

The Use of Terra/ASTER Data to Stratify Vegetation Types in Peat-Swamp Forest for Conservation of Biodiversity at Klias Peninsula, Sabah, Malaysia.

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Recent advances in remote sensing technology and GIS have provided a useful tool for biodiversity conservation. Image-based remote sensing may provide timely and spatially distributed information on forest vegetation conditions, which are needed to manage the area at a landscape level. The project area is located at Klias Forest Reserve (3,630 ha of Class 1 Protection Forest) of Klias Peninsula, Sabah, Malaysia, including the Conservation Area that covered a total area of 7,200 ha. It is believed to be one of the last remaining intact tropical peat-swamp forests in the northern part of the Island of Borneo. The study seeks the capability of Terra/ASTER satellite data to stratify vegetation types in peat-swamp forest area with the aim to provide management inputs for conservation and sustainable use of wetland ecosystem in Klias Peninsula. Analysis and interpretation of data were carried out by using the combination of advance available technologies including Remote Sensing (RS), Geographic Information System (GIS) and Global Positioning System (GPS). Digital and manual image classifications were used to interpret Terra/ASTER data. Processing of digital remotely-sensed images is normally done by computer while manual classification involves visual observation based on the differences in the spectral responses and image contrast. The result shows that the Terra/ASTER data had high potential for discriminating peat-swamp forest based on vegetation class and forest canopy density. Two maps were delivered as follows: (i) Forest Density Canopy Class Map and (ii) Preliminary Vegetation Class Map. Accuracy assessments of outputs were calculated from confusion matrix of Maximum Likelihood Classification (MLC) with overall accuracy of 88.2%. To complement the delivered outputs from this study, the following recommendations are proposed; (i) The most feasible satellite image data such as IKONOS and the use of space born radar (SAR) data can be taken into account for classifying and monitoring the peat swamp forest in future project, and (ii) Conducting a detail ecological study and field survey for each vegetation class of peat-swamp forest derived from satellite image.