Cruise summary

1. Cruise Information

(1) Cruise Number, Ship name : KR13-12, R/V Kairei

(2) Title of the Cruise
FY2013 Seismic survey and observations in Japan Trench region

(3) Chief Scientist [Affiliation] : FUJIE Gou [JAMSTEC]

(4) Representative of Science Party [Affiliation]
Shuichi Kodaira [JAMSTEC]

(5) Cruise period, Port call
2013/08/01 – 2013/08/17, Hachinohe-Yokosuka

(6) Research Area
Japan Trench region

(7) Research Map

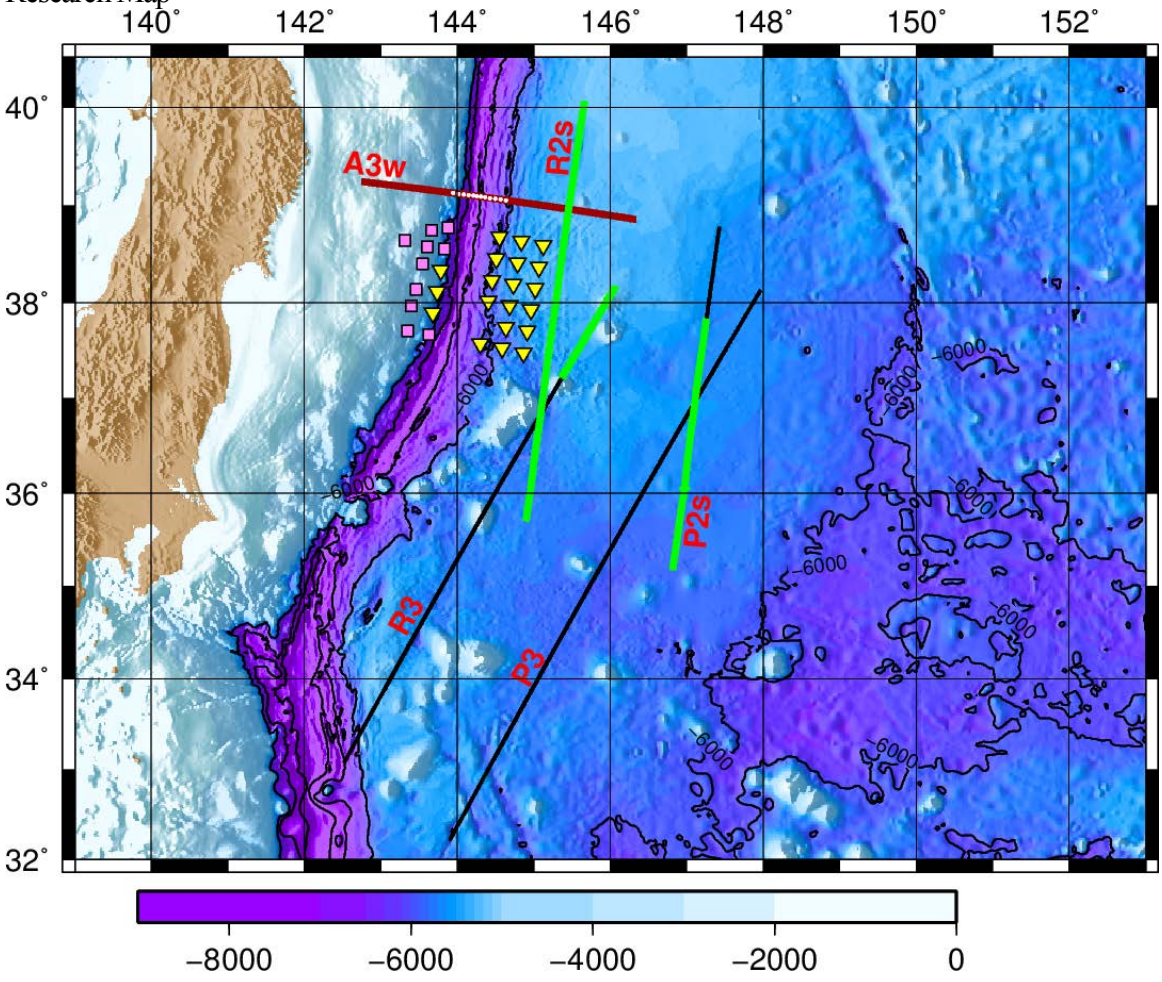

Figure 1. Location map of KR13-12 cruise. Red line represents OBS-refraction survey line and small white circles are OBSs for the wide-angle seismic refraction survey. Green lines are MCS lines (black lines were planned MCS lines). Purple squares are short-term OBSs for earthquake observation. Yellow inverted triangles are long-term OBSs for earthquake observation.

2. Overview of Observation

(1) Objectives

On 11 March 2011, the great 2011 Tohoku-oki earthquake (Mw 9.0) was occurred in the Japan Trench region. This was the greatest earthquake that has been observed in Japan, and it caused devastating damages in the eastern Japan. To evaluate the hazard of the large interpolate and outer rise earthquakes next to the rupture zones of the 2011 Tohoku-oki earthquake, we conducted seismic structure survey in the Japan Trench region. In addition, to reveal the precise distribution of aftershocks in the main shock region and outer rise region, we deployed 30 OBSs for short-term and long-term observation in the vicinity of the main shock region.

(2) Observations

1) OBS deployment
We deployed 13 OBSs for wide-angle seismic refraction and reflection survey and 30 OBSs for the aftershock observation.

2) Airgun shooting.
We shot the airgun array of R/V Kairei along A3w, R2s, P2s, and R3.

3) Bathymetry, magnetics and gravity observation.
During the cruise, bathymetry, magnetics and gravity data have been recorded continuously by SEABEAM2112.004, three component magnetometer and gravity meter, respectively. However, the SEABEAM system was broken down and we could not obtain the bathymetry data along the last two lines.

3. Data

We deployed 13 OBSs for wide-angle seismic structure study and recovered 11 OBSs. All the recovered OBSs recorded wide-angle reflections and refractions clearly. The on-board time-migrated sections along R2s/P2s/R3 were generally of good quality.