



Title	9.THE " USHIO MARU " CRUISE 375, CRUISE 376, CRUISE 377, CRUISE 378 IN NOVEMBER - DECEMBER 2016
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**THE " USHIO MARU "**

**CRUISE 375**

**CRUISE 376**

**CRUISE 377**

**CRUISE 378**

**IN NOVEMBER 2016**

**IN DECEMBER 2016**

## 1.Cruise Itinerary

### 1. Cruise Itinerary

#### Cruise 375

Departure from Hakodate	Nov. 7, 2016
Start hydrographic research (US16449)	7
Finish hydrographic research (US16456)	8
Return to Hakodate	8
Total coverage 128.8 miles	

#### Cruise 376

Departure from Hakodate	Nov. 14, 2016
Start hydrographic research (US16457)	14
Arrival at Hakodate	15
Departure from Hakodate	17
Arrival at Murooran	17
Depart from Murooran	18
Sampling by trawl net	18
Arrival at Murooran	18
Departure from Murooran	19
Sampling by trawl net	19
Finish hydrographic research (US16480)	19
Return to Hakodate	20
Total coverage 349.3 miles	

#### Cruise 377

Departure from Hakodate	Dec. 12, 2016
Start hydrographic research (US16481)	13
Retrieval ADCP mooring system	13
Setting ADCP mooring system	14
Arrival at Usujiri	14
Departure from Usujiri	15
Finish hydrographic research (US16509)	15
Return to Hakodate	16
Total coverage 330.9 miles	

#### Cruise 378

Departure from Hakodate	Dec. 20, 2016
Start hydrographic research (US16510)	20
Finish hydrographic research (US14527)	21
Return to Hakodate	21
Total coverage 116.2 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 SBE-19Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

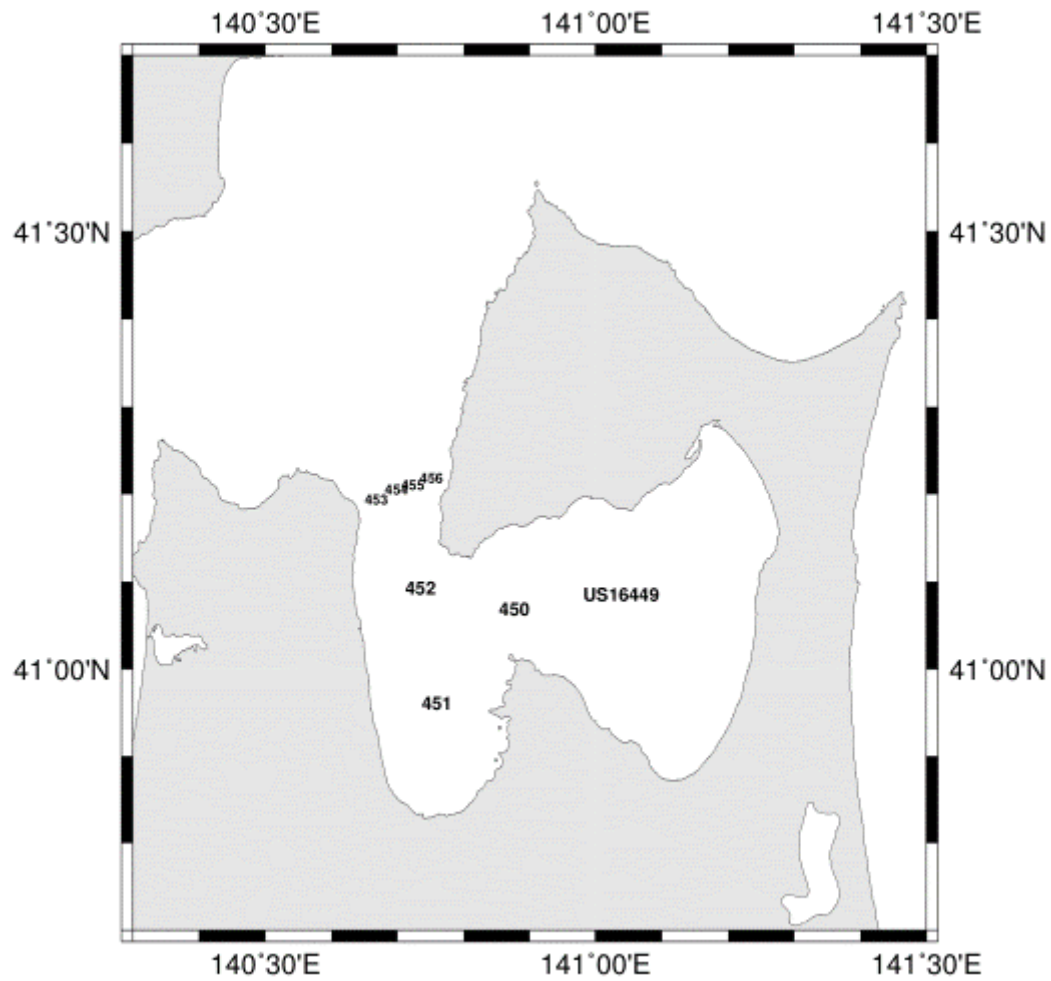


Figure 1. Oceanographic stations (Cruise 375)

