In order to detect the gravity changes associated with local mass movements, we have conducted gravity measurements in several test fields using a field absolute gravimeter Micro-G LaCoste Inc. A10-017. Among several causes of the local mass movements, one of the serious issues is due to excessive pumping of groundwater, which often brings on land subsidence as well. In many of the urbanized cities in Indonesia, for instance, significant subsidence has been reported. Although the subsidence could be measured by space geodetic techniques, such as GPS and InSAR, gravity measurements can provide useful information about the mass movement, which is the key to understand the mechanism of the land subsidence.

Another example of the local mass movements is the production and reinjection cycle of geothermal fluid at a geothermal plant. This production and reinjection cycle may cause mass redistribution which can be detected by gravity measurements. For the sustainable use of the geothermal fluid, monitoring of the mass balance in the geothermal reservoir is essentially important.

Besides these artificial issues, natural phenomena such as volcanic activities may also cause mass movements. So far, we have conducted repeated gravity measurements using A10-017 at several test fields in Japan and Indonesia; for monitoring the geothermal fluid, groundwater variations, land subsidence and volcanic activities. We summarized these results mainly from the viewpoints of absolute gravimetry, and discuss the applicability of A10 for monitoring local mass movements in the fields.