



Title	3.THE "OSHORO MARU" CRUISE 025 to THE WESTERN NORTH PACIFIC OCEAN in MAY 2016
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**THE "OSHORO MARU" CRUISE 025
TO THE WESTERN NORTH PACIFIC OCEAN
IN MAY 2016**

2. Cruise Itinerary

Cruise 025

Departure from Hakodate	May. 12, 2016
Start of oceanographic research	14
Start of long-line research (OSSL1601) and gillnet research (OSG1601)	15
End of long-line research (OSSL1603)	16
End of gillnet research (OSG1603)	19
End of oceanographic research	20
Return to Hakodate	23

Total coverage 1886.4miles

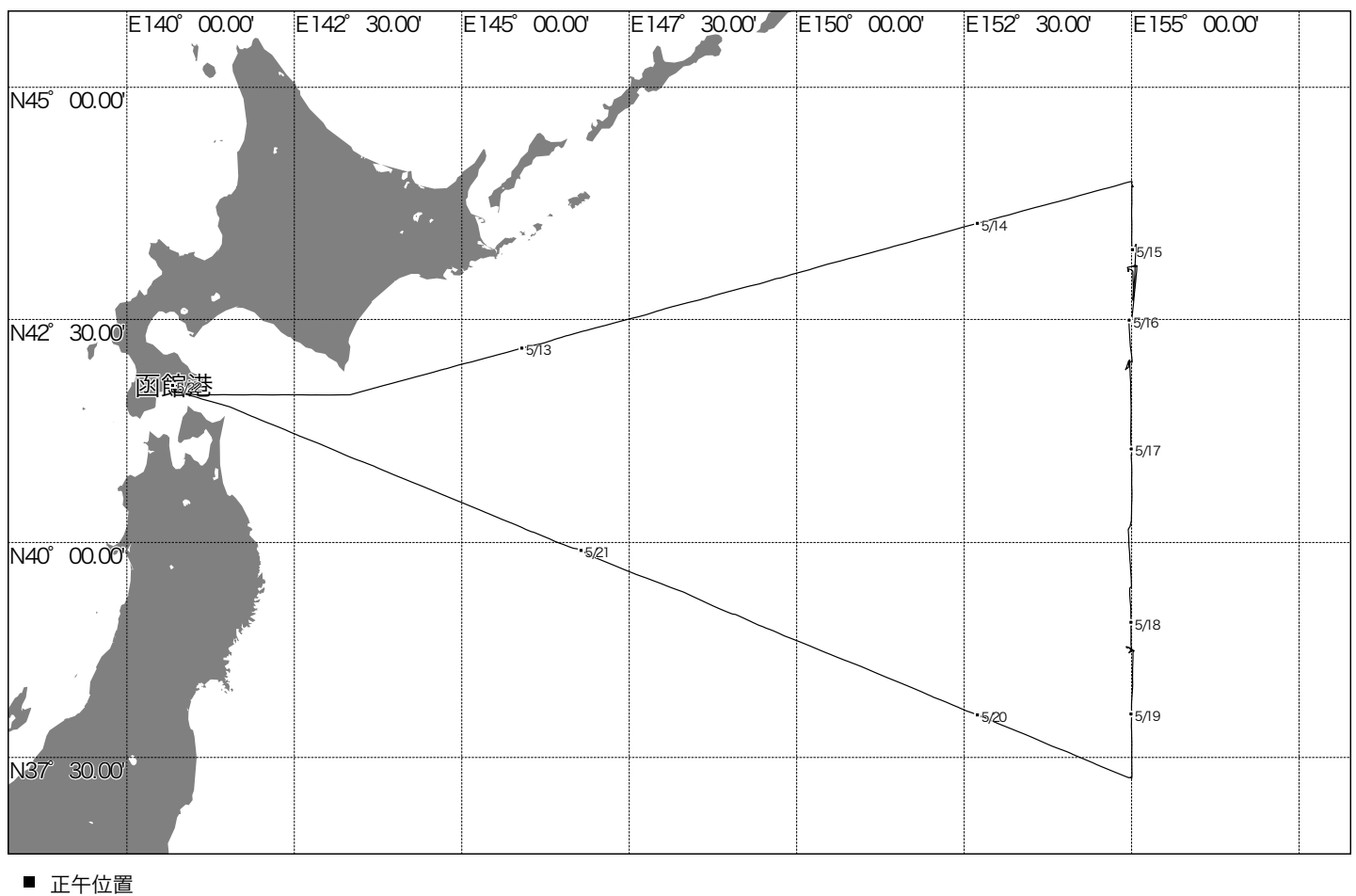


Fig.1: Noon Position

2. Vessel Personnel

Crew: Captain: Associate Professor Shogo Takagi
And 32 persons

Under Graduate instructor: Associate Professor (Laboratory of Strategic on Marine Bioresource Conservation and Management, Hokkaido University) Hideaki Kudo

