D” discontinuity in the northwestern edge of the Pacific Large Low-Velocity Province detected by NECESSArray and F-net

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Broadband seismic recordings from the stations of NECESSArray and F-net are analyzed to investigate the shear-wave velocity discontinuity at the top of D” layer across the northwestern edge of the Pacific Large Low-Shear-Velocity Province (LLSVP). In this study, we focus on the nature of the D” discontinuity across the edge of the LLSVP by detecting a precursor to ScS phase at epicentral distances of 65° to 85°. Transverse component seismograms from earthquakes occurred in the Kermadec, Fiji, and Vanuatu regions are assembled and analyzed. Employing linear and phase-weighted vespagram (Schimmel and Paulssen, 1997), we identified a clear arrival with an arrival time and slowness between the S and ScS waves, indicating a reflected S wave from the D” discontinuity.

Keywords: D” discontinuity, LLSVP, lowermost mantle, ScS-wave, array analysis, Northwest Pacific