press.	Temp.	Salinity	Sigma-T
5	7.047	32.515	25.456
10	6.759	32.811	25.726
20	6.465	33.382	26.215
30	4.929	33.327	26.357
40	3.478	33.219	26.420
50	2.713	33.258	26.519
75	5.166	33.666	26.599
100	5.741	33.752	26.598
125	5.470	33.736	26.619

STATION US08152
LATITUDE 42-19.7 N
LONGITUDE 141-05.7 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	6.693	32.339	25.364
10	6.401	32.284	25.357
20	3.670	32.425	25.770
30	2.116	32.684	26.108
40	2.674	32.914	26.248

STATION US08153
LATITUDE 42-25.0 N
LONGITUDE 141-14.8 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	7.150	32.771	25.643
10	6.474	32.944	25.869
20	6.444	33.098	25.994
30	6.763	33.425	26.210
40	2.653	32.955	26.282
50	2.561	33.133	26.432

STATION US08154
LATITUDE 42-15.0 N
LONGITUDE 140-54.9 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	6.388	32.512	25.539
10	5.692	32.512	25.624
20	2.144	32.624	26.058
30	1.930	32.902	26.296
40	2.263	33.004	26.353
50	2.181	33.142	26.470

STATION US08155
LATITUDE 42-10.1 N
LONGITUDE 140-55.1 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	6.886	32.452	25.427
10	5.725	32.404	25.534
20	2.906	32.809	26.144
30	3.373	33.079	26.318
40	2.933	33.094	26.370
50	1.972	33.062	26.421

STATION US08156
LATITUDE 42-05.3 N
LONGITUDE 140-55.1 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	7.306	32.401	25.330
10	6.866	32.388	25.380
20	4.971	32.469	25.672
30	2.767	32.860	26.197
40	2.108	32.903	26.284
50	2.183	32.989	26.347
75	3.404	33.467	26.625

STATION US08157
LATITUDE 42-01.6 N
LONGITUDE 140-55.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	7.780	32.386	25.253
10	7.731	32.387	25.261
20	6.320	32.444	25.494
30	3.491	32.604	25.929
40	2.895	32.904	26.221
50	3.190	33.129	26.375

STATION US08158
LATITUDE 42-13.6 N
LONGITUDE 140-41.1 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	7.785	32.492	25.335
10	7.676	32.468	25.332
20	6.233	32.472	25.527
30	5.276	32.559	25.709
40	3.125	32.804	26.121
50	2.817	32.977	26.286
75	3.135	33.423	26.614

STATION US08159
LATITUDE 42-12.8 N
LONGITUDE 140-35.1 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	7.554	32.454	25.338
10	7.397	32.434	25.345
20	6.003	32.464	25.549
30	4.351	32.558	25.809
40	2.047	32.658	26.092
50	2.429	32.986	26.325
75	3.191	33.364	26.562

STATION US08160
LATITUDE 42-19.1 N
LONGITUDE 140-30.3 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	7.702	32.432	25.300
10	7.680	32.414	25.289
20	5.230	32.435	25.617
30	3.092	32.594	25.956
40	2.388	32.863	26.230
50	1.562	32.842	26.274
75	2.978	33.307	26.535

STATION US08161
LATITUDE 42-26.3 N
LONGITUDE 140-38.0 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	7.869	32.422	25.268
10	7.890	32.421	25.265
20	7.541	32.387	25.287
30	4.628	32.443	25.689
40	2.223	32.668	26.087
50	2.526	32.967	26.302
75	3.646	33.548	26.666

STATION US08162
LATITUDE 42-18.9 N
LONGITUDE 140-44.2 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	7.987	32.398	25.233
10	7.947	32.399	25.239
20	5.950	32.439	25.535
30	4.026	32.666	25.928
40	2.527	32.800	26.169
50	2.538	32.993	26.322

STATION US08163
LATITUDE 42-20.8 N
LONGITUDE 140-37.5 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	7.424	32.416	25.326
10	7.338	32.416	25.338
20	7.166	32.420	25.365
30	6.963	32.442	25.409
40	4.408	32.542	25.790
50	2.394	32.811	26.188
75	2.813	33.169	26.440

STATION US08164
LATITUDE 42-17.2 N
LONGITUDE 140-36.0 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	7.476	32.404	25.310
10	7.419	32.421	25.331
20	7.380	32.429	25.343
30	7.201	32.433	25.370
40	4.189	32.594	25.854
50	2.263	32.800	26.189
75	3.066	33.248	26.481

STATION US08165
LATITUDE 41-57.4 N
LONGITUDE 140-58.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	7.380	32.442	25.353
10	7.138	32.451	25.393
20	3.426	32.701	26.012
30	2.533	32.876	26.229
40	2.047	32.955	26.330
50	2.152	33.027	26.380
75	3.021	33.274	26.505

STATION US08166
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	7.646	32.418	25.297
10	7.369	32.427	25.342
20	4.145	32.623	25.881
30	2.300	32.855	26.230
40	2.281	32.973	26.326
50	2.341	33.068	26.398
75	3.495	33.373	26.541

STATION US08167
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	7.554	32.418	25.310
10	7.475	32.425	25.326
20	4.596	32.565	25.789
30	2.443	32.887	26.245
40	3.079	33.126	26.382
50	3.109	33.185	26.427
75	3.918	33.399	26.521

STATION US08168
LATITUDE 41-58.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	7.955	32.413	25.249
10	7.500	32.404	25.306
20	3.917	32.692	25.958
30	2.603	32.920	26.258
40	2.632	33.048	26.358
50	3.484	33.231	26.429
75	3.669	33.350	26.506

STATION US08169
LATITUDE 42-01.4 N
LONGITUDE 141-17.7 E
DEPTH (m) 262

Press.	Temp.	Salinity	Sigma-T
5	8.241	32.690	25.425
10	8.327	33.529	26.070
20	8.684	33.876	26.288
30	8.536	34.031	26.432
40	8.480	34.051	26.456
50	8.256	34.041	26.483
75	7.732	33.979	26.512
100	7.336	33.965	26.557
125	6.731	33.898	26.587
150	6.558	33.879	26.595
175	6.097	33.838	26.622
200	5.539	33.780	26.645

STATION US08170
LATITUDE 42-17.0 N
LONGITUDE 140-39.7 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	9.272	32.362	25.010
10	8.176	32.380	25.191
20	6.925	32.444	25.416
30	3.213	32.705	26.035
40	2.772	32.911	26.237
50	1.850	32.943	26.335

4

THE “USHIO MARU”

CRUISE 148
CRUISE 149
CRUISE 150

IN MAY-JUNE 2008

1. Cruise Itinerary

Cruise 148

Departure from Hakodate	May	23	, 2008
Arrival at and departure from Shiraoi		23	
Start hydrographic research (US08171)		24	
Arrival at Nemuro		25	
Departure from Nemuro		29	
Start frame trawl net sampling		29	
Arrival at Rausu		29	
Departure from Rausu		30	
Start juvenile salmon sampling		30	
Research by R.O.V.	Jun.	1	
Finish frame trawl net sampling		1	
Finish juvenile salmon sampling		2	
Finish haydrographic research (US08213)		2	
Arrival at Abashiri		2	
Departure from Abashiri		3	
Arrival at Otaru		4	
Departure from Otaru		5	
Return to Hakodate		7	

Total coverage 1204.5 miles

Cruise 149

Departure from Hakodate	Jun.	11	, 2008
Start hydrographic research (US08214) and larvae net sampling		11	
Start trawl net research		11	
Arrival at Wakinosawa		11	
Departure from Wakinosawa		12	
Arrival at Aomori		12	
Departure from Aomori		13	
Arrival at Noheji		13	
Departure from Noheji		14	
Finish hydrographic research (US08237) and larvae net sampling		14	
Finish trawl net research		14	
Return to Hakodate		15	

Total coverage 236.0 miles

Cruise 150

Departure from Hakodate	Jun.	20	, 2008
Arrival at and departure from		20	
Start hydrographic research (US08238) and larvae net sampling		20	
Sampling by frame trawl net		20	
Arrival at Usujiri		21	
Departure from Usujiri		22	
Arrival at Usujiri		22	
Departure from Usujiri		23	
Retrieval Sediment trap system		23	
Arrival at Usujiri		23	
Departure from Usujiri		24	
Arrival at and departure from Muroran		24	
Arrival at and departure from Muroran		25	
Arrival at Usujiri		25	
Departure from Usujiri		26	
Set Sediment trap system		26	
Research by trawl net and mid water trawl net		26	
Arrival at Usujiri		26	
Departure from Usujiri		28	
Sampling by frame trawl net		28	
Finish hydrographic research (US08269) and larvae net sampling		29	
Return to Hakodate		30	

Total coverage 684.1 miles

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 148

Research Staff :	Professor	(Laboratory of Marine Environmental Science)	
			Shigeru Montani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	
			Tohru Hirawake
	Assistant Professor	(Field Science Center for Northern Biosphere)	
			Jun Yamamoto
	Research Associate	(Field Science Center for Northern Biosphere)	
			Toshihiro Iwamori
Guest Scientist (Domestic) :	Professor	(Tokyo University of Agriculture)	
			Akihiro Shiomoto

Graduate Students :	Chair of Marine Bioresource and Environment Sensing :	1 person
	Chair of of Marine Bioresource Science :	1 person
	Chair of Strategic Studies on Marine Biorresource Conservation and Management :	1 person
	Graduate School of the Fisheries Sciences :	1 person
	Graduate School of Environmental Science :	5 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	3 persons

Cruise 149

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	
			Tetsuya Takatsu

Graduate Students :	Chair of Marine Bioresource Science :	2 persons
Under Graduate Students :	Department of Marine Biological Science :	10 persons

Cruise 150

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	
			Toshikuni Nakatani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	
			Tohru Mukai
	Assistant Professor	(Field Science Center for Northern Biosphere)	
			Jun Yamamoto

Graduate Students :	Chair of Marine Bioresource Science :	3 persons
	Chair of Marine Bioresource and Environment Sensing :	3 persons
	Chair of Marine Environmental Science :	1 person
	Graduate School of the Fisheries Sciences :	1 person
	Graduate School of Environmental Science :	2 persons
Under Graduate Students :	Department of Marine Biological Science :	3 persons
	Department of Marine Production System Science :	8 persons
	Department of Marine Production System Science (Third grade) :	1 person
	Department of Applied Marine Science (Third grade) :	2 persons

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

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

Figure 1: Oceanographic stations (Cruise 148)

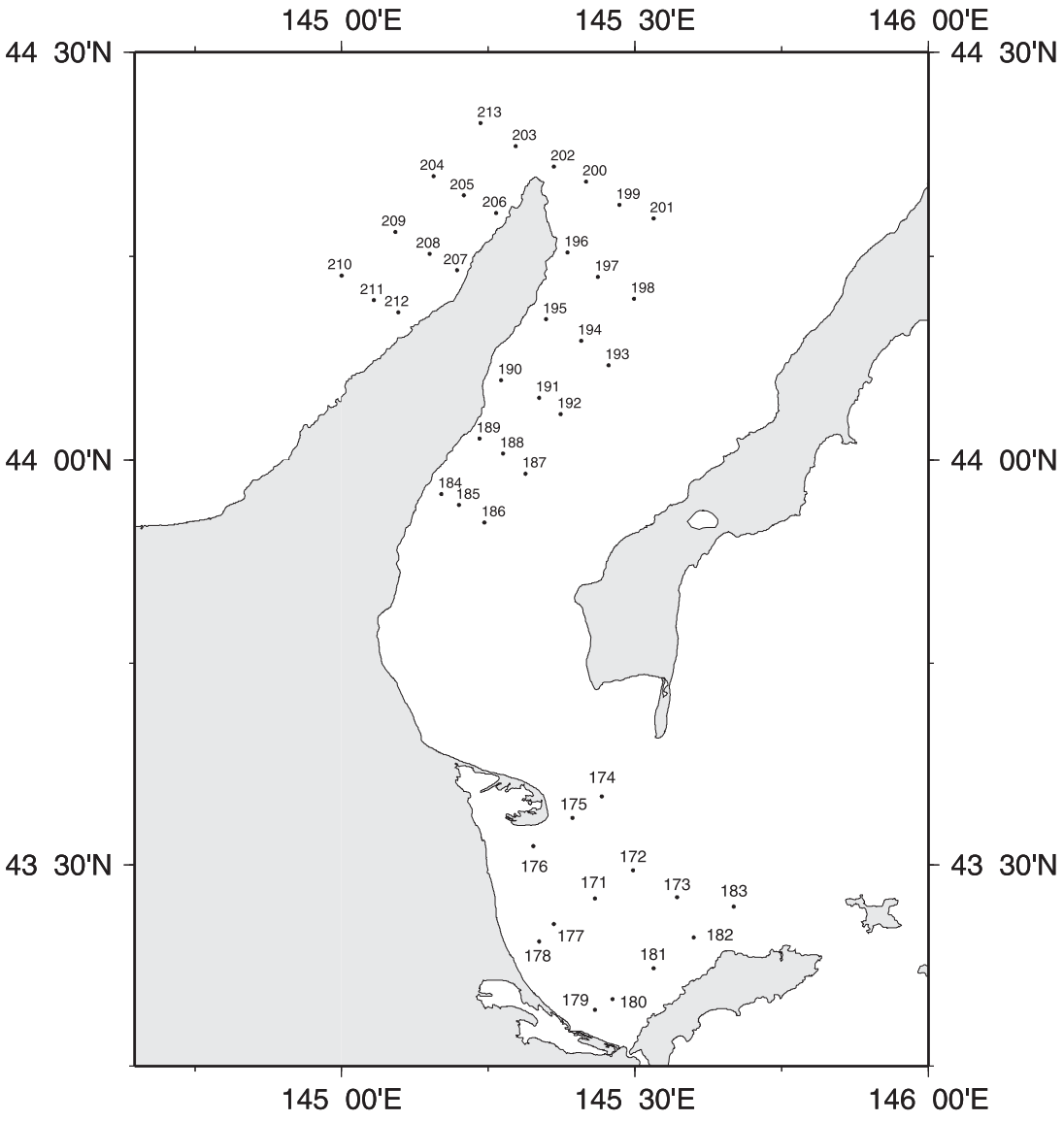

Figure 2: Oceanographic stations (Cruise 149)

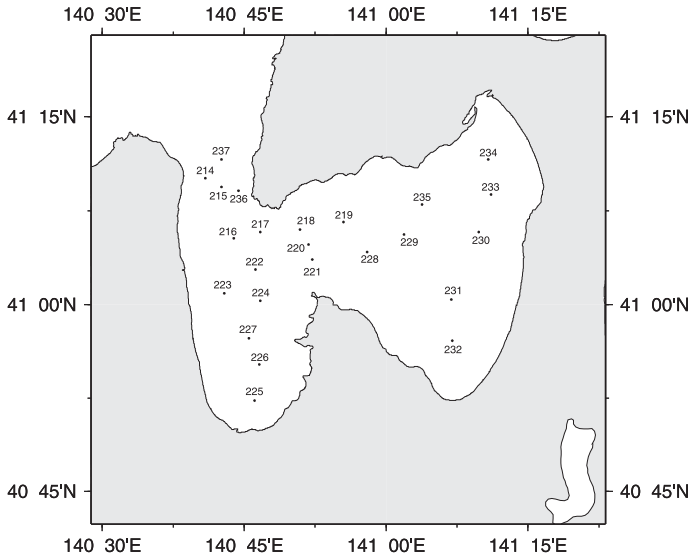

Figure 3: Oceanographic stations (Cruise 150)

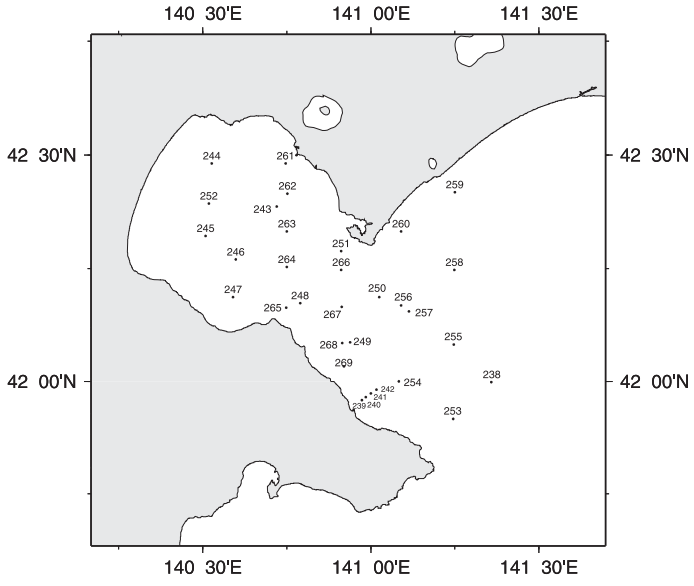

Table 1: List of oceanographic stations

Cruise 148

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08171	43-27.5	145-25.9	5/25	0501-0505	20	SSE-1	East-1	SSE-3	8.6	6.8	f	1012.2
US08172	43-29.6	145-29.8	5/25	0533-0541	24	SSE-1	East-1	SSE-3	8.1	6.4	f	1012.0
US08173	43-27.6	145-34.3	5/25	0609-0614	30	South-2	East-1	South-4	8.5	6.5	f	1011.6
US08174	43-35.1	145-26.6	5/25	0712-0714	13	South-1	East-1	South-3	8.7	6.1	f	1011.0
US08175	43-33.5	145-23.6	5/25	0739-0742	12	SSE-2	East-1	SSE-4	9.2	8.1	f	1010.3
US08176	43-31.4	145-19.6	5/25	0814-0817	6	SSE-1	East-1	SSE-3	9.3	8.5	f	1010.1
US08177	43-25.6	145-21.7	5/25	0857-0900	11	SSW-1	East-1	SSW-3	9.7	7.3	f	1010.1
US08178	43-24.3	145-20.2	5/25	0915-0918	9	SSW-2	East-1	SSW-5	10.4	7.1	f	1010.2
US08179	43-19.2	145-25.9	5/25	1002-1009	12	SSW-3	East-1	SSW-5	9.5	7.0	f	1010.2
US08180	43-20.0	145-27.7	5/25	1017-1020	14	SSW-3	East-1	SSW-5	9.7	6.7	f	1010.5
US08181	43-22.3	145-31.9	5/25	1047-1050	17	SSW-3	South-1	SSW-5	9.4	6.7	f	1010.3
US08182	43-24.6	145-36.0	5/25	1113-1117	25	South-2	South-1	South-3	9.4	6.4	f	1010.1
US08183	43-26.9	145-40.1	5/25	1141-1144	31	SSE-1	South-1	SSE-3	9.0	6.3	f	1010.1
US08184	43-57.5	145-10.2	5/29	1305-1317	79	East-2	NE -1	East-4	5.2	5.6	bc	1015.6
US08185	43-56.7	145-12.0	5/29	1344-1350	84	East-2	NE -1	East-4	5.7	5.7	bc	1015.6
US08186	43-55.4	145-14.6	5/29	1415-1422	82	NE -3	NE -1	NE -5	5.2	5.0	bc	1016.0
US08187	43-59.0	145-18.8	5/29	1519-1531	270	ENE-3	NE -1	ENE-5	5.2	5.2	bc	1015.7
US08188	44-00.5	145-16.5	5/29	1550-1609	442	NNE-3	NE -1	NNE-5	5.6	5.9	bc	1015.8
US08189	44-01.6	145-14.1	5/29	1629-1641	288	SSW-1	NE -1	SSW-3	6.7	5.9	bc	1016.0
US08190	44-05.9	145-16.3	5/30	0547-0601	328	NNE-2	NE -1	NNE-4	4.0	4.8	o	1022.1
US08191	44-04.6	145-20.2	5/30	0650-0723	828	NNE-2	NE -1	NNE-4	3.9	4.2	o	1022.5
US08192	44-03.4	145-22.4	5/30	0758-0822	540	NNE-2	NE -1	NNE-4	4.3	3.8	o	1022.4
US08193	44-07.0	145-27.3	5/30	0919-1001	1124	NNE-2	NNE-1	NNE-4	4.0	3.8	o	1023.1
US08194	44-08.8	145-24.5	5/30	1034-1120	1512	NNE-2	NNE-1	NNE-4	3.7	4.0	o	1023.6
US08195	44-10.4	145-20.9	5/30	1141-1152	264	NNE-2	NNE-1	NNE-4	4.0	3.9	o	1023.7
US08196	44-15.3	145-23.1	5/30	1232-1243	140	North-2	NNE-1	North-4	5.1	4.1	c	1023.6
US08197	44-13.5	145-26.2	5/30	1306-1357	1570	North-1	NE -1	North-4	5.4	4.3	o	1023.6
US08198	44-11.9	145-29.9	5/30	1424-1514	2057	NNE-2	NE -1	NNE-4	5.0	4.3	o	1023.7
US08199	44-18.8	145-28.4	5/30	1612-1705	1599	NE -2	NE -1	NE -3	3.6	4.2	o	1023.7
US08200	44-20.5	145-25.0	5/30	1723-1756	1038	East-1	NNE-1	East-3	3.8	4.2	o	1024.0
US08201	44-17.8	145-31.9	5/31	0557-0649	2120	South-3	SE -1	South-5	2.9	3.9	f	1023.0
US08202	44-21.6	145-21.7	5/31	0753-0800	73	SSE-3	SSW-1	SSE-6	4.6	3.9	c	1021.8
US08203	44-23.1	145-17.8	5/31	0830-0852	723	NW -1	NE -1	NW -3	5.2	5.4	bc	1021.5
US08204	44-20.9	145-09.4	5/31	0942-1017	1235	Calm	NE -1	Calm	5.7	3.9	bc	1021.6
US08205	44-19.5	145-12.5	5/31	1058-1118	741	NNE-1	NE -1	NNE-2	8.3	6.2	bc	1020.6
US08206	44-18.2	145-15.8	5/31	1146-1152	100	Calm	NE -1	Calm	9.2	6.4	bc	1020.1
US08207	44-14.0	145-11.8	5/31	1232-1239	101	ESE-3	North-1	ESE-6	11.9	6.1	bc	1019.1
US08208	44-15.2	145-09.0	5/31	1305-1328	595	SSE-2	NE -1	SSE-4	10.1	6.9	bc	1019.2
US08209	44-16.8	145-05.5	5/31	1404-1425	901	Calm	NE -1	Calm	8.0	4.5	bc	1019.1
US08210	44-13.6	145-00.0	5/31	1515-1536	671	ENE-1	South-1	ENE-2	11.0	4.5	bc	1018.5
US08211	44-11.8	145-03.3	5/31	1612-1628	465	NNW-1	Soouth-1	NNW-2	11.1	4.5	bc	1017.6
US08212	44-10.9	145-05.8	6/1	0604-0625	368	Calm	NE -1	Calm	7.0	6.4	bc	1018.0
US08213	44-24.8	145-14.2	6/2	0400-0453	1425	Calm	East-1	Calm	5.9	4.9	bc	1023.4

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Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08214	41-10.1	140-40.9	6/11	1233-1236	58	West-3	WNW-1	West-5	15.5	13.8	bc	1006.5
US08215	41-09.4	140-42.6	6/11	1257-1301	77	West-2	WNW-1	West-4	19.7	14.4	bc	1006.3
US08216	41-05.3	140-43.9	6/11	1407-1411	61	WNW-2	West-1	WNW-4	18.4	14.2	bc	1006.2
US08217	41-05.8	140-46.7	6/11	1500-1504	63	NW -1	NW -1	NW -3	19.2	14.3	bc	1006.0
US08218	41-06.0	140-50.9	6/11	1530-1534	54	WNW-2	West-1	WNW-4	19.1	12.9	bc	1006.1
US08219	41-06.6	140-55.5	6/12	0631-0635	48	WSW-1	South-1	WSW-2	13.8	13.7	bc	1007.6
US08220	41-04.8	140-51.8	6/12	0838-0842	53	Calm	South-1	Calm	15.7	14.1	bc	1007.6
US08221	41-03.6	140-52.2	6/12	0913-0917	51	Calm	South-1	Calm	17.5	13.9	bc	1007.6
US08222	41-02.8	140-46.2	6/12	1004-1008	53	Calm	South-1	Calm	17.9	14.7	bc	1007.1
US08223	41-00.9	140-42.9	6/12	1042-1046	56	Calm	South-1	Calm	18.9	14.6	bc	1006.6
US08224	41-00.3	140-46.7	6/12	1230-1234	53	Calm	NNW-1	Calm	22.0	16.0	bc	1005.8
US08225	40-52.3	140-46.1	6/12	1352-1355	31	NNW-2	NNW-1	NNW-4	19.6	17.3	bc	1005.1
US08226	40-55.2	140-46.6	6/13	0721-0724	42	Calm	NNW-1	Calm	17.6	15.8	bc	1005.4
US08227	40-57.3	140-45.5	6/13	0823-0826	51	NNE-1	North-1	NNE-3	17.7	14.9	bc	1006.0
US08228	41-04.2	140-58.0	6/13	1011-1015	51	NE -2	ENE-1	NE -4	15.5	14.5	r	1006.7
US08229	41-05.6	141-01.9	6/13	1128-1132	47	ENE-1	ENE-1	ENE-3	14.7	14.4	c	1007.1
US08230	41-05.8	141-09.8	6/13	1237-1241	39	ESE-2	NE -1	ESE-3	14.4	14.5	c	1007.4
US08231	41-00.4	141-06.9	6/13	1454-1458	44	ESE-2	SE-1	ESE-4	13.0	14.5	r	1008.0
US08232	40-57.1	141-07.0	6/13	1541-1545	37	ESE-3	SE-1	ESE-5	14.0	14.7	o	1007.5
US08233	41-08.8	141-11.1	6/14	0728-0730	35	NNE-1	NNE-1	NNE-3	12.6	14.6	o	1013.6
US08234	41-11.6	141-10.8	6/14	0841-0844	29	Calm	North-1	Calm	14.0	14.8	bc	1013.6
US08235	41-08.0	141-03.8	6/14	0947-0950	37	South-1	North-1	South-2	14.6	14.7	c	1013.6
US08236	41-09.1	140-44.4	6/14	1137-1141	62	Calm	NW -1	Calm	16.3	14.9	bc	1013.7
US08237	41-11.6	140-42.6	6/14	1203-1207	73	Calm	NW -1	Calm	15.8	14.5	bc	1013.7

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Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08238	41-59.9	141-21.5	6/20	1758-1810	332	SSW-1	South-1	SSW-2	16.1	14.5	c	1007.6
US08239	41-57.5	140-58.4	6/22	0903-0907	80	ESE-1	East-1	ESE-3	14.7	11.5	o	1007.7
US08240	41-57.9	140-59.1	6/22	0911-0915	85	SE -2	East-2	SE -4	13.5	11.4	o	1007.7
US08241	41-58.4	141-00.0	6/22	0921-0925	90	SE -2	East-2	SE -4	13.4	12.0	o	1007.7
US08242	41-58.9	141-01.0	6/22	0931-0935	96	ESE-2	East-2	ESE-4	13.2	12.5	o	1007.7
US08243	42-23.2	140-43.2	6/24	1304-1311	58	WSW-1	SE -1	WSW-3	18.3	15.1	bc	1006.7
US08244	42-28.9	140-31.6	6/24	1414-1422	76	Calm	SE -1	Calm	20.3	15.9	bc	1006.1
US08245	42-19.3	140-30.5	6/24	1621-1627	94	SE -1	SE -1	SE -2	18.1	15.4	c	1005.6
US08246	42-16.2	140-35.9	6/24	1711-1719	92	Calm	SE -1	Calm	18.9	16.6	bc	1005.6
US08247	42-11.2	140-35.4	6/25	0613-0622	82	Calm	SE -1	Calm	17.1	15.9	bc	1007.1
US08248	42-10.4	140-47.4	6/25	0717-0725	93	ESE-1	SE -1	ESE-2	16.9	15.2	c	1007.6
US08249	42-05.2	140-56.3	6/25	0825-0831	86	Calm	SE -1	Calm	17.2	15.8	c	1007.6
US08250	42-11.2	141-01.5	6/25	0916-0922	81	Calm	SE -1	Calm	17.3	14.8	bc	1007.6
US08251	42-17.3	140-54.7	6/25	1008-1013	57	SE -1	SE -1	SE -3	19.1	16.2	bc	1007.7
US08252	42-23.6	140-31.1	6/26	1306-1312	96	ESE-2	ESE-1	ESE-4	15.2	16.1	bc	1008.2
US08253	41-55.0	141-14.7	6/28	0819-0827	240	NE -1	East-1	NE -3	15.0	14.5	c	1015.6
US08254	42-00.0	141-05.0	6/28	0930-0934	117	Calm	East-1	Calm	16.0	15.3	c	1015.2
US08255	42-04.9	141-14.8	6/28	1035-1043	224	Calm	East-1	Calm	16.2	14.7	c	1015.1
US08256	42-10.1	141-05.4	6/28	1145-1149	93	Calm	ESE-1	Calm	18.5	15.9	c	1014.6
US08257	42-09.3	141-06.8	6/28	1204-1209	100	Calm	ESE-1	Calm	19.6	15.9	c	1014.6
US08258	42-14.8	141-14.9	6/28	1337-1343	172	ESE-1	ESE-1	ESE-3	15.9	16.4	c	1014.2
US08259	42-25.1	141-15.0	6/28	1549-1552	69	Calm	ESE-1	Calm	15.9	16.1	c	1013.5
US08260	42-19.9	141-05.4	6/28	1757-1800	52	SE -1	ESE-1	SE -2	16.6	16.8	bc	1012.4
US08261	42-28.9	140-44.8	6/29	No Data								
US08262	42-24.9	140-45.1	6/29	0534-0536	55	SSE-1	SSE-1	SSE-2	16.2	17.3	o	1011.6
US08263	42-19.9	140-45.0	6/29	0610-0614	59	SSW-1	SSE-1	SSW-3	16.1	16.7	o	1011.5
US08264	42-15.2	140-45.0	6/29	0646-0650	78	SW -2	SSE-1	SW -2	15.8	16.0	o	1011.4
US08265	42-09.8	140-44.9	6/29	0729-0733	87	Calm	SSE-1	Calm	16.1	15.8	o	1011.5
US08266	42-14.8	140-54.7	6/29	0834-0837	61	Calm	SE -1	Calm	16.9	17.7	o	1011.3
US08267	42-09.9	140-54.8	6/29	0909-0913	76	Calm	SE -1	Calm	17.8	16.1	c	1011.1
US08268	42-05.1	140-54.9	6/29	0946-0950	88	SE -1	SE -1	SE -3	16.9	16.6	o	1011.1
US08269	42-02.0	140-55.2	6/29	1012-1016	79	East-2	SE -1	East-4	16.4	16.0	o	1010.8

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION	US08171		
LATITUDE	43-27.5	N	
LONGITUDE	145-25.9	E	
DEPTH (m)	20		

Press.	Temp.	Salinity	Sigma-T
5	6.941	32.123	25.161
10	5.143	32.280	25.503

STATION	US08172		
LATITUDE	43-29.6	N	
LONGITUDE	145-29.8	E	
DEPTH (m)	24		

Press.	Temp.	Salinity	Sigma-T
5	6.874	32.034	25.100
10	5.853	32.415	25.528
20	3.646	32.688	25.982

STATION	US08173		
LATITUDE	43-27.6	N	
LONGITUDE	145-34.3	E	
DEPTH (m)	30		

Press.	Temp.	Salinity	Sigma-T
5	6.635	32.243	25.295
10	5.613	32.443	25.578
20	3.808	32.654	25.939

