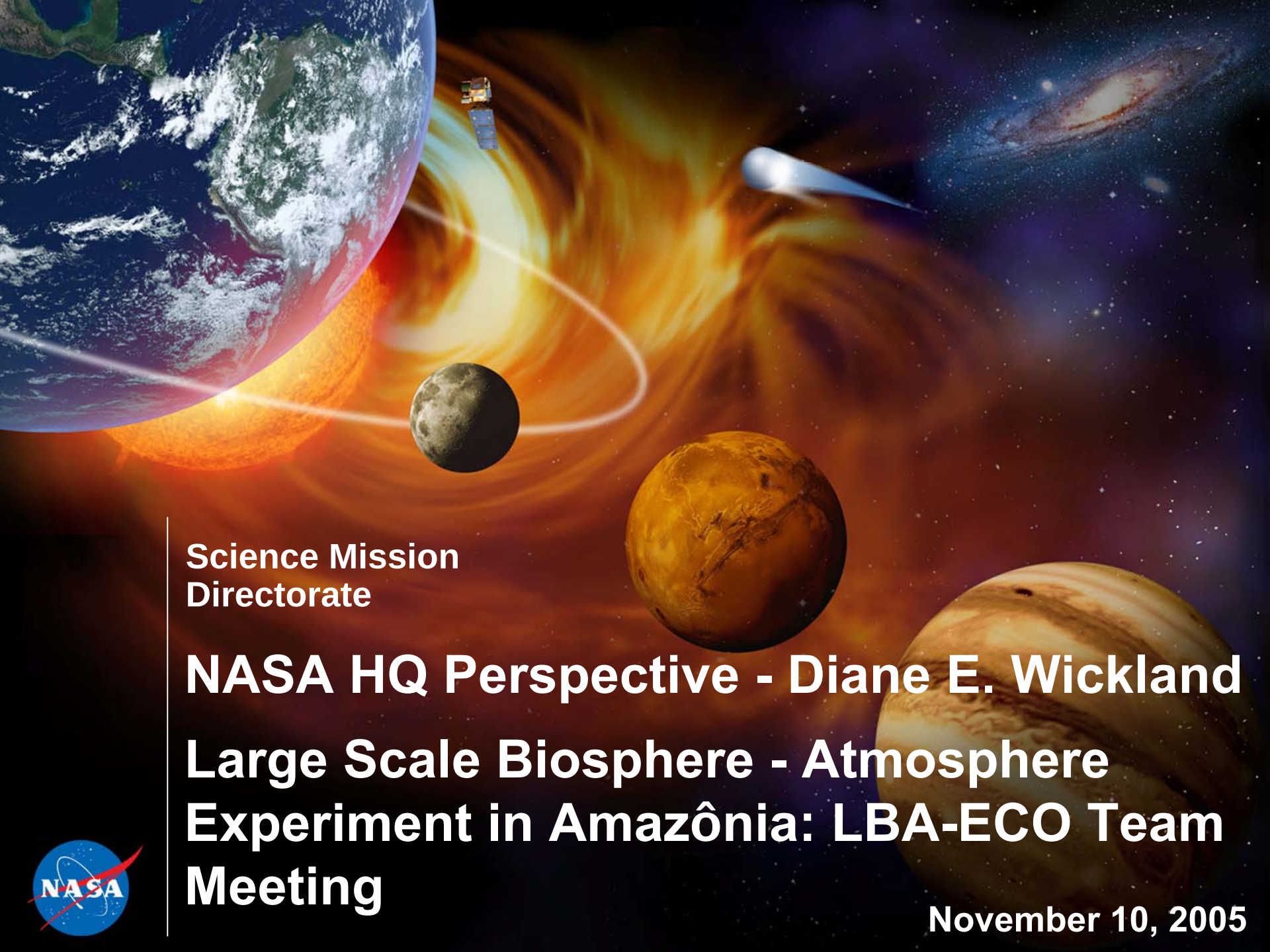


Science Mission Directorate

NASA HQ Perspective - Diane E. Wickland

Large Scale Biosphere - Atmosphere Experiment in Amazônia: LBA-ECO Team Meeting

November 10, 2005

NASA Perspective

The Large Scale Biosphere-Atmosphere Experiment in Amazônia (LBA) is an international research initiative led by Brazil.

