LAND USE CHANGE DETECTION OF KUALA TERENGGANU

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Land Use Change Detection of Kuala Terengganu

By

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Research Report submitted in partial fulfilment of the requirements for the degree of Bachelor of Science (Marine Science)

Department of Marine Science
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DEPARTMENT OF MARINE SCIENCE
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DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled: **Land Use Change Detection of Kuala Terengganu** by **Teow Boon Shyan**, Matric No. **UK 20342** have been examined and all errors identified have been corrected. This report issubmitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree of **Bachelor of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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cm	centimeter
DN	Digital Number
EMR	Electromagnetic Radiation
GCP	Ground Control Point
GIS	Geographical Information System
km	kilometer
m	meter
MAXLIKE	Maximum Likelihood
MINDIST	Minimum Distance-To-Mean
MS	Multispectral
PAN	Panchromatic
TM	Thematic Mapper

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ABSTRACT

Integrating remote sensing and Geographical Information System (GIS) in research of land, water, agriculture and marine resources and geomorphology may lead the researchers to a more understanding of sustainable development. In this study, the integration of these two disciplines was used to detect the land use change and produce land use map of Kuala Terengganu town area, Terengganu. For the land cover classification, satellite image (IKONOS), captured on 28th August 2002 and (QuickBird), captured on 14th April 2007 and 9th December 2009 was analyzed and classified using two classifier from 'Maximum Likelihood Classifier' with overall kappa accuracy 0.96, 0.94 and 0.94 respectively. From the results, 6 basic classes of the land cover were classified. There are water body, sand, vegetation, building, land and tar. Land use map of this three different years were produced from the result. Determination of land use changes was done by comparing three satellite images dated the 28th August 2002, the 14th April 2007 and the 9th December 2009. These images were classified and comparing for the changes detection. Three out of four types change detection has been identified, which are new area, lost area and re-planting. From the result, Kuala Terengganu town area was been defined as the development area which needs a plan to become sustainable development. This study, therefore, implies that the integration of remote sensing and GIS techniques is an accurate, fast and easy method in order to identify land use changes and produce land use map.

ABSTRAK

Integrasi antara teknologi Penderiaan Jauh dan Sistem Geografik Informasi (GIS) dalam penyelidikan sumber tanah, air, pertanian dan sumber laut serta geomorfologi boleh memberikan lebih banyak pemahaman terhadap penyelidik-penyelidik tentang penbangunan yang mampan. Dalam kajian ini, intergrasi dari dua displin ini telah digunakan untuk mengesan perubahan guna tanah dan menghasilkan peta penggunaan tanah di kawasan bandar Kuala Terengganu, Terengganu. Untuk klasifikasi litupan tanah, imeg satelit (IKONOS) yang bertarikh 28 Ogos 2002 dan (QuickBird) yang bertarikh 14 April 2007 dan 9 Disember 2009 telah dianalisis dan diklasifikasi dengan menggunakan dua pengelas dari 'Hard Classification' dengan ketepatan kappa keseluruhan 0.96, 0.94 dan 0.94 masing-masing. Dari keputusan yang diperolehi, 6 kelas litupan tanh telah dapat ditentukan. Iaitu badan air, pasir, tumbuh-tumbuhan, bangunan, tanah, dan tar. Bagi mengesan perubahan litupan tanah, tiga imej satelit yang bertarikh 28 Ogos 2002, 14 April 2007 dan 9 Disember 2009 telah dibandingkan. Tiga daripada empat jenis perubahan telah dikesan dan dikenalpasti, iaitu kawasan baru, kawasan yang hilang dan penanaman semula. Dari keputusan yang diperolehi, kawasan bandar Kuala Terengganu telah ditakrifkan sebagai kawasan pembangunan yang memerlukan satu perancangan untuk menjadi pembangunan yang mampan. Secara keseluruhannya, kajian ini dapat menunjukkan bahawa teknik integrasi antara Penderiaan Jaug dan GIS adalh kaedah yang tepat, cepat dan mudah untuk mengneal pasti perubahan penggunaan tanah dan penghasilan peta penggunaan tanah.