



HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 363

CRUISE 364

CRUISE 365

IN JUNE 2016

IN JULY 2016

1.Cruise Itinerary

1. Cruise Itinerary

Cruise 363

Departure from Hakodate	Jun. 7, 2016
Retrieval ADCP mooring system	7
Start hydrographic research (US16292)	7
Arrival at Hakodate	8
Departure from Hakodate	9
Calibration og echo sounder	9
Towing frame trawl net	10
Towing frame trawl net	11
Finish hydrographic research (US16314)	11
Arrival at Hakodate	12
Depature from Hakodate	13
Return to Hakodate	14
Total coverage 458.7 miles	

Cruise 364

Departure from Hakodate	Jun. 20, 2016
Start hydrographic research (US16315)	20
Arrival at Ominato	20
Departure from Ominato	21
Finish hydrographic research (US16331)	21
Return to Hakodate	22
Total coverage 171.5 miles	

Cruise 365

Departure from Hakodate	Jul. 28, 2016
Testing echo sounder system	28
Arrival at and departure from Hakodate	28
Start hydrographic research (US16332)	29
Finish hydrographic research (US16340)	29
Return to Hakodate	30
Total coverage 235.1 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”.

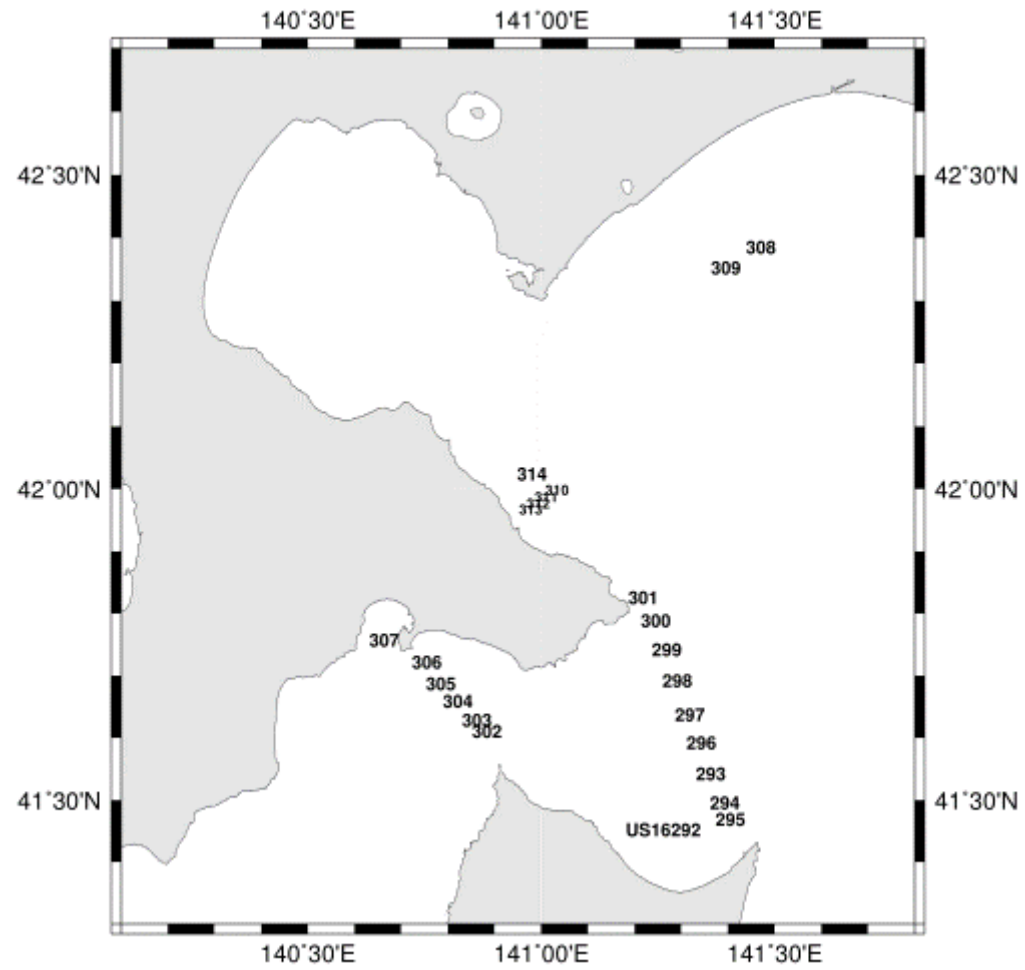


Figure 1. Oceanographic stations (Cruise 363)

