Seismic events accompanying the effusive-explosive eruption of Kizimen volcano (Kamchatka) in December 2009 - January 2013.

Pavel Pavlovich Firstov, Alexandra Albertovna Shakirova

KB GS RAS, Russia

E-mail: elegance1@mail.ru

In December 2010 began explosive–effusive eruption of andesitic Kizimen volcano after 91 years of silence. It was preceded by sluggish seismic preparation for more than two years. Volcanic eruption from December 2010 to January 2013 can be divided into several stages based on remote sensing observations, particularly seismic and visual data.

1) The first stage (December 9, 2010 – May 11, 2011) was associated with destruction of top part of approach channel and formation of apical extrusion. The last was accompanied by strong explosions and eruption of pyroclastic flows. During this period explosive earthquakes and micro earthquakes regime drumbeats was recorded by the closest telemetry station (RTSS) KZV (R = 2.6 km) to the volcano. This regime is characterized by the appearance of quasi periodic micro earthquakes with a quasi– amplitudes (K<5, where K = lg E, J) for the long–time plots. The first phase is characterized by the appearance of a short-term regime drumbeats.

2) The second stage (May – October 2011) was associated with squeezing of the lava flow coming down to the base of the volcano on its east side. The squeezing was accompanied by micro earthquakes regime drumbeats with long periods to several days. The maximum intensity of this regime was in June–September 2011.

3) The third stage (October 2011 – June 2012) was associated with formation and movement of a new tongue of the lava flow, detached from the eastern tongue in height 1300 meters above sea level. The movement of lava tongue was accompanied by micro earthquakes of regime drumbeats II significantly lower intensity than drumbeats I. At this stage it should be noted another period, November 25, 2011 – January 12, 2012, when there were no micro earthquakes and were eruption of pyroclastic flows frequently.

4) From June 2012 to January 2013 was recorded slow squeezing extrusive dome visually, accompanied by a weak explosive activity and the absence of regime drumbeats. Micro earthquakes were appeared in January again. This indicated a change in speed of squeezing viscous andesitic lava.