HOKKAIDO UNIVERSITY

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THE “OSHORO MARU” CRUISE 194
TO WATERS EAST OF HONSHU AND TO THE OGASAWARA ISLANDS

IN OCTOBER-NOVEMBER 2008

1. Cruise Itinerary

Cruise 194

Departure from Hakodate	Oct.	19	, 2008
Start Tuna Long-line research (OSL0801)		23	
Start hydrographic research (OS08193)		23	
Finish Tuna Long-line research (OSL0803)		25	
Arrival at Futami		26	
Departure from Futami		29	
Finish hydrographic research (OS08210)		31	
Return to Hakodate	Nov.	2	

Total coverage 1844.1miles

2. Vessel Personnel

Captain:		Professor	Toshimi Meguro
Crew :	Chief Officer	Associated Professor	Yoshiyuki Kajiwara
	First Officer	Associated Professor	Shogo Takagi
	Second Officer	Instructor	Yoshihiko Kamei
	Jr. Second Officer	Instructor	Keiichiro Sakaoka
	Chief Engineer	Instructor	Junichi Kimura
	And 24 men		

Cruise 194

Research Staff:	Instructor	(Laboratory of Marine Environmental Science) Hiroji Onishi
Guest Scientist:	Post Doctor	(Department of Earth and Planetary Science, University of Tokyo) Maki Nagasawa

Teaching Assistant:	3 Persons
Graduate Students:	1 Person
Under Graduate Students:	29 Persons

Total 65 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2
Tuna long-line research	Fig. 3	Table 3

