COMPOSITION OF TEPHRA FROM MODERN (2009-2011) ERUPTIONS OF THE KAMCHATKA AND KURILE ISLANDS VOLCANOES

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We report new electron microscopy and high-precision EMP data on tephra from five modern (2009-2011) eruptions from Kamchatka and Kurile Islands volcanoes. All the studied tephra contain fresh volcanic glass. Fresh magmatic material prevails in Kliuchevskoi and Sarychev Peak tephra as well as in tephra erupted from Kizimen volcano in January 2011. Tephra from the initial eruptions of Kizimen volcano (December 2011) and from Shiveluch and Koriaksky eruptions mainly consist of crystallized rock fragments and crystals with subordinate amount of glass. Most of the analyzed volcanic glass shards have normal alkalinity and moderate-K composition as the majority of Kamchatkan magmas. Composition of glasses from the 2010 eruptions of Kliuchevskoi and Shiveluch are consistent with the expected ones for the current period of their evolution. Composition of volcanic glass from the 2010-2011 eruptions from Kizimen is identical to that from its largest pre-historic eruptions. This fact implies that a magmatic chamber of stable rhyolitic composition has been present under Kizimen volcano for at least 10 kyr.

Keywords: modern explosive eruptions, tephra, volcanic glass, electron-probe analysis.