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THE " USHIO MARU "

CRUISE 357
CRUISE 358
CRUISE 359

IN MARCH 2016
IN APRIL 2016

1. Cruise Itinerary

Cruise 357	
Departure from Hakodate	Mar. 21, 2016
Start hydrographic research (US16165)	21
Arrival at Muroran	22
Depart from Muroran	23
Finish hydrographic research (US16186)	23
Return to Hakodate	24
Total coverage 280.8 miles	

Cruise 358	
Departure from Hakodate	Apr. 11, 2016
Start hydrographic research (US16187)	11
Towing frame twawl net	11
Twoing frame trawl net	12
Finish hydrographic research (US16194)	12
Arrival at Hakodate	12
Depart from Hakodate	13
Retrieval ADCP mooring system	13
Arrival at Mori	13
Depart from Mori	14
Set ADCP mooring system	14
Finish hydrographic research (US16204)	14
Return to Hakodate	14
Total coverage 250.6 miles	

Cruise 359	
Departure from Hakodate	Apr. 21, 2016
Start hydrographic research (US16205)	21
Arrival at Usujiri	21
Depart from Usujiri	22
Towing frame trawl net	22
Arrival at Muroran	22
Depart from Muroran	23
Arrival at Usujiri	24
Depart from Usujiri	25
Calibration of echo sounder	25
Towing frame trawl net	26
Finish hydrographic research	27
Arrival at and depart from Usujiri	27
Return to Hakodate	28
Total coverage 472.3 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 SBE-19Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

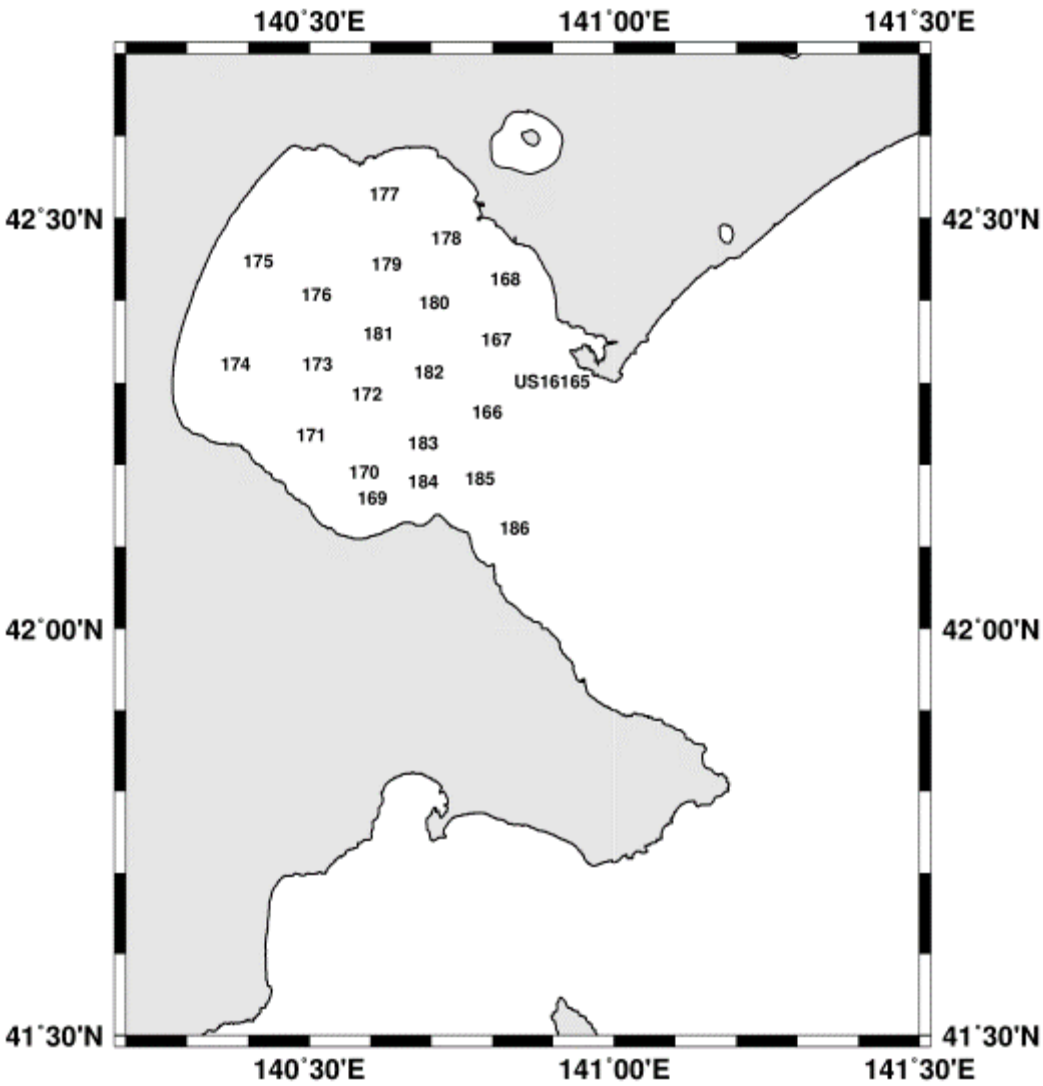

Figure 1. Oceanographic stations (Cruise 357)

