

# Seismicity change in the Tokai region since October 1997 and its tectonic meaning

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Many seismologists have endeavored to get out information on the stress and physical state of the seismogenic region from changes in seismicity. The Tokai region is one of the most appropriate test fields for the study. Because activities of micro-earthquakes have been monitored more than 20 years using a dense seismic network and an asperity of the anticipated Tokai earthquake is supposed to exist just beneath the network. In the Tokai region, a conspicuous seismic quiescence occurred in 1988-89 (Yoshida and Maeda, 1990), and significant changes in seismicity have been observed several times afterwards; e.g., lowering in mid 1999 and activation in fall 2000 and so on (JMA, 2003).

In this lecture we talk about characteristics of seismicity changes in the Tokai region and consider their tectonic meanings on the basis of the JMA catalog since October 1997; that is, after JMA started the unified procession of seismic data in Japan.

Matsumura (2002) recognized four significant changes in the activity of micro-earthquakes in an estimated locked region in the Tokai region since late 1990s, i.e., changes in October 1996, August 1999, October 2000 and April 2001, and examined in detail where in the locked area they occurred. We show that especially the activation in fall 2000 and lowering from late 2001 as well as increase in summer 2002 were not confined in the locked area as Matsumura suggested, but the changes extended to the slab beneath Aich Prefecture. We further investigate relationship between the activation of seismicity in fall 2000 and the volcano-seismic event in northern Izu Islands. We consider that the change in seismicity in fall 2000, as well as those observed after 2001, were related to loosening and restoring of the interplate coupling. An important point is that loosening and restoring are reflected in increase and decrease of seismic activity, respectively (Yoshida et al., 2003)

It was shown that a slow-slip event had occurred on the plate interface beneath Hamana Lake in October 2000 using the data of GPS network (Ozawa et al., 2002). The slow slip has been still going on. We have found that the seismicity in the slab beneath Aichi Prefecture has a tendency to increase or decrease corresponding to an acceleration or deceleration of the slow slip event. This correspondence also accords to the above-mentioned general relationship between change in seismicity and that of the coupling state.