Ground deformation associated with the volcanic activity of Sakurajima volcano revealed by InSAR and leveling data

Keigo Yamamoto[1]

[1] D.P.R.I., Kyoto Univ.

Sakurajima volcano since 1957. The results suggested that the ground deformation associated with the eruptive activity reflects the phenomena of magma storage and/or ejection at the inferred reservoirs beneath the volcano and the Aira caldera (Eto, 1989). Although the leveling measures the sparse and restricted observation points (bench marks), the recent InSAR technique allows us to detect nearly continuous deformation image which covers the whole target area. In this paper, the results of InSAR analysis as well as the leveling data are shown to discuss the recent ground deformation of this volcano.

The last precise leveling survey that measures the leveling bench marks in Sakurajima volcano and around the Aira caldera was conducted during the period from October to December 2007 (Yamamoto et al, 2008). The obtained survey data indicated the ground uplifts at the northern part of Sakurajima during the period from 2006 to 2007, where the previous leveling survey had been conducted in 2006. From the analysis according to Mogi's model, the inflation source is located beneath the northern flank of the volcano, suggesting that the magma storage at the deep magma reservoir is progressed during the study period.

For the preliminary InSAR analysis, ALOS/PALSAR image pair is selected to analyze so as to compare the ground deformation with that from the leveling data analysis. The resultant interferogram is seem to be consistent with the theoretical one that is calculated by using Mogi's source from leveling data, although the ground deformation is minor during this study period.

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