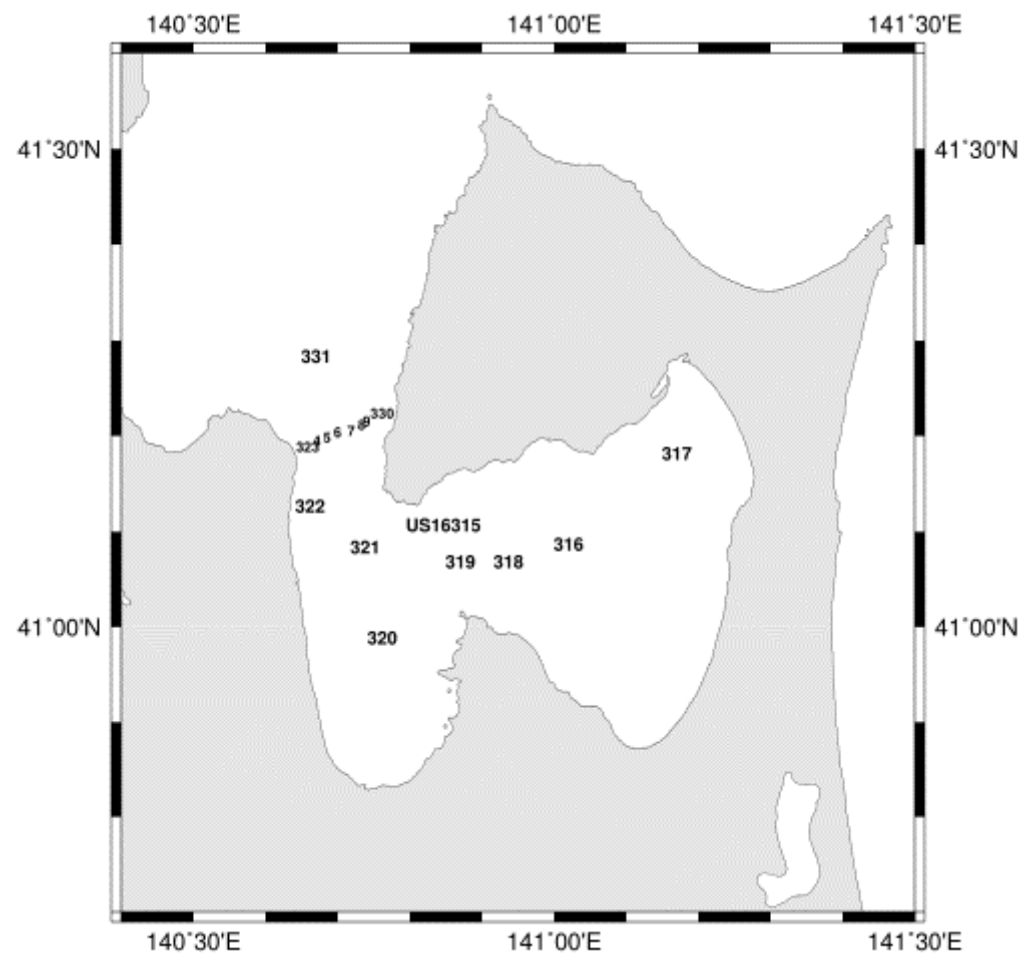


Figure 2. Oceanographic stations (Cruise 364)

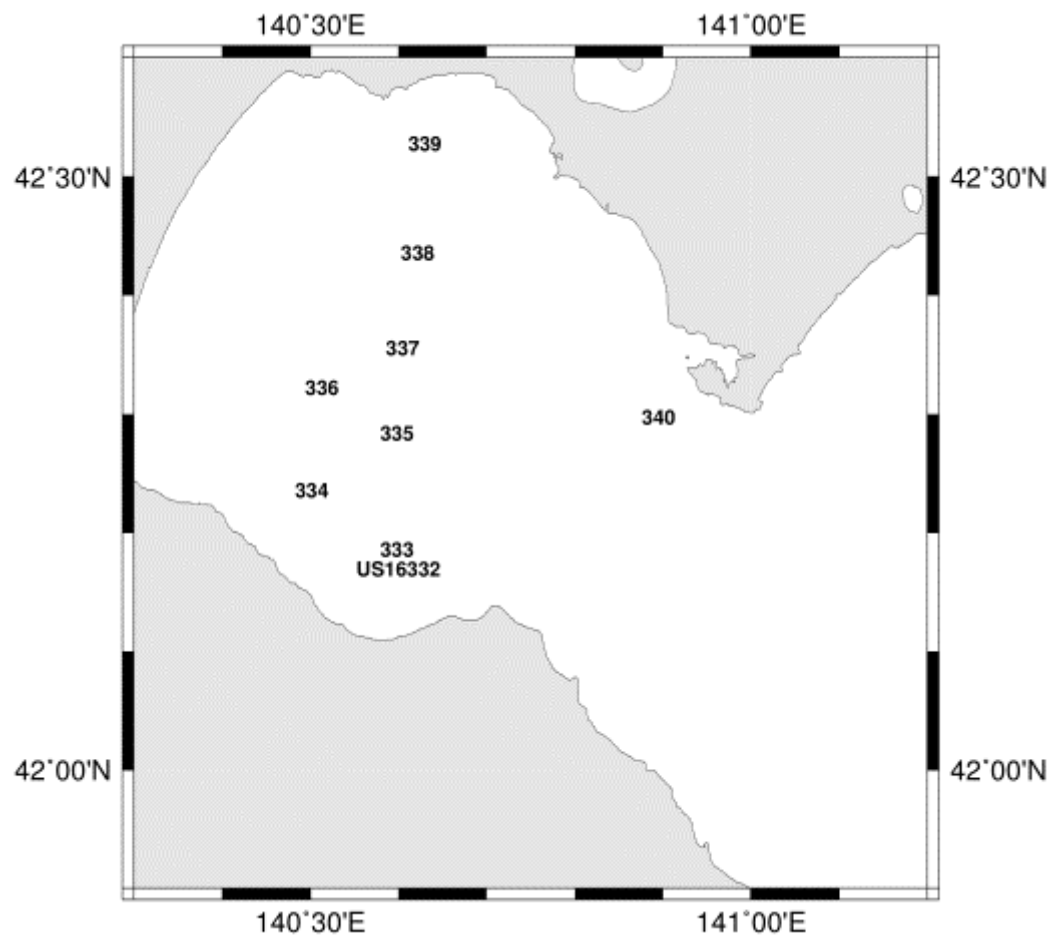


Figure 3. Oceanographic stations (Cruise 365)

