

箱根火山大涌谷テフラ群—最新マグマ噴火後の水蒸気爆発堆積物

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The Owakidani Tephra Group: A Newly Discovered Post-magmatic
Eruption Product of Hakone Volcano, JapanMakoto KOBAYASHI*, Kazutaka MANNEN**, Mitsuru OKUNO***,
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We discovered a set of phreatic explosion deposits, herein referred to as the Owakidani tephra group, on the northern slope of Mt. Kamiyama and in the Owakidani fumarolic area of the Hakone Volcano. The tephra group is the product of the volcanic activities since the latest magmatic eruption of Hakone Volcano at around 2.9 ka. It comprises five units named Hk-Ow1 to Hk-Ow5 in the ascending order. Both Hk-Ow1 and Hk-Ow2 comprise tephra fall deposits and secondary debris flow deposits. In addition to these deposits, Hk-Ow2 is also associated with surge deposits. Hk-Ow3, Hk-Ow4 and Hk-Ow5 consist of tephra fall deposits. The ash of these tephra fall deposits and the matrix of the secondary debris flows are principally composed of clay, altered lithics and secondary minerals supposed to be of fumarolic area origin.

It is possible that Hk-Ow1 and Hk-Ow2 erupted from a fissure on the northeastern ridge of Mt. Kamiyama, while Hk-Ow3, Hk-Ow4 and Hk-Ow5 erupted at Owakidani.

No juvenile material was found within the deposits of these eruptions except for Hk-Ow2, while the surge deposit of Hk-Ow2 contained trace amounts of volcanic glass fragment. Although it is considered that the principal nature of the eruptions of the Owakidani tephra group is phreatic, the deformation of the edifice around the source area implies the possibility of magma intrusion to shallow levels.

Based on the calendar ages of the Owakidani tephra group and the stratigraphic position of the Kozushima-Tenjosan tephra, we estimated that Hk-Ow3, Hk-Ow4 and Hk-Ow5 erupted in relatively short intervals between the latter half of the 12th and 13th centuries. On the other hand, Hk-Ow1 and Hk-Ow2 erupted at around 3 kyr BP and 2 kyr BP, respectively.

The eruption ages of the Owakidani tephra group generally correspond to the seismic events that occurred in the Koze-Matsuda Faults and the Tanna-Hirayama tectonic line. It is suggested that the activity of the Hakone Volcano may be closely related to the tectonic events in this region.

Key words: Hakone volcano, Owakidani tephra, phreatic eruption, Kozushima-Tenjosan tephra, radiometric carbon age

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