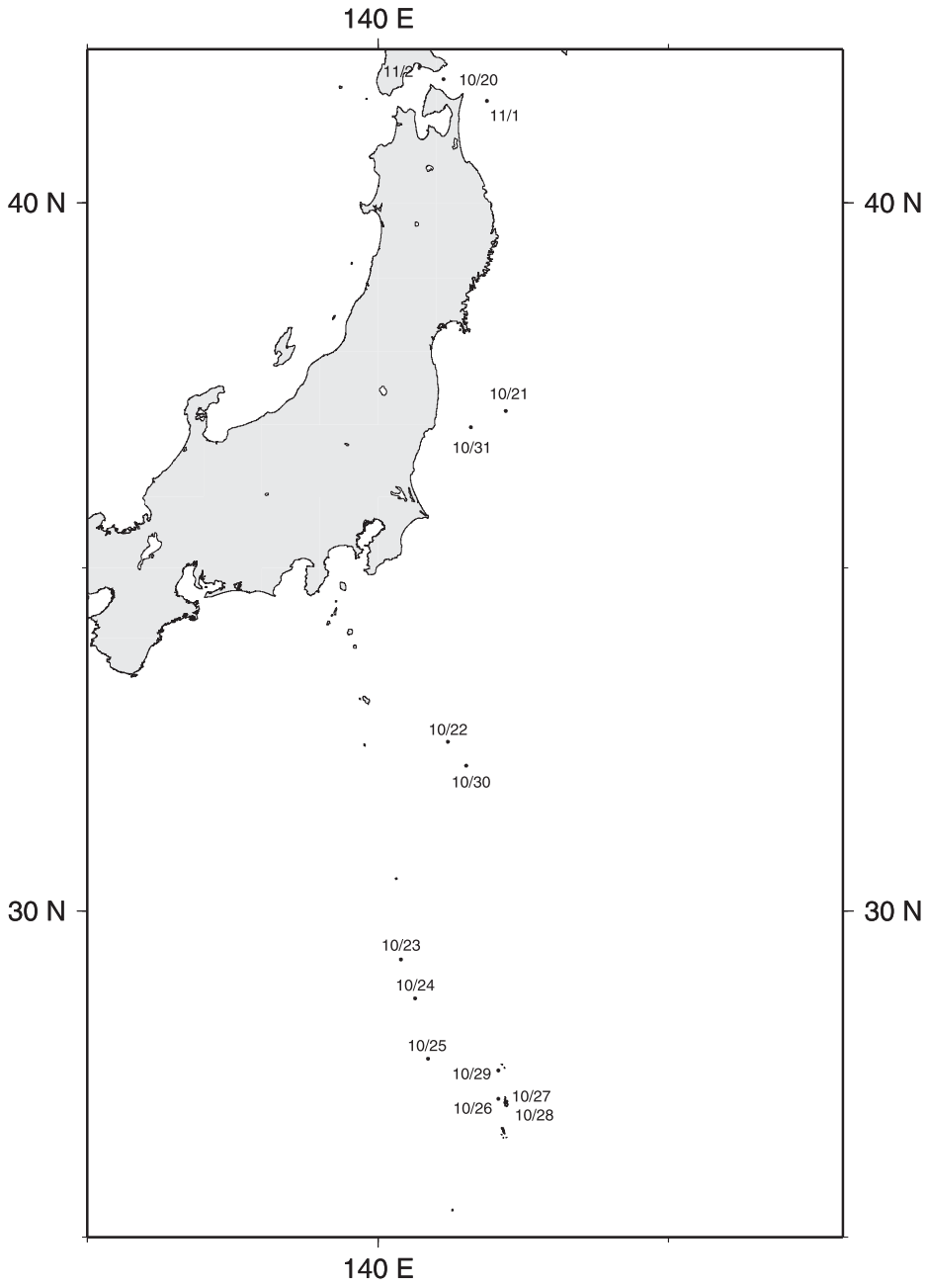

Figure 1: Noon position

4. 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 “Oshoro Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

