

Eruption age determination of the latest two lava flows and characteristics of volcanoclastic materials from the recent activity of Yokodake Volcano, Japan

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Yokodake volcano, which effused nine lava flows (Y1~Y9), is the only active volcano belonging to Yatsugatake volcano groups in central Japan. Eruption ages of Y1-Y8 lava were not determined distinctively. To evaluate the latest activity of Yokodake volcano, we carried out paleomagnetic studies and tried to estimate the eruption ages of the Y8 and Y9 lava flows. However, several candidates for paleomagnetic ages were remained (Nitta and Saito, 2018, JPGU; Nitta and Saito, 2018, fall meeting of the volcanological society of Japan). In this study, we applied thermoluminescence (TL) dating for Y8 and Y9 lava and viscous remanent magnetization (VRM) dating for Y9 lava. In addition, the volcanoclastic layers were found just above the Y9 lava and around the surface of the summit region. We will report characteristics of the volcanoclastic layers, discussing the recent activities of this volcano.

TL dating was performed by using poly-minerals (ca 10~50 μm) sample extracted from Y8 and Y9 lava. TL age of Y8 sample was 3.3 ± 1.2 ka. Y9 lava sample didn't emit TL intensity. As for Y9 lava, we tried to estimate the age using VRM. However, the estimated ages were widely scattered. We conclude eruption age of the Y8 lava is ca. 3.3 ka, which is consistent with our previous paleomagnetic age of 3.35~3.85ka. On the other hand, five eruption ages of Y9 lava (0.60 ka, 1.80 ka, 1.90~1.95 ka, 2.20~2.25 ka, 2.4~2.45 ka) are still remained.

We recognized light gray volcanic ash deposit just above Y9 lava which composed of sand to silt size and contained carbonaceous material. It may be comparable to NYk-1 tephra (Okuno, 1995). Four volcanoclastic layers were found at summit region and the lower layer is a possibility of being correlated with NYk-2 tephra (2.35~2.15 cal ka BP; Okuno and Kobayashi, 2010). Two volcanoclastic layers above NYk-2 tephra seem to be derived from Yokodake volcano, suggesting at least two volcanic eruptions were occurred after NYk-2 tephra eruption.

Keywords: Yokodake Volcano, Latest lava, Eruption age determination, TL dating, Volcanoclastic materials from the recent activity