S152-001 **Room: IC** **Time: May 23 15:30-15:45**

Receiver function imaging of the Philippine Sea Plate beneath Kii Peninsula (II)

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We carry out a seismic observation in the Kii Peninsula to investigate underground structure under the DAIDAITOKU Project whose purpose is to reduce damages in urban areas due to large earthquakes. We have deployed seismic stations at every ~5 km on Shingu-Kawachinagano Profile Line which is designed to be parallel to the subducting direction of the Philippine Sea Plate (PHP). The purpose of the observation is to image S wave velocity discontinuities beneath the profile line by using receiver function (RF) analyses with waveforms from teleseismic events and to estimate the shapes of the PHP and the Moho discontinuity. To know the large scale structure beneath the Kii Peninsula through which seismic waves from the Tonankai Earthquake travel to Osaka area is very important to predict strong motions accurately.

RFs are calculated by deconvolving the vertical component of the P coda from teleseismic events from the corresponding radial component in order to remove source time functions. Not only the direct P waves but also Ps converted waves generated at S wave velocity discontinuities beneath stations are left in the obtained RFs. We can convert the relative travel time between the Ps converted wave and the direct P wave to the depth of the S wave velocity discontinuity assuming a velocity structure. We can draw a image of the S wave velocity discontinuities by arranging the depth-converted RFs along the corresponding ray paths. We can also estimate S wave velocity structure by inverting the RF image.

The figure shows S wave velocity perturbations in the cross-section along the Shingu-Kawachinagano Profile Line. The velocity perturbations are relative to the JMA2001 velocity model. The right-hand side of the figure is the SE direction, while the left-hand side is the NW direction. The arrows show the positions of the Median Tectonic Line (MTL) and Gobo-Hagi Tectonic Line (GHTL). We explained the resulting S wave velocity structure as the oceanic mantle, the oceanic crust and the serpentinized mantle wedge from the deeper potions as shown in the figure. The oceanic mantle shows high velocity anomalies as a whole. Most of the earthquakes shown by the crosses occur in the oceanic mantle. The oceanic crust shows obvious low velocity anomalies to the depths where the deep low frequency events (DLFEs) shown by the circles occur, and less low velocity anomalies beyond the depths. This suggests that the dehydration is active in the region where the DLFEs occur, the discharged water serpentinizes the mantle wedge. The serpentinized mantle wedge shows widespread low velocity anomalies. As the result, the mantle wedge has lower velocities than the overlying continental crust. The Moho discontinuity like this is called the 'inverted' Moho. As the serpentinized mantle wedge has low strength and hardly accumulates strain, the boundary between the serpentinized mantle wedge and the oceanic crust can never be a coupling area. Therefore, the lower limit of the source area of the Tonankai Earthquake is thought to be near at the depth of 30 km along the upper surface of the oceanic crust as shown in the figure.