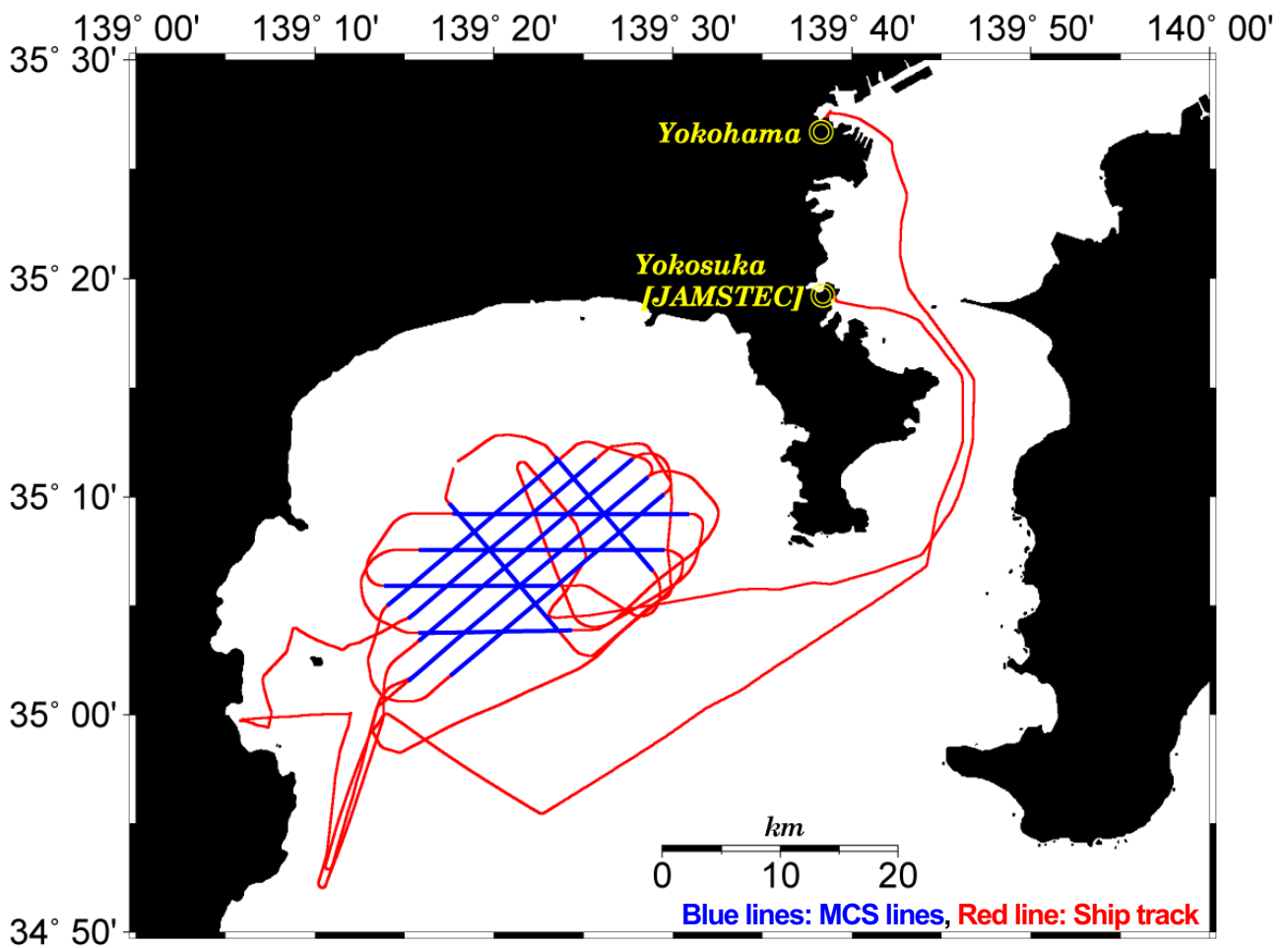


Cruise summary

1. Cruise Information :

- (1) Cruise number, Ship name: KR10-01, R/V Kairei
- (2) Title of the cruise: 2009FY “Seismic study in the Sagami bay”
- (3) Chief Scientist [Affiliation]: Tetsuo No [IFREE, JAMSTEC]
- (4) Representative of Science Party [Affiliation]: Yoshio Fukao [IFREE, JAMSTEC],
- (5) Title of proposal: High resolution deep seismic study in and around the Sagami Bay and Boso peninsula
- (6) Cruise period, Port call: 2010/1/4 - 1/8, Yokosuka to Yokohama
- (7) Research Area: Sagami Bay
- (8) Research Map:



2. Overview of Observation :

(1) Objectives :

The Sagami Bay is located along the boundary between the Philippine Sea Plate and the Northeast Honshu arc. Great earthquakes (e.g., the 1923 Great Kanto earthquake, the 1703 Genroku earthquake) have frequently occurred in the Sagami Trough, including the Sagami Bay, and these earthquakes have caused very strong vibrations, large tsunamis, and serious damage around the Kanto and Tokai area. Studies conducted in the last ten years have contributed to the crustal exploration of the Philippine Sea Plate for territorial delimitation of the continental shelf. For example, the forearc in the Izu-Ogasawara arc includes a paleoarc formed during the Eocene, and an island arc formed during the Oligocene. Between these arcs is distributed a thin crust, which was rifted during the Eocene, and a thick sedimentary layer on the crust (e.g., Takahashi et al., 2008). Since the Philippine Sea Plate has these heterogeneous structures which formed in the Izu-Ogasawara, it is important to understand how it affects the seismogenic zone around the Sagami Bay. To study the seismotectonics around the Sagami Bay, some seismic reflection studies have been conducted (e.g., Kato et al., 1983, Kinoshita et al., 2006). However, the past seismic reflection surveys have been carried out using short streamer cables. In order to study the deep crustal structure, we need to carry out data acquisition by using long streamer cables.

