



## **Explosive Eruptions of Kamchatkan Volcanoes in 2012 and Danger to Aviation**

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Strong explosive eruption of volcanoes is the most dangerous for aircraft because in a few hours or days in the atmosphere and the stratosphere can produce about several cubic kilometers of volcanic ash and aerosols. Ash plumes and the clouds, depending on the power of the eruption, the strength and wind speed, can travel thousands of kilometers from the volcano for several days, remaining hazardous to aircraft, as the melting temperature of small particles of ash below the operating temperature of jet engines.

There are 30 active volcanoes in the Kamchatka and 6 active volcanoes in the Northern Kuriles, and 4 of them continuously active. In 2012 seven strong explosive eruptions of the Kamchatkan and the Northern Kuriles volcanoes Sheveluch, Bezymianny, Kizimen, Tolbachik, Klyuchevskoy, and Karymsky took place. In addition, higher fumarolic activity of Gorely volcano was observed.

The eruptive activity of Sheveluch Volcano began since 1980 (growth of the lava dome) and is continuing at present. Strong explosive events of the volcano occurred in 2012: on January 22-23; on March 16-17; March 25-30 – June 03; and on September 18: ash plumes rose up to 10 km a.s.l. and extended about 200-2000 km to the different directions of the volcano.

The eruptive activity of Bezymianny volcano began since 1955, and is continuing at present as growth of the lava dome. Two paroxysmal explosive phases of the eruption occurred on March 08 and September 01: ash plumes rose up to 8-12 km a.s.l. and extended about 1500 km to the east-north-east of the volcano.

Eruption of Kizimen volcano began on December 09, 2010, and continues. Strong explosive eruption began in mid-December, 2010, - ash plumes rose up to 10 km a.s.l. and extended > 800 km from the volcano. There are several stages of the eruption: explosive (from 09 December 2010 to mid-January 2011); explosive-effusive (mid-January to mid-June 2011); effusive (mid-January 2011 to September 2012). Extrusive-effusive phase of eruption of the volcano continues at present.

Strombolian explosive eruption of Klyuchevskoy volcano began on October 14, 2012, and continues at present.

Tolbachik. Explosive-effusive fissure eruption at Tolbachinsky Dol began on November 27, 2012, and continues. Four cinder cones grew at the fissure; lava flows extended about 20 km of vents. Karymsky volcano has been in a state of explosive eruption since 1996. The moderate explosive eruption continued during all 2012.

The eruptive activity of Alaid volcano began on October 06 and probably finished in mid- December, 2012. Gas-steam plumes containing small amount of ash rose up to 3 km a.s.l., a small cinder cone grew into summit volcanic crater. Satellite data showed a weak thermal anomaly over the volcano on October-November.

Strong fumarolic activity of Gorely volcano began to noting from June 2010 and continues at present. A new vent on the wall of the volcanic active crater was discovered on June 17, 2010. The crater lake disappeared to Summer 2012.