The formation process of lava domes in Sambe volcano

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Sambe volcano is an active volcano laying astride the volcanic front of the SW Japan arc. The latest eruption of this volcano was *ca.* 3800 ybp and may formed the present volcanic topography showing lava domes with four peaks (Mt. Osambe, Mt. Mesambe, Mt. Kosambe, Mt. Magosambe). The formation process of these topographically isolated four domes has been controversial. In order to access this problem, rocks from these peaks have been analyzed petrographically, which provide the following results:
(1) Rocks from Osanbe and Mesanbe are poorer in quartz phenocrysts than those from Magosanbe and Kosanbe,
(2) Al_2O_3, CaO, and Na_2O contents decrease with increasing SiO_2 for all rocks from four peaks, which may correspond the change in the amount of plagioclase phenocrysts,
(3) Rocks can be divided into 2 groups, the Osambe-Mesambe and the Kosambe- Magosambe groups, based on the difference in K_2O, Sr, Zr and Nb concentrations,
(4) Osambe and Mesambe rocks can be identified by the SiO_2 and the plagioclase phenocryst contents,
(5) High-T oxidation is recognized even for rocks that form the valley between peaks, showing the original distribution of these rocks at the kava surface.
These lines of evidence may lead to the conclusion that the four domes formed independently rather than that a large lava dome has been reshaped into four peaks by subsequent eruption and/or erosion.

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