HOKKAIDO UNIVERSITY

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PART Ⅱ

USHIO MARU CRUISE FROM JANUARY TO DECEMBER IN 2011

Ⅰ. Crew's List

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

Ⅱ. Particulars

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

1

THE " USHIO MARU "

CRUISE 215
CRUISE 216
CRUISE 217

IN JANUARY 2011

1. Cruise Itinerary

Cruise 215

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

Total coverage 156.7 miles

Cruise 216

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

Total coverage 272.9 miles

Cruise 217

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

Total coverage 215.5 miles

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

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

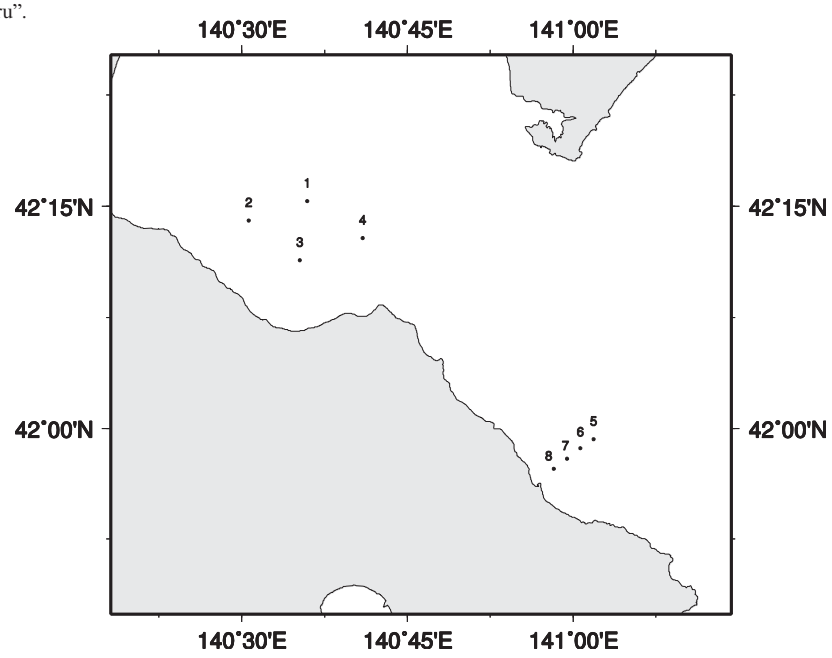

Figure 1. Oceanographic stations (Cruise 215)

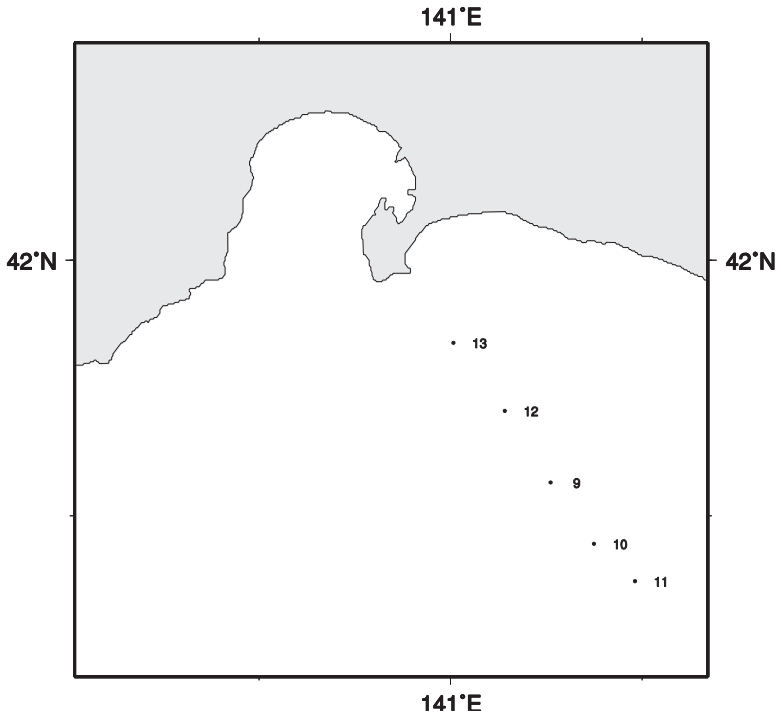

Figure 2. Oceanographic stations (Cruise 216)

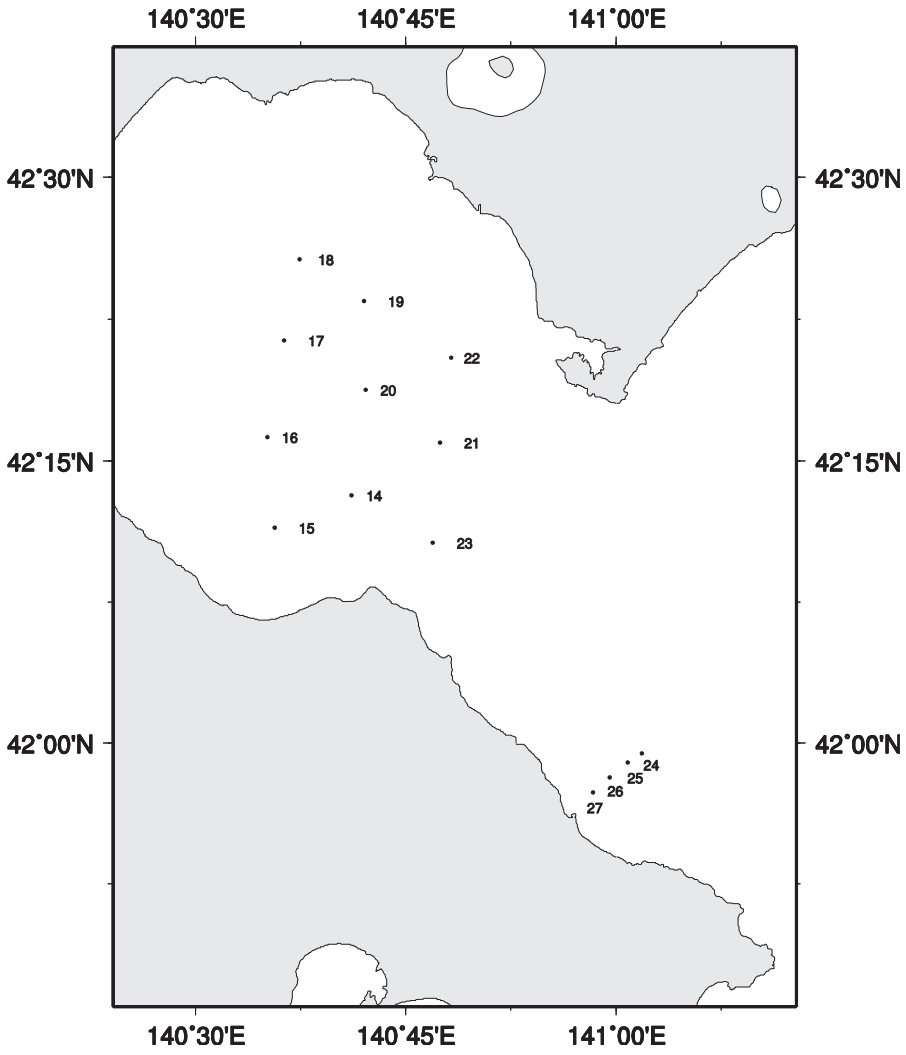

Figure 3. Oceanographic stations (Cruise 217)

Table 1: List of oceanographic stations

Cruise 215

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

Cruise 216

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

Cruise 217

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11001
LATITUDE 42-15.4 N
LONGITUDE 140-35.9 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	6.657	33.553	26.325
10	6.656	33.555	26.326
20	6.665	33.551	26.323
30	6.664	33.555	26.325
40	6.664	33.556	26.326
50	6.663	33.556	26.326
75	6.617	33.557	26.333

STATION US11002
LATITUDE 42-14.1 N
LONGITUDE 140-30.6 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	6.564	33.571	26.351
10	6.564	33.570	26.351
20	6.570	33.570	26.350
30	6.571	33.571	26.350
40	6.573	33.570	26.349
50	6.570	33.569	26.349
75	6.484	33.552	26.347

STATION US11003
LATITUDE 42-11.4 N
LONGITUDE 140-35.2 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	6.756	33.586	26.337
10	6.758	33.585	26.336
20	6.759	33.584	26.336
30	6.760	33.583	26.335
40	6.761	33.583	26.335
50	6.757	33.583	26.335
75	6.721	33.579	26.337

STATION US11004
LATITUDE 42-12.9 N
LONGITUDE 140-40.9 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	6.685	33.576	26.340
10	6.686	33.576	26.339
20	6.686	33.577	26.340
30	6.686	33.577	26.340
40	6.691	33.578	26.340
50	6.679	33.574	26.339
75	6.642	33.570	26.340

STATION US11005
LATITUDE 41-59.3 N
LONGITUDE 141-01.8 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	5.878	33.234	26.173
10	5.879	33.233	26.171
20	5.878	33.232	26.170
30	5.884	33.233	26.171
40	5.889	33.234	26.171
50	5.886	33.235	26.172
75	6.542	33.409	26.227
100	6.914	33.552	26.290

STATION US11006
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	5.972	33.284	26.200
10	6.000	33.283	26.196
20	6.407	33.414	26.248
30	6.674	33.443	26.236
40	6.690	33.445	26.236
50	6.816	33.469	26.238
75	6.834	33.474	26.239

STATION US11007
LATITUDE 41-58.0 N
LONGITUDE 140-59.4 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	6.717	33.454	26.239
10	6.719	33.454	26.239
20	6.729	33.453	26.237
30	6.729	33.455	26.238
40	6.734	33.455	26.237
50	6.739	33.456	26.238
75	6.793	33.470	26.241

STATION US11008
LATITUDE 41-57.3 N
LONGITUDE 140-58.2 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	6.609	33.427	26.232
10	6.601	33.426	26.233
20	6.614	33.426	26.231
30	6.626	33.427	26.230
40	6.655	33.433	26.230
50	6.751	33.456	26.236
75	6.868	33.553	26.297

STATION US11009
LATITUDE 41-38.5 N
LONGITUDE 140-48.9 E
DEPTH (m) 340

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

STATION US11010
LATITUDE 41-36.7 N
LONGITUDE 140-50.6 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	10.682	33.789	25.889
10	10.688	33.788	25.887
20	10.694	33.792	25.889
30	10.696	33.793	25.890
40	10.724	33.810	25.898
50	10.683	33.833	25.923
75	10.422	33.855	25.985

STATION US11011
LATITUDE 41-35.6 N
LONGITUDE 140-52.2 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	10.682	33.745	25.855
10	10.685	33.746	25.855
20	10.694	33.748	25.855
30	10.696	33.747	25.854
40	10.706	33.747	25.852
50	10.702	33.747	25.853

STATION US11012
LATITUDE 41-40.6 N
LONGITUDE 140-47.1 E
DEPTH (m) 236

Press.	Temp.	Salinity	Sigma-T
5	10.099	33.752	25.960
10	10.109	33.837	26.025
20	10.110	33.837	26.025
30	10.106	33.838	26.027
40	10.120	33.838	26.025
50	10.115	33.840	26.026
75	10.077	33.882	26.066
100	9.816	33.887	26.114
125	9.598	33.906	26.165
150	9.392	33.914	26.205
175	9.086	33.937	26.272
200	8.580	33.955	26.365

STATION US11013
LATITUDE 41-42.6 N
LONGITUDE 140-45.1 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	9.708	33.823	26.082
10	9.719	33.825	26.081
20	9.726	33.825	26.081
30	9.722	33.823	26.080
40	9.723	33.824	26.080
50	9.721	33.829	26.084
75	9.592	33.853	26.124

STATION US11014
LATITUDE 42-13.1 N
LONGITUDE 140-41.1 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	4.781	33.526	26.531
10	4.782	33.523	26.529
20	4.779	33.521	26.527
30	4.783	33.521	26.527
40	4.785	33.522	26.528
50	4.786	33.523	26.528
75	4.793	33.527	26.531

STATION US11015
LATITUDE 42-11.4 N
LONGITUDE 140-35.6 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	4.857	33.538	26.532
10	4.860	33.564	26.553
20	4.856	33.560	26.550
30	4.857	33.558	26.548
40	4.857	33.557	26.547
50	4.846	33.558	26.549
75	4.737	33.548	26.554

STATION US11016
LATITUDE 42-16.2 N
LONGITUDE 140-35.1 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	4.932	33.567	26.547
10	4.935	33.567	26.547
20	4.936	33.565	26.545
30	4.933	33.565	26.545
40	4.935	33.563	26.543
50	4.935	33.564	26.544
75	4.935	33.563	26.544

STATION US11017
LATITUDE 42-21.3 N
LONGITUDE 140-36.3 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	4.960	33.545	26.527
10	4.962	33.566	26.543
20	4.967	33.566	26.542
30	4.969	33.565	26.541
40	4.970	33.565	26.541
50	4.967	33.565	26.541
75	4.968	33.564	26.541

STATION US11018
LATITUDE 42-25.6 N
LONGITUDE 140-37.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	4.905	33.533	26.523
10	4.908	33.564	26.547
20	4.911	33.567	26.550
30	4.907	33.566	26.549
40	4.905	33.564	26.547
50	4.903	33.564	26.547
75	4.903	33.562	26.546

STATION US11019
LATITUDE 42-23.4 N
LONGITUDE 140-42.0 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	4.739	33.446	26.472
10	4.739	33.503	26.517
20	4.740	33.502	26.517
30	4.724	33.501	26.517
40	4.702	33.499	26.518
50	4.662	33.499	26.522

STATION US11020
LATITUDE 42-18.7 N
LONGITUDE 140-42.1 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	4.602	33.510	26.538
10	4.573	33.506	26.538
20	4.607	33.514	26.541
30	4.704	33.542	26.552
40	4.749	33.542	26.547
50	4.749	33.543	26.548

STATION US11021
LATITUDE 42-15.9 N
LONGITUDE 140-47.4 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	4.411	33.396	26.468
10	4.411	33.395	26.467
20	4.414	33.394	26.466
30	4.416	33.392	26.465
40	4.419	33.393	26.465
50	4.426	33.395	26.465

STATION US11022
LATITUDE 42-20.4 N
LONGITUDE 140-48.2 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	4.495	33.312	26.392
10	4.494	33.315	26.395
20	4.498	33.323	26.401
30	4.667	33.461	26.492
40	4.887	33.529	26.522
50	4.919	33.528	26.518

STATION US11023
LATITUDE 42-10.6 N
LONGITUDE 140-46.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	4.698	33.335	26.388
10	4.705	33.334	26.388
20	4.702	33.326	26.381
30	4.717	33.320	26.375
40	4.707	33.319	26.375
50	4.541	33.310	26.386
75	4.828	33.511	26.514

STATION US11024
LATITUDE 41-59.4 N
LONGITUDE 141-01.8 E
DEPTH (m) 102

Press.	Temp.	Salinity	Sigma-T
5	5.050	33.299	26.321
10	5.047	33.299	26.321
20	5.048	33.299	26.322
30	5.043	33.298	26.321
40	5.026	33.296	26.322
50	5.010	33.297	26.324
75	4.840	33.303	26.348
100	4.762	33.399	26.432

STATION US11025
LATITUDE 41-58.9 N
LONGITUDE 141-00.8 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	5.100	33.298	26.315
10	5.100	33.297	26.314
20	5.102	33.297	26.314
30	5.095	33.297	26.314
40	5.088	33.295	26.313
50	5.068	33.292	26.313
75	4.824	33.299	26.346

STATION US11026
LATITUDE 41-58.1 N
LONGITUDE 140-59.5 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	5.115	33.274	26.294
10	5.116	33.291	26.307
20	5.117	33.299	26.313
30	5.112	33.298	26.313
40	5.113	33.300	26.315
50	5.057	33.292	26.315
75	4.774	33.332	26.378

STATION US11027
LATITUDE 41-57.3 N
LONGITUDE 140-58.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	4.973	33.295	26.327
10	4.971	33.293	26.325
20	4.960	33.291	26.325
30	4.958	33.291	26.325
40	4.951	33.291	26.326
50	4.926	33.305	26.340
75	4.764	33.325	26.373

2

THE " USHIO MARU "

CRUISE 218

CRUISE 219

CRUISE 220

IN JANUARY - FEBRUARY 2011

1. Cruise Itinerary

Cruise 218

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

Total coverage 118.4 miles

Cruise 219

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

Total coverage 380.9 miles

Cruise 220

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

Total coverage 140.0 miles

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

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

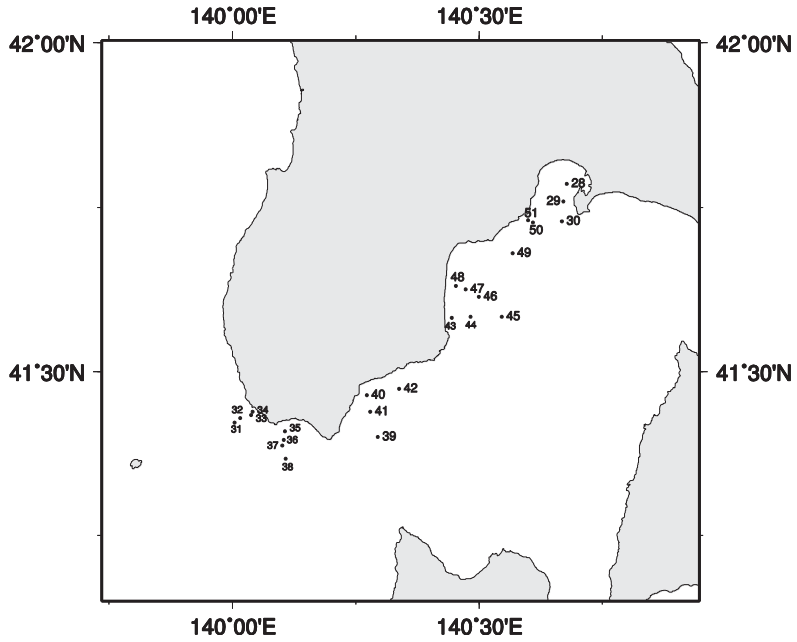

Figure 1. Oceanographic stations (Cruise 218)

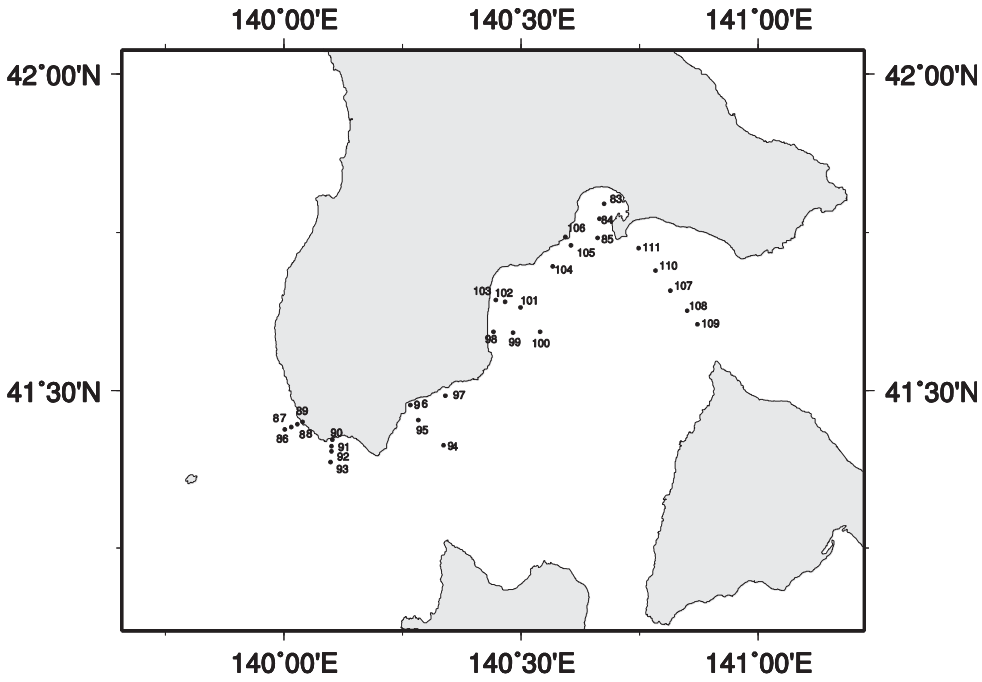

Figure 2. Oceanographic stations (Cruise 220)

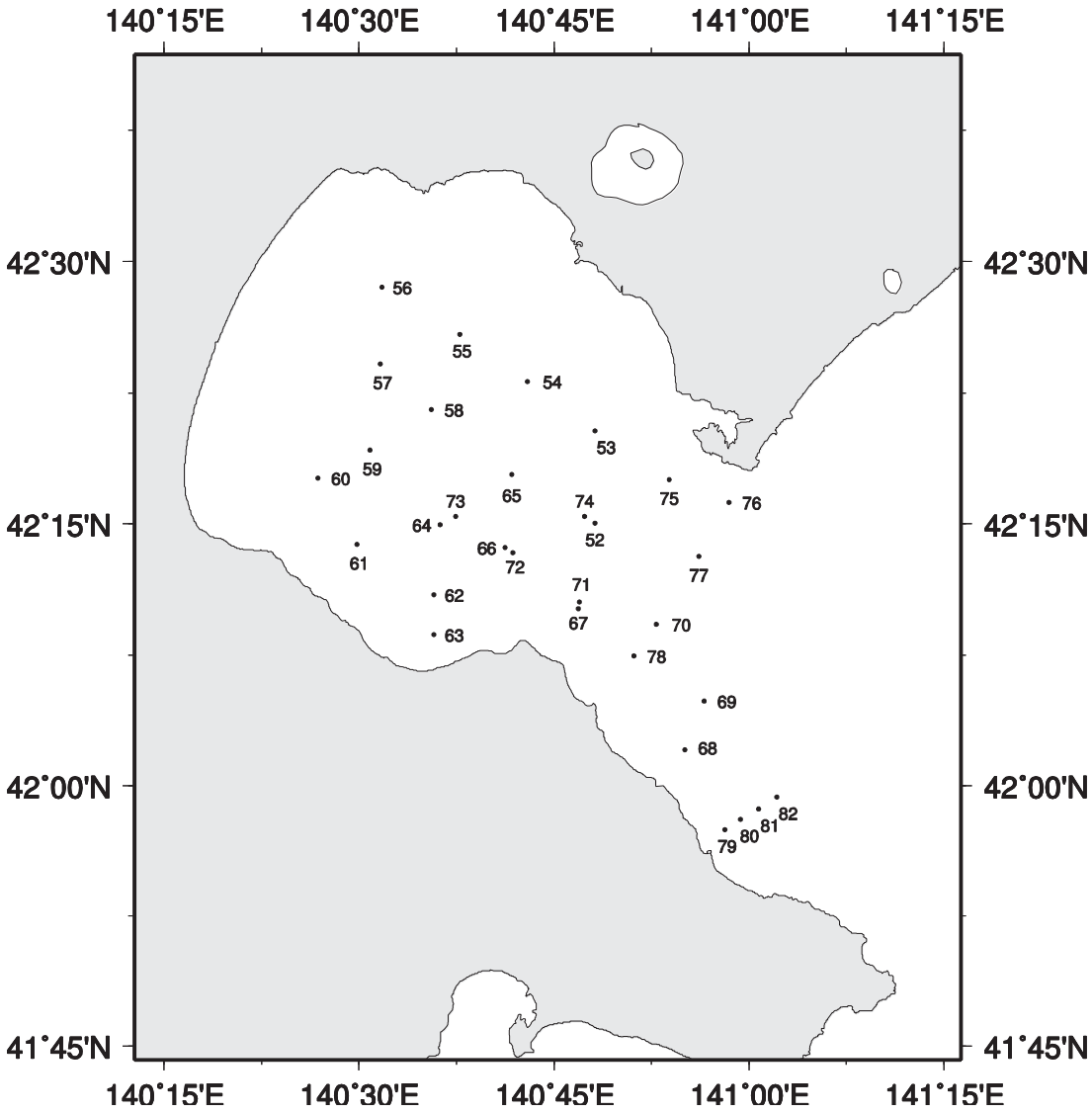

Figure 3. Oceanographic stations (Cruise 219)

Table 1: List of oceanographic stations

Cruise 218

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

Cruise 219

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

Cruise 220

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11028
LATITUDE 41-47.2 N
LONGITUDE 140-40.6 E
DEPTH (m) 20

Press.	Temp.	Salinity	Sigma-T
5	8.764	33.821	26.232
10	8.703	33.804	26.228

STATION US11029
LATITUDE 41-45.6 N
LONGITUDE 140-40.2 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	9.421	33.909	26.196
10	9.424	33.904	26.192
20	9.110	33.863	26.210
30	9.049	33.865	26.222

STATION US11030
LATITUDE 41-43.8 N
LONGITUDE 140-40.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	9.557	33.914	26.178
10	9.562	33.913	26.176
20	9.527	33.908	26.178
30	9.414	33.895	26.186
40	9.306	33.884	26.195
50	9.042	33.832	26.197

STATION US11031
LATITUDE 41-25.4 N
LONGITUDE 140-00.2 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	9.381	33.946	26.232
10	9.296	33.942	26.242
20	9.058	33.947	26.285
30	8.921	33.948	26.307
40	8.753	33.960	26.343
50	8.705	33.978	26.364
75	8.665	33.966	26.361
100	7.752	33.974	26.505

STATION US11032
LATITUDE 41-25.8 N
LONGITUDE 140-00.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	9.584	33.925	26.182
10	9.248	33.896	26.214
20	8.926	33.941	26.301
30	8.724	33.943	26.334
40	8.372	33.947	26.391
50	8.146	33.967	26.441
75	7.870	33.960	26.476

STATION US11033
LATITUDE 41-26.1 N
LONGITUDE 140-02.2 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	8.324	33.946	26.397
10	8.307	33.956	26.408
20	8.259	33.955	26.414
30	8.258	33.956	26.415
40	8.299	33.957	26.410

STATION US11034
LATITUDE 41-26.4 N
LONGITUDE 140-02.4 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	8.728	33.927	26.321
10	8.704	33.946	26.339
20	8.729	33.941	26.331
30	8.732	33.944	26.334

STATION US11035
LATITUDE 41-24.6 N
LONGITUDE 140-06.3 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	10.260	33.918	26.063
10	10.143	33.918	26.083
20	9.553	33.891	26.160
30	9.278	33.910	26.220
40	9.196	33.916	26.238
50	8.934	33.869	26.243

STATION US11036
LATITUDE 41-23.8 N
LONGITUDE 140-06.2 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	10.293	33.922	26.060
10	10.275	33.920	26.062
20	10.099	33.921	26.093
30	9.973	33.916	26.110
40	9.858	33.912	26.127
50	9.664	33.910	26.157
75	9.113	33.911	26.247

STATION US11037
LATITUDE 41-23.3 N
LONGITUDE 140-06.0 E
DEPTH (m) 102

Press.	Temp.	Salinity	Sigma-T
5	10.295	33.921	26.059
10	10.300	33.924	26.061
20	10.160	33.921	26.083
30	10.096	33.920	26.093
40	10.013	33.921	26.107
50	9.987	33.920	26.111
75	9.508	33.895	26.171
100	9.278	33.905	26.216

STATION US11038
LATITUDE 41-22.1 N
LONGITUDE 140-06.4 E
DEPTH (m) 119

Press.	Temp.	Salinity	Sigma-T
5	10.307	33.892	26.035
10	10.310	33.923	26.058
20	10.311	33.922	26.057
30	10.244	33.919	26.066
40	9.794	33.900	26.128
50	9.538	33.911	26.179
75	9.435	33.914	26.198
100	9.146	33.910	26.241

STATION US11039
LATITUDE 41-24.1 N
LONGITUDE 140-17.6 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	9.755	33.831	26.080
10	9.736	33.881	26.123
20	9.518	33.911	26.181
30	9.483	33.915	26.191
40	9.409	33.912	26.200
50	9.305	33.912	26.217
75	9.052	33.912	26.258

STATION US11040
LATITUDE 41-27.9 N
LONGITUDE 140-16.3 E
DEPTH (m) 28

Press.	Temp.	Salinity	Sigma-T
5	8.959	33.981	26.327
10	9.116	33.979	26.300
20	9.117	33.972	26.295

STATION US11041
LATITUDE 41-26.4 N
LONGITUDE 140-16.7 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	9.266	33.926	26.235
10	9.257	33.925	26.235
20	9.240	33.924	26.237
30	9.187	33.927	26.248
40	9.187	33.918	26.241
50	9.146	33.923	26.251

STATION US11042
LATITUDE 41-28.5 N
LONGITUDE 140-20.2 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	9.257	33.914	26.227
10	9.257	33.915	26.227
20	9.306	33.929	26.231
30	9.279	33.922	26.230
40	9.081	33.928	26.266
50	9.063	33.935	26.274

STATION US11043
LATITUDE 41-35.0 N
LONGITUDE 140-26.6 E
DEPTH (m) 14

Press.	Temp.	Salinity	Sigma-T
5	7.838	33.692	26.270
10	7.848	33.754	26.318

STATION US11044
LATITUDE 41-35.1 N
LONGITUDE 140-28.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	9.019	33.879	26.237
10	9.015	33.881	26.240
20	9.019	33.880	26.238

STATION US11045
LATITUDE 41-35.1 N
LONGITUDE 140-32.7 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	9.377	33.916	26.209
10	9.380	33.916	26.208
20	9.360	33.912	26.208
30	9.351	33.916	26.213
40	9.323	33.913	26.216
50	9.319	33.913	26.216

STATION US11046
LATITUDE 41-36.9 N
LONGITUDE 140-29.9 E
DEPTH (m) 33

Press.	Temp.	Salinity	Sigma-T
5	9.181	33.899	26.227
10	9.185	33.903	26.230
20	9.166	33.902	26.232
30	9.165	33.902	26.232

STATION US11047
LATITUDE 41-37.6 N
LONGITUDE 140-28.3 E
DEPTH (m) 23

Press.	Temp.	Salinity	Sigma-T
5	9.016	33.883	26.241
10	9.022	33.883	26.240
20	9.016	33.884	26.242

STATION US11048
LATITUDE 41-37.9 N
LONGITUDE 140-27.1 E
DEPTH (m) 17

Press.	Temp.	Salinity	Sigma-T
5	8.643	33.827	26.255
10	8.647	33.842	26.267

STATION US11049
LATITUDE 41-40.9 N
LONGITUDE 140-34.0 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	9.213	33.893	26.217
10	9.175	33.891	26.222
20	9.102	33.866	26.214
30	9.022	33.869	26.229
40	9.003	33.864	26.228

STATION US11050
LATITUDE 41-43.7 N
LONGITUDE 140-36.5 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	9.172	33.896	26.226
10	8.955	33.867	26.238
20	9.069	33.920	26.262
30	9.074	33.930	26.269

STATION US11051
LATITUDE 41-43.9 N
LONGITUDE 140-35.9 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
5	9.048	33.852	26.212
10	9.092	33.860	26.211

STATION US11052
LATITUDE 42-15.1 N
LONGITUDE 140-48.1 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	3.719	33.191	26.375
10	3.724	33.199	26.381
20	3.731	33.201	26.381
30	3.799	33.226	26.395
40	4.017	33.344	26.468
50	3.998	33.459	26.560

STATION US11053
LATITUDE 42-20.4 N
LONGITUDE 140-48.1 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	3.911	33.478	26.584
10	3.945	33.486	26.587
20	3.984	33.492	26.589
30	4.079	33.509	26.593
40	4.135	33.531	26.604
50	4.150	33.534	26.605

STATION US11054
LATITUDE 42-23.2 N
LONGITUDE 140-42.9 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	4.301	33.558	26.608
10	4.308	33.570	26.617
20	4.306	33.570	26.617
30	4.310	33.570	26.617
40	4.310	33.570	26.616
50	4.309	33.568	26.615

STATION US11055
LATITUDE 42-25.9 N
LONGITUDE 140-37.7 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	4.047	33.488	26.579
10	4.047	33.486	26.577
20	4.318	33.543	26.594
40	4.338	33.536	26.587
50	4.342	33.540	26.589
75	4.367	33.556	26.599

STATION US11056
LATITUDE 42-28.6 N
LONGITUDE 140-31.7 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	4.354	33.566	26.609
10	4.358	33.566	26.609
20	4.362	33.567	26.609
30	4.362	33.566	26.608
40	4.364	33.567	26.609
50	4.366	33.567	26.609
75	4.373	33.568	26.609

STATION US11057
LATITUDE 42-24.2 N
LONGITUDE 140-31.6 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.682	33.310	26.473
10	3.681	33.344	26.500
20	4.223	33.501	26.571
30	4.376	33.552	26.596
40	4.386	33.556	26.598
50	4.289	33.543	26.598
75	4.290	33.553	26.605

STATION US11058
LATITUDE 42-21.6 N
LONGITUDE 140-35.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	3.901	33.388	26.514
10	3.899	33.396	26.520
20	3.914	33.401	26.523
30	3.982	33.413	26.525
40	4.037	33.428	26.532
50	4.391	33.496	26.550
75	4.232	33.515	26.581

STATION US11059
LATITUDE 42-19.3 N
LONGITUDE 140-30.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	3.635	33.326	26.490
10	3.664	33.337	26.496
20	3.774	33.385	26.524
30	3.950	33.436	26.547
40	4.017	33.454	26.555
50	4.054	33.458	26.554
75	4.243	33.503	26.570

STATION US11060
LATITUDE 42-17.7 N
LONGITUDE 140-26.8 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	3.872	33.515	26.618
10	3.875	33.538	26.636
20	3.945	33.559	26.645
30	3.970	33.555	26.640
40	3.970	33.555	26.640
50	3.971	33.556	26.641
75	3.969	33.558	26.642

STATION US11061
LATITUDE 42-13.9 N
LONGITUDE 140-29.8 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	3.494	33.197	26.401
10	3.496	33.204	26.406
20	3.474	33.207	26.411
30	3.945	33.418	26.533
40	4.390	33.519	26.568
50	4.498	33.533	26.567
75	4.413	33.533	26.576

STATION US11062
LATITUDE 42-11.0 N
LONGITUDE 140-35.7 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	3.710	33.267	26.436
10	3.746	33.293	26.453
20	3.795	33.352	26.496
30	4.012	33.474	26.571
40	4.190	33.549	26.612
50	4.193	33.547	26.611
75	4.189	33.546	26.610

STATION US11063
LATITUDE 42-08.7 N
LONGITUDE 140-35.7 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	3.434	33.246	26.446
10	3.432	33.255	26.453
20	3.437	33.257	26.454
30	3.467	33.277	26.467
40	3.848	33.367	26.502
50	4.500	33.544	26.576

STATION US11064
LATITUDE 42-15.0 N
LONGITUDE 140-36.2 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	3.866	33.385	26.515
10	4.036	33.465	26.561
20	4.115	33.478	26.564
30	4.139	33.488	26.569
40	4.162	33.509	26.584
50	4.246	33.540	26.600
75	4.279	33.546	26.601

STATION US11065
LATITUDE 42-17.9 N
LONGITUDE 140-41.7 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	4.265	33.567	26.619
10	4.262	33.565	26.618
20	4.250	33.562	26.616
30	4.238	33.560	26.617
40	4.246	33.561	26.617
50	4.253	33.562	26.616

STATION US11066
LATITUDE 42-13.7 N
LONGITUDE 140-41.2 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	3.663	33.208	26.394
10	3.641	33.206	26.395
20	3.847	33.307	26.455
30	4.191	33.409	26.501
40	4.015	33.444	26.547
50	4.030	33.498	26.588
75	4.067	33.532	26.611

STATION US11067
LATITUDE 42-10.2 N
LONGITUDE 140-46.8 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.634	33.217	26.404
10	3.587	33.208	26.401
20	3.722	33.260	26.429
30	4.266	33.422	26.504
40	4.393	33.475	26.532
50	4.011	33.438	26.543
75	4.121	33.527	26.602

STATION US11068
LATITUDE 42-02.1 N
LONGITUDE 140-55.0 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	3.600	33.219	26.409
10	3.602	33.220	26.409
20	3.604	33.215	26.405
30	3.622	33.213	26.402
40	3.620	33.209	26.398
50	3.614	33.205	26.396
75	3.821	33.322	26.469

STATION US11069
LATITUDE 42-04.9 N
LONGITUDE 140-56.5 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.608	33.225	26.412
10	3.615	33.223	26.410
20	3.639	33.227	26.411
30	3.645	33.229	26.412
40	3.689	33.238	26.415
50	3.693	33.240	26.417
75	3.809	33.305	26.457

STATION US11070
LATITUDE 42-09.3 N
LONGITUDE 140-52.8 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	3.501	33.228	26.425
10	3.507	33.229	26.426
20	3.510	33.229	26.425
30	3.512	33.230	26.426
40	3.525	33.232	26.426
50	3.530	33.233	26.426
75	3.973	33.339	26.467

STATION US11071
LATITUDE 42-10.6 N
LONGITUDE 140-46.9 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	3.478	33.192	26.399
10	3.474	33.191	26.398
20	3.625	33.288	26.462
30	3.878	33.333	26.472
40	4.156	33.441	26.530
50	4.526	33.515	26.550
75	4.165	33.529	26.600

STATION US11072
LATITUDE 42-13.4 N
LONGITUDE 140-41.8 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	3.733	33.375	26.520
10	3.729	33.374	26.519
20	3.739	33.374	26.519
30	4.134	33.524	26.599
40	4.290	33.569	26.618
50	4.309	33.569	26.616
75	4.331	33.572	26.616

STATION US11073
LATITUDE 42-15.5 N
LONGITUDE 140-37.4 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	3.882	33.424	26.544
10	3.880	33.423	26.544
20	3.877	33.423	26.544
30	3.878	33.425	26.545
40	3.880	33.426	26.546
50	3.994	33.453	26.556
75	4.282	33.553	26.606

STATION US11074
LATITUDE 42-15.5 N
LONGITUDE 140-47.3 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	3.607	33.222	26.410
10	3.602	33.223	26.411
20	3.603	33.221	26.410
30	3.648	33.247	26.426
40	4.467	33.496	26.541
50	4.407	33.480	26.535

STATION US11075
LATITUDE 42-17.6 N
LONGITUDE 140-53.8 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	3.604	33.280	26.457
10	3.623	33.284	26.458
20	3.652	33.290	26.461
30	3.729	33.325	26.480
40	3.718	33.328	26.484
50	3.995	33.413	26.524

STATION US11076
LATITUDE 42-16.3 N
LONGITUDE 140-58.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	3.476	33.211	26.414
10	3.471	33.224	26.425
20	3.449	33.229	26.431
30	3.421	33.229	26.433
40	3.418	33.228	26.433
50	3.385	33.224	26.433

STATION US11077
LATITUDE 42-13.2 N
LONGITUDE 140-56.1 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	3.626	33.241	26.424
10	3.622	33.242	26.425
20	3.619	33.243	26.426
30	3.620	33.244	26.426
40	3.712	33.272	26.440
50	3.744	33.279	26.442

STATION US11078
LATITUDE 42-07.5 N
LONGITUDE 140-51.1 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	3.703	33.047	26.261
10	3.707	33.216	26.396
20	3.701	33.218	26.398
30	3.663	33.229	26.410
40	3.655	33.231	26.413
50	3.817	33.297	26.450
75	4.169	33.539	26.607

STATION US11079
LATITUDE 41-57.5 N
LONGITUDE 140-58.1 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	3.708	33.208	26.390
10	3.711	33.208	26.389
20	3.707	33.210	26.391
30	3.685	33.208	26.391
40	3.684	33.210	26.394
50	3.698	33.214	26.396
75	3.885	33.341	26.478

STATION US11080
LATITUDE 41-58.1 N
LONGITUDE 140-59.3 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	3.732	33.208	26.387
10	3.732	33.207	26.386
20	3.718	33.205	26.386
30	3.686	33.206	26.390
40	3.679	33.208	26.392
50	3.674	33.208	26.393
75	3.709	33.217	26.397

STATION US11081
LATITUDE 41-58.7 N
LONGITUDE 141-00.7 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.839	33.208	26.377
10	3.842	33.214	26.381
20	3.813	33.211	26.382
30	3.726	33.209	26.388
40	3.705	33.211	26.392
50	3.683	33.211	26.394
75	3.671	33.212	26.396

STATION US11082
LATITUDE 41-59.4 N
LONGITUDE 141-02.1 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	3.832	33.211	26.380
10	3.812	33.216	26.386
20	3.683	33.216	26.398
30	3.669	33.218	26.401
40	3.649	33.223	26.407
50	3.654	33.229	26.411
75	3.659	33.230	26.412
100	3.780	33.282	26.441

STATION US11083
LATITUDE 41-47.0 N
LONGITUDE 140-40.7 E
DEPTH (m) 21

Press.	Temp.	Salinity	Sigma-T
5	6.952	33.685	26.390
10	6.984	33.747	26.434

STATION US11084
LATITUDE 41-45.6 N
LONGITUDE 140-40.1 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	7.182	33.781	26.434
10	7.181	33.823	26.467
20	7.491	33.876	26.465
30	7.490	33.872	26.462

STATION US11085
LATITUDE 41-43.8 N
LONGITUDE 140-39.9 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	8.081	33.918	26.412
10	8.084	33.916	26.410
20	8.081	33.912	26.407
30	7.972	33.900	26.414
40	7.863	33.912	26.439
50	7.859	33.913	26.441

STATION US11086
LATITUDE 41-25.6 N
LONGITUDE 140-00.3 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	9.299	33.841	26.163
10	9.286	33.837	26.162
20	9.077	33.858	26.212
30	8.966	33.862	26.232
40	8.908	33.866	26.245
50	8.874	33.866	26.250
75	8.621	33.880	26.300
100	8.194	33.921	26.397

STATION US11087
LATITUDE 41-25.8 N
LONGITUDE 140-01.1 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	9.292	33.836	26.160
10	9.272	33.847	26.172
20	9.192	33.853	26.189
30	9.165	33.855	26.195
40	9.155	33.855	26.197
50	9.115	33.846	26.196
75	8.723	33.878	26.283

STATION US11088
LATITUDE 41-26.1 N
LONGITUDE 140-01.9 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	9.272	33.850	26.174
10	9.271	33.850	26.175
20	9.190	33.846	26.184
30	9.106	33.847	26.198
40	9.006	33.853	26.219
50	8.798	33.858	26.255

STATION US11089
LATITUDE 41-26.3 N
LONGITUDE 140-02.5 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	9.146	33.840	26.187
10	9.151	33.852	26.195
20	8.991	33.854	26.222

STATION US11090
LATITUDE 41-24.6 N
LONGITUDE 140-06.3 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	9.277	33.840	26.166
10	9.279	33.841	26.166
20	9.231	33.848	26.179
30	9.167	33.847	26.189
40	9.023	33.856	26.219
50	8.863	33.868	26.254

STATION US11091
LATITUDE 41-24.0 N
LONGITUDE 140-06.2 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	9.376	33.857	26.163
10	9.370	33.857	26.164
20	9.322	33.853	26.168
30	9.318	33.853	26.169
40	9.314	33.853	26.170
50	9.314	33.852	26.169
75	9.016	33.868	26.229

STATION US11092
LATITUDE 41-23.5 N
LONGITUDE 140-06.2 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	9.346	33.860	26.170
10	9.356	33.859	26.168
20	9.339	33.858	26.170
30	9.255	33.859	26.184
40	9.194	33.869	26.201
50	9.185	33.870	26.204
75	9.106	33.873	26.219

STATION US11093
LATITUDE 41-22.5 N
LONGITUDE 140-06.1 E
DEPTH (m) 116

Press.	Temp.	Salinity	Sigma-T
5	9.000	33.872	26.235
10	9.007	33.876	26.237
20	9.030	33.875	26.233
30	9.034	33.875	26.232
40	9.038	33.875	26.231
50	9.049	33.879	26.232
75	8.544	33.899	26.327
100	8.418	33.907	26.352

STATION US11094
LATITUDE 41-24.1 N
LONGITUDE 140-20.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	9.264	33.797	26.134
10	9.273	33.865	26.185
20	9.286	33.863	26.182
30	9.283	33.863	26.183
40	9.279	33.864	26.184
50	9.247	33.859	26.185
75	8.421	33.906	26.352

STATION US11095
LATITUDE 41-27.9 N
LONGITUDE 140-16.2 E
DEPTH (m) 25

Press.	Temp.	Salinity	Sigma-T
5	7.653	33.958	26.506
10	7.660	33.958	26.505
20	7.670	33.952	26.499

STATION US11096
LATITUDE 41-26.5 N
LONGITUDE 140-17.2 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	8.547	33.900	26.327
10	8.395	33.890	26.343
20	7.888	33.936	26.455
30	7.881	33.940	26.459
40	7.833	33.943	26.468
50	7.821	33.943	26.470

STATION US11097
LATITUDE 41-28.8 N
LONGITUDE 140-20.6 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	8.265	33.917	26.384
10	8.265	33.921	26.387
20	8.117	33.931	26.417
30	7.991	33.933	26.437
40	7.821	33.940	26.468
50	7.543	33.959	26.523

STATION US11098
LATITUDE 41-34.9 N
LONGITUDE 140-26.7 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
10	7.571	33.851	26.434

STATION US11099
LATITUDE 41-34.8 N
LONGITUDE 140-29.2 E
DEPTH (m) 33

Press.	Temp.	Salinity	Sigma-T
5	7.746	33.913	26.457
10	7.741	33.925	26.468
20	7.736	33.927	26.470
30	7.724	33.925	26.470

STATION US11100
LATITUDE 41-34.9 N
LONGITUDE 140-32.6 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	7.917	33.899	26.421
10	7.918	33.916	26.435
20	7.921	33.917	26.435
30	7.910	33.916	26.435
40	7.802	33.916	26.452
50	7.709	33.917	26.466

STATION US11101
LATITUDE 41-37.2 N
LONGITUDE 140-30.1 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	7.792	33.935	26.468
10	7.788	33.935	26.468
20	7.777	33.936	26.471
30	7.778	33.936	26.471

STATION US11102
LATITUDE 41-37.7 N
LONGITUDE 140-28.2 E
DEPTH (m) 23

Press.	Temp.	Salinity	Sigma-T
5	7.512	33.907	26.486
10	7.457	33.906	26.493
20	7.460	33.921	26.504

STATION US11103
LATITUDE 41-37.9 N
LONGITUDE 140-27.0 E
DEPTH (m) 17

Press.	Temp.	Salinity	Sigma-T
5	7.497	33.916	26.496
10	7.493	33.917	26.497

STATION US11104
LATITUDE 41-41.1 N
LONGITUDE 140-34.2 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	7.967	33.913	26.425
10	7.959	33.912	26.426
20	7.923	33.913	26.432
30	7.845	33.915	26.444
40	7.835	33.917	26.448

STATION US11105
LATITUDE 41-43.1 N
LONGITUDE 140-36.5 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	8.009	33.902	26.411
10	8.006	33.902	26.411
20	7.977	33.899	26.413
30	7.957	33.900	26.417
40	7.913	33.899	26.422
50	7.803	33.897	26.436

STATION US11106
LATITUDE 41-43.9 N
LONGITUDE 140-35.8 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
5	6.654	33.666	26.415
10	7.297	33.850	26.472

STATION US11107
LATITUDE 41-38.8 N
LONGITUDE 140-49.1 E
DEPTH (m) 349

Press.	Temp.	Salinity	Sigma-T
5	8.810	33.884	26.274
10	8.814	33.885	26.274
20	8.816	33.884	26.273
30	8.816	33.883	26.273
40	8.804	33.884	26.275
50	8.802	33.884	26.275
75	8.818	33.882	26.272
100	8.797	33.883	26.275
125	8.766	33.882	26.280
150	8.708	33.888	26.293
175	8.714	33.884	26.289
200	8.579	33.900	26.322
250	8.556	33.902	26.328
300	8.465	33.905	26.344

STATION US11108
LATITUDE 41-36.9 N
LONGITUDE 140-51.2 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	8.969	33.868	26.236
10	8.962	33.868	26.238
20	8.960	33.869	26.239
30	8.953	33.867	26.239
40	8.953	33.869	26.240
50	8.957	33.867	26.238
75	8.883	33.870	26.252