STATION	US08174		
LATITUDE	43-35.1	N	
LONGITUDE	145-26.6	E	
DEPTH (m)	13		

Press.	Temp.	Salinity	Sigma-T
5	6.578	32.090	25.182
10	5.356	32.298	25.494

STATION	US08175		
LATITUDE	43-33.5	N	
LONGITUDE	145-23.6	E	
DEPTH (m)	12		

Press.	Temp.	Salinity	Sigma-T
5	7.946	31.757	24.735

STATION	US08176		
LATITUDE	43-31.4	N	
LONGITUDE	145-19.6	E	
DEPTH (m)	6		

Press.	Temp.	Salinity	Sigma-T
5	8.032	31.778	24.739

STATION	US08177		
LATITUDE	43-25.6	N	
LONGITUDE	145-21.7	E	
DEPTH (m)	11		

Press.	Temp.	Salinity	Sigma-T
5	7.723	31.942	24.912

STATION	US08178		
LATITUDE	43-24.3	N	
LONGITUDE	145-20.2	E	
DEPTH (m)	9		

Press.	Temp.	Salinity	Sigma-T
5	6.973	31.963	25.030

STATION	US08179		
LATITUDE	43-19.2	N	
LONGITUDE	145-25.9	E	
DEPTH (m)	12		

Press.	Temp.	Salinity	Sigma-T
5	6.466	32.144	25.239

STATION	US08180		
LATITUDE	43-20.0	N	
LONGITUDE	145-27.7	E	
DEPTH (m)	14		

Press.	Temp.	Salinity	Sigma-T
5	7.035	31.901	24.974
10	4.933	32.295	25.539

STATION	US08181		
LATITUDE	43-22.3	N	
LONGITUDE	145-31.9	E	
DEPTH (m)	17		

Press.	Temp.	Salinity	Sigma-T
5	7.080	31.994	25.041
10	6.476	32.112	25.212

STATION	US08182		
LATITUDE	43-24.6	N	
LONGITUDE	145-36.0	E	
DEPTH (m)	25		

Press.	Temp.	Salinity	Sigma-T
5	6.613	32.127	25.206
10	5.406	32.312	25.499
20	3.673	32.683	25.975

STATION	US08183		
LATITUDE	43-26.9	N	
LONGITUDE	145-40.1	E	
DEPTH (m)	31		

Press.	Temp.	Salinity	Sigma-T
5	6.701	32.216	25.266
10	5.178	32.550	25.714
20	3.779	32.712	25.988

STATION	US08184		
LATITUDE	43-57.5	N	
LONGITUDE	145-10.2	E	
DEPTH (m)	79		

Press.	Temp.	Salinity	Sigma-T
5	6.268	32.094	25.224
10	5.636	32.140	25.337
20	4.804	32.264	25.528
30	3.681	32.280	25.653
40	−0.236	32.813	26.352
50	−0.022	32.925	26.432
75	−0.104	33.036	26.526

STATION	US08185		
LATITUDE	43-56.7	N	
LONGITUDE	145-12.0	E	
DEPTH (m)	84		

Press.	Temp.	Salinity	Sigma-T
5	6.118	32.125	25.267
10	5.616	32.137	25.337
20	5.136	32.283	25.507
30	3.940	32.290	25.637
40	1.071	32.458	25.997
50	−0.213	32.801	26.341
75	−0.089	33.038	26.527

STATION	US08186		
LATITUDE	43-55.4	N	
LONGITUDE	145-14.6	E	
DEPTH (m)	82		

Press.	Temp.	Salinity	Sigma-T
5	5.336	32.198	25.417
10	5.259	32.191	25.420
20	5.025	32.264	25.504
30	4.776	32.258	25.526
40	3.531	32.310	25.691
50	0.275	32.607	26.161
75	−0.217	33.057	26.548

STATION	US08187		
LATITUDE	43-59.0	N	
LONGITUDE	145-18.8	E	
DEPTH (m)	270		

Press.	Temp.	Salinity	Sigma-T
5	5.938	32.090	25.262
10	5.160	32.204	25.442
20	4.644	32.445	25.688
30	4.076	32.582	25.855
40	4.043	32.627	25.895
50	2.743	32.729	26.094
75	0.090	32.938	26.438
100	−0.309	33.062	26.556
125	−0.158	33.143	26.615
150	−0.014	33.170	26.629
175	0.073	33.210	26.658
200	0.165	33.246	26.682

STATION	US08188		
LATITUDE	44-00.5	N	
LONGITUDE	145-16.5	E	
DEPTH (m)	442		

Press.	Temp.	Salinity	Sigma-T
5	5.305	32.258	25.468
10	5.162	32.269	25.492
20	4.824	32.254	25.518
30	4.052	32.419	25.728
40	4.052	32.496	25.790
50	2.090	32.707	26.128
75	0.173	32.943	26.438
100	−0.133	33.038	26.528
125	−0.266	33.085	26.573
150	−0.190	33.140	26.614
175	0.031	33.211	26.661
200	0.271	33.290	26.712
250	0.591	33.363	26.753
300	0.783	33.436	26.801
400	1.072	33.534	26.862

STATION US08189
LATITUDE 44-01.6 N
LONGITUDE 145-14.1 E
DEPTH (m) 288

Press.	Temp.	Salinity	Sigma-T
5	5.572	32.143	25.347
10	5.188	32.247	25.472
20	4.699	32.279	25.551
30	4.184	32.343	25.655
40	2.200	32.407	25.880
50	0.500	32.701	26.225
75	0.019	32.972	26.468
100	−0.158	33.078	26.562
125	−0.160	33.140	26.612
150	−0.150	33.165	26.632
175	−0.073	33.209	26.664
200	0.003	33.237	26.683
250	0.336	33.315	26.729

STATION US08190
LATITUDE 44-05.9 N
LONGITUDE 145-16.3 E
DEPTH (m) 328

Press.	Temp.	Salinity	Sigma-T
5	5.335	32.168	25.393
10	4.671	32.301	25.572
20	4.347	32.349	25.643
30	4.308	32.395	25.683
40	2.037	32.475	25.946
50	0.386	32.723	26.249
75	0.205	33.002	26.483
100	−0.102	33.057	26.543
125	−0.072	33.095	26.572
150	−0.177	33.151	26.622
175	0.119	33.181	26.632
200	0.281	33.260	26.687
250	0.458	33.344	26.746

STATION US08191
LATITUDE 44-04.6 N
LONGITUDE 145-20.2 E
DEPTH (m) 828

Press.	Temp.	Salinity	Sigma-T
5	4.555	32.352	25.624
10	4.330	32.387	25.675
20	4.254	32.403	25.695
30	3.850	32.476	25.793
40	3.492	32.597	25.923
50	2.849	32.771	26.119
75	1.432	33.010	26.418
100	−0.147	33.113	26.590
125	−0.336	33.113	26.599
150	−0.268	33.145	26.621
175	−0.145	33.182	26.645
200	0.121	33.236	26.676
250	0.450	33.345	26.747
300	0.834	33.431	26.794
400	1.025	33.529	26.861
500	1.249	33.623	26.922
600	1.476	33.713	26.979
700	1.720	33.815	27.043

STATION US08192
LATITUDE 44-03.4 N
LONGITUDE 145-22.4 E
DEPTH (m) 540

Press.	Temp.	Salinity	Sigma-T
5	4.356	32.033	25.392
10	4.095	32.469	25.764
20	4.100	32.614	25.879
30	3.610	32.677	25.976
40	3.175	32.818	26.128
50	3.143	32.959	26.243
75	1.146	33.226	26.610
100	1.362	33.123	26.513
125	0.118	33.167	26.621
150	−0.136	33.176	26.640
175	−0.118	33.198	26.657
200	0.082	33.254	26.693
250	0.549	33.345	26.741
300	0.680	33.378	26.761
400	1.091	33.545	26.870

STATION US08193
LATITUDE 44-07.0 N
LONGITUDE 145-27.3 E
DEPTH (m) 1124

Press.	Temp.	Salinity	Sigma-T
5	4.223	32.462	25.746
10	4.019	32.492	25.790
20	3.884	32.567	25.862
30	3.345	32.625	25.959
40	3.067	32.659	26.011
50	2.690	32.732	26.101
75	1.454	32.953	26.371
100	1.548	33.125	26.502
125	0.482	33.147	26.585
150	−0.174	33.178	26.643
175	−0.141	33.211	26.669
200	0.389	33.279	26.697
250	0.782	33.399	26.771
300	0.830	33.446	26.807
400	1.142	33.560	26.879
500	1.346	33.628	26.920
600	1.402	33.675	26.953
700	1.647	33.773	27.015
800	2.030	33.952	27.129
900	2.238	34.127	27.253

STATION US08194
LATITUDE 44-08.8 N
LONGITUDE 145-24.5 E
DEPTH (m) 1512

Press.	Temp.	Salinity	Sigma-T
5	4.426	32.376	25.657
10	4.395	32.406	25.683
20	3.914	32.539	25.837
30	3.726	32.611	25.913
40	3.685	32.628	25.930
50	3.720	32.632	25.930
75	2.609	32.966	26.295
100	0.673	33.070	26.513
125	−0.292	33.103	26.589
150	−0.347	33.151	26.629
175	−0.392	33.174	26.650
200	0.055	33.219	26.666
250	0.680	33.367	26.752
300	0.958	33.462	26.812
400	1.205	33.563	26.877
500	1.265	33.615	26.915
600	1.424	33.696	26.969
700	1.701	33.794	27.028
800	2.083	33.983	27.150
900	2.241	34.114	27.243
1000	2.273	34.220	27.325
1200	2.258	34.367	27.444

STATION US08195
LATITUDE 44-10.4 N
LONGITUDE 145-20.9 E
DEPTH (m) 264

Press.	Temp.	Salinity	Sigma-T
5	4.391	32.331	25.624
10	4.375	32.334	25.628
20	4.177	32.382	25.687
30	3.965	32.478	25.783
40	3.661	32.649	25.949
50	3.393	32.735	26.042
75	0.702	32.948	26.413
100	0.400	33.101	26.553
125	0.284	33.132	26.584
150	0.052	33.174	26.629
175	0.148	33.214	26.658
200	0.206	33.243	26.678

STATION US08196
LATITUDE 44-15.3 N
LONGITUDE 145-23.1 E
DEPTH (m) 140

Press.	Temp.	Salinity	Sigma-T
5	4.394	32.368	25.654
10	4.340	32.419	25.699
20	4.097	32.569	25.843
30	3.571	32.873	26.136
40	3.879	32.978	26.190
50	4.642	33.138	26.239
75	3.317	33.308	26.506
100	1.853	33.237	26.570

STATION US08197
LATITUDE 44-13.5 N
LONGITUDE 145-26.2 E
DEPTH (m) 1570

Press.	Temp.	Salinity	Sigma-T
5	4.652	32.283	25.559
10	4.607	32.352	25.619
20	4.244	32.485	25.761
30	4.152	32.509	25.790
40	4.082	32.548	25.828
50	4.033	32.611	25.883
75	1.927	32.992	26.369
100	1.010	33.065	26.489
125	0.220	33.089	26.552
150	−0.370	33.120	26.606
175	−0.258	33.159	26.632
200	0.047	33.210	26.659
250	0.287	33.298	26.717
300	0.703	33.417	26.791
400	1.096	33.559	26.881
500	1.273	33.621	26.919
600	1.405	33.686	26.962
700	1.684	33.790	27.026
800	2.133	34.020	27.176
900	2.242	34.134	27.259
1000	2.305	34.239	27.338
1200	2.258	34.380	27.455

STATION US08198
LATITUDE 44-11.9 N
LONGITUDE 145-29.9 E
DEPTH (m) 2057

Press.	Temp.	Salinity	Sigma-T
5	4.701	32.290	25.559
10	4.699	32.294	25.563
20	4.535	32.369	25.640
30	3.461	32.664	25.980
40	4.172	32.894	26.094
50	4.159	33.014	26.190
75	4.750	33.269	26.331
100	1.498	33.301	26.647
125	0.466	33.107	26.554
150	0.032	33.138	26.602
175	0.065	33.191	26.643
200	−0.136	33.225	26.680
250	0.513	33.359	26.755
300	0.775	33.441	26.806
400	1.105	33.563	26.883
500	1.375	33.645	26.931
600	1.461	33.701	26.970
700	1.625	33.767	27.011
800	2.056	33.955	27.130
900	2.251	34.126	27.252
1000	2.291	34.243	27.342
1200	2.275	34.364	27.440

STATION US08199
LATITUDE 44-18.8 N
LONGITUDE 145-28.4 E
DEPTH (m) 1599

Press.	Temp.	Salinity	Sigma-T
5	4.721	32.251	25.526
10	4.628	32.313	25.585
20	4.404	32.410	25.685
30	3.973	32.539	25.831
40	3.788	32.664	25.949
50	3.317	32.811	26.110
75	1.774	33.073	26.444
100	1.148	33.155	26.552
125	0.451	33.099	26.549
150	−0.280	33.131	26.610
175	−0.606	33.196	26.676
200	−0.206	33.194	26.658
250	0.264	33.309	26.728
300	0.541	33.372	26.764
400	0.900	33.484	26.832
500	1.139	33.589	26.902
600	1.325	33.659	26.946
700	1.863	33.868	27.075
800	2.190	34.061	27.205
900	2.278	34.158	27.275
1000	2.308	34.254	27.350
1200	2.270	34.378	27.452

STATION US08200
LATITUDE 44-20.5 N
LONGITUDE 145-25.0 E
DEPTH (m) 1038

Press.	Temp.	Salinity	Sigma-T
5	4.634	32.330	25.598
10	4.613	32.348	25.615
20	4.348	32.516	25.776
30	4.068	32.637	25.900
40	2.681	32.904	26.239
50	0.227	32.966	26.453
75	0.953	33.053	26.482
100	0.301	33.107	26.563
125	0.530	33.095	26.541
150	−0.221	33.184	26.650
175	0.564	33.271	26.681
200	1.989	33.438	26.721
250	1.372	33.434	26.762
300	1.491	33.461	26.776
400	1.071	33.556	26.880
500	1.263	33.636	26.932
600	1.464	33.704	26.973
700	1.707	33.795	27.028

STATION US08201
LATITUDE 44-17.8 N
LONGITUDE 145-31.9 E
DEPTH (m) 2120

Press.	Temp.	Salinity	Sigma-T
5	4.698	32.351	25.608
10	4.695	32.347	25.606
20	4.363	32.450	25.722
30	3.800	32.730	26.000
40	3.010	32.801	26.129
50	4.086	33.077	26.248
75	4.090	33.223	26.364
100	4.775	33.382	26.418
125	4.174	33.408	26.502
150	2.716	33.415	26.645
175	0.143	33.261	26.696
200	−0.110	33.223	26.677
250	0.388	33.328	26.736
300	1.044	33.453	26.799
400	1.214	33.548	26.864
500	1.176	33.600	26.908
600	1.393	33.684	26.961
700	1.741	33.802	27.031
800	2.123	34.001	27.161
900	2.269	34.151	27.270
1000	2.308	34.258	27.352
1200	2.258	34.389	27.462

STATION US08202
LATITUDE 44-21.6 N
LONGITUDE 145-21.7 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	4.803	33.093	26.185
10	4.934	33.130	26.200
20	5.261	33.224	26.238
30	5.271	33.256	26.262
40	5.355	33.271	26.264
50	5.232	33.346	26.338

STATION US08203
LATITUDE 44-23.1 N
LONGITUDE 145-17.8 E
DEPTH (m) 723

Press.	Temp.	Salinity	Sigma-T
5	5.765	33.171	26.136
10	5.837	33.274	26.209
20	5.701	33.396	26.322
30	5.495	33.394	26.345
40	5.130	33.435	26.420
50	4.988	33.449	26.447
75	3.511	33.388	26.551
100	3.015	33.424	26.625
125	3.152	33.521	26.691
150	2.953	33.506	26.696
175	2.833	33.512	26.712
200	1.904	33.510	26.785
250	1.400	33.433	26.759
300	1.457	33.505	26.814
400	2.232	33.686	26.901
500	1.950	33.704	26.937

STATION US08204
LATITUDE 44-20.9 N
LONGITUDE 145-09.4 E
DEPTH (m) 1235

Press.	Temp.	Salinity	Sigma-T
5	3.816	32.788	26.045
10	3.837	32.820	26.068
20	4.037	33.110	26.280
30	3.412	33.162	26.381
40	2.477	33.193	26.487
50	1.023	33.133	26.543
75	0.337	33.187	26.626
100	1.121	33.270	26.647
125	2.996	33.508	26.695
150	1.329	33.633	26.924
175	1.271	33.472	26.799
200	1.753	33.538	26.819
250	2.869	33.704	26.862
300	1.635	33.602	26.878
400	2.049	33.658	26.893
500	1.667	33.716	26.968
600	2.026	33.808	27.015
700	2.051	33.836	27.035
800	2.086	33.965	27.136
900	2.267	34.167	27.283
1000	2.298	34.267	27.361

STATION US08205
LATITUDE 44-19.5 N
LONGITUDE 145-12.5 E
DEPTH (m) 741

Press.	Temp.	Salinity	Sigma-T
5	6.503	33.418	26.239
10	5.196	33.343	26.339
20	4.514	33.269	26.356
30	4.489	33.433	26.489
40	5.118	33.545	26.508
50	4.507	33.560	26.588
75	3.130	33.432	26.622
100	2.794	33.502	26.707
125	2.705	33.515	26.726
150	2.469	33.532	26.759
175	2.305	33.562	26.796
200	2.201	33.571	26.812
250	2.296	33.642	26.860
300	2.165	33.663	26.888
400	2.251	33.698	26.909
500	2.257	33.763	26.960

STATION US08206
LATITUDE 44-18.2 N
LONGITUDE 145-15.8 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	5.922	33.324	26.238
10	5.499	33.349	26.309
20	5.232	33.469	26.435
30	5.049	33.535	26.508
40	4.944	33.520	26.508
50	4.860	33.512	26.511
75	4.281	33.524	26.583

STATION US08207
LATITUDE 44-14.0 N
LONGITUDE 145-11.8 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	6.730	33.489	26.265
10	6.634	33.486	26.275
20	5.746	33.469	26.375
30	5.645	33.515	26.422
40	5.698	33.573	26.462
50	5.579	33.597	26.496
75	5.363	33.600	26.524

STATION US08208
LATITUDE 44-15.2 N
LONGITUDE 145-09.0 E
DEPTH (m) 595

Press.	Temp.	Salinity	Sigma-T
5	7.259	33.529	26.225
10	5.164	33.480	26.451
20	5.522	33.620	26.521
30	5.145	33.594	26.544
40	5.031	33.584	26.549
50	4.798	33.579	26.572
75	3.866	33.543	26.641
100	2.421	33.514	26.748
125	2.899	33.578	26.759
150	3.351	33.621	26.752
175	2.977	33.639	26.801
200	2.931	33.672	26.831
250	2.420	33.662	26.867
300	2.001	33.640	26.882
400	1.951	33.701	26.934
500	2.161	33.741	26.950

STATION US08209
LATITUDE 44-16.8 N
LONGITUDE 145-05.5 E
DEPTH (m) 901

Press.	Temp.	Salinity	Sigma-T
5	4.088	33.020	26.202
10	3.412	33.229	26.434
20	2.091	33.442	26.717
30	0.806	33.386	26.760
40	0.420	33.309	26.719
50	0.711	33.339	26.727
75	1.051	33.340	26.708
100	2.453	33.513	26.745
125	0.821	33.401	26.771
150	0.672	33.425	26.799
175	0.766	33.437	26.803
200	0.867	33.464	26.819
250	2.453	33.676	26.875
300	2.830	33.768	26.917
400	2.683	33.784	26.942

STATION US08210
LATITUDE 44-13.6 N
LONGITUDE 145-00.0 E
DEPTH (m) 671

Press.	Temp.	Salinity	Sigma-T
5	4.332	33.162	26.291
10	4.034	33.242	26.385
20	3.558	33.429	26.580
30	2.485	33.449	26.691
40	2.413	33.381	26.643
50	2.182	33.422	26.693
75	2.454	33.442	26.688
100	2.064	33.473	26.744
125	1.953	33.495	26.769
150	2.367	33.533	26.768
175	3.128	33.694	26.831
200	3.165	33.723	26.851
250	3.057	33.732	26.868
300	1.930	33.645	26.891
400	2.375	33.747	26.939

STATION US08211
LATITUDE 44-11.8 N
LONGITUDE 145-03.3 E
DEPTH (m) 465

Press.	Temp.	Salinity	Sigma-T
5	7.214	33.360	26.097
10	7.159	33.384	26.124
20	6.687	33.537	26.308
30	6.431	33.565	26.364
40	6.197	33.571	26.399
50	5.951	33.588	26.443
75	4.821	33.601	26.586
100	4.370	33.647	26.672
125	3.837	33.630	26.713
150	2.995	33.522	26.706
175	3.267	33.677	26.805
200	3.388	33.703	26.814
250	3.467	33.742	26.838
300	3.166	33.736	26.861

STATION US08212
LATITUDE 44-10.9 N
LONGITUDE 145-05.8 E
DEPTH (m) 368

Press.	Temp.	Salinity	Sigma-T
5	6.521	33.308	26.149
10	6.091	33.416	26.289
20	5.816	33.484	26.377
30	5.837	33.513	26.398
40	5.836	33.545	26.423
50	5.713	33.569	26.457
75	5.352	33.578	26.508
100	2.746	33.502	26.712
125	2.515	33.472	26.707
150	3.126	33.563	26.727
175	3.465	33.679	26.788
200	3.223	33.694	26.823
250	3.154	33.691	26.826
300	2.964	33.676	26.831

STATION US08213
LATITUDE 44-24.8 N
LONGITUDE 145-14.2 E
DEPTH (m) 1425

Press.	Temp.	Salinity	Sigma-T
5	5.317	33.141	26.166
10	5.405	33.173	26.181
20	4.997	33.310	26.336
30	5.396	33.426	26.382
40	4.139	33.426	26.520
50	3.102	33.471	26.655
75	2.770	33.498	26.706
100	2.174	33.486	26.745
125	2.950	33.547	26.730
150	2.366	33.592	26.815
175	2.009	33.567	26.823
200	2.016	33.555	26.813
250	2.002	33.585	26.838
300	2.207	33.643	26.868
400	2.091	33.729	26.947
500	2.357	33.778	26.965
600	2.050	33.786	26.995
700	1.983	33.816	27.024
800	2.120	33.994	27.157
900	2.282	34.165	27.280
1000	2.317	34.274	27.365
1200	2.237	34.405	27.476

STATION US08214
LATITUDE 41-10.1 N
LONGITUDE 140-40.9 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	14.200	33.770	25.195
10	13.785	33.795	25.301
20	13.586	33.825	25.365
30	13.405	33.835	25.409
40	13.045	33.858	25.499
50	11.799	33.936	25.801

STATION US08215
LATITUDE 41-09.4 N
LONGITUDE 140-42.6 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	13.789	33.795	25.299
10	13.619	33.805	25.342
20	13.461	33.858	25.415
30	12.872	33.878	25.549
40	12.283	33.918	25.695
50	11.507	33.928	25.848

STATION US08216
LATITUDE 41-05.3 N
LONGITUDE 140-43.9 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	13.931	33.681	25.182
10	13.720	33.699	25.240
20	12.394	33.825	25.601
30	11.367	33.681	25.682
40	11.092	33.741	25.779
50	10.433	33.883	26.006

STATION US08217
LATITUDE 41-05.8 N
LONGITUDE 140-46.7 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	14.300	33.511	24.974
10	12.275	33.515	25.384
20	11.632	33.624	25.589
30	11.320	33.685	25.694
40	10.969	33.775	25.827
50	9.618	33.739	26.031

STATION US08218
LATITUDE 41-06.0 N
LONGITUDE 140-50.9 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	13.379	33.439	25.108
10	12.243	33.532	25.403
20	11.716	33.634	25.582
30	11.630	33.774	25.706
40	10.285	33.665	25.861
50	7.745	33.564	26.183

STATION US08219
LATITUDE 41-06.6 N
LONGITUDE 140-55.5 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	14.036	33.404	24.947
10	13.132	33.482	25.191
20	10.870	33.421	25.569
30	10.496	33.514	25.707
40	9.242	33.550	25.944

STATION US08220
LATITUDE 41-04.8 N
LONGITUDE 140-51.8 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	13.770	33.441	25.030
10	12.717	33.474	25.267
20	11.787	33.612	25.552
30	11.045	33.670	25.732
40	10.433	33.752	25.904
50	9.765	33.901	26.133

STATION US08221
LATITUDE 41-03.6 N
LONGITUDE 140-52.2 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	13.962	33.381	24.944
10	13.646	33.406	25.028
20	11.949	33.540	25.465
30	10.420	33.483	25.696
40	10.965	33.843	25.881

STATION US08222
LATITUDE 41-02.8 N
LONGITUDE 140-46.2 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	14.371	33.386	24.862
10	12.951	33.439	25.194
20	12.030	33.652	25.537
30	11.408	33.687	25.679
40	11.428	33.831	25.788
50	10.830	33.886	25.939

STATION US08223
LATITUDE 41-00.9 N
LONGITUDE 140-42.9 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	14.100	33.425	24.950
10	14.008	33.692	25.175
20	12.987	33.827	25.487
30	11.762	33.687	25.614
40	11.204	33.718	25.741
50	10.809	33.918	25.967

STATION US08224
LATITUDE 41-00.3 N
LONGITUDE 140-46.7 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	15.047	33.579	24.866
10	12.844	33.495	25.258
20	11.748	33.631	25.573
30	11.262	33.689	25.707
40	11.063	33.802	25.832
50	10.633	33.918	25.998

STATION US08225
LATITUDE 40-52.3 N
LONGITUDE 140-46.1 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	15.450	33.350	24.601
10	14.187	33.424	24.930
20	12.267	33.679	25.512
30	11.523	33.726	25.688

STATION US08226
LATITUDE 40-55.2 N
LONGITUDE 140-46.6 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	14.591	33.408	24.833
10	14.340	33.650	25.072
20	12.196	33.493	25.381
30	11.614	33.642	25.606

STATION US08227
LATITUDE 40-57.3 N
LONGITUDE 140-45.5 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	14.455	33.729	25.109
10	13.986	33.783	25.250
20	13.342	33.826	25.415
30	12.668	33.840	25.560
40	12.360	33.874	25.646
50	10.809	33.911	25.962

STATION US08228
LATITUDE 41-04.2 N
LONGITUDE 140-58.0 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	14.814	33.341	24.734
10	14.441	33.376	24.840
20	12.006	33.553	25.464
30	11.639	33.698	25.645
40	10.776	33.712	25.812

STATION US08229
LATITUDE 41-05.6 N
LONGITUDE 141-01.9 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	14.745	33.324	24.735
10	14.337	33.356	24.846
20	11.277	33.375	25.460
30	10.792	33.423	25.585
40	9.493	33.537	25.893

STATION US08230
LATITUDE 41-05.8 N
LONGITUDE 141-09.8 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	14.861	33.220	24.630
10	14.601	33.241	24.702
20	11.130	33.323	25.446
30	10.666	33.418	25.603

STATION US08231
LATITUDE 41-00.4 N
LONGITUDE 141-06.9 E
DEPTH (m) 44

Press.	Temp.	Salinity	Sigma-T
5	14.768	33.242	24.667
10	13.138	33.187	24.961
20	11.561	33.310	25.358
30	9.973	33.423	25.725
40	9.520	33.664	25.989

STATION US08232
LATITUDE 40-57.1 N
LONGITUDE 141-07.0 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	15.050	33.201	24.575
10	12.961	33.188	24.997
20	11.025	33.352	25.488
30	10.401	33.464	25.685

STATION US08233
LATITUDE 40-08.8 N
LONGITUDE 141-11.1 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	14.799	33.068	24.526
10	12.720	33.225	25.073
20	11.665	33.394	25.404
30	10.342	33.479	25.706

STATION US08234
LATITUDE 41-11.6 N
LONGITUDE 141-10.8 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	14.802	33.034	24.499
10	13.095	33.192	24.974
20	11.864	33.311	25.303

STATION US08235
LATITUDE 41-08.0 N
LONGITUDE 141-03.8 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	14.643	33.193	24.656
10	14.617	33.220	24.682
20	12.343	33.284	25.192
30	11.189	33.371	25.473

STATION US08236
LATITUDE 41-09.1 N
LONGITUDE 140-44.4 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	14.649	33.304	24.740
10	14.070	33.454	24.978
20	13.474	33.779	25.352
30	12.971	33.874	25.527
40	12.319	33.922	25.691
50	10.917	33.806	25.861

STATION US08237
LATITUDE 41-11.6 N
LONGITUDE 140-42.6 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	14.449	33.619	25.026
10	14.182	33.737	25.173
20	13.507	33.796	25.358
30	13.091	33.851	25.485
40	11.685	33.952	25.835
50	11.450	33.979	25.899

STATION US08238
LATITUDE 41-59.9 N
LONGITUDE 141-21.5 E
DEPTH (m) 332

Press.	Temp.	Salinity	Sigma-T
5	11.915	33.068	25.105
10	10.907	33.106	25.317
20	8.423	33.104	25.723
30	8.198	33.374	25.967
40	7.058	33.364	26.122
50	7.023	33.567	26.287
75	7.615	33.938	26.496
100	6.732	33.841	26.542
125	5.920	33.754	26.578
150	5.320	33.687	26.598
175	4.940	33.643	26.606
200	4.710	33.639	26.629
250	4.564	33.685	26.681

STATION US08239
LATITUDE 41-57.5 N
LONGITUDE 140-58.4 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	10.305	32.435	24.898
10	8.323	32.574	25.322
20	8.416	32.970	25.618
30	8.257	33.307	25.906
40	7.312	33.460	26.163
50	6.978	33.703	26.400
75	5.599	33.721	26.591

STATION US08240
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	10.438	32.410	24.855
10	8.408	32.536	25.279
20	8.222	32.922	25.610
30	8.579	33.340	25.884
40	7.933	33.444	26.061
50	6.013	33.442	26.320
75	5.660	33.745	26.603

STATION US08241
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	12.775	32.228	24.290
10	8.533	32.503	25.235
20	8.657	33.004	25.608
30	8.885	33.314	25.816
40	8.289	33.421	25.991
50	5.282	33.347	26.333
75	5.791	33.776	26.611

STATION US08242
LATITUDE 41-58.9 N
LONGITUDE 141-01.0 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	10.053	32.456	24.955
10	8.890	32.547	25.215
20	8.037	32.781	25.526
30	8.388	33.220	25.818
40	8.317	33.371	25.947
50	5.917	33.416	26.311
75	5.686	33.740	26.596

STATION US08243
LATITUDE 42-23.2 N
LONGITUDE 140-43.2 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	14.438	32.153	23.897
10	13.862	32.164	24.025
20	8.969	32.302	25.011
30	7.974	32.679	25.455
40	7.896	33.046	25.755
50	5.651	33.081	26.078

STATION US08244
LATITUDE 42-28.9 N
LONGITUDE 140-31.6 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	14.529	32.089	23.829
10	12.558	32.091	24.225
20	9.305	32.276	24.938
30	8.022	32.635	25.414
40	6.656	32.931	25.835
50	3.280	32.833	26.131

STATION US08245
LATITUDE 42-19.3 N
LONGITUDE 140-30.5 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	14.717	32.094	23.793
10	13.938	32.516	24.281
20	9.218	32.423	25.067
30	7.859	32.630	25.433
40	5.874	32.775	25.810
50	5.797	33.145	26.112
75	3.930	33.329	26.464

STATION US08246
LATITUDE 42-16.2 N
LONGITUDE 140-35.9 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	14.781	32.395	24.011
10	13.201	32.810	24.657
20	9.260	32.496	25.117
30	7.459	32.703	25.547
40	6.341	33.005	25.933
50	3.554	32.830	26.103
75	3.138	33.303	26.518

STATION US08247
LATITUDE 42-11.2 N
LONGITUDE 140-35.4 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	14.566	32.250	23.945
10	11.113	32.258	24.620
20	8.564	32.437	25.179
30	7.893	32.791	25.554
40	6.837	32.925	25.806
50	5.266	33.062	26.109
75	3.090	33.276	26.501

STATION US08248
LATITUDE 42-10.4 N
LONGITUDE 140-47.4 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	14.122	32.328	24.098
10	13.290	32.374	24.302
20	8.674	32.561	25.259
30	8.593	33.038	25.645
40	9.227	33.398	25.828
50	8.679	33.471	25.971
75	5.439	33.598	26.513

