Geophysical Research Abstracts
Vol. 12, EGU2010-3558, 2010
EGU General Assembly 2010

Mass transport effects on the terrestrial gravity observations in the Czech Republic

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Absolute gravimeters (AGs) and superconducting gravimeters (SGs) are able to detect such effects as mass changes in the Earth's interior, hydrosphere or atmosphere as well as the height changes caused by crustal deformation. Good knowledge of very dynamic processes as mass variation and redistribution in the gravimeter vicinity is necessary for full utilization of terrestrial gravity observations in geodynamics. Presented are results of precise terrestrial gravity observations at four stations in the Czech Republic. Besides the complex gravity observations (SG+AG) at Pecny station, results of frequent (4 times per year) absolute gravity measurements at three stations (Polom, Kunzak and Zdiby) are presented. Time series of gravity variations are corrected for local hydrological effects and compared with gravity field variations based on the GRACE data. The results clearly showed the primary importance of the modeling of local hydrological effects for reliable comparison of terrestrial and satellite data. Such modeling play important role also for utilization of repeated absolute gravity measurements in geodynamics.