HOKKAIDO UNIVERSITY

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THE " USHIO MARU "

CRUISE 366
CRUISE 367
CRUISE 368

IN AUGUST 2016
IN SEPTEMBER 2016

1. Cruise Itinerary

Cruise 366		
Departure from Hakodate	Aug.	3, 2016
Deploying GPS buoys		4
Observation by XBT		5
Observation by XBT		6
Start hydrographic research (US16341)		6
Retrieval GPS buoys		6
Arrival at Wakkanai		7
Depature from Wakkanai		8
Finish hydrographic research (US16353)		8
Arrival at Iwanai		9
Depature from Iwanai		10
Return to Hakodate		11
Total coverage 1341.8 miles		

Cruise 367		
Departure from Hakodate	Aug.	21, 2016
Start hydrographic research (US16354)		22
Arrival at Hakodate		22
Departure from Hakodate		24
Calibration of echo sounder		24
Noise test of echo sounder		25
Retrieval ADCP mooring system		26
Arrival at Usujiri		26
Departure from Usujiri		27
Setting ADCP mooring system		27
Finish hydrographic research (US16366)		27
Arrival at and departure from Usujiri		27
Return to Hakodate		28
Total coverage 611.0 miles		

Cruise 368		
Departure from Hakodate	Sep.	4 , 2016
Start hydrographic research (US16367)		4
Setting CTD mooring system		4
Arrival at and departure from Hakoate		5
Finish hydrographic research (US14373)		6
Arrival at and departure from Hakodate		6
Arrival at Usujiri		6
Departure from Usujiri		7
Sampling by mud-sampler		7
Sampling by squid jigging		7
Return to Hakodate		8
Total coverage 212.6 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”.

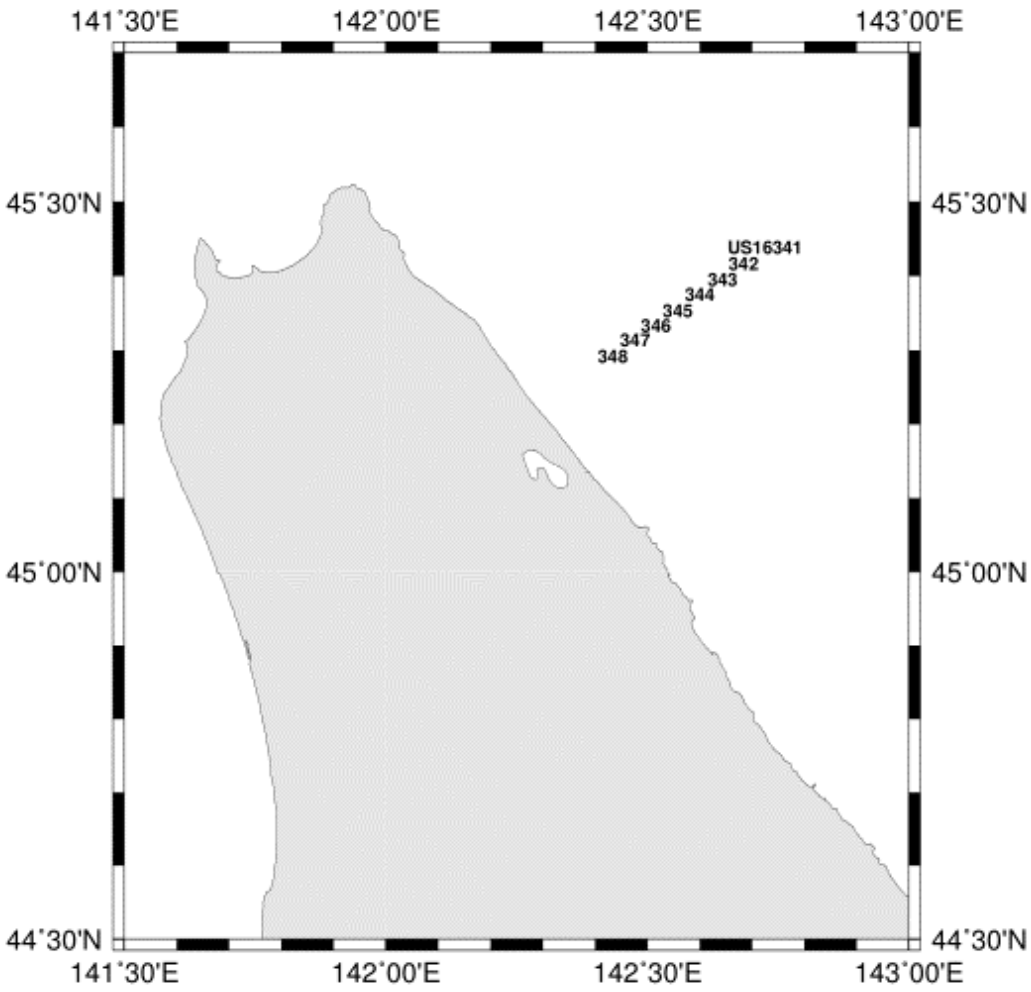

Figure 1. Oceanographic stations (Cruise 366-1)