STATION US08249
LATITUDE 42-05.2 N
LONGITUDE 140-56.3 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	14.580	32.118	23.840
10	10.609	32.349	24.780
20	8.622	32.940	25.563
30	7.107	33.025	25.849
40	9.071	33.702	26.090
50	7.995	33.630	26.198
75	5.185	33.611	26.553

STATION US08250
LATITUDE 42-11.2 N
LONGITUDE 141-01.5 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	14.670	32.296	23.959
10	11.584	32.647	24.839
20	10.227	33.356	25.630
30	8.208	33.445	26.022
40	7.992	33.624	26.195
50	7.020	33.645	26.349
75	5.456	33.643	26.547

STATION US08251
LATITUDE 42-17.3 N
LONGITUDE 140-54.7 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	15.018	32.010	23.664
10	10.732	32.649	24.992
20	9.298	33.026	25.526
30	8.986	33.271	25.766
40	8.397	33.424	25.977
50	8.255	33.604	26.140

STATION US08252
LATITUDE 42-23.6 N
LONGITUDE 140-31.1 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	15.669	32.132	23.616
10	12.096	32.417	24.566
20	9.695	32.276	24.876
30	8.129	32.539	25.323
40	7.956	32.811	25.562
50	6.049	33.061	26.015
75	2.927	33.141	26.408

STATION US08253
LATITUDE 41-55.0 N
LONGITUDE 141-14.7 E
DEPTH (m) 240

Press.	Temp.	Salinity	Sigma-T
5	13.702	32.539	24.347
10	12.887	33.081	24.929
20	10.944	33.397	25.537
30	8.503	33.325	25.884
40	8.187	33.417	26.003
50	7.542	33.546	26.199
75	7.168	33.806	26.455
100	6.795	33.812	26.511
125	6.248	33.776	26.554
150	5.762	33.747	26.592
175	5.154	33.687	26.617
200	5.048	33.709	26.646

STATION US08254
LATITUDE 42-00.0 N
LONGITUDE 141-05.0 E
DEPTH (m) 117

Press.	Temp.	Salinity	Sigma-T
5	13.398	32.619	24.468
10	9.852	33.134	25.519
20	9.302	33.561	25.943
30	8.206	33.577	26.126
40	8.947	33.916	26.278
50	8.763	33.911	26.303
75	8.056	33.856	26.367
100	6.963	33.777	26.461

STATION US08255
LATITUDE 42-04.9 N
LONGITUDE 141-14.8 E
DEPTH (m) 224

Press.	Temp.	Salinity	Sigma-T
5	14.614	32.361	24.020
10	10.860	32.921	25.182
20	8.540	33.199	25.779
30	8.886	33.603	26.042
40	8.354	33.648	26.159
50	8.574	33.800	26.245
75	7.601	33.817	26.403
100	6.809	33.801	26.500
125	6.133	33.746	26.545
150	5.516	33.704	26.588
175	4.979	33.652	26.609
200	4.987	33.698	26.645

STATION US08256
LATITUDE 42-10.1 N
LONGITUDE 141-05.4 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	15.366	32.631	24.067
10	13.055	32.946	24.791
20	8.977	33.127	25.655
30	8.677	33.418	25.929
40	7.750	33.404	26.057
50	8.511	33.808	26.261
75	5.654	33.446	26.367

STATION US08257
LATITUDE 42-09.3 N
LONGITUDE 141-06.8 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	15.585	32.608	24.001
10	14.430	32.592	24.237
20	9.189	33.181	25.664
30	8.619	33.430	25.948
40	7.383	33.486	26.173
50	7.612	33.698	26.308
75	5.885	33.530	26.405

STATION US08258
LATITUDE 42-14.8 N
LONGITUDE 141-14.9 E
DEPTH (m) 172

Press.	Temp.	Salinity	Sigma-T
5	16.016	32.592	23.893
10	14.868	32.612	24.160
20	10.038	32.880	25.291
30	8.224	33.206	25.832
40	8.942	33.619	26.046
50	8.540	33.730	26.195
75	7.045	33.761	26.437
100	6.994	33.875	26.533
125	6.218	33.785	26.565
150	5.782	33.739	26.583

STATION US08259
LATITUDE 42-25.1 N
LONGITUDE 141-15.0 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	15.781	32.057	23.534
10	14.353	32.442	24.138
20	12.591	33.195	25.075
30	8.813	33.108	25.666
40	7.986	33.317	25.954
50	7.932	33.427	26.049

STATION US08260
LATITUDE 42-19.9 N
LONGITUDE 141-05.4 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	15.025	32.100	23.731
10	10.983	32.520	24.847
20	8.805	33.007	25.588
30	8.654	33.221	25.779
40	8.339	33.314	25.900

STATION US08261
LATITUDE 42-28.9 N
LONGITUDE 140-44.8 E
DEPTH (m) 52

No data

STATION US08262
LATITUDE 42-24.9 N
LONGITUDE 140-45.1 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	17.144	32.131	23.280
10	15.053	32.199	23.802
20	10.801	32.404	24.789
30	7.904	32.565	25.376
40	4.782	32.799	25.954

STATION US08263
LATITUDE 42-19.9 N
LONGITUDE 140-45.0 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	16.459	32.145	23.449
10	15.169	32.103	23.703
20	12.796	32.497	24.494
30	7.444	32.584	25.455
40	6.776	33.027	25.895
50	5.829	33.204	26.155

STATION US08264
LATITUDE 42-15.2 N
LONGITUDE 140-45.0 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	15.780	32.191	23.637
10	15.176	32.180	23.761
20	13.525	32.520	24.367
30	8.271	32.705	25.432
40	7.299	33.070	25.858
50	5.677	33.147	26.128

STATION US08265
LATITUDE 42-09.8 N
LONGITUDE 140-44.9 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	16.281	32.296	23.605
10	14.163	32.530	24.245
20	8.877	32.415	25.114
30	8.493	32.808	25.480
40	8.858	33.194	25.726
50	5.567	33.012	26.034
75	2.922	33.189	26.447

STATION US08266
LATITUDE 42-14.8 N
LONGITUDE 140-54.7 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	15.057	32.007	23.648
10	12.389	32.587	24.642
20	10.190	32.779	25.186
30	8.852	33.042	25.608
40	8.522	33.229	25.805
50	8.090	33.330	25.949

STATION US08267
LATITUDE 42-09.9 N
LONGITUDE 140-54.8 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	15.658	32.652	24.019
10	12.806	33.053	24.923
20	8.536	33.011	25.632
30	8.042	33.166	25.827
40	8.533	33.431	25.962
50	8.060	33.522	26.104

STATION US08268
LATITUDE 42-05.1 N
LONGITUDE 140-54.9 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	16.258	32.489	23.758
10	13.657	32.891	24.628
20	9.545	33.054	25.508
30	8.769	33.410	25.909
40	8.620	33.646	26.117
50	8.838	33.820	26.220
75	4.154	33.335	26.447

STATION US08269
LATITUDE 42-02.0 N
LONGITUDE 140-55.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	15.973	32.171	23.579
10	12.364	32.684	24.722
20	9.964	33.193	25.548
30	8.920	33.433	25.904
40	8.691	33.612	26.079
50	8.693	33.743	26.182

5

THE “USHIO MARU”

CRUISE 151
CRUISE 152
CRUISE 153

IN JULY-AUGUST 2008

1. Cruise Itinerary

Cruise 151

Departure from Hakodate	Jul.	7	, 2008
Arrival at and departure from Usujiri		7	
Start hydrographic research (US08270) and larvae net sampling		7	
Start frame trawl net sampling		7	
Arrival at Usujiri		7	
Departure from Usujiri		8	
Arrival at Shiraoi		8	
Departure from Shiraoi		9	
Arrival at Usujiri		10	
Departure from Usujiri		11	
Arrival at Muroran		11	
Departure from Muroran		12	
Arrival at and departure from Muroran		13	
Arrival at Usujiri		13	
Departure from Usujiri		14	
Finish frame trawl net sampling		15	
Arrival at Usujiri		15	
Departure from Usujiri		17	
Arrival at Usujiri		17	
Departure from Usujiri		18	
Research by trawl net and mid water trawl net		18	
Finish hydrographic research (US08303) and larvae net sampling		18	
Arrival at and departure from Usujiri		18	
Return to Hakodate		19	

Total coverage 809.3 miles

Cruise 152

Departure from Hakodate	Jul.	24	, 2008
Arrival at Otaru		25	
Departure from Otaru		26	
Start hydrographic research (US08304) and larvae net sampling		26	
Arrival at Rausu		30	
Departure from Rausu		31	
Finish hydrographic research (US08377) and larvae net sampling	Aug.	1	
Arrival at Shiraoi		2	
Departure from Shiraoi		3	
Return to Hakodate		4	

Total coverage 1247.8 miles

Cruise 153

Departure from Hakodate	Aug.	18	, 2008
Experiment of X.B.T.		18	
Start hydrographic research (US08378)		18	
Arrival at Usujiri		18	
Departure from Usujiri		19	
Arrival at Muroran		19	
Departure from Muroran		20	
Start larvae net sampling		20	
Arrival at Muroran		20	
Departure from Muroran		21	
Retrieval Sediment trap system		21	
Arrival at and departure from Mori		21	
Start trawl net research		21	
Finish trawl net research		22	
Finish hydrographic research (US08391) and larvae net sampling		22	
Arrival at and departure from Mori		22	
Set Sediment trap system		22	
Return to Hakodate		26	

Total coverage 341.4 miles

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 151

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Research Associate	(Field Science Center for Northern Biosphere)	Hiroki Yasuma

Graduate Students :	Chair of of Marine Bioresource Science :	4 persons
	Chair of Marine Bioresource and Environment Sensing :	3 persons
	Graduate School of the Fisheries Sciences :	1 person
	Graduate School of Environmental Science :	6 persons
Under Graduate Students :	Department of Marine Biological Science :	4 persons
	Department of Fisheries Oceanography and Marine Science :	2 persons
	Department of Marine Production System Science :	6 persons

Cruise 152

Research Staff :	Professor	(Laboratory of Marine Environmental Science)	Shigeru Montani
	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Associate Professor	(Laboratory of Marine Environmental Science)	Yutaka Isoda

Graduate Students :	Chair of Marine Environmental Science :	2 persons
	Graduate School of Environmental Science :	7 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	5 persons

Cruise 153

Research Staff :	Professor	(Laboratory of Marine Bioresource Science)	Toyomi Takahashi
	Associate Professor	(Laboratory of Marine Industorial Science and Technology)	Shynji Jiyanuma
	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Assistant Professor	(Laboratory of Marine Environmental Science)	Hiroji Ohnishi
	Technician	(Field Science Center for Northern Biosphere)	Shinichi Fukui
	Visiting Associate Professor	(Faculty of the Fisheries Sciences)	Koutaro Tetsumura
	Visiting Researcher	(Faculty of the Fisheries Sciences)	Nariyuki Mohnai
	Research Associate	(Field Science Center for Northern Biosphere)	Toshihiro Iwamori

Graduate Students :	Chair of of Marine Bioresource Science :	4 persons
	Chair of Marine Environmental Science :	2 persons
	Graduate School of Environmental Science :	4 persons
Under Graduate Students :	Department of Marine Biological Science :	4 persons
	Department of Fisheries Oceanography and Marine Science :	4 persons
	Department of Marine Production System Science :	2 persons

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

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

Figure 1: Oceanographic stations (Cruise 151)

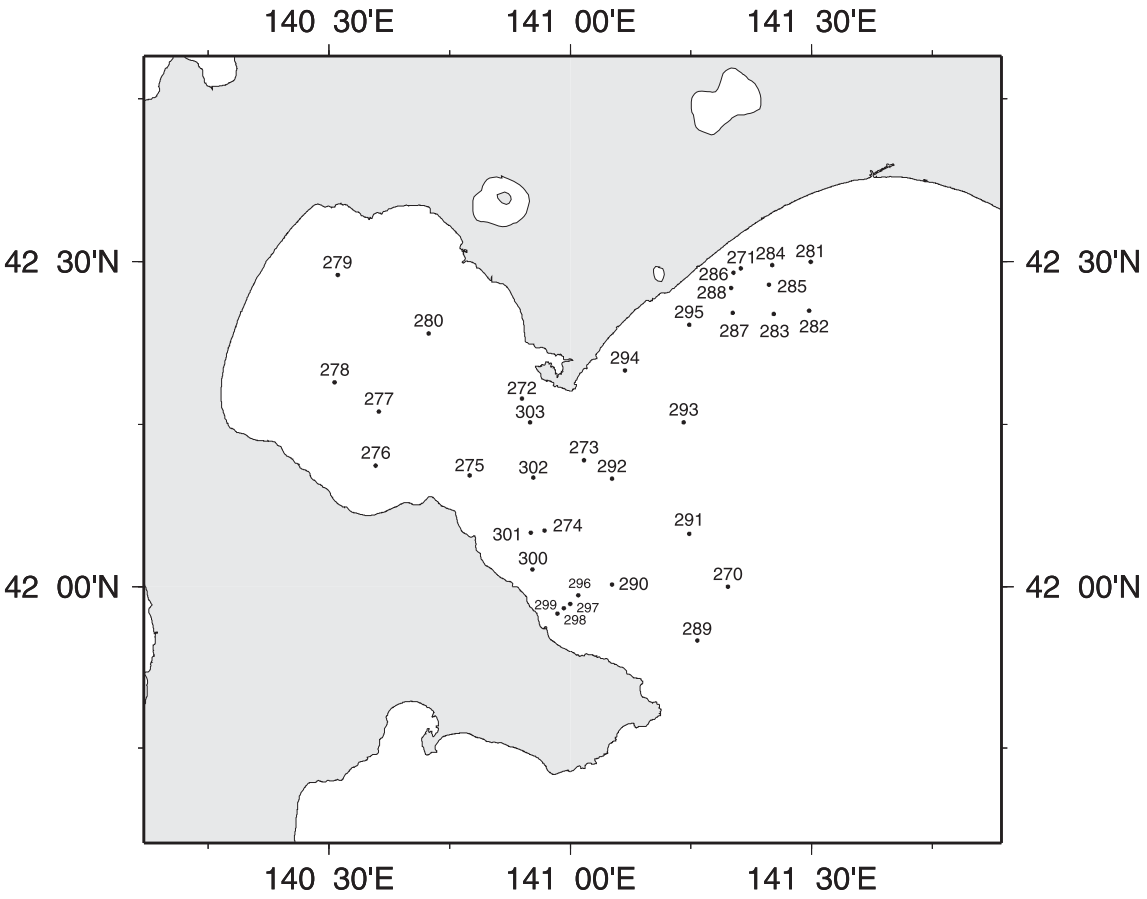

Figure 2: Oceanographic stations (Cruise 152)

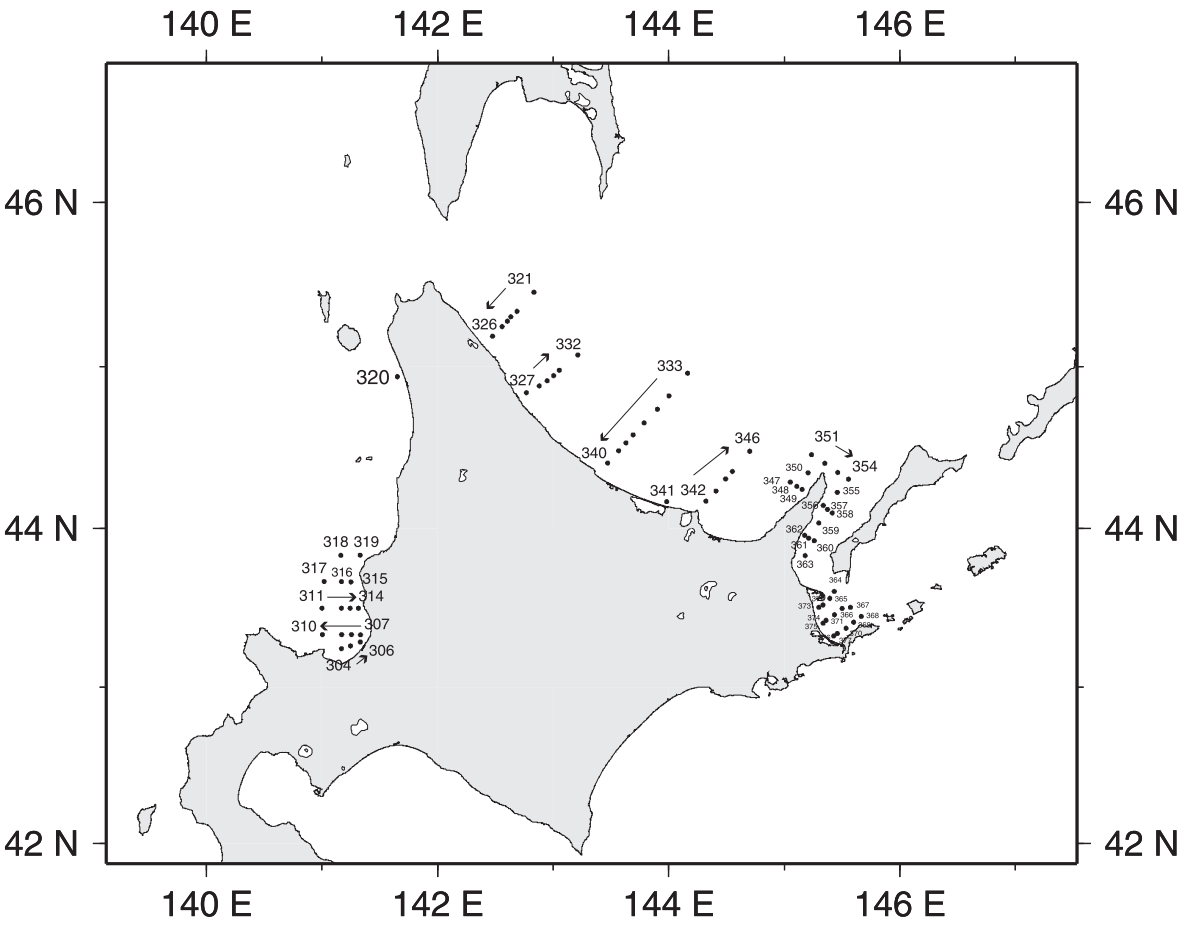

Figure 3: Oceanographic stations (Cruise 153)

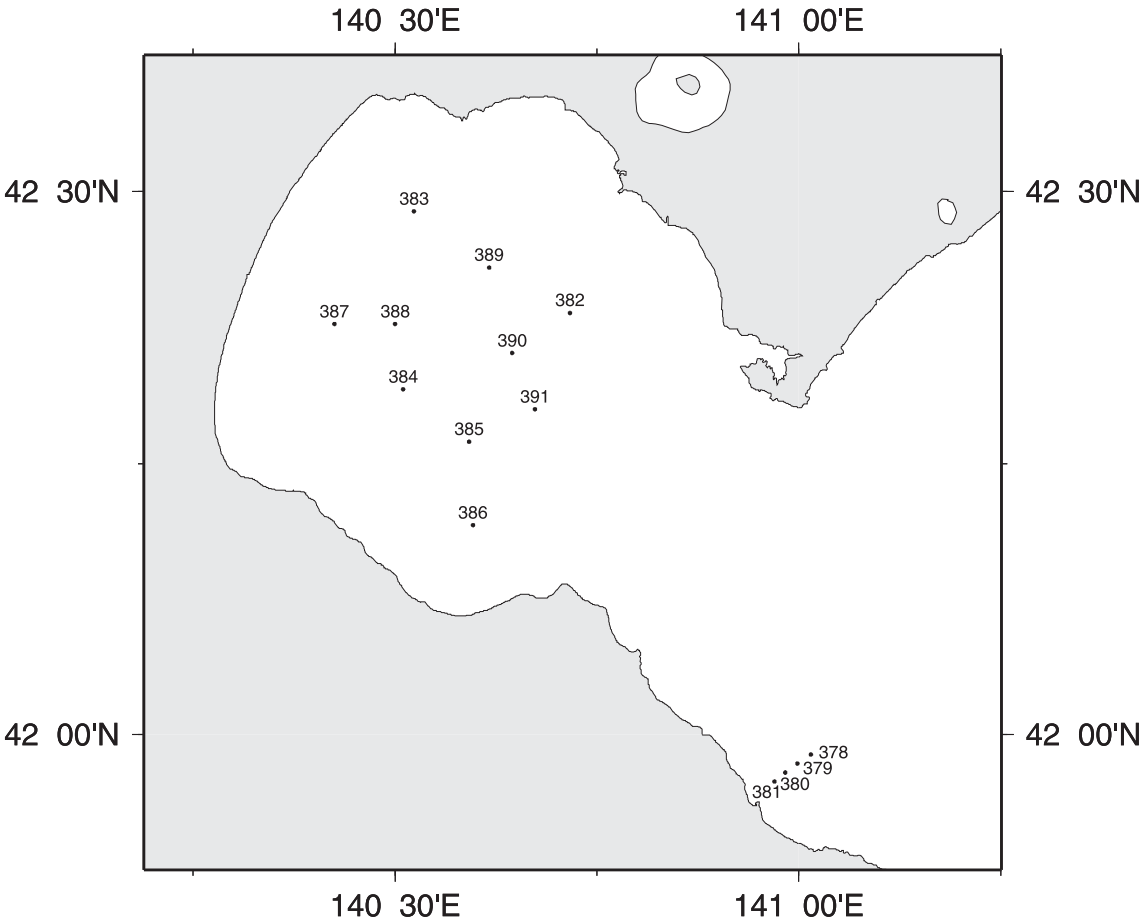

Table 1: List of oceanographic stations

Cruise 151

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08270	42-00.0	141-19.6	7/7	1728-1740	308	East-1	East-1	East-3	16.5	16.5	o	1012.2
US08271	42-29.4	141-21.2	7/9	0722-0726	63	Calm	SSE-1	Calm	17.0	15.8	o	1015.1
US08272	42-17.4	140-54.0	7/12	0740-0745	57	WNW-1	West-1	WNW-3	18.9	18.6	bc	1004.1
US08273	42-11.7	141-01.7	7/12	0836-0843	78	West-2	SE -1	West-4	19.2	17.4	bc	1004.1
US08274	42-05.2	140-56.8	7/12	0930-0936	84	WNW-2	SE -1	WNW-4	18.8	17.2	bc	1004.1
US08275	42-10.3	140-47.5	7/12	1029-1037	92	WNW-2	SE -1	WNW-4	20.5	18.4	bc	1004.1
US08276	42-11.2	140-35.8	7/12	1133-1140	81	NW -1	NW -1	NW -2	21.0	18.8	bc	1004.5
US08277	42-16.2	140-36.2	7/12	1216-1222	91	NNW-2	SE -1	NNW-4	21.2	18.3	bc	1004.4
US08278	42-18.9	140-30.7	7/12	1415-1422	93	NNW-2	NNW-1	NNW-4	20.4	18.3	bc	1004.1
US08279	42-28.8	140-31.1	7/13	0630-0640	76	Calm	SE -1	Calm	19.4	17.7	bc	1008.5
US08280	42-23.4	140-42.4	7/13	0842-0848	63	Calm	SE -1	Calm	20.0	19.0	bc	1008.6
US08281	42-30.0	141-29.9	7/14	1131-1135	75	Calm	ESE-1	Calm	19.1	16.8	c	1009.1
US08282	42-25.5	141-29.7	7/14	1208-1213	116	Calm	ESE-1	Calm	19.0	15.8	o	1009.1
US08283	42-25.2	141-25.3	7/14	1240-1245	103	Calm	ESE-1	Calm	18.6	16.9	o	1009.0
US08284	42-29.7	141-25.1	7/14	1320-1324	77	Calm	ESE-1	Calm	19.1	17.1	c	1008.7
US08285	42-27.9	141-24.7	7/14	1357-1401	86	Calm	ESE-1	Calm	19.2	16.8	r	1008.6
US08286	42-29.0	141-20.3	7/14	1429-1432	61	Calm	ESE-1	Calm	19.5	17.6	c	1008.7
US08287	42-25.3	141-20.2	7/14	1500-1504	91	West-1	ESE-1	West-3	18.6	16.8	c	1008.6
US08288	42-27.6	141-20.0	7/14	1605-1608	75	WSW-1	ESE-1	WSW-2	18.8	17.1	c	1009.0
US08289	41-55.0	141-15.8	7/15	0500-0511	261	WNW-1	SE -1	WNW-3	18.2	16.6	bc	1010.8
US08290	42-00.2	141-05.2	7/15	0620-0635	116	NNW-1	SE -1	NNW-3	18.1	17.6	o	1011.2
US08291	42-04.9	141-14.8	7/15	0738-0745	226	Calm	SE -1	Calm	18.9	17.6	o	1011.6
US08292	42-10.0	141-05.2	7/15	0848-0853	90	Calm	SE -1	Calm	20.8	16.2	o	1011.5
US08293	42-15.2	141-14.1	7/15	0950-0955	144	SW -1	SE -1	SW -2	21.7	18.1	bc	1011.4
US08294	42-20.0	141-06.8	7/15	1046-1049	58	SSW-1	SE -1	SSW-3	21.6	18.4	bc	1011.0
US08295	42-24.2	141-14.8	7/15	1158-1202	74	South-1	SE -1	South-3	20.2	18.0	bc	1010.6
US08296	41-59.2	141-01.0	7/15	1445-1449	96	Calm	SE -1	Calm	21.3	18.7	bc	1010.1
US08297	41-58.4	141-00.0	7/15	1456-1500	90	Calm	SE -1	Calm	21.6	18.3	bc	1010.0
US08298	41-58.0	140-59.2	7/15	1505-1509	85	Calm	SE -1	Calm	22.0	19.2	bc	1010.0
US08299	41-57.5	140-58.4	7/15	1514-1518	81	Calm	SE -1	Calm	22.5	17.9	c	1010.0
US08300	42-01.6	140-55.3	7/15	1548-1552	79	Calm	SE -1	Calm	21.2	20.4	bc	1010.0
US08301	42-05.0	140-55.1	7/15	1618-1622	87	Calm	SE -1	Calm	20.8	18.9	bc	1010.0
US08302	42-10.1	140-55.4	7/15	1657-1701	76	ESE-1	SE -1	ESE-2	20.2	19.1	bc	1009.8
US08303	42-15.2	140-55.0	7/15	1738-1742	60	SSE-1	SE -1	SSE-2	20.4	19.7	c	1009.9

Cruise 153

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08378	41-58.9	141-00.9	8/18	1356-1400	96	East-1	East-1	East-3	21.8	21.2	bc	1011.0
US08379	41-58.4	140-59.9	8/18	1407-1411	89	East-1	East-1	East-3	21.9	21.0	bc	1011.0
US08380	41-57.9	140-59.0	8/18	1417-1420	84	East-1	East-1	East-3	22.3	21.1	bc	1011.0
US08381	41-57.4	140-58.2	8/18	1426-1430	79	East-1	East-1	East-3	22.6	21.0	bc	1011.0
US08382	42-23.3	140-43.0	8/20	0803-0818	59	ESE-1	SE -1	ESE-2	18.3	20.4	r	1003.0
US08383	42-28.9	140-31.4	8/20	0924-0930	75	ESE-1	SE -1	ESE-2	18.9	20.7	o	1003.7
US08384	42-19.1	140-30.6	8/20	1111-1118	92	ESE-2	ESE-1	ESE-4	19.4	20.6	r	1003.8
US08385	42-16.2	140-35.5	8/20	1159-1206	90	East-3	ESE-1	East-5	19.0	20.5	o	1003.6
US08386	42-11.6	140-35.8	8/21	1149-1153	83	South-2	ESE-1	South-4	18.6	20.5	c	1009.6
US08387	42-22.7	140-25.5	8/21	1542-1546	73	ESE-2	SE -1	ESE-4	19.1	20.6	bc	1010.3
US08388	42-22.7	140-30.0	8/21	1633-1640	95	ESE-2	SE -1	ESE-4	19.0	20.5	bc	1010.9
US08389	42-25.8	140-37.0	8/22	0753-0757	84	SW -1	SE -1	SW -2	19.7	20.4	bc	1014.6
US08390	42-21.1	140-38.7	8/22	1028-1032	80	SSE-1	SE -1	SSE-2	19.2	20.6	bc	1015.1
US08391	42-18.0	140-40.4	8/22	1201-1205	77	SE -2	SE -1	SE -4	19.9	20.5	bc	1014.8