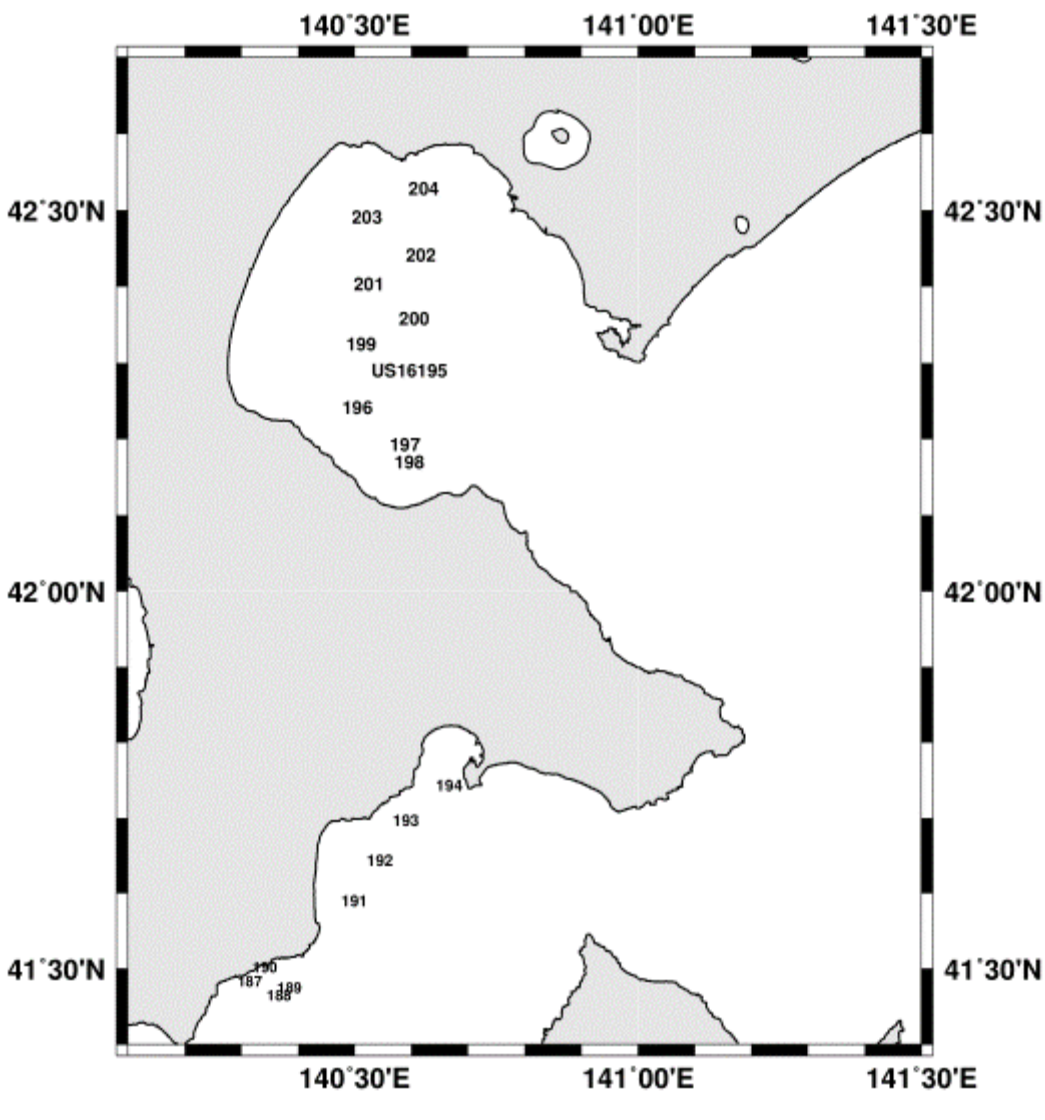

Figure 2. Oceanographic stations (Cruise 358)

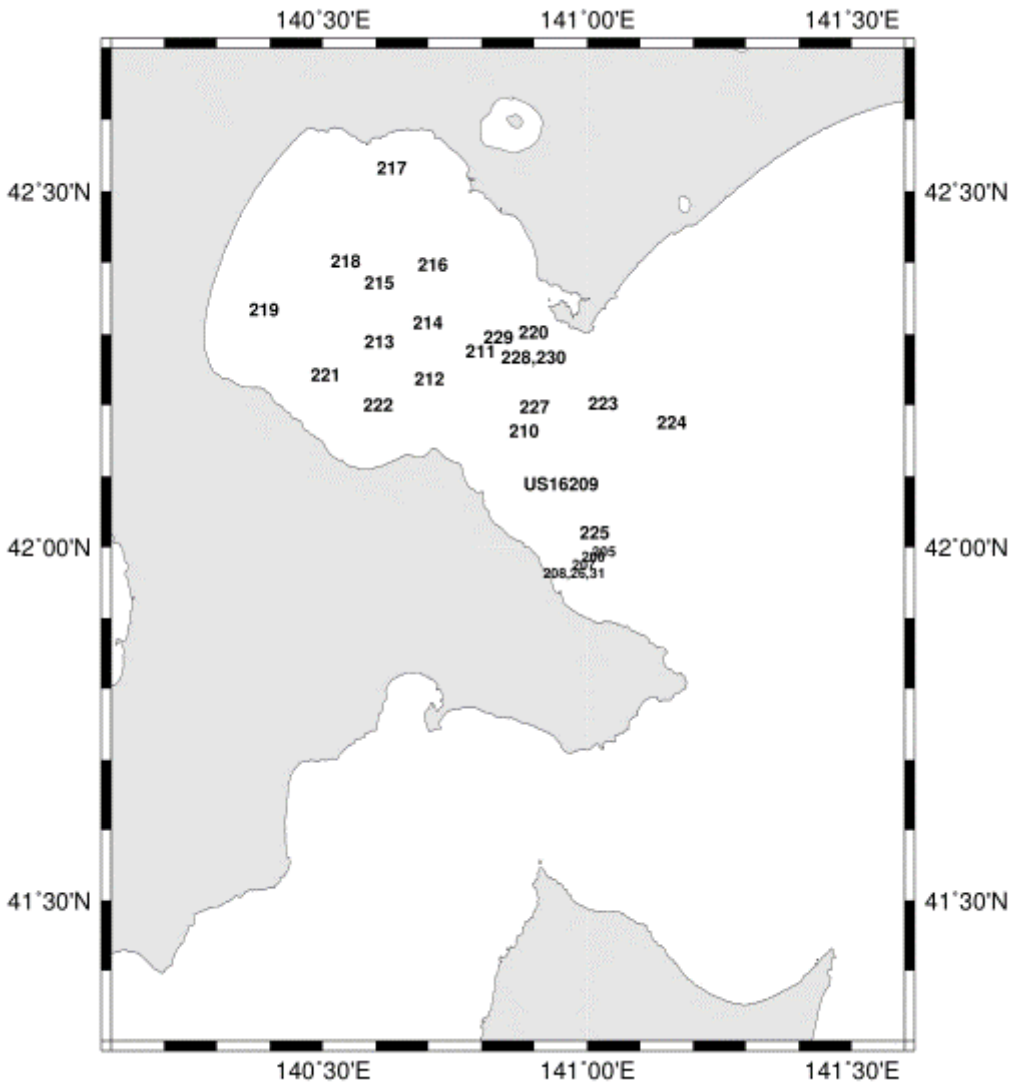

Figure 3. Oceanographic stations (Cruise 359)

