



HOKKAIDO UNIVERSITY

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

IN DECEMBER 2011

1. Cruise Itinerary

Cruise 238

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

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

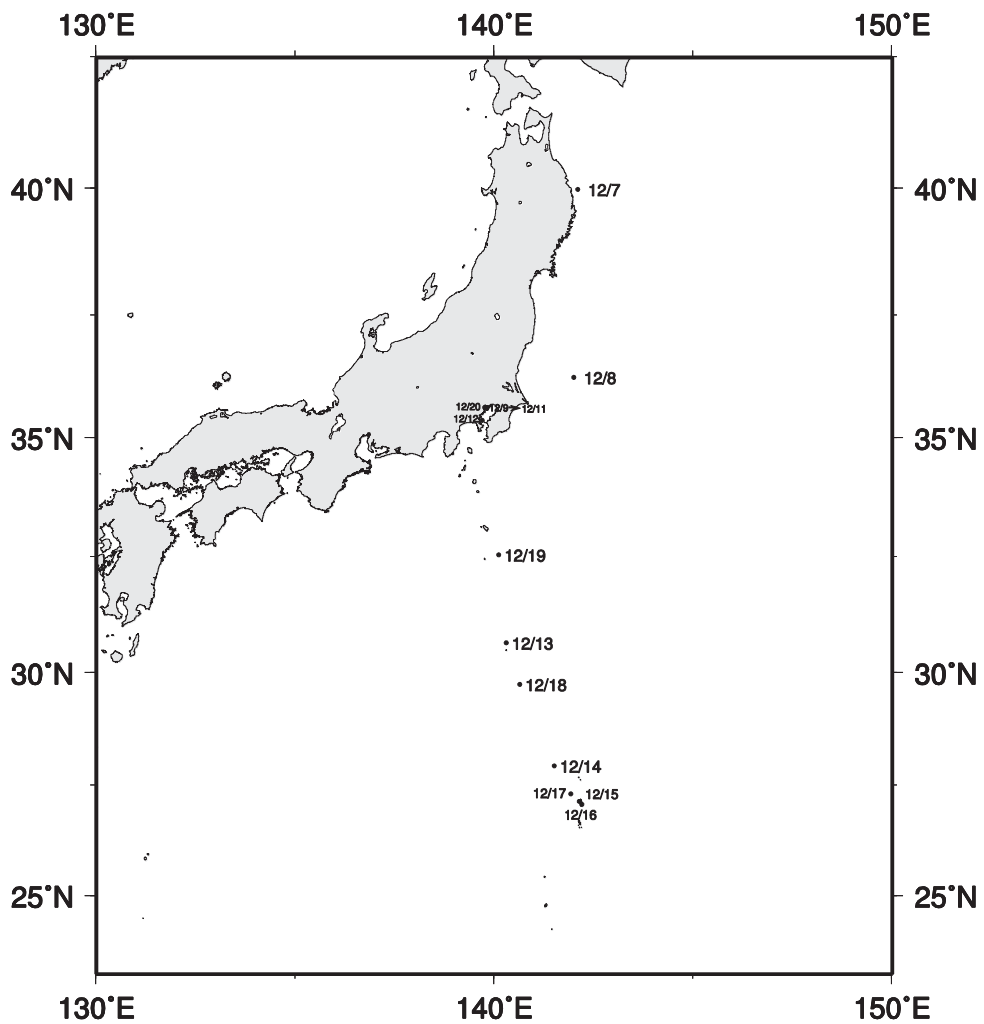


Figure 1. Noon position

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

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

Teaching Assistant:	2 person	
Graduate Students:	4 persons	
Under Graduate Students:	22 persons	
	(Department of Marine Science and Resources, Nihon University)	16 Persons
	(Teikyo University of Science and Technology)	5 Persons
	(Tokyo University)	1 Person
	Total 37 persons	