This talk, however, will focus almost entirely on NASA's contribution to LBA and what changes are occurring within LBA-ECO.

NASA is here today and its LBA-ECO team has been methodically wrapping up its field phase over the past year (one year after our original Implementing Arrangement expired), due to the extraordinary steps taken by the Brazilian government to define an alternative mechanism for securing official permission for us to continue conducting field research in Brazil.

A Time of Transition for NASA in LBA

LBA continues in its quest for answers to the two LBA questions, with growing emphasis on synthesis and integration, but also with continued field activity:

- **How does Amazônia currently function as a regional entity?**
- **How will changes in land use and climate affect the biological, chemical, and physical functions of Amazônia, including the sustainability of development in the region and the influence of Amazônia on global climate?**

LBA-ECO (i.e., NASA) turns its attention wholly (almost) to synthesis and integration, recognizing that the above questions drive synthesis, but also determined to assess progress toward answering the LBA-ECO question:

- **How do tropical forest conversion, regrowth, and selective logging, influence carbon storage, nutrient dynamics, trace gas fluxes, and the prospect for sustainable land use in Amazônia?**

A Time of Transition for NASA in LBA

NASA-funded LBA field research ends December 2005 -- completion of LBA-ECO Phase II research (although analysis and publication of results will continue. . .)

LBA-ECO synthesis and integration research (Phase 3) has been selected and new investigations are planned to start in January 2006. (no field activity) LBA SSC will review soon.

Balanço Atmosférico Regional do Carbono na Amazônia (BARCA) campaign for airborne CO_2 measurements is still pending

New Implementing Arrangement for NASA participation in LBA through its synthesis and integration phase (Phase 3) is approaching signature (content has been agreed upon, final documentation is being prepared) – once signed, it will need to go to Brazil's Congress for approval

A Time of Transition for NASA in LBA

NASA (GSFC and LBA-ECO Project Office) has developed, in close consultation with the LBA Central Office and Phase 2 scientists, a detailed plan and timeline for the transition of field activity, equipment, and infrastructure.

They need your assistance and cooperation; please make sure you close out your field activities on schedule and, if you are expecting any final support from Project Office personnel, make sure they know. Have your own plan!

NASA intends to transition most property and equipment to Brazilian research institutions, but the property disposal plan has not yet been approved (2 years in process now) – so some transfers are now ~2 mos. behind schedule.

A Time of Transition for NASA in LBA

You have been aided in your accomplishments during the field phases of LBA-ECO by an incredibly talented and dedicated Project Office staff.

You also have been aided in your accomplishments during the field phases of LBA-ECO by the LBA Central Office and their staff, INPA, INPE, MCT, and your Science Steering Committee.

➔ Please remember to thank the individuals that have served you so well!

LBA-ECO Phase 3

NASA recently selected 21 new investigations for LBA synthesis and integration (topics in terrestrial ecology, land cover and land use change, hydrometeorology), many of which continue Phase II investigations. These will be reviewed by the LBA SSC very soon. Most awards will start in January 2006 (a few Dec.'05-May'06) and run for 2 years (some 3 years).

The focus will be on assessing what we have learned; providing answers to the LBA questions; archiving a high-quality, comprehensive data set; completing training and education activities; and helping our Brazilian counterparts to move LBA data and information into the decision support arena.

NASA LBA (Phase 3) Solicitation & Selection

Solicitation Release Date: January 28, 2005

Total Available Funding & Number of Awards Advertised: $2-2.5 million per year for 2 years (a 3rd year may be requested with compelling justification) **and 15-25 awards**

Proposals Due: April 26, 2005

Received 37 proposals (one submitted in parallel from two institutions)

Peer Review Panel meeting: July 12-14, 2005

Selection Discussions: August, 2005

Announcement Date: September 1, 2005

Nominal Start Date for Awards: January, 2006 (plan to start a few earlier using FY2005 funds)

NASA "Disciplines" Participating in LBA

Carbon Cycle & Ecosystems Focus Area:

Terrestrial Ecology
Diane Wickland & Bill Emanuel

Land Cover and Land Use Change (LCLUC)
Garik Gutman

Water and Energy Cycle Focus Area:

Terrestrial Hydrology
Jared Entin

LBA Research Solicited

Investigations to analyze data from the Large Scale Biosphere-Atmosphere Experiment in Amazônia (LBA) and to conduct synthetic and integrative research that summarizes the new knowledge obtained through LBA.