Table 1. List of Oceanographic Station

Cruise 363												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16292	41-26.5	141-15.7	6/7	1304-1312	83	WNW-1	East-1	WNW-3	19.4	13.9	bc	1015.8
US16293	41-31.9	141-21.8	6/7	1421-1440	256	ESE-1	East-1	ESE-4	15.9	13.6	bc	1015.5
US16294	41-29.1	141-23.6	6/7	1555-1604	96	ESE-3	East-1	ESE-5	16.9	13.3	c	1014.8
US16295	41-27.5	141-24.3	6/7	1620-1626	49	ESE-3	East-1	ESE-5	16.5	13	c	1014.8
US16296	41-34.9	141-20.6	6/7	1718-1742	321	SE-2	East-1	SE-3	16.1	12.5	c	1014.9
US16297	41-37.6	141-19.1	6/8	0551-0608	215	North-2	ENE-1	North-2	12.7	11.6	c	1014.3
US16298	41-40.9	141-17.5	6/8	0634-0654	230	North-2	ENE-1	North-3	13.1	11.5	c	1014.1
US16299	41-43.9	141-16.1	6/8	0717-0736	230	North-2	East-1	North-3	13.6	12.4	c	1014.5
US16300	41-46.7	141-14.7	6/8	0758-0817	203	NNW-2	East-1	NNW-4	14.3	12.8	c	1014.5
US16301	41-48.9	141-13.1	6/8	0837-0853	159	NW-2	East-1	NW-4	14.7	12.8	m	1014.2
US16302	41-36.0	140-53.0	6/8	1150-1159	56	SE-2	East-1	SE-3	14.7	13.4	r	1014.1
US16303	41-37.1	140-51.7	6/8	1218-1232	105	East-2	East-1	East-3	14.3	14	r	1014.1
US16304	41-38.9	140-49.3	6/8	1300-1322	343	ESE-2	East-1	ESE-3	15.7	13.9	r	1014.1
US16305	41-40.6	140-47.1	6/8	1402-1420	228	SE-2	East-1	SE-2	15.6	14.2	o	1014.1
US16306	41-42.7	140-45.3	6/8	1440-1450	86	SE-2	ESE-1	SE-3	15	14.3	r	1014.1
US16307	41-44.8	140-39.8	6/9	0934-0939	53	North-1	NNW-1	North-3	15.7	12.4	r	1013.1
US16308	42-22.5	141-28.2	6/10	1311-1326	344	West-2	WSW-1	West-2	21.7	11.9	bc	1013.6
US16309	42-20.5	141-23.7	6/10	2145-2152	400	East-1	SE-1	East-3	14.9	13.3	c	1016.8
US16310	41-59.4	141-02.0	6/11	0734-0741	100	West-2	WNW-1	West-3	13.5	11.2	o	1018.7
US16311	41-58.7	141-00.6	6/11	0751-0758	93	WNW-2	NW-1	WNW-3	13.5	11.5	o	1018.6
US16312	41-58.1	140-59.6	6/11	0806-0811	86	NW-1	NW-1	NW-3	13.7	11.8	c	1018.7
US16313	41-57.5	140-58.6	6/11	0820-0825	82	NW-1	NW-1	NW-3	14.2	12.2	c	1018.7
US16314	42-00.8	140-58.8	6/11	1555-1600	83	SE-1	NW-1	SE-3	17.2	13.8	bc	1017

Cruise 364												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16315	41-06.0	140-50.8	6/20	1316-1327	52	ENE-2	NE-1	ENE-4	18	16	o	1006.1
US16316	41-04.8	141-01.2	6/20	1420-1427	47	East-2	East-1	East-3	20.1	16.2	c	1005.8
US16317	41-10.5	141-10.2	6/20	1628-1633	30	NE-2	No Swell	NE-3	20	16.5	c	1006
US16318	41-03.7	140-56.2	6/21	0743-0750	37	SE-2	SSE-1	SE-3	17.2	16.6	o	1010.7
US16319	41-03.7	140-52.2	6/21	0905-0911	50	ESE-1	East-1	ESE-2	20.2	16.3	o	1011.1
US16320	40-58.9	140-45.7	6/21	1004-1009	51	North-1	North-1	North-1	18.3	16.2	o	1011.1
US16321	41-07.9	140-40.6	6/21	1133-1140	58	ENE-1	North-1	ENE-3	18.9	16.2	c	1011
US16322	41-07.2	140-39.7	6/21	1211-1217	48	ESE-1	North-1	ESE-3	20.7	16	bc	1011
US16323	41-11.3	140-40.0	6/21	1236-1242	40	NNE-1	North-1	NNE-2	18.9	15.8	bc	1011
US16324	41-11.5	140-42.5	6/21	1251-1258	57	NNE-1	North-1	NNE-3	22.4	16	bc	1010.7
US16325	41-11.6	140-41.1	6/21	1306-1313	68	NNE-1	North-1	NNE-4	18.4	16.1	bc	1011
US16326	41-11.9	140-42.0	6/21	1325-1333	74	NNE-1	North-1	NNE-3	18.9	15.9	bc	1011.1
US16327	41-12.0	140-43.1	6/21	1343-1350	71	NNE-1	North-1	NNE-3	20.4	16	bc	1010.9
US16328	41-12.4	140-44.0	6/21	1359-1406	70	North-1	North-1	North-3	20.6	16.6	bc	1010.8
US16329	41-12.6	140-44.4	6/21	1415-1421	68	ENE-1	North-1	ENE-2	22.2	16.2	bc	1010.8
US16330	41-13.1	140-45.7	6/21	1428-1434	63	Calm	North-1	Calm	22.7	16.1	bc	1011
US16331	41-16.6	140-40.2	6/21	1507-1518	142	Calm	North-1	Calm	20.6	16.3	c	1010.8