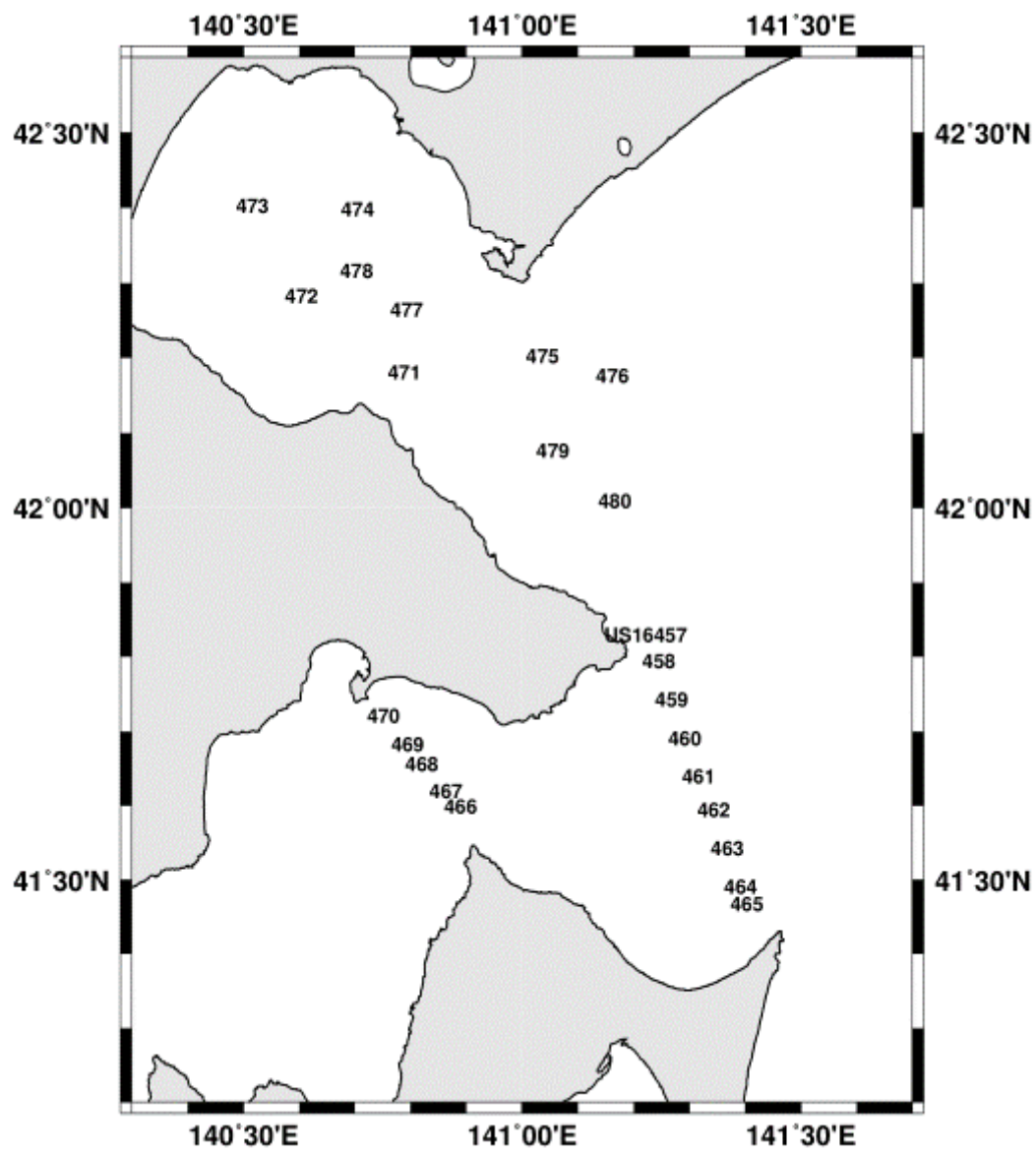


Figure 2. Oceanographic stations (Cruise 376)

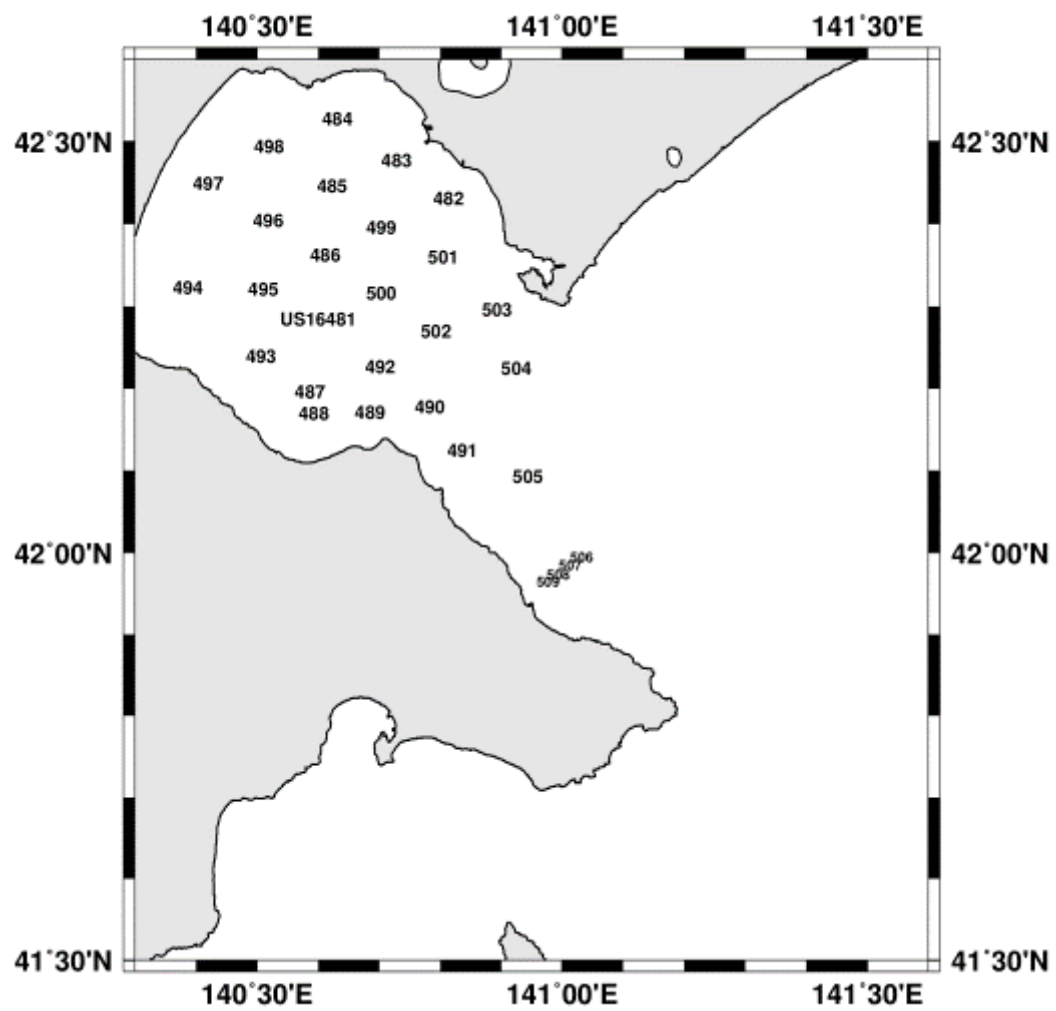


Figure 3. Oceanographic stations (Cruise 377)

