HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 185
CRUISE 186
CRUISE 187

IN JANUARY 2010

1. Cruise Itinerary

Cruise 185

Departure from Hakodate	Jan.	6	,	2010
Start hydrographic research (US10001)		7		
Arrival at Hakodate		7		
Departure from Hakodate		8		
Finish hydrographic research (US10015)		8		
Return to Hakodate		9		

Total coverage 190.9 miles

Cruise 186

Departure from Hakodate	Jan.	20	,	2010
Return to Hakodate		21		

Total coverage 0.5 miles

Cruise 187

Departure from Hakodate	Jan.	26	,	2010
Start hydrographic research (US10016)		26		
Arrival at Hakodate		26		
Departure from Hakodate		27		
Finish hydrographic research (US10027)		27		
Return to Hakodate		27		

Total coverage 86.4 miles

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew:	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 185

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

Cruise 186

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
Graduate Students:	Chair of Marine Bioresource Science:		4 persons
Under Graduate Students:	Department of Marine Biological Science:		1 person

Cruise 187

Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu
Graduate Students:	Chair of Marine Bioresource Science:		4 persons
Under Graduate Students:	Department of Marine Biological Science (Third grade):		1 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 185)

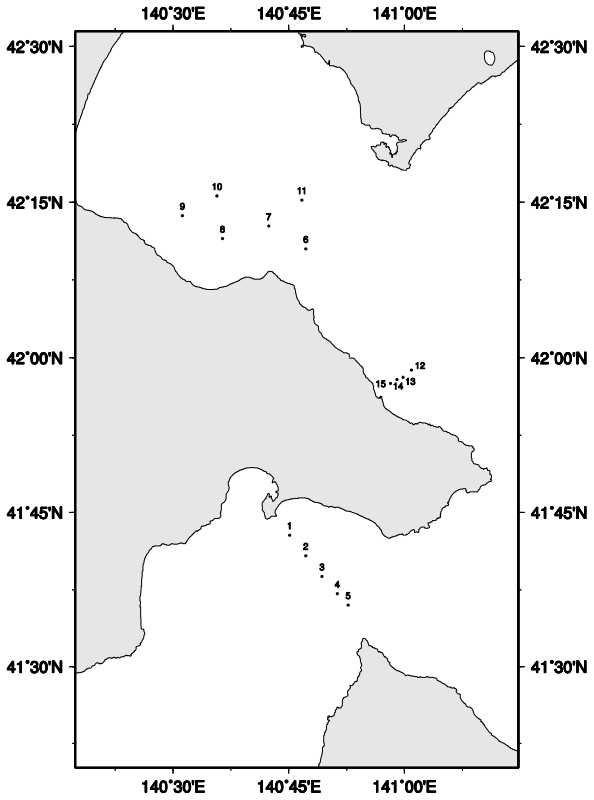

Figure 2: Oceanographic stations (Cruise 187)

