

A general overview of the first coring results done by D/V Chikyu and its future plan

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After the delivery of D/V Chikyu on June 29, 2005, she sailed off Shimokita Peninsula of the NE Japan for the shake-down of all equipments onboard and ship itself. This paper introduces a general summary of the first coring results done by D/V Chikyu which was held at off-Shimokita, forearc slope of the NE-Japan during the CK05-04 Leg 2 cruise (16 Nov. - 14 Dec. 2005). Cores were taken from three holes at two sites (C9001A, C9002A and B) using Hydraulic Piston Coring System (HPCS). Two sites are about 800 m apart with each other. Water depth is about 1,180 m, and penetrations are 46.5 mbsf and 70.8 mbsf for sites C9001 and C9002, respectively. The purposes of this cruise are not only scientific but include technical issues: 1) evaluation of coring quality of HPCS, 2) geotechnical evaluation of the planned riser drilling site, 3) actual test of core flow and laboratory equipments, 4) search for eukaryote from deep formation, 5) high-resolution biostratigraphy.

Coring quality was generally very good with more than 100 % of recovery. The coring quality was evaluated using X-ray CT scanner for whole-round cores as well as naked-eye observation for split cores. No severe drilling disturbance was recognised except for one core. However, punctuation on the core liner for degassing caused a disturbance a few cm area around the punctuation hole. Shear strength of the formation was measured onboard for geotechnical purpose by vane shear and penetrator tests. Both methods have proved that the formation has sufficient strength required for settlement of conductor pipe in riser drilling operation. The following subjects are routinely measured onboard: X-ray CT image, gamma-ray attenuation, bulk density, P-wave velocity, electric resistivity, magnetic susceptibility, natural gamma-ray radiations, colour spectra, photo image, palaeomagnetic polarity and intensity, bulk chemistry, headspace gas chemistry, moisture and density, total organic carbon, and shear strength. The core flow was smooth and all intended onboard measurements were completed. Further data qualification is needed for some analyses, however, some physical property measurements show significant correlation with lithologic features. Especially, magnetic susceptibility curves were very useful for inter-hole depth correlation. See details of core description and laboratory status for poster presentations of Aoike et al. and Sugihara et al. in this session, respectively. All results of onboard core descriptions and measurements are uploaded to the J-CORES (JAMSTEC Core Systematics) data management system that is developing by us with consultations of scientists. This cruise was the first trial of the system with real data. See details for poster presentations of Matsuda et al. in this session. We have approved several shore-based research proposals including geotechnical, stratigraphic, geochemical and microbiological studies.

D/V Chikyu will investigate the first riser drilling at almost same site as HPCS sites in this summer. We may have more cores and variety of rock/sediment materials for our laboratory shake-down. More serious core handling simulation will be conducted during the cruise and prepare for the future international operation in the late 2007.