



Monitoring of 2010-2011 Kizimen Volcano Eruption and Prediction of Danger for Aviation

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Kizimen (2,485 m) is located on the western slope of the southern part of Tumrok ridge in 265 km to the north-east from Petropavlovsk-Kamchatsky. History of Kizimen eruptions is unknown. There is incomplete data about only one eruption in 1928-1929 which was likely moderate explosive (or explosive-effusive) events. Tephrochronological data point out several catastrophic eruptions in evolution of this volcano.

The first episode of activity Kizimen volcano was registered in September-October 2009. Seismicity of the area of the volcano increased and a weak thermal anomaly over the volcano noted from August 21 till October 16. Later on activity of the volcano decreased.

From January 2010, seismicity of the volcano was above background levels continuously. Visual observation of the volcano by volcanologists on November 20, allowed to detecting several new fumaroles at summit and south-western flank of the volcano. A small amount of volcanic dust covered south-western flank of the volcano. Probably this dust was formed in time of new fumaroles elaboration. Thermal anomaly was noted at the volcano on November 30.

According to seismic data by KB GS RAS on December 09, weak volcanic earthquakes began registering more often; weak volcanic tremor began recording; 5 strong seismic events occurred and one long seismic event from 16:20 UTC. Hot avalanches began to occur at the volcano from December 09. A bright thermal anomaly appeared over the volcano on December 10. In the KVERT Release 65-10 was written: "Activity of the volcano increased. A danger of strong explosive eruption exists. Ash explosions up to 10 km (or 32,800 ft) ASL are possible at any time".

The strong explosive event of 19:57 UTC on December 12 produced an ash plume that reached a height of 33,000 feet according to the Tokyo VAAC. Ashfalls occurred in the villages Kozyrevsk and Tigil. The water level in L. Schapina River rose 60 cm after the December 12 ash explosions. It is possible that lahars were produced by pyroclastic flows or lava flow interaction with snow.

Seismic activity of the volcano decreased on December 13, but shallow seismic events into the volcanic edifice continue to records.

Seismicity of the volcano began to increasing on December 27. Ash plumes rose up to 3.5-4.5 km ASL and extending about 160 km to the west from the volcano.

Seismic activity of the volcano increased again on December 31 and remains high till January 09. Paroxysmal explosive events occurred at 17:56 UTC on December 31: ash plumes rose up to 8-10 km ASL and extending to the south-west from the volcano. Ash plumes extended >500 km to the south-south-west from the volcano on January 01, and ash falls were noted in the different areas of Petropavlovsk-Kamchatsky, Yelizovo and all Southern Kamchatka. Ash plumes extended >500 km to the east-north-east from the volcano on January 05, and ash falls were noted in the Komandorsky Islands. The ash cloud from Kizimen volcano was registered on the distance 838 km to the north-east from the volcano on December 05.

KVERT changed Aviation color code: from Green to Yellow on October 10, 2009, (KVERT RELEASE (K.R.) 59-09); from Yellow to Green on November 12, 2009 (K.R. 64-09); from Green to Yellow on November 25, 2010 (K.R.62-10); from Yellow to Orange on December 10, 2010 (K.R. 65-10); from Orange to Red on December 12, 2010 (K.R. 66-10); from Red to Orange on December 13, 2010 (K.R. 68-10); from Orange to Red on December 27, 2010 (K.R.71-10); from Red to Orange on December 29, 2010 (K.R. 72-10); from Orange to Red on December 31, 2010 (K.R. 73-10).