論　説

火山　第 59 巻 (2014)
第 3 号　185−206 頁

男体火山の最近 17,000 年間の噴火史

石崎泰男*・森田考美**・岡村裕子**,***・小池一馬****・
宮本亜里沙****・及川輝樹*****

（2014 年 5 月 1 日受付，2014 年 8 月 11 日受理）

Eruption History of Nantai Volcano During the Last 17,000 Years

Yasuo Ishizaki*, Takami Morita**, Yuko Okamura**,***, Kazuma Koike****,
Arisa Miyamoto**** and Teruki Oikawa*****

Nantai volcano (2,486 m a.s.l.), a near-conical stratovolcano with a summit crater ~1 km wide, is located along the volcanic front of NE Japan. To date, the eruptive history and characteristics of this volcano have been poorly studied, except for an explosive eruption that occurred at ~17 cal. ka BP (Stage 2 eruption). In this paper, we present the results of investigation of the stratigraphy of recent proximal eruption products, the tephrostratigraphy of the northeastern foot of the volcano, and new radiocarbon ages. The results show that at least six eruptions of Nantai volcano have occurred after Stage 2 eruption, and we refer to these as Stage 3 eruptions.

We identify four tephra layers and one pyroclastic flow deposit in the soil sections　above the Stage 2 pumice flow deposit, at the northeastern foot of the volcano. These are classified in the ascending order as: (1) Nantai-Bentengawara Tephra 4 (Nt-Bt4), (2) Bentengawara Pyroclastic Flow Deposit, (3) Nt-Bt3, (4) Nt-Bt2, and (5) Nt-Bt1. The Nt-Bt2 is phreatic fallout with no juvenile material; the other tephra layers are phreatomagmatic fallouts containing juvenile pyroclasts together with ash aggregates. Six Stage 3 eruption products are identified within and around the summit crater: (1) a blocky lava flow (Osawa Lava) exposed on the northern crater wall, (2) a partly dissected scoria cone and (3) a poorly-preserved tuff ring (and its resedimented deposits) on the steep crater floor, (4) a subaqueous lava and associated lava fragments sandwiched by lacustrine deposits, (5) a tuff breccia containing hydrothermally-altered lava block and clayey matrix, and (6) a stratigraphically uppermost phreatomagmatic tephra (Nantai-Yudonoyama Tephra). All the proximal eruption products, except for the subaqueous lava, can be correlated with the tephra layers and the pyroclastic flow deposit on the northeastern foot based on stratigraphic positions, lithologies, and geochemical affinities. Our study reveals that five tephra-forming eruptions (ca. 14, 12, 8, 7.5, and 7 cal. ka BP) and one non-explosive subaqueous eruption (between 12 and 8 cal. ka BP) occurred during Stage 3, from a discrete eruption center inside the summit crater. Moreover, the tephra-forming eruptions were diverse in style, with strombolian (12 cal. ka BP), phreatomagmatic (14, 8, and 7 cal. ka BP), and phreatic (7.5 cal. ka BP) eruptions. Eruption style was determined primarily by vent position and spatiotemporal variations in local hydrological factors (e.g., the presence or absence of a crater lake, wet lacustrine deposits, and streams).

Key words: Nantai volcano, proximal eruptives, tephra, eruption history

* 〒930−8555　富山市五福 3190
富山大学大学院理工学研究部
Graduate School of Science and Engineering, University of Toyama, 3190 Gofuku, Toyama 930−8555, Japan.
** 〒930−8555　富山市五福 3190
富山大学大学院理工学教育部
Graduate School of Science and Engineering for Education, University of Toyama, 3190 Gofuku, Toyama 930−8555, Japan.
*** 〒315−0035　茨城県石岡市南台 3−1−11
岡村地質
Okamura Chishitsu Co. Ltd., 3−1−11 Minamidai, Ishioka, Ibaraki 315−0035, Japan.
**** 〒930−8555　富山市五福 3190
富山大学理学部地球科学科
Department of Earth Science, Faculty of Sciences, University of Toyama, 3190 Gofuku, Toyama 930−8555, Japan.
***** 〒305−8567　茨城県つくば市東 1−1−1 中央第 7
独立行政法人産業技術総合研究所地質情報研究部門
AIST, Geological Survey of Japan, Tsukuba Central 7, 1−1−1 Higashi, Tsukuba, Ibaraki 305−8567, Japan.

Corresponding author: Yasuo Ishizaki
e-mail: ishizaki@sci.u-toyama.ac.jp