Lava Dome Deformation at Unzen Volcano as viewed from ALOS PALSAR Interferometry（continued report）.

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Abstract

At the Unzen Volcano, after the eruption started in November 1990, the lava dome appeared in 1991, and pyroclastic flows frequently occurred resulting from collapse of the dome since May 1991. The dimension of the lava dome (called Heisei-Shinzan) is 1000m X 500m and the thickness is 230m approximately. The extrusion of lava was almost terminated by the beginning of 1995, and contraction and sinking of the lava dome have been observed after that. This study shows that two pairs of ALOS PALSAR interferometry observed at another period and each orbit detected the deformation of the lava dome.

ALOS (Daichi), launched in February 2006, has L-band SAR (PALSAR) and the sensor has many advantages to analyze the crustal deformation around volcano areas using InSAR. In this study, we use two pairs of images captured at Ascending (August 26 and October 11, 2006, took from westward, and the perpendicular baseline was 670m) and Descending (July 27 and September 11, 2007, took from eastward, and the perpendicular baseline was 70m). Two pairs of coherences were very good and nice interferometry images were obtained. Both interferometry images show that the deformation of the lava dome was with several centimeters in the direction that went away from the satellite.

MRI has surveyed the deformation of lava dome using GPS receivers with Fukuoka district Meteorological observatory and (former) Unzendake Weather Station since September, 1999. The result of the campaign observations shows deformation with several tens centimeters per year, and it is remarkable particularly in downward. We surveyed the deformation of lava dome using GPS receivers again in November, 2007. The result showed the deformation velocity with several centimeters per photography interval (46days). The result is consistent with InSAR observation.

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