

ABSOLUTE GRAVITY MEASUREMENTS WITH A NAOM2 ABSOLUTE GRAVIMETER AT SYOWA STATION (ABSTRACT)

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The National Astronomical Observatory, Mizusawa (NAOM) made absolute gravity measurements at Syowa Station, Antarctica, one of the International Absolute Gravity Basestation Network (IAGBN) stations from December 1992 to January 1993. The project for the establishment of an absolute gravity station was started in 1990 by the 32nd Japanese Antarctic Research Expedition (JARE-32), and the first measurement at Syowa Station (IAGBN No. 0417) employing a modern absolute gravimeter (free-fall type) was carried out by the Geographical Survey Institute (GSI) during JARE-33 (S. FUJIWARA *et al.*, Proc. NIPR Symp. Antarct. Geosci., 6, 137, 1993). Following the GSI, NAOM conducted absolute gravity measurements at Syowa Station during the JARE-34 summer operations, employing two sets of absolute gravimeters (NAOM2 model and rotating vacuum pipe model (H. HANADA and T. TSUBOKAWA, Proc. NIPR Symp. Antarct. Geosci., 7, 14, 1994) developed at the NAOM.

In this report we describe the results of absolute gravity measurements by the NAOM2.

The results obtained were:

Date	December 27, 1992–January 26, 1993
Number of measurements	276
Final value	982524.152 mGal
Standard deviation	.040 mGal
Standard error	.002 mGal
Adopted gravity gradient	0.334 mGal/m

The final value contains five corrections, such as Earth tides (no Honkasalo correction), ground vibrations, instrumental height, air pressure and light velocity.

The difference between the former value obtained by the GSI (JARE-33) and that of the NAOM2 (JARE-34) was 100 μ Gal.

After the measurements at Syowa Station, we made a direct comparison between the GSI and the NAOM2 absolute gravimeters at Tsukuba from June 29 to July 2, 1993. The obtained difference (GSI-NAOM2) was 53 μ Gal. This difference was consistent with that at Syowa Station.

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