

SVC070-P21

Room:Convention Hall

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Distribution analysis of pyroclastic deposits on 2011 eruption of Shinmoedake Volcano, Kirishima Volcanic Group, using

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In January 2011, a magmatic eruption occurred in Shinmoedake Volcano, one of members of the Kirishima volcanic group, located in Kyushu, Japan. In this study, we employed C-band SAR data acquired by RADARSAT-2 for the examination of ground surface changes due to the volcanic activities (ash fall and volcanic bombs). RADARSAT-2 images that were acquired with the Multi-look fine mode (8m resolution) and Fine Quad-Pol mode (12m resolution) were examined. By performing continuous monitoring, we generated a change detection image from the Multi-look fine mode data. On the other hand, we analysed the full polarimetric image and generated a Pauli color-coded image with the Fine Quad-Pol mode data. Change detection images showed differences of backscatter intensity between images before and after the eruption (Fig. 1). Red color indicates smoother features on the before eruption image, while blue color indicates rougher features on the same image. Change detection images revealed the regional and local changes, especially around the craters and southeast direction. We considered the ground surface changes around the crater detected in this study was deposited volcanic bombs and thick ash by the eruption. Pauli color-coded image was classified into bare ground area, forest area, and building area, using the differences of reflecting features (Fig. 2). Around the crater, while forest area is decreasing, bare ground area is increasing. We considered this change around the crater detected in this study was influenced by the volcanic ashes.

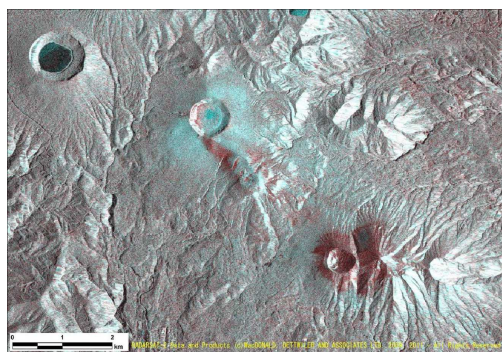


Fig. 1 Change Detection Image

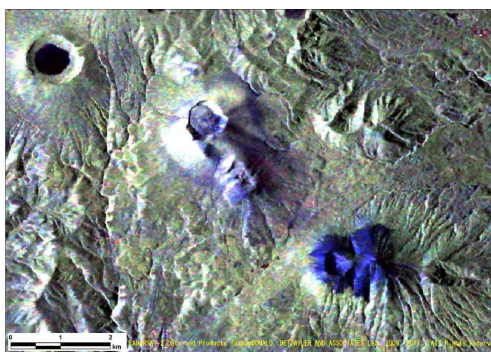


Fig. 2 Pauli color-coded image

Keywords: Shinmoedake, RADARSAT-2, SAR, volcanic eruption, pyroclastic deposit, monitoring