Table 1. List of Oceanographic Station

Cruise 357

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16165	42-17.6	140-53.9	3/21	1348-1353	57	NW-2	NNW-1	NW-5	4.1	3.1	bc	1016.5
US16166	42-15.4	140-47.5	3/21	1522-1535	72	NW-3	NW-1	NW-6	3.2	3.3	bc	1016.2
US16167	42-20.7	140-48.4	3/21	1618-1622	53	NW-3	NW-1	NW-6	2.9	3.3	b	1016.2
US16168	42-25.1	140-49.3	3/21	1702-1705	43	NW-3	NW-1	NW-5	2.6	4.0	bc	1016.1
US16169	42-09.1	140-36.2	3/22	0522-0559	69	SSW-2	ESE-1	SSW-3	1.7	4.3	b	1013.7
US16170	42-11.0	140-35.4	3/22	0639-0644	80	South-2	ESE-1	South-2	2.3	4.3	bc	1013.2
US16171	42-13.7	140-30.2	3/22	0744-0749	77	Calm	ESE-1	Calm	3.0	4.2	bc	1012.7
US16172	42-16.7	140-35.7	3/22	0833-0840	91	Calm	NW-1	Calm	4.2	4.4	bc	1012.6
US16173	42-18.9	140-30.8	3/22	1033-1039	94	Calm	NW-1	Calm	6.4	4.3	bc	1012.4
US16174	42-18.9	140-22.8	3/22	1131-1135	52	West-2	West-1	West-5	4.4	4.4	bc	1011.6
US16175	42-26.4	140-25.0	3/22	1237-1240	60	West-2	West-1	West-5	4.6	4.6	bc	1010.6
US16176	42-24.0	140-30.7	3/22	1324-1328	95	West-2	West-1	West-5	5.1	4.4	bc	1010.5
US16177	42-31.3	140-37.4	3/22	1431-1439	61	West-2	West-1	West-4	6.1	4.1	bc	1009.8
US16178	42-28.1	140-43.5	3/23	0825-0829	59	West-3	West-1	West-5	3.1	4.1	bc	1011.8
US16179	42-26.2	140-37.6	3/23	0907-0912	82	West-2	West-1	West-4	3.9	3.8	bc	1012.1
US16180	42-23.4	140-42.3	3/23	0950-0955	63	West-2	West-1	West-4	4.6	3.7	bc	1012.5
US16181	42-21.1	140-36.8	3/23	1033-1039	87	WNW-2	West-1	WNW-3	4.1	3.8	c	1012.6
US16182	42-18.3	140-41.8	3/23	1119-1122	67	West-2	West-1	West-3	4.7	3.9	c	1012.7
US16183	42-13.1	140-41.2	3/23	1210-1215	84	WNW-2	WSW-1	WNW-2	4.7	4.6	c	1012.8
US16184	42-10.3	140-41.2	3/23	1245-1249	86	NNW-2	NW-1	NNW-4	4.4	4.7	c	1012.8
US16185	42-10.5	140-46.8	3/23	1330-1334	95	NNW-3	NW-1	NNW-5	4.7	4.1	c	1013
US16186	42-06.9	140-50.2	3/23	1417-1421	71	WNW-2	NW-1	WNW-3	3	4.1	s	1013.6

Table 1. List of Oceanographic Station (continued)

Cruise 358

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16187	41-28.6	140-18.9	4/11	1125-1129	54	NW-3	SW-1	NNW-3	9.2	9.2	bc	1013.1
US16188	41-27.5	140-22.0	4/11	1219-1225	84	NW-3	SW-1	NNW-3	5.3	9.5	bc	1013.6
US16189	41-28.1	140-23.1	4/11	1249-1257	108	North-3	SW-1	North-6	5	9.1	s	1013.8
US16190	41-29.7	140-20.5	4/11	2048-2053	50	WSW-2	SW-1	WSW-5	5	8.6	bc	1018.8
US16191	41-35.0	140-30.0	4/12	0537-0542	46	West-3	South-1	West-5	6.4	8.9	bc	1021.7
US16192	41-38.2	140-32.7	4/12	0625-0631	49	West-2	South-1	West-4	6.5	9.1	bc	1021.9
US16193	41-41.4	140-35.4	4/12	0711-0717	52	West-2	South-1	West-3	6.4	9	bc	1022.1
US16194	41-44.2	140-40.0	4/12	0803-0807	58	NW-1	SSW-1	NW-3	8.5	8.8	bc	1022.1
US16195	42-16.9	140-35.8	4/13	1320-1332	91	ESE-3	East-1	ESE-5	6.9	4.7	r	1011.6
US16196	42-14.0	140-30.3	4/13	1500-1506	80	East-2	East-1	East-4	6.4	4.4	r	1010.2
US16197	42-11.1	140-35.3	4/13	1537-1544	79	East-2	East-1	East-4	6.7	4.5	r	1009.8
US16198	42-09.7	140-35.8	4/13	1556-1603	71	East-2	East-1	East-4	6.6	4.5	r	1009.8
US16199	42-19.0	140-30.7	4/14	0635-0641	94	Calm	ESE-1	Calm	6.5	4.5	r	1010.5
US16200	42-21.0	140-36.3	4/14	0717-0723	89	NNW-1	ESE-1	NNW-1	6.3	4.9	m	1010
US16201	42-23.7	140-31.5	4/14	0750-0757	96	Calm	ESE-1	Calm	7.2	4.3	m	1010.1
US16202	42-26.0	140-37.0	4/14	0827-0834	84	Calm	ESE-1	Calm	6.8	4.1	m	1010.1
US16203	42-29.0	140-31.3	4/14	0907-0912	75	Calm	East-1	Calm	7.3	4.1	m	1009.8
US16204	42-31.2	140-37.3	4/14	0945-0953	62	Calm	East-1	Calm	8	4.5	m	1010