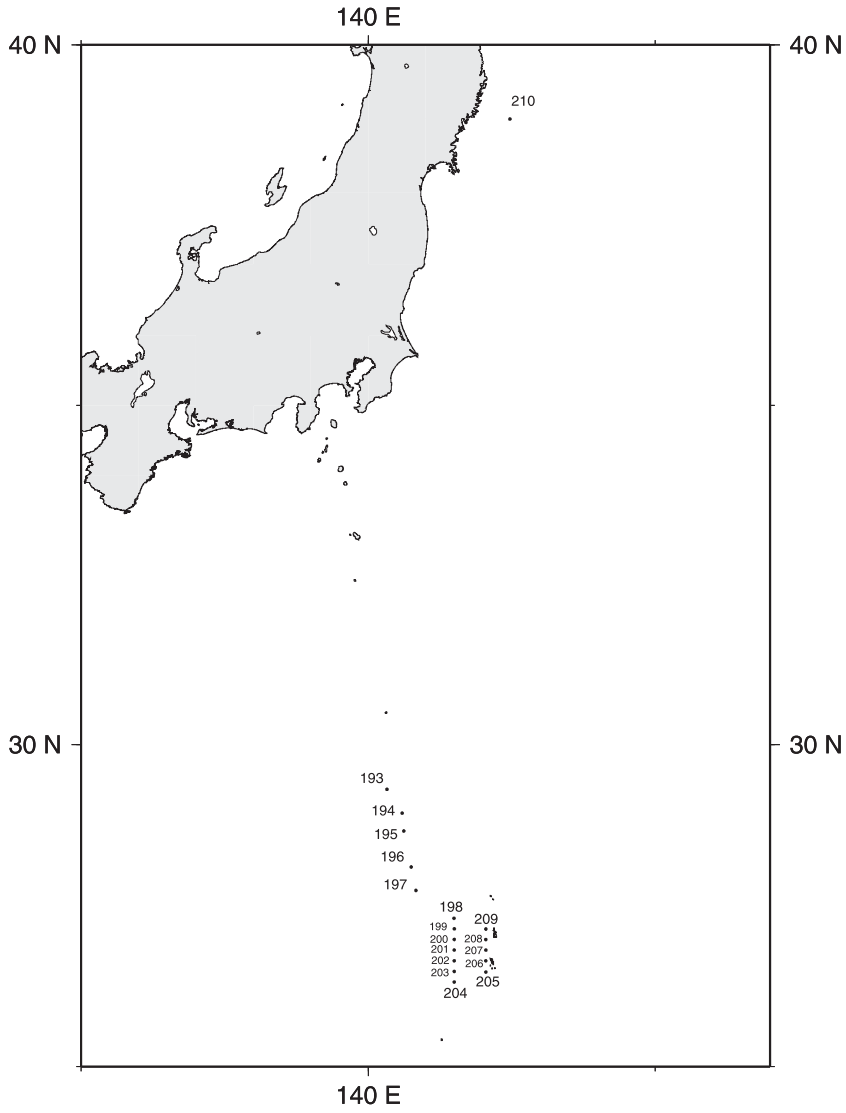

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS08193	29-19.1N	140-19.6E	10/23	0915	9	2910	3	22.4	26.5	o	SBE-9plus
OS08194	28-57.2N	140-35.6E	10/23	1630	9	3445	3	22.2	26.7	bc	SBE-9plus
OS08195	28-40.8N	140-37.2E	10/24	0807	9	2905	3	23.7	26.8	bc	SBE-9plus
OS08196	28-07.5N	140-45.0E	10/24	1730	9	2748	-	-	27.4	bc	SBE-9plus
OS08197	27-45.8N	140-49.9E	10/25	0800	9	2555	2	33.1	27.6	c	SBE-9plus
OS08198	27-19.9N	141-29.7E	10/25	1813	9	4055	-	-	27.4	bc	SBE-9plus
OS08199	27-10.0N	141-30.1E	10/25	2051	9	4004	-	-	27.1	bc	XBT
OS08200	27-00.1N	141-30.0E	10/25	2137	9	3916	-	-	27	bc	XBT
OS08201	26-50.1N	141-30.0E	10/25	2226	9	3747	-	-	27	bc	XCTD
OS08202	26-40.0N	141-30.0E	10/25	2330	9	3643	-	-	27	bc	XBT
OS08203	26-30.0N	141-30.0E	10/26	0025	9	3560	-	-	27.1	bc	XBT
OS08204	26-20.1N	141-30.0E	10/26	0121	9	3488	-	-	27.1	bc	XCTD
OS08205	26-29.5N	142-03.0E	10/26	0710	9	1315	-	-	26.8	bc	XCTD
OS08206	26-40.0N	142-03.0E	10/26	0816	9	789	-	-	27.1	bc	XBT
OS08207	26-50.0N	142-03.1E	10/26	0918	9	190	3	44.1	27.7	bc	SBE-9plus
OS08208	27-00.0N	142-03.0E	10/26	1043	9	890	-	-	27	bc	XBT
OS08209	27-09.8N	142-03.0E	10/26	1145	9	889	-	-	27.1	bc	XCTD
OS08210	39-00.1N	142-28.1E	10/31	2238	9	1155	-	-	15.6	-	SBE-9plus

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS08193
Longitude	29-19.1N
Latitude	140-19.6E
Depth(m)	2910

Press.	Temp.	Sal.	SIG-T
5	26.596	33.952	22.058
10	26.590	33.952	22.060
20	26.593	33.954	22.061
30	26.595	33.954	22.060
40	26.597	33.958	22.063
50	26.500	34.137	22.228
75	24.053	34.625	23.343
100	22.298	34.728	23.929
125	20.799	34.759	24.366
150	19.640	34.794	24.700
200	18.354	34.785	25.021
250	17.803	34.779	25.152
300	16.946	34.736	25.326
400	15.231	34.612	25.623
500	11.659	34.364	26.160

Station	OS08194
Longitude	28-57.2N
Latitude	140-35.6E
Depth(m)	3445

Press.	Temp.	Sal.	SIG-T
5	26.851	34.035	22.040
10	26.851	34.034	22.040
20	26.846	34.035	22.042
30	26.854	34.035	22.039
40	26.860	34.036	22.038
50	26.868	34.040	22.039
75	26.516	34.066	22.169
100	25.090	34.548	22.975
125	22.575	34.678	23.813
150	20.607	34.751	24.412
200	18.591	34.800	24.973
250	17.730	34.776	25.168
300	16.582	34.708	25.389
400	14.084	34.537	25.813
500	9.931	34.310	26.425
600	7.330	34.246	26.779
700	5.909	34.258	26.978
800	4.840	34.253	27.101
900	4.059	34.310	27.231
1000	3.526	34.368	27.331
1200	2.949	34.453	27.453
1500	2.353	34.532	27.568
2000	1.838	34.613	27.674

