論　説

火山 第52巻 (2007)
第1号 1–21頁

霧島・御鉢火山の噴火史

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（2006年4月25日受付，2006年12月6日受理）

Eruptive History of Ohachi Volcano, Kirishima Volcano Group, Southern Kyushu, Japan

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The Kirishima Volcano Group is composed of many Quaternary volcanoes occupying an area about 600 km^2. Ohachi Volcano is a small, active stratovolcano situated at the southeastern part of the Kirishima Volcano Group. It has a considerably large crater compared to the size of its volcanic edifice, with thick agglutinates that crop out on the wall of the crater.

We studied the eruptive history of Ohachi Volcano by tephrochronological method, and recognized 15 tephra deposits around the volcano. Geological and archeological data and documentary records of eruption indicate that the oldest tephra from the Ohachi Volcano is the Araso tephra (AsT) erupted in ca. AD 700. All other tephra deposits were erupted in historic time such as Katazoe tephra (KzT) in AD 788, Miyasugi tephra (MsT) in ca. AD 1000, Takaharu tephra (ThT) in AD 1235, and Takachihogawara tephra 1-11 (TgT-1 to TgT-11) in the period of AD 1250-1700. Thus, the Ohachi is a very young volcano at 1300 years old.

We recognized two types of magmatic eruption: sub-plinian and vulcanian. Lava emission took place at least four times in association with sub-plinian eruptions. Among these eruptions, ThT is the most voluminous, and a pyroclastic flow was also generated. The total volume of erupted magma (volcanic edifice included) was calculated to be about 2.5×10^8 m^3 (DRE). Eruption rate was not constant throughout the eruptive history of Ohachi volcano, that is, the eruptive history is conveniently divided into three stages by the eruption rate: the early stage from AD 700 to 1235 (ca. 540 years), the middle stage from AD 1236 to 1717 (480 years), and the late stage from AD 1718 up to present (290 years). This indicates that more than 80% of the total amount of magma was produced in the early stage, while the remaining 20% of magma was erupted in the middle stage. Although there are many recorded eruptions during the late stage, it is difficult to find any tephra deposits around the Ohachi Volcano, which suggests that the scale of volcanic eruption is progressively diminishing through time.

The volcanic edifice of Ohachi is composed mainly of succession of thick tephra layers, some of them changed to agglutinates. Correlation of the proximal deposits to the distal tephra suggests that the volcanic edifice had grown mainly during the two eruptive stages of KzT and ThT, which are comparatively large-scale sub-plinian eruptions (order of 10^7 m^3 to 10^6 m^3). Hence, the most important process in generating agglutinates is rapid accumulation of voluminous tephra around the crater which are generated during sub-plinian eruptions.

Key words: Ohachi volcano, Kirishima volcano group, eruptive history, sub-plinian eruption, agglutinate

1. はじめに

御鉢（標高1,425 m）は，鹿児島・宮崎両県境に広がる霧島火山群の南東部に位置し，高千穂複合火山（井ノ上，1988）の一部を構成する火山である．高千穂複合火山は，

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