

Construction of Syobasama crustal activity observatory ?Installation of Ishii-type borehole stressmeter?

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Large changes in the pore pressure in Toki granite have produced by the excavation of underground facilities of Mizunami Underground Research Laboratory (MIU) and drilling well for hydraulic tests in MIU (e.g. Asai and Ishii, JpGU2013). We have observed remarkable stress/strain/tilt variations associated with the pore pressure changes at borehole observation site TRIES, STG300 (on the north-east side of the fault), Togari(TGR350/TGR165), STG100, STG200 (south-west side), respectively within 500m of the MIU.

In this area the NNW trending sub-vertical (normal) fault is exists (e.g. JNC, 2003 and 2004). Pore pressure changes occurs in the south-west side of the fault, its impact were observed in water level/pressure record of the same side, and were also observed in stress, strain and tilt record. On the other hand, its impact were not seen in the water level/pressure record of the north-east side of the fault, but its impact were observed on stress, strain and tilt record. Pore pressure change occurs in the north-east side of the fault are similar to those of the south-east side. This observation results indicate that fault has impermeability and elastic deformation of the rock caused by pore pressure change extends over the fault.

In order to clarify the relationship of groundwater level changes to crustal strain changes at Syobasama observation site which is located approximately 1km northwest of MIU, Tono Research Institute of Earthquake Science has constructed the new borehole depth of 110 m and installation of Ishii-type borehole stress meters is scheduled in February 2014. We will present the details of construction of Syobasama observatory, and result of continuous stress observation with groundwater records.

Keywords: Pore pressure change, Elastic deformation, Mizunami Underground Research Laboratory, Ishii-type borehole stress meter