Cruise 152

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08304	43-14.7	141-10.1	7/26	0810-0813	24	NNW-2	North-1	NNW-4	20.8	19.6	bc	1012.2
US08305	43-15.7	141-14.8	7/26	0840-0843	22	NNW-2	North-1	NNW-4	21.6	20.2	bc	1012.2
US08306	43-17.2	141-19.9	7/26	0909-0913	16	West-1	North-1	West-3	21.9	20.9	bc	1012.2
US08307	43-19.9	141-20.0	7/26	0930-0933	21	NW -1	North-1	NW -3	21.0	21.3	bc	1012.2
US08308	43-20.0	141-15.3	7/26	0955-0959	27	NW-2	North-1	NW -4	20.0	19.7	bc	1012.2
US08309	43-20.0	141-10.2	7/26	1021-1026	36	NW -2	North-1	NW -4	19.7	19.8	bc	1012.2
US08310	43-20.0	141-00.2	7/26	1114-1119	49	NW -1	North-1	NW -3	19.9	21.2	bc	1012.4
US08311	43-30.0	141-00.0	7/26	1226-1232	92	North-1	North-1	North-3	21.6	20.2	bc	1012.2
US08312	43-30.0	141-10.1	7/26	1324-1330	58	North-1	North-1	North-3	21.3	20.2	bc	1012.0
US08313	43-30.0	141-14.6	7/26	1357-1400	40	NNW-2	North-1	NNW-4	22.4	20.3	bc	1012.0
US08314	43-30.0	141-18.9	7/26	1421-1425	31	NNW-2	North-1	NNW-4	22.6	20.4	bc	1012.0
US08315	43-39.9	141-15.0	7/26	1533-1538	64	NNW-2	North-1	NNW-4	21.4	18.3	bc	1012.0
US08316	43-40.0	141-10.1	7/26	1602-1608	81	NNW-2	North-1	NNW-4	20.7	20.4	bc	1012.1
US08317	43-40.1	141-01.1	7/26	1655-1710	285	NNE-2	North-1	NNE-4	20.8	20.0	bc	1012.2
US08318	43-49.9	141-09.8	7/26	1834-1847	232	NNE-2	North-1	NNE-5	20.8	20.1	bc	1011.8
US08319	43-50.0	141-19.8	7/26	1943-1950	80	NNE-2	North-1	NNE-4	21.0	20.9	bc	1012.0
US08320	44-56.4	141-39.1	7/27	0421-0425	28	East-1	NE -1	East-3	16.5	19.5	bc	1014.1
US08321	45-27.4	142-50.0	7/27	1158-1206	118	SSE-2	East-1	SSE-4	16.7	15.7	bc	1014.7
US08322	45-20.4	142-41.2	7/27	1310-1317	97	SE -2	East-1	SE -4	18.1	15.8	bc	1014.8
US08323	45-18.4	142-38.0	7/27	1341-1348	87	SE -2	East-1	SE -4	18.0	16.2	bc	1014.5
US08324	45-16.8	142-36.2	7/27	1403-1407	78	SE -2	East-1	SE -5	17.9	17.0	bc	1014.0
US08325	45-14.8	142-33.5	7/27	1432-1438	64	SE -3	ESE-1	SE -5	17.8	17.0	bc	1014.7
US08326	45-11.3	142-28.5	7/27	1510-1515	43	SE -3	ESE-1	SE -5	18.7	17.8	bc	1013.3
US08327	44-50.5	142-46.1	7/27	1724-1728	49	ESE-2	SE -1	ESE-4	18.1	17.5	bc	1013.6
US08328	44-53.0	142-52.8	7/27	1759-1802	87	ESE-2	East-1	ESE-4	17.0	16.4	bc	1013.6
US08329	44-54.9	142-56.9	7/27	1831-1840	114	ESE-2	East-1	ESE-4	16.5	16.8	bc	1013.6
US08330	44-56.8	143-00.2	7/27	1902-1910	127	ESE-2	East-1	ESE-4	15.9	15.2	bc	1013.7
US08331	44-58.8	143-03.2	7/27	1932-1940	130	ESE-2	East-1	ESE-4	15.8	15.2	bc	1013.5
US08332	45-04.4	143-12.8	7/27	2035-2046	138	ESE-2	East-1	ESE-4	16.1	16.3	bc	1012.8
US08333	44-57.7	144-09.8	7/28	0610-0636	230	ESE-1	East-1	ESE-3	14.6	13.4	bc	1012.5
US08334	44-49.3	144-00.1	7/28	0743-0802	184	ESE-1	East-1	ESE-2	16.2	13.6	bc	1012.6
US08335	44-44.4	143-54.1	7/28	0841-0859	172	SE -1	NE -1	SE -3	16.8	13.2	bc	1012.4
US08336	44-39.3	143-47.2	7/28	1115-1125	159	East-1	ENE-1	East-2	19.7	15.2	bc	1012.1
US08337	44-34.9	143-41.5	7/28	1204-1215	148	East-1	ENE-1	East-2	21.4	16.1	bc	1011.7
US08338	44-31.9	143-37.8	7/28	1242-1253	131	ENE-1	ENE-1	ENE-3	20.7	16.8	bc	1011.7
US08339	44-29.0	143-34.0	7/28	1412-1421	95	ENE-1	ENE-1	ENE-3	20.1	15.8	bc	1010.7
US08340	44-24.4	143-28.3	7/28	1500-1507	56	NE -1	ENE-1	NE -2	21.4	17.8	bc	1010.5
US08341	44-10.0	143-58.9	7/28	1804-1809	37	SE -1	ENE-1	SE -3	21.6	17.1	bc	1010.0
US08342	44-10.2	144-19.3	7/28	1955-2002	110	SSE-2	ESE-1	SSE-5	17.4	15.6	bc	1011.0
US08343	44-14.0	144-24.5	7/28	2033-2048	321	SSE-2	SE -1	SSE-5	16.9	14.5	bc	1011.5
US08344	44-18.5	144-29.5	7/28	2128-2204	923	South-2	SE -1	South-5	15.9	14.2	bc	1011.8
US08345	44-21.3	144-33.0	7/28	2237-0020	1131	South-2	SE -1	South-4	16.3	14.1	bc	1012.0
US08346	44-28.8	144-42.0	7/29	0132-0227	1473	South-2	SE -1	South-4	14.9	12.8	bc	1011.6
US08347	44-17.3	145-03.1	7/29	0435-0452	802	WSW-1	SE -1	WSW-3	15.0	13.5	bc	1012.7
US08348	44-15.7	145-06.5	7/29	0515-0531	755	SE -1	SE -1	SE -2	15.5	14.3	bc	1013.0
US08349	44-14.6	145-09.2	7/29	0550-0606	406	SE -1	SE -1	SE -6	15.4	16.0	bc	1012.8
US08350	44-20.8	145-12.3	7/29	0640-0655	985	NNE-1	SE -1	NNE-3	15.4	13.6	bc	1013.1
US08351	44-27.5	145-14.1	7/29	0734-0748	1773	ESE-1	East-1	ESE-2	16.0	13.9	bc	1013.1
US08352	44-24.3	145-21.0	7/29	0829-0843	436	SE -3	SE -1	SE -6	15.0	13.6	bc	1012.7
US08353	44-20.9	145-27.7	7/29	0921-0935	1672	SSE-3	SE -1	SSE-6	14.3	13.0	c	1013.1
US08354	44-18.4	145-33.3	7/29	1005-1020	2388	SSE-3	SE -1	SSE-6	13.8	13.4	c	1013.6
US08355	44-13.5	145-27.5	7/29	1107-1147	1818	SSE-3	SE -1	SSE-5	14.0	13.7	c	1013.8
US08356	44-08.6	145-20.2	7/29	1249-1301	510	South-3	SSW-1	South-5	14.6	13.7	o	1014.0
US08357	44-07.1	145-22.4	7/29	1317-1330	985	SSW-2	SSW-1	SSW-4	14.5	14.1	o	1014.0
US08358	44-05.8	145-24.9	7/29	1340-1357	1008	SSE-2	SSE-1	SSE-4	14.6	13.8	o	1013.9
US08359	44-02.0	145-17.9	7/29	1442-1453	424	South-3	South-1	South-5	15.0	13.9	o	1013.6
US08360	43-55.4	145-15.5	7/29	1540-1546	85	SSE-3	SSE-1	SSE-5	14.9	14.7	c	1013.9
US08361	43-56.4	145-12.6	7/29	1602-1610	83	SSE-1	SSE-1	SSE-3	15.1	14.6	o	1014.2
US08362	43-57.4	145-10.5	7/29	1624-1630	82	SSW-1	SSE-1	SSW-3	14.9	14.6	o	1014.5
US08363	43-49.8	145-10.8	7/31	1601-1606	42	SSE-2	SSE-1	SSE-5	16.2	15.1	bc	1015.8
US08364	43-36.3	145-25.9	7/31	1807-1812	23	SSE-2	SSE-1	SSE-4	14.8	12.6	o	1016.8
US08365	43-33.7	145-23.6	7/31	1850-1852	12	SSW-2	SSE-1	SSW-4	15.2	13.0	o	1017.2
US08366	43-29.9	145-30.0	7/31	1942-1944	24	SSW-1	SSE-1	SSW-4	15.1	13.6	o	1017.2
US08367	43-30.3	145-34.3	7/31	2008-2011	29	SSW-1	SSE-1	SSW-4	15.5	14.9	o	1017.6
US08368	43-26.9	145-39.9	7/31	2050-2052	31	South-1	South-1	South-4	15.6	14.6	o	1017.4
US08369	43-24.7	145-36.0	7/31	2120-2123	26	SSW-1	South-1	SSW-3	15.9	14.5	o	1017.6
US08370	43-22.4	145-32.0	7/31	2151-2153	18	SW -1	South-1	SW -3	15.7	15.6	o	1017.6
US08371	43-27.5	145-26.0	7/31	2240-2243	20	South-1	South-1	South-3	15.8	15.1	o	1017.5
US08372	43-31.2	145-20.0	8/1	0415-0418	7	South-1	SE -1	South-3	15.7	14.7	o	1016.6
US08373	43-30.3	145-17.9	8/1	0442-0445	7	South-1	SE -1	South-3	15.6	14.6	o	1016.7
US08374	43-25.4	145-21.6	8/1	0524-0527	11	South-1	SE -1	South-3	15.8	14.3	o	1017.0
US08375	43-24.3	145-20.1	8/1	0542-0544	9	South-1	SE -1	South-3	16.2	14.4	o	1017.1
US08376	43-19.5	145-25.6	8/1	0628-0631	12	South-1	SE -1	South-3	16.5	15.7	o	1017.0
US08377	43-20.4	145-27.5	8/1	0646-0648	15	South-1	SE -1	South-3	16.7	16.0	o	1017.1

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08270
LATITUDE 42-00.0 N
LONGITUDE 141-19.6 E
DEPTH (m) 308

Press.	Temp.	Salinity	Sigma-T
5	16.297	32.837	24.017
10	15.426	32.976	24.319
20	12.205	33.976	25.755
30	11.127	34.013	25.984
40	10.471	34.010	26.098
50	8.597	33.798	26.240
75	6.820	33.753	26.461
100	7.133	33.916	26.546
125	6.176	33.806	26.587
150	5.010	33.704	26.647
175	4.575	33.678	26.674
200	2.918	33.490	26.687
250	3.281	33.603	26.745

STATION US08271
LATITUDE 42-29.4 N
LONGITUDE 141-21.2 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	15.672	32.839	24.159
10	15.605	32.886	24.210
20	13.883	32.802	24.513
30	12.760	33.332	25.148
40	9.158	33.099	25.605
50	8.081	33.261	25.896

STATION US08272
LATITUDE 42-17.4 N
LONGITUDE 140-54.0 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	18.423	31.926	22.816
10	16.568	32.171	23.444
20	9.877	32.632	25.124
30	8.408	32.876	25.546
40	7.434	33.042	25.817
50	7.761	33.381	26.037

STATION US08273
LATITUDE 42-11.7 N
LONGITUDE 141-01.7 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	15.824	32.816	24.107
10	14.905	32.955	24.416
20	11.597	33.140	25.219
30	8.809	33.082	25.646
40	8.015	33.230	25.881
50	8.088	33.362	25.974

STATION US08274
LATITUDE 42-05.2 N
LONGITUDE 140-56.8 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	16.750	32.889	23.953
10	14.956	33.045	24.474
20	11.334	33.027	25.180
30	8.492	33.223	25.805
40	8.089	33.342	25.959
50	4.183	32.900	26.097
75	3.716	33.315	26.474

STATION US08275
LATITUDE 42-10.3 N
LONGITUDE 140-47.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	18.262	31.937	22.864
10	16.247	32.283	23.603
20	14.013	32.427	24.197
30	9.260	32.386	25.031
40	8.611	32.860	25.503
50	6.578	32.899	25.820
75	3.491	33.156	26.368

STATION US08276
LATITUDE 42-11.2 N
LONGITUDE 140-35.8 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	18.577	32.160	22.957
10	17.020	32.209	23.368
20	16.047	32.390	23.730
30	10.932	32.517	24.854
40	7.648	32.699	25.518
50	5.919	32.889	25.895
75	2.687	32.919	26.251

STATION US08277
LATITUDE 42-16.2 N
LONGITUDE 140-36.2 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	17.955	32.142	23.095
10	17.242	32.171	23.288
20	16.850	32.287	23.468
30	15.743	32.498	23.881
40	9.926	32.438	24.964
50	7.049	32.723	25.619
75	2.661	33.037	26.347

STATION US08278
LATITUDE 42-18.9 N
LONGITUDE 140-30.7 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	17.561	32.217	23.247
10	17.346	32.226	23.305
20	16.588	32.267	23.513
30	15.997	32.492	23.820
40	9.447	32.485	25.079
50	7.281	32.858	25.694
75	3.178	33.063	26.323

STATION US08279
LATITUDE 42-28.8 N
LONGITUDE 140-31.1 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	17.356	32.113	23.216
10	16.002	32.523	23.843
20	13.920	32.484	24.260
30	8.602	32.537	25.251
40	8.029	33.061	25.747
50	6.297	33.114	26.025

STATION US08280
LATITUDE 42-23.4 N
LONGITUDE 140-42.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	18.189	32.081	22.992
10	16.752	32.244	23.458
20	16.067	32.453	23.775
30	9.475	32.262	24.900
40	8.194	32.572	25.339
50	6.910	32.974	25.835

STATION US08281
LATITUDE 42-30.0 N
LONGITUDE 141-29.9 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	16.180	32.906	24.097
10	14.654	33.024	24.524
20	9.943	32.984	25.387
30	9.397	33.298	25.722
40	7.825	33.345	26.000
50	6.891	33.384	26.160

STATION US08282
LATITUDE 42-25.5 N
LONGITUDE 141-29.7 E
DEPTH (m) 116

Press.	Temp.	Salinity	Sigma-T
5	15.182	33.045	24.425
10	10.525	32.950	25.263
20	8.560	33.213	25.787
30	7.506	33.306	26.015
40	9.676	34.003	26.228
50	9.619	34.024	26.254
75	9.209	34.001	26.303
100	6.825	33.759	26.465

STATION US08283
LATITUDE 42-25.2 N
LONGITUDE 141-25.3 E
DEPTH (m) 103

Press.	Temp.	Salinity	Sigma-T
5	15.640	33.348	24.558
10	12.337	33.597	25.435
20	10.669	33.602	25.745
30	9.696	33.722	26.004
40	9.970	33.973	26.155
50	9.759	34.014	26.222
75	8.023	33.874	26.386

STATION US08284
LATITUDE 42-29.7 N
LONGITUDE 141-25.1 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	15.660	32.843	24.165
10	13.489	33.020	24.762
20	10.050	32.975	25.362
30	8.357	33.171	25.785
40	7.952	33.320	25.962
50	7.777	33.525	26.148

STATION US08285
LATITUDE 42-27.9 N
LONGITUDE 141-24.7 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	15.980	33.033	24.240
10	14.032	33.146	24.748
20	12.153	33.486	25.384
30	10.264	33.665	25.865
40	9.490	33.779	26.083
50	8.610	33.765	26.212
75	6.602	33.696	26.445

STATION US08286
LATITUDE 42-29.0 N
LONGITUDE 141-20.3 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	17.295	32.821	23.773
10	15.571	33.015	24.317
20	11.258	33.035	25.200
30	9.764	33.267	25.638
40	8.166	33.300	25.914

STATION US08287
LATITUDE 42-25.3 N
LONGITUDE 141-20.2 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	16.236	32.935	24.106
10	14.684	33.207	24.657
20	10.120	33.147	25.485
30	9.695	33.669	25.964
40	8.559	33.662	26.139
50	8.657	33.825	26.252
75	7.023	33.770	26.447

STATION US08288
LATITUDE 42-27.6 N
LONGITUDE 141-20.0 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	16.843	32.868	23.915
10	14.857	33.023	24.479
20	10.905	33.182	25.377
30	10.898	33.685	25.770
40	8.226	33.480	26.047
50	7.387	33.596	26.260

STATION US08289
LATITUDE 41-55.0 N
LONGITUDE 141-15.8 E
DEPTH (m) 261

Press.	Temp.	Salinity	Sigma-T
5	15.910	33.141	24.338
10	12.774	33.100	24.965
20	8.765	33.078	25.650
30	8.173	33.365	25.965
40	7.760	33.416	26.065
50	7.522	33.426	26.107
75	8.207	33.976	26.439
100	7.578	33.897	26.469
125	7.029	33.866	26.521
150	5.797	33.728	26.573
175	5.362	33.715	26.614
200	5.173	33.696	26.622

STATION US08290
LATITUDE 42-00.2 N
LONGITUDE 141-05.2 E
DEPTH (m) 116

Press.	Temp.	Salinity	Sigma-T
5	17.813	32.657	23.524
10	15.659	32.949	24.247
20	12.376	33.167	25.095
30	11.366	33.657	25.664
40	8.190	33.295	25.907
50	8.169	33.500	26.071
75	6.385	33.591	26.390
100	6.247	33.756	26.538

STATION US08291
LATITUDE 42-04.9 N
LONGITUDE 141-14.8 E
DEPTH (m) 226

Press.	Temp.	Salinity	Sigma-T
5	17.862	32.868	23.673
10	14.172	33.505	24.996
20	11.077	33.689	25.741
30	10.076	33.789	25.993
40	8.716	33.723	26.162
50	8.101	33.763	26.287
75	7.124	33.814	26.468
100	6.045	33.727	26.541
125	5.926	33.778	26.596
150	4.761	33.635	26.619
175	4.408	33.599	26.629
200	4.319	33.595	26.635

STATION US08292
LATITUDE 42-10.0 N
LONGITUDE 141-05.2 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	17.892	32.112	23.088
10	15.203	32.712	24.165
20	11.884	33.224	25.231
30	8.197	32.951	25.636
40	8.021	33.183	25.844
50	8.025	33.274	25.915
75	6.622	33.568	26.342

STATION US08293
LATITUDE 42-15.2 N
LONGITUDE 141-14.1 E
DEPTH (m) 144

Press.	Temp.	Salinity	Sigma-T
5	16.940	32.900	23.917
10	14.129	33.287	24.837
20	10.632	33.447	25.631
30	10.752	33.916	25.975
40	9.359	33.828	26.143
50	9.699	34.021	26.238
75	7.862	33.876	26.412
100	6.910	33.821	26.502
125	5.870	33.745	26.577

STATION US08294
LATITUDE 42-20.0 N
LONGITUDE 141-06.8 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	18.168	32.548	23.354
10	15.499	32.818	24.181
20	11.574	32.905	25.041
30	8.048	33.263	25.903
40	7.065	33.392	26.143
50	5.999	33.527	26.389

STATION US08295
LATITUDE 42-24.2 N
LONGITUDE 141-14.8 E
DEPTH (m) 74

Press.	Temp.	Salinity	Sigma-T
5	16.321	32.755	23.948
10	15.435	33.019	24.350
20	11.699	33.099	25.168
30	8.501	33.073	25.686
40	9.473	33.587	25.936
50	7.280	33.543	26.233

STATION US08296
LATITUDE 41-59.2 N
LONGITUDE 141-01.0 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	17.469	32.446	23.445
10	16.891	32.435	23.572
20	12.920	33.025	24.879
30	12.029	33.221	25.202
40	8.653	33.273	25.820
50	7.622	33.382	26.058
75	6.384	33.711	26.485

STATION US08297
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	17.780	32.468	23.387
10	17.260	32.398	23.457
20	15.189	33.120	24.482
30	11.462	33.137	25.242
40	8.386	33.255	25.846
50	7.555	33.388	26.072
75	5.873	33.670	26.517

STATION US08298
LATITUDE 41-58.0 N
LONGITUDE 140-59.2 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	17.615	32.394	23.370
10	17.530	32.466	23.446
20	15.310	33.043	24.396
30	13.075	33.331	25.086
40	8.979	33.081	25.619
50	7.907	33.382	26.017
75	5.583	33.687	26.566

STATION US08299
LATITUDE 41-57.5 N
LONGITUDE 140-58.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	17.904	32.218	23.166
10	17.208	32.390	23.463
20	15.408	33.063	24.390
30	12.924	33.190	25.006
40	9.721	33.037	25.465
50	8.030	33.336	25.962
75	5.497	33.709	26.594

STATION US08300
LATITUDE 42-01.6 N
LONGITUDE 140-55.3 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	18.363	32.098	22.963
10	17.606	32.204	23.227
20	14.905	32.456	24.031
30	13.497	33.281	24.962
40	9.720	33.047	25.473
50	8.281	33.307	25.903

STATION US08301
LATITUDE 42-05.0 N
LONGITUDE 140-55.1 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	18.287	32.098	22.981
10	16.537	32.323	23.568
20	15.118	32.980	24.389
30	13.354	33.302	25.007
40	8.879	33.003	25.573
50	8.168	33.353	25.956
75	5.669	33.700	26.567

STATION US08302
LATITUDE 42-10.1 N
LONGITUDE 140-55.4 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	17.423	32.131	23.214
10	15.123	32.543	24.052
20	11.206	33.024	25.200
30	8.473	33.010	25.641
40	8.179	33.330	25.936
50	6.731	33.224	26.056

STATION US08303
LATITUDE 42-15.2 N
LONGITUDE 140-55.0 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	18.272	32.038	22.939
10	15.141	32.373	23.917
20	9.520	32.632	25.182
30	8.924	33.143	25.676
40	7.693	33.337	26.013
50	6.527	33.382	26.207

STATION US08304
LATITUDE 43-14.7 N
LONGITUDE 141-10.1 E
DEPTH (m) 24

Press.	Temp.	Salinity	Sigma-T
5	20.017	33.347	23.497
10	18.850	33.937	24.247
20	16.384	34.044	24.924

STATION US08305
LATITUDE 43-15.7 N
LONGITUDE 141-14.8 E
DEPTH (m) 22

Press.	Temp.	Salinity	Sigma-T
5	20.005	33.441	23.571
10	19.457	33.554	23.799

STATION US08306
LATITUDE 43-17.2 N
LONGITUDE 141-19.9 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
5	19.351	33.316	23.646
10	18.294	33.863	24.329

STATION US08307
LATITUDE 43-19.9 N
LONGITUDE 141-20.0 E
DEPTH (m) 21

Press.	Temp.	Salinity	Sigma-T
5	19.709	33.585	23.758
10	19.332	33.599	23.866

STATION US08308
LATITUDE 43-20.0 N
LONGITUDE 141-15.3 E
DEPTH (m) 27

Press.	Temp.	Salinity	Sigma-T
5	19.905	33.296	23.488
10	19.470	33.455	23.721
20	17.658	33.950	24.551

STATION US08309
LATITUDE 43-20.0 N
LONGITUDE 141-10.2 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	19.910	0.389	946.230
10	19.324	0.155	481.690
20	17.940	0.186	238.180

STATION US08310
LATITUDE 43-20.0 N
LONGITUDE 141-00.2 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	20.877	0.321	190.530
10	17.958	0.147	210.450
20	13.476	0.209	162.200
30	12.045	0.378	80.208
40	10.820	0.598	37.023

STATION US08311
LATITUDE 43-30.0 N
LONGITUDE 141-00.0 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	20.628	0.192	156.150
10	18.774	0.143	146.920
20	14.905	0.392	117.580
30	12.502	0.390	79.736
40	11.261	0.534	36.528
50	9.879	0.290	16.176
75	8.265	0.247	3.883

STATION US08312
LATITUDE 43-30.0 N
LONGITUDE 141-10.1 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	20.449	32.959	23.088
10	20.060	33.145	23.332
20	16.060	33.991	24.958
30	12.947	34.031	25.652
40	10.887	34.077	26.077
50	9.218	34.114	26.389

STATION US08313
LATITUDE 43-30.0 N
LONGITUDE 141-14.6 E
DEPTH (m) 40

Press.	Temp.	Salinity	Sigma-T
5	20.565	32.902	23.014
10	20.151	33.002	23.199
20	17.007	33.991	24.738
30	12.632	33.987	25.680

STATION US08314
LATITUDE 43-30.0 N
LONGITUDE 141-18.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	20.681	33.523	23.456
10	20.278	33.533	23.570
20	16.171	33.984	24.927

STATION US08315
LATITUDE 43-39.9 N
LONGITUDE 141-15.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	19.599	33.784	23.939
10	18.735	33.847	24.207
20	16.267	33.992	24.911
30	12.271	33.985	25.749
40	10.482	34.087	26.156
50	9.617	34.150	26.353

STATION US08316
LATITUDE 43-40.0 N
LONGITUDE 141-10.1 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	20.381	33.629	23.616
10	19.566	33.837	23.988
20	18.300	33.962	24.404
30	16.162	34.050	24.980
40	12.630	34.007	25.696
50	9.995	34.096	26.247
75	8.628	34.172	26.528

STATION US08317
LATITUDE 43-40.1 N
LONGITUDE 141-01.1 E
DEPTH (m) 285

Press.	Temp.	Salinity	Sigma-T
5	20.252	33.717	23.717
10	20.097	33.709	23.752
20	19.415	33.774	23.979
30	18.888	33.916	24.221
40	16.674	34.032	24.848
50	13.418	34.119	25.626
75	10.093	34.239	26.342
100	7.983	34.158	26.615
125	6.353	34.113	26.807
150	4.892	34.088	26.965
175	3.995	34.076	27.051
200	3.291	34.093	27.135
250	2.092	34.077	27.225

STATION US08318
LATITUDE 43-49.9 N
LONGITUDE 141-09.8 E
DEPTH (m) 232

Press.	Temp.	Salinity	Sigma-T
5	20.348	33.506	23.531
10	19.850	33.667	23.785
20	18.821	33.859	24.195
30	15.658	34.008	25.062
40	13.187	34.084	25.646
50	11.479	34.153	26.029
75	9.395	34.203	26.430
100	8.276	34.190	26.596
125	6.363	34.118	26.809
150	4.810	34.079	26.966
175	3.696	34.087	27.090
200	3.115	34.080	27.141

STATION US08319
LATITUDE 43-50.0 N
LONGITUDE 141-19.8 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	20.621	33.520	23.470
10	19.119	33.830	24.097
20	16.992	33.990	24.741
30	15.051	34.078	25.250
40	12.944	34.067	25.681
50	10.486	34.066	26.139

STATION US08320
LATITUDE 44-56.4 N
LONGITUDE 141-39.1 E
DEPTH (m) 28

Press.	Temp.	Salinity	Sigma-T
5	19.770	33.590	23.747
10	19.731	33.664	23.813
20	15.886	33.965	24.977

STATION US08321
LATITUDE 45-27.4 N
LONGITUDE 142-50.0 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	15.318	31.805	23.441
10	10.964	31.948	24.405
20	8.237	32.154	25.005
30	3.971	32.250	25.602
40	2.342	32.584	26.010
50	0.703	32.651	26.174
75	−0.725	33.102	26.606
100	1.566	33.209	26.568

STATION US08322
LATITUDE 45-20.4 N
LONGITUDE 142-41.2 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	15.432	31.961	23.537
10	10.672	32.048	24.534
20	7.294	32.573	25.468
30	5.773	33.164	26.130
40	5.317	33.490	26.442
50	4.394	33.598	26.630
75	4.103	34.000	26.980

STATION US08323
LATITUDE 45-18.4 N
LONGITUDE 142-38.0 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	16.522	33.650	24.590
10	12.247	33.227	25.166
20	8.728	33.555	26.029
30	6.439	34.018	26.721
40	6.423	34.044	26.743
50	6.437	34.051	26.747
75	5.280	34.058	26.896

STATION US08324
LATITUDE 45-16.8 N
LONGITUDE 142-36.2 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	17.220	33.598	24.386
10	15.847	33.741	24.814
20	9.338	33.861	26.172
30	8.984	34.036	26.366
40	8.811	34.056	26.409
50	8.581	34.058	26.446

STATION US08325
LATITUDE 45-14.8 N
LONGITUDE 142-33.5 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	16.883	33.876	24.679
10	13.702	33.908	25.405
20	12.595	33.995	25.695
30	12.374	34.013	25.751
40	10.780	34.010	26.044
50	10.323	34.036	26.144

STATION US08326
LATITUDE 45-11.3 N
LONGITUDE 142-28.5 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	18.152	33.911	24.401
10	16.207	33.896	24.851
20	15.729	33.945	24.998
30	15.652	33.955	25.022

STATION US08327
LATITUDE 44-50.5 N
LONGITUDE 142-46.1 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	17.858	33.959	24.510
10	17.165	33.916	24.644
20	16.610	33.930	24.784
30	16.485	33.934	24.817
40	16.150	33.943	24.900

STATION US08328
LATITUDE 44-53.0 N
LONGITUDE 142-52.8 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	16.893	33.894	24.691
10	15.863	33.914	24.943
20	14.513	33.920	25.245
30	11.119	33.980	25.960
40	10.574	34.028	26.094
50	10.339	34.034	26.140
75	9.300	34.043	26.320

STATION US08329
LATITUDE 45-54.9 N
LONGITUDE 142-56.9 E
DEPTH (m) 114

Press.	Temp.	Salinity	Sigma-T
5	16.930	33.724	24.551
10	16.667	33.692	24.588
20	6.611	33.124	25.993
30	6.031	33.549	26.402
40	5.626	33.845	26.686
50	5.665	34.022	26.821
75	5.513	34.029	26.846
100	5.321	34.038	26.875

STATION US08330
LATITUDE 44-56.8 N
LONGITUDE 143-00.2 E
DEPTH (m) 127

Press.	Temp.	Salinity	Sigma-T
5	13.628	32.415	24.265
10	10.506	32.824	25.168
20	6.744	33.043	25.912
30	5.869	33.500	26.384
40	5.247	33.802	26.697
50	5.114	33.902	26.792
75	4.803	33.974	26.884
100	4.460	34.000	26.942

STATION US08331
LATITUDE 44-58.8 N
LONGITUDE 143-03.2 E
DEPTH (m) 130

Press.	Temp.	Salinity	Sigma-T
5	15.965	32.148	23.563
10	9.499	32.379	24.987
20	2.876	32.363	25.791
30	0.739	32.592	26.124
40	3.469	33.295	26.481
50	4.568	33.545	26.569
75	4.984	33.957	26.850
100	4.640	33.983	26.909

STATION US08332
LATITUDE 45-04.4 N
LONGITUDE 143-12.8 E
DEPTH (m) 138

Press.	Temp.	Salinity	Sigma-T
5	16.225	32.312	23.631
10	11.354	32.706	24.926
20	3.187	32.536	25.902
30	2.618	32.952	26.283
40	0.841	32.964	26.418
50	0.856	33.096	26.523
75	−0.052	33.183	26.642
100	1.010	33.340	26.710
125	2.975	33.563	26.740

STATION US08333
LATITUDE 44-57.7 N
LONGITUDE 144-09.8 E
DEPTH (m) 230

Press.	Temp.	Salinity	Sigma-T
5	13.781	32.396	24.220
10	9.732	32.315	24.899
20	2.962	32.539	25.924
30	1.513	32.725	26.184
40	0.512	32.868	26.359
50	−0.476	32.936	26.461
75	−0.638	33.097	26.598
100	−0.592	33.135	26.627
125	−0.012	33.218	26.668
150	0.352	33.269	26.691
175	−0.058	33.304	26.740
200	−0.081	33.305	26.742

STATION US08334
LATITUDE 44-49.3 N
LONGITUDE 144-00.1 E
DEPTH (m) 184

Press.	Temp.	Salinity	Sigma-T
5	13.317	32.659	24.517
10	10.934	32.636	24.946
20	3.235	32.808	26.115
30	1.590	32.940	26.351
40	0.942	33.038	26.471
50	0.290	33.089	26.549
75	0.193	33.191	26.636
100	0.320	33.258	26.683
125	0.495	33.292	26.702
150	1.053	33.341	26.708
175	2.928	33.603	26.776

STATION US08335
LATITUDE 44-44.4 N
LONGITUDE 143-54.1 E
DEPTH (m) 172

Press.	Temp.	Salinity	Sigma-T
5	12.833	32.704	24.648
10	11.151	32.696	24.953
20	2.368	32.835	26.209
30	1.144	33.012	26.438
40	1.382	33.196	26.570
50	1.718	33.247	26.588
75	0.271	33.209	26.647
100	0.469	33.243	26.664
125	0.320	33.304	26.721
150	2.497	33.456	26.695

STATION US08336
LATITUDE 44-393 N
LONGITUDE 143-47.2 E
DEPTH (m) 159

Press.	Temp.	Salinity	Sigma-T
5	15.285	32.622	24.077
10	8.144	32.590	25.359
20	1.883	32.594	26.053
30	1.206	32.883	26.331
40	1.108	33.059	26.478
50	0.873	33.190	26.598
75	1.100	33.298	26.670
100	0.771	33.332	26.718
125	2.223	33.540	26.785
150	2.937	33.844	26.968

STATION US08337
LATITUDE 44-34.9 N
LONGITUDE 143-41.5 E
DEPTH (m) 148

Press.	Temp.	Salinity	Sigma-T
5	14.943	32.484	24.045
10	14.429	32.433	24.115
20	4.137	32.683	25.929
30	1.311	32.947	26.375
40	0.483	33.082	26.533
50	0.294	33.162	26.608
75	0.194	33.244	26.679
100	2.482	33.540	26.764
125	4.045	33.726	26.768

STATION US08338
LATITUDE 44-31.9 N
LONGITUDE 143-37.8 E
DEPTH (m) 131

Press.	Temp.	Salinity	Sigma-T
5	14.834	32.433	24.029
10	7.905	32.254	25.131
20	3.982	32.951	26.158
30	4.596	33.480	26.515
40	6.316	33.886	26.632
50	5.810	33.819	26.643
75	4.533	33.693	26.691
100	5.011	33.795	26.719
125	4.985	33.802	26.727

STATION US08339
LATITUDE 44-29.0 N
LONGITUDE 143-34.0 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	16.220	33.194	24.309
10	14.052	33.555	25.056
20	9.388	33.757	26.083
30	9.485	33.877	26.160
40	8.990	33.911	26.267
50	8.502	33.916	26.347
75	6.818	33.839	26.529

STATION US08340
LATITUDE 44-24.4 N
LONGITUDE 143-28.3 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	17.673	33.920	24.524
10	17.081	33.908	24.657
20	15.007	33.943	25.156
30	13.215	33.915	25.509
40	12.790	33.927	25.603
50	12.699	33.930	25.624

STATION US08341
LATITUDE 44-10.0 N
LONGITUDE 143-58.9 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	16.074	33.823	24.825
10	14.970	33.685	24.965
20	14.476	33.857	25.204
30	14.445	33.863	25.215

STATION US08342
LATITUDE 44-10.2 N
LONGITUDE 144-19.3 E
DEPTH (m) 110

Press.	Temp.	Salinity	Sigma-T
5	15.839	33.795	24.857
10	14.707	33.958	25.232
20	13.586	33.865	25.396
30	11.526	33.846	25.781
40	10.080	33.783	25.988
50	9.172	33.776	26.133
75	7.569	33.686	26.304
100	6.830	33.715	26.429