3. Items of Research

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

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

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

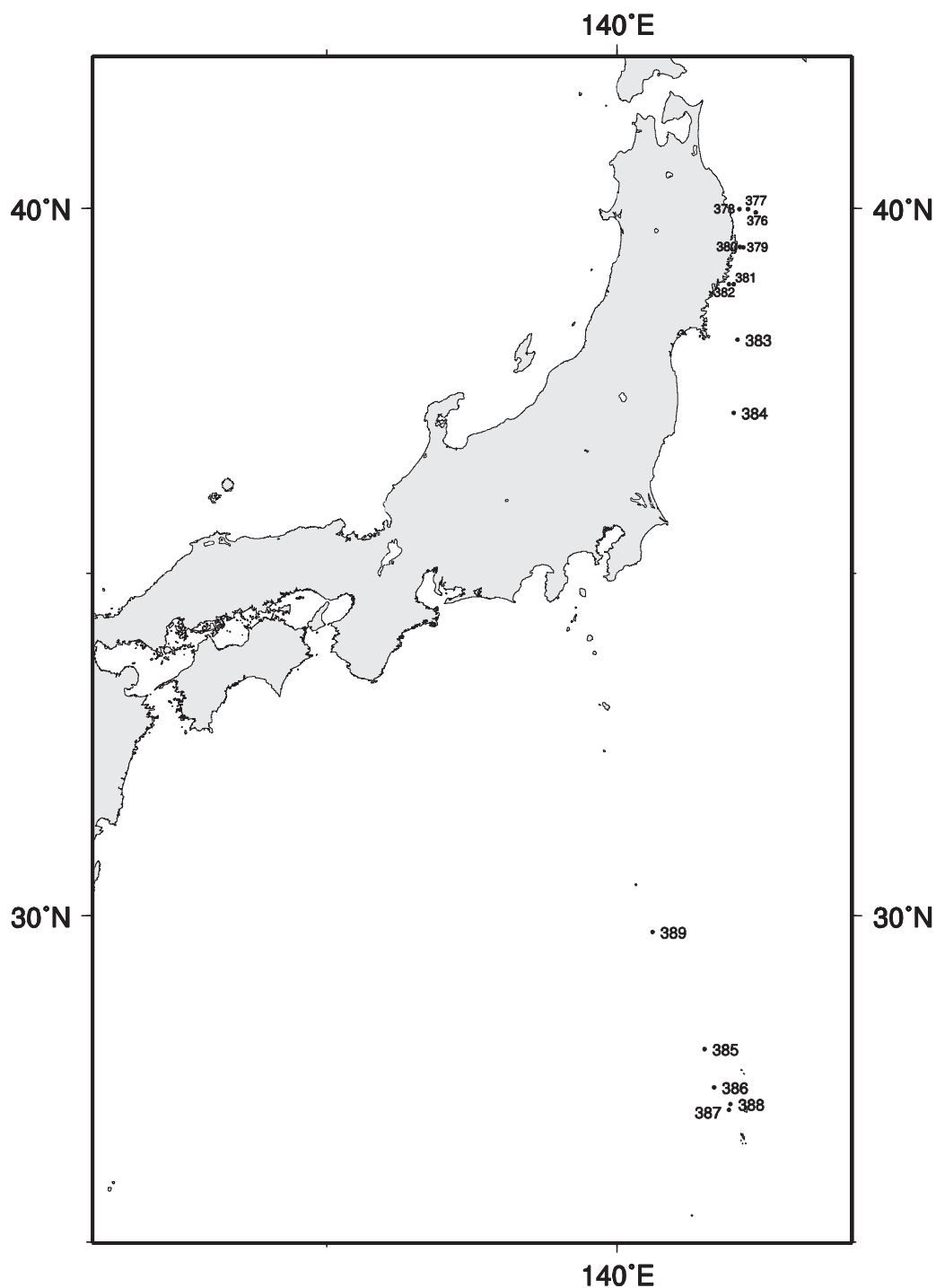


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

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

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

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

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

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

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

5. Long-line Research

[Long-line Sampling]

