

Relationship between absolute gravity and groundwater volume at Syobasama site of Underground Research Laboratory

Toshiyuki Tanaka[1]; Yasuhiro Asai[1]; Harumi Aoki[1]

[1] TRIES

<http://www.tries.jp/>

TRIES has been repeatedly conducting absolute gravity measurement at Mizunami Geoscience Academy (MGA) adjacent to Mizunami Underground Laboratory (MIU) in Mizunami city, Gifu prefecture, central Japan. Tanaka et al.[in press, G-cubed] has shown that the gravity variations at MGA correlate with the superposition of pore water pressure in both an unconfined and a confined layer and vertical deformation (free-air gradient). However, piezometer, strainmeter, tiltmeter, etc. in and around MIU construction site have been disturbed since July, 2005 because of large amount of groundwater inflow into the shafts and its drainage from the shafts. The gravity changes resulting from these accidents are not remarkable, but we cannot analyse we used to.

On the other hand, we have been also repeatedly conducting absolute gravity measurement at Syobasama site of Underground Research Laboratory project located about 1.3 km NW of MIU site since June, 2004. This observation site is situated in upstream region, so no disturbance for groundwater level and pore water pressure has occurred at this time.

In this meeting, we plan to consider the relationship between gravity variation and pore water (groundwater level) change at Syobasama site and then discuss how to correlate with the one of MGA. Furthermore, we would argue secular change of gravity based on the results of third leveling survey planned for March, 2006.