Submission date 2017/09/15

Cruise Summary

1. Cruise Information

(1) Cruise ID: KM17-08C

(2) Name of vessel: Kaimei

(3) Title of the cruise:

2017FY “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region”

(4) Chief scientist [Affiliation]: Tsutomu Takahashi [JAMSTEC]

(5) Representative of the Science Party [Affiliation]: Shuichi Kodaira [JAMSTEC]

(6) Title of proposal:

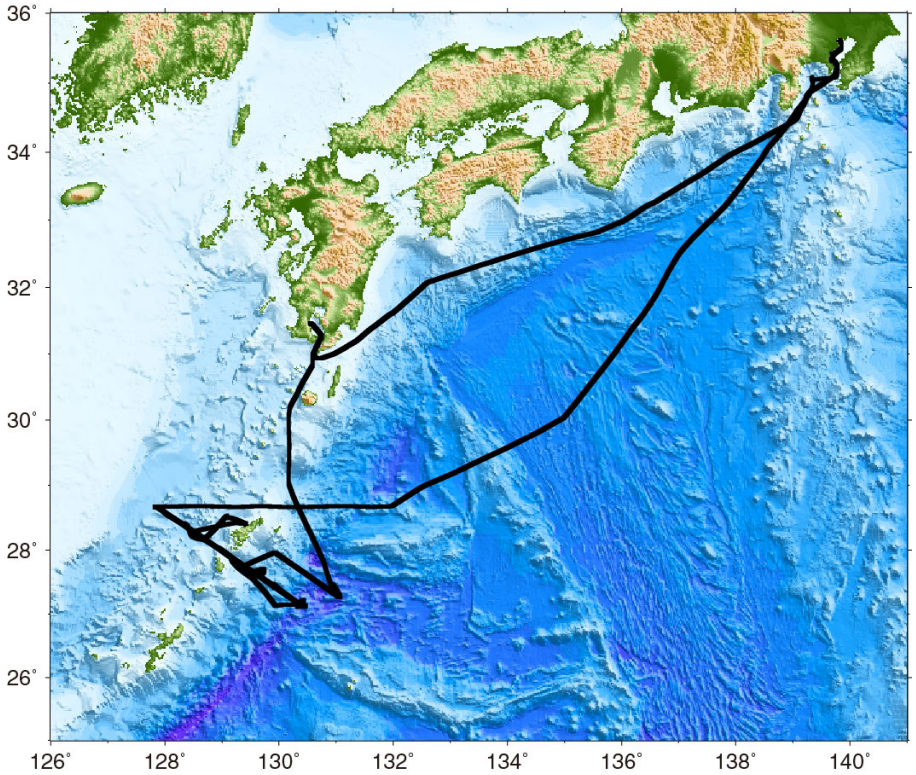
Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region

(7) Cruise period: Aug. 16, 2017 – Sep. 6, 2017

(8) Ports of departure / call / arrival: Tokyo port to Yokohama port

(9) Research area: Ryukyu arc

(10) Research map



2. Overview of the Observation

(1) Objectives

In Ryukyu subduction zone, permanent seismic observatories are deployed only on islands, and therefore island distribution causes a significant restriction of estimations of seismicity and underground structures in this area. To elucidate details of seismicity, lithospheric structures, and plate geometry of this subduction zone, we conduct a series of passive and active seismic surveys around Ryukyu arc, as a part of research project “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region” funded by Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan. In this KM17-08C cruise, we conducted a seismic refraction survey with 30 ocean bottom seismographs (OBSs), and seismic reflection surveys at two survey lines around Amami-Oshima, southwest Japan.

(2) List of observation

(a) Seismic Refraction survey

We have deployed 30 OBSs (TOBS-24N, TOKYO SOKUSHIN CO., LTD) along RK03 survey line near Amami Oshima. Deployed OBS is equipped with a three component 4.5Hz geophone and a hydrophone. After deployment, we conducted air-gun shooting twice by using two or three air-gun sub-arrays (Bolt Long Life Air Gun). Air-gun depth was kept at 10m below the sea surface. Shooting interval of this survey is set as 200m, and offset distance of shooting point between the first and second shooting is 100m. After the air-gun shooting, we recovered the deployed OBSs.

(b) Seismic Reflection Survey

Seismic reflection surveys were conducted along RK03 and RK04 survey lines with three air-gun sub-arrays and a 480-channel hydrophone streamer cable. Air-gun and streamer cable were towed with depths of 10m and 21m below the sea surface, respectively.

(c) Bathymetry, magnetic, and gravity observations

Bathymetry, magnetic, and gravity data were recorded continuously throughout this cruise.