

Eruption preceding the 9th century Tenjosan eruption in the northern Kozushima, Izu Islands

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Kozushima Volcano in the north part of the Izu Islands is a volcanic island composed of dozens of rhyolitic lava domes and pyroclastic cones. Based on the ages determined by ESR, fission track, ¹⁴C and old documents, the volcanism of the Kozushima Volcano started several ten thousand or about a hundred thousand years ago and formed monogenetic volcanoes. The latest eruption occurred in AD838 associating with the formation of lava dome and pyroclastic cone of Tenjosan.

In order to contribute to long-term forecasting of volcanic eruption in the Izu Islands off Tokyo, we aim to construct tephrostratigraphy and eruptive history of the Kozushima Volcano. In this presentation, we will report a fall out tephra related to the activity of the northern Volcanic chains (Kobeyama - Ananoyama - Hanadate) just before the Tenjosan eruption.

According to the geological survey, we recognized a white ash fall deposit (Kozushima-Ananoyama tephra: Kz-An) containing altered volcanic blocks and lapilli below Kozushima-Tenjosan tephra (Iz-Kt) is distributed in northern to central Kozushima. Kz-An has a thickness of several cm to 20 cm and a medium to fine sand sized pumice fall layer containing biotite and amphibole. The chemical composition of the volcanic glass shards is SiO₂: 77.5-78.3 wt%, K₂O: 3.5-4.1 wt%, Na₂O: 3.6-4.1 wt%, and CaO: 0.3-0.8 wt%.

In terms of the similarities of mineral composition, refractive indices and chemical composition of the volcanic glass shards, this Kz-An correlates with a coarse to fine sand sized volcanic ash layer intercalated in pyroclastic surge deposits issued from the Ananoyama lava dome.

On the other hand, the chemical composition of the volcanic glass shards from the lava of the northern volcanic chains (Kobeyama - Ananoyama - Hanadate) is SiO₂: 77.2-78.3 wt%, K₂O: 3.8- 4.1 wt%, and Na₂O: 3.6 -4.1 wt% and CaO: 0.3-0.5 wt%. This composition is very similar to that of Iz-Kt, but do not correspond with that of Kz-An. These results indicate temporal changes of chemical composition during the eruption at the Ananoyama, or that the source volcano of Kz-An is not Ananoyama Volcano.

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