Cruise 365												
station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16332	42-09.8	140-36.0	7/29	0848-0856	72	East-3	East-1	East-5	20.2	19.2	o	1013.1
US16333	42-10.8	140-35.9	7/29	0919-0925	78	East-3	East-1	East-5	19.7	19	r	1012.7
US16334	42-13.8	140-30.1	7/29	0958-1003	76	East-3	East-1	East-5	20	18.8	o	1012.7
US16335	42-16.7	140-35.9	7/29	1049-1100	90	ESE-3	East-1	ESE-5	20.3	18.6	o	1013.1
US16336	42-19.0	140-30.8	7/29	1208-1214	91	ESE-3	East-1	ESE-5	22.7	19	c	1013.2
US16337	42-21.0	140-36.3	7/29	1244-1250	86	NE-1	ESE-1	NE-2	21.7	18.8	c	1013.1
US16338	42-25.8	140-37.3	7/29	1326-1331	82	Calm	ESE-1	Calm	22.1	18.7	o	1013.2
US16339	42-31.3	140-37.8	7/29	1415-1421	59	West-1	ESE-1	West-3	23.3	20.3	c	1013.1
US16340	42-17.5	140-53.7	7/29	1651-1656	55	East-3	East-1	East-5	20.9	18.3	c	1013.1

Table 2. Oceanographic data

STATION US16292			
LATITUDE	41-26.5	N	
LONGITUDE	141-15.7	E	
DEPTH (m)	83		
Press.	Temp.	Salinity	Sigma-T
5	13.6755	33.8195	25.3418
10	12.8907	33.8511	25.5245
20	12.2694	33.9134	25.6939
30	12.1259	34.0229	25.8063
40	11.513	34.0595	25.9497
50	10.661	34.0631	26.1062
69	10.4893	34.058	26.1323

STATION US16293			
LATITUDE	41-31.9	N	
LONGITUDE	141-21.8	E	
DEPTH (m)	256		
Press.	Temp.	Salinity	Sigma-T
5	12.7135	33.9819	25.6608
10	12.5997	33.9887	25.6884
20	11.8326	34.061	25.8914
30	11.6799	34.0767	25.9321
40	11.5978	34.0773	25.9479
50	11.4905	34.0815	25.971
75	11.1824	34.0837	26.0291
100	11.0883	34.0875	26.049
125	10.9503	34.0901	26.0759
150	10.3492	34.0311	26.1356
175	10.2276	34.0343	26.1591
200	8.889	33.9042	26.2776
240	7.3505	33.7624	26.3953

STATION US16294			
LATITUDE	41-29.1	N	
LONGITUDE	141-23.6	E	
DEPTH (m)	96		
Press.	Temp.	Salinity	Sigma-T
5	13.2977	33.9414	25.5132
10	12.7413	33.9541	25.6338
20	11.8696	34.0623	25.8854
30	11.5102	34.0716	25.9597
40	11.0048	34.0728	26.0526
50	10.4478	34.0625	26.143
75	10.1303	34.0676	26.2017
80	9.7016	34.0089	26.228

STATION US16295			
LATITUDE	41-27.5	N	
LONGITUDE	141-24.3	E	
DEPTH (m)	49		
Press.	Temp.	Salinity	Sigma-T
5	11.9788	34.0532	25.8578
10	11.9003	34.0619	25.8793
20	11.7969	34.0647	25.9009
30	11.574	34.0676	25.9447
40	10.5401	34.0427	26.1115

STATION US16296			
LATITUDE	41-34.9	N	
LONGITUDE	141-20.6	E	
DEPTH (m)	321		
Press.	Temp.	Salinity	Sigma-T
5	11.1248	33.0264	25.2167
10	11.5687	33.1641	25.2434
20	11.9826	33.4394	25.3804
30	10.7291	33.2513	25.4617
40	11.264	33.545	25.5951
50	11.5142	33.6527	25.6332
75	11.1233	33.9407	25.9284
100	10.5506	33.9385	26.0284
125	9.4896	33.9109	26.1864
150	8.1911	33.8339	26.3296
175	6.8526	33.7252	26.4346
200	6.5221	33.6916	26.4519
250	5.61	33.6442	26.5291
300	3.9862	33.5884	26.6648

STATION US16297			
LATITUDE	41-37.6	N	
LONGITUDE	141-19.1	E	
DEPTH (m)	215		
Press.	Temp.	Salinity	Sigma-T
5	11.5669	33.948	25.8531
10	11.546	33.9501	25.8585
20	11.4801	33.9547	25.8743
30	11.2521	34.005	25.9551
40	11.0734	34.0707	26.0387
50	11.0534	34.0954	26.0614
75	10.8701	34.1002	26.0981
100	10.5525	34.0585	26.1216
125	10.4163	34.0622	26.1483
150	9.587	33.9762	26.2214
175	8.7042	33.8766	26.2848
200	5.6701	33.6574	26.5324

