



R/V Kairei Cruise Report  
KR10-09

Seismic survey and observation in NW Pacific

Jul. 1, 2010 – Jul. 28, 2010

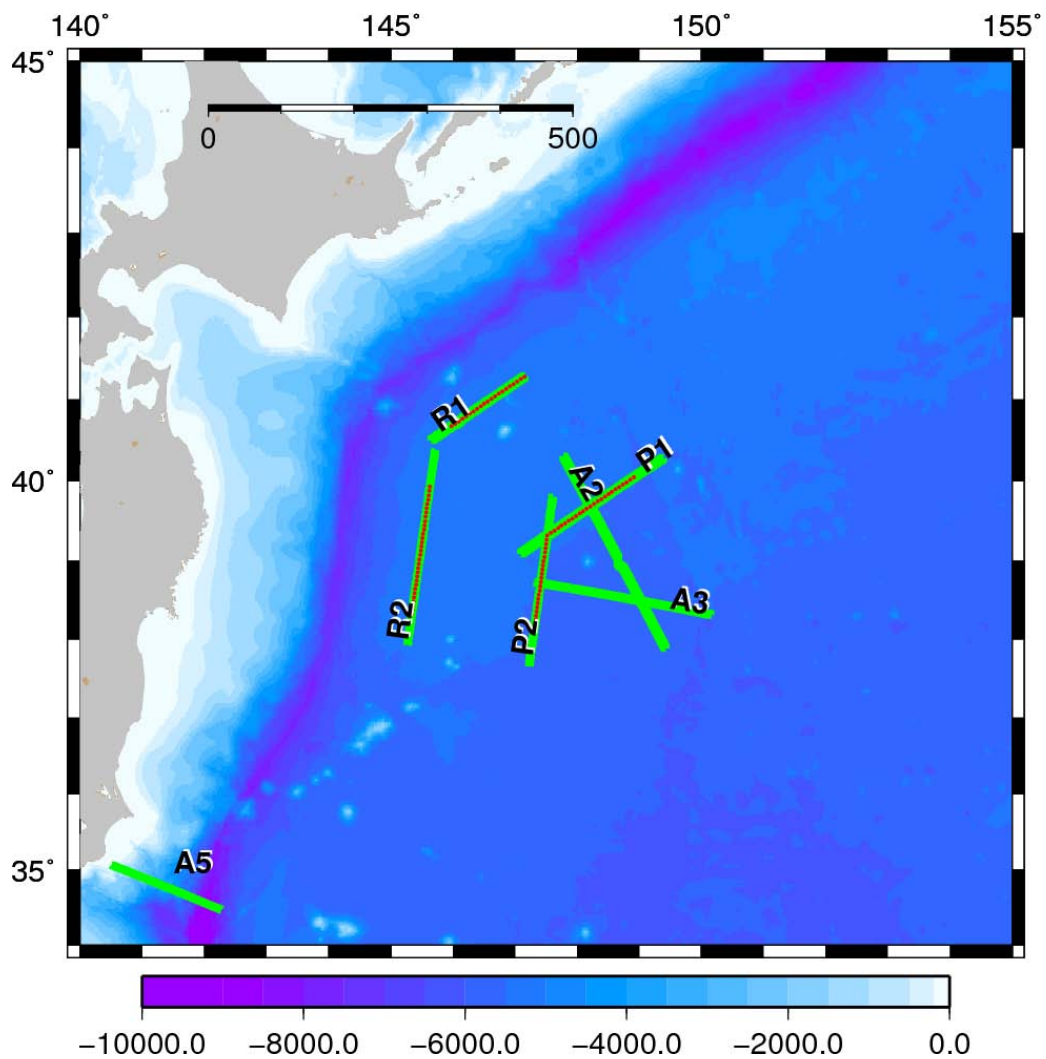
Japan Agency for Marine-Earth Science and Technology  
(JAMSTEC)

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1. Cruise information

- (1) Cruise number, ship name : KR10-09, R/V Kairei
- (2) Title of the cruise  
Seismic survey and observation in NW Pacific
- (3) Cruise period, port call  
2010/07/01 – 2010/07/28, Yokosuka-Yokosuka
- (4) Research area  
NW Pacific
- (5) Research map  
White circles represent OBSs.



*Fig. 1: Location map. Red circles represent OBSs and green lines are airgun lines.*

## 2. Researchers

- (1) Chief scientist [Affiliation] : FUJIE Gou [JAMSTEC]
- (2) Representative of science party [Affiliation] : Yoshiyuki TATSUMI [JAMSTEC]
- (3) Science party list
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## 3. Overview of observation

### (1) Objectives

In the northwestern Pacific region, the old oceanic plate (Pacific plate) formed in the eastern Pacific ridge is subducting from the Japan and Kuril trenches. The subduction of the oceanic plate causes earthquakes and volcanoes in the island arc, and it is important to clarify the detailed structure of the oceanic plate.

