Geophysical Research Abstracts
Vol. 15, EGU2013-8459, 2013
EGU General Assembly 2013

Gravity field modelling based on the spectral sensitivity of gravity related quantities- a new geoid model for Hungary

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In precise geoid modelling the combination of all available gravity related quantity is desired. A new quasi-geoid solution was developed for Hungary based on the spectral combination technique combining geopotential information, gravity and gravity gradient data sets in a complementary way.
Based on the spectral sensitivity of gravity related quantities under consideration spectral weights for spectral combination were derived. To determine the geoid in the whole spectral band the specific integral kernels in the spectral domain were modified using the spectral weights and the calculations were based on 1D FFT spectral technique.
In the combination of measurements, EGM2008 model was used exclusively to spherical harmonic degree 1000. Gravity data had superior performance up to degree about 4000 with respect to geopotential and gradient information, while the high- frequency part of the gravity signal stems from gravity gradient data in gravity field modelling.