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SSS015-P10 Room: Convention Hall Time: May 27 17:15-18:45

Spatial Variations of P wave t* in the Kanto and southern Tohoku regions

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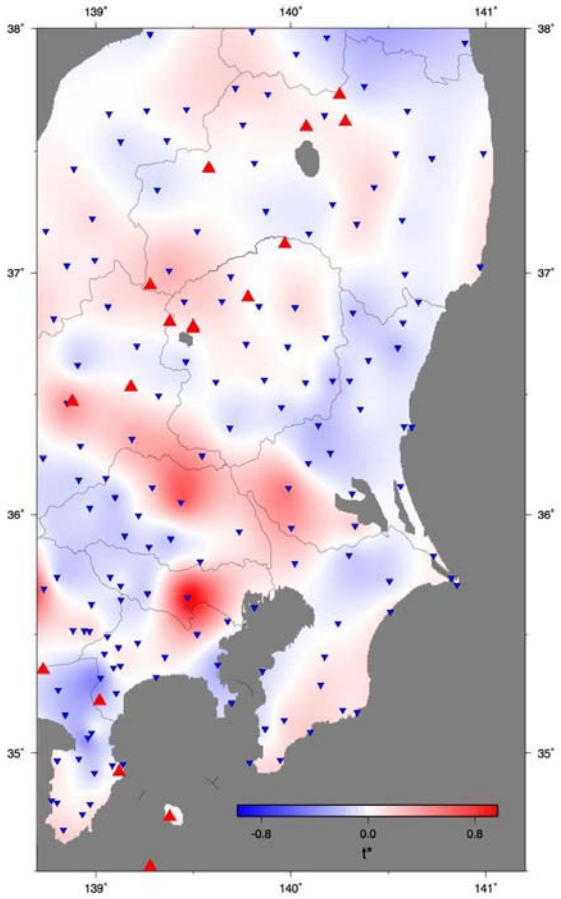
We estimated the spatial variations of the seismic parameter t* using teleseismic (epicentral distances between 30°and 90°) P wave spectra for 15 deep (focal depths > 200 km) earthquakes recorded at 154 Hi-net stations in the Kanto and southern Tohoku regions, Japan. We closely followed the approach of Hwang et al. (2009). The good-quality vertical-component seismograms were selected by visual inspection, whose P phases were hand-picked and Fourier-transformed. We thus determined the relative P wave spectral ratios up to 1 Hz for all the station pairs with high signal-to-noise ratios, which were inverted for t* by least squares inversion. The inversion was carried out with the constraint that the average of t* is zero. It is shown (see Figure) that high t* (high attenuation) is partly correlated to the active volcanic areas. Localized high t* areas are also found in the central part of Kanto, whereas low t* dominates in the eastern parts of Kanto and southern Tohoku. This t* pattern seems consistent with Q^{-1} structures proposed by previous researches based on local event data, such as the result of Sekine (2005) for high-frequency (around 5Hz) P wave Q^{-1} at depths of around 40 and 65 km.



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References:
Hwang, Ritsema, Goes (2009), J. Geophys. Res., 114, B06312, doi:10.1029/2008JB006091.
Sekine (2005), Rep. Nat. Res. Inst. Earth Sci. Disast. Prev., 68, 137-174.

Figure: Variation of t*. Red and blue colors denote positive and negative t* (sec), respectively. Red triangles and blue reverse triangles indicate active volcanoes and the Hi-net stations, respectively.

Keywords: t*, attenuation, teleseismic P wave, Kanto and southern Tohoku