

The geological and volcanological expedition at Chikurachki and Fuss volcanoes at Paramushir Island, northern Kurils

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Geological and volcanological expedition for Chikurachki (1,816m) and Fuss (1,772m) volcano was carried out in September 2007. Our goal was to clarify the eruptive history, mechanism of eruption, and evolution of magma plumbing system at the active volcanoes in northern part of the Kuril Islands.

Chikurachki is a basaltic-andesitic stratovolcano. Its cone is poorly eroded, especially in the eastern part of the volcano. Chikurachki is located at the northern edge of a volcanic chain that extends from SSE to NNE. Tatarinov and Lomonosov volcanoes, which form the southern part of the chain, are also stratovolcanoes with caldera and lava domes. Their edifices are well preserved, although slightly more eroded than Chikurachki.

Fuss volcano is located 17 km to the WSW of Chikurachki, slightly towards back-arc side of Chikurachki. It is an andesitic-dacitic stratovolcano. The volcano's edifice is well preserved, although less eroded than Chikurachki. The only known historical eruption took place in 1854 (Gorshkov, 1970), but the eruptive history is still poorly studied.

Western part of Chikurachki-Tatarinov-Lomonosov volcanic chain and the northeastern foot of Fuss volcano were surveyed by our expedition. In this area, numerous stratified pumice and scoria fall deposits overlie volcanic lahar and debris avalanche deposits. At the wetland, at the southern foot of Fuss volcano, an over 6m high outcrop of volcanoclastic deposits interlayered with peat horizons was discovered. Among the volcanoclastic deposits, over 30 units of tephra (pumice fall, scoria fall, and fine ashes) could be recognized. The lower part of the outcrop is dominated by hornblende dacitic pumice falls. But towards the top of the outcrop, scoria fall layers are gradually more dominant. Maximum pumice size, thickness and number of the pumice fall units increase towards the Fuss volcano. It is assumed that the hornblende dacite pumice layers were erupted from Fuss volcano. On the other hand, scoria fall deposits dominate closer to Chikurachki volcano. These scoria units seem to have been erupted from Chikurachki volcano.

A widespread tephra could be recognized in the surveyed area. It is a well sorted yellowish-white fine ash, 7-10cm in thickness. Its grain size and thickness do not change in this area. The volcanic glass could be classified based on microscopic identification, 90% of bubble wall type and 10% of pumice type. The phenocryst assemblage is plagioclase, pyroxene, magnetite and hornblende. These characteristics and chemical composition of volcanic glass is same as KO tephra, widespread tephra erupted from the Kurile Lake-Iliinisky caldera at southern Kamchatka (7.6 14C ka : Zaretskaia et al., 2001; Ponomareva et al., 2004). If this correlation is correct, the Chikurachki and Fuss tephtras recognized during our expedition belong to their Holocene eruptions.