Investigations may involve:

- **new and/or continuing analysis of LBA data sets**
- **modeling**
- **intercomparison of data products or models**

Other than extending satellite data sets, no new data collection or field activities will be supported.

LBA Research Solicited

Research activities of interest, <u>in priority order</u> are:

1) Synthesis and integration of the results of LBA to answer one or more of LBA's research questions. Topics, in rough priority order, are:

- *Amazonian carbon dynamics (1a)*
- *Sustainability in Amazônia (1b)*
- *Whole system functioning (1c)*
- *Hydrometeorology (1d)*
- *Future trajectories of change in the Amazon (1e)*

2) Research to complete the preparation and analysis of LBA-ECO data sets.

3) Research to place LBA research results in a global context.

Other LBA Requirements

Investigators selected must become members of the LBA-ECO and LBA Science Teams.

Proposers must address the following in their submission:

- Each proposal must involve a substantive scientific collaboration with a **South American Co-Principal Investigator** (i.e., host-country counterpart). Involvement of scientists from **Amazonian institutions** is strongly encouraged.

- The proposal must include a **Management/Data/Training & Education Plan** Section that describes:
  (i) how the investigation will be managed, with clear roles and responsibilities for all participants
  (ii) plans for managing and making available new LBA data products, with a schedule, and for complying with LBA data policies
  (iii) a training and education plan

Optional Proposal Components

Proposers may request funding for additional activities as options within an LBA proposal:

- An ***optional*** **Synthesis Leadership (SL) Section** may be submitted to offer leadership in the synthesis for a particular LBA topic or activity. The budget for SL must not exceed $50K over two years.

- An ***optional*** budget request may be submitted, with justification, that provides only for **completion of a graduate student's LBA research**.

Review Procedures

- **Mail-in Review - each proposal mailed to 5 scientists (M Ave).** (Received 1-5 reviews each, with average of 3 per proposal)
- **Project Office Assessment - LBA-ECO project staff analyzed Management/Data/Training & Education Plans for past performance and compliance with LBA policies.** (Provided as input to peer review panel & selection discussions)
- **Panel Review - each proposal read by 4 panelists and individually rated, then discussed by entire panel.**

➔ **Brazil's MCT and the LBA Science Steering Committee provided names of South American scientists for NASA to consider as peer reviewers (NASA recruited 3 panelists from Brazil and invited at least 1 South American mail-in reviewer per proposal)**

NASA LBA Evaluation Criteria

(1) Evaluation of a proposal's relevance to NASA's objectives includes:

- the consideration of the potential contribution of the effort to NASA's mission as expressed in its most recent NASA strategy documents;

- the specific objectives and goals for LBA as given in the NRA (A.3 of Research Opportunities in Space and Earth Science -- 2005);

- the quality, effectiveness, and appropriateness of the Management/Data/Training and Education Plan in its response to LBA policies; and

- the strength, quality, effectiveness, and appropriateness of the South American collaboration.

NASA LBA Evaluation Criteria (cont.)

(2) Evaluation of intrinsic merit includes consideration of the following factors:

- overall scientific or technical merit of the proposal and/or unique and innovative methods, approaches, concepts, or advanced technologies demonstrated by the proposal;
- offeror's capabilities, related experience, facilities, techniques, or unique combination of these which are integral factors for achieving the proposal's objectives;
- qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives;
- overall standing among similar proposals and/or evaluation against the state-of-the-art; and

- if it is a successor proposal: the performance of the investigators and their institutions in past LBA research and their record of delivery of data to LBA DIS, or if it is a new proposal: the performance of the investigators and their institutions in similar relevant research projects.

NASA LBA Evaluation Criteria (cont.)

(3) Evaluation of the cost of a proposed effort shall include the realism and reasonableness of the proposed cost, and the comparison of that proposed cost to available funds. Low cost, while desirable, does not offset the importance of realism and reasonableness of the proposed budget.