Station	OS08195
Longitude	28-40.8N
Latitude	140-37.2E
Depth(m)	2905

Press.	Temp.	Sal.	SIG-T
5	26.642	33.918	22.018
10	26.642	33.917	22.018
20	26.642	33.917	22.018
30	26.645	33.917	22.017
40	26.653	33.922	22.018
50	26.650	33.920	22.018
75	26.099	34.363	22.524
100	24.254	34.615	23.277
125	23.257	34.679	23.618
150	21.888	34.716	24.035
200	19.681	34.779	24.678
250	18.717	34.775	24.922
300	16.123	34.664	25.462
400	12.739	34.456	26.024
500	10.314	34.319	26.366

Station	OS08196
Longitude	28-07.5N
Latitude	140-45.0E
Depth(m)	2748

Press.	Temp.	Sal.	SIG-T
5	27.341	34.465	22.208
10	27.343	34.465	22.207
20	27.276	34.457	22.223
30	27.251	34.452	22.227
40	26.770	34.518	22.430
50	24.278	34.728	23.354
75	22.411	34.764	23.924
100	20.083	34.814	24.599
125	19.176	34.818	24.839
150	18.675	34.811	24.960
200	17.862	34.784	25.142
250	17.281	34.760	25.264
300	16.706	34.721	25.370
400	14.850	34.588	25.688
500	11.429	34.357	26.197
600	7.618	34.147	26.660
700	6.075	34.121	26.849
800	4.728	34.191	27.064
900	4.217	34.253	27.170
1000	3.628	34.340	27.298
1200	3.133	34.414	27.406
1500	2.534	34.509	27.535
2000	1.911	34.604	27.661

Station	OS08197
Longitude	27-45.8N
Latitude	140-49.9E
Depth(m)	2555

Press.	Temp.	Sal.	SIG-T
5	27.594	34.459	22.122
10	27.600	34.464	22.124
20	27.530	34.558	22.217
30	27.512	34.586	22.244
40	26.860	34.562	22.435
50	23.698	34.621	23.445
75	22.306	34.697	23.903
100	20.432	34.774	24.476
125	19.681	34.799	24.693
150	18.986	34.806	24.877
200	18.194	34.794	25.068
250	17.488	34.766	25.219
300	16.687	34.720	25.374
400	14.503	34.561	25.742
500	11.804	34.379	26.144

Station	OS08198
Longitude	27-19.9N
Latitude	141-29.7E
Depth(m)	4055

Press.	Temp.	Sal.	SIG-T
5	27.466	34.628	22.290
10	27.400	34.634	22.316
20	27.108	34.666	22.434
30	26.968	34.672	22.483
40	26.390	34.684	22.675
50	25.143	34.700	23.073
75	22.175	34.818	24.032
100	19.498	34.812	24.750
125	18.672	34.808	24.959
150	18.387	34.802	25.026
200	17.796	34.785	25.159
250	17.343	34.765	25.253
300	16.921	34.742	25.336
400	14.417	34.557	25.757
500	11.845	34.374	26.133
600	9.005	34.200	26.491
700	6.812	34.125	26.755
800	5.235	34.124	26.954
900	4.603	34.184	27.073
1000	4.139	34.233	27.162
1200	3.386	34.379	27.353
1500	2.522	34.509	27.535
2000	1.875	34.609	27.669

Station OS08199
Longitude 27-10.0N
Latitude 141-30.1E
Depth(m) 4004

Press.	Temp.	Sal.	SIG-T
5	27.502	-	-
10	27.400	-	-
20	27.367	-	-
30	27.307	-	-
40	26.632	-	-
50	25.324	-	-
75	22.789	-	-
100	20.687	-	-
125	18.930	-	-
150	18.398	-	-
200	17.791	-	-
250	17.288	-	-
300	16.803	-	-
400	15.286	-	-
500	12.158	-	-
600	9.859	-	-
700	6.920	-	-

Station OS08200
Longitude 27-00.1N
Latitude 141-30.0E
Depth(m) 3916

Press.	Temp.	Sal.	SIG-T
5	27.592	-	-
10	27.489	-	-
20	27.332	-	-
30	27.122	-	-
40	26.555	-	-
50	25.084	-	-
75	20.968	-	-
100	19.970	-	-
125	19.150	-	-
150	18.354	-	-
200	17.779	-	-
250	17.151	-	-
300	16.783	-	-
400	15.543	-	-
500	12.595	-	-
600	9.389	-	-
700	7.017	-	-

