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Comparison of Three FG5 Absolute Gravimeters at Wuhan, China

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Kyoto University (KU) and Geographical Survey Institute (GSI) have jointly carried out absolute gravity (AG) measurements in China, Malaysia and Indonesia since 2002 for the purpose of establishment of the highly precise absolute gravity station network in East Asia and South-east Asia. We have already determined AG values at Kuala Lumpur in Malaysia as well as at Bandung and Yogyakarta in Indonesia. In China, we conducted AG measurements at Wuhan, Nanning, Shanghai and Beijing under the cooperation with the Institute of Geodesy and Geophysics, Chinese Academy of Science (CAS/IGG).

We performed parallel AG measurements at the International Tidal Gravity Basic Station (ITGBS) in Wuhan from 19th Feb. to 26th Feb., 2003 using three absolute gravimeters (FG5 #201:GSI, #210:KU and #112:CAS/IGG) manufactured by Micro-g Solutions Inc. With regard to measurements using the #201 gravimeter, we obtained continuous data for 110 hours. Figure 1 shows temporal variations of gravity values obtained from FG5 #201 after correcting solid earth tides, polar motion, and the effect of air pressure changes. The circle means 1-set gravity value which includes 120 drops (30 minutes data; 20 minutes observation, 10 minutes interval). This shows temporal variations associated with ocean tides, though there are some differences from theoretical values. Table 1 shows comparison of mean gravity values measured by three absolute gravimeters at the ITGBS site. The result shows the difference of 11ugal between gravity values measured by CAS/IGG and GSI.

In addition, GSI group will carry out AG measurements at Kota Kinabalu, Malaysia from 1st July to 12th July, 2004. The gravity station at Kota Kinabalu is located in the laboratory of Universiti Malaysia Sabah. We will also report the preliminary results obtained at Kota Kinabalu.

Keywords: Absolute Gravity Measurements; FG5

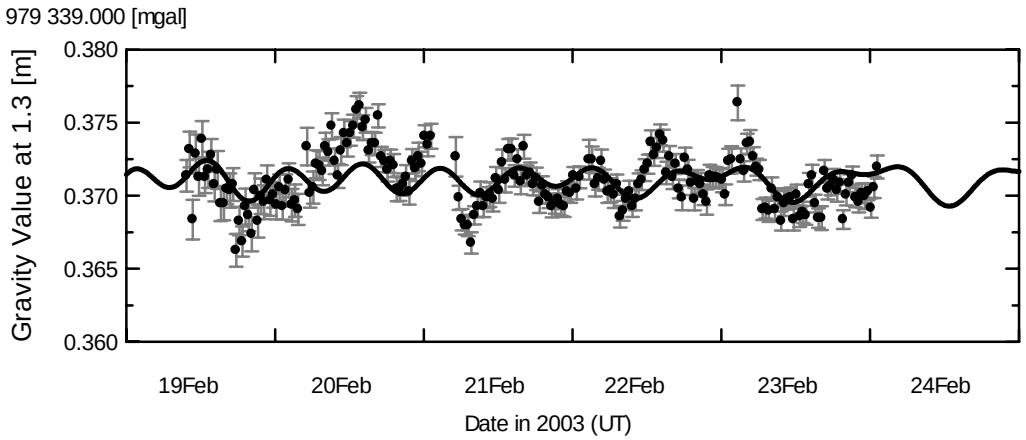

Figure 1. Temporal variations of gravity values at Wuhan (FG5 #201). Solid curve shows the ocean tides calculated by GOTIC 2 program[1].

Table 1. Comparison of Absolute Gravity Values at the ITGBS site, Wuhan.

	Gravity Value [mgal]
CAS/IGG	979 339.3603
Kyoto Univ.	979 339.3635
GSI	979 339.3711

References

[1] Matsumoto, K., T. Sato, T. Takanezawa and M. Ooe, *J. Geod. Soc. Japan*, **47**, 243-248, (2001).