



Comparison of gravity recovery from superconducting gravimeter with hydrological models of various spatial extents

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We have compared temporal gravity variations of the superconducting gravimeter with various water storage models and observations at Metsähovi, in Finland. We have local data, such as precipitation, snow cover and groundwater level. We use two hydrological models: (1) The high accurate model for Finland, the Watershed Simulation and Forecasting System (WSFS). (2) The Climate Prediction Center global soil moisture data set (CPC), which correlates well with WSFS. We have exploited both regression methods and loading calculations using Green's function formalism to calculate gravity effects of these sources. Gravity residuals are strongly correlated with local groundwater level, which is also clearly correlated with regional water storage. The important question of ground truth validation for gravity satellite missions is how to separate the attraction of the near-field water storage from the loading effect of the regional water storage. Using regression methods it is not possible to separate the various factors. Though, the local hydrological conditions have slowly altered and it offers a possibility to separate these phenomena.