Since 2009, we began a large-scale seismic structural study to reveal the detailed seismic structure within the incoming plate in the Northwestern Pacific region. This cruise was conducted as a part of this structure study and we established several survey profiles mainly to reveal the seismic structure variation along the trench axis.

(2) Observation, activities

1) OBS deployment

One hundred one OBSs were deployed along P1, P2, R1 and R2.

2) Airgun shooting

We shot the airgun array of R/V Kairei along P1, P2, R1, R2, A2, A3 and A5 profiles. A 444-ch hydrophone streamer was towed during the shooting

3) Bathymetry, magnetic and gravity observation

During the cruise, bathymetry, magnetic and gravity data have been recorded continuously by SEABEAM2112.004, three component magnetometer and gravity meter, respectively.

(3) Research results

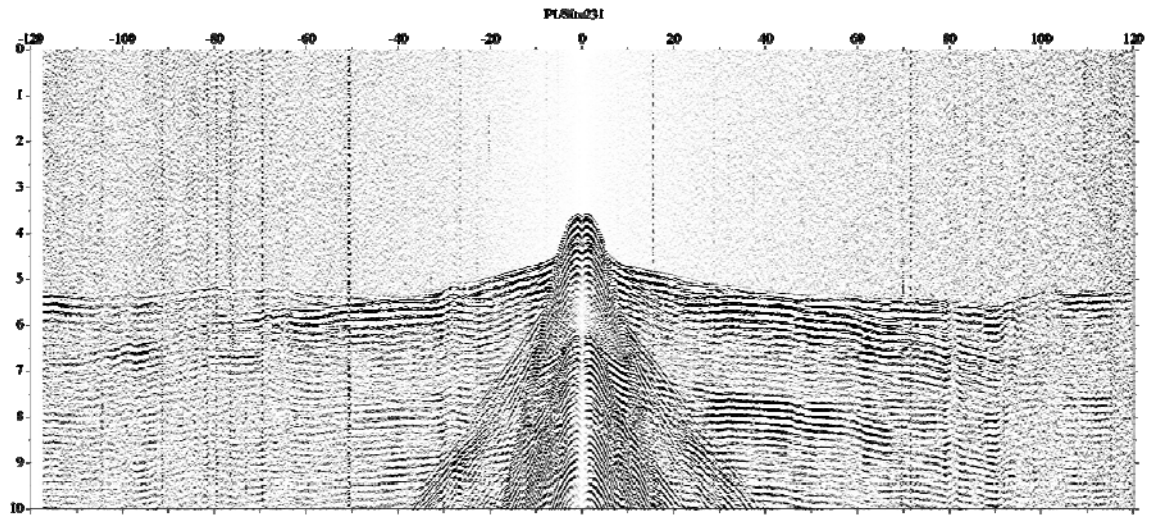


Fig. 1: Record section at Site 213 on profile P1. The vertical axis is reduced travel time and the reduction velocity is 8km/sec. The horizontal axis shows the offset between OBS and shots. Right side is east.

