

High spacial resolution subsurface monitoring by a giant magnetostrictive seismic source

*Takahiro Kunitomo^{1,2}, Hiroshi Ishii¹, Yasuhiro Asai¹

1. Association for the Development of Earthquake Prediction, Tono Research Institute of Earthquake Science, 2. Center Graduate School Earthquake and Volcano Research Center of Environmental Studies, Nagoya University

Actuators using giant magnetostrictive elements are expected to be used as seismic sources for high frequencies because they have small displacements but large generated forces and easy to handle. At JpGU 2017, we reported that a single force type giant magnetostrictive source which is capable of exciting arbitrary waveforms with GPS synchronization (maximum generating force of 91 kgf). Also, we reported that the stepwise delay in P wave traveltime derived from Kumamoto Earthquake (Mj7.3, April 16, 2016) by use of a TRIES borehole seismograph data, and the subsequent change correlated well with the change in the pore pressure measured at the STG200N at the Mizunami Underground Research Laboratory. On the other hand, in order to investigate the subsurface structural change of the Mizunami Group (Miocene sediments) above the Toki granite, we are conducting observations using a small seismic array installed in the Mizunami observation tunnel in August 2016. In this presentation, we will discuss about the reflection SV phase which indicate the existence of a small area that seismic properties vary significantly in the Mizunami Group.

Keywords: giant magnetostrictive seismic source, shallow subsurface structure change