STUDY AND MODELLING OF EARTH CRUST MOVEMENTS IN THE SURROUNDINGS OF ACTIVE VOLCANO USING THE RESULTS OF REPEATED HIGH-PRECISION LEVELING

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The results of modeling the dependence of the vertical movements of the Earth's crust of the leveling profile points on their remoteness from the top of the volcano are considered. The topic of volcanism in Russia is more relevant for the Kamchatka region, which has more than 60 active volcanoes. The aim of the study is to simulate the movements of the earth's crust in the vicinity of an active volcano based on the results of repeated high-precision leveling. Vertical movements of the Earth's surface, near the Klyuchevskoy volcano, were observed by second class leveling in three profiles: two radial, one of which goes to the northeast, and the second to the southeast from the top of the volcano, and one transverse. MathCAD software was used to build two types of models based on the results of long-term geodetic measurements. As a result of the study, a search was made for the type of functional dependence of the values of the vertical displacements of the points as they are removed from the volcano. The recommended range of distances for the application of the proposed models. Differences between the vertical displacements of the Earth's crust obtained by modeling using linear and logarithmic dependencies are presented.

Key words: Earth's crust movements, vertical displacements of points, repeated geodetic measurements, modeling, functional relationships, high-precision leveling, active volcano, geodynamic processes.

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