STATION US11109
LATITUDE 41-35.6 N
LONGITUDE 140-52.5 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	8.789	33.848	26.249
10	8.730	33.870	26.276
20	8.711	33.880	26.286
30	8.574	33.891	26.316

STATION US11110
LATITUDE 41-40.7 N
LONGITUDE 140-47.2 E
DEPTH (m) 227

Press.	Temp.	Salinity	Sigma-T
5	8.874	33.876	26.258
10	8.851	33.870	26.257
20	8.712	33.883	26.288
30	8.603	33.896	26.315
40	8.582	33.899	26.321
50	8.544	33.901	26.329
75	8.537	33.903	26.331
100	8.496	33.906	26.340
125	8.457	33.909	26.348
150	8.413	33.911	26.357
175	8.271	33.911	26.378
200	8.145	33.920	26.404

STATION US11111
LATITUDE 41-42.8 N
LONGITUDE 140-45.1 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	8.549	33.894	26.322
10	8.550	33.894	26.323
20	8.484	33.899	26.336
30	8.437	33.906	26.349
40	8.392	33.909	26.358
50	8.371	33.910	26.362
75	8.291	33.911	26.375

3

THE " USHIO MARU "

CRUISE 221
CRUISE 222
CRUISE 223

IN FEBRUARY - MARCH 2011

1. Cruise Itinerary

Cruise 221			
Departure from Hakodate	Feb.	21,	2011
Arrival at and departure from Usujiri		21	
Start hydrographic research (US11112)		21	
Arrival at Muroran		22	
Departure from Muroran		23	
Finish hydrographic research (US11130)		23	
Arrival at and departure from Usujiri		23	
Return to Hakodate		23	
Total coverage 219.9 miles			

Cruise 222			
Departure from Hakodate	Mar.	6,	2011
Start hydrographic research (US11131)		6	
Arrival at and departure from Usujiri		6	
Set mooring omnidirectional microphone system		6	
Retrieval mooring omnidirectional microphone system		8	
Arrival at Usujiri		8	
Departure from Usujiri		9	
Finish hydrographic research (US11157)		9	
Arrival at Usujiri		9	
Departure from Usujiri		10	
Return to Hakodate		11	
Total coverage 469.4 miles			

Cruise 223			
Departure from Hakodate	Mar.	22,	2011
Start hydrographic research (US11158)		22	
Finish hydrographic research (US11176)		23	
Arrival at and departure from Usujiri		23	
Return to Hakodate		24	
Total coverage 200.0 miles			

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

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

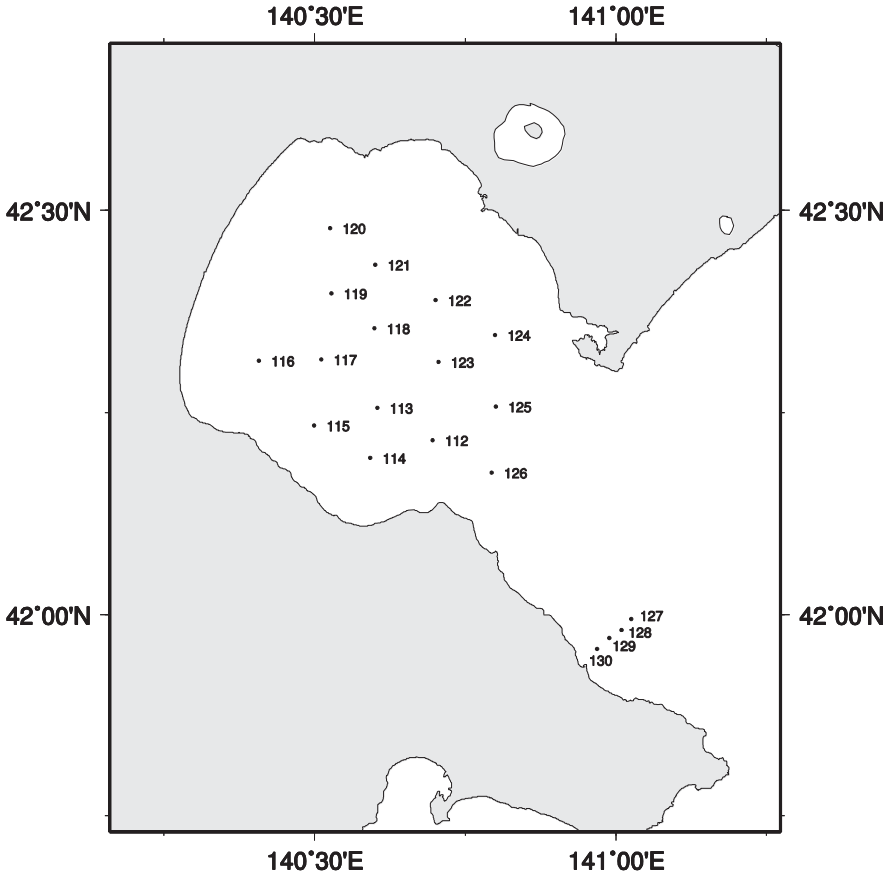

Figure 1. Oceanographic stations (Cruise 221)

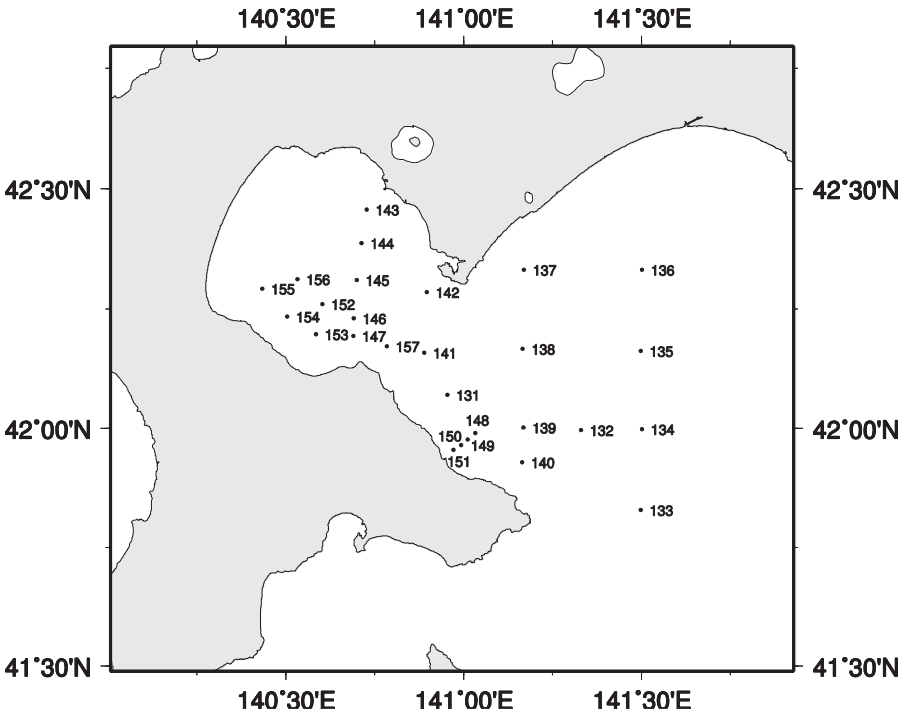

Figure 2. Oceanographic stations (Cruise 222)

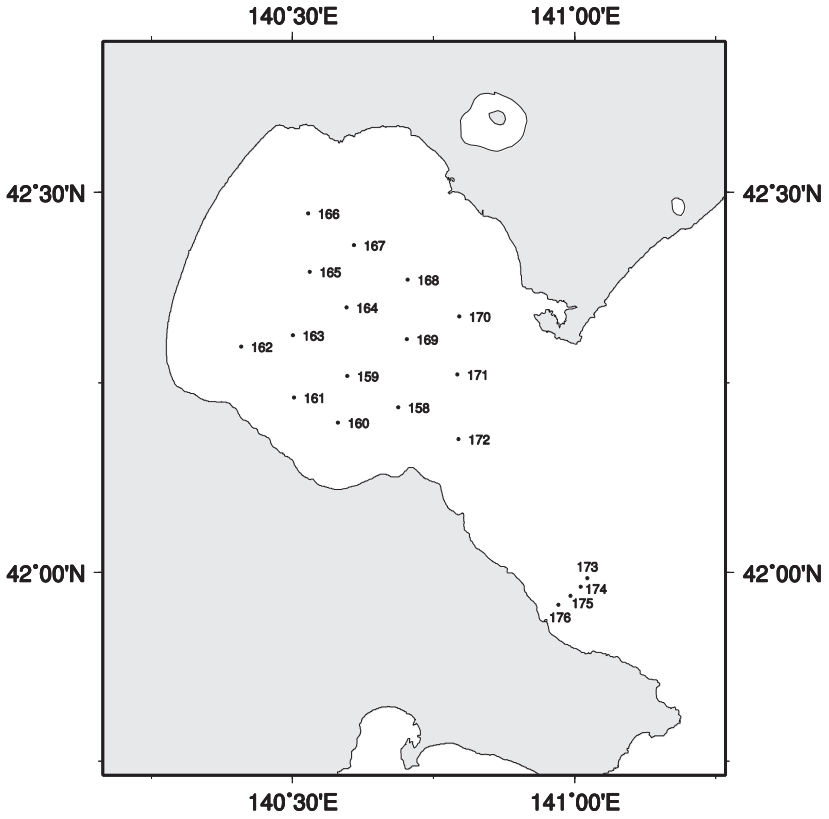

Figure 3. Oceanographic stations (Cruise 223)

Table 1: List of oceanographic stations

Cruise 221

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

Cruise 222

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

Cruise 223

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11112
LATITUDE 42-13.0 N
LONGITUDE 140-41.7 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	3.501	33.392	26.556
10	3.413	33.410	26.579
20	3.415	33.411	26.579
30	3.424	33.414	26.581
40	3.432	33.415	26.581
50	3.480	33.429	26.587
75	3.599	33.462	26.603

STATION US11113
LATITUDE 42-15.4 N
LONGITUDE 140-36.2 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	3.266	33.308	26.511
10	3.240	33.318	26.521
20	3.198	33.316	26.524
30	3.276	33.354	26.546
40	3.542	33.444	26.594
50	3.746	33.506	26.623
75	3.872	33.532	26.631

STATION US11114
LATITUDE 42-11.7 N
LONGITUDE 140-35.5 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.355	33.353	26.538
10	3.327	33.351	26.540
20	3.422	33.418	26.584
30	3.438	33.423	26.586
40	3.468	33.435	26.593
50	3.498	33.447	26.600
75	3.747	33.510	26.626

STATION US11115
LATITUDE 42-14.1 N
LONGITUDE 140-29.9 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	3.536	33.478	26.621
10	3.529	33.481	26.624
20	3.521	33.486	26.629
30	3.418	33.480	26.634
40	3.440	33.486	26.637
50	3.472	33.491	26.637
75	3.359	33.497	26.653

STATION US11116
LATITUDE 42-18.9 N
LONGITUDE 140-24.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	3.598	33.486	26.621
10	3.594	33.487	26.622
20	3.585	33.485	26.622
30	3.584	33.484	26.622
40	3.584	33.484	26.621
50	3.585	33.483	26.620

STATION US11117
LATITUDE 42-19.0 N
LONGITUDE 140-30.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	3.591	33.459	26.601
10	3.572	33.464	26.606
20	3.581	33.469	26.610
30	3.583	33.469	26.609
40	3.642	33.480	26.613
50	3.649	33.484	26.615
75	3.732	33.500	26.620

STATION US11118
LATITUDE 42-21.3 N
LONGITUDE 140-35.9 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	3.685	33.477	26.606
10	3.618	33.484	26.618
20	3.646	33.494	26.624
30	3.658	33.495	26.623
40	3.659	33.494	26.622
50	3.664	33.496	26.623
75	3.665	33.496	26.623

STATION US11119
LATITUDE 42-23.9 N
LONGITUDE 140-31.6 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	3.724	33.461	26.589
10	3.621	33.485	26.619
20	3.641	33.489	26.620
30	3.661	33.496	26.623
40	3.660	33.495	26.622
50	3.658	33.495	26.623
75	3.665	33.498	26.625

STATION US11120
LATITUDE 42-28.7 N
LONGITUDE 140-31.5 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	3.717	33.397	26.539
10	3.460	33.415	26.578
20	3.467	33.420	26.581
30	3.625	33.464	26.601
40	3.685	33.486	26.613
50	3.698	33.492	26.617
75	3.760	33.502	26.618

STATION US11121
LATITUDE 42-26.0 N
LONGITUDE 140-36.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.595	33.413	26.564
10	3.567	33.445	26.592
20	3.613	33.469	26.607
30	3.659	33.484	26.614
40	3.662	33.486	26.615
50	3.662	33.486	26.615
75	3.720	33.497	26.618

STATION US11122
LATITUDE 42-23.4 N
LONGITUDE 140-42.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	3.129	33.290	26.509
10	3.065	33.243	26.477
20	3.075	33.259	26.489
30	3.250	33.317	26.519
40	3.315	33.344	26.535
50	3.477	33.416	26.577

STATION US11123
LATITUDE 42-18.8 N
LONGITUDE 140-42.3 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	3.418	33.145	26.367
10	3.046	33.178	26.427
20	3.013	33.189	26.439
30	3.012	33.194	26.442
40	3.273	33.297	26.501
50	3.864	33.527	26.628

STATION US11124
LATITUDE 42-20.8 N
LONGITUDE 140-47.9 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	3.257	33.191	26.418
10	3.030	33.186	26.434
20	3.010	33.194	26.443
30	3.007	33.196	26.445
40	3.014	33.198	26.445
50	3.033	33.202	26.447

STATION US11125
LATITUDE 42-15.5 N
LONGITUDE 140-48.0 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	2.832	33.107	26.389
10	2.831	33.107	26.389
20	2.832	33.108	26.389
30	2.850	33.101	26.382
40	2.925	33.141	26.408
50	3.095	33.203	26.442

STATION US11126
LATITUDE 42-10.6 N
LONGITUDE 140-47.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	2.973	33.161	26.420
10	2.975	33.163	26.421
20	2.990	33.170	26.425
30	3.207	33.316	26.522
40	3.479	33.421	26.581
50	3.514	33.426	26.582
75	3.564	33.469	26.611

STATION US11127
LATITUDE 41-59.7 N
LONGITUDE 141-01.5 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	2.251	32.903	26.273
10	2.245	32.902	26.272
20	2.247	32.904	26.274
30	2.442	32.965	26.307
40	2.429	32.960	26.304
50	2.252	32.963	26.320
75	3.246	33.145	26.382

STATION US11128
LATITUDE 41-58.9 N
LONGITUDE 141-00.5 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	2.277	32.909	26.275
10	2.272	32.908	26.275
20	2.268	32.910	26.277
30	2.339	32.948	26.302
40	2.613	33.023	26.340
50	2.901	33.076	26.358
75	3.226	33.134	26.376

STATION US11129
LATITUDE 41-58.3 N
LONGITUDE 140-59.3 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	2.529	32.982	26.314
10	2.524	32.981	26.313
20	2.569	32.998	26.323
30	2.878	33.100	26.379
40	2.946	33.100	26.374
50	2.922	33.117	26.389
75	2.912	33.168	26.431

STATION US11130
LATITUDE 41-57.5 N
LONGITUDE 140-58.1 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	2.803	33.071	26.363
10	2.841	33.087	26.372
20	2.920	33.117	26.389
30	2.901	33.122	26.395
40	2.904	33.129	26.400
50	2.866	33.132	26.405
75	3.423	33.360	26.538

STATION US11131
LATITUDE 42-04.3 N
LONGITUDE 140-57.2 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	2.683	33.041	26.349
10	2.318	33.051	26.386
20	2.328	33.074	26.403
30	2.594	33.154	26.446
40	2.753	33.202	26.471
50	2.939	33.258	26.500
75	3.055	33.329	26.547

STATION US11132
LATITUDE 41-59.9 N
LONGITUDE 141-19.7 E
DEPTH (m) 305

Press.	Temp.	Salinity	Sigma-T
5	1.900	32.882	26.283
10	1.911	32.881	26.281
20	1.897	32.874	26.276
30	1.809	32.864	26.275
40	1.737	32.865	26.280
50	1.759	32.882	26.293
75	4.415	33.492	26.543
100	3.974	33.317	26.450
125	3.090	33.240	26.472
150	2.842	33.297	26.539
175	2.879	33.340	26.571
200	2.643	33.400	26.638
250	2.445	33.443	26.689

STATION US11133
LATITUDE 41-49.8 N
LONGITUDE 141-29.8 E
DEPTH (m) 360

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

STATION US11134
LATITUDE 42-00.0 N
LONGITUDE 141-30.0 E
DEPTH (m) 479

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

STATION US11135
LATITUDE 42-09.8 N
LONGITUDE 141-29.8 E
DEPTH (m) 546

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

STATION US11136
LATITUDE 42-20.0 N
LONGITUDE 141-30.0 E
DEPTH (m) 436

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

STATION US11137
LATITUDE 42-20.0 N
LONGITUDE 141-10.1 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	1.985	32.948	26.329
10	1.978	32.853	26.253
20	1.975	32.833	26.238
30	1.987	32.834	26.237
40	1.974	32.834	26.238
50	2.606	33.052	26.363

STATION US11138
LATITUDE 42-10.1 N
LONGITUDE 141-09.9 E
DEPTH (m) 123

Press.	Temp.	Salinity	Sigma-T
5	2.114	32.943	26.315
10	2.108	32.944	26.317
20	2.103	32.942	26.315
30	2.102	32.939	26.313
40	2.104	32.940	26.314
50	2.081	32.943	26.318
75	3.211	33.191	26.423
100	3.837	33.241	26.403

STATION US11139
LATITUDE 42-00.2 N
LONGITUDE 141-10.0 E
DEPTH (m) 135

Press.	Temp.	Salinity	Sigma-T
5	2.194	32.981	26.340
10	2.178	32.966	26.329
20	2.175	32.966	26.329
30	2.170	32.964	26.328
40	2.168	32.963	26.327
50	2.167	32.960	26.325
75	2.160	32.960	26.325
100	2.235	32.974	26.331
125	3.483	33.234	26.432

STATION US11140
LATITUDE 41-55.8 N
LONGITUDE 141-09.8 E
DEPTH (m) 179

Press.	Temp.	Salinity	Sigma-T
5	2.232	32.948	26.310
10	2.211	32.955	26.317
20	2.167	32.953	26.320
30	2.167	32.953	26.319
40	2.202	32.961	26.323
50	2.259	32.974	26.329
75	2.475	33.024	26.352
100	2.858	33.090	26.373
125	3.188	33.256	26.476
150	3.426	33.340	26.521

STATION US11141
LATITUDE 42-09.6 N
LONGITUDE 140-53.3 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	2.199	32.907	26.280
10	2.141	32.902	26.281
20	2.067	32.901	26.285
30	2.066	32.907	26.290
40	2.151	32.964	26.329
50	2.256	32.987	26.340

STATION US11142
LATITUDE 42-17.2 N
LONGITUDE 140-53.7 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	2.206	32.920	26.290
10	2.199	32.918	26.289
20	2.184	32.950	26.316
30	2.184	32.955	26.319
40	2.183	32.955	26.319
50	2.186	32.962	26.325

STATION US11143
LATITUDE 42-27.5 N
LONGITUDE 140-43.6 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	2.384	33.021	26.357
10	2.372	33.017	26.354
20	2.335	33.014	26.355
30	2.283	33.013	26.358
40	2.961	33.288	26.522
50	3.695	33.506	26.628

STATION US11144
LATITUDE 42-23.3 N
LONGITUDE 140-42.7 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	2.421	33.031	26.362
10	2.421	33.032	26.362
20	2.426	33.029	26.360
30	2.413	33.026	26.358
40	2.409	33.059	26.385
50	3.533	33.528	26.661

STATION US11145
LATITUDE 42-18.7 N
LONGITUDE 140-41.9 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	2.290	33.014	26.359
10	2.292	33.015	26.359
20	2.292	33.013	26.358
30	2.286	33.012	26.357
40	2.993	33.420	26.625
50	3.550	33.484	26.625

STATION US11146
LATITUDE 42-13.9 N
LONGITUDE 140-41.4 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	2.139	32.957	26.325
10	2.141	32.959	26.326
20	2.493	33.190	26.483
30	2.978	33.323	26.548
40	3.019	33.338	26.556
50	3.130	33.371	26.573
75	3.248	33.406	26.590

STATION US11147
LATITUDE 42-11.7 N
LONGITUDE 140-41.3 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	2.426	33.097	26.414
10	2.483	33.105	26.416
20	2.918	33.347	26.573
30	3.033	33.355	26.569
40	3.121	33.385	26.585
50	3.257	33.415	26.597
75	3.274	33.421	26.600

STATION US11148
LATITUDE 41-59.5 N
LONGITUDE 141-01.9 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	2.169	32.973	26.335
10	2.168	32.970	26.333
20	2.190	32.968	26.329
30	2.375	33.030	26.364
40	2.478	33.096	26.409
50	2.722	33.183	26.459
75	2.928	33.261	26.504

STATION US11149
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	2.223	32.987	26.343
10	2.270	33.007	26.354
20	2.580	33.109	26.411
30	2.652	33.153	26.441
40	2.654	33.168	26.452
50	2.841	33.228	26.485
75	2.993	33.295	26.525

STATION US11150
LATITUDE 41-58.0 N
LONGITUDE 140-59.5 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	2.305	33.050	26.386
10	2.277	33.042	26.382
20	2.389	33.065	26.391
30	2.490	33.146	26.448
40	2.544	33.168	26.462
50	2.717	33.226	26.493
75	3.021	33.311	26.535

STATION US11151
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	2.169	33.010	26.364
10	2.166	33.012	26.366
20	2.226	33.023	26.371
30	2.462	33.090	26.406
40	2.512	33.158	26.456
50	2.600	33.192	26.476
75	2.726	33.233	26.498

STATION US11152
LATITUDE 42-15.7 N
LONGITUDE 140-36.1 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	2.204	33.048	26.392
10	2.202	33.055	26.398
20	2.210	33.058	26.400
30	2.944	33.338	26.563
40	3.161	33.392	26.587
50	3.271	33.415	26.596
75	3.355	33.440	26.608

STATION US11153
LATITUDE 42-11.9 N
LONGITUDE 140-35.0 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	2.674	33.228	26.499
10	2.669	33.231	26.502
20	2.667	33.230	26.501
30	2.681	33.242	26.509
40	2.743	33.254	26.513
50	2.902	33.303	26.539
75	3.172	33.416	26.606

STATION US11154
LATITUDE 42-14.1 N
LONGITUDE 140-30.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	2.680	33.172	26.453
10	2.674	33.183	26.462
20	2.671	33.187	26.466
30	2.915	33.283	26.522
40	3.071	33.282	26.508
50	3.354	33.372	26.554
75	3.769	33.513	26.626

STATION US11155
LATITUDE 42-17.6 N
LONGITUDE 140-26.0 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	2.847	33.212	26.471
10	2.851	33.215	26.473
20	2.856	33.217	26.474
30	2.863	33.222	26.478
40	3.007	33.260	26.496
50	3.472	33.398	26.564

STATION US11156
LATITUDE 42-18.8 N
LONGITUDE 140-31.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	2.500	33.154	26.454
10	2.500	33.163	26.461
20	2.499	33.164	26.462
30	2.501	33.163	26.461
40	3.097	33.382	26.585
50	3.258	33.409	26.592
75	3.523	33.469	26.615

STATION US11157
LATITUDE 42-10.4 N
LONGITUDE 140-47.0 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	2.111	32.980	26.345
10	2.119	32.988	26.351
20	2.150	33.005	26.362
30	2.577	33.222	26.502
40	2.708	33.258	26.520
50	2.873	33.304	26.542
75	3.101	33.364	26.571

STATION US11158
LATITUDE 42-13.1 N
LONGITUDE 140-41.2 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	2.603	33.045	26.358
10	2.599	33.044	26.358
20	2.577	33.040	26.357
30	2.560	33.051	26.366
40	2.691	33.164	26.446
50	2.964	33.269	26.506
75	3.466	33.453	26.608

STATION US11159
LATITUDE 42-15.6 N
LONGITUDE 140-35.8 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	2.901	33.176	26.438
10	2.901	33.190	26.449
20	2.883	33.189	26.449
30	2.858	33.194	26.456
40	2.847	33.198	26.460
50	2.840	33.200	26.462
75	3.467	33.460	26.613

STATION US11160
LATITUDE 42-11.9 N
LONGITUDE 140-34.8 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	2.914	33.162	26.426
10	2.914	33.183	26.442
20	2.915	33.183	26.442
30	2.898	33.175	26.437
40	2.850	33.187	26.451
50	2.805	33.200	26.465
75	2.942	33.301	26.534

STATION US11161
LATITUDE 42-13.9 N
LONGITUDE 140-30.1 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	2.915	33.162	26.425
10	2.915	33.174	26.435
20	2.930	33.176	26.435
30	2.937	33.180	26.438
40	2.918	33.183	26.442
50	2.842	33.193	26.457
75	3.524	33.488	26.630

STATION US11162
LATITUDE 42-17.9 N
LONGITUDE 140-24.5 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	2.919	33.041	26.329
10	2.919	33.135	26.403
20	2.921	33.161	26.424
30	2.935	33.173	26.432
40	2.973	33.287	26.520
50	3.596	33.496	26.630

STATION US11163
LATITUDE 42-18.8 N
LONGITUDE 140-30.0 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	2.672	33.108	26.403
10	2.666	33.106	26.402
20	2.674	33.108	26.402
30	2.716	33.118	26.407
40	3.221	33.364	26.559
50	3.579	33.484	26.622
75	3.678	33.496	26.622

STATION US11164
LATITUDE 42-21.0 N
LONGITUDE 140-35.7 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	2.828	33.163	26.434
10	2.773	33.148	26.426
20	2.769	33.153	26.430
30	2.806	33.163	26.435
40	2.814	33.179	26.448
50	3.081	33.334	26.548
75	3.579	33.481	26.619

STATION US11165
LATITUDE 42-23.8 N
LONGITUDE 140-31.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	2.716	33.083	26.379
10	2.711	33.083	26.380
20	2.756	33.102	26.391
30	2.761	33.133	26.415
40	3.361	33.448	26.614
50	3.508	33.472	26.618
75	3.553	33.481	26.622

STATION US11166
LATITUDE 42-28.4 N
LONGITUDE 140-31.6 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	2.860	33.074	26.360
10	2.714	33.060	26.361
20	2.718	33.074	26.372
30	3.029	33.299	26.525
40	3.238	33.422	26.604
50	3.387	33.452	26.614
75	3.588	33.484	26.620

STATION US11167
LATITUDE 42-25.9 N
LONGITUDE 140-36.5 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	2.947	33.071	26.350
10	2.712	33.064	26.364
20	2.710	33.077	26.375
30	2.691	33.164	26.446
40	3.146	33.361	26.564
50	3.437	33.460	26.616
75	3.601	33.485	26.620

STATION US11168
LATITUDE 42-23.2 N
LONGITUDE 140-42.2 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	2.860	33.048	26.339
10	2.680	33.039	26.347
20	2.691	33.063	26.365
30	2.682	33.152	26.437
40	2.759	33.202	26.470
50	3.347	33.458	26.622

STATION US11169
LATITUDE 42-18.5 N
LONGITUDE 140-42.1 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	2.816	33.071	26.362
10	2.641	33.047	26.357
20	2.566	33.083	26.392
30	2.615	33.094	26.397
40	2.799	33.234	26.493
50	2.911	33.285	26.524

STATION US11170
LATITUDE 42-20.3 N
LONGITUDE 140-47.7 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	2.849	33.030	26.326
10	2.769	33.014	26.320
20	2.575	33.033	26.351
30	2.573	33.037	26.354
40	2.703	33.180	26.458
50	2.937	33.241	26.486

STATION US11171
LATITUDE 42-15.7 N
LONGITUDE 140-47.5 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	2.675	33.024	26.336
10	2.642	33.018	26.334
20	2.526	33.037	26.358
30	2.503	33.039	26.362
40	2.566	33.080	26.389
50	2.877	33.199	26.458

STATION US11172
LATITUDE 42-10.6 N
LONGITUDE 140-47.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	2.561	33.024	26.345
10	2.552	33.025	26.346
20	2.525	33.026	26.349
30	2.451	33.026	26.355
40	2.721	33.174	26.451
50	2.733	33.181	26.456
75	3.038	33.344	26.560

STATION US11173
LATITUDE 41-59.6 N
LONGITUDE 141-01.3 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	1.902	32.989	26.368
10	1.897	32.879	26.280
20	1.897	32.846	26.254
30	1.884	32.846	26.255
40	1.895	32.857	26.263
50	1.987	32.900	26.290
75	3.021	33.165	26.419

STATION US11174
LATITUDE 41-58.9 N
LONGITUDE 141-00.6 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	1.890	32.858	26.264
10	1.888	32.859	26.265
20	1.879	32.866	26.271
30	1.878	32.866	26.272
40	1.879	32.871	26.275
50	1.894	32.889	26.288
75	3.847	33.327	26.471

STATION US11175
LATITUDE 41-58.2 N
LONGITUDE 140-59.5 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	1.789	32.811	26.233
10	1.793	32.822	26.242
20	1.769	32.828	26.249
30	1.754	32.822	26.245
40	1.697	32.830	26.255
50	1.720	32.865	26.282
75	4.158	33.343	26.452

STATION US11176
LATITUDE 41-57.5 N
LONGITUDE 140-58.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	1.784	32.801	26.226
10	1.786	32.814	26.236
20	1.786	32.814	26.236
30	1.786	32.813	26.235
40	1.801	32.819	26.239
50	3.077	33.198	26.440
75	3.344	33.293	26.491

4

THE " USHIO MARU "

CRUISE 224
CRUISE 225
CRUISE 226

IN APRIL 2011

1. Cruise Itinerary

Cruise 224			
Departure from Hakodate	Apr.	2,	2011
Arrival at Fukushima		2	
Departure from Fukushima		3	
Start hydrographic research (US11177)		3	
Arrival at Aomori		3	
Departure from Aomori		4	
Finish hydrographic research (US11197)		4	
Return to Hakodate		5	
Total coverage 206.4 miles			

Cruise 225			
Departure from Hakodate	Apr.	9,	2011
Arrival at and departure from Usujiri		9	
Start hydrographic research (US11198)		9	
Sampling by frame trawl net		9	
Retrieval mooring ADCP system		11	
Arrival at Usujiri		11	
Departure from Usujiri		12	
Set mooring ADCP system		12	
Arrival at Mori		12	
Departure from Mori		13	
Finish hydrographic research (US11239)		13	
Arrival at and departure from Usujiri		13	
Return to Hakodate		14	
Total coverage 495.9 miles			

Cruise 226			
Departure from Hakodate	Apr.	18,	2011
Arrival at Esashi		18	
Departure from and arrival at Esashi		19	
Departure from Esashi		20	
Sampling by gill net (for catching fur seal)		20	
Return to Hakodate		21	
Total coverage 243.8 miles			

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

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

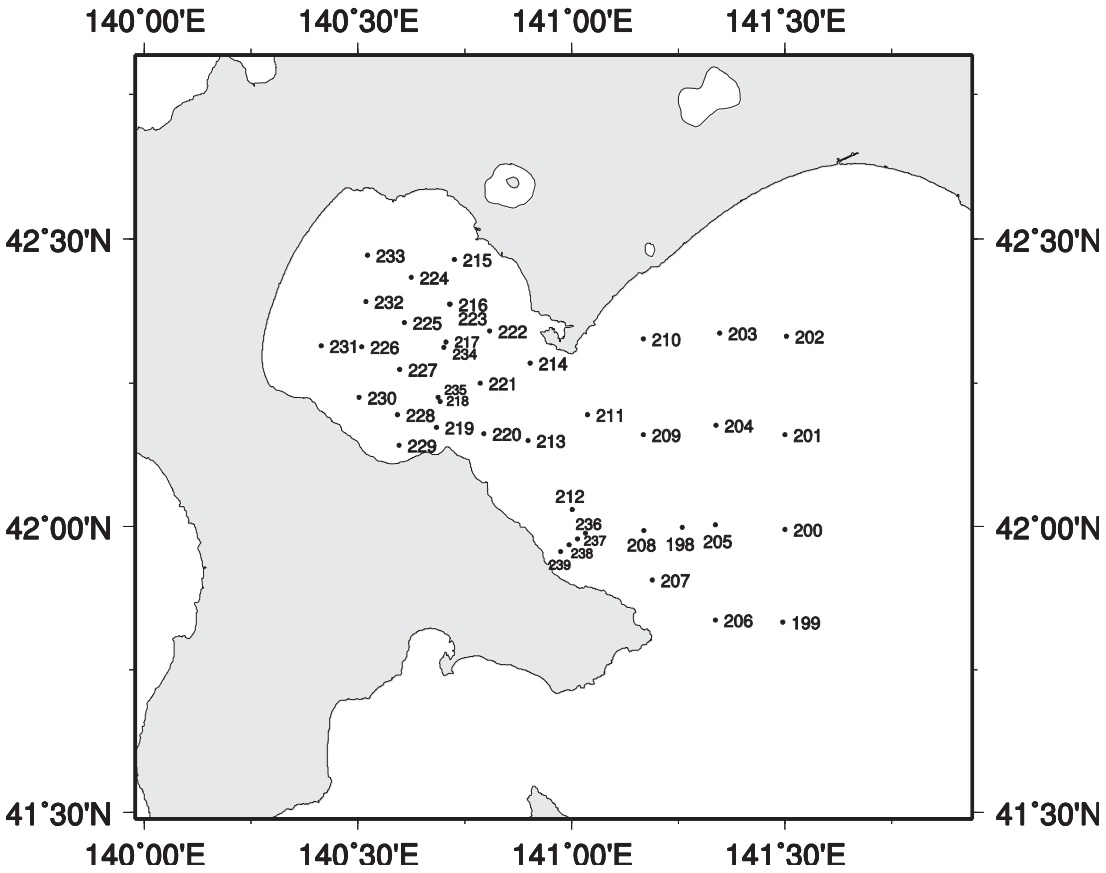

Figure 1. Oceanographic stations (Cruise 225)

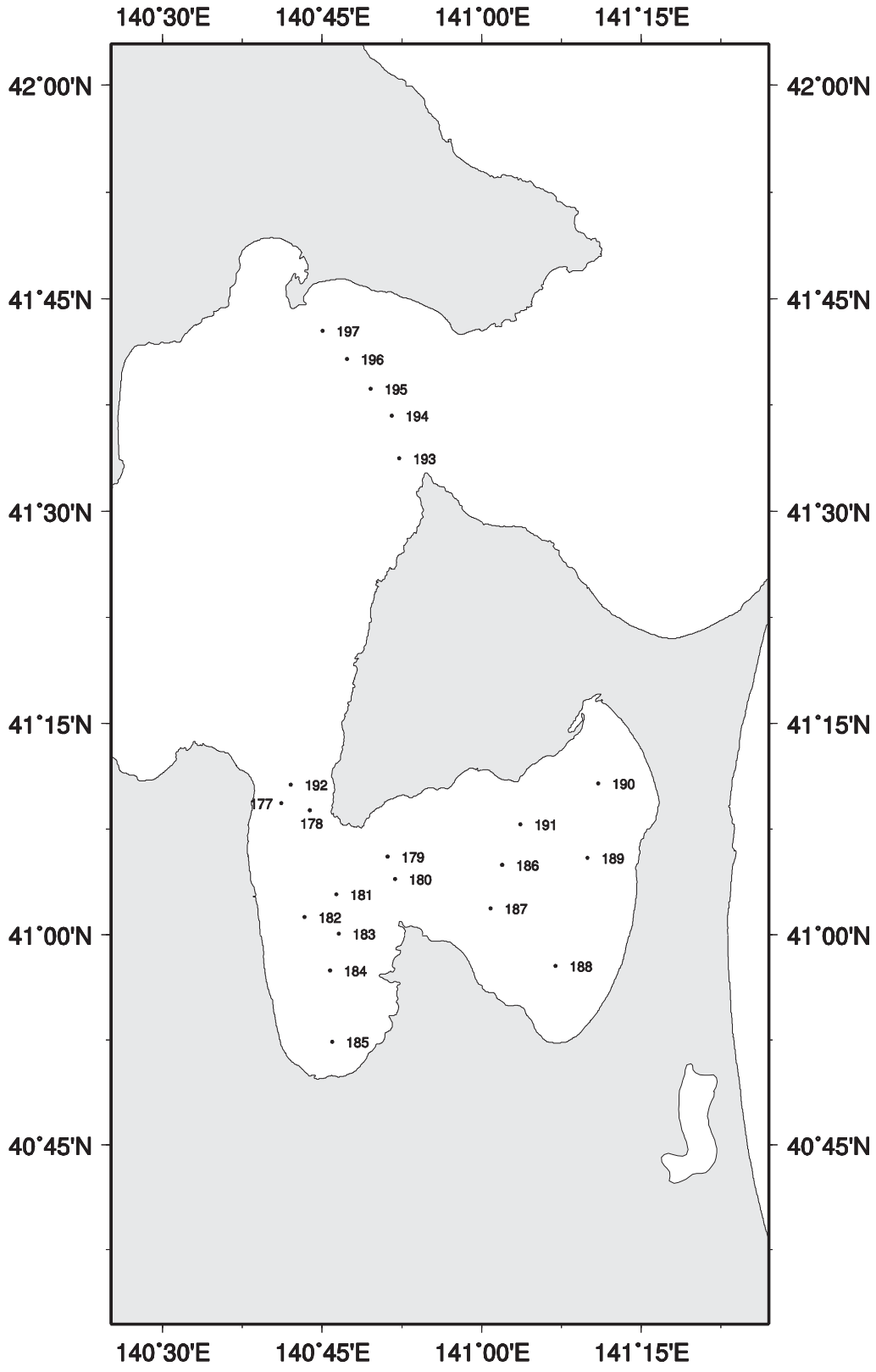

Figure 2. Oceanographic stations (Cruise 224)

Table 1: List of oceanographic stations

Cruise 224

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

Cruise 225

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

Cruise 226 No data

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11177
LATITUDE 41-09.4 N
LONGITUDE 140-41.1 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	8.030	33.727	26.270
10	8.074	33.800	26.320
20	8.067	33.804	26.325
30	8.050	33.804	26.327
40	8.016	33.806	26.334

STATION US11178
LATITUDE 41-08.9 N
LONGITUDE 140-43.8 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	5.515	33.297	26.266
10	5.658	33.360	26.299
20	5.960	33.427	26.315
30	6.224	33.492	26.333
40	7.662	33.819	26.395
50	8.046	33.892	26.397

STATION US11179
LATITUDE 41-05.6 N
LONGITUDE 140-51.1 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	4.091	32.876	26.088
10	4.089	32.897	26.104
20	4.081	32.897	26.105
30	4.345	33.005	26.164
40	4.924	33.240	26.288
50	7.354	33.784	26.412

STATION US11180
LATITUDE 41-04.0 N
LONGITUDE 140-51.8 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	3.777	32.768	26.032
10	3.775	32.795	26.054
20	3.812	32.840	26.086
30	4.002	32.882	26.101
40	4.248	33.028	26.192

STATION US11181
LATITUDE 41-02.9 N
LONGITUDE 140-46.3 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	4.357	32.981	26.144
10	4.364	33.007	26.164
20	4.380	33.013	26.167
30	4.448	33.035	26.178
40	4.462	33.061	26.196

STATION US11182
LATITUDE 41-01.3 N
LONGITUDE 140-43.3 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	4.575	33.004	26.139
10	4.564	33.005	26.141
20	4.520	33.011	26.151
30	4.574	33.113	26.226
40	6.621	33.673	26.424
50	7.223	33.761	26.412

STATION US11183
LATITUDE 41-00.1 N
LONGITUDE 140-46.5 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	4.468	32.900	26.068
10	4.495	32.989	26.136
20	4.481	32.989	26.137
30	4.453	32.986	26.138
40	4.619	33.165	26.263

STATION US11184
LATITUDE 40-57.5 N
LONGITUDE 140-45.7 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	4.460	32.946	26.105
10	4.469	32.985	26.136
20	4.484	33.020	26.162
30	4.484	33.027	26.168
40	5.651	33.450	26.371

STATION US11185
LATITUDE 40-52.4 N
LONGITUDE 140-45.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	4.666	32.902	26.049
10	4.673	32.930	26.070
20	4.654	32.973	26.106

STATION US11186
LATITUDE 41-05.0 N
LONGITUDE 141-01.9 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	3.838	32.740	26.004
10	3.826	32.788	26.043
20	3.819	32.790	26.046
30	3.783	32.793	26.052
40	3.729	32.802	26.064

STATION US11187
LATITUDE 41-01.9 N
LONGITUDE 141-00.8 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	3.877	32.813	26.059
10	3.802	32.813	26.066
20	3.781	32.805	26.062
30	3.776	32.807	26.064
40	3.770	32.808	26.065

STATION US11188
LATITUDE 40-57.8 N
LONGITUDE 141-06.9 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	3.986	32.798	26.036
10	3.904	32.803	26.048
20	3.883	32.808	26.054
30	3.882	32.809	26.055

STATION US11189
LATITUDE 41-05.5 N
LONGITUDE 141-09.9 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	4.179	32.838	26.049
10	3.930	32.798	26.042
20	3.702	32.776	26.046
30	3.674	32.782	26.053

STATION US11190
LATITUDE 41-10.8 N
LONGITUDE 141-10.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	4.942	32.522	25.718
10	4.561	32.607	25.826
20	3.979	32.728	25.981

STATION US11191
LATITUDE 41-07.9 N
LONGITUDE 141-03.6 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	3.926	32.782	26.029
10	3.658	32.821	26.086
20	3.594	32.875	26.135
30	3.604	32.903	26.157

STATION US11192
LATITUDE 41-10.7 N
LONGITUDE 140-42.0 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	8.402	33.663	26.164
10	8.445	33.780	26.249
20	8.378	33.850	26.314
30	8.277	33.851	26.330
40	8.271	33.852	26.332
50	8.254	33.852	26.335

STATION US11193
LATITUDE 41-33.8 N
LONGITUDE 140-52.2 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	8.511	33.909	26.340
10	8.512	33.912	26.342
20	8.464	33.910	26.348
30	8.431	33.911	26.354
40	8.422	33.912	26.356
50	8.424	33.913	26.356

STATION US11194
LATITUDE 41-36.8 N
LONGITUDE 140-51.5 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	8.626	33.897	26.313
10	8.565	33.900	26.324
20	8.434	33.920	26.361
30	8.444	33.921	26.359
40	8.404	33.924	26.368
50	8.387	33.924	26.371
75	8.397	33.924	26.369

STATION US11195
LATITUDE 41-38.7 N
LONGITUDE 140-49.5 E
DEPTH (m) 328

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

STATION US11196
LATITUDE 41-40.8 N
LONGITUDE 140-47.3 E
DEPTH (m) 226

Press.	Temp.	Salinity	Sigma-T
5	7.978	33.911	26.421
10	7.971	33.909	26.421
20	7.973	33.912	26.423
30	8.055	33.929	26.424
40	8.061	33.931	26.426
50	8.023	33.937	26.435
75	7.779	33.928	26.464
100	7.731	33.929	26.472
125	7.657	33.937	26.489
150	7.501	33.975	26.541
175	7.432	33.984	26.559
200	7.340	33.995	26.580

STATION US11197
LATITUDE 41-42.8 N
LONGITUDE 140-45.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	8.160	32.261	25.100
10	8.157	32.272	25.109
20	8.046	32.373	25.204
30	7.940	33.957	26.464
40	7.812	33.964	26.488
50	7.808	33.967	26.491
75	7.579	33.981	26.535

STATION US11198
LATITUDE 42-00.0 N
LONGITUDE 141-15.5 E
DEPTH (m) 244

Press.	Temp.	Salinity	Sigma-T
5	2.713	32.665	26.046
10	2.688	32.670	26.052
20	2.457	32.763	26.144
30	2.347	33.018	26.357
40	2.810	33.129	26.408
50	3.695	33.280	26.448
75	4.138	33.345	26.456
100	4.689	33.481	26.506
125	3.074	33.297	26.519
150	3.279	33.373	26.561
175	3.143	33.382	26.581
200	2.834	33.390	26.615

STATION US11199
LATITUDE 41-50.1 N
LONGITUDE 141-29.6 E
DEPTH (m) 357

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

STATION US11200
LATITUDE 41-59.8 N
LONGITUDE 141-29.9 E
DEPTH (m) 473

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

STATION US11201
LATITUDE 42-09.7 N
LONGITUDE 141-29.9 E
DEPTH (m) 548

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

STATION US11202
LATITUDE 42-20.0 N
LONGITUDE 141-30.1 E
DEPTH (m) 436

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

STATION US11203
LATITUDE 42-20.3 N
LONGITUDE 141-20.7 E
DEPTH (m) 268

Press.	Temp.	Salinity	Sigma-T
5	3.574	32.871	26.134
10	3.695	32.931	26.171
20	3.297	32.930	26.206
30	2.870	32.955	26.264
40	2.807	32.991	26.298
50	2.970	33.117	26.385
75	4.752	33.441	26.467
100	3.468	33.271	26.463
125	3.237	33.292	26.500
150	3.124	33.353	26.560
175	3.007	33.378	26.590
200	2.566	33.383	26.631
250	2.491	33.467	26.705

STATION US11204
LATITUDE 42-10.7 N
LONGITUDE 141-20.2 E
DEPTH (m) 368

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

STATION US11205
LATITUDE 42-00.3 N
LONGITUDE 141-20.1 E
DEPTH (m) 307

Press.	Temp.	Salinity	Sigma-T
5	2.945	32.650	26.014
10	2.767	32.664	26.040
20	2.767	32.717	26.083
30	2.064	32.816	26.217
40	2.321	32.983	26.331
50	3.407	33.202	26.413
75	5.167	33.490	26.459
100	4.415	33.417	26.484
125	3.955	33.393	26.513
150	4.885	33.577	26.560
175	5.074	33.627	26.579
200	4.594	33.595	26.607
250	2.383	33.389	26.651

STATION US11206
LATITUDE 41-50.3 N
LONGITUDE 141-20.1 E
DEPTH (m) 286

Press.	Temp.	Salinity	Sigma-T
5	3.164	32.678	26.017
10	3.065	32.679	26.027
20	2.852	32.694	26.058
30	2.440	32.805	26.180
40	2.546	33.051	26.368
50	3.001	33.155	26.412
75	4.178	33.364	26.467
100	4.636	33.477	26.508
125	4.404	33.491	26.544
150	4.728	33.577	26.578
175	4.352	33.548	26.595
200	3.105	33.449	26.637
250	2.305	33.436	26.695

STATION US11207
LATITUDE 41-54.5 N
LONGITUDE 141-11.3 E
DEPTH (m) 202

Press.	Temp.	Salinity	Sigma-T
5	3.324	32.690	26.013
10	3.122	32.698	26.037
20	2.355	32.731	26.127
30	2.022	32.817	26.221
40	2.576	33.049	26.364
50	3.410	33.209	26.418
75	4.274	33.373	26.464
100	3.827	33.343	26.485
125	3.216	33.308	26.516
150	2.830	33.323	26.561
175	2.586	33.346	26.600

STATION US11208
LATITUDE 41-59.7 N
LONGITUDE 141-10.1 E
DEPTH (m) 138

Press.	Temp.	Salinity	Sigma-T
5	3.624	32.697	25.990
10	2.993	32.678	26.033
20	2.413	32.671	26.074
30	2.056	32.699	26.124
40	2.070	32.848	26.243
50	2.659	33.093	26.392
75	4.736	33.433	26.462
100	3.894	33.352	26.486
125	3.162	33.332	26.539

STATION US11209
LATITUDE 42-09.7 N
LONGITUDE 141-10.0 E
DEPTH (m) 124

Press.	Temp.	Salinity	Sigma-T
5	3.471	32.700	26.008
10	3.346	32.768	26.073
20	3.334	32.845	26.135
30	2.716	32.899	26.232
40	2.753	32.932	26.255
50	2.703	32.945	26.270
75	2.723	33.077	26.374
100	3.327	33.248	26.457

