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Preliminary results from IODP Expedition 333: Subduction inputs 2 and heat flow

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Expedition 333 was conducted as a part of the NanTroSEIZE project. Two input sites on the Shikoku Basin: C0011 and C0012 were cored and measure temperature in the interval that was not done during Expedition 322. Sites C0011 is located on the north-west flank of Kashinosaki Knoll, and C0012 is atop the Knoll. A total thickness of 380 m sediment was cored at Site C0011. The late Pleistocene ? late Miocene Shikoku Basin facies and an underlain volcanoclastic sand facies were recovered. Shipboard measurements demonstrate drastic physical property changes occurred within the Shikoku Basin facies which is similar to down-hole changes at sites 1173 and 1177 in the Muroto and Ashizuri input sites, offshore the Shikoku Island. A total thickness of 180 mbsf sediment was cored from the top of Sites C0012. A similar lithology to that of C0011 was recovered. However, the sequence involves a significant hiatus in the early Pleistocene-late Pliocene time. A disturbed structure in the interval of 15-85 mbsf suggests a large-scale slumping event in the north flank of the Knoll in that time. Below the sediment?basement interface around 525 mbsf, Site C0012 was deepened up to 630.5 m in order to characterize basement alteration. Recovered basalt rocks are altered heterogeneously. Such alternations may be an important key to understand a change in mechanical strength distribution within the basement during a subduction process. High quality strata temperature data were obtained during HPCS operation at sites C0011 and C0012. Preliminary estimation reveals the higher temperature gradient at site C0012. Analysis of through sediment and basaltic basement composition, geomechanical experiments and hydrological modeling will provide a complete characterization of incoming sediments and igneous basement prior to their arrival at the subduction front and seismogenic zone.

Keywords: NanTroSEIZE, input site, Heat flow