

Anomalously large PKiKP/PcP amplitude ratios at frequency of around 1 Hz observed by USArray

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Tanaka and Tkalcic (2015) observed the frequency dependent PKiKP/PcP amplitude ratios by Hi-net, of which ray paths are passing below the Western Pacific. They showed the existence of a spectral peak at approximately 2 to 3 Hz, a spectral hole at 1 and 3 Hz, and no peak and hole, suggesting lateral variations at the inner core surface. Here I report frequency dependent PKiKP/PcP amplitude ratios observed by USArray, of which reflection points are located below the Central America. I find also a large scatter of the frequency characteristics. Interestingly, the spectral peaks in the PKiKP/PcP spectral ratios around 1-1.5 Hz are detected when the reflection points are located below the east of Mexico that is not observed by Hinet. The peak amplitude is about 2 times greater than that around 2 Hz. Based on the finite difference simulations by Tanaka and Tkalcic (2015), this observed peak can be explained by ICB sinusoidal topography with wavelength and height of 0.5 km, or ICB spiky topography with wavelength and height of 1.5 km. This observation suggests that the crystallization at the inner core surface or inner core growth system below the east of Mexico is different from that below the Western Pacific.

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