Depths of 410 and 660 km discontinuities under the Japan Island derived from P-s converted waves

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We have investigated the depths of the "410" and "660" km seismic discontinuities under Japan using converted waves detected from the teleseismic waveforms recorded by the J-array seismic network. Our results show that the 410-km discontinuity is depressed by about 20 km and the 660-km discontinuity is uplifted by about 15 km under central Japan to the Pacific coast areas, which coincides with a low-velocity anomaly there in the depths of 300-1600 km detected by our local and global tomographic imagings. Such a thinning of the mantle transition zone is considered to be caused by a small-scale hot plume rising from the lower mantle.