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

[S-TT48] Synthetic Aperture Radar

convener: Yu Morishita (Geospatial Information Authority of Japan), Shoko Kobayashi (Tamagawa University), Youhei Kinoshita (一般財団法人リモート・センシング技術センター, 共同), Takahiro Abe (Earth Observation Research Center, Japan Aerospace Exploration Agency)

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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-P07] Crater Activity of Shinmoe-dake (a part of the Mount Kirishima cluster of Volcanoes) from Dec 6 2016 to Oct 25 2017 by InSAR Detection

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Synthetic Aperture Radar SAR is a sensor that irradiates radio waves (microwaves) and receives radio waves reflected from the ground surface and returned. SAR has high resolution performance and can be observed irrespective of weather, it is used for detecting crustal deformation accompanying volcanic activity. This research will detect the deformation of the volcanic mountain by using the interferometric SAR technique. INSAR uses two types of data with different times and finds variates from the differential distance between from the satellite to the target (phase difference). This research will detect the deformation of the Shinmoe-dake by using the interferometric SAR technique.

Processing data from December 6, 2016 to October 25, 2017, including the eruption of Shinmoe-dake, and applying atmospheric correction, it confirmed that subsidence of 2.8 cm on average found in the volcanic crater in 10 months. Validation of the results has been conducted using the GPS data acquired at three points by GSI and measured the RSSE of 1.94cm. Since the accuracy of INSAR and GPS is 1.94 cm, it is conceivable that mean sedimentation of 2.8 cm of volcanic crater is meaningful. However, since the DEM data used in this study is GIS-50m, the data may be old and the result may be unfavorable, so it is considered that it is necessary to obtain the change amount again with the new DEM data.