Cruise 359

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16205	41-59.2	141-01.9	4/21	1259-1304	100	SSW-2	ESE-1	SSW-4	17.6	9.2	bc	1011.6
US16206	41-58.8	141-00.7	4/21	1314-1319	94	South-3	ESE-1	South-5	16.5	9.3	bc	1011.5
US16207	41-58.1	140-59.6	4/21	1329-1333	87	SW-1	ESE-1	SW-2	15.8	9	bc	1011.2
US16208	41-57.4	140-58.5	4/21	1343-1347	81	Calm	ESE-1	Calm	14.2	7.1	bc	1011.2
US16209	42-04.8	140-57.0	4/22	0540-0546	83	Calm	ESE-1	Calm	8	6.9	o	1008.6
US16210	42-09.3	140-52.8	4/22	0644-0650	77	South-1	ESE-1	South-3	8.3	6.5	o	1009.1
US16211	42-16.0	140-47.9	4/22	0751-0757	70	Calm	ESE-1	SSE-2	8.5	6.1	o	1009.3
US16212	42-13.7	140-42.1	4/22	0858-0903	87	Calm	ESE-1	SE-2	9.2	7	c	1009.8
US16213	42-16.8	140-36.4	4/22	0947-0952	90	SE-2	ESE-1	SE-3	10.3	6.2	bc	1010.4
US16214	42-18.4	140-41.9	4/22	1045-1050	67	SE-2	ESE-1	SE-3	9.6	5.9	bc	1010.8
US16215	42-21.8	140-36.4	4/22	1141-1145	89	SE-2	ESE-1	SE-2	11.2	6.2	bc	1011.1
US16216	42-23.3	140-42.5	4/22	1416-1420	62	ESE-3	ESE-1	ESE-4	10.2	6.6	bc	1011
US16217	42-31.4	140-37.8	4/23	1345-1351	60	SE-3	SE-1	SE-3	9.5	5.1	o	1008.1
US16218	42-23.6	140-32.6	4/23	1518-1524	96	SE-3	SE-1	SE-3	8.5	5.5	o	1008
US16219	42-19.5	140-23.3	4/23	1640-1645	55	SE-3	SE-1	South-3	7.6	5.8	o	1009.1
US16220	42-17.6	140-53.9	4/24	0455-0501	57	NW-2	SE-1	NW-3	5.7	5.7	bc	1013.2
US16221	42-14.0	140-30.3	4/24	0707-0712	80	West-2	ESE-1	West-3	6	5.4	bc	1014
US16222	42-11.5	140-36.3	4/24	0814-0820	83	WNW-2	ESE-1	WNW-2	7.9	5.7	bc	1014.4
US16223	42-11.6	141-01.8	4/24	1111-1120	79	NW-2	ESE-1	NW-3	9.9	6.1	bc	1014.5
US16224	42-10.0	141-09.6	4/24	1223-1230	119	NW-2	ESE-1	NW-3	12.8	6.8	bc	1013.6
US16225	42-00.7	141-00.8	4/24	1413-1419	90	Calm	ESE-1	South-2	13.7	8.1	bc	1014
US16226	41-57.0	140-57.8	4/25	0816-0823	66	Calm	Calm	ESE-1	10.6	6.4	bc	1022.2
US16227	42-11.3	140-54.0	4/26	0658-0706	71	Calm	ESE-1	Calm	8.3	7.8	o	1021.1
US16228	42-15.5	140-53.9	4/26	0944-0948	59	Calm	ESE-1	Calm	11.8	7.5	c	1020
US16229	42-17.2	140-49.9	4/26	1124-1130	63	Calm	East-1	Calm	11	7.2	c	1020.1
US16230	42-15.3	140-54.2	4/26	2115-2121	59	NW-3	NW-1	NW-4	7.5	7.1	bc	1020.1
US16231	42-57.2	140-57.5	4/27	0734-0738	62	NNW-2	NE-1	NNW-4	7.8	7	bc	1020.6

Table 2. Oceanographic data

STATION US16165
LATITUDE 42-17.6 N
LONGITUD 140-53.9 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	3.9325	32.9171	26.1361
10	3.7931	32.9241	26.1553
20	3.6634	32.9597	26.1961
30	3.6519	32.9824	26.2152
40	3.6708	33.0154	26.2397
50	3.7218	33.0249	26.2424
56	3.765	33.0347	26.2461

STATION US16166
LATITUDE 42-15.4 N
LONGITUD 140-47.5 E
DEPTH (m) 72

Press.	Temp.	Salinity	Sigma-T
5	3.6625	32.7841	26.0564
10	3.6532	32.7871	26.0596
20	4.7845	33.2922	26.3453
30	4.9183	33.3312	26.3615
40	5.035	33.3572	26.369
50	5.0395	33.4001	26.4025
71	4.4013	33.5967	26.6283

STATION US16167
LATITUDE 42-20.7 N
LONGITUD 140-48.4 E
DEPTH (m) 53

Press.	Temp.	Salinity	Sigma-T
5	3.8359	32.8787	26.115
10	3.8225	32.8801	26.1174
20	3.7984	32.883	26.1221
30	5.0232	33.3218	26.3423
40	4.6531	33.2661	26.3389
50	4.6827	33.2765	26.344
52	4.6807	33.2763	26.344

STATION US16168
LATITUDE 42-25.1 N
LONGITUD 140-49.3 E
DEPTH (m) 43

Press.	Temp.	Salinity	Sigma-T
5	4.3851	32.9952	26.1524
10	4.3828	32.9953	26.1527
20	3.915	33.059	26.2507
30	3.9816	33.0875	26.2668
40	4.2273	33.1728	26.3097
42	4.2268	33.1715	26.3088

STATION US16169
LATITUDE 42-09.1 N
LONGITUD 140-36.2 E
DEPTH (m) 69

Press.	Temp.	Salinity	Sigma-T
5	4.665	33.2187	26.3
10	4.7941	33.2207	26.2875
20	4.7863	33.2929	26.3457
30	4.7791	33.297	26.3497
40	4.8108	33.3286	26.3713
50	4.6824	33.3878	26.4324
60	4.478	33.3981	26.4625

STATION US16170
LATITUDE 42-11.0 N
LONGITUD 140-35.4 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	4.667	33.2614	26.3337
10	4.6857	33.2657	26.3351
20	4.6949	33.2917	26.3547
30	4.6337	33.3075	26.3739
40	4.5324	33.3333	26.4052
50	4.5053	33.3815	26.4464
75	4.5365	33.418	26.4721
78	4.4867	33.4314	26.488

STATION US16171
LATITUDE 42-13.7 N
LONGITUD 140-30.2 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	4.6394	33.2215	26.305
10	4.6423	33.2226	26.3056
20	4.7356	33.2698	26.3329
30	4.6911	33.3857	26.4297
40	4.6728	33.4826	26.5085
50	4.5344	33.5559	26.5818
74	4.4171	33.6026	26.6313