STATION US08343
LATITUDE 44-14.0 N
LONGITUDE 144-24.5 E
DEPTH (m) 321

Press.	Temp.	Salinity	Sigma-T
5	14.843	32.747	24.269
10	10.870	33.302	25.474
20	3.769	32.530	25.844
30	5.488	33.271	26.248
40	5.963	33.588	26.442
50	6.518	33.808	26.544
75	4.781	33.568	26.564
100	5.202	33.769	26.676
125	3.496	33.572	26.700
150	1.520	33.528	26.827
175	3.842	33.601	26.690
200	3.169	33.609	26.759
250	3.966	33.772	26.813
300	3.345	33.734	26.843

STATION US08344
LATITUDE 44-18.5 N
LONGITUDE 144-29.5 E
DEPTH (m) 923

Press.	Temp.	Salinity	Sigma-T
5	14.211	32.749	24.404
10	13.066	32.759	24.643
20	4.316	32.963	26.134
30	2.222	33.217	26.526
40	1.567	33.259	26.608
50	0.410	33.189	26.623
75	0.924	33.273	26.661
100	0.538	33.332	26.732
125	0.576	33.329	26.727
150	0.608	33.345	26.738
175	0.624	33.360	26.749
200	0.987	33.422	26.777
250	1.364	33.503	26.818
300	1.222	33.515	26.837
400	1.570	33.620	26.898
500	1.775	33.704	26.950
600	1.905	33.778	27.000
700	2.043	33.939	27.118
800	2.171	34.063	27.208
900	2.244	34.147	27.269

STATION US08345
LATITUDE 44-21.3 N
LONGITUDE 144-33.0 E
DEPTH (m) 1131

Press.	Temp.	Salinity	Sigma-T
5	14.515	32.869	24.433
10	9.095	32.991	25.530
20	5.568	33.378	26.324
30	5.034	33.489	26.473
40	4.150	33.450	26.538
50	2.474	33.319	26.588
75	2.441	33.424	26.674
100	2.233	33.440	26.704
125	2.055	33.448	26.724
150	0.807	33.340	26.723
175	1.241	33.420	26.759
200	0.850	33.405	26.772
250	2.326	33.594	26.820
300	2.253	33.597	26.828
400	1.718	33.641	26.904
500	2.115	33.761	26.970
600	1.960	33.839	27.044
700	2.093	33.983	27.150
800	2.217	34.081	27.218
900	2.303	34.173	27.285
1000	2.321	34.254	27.348

STATION US08346
LATITUDE 44-28.8 N
LONGITUDE 144-42.0 E
DEPTH (m) 1473

Press.	Temp.	Salinity	Sigma-T
5	12.956	32.969	24.829
10	11.044	33.235	25.394
20	2.972	32.945	26.247
30	1.972	33.113	26.462
40	1.181	33.139	26.538
50	0.420	33.123	26.570
75	0.593	33.226	26.643
100	2.906	33.511	26.705
125	2.219	33.449	26.712
150	2.000	33.443	26.724
175	1.368	33.401	26.736
200	0.925	33.389	26.755
250	0.745	33.417	26.788
300	1.161	33.503	26.832
400	1.392	33.605	26.898
500	1.576	33.712	26.971
600	1.863	33.847	27.058
700	2.099	33.985	27.151
800	2.229	34.090	27.224
900	2.296	34.174	27.286
1000	2.334	34.259	27.351
1200	2.259	34.401	27.471

STATION US08347
LATITUDE 44-17.3 N
LONGITUDE 145-03.1 E
DEPTH (m) 802

Press.	Temp.	Salinity	Sigma-T
5	13.738	32.991	24.688
10	12.155	33.321	25.255
20	11.548	33.768	25.717
30	7.475	33.211	25.944
40	9.034	33.800	26.173
50	7.264	33.571	26.257
75	2.098	33.281	26.587
100	2.850	33.424	26.640
125	1.805	33.531	26.809
150	0.849	33.348	26.726
175	1.342	33.430	26.761
200	2.045	33.481	26.751
250	2.070	33.541	26.797
300	2.230	33.598	26.831

STATION US08348
LATITUDE 44-15.7 N
LONGITUDE 145-06.5 E
DEPTH (m) 755

Press.	Temp.	Salinity	Sigma-T
5	13.794	33.517	25.084
10	13.466	33.781	25.355
20	13.293	33.932	25.507
30	13.177	33.924	25.524
40	12.777	33.929	25.608
50	12.500	33.932	25.664
75	10.345	33.859	26.002
100	3.965	33.409	26.524
125	3.159	33.472	26.651
150	3.597	33.570	26.688
175	2.904	33.519	26.712
200	2.096	33.458	26.729
250	2.069	33.516	26.777
300	2.133	33.574	26.819

STATION US08349
LATITUDE 44-14.6 N
LONGITUDE 145-09.2 E
DEPTH (m) 406

Press.	Temp.	Salinity	Sigma-T
5	16.160	33.625	24.653
10	15.401	33.534	24.754
20	14.204	33.845	25.252
30	14.120	33.866	25.286
40	13.831	33.888	25.363
50	12.996	33.916	25.554
75	12.284	33.926	25.701
100	9.336	33.661	26.016
125	6.223	33.664	26.469
150	4.847	33.611	26.592
175	2.685	33.425	26.655
200	2.759	33.485	26.697
250	2.338	33.518	26.758
300	2.101	33.553	26.804

STATION US08350
LATITUDE 44-20.8 N
LONGITUDE 145-12.3 E
DEPTH (m) 985

Press.	Temp.	Salinity	Sigma-T
5	14.001	33.854	25.301
10	13.965	33.857	25.311
20	13.698	33.897	25.398
30	13.321	33.939	25.507
40	12.678	33.911	25.613
50	11.396	33.737	25.721
75	10.000	33.852	26.056
100	4.082	33.498	26.583
125	4.125	33.615	26.672
150	3.430	33.548	26.687
175	3.032	33.541	26.718
200	3.535	33.622	26.736
250	1.781	33.488	26.777
300	2.225	33.598	26.831

STATION US08351
LATITUDE 44-27.5 N
LONGITUDE 145-14.1 E
DEPTH (m) 1773

Press.	Temp.	Salinity	Sigma-T
5	14.188	32.836	24.476
10	10.982	32.763	25.037
20	5.712	33.003	26.010
30	6.804	33.598	26.341
40	7.382	33.792	26.414
50	6.644	33.730	26.466
75	2.713	33.336	26.582
100	2.139	33.296	26.596
125	0.785	33.316	26.704
150	1.886	33.397	26.696
175	1.964	33.485	26.760
200	2.324	33.508	26.751
250	2.760	33.626	26.809
300	2.035	33.578	26.829

STATION US08352
LATITUDE 44-24.3 N
LONGITUDE 145-21.0 E
DEPTH (m) 436

Press.	Temp.	Salinity	Sigma-T
5	13.871	33.857	25.331
10	13.822	33.853	25.338
20	13.512	33.891	25.431
30	13.119	33.882	25.503
40	12.618	33.861	25.586
50	11.684	33.853	25.758
75	10.765	33.858	25.928
100	7.491	33.726	26.347
125	4.737	33.529	26.538
150	3.215	33.484	26.655
175	2.684	33.460	26.683
200	2.172	33.477	26.739
250	2.097	33.562	26.812
300	2.339	33.613	26.834

STATION US08353
LATITUDE 44-20.9 N
LONGITUDE 145-27.7 E
DEPTH (m) 1672

Press.	Temp.	Salinity	Sigma-T
5	13.252	33.560	25.228
10	13.252	33.567	25.233
20	13.354	33.623	25.255
30	12.234	33.725	25.554
40	11.813	33.757	25.659
50	10.804	33.726	25.819
75	9.250	33.695	26.056
100	7.109	33.609	26.308
125	5.503	33.563	26.477
150	3.934	33.494	26.595
175	2.189	33.367	26.649
200	1.735	33.387	26.699
250	1.511	33.435	26.753
300	1.634	33.493	26.792

STATION US08354
LATITUDE 44-18.4 N
LONGITUDE 145-33.3 E
DEPTH (m) 2388

Press.	Temp.	Salinity	Sigma-T
5	13.753	33.217	24.860
10	13.767	33.434	25.025
20	13.868	33.514	25.066
30	14.179	33.634	25.094
40	12.321	33.651	25.481
50	11.124	33.693	25.736
75	9.183	33.701	26.072
100	7.354	33.626	26.288
125	5.302	33.513	26.461
150	4.911	33.566	26.549
175	3.173	33.419	26.607
200	2.477	33.383	26.638
250	1.547	33.417	26.736
300	1.413	33.490	26.805

STATION US08355
LATITUDE 44-13.5 N
LONGITUDE 145-27.5 E
DEPTH (m) 1818

Press.	Temp.	Salinity	Sigma-T
5	14.037	33.352	24.906
10	14.036	33.406	24.948
20	12.716	33.496	25.284
30	11.681	33.725	25.659
40	11.587	33.735	25.684
50	11.264	33.742	25.748
75	9.639	33.604	25.922
100	7.403	33.576	26.242
125	6.143	33.545	26.385
150	2.881	33.365	26.590
175	1.738	33.353	26.671
200	1.395	33.369	26.709
250	1.093	33.423	26.771
300	1.130	33.478	26.814
400	1.477	33.603	26.891
500	1.566	33.688	26.952
600	1.772	33.802	27.029
700	2.106	34.000	27.162
800	2.235	34.124	27.251
900	2.293	34.211	27.316
1000	2.293	34.282	27.373

STATION US08356
LATITUDE 44-08.6 N
LONGITUDE 145-20.2 E
DEPTH (m) 510

Press.	Temp.	Salinity	Sigma-T
5	14.047	33.307	24.869
10	14.162	33.559	25.040
20	11.921	33.567	25.491
30	11.480	33.637	25.627
40	10.917	33.656	25.744
50	10.414	33.645	25.824
75	8.875	33.669	26.095
100	6.273	33.519	26.348
125	3.131	33.354	26.559
150	1.644	33.347	26.674
175	1.440	33.371	26.707
200	0.885	33.332	26.711
250	1.127	33.434	26.778
300	1.169	33.475	26.808

STATION US08357
LATITUDE 44-07.1 N
LONGITUDE 145-22.4 E
DEPTH (m) 985

Press.	Temp.	Salinity	Sigma-T
5	14.466	33.193	24.693
10	13.730	33.419	25.021
20	11.783	33.582	25.528
30	10.608	33.663	25.804
40	9.932	33.649	25.909
50	9.562	33.622	25.949
75	8.645	33.649	26.116
100	6.104	33.536	26.383
125	4.246	33.430	26.513
150	2.354	33.327	26.604
175	1.489	33.299	26.646
200	0.865	33.322	26.704
250	1.306	33.413	26.750
300	0.944	33.440	26.795

STATION US08358
LATITUDE 44-05.8 N
LONGITUDE 145-24.9 E
DEPTH (m) 1008

Press.	Temp.	Salinity	Sigma-T
5	14.257	33.331	24.844
10	13.958	33.391	24.952
20	12.422	33.527	25.364
30	10.997	33.606	25.690
40	9.913	33.650	25.913
50	9.412	33.652	25.996
75	8.199	33.663	26.194
100	6.246	33.549	26.375
125	4.777	33.474	26.490
150	3.048	33.362	26.573
175	1.838	33.308	26.628
200	1.210	33.304	26.669
250	0.960	33.360	26.729
300	1.044	33.438	26.786

STATION US08359
LATITUDE 44-02.0 N
LONGITUDE 145-17.9 E
DEPTH (m) 424

Press.	Temp.	Salinity	Sigma-T
5	14.247	32.962	24.561
10	13.854	33.116	24.762
20	11.926	33.244	25.239
30	11.004	33.509	25.614
40	10.420	33.550	25.749
50	9.611	33.559	25.892
75	8.525	33.594	26.091
100	6.143	33.533	26.376
125	4.338	33.455	26.523
150	2.691	33.336	26.583
175	2.118	33.355	26.645
200	2.396	33.433	26.685
250	0.814	33.374	26.749
300	0.950	33.441	26.795

STATION US08360
LATITUDE 43-55.4 N
LONGITUDE 145-15.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	14.653	32.807	24.356
10	14.769	32.887	24.393
20	13.856	33.270	24.880
30	11.974	33.385	25.340
40	11.002	33.425	25.549
50	10.244	33.547	25.776

STATION US08361
LATITUDE 43-56.4 N
LONGITUDE 145-12.6 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	14.656	32.790	24.342
10	14.699	32.980	24.480
20	13.191	33.164	24.933
30	11.075	33.288	25.429
40	10.494	33.515	25.708
50	9.946	33.542	25.822

STATION US08362
LATITUDE 43-57.4 N
LONGITUDE 145-10.5 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	14.980	32.811	24.289
10	14.076	33.024	24.644
20	11.750	33.228	25.259
30	10.563	33.555	25.728
40	9.909	33.560	25.843
50	9.483	33.604	25.947
75	7.663	33.553	26.186

STATION US08363
LATITUDE 43-49.8 N
LONGITUDE 145-10.8 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	15.391	32.784	24.179
10	13.088	33.016	24.839
20	11.532	33.377	25.415
30	10.340	33.507	25.729

STATION US08364
LATITUDE 43-36.3 N
LONGITUDE 145-25.9 E
DEPTH (m) 23

Press.	Temp.	Salinity	Sigma-T
5	13.143	32.637	24.535
10	11.890	32.623	24.764

STATION US08365
LATITUDE 43-33.7 N
LONGITUDE 145-23.6 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	13.944	32.578	24.327

STATION US08366
LATITUDE 43-29.9 N
LONGITUDE 145-30.0 E
DEPTH (m) 24

Press.	Temp.	Salinity	Sigma-T
5	13.980	32.346	24.141
10	12.559	32.580	24.604

STATION US08367
LATITUDE 43-30.3 N
LONGITUDE 145-34.3 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	14.342	32.532	24.209
10	11.490	32.771	24.952
20	9.905	32.739	25.202

STATION US08368
LATITUDE 43-26.9 N
LONGITUDE 145-39.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	14.505	32.467	24.125
10	10.927	32.544	24.876
20	9.510	32.857	25.359

STATION US08369
LATITUDE 43-24.7 N
LONGITUDE 145-36.0 E
DEPTH (m) 26

Press.	Temp.	Salinity	Sigma-T
5	15.098	32.282	23.857
10	12.534	32.574	24.605
20	8.739	32.695	25.354

STATION US08370
LATITUDE 43-22.4 N
LONGITUDE 145-32.0 E
DEPTH (m) 18

Press.	Temp.	Salinity	Sigma-T
5	15.962	32.142	23.559
10	12.557	32.838	24.804

STATION US08371
LATITUDE 43-27.5 N
LONGITUDE 145-26.0 E
DEPTH (m) 20

Press.	Temp.	Salinity	Sigma-T
5	13.988	32.588	24.326
10	12.619	32.579	24.592

STATION US08372
LATITUDE 43-31.2 N
LONGITUDE 145-20.0 E
DEPTH (m) 7

Press.	Temp.	Salinity	Sigma-T
5	14.334	32.411	24.117

STATION US08373
LATITUDE 43-30.3 N
LONGITUDE 145-17.9 E
DEPTH (m) 7

Press.	Temp.	Salinity	Sigma-T
5	14.631	32.382	24.033

STATION US08374
LATITUDE 43-25.4 N
LONGITUDE 145-21.6 E
DEPTH (m) 11

Press.	Temp.	Salinity	Sigma-T
5	14.310	32.356	24.080

STATION US08375
LATITUDE 43-24.3 N
LONGITUDE 145-20.1 E
DEPTH (m) 9

Press.	Temp.	Salinity	Sigma-T
5	13.929	32.427	24.214

STATION US08376
LATITUDE 43-19.5 N
LONGITUDE 145-25.6 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	15.894	31.772	23.290

STATION US08377
LATITUDE 43-20.4 N
LONGITUDE 145-27.5 E
DEPTH (m) 15

Press.	Temp.	Salinity	Sigma-T
5	16.426	31.814	23.202
10	11.943	32.367	24.559

STATION US08378
LATITUDE 41-58.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	21.345	32.004	22.122
10	18.149	32.926	23.647
20	11.719	33.624	25.573
30	10.654	33.760	25.871
40	9.317	33.780	26.112
50	8.600	33.772	26.219
75	8.486	33.834	26.285

STATION US08379
LATITUDE 41-58.4 N
LONGITUDE 140-59.9 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	20.936	32.017	22.242
10	19.821	32.619	22.993
20	14.174	33.426	24.935
30	11.114	33.824	25.839
40	9.664	33.851	26.111
50	9.495	33.946	26.213
75	8.365	33.828	26.299

STATION US08380
LATITUDE 41-57.9 N
LONGITUDE 140-59.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	21.082	31.989	22.182
10	20.545	32.317	22.574
20	15.427	33.372	24.624
30	10.797	33.662	25.769
40	10.302	33.900	26.042
50	9.385	33.915	26.207
75	8.101	33.791	26.309

STATION US08381
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	20.970	32.054	22.261
10	20.514	32.141	22.448
20	14.203	32.995	24.596
30	10.856	33.470	25.610
40	10.094	33.771	25.976
50	8.671	33.662	26.122
75	6.004	33.485	26.355

STATION US08382
LATITUDE 42-23.3 N
LONGITUDE 140-43.0 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	20.781	31.921	22.210
10	20.859	32.044	22.283
20	19.030	32.124	22.817
30	13.829	32.813	24.533
40	8.932	33.246	25.755
50	7.794	33.359	26.015

STATION US08383
LATITUDE 42-28.9 N
LONGITUDE 140-31.4 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	20.934	31.996	22.227
10	20.987	32.076	22.273
20	17.459	32.894	23.790
30	9.057	32.528	25.174
40	7.928	33.072	25.770
50	7.514	33.374	26.067

STATION US08384
LATITUDE 42-19.1 N
LONGITUDE 140-30.6 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	20.857	31.960	22.220
10	20.863	31.976	22.230
20	17.651	32.283	23.276
30	13.455	33.114	24.840
40	8.780	32.958	25.554
50	6.436	33.058	25.963
75	3.667	33.339	26.497

STATION US08385
LATITUDE 42-16.2 N
LONGITUDE 140-35.5 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	20.778	31.964	22.244
10	20.793	31.970	22.244
20	17.667	32.316	23.298
30	14.211	32.982	24.584
40	8.388	32.641	25.364
50	6.052	32.951	25.927
75	6.382	33.674	26.456

STATION US08386
LATITUDE 42-11.6 N
LONGITUDE 140-35.8 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	20.729	31.995	22.280
10	20.259	32.012	22.417
20	13.543	32.619	24.440
30	11.779	33.283	25.297
40	7.653	32.976	25.735
50	5.778	32.992	25.993
75	4.326	33.287	26.390

STATION US08387
LATITUDE 42-22.7 N
LONGITUDE 140-25.5 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	20.409	31.983	22.356
10	19.482	32.089	22.676
20	15.310	32.561	24.025
30	9.057	32.583	25.217
40	7.786	32.978	25.717
50	7.241	33.261	26.016

STATION US08388
LATITUDE 42-22.7 N
LONGITUDE 140-30.0 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	20.823	31.899	22.182
10	20.824	31.924	22.201
20	18.336	32.372	23.178
30	14.924	33.108	24.530
40	8.680	32.930	25.547
50	7.597	33.279	25.981
75	4.152	33.397	26.496

STATION US08389
LATITUDE 42-25.8 N
LONGITUDE 140-37.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	20.589	31.933	22.270
10	20.578	31.932	22.272
20	19.800	32.252	22.719
30	15.786	32.825	24.123
40	9.373	32.922	25.432
50	8.048	33.219	25.868
75	5.263	33.351	26.338

STATION US08390
LATITUDE 42-21.1 N
LONGITUDE 140-38.7 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	20.598	31.994	22.314
10	20.571	32.004	22.329
20	20.521	32.030	22.362
30	15.421	32.700	24.108
40	8.837	32.908	25.506
50	8.411	33.467	26.009
75	5.427	33.465	26.409

STATION US08391
LATITUDE 42-18.0 N
LONGITUDE 140-40.4 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	20.621	31.923	22.254
10	20.513	31.964	22.314
20	20.239	32.113	22.499
30	13.947	32.728	24.443
40	8.804	33.023	25.601
50	6.341	33.153	26.051
75	6.122	33.553	26.394

6

THE “USHIO MARU”

CRUISE 154
CRUISE 155
CRUISE 156

IN AUGUST-OCTOBER 2008

1. Cruise Itinerary

Cruise 154			
Departure from Hakodate	Aug.	31	, 2008
Start hydrographic research (US08392) and larvae net sampling	Sep.	1	
Arrival at Rausu		1	
Departure from Rausu		3	
Set profiling float		4	
Research by R.O.V.		6	
Arrival at Rausu		7	
Departure from Rausu		8	
Arrival at Kushiro		9	
Departure from Kushiro		10	
Finish hydrographic research (US08449) and larvae net sampling		13	
Return to Hakodate		15	
Total coverage 1497.1 miles			

Cruise 155			
Departure from Hakodate	Sep.	18	, 2008
Start hydrographic research (US08450)		18	
Start Tuna Long-line research		19	
Finish Tuna Long-line research		20	
Arrival at Hakodate		21	
Departure from Hakodate		22	
Arrival at Muroran		22	
Departure from Muroran		23	
Finish hydrographic research (US08463)		23	
Arrival at Muroran		23	
Departure from Muroran		24	
Return to Hakodate		25	
Total coverage 489.0 miles			

Cruise 156			
Departure from Hakodate	Oct.	27	, 2008
Start hydrographic research (US08464)		27	
Arrival at Muroran		27	
Departure from Muroran		28	
Retrieval Sediment trap system		28	
Arrival at Muroran		29	
Departure from Muroran		30	
Finish hydrographic research (US08477)		30	
Set mooring ADCP system		30	
Arrival at and departure from Mori		30	
Return to Hakodate		31	
Total coverage 273.2 miles			

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 154

Research Staff :	Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Seiichi Saitoh
	Assistant Professor	(Field Science Center for Northern Biosphere)	Jun Yamamoto
	Research Associate	(Field Science Center for Northern Biosphere)	Toshihiro Iwamori
Guest Scientist (Domestic) :	Professor	(Tokyo University of Agriculture)	Akihiro Shiomoto

Graduate Students :	Chair of Marine Bioresource and Environment Sensing :	3 persons
	Graduate School of the Fisheries Sciences :	1 person
	Graduate School of Environmental Science :	2 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	3 persons
	Department of Marine Production System Science :	1 person
	Department of Marine Biology :	1 person

Cruise 155

Research Staff :	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Susumu Shimizu
	Research Associate	(Laboratory of Marine Environmental Science)	Kenji Toya

Graduate Students :	Chair of Marine Bioresource and Environment Sensing :	4 persons
	Chair of Marine Environmental Science :	4 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	6 persons
	Department of Applied Marine Science (Third grade) :	5 persons

Cruise 156

Research Staff :	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo

Graduate Students :	Chair of Marine Environmental Science :	1 person
	Graduate School of Environmental Science :	5 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	8 persons

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

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

Figure 1: Oceanographic stations (Cruise 154)

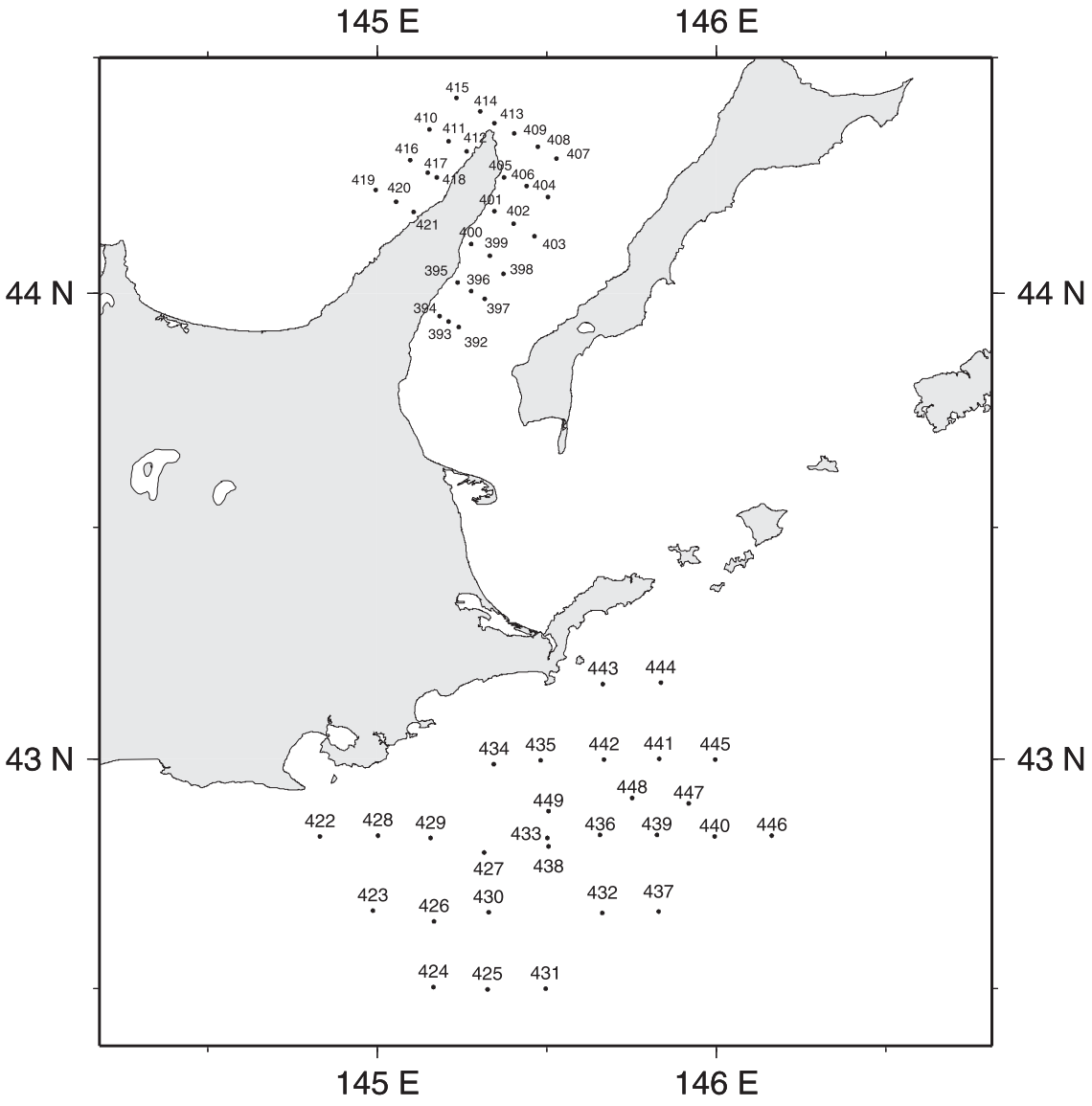

Figure 2: Oceanographic stations (Cruise 155)

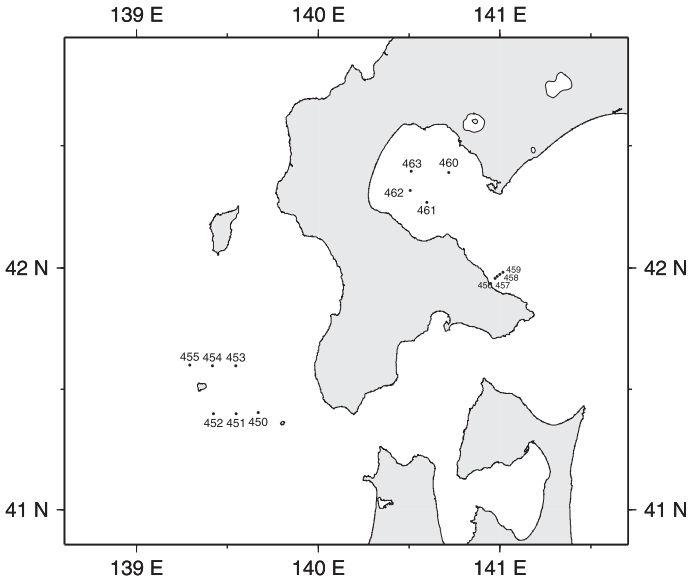

Figure 3: Oceanographic stations (Cruise 156)