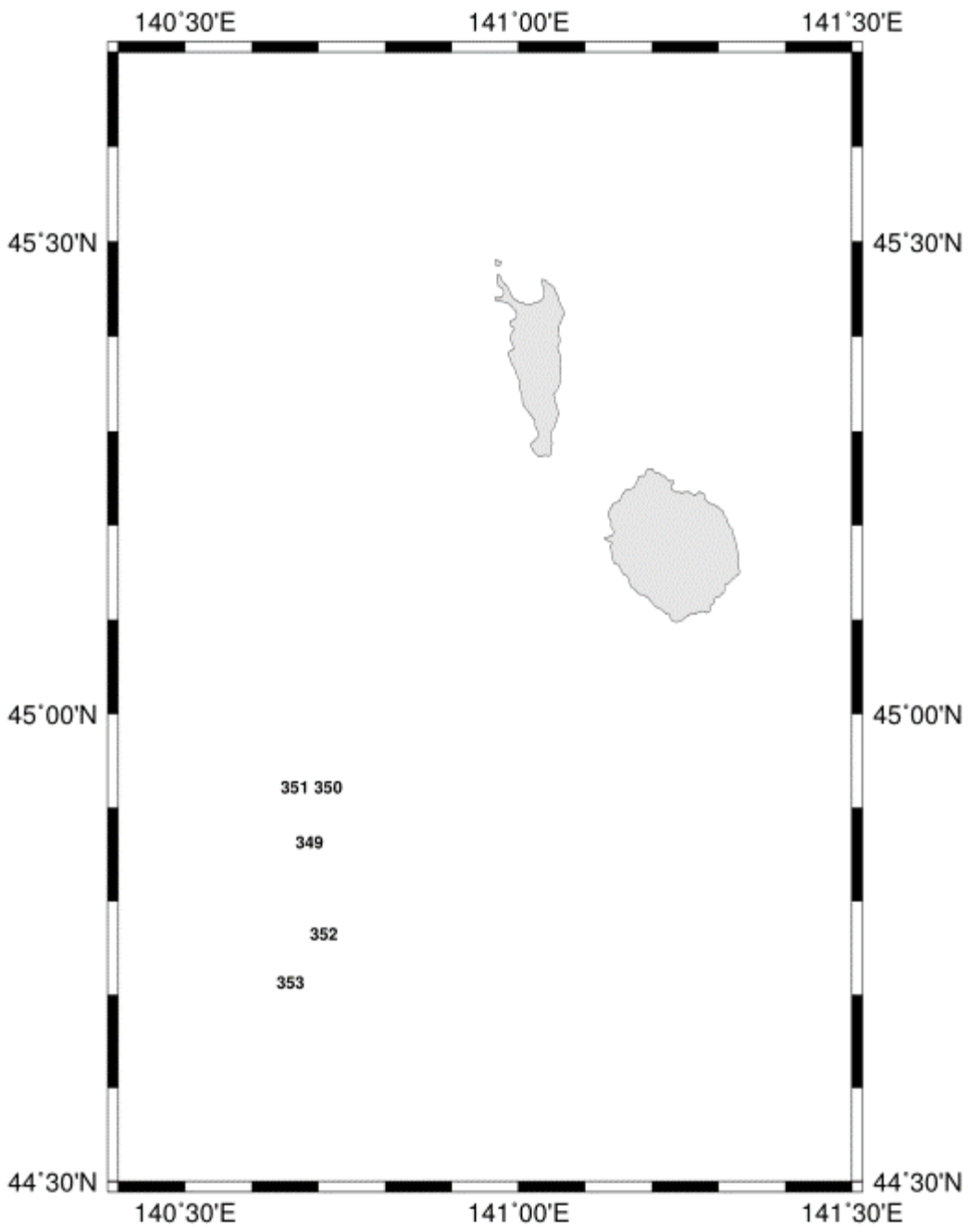

Figure 2. Oceanographic stations (Cruise 366-2)

