doi : 10.17596/0003295

R/V Kairei Cruise Report

KR10-13

Seismic study in the Izu-Ogasawara region

Dec. 7, 2010 – Dec. 28, 2010

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

Contents:

1. Cruise Information：

(1) Cruise number, Ship name: KR10-13, R/V Kairei

(2) Title of the cruise: 2010FY “Seismic study at the Izu-Ogasawara region”

(3) Title of proposal:

Crustal growth of the Izu-Ogasawara island arc

(4) Cruise period, Port call:

2010/12/7-12/28, Yokosuka Port to JAMSTEC (Yokosuka)

(5) Research Area: Izu-Ogasawara

(6) Research Map:

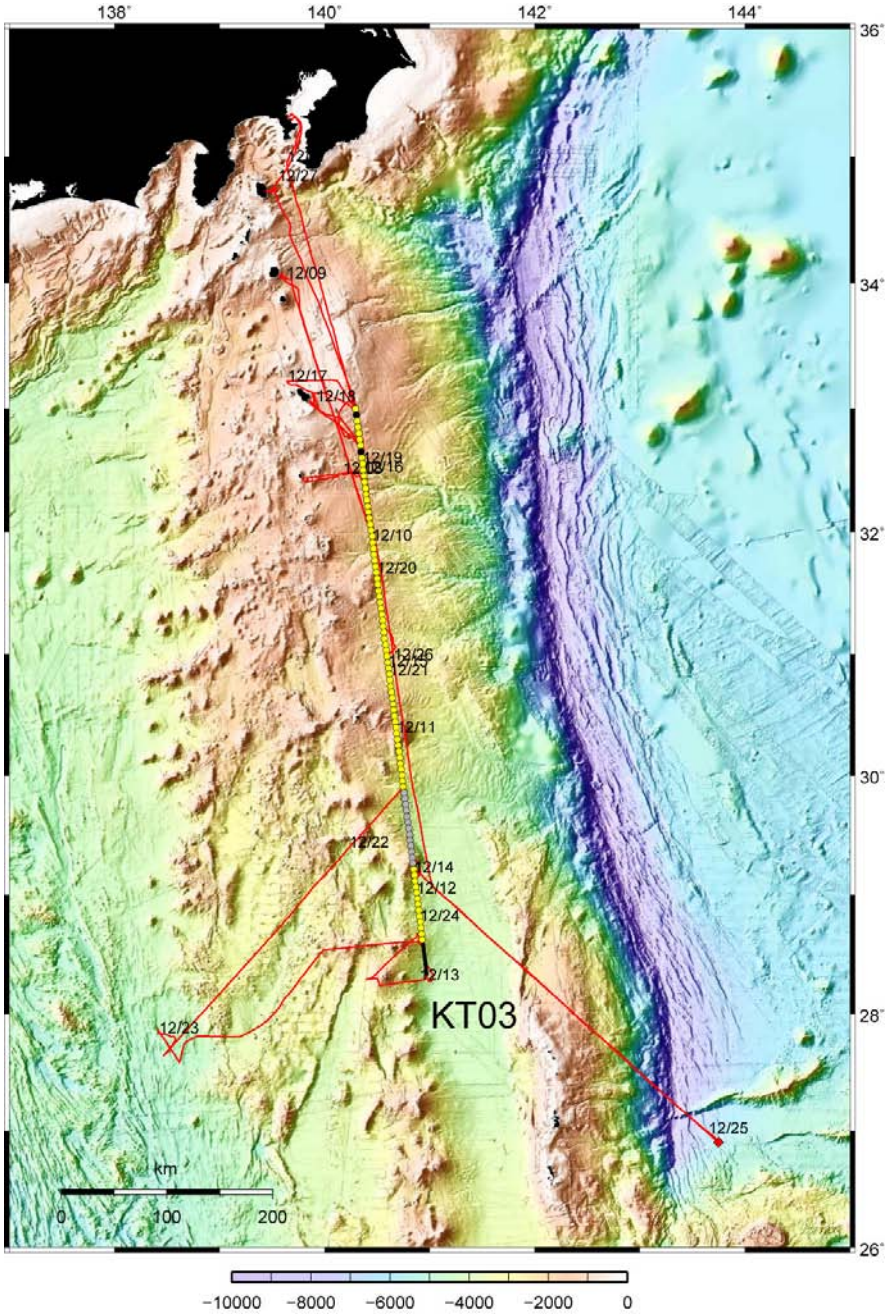

Figure 1 Survey map and ship track in KR10-13 cruise.

