



R/V Kairei Cruise Report

KR12-12 Leg1 & Leg2

Seismic survey and seismicity study
in off Kii Peninsula ~ off Tokai, Nankai trough

June 29 – August 6, 2012

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

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1. Cruise Information :

(1) Cruise number, Ship name: KR12-12_Leg1&Leg2, R/V Kairei

(2) Title of the cruise: 2012FY “Seismic survey and seismicity study in off Kii Peninsula ~ off Tokai”

(3) Chief Scientist [Affiliation]: Koichiro OBANA[JAMSTEC](Leg1)

Norio SHIMOMURA [JAMSTEC](Leg2)

(4) Representative of Science Party [Affiliation]: Yoshiyuki KANEDA [JAMSTEC],

(5) Title of proposal:

Research for Interaction between the Tokai, Tonankai and Nankai Earthquakes

- Seismic survey and seismicity study in off Kii Peninsula ~ off Tokai -

(6) Cruise period, Port call: 2012/6/29-7/20, from JAMSTEC (Yokosuka) to Onomichi (Onomichi)

2012/7/23-8/6, from Onomichi (Onomichi) to JAMSTEC (Yokosuka)

(7) Research Area: from off Kii Peninsula to off Tokai

(8) Research Area Map:

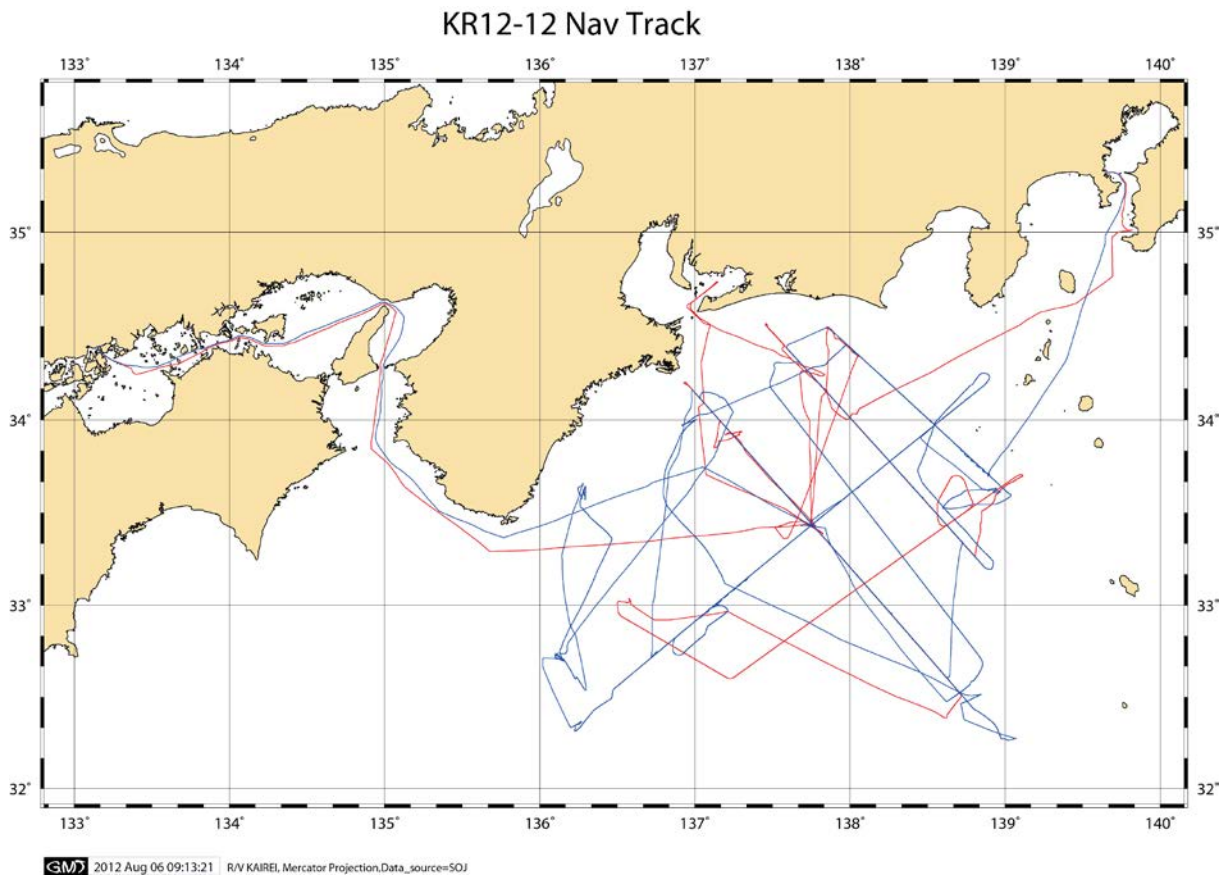


Fig.1 Map of ship track in NT12-12 cruise. Blue line is Leg1. Red line is Leg2.