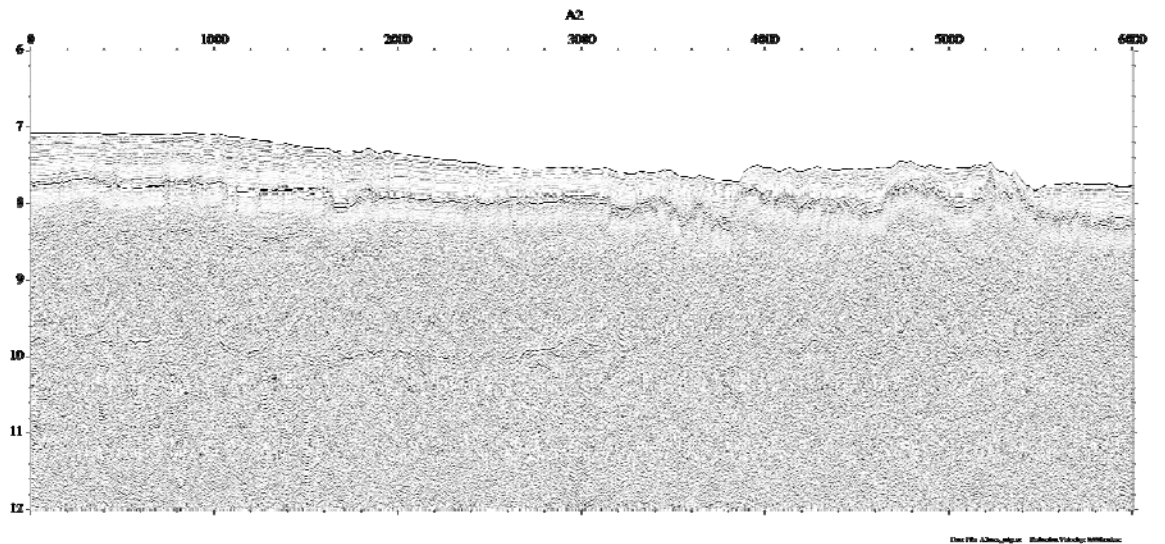


Fig. 2: Time migrated MCS record section along the profile A2. The vertical axis is two-way traveltimes in second and the horizontal axis is the shot number. Right side is SSE.

4. List of observation instruments

- (1) Ocean bottom seismometer (OBS)
- (2) 444-ch hydrophone streamer
- (3) SEABEAM2112.004
- (4) Three component magnetometer
- (5) Gravity meter.

5. Cruise log:

Date	Remarks
2010/07/01	Departure from Yokosuka
2010/07/02	Transit to survey area, OBS deployment (R2)
2010/07/03	OBS deployment (R2)
2010/07/04	OBS deployment (R1)
2010/07/05	OBS deployment (R1), Airgun shot (R1)
2010/07/06	Airgun shot (R1, R2)
2010/07/07	Airgun shot (R2)
2010/07/08	Airgun shot (R2), OBS deployment (P2)
2010/07/09	OBS deployment (P2)
2010/07/10	OBS deployment (P2, P1)
2010/07/11	OBS deployment (P1)
2010/07/12	OBS deployment, abort due to bad weather
2010/07/13	Abort dut to bad weather
2010/07/14	Airgun shot (P1)
2010/07/15	Airgun shot (P1, P2)
2010/07/16	Airgun shot (P2)
2010/07/17	Airgun shot (P2)
2010/07/18	Airgun shot (P2, A3)
2010/07/19	Airgun shot (A3)
2010/07/20	Airgun shot (A3, A2)
2010/07/21	Airgun shot (A2)
2010/07/22	Airgun shot (P1)
2010/07/23	Airgun shot (P2)
2010/07/24	Site 302, try to recover OBS, transit to A5
2010/07/25	Airgun shot (A5)
2010/07/26	Airgun shot (A5)
2010/07/27	Transit to Yokosuka
2010/07/28	Arrival at Yokosuka (JAMSTEC)

6. OBS position (deploy position)

R1				P1			
<i>Site</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Depth (m)</i>	<i>Site</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Depth (m)</i>
101	40-40.1616	145-58.6923	5223	201	39-18.9985	147-31.2447	5298
102	40-42.0065	146-02.2085	5241	202	39-20.8345	147-34.6686	5388
103	40-43.8444	146-05.7140	5210	203	39-22.6565	147-38.1498	5412
104	40-45.6892	146-09.2390	5215	204	39-24.4870	147-41.6025	5393
105	40-47.5276	146-12.7445	5216	205	39-26.3099	147-45.0685	5388
106	40-49.3608	146-16.2641	5232	206	39-28.1231	147-48.5318	5394
107	40-51.2015	146-19.7890	5249	207	39-29.9396	147-52.0022	5390
108	40-53.0313	146-23.3261	5257	208	39-31.7776	147-55.4762	5419
109	40-54.8629	146-26.8562	5275	209	39-33.5890	147-58.9626	5418
110	40-56.6950	146-30.3892	5286	210	39-35.4137	148-02.4272	5434
111	40-58.5216	146-33.9271	5295	211	39-37.2280	148-05.8953	5453
112	41-00.3471	146-37.4675	5338	212	39-39.0278	148-09.4003	5463
113	41-02.1733	146-41.0137	5204	213	39-40.8717	148-12.8593	5472
114	41-03.9924	146-44.5620	5245	214	39-42.6723	148-16.3647	5498
115	41-05.8121	146-48.1131	5322	215	39-44.4589	148-19.8562	5496
116	41-07.6410	146-51.6706	5343	216	39-46.2743	148-23.3678	5508
117	41-09.4495	146-55.2248	5339	217	39-48.0821	148-26.8608	5524
118	41-11.2657	146-58.7881	5315	218	39-49.8697	148-30.3518	5542
119	41-13.0740	147-02.3523	5282	219	39-51.6803	148-33.8521	5542
120	41-14.8834	147-05.9199	5260	220	39-53.4645	148-37.3822	5509
121	41-16.4863	147-09.0712	5239	221	39-55.2669	148-40.8661	5471
				222	39-57.0680	148-44.3915	5437
				223	39-58.8605	148-47.9038	5429
				224	40-00.6490	148-51.4231	5444
				225	40-02.4422	148-54.9451	5481

