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Abstract title

THE MAGMATIC MELTS EVOLUTION OF GORELY VOLCANO (KAMCHATKA)

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Abstract

Integrated mineralogical-geochemical study of volcano edifice structural complexes samples (with following computer simulation) was conducted for determination of all Gorely volcano rocks variety (from basalt to rhyolite) genesis conditions.

Gorely volcano (South Kamchatka) is a complicated long-lived eruptive center which continues its activity at present time. Gorely volcano consists of two edifices - ancient and modern. Shield-shaped ancient edifice has a large caldera (diameter is about 12 km). This part of the volcano is made of basalt-andesite-dacite-rhyolite volcanic series. Upper part of the ancient series is presented by ignimbrites. The ignimbrite genesis is connected with caldera forming eruption about 40 thousand years ago. Whole ignimbrite volume is about 100 km³. After long period formation of Young Gorely begins in the caldera. At present time modern edifice consists of three summit merged cones (with 11 craters) and about 40 subsidiary (peripheral) cones on the edifice's slopes. Basalts, andesites and dacites compose the modern edifice.

Analysis of materials about Gorely volcano structure, geochemical and microprobe investigations allows to make a reconstruction of Gorely volcano magmatic series evolution - its ancient edifice and modern volcano. On basis of the obtained data it is suggested a conception. According with this idea both volcanic series of Gorely volcano are like genetic series, which have similar evolution stages. Common source for both series is a peridotite from upper mantle which formed via fractionation the whole variety of Gorely volcano rocks - from basalts to rhyolites.

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