Classification of paddy fields and non-paddy fields using growth characteristics of back scattering coefficient of paddy rice by ALOS-2 / PALSAR-2.

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Rice is eaten in a wide area mainly in Southeast Asia, and it is one of the world's three biggest grains lined with wheat and maize. In recent years, stable supply of rice is required as the world population increases and climate change. Grasping the cultivated area of paddy rice is one of the important factors for grasping production control of rice. The Ministry of Agriculture, Forestry and Fisheries each year conducts survey of planting area of paddy rice on the land planted by all prefectures. However, since it is an actual survey by staff or statisticians, establishment of a more efficient and precise investigation method is required. Synthetic Aperture Radar (SAR) is a technique that measures the microwave (backscattering coefficient) that the radar itself emits microwaves, scatters as it hits an object to be observed, and bounces back in the direction of the radar. Therefore, unlike optical sensors, it is possible to observe the ground surface independently of weather and day and night. In addition, we can observe the wide area with one observation. Therefore, it is useful in the field of agriculture.
In this research, we used observation data (total of 38 scenes) of PALSAR - 2 installed in JAXA 's "Daichi 2" (ALOS - 2) from 2014 to 2017. Time series change of the back scattering coefficient of field planted with paddy rice was modeled using least squares method. From the distribution characteristics of each coefficient, the boundary line between paddy field and non-paddy field was visually set and binary classification chart was created. As accuracy verification, we superimposed classification diagrams on Google Earth and verified 200 places where paddy rice was planted in the field survey. As a result, the classification accuracy was confirmed to be 87.5%. As a cause of misextraction, there is a steel tower near the misclassified field, which is considered to have been influenced.

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