Crustal heterogeneity around the Yamasaki fault zone from analyses of S wave reflectors

Kousuke Yoshikawa[1]; Kin'ya Nishigami[2]

[1] Earth and Planetary Sciences,Kyoto Univ.; [2] DPRI, Kyoto Univ.

The Yamasaki fault zone is composed of several left-lateral strike-slip active faults and it has a total length of about 80km. The average recurrence interval is estimated to be 2000 years, and the most recent event in the Yamasaki fault zone occurred in 868 (Research Group for Active Faults, 1992). Since the Tottori Seismological Observatory, Kyoto univ. started telemetry seismic observation in 1976, many studies has been done, for example on space-time distribution and generating properties of microearthquakes, focal mechanism, and space-time variation of b-values [e.g., Tsukuda (1985); Shibutani and Takeuchi(2005)].

We applied the NMO correction to the waveform data observed by a routine seismic stations around the Yamasaki fault zone, and estimated the distribution of the S-wave reflectors. In the analysis, we used 3045 waveforms from 27 events that occurred from January in 2002 to December in 2003 around the Yamasaki fault zone. We applied a band-pass filter (7-15 Hz) to the waveforms and then corrected the effects of geometrical spreading and anelastic attenuation. We assumed the S-wave velocity structure of a half space with 3.4km/s.

The results show strong reflection phases from the lower crust in this area, approximate depth range of 15-35 km. Continuous reflection phases are also detected at depths from 30 to 35 km, which is considered to be the Moho discontinuity from the previous study of crustal structure in this area (Yoshii et al., 1974). We will estimate crustal inhomogeneity around the Yamasaki fault zone based on detailed distribution of crustal reflectors, and we will also discuss its relation to the seismic activity properties in the fault zone.

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