

# Lithofacies and bulk rock chemistry of borehole cores from Mayuyama, Unzen volcano, Japan

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The Mayuyama volcano is located at the easternmost part of the Unzen volcano. It comprises two lava domes of the Shichimenzan and the Tenguyama. A fission track date for the Shichimenzan lava is 5.1 ka and a <sup>14</sup>C date for the Mutsugi pyroclastic flow that derived from the northern part of the Mayuyama dome is 4.2 ka BP. The borehole cores have been obtained from the northeastern flank of the Mayuyama volcano (75.0 - 119.8 m in depth). We have made a detailed growth history and stratigraphy of the Mayuyama volcano by lithofacies and bulk rock chemistry analysis of cores.

The borehole cores are subdivided into four geologic units from bottom to top as follows. First unit is dacitic lava flows of the Older Unzen volcano (OU). The second unit is products of pre-Mayuyama volcanic rocks (PM), which may correlate with Older Unzen volcano, Nodake, Myokendake and Fugendake collapse. Small and sparse biotite with pyroxene phenocrysts are specific to the rocks of PM. PM contains many glassy dark blocks as essential dacitic fragments. The third unit is subdivided to four subunits. They are correspondent to the growth of the Mayuyama volcano, composed of three pyroclastic flows (M1-M3) and related lahar deposits (M4). Large biotite phenocrysts are specific to the essential fragments of M1-M4. M1 is monomictic and contains vesicular blocks and their ash. M2, M3 and M4 contain dark blocks which originated in OU and PM. Soil appear at the top of M4. The fourth unit is correspondent to the erosion of the Shichimenzan dome characterized by many lahar deposits (MC). Large biotite phenocrysts are specific to the rocks of MC. MC contains few dark blocks.

Rock samples were collected from whole geologic units. They chemically show a broad cluster in Harker's variation diagrams. The whole rock SiO<sub>2</sub> contents of essential fragments from OU and PM range from 59.8 to 65.7 wt.%. On the other hand, those from M1, M2, M3, M4 and MC range from 65.1 to 66.5 wt.%, which overlap with outcrop samples of the Mayuyama volcano.

Dark blocks which included from 2 to 30% in M1-M4 suggests that products of OU and PM may have been partially withdrawn along with Mayuyama lava during the eruption.