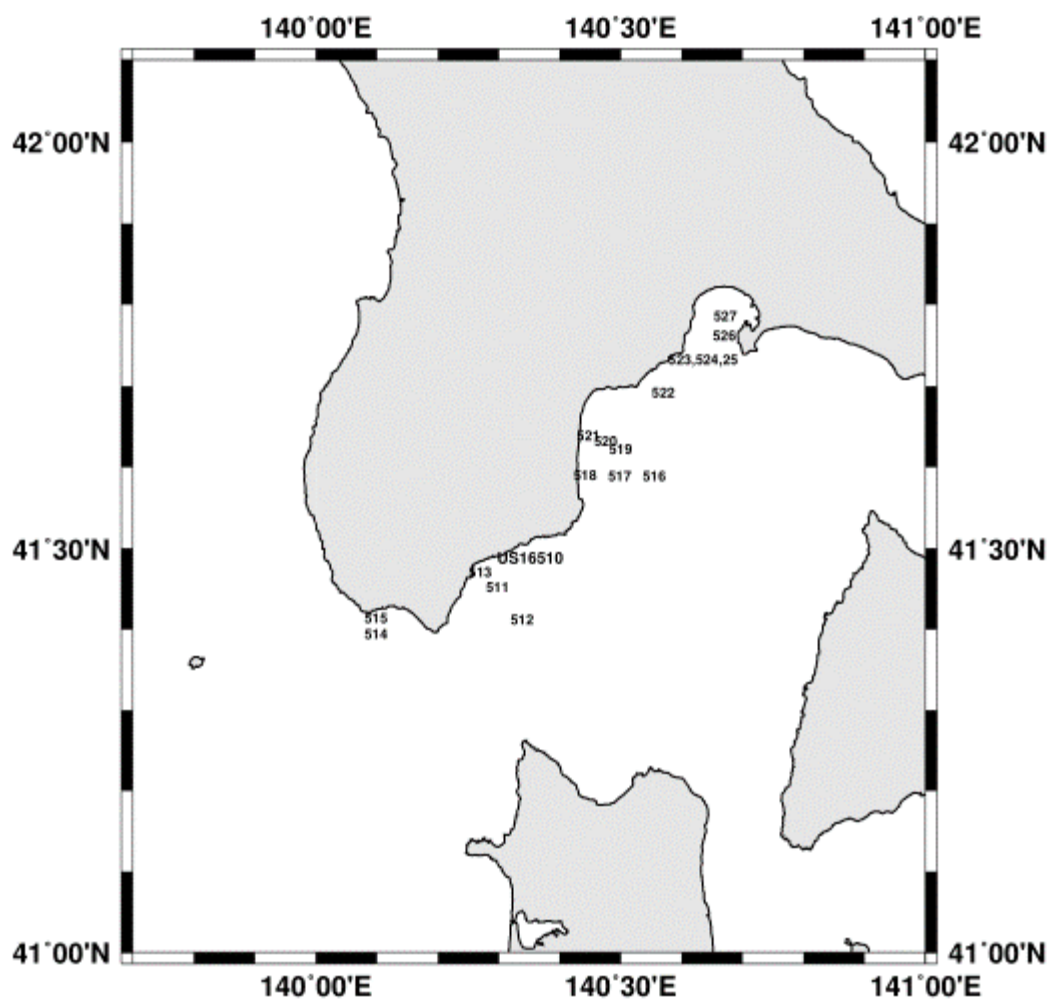


Figure 3. Oceanographic stations (Cruise 378)

Table 1. List of Oceanographic Station

Cruise 375												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16449	41-04.7	141-02.3	11/7	1232-1238	46	Calm	WNW-1	Calm	8.1	14.1	bc	1030.7
US16450	41-03.7	140-52.6	11/7	1417-1424	50	East-1	NNW-1	East-2	8.4	14.4	bc	1029.3
US16451	40-57.2	140-45.6	11/7	1557-1609	49	East-2	NE-1	East-3	8.1	14.8	bc	1028.1
US16452	40-05.1	140-44.1	11/8	0534-0542	59	WSW-1	ESE-1	WSW-2	7.9	14.7	c	1018.1
US16453	41-11.3	140-40.1	11/8	0624-0632	54	SE-2	ESE-1	SE-3	8.7	15.1	c	1018
US16454	41-12.0	140-41.9	11/8	0643-0650	74	SSE-2	ESE-1	SSE-3	8.9	15.4	o	1017.9
US16455	41-12.3	140-43.4	11/8	0702-0713	69	ESE-3	ESE-1	ESE-4	9.3	15.2	o	1017.2
US16456	41-12.8	140-45.1	11/8	0720-0730	62	SE-3	ESE-1	SE-5	9.3	15.1	o	1016.8
Cruise 376												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16457	41-49.2	141-13.3	11/14	1204-1219	174	SSE-2	South-1	SSE-3	10.9	11.9	bc	1023.8
US16458	41-47.1	141-14.7	11/14	1310-1326	200	SSE-3	SE-1	SSE-5	11.5	11.1	bc	1021.4
US16459	41-44.0	141-16.1	11/14	1348-1406	227	SE-3	SE-1	SE-5	12.1	13.5	bc	1020.7
US16460	41-40.9	141-17.5	11/14	1428-1445	230	SSE-3	SE-1	SSE-5	12.3	14	bc	1020
US16461	41-37.8	141-19.0	11/14	1509-1525	214	SSE-3	SE-1	SSE-6	12.9	14	bc	1019.8
US16462	41-35.1	141-20.6	11/14	1546-1610	309	SSE-3	SE-1	SSE-6	13	14.1	bc	1019.3
US16463	41-32.0	141-22.1	11/14	1637-1647	253	SSE-3	SE-1	SSE-6	12.9	14.8	bc	1018
US16464	41-28.9	141-23.5	11/14	1712-1719	90	SSE-3	SE-1	SSE-7	13.4	14.7	bc	1017.5
US16465	41-27.5	141-24.2	11/14	1731-1735	49	SSE-3	SE-1	SSE-6	13.7	14.7	bc	1017.3
US16466	41-35.4	140-53.4	11/14	2013-2019	50	SE-1	East-1	SE-1	13.3	14.9	c	1016.1
US16467	41-36.6	140-51.8	11/14	2037-2046	72	East-1	East-1	Calm	13	14.9	c	1015.4
US16468	41-38.8	140-49.2	11/14	2115-2137	300	NE-1	East-1	Calm	13	14.2	bc	1014.5
US16469	41-40.4	140-47.7	11/14	2211-2235	253	SW-1	East-1	WSW-2	12.7	13.4	bc	1013.5
US16470	41-42.7	140-45.1	11/14	2259-2308	85	Calm	East-1	Calm	11.8	14.2	bc	1012.5
US16471	42-10.3	140-47.3	11/17	1135-1143	92	NW-3	NW-1	NW-6	3	10.3	bc	1020.7
US16472	42-16.4	140-36.3	11/17	1252-1300	90	WNW-3	NW-1	WNW-6	3.2	10	bc	1020.7
US16473	42-23.6	140-31.0	11/17	1352-1400	94	West-3	WNW-1	West-6	3	9.8	bc	1020.4
US16474	42-23.3	140-42.3	11/17	1452-1458	63	West-3	WNW-1	West-6	3.4	9.8	bc	1021
US16475	42-11.6	141-02.2	11/18	0756-0802	79	WSW-3	WSW-1	WSW-4	6.6	10.6	bc	1022.8
US16476	42-10.0	141-09.7	11/18	0914-0921	120	SW-3	WSW-1	SW-4	7.6	11	c	1023
US16477	42-15.3	140-47.6	11/18	1136-1145	70	WSW-3	WSW-1	WSW-5	9.7	10.3	c	1020
US16478	42-18.4	140-42.2	11/19	0813-0818	64	South-1	West-1	South-2	10.9	9.6	o	1018
US16479	42-04.0	141-03.3	11/19	1056-1101	96	South-2	SE-1	South-4	12.5	11.1	o	1017.3
US16480	42-00.0	141-10.0	11/19	1218-1227	134	SW-2	SE-1	SW-4	13.2	11.3	c	1016.2

Table 1. List of Oceanographic Station(continued)

