

Activities about non-volcanic tremor beneath the Yatsushiro fault zone

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Non-volcanic tremor induced by dynamic stresses has been detected in the Hinagu fault zone (Chao and Obara, 2012, SSJ). We notice that the tremor occurred at the deep extension of the fault zone (Miyazaki et al., 2015, submitted). In addition, from the velocity structure estimated by seismic tomography (Matsubara and Obara, 2011), there are low P-wave velocity zone at the deep part of the source region and high P-wave velocity anomaly in the shallow seismogenic zone. Therefore, the resolution is not sufficiently enough, the tremor occurred in the brittle-ductile transient zone.

Investigating the stationary activities of non-volcanic tremor is important to reveal the crustal deformation process in the fault zone. We performed the matched filter analysis (Gibbons and Ringdal, 2006) and detected the events (Miyazaki et al., 2014, SSJ). However, most detected events were difficult to distinguish between signals and noises. In this study, we test the detectability of small-scaled template events in the continuous seismic records including ambient noises using the same way conducted by Shelly et al. (2006). We confirm that the scaled template events comparable to ambient noise level are detectable with same magnitude of summed correlation coefficients as threshold values. This implies that a non-volcanic tremor without a disturbance occurred at the deep extension of the Hinagu fault zone has very small magnitude.

Keywords: non-volcanic tremor, Yatsushiro, Hinagu, active fault