

ABSTRACT

The Analysis of Land Cover Changes in Trinidad and Tobago

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The ad hoc land use planning has paid very little consideration to environmental impact or physical constraints, which has given rise to urban sprawl and resulted in physical socio-economic and environmental problems. Decisions made on land use planning in Trinidad and Tobago are being done on a zonal perspective rather than a synergistic perspective. As a result of Trinidad and Tobago's economic progress, urbanization and development are fragmenting natural areas and reducing the viability of species that play important functional role in ecosystems.

In an effort to have a sustainable future it is important to know and view the country as a whole as it relates to environmental impact and long term planning. The future patterns of land use and land cover must be understood at a series of spatial and temporal scales to distinguish and predict the behaviour and impacts of local land use, and other environmental and social systems. Therefore the lack of data at those scales has made it difficult to accurately represent the current land use land cover patterns within the country.

In this research, remotely sensed images were used to develop the foundation to fill the gap in the knowledge on the state of land use and cover in Trinidad and Tobago. A Maximum Likelihood supervised classification was performed on satellite images to create a new and comprehensive land cover/use map for Trinidad. This approach included a methodology to deal with cloud and shadows removal over the island. The maximum likelihood classification algorithms and two mode filters were used. The overall accuracy achieved on 478 and 151 evaluation samples were greater than 70% and 80% for Trinidad and Tobago respectively. Evaluation of the land cover changes derived through cross classification analysis, the vegetation land cover increased considerably between 1990's and 2000's for both Trinidad and Tobago, showing a 14% and 12% increase in area respectively. Most of the expansion occurred at the expense of primary forest, which decreased over the same period.

Keywords: Terri Richardson; Remote Sensing; Land Cover Changes; Land Use Planning Sustainable Development Cloud and Cloud Shadow Removal; Trinidad and Tobago.