Detection of Landslide Displacement from SAR Interferometry of ALOS-2/PALSAR-2 data

*yuya kitoh[1], Yoshihiro Hiramatsu[1]

1.Kanazawa University

The types of landslide are various, and it is important to monitor the spatio-temporal landslide movement for understanding the landslide mechanism. GNSS survey and ground-based observations are generally used for landslide monitoring, but it is impossible to monitor the spatial distribution of landslide. InSAR (SAR Interferometry) is developed originally for a technique to detect the ground surface displacement spatially. Now InSAR becomes a monitoring tool for the deformation with glacier, landslide and subsidence.
In this study, we estimated landslide displacement from InSAR analysis and studied the characteristic of landslide movement with ground-based observation in the Noto Peninsula, central Japan. We analyzed SAR (synthetic aperture radar) images acquired by ALOS-2/PALSAR-2, and used GNSS and borehole extensometers as the groud-based observation.
InSAR analysis reveals landslide displacement in the area of 300 m ×500 m. The magnitude and direction of landslide displacement is coincident with the ground-based monitoring results. In this study, we present a relationship between the landslide displacement detected by InSAR, the ground monitoring and cumulative rainfall, and discuss the spatio-temporal landslide movement.
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Keywords: Landslide displacement, ALOS-2, InSAR, GNSS, Noto Peninsula