STATION US16298			
LATITUDE	41-40.9	N	
LONGITUDE	141-17.5	E	
DEPTH (m)	230		
Press.	Temp.	Salinity	Sigma-T
5	12.1326	32.799	24.8552
10	10.9486	32.9882	25.2183
20	11.5653	33.6352	25.6102
30	11.5783	33.919	25.8284
40	11.259	34.0588	25.9958
50	11.0773	34.0449	26.0179
75	9.8649	33.9752	26.1745
100	9.187	33.9387	26.2572
125	8.0507	33.8408	26.3559
150	6.0255	33.5593	26.4111
175	5.5284	33.5577	26.4705
200	4.8164	33.5431	26.5408
210	4.3455	33.5299	26.5812

STATION US16299			
LATITUDE	41-43.9		
LONGITUDE	141-16.1		
DEPTH (m)	230		
Press.	Temp.	Salinity	Sigma-T
5	11.6079	32.4262	24.6625
10	10.2894	32.5095	24.9593
20	8.7901	32.8065	25.4334
30	7.9074	32.9317	25.6632
40	7.7179	32.9931	25.7386
50	7.2206	33.3427	26.0832
75	6.5377	33.5067	26.3041
100	6.5038	33.5788	26.3654
125	6.1465	33.5801	26.4122
150	5.6917	33.5441	26.4401
175	5.1634	33.5135	26.4782
200	4.5615	33.4931	26.5289
210	4.3	33.4938	26.5573

STATION US16300			
LATITUDE	41-46.7	N	
LONGITUDE	141-14.7	E	
DEPTH (m)	203		
Press.	Temp.	Salinity	Sigma-T
5	12.8814	32.4774	24.4624
10	10.8988	32.4181	24.7833
20	8.0788	32.811	25.5434
30	8.0725	33.2999	25.9281
40	7.9923	33.4138	26.0293
50	6.6841	33.3445	26.157
75	6.2606	33.4426	26.2892
100	6.4902	33.5738	26.3632
125	6.4296	33.5981	26.3902
150	6.0732	33.5654	26.4099
175	5.1088	33.4985	26.4726
190	4.7203	33.4952	26.5134

STATION US16301			
LATITUDE	41-48.9	N	
LONGITUDE	141-13.1	E	
DEPTH (m)	159		
Press.	Temp.	Salinity	Sigma-T
5	10.7917	32.4114	24.7967
10	9.6741	32.5583	25.0994
20	7.656	33.0132	25.7631
30	6.462	33.0215	25.9312
40	6.3398	33.0688	25.9842
50	6.1177	33.1281	26.059
75	6.7882	33.5329	26.2917
100	6.4343	33.5388	26.3429
125	6.4131	33.5481	26.353
140	6.1927	33.537	26.3724

STATION US16302			
LATITUDE	41-36.0	N	
LONGITUDE	140-53.0	E	
DEPTH (m)	56		
Press.	Temp.	Salinity	Sigma-T
5	13.7418	34.0587	25.5132
10	13.3291	34.0814	25.6151
20	12.7401	34.1399	25.778
30	12.6976	34.1414	25.7875
40	12.6708	34.1433	25.7943
50	12.7078	34.1429	25.7867

STATION US16303			
LATITUDE	41-37.1	N	
LONGITUDE	140-51.7	E	
DEPTH (m)	105		
Press.	Temp.	Salinity	Sigma-T
5	13.3351	34.1032	25.6308
10	13.0005	34.1252	25.7151
20	12.7168	34.1411	25.7835
30	12.5957	34.1467	25.8117
40	12.2035	34.1628	25.9001
50	12.083	34.1644	25.9243
75	11.9634	34.1635	25.9464
100	11.7598	34.1593	25.9814
110	11.51	34.1522	26.0223

STATION US16304			
LATITUDE	41-38.9	N	
LONGITUDE	140-49.3	E	
DEPTH (m)	343		
Press.	Temp.	Salinity	Sigma-T
5	13.6402	34.1282	25.5879
10	13.3961	34.1176	25.6296
20	13.1787	34.1237	25.6782
30	12.9881	34.1344	25.7247
40	12.6799	34.1497	25.7975
50	12.5226	34.1583	25.8349
75	11.8261	34.1649	25.9733
100	10.9356	34.1585	26.1317
125	10.1872	34.1371	26.2463
150	9.9637	34.1355	26.2831
175	9.7798	34.134	26.3128
200	9.7086	34.1355	26.3258
250	9.6469	34.1336	26.3346
275	9.5298	34.1292	26.3505

STATION US16307			
LATITUDE	41-44.8	N	
LONGITUDE	140-39.8	E	
DEPTH (m)	53		
Press.	Temp.	Salinity	Sigma-T
5	12.1988	33.3963	25.3061
10	12.0132	33.854	25.6965
20	11.728	33.9664	25.8375
30	11.5469	34.0925	25.9691
40	11.4628	34.136	26.0184
50	11.2237	34.1385	26.0642

STATION US16310			
LATITUDE	41-59.4	N	
LONGITUDE	141-02.0	E	
DEPTH (m)	100		
Press.	Temp.	Salinity	Sigma-T
5	11.3479	32.7663	24.9744
10	11.2948	32.7593	24.9785
20	10.2215	32.8621	25.2457
30	7.7749	33.0905	25.807
40	6.68	33.1187	25.9795
50	6.3874	33.2417	26.1145
75	6.7498	33.5292	26.2939
95	6.0667	33.4783	26.3419

STATION US16313			
LATITUDE	41-57.5	N	
LONGITUDE	140-58.6	E	
DEPTH (m)	82		
Press.	Temp.	Salinity	Sigma-T
5	12.4876	32.6576	24.6781
10	12.342	32.7835	24.8035
20	12.0525	32.9505	24.9877
30	8.7307	32.662	25.3293
40	7.6828	32.8788	25.6538
50	6.4814	33.0527	25.9534
75	6.1219	33.3881	26.2638
77	5.9464	33.3685	26.2702

