[EJ] Evening Poster | S (Solid Earth Sciences) | S-TT Technology & Techniques

[S-TT48]Synthetic Aperture Radar

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ALOS-2 and Sentinel-1, which have highly enhanced capacity compared to previous SAR satellites, were launched in 2014, and their utilization has been widely expanding as the data has accumulated. Now we are facing a new and abundant era of the satellite SAR, along with a worldwide trend to an open and free data policy of satellite data, and with next-generation advanced SAR satellite plans by several countries. In addition, SAR technologies with other platforms, such as ground-based SAR with high temporal resolution and UAV (Unmanned Aerial Vehicle) SAR with flexible operability, have also been developed and used for various targets. These facts indicate that the SAR utilization data has become widespread in both basic researches (e.g., earth science) and diverse applications (e.g., disaster prevention and forest monitoring). In this session, we would like to share a broad knowledge and information regarding SAR. A wide range of research topics from basic researches to advanced applications will be welcomed.

[STT48-P13]Distinction and inspection of the landslide domain using the Polarimetric synthetic aperture radar mounted with a plane

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In recent years, landslides have arisen from various factors around the world, causing damage such as collapse of buildings and isolation of mountain villages due to landslides. Also, in Japan, due to floods caused by torrential rains such as guerrilla and landslides caused by the occurrence of large-scale earthquakes, deaths are issued in Totsukawa village, Hiroshima city, Aso province and others. It is extremely important to make efforts to prevent such secondary disasters, and we believe it is important to provide safe and speedy information to the disaster prevention center, and disaster area information (such as the location of landslide areas). Therefore, in this study, we considered that it is appropriate to use weatherproof synthetic aperture radar (SAR) which can observe even in bad weather, and aims to optimize parameters to be found most efficiently in the landslide area by using the function of SAR Respectively.

The data observed with the aircraft-based synthetic aperture radar Pi - SAR - L2 was used this time. L205608 observing the Aso region on August 4, 2016 and L206001 to L206005 observing the Aso region in September 2017 are imaged with Sigma-SAR1) and the optimal combination of the obtained images is selected Therefore, the optimal combination of HH, HV and VV obtained by polarimetry data was investigated. As a method, these histogram measurements were carried out with the landslide area and the non-landslide area visually recognizable as the teacher (target), and the separability of both were measured.

Next, thresholds for classifying landslide areas and non-landslide areas were set from the intersection of the two histograms with respect to the tops of the obtained combinations, landslide areas were calculated on the basis of the thresholds, and the images were binarized. Incidentally, in this algorithm, a

median filter that removes noise and inclination correction to remove the horizontal ground from the inclination of the ground surface are also executed. As a result, HH-VV-Coherence proved to be able to detect the landslide area most efficiently among possible combinations.

In order to improve accuracy from now on, in the inclination correction processing, the affected area with the small current slope is determined to be a non-affected area like the flat area, and it is displayed in black. This time we compare two different regions in the image at one time, but we think that by extracting better parameters by comparing the same region at different times, it will lead to an improvement in accuracy.