

IMPLEMENTING ARRANGEMENT
BETWEEN
THE GOVERNMENT OF THE UNITED STATES OF AMERICA
AND
THE GOVERNMENT OF THE FEDERATIVE REPUBLIC OF BRAZIL
FOR COOPERATION ON ECOLOGICAL RESEARCH IN THE LARGE SCALE
BIOSPHERE-ATMOSPHERE EXPERIMENT IN AMAZONIA (LBA)

The Government of the United States of America,
____ and
____ The Government of the Federative Republic of Brazil,
____ (hereinafter referred to as Parties),

Desiring to extend their mutually beneficial cooperation in Earth
System Science;

Recognizing the need to better understand how tropical ecosystems
function at regional scales and how changes in land cover and land use affect that
function as well as the prospects for sustainable land use in tropical ecosystems; and

Convinced of their mutual interest in conducting field experiments in
Brazil, as part of the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA)
for the overall duration of the LBA field program from 1998 through 2003;

Considering that the goal of LBA is to generate knowledge to define the
present state of Amazon ecosystems and their response to observed perturbations, as
well as to use modeling to provide insight into possible changes in the future;

Considering that three groups were established by Brazil to promote the
general organization of the project:

The Superior Committee of LBA, created by *Portaria MCT nE 344, of 28.08.1997*,
composed of representatives of the Ministry of Science and Technology, Ministry for
Foreign Relations, Ministry of the Environment, Water Resources and Legal Amazon,
Ministry of Mines and Energy, Joint Chiefs of Staff, Ministry of Aeronautics and the
Secretariat for Strategic Affairs, oversees, either directly or through independent
auditing, the development of the LBA program and its Committees, including
subsequent LBA activities, approves the make-up of these Committees, plans and
implementation actions, as well as guidelines for data dissemination, and provides the
highest level of interface with other institutions of the Brazilian Government;

The Organizing and Implementing Committee (OIC), composed of the individuals responsible for the funding bodies and major participating institutions for each LBA component, coordinates the implementation of LBA, balancing operational needs, requirements, and scientific priorities with available funding; and

The Science Steering Committee (SSC), composed of scientists representing each component's individual science teams, coordinates the overall scientific direction and strategies for LBA, consistent with the LBA Concise Experimental Plan;

Taking into account that each component of LBA will assume responsibility for its own research activities and data management requirements.

Recognizing that LBA is organized in multiple, independently-funded components;

Considering that, from the operational point of view, INPE will lead the overall coordination and integration of LBA, advocating complementarity and compatibility among the independently-funded components, as well as with other, related projects under way in Amazonia;

Taking into account that each LBA component will establish its own management structure, as well as its science team, and will nominate representatives to the OIC and SSC, and that the overall LBA science team shall consist of all investigators in all components of LBA.

Have agreed as follows:

ARTICLE I SCOPE AND OBJECTIVES

A. This Implementing Arrangement is subject to and covered by the Agreement Between the United States of America and the Federative Republic of Brazil Relating to Cooperation in Science and Technology, signed on February 6, 1984, as amended and extended by the Protocol signed on March 21, 1994 (hereinafter referred to as Framework Agreement).

B. For the purposes of this Implementing Arrangement, the National Aeronautics and Space Administration (NASA) of the United States of America and the National Institute for Space Research (INPE) of the Federative Republic of Brazil are its Executing Agencies.

The objective of this Implementing Arrangement is to establish a framework for scientific and technological cooperation by the Parties in the field of ecological research, through LBA, based on mutual benefit.

D. The object of this Implementing Arrangement is the Ecological Component of LBA (LBA-Ecology). The overall scientific plan for LBA-Ecology is consistent with the LBA Concise Experimental Plan, but focuses primarily on the ecological, biogeochemical, and land cover and land use change objectives of LBA.