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

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

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

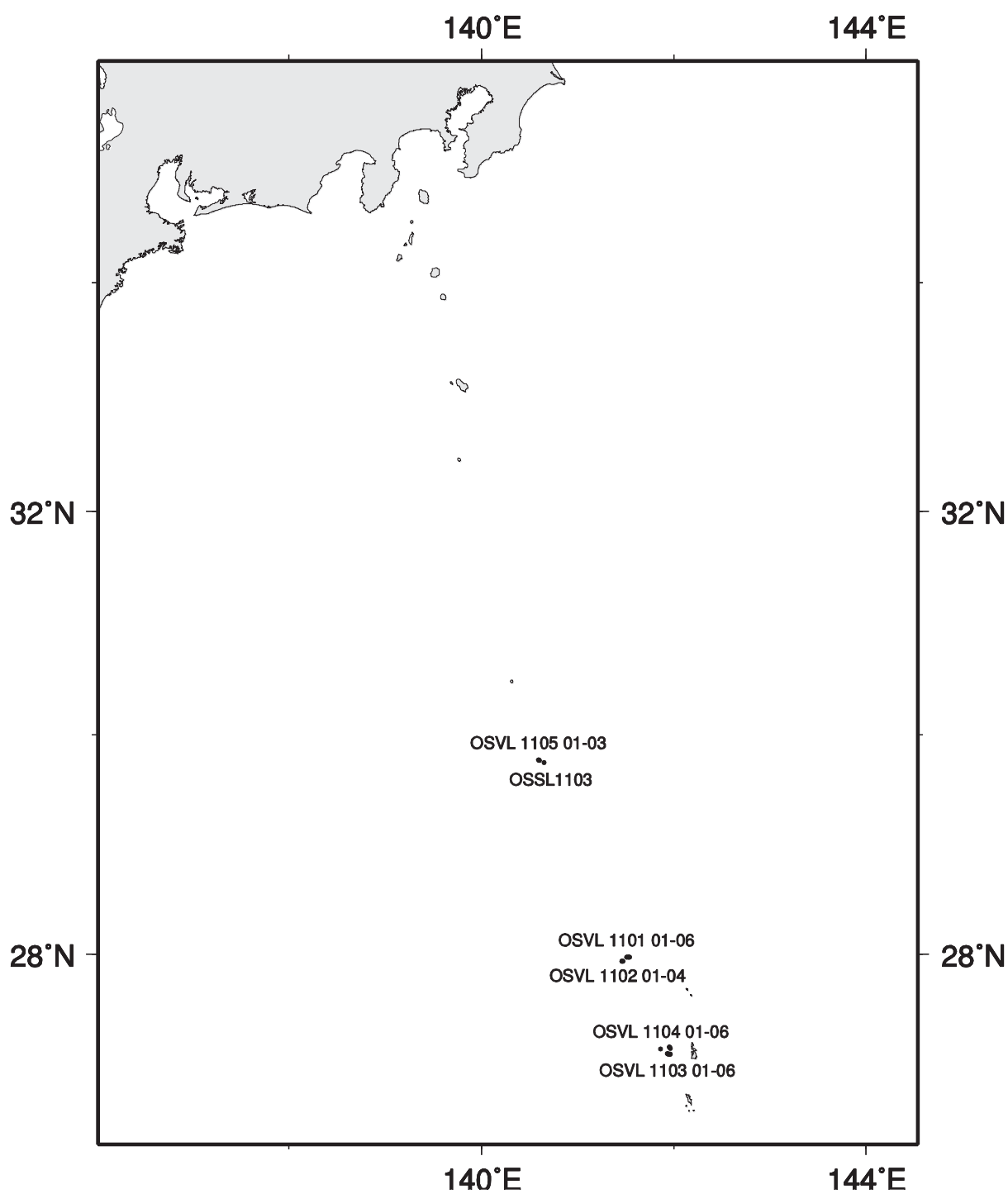


Figure 3. Locations of long-line research

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

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

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

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

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

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

S.T. : Surface temperature

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

APPENDIX

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

Oceanographic stations are adopted as the positons.

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

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

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