

## Vertical ground deformation in Sakurajima volcano and around Aira caldera: results of leveling survey in Oct.-Nov. 2013

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We conducted the precise leveling survey in Sakurajima volcano and around Aira caldera in October and November 2013, following the repeated leveling surveys to evaluate the vertical ground deformation associated with the recent eruptive activity of this volcano. The leveling routes measured in 2013 survey are about 117 km long in total, including Sakurajima coast route, Sakurajima western flank route, Sakurajima northern flank route, Kagoshima Bay western coast route (BM.2469 - BM.2474 - BM.J), Kagoshima Bay eastern coast route (BM.2500 - BM.J.2797) and Soo route (BM.J.2797 - BM.2785). These leveling routes were measured by the joint university team during the period of November 5-22 and by Geospatial Information Authority of Japan (GSI) during the periods from October 25 to November 7 and of November 13-26.

The obtained survey data are compared with those of the previous surveys conducted in October-December 2007 and November-December 2012, resulting in the relative vertical displacements of the bench marks. The resultant displacements show the ground uplift around Aira caldera as well as the ground subsidence near the central part of Sakurajima. From the analysis based on Mogi's model, the inflation and deflation sources are located beneath the center of Aira caldera and beneath the center of Sakurajima, respectively.

These results indicate that the magma storage at the magma reservoir beneath Aira caldera is still progressed. On the other hand, they also suggest the increase of the amount of ejected magma at the magma reservoir beneath the center of Sakurajima volcano, reflecting the recent increase of the eruptive activity at Showa crater.

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