STATION US11210
LATITUDE 42-19.7 N
LONGITUDE 141-10.0 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	3.973	32.918	26.133
10	3.861	32.929	26.152
20	3.235	32.923	26.207
30	3.137	33.003	26.279
40	3.326	33.080	26.323
50	2.899	33.141	26.410

STATION US11211
LATITUDE 42-11.8 N
LONGITUDE 141-02.2 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	3.808	32.879	26.118
10	3.728	32.886	26.131
20	3.570	32.895	26.154
30	3.271	32.922	26.203
40	2.895	32.943	26.252
50	2.844	32.966	26.275

STATION US11212
LATITUDE 42-01.9 N
LONGITUDE 141-00.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	3.245	32.754	26.071
10	3.242	32.760	26.076
20	2.884	32.883	26.205
30	2.625	32.884	26.227
40	2.497	32.939	26.282
50	2.640	33.067	26.373
75	3.182	33.297	26.510

STATION US11213
LATITUDE 42-09.1 N
LONGITUDE 140-53.8 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	3.768	32.804	26.062
10	3.638	32.805	26.075
20	3.432	32.832	26.116
30	2.762	33.002	26.311
40	3.159	33.333	26.540
50	3.216	33.348	26.547

STATION US11214
LATITUDE 42-17.2 N
LONGITUDE 140-54.1 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	4.020	32.930	26.138
10	4.014	32.936	26.143
20	3.864	32.955	26.173
30	3.734	33.024	26.240
40	3.215	33.062	26.319
50	2.936	33.196	26.450

STATION US11215
LATITUDE 42-28.0 N
LONGITUDE 140-43.5 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	4.225	32.975	26.153
10	4.170	32.976	26.159
20	3.840	32.977	26.193
30	3.134	33.026	26.298
40	2.911	33.187	26.445
50	2.927	33.232	26.480

STATION US11216
LATITUDE 42-23.3 N
LONGITUDE 140-42.9 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	4.456	33.003	26.151
10	4.333	33.005	26.166
20	2.683	32.894	26.231
30	2.870	32.992	26.294
40	2.904	33.139	26.408
50	3.021	33.231	26.471

STATION US11217
LATITUDE 42-19.4 N
LONGITUDE 140-42.3 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	4.296	32.928	26.108
10	4.293	32.929	26.109
20	4.294	32.930	26.110
30	2.558	32.866	26.219
40	2.669	32.993	26.311
50	3.082	33.228	26.463

STATION US11218
LATITUDE 42-13.2 N
LONGITUDE 140-41.5 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	3.955	32.837	26.071
10	3.945	32.839	26.073
20	3.376	32.907	26.181
30	3.634	33.078	26.293
40	3.341	33.104	26.341
50	3.096	33.250	26.480
75	3.660	33.486	26.616

STATION US11219
LATITUDE 42-10.5 N
LONGITUDE 140-41.0 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	4.020	32.822	26.052
10	4.000	32.837	26.066
20	3.608	33.057	26.279
30	3.268	33.138	26.375
40	3.014	33.193	26.442
50	3.048	33.245	26.480
75	3.510	33.459	26.608

STATION US11220
LATITUDE 42-09.8 N
LONGITUDE 140-47.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	3.495	32.775	26.065
10	3.491	32.775	26.065
20	3.628	32.987	26.221
30	3.325	33.061	26.308
40	2.929	33.133	26.401
50	3.294	33.355	26.546
75	3.629	33.471	26.607

STATION US11221
LATITUDE 42-15.1 N
LONGITUDE 140-47.1 E
DEPTH (m) 74

Press.	Temp.	Salinity	Sigma-T
5	3.676	32.853	26.110
10	3.630	32.854	26.115
20	2.908	32.895	26.213
30	2.531	32.952	26.290
40	2.516	32.990	26.321
50	2.682	33.071	26.372

STATION US11222
LATITUDE 42-20.5 N
LONGITUDE 140-48.4 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	3.739	32.760	26.030
10	3.641	32.764	26.042
20	3.512	32.869	26.138
30	2.984	32.897	26.208
40	3.107	33.021	26.296
50	2.980	33.153	26.413

STATION US11223
LATITUDE 42-23.3 N
LONGITUDE 140-42.8 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	4.606	32.978	26.116
10	4.483	32.975	26.126
20	3.894	33.047	26.243
30	3.655	33.107	26.314
40	3.108	33.189	26.430
50	3.169	33.260	26.481

STATION US11224
LATITUDE 42-26.1 N
LONGITUDE 140-37.4 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	4.467	33.015	26.160
10	4.400	33.024	26.174
20	3.807	33.030	26.238
30	3.554	33.123	26.336
40	3.069	33.164	26.413
50	3.083	33.272	26.499
75	3.581	33.476	26.615

STATION US11225
LATITUDE 42-21.4 N
LONGITUDE 140-36.5 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	4.666	32.957	26.092
10	4.552	32.983	26.125
20	4.377	33.001	26.158
30	3.460	33.075	26.307
40	3.110	33.261	26.487
50	3.420	33.441	26.603
75	3.577	33.478	26.618

STATION US11226
LATITUDE 42-18.9 N
LONGITUDE 140-30.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	4.881	32.953	26.065
10	4.656	32.951	26.088
20	3.972	32.994	26.194
30	3.085	33.152	26.403
40	3.324	33.394	26.574
50	3.473	33.455	26.609
75	3.624	33.486	26.619

STATION US11227
LATITUDE 42-16.5 N
LONGITUDE 140-35.8 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	5.178	32.894	25.985
10	4.728	32.888	26.031
20	3.700	33.048	26.263
30	3.385	33.130	26.358
40	3.132	33.317	26.530
50	3.406	33.437	26.600
75	3.629	33.480	26.613

STATION US11228
LATITUDE 42-11.8 N
LONGITUDE 140-35.5 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	5.023	32.814	25.940
10	4.911	32.806	25.946
20	3.577	32.990	26.228
30	3.340	33.108	26.344
40	3.177	33.310	26.520
50	3.398	33.377	26.554
75	3.586	33.456	26.599

STATION US11229
LATITUDE 42-08.6 N
LONGITUDE 140-35.7 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	5.266	32.198	25.425
10	5.120	32.333	25.548
20	4.042	32.960	26.159
30	3.455	33.100	26.327
40	3.196	33.325	26.531
50	3.359	33.363	26.546

STATION US11230
LATITUDE 42-13.6 N
LONGITUDE 140-30.1 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	5.409	32.341	25.522
10	4.562	32.772	25.956
20	3.757	33.019	26.234
30	3.205	33.100	26.351
40	3.179	33.292	26.506
50	3.282	33.382	26.568

STATION US11231
LATITUDE 42-19.0 N
LONGITUDE 140-24.8 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	4.844	32.593	25.785
10	4.508	32.868	26.038
20	3.627	33.037	26.261
30	3.040	33.169	26.420
40	3.004	33.272	26.505
50	3.149	33.330	26.539

STATION US11232
LATITUDE 42-23.6 N
LONGITUDE 140-31.1 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	4.747	32.954	26.081
10	4.716	32.976	26.102
20	3.556	33.045	26.274
30	3.001	33.188	26.439
40	3.168	33.317	26.527
50	3.411	33.434	26.598
75	3.575	33.479	26.618

STATION US11233
LATITUDE 42-28.4 N
LONGITUDE 140-31.3 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	4.795	32.953	26.075
10	4.784	32.957	26.080
20	4.063	33.061	26.237
30	3.679	33.101	26.307
40	3.420	33.141	26.363
50	3.071	33.282	26.508

STATION US11234
LATITUDE 42-18.8 N
LONGITUDE 140-42.0 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	3.945	32.783	26.029
10	3.885	32.790	26.040
20	3.238	32.796	26.105
30	2.292	32.933	26.293
40	2.789	33.097	26.384
50	3.211	33.317	26.523

STATION US11235
LATITUDE 42-13.6 N
LONGITUDE 140-41.2 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	4.044	32.764	26.003
10	3.951	32.762	26.011
20	3.309	32.867	26.155
30	2.597	32.906	26.247
40	3.228	33.121	26.365
50	2.927	33.213	26.465
75	3.601	33.481	26.617

STATION US11236
LATITUDE 41-59.4 N
LONGITUDE 141-01.9 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	3.878	32.860	26.096
10	3.402	32.734	26.041
20	3.343	32.790	26.091
30	2.587	32.802	26.165
40	2.267	32.927	26.291
50	2.672	33.062	26.366
75	3.066	33.225	26.462

STATION US11237
LATITUDE 41-58.8 N
LONGITUDE 141-00.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	3.443	32.685	25.998
10	3.306	32.708	26.029
20	3.121	32.713	26.049
30	2.275	32.775	26.168
40	2.168	32.912	26.287
50	2.610	33.049	26.361
75	3.139	33.256	26.481

STATION US11238
LATITUDE 41-58.2 N
LONGITUDE 140-59.6 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	4.262	32.660	25.899
10	3.475	32.673	25.986
20	3.242	32.691	26.021
30	2.367	32.770	26.158
40	2.262	32.956	26.314
50	2.681	33.069	26.371
75	3.170	33.327	26.535

STATION US11239
LATITUDE 41-57.5 N
LONGITUDE 140-58.4 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	3.691	32.674	25.966
10	3.485	32.692	26.000
20	3.123	32.687	26.028
30	2.929	32.903	26.217
40	2.672	33.076	26.377
50	2.878	33.142	26.413
75	3.192	33.334	26.538

5

THE " USHIO MARU "

CRUISE 227
CRUISE 228
CRUISE 229

IN APRIL - MAY 2011

1. Cruise Itinerary

Cruise 227

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

Total coverage 741.4 miles

Cruise 228

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

Total coverage 692.2 miles

Cruise 229

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

Total coverage 745.8 miles

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

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

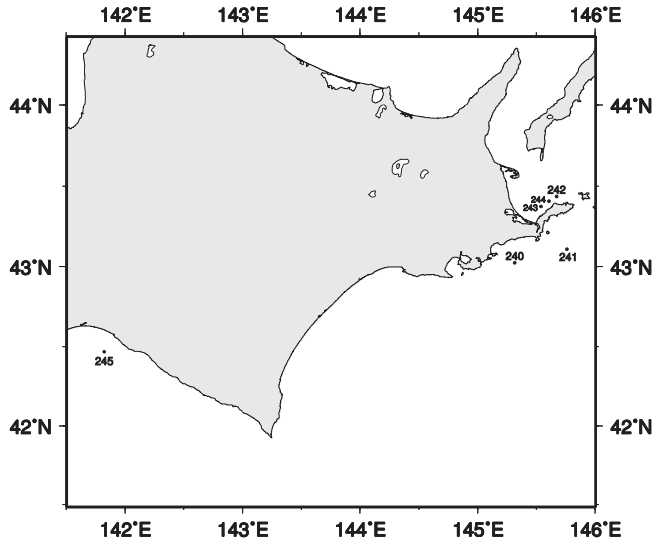

Figure 1. Oceanographic stations (Cruise 227)

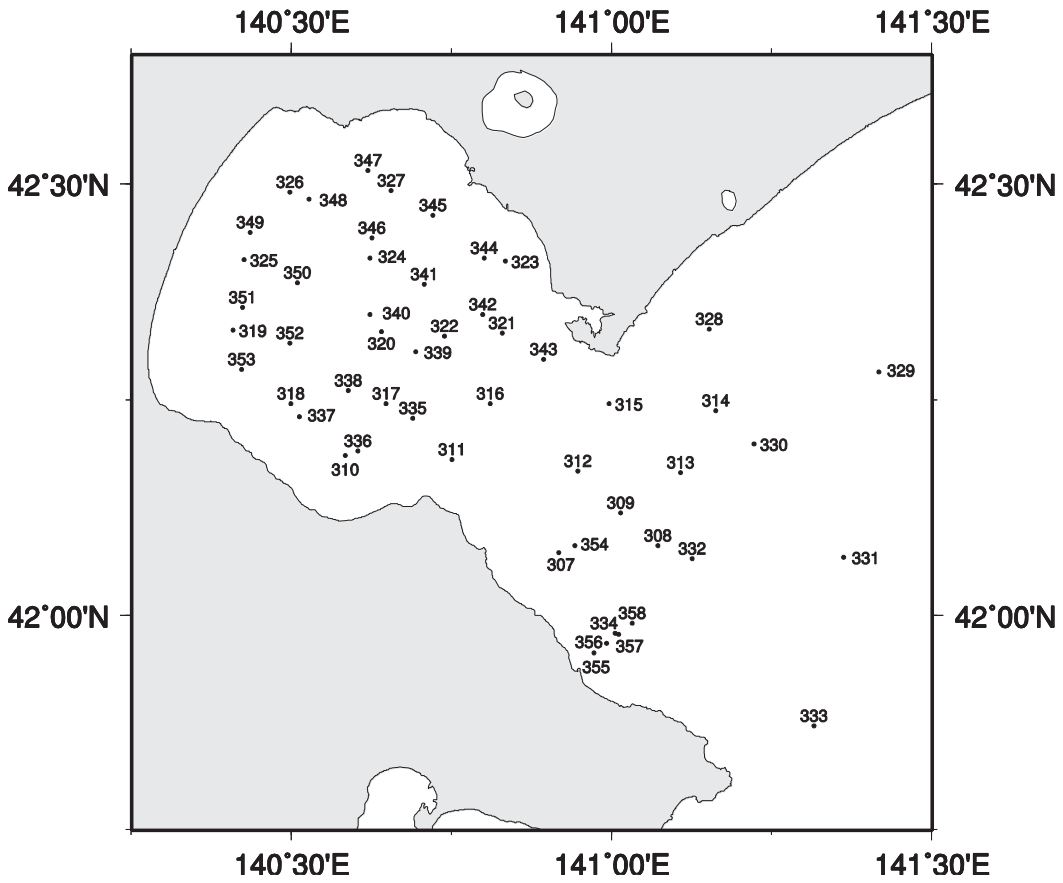

Figure 2. Oceanographic stations (Cruise 229)

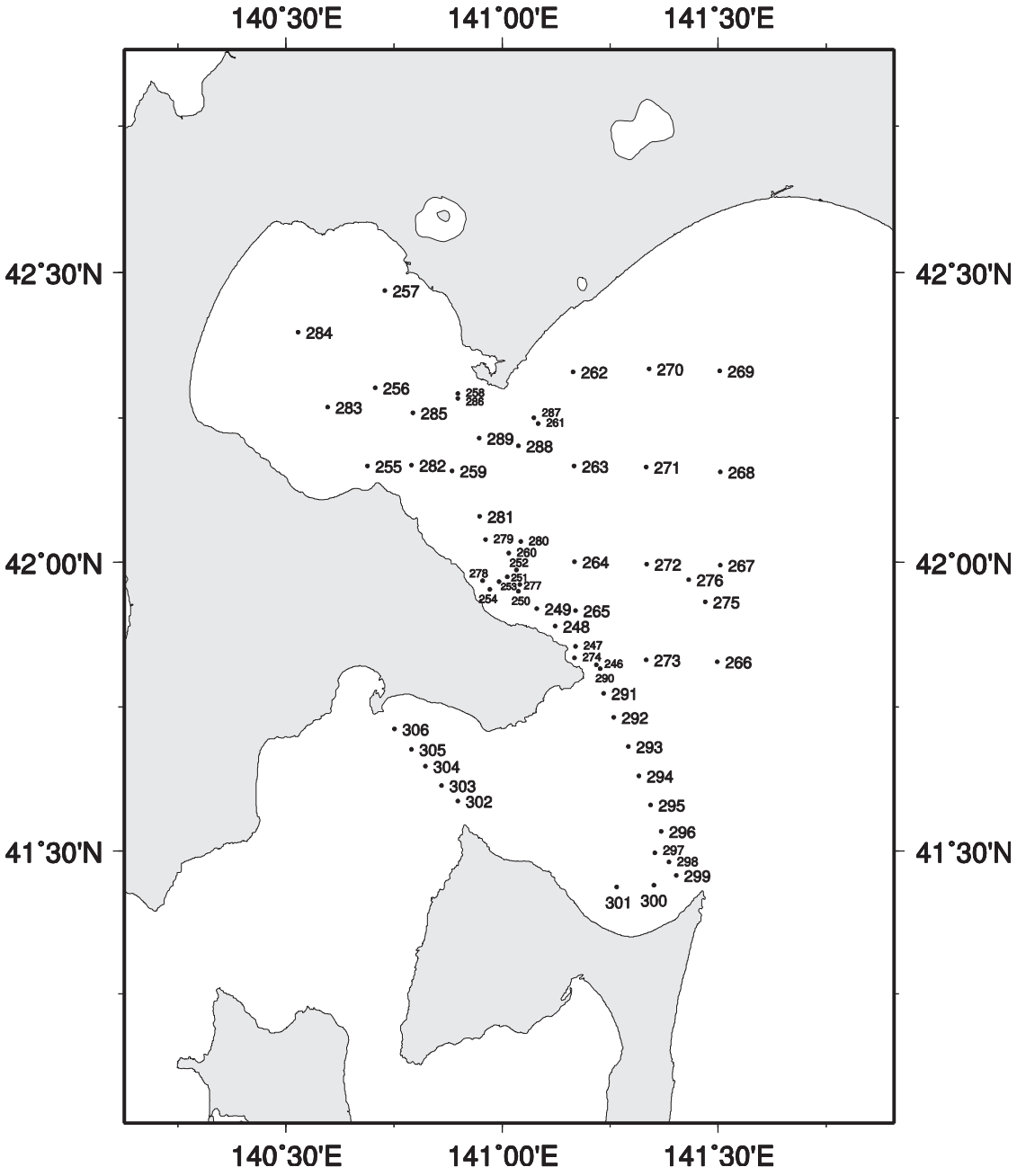

Figure 3. Oceanographic stations (Cruise 228)

Table 1: List of oceanographic stations

Cruise 227

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

Cruise 228

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

Cruise 229

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11307	42-04.4	140-55.0	5/20	1443-1447	76	West-2	ESE-1	West-4	14.7	7.4	r	1010.1
US11308	42-04.9	141-04.3	5/20	1534-1538	100	WNW-2	ESE-1	WNW-3	13.7	7.5	o	1009.5
US11309	42-07.2	141-00.8	5/20	1740-1744	87	Calm	ESE-1	Calm	13.4	8.4	o	1009.6
US11310	42-11.2	140-35.0	5/21	0549-0553	81	Calm	East-1	Calm	11.2	9	r	1007
US11311	42-10.9	140-45.0	5/21	0641-0646	96	Calm	East-1	Calm	11.5	8.4	f	1007.3
US11312	42-10.1	140-56.8	5/21	0745-0748	78	Calm	East-1	Calm	11.3	9.3	f	1007.3
US11313	42-10.0	141-06.4	5/21	0840-0844	95	Calm	ESE-1	Calm	10.7	8.6	f	1007.1
US11314	42-14.3	141-09.7	5/21	1115-1119	96	Calm	ESE-1	Calm	11.2	8.7	m	1006.7
US11315	42-14.8	140-59.7	5/21	1204-1207	68	Calm	ESE-1	Calm	11.9	8.5	f	1006.6
US11316	42-14.8	140-48.6	5/21	1300-1303	70	Calm	ESE-1	Calm	12.6	8.9	o	1006.7
US11317	42-14.8	140-38.8	5/21	1349-1353	88	WNW-1	ESE-1	WNW-3	12.4	9.2	o	1006.7
US11318	42-14.8	140-29.9	5/21	1605-1609	82	SW -1	ESE-1	SW -3	12.9	9.5	o	1007.5
US11319	42-19.9	140-24.5	5/22	0554-0556	66	West-1	ESE-1	West-1	10	8.5	o	1011.1
US11320	42-19.8	140-38.4	5/22	0700-0705	82	West-1	ESE-1	West-3	10.8	8.4	o	1011.6
US11321	42-19.7	140-49.7	5/22	0800-0802	47	West-1	SE -1	West-3	10.6	8.8	o	1011.6
US11322	42-19.5	140-44.3	5/22	0830-0833	60	West-1	ESE-1	West-3	10.2	8	o	1011.7
US11323	42-24.7	140-50.0	5/22	1029-1032	40	Calm	SW-1	Calm	11.3	9.2	c	1012.1
US11324	42-24.9	140-37.3	5/22	1132-1135	86	Calm	West-1	Calm	12.7	8.3	c	1012.2
US11325	42-24.8	140-25.5	5/22	1231-1234	70	West-2	West-1	West-3	13.8	9	bc	1011.9
US11326	42-29.5	140-29.8	5/22	1310-1313	68	WSW-2	WSW-1	WSW-4	14.5	8.8	bc	1011.7
US11327	42-29.6	140-39.3	5/22	1357-1400	66	WSW-2	WSW-1	WSW-5	13.2	9	bc	1011.6
US11328	42-20.0	141-09.1	5/23	0525-0527	69	Calm	SW-1	Calm	8.4	7.9	bc	1017.1
US11329	42-17.0	141-25.0	5/23	0644-0652	477	Calm	SW-1	Calm	8.4	8	bc	1017.3
US11330	42-12.0	141-13.3	5/23	0758-0803	152	West-2	SW-1	West-5	9.1	8.5	bc	1018.2
US11331	42-04.1	141-21.7	5/23	0904-0912	346	NW -2	West-1	NW -4	9.7	8.6	bc	1018.4
US11332	42-04.0	141-07.5	5/23	1021-1026	118	NW -2	West-1	NW -4	9.2	8.3	c	1019
US11333	41-52.3	141-18.9	5/23	1149-1157	284	West-1	SE -1	West-2	10	8.9	bc	1019.6
US11334	41-58.8	141-00.3	5/23	1334-1338	91	NW -1	SE -1	NW -2	11.5	9.6	bc	1019.5
US11335	42-13.8	140-41.3	5/25	0849-0854	88	ESE-1	ESE-1	ESE-1	10.5	9.2	c	1019.1
US11336	42-11.5	140-36.2	5/25	0953-0959	82	SSW-1	ESE-1	SSW-1	12.2	9.6	bc	1019.1
US11337	42-13.9	140-30.7	5/25	1058-1103	81	SE -1	East-1	SE -2	13.5	106	bc	1019.5
US11338	42-15.7	140-35.3	5/25	1143-1148	91	SE -1	East-1	SE -3	11.5	9.6	bc	1019.5
US11339	42-18.4	140-41.6	5/25	1317-1321	71	SE -1	East-1	SE -3	10.2	10.2	bc	1019.7
US11340	42-21.0	140-37.3	5/25	1422-1426	84	SE -1	East-1	SE -3	14	9.7	bc	1020
US11341	42-23.1	140-42.4	5/25	1523-1526	61	SE -1	East-1	SE -3	10.6	9.6	bc	1020.1
US11342	42-21.0	140-47.9	5/25	1558-1600	51	SE -1	ESE-1	SE -3	10.8	9.5	bc	1020.1
US11343	42-17.9	140-53.6	5/25	1638-1641	55	SE -1	ESE-1	SE -3	11.8	9.8	bc	1020.1
US11344	42-24.9	140-48.0	5/26	0703-0708	45	Calm	SE -1	Calm	7.7	9.3	f	1024.2
US11345	42-27.9	140-43.2	5/26	0739-0745	59	Calm	SE -1	Calm	7.8	9.7	f	1024.2
US11346	42-26.3	140-37.5	5/26	0817-0823	81	Calm	SE -1	Calm	7.9	9.8	f	1024.2
US11347	42-31.0	140-37.1	5/26	0856-0900	63	Calm	SE -1	Calm	8.3	9.6	f	1024.1
US11348	42-29.0	140-31.6	5/26	0934-0938	75	Calm	SE -1	Calm	8.7	10	f	1024.1
US11349	42-26.7	140-26.1	5/26	1011-1015	68	Calm	SE -1	Calm	8.8	10	f	1024
US11350	42-23.2	140-30.5	5/26	1103-1108	95	Calm	SE -1	Calm	9.1	10	f	1023.6
US11351	42-21.5	140-25.4	5/26	1159-1203	73	Calm	SE -1	Calm	9.6	10.9	f	1023.5
US11352	42-19.0	140-29.8	5/26	1243-1249	92	Calm	SE -1	Calm	9.6	10.5	f	1023.2
US11353	42-17.2	140-25.3	5/26	1333-1337	63	Calm	East-1	Calm	10	11	f	1023.1
US11354	42-04.9	140-56.5	5/26	1644-1649	85	East-1	ESE-1	East-3	9.8	10	f	1022.6
US11355	41-57.4	140-58.3	5/27	1005-1009	80	Calm	East-1	Calm	9.6	9.3	f	1027.1
US11356	41-58.1	140-59.5	5/27	1016-1020	87	Calm	East-1	Calm	9.3	9.5	f	1022.1
US11357	41-58.7	141-00.6	5/27	1028-1032	94	NE -1	ESE-1	NE -3	9.4	9.4	f	1021.9
US11358	41-59.5	141-01.9	5/27	1042-1047	101	NE -1	ESE-1	NE -3	9.4	9.6	f	1021.8

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11240
LATITUDE 43-01.7 N
LONGITUDE 145-18.7 E
DEPTH (m) 46

Press.	Temp.	Salinity	Sigma-T
5	3.241	32.268	25.684
10	2.460	32.354	25.818
20	1.645	32.442	25.948
30	1.423	32.635	26.117
40	1.732	32.775	26.208

STATION US11241
LATITUDE 43-06.7 N
LONGITUDE 145-45.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	1.874	32.580	26.042
10	1.622	32.566	26.049
20	0.935	32.603	26.122
30	0.968	32.684	26.185
40	0.969	32.729	26.222
50	1.114	32.782	26.255
75	0.951	32.957	26.405

STATION US11242
LATITUDE 43-26.4 N
LONGITUDE 145-40.2 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	2.264	32.341	25.822
10	1.533	32.438	25.952
20	1.387	32.475	25.991

STATION US11243
LATITUDE 43-22.6 N
LONGITUDE 145-32.1 E
DEPTH (m) 18

Press.	Temp.	Salinity	Sigma-T
5	4.075	31.797	25.232
10	2.960	32.148	25.613

STATION US11244
LATITUDE 43-24.6 N
LONGITUDE 145-36.2 E
DEPTH (m) 25

Press.	Temp.	Salinity	Sigma-T
5	4.444	31.853	25.240
10	2.162	32.269	25.772
20	1.578	32.386	25.907

STATION US11245
LATITUDE 42-28.2 N
LONGITUDE 141-49.2 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	4.218	32.669	25.910
10	3.912	32.664	25.937
20	3.574	32.677	25.980
30	3.546	32.684	25.987

STATION US11246
LATITUDE 41-49.5 N
LONGITUDE 141-13.0 E
DEPTH (m) 165

Press.	Temp.	Salinity	Sigma-T
5	5.296	32.627	25.761
10	5.685	32.835	25.880
20	7.864	33.659	26.241
30	8.130	33.767	26.286
40	8.134	33.793	26.306
50	8.218	33.828	26.321
75	7.215	33.713	26.375
100	4.716	33.474	26.497
125	4.679	33.488	26.512
150	4.681	33.490	26.514

STATION US11247
LATITUDE 41-51.4 N
LONGITUDE 141-10.1 E
DEPTH (m) 107

Press.	Temp.	Salinity	Sigma-T
5	5.458	32.633	25.747
10	5.276	32.780	25.884
20	6.260	33.198	26.096
30	6.502	33.447	26.262
40	6.937	33.617	26.338
50	7.182	33.700	26.370
75	5.925	33.594	26.451
100	5.724	33.576	26.461

STATION US11248
LATITUDE 41-53.5 N
LONGITUDE 141-07.3 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	5.795	32.519	25.618
10	5.927	32.805	25.828
20	6.221	33.200	26.103
30	6.292	33.257	26.139
40	7.788	33.764	26.334
50	7.925	33.789	26.334
75	6.595	33.684	26.436

STATION US11249
LATITUDE 41-55.3 N
LONGITUDE 141-04.7 E
DEPTH (m) 110

Press.	Temp.	Salinity	Sigma-T
5	5.834	32.431	25.543
10	6.227	32.772	25.764
20	7.948	33.608	26.188
30	8.220	33.708	26.227
40	6.240	33.404	26.261
50	5.751	33.390	26.311
75	6.377	33.633	26.425
100	3.182	33.375	26.572

STATION US11250
LATITUDE 41-57.1 N
LONGITUDE 141-02.2 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	5.710	32.446	25.570
10	5.666	32.505	25.622
20	5.692	32.784	25.839
30	5.667	33.122	26.109
40	7.796	33.604	26.207
50	7.782	33.673	26.263
75	3.468	33.276	26.467

STATION US11251
LATITUDE 41-58.6 N
LONGITUDE 141-00.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	5.590	32.619	25.720
10	5.526	32.631	25.738
20	4.679	32.724	25.906
30	5.501	33.084	26.099
40	6.023	33.239	26.158
50	5.704	33.231	26.191
75	3.350	33.357	26.542

STATION US11252
LATITUDE 41-59.3 N
LONGITUDE 141-01.9 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	5.670	32.576	25.677
10	5.628	32.588	25.692
20	4.901	32.929	26.044
30	5.271	33.043	26.093
40	5.681	33.151	26.130
50	8.032	33.684	26.236
75	3.428	33.365	26.541

STATION US11253
LATITUDE 41-58.1 N
LONGITUDE 140-59.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	5.652	32.622	25.715
10	5.644	32.622	25.717
20	5.251	32.718	25.838
30	5.148	33.034	26.100
40	5.145	33.097	26.151
50	4.917	33.197	26.256
75	3.363	33.330	26.520

STATION US11254
LATITUDE 41-57.3 N
LONGITUDE 140-58.2 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	5.631	32.561	25.670
10	5.513	32.584	25.702
20	4.767	32.710	25.886
30	4.454	32.791	25.983
40	5.187	33.104	26.151
50	3.742	33.090	26.292

STATION US11255
LATITUDE 42-10.1 N
LONGITUDE 140-41.2 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	5.754	32.044	25.247
10	5.767	32.468	25.581
20	5.053	32.604	25.770
30	4.608	32.720	25.910
40	4.197	32.840	26.048
50	3.453	33.018	26.263
75	3.303	33.323	26.519

STATION US11256
LATITUDE 42-18.2 N
LONGITUDE 140-42.3 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	5.712	32.446	25.570
10	5.557	32.459	25.598
20	5.411	32.459	25.615
30	4.933	32.700	25.859
40	4.042	32.847	26.070
50	3.017	33.131	26.392

STATION US11257
LATITUDE 42-28.2 N
LONGITUDE 140-43.6 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	6.985	31.934	25.007
10	5.865	32.527	25.615
20	5.525	32.574	25.693
30	5.379	32.583	25.716
40	4.593	32.652	25.858
50	3.682	32.945	26.183

STATION US11258
LATITUDE 42-17.6 N
LONGITUDE 140-53.8 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	6.328	32.310	25.387
10	5.536	32.528	25.655
20	5.330	32.565	25.708
30	4.788	32.683	25.862
40	3.636	32.939	26.182
50	3.268	33.058	26.311

STATION US11259
LATITUDE 42-09.6 N
LONGITUDE 140-53.0 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	5.933	31.660	24.922
10	5.381	32.327	25.514
20	5.087	32.698	25.841
30	4.285	32.865	26.059
40	3.733	32.934	26.169
50	3.905	33.303	26.446

STATION US11260
LATITUDE 42-01.1 N
LONGITUDE 141-00.8 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	5.718	32.647	25.728
10	5.545	32.696	25.787
20	5.414	32.745	25.841
30	5.653	32.972	25.992
40	6.144	33.298	26.190
50	7.320	33.731	26.375
75	3.981	33.384	26.503

STATION US11261
LATITUDE 42-14.5 N
LONGITUDE 141-04.9 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	6.641	31.958	25.070
10	5.506	32.183	25.386
20	3.412	32.919	26.187
30	3.127	33.085	26.345
40	3.187	33.157	26.398
50	3.261	33.226	26.446

STATION US11262
LATITUDE 42-19.8 N
LONGITUDE 141-09.8 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	5.580	32.370	25.525
10	5.203	32.597	25.748
20	4.203	32.773	25.995
30	3.758	32.897	26.137
40	3.563	32.981	26.222
50	3.191	33.122	26.369

STATION US11263
LATITUDE 42-10.1 N
LONGITUDE 141-09.9 E
DEPTH (m) 123

Press.	Temp.	Salinity	Sigma-T
5	5.500	32.735	25.823
10	5.274	32.751	25.862
20	5.086	32.967	26.054
30	4.884	33.026	26.123
40	4.786	33.050	26.153
50	4.408	33.055	26.197
75	3.201	33.190	26.422
100	3.319	33.294	26.494

STATION US11264
LATITUDE 42-00.2 N
LONGITUDE 141-10.0 E
DEPTH (m) 136

Press.	Temp.	Salinity	Sigma-T
5	5.396	32.731	25.832
10	5.320	32.755	25.860
20	4.668	32.835	25.995
30	4.210	32.850	26.055
40	3.823	32.925	26.153
50	3.812	33.041	26.247
75	3.499	33.281	26.468
100	3.439	33.345	26.525
125	3.454	33.427	26.588

STATION US11265
LATITUDE 41-55.1 N
LONGITUDE 141-10.1 E
DEPTH (m) 188

Press.	Temp.	Salinity	Sigma-T
5	5.343	32.721	25.830
10	4.793	32.727	25.896
20	4.155	32.806	26.025
30	4.205	32.940	26.127
40	4.136	33.037	26.211
50	4.100	33.132	26.290
75	3.923	33.367	26.495
100	4.191	33.433	26.520
125	3.866	33.444	26.562
150	3.041	33.396	26.601
175	2.779	33.421	26.644

STATION US11266
LATITUDE 41-49.8 N
LONGITUDE 141-29.8 E
DEPTH (m) 363

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

STATION US11267
LATITUDE 41-59.8 N
LONGITUDE 141-30.2 E
DEPTH (m) 497

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

STATION US11268
LATITUDE 42-09.5 N
LONGITUDE 141-30.2 E
DEPTH (m) 569

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

STATION US11269
LATITUDE 42-19.9 N
LONGITUDE 141-30.1 E
DEPTH (m) 448

Press.	Temp.	Salinity	Sigma-T
5	5.750	32.571	25.664
10	4.324	32.688	25.915
20	6.165	33.383	26.254
30	7.250	33.593	26.276
40	6.917	33.574	26.306
50	7.589	33.750	26.352
75	5.947	33.603	26.455
100	5.156	33.557	26.513
125	4.223	33.451	26.531
150	3.591	33.419	26.569
175	3.444	33.434	26.594
200	2.802	33.390	26.617
250	2.449	33.427	26.676
300	2.399	33.504	26.742

STATION US11270
LATITUDE 42-20.1 N
LONGITUDE 141-20.3 E
DEPTH (m) 269

Press.	Temp.	Salinity	Sigma-T
5	5.801	32.633	25.707
10	5.393	32.628	25.751
20	4.347	32.804	26.004
30	4.599	32.886	26.043
40	3.718	32.864	26.114
50	3.504	32.953	26.206
75	3.633	33.343	26.504
100	3.382	33.336	26.522
125	3.829	33.424	26.550
150	3.520	33.422	26.578
175	3.745	33.480	26.603
200	3.197	33.434	26.617
250	2.553	33.425	26.666

STATION US11271
LATITUDE 42-10.0 N
LONGITUDE 141-19.9 E
DEPTH (m) 359

Press.	Temp.	Salinity	Sigma-T
5	5.280	32.635	25.769
10	5.033	32.699	25.848
20	4.083	32.850	26.068
30	4.051	32.954	26.154
40	5.360	33.255	26.251
50	6.038	33.402	26.285
75	6.084	33.643	26.470
100	5.327	33.570	26.504
125	4.229	33.451	26.530
150	4.210	33.497	26.569
175	3.877	33.478	26.588
200	3.391	33.448	26.611
250	2.483	33.435	26.680

STATION US11272
LATITUDE 41-59.9 N
LONGITUDE 141-20.0 E
DEPTH (m) 308

Press.	Temp.	Salinity	Sigma-T
5	5.746	32.855	25.889
10	5.417	32.873	25.941
20	5.040	32.883	25.993
30	4.075	32.870	26.085
40	3.902	32.967	26.179
50	4.332	33.176	26.301
75	4.864	33.479	26.485
100	5.458	33.607	26.517
125	4.737	33.532	26.541
150	4.238	33.490	26.561
175	4.226	33.521	26.587
200	3.718	33.485	26.609
250	2.989	33.468	26.663

STATION US11273
LATITUDE 41-50.0 N
LONGITUDE 141-19.9 E
DEPTH (m) 279

Press.	Temp.	Salinity	Sigma-T
5	7.095	33.240	26.020
10	7.589	33.356	26.042
20	7.928	33.596	26.182
30	8.397	33.812	26.282
40	8.449	33.851	26.304
50	8.425	33.855	26.311
75	7.850	33.807	26.359
100	6.300	33.631	26.433
125	5.009	33.484	26.473
150	5.166	33.581	26.531
175	4.906	33.575	26.556
200	4.474	33.538	26.574
250	2.806	33.439	26.656

STATION US11274
LATITUDE 41-50.2 N
LONGITUDE 141-10.0 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	6.127	32.538	25.592
10	5.643	32.599	25.698
20	5.186	32.706	25.836
30	4.842	32.856	25.993
40	5.617	33.182	26.163
50	5.808	33.472	26.369

STATION US11275
LATITUDE 41-56.0 N
LONGITUDE 141-28.1 E
DEPTH (m) 372

Press.	Temp.	Salinity	Sigma-T
5	6.729	33.049	25.918
10	8.556	33.664	26.141
20	8.562	33.752	26.209
30	7.857	33.697	26.272
40	7.679	33.704	26.303
50	7.673	33.708	26.307
75	7.685	33.749	26.338
100	7.308	33.775	26.412
125	6.675	33.751	26.479
150	6.000	33.693	26.520
175	5.253	33.601	26.537
200	5.164	33.654	26.589
250	3.248	33.483	26.652

STATION US11276
LATITUDE 41-58.3 N
LONGITUDE 141-25.8 E
DEPTH (m) 355

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

STATION US11277
LATITUDE 41-57.8 N
LONGITUDE 141-02.4 E
DEPTH (m) 105

Press.	Temp.	Salinity	Sigma-T
5	5.983	32.466	25.552
10	5.940	32.524	25.604
20	5.725	32.738	25.799
30	4.749	32.798	25.958
40	7.515	33.747	26.360
50	7.384	33.789	26.411
75	3.923	33.392	26.515

STATION US11278
LATITUDE 41-58.2 N
LONGITUDE 140-57.2 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	7.877	32.158	25.060
10	6.572	32.205	25.273
20	6.366	32.327	25.395
30	5.767	32.486	25.594
40	3.911	33.073	26.262
50	3.459	33.269	26.462

STATION US11279
LATITUDE 42-02.5 N
LONGITUDE 140-57.6 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	6.087	32.335	25.437
10	5.678	32.496	25.613
20	4.811	32.632	25.819
30	4.432	32.741	25.946
40	4.386	32.957	26.122
50	5.179	33.366	26.360

STATION US11280
LATITUDE 42-02.3 N
LONGITUDE 141-02.5 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	6.915	32.622	25.557
10	5.597	32.543	25.660
20	4.888	32.673	25.843
30	4.662	32.751	25.930
40	6.509	33.368	26.198
50	7.613	33.710	26.317
75	3.366	33.289	26.486

STATION US11281
LATITUDE 42-04.9 N
LONGITUDE 140-56.8 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	5.722	32.528	25.633
10	5.711	32.532	25.637
20	5.270	32.684	25.809
30	4.644	32.969	26.104
40	4.731	33.185	26.266
50	4.246	33.308	26.415
75	3.481	33.375	26.544

STATION US11282
LATITUDE 42-10.2 N
LONGITUDE 140-47.3 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	5.460	32.595	25.717
10	5.412	32.605	25.731
20	4.919	32.777	25.922
30	5.088	32.937	26.030
40	6.755	33.455	26.234
50	5.857	33.438	26.336
75	3.388	33.377	26.555

STATION US11283
LATITUDE 42-16.2 N
LONGITUDE 140-35.7 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	5.856	32.524	25.614
10	5.840	32.536	25.625
20	5.780	32.542	25.638
30	5.525	32.572	25.691
40	4.207	32.883	26.081
50	3.424	33.031	26.276
75	3.386	33.402	26.575

STATION US11284
LATITUDE 42-23.9 N
LONGITUDE 140-31.6 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	6.350	32.441	25.487
10	6.319	32.442	25.493
20	6.191	32.461	25.523
30	5.321	32.595	25.733
40	3.768	32.912	26.148
50	3.386	33.072	26.311
75	3.432	33.416	26.581

STATION US11285
LATITUDE 42-15.6 N
LONGITUDE 140-47.5 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	6.060	32.489	25.562
10	6.043	32.500	25.572
20	5.880	32.503	25.594
30	5.154	32.578	25.738
40	4.410	32.789	25.986
50	3.602	33.156	26.358

STATION US11286
LATITUDE 42-17.1 N
LONGITUDE 140-53.8 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	6.297	32.430	25.486
10	5.892	32.497	25.589
20	5.477	32.534	25.667
30	4.664	32.747	25.926
40	3.289	33.032	26.288
50	3.153	33.170	26.411

STATION US11287
LATITUDE 42-15.1 N
LONGITUDE 141-04.3 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	5.975	32.568	25.634
10	5.972	32.573	25.638
20	5.259	32.655	25.788
30	3.996	33.040	26.228
40	3.338	33.076	26.319
50	3.240	33.204	26.430

STATION US11288
LATITUDE 42-12.2 N
LONGITUDE 141-02.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	6.295	32.501	25.542
10	5.924	32.542	25.620
20	5.466	32.683	25.786
30	4.728	32.844	25.996
40	3.757	32.900	26.140
50	4.379	33.236	26.344

STATION US11289
LATITUDE 42-13.0 N
LONGITUDE 140-56.7 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	5.908	32.582	25.654
10	5.908	32.601	25.668
20	5.829	32.612	25.687
30	4.382	32.883	26.064
40	4.414	32.990	26.145
50	5.415	33.284	26.267

STATION US11290
LATITUDE 41-49.1 N
LONGITUDE 141-13.5 E
DEPTH (m) 178

Press.	Temp.	Salinity	Sigma-T
5	6.637	32.753	25.697
10	6.642	32.759	25.701
20	6.097	32.918	25.895
30	5.048	32.958	26.051
40	5.395	33.289	26.273
50	4.277	33.188	26.317
75	4.161	33.211	26.347
100	6.210	33.617	26.433
125	4.610	33.444	26.485
150	4.058	33.432	26.533
175	4.054	33.454	26.551

STATION US11291
LATITUDE 41-46.5 N
LONGITUDE 141-14.0 E
DEPTH (m) 187

Press.	Temp.	Salinity	Sigma-T
5	6.758	32.898	25.795
10	6.787	32.974	25.851
20	7.276	33.364	26.092
30	7.334	33.440	26.144
40	6.371	33.367	26.215
50	6.144	33.467	26.324
75	5.749	33.561	26.447
100	4.601	33.448	26.489
125	4.167	33.451	26.537
150	4.127	33.450	26.540
175	4.110	33.450	26.542

STATION US11292
LATITUDE 41-44.0 N
LONGITUDE 141-15.4 E
DEPTH (m) 224

Press.	Temp.	Salinity	Sigma-T
5	8.286	33.691	26.203
10	8.295	33.711	26.218
20	8.271	33.742	26.245
30	8.277	33.751	26.251
40	8.117	33.740	26.267
50	7.987	33.766	26.307
75	7.698	33.795	26.372
100	6.667	33.695	26.435
125	6.738	33.765	26.481
150	5.821	33.667	26.521
175	4.871	33.560	26.548
200	4.305	33.530	26.585

STATION US11293
LATITUDE 41-41.0 N
LONGITUDE 141-17.4 E
DEPTH (m) 233

Press.	Temp.	Salinity	Sigma-T
5	7.726	33.478	26.118
10	7.678	33.478	26.125
20	7.246	33.520	26.219
30	7.799	33.692	26.276
40	8.231	33.802	26.298
50	8.230	33.799	26.297
75	8.095	33.803	26.319
100	7.012	33.767	26.446
125	6.814	33.765	26.471
150	6.310	33.735	26.513
175	4.794	33.572	26.566
200	3.670	33.470	26.602

STATION US11294
LATITUDE 41-37.9 N
LONGITUDE 141-18.9 E
DEPTH (m) 214

Press.	Temp.	Salinity	Sigma-T
5	8.996	33.806	26.184
10	9.047	33.836	26.199
20	9.070	33.854	26.210
30	8.943	33.850	26.227
40	8.818	33.839	26.237
50	8.765	33.849	26.253
75	8.556	33.856	26.291
100	8.343	33.831	26.305
125	8.243	33.824	26.314
150	6.909	33.741	26.439
175	6.337	33.716	26.495
200	4.270	33.543	26.599

STATION US11295
LATITUDE 41-34.9 N
LONGITUDE 141-20.5 E
DEPTH (m) 320

Press.	Temp.	Salinity	Sigma-T
5	9.089	33.821	26.180
10	9.098	33.821	26.179
20	9.062	33.820	26.184
30	9.061	33.820	26.185
40	9.022	33.822	26.193
50	9.016	33.824	26.195
75	8.997	33.827	26.200
100	8.983	33.830	26.205
125	8.977	33.834	26.209
150	8.974	33.838	26.212
175	8.981	33.841	26.213
200	8.988	33.841	26.213
250	8.874	33.888	26.267
300	7.733	34.008	26.534

STATION US11296
LATITUDE 41-32.1 N
LONGITUDE 141-22.0 E
DEPTH (m) 257

Press.	Temp.	Salinity	Sigma-T
5	9.348	33.784	26.110
10	9.297	33.794	26.126
20	9.295	33.795	26.128
30	9.294	33.795	26.128
40	9.261	33.805	26.141
50	9.263	33.805	26.141
75	9.193	33.824	26.167
100	9.088	33.847	26.202
125	8.974	33.868	26.236
150	8.970	33.872	26.239
175	8.930	33.884	26.255
200	8.587	33.939	26.352

STATION US11297
LATITUDE 41-29.9 N
LONGITUDE 141-21.1 E
DEPTH (m) 222

Press.	Temp.	Salinity	Sigma-T
5	9.732	33.723	25.999
10	9.441	33.764	26.079
20	9.390	33.775	26.096
30	9.282	33.800	26.133
40	9.246	33.807	26.145
50	9.221	33.812	26.153
75	9.202	33.817	26.159
100	9.216	33.815	26.156
125	9.191	33.820	26.164
150	9.164	33.827	26.173
175	9.071	33.845	26.202
200	9.027	33.854	26.217

STATION US11298
LATITUDE 41-28.9 N
LONGITUDE 141-23.1 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	9.516	33.763	26.066
10	9.503	33.764	26.070
20	9.441	33.775	26.088
30	9.430	33.779	26.093
40	9.323	33.796	26.124
50	9.304	33.800	26.130
75	9.207	33.813	26.156

STATION US11299
LATITUDE 41-27.5 N
LONGITUDE 141-24.1 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	9.325	33.804	26.130
10	9.279	33.803	26.137
20	9.263	33.803	26.139
30	9.250	33.805	26.142
40	9.227	33.806	26.147

STATION US11300
LATITUDE 41-26.5 N
LONGITUDE 141-21.0 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	9.428	33.776	26.091
10	9.396	33.777	26.097
20	9.366	33.780	26.104
30	9.351	33.783	26.109
40	9.332	33.788	26.116
50	9.311	33.792	26.122

STATION US11301
LATITUDE 41-26.3 N
LONGITUDE 141-15.8 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	9.584	33.758	26.051
10	9.504	33.757	26.064
20	9.460	33.761	26.074
30	9.435	33.763	26.080
40	9.411	33.768	26.088
50	9.376	33.777	26.100

STATION US11302
LATITUDE 41-35.3 N
LONGITUDE 140-53.8 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	10.172	33.420	25.690
10	10.172	33.423	25.692
20	10.173	33.426	25.694
30	10.175	33.425	25.693
40	10.175	33.426	25.693
50	10.177	33.426	25.693