Teaching Assistant: 2 persons

Under Graduate Student: 53 persons

Research stuff: Associate Professor (Laboratory of Marine Biodiversity, Hokkaido University) Atsushi Yamaguchi

Associate Professor (Laboratory of Marine Environmental Science, Hokkaido University)

Atsuchi Ooki

Associate Professor (Laboratory of Marine Bioresource Science, Hokkaido University)

Orio Yamamura

Under Graduate Student: 3 persons

3. Items of Research

Biological research for fishes caught by non-selective drift gillnets, surface longline and Hook-and-Line:

Gillnet, surface longline and Hook-and-Line researches were performed during this cruise. The operations were supervised by the captain, and were conducted by deck officers, crews, research staff and cadets.

Fig.2 Table 1,2,3,4

Hydrographic observations: (Observation of Temperature, Salinity, and Computed Dynamic Depth Anomaly)

Hydrographic work on deck and the data processing were made by Science officer, the deck officers, crews, research staff and cadets of the “*Oshoromaru*”.

Temperature and salinity were measured by CTD (Seabird SBE-9).

Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”.

Water and Plankton sampling were also carried out at almost every hydrographic stations.

Fig.2 Table 5,6

4. Result of Gillnet and Longline Research

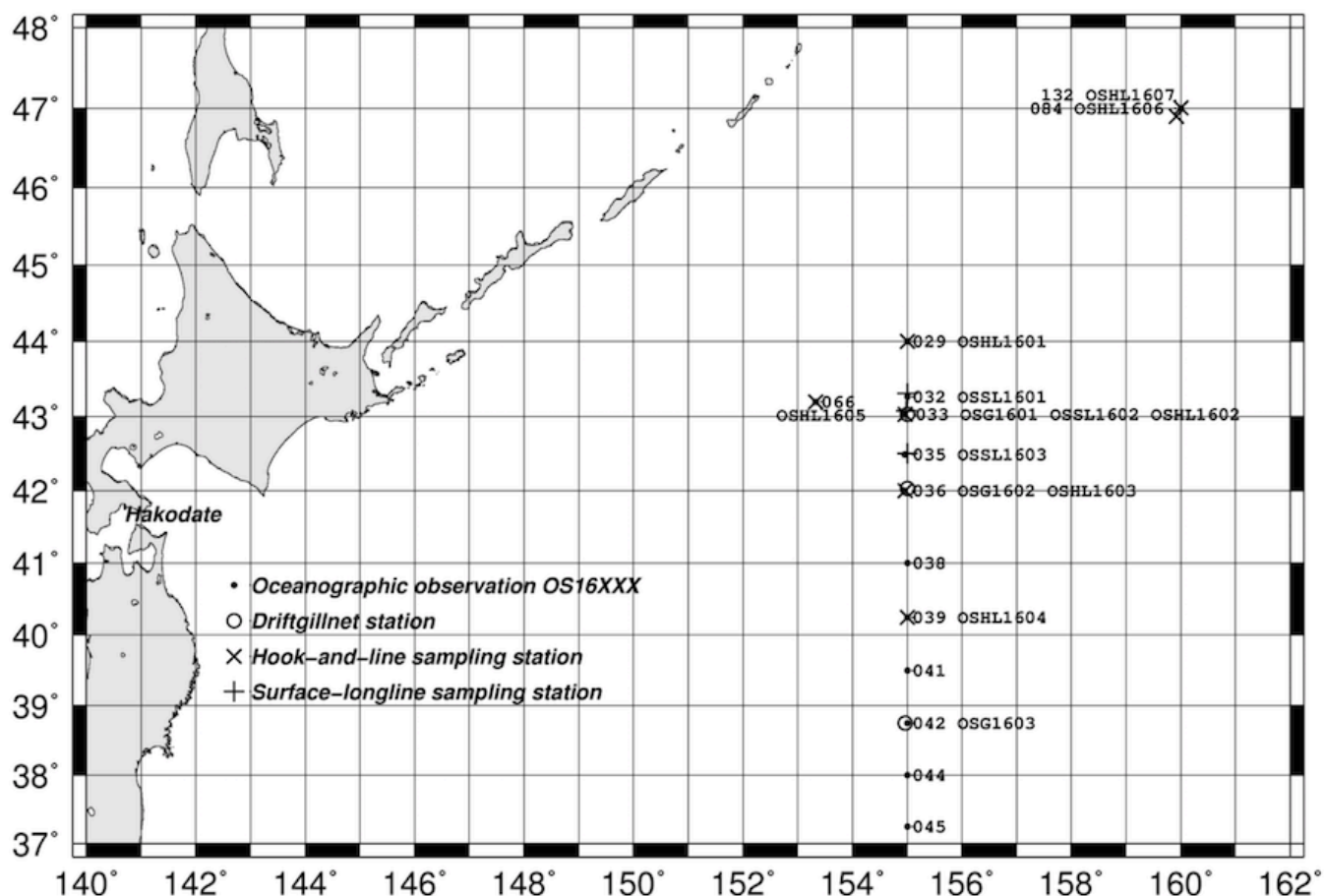


