

Spatial distribution of coda Q around the Atotsugawa fault zone

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We investigate a detailed spatial distribution of coda Q around the Atotsugawa fault zone in a high strain rate zone, central Japan, using waveform data from a dense seismic observation. Low coda Q at lower frequencies is localized along the fault zone, showing a good spatial correlation with the strain rate. On the other hand, we find no characteristic spatial distribution of coda Q at higher frequencies. The spatial distribution of coda Q at lower frequencies shows a good correlation with the S-wave velocity structure from the base of the upper crust to the lower crust reported by Nakajima and Hasegawa (2007). We, therefore, suggest that the coda Q at lower frequencies is the parameter that reflects the ductile deformations below the brittle-ductile transition zone of the crust. We estimate a spatial variation in stressing rate using those of coda Q in the analyzed region based on the procedure of Hiramatsu et al. (2010). The estimated variations of 15 kPa/year at the 1.5 Hz band and 18 kPa/year at the 2.0 Hz band are slightly larger than that estimated from the result of Jin and Aki (2005). This result suggests that the spatial variation in stressing rate around the Atotsugawa fault zone is possibly to be larger than the average one in the Niigata-Kobe high strain rate zone.

Keywords: the Atotsugawa fault zone, coda Q, stressing rate, high strain rate zone