



Determination of physical heights using Global Geopotential Model, GPS/GNSS and gravity measurements

M. Mojzes (1), M. Valko (1)

(1) Slovak University of Technology in Bratislava, Department of Theoretical Geodesy
(marcel.mojzes@stuba.sk, milos.valko@stuba.sk)

The classical determination of physical heights using leveling and gravity measurements along leveling lines and connected to tide gauge are influenced by systematic errors unhomogeneity in used technology, gravity reference network and unhomogeneity chosen parameters of normal gravity field. Unification of classical physical vertical networks using Global Geopotential Model of the Earth and GPS/GNSS measurements is problematic. The determination of physical heights using Global Geopotential Model, GPS/GNSS and gravity measurements is very effective. This method exclude more time spend leveling method and it is make possible create homogeneous network of physical heights on the World. The presentation is oriented on mathematical formulation determination of physical heights by solution of second geodetic boundary value problem using gravity disturbance. The practical experimental solution is provided on the area of Slovakia.