2. Researchers

(1) Chief Scientist [Affiliation]: Mikiya YAMASHITA [JAMSTEC]

Co-chief Scientist [Affiliation]: Naoto NOGUCHI [JAMSTEC]

(2) Representative of Science Party [Affiliation]: Yoshiyuki TATSUMI [JAMSTEC],

(3) Science party list:

Shuichi KODAIRA [JAMSTEC],
Narumi TAKAHASHI [JAMSTEC],
Yuka KAIHO [JAMSTEC],
Seiichi MIURA [JAMSTEC],
Takeshi SATO [JAMSTEC],
Mikiya YAMASHITA [JAMSTEC],
Tetsuo NO [JAMSTEC],
Tsutomu TAKAHASHI [JAMSTEC],
Naoto NOGUCHI [JAMSTEC],
Yoshiyuki TATSUMI [JAMSTEC],

3. Overview of Observation：

(1) Objectives：

IFREE has conducted seismic surveys intensively in the Izu-Ogasawara area to understand crustal evolution of oceanic arcs since 2004. The objectives of this cruise are to obtain the configuration of Oligocene paleo-arc by seismic refraction and reflection surveys using 90 OBSs conducted in the Izu-Ogasawara fore-arc region.

Furthermore, we deployed 1 OBS in order to obtain the accurate aftershock distribution of M7.4 Ogasawara earthquake at 2010/12/22 02:19(JST) in the east of Bonin Islands.

(2) List of observation instruments：

1) Deployment and recovery of ocean bottom seismometers (OBSs)

90 OBSs were deployed on line KT03. 2 OBSs were lost because of no response from transponder. 13 OBSs were not recovered due to weather condition.

2) Seismic refraction and reflection survey

Seismic refraction and reflection surveys were carried out on line KT03, the Izu-Ogasawara area, using the airgun array of 7,800 cu. inch and a 444-ch. hydrophone streamer.

3) Bathymetry observation

During this cruise, bathymetry data have been recorded continuously by SEABEAM2112.

4) Temperature, Conductivity and Depth observation for oceanic fine imaging in reflection experiment

We have conducted 20 XCTDs (eXpendable Conductivity, Temperature and Depth) and 5 XBTs (eXpendable-Bathy Thermographs).

5) Earthquake observation

1 OBS was deployed in the east of Bonin Island. It will be recovered in KR11-01 cruise.

(3) Cruise log:

Date		Remarks
2010/12/7	Tue	Departure from Yokosuka Port

		and transit to survey area, deployment of OBSs
2010/12/8	Wed	Standby due to weather condition, deployment of OBSs
2010/12/9	Thu	Standby due to weather condition in Miyake Is.
2010/12/10	Fri	Deployment of OBSs
2010/12/11	Sat	Deployment of OBSs
2010/12/12	Sun	Deployment of OBSs
2010/12/13	Mon	Airgun shooting and MCS survey
2010/12/14	Tue	Airgun shooting and MCS survey
2010/12/15	Wed	Airgun shooting and MCS survey
2010/12/16	Thu	Airgun shooting and MCS survey
2010/12/17	Fri	Finish the airgun shooting and MCS survey, Recovery of OBSs
2010/12/18	Sat	Standby due to weather condition
2010/12/19	Sun	Recovery of OBSs
2010/12/20	Mon	Recovery of OBSs
2010/12/21	The	Recovery of OBSs
2010/12/22	Wed	Standby due to weather condition, Recovery of OBSs
2010/12/23	Thu	Standby due to weather condition, (Christmas Party)
2010/12/24	Fri	Recovery of OBSs
2010/12/25	Sat	Deployment of OBS for earthquake observation in Ogasawara
2010/12/26	Sun	Transit to JAMSTEC
2010/12/27	Mon	Transit to JAMSTEC
2010/12/28	Tue	Arrive at JAMSTEC

(4) OBS Position

Site	Latitude	Longitude	Depth (m)	Remarks
1	32_59.4862	140_17.7453	760.2	
2	32_56.5248	140_18.2277	877.0	Lost
3	32_53.5527	140_18.6869	927.6	
4	32_50.5513	140_19.1538	1064.1	
5	32_47.5272	140_19.6734	1213.4	
6	32_44.6438	140_20.0803	1319.4	
7	32_41.6904	140_20.4745	1459.4	
8	32_38.7262	140_20.8540	1468.3	Lost
9	32_35.7443	140_21.2608	1535.5	
10	32_32.8067	140_21.6889	1691.6	
11	32_29.8425	140_22.1117	2044.4	

