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R/V Kairei Cruise Report

KR11-E05

Seismic survey in the Japan Trench region

Aug. 27, 2011 – Sep. 11, 2011

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

Contents:

1．Cruise Information：

（1）Cruise number, Ship name: KR11-E05, R/V Kairei

（2）Title of the cruise:

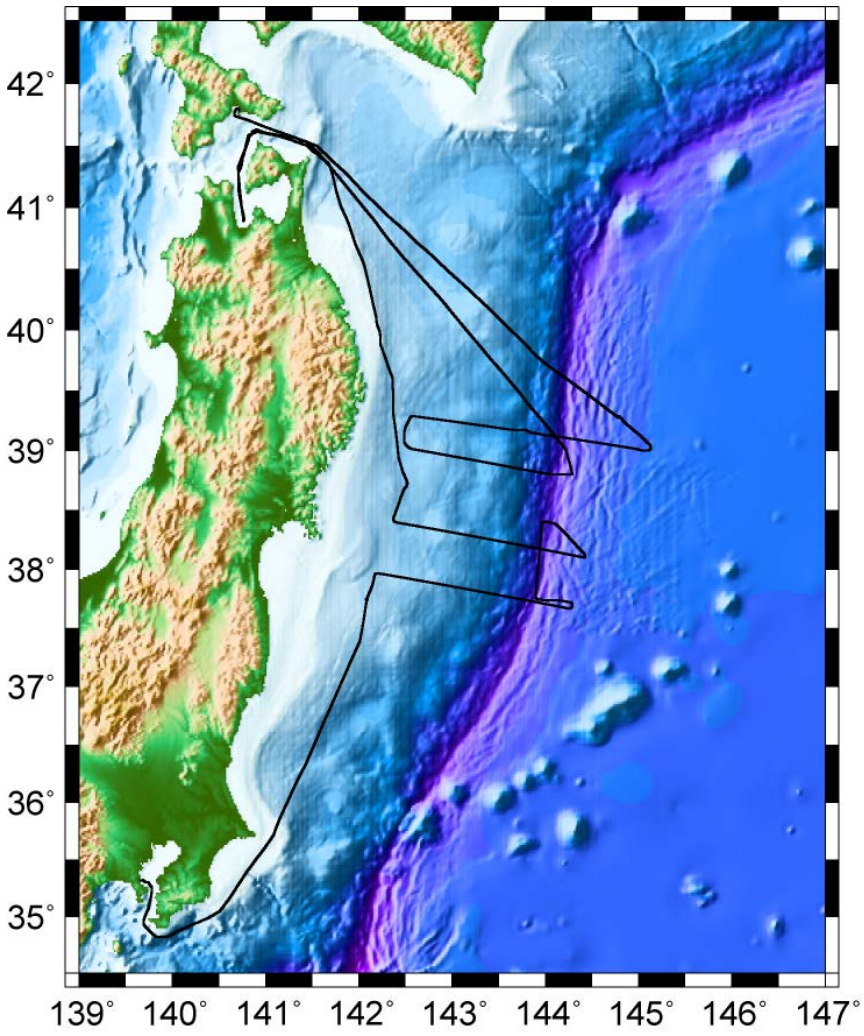
2011FY “Seismic survey in the Japan Trench region”

（3）Cruise period, Port call:

2011/08/27-09/11, Hakodate-port to JAMSTEC (Yokosuka)

（4）Research Area: Japan Trench

（5）Research Map:



２．Researchers

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３．Overview of Observation：

（１）Objectives：

On 11 March 2011, the great earthquake (the 2011 Off the Pacific Coast of Tohoku Earthquake: Mw 9.0) occurred in the forearc area of the Japan Trench region. This earthquake caused devastating damages in the Tohoku and the Kanto regions. Especially, the huge tsunami struck to the Pacific coast in these regions and caused considerable damage. To understand the mechanism and tectonics around the source area of this great earthquake, it is very important to clarify the detailed crustal structure in the Japan Trench region. The objectives of this cruise are to reveal the detailed structure around the rupture zone of this great earthquake and transition of the structure in the subducted oceanic and continental plates from the trench landward.