STATION US16316			
LATITUDE	41-04.8	N	
LONGITUDE	141-01.2	E	
DEPTH (m)	47		
Press.	Temp.	Salinity	Sigma-T
5	16.3041	33.0647	24.1904
10	16.1773	33.0957	24.2431
20	13.8927	33.3897	24.9651
30	11.7291	33.3232	25.3374
40	10.0474	33.3771	25.6769
43	10.0386	33.3984	25.695

STATION US16305			
LATITUDE	41-40.6	N	
LONGITUDE	140-47.1	E	
DEPTH (m)	228		
Press.	Temp.	Salinity	Sigma-T
5	14.6843	34.2093	25.4308
10	14.3896	34.2131	25.4968
20	14.013	34.2078	25.5722
30	13.3157	34.1857	25.6986
40	12.5008	34.1726	25.8502
50	12.3774	34.1746	25.8757
75	12.0517	34.1656	25.9312
100	12.0042	34.1713	25.9446
125	11.3684	34.1578	26.0528
150	11.0333	34.1418	26.1013
175	11.033	34.1463	26.1047
200	10.7292	34.1354	26.1505
210	10.4503	34.1353	26.1993

STATION US16308			
LATITUDE	42-22.5	N	
LONGITUDE	141-28.2	E	
DEPTH (m)	344		
Press.	Temp.	Salinity	Sigma-T
5	10.2911	32.4295	24.8966
10	10.5396	32.8733	25.2002
20	9.3701	33.3202	25.744
30	7.3272	33.1845	25.944
40	8.1	33.5413	26.1135
50	9.027	33.7864	26.1635
75	8.5498	33.7798	26.2329
100	7.9883	33.6938	26.2496
125	6.8782	33.6322	26.3578
150	5.7544	33.5094	26.4051
175	4.9578	33.4387	26.4423
200	4.6147	33.4389	26.4802
250	3.631	33.3958	26.5464
300	3.7395	33.5111	26.6276
327	3.6465	33.5773	26.6894

STATION US16311			
LATITUDE	41-58.7	N	
LONGITUDE	141-00.6	E	
DEPTH (m)	93		
Press.	Temp.	Salinity	Sigma-T
5	11.6328	32.9716	25.0821
10	11.5541	32.9751	25.0992
20	9.7913	32.913	25.3572
30	6.4799	32.9093	25.8404
40	7.1234	33.2702	26.0395
50	6.0069	33.2164	26.1425
75	6.5386	33.5088	26.3057
92	5.4792	33.4568	26.3965

STATION US16314			
LATITUDE	42-00.8	N	
LONGITUDE	140-58.8	E	
DEPTH (m)	83		
Press.	Temp.	Salinity	Sigma-T
5	12.5885	32.7533	24.7329
10	11.8745	32.8206	24.9202
20	10.5288	33.2596	25.5031
30	7.5912	33.02	25.7776
40	7.1993	33.2527	26.0153
50	6.4079	33.2403	26.1107
75	6.198	33.4617	26.3123
80	5.6669	33.448	26.3671

STATION US16317			
LATITUDE	41-10.5	N	
LONGITUDE	141-10.2	E	
DEPTH (m)	30		
Press.	Temp.	Salinity	Sigma-T
5	16.0374	33.032	24.2258
10	14.4324	33.2075	24.7116
20	12.2276	33.2722	25.2043
26	11.1741	33.2711	25.3983

STATION US16306			
LATITUDE	41-42.7	N	
LONGITUDE	140-45.3	E	
DEPTH (m)	86		
Press.	Temp.	Salinity	Sigma-T
5	14.2765	34.1928	25.5051
10	14.223	34.195	25.5182
20	13.685	34.1648	25.607
30	13.373	34.1658	25.6716
40	12.9656	34.1526	25.7432
50	12.2306	34.1634	25.8953
70	11.623	34.136	25.9889

STATION US16309			
LATITUDE	42-20.5	N	
LONGITUDE	141-23.7	E	
DEPTH (m)	400		
Press.	Temp.	Salinity	Sigma-T
5	10.7009	32.3876	24.794
10	10.3936	32.6394	25.0429
20	8.5657	32.6558	25.3495
30	9.7859	33.532	25.8415
40	6.7325	33.1344	25.985
50	7.5213	33.43	26.1098
75	8.7657	33.8306	26.2393
100	7.0438	33.6203	26.326
101	7.1011	33.6374	26.3316

STATION US16312			
LATITUDE	41-58.1	N	
LONGITUDE	140-59.6	E	
DEPTH (m)	86		
Press.	Temp.	Salinity	Sigma-T
5	12.1296	33.0004	25.012
10	11.8979	32.9998	25.0549
20	9.6115	32.8983	25.375
30	7.5294	33.0035	25.7733
40	6.3411	33.0018	25.9311
50	6.1703	33.1872	26.099
75	6.2863	33.447	26.2895
82	5.848	33.4522	26.3485

STATION US16315			
LATITUDE	41-06.0	N	
LONGITUDE	140-50.8	E	
DEPTH (m)	52		
Press.	Temp.	Salinity	Sigma-T
5	15.789	33.2314	24.435
10	15.5785	33.3325	24.5596
20	13.0359	33.5053	25.228
30	12.745	33.6195	25.3737
40	12.7014	33.8152	25.5339
48	12.1861	33.8982	25.6985

