Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SVC48-P33 Room:Convention Hall Time:May 19 18:15-19:30

Geomorphological Growth of Lava Domes

Takaaki Mori[1*], Oshima Hiromitu[2]

[1]Institute of Seismology and Volcanology, Hokkaido University (PASCO Corporation), [2]Institute of Seismology and Volcanology, Hokkaido University

The lava dome is one of the remarkable shapes in volcanic landforms. The average height and diameter are about 540m and 170m, and the range of the aspect ratio is 0.125-0.35. Lava domes have been formed at 58 volcanoes in the world, including 3 volcanoes in Japan, since 1900, but little comparative study on the growth of a lava dome has been carried out.

In this work, we try to investigate features of the lava dome growth through the comparison with temporal changes in the height and the radius of lava domes.

It was only 9 lava domes that the height and the radius of a dome continuing to grow were observed. The normalized height-time and radius-time curves show that the height and the radius increase with the time according to logarithmic or power low, and they exceed 50% of the maximums for 5-20% of the whole growth time. The curves suggests that the termination of the dome forming activities and an ultimate size of the lava dome can be predicted from the temporal changes in the height and/or the radius of a lava dome. The height-radius relations of each lava dome reveal that growth paths branch in two directions at the transition zone from the higher growth rate to the lower one. The two directions are approximately parallel with the height-radius relation line of Peleean dome and of Low lava dome (Blake, 1990) respectively.

We also investigate a morphological feature of spines accompanying some Peleean domes. The aspect ratios of them fall between the lower limit of 0.35 and the upper limit of 3.0, and the maximum heights are less than the upper limit of 300-350m.

Although the height and the radius data from only 9 domes allow to lead two features of the lava dome growth, more detailed topographic data during the growth of a lava dome are required to better understand the feature of the dome growth. The result suggests the possibility that we can predict growth periods and size of lava dome. It will be necessary to measure even height and a diameter.

Keywords: Lava dome