STATION US16172
LATITUDE 42-16.7 N
LONGITUD 140-35.7 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	4.5709	33.29	26.3668
10	4.5344	33.2377	26.3292
20	4.7255	33.2983	26.3566
30	4.7262	33.3061	26.3627
40	4.5965	33.4007	26.4518
50	4.6154	33.4912	26.5217
75	4.4938	33.5921	26.6148
86	4.4614	33.5959	26.6213

STATION US16173
LATITUDE 42-18.9 N
LONGITUD 140-30.8 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	4.0966	32.9753	26.166
10	4.0351	32.9848	26.1798
20	4.334	33.0927	26.2351
30	4.5216	33.4625	26.509
40	4.5744	33.55	26.5728
50	4.5547	33.5655	26.5872
75	4.4259	33.6014	26.6295
91	4.3674	33.6075	26.6404

STATION US16174
LATITUDE 42-18.9 N
LONGITUD 140-22.8 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	4.8402	33.1763	26.2473
10	4.7142	33.1738	26.259
20	4.7367	33.2141	26.2886
30	4.6038	33.2858	26.3599
40	4.6188	33.3614	26.4183
50	4.6425	33.4064	26.4514
50	4.6425	33.4064	26.4514

STATION US16175
LATITUDE 42-26.4 N
LONGITUD 140-25.0 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	4.7746	33.1389	26.2248
10	4.7467	33.1397	26.2285
20	4.5363	33.1981	26.2975
30	4.7272	33.3154	26.3699
40	4.615	33.423	26.4676
50	4.5306	33.5641	26.5887
58	4.4288	33.5999	26.6279

STATION US16176
LATITUDE 42-24.0 N
LONGITUD 140-30.7 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	4.8382	33.256	26.3107
10	4.8309	33.2552	26.3108
20	4.6958	33.2705	26.3378
30	4.6365	33.3636	26.4181
40	4.637	33.4158	26.4595
50	4.6251	33.4363	26.477
75	4.4772	33.5776	26.605
94	4.3828	33.6049	26.6367

STATION US16177
LATITUDE 42-31.3 N
LONGITUD 140-37.4 E
DEPTH (m) 61

Press.	Temp.	Salinity	Sigma-T
5	4.7028	33.1824	26.2671
10	4.3758	33.0642	26.2081
20	4.4374	33.1066	26.2353
30	4.687	33.2319	26.3081
40	4.6948	33.3425	26.395
50	4.6403	33.4112	26.4554
58	4.6228	33.5173	26.5415

STATION US16178
LATITUDE 42-28.1 N
LONGITUD 140-43.5 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	4.4965	33.1025	26.2258
10	4.492	33.1039	26.2274
20	4.4497	33.1307	26.2531
30	4.5018	33.2329	26.3288
40	4.5128	33.2478	26.3395
50	4.7887	33.307	26.3566
58	4.8398	33.3121	26.355

STATION US16179
LATITUDE 42-26.2 N
LONGITUD 140-37.6 E
DEPTH (m) 82

Press.	Temp.	Salinity	Sigma-T
5	4.3408	33.0591	26.2076
10	4.3437	33.0584	26.2069
20	4.3187	33.1074	26.2484
30	4.6952	33.2768	26.3429
40	4.7999	33.3032	26.3524
50	4.9915	33.3899	26.3998
75	4.482	33.5883	26.6131
79	4.4343	33.5984	26.6262

STATION US16180
LATITUDE 42-23.4 N
LONGITUD 140-42.3 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	3.9021	32.9244	26.1449
10	3.8761	32.9264	26.1491
20	3.8777	32.941	26.1605
30	4.9078	33.3085	26.3446
40	4.8002	33.2932	26.3444
50	4.6083	33.5001	26.5294
61	4.4172	33.6024	26.6312

STATION US16181
LATITUDE 42-21.1 N
LONGITUD 140-36.8 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	4.1721	32.9512	26.1393
10	4.0631	32.9533	26.1519
20	4.593	33.3921	26.4454
30	4.5647	33.5133	26.5447
40	4.5343	33.5476	26.5752
50	4.4895	33.5725	26.5997
75	4.4118	33.5974	26.6277
85	4.404	33.6029	26.6329

STATION US16182
LATITUDE 42-18.3 N
LONGITUD 140-41.8 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	4.3418	33.0363	26.1895
10	4.2696	33.0696	26.2234
20	4.71	33.282	26.3454
30	4.6802	33.3186	26.3777
40	4.5479	33.3848	26.4444
50	4.5567	33.4913	26.528
65	4.4324	33.5954	26.624

STATION US16183
LATITUDE 42-13.1 N
LONGITUD 140-41.2 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	4.8802	33.289	26.3322
10	4.7299	33.2924	26.3514
20	4.7006	33.3058	26.3653
30	4.6775	33.3133	26.3738
40	4.4752	33.3925	26.4583
50	4.4072	33.4486	26.5101
75	4.527	33.5717	26.595
87	4.3874	33.5992	26.6318

STATION US16184
LATITUDE 42-10.3 N
LONGITUD 140-41.2 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	4.8879	33.2799	26.3242
10	4.7281	33.2757	26.3384
20	4.6757	33.2798	26.3473
30	4.6741	33.2817	26.349
40	4.6669	33.2843	26.3519
50	4.6609	33.3779	26.4268
75	4.55	33.4415	26.4892
83	4.4041	33.4563	26.5165

STATION US16185
LATITUDE 42-10.5 N
LONGITUD 140-46.8 E
DEPTH (m) 95

Press.	Temp.	Salinity	Sigma-T
5	4.4108	32.9633	26.1244
10	4.381	33.0939	26.2312
20	4.7443	33.2798	26.3399
30	4.754	33.2896	26.3466
40	4.7125	33.3075	26.3653
50	4.6841	33.379	26.4252
75	4.5062	33.548	26.5785
91	4.4031	33.5974	26.6287

STATION US16186
LATITUDE 42-06.9 N
LONGITUD 140-50.2 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	4.7186	33.116	26.2127
10	4.629	33.1734	26.268
20	4.715	33.2247	26.2994
30	4.7533	33.2673	26.329
40	4.7599	33.2974	26.3522
50	4.7029	33.3319	26.3857
61	4.5984	33.4364	26.48

STATION US16187
LATITUDE 41-28.6 N
LONGITUD 140-18.9 E
DEPTH (m) 54

Press.	Temp.	Salinity	Sigma-T
5	9.2916	33.8125	26.1417
10	9.0643	33.8819	26.2324
20	8.9794	33.905	26.264
30	8.9665	33.907	26.2675
40	8.9474	33.9069	26.2705
50	8.9286	33.9067	26.2733
52	8.9201	33.907	26.2749

