

Geospatial analysis of land changes in the megacities of Southeast Asia

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The advancements of remote sensing and geographic information systems technologies enable us to monitor land changes at various spatial and temporal scales, and analyze the implications of such changes from different perspectives. This study assesses the spatiotemporal patterns of land changes in the megacities of Southeast Asia, namely Bangkok (Thailand), Jakarta (Indonesia) and Manila (the Philippines). The goal is to gain better understanding on the land transformation process in each megacity, which may be useful from the perspective of sustainable landscape and urban planning. Remote sensing data were used to develop land cover maps for the megacities across three epochs, i.e. t1-1990, t2-2000 and t3-2010. A hybrid classification method that integrates pixel-based and object-based techniques was employed in land cover classification. Transition matrices for the two time intervals (t1-t2 and t2-t3) were computed and geospatial tools and techniques were applied in order to reveal the spatiotemporal patterns of land changes in each megacity. The implications of the findings for future landscape and urban planning in relation to the sustainable development of the three megacities are explored.

Keywords: GIS, Remote sensing, Land change, Urbanization, Megacities, Southeast Asia