Cruise 377												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16481	42-16.6	140-36.0	12/12	1455-1505	90	NW-2	NW-1	NW-4	0.8	8.2	bc	1027
US16482	42-25.4	140-48.8	12/13	0717-0721	42	SE-3	SE-1	SE-6	5.7	7.8	r	1016
US16483	42-28.2	140-43.7	12/13	0802-0806	58	SSE-3	SSE-2	SSE-6	6	8	o	1015.7
US16484	42-31.2	140-37.9	12/13	0840-0847	60	SSE-3	SSE-2	SSE-5	6.1	7.8	o	1014.5
US16485	42-26.3	140-37.4	12/13	0931-0936	81	SSW-3	SSE-1	SSW-5	6.1	7.9	r	1014.1
US16486	42-21.3	140-36.7	12/13	1020-1027	86	West-3	ESE-1	West-5	5.1	7.8	r	1014.6
US16487	42-11.3	140-35.2	12/13	1152-1157	80	West-2	West-1	West-4	6	8	c	1014.2
US16488	42-09.7	140-35.6	12/13	1211-1219	72	West-2	West-1	West-4	6	8.2	c	1014.1
US16489	42-09.8	140-41.1	12/13	1258-1304	79	West-2	West-1	West-4	6.6	8.4	c	1014.2
US16490	42-10.2	140-47.0	12/13	1342-1349	94	West-3	West-1	West-5	6.5	8.5	o	1014.4
US16491	42-07.0	140-50.2	12/13	1422-1425	63	WNW-3	West-1	WNW-4	5.9	8.6	o	1014.6
US16492	42-13.1	140-42.1	12/14	0900-0907	89	West-2	NW-1	West-4	1.2	8.1	o	1010.6
US16493	42-13.9	140-30.4	12/14	1013-1018	79	West-1	NW-1	West-2	1.5	8	c	1009.7
US16494	42-18.9	140-23.2	12/14	1111-1115	54	NW-1	NW-1	NW-1	1.7	7.8	c	1008.1
US16495	42-18.8	140-30.6	12/14	1202-1209	92	West-1	NW-1	West-2	2.2	7.9	bc	1007.5
US16496	42-23.8	140-31.1	12/14	1250-1258	95	NNW-1	NW-1	NNW-2	2.2	8	bc	1006.4
US16497	42-26.5	140-25.2	12/14	1331-1337	63	NNW-1	NW-1	NNW-2	1.8	7.9	bc	1005.8
US16498	42-29.2	140-31.2	12/14	1422-1429	73	NNW-1	NW-1	NNW-2	3.4	7.9	bc	1005.3
US16499	42-23.3	140-42.2	12/14	1534-1539	63	WNW-1	NW-1	WNW-2	2.1	7.9	bc	1005.1
US16500	42-18.5	140-42.2	12/15	0706-0710	64	NNW-2	ESE-1	NNW-4	-0.4	9	c	1010.6
US16501	42-21.1	140-48.3	12/15	0746-0751	51	West-2	SE-1	West-2	-0.6	8.2	bc	1010.9
US16502	42-15.7	140-47.6	12/15	0830-0836	70	WSW-2	SE-1	WSW-4	-0.6	9	c	1010.8
US16503	42-17.3	140-53.6	12/15	0919-0924	58	WNW-2	ESE-1	WNW-3	1.2	9.4	bc	1011.1
US16504	42-13.0	140-55.5	12/15	1001-1007	67	West-2	ESE-1	West-4	0.8	9.4	c	1011.1
US16505	42-05.1	140-56.6	12/15	1104-1111	83	West-2	ESE-1	West-4	0.7	9.5	bc	1010.6
US16506	41-59.3	141-01.9	12/15	1201-1206	100	NW-2	ESE-1	NW-2	1.2	9.6	bc	1010.1
US16507	41-58.7	141-00.8	12/15	1214-1219	94	Calm	ESE-1	Calm	1.5	9.7	c	1010.1
US16508	41-58.0	140-59.6	12/15	1229-1233	86	Calm	ESE-1	Calm	1.2	9.7	c	1010.1
US16509	41-57.5	140-58.6	12/15	1242-1247	81	SW-2	ESE-1	SW-4	0.7	9.7	o	1009.7

Cruise 378												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16510	41-28.9	140-21.1	12/20	1025-1031	63	West-2	SW-1	West-4	8.3	10.6	c	1025.5
US16511	41-26.8	140-17.9	12/20	1100-1106	65	WNW-2	SW-1	WNW-4	8.5	10.8	c	1025.5
US16512	41-24.4	140-20.3	12/20	1135-1143	95	West-3	SW-1	West-5	8.2	10.9	bc	1025.4
US16513	41-27.9	140-16.2	12/20	1214-1218	24	West-2	SW-1	West-5	8.1	10.7	bc	1025.5
US16514	41-23.3	140-05.9	12/20	1343-1350	100	WNW-3	West-1	WNW-6	6.5	10.9	bc	1025.5
US16515	41-24.5	140-05.9	12/20	1407-1414	52	NW-3	West-1	NW-6	6.4	10.4	bc	1025.6
US16516	41-35.0	140-33.3	12/21	0715-0722	56	WNW-2	SW-1	WNW-3	7.5	11	c	1029.3
US16517	41-35.0	140-29.9	12/21	0757-0804	45	NNW-2	South-1	NNW-3	5.2	11	c	1029.9
US16518	41-35.1	140-26.5	12/21	0822-0825	13	NNW-2	South-1	NNW-3	3.7	10.7	c	1029.8
US16519	41-37.0	140-30.0	12/21	0907-0912	32	NNW-2	South-1	NNW-3	5.4	10.7	c	1030.5
US16520	41-37.6	140-28.5	12/21	0932-0937	23	WNW-2	South-1	WNW-3	5	10.1	c	1030.7
US16521	41-38.0	140-26.8	12/21	0947-0952	16	SW-2	South-1	SW-3	5.2	9.6	c	1030.7
US16522	41-41.2	140-34.2	12/21	1054-1100	39	SSW-2	South-1	SSW-2	7.3	10.9	c	1030.5
US16523	41-43.7	140-36.6	12/21	1121-1126	33	SSW-1	SW-1	SSW-2	7.5	10.8	c	1030
US16524	41-43.6	140-38.1	12/21	1154-1201	57	SW-2	SW-1	SW-4	8	10.9	o	1029.7
US16525	41-43.5	140-40.0	12/21	1222-1230	67	West-2	SW-1	West-4	8.2	10.7	c	1029.6
US16526	41-45.4	140-40.2	12/21	1254-1259	41	Calm	South-1	Calm	7.2	10	o	1029.5
US16527	41-46.8	140-40.3	12/21	1320-1325	20	Calm	Calm	Calm	6.9	8.8	o	1029.5



