

北海道東部, 雄阿寒火山の形成史

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(2009年3月9日受付, 2009年6月24日受理)

Eruption History of Oakan Volcano, Eastern Hokkaido, Japan

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Oakan volcano is one of the post-caldera volcanoes of Akan caldera, and its eruptive history has not yet been clarified well. In order to reveal the structure of volcanic edifice and eruptive history with possible age data, we carry out not only geological survey but also tephrochronological study around the volcano. We identify 10 tephra units, nine of which are wide-spread tephros from other volcanoes in Hokkaido and Baitoushan volcano. Only one tephra unit (Oafa) from Oakan volcano has been recognized, but the other nine tephros can be used as good time markers for understanding the activity of the Oakan volcano.

The volcanic activity can be divided into two main stages: the early stage (E stage) and late one (L stage). Although most of the edifice of the E stage is covered by eruptive materials of the L stage, several lava flows are distributed on the southern flank. After the formation of the edifice, sector collapse of its southern part occurred and formed a debris avalanche deposit on the flank. The edifice and the debris avalanche deposit of the E stage is covered by Meakan tephra (NaPS: ca. 1.3 ka), which indicates that the activity of the E stage had terminated before 1.3 ka. After a certain period of dormancy, the activity of the L stage started, which can be divided into two sub-stages: L-1 and L-2. During the L-1 stage, lava effused from four crater areas, and the Futatsudake cone was formed at one of these areas. Based on petrological features of these lavas, the L-1 stage could be divided into L-1-1 and L-1-2 groups. Oafa tephra layer recognized at the flank was derived from the cone (L-1-2) judging from its isopach and isopleth maps, and also from its petrological features. The tephra layer is sandwiched between Ma-f (ca. 6.6 ka) and Ta-c2 (ca. 2.5 ka) tephros. Considering thickness of soils between Oafa and these two layers, we estimate that eruption age of Oafa is about 5 ka. Although Oafa can be correlated with the activity of L-1-2 group, it seems that the activity of L-stage began around 5 ka, because there existed no obvious time interval between L-1-1 and L-1-2 groups. Thus, the dormancy period between the early and late stages can be estimated to be about 8000 years. In the L-2 stage, eruption centers moved northeast to construct the summit (Oakandake) pyroclastic cone, in which four craters were formed. At the same time, lava flows repeatedly effused from the cone to widely cover the north to southeast flank. Based on the location of eruption centers and the time sequence of these lava flows, the activity of L-2 stage can be divided into four groups: L-2-1 to L-2-4. The youngest crater at the summit cone of L-2 stage was formed before 1 ka, because it is covered by Ma-b tephra (ca. 1.0 ka). This suggests that the latest magmatic activity of L-2 stage occurred before 1 ka. Although no eruptive activity was recorded, weak fumarole activity at the north crater on the mid flank was reported. Our study reveals frequent eruptions of Oakan volcano during Holocene, and suggests that the volcano must be considered as an active volcano.

Key words: Oakan volcano, Akan caldera, tephrochronology, eruption history, active volcano

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