Station OS08201
Longitude 26-50.1N
Latitude 141-30.0E
Depth(m) 3747

Press.	Temp.	Sal.	SIG-T
5	27.107	34.500	22.309
10	27.023	34.531	22.359
20	26.972	34.539	22.382
30	26.802	34.518	22.420
40	25.849	34.547	22.740
50	24.638	34.637	23.178
75	21.207	34.766	24.261
100	19.728	34.770	24.659
125	19.067	34.767	24.827
150	18.536	34.765	24.960
200	17.824	34.753	25.127
250	17.360	34.736	25.227
300	16.807	34.703	25.333
400	15.047	34.572	25.632
500	12.495	34.390	26.021
600	9.563	34.201	26.402
700	6.305	34.065	26.775
800	5.178	34.119	26.956
900	4.460	34.199	27.101
1000	3.943	34.292	27.229
1200	3.152	34.419	27.407
1500	2.434	34.540	27.568

Station OS08202
Longitude 26-40.0N
Latitude 141-30.0E
Depth(m) 3643

Press.	Temp.	Sal.	SIG-T
5	27.500	-	-
10	27.262	-	-
20	27.193	-	-
30	26.845	-	-
40	25.120	-	-
50	23.992	-	-
75	21.509	-	-
100	20.534	-	-
125	19.610	-	-
150	18.792	-	-
200	18.090	-	-
250	17.410	-	-
300	16.677	-	-
400	14.993	-	-
500	11.536	-	-
600	8.320	-	-
700	6.457	-	-

Station OS08203
Longitude 26-30.0N
Latitude 141-30.0E
Depth(m) 3560

Press.	Temp.	Sal.	SIG-T
5	27.520	-	-
10	27.479	-	-
20	27.283	-	-
30	26.982	-	-
40	26.542	-	-
50	24.477	-	-
75	23.219	-	-
100	20.824	-	-
125	19.440	-	-
150	18.822	-	-
200	17.931	-	-
250	17.271	-	-
300	16.657	-	-
400	14.247	-	-
500	12.199	-	-
600	8.351	-	-
700	6.334	-	-

Station OS08204
Longitude 26-20.1N
Latitude 141-30.0E
Depth(m) 3488

Press.	Temp.	Sal.	SIG-T
5	27.628	34.278	21.975
10	27.586	34.288	21.996
20	27.421	34.320	22.073
30	25.630	34.501	22.773
40	24.886	34.534	23.025
50	23.728	34.559	23.389
75	21.434	34.692	24.142
100	19.899	34.708	24.567
125	19.073	34.722	24.791
150	18.536	34.721	24.926
200	17.814	34.720	25.104
250	17.375	34.699	25.195
300	16.388	34.644	25.385
400	13.839	34.452	25.798
500	10.609	34.251	26.262
600	8.214	34.126	26.556
700	6.464	34.105	26.786
800	5.040	34.161	27.006
900	4.166	34.258	27.179
1000	3.716	34.320	27.274
1200	3.070	34.430	27.424
1500	2.492	34.523	27.549

Station OS08205
Longitude 26-29.5N
Latitude 142-03.0E
Depth(m) 1315

Press.	Temp.	Sal.	SIG-T
5	27.528	34.324	22.042
10	26.953	34.369	22.260
20	26.627	34.392	22.380
30	24.713	34.509	23.059
40	23.760	34.550	23.373
50	22.536	34.597	23.762
75	19.860	34.701	24.572
100	18.877	34.735	24.851
125	18.613	34.734	24.917
150	18.483	34.735	24.950
200	17.751	34.721	25.120
250	17.350	34.713	25.211
300	16.630	34.674	25.352
400	14.426	34.509	25.718

