

Mapping and monitoring of interplate quasi-static slip in NE Japan using small repeating earthquakes

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Small repeating earthquake data is a useful tool to detect interplate quasi-static slip. Uchida et al. (2005) developed an automatic detection system of the small repeating earthquake for the Tohoku and Hokkaido regions, Japan. In this study, we expanded the monitoring area to the Kanto region and discuss on the quasi-static slip on the plate boundary 1000km long along the Japan and Kuril trenches.

Small repeating earthquake activities in the Kanto region have already been investigated by Igarashi (2002, 2003), Matsubara et al. (2003) and Kimura et al. (2006). In the present study, we obtained a similar distribution of small repeating earthquakes using the same method as we used for the Tohoku and Hokkaido regions (Uchida et al. 2005).

The distribution of repeating earthquakes in Kanto shows that there is a jump of the western limit of small repeating earthquakes near 36.3N: the limit of the interplate event was located near the east coast of Honshu in northern Kanto but it shifts about 40 km to the west in southern Kanto. We infer that this is because the temperature of the upper surface of the Pacific plate in southern Kanto is colder than that in northern Kanto because of the contact with the overlying cold Philippine Sea plate (e.g. Hasegawa et al., 2007).

We also estimated slip rate near the western limit of interplate earthquakes to investigate the along-arc variation of slip rate. The result shows that the slip rate is not uniform and the areas near the past large earthquakes have slower slip rate.

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