12	32_26.8848	140_22.4963	1794.5	
13	32_23.9091	140_23.0723	1778.6	
14	32_20.9478	140_23.3998	2030.5	
15	32_18.1326	140_23.7532	1834.8	
16	32_15.1832	140_24.2574	1799.4	
17	32_12.2110	140_24.7514	1815.9	
18	32_09.3038	140_25.2252	1890.5	
19	32_06.3696	140_25.6903	1988.5	
20	32_03.4191	140_26.0484	1992.7	
21	32_00.4990	140_26.6320	1990.0	
22	31_57.6011	140_27.1667	2165.1	
23	31_54.5417	140_27.5220	2276.1	
24	31_51.6128	140_27.9191	2471.0	
25	31_48.6349	140_28.2791	2403.4	
26	31_45.7137	140_28.7112	2129.0	
27	31_42.7907	140_29.1728	2116.0	
28	31_39.8344	140_29.6395	1692.9	
29	31_36.8952	140_30.0300	1846.5	
30	31_33.9483	140_30.4038	1886.6	
31	31_30.9668	140_30.8609	2012.8	
32	31_28.0737	140_31.3456	1972.1	
33	31_25.1456	140_31.7757	1990.5	
34	31_22.2237	140_32.2442	1973.1	
35	31_19.2732	140_32.7160	2114.7	
36	31_16.3469	140_33.1382	2310.2	
37	31_13.4181	140_33.5200	2463.9	
38	31_10.4478	140_33.9748	2470.4	
39	31_07.4184	140_34.2591	2404.3	
40	31_04.5256	140_34.9260	2255.6	
41	31_01.5879	140_35.3738	2241.9	
42	30_58.6035	140_35.7076	2290.2	
43	30_55.6815	140_36.1753	2284.4	
44	30_52.7495	140_36.5686	2302.9	
45	30_49.8103	140_36.9574	2310.1	
46	30_46.8497	140_37.4075	2241.2	
47	30_43.8924	140_37.7887	2096.7	
48	30_40.9597	140_38.2002	2116.2	

49	30_37.9873	140_38.6600	2067.4	
50	30_35.0372	140_39.1228	2062.0	
51	30_32.1009	140_39.5457	2036.8	
52	30_29.1742	140_39.9577	2074.1	
53	30_26.2278	140_40.4120	1615.4	
54	30_23.3189	140_40.8130	1431.3	
55	30_20.3724	140_41.2155	1171.7	
56	30_17.4722	140_41.6971	1329.2	
57	30_14.4218	140_42.1138	2085.3	
58	30_11.4515	140_42.5270	2722.2	
59	30_08.5210	140_42.9958	2672.8	
60	30_05.5634	140_43.3956	2800.8	
61	30_02.6336	140_43.8700	3038.7	
62	29_59.6424	140_44.1543	2916.2	
63	29_56.6786	140_44.5523	3057.1	
64	29_53.7683	140_45.0356	3102.7	
65	29_50.8832	140_45.3954	3352.2	Unrecovered
66	29_47.9689	140_45.8684	3517.6	Unrecovered
67	29_45.0586	140_46.3159	3406.3	Unrecovered
68	29_42.1677	140_46.7350	3437.3	Unrecovered
69	29_39.1635	140_47.1730	3543.9	Unrecovered
70	29_36.2161	140_47.6433	3569.1	Unrecovered
71	29_33.2538	140_48.0655	3499.1	Unrecovered
72	29_30.1038	140_48.4992	3290.4	Unrecovered
73	29_27.3635	140_48.8965	3399.9	Unrecovered
74	29_24.4055	140_49.3227	2936.6	Unrecovered
75	29_21.4487	140_49.7059	2667.8	Unrecovered
76	29_18.4928	140_50.1153	2166.4	Unrecovered
77	29_15.7052	140_50.5240	2053.4	Unrecovered
78	29_12.6516	140_50.9063	2331.4	
79	29_09.6908	140_51.3600	3221.5	
80	29_06.7375	140_51.7544	3504.7	
81	29_03.7612	140_52.1267	3721.0	
82	29_00.8559	140_52.5916	3629.0	
83	28_57.8825	140_53.0040	3610.0	
84	28_54.9707	140_53.4147	3635.5	
85	28_52.0067	140_53.8555	3495.6	

86	28_49.0231	140_54.2290	3571.6	
87	28_46.1272	140_54.6363	3514.6	
88	28_43.1227	140_54.9737	3453.0	
89	28_40.1969	140_55.3938	3447.2	
90	28_37.2288	140_55.8048	3326.6	

Site	Latitude	Longitude	Depth (m)	Remarks
C01	26_54.0722	143_45.0741	5892.3	Earthquake Observation

(5) MCS line list

Line name	Latitude	Longitude
KT03 (200m)	28_20.3088 'N	140_58.2203 'E
	33_01.0352 'N	140_17.3145 'E

4. Preliminary results

Figure 2 shows the record section obtained in northern side of line KT03. Figure 3 shows an example of the MCS profile around Omachi Smt.