STATION US11303
LATITUDE 41-36.9 N
LONGITUDE 140-51.5 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	10.034	33.523	25.793
10	10.058	33.526	25.791
20	9.969	33.559	25.832
30	9.850	33.638	25.914
40	9.694	33.736	26.016
50	9.665	33.753	26.034
75	9.612	33.781	26.065

STATION US11304
LATITUDE 41-38.9 N
LONGITUDE 140-49.3 E
DEPTH (m) 306

Press.	Temp.	Salinity	Sigma-T
5	9.980	33.636	25.890
10	9.921	33.644	25.907
20	9.699	33.698	25.986
30	9.666	33.744	26.027
40	9.480	33.853	26.142
50	9.389	33.884	26.182
75	8.927	33.996	26.343
100	8.788	34.000	26.368
125	8.669	34.012	26.396
150	8.673	34.017	26.400
175	8.473	34.018	26.431
200	8.351	34.014	26.447
250	8.370	34.014	26.444

STATION US11305
LATITUDE 41-40.7 N
LONGITUDE 140-47.3 E
DEPTH (m) 223

Press.	Temp.	Salinity	Sigma-T
5	10.044	33.642	25.884
10	10.075	33.705	25.928
20	9.777	33.828	26.074
30	9.526	33.867	26.146
40	9.480	33.896	26.176
50	9.397	33.916	26.206
75	9.016	33.956	26.298
100	8.582	33.957	26.367
125	8.427	33.953	26.388
150	8.323	33.953	26.404
175	8.409	33.956	26.392
200	8.070	33.966	26.451

STATION US11306
LATITUDE 41-42.8 N
LONGITUDE 140-45.0 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	9.361	33.711	26.051
10	9.093	33.749	26.124
20	8.895	33.795	26.191
30	8.713	33.868	26.277
40	8.632	33.896	26.311
50	8.574	33.901	26.324
75	8.196	33.950	26.420

STATION US11307
LATITUDE 42-04.4 N
LONGITUDE 140-55.0 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	7.657	32.445	25.317
10	6.673	32.498	25.491
20	5.679	32.567	25.669
30	5.013	32.699	25.850
40	4.633	32.812	25.980
50	3.555	33.026	26.259

STATION US11308
LATITUDE 42-04.9 N
LONGITUDE 141-04.3 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	7.689	32.498	25.354
10	7.143	32.528	25.452
20	6.341	32.588	25.604
30	6.013	32.673	25.713
40	6.039	32.923	25.907
50	7.430	33.587	26.246
75	3.463	33.282	26.472

STATION US11309
LATITUDE 42-07.2 N
LONGITUDE 141-00.8 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	8.246	32.194	25.035
10	6.262	32.396	25.463
20	5.086	32.651	25.804
30	4.521	32.947	26.100
40	5.729	33.342	26.275
50	4.607	33.323	26.389
75	3.659	33.332	26.493

STATION US11310
LATITUDE 42-11.2 N
LONGITUDE 140-35.0 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	8.027	32.227	25.093
10	6.643	32.410	25.426
20	5.812	32.497	25.598
30	4.834	32.716	25.883
40	4.404	32.804	25.998
50	3.666	32.990	26.220
75	3.242	33.306	26.511

STATION US11311
LATITUDE 42-10.9 N
LONGITUDE 140-45.0 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	8.433	32.207	25.018
10	7.856	32.270	25.151
20	6.464	32.433	25.467
30	5.477	32.574	25.698
40	4.390	32.828	26.019
50	3.947	33.130	26.304
75	3.358	33.378	26.558

STATION US11312
LATITUDE 42-10.1 N
LONGITUDE 140-56.8 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	8.332	31.811	24.722
10	7.418	32.019	25.015
20	5.436	32.609	25.731
30	5.358	33.218	26.222
40	4.793	33.197	26.269
50	3.306	33.167	26.395

STATION US11313
LATITUDE 42-10.0 N
LONGITUDE 141-06.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	6.741	32.406	25.410
10	5.636	32.555	25.665
20	5.302	32.928	25.998
30	4.503	33.031	26.169
40	4.365	33.126	26.259
50	4.220	33.284	26.399
75	4.239	33.439	26.520

STATION US11314
LATITUDE 42-14.3 N
LONGITUDE 141-09.7 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	8.790	32.189	24.950
10	7.237	32.390	25.332
20	5.741	32.615	25.700
30	4.169	32.813	26.030
40	4.255	33.069	26.224
50	5.473	33.323	26.291
75	6.735	33.694	26.426

STATION US11315
LATITUDE 42-14.8 N
LONGITUDE 140-59.7 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	7.403	31.989	24.994
10	6.823	32.367	25.368
20	6.508	32.844	25.786
30	5.028	32.875	25.987
40	5.336	33.069	26.106
50	3.442	32.968	26.224

STATION US11316
LATITUDE 42-14.8 N
LONGITUDE 140-48.6 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	8.325	31.794	24.710
10	7.174	31.911	24.963
20	5.827	32.379	25.503
30	4.379	32.651	25.879
40	3.672	32.847	26.106
50	4.055	33.097	26.267

STATION US11317
LATITUDE 42-14.8 N
LONGITUDE 140-38.8 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	8.584	31.718	24.612
10	7.661	31.864	24.860
20	5.924	32.460	25.555
30	4.889	32.721	25.881
40	4.024	32.889	26.105
50	3.693	33.029	26.248
75	3.453	33.355	26.531

STATION US11318
LATITUDE 42-14.8 N
LONGITUDE 140-29.9 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	8.844	32.040	24.825
10	7.596	32.428	25.312
20	6.248	32.514	25.558
30	5.221	32.611	25.757
40	4.585	32.745	25.932
50	3.404	33.052	26.294
75	3.364	33.372	26.553

STATION US11319
LATITUDE 42-19.9 N
LONGITUDE 140-24.5 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	8.024	31.865	24.809
10	6.917	32.246	25.261
20	6.275	32.458	25.510
30	5.525	32.554	25.677
40	4.304	32.804	26.008
50	3.249	33.108	26.353

STATION US11320
LATITUDE 42-19.8 N
LONGITUDE 140-38.4 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	8.537	32.228	25.019
10	7.334	32.344	25.282
20	6.600	32.411	25.432
30	6.064	32.463	25.540
40	5.009	32.660	25.820
50	3.898	33.045	26.241
75	3.508	33.311	26.490

STATION US11321
LATITUDE 42-19.7 N
LONGITUDE 140-49.7 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	8.878	32.139	24.897
10	6.930	32.325	25.322
20	5.887	32.498	25.590
30	4.872	32.693	25.860
40	4.018	32.923	26.133

STATION US11322
LATITUDE 42-19.5 N
LONGITUDE 140-44.3 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	8.217	32.318	25.136
10	7.569	32.338	25.245
20	6.440	32.431	25.469
30	5.912	32.499	25.588
40	4.715	32.732	25.908
50	3.365	33.115	26.348

STATION US11323
LATITUDE 42-24.7 N
LONGITUDE 140-50.0 E
DEPTH (m) 40

Press.	Temp.	Salinity	Sigma-T
5	7.685	32.289	25.190
10	7.004	32.353	25.333
20	5.967	32.424	25.522
30	4.692	32.623	25.824

STATION US11324
LATITUDE 42-24.9 N
LONGITUDE 140-37.3 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	7.401	32.284	25.226
10	7.069	32.438	25.391
20	6.321	32.500	25.538
30	5.383	32.578	25.712
40	4.718	32.789	25.954
50	3.816	33.077	26.275
75	3.333	33.315	26.510

STATION US11325
LATITUDE 42-24.8 N
LONGITUDE 140-25.5 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	8.662	32.131	24.924
10	7.916	32.207	25.093
20	6.212	32.466	25.524
30	4.728	32.686	25.871
40	3.542	33.000	26.240
50	3.225	33.125	26.368

STATION US11326
LATITUDE 42-29.5 N
LONGITUDE 140-29.8 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	8.867	32.296	25.022
10	7.600	32.323	25.229
20	6.299	32.500	25.541
30	5.475	32.563	25.690
40	4.186	32.891	26.090
50	3.299	33.133	26.368

STATION US11327
LATITUDE 42-29.6 N
LONGITUDE 140-39.3 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	8.528	32.285	25.064
10	6.630	32.444	25.454
20	5.952	32.492	25.577
30	5.487	32.552	25.679
40	4.232	32.815	26.025
50	3.724	32.988	26.213

STATION US11328
LATITUDE 42-20.0 N
LONGITUDE 141-09.1 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	7.389	32.019	25.019
10	7.083	32.361	25.329
20	5.325	32.683	25.802
30	5.525	32.984	26.017
40	4.578	32.865	26.028
50	4.625	33.021	26.147

STATION US11329
LATITUDE 42-17.0 N
LONGITUDE 141-25.0 E
DEPTH (m) 477

Press.	Temp.	Salinity	Sigma-T
5	8.068	32.068	24.962
10	7.167	32.923	25.760
20	6.757	32.998	25.875
30	5.929	32.977	25.963
40	5.406	33.173	26.180
50	6.121	33.415	26.285
75	5.722	33.506	26.406
100	5.613	33.580	26.478
125	6.047	33.694	26.515
150	4.912	33.550	26.536
175	3.997	33.465	26.566
200	4.010	33.486	26.581

STATION US11330
LATITUDE 42-12.0 N
LONGITUDE 141-13.3 E
DEPTH (m) 152

Press.	Temp.	Salinity	Sigma-T
5	8.561	31.906	24.763
10	8.099	32.311	25.148
20	5.183	32.823	25.929
30	4.970	32.954	26.057
40	6.463	33.379	26.213
50	7.369	33.563	26.236
75	7.473	33.756	26.373

STATION US11331
LATITUDE 42-04.1 N
LONGITUDE 141-21.7 E
DEPTH (m) 346

Press.	Temp.	Salinity	Sigma-T
5	8.797	33.378	25.880
10	8.579	33.346	25.889
20	8.727	33.450	25.947
30	8.353	33.482	26.029
40	7.124	33.413	26.152
50	6.040	33.346	26.241
75	4.683	33.413	26.452
100	4.956	33.508	26.498
125	4.872	33.520	26.516
150	4.306	33.475	26.541
175	3.580	33.418	26.569

STATION US11332
LATITUDE 42-04.0 N
LONGITUDE 141-07.5 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	8.584	32.273	25.047
10	8.493	32.279	25.065
20	5.571	32.610	25.715
30	5.095	32.830	25.945
40	6.655	33.430	26.228
50	4.217	33.216	26.345
75	3.450	33.314	26.499

STATION US11333
LATITUDE 41-52.3 N
LONGITUDE 141-18.9 E
DEPTH (m) 284

Press.	Temp.	Salinity	Sigma-T
5	9.136	33.404	25.847
10	9.185	33.389	25.828
20	8.876	33.629	26.064
30	8.412	33.686	26.180
40	8.305	33.753	26.249
50	8.407	33.822	26.287
75	7.959	33.808	26.343
100	7.102	33.766	26.432
125	6.367	33.730	26.503
150	4.827	33.558	26.552
175	3.112	33.401	26.599
200	2.809	33.440	26.656

STATION US11334
LATITUDE 41-58.8 N
LONGITUDE 141-00.3 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	9.528	31.835	24.558
10	7.709	31.945	24.917
20	6.690	32.187	25.244
30	6.184	32.514	25.566
40	4.778	32.724	25.895
50	3.746	32.984	26.207

STATION US11335
LATITUDE 42-13.8 N
LONGITUDE 140-41.3 E
DEPTH (m) 88

Press.	Temp.	Salinity	Sigma-T
5	9.569	31.918	24.617
10	8.229	32.226	25.062
20	6.036	32.311	25.424
30	5.075	32.664	25.815
40	4.422	32.923	26.091
50	4.671	33.213	26.295
75	3.490	33.287	26.473

STATION US11336
LATITUDE 42-11.5 N
LONGITUDE 140-36.2 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	9.111	31.977	24.735
10	7.710	32.264	25.167
20	5.820	32.458	25.566
30	4.727	32.741	25.915
40	4.881	33.220	26.278
50	3.153	33.159	26.402
75	3.352	33.373	26.555

STATION US11337
LATITUDE 42-13.9 N
LONGITUDE 140-30.7 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	9.403	32.045	24.742
10	8.149	32.306	25.137
20	6.326	32.350	25.418
30	5.548	32.640	25.742
40	4.388	32.884	26.064
50	3.703	33.047	26.262
75	3.293	33.337	26.531

STATION US11338
LATITUDE 42-15.7 N
LONGITUDE 140-35.3 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	9.375	32.037	24.740
10	7.713	32.335	25.223
20	6.501	32.421	25.453
30	5.148	32.568	25.731
40	4.442	32.910	26.079
50	3.705	33.056	26.269
75	3.332	33.363	26.549

STATION US11339
LATITUDE 42-18.4 N
LONGITUDE 140-41.6 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	8.360	32.266	25.075
10	7.740	32.342	25.224
20	6.347	32.455	25.499
30	6.048	32.495	25.568
40	5.175	32.639	25.784
50	4.027	32.910	26.122

STATION US11340
LATITUDE 42-21.0 N
LONGITUDE 140-37.3 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	9.890	32.149	24.745
10	9.031	32.230	24.945
20	6.867	32.406	25.394
30	6.004	32.522	25.595
40	4.438	32.761	25.961
50	3.490	33.047	26.282
75	3.426	33.384	26.557

STATION US11341
LATITUDE 42-23.1 N
LONGITUDE 140-42.4 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	9.405	32.231	24.887
10	9.304	32.230	24.902
20	6.160	32.425	25.498
30	5.986	32.535	25.607
40	4.902	32.675	25.843
50	3.993	32.915	26.128

STATION US11342
LATITUDE 42-21.0 N
LONGITUDE 140-47.9 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	9.388	32.301	24.944
10	8.809	32.237	24.984
20	6.494	32.429	25.460
30	4.954	32.697	25.855
40	4.228	32.975	26.152

STATION US11343
LATITUDE 42-17.9 N
LONGITUDE 140-53.6 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	9.449	31.414	24.242
10	8.127	31.847	24.780
20	7.766	32.227	25.130
30	5.946	32.491	25.577
40	4.691	32.714	25.897
50	4.415	32.990	26.145

STATION US11344
LATITUDE 42-24.9 N
LONGITUDE 140-48.0 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	9.546	32.205	24.844
10	8.674	32.292	25.048
20	6.299	32.444	25.497
30	5.553	32.715	25.801
40	4.296	32.827	26.028

STATION US11345
LATITUDE 42-27.9 N
LONGITUDE 140-43.2 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	9.493	32.168	24.823
10	8.715	32.184	24.957
20	6.360	32.323	25.393
30	5.462	32.564	25.692
40	4.449	32.806	25.995
50	4.369	33.026	26.179

STATION US11346
LATITUDE 42-26.3 N
LONGITUDE 140-37.5 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	9.839	32.068	24.690
10	8.352	32.208	25.031
20	6.393	32.432	25.475
30	5.725	32.527	25.632
40	4.802	32.693	25.868
50	3.596	33.023	26.253
75	3.352	33.339	26.527

STATION US11347
LATITUDE 42-31.0 N
LONGITUDE 140-37.1 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	9.499	32.038	24.721
10	8.849	32.156	24.915
20	6.204	32.467	25.526
30	5.768	32.524	25.625
40	4.915	32.678	25.844
50	4.000	32.911	26.124

STATION US11348
LATITUDE 42-29.0 N
LONGITUDE 140-31.6 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	9.545	32.144	24.796
10	8.957	32.204	24.936
20	6.473	32.481	25.504
30	5.744	32.557	25.654
40	4.470	32.766	25.961
50	3.812	33.022	26.231

STATION US11349
LATITUDE 42-26.7 N
LONGITUDE 140-26.1 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	9.860	32.031	24.658
10	8.243	32.272	25.097
20	6.325	32.467	25.511
30	5.835	32.521	25.614
40	4.602	32.768	25.949
50	3.854	32.936	26.159

STATION US11350
LATITUDE 42-23.2 N
LONGITUDE 140-30.5 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	10.064	32.137	24.706
10	9.259	32.221	24.902
20	6.774	32.382	25.386
30	5.260	32.583	25.730
40	3.770	32.938	26.169
50	3.207	33.134	26.377
75	3.388	33.401	26.574

STATION US11351
LATITUDE 42-21.5 N
LONGITUDE 140-25.4 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	10.547	31.700	24.285
10	8.441	32.247	25.048
20	6.535	32.410	25.439
30	5.443	32.555	25.687
40	4.586	32.746	25.933
50	3.907	32.989	26.196

STATION US11352
LATITUDE 42-19.0 N
LONGITUDE 140-29.8 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	9.592	32.065	24.727
10	9.045	32.182	24.905
20	6.734	32.369	25.382
30	5.517	32.575	25.694
40	4.749	32.704	25.883
50	3.713	32.964	26.195
75	3.270	33.309	26.511

STATION US11353
LATITUDE 42-17.2 N
LONGITUDE 140-25.3 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	10.911	31.870	24.355
10	8.048	32.287	25.137
20	6.102	32.422	25.503
30	5.197	32.614	25.762
40	4.557	32.752	25.941
50	3.622	33.008	26.239

STATION US11354
LATITUDE 42-04.9 N
LONGITUDE 140-56.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	9.511	32.003	24.691
10	7.432	32.617	25.483
20	5.018	32.722	25.867
30	4.579	32.902	26.058
40	4.530	33.004	26.144
50	4.013	33.153	26.316
75	3.425	33.374	26.549

STATION US11355
LATITUDE 41-57.4 N
LONGITUDE 140-58.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	8.222	31.991	24.879
10	6.890	32.273	25.286
20	5.594	32.550	25.666
30	4.997	32.824	25.951
40	5.130	33.017	26.088
50	4.063	33.015	26.201
75	3.369	33.214	26.426

STATION US11356
LATITUDE 41-58.1 N
LONGITUDE 140-59.5 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	8.734	31.955	24.775
10	6.539	32.323	25.371
20	5.237	32.688	25.816
30	5.758	32.990	25.994
40	4.570	32.986	26.126
50	5.216	33.235	26.252
75	3.354	33.297	26.494

STATION US11357
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	10.007	31.817	24.466
10	8.438	32.052	24.895
20	5.695	32.619	25.708
30	5.363	32.819	25.905
40	5.219	33.015	26.077
50	4.416	33.040	26.185
75	3.641	33.224	26.408

STATION US11358
LATITUDE 41-59.5 N
LONGITUDE 141-01.9 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	9.368	32.305	24.951
10	7.889	32.487	25.316
20	5.669	32.860	25.902
30	5.721	33.021	26.023
40	4.452	33.018	26.164
50	4.127	33.090	26.254
75	4.992	33.379	26.391

6

THE " USHIO MARU "

CRUISE 230
CRUISE 231
CRUISE 232

IN JUNE - AUGUST 2011

1. Cruise Itinerary

Cruise 230

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

Total coverage 302.9 miles

Cruise 231

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

Total coverage 1165.8 miles

Cruise 232

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

Total coverage 1154.2 miles

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

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

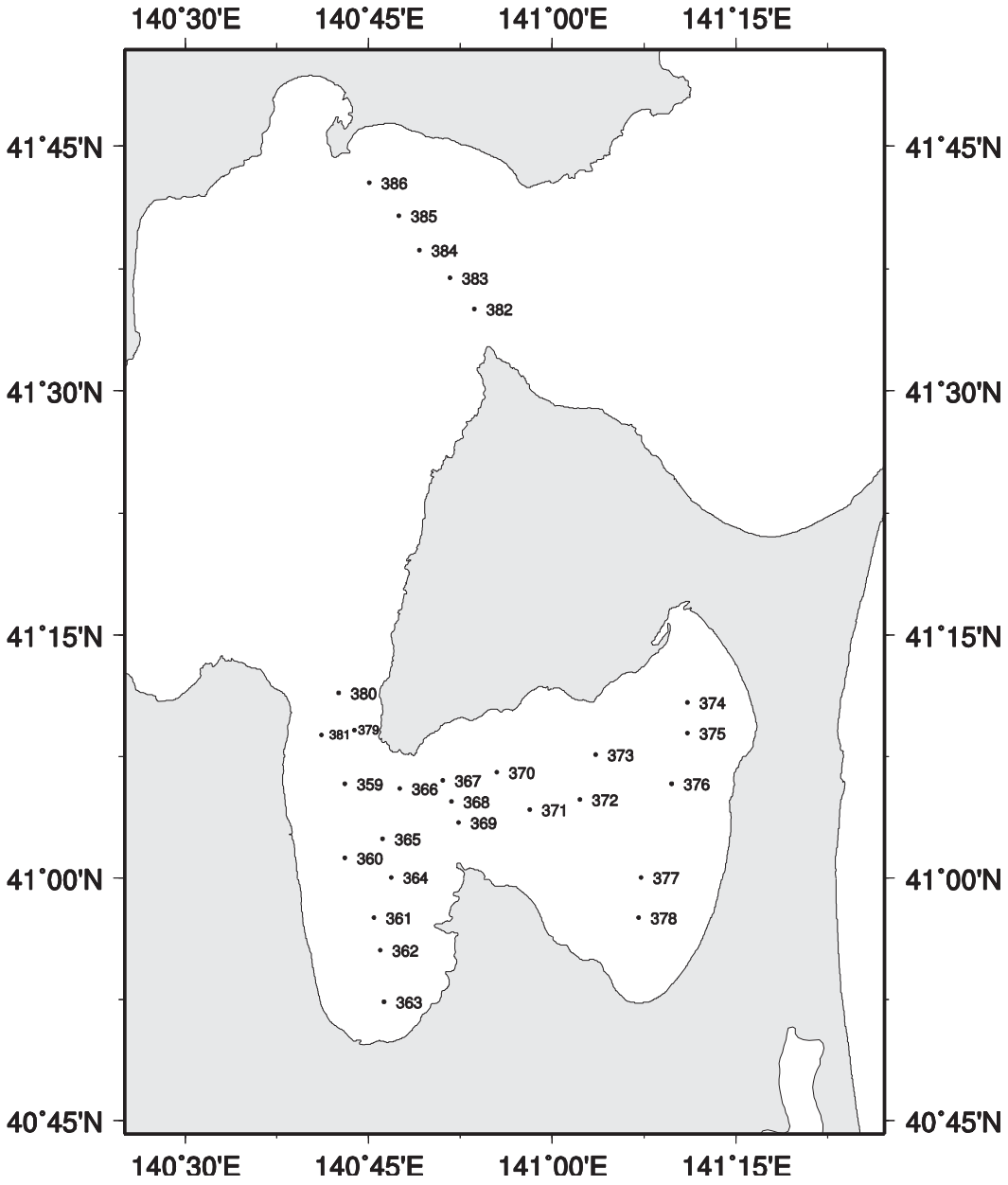

Figure 1. Oceanographic stations (Cruise 230)

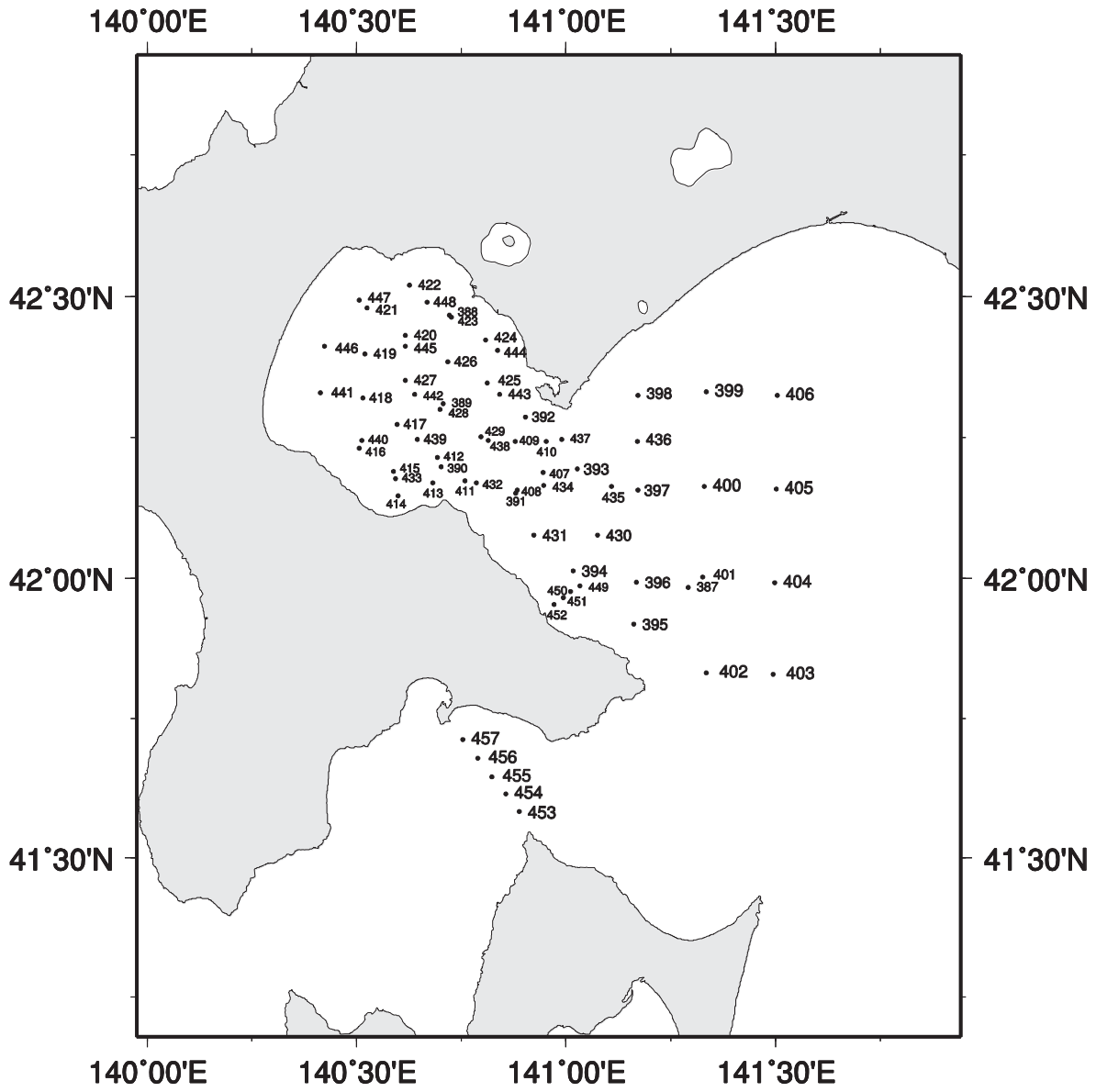

Figure 2. Oceanographic stations (Cruise 231)

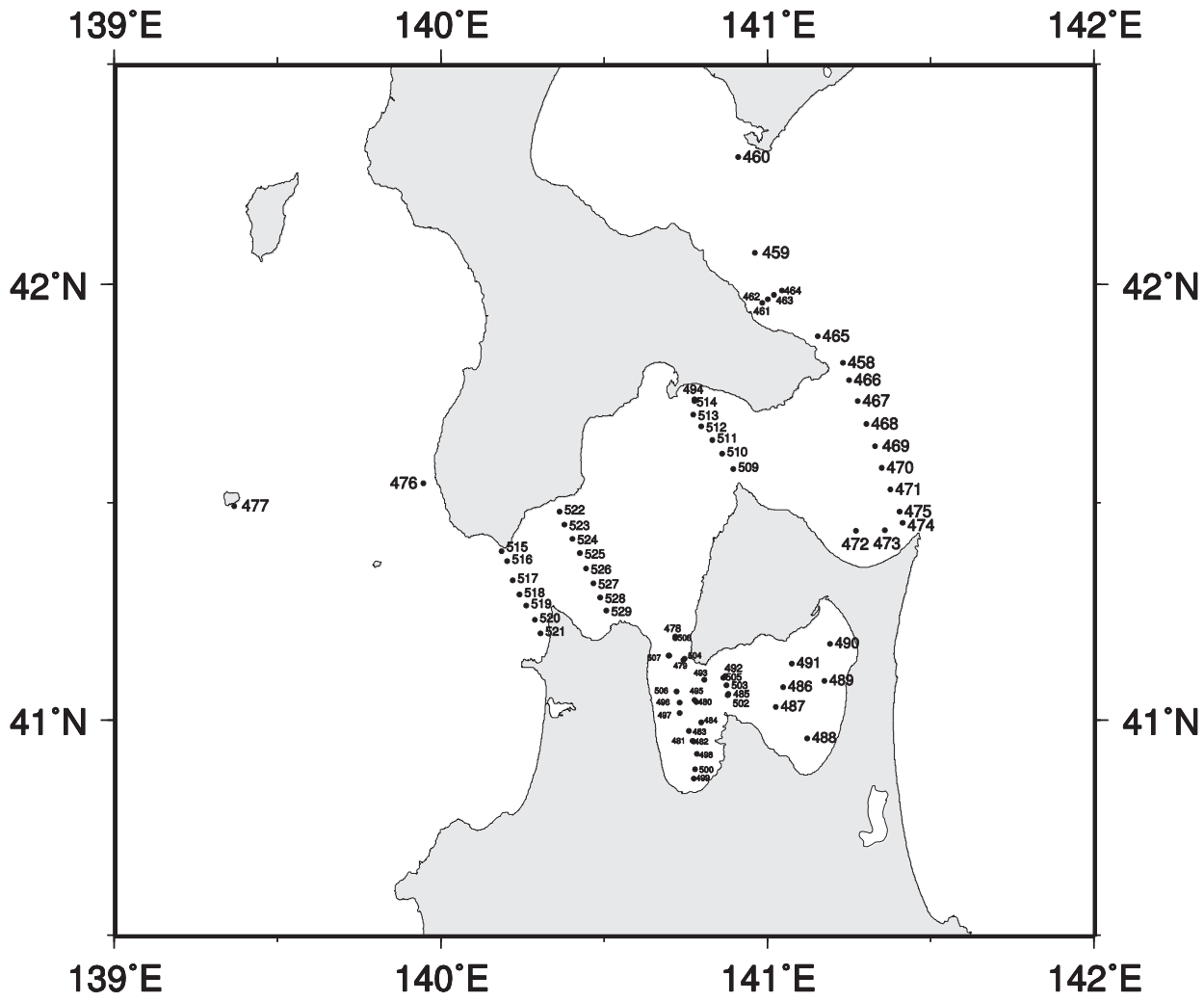

Figure 3. Oceanographic stations (Cruise 232)

Table 1: List of oceanographic stations

Cruise 230

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11359	41-05.9	140-43.0	6/1	1340-1343	64	West-3	East-1	East-5	10.7	11.5	c	1019.1
US11360	41-01.3	140-43.0	6/1	1440-1443	56	ENE-3	East-1	ENE-5	11.3	10.4	bc	1018.1
US11361	40-57.6	140-45.4	6/1	1516-1519	53	ENE-3	NE -1	ENE-5	11.6	10.8	bc	1017.6
US11362	40-55.6	140-45.9	6/1	1539-1542	43	NE -2	NE -1	NE -4	13.0	11.5	bc	1017.6
US11363	40-52.4	140-46.2	6/1	1621-1623	30	NE -3	NE -1	NE -5	13.4	11.5	bc	1017.2
US11364	41-00.1	140-46.8	6/2	0724-0727	52	NE -1	NNE-1	NE -3	10.4	10.6	o	1018.1
US11365	41-02.5	140-46.1	6/2	0803-0806	52	NE -1	NNE-1	NE -3	10.7	10.5	c	1018.1
US11366	41-05.6	140-47.5	6/2	0832-0836	59	ENE-1	NE -1	ENE-3	11.1	10.6	c	1018.1
US11367	41-06.1	140-51.0	6/2	0901-0904	52	NE -1	East-1	NE -3	12.5	10.6	c	1018.0
US11368	41-04.8	140-51.7	6/2	0919-0922	52	ENE-1	East-1	ENE-2	12.1	10.4	c	1017.8
US11369	41-03.5	140-52.3	6/2	0953-0956	50	NE -1	East-1	NE -3	13.4	10.6	bc	1017.6
US11370	41-06.6	140-55.4	6/2	1023-1026	46	NE -1	NE -1	NE -3	12.5	10.2	bc	1017.6
US11371	41-04.3	140-58.1	6/2	1050-1053	49	NE -1	NE -1	NE -3	14.2	10.8	c	1017.2
US11372	41-04.9	141-02.2	6/2	1133-1136	47	NE -1	NE -1	NE -3	13.6	11.0	bc	1017.0
US11373	41-07.7	141-03.5	6/2	1214-1217	38	NE -1	NE -1	NE -2	14.1	11.0	bc	1016.6
US11374	41-10.9	141-11.0	6/2	1315-1318	30	NNE-2	NE -1	NNE-4	15.3	11.8	bc	1015.6
US11375	41-09.0	141-11.0	6/2	1351-1354	34	North-2	North-1	North-4	15.3	11.7	bc	1015.1
US11376	41-05.9	141-09.7	6/2	1417-1420	39	North-2	North-1	North-4	15.1	11.9	bc	1015.1
US11377	41-00.1	141-07.2	6/2	1514-1517	43	NNE-1	East-1	NNE-2	16.0	11.7	c	1014.7
US11378	40-57.6	141-07.0	6/2	1553-1556	38	East-2	East-1	East-4	14.2	11.9	c	1014.6
US11379	41-09.2	140-43.8	6/3	0745-0748	60	SE -1	NW -1	SE -3	11.7	11.7	o	1013.6
US11380	41-11.5	140-42.5	6/3	0809-0812	71	SE -1	NNW-1	SE -3	12.3	11.9	o	1013.6
US11381	41-08.9	140-41.1	6/3	0838-0841	46	South-1	NNW-1	South-2	13.0	11.9	o	1013.6
US11382	41-35.1	140-53.6	6/4	1321-1323	45	NE -1	NE -1	NE -3	12.2	11.1	bc	1006.1
US11383	41-37.0	140-51.6	6/4	1358-1403	99	NE -1	East-1	NE -1	13.1	11.9	c	1006.2
US11384	41-38.7	140-49.1	6/4	1443-1455	327	ESE-1	East-1	ESE-3	12.3	10.9	o	1005.7
US11385	41-40.8	140-47.4	6/4	1520-1528	224	East-1	East-1	East-3	13.7	11.4	c	1005.2
US11386	41-42.8	140-45.0	6/4	1606-1610	86	East-1	SE -1	East-2	12.1	11.9	c	1004.6

Cruise 231

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11387	41-59.1	141-17.4	6/9	1922-1942	277	North-1	East-1	North-1	12.4	12.3	r	1005.7
US11388	42-27.9	140-43.5	6/10	1941-1945	60	Calm	NE -1	West-2	15.4	14.8	o	1005.1
US11389	42-18.7	140-42.3	6/10	2055-2059	69	Calm	East-1	Calm	13.8	12.7	o	1005.7
US11390	42-12.0	140-42.0	6/10	2156-2200	94	SE -1	East-1	SE -2	13.1	12	c	1006
US11391	42-09.2	140-52.7	6/10	2314-2318	78	NE -1	East-1	NE -2	12.9	12.8	c	1005.6
US11392	42-17.3	140-54.1	6/11	0020-0024	58	Calm	ESE-1	Calm	14.1	14.6	m	1004.7
US11393	42-11.8	141-01.5	6/11	0119-0123	79	Calm	ESE-1	Calm	13	12.2	f	1004.6
US11394	42-00.9	141-00.9	6/11	0241-0245	91	Calm	ESE-1	Calm	13.5	13.3	f	1004.7
US11395	41-55.2	141-09.6	6/11	0350-0357	175	Calm	ESE-1	Calm	13.1	12.1	o	1004.6
US11396	41-59.7	141-10.0	6/11	0448-0453	136	Calm	ESE-1	Calm	14	13	bc	1004.6
US11397	42-09.5	141-10.2	6/11	0613-0617	124	Calm	ESE-1	Calm	14.1	12.8	bc	1004.4
US11398	42-19.6	141-10.2	6/11	0734-0738	76	NE -1	ESE-1	NE -2	13.1	12.1	f	1004.6
US11399	42-20.0	141-20.0	6/11	0834-0842	248	Calm	ESE-1	Calm	13.2	11.5	f	1004.1
US11400	42-09.9	141-19.7	6/11	1003-1019	352	Calm	ESE-1	Calm	14.5	12.7	m	1003.9
US11401	42-00.2	141-19.5	6/11	1143-1154	299	Calm	ESE-1	Calm	14.8	12.5	f	1003.3
US11402	41-50.0	141-20.0	6/11	1322-1333	280	Calm	ESE-1	Calm	15.5	12.6	f	1002.1
US11403	41-49.8	141-29.6	6/11	1433-1445	352	Calm	ESE-1	Calm	15.2	11.9	f	1001.6
US11404	41-59.6	141-29.8	6/11	1606-1616	466	Calm	ESE-1	Calm	14.4	10.9	f	1001.6
US11405	42-09.6	141-30.0	6/11	1738-1749	548	SSW-1	ESE-1	SSW-2	14.5	12.1	f	1001.6
US11406	42-19.6	141-30.2	6/11	1913-1924	440	SW -1	SE -1	SW -2	13.5	13.2	f	1002.2
US11407	42-11.4	140-56.6	6/12	1353-1357	74	Calm	ESE-1	Calm	18.6	13.8	bc	1006.5
US11408	42-09.5	140-52.9	6/12	1420-1424	77	Calm	ESE-1	Calm	18	14.7	bc	1007.2
US11409	42-14.7	140-52.6	6/12	1457-1500	61	SSW-1	ESE-1	SSW-2	19.3	16	bc	1006.1
US11410	42-14.7	140-57.1	6/12	1523-1526	66	SSW-1	ESE-1	SSW-2	17.3	15.7	bc	1006.1
US11411	42-10.3	140-47.1	6/14	0802-0806	94	West-1	ESE-1	West-3	14.6	14	c	1005.8
US11412	42-13.0	140-41.5	6/14	0837-0841	89	WNW-2	ESE-1	WNW-4	15.3	13.3	c	1006.1
US11413	42-10.3	140-40.8	6/14	0900-0904	85	WNW-2	ESE-1	WNW-4	14.6	14.4	c	1006.1
US11414	42-08.9	140-35.9	6/14	0929-0933	63	WNW-1	East-1	WNW-3	14.9	14.3	c	1006.2
US11415	42-11.5	140-35.2	6/14	0956-1000	80	NW -1	ESE-1	NW -3	15	13.7	c	1006.2
US11416	42-14.0	140-30.3	6/14	1027-1031	80	WNW-1	ESE-1	WNW-3	15.9	13.7	c	1006.6
US11417	42-16.5	140-35.7	6/14	1101-1105	90	NW -1	East-1	NW -3	16.3	13.9	c	1006.6
US11418	42-19.3	140-30.8	6/14	1153-1157	94	Calm	NW -1	Calm	15.3	14	bc	1006.6
US11419	42-24.0	140-31.1	6/14	1226-1230	95	NW -2	ESE-1	NW -4	15.9	14.5	bc	1006.4
US11420	42-26.0	140-36.9	6/14	1302-1306	84	NW -1	ESE-1	NW -3	16.9	15.4	bc	1006.3
US11421	42-28.9	140-31.4	6/14	1345-1349	76	NW -2	ESE-1	NW -4	15.1	15.2	bc	1006.5
US11422	42-31.3	140-37.5	6/14	1421-1425	61	NW -2	West-1	NW -4	15.3	14.1	bc	1006.5
US11423	42-28.1	140-43.2	6/14	1454-1458	61	NW-2	West-1	NW -4	15.1	14.5	bc	1006.6
US11424	42-25.5	140-48.4	6/14	1526-1530	45	NW -2	West-1	NW -4	15.4	14.1	bc	1006.6
US11425	42-20.9	140-48.6	6/15	0719-0722	51	WNW-2	WNW-1	WNW-4	13.3	14.3	bc	1011.6
US11426	42-23.2	140-43.0	6/15	0753-0757	58	WNW-2	West-1	WNW-4	13.5	13.3	bc	1011.7
US11427	42-21.2	140-36.9	6/15	0827-0831	85	NW -2	NW -1	NW -4	13.4	13.5	c	1011.8
US11428	42-18.1	140-41.9	6/15	0936-0939	64	NW -1	NW -1	NW -3	15.7	13.3	bc	1012.1
US11429	42-15.2	140-47.7	6/15	1010-1014	70	NW -1	NW -1	NW -3	17.2	13.7	bc	1012.2
US11430	42-04.7	141-04.4	6/16	0723-0728	101	Calm	WNW-1	Calm	14.3	11.3	bc	1016.6
US11431	42-04.7	140-55.3	6/16	0812-0816	84	Calm	ESE-1	Calm	13.7	12.3	bc	1016.3
US11432	42-10.5	140-45.4	6/16	0918-0922	94	Calm	ESE-1	Calm	14.5	14.2	bc	1016.2
US11433	42-10.7	140-35.5	6/16	1008-1012	77	NE -1	East-1	NE -1	14.9	14.5	bc	1016.1
US11434	42-10.0	140-56.7	6/16	1151-1155	77	ESE-1	ESE-1	ESE-2	13.9	12.1	bc	1016.1
US11435	42-09.9	141-06.4	6/16	1243-1246	95	SE -1	ESE-1	SE-2	13.8	11.6	bc	1016.2
US11436	42-14.7	141-10.1	6/17	0654-0658	98	NNE-1	ESE-1	NNE-3	12.6	11.1	o	1014.1
US11437	42-14.9	140-59.3	6/17	0750-0753	67	ENE-1	ESE-1	ENE-3	14.9	14	o	1014
US11438	42-14.8	140-48.8	6/17	0843-0847	69	SSE-1	SE -1	SSE-3	14.4	11.7	o	1014
US11439	42-14.9	140-38.6	6/17	0935-0939	87	SSE-1	ESE-1	SSE-2	14.6	13.7	o	1013.7
US11440	42-14.8	140-30.7	6/17	1018-1022	84	ESE-1	ESE-1	ESE-2	16	14.3	o	1013.6
US11441	42-19.9	140-24.7	6/17	1105-1108	77	Calm	East-1	Calm	14.6	14.5	o	1013.2
US11442	42-19.7	140-38.2	6/17	1209-1213	81	Calm	East-1	Calm	16.5	14	o	1012.6
US11443	42-19.7	140-50.4	6/17	1311-1314	45	SE -2	ESE-1	SE -4	15.2	15.7	bc	1012
US11444	42-24.4	140-50.1	6/18	0653-0655	39	NNE-1	ESE-1	NNE-3	13.7	14.7	bc	1009.1
US11445	42-24.8	140-36.9	6/18	0800-0805	86	Calm	ESE-1	Calm	15.2	14.6	c	1009.2
US11446	42-24.8	140-25.3	6/18	0859-0903	68	SE -1	ESE-1	SE -2	15.8	15.8	bc	1008.6
US11447	42-29.7	140-30.3	6/18	0942-0946	68	Calm	ESE-1	Calm	14.9	15.3	bc	1008.6
US11448	42-29.5	140-40.0	6/18	1034-1038	65	Calm	SE -1	Calm	15.7	14.8	bc	1008.5
US11449	41-59.3	141-01.9	6/19	0644-0649	101	Calm	SE -1	Calm	16.2	14.6	bc	1008.4
US11450	41-58.7	141-00.6	6/19	0657-0701	94	Calm	SE -1	Calm	16.4	14.9	bc	1008.3
US11451	41-58.0	140-59.5	6/19	0710-0714	86	Calm	SE -1	Calm	16.8	15.4	bc	1008.6
US11452	41-57.3	140-58.2	6/19	0723-0727	76	Calm	SE -1	Calm	17.4	15.4	bc	1008.6
US11453	41-35.1	140-53.2	6/19	1055-1058	36	SSW-2	East-1	SSW-4	17.2	13.2	bc	1010
US11454	41-37.0	140-51.3	6/19	1117-1121	98	SW -2	East-1	SW -4	17.3	13.2	bc	1009.8
US11455	41-38.8	140-49.3	6/19	1140-1151	339	SW -2	East-1	SW -4	16.9	12.9	bc	1009.7
US11456	41-40.8	140-47.3	6/19	1211-1219	225	SW -2	SW -1	SW -4	17.3	13.5	c	1009.8
US11457	41-42.8	140-45.1	6/19	1238-1242	84	SW -2	SW -1	SW -4	17.5	13.5	bc	1009.6

Cruise 232

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11359
LATITUDE 41-05.9 N
LONGITUDE 140-43.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	11.242	32.515	24.798
10	11.246	32.530	24.809
20	11.057	32.619	24.912
30	10.877	32.740	25.037
40	10.710	33.571	25.714
50	9.849	33.935	26.146

STATION US11360
LATITUDE 41-01.3 N
LONGITUDE 140-43.0 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	10.998	32.776	25.044
10	10.960	32.789	25.061
20	10.314	33.039	25.368
30	10.508	33.504	25.697
40	9.901	33.849	26.070
50	9.761	33.939	26.164

STATION US11361
LATITUDE 40-57.6 N
LONGITUDE 140-45.4 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	10.859	32.715	25.022
10	10.852	32.714	25.022
20	9.312	33.148	25.619
30	9.038	33.264	25.753
40	9.024	33.566	25.992
50	9.260	33.670	26.035

STATION US11362
LATITUDE 40-55.6 N
LONGITUDE 140-45.9 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	11.631	32.525	24.735
10	10.342	32.877	25.237
20	9.686	33.037	25.471
30	9.076	33.200	25.696
40	9.055	33.499	25.934

STATION US11363
LATITUDE 40-52.4 N
LONGITUDE 140-46.2 E
DEPTH (m) 30

Press.	Temp.	Salinity	Sigma-T
5	11.619	32.551	24.758
10	10.997	32.690	24.978
20	9.745	33.020	25.449

STATION US11364
LATITUDE 41-00.1 N
LONGITUDE 140-46.8 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	10.760	32.868	25.158
10	10.608	32.877	25.191
20	9.438	33.035	25.510
30	8.935	33.194	25.714
40	10.102	33.762	25.968
50	9.805	33.930	26.150

STATION US11365
LATITUDE 41-02.5 N
LONGITUDE 140-46.1 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	10.698	32.559	24.928
10	10.505	32.646	25.029
20	10.346	32.785	25.164
30	10.168	33.222	25.536
40	9.640	33.947	26.190
50	9.632	33.980	26.217

STATION US11366
LATITUDE 41-05.6 N
LONGITUDE 140-47.5 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	10.674	32.609	24.971
10	10.431	32.635	25.033
20	10.213	32.973	25.333
30	9.653	33.824	26.092
40	9.632	33.935	26.182
50	9.648	33.987	26.220

STATION US11367
LATITUDE 41-06.1 N
LONGITUDE 140-51.0 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	9.702	32.683	25.192
10	9.676	32.748	25.247
20	10.214	32.994	25.350
30	9.634	32.987	25.441
40	9.755	33.935	26.161
50	9.624	33.952	26.197

STATION US11368
LATITUDE 41-04.8 N
LONGITUDE 140-51.7 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	10.473	32.812	25.164
10	9.777	32.876	25.331
20	9.543	32.986	25.455
30	9.574	33.043	25.494
40	9.796	33.933	26.153
50	9.679	33.943	26.181

STATION US11369
LATITUDE 41-03.5 N
LONGITUDE 140-52.3 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	10.722	32.839	25.142
10	9.997	33.038	25.421
20	10.191	33.209	25.521
30	9.638	33.394	25.758
40	8.885	33.529	25.984

STATION US11370
LATITUDE 41-06.6 N
LONGITUDE 140-55.4 E
DEPTH (m) 46

Press.	Temp.	Salinity	Sigma-T
5	9.816	32.616	25.121
10	9.448	32.662	25.217
20	9.447	32.715	25.259
30	9.633	32.896	25.370
40	9.572	33.902	26.166

STATION US11371
LATITUDE 41-04.3 N
LONGITUDE 140-58.1 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	10.970	32.397	24.755
10	9.527	32.494	25.073
20	9.115	32.603	25.224
30	8.876	32.770	25.392
40	9.655	33.798	26.071

STATION US11372
LATITUDE 41-04.9 N
LONGITUDE 141-02.2 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	11.270	32.504	24.784
10	10.407	32.413	24.864
20	9.532	32.517	25.090
30	9.377	32.558	25.147
40	9.362	33.609	25.971

