OBJECT-BASED CLASSIFICATION OF URBAN AREAS USING THAICHOTE, CASE STUDY OF MUEANG DISTRICT, NAKHON RATCHASIMA PROVINCE OF THAILAND

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Abstract: The aim of the study is to evaluate classified land use and land cover (LULC) classification of Thaichote in the part of Mueang district of Nakhon Ratchasima province in Thailand. LULC classification of very high resolution (VHR) imagery over urban areas is the very challenging task. They are spectrally too similar to be separated using only the spectral data of VHR imagery. This study prepared pan-sharpened image of Thaichote with the Gram-Schmidt pan-sharpen method that were used for LULC classification using object-based classification. The hierarchical rule-based object-based classification framework was developed based on subset of Thaichote imagery to classify complex urban areas. Herein, all datasets were classified into 9 classes that consisted of (1) water body, (2) shadow, (3) trees, (4) crop, (5) grass, (6) built-up area, (7) parking lot, (8) road, and (9) abandon land. In addition, accuracy assessment of LULC classification was performed with Overall Accuracy (OA) and Kappa hat coefficient of agreement ($\widehat{K}$). As a result, it provided OA and $\widehat{K}$ of 82.25% and 80.75%, respectively. These results demonstrate that object-based classification methods can be used to generate highly accurate maps of urban areas using high spatial resolution imagery.

Keyword : Object-Based Classification, Urban Areas, Pan-sharpened, Thaichote, Thailand