

Vertical ground deformation in and around Sakurajima volcano measured by precise leveling survey (until Dec. 2012)

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We conducted the precise leveling survey in and around Sakurajima volcano in November and December 2012, in order to evaluate the vertical ground deformation associated with the recent eruptive activity of this volcano. The survey data measured in Sakurajima are compared with those of the previous survey conducted in November 2011, resulting in the relative vertical displacements of the bench marks during the period from November 2011 to November-December 2012. The resultant displacements indicate the ground uplift at the northern part of Sakurajima. The relative ground height level at the northern part of Sakurajima at the time of November-December 2012 recovers and further exceeds the height level in around 1973, when the intense summit eruptions during the 1970s and the 1980s started. From the analysis based on a spherical source model, the inflation source is located at 9.6 km depth beneath the center of Aira caldera. The relative vertical displacements around the western coast of Kagoshima Bay calculated during the period from November 2009 (the previous survey) to November-December 2012 also show the ground uplift near the center of Aira caldera. These results suggest that the magma storage at the magma reservoir beneath Aira caldera is progressed in spite of the recent increase of the volume of ejected magma associated with the eruptive activity at Showa crater.

Keywords: Sakurajima volcano, Aira caldera, precise leveling survey, vertical ground deformation