

Detection of slope failure using ALOS and ALOS-2 data -Application to Mt. Fuji

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Synthetic aperture radar (SAR) has an advantage for acquiring information in wide area with high spatial density, and this advantage would be effective for slope failure detection. However, some slopes are difficult to be monitored because of low coherence due to slope angles or surface coverings. In this study, we applied InSAR analysis to Mt. Fuji, which has been recently paid attention to its slope failure, and clarified slopes that can be monitored by InSAR analysis. Some case studies of slope failure detection were also done.

Our InSAR results using ascending and descending data showed the slopes opposite to radar illumination exhibits low coherence likely due to the shadow effect. Accordingly, it is possible to monitor most of slopes using either ascending or descending data. However, the western slopes of Mt. Fuji constantly showed low coherence in both ascending and descending data. This is attributed to the layover effect in ascending data and the shadow effect in descending data. Compared with ALOS and ALOS-2 data analysis, ALOS-2 results have larger high coherence areas compared with ALOS result. We also found the slope failure in the Houei crater. These results show the effectiveness of slope failure monitoring using InSAR analysis of ALOS and ALOS-2 data.

Keywords: SAR interferometry, Slope failure, Mt. Fuji