

APPLICATION OF REMOTE SENSING FOR MANGROVE LAND COVER
CHANGES IN KUALA SUNGAI KUANTAN

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BY

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ABSTRACT

Recent years, Malaysia has been undergoing a vast development in socio-economic structural and town planning. These vast changes also included the use of land resources. Major changes in land use within environmental, social and economic condition may limit option for use of land resources. In Malaysia, the need of mapping of land usage is getting important. The demand for storage, analysis and display of complex and voluminous environmental data has increase in recent years. This study was done aiming to classify and determine the changes of land cover especially for Mangrove Land Cover in Kuala Sungai Kuantan, between 1991 and 1997. The primary data that used in this study are satellite image Landsat TM, with the aid of field survey, topography map and land cover map. The digital image was processed using PCI EASI/PACE (Version 6.2) software. Visual interpretation of enhanced TM data with band combination of channel of 4,5,3 (R,G,B) were done and Geometric correction process using Nearest Neighbor with RSO (Rectified Skew Orthomorphic) units (meter) was conducted to evaluate the geometric distortion caused during the process of satellite sensing. Maximum Likelihood classifier was used in classification process to determine land cover classes. Ground sampling was done to confirm the accuracy of the classification and 12 land cover classes were determined for both images. Land cover maps for 1991 and 1997 were then produced. Finally, matrix analysis was done to detect 'from-to' changes by the basis of comparing pixel by pixel on the classification images and resulting quantitative information data. In this study, only mangrove land cover changes were determined.

ABSTRAK

Di Malaysia, pemetaan penggunaan tanah telah menjadi semakin penting disebabkan oleh pembangunan yang pesat di dalam struktur ekonomi dan perancangan wilayahnya. Permintaan untuk data alam sekitar yang kompleks dan bernilai semakin meningkat sejak kebelakangan ini. Kajian ini adalah bertujuan untuk mengklasifikasi dan menentukan perubahan litupan tanah iaitu litupan hutan paya bakau, di Kuala Sungai Kuantan, di antara tahun 1991 dan 1997. Data utama yang digunakan di dalam kajian ini adalah imej digital satelit Landsat TM, dan dibantu dengan survei keadaan sebenar, Peta Topografi dan Peta Litupan Tanah. Imej ini akan diproses menggunakan perisian PCI EASI/PACE (Version 6.2). Interpretasi visual akan dilakukan ke atas data LandsatTM yang telah ditonjolkan dan pada jalur 4,5,3 (R,G,B). Proses pembetulan geometrik pula dilakukan untuk membetulkan ralat geometrik yang berlaku semasa proses sensing satelit dan berdasarkan unit (meter) Unjuran Bentuk Benar Serong Ditepati (RSO). Proses Klasifikasi pula menggunakan 'Maximum Likelihood Classifier' untuk menentukan kelas litupan tanah. Survey keadaan sebenar kemudiannya dapat mengesahkan ketepatan analisa klasifikasi dan 12 kelas telah dipilih untuk kedua-dua imej. Peta Litupan Tanah 1991 dan 1997 untuk kawasan kajian dihasilkan. Akhirnya, analisis matrix dilakukan untuk mendapatkan keputusan perubahan 'from-to' dengan membandingkan pixel dengan pixel di dalam imej yang telah diklasifikasikan. Hanya perubahan litupan hutan paya bakau yang telah ditentukan di dalam kajian ini.