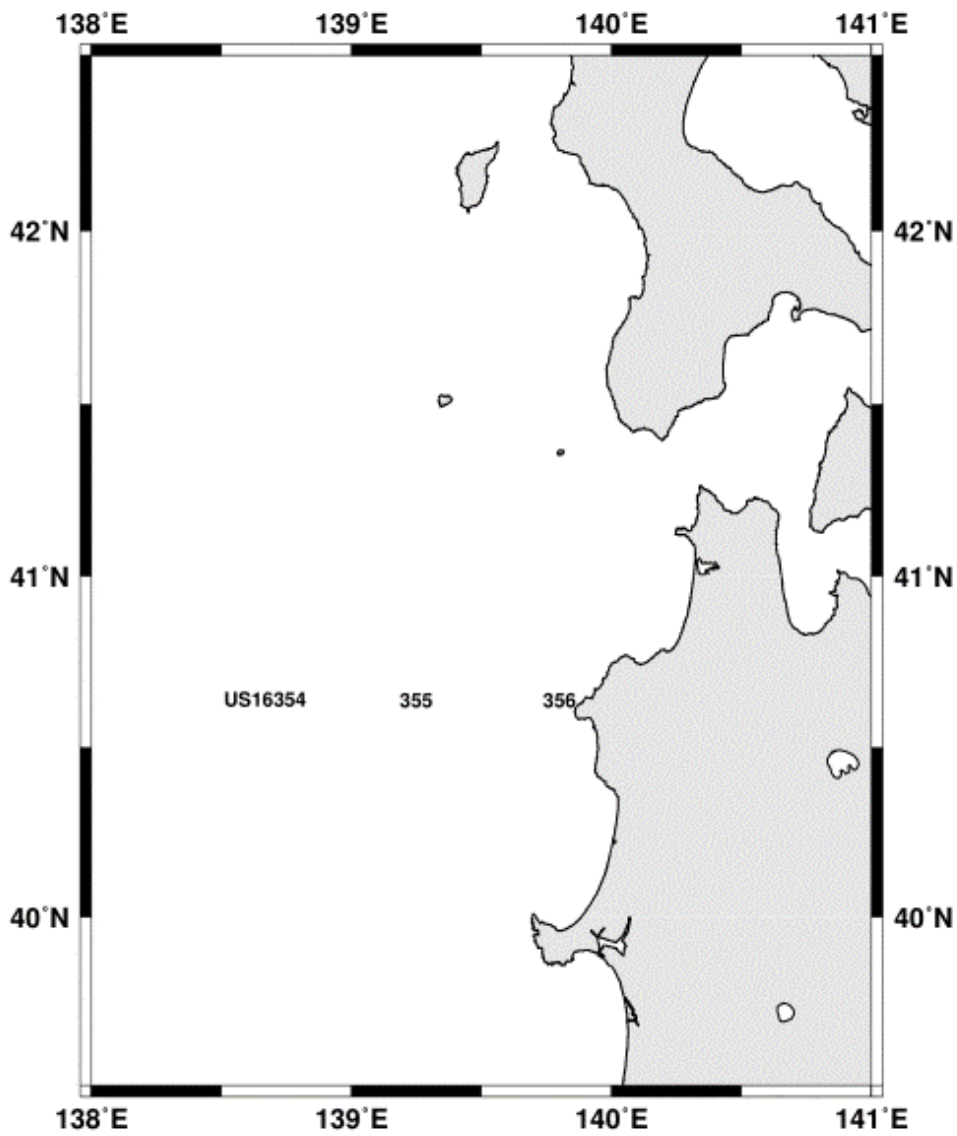

Figure 3. Oceanographic stations (Cruise 367-1)

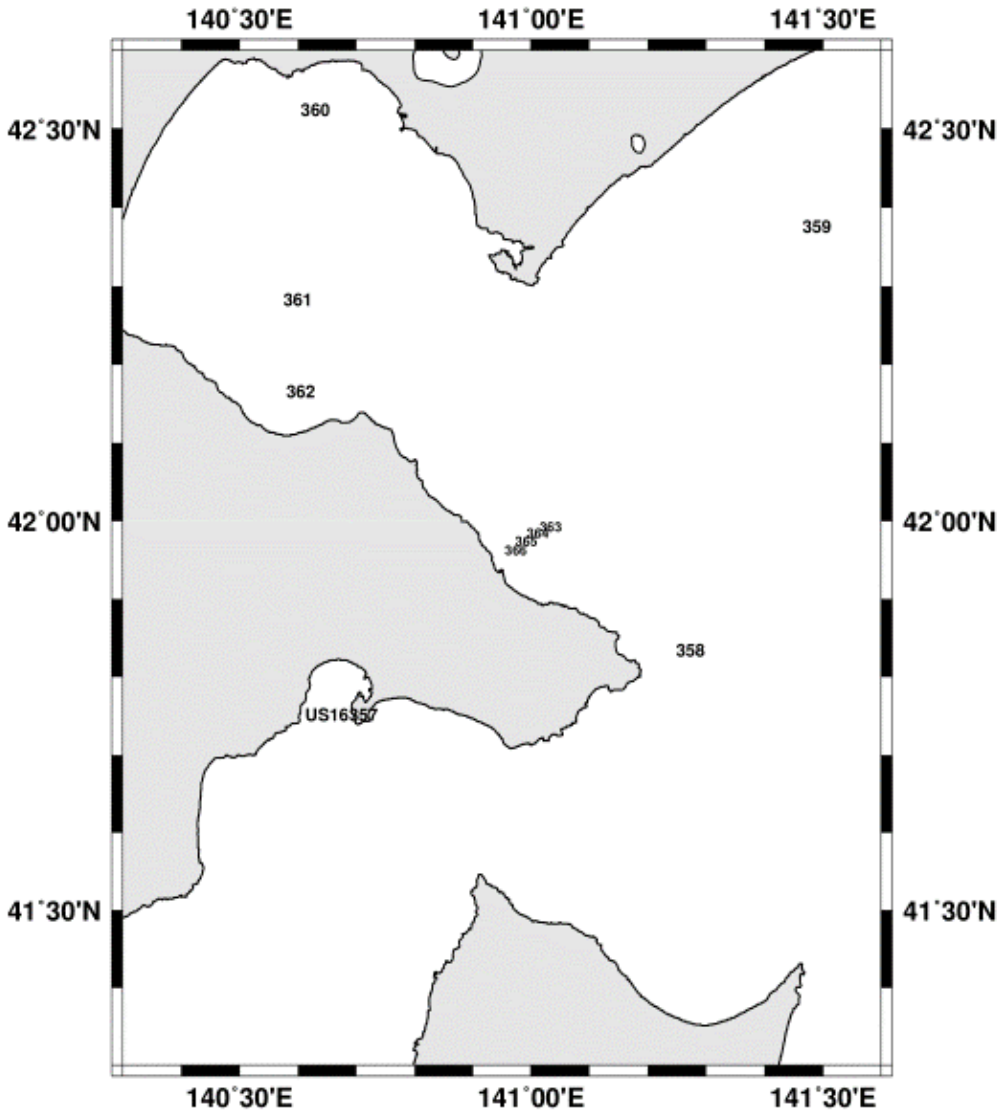

Figure 4. Oceanographic stations (Cruise 367-2)