STATION US16188
LATITUDE 41-27.5 N
LONGITUD 140-22.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	9.0346	33.9692	26.3054
10	8.9082	33.9992	26.3489
20	8.7634	34.0261	26.3928
30	8.6415	34.0126	26.4012
40	8.4605	34.0033	26.4218
50	8.3424	34.0116	26.4462
75	8.1398	34.0193	26.4828
81	7.8562	34.0255	26.5296

STATION US16189
LATITUDE 41-28.1 N
LONGITUD 140-23.1 E
DEPTH (m) 108

Press.	Temp.	Salinity	Sigma-T
5	9.1912	34.0361	26.3328
10	9.111	34.0299	26.3408
20	8.881	34.0276	26.3755
30	8.831	34.028	26.3837
40	8.7509	34.0174	26.3879
50	8.6523	34.0116	26.3987
75	8.4514	34.013	26.4307
99	8.307	34.0136	26.4532

STATION US16190
LATITUDE 41-29.7 N
LONGITUD 140-20.5 E
DEPTH (m) 50

Press.	Temp.	Salinity	Sigma-T
5	8.8909	34.0197	26.3678
10	8.8689	34.0224	26.3734
20	8.792	34.0231	26.3859
30	8.6841	34.024	26.4035
40	8.6327	34.0267	26.4135
48	8.3321	34.0215	26.4556

STATION US16191
LATITUDE 41-35.0 N
LONGITUD 140-30.0 E
DEPTH (m) 46

Press.	Temp.	Salinity	Sigma-T
5	9.0743	33.8819	26.2308
10	9.1037	33.8889	26.2316
20	9.1389	33.8985	26.2335
30	9.1455	33.9003	26.2338
40	9.1428	33.9006	26.2345
45	9.1417	33.901	26.235

STATION US16192
LATITUDE 41-38.2 N
LONGITUD 140-32.7 E
DEPTH (m) 49

Press.	Temp.	Salinity	Sigma-T
5	9.2684	33.9208	26.2301
10	9.2939	33.9282	26.2318
20	9.1812	33.9773	26.2884
30	9.1346	33.9915	26.3069
40	9.1428	33.9924	26.3064
48	9.1461	33.9927	26.3061

STATION US16193
LATITUDE 41-41.4 N
LONGITUD 140-35.4 E
DEPTH (m) 52

Press.	Temp.	Salinity	Sigma-T
5	9.1076	33.6323	26.0302
10	9.3903	33.9555	26.2375
20	9.2827	33.9928	26.2841
30	9.281	33.9934	26.2849
40	9.0734	34.0001	26.3235
50	8.9643	34.003	26.3431
51	8.9675	34.0038	26.3432

STATION US16194
LATITUDE 41-44.2 N
LONGITUD 140-40.0 E
DEPTH (m) 58

Press.	Temp.	Salinity	Sigma-T
5	9.1852	33.7031	26.0732
10	9.356	33.8772	26.1818
20	9.4189	33.9709	26.2449
30	9.3039	33.9876	26.2767
40	9.0692	33.9974	26.322
50	8.6706	34.0113	26.3956
57	8.5849	34.0184	26.4144

STATION US16195
LATITUDE 42-16.9 N
LONGITUD 140-35.8 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	4.8466	32.483	25.6969
10	4.8858	32.529	25.7291
20	5.3113	32.9875	26.0447
30	5.2633	33.0451	26.0958
40	4.681	33.4009	26.4429
50	4.5786	33.5043	26.536
75	4.4071	33.5817	26.6158
85	4.4038	33.5979	26.629

STATION US16196
LATITUDE 42-14.0 N
LONGITUD 140-30.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	4.7459	32.4907	25.7139
10	4.7263	32.4979	25.7217
20	5.0654	32.912	26.0128
30	4.9763	33.1742	26.2305
40	5.0044	33.3674	26.3805
50	4.9335	33.4377	26.4442
75	4.5009	33.5804	26.6048
75	4.5009	33.5804	26.6048

STATION US16197
LATITUDE 42-11.1 N
LONGITUD 140-35.3 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	4.7459	32.4907	25.7139
10	4.7263	32.4979	25.7217
20	5.0654	32.912	26.0128
30	4.9763	33.1742	26.2305
40	5.0044	33.3674	26.3805
50	4.9335	33.4377	26.4442
75	4.5009	33.5804	26.6048
75	4.5009	33.5804	26.6048

STATION US16198
LATITUDE 42-09.7 N
LONGITUD 140-35.8 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	5.2174	32.4202	25.6062
10	4.8877	32.5517	25.7469
20	4.564	32.6269	25.8413
30	4.9392	33.1345	26.2032
40	5.1659	33.2749	26.2889
50	5.3587	33.3675	26.34
60	5.1899	33.4146	26.3968

STATION US16199
LATITUDE 42-19.0 N
LONGITUD 140-30.7 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	4.7267	32.4289	25.6669
10	4.7214	32.4309	25.6691
20	4.9928	32.7998	25.932
30	5.0978	33.0933	26.1528
40	5.1429	33.3463	26.348
50	4.869	33.379	26.4048
75	4.4977	33.5669	26.5944
90	4.4302	33.5985	26.6267

STATION US16200
LATITUDE 42-21.0 N
LONGITUD 140-36.3 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	5.1555	32.7337	25.8614
10	5.1081	32.7464	25.8768
20	5.0851	32.8058	25.9265
30	5.0241	32.8947	26.0037
40	4.964	33.1271	26.1946
50	4.7891	33.335	26.3787
75	4.5856	33.5431	26.566
85	4.5076	33.5718	26.5973

STATION US16201
LATITUDE 42-23.7 N
LONGITUD 140-31.5 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	4.6103	32.4401	25.6881
10	4.5644	32.454	25.704
20	4.1711	32.5273	25.8026
30	3.9414	32.6073	25.8889
40	5.0421	33.1408	26.1967
50	5.3431	33.3925	26.3616
75	4.5686	33.5365	26.5627
92	4.457	33.5934	26.6198

STATION US16202
LATITUDE 42-26.0 N
LONGITUD 140-37.0 E
DEPTH (m) 84

Press.	Temp.	Salinity	Sigma-T
5	4.3167	32.4568	25.7319
10	4.3107	32.4623	25.7368
20	4.2084	32.4777	25.7594
30	3.9647	32.6218	25.8981
40	4.5861	33.0241	26.1541
50	4.7857	33.1251	26.2127
75	4.8297	33.4636	26.4763
80	4.7626	33.4907	26.5051

