LBA

Experimento de Grande Escala
da Biosfera-Atmosfera na Amazônia

2ª Conferência Científica Internacional do LBA

07 a 10 de Julho de 2002

Centro de Convenções Studio 5,

Av. Rodrigo Otávio, 3555 - Distrito Industrial

Fone: (092) 216-3555 Manaus/AM

Organização:
Secretaria da Conferência
LBA - Escritório Gerencial de Manaus, INPA
Email: lbaconf@inpa.gov.br
Tel: (92) 216-6205 Telefax: (92) 643-3256
Manaus - AM - Brasil

Detecting deforested areas from NDVI series in Amazonia 1982-1999

N. Dessay, H. Laurent, L. Machado, J. Ronchail, Y. Shimabukuro

CTA /IAE/ ACA
Centro Técnico Aeroespacial /Instituto de Aeronáutica e Espaço/ Divisão de Ciências Atmosféricas CEP 12228-904, São José dos Campos, SP, Brasil.
and

Institut de Recherche pour le développement/Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France

ndessay@iae.cta.br, hlaurent@iae.cta.br, machado@iae.cta.br, josyane@aneel.gov.br, yosio@ltid.inpe.br

The aim of this work is to localize forest areas that evolved toward a deforestation or a reforestation using the Normalized Difference Vegetation Index (NDVI). We shall pay special attention to 9 areas chosen among the LBA study areas. When the forest undergoes a transformation such as deforestation, the NDVI presents a very sharp minimum during the dry season, that we shall use in this work. Firstly, we use the areas that have remained steady during 18 years as a reference to calibrate the NDVI dataset over this period. Secondly, the regions of rain forest are geographically distinct because the dry season is not the same from one region to the other. To take this into account, we define homogeneous areas using the IBGE (Instituto Brasileiro de Geografia e Estatística) vegetation classification, the precipitation series that are provided by the Agência Nacional de Energia Eléctrica (ANEEL) and the Instituto Nacional de Meteorologia (INMET) and the high level cloud cover available from the International Satellite Cloud Climatology Project (ISCCP). Then we define reference dry season NDVI by averaging the NDVI minimum in different areas that are known as not having suffered deforestation. Afterwards, we compare the date and amplitude of the NDVI minimum for 9 LBA target areas with that of the nearest reference area. We observe in some cases large differences that permit to analyze the deforestation or the reforestation. This approach gives both a spatial and a temporal vision of the evolution of the forest.