

**IODP Expedition 334: Costa Rica Seismogenesis Project (CRISP)
Week 3 Report (28 March – 3 April 2011)**

OPERATIONS

Week 3 of Expedition 334, Costa Rica Seismogenesis Project (CRISP), began with the bit at 705.0 mbrf (566.2 mbsf) while XCB coring in Hole U1379C. XCB coring continued through Core U1379-118X reaching 949 mbsf, approximately 60 m into the basement objective. A total of 857.8 m were cored with the XCB system recovering 723.64 m (84.4%). Last core on deck for Hole U1379C was at 0130 hr on 2 April 2011. The hole was then displaced with 10.5 ppg mud and the drill string was tripped back to the surface, clearing the rotary table at 0910 hr. The rig was secured for transit and the beacon was recovered at 0941 hr.

The 6 nm transit to Site U1378 was completed in 1.25 hr. A new APC/XCB bit was made up and drill string was tripped to just above the seafloor. With the bit positioned at 529.0 mbrf, Hole U1378B was spudded at 1512 hr on 2 April recovering 5.36 m of core, which indicated a seafloor depth of 533.2 mbrf. APC coring continued to Core U1378-16H at 127.8 mbsf. A total of 129.56 m of core were recovered (101.4% recovery) on the APC section of the hole. The XCB coring system was then installed and XCB coring continued throughout the day. The XCB recovery was excellent and the final depth at the end of week 3 was 704.56 mbrf (171.36 mbsf).

SCIENCE RESULTS

Although we started coring a new site (Site U1378) at the end of this week, all of the observations summarized below were carried out on core material and samples retrieved from Hole U1379C. During the third week another 396 m of sediment and 12 m of basement have been recovered. The majority of the cored sediments consist of a monotonous sequence of mainly greenish gray silty clay to silt, that is frequently interrupted by fining upward sandy intervals containing more or less abundant shell fragments. Dispersed in the sediments are ~53 tephra layers and pods of variable thickness as well as carbonate and dolomite

concretions. The tephra layers mainly consist of glass, feldspar, amphibole and biotite particles of ash size. The glass is mainly fresh. The transition from sediments to basement is marked by a sequence of conglomerates dispersed in a sandy clayey matrix consisting of variably sized clasts of variable composition (limestones and basalts could be clearly identified). Below this sequence the cored material consists of more or less alternating fining upward and coarsening upward units of silty clay, sandy silt and silty sand of greenish brown to greenish gray color. Bedding dips change from the upper parts of the sediment sequence to the lower parts. In the upper to middle part bedding dips are gentle to horizontal, below 600 mbsf bedding dips get steeper and the transition from sediment to basement seems to be characterized by an unconformity. According to the nannofossil community the material cored in this hole is of Pleistocene age. This is confirmed by the magnetostratigraphy, which shows a magnetic reversal in Core U1379C-83X, which correlates with Chron C1r.2r (1.185–0.778 Ma).

Analysis of the pore water squeezed from the sediments at regular intervals shows a decrease in the K and Mg content and an increase in Ca in the lower parts of the hole. Cell counting carried out on the retrieved core material revealed cell concentrations in the range of 10^6 to 10^8 cells per cubic centimeter in the first 30 mbsf, showing a general decline with depth.

TECHNICAL SUPPORT AND HSE ACTIVITIES

Week 3 was dominated by processing and sampling cores collected from Site U1379. A fire and boat drill was held for the ship's complement on Monday March 28.