Development of Selection Recommendation

- **Following the review panel meetings, NASA program managers, in consultation with LBA-ECO Project Office leaders, developed a selection recommendation; Dr. Jack Kaye has reviewed this, approved it, and indicated it was ready to present to the ESSD Steering Committee**
  - **Peer Review Panel's Overall Rating established the "competitive range" and documented key factors**
  - **The proposed projects' ability to meet NASA program goals and commitments was assessed**
  - **Program balance, needs for LBA synthesis and integration, and synergy among recommended selections were assessed**
  - **Costs were rigorously analyzed (commensurate with work proposed; available funds; cost-benefit)**
  - **The Brazilian perspective was taken into account as much as possible**
  - **Conflict of interest was managed appropriately throughout**

Input from Brazil's MCT

Brazil's MCT Sent an Observer to the Peer Review Panel Meeting who provided feedback on the process and:

- He asked us to look at the number of Brazilian scientists participating as Co-Principal Investigator or co-investigator on more than one proposal. He expressed concern about an individual scientist's ability to contribute strongly to multiple investigations.

- He noted that several proposals depend on the BARCA* campaign (which had been approved by MCT for a Scientific Expedition license, but not yet by the Ministry of Defense for its flights) – he wanted to know how these would be handled if approval was not received prior to selection.

*** Balanço atmosférico regional do carbono na Amazônia**

LBA-ECO & Hydromet Themes Covered

Carbon Dynamics: Lefsky/Carniero (28), *Richey/Victoria (24),* Chambers/Higuchi/Camargo (11), Saleska/Rocha/Artaxo/A. Nobre/Shimabukuro (29), Wofsy/Artaxo/Camargo/Silva Dias (14), Fitzjarrald/Moraes/Cohen/Silva Dias/Manzi (25), S. Miller/Rocha (23)

Land Cover & Land Use Change: Nepstad/Soares/Almeida (13), Walker/Reis (35), Walsh/Medina (38), Asner/Bustamante(7), Foley/Costa (4), Csiszar/Longo/Setzer (30), Moran/Batistella (20)

Trace Gas & Aerosol Fluxes: Potter/Oliveira/Bustamante/Ferreira (8), Melillo/Cerri (18), J. Miller/Gatti/Silva Dias (19)

Nutrient Dynamics & Surface Water Chemistry: Davidson/Carvalho/Figueiredo/Viera (2), Richey/Victoria (24), Deegan/Victoria (16), *Melillo/Cerri (18)*

Hydrometeorology: Melack/Novo (26), Shuttleworth/Bastidas/Nobre (10&21)

LBA Phase 3 Topics Covered

1. **Synthesis and Integration to Answer LBA Questions:**

   1a. Amazon Carbon Dynamics: Lefsky (28), Asner (7), *Potter (8)*, Richey (24), Chambers (11), Saleska (29), *Wofsy (14), Fitzjarrald (25)*

   1b. Sustainability in Amazonia: Foley (4), Deegan (16), Melillo (18), *Davidson (2)*

   1c. Whole System Functioning: Potter (8), *Richey (24)*, Moran (20)

   1d. Hydrometeorolgy: Melack (26), Shuttleworth (10), Bastidas (21)

   1e. Future Trajectories of Change: Nepstad (13), Walker (35), Walsh (38)

2. **Completion of LBA-ECO Data Sets:** Csiszar (30), Wofsy (14), J. Miller (19), Davidson (2), Fitzjarrald (25), S. Miller (23)

3. **Placing LBA Results in a Global Context:** *Foley (4), Potter (8), J. Miller (19)*

Recommended Funding by Institution Type

Type of Institution	# Submitted	# Recommended	Percent
Universities	26	17*+	65%
Non-profit Private	8	4	50%
NASA Centers	3	1	33%
Other Govt. Agencies	0	0	0%
For-profit Private	0	0	0%
TOTAL:	**37**	**22+**	

* 2 University-led proposals have NASA collaborations (Morisette, GSFC with Csiszar and Potter, ARC with J. Miller);

+ 2 of these are the same proposal submitted in parallel by 2 institutions

➔ **Overall 59% success rate**; also ~58% of total funds requested will be awarded

South American Institutions

South American Participation in Recommended Proposals

Institution Type	# Proposals	Percent
Amazonian (Brazil)	8	36%
INPA(5), Embrapa Oriental (3), U. F. Para (2), Museo Goeldi (1), IPAM (1)		
Non-Amazonian (Brazil)	13+	59%
INPE (9) , U. Sao Paulo (8), Other Universities (9) , Embrapa (1) , Other (2)		
Ecuador	1	5%
TOTAL:	**22**	

