

The active monitoring of the Earth's lithosphere by continuous transmission of the seismic ACROSS

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We have started the routine transmission of the accurately controlled elastic wave signals by the seismic ACROSS transmitter at Tono mine (Toki-shi, Gifu) from Oct.2002, and continuous observations have been executed for more than two years, in order to improve the active and continuous monitoring system for the Earth's interior by seismic waves. In this period, existing problems of the transmitter are thrashed out and all problems were solved without power cut.

The current transmission is called the fifth transmission experiment (FM signal, modulation period:50 s, frequency range:10.25-19.45Hz, period of transmission:Feb.20.2004-ongoing), which is a relatively low frequency and long modulation period transmission, to send seismic waves for long distance seismic stations. Because the rotating direction of eccentric mass is switched every 1-hour, we have a set of radial and transverse excitations towards any of stations by summing up the source signals of normal and reverse rotations with appropriate phase shift. The transmitted signals are observed by Hi-net or our seismic arrays. From Nov. 2004, a joint observation was started by Tono Geoscience Center, Nagoya University, Tokyo University and Shizuoka University to observe seismic reflection waves from the lower crust and the plate boundary under the Tokai district.

We used seismic wave data obtained by National Research Institute for Earth Science and Disaster Prevention, Japan.