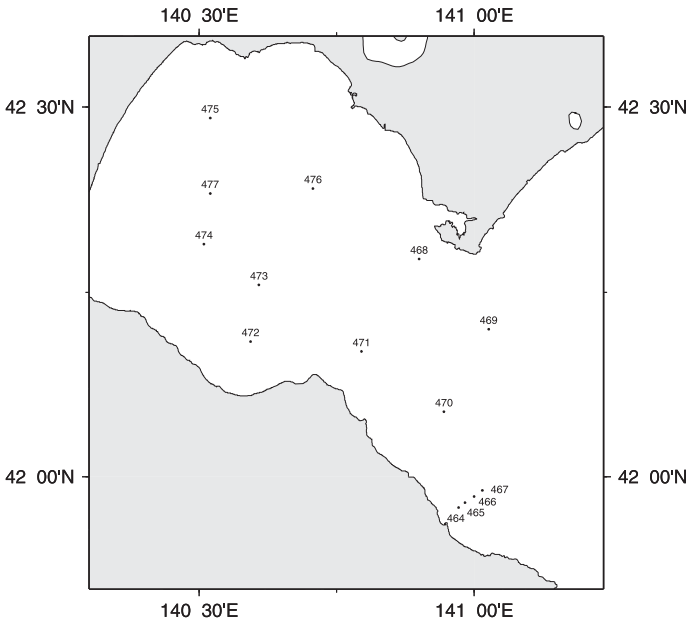

Table 1: List of oceanographic stations

Cruise 154

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08392	43-55.7	145-14.4	9/1	1511-1515	81	NE -1	NE -1	NE -2	17.6	16.6	r	1012.5
US08393	43-56.4	145-12.6	9/1	1535-1538	84	NE -1	NE -1	NE -2	17.7	17.3	r	1012.6
US08394	43-57.1	145-11.0	9/1	1549-1553	82	North-1	NE -1	North-3	18.1	17.6	r	1012.5
US08395	44-01.4	145-14.2	9/3	0713-0726	336	South-1	East-1	South-2	18.4	17.5	f	1009.3
US08396	44-00.3	145-16.6	9/3	0755-0809	382	SSW-1	East-1	SSW-2	18.2	17.1	f	1009.2
US08397	43-59.3	145-19.0	9/3	0821-0830	272	South-1	East-1	South-3	18.4	17.4	f	1009.1
US08398	44-02.5	145-22.3	9/3	0911-0932	910	Calm	East-1	Calm	18.9	17.0	f	1009.0
US08399	44-04.8	145-19.9	9/3	0955-1017	716	South-1	East-1	South-2	18.9	17.1	f	1008.6
US08400	44-06.3	145-16.6	9/3	1050-1102	376	South-2	East-1	South-4	18.7	16.9	c	1007.6
US08401	44-10.5	145-20.7	9/3	1134-1138	136	Calm	East-1	Calm	18.6	16.4	f	1006.8
US08402	44-08.9	145-24.1	9/3	1208-1255	1473	South-2	East-1	South-4	18.4	16.9	r	1006.6
US08403	44-07.3	145-27.8	9/3	1402-1440	1200	South-2	East-1	South-4	18.7	17.5	o	1006.0
US08404	44-12.3	145-30.2	9/3	1523-1638	2075	South-2	East-1	South-4	19.1	17.3	f	1004.6
US08405	44-14.8	145-22.4	9/4	0641-0652	327	NNE-1	South-1	NNE-3	23.3	16.8	bc	1009.7
US08406	44-13.7	145-26.4	9/4	0715-0802	1566	NW -2	NW -1	NW -3	22.6	17.3	bc	1010.5
US08407	44-17.2	145-31.7	9/4	0910-1010	2077	NW -3	NW -1	NW -6	20.4	16.8	bc	1011.4
US08408	44-18.7	145-28.4	9/4	1025-1105	1516	WNW-2	NW -1	WNW-4	21.3	16.7	bc	1012.7
US08409	44-20.4	145-24.2	9/4	1140-1209	849	WNW-3	NW -1	WNW-5	21.4	16.6	bc	1013.5
US08410	44-20.9	145-09.2	9/5	0755-0827	1233	Calm	West-1	Calm	20.4	17.4	bc	1018.8
US08411	44-19.4	145-12.6	9/5	0900-0924	734	Calm	West-1	Calm	21.7	18.5	bc	1019.0
US08412	44-18.1	145-15.8	9/5	0942-0946	139	Calm	West-1	Calm	20.5	17.8	bc	1018.9
US08413	44-21.7	145-20.7	9/5	1026-1030	85	SSE-2	SE -1	SSE-4	17.3	17.0	f	1019.1
US08414	44-23.2	145-18.2	9/5	1047-1107	711	SE -2	SE -1	SE -4	19.0	18.6	f	1019.1
US08415	44-24.9	145-14.0	9/5	1146-1234	1419	East-2	SE -1	East-4	19.3	17.5	bc	1019.1
US08416	44-17.0	145-05.8	9/5	1350-1418	855	Calm	NE -1	Calm	22.5	19.3	bc	1018.7
US08417	44-15.4	145-08.9	9/5	1449-1505	575	Calm	NE -1	Calm	22.5	20.2	bc	1018.7
US08418	44-14.8	145-10.5	9/5	1516-1526	327	Calm	NE -1	Calm	22.7	20.3	bc	1018.7
US08419	44-13.2	144-59.7	9/6	0605-0629	684	Calm	North-1	Calm	20.0	18.8	bc	1019.5
US08420	44-11.7	145-03.3	9/6	0650-0711	460	Calm	North-1	Calm	20.6	18.8	bc	1019.5
US08421	44-10.4	145-06.4	9/6	0748-0755	215	Calm	North-1	Calm	20.8	18.7	bc	1019.4
US08422	42-49.9	144-49.8	9/10	1033-1042	99	East-1	SE -1	East-2	19.9	19.3	bc	1020.1
US08423	42-40.2	144-59.2	9/10	1211-1234	655	South-2	South-1	South-4	19.3	16.1	bc	1019.6
US08424	42-30.2	145-09.9	9/10	1357-1422	1947	South-2	SE -1	South-4	19.9	20.8	c	1019.2
US08425	42-29.9	145-19.5	9/10	1510-1531	2247	South-3	South-1	South-5	19.5	20.9	c	1019.0
US08426	42-38.8	145-10.0	9/10	1645-1707	1352	SW -2	South-1	SW -4	19.8	19.6	c	1019.0
US08427	42-47.8	145-18.9	9/10	1902-1929	605	SW-2	South-1	SW -4	19.2	19.3	bc	1019.8
US08428	42-50.0	145-00.1	9/11	0157-0205	109	SSW-2	South-1	SSW-4	18.3	17.4	bc	1019.1
US08429	42-49.7	145-09.4	9/11	0253-0302	133	South-2	South-1	South-4	17.1	15.1	bc	1019.1
US08430	42-40.0	145-19.7	9/11	0428-0453	1820	SSW-2	South-1	SSW-5	19.3	18.1	bc	1019.0
US08431	42-30.0	145-29.8	9/11	0607-0929	2524	SSW-2	South-1	SSW-4	20.1	19.0	bc	1019.1
US08432	42-39.9	145-39.8	9/11	0743-0806	2310	SSW-1	South-1	SSW-3	21.4	18.8	bc	1019.2
US08433	42-49.7	145-30.1	9/11	0922-0943	1175	South-1	South-1	South-3	20.9	17.0	bc	1018.8
US08434	42-59.3	145-20.6	9/11	1053-1059	70	South-1	South-1	South-3	20.5	16.2	bc	1018.5
US08435	42-59.8	145-28.9	9/11	1143-1152	87	South-1	South-1	South-3	21.0	16.5	bc	1018.1
US08436	42-50.1	145-39.4	9/11	1308-1329	1586	South-1	South-1	South-3	19.9	17.8	bc	1017.3
US08437	42-40.1	145-49.8	9/11	1452-1505	2591	South-2	South-1	South-4	21.2	19.7	bc	1016.7
US08438	42-48.6	145-30.3	9/11	1857-1923	415	SSE-1	South-1	SSE-2	19.1	17.4	bc	1017.6
US08439	42-50.1	145-49.5	9/12	0303-0327	2071	NE -1	South-1	NE -3	20.1	19.0	r	1012.8
US08440	42-49.9	145-59.7	9/12	0426-0449	2268	SSE-1	South-1	SSE-4	20.8	18.9	r	1012.1
US08441	43-00.0	145-49.9	9/12	0603-0626	710	SSE-1	South-1	SSE-3	20.5	17.7	f	1011.7
US08442	42-59.9	145-40.1	9/12	0711-0719	116	SSE-2	South-1	SSE-5	19.8	16.3	o	1010.5
US08443	43-09.7	145-39.9	9/12	0822-0830	55	SSE-2	South-1	SSE-5	19.1	16.1	r	1009.0
US08444	43-09.9	145-50.2	9/13	0723-0731	89	SW -1	SSE-1	SW -2	16.0	14.0	bc	1011.6
US08445	42-59.9	145-59.8	9/13	0842-0908	1661	SW -1	SSE-2	SW -3	18.7	17.9	bc	1012.5
US08446	42-50.0	146-09.8	9/13	1018-1040	2607	SW -1	SSE-2	SW-2	20.2	20.0	bc	1013.0
US08447	42-54.2	145-55.1	9/13	1243-1304	1895	South-1	SSE-2	South-2	22.1	18.6	bc	1012.6
US08448	42-54.9	145-45.1	9/13	1449-1509	993	South-1	SSE-2	South-2	20.2	17.7	bc	1012.2
US08449	42-53.2	145-30.3	9/13	1838-1856	381	South-1	SSE-2	South-2	18.6	16.0	c	1013.1

Cruise 155

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08450	41-24.2	139-40.2	9/18	1523-1530	806	South-2	SE -1	South-4	26.1	24.5	bc	1012.5
US08451	41-23.9	139-32.9	9/18	1611-1622	1525	South-2	SE -1	South-4	25.6	24.3	bc	1012.1
US08452	41-23.9	139-25.4	9/18	1705-1713	2298	South-2	SE -1	South-4	25.4	24.3	bc	1011.6
US08453	41-35.8	139-32.8	9/19	1042-1051	1100	WNW-3	West-1	WNW-5	24.0	23.9	bc	1014.0
US08454	41-35.8	139-25.1	9/19	1130-1138	1750	NW -2	WNW-1	NW -5	22.1	24.2	c	1013.6
US08455	41-36.0	139-17.6	9/19	1217-1225	1602	NW -2	WNW-1	NW -5	22.3	24.1	bc	1013.6
US08456	41-57.4	140-58.4	9/22	1350-1354	80	ESE-2	East-1	ESE-4	20.8	20.0	c	1011.0
US08457	41-57.9	140-59.1	9/22	1359-1403	84	ESE-2	East-1	ESE-5	20.8	20.1	c	1010.5
US08458	41-58.4	141-00.0	9/22	1409-1413	88	ESE-2	East-1	ESE-5	20.5	20.0	c	1010.5
US08459	41-58.9	141-01.0	9/22	1420-1424	95	ESE-2	East-1	ESE-5	20.4	20.1	c	1010.5
US08460	42-23.4	140-43.1	9/23	0805-0815	58	SSW-2	SE -1	SSW-4	21.0	20.1	r	1001.7
US08461	42-16.1	140-35.9	9/23	0907-0917	91	WSW-2	SE -1	WSW-5	19.3	20.1	r	1001.8
US08462	42-19.0	140-30.4	9/23	1103-1111	93	WNW-3	SE -1	WNW-6	19.3	20.2	c	1002.1
US08463	42-23.7	140-30.7	9/23	1151-1157	95	NW -3	West-1	NW -5	19.6	19.9	bc	1002.0

Cruise 156

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08464	41-57.5	140-58.3	10/27	1258-1302	80	West-3	ESE-1	West-5	11.1	14.0	c	1006.6
US08465	41-57.9	140-59.0	10/27	1307-1311	85	West-3	ESE-1	West-5	11.5	14.1	c	1007.1
US08466	41-58.4	141-00.0	10/27	1317-1321	89	WNW-2	ESE-1	WNW-4	11.3	14.0	r	1007.2
US08467	41-58.9	141-00.9	10/27	1327-1332	96	WNW-2	ESE-1	WNW-4	11.1	13.9	c	1007.2
US08468	42-17.7	140-54.0	10/28	0707-0710	56	West-2	WSW-1	West-5	10.8	14.4	c	1008.1
US08469	42-12.0	141-01.6	10/28	0805-0809	78	West-2	West-1	West-4	11.1	14.3	bc	1008.1
US08470	42-05.3	140-56.7	10/28	0901-0905	83	WSW-2	ESE-1	WSW-4	11.4	14.0	bc	1008.0
US08471	42-10.2	140-47.7	10/28	0959-1003	91	WSW-2	West-1	WSW-3	11.9	14.2	c	1007.6
US08472	42-11.0	140-35.6	10/28	1108-1112	80	WSW-3	West-1	WSW-5	13.2	14.3	c	1007.1
US08473	42-15.6	140-36.5	10/28	1200-1205	90	West-3	West-1	West-5	13.3	14.2	bc	1006.6
US08474	42-18.9	140-30.5	10/28	1407-1411	94	West-3	West-1	West-5	11.8	14.1	bc	1006.2
US08475	42-29.1	140-31.2	10/29	0630-0635	74	NW -2	West-1	NW -4	6.3	13.3	c	1007.0
US08476	42-23.4	140-42.4	10/29	0842-0846	62	West-2	NW -1	West-4	7.5	13.8	bc	1008.6
US08477	42-23.0	140-31.2	10/30	0829-0834	96	West-3	West-1	West-5	8.9	13.7	bc	1016.2

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08392
LATITUDE 43-55.7 N
LONGITUDE 145-14.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	17.201	33.355	24.205
10	16.972	33.481	24.355
20	16.007	33.636	24.697
30	15.790	33.661	24.765
40	13.274	33.708	25.337
50	11.898	33.729	25.622
75	8.113	33.660	26.204

STATION US08393
LATITUDE 43-56.4 N
LONGITUDE 145-12.6 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	17.134	33.229	24.124
10	16.823	33.494	24.400
20	16.658	33.618	24.534
30	15.862	33.659	24.748
40	13.324	33.724	25.340
50	12.016	33.747	25.613
75	8.275	33.672	26.190

STATION US08394
LATITUDE 43-57.1 N
LONGITUDE 145-11.0 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	17.330	33.081	23.964
10	17.070	33.559	24.392
20	16.440	33.623	24.588
30	15.598	33.680	24.823
40	14.050	33.733	25.198
50	12.056	33.736	25.597
75	9.494	33.738	26.051

STATION US08395
LATITUDE 44-01.4 N
LONGITUDE 145-14.2 E
DEPTH (m) 336

Press.	Temp.	Salinity	Sigma-T
5	17.518	33.086	23.923
10	16.629	33.314	24.307
20	16.330	33.651	24.635
30	15.968	33.686	24.744
40	15.416	33.709	24.886
50	14.372	33.709	25.112
75	11.328	33.733	25.729
100	8.873	33.716	26.133
125	6.934	33.671	26.381
150	5.693	33.606	26.489
175	4.407	33.536	26.579
200	3.424	33.481	26.634
250	1.987	33.405	26.695
300	1.537	33.422	26.741

STATION US08396
LATITUDE 44-00.3 N
LONGITUDE 145-16.6 E
DEPTH (m) 382

Press.	Temp.	Salinity	Sigma-T
5	17.267	33.148	24.031
10	16.607	33.260	24.271
20	16.153	33.342	24.438
30	15.653	33.702	24.827
40	14.378	33.722	25.120
50	13.342	33.712	25.327
75	10.007	33.722	25.953
100	8.685	33.724	26.168
125	7.395	33.681	26.325
150	6.081	33.626	26.457
175	5.042	33.585	26.549
200	3.986	33.509	26.602
250	2.656	33.446	26.674
300	2.001	33.459	26.737

STATION US08397
LATITUDE 43-59.3 N
LONGITUDE 145-19.0 E
DEPTH (m) 272

Press.	Temp.	Salinity	Sigma-T
5	17.139	33.236	24.128
10	16.706	33.250	24.240
20	16.312	33.325	24.389
30	15.427	33.607	24.804
40	14.222	33.814	25.224
50	12.657	33.708	25.460
75	9.271	33.727	26.078
100	8.706	33.736	26.174
125	7.587	33.694	26.308
150	6.302	33.643	26.442
175	5.168	33.587	26.536
200	4.458	33.556	26.590

STATION US08398
LATITUDE 44-02.5 N
LONGITUDE 145-22.3 E
DEPTH (m) 910

Press.	Temp.	Salinity	Sigma-T
5	17.199	33.525	24.336
10	17.035	33.539	24.385
20	16.236	33.631	24.641
30	14.808	33.712	25.020
40	13.346	33.740	25.348
50	12.954	33.826	25.493
75	9.184	33.720	26.086
100	6.898	33.668	26.384
125	5.053	33.561	26.529
150	3.318	33.452	26.621
175	2.654	33.432	26.663
200	2.335	33.431	26.688
250	2.057	33.453	26.728
300	1.859	33.462	26.750
400	1.413	33.517	26.826
500	1.533	33.627	26.906

STATION US08399
LATITUDE 44-04.8 N
LONGITUDE 145-19.9 E
DEPTH (m) 716

Press.	Temp.	Salinity	Sigma-T
5	17.379	33.501	24.274
10	16.948	33.677	24.511
20	16.418	33.672	24.631
30	16.125	33.721	24.735
40	14.779	33.683	25.005
50	13.042	33.714	25.388
75	9.580	33.701	26.008
100	7.307	33.651	26.314
125	5.634	33.592	26.485
150	4.495	33.536	26.570
175	3.150	33.436	26.623
200	2.364	33.421	26.679
250	1.558	33.400	26.722
300	1.878	33.484	26.766
400	1.369	33.522	26.833
500	1.522	33.627	26.906
600	1.738	33.784	27.017

STATION US08400
LATITUDE 44-06.3 N
LONGITUDE 145-16.6 E
DEPTH (m) 376

Press.	Temp.	Salinity	Sigma-T
5	16.970	33.471	24.348
10	16.820	33.525	24.425
20	16.395	33.695	24.654
30	15.683	33.700	24.819
40	14.853	33.717	25.015
50	14.254	33.732	25.154
75	11.222	33.726	25.744
100	8.584	33.734	26.192
125	7.190	33.693	26.363
150	4.946	33.564	26.543
175	3.842	33.500	26.609
200	2.926	33.464	26.666
250	2.036	33.450	26.727
300	1.914	33.489	26.768

STATION US08401
LATITUDE 44-10.5 N
LONGITUDE 145-20.7 E
DEPTH (m) 136

Press.	Temp.	Salinity	Sigma-T
5	16.806	33.604	24.488
10	16.697	33.669	24.564
20	16.440	33.699	24.647
30	15.907	33.736	24.797
40	15.854	33.741	24.812
50	12.937	33.682	25.385
75	9.094	33.727	26.106

STATION US08402
LATITUDE 44-08.9 N
LONGITUDE 145-24.1 E
DEPTH (m) 1473

Press.	Temp.	Salinity	Sigma-T
5	17.309	33.280	24.122
10	16.965	33.513	24.381
20	16.678	33.649	24.553
30	14.711	33.704	25.035
40	12.862	33.707	25.419
50	10.569	33.725	25.859
75	7.165	33.635	26.321
100	5.810	33.602	26.471
125	5.292	33.585	26.520
150	4.635	33.561	26.575
175	3.330	33.461	26.626
200	2.375	33.419	26.676
250	1.525	33.405	26.728
300	1.757	33.479	26.771
400	1.430	33.532	26.837
500	1.568	33.625	26.902
600	1.726	33.763	27.001
700	2.071	33.971	27.141
800	2.201	34.100	27.235
900	2.215	34.175	27.293
1000	2.250	34.256	27.356
1200	2.237	34.384	27.459

STATION US08403
LATITUDE 44-07.3 N
LONGITUDE 145-27.8 E
DEPTH (m) 1200

Press.	Temp.	Salinity	Sigma-T
5	17.500	33.240	24.045
10	16.870	33.583	24.458
20	16.181	33.696	24.704
30	13.872	33.705	25.213
40	11.023	33.693	25.753
50	9.298	33.695	26.048
75	7.236	33.668	26.337
100	5.751	33.614	26.488
125	4.553	33.551	26.576
150	3.345	33.463	26.627
175	2.998	33.475	26.668
200	2.509	33.443	26.684
250	2.411	33.480	26.722
300	2.136	33.501	26.761
400	1.642	33.553	26.839
500	1.664	33.635	26.903
600	1.728	33.771	27.007
700	2.054	33.960	27.134
800	2.212	34.099	27.233
900	2.284	34.188	27.298
1000	2.296	34.258	27.354
1200	2.269	34.382	27.455
1500	2.162	34.467	27.531

STATION US08404
LATITUDE 44-12.3 N
LONGITUDE 145-30.2 E
DEPTH (m) 2075

Press.	Temp.	Salinity	Sigma-T
5	17.858	33.239	23.958
10	17.155	33.313	24.183
20	14.050	33.705	25.176
30	10.922	33.723	25.795
40	9.395	33.723	26.055
50	8.293	33.667	26.184
75	6.966	33.662	26.369
100	5.028	33.544	26.518
125	4.210	33.527	26.593
150	2.892	33.445	26.653
175	2.248	33.420	26.687
200	1.963	33.413	26.703
250	1.565	33.413	26.732
300	2.188	33.510	26.763
400	1.713	33.557	26.837
500	2.320	33.712	26.915
600	1.769	33.777	27.010
700	2.061	33.972	27.143
800	2.214	34.088	27.224
900	2.278	34.187	27.298
1000	2.251	34.270	27.367

STATION US08405
LATITUDE 44-14.8 N
LONGITUDE 145-22.4 E
DEPTH (m) 327

Press.	Temp.	Salinity	Sigma-T
5	16.843	33.675	24.535
10	16.763	33.681	24.558
20	16.563	33.694	24.614
30	15.579	33.718	24.856
40	14.432	33.764	25.141
50	11.823	33.731	25.637
75	9.221	33.717	26.078
100	7.865	33.712	26.282
125	6.103	33.647	26.471
150	4.532	33.553	26.580
175	3.605	33.497	26.629
200	3.157	33.466	26.647
250	2.346	33.450	26.703

STATION US08406
LATITUDE 44-13.7 N
LONGITUDE 145-26.4 E
DEPTH (m) 1566

Press.	Temp.	Salinity	Sigma-T
5	17.912	33.262	23.963
10	16.969	33.434	24.320
20	15.289	33.709	24.914
30	14.257	33.749	25.166
40	12.200	33.751	25.581
50	11.028	33.734	25.785
75	7.865	33.687	26.263
100	6.908	33.708	26.414
125	5.110	33.583	26.539
150	4.425	33.542	26.582
175	3.352	33.463	26.626
200	2.798	33.452	26.667
250	2.122	33.446	26.718
300	1.453	33.413	26.740
400	1.388	33.509	26.821
500	1.541	33.620	26.900
600	1.738	33.765	27.002
700	2.026	33.957	27.134
800	2.187	34.087	27.226
900	2.257	34.183	27.297
1000	2.282	34.271	27.365
1200	2.235	34.383	27.459

STATION US08407
LATITUDE 44-17.2 N
LONGITUDE 145-31.7 E
DEPTH (m) 2077

Press.	Temp.	Salinity	Sigma-T
5	17.161	33.680	24.463
10	17.145	33.683	24.470
20	16.723	33.694	24.577
30	14.471	33.764	25.133
40	13.042	33.766	25.428
50	12.443	33.796	25.569
75	10.899	33.812	25.868
100	9.488	33.747	26.059
125	6.696	33.636	26.385
150	5.322	33.607	26.534
175	3.467	33.476	26.626
200	2.888	33.472	26.676
250	2.080	33.459	26.731
300	1.950	33.478	26.756
400	1.451	33.522	26.827
500	1.596	33.629	26.903
600	1.754	33.778	27.011
700	2.088	33.985	27.151
800	2.178	34.088	27.227
900	2.273	34.187	27.299
1000	2.290	34.265	27.360
1200	2.263	34.385	27.458
1500	2.173	34.463	27.528

STATION US08408
LATITUDE 44-18.7 N
LONGITUDE 145-28.4 E
DEPTH (m) 1516

Press.	Temp.	Salinity	Sigma-T
5	16.981	33.712	24.531
10	16.947	33.714	24.540
20	16.422	33.756	24.694
30	15.148	33.871	25.070
40	13.767	33.755	25.274
50	13.229	33.779	25.401
75	12.279	33.889	25.673
100	10.134	33.781	25.977
125	7.221	33.654	26.328
150	5.352	33.597	26.522
175	4.222	33.549	26.609
200	3.537	33.583	26.704
250	2.777	33.524	26.726
300	2.693	33.566	26.767
400	1.832	33.570	26.839
500	1.731	33.644	26.905
600	1.768	33.774	27.007
700	2.052	33.955	27.130
800	2.183	34.094	27.232
900	2.266	34.180	27.293
1000	2.283	34.281	27.373
1200	2.256	34.393	27.465

STATION US08409
LATITUDE 44-20.4 N
LONGITUDE 145-24.2 E
DEPTH (m) 849

Press.	Temp.	Salinity	Sigma-T
5	16.798	33.592	24.481
10	16.745	33.591	24.493
20	16.589	33.604	24.539
30	16.032	33.693	24.735
40	14.714	33.788	25.100
50	13.281	33.744	25.364
75	11.458	33.751	25.720
100	9.131	33.732	26.104
125	6.912	33.666	26.380
150	5.245	33.642	26.571
175	4.022	33.573	26.648
200	2.478	33.452	26.694
250	2.245	33.488	26.741
300	2.140	33.519	26.774
400	1.842	33.571	26.838
500	1.657	33.658	26.922
600	1.731	33.768	27.005
700	2.034	33.940	27.120
800	2.194	34.076	27.216

STATION US08410
LATITUDE 44-20.9 N
LONGITUDE 145-09.2 E
DEPTH (m) 1233

Press.	Temp.	Salinity	Sigma-T
5	17.601	33.405	24.148
10	17.349	33.467	24.255
20	14.223	33.287	24.817
30	11.452	33.589	25.595
40	8.709	33.544	26.023
50	9.660	33.768	26.047
75	8.274	33.756	26.256
100	5.600	33.557	26.461
125	4.969	33.702	26.650
150	4.722	33.691	26.669
175	3.375	33.561	26.702
200	2.810	33.547	26.742
250	2.011	33.507	26.775
300	2.120	33.545	26.797
400	2.282	33.654	26.871
500	2.143	33.702	26.920
600	1.822	33.799	27.023
700	2.082	33.959	27.131
800	2.203	34.076	27.216

STATION US08411
LATITUDE 44-19.4 N
LONGITUDE 145-12.6 E
DEPTH (m) 734

Press.	Temp.	Salinity	Sigma-T
5	17.959	33.911	24.448
10	16.913	33.984	24.755
20	16.521	34.013	24.869
30	16.259	33.988	24.910
40	15.140	33.939	25.123
50	14.533	33.941	25.256
75	11.171	33.824	25.829
100	6.513	33.551	26.343
125	5.675	33.729	26.589
150	4.795	33.709	26.675
175	2.907	33.509	26.703
200	2.490	33.495	26.727
250	2.120	33.490	26.753
300	2.175	33.522	26.774
400	2.188	33.614	26.847
500	2.275	33.681	26.893
600	1.883	33.815	27.031

STATION US08412
LATITUDE 44-18.1 N
LONGITUDE 145-15.8 E
DEPTH (m) 139

Press.	Temp.	Salinity	Sigma-T
5	17.737	33.779	24.401
10	17.592	33.792	24.446
20	16.854	33.887	24.695
30	16.306	33.920	24.847
40	15.703	33.977	25.027
50	15.174	33.967	25.138
75	13.672	33.969	25.459

STATION US08413
LATITUDE 44-21.7 N
LONGITUDE 145-20.7 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	17.119	33.727	24.509
10	17.103	33.741	24.524
20	17.168	33.771	24.531
30	17.208	33.772	24.522
40	16.849	33.832	24.653
50	14.904	33.955	25.187

STATION US08414
LATITUDE 44-23.2 N
LONGITUDE 145-18.2 E
DEPTH (m) 711

Press.	Temp.	Salinity	Sigma-T
5	18.797	33.892	24.226
10	18.127	33.939	24.428
20	16.407	34.003	24.887
30	16.015	33.978	24.958
40	15.007	33.946	25.158
50	14.569	33.970	25.271
75	11.285	33.839	25.820
100	6.856	33.469	26.233
125	5.369	33.527	26.465
150	4.828	33.647	26.622
175	4.540	33.689	26.687
200	3.882	33.638	26.715
250	2.481	33.520	26.748
300	2.409	33.561	26.786
400	2.105	33.596	26.839
500	1.531	33.620	26.900

STATION US08415
LATITUDE 44-24.9 N
LONGITUDE 145-14.0 E
DEPTH (m) 1419

Press.	Temp.	Salinity	Sigma-T
5	17.859	33.394	24.077
10	16.800	33.354	24.298
20	13.464	33.324	25.002
30	9.435	33.283	25.705
40	10.728	33.806	25.894
50	10.543	33.857	25.966
75	7.406	33.582	26.246
100	1.239	33.097	26.501
125	0.346	33.181	26.620
150	0.449	33.236	26.659
175	0.423	33.257	26.678
200	0.640	33.297	26.698
250	0.572	33.340	26.736
300	0.996	33.426	26.780
400	1.401	33.536	26.842
500	1.718	33.663	26.921
600	1.763	33.778	27.010
700	2.073	33.962	27.134
800	2.230	34.090	27.224
900	2.295	34.185	27.295
1000	2.307	34.270	27.362

STATION US08416
LATITUDE 44-17.0 N
LONGITUDE 145-05.8 E
DEPTH (m) 855

Press.	Temp.	Salinity	Sigma-T
5	18.180	33.824	24.327
10	16.640	33.969	24.808
20	16.166	33.987	24.930
30	15.635	33.971	25.038
40	15.178	33.946	25.120
50	14.312	33.909	25.279
75	5.159	33.262	26.279
100	5.752	33.729	26.579
125	5.055	33.713	26.649
150	3.830	33.608	26.696
175	2.642	33.498	26.717
200	2.372	33.493	26.735
250	1.969	33.492	26.766
300	1.977	33.526	26.793
400	1.715	33.552	26.833
500	2.202	33.696	26.911
600	1.956	33.792	27.007
700	2.074	33.953	27.127

STATION US08417
LATITUDE 44-15.4 N
LONGITUDE 145-08.9 E
DEPTH (m) 575

Press.	Temp.	Salinity	Sigma-T
5	18.316	33.901	24.352
10	17.399	33.971	24.630
20	15.893	33.941	24.958
30	15.548	33.956	25.047
40	15.275	33.958	25.108
50	14.682	33.946	25.228
75	9.991	33.815	26.028
100	6.460	33.732	26.492
125	5.949	33.776	26.592
150	4.702	33.668	26.652
175	3.690	33.583	26.690
200	2.829	33.529	26.726
250	2.294	33.526	26.768
300	2.213	33.562	26.803
400	1.911	33.586	26.845

STATION US08418
LATITUDE 44-14.8 N
LONGITUDE 145-10.5 E
DEPTH (m) 327

Press.	Temp.	Salinity	Sigma-T
5	18.530	33.848	24.259
10	18.213	33.893	24.372
20	16.445	33.973	24.855
30	15.813	33.975	25.002
40	15.391	33.963	25.086
50	14.704	33.943	25.221
75	10.998	33.832	25.866
100	7.075	33.748	26.422
125	5.322	33.699	26.606
150	4.581	33.653	26.654
175	3.688	33.587	26.693
200	2.564	33.511	26.734
250	2.271	33.538	26.779

STATION US08419
LATITUDE 44-13.2 N
LONGITUDE 144-59.7 E
DEPTH (m) 684

Press.	Temp.	Salinity	Sigma-T
5	19.135	33.985	24.211
10	18.989	33.960	24.229
20	16.400	33.602	24.581
30	14.751	33.741	25.055
40	10.462	33.395	25.620
50	10.476	33.784	25.921
75	9.033	33.731	26.120
100	5.359	33.368	26.341
125	4.181	33.560	26.622
150	4.172	33.661	26.703
175	2.884	33.566	26.751
200	2.308	33.528	26.768
250	2.649	33.603	26.801
300	3.198	33.698	26.828
400	1.936	33.586	26.844
500	1.430	33.634	26.919

STATION US08420
LATITUDE 44-11.7 N
LONGITUDE 145-03.3 E
DEPTH (m) 460

Press.	Temp.	Salinity	Sigma-T
5	18.990	33.940	24.214
10	18.939	33.950	24.234
20	16.852	33.988	24.773
30	15.861	33.943	24.966
40	15.415	33.951	25.072
50	15.058	33.938	25.140
75	14.349	33.880	25.248
100	7.878	33.676	26.252
125	7.162	33.683	26.359
150	5.485	33.645	26.545
175	3.993	33.575	26.653
200	2.710	33.520	26.729
250	2.490	33.564	26.783
300	2.276	33.576	26.810

STATION US08421
LATITUDE 44-10.4 N
LONGITUDE 145-06.4 E
DEPTH (m) 215

Press.	Temp.	Salinity	Sigma-T
5	18.862	33.892	24.209
10	18.287	33.839	24.312
20	17.002	33.888	24.660
30	16.481	33.912	24.801
40	15.714	33.922	24.983
50	15.643	33.952	25.022
75	15.263	33.944	25.100
100	11.441	33.635	25.629
125	6.644	33.598	26.362

STATION US08422
LATITUDE 42-49.9 N
LONGITUDE 144-49.8 E
DEPTH (m) 99

Press.	Temp.	Salinity	Sigma-T
5	17.928	32.774	23.585
10	15.220	33.379	24.675
20	12.857	33.433	25.207
30	11.456	33.404	25.451
40	10.662	33.414	25.600
50	9.975	33.421	25.723
75	6.345	33.338	26.196

STATION US08423
LATITUDE 42-40.2 N
LONGITUDE 144-59.2 E
DEPTH (m) 655

Press.	Temp.	Salinity	Sigma-T
5	10.119	33.381	25.668
10	9.606	33.370	25.745
20	7.287	33.312	26.049
30	5.775	33.298	26.235
40	3.156	33.123	26.373
50	2.610	33.182	26.467
75	3.356	33.399	26.575
100	2.655	33.398	26.636
125	1.984	33.358	26.658
150	1.959	33.421	26.709
175	2.000	33.432	26.716
200	2.004	33.449	26.729
250	2.007	33.471	26.746
300	2.110	33.552	26.803
400	2.591	33.773	26.942
500	2.763	33.889	27.019

STATION US08424
LATITUDE 42-30.2 N
LONGITUDE 145-09.9 E
DEPTH (m) 1947

Press.	Temp.	Salinity	Sigma-T
5	21.003	33.091	23.041
10	20.794	33.320	23.270
20	18.094	33.234	23.896
30	7.592	32.798	25.603
40	5.182	32.984	26.057
50	3.790	33.069	26.271
75	2.432	33.169	26.472
100	2.134	33.255	26.563
125	2.027	33.331	26.632
150	2.001	33.384	26.677
175	2.065	33.448	26.723
200	2.314	33.536	26.774
250	2.391	33.615	26.832
300	2.456	33.694	26.890
400	2.970	33.897	27.007
500	2.737	33.966	27.083

