

Installation of the First Gravity Station in the Mount Fuji Research Institute, and the Phase-Free gravity measurement

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Mount Fuji is an active volcano, the difficult situation is that we can't tell where the vent will open. Moreover, the eruption is thought to occur rapidly after the precursors such as ground deformations or increase of the seismic activities, because of its low viscosity magma. As a part of the volcano monitoring system, we are now constructing the gravity monitoring network. We are planning to install multiple continuous gravity monitoring stations. We installed the First Gravity Station in Mount Fuji Research Institute (MFRI) last year, where the absolute gravity value is measured by GSI. We are going to start the continuous observation in this station. Although low frequency events or tremors are observed sporadically, Mount Fuji is quiet at this point of time. So, the purpose of our observation at the beginning is to comprehend the precipitation and ground water effect, including snow melting effect in the spring time.

There is another interesting point for the gravity observation in Mount Fuji. The gravity difference between MFRI and the fifth station of the Yoshida trail is about 320 mGal, and the travel time between two points is about 30 minutes. It means that this is a good observation line for the verification of the gravimeters. Now we suggest the "phase-free" gravity measurement (<https://phasefree.org/>). The idea of "phase-free" is to eliminate the social phases (time, state) of normal times and disasters, so that goods or services normally used can be appropriately used at the time of disaster. If we continuously use the gravity observation line for the verification by various gravimeters in the normal time, that will be the important data for the volcano monitoring when the Mount Fuji is starting to prepare the eruption.

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