STATION US16318			
LATITUDE	41-03.7	N	
LONGITUDE	140-56.2	E	
DEPTH (m)	37		
Press.	Temp.	Salinity	Sigma-T
5	16.3967	33.0249	24.1387
10	16.2855	33.027	24.1656
20	12.1391	33.2273	25.1863
30	11.4826	33.4157	25.4548
33	11.5232	33.4958	25.5096

STATION	US16319		
LATITUDE	41-03.7	N	
LONGITUDE	140-52.2	E	
DEPTH (m)	50		
Press.	Temp.	Salinity	Sigma-T
5	16.237	33.186	24.299
10	15.7796	33.281	24.4752
20	14.3535	33.6572	25.0752
30	12.698	33.502	25.2919
40	12.1401	33.6789	25.5365
46	11.7097	33.7266	25.6545

STATION	US16322		
LATITUDE	41-07.2	N	
LONGITUDE	140-39.7	E	
DEPTH (m)	48		
Press.	Temp.	Salinity	Sigma-T
5	15.8035	33.4266	24.5818
10	15.7409	33.4613	24.6225
20	15.5177	33.6617	24.8265
30	15.47	33.6815	24.8524
40	14.2967	33.84	25.2285
44	13.7171	33.9152	25.4074

STATION	US16325		
LATITUDE	41-11.6	N	
LONGITUDE	140-41.1	E	
DEPTH (m)	68		
Press.	Temp.	Salinity	Sigma-T
5	15.4891	33.6047	24.789
10	15.2611	33.6584	24.8807
20	14.8998	33.7343	25.018
30	14.4794	33.8338	25.185
40	13.9185	33.9268	25.3747
50	12.8984	34.0473	25.675
64	12.4137	34.0866	25.8004

STATION	US16328		
LATITUDE	41-12.4	N	
LONGITUDE	140-44.0	E	
DEPTH (m)	70		
Press.	Temp.	Salinity	Sigma-T
5	15.3502	33.6541	24.8577
10	15.2575	33.6592	24.8821
20	14.2014	33.7819	25.2037
30	13.9376	33.965	25.4002
40	13.3865	34.1026	25.6199
50	12.698	34.0063	25.6828
66	12.9665	34.0975	25.7004

STATION	US16331		
LATITUDE	41-16.6	N	
LONGITUDE	140-40.2	E	
DEPTH (m)	142		
Press.	Temp.	Salinity	Sigma-T
5	15.2234	33.7074	24.9267
10	15.0779	33.7564	24.9962
20	14.8406	33.7945	25.0772
30	14.1729	33.8806	25.2859
40	13.9572	33.8854	25.3347
50	13.3164	33.9502	25.5162
75	11.969	34.0638	25.8678
100	11.9051	34.0688	25.8838
125	11.6758	34.0769	25.9331
134	11.4662	34.0865	25.9792

STATION	US16320		
LATITUDE	40-58.9	N	
LONGITUDE	140-45.7	E	
DEPTH (m)	51		
Press.	Temp.	Salinity	Sigma-T
5	16.1673	33.1803	24.3104
10	15.9386	33.2339	24.4033
20	14.5925	33.5952	24.9768
30	14.6321	33.9813	25.2661
40	13.7177	33.9293	25.4182
47	13.3568	33.9266	25.4897

STATION	US16323		
LATITUDE	41-11.3	N	
LONGITUDE	140-40.0	E	
DEPTH (m)	40		
Press.	Temp.	Salinity	Sigma-T
5	15.6015	33.5924	24.7546
10	15.0459	33.6614	24.9301
20	14.8285	33.7296	25.0297
30	14.592	33.7779	25.1178
36	14.1333	33.8544	25.274

STATION	US16326		
LATITUDE	41-11.9	N	
LONGITUDE	140-42.0	E	
DEPTH (m)	74		
Press.	Temp.	Salinity	Sigma-T
5	15.592	33.5287	24.7076
10	15.2963	33.6571	24.8719
20	14.7083	33.7394	25.0632
30	14.6	33.8173	25.1465
40	13.9883	33.9218	25.3563
50	13.4565	34.0049	25.5301
70	12.4249	34.089	25.8001

STATION	US16329		
LATITUDE	41-12.6	N	
LONGITUDE	140-44.4	E	
DEPTH (m)	68		
Press.	Temp.	Salinity	Sigma-T
5	15.4703	33.623	24.8073
10	14.9876	33.7158	24.9846
20	14.5328	33.7677	25.1226
30	13.9868	33.9844	25.4051
40	13.0603	33.9553	25.5716
50	12.9478	34.0333	25.6544
64	13.0834	34.096	25.6759

STATION	US16332		
LATITUDE	42-09.8	N	
LONGITUDE	140-36.0	E	
DEPTH (m)	72		
Press.	Temp.	Salinity	Sigma-T
5	11.837	31.508	23.908
5	18.5752	31.739	22.6361
10	18.4479	31.8023	22.7157
20	17.8182	32.1002	23.0963
30	14.5877	32.3454	24.0139
40	12.0133	32.9731	25.0126
50	8.9355	32.8892	25.4756
69	6.4523	33.1343	26.0215

STATION	US16321		
LATITUDE	41-07.9	N	
LONGITUDE	140-40.6	E	
DEPTH (m)	58		
Press.	Temp.	Salinity	Sigma-T
5	16.0164	32.9707	24.1834
10	15.9062	33.002	24.2323
20	14.847	33.5142	24.8596
30	13.8936	34.079	25.4975
40	13.4441	34.1013	25.6072
50	12.7769	34.0597	25.7086
54	12.0103	33.9088	25.7396