Fig.2: research stations

Table 1. Position and research conditions of surface drift gillnet sampling at each station during the *Oshoro maru* Cruise #025, 2016.

Station	Date and Time (S.M.T.*1)				T.D.*2	Set Position		D.S.*3	bottom depth(m)	Wr*4	Wind (Force)	S.T.*5 (°C)
	Net set		Net haul			Lat.	Long.					
OSG 1601	May 15	1939-2000	May 16	0533-0647	+10h	43-01.9N	155-00.7 E	290	5345	o	East-4	7.4
OSG 1602	May 16	1903-1925	May 17	0453-0553	+10h	42-01.7N	154-59.6 E	290	5400	o	SE-4	7.6
OSG 1603	May 18	1812-1832	May 19	0458-0620	+10h	38-44.7N	154-57.6 E	215	5740	bc	SSE-5	14.4

Table 2. Position and research conditions of surface drift gillnet sampling at each station during the *Oshoro maru* Cruise #025, 2016.

Station	Date and Time (S.M.T.*1)				T.D.*2	Set Position		D.S.*3	Number of baskets	bottom depth(m)	Wr*4	Wind (Force)	S.T.*5 (°C)
	Line set		Line haul			Lat.	Long.						
OSSL1601	May 15	1023-1040	May 15	1356-1450	+10h	43-18.7N	155-00.1N	180	20	5445	f	ENE-3	5
OSSL1602	May 16	0440-0505	May 16	0726-0845	+10h	43-04.5N	154-58.6E	80	30	5353	c	ENE-4	7.3
OSSL1603	May 16	1222-1240	May 16	1534-1615	+10h	42-30.5N	155-00.2E	270	20	5140	o	East-5	8.2

*1 S.M.T. : Ship's Mean Time.

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of net or line set.

*4 Wr. : Weather (bc:25-74%clouded, c: 75-99% clouded, o: 100% clouded, f: fog).

