

Backscattering Analysis of Typhoon-induced Landslides Using Sentinel-1 C-band SAR Data

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Abstract:

As a kind of natural geological disaster, landslide causes enormous damaged properties and a large number of casualties all over the world. When landslides occurred in remote areas and the availability of optical images are rare due to cloud persistence. This study aims to analyze SAR backscattering changes of event landslides through a multi-temporal Sentinel-1 C-band synthetic aperture radar (SAR) image dataset. With applying NDSI (Normalized Difference Sigma Index), the change detection was performed, and able to identify the strength of radar signal over landslides area induced by Typhoon Sudier in 2015. Preliminary result shows that from both ascending and descending data, lower backscattering can be found on landslide areas where NDSI value is also negative. Additionally, by analyzing temporal changes of SAR backscattering, rapidly classification of landslide can be achieved, and Sentinel-1 C-band VH data was found to be a better polarization mode for rapid landslide detection.

Keywords: Sentinel-1 synthetic aperture radar, PolSAR, Landslide Detection, Backscattering Analysis