



ABSTRACTS

5. Vasile CHIRIAC: *Height Reference Surface for high accuracy Digital Elevation Modelling in Republic of Moldova*

In 2011 Laser Scanning of flood risk areas was done by Land Relation and Cadastre Agency in the frame of the project financed by Norwegian Government and continuing. The future plans are to cover all territory of the country with LiDAR data. However, as the precision and availability of LiDAR elevation data has improved the need to tie the LiDAR elevations to a National Levelling Network has increased. When combined with GNSS and inertial navigation data the ranges stored by the onboard computer may be converted to a 3-dimensional spot position – in this case expressed in European Terrestrial Reference System (ETRS89) coordinates based on GRS80 ellipsoid. To utilize this data at local or national level it is necessary to convert the ellipsoidal heights to a vertical datum such as the Baltic Sea 1977. This conversion requires the use of a high accuracy Height Reference Surface (HRS) that may be developed by conducting GNSS measurements on the national levelling network benchmarks and using quasigeoid models available in Republic of Moldova (GM2005, GM2010, and GM2012) or Earth Gravitational Model EGM2008. This paper presents the results of comparative study of Height Reference Surface modelling methods using control GNSS/Levelling measurements and EGM2008 model. The GNSS measurements were carried out on 40 first and second order levelling benchmarks of National Levelling Network. For HRS determination three, four, five and seven parameters equations and multi-quadratic surface methods were used. Comparative analyses of examined methods showed the increasing accuracy from 5.6 cm using parameters equations to 4.6 cm with multi-quadratic surface model that correspond to fourth order levelling and could be used for high resolution Digital Elevation Modelling for all territory of the country. The analyses of residuals showed the best results in the middle part country territory and the worse on the eastern and western borders were is a lack of high quality data. The results of this study could be used by Land Relation and Cadastre Agency for improvement of existing and future Digital Elevation Models.

Organisers



Partners