STATION US11373
LATITUDE 41-07.7 N
LONGITUDE 141-03.5 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	10.505	32.435	24.865
10	10.020	32.495	24.993
20	9.572	32.614	25.159
30	9.417	32.657	25.218

STATION US11374
LATITUDE 41-10.9 N
LONGITUDE 141-11.0 E
DEPTH (m) 30

Press.	Temp.	Salinity	Sigma-T
5	11.428	32.386	24.664
10	10.489	32.435	24.868
20	8.314	32.684	25.409

STATION US11375
LATITUDE 41-09.0 N
LONGITUDE 141-11.0 E
DEPTH (m) 34

Press.	Temp.	Salinity	Sigma-T
5	11.033	32.396	24.743
10	10.032	32.475	24.975
20	9.405	32.547	25.134
30	8.187	33.239	25.863

STATION US11376
LATITUDE 41-05.9 N
LONGITUDE 141-09.7 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	10.647	32.392	24.807
10	10.237	32.453	24.924
20	9.838	32.574	25.084
30	9.374	32.849	25.375

STATION US11377
LATITUDE 41-00.1 N
LONGITUDE 141-07.2 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	11.670	32.397	24.629
10	10.787	32.395	24.785
20	9.474	32.468	25.061
30	8.097	33.201	25.847
40	8.788	33.533	26.003

STATION US11378
LATITUDE 40-57.6 N
LONGITUDE 141-07.0 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	11.418	32.394	24.672
10	10.325	32.407	24.873
20	8.263	32.766	25.481
30	9.134	33.503	25.925

STATION US11379
LATITUDE 41-09.2 N
LONGITUDE 140-43.8 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	12.051	32.546	24.674
10	11.506	32.633	24.842
20	11.399	32.679	24.897
30	11.195	32.758	24.995
40	9.925	33.932	26.131
50	9.660	34.003	26.231

STATION US11380
LATITUDE 41-11.5 N
LONGITUDE 140-42.5 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	12.074	32.523	24.652
10	11.926	32.552	24.703
20	11.191	32.682	24.937
30	11.650	33.279	25.318
40	10.614	33.789	25.901
50	10.179	33.928	26.084

STATION US11381
LATITUDE 41-08.9 N
LONGITUDE 140-41.1 E
DEPTH (m) 46

Press.	Temp.	Salinity	Sigma-T
5	12.021	32.528	24.666
10	11.142	32.595	24.878
20	10.855	32.836	25.116
30	10.998	33.696	25.761
40	10.528	33.830	25.948

STATION US11382
LATITUDE 41-35.1 N
LONGITUDE 140-53.6 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	11.104	33.729	25.767
10	11.097	33.708	25.752
20	11.044	33.694	25.751
30	11.022	33.699	25.758
40	11.017	33.699	25.760

STATION US11383
LATITUDE 41-37.0 N
LONGITUDE 140-51.6 E
DEPTH (m) 99

Press.	Temp.	Salinity	Sigma-T
5	11.196	33.635	25.677
10	10.575	33.775	25.897
20	10.355	33.831	25.979
30	10.044	33.878	26.068
40	9.827	33.910	26.130
50	9.828	33.914	26.133
75	9.882	33.911	26.121

STATION US11384
LATITUDE 41-38.7 N
LONGITUDE 140-49.1 E
DEPTH (m) 327

Press.	Temp.	Salinity	Sigma-T
5	10.603	33.833	25.937
10	10.136	33.864	26.042
20	9.954	33.899	26.100
30	9.671	33.935	26.175
40	9.695	33.934	26.170
50	9.483	33.952	26.220
75	9.180	33.977	26.289
100	9.054	33.990	26.319
125	8.669	34.007	26.393
150	8.561	34.012	26.413
175	8.529	34.009	26.416
200	8.639	34.007	26.397
250	8.805	33.999	26.365

STATION US11385
LATITUDE 41-40.8 N
LONGITUDE 140-47.4 E
DEPTH (m) 224

Press.	Temp.	Salinity	Sigma-T
5	11.169	33.628	25.677
10	11.002	33.656	25.728
20	10.518	33.736	25.876
30	10.171	33.805	25.990
40	10.128	33.825	26.013
50	10.110	33.855	26.039
75	10.045	33.895	26.082
100	9.964	33.909	26.106
125	9.658	33.922	26.168
150	9.471	33.938	26.211
175	9.184	33.954	26.269

STATION US11386
LATITUDE 41-42.8 N
LONGITUDE 140-45.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	11.965	33.614	25.519
10	11.451	33.643	25.637
20	11.114	33.700	25.742
30	10.760	33.757	25.850
40	10.430	33.798	25.939
50	10.135	33.826	26.013
75	9.116	33.797	26.158

STATION US11387
LATITUDE 41-59.1 N
LONGITUDE 141-17.4 E
DEPTH (m) 277

Press.	Temp.	Salinity	Sigma-T
5	11.403	32.956	25.112
10	10.154	33.136	25.471
20	8.293	33.267	25.869
30	8.846	33.637	26.075
40	8.542	33.795	26.246
50	8.412	33.834	26.296
75	6.773	33.750	26.465
100	6.229	33.718	26.510
125	5.312	33.659	26.576
150	4.686	33.617	26.614
175	4.144	33.611	26.667
200	3.588	33.594	26.708
250	3.083	33.612	26.769

STATION US11388
LATITUDE 42-27.9 N
LONGITUDE 140-43.5 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	13.245	31.662	23.760
10	10.880	31.933	24.409
20	8.160	32.250	25.092
30	6.795	32.648	25.593
40	5.768	32.710	25.771
50	4.882	32.957	26.069

STATION US11389
LATITUDE 42-18.7 N
LONGITUDE 140-42.3 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	11.494	31.724	24.138
10	11.274	31.754	24.201
20	9.882	31.852	24.515
30	8.287	32.255	25.077
40	6.229	32.476	25.530
50	5.032	32.685	25.836

STATION US11390
LATITUDE 42-12.0 N
LONGITUDE 140-42.0 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	12.076	31.741	24.045
10	9.783	31.850	24.529
20	8.303	32.274	25.090
30	7.490	32.436	25.333
40	7.043	32.594	25.518
50	6.552	32.944	25.859
75	3.206	33.193	26.424

STATION US11391
LATITUDE 42-09.2 N
LONGITUDE 140-52.7 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	12.181	31.797	24.069
10	8.308	32.227	25.052
20	6.246	32.581	25.611
30	6.731	33.011	25.888
40	5.751	32.987	25.993
50	6.177	33.252	26.149

STATION US11392
LATITUDE 42-17.3 N
LONGITUDE 140-54.1 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	12.680	31.744	23.934
10	11.239	31.819	24.257
20	8.479	32.210	25.013
30	5.596	32.726	25.805
40	5.401	32.902	25.967

STATION US11393
LATITUDE 42-11.8 N
LONGITUDE 141-01.5 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	12.002	32.608	24.731
10	8.552	32.566	25.281
20	5.668	32.628	25.719
30	4.895	32.671	25.841
40	4.875	32.765	25.917
50	6.971	33.389	26.153

STATION US11394
LATITUDE 42-00.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	11.061	32.732	24.999
10	9.519	32.817	25.327
20	8.715	33.070	25.651
30	5.850	32.810	25.841
40	6.707	33.367	26.172
50	4.767	33.187	26.264
75	5.001	33.451	26.447

STATION US11395
LATITUDE 41-55.2 N
LONGITUDE 141-09.6 E
DEPTH (m) 175

Press.	Temp.	Salinity	Sigma-T
5	11.839	32.448	24.637
10	9.592	32.723	25.241
20	8.546	33.148	25.738
30	5.143	32.911	26.003
40	7.703	33.639	26.248
50	7.559	33.691	26.310
75	5.520	33.506	26.431
100	5.243	33.554	26.501
125	4.571	33.534	26.561
150	4.267	33.525	26.585

STATION US11396
LATITUDE 41-59.7 N
LONGITUDE 141-10.0 E
DEPTH (m) 136

Press.	Temp.	Salinity	Sigma-T
5	11.588	32.620	24.817
10	9.908	32.828	25.270
20	8.041	33.348	25.971
30	6.620	33.339	26.161
40	7.107	33.602	26.303
50	7.097	33.669	26.357
75	6.548	33.671	26.432
100	5.755	33.648	26.515
125	4.557	33.532	26.560

STATION US11397
LATITUDE 42-09.5 N
LONGITUDE 141-10.2 E
DEPTH (m) 124

Press.	Temp.	Salinity	Sigma-T
5	10.512	32.887	25.216
10	9.211	32.993	25.514
20	6.635	33.097	25.969
30	5.935	33.257	26.183
40	5.442	33.242	26.231
50	6.527	33.492	26.294
75	5.940	33.469	26.351
100	5.885	33.609	26.468

STATION US11398
LATITUDE 42-19.6 N
LONGITUDE 141-10.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	11.086	31.657	24.158
10	7.420	32.337	25.264
20	5.899	32.425	25.531
30	5.814	32.969	25.970
40	4.099	32.800	26.026
50	5.748	33.235	26.189

STATION US11399
LATITUDE 42-20.0 N
LONGITUDE 141-20.0 E
DEPTH (m) 248

Press.	Temp.	Salinity	Sigma-T
5	10.458	32.884	25.223
10	10.417	33.045	25.355
20	7.874	33.038	25.752
30	8.286	33.614	26.143
40	6.964	33.485	26.230
50	7.037	33.555	26.276
75	6.175	33.541	26.378
100	5.215	33.495	26.458
125	5.314	33.587	26.519
150	4.624	33.533	26.554
175	3.963	33.500	26.596
200	3.381	33.469	26.629

STATION US11400
LATITUDE 42-09.9 N
LONGITUDE 141-19.7 E
DEPTH (m) 352

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

STATION US11401
LATITUDE 42-00.2 N
LONGITUDE 141-19.5 E
DEPTH (m) 299

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

STATION US11402
LATITUDE 41-50.0 N
LONGITUDE 141-20.0 E
DEPTH (m) 280

Press.	Temp.	Salinity	Sigma-T
5	12.346	32.838	24.845
10	9.556	33.139	25.572
20	8.192	33.451	26.029
30	8.674	33.750	26.190
40	8.352	33.751	26.240
50	7.652	33.697	26.301
75	7.451	33.761	26.380
100	6.677	33.713	26.449
125	5.996	33.685	26.514
150	4.848	33.593	26.577
175	4.715	33.629	26.620
200	3.822	33.553	26.653
250	3.004	33.535	26.716

STATION US11403
LATITUDE 41-49.8 N
LONGITUDE 141-29.6 E
DEPTH (m) 352

Press.	Temp.	Salinity	Sigma-T
5	10.997	32.595	24.903
10	9.063	32.881	25.449
20	5.794	32.929	25.942
30	4.751	33.017	26.131
40	4.584	33.104	26.218
50	4.904	33.314	26.349
75	5.151	33.460	26.437
100	6.345	33.728	26.504
125	4.431	33.460	26.516
150	4.402	33.515	26.564
175	2.869	33.348	26.578
200	2.402	33.331	26.604
250	2.532	33.431	26.672

STATION US11404
LATITUDE 41-59.6 N
LONGITUDE 141-29.8 E
DEPTH (m) 466

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

STATION US11405
LATITUDE 42-09.6 N
LONGITUDE 141-30.0 E
DEPTH (m) 548

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

STATION US11406
LATITUDE 42-19.6 N
LONGITUDE 141-30.2 E
DEPTH (m) 440

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

STATION US11407
LATITUDE 42-11.4 N
LONGITUDE 140-56.6 E
DEPTH (m) 74

Press.	Temp.	Salinity	Sigma-T
5	12.498	32.165	24.294
10	8.373	32.434	25.205
20	6.906	32.642	25.574
30	6.526	32.787	25.738
40	5.336	32.885	25.961
50	5.229	33.000	26.064

STATION US11408
LATITUDE 42-09.5 N
LONGITUDE 140-52.9 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	12.429	32.066	24.231
10	11.208	32.375	24.695
20	8.236	32.602	25.356
30	5.938	32.562	25.634
40	5.630	32.822	25.877
50	5.695	33.154	26.131

STATION US11409
LATITUDE 42-14.7 N
LONGITUDE 140-52.6 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	16.036	31.766	23.253
10	13.364	31.634	23.715
20	8.090	32.242	25.096
30	5.646	32.664	25.750
40	4.975	32.790	25.926
50	6.425	33.254	26.119

STATION US11410
LATITUDE 42-14.7 N
LONGITUDE 140-57.1 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	13.878	31.046	23.158
10	11.267	31.893	24.310
20	8.461	32.326	25.107
30	5.523	32.671	25.769
40	4.674	32.819	25.982
50	5.686	33.207	26.174

STATION US11411
LATITUDE 42-10.3 N
LONGITUDE 140-47.1 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	13.752	31.736	23.717
10	12.397	31.764	24.003
20	8.450	32.211	25.018
30	6.490	32.518	25.531
40	5.508	32.752	25.836
50	5.771	33.204	26.162
75	5.304	33.472	26.429

STATION US11412
LATITUDE 42-13.0 N
LONGITUDE 140-41.5 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	13.480	31.710	23.751
10	12.983	31.732	23.865
20	9.083	31.999	24.756
30	7.794	32.327	25.204
40	6.547	32.673	25.646
50	5.543	32.995	26.024
75	3.238	33.252	26.469

STATION US11413
LATITUDE 42-10.3 N
LONGITUDE 140-40.8 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	14.564	31.731	23.545
10	13.321	31.764	23.823
20	8.429	32.400	25.170
30	6.811	32.539	25.505
40	6.181	32.682	25.699
50	4.937	32.911	26.027
75	3.430	33.324	26.508

STATION US11414
LATITUDE 42-08.9 N
LONGITUDE 140-35.9 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	13.243	31.897	23.943
10	10.452	31.977	24.516
20	8.075	32.271	25.120
30	6.101	32.493	25.559
40	5.107	32.643	25.795
50	4.180	32.870	26.074

STATION US11415
LATITUDE 42-11.5 N
LONGITUDE 140-35.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	14.087	31.730	23.644
10	9.860	32.036	24.661
20	7.669	32.383	25.266
30	6.960	32.544	25.490
40	5.223	32.609	25.755
50	4.208	32.890	26.087
75	3.259	33.313	26.515

STATION US11416
LATITUDE 42-14.0 N
LONGITUDE 140-30.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	13.707	31.756	23.741
10	10.741	31.937	24.436
20	7.930	32.314	25.175
30	6.101	32.502	25.567
40	5.208	32.627	25.771
50	3.988	32.931	26.142
75	3.402	33.370	26.547

STATION US11417
LATITUDE 42-16.5 N
LONGITUDE 140-35.7 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	13.470	31.732	23.770
10	12.566	31.734	23.947
20	9.203	32.068	24.791
30	8.177	32.352	25.169
40	5.825	32.596	25.675
50	4.559	32.824	25.999
75	3.215	33.255	26.473

STATION US11418
LATITUDE 42-19.3 N
LONGITUDE 140-30.8 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	13.780	31.803	23.763
10	10.879	32.090	24.532
20	8.209	32.424	25.221
30	7.773	32.742	25.534
40	5.292	32.616	25.753
50	4.068	32.893	26.104
75	3.279	33.293	26.497

STATION US11419
LATITUDE 42-24.0 N
LONGITUDE 140-31.1 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	14.153	31.792	23.678
10	9.728	31.952	24.617
20	7.827	32.311	25.188
30	6.373	32.477	25.513
40	5.223	32.620	25.764
50	4.408	32.815	26.007
75	3.247	33.251	26.467

STATION US11420
LATITUDE 42-26.0 N
LONGITUDE 140-36.9 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	14.954	31.653	23.403
10	10.674	31.899	24.418
20	8.232	32.267	25.094
30	6.542	32.444	25.465
40	5.541	32.571	25.688
50	4.224	32.862	26.064
75	3.418	33.346	26.527

STATION US11421
LATITUDE 42-28.9 N
LONGITUDE 140-31.4 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	15.356	31.611	23.284
10	13.025	31.738	23.861
20	8.433	32.206	25.017
30	6.278	32.472	25.521
40	4.601	32.754	25.938
50	3.721	32.985	26.211

STATION US11422
LATITUDE 42-31.3 N
LONGITUDE 140-37.5 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	11.498	31.846	24.232
10	10.071	32.000	24.599
20	7.478	32.370	25.283
30	6.048	32.535	25.599
40	5.072	32.722	25.862
50	4.130	33.009	26.189

STATION US11423
LATITUDE 42-28.1 N
LONGITUDE 140-43.2 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	12.850	31.977	24.080
10	9.002	32.020	24.785
20	7.498	32.353	25.266
30	6.466	32.682	25.663
40	5.162	32.783	25.899
50	4.408	33.025	26.174

STATION US11424
LATITUDE 42-25.5 N
LONGITUDE 140-48.4 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	15.140	31.678	23.383
10	10.722	32.185	24.632
20	8.341	32.621	25.356
30	5.892	32.621	25.686
40	5.178	32.802	25.913

STATION US11425
LATITUDE 42-20.9 N
LONGITUDE 140-48.6 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	14.497	31.745	23.570
10	9.281	32.092	24.798
20	7.313	32.472	25.386
30	6.713	32.730	25.669
40	4.988	32.836	25.962

STATION US11426
LATITUDE 42-23.2 N
LONGITUDE 140-43.0 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	13.204	31.784	23.863
10	10.206	31.957	24.542
20	8.514	32.301	25.080
30	6.413	32.480	25.510
40	5.446	32.620	25.738
50	4.018	32.972	26.171

STATION US11427
LATITUDE 42-21.2 N
LONGITUDE 140-36.9 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	13.554	31.742	23.761
10	12.344	31.769	24.016
20	9.042	32.105	24.845
30	7.622	32.339	25.238
40	6.367	32.483	25.519
50	4.752	32.717	25.893
75	3.493	33.357	26.528

STATION US11428
LATITUDE 42-18.1 N
LONGITUDE 140-41.9 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	12.943	31.727	23.870
10	10.846	31.760	24.280
20	9.600	31.861	24.567
30	8.268	32.271	25.093
40	6.474	32.605	25.601
50	5.636	32.971	25.994

STATION US11429
LATITUDE 42-15.2 N
LONGITUDE 140-47.7 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	13.992	31.837	23.746
10	10.120	31.959	24.559
20	8.256	32.288	25.107
30	6.243	32.470	25.524
40	5.445	32.677	25.784
50	6.080	33.135	26.069

STATION US11430
LATITUDE 42-04.7 N
LONGITUDE 141-04.4 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	11.262	32.225	24.569
10	10.120	32.748	25.173
20	6.264	32.778	25.764
30	5.710	33.074	26.067
40	7.566	33.585	26.225
50	7.266	33.540	26.232
75	5.815	33.461	26.359

STATION US11431
LATITUDE 42-04.7 N
LONGITUDE 140-55.3 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	12.350	31.717	23.975
10	12.060	31.761	24.063
20	9.266	32.809	25.361
30	8.168	32.931	25.625
40	5.952	32.939	25.930
50	6.786	33.484	26.253
75	5.466	33.507	26.438

STATION US11432
LATITUDE 42-10.5 N
LONGITUDE 140-45.4 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	14.226	31.824	23.688
10	13.158	31.847	23.920
20	8.934	32.094	24.854
30	7.027	32.497	25.444
40	5.560	32.748	25.827
50	5.955	33.082	26.043
75	5.480	33.503	26.433

STATION US11433
LATITUDE 42-10.7 N
LONGITUDE 140-35.5 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	13.818	31.708	23.682
10	13.520	31.714	23.746
20	9.378	32.040	24.742
30	7.375	32.756	25.600
40	5.012	32.639	25.802
50	4.039	32.914	26.123

STATION US11434
LATITUDE 42-10.0 N
LONGITUDE 140-56.7 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	11.142	31.922	24.355
10	8.085	32.303	25.144
20	5.907	32.517	25.602
30	5.028	32.743	25.883
40	5.822	33.032	26.020
50	7.572	33.561	26.206

STATION US11435
LATITUDE 42-09.9 N
LONGITUDE 141-06.4 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	9.146	32.417	25.073
10	8.623	33.036	25.639
20	8.036	33.316	25.946
30	6.702	33.324	26.138
40	7.265	33.545	26.236
50	7.163	33.568	26.269
75	5.675	33.452	26.369

STATION US11436
LATITUDE 42-14.7 N
LONGITUDE 141-10.1 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	10.374	32.517	24.951
10	7.221	32.554	25.463
20	7.421	33.108	25.871
30	5.609	33.038	26.050
40	8.279	33.664	26.183
50	8.243	33.675	26.197
75	5.828	33.430	26.334

STATION US11437
LATITUDE 42-14.9 N
LONGITUDE 140-59.3 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	13.982	32.875	24.549
10	9.410	32.636	25.202
20	8.027	32.759	25.510
30	6.053	32.830	25.832
40	5.597	32.998	26.019
50	6.059	33.433	26.307

STATION US11438
LATITUDE 42-14.8 N
LONGITUDE 140-48.8 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	13.061	31.849	23.941
10	10.177	31.990	24.573
20	7.907	32.356	25.211
30	6.132	32.509	25.568
40	5.278	32.748	25.859
50	5.140	33.072	26.131

STATION US11439
LATITUDE 42-14.9 N
LONGITUDE 140-38.6 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	13.822	31.763	23.723
10	13.015	31.761	23.881
20	9.651	31.921	24.605
30	7.844	32.300	25.176
40	5.876	32.559	25.639
50	4.967	32.921	26.031
75	3.334	33.271	26.475

STATION US11440
LATITUDE 42-14.8 N
LONGITUDE 140-30.7 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	14.136	31.811	23.696
10	11.126	31.776	24.244
20	8.563	32.212	25.002
30	6.674	32.640	25.603
40	4.777	32.722	25.894
50	3.935	32.939	26.153
75	3.333	33.343	26.533

STATION US11441
LATITUDE 42-19.9 N
LONGITUDE 140-24.7 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	13.944	31.697	23.647
10	10.227	31.984	24.560
20	7.291	32.371	25.309
30	5.887	32.525	25.611
40	4.802	32.731	25.898
50	3.931	32.939	26.154

STATION US11442
LATITUDE 42-19.7 N
LONGITUDE 140-38.2 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	13.883	31.739	23.692
10	13.628	31.744	23.747
20	10.271	31.915	24.498
30	7.426	32.427	25.334
40	5.938	32.629	25.687
50	4.343	32.841	26.034

STATION US11443
LATITUDE 42-19.7 N
LONGITUDE 140-50.4 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	14.192	31.897	23.751
10	12.908	31.987	24.078
20	8.151	32.371	25.188
30	6.563	32.779	25.727
40	5.278	33.009	26.065

STATION US11444
LATITUDE 42-24.4 N
LONGITUDE 140-50.1 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	12.773	31.783	23.946
10	8.966	32.146	24.889
20	7.887	32.637	25.435
30	6.322	32.716	25.708

STATION US11445
LATITUDE 42-24.8 N
LONGITUDE 140-36.9 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	14.817	31.667	23.443
10	11.058	31.870	24.327
20	7.878	32.309	25.178
30	7.158	32.600	25.507
40	5.652	32.652	25.739
50	4.455	33.028	26.171
75	3.412	33.381	26.555

STATION US11446
LATITUDE 42-24.8 N
LONGITUDE 140-25.3 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	14.827	31.780	23.528
10	9.618	32.032	24.697
20	7.365	32.492	25.394
30	5.878	32.543	25.626
40	4.921	32.704	25.864
50	4.320	32.888	26.074

STATION US11447
LATITUDE 42-29.7 N
LONGITUDE 140-30.3 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	14.884	31.799	23.530
10	10.020	32.081	24.670
20	7.436	32.349	25.272
30	5.895	32.527	25.612
40	4.863	32.788	25.937
50	4.431	33.019	26.167

STATION US11448
LATITUDE 42-29.5 N
LONGITUDE 140-40.0 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	14.706	31.820	23.584
10	10.756	31.782	24.313
20	8.014	32.381	25.216
30	6.280	32.490	25.535
40	5.125	32.640	25.791
50	4.540	32.937	26.090

STATION US11449
LATITUDE 41-59.3 N
LONGITUDE 141-01.9 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	12.264	31.925	24.153
10	10.845	32.069	24.520
20	5.855	32.510	25.603
30	5.448	32.791	25.873
40	5.663	33.028	26.036
50	6.254	33.234	26.125
75	5.973	33.525	26.391

STATION US11450
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	10.811	32.079	24.534
10	7.599	32.345	25.246
20	5.935	32.561	25.634
30	5.369	32.807	25.895
40	6.224	33.187	26.092
50	7.658	33.649	26.262
75	5.657	33.501	26.410

STATION US11451
LATITUDE 41-58.0 N
LONGITUDE 140-59.5 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	14.836	31.727	23.485
10	9.376	32.147	24.826
20	7.583	32.704	25.531
30	5.477	32.699	25.797
40	5.788	33.007	26.004
50	7.320	33.573	26.250
75	6.214	33.558	26.386

STATION US11452
LATITUDE 41-57.3 N
LONGITUDE 140-58.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	12.815	31.829	23.973
10	9.157	32.147	24.861
20	9.213	32.905	25.445
30	5.939	32.759	25.789
40	6.102	33.020	25.976
50	6.501	33.452	26.265

STATION US11453
LATITUDE 41-35.1 N
LONGITUDE 140-53.2 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	12.678	33.920	25.620
10	12.164	33.964	25.753
20	11.770	34.005	25.860
30	11.745	34.013	25.870

STATION US11454
LATITUDE 41-37.0 N
LONGITUDE 140-51.3 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	12.468	33.934	25.672
10	11.948	33.963	25.793
20	11.594	34.004	25.892
30	11.459	34.025	25.933
40	11.145	34.051	26.010
50	10.867	34.075	26.079
75	10.784	34.088	26.104

STATION US11455
LATITUDE 41-38.8 N
LONGITUDE 140-49.3 E
DEPTH (m) 339

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

STATION US11456
LATITUDE 41-40.8 N
LONGITUDE 140-47.3 E
DEPTH (m) 225

Press.	Temp.	Salinity	Sigma-T
5	14.365	33.970	25.314
10	13.475	33.996	25.520
20	12.404	34.048	25.772
30	12.070	34.062	25.847
40	11.693	34.072	25.926
50	11.017	34.072	26.050
75	10.670	34.104	26.137
100	10.273	34.124	26.221
125	9.921	34.130	26.286
150	9.620	34.135	26.340
175	9.170	34.142	26.419
200	9.133	34.143	26.426

STATION US11457
LATITUDE 41-42.8 N
LONGITUDE 140-45.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	13.742	33.291	24.920
10	13.680	33.369	24.993
20	10.882	33.960	25.987
30	10.325	34.004	26.119
40	9.995	34.053	26.214
50	9.688	34.101	26.303
75	9.422	34.112	26.355

STATION US11458
LATITUDE 41-49.4 N
LONGITUDE 141-13.2 E
DEPTH (m) 177

Press.	Temp.	Salinity	Sigma-T
5	17.414	31.967	23.091
10	16.492	32.030	23.353
20	13.692	32.200	24.087
30	8.031	32.758	25.509
40	7.152	33.002	25.824
50	6.288	33.272	26.151
75	5.989	33.426	26.310
100	5.854	33.483	26.372
125	5.369	33.542	26.477
150	4.035	33.475	26.569

STATION US11459
LATITUDE 42-04.4 N
LONGITUDE 140-57.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	18.970	32.214	22.900
10	17.414	32.265	23.319
20	13.645	32.738	24.512
30	7.165	32.455	25.392
40	6.538	32.861	25.795
50	5.625	32.874	25.918
75	4.303	33.146	26.281

STATION US11460
LATITUDE 42-17.5 N
LONGITUDE 140-54.0 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	18.138	31.415	22.495
10	17.069	31.882	23.107
20	14.334	32.516	24.199
30	9.371	32.798	25.336
40	7.378	32.845	25.670
50	6.047	32.963	25.938

STATION US11461
LATITUDE 41-57.6 N
LONGITUDE 140-58.4 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	19.413	31.319	22.107
10	18.090	31.408	22.501
20	14.123	32.034	23.871
30	8.916	32.327	25.039
40	7.279	32.868	25.702
50	6.430	33.165	26.049
75	4.906	33.363	26.388

STATION US11462
LATITUDE 41-58.1 N
LONGITUDE 140-59.4 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	18.546	31.529	22.483
10	17.738	31.470	22.633
20	13.283	32.084	24.079
30	8.029	32.445	25.264
40	6.772	33.036	25.903
50	6.601	33.341	26.165
75	5.522	33.386	26.336

STATION US11463
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	19.129	31.368	22.215
10	17.608	32.032	23.095
20	11.272	32.220	24.563
30	7.889	32.892	25.634
40	5.303	32.936	26.005
50	5.567	33.118	26.118
75	5.432	33.302	26.280

STATION US11464
LATITUDE 41-59.3 N
LONGITUDE 141-02.0 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	20.479	31.631	22.069
10	16.683	31.988	23.277
20	13.668	32.840	24.586
30	6.710	32.839	25.755
40	5.318	32.911	25.983
50	5.319	33.042	26.087
75	5.380	33.252	26.246

STATION US11465
LATITUDE 41-53.0 N
LONGITUDE 141-08.6 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	18.132	31.506	22.566
10	17.496	31.765	22.917
20	13.831	32.067	23.956
30	10.446	32.946	25.273
40	6.201	33.120	26.042
50	6.375	33.364	26.212
75	5.932	33.507	26.381

STATION US11466
LATITUDE 41-47.0 N
LONGITUDE 141-14.4 E
DEPTH (m) 197

Press.	Temp.	Salinity	Sigma-T
5	17.882	32.001	23.005
10	16.447	32.429	23.670
20	10.517	32.808	25.153
30	6.279	32.967	25.912
40	5.983	33.155	26.097
50	6.141	33.334	26.219
75	6.251	33.546	26.372
100	5.372	33.483	26.429
125	4.959	33.495	26.487
150	4.353	33.513	26.567
175	3.861	33.494	26.602

STATION US11467
LATITUDE 41-44.1 N
LONGITUDE 141-16.0 E
DEPTH (m) 229

Press.	Temp.	Salinity	Sigma-T
5	18.804	32.077	22.838
10	16.915	32.583	23.680
20	14.876	32.679	24.210
30	9.788	32.905	25.352
40	11.404	34.041	25.955
50	8.653	33.606	26.081
75	6.428	33.537	26.342
100	5.918	33.599	26.456
125	4.561	33.476	26.516
150	3.291	33.375	26.562
175	2.772	33.376	26.609
200	2.676	33.422	26.654

STATION US11468
LATITUDE 41-41.0 N
LONGITUDE 141-17.6 E
DEPTH (m) 233

Press.	Temp.	Salinity	Sigma-T
5	14.985	33.584	24.883
10	12.546	33.981	25.693
20	11.932	34.122	25.920
30	11.598	34.121	25.982
40	11.238	34.088	26.022
50	10.315	33.975	26.098
75	9.096	34.089	26.389
100	7.758	33.915	26.457
125	6.724	33.847	26.548
150	4.623	33.578	26.590
175	2.808	33.473	26.683
200	2.734	33.516	26.724

STATION US11469
LATITUDE 41-37.9 N
LONGITUDE 141-19.1 E
DEPTH (m) 215

Press.	Temp.	Salinity	Sigma-T
5	16.034	33.771	24.795
10	15.864	33.779	24.839
20	14.394	33.873	25.233
30	13.756	33.926	25.408
40	13.421	33.952	25.496
50	13.143	33.993	25.584
75	10.668	34.037	26.085
100	8.545	33.911	26.336
125	7.752	33.931	26.470
150	7.793	33.980	26.503
175	6.265	33.855	26.614
200	3.477	33.703	26.806

STATION US11470
LATITUDE 41-35.0 N
LONGITUDE 141-20.4 E
DEPTH (m) 311

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

STATION US11471
LATITUDE 41-32.0 N
LONGITUDE 141-22.0 E
DEPTH (m) 254

Press.	Temp.	Salinity	Sigma-T
5	18.345	33.862	24.316
10	18.169	33.875	24.369
20	16.702	33.947	24.776
30	15.740	34.033	25.063
40	15.627	34.045	25.097
50	13.984	34.070	25.471
75	12.548	34.138	25.815
100	11.521	34.172	26.036
125	10.981	34.169	26.132
150	10.228	34.176	26.269
175	10.170	34.177	26.280
200	10.007	34.175	26.306

STATION US11472
LATITUDE 41-26.3 N
LONGITUDE 141-15.6 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	17.615	33.886	24.513
10	16.833	33.976	24.768
20	16.448	34.015	24.887
30	16.398	34.019	24.902
40	13.093	34.084	25.665
50	11.510	34.178	26.042

STATION US11473
LATITUDE 41-26.4 N
LONGITUDE 141-20.9 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	17.603	33.908	24.532
10	17.448	33.937	24.592
20	17.238	33.955	24.656
30	16.655	33.978	24.810
40	10.730	34.164	26.173
50	10.455	34.187	26.239

STATION US11474
LATITUDE 41-27.4 N
LONGITUDE 141-24.2 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	17.288	33.870	24.579
10	17.239	33.886	24.603
20	17.114	33.953	24.684
30	11.966	34.092	25.890

STATION US11475
LATITUDE 41-28.9 N
LONGITUDE 141-23.7 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	18.158	33.850	24.353
10	18.076	33.833	24.359
20	17.791	33.842	24.436
30	17.190	33.942	24.658
40	14.836	34.005	25.239
50	11.373	34.170	26.062
75	10.665	34.202	26.214

STATION US11476
LATITUDE 41-32.8 N
LONGITUDE 139-56.2 E
DEPTH (m) 136

Press.	Temp.	Salinity	Sigma-T
5	23.126	33.796	22.984
10	23.054	33.816	23.021
20	22.027	33.887	23.365
30	19.551	33.877	24.022
40	14.791	34.055	25.289
50	11.771	34.109	25.940
75	8.682	34.115	26.475
100	7.627	34.091	26.615
125	5.104	34.041	26.903

STATION US11477
LATITUDE 41-29.7 N
LONGITUDE 139-21.4 E
DEPTH (m) 107

Press.	Temp.	Salinity	Sigma-T
5	23.059	33.742	22.963
10	22.494	33.753	23.132
20	21.148	33.789	23.532
30	20.260	33.809	23.785
40	11.583	33.870	25.790
50	9.136	33.943	26.269
75	4.947	34.004	26.891

STATION US11478
LATITUDE 41-11.7 N
LONGITUDE 140-42.5 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	21.051	32.891	22.875
10	20.840	32.913	22.949
20	20.246	33.532	23.578
30	17.912	33.866	24.425
40	15.383	34.061	25.164
50	14.630	34.100	25.358

STATION US11479
LATITUDE 41-09.0 N
LONGITUDE 140-41.2 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	21.057	32.936	22.908
10	20.926	32.908	22.922
20	20.357	33.533	23.549
30	18.268	33.772	24.266
40	15.932	33.976	24.975

STATION US11480
LATITUDE 41-02.5 N
LONGITUDE 140-43.2 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	20.009	32.933	23.184
10	19.938	32.908	23.183
20	19.704	33.784	23.911
30	19.111	33.841	24.107
40	17.125	33.961	24.688
50	13.704	34.112	25.562

STATION US11481
LATITUDE 40-57.1 N
LONGITUDE 140-45.8 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	19.865	33.072	23.327
10	19.972	33.327	23.494
20	19.363	33.762	23.983
30	18.648	33.874	24.249
40	14.777	33.670	24.995

STATION US11482
LATITUDE 40-53.3 N
LONGITUDE 140-46.1 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	21.327	32.772	22.710
10	20.148	33.845	23.842
20	19.432	33.855	24.036
30	17.128	33.845	24.597

STATION US11483
LATITUDE 40-59.8 N
LONGITUDE 140-47.2 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	19.764	33.023	23.316
10	19.752	33.025	23.321
20	18.786	33.643	24.038
30	16.877	33.767	24.597
40	14.423	33.640	25.047

STATION US11484
LATITUDE 41-02.6 N
LONGITUDE 140-46.3 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	20.003	33.165	23.362
10	19.933	33.158	23.375
20	18.923	33.464	23.867
30	16.940	33.930	24.707
40	13.962	33.682	25.177

STATION US11485
LATITUDE 41-03.7 N
LONGITUDE 140-52.2 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	18.236	32.941	23.638
10	18.120	32.989	23.703
20	18.236	33.352	23.952
30	18.193	33.617	24.166
40	15.829	33.847	24.899

STATION US11486
LATITUDE 41-04.7 N
LONGITUDE 141-02.3 E
DEPTH (m) 46

Press.	Temp.	Salinity	Sigma-T
5	20.811	32.637	22.746
10	20.740	32.643	22.770
20	20.058	32.714	23.004
30	16.989	33.339	24.243
40	12.870	33.603	25.336

STATION US11487
LATITUDE 41-01.9 N
LONGITUDE 141-00.9 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	20.817	32.641	22.748
10	20.808	32.638	22.748
20	19.211	32.788	23.278
30	15.978	33.446	24.557
40	13.161	33.565	25.249

STATION US11488
LATITUDE 40-57.6 N
LONGITUDE 141-06.7 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	21.000	32.616	22.680
10	20.995	32.658	22.713
20	17.083	33.006	23.965
30	15.779	33.609	24.728

STATION US11489
LATITUDE 41-05.5 N
LONGITUDE 141-09.9 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	20.630	32.680	22.827
10	20.358	32.701	22.915
20	17.327	32.984	23.890
30	13.885	33.278	24.881

STATION US11490
LATITUDE 41-10.7 N
LONGITUDE 141-10.9 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	21.435	32.630	22.573
10	18.907	32.771	23.342
20	15.452	32.991	24.325

STATION US11491
LATITUDE 41-07.9 N
LONGITUDE 141-03.8 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	20.679	32.668	22.805
10	20.310	32.706	22.932
20	19.254	32.828	23.297
30	14.127	33.378	24.908

STATION US11492
LATITUDE 41-06.2 N
LONGITUDE 140-51.6 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	18.909	32.958	23.484
10	18.562	33.039	23.633
20	18.396	33.276	23.855
30	18.483	33.683	24.145
40	15.457	33.811	24.955

STATION US11493
LATITUDE 41-08.4 N
LONGITUDE 140-43.9 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	20.822	32.857	22.911
10	20.655	32.878	22.971
20	19.830	33.254	23.475
30	19.566	33.572	23.785
40	17.993	33.847	24.391
50	13.520	33.935	25.463

STATION US11494
LATITUDE 41-44.4 N
LONGITUDE 140-46.0 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	33.389	23.176	
10	33.484	23.354	
20	33.848	24.029	
30	34.080	24.722	
40	34.167	25.269	
50	34.200	25.695	

STATION US11495
LATITUDE 41-04.1 N
LONGITUDE 140-42.7 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	20.599	33.075	23.136
10	20.454	33.085	23.182
20	19.281	33.506	23.808
30	17.554	33.788	24.452
40	15.561	33.916	25.012
50	14.385	34.109	25.417

STATION US11496
LATITUDE 41-02.9 N
LONGITUDE 140-46.0 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	21.231	33.049	22.947
10	20.683	33.057	23.101
20	19.654	33.357	23.599
30	17.494	33.838	24.505
40	14.586	34.000	25.290
50	12.823	34.197	25.806

STATION US11497
LATITUDE 41-01.1 N
LONGITUDE 140-43.2 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	20.546	33.086	23.159
10	20.292	33.084	23.225
20	19.384	33.605	23.858
30	18.148	33.831	24.341
40	16.744	33.944	24.764
50	14.287	34.128	25.453

STATION US11498
LATITUDE 40-58.6 N
LONGITUDE 140-44.9 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	20.533	33.107	23.178
10	20.294	33.153	23.276
20	19.157	33.607	23.917
30	18.253	33.829	24.313
40	16.227	34.002	24.928
50	13.550	34.134	25.611

STATION US11499
LATITUDE 40-52.0 N
LONGITUDE 140-45.8 E
DEPTH (m) 27

Press.	Temp.	Salinity	Sigma-T
5	21.514	33.052	22.872
10	20.634	33.114	23.157
20	19.230	33.463	23.788

STATION US11500
LATITUDE 40-55.4 N
LONGITUDE 140-46.4 E
DEPTH (m) 41

Press.	Temp.	Salinity	Sigma-T
5	20.622	33.071	23.127
10	20.169	33.141	23.300
20	19.951	33.814	23.870
30	18.270	33.694	24.206
40	15.802	34.022	25.041

STATION US11501
LATITUDE 40-57.2 N
LONGITUDE 140-45.6 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	21.039	33.077	23.020
10	20.364	33.160	23.263
20	19.711	33.496	23.690
30	17.977	33.835	24.386

STATION US11502
LATITUDE 41-03.6 N
LONGITUDE 140-52.1 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	22.032	33.010	22.698
10	20.001	33.176	23.371
20	19.262	33.671	23.939
30	17.883	33.648	24.265
40	15.854	34.016	25.024

STATION US11503
LATITUDE 41-04.9 N
LONGITUDE 140-51.8 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	20.878	33.130	23.104
10	19.914	33.594	23.712
20	18.812	33.644	24.032
30	17.820	33.685	24.309
40	14.806	33.760	25.058
50	11.911	34.158	25.952

STATION US11504
LATITUDE 41-06.0 N
LONGITUDE 140-51.3 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	20.435	33.018	23.136
10	19.554	33.475	23.715
20	18.693	33.615	24.041
30	17.753	33.836	24.441
40	13.987	33.665	25.158

STATION US11505
LATITUDE 41-05.7 N
LONGITUDE 140-47.8 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	21.668	33.026	22.811
10	20.359	33.121	23.235
20	19.651	33.774	23.918
30	16.840	33.807	24.637
40	13.034	33.531	25.248

STATION US11506
LATITUDE 41-08.6 N
LONGITUDE 140-44.1 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	20.886	33.099	23.078
10	19.276	33.546	23.840
20	18.708	33.737	24.130
30	16.583	33.735	24.641
40	14.757	33.756	25.065
50	13.078	33.856	25.491

STATION US11507
LATITUDE 41-09.0 N
LONGITUDE 140-41.3 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	20.492	32.965	23.081
10	20.024	32.997	23.228
20	20.090	33.429	23.540
30	18.783	33.735	24.109
40	17.212	33.899	24.619

STATION US11508
LATITUDE 41-11.4 N
LONGITUDE 140-42.5 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	20.320	32.933	23.102
10	20.284	33.320	23.407
20	19.766	33.626	23.775
30	19.146	33.706	23.995
40	17.630	33.857	24.487
50	15.591	34.011	25.079

STATION US11509
LATITUDE 41-34.8 N
LONGITUDE 140-53.1 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	19.956	33.691	23.775
10	19.333	33.777	24.002
20	15.423	34.082	25.171

STATION US11510
LATITUDE 41-36.9 N
LONGITUDE 140-51.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	21.051	33.573	23.394
10	21.027	33.572	23.400
20	18.577	33.754	24.175
30	15.992	34.054	25.022
40	14.374	34.190	25.482
50	13.138	34.251	25.785
75	12.232	34.304	26.005

STATION US11511
LATITUDE 41-38.8 N
LONGITUDE 140-49.3 E
DEPTH (m) 331

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

STATION US11512
LATITUDE 41-40.7 N
LONGITUDE 140-47.2 E
DEPTH (m) 223

Press.	Temp.	Salinity	Sigma-T
5	22.619	33.571	22.958
10	22.588	33.627	23.010
20	19.332	33.908	24.102
30	18.098	34.008	24.488
40	15.984	34.186	25.125
50	13.845	34.164	25.573
75	12.212	34.311	26.014
100	11.234	34.263	26.159
125	10.634	34.251	26.258
150	10.381	34.255	26.305
175	10.045	34.245	26.355
200	9.997	34.243	26.362

STATION US11513
LATITUDE 41-42.3 N
LONGITUDE 140-45.7 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	22.760	33.659	22.985
10	22.317	33.751	23.180
20	21.443	33.754	23.425
30	18.712	33.899	24.253
40	16.206	34.075	24.989
50	12.804	34.238	25.841
75	11.348	34.231	26.114

STATION US11514
LATITUDE 41-44.1 N
LONGITUDE 140-46.0 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	21.936	33.678	23.231
10	21.257	33.787	23.501
20	17.883	33.972	24.514
30	16.128	34.112	25.035
40	15.502	34.156	25.211
50	13.340	34.207	25.710

STATION US11515
LATITUDE 41-23.5 N
LONGITUDE 140-10.5 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	17.911	34.084	24.592
10	17.463	34.125	24.733
20	14.301	34.248	25.543

STATION US11516
LATITUDE 41-22.1 N
LONGITUDE 140-11.6 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	25.078	33.870	22.464
10	21.650	33.889	23.470
20	16.480	34.183	25.009
30	12.808	34.304	25.892
40	10.611	34.240	26.253
50	10.046	34.244	26.353

STATION US11517
LATITUDE 41-19.5 N
LONGITUDE 140-12.6 E
DEPTH (m) 183

Press.	Temp.	Salinity	Sigma-T
5	25.240	33.315	21.996
10	20.916	33.861	23.648
20	15.715	34.293	25.268
30	12.854	34.294	25.875
40	11.061	34.228	26.163
50	9.747	34.217	26.383
75	9.083	34.198	26.477
100	8.877	34.192	26.505
125	8.758	34.184	26.517
150	8.730	34.184	26.522
175	8.751	34.185	26.519

STATION US11518
LATITUDE 41-17.5 N
LONGITUDE 140-13.8 E
DEPTH (m) 242

Press.	Temp.	Salinity	Sigma-T
5	24.496	33.301	22.209
10	23.994	33.431	22.456
20	20.741	33.746	23.609
30	18.765	33.992	24.310
40	18.613	34.040	24.385
50	17.951	34.113	24.604
75	14.771	34.394	25.554
100	13.444	34.390	25.831
125	11.517	34.312	26.146
150	10.737	34.282	26.263
175	10.366	34.260	26.312
200	10.298	34.265	26.327

STATION US11519
LATITUDE 41-16.0 N
LONGITUDE 140-15.0 E
DEPTH (m) 169

Press.	Temp.	Salinity	Sigma-T
5	25.917	32.523	21.191
10	21.909	33.321	22.967
20	21.024	33.599	23.421
30	20.827	33.747	23.587
40	20.569	33.823	23.714
50	20.044	33.869	23.888
75	15.419	34.148	25.223
100	13.027	34.361	25.893
125	12.996	34.367	25.904
150	12.000	34.360	26.092

STATION US11520
LATITUDE 41-14.0 N
LONGITUDE 140-16.6 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	25.455	32.927	21.638
10	24.654	33.041	21.965
20	22.228	33.704	23.170
30	20.631	33.824	23.698
40	19.445	33.923	24.085
50	16.760	33.919	24.741
75	15.646	34.099	25.135

STATION US11521
LATITUDE 41-12.1 N
LONGITUDE 140-17.7 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	24.484	33.111	22.069
10	23.135	33.122	22.471
20	22.203	33.619	23.112
30	21.615	33.751	23.376
40	20.254	33.823	23.798

STATION US11522
LATITUDE 41-28.9 N
LONGITUDE 140-21.2 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	19.777	34.148	24.170
10	17.188	33.946	24.661
20	14.648	34.123	25.372
30	12.788	34.177	25.797
40	10.744	34.195	26.195
50	10.221	34.215	26.301

STATION US11523
LATITUDE 41-27.1 N
LONGITUDE 140-22.1 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	19.035	34.078	24.308
10	18.017	34.070	24.556
20	15.874	34.097	25.081
30	12.408	34.149	25.850
40	12.118	34.197	25.943
50	11.710	34.204	26.025
75	10.529	34.234	26.263

STATION US11524
LATITUDE 41-25.2 N
LONGITUDE 140-23.5 E
DEPTH (m) 234

Press.	Temp.	Salinity	Sigma-T
5	18.842	34.107	24.379
10	16.640	34.283	25.049
20	15.738	34.128	25.136
30	13.680	34.148	25.595
40	11.178	34.209	26.127
50	10.612	34.216	26.234
75	9.976	34.215	26.343
100	9.724	34.214	26.385
125	9.692	34.217	26.392
150	9.606	34.211	26.402
175	9.587	34.213	26.407
200	9.622	34.217	26.404

