

The relationship of groundwater level changes to crustal strain changes (2) - Establishment of new observation site -

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In order to clarify the relationship of groundwater level changes to crustal strain changes, Tono Research Institute of Earthquake Science has observed groundwater level, crustal strain/tilt changes in the neighborhood of Mizunami Underground Research Laboratory (MIU, JAEA).

As part of this study, we made an improvement to the 23.3 m-deep borehole in the 100m-stage of MIU, and started the continuous tilts observation on 9 March 2007 by using the our developed borehole tiltmeters. Up to the present, following tilt variations are observed: (1) maximum tilt down to the south of approximately 1.5×10^{-4} radian was observed from 9 March to 1 April 2007, and direction change from south to south-southwest was occurred on 1 April 2007, thereafter maximum tilt down of approximately 2.3×10^{-4} radian has observed. (2) tilt-steps associated with the blasting for the excavation of MIU were observed from 9 March to 1 April 2007, but no tilt-steps due to blasting were observed after 1 April 2007. (3) maximum tilt down of approximately 10^{-6} radian associated with the welling up of groundwater of approximately 100 liter/min were observed from 14 November to 15 December 2008.

In February 2009, presently, we are making an improvement to another 20 m-deep borehole (STG200) in the 200m-deep gallery of MIU, which is located in the Toki granite unconformably overlain by Tertiary layers. We are planning the installation of Ishii-type borehole strainmeters and tiltmeters in March 2009.

We will present the details of observed tilt/strain changes in STG100 and STG200, and describe the tilt/strain changes associated with the groundwater level changes due to the the excavation of MIU.