Review of parameters used in the detection of selected land form from ALS data

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Due to increasing use of numerical models in the decision-making processes, a number of technical guidelines have been developed to guarantee the quality of the studies. At the same time, the algorithms have rapidly developed to automatically (mainly for elements characterized by regular shape) and semi-automatically detect the desired elements from data clouds. In addition, the requirement to develop digital geomorphological maps was one of the driving force of the development of attempts to detect single field terrain form from the numerical terrain model. The aim of this study is to present the possibility of application of parameters describing the shape in the detection of selected land form. The research was based on spatial data from ALS (Airborne Laser Scanning) saved in GRID with spatial resolution of 1.0 and 5.0 meters. Data has been divided into voxels and then modeled by using geomorphons. Statistical parameters (e.g. variances, standard deviations, planarity or sphericity) were determined and analyzed for each given voxel. The use of various shape parameters in detection of parabolic dunes was presented. The research has proven that the detection of field forms depends on the density of the base material as well as the size and complexity of the geometry of the sought land form. Statistical parameters with the known accuracy of spatial data allow to assess to what extent the proposed model of the analyzed surface deviates from the measurement data. The possibility of evaluation of given terrain model increases the probability of accurate detection of the land form.