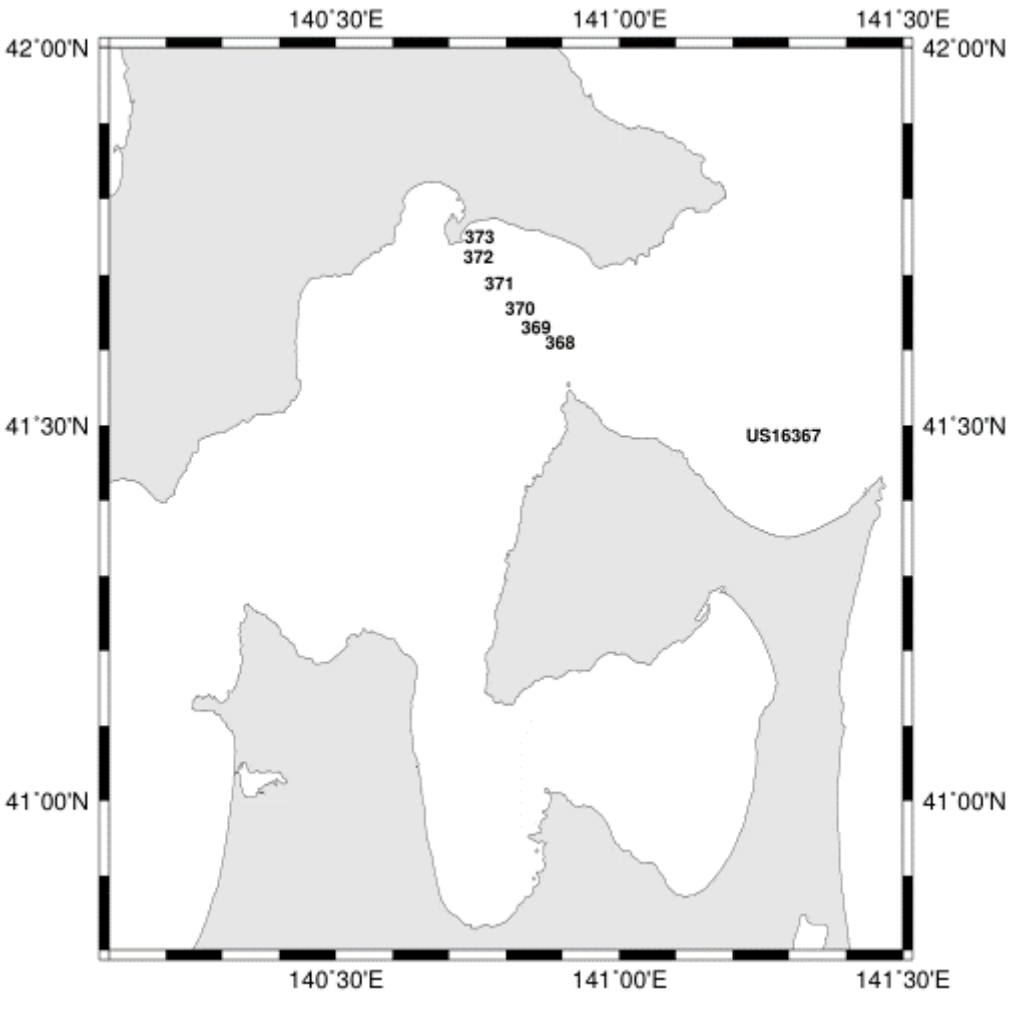

Figure 5. Oceanographic stations (Cruise 368)

able 1. List of Oceanographic Station

Cruise 366

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16341	45-25.8	142-43.5	8/6	0538-0545	105	WSW-2	WNW-1	WSW-4	16.7	15.6	bc	1009.6
US16342	45-24.5	142-41.0	8/6	0600-0607	98	WSW-2	WNW-1	WSW-4	16.8	16.1	bc	1009.5
US16343	45-23.2	142-38.6	8/6	0622-0628	91	WSW-2	WNW-1	WSW-4	15.5	10.3	bc	1009.5
US16344	45-22.0	142-36.0	8/6	0645-0650	86	WSW-2	WNW-1	WSW-4	16.1	11.3	bc	1009.5
US16345	45-20.7	142-33.5	8/6	0706-0712	78	WSW-2	WNW-1	WSW-3	16.8	9.9	bc	1009.6
US16346	45-19.5	142-31.0	8/6	0729-0733	64	WSW-2	WNW-1	WSW-3	18.7	11.1	bc	1009.7
US16347	45-18.3	142-28.6	8/6	0751-0755	57	WSW-2	WNW-1	WSW-3	19.9	16.7	bc	1009.8
US16348	45-17.0	142-26.0	8/6	0811-0815	48	WSW-2	WNW-1	WSW-4	21	17.5	bc	1009.8
US16349	44-51.4	140-41.2	8/7	0735-0745	152	SSE-2	North-1	SSE-4	21.4	21.1	bc	1011.3
US16350	44-54.9	140-42.9	8/8	2055-2105	177	NW-2	SSW-1	NW-3	22.5	21.7	bc	1008.7
US16351	44-54.9	140-39.9	8/8	2144-2158	347	NW-2	SSW-1	NW-3	22.1	21.5	bc	1008.6
US16352	44-45.5	140-42.5	8/8	2315-2326	206	NW-1	SSW-1	NW-3	22.9	22.5	c	1008.7
US16353	44-42.4	140-39.5	8/8	2354-0008	205	NNW-1	SSW-1	NNW-3	22.4	23.1	c	1008.8

