

## Data Management Support for the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA)

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**PROJECT START DATE:** 1999

**PROJECT END DATE:** 2012

**SPONSOR:** NASA-Terrestrial Ecology Program

**PARTNERS:** Brazilian Ministry of Science and Technology (MCT); National (Brazilian) Institute for Research in Amazonia (INPA); and the LBA-Ecology (LBA-ECO) project at NASA

**PROJECT WEBSITES:**

[http://lba.inpa.gov.br/lba/lba\\_ingles/?lg=eng](http://lba.inpa.gov.br/lba/lba_ingles/?lg=eng)

<http://mercury.ornl.gov/lba/>

### PROJECT DESCRIPTION



*The Amazon region of South America as viewed by MODIS on NASA's Terra satellite.*

The Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA) is an international research initiative led by Brazil. LBA is designed to create the new knowledge needed to understand the climatological, ecological, biogeochemical, and hydrological functioning of Amazonia, the impact of land use change on these functions, and the interactions between Amazonia and the Earth system.

LBA combines newly developed analytical tools and innovative, multidisciplinary, experimental designs in a powerful synthesis which will create new knowledge to address long-standing issues and controversies. LBA provides new understanding of environmental controls on flows of energy, water, carbon, nutrients, and trace gases between the atmosphere, hydrosphere, and biosphere of Amazonia to help provide the scientific basis of policies for sustainable use of Amazonian natural resources. The enhancement of research capacities and networks within and between the Amazonian countries associated with LBA will help advance education and applied research into sustainable development, and help in the process of formulating policies for the sustainable development of the region.

The Brazilian Ministry of Science and Technology (MCT) is responsible for the policy management of LBA. The National Institute for Amazonian Research (INPA) is responsible for the scientific coordination of the experiment and for its implementation. Created through an international cooperative agreement, LBA has important institutional relations, including ties with over 40 Brazilian institutions, 25 institutions from various Amazonian countries, as well as institutions from the US and 8 European nations.

Staff from ORNL's Environmental Sciences Division have provided data management support for over a decade to LBA. This support is focused on turning observations made in the Amazon into data products that are well-documented, quality assured, and ready to be curated at data archives in Brazil and the US.

### SIGNIFICANCE

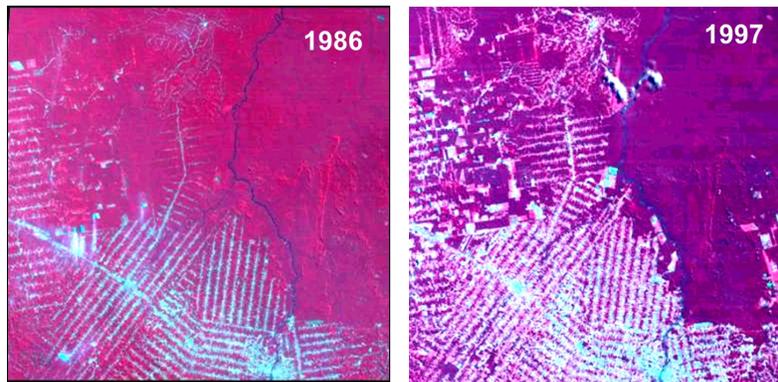
LBA is centered around two key questions that is being addressed through multidisciplinary research, integrating studies in the physical, chemical, biological, and

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human sciences: (1) How does Amazonia currently function as a regional entity, and (2) How will changes in land use and climate affect the biological, chemical and physical functions of Amazonia, including the sustainability of development in the region and the influence of Amazonia on global climate? In LBA, emphasis is given to observations and analysis which will enlarge the knowledge base for Amazonia in six general areas: Physical Climate, Carbon Storage and Exchange, Biogeochemistry, Atmospheric Chemistry, Hydrology, and Land Use and Land Cover. The program is designed to address major issues raised by the Climate Convention. It will help provide the basis for sustainable land use in Amazonia, using data and analysis to define the present state of the system and its response to observed perturbations, complemented by modeling to provide insight into possible changes in the future.

### INTERESTING FINDINGS

A key legacy from the LBA Project is the data products archived at data centers in Brazil and the US. For the LBA-Ecology program, funded by NASA, the data is being archived at the ORNL Distributed Active Archive Center (DAAC). To



Central Rondonia, Brazil: Forest clearing 1986-1997 (Landsat imagery, forest=red) Courtesy TRFIC-MSU