*5 S.T. : Surface temperature

Table 3. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 025, in May, 2016. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name		Scientific name	Station	OSG 1601				OSG 1602				OSG 1603				
				Gear	C		A	Total	C		A	Total	C		A	Total
					CPUE	(%)			CPUE	(%)			CPUE	(%)		
Sockeye salmon	<i>Oncorhynchus nerka</i>	1	0.0	(0.5)	0	1	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0
Chum salmon	<i>Oncorhynchus keta</i>	1	0.0	(0.5)	2	3	12	0.4	(4.7)	17	29	0	0.0	(0.0)	0	0
Pink salmon	<i>Oncorhynchus gorbuscha</i>	204	6.8	(96.2)	0	204	234	7.8	(91.4)	1	235	0	0.0	(0.0)	0	0
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0	(0.0)	0	0	2	0.1	(0.8)	0	2	0	0.0	(0.0)	0	0
Tufted Puffin	<i>Fratercula cirrhata</i>	0	0.0	(0.0)	0	0	1	0.0	(0.4)	0	1	0	0.0	(0.0)	0	0
Boreal clubhook squid	<i>Onychoteuthis borealijaponica</i>	4	0.1	(1.9)	0	4	5	0.2	(2.0)	0	5	2	0.1	(1.0)	0	2
Boreopacific gonate squid	<i>Gonatopsis borealis</i>	2	0.067	(0.9)	0	2	1	0.0	(0.4)	0	1	0	0.0	(0.0)	0	0
Horned puffin	<i>Fratercula corniculata</i>	0	0.0	(0.0)	0	0	1	0.033	(0.4)	0	1	0	0.0	(0.0)	0	0
Neon flying squid	<i>Ommastrephes bartramii</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	11	0.367	(5.7)	14	25
Pacific pomfret	<i>Brama japonica</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	172	5.733	(89.6)	109	281
Albacore tuna	<i>Thunnus alalunga</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	0	0	(0.0)	1	1
Blue shark	<i>Prionace glauca</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	6	0.2	(3.1)	2	8
Shortfin mako shark	<i>Isurus oxyrinchus</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	0	0	(0.0)	1	1
Salmon shark	<i>Lamna ditropis</i>	0	0.0	(0.0)	0	0	0	0	(0.0)	0	0	1	0.033	(0.5)	0	1

Table 4. The catch number of each salmonid at each station where salmonids were collected by hook-and-line gear, surface longline in the Oshoro maru Cruise # 025, 2016.

Station Name	Sampling gear	Species name									Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	D.immutabilis	B.J.Hilgendorf	Scomber	
Cruise #025											
OSSL 1601	Surface longline	0	8	23	0	0	0	0	0	0	31
OSSL 1602	Surface longline	0	4	159	0	0	0	2	0	0	165
OSSL 1603	Surface longline	0	1	17	0	0	0	0	0	0	18
OSHL 1601	Hook-and-line	0	1	9	0	0	0	0	0	0	10
OSHL 1602	Hook-and-line	0	2	100	0	0	0	0	0	0	102
OSHL 1603	Hook-and-line	0	0	226	0	0	0	0	0	0	226
OSHL 1604	Hook-and-line	0	0	3	0	0	0	0	3	4	10

Table 5. List of oceanographic station during the Oshoro maru Cruise #025, 2016.

Station	Date and Time (S.M.T.*1)	T.D.*2	Set Position		Remark CTD	CTD depth(db)
			Lat.	Long.		
Cruise #025						
OS 16029	May 14	2000	+9h	43-59.9N	155-00.2E	Sea-Bird SBE 9 5300
OS 16032	May 15	1055	+10h	43-16.0N	155-00.3E	Sea-Bird SBE 9 5500
OS 16033	May 15	2100	+10h	43-01.7N	154-57.3E	Sea-Bird SBE 9 5300
OS 16035	May 16	1302	+10h	42-29.6N	154-57.7E	Sea-Bird SBE 9 5200
OS 16036	May 16	2027	+10h	41-59.5N	154-57.8E	Sea-Bird SBE 9 5400
OS 16038	May 17	1333	+10h	41-00.0N	155-00.2E	Sea-Bird SBE 9 5500
OS 16039	May 17	2038	+10h	40-14.9N	154-59.8E	Sea-Bird SBE 9 5500
OS 16041	May 18	0810	+10h	39-29.9N	154-59.9E	Sea-Bird SBE 9 5600
OS 16042	May 18	1533	+10h	38-45.0N	155-00.0E	Sea-Bird SBE 9 5700
OS 16044	May 19	1204	+10h	38-00.2N	154-59.9E	Sea-Bird SBE 9 6000
OS 16045	May 19	1922	+10h	37-15.0N	155-00.0E	Sea-Bird SBE 9 5700

