

## Detection of Landslide Displacement at the Hakusan volcano from Interferometric Analysis of ALOS/PALSAR data

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A continuous landslide has been observed around the Jinnosuke valley of the Hakusan volcano located at the prefectural boundary between Ishikawa and Gifu. Kanazawa Office of River and National Highway [2007] estimated the displacement of the landslide of about 10cm/yr from GPS and EDM observations. On the other hand, the spatial distribution of the landslide has remained uncertain. We try here to detect the landslide around Jinnosuke valley of the Hakusan volcano using SAR interferometry, which is an effective method to specify the spatial distribution of the landslide area.

We generate 13 differential SAR interferograms (9 Ascendings and 4 Descendings) using 10 SAR acquisitions from available PALSAR data. The raw SAR data are processed using the JAXA/SIGMA-SAR [Shimada, 1999]. We apply a linear relationship between altitudes and phase difference change [Fujiwara et al., 1999] and remove the effect of propagation delay on the entire interferogram due to vapor in the atmosphere based on the relationship. As a result, we find the interference fringes of the displacement on surface due to the landslide in two interferograms. The interference colors show the slant range shortening. We convert the interference colors to the displacement of the landslide in consideration of landform features. The occurrence of the landslide over several hundred meters to 2km squares is recognized around the Jinnosuke and the Sensai valleys. The horizontal displacement of the landslide is several to 25cm per year. These estimations are consistent with those from GPS and EDM observations. Comparing the results of two interferograms, the area of the landslide is common, but we can find the difference of areas with large displacement between the two. We, thus, consider that the local landslide occurs independently in time and space, while the continuous landslide area is common in large spatial scale around the Jinnosuke and the Sensai valley.