STATION US08425
LATITUDE 42-29.9 N
LONGITUDE 145-19.5 E
DEPTH (m) 2247

Press.	Temp.	Salinity	Sigma-T
5	21.117	33.358	23.213
10	21.046	33.332	23.213
20	20.271	33.302	23.396
30	9.656	32.747	25.249
40	5.347	32.959	26.018
50	3.449	33.049	26.287
75	2.100	33.143	26.476
100	1.753	33.247	26.586
125	1.862	33.322	26.638
150	2.033	33.391	26.680
175	2.119	33.457	26.727
200	2.234	33.520	26.768
250	2.454	33.632	26.839
300	2.977	33.758	26.896
400	2.707	33.873	27.011
500	2.765	33.977	27.089

STATION US08426
LATITUDE 42-38.8 N
LONGITUDE 145-10.0 E
DEPTH (m) 1352

Press.	Temp.	Salinity	Sigma-T
5	19.804	32.612	22.992
10	19.194	32.883	23.355
20	11.317	32.746	24.962
30	5.187	32.995	26.064
40	3.955	33.071	26.256
50	3.170	33.124	26.372
75	2.144	33.213	26.529
100	1.971	33.280	26.596
125	1.928	33.340	26.647
150	1.936	33.386	26.684
175	1.807	33.409	26.711
200	1.932	33.459	26.742
250	2.026	33.525	26.788
300	2.298	33.620	26.843
400	2.698	33.799	26.953
500	2.858	33.931	27.045

STATION US08427
LATITUDE 42-47.8 N
LONGITUDE 145-18.9 E
DEPTH (m) 605

Press.	Temp.	Salinity	Sigma-T
5	19.385	32.587	23.081
10	16.978	32.639	23.708
20	9.189	32.845	25.400
30	4.780	33.033	26.140
40	3.537	33.091	26.313
50	2.852	33.143	26.415
75	2.123	33.228	26.543
100	2.067	33.299	26.604
125	2.004	33.356	26.655
150	1.963	33.394	26.688
175	1.883	33.414	26.710
200	1.925	33.440	26.728
250	1.943	33.496	26.771
300	2.147	33.555	26.802
400	2.337	33.681	26.889
500	2.737	33.829	26.973

STATION US08428
LATITUDE 42-50.0 N
LONGITUDE 145-00.1 E
DEPTH (m) 109

Press.	Temp.	Salinity	Sigma-T
5	15.551	33.325	24.559
10	13.331	33.457	25.131
20	11.820	33.452	25.421
30	10.350	33.407	25.649
40	10.188	33.447	25.707
50	8.801	33.399	25.896
75	5.361	33.351	26.326

STATION US08429
LATITUDE 42-49.7 N
LONGITUDE 145-09.4 E
DEPTH (m) 133

Press.	Temp.	Salinity	Sigma-T
5	14.990	33.228	24.608
10	11.848	33.289	25.289
20	10.883	33.467	25.603
30	9.171	33.475	25.897
40	6.287	33.469	26.307
50	5.900	33.387	26.291
75	5.598	33.385	26.326
100	4.988	33.406	26.413

STATION US08430
LATITUDE 42-40.0 N
LONGITUDE 145-19.7 E
DEPTH (m) 1820

Press.	Temp.	Salinity	Sigma-T
5	19.189	32.601	23.141
10	19.001	32.631	23.211
20	12.168	32.823	24.867
30	5.421	32.976	26.023
40	4.245	33.113	26.260
50	3.386	33.196	26.411
75	2.350	33.237	26.533
100	1.956	33.294	26.609
125	1.890	33.343	26.652
150	1.906	33.372	26.675
175	1.787	33.415	26.717
200	1.977	33.465	26.744
250	2.019	33.529	26.792
300	2.188	33.607	26.841
400	2.652	33.784	26.945
500	2.737	33.919	27.045

STATION US08431
LATITUDE 42-30.0 N
LONGITUDE 145-29.8 E
DEPTH (m) 2524

Press.	Temp.	Salinity	Sigma-T
5	19.298	32.573	23.092
10	18.606	32.557	23.254
20	14.700	32.688	24.254
30	8.374	32.987	25.638
40	4.504	33.016	26.156
50	3.423	33.092	26.324
75	2.100	33.213	26.533
100	1.966	33.325	26.632
125	1.799	33.357	26.671
150	1.787	33.404	26.709
175	1.985	33.475	26.751
200	2.057	33.518	26.780
250	2.200	33.605	26.838
300	2.427	33.707	26.902
400	2.768	33.875	27.007
500	3.329	34.055	27.101

STATION US08432
LATITUDE 42-39.9 N
LONGITUDE 145-39.8 E
DEPTH (m) 2310

Press.	Temp.	Salinity	Sigma-T
5	18.835	32.483	23.140
10	14.884	32.589	24.138
20	8.038	32.869	25.595
30	5.606	33.007	26.026
40	4.245	33.056	26.215
50	2.956	33.116	26.385
75	2.132	33.225	26.539
100	2.035	33.296	26.604
125	1.870	33.339	26.651
150	1.879	33.393	26.693
175	2.072	33.480	26.748
200	2.239	33.544	26.787
250	2.264	33.625	26.850
300	2.536	33.719	26.903
400	2.739	33.843	26.984

STATION US08433
LATITUDE 42-49.7 N
LONGITUDE 145-30.1 E
DEPTH (m) 1175

Press.	Temp.	Salinity	Sigma-T
5	15.637	33.193	24.439
10	12.354	33.116	25.059
20	8.484	33.244	25.822
30	5.886	33.244	26.179
40	4.092	33.165	26.317
50	2.968	33.187	26.441
75	2.220	33.257	26.558
100	2.115	33.311	26.610
125	1.957	33.332	26.639
150	1.849	33.372	26.679
175	1.960	33.407	26.698
200	1.884	33.435	26.727
250	1.981	33.498	26.770
300	2.079	33.553	26.806
400	2.525	33.722	26.906

STATION US08434
LATITUDE 42-59.3 N
LONGITUDE 145-20.6 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	15.697	33.311	24.517
10	13.966	33.408	24.964
20	11.867	33.449	25.410
30	10.691	33.424	25.603
40	10.147	33.433	25.703
50	9.586	33.416	25.784

STATION US08435
LATITUDE 42-59.8 N
LONGITUDE 145-28.9 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	16.600	33.191	24.220
10	15.774	33.264	24.463
20	12.380	33.410	25.282
30	11.670	33.451	25.448
40	9.440	33.354	25.759
50	7.895	33.377	26.015
75	6.592	33.384	26.201

STATION US08436
LATITUDE 42-50.1 N
LONGITUDE 145-39.4 E
DEPTH (m) 1586

Press.	Temp.	Salinity	Sigma-T
5	18.866	32.639	23.251
10	16.139	32.655	23.912
20	8.446	32.932	25.584
30	4.867	33.046	26.141
40	3.598	33.129	26.337
50	2.901	33.189	26.448
75	2.370	33.300	26.581
100	2.106	33.389	26.673
125	1.863	33.365	26.672
150	1.743	33.390	26.701
175	1.939	33.440	26.727
200	2.003	33.476	26.750
250	2.055	33.543	26.801
300	2.486	33.662	26.861
400	2.607	33.795	26.958
500	3.002	33.951	27.048

STATION US08437
LATITUDE 42-40.1 N
LONGITUDE 145-49.8 E
DEPTH (m) 2591

Press.	Temp.	Salinity	Sigma-T
5	20.494	32.935	23.058
10	19.384	33.459	23.746
20	8.664	32.843	25.481
30	5.600	33.008	26.027
40	4.398	33.120	26.250
50	3.771	33.156	26.342
75	2.620	33.219	26.496
100	2.216	33.341	26.626
125	2.098	33.392	26.676
150	2.125	33.452	26.722
175	2.060	33.485	26.754
200	2.040	33.518	26.781
250	2.263	33.609	26.837
300	2.679	33.740	26.908
400	2.799	33.883	27.011
500	3.026	34.014	27.095

STATION US08438
LATITUDE 42-48.6 N
LONGITUDE 145-30.3 E
DEPTH (m) 415

Press.	Temp.	Salinity	Sigma-T
5	17.055	33.040	23.997
10	16.363	33.199	24.280
20	9.713	33.060	25.484
30	4.916	33.046	26.136
40	4.601	33.827	26.789
50	3.157	33.931	27.017
75	2.151	33.311	26.607
100	2.346	33.370	26.639
125	1.985	33.354	26.654
150	1.919	33.378	26.678
175	1.827	33.400	26.703
200	1.956	33.445	26.729
250	1.982	33.514	26.783
300	2.196	33.603	26.838
400	2.607	33.767	26.935
500	2.890	33.898	27.015

STATION US08439
LATITUDE 42-50.1 N
LONGITUDE 145-49.5 E
DEPTH (m) 2071

Press.	Temp.	Salinity	Sigma-T
5	19.161	32.481	23.057
10	13.990	32.498	24.256
20	6.073	32.951	25.925
30	4.446	33.061	26.198
40	3.303	33.139	26.373
50	3.076	33.200	26.441
75	2.402	33.275	26.559
100	2.184	33.325	26.616
125	1.882	33.367	26.672
150	1.828	33.392	26.696
175	1.824	33.423	26.721
200	1.880	33.459	26.746
250	2.018	33.532	26.795
300	2.245	33.621	26.848
400	2.583	33.803	26.966
500	2.721	33.937	27.061

STATION US08440
LATITUDE 42-49.9 N
LONGITUDE 145-59.7 E
DEPTH (m) 2268

Press.	Temp.	Salinity	Sigma-T
5	19.277	32.467	23.016
10	14.593	32.546	24.167
20	8.176	32.903	25.601
30	5.863	33.051	26.029
40	4.608	33.277	26.352
50	3.255	33.182	26.411
75	2.167	33.363	26.648
100	2.028	33.322	26.625
125	2.055	33.382	26.672
150	2.047	33.426	26.707
175	2.018	33.463	26.739
200	1.979	33.494	26.767
250	2.228	33.585	26.820
300	2.377	33.663	26.870
400	2.677	33.829	26.979
500	2.737	33.951	27.071

STATION US08441
LATITUDE 43-00.0 N
LONGITUDE 145-49.9 E
DEPTH (m) 710

Press.	Temp.	Salinity	Sigma-T
5	16.979	32.627	23.699
10	15.019	32.849	24.310
20	8.681	33.018	25.615
30	5.874	33.101	26.068
40	3.768	33.313	26.467
50	2.865	33.260	26.508
75	2.139	33.248	26.557
100	2.158	33.328	26.620
125	1.991	33.372	26.668
150	1.832	33.378	26.685
175	1.834	33.408	26.708
200	1.871	33.441	26.733
250	1.954	33.481	26.758
300	2.055	33.538	26.797
400	2.473	33.697	26.890
500	2.635	33.816	26.972

STATION US08442
LATITUDE 42-59.9 N
LONGITUDE 145-40.1 E
DEPTH (m) 116

Press.	Temp.	Salinity	Sigma-T
5	15.346	33.023	24.372
10	13.573	33.182	24.870
20	9.371	33.182	25.636
30	5.904	33.250	26.182
40	5.583	33.540	26.450
50	4.774	33.395	26.428
75	3.873	33.356	26.491
100	3.623	33.354	26.514

STATION US08443
LATITUDE 43-09.7 N
LONGITUDE 145-39.9 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	14.812	33.330	24.726
10	13.539	33.414	25.056
20	11.660	33.438	25.439
30	11.006	33.443	25.562
40	10.474	33.444	25.656

STATION US08444
LATITUDE 43-09.9 N
LONGITUDE 145-50.2 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	14.643	32.750	24.315
10	12.739	33.407	25.211
20	10.259	33.408	25.665
30	9.253	33.416	25.838
40	8.852	33.427	25.910
50	7.900	33.346	25.989
75	6.285	33.339	26.204

STATION US08445
LATITUDE 42-59.9 N
LONGITUDE 145-59.8 E
DEPTH (m) 1661

Press.	Temp.	Salinity	Sigma-T
5	18.295	32.205	23.061
10	18.152	32.219	23.107
20	9.221	32.831	25.385
30	5.715	32.985	25.995
40	3.593	33.070	26.291
50	2.336	33.124	26.443
75	1.739	33.193	26.543
100	1.762	33.259	26.594
125	1.848	33.336	26.650
150	2.037	33.388	26.677
175	2.086	33.462	26.733
200	2.316	33.520	26.761
250	2.401	33.606	26.823
300	2.423	33.667	26.870
400	2.815	33.834	26.970
500	3.027	33.956	27.049

STATION US08446
LATITUDE 42-50.0 N
LONGITUDE 146-09.8 E
DEPTH (m) 2607

Press.	Temp.	Salinity	Sigma-T
5	20.178	32.781	23.023
10	20.173	32.840	23.070
20	10.791	32.920	25.191
30	5.590	32.978	26.004
40	3.931	33.072	26.260
50	3.428	33.170	26.386
75	2.132	33.197	26.517
100	2.023	33.295	26.604
125	2.153	33.378	26.661
150	2.128	33.440	26.712
175	2.189	33.503	26.758
200	2.284	33.557	26.794
250	2.289	33.633	26.854
300	2.831	33.779	26.925
400	2.961	33.922	27.028
500	3.486	34.099	27.120

STATION US08447
LATITUDE 42-54.2 N
LONGITUDE 145-55.1 E
DEPTH (m) 1895

Press.	Temp.	Salinity	Sigma-T
5	18.465	32.185	23.004
10	17.907	32.239	23.182
20	8.322	32.813	25.510
30	6.167	32.976	25.933
40	4.299	33.078	26.227
50	3.235	33.138	26.378
75	1.885	33.186	26.527
100	1.827	33.284	26.610
125	2.000	33.363	26.660
150	2.054	33.414	26.697
175	2.390	33.512	26.749
200	2.378	33.568	26.794
250	2.492	33.648	26.849
300	2.348	33.689	26.894
400	2.855	33.857	26.986
500	3.005	33.983	27.073

STATION US08448
LATITUDE 42-54.9 N
LONGITUDE 145-45.1 E
DEPTH (m) 993

Press.	Temp.	Salinity	Sigma-T
5	16.857	32.340	23.507
10	11.096	32.630	24.911
20	5.636	32.977	25.999
30	3.936	33.077	26.263
40	3.023	33.136	26.395
50	2.623	33.225	26.500
75	2.365	33.309	26.589
100	2.386	33.376	26.641
125	1.958	33.401	26.694
150	1.668	33.387	26.704
175	1.660	33.409	26.722
200	1.908	33.469	26.752
250	2.059	33.536	26.795
300	2.239	33.613	26.842
400	2.662	33.787	26.946
500	2.912	33.919	27.030

STATION US08449
LATITUDE 42-53.2 N
LONGITUDE 145-30.3 E
DEPTH (m) 381

Press.	Temp.	Salinity	Sigma-T
5	15.665	32.555	23.943
10	12.855	32.867	24.769
20	6.648	33.077	25.951
30	4.404	33.119	26.248
40	4.373	33.277	26.377
50	3.983	33.339	26.467
75	3.286	33.366	26.555
100	2.342	33.385	26.651
125	2.047	33.405	26.691
150	2.026	33.411	26.697
175	2.013	33.409	26.696
200	1.969	33.435	26.720
250	1.942	33.470	26.750
300	2.022	33.526	26.789

STATION US08450
LATITUDE 41-24.2 N
LONGITUDE 139-40.2 E
DEPTH (m) 806

Press.	Temp.	Salinity	Sigma-T
5	24.773	33.540	22.307
10	24.612	33.625	22.419
20	21.328	34.196	23.792
30	18.507	34.367	24.662
40	17.012	34.432	25.076
50	16.094	34.479	25.325
75	14.112	34.458	25.745
100	12.061	34.369	26.087
125	10.731	34.283	26.265
150	9.754	34.261	26.416
175	7.821	34.172	26.650

STATION US08451
LATITUDE 41-23.9 N
LONGITUDE 139-32.9 E
DEPTH (m) 1525

Press.	Temp.	Salinity	Sigma-T
5	24.433	33.609	22.461
10	24.073	33.718	22.649
20	23.130	34.051	23.177
30	18.854	34.352	24.563
40	16.988	34.438	25.086
50	15.835	34.503	25.403
75	13.086	34.411	25.919
100	11.252	34.315	26.196
125	10.432	34.269	26.307
150	9.635	34.240	26.420
175	8.527	34.200	26.566

STATION US08452
LATITUDE 41-23.9 N
LONGITUDE 139-25.4 E
DEPTH (m) 2298

Press.	Temp.	Salinity	Sigma-T
5	24.431	33.600	22.454
10	24.407	33.603	22.463
20	23.924	34.054	22.948
30	21.242	33.951	23.629
40	17.102	34.342	24.985
50	15.539	34.444	25.424
75	13.489	34.432	25.854
100	11.398	34.318	26.172
125	9.871	34.225	26.368
150	8.118	34.174	26.608
175	6.057	34.106	26.839

STATION US08453
LATITUDE 41-35.8 N
LONGITUDE 139-32.8 E
DEPTH (m) 1100

Press.	Temp.	Salinity	Sigma-T
5	24.145	33.683	22.602
10	24.126	33.682	22.607
20	23.921	33.956	22.875
30	18.552	34.354	24.640
40	16.521	34.438	25.195
50	15.445	34.476	25.469
75	12.777	34.410	25.980
100	10.497	34.272	26.298
125	9.447	34.218	26.434
150	7.332	34.144	26.699
175	5.198	34.068	26.914
200	3.555	34.059	27.082

STATION US08454
LATITUDE 41-35.8 N
LONGITUDE 139-25.1 E
DEPTH (m) 1750

Press.	Temp.	Salinity	Sigma-T
5	24.446	33.565	22.423
10	24.399	33.571	22.442
20	22.508	33.872	23.218
30	17.584	34.346	24.873
40	16.223	34.457	25.279
50	15.415	34.481	25.480
75	12.377	34.378	26.034
100	10.898	34.299	26.248
125	9.344	34.223	26.454
150	7.370	34.150	26.698
175	4.425	34.063	26.996
200	3.219	34.052	27.108

STATION US08455
LATITUDE 41-36.0 N
LONGITUDE 139-17.6 E
DEPTH (m) 1602

Press.	Temp.	Salinity	Sigma-T
5	24.104	33.670	22.604
10	24.047	33.699	22.643
20	23.617	34.032	23.021
30	17.630	34.351	24.865
40	16.066	34.454	25.313
50	14.776	34.471	25.613
75	11.967	34.353	26.092
100	10.506	34.258	26.286
125	9.135	34.210	26.477
150	6.623	34.123	26.779
175	4.434	34.064	26.996
200	2.877	34.051	27.138

STATION US08456
LATITUDE 41-57.4 N
LONGITUDE 140-58.4 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	20.302	33.373	23.442
10	20.154	33.308	23.431
20	17.288	33.379	24.203
30	15.695	33.491	24.656
40	13.051	33.330	25.089
50	9.743	33.127	25.532
75	9.290	33.830	26.156

STATION US08457
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	20.329	33.356	23.422
10	20.227	33.346	23.441
20	17.756	33.546	24.218
30	14.169	33.283	24.825
40	11.213	33.378	25.474
50	9.292	33.439	25.850
75	9.635	33.896	26.151

STATION US08458
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	20.307	33.321	23.401
10	20.285	33.328	23.412
20	18.662	33.604	24.039
30	13.968	33.374	24.938
40	13.793	33.985	25.445
50	11.813	33.972	25.826
75	10.303	34.017	26.133

STATION US08459
LATITUDE 41-58.9 N
LONGITUDE 141-01.0 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	20.305	33.388	23.453
10	20.283	33.384	23.456
20	19.152	33.683	23.976
30	14.493	33.326	24.790
40	13.234	33.993	25.566
50	12.052	33.997	25.801
75	10.082	33.958	26.124

STATION US08460
LATITUDE 42-23.4 N
LONGITUDE 140-43.1 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	20.337	32.374	22.673
10	20.339	32.378	22.675
20	18.610	33.103	23.669
30	15.930	33.272	24.434
40	12.325	33.389	25.276
50	9.993	33.578	25.843

STATION US08461
LATITUDE 42-16.1 N
LONGITUDE 140-35.9 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	20.387	32.347	22.638
10	20.396	32.363	22.648
20	18.089	33.033	23.744
30	16.484	33.206	24.258
40	13.383	33.366	25.051
50	10.072	33.476	25.750
75	5.437	33.377	26.338

STATION US08462
LATITUDE 42-19.0 N
LONGITUDE 140-30.4 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	20.115	32.431	22.773
10	20.134	32.452	22.784
20	17.919	33.104	23.840
30	16.974	33.727	24.543
40	12.052	33.171	25.159
50	8.353	33.296	25.883
75	6.099	33.426	26.297

STATION US08463
LATITUDE 42-23.7 N
LONGITUDE 140-30.7 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	20.158	32.498	22.813
10	20.147	32.507	22.823
20	17.631	33.011	23.838
30	16.046	33.421	24.523
40	12.209	33.048	25.034
50	8.853	33.326	25.830
75	5.524	33.398	26.344

STATION US08464
LATITUDE 41-57.5 N
LONGITUDE 140-58.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	14.451	33.449	24.894
10	14.353	33.439	24.907
20	14.238	33.444	24.935
30	14.186	33.478	24.973
40	14.157	33.615	25.084
50	14.041	33.803	25.253
75	8.267	33.933	26.396

STATION US08465
LATITUDE 41-57.9 N
LONGITUDE 140-59.0 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	14.416	33.482	24.927
10	14.396	33.482	24.931
20	14.088	33.527	25.030
30	14.222	33.680	25.120
40	14.262	33.834	25.231
50	12.882	33.792	25.481
75	7.934	33.913	26.430

STATION US08466
LATITUDE 41-58.4 N
LONGITUDE 141-00.0 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	14.247	33.521	24.993
10	14.201	33.524	25.005
20	14.389	33.786	25.167
30	14.941	34.054	25.256
40	13.512	33.794	25.355
50	11.815	33.780	25.676
75	7.990	33.894	26.406

STATION US08467
LATITUDE 41-58.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	14.292	33.665	25.094
10	14.421	33.835	25.198
20	14.915	34.100	25.297
30	13.946	33.740	25.224
40	13.103	33.881	25.505
50	11.791	33.871	25.751
75	9.510	34.019	26.267

STATION US08468
LATITUDE 42-17.7 N
LONGITUDE 140-54.0 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	15.159	35.018	25.956
10	14.974	34.024	25.225
20	14.983	34.025	25.224
30	14.981	34.025	25.225
40	14.940	34.017	25.228
50	11.780	33.662	25.591

STATION US08469
LATITUDE 42-12.0 N
LONGITUDE 141-01.6 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	14.619	34.022	25.300
10	14.658	34.044	25.309
20	14.769	34.110	25.336
30	14.448	34.016	25.332
40	11.342	33.761	25.749
50	10.696	33.823	25.913
75	9.127	33.994	26.310

STATION US08470
LATITUDE 42-05.3 N
LONGITUDE 140-56.7 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
10	14.305	33.662	25.090
20	14.334	33.711	25.121
30	13.872	33.771	25.264
40	13.032	33.906	25.539
50	12.472	33.972	25.701
75	8.963	33.975	26.322

STATION US08471
LATITUDE 42-10.2 N
LONGITUDE 140-47.7 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	14.414	33.507	24.947
10	14.420	33.529	24.962
20	14.371	33.616	25.040
30	14.518	33.772	25.129
40	13.448	33.728	25.318
50	12.861	33.779	25.475
75	8.777	33.792	26.207

STATION US08472
LATITUDE 42-11.0 N
LONGITUDE 140-35.6 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	14.494	33.449	24.885
10	14.504	33.544	24.956
20	14.504	33.556	24.966
30	14.494	33.577	24.984
40	14.510	33.601	24.999
50	14.321	33.593	25.033
75	8.852	33.703	26.126

STATION US08473
LATITUDE 42-15.6 N
LONGITUDE 140-36.5 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	14.447	33.663	25.060
10	14.433	33.659	25.060
20	14.439	33.660	25.060
30	14.383	33.737	25.130
40	13.266	33.745	25.367
50	12.688	33.758	25.493
75	9.755	33.809	26.063

STATION US08474
LATITUDE 42-18.9 N
LONGITUDE 140-30.5 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	14.447	33.648	25.048
10	14.446	33.648	25.049
20	14.472	33.654	25.048
30	14.579	33.713	25.071
40	14.280	33.846	25.237
50	12.978	33.839	25.498
75	7.993	33.700	26.254

STATION US08475
LATITUDE 42-29.1 N
LONGITUDE 140-31.2 E
DEPTH (m) 74

Press.	Temp.	Salinity	Sigma-T
5	14.344	33.729	25.133
10	14.323	33.732	25.140
20	14.351	33.749	25.147
30	14.293	33.862	25.246
40	12.983	33.912	25.554
50	11.859	33.878	25.745

STATION US08476
LATITUDE 42-23.4 N
LONGITUDE 140-42.4 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	14.154	33.547	25.032
10	14.176	33.631	25.093
20	14.176	33.652	25.109
30	14.191	33.691	25.135
40	12.089	33.698	25.561
50	11.567	33.903	25.818

STATION US08477
LATITUDE 42-23.0 N
LONGITUDE 140-31.2 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	14.134	33.775	25.213
10	14.151	33.784	25.216
20	14.164	33.783	25.213
30	14.247	33.819	25.223
40	14.258	33.874	25.263
50	11.773	33.753	25.663
75	6.336	33.495	26.320

7

THE “USHIO MARU”

CRUISE 157
CRUISE 158
CRUISE 159
CRUISE 160

IN NOVEMBER-DECEMBER 2008

1. Cruise Itinerary

Cruise 157			
Departure from Hakodate	Nov.	11	, 2008
Start hydrographic research (US08478)		11	
Arrival at Usujiri		11	
Departure from Usujiri		12	
Start larvae net sampling		12	
Sampling by frame trawl net		12	
Arrival at Usujiri		13	
Departure from Usujiri		14	
Research by bottom long-line		14	
Arrival at and departure from Usujiri		14	
Arrival at Mori		14	
Departure from Mori		15	
Research by trawl net and sledge net		15	
Arrival at and departure from Mori		15	
Finish hydrographic research (US08495) and larvae net sampling		15	
Return to Hakodate		16	
Total coverage 338.8 miles			

Cruise 158			
Departure from Hakodate	Nov.	27	, 2008
Hydrographic research (US08496 - US08501) and larvae net sampling		27	
Return to Hakodate		28	
Total coverage 87.8 miles			

Cruise 159			
Departure from Hakodate	Dec.	8	, 2008
Arrival at Usujiri		8	
Departure from Usujiri		9	
Start hydrographic research (US08502) and larvae net sampling		9	
Retrieval Sediment trap system		9	
Arrival at Mori		9	
Departure from Mori		10	
Set Sediment trap system		10	
Arrival at Usujiri		10	
Departure from Usujiri		11	
Arrival at Usujiri		11	
Departure from Usujiri		12	
Arrival at Usujiri		12	
Departure from Usujiri		13	
Arrival at Muroran		13	
Departure from Muroran		14	
Arrival at Muroran		14	
Departure from Muroran		15	
Arrival at and departure from Usujiri		15	
Finish hydrographic research (US08527) and larvae net sampling		15	
Return to Hakodate		16	
Total coverage 421.2 miles			

Cruise 160			
Departure from Hakodate	Dec.	24	, 2008
Hydrographic research (US08528 - US08535) and larvae net sampling		24	
Return to Hakodate		25	
Total coverage 56.4 miles			

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 157

Research Staff :	Professor	(Laboratory of Marine Bioresource Science)	Toyomi Takahashi
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Susumu Shimizu
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai

Graduate Students :	Chair of Marine Bioresource Science :	4 persons
	Chair of Marine Bioresource and Environment Sensing :	6 persons
Under Graduate Students :	Department of Marine Biological Science :	5 persons
	Department of Marine Production System Science :	11 persons

Cruise 158

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Under Graduate Students :	Department of Marine Biological Science :	4 persons

Cruise 159

Research Staff :	Associate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai
	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
	Technician	(Field Science Center for Northern Biosphere)	Shinichi Fukui

Graduate Students :	Chair of Marine Bioresource and Environment Sensing :	3 persons
	Chair of Marine Bioresource Science :	1 person
	Chair of Marine Environmental Science :	2 persons
	Graduate School of Environmental Science :	5 persons
Under Graduate Students :	Department of Fisheries Oceanography and Marine Science :	3 persons
	Department of Marine Production System Science :	11 persons
	Department of Marine Biological Science :	3 persons

Cruise 160

Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students :	Chair of Marine Bioresource Science :	2 persons
Under Graduate Students :	Department of Marine Biological Science :	2 persons

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

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

Figure 1: Oceanographic stations (Cruise 157)

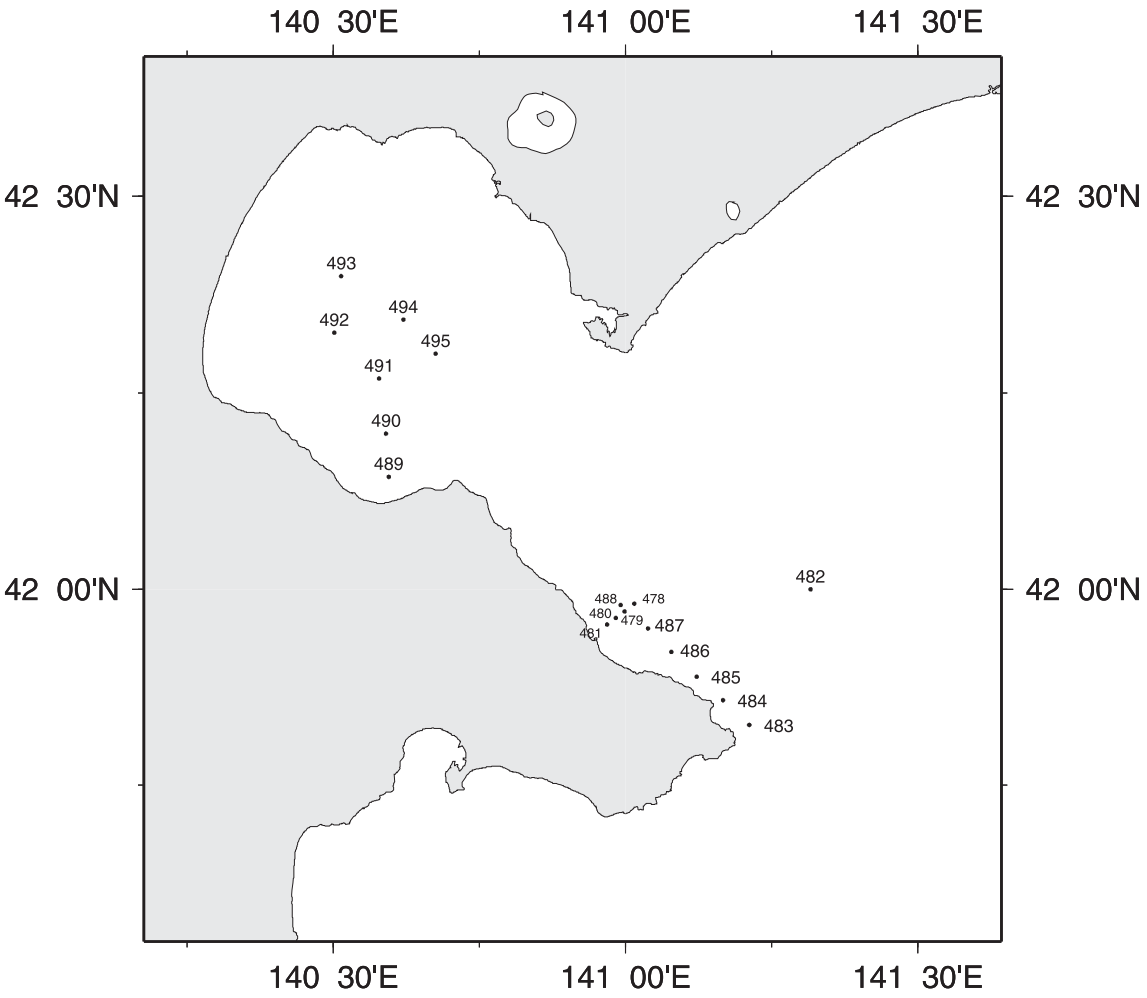

Figure 2: Oceanographic stations (Cruise 158)

