

Application of Multitemporal Sentinel-1 Synthetic Aperture Radar (SAR) Data to Assess Rain-fed Rice Growth in the Upper Chi-river Basin, Thailand

Aimamorn Kongarsa¹, and Chattichai Waisurasingha¹

¹Sustainable Infrastructure Research and Development Center,
Faculty of Engineering, Khon Kaen University, 40002, Thailand

Email: k.aimamorn@gmail.com; chattichai@gmail.com

For more than half of the world population, rice is, globally, one of the most stable food. In Thailand that is one of the vital rice exporters of the world, the government is now, on the one hand, trying to decrease the rice paddy field and, on the other hand, attempting to improve rice productivity per area. Accordingly, it is essential to apply precision agriculture technology for monitoring as well as assessing rice growth in order to progress rice yield. Besides, over a large area, remotely sensed data such as synthetic aperture radar (SAR) imagery can be employed. Therefore, this study aims to evaluate rice growth using multitemporal Sentinel-1 SAR data and to analyze data using a band combination technique together with support vector machine classification. In this study, we observed training data as well as reference data in order to analyze a set of SAR imagery and assess the result accuracy, respectively. The result illustrated that multitemporal Sentinel-1 SAR data can be used to determine rice growth effectively.

Key words: *synthetic aperture radar (SAR), Sentinel-1, rice growth*