Detailed seismic attenuation structure beneath Kii peninsula, southwestern Japan

*Saeko Kita¹, Takuo Shibutani²

1. Department of Earth and Planetary Systems Science, Hiroshima University, 2. Disaster Prevention Research Institute, Kyoto University

Three-dimensional seismic attenuation structure (frequency-independent Qp) 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-Qp portion is clearly imaged in the continental plate at depths ~30 km beneath from Osaka to southern Kyoto. The location of the very low-Qp portion corresponds to the location of Low Vp and Vs 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-Qp portion within the subducting oceanic crust. The location of the relatively low-Qp beneath the low frequency earthquakes also corresponds to low Vp and low Vs portion obtained by Shibutani and Hirahara [2016]. At the depths of 30 and 50 km, high-Qp portions are imaged beneath Kumano, Shingu, Kouyasan and Izumi-Ohtsu region. The strike of the high-Qp region corresponds almost to that of segmentation boundary of Vp/Vs structure [Akuhara et al., 2013] and tremors.

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