STATION US11525
LATITUDE 41-23.2 N
LONGITUDE 140-24.9 E
DEPTH (m) 259

Press.	Temp.	Salinity	Sigma-T
5	25.522	32.482	21.282
10	24.810	32.925	21.831
20	23.069	33.517	22.790
30	22.782	33.504	22.862
40	22.348	33.555	23.023
50	20.062	33.803	23.832
75	15.917	34.222	25.168
100	13.895	34.287	25.658
125	11.904	34.234	26.013
150	10.763	34.228	26.216
175	10.393	34.248	26.297
200	10.237	34.237	26.316
250	10.135	34.234	26.331

STATION US11526
LATITUDE 41-21.1 N
LONGITUDE 140-26.0 E
DEPTH (m) 199

Press.	Temp.	Salinity	Sigma-T
5	23.493	33.220	22.442
10	22.063	33.518	23.074
20	19.897	33.674	23.777
30	16.864	33.935	24.729
40	15.320	34.100	25.208
50	15.211	34.132	25.257
75	13.346	34.318	25.795
100	12.949	34.356	25.904
125	12.929	34.352	25.905
150	12.849	34.339	25.911
175	12.394	34.329	25.992

STATION US11527
LATITUDE 41-19.0 N
LONGITUDE 140-27.4 E
DEPTH (m) 112

Press.	Temp.	Salinity	Sigma-T
5	21.174	33.676	23.439
10	20.709	33.716	23.595
20	20.241	33.711	23.715
30	19.767	33.758	23.875
40	19.610	33.777	23.931
50	18.956	33.836	24.143
75	13.918	34.237	25.614
100	12.843	34.289	25.873

STATION US11528
LATITUDE 41-17.1 N
LONGITUDE 140-28.6 E
DEPTH (m) 156

Press.	Temp.	Salinity	Sigma-T
5	21.054	33.881	23.627
10	18.750	34.045	24.355
20	17.709	33.930	24.523
30	16.019	34.078	25.035
40	14.523	34.183	25.445
50	13.884	34.185	25.581
75	12.980	34.301	25.855
100	12.406	34.324	25.986
125	12.304	34.334	26.013

STATION US11529
LATITUDE 41-15.3 N
LONGITUDE 140-29.8 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	22.118	32.363	22.183
10	20.426	33.766	23.708
20	18.849	33.824	24.161
30	16.734	33.924	24.751
40	14.281	34.119	25.447
50	13.096	34.203	25.756
75	12.499	34.279	25.933

7

THE " USHIO MARU "

CRUISE 233
CRUISE 234
CRUISE 235

IN AUGUST - SEPTEMBER 2011

1. Cruise Itinerary

Cruise 233

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

Total coverage 540.5 miles

Cruise 234

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

Total coverage 602.2 miles

Cruise 235

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

Total coverage 209.2 miles

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

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

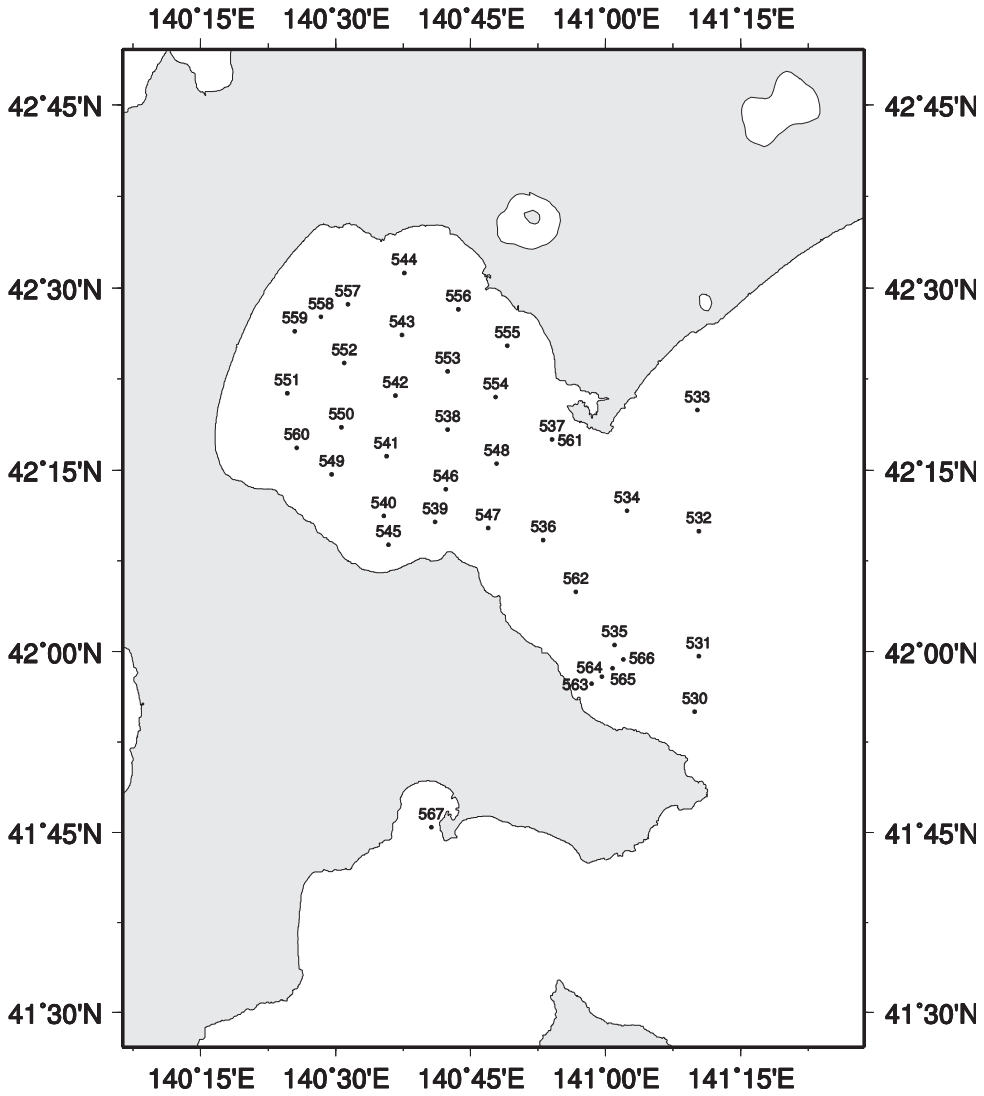

Figure 1. Oceanographic stations (Cruise 233)

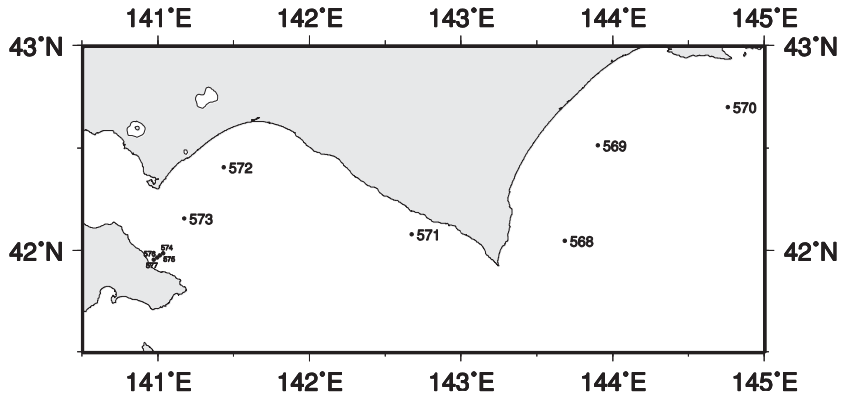

Figure 2. Oceanographic stations (Cruise 234)

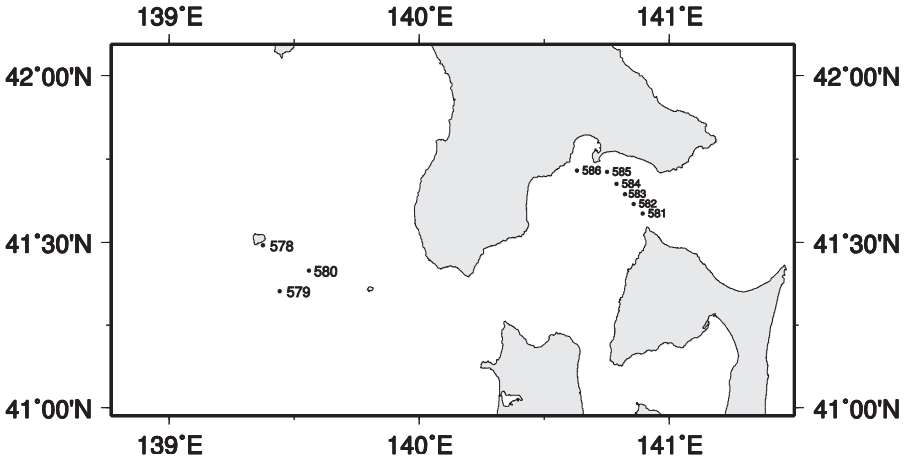

Figure 3. Oceanographic stations (Cruise 235)

Table 1: List of oceanographic stations

Cruise 233

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

Cruise 234

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

Cruise 235

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION	US11530	
LATITUDE	41-55.1	N
LONGITUDE	141-09.8	E
DEPTH (m)	178	

Press.	Temp.	Salinity	Sigma-T
5	18.677	31.921	22.750
10	16.332	32.156	23.486
20	12.942	33.009	24.862
30	9.573	33.204	25.621
40	9.024	33.482	25.926
50	9.645	33.879	26.136
75	9.730	34.053	26.258
100	8.385	33.861	26.322
125	7.449	33.759	26.379
150	5.809	33.603	26.472

STATION	US11531	
LATITUDE	41-59.7	N
LONGITUDE	141-10.3	E
DEPTH (m)	140	

Press.	Temp.	Salinity	Sigma-T
5	21.068	32.414	22.508
10	17.799	32.872	23.691
20	14.735	33.888	25.172
30	12.913	34.075	25.693
40	11.944	34.075	25.881
50	11.495	34.131	26.009
75	9.576	33.929	26.186
100	8.510	33.874	26.313
125	7.555	33.760	26.364

STATION	US11532	
LATITUDE	42-10.0	N
LONGITUDE	141-10.3	E
DEPTH (m)	123	

Press.	Temp.	Salinity	Sigma-T
5	21.324	32.428	22.450
10	17.188	32.875	23.840
20	12.375	33.249	25.158
30	13.300	34.051	25.598
40	12.687	34.039	25.710
50	12.165	34.117	25.872
75	10.008	33.933	26.117
100	7.579	33.695	26.310

STATION	US11533	
LATITUDE	42-20.0	N
LONGITUDE	141-10.1	E
DEPTH (m)	73	

Press.	Temp.	Salinity	Sigma-T
5	21.114	32.127	22.278
10	18.077	32.499	23.339
20	13.034	33.140	24.945
30	9.578	33.186	25.605
40	8.564	33.249	25.814
50	7.798	33.333	25.994

STATION	US11534	
LATITUDE	42-11.7	N
LONGITUDE	141-02.3	E
DEPTH (m)	80	

Press.	Temp.	Salinity	Sigma-T
5	21.426	32.317	22.338
10	19.289	32.869	23.320
20	13.817	33.217	24.847
30	12.007	33.629	25.523
40	10.146	33.748	25.949
50	9.196	33.754	26.111

STATION	US11535	
LATITUDE	42-00.6	N
LONGITUDE	141-00.9	E
DEPTH (m)	91	

Press.	Temp.	Salinity	Sigma-T
5	17.904	31.982	22.984
10	12.730	32.643	24.620
20	11.268	33.182	25.312
30	8.524	33.133	25.730
40	7.576	33.336	26.028
50	6.180	33.230	26.132
75	6.127	33.508	26.358

STATION	US11536	
LATITUDE	42-09.3	N
LONGITUDE	140-53.0	E
DEPTH (m)	77	

Press.	Temp.	Salinity	Sigma-T
5	21.851	32.604	22.440
10	17.617	33.025	23.853
20	13.620	33.609	25.191
30	10.494	33.432	25.643
40	7.792	33.228	25.913
50	8.018	33.529	26.116

STATION	US11537	
LATITUDE	42-17.6	N
LONGITUDE	140-54.0	E
DEPTH (m)	56	

Press.	Temp.	Salinity	Sigma-T
5	21.078	31.809	22.046
10	17.662	32.628	23.537
20	13.291	32.955	24.751
30	9.905	33.139	25.515
40	8.828	33.158	25.703

STATION	US11538	
LATITUDE	42-18.4	N
LONGITUDE	140-42.4	E
DEPTH (m)	63	

Press.	Temp.	Salinity	Sigma-T
5	22.530	31.354	21.303
10	21.331	31.447	21.703
20	17.037	31.970	23.181
30	10.003	32.467	24.974
40	7.474	32.907	25.705
50	5.497	32.978	26.016

STATION	US11539	
LATITUDE	42-10.8	N
LONGITUDE	140-41.0	E
DEPTH (m)	87	

Press.	Temp.	Salinity	Sigma-T
5	22.275	31.333	21.359
10	20.592	31.564	21.989
20	13.326	32.513	24.402
30	8.853	32.836	25.447
40	7.071	33.012	25.843
50	5.349	32.947	26.008
75	3.818	33.243	26.406

STATION	US11540	
LATITUDE	42-11.3	N
LONGITUDE	140-35.3	E
DEPTH (m)	79	

Press.	Temp.	Salinity	Sigma-T
5	22.110	31.352	21.418
10	19.418	31.700	22.396
20	12.608	32.512	24.542
30	7.720	32.593	25.424
40	5.829	32.775	25.815
50	5.039	33.002	26.087
75	3.769	33.216	26.390

STATION	US11541	
LATITUDE	42-16.2	N
LONGITUDE	140-35.6	E
DEPTH (m)	91	

Press.	Temp.	Salinity	Sigma-T
5	22.259	31.348	21.374
10	21.670	31.417	21.588
20	16.707	31.947	23.240
30	9.022	32.521	25.173
40	6.120	32.761	25.769
50	7.693	33.399	26.061
75	5.773	33.452	26.358

STATION	US11542	
LATITUDE	42-21.2	N
LONGITUDE	140-36.6	E
DEPTH (m)	87	

Press.	Temp.	Salinity	Sigma-T
5	22.632	31.321	21.250
10	22.347	31.340	21.343
20	16.928	31.951	23.192
30	8.650	32.393	25.131
40	6.876	32.870	25.757
50	6.822	33.328	26.126
75	6.062	33.362	26.251

STATION	US11543	
LATITUDE	42-26.2	N
LONGITUDE	140-37.3	E
DEPTH (m)	82	

Press.	Temp.	Salinity	Sigma-T
5	22.507	31.301	21.270
10	22.387	31.300	21.302
20	15.360	32.113	23.668
30	7.429	32.435	25.340
40	5.910	32.776	25.806
50	5.075	32.899	26.001
75	3.875	33.191	26.359

STATION	US11544	
LATITUDE	42-31.3	N
LONGITUDE	140-37.6	E
DEPTH (m)	60	

Press.	Temp.	Salinity	Sigma-T
5	22.003	31.198	21.331
10	18.793	31.783	22.616
20	10.770	32.661	24.995
30	6.571	32.583	25.572
40	5.679	32.819	25.868
50	5.437	33.006	26.045

STATION	US11545	
LATITUDE	42-08.9	N
LONGITUDE	140-35.8	E
DEPTH (m)	66	

Press.	Temp.	Salinity	Sigma-T
5	22.033	31.530	21.574
10	18.536	32.108	22.926
20	10.879	32.581	24.914
30	6.480	32.497	25.515
40	5.612	32.839	25.892
50	5.183	33.006	26.074

STATION	US11546	
LATITUDE	42-13.5	N
LONGITUDE	140-42.2	E
DEPTH (m)	87	

Press.	Temp.	Salinity	Sigma-T
5	22.620	31.324	21.255
10	21.001	31.506	21.835
20	15.791	32.145	23.599
30	9.029	32.653	25.275
40	9.571	33.476	25.833
50	7.360	33.354	26.073
75	6.014	33.415	26.299

STATION	US11547	
LATITUDE	42-10.3	N
LONGITUDE	140-46.9	E
DEPTH (m)	94	

Press.	Temp.	Salinity	Sigma-T
5	22.044	31.396	21.470
10	17.029	32.142	23.315
20	14.629	32.946	24.468
30	8.634	32.855	25.495
40	7.446	33.079	25.845
50	4.992	32.946	26.048
75	3.711	33.148	26.341

STATION US11548
LATITUDE 42-15.6 N
LONGITUDE 140-47.8 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	22.674	31.303	21.224
10	22.412	31.363	21.343
20	14.911	32.235	23.860
30	12.588	33.063	24.973
40	8.949	33.153	25.680
50	7.735	33.349	26.016

STATION US11549
LATITUDE 42-14.7 N
LONGITUDE 140-29.5 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	22.485	31.336	21.302
10	21.517	32.041	22.103
20	12.370	32.406	24.505
30	7.386	32.537	25.426
40	5.929	32.806	25.828
50	4.985	32.898	26.011

STATION US11550
LATITUDE 42-18.6 N
LONGITUDE 140-30.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	22.435	31.390	21.357
10	20.523	31.445	21.917
20	14.378	32.324	24.041
30	8.555	32.564	25.279
40	6.167	32.692	25.709
50	4.864	32.930	26.050
75	3.987	33.212	26.365

STATION US11551
LATITUDE 42-21.4 N
LONGITUDE 140-24.6 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	19.141	31.748	22.502
10	16.687	32.147	23.398
20	11.089	32.578	24.874
30	8.401	32.695	25.405
40	6.095	32.743	25.758
50	5.280	32.958	26.025

STATION US11552
LATITUDE 42-23.9 N
LONGITUDE 140-30.9 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	22.331	31.517	21.482
10	20.751	31.569	21.950
20	14.372	32.446	24.137
30	7.842	32.432	25.281
40	6.044	32.724	25.749
50	5.304	32.964	26.027
75	3.826	33.191	26.365

STATION US11553
LATITUDE 42-23.2 N
LONGITUDE 140-42.4 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	22.956	31.362	21.189
10	20.879	31.492	21.858
20	16.395	32.351	23.621
30	8.978	32.660	25.289
40	6.922	32.915	25.787
50	7.204	33.233	26.000

STATION US11554
LATITUDE 42-21.1 N
LONGITUDE 140-47.7 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	22.838	31.342	21.208
10	19.242	31.875	22.573
20	13.738	33.234	24.876
30	9.765	33.195	25.582
40	8.680	33.229	25.781

STATION US11555
LATITUDE 42-25.3 N
LONGITUDE 140-49.0 E
DEPTH (m) 41

Press.	Temp.	Salinity	Sigma-T
5	22.320	31.365	21.370
10	21.108	32.326	22.431
20	14.747	32.750	24.292
30	10.253	33.117	25.439

STATION US11556
LATITUDE 42-28.3 N
LONGITUDE 140-43.6 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	22.512	31.431	21.366
10	22.439	31.439	21.393
20	15.482	32.768	24.146
30	10.071	32.884	25.288
40	9.187	33.208	25.686
50	6.924	33.144	25.967

STATION US11557
LATITUDE 42-28.7 N
LONGITUDE 140-31.3 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	22.203	31.490	21.497
10	22.099	31.503	21.536
20	16.182	32.268	23.606
30	8.767	32.478	25.180
40	6.554	32.640	25.619
50	5.734	32.893	25.920

STATION US11558
LATITUDE 42-27.7 N
LONGITUDE 140-28.3 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	21.670	31.453	21.616
10	21.449	31.587	21.778
20	13.377	32.353	24.268
30	8.460	32.476	25.224
40	6.791	32.717	25.648
50	7.227	33.172	25.948

STATION US11559
LATITUDE 42-26.5 N
LONGITUDE 140-25.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	21.678	31.510	21.656
10	21.526	31.602	21.768
20	12.967	32.467	24.438
30	10.382	32.812	25.179
40	6.136	32.618	25.654
50	6.446	33.063	25.966

STATION US11560
LATITUDE 42-16.9 N
LONGITUDE 140-25.6 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	21.627	31.510	21.670
10	20.121	31.828	22.310
20	11.915	32.523	24.682
30	9.851	32.708	25.187
40	7.228	32.774	25.635
50	5.976	32.896	25.893

STATION US11561
LATITUDE 42-17.6 N
LONGITUDE 140-54.0 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	21.299	32.248	22.320
10	21.303	32.249	22.320
20	14.437	33.076	24.609
30	12.631	33.450	25.265
40	10.745	33.444	25.609

STATION US11562
LATITUDE 42-05.0 N
LONGITUDE 140-56.6 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	19.444	32.146	22.729
10	18.839	32.447	23.111
20	13.423	33.114	24.848
30	9.534	33.192	25.618
40	8.664	33.432	25.943
50	8.486	33.506	26.028

STATION US11563
LATITUDE 41-57.4 N
LONGITUDE 140-58.4 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	16.079	32.765	24.011
10	14.195	33.032	24.626
20	10.393	32.787	25.158
30	6.755	32.663	25.611
40	5.700	32.805	25.854
50	5.428	32.920	25.978

STATION US11564
LATITUDE 41-58.0 N
LONGITUDE 140-59.5 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	16.987	32.533	23.625
10	14.441	33.040	24.580
20	11.942	33.209	25.209
30	11.389	33.665	25.666
40	10.861	33.858	25.911
50	10.664	33.912	25.988
75	5.058	33.121	26.179

STATION US11565
LATITUDE 41-58.7 N
LONGITUDE 141-00.7 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	17.392	32.507	23.510
10	14.706	33.017	24.507
20	11.910	33.238	25.237
30	9.602	33.200	25.613
40	8.702	33.411	25.920
50	10.361	33.958	26.077
75	7.045	33.459	26.199

STATION US11566
LATITUDE 41-59.4 N
LONGITUDE 141-01.9 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	17.947	32.430	23.317
10	15.261	33.005	24.377
20	12.089	33.046	25.055
30	9.854	33.227	25.592
40	7.880	33.152	25.840
50	7.795	33.332	25.994
75	8.141	33.671	26.210

STATION US11567
LATITUDE 41-45.5 N
LONGITUDE 140-40.6 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	24.331	33.455	22.374
10	24.346	33.456	22.371
20	24.219	33.462	22.413

STATION US11568
LATITUDE 42-03.0 N
LONGITUDE 143-40.8 E
DEPTH (m) 312

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

STATION US11569
LATITUDE 42-31.0 N
LONGITUDE 143-54.0 E
DEPTH (m) 172

Press.	Temp.	Salinity	Sigma-T
5	16.105	32.749	23.993
10	12.971	32.760	24.664
20	11.438	33.288	25.364
30	7.772	33.076	25.796
40	6.771	33.211	26.040
50	6.413	33.269	26.133
75	4.811	33.210	26.277
100	4.130	33.255	26.385
125	2.882	33.217	26.472
150	2.725	33.257	26.517

STATION US11570
LATITUDE 42-42.2 N
LONGITUDE 144-45.4 E
DEPTH (m) 185

Press.	Temp.	Salinity	Sigma-T
5	15.437	32.831	24.205
10	13.168	32.951	24.773
20	11.658	33.345	25.368
30	9.787	33.399	25.737
40	8.968	33.424	25.889
50	8.353	33.444	26.000
75	8.141	33.471	26.053
100	7.267	33.443	26.156
125	5.396	33.276	26.263
150	3.184	33.247	26.470
175	2.325	33.291	26.577

STATION US11571
LATITUDE 42-05.0 N
LONGITUDE 142-40.3 E
DEPTH (m) 119

Press.	Temp.	Salinity	Sigma-T
5	21.410	32.929	22.807
10	20.226	33.725	23.730
20	18.036	33.969	24.474
30	16.951	34.032	24.783
40	14.832	34.063	25.286
50	14.614	34.202	25.440
75	11.528	34.103	25.981
100	9.699	33.993	26.216

STATION US11572
LATITUDE 42-24.6 N
LONGITUDE 141-25.8 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	22.223	33.184	22.777
10	21.214	33.130	23.013
20	16.385	33.622	24.600
30	12.732	33.671	25.416
40	11.916	33.928	25.772
50	11.762	33.997	25.855
75	9.584	33.971	26.218
100	8.112	33.837	26.344

STATION US11573
LATITUDE 42-09.6 N
LONGITUDE 141-10.3 E
DEPTH (m) 124

Press.	Temp.	Salinity	Sigma-T
5	22.469	32.125	21.904
10	20.402	33.479	23.496
20	14.863	33.654	24.964
30	11.573	33.709	25.666
40	10.182	33.590	25.820
50	10.201	33.674	25.882
75	10.523	34.011	26.090
100	9.108	33.898	26.238

STATION US11574
LATITUDE 41-59.4 N
LONGITUDE 141-02.0 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	22.411	31.601	21.524
10	20.362	32.763	22.962
20	16.194	33.521	24.566
30	13.072	33.551	25.256
40	12.111	33.695	25.555
50	11.281	33.787	25.780
75	10.737	33.997	26.042

STATION US11575
LATITUDE 41-58.8 N
LONGITUDE 141-00.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	21.658	31.866	21.932
10	19.936	32.447	22.832
20	16.226	33.350	24.427
30	12.560	33.322	25.179
40	11.823	33.668	25.588
50	9.927	33.463	25.764
75	6.575	33.339	26.167

STATION US11576
LATITUDE 41-58.1 N
LONGITUDE 140-59.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	21.152	31.993	22.165
10	19.555	32.470	22.948
20	15.414	32.982	24.326
30	12.763	33.438	25.229
40	10.323	33.491	25.719
50	10.376	33.596	25.790
75	6.422	33.146	26.034

STATION US11577
LATITUDE 41-57.5 N
LONGITUDE 140-58.2 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	20.952	31.909	22.156
10	18.116	32.198	23.099
20	14.957	32.920	24.378
30	12.638	33.396	25.221
40	11.470	33.487	25.513
50	9.873	33.408	25.730
75	9.402	33.541	25.912

STATION US11578
LATITUDE 41-29.6 N
LONGITUDE 139-22.4 E
DEPTH (m) 246

Press.	Temp.	Salinity	Sigma-T
5	23.466	33.524	22.681
10	23.468	33.524	22.680
20	19.592	33.690	23.868
30	15.239	34.099	25.225
40	12.952	34.197	25.780
50	12.641	34.378	25.982
75	8.744	34.134	26.480
100	7.110	34.080	26.679
125	4.216	34.022	26.986
150	3.128	34.031	27.100
175	2.660	34.045	27.152
200	1.967	34.045	27.209

STATION US11579
LATITUDE 41-21.3 N
LONGITUDE 139-26.4 E
DEPTH (m) 2437

Press.	Temp.	Salinity	Sigma-T
5	22.748	33.531	22.892
10	22.769	33.572	22.917
20	21.763	33.642	23.251
30	14.928	34.182	25.357
40	13.337	34.348	25.820
50	12.174	34.323	26.030
75	9.348	34.191	26.428
100	6.948	34.074	26.697
125	3.244	33.991	27.057
150	2.614	34.005	27.125
175	2.324	34.007	27.150
200	2.222	34.015	27.165

STATION US11580
LATITUDE 41-25.0 N
LONGITUDE 139-33.4 E
DEPTH (m) 1543

Press.	Temp.	Salinity	Sigma-T
5	23.398	33.620	22.773
10	23.315	33.605	22.785
20	17.807	33.958	24.521
30	15.853	34.366	25.293
40	15.534	34.421	25.408
50	14.415	34.389	25.627
75	11.957	34.363	26.103
100	9.910	34.231	26.366
125	8.101	34.134	26.579
150	5.779	34.061	26.838
175	3.402	34.039	27.081
200	2.420	34.028	27.160

STATION US11581
LATITUDE 41-35.3 N
LONGITUDE 140-53.5 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	23.830	33.527	22.576
10	22.691	33.617	22.973
20	19.934	33.856	23.906
30	19.882	33.897	23.951
40	19.190	33.945	24.167

STATION US11582
LATITUDE 41-37.0 N
LONGITUDE 140-51.4 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	23.422	33.541	22.706
10	23.367	33.556	22.733
20	21.976	33.740	23.267
30	19.683	33.959	24.050
40	16.481	34.115	24.957
50	14.214	34.225	25.543
75	13.441	34.286	25.751

STATION US11583
LATITUDE 41-38.8 N
LONGITUDE 140-49.3 E
DEPTH (m) 324

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

STATION US11584
LATITUDE 41-40.7 N
LONGITUDE 140-47.2 E
DEPTH (m) 227

Press.	Temp.	Salinity	Sigma-T
5	21.496	33.634	23.319
10	20.956	33.730	23.539
20	18.034	33.967	24.473
30	15.435	34.105	25.186
40	14.639	34.155	25.399
50	13.327	34.178	25.690
75	12.550	34.241	25.894
100	11.939	34.265	26.030
125	11.526	34.257	26.101
150	11.170	34.254	26.163
175	11.077	34.253	26.180
200	10.876	34.246	26.210

STATION US11585
LATITUDE 41-42.8 N
LONGITUDE 140-45.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	21.578	33.631	23.295
10	21.160	33.763	23.510
20	20.404	33.823	23.758
30	17.954	33.961	24.488
40	14.734	34.071	25.313
50	13.672	34.185	25.625
75	12.299	34.247	25.947

STATION US11586
LATITUDE 41-43.1 N
LONGITUDE 140-37.7 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	21.357	33.645	23.365
10	20.756	33.773	23.626
20	19.749	33.885	23.977
30	18.346	33.965	24.394
40	16.950	34.064	24.808
50	16.425	34.114	24.969

8

THE " USHIO MARU "

CRUISE 236
CRUISE 237
CRUISE 238

IN SEPTEMBER - OCTOBER 2011

1. Cruise Itinerary

Cruise 236

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

Total coverage 197.4 miles

Cruise 237

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

Total coverage 269.7 miles

Cruise 238

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

Total coverage 1015.3 miles

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

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

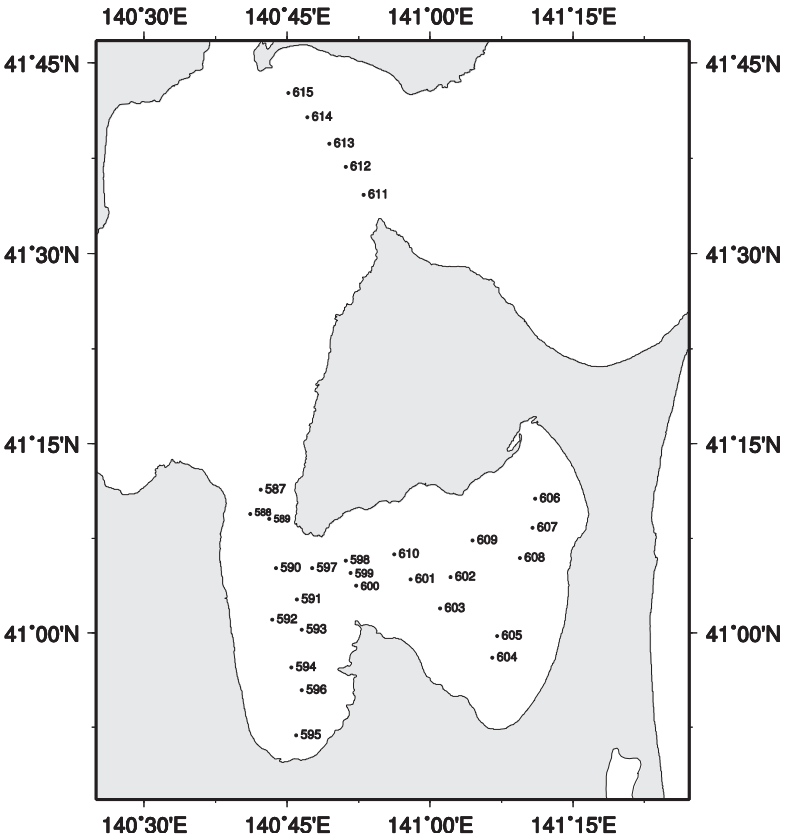

Figure 1. Oceanographic stations (Cruise 236)

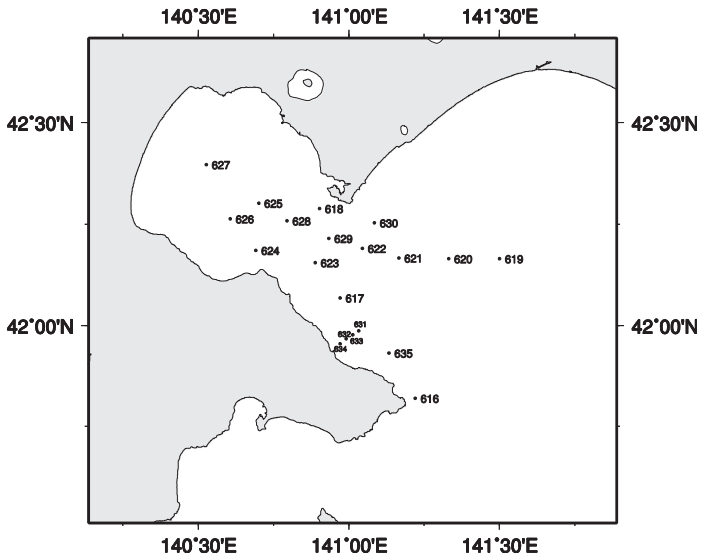

Figure 2. Oceanographic stations (Cruise 237)

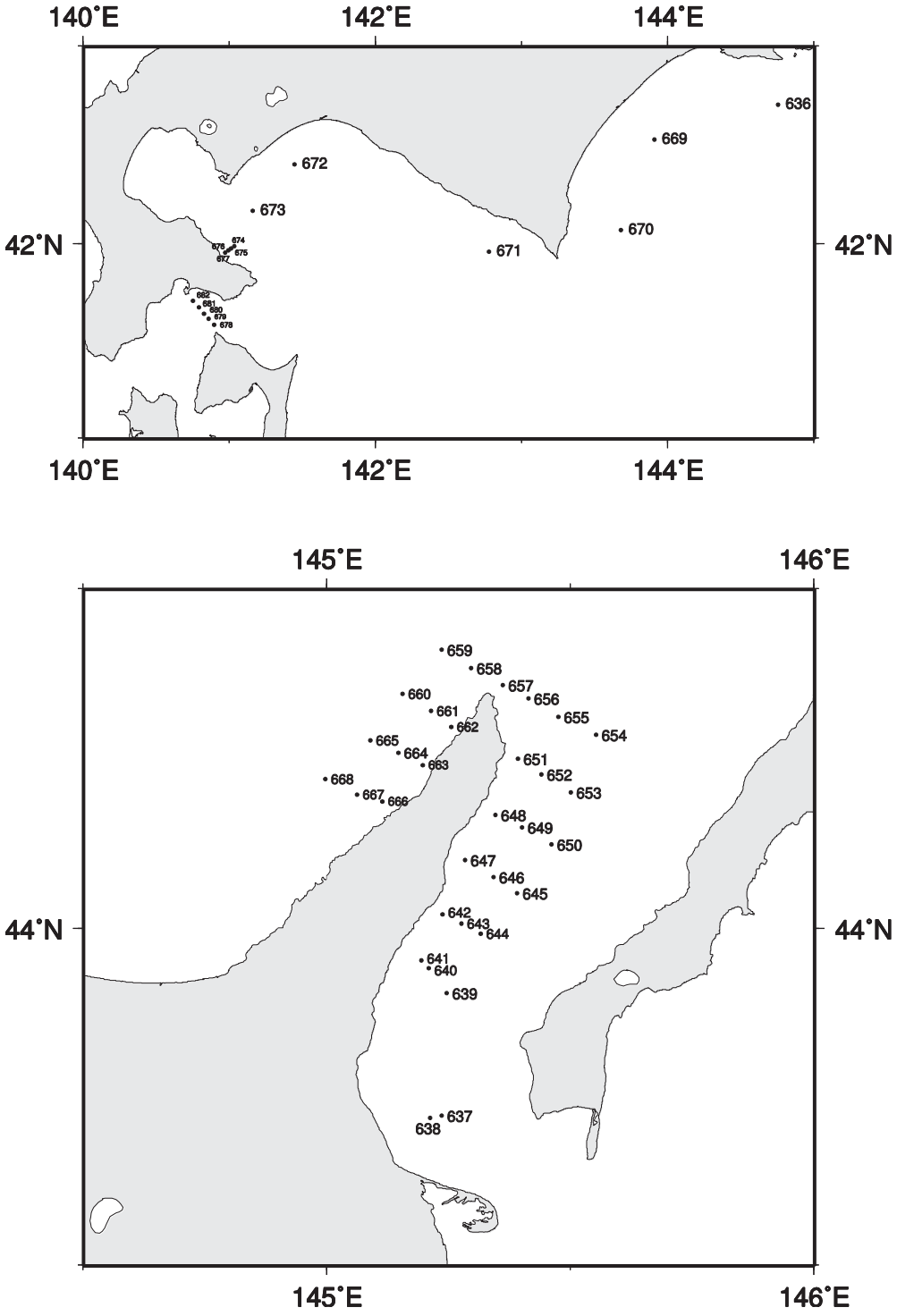

Figure 3. Oceanographic stations (Cruise 238; 2 maps)

Table 1: List of oceanographic stations

Cruise 236

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

Cruise 237

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

Cruise 238

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11587
LATITUDE 41-11.4 N
LONGITUDE 140-42.2 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	22.635	32.576	22.200
10	22.735	32.907	22.423
20	22.730	33.240	22.676
30	21.857	33.460	23.088
40	21.181	33.638	23.409
50	19.855	33.790	23.877

STATION US11588
LATITUDE 41-09.5 N
LONGITUDE 140-41.1 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	22.608	32.550	22.187
10	22.692	32.982	22.491
20	22.855	33.307	22.692
30	22.613	33.469	22.883
40	21.874	33.570	23.167

STATION US11589
LATITUDE 41-09.1 N
LONGITUDE 140-43.1 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	22.549	32.336	22.042
10	22.667	32.565	22.182
20	23.259	33.310	22.578
30	22.888	33.505	22.832
40	21.933	33.607	23.178
50	18.770	33.869	24.215

STATION US11590
LATITUDE 41-05.2 N
LONGITUDE 140-43.8 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	22.516	32.597	22.249
10	22.534	32.610	22.254
20	22.841	33.469	22.819
30	22.553	33.604	23.003
40	20.196	33.753	23.759
50	18.195	33.909	24.389

STATION US11591
LATITUDE 41-02.7 N
LONGITUDE 140-46.0 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	22.589	32.727	22.327
10	22.885	33.191	22.595
20	22.189	33.557	23.069
30	20.919	33.502	23.376
40	19.826	33.518	23.677

STATION US11592
LATITUDE 41-01.1 N
LONGITUDE 140-43.4 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	22.458	32.478	22.175
10	22.537	32.536	22.197
20	23.206	33.594	22.809
30	22.567	33.630	23.018
40	18.995	33.614	23.964
50	16.200	34.028	24.954

STATION US11593
LATITUDE 41-00.3 N
LONGITUDE 140-46.5 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	22.408	31.632	21.548
10	22.748	32.982	22.476
20	22.844	33.579	22.901
30	22.023	33.599	23.147
40	20.223	33.510	23.567

STATION US11594
LATITUDE 40-57.3 N
LONGITUDE 140-45.4 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	22.841	32.093	21.775
10	22.892	32.838	22.325
20	23.345	33.492	22.691
30	22.432	33.603	23.036
40	19.487	33.619	23.842

STATION US11595
LATITUDE 40-51.9 N
LONGITUDE 140-45.9 E
DEPTH (m) 26

Press.	Temp.	Salinity	Sigma-T
5	23.099	31.970	21.609
10	23.642	32.728	22.027
20	23.059	33.423	22.721

STATION US11596
LATITUDE 40-55.5 N
LONGITUDE 140-46.5 E
DEPTH (m) 41

Press.	Temp.	Salinity	Sigma-T
5	23.064	32.082	21.704
10	23.357	33.070	22.368
20	23.207	33.538	22.765
30	22.732	33.545	22.907

STATION US11597
LATITUDE 41-05.2 N
LONGITUDE 140-47.6 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	22.459	32.602	22.269
10	22.597	32.760	22.350
20	22.993	33.620	22.890
30	22.313	33.564	23.039
40	20.149	33.760	23.777
50	18.002	33.830	24.375

STATION US11598
LATITUDE 41-05.8 N
LONGITUDE 140-51.1 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	22.444	32.516	22.208
10	22.497	32.531	22.204
20	23.059	33.527	22.800
30	22.570	33.582	22.981
40	20.916	33.482	23.361

STATION US11599
LATITUDE 41-04.8 N
LONGITUDE 140-51.6 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	22.485	32.511	22.192
10	22.714	32.900	22.423
20	22.942	33.550	22.851
30	22.105	33.583	23.112
40	20.067	33.566	23.651

STATION US11600
LATITUDE 41-03.8 N
LONGITUDE 140-52.2 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	22.317	32.277	22.063
10	22.876	32.987	22.443
20	22.939	33.609	22.896
30	21.758	33.545	23.180
40	19.767	33.587	23.745

STATION US11601
LATITUDE 41-04.3 N
LONGITUDE 140-57.9 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	22.106	31.957	21.879
10	22.610	32.403	22.076
20	22.721	32.997	22.494
30	22.392	33.558	23.013
40	20.586	33.561	23.510

STATION US11602
LATITUDE 41-04.5 N
LONGITUDE 141-02.1 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	22.261	32.094	21.939
10	22.507	32.334	22.053
20	22.921	32.777	22.271
30	22.510	33.320	22.799
40	19.450	33.361	23.654

STATION US11603
LATITUDE 41-02.0 N
LONGITUDE 141-01.0 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	22.282	32.142	21.970
10	22.545	32.308	22.022
20	22.980	32.741	22.227
30	21.970	33.344	22.969
40	20.610	33.585	23.521

STATION US11604
LATITUDE 40-58.1 N
LONGITUDE 141-06.5 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	22.320	32.467	22.206
10	22.410	32.549	22.242
20	22.915	32.986	22.431
30	21.192	33.128	23.018

STATION US11605
LATITUDE 40-59.8 N
LONGITUDE 141-07.0 E
DEPTH (m) 42

Press.	Temp.	Salinity	Sigma-T
5	22.504	32.319	22.042
10	22.551	32.427	22.110
20	22.893	32.992	22.442
30	21.280	33.140	23.003
40	19.233	33.701	23.969

STATION US11606
LATITUDE 41-10.7 N
LONGITUDE 141-11.0 E
DEPTH (m) 30

Press.	Temp.	Salinity	Sigma-T
5	22.323	32.283	22.065
10	22.374	32.387	22.130
20	22.664	32.979	22.497

STATION US11607
LATITUDE 41-08.4 N
LONGITUDE 141-10.7 E
DEPTH (m) 34

Press.	Temp.	Salinity	Sigma-T
5	22.422	32.406	22.131
10	22.427	32.406	22.129
20	22.835	32.954	22.430
30	21.009	33.114	23.056

STATION US11608
LATITUDE 41-06.0 N
LONGITUDE 141-09.4 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	22.277	32.147	21.975
10	22.542	32.425	22.111
20	22.829	33.005	22.470
30	21.764	33.267	22.967

STATION US11609
LATITUDE 41-07.4 N
LONGITUDE 141-04.4 E
DEPTH (m) 40

Press.	Temp.	Salinity	Sigma-T
5	22.426	32.435	22.152
10	22.431	32.431	22.147
20	23.028	32.885	22.323
30	21.081	33.179	23.086

STATION US11610
LATITUDE 41-06.3 N
LONGITUDE 140-56.2 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	22.039	31.969	21.906
10	22.619	32.419	22.085
20	22.738	33.056	22.535
30	22.064	33.496	23.057
40	20.153	33.624	23.673

STATION US11611
LATITUDE 41-34.7 N
LONGITUDE 140-53.0 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	21.930	33.442	23.054
10	21.483	33.507	23.227
20	21.314	33.541	23.299
30	20.773	33.601	23.490

STATION US11612
LATITUDE 41-36.9 N
LONGITUDE 140-51.1 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	23.119	33.249	22.573
10	22.845	33.351	22.728
20	22.249	33.500	23.009
30	21.990	33.549	23.118
40	21.363	33.558	23.298
50	20.654	33.647	23.558
75	14.554	34.043	25.330

STATION US11613
LATITUDE 41-38.7 N
LONGITUDE 140-49.4 E
DEPTH (m) 332

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

STATION US11614
LATITUDE 41-40.8 N
LONGITUDE 140-47.1 E
DEPTH (m) 219

Press.	Temp.	Salinity	Sigma-T
5	22.525	33.301	22.781
10	22.523	33.294	22.776
20	22.061	33.257	22.877
30	21.531	33.497	23.206
40	19.810	33.742	23.852
50	18.326	33.949	24.387
75	14.245	34.266	25.568
100	13.035	34.330	25.867
125	11.686	34.274	26.085
150	11.518	34.274	26.115
175	11.015	34.241	26.182
200	10.734	34.239	26.231

STATION US11615
LATITUDE 41-42.7 N
LONGITUDE 140-45.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	21.951	33.464	23.065
10	21.954	33.464	23.064
20	21.539	33.544	23.239
30	19.488	33.776	23.961
40	18.818	33.873	24.206
50	17.410	34.028	24.670
75	13.746	34.199	25.621

STATION US11616
LATITUDE 41-49.3 N
LONGITUDE 141-13.1 E
DEPTH (m) 166

Press.	Temp.	Salinity	Sigma-T
5	19.450	33.419	23.699
10	18.863	33.465	23.883
20	16.815	33.466	24.381
30	16.061	33.556	24.624
40	13.714	33.661	25.212
50	13.104	33.744	25.399
75	11.990	33.854	25.701
100	10.493	33.884	25.996
125	9.541	33.835	26.119
150	8.644	33.806	26.239

STATION US11617
LATITUDE 42-04.2 N
LONGITUDE 140-58.2 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	19.513	32.705	23.138
10	19.013	33.020	23.505
20	18.675	33.457	23.924
30	17.693	33.618	24.289
40	15.597	33.743	24.872
50	13.419	33.828	25.401
75	9.081	33.500	25.931

STATION US11618
LATITUDE 42-17.4 N
LONGITUDE 140-54.1 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	18.767	33.201	23.705
10	18.691	33.316	23.812
20	18.076	33.370	24.005
30	16.910	33.453	24.348
40	16.313	33.642	24.632

STATION US11619
LATITUDE 42-10.0 N
LONGITUDE 141-29.9 E
DEPTH (m) 544

Press.	Temp.	Salinity	Sigma-T
5	20.116	33.413	23.521
10	19.843	33.409	23.589
20	17.307	33.868	24.573
30	16.263	33.978	24.902
40	14.417	34.038	25.356
50	13.082	34.110	25.687
75	12.195	34.119	25.868
100	11.497	34.087	25.974
125	11.290	34.136	26.050
150	10.060	34.035	26.188
175	8.461	33.876	26.322
200	6.642	33.694	26.438
250	3.972	33.496	26.592

STATION US11620
LATITUDE 42-10.0 N
LONGITUDE 141-19.8 E
DEPTH (m) 351

Press.	Temp.	Salinity	Sigma-T
5	18.944	33.334	23.763
10	18.949	33.334	23.761
20	18.763	33.336	23.809
30	16.476	33.866	24.767
40	14.663	34.061	25.321
50	13.650	34.117	25.578
75	12.004	34.132	25.914
100	11.072	34.095	26.058
125	10.251	34.020	26.144
150	9.533	33.961	26.218
175	8.343	33.857	26.325
200	6.706	33.691	26.427
250	3.435	33.494	26.643

STATION US11621
LATITUDE 42-10.1 N
LONGITUDE 141-09.9 E
DEPTH (m) 119

Press.	Temp.	Salinity	Sigma-T
5	19.128	32.986	23.450
10	18.911	33.076	23.574
20	17.311	33.610	24.374
30	15.674	33.909	24.982
40	14.809	34.068	25.295
50	13.257	34.012	25.576
75	12.934	34.051	25.671
100	12.690	34.082	25.743

