

Wave perturbations in the atmosphere accompanied the eruption of the Raykoke volcano (Kuril Islands) 21–22 June, 2019

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Abstract Резюме [Rus PDF](#)

Infrasound signals (IS), accompanied the most powerful episodes of the Raykoke volcano of the 21–22 June 2019, were registered by the network of observation stations, located at the distances of 335 to 974 km from the volcano. We identified IS of two frequency ranges: $f = 0.08$ – 0.5 Hz and $f = 0.004$ – 0.012 Hz. The first one was caused by magma fragmentation and non-stationary processes, appeared during the ash-gas mix outflowing from the crater. The second IS range is associated with an eruptive column forming and an eruptive cloud appearance. In this case the separate eruption episodes are considered as a continuous heat source. On the base of kinematic and dynamic parameters of IS of the first range, we carried out the detailed reconstruction of the eruption course, there 11 separate episodes (explosions) were distinguished. Wave pattern of IS allowed to defined four episodes (no. 1, 5, 6, 8) as explosions, in other cases a high-speed outflow of ash-gas mix (“blow”) occurred from the volcano vent. The most long “blow” (no. 9) lasted for ~3.5 hr. On the base of IS of the second range, we estimated the minimal volume of the ash ejected into the atmosphere (by the methodology of Yu.A. Gostintsev and Yu.A. Shatskih) as >0.1 km³, that allows us to assign the index of explosive activity VEI – 4 for this eruption.

Keywords

Raikoke volcano, explosive eruption, infrasound, eruptive cloud, ejected ash volume

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