Table 6. Oceanographic data

STATION OS16029				STATION OS16032				STATION OS16033			
LATITUDE		43-59.8	N	LATITUDE		43-15.9	N	LATITUDE		43-01.7	N
LONGITUDE		155-00.2	E	LONGITUDE		155-00.3	E	LONGITUDE		154-57.3	E
DEPTH (m)		5300		DEPTH (m)		5500		DEPTH (m)		5300	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	3.9084	33.0129	26.2147	5	4.9942	33.0621	26.1397	5	7.5456	33.6118	26.2494
10	3.6221	33.0066	26.2373	10	4.9641	33.0636	26.1442	10	7.5478	33.6116	26.2489
20	3.5745	33.0054	26.2409	20	4.7951	33.0535	26.1549	20	7.2216	33.5788	26.2689
30	3.5687	33.0081	26.2436	30	4.5042	33.0296	26.1671	30	7.0884	33.5777	26.2858
40	3.5577	33.007	26.2438	40	4.5893	33.0552	26.1785	40	7.1095	33.5839	26.2883
50	3.5446	33.0063	26.2444	50	4.566	33.0974	26.2144	50	7.1424	33.5922	26.2904
75	3.3634	33.0093	26.2636	75	4.7542	33.2792	26.3383	75	7.2382	33.6227	26.3011
100	3.0182	33.0632	26.3376	100	5.062	33.3831	26.3865	100	7.0673	33.6253	26.3267
125	3.5846	33.4017	26.5555	125	3.1179	33.3066	26.5229	125	5.2837	33.4893	26.4452
150	3.4628	33.4814	26.6306	150	3.4905	33.4049	26.567	150	3.4174	33.3248	26.51
175	3.0416	33.5336	26.7109	175	4.0629	33.5401	26.6185	175	3.1359	33.3314	26.5411
200	2.9084	33.5739	26.7547	200	3.4843	33.5156	26.6558	200	3.2492	33.4145	26.5971
250	3.0205	33.6839	26.8327	250	4.1778	33.7417	26.767	250	5.1946	33.8192	26.7168
300	3.236	33.8272	26.9274	300	4.4142	33.874	26.8472	300	4.3884	33.8154	26.8034
400	3.4751	34.028	27.065	400	4.5124	34.0642	26.9877	400	3.7114	33.9075	26.946
500	3.386	34.1264	27.1519	500	3.8026	34.1032	27.0928	500	3.9779	34.0791	27.0559
600	3.2363	34.2114	27.2338	600	3.436	34.1597	27.1737	600	3.8273	34.1715	27.1447
700	3.1716	34.2839	27.2977	700	3.2323	34.2355	27.2534	700	3.3978	34.2085	27.2162
800	3.0112	34.3232	27.3438	800	3.1467	34.3039	27.316	800	3.205	34.2816	27.2927
900	2.8685	34.3783	27.4007	900	2.9612	34.3502	27.3699	900	3.1679	34.3521	27.3525
1000	2.6319	34.4041	27.4421	1000	2.8244	34.3875	27.4119	1000	2.8812	34.3736	27.3957
1200	2.4211	34.4594	27.5043	1200	2.4969	34.4437	27.4853	1200	2.5881	34.4418	27.476
1500	2.1742	34.5286	27.58	1500	2.2377	34.5126	27.562	1500	2.2749	34.5056	27.5534
2000	1.845	34.603	27.6657					2000	1.9461	34.5912	27.6484
2500	1.6425	34.6444	27.7143					2500	1.7039	34.6359	27.7028
3000	1.528	34.6654	27.7396					3000	1.5586	34.6612	27.734
3500	1.4727	34.6772	27.7531								
4000	1.4592	34.6843	27.7598								
4500	1.4725	34.6888	27.7625								
5000	1.5154	34.6906	27.7607								

