

Mode of A.D.838 eruption of Tenjyo-san volcano,Kozu-shima island based on hydration of glassy fragment

KADO, Yasuyuki^{1*}, Keiko Suzuki-kamata¹

¹Earth and Planetary Sciences, Graduate School of Science, Kobe University

Kozu-shima is one of the Izu Islands and located about 170 km southwest of Tokyo. The island mainly consists of rhyolitic lava domes, thick lava flows and pyroclastic deposits. The latest eruption occurred at Tenjyo-san in 838 A. D. Individual lava activities are able to be separated easily, but pyroclastic deposits are difficult to be distinguished in detail because their component and composition are very similar. Thus it is difficult to identify sources of pyroclastic deposits and the eruption history is still uncertain. I measured the thicknesses of the hydration layers along the cracks in the glassy groundmass of Tenjyo-san lava and glassy rock fragments in pyroclastic deposits to distinguish 838 Tenjyo-san pyroclastic deposits.

Hydration layers were measured on thin sections, and results were plotted in histograms. According to the histograms, some fragments have two or more peaks of hydration layers. When the cracks are formed by cooling of magma or fracturing of rock, hydration layers begin to be formed along the crack. The thickest peak is considered to correspond to the cooling of magma. The others are estimated to relate the fracturing of rock. In the measured data, the thinnest peak of hydration layer is almost corresponding to the Tenjyo-san lava's peak. Therefore, these glassy rock fragments were formed before Tenjyo-san eruption and caught in the pyroclastic deposit when the eruption occurred.

Contrast of deposit which is based on the results of hydration layers show that the pyroclastic flow which is distributed at the southwest of island is corresponding to the base part of pyroclastic flow at northwest.

This result and shape of Tenjyo-san lava and distribution of pyroclastic flows indicate Tenjyo-san eruption began in the south part of present Tenjyo-san lava dome, and the vent shifted to the north part of the dome.

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