

Chikyu Shallow Core Program (SCORE)

Proposal Cover Sheet

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Proposal No.	017-R3
New / Revised	Revised

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Basic Information

Title:	Cold axis or Hot axis? Investigating the geothermal structure of a pre-break-up backarc basin, southern part of Okinawa Trough
Keywords: (5 or less)	Backarc basin, normal fault, fluid, heat flow, subduction zone
Area:	East China Sea

Lead Proponent:	Makoto Otsubo
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I permit. I don't permit.

Scientific Objectives (250 words or less)

We propose one piston coring by the Chikyu axis (Yaeyama Rift) in the southern part of the Okinawa Trough. Our strategy includes ~100 m piston coring at one site. The coring aims to recover sediments and pore fluids and measure ground temperatures. The objectives of the piston coring program are three-fold. (1) Investigate the source of the trough-filling sediments by studying the variation of lithology and grain size in the depth direction. (2) Document and analyze the hydrogeological and geochemical properties of the trough-fill sediments to determine the upwelling of deep fluids derived from the mantle. (3) Measure the temperature in the trough-filling sediments to understand the true thermal structure of the trough axis. Results from our studies directly address Challenge 11 ("How do subduction zones initiate, cycle volatiles, and generate continental crust?") and contribute to Challenge 14 (fluids) of the IODP 2013–2023 Science Plan.

Proposed Sites

Site Name	Position (Lat, Lon)	Water Depth (m)	Penetration (m)	Primary or alternate
SOT-01A	25:12.71'N, 124:17.40'E	2,254 m	100 m	Primary
SOT-02A	25:11.59'N, 124:14.40'E	2,199 m	100 m	Alternate

[Note: Only shallow-penetration coring (about <100 m below seafloor) is available.]

Non-standard Measurements

in-situ temperature measurement by using APCT-3 (every 10 m)

[Note: Please describe above any non-standard measurements needed to achieve the proposed scientific objectives. Standard measurements are X-ray CT, Multi-sensor core logger, and split surface image.]

List previous drilling in area

ODP 195 Site 1202A

List potential hazards and preferred weather window

List potential hazards: Typhoon in summer

preferred weather window: Autumn to Spring (Nov. to May)

Proponent List

First Name	Last Name	Affiliation	Country	Expertise
Makoto	Otsubo	Geological Survey of Japan	Japan	Subduction tectonics, Fault mechanics
Ryuta	Arai	Japan Agency for Marine-Earth Science and Technology	Japan	Subduction tectonics, Seismic velocity structure

Tomohiro	Toki	Univ. of Ryukyus	Japan	Fluid geochemistry
Ayanori	Misawa	Geological Survey of Japan	Japan	Subduction tectonics, seismic reflection
Kiyokazu	Oohashi	Yamaguchi Univ.	Japan	Fault mechanics
Yoshimi	Kubota	National Museum of Nature and Science	Japan	Paleontology, sedimentology
Ayumu	Miyakawa	Geological Survey of Japan	Japan	Subduction tectonics, Numerical modelling
Masataka	Kinoshita	The University of Tokyo, ERI	Japan	Geothermal structure
Fumihiko	Ikegami*	Univ. of Tasmania	Australia	Subduction margin processes

[Note: For proponents who do not have J-DESC memberships, please put an asterisk (*) AFTER his/her last name.]

Does your plan need onboard scientists?

Yes No

If you check "Yes", please fill in the following blanks.

Number of people needed and their roles on board:

Name of candidates for the chief scientist on board:

	(primary)
	(alternate)