STATION OS16035				STATION OS16036				STATION OS16038			
LATITUDE		42-29.6	N	LATITUDE		41-59.5	N	LATITUDE		41-00.0	N
LONGITUDE		154-57.7	E	LONGITUDE		154-57.8	E	LONGITUDE		155-00.0	E
DEPTH (m)		5200		DEPTH (m)		5400		DEPTH (m)		5500	
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	7.5188	33.6202	26.2598	5	7.7017	33.6265	26.2386	10	12.2065	34.2348	25.9553
10	7.5174	33.6204	26.2601	10	7.6959	33.6266	26.2395	20	12.1617	34.239	25.9672
20	8.0393	33.8221	26.343	20	7.3963	33.6267	26.2822	30	12.1114	34.2401	25.9777
30	8.0574	33.828	26.3449	30	7.2652	33.6295	26.3027	40	12.0372	34.2306	25.9844
40	8.3036	33.885	26.3528	40	7.2478	33.6298	26.3054	50	11.716	34.183	26.008
50	8.2774	33.8827	26.355	50	7.1261	33.6388	26.3293	75	9.9801	34.0148	26.186
75	8.2785	33.8891	26.3598	75	6.6961	33.6667	26.4094	100	9.9426	34.1418	26.2915
100	8.0653	33.8845	26.3881	100	6.7065	33.6696	26.4103	125	8.5935	33.9232	26.3385
125	7.4994	33.8122	26.4135	125	6.7303	33.6759	26.4121	150	8.0176	33.8896	26.3991
150	7.0848	33.7732	26.4407	150	6.1128	33.6847	26.4992	175	5.4745	33.5407	26.4634
175	6.5236	33.7142	26.4696	175	4.6108	33.6093	26.6158	200	3.8224	33.3674	26.5052
200	5.8137	33.6867	26.538	200	4.0447	33.6261	26.6887	250	5.756	33.7429	26.5895
250	5.312	33.7064	26.6138	250	3.1599	33.6491	26.7924	300	4.0489	33.607	26.6731
300	5.3019	33.8315	26.714	300	3.2064	33.7432	26.8631	400	3.7829	33.754	26.8168
400	4.4803	33.9274	26.8825	400	3.7696	33.9736	26.9929	500	3.9557	33.9842	26.9826
500	3.7308	33.9869	27.0073	500	3.532	34.0766	27.0982	600	4.1799	34.1776	27.1132
600	3.5651	34.083	27.1001	600	3.6076	34.1903	27.1815	700	3.5536	34.1878	27.1847
700	3.4869	34.193	27.1953	700	3.4611	34.2776	27.2652	800	3.3342	34.2613	27.2644
800	3.3245	34.2669	27.2698	800	3.2527	34.3238	27.3219	900	3.1086	34.309	27.3235
900	3.1599	34.3151	27.3236	900	3.0203	34.3597	27.3721	1000	2.9685	34.355	27.373
1000	2.9709	34.3554	27.3731	1000	2.8509	34.3862	27.4085	1200	2.6623	34.4266	27.4574
1200	2.7091	34.4217	27.4494	1200	2.5701	34.4557	27.4887	1500	2.3207	34.5082	27.5517
1500	2.372	34.4992	27.5403	1500	2.2803	34.5175	27.5625				
				2000	1.954	34.5919	27.6483				
				2500	1.7065	34.6362	27.7029				
				3000	1.5775	34.6592	27.731				

STATION OS16039			
LATITUDE 40-14.9 N			
LONGITUDE 154-59.8 E			
DEPTH (m) 5500			
Press.	Temp.	Salinity	Sigma-T
5	13.0144	34.3855	25.9139
10	13.0162	34.3853	25.9134
20	13.0016	34.385	25.9161
30	12.9643	34.384	25.9228
40	12.7479	34.3733	25.9574
50	12.4751	34.3456	25.9894
75	12.1615	34.3515	26.0546
100	10.9639	34.2573	26.2036
125	10.3113	34.1914	26.2672
150	9.3883	34.0538	26.3147
175	8.6989	33.9611	26.3519
200	8.0354	33.8902	26.397
250	4.397	33.4325	26.4984
300	5.4947	33.6993	26.5866
400	5.7881	33.9612	26.7581
500	4.9563	34.0492	26.9264
600	4.3294	34.1029	27.0381
700	3.9394	34.1892	27.1473
800	3.6536	34.2542	27.2278
900	3.4123	34.3209	27.3045
1000	3.053	34.3499	27.3612
1200	2.7251	34.4169	27.4442
1500	2.3791	34.4928	27.5345
2000	1.9927	34.5849	27.6397
2500	1.7455	34.6309	27.6957
3000	1.5986	34.6569	27.7276

STATION OS16041			
LATITUDE 38-45.0 N			
LONGITUDE 155-00.0 E			
DEPTH (m) 5600			
Press.	Temp.	Salinity	Sigma-T
5	11.1669	34.0266	25.9875
10	11.1109	34.0248	25.9962
20	10.9515	34.0256	26.0254
30	10.6486	34.0304	26.0829
40	10.4303	34.0185	26.1118
50	10.26	34.0059	26.1313
75	9.7514	33.9895	26.2046
100	8.7822	33.9388	26.3215
125	8.5463	33.944	26.3621
150	8.5139	33.9493	26.3712
175	7.804	33.8351	26.3877
200	7.1727	33.7595	26.4179
250	5.9572	33.6827	26.5171
300	5.1686	33.6732	26.6041
400	4.5277	33.811	26.785
500	4.0544	33.9072	26.9113
600	3.7905	34.0369	27.0412
700	3.6627	34.1572	27.1496
800	3.6025	34.2503	27.2297
900	3.2694	34.3046	27.305
1000	3.0402	34.3531	27.365
1200	2.7217	34.4213	27.448
1500	2.3699	34.5045	27.5447

