

Eruption history in the southern part of Kozushima Volcano, Izu Islands

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This study using tephrochronology revealed the formation order of lava domes and tephrostratigraphy in the southern part of Kozushima, Izu Islands. Because the identification of Kozushima tephras under only field and microscopic observations is not sufficient to discriminate proximal tephras, we have examined the major element compositions of glass shards using SEM-EDS. Lava domes in the southern part of Kozushima are composed of Takodo, Osawa, and Matsuyamabana lava domes. According to the previous studies, tephras deposited in the southern part of Kozushima are Chichibuyama pyroclastic surge deposit B (Cb-B), Chichibuyama pyroclastic surge deposit A (Cb-A), and Tenjosan pyroclastic surge deposit in ascending order. Pyroclastic flow and surge deposits forming the pyroclastic cone of the Takodoyama lava dome are immediately overlain by AT tephra (30 ka) and are correlated with Cb-B on Membo lava. After this eruptive event, Osawa lava dome and Matsuyamabana lava have been formed with the deposition of Cb-A in the same eruption at about 26-22 cal ka BP, covering Membo lava in southern Kozushima. The results of the major element compositions measurements show that Cb-A lacked in CaO than Cb-B, and abundant in K₂O than Cb-B, showing that they are distinguishable. A weathered lava overlain by Cb-B is located in south Matsuyamabana lava. This shows that this lava was formed before the formation of Takodo lava dome. Therefore, we named Nagasaki lava for this lava as independent lava from the Matsuyamabana lava. Thus, it becomes apparent that lava domes in southern part of Kozushima erupted in the order of Nagasaki lava, Takodo lava dome, Matsuyamabana lava, Osawa lava dome. It is presumed that the crater of Matsuyama volcano is located in just under Osawa volcano. Because Matsuyamabana lava dips gently to the south. It is assumed that Cb-A erupted just after the formation of Matsuyamabana lava effusion, because Cb-A on the Matsuyamabana lava is reddened by thermal oxidation. The formation of Osawa lava effused after Cb-A eruption, because Cb-A does not exist above the Osawa lava. Previous studies showed there are no proximal tephras between Tenjosan pyroclastic surge deposit (AD838), and Cb-A in the southern part of Kozushima. However, in this study we clarified that volcanic ash layer from northern part of Kozushima exists above Cb-A.