

The earliest subaerially exposed magmatic products of the Fiji-Tonga-Kermadec (FTK) arc are preserved in the Yavuna Group of Viti Levu, Fiji, and cobbles from 'Eua, Tonga. They are similar in age and magma types to the earliest rocks of the Izu-Bonin-Mariana (IBM) arc. Comparisons between lavas erupted at the two arcs, formed at the same plate margin at around the same time, provide new insights into the associations of lava types produced during subduction initiation and arc infancy. In Fiji they include typical island arc tholeiitic (IAT), boninitic (BON), and MORB-like early arc tholeiitic (EAT) pillow lavas that are interpreted as products of flux- and decompression- melting which occurred simultaneously during subduction initiation. Although the oldest rocks in the southwest Pacific (FTK) and the northwest Pacific (IBM) arcs are generally similar, they differ in two important respects. First, all magma types erupted simultaneously in the SW Pacific whereas a similar assemblage may have erupted sequentially in IBM. Second, the primary mantle wedge was "Pacific" in isotopic character in the SW Pacific, but "Indian" in the NW Pacific. Additionally, Viti Levu has one of the largest exposures of tonalite plutons in the world. REE suggests production of tonalitic middle crust could be the result of reworking early-arc crust while preserving local mantle features.