

Absolute gravity measurement in coastal region of East Antarctica ? A preliminary report

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We have started a project to implement absolute gravity measurements with GPS measurements on several outcropped areas along Prince Olav Coast and Soya Coast which locate in East Antarctica in the framework of the 53rd Japanese Antarctic Research Expedition (JARE53). The objectives of the measurements are precise determination of gravity field of Antarctic region and estimation of crustal movements associated with Glacial Isostatic Adjustment (GIA).

We planned to carry out the absolute gravity measurements with a portable absolute gravimeter A10 at 9 outcropped areas including Syowa Station during initial phases of the project. However, because of logistic restriction in JARE53 due to the impossibility of Icebreaker Shirase to come alongside Syowa Station, we have conducted the measurements at only just two areas, i.e. Syowa Station and Langhovde. Although the number of measured sites were much reduced, absolute measurements with A10 in the outcropped areas of Antarctica was the first trial of JARE and a lot of know-how were obtained through the measurements. The experiences including logistic preparation will bring many benefits to the next measurements in Antarctica.

The tentative absolute gravity value at Langhovde was 982 535 584. 57micro-Gal and its standard deviation was 2.4micro-Gal. In the presentation, we will show the outline of our project. We also show details of the measurements at Langhovde and Syowa Station and preliminary results of relative gravity measurements around the absolute gravimetric sites.

Keywords: absolute gravity measurement, GPS measurement, gravity field of Antarctic region, Glacial Isostatic Adjustment, A10