Cruise Summary

1. Cruise Information

(1) **Cruise ID:** KH-23-11

(2) **Vessel:** R/V HAKUHO MARU

(3) **Cruise Title**

Earth science integrated oceanographic observations in the Southern part of Okinawa Trough for understanding the early processes of back-arc spreading

(4) **Chief Scientist**

Makoto Otsubo (Geological Survey of Japan/AIST)

(5) **Representative of the Science Party**

SH23-16 Makoto Otsubo (Geological Survey of Japan/AIST)

(6) **Research Titles**

SH23-16 Earth science integrated oceanographic observations in the Southern part of Okinawa Trough for understanding the early processes of back-arc spreading

(7) **Cruise Period**

2023/12/28 - 2024/01/10

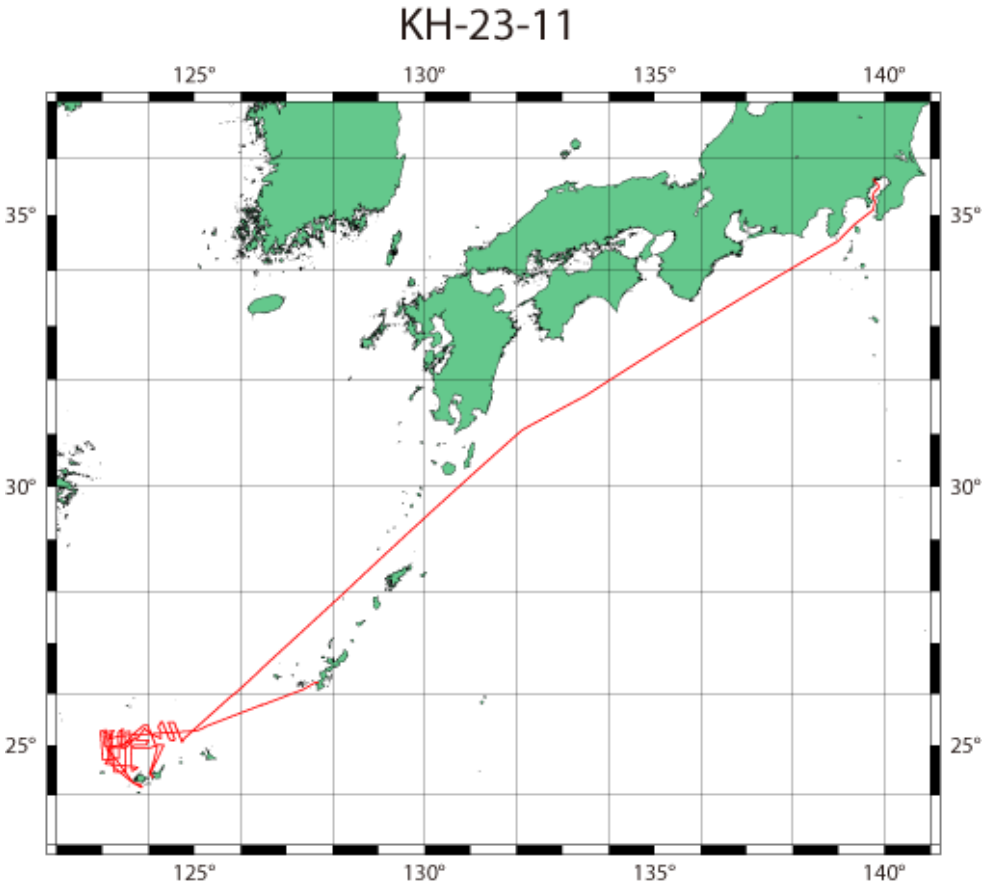
(8) **Ports of departure/call/arrival**

Naha - Tokyo

(9) **Research Area**

Southern part of Okinawa Trough

(10) **Cruise Track**



2. Overview of the Observation

The Okinawa Trough (East China Sea) is a back-arc basin located on the Eurasian Plate and is an early stage of thinning of the continental crust, which has been undergoing intermittent spreading (rifting) for 2 million years. It is not clear how the crust thins during this stage and what factors promote this thinning. In this study, we focused on the possibility of crustal weakening caused by fluid migration and thermal condition along faults in the early stage of back-arc basin development, and conducted seismic reflection surveys and bathymetric surveys over a wide area, focusing on the Yaeyama and Yonaguni rifts in the southern part of the Okinawa Trough, where the spreading is most advanced, and conducted seismic reflection surveys at several locations in the two rifts. In the KH-23-11 Cruse, at several points in both rifts, we will collect sediments filling the Okinawa Troughs by piston coring, extract water and gas from the collected sediments, measure crustal heat flow around the trough axes, and conduct water sampling

and CTD observations.