Table 2. Oceanographic data

STATION US16449				STATION US16450				STATION US16451			
LATITUDE 41-04.7 N				LATITUDE 41-03.7 N				LATITUDE 40-57.2 N			
LONGITUD 141-02.3 E				LONGITUD 140-52.6 E				LONGITUD 140-45.6 E			
DEPTH (m) 46				DEPTH (m) 50				DEPTH (m) 49			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	14.4548	33.5262	24.9529	5	14.6579	33.6727	25.0226	5	14.96	33.6753	24.9594
10	14.3809	33.5256	24.9681	10	14.6453	33.6615	25.0166	10	14.956	33.6725	24.9581
20	14.3994	33.5346	24.971	20	14.9581	33.8002	25.0561	20	14.9454	33.6702	24.9587
30	14.4	33.5364	24.9723	30	14.9386	33.8239	25.0786	30	14.9451	33.6748	24.9623
40	14.3733	33.5294	24.9726	40	14.9038	33.8404	25.0989	40	14.9457	33.6778	24.9644
42	14.3658	33.5288	24.9736	46	14.8701	33.869	25.1281	45	15.1406	34.0873	25.2376
STATION US16452				STATION US16453				STATION US16454			
LATITUDE 40-05.1 N				LATITUDE 41-11.3 N				LATITUDE 41-12.0 N			
LONGITUD 140-44.1 E				LONGITUD 140-40.1 E				LONGITUD 140-41.9 E			
DEPTH (m) 59				DEPTH (m) 54				DEPTH (m) 74			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	15.0861	33.7641	25.0004	5	15.6628	33.8616	24.948	5	15.4401	33.9043	25.0305
10	15.0861	33.7614	24.9983	10	15.6676	33.8601	24.9457	10	15.4448	33.9006	25.0266
20	15.0954	33.7601	24.9953	20	15.6635	33.8585	24.9455	20	15.4431	33.8998	25.0264
30	15.0935	33.7596	24.9953	30	15.6054	33.8631	24.962	30	15.4402	33.904	25.0302
40	15.094	33.7595	24.9952	40	15.4858	33.8833	25.0042	40	15.4412	33.9046	25.0304
50	15.0924	33.7597	24.9956	50	15.4411	33.8935	25.022	50	15.4242	33.9209	25.0468
55	15.0847	33.763	24.9998					70	14.5271	34.0327	25.3283
STATION US16455				STATION US16456				STATION US16457			
LATITUDE 41-12.3 N				LATITUDE 41-12.8 N				LATITUDE 41-49.2 N			
LONGITUD 140-43.4 E				LONGITUD 140-45.1 E				LONGITUD 141-13.3 E			
DEPTH (m) 69				DEPTH (m) 62				DEPTH (m) 174			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	15.4067	33.9214	25.051	5	15.0272	33.8893	25.1098	5	11.4132	33.986	25.9109
10	15.4067	33.9175	25.0481	10	15.0353	33.8861	25.1055	10	11.389	33.985	25.9146
20	15.3901	33.9146	25.0496	20	15.0519	33.884	25.1003	20	11.3753	33.9948	25.9247
30	15.3582	33.9088	25.0521	30	15.0557	33.8846	25.0999	30	11.3319	34.0085	25.9433
40	15.3265	33.9019	25.0538	40	15.0555	33.8842	25.0997	40	11.3422	34.0163	25.9475
50	15.1719	33.8668	25.0607	50	15.0282	33.8871	25.1078	50	11.2934	34.0265	25.9643
65	14.8863	33.9429	25.1816	58	14.9514	33.8841	25.1222	75	10.9127	34.0088	26.0193
								100	10.8262	34.0102	26.0358
								125	10.8237	34.0104	26.0363
								150	10.8284	34.0142	26.0385
								160	10.7947	34.0162	26.046
STATION US16458				STATION US16459				STATION US16460			
LATITUDE 41-47.1 N				LATITUDE 41-44.0 N				LATITUDE 41-40.9 N			
LONGITUD 141-14.7 E				LONGITUD 141-16.1 E				LONGITUD 141-17.5 E			
DEPTH (m) 200				DEPTH (m) 227				DEPTH (m) 230			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	11.6239	33.9802	25.8675	5	14.4405	33.8895	25.2362	5	14.2774	33.8948	25.2748
10	11.6119	33.9636	25.8569	10	14.4164	33.9029	25.2517	10	13.5993	33.9443	25.4541
20	11.5862	33.9602	25.859	20	13.061	33.9188	25.5432	20	11.9782	33.9407	25.7705
30	11.5822	33.9602	25.8598	30	12.1627	33.9605	25.7508	30	11.8677	33.9596	25.806
40	11.5898	33.9615	25.8593	40	11.6516	33.9656	25.851	40	11.7841	33.957	25.8197
50	11.4113	33.9853	25.9107	50	11.5459	33.9699	25.874	50	11.8034	33.9587	25.8173
75	11.3834	33.9861	25.9165	75	11.4543	33.9685	25.8897	75	11.6446	33.9627	25.8501
100	11.3251	34.0012	25.9389	100	11.4228	33.971	25.8975	100	11.3777	33.9876	25.9187
125	11.2596	34.0189	25.9646	125	11.3868	33.9789	25.9102	125	11.205	33.9944	25.9554
150	11.0677	34.0143	25.9958	150	11.3194	34.0084	25.9455	150	11.1555	34.0117	25.9779
175	10.6941	34.0101	26.0591	175	10.4932	33.9949	26.0825	175	10.5442	34.0002	26.0777
191	10.6299	34.0051	26.0664	200	10.0696	33.9808	26.1443	200	9.867	33.9637	26.1651
				221	8.1657	33.8337	26.3333	221	8.5382	33.8681	26.3038



STATION US16476			
LATITUDE 42-10.0 N			
LONGITUD 141-09.7 E			
DEPTH (m) 120			
Press.	Temp.	Salinity	Sigma-T
5	12.0766	34.0243	25.8167
10	12.0756	34.0233	25.8162
20	11.7751	33.9855	25.8435
30	11.3838	33.9509	25.889
40	11.3421	33.9478	25.8943
50	11.3557	33.9502	25.8936
75	11.3161	33.948	25.8991
100	11.2215	33.9599	25.9256
116	10.6702	33.9875	26.0456

STATION US16479			
LATITUDE 42-04.0 N			
LONGITUD 141-03.3 E			
DEPTH (m) 96			
Press.	Temp.	Salinity	Sigma-T
5	11.4419	33.9536	25.8805
10	11.4416	33.9555	25.882
20	11.4464	33.9565	25.8819
30	11.4455	33.9561	25.8817
40	11.4458	33.9557	25.8813
50	11.4339	33.9531	25.8816
75	11.4252	33.9525	25.8827
94	11.2186	34.0105	25.9655

STATION US16482			
LATITUDE 42-25.4 N			
LONGITUD 140-48.8 E			
DEPTH (m) 42			
Press.	Temp.	Salinity	Sigma-T
5	8.3571	33.872	26.3345
10	8.3459	33.8705	26.3351
20	8.3276	33.8668	26.3349
30	8.3166	33.8644	26.3346
40	8.2665	33.8533	26.3336
41	8.222	33.8448	26.3335