E. The LBA-Ecology science plan calls for aircraft-based in situ measurements and remote sensing observations; ground-based observations, process studies and experiments; ground-based case studies of land use change; modeling; and synthesis and integration of results. Only those measurements and observations that can be acquired using Brazilian aircraft -- and foreign aircraft on loan to Brazil under Brazilian registration -- will be covered under this Implementing Arrangement. Proposed use of U.S. aircraft in Brazil will be considered in the future and may be the subject of future, separate Implementing Arrangements.

F. A data and information management system, to be located at INPE -- the LBA Data and Information System (LBA-DIS) - will be developed by INPE, with NASA's participation, as part of the scope of this Implementing Arrangement to hold, manage, and distribute LBA data and information. It will include already existing data and any other kind of data collected under the auspices of LBA. INPE will be the repository for all LBA-DIS data and information, and NASA will have at its disposal copies of the system, of the data and of the information.

ARTICLE 2

AREAS OF COOPERATION

Cooperation under this Implementing Arrangement may be undertaken in the following areas:

- a) physical climate;
- b) carbon storage and exchange;
- c) biogeochemistry;
- d) atmospheric chemistry;
- e) hydrology and water chemistry;
- f) land use and land cover.

ARTICLE 3 UNDERTAKINGS

Cooperation under this Implementing Arrangement may include:

- a) information, products and technical data exchange, including preexisting data and all new satellite, aircraft and ground-based data, collected under the auspices of LBA;
- b) exchange of scientists, engineers and other specialists, for time periods mutually agreed upon, to participate in experiments, analysis, projects and other research and development activities, and to develop and validate models of ecological systems and their components in research centers, laboratories and other facilities;
- c) measurements of the important fluxes and states that govern the ecological and biogeochemical functioning associated with different land use types;
- d) organization of, or participation in seminars, workshops, training and educational activities and other meetings;
- e) publication in specialized journals;
- f) exchange, supply and mutual use of equipment, samples, materials, instruments and components for experiments, tests and evaluations;
- g) execution of cooperative studies, projects or experiments, including cooperative design, operational and construction activities;
- h) arrangement of support services, field facilities, laboratory space, lodging and group meeting facilities; and
- l) other forms of cooperation mutually agreed upon, in writing, by the Executing Agencies.

ARTICLE 4 MANAGEMENT

A.The LBA-Ecology is one of the multiple independently-funded components of LBA.

B.The LBA-Ecology science team shall consist of Brazilians, U.S., and foreign investigators selected for participation in the LBA-Ecology Project.

The NASA and INPE program points of contact for LBA-Ecology, who are responsible for coordinating and implementing agreed-upon functions and responsibilities of each Party, will be indicated in an exchange of letters between the Parties. They shall be responsible for coordination with all LBA components and coordination between NASA LBA-Ecology and the overall Brazil LBA Project.

D. After NASA identifies the U.S.-led investigations that will constitute its contribution to the LBA-Ecology science team, but before the initiation of scientific data collection on the ground, INPE and NASA will develop and mutually agree upon a detailed experiment plan for LBA-Ecology. This plan will be consistent with the research objectives and activities outlined in the LBA Concise Experimental Plan and the NASA Research Announcement for LBA-Ecology. All scientists and personnel will be expected to comply with all applicable Brazilian laws and regulations prior to the initiation and during the conduct of any LBA-Ecology research within Brazil. In addition, all U.S.-led scientists and personnel will be expected to comply with all applicable U.S. laws and regulations prior to the initiation and during the conduct of any LBA-Ecology research within Brazil.