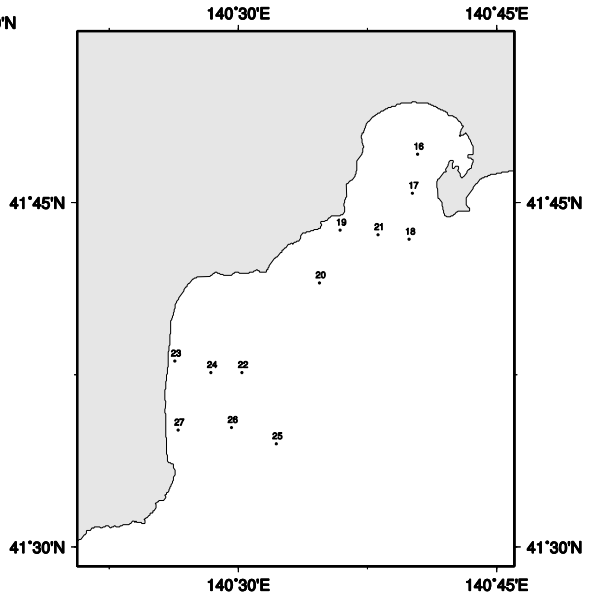

Table 1: List of oceanographic stations

Cruise 185

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US10001	41-42.8	140-45.1	1/7	0700-0703	86	NNW-2	East-1	NNW-4	4.3	10.9	c	1006.5
US10002	41-40.8	140-47.2	1/7	0720-0730	225	North-2	East-1	North-4	4.2	11.0	c	1006.6
US10003	41-38.8	140-49.3	1/7	0748-0800	336	North-3	East-1	North-5	4.6	10.9	bc	1006.7
US10004	41-37.1	140-51.3	1/7	0815-0820	101	NNE-3	East-1	NNE-5	4.6	11.4	bc	1007.3
US10005	41-36.0	140-52.7	1/7	0831-0834	47	NNE-3	East-1	NNE-5	4.9	11.4	bc	1007.3
US10006	42-10.5	140-47.2	1/8	1157-1201	93	NNW-1	ESE-1	NNW-3	1.3	5.9	bc	1012.4
US10007	42-12.7	140-42.4	1/8	1243-1247	92	NW -1	ESE-1	NW -2	1.7	6.0	bc	1012.1
US10008	42-11.5	140-36.4	1/8	1336-1340	83	SW -1	East-1	SW -2	2.5	6.1	bc	1012.2
US10009	42-13.7	140-31.2	1/8	1427-1431	83	West-2	East-1	West-4	1.0	6.2	s	1012.2
US10010	42-15.6	140-35.7	1/8	1516-1520	92	West-3	East-1	West-5	1.0	6.2	s	1012.6
US10011	42-15.2	140-46.7	1/8	1618-1622	75	NW -3	East-1	NW -5	2.3	5.7	c	1012.6
US10012	41-58.8	141-00.9	1/8	1818-1823	96	NW -3	East-1	NW -5	2.1	5.8	c	1013.1
US10013	41-58.1	140-59.8	1/8	1830-1834	90	West-3	East-1	West-5	1.9	6.1	s	1012.7
US10014	41-57.9	140-59.0	1/8	1839-1843	86	West-3	East-1	West-5	1.8	6.0	s	1013.0
US10015	41-57.5	140-58.2	1/8	1849-1853	80	WNW-3	East-1	WNW-5	1.4	6.0	c	1013.1

Cruise 186 No data

Cruise 187

Station	Lat. (N)	Long (E)	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US10016	41-47.1	140-40.4	1/26	0853-0855	21	NW -3	SW -1	NW -5	-4.7	6.9	s	1015.6
US10017	41-45.4	140-40.1	1/26	0921-0923	40	West-3	SW -1	West-5	-5.0	7.1	s	1016.1
US10018	41-43.4	140-39.9	1/26	0955-0959	68	West-3	SW -1	West-5	-4.1	8.9	s	1016.1
US10019	41-43.8	140-35.9	1/26	1125-1127	17	West-3	SW -1	West-5	-3.8	9.0	s	1016.2
US10020	41-41.5	140-34.7	1/26	1205-1207	42	WNW-4	SW -1	WNW-6	-4.2	9.7	s	1016.1
US10021	41-43.6	140-38.1	1/26	1238-1243	58	West-4	SW -1	West-6	-2.2	9.7	c	1016.1
US10022	41-37.6	140-30.2	1/27	0901-0903	31	West-1	SW -1	West-3	2.4	8.7	bc	1021.1
US10023	41-38.1	140-26.3	1/27	0923-0925	13	SW -1	South-1	SW -2	2.8	8.6	bc	1020.7
US10024	41-37.6	140-28.4	1/27	0953-0955	24	SW -1	South-1	SW -2	3.4	8.6	bc	1020.5
US10025	41-34.5	140-32.2	1/27	1030-1033	62	WSW-3	SSW-1	WSW-5	5.3	9.5	bc	1019.6
US10026	41-35.2	140-29.6	1/27	1057-1100	42	SW -2	SSW-1	SW -4	6.3	9.4	bc	1019.0
US10027	41-35.1	140-26.5	1/27	1136-1138	13	SW -2	South-1	SW -4	6.0	8.6	c	1018.0

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US10001
LATITUDE 41-42.8 N
LONGITUDE 140-45.1 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	11.184	34.019	25.978
10	11.191	33.998	25.961
20	11.189	33.999	25.962
30	11.183	33.996	25.961
40	11.189	33.997	25.961
50	11.194	34.005	25.966
75	11.037	34.033	26.016

