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IODP Expedition 352 FAB and boninite

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The Izu-Bonin-Mariana (IBM) system consists of oceanic crustal related to convergence between the Philippine Sea Plate and the Pacific Plate. International Ocean Discovery Program (IODP) Expedition 352 has drilled through the entire volcanic sequence of the Bonin fore arc (1) to obtain a high-fidelity record of magmatic evolution during subduction initiation and early arc development, (2) to test the hypothesis that fore-arc lies beneath boninite and understand chemical gradients within these units and across the transition, (3) to use drilling results to understand how mantle melting processes evolve during and after subduction initiation, and (4) to test the hypothesis that the fore-arc lithosphere created during subduction initiation is the birthplace of suprasubduction zone (SSZ) ophiolites (Expedition 352 Preliminary Report, 2015). During Expedition 352, 1.22 km of igneous basement and 0.46 km of overlying sediment were cored, including fore-arc basalts (FAB) and boninite related to seafloor spreading and earliest arc development. We present preliminary results obtained during Expedition 352, focusing on physical and chemical properties of igneous rocks.

Keywords: IODP, Expedition, Forearc, IBM, FAB, boninite