

Eruption process of the Aokigahara lava flow of Fuji volcano and the temporal variation of its bulk chemistry

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The Aokigahara lava flow, erupted from 864A.D.to 866A.D.(Jogan era), is the most voluminous eruptive product of Fuji volcano (ca.1.2km³) since 4.5ka and comprises four lava groups issued from different vents aligning WNW to ESE; they are the Kudariyama, Ishizuka, Nagaoyama and Koriana lava groups. The Jogan eruption began with the effusion of aa to intermediate pahoehoe lava flow from the Kudariyama fissure vent situated about 1km from the western foot of the Omuroyama pyroclastic cone. The lavas consist of a lot of lobes and flew down the slope to enter the lake Motosuko and Senoumi. The western half of the lake Senoumi was buried by the Kudariyama lavas group. At the drilling site of Narusawa situated central portion of the lake Senoumi, the lake was completely buried only by the Kudariyama lava group with a thickness of 70m. The erupted lava changed from aa to pahoehoe and finally a chain of small spatter cone was constructed around the vent. Next to the Kudariyama lava, pahoehoe lavas with subordinate aa erupted from the Ishizuka vent at the western foot of the Omuroyama pyroclastic cone. The Ishizuka lava flew down northward and probably buried a part of the eastern half of the lake Senoumi. Following the effusion of the Ishizuka lavas, the Nagaoyama lava group I comprising pahoehoe and aa erupted from the Nagaoyama fissure vent at the eastern foot of the Omuroyama, then the Nagaoyama lava group II composed of large and thick lobes of aa lava effused and at last the Nagaoyama lava group III consisting of voluminous pahoehoe lava poured out and flew down northward to cover wide area of the lava field. Some of them reached the lake Shojiko in the west and the present village of Narusawa in the east. The chain of pyroclastic cone of Nagoyama was probably formed closely related to the eruption of Nagaoyama II lava group. The Koriana lava group I, covered by the the Nagaoyama lava groups, comprises aa lavas and erupted from the fissure vent of Koriana. The Koriana lava group II, covered by the scoria from the Nagaoyama pyroclastic cones, is composed of pahoehoe lava and also effused from the Koriana fissure vent.

The FeO*/MgO ratio of basalt of the Kudariyama lava group is the highest (2.16-2.28) and that of the Ishizuka lava group is the next (2.16-2.25), excluding the Koriana lava groups. On the other hand, the FeO*/MgO ratio is lower in the Nagaoyama lava group I (2.14-2.21) and II-III (1.99-2.17). The FeO*/MgO ratios of erupted basalt appear to decrease with time. The Kudariyama and Ishizuka lava group show different trend on the FeO*/MgO variation diagrams compared with the Nagaoyama and Koriana lava groups, indicating that the magmatic plumbing system of the former lava groups was not the same that of the latter lava groups.