STATION US10002
LATITUDE 41-40.8 N
LONGITUDE 140-47.2 E
DEPTH (m) 225

Press.	Temp.	Salinity	Sigma-T
5	11.243	34.044	25.987
10	11.230	34.043	25.989
20	11.120	34.032	26.000
30	11.045	34.039	26.019
40	10.990	34.041	26.030
50	10.954	34.041	26.037
75	10.742	34.042	26.075
100	10.555	34.046	26.111
125	10.449	34.049	26.133
150	10.319	34.046	26.152
175	10.182	34.046	26.176

STATION US10003
LATITUDE 41-38.8 N
LONGITUDE 140-49.3 E
DEPTH (m) 336

Press.	Temp.	Salinity	Sigma-T
5	11.578	34.044	25.926
10	11.576	34.042	25.925
20	11.474	34.032	25.936
30	11.416	34.026	25.941
40	11.396	34.027	25.946
50	11.332	34.032	25.962
75	11.257	34.037	25.979
100	11.239	34.040	25.985
125	10.980	34.040	26.032
150	10.961	34.044	26.038
175	10.828	34.045	26.062
200	10.610	34.037	26.095
250	9.900	34.061	26.235
300	9.888	34.062	26.238

STATION US10004
LATITUDE 41-37.1 N
LONGITUDE 140-51.3 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	11.747	34.035	25.887
10	11.757	34.034	25.884
20	11.743	34.034	25.888
30	11.710	34.037	25.896
40	11.656	34.033	25.903
50	11.591	34.025	25.908
75	11.576	34.025	25.911

STATION US10005
LATITUDE 41-36.0 N
LONGITUDE 140-52.7 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	11.667	33.993	25.870
10	11.636	34.005	25.885
20	11.619	34.006	25.888
30	11.610	34.009	25.892
40	11.610	34.008	25.892

STATION US10006
LATITUDE 42-10.5 N
LONGITUDE 140-47.2 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	6.232	33.300	26.180
10	6.234	33.312	26.190
20	6.199	33.304	26.188
30	6.193	33.303	26.187
40	6.197	33.304	26.188
50	6.215	33.311	26.191
75	6.087	33.327	26.220

STATION US10007
LATITUDE 42-12.7 N
LONGITUDE 140-42.4 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	6.498	33.263	26.117
10	6.455	33.306	26.156
20	6.312	33.304	26.173
30	6.263	33.313	26.187
40	6.251	33.315	26.190
50	6.243	33.315	26.191
75	6.233	33.319	26.195

STATION US10008
LATITUDE 42-11.5 N
LONGITUDE 140-36.4 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	6.424	33.281	26.141
10	6.412	33.290	26.150
20	6.386	33.289	26.152
30	6.365	33.288	26.154
40	6.359	33.288	26.155
50	6.360	33.289	26.155
75	6.366	33.290	26.155

STATION US10009
LATITUDE 42-13.7 N
LONGITUDE 140-31.2 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	6.527	33.264	26.114
10	6.494	33.292	26.141
20	6.484	33.294	26.144
30	6.479	33.294	26.144
40	6.471	33.295	26.146
50	6.471	33.295	26.146
75	6.452	33.306	26.157

STATION US10010
LATITUDE 42-15.6 N
LONGITUDE 140-35.7 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	6.473	33.299	26.148
10	6.448	33.304	26.156
20	6.324	33.309	26.175
30	6.279	33.312	26.184
40	6.273	33.315	26.187
50	6.262	33.315	26.189
75	6.285	33.322	26.191

STATION US10011
LATITUDE 42-15.2 N
LONGITUDE 140-46.7 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	6.072	33.281	26.186
10	6.139	33.302	26.193
20	6.164	33.310	26.197
30	6.188	33.312	26.195
40	6.149	33.306	26.195
50	6.043	33.294	26.199

STATION US10012
LATITUDE 41-58.8 N
LONGITUDE 141-00.9 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	6.253	33.343	26.212
10	6.252	33.344	26.212
20	6.207	33.351	26.224
30	6.202	33.355	26.227
40	6.195	33.355	26.229
50	6.192	33.356	26.230
75	6.191	33.356	26.230

