Quality analysis of voxel models obtained with remote sensing

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**Abstract**.

Use of the resource potential of the Arctic is impossible without reliable information about the spatial and temporal characteristics of the developed territories. The topographic and bathymetric information are needed to solve engineering and logistic tasks. Furthermore, surveying, geodetic surveying and geological surveys in these territories are limited by climatic conditions and their infrastructural remoteness. That means, that it’s needed to replace classical methods of performing geodetic works and surveys with the presence of workers on the object with modern automated methods of remote sensing of territories. That methods include the technologies of multipath echo-location, aerial or terrestrial laser scanning, photogrammetry and space sensing of the Earth. Despite the differences between these technologies, they are united by the result, the geospatial data, often called a "point cloud". Such point clouds are not regular in their structure and form 3D-model of the object due to the redundant data, which makes processing, systematizing and storing this kind of the information more difficult. The paper considers the method of generalization of geospatial data, that allows to reduce these disadvantages by approximating local sections of the model with planes that fit into a fragment of a point cloud using the least squares method. The model described in the paper allow to statistically assess the quality of the initial data, to simplify next mathematical processing for solving specific engineering problems, including geomechanical, environmental and glaciological monitoring.