（２）List of observation instruments：

１）Multi-channel seismic (MCS) reflection survey

On 5 lines (D03, D08, D16, D19 and S13 lines), the MCS reflection survey using a tuned air-gun array of 7,800 cubic inch and a 444 channel hydrophone streamer with a 12.5 m group interval was conducted. A volume of a tuned air-gun array on a part of D03, D16, and D19 lines is 7,200, 6,150, and 6,750 cubic inch, respectively, because of an air-gun system trouble. And, one-third part on S13 line, a volume of a tuned air-gun array is 3,900 cubic inch because of a towed system trouble.

２）Bathymetry, Gravity and Geomagnetic observation

During this cruise, bathymetry, gravity and geomagnetic data have been recorded continuously by SEABEAM2112, gravity meter (KSS-31) and three-component magnetometer (SFG1214), respectively.

３）Temperature and Conductivity observation for the correction of sonic speed

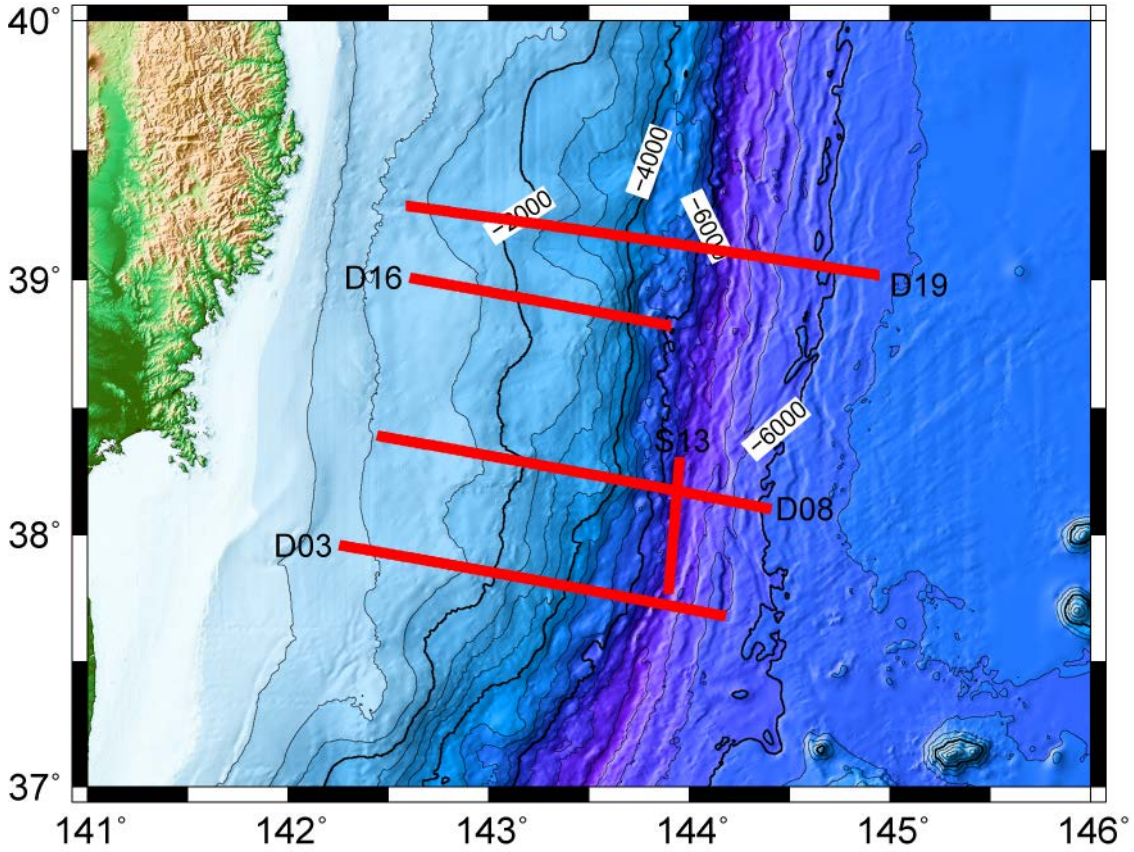
Expendable Conductivity-Temperature-Depth (XCTD) and expendable-Bathy Thermograph (XBT) have been conducted to correct the sonic speed for the bathymetry data.