Cruise 367

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16354	40-37.2	138-40.0	8/22	0231-0254	3246	North-1	NE-1	North-2	26.9	26.4	c	1007.1
US16354-2	40-37.2	138-39.4	8/22	0301-0311	3246	North-1	NE-1	North-2	28.2	26.4	c	1007
US16354-3	40-37.2	138-39.2	8/22	0317-0328	3246	North-1	NE-1	North-2	28.2	26.4	c	1007
US16354-4	40-37.2	138-39.0	8/22	0335-0346	3230	North-1	NE-1	North-2	28.2	26.4	c	1007
US16355	40-37.0	138-14.9	8/22	0633-0700	2801	NNE-2	NE-1	NNE-3	25.6	25.6	o	1007.1
US16356	40-37.0	139-48.0	8/22	0925-0943	388	NNE-2	NW-1	NNE-4	25.8	26.7	r	1006.9
US16356-1	40-37.0	139-48.2	8/22	0947-1005	373	NNE-2	NW-1	NNE-4	25.8	26.7	r	1006.9
US16356-3	40-37.0	139-48.2	8/22	1014-1027	369	NNE-2	NW-1	NNE-4	25.8	26.7	r	1006.9
US16356-4	40-37.0	139-48.2	8/22	1027-1034	375	NNE-2	NW-1	NNE-4	25.8	26.7	r	1006.9
US16357	41-44.6	140-40.5	8/24	1004-1008	56	NW-1	South-1	NW-3	25.4	23.5	bc	1012.6
US16358	41-49.6	141-16.4	8/24	1929-1942	240	SSE-2	SE-1	SSE-3	23.1	23.2	bc	1011.8
US16359	42-22.1	141-29.4	8/25	1946-2005	363	SE-2	SE-1	SE-4	22.5	21.8	o	1005.6
US16360	42-31.0	140-37.8	8/27	0933-0941	60	North-1	SE-1	North-3	22.6	22.9	bc	1012.1
US16361	42-16.5	140-36.0	8/27	1105-1117	90	NW-1	SE-1	NW-3	23.3	22.6	b	1012.1
US16362	42-09.5	140-36.3	8/27	1238-1246	70	SW-1	East-1	SW-2	23.2	23	bc	1011.7
US16363	41-59.2	141-02.0	8/27	1457-1503	100	NW-1	ENE-1	NW-2	23.7	22.9	b	1011.4
US16364	41-58.7	141-00.7	8/27	1513-1518	93	Calm	ENE-1	Calm	24.1	23	bc	1011.2
US16365	41-58.1	140-59.5	8/27	1528-1533	85	Calm	ENE-1	Calm	24.2	23	bc	1011.3
US16366	41-57.4	140-58.4	8/27	1542-1547	78	Calm	ENE-1	Calm	24.2	23	bc	1011.2

Cruise 368

station	Lat. (N)°	Long. (E)°	Date	Hour	Depth (m)	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr.	Bar (hPa)
US16367	41-28.7	141-17.4	9/4	1158-1208	226	SSE-2	East-1	SSE-4	22.1	20.3	bc	1020
US16368	41-36.1	140-53.7	9/4	1440-1446	85	East-2	East-1	East-4	22	22.6	bc	1019.7
US16369	41-37.3	140-51.2	9/4	1510-1517	102	East-3	East-1	East-5	22.9	23.8	bc	1019.1
US16370	41-38.8	140-49.5	9/4	1536-1548	337	East-3	ENE-1	East-5	22.6	23.2	bc	1019.2
US16371	41-40.8	140-47.3	9/4	1608-1618	221	East-2	ENE-1	East-4	22.3	22.7	bc	1019.2
US16372	41-42.9	140-45.1	9/4	1635-1642	83	East-2	ENE-1	East-5	22.3	22.9	o	1019.3
US16373	41-44.5	140-45.2	9/6	0648-0652	56	East-2	ESE-1	East-3	23.1	23	o	1008.8

Table 2. Oceanographic data

STATION US16341
LATITUDE 45-25.8 N
LONGITUD 142-43.5 E
DEPTH (m) 105

Press.	Temp.	Salinity	Sigma-T
5	16.4704	32.1206	23.4276
10	11.3534	32.3954	24.6851
20	6.7071	33.404	26.2008
30	6.6969	33.5879	26.3471
40	6.9766	33.6669	26.3718
50	7.2063	33.7389	26.397
75	6.4825	33.6936	26.4587
96	7.2247	33.9371	26.5505

STATION US16342
LATITUDE 45-24.5 N
LONGITUD 142-41.0 E
DEPTH (m) 98

Press.	Temp.	Salinity	Sigma-T
5	11.1992	33.1751	25.3191
10	9.8738	33.2452	25.6029
20	8.8239	33.9667	26.3368
30	8.4506	33.9826	26.407
40	8.1944	33.9753	26.4401
50	8.086	33.9772	26.4578
75	7.7281	33.9826	26.5146
91	6.8244	33.9435	26.6105

STATION US16343
LATITUDE 45-23.2 N
LONGITUD 142-38.6 E
DEPTH (m) 91

Press.	Temp.	Salinity	Sigma-T
5	9.3449	33.9875	26.2698
10	8.4218	33.8868	26.3363
20	7.974	33.9496	26.4527
30	7.8752	33.9639	26.4785
40	7.7711	33.9777	26.5045
50	7.7221	33.9739	26.5087
75	6.8276	33.9251	26.5954
85	6.79	33.923	26.5988

STATION US16344
LATITUDE 45-22.0 N
LONGITUD 142-36.0 E
DEPTH (m) 86

Press.	Temp.	Salinity	Sigma-T
5	6.6641	32.967	25.8619
10	1.5562	32.5711	26.0571
20	6.8152	33.6103	26.349
30	6.5727	33.5881	26.3637
40	6.9008	33.6724	26.3865
50	7.1115	33.8368	26.4871
75	7.125	33.9075	26.541
81	7.1263	33.9073	26.5406

