



Direct magmatic gas sampling at Gorely volcano (Kamchatka) in 2011

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Gorely volcano is located in Southern Kamchatka 75 km south-west of Petropavlovsk-Kamchatsky and 15 km north-west of Mutnovsky volcano. Gorely consists of 3 merged cones and is a ridge-like sublatitudinal structure (1830 masl) of basaltic-andesite-basaltic composition inside a 9x13 km caldera (of upper pleistocene age) situated in the East Volcanic Belt of Kamchatka. During the last 600–650 years eruptions of Gorely were explosive, mainly Vulcanian and phreatic. Since the 18th century a new eruptive cycle set with eruptions every 4–60 years. All eruptions in the 20th century (1929–31, 1961, 1980–81, 1984–86) occurred in the active crater of the central cone (Kirsanov and Melekestsev, 1991). Acid crater lakes appeared in the crater during non-eruptive periods in 1960, 1978–79, 1984, since 1992 (Egorov et al., 1998). After the last eruption vigorously degassing ~20 m red-glowing bocca in the active crater was first observed on June 16, 2010 5–7 m above the crater lake (Ovsyannikov and Chirkov, 2010).

First direct sampling of magmatic gas and condensate on Gorely volcano was performed on September 20, 2011 during short fieldwork after 11th CCVG IAVCEI Workshop on Volcanic Gases. Samples were collected from the high-temperature (~900°C) vent near the bocca in the active crater. Chemical composition of gases, metallic trace element composition of ammonia solution from Giggenbach bottle and acid condensate (ICP-MS) as well as isotopic composition of H and O in condensate were determined. The results obtained will be presented and discussed. The study is supported by RFBR, grant 10-05-00649.

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