

# Scientists obtain core samples from subsea fault system off Japan

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The third expedition of the Integrated Ocean Drilling Program's Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) completed its mission off the Kii Peninsula today. The expedition science party, 26 scientists representing 10 countries, set forth on Dec. 19, 2007, aboard the drilling vessel Chikyu, to evaluate the deformation, structural partitioning, and physical characteristics of the Nankai Trough fault zone.

The expedition was led by co-chief scientists Elizabeth Screaton of University of Florida, and Gaku Kimura of University of Tokyo. The investigators successfully drilled and cored 13 boreholes in the fault zone.

“We collected more than 5,000 samples from the cores for further examination,” notes Dr. Screaton. “The resulting data will provide important new constraints on models of the evolution of the subduction zone and its relationship to earthquake and tsunami generation.” The Nankai Trough, a geological trench approximately 770 kilometers long, stretches from the Suruga Bay to where the Philippine Sea Plate slips (subducts) under southwest Japan.

Along this subduction zone, sediment on the underlying tectonic plate continuously scrapes off and adds material to the overriding plate, forming new geological sediments called the accretionary prism.

“Understanding the deformation within the accretionary prism and its fault zones is an important factor in understanding how earthquakes are

generated and why some earthquakes cause disturbance at the seafloor that leads to tsunamis,” Sreaton explains.

Expedition scientists examined the sediments ranging from the youngest on the slope overlying the accretionary prism, through fault zones and into sediments underneath the megasplay fault and frontal thrust.

According to Dr. Kimura, even the youngest sediments have an important story to tell. “The sediments provide information about past slope failures,” explains Kimura, “which may relate to past megasplay movement and earthquakes, and which may cause tsunamis.” Megasplay refers to large faults that branch off the major plate boundary, to near the seafloor.

IODP Expedition 316 was implemented by the Center for Deep Earth Exploration of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). CDEX/JAMSTEC is one of three organizations that implement expeditions on behalf of IODP, managing operations aboard Chikyu.

Chikyu is scheduled to depart from the port of Shingu on Feb. 12 to deliver the core samples to the Kochi Core Center, one of three IODP repositories that archive sediment samples. NanTroSEIZE investigations will continue with Expedition 320 in Fall 2008.

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