*Table 1: OBS positions along lines R1 and P1.*



R2				P2			
Site	Latitude	Longitude	Depth(m)	Site	Latitude	Longitude	Depth(m)
301	38-19.3657	145-20.3694	5349	401	38-08.4492	147-18.6405	5603
302	38-22.5033	145-20.9855	5307	402	38-11.6586	147-19.2003	5603
303	38-25.7287	145-21.5383	5321	403	38-14.8675	147-19.7707	5592
304	38-28.9352	145-22.1150	5331	404	38-18.0756	147-20.3377	5630
305	38-32.1319	145-22.6948	5332	405	38-21.2909	147-20.9064	5589
306	38-35.3361	145-23.2737	5339	406	38-24.4999	147-21.4562	5584
307	38-38.5521	145-23.8281	5384	407	38-27.6995	147-22.0337	5596
308	38-41.7570	145-24.4039	5346	408	38-30.9058	147-22.5999	5566
309	38-44.9682	145-24.9753	5365	409	38-34.1237	147-23.1697	5570
310	38-48.1627	145-25.5637	5340	410	38-37.3067	147-23.7409	5566
311	38-51.3709	145-26.1384	5252	411	38-40.5217	147-24.3117	5564
312	38-54.5859	145-26.7258	5217	412	38-43.7236	147-24.8875	5557
313	38-57.7750	145-27.3022	5242	413	38-46.9296	147-25.4567	5554
314	39-00.9812	145-27.8827	5271	414	38-50.1362	147-26.0345	5489
315	39-04.1879	145-28.4595	5262	415	38-53.3594	147-26.6242	5506
316	39-07.3954	145-29.0409	5315	416	38-56.5602	147-27.1979	5517
317	39-10.6052	145-29.6152	5265	417	38-59.7594	147-27.7673	5515
318	39-13.8066	145-30.2060	5298	418	39-02.9841	147-28.3534	5523
319	39-17.0117	145-30.7946	5320	419	39-06.1687	147-28.9087	5499
320	39-20.2346	145-31.3797	5315	420	39-09.3785	147-29.4955	5505
321	39-23.4253	145-31.9615	5311	421	39-12.5833	147-30.0708	5373
322-1	39-26.6228	145-32.5549	5311	422	39-15.7956	147-30.6622	5361
322-2	39-26.6266	145-32.5547	5315				
323	39-29.8329	145-33.1391	5293				
324-1	39-33.0468	145-33.7314	5290				
324-2	39-33.0428	145-33.7269	5292				
325	39-36.2471	145-34.3226	5291				
326	39-39.4534	145-34.9158	5291				
327	39-42.6591	145-35.4939	5284				
328	39-45.8874	145-36.1022	5289				
329	39-49.0686	145-36.6848	5270				
330	39-52.2746	145-37.2818	5251				
331	39-55.4803	145-37.8760	5230				

Table 2: OBS position (deploy position) along lines R2 and P2.

7. Airgun lines (end points)

Line name	Latitude	Longitude
A2	37_53.48924'N	149_25.29110'E
	40_18.06410'N	147_46.87914'E
A3	38_43.85165'N	147_19.03576'E
	38_19.00589'N	150_09.88001'E
P1 (50m)	39_50.61071'N	148_31.77841'E
	39_17.11897'N	147_27.70503'E
P1 (200m)	40_16.69317'N	149_23.23440'E
	39_05.16169'N	147_05.34659'E
P2 (50m)	37_39.66748'N	147_13.61512'E
	39_20.24656'N	147_31.46809'E
P2 (200m)	39_47.78591'N	147_36.51154'E
	37_39.48520'N	147_13.58479'E
R1	41_16.66177'N	147_09.42677'E
	40_29.94075'N	145_39.34375'E
R2	40_22.24321'N	145_42.87124'E
	37_56.12318'N	145_16.34775'E

*Table 3: Airgun lines. We shot twice along P1 and P2 lines with two shot spacing of 50m and*

8. Notice on using

This cruise report is a preliminary documentation as of the end of the cruise. It may not be corrected even if changes on content (i.e. taxonomic classifications) are found after publication. It may also be changed without notice. Data on the cruise report may be raw or not processed. Please ask the PI(s) for the latest information before using. Users of data or results of this cruise are requested to submit their results to Data Integration and Analysis Group (DIAG), JAMSTEC.