STATION US16345
LATITUDE 45-20.7 N
LONGITUD 142-33.5 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	10.2428	33.8455	26.0091
10	9.6281	33.9603	26.2022
20	9.5207	33.9816	26.2366
30	9.4664	33.9758	26.241
40	7.4956	33.6881	26.3163
50	7.3487	33.8281	26.4473
73	7.8526	33.9698	26.4865

STATION US16346
LATITUDE 45-19.5 N
LONGITUD 142-31.0 E
DEPTH (m) 64

Press.	Temp.	Salinity	Sigma-T
5	16.02	33.9226	24.9144
10	14.4125	33.7857	25.1616
20	12.0736	33.9085	25.7274
30	10.2939	33.9546	26.0855
40	9.4639	33.9797	26.2444
50	9.2011	33.9923	26.2969
60	9.1392	33.9952	26.3091

STATION US16347
LATITUDE 45-18.3 N
LONGITUD 142-28.6 E
DEPTH (m) 57

Press.	Temp.	Salinity	Sigma-T
5	16.9482	33.8862	24.6717
10	16.333	33.8489	24.7862
20	15.7249	33.7959	24.8835
30	14.4988	33.8587	25.2001
40	11.8998	33.9155	25.7657
50	11.5909	33.9488	25.8493
52	11.4866	33.9486	25.8683

STATION US16348
LATITUDE 45-17.0 N
LONGITUD 142-26.0 E
DEPTH (m) 48

Press.	Temp.	Salinity	Sigma-T
5	18.5891	33.7655	24.1811
10	18.2722	33.7431	24.2427
20	16.9922	33.7423	24.5509
30	16.3676	33.777	24.723
40	14.8668	33.8237	25.0937
43	13.6237	33.8826	25.4014

STATION US16349
LATITUDE 44-51.4 N
LONGITUD 140-41.2 E
DEPTH (m) 152

Press.	Temp.	Salinity	Sigma-T
5	19.008	31.664	22.472
5	21.1981	33.727	23.4714
10	21.1047	33.7192	23.4908
20	20.2665	33.7138	23.7109
30	16.4891	34.0321	24.8909
40	14.0181	34.053	25.4515
50	12.647	34.0876	25.7558
75	9.7051	34.0774	26.281
100	7.9626	34.0546	26.5369
125	6.1998	34.0181	26.7514
144	5.0202	34.0115	26.8892

STATION US16350
LATITUDE 44-54.9 N
LONGITUD 140-42.9 E
DEPTH (m) 177

Press.	Temp.	Salinity	Sigma-T
5	21.762	33.7394	23.3262
10	21.769	33.7423	23.3266
20	19.3166	33.7871	24.0132
30	15.4693	33.8336	24.9695
40	13.5474	34.0261	25.528
50	12.2954	34.0865	25.8231
75	9.6723	34.0392	26.2566
100	8.0958	34.0358	26.5023
125	6.4174	34.0177	26.723
150	4.7839	34.0188	26.9217
168	4.3154	34.0422	26.9914

STATION US16351
LATITUDE 44-54.9 N
LONGITUD 140-39.9 E
DEPTH (m) 347

Press.	Temp.	Salinity	Sigma-T
5	21.8204	33.7928	23.3507
10	21.7644	33.8	23.3717
20	18.6035	33.7962	24.201
30	15.5335	33.8484	24.9667
40	13.5629	33.9783	25.4878
50	11.7138	34.0036	25.869
75	9.4903	33.989	26.2474
100	7.9819	34.0239	26.5099
125	6.0674	34.0135	26.7647
150	5.0213	34.0268	26.9012
175	4.3283	34.0361	26.9851
200	3.8044	34.0346	27.038
250	2.7168	34.0419	27.1452
300	1.81	34.044	27.2203
321	1.3025	34.0498	27.2613

STATION US16352
LATITUDE 44-45.5 N
LONGITUD 140-42.5 E
DEPTH (m) 206

Press.	Temp.	Salinity	Sigma-T
5	22.8321	33.709	23.0028
10	22.8412	33.7135	23.0035
20	22.3196	33.9204	23.3083
30	18.7202	34.1563	24.447
40	15.264	34.2288	25.3194
50	12.4433	34.0569	25.7716
75	10.9585	34.1177	26.0959
100	9.4696	34.0977	26.3357
125	7.2806	33.9939	26.5873
150	5.7325	34.0206	26.812
175	4.4729	34.027	26.9624
188	3.5808	34.0352	27.0605

STATION US16353
LATITUDE 44-42.4 N
LONGITUD 140-39.5 E
DEPTH (m) 205

Press.	Temp.	Salinity	Sigma-T
5	23.2887	33.8659	22.9906
10	23.2918	33.8622	22.9869
20	21.3145	34.0629	23.6951
30	17.6878	34.1149	24.6703
40	15.0411	34.2262	25.3663
50	13.2357	34.2751	25.784
75	10.2961	34.1119	26.2078
100	9.0234	34.0862	26.3988
125	7.221	34.0041	26.6037
150	5.63	34.0252	26.8281
175	4.3652	34.0355	26.9808
200	3.2555	34.045	27.0993
203	3.1658	34.0403	27.1039

STATION US16354
LATITUDE 40-37.2 N
LONGITUD 138-40.0 E
DEPTH (m) 3246

Press.	Temp.	Salinity	Sigma-T
5	26.5314	33.8926	22.0321
10	26.3945	33.8717	22.0593
20	21.9962	34.1086	23.5417
30	18.5379	34.2945	24.5984
40	16.7239	34.4387	25.1485
50	15.323	34.3887	25.4295
75	13.1	34.2746	25.8109
100	11.5715	34.1779	26.031
125	10.146	34.1468	26.2608
150	7.4635	34.0593	26.6129
175	4.3921	33.9562	26.9148
200	3.1566	34.0068	27.078
250	1.7791	34.0292	27.2106
300	1.3617	34.0415	27.2505
302	1.3528	34.0426	27.2521