+ 2 of these are the same proposal submitted in parallel by 2 institutions

Brazilian Counterparts: Balance

Reynaldo Victoria, CENA, USP – Only South American Co-PI on more than one selected proposal (Richey & Deegan) and both are renewals of well-established, effective collaborations*

Several others are co-investigators on more than one:

Paulo Artaxo, USP – Saleska and Wofsy
Mercedes Bustamante, U.F. Brasilia – Asner (Co-PI) and Potter
Plinio Camargo, USP – Wofsy, Chambers
Marcos Costa, U.F. Viçosa – Foley (Co-PI) and Melack
Humberto da Rocha, USP – Saleska and S. Miller
Maria Silva Dias, INPE-CPTEC – Fitzjarrald, Miller, Wofsy

*__Carlos Nobre__, INPE – Co-PI with both Shuttleworth & Bastidas (but this is one investigation -- parallel submissions of the same proposal)

LBA Selection Recommendation

New vs. "Renewal" Investigations for LBA:

	# Proposals	# Selected
PI New to LBA	5	0
New PI, former Affiliate	2	1
New PI, former student or Post-Doc	3	3
New PI, former co-I	6	3
Renewing PI	21[+]	15[+]
TOTAL	**37**	**22**

[+] 2 of these are the same proposal submitted in parallel by 2 institutions

LBA Phase 3 – Who's on the Team?

LBA-ECO Phase 1 and Phase 2 investigators will continue to be welcome at NASA's LBA Science Team meetings. Their participation in synthesis and integration activities will be vital to LBA's overall success.

- "Emeritus" PIs with no other relevant funding may request travel support from NASA for key LBA meetings and workshops (contact the LBA-ECO Project Office; decisions will be made on a case by case basis, and early notice will help your case!)

The LBA SSC sets the policy for overall LBA Science Team membership.

LBA Synthesis Leadership

Synthesis Leadership (SL) Augmentations Recommended

- Effects of Deforestation on Sustainability – Foley/Costa
- Effects of Land Use Change & Agricultural Intensification – Melillo/Cerri
- Human-Environment Interactions in Amazonia – Moran/Batistella
- Land-Water Coupling / Scaling – Richey/Victoria

<u>Primarily Carbon</u>:

- LBA Eddy Flux Measurement Integration & Scaling – Saleska/Rocha/Artaxo/A. Nobre/Shimabukuro
- Effects of Forest Disturbance & Selective Logging – Chambers/Higuchi/Camargo
- Role of Secondary Forests – Davidson/Carvalho/Figueiredo/Viera

ON HOLD: BARCA Airborne Campaign Integration – Wofsy, Harvard/Artaxo/Camargo/M. Silva Dias

LBA Synthesis Leadership

Synthesis Leadership Activities Missing:

Role of Fire in Amazonia – Project Scientist plans to organize within LBA-ECO and coordinate through LBA SSC

Grand Carbon Synthesis – Project Scientist plans to organize under auspices of LBA SSC (can take advantage of the “Primarily Carbon” cluster)

Program Issues, Trends, Concerns

- Fewer than anticipated new and renewal proposals (13 of 33 current investigations did not propose)
- High success rate

- Integration challenges across LBA – scaling up
- Assuring the legacy – capturing the data for archive, delivering on the syntheses with new understanding

