From the Landscape to the Region: Scaling up Approaches in Human and Physical Dimensions of Land-Use and Land-Cover Change in the Amazon

Mateus Batistella, EMBRAPA, mb@cnpm.embrapa.br (Presenting)
Diogenes Alves, INPE, dalves@dpi.inpe.br
Dengsheng Lu, Indiana University, dlu@indiana.edu
Emilio F. Moran, Indiana University, moran@indiana.edu
Eduardo S. Brondizio, Indiana University, ebrondiz@indiana.edu
Alvaro D'Antona, Indiana University, adantona@indiana.edu

As LBA progressed, the key importance of understanding human and physical factors behind land-use and land-cover change in the Amazon became apparent. In particular, differentiating and analyzing processes such as deforestation, land abandonment, land degradation, and land use intensification has been recognized as of critical importance. Our project in LBA (LC-34) builds on selected case studies to propose a multiscale synthesis about these processes, to Census units and meso-regions in Pará and Rondônia. Remote sensing techniques and inputs from social sciences are embedded in our approaches. Our goal is to differentiate high Carbon content non-forest vegetation (NFV) such as secondary succession, agroforestry, and perennial agriculture from all other land-cover (LC) classes within the deforested areas in 1997, 2000, and 2004, as mapped by Prodes. TM data are being used for calibration of MODIS/AVHRR data to derive pure pixels and fractions of LC within mixed pixels. The stages of occupation have been divided into old and new areas, inferred for grid cells of 1/4 degree. An alternative approach is to classify TM data for selected areas through a stratified sampling strategy based on landscape structure information. The sample areas are being defined to tentatively reconstruct deforestation patterns. We also analyze human distributions and their relation with the rearrangement of the agrarian structure and socio-demographic dynamics (e.g., lot turnover, population mobility, household reorganization). This presentation shares some preliminary results and represents an opportunity for interaction with the LBA community.

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