

## Installation and performance evaluation of seismic ACROSS source in NU Mikawa Observatory and its role in Tokai monitoring plan

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Seismological phenomena are active beneath Tokai region due to the subduction of Philippine Sea Plate. Tokai monitoring plan was proposed (Kasahara, et al., 2004) to understand the crustal structure in the region, the mechanism of the time-evolving phenomena such as slow-slips and deep low-frequency tremors and to monitor the time-variation of coupling of the plate boundary. Seismic ACROSS will play an important role for the monitoring plan.

Two seismic ACROSS sources that belong to JAEA (Toki, Gifu Pref.) and JMA (Mori, Shizuoka Pref.) respectively are currently in operation for the monitoring plan. In 2006, Nagoya University installed two out of four seismic ACROSS sources in their Mikawa Observatory in Toyohashi, Aichi Pref. They were formerly installed at Kagamihara, Gifu Pref.

The reasons of the choice of location includes:

- Locating a source in Toyohashi adds three-dimensional feature in observation to currently available two-dimensional Toki-Morimachi line.
- Sources in Toyohashi add an observation line along the strike of the plate motion.
- Signal transmission from Toyohashi can target the slow-slips and deep low-frequency tremors under Tokai region.
- Full usage of the existing facilities such as a building, equipments and data transportation capability can save time, efforts and budget.

Search for the location was initiated in 2005. After fixing the location, subsurface survey and design followed. Engineering works in terms of the excavation and construction of the source foundation, installation and adjustment of the sources and the electrical devices were completed until the end of 2006. New GPS-synchronized FM controller will be installed and tested until March 2007. After shakedown, the source will in operation as the third long-term monitoring source in this region.

The sources have the maximum frequency of 25 Hz and maximum power of  $1.0 \times 10^5 \text{N}$ . Controlled seismic transmission to designated direction will be tested using the two sources installed 30 m apart from each other. The observation capability is expected within 50 km. A signal design was proposed so that the interference among the sources can be avoided (Kunitomo, 2006).

Continuous seismic record observed at nearby seismic stations such as Mikawa station (NU.MIK), Hi-net N.THNH (approx. 3 km) and N.MKB.H (approx. 10 km) will be analyzed. The performance evaluation of the new sources will be reported at the conference.