

IODP Proposal Cover Sheet

 New Revised Addendum**738-APL**

Please fill out information in all gray boxes

Above For Official Use Only

	Please check if this is Mission proposal <input type="checkbox"/>	
Title:	Ancillary Project Letter: Nankai Trough Submarine LandSLIDE history (NanTroSLIDE)	
Proponent(s):	Michael Strasser (Univ. Bremen, GER), Gregory F. Moore (Univ. Hawaii, USA), Juichiro Ashi (Univ. Tokyo, JPN), Angelo Camerlenghi (Univ. Barcelona, ESP), Brandon Dugan (Rice Univ., USA), Katrin Huhn (Univ. Bremen, GER), Kiichiro Kawamura (Fukada Geol. Inst. Tokyo, JPN), Brian G. McAdoo (Vassar College, USA), Giuliana Panieri (Univ. Bologna, ITA), Gian Andrea Pini (Univ. Bologna, ITA), Roger Urgeles (Univ. Barcelona, ESP)	
Keywords: (5 or less)	Submarine Landslide, Mass transport deposits, Geohazards, Paleoseismology, Slope basin sedimentary evolution	Area: Nankai Trough, Japan

Contact Information:

Contact Person:	Michael Strasser	
Department:	MARUM – Centre for Marine Environmental Sciences	
Organization:	University of Bremen	
Address	Leobener Strasse, 28359 Bremen, Germany	
Tel.:	+49 421 218 65862	Fax: +49 421 218 65810
E-mail:	mstrasser@uni-bremen.de	

Permission to post abstract on IODP Web site: Yes No

Abstract: (400 words or less)

This Ancillary Project Letter aims to add one Site (NTS-1A) to the NanTroSEIZE study area to constrain timing, causes and consequences of submarine landslides in one of the best studied accretionary complexes worldwide. It is generally accepted that submarine landslides are leading agents for downslope sediment mass transport and can have catastrophic impact on both offshore infra-structure (e.g. pipelines, cables and platforms) and coastal areas (e.g. landslide-induced tsunamis). Although increasingly investigated within international programs (e.g. IGCP 511, MARGINS, COSTA, STRATAFORM) over the last decade, many open questions remain in relation to trigger mechanisms and timing. To improve our conceptual understanding, quantitative constraints on frequency and magnitude of submarine landslides on relevant timescales are key requirements and need to be related to associated triggering factors and slope failure mechanisms.

On the basis of new 3D seismic data interpretation in the NanTroSEIZE study area, we have identified an ideally suited slope basin sedimentary succession that is composed of stacked Pleistocene-to-recent mass transport deposits (MTDs) that includes one exceptionally large MTD up to 150m in thickness. A 350m thick succession, comprising the distal part of the mega deposit, could be completely drilled by APC/XCB (or HPCS/ESCS) within 3 days before, during or after any of the upcoming NanTroSEIZE operations.

We expect to catalog a detailed submarine landslide event history along with clues on the depositional dynamics of each MTD as they relate to tsunamigenic potential. In conjunction with 3D seismic interpretation we will be able to constrain scales and landslide magnitude. The results obtained will be interpreted in terms of short-term trigger mechanisms and long-term pre-conditioning factors by correlating the magnitudes and frequencies of MTDs to the seismicity and tectonic evolution of the margin. Additionally, data from nearby NanTroSEIZE drill sites are expected to reveal quantitative constraints on slope stability conditions and submarine landslides initiation. In combination, the available data set will allow us to establish a better physical understanding of tectonic processes and slope failures, to gain a general understanding of failure-related sedimentation patterns and the significance of large episodic mass transport events. Ultimately, this could help us to assess the tsunamigenic potential of submarine landslides. We thus expect this proposed project to become an important case study providing the base to improve our conceptual understanding of causes and consequences of submarine landslides.

738-APL

Scientific Objectives: (250 words or less)

The primary goals of drilling the proposed site (NTS-1A) are:

- (i) To establish a well-dated Pleistocene-to-recent mass-movement event stratigraphy
- (ii) To sample the distal part of an exceptionally thick MTD for analyzing its rheological behavior to constrain sliding dynamics and tsunamigenic potential

This aims at providing answers to following questions:

- 1) What is the frequency of submarine landslides
- 2) How are MTDs and earthquakes related and can we use the MTD-inventory to interpret paleoseismology
- 3) What controls type, size and magnitude of turbidites and MTDs and how do they change through time?
- 4) What are the dynamics of large submarine landslides and can we infer their tsunamigenic potential?

By addressing these focused key questions, we aim to isolate tectonic processes influencing magnitude and occurrence of submarine landslides along active subduction zone margins and to understand their potential for triggering catastrophic consequences both in terms of hazard (tsunamigenic landslides) and of sediment mass-transfer and margin evolution.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

None

Proposed Sites:

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
NTS-1A	136 deg 40.8888' E 33 deg 09.4195' N	3100	350	-	350	<p>Core and date slope basin sediments and mass transport deposits to constrain submarine landslide history</p> <p>Core and sample MTDs for analyzing its rheological behavior to constrain sliding dynamics and tsunamigenic potential</p>