

# **VERTICAL ACCURACY EVALUATION OF DIGITAL TERRAIN MODELS CREATED BASED ON LINE-FOLLOWING DIGITIZATION OF CONTOUR MAPS**

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## **Abstract**

Digital terrain models are used in wide variety of domains and applications, of which the most important are: orthorectification of aerial and satellite images, space object modelling, passageways designing, achieving slopes exhibition maps, hydrological modeling, etc. There are several techniques for data acquisition in order to create digital terrain models, such as photogrammetry, radargrammetry, interferometry, airborne laser scanning, surveying and geodetic and cartographic digitization. By using cartographic digitization, digital terrain models are created based on the digitized contour maps on existing maps, which were brought in digital format by scanning process, this method involving low costs and being reach of a large number of users. It must therefore assess the vertical accuracy of digital terrain models created by this method. To achieve results, first were created the digital terrain models based on contour maps and points of known elevations manually digitized on plans at 1: 1000 scale and maps at 1: 25000 scale, using an interpolation grid side of 5m and spline bicubic interpolation method. Then, were determined with precision, by GNSS technology, the coordinates of 18 control points. Based on the grid nodes elevations, using the spline bicubic interpolation method, were calculated the elevations of the 18 control points and then the differences between them and those accurately obtained by GNSS technology. By performing a statistical analysis of these differences, the vertical precision of digital terrain models created from contour maps was determined.

**Key words:** digital terrain model, line-following digitization, contour maps, accuracy evaluation

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