STATION US16485			
LATITUDE 42-26.3 N			
LONGITUD 140-37.4 E			
DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T
5	8.262	33.8414	26.3249
10	8.266	33.8424	26.3251
20	8.2666	33.8416	26.3243
30	8.2611	33.8405	26.3243
40	8.2602	33.8407	26.3246
50	8.2595	33.8406	26.3246
75	8.2479	33.8385	26.3247
79	8.2273	33.8382	26.3276

STATION US16488			
LATITUDE 42-09.7 N			
LONGITUD 140-35.6 E			
DEPTH (m) 72			
Press.	Temp.	Salinity	Sigma-T
5	8.2953	33.8688	26.3413
10	8.2965	33.8655	26.3385
20	8.2973	33.8639	26.3372
30	8.2938	33.8627	26.3368
40	8.2943	33.8623	26.3364
50	8.2957	33.8624	26.3363
65	8.2984	33.8625	26.336

STATION US16477			
LATITUDE 42-15.3 N			
LONGITUD 140-47.6 E			
DEPTH (m) 70			
Press.	Temp.	Salinity	Sigma-T
5	10.5586	33.9486	26.0349
10	10.5563	33.9487	26.0354
20	10.5556	33.9488	26.0356
30	10.547	33.9512	26.0389
40	10.5482	33.9514	26.0389
50	10.5496	33.9514	26.0387
68	10.5467	33.9525	26.04

STATION US16480			
LATITUDE 42-00.0 N			
LONGITUD 141-10.0 E			
DEPTH (m) 134			
Press.	Temp.	Salinity	Sigma-T
5	11.6271	34.0364	25.9107
10	11.5738	34.0315	25.9167
20	11.4486	34.023	25.9332
30	11.4045	34.0223	25.9408
40	11.405	34.0269	25.9442
50	11.3973	34.0264	25.9453
75	11.2987	34.0208	25.9589
100	11.1012	34.0203	25.9944
125	10.0523	33.9639	26.134
128	9.6439	33.9279	26.1743

STATION US16483			
LATITUDE 42-28.2 N			
LONGITUD 140-43.7 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	8.3011	33.8361	26.3148
10	8.2905	33.8324	26.3135
20	8.2713	33.8288	26.3136
30	8.2571	33.8242	26.3121
40	8.2576	33.8233	26.3114
50	8.2583	33.8235	26.3114
57	8.2627	33.8254	26.3122

STATION US16486			
LATITUDE 42-21.3 N			
LONGITUD 140-36.7 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	8.1961	33.8317	26.3271
10	8.2022	33.832	26.3264
20	8.2035	33.8313	26.3257
30	8.2029	33.831	26.3256
40	8.1989	33.8298	26.3252
50	8.1871	33.8274	26.3251
75	8.1906	33.8278	26.3249
84	8.1917	33.828	26.3249

STATION US16489			
LATITUDE 42-09.8 N			
LONGITUD 140-41.1 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	8.7505	33.9134	26.3065
10	8.7563	33.9146	26.3066
20	8.6348	33.8851	26.3023
30	8.4661	33.8603	26.3088
40	8.3721	33.8479	26.3134
50	8.3814	33.8516	26.3148
75	8.4126	33.8614	26.3177
77	8.4287	33.8653	26.3184

STATION US16478			
LATITUDE 42-18.4 N			
LONGITUD 140-42.2 E			
DEPTH (m) 64			
Press.	Temp.	Salinity	Sigma-T
5	9.9946	33.7958	26.0126
10	9.9892	33.7966	26.0141
20	9.9754	33.7972	26.0169
30	9.9733	33.7978	26.0177
40	9.9709	33.7985	26.0187
50	9.982	33.8029	26.0202
62	9.9779	33.8045	26.0221

STATION US16481			
LATITUDE 42-16.6 N			
LONGITUD 140-36.0 E			
DEPTH (m) 90			
Press.	Temp.	Salinity	Sigma-T
5	8.4047	33.8729	26.328
10	8.4086	33.8692	26.3245
20	8.422	33.8687	26.322
30	8.4253	33.8696	26.3223
40	8.426	33.8696	26.3222
50	8.4258	33.8699	26.3225
75	8.4126	33.8699	26.3244
85	8.4045	33.8698	26.3256

STATION US16484			
LATITUDE 42-31.2 N			
LONGITUD 140-37.9 E			
DEPTH (m) 60			
Press.	Temp.	Salinity	Sigma-T
5	7.7275	33.7567	26.3372
10	7.7278	33.7563	26.3368
20	7.7429	33.7582	26.3362
30	7.7289	33.7558	26.3363
40	7.7159	33.7533	26.3362
50	7.7098	33.752	26.3361
55	7.7101	33.752	26.336

STATION US16487			
LATITUDE 42-11.3 N			
LONGITUD 140-35.2 E			
DEPTH (m) 80			
Press.	Temp.	Salinity	Sigma-T
5	8.5323	33.8882	26.3205
10	8.5312	33.8878	26.3204
20	8.5267	33.8879	26.3211
30	8.5188	33.8878	26.3222
40	8.5021	33.8851	26.3227
50	8.4829	33.8833	26.3242
75	8.4534	33.8785	26.325
78	8.45	33.8783	26.3253

STATION US16490			
LATITUDE 42-10.2 N			
LONGITUD 140-47.0 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	8.9012	33.937	26.3013
10	8.9038	33.9371	26.301
20	8.9145	33.9422	26.3033
30	8.9216	33.943	26.3029
40	8.9113	33.9429	26.3044
50	8.8808	33.939	26.3062
75	8.8624	33.9402	26.31
91	8.8434	33.9366	26.3101

STATION US16491			
LATITUDE 42-07.0 N			
LONGITUD 140-50.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	8.8815	33.9136	26.2862
10	8.8802	33.9135	26.2862
20	8.8769	33.9129	26.2863
30	8.8332	33.9079	26.2892
40	8.8376	33.9158	26.2947
50	8.8488	33.9188	26.2953
60	8.8524	33.9195	26.2954

STATION US16492			
LATITUDE 42-13.1 N			
LONGITUD 140-42.1 E			
DEPTH (m) 89			
Press.	Temp.	Salinity	Sigma-T
5	8.4449	33.8966	26.3405
10	8.4448	33.8969	26.3407
20	8.4444	33.8975	26.3412
30	8.4521	33.8983	26.3407
40	8.4561	33.8982	26.34
50	8.4494	33.8978	26.3407
75	8.4528	33.8974	26.3399
87	8.4514	33.8976	26.3403

STATION US16493			
LATITUDE 42-13.9 N			
LONGITUD 140-30.4 E			
DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T
5	8.2718	33.8684	26.3446
10	8.2797	33.8687	26.3436
20	8.2966	33.8686	26.341
30	8.2863	33.8672	26.3414
40	8.2855	33.8671	26.3415
50	8.2851	33.8666	26.3412
75	8.2915	33.8672	26.3406
77	8.2914	33.867	26.3405

