

# Absolute gravity measurement in Mizunami, central Japan - Installation of the FG5 absolute gravimeter -

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## 1. Introduction

Tono Research Institute of Earthquake Science (TRIES) installed the FG5 absolute gravimeter (#225) in January, 2004. Our two main purposes are 'Detection of gravity change related to the occurrence of earthquake' and

'Evaluation of gravity effect caused by ground water change under the cooperation with the Mizunami Underground Research Laboratory (MIU) Project of Japan Nuclear Cycle Development Institute (JNC)'.

## 2. Measurement environment

The FG5 was temporarily set up in the measurement room of Mizunami Geoscience Museum (MGA) where TRIES had entered it. The observation platform has an independent foundation from that of the building to protect the influence of deformation by sunlight. MGA has a high noise level resulting from construction work of the MIU and boring survey for ground water. However, SD of Cycling mode of Scintrex CG3M gravimeter data are less than 20 microGal at this site under the calm weather condition of midnight.

The Syobasama site (1.5 km from the MGA in direct distance) will become a permanent observation point after the next fiscal year. But, the site is an observation hut built on an alluvium plain because of change of the previous plan which was described in Tanaka et al. (2002, 2003). The observation platform in the hut is also independent of the building. In addition, a geodetic GPS receiver and some geophysical instruments in a bore hole will observe continuously and simultaneously near the observation hut.

JNC had carried out boring and reflection surveys to clarify the subsurface structures under both observation sites. And more, we have also carried out a microgravity survey around the Syobasama site (Tanaka et al., 2003). Furthermore, we will make a leveling observation between the MGA and Syobasama sites.

## 3. Preliminary measurement

We can not specify the absolute gravity value, because we use temporal input parameters (vertical gradient, geodetic coordinate) for determination of it (approximately 979716045~979716050 microGal). This gravity value is almost 20~40 microGal greater than formerly inferred one by two relative gravimeters (TRIES CG3M and Nagoya univ. L&R typeG). However, we got 0.28 microGal as Measurement Precision calculated by the processing software g in the midnight observation on January 14.

## 4. Future plan

We continue to measure gravity value and examine relationship with ground water level in the MGA until the Syobasama site will be established in next spring. Then, we will accumulate good quality gravity data with another geophysical ones mentioned in the section 2.