ARTICLE 5 NASA RESPONSIBILITIES

In accordance with the provisions set forth in Article 4 of the Framework Agreement, and using reasonable efforts to fulfill its responsibilities under this Implementing Arrangement, NASA will:

- a) participate with INPE in the planning for LBA-Ecology, including, but not limited to, planning the deployment of ground-based instrumentation and infrastructure, planning the observations and field experiments, selecting mutually-acceptable study sites, planning for the acquisition of satellite data, and planning for the use of Brazilian aircraft;
- b) coordinate the involvement of any other U.S. agencies in LBA-Ecology;
- c) arrange for necessary support services, field facilities and laboratory space in Brazil as well as lodging and meeting space for the LBA-Ecology science team and staff, as shall be agreed upon in the LBA-Ecology experiment plan;
- d) provide LBA-Ecology remote sensing and other instrumentation to be deployed on Brazilian aircraft and arrange for appropriate operational support of such, as shall be agreed upon in the LBA-Ecology experiment plan;

- e) provide LBA-Ecology instrumentation, supporting equipment, and expendable supplies for ground-based observations, process studies, experiments, and case studies of land use change and appropriate operational support of such, as shall be agreed upon in the LBA-Ecology experiment plan;
- f) process, correct, quality assure, and document measurements and data sets under this component of LBA and deliver them to the LBA-DIS in a timely fashion so that they may be exchanged with all LBA investigators;
- g) establish and support the LBA-Ecology Project Office and LBA-Ecology components of the LBA-DIS data system;
- h) provide funding for the U.S.-led investigations selected by NASA for scientific participation in LBA-Ecology;
- i) participate in LBA-Ecology instrument calibration and comparison studies of the other components of LBA;
- j) participate cooperatively with INPE and other organizations participating in LBA in the analysis, reporting, and publication of results;
- k) ensure the provision of copies of all scientific data and results to the LBA Project Office at INPE;
- l) ensure the provision of data from NASA satellites as shall be agreed upon in the LBA-Ecology experiment plan;
- m) participate in LBA organizational and scientific meetings and nominate and support the participation of the U.S. LBA-Ecology representatives to the LBA SSC and the LBA OIC; and
- n) participate in LBA training and education activities to be agreed upon.

ARTICLE 6 INPE RESPONSIBILITIES

In accordance with the provisions set forth in Article 4 of the Framework Agreement, and using reasonable efforts to fulfill its responsibilities under this Implementing Arrangement, INPE will:

- a) in accordance with Article 13 of this Implementing Arrangement, serve as liaison with the Government of Brazil to obtain all necessary authorizations, entry, or re-export documentation and clearances, and to provide assistance in obtaining free customs clearance and waiver of applicable customs duties and taxes for all LBA-Ecology equipment, instrumentation, and supplies, as well as seeking exemption from storage fees in the event storage becomes necessary upon arrival in Brazil;
- b) in accordance with Article 14 of this Implementing Arrangement, serve as liaison with the Government of Brazil, to obtain the appropriate entry and residence documentation and clearances for personnel (scientists and staff) who enter, exit, and reside within Brazil in order to carry out LBA-Ecology activities;
- c) plan LBA-Ecology cooperative activities, with NASA, including, but not limited to, the deployment of ground-based instrumentation and infrastructure, the observations and field experiments, the selection of mutually-acceptable study sites, and the acquisition of satellite data;
- d) coordinate the involvement of other Brazilian agencies and other international participants in LBA-Ecology;
- e) coordinate actions jointly with the Superior Committee of LBA, established by the Ministry of Science and Technology of the Federative Republic of Brazil;
- f) assist NASA in obtaining access to Brazilian facilities, aircraft, and other such accommodations and support services;
- g) request the Brazilian Joint Chiefs of Staff's (*EMFA*) authorization for all aerial surveys of the LBA-Ecology in accordance with *Decreto* nE 1177, of 21.06.1971, *Decreto* nE 2278, of 17.07.1997 and *Portaria* nE 0637- SC-6/FA-61 of 05.03.1998;
- h) in conjunction with the Ministry of Aeronautics, arrange for the deployment of Brazilian and foreign aircraft on loan to Brazil, and appropriate personnel, to operate research instruments, and participate with NASA in the organization and conduct of airborne campaigns utilizing Brazilian aircraft;
- i) provide satellite data from Brazilian ground receiving stations and Brazilian satellites as shall be agreed upon in the LBA-Ecology experiment plan;
- j) process, correct, quality assure, and document measurements and data sets under LBA-Ecology and deliver them to the LBA-DIS in a timely fashion so that they may be exchanged with LBA investigators. INPE will serve as a repository of the original LBA-Ecology data.

