Geophysical Research Abstracts
Vol. 13, EGU2011-9685, 2011
EGU General Assembly 2011

Accuracy of the Absolute Gravimeter FG5#215 and Some Aspects of Repeated Absolute Gravity Measurements

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Absolute gravimeters (AGs) can detect thin effects caused by mass changes in the Earth's interior, in the hydrosphere and atmosphere as well as the height changes caused by the geodynamic processes. To get a full benefit from absolute measurements, it is necessary to have, among others, a good knowledge of the instrumental accuracy and of local environmental effects on gravity as the main disturbing effect.

The combined gravity series of the absolute gravimeter FG5#215 and the superconducting gravimeter OSG-050 at the reference station Pecný together with regular participation at International Comparisons of Absolute Gravimeters allowed to determine the accuracy parameters of the FG5#215 such as repeatability, reproducibility and uncertainty.

Besides atmospheric effects, the hydrological effects cause significant disturbances in time-dependent gravity observations. Especially, the local hydrological effects are the main limitations for a reliable utilization of absolute gravity measurements in geodynamics. Based on the results obtained by the FG5#215, during long-term repeated measurements at many stations, few aspects of hydrological effects are presented.