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The Izu-Bonin (Ogasawara)-Mariana (IBM) arc is known to be the typical oceanic island arc, and it is the most suitable area to understand the growth process of island arc. The IBM arc consists of several arrangements which were created by repetition of rifting and backarc spreading. Taylor (1992) identified Eocene and Oligocene paleo arcs located in the IBM forearc region by ODP drilling.

By previous seismic survey and deep sea drilling, convex basements are distributed along North-South direction in present forearc region. The convex basements are reported to be formed during Eocene and Oligocene (Taylor, 1992). In IBM forearc region, the middle crust with 6 km/s is recognized by seismic survey using OBSs. In IBM region, four IODP drilling sites are proposed in order to understand comprehensive growth process of arc and continental crust evolution (Tatsumi, 2008). Two of them are located in forearc region.

Japan Agency for Marine-Earth Science and Technology (JAMSTEC) carried out multi-channel seismic reflection survey using 7,800/12,000 cu.in. air gun and 5-6 km streamer with 444/204 ch hydrophones for understanding of crustal structure in the IBM region since 2004. JAMSTEC also conducted mini-MCS survey using 12 ch short streamer and 3,000 cu.in air-gun around the IBM region for linkage of volcanic sediments in 2007. We analyzed and interpreted these data in order to obtain the configuration of paleo-arc arrangement in forearc region.

In IBM forearc region, thick sedimentary basins distribute from east side of volcanic front. Two convex basement peaks are indicated in across profile of forearc region. These peaks are estimated to be the top of paleoarc (Eocene and Oligocene) by previous ODP drilling. We considered from MCS profiles that these peaks are continued along the current volcanic arc. The distance between the Eocene and Oligocene arcs is different along the NS direction. We also applied attribute analysis for MCS profile to emphasize the reflection from volcanic basement. The profile of reflection strength shows the clear peak of volcanic arrangement. By mapping the basement high beneath the sediments, we identified the volcanic arrangement between Oligocene arc and Eocene arc. We discuss about the crustal evolution from these characteristics.