

Subsidence near the summit and east of Sakurajima volcano - Possible Remnants of Cooling Dikes Intruded during Showa Eruption? -

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D-InSAR observation during 1992 to 1998 using JERS-1 SAR showed four characteristics of the crustal deformation in Aira Caldera region, which are 1)Upheaval around the Aira Caldera, 2)Upheaval centering at Northern part of the Sakurajima Island, 3)Local subsidence at Eastern part of the Sakurajima Island (Kurokami), and 4)Local subsidence at the summit of Sakurajima Volcano (Okuyama et al. 2000). Two upheaval signals can be explained by inflating point sources which are located at the depth of 10km in Kagoshima bay, and at the depth of 4km at Northern part of the Sakurajima Island respectively.

Local subsidence at Kurokami, on the other hand, is observed through the observation period of D-InSAR. GPS measurement which is taken place by Sakurajima Volcano Research Center, Kyoto Univ. shows subsidence at Kurokami (SVRC, DPRI, Kyoto Univ., 2000). These facts indicates that the subsidence is real crustal deformation. However its spatial scale is about 1km wide, and there is no observational result which implies the existence of magma chamber at shallow depth in this region.

The subsidence at the summit of Sakurajima Volcano was considered to be the effect of overestimated topography-related atmospheric delay. However, Ishihara et al. (2004) reported the need of deflating point source at the depth of 1-2km under the summit of Sakurajima Volcano to explain the deformation observed by Leveling survey at Northern part of the Sakurajima Island. Hence this subsidence signal is considered to be real as well.

Possible mechanism to explain these local subsidences is shrinking of the intruded dike due to cooling contraction. At presentation, we discuss the mechanism from spatial distribution and temporal evolution of the subsidence at these local subsidence areas.