STATION US16355
LATITUDE 40-37.0 N
LONGITUD 138-14.9 E
DEPTH (m) 2801

Press.	Temp.	Salinity	Sigma-T
5	25.8022	33.8074	22.1951
10	25.7087	33.84	22.2485
20	21.4336	34.0791	23.6749
30	18.8198	34.2894	24.5237
40	17.017	34.3903	25.0423
50	15.7306	34.3475	25.3067
75	13.9406	34.3183	25.6727
100	12.6863	34.2208	25.8513
125	11.7237	34.134	25.9685
150	11.336	34.1478	26.0509
175	10.6309	34.1287	26.1626
200	8.8193	34.0836	26.429
250	4.0713	34.0096	26.991
300	2.0763	34.02	27.1806
302	2.0204	34.0225	27.187

STATION US16356
LATITUDE 40-37.0 N
LONGITUD 139-48.0 E
DEPTH (m) 388

Press.	Temp.	Salinity	Sigma-T
5	26.6289	33.33	21.5777
10	26.5432	33.3716	21.6359
20	24.0511	33.9253	22.8128
30	21.9693	34.1487	23.5797
40	20.4521	34.2757	24.0898
50	17.9789	34.2842	24.729
75	15.1056	34.3276	25.4304
100	13.2796	34.2354	25.7444
125	11.6499	34.1788	26.0171
150	10.3138	34.1311	26.2198
175	8.4943	34.0891	26.4839
200	5.9547	34.0357	26.7963
202	5.8633	34.0359	26.8079

STATION US16357
LATITUDE 41-44.6 N
LONGITUD 140-40.5 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	23.3006	33.7134	22.8717
10	22.114	33.9251	23.3694
20	18.518	34.0843	24.4427
30	15.8106	34.1382	25.1276
40	15.1147	34.1477	25.2897
50	13.0591	34.1527	25.7247
52	12.8241	34.1536	25.7721

STATION US16358
LATITUDE 41-49.6 N
LONGITUD 141-16.4 E
DEPTH (m) 240

Press.	Temp.	Salinity	Sigma-T
5	23.2071	31.5537	21.2633
10	22.6421	32.055	21.8029
20	18.4464	32.9322	23.579
30	14.0346	33.3509	24.9057
40	13.0901	33.5612	25.2604
50	10.8637	33.3906	25.5465
75	11.3711	34.0323	25.9546
100	9.5532	33.8644	26.1396
125	8.4409	33.7553	26.2303
150	5.7927	33.5122	26.4026
175	4.2809	33.4563	26.5295
200	3.8631	33.4709	26.5835
216	3.7348	33.4911	26.6123

STATION US16359
LATITUDE 42-22.1 N
LONGITUD 141-29.4 E
DEPTH (m) 363

Press.	Temp.	Salinity	Sigma-T
5	21.9127	32.3461	22.2268
10	21.1614	32.8971	22.8503
20	16.4856	33.5144	24.494
30	13.6971	33.6339	25.1939
40	13.0164	33.8314	25.4843
50	12.1746	33.8704	25.6786
75	10.3185	33.9143	26.0498
100	9.3258	33.892	26.1983
125	7.0453	33.6167	26.3229
150	5.1991	33.4503	26.424
175	4.6258	33.4533	26.4904
200	3.979	33.4363	26.5444
250	3.731	33.4678	26.594
300	3.6256	33.5599	26.6776
327	3.7903	33.6375	26.7233

STATION US16360
LATITUDE 42-31.0 N
LONGITUD 140-37.8 E
DEPTH (m) 60

Press.	Temp.	Salinity	Sigma-T
5	22.9571	31.2359	21.0939
10	22.5995	31.591	21.4634
20	17.0108	32.322	23.4572
30	13.6862	33.1357	24.8111
40	10.9231	33.2446	25.4224
50	10.4214	33.5275	25.7304
55	9.4394	33.6453	25.9871

STATION US16361
LATITUDE 42-16.5 N
LONGITUD 140-36.0 E
DEPTH (m) 90

Press.	Temp.	Salinity	Sigma-T
5	22.7117	31.5544	21.4041
10	22.6471	31.5046	21.3846
20	20.5524	31.9586	22.2991
30	16.3827	32.755	23.9346
40	11.5735	32.9745	25.0952
50	9.2807	33.1479	25.6235
75	7.2481	33.6272	26.3032
85	6.4099	33.5491	26.3541

STATION US16362
LATITUDE 42-09.5 N
LONGITUD 140-36.3 E
DEPTH (m) 70

Press.	Temp.	Salinity	Sigma-T
5	22.6852	31.5532	21.4107
10	22.5118	31.5645	21.4679
20	19.5197	32.2057	22.7552
30	13.4982	32.811	24.5983
40	10.6236	32.9998	25.2842
50	8.765	33.1273	25.6884
60	7.8197	33.3253	25.9849

STATION US16363
LATITUDE 41-59.2 N
LONGITUD 141-02.0 E
DEPTH (m) 100

Press.	Temp.	Salinity	Sigma-T
5	22.1921	31.4793	21.4921
10	21.7264	31.8579	21.9074
20	17.398	33.2022	24.0406
30	14.7477	33.6757	25.0056
40	11.8322	33.641	25.5652
50	12.0463	33.9075	25.7318
75	10.2713	33.9138	26.0576
89	9.6224	33.8806	26.1409