2. Researchers

(1) Chief Scientist [Affiliation]: Koichiro OBANA [JAMSTEC](Leg1),

Norio SHIMOMURA [JAMSTEC](Leg2)

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

(3) Science party list:

Shuichi KODAIRA [JAMSTEC]

Narumi TAKAHASHI [JAMSTEC],

Yuka KAIHO [JAMSTEC],

Gou FUJIE [JAMSTEC],

Ayako NAKANISHI [JAMSTEC],

Seiichi MIURA [JAMSTEC],

Takeshi SATO [JAMSTEC],

Jin-Oh PARK [JAMSTEC],

Tsutomu TAKAHASHI [JAMSTEC],

Yojiro YAMAMOTO [JAMSTEC],

Mikiya YAMASHITA [JAMSTEC],

Tetsuo NO [JAMSTEC],

Kazuhiko KASHIWASE [JAMSTEC],

Kaoru TAKIZAWA [NME Ltd.],

Naoto NOGUCHI [NME Ltd.],

Taro SHIRAI [NME Ltd.]

3. Overview of Observation:

(1) Objectives:

This research cruise was conducted as a part of the study of “Research program concerning interaction between the Tokai, Tonankai, and Nankai Earthquakes” funded by the Ministry of Education, Culture, Sports, Science, and Technology of Japan. In the Nankai Trough seismic subduction zone, a number of great earthquakes ($M > 8$), such as 1944 Tonankai and 1946 Nankai earthquakes, have been repeatedly occurred. Notable features in this region are the segmentation of the rupture zones and synchronization of these segments. To understand the structure factors controlling the segmentation and the synchronization of rupture zones, it is necessary to reveal the detailed structure variations and seismic activities in this subduction zone. The objectives of this cruise are to reveal detailed seismic structure and seismic activity around off Kii Peninsula and off Tokai in the Nankai Trough.

(2) List of observation instruments:

1) Deployment of ocean bottom seismometers (OBSs)

162 OBSs were deployed around off Kii Peninsula and off Tokai during this cruise.

2) Seismic refraction survey

A seismic refraction survey using a tuned air-gun array of 7,800 cubic inch and OBSs was conducted in 2 survey lines (Z02 and Z04) off Kii Peninsula and off Tokai. This survey on Z01 and Z11 line could not be conducted because of the bad sea condition.

3) Multi-channel seismic (MCS) reflection survey

Multi-channel seismic reflection surveys were conducted in 7 lines (Z01, Z02, Z03, Z04, Z06, Z11 and Z13) using the 444 channel hydrophone streamer with a 12.5 m group interval. This survey on Z05, Z10 and Z12 line could not be conducted because of the bad sea condition.

4) Recovery of 14 OBSs around off Kii Peninsula and off Tokai

14 OBSs were recovered, although 3 plus alpha OBSs was planned to recover during this cruise.

5) 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.

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

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

(3) Cruise log:

1) Leg1

Date		Remarks
2012/6/29	Fri	Departure from JAMSTEC (Yokosuka) Transit to survey area and deployment of OBSs
2012/6/30	Sat	Deployment of OBSs
2012/7/1	Sun	Deployment of OBSs
2012/7/2	Mon	Deployment of OBSs
2012/7/3	Tue	Deployment of OBSs and standby due to weather condition
2012/7/4	Wed	Deployment of OBSs
2012/7/5	Thu	Air-gun shooting and MCS survey on line Z01
2012/7/6	Fri	Air-gun shooting and MCS survey on line Z01
2012/7/7	Sat	Standby due to weather condition
2012/7/8	Sun	Air-gun shooting and MCS survey on line Z04
2012/7/9	Mon	Air-gun shooting and MCS survey on line Z04
2012/7/10	Tue	Air-gun shooting and MCS survey on line Z04
2012/7/11	Wed	Standby due to weather condition
2012/7/12	Thu	Standby due to weather condition
2012/7/13	Fri	Air-gun shooting and MCS survey on line Z11
2012/7/14	Sat	Air-gun shooting and MCS survey on line Z11
2012/7/15	Sun	Air-gun shooting and MCS survey on line Z11
2012/7/16	Mon	Air-gun shooting and MCS survey on line Z02
2012/7/17	Tue	Air-gun shooting and MCS survey on line Z02 and Z03
2012/7/18	Wed	Air-gun shooting and MCS survey on line Z03
2012/7/19	Thu	Recovery of OBSs and transit to Onomichi port (Onomichi)
2012/7/20	Fri	Transit and arrive at Onomichi port (Onomichi)

