

Detailed seismic attenuation structure beneath Kii peninsula, southwestern Japan

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Three-dimensional seismic attenuation structure (frequency-independent Q_p) beneath Kinki region is estimated using t^* determined by applying the S-coda wave spectral ratio method to waveform data from the nationwide dense seismic network and temporary seismic observations beneath Kinki region [Shibutani and Hirahara, 2016]. Method and analysis procedure used in Kita and Matsubara [2016] were adopted in this study. The temporary seismic observation was performed from May 2004 to March 2013. The seismic attenuation structure was imaged beneath Kii peninsula at depths down to 50 km. The resolution of the image was improved comparing to that in the previous study [Kita and Matsubara, 2016 JGR], in which only data from the nationwide dense seismic network was used. Very low- Q_p portion is clearly imaged in the continental plate at depths ~ 30 km beneath from Osaka to southern Kyoto. The location of the very low- Q_p portion corresponds to the location of Low V_p and V_s portion by Shibutani and Hirahara [2016]. Beneath Kii peninsula, hypocenters of low frequency earthquakes determined by Ohta and Ide [2011] are located above relatively low- Q_p portion within the subducting oceanic crust. The location of the relatively low- Q_p beneath the low frequency earthquakes also corresponds to low V_p and low V_s portion obtained by Shibutani and Hirahara [2016]. At the depths of 30 and 50 km, high- Q_p portions are imaged beneath Kumano, Shingu, Kouyasan and Izumi-Ohtsu region. The strike of the high- Q_p region corresponds almost to that of segmentation boundary of V_p/V_s structure [Akuhara et al., 2013] and tremors.

Keywords: Seismic attenuation structure, Slow earthquakes, Seismic velocities structures, t^* , Southwestern Japan