STATION	US16324		
LATITUDE	41-11.5	N	
LONGITUDE	140-42.5	E	
DEPTH (m)	57		
Press.	Temp.	Salinity	Sigma-T
5	15.4688	33.6069	24.7952
10	15.1169	33.6825	24.9309
20	14.8338	33.7543	25.0477
30	14.5025	33.7977	25.1522
40	13.6249	33.9744	25.4721
50	12.6999	34.0562	25.7211
53	12.2904	34.0809	25.8198

STATION	US16327		
LATITUDE	41-12.0	N	
LONGITUDE	140-43.1	E	
DEPTH (m)	71		
Press.	Temp.	Salinity	Sigma-T
5	16.2332	33.4177	24.4777
10	15.4381	33.6099	24.8043
20	15.1043	33.6851	24.9356
30	14.5577	33.7482	25.1022
40	13.8024	33.9443	25.4123
50	12.4487	34.0116	25.7354
67	12.0853	33.9617	25.7665

STATION	US16330		
LATITUDE	41-13.1	N	
LONGITUDE	140-45.7	E	
DEPTH (m)	63		
Press.	Temp.	Salinity	Sigma-T
5	15.92	33.4546	24.5771
10	15.3944	33.6121	24.8156
20	14.1701	33.8753	25.2824
30	13.5568	34.0204	25.5216
40	13.3737	34.035	25.5702
50	13.4108	34.0791	25.5968
59	13.2985	34.0809	25.6209

STATION	US16333		
LATITUDE	42-10.8	N	
LONGITUDE	140-35.9	E	
DEPTH (m)	78		
Press.	Temp.	Salinity	Sigma-T
5	18.7592	31.6763	22.5427
10	18.5075	31.798	22.6978
20	17.3954	32.0113	23.129
30	15.3658	32.7536	24.1609
40	11.7479	32.9713	25.0607
50	9.8916	33.0123	25.4182
75	7.1344	33.5105	26.2271

STATION US16334			
LATITUDE	42-13.8	N	
LONGITUDE	140-30.1	E	
DEPTH (m)	76		
Press.	Temp.	Salinity	Sigma-T
5	18.9013	31.6144	22.4602
10	18.5552	31.7828	22.6745
20	18.473	31.8481	22.7445
30	16.813	32.8379	23.899
40	12.0973	32.8622	24.9109
50	9.452	32.9192	25.4173
73	6.7265	33.3197	26.1319

STATION US16337			
LATITUDE	42-21.0	N	
LONGITUDE	140-36.3	E	
DEPTH (m)	86		
Press.	Temp.	Salinity	Sigma-T
5	18.8578	31.7756	22.594
10	18.6028	31.7305	22.6228
20	18.5213	31.8334	22.7215
30	17.5801	32.7908	23.6821
40	12.2981	32.5897	24.6616
50	11.0892	33.0132	25.2127
75	7.7037	33.5838	26.2048
83	5.8036	33.4325	26.3386

STATION US16340			
LATITUDE	42-17.5	N	
LONGITUDE	140-53.7	E	
DEPTH (m)	55		
Press.	Temp.	Salinity	Sigma-T
5	18.4891	32.0571	22.9003
10	18.4578	32.065	22.914
20	18.3159	32.1679	23.0274
30	17.5484	32.7726	23.6757
40	14.9128	33.0802	24.5109
50	13.3259	33.4186	25.1029
53	12.6163	33.4388	25.259

STATION US16335			
LATITUDE	42-16.7	N	
LONGITUDE	140-35.9	E	
DEPTH (m)	90		
Press.	Temp.	Salinity	Sigma-T
5	18.8313	31.6149	22.478
10	18.0828	31.9061	22.884
20	16.8565	32.6649	23.7563
30	14.9267	32.9089	24.3758
40	12.2068	33.1422	25.1074
50	10.6929	33.2563	25.4718
75	7.9903	33.5537	26.1394
87	5.4011	33.434	26.3876

STATION US16338			
LATITUDE	42-25.8	N	
LONGITUDE	140-37.3	E	
DEPTH (m)	82		
Press.	Temp.	Salinity	Sigma-T
5	18.7317	31.695	22.5638
10	18.3757	31.8375	22.7603
20	18.3368	31.9542	22.859
30	17.7387	32.0789	23.0991
40	14.1858	32.6318	24.3185
50	10.4596	32.8537	25.1986
75	7.7866	33.5791	26.1891
79	7.4118	33.553	26.2221

STATION US16336			
LATITUDE	42-19.0	N	
LONGITUDE	140-30.8	E	
DEPTH (m)	91		
Press.	Temp.	Salinity	Sigma-T
5	19.246	31.4163	22.2228
10	18.5583	31.7802	22.6718
20	18.4858	31.8185	22.7187
30	16.2445	32.0939	23.4582
40	12.344	32.785	24.8043
50	11.1164	33.2078	25.3593
75	7.7343	33.5906	26.2056
88	5.3784	33.41	26.3714

STATION US16339			
LATITUDE	42-31.3	N	
LONGITUDE	140-37.8	E	
DEPTH (m)	59		
Press.	Temp.	Salinity	Sigma-T
5	19.1317	31.4688	22.2916
10	18.6141	31.7507	22.6354
20	17.6965	31.9618	23.0196
30	15.6965	32.3935	23.8112
40	11.7438	32.7585	24.8961
50	10.0789	32.9746	25.3573
56	9.1637	33.1933	25.6777