STATION US16203
LATITUDE 42-29.0 N
LONGITUD 140-31.3 E
DEPTH (m) 75

Press.	Temp.	Salinity	Sigma-T
5	4.5184	32.4256	25.6863
10	4.2924	32.4405	25.7213
20	4.183	32.4657	25.7524
30	4.5852	33.0262	26.1559
40	4.6634	33.0641	26.1776
50	5.0398	33.2961	26.32
71	4.9013	33.4824	26.4832

STATION US16204
LATITUDE 42-31.2 N
LONGITUD 140-37.3 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	4.6225	32.4518	25.6962
10	4.5755	32.4807	25.724
20	3.8983	32.6882	25.9575
30	4.4683	33.0112	26.1563
40	4.7662	33.1202	26.2109
50	4.7622	33.1944	26.2702
55	4.8947	33.3055	26.3437

STATION US16205
LATITUDE 41-59.2 N
LONGITUD 141-01.9 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	9.2729	33.8458	26.1707
10	8.965	33.849	26.2224
20	8.7341	33.8348	26.2475
30	8.5435	33.8293	26.2725
40	8.35	33.8184	26.2936
50	8.2942	33.8188	26.3023
75	8.0894	33.8445	26.3531
96	6.8882	33.6861	26.399

STATION US16206
LATITUDE 41-58.8 N
LONGITUD 141-00.7 E
DEPTH (m) 94

Press.	Temp.	Salinity	Sigma-T
5	9.0749	33.8591	26.2129
10	8.9001	33.8571	26.2389
20	8.6111	33.8237	26.2578
30	8.1789	33.7714	26.2824
40	8.2459	33.8058	26.2993
50	8.1517	33.8279	26.3308
75	7.7238	33.8113	26.3806
90	7.1375	33.7123	26.3856

STATION US16207
LATITUDE 41-58.1 N
LONGITUD 140-59.6 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	8.5703	33.728	26.1891
10	8.5688	33.7349	26.1947
20	8.4558	33.8326	26.2886
30	8.259	33.8368	26.3217
40	8.1588	33.8237	26.3264
50	8.0894	33.8265	26.339
75	7.4443	33.7924	26.4058
83	7.024	33.7419	26.4245

STATION US16208
LATITUDE 41-57.4 N
LONGITUD 140-58.5 E
DEPTH (m) 81

Press.	Temp.	Salinity	Sigma-T
5	6.0881	32.8595	25.8505
10	5.7725	32.8671	25.8951
20	8.1791	33.7451	26.2616
30	8.5928	33.8533	26.2838
40	8.245	33.8121	26.3045
50	8.3013	33.8706	26.3418
75	6.6339	33.6984	26.4426
77	6.5805	33.6948	26.4468

STATION US16209
LATITUDE 42-04.8 N
LONGITUD 140-57.0 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	6.8774	33.2711	26.0734
10	7.5547	33.4841	26.1476
20	8.0322	33.6435	26.2038
30	8.2958	33.7369	26.2378
40	8.3903	33.805	26.2769
50	8.1665	33.7794	26.2905
75	8.0747	33.8601	26.3675
81	7.3743	33.7553	26.3865

STATION US16210
LATITUDE 42-09.3 N
LONGITUD 140-52.8 E
DEPTH (m) 77

Press.	Temp.	Salinity	Sigma-T
5	6.2322	32.8341	25.8126
10	5.7515	32.8834	25.9105
20	5.5093	32.923	25.9706
30	6.3241	33.179	26.0731
40	7.3394	33.4244	26.131
50	7.7764	33.6047	26.2107
75	6.0059	33.5401	26.3984
75	6.0059	33.5401	26.3984

STATION US16211
LATITUDE 42-16.0 N
LONGITUD 140-47.9 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	5.5469	32.6421	25.7439
10	5.4647	32.6654	25.772
20	5.2945	32.6941	25.8143
30	5.1311	32.7581	25.8835
40	5.0762	32.8801	25.9863
50	5.0744	33.0909	26.1535
69	5.6338	33.5025	26.4142

STATION US16212
LATITUDE 42-13.7 N
LONGITUD 140-42.1 E
DEPTH (m) 87

Press.	Temp.	Salinity	Sigma-T
5	6.6688	32.6735	25.6301
10	5.7051	32.6775	25.7533
20	5.2356	32.7681	25.8796
30	5.0852	32.8532	25.964
40	5.5681	32.999	26.0238
50	5.8645	33.3598	26.2734
75	6.0075	33.6244	26.4648
84	4.7893	33.5182	26.5241

STATION US16213
LATITUDE 42-16.8 N
LONGITUD 140-36.4 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	5.8548	32.7064	25.7582
10	5.9188	32.7199	25.7611
20	5.4055	32.7008	25.8068
30	5.207	32.739	25.8598
40	5.1124	32.7612	25.888
50	4.9985	33.0761	26.1503
75	4.5566	33.542	26.5683
88	4.4657	33.5875	26.6142

STATION US16214
LATITUDE 42-18.4 N
LONGITUD 140-41.9 E
DEPTH (m) 67

Press.	Temp.	Salinity	Sigma-T
5	6.004	32.6117	25.6652
10	5.4365	32.5952	25.7197
20	5.3018	32.6449	25.7745
30	5.0599	32.7039	25.8485
40	4.825	32.8789	26.0131
50	4.7961	33.3185	26.3649
64	4.8125	33.4946	26.5028

STATION US16215
LATITUDE 42-21.8 N
LONGITUD 140-36.4 E
DEPTH (m) 89

Press.	Temp.	Salinity	Sigma-T
5	6.0468	32.6551	25.6943
10	5.5537	32.6374	25.7395
20	5.0325	32.6861	25.8375
30	5.1908	32.7837	25.8971
40	4.922	32.8739	25.9985
50	5.1185	33.3703	26.3699
75	4.5644	33.5414	26.567
85	4.5042	33.5729	26.5985

STATION US16216
LATITUDE 42-23.3 N
LONGITUD 140-42.5 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	6.6169	32.585	25.567
10	5.3939	32.6015	25.7296
20	5.1302	32.6829	25.824
30	5.1496	32.7413	25.8681
40	4.8466	32.8843	26.0151
50	5.1029	33.3203	26.332
60	5.2171	33.3779	26.3646

