



Experimento de Grande Escala
da Biosfera-Atmosfera na Amazônia

2ª Conferência Científica Internacional do LBA

07 a 10 de Julho de 2002



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INFLUENCE OF SEASONALITY AND LAND USE ON GROSS PRIMARY PHOTOSYNTHESIS DYNAMIC AT TAPAJÓS REGION

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Amazon region is the focus of the research works related with the global changes. In Brazil, the great contribution for the increase of atmospheric CO₂ is the land use changes (70% of total emission). Due to the uncertainties about the productivity of Amazon biome and the consequences of climatic changes and of land use changes in the Amazon forest productivity, this work propose to supply the lack of detail regional analyses for Amazon region. Present abstract is an overview of our project that will explain the way that we will carry the study about primary productivity at Tapajós. We pretend to emphasize methodological aspects to access gross primary photosynthesis (GPP). The general aim of this research is to model the GPP process in a forest ecosystem in Alto Tapajós-PA, to evaluate the effects of the land use changes and of the atmospheric CO₂ increase. This approach will consider the spatial and temporal variability of the environmental variables (soils, vegetation, temperature, precipitation, irradiance, etc). A multi-scale methodology using field, meteorological and remote sensing data will be apply to scaling up local to regional GPP at 1km grid with the Aggregate Canopy Model from Williams et al. (1997). We will use a map integration routine to define land units according land use, vegetation, soils and relief patterns to collect field data about leaf area index (LAI) and leaf nitrogen concentration in the dry and wet season. To access land use we will carry an analysis of MODIS image. With field and microclimate data, and remote sensing estimations of land use and irradiance it will be possible to set the parameters for Tapajós environmental conditions. To validate model results we will carry a comparison with eddy flux data and an error analysis. So, we intend to generate results that make possible the quantitative analysis of GPP in the regional scale. We began project activities on May. At the moment, we are digitalizing thematic maps (soil and vegetation) from the region and working to acquire data and build a database about vegetation information. Fieldwork will be carried in August. Previous field data collect at Tapajós showed differences in forest structure between sites in primary forest. Mainly associate with species composition, so characterize also LAI and N pattern from these vegetation type, will be helpful for GPP spatial analysis in that ecosystem. The present studied will contribute to the knowledge of biological processes in the Amazon, and the effects of climate and land use changes. This information will clearly help the elaboration of management plans resulting in the conservation of Amazon forest through sustainable development of North region of Brazil.