STATION OS16042			
LATITUDE 41-00.0 N			
LONGITUDE 155-00.0 E			
DEPTH (m) 5700			
Press.	Temp.	Salinity	Sigma-T
5	14.3595	34.4165	25.6603
10	14.3497	34.4161	25.662
20	12.9512	34.3257	25.8801
30	11.9701	34.2912	26.0442
40	11.714	34.2753	26.0801
50	11.5719	34.3215	26.1425
75	10.9786	34.3051	26.2382
100	10.9235	34.3038	26.2471
125	10.8738	34.2969	26.2507
150	10.698	34.2754	26.2651
175	10.4835	34.2485	26.2819
200	10.3224	34.2244	26.291
250	8.9387	34.0298	26.3681
300	7.6106	33.9027	26.4688
400	6.1017	33.9942	26.745
500	4.9926	34.0479	26.9212
600	4.4707	34.1394	27.0519
700	4.3291	34.2505	27.1554
800	3.7605	34.2882	27.2442
900	3.4402	34.3348	27.3128
1000	3.1986	34.3704	27.3642
1200	2.7964	34.4426	27.4584
1500	2.4114	34.5084	27.5443
2000	1.9773	34.5898	27.6448
2500	1.7153	34.6347	27.701
3000	1.5712	34.66	27.7321

STATION OS16044			
LATITUDE 38-00.2 N			
LONGITUDE 154-59.9 E			
DEPTH (m) 6000			
Press.	Temp.	Salinity	Sigma-T
5	17.2854	34.6727	25.195
10	17.287	34.673	25.1948
20	17.2714	34.6733	25.1988
30	17.094	34.6745	25.2421
40	16.1323	34.6483	25.4468
50	15.6026	34.6263	25.5501
75	14.5492	34.5597	25.7302
100	13.5773	34.485	25.8768
125	12.8829	34.4405	25.9827
150	12.1796	34.3721	26.0671
175	11.4927	34.3055	26.1447
200	10.7224	34.2326	26.2274
250	8.2378	33.9298	26.3979
300	8.0757	34.0643	26.5277
400	6.6687	34.0617	26.7245
500	4.7566	34.0122	26.9196
600	4.5228	34.1522	27.0564
700	4.0984	34.2244	27.159
800	3.6858	34.2962	27.2581
900	3.4111	34.3416	27.321
1000	3.1753	34.393	27.3844
1200	2.7362	34.4507	27.4703
1500	2.3531	34.5178	27.5567

STATION OS16045			
LATITUDE 37-15.0 N			
LONGITUDE 155-00.0 E			
DEPTH (m) 5700			
Press.	Temp.	Salinity	Sigma-T
5	18.0883	34.7379	25.0495
10	18.0828	34.738	25.051
20	16.5684	34.6838	25.3731
30	16.3045	34.6818	25.4329
40	15.9618	34.6587	25.4938
50	15.3546	34.6299	25.6083
75	14.6204	34.5798	25.7304
100	13.4374	34.4798	25.9014
125	12.5517	34.3892	26.0083
150	11.7568	34.3302	26.1148
175	10.7226	34.2153	26.2139
200	9.9747	34.1304	26.2772
250	8.2699	33.9198	26.3852
300	5.1116	33.542	26.5067
400	6.652	34.079	26.7403
500	5.0828	34.0556	26.917
600	4.8613	34.202	27.0584
700	4.0325	34.2359	27.175
800	3.7638	34.2948	27.2492
900	3.4318	34.345	27.3218
1000	3.164	34.3803	27.3753
1200	2.7793	34.4464	27.463
1500	2.365	34.5144	27.553
2000	1.9454	34.5949	27.6514
2500	1.7091	34.6374	27.7037
3000	1.5819	34.6599	27.7312