

## Cruise summary of MR13-E02 cruise

### Cruise information

Cruise number	MR13-E02
Name of the cruise	R/V MIRAI
Chief scientist	Takafumi Kasaya (IFREE, JAMSTEC)
Representative of the Science Party 1	Hideaki Machiyama (SRRP, JAMSTEC)
Title of the cruise	Marine electro-magnetic survey around Iheya North knoll field
Cruise period	25 Nov 2013 – 9 Dec 2013
Ports of call	Yokohama-Shinko port – Naha
Research Area	North Iheya hydrothermal area (Fig.1)

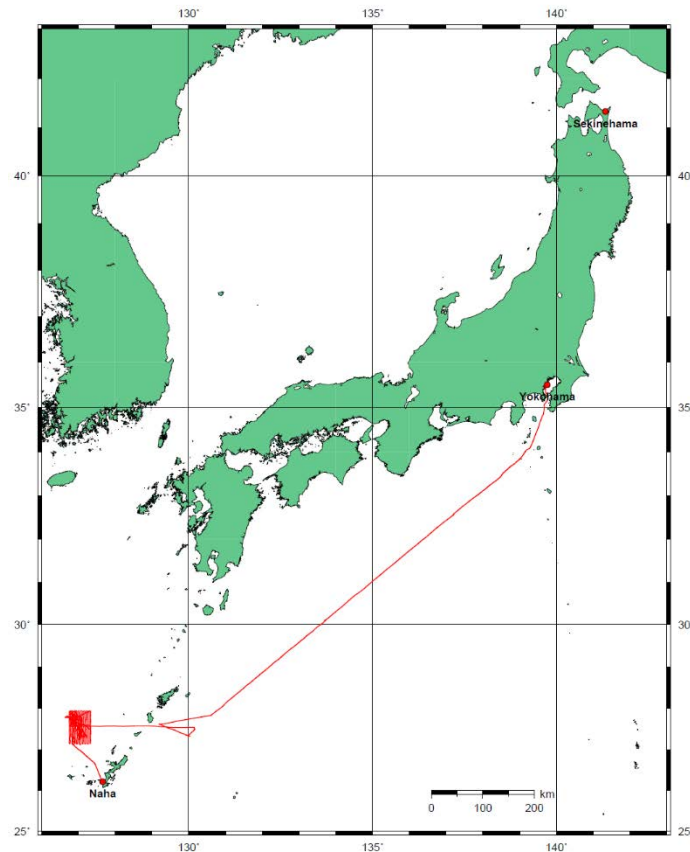


Fig.1 Ship track of this cruise.

## **Cruise proposal**

” Marine electro-magnetic survey around Iheya North knoll field”

In recent, the concern with the submarine massive sulphides (SMS) has been growing. However, few exploration techniques were developed to evaluate the thickness of SMS and to find the buried SMS. It is also very important for the study of the origin and formation of SMS to detect the subsurface hydrothermal circulation system.

In the Iheya North knoll field, seismic survey and deep-sea drilling study had carried out. However, their result have not been fully elucidated the whole hydrothermal circulation system. Geophysical exploration method based on the electromagnetism is very sensitive to the conductive fluid and mineral resources. Therefore, we have carried out the DC resistivity survey and magneto-telluric (MT) survey around Iheya North knoll filed. On this cruise, we deployed six ocean bottom electro-magnetometers (OBEMs) for the EM survey, and carried out the deep-towed controlled source DC and EM survey at three areas in/around the Iheya North geothermal area. Moreover, we tried the deep-towed subbottom profiling.