

Precise Relative Gravity Measurements over Mt. Fuji Area

Mikio Satomura[1]; Minori Watanabe[2]; Shuhei Okubo[3]; Shigekazu Kusumoto[4]; Sadato Ueki[5]

[1] Fac. of Science, Shizuoka Univ.; [2] Biology and Geosciences, Shizuoka Univ.; [3] ERI, Univ. Tokyo; [4] School of Marine Sci. & Tech., Tokai Univ.; [5] RCPEVE, Tohoku Univ.

It was known that some low frequency earthquakes occur under the Mt. Fuji. Such earthquakes occurred so often in October 2000 and April to May 2001, and much attention was paid to the volcanic activity of Mt. Fuji.

In order to investigate the change of the volcanic activity and to prepare the future activity, we have performed precise relative gravity measurements near and over the Mt. Fuji area since 2002. Similar gravity measurements had been carried out by the Geographical Survey Institute since 2001 and we chose the same gravity stations as those by GSI for about a half of the stations. We also performed absolute gravity measurements at Asagiri in the western foot, Susono in the southern foot and Gotenba in the eastern foot of the Mt. Fuji. Geographical survey Institute performed an absolute measurement at Fuji-yoshida in the northern foot of the Mt. Fuji. These absolute measurements are useful not only as base values to investigate the gravity change but also to check the scale factors of the gravimeters.

Relative measurements were carried out at 25 stations including 4 absolute stations. They were carried out by LaCoste & Romberg gravimeters G-582, G-705 and G-822 in 2003, by those G-822 and G-875 in 2003 and 2004.

The height difference is so large that the range of the gravity values are also large such as almost 500 mgal, and scale factors are very important to discuss the gravity temporal change. Every gravimeter had already been examined its scale factor but there was some difference among the obtained gravity values at the same station. We also compared the gravity values from LaCoste and Romberg gravimeters and those by absolute measurements, the correction values for scale factors of 4 gravimeters are obtained.

The accuracy of the gravity differences obtained were about 40 microgal, and it is less accurate than the usual measurements in a flat areas. We can see gravity increases in high mountain area and gravity decreases in low areas, but they are not significant compared with measurement accuracy. This result is in harmony with that Mt. Fuji had no significant activity during the period concerned.