

## Support Vector Machine (SVM) for Forest Cover Change Identification Derived from Microwave Data

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### *Abstract*

Forests cover change information is required to many researchers for developing a model of quantitative assessments of the effects of land cover changes on the global environment and climate change. Map of forest cover change is usually produced through image classification that is a process on remotely sensed images. Recently, there are many remote sensing data classification methods. However, which system is suitable for thematic mapping of forest and non-forest, and provide high accuracy is not fully understood. SVM (Support Vector Machine) as a new and promising classification method is a general class of learning architecture inspired from statistical learning theory that performs structural risk minimization to obtain the optimal separating hyperplane from a given training data and produce a good generalization ability. The method is basically designed for binary classification, but possible to extend the binary to multiclass classification, to produce accurate classification based on small training set through training sample selection. The objective of this research is to classify forest and non-forest classes derived from active microwave data using SVM classifier. As a study area, Sungai Wain in Balikpapan, East Kalimantan province was selected and a set of microwave data with HH (Horizontal-Horizontal) and HV (Horizontal-Vertical) polarizations was used. From the first attempt in using SVM method, it produces good results with 72.77 % correctly classified classes and mean absolute error 0.27. Backscatter values extracted from the data show that HH polarization produce higher value than HV polarization in both classes, forest and non-forest.

**Keywords:** forest cover change, quantitative assessment, image classification, SVM