

# Cruise Summary

## 1. Cruise Information

(1) **Cruise ID:** KS-25-3

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

(3) **Cruise Title**

Can seamount subduction weaken locking of megathrust earthquake? : Quest for fluid flow along faults

(4) **Chief Scientist**

Masataka Kinoshita (ERI, The University of Tokyo)

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

S25-16 Masataka Kinoshita (ERI, The University of Tokyo)

(6) **Research Titles**

S25-16 Can seamount subduction weaken locking of megathrust earthquake? : Quest for fluid flow along faults

(7) **Cruise Period**

2025/04/22 - 2025/04/30

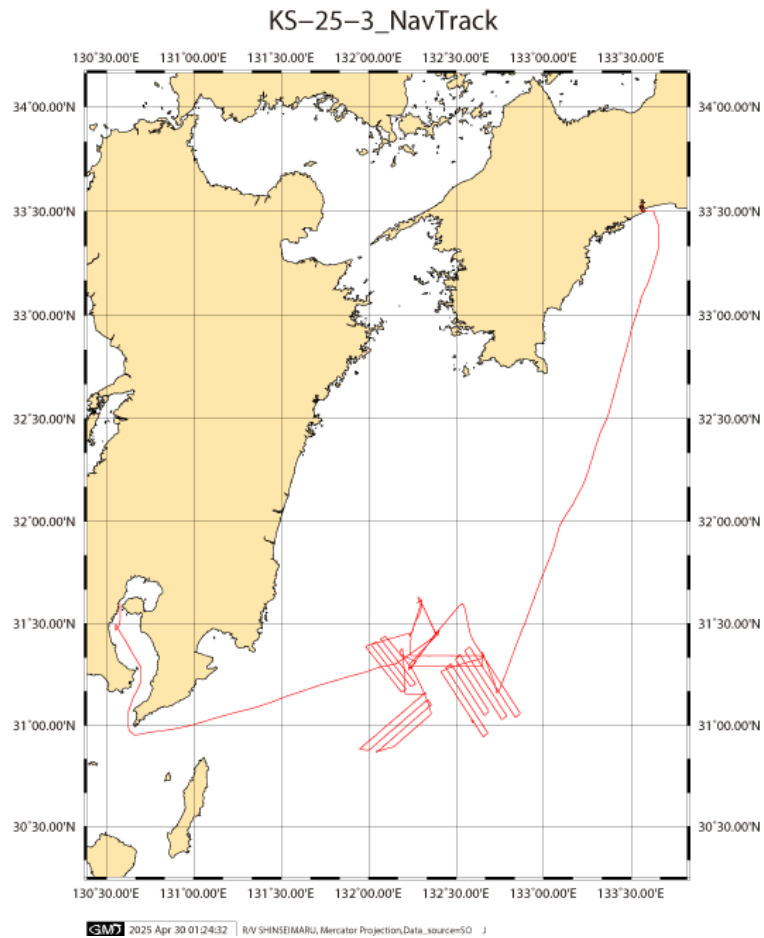
(8) **Ports of departure/call/arrival**

Kagoshima - Kochi

(9) **Research Area**

Hyuga-Nada

## (10) Cruise Track



## 2. Overview of the Observation

The Nankai Trough earthquake is feared to have an 80% probability of occurring within the next 30 years. Although its epicenter extends from Shizuoka Prefecture to off the coast of Miyazaki Prefecture, historical data shows that its epicenter will not reach the western side of the Hyuga Sea. However, the reason for this is not yet clear.

The M7-class earthquakes that occurred off Miyazaki in August of last year and January of this year are being debated by the government's Seismological Research Commission as to whether they could trigger a Nankai Trough earthquake. Such an important area, Hyuga-nada, has subducted seamounts that formed about 30 million years ago, and we believe that this obstacle is causing the area to behave differently from other areas.

The purpose of this survey is to verify the possibility that water is being squeezed

out of the strata at the location where the obstacle has subducted. Specifically, we will use piston core samplers and heat flow probes to look for evidence of water being squeezed out of the seafloor. If water is seeping from the seafloor, the source strata should be depleted of water, which may make it difficult for a large-scale earthquake to occur at that location.

The following were conducted from the time of departure on 4/22 to the time of arrival on 4/30:

- (1) Sediment sampling and heat flow measurements using a heat flow piston corer
- (2) Multi-point heat flow measurement by heat flow probe
- (3) Very low-surface mud sampling and heat flow measurements (SAHF) using a multiple corer
- (4) Seafloor topography and surface geology survey using multibeam acoustic sounding instrument and sub-bottom profiler