Low density upper mantle beneath the north Izu-Bonin island arc system

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We modeled a density structure of upper mantle beneath the north Izu-Bonin island arc system at 32 15 N, where the P-wave velocity structure were well constrained. The predictable components of the gravity field are subtracted from the free-air anomaly field to produce residual gravity anomaly field. These components are calculated from the sea-floor topography and the P-wave velocity structure using a velocity-density relation. The residual gravity field allows us to model the upper mantle density structure. The results of the best-fit models indicate that a board low-density region (at least 30 kg/m**3 lower) is required in the upper mantle beneath the island arc, which provides constraint on the mechanism of the oceanic island arc and subducting slab system.