Station OS08206
Longitude 26-40.0N
Latitude 142-03.0E
Depth(m) 789

Press.	Temp.	Sal.	SIG-T
5	27.250	-	-
10	27.209	-	-
20	27.050	-	-
30	26.790	-	-
40	23.583	-	-
50	21.890	-	-
75	20.469	-	-
100	19.636	-	-
125	18.970	-	-
150	18.532	-	-
200	18.251	-	-
250	17.732	-	-
300	16.893	-	-
400	14.709	-	-
500	12.153	-	-
600	12.601	-	-
700	12.640	-	-

Station OS08207
Longitude 26-50.0N
Latitude 142-03.1E
Depth(m) 190

Press.	Temp.	Sal.	SIG-T
5	27.548	34.345	22.051
10	27.538	34.345	22.054
20	27.530	34.344	22.056
30	27.430	34.359	22.099
40	25.085	34.624	23.033
50	23.648	34.642	23.475
75	20.862	34.744	24.338
100	19.838	34.775	24.633
125	18.946	34.785	24.872
150	18.041	34.775	25.091

Station OS08208
Longitude 27-00.0N
Latitude 142-03.0E
Depth(m) 890

Press.	Temp.	Sal.	SIG-T
5	27.110	-	-
10	26.981	-	-
20	26.673	-	-
30	26.162	-	-
40	25.673	-	-
50	24.194	-	-
75	22.319	-	-
100	19.646	-	-
125	19.320	-	-
150	19.062	-	-
200	18.521	-	-
250	17.742	-	-
300	16.947	-	-
400	14.769	-	-
500	12.126	-	-
600	8.560	-	-
700	5.894	-	-

Station OS08209
Longitude 27-09.8N
Latitude 142-03.0E
Depth(m) 889

Press.	Temp.	Sal.	SIG-T
5	27.221	34.391	22.191
10	27.072	34.419	22.259
20	26.521	34.499	22.494
30	25.743	34.561	22.784
40	25.266	34.579	22.944
50	23.799	34.629	23.421
75	22.297	34.684	23.896
100	20.358	34.736	24.467
125	19.380	34.741	24.727
150	18.729	34.753	24.902
200	18.298	34.739	25.000
250	18.125	34.736	25.040
300	17.109	34.711	25.267
400	14.972	34.562	25.641
500	11.842	34.360	26.122
600	7.780	34.151	26.640
700	6.280	34.130	26.830
800	5.056	34.203	27.037

Station OS08210
Longitude 39-00.1N
Latitude 142-28.1E
Depth(m) 1155

Press.	Temp.	Sal.	SIG-T
5	15.132	33.762	24.990
10	15.132	33.762	24.990
20	15.134	33.766	24.992
30	15.156	33.796	25.010
40	15.033	33.854	25.082
50	13.569	34.119	25.596
75	9.668	33.883	26.136
100	7.404	33.751	26.379
125	6.779	33.806	26.508
150	6.741	33.894	26.583
200	4.523	33.656	26.662
250	3.385	33.608	26.739
300	4.508	33.844	26.813
400	4.316	33.979	26.941
500	4.421	34.152	27.068
600	4.135	34.221	27.153
700	3.603	34.236	27.219
800	3.308	34.280	27.282
900	3.084	34.308	27.325
1000	2.949	34.373	27.389

5. Data on Tuna Longline Research

The research gear was divided into 2 groups according to the number of baskets (hachi) used and the length of the float line.

A detailed explanation of each group of tuna longline is as follow:

Group		A	B	C
Main line	(m)	500	500	500
Branch line	(m)	11.5	11.5	11.5
Sekiyama	(m)	8	8	8
Kanayama	(m)	2	2	2
Float line	(m)	20	40	60

Frozen Japanese common squid were used as bait. The operation of tuna longline was supervised by the captain and deck officers, and all crews and cadets were engaged in the work.

Biological measurements of fishes captured were carried out on board by deck officers immediately after fishing.

