

## Upper mantle structure beneath Japan Islands by receiver function migration

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In the Japan subduction zone, tomographic results have shown the morphology of the Pacific slab that lies on or around the 660 km discontinuity, and receiver function images have also shown the undulations of the 410 km and 660 km discontinuities (hereafter, the 410 and the 660). However, understanding the relation between cold subducting slab and upper mantle discontinuities in more details, it is effective to simultaneously image these structures with high resolution, especially for subducting slab.

We applied single scattering analysis with receiver function (RF) calculated with tiltmeter recordings that is observed at 700 stations in Japan and contain relatively lower frequency component ( $\sim 1000$  sec). For deconvolution to calculate RF, since tiltmeter recordings have just horizontal component, we obtained source-time function by stacking all of vertical components observed at F-net broadband stations, that is, we consider these stacked waveforms as source-time functions. We applied a bandpass filter of 0.02-0.16 Hz. Simply assuming that a complex model is constructed of individual scattering points, we can image not only horizontal interface but also dipping layer.

Our results show surface of the Pacific slab down to a depth of 400 km and lower slab boundary in the upper and lower mantle. Dip angle of the slab is consistent with JMA event distribution that is determined by 1D JMA velocity model used for calculating travel times in migration in this study. For lower slab boundary in the lower mantle, the extent of penetration into the lower mantle for the stagnant slab seems to show lateral variation as shown by tomographic results, but in horizontally local scale,  $\sim 150$  km. Depression of the 660 starts westwards near a province where the lower slab boundary intersects the 660. To investigate more details extensively, we compiled some regional seismic results focusing on topography of the 660. The region that the 660 is greatly depressed is consistent with an area where the stagnant slab is imaged by tomographic results.