[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)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

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-P14]L-band radar backscatter variation due to the Amazonian deforestation

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In this research, we will use the time series L band SAR data (ALOS / PALSAR and ALOS - 2 / PALSAR - 2) obtained from 2006 to 2017 for the change of radar backscattering in the Amazon deforestation area of Brazil By doing so, we could check the variation pattern of the backscatter coefficient during these periods.

The classification of forests and non-forests by SAR has been studied a lot in the past. The backscattering coefficient observed by radar is highly sensitive to forests and non-forests, and setting thresholds is important for classification to be performed with high accuracy. Whether or not this threshold value is stably determined may depend on the method of reducing forest and the place, careful investigation is necessary through comparison with local data.

We confirmed that there are three patterns in the change of back scattering coefficient associated with deforestation in Amazon. In the future, we will increase the evaluation area and extract forest fluctuation patterns in the target area. At the same time, we set thresholds for forest classification considering seasonal variation etc. Using Landsat, it was confirmed that this area has the greatest deforestation in the 1990s.

Whether or not the threshold is stably determined as mentioned above may depend on the way and location of forest reduction.

It is necessary to comprehensively consider three fluctuation patterns. From the graph of the average value of the backscattering coefficient in the evaluation area, by using Bayesian estimation from fluctuation of cumulative distribution function etc, we will lead to improvement of accuracy of threshold setting in forest non-forest classification in Amazon.

By incorporating JERS - 1 's image data, we plan to extract and characterize forest area variation over longer periods.