- k) establish and support the LBA Project Office and data system components of LBA-DIS at INPE;
- l) participate in LBA instrument calibration and comparison studies;
- m) participate cooperatively with NASA and other organizations participating in LBA in the analysis, reporting, and publication of results;
- n) convene and participate in LBA organizational and scientific meetings, including meetings of the LBA SSC and OIC;
- o) organize and participate in LBA training and education activities to be agreed under this component of LBA, as well as promote the participation of other Brazilian scientific institutions in such activities; and
- p) submit guidelines for data dissemination and publication of results for the approval of LBA's Superior Committee.

ARTICLE 7 ADDITIONAL ORGANIZATIONS

Each Executing Agency may encourage and promote the development of direct contacts and cooperation among governmental agencies and other institutions, in their respective countries, so as to advance the objectives of this Implementing Arrangement, taking into account Articles 11 and 12.

ARTICLE 8 FUNDING ARRANGEMENTS

Each Party, through the respective Executing Agency, shall bear the costs of discharging its respective responsibilities under this Implementing Arrangement, including travel and subsistence of its agency's personnel and transportation of its own equipment and associated documentation. It is understood that the ability of the Parties to carry out their respective responsibilities is subject to their respective funding procedures and the availability of appropriated funds.

ARTICLE 9 PUBLIC INFORMATION RELEASE

Release of public information regarding this program may be done by the Parties for their own portions of the program and, insofar as participation of the other is involved, after suitable consultation between Executing Agencies.

ARTICLE 10 SCIENCE DATA RIGHTS

A. All LBA-Ecology investigators shall have a period of no more than one year from data collection to provide quality assured, and documented data to the LBA Data and Information System (LBA-DIS). INPE and NASA will ensure that the data collected through their sponsorship are archived in appropriate data centers in both countries. Except for data that are subject to commercial or other proprietary rights protections outside the control of LBA, all data from LBA-Ecology will be made available to all LBA investigators at no cost and to all others without restriction at no more than the cost of filling the user request.

B. Results of LBA-Ecology investigations will be made available to the general scientific community through publication in appropriate journals or other established channels as soon as possible and consistent with good scientific practices. In the event such reports or publications are copyrighted, INPE and NASA shall have a royalty-free right under the copyright to reproduce, distribute and use such copyrighted work for their own purposes.

ARTICLE 11 INTELLECTUAL PROPERTY RIGHTS

A. Protection and allocation of intellectual property and the treatment of business confidential information, created or provided in the course of cooperative activities, under this Implementing Arrangement, shall be protected in accordance with the provisions set forth in Annex I of the Framework Agreement.

B. Nothing in this Implementing Arrangement shall be construed as granting or implying any rights to, or interest in, patents owned or inventions which are independently developed by the Parties or their contractors or subcontractors.

ARTICLE 12

EXCHANGE OF TECHNICAL DATA AND GOODS

Each Party is obligated to transfer to the other Party only those technical data and goods necessary to fulfill its responsibilities under this Implementing Arrangement, subject to national laws and regulations, and the following provisions:

- a) In transferring data and goods which are proprietary or subject to export controls, and for which protection is to be maintained, such technical data shall be marked with a notice and such goods shall be specifically identified to indicate that they shall be used and disclosed by the receiving Party, institutions acting on its behalf, and its contractors and subcontractors only for the purposes of fulfilling the receiving Party's responsibilities under this Implementing Arrangement, and that the marked technical data and identified goods shall not be disclosed or retransferred to any other entity without prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such marked technical data or identified goods from unauthorized use and disclosure. Nothing in this Article requires the Parties to transfer technical data or goods contrary to national laws and regulations relating to export control or control of classified data.
- b) The Parties are under no obligation to protect any unmarked technical data or unidentified goods. However, all technical data and goods transferred under this Implementing Arrangement shall be used exclusively for the purposes of fulfilling the Parties' responsibilities under this Implementing Arrangement.

