

MAPPING OF REGIONAL FOREST COVER CHANGES IN MALAYSIA USING MODERATE RESOLUTION IMAGING SPECTRORADIOMETER

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Abstract: Concern over global problems induced by rising CO₂ has prompted attention on the role of forest as carbon 'storage' because forests store a large amount of carbon in vegetation and soil. The classification of regional forests cover is a challenging task. Malaysia is well known with rich natural tropical forest resources that mostly dominated by trees from the *Dipterocarpaceae* family. For management purposes, the forested areas in Malaysia are classified into six types of forest according to changes in altitude, composition, flora, habitat, climate and soil characteristics, namely Upper Montane Forest, Lower Montane Forest, Upper Hill Dipterocarp Forest, Hill Dipterocarp Forest, Peat Swamp Forest, and Mangrove Forest. All of these forests play a very important role in sustainable development and provide a range of economic, social and environmental benefits, including essential ecosystem services such as climate change mitigation and adaptation. Having access to the latest status of forest cover and changes is very significant for the estimation and evaluation of the forest resources, carbon sequestration, and to support sustainable forest management. It plays a key part in the concentrated effort on illegal logging, forest fire monitoring and early warning for forest degradation, the reduction of deforestation, and the improvement of forest quality. This will be achieved by making intensive use of the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite remote sensing technology. The primary goal of this study is to estimate the yearly forest coverage and changes from 2000 to 2010 in Malaysia and to identify the main causes of forest changes during this period. This information is useful to discover the driving forces of the forest changes and can provide policy decision supporting information to the local relevant government in Malaysia. The proposed approach in this study was using the MODIS data, ground measurements and other thematic geographic data as the main input in data processing. With hyperspectral capability, MODIS data provide a greater opportunity for differentiating between vegetation and non-vegetation features in landuse classification process. The study was integrating the pixel based indices and object oriented approach in extracting of forest area and forest changes in the study area with the intensive usage of Geographic Information System (GIS). The outcomes of this project will help to clarify the status of where the forests cover and how much change on forest area in the Malaysia region.