

# MANGROVE MAPPING WITH RAPIDEYE IMAGERY USING SUPPORT VECTOR MACHINE

C. F. Chen<sup>1,2</sup>, N. T. Son<sup>1</sup>, C.R. Chen<sup>2</sup>, L.Y. Chang<sup>2</sup>

<sup>1</sup>Center for Space and Remote Sensing Research

<sup>2</sup>Department of Civil Engineering

National Central University, Jhongli City, Taoyuan County 32001, Taiwan

Email: cfchen@csrsr.ncu.edu.tw, ntsonait@hotmail.com, ccruncu@gmail.com, lychang@csrsr.ncu.edu.tw

**KEY WORDS:** Rapideye imagery, mangrove forests, support vector machine, Central America

**ABSTRACT:** Mangrove forests play an important role in stabilizing sediments and preventing soil erosion in coastal areas. It also provides a wide range of ecological services for human beings and habitats for various wildlife forms. Thus, mangrove monitoring is essential for evaluating the forest management strategies. The main objective of this study is to investigate the spatial distributions of mangrove forests in the Gulf of Fonseca, Central America with Rapideye imagery using the support vector machine (SVM) in 2012. Various spatial and non-spatial data were also collected for field surveys, cross-checking, and preparation of the ground reference data for accuracy assessment of the classification results. The methods of data processing comprise four main steps: (1) ortho-rectification of the Rapideye, (2) data masking of non-vegetated areas, (3) image classification using SVM, including selection of training samples to feed the SVM for classification, and (4) accuracy assessment of the classification results. The pixel-by-pixel comparison results between the classification map and the ground reference data using the error matrix indicated satisfactory results. The study demonstrates the validity of methods used for mapping mangrove forests in the Gulf of Fonseca (Central America). The information of mangrove forests achieved from this study might be useful for forest managers to evaluate their current forest management strategies in respect to formulating a better strategy for management of mangrove ecosystems in the region.