STATION US11622
LATITUDE 42-11.5 N
LONGITUDE 141-02.6 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	19.141	32.959	23.426
10	19.121	32.988	23.454
20	18.338	33.187	23.801
30	18.129	33.676	24.227
40	16.815	33.784	24.624
50	14.765	33.848	25.135

STATION US11623
LATITUDE 42-09.4 N
LONGITUDE 140-53.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	19.384	32.753	23.207
10	19.384	32.801	23.244
20	18.627	33.504	23.972
30	18.263	33.660	24.182
40	16.059	33.931	24.912
50	14.356	34.036	25.367

STATION US11624
LATITUDE 42-11.2 N
LONGITUDE 140-41.4 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	19.898	32.498	22.881
10	19.883	32.665	23.012
20	19.938	32.732	23.049
30	17.776	33.525	24.197
40	14.557	33.591	24.981
50	11.006	33.446	25.564
75	10.765	33.856	25.926

STATION US11625
LATITUDE 42-18.2 N
LONGITUDE 140-42.0 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	19.661	32.720	23.111
10	19.639	32.795	23.174
20	18.649	33.531	23.987
30	17.615	33.690	24.362
40	15.422	33.851	24.994
50	13.801	34.076	25.514

STATION US11626
LATITUDE 42-15.9 N
LONGITUDE 140-36.3 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	20.032	32.442	22.803
10	20.024	32.497	22.847
20	18.935	33.292	23.733
30	18.245	33.592	24.134
40	15.658	33.916	24.991
50	9.640	33.232	25.631
75	8.326	33.491	26.041

STATION US11627
LATITUDE 42-23.9 N
LONGITUDE 140-31.5 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	20.425	32.460	22.714
10	20.393	32.458	22.721
20	20.112	32.571	22.881
30	15.930	33.341	24.487
40	13.358	33.632	25.261
50	10.581	33.475	25.662
75	8.784	33.640	26.087

STATION US11628
LATITUDE 42-15.6 N
LONGITUDE 140-47.6 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	19.559	32.782	23.185
10	19.192	32.979	23.429
20	18.577	33.297	23.826
30	17.714	33.635	24.296
40	16.182	33.942	24.892
50	14.384	34.027	25.354

STATION US11629
LATITUDE 42-13.0 N
LONGITUDE 140-55.9 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	19.198	33.072	23.498
10	19.118	33.348	23.729
20	18.187	33.593	24.149
30	17.364	33.786	24.496
40	15.935	33.869	24.892
50	15.207	34.022	25.173

STATION US11630
LATITUDE 42-15.3 N
LONGITUDE 141-05.0 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	19.110	33.120	23.557
10	18.902	33.451	23.863
20	16.989	33.466	24.339
30	16.441	33.564	24.542
40	16.277	33.947	24.874
50	15.239	33.981	25.134

STATION US11631
LATITUDE 41-59.3 N
LONGITUDE 141-01.9 E
DEPTH (m) 99

Press.	Temp.	Salinity	Sigma-T
5	19.430	33.003	23.387
10	19.198	32.989	23.435
20	19.146	33.565	23.888
30	17.945	33.514	24.148
40	15.950	33.955	24.955
50	13.569	33.868	25.401
75	11.831	34.037	25.873

STATION US11632
LATITUDE 41-58.7 N
LONGITUDE 141-00.7 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	19.804	32.975	23.269
10	19.289	33.047	23.456
20	18.880	33.368	23.805
30	18.566	33.568	24.036
40	15.794	33.958	24.993
50	14.180	33.970	25.354
75	12.054	34.027	25.823

STATION US11633
LATITUDE 41-58.1 N
LONGITUDE 140-59.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	20.055	32.586	22.907
10	19.783	32.597	22.986
20	18.822	33.233	23.716
30	18.574	33.525	24.001
40	16.251	33.850	24.806
50	12.724	33.400	25.207
75	12.178	33.971	25.756

STATION US11634
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 76

Press.	Temp.	Salinity	Sigma-T
5	20.035	32.444	22.804
10	19.948	32.514	22.880
20	19.601	32.994	23.335
30	16.985	33.291	24.206
40	13.645	33.364	24.996
50	11.582	33.323	25.364
75	12.220	34.003	25.773

STATION US11635
LATITUDE 41-56.0 N
LONGITUDE 141-07.9 E
DEPTH (m) 145

Press.	Temp.	Salinity	Sigma-T
5	19.382	33.061	23.443
10	19.127	33.040	23.491
20	18.832	33.479	23.902
30	17.796	33.668	24.302
40	15.011	33.592	24.884
50	12.980	33.781	25.453
75	12.351	33.947	25.704
100	10.673	33.882	25.963
125	9.025	33.917	26.266

STATION US11636
LATITUDE 42-42.6 N
LONGITUDE 144-45.1 E
DEPTH (m) 176

Press.	Temp.	Salinity	Sigma-T
5	14.823	33.340	24.730
10	14.823	33.337	24.728
20	14.823	33.335	24.726
30	14.820	33.333	24.726
40	14.767	33.327	24.733
50	14.386	33.292	24.787
75	11.205	33.299	25.415
100	6.996	33.279	26.063
125	6.895	33.643	26.364
150	4.464	33.401	26.466
175	3.400	33.272	26.470

STATION US11637
LATITUDE 43-43.4 N
LONGITUDE 145-14.1 E
DEPTH (m) 17

Press.	Temp.	Salinity	Sigma-T
5	16.202	33.506	24.553
10	16.194	33.506	24.554

STATION US11638
LATITUDE 43-43.2 N
LONGITUDE 145-12.7 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
5	16.145	33.504	24.564
10	16.147	33.502	24.562

STATION US11639
LATITUDE 43-54.3 N
LONGITUDE 145-14.7 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	16.202	33.508	24.554
10	16.167	33.508	24.562
20	16.159	33.509	24.565
30	16.020	33.537	24.618
40	15.893	33.556	24.661
50	15.822	33.565	24.684

STATION US11640
LATITUDE 43-56.5 N
LONGITUDE 145-12.5 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	16.158	33.485	24.547
10	16.097	33.508	24.578
20	16.030	33.518	24.601
30	15.862	33.552	24.665
40	15.717	33.566	24.709
50	15.011	33.600	24.891
75	10.795	33.764	25.850

STATION US11641
LATITUDE 43-57.2 N
LONGITUDE 145-11.6 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	16.169	33.506	24.560
10	16.117	33.506	24.572
20	16.056	33.515	24.593
30	15.965	33.522	24.619
40	15.512	33.592	24.775
50	14.395	33.643	25.056
75	9.256	33.775	26.118

STATION US11642
LATITUDE 44-01.3 N
LONGITUDE 145-14.2 E
DEPTH (m) 334

Press.	Temp.	Salinity	Sigma-T
5	16.296	33.487	24.516
10	15.843	33.419	24.567
20	15.847	33.488	24.619
30	15.715	33.564	24.707
40	15.595	33.610	24.770
50	13.695	33.661	25.215
75	9.543	33.798	26.089
100	8.642	33.794	26.230
125	7.635	33.743	26.340
150	7.000	33.718	26.409
175	6.135	33.674	26.488
200	5.088	33.613	26.565
250	3.139	33.457	26.641

STATION US11643
LATITUDE 44-00.5 N
LONGITUDE 145-16.5 E
DEPTH (m) 428

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

STATION US11644
LATITUDE 43-59.6 N
LONGITUDE 145-18.9 E
DEPTH (m) 278

Press.	Temp.	Salinity	Sigma-T
5	16.332	33.506	24.523
10	16.224	33.505	24.547
20	16.175	33.507	24.559
30	16.115	33.511	24.576
40	15.707	33.571	24.715
50	13.776	33.662	25.200
75	11.243	33.798	25.795
100	9.462	33.816	26.116
125	8.301	33.780	26.271
150	6.791	33.683	26.409
175	5.751	33.612	26.487
200	4.534	33.555	26.581
250	2.278	33.399	26.668

STATION US11645
LATITUDE 44-03.2 N
LONGITUDE 145-23.4 E
DEPTH (m) 517

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

STATION US11646
LATITUDE 44-04.6 N
LONGITUDE 145-20.5 E
DEPTH (m) 1097

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

STATION US11647
LATITUDE 44-06.1 N
LONGITUDE 145-17.0 E
DEPTH (m) 490

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

STATION US11648
LATITUDE 44-10.1 N
LONGITUDE 145-20.7 E
DEPTH (m) 274

Press.	Temp.	Salinity	Sigma-T
5	16.160	33.474	24.538
10	15.895	33.489	24.609
20	15.720	33.535	24.684
30	15.602	33.558	24.728
40	15.361	33.581	24.799
50	14.814	33.617	24.946
75	12.928	33.733	25.426
100	10.317	33.793	25.956
125	8.850	33.800	26.202
150	7.745	33.756	26.334
175	6.791	33.698	26.421
200	5.406	33.608	26.524
250	4.324	33.557	26.605

STATION US11649
LATITUDE 44-09.0 N
LONGITUDE 145-24.0 E
DEPTH (m) 1450

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

STATION US11650
LATITUDE 44-07.5 N
LONGITUDE 145-27.6 E
DEPTH (m) 1255

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

STATION US11651
LATITUDE 44-15.1 N
LONGITUDE 145-23.5 E
DEPTH (m) 301

Press.	Temp.	Salinity	Sigma-T
5	15.376	33.536	24.761
10	15.317	33.545	24.781
20	15.227	33.557	24.810
30	15.116	33.549	24.828
40	15.157	33.575	24.839
50	14.891	33.622	24.934
75	14.041	33.682	25.160
100	11.656	33.756	25.688
125	9.814	33.781	26.031
150	7.167	33.722	26.389
175	5.611	33.630	26.518
200	5.256	33.616	26.549
250	3.639	33.519	26.644

STATION US11652
LATITUDE 44-13.7 N
LONGITUDE 145-26.4 E
DEPTH (m) 1603

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

STATION US11653
LATITUDE 44-12.1 N
LONGITUDE 145-30.0 E
DEPTH (m) 2081

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

STATION US11654
LATITUDE 44-17.2 N
LONGITUDE 145-33.1 E
DEPTH (m) 2084

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

STATION US11655
LATITUDE 44-18.8 N
LONGITUDE 145-28.5 E
DEPTH (m) 1865

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

STATION US11656
LATITUDE 44-20.4 N
LONGITUDE 145-24.8 E
DEPTH (m) 1011

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

STATION US11657
LATITUDE 44-21.6 N
LONGITUDE 145-21.6 E
DEPTH (m) 73

Press.	Temp.	Salinity	Sigma-T
5	15.493	33.575	24.765
10	15.416	33.579	24.785
20	15.367	33.580	24.797
30	15.288	33.587	24.820
40	15.125	33.606	24.870
50	13.876	33.694	25.204

STATION US11658
LATITUDE 44-23.1 N
LONGITUDE 145-17.7 E
DEPTH (m) 708

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

STATION US11659
LATITUDE 44-24.7 N
LONGITUDE 145-14.1 E
DEPTH (m) 1436

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

STATION US11660
LATITUDE 44-20.8 N
LONGITUDE 145-09.3 E
DEPTH (m) 1200

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

STATION US11661
LATITUDE 44-19.3 N
LONGITUDE 145-12.8 E
DEPTH (m) 745

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

STATION US11662
LATITUDE 44-17.9 N
LONGITUDE 145-15.3 E
DEPTH (m) 117

Press.	Temp.	Salinity	Sigma-T
5	14.653	33.123	24.599
10	14.715	33.153	24.609
20	14.748	33.231	24.663
30	15.120	33.409	24.720
40	15.067	33.406	24.729
50	14.860	33.413	24.779
75	9.292	33.731	26.078
100	8.309	33.731	26.231

STATION US11663
LATITUDE 44-14.5 N
LONGITUDE 145-11.8 E
DEPTH (m) 160

Press.	Temp.	Salinity	Sigma-T
5	15.041	33.288	24.644
10	15.065	33.322	24.664
20	15.081	33.384	24.709
30	15.068	33.389	24.716
40	15.055	33.392	24.720
50	15.020	33.395	24.730
75	14.990	33.397	24.738
100	7.472	33.705	26.333
125	7.316	33.768	26.404

STATION US11664
LATITUDE 44-15.6 N
LONGITUDE 145-08.8 E
DEPTH (m) 620

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

STATION US11665
LATITUDE 44-16.7 N
LONGITUDE 145-05.3 E
DEPTH (m) 850

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

STATION US11666
LATITUDE 44-11.3 N
LONGITUDE 145-06.8 E
DEPTH (m) 290

Press.	Temp.	Salinity	Sigma-T
5	15.140	33.261	24.601
10	15.179	33.274	24.603
20	15.320	33.348	24.629
30	15.413	33.401	24.649
40	15.369	33.453	24.699
50	14.657	33.402	24.814
75	14.293	33.488	24.958
100	9.118	33.600	26.003
125	7.147	33.716	26.387
150	6.717	33.704	26.436
175	5.719	33.562	26.451
200	5.489	33.575	26.489

STATION US11667
LATITUDE 44-11.9 N
LONGITUDE 145-03.7 E
DEPTH (m) 440

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

STATION US11668
LATITUDE 44-13.3 N
LONGITUDE 144-59.8 E
DEPTH (m) 670

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

STATION US11669
LATITUDE 42-32.0 N
LONGITUDE 143-54.4 E
DEPTH (m) 144

Press.	Temp.	Salinity	Sigma-T
5	14.419	33.198	24.708
10	14.379	33.198	24.716
20	14.101	33.242	24.808
30	13.848	33.235	24.854
40	12.509	33.170	25.071
50	11.118	33.158	25.320
75	6.739	33.185	26.023
100	3.216	33.215	26.441
125	3.187	33.334	26.539

STATION US11670
LATITUDE 42-04.4 N
LONGITUDE 143-40.5 E
DEPTH (m) 316

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

STATION US11671
LATITUDE 41-57.7 N
LONGITUDE 142-46.5 E
DEPTH (m) 280

Press.	Temp.	Salinity	Sigma-T
5	16.762	33.567	24.470
10	16.726	33.584	24.492
20	16.445	33.602	24.571
30	14.991	33.914	25.137
40	14.270	33.945	25.315
50	13.791	34.023	25.476
75	12.756	34.095	25.741
100	10.936	34.054	26.050
125	9.583	33.973	26.220
150	7.659	33.674	26.282
175	7.690	33.695	26.294
200	6.980	33.611	26.328
250	5.243	33.526	26.479

STATION US11672
LATITUDE 42-24.4 N
LONGITUDE 141-26.6 E
DEPTH (m) 175

Press.	Temp.	Salinity	Sigma-T
5	17.455	33.515	24.267
10	17.456	33.517	24.268
20	17.329	33.564	24.335
30	17.085	33.564	24.393
40	16.189	33.775	24.762
50	14.497	34.064	25.359
75	11.656	34.072	25.933
100	10.613	34.008	26.072
125	10.093	34.014	26.166
150	8.579	33.919	26.338

STATION US11673
LATITUDE 42-10.3 N
LONGITUDE 141-09.4 E
DEPTH (m) 114

Press.	Temp.	Salinity	Sigma-T
5	17.562	33.181	23.986
10	17.561	33.176	23.982
20	17.556	33.174	23.981
30	16.865	33.589	24.463
40	14.843	33.924	25.177
50	13.542	34.023	25.526
75	11.317	34.066	25.991
100	9.522	33.968	26.226

STATION US11674
LATITUDE 41-59.5 N
LONGITUDE 141-01.9 E
DEPTH (m) 99

Press.	Temp.	Salinity	Sigma-T
5	17.547	33.172	23.982
10	17.429	33.175	24.013
20	17.397	33.191	24.032
30	17.178	33.324	24.187
40	13.840	33.931	25.394
50	12.289	34.054	25.799
75	8.852	33.891	26.273

STATION US11675
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	17.800	33.172	23.921
10	17.554	33.178	23.985
20	17.375	33.183	24.032
30	16.357	33.518	24.526
40	13.102	33.700	25.365
50	11.716	34.050	25.905
75	8.711	33.843	26.258

STATION US11676
LATITUDE 41-58.1 N
LONGITUDE 140-59.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	17.578	33.007	23.848
10	17.555	33.064	23.897
20	17.424	33.204	24.036
30	15.865	33.587	24.692
40	13.176	33.704	25.354
50	11.210	34.016	25.971
75	9.157	33.906	26.236

STATION US11677
LATITUDE 41-57.4 N
LONGITUDE 140-58.2 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	17.512	33.018	23.873
10	17.459	33.026	23.891
20	16.980	33.392	24.285
30	14.502	33.637	25.028
40	14.135	33.949	25.347
50	9.883	33.589	25.870

STATION US11678
LATITUDE 41-35.3 N
LONGITUDE 140-53.6 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	19.280	33.462	23.775
10	19.702	33.415	23.631
20	18.548	33.596	24.062
30	18.464	33.620	24.101
40	17.807	33.723	24.341

STATION US11679
LATITUDE 41-37.1 N
LONGITUDE 140-51.4 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	19.610	33.354	23.608
10	19.254	33.467	23.785
20	18.405	33.652	24.141
30	17.669	33.775	24.414
40	16.177	34.018	24.952
50	14.199	34.251	25.566
75	12.888	34.282	25.859

STATION US11680
LATITUDE 41-38.7 N
LONGITUDE 140-49.4 E
DEPTH (m) 309

Press.	Temp.	Salinity	Sigma-T
5	18.642	33.488	23.956
10	18.370	33.538	24.062
20	17.464	33.833	24.508
30	15.859	34.039	25.040
40	15.305	34.243	25.322
50	14.766	34.293	25.477
75	12.055	34.249	25.995
100	10.542	34.185	26.222
125	9.904	34.177	26.325
150	9.468	34.184	26.403
175	9.332	34.183	26.425
200	9.084	34.182	26.464
250	8.595	34.163	26.526

STATION US11681
LATITUDE 41-40.7 N
LONGITUDE 140-47.3 E
DEPTH (m) 225

Press.	Temp.	Salinity	Sigma-T
5	17.908	33.566	24.196
10	17.773	33.571	24.233
20	17.430	33.597	24.336
30	15.882	33.743	24.807
40	14.754	33.846	25.136
50	13.823	33.983	25.438
75	11.955	34.070	25.875
100	10.948	34.153	26.125
125	9.949	34.200	26.336
150	9.574	34.194	26.394
175	8.908	34.158	26.473
200	8.725	34.164	26.507

STATION US11682
LATITUDE 41-42.7 N
LONGITUDE 140-45.0 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	16.050	33.713	24.746
10	16.040	33.714	24.750
20	15.351	33.775	24.951
30	14.127	33.898	25.309
40	13.162	33.970	25.563
50	12.136	34.054	25.828
75	10.884	34.165	26.146

9

THE " USHIO MARU "

CRUISE 239
CRUISE 240
CRUISE 241

IN OCTOBER - NOVEMBER 2011

1. Cruise Itinerary

Cruise 239

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

Total coverage 201.6 miles

Cruise 240

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

Total coverage 315.9 miles

Cruise 241

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

Total coverage 185.4 miles

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

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

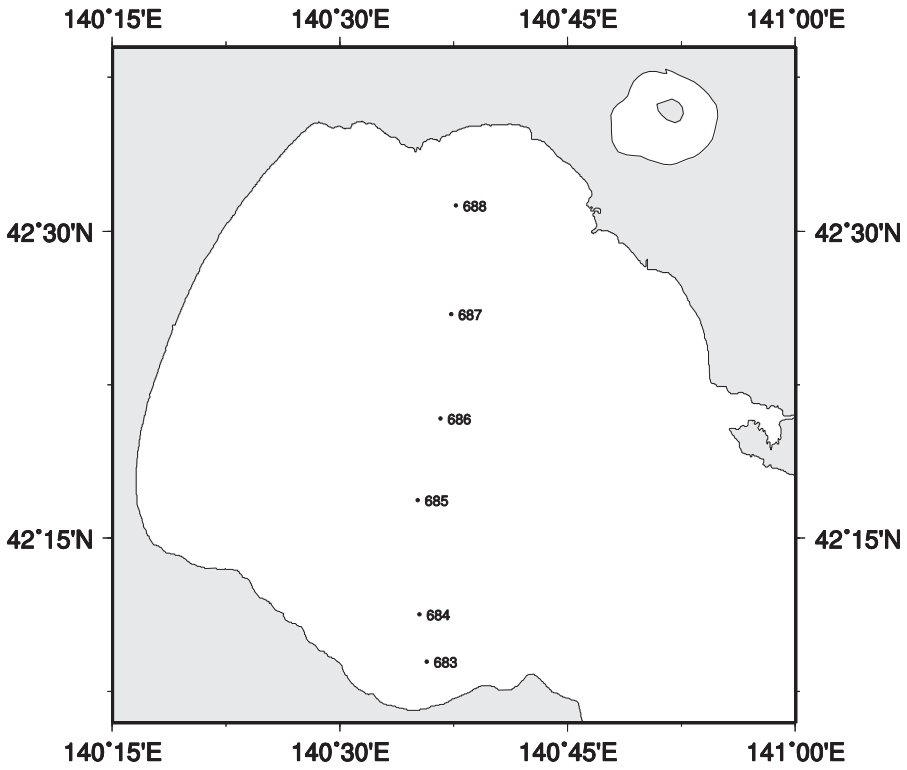

Figure 1. Oceanographic stations (Cruise 239)

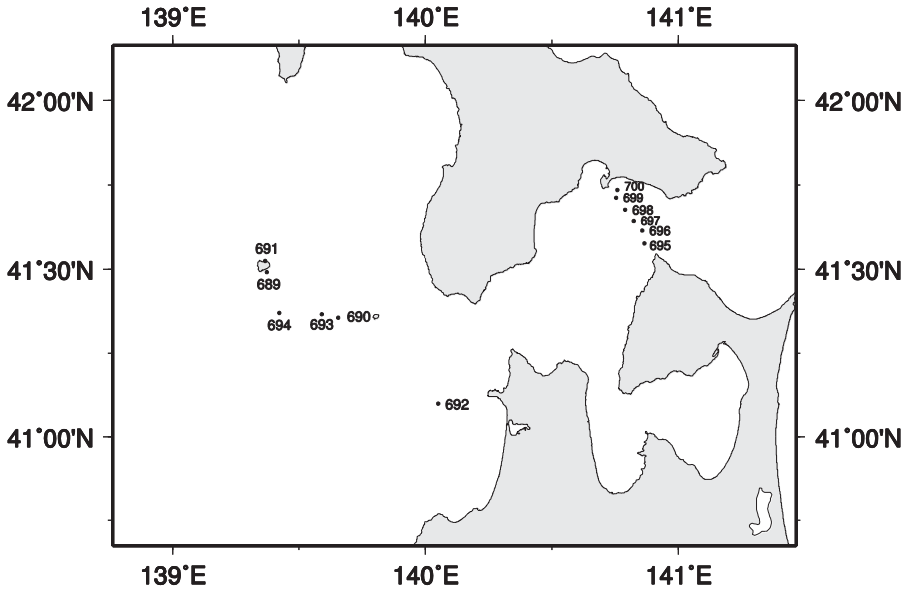

Figure 2. Oceanographic stations (Cruise 240)

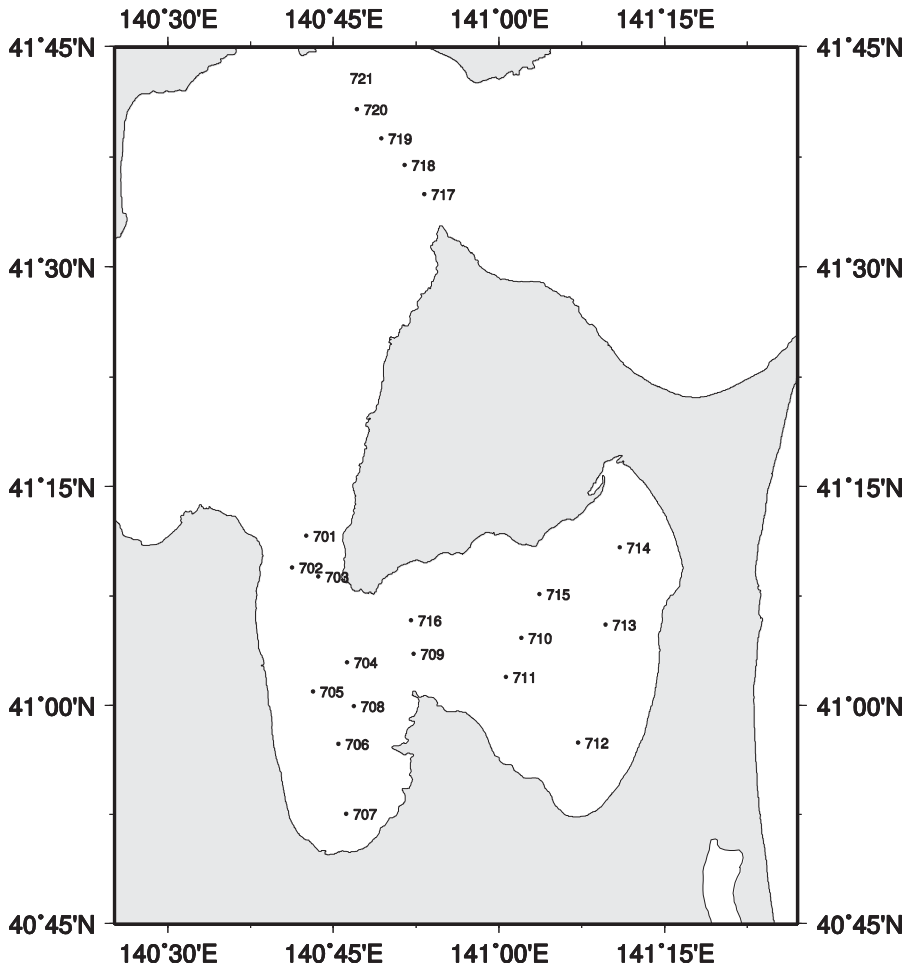

Figure 3. Oceanographic stations (Cruise 241)

Table 1: List of oceanographic stations

Cruise 239

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

Cruise 240

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

Cruise 241

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

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11683
LATITUDE 42-09.0 N
LONGITUDE 140-35.7 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	14.829	32.926	24.410
20	14.681	33.607	24.967
30	12.354	33.837	25.619
40	11.349	33.754	25.742
50	10.092	33.714	25.933

STATION US11684
LATITUDE 42-11.3 N
LONGITUDE 140-35.2 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	15.002	33.580	24.877
10	14.988	33.583	24.883
20	14.465	33.633	25.033
30	12.907	33.741	25.436
40	11.588	33.961	25.859
50	10.167	33.816	25.999
75	7.056	33.571	26.285

STATION US11685
LATITUDE 42-16.9 N
LONGITUDE 140-35.1 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	15.654	33.470	24.648
10	15.655	33.469	24.648
20	15.659	33.469	24.647
30	15.657	33.470	24.648
40	14.225	33.658	25.103
50	12.827	33.833	25.523
75	8.431	33.785	26.254

STATION US11686
LATITUDE 42-20.9 N
LONGITUDE 140-36.6 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	15.618	33.449	24.641
10	15.620	33.450	24.641
20	15.620	33.449	24.640
30	15.619	33.450	24.641
40	14.832	33.596	24.926
50	12.721	33.943	25.629
75	8.696	33.721	26.164

STATION US11687
LATITUDE 42-26.0 N
LONGITUDE 140-37.3 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	15.445	33.419	24.656
10	15.462	33.436	24.665
20	15.468	33.435	24.663
30	15.457	33.459	24.684
40	13.688	33.796	25.322
50	12.553	33.861	25.598
75	9.089	33.828	26.186

STATION US11688
LATITUDE 42-31.3 N
LONGITUDE 140-37.6 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	15.048	33.469	24.781
10	15.041	33.470	24.783
20	14.774	33.589	24.933
30	13.996	33.817	25.274
40	12.011	33.833	25.681
50	10.396	33.763	25.919

STATION US11689
LATITUDE 41-29.6 N
LONGITUDE 139-22.3 E
DEPTH (m) 250

Press.	Temp.	Salinity	Sigma-T
5	17.659	33.634	24.309
10	17.664	33.630	24.304
20	17.607	33.626	24.315
30	17.350	33.636	24.385
40	16.911	33.813	24.625
50	16.535	33.990	24.848
75	13.254	34.327	25.820
100	10.201	34.234	26.319
125	7.119	34.105	26.697
150	5.583	34.063	26.864
175	4.496	34.023	26.957
200	3.670	34.032	27.049

STATION US11690
LATITUDE 41-21.5 N
LONGITUDE 139-39.2 E
DEPTH (m) 250

Press.	Temp.	Salinity	Sigma-T
5	18.866	33.321	23.772
10	18.865	33.322	23.773
20	18.861	33.321	23.773
30	18.865	33.321	23.773
40	18.449	34.163	24.520
50	16.544	34.324	25.103
75	13.550	34.386	25.806
100	11.673	34.302	26.108
125	10.699	34.263	26.255
150	10.024	34.240	26.354
175	8.452	34.158	26.545
200	6.110	34.071	26.805

STATION US11691
LATITUDE 41-31.6 N
LONGITUDE 139-21.8 E
DEPTH (m) 210

Press.	Temp.	Salinity	Sigma-T
5	17.299	33.537	24.321
10	17.301	33.540	24.323
20	17.299	33.550	24.331
30	16.774	33.650	24.531
40	16.247	33.908	24.851
50	15.563	34.312	25.317
75	12.131	34.308	26.027
100	10.090	34.235	26.339
125	6.762	34.090	26.735
150	6.039	34.071	26.813

STATION US11692
LATITUDE 41-06.1 N
LONGITUDE 140-02.9 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	18.877	33.321	23.769
10	18.889	33.320	23.766
20	18.903	33.323	23.765
30	18.906	33.325	23.765
40	18.914	33.332	23.769
50	18.942	33.359	23.782
75	15.248	34.445	25.490

STATION US11693
LATITUDE 41-22.1 N
LONGITUDE 139-35.3 E
DEPTH (m) 310

Press.	Temp.	Salinity	Sigma-T
5	19.040	33.187	23.626
10	19.047	33.186	23.623
20	19.117	33.229	23.638
30	18.876	33.314	23.764
40	18.867	33.882	24.201
50	16.942	34.301	24.992
75	14.828	34.421	25.563
100	12.811	34.368	25.941
125	10.729	34.262	26.249
150	10.088	34.245	26.347
175	8.596	34.158	26.522
200	6.911	34.096	26.718

STATION US11694
LATITUDE 41-22.3 N
LONGITUDE 139-25.2 E
DEPTH (m) 2431

Press.	Temp.	Salinity	Sigma-T
5	19.068	33.249	23.666
10	19.070	33.248	23.665
20	19.084	33.249	23.662
30	19.065	33.354	23.747
40	18.834	33.359	23.809
50	18.786	33.870	24.212
75	15.054	34.424	25.516
100	13.374	34.399	25.852
125	11.251	34.283	26.172
150	10.316	34.257	26.317
175	8.875	34.172	26.489
200	6.949	34.090	26.709

STATION US11695
LATITUDE 41-34.7 N
LONGITUDE 140-51.8 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	17.535	33.640	24.344
10	17.467	33.636	24.356
20	17.350	33.639	24.387
30	17.217	33.654	24.430
40	17.014	33.672	24.492
50	16.744	33.740	24.607

STATION US11696
LATITUDE 41-37.0 N
LONGITUDE 140-51.3 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	17.016	33.697	24.510
10	16.892	33.697	24.539
20	16.724	33.705	24.585
30	16.490	33.731	24.659
40	16.162	33.780	24.773
50	15.256	33.963	25.116
75	13.782	34.168	25.590

STATION US11697
LATITUDE 41-38.7 N
LONGITUDE 140-49.3 E
DEPTH (m) 344

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

STATION US11698
LATITUDE 41-40.7 N
LONGITUDE 140-47.2 E
DEPTH (m) 226

Press.	Temp.	Salinity	Sigma-T
5	15.800	33.861	24.917
10	15.455	33.899	25.023
20	14.994	33.965	25.175
30	14.786	34.005	25.251
40	14.657	34.027	25.296
50	14.541	34.065	25.350
75	14.552	34.120	25.390
100	14.068	34.184	25.542
125	13.591	34.206	25.658
150	12.337	34.235	25.930
175	11.983	34.240	26.002
200	11.759	34.236	26.041

STATION US11699
LATITUDE 41-42.8 N
LONGITUDE 140-45.1 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	17.174	33.605	24.403
10	16.582	33.641	24.569
20	15.619	33.793	24.905
30	15.278	33.833	25.011
40	14.870	33.908	25.158
50	14.699	33.989	25.258
75	13.808	34.054	25.496

STATION US11700
LATITUDE 41-44.2 N
LONGITUDE 140-45.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	16.938	33.627	24.475
10	16.182	33.726	24.726
20	15.272	33.834	25.014
30	14.687	33.949	25.229
40	14.513	34.003	25.309
50	14.143	34.047	25.421

STATION US11701
LATITUDE 41-11.7 N
LONGITUDE 140-42.5 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	17.610	33.534	24.244
10	17.611	33.534	24.244
20	17.599	33.537	24.249
30	17.187	33.623	24.414
40	17.068	33.617	24.437
50	17.057	33.618	24.441

STATION US11702
LATITUDE 41-09.5 N
LONGITUDE 140-41.2 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	17.007	33.389	24.276
10	17.005	33.387	24.276
20	17.039	33.405	24.281
30	17.144	33.446	24.288
40	17.270	33.606	24.381

STATION US11703
LATITUDE 41-08.9 N
LONGITUDE 140-43.6 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	17.114	33.404	24.263
10	17.128	33.417	24.270
20	17.232	33.476	24.290
30	17.214	33.508	24.319
40	17.220	33.591	24.381
50	17.177	33.608	24.404

STATION US11704
LATITUDE 41-03.0 N
LONGITUDE 140-46.2 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	16.916	33.318	24.243
10	16.855	33.329	24.266
20	16.858	33.346	24.278
30	16.865	33.356	24.285
40	17.241	33.690	24.452

STATION US11705
LATITUDE 41-01.0 N
LONGITUDE 140-43.1 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	16.941	33.278	24.207
10	16.947	33.336	24.250
20	16.910	33.335	24.258
30	16.884	33.339	24.267
40	17.221	33.541	24.343
50	16.395	33.769	24.710

STATION US11706
LATITUDE 40-57.4 N
LONGITUDE 140-45.4 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	16.875	33.297	24.237
10	16.878	33.296	24.235
20	16.866	33.300	24.241
30	16.987	33.369	24.266
40	17.253	33.641	24.412

STATION US11707
LATITUDE 40-52.6 N
LONGITUDE 140-46.1 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	16.625	33.087	24.134
10	16.661	33.121	24.151
20	16.813	33.243	24.210

STATION US11708
LATITUDE 41-00.0 N
LONGITUDE 140-46.8 E
DEPTH (m) 51

Press.	Temp.	Salinity	Sigma-T
5	16.755	33.357	24.311
10	16.765	33.353	24.305
20	16.770	33.351	24.302
30	16.782	33.353	24.301
40	16.824	33.388	24.319

STATION US11709
LATITUDE 41-03.6 N
LONGITUDE 140-52.2 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	16.841	33.289	24.239
10	16.844	33.290	24.239
20	16.846	33.290	24.238
30	16.849	33.292	24.239
40	16.857	33.299	24.243

STATION US11710
LATITUDE 41-04.7 N
LONGITUDE 141-02.0 E
DEPTH (m) 47

Press.	Temp.	Salinity	Sigma-T
5	16.742	33.213	24.203
10	16.745	33.211	24.201
20	16.747	33.211	24.200
30	16.749	33.210	24.200
40	16.755	33.215	24.202

STATION US11711
LATITUDE 41-02.0 N
LONGITUDE 141-00.6 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	16.692	33.173	24.184
10	16.689	33.170	24.183
20	16.683	33.170	24.184
30	16.698	33.169	24.180
40	16.721	33.178	24.182

STATION US11712
LATITUDE 40-57.5 N
LONGITUDE 141-07.1 E
DEPTH (m) 37

Press.	Temp.	Salinity	Sigma-T
5	16.503	33.110	24.179
10	16.510	33.107	24.176
20	16.510	33.104	24.173
30	16.512	33.104	24.173

STATION US11713
LATITUDE 41-05.6 N
LONGITUDE 141-09.6 E
DEPTH (m) 33

Press.	Temp.	Salinity	Sigma-T
5	16.608	33.138	24.177
10	16.614	33.137	24.175
20	16.623	33.140	24.175
30	16.625	33.140	24.174

STATION US11714
LATITUDE 41-10.9 N
LONGITUDE 141-10.9 E
DEPTH (m) 29

Press.	Temp.	Salinity	Sigma-T
5	16.633	33.098	24.140
10	16.613	33.093	24.141
20	16.553	33.080	24.145

STATION US11715
LATITUDE 41-07.7 N
LONGITUDE 141-03.6 E
DEPTH (m) 38

Press.	Temp.	Salinity	Sigma-T
5	16.554	33.125	24.180
10	16.565	33.147	24.194
20	16.665	33.215	24.223
30	16.715	33.228	24.221

US11716 41-05.9 140-52.0 51

Press.	Temp.	Salinity	Sigma-T
5	16.753	33.203	24.193
10	16.778	33.244	24.219
20	16.805	33.289	24.247
30	16.809	33.288	24.245
40	16.812	33.289	24.245

US11716 41-05.9 140-52.0 51

Press.	Temp.	Salinity	Sigma-T
5	16.753	33.203	24.193
10	16.778	33.244	24.219
20	16.805	33.289	24.247
30	16.809	33.288	24.245
40	16.812	33.289	24.245

STATION US11717
LATITUDE 41-35.0 N
LONGITUDE 140-53.2 E
DEPTH (m) 35

Press.	Temp.	Salinity	Sigma-T
5	17.816	33.340	24.046
10	17.789	33.487	24.165
20	17.581	33.563	24.273
30	17.465	33.601	24.330

STATION US11718
LATITUDE 41-37.0 N
LONGITUDE 140-51.4 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	17.962	33.420	24.071
10	17.960	33.421	24.073
20	17.524	33.516	24.251
30	17.113	33.633	24.439
40	16.931	33.700	24.533
50	16.790	33.756	24.609
75	14.731	34.079	25.320

US11716 41-05.9 140-52.0 51

Press.	Temp.	Salinity	Sigma-T
5	16.753	33.203	24.193
10	16.778	33.244	24.219
20	16.805	33.289	24.247
30	16.809	33.288	24.245
40	16.812	33.289	24.245

US11719 41-38.8 140-49.3 322

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

STATION US11720
LATITUDE 41-40.8 N
LONGITUDE 140-47.1 E
DEPTH (m) 225

Press.	Temp.	Salinity	Sigma-T
5	16.691	33.704	24.592
10	16.547	33.733	24.647
20	15.545	33.734	24.876
30	15.337	33.773	24.952
40	14.976	33.815	25.064
50	14.072	33.963	25.371
75	12.515	34.095	25.787
100	11.524	34.168	26.032
125	10.957	34.208	26.167
150	10.880	34.227	26.195
175	10.625	34.222	26.237
200	10.424	34.216	26.267

STATION US11721
LATITUDE 41-43.3 N
LONGITUDE 140-45.0 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	15.627	33.724	24.850
10	15.620	33.720	24.849
20	14.873	33.803	25.077
30	14.494	33.866	25.207
40	13.624	33.982	25.478
50	12.772	34.081	25.726
75	12.609	34.162	25.821

10

THE " USHIO MARU "

CRUISE 242
CRUISE 243
CRUISE 244
CRUISE 245

IN NOVEMBER - DECEMBER 2011

1. Cruise Itinerary

Cruise 242			
Departure from Hakodate	Nov.	14,	2011
Start hydrographic research (US11722)		14	
Arrival at Hakodate		16	
Departure from Hakodate		17	
Finish hydrographic research (US11745)		18	
Return to Hakodate		19	
Total coverage 344.8 miles			

Cruise 243			
Departure from Hakodate	Nov.	28,	2011
Start hydrographic research (US11746)		28	
Arrival at Fukushima		28	
Departure from Fukushima		29	
Finish hydrographic research (US11769)		29	
Return to Hakodate		29	
Total coverage 121.1 miles			

Cruise 244			
Departure from Hakodate	Dec.	12,	2011
Start hydrographic research (US11770)		13	
Arrival at Usujiri		13	
Departure from Usujiri		14	
Retrieval mooring ADCP system		14	
Arrival at and departure from Mori		14	
Arrival at Muroran (anchorage)		14	
Departure from Muroran		15	
Set mooring ADCP system		15	
Arrival at and departure from Usujiri		15	
Finish hydrographic research (US11788)		15	
Return to Hakodate		16	
Total coverage 346.3 miles			

Cruise 245			
Departure from Hakodate	Dec.	20,	2011
Start hydrographic research (US11789)		20	
Arrival at Fukushima		20	
Departure from Fukushima		21	
Finish hydrographic research (US11818)		21	
Return to Hakodate		22	
Total coverage 147.8 miles			

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

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

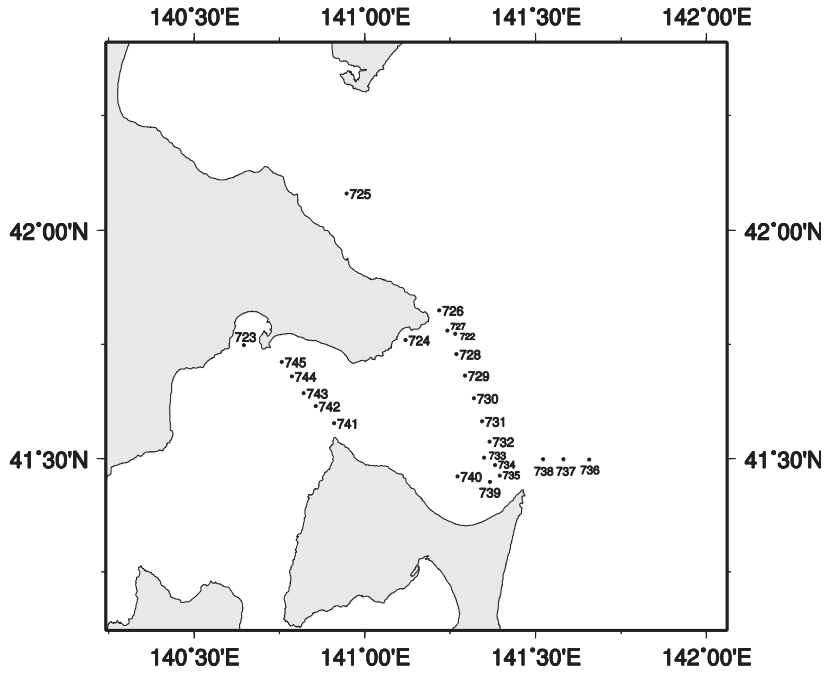

Figure 1. Oceanographic stations (Cruise 242)

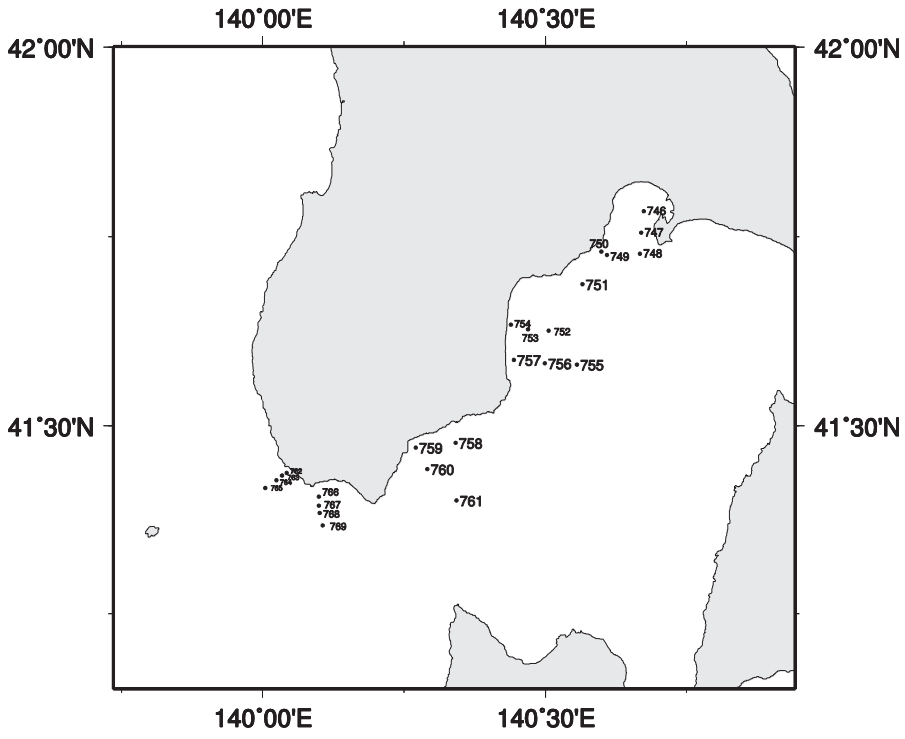

Figure 2. Oceanographic stations (Cruise 243)

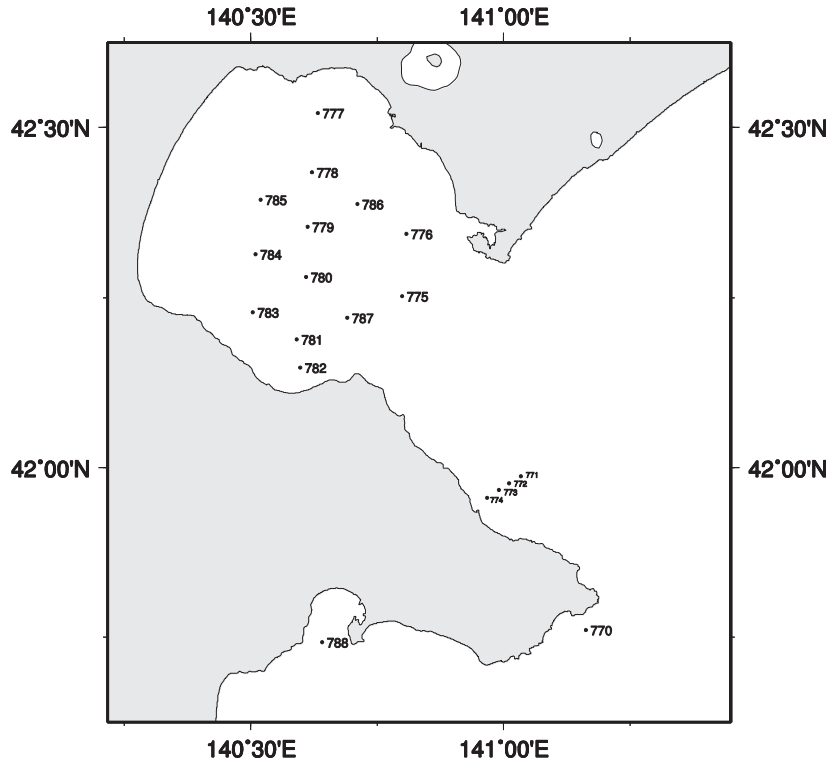

Figure 3. Oceanographic stations (Cruise 244)

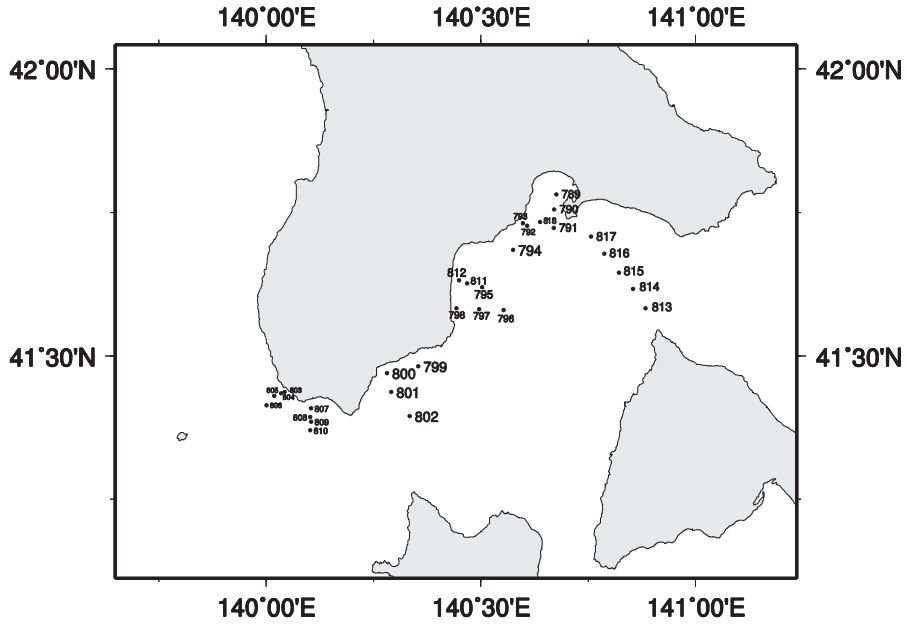

Figure 4. Oceanographic stations (Cruise 245)

