

Gravimetical vertical array observation -the 2014 fiscal year-

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The gravimetical vertical array, as we call it here, is to suppress the rainfall disturbance with establishing two gPhone gravimeters across the unconfined groundwater surface using the Mizunami Underground Laboratory (MIU). In the 2014 fiscal year, we set up gPhone#130 in the refuge area of the 100m-deep sub-stage (sub-stage is a horizontal tunnel between the Main and Ventilation shafts) and gPhone#90 on the ground surface in the measuring room of the Mizunami Geoscience Academy, and have accumulated data without bad effects of blasting for construction works as those of years past. The sensor drift of #130 is dominated by nonlinear fluctuations because of high-noise level environment due to drainage equipments and elevator machines. The one of #90 is almost linear, and we will be able to evaluate the drift rate by using an absolute gravimeter. As for the atmospheric pressure belowground, the difference from the one aboveground becomes larger, the deeper the observed depth is. Therefore, it is necessary to investigate the reduction methods, both sensor drift and atmospheric disturbance for the sake of sub-microGal variations. In this presentation, we demonstrate the attempt to decrease the nonlinear drift using non-parametric modeling and to assess atmospheric disturbance based on the MANAL atmospheric model by the Japan Meteorological Agency.

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