- Pending Implementing Arrangement and its formal approval

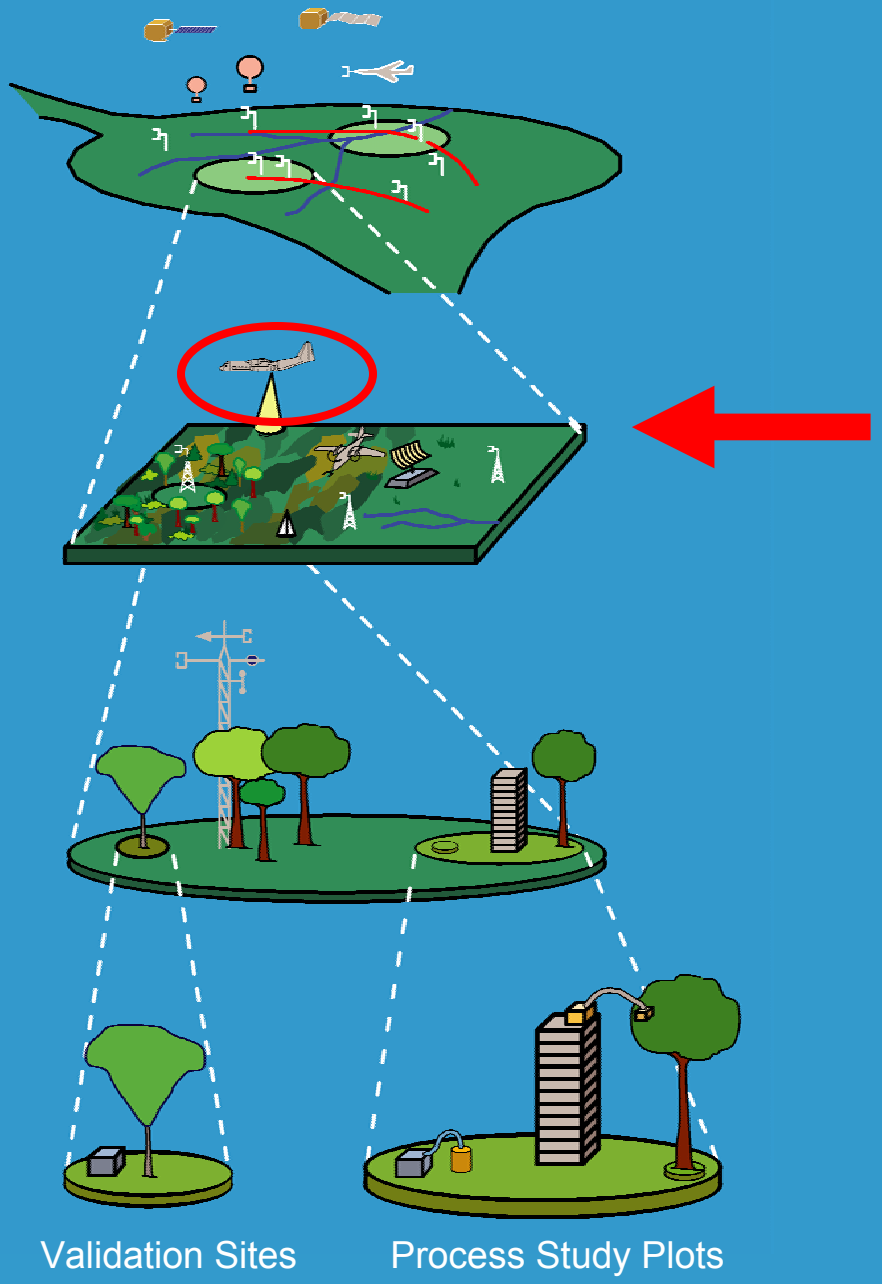
LBA Scaling Strategy

100 - 10,000 km
Pan-Amazonian Region

1 - 100 km
Study Areas
(e.g., Para, Rondônia)

~ 1 km
Flux Tower Sites

1 - 10 m
Process Study Plots
Validation Sites



LBA Phase 3 – On-going Award Negotiations

Awards will be monitored out of NASA HQ in Phase 3.

I have been slow to conclude negotiations with PIs – many award letters asked for (and procurement paperwork will be held until they are received):

- **revised Data Plans**
- **official letters of commitment from co-investigator institutions**
- **revised budgets**

If I have not yet told you I have everything I need, please see me or call on or after Nov. 21 – I would like to have all the procurement paperwork ready to go by early December. (If you are not sure, I have some of my notes here and I may be able to tell you here.)

LBA Phase 3 – Challenges Ahead

Working together to integrate our LBA data and results in order to create the synthesis and to holistically address our cross-disciplinary questions (will require coordinated, near-term data sharing)

Delivering a well-documented and comprehensive data set for long-term archive (this should not be the last thing you do!)

A synthesis that provides important information and significantly advances the state of the science.

Providing results with policy relevance and/or societal importance to decision makers (how to make it most useful to them; how to deliver; how to proceed in light of known sensitivities; need to keep NASA & MCT informed)

Enjoy the Meeting!