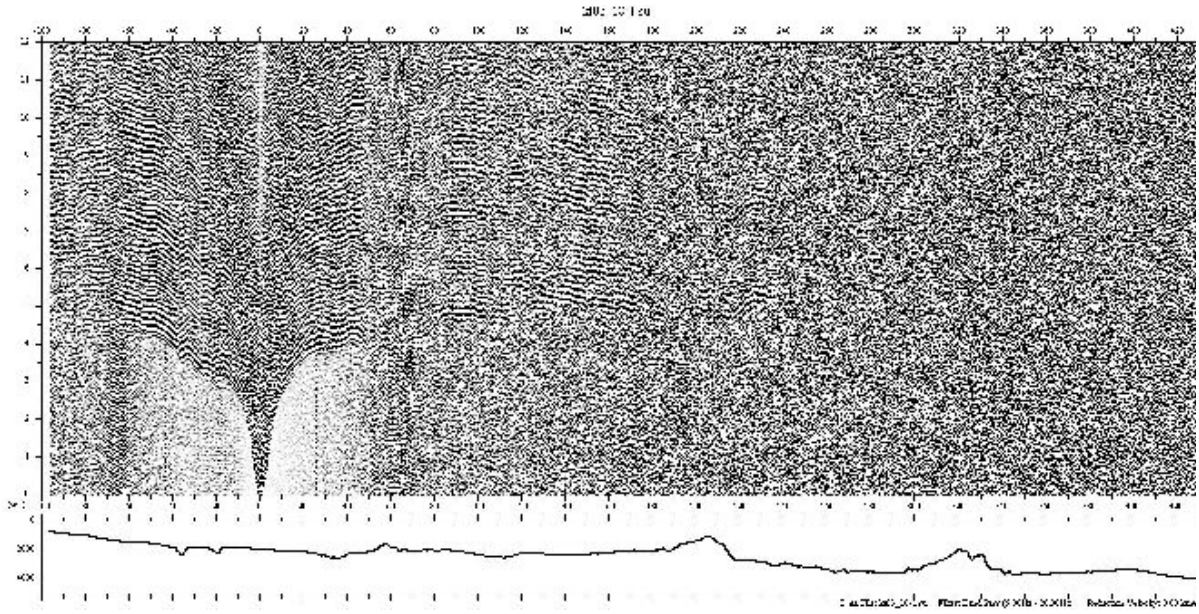

Figure 2 Example of record section of OBS (No.18).

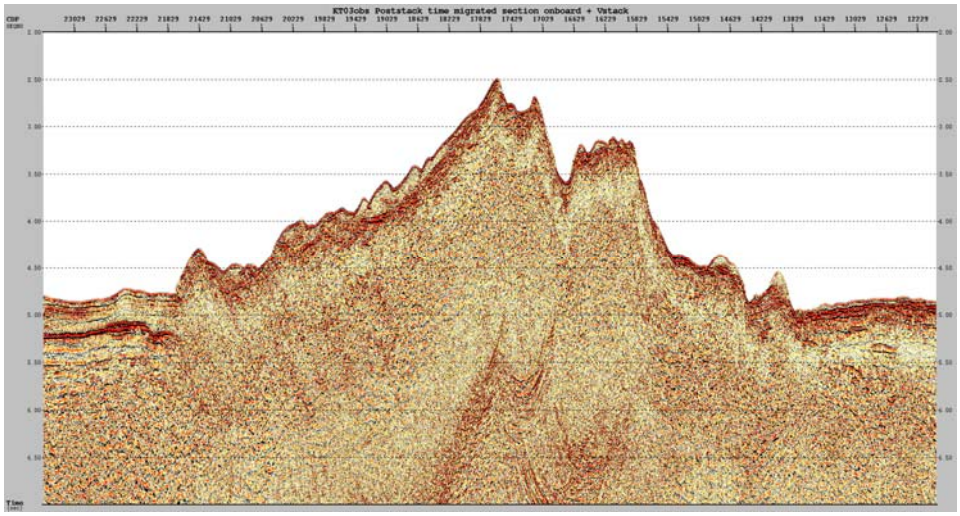

Figure 3 MCS profile around Omachi Smt. on line KT03.

5. 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.