

## Preliminary Result of NantroSEIZE Expedition 316, shallow megasplay fault system and frontal thrust

# Gaku Kimura[1]

[1] Earth and Planetary Science . Inst., Univ. of Tokyo (Jamstec, IFREE)

<http://web.mac.com/tectonicsgaku/iWeb>

G. KIMURA, E.SCREATON, D.CUREWITZ, and 316, 315, 314 NantroSEIZE Science Party

Integrated Ocean Drilling Program (IODP) Expedition 316 is part of the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) complex drilling project (CDP). This coordinated, multiplatform, and multi-expedition drilling project is designed to investigate fault mechanics and seismogenesis along subduction megathrusts through direct sampling, in situ measurements, and long-term monitoring in conjunction with allied laboratory and numerical modeling studies.

Expedition 316 was designed to evaluate the deformation, the inferred depth of detachment, the structural partitioning, the fault zone physical characteristics and fluid flow at the frontal thrust and at the shallow portion of the megasplay system. To accomplish these objectives, drilling was conducted at two sites in the megasplay region, one within the fault zone and one in the slope basin seaward of the megasplay. Two sites were also drilled within the frontal thrust region. During Expedition 314, two of these sites had been characterized using Logging-while-Drilling (LWD).

Site C0004 is located along the slope of the accretionary prism landward of the inferred intersection of the megasplay fault zone with the seafloor. Drilling at this site examined the youngest sediments on the slope overlying the accretionary prism; these sediments consist of slowly deposited marine sediments and redeposited material from further upslope. This redeposited material provides information about past slope failures, which may be related to past megasplay movement, earthquakes, and tsunami-genesis. The accretionary prism was sampled and the megasplay fault zone was successfully drilled. The cores from the fault zone record a complex history of deformation based on structural observations and two age reversals suggested by nannofossil evidence. The sediments underneath the fault zone were sampled to understand their deformation, consolidation, and fluid flow history.

Drilling at Site C0008 targeted the slope basin seaward of the megasplay fault. This basin records the history of fault movement. In addition, sediment layers within this basin provide a reference for the sediment underthrust beneath Site C0004.

Drilling at Sites C0006 and C0007 examined the frontal thrust region. Site C0006 captured several fault zones within the prism before being halted by drilling conditions. Site C0007 successfully drilled through the plate boundary frontal thrust, and successfully recovered thrust fault material ranging from breccia to fault gouge.