

Eruption of the Kilauea volcano. Seismogravity processes and gravitomagnetic disturbances registered at the volcanic activation stage

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The analysis of the developing eruption of the shield volcano Kilauea, which significantly affected the environment of the Hawaii archipelago, was carried out. The main attention is focused on seismogravitational processes caused by the transformation of large-scale separate blocks of rock in the structures of the Hawaiian plume that formed the archipelago. Activation of seismogravity processes in the area of volcanic edifice contributed to the development of focal formations and, as a result, gave rise to disturbances in the variations of the Earth's magnetic field.

The seismogravity process and gravity-magnetic disturbances were successfully recorded by instruments at the Geophysical Observatory in Northern Caucasus of the Institute of Physics of the Earth of RAS in the course of preparation of a strong earthquake, the source of which was formed in the Kilauea volcanic structure.

It was experimentally established that, prior to an earthquake, in the depths of a volcanic structure of the erupting Kilauea volcano, separate large-scale geological structures began to form, responsible for the development of seismogravitational processes and gravity-magnetic disturbances that preceded the main event. Registered instrumentally prognostic effects appeared here a few hours before the main event.

Analysis of the experimental data obtained by the instrumental complexes of the Geophysical Observatory in Northern Caucasus and the representative scientific material already published and dedicated to geodynamic processes in the region of the Kilauea volcanic structure, enables to formulate conclusions that the study of a separate class of seismogravity processes is becoming the defining problem of geophysics, volcanology and geo-ecology.

Observed processes and disturbances can be classified as a possible short-term forerunners of a developing environmental disaster in the Hawaii archipelago.