STATION US16494			
LATITUDE 42-18.9 N			
LONGITUD 140-23.2 E			
DEPTH (m) 54			
Press.	Temp.	Salinity	Sigma-T
5	8.0448	33.8185	26.3393
10	8.0379	33.8179	26.3399
20	8.0335	33.8171	26.3399
30	8.0348	33.8169	26.3396
40	8.0344	33.8173	26.3399
50	8.0341	33.817	26.3397
52	8.0345	33.8169	26.3394

STATION US16495			
LATITUDE 42-18.8 N			
LONGITUD 140-30.6 E			
DEPTH (m) 92			
Press.	Temp.	Salinity	Sigma-T
5	8.4561	33.89	26.3336
10	8.4513	33.8892	26.3337
20	8.4433	33.8876	26.3336
30	8.4568	33.8905	26.3338
40	8.4571	33.8905	26.3338
50	8.4586	33.8905	26.3335
75	8.4582	33.8895	26.3329
89	8.462	33.8905	26.3331

STATION US16496			
LATITUDE 42-23.8 N			
LONGITUD 140-31.1 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	8.5296	33.8994	26.3296
10	8.5284	33.8992	26.3297
20	8.5257	33.8979	26.3291
30	8.5194	33.8982	26.3303
40	8.5206	33.8983	26.3302
50	8.5234	33.8987	26.3301
75	8.5229	33.8978	26.3295
90	8.514	33.8963	26.3296

STATION US16497			
LATITUDE 42-26.5 N			
LONGITUD 140-25.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	8.2007	33.8457	26.3374
10	8.1794	33.843	26.3385
20	8.1304	33.8403	26.3437
30	8.0802	33.8362	26.348
40	8.0285	33.8321	26.3524
50	8.01	33.8302	26.3537
60	8.0032	33.8299	26.3545

STATION US16498			
LATITUDE 42-29.2 N			
LONGITUD 140-31.2 E			
DEPTH (m) 73			
Press.	Temp.	Salinity	Sigma-T
5	8.2085	33.843	26.3342
10	8.2083	33.8427	26.334
20	8.2003	33.8421	26.3347
30	8.1841	33.8408	26.3361
40	8.1696	33.8397	26.3374
50	8.1444	33.8372	26.3392
71	8.0625	33.832	26.3473

STATION US16499			
LATITUDE 42-23.3 N			
LONGITUD 140-42.2 E			
DEPTH (m) 63			
Press.	Temp.	Salinity	Sigma-T
5	8.3012	33.8788	26.3483
10	8.2985	33.8784	26.3484
20	8.3085	33.8784	26.3469
30	8.3117	33.8792	26.347
40	8.3693	33.8937	26.3497
50	8.4421	33.9102	26.3515
62	8.5418	33.9319	26.3533

STATION US16500			
LATITUDE 42-18.5 N			
LONGITUD 140-42.2 E			
DEPTH (m) 64			
Press.	Temp.	Salinity	Sigma-T
5	9.2769	34.0031	26.2931
10	9.2761	34.0025	26.2928
20	9.2702	34.0022	26.2935
30	9.1756	33.9949	26.3031
40	9.1439	33.997	26.3097
50	9.1166	33.9959	26.3133
61	9.0919	33.993	26.315

STATION US16501			
LATITUDE 42-21.1 N			
LONGITUD 140-48.3 E			
DEPTH (m) 51			
Press.	Temp.	Salinity	Sigma-T
5	8.4747	33.9309	26.3628
10	8.4754	33.9312	26.3629
20	8.4781	33.9303	26.3618
30	8.4452	33.9239	26.3619
40	8.41	33.9214	26.3652
49	8.3632	33.9144	26.3668

STATION US16502			
LATITUDE 42-15.7 N			
LONGITUD 140-47.6 E			
DEPTH (m) 70			
Press.	Temp.	Salinity	Sigma-T
5	9.044	33.9833	26.315
10	9.0441	33.9827	26.3145
20	9.0253	33.9747	26.3112
30	8.8716	33.9516	26.3175
40	8.7321	33.9313	26.3234
50	8.6745	33.9237	26.3264
69	8.5493	33.8968	26.3246

STATION US16503			
LATITUDE 42-17.3 N			
LONGITUD 140-53.6 E			
DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T
5	9.4404	34.0315	26.2888
10	9.4465	34.0315	26.2878
20	9.4532	34.0316	26.2867
30	9.453	34.0305	26.2859
40	9.4526	34.0292	26.285
50	9.4458	34.0289	26.2859
57	9.4409	34.0274	26.2855

STATION US16504			
LATITUDE 42-13.0 N			
LONGITUD 140-55.5 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	9.6842	34.0118	26.2332
10	9.7034	34.0128	26.2308
20	9.4083	33.976	26.2506
30	9.2998	33.9735	26.2662
38	9.2967	33.9796	26.2716

STATION US16505			
LATITUDE 42-05.1 N			
LONGITUD 140-56.6 E			
DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T
5	9.8864	34.0241	26.2091
10	9.8876	34.0229	26.2079
20	9.8859	34.0222	26.2076
30	9.8778	34.0217	26.2086
40	9.7769	34.0134	26.219
50	9.3611	33.982	26.263
75	8.8952	33.9315	26.2981
81	8.901	33.9335	26.2987

STATION US16506			
LATITUDE 41-59.3 N			
LONGITUD 141-01.9 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	9.9326	34.025	26.2019
10	9.9325	34.0252	26.2022
20	9.9377	34.025	26.2011
30	9.9355	34.0239	26.2007
40	9.9291	34.0227	26.2008
50	9.9238	34.0217	26.2009
75	9.9253	34.0219	26.2008
96	9.899	34.0186	26.2026

STATION US16507			
LATITUDE 41-58.7 N			
LONGITUD 141-00.8 E			
DEPTH (m) 94			
Press.	Temp.	Salinity	Sigma-T
5	10.0014	34.0263	26.1914
10	10.016	34.0259	26.1886
20	9.9956	34.0227	26.1896
30	9.9972	34.0258	26.1917
40	9.9888	34.0251	26.1926
50	9.94	34.021	26.1976
75	9.9091	34.019	26.2013
90	9.2938	33.9709	26.2652

STATION US16508			
LATITUDE 41-58.0 N			
LONGITUD 140-59.6 E			
DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T
5	10.0601	34.0228	26.1787
10	10.0614	34.022	26.1779
20	10.0585	34.0217	26.1781
30	10.0597	34.0214	26.1777
40	10.0558	34.0213	26.1783
50	10.0527	34.0211	26.1786
75	9.0977	33.9529	26.2826
83	9.0651	33.9552	26.2897

STATION US16509			
LATITUDE 41-57.5 N			
LONGITUD 140-58.6 E			
DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T
5	10.013	34.0261	26.1893
10	10.0172	34.0257	26.1883
20	10.0154	34.0242	26.1874
30	9.9156	34.0172	26.1988
40	9.482	33.9825	26.2436
50	9.2147	33.9647	26.2732
75	9.0754	33.9635	26.2945
78	9.0754	33.9639	26.2948