STATION US16364
LATITUDE 41-58.7 N
LONGITUD 141-00.7 E
DEPTH (m) 93

Press.	Temp.	Salinity	Sigma-T
5	22.5217	31.4509	21.379
10	22.3918	31.5577	21.4961
20	18.1138	33.1638	23.8382
30	14.4899	33.6628	25.0507
40	12.9617	33.8745	25.5285
50	11.4732	33.8353	25.7826
75	9.7857	33.877	26.111
86	9.328	33.8746	26.1844

STATION US16365
LATITUDE 41-58.1 N
LONGITUD 140-59.5 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	22.4582	31.4737	21.414
10	22.3219	31.5223	21.4888
20	19.6105	33.0582	23.382
30	14.1682	33.1979	24.7598
40	12.994	33.89	25.5342
50	11.239	33.8917	25.8694
75	9.5745	33.8827	26.1505
80	8.869	33.8322	26.2243

STATION US16366
LATITUDE 41-57.4 N
LONGITUD 140-58.4 E
DEPTH (m) 78

Press.	Temp.	Salinity	Sigma-T
5	22.5217	31.5192	21.4307
10	22.3728	31.5789	21.5175
20	19.9733	32.4598	22.8318
30	14.1542	33.0405	24.6411
40	12.7424	33.8511	25.5537
50	11.0944	33.8988	25.9011
74	7.4758	33.6485	26.2881

STATION US16367
LATITUDE 41-28.7 N
LONGITUD 141-17.4 E
DEPTH (m) 226

Press.	Temp.	Salinity	Sigma-T
5	20.0934	33.5806	23.6549
10	19.3919	33.6671	23.9028
20	18.1424	33.9173	24.408
30	18.1321	34.0458	24.5089
40	18.0461	34.059	24.5401
50	17.8319	34.07	24.6009
75	14.4332	34.0984	25.399
100	13.093	34.1678	25.7296
125	12.938	34.1687	25.7612
150	12.3955	34.1646	25.8645
175	11.1607	34.1528	26.0867
200	10.7234	34.1422	26.1568
207	10.6994	34.1465	26.1644

STATION US16368
LATITUDE 41-36.1 N
LONGITUD 140-53.7 E
DEPTH (m) 85

Press.	Temp.	Salinity	Sigma-T
5	23.7166	33.8757	22.8736
10	23.1539	33.8665	23.0298
20	19.8084	34.0002	24.0494
30	18.0283	34.0901	24.5683
40	17.8353	34.1193	24.6379
50	17.4405	34.1326	24.7436
74	15.93	34.1158	25.0839

STATION US16369
LATITUDE 41-37.3 N
LONGITUD 140-51.2 E
DEPTH (m) 102

Press.	Temp.	Salinity	Sigma-T
5	23.5393	33.9213	22.9599
10	23.4428	33.9342	22.9977
20	20.214	34.0757	24.0005
30	16.4366	34.162	25.0029
40	16.2365	34.1928	25.0726
50	14.1032	34.171	25.5248
75	12.3499	34.175	25.8813
95	12.0016	34.1983	25.9661

STATION US16370
LATITUDE 41-38.8 N
LONGITUD 140-49.5 E
DEPTH (m) 337

Press.	Temp.	Salinity	Sigma-T
5	21.8687	33.9412	23.45
10	20.6132	34.0109	23.8451
20	17.2985	34.1929	24.8238
30	16.516	34.2536	25.0548
40	16.3953	34.2788	25.1022
50	16.0277	34.2721	25.1814
75	12.9526	34.2182	25.7966
100	11.3021	34.1754	26.0786
125	10.6572	34.1577	26.1806
150	10.1284	34.1451	26.2625
175	10.0118	34.1346	26.2741
200	9.2312	34.1044	26.3797
250	9.0375	34.1129	26.4175
261	9.0527	34.1112	26.4137

STATION US16371
LATITUDE 41-40.8 N
LONGITUD 140-47.3 E
DEPTH (m) 221

Press.	Temp.	Salinity	Sigma-T
5	22.8293	33.9283	23.1699
10	22.5461	33.9019	23.2303
20	21.2031	33.9496	23.6393
30	19.4157	33.9488	24.1114
40	17.3127	34.0028	24.6746
50	15.0429	34.0419	25.2239
75	11.5762	34.0979	25.9679
100	9.706	34.1088	26.3054
125	9.4706	34.1266	26.3582
150	9.4707	34.1287	26.3598
175	9.3171	34.1235	26.3808
193	9.1782	34.1197	26.4003

STATION US16372
LATITUDE 41-42.9 N
LONGITUD 140-45.1 E
DEPTH (m) 83

Press.	Temp.	Salinity	Sigma-T
5	23.0241	33.9449	23.1267
10	22.9626	33.9485	23.147
20	22.1826	33.9595	23.3764
30	19.5836	34.0459	24.1426
40	16.0072	34.015	24.988
50	12.8083	34.0981	25.7321
75	10.8021	34.1457	26.1456
78	10.8013	34.1494	26.1486

STATION US16373
LATITUDE 41-44.5 N
LONGITUD 140-45.2 E
DEPTH (m) 56

Press.	Temp.	Salinity	Sigma-T
5	23.2181	33.8759	23.0186
10	23.1898	33.8747	23.0259
20	23.0712	33.8543	23.0445
30	20.6949	33.8462	23.6978
40	17.8046	33.9753	24.5349
50	15.2987	34.0948	25.2085
52	15.1	34.1301	25.2794