Chikyu Shallow Core Program (SCORE)

Proposal Cover Sheet

Received date	18 Oct. 2021
Proposal No.	014-R3
New / Revised	Revised

(Above For Official Use Only)

Basic Information

Title:	Structural and stratigraphic characteristics, and physical property of the Shizunai submarine landslide, Hidaka trough, northern Japan
Keywords: (5 or less)	Shizunai submarine landslide, Hidaka trough, internal deformation structure, physical property, landslide-induced tsunami
Area:	Hidaka trough, offshore southern Hokkaido, northern Japan

Lead Proponent:	Hiroyuki Arato, Prof., Dr. Sc.
Affiliation:	Graduate School of International Resource Sciences, Akita University
Address:	1-1 Tegata Gakuenmachi, Akita City, Akita Prefecture, 010-8502 Japan
Phone:	+81-18-889-3257
E-mail:	h_arato@gipc.akita-u.ac.jp

☐ Permission is granted to post the coversheet/site table on www.j-desc.org

Scientific Objectives (250 words or less)

Submarine landslides are common on the ocean floor. Recent modeling efforts have shown that these slides may cause tsunamis that affect coastal communities and offshore infrastructure. To mitigate these geohazards, it is vital to understand the mechanisms of slide initiation; however, current knowledge of these mechanisms is insufficient due to a lack of fundamental measurements, e.g., the timing, size, and nature of submarine landslides, as mentioned in ***Challenge 12 of the IODP SCIENTIFIC PLAN FOR 2013–2023***.

To illustrate the nature and behavior of submarine landslides, we propose shallow coring of a submarine landslide in the Hidaka Trough, northern Japan, to acquire geological and structural data and measure the physical properties of the landslide body and the surrounding material. Based on three-dimensional seismic interpretation, a ~100 m core can penetrate the slip surface. Determining the sedimentation rate, geological characteristics (e.g., lithofacies, porosity, consolidation state, permeability, sonic velocity, and density) and microstructural characteristics of submarine landslides using core samples provides fundamental information on the characteristics of the slide.

A comparison of the sliding body and a reference site should aid in understanding when, where, and why submarine landslides occur. We will then construct a realistic model of submarine landslides that should contribute substantially to our understanding of the mechanisms of submarine landslides and future mitigation of landslide-induced tsunami disasters.

Proposed Sites

Site Name	Position (Lat, Lon)	Water Depth (m)	Penetration (m)	Primary or alternate
Shizunai-1	42 deg 02' 26.3652" N 142 deg 17' 41.8730" E	976.1 m	100.0 m	primary (priority)
Shizunai-2	42 deg 01' 50.0535" N 142 deg 19' 14.1770" E	976.8 m	100.0 m	
Shizunai-3	42 deg 00’ 41.1597” N 142 deg 13’ 54.4282” E	1,002.3 m	40.0 m	primary
Shizunai-4	41 deg 59' 02.1380" N 142 deg 12' 47.5641" E	1,012.3 m	100.0 m	alternate
Shizunai-5	42 deg 03' 13.6656" N 142 deg 15' 41.4916" E	990.1 m	100.0 m	

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

Non-standard Measurements

no

[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

SCORE Expedition 910 site (approximately 27 km south-southeast of the proposed Site Shizunai-1)(Fig. 2)

List potential hazards and preferred weather window

n/a

Proponent List

First Name	Last Name	Affiliation	Country	Expertise
Hiroyuki	Arato	Akita University	Japan	Sedimentology Seismic Geology
Shun	Chiyonobu	Akita University	Japan	Biostratigraphy Physical Property
Yuzuru	Yamamoto	Kobe University	Japan	Physical Property Structural Geology
Yasuhiro	Yamada	Kyushu University	Japan	Structural Geology Physical Property
Kazuya	Shiraishi	JAMSTEC	Japan	Geophysics

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