

JICA-JAXA熱帯林早期警戒システム(JJ-FAST)のため の、PALSAR-2/ScanSARを使った早期森林伐採検出手法(アドバンスト)の 検討 3 –南米での時系列解析結果 –

Development of early deforestation detection algorithm (advanced) with PALSAR-2/ScanSAR for JICA-JAXA program (JJ-FAST) 3 –Time series analysis in South America –

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Time series PALSAR-2/ScanSAR data were used for detecting early-stage deforestation. The data were taken 9 times/year, following ALOS-2 systematic observation strategy [1], and it covers global areas, including major tropical forest in the world. By using this data, JICA and JAXA launched a service, “JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)” in November 2016 [1]. The system is on the web, and is freely accessible from a smartphone or other devices. Decrease of Γ_{HV}^0 are observed after deforestation, and current algorithm uses HV polarization data and two data taken in different timing. HH polarization, and time series data will be used for the future operation. Time series data obtained in South America with HH and HV polarizations were used, and compared it to the Landsat data to clarify the ability to detect the early-stage deforestation, where fallen trees were left on the ground. The Σ_{HH}^0 value increased by 1.2 dB in areas undergoing the early stages of deforestation. The detection timing is almost same as that using the optical sensor. On the other hand, the Σ_{HV}^0 value decreased by 3.2 dB for late-stage deforestation areas, where fallen trees were removed. The detection timing is about a few month after the detection of deforestation by Σ_{HH}^0 , or optical sensor. Many errors of the deforestation detection were observed at wet forest areas. Temporal variations of Γ^0 were observed for the area, which induces the deforestation detection errors. The variations of Γ^0 shows some correlation with precipitation for both HH and HV polarization [3], and flooding, variation of moisture for soil and trees may be the possible cause for the Γ^0 variation.

[1] ALOS-2 systematic observation strategy,

http://www.eorc.jaxa.jp/ALOS/en/top/obs_top.htm Accessed February 16, 2017

[2] JJ-FAST, http://www.eorc.jaxa.jp/jjfast/jj_index.html, February 16, 2017

[3] Manabu Watanabe, et al., Multi-temporal Fluctuations in L-band Backscatter from a Japanese Forest, IEEE Trans. Geosci. Remote Sensing, 53(11), 5799-5813, 2015

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