（３） Cruise log:

Date		Remarks
2011/08/27	Sat	Departure from Hakodate-port, and transit to the survey area
2011/08/28	Sun	MCS survey on D19 line
2011/08/29	Mon	MCS survey on D19 line
2011/08/30	Tue	MCS survey on D16 line and transit to the Mutsu Bay to escape the typhoon
2011/08/31	Wed	Transit to the Mutsu Bay and stay there to escape the typhoon
2011/09/01	Thu	Stay at the Mutsu Bay to escape the typhoon
2011/09/02	Fri	Stay at the Mutsu Bay to escape the typhoon
2011/09/03	Sat	Stay at the Mutsu Bay to escape the typhoon
2011/09/04	Sun	Stay at the Mutsu Bay to escape the typhoon
2011/09/05	Mon	Stay at the Mutsu Bay to escape the typhoon
2011/09/06	Tue	Stay at the Mutsu Bay to escape the typhoon, and transit to the survey area
2011/09/07	Wed	MCS survey on D08 line
2011/09/08	Thu	MCS survey on D08 and S13 lines
2011/09/09	Fri	MCS survey on S13 and D03 lines
2011/09/10	Sat	MCS survey on D03 line and transit to JAMSTEC (Yokosuka)
2011/09/11	Sun	Arrive at JAMSTEC (Yokosuka)

（4） Seismic lines

1） Multi-channel seismic (MCS) reflection survey



Red lines are MCS reflection survey lines conducted in this cruise using a tuned air-gun array and a 444 channel hydrophone streamer.

D19	Time (UTC)	Latitude (N)	Longitude (E)	Depth (m)	SP
First shot	2011/08/28 07:30	39° 00.08763’	145° 01.58315’	5516	6088
First good shot	2011/08/28 08:29	39° 00.96206’	144° 56.94556’	5538	5951
Last good shot	2011/08/29 10:12	39° 17.14390’	142° 35.24351’	1386	1823
Last shot	2011/08/29 10:12	39° 17.14390’	142° 35.24351’	1386	1823

D16	Time (UTC)	Latitude (N)	Longitude (E)	Depth (m)	SP
First shot	2011/08/29 14:58	39° 00.42343’	142° 36.31581’	1217	1730
First good shot	2011/08/29 14:59	39° 00.41433’	142° 36.38411’	1216	1732
Last good shot	2011/08/30 04:00	38° 49.12955’	143° 54.61031’	6042	4032
Last shot	2011/08/30 04:00	38° 49.12955’	143° 54.61031’	6042	4032

D08	Time (UTC)	Latitude (N)	Longitude (E)	Depth (m)	SP
First shot	2011/09/07 07:02	38° 23.46441’	142° 26.22406’	1043	1620
First good shot	2011/09/07 07:07	38° 23.40032’	142° 26.66316’	1061	1633

Last good shot	2011/09/08 02:52	38°	06.06814’	144°	24.48913’	5936	5131
Last shot	2011/09/08 02:52	38°	06.06814’	144°	24.48913’	5936	5131

S13	Time (UTC)	Latitude (N)		Longitude (E)		Depth (m)	SP
First shot	2011/09/08 11:40	38°	18.36392’	143°	57.16127’	6894	1001
First good shot	2011/09/08 11:41	38°	18.28294’	143°	57.15441’	6878	1004
Last good shot	2011/09/08 19:38	37°	46.08106’	143°	53.78933’	7451	2200
Last shot	2011/09/08 19:38	37°	46.08106’	143°	53.78933’	7451	2200

D03	Time (UTC)	Latitude (N)		Longitude (E)		Depth (m)	SP
First shot	2011/09/09 01:47	37°	40.67298’	144°	10.98027’	6409	4770
First good shot	2011/09/09 01:48	37°	40.68251’	144°	10.91339’	6410	4768
Last good shot	2011/09/09 21:00	37°	57.57789’	142°	15.31937’	853	1318
Last shot	2011/09/09 21:00	37°	57.57789’	142°	15.31937’	853	1318

４． Notice on using:

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