Cruise summary

1．Cruise Information：

（1） Cruise number, Ship name: KR11-01, R/V Kairei

（2） Title of the cruise:　2010FY “Seismic study in the northwestern Pacific region”

（3） Chief Scientist [Affiliation]: Takeshi SATO [JAMSTEC]

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

（5） Title of proposal:

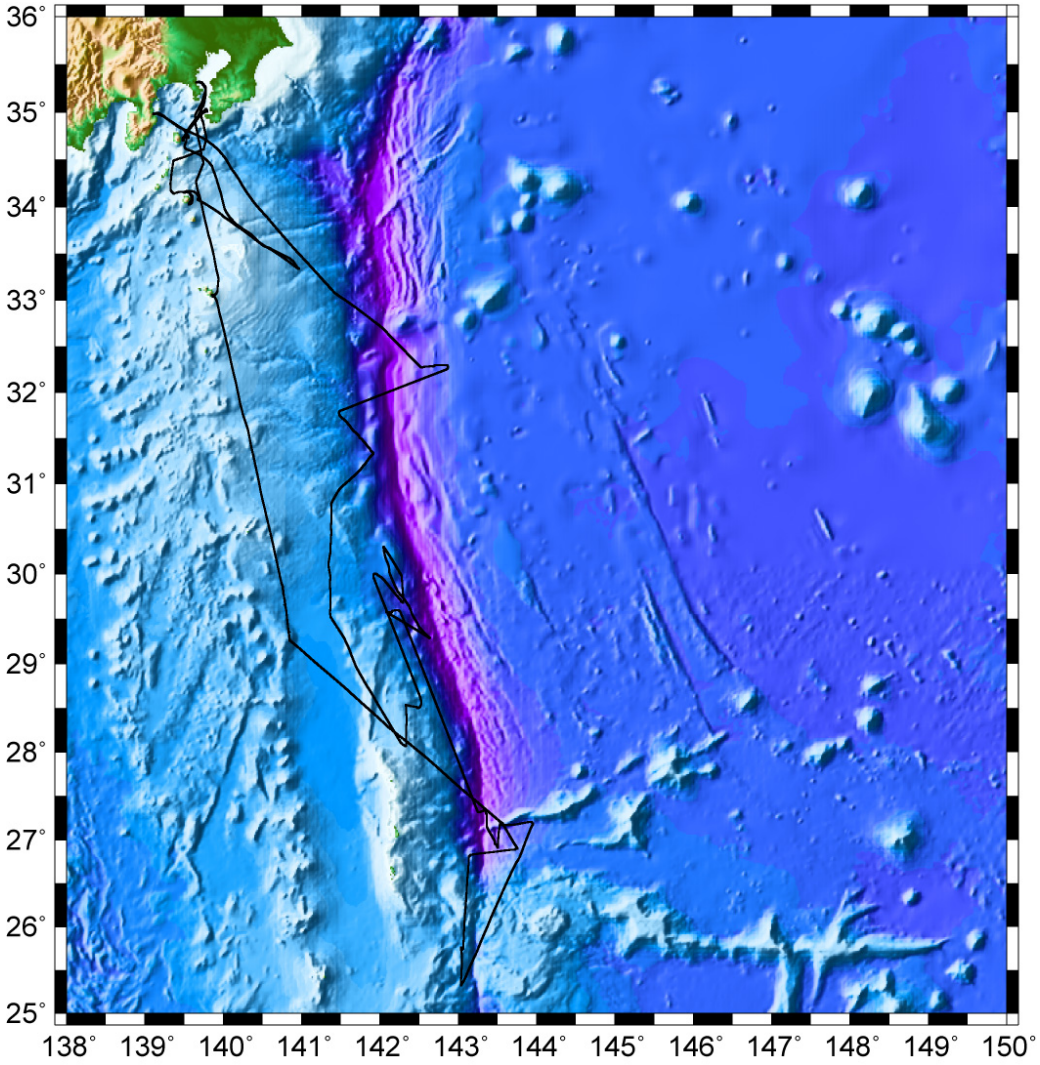
High-resolution structure study in the northwestern Pacific region

（6） Cruise period, Port call:

2011/1/4-1/20, JAMSTEC (Yokosuka) to JAMSTEC (Yokosuka)

（7） Research Area: Northwestern Pacific and Izu-Ogasawara

（8） Research Map:



2．Overview of　Observation：

（1）Objectives：

In the northwestern Pacific region, the old oceanic plate (Pacific plate) formed in the eastern Pacific ridge has been subducting in the Japan, Kuril and Ogasawara trenches. To advance the "Mohole project" being one of an IODP proposal and to understand the structural character of the old oceanic plate, it is important to clarify the crust and mantle structure in the old oceanic plate and the transitional process of the structure in the plate. The objectives of this cruise are to reveal the detailed crust and mantle structure of the old oceanic plate (Pacific plate)　and transition of this structure around the trench.

In the Izu-Ogasawara area, IFREE has conducted seismic surveys intensively to understand crustal evolution of oceanic arcs since 2004. The objectives of this cruise in this area are to reveal the distribution of the detail crustal structure in the fore-arc area and in planed drill points of the "Project IBM" being one of an IODP proposal.

The earthquake of M_{JMA} = 7.4 occurred on December 22, 2010 off the east of the Chichi-jima in the Ogasawara area. To understand the mechanism of the earthquake generation and the tsunami generation of this earthquake, and the deformation of the old oceanic plate around the trench, it is important to clarify the location and geometry of the fault plane of the main shock. The objectives are also to reveal the precise aftershock distribution of this earthquake because this distribution is essential to determine the fault geometry.

（2）List of observation instruments：

1）Multi-channel seismic (MCS) reflection survey

On 3 lines (A6mcs_0, KT06_0 and KT07 lines, the MCS 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. On A6mcs_0 line of the MCS survey, a volume of a tuned air-gun array is 6,550 cubic inch because of an air-gun system trouble.

2）Recovery of ocean bottom seismometers (OBSs)

13 OBSs deployed off the south-southeast of Tori-shima and one OBS deployed off the east of Chichi-jima by KR10-13 cruise were recovered.

3）Deployment of OBSs

4 OBSs were deployed off the east of Chichi-jima.

4）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.

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

Expendable-Bathy Thermograph (XBT) has been conducted to correct the sonic speed for the bathymetry survey.