STATION US16217
LATITUDE 42-31.4 N
LONGITUD 140-37.8 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	5.6915	32.6746	25.7526
10	5.677	32.6754	25.755
20	5.6562	32.6793	25.7605
30	5.6305	32.6825	25.7661
40	5.011	32.8397	25.9616
50	4.799	33.2186	26.2853
58	5.015	33.3925	26.3992

STATION US16218
LATITUDE 42-23.6 N
LONGITUD 140-32.6 E
DEPTH (m) 96

Press.	Temp.	Salinity	Sigma-T
5	5.854	32.7136	25.7639
10	5.8196	32.714	25.7685
20	5.7591	32.7151	25.7766
30	5.2637	32.7154	25.8347
40	5.0708	32.8716	25.9802
50	4.8187	33.2159	26.2811
75	4.515	33.5598	26.5869
94	4.4726	33.5842	26.6108

STATION US16219
LATITUDE 42-19.5 N
LONGITUD 140-23.3 E
DEPTH (m) 55

Press.	Temp.	Salinity	Sigma-T
5	6.061	32.5179	25.5842
10	5.935	32.55	25.6249
20	5.1435	32.901	25.9953
30	4.7785	33.1466	26.2305
34	4.7418	33.1763	26.2581

STATION US16220
LATITUDE 42-17.6 N
LONGITUD 140-53.9 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	5.8826	32.6952	25.746
10	5.7947	32.7085	25.7671
20	5.7976	32.8894	25.9097
30	5.5717	33.0142	26.0353
40	5.4154	33.3424	26.3134
50	5.5152	33.4152	26.3593
55	5.4992	33.4242	26.3683

STATION US16221
LATITUDE 42-14.0 N
LONGITUD 140-30.3 E
DEPTH (m) 80

Press.	Temp.	Salinity	Sigma-T
5	5.6149	32.6587	25.7491
10	5.5943	32.6652	25.7568
20	5.0854	32.8237	25.9406
24	5.0691	32.8702	25.9792

STATION US16222
LATITUDE 42-11.5 N
LONGITUD 140-36.3 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	6.7355	32.7639	25.6927
8	6.723	32.7667	25.6965

STATION US16223
LATITUDE 42-11.6 N
LONGITUD 141-01.8 E
DEPTH (m) 79

Press.	Temp.	Salinity	Sigma-T
5	5.8807	32.7087	25.7569
10	5.7498	32.7029	25.768
20	5.5748	32.7288	25.8093
30	5.0213	32.9083	26.0148
40	6.3404	33.3338	26.1932
50	6.263	33.4798	26.3183
75	6.2051	33.5942	26.416
77	6.2027	33.5946	26.4166

STATION US16224
LATITUDE 42-10.0 N
LONGITUD 141-09.6 E
DEPTH (m) 119

Press.	Temp.	Salinity	Sigma-T
5	6.5994	33.0814	25.9607
10	6.5492	33.1145	25.9934
20	6.9196	33.2851	26.0788
30	6.9534	33.3164	26.0989
40	7.1799	33.4173	26.1476
50	7.4138	33.5036	26.1829
75	7.2651	33.5963	26.2767
100	6.4784	33.6126	26.3953
116	6.4685	33.6164	26.3996

STATION US16225
LATITUDE 42-00.7 N
LONGITUD 141-00.8 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	7.3028	32.9763	25.7837
10	8.1783	33.5821	26.1339
20	8.2279	33.7663	26.2711
30	8.2057	33.7941	26.2962
40	8.2228	33.8013	26.2993
50	8.3794	33.846	26.3108
75	7.43	33.7419	26.368
89	6.3956	33.6692	26.4508

STATION US16226
LATITUDE 41-57.0 N
LONGITUD 140-57.8 E
DEPTH (m) 66

Press.	Temp.	Salinity	Sigma-T
5	6.2926	32.7783	25.761
10	6.0735	32.7928	25.7997
20	6.2158	33.1448	26.0599
30	7.5473	33.627	26.2611
40	8.0439	33.7475	26.2837
50	7.9791	33.7989	26.3336
61	7.5073	33.7787	26.386

STATION US16227
LATITUDE 42-11.3 N
LONGITUD 140-54.0 E
DEPTH (m) 71

Press.	Temp.	Salinity	Sigma-T
5	5.8773	32.592	25.665
10	5.739	32.6974	25.765
20	5.9149	33.0319	26.0081
30	6.6046	33.2415	26.0862
40	5.4353	33.2473	26.2358
50	5.2458	33.3441	26.3345
60	5.4733	33.4177	26.3663

STATION US16228
LATITUDE 42-15.5 N
LONGITUD 140-53.9 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	7.3091	31.6859	24.7679
10	5.9868	32.4583	25.5462
20	5.8047	32.6984	25.7579
30	5.5847	33.2055	26.1852
40	5.8282	33.3429	26.2644
50	5.893	33.4316	26.3266
55	5.8989	33.4437	26.3355

STATION US16229
LATITUDE 42-17.2 N
LONGITUD 140-49.9 E
DEPTH (m) 63

Press.	Temp.	Salinity	Sigma-T
5	6.8149	31.8633	24.9728
10	6.2653	32.3409	25.4192
20	5.8763	32.6944	25.7462
30	5.4668	32.9635	26.0076
40	5.3016	33.2044	26.2174
50	5.4695	33.4013	26.3537
58	5.5036	33.421	26.3652

STATION US16230
LATITUDE 42-15.3 N
LONGITUD 140-54.2 E
DEPTH (m) 59

Press.	Temp.	Salinity	Sigma-T
5	7.0983	31.9917	25.0367
10	5.7575	32.7716	25.8214
20	5.4757	32.9812	26.0206
30	5.7928	33.1652	26.1283
40	5.9142	33.44	26.3307
50	5.9909	33.4753	26.349
54	5.9914	33.4751	26.3488

STATION US16231
LATITUDE 42-57.2 N
LONGITUD 140-57.5 E
DEPTH (m) 62

Press.	Temp.	Salinity	Sigma-T
5	7.0421	32.5235	25.4627
10	6.593	32.7276	25.6826
20	6.4594	32.8476	25.7944
30	6.0801	33.0976	26.0396
40	7.4788	33.5959	26.2463
50	7.7832	33.7635	26.3345
55	6.6601	33.6114	26.3708