Table 1: List of oceanographic stations

Cruise 242

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11722	41-46.5	141-15.8	11/14	1849-1855	211	West-3	NW -1	West-5	6.6	13.7	bc	1018.1
US11723	41-45.0	140-38.7	11/16	0549-0552	48	WNW-1	SW -1	WNW-3	2.3	14.3	s	1024.1
US11724	41-45.7	141-07.1	11/18	0347-0350	53	NW -1	WSW-1	NW -3	3.6	13.3	bc	1027.6
US11725	42-04.9	140-56.7	11/18	0639-0647	81	SW -1	SW -1	SW -3	6.8	12.8	bc	1026.0
US11726	41-49.6	141-13.0	11/18	0901-0915	171	SE -1	SE -1	SE -3	9.4	13.1	bc	1024.2
US11727	41-46.9	141-14.4	11/18	1023-1037	193	SSW-3	SW -1	SSW-5	10.2	12.8	c	1023.1
US11728	41-43.8	141-16.0	11/18	1100-1115	228	SW -3	SW -1	SW -5	10.4	12.9	c	1023.0
US11729	41-41.0	141-47.5	11/18	1155-1210	232	SW -2	SW -1	SW -4	11.1	12.6	c	1022.1
US11730	41-38.0	141-19.1	11/18	1238-1251	215	SW -3	SW -1	SW -5	11.6	12.8	c	1021.4
US11731	41-35.0	141-20.5	11/18	1331-1349	313	SW -3	SW -1	SW -5	12.2	13.8	c	1020.6
US11732	41-32.3	141-21.8	11/18	1411-1425	260	SW -2	SW -1	SW -4	12.8	14.8	c	1020.6
US11733	41-30.2	141-20.9	11/18	1444-1453	230	SW -2	SW -1	SW -4	12.9	14.7	c	1020.6
US11734	41-29.2	141-22.8	11/18	1505-1515	129	SW -2	SW -1	SW -4	13.2	14.7	c	1020.6
US11735	41-27.8	141-23.6	11/18	1527-1533	61	SSW-2	SW -1	SSW-4	13.0	14.6	bc	1020.1
US11736	41-29.9	141-39.3	11/18	1644-1706	607	SSW-3	South-1	SSW-5	12.6	15.2	bc	1020.3
US11737	41-30.0	141-34.8	11/18	1732-1737	108	SSW-3	SSW-1	SSW-5	12.7	15.0	bc	1019.1
US11738	41-30.0	141-31.2	11/18	1758-1802	67	SSW-3	SSW-1	SSW-5	12.6	15.2	c	1019.1
US11739	41-27.0	141-21.9	11/18	1852-1856	71	South-3	SSW-1	South-5	12.2	14.7	c	1018.6
US11740	41-27.7	141-16.2	11/18	1922-1928	154	South-2	SSW-1	South-4	12.5	14.7	c	1018.6
US11741	41-34.7	140-54.5	11/18	2108-2112	52	SSW-2	SSW-1	SSW-4	12.7	14.8	c	1017.6
US11742	41-37.0	140-51.3	11/18	2133-2137	95	SSW-2	SSW-1	SSW-4	13.3	14.9	c	1017.1
US11743	41-38.7	140-49.2	11/18	2153-2204	340	SSW-2	SSW-1	SSW-4	13.4	13.8	c	1016.7
US11744	41-40.9	140-47.1	11/18	2220-2227	212	SSW-2	SSW-1	SSW-4	13.3	13.1	c	1016.1
US11745	41-42.8	140-45.3	11/18	2244-2250	83	SSW-2	SSW-1	SSW-4	13.2	13.0	c	1016.1

Cruise 243

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11746	41-47.1	140-40.4	11/28	0849-0851	19	North-1	SW -1	North-2	3.8	10.4	bc	1027.2
US11747	41-45.4	140-40.1	11/28	0911-0913	39	North-1	South-1	North-2	5.5	13.3	bc	1027.2
US11748	41-43.7	140-40.0	11/28	0939-0936	63	NNW-1	South-1	NNW-3	6.7	13.5	bc	1027.2
US11749	41-43.6	140-36.5	11/28	1002-1004	36	North-1	South-1	North-2	7.2	13.5	bc	1027.6
US11750	41-43.9	140-35.9	11/28	1009-1011	11	NNW-1	South-1	NNW-3	7	11.3	bc	1027.6
US11751	41-41.3	140-33.9	11/28	1045-1047	36	NNE-1	South-1	NNE-3	8.3	11.9	c	1027.5
US11752	41-37.6	140-30.3	11/28	1122-1124	30	Calm	South-1	Calm	8	12.7	c	1026.8
US11753	41-37.7	140-28.1	11/28	1143-1144	19	Calm	South-1	Calm	8.3	12.1	c	1026.5
US11754	41-38.1	140-26.3	11/28	1201-1202	12	Calm	South-1	Calm	8.5	11.9	o	1026.2
US11755	41-34.9	140-33.3	11/28	1249-1251	59	Calm	South-1	Calm	9.1	12.5	o	1026.1
US11756	41-35.0	140-29.9	11/28	1328-1331	45	NW -1	South-1	NW -2	8.9	12.6	o	1025.6
US11757	41-35.3	140-26.6	11/28	1404-1415	12	Calm	South-1	Calm	8.7	11.6	o	1025.1
US11758	41-28.7	140-20.4	11/28	1515-1518	60	NE -1	South-1	NE -2	10.7	13.5	o	1025
US11759	41-28.3	140-16.2	11/29	0632-0633	11	NW -1	South-1	NW -3	11	14.3	o	1021.1
US11760	41-26.6	140-17.4	11/29	0657-0659	63	Calm	SW -1	Calm	11.6	14	o	1022.1
US11761	41-24.1	140-20.5	11/29	0740-0744	93	Calm	SW -1	Calm	12.8	13.6	o	1022.1
US11762	41-26.3	140-02.5	11/29	0925-0926	26	NW -3	West-1	NW -5	11.3	14.3	o	1022.6
US11763	41-26.1	140-02.0	11/29	0940-0943	45	NW -3	West-1	NW -5	11.6	14.4	o	1022.6
US11764	41-25.7	140-01.4	11/29	0956-1000	83	NW -3	West-1	NW -5	11.5	14.8	o	1022.7
US11765	41-25.1	140-00.2	11/29	1017-1022	104	NNW-3	NW -1	NNW-5	11.2	15.2	o	1022.7
US11766	41-24.4	140-05.9	11/29	1104-1106	56	WNW-2	NW -1	WNW-4	11.3	13.8	o	1022.1
US11767	41-23.7	140-05.9	11/29	1119-1123	93	NW -2	NW -1	NW-4	11.8	13.9	o	1022.1
US11768	41-23.1	140-06.0	11/29	1136-1141	105	NW -3	NW -1	NW -5	11.7	13.6	o	1022.1
US11769	41-22.1	140-06.3	11/29	1156-1201	118	NW -3	NW -1	NW -5	11.7	13.8	o	1021.6

Cruise 244

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11770	41-45.7	141-09.7	12/12	0647-0653	113	West-2	SW -2	West-3	-0.8	8.8	bc	1023.5
US11771	41-59.3	141-02.0	12/13	1132-1136	101	West-3	NW -1	West-5	1.4	7.6	bc	1024.5
US11772	41-58.7	141-00.6	12/13	1144-1148	93	West-3	NW -1	West-5	1.3	7.7	bc	1024.5
US11773	41-58.1	140-59.4	12/13	1155-1159	85	WNW-3	NW -1	WNW-5	1.1	8	s	1024.2
US11774	41-57.4	140-58.0	12/13	1207-1210	75	NW -3	NW -1	NW -5	1.1	8.6	bc	1024.6
US11775	42-15.2	140-47.9	12/14	0815-0818	70	SSW-1	West-1	SSW-2	3.4	8.7	bc	1022.2
US11776	42-20.7	140-48.4	12/14	0909-0912	52	East-1	West-1	East-2	3.4	8.6	bc	1022.1
US11777	42-31.3	140-37.9	12/14	1038-1042	59	Calm	NW -1	Calm	2.7	8.6	c	1021.5
US11778	42-26.1	140-37.2	12/14	1129-1134	82	SE -1	NW -1	SE -3	4.2	8.8	bc	1020.5
US11779	42-21.3	140-36.7	12/14	1239-1243	86	South-1	NW -1	South-1	4.9	8.8	c	1019.6
US11780	42-16.9	140-36.5	12/14	1318-1223	89	South-1	NW -1	South-2	4.9	8.7	c	1018.6
US11781	42-11.4	140-35.4	12/14	1449-1453	81	South-2	NW -1	South-4	5.3	8.6	c	1017.1
US11782	42-08.9	140-35.8	12/14	1519-1523	65	South-2	South-1	South-4	4.4	8.6	c	1016.7
US11783	42-13.8	140-30.2	12/14	1655-1658	78	SSE-2	NW -1	SSE-4	4.3	8.6	r	1015.5
US11784	42-18.9	140-30.5	12/14	1737-1742	92	East-2	NW -1	East-4	4.1	8.7	r	1014.1
US11785	42-23.7	140-31.1	12/14	1815-1820	94	SE -2	ESE-1	SE -4	5.6	8.9	r	1014
US11786	42-23.3	140-42.6	12/14	1913-1916	61	SSE-3	SE -1	SSE-5	4.3	8.8	r	1013.6
US11787	42-13.3	140-41.4	12/15	0646-0650	89	West-4	West-1	West-6	4	8.6	o	1010
US11788	41-44.6	140-38.4	12/15	1424-1427	49	NW -3	West-1	NW -5	0.7	11.2	s	1011.1

Cruise 245

Station	Lat. (N)*	Long (E)*	Date	S.M.T	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar. (hPa)
US11789	41-47.0	140-40.5	12/20	0840-0842	20	NW -1	SW -1	NW -2	-4.1	8.8	bc	1020.6
US11790	41-45.4	140-40.2	12/20	0900-0902	39	West-1	SW -1	West-3	-3.6	10.2	bc	1020.7
US11791	41-43.5	140-40.1	12/20	0922-0925	66	West-2	SW -1	West-4	-3	10.5	bc	1020.8
US11792	41-43.7	140-36.4	12/20	0952-0954	31	West-1	SW -1	West-2	-3.5	10.5	bc	1021.1
US11793	41-44.0	140-35.8	12/20	0958-0959	12	NW -1	SW -1	NW -3	-3.4	9.8	bc	1021.2
US11794	41-41.2	140-34.4	12/20	1036-1039	41	NW -1	SW -1	NW -3	-3	10.4	s	1021.2
US11795	41-37.3	140-30.1	12/20	1117-1120	32	WNW-3	SW -1	WNW-5	-2.3	10	s	1021
US11796	41-34.9	140-33.1	12/20	1208-1211	59	WNW-3	SW -1	WNW-5	-2.6	10.4	s	1020.7
US11797	41-35.0	140-29.7	12/20	1243-1245	43	NW -3	SSW-1	NW -5	-2.4	10.4	s	1020.6
US11798	41-35.1	140-26.5	12/20	1317-1318	12	NNW-1	SSE-1	NNW-3	-2.8	9.7	s	1020.6
US11799	41-29.0	140-21.2	12/20	1420-1423	63	West-3	SSW-1	West-3	-2.5	9.8	s	1020.8
US11800	41-28.3	140-16.8	12/20	1501-1503	27	NW -2	South-1	NW -4	-2.3	10.3	s	1021
US11801	41-26.3	140-17.4	12/21	0722-0725	68	NW -1	SSW-1	NW -2	-2.9	10	o	1024.3
US11802	41-23.8	140-20.0	12/21	0753-0757	97	NW -1	SW -1	NW -2	-2.1	9	s	1024.2
US11803	41-26.3	140-02.5	12/21	0933-0935	31	NW -2	WNW-1	NW -3	0.2	9.7	bc	1024.2
US11804	41-26.2	140-02.0	12/21	0949-0952	44	NW -2	WNW-1	NW -3	0.2	9.6	bc	1024.2
US11805	41-25.9	140-01.1	12/21	1007-1011	83	NW -2	West-1	NW -4	0.7	9.8	bc	1024.2
US11806	41-24.9	140-00.0	12/21	1028-1033	112	West-2	West-1	West-4	0.8	9.6	bc	1024.1
US11807	41-24.6	140-06.2	12/21	1117-1120	48	West-2	WSW-1	West-3	0.9	10.5	c	1023.6
US11808	41-23.7	140-06.1	12/21	1135-1139	90	WNW-2	West-1	WNW-4	1.1	10.5	bc	1023.4
US11809	41-23.2	140-06.2	12/21	1151-1155	100	West-2	West-1	West-1	1.6	10	bc	1024.1
US11810	41-22.3	140-06.1	12/21	1213-1218	118	West-1	West-1	West-2	1.6	11.5	bc	1023
US11811	41-37.7	140-28.0	12/21	1507-1508	18	NW -1	SE -1	NW -2	0.9	10.2	bc	1022.1
US11812	41-38.0	140-26.9	12/21	1522-1523	16	NW -1	SE -1	NW -3	0.6	10.1	bc	1022.2
US11813	41-35.1	140-52.9	12/21	1713-1715	36	Calm	NW -1	Calm	1.4	11.5	bc	1022.2
US11814	41-37.1	140-51.2	12/21	1736-1740	98	Calm	NW -1	Calm	1.2	11.4	c	1022.1
US11815	41-38.8	140-49.2	12/21	1756-1809	339	NNE-1	NW -1	NNE-3	1.9	11.3	s	1022.1
US11816	41-40.8	140-47.2	12/21	1825-1834	223	North-1	NW -1	North-3	1.3	11.2	s	1022.1
US11817	41-42.6	140-45.3	12/21	1852-1856	86	North-1	WNW-1	North-3	1.3	11.5	o	1022.1
US11818	41-44.1	140-38.2	12/21	1955-1958	53	North-1	SW -1	North-3	0.1	10.8	s	1022.2

(*): Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US11722
LATITUDE 41-46.5 N
LONGITUDE 141-15.8 E
DEPTH (m) 211

Press.	Temp.	Salinity	Sigma-T
5	13.734	33.767	25.290
10	13.722	33.767	25.292
20	13.712	33.769	25.295
30	13.632	33.778	25.319
40	12.356	33.531	25.380
50	12.669	34.012	25.693
75	10.189	33.731	25.929
100	9.915	33.838	26.059
125	8.769	33.869	26.269
150	7.909	33.849	26.384

STATION US11723
LATITUDE 41-45.0 N
LONGITUDE 140-38.7 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	14.495	33.933	25.258
10	14.497	33.926	25.252
20	14.539	33.950	25.262
30	14.527	33.984	25.290
40	14.253	34.058	25.406

STATION US11724
LATITUDE 41-45.7 N
LONGITUDE 141-07.1 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	13.460	33.839	25.401
10	13.462	33.839	25.401
20	13.356	33.834	25.418
30	13.255	33.830	25.436
40	13.197	33.838	25.454
50	13.144	33.844	25.469

STATION US11725
LATITUDE 42-04.9 N
LONGITUDE 140-56.7 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	13.011	33.820	25.476
10	13.021	33.820	25.474
20	13.016	33.818	25.474
30	13.002	33.813	25.473
40	13.009	33.815	25.473
50	13.018	33.817	25.473
75	12.806	33.814	25.513

STATION US11726
LATITUDE 41-49.6 N
LONGITUDE 141-13.0 E
DEPTH (m) 171

Press.	Temp.	Salinity	Sigma-T
5	13.100	33.667	25.341
10	13.181	33.835	25.455
20	13.039	33.843	25.489
30	13.036	33.849	25.494
40	13.019	33.851	25.499
50	12.782	33.857	25.550
75	9.592	33.959	26.207
100	8.487	33.840	26.290
125	7.429	33.794	26.410
150	7.207	33.777	26.427

STATION US11727
LATITUDE 41-46.9 N
LONGITUDE 141-14.4 E
DEPTH (m) 193

Press.	Temp.	Salinity	Sigma-T
5	13.089	33.859	25.492
10	13.092	33.859	25.491
20	13.088	33.858	25.491
30	13.082	33.858	25.492
40	13.068	33.858	25.495
50	12.994	33.877	25.524
75	11.032	34.070	26.045
100	10.012	34.013	26.179
125	7.642	33.833	26.409
150	6.772	33.762	26.475
175	4.700	33.587	26.588

STATION US11728
LATITUDE 41-43.8 N
LONGITUDE 141-16.0 E
DEPTH (m) 228

Press.	Temp.	Salinity	Sigma-T
5	14.286	33.924	25.296
10	14.289	33.922	25.293
20	14.160	33.942	25.336
30	13.995	33.954	25.380
40	13.514	33.964	25.487
50	12.449	33.962	25.697
75	10.489	33.918	26.023
100	9.169	33.890	26.222
125	7.501	33.817	26.417
150	5.982	33.681	26.513
175	4.842	33.607	26.589
200	3.311	33.526	26.680

STATION US11729
LATITUDE 41-41.0 N
LONGITUDE 141-47.5 E
DEPTH (m) 232

Press.	Temp.	Salinity	Sigma-T
5	12.990	33.985	25.608
10	12.658	34.006	25.691
20	12.500	34.019	25.731
30	12.397	34.025	25.756
40	12.295	34.026	25.777
50	12.233	34.027	25.789
75	11.692	34.007	25.876
100	10.139	33.930	26.093
125	8.180	33.839	26.335
150	6.845	33.778	26.477
175	5.647	33.724	26.588
200	3.996	33.643	26.707

STATION US11730
LATITUDE 41-38.0 N
LONGITUDE 141-19.1 E
DEPTH (m) 215

Press.	Temp.	Salinity	Sigma-T
5	13.020	33.966	25.588
10	13.040	34.003	25.613
20	12.994	34.003	25.622
30	12.995	34.004	25.622
40	12.852	34.005	25.652
50	12.699	34.007	25.683
75	12.359	33.994	25.739
100	9.626	33.863	26.127
125	7.486	33.810	26.414
150	7.276	33.809	26.443
175	7.224	33.810	26.450
200	6.370	33.771	26.535

STATION US11731
LATITUDE 41-35.0 N
LONGITUDE 141-20.5 E
DEPTH (m) 313

Press.	Temp.	Salinity	Sigma-T
5	14.771	33.875	25.154
10	14.756	33.885	25.165
20	14.747	33.890	25.171
30	14.748	33.895	25.175
40	14.571	33.964	25.266
50	14.486	33.966	25.286
75	14.042	33.958	25.373
100	13.896	34.000	25.436
125	13.795	34.008	25.463
150	12.875	34.061	25.690
175	9.961	33.969	26.153
200	8.892	33.961	26.321
250	8.974	33.999	26.339
300	4.838	33.712	26.672

STATION US11732
LATITUDE 41-32.3 N
LONGITUDE 141-21.8 E
DEPTH (m) 260

Press.	Temp.	Salinity	Sigma-T
5	14.972	33.875	25.111
10	14.982	33.873	25.107
20	14.949	33.875	25.116
30	14.952	33.876	25.115
40	14.794	33.890	25.161
50	14.796	33.891	25.161
75	14.643	33.905	25.205
100	13.668	34.011	25.492
125	13.236	34.071	25.626
150	12.996	34.082	25.683
175	12.804	34.070	25.711
200	12.435	34.136	25.835

STATION US11733
LATITUDE 41-30.2 N
LONGITUDE 141-20.9 E
DEPTH (m) 230

Press.	Temp.	Salinity	Sigma-T
5	14.954	33.846	25.092
10	14.953	33.846	25.093
20	14.959	33.845	25.090
30	14.934	33.853	25.102
40	14.895	33.862	25.117
50	14.829	33.875	25.142
75	14.660	33.901	25.198
100	13.167	34.059	25.630
125	12.692	34.104	25.760
150	12.392	34.140	25.846
175	12.357	34.157	25.866
200	11.288	34.170	26.077

STATION US11734
LATITUDE 41-29.2 N
LONGITUDE 141-22.8 E
DEPTH (m) 129

Press.	Temp.	Salinity	Sigma-T
5	14.983	33.861	25.098
10	14.979	33.859	25.097
20	14.970	33.859	25.099
30	14.906	33.865	25.118
40	14.875	33.869	25.127
50	14.856	33.871	25.133
75	14.125	33.944	25.345
100	12.357	34.118	25.836

STATION US11735
LATITUDE 41-27.8 N
LONGITUDE 141-23.6 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	15.238	33.815	25.007
10	15.182	33.821	25.023
20	14.958	33.840	25.087
30	14.857	33.854	25.120
40	14.720	33.879	25.168
50	14.699	33.884	25.177

STATION US11736
LATITUDE 41-29.9 N
LONGITUDE 141-39.3 E
DEPTH (m) 607

Press.	Temp.	Salinity	Sigma-T
5	15.335	33.810	24.981
10	15.286	33.817	24.998
20	15.194	33.831	25.028
30	15.138	33.840	25.048
40	15.130	33.842	25.051
50	15.117	33.843	25.055
75	15.003	33.858	25.091
100	14.973	33.859	25.098
125	14.908	33.864	25.116
150	14.879	33.867	25.125
175	14.425	33.921	25.264
200	13.411	33.958	25.503
250	5.241	33.590	26.530
300	2.395	33.521	26.755
400	2.831	33.711	26.871
500	3.455	33.973	27.023

STATION US11737
LATITUDE 41-30.0 N
LONGITUDE 141-34.8 E
DEPTH (m) 108

Press.	Temp.	Salinity	Sigma-T
5	15.427	33.799	24.953
10	15.393	33.806	24.965
20	15.187	33.839	25.036
30	15.114	33.846	25.057
40	15.020	33.855	25.085
50	14.952	33.860	25.104
75	14.789	33.875	25.151
100	14.553	33.877	25.203

STATION US11738
LATITUDE 41-30.0 N
LONGITUDE 141-31.2 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	15.392	33.804	24.963
10	15.256	33.822	25.008
20	15.160	33.839	25.042
30	15.065	33.844	25.067
40	14.977	33.852	25.092
50	14.834	33.867	25.135

STATION US11739
LATITUDE 41-27.0 N
LONGITUDE 141-21.9 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	14.914	33.857	25.110
10	14.915	33.859	25.111
20	14.843	33.869	25.134
30	14.324	33.913	25.279
40	12.965	34.063	25.674
50	13.124	34.062	25.642

STATION US11740
LATITUDE 41-27.7 N
LONGITUDE 141-16.2 E
DEPTH (m) 154

Press.	Temp.	Salinity	Sigma-T
5	14.877	33.851	25.113
10	14.886	33.850	25.110
20	14.881	33.852	25.113
30	14.832	33.862	25.131
40	14.779	33.872	25.150
50	14.486	33.911	25.243
75	13.412	34.026	25.556
100	12.638	34.122	25.784
125	12.164	34.151	25.899

STATION US11741
LATITUDE 41-34.7 N
LONGITUDE 140-54.5 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	15.110	33.808	25.029
10	15.105	33.808	25.030
20	15.111	33.808	25.029
30	15.139	33.806	25.021
40	15.128	33.808	25.025

STATION US11742
LATITUDE 41-37.0 N
LONGITUDE 140-51.3 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	14.703	33.819	25.126
10	14.673	33.821	25.134
20	14.508	33.851	25.192
30	14.474	33.862	25.208
40	14.484	33.861	25.205
50	14.487	33.863	25.206
75	13.607	33.973	25.475

STATION US11743
LATITUDE 41-38.7 N
LONGITUDE 140-49.2 E
DEPTH (m) 340

Press.	Temp.	Salinity	Sigma-T
5	13.683	33.904	25.406
10	13.685	33.908	25.409
20	13.666	33.915	25.417
30	12.635	34.116	25.780
40	12.084	34.187	25.941
50	11.377	34.207	26.089
75	11.391	34.215	26.093
100	11.229	34.225	26.131
125	11.254	34.225	26.126
150	11.247	34.238	26.137
175	11.282	34.249	26.140
200	11.190	34.252	26.158
250	10.109	34.201	26.310
300	9.485	34.175	26.394

STATION US11744
LATITUDE 41-40.9 N
LONGITUDE 140-47.1 E
DEPTH (m) 212

Press.	Temp.	Salinity	Sigma-T
5	13.167	33.927	25.528
10	13.174	33.927	25.527
20	13.149	33.929	25.534
30	13.098	33.935	25.548
40	12.255	33.986	25.753
50	12.069	34.065	25.850
75	12.219	34.053	25.812
100	11.918	34.110	25.913
125	11.341	34.224	26.109
150	11.269	34.231	26.128
175	10.997	34.224	26.172
200	9.406	34.145	26.383

STATION US11745
LATITUDE 41-42.8 N
LONGITUDE 140-45.3 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	12.978	33.964	25.595
10	12.957	33.975	25.607
20	12.941	33.986	25.619
30	12.921	33.994	25.630
40	12.910	33.999	25.635
50	12.915	34.005	25.639
75	12.709	34.038	25.705

STATION US11746
LATITUDE 41-47.1 N
LONGITUDE 140-40.4 E
DEPTH (m) 19

Press.	Temp.	Salinity	Sigma-T
5	13.447	33.523	25.159
10	13.978	33.755	25.230

STATION US11747
LATITUDE 41-45.4 N
LONGITUDE 140-40.1 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	13.645	33.837	25.362
10	13.637	33.834	25.361
20	13.633	33.831	25.359
30	13.554	33.840	25.382

STATION US11748
LATITUDE 41-43.7 N
LONGITUDE 140-40.0 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	13.775	33.850	25.345
10	13.783	33.848	25.342
20	13.778	33.847	25.342
30	13.770	33.847	25.344
40	13.545	33.848	25.390
50	13.371	33.891	25.459

STATION US11749
LATITUDE 41-43.6 N
LONGITUDE 140-36.5 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	12.920	33.371	25.147
10	13.384	33.760	25.356
20	13.330	33.771	25.375
30	13.032	33.720	25.395

STATION US11750
LATITUDE 41-43.9 N
LONGITUDE 140-35.9 E
DEPTH (m) 11

Press.	Temp.	Salinity	Sigma-T
5	11.673	33.131	25.199
10	13.127	33.660	25.329

STATION US11751
LATITUDE 41-41.3 N
LONGITUDE 140-33.9 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	13.419	33.835	25.406
10	13.171	33.809	25.437
20	12.939	33.780	25.460
30	12.762	33.755	25.475

STATION US11752
LATITUDE 41-37.6 N
LONGITUDE 140-30.3 E
DEPTH (m) 30

Press.	Temp.	Salinity	Sigma-T
5	12.963	33.815	25.482
10	12.899	33.815	25.495
20	12.643	33.802	25.535
30	12.623	33.800	25.538

STATION US11753
LATITUDE 41-37.7 N
LONGITUDE 140-28.1 E
DEPTH (m) 19

Press.	Temp.	Salinity	Sigma-T
5	12.363	33.738	25.540
10	12.301	33.746	25.558

STATION US11754
LATITUDE 41-38.1 N
LONGITUDE 140-26.3 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	12.054	33.556	25.457
10	11.954	33.713	25.598

STATION US11755
LATITUDE 41-34.9 N
LONGITUDE 140-33.3 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	12.942	33.734	25.423
10	13.112	33.798	25.439
20	13.099	33.839	25.473
30	12.964	33.860	25.517
40	12.586	33.939	25.652
50	12.072	34.036	25.826

STATION US11756
LATITUDE 41-35.0 N
LONGITUDE 140-29.9 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	12.926	33.739	25.431
10	12.927	33.749	25.438
20	12.879	33.776	25.469
30	12.694	33.774	25.504
40	12.598	33.840	25.574

STATION US11757
LATITUDE 41-35.3 N
LONGITUDE 140-26.6 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	12.815	33.429	25.212
10	12.727	33.715	25.451

STATION US11758
LATITUDE 41-28.7 N
LONGITUDE 140-20.4 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	13.517	33.874	25.417
10	13.469	33.881	25.432
20	13.049	33.927	25.552
30	12.912	33.948	25.596
40	12.855	33.956	25.613
50	12.720	33.978	25.656

STATION US11759
LATITUDE 41-28.3 N
LONGITUDE 140-16.2 E
DEPTH (m) 11

Press.	Temp.	Salinity	Sigma-T
5	14.646	33.657	25.013
10	14.655	33.657	25.011

STATION US11760
LATITUDE 41-26.6 N
LONGITUDE 140-17.4 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	14.254	33.757	25.173
10	14.212	33.764	25.188
20	13.987	33.798	25.261
30	13.840	33.840	25.324
40	13.616	33.934	25.443
50	13.125	34.067	25.645

STATION US11761
LATITUDE 41-24.1 N
LONGITUDE 140-20.5 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	13.635	33.895	25.409
10	12.875	33.996	25.640
20	12.605	34.034	25.722
30	12.453	34.042	25.759
40	12.287	34.051	25.798
50	12.053	34.065	25.853
75	11.035	34.139	26.099

STATION US11762
LATITUDE 41-26.3 N
LONGITUDE 140-02.5 E
DEPTH (m) 26

Press.	Temp.	Salinity	Sigma-T
5	14.467	33.592	25.001
10	14.139	33.690	25.146
20	13.838	33.755	25.259

STATION US11763
LATITUDE 41-26.1 N
LONGITUDE 140-02.0 E
DEPTH (m) 45

Press.	Temp.	Salinity	Sigma-T
5	14.794	33.624	24.956
10	14.586	33.668	25.034
20	14.070	33.749	25.206
30	13.577	33.818	25.361
40	13.168	33.891	25.500

STATION US11764
LATITUDE 41-25.7 N
LONGITUDE 140-01.4 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	15.363	33.653	24.854
10	15.379	33.652	24.850
20	15.382	33.651	24.848
30	15.381	33.652	24.850
40	14.582	34.104	25.371
50	12.084	34.143	25.907
75	10.910	34.259	26.214

STATION US11765
LATITUDE 41-25.1 N
LONGITUDE 140-00.2 E
DEPTH (m) 104

Press.	Temp.	Salinity	Sigma-T
5	15.430	33.635	24.826
10	15.441	33.636	24.824
20	15.444	33.646	24.831
30	15.343	33.693	24.889
40	15.105	33.785	25.012
50	14.568	34.402	25.604
75	10.771	34.256	26.237

STATION US11766
LATITUDE 41-24.4 N
LONGITUDE 140-05.9 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	13.828	33.743	25.252
10	12.631	33.997	25.689
20	12.105	34.147	25.907
30	11.836	34.239	26.029
40	11.604	34.267	26.094
50	11.521	34.275	26.116

STATION US11767
LATITUDE 41-23.7 N
LONGITUDE 140-05.9 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	13.829	33.796	25.293
10	13.257	33.888	25.480
20	11.702	34.138	25.975
30	11.290	34.241	26.132
40	11.238	34.282	26.174
50	11.072	34.280	26.202
75	10.606	34.270	26.277

STATION US11768
LATITUDE 41-23.1 N
LONGITUDE 140-06.0 E
DEPTH (m) 105

Press.	Temp.	Salinity	Sigma-T
5	13.843	33.776	25.274
10	13.850	33.773	25.270
20	13.842	33.767	25.267
30	13.160	33.884	25.497
40	12.235	34.045	25.803
50	11.476	34.157	26.032
75	10.451	34.263	26.299
100	10.374	34.261	26.311

STATION US11769
LATITUDE 41-22.1 N
LONGITUDE 140-06.3 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	14.080	33.799	25.243
10	13.493	33.864	25.414
20	12.807	34.013	25.667
30	12.765	34.071	25.720
40	12.339	34.176	25.884
50	11.649	34.218	26.048
75	10.653	34.239	26.245
100	10.401	34.252	26.299

STATION US11770
LATITUDE 41-45.7 N
LONGITUDE 141-09.7 E
DEPTH (m) 113

Press.	Temp.	Salinity	Sigma-T
5	8.969	33.643	26.061
10	9.329	33.744	26.082
20	9.547	33.783	26.077
30	9.657	33.807	26.078
40	9.680	33.812	26.078
50	9.681	33.811	26.077
75	9.505	33.798	26.095
100	9.146	33.764	26.127

STATION US11771
LATITUDE 41-59.3 N
LONGITUDE 141-02.0 E
DEPTH (m) 101

Press.	Temp.	Salinity	Sigma-T
5	8.033	33.378	25.995
10	8.061	33.382	25.994
20	8.140	33.401	25.997
30	8.217	33.419	26.000
40	8.400	33.468	26.011
50	8.477	33.486	26.013
75	8.657	33.555	26.040

STATION US11772
LATITUDE 41-58.7 N
LONGITUDE 141-00.6 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	8.166	33.415	26.004
10	8.171	33.413	26.002
20	8.183	33.413	26.001
30	8.167	33.408	25.999
40	8.488	33.480	26.007
50	8.903	33.581	26.022
75	8.379	33.586	26.107

STATION US11773
LATITUDE 41-58.1 N
LONGITUDE 140-59.4 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	8.386	33.459	26.006
10	8.389	33.458	26.005
20	8.371	33.451	26.002
30	8.403	33.457	26.002
40	8.627	33.517	26.015
50	8.827	33.563	26.020
75	7.656	33.573	26.203

STATION US11774
LATITUDE 41-57.4 N
LONGITUDE 140-58.0 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	8.663	33.548	26.034
10	8.666	33.548	26.033
20	8.667	33.548	26.033
30	8.682	33.551	26.033
40	8.743	33.568	26.037
50	9.064	33.661	26.059

STATION US11775
LATITUDE 42-15.2 N
LONGITUDE 140-47.9 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	8.706	33.795	26.221
10	8.709	33.794	26.219
20	8.713	33.792	26.217
30	8.716	33.792	26.217
40	8.716	33.791	26.216
50	8.729	33.795	26.217

STATION US11776
LATITUDE 42-20.7 N
LONGITUDE 140-48.4 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	8.847	33.748	26.162
10	8.903	33.810	26.202
20	8.900	33.809	26.201
30	8.904	33.808	26.200
40	8.907	33.808	26.199

STATION US11777
LATITUDE 42-31.3 N
LONGITUDE 140-37.9 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	8.870	33.770	26.176
10	8.883	33.766	26.170
20	8.876	33.763	26.169
30	8.851	33.758	26.169
40	8.779	33.743	26.169
50	8.720	33.740	26.175

STATION US11778
LATITUDE 42-26.1 N
LONGITUDE 140-37.2 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	8.911	33.745	26.149
10	8.918	33.772	26.170
20	8.885	33.805	26.200
30	8.844	33.805	26.207
40	8.812	33.807	26.213
50	8.802	33.808	26.216
75	8.382	33.796	26.271

STATION US11779
LATITUDE 42-21.3 N
LONGITUDE 140-36.7 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	8.801	33.739	26.162
10	8.838	33.775	26.184
20	8.839	33.795	26.200
30	8.838	33.794	26.200
40	8.833	33.794	26.200
50	8.825	33.794	26.201
75	8.824	33.797	26.204

STATION US11780
LATITUDE 42-16.9 N
LONGITUDE 140-36.5 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	8.964	33.737	26.135
10	8.994	33.786	26.168
20	8.994	33.805	26.183
30	8.995	33.805	26.183
40	8.989	33.805	26.184
50	8.980	33.805	26.186
75	8.948	33.805	26.191

STATION US11781
LATITUDE 42-11.4 N
LONGITUDE 140-35.4 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	8.856	33.780	26.185
10	8.871	33.797	26.196
20	8.887	33.795	26.192
30	8.893	33.796	26.192
40	8.899	33.798	26.193
50	8.907	33.800	26.193
75	8.916	33.803	26.194

STATION US11782
LATITUDE 42-08.9 N
LONGITUDE 140-35.8 E
DEPTH (m) 65

Press.	Temp.	Salinity	Sigma-T
5	8.564	33.649	26.128
10	8.807	33.751	26.170
20	8.910	33.783	26.179
30	8.919	33.784	26.179
40	8.937	33.798	26.187
50	8.929	33.799	26.189

STATION US11783
LATITUDE 42-13.8 N
LONGITUDE 140-30.2 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	8.211	33.473	26.044
10	8.686	33.666	26.123
20	8.910	33.742	26.147
30	8.949	33.756	26.152
40	8.971	33.776	26.164
50	8.966	33.781	26.169

STATION US11784
LATITUDE 42-18.9 N
LONGITUDE 140-30.5 E
DEPTH (m) 92

Press.	Temp.	Salinity	Sigma-T
5	9.054	33.811	26.178
10	9.061	33.808	26.175
20	9.069	33.804	26.171
30	9.071	33.803	26.170
40	9.084	33.805	26.169
50	9.072	33.803	26.170
75	9.028	33.803	26.176

STATION US11785
LATITUDE 42-23.7 N
LONGITUDE 140-31.1 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	9.190	33.807	26.153
10	9.193	33.805	26.151
20	9.189	33.802	26.150
30	9.195	33.804	26.151
40	9.193	33.805	26.152
50	9.189	33.806	26.153
75	9.175	33.806	26.155

STATION US11786
LATITUDE 42-23.3 N
LONGITUDE 140-42.6 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	8.876	33.809	26.205
10	8.887	33.804	26.200
20	8.890	33.803	26.198
30	8.893	33.802	26.197
40	8.886	33.801	26.198
50	8.883	33.803	26.199

STATION US11787
LATITUDE 42-13.3 N
LONGITUDE 140-41.4 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	8.829	33.805	26.209
10	8.808	33.800	26.209
20	8.820	33.803	26.209
30	8.823	33.803	26.209
40	8.826	33.803	26.208
50	8.826	33.803	26.208
75	8.821	33.803	26.209

STATION US11788
LATITUDE 41-44.6 N
LONGITUDE 140-38.4 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	11.520	33.941	25.857
10	11.518	33.942	25.858
20	11.508	33.940	25.858
30	11.505	33.939	25.858
40	11.562	33.966	25.868

STATION US11789
LATITUDE 41-47.0 N
LONGITUDE 140-40.5 E
DEPTH (m) 20

Press.	Temp.	Salinity	Sigma-T
5	9.383	33.608	25.967
10	9.838	33.772	26.020

STATION US11790
LATITUDE 41-45.4 N
LONGITUDE 140-40.2 E
DEPTH (m) 39

Press.	Temp.	Salinity	Sigma-T
5	10.899	33.992	26.009
10	10.900	33.985	26.003
20	10.802	33.977	26.015
30	10.654	33.973	26.038

STATION US11791
LATITUDE 41-43.5 N
LONGITUDE 140-40.1 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	10.696	33.980	26.035
10	10.709	33.971	26.026
20	10.719	33.964	26.018
30	10.793	33.991	26.027
40	10.778	33.976	26.017
50	10.807	34.012	26.040

STATION US11792
LATITUDE 41-43.7 N
LONGITUDE 140-36.4 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	10.868	33.997	26.018
10	10.311	33.904	26.043
20	10.433	33.946	26.054

STATION US11793
LATITUDE 41-44.0 N
LONGITUDE 140-35.8 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	9.833	33.832	26.068
10	9.837	33.826	26.063

STATION US11794
LATITUDE 41-41.2 N
LONGITUDE 140-34.4 E
DEPTH (m) 41

Press.	Temp.	Salinity	Sigma-T
5	10.744	34.004	26.045
10	10.742	33.994	26.038
20	10.727	33.991	26.038
30	10.714	33.990	26.040
40	10.700	33.991	26.043

STATION US11795
LATITUDE 41-37.3 N
LONGITUDE 140-30.1 E
DEPTH (m) 32

Press.	Temp.	Salinity	Sigma-T
5	10.477	33.952	26.052
10	10.500	33.962	26.056
20	10.509	33.959	26.051
30	10.529	33.962	26.051

STATION US11796
LATITUDE 41-34.9 N
LONGITUDE 140-33.1 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	10.634	34.007	26.067
10	10.662	34.009	26.064
20	10.618	34.011	26.073
30	10.457	34.013	26.103
40	10.398	34.023	26.121
50	10.355	34.029	26.133

STATION US11797
LATITUDE 41-35.0 N
LONGITUDE 140-29.7 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	10.450	33.955	26.059
10	10.451	33.952	26.056
20	10.468	33.951	26.053
30	10.487	33.952	26.050
40	10.491	33.952	26.050

STATION US11798
LATITUDE 41-35.1 N
LONGITUDE 140-26.5 E
DEPTH (m) 12

Press.	Temp.	Salinity	Sigma-T
5	8.900	33.432	25.906
10	9.025	33.765	26.147

STATION US11799
LATITUDE 41-29.0 N
LONGITUDE 140-21.2 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	10.209	33.924	26.076
10	10.219	33.926	26.076
20	10.225	33.926	26.075
30	10.270	33.936	26.075
40	10.269	33.935	26.075
50	10.291	33.939	26.074

STATION US11800
LATITUDE 41-28.3 N
LONGITUDE 140-16.8 E
DEPTH (m) 27

Press.	Temp.	Salinity	Sigma-T
5	10.247	33.926	26.071
10	10.329	33.962	26.085
20	10.354	33.961	26.080

STATION US11801
LATITUDE 41-26.3 N
LONGITUDE 140-17.4 E
DEPTH (m) 68

Press.	Temp.	Salinity	Sigma-T
5	10.263	33.973	26.105
10	10.267	33.970	26.102
20	10.182	33.971	26.117
30	9.807	34.008	26.210
40	9.622	34.031	26.258
50	9.623	34.032	26.259

STATION US11802
LATITUDE 41-23.8 N
LONGITUDE 140-20.0 E
DEPTH (m) 97

Press.	Temp.	Salinity	Sigma-T
5	9.653	34.038	26.259
10	9.657	34.033	26.255
20	9.659	34.031	26.252
30	9.653	34.031	26.253
40	9.332	34.043	26.315
50	9.060	34.050	26.364
75	8.736	34.067	26.429

STATION US11803
LATITUDE 41-26.3 N
LONGITUDE 140-02.5 E
DEPTH (m) 31

Press.	Temp.	Salinity	Sigma-T
5	9.782	33.983	26.194
10	9.255	34.019	26.309
20	9.236	34.030	26.321
30	8.889	34.042	26.386

STATION US11804
LATITUDE 41-26.2 N
LONGITUDE 140-02.0 E
DEPTH (m) 44

Press.	Temp.	Salinity	Sigma-T
5	9.952	33.995	26.175
10	9.784	34.006	26.212
20	9.563	34.019	26.259
30	9.482	34.022	26.275
40	8.861	34.046	26.393

STATION US11805
LATITUDE 41-25.9 N
LONGITUDE 140-01.1 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	9.979	34.003	26.177
10	9.976	34.002	26.177
20	9.988	34.001	26.174
30	9.795	34.005	26.210
40	9.775	34.008	26.215
50	9.661	34.015	26.239
75	7.770	34.101	26.602

STATION US11806
LATITUDE 41-24.9 N
LONGITUDE 140-00.0 E
DEPTH (m) 112

Press.	Temp.	Salinity	Sigma-T
5	9.764	33.961	26.181
10	9.796	34.031	26.230
20	9.792	34.032	26.231
30	9.796	34.040	26.236
40	9.582	34.040	26.272
50	9.112	34.040	26.349
75	8.778	34.086	26.437
100	4.361	34.024	26.972

STATION US11807
LATITUDE 41-24.6 N
LONGITUDE 140-06.2 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	11.113	33.960	25.945
10	11.125	33.955	25.939
20	11.056	33.955	25.952
30	10.991	33.959	25.967
40	10.955	33.961	25.975

STATION US11808
LATITUDE 41-23.7 N
LONGITUDE 140-06.1 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	10.363	33.874	26.011
10	10.418	34.005	26.103
20	10.407	34.001	26.103
30	10.481	33.999	26.088
40	10.495	33.999	26.085
50	10.462	34.000	26.092
75	10.431	34.003	26.100

STATION US11809
LATITUDE 41-23.2 N
LONGITUDE 140-06.2 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	10.683	33.982	26.039
10	10.687	33.976	26.034
20	10.308	34.001	26.119
30	10.292	34.006	26.126
40	10.303	34.009	26.126
50	10.320	34.011	26.125
75	10.251	34.018	26.142

STATION US11810
LATITUDE 41-22.3 N
LONGITUDE 140-06.1 E
DEPTH (m) 118

Press.	Temp.	Salinity	Sigma-T
5	11.792	33.888	25.765
10	11.502	33.907	25.833
20	11.310	33.936	25.891
30	10.843	33.951	25.986
40	10.286	33.996	26.119
50	10.301	34.006	26.125
75	10.221	34.017	26.147
100	10.228	34.023	26.150

STATION US11811
LATITUDE 41-37.7 N
LONGITUDE 140-28.0 E
DEPTH (m) 18

Press.	Temp.	Salinity	Sigma-T
5	10.449	33.805	25.942
10	10.424	33.974	26.078

STATION US11812
LATITUDE 41-38.0 N
LONGITUDE 140-26.9 E
DEPTH (m) 16

Press.	Temp.	Salinity	Sigma-T
5	9.531	33.858	26.138
10	9.516	33.854	26.138

STATION US11813
LATITUDE 41-35.1 N
LONGITUDE 140-52.9 E
DEPTH (m) 36

Press.	Temp.	Salinity	Sigma-T
5	11.928	33.897	25.746
10	11.931	33.897	25.746
20	11.905	33.901	25.753
30	11.905	33.901	25.753

STATION US11814
LATITUDE 41-37.1 N
LONGITUDE 140-51.2 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	11.633	33.925	25.823
10	11.632	33.919	25.819
20	11.616	33.919	25.822
30	11.533	33.927	25.843
40	11.247	33.951	25.914
50	11.244	33.953	25.916
75	10.841	33.990	26.017

STATION US11815
LATITUDE 41-38.8 N
LONGITUDE 140-49.2 E
DEPTH (m) 339

Press.	Temp.	Salinity	Sigma-T
5	11.256	33.848	25.832
10	11.299	33.943	25.899
20	11.228	33.950	25.917
30	11.210	33.952	25.921
40	11.288	33.951	25.907
50	11.271	33.951	25.910
75	11.280	33.955	25.911
100	11.126	33.966	25.948
125	11.030	33.971	25.969
150	10.712	33.984	26.036
175	10.518	33.989	26.074
200	10.030	34.027	26.187
250	9.535	34.060	26.296
300	9.539	34.061	26.296

STATION US11816
LATITUDE 41-40.8 N
LONGITUDE 140-47.2 E
DEPTH (m) 223

Press.	Temp.	Salinity	Sigma-T
5	11.715	33.941	25.820
10	11.728	33.933	25.812
20	11.734	33.929	25.807
30	11.737	33.928	25.806
40	11.709	33.932	25.815
50	11.417	33.959	25.889
75	11.354	33.977	25.915
100	11.292	33.983	25.930
125	11.256	33.989	25.942
150	10.369	34.026	26.128
175	10.418	34.034	26.126
200	10.410	34.034	26.127

STATION US11817
LATITUDE 41-42.6 N
LONGITUDE 140-45.3 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	11.811	33.903	25.773
10	11.824	33.906	25.773
20	11.765	33.912	25.788
30	11.736	33.916	25.797
40	11.610	33.928	25.830
50	11.595	33.930	25.834
75	11.524	33.936	25.852

STATION US11818
LATITUDE 41-44.1 N
LONGITUDE 140-38.2 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	11.050	33.989	25.979
10	10.969	33.977	25.985
20	10.859	33.971	26.000
30	10.860	33.971	25.999
40	10.826	33.971	26.005
50	10.628	33.985	26.051