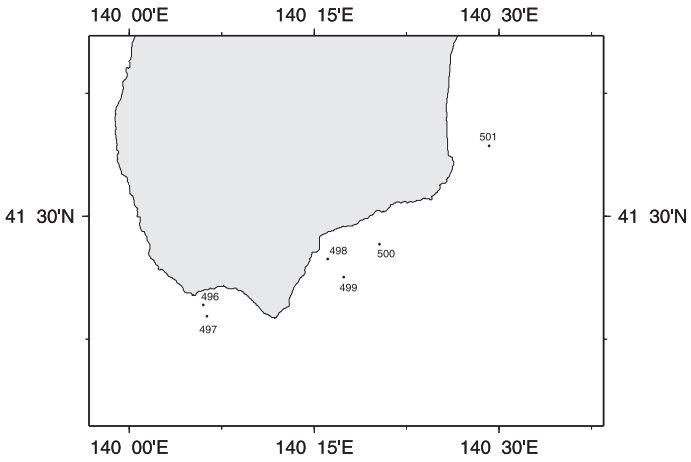

Figure 3: Oceanographic stations (Cruise 159)

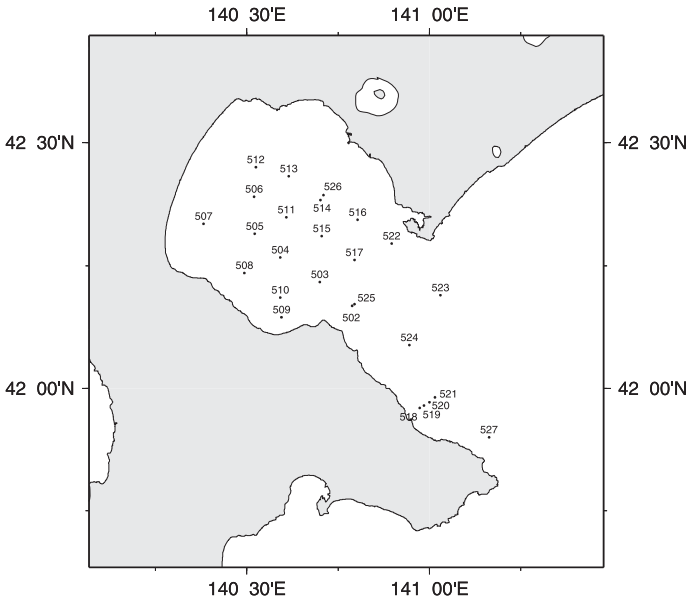

Figure 4: Oceanographic stations (Cruise 160)

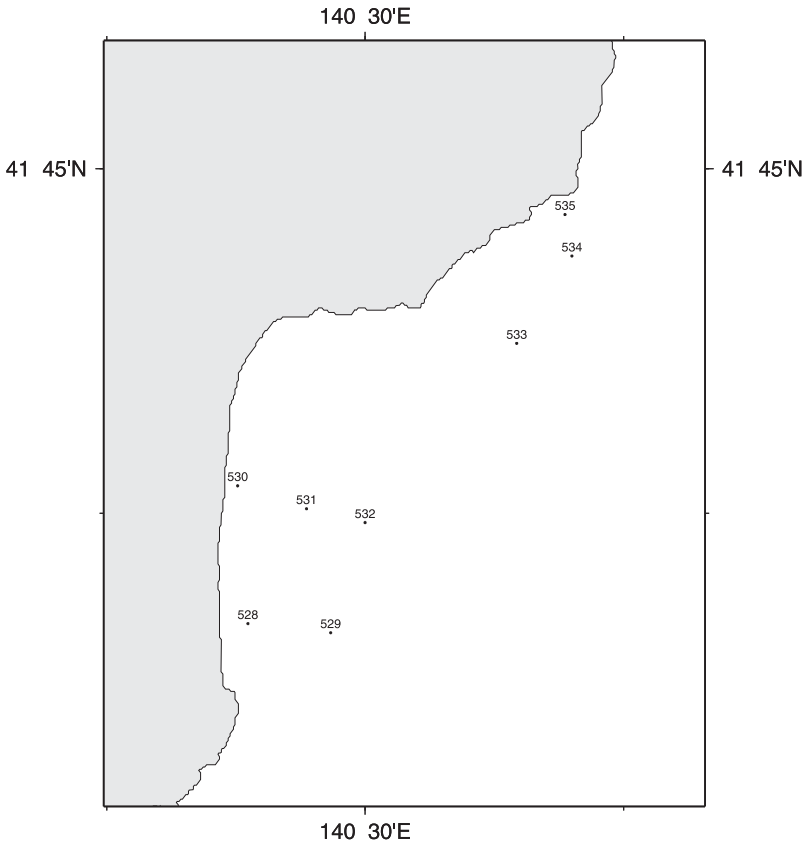

Table 1: List of oceanographic stations

Cruise 157

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08478	41-58.9	141-00.9	11/11	1411-1416	96	Calm	NE -1	Calm	9.2	12.8	bc	1028.0
US08479	41-58.3	140-59.9	11/11	1422-1427	89	Calm	NE -1	Calm	9.6	12.6	bc	1028.1
US08480	41-57.8	140-59.0	11/11	1433-1438	85	Calm	NE -1	Calm	9.7	12.6	bc	1028.1
US08481	41-57.3	140-58.1	11/11	1444-1448	78	Calm	NE -1	Calm	9.7	12.7	bc	1028.1
US08482	42-00.0	141-19.0	11/12	1759-1812	292	South-1	South-1	South-3	12.0	12.7	b	1025.7
US08483	41-49.6	141-12.7	11/14	0805-0813	136	Calm	ESE-1	Calm	11.4	12.1	bc	1023.6
US08484	41-51.5	141-10.0	11/14	0835-0841	106	Calm	ESE-1	Calm	11.6	12.1	c	1023.8
US08485	41-53.3	141-07.3	11/14	0903-0907	93	Calm	ESE-1	Calm	11.5	12.1	c	1023.7
US08486	41-55.2	141-04.7	11/14	1025-1030	109	North-1	ESE-1	North-2	11.7	12.3	bc	1023.9
US08487	41-57.0	141-02.3	11/14	1050-1054	104	East-1	ESE-1	East-2	12.1	11.9	bc	1023.6
US08488	41-58.8	140-59.5	11/14	1117-1120	85	NE -1	ESE-1	NE -2	11.6	11.9	bc	1023.0
US08489	42-08.6	140-35.7	11/14	1516-1520	63	Calm	East-1	Calm	13.1	12.2	bc	1021.6
US08490	42-11.9	140-35.4	11/15	1532-1537	85	East-1	East-1	East-3	11.7	11.6	c	1019.7
US08491	42-16.1	140-34.7	11/15	1701-1706	92	East-1	East-1	East-3	11.7	12.2	o	1019.0
US08492	42-19.6	140-30.1	11/15	1758-1803	92	East-2	East-1	East-4	12.0	12.1	o	1018.6
US08493	42-23.9	140-30.8	11/15	1900-1905	95	North-1	East-1	North-2	11.3	11.6	o	1018.1
US08494	42-20.6	140-37.2	11/15	2010-2015	85	East-1	East-1	East-3	12.1	12.2	o	1017.0
US08495	42-18.0	140-40.5	11/15	2110-2115	76	Calm	East-1	Calm	12.1	12.2	o	1016.0

Cruise 158

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08496	41-24.6	140-06.0	11/27	1218-1221	52	South-2	SSW-1	South-4	11.2	15.3	c	1016.0
US08497	41-23.9	140-06.3	11/27	1249-1253	84	SSW-1	SSW-1	SSW-5	11.0	15.3	r	1015.7
US08498	41-27.4	140-16.1	11/27	1404-1406	32	WSW-3	SSW-1	WSW-5	10.0	13.5	r	1014.6
US08499	41-26.3	140-17.4	11/27	1448-1452	69	SW -3	SSW-1	SW -5	11.2	13.6	o	1014.0
US08500	41-28.3	140-20.3	11/27	1529-1532	64	SW -3	SSW-1	SW -5	12.1	13.9	c	1014.1
US08501	41-34.3	140-29.2	11/27	1643-1644	36	WNW-1	SSW-1	WNW-2	10.0	13.7	c	1014.2

Cruise 159

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08502	42-10.1	140-47.3	12/9	0814-0818	94	SSE-1	ESE-1	SSE-3	9.7	10.2	bc	1021.6
US08503	42-13.0	140-42.0	12/9	0913-0917	90	SSW-1	ESE-1	SSW-3	11.0	9.6	bc	1022.0
US08504	42-16.0	140-35.5	12/9	1039-1046	92	North-1	ESE-1	North-2	10.1	9.4	bc	1022.2
US08505	42-18.9	140-31.3	12/9	1140-1147	94	Calm	ESE-1	Calm	10.7	9.1	bc	1022.1
US08506	42-23.4	140-31.2	12/9	1238-1245	96	WSW-2	ESE-1	WSW-4	10.9	9.2	bc	1021.6
US08507	42-20.1	140-22.9	12/9	1357-1400	54	West-2	ESE-1	West-3	10.7	9.2	bc	1021.1
US08508	42-14.1	140-29.6	12/9	1500-1503	76	North-1	ESE-1	North-2	10.4	8.3	bc	1021.1
US08509	42-08.7	140-35.7	12/9	1548-1550	63	Calm	ESE-1	Calm	10.1	8.4	bc	1021.0
US08510	42-11.1	140-35.5	12/10	0746-0749	80	West-1	ESE-1	West-2	7.8	9.6	c	1017.5
US08511	42-20.9	140-36.5	12/10	0902-0905	88	West-1	ESE-1	West-4	8.2	9.4	bc	1016.6
US08512	42-27.0	140-31.5	12/10	1006-1010	75	NW -1	ESE-1	NW -3	8.7	9.3	bc	1016.7
US08513	42-25.9	140-36.9	12/10	1055-1059	85	NW -2	ESE-1	NW -3	9.5	9.4	bc	1015.7
US08514	42-23.0	140-42.1	12/10	1138-1141	65	NW -2	ESE-1	NW -3	9.5	9.4	bc	1015.7
US08515	42-18.6	140-42.3	12/10	1216-1219	66	West-2	ESE-1	West-3	9.0	9.4	bc	1015.1
US08516	42-20.6	140-48.2	12/10	1300-1303	55	West-2	ESE-1	West-3	10.1	9.3	bc	1014.7
US08517	42-15.7	140-47.7	12/10	1339-1343	71	West-2	ESE-1	West-4	9.4	10.1	bc	1014.1
US08518	41-57.6	140-58.4	12/11	1338-1341	81	NW -2	ESE-1	NW -3	1.5	10.7	s	1008.1
US08519	41-57.9	140-59.1	12/11	1347-1351	85	NW -2	ESE-1	NW -3	1.7	10.6	s	1007.6
US08520	41-58.3	141-00.0	12/11	1357-1400	90	NW -2	ESE-1	NW -3	1.5	10.6	s	1007.2
US08521	41-58.9	141-00.9	12/11	1407-1411	96	North-2	ESE-1	North-3	1.5	10.6	s	1006.7
US08522	42-17.7	140-53.8	12/14	0713-0721	57	North-1	West-1	North-2	-0.4	9.1	c	1019.0
US08523	42-11.4	141-01.8	12/14	0813-0819	79	NW -1	East-1	NW -2	0.1	8.8	s	1019.1
US08524	42-05.3	140-56.7	12/14	0902-0907	84	West-2	East-1	West-4	0.5	9.7	bc	1018.6
US08525	42-10.3	140-47.7	12/14	0955-1003	91	West-2	East-1	West-4	0.6	9.9	c	1018.7
US08526	42-23.6	140-42.6	12/14	1506-1512	63	NW -1	East-1	NW -2	1.4	8.9	bc	1016.6
US08527	41-54.0	141-09.8	12/15	1235-1240	184	West-2	NW -1	West-3	3.6	11.8	bc	1017.0

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Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US08528	41-35.1	140-26.6	12/24	1104-1107	14	West-1	SSE-1	West-2	5.1	11.9	bc	1021.1
US08529	41-34.9	140-29.0	12/24	1140-1143	32	SSW-2	SSE-1	SSW-5	5.5	12.2	bc	1020.5
US08530	41-38.1	140-26.3	12/24	1238-1240	15	SSW-2	SSE-1	SSW-4	5.6	11.7	bc	1019.6
US08531	41-37.6	140-28.3	12/24	1259-1301	22	SSW-2	SSE-1	SSW-4	5.4	11.9	bc	1019.1
US08532	41-37.3	140-30.0	12/24	1319-1322	31	West-1	SSE-1	West-3	5.3	12.2	c	1018.7
US08533	41-41.2	140-34.4	12/24	1422-1426	42	SW -1	SSE-1	SW -3	5.5	12.3	c	1018.5
US08534	41-43.1	140-36.0	12/24	1459-1502	36	SW -1	SSE-1	SW -3	5.9	12.0	c	1018.5
US08535	41-44.0	140-35.8	12/24	1516-1518	6	SSE-2	SSE-1	SSE-4	5.7	11.7	r	1018.4

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08478
LATITUDE 41-58.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	12.925	33.954	25.597
10	12.849	34.007	25.654
20	12.633	34.026	25.711
30	11.477	33.963	25.882
40	10.812	34.015	26.042
50	10.799	34.118	26.125
75	8.803	33.955	26.331

STATION US08479
LATITUDE 41-58.3 N
LONGITUDE 140-59.9 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	12.843	34.031	25.674
10	12.776	34.040	25.693
20	12.609	34.021	25.712
30	9.876	33.960	26.161
40	9.683	34.051	26.264
50	9.437	34.042	26.298
75	7.413	33.830	26.440

STATION US08480
LATITUDE 41-57.8 N
LONGITUDE 140-59.0 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	12.932	34.003	25.634
10	12.837	34.021	25.667
20	12.594	34.017	25.711
30	9.952	34.027	26.200
40	9.176	34.000	26.307
50	8.914	33.997	26.346
75	6.164	33.725	26.525

STATION US08481
LATITUDE 41-57.3 N
LONGITUDE 140-58.1 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	13.008	34.019	25.631
10	12.893	34.022	25.656
20	12.807	34.035	25.683
30	11.664	33.951	25.837
40	9.848	34.022	26.214
50	8.673	33.940	26.339
75	4.901	33.620	26.592

STATION US08482
LATITUDE 42-00.0 N
LONGITUDE 141-19.0 E
DEPTH (m) 292

Press.	Temp.	Salinity	Sigma-T
5	12.972	34.113	25.711
10	12.973	34.110	25.709
20	12.940	34.110	25.716
30	12.904	34.107	25.720
40	12.773	34.099	25.740
50	12.744	34.100	25.747
75	12.655	34.093	25.759
100	11.583	34.056	25.934
125	8.485	33.951	26.377
150	7.075	33.795	26.459
175	6.453	33.749	26.506
200	5.335	33.641	26.559
250	3.819	33.540	26.643

STATION US08483
LATITUDE 41-49.6 N
LONGITUDE 141-12.7 E
DEPTH (m) 136

Press.	Temp.	Salinity	Sigma-T
5	12.478	33.996	25.718
10	12.486	34.003	25.721
20	11.792	33.956	25.817
30	11.221	34.011	25.966
40	10.875	34.040	26.050
50	10.521	34.104	26.162
75	9.537	34.013	26.258
100	8.996	33.980	26.320
125	8.231	33.866	26.349

STATION US08484
LATITUDE 41-51.5 N
LONGITUDE 141-10.0 E
DEPTH (m) 106

Press.	Temp.	Salinity	Sigma-T
5	12.442	34.006	25.733
10	12.421	34.009	25.739
20	12.454	34.046	25.761
30	10.772	33.907	25.965
40	10.710	33.973	26.027
50	10.748	33.976	26.023
75	8.556	33.908	26.333
100	8.097	33.886	26.385

STATION US08485
LATITUDE 41-53.3 N
LONGITUDE 141-07.3 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	12.266	34.007	25.767
10	12.259	34.011	25.772
20	12.263	34.015	25.774
30	12.237	34.011	25.776
40	11.759	33.945	25.815
50	9.912	33.937	26.136
75	8.160	33.879	26.370

STATION US08486
LATITUDE 41-55.2 N
LONGITUDE 141-04.7 E
DEPTH (m) 109

Press.	Temp.	Salinity	Sigma-T
5	12.482	34.028	25.742
10	12.443	34.031	25.752
20	12.430	34.032	25.755
30	12.309	34.015	25.765
40	11.581	34.023	25.908
50	10.419	33.938	26.051
75	7.992	33.855	26.376
100	6.768	33.797	26.502

STATION US08487
LATITUDE 41-57.0 N
LONGITUDE 141-02.3 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	12.201	33.844	25.653
10	12.171	33.843	25.658
20	11.922	33.801	25.679
30	11.732	34.007	25.868
40	9.882	33.836	26.063
50	8.816	33.920	26.302
75	7.363	33.822	26.441
100	6.757	33.793	26.501

STATION US08488
LATITUDE 41-58.8 N
LONGITUDE 140-59.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	12.248	33.855	25.653
10	12.056	33.820	25.662
20	10.810	33.869	25.929
30	9.547	33.924	26.187
40	8.779	33.886	26.281
50	7.839	33.859	26.402
75	7.475	33.854	26.450

STATION US08489
LATITUDE 42-08.6 N
LONGITUDE 140-35.7 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	12.493	32.671	24.690
10	12.408	33.901	25.658
20	12.297	33.922	25.695
30	12.308	33.929	25.699
40	9.255	33.738	26.089
50	8.389	33.767	26.247

STATION US08490
LATITUDE 42-11.9 N
LONGITUDE 140-35.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	12.391	33.872	25.638
10	12.401	33.878	25.641
20	12.346	33.897	25.667
30	11.959	33.900	25.743
40	11.019	33.699	25.759
50	9.720	33.864	26.112
75	5.979	33.646	26.485

STATION US08491
LATITUDE 42-16.1 N
LONGITUDE 140-34.7 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	12.531	33.861	25.603
10	12.531	33.863	25.604
20	12.516	33.862	25.607
30	12.489	33.861	25.611
40	12.550	33.948	25.667
50	12.618	33.976	25.675
75	7.736	33.832	26.395

STATION US08492
LATITUDE 42-19.6 N
LONGITUDE 140-30.1 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	12.430	33.859	25.621
10	12.411	33.854	25.620
20	12.349	33.872	25.646
30	12.144	33.913	25.717
40	11.250	33.840	25.827
50	9.066	33.881	26.232
75	8.548	33.906	26.332

STATION US08493
LATITUDE 42-23.9 N
LONGITUDE 140-30.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	11.942	33.822	25.685
10	11.898	33.823	25.694
20	11.860	33.823	25.702
30	10.531	33.698	25.844
40	8.618	33.911	26.325
50	7.997	33.878	26.393
75	5.953	33.662	26.501

STATION US08494
LATITUDE 42-20.6 N
LONGITUDE 140-37.2 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	12.520	33.910	25.643
10	12.521	33.911	25.643
20	12.546	33.919	25.645
30	12.555	33.923	25.646
40	12.561	33.932	25.652
50	12.666	33.963	25.656
75	7.890	33.782	26.334

STATION US08495
LATITUDE 42-18.0 N
LONGITUDE 140-40.5 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	12.508	33.861	25.607
10	12.509	33.861	25.607
20	12.501	33.862	25.609
30	12.491	33.863	25.612
40	12.488	33.870	25.618
50	12.484	33.881	25.627
75	9.052	33.929	26.271

STATION US08496
LATITUDE 41-24.6 N
LONGITUDE 140-06.0 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	15.314	33.963	25.104
10	15.301	33.960	25.104
20	15.123	33.977	25.157
30	15.022	33.991	25.189
40	15.015	33.995	25.194
50	15.015	33.995	25.194

STATION US08497
LATITUDE 41-23.9 N
LONGITUDE 140-06.3 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	15.609	33.921	25.006
10	15.613	33.917	25.002
20	15.553	33.916	25.014
30	15.257	33.952	25.108
40	15.045	33.998	25.190
50	14.977	34.013	25.216

STATION US08498
LATITUDE 41-27.4 N
LONGITUDE 140-16.1 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	13.749	34.060	25.513
10	13.749	34.074	25.523
20	13.697	34.078	25.538

STATION US08499
LATITUDE 41-26.3 N
LONGITUDE 140-17.4 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	13.891	34.089	25.506
10	13.876	34.093	25.512
20	13.795	34.095	25.531
30	13.774	34.098	25.537
40	13.750	34.102	25.545
50	13.699	34.101	25.555

STATION US08500
LATITUDE 41-28.3 N
LONGITUDE 140-20.3 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	14.279	34.060	25.402
10	14.279	34.060	25.402
20	14.224	34.065	25.417
30	14.187	34.069	25.428
40	14.182	34.070	25.430
50	14.171	34.071	25.434

STATION US08501
LATITUDE 41-34.3 N
LONGITUDE 140-29.2 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	14.215	34.027	25.390
10	14.219	34.025	25.388
20	14.120	33.996	25.386
30	14.028	34.022	25.426

STATION US08502
LATITUDE 42-10.1 N
LONGITUDE 140-47.3 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	10.837	34.081	26.089
10	10.843	34.076	26.084
20	10.285	33.914	26.055
30	10.119	33.999	26.150
40	10.062	33.982	26.146
50	9.617	33.924	26.176
75	7.392	33.793	26.413

STATION US08503
LATITUDE 42-13.0 N
LONGITUDE 140-42.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	9.897	33.989	26.180
10	9.895	33.993	26.183
20	9.892	33.997	26.187
30	9.883	34.003	26.193
40	9.796	33.991	26.198
50	9.748	33.986	26.202
75	9.307	33.959	26.254

STATION US08504
LATITUDE 42-16.0 N
LONGITUDE 140-35.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	9.697	33.973	26.201
10	9.694	33.973	26.201
20	9.680	33.973	26.204
30	9.683	33.975	26.204
40	9.685	33.975	26.204
50	9.683	33.974	26.204
75	9.670	33.971	26.204

STATION US08505
LATITUDE 42-18.9 N
LONGITUDE 140-31.3 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	9.400	33.868	26.168
10	9.390	33.876	26.175
20	9.410	33.888	26.181
30	9.405	33.887	26.182
40	9.380	33.883	26.182
50	9.316	33.911	26.215
75	8.058	33.883	26.388

STATION US08506
LATITUDE 42-23.4 N
LONGITUDE 140-31.2 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	9.606	33.925	26.178
10	9.725	33.965	26.190
20	9.681	33.966	26.198
30	9.671	33.966	26.200
40	9.666	33.967	26.202
50	9.650	33.968	26.205
75	7.058	33.779	26.449

STATION US08507
LATITUDE 42-20.1 N
LONGITUDE 140-22.9 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	9.400	33.762	26.085
10	9.691	33.910	26.152
20	9.720	33.935	26.168
30	9.695	33.937	26.173
40	9.602	33.931	26.184
50	9.372	33.916	26.210

STATION US08508
LATITUDE 42-14.1 N
LONGITUDE 140-29.6 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	9.407	33.732	26.060
10	9.626	33.945	26.191
20	9.706	33.977	26.202
30	9.714	33.984	26.207
40	9.712	33.985	26.208
50	9.726	33.996	26.214

STATION US08509
LATITUDE 42-08.7 N
LONGITUDE 140-35.7 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	8.869	33.455	25.929
10	9.727	33.930	26.162
20	9.799	33.978	26.187
30	9.714	33.971	26.196
40	9.698	33.977	26.204
50	9.707	33.984	26.207

STATION US08510
LATITUDE 42-11.1 N
LONGITUDE 140-35.5 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	9.922	33.954	26.148
10	9.956	34.004	26.182
20	9.959	34.003	26.181
30	9.917	34.003	26.187
40	9.792	33.997	26.203
50	9.761	33.999	26.210
75	8.282	33.859	26.336

STATION US08511
LATITUDE 42-20.9 N
LONGITUDE 140-36.5 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	9.785	33.946	26.165
10	9.796	33.961	26.175
20	9.795	33.960	26.174
30	9.797	33.960	26.174
40	9.796	33.959	26.173
50	9.775	33.955	26.174
75	9.591	33.948	26.199

STATION US08512
LATITUDE 42-27.0 N
LONGITUDE 140-31.5 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	9.578	33.946	26.199
10	9.578	33.961	26.211
20	9.573	33.960	26.211
30	9.574	33.960	26.211
40	9.572	33.960	26.211
50	9.571	33.960	26.211

STATION US08513
LATITUDE 42-25.9 N
LONGITUDE 140-36.9 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	9.924	33.972	26.162
10	9.922	33.971	26.162
20	9.914	33.970	26.162
30	9.913	33.970	26.162
40	9.889	33.969	26.165
50	9.857	33.967	26.169
75	9.755	33.963	26.183

STATION US08514
LATITUDE 42-23.0 N
LONGITUDE 140-42.1 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	9.756	33.965	26.185
10	9.738	33.950	26.176
20	9.706	33.947	26.179
30	9.680	33.944	26.181
40	9.527	33.927	26.193
50	9.513	33.932	26.200

STATION US08515
LATITUDE 42-18.6 N
LONGITUDE 140-42.3 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	9.719	33.926	26.161
10	9.718	33.946	26.176
20	9.677	33.942	26.180
30	9.647	33.938	26.182
40	9.630	33.936	26.183
50	9.596	33.932	26.186

STATION US08516
LATITUDE 42-20.6 N
LONGITUDE 140-48.2 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	9.253	33.943	26.250
10	9.203	33.940	26.255
20	9.083	33.930	26.267
30	8.945	33.931	26.289
40	8.916	33.932	26.295
50	8.458	33.879	26.325

STATION US08517
LATITUDE 42-15.7 N
LONGITUDE 140-47.7 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	10.780	34.037	26.065
10	10.805	34.065	26.083
20	10.410	34.032	26.126
30	9.967	34.001	26.177
40	9.790	33.999	26.205
50	9.571	33.995	26.239

STATION US08518
LATITUDE 41-57.6 N
LONGITUDE 140-58.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	11.229	33.901	25.878
10	11.489	34.047	25.944
20	11.369	34.068	25.982
30	11.234	34.081	26.017
40	11.164	34.064	26.017
50	10.178	33.974	26.121
75	8.814	33.873	26.265

STATION US08519
LATITUDE 41-57.9 N
LONGITUDE 140-59.1 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	11.235	34.054	25.996
10	11.361	34.067	25.984
20	11.194	34.077	26.022
30	11.164	34.081	26.030
40	11.159	34.082	26.032
50	11.029	34.056	26.035
75	9.301	33.926	26.229

STATION	US08520	
LATITUDE	41-58.3	N
LONGITUDE	141-00.0	E
DEPTH (m)	90	

Press.	Temp.	Salinity	Sigma-T
5	11.145	34.083	26.035
10	11.163	34.080	26.029
20	11.168	34.078	26.027
30	11.156	34.077	26.028
40	11.126	34.075	26.033
50	11.045	34.074	26.047
75	9.916	33.935	26.134

STATION	US08521	
LATITUDE	41-58.9	N
LONGITUDE	141-00.9	E
DEPTH (m)	96	

Press.	Temp.	Salinity	Sigma-T
5	10.970	33.990	25.994
10	11.124	34.065	26.025
20	11.111	34.062	26.025
30	11.116	34.064	26.025
40	11.114	34.064	26.026
50	10.931	34.055	26.052
75	10.266	33.939	26.079

STATION	US08522	
LATITUDE	42-17.7	N
LONGITUDE	140-53.8	E
DEPTH (m)	57	

Press.	Temp.	Salinity	Sigma-T
5	8.914	33.947	26.307
10	8.919	33.947	26.306
20	8.918	33.946	26.306
30	8.916	33.947	26.307
40	8.913	33.947	26.307
50	8.915	33.948	26.308

STATION	US08523	
LATITUDE	42-11.4	N
LONGITUDE	141-01.8	E
DEPTH (m)	79	

Press.	Temp.	Salinity	Sigma-T
5	9.193	33.992	26.298
10	9.202	33.984	26.290
20	9.107	33.961	26.287
30	8.974	33.941	26.293
40	8.918	33.934	26.297
50	8.904	33.932	26.297
75	8.770	33.921	26.310

STATION	US08524	
LATITUDE	42-05.3	N
LONGITUDE	140-56.7	E
DEPTH (m)	84	

Press.	Temp.	Salinity	Sigma-T
5	10.149	33.868	26.043
10	10.219	33.997	26.132
20	10.216	33.992	26.128
30	10.211	33.990	26.127
40	10.192	33.989	26.130
50	10.181	33.988	26.131
75	9.946	33.963	26.151

STATION	US08525	
LATITUDE	42-10.3	N
LONGITUDE	140-47.7	E
DEPTH (m)	91	

Press.	Temp.	Salinity	Sigma-T
5	9.992	33.577	25.842
10	10.234	34.043	26.165
20	10.242	34.040	26.161
30	10.245	34.040	26.161
40	10.251	34.039	26.159
50	9.509	33.939	26.205
75	9.099	33.948	26.279

STATION	US08526	
LATITUDE	42-23.6	N
LONGITUDE	140-42.6	E
DEPTH (m)	63	

Press.	Temp.	Salinity	Sigma-T
5	9.242	33.881	26.203
10	9.295	33.954	26.252
20	9.287	33.953	26.253
30	9.231	33.947	26.257
40	9.130	33.936	26.264
50	9.097	33.934	26.268

STATION	US08527	
LATITUDE	41-54.0	N
LONGITUDE	141-09.8	E
DEPTH (m)	184	

Press.	Temp.	Salinity	Sigma-T
5	12.139	33.924	25.727
10	12.130	33.923	25.728
20	11.475	33.907	25.838
30	11.482	33.986	25.898
40	9.533	33.614	25.947
50	8.647	33.584	26.065
75	7.881	33.501	26.114
100	8.954	33.855	26.229

STATION	US08528	
LATITUDE	41-35.1	N
LONGITUDE	140-26.6	E
DEPTH (m)	14	

Press.	Temp.	Salinity	Sigma-T
5	12.325	33.769	25.572
10	12.323	33.764	25.568

STATION	US08529	
LATITUDE	41-34.9	N
LONGITUDE	140-29.0	E
DEPTH (m)	32	

Press.	Temp.	Salinity	Sigma-T
5	12.607	33.961	25.666
10	12.608	33.960	25.664
20	12.610	33.960	25.664

STATION	US08530	
LATITUDE	41-38.1	N
LONGITUDE	140-26.3	E
DEPTH (m)	15	

Press.	Temp.	Salinity	Sigma-T
5	12.459	33.781	25.555

STATION	US08531	
LATITUDE	41-37.6	N
LONGITUDE	140-28.3	E
DEPTH (m)	22	

Press.	Temp.	Salinity	Sigma-T
5	12.563	33.949	25.665
10	12.563	33.950	25.666

STATION	US08532	
LATITUDE	41-37.3	N
LONGITUDE	140-30.0	E
DEPTH (m)	31	

Press.	Temp.	Salinity	Sigma-T
5	12.537	33.923	25.650
10	12.539	33.923	25.650
20	12.540	33.923	25.649

STATION	US08533	
LATITUDE	41-41.2	N
LONGITUDE	140-34.4	E
DEPTH (m)	42	

Press.	Temp.	Salinity	Sigma-T
5	12.623	33.935	25.642
10	12.631	33.932	25.639
20	12.866	34.023	25.662
30	12.842	34.030	25.673

STATION	US08534	
LATITUDE	41-43.1	N
LONGITUDE	140-36.0	E
DEPTH (m)	36	

Press.	Temp.	Salinity	Sigma-T
5	12.224	33.730	25.560
10	12.457	33.896	25.644
20	12.544	33.901	25.631
30	12.728	33.987	25.662

STATION	US08535	
LATITUDE	41-44.0	N
LONGITUDE	140-35.8	E
DEPTH (m)	6	

Press.	Temp.	Salinity	Sigma-T
4	12.100	33.749	25.599

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