

SIT036-03

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Extent of the Large Low Velocity Province in the lowermost mantle constrained by the data from JISNET

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Sharp geographical boundaries (sharp side) of the LLVPs (Large Low-Velocity Provinces) in the lowermost mantle are suggested in several regions (e.g., Ni et al., 2002; Takeuchi et al., 2008). In this study, we try to identify the boundary of the Pacific LLVP beneath the Australia and the New Guinea Island regions. We compare the obtained results with the sharp side constrained by the broadband seismograph array in Vietnam (Takeuchi et al., 2008) and try to discuss the general features of the LLVP beneath the western Pacific region.

We analyzed the data from JISNET (the Indonesian broadband seismograph array) deployed by NIED (National Research Institute for Earth Science and Disaster Prevention) and other institutions together with the data from nearby permanent stations. We measured 119 sets of absolute (S, ScS) and differential (ScS-S) travel times from the records for 25 events (between 1998-2000) in the Tonga-Fiji, Kermadec, and Vanuatu regions. The distribution of the observed ScS-S travel time residuals is a bit complicated. However, by comparing it to the distributions of S and ScS residuals, we found that the observed data can be explained by the LLVP in the lowermost mantle and small-scale low velocity anomalies around the 1500 km depth.

The identified boundary of the LLVP appears to be continuous with that identified in the previous study (Takeuchi et al., 2008), but its strike appears to change from the N-S direction to the NW-SE direction. We also found the amount of changes in travel time residuals at the identified boundary is more or less comparable with that observed in the previous study (Takeuchi et al., 2008).

Until the presentation, we plan to conduct forward modelings of travel times, constrain the contrast and the sharpness of the identified sharp side, and discuss the lateral homogeneities or heterogeneities of the LLVP beneath the western Pacific.

Acknowledgment

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