STATION US16511			
LATITUDE 41-26.8 N			
LONGITUD 140-17.9 E			
DEPTH (m) 65			
Press.	Temp.	Salinity	Sigma-T
5	11.041	33.9526	25.9525
10	10.9489	33.9496	25.9667
20	10.8403	33.949	25.9856
30	10.7518	33.9483	26.0007
40	10.6782	33.9481	26.0135
50	10.5924	33.9495	26.0297
63	9.2537	33.9198	26.2322

STATION US16512			
LATITUDE 41-24.4 N			
LONGITUD 140-20.3 E			
DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T
5	12.1422	33.9315	25.7322
10	11.7598	33.931	25.804
20	11.3458	33.9418	25.8889
30	10.9495	33.9534	25.9695
40	10.3743	33.9552	26.0721
50	10.1458	33.9639	26.1181
75	9.0224	33.9722	26.3098
92	9.0513	33.9749	26.3073

STATION US16513			
LATITUDE 41-27.9 N			
LONGITUD 140-16.2 E			
DEPTH (m) 24			
Press.	Temp.	Salinity	Sigma-T
5	11.0618	33.947	25.9444
10	11.064	33.9463	25.9435
20	11.0647	33.9457	25.9429
24	11.0627	33.9455	25.9431

STATION US16514			
LATITUDE 41-23.3 N			
LONGITUD 140-05.9 E			
DEPTH (m) 100			
Press.	Temp.	Salinity	Sigma-T
5	10.797	33.9617	26.0031
10	10.7921	33.9619	26.0042
20	10.7784	33.9617	26.0065
30	10.7563	33.9626	26.0111
40	10.5728	33.9638	26.0443
50	9.8991	33.9322	26.1352
75	9.1041	33.939	26.2707
99	8.9629	33.9448	26.2978

STATION US16515			
LATITUDE 41-24.5 N			
LONGITUD 140-05.9 E			
DEPTH (m) 52			
Press.	Temp.	Salinity	Sigma-T
5	10.7897	33.9567	26.0005
10	10.8013	33.9565	25.9983
20	10.7749	33.9545	26.0015
30	10.6664	33.9464	26.0143
40	10.3059	33.9342	26.0675
50	10.0067	33.9375	26.1211
52	9.9791	33.934	26.1231

STATION US16516			
LATITUDE 41-35.0 N			
LONGITUD 140-33.3 E			
DEPTH (m) 56			
Press.	Temp.	Salinity	Sigma-T
5	11.4431	33.9968	25.9139
10	11.4582	33.9957	25.9102
20	11.2414	33.9799	25.9375
30	11.1137	33.9752	25.957
40	10.7039	33.9605	26.0187
50	10.5187	33.9591	26.0501
55	10.3915	33.9599	26.0728

STATION US16517			
LATITUDE 41-35.0 N			
LONGITUD 140-29.9 E			
DEPTH (m) 45			
Press.	Temp.	Salinity	Sigma-T
5	17.387	33.787	24.491
5	11.2139	33.9694	25.9344
10	11.2176	33.9684	25.933
20	11.2202	33.9687	25.9327
30	11.1461	33.9525	25.9335
40	10.8928	33.9251	25.9576
44	10.6598	33.9078	25.9854

STATION US16518			
LATITUDE 41-35.1 N			
LONGITUD 140-26.5 E			
DEPTH (m) 13			
Press.	Temp.	Salinity	Sigma-T
5	10.9206	33.9369	25.9619
10	10.9343	33.9368	25.9593
12	10.9335	33.9367	25.9594

STATION US16519			
LATITUDE 41-37.0 N			
LONGITUD 140-30.0 E			
DEPTH (m) 32			
Press.	Temp.	Salinity	Sigma-T
5	11.2055	33.9713	25.9374
10	11.2138	33.9708	25.9355
20	10.6915	33.9162	25.9863
30	10.4287	33.8977	26.0178
31	10.418	33.8984	26.0202

STATION US16520			
LATITUDE 41-37.6 N			
LONGITUD 140-28.5 E			
DEPTH (m) 23			
Press.	Temp.	Salinity	Sigma-T
5	10.3086	33.8436	25.9964
10	10.3562	33.859	26.0002
20	10.0538	33.8671	26.0582
22	10.079	33.8736	26.059

STATION US16521			
LATITUDE 41-38.0 N			
LONGITUD 140-26.8 E			
DEPTH (m) 16			
Press.	Temp.	Salinity	Sigma-T
5	9.8324	33.8013	26.0441
10	9.8205	33.8028	26.0472
15	9.8239	33.8212	26.061

STATION US16522			
LATITUDE 41-41.2 N			
LONGITUD 140-34.2 E			
DEPTH (m) 39			
Press.	Temp.	Salinity	Sigma-T
5	11.1879	33.949	25.9232
10	11.1821	33.9487	25.9241
20	11.1821	33.9487	25.924
30	11.1733	33.9486	25.9256
38	11.0838	33.9435	25.9377

STATION US16523			
LATITUDE 41-43.7 N			
LONGITUD 140-36.6 E			
DEPTH (m) 33			
Press.	Temp.	Salinity	Sigma-T
5	10.8673	33.9344	25.9694
10	10.8701	33.9343	25.9688
20	10.8322	33.9232	25.967
30	10.4918	33.8748	25.989
32	10.3821	33.8564	25.9937

STATION US16524			
LATITUDE 41-43.6 N			
LONGITUD 140-38.1 E			
DEPTH (m) 57			
Press.	Temp.	Salinity	Sigma-T
5	11.118	33.9497	25.9364
10	11.1084	33.9471	25.9361
20	11.0887	33.9454	25.9383
30	11.0093	33.9353	25.9448
40	10.976	33.938	25.9528
50	10.7711	33.9077	25.9657
56	10.7649	33.9094	25.9681

STATION US16525			
LATITUDE 41-43.5 N			
LONGITUD 140-40.0 E			
DEPTH (m) 67			
Press.	Temp.	Salinity	Sigma-T
5	10.7878	33.8917	25.9503
10	10.7799	33.8869	25.9479
20	10.8151	33.8966	25.9492
30	10.8928	33.9157	25.9503
40	10.8331	33.9238	25.9672
50	10.8304	33.9395	25.9799
66	10.6815	33.9546	26.018

STATION US16526			
LATITUDE 41-45.4 N			
LONGITUD 140-40.2 E			
DEPTH (m) 41			
Press.	Temp.	Salinity	Sigma-T
5	9.9609	33.7103	25.9515
10	10.2302	33.7593	25.9441
20	10.7583	33.8891	25.9534
30	10.8526	33.9129	25.9553
38	10.7841	33.9055	25.9617

STATION US16527			
LATITUDE 41-46.8 N			
LONGITUD 140-40.3 E			
DEPTH (m) 20			
Press.	Temp.	Salinity	Sigma-T
5	9.535	33.5373	25.887
10	10.4458	33.811	25.9473
20	10.8339	33.9133	25.9589
20	10.8339	33.9133	25.9589