Table 3: Data on tuna longline research

No. of research		OSL0801	OSL0802	OSL0803
Date		23, Oct.	24, Oct.	25, Oct.
posision of	Lat. (N)	29-22.6	28-36.3	27-40.9
line set	Long. (E)	140-29.5	140-42.7	140-58.6
Time	Line set	0457-0621	0418-0505	0420-0505
(S. M. T.)	Line haul	1255-1446	1252-1445	1248-1455
Direction of line set		270	320	340
No. of baskets used		30	30	30
Surface temp. (°C)		26.5	27.4	27.2
Weather		o	bc	bc
Wind		East-6	SE-4	SSE-4
Thresher shark				1
Blue Shark				2
Daggertooth				1
Pacific lancetfish			1	
Albacore			1	
Skipjack tuna		1		

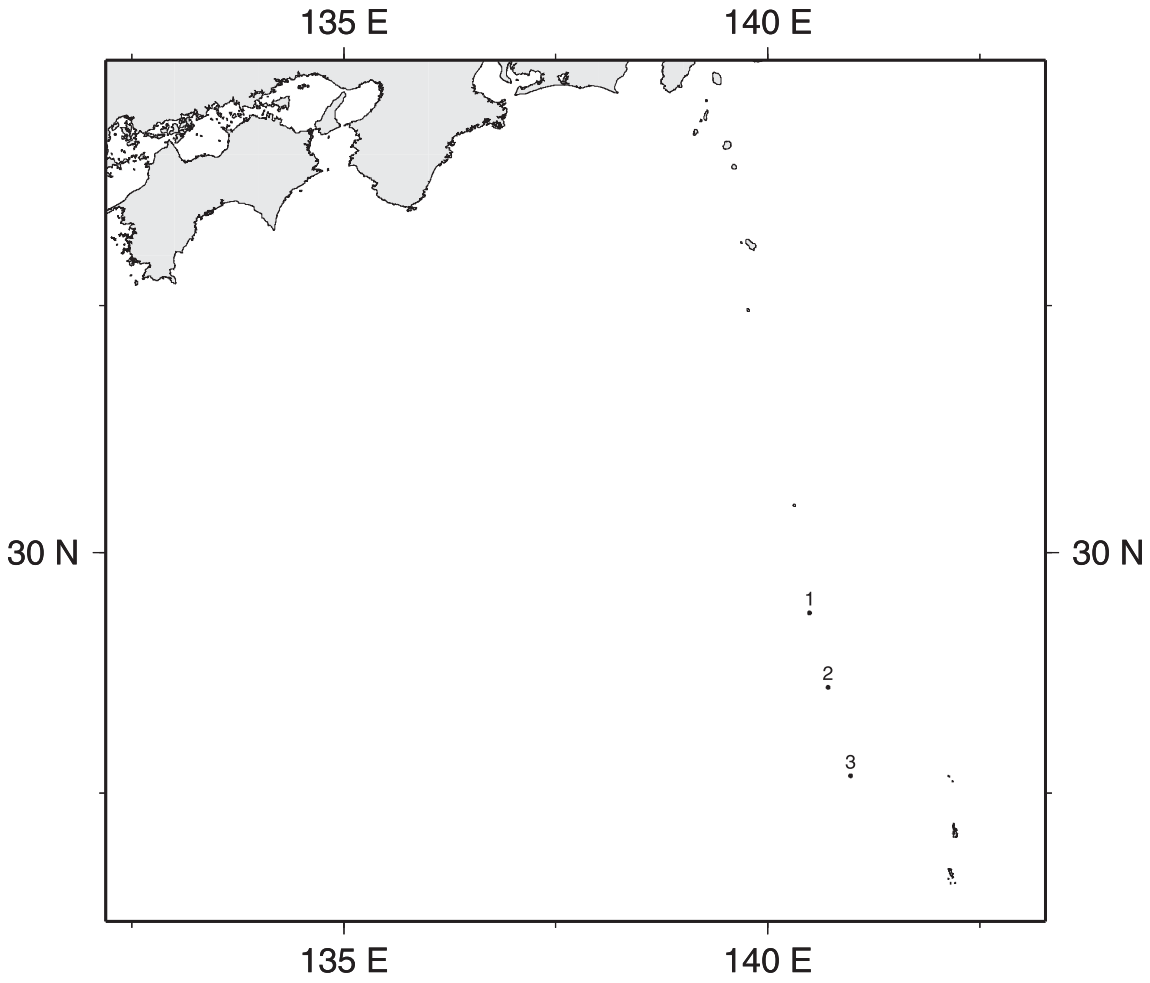

Figure 3: Locations of tuna longline research