

A Proposal to Monitor Volcanic Activity in the Kurile Islands

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Volcanoes of the Kurile Islands in the Russian Far East lie immediately adjacent to the North Pacific Composite Air Routes and pose a significant danger to aviation in the Northern Pacific region. There are 105 Quaternary volcanoes in the Kurile Islands, 40 of which have been historically active; 56 eruptions were reported from these volcanoes in the 20th century, an average of about one eruption every two years. More than 2/3 of the volcanoes have the lava domes at the summit. Explosive eruptions are typical of these volcanoes and ash-rich eruption clouds may rise to heights of 10-30 km ASL and extend hundreds of km away from the erupting center.

The volcanoes most dangerous to aviation are (from north to south): Alaid, Ebeko, Chikurachki, Peak Nemo, Peak Krenitsin, Peak Severgin, Raikoke, Sarytchev, Ivan Grozny and Tyatya. Also, potentially dangerous suppose to be Palass, Prevo, Trezubets and Peak Fuss. The most active volcanoes in the past century were: Peak Sarytchev (7 eruptions), Ebeko (6), Chikurachki (6), Ivan Grozny (5), and Alaid (4). The largest eruptions of the XX century occurred in 1924 (Raikoke), 1933 (Severgin), 1946 (Peak Sarychev), 1972 and 1981 (Alaid), and 1973 (Tyatya). The most recent eruption in the Kurile Islands began on January 25, 2002, when Chikurachki volcano, located on Paramushir Island in the northern Kuriles, began an explosive eruption that lasted for several weeks. Explosions sent ash plumes to heights of 2500 m ASL resulting in downwind ash clouds that extended about 100-150 km E, SE and NE; ash falls were reported several times at Severo-Kurilsk, a nearby town.

To monitor volcanic activity on Kurile Islands, we propose to organize a team of 4-5 scientists that would be similar to Kamchatkan Volcanic Eruption Response Team (KVERT). This team might be a part of the Institute of Marine Geology and Geochemistry (IMGG) FED RAS in Yuzhno-Sakhalinsk. Scientists from IMGG have access to MODIS satellite imagery, seismic monitoring, and visual observations of the volcanoes. The Sakhalin Experimental and Methodical Seismological Department (SOMSOP) operates seismic stations at several large villages in the Kurile Islands and at Yuzhno-Sakhalinsk. At this time, funding is not available to establish this team but KVERT hopes to organize a workshop this fall to discuss future organization of such a team.

At present, the volcanoes of Atlasov, Paramushir and Onkotan in the northern Kuriles are monitored to some degree by KVERT from Petropavlovsk-Kamchatsky through observers in Severo-Kurilsk. In particular, Kamchatkan Experimental and Methodical Seismological Department (KOMSP) monitors Alaid volcano (Atlasov Island).