

# Seismological observation of the 660 km discontinuity beneath the Mid-Atlantic Ridge by using P'P' precursors

# Akira Yamada[1]; Kenji Akase[2]; Dapeng Zhao[2]

[1] GRC, Ehime Univ.; [2] GRC, Ehime Univ

The precursor to the P'P' (P'660P'), which is interpreted as the reflection from the 660 km discontinuity, is identified in the stacked seismograms. The configuration of deep earthquakes occurred in the Fiji-Tonga region and the seismic stations in Japan is appropriate to investigate the upper mantle discontinuity beneath the Mid-Atlantic Ridge, which can be only determined by using P'P' precursor as the short-period probe. The previous studies (Nakanishi, 1988; Isse et al., 1997) found an interesting feature of the 660 km discontinuity beneath the region: the observed amplitude of the P'660P' decreases as the reflection points become close to the Mid Atlantic Ridge. Nakanishi and Stevenson (2003) interpreted this feature by a variability of the discontinuity thickness induced by an upward flow through the 660 km discontinuity.

Observations of the P'660P' are obtained in this study from earthquakes in Fiji-Tonga region. Although the feature found by Nakanishi (1998) and Isse et al. (1997) is not observed at this stage, our present results indicate a shallower 660 km discontinuity beneath the ridge. Providing that the temperature anomaly causes the shallowing of the discontinuity, our observations suggest that a high-temperature anomaly across the 660 km discontinuity exists beneath the Mid Atlantic Ridge, which is proposed and modeled by Nakanishi and Stevenson (2003).