

Fine structure of the low velocity province in the lowermost mantle constrained by the Vietnamese broadband seismograph array

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It is well known that large scale low velocity provinces presumably related to upwellings of the mantle convection exist beneath Africa and the Pacific. Clear regional variability of the low velocity structure in these two major upwelling regions is suggested by global waveform tomography: strong low velocity anomalies beneath Africa extend for about 1300-1400 km from the CMB, whereas those beneath the Pacific are restricted to about 300-400 km from the CMB (Takeuchi 2007). The final goals of this study are to obtain direct evidence on this regional variability and to constrain the dynamics of the upwellings.

Detailed structure in the low velocity provinces is not yet well known due to the heterogeneous distribution of epicenters and seismograph arrays. Recently, by IRIS Pascal and other projects, existence of peculiar low velocity anomalies beneath Africa is suggested, and it is thought to reflect special dynamic process and/or chemical structure.

The Vietnamese broadband seismograph array deployed by the Ocean Hemisphere Project is expected to have potentiality to resolve unknown fine structure of the low velocity province in the Western Pacific region. The depth of bottoming points of S and sS for Fiji-Tonga-Kermadec and Vanuatu events widely distribute between 150-1300 km from the CMB, and the data are expected to have higher resolution in the vertical direction. The reflection points of ScS and sScS densely distribute in the horizontal direction, and the data are expected to have good lateral resolution. Fine structure models obtained by using these data will be presented.