In January 2010, we have conducted a multi-channel seismic reflection (MCS) survey around the Sagami Knoll in the Sagami Bay using R/V KAIREI of JAMSTEC. The survey lines were set according to the drilling sites proposed for the Integrated Ocean Drilling Program (IODP) expedition of the Kanto Asperity Project and the fishing operations around the survey area

(2) List of observation instruments :

1) Multichannel seismic reflection survey (MCS)

MCS data was acquired along 12 lines (SG10-1, SG10-2, SG10-A, SG10-B, SG10-C, SG10-D, SG10-E, SG10-EW1, SG10-EW2, SG10-EW3, SG10-EW4, and SG10-B-17m) with a total length of approximately 234.8 km. We used an airgun array with a spacing of 37.5 m. The total capacity of this array was 7,800 in.cu. (130-liters; tuned airgun array consisting of 32 guns). The standard air pressure was 2,000 psi (about 14 MPa). During operation, we towed a 360-channel hydrophone streamer cable with a 4600-m maximum offset, and the group interval was 12.5 m. The towing depth of the airgun array and the streamer cable was maintained at 6 m and 10 m below the sea surface, respectively. The sampling rate was 2 ms, and the recording length was 15 s. During the survey, the weather and sea conditions were normal and the ocean currents were weak; therefore, the data quality of this exploration was good.

2) Bathymetry, magnetics and gravity observation

Bathymetry, magnetic, and gravity data were recorded continuously during the survey. The bathymetry survey on R/V KAIREI uses a multi-narrow beam echo sounder manufactured by SeaBeam Instruments (type: Sea Beam 2112.004)(Fig.5). Gravity data is obtained by a shipboard gravimeter manufactured by Fugro Co., Ltd. (type: BODESEEWERK KSS31). The magnetic survey uses a three-component magnetometer manufactured by Tiera Technica Corporation (type: SFG1214).