## LANDSCAPE DYNAMICS IN THE EASTERN AMAZON USING GEOPROCESSING TECHNIQUES

## ESTUDO DA DINÂMICA NA PAISAGEM DA AMAZÔNIA ORIENTAL ATRAVÉS DE TÉCNICAS DE GEOPROCESSAMENTO

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In order to evaluate the human occupation processes in the Amazon region, the vegetation monitoring and land use change analysis using methodologies of integrated investigation are extremely required. In this context, this paper presents and discusses the integration of digital image processing techniques and Geographic Information Systems (GIS) associated with field information to contribute in the study of the vegetation cover and land use changes in the Igarapé-Açu region, Pará State. For this, Landsat TM data were submitted to different digital image processing techniques using SITIM and SPRING Digital Image Analyzer. For the image spectral feature reconnaissance, more recent image module was selected in which the image enhancement, image segmentation and image classification by region techniques were applied. From the information set already obtained for these techniques associated with the field survey, the 1984, 1988, and 1991 images, after the pre-processing fase, were submitted to the hybrid classification process using K-means classifier and Maximum-likelihood classifier (Maxver). Then, a thematic legend was defined with four classes of vegetation cover (dense ombrophilous forest, and the initial, intermediate and advanced stage of secondary regrowth) and five classes of land use (bare soil, annual crops, perennial crops, pasture and pasture with invasion of weeds). The classified images were migrated into the *GIS* (SGI/INPE), and an analysis was made on the quantification of the area of interest and of the dynamics of the mapped classes considered in the studies of interest. Therefore the proposed study can be considered a valuable tool to associate the changes in the agricultural lanscape in the land use systems even for the complex vegetation pattern originated from shifting cultivation.

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