



HOKKAIDO UNIVERSITY

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

IN OCTOBER 2011

1. Cruise Itinerary

Cruise 235

Departure from Hakodate

Oct. 2, 2011

Start hydrographic research (OS11333)

3

Arrival at Miyako

3

Departure from Miyako

3

Finish hydrographic research (OS11353)

6

Return to Hakodate

7

Total coverage 859.3miles 6 days at sea.

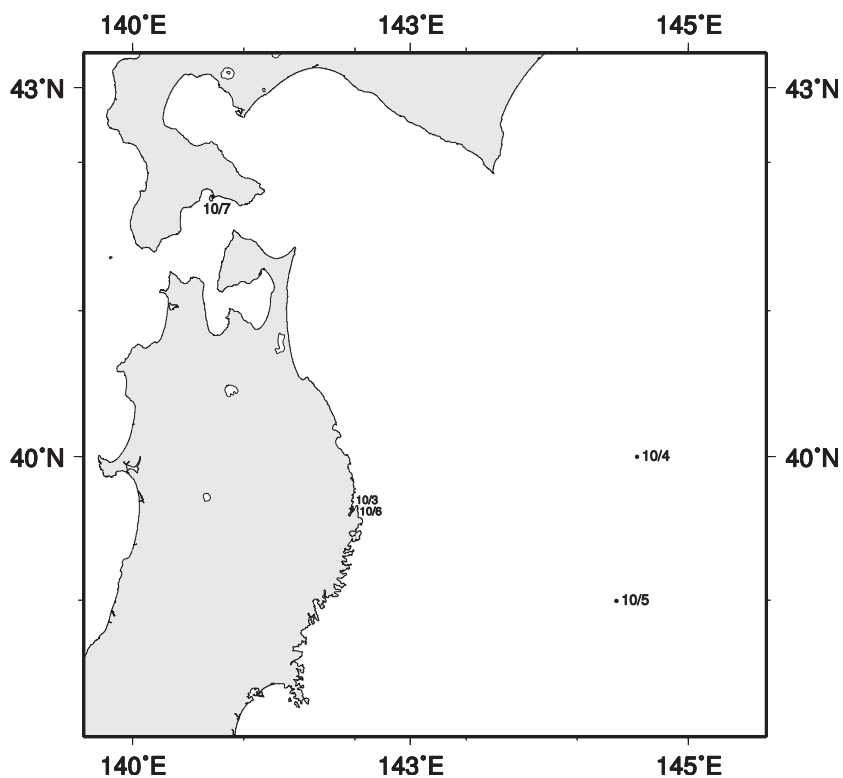


Figure 1. Noon position

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

Cruise 235

There are no researchers in this Cruise.

3. Items of Research

Hydrographic observations:
Water samplings by Niskin bottles:

Fig. 2 Table 1,2

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

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

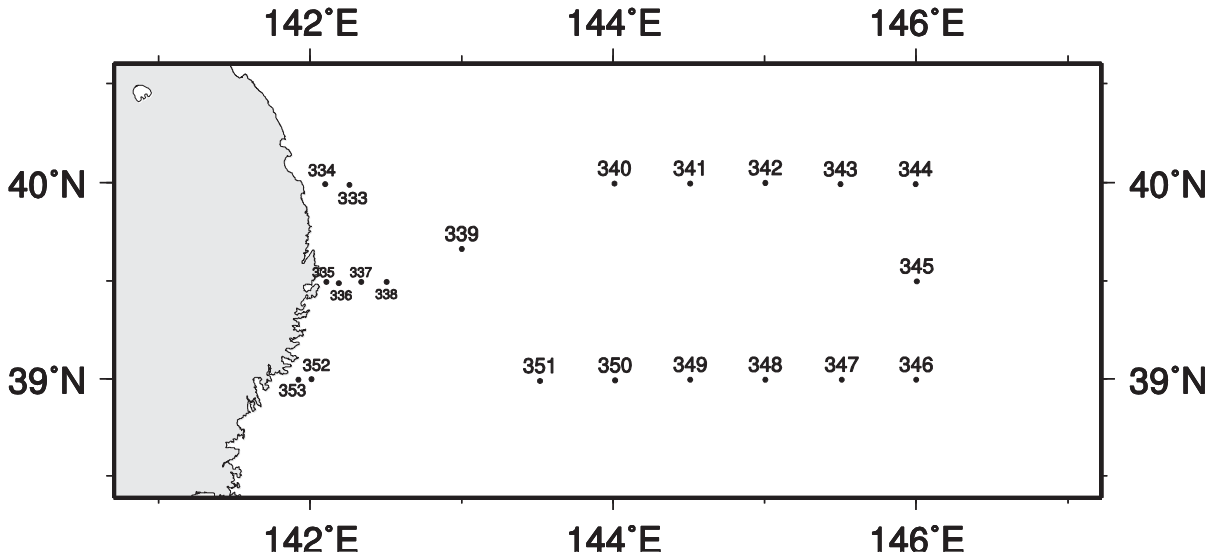


Figure 2. Oceanographic stations

Table 1. List of Oceanographic Station

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

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

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

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

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

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

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

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

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

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

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

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

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

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