2) Leg2

Date		Remarks
2012/7/23	Mon	Departure from Onomichi port (Onomichi) and transit to survey area
2012/7/24	Tue	Transit to survey area and deployment of OBSs
2012/7/25	Wed	Air-gun shooting on line Z04
2012/7/26	Thu	Air-gun shooting on line Z04
2012/7/27	Fri	Air-gun shooting and MCS survey on line Z06 and Z13
2012/7/28	Sat	Air-gun shooting and MCS survey on line Z13
2012/7/29	Sun	Air-gun shooting on line Z02
2012/7/30	Mon	Air-gun shooting on line Z02 and recovery of OBSs
2012/7/31	Tue	Transit and stay at Mikawa Bay to escape the typhoon

2012/8/1	Wed	Stay at Mikawa Bay to escape the typhoon
2012/8/2	Thu	Stay at Mikawa Bay to escape the typhoon and transit to survey area
2012/8/3	Fri	Recovery of OBSs and standby due to weather condition
2012/8/4	Sat	Transit and stay at Tateyama Bay to escape the typhoon
2012/8/5	Sun	Stay at Tateyama Bay to escape the typhoon
2012/8/6	Mon	Transit and arrive at JAMSTEC (Yokosuka)

(4) Research Information:

1) Refraction/Reflection seismic survey and deployed OBSs

During the cruise, 2 lines of seismic refraction survey and 7 lines of Multi-channel seismic reflection surveys have been conducted and 162 OBSs were deployed.

2) OBS Recovery

During the cruise, 14 ocean bottom seismographs (OBSs) have been recovered.

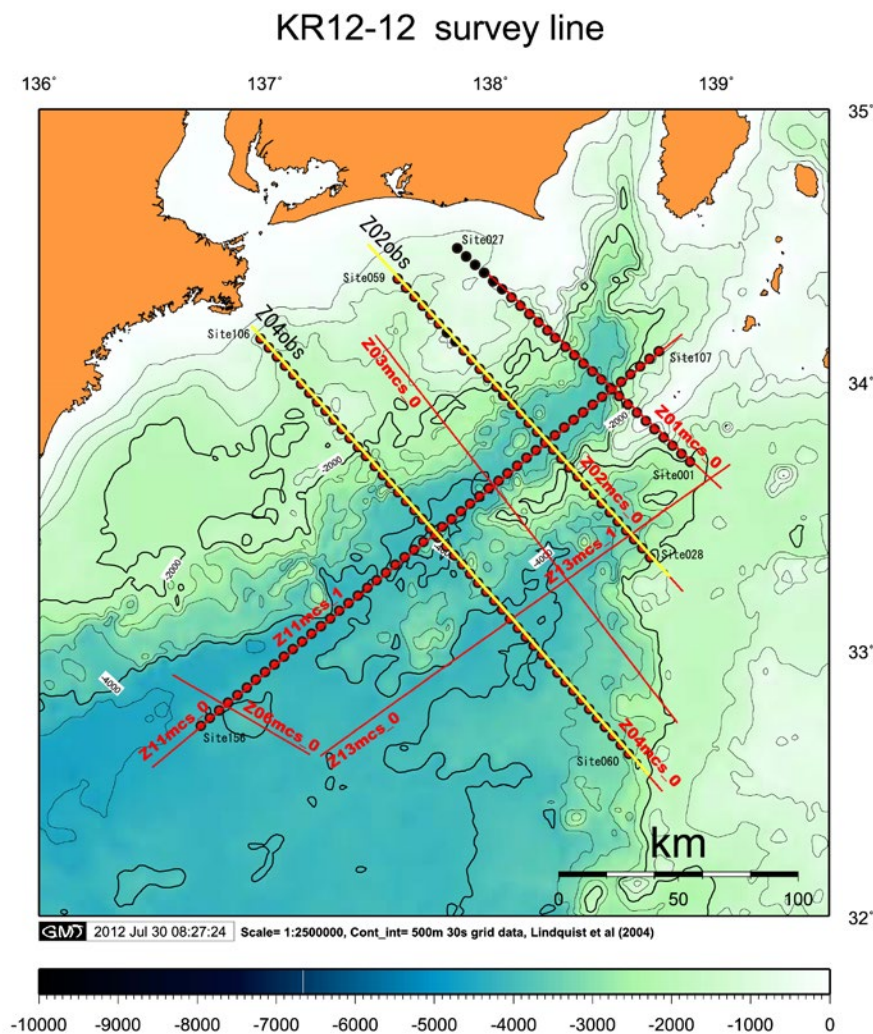


Fig.2 Map of survey line and the OBSs. Red circles are the OBSs deployed during the cruise KR12-12. Black circles are deployed and recovered OBSs. Red lines are MCS survey lines, yellow lines are OBS's.

4. 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.