ARTICLE 13

EQUIPMENT EXCHANGE

A. Each Executing Agency may provide equipment to the other, for use in cooperative activities. The sending Executing Agency shall promptly deliver a detailed list of equipment to be provided, together with relevant specifications and appropriate technical documentation concerning the use, maintenance and repair of equipment to the receiving Executing Agency.

B. The sending Executing Agency shall retain title to the equipment and of the repair components provided to the other Executing Agency, and the receiving Executing Agency shall return the equipment to the sending Executing Agency upon termination of the cooperative activity, unless otherwise specified in writing by the Executing Agencies.

C. Unless otherwise specified in writing by the Executing Agencies, all equipment provided by U.S. institutions for this Implementing Arrangement remains the property of those same U.S. institutions, and will be returned to the United States after the conclusion of its intended purpose under the Implementing Arrangement. It may not be used for any purpose other than to support the conduct of the Implementing Arrangement, unless otherwise specified in a separate, written agreement between the Executing Agencies. While in Brazil, the equipment will remain in the possession of the authorized users and may not be transferred to any other parties unless authorized in writing by the U.S. institution that owns the property. INPE will facilitate the return of any U.S. institution's property at the conclusion of its use under this Implementing Arrangement, or for maintenance or repair, as requested by NASA.

D. Operation of equipment provided under this Implementing Arrangement at the facilities of the receiving Executing Agency is subject to agreement of the Executing Agencies.

E. Equipment provided under this Implementing Arrangement for cooperative activities shall be deemed scientific, non-commercial equipment.

F. In accordance with Article 6 of the Framework Agreement, and consistent with Article 8 of this Implementing Arrangement, the Parties shall facilitate customs clearance and waiver of applicable duties and taxes for equipment, supplies, and goods necessary for the implementation of this Implementing Arrangement. Such arrangements shall be fully reciprocal.

G. Unless the Executing Agencies have agreed otherwise, the sending Executing Agency will be responsible for and shall bear the costs of equipment and material transportation, by ship or airplane, up to an authorized entering port at the receiving Executing Agency country, convenient for the final destination, and for insurance and equipment guard during transportation.

H. Unless the Executing Agencies have formally agreed otherwise, the receiving Executing Agency shall arrange for the necessary facilities concerning the received equipment, including services such as electricity, water and gas.

ARTICLE 14

PERSONNEL EXCHANGE

A. Whenever personnel exchange or appointment takes place, each Executing Agency shall provide appropriate personnel, according to the capacity and ability required to carry out the activities planned under this Implementing Arrangement. Each personnel exchange shall be mutually agreed upon beforehand, through exchange of letters between the Executing Agencies, with due reference to this Implementing Arrangement and related dispositions concerning intellectual property in the Framework Agreement.

B. The host Executing Agency will provide an on-site office, office furniture, computer hardware/software equipment with e-mail capability, local and long-distance telephone and fax services, office supplies, and clerical support, unless the Executing Agencies have agreed otherwise;

C. Each Executing Agency shall be responsible for its own personnel's salary, insurance and per diem. Each Executing Agency shall be responsible for compensation of its Contractor employees, in accordance with the respective contract of the Executing Agency that provides the Contractor employees.

D. Each Executing Agency shall pay for its own personnel's travel expenses and lodging, while at the facilities of the host Executing Agency, unless the Executing Agencies have agreed otherwise. Each Executing Agency shall provide for its Contractor employees' travel expenses and lodging, while at the facilities of the host Executing Agency, in accordance with the respective contract of the Executing Agency that provides the Contractor employees.

