Modelling of Hydrological Mass Variation on the Site Modra-Piesok

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Time series of gravity measurements can be used to characterize dynamic changes of subsurface system. However, these measurements can be strongly influenced by hydrological processes especially water mass variations. Therefore, the influence of hydrological effects on gravity needs to be modelled so that the observed gravity can be appropriately corrected. Often, due to the lack of measurements, an accurate local hydrological model is not available and the gravity corrections are affected by an unknown error. In the present-time the absolute gravity measurements have very high accuracy (1 microgal). After all used standard correction the time series of absolute gravity has variation with amplitude 5 microgal. The hydrological mass variation is very often modelled by global, regional and local hydrological effects. For computation of hydrological effects were used global hydrological model WGHM with 0.5° x 0.5° grid. The regional effect was computed from continental hydrological measurements and local effect from local hydrological measurements performed on the site Modra-Piesky. The local effects were controlled by repeated relative gravity measurements. The all hydrological effects were tested by absolute gravity measurements performed on the site Modra-Piesky. The poster presents theoretical and numerical results of the test.