STATION US10013
LATITUDE 41-58.1 N
LONGITUDE 140-59.8 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	6.410	33.300	26.158
10	6.417	33.312	26.166
20	6.392	33.307	26.165
30	6.316	33.323	26.188
40	6.298	33.329	26.195
50	6.304	33.330	26.195
75	6.192	33.353	26.227

STATION US10014
LATITUDE 41-57.9 N
LONGITUDE 140-59.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	6.379	33.302	26.163
10	6.385	33.300	26.161
20	6.385	33.304	26.164
30	6.379	33.310	26.170
40	6.368	33.313	26.173
50	6.367	33.313	26.174

STATION US10015
LATITUDE 41-57.5 N
LONGITUDE 140-58.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	6.429	33.299	26.154
10	6.440	33.302	26.156
20	6.436	33.299	26.154
30	6.356	33.288	26.155
40	6.350	33.288	26.155

STATION US10016
LATITUDE 41-47.1 N
LONGITUDE 140-40.4 E
DEPTH (m) 21

Press.	Temp.	Salinity	Sigma-T
5	7.761	32.992	25.731
10	8.418	33.555	26.077

STATION US10017
LATITUDE 41-45.4 N
LONGITUDE 140-40.1 E
DEPTH (m) 40

Press.	Temp.	Salinity	Sigma-T
5	8.763	33.400	25.902
10	9.449	33.910	26.192
20	9.639	33.925	26.173
30	9.603	33.914	26.170

STATION US10018
LATITUDE 41-43.4 N
LONGITUDE 140-39.9 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	9.969	33.981	26.162
10	9.991	33.993	26.168
20	10.000	34.013	26.181
30	9.995	34.010	26.179
40	9.999	34.013	26.182
50	10.006	34.015	26.182

STATION US10019
LATITUDE 41-43.8 N
LONGITUDE 140-35.9 E
DEPTH (m) 17

Press.	Temp.	Salinity	Sigma-T
5	9.254	33.873	26.195
10	9.250	33.902	26.218

STATION US10020
LATITUDE 41-41.5 N
LONGITUDE 140-34.7 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	9.880	34.013	26.201
10	9.875	34.017	26.205
20	9.890	34.014	26.200
30	9.853	34.010	26.204
40	9.820	34.005	26.205

STATION US10021
LATITUDE 41-43.6 N
LONGITUDE 140-38.1 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	9.923	33.795	26.024
10	9.942	34.011	26.189
20	9.947	34.012	26.190
30	9.954	34.004	26.182
40	9.953	34.007	26.185
50	9.964	34.011	26.186

STATION US10022
LATITUDE 41-37.6 N
LONGITUDE 140-30.2 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	8.867	33.959	26.324
10	8.851	33.958	26.326
20	8.847	33.946	26.317

STATION US10023
LATITUDE 41-38.1 N
LONGITUDE 140-26.3 E
DEPTH (m) 13

Press.	Temp.	Salinity	Sigma-T
5	8.851	33.830	26.226

STATION US10024
LATITUDE 41-37.6 N
LONGITUDE 140-28.4 E
DEPTH (m) 24

Press.	Temp.	Salinity	Sigma-T
5	8.945	33.956	26.309
10	8.945	33.957	26.310
20	8.949	33.959	26.311

STATION US10025
LATITUDE 41-34.5 N
LONGITUDE 140-32.2 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	9.843	34.001	26.198
10	9.848	34.021	26.213
20	9.846	34.019	26.212
30	9.808	34.020	26.219
40	9.777	34.023	26.226
50	9.776	34.023	26.226

STATION US10026
LATITUDE 41-35.2 N
LONGITUDE 140-29.6 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	9.191	33.996	26.301
10	9.179	33.998	26.305
20	9.208	34.010	26.310
30	9.237	34.009	26.304
40	9.255	34.013	26.304

STATION US10027
LATITUDE 41-35.1 N
LONGITUDE 140-26.5 E
DEPTH (m) 13

Press.	Temp.	Salinity	Sigma-T
5	8.888	33.902	26.276
10	8.885	33.919	26.290