E. In accordance with Article 6 of the Framework Agreement, each Party shall facilitate the provision of the appropriate entry and residence documentation for the other Party's nationals who enter, exit, and reside within its territory in order to carry out activities under this Implementing Arrangement. As far as possible, each Party shall facilitate the participation of nationals of foreign countries who have been selected for participation in LBA.

F. Each Executing Agency's personnel and Contractor employees, shall abide by the general rules of work and the security norms of the host Executing Agency.

ARTICLE 15
AVAILABLE INFORMATION

A. The Executing Agencies will exchange the necessary information to accomplish the objectives of this Implementing Arrangement. All Information obtained as a result of this Implementing Arrangement will be promptly exchanged by the Executing Agencies.

B. Information transferred by one Executing Agency to the other under this Implementing Arrangement shall be accurate and according to the best knowledge and belief of the transmitting Executing Agency. However, this Executing Agency does not warrant the adaptability of the transferred information for the particular use or application of the receiving Executing Agency or of any third party.

ARTICLE 16
LIABILITY AND RISK OF LOSS

A. With regard to activities undertaken pursuant to this Implementing Arrangement, neither Party shall make any claim against the other, employees of the other, or the other's related entities (e.g., contractors, subcontractors, investigators or their contractors or subcontractors), or employees of the others related entities for any injury to or death of its own employees or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise, except in the case of willful misconduct.

B. The Parties further agree to use all reasonable efforts to extend this cross-waiver as set forth in the above paragraph, to its own related entities involved in this cooperative project by requiring them, by contract or otherwise, to waive all claims against the other Party, its related entities, or employees of the other Party or its related entities for injury, death, damage or loss arising from activities undertaken pursuant to this Implementing Arrangement.

C. This cross-waiver of liability shall not be applicable to:

- a) claims between a Party and its related entity, or between its own related entities;
- b) claims made by a natural person, his/her estate, survivors or subrogees for injury or death of such natural person, except where a subrogee is one of the Parties,
- c) intellectual property claims; or

d) claims for damage based upon a failure of the Parties or their related entities to flowdown the cross-waiver.

D. Nothing in this cross-waiver of liability shall be construed to create the basis for a claim or suit where none would otherwise exist.

ARTICLE 17 DISPUTE SETTLEMENT

In the event that disputes arise regarding administrative or technical matters in the implementation of this Implementing Arrangement, such issues shall be referred initially to the identified points of contact of the Executing Agencies for resolution. Disputes which cannot be resolved by the points of contact, and other disputes regarding the implementation or interpretation of this Implementing Arrangement shall be referred to the appropriate level of authority of the Executing Agencies for resolution. Should this instance be unsuccessful, both Parties shall enter into consultation with a view to settling the issue.

ARTICLE 18 GENERAL PROVISIONS

A. Each Executing Agency shall conduct its activities under this Implementing Arrangement subject to its national regulations and its applicable laws, and shall provide resources according to personnel availability and appropriated funds.

B. Each Executing Agency shall use its best efforts to obtain all permits and licenses required by law to carry out this Implementing Arrangement.

ARTICLE 19 FINAL PROVISIONS

This Implementing Arrangement shall enter into force upon signature and shall remain in force for 3 (three) years, or as long as the Framework Agreement remains in force, whichever is the shorter period, unless one of the Parties notifies the other of its intention to terminate this Implementing Arrangement, upon 90 calendar days written notification to the other Party. The present Implementing Arrangement will be automatically extended for another 3 (three) year period, and it may be altered or further extended by written agreement between the Parties, unless one of the Parties notifies the other of its intention to terminate this Implementing Arrangement upon 90 calendar days

written notification to the other Party and provided that the Framework Agreement remains in force.

Done, in duplicate, in the English and Portuguese languages, both texts being equally authentic, this day of 1998.

FOR THE GOVERNMENT OF THE
UNITED STATES OF AMERICA

FOR THE GOVERNMENT OF THE
FEDERATIVE REPUBLIC OF
BRAZIL

LOCATION: Brasilia, D.F.

LOCATION: Brasilia, D.F.