

Variation of the crater bottom in 2004 Eruption of Asama-yama revealed by satellite SAR images

Taku Ozawa[1]; Makoto Murakami[2]; Hiroshi Yarai[3]; Hiroshi Ohkura[1]

[1] NIED; [2] Geography and Geodynamics Research Center, The GSI; [3] GSI

We analyzed satellite SAR images to investigate the crater of Asama-yama which started the eruption from 1 Sep. 2004. On the RADARSAT SAR image acquired on September 7, a significant variation relative to that simulated from DEM (observed on 10Oct.2003) was not found. It indicates that there was no variation of the bottom of crater by September 7. On the other hand, the contraction of shadow area which was caused by a steep topography of crater wall was found on the SAR image acquired on October 1, and it indicates that the bottom of crater was uplifted. The height at the boundary of shadow area can be estimated uniquely from the SAR observation geometry, and the height change of about 50 m was estimated from a comparison between the height estimated from its geometry and that of DEM. Though a significant variation was not found on the SAR image of October 25, a slight variation was found on that of November 18. It suggests that the center of crater was burst associated with the eruption which occurred on November 14 and that the objects by its eruption were accumulated around there. We also analyzed ENVISAT SAR images. On the SAR image acquired at 21:35 of September 14, a significant variation of not only the shadow area but also the layover area was not found. It suggests that there was no uplift of the bottom of crater by that time. Though the appearance of lava of about 0.9 million ton was found by aircraft SAR observations at about 10:00 and 14:00 of September 16 (Geographical Survey Institute, <http://www.gsi.go.jp/WNEW/PRESS-RELEASE/2004/0919.htm>, 2004), the appearance time of its lava was narrowed to 1.5 days between 20:35 of September 14 and 10:00 of September 16.

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